

ภาคผนวก 47ก

รายงานผลการดำเนินงานตามแผนบริหารจัดการความเสี่ยง

ที่ SCG Chem/MOC/2564/395

วันที่ 1 พฤศจิกายน 2564

เรื่อง นำส่งรายงานการวิเคราะห์ความเสี่ยงอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน (HAZOP) รอบ
ทบทวนครบวาระ 5 ปี ของบริษัท มาบตาพุดโอเลฟินส์ จำกัด

เรียน ผู้อำนวยการกองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน
กรมโรงงานอุตสาหกรรม

อ้างถึง

1. ประกาศกระทรวงอุตสาหกรรม ฉบับที่ 3 (พ.ศ. 2542) ออกตามความในพระราชบัญญัติโรงงาน พ.ศ. 2535 เรื่อง มาตรการคุ้มครองความปลอดภัยในการดำเนินงาน
2. ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัยในการดำเนินงาน (ฉบับที่ 4) พ.ศ. 2552

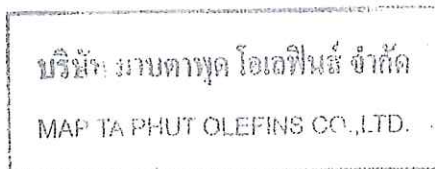
สิ่งที่ส่งมาด้วย

1. เล่มรายงานการวิเคราะห์ความเสี่ยงอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน จำนวน 12 เล่ม
2. CD รายงานการวิเคราะห์ความเสี่ยงอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน จำนวน 1 แผ่น

ด้วยบริษัท มาบตาพุดโอเลฟินส์ จำกัด (บริษัทฯ) ตั้งอยู่เลขที่ 88/3 ถนนทางหลวงระยอง-สาย 3191 ต.มาบตาพุด อ.เมือง จ.หวัดระยอง ทะเบียนผู้ประกอบการอุตสาหกรรมเลขที่ 82320000125503 (น.42(1)-1/2550-นอล.) ได้ดำเนินการทบทวนการประเมินความเสี่ยงรอบวาระครบทุก 5 ปี ดังประกาศกระทรวงอุตสาหกรรม ตามที่อ้างถึง

บริษัทฯจึงขอส่งแฟ้มรายงานและ CD รายงานการวิเคราะห์ความเสี่ยงอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน ตามสิ่งที่แนบมาด้วย 1. และ 2. เพื่อดำเนินการตามกฎหมายที่อ้างถึง
จึงเรียนมาเพื่อให้กรมโรงงานอุตสาหกรรมทราบและโปรดพิจารณา

ขอแสดงความนับถือ



(นายชยศักดิ์ อุบลฉนวน)

ผู้รับมอบอำนาจ

เบอร์ติดต่อประสานงาน : โทรศัพท์มือถือ 098-899-0565

กองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน
ได้รับเอกสารเรียบร้อยแล้ว

(นายชวรงค์ วสุธาสนั่น)

นักจัดการงานทั่วไปชำนาญการ

พ.ย. ๒๕๖๔

ที่ MOC/001

วันที่ 25 สิงหาคม 2565

เรื่อง ขอนำส่งเอกสารเพิ่มเติมรายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน

เรียน ผู้อำนวยการกองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน

ตามที่บริษัท มาบตาพุดโอเลฟินส์ จำกัด นำส่งรายงานการวิเคราะห์ความเสี่ยงอันตรายที่อาจเกิดจากการประกอบกิจการโรงงานแล้ว เพื่อให้ทางกรมโรงงานพิจารณานั้น

ซึ่งเจ้าหน้าที่ตรวจสอบเอกสาร แต่มีความประสงค์ขอเพิ่มเติมข้อมูลจากทางบริษัทฯ

ดังนั้น ทางบริษัทฯ นำส่งเอกสารเพิ่มเติมเพื่อประกอบการพิจารณา

จึงเรียนมาเพื่อโปรดพิจารณา

พ. 42(1)-1/2550-นอว.

บริษัท มาบตาพุดโอเลฟินส์ จำกัด
MAP TA PHUT OLEFINS CO., LTD.

ขอแสดงความนับถืออย่างสูง

นายชัยศักดิ์ อุบลวัฒน์
ผู้รับมอบอำนาจ

ผู้ประสานงาน : นายชัยศักดิ์ อุบลวัฒน์

เบอร์โทรศัพท์ : 098-8990595

กองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน
ได้รับเอกสารต้นฉบับแล้ว

(นายชวณะ วสุธาขนิพนธ์)
นักจัดการงานทั่วไปชำนาญการ

๒๖ ส.ค. ๒๕๖๕

ที่ อก ๐๓๑๒/ ๑๓๗๘๗



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๖ กันยายน ๒๕๖๕

เรื่อง รายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน

เรียน กรรมการผู้จัดการ บริษัท มาบตาพุดโอเลฟินส์ จำกัด

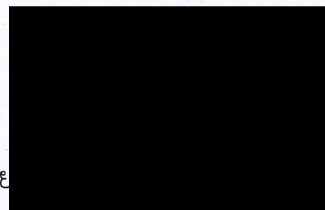
อ้างถึง หนังสือ บริษัท มาบตาพุดโอเลฟินส์ จำกัด ที่ MOC/001 ลงวันที่ ๒๕ สิงหาคม ๒๕๖๕

ตามหนังสือที่อ้างถึง ท่านได้ส่งรายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน (ฉบับแก้ไข) ของบริษัท มาบตาพุดโอเลฟินส์ จำกัด ประกอบกิจการ ผลิตโอเลฟินส์เกรดเอทีลีน (ETHYLENE) ๘๔๘,๐๐๐ตัน/ปี และโอเลฟินส์เกรดโพรพิลีน (PROPYLENE) ๗๑๒,๐๐๐ ตัน/ปี รวม ๑,๕๖๐,๐๐๐ ตัน/ปี ทะเบียนโรงงานเลขที่ น.๔๒(๑)-๑/๒๕๕๐-นอล. ตั้งอยู่เลขที่ ๓๒๒๐๓ ถนนทางหลวงระยอง - สาย ๓๑๙๑ ตำบลมาบตาพุด อำเภอเมืองระยอง จังหวัดระยอง นั้น

กรมโรงงานอุตสาหกรรม ได้พิจารณารายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงานแล้ว ขอแจ้งให้ทราบว่ารายงานดังกล่าวผ่านเกณฑ์การพิจารณา จึงเห็นชอบในรายงานดังกล่าว ซึ่งท่านต้องปฏิบัติตามแผนงานควบคุมความเสี่ยงอย่างเคร่งครัด ทบทวนและจัดทำรายงานครั้งต่อไป ตามที่กำหนดในประกาศกระทรวงอุตสาหกรรม

จึงเรียนมาเพื่อทราบ ทั้งนี้ ขอให้ท่านจัดส่งรายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงานครั้งต่อไป พร้อม CD หรือ อุปกรณ์จัดเก็บข้อมูล (Thumb Drive) ให้กองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน กรมโรงงานอุตสาหกรรม หากมีข้อสงสัยสอบถามรายละเอียดเพิ่มเติมได้ที่ นายณนตน์ณัฐ อยู่ยืน และท่านสามารถดูรายละเอียดคู่มือเพิ่มเติมได้ที่ <http://reg3.diw.go.th/safety/คู่มือ/ประเมินความเสี่ยง>

ขอแสดงความนับถือ



(นาย

ผู้อำนวยการกองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองส่งเสริมเทคโนโลยีความปลอดภัยโรงงาน

คณะทำงานตรวจรายงานการวิเคราะห์ความเสี่ยง

จากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน คณะที่ ๒

โทร. ๐ ๒๔๓๐ ๖๓๑๔ ต่อ ๒๓๐๙

โทรสาร ๐ ๒๔๓๐ ๖๓๑๔ ต่อ ๒๓๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th

ที่ MOC Safety Operation 006_2568

วันที่ 31 มีนาคม 2568

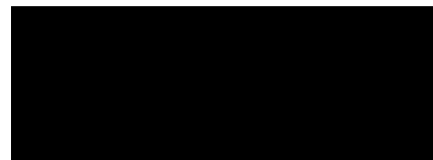
- เรื่อง รายงานผลการดำเนินงานตามแผนบริหารจัดการความเสี่ยง
- เรียน ผู้อำนวยการสำนักงานนิคมอุตสาหกรรม
- เอกสารแนบ
1. ใบบำส่งผลการดำเนินงานตามแผนบริหารจัดการความเสี่ยง
 2. แบบรายงานการปฏิบัติตามมาตรการที่เสนอในรายงานการวิเคราะห์ความเสี่ยงปี 2567
 3. สรุปข้อมูลสารเคมี
 4. รายงานผลการดำเนินงานตามแผนควบคุมความเสี่ยง
 5. ทะเบียนรายการดำเนินการตามกฎหมายความปลอดภัย

อ้างถึง ประกาศการนิคมอุตสาหกรรมแห่งประเทศไทยที่ 62/2555 เรื่อง การรายงานผลการดำเนินงานตามแผนบริหารจัดการความเสี่ยงตามที่กำหนดไว้ในรายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน ซึ่งกำหนดให้ผู้ประกอบกิจการโรงงานที่ได้รับใบอนุญาตประกอบกิจการโรงงาน ดำเนินการรายงานผลการดำเนินงานตามแผนบริหารจัดการความเสี่ยงตามที่กำหนดไว้ในรายงานการวิเคราะห์ความเสี่ยงจากอันตรายที่อาจเกิดจากการประกอบกิจการโรงงาน ต่อผู้อำนวยการสำนักงานนิคมอุตสาหกรรม ทุกๆ หนึ่งปี

ดังนั้น บริษัท มาบตาพุดโอเลฟินส์ จำกัด จึงขอทำการรายงานผลการดำเนินงานตามแผนบริหารจัดการความเสี่ยง ประจำปี 2567 โดยมีรายละเอียดดังเอกสารแนบ
จึงเรียนมาเพื่อพิจารณา



ขอแสดงความนับถือ



(นายวสุธ แวอุเซง)

MOC Safety Operation Engineer

ภาคผนวก 48ก

รายงานการตรวจประเมินภายนอก
การจัดการความปลอดภัยกระบวนการผลิต

ผลการตรวจประเมินการจัดการความปลอดภัยกระบวนการผลิต : PSM External Audit

รายงานการตรวจประเมินภายนอก การจัดการความปลอดภัยกระบวนการผลิต

บริษัท มาบตาพุดโอเลฟินส์ จำกัด
เลขที่ 88/3 ถนนทางหลวงระยอง-สาย3191 ต.มาบตาพุด
อ.เมืองระยอง จ.ระยอง 21150

ทะเบียนผู้ประกอบการอุตสาหกรรมเลขที่
น.42(1)-1/2550-นอล.

ประกอบกิจการ

1. ผลิตโอเลฟินส์เกรดเอทรีน, โอเลฟินส์เกรดโพรพิลีน, Isobutene 130,524 ตัน/ปี, Hydrogen 5,308 ตัน/ปี, Cracker Bottom 111,340 ตัน/ปี, Styrene 60,543 ตัน/ปี, C9+ 245,601 ตัน/ปี, Benzene 413,910 ตัน/ปี, Toluene 176,514 ตัน/ปี, Mixed Xylene 160,335 ตัน/ปี, Mixed C5 193,508 ตัน/ปี, Piperylene 43,712 ตัน/ปี, Dicyclopentadiene 44,501 ตัน/ปี, Cyclopentane 4,818 ตัน/ปี, Isoprene 68,854 ตัน/ปี, C5 Raffinate 200,254 ตัน/ปี, C5 Raffinate-3 17,520 ตัน/ปี, C6-C8 Non-Aromatic 115,598 ตัน/ปี, C9-C10 111,340 ตัน/ปี, Ethane 159,432 ตัน/ปี, Propane 63,160 ตัน/ปี, ไอเอ และน้ำเพื่อการอุตสาหกรรม ผลิตกับฟลูออไรด์ ได้แก่ Tail Gas 18,396 ตัน/ปี, Pyrolysis Gasoline 824,929 ตัน/ปี, Flare Gas Recovery 2,000 ตัน/ปี, Mixed C4 447,811 ตัน/ปี, Fuel Gas 728,832 ตัน/ปี และ C4 Raffinate 120,451 ตัน/ปี
หมายเหตุ: ภารกิจ Run Metathesis ผลิตโอเลฟินส์เกรดเอทรีน (ETHYLENE) 1,334,936 ตัน/ปี, และโอเลฟินส์เกรดโพรพิลีน (PROPYLENE) 1,106,258 ตัน/ปี ภารกิจ Run Metathesis ผลิตโอเลฟินส์เกรดเอทรีน (ETHYLENE) 1,471,680 ตัน/ปี และโอเลฟินส์เกรดโพรพิลีน (PROPYLENE) 686,258 ตัน/ปี 2. ผลิตจำหน่ายไฟฟ้าประมาณ 115 MW สำหรับใช้ใน 30 องค์กรและเชื้อเพลิง 3. โรงกลั่นน้ำมันของบริษัท มาบตาพุดโอเลฟินส์ จำกัด และผลิตไฟฟ้าจากพลังงานแสงอาทิตย์บนทุ่นลอยน้ำ (Solar Floating) ขนาดกำลังการผลิต 1.998 MW เพื่อใช้ภายในโรงงานเท่านั้น 4. เชื้อเพลิงปรับปรุงเครื่องจักรและอุปกรณ์ที่ใช้ในอุตสาหกรรมปิโตรเคมี

วันที่ 31 ตุลาคม - 1 พฤศจิกายน 2567



OC : 31 ตุลาคม-1 พฤศจิกายน 2567

กรณีตรวจเพื่อขอหนังสืออนุญาตประกอบกิจการฯ ฉบับไม่มีอายุ/กรณีตรวจประเมินภายนอกทุก 3 ปี

System/Document Audit

Onsite Audit



ผลการตรวจประเมิน : ไม่มีความสอดคล้องกับข้อบังคับอย่างไม่มีนัยสำคัญ และผ่านเกณฑ์การพิจารณา

ภาคผนวก 49ก

เอกสารระบบการจัดการความปลอดภัย (PSM)

เอกสารระบบการจัดการความปลอดภัย (PSM)

INTERNAL Do not distribute



**Process Safety Management
Safety Action Plan /Own Plan
Safety Culture**

INTERNAL Do not distribute

Page | 2



Project Name : Level Up Safe Work Operation control by implementing SIMOPS



Progress ; 75 % (+10) On Plan

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
MOC Key mile stone	Procedure & Matrix		Communicate	Pilot & Get feedback	Prepare Training & Communication package	Training to employee (OPE,RMT)	Go live & Plant wide	
ROC			SIMOPs Awareness Communicate			Training to employee (OPE,RMT)	Pilot at BTU section	Go live & Plant wide

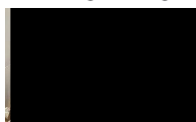
Achievement

- Completed SIMOPs training to ROC/MOC/RMT

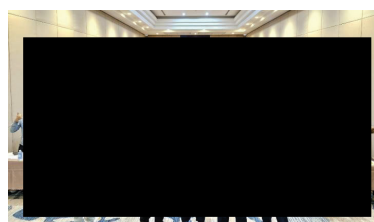
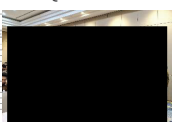
Knowledge training

Arrange mini work shop

Q&A



Date	ROC	MOC
20/06/25	B	A
25/06/25	A	B
30/06/25	C	D
04/07/25	D	C



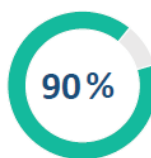
Date	ROC	MOC
20/06/25	B	A
25/06/25	A	B
30/06/25	C	D
04/07/25	D	C

Total 550 persons

Benefit

- Build understanding how to apply SIMOPs in safe work control
- Build capability how to assess SIMOPs to all employee

Training satisfaction



Feedback from trainee

- เนื้อหาการอบรมครบถ้วนดีมาก
- ทำให้เข้าใจเกี่ยวกับระบบ safety มากขึ้น
- ได้เรียนรู้ระบบ safety มากขึ้น

Next Action

- ROC : Go live at BTU for pilot execution on 17 Jul 25**
- ROC & MOC : Go live Plant wide 17 Aug 25**
- On site observation & Coaching
- Prepare SIMOPs critique assessment checklist (Assess after implement 3 months)

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Page | 3

Project Name : Sustain Safety Culture performance by strengthen OD Safety leadership



Progress ; 64 % (+6)

Month	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Key mile stone	Prepare OD & Material for Felt leadership & OD Work shop	Arrange Felt leadership & OD Work shop for supervisor (Sec/SS/US) on 25,28 Apr 25	Arrange Felt leadership & OD Work shop for Manager	Arrange OD awareness for front line operators	LSW implementation & Coaching					Arrange sustainability Work Shop

Achievement

- Completed Felt leadership & OD Work shop for Management level
- Completed train OD awareness Training for Front-Line Operators

Training satisfaction



- เสนอให้อบรมทบทวนให้พนักงานเรื่อยๆ
- เข้าใจOD ที่เกี่ยวข้องกับ PSM มากขึ้น

Next Action :

- Continue Communicate visible felt leadership (VFL) awareness & knowledge to front line leader
- Continue Coaching Felt leadership & OD for Sec/SS/US through safety black belt coaching/line walk/Observation

VFL Communication technic package



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Project Name : Process Safety Fundamental Rules [PSFRs] – Act with disciplines

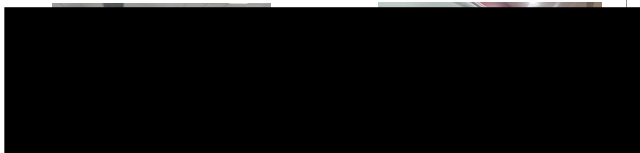
Progress ; On Plan

Month	Jun	Jul	Aug	Sep	Q4/25
ROC Milestone	-Soft opening by Top Mnt. -Selected Olefins 9 PSFRs -Build awareness by safety contact	- Prepare 9 booklet/poster/vdo - Lunch 9 PSFRs - Communicate & training	- Commitment event & go-live - Embed to daily operation and LSW - PSFR theme - line walk	- Embed to daily operation and LSW - PSFR theme - line walk	
MOC Milestone	Selected Olefins 9 PSFRs Soft opening by Top Mnt.	- Prepare 9 booklet/poster/vdo - Lunch 9 PSFRs - Communicate & training	- Commitment event & go-live - Embed to daily operation and LSW - PSFR theme - line walk	- Embed to daily operation and LSW - PSFR theme - line walk	

Achievement

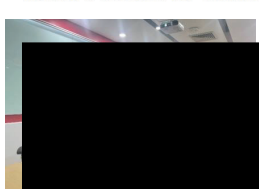
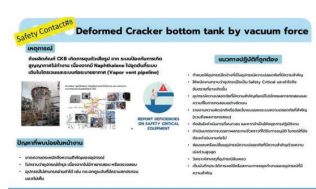
Opening Olefins PSFRs by Management

Selected Olefins 9 PSFRs



Build awareness by safety contact

Review 9 booklet for Olefins



INTERNAL Do not distribute

Benefit

- Develop PSFR standard (Technical model for Olefins)
- Build up Process Safety Awareness through Olefins lesson learned (Mindset & behavior)

9 Process Safety Fundamental Rules (PSFR)

9 กฎพื้นฐานความปลอดภัยกระบวนการผลิต



Page | 5

Next Action

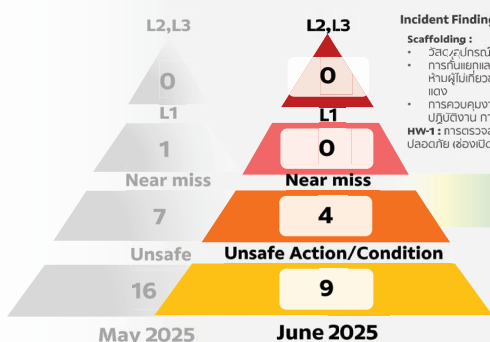
- Prepare 9 booklet/PSFR manual support document/poster/vdo (Technical model, Managing Process)
- Lunch 9 PSFRs (Competency, M&B)
- Communicate & training (Competency, M&B)
- Prepare commitment event and go-live (Competency, M&B)

Need Support : Engage and communicate to all employees and contractors (know, believe, feel, act)

SCGC



MOC SAFETY PERFORMANCE June 2025



Incident Finding Detail

Scaffolding :

- วัสดุอุปกรณ์ตกจากที่สูง
- การกั้นเขตและปิดล้อมพื้นที่ของงานเป็นรั้ว และการห้ามผู้ที่ไม่เกี่ยวข้องเข้าปฏิบัติงานบนที่สูงเป็นรั้ว
- การควบคุมงานของ Safety Lead : ขั้นตอนการปฏิบัติงาน การใส่-ส่งอุปกรณ์

HW-1 : การตรวจสอบงานปฏิบัติงานให้อยู่ในบริเวณที่ปลอดภัย (ช่องเปิด, หลุมขุดดิน, เสาเข็ม)



KPI YTD 2025



Injury / Illness
การบาดเจ็บ/เจ็บป่วย

0



Fire & Explosion
ไฟไหม้/ระเบิด

0



LOPC
การหก/รั่วไหลของสารเคมี

0



Property Damage
ทรัพย์สินเสียหาย

0



Non-compliance
ข้อบกพร่องตามข้อกำหนด-กฎหมาย

0



Environment Incident
เหตุการณ์ด้านสิ่งแวดล้อม / ร่องรอย

0



Distribution
อุบัติเหตุจากการขนส่งทางรถขนส่ง

0



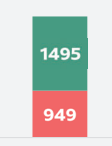
MVA
อุบัติเหตุทางรถยนต์บริษัท

0

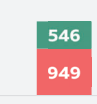
* L1 Injury : สารเคมีรั่วซึมโดน ผู้ปฏิบัติงาน ขณะถอด Valve 2" ที่ E-705 (May)

PTW & SWP AUDIT RESULT June 2025

Total : 2444



Total : 1495



Work Permit

High Risk

SWP

Non-HighRisk

%SWP Audit (Target =40%)

64.7% (May 2024)

71.9%

%SWP High Risk Work Audit (Target =100%)

100% (May 2024)

100%

NC – SWP Finding

June 2025
0 Issue

(Target =0)
NC= 0

Recognition



Hot Work class I

ปฏิบัติงาน Hot Work Class I บนที่สูงในงาน Project ตามมาตรการบนชั้นความปลอดภัย Safe Work Cert.

Gap for Improvement



WAH & Scaffolding

การกั้นเขตพื้นที่ของงาน เบื้องต้นและงานอื่นๆ และการปฏิบัติตามมาตรการป้องกันของเขต

Safety Focus



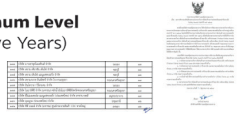


SIMOP Awareness

การประเมินความเสี่ยง และจัดการงานที่ปฏิบัติงานที่เสี่ยงกับ/ผลกระทบระหว่างงาน

SCGC



Safety Operation Key Highlight as of June 2025

Focus Activity	Achievement	Outcome
Reward & Recognition : Best Manufacturing in Occupational Health & safety Award Y2025	<ul style="list-style-type: none"> Meet Criteria for Award in the 13th Consecutive year <ul style="list-style-type: none"> Complied with Thai Law (Safety & Occupational Health) Best Practice of safety program for overall manufacturing (Score > 95% - Platinum Level) 	✓ Achieved Platinum Level (13 th Consecutive Years) 
Visible Safety Leadership : Management Line walk / Daily SWP Audit	<ul style="list-style-type: none"> Conducted Audit monthly management line walk & daily SWP Audit 100% participation for onsite audit in each area (MD, Div Mgr., Dept Mgr., Sect. Mgr. Engineer, US) 	✓ 100% Sharing & follow up closing of unsafe as of JUN 2025 
Safe Work Control <ul style="list-style-type: none"> Field Safety Management Risk Forecast & Mitigation Measure for MOC-I,ACRU-I 	<ul style="list-style-type: none"> Conducted High Risk work Audit for project with 3 week look ahead risk forecast checklist Completed SIMOPs onsite Identification & Execution for Project ACRUI/MOCI/ACRU 	✓ Layer 1 on site control ratio not over 1SL: 10 workers (Project) ✓ No Accident from Critical Work (Heavy lifting, HW1 piping) ✓ Risk forecast : focus on Hand injury prevention & SIMOP during Jul-Aug
Contractor Safety Management <ul style="list-style-type: none"> Safe Behavior Management (SBM) Safety lead Evaluation 	<ul style="list-style-type: none"> FSM Redline/ SBM June 2025 : 5 cases Evaluated Safety lead to increase competency of keyman Pre-Qualification contractor audit for AVL Approval 	Contractor Safety Lead : 111 12 Company Pass = 102, Fair = 8, Not pass = 1 (not pass : 1 ไม่ผ่านเกณฑ์ (1 ครั้ง) - ไม่ผ่านเกณฑ์การประเมินความปลอดภัย วัสดุ Material ไม่ผ่านแบบ Tray ไม่ผ่านอุปกรณ์) 
Off the job safety	<ul style="list-style-type: none"> Shared lesson learned & build-up awareness for Off the job safety. 	✓ Build up safety awareness to all workers ✓ Follow-up Lesson Learn from Near miss case



MOC Safety Culture Activities

Activity	Key Highlight	Key Focus	Result
Management Communication	<ul style="list-style-type: none"> Safety KPI/Policy Communication Safety Alert & Lesson Learned Sharing Safety Sharing and Recognition 	Employee All Level	100% Communicated as planned
Safety Plan Weekly/Daily Meeting With Contractor's Leader	<ul style="list-style-type: none"> Risk Focus with One Team CSM and Get feedback and requirement from contractor Follow up Safety plan progress from contractor 	Layer 1 of FSM (Safety Officer/ Safety Lead)	 100% safety plan completion as plan
One Safe Two Month Program	<ul style="list-style-type: none"> Focus and control Risk at work Layer 1 of FSM Evaluation Strengthen safety awareness to employee and contractor Eliminate unsafe & Prevent recurrence case 	All Workers & Layer 1 Evaluation	Zero Accident related to One Safe two month topic (2025)
Management Caring Safety Line Walk	<ul style="list-style-type: none"> To Audit field safety management (FSM) and SWP standard onsite and finding gap for eliminate unsafe. Sharing to each section in collaboration meeting (Daily) 	Line Manager (Section, US, Engineer, FO)	 100% finding closing
Recognition	<ul style="list-style-type: none"> To Recognize and promote safe behavior (lifesaver) of employee Keep momentum in safety improvement 	Employee All Level	100% Communicated and sharing as planned



Cultural safety : MOC CSM One Team Activity

Actively promote and prioritize safety. Driven contractor to act like **Ownership and have accountability** with safety awareness by **One Team** Contractor Safety Program



One Team Contractor Safety Program

Activity	Key Highlight	Key Focus	Result
One Team Meeting Management Level	<ul style="list-style-type: none"> Commitment together with partnership To communicate Olefins expectation and follow & support for CSM-One Team Program 	Contractor Management	
Safety Plan Weekly/Daily Meeting Contractor's Leader	Risk Focus with One Team CSM and Get feedback and requirement from contractor Follow up Safety plan progress from contractor	Layer 1 of FSM (Safety Officer/ Safety Lead)	safety plan completion as plan
One Safe Two Month Program	Focus and control Risk at work Layer 1 of FSM Evaluation Strengthen safety awareness to employee and contractor Eliminate unsafe & Prevent recurrence case	All Worker & Layer 1 Evaluation	Zero Accident related to One Safe two month topic (2025)
One Team Management Card Safety Line Walk	Commitment together with partnership and Team engagement To Audit field safety management (FSM) onsite and finding gap for eliminate unsafe 100 % line walk as plan,	Contractor Management, All Worker	<p>100% Unsafe finding closing</p> <p>MOC Contractor Participate in 2025 : TTCL, RNC, WTM</p>
One Team Olefins Contractor Safety Monthly Meeting	Communicate safety policy or regulation to distribute in contractor company To follow & support Olefins Contractor	Layer 2,3 of FSM (Safety Manager/ Safety Officer)	<p>62 Company & 44 Safety Leader of Olefins Contractor Participate (2025)</p> <p>2 Company Show & Share Safety Practice</p>

Page | 9



ขอแสดงความยินดีกับ บริษัท มาบตาพุดโอเลฟินส์ จำกัด
ประสบความสำเร็จจากการดำเนินงานครบ 14 ปี

14
Year

**โดยไม่เกิดอุบัติเหตุ
ถึงขั้นหยุดงาน (DAWC)**
WORKING WITHOUT DAWC

หรือ 5,112 วัน (14/12/2567)

เป้าหมายถัดไป : 14/12/2568 (15 ปี)

ความสำเร็จในครั้งนี้ได้มาจากความร่วมมือร่วมใจของพนักงานทุกท่าน
ในการช่วยดูแล ตรวจสอบ ทำจัดจุดเสี่ยง และปฏิบัติตามมาตรฐานด้านความปลอดภัยอย่างเคร่งครัด
รวมถึงสามารถดูแลเพื่อนร่วมงาน และคู่ธุรกิจให้ทำงานอย่างปลอดภัย
ขอให้นักงานทุกท่านปฏิบัติงานด้วยความปลอดภัยเช่นนี้ตลอดไป
ตามวัฒนธรรมการทำงานขององค์กรของเรา คือ
“ต้องไม่ยอมให้เกิดการบาดเจ็บและสูญเสียใดๆ จากอุบัติเหตุในการทำงาน”

**“ONE TEAM”
CHECK BEFORE ACT**

Page | 10



บริษัท มาบตาพุดโอเลฟินส์ จำกัด



ได้รับรางวัล

**ZERO ACCIDENT CAMPAIGN
AWARD Y2025**



PLATINUM LEVEL
(ระดับสูงสุดของประเทศ 4 ปีต่อเนื่อง)



จากการทำงานโดยไม่เกิดอุบัติเหตุถึงขั้นหยุดงาน

16,658,904 ชั่วโมง



พิธีรับมอบโล่ประกาศเกียรติคุณ
กับรัฐมนตรีว่าการกระทรวงแรงงาน

ณ งาน THAILAND SAFE WORK #37 วันที่ 08 มิถุนายน 2568

โดยสถาบันส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน (องค์การมหาชน)



ภาคผนวก ข

ผลการตรวจวัดคุณภาพสิ่งแวดล้อม

ภาคผนวก 1ข

ใบรับรองผลการตรวจวัดคุณภาพอากาศจากปล่องระบาย



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 2512800

Date Received :Feb 11, 2025

Date Reported :Feb 17, 2025

Report Number :3230737-1

Page 1 of 1

Sample Number 2512800-1
Sample Description Emission from Stationary Source
Location ปล่องเตาแตกตัวโมเลกุล (H-100H) (Naphtha Cracking Heater Stack (H-100H))
Measurement Date Feb 11, 2025

Stack Description

Ambient Temperature	32 °C	Diameter	2.00 m	Oxygen	4.93 %
Ambient Pressure	752.4 mmHg	Shape	Circle	Carbon dioxide	8.80 %
Type of Process	Combustion	Stack Temperature	124 °C	Gas Velocity	23.44 m/s
Type of Fuel	Fuel Gas	Moisture	14.28 %	Flow Rate	168333 Nm3/hr

Run No.	Sampling Time	Oxygen (%)	Carbon Dioxide (%)	Oxides of Nitrogen (ppm)		Sulfur Dioxide (ppm)	
				at Actual O ₂	at 7% O ₂	at Actual O ₂	at 7% O ₂
1	11:20 AM - 11:40 AM	4.98	8.77	39.17	34.21	1.79	1.56
2	11:41 AM - 12:01 PM	4.92	8.82	39.28	34.16	0.29	0.25
3	12:02 PM - 12:22 PM	4.90	8.82	39.90	34.66	0.61	0.53
Average (ppm)		4.93	8.80	39.45	34.34	0.90	0.78
Guideline ^{1/} (ppm)				-	50	-	7.2
Guideline ^{2/} (ppm)				-	120	-	20
Result (mg/Nm ³)				74.23	64.61	2.34	2.04
Emission Rate at Actual O ₂ (g/s)				3.4708		0.1096	
Guideline ^{1/} (g/s)				5.63		1.13	
Method				US EPA Method 7E		US EPA Method 6C	

Sampled By : Worawich Tongpoom

Guideline : ^{1/}Environmental Impact Assessment Report of Map Ta Phut Olefins Co., Ltd. (GTG)

^{2/}Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

Technical Management

Wichan Choonharat
Manager
ทะเบียนเลขที่ ว-204-ค-0006

Approved by

Sarayuth Jittrantont
Assistant General Manager
ทะเบียนเลขที่ ว-204-ค-0003

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 2512800

Date Received :Feb 11, 2025

Date Reported :Feb 17, 2025

Report Number :3230737-1

Page 1 of 1

Sample Number 2512800-1
Sample Description Emission from Stationary Source
Location ปล่องเตาแตกตัวโมเลกุล (H-100H) (Naphtha Cracking Heater Stack (H-100H))
Measurement Date Feb 11, 2025

Stack Description

Ambient Temperature	32 °C	Diameter	2.00 m	Oxygen	4.93 %
Ambient Pressure	752.4 mmHg	Shape	Circle	Carbon dioxide	8.80 %
Type of Process	Combustion	Stack Temperature	124 °C	Gas Velocity	23.44 m/s
Type of Fuel	Fuel Gas	Moisture	14.28 %	Flow Rate	168333 Nm3/hr

Run No.	Sampling Time	Oxygen (%)	Carbon Dioxide (%)	Carbon Monoxide (ppm)	
				at Actual O ₂	At 7% O ₂
1	11:20 AM - 11:40 AM	4.98	8.77	2.22	1.94
2	11:41 AM - 12:01 PM	4.92	8.82	2.21	1.92
3	12:02 PM - 12:22 PM	4.90	8.82	2.23	1.94
Average (ppm)		4.93	8.80	2.22	1.93
Result (mg/Nm ³)				2.54	2.21
Emission Rate at Actual O ₂ (g/s)				0.1189	
Method				US EPA Method 10	

Sampled By : Worawich Tongpoom

Technical Management

Wichan Choonharat
Manager
ทะเบียนเลขที่ ว-204-ค-0006

Approved by

Sarayuth Jittranont
Assistant General Manager
ทะเบียนเลขที่ ว-204-ค-0003

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Analysis / Test Report

TESTING
No.0009

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523480

Date Received : Mar 19, 2025

Date Reported : Mar 26, 2025

Report Number: 3254526-1

Page 1 of 2

Sample Number 2523480-1
Sampled Date Mar 19, 2025
Sample Description Emission from Stationary Source
Location ปล่อง Naphtha Cracking Heater Stack 1 stack (H-100H))
Date Analysis Commenced Mar 20, 2025
Condition of Sample Extracted into one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	758	mmHg	Diameter	2.00	m	Oxygen	5.8	%
Ambient Temperature	30.0	°C	Shape	Circle		Carbon Dioxide	8.6	%
Type of Process	Combustion		Stack Temperature	118	°C	Gas Velocity	24.7	m/s
Type of Fuel	Fuel Gas		Moisture	14.21	%	Flow Rate (Actual O2)	181446	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result		Guideline (1)	Guideline (2)	Method	Testing Location
					at 7 %O ₂	at 5.8 % O ₂				

Air Testing

Total Suspended Particulate	10:50 AM - 11:38 AM	mg/m3	-	0.5	1.0	1.09	21.5	60	U.S. Environmental Protection Agency 40 CFR method 5, Appendix A, 2020 (Include sampling)	Bangkok
-----------------------------	---------------------	-------	---	-----	-----	------	------	----	---	---------

Guideline :

- 1.Environmental Impact Assessment Report of Map Ta Phut Olefins Co., Ltd.
- 2.Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

Technical Management

Orawan Rakyong
Scientist (3)
ทะเบียนเลขที่ ว-204-จ-0027

Approved by

Kanokkorn Anek
Assistant General Manager
ทะเบียนเลขที่ ว-204-ค-0004

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S:\Reports_Air Stack_O2_2GL.rpt (10:44AM)



Analysis / Test Report

TESTING
No.0009

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523480

Date Received : Mar 19, 2025

Date Reported : Mar 26, 2025

Report Number: 3254526-1

Page 2 of 2

Sample Number	2523480-1
Sampled Date	Mar 19, 2025
Sample Description	Emission from Stationary Source
Location	ปล่อง Naphtha Cracking Heater Stack 1 stack (H-100H))
Date Analysis Commenced	Mar 20, 2025
Condition of Sample	Extracted into one filter paper placed in plastic petri dish

Stack Description

Ambient Pressure	758	mmHg	Diameter	2.00	m	Oxygen	5.8	%
Ambient Temperature	30.0	°C	Shape	Circle		Carbon Dioxide	8.6	%
Type of Process	Combustion		Stack Temperature	118	°C	Gas Velocity	24.7	m/s
Type of Fuel	Fuel Gas		Moisture	14.21	%	Flow Rate (Actual O2)	181446	Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result Emission Rate	Guideline (1)	Guideline (2)	Method	Testing Location
---------	--------------	------	-----	-----------	----------------------	---------------	---------------	--------	------------------

Air Testing

Total Suspended Particulate *	10:50 AM - 11:38 AM	g/s	-	-	0.05	1.29	-	Calculated	Bangkok
-------------------------------	---------------------	-----	---	---	------	------	---	------------	---------

Guideline :

- 1.Environmental Impact Assessment Report of Map Ta Phut Olefins Co., Ltd.
- 2.Notification of the Ministry of Natural Resources and Environment, 2023 (B.E. 2566) on Emission Standard from Power Plants.

Sampling By : Wuttikorn Siriwan ทะเบียนเลขที่ ว-204-จ-0180

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

Orawan Rakyong
Scientist (3)
ทะเบียนเลขที่ ว-204-จ-0027

Approved by

Kanokkorn Anek
Assistant General Manager
ทะเบียนเลขที่ ว-204-ค-0004

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ภาคผนวก 2ข

ใบรับรองผลการตรวจสอบความถูกต้อง
ของการทำงานของระบบ CEMs (Audit CEMs)



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location :

Lot ID: 2522842

Date Received : Apr 25, 2025
Date Reported : May 07, 2025
Report Number : 3253467-1

Page 1 of 2

Sample Number : 2522842-1
Sampled Date : Apr 25, 2025
Sample Description : Emission from Stationary Source
Location : Naphtha Cracking Heater Stack 8 H-100H
Parameter : NOx

Relative Accuracy Test Audit Report

Run No.	Date	Time		Raw Data at Actual O2		Corrected Value at 7% O2		Difference
		Start	Stop	CEMs (ppm)	RM (ppm)	CEMs (ppm)	RM (ppm)	
1	25 Apr 25	11:15	11:35	31.90	33.72	27.23	29.02	1.79
2	25 Apr 25	11:36	11:56	32.05	33.66	27.32	28.97	1.65
3	25 Apr 25	11:57	12:17	31.57	33.72	26.84	28.99	2.15
4	25 Apr 25	12:18	12:38	31.22	33.70	26.55	28.98	2.43
5	25 Apr 25	12:39	12:59	31.39	33.83	26.82	29.13	2.32
6	25 Apr 25	13:00	13:20	32.14	34.27	27.41	29.54	2.13
7	25 Apr 25	13:21	13:41	31.66	33.97	26.85	29.20	2.35
8	25 Apr 25	13:42	14:02	31.50	33.90	26.71	29.08	2.36
9*	25 Apr 25	14:03	14:23	28.01	33.36	23.63	28.43	4.80
10*	25 Apr 25	14:24	14:44	29.96	33.12	25.16	28.25	3.09
11*	25 Apr 25	14:45	15:05	28.98	32.94	24.34	28.12	3.78
12	25 Apr 25	15:06	15:26	30.98	33.42	26.06	28.58	2.51
Average						26.87	29.05	2.19
Confidence Coefficient (CC)								0.23
Relative Accuracy (Compared with RM) (%)								8.31
Relative Accuracy Criteria ^{1/} (Compared with RM)								≤ 20%

Reference Method : US EPA Method 7E

Remark: * Sample with * is a rejected data

^{1/} Relative Accuracy Criteria of NOx is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 2 (PS-2)

RA Result is within Criteria

Technical Management



Wichan Choonharat
Manager

ทะเบียนเลขที่ ว-204-ค-0006

Approved by



Sarayuth Jittranont
Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0003

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location :

Lot ID: 2522842

Date Received : Apr 25, 2025
Date Reported : May 07, 2025
Report Number : 3253467-1

Page 2 of 2

Sample Number 2522842-1
Sampled Date Apr 25, 2025
Sample Description Emission from Stationary Source
Location Naphtha Cracking Heater Stack 8 H-100H
Parameter O2

Relative Accuracy Test Audit Report

Run No.	Date	Time		Raw Data at Actual		Difference
		Start	Stop	CEMs (%)	RM (%)	
1	25 Apr 25	11:15	11:35	4.62	4.75	0.13
2	25 Apr 25	11:36	11:56	4.59	4.75	0.15
3	25 Apr 25	11:57	12:17	4.55	4.73	0.18
4	25 Apr 25	12:18	12:38	4.55	4.74	0.19
5	25 Apr 25	12:39	12:59	4.63	4.76	0.13
6	25 Apr 25	13:00	13:20	4.60	4.78	0.17
7	25 Apr 25	13:21	13:41	4.51	4.73	0.22
8	25 Apr 25	13:42	14:02	4.51	4.69	0.18
9	25 Apr 25	14:03	14:23	4.42	4.59	0.17
10*	25 Apr 25	14:24	14:44	4.35	4.60	0.25
11*	25 Apr 25	14:45	15:05	4.35	4.62	0.27
12*	25 Apr 25	15:06	15:26	4.38	4.65	0.27
Average				4.55	4.72	0.17
Confidence Coefficient (CC)						-
Relative Accuracy (Compared in Actual) (%)						0.17
Relative Accuracy Criteria ^{1/} (%)						≤ 1%

Reference Method : US EPA Method 3A

Remark: * Sample with * is a rejected data

^{1/} Relative Accuracy Criteria of O2 is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 3 (PS-3)

RA Result is within Criteria

Sampled By : Anuvat Mounpair

Technical Management



Wichan Choonharat
Manager

ทะเบียนเลขที่ ว-204-ค-0006

Approved by



Sarayuth Jittranont
Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0003

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ภาคผนวก 3ข

ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253997

Date Received : Feb 17, 2025

Date Reported : Jul 09, 2025

Report Number: 3212661-5 Rev. No.1

Page 1 of 1

Sample Description	Air Quality			
Location	หมู่บ้านหนอง (เนินพยอม) (GPS 47P 0736527, 1411266)			
Date Analysis Commenced	Feb 18, 2025			
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag and one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Sampling Condition		Total Suspended Particulate (mg/m3)
		Pressure (mm Hg)	Temperature (°C)	
253997-1	Feb 10 - Feb 11, 2025	756	31.0	0.104
253997-2	Feb 11 - Feb 12, 2025	756	29.0	0.116
253997-3	Feb 12 - Feb 13, 2025	756	30.0	0.130
253997-4	Feb 13 - Feb 14, 2025	756	29.0	0.103
253997-5	Feb 14 - Feb 15, 2025	756	30.0	0.092
253997-6	Feb 15 - Feb 16, 2025	756	29.0	0.077
253997-7	Feb 16 - Feb 17, 2025	756	30.0	0.065
Guideline	-	-	-	0.33

Reference Method

Total Suspended Particulate : United States Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Panuwat Wangbong

Note:

This Analysis test report is reissued to supersede report No.3212661-1, Date Reported : Feb 21, 2025 due to revise analytical information

Approved by

Thanita Kulsuriwong
Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253997

Date Received : Feb 17, 2025

Date Reported : Jul 09, 2025

Report Number: 3212661-6 Rev. No.1

Page 1 of 1

Sample Description	Air Quality			
Location	ชุมชนบ้านบอน (GPS 47P 0735254, 1408965)			
Date Analysis Commenced	Feb 18, 2025			
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag and one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Sampling Condition		Total Suspended Particulate (mg/m3)
		Pressure (mm Hg)	Temperature (°C)	
253997-8	Feb 10 - Feb 11, 2025	756	31.0	0.136
253997-9	Feb 11 - Feb 12, 2025	756	29.0	0.156
253997-10	Feb 12 - Feb 13, 2025	756	30.0	0.134
253997-11	Feb 13 - Feb 14, 2025	756	29.0	0.144
253997-12	Feb 14 - Feb 15, 2025	756	30.0	0.090
253997-13	Feb 15 - Feb 16, 2025	756	29.0	0.085
253997-14	Feb 16 - Feb 17, 2025	756	30.0	0.076
Guideline	-	-	-	0.33

Reference Method

Total Suspended Particulate : United States Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Panuwat Wangbong

Note:

This Analysis test report is reissued to supersede report No.3212661-2, Date Reported : Feb 21, 2025 due to revise analytical information

Approved by

Thanita Kulsuriwong
Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253997

Date Received : Feb 17, 2025

Date Reported : Jul 09, 2025

Report Number: 3212661-7 Rev. No.1

Page 1 of 1

Sample Description	Air Quality			
Location	અવગમન (GPS 47P 0734581, 1408569)			
Date Analysis Commenced	Feb 18, 2025			
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag and one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Sampling Condition		Total Suspended Particulate (mg/m3)
		Pressure (mm Hg)	Temperature (°C)	
253997-15	Feb 10 - Feb 11, 2025	756	31.0	0.137
253997-16	Feb 11 - Feb 12, 2025	756	29.0	0.155
253997-17	Feb 12 - Feb 13, 2025	756	30.0	0.149
253997-18	Feb 13 - Feb 14, 2025	756	29.0	0.115
253997-19	Feb 14 - Feb 15, 2025	756	30.0	0.103
253997-20	Feb 15 - Feb 16, 2025	756	29.0	0.098
253997-21	Feb 16 - Feb 17, 2025	756	30.0	0.110
Guideline	-	-	-	0.33

Reference Method

Total Suspended Particulate : United States Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Panuwat Wangbong

Note:

This Analysis test report is reissued to supersede report No.3212661-3, Date Reported : Feb 21, 2025 due to revise analytical information

Approved by

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Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253997

Date Received : Feb 17, 2025

Date Reported : Jul 09, 2025

Report Number: 3212661-8 Rev. No.1

Page 1 of 1

Sample Description	Air Quality			
Location	ชุมชนห้วยโป่งใน 2 (GPS 47P 0732149, 1410979)			
Date Analysis Commenced	Feb 18, 2025			
Condition of Sample	Drawn into one glass filter paper (8x10 inch) placed in plastic bag and one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Sampling Condition		Total Suspended Particulate (mg/m3)
		Pressure (mm Hg)	Temperature (°C)	
253997-22	Feb 10 - Feb 11, 2025	756	31.0	0.146
253997-23	Feb 11 - Feb 12, 2025	756	29.0	0.181
253997-24	Feb 12 - Feb 13, 2025	756	30.0	0.169
253997-25	Feb 13 - Feb 14, 2025	756	29.0	0.220
253997-26	Feb 14 - Feb 15, 2025	756	30.0	0.147
253997-27	Feb 15 - Feb 16, 2025	756	29.0	0.098
253997-28	Feb 16 - Feb 17, 2025	756	30.0	0.071
Guideline	-	-	-	0.33

Reference Method

Total Suspended Particulate : United States Environmental Protection Agency 40 CFR, method 50, Appendix B, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Panuwat Wangbong

Note:

This Analysis test report is reissued to supersede report No.3212661-4, Date Reported : Feb 21, 2025 due to revise analytical information

Approved by

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Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523481

Date Received : Mar 25, 2025

Date Reported : Apr 01, 2025

Report Number: 3254511-1

Page 1 of 1

Sample Description	Air Quality			
Location	หมู่บ้านนพเขต (เนินพยอม)			
Date Analysis Commenced	Mar 25, 2025			
Condition of Sample	Contained in one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Particulate Matter (PM-10) (mg/m3)	Barometric Pressure (mm Hg)	Atmospheric Temperature (°C)
2523481-1	Mar 16 - Mar 17, 2025	0.030	755*	31.5*
2523481-2	Mar 17 - Mar 18, 2025	0.030	755*	31.7*
2523481-3	Mar 18 - Mar 19, 2025	0.038	755*	31.5*
2523481-4	Mar 19 - Mar 20, 2025	0.053	755*	30.8*
2523481-5	Mar 20 - Mar 21, 2025	0.055	755*	30.7*
2523481-6	Mar 21 - Mar 22, 2025	0.063	755*	31.3*
2523481-7	Mar 22 - Mar 23, 2025	0.077	755*	31.3*
Guideline		0.12	-	-

Reference Method

Particulate Matter (PM-10) : United States Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Siriwit Ruangsom

Remark : Result (s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.

-

Approved by

Thanita Kulsuriwong
Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523481

Date Received : Mar 25, 2025

Date Reported : Apr 01, 2025

Report Number: 3254511-2

Page 1 of 1

Sample Description	Air Quality			
Location	ชุมชนบ้านบ่อน			
Date Analysis Commenced	Mar 25, 2025			
Condition of Sample	Contained in one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Particulate Matter (PM-10) (mg/m3)	Barometric Pressure (mm Hg)	Atmospheric Temperature (°C)
2523481-8	Mar 16 - Mar 17, 2025	0.017	755*	31.5*
2523481-9	Mar 17 - Mar 18, 2025	0.022	755*	31.7*
2523481-10	Mar 18 - Mar 19, 2025	0.031	755*	31.5*
2523481-11	Mar 19 - Mar 20, 2025	0.048	755*	30.8*
2523481-12	Mar 20 - Mar 21, 2025	0.046	755*	30.7*
2523481-13	Mar 21 - Mar 22, 2025	0.056	755*	31.3*
2523481-14	Mar 22 - Mar 23, 2025	0.069	755*	31.3*
Guideline		0.12	-	-

Reference Method

Particulate Matter (PM-10) : United States Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Siriwit Ruangsom

Remark : Result (s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.

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Approved by

Thanita Kulsuriwong
Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523481

Date Received : Mar 25, 2025

Date Reported : Apr 01, 2025

Report Number: 3254511-3

Page 1 of 1

Sample Description	Air Quality			
Location	เมืองระยอง			
Date Analysis Commenced	Mar 25, 2025			
Condition of Sample	Contained in one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Particulate Matter (PM-10) (mg/m3)	Barometric Pressure (mm Hg)	Atmospheric Temperature (°C)
2523481-15	Mar 16 - Mar 17, 2025	0.026	755*	31.5*
2523481-16	Mar 17 - Mar 18, 2025	0.021	755*	31.7*
2523481-17	Mar 18 - Mar 19, 2025	0.030	755*	31.5*
2523481-18	Mar 19 - Mar 20, 2025	0.046	755*	30.8*
2523481-19	Mar 20 - Mar 21, 2025	0.015	755*	30.7*
2523481-20	Mar 21 - Mar 22, 2025	0.059	755*	31.3*
2523481-21	Mar 22 - Mar 23, 2025	0.064	755*	31.3*
Guideline		0.12	-	-

Reference Method

Particulate Matter (PM-10) : United States Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Siriwit Ruangsom

Remark : Result (s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.

-

Approved by

Thanita Kulsuriwong
Scientist (4)

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523481

Date Received : Mar 25, 2025

Date Reported : Apr 01, 2025

Report Number: 3254511-4

Page 1 of 1

Sample Description	Air Quality			
Location	ชุมชนห้วยโป่งใน 2			
Date Analysis Commenced	Mar 25, 2025			
Condition of Sample	Contained in one quartz filter paper (8x10 inch) placed in plastic bag			
Sample Number	Sampled Date	Particulate Matter (PM-10) (mg/m3)	Barometric Pressure (mm Hg)	Atmospheric Temperature (°C)
2523481-22	Mar 16 - Mar 17, 2025	0.021	755*	31.5*
2523481-23	Mar 17 - Mar 18, 2025	0.024	755*	31.7*
2523481-24	Mar 18 - Mar 19, 2025	0.042	755*	31.5*
2523481-25	Mar 19 - Mar 20, 2025	0.062	755*	30.8*
2523481-26	Mar 20 - Mar 21, 2025	0.062	755*	30.7*
2523481-27	Mar 21 - Mar 22, 2025	0.060	755*	31.3*
2523481-28	Mar 22 - Mar 23, 2025	0.073	755*	31.3*
Guideline		0.12	-	-

Reference Method

Particulate Matter (PM-10) : United States Environmental Protection Agency 40 CFR, method 50, Appendix J, revised as of July 1, 2008

Guideline : Notification of the National Environmental Board. No.24, 2004 (B.E.2547) dated September 22, 2004

Sampled By : Siriwit Ruangsom

Remark : Result (s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.

-

Approved by

Thanita Kulsuriwong
Scientist (4)

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253992

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3212665-1

Page 1 of 1

Sample Description Air Quality
Location หมู่บ้านนพเขต (เนินพยอม) (GPS 47P 0736527, 1411266)
Parameter Nitrogen dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253992-1	253992-2	253992-3	253992-4	253992-5	253992-6	253992-7
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
09:00 AM - 10:00 AM	0.0033	0.0026	0.0035	0.0031	0.0050	0.0029	0.0027
10:00 AM - 11:00 AM	0.0037	0.0024	0.0031	0.0028	0.0044	0.0032	0.0017
11:00 AM - 12:00 PM	0.0026	0.0023	0.0024	0.0031	0.0057	0.0036	0.0014
12:00 PM - 01:00 PM	0.0037	0.0027	0.0040	0.0044	0.0042	0.0033	0.0012
01:00 PM - 02:00 PM	0.0043	0.0034	0.0056	0.0042	0.0040	0.0028	0.0011
02:00 PM - 03:00 PM	0.0049	0.0044	0.0050	0.0041	0.0031	0.0034	0.0044
03:00 PM - 04:00 PM	0.0041	0.0031	0.0047	0.0037	0.0032	0.0040	0.0038
04:00 PM - 05:00 PM	0.0035	0.0025	0.0051	0.0048	0.0032	0.0036	0.0031
05:00 PM - 06:00 PM	0.0028	0.0018	0.0031	0.0037	0.0034	0.0031	0.0016
06:00 PM - 07:00 PM	0.0038	0.0024	0.0024	0.0029	0.0028	0.0047	0.0011
07:00 PM - 08:00 PM	0.0046	0.0041	0.0037	0.0041	0.0023	0.0042	0.0008
08:00 PM - 09:00 PM	0.0037	0.0038	0.0058	0.0047	0.0014	0.0037	0.0007
09:00 PM - 10:00 PM	0.0034	0.0038	0.0035	0.0023	0.0011	0.0026	0.0006
10:00 PM - 11:00 PM	0.0032	0.0040	0.0052	0.0015	0.0010	0.0032	0.0004
11:00 PM - 12:00 AM	0.0035	0.0071	0.0036	0.0024	0.0015	0.0029	0.0004
12:00 AM - 01:00 AM	0.0039	0.0036	0.0053	0.0011	0.0021	0.0024	0.0004
01:00 AM - 02:00 AM	0.0030	0.0044	0.0030	0.0007	0.0020	0.0012	0.0004
02:00 AM - 03:00 AM	0.0030	0.0040	0.0026	0.0006	0.0018	0.0016	0.0016
03:00 AM - 04:00 AM	0.0030	0.0032	0.0037	0.0008	0.0017	0.0020	0.0012
04:00 AM - 05:00 AM	0.0026	0.0045	0.0049	0.0011	0.0015	0.0021	0.0020
05:00 AM - 06:00 AM	0.0035	0.0043	0.0052	0.0017	0.0017	0.0024	0.0024
06:00 AM - 07:00 AM	0.0040	0.0047	0.0050	0.0035	0.0017	0.0020	0.0024
07:00 AM - 08:00 AM	0.0047	0.0023	0.0055	0.0035	0.0020	0.0016	0.0032
08:00 AM - 09:00 AM	0.0031	0.0037	0.0031	0.0017	0.0020	0.0021	0.0044
Average	0.0036	0.0035	0.0041	0.0028	0.0026	0.0029	0.0018
1hr - Maximum	0.0049	0.0071	0.0058	0.0048	0.0057	0.0047	0.0044
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170

Standard : Notification of the National Environment Board No. 33, 2009 (B.E. 2552).
Reference Method : US EPA Method Part 50 App. F (Chemiluminescence)

Approved by

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Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253992

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3239843-1

Page 1 of 1

Sample Description Air Quality
Location ชุมชนบ้านนา (GPS 47P 0735254, 1408965)
Parameter Nitrogen dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253992-8	253992-9	253992-10	253992-11	253992-12	253992-13	253992-14
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
10:00 AM - 11:00 AM	0.0044	0.0049	0.0071	0.0107	0.0059	0.0042	0.0071
11:00 AM - 12:00 PM	0.0032	0.0065	0.0086	0.0048	0.0059	0.0037	0.0064
12:00 PM - 01:00 PM	0.0061	0.0195	0.0039	0.0062	0.0077	0.0055	0.0076
01:00 PM - 02:00 PM	0.0033	0.0077	0.0051	0.0055	0.0047	0.0057	0.0068
02:00 PM - 03:00 PM	0.0056	0.0059	0.0080	0.0053	0.0042	0.0046	0.0065
03:00 PM - 04:00 PM	0.0037	0.0049	0.0060	0.0072	0.0041	0.0055	0.0041
04:00 PM - 05:00 PM	0.0025	0.0088	0.0058	0.0044	0.0081	0.0042	0.0054
05:00 PM - 06:00 PM	0.0047	0.0040	0.0041	0.0032	0.0037	0.0051	0.0038
06:00 PM - 07:00 PM	0.0024	0.0058	0.0049	0.0042	0.0082	0.0047	0.0028
07:00 PM - 08:00 PM	0.0023	0.0072	0.0075	0.0036	0.0043	0.0049	0.0028
08:00 PM - 09:00 PM	0.0056	0.0065	0.0045	0.0074	0.0040	0.0033	0.0028
09:00 PM - 10:00 PM	0.0057	0.0060	0.0059	0.0043	0.0030	0.0060	0.0023
10:00 PM - 11:00 PM	0.0037	0.0046	0.0039	0.0084	0.0032	0.0045	0.0020
11:00 PM - 12:00 AM	0.0062	0.0055	0.0052	0.0084	0.0077	0.0038	0.0022
12:00 AM - 01:00 AM	0.0070	0.0056	0.0055	0.0043	0.0041	0.0038	0.0057
01:00 AM - 02:00 AM	0.0044	0.0044	0.0050	0.0034	0.0058	0.0072	0.0078
02:00 AM - 03:00 AM	0.0045	0.0093	0.0069	0.0023	0.0054	0.0071	0.0065
03:00 AM - 04:00 AM	0.0058	0.0081	0.0035	0.0031	0.0055	0.0036	0.0039
04:00 AM - 05:00 AM	0.0031	0.0085	0.0055	0.0047	0.0061	0.0054	0.0037
05:00 AM - 06:00 AM	0.0063	0.0049	0.0031	0.0088	0.0072	0.0070	0.0047
06:00 AM - 07:00 AM	0.0047	0.0055	0.0050	0.0029	0.0055	0.0055	0.0046
07:00 AM - 08:00 AM	0.0035	0.0058	0.0055	0.0086	0.0070	0.0033	0.0043
08:00 AM - 09:00 AM	0.0060	0.0030	0.0094	0.0061	0.0032	0.0022	0.0027
09:00 AM - 10:00 AM	0.0071	0.0059	0.0087	0.0067	0.0023	0.0025	0.0061
Average	0.0047	0.0066	0.0058	0.0056	0.0053	0.0047	0.0047
1hr - Maximum	0.0071	0.0195	0.0094	0.0107	0.0082	0.0072	0.0078
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170

Standard : Notification of the National Environment Board No. 33, 2009 (B.E. 2552).
Reference Method : US EPA Method Part 50 App. F (Chemiluminescence)

Approved by

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Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253992

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3239844-1

Page 1 of 1

Sample Description Air Quality
Location บ้านฉาง (GPS 47P 0734581, 1408569)
Parameter Nitrogen dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253992-15	253992-16	253992-17	253992-18	253992-19	253992-20	253992-21
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
11:00 AM - 12:00 PM	0.0018	0.0079	0.0100	0.0032	0.0099	0.0030	0.0047
12:00 PM - 01:00 PM	0.0054	0.0089	0.0116	0.0060	0.0072	0.0032	0.0036
01:00 PM - 02:00 PM	0.0081	0.0049	0.0066	0.0085	0.0075	0.0073	0.0028
02:00 PM - 03:00 PM	0.0088	0.0082	0.0099	0.0059	0.0083	0.0051	0.0059
03:00 PM - 04:00 PM	0.0078	0.0082	0.0095	0.0047	0.0103	0.0116	0.0087
04:00 PM - 05:00 PM	0.0071	0.0039	0.0041	0.0045	0.0098	0.0118	0.0084
05:00 PM - 06:00 PM	0.0045	0.0061	0.0075	0.0100	0.0101	0.0051	0.0078
06:00 PM - 07:00 PM	0.0046	0.0070	0.0042	0.0068	0.0081	0.0064	0.0076
07:00 PM - 08:00 PM	0.0058	0.0105	0.0083	0.0057	0.0071	0.0088	0.0062
08:00 PM - 09:00 PM	0.0057	0.0099	0.0047	0.0043	0.0102	0.0107	0.0081
09:00 PM - 10:00 PM	0.0048	0.0103	0.0080	0.0057	0.0087	0.0114	0.0061
10:00 PM - 11:00 PM	0.0103	0.0053	0.0040	0.0043	0.0103	0.0116	0.0033
11:00 PM - 12:00 AM	0.0112	0.0056	0.0059	0.0086	0.0102	0.0096	0.0026
12:00 AM - 01:00 AM	0.0093	0.0058	0.0119	0.0094	0.0091	0.0107	0.0023
01:00 AM - 02:00 AM	0.0044	0.0074	0.0113	0.0039	0.0090	0.0081	0.0025
02:00 AM - 03:00 AM	0.0052	0.0102	0.0112	0.0029	0.0085	0.0056	0.0021
03:00 AM - 04:00 AM	0.0062	0.0088	0.0067	0.0028	0.0079	0.0049	0.0021
04:00 AM - 05:00 AM	0.0056	0.0068	0.0062	0.0036	0.0077	0.0042	0.0029
05:00 AM - 06:00 AM	0.0049	0.0096	0.0059	0.0051	0.0090	0.0045	0.0068
06:00 AM - 07:00 AM	0.0048	0.0102	0.0062	0.0097	0.0046	0.0055	0.0087
07:00 AM - 08:00 AM	0.0063	0.0057	0.0058	0.0051	0.0074	0.0089	0.0106
08:00 AM - 09:00 AM	0.0095	0.0069	0.0097	0.0073	0.0099	0.0095	0.0111
09:00 AM - 10:00 AM	0.0040	0.0058	0.0106	0.0079	0.0037	0.0047	0.0094
10:00 AM - 11:00 AM	0.0112	0.0118	0.0093	0.0118	0.0060	0.0073	0.0087
Average	0.0066	0.0077	0.0079	0.0062	0.0084	0.0075	0.0060
1hr - Maximum	0.0112	0.0118	0.0119	0.0118	0.0103	0.0118	0.0111
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170

Standard : Notification of the National Environment Board No. 33, 2009 (B.E. 2552).
Reference Method : US EPA Method Part 50 App. F (Chemiluminescence)

Approved by

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Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253992

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3239845-1

Page 1 of 1

Sample Description Air Quality
Location ชุมชนห้วยโป่งใน 2 (GPS 47P 0732149, 1410979)
Parameter Nitrogen dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253992-22	253992-23	253992-24	253992-25	253992-26	253992-27	253992-28
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
12:00 PM - 01:00 PM	0.0047	0.0028	0.0051	0.0157	0.0040	0.0089	0.0060
01:00 PM - 02:00 PM	0.0046	0.0056	0.0094	0.0135	0.0032	0.0113	0.0105
02:00 PM - 03:00 PM	0.0054	0.0103	0.0071	0.0133	0.0039	0.0031	0.0144
03:00 PM - 04:00 PM	0.0035	0.0050	0.0135	0.0098	0.0047	0.0030	0.0132
04:00 PM - 05:00 PM	0.0038	0.0049	0.0055	0.0087	0.0075	0.0035	0.0135
05:00 PM - 06:00 PM	0.0049	0.0050	0.0060	0.0060	0.0056	0.0034	0.0053
06:00 PM - 07:00 PM	0.0063	0.0086	0.0078	0.0108	0.0111	0.0069	0.0048
07:00 PM - 08:00 PM	0.0092	0.0108	0.0170	0.0130	0.0128	0.0099	0.0056
08:00 PM - 09:00 PM	0.0128	0.0125	0.0107	0.0195	0.0130	0.0148	0.0065
09:00 PM - 10:00 PM	0.0104	0.0156	0.0109	0.0104	0.0134	0.0174	0.0065
10:00 PM - 11:00 PM	0.0136	0.0077	0.0174	0.0127	0.0152	0.0181	0.0125
11:00 PM - 12:00 AM	0.0147	0.0185	0.0093	0.0139	0.0197	0.0192	0.0119
12:00 AM - 01:00 AM	0.0105	0.0160	0.0098	0.0117	0.0167	0.0146	0.0081
01:00 AM - 02:00 AM	0.0077	0.0157	0.0066	0.0105	0.0113	0.0106	0.0039
02:00 AM - 03:00 AM	0.0083	0.0199	0.0075	0.0189	0.0068	0.0077	0.0039
03:00 AM - 04:00 AM	0.0133	0.0152	0.0100	0.0102	0.0118	0.0083	0.0051
04:00 AM - 05:00 AM	0.0153	0.0166	0.0166	0.0123	0.0122	0.0091	0.0075
05:00 AM - 06:00 AM	0.0134	0.0127	0.0170	0.0138	0.0094	0.0101	0.0043
06:00 AM - 07:00 AM	0.0130	0.0137	0.0142	0.0111	0.0107	0.0126	0.0046
07:00 AM - 08:00 AM	0.0159	0.0107	0.0191	0.0106	0.0125	0.0139	0.0122
08:00 AM - 09:00 AM	0.0152	0.0131	0.0025	0.0129	0.0171	0.0132	0.0146
09:00 AM - 10:00 AM	0.0179	0.0118	0.0106	0.0157	0.0147	0.0096	0.0129
10:00 AM - 11:00 AM	0.0091	0.0111	0.0166	0.0080	0.0070	0.0148	0.0087
11:00 AM - 12:00 PM	0.0052	0.0052	0.0148	0.0058	0.0077	0.0126	0.0087
Average	0.0099	0.0112	0.0110	0.0120	0.0105	0.0107	0.0086
1hr - Maximum	0.0179	0.0199	0.0191	0.0195	0.0197	0.0192	0.0146
Standard 1hr - Average	0.170	0.170	0.170	0.170	0.170	0.170	0.170

Standard : Notification of the National Environment Board No. 33, 2009 (B.E. 2552).
Reference Method : US EPA Method Part 50 App. F (Chemiluminescence)

Approved by

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Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253996

Date Received : Feb 17, 2025
Date Reported : Feb 20, 2025
Report Number: 3212662-1

Page 1 of 1

Sample Description Air Quality
Location หมู่บ้านนพเขต (เนินพยอม) (GPS 47P 0736527, 1411266)
Parameter Sulfur Dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253996-1	253996-2	253996-3	253996-4	253996-5	253996-6	253996-7
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
09:00 AM - 10:00 AM	0.0019	0.0020	0.0020	0.0021	0.0021	0.0020	0.0018
10:00 AM - 11:00 AM	0.0016	0.0021	0.0021	0.0020	0.0019	0.0018	0.0019
11:00 AM - 12:00 PM	0.0016	0.0025	0.0024	0.0022	0.0022	0.0018	0.0018
12:00 PM - 01:00 PM	0.0016	0.0024	0.0024	0.0021	0.0020	0.0022	0.0018
01:00 PM - 02:00 PM	0.0013	0.0013	0.0013	0.0017	0.0019	0.0021	0.0016
02:00 PM - 03:00 PM	0.0018	0.0014	0.0014	0.0016	0.0016	0.0025	0.0013
03:00 PM - 04:00 PM	0.0001	0.0018	0.0018	0.0018	0.0017	0.0005	0.0017
04:00 PM - 05:00 PM	<0.0001	0.0016	0.0018	0.0016	0.0019	0.0013	0.0018
05:00 PM - 06:00 PM	0.0003	0.0017	0.0019	0.0018	0.0017	0.0015	0.0017
06:00 PM - 07:00 PM	0.0005	0.0016	0.0018	0.0017	0.0017	0.0018	0.0016
07:00 PM - 08:00 PM	0.0009	0.0017	0.0018	0.0018	0.0018	0.0017	0.0019
08:00 PM - 09:00 PM	0.0012	0.0018	0.0018	0.0020	0.0017	0.0020	0.0015
09:00 PM - 10:00 PM	0.0008	0.0018	0.0019	0.0018	0.0018	0.0018	0.0016
10:00 PM - 11:00 PM	0.0013	0.0023	0.0020	0.0019	0.0018	0.0018	0.0018
11:00 PM - 12:00 AM	0.0014	0.0021	0.0018	0.0018	0.0019	0.0020	0.0018
12:00 AM - 01:00 AM	0.0014	0.0021	0.0022	0.0020	0.0019	0.0017	0.0015
01:00 AM - 02:00 AM	0.0016	0.0017	0.0021	0.0018	0.0017	0.0018	0.0017
02:00 AM - 03:00 AM	0.0018	0.0020	0.0021	0.0018	0.0019	0.0018	0.0018
03:00 AM - 04:00 AM	0.0018	0.0020	0.0019	0.0019	0.0019	0.0017	0.0016
04:00 AM - 05:00 AM	0.0017	0.0020	0.0020	0.0016	0.0018	0.0016	0.0019
05:00 AM - 06:00 AM	0.0018	0.0024	0.0021	0.0019	0.0022	0.0019	0.0018
06:00 AM - 07:00 AM	0.0018	0.0021	0.0023	0.0018	0.0023	0.0022	0.0023
07:00 AM - 08:00 AM	0.0018	0.0020	0.0022	0.0024	0.0022	0.0020	0.0020
08:00 AM - 09:00 AM	0.0021	0.0023	0.0021	0.0018	0.0021	0.0021	0.0018
Average	0.0013	0.0019	0.0020	0.0019	0.0019	0.0018	0.0018
1hr - Maximum	0.0021	0.0025	0.0024	0.0024	0.0023	0.0025	0.0023
Standard 1hr - Average	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Standard 24 hrs - Average	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Standard : Notification of the National Environment Board No.10, 1995 (B.E.2538), No. 21, 2001 (B.E.2544) and No.24, 2004 (B.E.2547).
Reference Method : US EPA Method Part 53 and 58

Approved by

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Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253996

Date Received : Feb 17, 2025
Date Reported : Feb 20, 2025
Report Number: 3239216-1

Page 1 of 1

Sample Description Air Quality
Location ชุมชนบ้านนา (GPS 47P 0735254, 1408965)
Parameter Sulfur Dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253996-8	253996-9	253996-10	253996-11	253996-12	253996-13	253996-14
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
10:00 AM - 11:00 AM	0.0011	0.0009	0.0008	0.0013	0.0011	0.0011	0.0010
11:00 AM - 12:00 PM	0.0011	0.0011	0.0018	0.0012	0.0010	0.0010	0.0010
12:00 PM - 01:00 PM	0.0011	0.0010	0.0009	0.0013	0.0010	0.0010	0.0011
01:00 PM - 02:00 PM	0.0011	0.0010	0.0005	0.0012	0.0010	0.0010	0.0010
02:00 PM - 03:00 PM	0.0012	0.0010	0.0006	0.0013	0.0010	0.0010	0.0010
03:00 PM - 04:00 PM	0.0012	0.0011	0.0009	0.0012	0.0010	0.0010	0.0010
04:00 PM - 05:00 PM	0.0012	0.0010	0.0010	0.0012	0.0010	0.0010	0.0010
05:00 PM - 06:00 PM	0.0012	0.0010	0.0009	0.0011	0.0010	0.0011	0.0010
06:00 PM - 07:00 PM	0.0013	0.0010	0.0009	0.0011	0.0010	0.0012	0.0010
07:00 PM - 08:00 PM	0.0012	0.0009	0.0010	0.0011	0.0010	0.0011	0.0011
08:00 PM - 09:00 PM	0.0002	0.0012	0.0010	0.0011	0.0011	0.0012	0.0012
09:00 PM - 10:00 PM	0.0005	0.0012	0.0010	0.0011	0.0011	0.0011	0.0003
10:00 PM - 11:00 PM	0.0009	0.0013	0.0010	0.0011	0.0011	0.0011	0.0016
11:00 PM - 12:00 AM	0.0014	0.0012	0.0010	0.0010	0.0011	0.0011	0.0015
12:00 AM - 01:00 AM	0.0014	0.0011	0.0010	0.0010	0.0011	0.0011	0.0015
01:00 AM - 02:00 AM	0.0013	0.0011	0.0010	0.0010	0.0001	0.0011	0.0014
02:00 AM - 03:00 AM	0.0013	0.0011	0.0011	0.0010	0.0009	0.0011	0.0013
03:00 AM - 04:00 AM	0.0012	0.0011	0.0010	0.0010	0.0008	0.0011	0.0012
04:00 AM - 05:00 AM	0.0012	0.0011	0.0011	0.0010	0.0011	0.0011	0.0012
05:00 AM - 06:00 AM	0.0012	0.0011	0.0011	0.0009	0.0011	0.0011	0.0011
06:00 AM - 07:00 AM	0.0011	0.0011	0.0011	0.0010	0.0009	0.0011	0.0011
07:00 AM - 08:00 AM	0.0011	0.0011	0.0012	0.0010	0.0010	0.0011	0.0011
08:00 AM - 09:00 AM	0.0010	0.0017	0.0013	0.0010	0.0011	0.0012	0.0011
09:00 AM - 10:00 AM	0.0010	0.0009	0.0014	0.0011	0.0012	0.0011	0.0011
Average	0.0011	0.0011	0.0010	0.0011	0.0010	0.0011	0.0011
1hr - Maximum	0.0014	0.0017	0.0018	0.0013	0.0012	0.0012	0.0016
Standard 1hr - Average	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Standard 24 hrs - Average	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Standard : Notification of the National Environment Board No.10, 1995 (B.E.2538), No. 21, 2001 (B.E.2544) and No.24, 2004 (B.E.2547).
Reference Method : US EPA Method Part 53 and 58

Approved by

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Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253996

Date Received : Feb 17, 2025
Date Reported : Feb 20, 2025
Report Number: 3239217-1

Page 1 of 1

Sample Description Air Quality
Location บ้านฉาง (GPS 47P 0734581, 1408569)
Parameter Sulfur Dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253996-15 Feb 10, 2025	253996-16 Feb 11, 2025	253996-17 Feb 12, 2025	253996-18 Feb 13, 2025	253996-19 Feb 14, 2025	253996-20 Feb 15, 2025	253996-21 Feb 16, 2025
Time							
11:00 AM - 12:00 PM	0.0012	0.0009	0.0011	0.0012	0.0014	0.0012	0.0011
12:00 PM - 01:00 PM	0.0006	0.0009	0.0011	0.0012	0.0013	0.0012	0.0011
01:00 PM - 02:00 PM	0.0008	0.0010	0.0011	0.0012	0.0014	0.0014	0.0012
02:00 PM - 03:00 PM	0.0010	0.0012	0.0013	0.0015	0.0013	0.0013	0.0012
03:00 PM - 04:00 PM	0.0011	0.0009	0.0013	0.0014	0.0013	0.0013	0.0012
04:00 PM - 05:00 PM	0.0010	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013
05:00 PM - 06:00 PM	0.0010	0.0011	0.0012	0.0012	0.0012	0.0013	0.0013
06:00 PM - 07:00 PM	0.0009	0.0011	0.0012	0.0012	0.0012	0.0012	0.0013
07:00 PM - 08:00 PM	0.0008	0.0011	0.0011	0.0012	0.0013	0.0012	0.0012
08:00 PM - 09:00 PM	0.0009	0.0011	0.0012	0.0013	0.0012	0.0012	0.0012
09:00 PM - 10:00 PM	0.0009	0.0011	0.0012	0.0012	0.0012	0.0014	0.0012
10:00 PM - 11:00 PM	0.0009	0.0011	0.0012	0.0012	0.0013	0.0014	0.0014
11:00 PM - 12:00 AM	0.0009	0.0011	0.0012	0.0013	0.0012	0.0014	0.0014
12:00 AM - 01:00 AM	0.0009	0.0010	0.0012	0.0009	0.0012	0.0013	0.0012
01:00 AM - 02:00 AM	0.0009	0.0011	0.0013	0.0011	0.0012	0.0012	0.0013
02:00 AM - 03:00 AM	0.0009	0.0011	0.0013	0.0012	0.0012	0.0013	0.0013
03:00 AM - 04:00 AM	0.0010	0.0011	0.0013	0.0012	0.0013	0.0013	0.0012
04:00 AM - 05:00 AM	0.0010	0.0012	0.0013	0.0012	0.0013	0.0013	0.0013
05:00 AM - 06:00 AM	0.0010	0.0013	0.0013	0.0012	0.0013	0.0012	0.0013
06:00 AM - 07:00 AM	0.0010	0.0012	0.0013	0.0012	0.0012	0.0013	0.0012
07:00 AM - 08:00 AM	0.0010	0.0012	0.0013	0.0013	0.0013	0.0013	0.0012
08:00 AM - 09:00 AM	0.0010	0.0013	0.0013	0.0012	0.0013	0.0013	0.0013
09:00 AM - 10:00 AM	0.0010	0.0012	0.0012	0.0011	0.0013	0.0012	0.0013
10:00 AM - 11:00 AM	0.0010	0.0012	0.0012	0.0012	0.0011	0.0011	0.0012
Average	0.0009	0.0011	0.0012	0.0012	0.0013	0.0013	0.0012
1hr - Maximum	0.0012	0.0013	0.0013	0.0015	0.0014	0.0014	0.0014
Standard 1hr - Average	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Standard 24 hrs - Average	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Standard : Notification of the National Environment Board No.10, 1995 (B.E.2538), No. 21, 2001 (B.E.2544) and No.24, 2004 (B.E.2547).
Reference Method : US EPA Method Part 53 and 58

Approved by

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Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 253996

Date Received : Feb 17, 2025
Date Reported : Feb 20, 2025
Report Number: 3239218-1

Page 1 of 1

Sample Description Air Quality
Location ชุมชนห้วยโป่งใน 2 (GPS 47P 0732149, 1410979)
Parameter Sulfur Dioxide (ppm)
Measurement Date Feb 10, 2025 - Feb 17, 2025
Measurement by Panuwat Wangbong

	253996-22	253996-23	253996-24	253996-25	253996-26	253996-27	253996-28
Time	Feb 10, 2025	Feb 11, 2025	Feb 12, 2025	Feb 13, 2025	Feb 14, 2025	Feb 15, 2025	Feb 16, 2025
12:00 PM - 01:00 PM	0.0060	0.0090	0.0061	0.0060	0.0061	0.0061	0.0061
01:00 PM - 02:00 PM	0.0059	0.0070	0.0062	0.0060	0.0060	0.0061	0.0061
02:00 PM - 03:00 PM	0.0058	0.0065	0.0061	0.0059	0.0060	0.0060	0.0061
03:00 PM - 04:00 PM	0.0058	0.0061	0.0059	0.0059	0.0059	0.0060	0.0060
04:00 PM - 05:00 PM	0.0058	0.0060	0.0059	0.0059	0.0059	0.0059	0.0060
05:00 PM - 06:00 PM	0.0058	0.0059	0.0058	0.0059	0.0059	0.0059	0.0060
06:00 PM - 07:00 PM	0.0058	0.0059	0.0058	0.0058	0.0059	0.0059	0.0059
07:00 PM - 08:00 PM	0.0058	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059
08:00 PM - 09:00 PM	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059	0.0063
09:00 PM - 10:00 PM	0.0058	0.0058	0.0058	0.0058	0.0058	0.0059	0.0062
10:00 PM - 11:00 PM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060
11:00 PM - 12:00 AM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060
12:00 AM - 01:00 AM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0058	0.0059
01:00 AM - 02:00 AM	0.0058	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059
02:00 AM - 03:00 AM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059
03:00 AM - 04:00 AM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059
04:00 AM - 05:00 AM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059
05:00 AM - 06:00 AM	0.0057	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059
06:00 AM - 07:00 AM	0.0058	0.0058	0.0058	0.0059	0.0058	0.0059	0.0059
07:00 AM - 08:00 AM	0.0058	0.0059	0.0059	0.0059	0.0059	0.0059	0.0059
08:00 AM - 09:00 AM	0.0062	0.0059	0.0059	0.0059	0.0059	0.0061	0.0060
09:00 AM - 10:00 AM	0.0067	0.0059	0.0059	0.0060	0.0060	0.0062	0.0060
10:00 AM - 11:00 AM	0.0073	0.0061	0.0060	0.0061	0.0061	0.0061	0.0061
11:00 AM - 12:00 PM	0.0086	0.0061	0.0060	0.0061	0.0061	0.0061	0.0061
Average	0.0060	0.0061	0.0059	0.0059	0.0059	0.0060	0.0060
1hr - Maximum	0.0086	0.0090	0.0062	0.0061	0.0061	0.0062	0.0063
Standard 1hr - Average	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Standard 24 hrs - Average	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Standard : Notification of the National Environment Board No.10, 1995 (B.E.2538), No. 21, 2001 (B.E.2544) and No.24, 2004 (B.E.2547).
Reference Method : US EPA Method Part 53 and 58

Approved by

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Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 253998

Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

Report Number :3212654-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 2

Sample Number 253998-1 to 7
Parameter Wind Speed / Wind Direction
Location หมู่บ้านหนอง (เนินพยอม) (GPS 47P 0736527, 1411266)
Sampling Date Feb 10 - Feb 17, 2025
Sampling by Panuwat Wangbong

Time	Feb 10 - Feb 11, 2025			Feb 11 - Feb 12, 2025			Feb 12 - Feb 13, 2025			Feb 13 - Feb 14, 2025			Feb 14 - Feb 15, 2025			Feb 15 - Feb 16, 2025			Feb 16 - Feb 17, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
09:00 AM - 10:00 AM	0.0	-	-	1.5	351.0	N	0.4	209.0	SSW	1.6	359.0	N	1.2	189.0	S	1.5	349.0	N	1.1	188.0	S
10:00 AM - 11:00 AM	2.1	38.0	NE	0.0	-	-	0.0	-	-	0.0	-	-	0.3	25.0	NNE	0.3	50.0	NE	0.0	-	-
11:00 AM - 12:00 PM	0.0	-	-	0.0	-	-	0.3	18.0	NNE	0.0	-	-	0.0	-	-	0.3	179.0	S	0.4	180.0	S
12:00 PM - 01:00 PM	2.1	204.0	SSW	0.0	-	-	1.5	335.0	NNW	1.2	346.0	NNW	0.0	-	-	1.1	199.0	SSW	0.5	190.0	S
01:00 PM - 02:00 PM	0.0	-	-	1.2	352.0	N	1.4	336.0	NNW	0.8	359.0	N	0.0	-	-	1.1	194.0	SSW	1.1	178.0	S
02:00 PM - 03:00 PM	0.7	193.0	SSW	0.0	-	-	1.4	359.0	N	1.2	359.0	N	0.0	-	-	0.0	-	-	1.2	180.0	S
03:00 PM - 04:00 PM	1.2	277.0	W	1.4	334.0	NNW	0.0	-	-	0.3	4.0	N	0.0	-	-	0.5	185.0	S	1.3	3.0	N
04:00 PM - 05:00 PM	1.5	342.0	NNW	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.3	21.0	NNE	0.3	23.0	NNE
05:00 PM - 06:00 PM	1.0	287.0	WNW	0.0	-	-	0.7	14.0	NNE	0.3	72.0	ENE	0.0	-	-	0.0	-	-	0.5	28.0	NNE
06:00 PM - 07:00 PM	0.3	17.0	NNE	1.1	320.0	NW	0.9	14.0	NNE	0.4	178.0	S	0.0	-	-	0.0	-	-	0.6	14.0	NNE
07:00 PM - 08:00 PM	0.3	22.0	NNE	1.1	347.0	NNW	0.7	311.0	NW	0.0	-	-	0.4	169.0	S	1.9	189.0	S	0.0	-	-
08:00 PM - 09:00 PM	0.0	-	-	0.7	251.0	WSW	0.4	91.0	E	0.0	-	-	0.3	160.0	SSE	2.4	164.0	SSE	0.1	-	-
09:00 PM - 10:00 PM	0.0	-	-	0.3	212.0	SSW	0.0	-	-	1.6	188.0	S	0.3	311.0	NW	0.0	-	-	0.7	33.0	NNE
10:00 PM - 11:00 PM	1.1	348.0	NNW	0.0	-	-	2.8	205.0	SSW	3.1	178.0	S	0.5	167.0	SSE	3.9	175.0	S	0.3	50.0	NE
11:00 PM - 12:00 AM	0.0	-	-	2.5	229.0	SW	0.0	-	-	0.0	-	-	0.3	208.0	SSW	0.5	217.0	SW	1.2	176.0	S
12:00 AM - 01:00 AM	0.0	-	-	1.6	191.0	S	2.3	167.0	SSE	4.0	191.0	S	3.2	189.0	S	3.9	184.0	S	1.5	228.0	SW
01:00 AM - 02:00 AM	1.2	248.0	WSW	1.2	316.0	NW	3.8	179.0	S	3.2	158.0	SSE	1.7	180.0	S	5.1	181.0	S	0.0	-	-
02:00 AM - 03:00 AM	0.0	-	-	0.3	274.0	W	0.0	-	-	2.0	171.0	S	0.0	-	-	1.5	197.0	SSW	1.0	123.0	ESE
03:00 AM - 04:00 AM	2.2	25.0	NNE	0.3	297.0	WNW	1.5	316.0	NW	0.0	-	-	0.0	-	-	1.0	186.0	S	1.0	187.0	S
04:00 AM - 05:00 AM	2.1	222.0	SW	1.7	323.0	NW	1.1	316.0	NW	0.3	327.0	NNW	0.3	189.0	S	0.0	-	-	0.0	-	-
05:00 AM - 06:00 AM	0.0	-	-	0.5	227.0	SW	0.4	202.0	SSW	1.1	339.0	NNW	0.3	26.0	NNE	0.0	-	-	1.8	212.0	SSW
06:00 AM - 07:00 AM	0.0	-	-	0.0	-	-	0.5	208.0	SSW	0.5	189.0	S	1.2	156.0	SSE	0.3	184.0	S	1.7	185.0	S
07:00 AM - 08:00 AM	1.2	146.0	SE	0.0	-	-	0.0	-	-	0.3	191.0	S	1.1	337.0	NNW	0.3	164.0	SSE	1.7	177.0	S
08:00 AM - 09:00 AM	0.8	127.0	SE	0.3	202.0	SSW	0.0	-	-	0.3	186.0	S	0.0	-	-	0.3	199.0	SSW	0.3	25.0	NNE

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jittranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253998

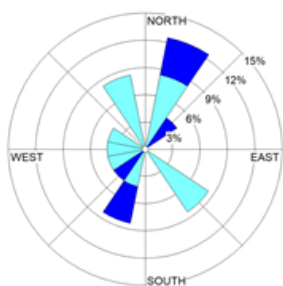
Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

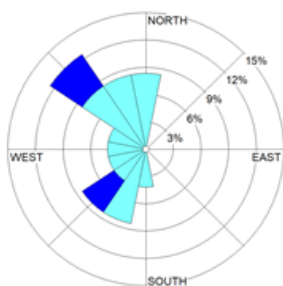
Report Number :3212654-1

Page 2 of 2

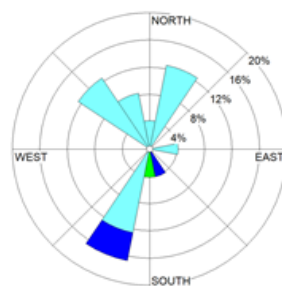
Wind Rose



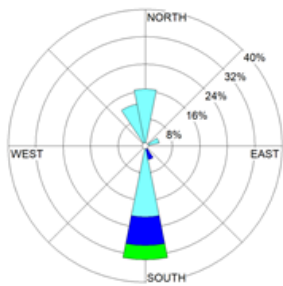
Date : Feb 10-11, 2025



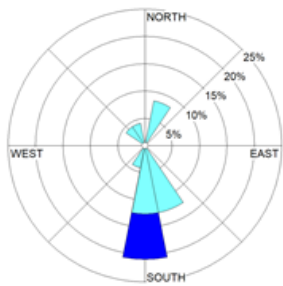
Date : Feb 11-12, 2025



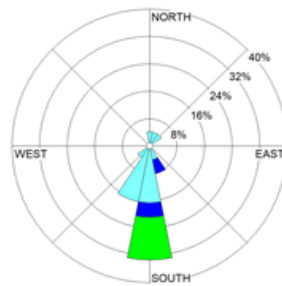
Date : Feb 12-13, 2025



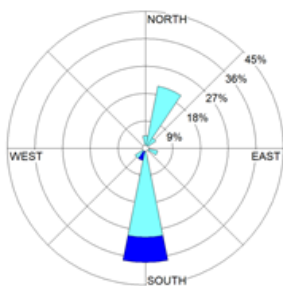
Date : Feb 13-14, 2025



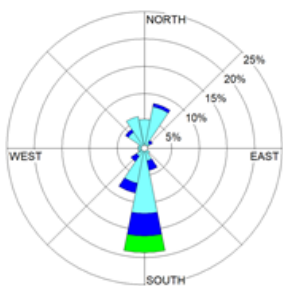
Date : Feb 14-15, 2025



Date : Feb 15-16, 2025



Date : Feb 16-17, 2025



Date : Feb 10-17, 2025

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	2.98
1.7-3.3	10.71
0.3-1.7	52.98
Calms	33.33

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jitranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 253998

Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

Report Number :3212654-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 2

Sample Number : 253998-8 to 14
Parameter : Wind Speed / Wind Direction
Location : ชุมชนบ้านบ่อน (GPS 47P 0735254, 1408965)
Sampling Date : Feb 10 - Feb 17, 2025
Sampling by : Panuwat Wangbong

Time	Feb 10 - Feb 11, 2025			Feb 11 - Feb 12, 2025			Feb 12 - Feb 13, 2025			Feb 13 - Feb 14, 2025			Feb 14 - Feb 15, 2025			Feb 15 - Feb 16, 2025			Feb 16 - Feb 17, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
10:00 AM - 11:00 AM	1.1	9.0	N	1.5	98.0	E	1.3	82.0	E	2.4	256.0	WSW	1.5	234.0	SW	1.6	146.0	SE	2.6	152.0	SSE
11:00 AM - 12:00 PM	2.2	37.0	NE	2.2	136.0	SE	2.4	247.0	WSW	1.9	243.0	WSW	3.4	170.0	S	0.9	235.0	SW	1.8	215.0	SW
12:00 PM - 01:00 PM	5.5	137.0	SE	2.6	235.0	SW	1.9	218.0	SW	1.4	114.0	ESE	3.1	258.0	WSW	2.9	165.0	SSE	2.8	244.0	WSW
01:00 PM - 02:00 PM	6.0	249.0	WSW	4.1	260.0	W	2.6	247.0	WSW	3.9	241.0	WSW	4.9	239.0	WSW	1.8	237.0	WSW	4.1	193.0	SSW
02:00 PM - 03:00 PM	2.9	246.0	WSW	2.3	235.0	SW	2.2	200.0	SSW	3.4	245.0	WSW	3.9	261.0	W	3.0	233.0	SW	3.4	251.0	WSW
03:00 PM - 04:00 PM	1.9	235.0	SW	3.3	254.0	WSW	1.6	223.0	SW	3.8	227.0	SW	2.8	232.0	SW	2.4	224.0	SW	0.6	216.0	SW
04:00 PM - 05:00 PM	1.0	275.0	W	1.1	261.0	W	1.9	287.0	WNW	1.3	237.0	WSW	2.2	266.0	W	2.8	244.0	WSW	2.1	245.0	WSW
05:00 PM - 06:00 PM	1.2	260.0	W	0.6	305.0	NW	0.6	271.0	W	1.1	275.0	W	1.6	249.0	WSW	0.7	264.0	W	1.6	243.0	WSW
06:00 PM - 07:00 PM	0.5	255.0	WSW	0.1	-	-	0.0	-	-	0.2	-	-	1.1	271.0	W	1.1	282.0	WNW	0.8	195.0	SSW
07:00 PM - 08:00 PM	0.0	-	-	0.0	-	-	0.1	-	-	0.0	-	-	0.0	-	-	0.9	72.0	ENE	0.7	167.0	SSE
08:00 PM - 09:00 PM	0.3	64.0	ENE	0.0	-	-	0.3	317.0	NW	0.0	-	-	0.5	137.0	SE	0.6	85.0	E	0.4	216.0	SW
09:00 PM - 10:00 PM	0.0	-	-	0.2	-	-	0.1	-	-	0.4	274.0	W	0.2	-	-	0.2	-	-	0.2	-	-
10:00 PM - 11:00 PM	0.1	-	-	0.0	-	-	0.2	-	-	0.0	-	-	0.0	-	-	0.3	83.0	E	0.2	-	-
11:00 PM - 12:00 AM	0.0	-	-	0.3	58.0	ENE	0.3	29.0	NNE	0.0	-	-	0.3	78.0	ENE	0.6	71.0	ENE	0.6	155.0	SSE
12:00 AM - 01:00 AM	0.6	28.0	NNE	0.4	33.0	NNE	0.1	-	-	0.6	183.0	S	0.1	-	-	0.0	-	-	0.5	163.0	SSE
01:00 AM - 02:00 AM	0.4	42.0	NE	0.4	35.0	NE	0.0	-	-	0.2	-	-	0.0	-	-	0.3	78.0	ENE	0.9	148.0	SSE
02:00 AM - 03:00 AM	0.3	42.0	NE	0.5	17.0	NNE	0.1	-	-	1.0	137.0	SE	0.2	-	-	0.0	-	-	0.2	-	-
03:00 AM - 04:00 AM	0.0	-	-	0.5	16.0	NNE	0.0	-	-	0.2	-	-	0.0	-	-	0.0	-	-	0.3	125.0	SE
04:00 AM - 05:00 AM	0.0	-	-	0.0	-	-	0.2	-	-	0.2	-	-	0.0	-	-	0.3	108.0	ESE	1.0	189.0	S
05:00 AM - 06:00 AM	0.0	-	-	0.2	-	-	0.2	-	-	0.4	161.0	SSE	1.0	85.0	E	0.1	-	-	0.5	170.0	S
06:00 AM - 07:00 AM	0.3	27.0	NNE	0.0	-	-	0.0	-	-	1.1	145.0	SE	0.0	-	-	0.0	-	-	0.4	224.0	SW
07:00 AM - 08:00 AM	0.5	28.0	NNE	0.1	-	-	0.5	29.0	NNE	1.8	155.0	SSE	0.5	123.0	ESE	0.4	59.0	ENE	0.4	256.0	WSW
08:00 AM - 09:00 AM	1.4	75.0	ENE	0.6	48.0	NE	1.9	164.0	SSE	0.7	194.0	SSW	0.3	188.0	S	1.2	185.0	S	1.1	351.0	N
09:00 AM - 10:00 AM	0.8	69.0	ENE	2.0	98.0	E	0.2	-	-	0.3	153.0	SSE	1.3	240.0	WSW	1.0	202.0	SSW	0.4	285.0	WNW

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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Approved by



Sarayuth Jittrantont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253998

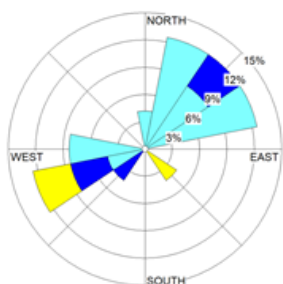
Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

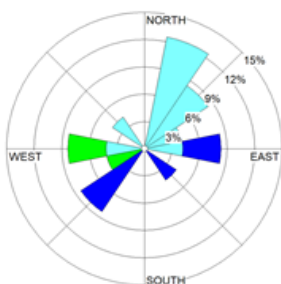
Report Number :3212654-1

Page 2 of 2

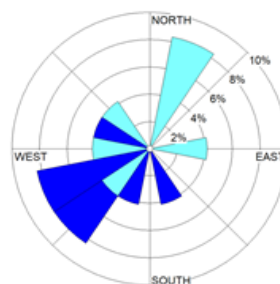
Wind Rose



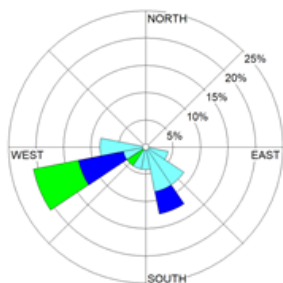
Date : Feb 10-11, 2025



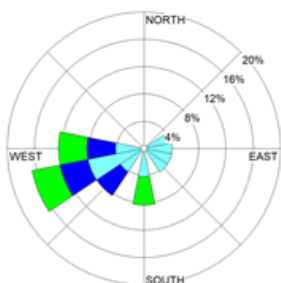
Date : Feb 11-12, 2025



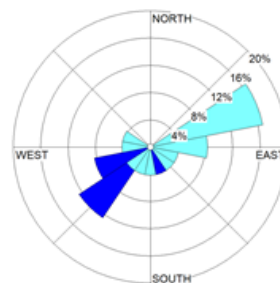
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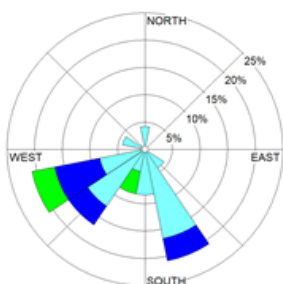
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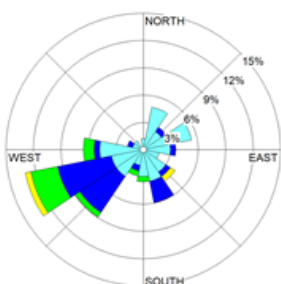
Date : Feb 14-15, 2025



Date : Feb 15-16, 2025



Date : Feb 16-17, 2025



Date : Feb 10-17, 2025

	WS (m/s)	%
	≥ 10.0	0.00
	8.0-10.0	0.00
	5.5-8.0	1.19
	3.3-5.5	5.95
	1.7-3.3	16.67
	0.3-1.7	44.05
	Calms	32.14

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Approved by

Sarayuth Jitranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 253998

Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

Report Number :3212654-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 2

Sample Number 253998-15 to 21
Parameter Wind Speed / Wind Direction
Location บ้านนาบอง (GPS 47P 0734581, 1408569)
Sampling Date Feb 10 - Feb 17, 2025
Sampling by Panuwat Wangbong

Time	Feb 10 - Feb 11, 2025			Feb 11 - Feb 12, 2025			Feb 12 - Feb 13, 2025			Feb 13 - Feb 14, 2025			Feb 14 - Feb 15, 2025			Feb 15 - Feb 16, 2025			Feb 16 - Feb 17, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
11:00 AM - 12:00 PM	1.2	339.0	NNW	1.9	172.0	S	3.7	212.0	SSW	2.1	151.0	SSE	1.8	222.0	SW	1.4	184.0	S	3.3	180.0	S
12:00 PM - 01:00 PM	2.2	162.0	SSE	1.5	246.0	WSW	3.8	247.0	WSW	1.7	153.0	SSE	1.0	182.0	S	1.2	232.0	SW	2.1	161.0	SSE
01:00 PM - 02:00 PM	3.0	200.0	SSW	2.3	223.0	SW	2.0	252.0	WSW	2.3	201.0	SSW	2.9	193.0	SSW	1.8	202.0	SSW	2.9	206.0	SSW
02:00 PM - 03:00 PM	1.9	194.0	SSW	3.2	287.0	WNW	2.2	245.0	WSW	2.3	227.0	SW	1.6	237.0	WSW	2.9	197.0	SSW	4.7	201.0	SSW
03:00 PM - 04:00 PM	0.8	266.0	W	1.5	258.0	WSW	1.3	170.0	S	1.6	206.0	SSW	2.7	235.0	SW	2.6	234.0	SW	2.4	182.0	S
04:00 PM - 05:00 PM	2.3	247.0	WSW	0.9	323.0	NW	1.6	271.0	W	1.3	239.0	WSW	1.9	248.0	WSW	1.9	270.0	W	1.0	248.0	WSW
05:00 PM - 06:00 PM	0.9	250.0	WSW	1.8	289.0	WNW	0.0	-	-	1.0	274.0	W	1.7	253.0	WSW	1.2	249.0	WSW	2.1	250.0	WSW
06:00 PM - 07:00 PM	1.1	266.0	W	0.2	-	-	0.0	-	-	0.7	270.0	W	0.4	239.0	WSW	1.3	301.0	WNW	1.5	200.0	SSW
07:00 PM - 08:00 PM	1.1	266.0	W	0.0	-	-	0.5	272.0	W	0.3	221.0	SW	0.5	122.0	ESE	0.7	86.0	E	0.6	148.0	SSE
08:00 PM - 09:00 PM	0.3	38.0	NE	0.2	-	-	0.9	272.0	W	0.3	221.0	SW	0.5	141.0	SE	0.7	86.0	E	1.7	152.0	SSE
09:00 PM - 10:00 PM	0.2	-	-	0.2	-	-	0.8	268.0	W	0.3	221.0	SW	0.2	-	-	0.5	94.0	E	1.4	147.0	SSE
10:00 PM - 11:00 PM	0.1	-	-	0.2	-	-	0.8	270.0	W	0.3	221.0	SW	0.2	-	-	1.4	284.0	WNW	0.7	194.0	SSW
11:00 PM - 12:00 AM	0.0	-	-	0.0	-	-	0.3	21.0	NNE	0.3	221.0	SW	0.7	252.0	WSW	0.3	21.0	NNE	1.3	155.0	SSE
12:00 AM - 01:00 AM	0.3	31.0	NNE	0.3	14.0	NNE	1.1	283.0	WNW	1.0	187.0	S	0.6	30.0	NNE	0.1	-	-	1.6	119.0	ESE
01:00 AM - 02:00 AM	0.2	-	-	0.1	-	-	0.1	-	-	1.0	187.0	S	0.1	-	-	0.7	152.0	SSE	0.6	165.0	SSE
02:00 AM - 03:00 AM	0.0	-	-	0.2	-	-	1.8	359.0	N	0.3	95.0	E	0.1	-	-	0.2	-	-	0.9	137.0	SE
03:00 AM - 04:00 AM	1.5	343.0	NNW	1.4	359.0	N	0.1	-	-	1.1	139.0	SE	1.2	214.0	SW	0.2	-	-	0.5	145.0	SE
04:00 AM - 05:00 AM	0.2	-	-	1.2	359.0	N	0.3	245.0	WSW	0.4	131.0	SE	1.2	214.0	SW	0.2	-	-	0.4	154.0	SSE
05:00 AM - 06:00 AM	0.2	-	-	0.2	-	-	0.3	263.0	W	1.3	137.0	SE	1.2	214.0	SW	0.1	-	-	0.4	171.0	S
06:00 AM - 07:00 AM	1.8	350.0	N	0.0	-	-	0.2	-	-	1.3	144.0	SE	1.1	183.0	S	0.1	-	-	0.3	219.0	SW
07:00 AM - 08:00 AM	2.0	37.0	NE	0.2	-	-	0.1	-	-	2.5	145.0	SE	0.2	-	-	0.0	-	-	0.7	359.0	N
08:00 AM - 09:00 AM	1.0	348.0	NNW	0.0	-	-	0.3	61.0	ENE	3.0	143.0	SE	0.4	318.0	NW	1.9	143.0	SE	1.2	287.0	WNW
09:00 AM - 10:00 AM	1.5	342.0	NNW	1.8	58.0	ENE	0.8	237.0	WSW	0.8	148.0	SSE	0.3	126.0	SE	1.0	118.0	ESE	0.3	245.0	WSW
10:00 AM - 11:00 AM	0.9	172.0	S	0.6	61.0	ENE	0.0	-	-	0.8	214.0	SW	2.6	166.0	SSE	0.6	217.0	SW	0.4	255.0	WSW

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jittrantont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253998

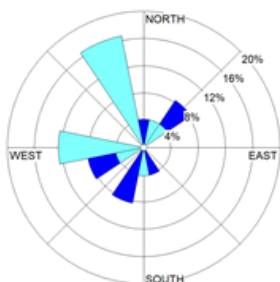
Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

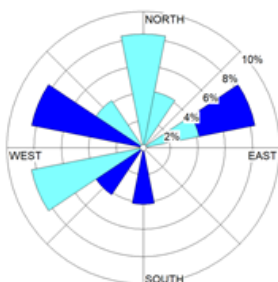
Report Number :3212654-1

Page 2 of 2

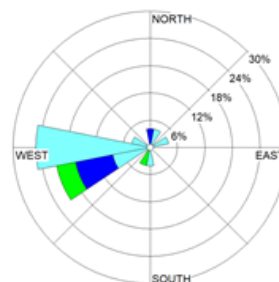
Wind Rose



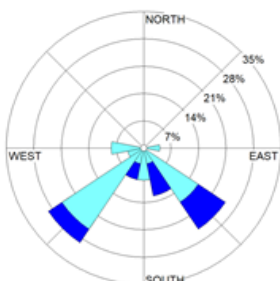
Date : Feb 10-11, 2025



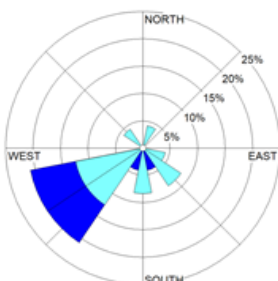
Date : Feb 11-12, 2025



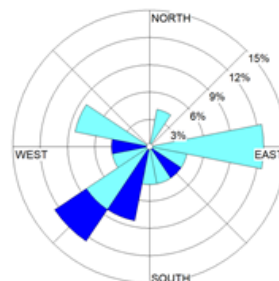
Date : Feb 12-13, 2025



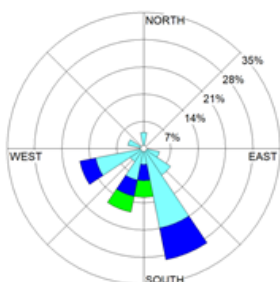
Date : Feb 13-14, 2025



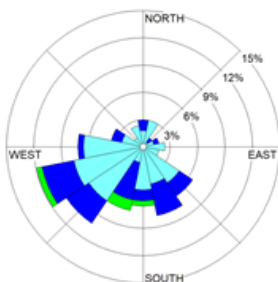
Date : Feb 14-15, 2025



Date : Feb 15-16, 2025



Date : Feb 16-17, 2025



Date : Feb 10-17, 2025

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	2.38
1.7-3.3	21.43
0.3-1.7	53.57
Calms	22.62

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Approved by

Sarayuth Jittrantont
Assistant General Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 253998
Date Received :Feb 17, 2025
Date Reported :Feb 24, 2025
Report Number :3212654-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 2

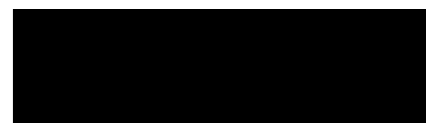
Sample Number : 253998-22 to 28
Parameter : Wind Speed / Wind Direction
Location : ชุมชนห้วยโป่งใน 2 (GPS 47P 0732149, 1410979)
Sampling Date : Feb 10 - Feb 17, 2025
Sampling by : Panuwat Wangbong

Time	Feb 10 - Feb 11, 2025			Feb 11 - Feb 12, 2025			Feb 12 - Feb 13, 2025			Feb 13 - Feb 14, 2025			Feb 14 - Feb 15, 2025			Feb 15 - Feb 16, 2025			Feb 16 - Feb 17, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
12:00 PM - 01:00 PM	1.2	339.0	NNW	1.9	172.0	S	3.7	212.0	SSW	2.1	151.0	SSE	1.8	222.0	SW	1.4	184.0	S	3.3	180.0	S
01:00 PM - 02:00 PM	2.2	162.0	SSE	1.5	246.0	WSW	3.8	247.0	WSW	1.7	153.0	SSE	1.0	182.0	S	1.2	232.0	SW	2.1	161.0	SSE
02:00 PM - 03:00 PM	3.0	200.0	SSW	2.3	223.0	SW	2.0	252.0	WSW	2.3	201.0	SSW	2.9	193.0	SSW	1.8	202.0	SSW	2.9	206.0	SSW
03:00 PM - 04:00 PM	1.9	194.0	SSW	3.2	287.0	WNW	2.2	245.0	WSW	2.3	227.0	SW	1.6	237.0	WSW	2.9	197.0	SSW	4.7	201.0	SSW
04:00 PM - 05:00 PM	0.8	266.0	W	1.5	258.0	WSW	1.3	170.0	S	1.6	206.0	SSW	2.7	235.0	SW	2.6	234.0	SW	2.4	182.0	S
05:00 PM - 06:00 PM	2.3	247.0	WSW	0.9	323.0	NW	1.6	271.0	W	1.3	239.0	WSW	1.9	248.0	WSW	1.9	270.0	W	1.0	248.0	WSW
06:00 PM - 07:00 PM	0.9	250.0	WSW	1.8	289.0	WNW	1.2	281.0	W	1.0	274.0	W	1.7	253.0	WSW	1.1	249.0	WSW	2.1	250.0	WSW
07:00 PM - 08:00 PM	1.1	266.0	W	0.2	-	-	1.2	255.0	WSW	0.7	270.0	W	0.4	239.0	WSW	1.1	301.0	WNW	1.5	200.0	SSW
08:00 PM - 09:00 PM	1.1	266.0	W	0.0	-	-	0.5	272.0	W	0.3	221.0	SW	0.2	-	-	0.3	86.0	E	0.6	148.0	SSE
09:00 PM - 10:00 PM	1.2	38.0	NE	0.2	-	-	0.9	272.0	W	0.3	221.0	SW	0.3	141.0	SE	0.3	86.0	E	1.7	152.0	SSE
10:00 PM - 11:00 PM	1.3	29.0	NNE	0.0	-	-	0.3	268.0	W	0.3	221.0	SW	0.2	-	-	0.4	94.0	E	1.4	147.0	SSE
11:00 PM - 12:00 AM	0.1	-	-	1.2	178.0	S	0.3	270.0	W	0.3	221.0	SW	0.3	210.0	SSW	1.1	284.0	WNW	0.7	194.0	SSW
12:00 AM - 01:00 AM	0.3	13.0	NNE	1.3	213.0	SSW	0.2	-	-	0.3	221.0	SW	1.6	252.0	WSW	0.3	21.0	NNE	1.3	155.0	SSE
01:00 AM - 02:00 AM	0.4	31.0	NNE	0.3	14.0	NNE	1.1	283.0	WNW	0.2	-	-	0.2	-	-	0.2	-	-	1.6	119.0	ESE
02:00 AM - 03:00 AM	0.2	-	-	0.2	-	-	0.2	-	-	1.0	187.0	S	0.2	-	-	1.5	152.0	SSE	0.6	165.0	SSE
03:00 AM - 04:00 AM	0.2	-	-	0.1	-	-	1.2	359.0	N	0.3	95.0	E	0.2	-	-	1.4	194.0	SSW	0.9	137.0	SE
04:00 AM - 05:00 AM	1.5	343.0	NNW	1.5	359.0	N	0.1	-	-	1.1	139.0	SE	0.5	214.0	SW	1.2	135.0	SE	0.5	145.0	SE
05:00 AM - 06:00 AM	0.3	32.0	NNE	1.5	359.0	N	1.1	123.0	ESE	0.4	131.0	SE	0.5	214.0	SW	1.2	135.0	SE	0.5	154.0	SSE
06:00 AM - 07:00 AM	0.2	-	-	0.2	-	-	1.0	146.0	SE	1.3	137.0	SE	0.5	214.0	SW	0.3	13.0	NNE	0.4	171.0	S
07:00 AM - 08:00 AM	0.0	-	-	0.2	-	-	0.1	-	-	1.3	144.0	SE	0.3	112.0	ESE	0.2	-	-	0.3	219.0	SW
08:00 AM - 09:00 AM	2.0	37.0	NE	0.2	-	-	0.1	-	-	2.5	145.0	SE	0.2	-	-	0.1	-	-	1.9	359.0	N
09:00 AM - 10:00 AM	1.0	348.0	NNW	0.2	-	-	0.3	61.0	ENE	3.0	143.0	SE	0.4	318.0	NW	1.9	143.0	SE	0.3	223.0	SW
10:00 AM - 11:00 AM	1.5	342.0	NNW	1.8	58.0	ENE	0.8	237.0	WSW	0.8	148.0	SSE	0.3	126.0	SE	1.0	118.0	ESE	0.3	245.0	WSW
11:00 AM - 12:00 PM	0.9	172.0	S	0.6	61.0	ENE	1.3	252.0	WSW	0.8	214.0	SW	2.6	166.0	SSE	0.6	217.0	SW	0.2	-	-

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by



Sarayuth Jittrantont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 253998

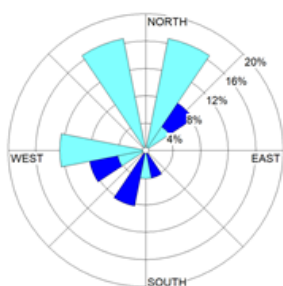
Date Received :Feb 17, 2025

Date Reported :Feb 24, 2025

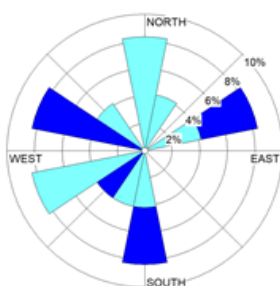
Report Number :3212654-1

Page 2 of 2

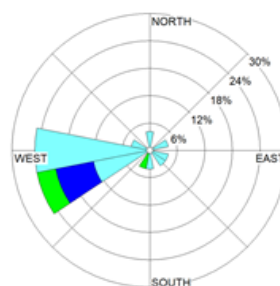
Wind Rose



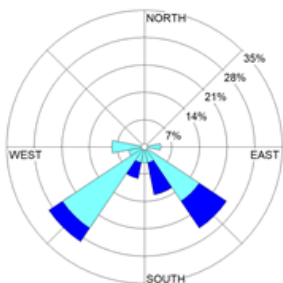
Date : Feb 10-11, 2025



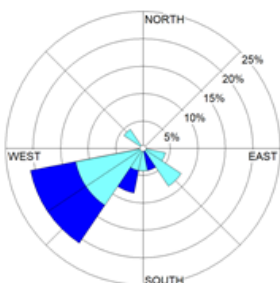
Date : Feb 11-12, 2025



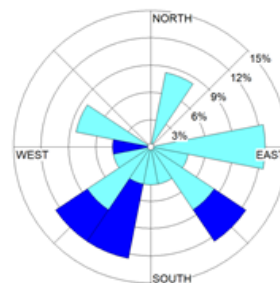
Date : Feb 12-13, 2025



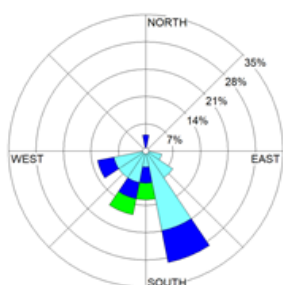
Date : Feb 13-14, 2025



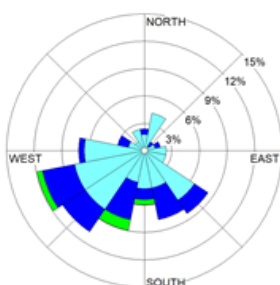
Date : Feb 14-15, 2025



Date : Feb 15-16, 2025



Date : Feb 16-17, 2025



Date : Feb 10-17, 2025

	WS (m/s)	%
	≥ 10.0	0.00
	8.0-10.0	0.00
	5.5-8.0	0.00
	3.3-5.5	2.38
	1.7-3.3	20.83
	0.3-1.7	58.33
	Calms	18.45

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Sarayuth Jitranont
Assistant General Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 2523482

Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

Report Number :3254509-1

P/O :

Project Name : Environmental Monitoring

Project Location :

Page 1 of 2

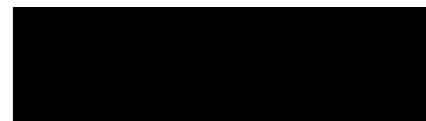
Sample Number 2523482-1 to 7
Parameter Wind Speed / Wind Direction
Location โรงงานพทศ (เงินพดมน)
Sampling Date Mar 16 - Mar 23, 2025
Sampling by Siriwit Ruangsom

Time	Mar 16 - Mar 17, 2025			Mar 17 - Mar 18, 2025			Mar 18 - Mar 19, 2025			Mar 19 - Mar 20, 2025			Mar 20 - Mar 21, 2025			Mar 21 - Mar 22, 2025			Mar 22 - Mar 23, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
09:00 AM - 10:00 AM	1.3	182.0	S	2.2	168.0	SSE	0.4	117.0	ESE	4.0	36.0	NE	5.1	45.0	NE	0.9	63.0	ENE	0.0	-	-
10:00 AM - 11:00 AM	1.1	159.0	SSE	2.3	177.0	S	0.7	359.0	N	1.2	78.0	ENE	2.8	46.0	NE	2.3	24.0	NNE	0.6	339.0	NNW
11:00 AM - 12:00 PM	1.9	184.0	S	1.5	166.0	SSE	0.0	-	-	1.4	20.0	NNE	1.1	3.0	N	1.0	41.0	NE	0.7	342.0	NNW
12:00 PM - 01:00 PM	1.1	197.0	SSW	1.6	182.0	S	1.3	144.0	SE	1.8	329.0	NNW	0.5	84.0	E	0.0	-	-	0.5	38.0	NE
01:00 PM - 02:00 PM	0.2	-	-	0.0	-	-	3.1	188.0	S	2.8	41.0	NE	4.2	28.0	NNE	0.0	-	-	0.6	172.0	S
02:00 PM - 03:00 PM	3.4	185.0	S	1.2	0.0	N	2.3	163.0	SSE	0.3	109.0	ESE	0.3	82.0	E	1.4	9.0	N	3.6	171.0	S
03:00 PM - 04:00 PM	2.5	179.0	S	0.0	-	-	0.9	152.0	SSE	1.3	41.0	NE	0.3	45.0	NE	1.5	168.0	SSE	1.3	184.0	S
04:00 PM - 05:00 PM	1.7	188.0	S	1.1	193.0	SSW	0.0	-	-	0.4	0.0	N	2.5	51.0	NE	2.1	180.0	S	1.3	177.0	S
05:00 PM - 06:00 PM	0.0	-	-	0.9	173.0	S	1.0	284.0	WNW	0.0	-	-	0.0	-	-	0.0	-	-	0.3	194.0	SSW
06:00 PM - 07:00 PM	1.1	177.0	S	1.7	170.0	S	1.5	169.0	S	1.5	40.0	NE	0.6	179.0	S	0.2	-	-	0.0	-	-
07:00 PM - 08:00 PM	1.1	169.0	S	1.2	161.0	SSE	2.2	83.0	E	0.0	-	-	0.0	-	-	0.0	-	-	1.2	177.0	S
08:00 PM - 09:00 PM	1.1	178.0	S	0.4	172.0	S	0.3	97.0	E	2.2	38.0	NE	0.2	-	-	0.6	13.0	NNE	1.1	42.0	NE
09:00 PM - 10:00 PM	0.9	164.0	SSE	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.5	0.0	N	0.0	-	-
10:00 PM - 11:00 PM	1.5	182.0	S	0.2	-	-	0.2	-	-	1.6	32.0	NNE	0.6	37.0	NE	0.5	0.0	N	0.5	40.0	NE
11:00 PM - 12:00 AM	1.3	175.0	S	0.2	-	-	0.2	-	-	0.0	-	-	0.2	-	-	0.0	-	-	0.3	40.0	NE
12:00 AM - 01:00 AM	1.4	186.0	S	0.0	-	-	0.0	-	-	0.0	-	-	0.2	-	-	0.2	-	-	0.0	-	-
01:00 AM - 02:00 AM	0.1	-	-	0.0	-	-	0.3	30.0	NNE	1.5	50.0	NE	0.0	-	-	0.0	-	-	0.2	-	-
02:00 AM - 03:00 AM	0.0	-	-	0.5	33.0	NNE	0.0	-	-	0.4	359.0	N	0.5	330.0	NNW	1.1	338.0	NNW	0.0	-	-
03:00 AM - 04:00 AM	0.2	-	-	0.0	-	-	0.5	334.0	NNW	0.0	-	-	0.0	-	-	0.0	-	-	0.5	332.0	NNW
04:00 AM - 05:00 AM	0.0	-	-	0.9	32.0	NNE	0.0	-	-	0.0	-	-	1.2	0.0	N	0.0	-	-	0.0	-	-
05:00 AM - 06:00 AM	0.3	46.0	NE	1.2	32.0	NNE	0.0	-	-	3.0	28.0	NNE	0.0	-	-	1.2	337.0	NNW	0.2	-	-
06:00 AM - 07:00 AM	0.0	-	-	1.2	25.0	NNE	0.6	27.0	NNE	2.1	31.0	NNE	0.0	-	-	0.0	-	-	0.0	-	-
07:00 AM - 08:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.6	17.0	NNE	2.0	42.0	NE	0.0	-	-
08:00 AM - 09:00 AM	0.9	162.0	SSE	0.0	-	-	0.0	-	-	4.9	42.0	NE	0.8	7.0	N	0.5	308.0	NW	0.2	-	-

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by



Sarayuth Jittranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523482

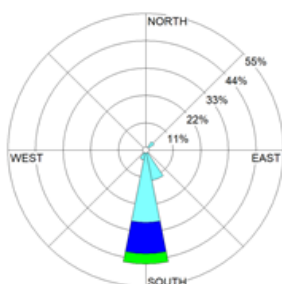
Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

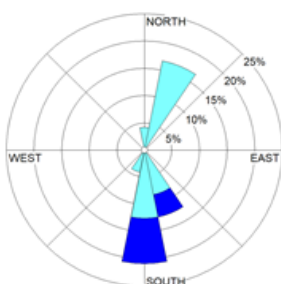
Report Number :3254509-1

Page 2 of 2

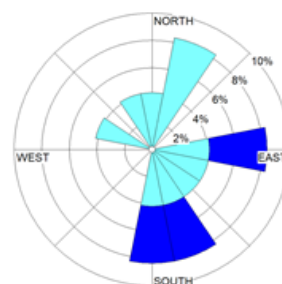
Wind Rose



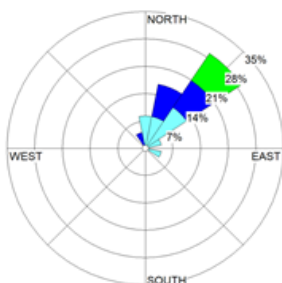
Date : Mar 16-17, 2025



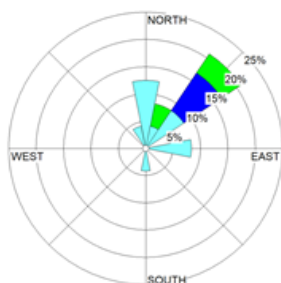
Date : Mar 17-18, 2025



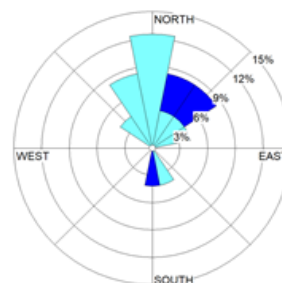
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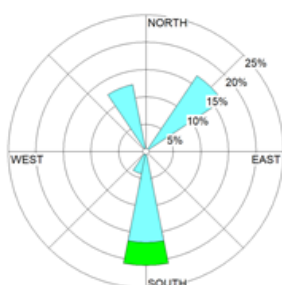
Date : Mar 19-20, 2025



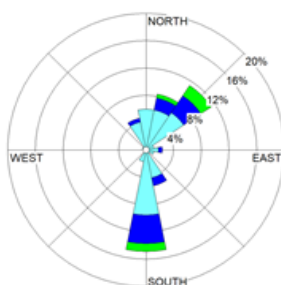
Date : Mar 20-21, 2025



Date : Mar 21-22, 2025



Date : Mar 22-23, 2025



Date : Mar 16-23, 2025

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	3.57
1.7-3.3	11.31
0.3-1.7	44.05
Calms	41.07

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Approved by

Sarayuth Jitranont
Assistant General Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 2523482

Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

Report Number :3254509-1

P/O :

Project Name : Environmental Monitoring

Project Location :

Page 1 of 2

Sample Number 2523482-8 to 14
Parameter Wind Speed / Wind Direction
Location ชุมชนบ้านบ่อน
Sampling Date Mar 16 - Mar 23, 2025
Sampling by Siriwit Ruangsom

Time	Mar 16 - Mar 17, 2025			Mar 17 - Mar 18, 2025			Mar 18 - Mar 19, 2025			Mar 19 - Mar 20, 2025			Mar 20 - Mar 21, 2025			Mar 21 - Mar 22, 2025			Mar 22 - Mar 23, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
10:00 AM - 11:00 AM	3.3	183.0	S	0.5	57.0	ENE	1.6	343.0	NNW	2.9	33.0	NNE	1.7	41.0	NE	2.8	23.0	NNE	1.7	343.0	NNW
11:00 AM - 12:00 PM	2.8	215.0	SW	1.8	60.0	ENE	0.7	86.0	E	0.9	82.0	E	2.2	0.0	N	1.1	31.0	NNE	2.6	357.0	N
12:00 PM - 01:00 PM	3.2	231.0	SW	1.1	205.0	SSW	1.8	200.0	SSW	1.7	37.0	NE	4.5	56.0	NE	0.3	76.0	ENE	0.8	43.0	NE
01:00 PM - 02:00 PM	2.2	219.0	SW	2.7	204.0	SSW	2.4	200.0	SSW	0.5	22.0	NNE	2.2	2.0	N	2.4	238.0	WSW	1.4	339.0	NNW
02:00 PM - 03:00 PM	3.4	167.0	SSE	0.3	275.0	W	0.9	198.0	SSW	3.7	76.0	ENE	1.9	23.0	NNE	0.3	91.0	E	3.4	188.0	S
03:00 PM - 04:00 PM	3.6	224.0	SW	0.0	-	-	2.4	216.0	SW	0.8	69.0	ENE	1.4	72.0	ENE	1.3	215.0	SW	3.6	225.0	SW
04:00 PM - 05:00 PM	2.4	218.0	SW	0.1	-	-	1.9	198.0	SSW	0.6	24.0	NNE	0.8	31.0	NNE	0.7	231.0	SW	0.9	105.0	ESE
05:00 PM - 06:00 PM	1.5	221.0	SW	1.7	161.0	SSE	2.4	251.0	WSW	0.6	24.0	NNE	1.4	72.0	ENE	1.0	194.0	SSW	0.9	168.0	SSE
06:00 PM - 07:00 PM	0.0	-	-	0.4	120.0	ESE	0.0	-	-	0.0	-	-	0.6	39.0	NE	0.1	-	-	0.0	-	-
07:00 PM - 08:00 PM	0.9	133.0	SE	1.5	124.0	SE	1.0	274.0	W	0.2	-	-	0.0	-	-	0.1	-	-	0.0	-	-
08:00 PM - 09:00 PM	0.6	143.0	SE	0.4	177.0	S	0.2	-	-	0.7	34.0	NE	0.2	-	-	0.0	-	-	0.6	268.0	W
09:00 PM - 10:00 PM	0.8	121.0	ESE	0.7	123.0	ESE	0.0	-	-	0.9	17.0	NNE	0.0	-	-	0.4	294.0	WNW	0.5	278.0	W
10:00 PM - 11:00 PM	1.5	126.0	SE	0.0	-	-	0.0	-	-	0.5	347.0	NNW	0.0	-	-	0.0	-	-	0.8	278.0	W
11:00 PM - 12:00 AM	0.1	-	-	0.4	64.0	ENE	0.0	-	-	0.6	13.0	NNE	1.6	20.0	NNE	0.0	-	-	0.8	314.0	NW
12:00 AM - 01:00 AM	0.5	137.0	SE	0.0	-	-	0.2	-	-	1.8	354.0	N	0.0	-	-	1.4	67.0	ENE	0.0	-	-
01:00 AM - 02:00 AM	0.3	138.0	SE	0.1	-	-	0.1	-	-	1.4	358.0	N	0.0	-	-	1.2	27.0	NNE	1.2	314.0	NW
02:00 AM - 03:00 AM	0.4	136.0	SE	0.1	-	-	0.0	-	-	0.8	30.0	NNE	1.1	0.0	N	0.4	20.0	NNE	0.0	-	-
03:00 AM - 04:00 AM	0.3	116.0	ESE	0.0	-	-	0.6	29.0	NNE	0.9	359.0	N	0.5	317.0	NW	0.4	18.0	NNE	0.1	-	-
04:00 AM - 05:00 AM	0.0	-	-	0.0	-	-	0.6	68.0	ENE	2.7	347.0	NNW	1.0	24.0	NNE	1.0	26.0	NNE	0.1	-	-
05:00 AM - 06:00 AM	0.4	63.0	ENE	0.0	-	-	0.6	36.0	NE	1.7	16.0	NNE	1.3	0.0	N	0.7	0.0	N	0.0	-	-
06:00 AM - 07:00 AM	0.0	-	-	0.2	-	-	1.3	88.0	E	0.9	17.0	NNE	1.4	0.0	N	1.5	359.0	N	0.0	-	-
07:00 AM - 08:00 AM	0.7	114.0	ESE	0.4	54.0	NE	2.1	65.0	ENE	3.5	36.0	NE	1.6	23.0	NNE	0.9	69.0	ENE	1.5	300.0	WNW
08:00 AM - 09:00 AM	1.4	75.0	ENE	0.3	88.0	E	2.6	58.0	ENE	1.0	20.0	NNE	1.6	359.0	N	2.3	59.0	ENE	1.2	310.0	NW
09:00 AM - 10:00 AM	0.5	131.0	SE	0.5	77.0	ENE	2.4	93.0	E	2.4	26.0	NNE	2.4	42.0	NE	1.8	0.0	N	0.6	314.0	NW

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jittranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523482

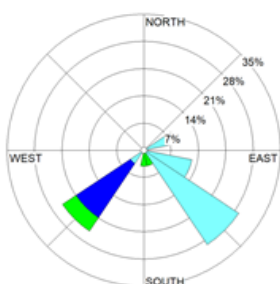
Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

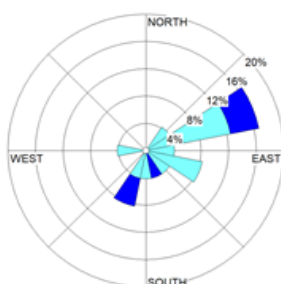
Report Number :3254509-1

Page 2 of 2

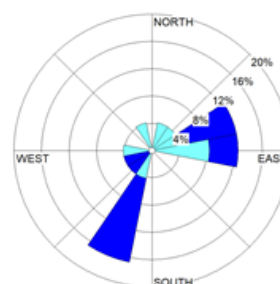
Wind Rose



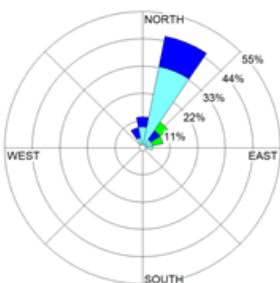
Date : Mar 16-17, 2025



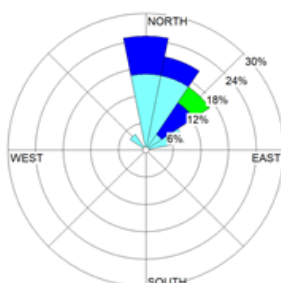
Date : Mar 17-18, 2025



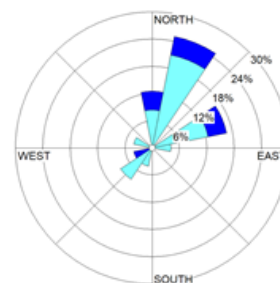
Date : Mar 18-19, 2025



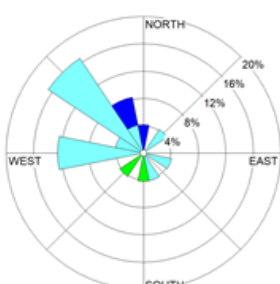
Date : Mar 19-20, 2025



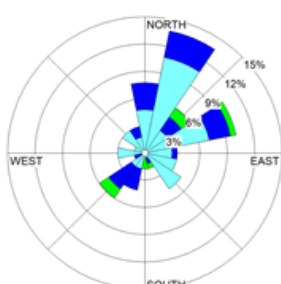
Date : Mar 20-21, 2025



Date : Mar 21-22, 2025



Date : Mar 22-23, 2025



Date : Mar 16-23, 2025

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	4.76
1.7-3.3	19.05
0.3-1.7	50.60
Calms	25.60

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Approved by

Sarayuth Jittrantont
Assistant General Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 2523482

Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

Report Number :3254509-1

P/O :

Project Name : Environmental Monitoring

Project Location :

Page 1 of 2

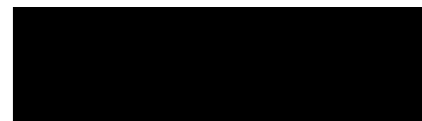
Sample Number 2523482-15 to 21
Parameter Wind Speed / Wind Direction
Location บ้านฉาง
Sampling Date Mar 16 - Mar 23, 2025
Sampling by Siriwit Ruangsom

Time	Mar 16 - Mar 17, 2025			Mar 17 - Mar 18, 2025			Mar 18 - Mar 19, 2025			Mar 19 - Mar 20, 2025			Mar 20 - Mar 21, 2025			Mar 21 - Mar 22, 2025			Mar 22 - Mar 23, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
11:00 AM - 12:00 PM	2.5	171.0	S	3.6	177.0	S	1.4	152.0	SSE	3.8	10.0	N	2.8	68.0	ENE	0.6	38.0	NE	2.2	359.0	N
12:00 PM - 01:00 PM	1.2	185.0	S	2.0	172.0	S	2.0	77.0	ENE	1.9	62.0	ENE	3.7	41.0	NE	1.4	81.0	E	1.4	209.0	SSW
01:00 PM - 02:00 PM	3.6	174.0	S	1.9	126.0	SE	2.0	141.0	SE	1.0	51.0	NE	3.0	26.0	NNE	0.9	2.0	N	0.0	-	-
02:00 PM - 03:00 PM	1.5	149.0	SSE	0.4	315.0	NW	1.2	177.0	S	0.0	-	-	1.4	78.0	ENE	0.7	132.0	SE	3.1	156.0	SSE
03:00 PM - 04:00 PM	1.8	145.0	SE	0.4	331.0	NNW	3.9	251.0	WSW	2.1	49.0	NE	0.6	35.0	NE	1.7	159.0	SSE	2.2	197.0	SSW
04:00 PM - 05:00 PM	1.7	162.0	SSE	0.0	-	-	0.5	195.0	SSW	1.6	41.0	NE	1.5	40.0	NE	1.6	163.0	SSE	3.6	156.0	SSE
05:00 PM - 06:00 PM	0.0	-	-	0.5	80.0	E	1.6	267.0	W	0.7	59.0	ENE	0.3	34.0	NE	0.2	-	-	2.0	130.0	SE
06:00 PM - 07:00 PM	0.0	-	-	1.6	131.0	SE	0.0	-	-	0.0	-	-	0.3	29.0	NNE	0.0	-	-	0.0	-	-
07:00 PM - 08:00 PM	0.0	-	-	0.8	167.0	SSE	0.5	255.0	WSW	1.2	37.0	NE	0.0	-	-	0.6	359.0	N	0.0	-	-
08:00 PM - 09:00 PM	0.0	-	-	0.7	143.0	SE	0.0	-	-	0.5	39.0	NE	0.3	122.0	ESE	0.0	-	-	0.4	348.0	NNW
09:00 PM - 10:00 PM	1.6	132.0	SE	1.2	133.0	SE	0.0	-	-	0.3	9.0	N	0.0	-	-	0.5	359.0	N	0.0	-	-
10:00 PM - 11:00 PM	0.0	-	-	0.0	-	-	0.5	348.0	NNW	0.0	-	-	1.2	92.0	E	0.7	335.0	NNW	0.2	-	-
11:00 PM - 12:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	1.9	52.0	NE	0.0	-	-	0.0	-	-	0.5	352.0	N
12:00 AM - 01:00 AM	1.6	192.0	SSW	0.0	-	-	0.2	-	-	1.9	33.0	NNE	1.0	0.0	N	0.5	27.0	NNE	0.0	-	-
01:00 AM - 02:00 AM	0.9	154.0	SSE	0.2	-	-	0.0	-	-	0.9	359.0	N	1.6	3.0	N	1.3	32.0	NNE	0.6	342.0	NNW
02:00 AM - 03:00 AM	2.0	97.0	E	0.5	120.0	ESE	0.0	-	-	1.2	27.0	NNE	1.8	4.0	N	1.4	358.0	N	0.0	-	-
03:00 AM - 04:00 AM	2.3	130.0	SE	0.6	359.0	N	0.9	0.0	N	2.1	331.0	NNW	2.2	336.0	NNW	1.3	359.0	N	0.3	0.0	N
04:00 AM - 05:00 AM	0.0	-	-	0.8	8.0	N	0.0	-	-	1.4	13.0	NNE	1.3	17.0	NNE	1.6	3.0	N	0.0	-	-
05:00 AM - 06:00 AM	0.0	-	-	0.0	-	-	1.2	7.0	N	2.5	2.0	N	2.7	354.0	N	2.2	25.0	NNE	0.5	0.0	N
06:00 AM - 07:00 AM	0.0	-	-	0.0	-	-	0.0	-	-	1.5	69.0	ENE	0.9	7.0	N	0.9	28.0	NNE	0.0	-	-
07:00 AM - 08:00 AM	2.3	102.0	ESE	0.9	320.0	NW	1.7	14.0	NNE	2.3	8.0	N	2.1	17.0	NNE	1.4	0.0	N	1.1	1.0	N
08:00 AM - 09:00 AM	0.5	118.0	ESE	1.3	2.0	N	1.7	39.0	NE	1.8	41.0	NE	2.9	26.0	NNE	4.1	17.0	NNE	0.9	311.0	NW
09:00 AM - 10:00 AM	1.5	147.0	SSE	0.4	65.0	ENE	0.4	66.0	ENE	3.3	41.0	NE	2.3	30.0	NNE	0.9	47.0	NE	0.2	-	-
10:00 AM - 11:00 AM	0.0	-	-	1.1	88.0	E	0.4	55.0	NE	4.0	43.0	NE	0.4	31.0	NNE	1.3	347.0	NNW	1.2	300.0	WNW

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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Approved by



Sarayuth Jittrantont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523482

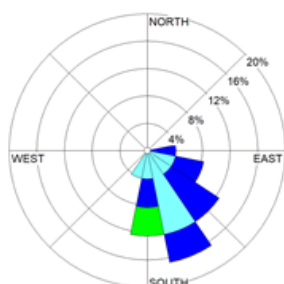
Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

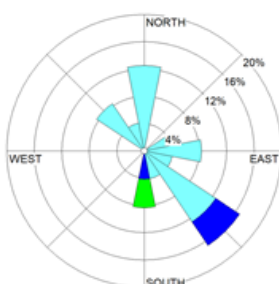
Report Number :3254509-1

Page 2 of 2

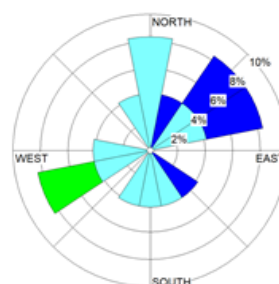
Wind Rose



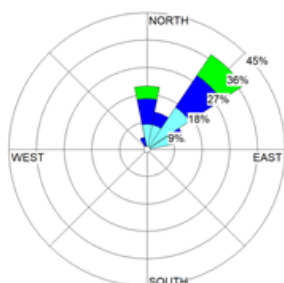
Date : Mar 16-17, 2025



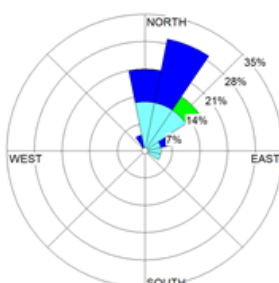
Date : Mar 17-18, 2025



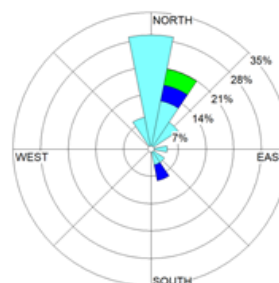
Date : Mar 18-19, 2025



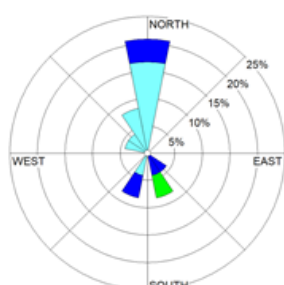
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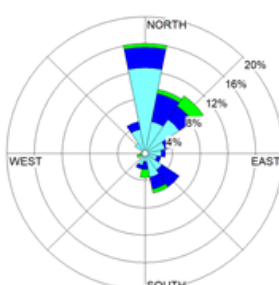
Date : Mar 20-21, 2025



Date : Mar 21-22, 2025



Date : Mar 22-23, 2025



Date : Mar 16-23, 2025

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	5.36
1.7-3.3	20.24
0.3-1.7	47.02
Calms	27.38

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Sarayuth Jittranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 2523482

Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

Report Number :3254509-1

P/O :

Project Name : Environmental Monitoring

Project Location :

Page 1 of 2

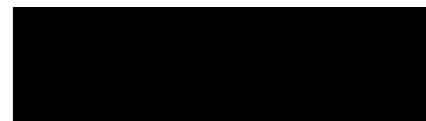
Sample Number 2523482-22 to 28
Parameter Wind Speed / Wind Direction
Location ชุมชนห้วยโป่งใน 2
Sampling Date Mar 16 - Mar 23, 2025
Sampling by Siriwit Ruangsom

Time	Mar 16 - Mar 17, 2025			Mar 17 - Mar 18, 2025			Mar 18 - Mar 19, 2025			Mar 19 - Mar 20, 2025			Mar 20 - Mar 21, 2025			Mar 21 - Mar 22, 2025			Mar 22 - Mar 23, 2025		
	WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)		WS (m/s)	WD (deg)	
12:00 PM - 01:00 PM	1.3	203.0	SSW	1.0	220.0	SW	1.2	195.0	SSW	2.3	19.0	NNE	3.5	8.0	N	2.9	27.0	NNE	1.3	151.0	SSE
01:00 PM - 02:00 PM	1.6	236.0	SW	0.8	251.0	WSW	2.6	246.0	WSW	1.2	41.0	NE	2.7	352.0	N	0.2	-	-	1.7	5.0	N
02:00 PM - 03:00 PM	2.4	239.0	WSW	3.8	187.0	S	1.7	198.0	SSW	2.1	0.0	N	3.3	26.0	NNE	3.8	10.0	N	2.1	246.0	WSW
03:00 PM - 04:00 PM	1.1	240.0	WSW	0.5	281.0	W	2.2	235.0	SW	0.5	11.0	N	1.3	18.0	NNE	0.7	359.0	N	2.2	205.0	SSW
04:00 PM - 05:00 PM	2.8	260.0	W	0.6	113.0	ESE	1.8	171.0	S	1.0	12.0	NNE	1.9	85.0	E	3.1	186.0	S	2.8	119.0	ESE
05:00 PM - 06:00 PM	1.9	233.0	SW	0.3	195.0	SSW	2.6	252.0	WSW	1.7	3.0	N	1.1	13.0	NNE	2.2	199.0	SSW	1.4	137.0	SE
06:00 PM - 07:00 PM	0.4	227.0	SW	0.4	128.0	SE	0.4	212.0	SSW	0.4	14.0	NNE	0.0	-	-	0.7	235.0	SW	1.3	202.0	SSW
07:00 PM - 08:00 PM	0.1	-	-	0.8	163.0	SSE	1.0	193.0	SSW	0.4	2.0	N	0.4	17.0	NNE	0.4	327.0	NNW	0.0	-	-
08:00 PM - 09:00 PM	0.3	214.0	SW	0.8	206.0	SSW	0.0	-	-	1.1	7.0	N	0.2	-	-	0.1	-	-	0.7	234.0	SW
09:00 PM - 10:00 PM	1.6	246.0	WSW	1.0	198.0	SSW	0.0	-	-	0.9	13.0	NNE	0.0	-	-	0.5	6.0	N	0.0	-	-
10:00 PM - 11:00 PM	1.4	116.0	ESE	0.6	177.0	S	0.3	10.0	N	1.2	13.0	NNE	0.7	8.0	N	0.7	1.0	N	0.8	261.0	W
11:00 PM - 12:00 AM	1.0	201.0	SSW	0.0	-	-	0.0	-	-	1.0	359.0	N	0.0	-	-	0.1	-	-	0.0	-	-
12:00 AM - 01:00 AM	0.4	210.0	SSW	0.2	-	-	0.0	-	-	0.2	-	-	0.0	-	-	0.7	2.0	N	0.5	0.0	N
01:00 AM - 02:00 AM	2.2	213.0	SSW	0.0	-	-	1.1	9.0	N	1.6	15.0	NNE	1.0	7.0	N	1.1	6.0	N	0.6	8.0	N
02:00 AM - 03:00 AM	1.7	212.0	SSW	0.0	-	-	0.0	-	-	1.7	12.0	NNE	1.1	7.0	N	1.3	359.0	N	1.2	21.0	NNE
03:00 AM - 04:00 AM	1.5	106.0	ESE	0.5	0.0	N	0.0	-	-	2.8	36.0	NE	1.5	5.0	N	1.3	10.0	N	2.2	6.0	N
04:00 AM - 05:00 AM	0.3	166.0	SSE	0.1	-	-	0.2	-	-	1.6	17.0	NNE	1.1	3.0	N	2.0	359.0	N	0.0	-	-
05:00 AM - 06:00 AM	0.0	-	-	0.5	3.0	N	0.1	-	-	1.0	14.0	NNE	2.7	0.0	N	1.5	4.0	N	0.3	5.0	N
06:00 AM - 07:00 AM	0.7	359.0	N	0.5	310.0	NW	1.1	0.0	N	1.3	7.0	N	2.7	1.0	N	1.1	359.0	N	0.5	5.0	N
07:00 AM - 08:00 AM	0.2	-	-	1.0	0.0	N	0.6	3.0	N	1.4	11.0	N	3.0	359.0	N	1.3	359.0	N	0.0	-	-
08:00 AM - 09:00 AM	0.9	14.0	NNE	0.3	15.0	NNE	0.8	50.0	NE	2.0	27.0	NNE	1.3	21.0	NNE	1.2	349.0	N	1.0	1.0	N
09:00 AM - 10:00 AM	0.9	326.0	NW	0.0	-	-	0.2	-	-	3.1	23.0	NNE	2.5	10.0	N	1.9	15.0	NNE	1.5	0.0	N
10:00 AM - 11:00 AM	1.7	196.0	SSW	0.6	352.0	N	2.3	13.0	NNE	3.4	38.0	NE	2.0	0.0	N	2.1	7.0	N	1.2	340.0	NNW
11:00 AM - 12:00 PM	1.0	240.0	WSW	0.1	-	-	2.8	351.0	N	2.3	19.0	NNE	2.3	349.0	N	1.2	7.0	N	2.2	355.0	N

Reference Method : Cup Anemometer & Anodized Aluminium Vane Method

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Approved by



Sarayuth Jittranont
Assistant General Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2523482

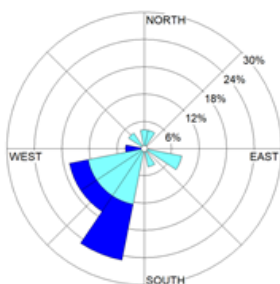
Date Received :Mar 25, 2025

Date Reported :Apr 01, 2025

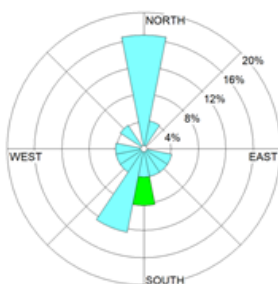
Report Number :3254509-1

Page 2 of 2

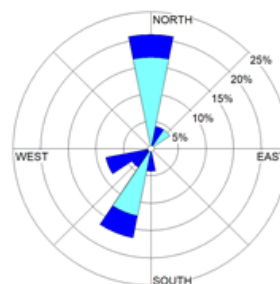
Wind Rose



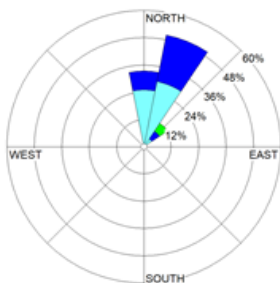
Date : Mar 16-17, 2025



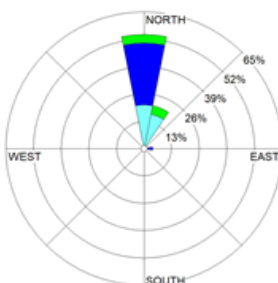
Date : Mar 17-18, 2025



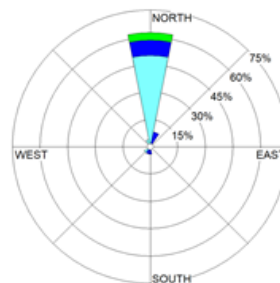
Date : Mar 18-19, 2025



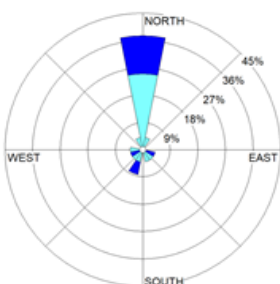
Date : Mar 19-20, 2025



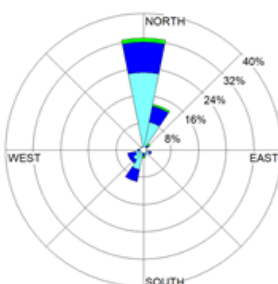
Date : Mar 20-21, 2025



Date : Mar 21-22, 2025



Date : Mar 22-23, 2025



Date : Mar 16-23, 2025

WS (m/s)	%
≥ 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	2.98
1.7-3.3	24.41
0.3-1.7	52.98
Calms	19.64

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sarayuth Jitranont
Assistant General Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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ใบรับรองผลการตรวจวัดระดับเสียงโดยทั่วไป



Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240198-1

Page 1 of 1

Sample Number 254008-1
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 10 - Feb 11, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	48.1	75.5	42.4
11:00 AM - 12:00 PM	49.3	71.5	43.5
12:00 PM - 01:00 PM	46.7	70.0	41.3
01:00 PM - 02:00 PM	48.9	75.0	41.9
02:00 PM - 03:00 PM	49.4	68.9	43.4
03:00 PM - 04:00 PM	50.2	77.1	43.1
04:00 PM - 05:00 PM	48.3	71.7	42.6
05:00 PM - 06:00 PM	50.4	75.4	44.3
06:00 PM - 07:00 PM	49.5	73.1	44.3
07:00 PM - 08:00 PM	47.1	61.1	43.8
08:00 PM - 09:00 PM	46.2	62.0	43.0
09:00 PM - 10:00 PM	46.5	63.7	44.1
10:00 PM - 11:00 PM	46.7	66.7	43.5
11:00 PM - 12:00 AM	45.6	59.2	43.7
12:00 AM - 01:00 AM	45.5	62.0	44.0
01:00 AM - 02:00 AM	46.5	63.5	45.1
02:00 AM - 03:00 AM	47.4	63.5	46.3
03:00 AM - 04:00 AM	47.5	55.7	46.5
04:00 AM - 05:00 AM	46.7	64.4	44.9
05:00 AM - 06:00 AM	49.6	62.8	47.9
06:00 AM - 07:00 AM	52.7	71.4	49.7
07:00 AM - 08:00 AM	51.6	69.8	48.2
08:00 AM - 09:00 AM	49.1	71.9	45.7
09:00 AM - 10:00 AM	51.2	79.2	43.9

Leq Average 24 hrs. (dB(A)) 48.8
Lmax (dB(A)) 79.2
L90 (dB(A)) 43.9
Ldn (dB(A)) 54.8

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240199-1

Page 1 of 1

Sample Number 254008-2
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 11 - Feb 12, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	49.0	76.1	41.9
11:00 AM - 12:00 PM	46.3	65.7	39.6
12:00 PM - 01:00 PM	47.8	70.3	40.0
01:00 PM - 02:00 PM	47.7	66.9	42.1
02:00 PM - 03:00 PM	52.3	68.5	48.5
03:00 PM - 04:00 PM	52.1	73.4	44.6
04:00 PM - 05:00 PM	49.7	68.2	44.2
05:00 PM - 06:00 PM	49.0	71.5	44.0
06:00 PM - 07:00 PM	47.7	64.2	44.3
07:00 PM - 08:00 PM	47.4	63.5	44.7
08:00 PM - 09:00 PM	48.6	68.1	45.4
09:00 PM - 10:00 PM	47.5	66.6	44.6
10:00 PM - 11:00 PM	48.1	66.2	44.8
11:00 PM - 12:00 AM	47.4	66.3	46.0
12:00 AM - 01:00 AM	47.2	59.2	45.5
01:00 AM - 02:00 AM	48.7	62.4	47.7
02:00 AM - 03:00 AM	47.8	62.2	46.4
03:00 AM - 04:00 AM	46.7	58.8	45.4
04:00 AM - 05:00 AM	46.8	62.7	44.8
05:00 AM - 06:00 AM	48.0	63.2	45.4
06:00 AM - 07:00 AM	51.1	70.4	47.9
07:00 AM - 08:00 AM	53.9	72.7	48.4
08:00 AM - 09:00 AM	49.8	70.7	43.5
09:00 AM - 10:00 AM	46.9	76.8	41.3

Leq Average 24 hrs. (dB(A)) 49.1
Lmax (dB(A)) 76.8
L90 (dB(A)) 44.7
Ldn (dB(A)) 54.8

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240200-1

Page 1 of 1

Sample Number 254008-3
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 12 - Feb 13, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	46.1	71.3	42.0
11:00 AM - 12:00 PM	45.8	67.3	39.8
12:00 PM - 01:00 PM	45.9	64.1	40.1
01:00 PM - 02:00 PM	46.8	72.3	40.4
02:00 PM - 03:00 PM	46.4	66.9	40.6
03:00 PM - 04:00 PM	48.2	70.6	41.4
04:00 PM - 05:00 PM	47.9	69.3	42.4
05:00 PM - 06:00 PM	49.3	74.0	45.0
06:00 PM - 07:00 PM	49.3	72.3	44.9
07:00 PM - 08:00 PM	46.8	66.3	43.7
08:00 PM - 09:00 PM	46.4	59.9	43.3
09:00 PM - 10:00 PM	45.3	64.8	41.7
10:00 PM - 11:00 PM	45.9	67.8	43.3
11:00 PM - 12:00 AM	47.9	62.4	45.0
12:00 AM - 01:00 AM	49.6	59.0	46.5
01:00 AM - 02:00 AM	49.4	56.7	47.1
02:00 AM - 03:00 AM	50.0	57.9	48.1
03:00 AM - 04:00 AM	48.9	60.8	46.6
04:00 AM - 05:00 AM	47.2	59.2	45.5
05:00 AM - 06:00 AM	47.7	60.5	45.6
06:00 AM - 07:00 AM	52.3	73.5	48.8
07:00 AM - 08:00 AM	53.6	79.0	49.6
08:00 AM - 09:00 AM	50.2	75.3	44.8
09:00 AM - 10:00 AM	50.3	74.9	43.8

Leq Average 24 hrs. (dB(A)) 48.8
Lmax (dB(A)) 79.0
L90 (dB(A)) 43.8
Ldn (dB(A)) 55.5

Standard (dB(A)) 70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management



Chonticha Subongkoch
Scientist (3)

Approved by



Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240201-1

Page 1 of 1

Sample Number 254008-4
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 13 - Feb 14, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	46.3	71.7	39.7
11:00 AM - 12:00 PM	47.6	76.8	39.2
12:00 PM - 01:00 PM	48.1	80.8	40.7
01:00 PM - 02:00 PM	52.3	74.7	44.6
02:00 PM - 03:00 PM	47.4	72.8	42.6
03:00 PM - 04:00 PM	51.1	71.8	43.4
04:00 PM - 05:00 PM	48.5	71.7	43.0
05:00 PM - 06:00 PM	48.8	68.4	44.1
06:00 PM - 07:00 PM	47.5	63.9	44.7
07:00 PM - 08:00 PM	47.7	58.5	45.4
08:00 PM - 09:00 PM	47.3	62.2	44.8
09:00 PM - 10:00 PM	47.9	67.7	44.6
10:00 PM - 11:00 PM	47.3	57.8	44.8
11:00 PM - 12:00 AM	47.0	61.4	44.4
12:00 AM - 01:00 AM	45.7	59.2	42.1
01:00 AM - 02:00 AM	43.9	60.6	40.4
02:00 AM - 03:00 AM	45.8	71.8	40.3
03:00 AM - 04:00 AM	42.1	61.2	39.6
04:00 AM - 05:00 AM	43.3	59.4	40.2
05:00 AM - 06:00 AM	47.3	68.9	42.8
06:00 AM - 07:00 AM	50.5	70.7	47.0
07:00 AM - 08:00 AM	52.0	70.8	47.6
08:00 AM - 09:00 AM	48.7	74.7	43.5
09:00 AM - 10:00 AM	48.1	63.1	45.6

Leq Average 24 hrs. (dB(A)) 48.2
Lmax (dB(A)) 80.8
L90 (dB(A)) 43.4
Ldn (dB(A)) 53.4
Standard (dB(A)) 70

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025

Date Reported : Feb 21, 2025

Report Number: 3240202-1

Page 1 of 1

Sample Number 254008-5
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 14 - Feb 15, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	47.5	75.6	41.6
11:00 AM - 12:00 PM	48.9	71.1	43.2
12:00 PM - 01:00 PM	47.1	66.4	42.2
01:00 PM - 02:00 PM	48.7	69.8	44.4
02:00 PM - 03:00 PM	50.1	69.9	45.6
03:00 PM - 04:00 PM	46.7	67.1	42.1
04:00 PM - 05:00 PM	48.6	68.3	42.6
05:00 PM - 06:00 PM	49.7	71.1	43.9
06:00 PM - 07:00 PM	48.0	66.1	43.7
07:00 PM - 08:00 PM	47.2	65.1	44.1
08:00 PM - 09:00 PM	45.7	64.2	42.8
09:00 PM - 10:00 PM	45.7	62.6	42.9
10:00 PM - 11:00 PM	45.4	61.6	42.9
11:00 PM - 12:00 AM	45.6	70.5	42.0
12:00 AM - 01:00 AM	44.0	58.5	42.5
01:00 AM - 02:00 AM	43.7	56.8	42.4
02:00 AM - 03:00 AM	43.3	60.8	41.6
03:00 AM - 04:00 AM	44.0	55.5	43.0
04:00 AM - 05:00 AM	44.4	59.2	42.9
05:00 AM - 06:00 AM	45.3	62.4	42.9
06:00 AM - 07:00 AM	49.9	70.7	46.2
07:00 AM - 08:00 AM	50.5	68.9	46.2
08:00 AM - 09:00 AM	48.8	68.5	44.1
09:00 AM - 10:00 AM	46.5	68.2	41.0

Leq Average 24 hrs. (dB(A)) 47.4
Lmax (dB(A)) 75.6
L90 (dB(A)) 42.9
Ldn (dB(A)) 52.5

Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240203-1

Page 1 of 1

Sample Number 254008-6
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 15 - Feb 16, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	44.9	69.6	40.1
11:00 AM - 12:00 PM	45.7	66.2	40.1
12:00 PM - 01:00 PM	45.0	67.0	39.2
01:00 PM - 02:00 PM	46.6	72.0	40.5
02:00 PM - 03:00 PM	46.6	69.7	41.0
03:00 PM - 04:00 PM	48.8	73.0	42.1
04:00 PM - 05:00 PM	49.0	69.0	43.0
05:00 PM - 06:00 PM	50.0	75.2	43.4
06:00 PM - 07:00 PM	47.1	67.6	43.5
07:00 PM - 08:00 PM	47.7	64.0	44.9
08:00 PM - 09:00 PM	46.3	61.4	43.6
09:00 PM - 10:00 PM	47.0	61.0	44.4
10:00 PM - 11:00 PM	46.0	61.0	43.3
11:00 PM - 12:00 AM	45.2	57.0	43.4
12:00 AM - 01:00 AM	45.3	62.4	43.3
01:00 AM - 02:00 AM	44.7	62.7	42.4
02:00 AM - 03:00 AM	44.2	61.6	42.6
03:00 AM - 04:00 AM	42.5	54.3	40.7
04:00 AM - 05:00 AM	43.2	57.5	40.9
05:00 AM - 06:00 AM	44.8	62.1	41.4
06:00 AM - 07:00 AM	50.0	72.7	45.0
07:00 AM - 08:00 AM	49.9	66.6	46.7
08:00 AM - 09:00 AM	49.7	72.9	43.9
09:00 AM - 10:00 AM	45.7	71.5	42.0

Leq Average 24 hrs. (dB(A)) 47.0
Lmax (dB(A)) 75.2
L90 (dB(A)) 42.6
Ldn (dB(A)) 52.4

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240204-1

Page 1 of 1

Sample Number 254008-7
Parameter Noise (Leq 24 hrs.)
Location ชุมชนบ้านมน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 140921)
Measurement Date Feb 16 - Feb 17, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 1120936

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	48.3	71.3	40.3
11:00 AM - 12:00 PM	46.4	72.0	39.1
12:00 PM - 01:00 PM	47.4	71.6	39.7
01:00 PM - 02:00 PM	47.4	67.3	40.5
02:00 PM - 03:00 PM	47.2	69.8	41.4
03:00 PM - 04:00 PM	48.4	72.5	42.4
04:00 PM - 05:00 PM	47.8	75.8	42.1
05:00 PM - 06:00 PM	49.5	73.9	43.8
06:00 PM - 07:00 PM	48.0	74.2	43.6
07:00 PM - 08:00 PM	47.3	71.0	44.0
08:00 PM - 09:00 PM	47.1	64.0	44.1
09:00 PM - 10:00 PM	46.0	72.0	42.5
10:00 PM - 11:00 PM	45.2	65.7	42.1
11:00 PM - 12:00 AM	45.5	61.2	42.1
12:00 AM - 01:00 AM	47.4	60.8	44.5
01:00 AM - 02:00 AM	47.3	56.7	45.0
02:00 AM - 03:00 AM	45.2	59.8	42.7
03:00 AM - 04:00 AM	42.6	55.3	40.2
04:00 AM - 05:00 AM	42.3	54.5	40.6
05:00 AM - 06:00 AM	43.4	63.0	41.1
06:00 AM - 07:00 AM	48.3	69.4	44.8
07:00 AM - 08:00 AM	49.9	69.1	45.8
08:00 AM - 09:00 AM	50.0	65.9	43.8
09:00 AM - 10:00 AM	51.8	71.7	42.2

Leq Average 24 hrs. (dB(A)) 47.6
Lmax (dB(A)) 75.8
L90 (dB(A)) 42.2
Ldn (dB(A)) 52.6

Standard (dB(A))

70

115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240205-1

Page 1 of 1

Sample Number 254008-8
Parameter Noise (Leq 24 hrs.)
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 10 - Feb 11, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	64.6	76.6	63.5
11:00 AM - 12:00 PM	64.7	84.5	63.4
12:00 PM - 01:00 PM	62.5	78.8	61.5
01:00 PM - 02:00 PM	67.3	76.7	66.2
02:00 PM - 03:00 PM	65.0	76.2	62.9
03:00 PM - 04:00 PM	66.2	74.8	65.1
04:00 PM - 05:00 PM	55.3	82.2	49.1
05:00 PM - 06:00 PM	54.9	80.5	49.7
06:00 PM - 07:00 PM	55.9	85.5	51.0
07:00 PM - 08:00 PM	52.1	72.0	51.0
08:00 PM - 09:00 PM	52.6	78.9	50.9
09:00 PM - 10:00 PM	51.8	69.4	51.1
10:00 PM - 11:00 PM	52.5	65.6	51.9
11:00 PM - 12:00 AM	53.1	80.9	51.8
12:00 AM - 01:00 AM	53.3	57.4	52.5
01:00 AM - 02:00 AM	53.4	66.3	52.7
02:00 AM - 03:00 AM	53.8	72.8	53.0
03:00 AM - 04:00 AM	54.0	71.0	53.3
04:00 AM - 05:00 AM	54.4	71.7	53.4
05:00 AM - 06:00 AM	55.1	67.2	54.0
06:00 AM - 07:00 AM	57.8	80.7	55.0
07:00 AM - 08:00 AM	57.4	81.6	53.8
08:00 AM - 09:00 AM	53.8	81.5	52.0
09:00 AM - 10:00 AM	53.4	73.0	51.5

Leq Average 24 hrs. (dB(A)) 60.2
Lmax (dB(A)) 85.5
L90 (dB(A)) 52.7
Ldn (dB(A)) 63.0

Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025

Date Reported : Feb 21, 2025

Report Number: 3240206-1

Page 1 of 1

Sample Number 254008-9
Parameter Noise (Leq 24 hrs.)
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 11 - Feb 12, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	54.0	78.0	50.2
11:00 AM - 12:00 PM	53.1	81.4	48.7
12:00 PM - 01:00 PM	53.4	84.5	48.1
01:00 PM - 02:00 PM	51.7	78.1	48.6
02:00 PM - 03:00 PM	51.8	77.1	48.3
03:00 PM - 04:00 PM	51.7	77.9	47.9
04:00 PM - 05:00 PM	53.5	76.7	49.1
05:00 PM - 06:00 PM	53.8	78.4	48.8
06:00 PM - 07:00 PM	56.3	81.5	51.0
07:00 PM - 08:00 PM	53.1	76.9	51.1
08:00 PM - 09:00 PM	54.1	83.7	51.6
09:00 PM - 10:00 PM	52.3	77.4	50.9
10:00 PM - 11:00 PM	51.9	61.7	51.2
11:00 PM - 12:00 AM	53.3	61.7	52.5
12:00 AM - 01:00 AM	53.0	63.4	52.3
01:00 AM - 02:00 AM	53.0	66.3	52.2
02:00 AM - 03:00 AM	53.0	60.8	52.3
03:00 AM - 04:00 AM	53.9	60.5	53.2
04:00 AM - 05:00 AM	53.5	58.3	52.9
05:00 AM - 06:00 AM	52.9	72.0	51.9
06:00 AM - 07:00 AM	57.3	85.3	54.0
07:00 AM - 08:00 AM	56.5	80.9	53.9
08:00 AM - 09:00 AM	52.1	71.1	50.3
09:00 AM - 10:00 AM	53.1	79.1	50.2

Leq Average 24 hrs. (dB(A)) 53.7
Lmax (dB(A)) 85.3
L90 (dB(A)) 51.0
Ldn (dB(A)) 60.2

Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025

Date Reported : Feb 21, 2025

Report Number: 3240207-1

Page 1 of 1

Sample Number : 254008-10
Parameter : Noise (Leq 24 hrs.)
Location : ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date : Feb 12 - Feb 13, 2025
Measurement by : Panuwat Wangbong
Sound Level meter : Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	54.2	79.5	50.5
11:00 AM - 12:00 PM	51.6	73.9	48.8
12:00 PM - 01:00 PM	50.2	75.4	47.4
01:00 PM - 02:00 PM	51.1	79.8	46.9
02:00 PM - 03:00 PM	61.8	81.1	59.2
03:00 PM - 04:00 PM	55.6	84.6	52.2
04:00 PM - 05:00 PM	53.1	81.6	50.4
05:00 PM - 06:00 PM	55.9	84.9	51.6
06:00 PM - 07:00 PM	55.8	79.9	53.1
07:00 PM - 08:00 PM	54.2	77.8	53.1
08:00 PM - 09:00 PM	53.8	77.7	52.6
09:00 PM - 10:00 PM	53.9	80.1	52.5
10:00 PM - 11:00 PM	53.3	64.5	52.7
11:00 PM - 12:00 AM	53.8	72.6	53.2
12:00 AM - 01:00 AM	53.5	78.4	52.8
01:00 AM - 02:00 AM	53.5	59.7	53.1
02:00 AM - 03:00 AM	54.4	56.9	54.0
03:00 AM - 04:00 AM	54.7	58.8	54.3
04:00 AM - 05:00 AM	54.2	57.5	53.9
05:00 AM - 06:00 AM	54.7	68.5	54.0
06:00 AM - 07:00 AM	57.2	85.4	54.8
07:00 AM - 08:00 AM	57.3	84.0	54.7
08:00 AM - 09:00 AM	55.6	80.9	53.4
09:00 AM - 10:00 AM	55.8	79.9	54.1

Leq Average 24 hrs. (dB(A)) : 55.3
Lmax (dB(A)) : 85.4
L90 (dB(A)) : 53.1
Ldn (dB(A)) : 61.1

Standard (dB(A)) : 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240208-1

Page 1 of 1

Sample Number 254008-11
Parameter Noise (Leq 24 hrs.)
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 13 - Feb 14, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	53.1	74.7	52.0
11:00 AM - 12:00 PM	53.1	79.0	51.7
12:00 PM - 01:00 PM	55.9	83.2	51.6
01:00 PM - 02:00 PM	54.2	78.4	51.7
02:00 PM - 03:00 PM	56.2	77.1	52.2
03:00 PM - 04:00 PM	53.8	80.0	51.7
04:00 PM - 05:00 PM	57.2	90.2	51.7
05:00 PM - 06:00 PM	56.1	82.7	51.7
06:00 PM - 07:00 PM	55.6	81.5	52.7
07:00 PM - 08:00 PM	56.5	84.5	53.0
08:00 PM - 09:00 PM	54.1	73.1	53.4
09:00 PM - 10:00 PM	54.1	77.2	53.1
10:00 PM - 11:00 PM	53.8	56.5	53.4
11:00 PM - 12:00 AM	53.8	76.1	53.2
12:00 AM - 01:00 AM	55.1	83.9	53.3
01:00 AM - 02:00 AM	53.2	62.6	52.7
02:00 AM - 03:00 AM	52.9	60.5	52.5
03:00 AM - 04:00 AM	52.9	64.1	52.5
04:00 AM - 05:00 AM	53.0	70.0	52.4
05:00 AM - 06:00 AM	53.1	61.6	52.6
06:00 AM - 07:00 AM	54.9	76.5	53.1
07:00 AM - 08:00 AM	58.6	85.8	53.1
08:00 AM - 09:00 AM	55.6	81.3	52.5
09:00 AM - 10:00 AM	54.8	83.7	52.5

Leq Average 24 hrs. (dB(A)) 54.9
Lmax (dB(A)) 90.2
L90 (dB(A)) 52.5
Ldn (dB(A)) 60.4

Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240209-1

Page 1 of 1

Sample Number 254008-12
Parameter Noise (Leq 24 hrs.)
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 14 - Feb 15, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	54.1	79.6	51.9
11:00 AM - 12:00 PM	54.9	82.2	51.9
12:00 PM - 01:00 PM	54.9	84.5	51.9
01:00 PM - 02:00 PM	53.6	73.3	51.7
02:00 PM - 03:00 PM	53.5	79.6	51.7
03:00 PM - 04:00 PM	53.5	77.8	51.5
04:00 PM - 05:00 PM	53.4	79.5	51.8
05:00 PM - 06:00 PM	56.4	85.0	52.0
06:00 PM - 07:00 PM	57.0	81.5	52.6
07:00 PM - 08:00 PM	54.5	75.8	52.6
08:00 PM - 09:00 PM	54.0	77.1	52.9
09:00 PM - 10:00 PM	54.2	78.1	53.1
10:00 PM - 11:00 PM	53.4	67.2	52.9
11:00 PM - 12:00 AM	53.8	64.2	53.1
12:00 AM - 01:00 AM	53.4	66.1	53.0
01:00 AM - 02:00 AM	54.2	67.1	53.3
02:00 AM - 03:00 AM	53.8	58.6	53.5
03:00 AM - 04:00 AM	53.7	57.8	53.4
04:00 AM - 05:00 AM	53.6	56.0	53.2
05:00 AM - 06:00 AM	54.3	79.7	53.4
06:00 AM - 07:00 AM	54.6	71.4	53.8
07:00 AM - 08:00 AM	58.4	86.9	55.0
08:00 AM - 09:00 AM	56.6	78.1	54.4
09:00 AM - 10:00 AM	56.1	81.3	53.4

Leq Average 24 hrs. (dB(A)) 54.8
Lmax (dB(A)) 86.9
L90 (dB(A)) 52.9
Ldn (dB(A)) 60.5

Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025
Date Reported : Feb 21, 2025
Report Number: 3240210-1

Page 1 of 1

Sample Number 254008-13
Parameter Noise (Leq 24 hrs.)
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 15 - Feb 16, 2025
Measurement by Panuwat Wangbong
Sound Level meter Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	54.1	87.8	52.0
11:00 AM - 12:00 PM	54.6	85.5	51.6
12:00 PM - 01:00 PM	54.3	83.7	51.5
01:00 PM - 02:00 PM	53.8	79.1	51.6
02:00 PM - 03:00 PM	53.8	80.6	51.6
03:00 PM - 04:00 PM	56.2	86.0	51.8
04:00 PM - 05:00 PM	54.1	81.5	51.8
05:00 PM - 06:00 PM	54.8	82.9	52.1
06:00 PM - 07:00 PM	55.6	79.2	52.5
07:00 PM - 08:00 PM	53.9	83.6	50.2
08:00 PM - 09:00 PM	52.6	75.4	50.8
09:00 PM - 10:00 PM	53.1	78.1	51.2
10:00 PM - 11:00 PM	51.5	62.8	50.7
11:00 PM - 12:00 AM	51.2	68.2	50.5
12:00 AM - 01:00 AM	51.9	73.8	50.3
01:00 AM - 02:00 AM	50.6	61.1	49.7
02:00 AM - 03:00 AM	50.9	54.6	50.3
03:00 AM - 04:00 AM	50.5	67.7	49.6
04:00 AM - 05:00 AM	50.7	73.0	49.8
05:00 AM - 06:00 AM	54.4	82.5	50.0
06:00 AM - 07:00 AM	58.2	84.9	51.0
07:00 AM - 08:00 AM	56.4	85.7	51.1
08:00 AM - 09:00 AM	54.1	84.7	49.4
09:00 AM - 10:00 AM	53.0	77.8	50.9

Leq Average 24 hrs. (dB(A)) 54.0
Lmax (dB(A)) 87.8
L90 (dB(A)) 50.9
Ldn (dB(A)) 59.7

Standard (dB(A)) 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head



Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 254008

Date Received : Feb 17, 2025

Date Reported : Feb 21, 2025

Report Number: 3240211-1

Page 1 of 1

Sample Number : 254008-14
Parameter : Noise (Leq 24 hrs.)
Location : รีมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date : Feb 16 - Feb 17, 2025
Measurement by : Panuwat Wangbong
Sound Level meter : Serial No. 920831

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	51.6	83.8	48.5
11:00 AM - 12:00 PM	51.8	81.3	47.8
12:00 PM - 01:00 PM	51.2	79.8	47.2
01:00 PM - 02:00 PM	51.6	82.6	47.7
02:00 PM - 03:00 PM	52.4	81.2	48.1
03:00 PM - 04:00 PM	51.8	80.0	48.0
04:00 PM - 05:00 PM	54.7	86.8	48.6
05:00 PM - 06:00 PM	53.1	81.1	47.6
06:00 PM - 07:00 PM	58.8	89.3	52.1
07:00 PM - 08:00 PM	52.4	78.9	49.3
08:00 PM - 09:00 PM	52.9	82.7	49.4
09:00 PM - 10:00 PM	50.2	72.5	49.0
10:00 PM - 11:00 PM	50.0	64.4	49.1
11:00 PM - 12:00 AM	50.1	73.6	49.1
12:00 AM - 01:00 AM	50.9	78.4	49.4
01:00 AM - 02:00 AM	50.0	60.9	49.3
02:00 AM - 03:00 AM	49.1	56.6	48.4
03:00 AM - 04:00 AM	49.1	55.6	48.4
04:00 AM - 05:00 AM	49.7	74.4	48.2
05:00 AM - 06:00 AM	50.1	74.8	48.2
06:00 AM - 07:00 AM	54.1	79.0	49.6
07:00 AM - 08:00 AM	57.4	85.7	49.9
08:00 AM - 09:00 AM	53.7	79.8	49.4
09:00 AM - 10:00 AM	53.1	82.5	49.5

Leq Average 24 hrs. (dB(A)) : 52.9
Lmax (dB(A)) : 89.3
L90 (dB(A)) : 48.6
Ldn (dB(A)) : 57.7

Standard (dB(A)) : 70 115

Reference Method : ISO1996-1 and 1996-2

Standard : 1. ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (พ.ศ. 2540) เรื่องกำหนดมาตรฐานระดับเสียงโดยทั่วไป
2. ประกาศกระทรวงอุตสาหกรรม เรื่องกำหนดค่าระดับเสียงการรบกวน และระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548

Remark : The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235003-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-8
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	64.6	64.1	55.0	-	63.0	-8.0
11:00 AM - 12:00 PM	64.7	64.4	52.9	-	63.3	-10.4
12:00 PM - 01:00 PM	62.5	61.8	54.2	-	60.8	-6.6
01:00 PM - 02:00 PM	67.3	66.6	59.0	-	65.7	-6.7
02:00 PM - 03:00 PM	65.0	65.3	n/a	-	64.4	-
03:00 PM - 04:00 PM	66.2	65.8	55.6	-	64.8	-9.2
04:00 PM - 05:00 PM	55.3	54.7	46.4	-	48.8	-2.4
05:00 PM - 06:00 PM	54.9	54.5	44.3	-	49.3	-5.0
06:00 PM - 07:00 PM	55.9	55.2	47.6	-	50.4	-2.8
07:00 PM - 08:00 PM	52.1	51.8	40.3	-	50.7	-10.4
08:00 PM - 09:00 PM	52.6	52.2	42.0	-	50.5	-8.5
09:00 PM - 10:00 PM	51.8	51.6	38.3	-	50.9	-12.6
10:00 PM - 10:05 PM	52.6	52.4	-	42.1	51.9	-9.8
10:05 PM - 10:10 PM	52.4	52.2	-	41.9	51.6	-9.7
10:10 PM - 10:15 PM	52.3	51.7	-	46.4	51.2	-4.8
10:15 PM - 10:20 PM	52.8	52.2	-	46.9	51.7	-4.8
10:20 PM - 10:25 PM	53.4	52.8	-	47.5	51.7	-4.2
10:25 PM - 10:30 PM	52.2	51.6	-	46.3	51.1	-4.8
10:30 PM - 10:35 PM	52.2	51.6	-	46.3	51.0	-4.7
10:35 PM - 10:40 PM	52.4	51.8	-	46.5	51.2	-4.7
10:40 PM - 10:45 PM	52.7	52.1	-	46.8	51.2	-4.4
10:45 PM - 10:50 PM	52.6	52.0	-	46.7	51.3	-4.6
10:50 PM - 10:55 PM	52.3	51.7	-	46.4	51.2	-4.8
10:55 PM - 11:00 PM	52.5	51.9	-	46.6	51.2	-4.6
11:00 PM - 11:05 PM	52.5	51.9	-	46.6	51.3	-4.7
11:05 PM - 11:10 PM	52.2	51.6	-	46.3	51.0	-4.7
11:10 PM - 11:15 PM	52.7	51.8	-	48.4	51.1	-2.7
11:15 PM - 11:20 PM	52.8	51.9	-	48.5	51.1	-2.6
11:20 PM - 11:25 PM	52.3	51.4	-	48.0	50.8	-2.8
11:25 PM - 11:30 PM	52.5	51.6	-	48.2	50.9	-2.7
11:30 PM - 11:35 PM	52.7	51.8	-	48.4	50.9	-2.5
11:35 PM - 11:40 PM	52.7	51.8	-	48.4	51.2	-2.8
11:40 PM - 11:45 PM	52.1	51.2	-	47.8	50.6	-2.8
11:45 PM - 11:50 PM	52.3	51.4	-	48.0	50.8	-2.8
11:50 PM - 11:55 PM	57.0	56.1	-	52.7	50.8	1.9
11:55 PM - 12:00 AM	52.3	51.4	-	48.0	50.8	-2.8
12:00 AM - 12:05 AM	52.2	51.3	-	47.9	50.6	-2.7
12:05 AM - 12:10 AM	52.4	51.5	-	48.1	50.6	-2.5
12:10 AM - 12:15 AM	53.2	52.3	-	48.9	51.6	-2.7
12:15 AM - 12:20 AM	53.4	52.5	-	49.1	51.6	-2.5

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235003-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-8
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	53.1	52.8	-	44.3	52.1	-7.8
12:25 AM - 12:30 AM	53.6	53.3	-	44.8	52.4	-7.6
12:30 AM - 12:35 AM	53.6	53.3	-	44.8	52.4	-7.6
12:35 AM - 12:40 AM	54.0	53.7	-	45.2	52.9	-7.7
12:40 AM - 12:45 AM	53.7	53.4	-	44.9	52.4	-7.5
12:45 AM - 12:50 AM	53.4	53.1	-	44.6	52.5	-7.9
12:50 AM - 12:55 AM	53.4	53.1	-	44.6	52.5	-7.9
12:55 AM - 01:00 AM	53.6	53.3	-	44.8	52.6	-7.8
01:00 AM - 01:05 AM	53.7	53.4	-	44.9	52.8	-7.9
01:05 AM - 01:10 AM	53.9	53.6	-	45.1	52.9	-7.8
01:10 AM - 01:15 AM	53.8	53.5	-	45.0	52.7	-7.7
01:15 AM - 01:20 AM	53.6	53.3	-	44.8	52.6	-7.8
01:20 AM - 01:25 AM	53.4	53.1	-	44.6	52.4	-7.8
01:25 AM - 01:30 AM	53.2	52.9	-	44.4	52.2	-7.8
01:30 AM - 01:35 AM	53.3	52.8	-	46.7	52.1	-5.4
01:35 AM - 01:40 AM	53.2	52.7	-	46.6	52.0	-5.4
01:40 AM - 01:45 AM	53.6	53.1	-	47.0	52.1	-5.1
01:45 AM - 01:50 AM	53.0	52.5	-	46.4	51.9	-5.5
01:50 AM - 01:55 AM	53.0	52.5	-	46.4	51.8	-5.4
01:55 AM - 02:00 AM	53.0	52.5	-	46.4	51.8	-5.4
02:00 AM - 02:05 AM	52.9	52.4	-	46.3	51.8	-5.5
02:05 AM - 02:10 AM	53.1	52.6	-	46.5	51.8	-5.3
02:10 AM - 02:15 AM	53.4	52.9	-	46.8	52.2	-5.4
02:15 AM - 02:20 AM	54.1	53.6	-	47.5	52.9	-5.4
02:20 AM - 02:25 AM	54.0	53.5	-	47.4	52.5	-5.1
02:25 AM - 02:30 AM	53.7	53.2	-	47.1	52.6	-5.5
02:30 AM - 02:35 AM	53.7	53.2	-	47.1	52.6	-5.5
02:35 AM - 02:40 AM	54.0	53.5	-	47.4	52.9	-5.5
02:40 AM - 02:45 AM	53.8	53.6	-	43.3	53.0	-9.7
02:45 AM - 02:50 AM	53.8	53.6	-	43.3	52.9	-9.6
02:50 AM - 02:55 AM	54.5	54.3	-	44.0	52.7	-8.7
02:55 AM - 03:00 AM	53.8	53.6	-	43.3	53.1	-9.8
03:00 AM - 03:05 AM	53.8	53.6	-	43.3	53.1	-9.8
03:05 AM - 03:10 AM	53.8	53.6	-	43.3	53.1	-9.8
03:10 AM - 03:15 AM	53.6	53.4	-	43.1	52.8	-9.7
03:15 AM - 03:20 AM	53.7	53.5	-	43.2	52.8	-9.6
03:20 AM - 03:25 AM	54.0	53.8	-	43.5	53.1	-9.6
03:25 AM - 03:30 AM	53.8	53.6	-	43.3	52.9	-9.6
03:30 AM - 03:35 AM	54.3	54.1	-	43.8	53.6	-9.8
03:35 AM - 03:40 AM	54.4	54.2	-	43.9	53.5	-9.6

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235003-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-8
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	54.1	53.9	-	43.6	53.1	-9.5
03:45 AM - 03:50 AM	54.0	53.8	-	43.5	53.1	-9.6
03:50 AM - 03:55 AM	54.6	54.4	-	44.1	52.8	-8.7
03:55 AM - 04:00 AM	53.7	53.5	-	43.2	52.8	-9.6
04:00 AM - 04:05 AM	53.5	52.8	-	48.2	51.9	-3.7
04:05 AM - 04:10 AM	53.4	52.7	-	48.1	51.9	-3.8
04:10 AM - 04:15 AM	54.3	53.6	-	49.0	52.4	-3.4
04:15 AM - 04:20 AM	54.3	53.6	-	49.0	52.8	-3.8
04:20 AM - 04:25 AM	54.5	53.8	-	49.2	52.8	-3.6
04:25 AM - 04:30 AM	54.7	54.0	-	49.4	53.0	-3.6
04:30 AM - 04:35 AM	54.7	54.0	-	49.4	53.0	-3.6
04:35 AM - 04:40 AM	54.8	54.1	-	49.5	52.9	-3.4
04:40 AM - 04:45 AM	54.7	54.0	-	49.4	53.0	-3.6
04:45 AM - 04:50 AM	54.3	53.6	-	49.0	52.9	-3.9
04:50 AM - 04:55 AM	54.4	54.1	-	45.6	53.3	-7.7
04:55 AM - 05:00 AM	55.2	54.9	-	46.4	53.5	-7.1
05:00 AM - 05:05 AM	54.6	54.3	-	45.8	53.6	-7.8
05:05 AM - 05:10 AM	53.8	53.5	-	45.0	52.8	-7.8
05:10 AM - 05:15 AM	53.3	53.0	-	44.5	52.4	-7.9
05:15 AM - 05:20 AM	54.0	53.7	-	45.2	52.9	-7.7
05:20 AM - 05:25 AM	54.2	53.9	-	45.4	53.3	-7.9
05:25 AM - 05:30 AM	54.5	54.2	-	45.7	53.6	-7.9
05:30 AM - 05:35 AM	55.2	54.9	-	46.4	54.2	-7.8
05:35 AM - 05:40 AM	55.7	55.4	-	46.9	54.3	-7.4
05:40 AM - 05:45 AM	55.9	55.6	-	47.1	54.4	-7.3
05:45 AM - 05:50 AM	55.8	55.2	-	49.9	54.1	-4.2
05:50 AM - 05:55 AM	56.7	56.1	-	50.8	54.1	-3.3
05:55 AM - 06:00 AM	55.6	55.0	-	49.7	53.7	-4.0
06:00 AM - 07:00 AM	57.8	57.3	48.2	-	54.4	-6.2
07:00 AM - 08:00 AM	57.4	56.9	47.8	-	53.4	-5.6
08:00 AM - 09:00 AM	53.8	53.5	42.0	-	51.6	-9.6
09:00 AM - 10:00 AM	53.4	52.9	43.8	-	50.9	-7.1
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 10-11 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-8 วันที่ตรวจวัด 10-11 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235004-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-9
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	54.0	53.6	43.4	-	49.8	-6.4
11:00 AM - 12:00 PM	53.1	54.9	n/a	-	48.4	-
12:00 PM - 01:00 PM	53.4	52.7	45.1	-	47.7	-2.6
01:00 PM - 02:00 PM	51.7	52.3	n/a	-	48.5	-
02:00 PM - 03:00 PM	51.8	51.5	40.0	-	48.3	-8.3
03:00 PM - 04:00 PM	51.7	51.6	35.3	-	48.1	-12.8
04:00 PM - 05:00 PM	53.5	52.7	45.8	-	49.2	-3.4
05:00 PM - 06:00 PM	53.8	53.5	42.0	-	48.8	-6.8
06:00 PM - 07:00 PM	56.3	57.0	n/a	-	50.9	-
07:00 PM - 08:00 PM	53.1	52.8	41.3	-	51.0	-9.7
08:00 PM - 09:00 PM	54.1	53.7	43.5	-	51.5	-8.0
09:00 PM - 10:00 PM	52.3	52.1	38.8	-	51.0	-12.2
10:00 PM - 10:05 PM	51.6	52.0	-	n/a	51.1	-
10:05 PM - 10:10 PM	51.5	52.0	-	n/a	51.2	-
10:10 PM - 10:15 PM	51.6	51.9	-	n/a	51.3	-
10:15 PM - 10:20 PM	51.9	52.0	-	n/a	51.6	-
10:20 PM - 10:25 PM	51.9	52.2	-	n/a	51.8	-
10:25 PM - 10:30 PM	52.0	52.2	-	n/a	51.7	-
10:30 PM - 10:35 PM	52.0	52.2	-	n/a	51.7	-
10:35 PM - 10:40 PM	52.0	52.6	-	n/a	52.1	-
10:40 PM - 10:45 PM	52.2	52.5	-	n/a	51.7	-
10:45 PM - 10:50 PM	51.7	52.1	-	n/a	51.6	-
10:50 PM - 10:55 PM	51.9	52.4	-	n/a	51.4	-
10:55 PM - 11:00 PM	52.1	53.0	-	n/a	52.3	-
11:00 PM - 11:05 PM	52.3	52.9	-	n/a	52.4	-
11:05 PM - 11:10 PM	52.3	53.1	-	n/a	52.6	-
11:10 PM - 11:15 PM	52.8	53.6	-	n/a	53.1	-
11:15 PM - 11:20 PM	53.0	53.4	-	n/a	52.9	-
11:20 PM - 11:25 PM	54.1	54.5	-	n/a	53.5	-
11:25 PM - 11:30 PM	54.2	55.5	-	n/a	54.3	-
11:30 PM - 11:35 PM	54.1	54.7	-	n/a	54.2	-
11:35 PM - 11:40 PM	53.8	54.6	-	n/a	54.0	-
11:40 PM - 11:45 PM	53.4	53.9	-	n/a	53.4	-
11:45 PM - 11:50 PM	53.5	54.1	-	n/a	53.3	-
11:50 PM - 11:55 PM	52.7	53.4	-	n/a	53.0	-
11:55 PM - 12:00 AM	52.3	53.3	-	n/a	52.6	-
12:00 AM - 12:05 AM	52.7	53.4	-	n/a	52.7	-
12:05 AM - 12:10 AM	52.5	52.9	-	n/a	52.1	-
12:10 AM - 12:15 AM	52.4	53.5	-	n/a	53.0	-
12:15 AM - 12:20 AM	52.5	53.4	-	n/a	53.0	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235004-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-9
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	52.6	53.4	-	n/a	53.1	-
12:25 AM - 12:30 AM	52.8	53.4	-	n/a	52.9	-
12:30 AM - 12:35 AM	52.7	53.4	-	n/a	52.9	-
12:35 AM - 12:40 AM	54.6	54.9	-	n/a	53.1	-
12:40 AM - 12:45 AM	52.9	53.7	-	n/a	53.2	-
12:45 AM - 12:50 AM	53.6	54.2	-	n/a	53.7	-
12:50 AM - 12:55 AM	53.6	54.0	-	n/a	53.0	-
12:55 AM - 01:00 AM	53.0	53.5	-	n/a	52.7	-
01:00 AM - 01:05 AM	53.0	53.6	-	n/a	53.0	-
01:05 AM - 01:10 AM	54.1	54.6	-	n/a	52.6	-
01:10 AM - 01:15 AM	53.7	54.0	-	n/a	53.5	-
01:15 AM - 01:20 AM	53.6	53.7	-	n/a	53.0	-
01:20 AM - 01:25 AM	52.5	52.9	-	n/a	52.1	-
01:25 AM - 01:30 AM	52.4	53.2	-	n/a	52.6	-
01:30 AM - 01:35 AM	52.9	53.8	-	n/a	53.0	-
01:35 AM - 01:40 AM	52.7	53.3	-	n/a	52.4	-
01:40 AM - 01:45 AM	52.9	53.5	-	n/a	52.5	-
01:45 AM - 01:50 AM	53.0	53.8	-	n/a	53.0	-
01:50 AM - 01:55 AM	52.8	53.2	-	n/a	52.5	-
01:55 AM - 02:00 AM	52.2	52.8	-	n/a	52.2	-
02:00 AM - 02:05 AM	52.5	53.1	-	n/a	52.5	-
02:05 AM - 02:10 AM	52.7	53.3	-	n/a	52.6	-
02:10 AM - 02:15 AM	52.5	53.3	-	n/a	52.5	-
02:15 AM - 02:20 AM	52.5	52.8	-	n/a	52.0	-
02:20 AM - 02:25 AM	52.1	52.5	-	n/a	51.9	-
02:25 AM - 02:30 AM	52.7	53.4	-	n/a	52.8	-
02:30 AM - 02:35 AM	53.0	53.3	-	n/a	52.7	-
02:35 AM - 02:40 AM	53.1	53.6	-	n/a	53.1	-
02:40 AM - 02:45 AM	54.1	54.6	-	n/a	53.4	-
02:45 AM - 02:50 AM	53.9	53.7	-	43.4	53.3	-9.9
02:50 AM - 02:55 AM	53.2	53.3	-	n/a	52.7	-
02:55 AM - 03:00 AM	52.8	53.0	-	n/a	52.4	-
03:00 AM - 03:05 AM	53.2	53.6	-	n/a	52.7	-
03:05 AM - 03:10 AM	53.4	53.7	-	n/a	53.2	-
03:10 AM - 03:15 AM	53.3	53.7	-	n/a	53.2	-
03:15 AM - 03:20 AM	53.9	54.3	-	n/a	53.6	-
03:20 AM - 03:25 AM	54.2	54.6	-	n/a	54.0	-
03:25 AM - 03:30 AM	54.6	55.0	-	n/a	54.6	-
03:30 AM - 03:35 AM	54.5	54.8	-	n/a	54.3	-
03:35 AM - 03:40 AM	53.0	53.1	-	n/a	52.5	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235004-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-9
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	53.8	54.4	-	n/a	53.9	-
03:45 AM - 03:50 AM	54.0	54.6	-	n/a	54.1	-
03:50 AM - 03:55 AM	54.1	54.2	-	n/a	53.5	-
03:55 AM - 04:00 AM	53.9	54.1	-	n/a	53.6	-
04:00 AM - 04:05 AM	53.9	54.1	-	n/a	53.6	-
04:05 AM - 04:10 AM	54.4	54.5	-	n/a	53.8	-
04:10 AM - 04:15 AM	54.2	54.5	-	n/a	54.1	-
04:15 AM - 04:20 AM	53.6	54.3	-	n/a	53.8	-
04:20 AM - 04:25 AM	53.3	53.8	-	n/a	53.3	-
04:25 AM - 04:30 AM	53.0	53.9	-	n/a	53.4	-
04:30 AM - 04:35 AM	53.9	54.5	-	n/a	53.9	-
04:35 AM - 04:40 AM	54.2	54.7	-	n/a	54.2	-
04:40 AM - 04:45 AM	53.4	53.9	-	n/a	53.2	-
04:45 AM - 04:50 AM	52.7	53.2	-	n/a	52.8	-
04:50 AM - 04:55 AM	52.4	52.5	-	n/a	51.9	-
04:55 AM - 05:00 AM	52.4	52.5	-	n/a	51.9	-
05:00 AM - 05:05 AM	51.8	52.1	-	n/a	51.6	-
05:05 AM - 05:10 AM	51.0	51.2	-	n/a	50.5	-
05:10 AM - 05:15 AM	51.6	52.2	-	n/a	51.6	-
05:15 AM - 05:20 AM	52.0	52.0	-	n/a	51.5	-
05:20 AM - 05:25 AM	52.0	52.5	-	n/a	51.6	-
05:25 AM - 05:30 AM	52.8	53.1	-	n/a	52.6	-
05:30 AM - 05:35 AM	53.4	53.6	-	n/a	52.2	-
05:35 AM - 05:40 AM	52.2	52.5	-	n/a	52.1	-
05:40 AM - 05:45 AM	53.6	53.8	-	n/a	52.8	-
05:45 AM - 05:50 AM	54.3	54.5	-	n/a	53.5	-
05:50 AM - 05:55 AM	54.2	54.4	-	n/a	53.6	-
05:55 AM - 06:00 AM	53.9	54.4	-	n/a	53.7	-
06:00 AM - 07:00 AM	57.3	57.5	n/a	-	54.3	-
07:00 AM - 08:00 AM	56.5	56.2	44.7	-	54.0	-9.3
08:00 AM - 09:00 AM	52.1	52.1	n/a	-	50.2	-
09:00 AM - 10:00 AM	53.1	53.3	n/a	-	50.4	-
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 11-12 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-9 วันที่ตรวจวัด 11-12 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235005-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-10
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	54.2	54.8	n/a	-	50.4	-
11:00 AM - 12:00 PM	51.6	51.7	n/a	-	48.9	-
12:00 PM - 01:00 PM	50.2	50.3	n/a	-	47.5	-
01:00 PM - 02:00 PM	51.1	51.2	n/a	-	47.1	-
02:00 PM - 03:00 PM	61.8	60.9	54.5	-	58.9	-4.4
03:00 PM - 04:00 PM	55.6	55.7	n/a	-	51.2	-
04:00 PM - 05:00 PM	53.1	53.0	36.7	-	50.5	-13.8
05:00 PM - 06:00 PM	55.9	55.6	44.1	-	51.8	-7.7
06:00 PM - 07:00 PM	55.8	55.6	42.3	-	53.1	-10.8
07:00 PM - 08:00 PM	54.2	54.0	40.7	-	53.1	-12.4
08:00 PM - 09:00 PM	53.8	53.6	40.3	-	52.5	-12.2
09:00 PM - 10:00 PM	53.9	53.7	40.4	-	52.4	-12.0
10:00 PM - 10:05 PM	52.4	52.5	-	n/a	52.0	-
10:05 PM - 10:10 PM	52.8	52.9	-	n/a	52.2	-
10:10 PM - 10:15 PM	53.0	53.0	-	n/a	52.6	-
10:15 PM - 10:20 PM	53.0	53.0	-	n/a	52.6	-
10:20 PM - 10:25 PM	53.8	53.4	-	46.2	52.7	-6.5
10:25 PM - 10:30 PM	53.2	53.8	-	n/a	52.8	-
10:30 PM - 10:35 PM	53.3	53.4	-	n/a	52.8	-
10:35 PM - 10:40 PM	53.5	53.3	-	43.0	52.9	-9.9
10:40 PM - 10:45 PM	53.4	53.4	-	n/a	52.9	-
10:45 PM - 10:50 PM	53.6	53.6	-	n/a	52.9	-
10:50 PM - 10:55 PM	53.2	53.2	-	n/a	52.8	-
10:55 PM - 11:00 PM	54.2	54.2	-	n/a	53.1	-
11:00 PM - 11:05 PM	53.6	53.4	-	43.1	53.1	-10.0
11:05 PM - 11:10 PM	54.8	54.9	-	n/a	53.3	-
11:10 PM - 11:15 PM	54.0	54.2	-	n/a	53.3	-
11:15 PM - 11:20 PM	53.8	53.9	-	n/a	53.4	-
11:20 PM - 11:25 PM	54.5	54.3	-	44.0	53.5	-9.5
11:25 PM - 11:30 PM	53.8	53.8	-	n/a	53.4	-
11:30 PM - 11:35 PM	53.7	53.8	-	n/a	53.3	-
11:35 PM - 11:40 PM	53.5	53.4	-	40.1	53.0	-12.9
11:40 PM - 11:45 PM	53.5	53.5	-	n/a	53.0	-
11:45 PM - 11:50 PM	53.3	53.4	-	n/a	53.0	-
11:50 PM - 11:55 PM	53.1	53.1	-	n/a	52.8	-
11:55 PM - 12:00 AM	53.1	53.2	-	n/a	52.8	-
12:00 AM - 12:05 AM	53.4	53.4	-	n/a	52.9	-
12:05 AM - 12:10 AM	56.0	55.8	-	45.5	53.1	-7.6
12:10 AM - 12:15 AM	53.2	53.3	-	n/a	52.9	-
12:15 AM - 12:20 AM	53.0	53.0	-	n/a	52.6	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235005-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-10
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	53.2	53.2	-	n/a	52.8	-
12:25 AM - 12:30 AM	53.2	53.3	-	n/a	52.8	-
12:30 AM - 12:35 AM	53.2	53.2	-	n/a	52.7	-
12:35 AM - 12:40 AM	53.0	53.0	-	n/a	52.6	-
12:40 AM - 12:45 AM	53.2	53.2	-	n/a	52.8	-
12:45 AM - 12:50 AM	53.2	53.2	-	n/a	52.8	-
12:50 AM - 12:55 AM	53.3	53.3	-	n/a	52.9	-
12:55 AM - 01:00 AM	53.5	53.4	-	40.1	53.0	-12.9
01:00 AM - 01:05 AM	53.2	53.1	-	39.8	52.8	-13.0
01:05 AM - 01:10 AM	53.3	53.3	-	n/a	52.9	-
01:10 AM - 01:15 AM	53.4	53.3	-	40.0	52.9	-12.9
01:15 AM - 01:20 AM	53.5	53.6	-	n/a	53.2	-
01:20 AM - 01:25 AM	53.5	53.6	-	n/a	53.2	-
01:25 AM - 01:30 AM	53.5	53.5	-	n/a	53.2	-
01:30 AM - 01:35 AM	53.3	53.4	-	n/a	53.0	-
01:35 AM - 01:40 AM	53.3	53.2	-	39.9	52.9	-13.0
01:40 AM - 01:45 AM	53.5	53.4	-	40.1	52.9	-12.8
01:45 AM - 01:50 AM	53.6	53.6	-	n/a	53.2	-
01:50 AM - 01:55 AM	53.6	53.8	-	n/a	53.4	-
01:55 AM - 02:00 AM	53.8	53.9	-	n/a	53.6	-
02:00 AM - 02:05 AM	54.0	54.2	-	n/a	53.8	-
02:05 AM - 02:10 AM	53.9	53.8	-	40.5	53.2	-12.7
02:10 AM - 02:15 AM	54.3	54.3	-	n/a	53.9	-
02:15 AM - 02:20 AM	54.6	54.6	-	n/a	54.2	-
02:20 AM - 02:25 AM	54.4	54.5	-	n/a	54.1	-
02:25 AM - 02:30 AM	54.4	54.5	-	n/a	54.2	-
02:30 AM - 02:35 AM	54.2	54.5	-	n/a	54.1	-
02:35 AM - 02:40 AM	54.0	54.3	-	n/a	53.8	-
02:40 AM - 02:45 AM	54.4	54.5	-	n/a	54.1	-
02:45 AM - 02:50 AM	54.7	54.9	-	n/a	54.6	-
02:50 AM - 02:55 AM	54.6	54.8	-	n/a	54.4	-
02:55 AM - 03:00 AM	54.7	54.8	-	n/a	54.4	-
03:00 AM - 03:05 AM	54.5	54.8	-	n/a	54.4	-
03:05 AM - 03:10 AM	54.4	54.5	-	n/a	54.2	-
03:10 AM - 03:15 AM	54.7	54.6	-	41.3	54.3	-13.0
03:15 AM - 03:20 AM	55.0	54.9	-	41.6	54.6	-13.0
03:20 AM - 03:25 AM	55.0	55.0	-	n/a	54.7	-
03:25 AM - 03:30 AM	54.7	54.8	-	n/a	54.4	-
03:30 AM - 03:35 AM	54.7	54.7	-	n/a	54.4	-
03:35 AM - 03:40 AM	55.2	55.2	-	n/a	54.8	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235005-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-10
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	55.0	55.1	-	n/a	54.8	-
03:45 AM - 03:50 AM	54.5	54.6	-	n/a	54.1	-
03:50 AM - 03:55 AM	54.0	54.1	-	n/a	53.8	-
03:55 AM - 04:00 AM	54.0	54.1	-	n/a	53.9	-
04:00 AM - 04:05 AM	54.2	54.2	-	n/a	53.9	-
04:05 AM - 04:10 AM	54.2	54.3	-	n/a	54.0	-
04:10 AM - 04:15 AM	54.0	54.1	-	n/a	53.8	-
04:15 AM - 04:20 AM	54.2	54.4	-	n/a	54.0	-
04:20 AM - 04:25 AM	54.2	54.3	-	n/a	53.9	-
04:25 AM - 04:30 AM	54.1	54.1	-	n/a	53.7	-
04:30 AM - 04:35 AM	54.2	54.3	-	n/a	54.0	-
04:35 AM - 04:40 AM	54.5	54.5	-	n/a	54.2	-
04:40 AM - 04:45 AM	54.3	54.5	-	n/a	54.2	-
04:45 AM - 04:50 AM	54.1	54.3	-	n/a	53.9	-
04:50 AM - 04:55 AM	54.2	54.3	-	n/a	54.0	-
04:55 AM - 05:00 AM	54.2	54.3	-	n/a	54.0	-
05:00 AM - 05:05 AM	54.2	54.2	-	n/a	53.9	-
05:05 AM - 05:10 AM	54.9	54.7	-	44.4	54.1	-9.7
05:10 AM - 05:15 AM	54.7	54.8	-	n/a	54.2	-
05:15 AM - 05:20 AM	54.8	54.3	-	48.2	53.9	-5.7
05:20 AM - 05:25 AM	54.7	54.9	-	n/a	54.0	-
05:25 AM - 05:30 AM	54.9	54.9	-	n/a	54.1	-
05:30 AM - 05:35 AM	54.8	54.8	-	n/a	54.1	-
05:35 AM - 05:40 AM	54.8	54.8	-	n/a	54.3	-
05:40 AM - 05:45 AM	54.6	54.8	-	n/a	54.0	-
05:45 AM - 05:50 AM	54.8	55.0	-	n/a	54.2	-
05:50 AM - 05:55 AM	54.6	54.6	-	n/a	54.0	-
05:55 AM - 06:00 AM	54.4	54.5	-	n/a	54.0	-
06:00 AM - 07:00 AM	57.2	57.0	43.7	-	54.7	-11.0
07:00 AM - 08:00 AM	57.3	57.1	43.8	-	54.7	-10.9
08:00 AM - 09:00 AM	55.6	55.3	43.8	-	53.2	-9.4
09:00 AM - 10:00 AM	55.8	55.1	47.5	-	53.4	-5.9
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 12-13 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-10 วันที่ตรวจวัด 12-13 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235006-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-11
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	53.1	53.0	36.7	-	51.9	-15.2
11:00 AM - 12:00 PM	53.1	53.0	36.7	-	51.7	-15.0
12:00 PM - 01:00 PM	55.9	55.8	39.5	-	51.3	-11.8
01:00 PM - 02:00 PM	54.2	53.8	43.6	-	51.6	-8.0
02:00 PM - 03:00 PM	56.2	55.6	47.3	-	52.1	-4.8
03:00 PM - 04:00 PM	53.8	53.5	42.0	-	51.6	-9.6
04:00 PM - 05:00 PM	57.2	56.8	46.6	-	51.7	-5.1
05:00 PM - 06:00 PM	56.1	55.7	45.5	-	51.7	-6.2
06:00 PM - 07:00 PM	55.6	55.3	43.8	-	52.6	-8.8
07:00 PM - 08:00 PM	56.5	56.1	45.9	-	52.9	-7.0
08:00 PM - 09:00 PM	54.1	53.9	40.6	-	53.2	-12.6
09:00 PM - 10:00 PM	54.1	53.6	44.5	-	52.8	-8.3
10:00 PM - 10:05 PM	53.7	52.9	-	49.0	52.6	-3.6
10:05 PM - 10:10 PM	53.8	53.0	-	49.1	52.6	-3.5
10:10 PM - 10:15 PM	54.0	53.2	-	49.3	52.8	-3.5
10:15 PM - 10:20 PM	54.2	53.6	-	48.3	53.2	-4.9
10:20 PM - 10:25 PM	53.7	53.3	-	46.1	52.9	-6.8
10:25 PM - 10:30 PM	53.7	53.3	-	46.1	52.9	-6.8
10:30 PM - 10:35 PM	53.6	53.1	-	47.0	52.7	-5.7
10:35 PM - 10:40 PM	53.4	53.1	-	44.6	52.8	-8.2
10:40 PM - 10:45 PM	53.5	53.1	-	45.9	52.7	-6.8
10:45 PM - 10:50 PM	53.7	53.0	-	48.4	52.7	-4.3
10:50 PM - 10:55 PM	53.8	52.9	-	49.5	52.6	-3.1
10:55 PM - 11:00 PM	53.9	53.2	-	48.6	52.8	-4.2
11:00 PM - 11:05 PM	54.1	53.5	-	48.2	53.0	-4.8
11:05 PM - 11:10 PM	55.7	55.5	-	45.2	52.8	-7.6
11:10 PM - 11:15 PM	53.3	53.1	-	42.8	52.7	-9.9
11:15 PM - 11:20 PM	53.5	53.1	-	45.9	52.7	-6.8
11:20 PM - 11:25 PM	53.5	53.0	-	46.9	52.6	-5.7
11:25 PM - 11:30 PM	53.6	53.1	-	47.0	52.7	-5.7
11:30 PM - 11:35 PM	53.6	53.2	-	46.0	52.8	-6.8
11:35 PM - 11:40 PM	53.8	53.1	-	48.5	52.8	-4.3
11:40 PM - 11:45 PM	53.7	53.1	-	47.8	52.7	-4.9
11:45 PM - 11:50 PM	53.5	53.2	-	44.7	52.8	-8.1
11:50 PM - 11:55 PM	53.5	53.2	-	44.7	52.8	-8.1
11:55 PM - 12:00 AM	53.5	53.3	-	43.0	52.9	-9.9
12:00 AM - 12:05 AM	55.5	55.0	-	48.9	53.0	-4.1
12:05 AM - 12:10 AM	54.1	55.6	-	n/a	53.1	-
12:10 AM - 12:15 AM	56.2	53.5	-	55.9	53.0	2.9
12:15 AM - 12:20 AM	53.8	53.1	-	48.5	52.6	-4.1

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235006-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-11
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	53.5	52.9	-	47.6	52.6	-5.0
12:25 AM - 12:30 AM	60.0	59.8	-	49.5	52.7	-3.2
12:30 AM - 12:35 AM	53.3	53.0	-	44.5	52.6	-8.1
12:35 AM - 12:40 AM	53.5	53.1	-	45.9	52.7	-6.8
12:40 AM - 12:45 AM	53.7	53.0	-	48.4	52.5	-4.1
12:45 AM - 12:50 AM	54.3	53.5	-	49.6	52.5	-2.9
12:50 AM - 12:55 AM	53.5	52.7	-	48.8	52.3	-3.5
12:55 AM - 01:00 AM	53.4	52.8	-	47.5	52.2	-4.7
01:00 AM - 01:05 AM	53.5	53.1	-	45.9	52.2	-6.3
01:05 AM - 01:10 AM	53.4	52.7	-	48.1	52.2	-4.1
01:10 AM - 01:15 AM	53.1	52.7	-	45.5	52.2	-6.7
01:15 AM - 01:20 AM	52.9	52.5	-	45.3	52.0	-6.7
01:20 AM - 01:25 AM	53.1	52.9	-	42.6	52.2	-9.6
01:25 AM - 01:30 AM	53.4	53.0	-	45.8	52.3	-6.5
01:30 AM - 01:35 AM	53.2	52.7	-	46.6	52.2	-5.6
01:35 AM - 01:40 AM	52.8	52.6	-	42.3	52.2	-9.9
01:40 AM - 01:45 AM	53.1	52.7	-	45.5	52.1	-6.6
01:45 AM - 01:50 AM	53.3	52.7	-	47.4	52.2	-4.8
01:50 AM - 01:55 AM	53.4	52.8	-	47.5	52.3	-4.8
01:55 AM - 02:00 AM	53.3	52.8	-	46.7	52.4	-5.7
02:00 AM - 02:05 AM	53.0	52.6	-	45.4	52.2	-6.8
02:05 AM - 02:10 AM	52.8	52.5	-	44.0	52.0	-8.0
02:10 AM - 02:15 AM	53.2	52.8	-	45.6	52.3	-6.7
02:15 AM - 02:20 AM	52.8	52.5	-	44.0	52.1	-8.1
02:20 AM - 02:25 AM	52.8	52.5	-	44.0	52.1	-8.1
02:25 AM - 02:30 AM	52.8	52.5	-	44.0	52.0	-8.0
02:30 AM - 02:35 AM	52.6	52.3	-	43.8	51.8	-8.0
02:35 AM - 02:40 AM	52.8	52.4	-	45.2	52.0	-6.8
02:40 AM - 02:45 AM	52.7	52.5	-	42.2	52.1	-9.9
02:45 AM - 02:50 AM	53.4	52.8	-	47.5	52.2	-4.7
02:50 AM - 02:55 AM	53.0	52.6	-	45.4	52.1	-6.7
02:55 AM - 03:00 AM	52.7	52.5	-	42.2	51.9	-9.7
03:00 AM - 03:05 AM	52.8	52.4	-	45.2	52.0	-6.8
03:05 AM - 03:10 AM	52.8	52.5	-	44.0	52.0	-8.0
03:10 AM - 03:15 AM	52.7	52.4	-	43.9	52.0	-8.1
03:15 AM - 03:20 AM	52.8	52.5	-	44.0	52.0	-8.0
03:20 AM - 03:25 AM	52.9	52.6	-	44.1	52.1	-8.0
03:25 AM - 03:30 AM	52.8	52.5	-	44.0	52.1	-8.1
03:30 AM - 03:35 AM	53.0	52.6	-	45.4	52.2	-6.8
03:35 AM - 03:40 AM	52.7	52.4	-	43.9	52.0	-8.1

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235006-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-11
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	53.3	53.2	-	39.9	52.1	-12.2
03:45 AM - 03:50 AM	53.3	52.6	-	48.0	52.1	-4.1
03:50 AM - 03:55 AM	53.0	52.5	-	46.4	52.0	-5.6
03:55 AM - 04:00 AM	52.9	52.4	-	46.3	52.0	-5.7
04:00 AM - 04:05 AM	52.6	52.5	-	39.2	52.0	-12.8
04:05 AM - 04:10 AM	53.2	53.1	-	39.8	52.0	-12.2
04:10 AM - 04:15 AM	54.3	52.9	-	51.7	51.9	-0.2
04:15 AM - 04:20 AM	52.9	52.6	-	44.1	52.2	-8.1
04:20 AM - 04:25 AM	53.0	52.5	-	46.4	52.1	-5.7
04:25 AM - 04:30 AM	52.9	52.5	-	45.3	52.1	-6.8
04:30 AM - 04:35 AM	52.9	52.5	-	45.3	52.1	-6.8
04:35 AM - 04:40 AM	53.0	52.6	-	45.4	52.2	-6.8
04:40 AM - 04:45 AM	52.9	52.4	-	46.3	52.0	-5.7
04:45 AM - 04:50 AM	52.8	52.7	-	39.4	52.0	-12.6
04:50 AM - 04:55 AM	52.6	52.4	-	42.1	52.0	-9.9
04:55 AM - 05:00 AM	52.9	52.5	-	45.3	52.1	-6.8
05:00 AM - 05:05 AM	53.2	52.8	-	45.6	52.3	-6.7
05:05 AM - 05:10 AM	53.4	52.8	-	47.5	52.2	-4.7
05:10 AM - 05:15 AM	53.1	52.6	-	46.5	52.2	-5.7
05:15 AM - 05:20 AM	53.1	52.5	-	47.2	52.1	-4.9
05:20 AM - 05:25 AM	53.0	52.6	-	45.4	52.1	-6.7
05:25 AM - 05:30 AM	52.9	52.6	-	44.1	52.2	-8.1
05:30 AM - 05:35 AM	52.7	52.5	-	42.2	52.1	-9.9
05:35 AM - 05:40 AM	53.0	52.6	-	45.4	52.2	-6.8
05:40 AM - 05:45 AM	53.4	52.9	-	46.8	52.3	-5.5
05:45 AM - 05:50 AM	53.5	52.9	-	47.6	52.2	-4.6
05:50 AM - 05:55 AM	53.0	52.7	-	44.2	52.2	-8.0
05:55 AM - 06:00 AM	53.1	52.8	-	44.3	52.1	-7.8
06:00 AM - 07:00 AM	54.9	54.4	45.3	-	52.8	-7.5
07:00 AM - 08:00 AM	58.6	57.6	51.7	-	52.8	-1.1
08:00 AM - 09:00 AM	55.6	55.1	46.0	-	52.2	-6.2
09:00 AM - 10:00 AM	54.8	54.0	47.1	-	52.2	-5.1
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 13-14 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-11 วันที่ตรวจวัด 13-14 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235007-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-12
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	54.1	53.8	42.3	-	51.8	-9.5
11:00 AM - 12:00 PM	54.9	54.2	46.6	-	51.8	-5.2
12:00 PM - 01:00 PM	54.9	54.4	45.3	-	51.6	-6.3
01:00 PM - 02:00 PM	53.6	53.4	40.1	-	51.6	-11.5
02:00 PM - 03:00 PM	53.5	53.3	40.0	-	51.6	-11.6
03:00 PM - 04:00 PM	53.5	53.5	n/a	-	51.4	-
04:00 PM - 05:00 PM	53.4	53.2	39.9	-	51.7	-11.8
05:00 PM - 06:00 PM	56.4	55.9	46.8	-	52.0	-5.2
06:00 PM - 07:00 PM	57.0	55.8	50.8	-	52.4	-1.6
07:00 PM - 08:00 PM	54.5	53.7	46.8	-	52.3	-5.5
08:00 PM - 09:00 PM	54.0	53.7	42.2	-	52.7	-10.5
09:00 PM - 10:00 PM	54.2	53.8	43.6	-	52.7	-9.1
10:00 PM - 10:05 PM	53.6	53.1	-	47.0	52.7	-5.7
10:05 PM - 10:10 PM	53.3	53.0	-	44.5	52.6	-8.1
10:10 PM - 10:15 PM	53.3	54.0	-	n/a	52.7	-
10:15 PM - 10:20 PM	54.2	52.9	-	51.3	52.6	-1.3
10:20 PM - 10:25 PM	53.0	52.9	-	39.6	52.5	-12.9
10:25 PM - 10:30 PM	53.2	52.9	-	44.4	52.5	-8.1
10:30 PM - 10:35 PM	53.4	53.0	-	45.8	52.6	-6.8
10:35 PM - 10:40 PM	54.0	53.4	-	48.1	52.7	-4.6
10:40 PM - 10:45 PM	53.2	53.0	-	42.7	52.6	-9.9
10:45 PM - 10:50 PM	53.4	53.1	-	44.6	52.7	-8.1
10:50 PM - 10:55 PM	52.9	52.7	-	42.4	52.3	-9.9
10:55 PM - 11:00 PM	52.9	52.7	-	42.4	52.3	-9.9
11:00 PM - 11:05 PM	53.3	53.0	-	44.5	52.6	-8.1
11:05 PM - 11:10 PM	53.1	53.0	-	39.7	52.6	-12.9
11:10 PM - 11:15 PM	55.2	54.5	-	49.9	52.8	-2.9
11:15 PM - 11:20 PM	54.0	53.3	-	48.7	53.0	-4.3
11:20 PM - 11:25 PM	54.0	53.6	-	46.4	52.9	-6.5
11:25 PM - 11:30 PM	53.4	53.4	-	n/a	53.0	-
11:30 PM - 11:35 PM	53.5	53.4	-	40.1	53.0	-12.9
11:35 PM - 11:40 PM	53.7	53.3	-	46.1	52.9	-6.8
11:40 PM - 11:45 PM	53.4	53.5	-	n/a	52.8	-
11:45 PM - 11:50 PM	53.8	53.5	-	45.0	52.6	-7.6
11:50 PM - 11:55 PM	54.1	53.2	-	49.8	52.6	-2.8
11:55 PM - 12:00 AM	53.5	53.2	-	44.7	52.7	-8.0
12:00 AM - 12:05 AM	53.4	53.1	-	44.6	52.6	-8.0
12:05 AM - 12:10 AM	53.2	53.0	-	42.7	52.6	-9.9
12:10 AM - 12:15 AM	53.4	53.2	-	42.9	52.8	-9.9
12:15 AM - 12:20 AM	53.5	53.2	-	44.7	52.7	-8.0

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235007-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-12
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	53.7	53.4	-	44.9	52.6	-7.7
12:25 AM - 12:30 AM	53.4	53.0	-	45.8	52.6	-6.8
12:30 AM - 12:35 AM	53.4	53.0	-	45.8	52.5	-6.7
12:35 AM - 12:40 AM	53.5	53.0	-	46.9	52.4	-5.5
12:40 AM - 12:45 AM	53.4	53.1	-	44.6	52.7	-8.1
12:45 AM - 12:50 AM	53.5	53.0	-	46.9	52.7	-5.8
12:50 AM - 12:55 AM	53.4	53.3	-	40.0	52.9	-12.9
12:55 AM - 01:00 AM	53.5	53.5	-	n/a	53.1	-
01:00 AM - 01:05 AM	53.9	53.4	-	47.3	53.1	-5.8
01:05 AM - 01:10 AM	53.7	53.3	-	46.1	52.9	-6.8
01:10 AM - 01:15 AM	53.6	53.2	-	46.0	52.8	-6.8
01:15 AM - 01:20 AM	53.5	53.1	-	45.9	52.7	-6.8
01:20 AM - 01:25 AM	53.5	53.2	-	44.7	52.8	-8.1
01:25 AM - 01:30 AM	53.5	53.1	-	45.9	52.7	-6.8
01:30 AM - 01:35 AM	53.6	53.2	-	46.0	52.8	-6.8
01:35 AM - 01:40 AM	53.6	53.1	-	47.0	52.7	-5.7
01:40 AM - 01:45 AM	53.6	53.0	-	47.7	52.7	-5.0
01:45 AM - 01:50 AM	53.8	53.2	-	47.9	52.9	-5.0
01:50 AM - 01:55 AM	57.5	61.6	-	n/a	53.1	-
01:55 AM - 02:00 AM	54.0	53.6	-	46.4	53.1	-6.7
02:00 AM - 02:05 AM	54.0	53.5	-	47.4	53.1	-5.7
02:05 AM - 02:10 AM	53.9	53.4	-	47.3	53.0	-5.7
02:10 AM - 02:15 AM	53.9	53.4	-	47.3	53.0	-5.7
02:15 AM - 02:20 AM	53.8	53.3	-	47.2	53.0	-5.8
02:20 AM - 02:25 AM	53.8	53.4	-	46.2	53.0	-6.8
02:25 AM - 02:30 AM	53.8	53.3	-	47.2	53.0	-5.8
02:30 AM - 02:35 AM	53.8	53.2	-	47.9	52.8	-4.9
02:35 AM - 02:40 AM	53.6	53.2	-	46.0	52.8	-6.8
02:40 AM - 02:45 AM	53.7	53.2	-	47.1	52.9	-5.8
02:45 AM - 02:50 AM	53.8	53.3	-	47.2	52.9	-5.7
02:50 AM - 02:55 AM	53.8	53.3	-	47.2	53.0	-5.8
02:55 AM - 03:00 AM	53.8	53.3	-	47.2	53.0	-5.8
03:00 AM - 03:05 AM	53.7	53.2	-	47.1	52.9	-5.8
03:05 AM - 03:10 AM	53.8	53.2	-	47.9	52.9	-5.0
03:10 AM - 03:15 AM	53.8	53.2	-	47.9	52.9	-5.0
03:15 AM - 03:20 AM	53.3	53.3	-	n/a	52.9	-
03:20 AM - 03:25 AM	53.4	53.3	-	40.0	53.0	-13.0
03:25 AM - 03:30 AM	54.0	53.5	-	47.4	53.2	-5.8
03:30 AM - 03:35 AM	54.1	53.4	-	48.8	53.0	-4.2
03:35 AM - 03:40 AM	53.6	53.0	-	47.7	52.7	-5.0

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235007-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-12
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	53.8	53.2	-	47.9	52.8	-4.9
03:45 AM - 03:50 AM	53.8	53.5	-	45.0	53.1	-8.1
03:50 AM - 03:55 AM	53.9	53.5	-	46.3	53.1	-6.8
03:55 AM - 04:00 AM	53.6	53.1	-	47.0	52.8	-5.8
04:00 AM - 04:05 AM	53.5	53.1	-	45.9	52.7	-6.8
04:05 AM - 04:10 AM	53.8	53.5	-	45.0	53.1	-8.1
04:10 AM - 04:15 AM	53.8	53.4	-	46.2	53.1	-6.9
04:15 AM - 04:20 AM	53.8	53.2	-	47.9	52.8	-4.9
04:20 AM - 04:25 AM	53.5	53.1	-	45.9	52.8	-6.9
04:25 AM - 04:30 AM	53.5	53.3	-	43.0	52.9	-9.9
04:30 AM - 04:35 AM	53.9	53.4	-	47.3	53.0	-5.7
04:35 AM - 04:40 AM	53.9	53.5	-	46.3	53.0	-6.7
04:40 AM - 04:45 AM	53.7	53.2	-	47.1	52.7	-5.6
04:45 AM - 04:50 AM	53.4	53.1	-	44.6	52.6	-8.0
04:50 AM - 04:55 AM	53.3	53.0	-	44.5	52.6	-8.1
04:55 AM - 05:00 AM	53.4	53.1	-	44.6	52.7	-8.1
05:00 AM - 05:05 AM	53.4	53.1	-	44.6	52.6	-8.0
05:05 AM - 05:10 AM	54.4	53.7	-	49.1	52.3	-3.2
05:10 AM - 05:15 AM	53.1	52.9	-	42.6	52.5	-9.9
05:15 AM - 05:20 AM	53.4	53.3	-	40.0	52.8	-12.8
05:20 AM - 05:25 AM	53.7	53.2	-	47.1	52.8	-5.7
05:25 AM - 05:30 AM	53.6	53.1	-	47.0	52.8	-5.8
05:30 AM - 05:35 AM	55.0	54.4	-	49.1	53.0	-3.9
05:35 AM - 05:40 AM	54.4	53.9	-	47.8	53.5	-5.7
05:40 AM - 05:45 AM	56.7	56.0	-	51.4	53.5	-2.1
05:45 AM - 05:50 AM	54.2	53.8	-	46.6	53.1	-6.5
05:50 AM - 05:55 AM	54.3	53.6	-	49.0	53.2	-4.2
05:55 AM - 06:00 AM	54.3	53.7	-	48.4	53.3	-4.9
06:00 AM - 07:00 AM	54.6	54.4	41.1	-	53.6	-12.5
07:00 AM - 08:00 AM	58.4	57.9	48.8	-	54.7	-5.9
08:00 AM - 09:00 AM	56.6	55.9	48.3	-	54.0	-5.7
09:00 AM - 10:00 AM	56.1	55.3	48.4	-	53.1	-4.7
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 14-15 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-12 วันที่ตรวจวัด 14-15 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235008-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-13
Parameter เสียงรบกวน
Location ริมรั้วโครงการด่านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	54.1	53.8	42.3	-	51.6	-9.3
11:00 AM - 12:00 PM	54.6	54.0	45.7	-	51.0	-5.3
12:00 PM - 01:00 PM	54.3	53.6	46.0	-	50.6	-4.6
01:00 PM - 02:00 PM	53.8	53.3	44.2	-	50.9	-6.7
02:00 PM - 03:00 PM	53.8	53.4	43.2	-	50.9	-7.7
03:00 PM - 04:00 PM	56.2	56.0	42.7	-	51.6	-8.9
04:00 PM - 05:00 PM	54.1	53.8	42.3	-	51.6	-9.3
05:00 PM - 06:00 PM	54.8	54.1	46.5	-	51.4	-4.9
06:00 PM - 07:00 PM	55.6	55.0	46.7	-	51.8	-5.1
07:00 PM - 08:00 PM	53.9	53.0	46.6	-	49.3	-2.7
08:00 PM - 09:00 PM	52.6	51.9	44.3	-	50.0	-5.7
09:00 PM - 10:00 PM	53.1	52.3	45.4	-	50.4	-5.0
10:00 PM - 10:05 PM	52.3	51.8	-	45.7	50.9	-5.2
10:05 PM - 10:10 PM	52.4	51.9	-	45.8	51.0	-5.2
10:10 PM - 10:15 PM	51.8	49.8	-	50.5	49.0	1.5
10:15 PM - 10:20 PM	51.4	49.5	-	49.9	48.5	1.4
10:20 PM - 10:25 PM	50.8	48.6	-	49.8	48.2	1.6
10:25 PM - 10:30 PM	51.3	49.9	-	48.7	49.0	-0.3
10:30 PM - 10:35 PM	51.3	49.4	-	49.8	48.7	1.1
10:35 PM - 10:40 PM	51.0	48.0	-	51.0	46.4	4.6
10:40 PM - 10:45 PM	50.6	49.0	-	48.5	48.6	-0.1
10:45 PM - 10:50 PM	51.4	48.6	-	51.2	47.9	3.3
10:50 PM - 10:55 PM	52.5	50.3	-	51.5	49.8	1.7
10:55 PM - 11:00 PM	50.9	49.3	-	48.8	48.9	-0.1
11:00 PM - 11:05 PM	51.1	50.1	-	47.2	49.6	-2.4
11:05 PM - 11:10 PM	50.3	48.8	-	48.0	48.4	-0.4
11:10 PM - 11:15 PM	50.6	49.8	-	45.9	49.3	-3.4
11:15 PM - 11:20 PM	51.5	49.0	-	50.9	48.5	2.4
11:20 PM - 11:25 PM	51.8	50.8	-	47.9	48.1	-0.2
11:25 PM - 11:30 PM	51.0	50.8	-	40.5	49.7	-9.2
11:30 PM - 11:35 PM	51.4	49.3	-	50.2	48.3	1.9
11:35 PM - 11:40 PM	51.5	49.3	-	50.5	48.5	2.0
11:40 PM - 11:45 PM	51.2	49.2	-	49.9	48.2	1.7
11:45 PM - 11:50 PM	51.3	49.7	-	49.2	48.9	0.3
11:50 PM - 11:55 PM	51.6	49.1	-	51.0	48.4	2.6
11:55 PM - 12:00 AM	50.9	48.2	-	50.6	47.8	2.8
12:00 AM - 12:05 AM	51.4	48.2	-	51.6	46.8	4.8
12:05 AM - 12:10 AM	53.7	50.7	-	53.7	47.5	6.2
12:10 AM - 12:15 AM	53.1	50.1	-	53.1	49.3	3.8
12:15 AM - 12:20 AM	53.1	50.5	-	52.6	49.5	3.1

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235008-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-13
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	54.0	53.7	-	45.2	51.0	-5.8
12:25 AM - 12:30 AM	51.9	49.4	-	51.3	49.1	2.2
12:30 AM - 12:35 AM	51.3	50.0	-	48.4	49.2	-0.8
12:35 AM - 12:40 AM	51.1	49.2	-	49.6	48.3	1.3
12:40 AM - 12:45 AM	50.7	49.0	-	48.8	48.6	0.2
12:45 AM - 12:50 AM	50.0	49.2	-	45.3	48.8	-3.5
12:50 AM - 12:55 AM	49.6	48.5	-	46.1	48.2	-2.1
12:55 AM - 01:00 AM	50.0	48.3	-	48.1	47.8	0.3
01:00 AM - 01:05 AM	51.1	49.2	-	49.6	48.4	1.2
01:05 AM - 01:10 AM	50.8	49.7	-	47.3	49.2	-1.9
01:10 AM - 01:15 AM	50.7	49.3	-	48.1	48.6	-0.5
01:15 AM - 01:20 AM	51.5	50.2	-	48.6	49.4	-0.8
01:20 AM - 01:25 AM	49.6	48.6	-	45.7	48.2	-2.5
01:25 AM - 01:30 AM	49.9	48.7	-	46.7	48.4	-1.7
01:30 AM - 01:35 AM	49.6	48.6	-	45.7	47.7	-2.0
01:35 AM - 01:40 AM	50.6	48.9	-	48.7	48.1	0.6
01:40 AM - 01:45 AM	50.6	49.2	-	48.0	47.8	0.2
01:45 AM - 01:50 AM	50.8	49.1	-	48.9	47.9	1.0
01:50 AM - 01:55 AM	50.4	48.2	-	49.4	47.5	1.9
01:55 AM - 02:00 AM	51.3	49.0	-	50.4	48.4	2.0
02:00 AM - 02:05 AM	51.4	49.6	-	49.7	48.8	0.9
02:05 AM - 02:10 AM	51.2	49.4	-	49.5	48.4	1.1
02:10 AM - 02:15 AM	51.0	49.1	-	49.5	48.4	1.1
02:15 AM - 02:20 AM	50.8	49.6	-	47.6	48.5	-0.9
02:20 AM - 02:25 AM	51.2	50.3	-	46.9	49.3	-2.4
02:25 AM - 02:30 AM	50.9	48.3	-	50.4	47.6	2.8
02:30 AM - 02:35 AM	50.9	48.4	-	50.3	47.7	2.6
02:35 AM - 02:40 AM	50.6	49.0	-	48.5	48.3	0.2
02:40 AM - 02:45 AM	50.8	49.3	-	48.5	48.9	-0.4
02:45 AM - 02:50 AM	50.7	47.2	-	51.1	46.6	4.5
02:50 AM - 02:55 AM	51.0	50.2	-	46.3	48.8	-2.5
02:55 AM - 03:00 AM	50.7	48.9	-	49.0	48.3	0.7
03:00 AM - 03:05 AM	50.7	49.8	-	46.4	49.0	-2.6
03:05 AM - 03:10 AM	50.8	48.9	-	49.3	47.6	1.7
03:10 AM - 03:15 AM	50.6	48.9	-	48.7	47.9	0.8
03:15 AM - 03:20 AM	50.3	49.1	-	47.1	48.0	-0.9
03:20 AM - 03:25 AM	50.7	48.7	-	49.4	47.7	1.7
03:25 AM - 03:30 AM	50.4	48.0	-	49.7	47.0	2.7
03:30 AM - 03:35 AM	50.3	48.0	-	49.4	46.9	2.5
03:35 AM - 03:40 AM	50.6	48.0	-	50.1	47.1	3.0

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235008-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-13
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	50.5	49.1	-	47.9	47.8	0.1
03:45 AM - 03:50 AM	51.1	48.2	-	51.0	47.4	3.6
03:50 AM - 03:55 AM	49.8	48.9	-	45.5	48.1	-2.6
03:55 AM - 04:00 AM	50.3	49.4	-	46.0	48.5	-2.5
04:00 AM - 04:05 AM	50.3	49.2	-	46.8	48.0	-1.2
04:05 AM - 04:10 AM	50.0	47.4	-	49.5	46.3	3.2
04:10 AM - 04:15 AM	50.1	47.5	-	49.6	46.9	2.7
04:15 AM - 04:20 AM	50.3	48.1	-	49.3	47.6	1.7
04:20 AM - 04:25 AM	50.4	47.9	-	49.8	47.4	2.4
04:25 AM - 04:30 AM	50.7	47.7	-	50.7	46.7	4.0
04:30 AM - 04:35 AM	52.3	50.2	-	51.1	47.0	4.1
04:35 AM - 04:40 AM	50.9	49.2	-	49.0	48.6	0.4
04:40 AM - 04:45 AM	51.3	49.2	-	50.1	48.5	1.6
04:45 AM - 04:50 AM	50.6	49.1	-	48.3	48.3	0.0
04:50 AM - 04:55 AM	50.2	49.0	-	47.0	48.0	-1.0
04:55 AM - 05:00 AM	50.7	49.2	-	48.4	48.3	0.1
05:00 AM - 05:05 AM	50.9	48.2	-	50.6	47.1	3.5
05:05 AM - 05:10 AM	56.6	56.0	-	50.7	49.1	1.6
05:10 AM - 05:15 AM	50.3	49.0	-	47.4	48.0	-0.6
05:15 AM - 05:20 AM	50.8	49.6	-	47.6	48.4	-0.8
05:20 AM - 05:25 AM	56.7	55.4	-	53.8	48.5	5.3
05:25 AM - 05:30 AM	50.6	48.4	-	49.6	47.8	1.8
05:30 AM - 05:35 AM	50.4	49.0	-	47.8	48.1	-0.3
05:35 AM - 05:40 AM	50.4	49.1	-	47.5	48.2	-0.7
05:40 AM - 05:45 AM	57.8	57.0	-	53.1	49.1	4.0
05:45 AM - 05:50 AM	51.3	50.7	-	45.4	49.6	-4.2
05:50 AM - 05:55 AM	51.6	50.0	-	49.5	49.3	0.2
05:55 AM - 06:00 AM	59.2	58.9	-	50.4	50.5	-0.1
06:00 AM - 07:00 AM	58.2	57.9	46.4	-	50.7	-4.3
07:00 AM - 08:00 AM	56.4	56.2	42.9	-	50.9	-8.0
08:00 AM - 09:00 AM	54.1	53.6	44.5	-	48.9	-4.4
09:00 AM - 10:00 AM	53.0	52.4	44.1	-	50.6	-6.5
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 15-16 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-13 วันที่ตรวจวัด 15-16 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235009-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-14
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	51.6	51.4	38.1	-	48.2	-10.1
11:00 AM - 12:00 PM	51.8	51.5	40.0	-	47.6	-7.6
12:00 PM - 01:00 PM	51.2	51.0	37.7	-	47.1	-9.4
01:00 PM - 02:00 PM	51.6	51.0	42.7	-	47.4	-4.7
02:00 PM - 03:00 PM	52.4	51.9	42.8	-	47.8	-5.0
03:00 PM - 04:00 PM	51.8	51.3	42.2	-	47.8	-5.6
04:00 PM - 05:00 PM	54.7	54.3	44.1	-	48.1	-4.0
05:00 PM - 06:00 PM	53.1	52.5	44.2	-	47.8	-3.6
06:00 PM - 07:00 PM	58.8	57.1	53.9	-	50.9	3.0
07:00 PM - 08:00 PM	52.4	51.9	42.8	-	49.1	-6.3
08:00 PM - 09:00 PM	52.9	52.3	44.0	-	49.0	-5.0
09:00 PM - 10:00 PM	50.2	49.9	38.4	-	48.7	-10.3
10:00 PM - 10:05 PM	49.9	49.5	-	42.3	48.6	-6.3
10:05 PM - 10:10 PM	50.2	49.6	-	44.3	48.7	-4.4
10:10 PM - 10:15 PM	50.0	49.5	-	43.4	48.7	-5.3
10:15 PM - 10:20 PM	49.9	49.4	-	43.3	48.7	-5.4
10:20 PM - 10:25 PM	49.7	49.4	-	40.9	48.6	-7.7
10:25 PM - 10:30 PM	49.3	49.3	-	n/a	48.3	-
10:30 PM - 10:35 PM	49.7	49.3	-	42.1	48.4	-6.3
10:35 PM - 10:40 PM	51.1	50.6	-	44.5	48.6	-4.1
10:40 PM - 10:45 PM	50.1	49.5	-	44.2	48.6	-4.4
10:45 PM - 10:50 PM	49.8	49.3	-	43.2	48.5	-5.3
10:50 PM - 10:55 PM	49.9	49.2	-	44.6	48.4	-3.8
10:55 PM - 11:00 PM	49.9	49.3	-	44.0	48.5	-4.5
11:00 PM - 11:05 PM	50.0	49.7	-	41.2	48.8	-7.6
11:05 PM - 11:10 PM	49.9	49.5	-	42.3	48.6	-6.3
11:10 PM - 11:15 PM	49.7	49.4	-	40.9	48.6	-7.7
11:15 PM - 11:20 PM	52.3	51.7	-	46.4	48.6	-2.2
11:20 PM - 11:25 PM	49.8	49.4	-	42.2	48.6	-6.4
11:25 PM - 11:30 PM	49.6	49.3	-	40.8	48.4	-7.6
11:30 PM - 11:35 PM	49.8	49.3	-	43.2	48.5	-5.3
11:35 PM - 11:40 PM	49.9	49.2	-	44.6	48.5	-3.9
11:40 PM - 11:45 PM	49.7	49.3	-	42.1	48.5	-6.4
11:45 PM - 11:50 PM	49.4	49.3	-	36.0	48.4	-12.4
11:50 PM - 11:55 PM	50.0	49.3	-	44.7	48.4	-3.7
11:55 PM - 12:00 AM	49.8	49.4	-	42.2	48.5	-6.3
12:00 AM - 12:05 AM	49.7	49.3	-	42.1	48.4	-6.3
12:05 AM - 12:10 AM	49.9	49.4	-	43.3	48.5	-5.2
12:10 AM - 12:15 AM	50.1	49.4	-	44.8	48.5	-3.7
12:15 AM - 12:20 AM	52.3	51.8	-	45.7	48.8	-3.1

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235009-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-14
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	50.1	49.5	-	44.2	48.6	-4.4
12:25 AM - 12:30 AM	54.4	53.7	-	49.1	48.9	0.2
12:30 AM - 12:35 AM	50.1	49.4	-	44.8	48.7	-3.9
12:35 AM - 12:40 AM	50.3	49.5	-	45.6	48.8	-3.2
12:40 AM - 12:45 AM	50.5	49.7	-	45.8	48.9	-3.1
12:45 AM - 12:50 AM	50.3	49.5	-	45.6	48.7	-3.1
12:50 AM - 12:55 AM	50.2	49.4	-	45.5	48.6	-3.1
12:55 AM - 01:00 AM	50.2	49.5	-	44.9	48.8	-3.9
01:00 AM - 01:05 AM	49.9	49.4	-	43.3	48.6	-5.3
01:05 AM - 01:10 AM	50.2	49.5	-	44.9	48.8	-3.9
01:10 AM - 01:15 AM	50.0	49.4	-	44.1	48.8	-4.7
01:15 AM - 01:20 AM	49.9	49.2	-	44.6	48.6	-4.0
01:20 AM - 01:25 AM	50.0	49.2	-	45.3	48.7	-3.4
01:25 AM - 01:30 AM	50.3	49.6	-	45.0	48.7	-3.7
01:30 AM - 01:35 AM	49.9	49.3	-	44.0	48.8	-4.8
01:35 AM - 01:40 AM	50.1	49.5	-	44.2	48.9	-4.7
01:40 AM - 01:45 AM	49.8	49.4	-	42.2	48.7	-6.5
01:45 AM - 01:50 AM	50.0	49.1	-	45.7	48.5	-2.8
01:50 AM - 01:55 AM	49.7	49.0	-	44.4	48.3	-3.9
01:55 AM - 02:00 AM	50.0	49.0	-	46.1	48.3	-2.2
02:00 AM - 02:05 AM	49.7	48.9	-	45.0	48.1	-3.1
02:05 AM - 02:10 AM	49.3	48.7	-	43.4	48.1	-4.7
02:10 AM - 02:15 AM	48.8	48.7	-	35.4	48.0	-12.6
02:15 AM - 02:20 AM	48.7	48.9	-	n/a	48.2	-
02:20 AM - 02:25 AM	49.3	48.8	-	42.7	48.0	-5.3
02:25 AM - 02:30 AM	49.3	48.8	-	42.7	48.1	-5.4
02:30 AM - 02:35 AM	49.3	48.7	-	43.4	48.0	-4.6
02:35 AM - 02:40 AM	49.1	48.6	-	42.5	47.7	-5.2
02:40 AM - 02:45 AM	49.1	48.5	-	43.2	47.6	-4.4
02:45 AM - 02:50 AM	49.4	48.9	-	42.8	47.8	-5.0
02:50 AM - 02:55 AM	48.9	48.4	-	42.3	47.5	-5.2
02:55 AM - 03:00 AM	48.6	48.6	-	n/a	47.6	-
03:00 AM - 03:05 AM	48.6	48.4	-	38.1	47.5	-9.4
03:05 AM - 03:10 AM	48.7	48.6	-	35.3	47.8	-12.5
03:10 AM - 03:15 AM	49.2	48.8	-	41.6	48.0	-6.4
03:15 AM - 03:20 AM	49.4	48.8	-	43.5	47.8	-4.3
03:20 AM - 03:25 AM	49.2	48.8	-	41.6	47.9	-6.3
03:25 AM - 03:30 AM	49.2	48.8	-	41.6	48.1	-6.5
03:30 AM - 03:35 AM	49.3	48.8	-	42.7	48.0	-5.3
03:35 AM - 03:40 AM	48.9	48.6	-	40.1	47.9	-7.8

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235009-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-14
Parameter เสียงรบกวน
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735039, 1409715)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 920831

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	49.0	48.6	-	41.4	47.9	-6.5
03:45 AM - 03:50 AM	49.2	48.8	-	41.6	48.1	-6.5
03:50 AM - 03:55 AM	49.2	48.9	-	40.4	48.2	-7.8
03:55 AM - 04:00 AM	49.1	48.8	-	40.3	48.0	-7.7
04:00 AM - 04:05 AM	48.8	48.7	-	35.4	47.9	-12.5
04:05 AM - 04:10 AM	50.1	49.9	-	39.6	47.9	-8.3
04:10 AM - 04:15 AM	49.0	48.7	-	40.2	47.9	-7.7
04:15 AM - 04:20 AM	49.2	48.8	-	41.6	47.9	-6.3
04:20 AM - 04:25 AM	48.6	48.3	-	39.8	47.4	-7.6
04:25 AM - 04:30 AM	48.2	48.2	-	n/a	47.3	-
04:30 AM - 04:35 AM	48.5	48.3	-	38.0	47.5	-9.5
04:35 AM - 04:40 AM	51.4	50.9	-	44.8	47.6	-2.8
04:40 AM - 04:45 AM	49.0	48.7	-	40.2	47.9	-7.7
04:45 AM - 04:50 AM	49.5	48.7	-	44.8	47.9	-3.1
04:50 AM - 04:55 AM	49.9	49.1	-	45.2	48.1	-2.9
04:55 AM - 05:00 AM	51.9	51.8	-	38.5	47.9	-9.4
05:00 AM - 05:05 AM	49.7	49.1	-	43.8	47.6	-3.8
05:05 AM - 05:10 AM	49.5	48.6	-	45.2	47.6	-2.4
05:10 AM - 05:15 AM	49.0	48.9	-	35.6	47.8	-12.2
05:15 AM - 05:20 AM	52.0	51.1	-	47.7	47.6	0.1
05:20 AM - 05:25 AM	49.4	48.8	-	43.5	47.4	-3.9
05:25 AM - 05:30 AM	49.9	48.9	-	46.0	47.5	-1.5
05:30 AM - 05:35 AM	49.4	49.1	-	40.6	48.0	-7.4
05:35 AM - 05:40 AM	50.0	48.9	-	46.5	47.9	-1.4
05:40 AM - 05:45 AM	50.0	49.6	-	42.4	47.6	-5.2
05:45 AM - 05:50 AM	50.3	48.9	-	47.7	47.9	-0.2
05:50 AM - 05:55 AM	50.3	49.6	-	45.0	48.2	-3.2
05:55 AM - 06:00 AM	50.5	49.7	-	45.8	48.2	-2.4
06:00 AM - 07:00 AM	54.1	53.3	46.4	-	49.2	-2.8
07:00 AM - 08:00 AM	57.4	56.9	47.8	-	49.5	-1.7
08:00 AM - 09:00 AM	53.7	53.6	37.3	-	49.1	-11.8
09:00 AM - 10:00 AM	53.1	52.6	43.5	-	49.3	-5.8
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 16-17 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-14 วันที่ตรวจวัด 16-17 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234996-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-1
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวาริ) (GPS 47P 0735240, 1409021)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	48.1	46.8	42.2	-	41.0	1.2
11:00 AM - 12:00 PM	49.3	48.9	38.7	-	43.8	-5.1
12:00 PM - 01:00 PM	46.7	46.4	34.9	-	41.3	-6.4
01:00 PM - 02:00 PM	48.9	48.0	41.6	-	41.2	0.4
02:00 PM - 03:00 PM	49.4	49.0	38.8	-	42.7	-3.9
03:00 PM - 04:00 PM	50.2	49.5	41.9	-	42.1	-0.2
04:00 PM - 05:00 PM	48.3	47.7	39.4	-	42.1	-2.7
05:00 PM - 06:00 PM	50.4	51.0	n/a	-	44.0	-
06:00 PM - 07:00 PM	49.5	49.4	33.1	-	44.4	-11.3
07:00 PM - 08:00 PM	47.1	47.1	n/a	-	43.7	-
08:00 PM - 09:00 PM	46.2	46.1	29.8	-	42.7	-12.9
09:00 PM - 10:00 PM	46.5	46.3	33.0	-	43.8	-10.8
10:00 PM - 10:05 PM	52.0	50.5	-	49.7	43.9	5.8
10:05 PM - 10:10 PM	46.7	47.6	-	n/a	43.8	-
10:10 PM - 10:15 PM	44.3	44.0	-	35.5	42.3	-6.8
10:15 PM - 10:20 PM	46.2	46.6	-	n/a	42.3	-
10:20 PM - 10:25 PM	44.0	43.8	-	33.5	42.1	-8.6
10:25 PM - 10:30 PM	43.8	43.7	-	30.4	42.3	-11.9
10:30 PM - 10:35 PM	44.7	44.5	-	34.2	42.8	-8.6
10:35 PM - 10:40 PM	46.2	46.0	-	35.7	43.7	-8.0
10:40 PM - 10:45 PM	46.4	46.3	-	33.0	43.0	-10.0
10:45 PM - 10:50 PM	45.9	45.4	-	39.3	44.0	-4.7
10:50 PM - 10:55 PM	47.3	46.9	-	39.7	44.2	-4.5
10:55 PM - 11:00 PM	45.4	45.1	-	36.6	42.7	-6.1
11:00 PM - 11:05 PM	43.5	43.2	-	34.7	42.3	-7.6
11:05 PM - 11:10 PM	45.5	45.5	-	n/a	43.2	-
11:10 PM - 11:15 PM	46.4	46.5	-	n/a	43.6	-
11:15 PM - 11:20 PM	45.3	45.0	-	36.5	43.8	-7.3
11:20 PM - 11:25 PM	45.7	45.3	-	38.1	44.0	-5.9
11:25 PM - 11:30 PM	45.2	45.0	-	34.7	43.7	-9.0
11:30 PM - 11:35 PM	46.3	45.5	-	41.6	43.2	-1.6
11:35 PM - 11:40 PM	44.9	44.7	-	34.4	43.4	-9.0
11:40 PM - 11:45 PM	44.7	44.5	-	34.2	42.9	-8.7
11:45 PM - 11:50 PM	46.3	45.3	-	42.4	43.6	-1.2
11:50 PM - 11:55 PM	45.2	45.9	-	n/a	43.8	-
11:55 PM - 12:00 AM	46.8	46.6	-	36.3	43.7	-7.4
12:00 AM - 12:05 AM	45.8	45.9	-	n/a	43.6	-
12:05 AM - 12:10 AM	45.3	44.8	-	38.7	43.8	-5.1
12:10 AM - 12:15 AM	45.9	45.7	-	35.4	44.8	-9.4
12:15 AM - 12:20 AM	45.2	45.1	-	31.8	44.3	-12.5

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234996-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-1
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	45.4	45.1	-	36.6	43.6	-7.0
12:25 AM - 12:30 AM	46.3	46.5	-	n/a	44.5	-
12:30 AM - 12:35 AM	46.7	46.7	-	n/a	44.0	-
12:35 AM - 12:40 AM	45.2	45.0	-	34.7	43.7	-9.0
12:40 AM - 12:45 AM	45.3	45.0	-	36.5	43.8	-7.3
12:45 AM - 12:50 AM	45.1	45.1	-	n/a	43.9	-
12:50 AM - 12:55 AM	44.5	44.3	-	34.0	43.3	-9.3
12:55 AM - 01:00 AM	44.4	44.3	-	31.0	42.8	-11.8
01:00 AM - 01:05 AM	44.0	44.0	-	n/a	42.9	-
01:05 AM - 01:10 AM	46.9	47.2	-	n/a	43.4	-
01:10 AM - 01:15 AM	46.5	46.3	-	36.0	43.8	-7.8
01:15 AM - 01:20 AM	46.6	46.6	-	n/a	45.1	-
01:20 AM - 01:25 AM	46.9	46.4	-	40.3	45.0	-4.7
01:25 AM - 01:30 AM	46.6	46.6	-	n/a	45.1	-
01:30 AM - 01:35 AM	46.4	46.3	-	33.0	45.2	-12.2
01:35 AM - 01:40 AM	46.3	46.1	-	35.8	45.3	-9.5
01:40 AM - 01:45 AM	47.0	46.9	-	33.6	45.7	-12.1
01:45 AM - 01:50 AM	47.0	47.0	-	n/a	45.8	-
01:50 AM - 01:55 AM	46.5	46.6	-	n/a	44.7	-
01:55 AM - 02:00 AM	47.1	47.1	-	n/a	46.0	-
02:00 AM - 02:05 AM	47.6	47.8	-	n/a	46.3	-
02:05 AM - 02:10 AM	47.6	47.4	-	37.1	46.3	-9.2
02:10 AM - 02:15 AM	46.9	46.7	-	36.4	45.6	-9.2
02:15 AM - 02:20 AM	46.6	46.4	-	36.1	45.3	-9.2
02:20 AM - 02:25 AM	48.9	48.7	-	38.4	46.3	-7.9
02:25 AM - 02:30 AM	46.9	46.9	-	n/a	46.1	-
02:30 AM - 02:35 AM	47.8	47.8	-	n/a	46.8	-
02:35 AM - 02:40 AM	48.0	47.9	-	34.6	46.9	-12.3
02:40 AM - 02:45 AM	47.6	47.6	-	n/a	46.3	-
02:45 AM - 02:50 AM	47.2	47.0	-	36.7	45.9	-9.2
02:50 AM - 02:55 AM	47.0	46.6	-	39.4	45.7	-6.3
02:55 AM - 03:00 AM	46.2	46.2	-	n/a	45.4	-
03:00 AM - 03:05 AM	47.9	47.8	-	34.5	46.4	-11.9
03:05 AM - 03:10 AM	46.7	46.9	-	n/a	45.8	-
03:10 AM - 03:15 AM	47.5	47.4	-	34.1	46.4	-12.3
03:15 AM - 03:20 AM	47.8	47.8	-	n/a	46.6	-
03:20 AM - 03:25 AM	47.3	47.1	-	36.8	46.3	-9.5
03:25 AM - 03:30 AM	47.9	47.8	-	34.5	47.0	-12.5
03:30 AM - 03:35 AM	48.4	48.2	-	37.9	47.0	-9.1
03:35 AM - 03:40 AM	48.3	48.1	-	37.8	47.4	-9.6

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234996-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-1
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	48.0	47.9	-	34.6	47.0	-12.4
03:45 AM - 03:50 AM	46.4	46.1	-	37.6	44.9	-7.3
03:50 AM - 03:55 AM	46.5	46.1	-	38.9	45.1	-6.2
03:55 AM - 04:00 AM	46.8	46.7	-	33.4	45.4	-12.0
04:00 AM - 04:05 AM	48.5	47.9	-	42.6	45.5	-2.9
04:05 AM - 04:10 AM	45.8	45.5	-	37.0	44.6	-7.6
04:10 AM - 04:15 AM	45.9	45.6	-	37.1	44.8	-7.7
04:15 AM - 04:20 AM	46.5	46.2	-	37.7	45.3	-7.6
04:20 AM - 04:25 AM	45.8	45.5	-	37.0	44.4	-7.4
04:25 AM - 04:30 AM	47.0	46.5	-	40.4	43.9	-3.5
04:30 AM - 04:35 AM	45.5	45.4	-	32.1	43.2	-11.1
04:35 AM - 04:40 AM	44.5	44.0	-	37.9	43.1	-5.2
04:40 AM - 04:45 AM	45.3	44.7	-	39.4	43.7	-4.3
04:45 AM - 04:50 AM	45.4	44.9	-	38.8	43.6	-4.8
04:50 AM - 04:55 AM	48.2	47.6	-	42.3	45.8	-3.5
04:55 AM - 05:00 AM	49.4	49.0	-	41.8	46.1	-4.3
05:00 AM - 05:05 AM	48.9	48.1	-	44.2	45.8	-1.6
05:05 AM - 05:10 AM	47.3	47.0	-	38.5	45.7	-7.2
05:10 AM - 05:15 AM	49.6	49.2	-	42.0	46.6	-4.6
05:15 AM - 05:20 AM	48.5	48.3	-	38.0	46.5	-8.5
05:20 AM - 05:25 AM	48.0	47.8	-	37.5	46.7	-9.2
05:25 AM - 05:30 AM	49.8	49.4	-	42.2	48.0	-5.8
05:30 AM - 05:35 AM	50.1	49.5	-	44.2	48.4	-4.2
05:35 AM - 05:40 AM	50.4	49.9	-	43.8	47.6	-3.8
05:40 AM - 05:45 AM	49.8	49.1	-	44.5	47.2	-2.7
05:45 AM - 05:50 AM	49.9	49.4	-	43.3	48.3	-5.0
05:50 AM - 05:55 AM	50.1	49.8	-	41.3	48.8	-7.5
05:55 AM - 06:00 AM	51.2	50.7	-	44.6	49.0	-4.4
06:00 AM - 07:00 AM	52.7	52.0	44.4	-	49.2	-4.8
07:00 AM - 08:00 AM	51.6	51.4	38.1	-	48.2	-10.1
08:00 AM - 09:00 AM	49.1	48.8	37.3	-	45.7	-8.4
09:00 AM - 10:00 AM	51.2	53.0	n/a	-	44.0	-
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 10-11 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-1 วันที่ตรวจวัด 10-11 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234997-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-2
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	49.0	48.8	35.5	-	42.9	-7.4
11:00 AM - 12:00 PM	46.3	46.1	32.8	-	39.4	-6.6
12:00 PM - 01:00 PM	47.8	47.5	36.0	-	39.8	-3.8
01:00 PM - 02:00 PM	47.7	46.5	41.5	-	41.4	0.1
02:00 PM - 03:00 PM	52.3	52.9	n/a	-	49.1	-
03:00 PM - 04:00 PM	52.1	51.0	45.6	-	43.7	1.9
04:00 PM - 05:00 PM	49.7	50.6	n/a	-	44.0	-
05:00 PM - 06:00 PM	49.0	48.6	38.4	-	43.9	-5.5
06:00 PM - 07:00 PM	47.7	48.5	n/a	-	45.4	-
07:00 PM - 08:00 PM	47.4	47.9	n/a	-	45.2	-
08:00 PM - 09:00 PM	48.6	48.4	35.1	-	45.4	-10.3
09:00 PM - 10:00 PM	47.5	47.2	35.7	-	44.4	-8.7
10:00 PM - 10:05 PM	48.9	49.1	-	n/a	44.3	-
10:05 PM - 10:10 PM	45.6	45.1	-	39.0	43.0	-4.0
10:10 PM - 10:15 PM	45.4	45.7	-	n/a	43.4	-
10:15 PM - 10:20 PM	45.9	45.4	-	39.3	43.2	-3.9
10:20 PM - 10:25 PM	47.0	46.3	-	41.7	43.6	-1.9
10:25 PM - 10:30 PM	47.9	47.5	-	40.3	43.8	-3.5
10:30 PM - 10:35 PM	49.0	49.0	-	n/a	45.8	-
10:35 PM - 10:40 PM	52.1	52.1	-	n/a	46.5	-
10:40 PM - 10:45 PM	49.9	47.5	-	49.2	44.1	5.1
10:45 PM - 10:50 PM	45.3	44.9	-	37.7	43.8	-6.1
10:50 PM - 10:55 PM	46.7	46.7	-	n/a	44.8	-
10:55 PM - 11:00 PM	46.9	46.3	-	41.0	45.1	-4.1
11:00 PM - 11:05 PM	46.3	46.0	-	37.5	44.9	-7.4
11:05 PM - 11:10 PM	47.6	46.8	-	42.9	45.3	-2.4
11:10 PM - 11:15 PM	47.5	46.4	-	44.0	45.2	-1.2
11:15 PM - 11:20 PM	48.3	48.0	-	39.5	45.4	-5.9
11:20 PM - 11:25 PM	48.0	46.8	-	44.8	45.6	-0.8
11:25 PM - 11:30 PM	47.5	46.9	-	41.6	45.6	-4.0
11:30 PM - 11:35 PM	46.9	46.5	-	39.3	45.2	-5.9
11:35 PM - 11:40 PM	47.0	46.5	-	40.4	45.5	-5.1
11:40 PM - 11:45 PM	47.2	47.5	-	n/a	45.9	-
11:45 PM - 11:50 PM	48.0	46.7	-	45.1	45.7	-0.6
11:50 PM - 11:55 PM	47.0	46.4	-	41.1	45.3	-4.2
11:55 PM - 12:00 AM	47.1	46.3	-	42.4	44.8	-2.4
12:00 AM - 12:05 AM	46.7	46.8	-	n/a	44.8	-
12:05 AM - 12:10 AM	47.9	47.5	-	40.3	45.3	-5.0
12:10 AM - 12:15 AM	48.0	47.6	-	40.4	45.3	-4.9
12:15 AM - 12:20 AM	47.5	47.0	-	40.9	45.9	-5.0

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234997-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-2
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	46.6	46.3	-	37.8	45.2	-7.4
12:25 AM - 12:30 AM	47.1	46.6	-	40.5	44.9	-4.4
12:30 AM - 12:35 AM	46.8	46.6	-	36.3	45.2	-8.9
12:35 AM - 12:40 AM	48.0	47.6	-	40.4	45.0	-4.6
12:40 AM - 12:45 AM	47.4	46.5	-	43.1	45.0	-1.9
12:45 AM - 12:50 AM	46.7	45.9	-	42.0	44.7	-2.7
12:50 AM - 12:55 AM	46.0	46.0	-	n/a	44.8	-
12:55 AM - 01:00 AM	46.7	46.1	-	40.8	45.2	-4.4
01:00 AM - 01:05 AM	48.3	48.0	-	39.5	46.7	-7.2
01:05 AM - 01:10 AM	48.1	48.0	-	34.7	46.0	-11.3
01:10 AM - 01:15 AM	48.9	47.9	-	45.0	47.3	-2.3
01:15 AM - 01:20 AM	49.1	48.8	-	40.3	47.5	-7.2
01:20 AM - 01:25 AM	49.6	49.1	-	43.0	47.7	-4.7
01:25 AM - 01:30 AM	49.0	48.2	-	44.3	46.9	-2.6
01:30 AM - 01:35 AM	48.6	48.2	-	41.0	47.6	-6.6
01:35 AM - 01:40 AM	49.0	48.4	-	43.1	47.5	-4.4
01:40 AM - 01:45 AM	49.0	48.5	-	42.4	47.9	-5.5
01:45 AM - 01:50 AM	48.8	48.2	-	42.9	47.2	-4.3
01:50 AM - 01:55 AM	47.7	47.3	-	40.1	46.7	-6.6
01:55 AM - 02:00 AM	47.8	47.5	-	39.0	46.7	-7.7
02:00 AM - 02:05 AM	47.8	47.2	-	41.9	46.4	-4.5
02:05 AM - 02:10 AM	47.7	47.2	-	41.1	46.0	-4.9
02:10 AM - 02:15 AM	46.7	45.7	-	42.8	45.0	-2.2
02:15 AM - 02:20 AM	46.6	46.5	-	33.2	45.5	-12.3
02:20 AM - 02:25 AM	46.6	46.4	-	36.1	45.5	-9.4
02:25 AM - 02:30 AM	48.0	47.9	-	34.6	47.0	-12.4
02:30 AM - 02:35 AM	47.8	47.1	-	42.5	46.3	-3.8
02:35 AM - 02:40 AM	48.4	48.3	-	35.0	45.5	-10.5
02:40 AM - 02:45 AM	47.4	49.4	-	n/a	44.9	-
02:45 AM - 02:50 AM	50.2	46.7	-	50.6	46.0	4.6
02:50 AM - 02:55 AM	47.4	46.7	-	42.1	45.8	-3.7
02:55 AM - 03:00 AM	47.4	47.2	-	36.9	46.1	-9.2
03:00 AM - 03:05 AM	48.1	47.9	-	37.6	46.3	-8.7
03:05 AM - 03:10 AM	47.5	46.7	-	42.8	45.7	-2.9
03:10 AM - 03:15 AM	46.9	46.0	-	42.6	44.8	-2.2
03:15 AM - 03:20 AM	47.6	46.9	-	42.3	45.2	-2.9
03:20 AM - 03:25 AM	46.5	46.0	-	39.9	44.2	-4.3
03:25 AM - 03:30 AM	45.9	44.9	-	42.0	44.1	-2.1
03:30 AM - 03:35 AM	45.7	45.1	-	39.8	44.3	-4.5
03:35 AM - 03:40 AM	47.0	47.0	-	n/a	45.5	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234997-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-2
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	47.4	45.9	-	45.1	44.5	0.6
03:45 AM - 03:50 AM	44.9	44.1	-	40.2	43.3	-3.1
03:50 AM - 03:55 AM	45.0	44.5	-	38.4	43.8	-5.4
03:55 AM - 04:00 AM	46.8	46.3	-	40.2	45.1	-4.9
04:00 AM - 04:05 AM	46.4	46.2	-	35.9	44.7	-8.8
04:05 AM - 04:10 AM	48.1	47.0	-	44.6	44.0	0.6
04:10 AM - 04:15 AM	46.7	46.4	-	37.9	43.9	-6.0
04:15 AM - 04:20 AM	45.8	44.9	-	41.5	44.1	-2.6
04:20 AM - 04:25 AM	46.0	45.8	-	35.5	44.3	-8.8
04:25 AM - 04:30 AM	46.3	45.3	-	42.4	44.2	-1.8
04:30 AM - 04:35 AM	46.2	45.5	-	40.9	44.2	-3.3
04:35 AM - 04:40 AM	46.7	46.3	-	39.1	44.8	-5.7
04:40 AM - 04:45 AM	47.0	46.5	-	40.4	45.2	-4.8
04:45 AM - 04:50 AM	46.7	46.1	-	40.8	44.0	-3.2
04:50 AM - 04:55 AM	47.6	47.3	-	38.8	42.9	-4.1
04:55 AM - 05:00 AM	47.0	45.3	-	45.1	42.6	2.5
05:00 AM - 05:05 AM	46.5	45.0	-	44.2	43.1	1.1
05:05 AM - 05:10 AM	49.0	48.2	-	44.3	43.8	0.5
05:10 AM - 05:15 AM	46.6	46.2	-	39.0	43.5	-4.5
05:15 AM - 05:20 AM	48.3	47.1	-	45.1	43.9	1.2
05:20 AM - 05:25 AM	48.2	47.5	-	42.9	45.4	-2.5
05:25 AM - 05:30 AM	48.3	47.7	-	42.4	45.5	-3.1
05:30 AM - 05:35 AM	47.9	47.7	-	37.4	45.6	-8.2
05:35 AM - 05:40 AM	49.0	47.8	-	45.8	45.3	0.5
05:40 AM - 05:45 AM	47.0	47.2	-	n/a	44.5	-
05:45 AM - 05:50 AM	48.5	47.2	-	45.6	44.8	0.8
05:50 AM - 05:55 AM	48.2	47.4	-	43.5	45.2	-1.7
05:55 AM - 06:00 AM	48.2	47.7	-	41.6	45.4	-3.8
06:00 AM - 07:00 AM	51.1	50.2	43.8	-	47.3	-3.5
07:00 AM - 08:00 AM	53.9	52.5	48.3	-	48.1	0.2
08:00 AM - 09:00 AM	49.8	48.9	42.5	-	42.0	0.5
09:00 AM - 10:00 AM	46.9	45.3	41.8	-	41.8	0.0
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 11-12 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-2 วันที่ตรวจวัด 11-12 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234998-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-3
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	46.1	45.8	34.3	-	42.1	-7.8
11:00 AM - 12:00 PM	45.8	45.2	36.9	-	39.9	-3.0
12:00 PM - 01:00 PM	45.9	45.7	32.4	-	39.7	-7.3
01:00 PM - 02:00 PM	46.8	47.0	n/a	-	40.1	-
02:00 PM - 03:00 PM	46.4	45.9	36.8	-	40.2	-3.4
03:00 PM - 04:00 PM	48.2	47.1	41.7	-	40.5	1.2
04:00 PM - 05:00 PM	47.9	48.1	n/a	-	41.9	-
05:00 PM - 06:00 PM	49.3	49.3	n/a	-	44.7	-
06:00 PM - 07:00 PM	49.3	49.0	37.5	-	44.9	-7.4
07:00 PM - 08:00 PM	46.8	48.2	n/a	-	45.5	-
08:00 PM - 09:00 PM	46.4	46.5	n/a	-	43.1	-
09:00 PM - 10:00 PM	45.3	45.8	n/a	-	41.9	-
10:00 PM - 10:05 PM	44.3	45.0	-	n/a	41.5	-
10:05 PM - 10:10 PM	43.8	44.2	-	n/a	41.8	-
10:10 PM - 10:15 PM	43.3	43.5	-	n/a	41.2	-
10:15 PM - 10:20 PM	43.3	43.4	-	n/a	41.1	-
10:20 PM - 10:25 PM	45.6	45.1	-	39.0	42.7	-3.7
10:25 PM - 10:30 PM	48.9	48.9	-	n/a	43.6	-
10:30 PM - 10:35 PM	46.2	45.3	-	41.9	42.7	-0.8
10:35 PM - 10:40 PM	45.3	44.2	-	41.8	42.7	-0.9
10:40 PM - 10:45 PM	45.1	44.6	-	38.5	42.7	-4.2
10:45 PM - 10:50 PM	46.9	47.1	-	n/a	43.4	-
10:50 PM - 10:55 PM	46.9	45.2	-	45.0	43.7	1.3
10:55 PM - 11:00 PM	46.9	46.0	-	42.6	44.9	-2.3
11:00 PM - 11:05 PM	46.6	45.7	-	42.3	44.4	-2.1
11:05 PM - 11:10 PM	45.9	45.2	-	40.6	43.8	-3.2
11:10 PM - 11:15 PM	46.8	46.2	-	40.9	44.1	-3.2
11:15 PM - 11:20 PM	46.3	46.2	-	32.9	43.4	-10.5
11:20 PM - 11:25 PM	47.4	46.8	-	41.5	44.3	-2.8
11:25 PM - 11:30 PM	47.4	47.7	-	n/a	44.0	-
11:30 PM - 11:35 PM	48.4	48.8	-	n/a	45.0	-
11:35 PM - 11:40 PM	48.3	48.8	-	n/a	44.3	-
11:40 PM - 11:45 PM	49.1	48.6	-	42.5	43.8	-1.3
11:45 PM - 11:50 PM	49.4	50.5	-	n/a	44.2	-
11:50 PM - 11:55 PM	48.3	48.8	-	n/a	44.0	-
11:55 PM - 12:00 AM	49.1	49.9	-	n/a	46.7	-
12:00 AM - 12:05 AM	49.2	49.9	-	n/a	47.3	-
12:05 AM - 12:10 AM	50.0	50.2	-	n/a	47.6	-
12:10 AM - 12:15 AM	49.6	51.5	-	n/a	45.1	-
12:15 AM - 12:20 AM	51.2	52.2	-	n/a	48.6	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234998-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-3
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	50.4	52.0	-	n/a	49.0	-
12:25 AM - 12:30 AM	49.2	49.4	-	n/a	44.8	-
12:30 AM - 12:35 AM	49.1	49.9	-	n/a	45.4	-
12:35 AM - 12:40 AM	49.5	49.7	-	n/a	45.3	-
12:40 AM - 12:45 AM	49.5	51.2	-	n/a	47.1	-
12:45 AM - 12:50 AM	49.0	50.0	-	n/a	45.9	-
12:50 AM - 12:55 AM	48.8	49.6	-	n/a	47.0	-
12:55 AM - 01:00 AM	49.3	51.7	-	n/a	49.1	-
01:00 AM - 01:05 AM	50.2	51.8	-	n/a	49.4	-
01:05 AM - 01:10 AM	49.6	51.2	-	n/a	48.1	-
01:10 AM - 01:15 AM	49.1	50.8	-	n/a	48.7	-
01:15 AM - 01:20 AM	49.2	51.0	-	n/a	47.0	-
01:20 AM - 01:25 AM	49.9	50.9	-	n/a	47.9	-
01:25 AM - 01:30 AM	49.4	51.1	-	n/a	48.8	-
01:30 AM - 01:35 AM	48.7	49.9	-	n/a	46.2	-
01:35 AM - 01:40 AM	48.9	48.7	-	38.4	45.4	-7.0
01:40 AM - 01:45 AM	48.7	48.7	-	n/a	46.3	-
01:45 AM - 01:50 AM	49.0	49.4	-	n/a	47.4	-
01:50 AM - 01:55 AM	49.1	48.6	-	42.5	46.7	-4.2
01:55 AM - 02:00 AM	50.2	49.5	-	44.9	47.7	-2.8
02:00 AM - 02:05 AM	50.5	49.3	-	47.3	47.8	-0.5
02:05 AM - 02:10 AM	50.1	49.0	-	46.6	47.3	-0.7
02:10 AM - 02:15 AM	50.3	49.4	-	46.0	47.7	-1.7
02:15 AM - 02:20 AM	49.2	48.7	-	42.6	46.5	-3.9
02:20 AM - 02:25 AM	50.2	49.9	-	41.4	48.6	-7.2
02:25 AM - 02:30 AM	50.0	49.2	-	45.3	47.9	-2.6
02:30 AM - 02:35 AM	49.7	49.2	-	43.1	46.9	-3.8
02:35 AM - 02:40 AM	50.2	49.9	-	41.4	48.0	-6.6
02:40 AM - 02:45 AM	50.5	50.2	-	41.7	48.6	-6.9
02:45 AM - 02:50 AM	49.8	49.2	-	43.9	47.7	-3.8
02:50 AM - 02:55 AM	49.7	48.9	-	45.0	47.4	-2.4
02:55 AM - 03:00 AM	49.5	48.7	-	44.8	45.7	-0.9
03:00 AM - 03:05 AM	48.4	47.9	-	41.8	45.1	-3.3
03:05 AM - 03:10 AM	48.9	48.9	-	n/a	46.7	-
03:10 AM - 03:15 AM	49.4	48.9	-	42.8	45.8	-3.0
03:15 AM - 03:20 AM	49.5	49.5	-	n/a	46.3	-
03:20 AM - 03:25 AM	49.2	48.7	-	42.6	45.9	-3.3
03:25 AM - 03:30 AM	48.6	48.1	-	42.0	46.5	-4.5
03:30 AM - 03:35 AM	48.7	48.7	-	n/a	45.5	-
03:35 AM - 03:40 AM	49.9	49.3	-	44.0	45.3	-1.3

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234998-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-3
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	48.8	49.4	-	n/a	46.2	-
03:45 AM - 03:50 AM	48.2	47.7	-	41.6	45.1	-3.5
03:50 AM - 03:55 AM	48.6	48.6	-	n/a	46.1	-
03:55 AM - 04:00 AM	48.8	48.7	-	35.4	46.1	-10.7
04:00 AM - 04:05 AM	48.6	48.7	-	n/a	46.0	-
04:05 AM - 04:10 AM	47.8	48.2	-	n/a	44.9	-
04:10 AM - 04:15 AM	47.5	48.6	-	n/a	45.3	-
04:15 AM - 04:20 AM	48.4	47.8	-	42.5	44.0	-1.5
04:20 AM - 04:25 AM	46.6	47.0	-	n/a	43.8	-
04:25 AM - 04:30 AM	46.5	46.1	-	38.9	44.2	-5.3
04:30 AM - 04:35 AM	46.6	45.9	-	41.3	45.0	-3.7
04:35 AM - 04:40 AM	46.6	45.7	-	42.3	44.4	-2.1
04:40 AM - 04:45 AM	46.5	46.1	-	38.9	44.3	-5.4
04:45 AM - 04:50 AM	46.1	45.8	-	37.3	44.4	-7.1
04:50 AM - 04:55 AM	46.9	46.0	-	42.6	44.6	-2.0
04:55 AM - 05:00 AM	47.0	46.3	-	41.7	45.1	-3.4
05:00 AM - 05:05 AM	47.0	47.0	-	n/a	44.6	-
05:05 AM - 05:10 AM	46.5	46.8	-	n/a	44.5	-
05:10 AM - 05:15 AM	46.8	45.5	-	43.9	44.0	-0.1
05:15 AM - 05:20 AM	45.9	44.9	-	42.0	44.0	-2.0
05:20 AM - 05:25 AM	49.0	51.7	-	n/a	44.4	-
05:25 AM - 05:30 AM	48.5	47.4	-	45.0	44.7	0.3
05:30 AM - 05:35 AM	47.4	46.4	-	43.5	44.3	-0.8
05:35 AM - 05:40 AM	47.5	46.5	-	43.6	45.0	-1.4
05:40 AM - 05:45 AM	47.8	47.4	-	40.2	44.9	-4.7
05:45 AM - 05:50 AM	48.9	47.9	-	45.0	46.0	-1.0
05:50 AM - 05:55 AM	48.3	47.4	-	44.0	45.4	-1.4
05:55 AM - 06:00 AM	47.7	47.1	-	41.8	44.9	-3.1
06:00 AM - 07:00 AM	52.3	50.8	47.0	-	47.9	-0.9
07:00 AM - 08:00 AM	53.6	54.6	n/a	-	48.8	-
08:00 AM - 09:00 AM	50.2	49.2	43.3	-	44.4	-1.1
09:00 AM - 10:00 AM	50.3	50.2	33.9	-	44.0	-10.1
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 12-13 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-3 วันที่ตรวจวัด 12-13 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234999-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-4
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	46.3	46.3	n/a	-	39.2	-
11:00 AM - 12:00 PM	47.6	47.4	34.1	-	39.0	-4.9
12:00 PM - 01:00 PM	48.1	48.9	n/a	-	40.3	-
01:00 PM - 02:00 PM	52.3	51.5	44.6	-	44.8	-0.2
02:00 PM - 03:00 PM	47.4	46.2	41.2	-	41.9	-0.7
03:00 PM - 04:00 PM	51.1	51.6	n/a	-	42.8	-
04:00 PM - 05:00 PM	48.5	48.0	38.9	-	42.3	-3.4
05:00 PM - 06:00 PM	48.8	48.4	38.2	-	43.7	-5.5
06:00 PM - 07:00 PM	47.5	47.0	37.9	-	44.3	-6.4
07:00 PM - 08:00 PM	47.7	46.7	40.8	-	44.5	-3.7
08:00 PM - 09:00 PM	47.3	46.9	36.7	-	44.2	-7.5
09:00 PM - 10:00 PM	47.9	47.7	34.4	-	44.2	-9.8
10:00 PM - 10:05 PM	47.2	47.6	-	n/a	44.4	-
10:05 PM - 10:10 PM	46.7	46.6	-	33.3	45.1	-11.8
10:10 PM - 10:15 PM	47.2	47.2	-	n/a	44.7	-
10:15 PM - 10:20 PM	48.2	47.7	-	41.6	44.9	-3.3
10:20 PM - 10:25 PM	46.7	46.9	-	n/a	44.6	-
10:25 PM - 10:30 PM	47.1	47.7	-	n/a	45.6	-
10:30 PM - 10:35 PM	48.1	48.5	-	n/a	45.9	-
10:35 PM - 10:40 PM	47.4	46.8	-	41.5	42.7	-1.2
10:40 PM - 10:45 PM	47.4	47.6	-	n/a	42.5	-
10:45 PM - 10:50 PM	46.7	46.3	-	39.1	44.8	-5.7
10:50 PM - 10:55 PM	46.4	46.7	-	n/a	44.9	-
10:55 PM - 11:00 PM	47.7	47.8	-	n/a	45.6	-
11:00 PM - 11:05 PM	46.7	47.2	-	n/a	42.4	-
11:05 PM - 11:10 PM	46.7	47.0	-	n/a	44.7	-
11:10 PM - 11:15 PM	46.5	46.9	-	n/a	43.6	-
11:15 PM - 11:20 PM	46.5	46.4	-	33.1	42.2	-9.1
11:20 PM - 11:25 PM	48.4	48.4	-	n/a	45.2	-
11:25 PM - 11:30 PM	46.5	46.9	-	n/a	44.2	-
11:30 PM - 11:35 PM	46.8	46.4	-	39.2	41.7	-2.5
11:35 PM - 11:40 PM	46.9	47.2	-	n/a	45.2	-
11:40 PM - 11:45 PM	47.1	47.1	-	n/a	45.0	-
11:45 PM - 11:50 PM	46.6	47.1	-	n/a	43.5	-
11:50 PM - 11:55 PM	47.4	47.8	-	n/a	45.7	-
11:55 PM - 12:00 AM	47.3	47.6	-	n/a	45.0	-
12:00 AM - 12:05 AM	47.1	47.7	-	n/a	42.6	-
12:05 AM - 12:10 AM	47.6	48.0	-	n/a	45.2	-
12:10 AM - 12:15 AM	43.7	42.7	-	39.8	40.1	-0.3
12:15 AM - 12:20 AM	47.0	47.1	-	n/a	41.7	-

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234999-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-4
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))						
เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	42.8	42.2	-	36.9	40.1	-3.2
12:25 AM - 12:30 AM	46.5	46.8	-	n/a	43.1	-
12:30 AM - 12:35 AM	43.1	42.4	-	37.8	39.3	-1.5
12:35 AM - 12:40 AM	45.8	46.5	-	n/a	41.5	-
12:40 AM - 12:45 AM	46.6	46.6	-	n/a	42.7	-
12:45 AM - 12:50 AM	45.3	45.5	-	n/a	38.7	-
12:50 AM - 12:55 AM	44.1	44.6	-	n/a	38.6	-
12:55 AM - 01:00 AM	45.1	45.2	-	n/a	38.8	-
01:00 AM - 01:05 AM	43.2	43.6	-	n/a	38.1	-
01:05 AM - 01:10 AM	44.5	44.2	-	35.7	37.7	-2.0
01:10 AM - 01:15 AM	44.3	44.1	-	33.8	38.8	-5.0
01:15 AM - 01:20 AM	43.2	42.3	-	38.9	38.3	0.6
01:20 AM - 01:25 AM	44.0	42.3	-	42.1	38.2	3.9
01:25 AM - 01:30 AM	43.6	41.9	-	41.7	39.0	2.7
01:30 AM - 01:35 AM	43.3	41.7	-	41.2	38.6	2.6
01:35 AM - 01:40 AM	44.0	41.6	-	43.3	38.8	4.5
01:40 AM - 01:45 AM	43.2	41.2	-	41.9	38.7	3.2
01:45 AM - 01:50 AM	43.3	42.0	-	40.4	39.6	0.8
01:50 AM - 01:55 AM	44.1	42.8	-	41.2	39.9	1.3
01:55 AM - 02:00 AM	45.1	44.0	-	41.6	38.5	3.1
02:00 AM - 02:05 AM	41.5	40.3	-	38.3	38.4	-0.1
02:05 AM - 02:10 AM	48.9	50.0	-	n/a	39.7	-
02:10 AM - 02:15 AM	53.1	52.8	-	44.3	42.1	2.2
02:15 AM - 02:20 AM	42.8	41.9	-	38.5	38.7	-0.2
02:20 AM - 02:25 AM	42.3	41.3	-	38.4	38.4	0.0
02:25 AM - 02:30 AM	42.1	40.6	-	39.8	38.8	1.0
02:30 AM - 02:35 AM	41.6	40.0	-	39.5	37.8	1.7
02:35 AM - 02:40 AM	41.5	40.4	-	38.0	38.4	-0.4
02:40 AM - 02:45 AM	42.4	41.2	-	39.2	39.1	0.1
02:45 AM - 02:50 AM	43.1	42.5	-	37.2	39.2	-2.0
02:50 AM - 02:55 AM	41.9	43.1	-	n/a	38.9	-
02:55 AM - 03:00 AM	44.5	42.4	-	43.3	39.3	4.0
03:00 AM - 03:05 AM	41.7	40.3	-	39.1	38.4	0.7
03:05 AM - 03:10 AM	41.5	40.2	-	38.6	38.2	0.4
03:10 AM - 03:15 AM	41.5	40.4	-	38.0	38.2	-0.2
03:15 AM - 03:20 AM	41.5	40.1	-	38.9	38.5	0.4
03:20 AM - 03:25 AM	40.8	39.7	-	37.3	37.6	-0.3
03:25 AM - 03:30 AM	42.3	41.2	-	38.8	38.7	0.1
03:30 AM - 03:35 AM	41.3	40.0	-	38.4	38.9	-0.5
03:35 AM - 03:40 AM	46.3	45.6	-	41.0	38.4	2.6

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3234999-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-4
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	41.3	39.8	-	39.0	38.1	0.9
03:45 AM - 03:50 AM	40.7	39.6	-	37.2	38.1	-0.9
03:50 AM - 03:55 AM	41.1	40.9	-	30.6	38.3	-7.7
03:55 AM - 04:00 AM	41.8	40.6	-	38.6	38.7	-0.1
04:00 AM - 04:05 AM	42.2	40.9	-	39.3	38.3	1.0
04:05 AM - 04:10 AM	41.3	40.5	-	36.6	38.2	-1.6
04:10 AM - 04:15 AM	42.4	41.5	-	38.1	38.5	-0.4
04:15 AM - 04:20 AM	43.0	41.8	-	39.8	38.7	1.1
04:20 AM - 04:25 AM	42.1	40.8	-	39.2	39.0	0.2
04:25 AM - 04:30 AM	42.0	41.0	-	38.1	38.6	-0.5
04:30 AM - 04:35 AM	41.5	40.5	-	37.6	38.7	-1.1
04:35 AM - 04:40 AM	41.7	40.6	-	38.2	38.9	-0.7
04:40 AM - 04:45 AM	45.1	44.6	-	38.5	39.3	-0.8
04:45 AM - 04:50 AM	46.7	44.4	-	45.8	40.3	5.5
04:50 AM - 04:55 AM	42.5	42.4	-	29.1	39.4	-10.3
04:55 AM - 05:00 AM	44.8	43.6	-	41.6	40.8	0.8
05:00 AM - 05:05 AM	45.5	45.0	-	38.9	40.8	-1.9
05:05 AM - 05:10 AM	45.3	43.4	-	43.8	40.3	3.5
05:10 AM - 05:15 AM	43.0	42.4	-	37.1	40.3	-3.2
05:15 AM - 05:20 AM	43.8	42.9	-	39.5	40.2	-0.7
05:20 AM - 05:25 AM	45.4	44.7	-	40.1	41.4	-1.3
05:25 AM - 05:30 AM	46.8	46.3	-	40.2	42.1	-1.9
05:30 AM - 05:35 AM	46.1	44.9	-	42.9	42.0	0.9
05:35 AM - 05:40 AM	45.5	45.4	-	32.1	42.0	-9.9
05:40 AM - 05:45 AM	52.7	53.7	-	n/a	43.0	-
05:45 AM - 05:50 AM	47.8	47.6	-	37.3	42.2	-4.9
05:50 AM - 05:55 AM	47.1	46.1	-	43.2	43.6	-0.4
05:55 AM - 06:00 AM	48.7	47.2	-	46.4	43.7	2.7
06:00 AM - 07:00 AM	50.5	49.3	44.3	-	46.1	-1.8
07:00 AM - 08:00 AM	52.0	51.4	43.1	-	46.7	-3.6
08:00 AM - 09:00 AM	48.7	49.3	n/a	-	42.5	-
09:00 AM - 10:00 AM	48.1	46.6	42.8	-	44.4	-1.6
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 13-14 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-4 วันที่ตรวจวัด 13-14 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235000-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-5
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	47.5	47.0	37.9	-	41.1	-3.2
11:00 AM - 12:00 PM	48.9	49.2	n/a	-	42.9	-
12:00 PM - 01:00 PM	47.1	46.9	33.6	-	41.7	-8.1
01:00 PM - 02:00 PM	48.7	47.8	41.4	-	43.7	-2.3
02:00 PM - 03:00 PM	50.1	49.3	42.4	-	45.2	-2.8
03:00 PM - 04:00 PM	46.7	45.9	39.0	-	41.5	-2.5
04:00 PM - 05:00 PM	48.6	47.6	41.7	-	42.1	-0.4
05:00 PM - 06:00 PM	49.7	49.7	n/a	-	43.6	-
06:00 PM - 07:00 PM	48.0	47.9	31.6	-	43.2	-11.6
07:00 PM - 08:00 PM	47.2	48.8	n/a	-	45.9	-
08:00 PM - 09:00 PM	45.7	46.9	n/a	-	43.4	-
09:00 PM - 10:00 PM	45.7	45.5	32.2	-	42.3	-10.1
10:00 PM - 10:05 PM	46.2	45.2	-	42.3	42.2	0.1
10:05 PM - 10:10 PM	46.0	45.0	-	42.1	42.1	0.0
10:10 PM - 10:15 PM	46.4	45.9	-	39.8	42.1	-2.3
10:15 PM - 10:20 PM	44.7	43.9	-	40.0	42.0	-2.0
10:20 PM - 10:25 PM	47.9	47.5	-	40.3	43.1	-2.8
10:25 PM - 10:30 PM	44.0	43.0	-	40.1	41.5	-1.4
10:30 PM - 10:35 PM	44.9	44.5	-	37.3	42.4	-5.1
10:35 PM - 10:40 PM	44.7	44.3	-	37.1	42.4	-5.3
10:40 PM - 10:45 PM	45.2	44.7	-	38.6	42.3	-3.7
10:45 PM - 10:50 PM	44.9	43.9	-	41.0	42.2	-1.2
10:50 PM - 10:55 PM	44.0	43.8	-	33.5	41.4	-7.9
10:55 PM - 11:00 PM	44.6	43.5	-	41.1	41.2	-0.1
11:00 PM - 11:05 PM	44.9	44.9	-	n/a	41.7	-
11:05 PM - 11:10 PM	44.1	43.8	-	35.3	41.4	-6.1
11:10 PM - 11:15 PM	44.0	43.3	-	38.7	41.1	-2.4
11:15 PM - 11:20 PM	43.6	42.5	-	40.1	40.6	-0.5
11:20 PM - 11:25 PM	43.7	43.4	-	34.9	41.0	-6.1
11:25 PM - 11:30 PM	43.2	42.4	-	38.5	40.9	-2.4
11:30 PM - 11:35 PM	43.5	42.4	-	40.0	40.9	-0.9
11:35 PM - 11:40 PM	43.5	42.4	-	40.0	40.5	-0.5
11:40 PM - 11:45 PM	44.7	43.5	-	41.5	40.9	0.6
11:45 PM - 11:50 PM	43.5	43.0	-	36.9	40.9	-4.0
11:50 PM - 11:55 PM	43.6	43.4	-	33.1	41.3	-8.2
11:55 PM - 12:00 AM	52.1	52.0	-	38.7	41.2	-2.5
12:00 AM - 12:05 AM	44.1	43.8	-	35.3	41.2	-5.9
12:05 AM - 12:10 AM	44.6	43.3	-	41.7	42.0	-0.3
12:10 AM - 12:15 AM	43.7	43.2	-	37.1	41.2	-4.1
12:15 AM - 12:20 AM	43.8	42.8	-	39.9	41.6	-1.7

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235000-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-5
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	43.6	42.7	-	39.3	41.6	-2.3
12:25 AM - 12:30 AM	43.6	42.2	-	41.0	41.4	-0.4
12:30 AM - 12:35 AM	45.1	44.6	-	38.5	41.3	-2.8
12:35 AM - 12:40 AM	43.6	42.9	-	38.3	41.2	-2.9
12:40 AM - 12:45 AM	45.0	43.4	-	42.9	41.2	1.7
12:45 AM - 12:50 AM	43.2	43.2	-	n/a	41.0	-
12:50 AM - 12:55 AM	42.9	41.5	-	40.3	40.7	-0.4
12:55 AM - 01:00 AM	43.9	42.9	-	40.0	41.5	-1.5
01:00 AM - 01:05 AM	43.9	43.0	-	39.6	41.5	-1.9
01:05 AM - 01:10 AM	44.4	43.0	-	41.8	41.6	0.2
01:10 AM - 01:15 AM	45.2	44.2	-	41.3	42.8	-1.5
01:15 AM - 01:20 AM	43.4	42.5	-	39.1	41.4	-2.3
01:20 AM - 01:25 AM	44.7	44.0	-	39.4	41.8	-2.4
01:25 AM - 01:30 AM	43.8	42.8	-	39.9	41.6	-1.7
01:30 AM - 01:35 AM	42.0	40.9	-	38.5	40.0	-1.5
01:35 AM - 01:40 AM	43.1	42.1	-	39.2	41.0	-1.8
01:40 AM - 01:45 AM	42.7	41.8	-	38.4	40.8	-2.4
01:45 AM - 01:50 AM	44.4	43.7	-	39.1	41.5	-2.4
01:50 AM - 01:55 AM	43.3	42.6	-	38.0	40.3	-2.3
01:55 AM - 02:00 AM	42.0	41.2	-	37.3	40.4	-3.1
02:00 AM - 02:05 AM	43.2	42.4	-	38.5	40.4	-1.9
02:05 AM - 02:10 AM	41.8	41.0	-	37.1	39.8	-2.7
02:10 AM - 02:15 AM	41.7	40.9	-	37.0	39.9	-2.9
02:15 AM - 02:20 AM	42.6	41.9	-	37.3	40.7	-3.4
02:20 AM - 02:25 AM	42.7	42.4	-	33.9	41.0	-7.1
02:25 AM - 02:30 AM	41.9	41.1	-	37.2	40.2	-3.0
02:30 AM - 02:35 AM	44.8	43.9	-	40.5	40.5	0.0
02:35 AM - 02:40 AM	42.8	41.9	-	38.5	40.4	-1.9
02:40 AM - 02:45 AM	44.1	43.5	-	38.2	41.8	-3.6
02:45 AM - 02:50 AM	45.4	44.9	-	38.8	41.2	-2.4
02:50 AM - 02:55 AM	43.2	42.1	-	39.7	40.7	-1.0
02:55 AM - 03:00 AM	43.4	42.6	-	38.7	41.2	-2.5
03:00 AM - 03:05 AM	43.2	42.4	-	38.5	41.5	-3.0
03:05 AM - 03:10 AM	43.2	42.3	-	38.9	41.7	-2.8
03:10 AM - 03:15 AM	43.6	42.9	-	38.3	41.5	-3.2
03:15 AM - 03:20 AM	43.4	42.5	-	39.1	41.6	-2.5
03:20 AM - 03:25 AM	43.6	42.5	-	40.1	41.4	-1.3
03:25 AM - 03:30 AM	43.4	42.9	-	36.8	42.0	-5.2
03:30 AM - 03:35 AM	43.6	42.9	-	38.3	42.1	-3.8
03:35 AM - 03:40 AM	44.0	43.4	-	38.1	41.8	-3.7

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235000-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-5
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	44.7	43.8	-	40.4	42.6	-2.2
03:45 AM - 03:50 AM	44.4	43.3	-	40.9	42.3	-1.4
03:50 AM - 03:55 AM	45.1	44.2	-	40.8	42.9	-2.1
03:55 AM - 04:00 AM	45.1	44.2	-	40.8	43.0	-2.2
04:00 AM - 04:05 AM	44.4	43.4	-	40.5	42.2	-1.7
04:05 AM - 04:10 AM	43.6	42.4	-	40.4	41.6	-1.2
04:10 AM - 04:15 AM	44.5	43.6	-	40.2	42.7	-2.5
04:15 AM - 04:20 AM	44.7	43.9	-	40.0	42.7	-2.7
04:20 AM - 04:25 AM	44.4	42.6	-	42.7	41.6	1.1
04:25 AM - 04:30 AM	43.9	43.7	-	33.4	42.0	-8.6
04:30 AM - 04:35 AM	44.5	43.2	-	41.6	41.6	0.0
04:35 AM - 04:40 AM	46.3	46.1	-	35.8	42.8	-7.0
04:40 AM - 04:45 AM	43.8	43.6	-	33.3	41.2	-7.9
04:45 AM - 04:50 AM	43.3	42.8	-	36.7	41.2	-4.5
04:50 AM - 04:55 AM	44.1	43.6	-	37.5	41.8	-4.3
04:55 AM - 05:00 AM	44.0	43.1	-	39.7	41.2	-1.5
05:00 AM - 05:05 AM	44.8	44.3	-	38.2	42.1	-3.9
05:05 AM - 05:10 AM	45.3	44.6	-	40.0	41.1	-1.1
05:10 AM - 05:15 AM	43.2	42.5	-	37.9	40.6	-2.7
05:15 AM - 05:20 AM	44.1	42.9	-	40.9	41.1	-0.2
05:20 AM - 05:25 AM	43.8	43.8	-	n/a	41.7	-
05:25 AM - 05:30 AM	43.2	42.6	-	37.3	41.6	-4.3
05:30 AM - 05:35 AM	44.4	43.6	-	39.7	41.6	-1.9
05:35 AM - 05:40 AM	46.0	45.6	-	38.4	42.8	-4.4
05:40 AM - 05:45 AM	46.0	45.9	-	32.6	44.1	-11.5
05:45 AM - 05:50 AM	44.9	44.3	-	39.0	42.6	-3.6
05:50 AM - 05:55 AM	47.1	46.2	-	42.8	43.6	-0.8
05:55 AM - 06:00 AM	48.0	46.9	-	44.5	43.1	1.4
06:00 AM - 07:00 AM	49.9	48.7	43.7	-	45.0	-1.3
07:00 AM - 08:00 AM	50.5	49.6	43.2	-	45.6	-2.4
08:00 AM - 09:00 AM	48.8	48.9	n/a	-	43.8	-
09:00 AM - 10:00 AM	46.5	46.0	36.9	-	40.6	-3.7
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 14-15 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-5 วันที่ตรวจวัด 14-15 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235001-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-6
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	44.9	44.8	28.5	-	39.8	-11.3
11:00 AM - 12:00 PM	45.7	47.5	n/a	-	41.4	-
12:00 PM - 01:00 PM	45.0	45.3	n/a	-	39.2	-
01:00 PM - 02:00 PM	46.6	46.7	n/a	-	40.2	-
02:00 PM - 03:00 PM	46.6	46.3	34.8	-	40.7	-5.9
03:00 PM - 04:00 PM	48.8	49.6	n/a	-	41.5	-
04:00 PM - 05:00 PM	49.0	48.1	41.7	-	42.4	-0.7
05:00 PM - 06:00 PM	50.0	49.0	43.1	-	43.0	0.1
06:00 PM - 07:00 PM	47.1	47.2	n/a	-	43.4	-
07:00 PM - 08:00 PM	47.7	48.5	n/a	-	45.7	-
08:00 PM - 09:00 PM	46.3	46.1	32.8	-	43.3	-10.5
09:00 PM - 10:00 PM	47.0	46.6	36.4	-	43.7	-7.3
10:00 PM - 10:05 PM	45.2	44.6	-	39.3	42.3	-3.0
10:05 PM - 10:10 PM	45.3	44.4	-	41.0	42.0	-1.0
10:10 PM - 10:15 PM	45.4	45.3	-	32.0	42.3	-10.3
10:15 PM - 10:20 PM	46.0	45.0	-	42.1	42.1	0.0
10:20 PM - 10:25 PM	48.3	47.9	-	40.7	42.8	-2.1
10:25 PM - 10:30 PM	45.9	45.2	-	40.6	42.6	-2.0
10:30 PM - 10:35 PM	46.3	45.9	-	38.7	42.5	-3.8
10:35 PM - 10:40 PM	46.9	46.3	-	41.0	42.5	-1.5
10:40 PM - 10:45 PM	46.0	45.2	-	41.3	42.9	-1.6
10:45 PM - 10:50 PM	45.2	44.3	-	40.9	42.5	-1.6
10:50 PM - 10:55 PM	45.5	45.0	-	38.9	41.7	-2.8
10:55 PM - 11:00 PM	45.2	44.7	-	38.6	41.7	-3.1
11:00 PM - 11:05 PM	44.8	43.9	-	40.5	42.0	-1.5
11:05 PM - 11:10 PM	43.6	43.0	-	37.7	41.4	-3.7
11:10 PM - 11:15 PM	45.3	44.7	-	39.4	41.4	-2.0
11:15 PM - 11:20 PM	44.9	44.7	-	34.4	41.8	-7.4
11:20 PM - 11:25 PM	44.6	43.7	-	40.3	41.6	-1.3
11:25 PM - 11:30 PM	45.8	45.5	-	37.0	42.5	-5.5
11:30 PM - 11:35 PM	45.6	45.2	-	38.0	42.2	-4.2
11:35 PM - 11:40 PM	44.8	44.1	-	39.5	42.1	-2.6
11:40 PM - 11:45 PM	45.6	44.9	-	40.3	43.1	-2.8
11:45 PM - 11:50 PM	45.2	44.1	-	41.7	42.7	-1.0
11:50 PM - 11:55 PM	45.4	44.4	-	41.5	43.1	-1.6
11:55 PM - 12:00 AM	46.3	45.3	-	42.4	44.2	-1.8
12:00 AM - 12:05 AM	46.1	45.1	-	42.2	43.5	-1.3
12:05 AM - 12:10 AM	45.3	44.6	-	40.0	42.6	-2.6
12:10 AM - 12:15 AM	45.7	44.8	-	41.4	43.1	-1.7
12:15 AM - 12:20 AM	47.6	47.2	-	40.0	43.2	-3.2

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235001-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-6
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	44.8	43.8	-	40.9	41.8	-0.9
12:25 AM - 12:30 AM	43.9	43.1	-	39.2	41.1	-1.9
12:30 AM - 12:35 AM	46.2	45.7	-	39.6	41.9	-2.3
12:35 AM - 12:40 AM	45.0	44.8	-	34.5	42.1	-7.6
12:40 AM - 12:45 AM	45.4	43.9	-	43.1	41.9	1.2
12:45 AM - 12:50 AM	44.0	43.2	-	39.3	41.7	-2.4
12:50 AM - 12:55 AM	43.7	42.8	-	39.4	40.8	-1.4
12:55 AM - 01:00 AM	44.2	42.3	-	42.7	40.6	2.1
01:00 AM - 01:05 AM	46.0	45.9	-	32.6	41.1	-8.5
01:05 AM - 01:10 AM	45.2	43.7	-	42.9	40.9	2.0
01:10 AM - 01:15 AM	44.8	43.9	-	40.5	40.9	-0.4
01:15 AM - 01:20 AM	44.4	43.4	-	40.5	41.0	-0.5
01:20 AM - 01:25 AM	43.8	42.2	-	41.7	41.0	0.7
01:25 AM - 01:30 AM	44.2	42.8	-	41.6	41.1	0.5
01:30 AM - 01:35 AM	43.4	41.7	-	41.5	40.5	1.0
01:35 AM - 01:40 AM	43.7	42.7	-	39.8	40.8	-1.0
01:40 AM - 01:45 AM	47.0	46.0	-	43.1	41.7	1.4
01:45 AM - 01:50 AM	45.1	43.7	-	42.5	40.7	1.8
01:50 AM - 01:55 AM	43.1	42.0	-	39.6	40.5	-0.9
01:55 AM - 02:00 AM	43.4	42.5	-	39.1	40.9	-1.8
02:00 AM - 02:05 AM	43.2	42.0	-	40.0	40.5	-0.5
02:05 AM - 02:10 AM	43.1	41.9	-	39.9	41.1	-1.2
02:10 AM - 02:15 AM	47.6	46.4	-	44.4	41.5	2.9
02:15 AM - 02:20 AM	43.5	42.0	-	41.2	40.4	0.8
02:20 AM - 02:25 AM	43.2	42.3	-	38.9	41.3	-2.4
02:25 AM - 02:30 AM	43.3	42.1	-	40.1	41.3	-1.2
02:30 AM - 02:35 AM	44.2	43.5	-	38.9	42.5	-3.6
02:35 AM - 02:40 AM	44.2	43.1	-	40.7	42.1	-1.4
02:40 AM - 02:45 AM	44.6	43.5	-	41.1	41.8	-0.7
02:45 AM - 02:50 AM	44.0	43.0	-	40.1	41.6	-1.5
02:50 AM - 02:55 AM	44.8	44.8	-	n/a	41.2	-
02:55 AM - 03:00 AM	42.5	41.1	-	39.9	39.5	0.4
03:00 AM - 03:05 AM	43.4	42.5	-	39.1	39.9	-0.8
03:05 AM - 03:10 AM	40.6	39.5	-	37.1	38.5	-1.4
03:10 AM - 03:15 AM	41.1	40.3	-	36.4	38.7	-2.3
03:15 AM - 03:20 AM	41.6	40.7	-	37.3	39.5	-2.2
03:20 AM - 03:25 AM	42.3	41.2	-	38.8	39.9	-1.1
03:25 AM - 03:30 AM	42.9	42.3	-	37.0	40.0	-3.0
03:30 AM - 03:35 AM	41.5	40.9	-	35.6	39.9	-4.3
03:35 AM - 03:40 AM	42.6	42.0	-	36.7	39.9	-3.2

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235001-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-6
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	42.2	41.5	-	36.9	39.8	-2.9
03:45 AM - 03:50 AM	43.4	43.3	-	30.0	40.4	-10.4
03:50 AM - 03:55 AM	43.8	42.8	-	39.9	40.3	-0.4
03:55 AM - 04:00 AM	43.4	43.2	-	32.9	40.8	-7.9
04:00 AM - 04:05 AM	45.8	46.2	-	n/a	41.2	-
04:05 AM - 04:10 AM	44.1	43.6	-	37.5	41.0	-3.5
04:10 AM - 04:15 AM	42.8	42.2	-	36.9	40.5	-3.6
04:15 AM - 04:20 AM	42.2	41.2	-	38.3	39.6	-1.3
04:20 AM - 04:25 AM	41.6	40.9	-	36.3	39.5	-3.2
04:25 AM - 04:30 AM	40.9	40.2	-	35.6	38.5	-2.9
04:30 AM - 04:35 AM	43.1	43.3	-	n/a	39.0	-
04:35 AM - 04:40 AM	42.6	41.8	-	37.9	40.2	-2.3
04:40 AM - 04:45 AM	42.0	40.7	-	39.1	39.4	-0.3
04:45 AM - 04:50 AM	42.2	41.3	-	37.9	39.3	-1.4
04:50 AM - 04:55 AM	44.1	45.0	-	n/a	40.1	-
04:55 AM - 05:00 AM	44.0	43.1	-	39.7	40.4	-0.7
05:00 AM - 05:05 AM	42.7	43.7	-	n/a	39.8	-
05:05 AM - 05:10 AM	47.0	46.1	-	42.7	41.6	1.1
05:10 AM - 05:15 AM	47.3	45.7	-	45.2	41.0	4.2
05:15 AM - 05:20 AM	44.0	43.4	-	38.1	40.3	-2.2
05:20 AM - 05:25 AM	42.9	41.9	-	39.0	38.8	0.2
05:25 AM - 05:30 AM	43.4	43.1	-	34.6	40.1	-5.5
05:30 AM - 05:35 AM	44.4	43.8	-	38.5	41.3	-2.8
05:35 AM - 05:40 AM	44.4	43.2	-	41.2	41.0	0.2
05:40 AM - 05:45 AM	44.7	44.4	-	35.9	41.1	-5.2
05:45 AM - 05:50 AM	46.0	45.9	-	32.6	40.5	-7.9
05:50 AM - 05:55 AM	43.8	42.7	-	40.3	40.0	0.3
05:55 AM - 06:00 AM	44.0	43.6	-	36.4	41.0	-4.6
06:00 AM - 07:00 AM	50.0	49.2	42.3	-	44.2	-1.9
07:00 AM - 08:00 AM	49.9	48.9	43.0	-	45.8	-2.8
08:00 AM - 09:00 AM	49.7	49.3	39.1	-	43.3	-4.2
09:00 AM - 10:00 AM	45.7	45.0	37.4	-	41.1	-3.7
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 15-16 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-6 วันที่ตรวจวัด 15-16 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235002-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254004-7
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
10:00 AM - 11:00 AM	48.3	47.6	40.0	-	39.6	0.4
11:00 AM - 12:00 PM	46.4	46.5	n/a	-	38.7	-
12:00 PM - 01:00 PM	47.4	46.6	39.7	-	39.2	0.5
01:00 PM - 02:00 PM	47.4	46.5	40.1	-	40.1	0.0
02:00 PM - 03:00 PM	47.2	47.4	n/a	-	40.8	-
03:00 PM - 04:00 PM	48.4	48.1	36.6	-	41.8	-5.2
04:00 PM - 05:00 PM	47.8	47.2	38.9	-	41.6	-2.7
05:00 PM - 06:00 PM	49.5	49.0	39.9	-	43.3	-3.4
06:00 PM - 07:00 PM	48.0	47.4	39.1	-	43.1	-4.0
07:00 PM - 08:00 PM	47.3	47.3	n/a	-	43.4	-
08:00 PM - 09:00 PM	47.1	46.7	36.5	-	43.2	-6.7
09:00 PM - 10:00 PM	46.0	44.9	39.5	-	41.8	-2.3
10:00 PM - 10:05 PM	45.0	44.3	-	39.7	41.8	-2.1
10:05 PM - 10:10 PM	44.0	43.0	-	40.1	41.0	-0.9
10:10 PM - 10:15 PM	44.4	43.4	-	40.5	41.3	-0.8
10:15 PM - 10:20 PM	45.6	44.8	-	40.9	41.6	-0.7
10:20 PM - 10:25 PM	45.9	44.6	-	43.0	41.6	1.4
10:25 PM - 10:30 PM	44.3	43.6	-	39.0	41.7	-2.7
10:30 PM - 10:35 PM	45.2	44.3	-	40.9	42.0	-1.1
10:35 PM - 10:40 PM	44.6	43.9	-	39.3	41.0	-1.7
10:40 PM - 10:45 PM	44.1	43.6	-	37.5	41.2	-3.7
10:45 PM - 10:50 PM	47.3	47.1	-	36.8	41.2	-4.4
10:50 PM - 10:55 PM	44.4	43.8	-	38.5	41.5	-3.0
10:55 PM - 11:00 PM	46.0	45.4	-	40.1	41.4	-1.3
11:00 PM - 11:05 PM	45.7	44.7	-	41.8	42.2	-0.4
11:05 PM - 11:10 PM	48.1	47.2	-	43.8	42.1	1.7
11:10 PM - 11:15 PM	44.8	44.3	-	38.2	41.2	-3.0
11:15 PM - 11:20 PM	44.0	42.9	-	40.5	40.0	0.5
11:20 PM - 11:25 PM	46.4	45.3	-	42.9	40.5	2.4
11:25 PM - 11:30 PM	45.1	43.9	-	41.9	40.5	1.4
11:30 PM - 11:35 PM	44.8	43.9	-	40.5	40.8	-0.3
11:35 PM - 11:40 PM	45.2	44.7	-	38.6	40.4	-1.8
11:40 PM - 11:45 PM	45.9	44.4	-	43.6	41.0	2.6
11:45 PM - 11:50 PM	45.0	44.2	-	40.3	40.7	-0.4
11:50 PM - 11:55 PM	43.6	42.7	-	39.3	40.7	-1.4
11:55 PM - 12:00 AM	45.4	44.5	-	41.1	40.1	1.0
12:00 AM - 12:05 AM	44.5	43.5	-	40.6	39.1	1.5
12:05 AM - 12:10 AM	44.8	43.6	-	41.6	39.8	1.8
12:10 AM - 12:15 AM	44.9	44.1	-	40.2	41.4	-1.2
12:15 AM - 12:20 AM	44.6	43.8	-	39.9	40.9	-1.0

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235002-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254004-7
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
12:20 AM - 12:25 AM	46.8	46.0	-	42.1	42.8	-0.7
12:25 AM - 12:30 AM	48.9	48.0	-	44.6	45.7	-1.1
12:30 AM - 12:35 AM	48.1	47.0	-	44.6	45.1	-0.5
12:35 AM - 12:40 AM	48.5	47.4	-	45.0	44.5	0.5
12:40 AM - 12:45 AM	47.5	46.5	-	43.6	42.8	0.8
12:45 AM - 12:50 AM	47.1	45.8	-	44.2	43.5	0.7
12:50 AM - 12:55 AM	49.3	48.1	-	46.1	45.4	0.7
12:55 AM - 01:00 AM	49.1	48.0	-	45.6	45.6	0.0
01:00 AM - 01:05 AM	48.5	47.1	-	45.9	45.0	0.9
01:05 AM - 01:10 AM	49.5	48.1	-	46.9	45.8	1.1
01:10 AM - 01:15 AM	48.8	47.7	-	45.3	45.3	0.0
01:15 AM - 01:20 AM	48.4	47.1	-	45.5	45.1	0.4
01:20 AM - 01:25 AM	47.6	46.2	-	45.0	44.1	0.9
01:25 AM - 01:30 AM	46.5	45.3	-	43.3	43.1	0.2
01:30 AM - 01:35 AM	45.9	44.5	-	43.3	39.9	3.4
01:35 AM - 01:40 AM	46.1	45.2	-	41.8	43.0	-1.2
01:40 AM - 01:45 AM	46.0	45.3	-	40.7	43.3	-2.6
01:45 AM - 01:50 AM	46.5	45.6	-	42.2	43.7	-1.5
01:50 AM - 01:55 AM	46.3	45.4	-	42.0	43.7	-1.7
01:55 AM - 02:00 AM	45.4	44.7	-	40.1	42.2	-2.1
02:00 AM - 02:05 AM	47.5	46.6	-	43.2	44.4	-1.2
02:05 AM - 02:10 AM	48.2	47.4	-	43.5	45.0	-1.5
02:10 AM - 02:15 AM	46.1	45.4	-	40.8	43.0	-2.2
02:15 AM - 02:20 AM	45.3	43.8	-	43.0	42.2	0.8
02:20 AM - 02:25 AM	45.0	43.9	-	41.5	42.1	-0.6
02:25 AM - 02:30 AM	44.0	42.9	-	40.5	39.5	1.0
02:30 AM - 02:35 AM	44.8	44.1	-	39.5	41.6	-2.1
02:35 AM - 02:40 AM	43.0	42.4	-	37.1	40.0	-2.9
02:40 AM - 02:45 AM	43.0	42.3	-	37.7	40.2	-2.5
02:45 AM - 02:50 AM	44.4	42.9	-	42.1	40.2	1.9
02:50 AM - 02:55 AM	44.3	43.7	-	38.4	40.1	-1.7
02:55 AM - 03:00 AM	43.4	42.2	-	40.2	39.8	0.4
03:00 AM - 03:05 AM	44.7	43.8	-	40.4	40.3	0.1
03:05 AM - 03:10 AM	43.4	42.3	-	39.9	40.2	-0.3
03:10 AM - 03:15 AM	42.5	41.3	-	39.3	39.0	0.3
03:15 AM - 03:20 AM	41.7	40.5	-	38.5	39.1	-0.6
03:20 AM - 03:25 AM	42.5	41.3	-	39.3	39.8	-0.5
03:25 AM - 03:30 AM	44.0	42.6	-	41.4	39.7	1.7
03:30 AM - 03:35 AM	43.8	42.6	-	40.6	38.9	1.7
03:35 AM - 03:40 AM	42.1	40.9	-	38.9	38.9	0.0

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254004
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report Number : 3235002-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254004-7
Parameter เสียงรบกวน
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735240, 1409021)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120936

ระดับเสียง (dB(A))

เวลา	เสียงจากแหล่งกำเนิด	เสียงขณะไม่มีการรบกวน	เสียงขณะมีการรบกวน		เสียงพื้นฐาน	ค่าระดับการรบกวน
			กลางวัน	กลางคืน		
03:40 AM - 03:45 AM	40.7	39.6	-	37.2	38.1	-0.9
03:45 AM - 03:50 AM	40.5	39.3	-	37.3	37.9	-0.6
03:50 AM - 03:55 AM	41.1	39.9	-	37.9	38.0	-0.1
03:55 AM - 04:00 AM	41.5	40.5	-	37.6	38.9	-1.3
04:00 AM - 04:05 AM	42.2	41.0	-	39.0	39.2	-0.2
04:05 AM - 04:10 AM	41.5	40.2	-	38.6	39.0	-0.4
04:10 AM - 04:15 AM	42.4	41.1	-	39.5	39.2	0.3
04:15 AM - 04:20 AM	42.0	40.8	-	38.8	39.2	-0.4
04:20 AM - 04:25 AM	42.5	41.4	-	39.0	38.9	0.1
04:25 AM - 04:30 AM	42.8	41.6	-	39.6	40.0	-0.4
04:30 AM - 04:35 AM	42.3	40.9	-	39.7	39.3	0.4
04:35 AM - 04:40 AM	42.2	41.2	-	38.3	39.4	-1.1
04:40 AM - 04:45 AM	42.4	41.4	-	38.5	39.6	-1.1
04:45 AM - 04:50 AM	42.1	41.0	-	38.6	39.1	-0.5
04:50 AM - 04:55 AM	42.7	41.3	-	40.1	39.7	0.4
04:55 AM - 05:00 AM	42.8	41.7	-	39.3	39.6	-0.3
05:00 AM - 05:05 AM	42.3	41.3	-	38.4	39.7	-1.3
05:05 AM - 05:10 AM	42.6	41.4	-	39.4	39.7	-0.3
05:10 AM - 05:15 AM	42.6	41.7	-	38.3	39.9	-1.6
05:15 AM - 05:20 AM	43.0	41.6	-	40.4	39.1	1.3
05:20 AM - 05:25 AM	42.3	41.2	-	38.8	39.7	-0.9
05:25 AM - 05:30 AM	43.1	42.0	-	39.6	39.6	0.0
05:30 AM - 05:35 AM	45.7	43.7	-	44.4	40.1	4.3
05:35 AM - 05:40 AM	42.9	41.9	-	39.0	40.1	-1.1
05:40 AM - 05:45 AM	43.0	42.6	-	35.4	39.9	-4.5
05:45 AM - 05:50 AM	43.4	42.7	-	38.1	40.6	-2.5
05:50 AM - 05:55 AM	45.0	44.7	-	36.2	40.8	-4.6
05:55 AM - 06:00 AM	43.1	42.1	-	39.2	40.4	-1.2
06:00 AM - 07:00 AM	48.3	46.6	43.4	-	43.6	-0.2
07:00 AM - 08:00 AM	49.9	49.0	42.6	-	45.2	-2.6
08:00 AM - 09:00 AM	50.0	49.6	39.4	-	43.4	-4.0
09:00 AM - 10:00 AM	51.8	51.7	35.4	-	42.0	-6.6
ค่ามาตรฐาน						≤ 10

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

มาตรฐาน

- ประกาศกระทรวงอุตสาหกรรม เรื่อง กำหนดค่าระดับเสียงการรบกวนและระดับเสียงที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2548
- ประกาศกระทรวงสาธารณสุข เรื่อง กำหนดค่ามาตรฐานมลพิษทางเสียงอันเกิดจากการประกอบกิจการที่เป็นอันตรายต่อสุขภาพ พ.ศ. 2561

Remark:

- ระดับเสียงจากแหล่งกำเนิด ทำการตรวจวัด วันที่ 16-17 กุมภาพันธ์ 2568
- ระดับเสียงพื้นฐานและระดับเสียงขณะไม่มีการรบกวน (Sample No.254007-7 วันที่ตรวจวัด 16-17 กุมภาพันธ์ 2568)
- n/a: ไม่สามารถคำนวณระดับเสียงขณะมีการรบกวนเนื่องจากระดับเสียงจากแหล่งกำเนิดน้อยกว่าระดับเสียงขณะไม่มีการรบกวน

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235013-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254007-1
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	46.8	71.2	41.0
11:00 AM - 12:00 PM	48.9	67.2	43.8
12:00 PM - 01:00 PM	46.4	66.6	41.3
01:00 PM - 02:00 PM	48.0	70.9	41.2
02:00 PM - 03:00 PM	49.0	72.1	42.7
03:00 PM - 04:00 PM	49.5	73.7	42.1
04:00 PM - 05:00 PM	47.7	70.6	42.1
05:00 PM - 06:00 PM	51.0	75.3	44.0
06:00 PM - 07:00 PM	49.4	73.3	44.4
07:00 PM - 08:00 PM	47.1	62.4	43.7
08:00 PM - 09:00 PM	46.1	62.7	42.7
09:00 PM - 10:00 PM	46.3	64.2	43.8
10:00 PM - 10:05 PM	50.5	65.3	43.9
10:05 PM - 10:10 PM	47.6	61.6	43.8
10:10 PM - 10:15 PM	44.0	49.1	42.3
10:15 PM - 10:20 PM	46.6	58.8	42.3
10:20 PM - 10:25 PM	43.8	50.2	42.1
10:25 PM - 10:30 PM	43.7	49.9	42.3
10:30 PM - 10:35 PM	44.5	49.2	42.8
10:35 PM - 10:40 PM	46.0	59.8	43.7
10:40 PM - 10:45 PM	46.3	66.5	43.0
10:45 PM - 10:50 PM	45.4	53.8	44.0
10:50 PM - 10:55 PM	46.9	58.2	44.2
10:55 PM - 11:00 PM	45.1	57.2	42.7
11:00 PM - 11:05 PM	43.2	49.6	42.3
11:05 PM - 11:10 PM	45.5	59.3	43.2
11:10 PM - 11:15 PM	46.5	59.6	43.6
11:15 PM - 11:20 PM	45.0	54.1	43.8
11:20 PM - 11:25 PM	45.3	56.0	44.0
11:25 PM - 11:30 PM	45.0	55.7	43.7
11:30 PM - 11:35 PM	45.5	58.4	43.2
11:35 PM - 11:40 PM	44.7	52.1	43.4
11:40 PM - 11:45 PM	44.5	58.5	42.9
11:45 PM - 11:50 PM	45.3	59.6	43.6
11:50 PM - 11:55 PM	45.9	57.5	43.8
11:55 PM - 12:00 AM	46.6	57.9	43.7
12:00 AM - 12:05 AM	45.9	57.7	43.6
12:05 AM - 12:10 AM	44.8	54.4	43.8
12:10 AM - 12:15 AM	45.7	49.4	44.8
12:15 AM - 12:20 AM	45.1	48.4	44.3

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235013-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254007-1
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	45.1	53.7	43.6
12:25 AM - 12:30 AM	46.5	60.2	44.5
12:30 AM - 12:35 AM	46.7	59.7	44.0
12:35 AM - 12:40 AM	45.0	50.2	43.7
12:40 AM - 12:45 AM	45.0	55.2	43.8
12:45 AM - 12:50 AM	45.1	57.7	43.9
12:50 AM - 12:55 AM	44.3	49.7	43.3
12:55 AM - 01:00 AM	44.3	51.0	42.8
01:00 AM - 01:05 AM	44.0	49.6	42.9
01:05 AM - 01:10 AM	47.2	64.5	43.4
01:10 AM - 01:15 AM	46.3	57.9	43.8
01:15 AM - 01:20 AM	46.6	61.5	45.1
01:20 AM - 01:25 AM	46.4	54.9	45.0
01:25 AM - 01:30 AM	46.6	55.4	45.1
01:30 AM - 01:35 AM	46.3	52.0	45.2
01:35 AM - 01:40 AM	46.1	48.5	45.3
01:40 AM - 01:45 AM	46.9	54.5	45.7
01:45 AM - 01:50 AM	47.0	53.0	45.8
01:50 AM - 01:55 AM	46.6	57.0	44.7
01:55 AM - 02:00 AM	47.1	49.8	46.0
02:00 AM - 02:05 AM	47.8	66.0	46.3
02:05 AM - 02:10 AM	47.4	50.4	46.3
02:10 AM - 02:15 AM	46.7	50.3	45.6
02:15 AM - 02:20 AM	46.4	49.4	45.3
02:20 AM - 02:25 AM	48.7	61.5	46.3
02:25 AM - 02:30 AM	46.9	49.6	46.1
02:30 AM - 02:35 AM	47.8	50.5	46.8
02:35 AM - 02:40 AM	47.9	52.4	46.9
02:40 AM - 02:45 AM	47.6	58.9	46.3
02:45 AM - 02:50 AM	47.0	58.6	45.9
02:50 AM - 02:55 AM	46.6	57.5	45.7
02:55 AM - 03:00 AM	46.2	51.5	45.4
03:00 AM - 03:05 AM	47.8	53.0	46.4
03:05 AM - 03:10 AM	46.9	51.3	45.8
03:10 AM - 03:15 AM	47.4	51.3	46.4
03:15 AM - 03:20 AM	47.8	56.1	46.6
03:20 AM - 03:25 AM	47.1	49.3	46.3
03:25 AM - 03:30 AM	47.8	51.0	47.0
03:30 AM - 03:35 AM	48.2	53.8	47.0
03:35 AM - 03:40 AM	48.1	51.3	47.4

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235013-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254007-1
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	47.9	50.5	47.0
03:45 AM - 03:50 AM	46.1	52.8	44.9
03:50 AM - 03:55 AM	46.1	52.3	45.1
03:55 AM - 04:00 AM	46.7	50.0	45.4
04:00 AM - 04:05 AM	47.9	57.4	45.5
04:05 AM - 04:10 AM	45.5	50.6	44.6
04:10 AM - 04:15 AM	45.6	48.4	44.8
04:15 AM - 04:20 AM	46.2	49.0	45.3
04:20 AM - 04:25 AM	45.5	49.4	44.4
04:25 AM - 04:30 AM	46.5	57.1	43.9
04:30 AM - 04:35 AM	45.4	57.8	43.2
04:35 AM - 04:40 AM	44.0	48.0	43.1
04:40 AM - 04:45 AM	44.7	57.8	43.7
04:45 AM - 04:50 AM	44.9	50.3	43.6
04:50 AM - 04:55 AM	47.6	59.2	45.8
04:55 AM - 05:00 AM	49.0	61.5	46.1
05:00 AM - 05:05 AM	48.1	59.6	45.8
05:05 AM - 05:10 AM	47.0	53.7	45.7
05:10 AM - 05:15 AM	49.2	59.4	46.6
05:15 AM - 05:20 AM	48.3	55.1	46.5
05:20 AM - 05:25 AM	47.8	51.6	46.7
05:25 AM - 05:30 AM	49.4	53.0	48.0
05:30 AM - 05:35 AM	49.5	54.4	48.4
05:35 AM - 05:40 AM	49.9	58.8	47.6
05:40 AM - 05:45 AM	49.1	57.9	47.2
05:45 AM - 05:50 AM	49.4	56.2	48.3
05:50 AM - 05:55 AM	49.8	53.9	48.8
05:55 AM - 06:00 AM	50.7	58.2	49.0
06:00 AM - 07:00 AM	52.0	69.6	49.2
07:00 AM - 08:00 AM	51.4	70.3	48.2
08:00 AM - 09:00 AM	48.8	75.6	45.7
09:00 AM - 10:00 AM	53.0	78.5	44.0

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235014-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. : 254007-2
Parameter : Noise
Location : ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date : Feb 11 - 12, 2025
Measurement by : Panuwat Wangbong
Sound Level Meter : 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	48.8	77.0	42.9
11:00 AM - 12:00 PM	46.1	67.1	39.4
12:00 PM - 01:00 PM	47.5	70.1	39.8
01:00 PM - 02:00 PM	46.5	65.0	41.4
02:00 PM - 03:00 PM	52.9	65.1	49.1
03:00 PM - 04:00 PM	51.0	73.2	43.7
04:00 PM - 05:00 PM	50.6	72.4	44.0
05:00 PM - 06:00 PM	48.6	65.8	43.9
06:00 PM - 07:00 PM	48.5	63.2	45.4
07:00 PM - 08:00 PM	47.9	63.3	45.2
08:00 PM - 09:00 PM	48.4	69.4	45.4
09:00 PM - 10:00 PM	47.2	64.8	44.4
10:00 PM - 10:05 PM	49.1	62.2	44.3
10:05 PM - 10:10 PM	45.1	54.9	43.0
10:10 PM - 10:15 PM	45.7	53.2	43.4
10:15 PM - 10:20 PM	45.4	53.1	43.2
10:20 PM - 10:25 PM	46.3	60.2	43.6
10:25 PM - 10:30 PM	47.5	62.8	43.8
10:30 PM - 10:35 PM	49.0	63.4	45.8
10:35 PM - 10:40 PM	52.1	64.7	46.5
10:40 PM - 10:45 PM	47.5	60.2	44.1
10:45 PM - 10:50 PM	44.9	52.6	43.8
10:50 PM - 10:55 PM	46.7	53.6	44.8
10:55 PM - 11:00 PM	46.3	52.3	45.1
11:00 PM - 11:05 PM	46.0	52.2	44.9
11:05 PM - 11:10 PM	46.8	53.1	45.3
11:10 PM - 11:15 PM	46.4	53.1	45.2
11:15 PM - 11:20 PM	48.0	66.3	45.4
11:20 PM - 11:25 PM	46.8	56.3	45.6
11:25 PM - 11:30 PM	46.9	54.2	45.6
11:30 PM - 11:35 PM	46.5	53.9	45.2
11:35 PM - 11:40 PM	46.5	49.9	45.5
11:40 PM - 11:45 PM	47.5	55.8	45.9
11:45 PM - 11:50 PM	46.7	51.3	45.7
11:50 PM - 11:55 PM	46.4	51.5	45.3
11:55 PM - 12:00 AM	46.3	56.3	44.8
12:00 AM - 12:05 AM	46.8	54.4	44.8
12:05 AM - 12:10 AM	47.5	58.1	45.3
12:10 AM - 12:15 AM	47.6	59.9	45.3
12:15 AM - 12:20 AM	47.0	58.5	45.9

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235014-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-2
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	46.3	50.6	45.2
12:25 AM - 12:30 AM	46.6	59.4	44.9
12:30 AM - 12:35 AM	46.6	55.9	45.2
12:35 AM - 12:40 AM	47.6	57.5	45.0
12:40 AM - 12:45 AM	46.5	55.6	45.0
12:45 AM - 12:50 AM	45.9	50.3	44.7
12:50 AM - 12:55 AM	46.0	55.9	44.8
12:55 AM - 01:00 AM	46.1	51.0	45.2
01:00 AM - 01:05 AM	48.0	51.0	46.7
01:05 AM - 01:10 AM	48.0	60.5	46.0
01:10 AM - 01:15 AM	47.9	54.2	47.3
01:15 AM - 01:20 AM	48.8	59.2	47.5
01:20 AM - 01:25 AM	49.1	58.0	47.7
01:25 AM - 01:30 AM	48.2	54.2	46.9
01:30 AM - 01:35 AM	48.2	50.1	47.6
01:35 AM - 01:40 AM	48.4	52.8	47.5
01:40 AM - 01:45 AM	48.5	52.8	47.9
01:45 AM - 01:50 AM	48.2	51.3	47.2
01:50 AM - 01:55 AM	47.3	50.3	46.7
01:55 AM - 02:00 AM	47.5	52.7	46.7
02:00 AM - 02:05 AM	47.2	51.0	46.4
02:05 AM - 02:10 AM	47.2	52.9	46.0
02:10 AM - 02:15 AM	45.7	50.9	45.0
02:15 AM - 02:20 AM	46.5	52.2	45.5
02:20 AM - 02:25 AM	46.4	51.1	45.5
02:25 AM - 02:30 AM	47.9	51.3	47.0
02:30 AM - 02:35 AM	47.1	51.5	46.3
02:35 AM - 02:40 AM	48.3	58.5	45.5
02:40 AM - 02:45 AM	49.4	59.1	44.9
02:45 AM - 02:50 AM	46.7	50.1	46.0
02:50 AM - 02:55 AM	46.7	48.7	45.8
02:55 AM - 03:00 AM	47.2	52.9	46.1
03:00 AM - 03:05 AM	47.9	53.7	46.3
03:05 AM - 03:10 AM	46.7	50.7	45.7
03:10 AM - 03:15 AM	46.0	54.7	44.8
03:15 AM - 03:20 AM	46.9	58.0	45.2
03:20 AM - 03:25 AM	46.0	54.2	44.2
03:25 AM - 03:30 AM	44.9	50.5	44.1
03:30 AM - 03:35 AM	45.1	50.6	44.3
03:35 AM - 03:40 AM	47.0	53.5	45.5

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235014-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-2
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	45.9	49.6	44.5
03:45 AM - 03:50 AM	44.1	49.0	43.3
03:50 AM - 03:55 AM	44.5	47.6	43.8
03:55 AM - 04:00 AM	46.3	51.1	45.1
04:00 AM - 04:05 AM	46.2	54.6	44.7
04:05 AM - 04:10 AM	47.0	59.8	44.0
04:10 AM - 04:15 AM	46.4	55.5	43.9
04:15 AM - 04:20 AM	44.9	52.6	44.1
04:20 AM - 04:25 AM	45.8	55.4	44.3
04:25 AM - 04:30 AM	45.3	51.4	44.2
04:30 AM - 04:35 AM	45.5	50.6	44.2
04:35 AM - 04:40 AM	46.3	54.5	44.8
04:40 AM - 04:45 AM	46.5	52.7	45.2
04:45 AM - 04:50 AM	46.1	55.1	44.0
04:50 AM - 04:55 AM	47.3	59.6	42.9
04:55 AM - 05:00 AM	45.3	58.2	42.6
05:00 AM - 05:05 AM	45.0	55.7	43.1
05:05 AM - 05:10 AM	48.2	58.7	43.8
05:10 AM - 05:15 AM	46.2	56.8	43.5
05:15 AM - 05:20 AM	47.1	58.6	43.9
05:20 AM - 05:25 AM	47.5	59.0	45.4
05:25 AM - 05:30 AM	47.7	58.8	45.5
05:30 AM - 05:35 AM	47.7	58.7	45.6
05:35 AM - 05:40 AM	47.8	59.6	45.3
05:40 AM - 05:45 AM	47.2	55.8	44.5
05:45 AM - 05:50 AM	47.2	58.0	44.8
05:50 AM - 05:55 AM	47.4	53.7	45.2
05:55 AM - 06:00 AM	47.7	55.3	45.4
06:00 AM - 07:00 AM	50.2	67.1	47.3
07:00 AM - 08:00 AM	52.5	71.7	48.1
08:00 AM - 09:00 AM	48.9	72.3	42.0
09:00 AM - 10:00 AM	45.3	68.9	41.8

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235015-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-3
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	45.8	67.7	42.1
11:00 AM - 12:00 PM	45.2	69.6	39.9
12:00 PM - 01:00 PM	45.7	66.6	39.7
01:00 PM - 02:00 PM	47.0	72.9	40.1
02:00 PM - 03:00 PM	45.9	72.0	40.2
03:00 PM - 04:00 PM	47.1	70.1	40.5
04:00 PM - 05:00 PM	48.1	69.9	41.9
05:00 PM - 06:00 PM	49.3	75.9	44.7
06:00 PM - 07:00 PM	49.0	71.0	44.9
07:00 PM - 08:00 PM	48.2	65.2	45.5
08:00 PM - 09:00 PM	46.5	60.7	43.1
09:00 PM - 10:00 PM	45.8	63.4	41.9
10:00 PM - 10:05 PM	45.0	55.4	41.5
10:05 PM - 10:10 PM	44.2	56.0	41.8
10:10 PM - 10:15 PM	43.5	50.7	41.2
10:15 PM - 10:20 PM	43.4	50.5	41.1
10:20 PM - 10:25 PM	45.1	53.4	42.7
10:25 PM - 10:30 PM	48.9	68.8	43.6
10:30 PM - 10:35 PM	45.3	55.8	42.7
10:35 PM - 10:40 PM	44.2	50.4	42.7
10:40 PM - 10:45 PM	44.6	53.4	42.7
10:45 PM - 10:50 PM	47.1	61.6	43.4
10:50 PM - 10:55 PM	45.2	53.4	43.7
10:55 PM - 11:00 PM	46.0	51.2	44.9
11:00 PM - 11:05 PM	45.7	48.4	44.4
11:05 PM - 11:10 PM	45.2	54.2	43.8
11:10 PM - 11:15 PM	46.2	56.3	44.1
11:15 PM - 11:20 PM	46.2	57.1	43.4
11:20 PM - 11:25 PM	46.8	53.9	44.3
11:25 PM - 11:30 PM	47.7	65.6	44.0
11:30 PM - 11:35 PM	48.8	53.5	45.0
11:35 PM - 11:40 PM	48.8	53.6	44.3
11:40 PM - 11:45 PM	48.6	54.0	43.8
11:45 PM - 11:50 PM	50.5	55.3	44.2
11:50 PM - 11:55 PM	48.8	53.7	44.0
11:55 PM - 12:00 AM	49.9	53.8	46.7
12:00 AM - 12:05 AM	49.9	55.1	47.3
12:05 AM - 12:10 AM	50.2	56.7	47.6
12:10 AM - 12:15 AM	51.5	60.1	45.1
12:15 AM - 12:20 AM	52.2	59.5	48.6

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235015-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-3
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	52.0	55.7	49.0
12:25 AM - 12:30 AM	49.4	57.6	44.8
12:30 AM - 12:35 AM	49.9	57.9	45.4
12:35 AM - 12:40 AM	49.7	57.5	45.3
12:40 AM - 12:45 AM	51.2	56.1	47.1
12:45 AM - 12:50 AM	50.0	55.0	45.9
12:50 AM - 12:55 AM	49.6	54.7	47.0
12:55 AM - 01:00 AM	51.7	56.5	49.1
01:00 AM - 01:05 AM	51.8	55.2	49.4
01:05 AM - 01:10 AM	51.2	55.4	48.1
01:10 AM - 01:15 AM	50.8	55.1	48.7
01:15 AM - 01:20 AM	51.0	56.3	47.0
01:20 AM - 01:25 AM	50.9	57.4	47.9
01:25 AM - 01:30 AM	51.1	55.5	48.8
01:30 AM - 01:35 AM	49.9	55.5	46.2
01:35 AM - 01:40 AM	48.7	54.4	45.4
01:40 AM - 01:45 AM	48.7	53.3	46.3
01:45 AM - 01:50 AM	49.4	53.8	47.4
01:50 AM - 01:55 AM	48.6	52.0	46.7
01:55 AM - 02:00 AM	49.5	52.5	47.7
02:00 AM - 02:05 AM	49.3	52.8	47.8
02:05 AM - 02:10 AM	49.0	52.3	47.3
02:10 AM - 02:15 AM	49.4	58.5	47.7
02:15 AM - 02:20 AM	48.7	52.9	46.5
02:20 AM - 02:25 AM	49.9	53.0	48.6
02:25 AM - 02:30 AM	49.2	52.6	47.9
02:30 AM - 02:35 AM	49.2	53.5	46.9
02:35 AM - 02:40 AM	49.9	57.5	48.0
02:40 AM - 02:45 AM	50.2	53.6	48.6
02:45 AM - 02:50 AM	49.2	52.3	47.7
02:50 AM - 02:55 AM	48.9	52.3	47.4
02:55 AM - 03:00 AM	48.7	52.1	45.7
03:00 AM - 03:05 AM	47.9	52.3	45.1
03:05 AM - 03:10 AM	48.9	54.9	46.7
03:10 AM - 03:15 AM	48.9	52.6	45.8
03:15 AM - 03:20 AM	49.5	56.3	46.3
03:20 AM - 03:25 AM	48.7	58.8	45.9
03:25 AM - 03:30 AM	48.1	50.4	46.5
03:30 AM - 03:35 AM	48.7	53.0	45.5
03:35 AM - 03:40 AM	49.3	53.5	45.3

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235015-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-3
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	49.4	53.7	46.2
03:45 AM - 03:50 AM	47.7	51.8	45.1
03:50 AM - 03:55 AM	48.6	52.4	46.1
03:55 AM - 04:00 AM	48.7	53.2	46.1
04:00 AM - 04:05 AM	48.7	53.3	46.0
04:05 AM - 04:10 AM	48.2	54.7	44.9
04:10 AM - 04:15 AM	48.6	56.3	45.3
04:15 AM - 04:20 AM	47.8	56.3	44.0
04:20 AM - 04:25 AM	47.0	55.4	43.8
04:25 AM - 04:30 AM	46.1	51.6	44.2
04:30 AM - 04:35 AM	45.9	48.8	45.0
04:35 AM - 04:40 AM	45.7	52.1	44.4
04:40 AM - 04:45 AM	46.1	51.8	44.3
04:45 AM - 04:50 AM	45.8	51.0	44.4
04:50 AM - 04:55 AM	46.0	51.8	44.6
04:55 AM - 05:00 AM	46.3	51.7	45.1
05:00 AM - 05:05 AM	47.0	54.8	44.6
05:05 AM - 05:10 AM	46.8	58.3	44.5
05:10 AM - 05:15 AM	45.5	51.9	44.0
05:15 AM - 05:20 AM	44.9	50.6	44.0
05:20 AM - 05:25 AM	51.7	64.7	44.4
05:25 AM - 05:30 AM	47.4	55.8	44.7
05:30 AM - 05:35 AM	46.4	57.0	44.3
05:35 AM - 05:40 AM	46.5	54.4	45.0
05:40 AM - 05:45 AM	47.4	54.6	44.9
05:45 AM - 05:50 AM	47.9	54.9	46.0
05:50 AM - 05:55 AM	47.4	54.6	45.4
05:55 AM - 06:00 AM	47.1	55.3	44.9
06:00 AM - 07:00 AM	50.8	71.0	47.9
07:00 AM - 08:00 AM	54.6	85.6	48.8
08:00 AM - 09:00 AM	49.2	68.8	44.4
09:00 AM - 10:00 AM	50.2	76.6	44.0

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235016-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-4
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	46.3	73.1	39.2
11:00 AM - 12:00 PM	47.4	79.7	39.0
12:00 PM - 01:00 PM	48.9	84.2	40.3
01:00 PM - 02:00 PM	51.5	71.3	44.8
02:00 PM - 03:00 PM	46.2	70.3	41.9
03:00 PM - 04:00 PM	51.6	74.2	42.8
04:00 PM - 05:00 PM	48.0	71.1	42.3
05:00 PM - 06:00 PM	48.4	71.2	43.7
06:00 PM - 07:00 PM	47.0	62.8	44.3
07:00 PM - 08:00 PM	46.7	61.1	44.5
08:00 PM - 09:00 PM	46.9	62.2	44.2
09:00 PM - 10:00 PM	47.7	67.5	44.2
10:00 PM - 10:05 PM	47.6	58.5	44.4
10:05 PM - 10:10 PM	46.6	51.5	45.1
10:10 PM - 10:15 PM	47.2	52.4	44.7
10:15 PM - 10:20 PM	47.7	56.4	44.9
10:20 PM - 10:25 PM	46.9	52.1	44.6
10:25 PM - 10:30 PM	47.7	51.9	45.6
10:30 PM - 10:35 PM	48.5	56.9	45.9
10:35 PM - 10:40 PM	46.8	53.8	42.7
10:40 PM - 10:45 PM	47.6	56.6	42.5
10:45 PM - 10:50 PM	46.3	50.7	44.8
10:50 PM - 10:55 PM	46.7	50.9	44.9
10:55 PM - 11:00 PM	47.8	52.5	45.6
11:00 PM - 11:05 PM	47.2	58.2	42.4
11:05 PM - 11:10 PM	47.0	51.2	44.7
11:10 PM - 11:15 PM	46.9	55.7	43.6
11:15 PM - 11:20 PM	46.4	53.6	42.2
11:20 PM - 11:25 PM	48.4	62.0	45.2
11:25 PM - 11:30 PM	46.9	51.8	44.2
11:30 PM - 11:35 PM	46.4	55.6	41.7
11:35 PM - 11:40 PM	47.2	50.7	45.2
11:40 PM - 11:45 PM	47.1	51.6	45.0
11:45 PM - 11:50 PM	47.1	51.8	43.5
11:50 PM - 11:55 PM	47.8	53.2	45.7
11:55 PM - 12:00 AM	47.6	55.5	45.0
12:00 AM - 12:05 AM	47.7	52.3	42.6
12:05 AM - 12:10 AM	48.0	55.2	45.2
12:10 AM - 12:15 AM	42.7	55.9	40.1
12:15 AM - 12:20 AM	47.1	61.9	41.7

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235016-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-4
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	42.2	51.6	40.1
12:25 AM - 12:30 AM	46.8	51.6	43.1
12:30 AM - 12:35 AM	42.4	50.4	39.3
12:35 AM - 12:40 AM	46.5	52.2	41.5
12:40 AM - 12:45 AM	46.6	53.0	42.7
12:45 AM - 12:50 AM	45.5	51.9	38.7
12:50 AM - 12:55 AM	44.6	52.2	38.6
12:55 AM - 01:00 AM	45.2	53.0	38.8
01:00 AM - 01:05 AM	43.6	51.8	38.1
01:05 AM - 01:10 AM	44.2	57.9	37.7
01:10 AM - 01:15 AM	44.1	53.4	38.8
01:15 AM - 01:20 AM	42.3	50.5	38.3
01:20 AM - 01:25 AM	42.3	51.2	38.2
01:25 AM - 01:30 AM	41.9	48.4	39.0
01:30 AM - 01:35 AM	41.7	48.4	38.6
01:35 AM - 01:40 AM	41.6	50.8	38.8
01:40 AM - 01:45 AM	41.2	53.9	38.7
01:45 AM - 01:50 AM	42.0	46.5	39.6
01:50 AM - 01:55 AM	42.8	51.2	39.9
01:55 AM - 02:00 AM	44.0	60.1	38.5
02:00 AM - 02:05 AM	40.3	52.3	38.4
02:05 AM - 02:10 AM	50.0	69.4	39.7
02:10 AM - 02:15 AM	52.8	71.3	42.1
02:15 AM - 02:20 AM	41.9	67.8	38.7
02:20 AM - 02:25 AM	41.3	57.2	38.4
02:25 AM - 02:30 AM	40.6	47.2	38.8
02:30 AM - 02:35 AM	40.0	48.6	37.8
02:35 AM - 02:40 AM	40.4	48.3	38.4
02:40 AM - 02:45 AM	41.2	51.1	39.1
02:45 AM - 02:50 AM	42.5	56.3	39.2
02:50 AM - 02:55 AM	43.1	57.4	38.9
02:55 AM - 03:00 AM	42.4	53.0	39.3
03:00 AM - 03:05 AM	40.3	45.8	38.4
03:05 AM - 03:10 AM	40.2	48.4	38.2
03:10 AM - 03:15 AM	40.4	50.0	38.2
03:15 AM - 03:20 AM	40.1	47.2	38.5
03:20 AM - 03:25 AM	39.7	46.2	37.6
03:25 AM - 03:30 AM	41.2	47.9	38.7
03:30 AM - 03:35 AM	40.0	46.1	38.9
03:35 AM - 03:40 AM	45.6	62.4	38.4

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235016-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-4
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	39.8	49.7	38.1
03:45 AM - 03:50 AM	39.6	47.3	38.1
03:50 AM - 03:55 AM	40.9	51.8	38.3
03:55 AM - 04:00 AM	40.6	48.9	38.7
04:00 AM - 04:05 AM	40.9	51.0	38.3
04:05 AM - 04:10 AM	40.5	51.2	38.2
04:10 AM - 04:15 AM	41.5	56.2	38.5
04:15 AM - 04:20 AM	41.8	50.7	38.7
04:20 AM - 04:25 AM	40.8	47.9	39.0
04:25 AM - 04:30 AM	41.0	48.9	38.6
04:30 AM - 04:35 AM	40.5	47.5	38.7
04:35 AM - 04:40 AM	40.6	50.2	38.9
04:40 AM - 04:45 AM	44.6	56.4	39.3
04:45 AM - 04:50 AM	44.4	55.7	40.3
04:50 AM - 04:55 AM	42.4	54.4	39.4
04:55 AM - 05:00 AM	43.6	51.3	40.8
05:00 AM - 05:05 AM	45.0	54.5	40.8
05:05 AM - 05:10 AM	43.4	54.8	40.3
05:10 AM - 05:15 AM	42.4	49.2	40.3
05:15 AM - 05:20 AM	42.9	53.8	40.2
05:20 AM - 05:25 AM	44.7	52.2	41.4
05:25 AM - 05:30 AM	46.3	56.1	42.1
05:30 AM - 05:35 AM	44.9	56.8	42.0
05:35 AM - 05:40 AM	45.4	57.0	42.0
05:40 AM - 05:45 AM	53.7	72.2	43.0
05:45 AM - 05:50 AM	47.6	64.7	42.2
05:50 AM - 05:55 AM	46.1	53.5	43.6
05:55 AM - 06:00 AM	47.2	58.9	43.7
06:00 AM - 07:00 AM	49.3	64.5	46.1
07:00 AM - 08:00 AM	51.4	73.1	46.7
08:00 AM - 09:00 AM	49.3	75.2	42.5
09:00 AM - 10:00 AM	46.6	60.8	44.4

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235017-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-5
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	47.0	74.4	41.1
11:00 AM - 12:00 PM	49.2	68.0	42.9
12:00 PM - 01:00 PM	46.9	69.6	41.7
01:00 PM - 02:00 PM	47.8	63.9	43.7
02:00 PM - 03:00 PM	49.3	71.8	45.2
03:00 PM - 04:00 PM	45.9	65.9	41.5
04:00 PM - 05:00 PM	47.6	66.5	42.1
05:00 PM - 06:00 PM	49.7	71.6	43.6
06:00 PM - 07:00 PM	47.9	70.9	43.2
07:00 PM - 08:00 PM	48.8	66.2	45.9
08:00 PM - 09:00 PM	46.9	64.6	43.4
09:00 PM - 10:00 PM	45.5	63.8	42.3
10:00 PM - 10:05 PM	45.2	55.9	42.2
10:05 PM - 10:10 PM	45.0	52.9	42.1
10:10 PM - 10:15 PM	45.9	55.7	42.1
10:15 PM - 10:20 PM	43.9	51.2	42.0
10:20 PM - 10:25 PM	47.5	62.2	43.1
10:25 PM - 10:30 PM	43.0	49.3	41.5
10:30 PM - 10:35 PM	44.5	54.9	42.4
10:35 PM - 10:40 PM	44.3	51.6	42.4
10:40 PM - 10:45 PM	44.7	59.6	42.3
10:45 PM - 10:50 PM	43.9	51.0	42.2
10:50 PM - 10:55 PM	43.8	52.1	41.4
10:55 PM - 11:00 PM	43.5	50.2	41.2
11:00 PM - 11:05 PM	44.9	56.3	41.7
11:05 PM - 11:10 PM	43.8	51.3	41.4
11:10 PM - 11:15 PM	43.3	51.4	41.1
11:15 PM - 11:20 PM	42.5	49.2	40.6
11:20 PM - 11:25 PM	43.4	54.3	41.0
11:25 PM - 11:30 PM	42.4	49.6	40.9
11:30 PM - 11:35 PM	42.4	47.6	40.9
11:35 PM - 11:40 PM	42.4	49.6	40.5
11:40 PM - 11:45 PM	43.5	54.9	40.9
11:45 PM - 11:50 PM	43.0	54.1	40.9
11:50 PM - 11:55 PM	43.4	55.2	41.3
11:55 PM - 12:00 AM	52.0	71.4	41.2
12:00 AM - 12:05 AM	43.8	66.1	41.2
12:05 AM - 12:10 AM	43.3	48.8	42.0
12:10 AM - 12:15 AM	43.2	51.0	41.2
12:15 AM - 12:20 AM	42.8	47.3	41.6

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235017-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-5
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	42.7	46.0	41.6
12:25 AM - 12:30 AM	42.2	46.4	41.4
12:30 AM - 12:35 AM	44.6	57.2	41.3
12:35 AM - 12:40 AM	42.9	49.2	41.2
12:40 AM - 12:45 AM	43.4	55.0	41.2
12:45 AM - 12:50 AM	43.2	54.6	41.0
12:50 AM - 12:55 AM	41.5	51.6	40.7
12:55 AM - 01:00 AM	42.9	54.0	41.5
01:00 AM - 01:05 AM	43.0	49.4	41.5
01:05 AM - 01:10 AM	43.0	47.6	41.6
01:10 AM - 01:15 AM	44.2	51.3	42.8
01:15 AM - 01:20 AM	42.5	46.9	41.4
01:20 AM - 01:25 AM	44.0	54.6	41.8
01:25 AM - 01:30 AM	42.8	46.5	41.6
01:30 AM - 01:35 AM	40.9	44.0	40.0
01:35 AM - 01:40 AM	42.1	48.2	41.0
01:40 AM - 01:45 AM	41.8	45.8	40.8
01:45 AM - 01:50 AM	43.7	53.9	41.5
01:50 AM - 01:55 AM	42.6	57.9	40.3
01:55 AM - 02:00 AM	41.2	47.6	40.4
02:00 AM - 02:05 AM	42.4	58.8	40.4
02:05 AM - 02:10 AM	41.0	50.2	39.8
02:10 AM - 02:15 AM	40.9	52.0	39.9
02:15 AM - 02:20 AM	41.9	48.1	40.7
02:20 AM - 02:25 AM	42.4	47.9	41.0
02:25 AM - 02:30 AM	41.1	47.7	40.2
02:30 AM - 02:35 AM	43.9	56.2	40.5
02:35 AM - 02:40 AM	41.9	50.5	40.4
02:40 AM - 02:45 AM	43.5	53.4	41.8
02:45 AM - 02:50 AM	44.9	60.6	41.2
02:50 AM - 02:55 AM	42.1	51.0	40.7
02:55 AM - 03:00 AM	42.6	48.9	41.2
03:00 AM - 03:05 AM	42.4	49.0	41.5
03:05 AM - 03:10 AM	42.3	45.6	41.7
03:10 AM - 03:15 AM	42.9	47.7	41.5
03:15 AM - 03:20 AM	42.5	55.1	41.6
03:20 AM - 03:25 AM	42.5	48.8	41.4
03:25 AM - 03:30 AM	42.9	50.6	42.0
03:30 AM - 03:35 AM	42.9	46.2	42.1
03:35 AM - 03:40 AM	43.4	49.6	41.8

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235017-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-5
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	43.8	48.9	42.6
03:45 AM - 03:50 AM	43.3	47.0	42.3
03:50 AM - 03:55 AM	44.2	50.4	42.9
03:55 AM - 04:00 AM	44.2	49.9	43.0
04:00 AM - 04:05 AM	43.4	51.4	42.2
04:05 AM - 04:10 AM	42.4	46.7	41.6
04:10 AM - 04:15 AM	43.6	46.9	42.7
04:15 AM - 04:20 AM	43.9	50.0	42.7
04:20 AM - 04:25 AM	42.6	46.7	41.6
04:25 AM - 04:30 AM	43.7	52.6	42.0
04:30 AM - 04:35 AM	43.2	52.1	41.6
04:35 AM - 04:40 AM	46.1	55.6	42.8
04:40 AM - 04:45 AM	43.6	54.2	41.2
04:45 AM - 04:50 AM	42.8	53.1	41.2
04:50 AM - 04:55 AM	43.6	50.9	41.8
04:55 AM - 05:00 AM	43.1	52.2	41.2
05:00 AM - 05:05 AM	44.3	54.0	42.1
05:05 AM - 05:10 AM	44.6	55.8	41.1
05:10 AM - 05:15 AM	42.5	53.5	40.6
05:15 AM - 05:20 AM	42.9	52.3	41.1
05:20 AM - 05:25 AM	43.8	53.5	41.7
05:25 AM - 05:30 AM	42.6	49.1	41.6
05:30 AM - 05:35 AM	43.6	53.7	41.6
05:35 AM - 05:40 AM	45.6	54.5	42.8
05:40 AM - 05:45 AM	45.9	54.5	44.1
05:45 AM - 05:50 AM	44.3	51.8	42.6
05:50 AM - 05:55 AM	46.2	55.5	43.6
05:55 AM - 06:00 AM	46.9	63.3	43.1
06:00 AM - 07:00 AM	48.7	68.4	45.0
07:00 AM - 08:00 AM	49.6	70.7	45.6
08:00 AM - 09:00 AM	48.9	69.2	43.8
09:00 AM - 10:00 AM	46.0	69.4	40.6

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235018-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-6
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	44.8	69.9	39.8
11:00 AM - 12:00 PM	47.5	66.5	41.4
12:00 PM - 01:00 PM	45.3	65.7	39.2
01:00 PM - 02:00 PM	46.7	67.2	40.2
02:00 PM - 03:00 PM	46.3	69.0	40.7
03:00 PM - 04:00 PM	49.6	74.4	41.5
04:00 PM - 05:00 PM	48.1	65.1	42.4
05:00 PM - 06:00 PM	49.0	73.3	43.0
06:00 PM - 07:00 PM	47.2	65.8	43.4
07:00 PM - 08:00 PM	48.5	65.1	45.7
08:00 PM - 09:00 PM	46.1	61.8	43.3
09:00 PM - 10:00 PM	46.6	61.0	43.7
10:00 PM - 10:05 PM	44.6	53.8	42.3
10:05 PM - 10:10 PM	44.4	52.2	42.0
10:10 PM - 10:15 PM	45.3	54.4	42.3
10:15 PM - 10:20 PM	45.0	56.4	42.1
10:20 PM - 10:25 PM	47.9	58.6	42.8
10:25 PM - 10:30 PM	45.2	53.8	42.6
10:30 PM - 10:35 PM	45.9	58.1	42.5
10:35 PM - 10:40 PM	46.3	60.1	42.5
10:40 PM - 10:45 PM	45.2	54.8	42.9
10:45 PM - 10:50 PM	44.3	48.8	42.5
10:50 PM - 10:55 PM	45.0	52.8	41.7
10:55 PM - 11:00 PM	44.7	59.7	41.7
11:00 PM - 11:05 PM	43.9	50.8	42.0
11:05 PM - 11:10 PM	43.0	52.0	41.4
11:10 PM - 11:15 PM	44.7	57.0	41.4
11:15 PM - 11:20 PM	44.7	52.6	41.8
11:20 PM - 11:25 PM	43.7	54.3	41.6
11:25 PM - 11:30 PM	45.5	56.0	42.5
11:30 PM - 11:35 PM	45.2	52.9	42.2
11:35 PM - 11:40 PM	44.1	49.9	42.1
11:40 PM - 11:45 PM	44.9	57.3	43.1
11:45 PM - 11:50 PM	44.1	53.0	42.7
11:50 PM - 11:55 PM	44.4	51.2	43.1
11:55 PM - 12:00 AM	45.3	50.3	44.2
12:00 AM - 12:05 AM	45.1	48.9	43.5
12:05 AM - 12:10 AM	44.6	53.1	42.6
12:10 AM - 12:15 AM	44.8	56.2	43.1
12:15 AM - 12:20 AM	47.2	62.5	43.2

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

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88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235018-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-6
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	43.8	59.2	41.8
12:25 AM - 12:30 AM	43.1	55.3	41.1
12:30 AM - 12:35 AM	45.7	56.8	41.9
12:35 AM - 12:40 AM	44.8	59.5	42.1
12:40 AM - 12:45 AM	43.9	60.0	41.9
12:45 AM - 12:50 AM	43.2	50.0	41.7
12:50 AM - 12:55 AM	42.8	53.3	40.8
12:55 AM - 01:00 AM	42.3	51.0	40.6
01:00 AM - 01:05 AM	45.9	62.3	41.1
01:05 AM - 01:10 AM	43.7	53.6	40.9
01:10 AM - 01:15 AM	43.9	58.5	40.9
01:15 AM - 01:20 AM	43.4	52.2	41.0
01:20 AM - 01:25 AM	42.2	47.6	41.0
01:25 AM - 01:30 AM	42.8	50.9	41.1
01:30 AM - 01:35 AM	41.7	52.9	40.5
01:35 AM - 01:40 AM	42.7	55.2	40.8
01:40 AM - 01:45 AM	46.0	57.9	41.7
01:45 AM - 01:50 AM	43.7	54.7	40.7
01:50 AM - 01:55 AM	42.0	49.6	40.5
01:55 AM - 02:00 AM	42.5	49.5	40.9
02:00 AM - 02:05 AM	42.0	51.3	40.5
02:05 AM - 02:10 AM	41.9	47.2	41.1
02:10 AM - 02:15 AM	46.4	58.9	41.5
02:15 AM - 02:20 AM	42.0	54.6	40.4
02:20 AM - 02:25 AM	42.3	46.8	41.3
02:25 AM - 02:30 AM	42.1	46.3	41.3
02:30 AM - 02:35 AM	43.5	46.9	42.5
02:35 AM - 02:40 AM	43.1	47.6	42.1
02:40 AM - 02:45 AM	43.5	55.2	41.8
02:45 AM - 02:50 AM	43.0	49.5	41.6
02:50 AM - 02:55 AM	44.8	55.5	41.2
02:55 AM - 03:00 AM	41.1	51.7	39.5
03:00 AM - 03:05 AM	42.5	51.0	39.9
03:05 AM - 03:10 AM	39.5	48.1	38.5
03:10 AM - 03:15 AM	40.3	46.9	38.7
03:15 AM - 03:20 AM	40.7	46.6	39.5
03:20 AM - 03:25 AM	41.2	47.9	39.9
03:25 AM - 03:30 AM	42.3	54.1	40.0
03:30 AM - 03:35 AM	40.9	45.9	39.9
03:35 AM - 03:40 AM	42.0	54.4	39.9

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235018-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-6
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	41.5	50.4	39.8
03:45 AM - 03:50 AM	43.3	52.3	40.4
03:50 AM - 03:55 AM	42.8	52.0	40.3
03:55 AM - 04:00 AM	43.2	53.8	40.8
04:00 AM - 04:05 AM	46.2	58.1	41.2
04:05 AM - 04:10 AM	43.6	57.9	41.0
04:10 AM - 04:15 AM	42.2	47.3	40.5
04:15 AM - 04:20 AM	41.2	46.2	39.6
04:20 AM - 04:25 AM	40.9	46.3	39.5
04:25 AM - 04:30 AM	40.2	52.3	38.5
04:30 AM - 04:35 AM	43.3	58.1	39.0
04:35 AM - 04:40 AM	41.8	46.9	40.2
04:40 AM - 04:45 AM	40.7	45.7	39.4
04:45 AM - 04:50 AM	41.3	46.2	39.3
04:50 AM - 04:55 AM	45.0	58.0	40.1
04:55 AM - 05:00 AM	43.1	54.9	40.4
05:00 AM - 05:05 AM	43.7	59.4	39.8
05:05 AM - 05:10 AM	46.1	59.2	41.6
05:10 AM - 05:15 AM	45.7	55.1	41.0
05:15 AM - 05:20 AM	43.4	51.4	40.3
05:20 AM - 05:25 AM	41.9	51.0	38.8
05:25 AM - 05:30 AM	43.1	53.3	40.1
05:30 AM - 05:35 AM	43.8	51.5	41.3
05:35 AM - 05:40 AM	43.2	53.0	41.0
05:40 AM - 05:45 AM	44.4	51.5	41.1
05:45 AM - 05:50 AM	45.9	58.3	40.5
05:50 AM - 05:55 AM	42.7	50.9	40.0
05:55 AM - 06:00 AM	43.6	51.1	41.0
06:00 AM - 07:00 AM	49.2	70.7	44.2
07:00 AM - 08:00 AM	48.9	64.2	45.8
08:00 AM - 09:00 AM	49.3	69.3	43.3
09:00 AM - 10:00 AM	45.0	63.7	41.1

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235019-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-7
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	47.6	72.3	39.6
11:00 AM - 12:00 PM	46.5	71.4	38.7
12:00 PM - 01:00 PM	46.6	67.0	39.2
01:00 PM - 02:00 PM	46.5	74.7	40.1
02:00 PM - 03:00 PM	47.4	69.0	40.8
03:00 PM - 04:00 PM	48.1	71.8	41.8
04:00 PM - 05:00 PM	47.2	68.5	41.6
05:00 PM - 06:00 PM	49.0	71.3	43.3
06:00 PM - 07:00 PM	47.4	67.6	43.1
07:00 PM - 08:00 PM	47.3	70.7	43.4
08:00 PM - 09:00 PM	46.7	65.9	43.2
09:00 PM - 10:00 PM	44.9	66.4	41.8
10:00 PM - 10:05 PM	44.3	54.7	41.8
10:05 PM - 10:10 PM	43.0	48.5	41.0
10:10 PM - 10:15 PM	43.4	49.2	41.3
10:15 PM - 10:20 PM	44.8	52.0	41.6
10:20 PM - 10:25 PM	44.6	58.6	41.6
10:25 PM - 10:30 PM	43.6	51.1	41.7
10:30 PM - 10:35 PM	44.3	52.9	42.0
10:35 PM - 10:40 PM	43.9	50.5	41.0
10:40 PM - 10:45 PM	43.6	56.4	41.2
10:45 PM - 10:50 PM	47.1	66.1	41.2
10:50 PM - 10:55 PM	43.8	50.8	41.5
10:55 PM - 11:00 PM	45.4	60.7	41.4
11:00 PM - 11:05 PM	44.7	58.3	42.2
11:05 PM - 11:10 PM	47.2	63.9	42.1
11:10 PM - 11:15 PM	44.3	53.1	41.2
11:15 PM - 11:20 PM	42.9	53.9	40.0
11:20 PM - 11:25 PM	45.3	56.1	40.5
11:25 PM - 11:30 PM	43.9	56.7	40.5
11:30 PM - 11:35 PM	43.9	52.6	40.8
11:35 PM - 11:40 PM	44.7	56.8	40.4
11:40 PM - 11:45 PM	44.4	52.6	41.0
11:45 PM - 11:50 PM	44.2	50.0	40.7
11:50 PM - 11:55 PM	42.7	49.6	40.7
11:55 PM - 12:00 AM	44.5	52.2	40.1
12:00 AM - 12:05 AM	43.5	53.2	39.1
12:05 AM - 12:10 AM	43.6	54.9	39.8
12:10 AM - 12:15 AM	44.1	51.6	41.4
12:15 AM - 12:20 AM	43.8	50.7	40.9

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235019-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-7
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	46.0	53.2	42.8
12:25 AM - 12:30 AM	48.0	54.7	45.7
12:30 AM - 12:35 AM	47.0	54.3	45.1
12:35 AM - 12:40 AM	47.4	56.1	44.5
12:40 AM - 12:45 AM	46.5	58.5	42.8
12:45 AM - 12:50 AM	45.8	54.8	43.5
12:50 AM - 12:55 AM	48.1	56.3	45.4
12:55 AM - 01:00 AM	48.0	55.5	45.6
01:00 AM - 01:05 AM	47.1	53.9	45.0
01:05 AM - 01:10 AM	48.1	54.1	45.8
01:10 AM - 01:15 AM	47.7	55.3	45.3
01:15 AM - 01:20 AM	47.1	53.5	45.1
01:20 AM - 01:25 AM	46.2	52.0	44.1
01:25 AM - 01:30 AM	45.3	53.1	43.1
01:30 AM - 01:35 AM	44.5	49.9	39.9
01:35 AM - 01:40 AM	45.2	51.4	43.0
01:40 AM - 01:45 AM	45.3	50.0	43.3
01:45 AM - 01:50 AM	45.6	50.0	43.7
01:50 AM - 01:55 AM	45.4	48.9	43.7
01:55 AM - 02:00 AM	44.7	50.1	42.2
02:00 AM - 02:05 AM	46.6	51.9	44.4
02:05 AM - 02:10 AM	47.4	52.9	45.0
02:10 AM - 02:15 AM	45.4	57.5	43.0
02:15 AM - 02:20 AM	43.8	49.7	42.2
02:20 AM - 02:25 AM	43.9	48.8	42.1
02:25 AM - 02:30 AM	42.9	51.6	39.5
02:30 AM - 02:35 AM	44.1	52.9	41.6
02:35 AM - 02:40 AM	42.4	53.6	40.0
02:40 AM - 02:45 AM	42.3	51.1	40.2
02:45 AM - 02:50 AM	42.9	53.3	40.2
02:50 AM - 02:55 AM	43.7	58.4	40.1
02:55 AM - 03:00 AM	42.2	51.6	39.8
03:00 AM - 03:05 AM	43.8	53.0	40.3
03:05 AM - 03:10 AM	42.3	51.4	40.2
03:10 AM - 03:15 AM	41.3	49.2	39.0
03:15 AM - 03:20 AM	40.5	48.0	39.1
03:20 AM - 03:25 AM	41.3	46.3	39.8
03:25 AM - 03:30 AM	42.6	53.7	39.7
03:30 AM - 03:35 AM	42.6	55.3	38.9
03:35 AM - 03:40 AM	40.9	46.3	38.9

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235019-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-7
Parameter Noise
Location ชุมชนบ้านบน (หมู่บ้านกุลวารี) (GPS 47P 0735251, 1409023) (Shut down)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 1120937

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	39.6	52.1	38.1
03:45 AM - 03:50 AM	39.3	53.2	37.9
03:50 AM - 03:55 AM	39.9	53.2	38.0
03:55 AM - 04:00 AM	40.5	46.5	38.9
04:00 AM - 04:05 AM	41.0	52.2	39.2
04:05 AM - 04:10 AM	40.2	45.6	39.0
04:10 AM - 04:15 AM	41.1	45.8	39.2
04:15 AM - 04:20 AM	40.8	45.2	39.2
04:20 AM - 04:25 AM	41.4	53.1	38.9
04:25 AM - 04:30 AM	41.6	48.1	40.0
04:30 AM - 04:35 AM	40.9	50.3	39.3
04:35 AM - 04:40 AM	41.2	50.0	39.4
04:40 AM - 04:45 AM	41.4	50.0	39.6
04:45 AM - 04:50 AM	41.0	47.8	39.1
04:50 AM - 04:55 AM	41.3	46.9	39.7
04:55 AM - 05:00 AM	41.7	47.9	39.6
05:00 AM - 05:05 AM	41.3	50.7	39.7
05:05 AM - 05:10 AM	41.4	48.6	39.7
05:10 AM - 05:15 AM	41.7	50.5	39.9
05:15 AM - 05:20 AM	41.6	52.4	39.1
05:20 AM - 05:25 AM	41.2	52.7	39.7
05:25 AM - 05:30 AM	42.0	51.1	39.6
05:30 AM - 05:35 AM	43.7	52.9	40.1
05:35 AM - 05:40 AM	41.9	51.9	40.1
05:40 AM - 05:45 AM	42.6	55.1	39.9
05:45 AM - 05:50 AM	42.7	50.5	40.6
05:50 AM - 05:55 AM	44.7	58.0	40.8
05:55 AM - 06:00 AM	42.1	48.1	40.4
06:00 AM - 07:00 AM	46.6	62.5	43.6
07:00 AM - 08:00 AM	49.0	68.4	45.2
08:00 AM - 09:00 AM	49.6	66.4	43.4
09:00 AM - 10:00 AM	51.7	68.8	42.0

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235020-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 1 of 3

Sample No. 254007-8
Parameter Noise
Location ร่มรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	64.1	76.2	63.0
11:00 AM - 12:00 PM	64.4	84.1	63.3
12:00 PM - 01:00 PM	61.8	78.6	60.8
01:00 PM - 02:00 PM	66.6	76.0	65.7
02:00 PM - 03:00 PM	65.3	75.2	64.4
03:00 PM - 04:00 PM	65.8	74.5	64.8
04:00 PM - 05:00 PM	54.7	81.7	48.8
05:00 PM - 06:00 PM	54.5	80.3	49.3
06:00 PM - 07:00 PM	55.2	84.8	50.4
07:00 PM - 08:00 PM	51.8	71.7	50.7
08:00 PM - 09:00 PM	52.2	78.5	50.5
09:00 PM - 10:00 PM	51.6	69.2	50.9
10:00 PM - 10:05 PM	52.4	54.0	51.9
10:05 PM - 10:10 PM	52.2	65.4	51.6
10:10 PM - 10:15 PM	51.7	53.8	51.2
10:15 PM - 10:20 PM	52.2	55.1	51.7
10:20 PM - 10:25 PM	52.8	62.5	51.7
10:25 PM - 10:30 PM	51.6	53.3	51.1
10:30 PM - 10:35 PM	51.6	53.5	51.0
10:35 PM - 10:40 PM	51.8	53.6	51.2
10:40 PM - 10:45 PM	52.1	56.7	51.2
10:45 PM - 10:50 PM	52.0	54.8	51.3
10:50 PM - 10:55 PM	51.7	53.4	51.2
10:55 PM - 11:00 PM	51.9	56.4	51.2
11:00 PM - 11:05 PM	51.9	54.1	51.3
11:05 PM - 11:10 PM	51.6	55.1	51.0
11:10 PM - 11:15 PM	51.8	55.0	51.1
11:15 PM - 11:20 PM	51.9	56.8	51.1
11:20 PM - 11:25 PM	51.4	54.5	50.8
11:25 PM - 11:30 PM	51.6	55.9	50.9
11:30 PM - 11:35 PM	51.8	59.3	50.9
11:35 PM - 11:40 PM	51.8	54.6	51.2
11:40 PM - 11:45 PM	51.2	52.6	50.6
11:45 PM - 11:50 PM	51.4	52.9	50.8
11:50 PM - 11:55 PM	56.1	80.0	50.8
11:55 PM - 12:00 AM	51.4	54.5	50.8
12:00 AM - 12:05 AM	51.3	53.8	50.6
12:05 AM - 12:10 AM	51.5	54.3	50.6
12:10 AM - 12:15 AM	52.3	54.1	51.6
12:15 AM - 12:20 AM	52.5	55.5	51.6

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235020-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 2 of 3

Sample No. 254007-8
Parameter Noise
Location ร่มรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	52.8	54.8	52.1
12:25 AM - 12:30 AM	53.3	56.0	52.4
12:30 AM - 12:35 AM	53.3	55.4	52.4
12:35 AM - 12:40 AM	53.7	57.1	52.9
12:40 AM - 12:45 AM	53.4	56.5	52.4
12:45 AM - 12:50 AM	53.1	55.1	52.5
12:50 AM - 12:55 AM	53.1	55.3	52.5
12:55 AM - 01:00 AM	53.3	56.0	52.6
01:00 AM - 01:05 AM	53.4	55.7	52.8
01:05 AM - 01:10 AM	53.6	56.2	52.9
01:10 AM - 01:15 AM	53.5	56.9	52.7
01:15 AM - 01:20 AM	53.3	55.5	52.6
01:20 AM - 01:25 AM	53.1	56.7	52.4
01:25 AM - 01:30 AM	52.9	55.0	52.2
01:30 AM - 01:35 AM	52.8	54.9	52.1
01:35 AM - 01:40 AM	52.7	55.1	52.0
01:40 AM - 01:45 AM	53.1	65.8	52.1
01:45 AM - 01:50 AM	52.5	54.7	51.9
01:50 AM - 01:55 AM	52.5	54.7	51.8
01:55 AM - 02:00 AM	52.5	54.5	51.8
02:00 AM - 02:05 AM	52.4	54.6	51.8
02:05 AM - 02:10 AM	52.6	55.2	51.8
02:10 AM - 02:15 AM	52.9	54.7	52.2
02:15 AM - 02:20 AM	53.6	55.2	52.9
02:20 AM - 02:25 AM	53.5	55.9	52.5
02:25 AM - 02:30 AM	53.2	55.2	52.6
02:30 AM - 02:35 AM	53.2	56.7	52.6
02:35 AM - 02:40 AM	53.5	55.3	52.9
02:40 AM - 02:45 AM	53.6	56.0	53.0
02:45 AM - 02:50 AM	53.6	55.9	52.9
02:50 AM - 02:55 AM	54.3	72.6	52.7
02:55 AM - 03:00 AM	53.6	57.7	53.1
03:00 AM - 03:05 AM	53.6	55.4	53.1
03:05 AM - 03:10 AM	53.6	55.0	53.1
03:10 AM - 03:15 AM	53.4	56.3	52.8
03:15 AM - 03:20 AM	53.5	57.2	52.8
03:20 AM - 03:25 AM	53.8	55.8	53.1
03:25 AM - 03:30 AM	53.6	55.5	52.9
03:30 AM - 03:35 AM	54.1	57.3	53.6
03:35 AM - 03:40 AM	54.2	57.9	53.5

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received :Feb 17, 2025
Date Reported :Feb 18, 2025
Report No. : 3235020-1

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Page 3 of 3

Sample No. 254007-8
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 10 - 11, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	53.9	56.3	53.1
03:45 AM - 03:50 AM	53.8	56.0	53.1
03:50 AM - 03:55 AM	54.4	70.8	52.8
03:55 AM - 04:00 AM	53.5	56.2	52.8
04:00 AM - 04:05 AM	52.8	54.8	51.9
04:05 AM - 04:10 AM	52.7	55.4	51.9
04:10 AM - 04:15 AM	53.6	67.0	52.4
04:15 AM - 04:20 AM	53.6	56.7	52.8
04:20 AM - 04:25 AM	53.8	56.8	52.8
04:25 AM - 04:30 AM	54.0	58.6	53.0
04:30 AM - 04:35 AM	54.0	57.4	53.0
04:35 AM - 04:40 AM	54.1	64.0	52.9
04:40 AM - 04:45 AM	54.0	57.1	53.0
04:45 AM - 04:50 AM	53.6	56.4	52.9
04:50 AM - 04:55 AM	54.1	60.6	53.3
04:55 AM - 05:00 AM	54.9	71.4	53.5
05:00 AM - 05:05 AM	54.3	57.7	53.6
05:05 AM - 05:10 AM	53.5	57.2	52.8
05:10 AM - 05:15 AM	53.0	54.9	52.4
05:15 AM - 05:20 AM	53.7	57.6	52.9
05:20 AM - 05:25 AM	53.9	55.9	53.3
05:25 AM - 05:30 AM	54.2	57.0	53.6
05:30 AM - 05:35 AM	54.9	58.1	54.2
05:35 AM - 05:40 AM	55.4	59.1	54.3
05:40 AM - 05:45 AM	55.6	61.7	54.4
05:45 AM - 05:50 AM	55.2	63.5	54.1
05:50 AM - 05:55 AM	56.1	60.3	54.1
05:55 AM - 06:00 AM	55.0	66.6	53.7
06:00 AM - 07:00 AM	57.3	80.1	54.4
07:00 AM - 08:00 AM	56.9	81.1	53.4
08:00 AM - 09:00 AM	53.5	81.3	51.6
09:00 AM - 10:00 AM	52.9	72.4	50.9

Reference Method :

1. ISO 1996-1
2. ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235021-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-9
Parameter Noise
Location ร่มรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	53.6	77.5	49.8
11:00 AM - 12:00 PM	54.9	92.8	48.4
12:00 PM - 01:00 PM	52.7	81.6	47.7
01:00 PM - 02:00 PM	52.3	78.8	48.5
02:00 PM - 03:00 PM	51.5	74.1	48.3
03:00 PM - 04:00 PM	51.6	77.6	48.1
04:00 PM - 05:00 PM	52.7	73.9	49.2
05:00 PM - 06:00 PM	53.5	82.9	48.8
06:00 PM - 07:00 PM	57.0	79.1	50.9
07:00 PM - 08:00 PM	52.8	75.2	51.0
08:00 PM - 09:00 PM	53.7	81.2	51.5
09:00 PM - 10:00 PM	52.1	71.8	51.0
10:00 PM - 10:05 PM	52.0	56.7	51.1
10:05 PM - 10:10 PM	52.0	63.5	51.2
10:10 PM - 10:15 PM	51.9	56.0	51.3
10:15 PM - 10:20 PM	52.0	55.2	51.6
10:20 PM - 10:25 PM	52.2	55.9	51.8
10:25 PM - 10:30 PM	52.2	55.4	51.7
10:30 PM - 10:35 PM	52.2	59.4	51.7
10:35 PM - 10:40 PM	52.6	60.2	52.1
10:40 PM - 10:45 PM	52.5	58.1	51.7
10:45 PM - 10:50 PM	52.1	55.9	51.6
10:50 PM - 10:55 PM	52.4	59.5	51.4
10:55 PM - 11:00 PM	53.0	56.8	52.3
11:00 PM - 11:05 PM	52.9	55.1	52.4
11:05 PM - 11:10 PM	53.1	55.4	52.6
11:10 PM - 11:15 PM	53.6	58.5	53.1
11:15 PM - 11:20 PM	53.4	60.0	52.9
11:20 PM - 11:25 PM	54.5	58.5	53.5
11:25 PM - 11:30 PM	55.5	59.1	54.3
11:30 PM - 11:35 PM	54.7	58.2	54.2
11:35 PM - 11:40 PM	54.6	57.0	54.0
11:40 PM - 11:45 PM	53.9	58.0	53.4
11:45 PM - 11:50 PM	54.1	57.7	53.3
11:50 PM - 11:55 PM	53.4	56.9	53.0
11:55 PM - 12:00 AM	53.3	57.5	52.6
12:00 AM - 12:05 AM	53.4	57.2	52.7
12:05 AM - 12:10 AM	52.9	57.9	52.1
12:10 AM - 12:15 AM	53.5	57.3	53.0
12:15 AM - 12:20 AM	53.4	54.9	53.0

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235021-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-9
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	53.4	54.6	53.1
12:25 AM - 12:30 AM	53.4	55.0	52.9
12:30 AM - 12:35 AM	53.4	55.4	52.9
12:35 AM - 12:40 AM	54.9	64.7	53.1
12:40 AM - 12:45 AM	53.7	56.8	53.2
12:45 AM - 12:50 AM	54.2	55.6	53.7
12:50 AM - 12:55 AM	54.0	60.1	53.0
12:55 AM - 01:00 AM	53.5	55.8	52.7
01:00 AM - 01:05 AM	53.6	54.9	53.0
01:05 AM - 01:10 AM	54.6	65.8	52.6
01:10 AM - 01:15 AM	54.0	55.5	53.5
01:15 AM - 01:20 AM	53.7	55.4	53.0
01:20 AM - 01:25 AM	52.9	55.1	52.1
01:25 AM - 01:30 AM	53.2	55.6	52.6
01:30 AM - 01:35 AM	53.8	55.9	53.0
01:35 AM - 01:40 AM	53.3	55.4	52.4
01:40 AM - 01:45 AM	53.5	60.0	52.5
01:45 AM - 01:50 AM	53.8	57.7	53.0
01:50 AM - 01:55 AM	53.2	54.9	52.5
01:55 AM - 02:00 AM	52.8	55.0	52.2
02:00 AM - 02:05 AM	53.1	56.2	52.5
02:05 AM - 02:10 AM	53.3	56.1	52.6
02:10 AM - 02:15 AM	53.3	55.5	52.5
02:15 AM - 02:20 AM	52.8	55.3	52.0
02:20 AM - 02:25 AM	52.5	56.9	51.9
02:25 AM - 02:30 AM	53.4	58.5	52.8
02:30 AM - 02:35 AM	53.3	54.8	52.7
02:35 AM - 02:40 AM	53.6	54.9	53.1
02:40 AM - 02:45 AM	54.6	60.6	53.4
02:45 AM - 02:50 AM	53.7	55.7	53.3
02:50 AM - 02:55 AM	53.3	55.4	52.7
02:55 AM - 03:00 AM	53.0	54.6	52.4
03:00 AM - 03:05 AM	53.6	61.9	52.7
03:05 AM - 03:10 AM	53.7	56.9	53.2
03:10 AM - 03:15 AM	53.7	55.7	53.2
03:15 AM - 03:20 AM	54.3	58.1	53.6
03:20 AM - 03:25 AM	54.6	56.2	54.0
03:25 AM - 03:30 AM	55.0	56.6	54.6
03:30 AM - 03:35 AM	54.8	56.2	54.3
03:35 AM - 03:40 AM	53.1	54.8	52.5

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235021-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-9
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 11 - 12, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	54.4	55.8	53.9
03:45 AM - 03:50 AM	54.6	57.1	54.1
03:50 AM - 03:55 AM	54.2	56.2	53.5
03:55 AM - 04:00 AM	54.1	55.7	53.6
04:00 AM - 04:05 AM	54.1	55.6	53.6
04:05 AM - 04:10 AM	54.5	56.7	53.8
04:10 AM - 04:15 AM	54.5	56.5	54.1
04:15 AM - 04:20 AM	54.3	55.9	53.8
04:20 AM - 04:25 AM	53.8	55.7	53.3
04:25 AM - 04:30 AM	53.9	55.7	53.4
04:30 AM - 04:35 AM	54.5	56.4	53.9
04:35 AM - 04:40 AM	54.7	56.0	54.2
04:40 AM - 04:45 AM	53.9	55.4	53.2
04:45 AM - 04:50 AM	53.2	55.0	52.8
04:50 AM - 04:55 AM	52.5	56.8	51.9
04:55 AM - 05:00 AM	52.5	58.0	51.9
05:00 AM - 05:05 AM	52.1	54.3	51.6
05:05 AM - 05:10 AM	51.2	57.5	50.5
05:10 AM - 05:15 AM	52.2	57.5	51.6
05:15 AM - 05:20 AM	52.0	54.3	51.5
05:20 AM - 05:25 AM	52.5	55.0	51.6
05:25 AM - 05:30 AM	53.1	56.8	52.6
05:30 AM - 05:35 AM	53.6	71.0	52.2
05:35 AM - 05:40 AM	52.5	56.9	52.1
05:40 AM - 05:45 AM	53.8	59.9	52.8
05:45 AM - 05:50 AM	54.5	61.2	53.5
05:50 AM - 05:55 AM	54.4	60.9	53.6
05:55 AM - 06:00 AM	54.4	58.5	53.7
06:00 AM - 07:00 AM	57.5	85.0	54.3
07:00 AM - 08:00 AM	56.2	78.7	54.0
08:00 AM - 09:00 AM	52.1	74.9	50.2
09:00 AM - 10:00 AM	53.3	76.3	50.4

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235022-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-10
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	54.8	79.5	50.4
11:00 AM - 12:00 PM	51.7	72.5	48.9
12:00 PM - 01:00 PM	50.3	74.0	47.5
01:00 PM - 02:00 PM	51.2	77.5	47.1
02:00 PM - 03:00 PM	60.9	81.9	58.9
03:00 PM - 04:00 PM	55.7	83.9	51.2
04:00 PM - 05:00 PM	53.0	81.2	50.5
05:00 PM - 06:00 PM	55.6	84.2	51.8
06:00 PM - 07:00 PM	55.6	79.3	53.1
07:00 PM - 08:00 PM	54.0	75.1	53.1
08:00 PM - 09:00 PM	53.6	75.6	52.5
09:00 PM - 10:00 PM	53.7	78.4	52.4
10:00 PM - 10:05 PM	52.5	55.0	52.0
10:05 PM - 10:10 PM	52.9	64.8	52.2
10:10 PM - 10:15 PM	53.0	54.5	52.6
10:15 PM - 10:20 PM	53.0	54.7	52.6
10:20 PM - 10:25 PM	53.4	58.5	52.7
10:25 PM - 10:30 PM	53.8	61.4	52.8
10:30 PM - 10:35 PM	53.4	56.7	52.8
10:35 PM - 10:40 PM	53.3	55.4	52.9
10:40 PM - 10:45 PM	53.4	56.0	52.9
10:45 PM - 10:50 PM	53.6	60.6	52.9
10:50 PM - 10:55 PM	53.2	55.6	52.8
10:55 PM - 11:00 PM	54.2	66.4	53.1
11:00 PM - 11:05 PM	53.4	55.3	53.1
11:05 PM - 11:10 PM	54.9	73.2	53.3
11:10 PM - 11:15 PM	54.2	62.2	53.3
11:15 PM - 11:20 PM	53.9	58.1	53.4
11:20 PM - 11:25 PM	54.3	59.8	53.5
11:25 PM - 11:30 PM	53.8	58.9	53.4
11:30 PM - 11:35 PM	53.8	59.3	53.3
11:35 PM - 11:40 PM	53.4	55.5	53.0
11:40 PM - 11:45 PM	53.5	65.8	53.0
11:45 PM - 11:50 PM	53.4	54.7	53.0
11:50 PM - 11:55 PM	53.1	54.3	52.8
11:55 PM - 12:00 AM	53.2	55.0	52.8
12:00 AM - 12:05 AM	53.4	55.5	52.9
12:05 AM - 12:10 AM	55.8	76.9	53.1
12:10 AM - 12:15 AM	53.3	54.9	52.9
12:15 AM - 12:20 AM	53.0	54.5	52.6

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235022-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-10
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	53.2	56.1	52.8
12:25 AM - 12:30 AM	53.3	57.2	52.8
12:30 AM - 12:35 AM	53.2	56.0	52.7
12:35 AM - 12:40 AM	53.0	54.4	52.6
12:40 AM - 12:45 AM	53.2	54.4	52.8
12:45 AM - 12:50 AM	53.2	55.3	52.8
12:50 AM - 12:55 AM	53.3	54.5	52.9
12:55 AM - 01:00 AM	53.4	56.3	53.0
01:00 AM - 01:05 AM	53.1	54.2	52.8
01:05 AM - 01:10 AM	53.3	54.5	52.9
01:10 AM - 01:15 AM	53.3	56.3	52.9
01:15 AM - 01:20 AM	53.6	54.8	53.2
01:20 AM - 01:25 AM	53.6	55.6	53.2
01:25 AM - 01:30 AM	53.5	54.5	53.2
01:30 AM - 01:35 AM	53.4	54.6	53.0
01:35 AM - 01:40 AM	53.2	54.3	52.9
01:40 AM - 01:45 AM	53.4	57.1	52.9
01:45 AM - 01:50 AM	53.6	55.6	53.2
01:50 AM - 01:55 AM	53.8	54.8	53.4
01:55 AM - 02:00 AM	53.9	55.2	53.6
02:00 AM - 02:05 AM	54.2	55.2	53.8
02:05 AM - 02:10 AM	53.8	55.4	53.2
02:10 AM - 02:15 AM	54.3	56.5	53.9
02:15 AM - 02:20 AM	54.6	56.0	54.2
02:20 AM - 02:25 AM	54.5	56.7	54.1
02:25 AM - 02:30 AM	54.5	55.7	54.2
02:30 AM - 02:35 AM	54.5	55.9	54.1
02:35 AM - 02:40 AM	54.3	55.7	53.8
02:40 AM - 02:45 AM	54.5	56.9	54.1
02:45 AM - 02:50 AM	54.9	55.9	54.6
02:50 AM - 02:55 AM	54.8	55.9	54.4
02:55 AM - 03:00 AM	54.8	56.2	54.4
03:00 AM - 03:05 AM	54.8	56.0	54.4
03:05 AM - 03:10 AM	54.5	55.6	54.2
03:10 AM - 03:15 AM	54.6	55.8	54.3
03:15 AM - 03:20 AM	54.9	55.9	54.6
03:20 AM - 03:25 AM	55.0	57.3	54.7
03:25 AM - 03:30 AM	54.8	55.9	54.4
03:30 AM - 03:35 AM	54.7	56.4	54.4
03:35 AM - 03:40 AM	55.2	56.6	54.8

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Approved by

Wilawan Borirak
Manager

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235022-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-10
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 12 - 13, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	55.1	56.5	54.8
03:45 AM - 03:50 AM	54.6	56.2	54.1
03:50 AM - 03:55 AM	54.1	55.5	53.8
03:55 AM - 04:00 AM	54.1	55.1	53.9
04:00 AM - 04:05 AM	54.2	55.3	53.9
04:05 AM - 04:10 AM	54.3	55.4	54.0
04:10 AM - 04:15 AM	54.1	55.2	53.8
04:15 AM - 04:20 AM	54.4	56.0	54.0
04:20 AM - 04:25 AM	54.3	57.5	53.9
04:25 AM - 04:30 AM	54.1	56.2	53.7
04:30 AM - 04:35 AM	54.3	55.4	54.0
04:35 AM - 04:40 AM	54.5	56.2	54.2
04:40 AM - 04:45 AM	54.5	55.8	54.2
04:45 AM - 04:50 AM	54.3	55.5	53.9
04:50 AM - 04:55 AM	54.3	55.8	54.0
04:55 AM - 05:00 AM	54.3	55.5	54.0
05:00 AM - 05:05 AM	54.2	55.7	53.9
05:05 AM - 05:10 AM	54.7	60.9	54.1
05:10 AM - 05:15 AM	54.8	61.4	54.2
05:15 AM - 05:20 AM	54.3	59.0	53.9
05:20 AM - 05:25 AM	54.9	67.7	54.0
05:25 AM - 05:30 AM	54.9	61.0	54.1
05:30 AM - 05:35 AM	54.8	61.7	54.1
05:35 AM - 05:40 AM	54.8	62.4	54.3
05:40 AM - 05:45 AM	54.8	61.6	54.0
05:45 AM - 05:50 AM	55.0	61.8	54.2
05:50 AM - 05:55 AM	54.6	60.2	54.0
05:55 AM - 06:00 AM	54.5	58.4	54.0
06:00 AM - 07:00 AM	57.0	84.6	54.7
07:00 AM - 08:00 AM	57.1	83.7	54.7
08:00 AM - 09:00 AM	55.3	79.7	53.2
09:00 AM - 10:00 AM	55.1	77.5	53.4

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235023-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-11
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	53.0	72.4	51.9
11:00 AM - 12:00 PM	53.0	75.4	51.7
12:00 PM - 01:00 PM	55.8	81.4	51.3
01:00 PM - 02:00 PM	53.8	76.8	51.6
02:00 PM - 03:00 PM	55.6	80.5	52.1
03:00 PM - 04:00 PM	53.5	77.6	51.6
04:00 PM - 05:00 PM	56.8	88.2	51.7
05:00 PM - 06:00 PM	55.7	85.6	51.7
06:00 PM - 07:00 PM	55.3	82.3	52.6
07:00 PM - 08:00 PM	56.1	82.8	52.9
08:00 PM - 09:00 PM	53.9	72.1	53.2
09:00 PM - 10:00 PM	53.6	74.9	52.8
10:00 PM - 10:05 PM	52.9	55.5	52.6
10:05 PM - 10:10 PM	53.0	54.1	52.6
10:10 PM - 10:15 PM	53.2	54.5	52.8
10:15 PM - 10:20 PM	53.6	55.8	53.2
10:20 PM - 10:25 PM	53.3	54.9	52.9
10:25 PM - 10:30 PM	53.3	54.5	52.9
10:30 PM - 10:35 PM	53.1	54.4	52.7
10:35 PM - 10:40 PM	53.1	54.5	52.8
10:40 PM - 10:45 PM	53.1	54.6	52.7
10:45 PM - 10:50 PM	53.0	55.5	52.7
10:50 PM - 10:55 PM	52.9	53.9	52.6
10:55 PM - 11:00 PM	53.2	55.4	52.8
11:00 PM - 11:05 PM	53.5	58.6	53.0
11:05 PM - 11:10 PM	55.5	75.8	52.8
11:10 PM - 11:15 PM	53.1	54.3	52.7
11:15 PM - 11:20 PM	53.1	55.4	52.7
11:20 PM - 11:25 PM	53.0	54.1	52.6
11:25 PM - 11:30 PM	53.1	54.1	52.7
11:30 PM - 11:35 PM	53.2	54.8	52.8
11:35 PM - 11:40 PM	53.1	54.6	52.8
11:40 PM - 11:45 PM	53.1	54.3	52.7
11:45 PM - 11:50 PM	53.2	54.4	52.8
11:50 PM - 11:55 PM	53.2	54.6	52.8
11:55 PM - 12:00 AM	53.3	54.7	52.9
12:00 AM - 12:05 AM	55.0	63.3	53.0
12:05 AM - 12:10 AM	55.6	73.7	53.1
12:10 AM - 12:15 AM	53.5	55.9	53.0
12:15 AM - 12:20 AM	53.1	55.5	52.6

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235023-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-11
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	52.9	54.2	52.6
12:25 AM - 12:30 AM	59.8	83.5	52.7
12:30 AM - 12:35 AM	53.0	54.2	52.6
12:35 AM - 12:40 AM	53.1	54.3	52.7
12:40 AM - 12:45 AM	53.0	54.6	52.5
12:45 AM - 12:50 AM	53.5	60.4	52.5
12:50 AM - 12:55 AM	52.7	54.1	52.3
12:55 AM - 01:00 AM	52.8	59.2	52.2
01:00 AM - 01:05 AM	53.1	60.2	52.2
01:05 AM - 01:10 AM	52.7	54.7	52.2
01:10 AM - 01:15 AM	52.7	56.7	52.2
01:15 AM - 01:20 AM	52.5	54.8	52.0
01:20 AM - 01:25 AM	52.9	58.5	52.2
01:25 AM - 01:30 AM	53.0	58.2	52.3
01:30 AM - 01:35 AM	52.7	55.6	52.2
01:35 AM - 01:40 AM	52.6	55.0	52.2
01:40 AM - 01:45 AM	52.7	60.4	52.1
01:45 AM - 01:50 AM	52.7	54.6	52.2
01:50 AM - 01:55 AM	52.8	54.3	52.3
01:55 AM - 02:00 AM	52.8	54.7	52.4
02:00 AM - 02:05 AM	52.6	54.9	52.2
02:05 AM - 02:10 AM	52.5	54.3	52.0
02:10 AM - 02:15 AM	52.8	54.7	52.3
02:15 AM - 02:20 AM	52.5	54.7	52.1
02:20 AM - 02:25 AM	52.5	54.1	52.1
02:25 AM - 02:30 AM	52.5	54.3	52.0
02:30 AM - 02:35 AM	52.3	54.2	51.8
02:35 AM - 02:40 AM	52.4	53.7	52.0
02:40 AM - 02:45 AM	52.5	54.3	52.1
02:45 AM - 02:50 AM	52.8	59.3	52.2
02:50 AM - 02:55 AM	52.6	54.6	52.1
02:55 AM - 03:00 AM	52.5	56.5	51.9
03:00 AM - 03:05 AM	52.4	53.9	52.0
03:05 AM - 03:10 AM	52.5	53.9	52.0
03:10 AM - 03:15 AM	52.4	53.8	52.0
03:15 AM - 03:20 AM	52.5	55.4	52.0
03:20 AM - 03:25 AM	52.6	54.3	52.1
03:25 AM - 03:30 AM	52.5	54.0	52.1
03:30 AM - 03:35 AM	52.6	54.0	52.2
03:35 AM - 03:40 AM	52.4	53.8	52.0

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235023-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-11
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 13 - 14, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	53.2	62.8	52.1
03:45 AM - 03:50 AM	52.6	55.7	52.1
03:50 AM - 03:55 AM	52.5	54.5	52.0
03:55 AM - 04:00 AM	52.4	53.7	52.0
04:00 AM - 04:05 AM	52.5	54.3	52.0
04:05 AM - 04:10 AM	53.1	63.8	52.0
04:10 AM - 04:15 AM	52.9	64.7	51.9
04:15 AM - 04:20 AM	52.6	54.1	52.2
04:20 AM - 04:25 AM	52.5	55.1	52.1
04:25 AM - 04:30 AM	52.5	53.9	52.1
04:30 AM - 04:35 AM	52.5	54.6	52.1
04:35 AM - 04:40 AM	52.6	53.9	52.2
04:40 AM - 04:45 AM	52.4	53.6	52.0
04:45 AM - 04:50 AM	52.7	69.4	52.0
04:50 AM - 04:55 AM	52.4	53.8	52.0
04:55 AM - 05:00 AM	52.5	53.7	52.1
05:00 AM - 05:05 AM	52.8	56.7	52.3
05:05 AM - 05:10 AM	52.8	57.0	52.2
05:10 AM - 05:15 AM	52.6	53.8	52.2
05:15 AM - 05:20 AM	52.5	54.3	52.1
05:20 AM - 05:25 AM	52.6	55.0	52.1
05:25 AM - 05:30 AM	52.6	53.8	52.2
05:30 AM - 05:35 AM	52.5	53.9	52.1
05:35 AM - 05:40 AM	52.6	57.0	52.2
05:40 AM - 05:45 AM	52.9	57.2	52.3
05:45 AM - 05:50 AM	52.9	56.8	52.2
05:50 AM - 05:55 AM	52.7	56.9	52.2
05:55 AM - 06:00 AM	52.8	57.2	52.1
06:00 AM - 07:00 AM	54.4	75.5	52.8
07:00 AM - 08:00 AM	57.6	82.4	52.8
08:00 AM - 09:00 AM	55.1	80.1	52.2
09:00 AM - 10:00 AM	54.0	77.4	52.2

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235024-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-12
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	53.8	79.4	51.8
11:00 AM - 12:00 PM	54.2	79.4	51.8
12:00 PM - 01:00 PM	54.4	80.3	51.6
01:00 PM - 02:00 PM	53.4	71.8	51.6
02:00 PM - 03:00 PM	53.3	76.7	51.6
03:00 PM - 04:00 PM	53.5	76.5	51.4
04:00 PM - 05:00 PM	53.2	76.3	51.7
05:00 PM - 06:00 PM	55.9	82.6	52.0
06:00 PM - 07:00 PM	55.8	79.1	52.4
07:00 PM - 08:00 PM	53.7	75.9	52.3
08:00 PM - 09:00 PM	53.7	75.7	52.7
09:00 PM - 10:00 PM	53.8	76.4	52.7
10:00 PM - 10:05 PM	53.1	54.8	52.7
10:05 PM - 10:10 PM	53.0	55.1	52.6
10:10 PM - 10:15 PM	54.0	68.5	52.7
10:15 PM - 10:20 PM	52.9	54.2	52.6
10:20 PM - 10:25 PM	52.9	55.1	52.5
10:25 PM - 10:30 PM	52.9	58.6	52.5
10:30 PM - 10:35 PM	53.0	56.5	52.6
10:35 PM - 10:40 PM	53.4	64.5	52.7
10:40 PM - 10:45 PM	53.0	56.5	52.6
10:45 PM - 10:50 PM	53.1	54.4	52.7
10:50 PM - 10:55 PM	52.7	54.1	52.3
10:55 PM - 11:00 PM	52.7	54.6	52.3
11:00 PM - 11:05 PM	53.0	54.1	52.6
11:05 PM - 11:10 PM	53.0	54.5	52.6
11:10 PM - 11:15 PM	54.5	58.7	52.8
11:15 PM - 11:20 PM	53.3	54.3	53.0
11:20 PM - 11:25 PM	53.6	59.8	52.9
11:25 PM - 11:30 PM	53.4	54.6	53.0
11:30 PM - 11:35 PM	53.4	56.3	53.0
11:35 PM - 11:40 PM	53.3	58.0	52.9
11:40 PM - 11:45 PM	53.5	63.1	52.8
11:45 PM - 11:50 PM	53.5	63.0	52.6
11:50 PM - 11:55 PM	53.2	55.3	52.6
11:55 PM - 12:00 AM	53.2	57.1	52.7
12:00 AM - 12:05 AM	53.1	54.7	52.6
12:05 AM - 12:10 AM	53.0	54.9	52.6
12:10 AM - 12:15 AM	53.2	54.7	52.8
12:15 AM - 12:20 AM	53.2	55.4	52.7

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235024-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-12
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	53.4	67.2	52.6
12:25 AM - 12:30 AM	53.0	55.1	52.6
12:30 AM - 12:35 AM	53.0	57.1	52.5
12:35 AM - 12:40 AM	53.0	57.3	52.4
12:40 AM - 12:45 AM	53.1	55.3	52.7
12:45 AM - 12:50 AM	53.0	54.3	52.7
12:50 AM - 12:55 AM	53.3	54.4	52.9
12:55 AM - 01:00 AM	53.5	54.9	53.1
01:00 AM - 01:05 AM	53.4	55.8	53.1
01:05 AM - 01:10 AM	53.3	54.8	52.9
01:10 AM - 01:15 AM	53.2	55.0	52.8
01:15 AM - 01:20 AM	53.1	54.5	52.7
01:20 AM - 01:25 AM	53.2	54.7	52.8
01:25 AM - 01:30 AM	53.1	54.2	52.7
01:30 AM - 01:35 AM	53.2	54.6	52.8
01:35 AM - 01:40 AM	53.1	54.9	52.7
01:40 AM - 01:45 AM	53.0	54.3	52.7
01:45 AM - 01:50 AM	53.2	54.4	52.9
01:50 AM - 01:55 AM	61.6	72.8	53.1
01:55 AM - 02:00 AM	53.6	55.2	53.1
02:00 AM - 02:05 AM	53.5	55.3	53.1
02:05 AM - 02:10 AM	53.4	55.4	53.0
02:10 AM - 02:15 AM	53.4	55.0	53.0
02:15 AM - 02:20 AM	53.3	54.9	53.0
02:20 AM - 02:25 AM	53.4	54.6	53.0
02:25 AM - 02:30 AM	53.3	54.7	53.0
02:30 AM - 02:35 AM	53.2	54.8	52.8
02:35 AM - 02:40 AM	53.2	57.9	52.8
02:40 AM - 02:45 AM	53.2	54.2	52.9
02:45 AM - 02:50 AM	53.3	54.7	52.9
02:50 AM - 02:55 AM	53.3	54.4	53.0
02:55 AM - 03:00 AM	53.3	54.4	53.0
03:00 AM - 03:05 AM	53.2	54.2	52.9
03:05 AM - 03:10 AM	53.2	54.3	52.9
03:10 AM - 03:15 AM	53.2	54.8	52.9
03:15 AM - 03:20 AM	53.3	55.2	52.9
03:20 AM - 03:25 AM	53.3	55.5	53.0
03:25 AM - 03:30 AM	53.5	54.8	53.2
03:30 AM - 03:35 AM	53.4	54.8	53.0
03:35 AM - 03:40 AM	53.0	54.3	52.7

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235024-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-12
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 14 - 15, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	53.2	55.0	52.8
03:45 AM - 03:50 AM	53.5	55.0	53.1
03:50 AM - 03:55 AM	53.5	54.8	53.1
03:55 AM - 04:00 AM	53.1	54.5	52.8
04:00 AM - 04:05 AM	53.1	54.4	52.7
04:05 AM - 04:10 AM	53.5	54.5	53.1
04:10 AM - 04:15 AM	53.4	54.5	53.1
04:15 AM - 04:20 AM	53.2	54.3	52.8
04:20 AM - 04:25 AM	53.1	54.1	52.8
04:25 AM - 04:30 AM	53.3	54.6	52.9
04:30 AM - 04:35 AM	53.4	54.7	53.0
04:35 AM - 04:40 AM	53.5	55.7	53.0
04:40 AM - 04:45 AM	53.2	54.9	52.7
04:45 AM - 04:50 AM	53.1	54.5	52.6
04:50 AM - 04:55 AM	53.0	54.8	52.6
04:55 AM - 05:00 AM	53.1	55.3	52.7
05:00 AM - 05:05 AM	53.1	54.6	52.6
05:05 AM - 05:10 AM	53.7	71.9	52.3
05:10 AM - 05:15 AM	52.9	54.2	52.5
05:15 AM - 05:20 AM	53.3	54.5	52.8
05:20 AM - 05:25 AM	53.2	54.6	52.8
05:25 AM - 05:30 AM	53.1	54.7	52.8
05:30 AM - 05:35 AM	54.4	70.8	53.0
05:35 AM - 05:40 AM	53.9	55.9	53.5
05:40 AM - 05:45 AM	56.0	77.8	53.5
05:45 AM - 05:50 AM	53.8	57.7	53.1
05:50 AM - 05:55 AM	53.6	56.7	53.2
05:55 AM - 06:00 AM	53.7	57.6	53.3
06:00 AM - 07:00 AM	54.4	69.9	53.6
07:00 AM - 08:00 AM	57.9	85.8	54.7
08:00 AM - 09:00 AM	55.9	75.2	54.0
09:00 AM - 10:00 AM	55.3	79.4	53.1

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235025-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. 254007-13
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	53.8	87.2	51.6
11:00 AM - 12:00 PM	54.0	85.0	51.0
12:00 PM - 01:00 PM	53.6	83.2	50.6
01:00 PM - 02:00 PM	53.3	77.8	50.9
02:00 PM - 03:00 PM	53.4	80.4	50.9
03:00 PM - 04:00 PM	56.0	85.8	51.6
04:00 PM - 05:00 PM	53.8	81.3	51.6
05:00 PM - 06:00 PM	54.1	82.2	51.4
06:00 PM - 07:00 PM	55.0	78.6	51.8
07:00 PM - 08:00 PM	53.0	83.0	49.3
08:00 PM - 09:00 PM	51.9	74.9	50.0
09:00 PM - 10:00 PM	52.3	77.6	50.4
10:00 PM - 10:05 PM	51.8	57.3	50.9
10:05 PM - 10:10 PM	51.9	60.1	51.0
10:10 PM - 10:15 PM	49.8	64.2	49.0
10:15 PM - 10:20 PM	49.5	60.9	48.5
10:20 PM - 10:25 PM	48.6	55.0	48.2
10:25 PM - 10:30 PM	49.9	54.0	49.0
10:30 PM - 10:35 PM	49.4	53.8	48.7
10:35 PM - 10:40 PM	48.0	62.1	46.4
10:40 PM - 10:45 PM	49.0	50.8	48.6
10:45 PM - 10:50 PM	48.6	51.7	47.9
10:50 PM - 10:55 PM	50.3	53.4	49.8
10:55 PM - 11:00 PM	49.3	51.2	48.9
11:00 PM - 11:05 PM	50.1	54.7	49.6
11:05 PM - 11:10 PM	48.8	54.3	48.4
11:10 PM - 11:15 PM	49.8	55.8	49.3
11:15 PM - 11:20 PM	49.0	51.9	48.5
11:20 PM - 11:25 PM	50.8	61.7	48.1
11:25 PM - 11:30 PM	50.8	62.5	49.7
11:30 PM - 11:35 PM	49.3	51.4	48.3
11:35 PM - 11:40 PM	49.3	52.3	48.5
11:40 PM - 11:45 PM	49.2	52.6	48.2
11:45 PM - 11:50 PM	49.7	53.2	48.9
11:50 PM - 11:55 PM	49.1	51.0	48.4
11:55 PM - 12:00 AM	48.2	51.3	47.8
12:00 AM - 12:05 AM	48.2	60.9	46.8
12:05 AM - 12:10 AM	50.7	66.8	47.5
12:10 AM - 12:15 AM	50.1	55.5	49.3
12:15 AM - 12:20 AM	50.5	56.3	49.5

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Approved by

Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235025-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-13
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	53.7	64.2	51.0
12:25 AM - 12:30 AM	49.4	52.4	49.1
12:30 AM - 12:35 AM	50.0	55.6	49.2
12:35 AM - 12:40 AM	49.2	51.5	48.3
12:40 AM - 12:45 AM	49.0	53.5	48.6
12:45 AM - 12:50 AM	49.2	51.4	48.8
12:50 AM - 12:55 AM	48.5	52.1	48.2
12:55 AM - 01:00 AM	48.3	49.9	47.8
01:00 AM - 01:05 AM	49.2	54.9	48.4
01:05 AM - 01:10 AM	49.7	51.4	49.2
01:10 AM - 01:15 AM	49.3	58.6	48.6
01:15 AM - 01:20 AM	50.2	52.2	49.4
01:20 AM - 01:25 AM	48.6	50.1	48.2
01:25 AM - 01:30 AM	48.7	49.8	48.4
01:30 AM - 01:35 AM	48.6	64.4	47.7
01:35 AM - 01:40 AM	48.9	61.9	48.1
01:40 AM - 01:45 AM	49.2	52.3	47.8
01:45 AM - 01:50 AM	49.1	52.5	47.9
01:50 AM - 01:55 AM	48.2	50.7	47.5
01:55 AM - 02:00 AM	49.0	52.1	48.4
02:00 AM - 02:05 AM	49.6	51.4	48.8
02:05 AM - 02:10 AM	49.4	53.1	48.4
02:10 AM - 02:15 AM	49.1	54.1	48.4
02:15 AM - 02:20 AM	49.6	52.6	48.5
02:20 AM - 02:25 AM	50.3	53.1	49.3
02:25 AM - 02:30 AM	48.3	53.3	47.6
02:30 AM - 02:35 AM	48.4	53.3	47.7
02:35 AM - 02:40 AM	49.0	51.1	48.3
02:40 AM - 02:45 AM	49.3	51.0	48.9
02:45 AM - 02:50 AM	47.2	49.2	46.6
02:50 AM - 02:55 AM	50.2	53.3	48.8
02:55 AM - 03:00 AM	48.9	51.0	48.3
03:00 AM - 03:05 AM	49.8	53.8	49.0
03:05 AM - 03:10 AM	48.9	54.8	47.6
03:10 AM - 03:15 AM	48.9	52.7	47.9
03:15 AM - 03:20 AM	49.1	57.8	48.0
03:20 AM - 03:25 AM	48.7	51.9	47.7
03:25 AM - 03:30 AM	48.0	50.0	47.0
03:30 AM - 03:35 AM	48.0	51.8	46.9
03:35 AM - 03:40 AM	48.0	51.8	47.1

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235025-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-13
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 15 - 16, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	49.1	51.6	47.8
03:45 AM - 03:50 AM	48.2	60.0	47.4
03:50 AM - 03:55 AM	48.9	51.2	48.1
03:55 AM - 04:00 AM	49.4	51.2	48.5
04:00 AM - 04:05 AM	49.2	51.5	48.0
04:05 AM - 04:10 AM	47.4	58.0	46.3
04:10 AM - 04:15 AM	47.5	49.8	46.9
04:15 AM - 04:20 AM	48.1	54.3	47.6
04:20 AM - 04:25 AM	47.9	56.1	47.4
04:25 AM - 04:30 AM	47.7	60.7	46.7
04:30 AM - 04:35 AM	50.2	71.5	47.0
04:35 AM - 04:40 AM	49.2	51.3	48.6
04:40 AM - 04:45 AM	49.2	55.4	48.5
04:45 AM - 04:50 AM	49.1	51.6	48.3
04:50 AM - 04:55 AM	49.0	51.4	48.0
04:55 AM - 05:00 AM	49.2	51.9	48.3
05:00 AM - 05:05 AM	48.2	51.6	47.1
05:05 AM - 05:10 AM	56.0	78.4	49.1
05:10 AM - 05:15 AM	49.0	52.0	48.0
05:15 AM - 05:20 AM	49.6	55.4	48.4
05:20 AM - 05:25 AM	55.4	77.8	48.5
05:25 AM - 05:30 AM	48.4	50.4	47.8
05:30 AM - 05:35 AM	49.0	50.8	48.1
05:35 AM - 05:40 AM	49.1	51.3	48.2
05:40 AM - 05:45 AM	57.0	78.2	49.1
05:45 AM - 05:50 AM	50.7	53.9	49.6
05:50 AM - 05:55 AM	50.0	54.8	49.3
05:55 AM - 06:00 AM	58.9	82.2	50.5
06:00 AM - 07:00 AM	57.9	84.6	50.7
07:00 AM - 08:00 AM	56.2	85.5	50.9
08:00 AM - 09:00 AM	53.6	84.1	48.9
09:00 AM - 10:00 AM	52.4	71.7	50.6

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

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Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235026-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 1 of 3

Sample No. : 254007-14
Parameter : Noise
Location : ร่มรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date : Feb 16 - 17, 2025
Measurement by : Panuwat Wangbong
Sound Level Meter : 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	51.4	76.0	48.2
11:00 AM - 12:00 PM	51.5	80.1	47.6
12:00 PM - 01:00 PM	51.0	79.1	47.1
01:00 PM - 02:00 PM	51.0	80.0	47.4
02:00 PM - 03:00 PM	51.9	77.9	47.8
03:00 PM - 04:00 PM	51.3	78.9	47.8
04:00 PM - 05:00 PM	54.3	87.6	48.1
05:00 PM - 06:00 PM	52.5	78.9	47.8
06:00 PM - 07:00 PM	57.1	87.7	50.9
07:00 PM - 08:00 PM	51.9	78.9	49.1
08:00 PM - 09:00 PM	52.3	80.7	49.0
09:00 PM - 10:00 PM	49.9	71.3	48.7
10:00 PM - 10:05 PM	49.5	62.8	48.6
10:05 PM - 10:10 PM	49.6	54.6	48.7
10:10 PM - 10:15 PM	49.5	54.3	48.7
10:15 PM - 10:20 PM	49.4	52.0	48.7
10:20 PM - 10:25 PM	49.4	52.3	48.6
10:25 PM - 10:30 PM	49.3	55.7	48.3
10:30 PM - 10:35 PM	49.3	53.5	48.4
10:35 PM - 10:40 PM	50.6	63.4	48.6
10:40 PM - 10:45 PM	49.5	53.8	48.6
10:45 PM - 10:50 PM	49.3	52.2	48.5
10:50 PM - 10:55 PM	49.2	52.5	48.4
10:55 PM - 11:00 PM	49.3	53.3	48.5
11:00 PM - 11:05 PM	49.7	55.7	48.8
11:05 PM - 11:10 PM	49.5	56.3	48.6
11:10 PM - 11:15 PM	49.4	61.8	48.6
11:15 PM - 11:20 PM	51.7	73.3	48.6
11:20 PM - 11:25 PM	49.4	53.4	48.6
11:25 PM - 11:30 PM	49.3	52.4	48.4
11:30 PM - 11:35 PM	49.3	52.3	48.5
11:35 PM - 11:40 PM	49.2	51.5	48.5
11:40 PM - 11:45 PM	49.3	52.5	48.5
11:45 PM - 11:50 PM	49.3	52.2	48.4
11:50 PM - 11:55 PM	49.3	52.2	48.4
11:55 PM - 12:00 AM	49.4	52.6	48.5
12:00 AM - 12:05 AM	49.3	53.0	48.4
12:05 AM - 12:10 AM	49.4	52.8	48.5
12:10 AM - 12:15 AM	49.4	53.8	48.5
12:15 AM - 12:20 AM	51.8	62.7	48.8

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory, ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

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Wilawan Borirak
Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235026-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 2 of 3

Sample No. 254007-14
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:20 AM - 12:25 AM	49.5	52.7	48.6
12:25 AM - 12:30 AM	53.7	76.7	48.9
12:30 AM - 12:35 AM	49.4	52.5	48.7
12:35 AM - 12:40 AM	49.5	51.8	48.8
12:40 AM - 12:45 AM	49.7	52.1	48.9
12:45 AM - 12:50 AM	49.5	53.4	48.7
12:50 AM - 12:55 AM	49.4	52.2	48.6
12:55 AM - 01:00 AM	49.5	51.6	48.8
01:00 AM - 01:05 AM	49.4	51.9	48.6
01:05 AM - 01:10 AM	49.5	51.6	48.8
01:10 AM - 01:15 AM	49.4	51.4	48.8
01:15 AM - 01:20 AM	49.2	51.9	48.6
01:20 AM - 01:25 AM	49.2	51.6	48.7
01:25 AM - 01:30 AM	49.6	60.6	48.7
01:30 AM - 01:35 AM	49.3	51.1	48.8
01:35 AM - 01:40 AM	49.5	51.1	48.9
01:40 AM - 01:45 AM	49.4	54.6	48.7
01:45 AM - 01:50 AM	49.1	52.5	48.5
01:50 AM - 01:55 AM	49.0	51.1	48.3
01:55 AM - 02:00 AM	49.0	55.1	48.3
02:00 AM - 02:05 AM	48.9	51.3	48.1
02:05 AM - 02:10 AM	48.7	52.7	48.1
02:10 AM - 02:15 AM	48.7	50.6	48.0
02:15 AM - 02:20 AM	48.9	51.0	48.2
02:20 AM - 02:25 AM	48.8	51.5	48.0
02:25 AM - 02:30 AM	48.8	52.1	48.1
02:30 AM - 02:35 AM	48.7	51.1	48.0
02:35 AM - 02:40 AM	48.6	53.0	47.7
02:40 AM - 02:45 AM	48.5	53.4	47.6
02:45 AM - 02:50 AM	48.9	56.6	47.8
02:50 AM - 02:55 AM	48.4	51.7	47.5
02:55 AM - 03:00 AM	48.6	53.9	47.6
03:00 AM - 03:05 AM	48.4	50.9	47.5
03:05 AM - 03:10 AM	48.6	51.8	47.8
03:10 AM - 03:15 AM	48.8	51.7	48.0
03:15 AM - 03:20 AM	48.8	52.6	47.8
03:20 AM - 03:25 AM	48.8	51.7	47.9
03:25 AM - 03:30 AM	48.8	50.9	48.1
03:30 AM - 03:35 AM	48.8	51.0	48.0
03:35 AM - 03:40 AM	48.6	51.7	47.9

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Approved by

Wilawan Borirak
Manager



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

Lot ID: 254007
Date Received : Feb 17, 2025
Date Reported : Feb 18, 2025
Report No. : 3235026-1

P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Page 3 of 3

Sample No. 254007-14
Parameter Noise
Location ริมรั้วโครงการด้านทิศตะวันตก (GPS 47P 0735034, 1409687) (Shut down)
Measurement Date Feb 16 - 17, 2025
Measurement by Panuwat Wangbong
Sound Level Meter 00764916

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
03:40 AM - 03:45 AM	48.6	51.5	47.9
03:45 AM - 03:50 AM	48.8	51.4	48.1
03:50 AM - 03:55 AM	48.9	51.3	48.2
03:55 AM - 04:00 AM	48.8	51.9	48.0
04:00 AM - 04:05 AM	48.7	51.9	47.9
04:05 AM - 04:10 AM	49.9	66.9	47.9
04:10 AM - 04:15 AM	48.7	54.5	47.9
04:15 AM - 04:20 AM	48.8	52.4	47.9
04:20 AM - 04:25 AM	48.3	51.7	47.4
04:25 AM - 04:30 AM	48.2	50.4	47.3
04:30 AM - 04:35 AM	48.3	50.7	47.5
04:35 AM - 04:40 AM	50.9	72.3	47.6
04:40 AM - 04:45 AM	48.7	50.9	47.9
04:45 AM - 04:50 AM	48.7	52.0	47.9
04:50 AM - 04:55 AM	49.1	58.9	48.1
04:55 AM - 05:00 AM	51.8	66.9	47.9
05:00 AM - 05:05 AM	49.1	59.5	47.6
05:05 AM - 05:10 AM	48.6	58.1	47.6
05:10 AM - 05:15 AM	48.9	57.0	47.8
05:15 AM - 05:20 AM	51.1	72.3	47.6
05:20 AM - 05:25 AM	48.8	58.7	47.4
05:25 AM - 05:30 AM	48.9	56.8	47.5
05:30 AM - 05:35 AM	49.1	56.0	48.0
05:35 AM - 05:40 AM	48.9	56.3	47.9
05:40 AM - 05:45 AM	49.6	59.5	47.6
05:45 AM - 05:50 AM	48.9	55.0	47.9
05:50 AM - 05:55 AM	49.6	59.3	48.2
05:55 AM - 06:00 AM	49.7	58.3	48.2
06:00 AM - 07:00 AM	53.3	77.6	49.2
07:00 AM - 08:00 AM	56.9	84.8	49.5
08:00 AM - 09:00 AM	53.6	78.7	49.1
09:00 AM - 10:00 AM	52.6	80.2	49.3

Reference Method :

- ISO 1996-1
- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2567

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Wilawan Borirak
Manager

ภาคผนวก 5ข

ใบรับรองผลการตรวจวัดคุณภาพน้ำ



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location: GTG

TESTING

No.0042

Lot ID: 24141802

Date Received : Jan 09, 2025

Date Reported : Jan 17, 2025

Report Number : 3195854-1

Page 1 of 2

Sample Number	24141802-1						
Sampled Date	Jan 09, 2025 9:42 AM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	Jan 09, 2025						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles. Sample containers comply to pretreatment - preservation standards. (APHA / USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	63.5	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	201	≤750	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	≤10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	8.2	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Phenol	mg/L	0.005	0.01	0.01	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 B, D	Rayong
Temperature *	Degree C	-	-	28.7	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	4780	≤9000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	29	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Phongthep Sitthiloh ทะเบียนเลขที่ ว-323-จ-0023 , Kardbundit Kitisupavanit ทะเบียนเลขที่ ว-204-จ-0001

Remark :

Technical Management

Chonticha Subongkoch
Scientist (3)
ทะเบียนเลขที่ ว-323-จ-0031

Approved by

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location: GTG

TESTING

No.0042

Lot ID: 24141802

Date Received : Jan 09, 2025

Date Reported : Jan 17, 2025

Report Number : 3195854-1

Page 2 of 2

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management



Chonticha Subongkoch
Scientist (3)

ทะเบียนเลขที่ ว-323-จ-0031

Approved by



Dej Changchon
Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location: GTG

TESTING

No.0009

Lot ID: 24141802

Date Received : Jan 09, 2025

Date Reported : Jan 22, 2025

Report Number : 3195854-2

Page 1 of 1

Sample Number	24141802-1						
Sampled Date	Jan 09, 2025 9:42 AM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	Jan 09, 2025						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles. Sample containers comply to pretreatment - preservation standards. (APHA / USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Volatile Organics Compounds							
Benzene *	mg/L	0.00015	0.0005	0.0082	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 6200 B	Bangkok
Water Testing							
Flow rate *	m3/hr	-	-	35.0	No Standard	Flow meter	Rayong
Nitrate as N *	mg/L	0.015	0.05	0.07	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-NO3 (E)	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Phongthep Sitthiloh , Kardbundit Kitisupavanit

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Approved by

Siriluk Bunnak
Section Head

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TESTING
No.0042

Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :
Project Name : Environmental Monitoring
Project Location :

Lot ID: 2516075

Date Received : Feb 24, 2025
Date Reported : Mar 04, 2025
Report Number : 3239364-1

Page 1 of 2

Sample Number	2516075-1
Sampled Date	Feb 24, 2025 10:12 AM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	Feb 24, 2025
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	93.1	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	189	≤750	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	≤10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	8.1	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Phenol	mg/L	0.005	0.01	Not Detected	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 B, D	Rayong
Temperature *	Degree C	-	-	29.9	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	4640	≤9000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	49	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Wasan Kinunti ทะเบียนเลขที่ ว-323-จ-0019 , Thanasoun Namakunna ทะเบียนเลขที่ ว-204-จ-0101

Technical Management

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2516075

Date Received : Feb 24, 2025

Date Reported : Mar 04, 2025

Report Number : 3239364-1

Page 2 of 2

Remark :

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- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

Photchana Seeda
Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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TESTING
No.0009

Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2516075

Date Received : Feb 24, 2025

Date Reported : Mar 04, 2025

Report Number : 3239364-2

Page 1 of 1

Sample Number	2516075-1						
Sampled Date	Feb 24, 2025 10:12 AM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	Feb 24, 2025						
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Volatile Organics Compounds							
Benzene	mg/L	0.00015	0.0005	0.0097	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 6200 B	Bangkok
Water Testing							
Flow rate *	m3/hr	-	-	60.0	No Standard	Flow meter, Analyzed by Client	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Wasan Kinunti , Thanasoun Namakunna

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- Sampling is not included in scope of accreditation ISO/IEC 17025

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Suwimon Chairuangwut
Scientist (3)

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2516075

Date Received : Feb 24, 2025

Date Reported : Mar 04, 2025

Report Number : 3239364-3

Page 1 of 1

Sample Number	2516075-1
Sampled Date	Feb 24, 2025 10:12 AM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	Feb 25, 2025
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Nitrate as N	mg/L	0.015	0.05	<0.05	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-NO3 (E)	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Wasan Kinunti , Thanasoun Namakunna

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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Photchana Seeda
Scientist (4)

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TESTING
No.0042

Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 2518393

Date Received : Mar 06, 2025
Date Reported : Mar 14, 2025
Report Number : 3243766-1

Page 1 of 2

Sample Number	2518393-1
Sampled Date	Mar 06, 2025 2:45 PM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	Mar 06, 2025
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles. Sample containers comply to pretreatment - preservation standards. (APHA / USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	40.0	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	199	≤750	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	≤10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	8.1	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Phenol	mg/L	0.005	0.01	Not Detected	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 B, D	Rayong
Temperature *	Degree C	-	-	32.9	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	5460	≤9000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	22	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Sansoen Khuiyoksui ทะเบียนเลขที่ ว-323-จ-0005 , Thanasoun Namakunna ทะเบียนเลขที่ ว-204-จ-0101

Technical Management

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

TESTING
No.0042

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location: GTG

Lot ID: 2518393

Date Received : Mar 06, 2025
Date Reported : Mar 14, 2025
Report Number : 3243766-1

Page 2 of 2

Remark :

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- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management



Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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TESTING
No.0009

Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location: GTG

Lot ID: 2518393

Date Received : Mar 06, 2025
Date Reported : Mar 14, 2025
Report Number : 3243766-2

Page 1 of 1

Sample Number	2518393-1						
Sampled Date	Mar 06, 2025 2:45 PM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	Mar 06, 2025						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles. Sample containers comply to pretreatment - preservation standards. (APHA / USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Volatile Organics Compounds							
Benzene	mg/L	0.00015	0.0005	0.0083	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 6200 B	Bangkok
Water Testing							
Flow rate *	m3/hr	-	-	50.0	No Standard	Flow meter	Rayong
Nitrate as N *	mg/L	0.015	0.05	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-NO3 (E)	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Sansoen Khuiyoksui , Thanasoun Namakunna

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- Sampling is not included in scope of accreditation ISO/IEC 17025

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Siriluk Bunnak
Section Head

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location: GTG

TESTING
No.0042
Lot ID: 2523231
Date Received : Apr 10, 2025
Date Reported : Apr 22, 2025
Report Number : 3253727-1

Page 1 of 2

Sample Number	2523231-1
Sampled Date	Apr 10, 2025 2:40 PM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	Apr 10, 2025
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and a lot of turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	98.0	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	232	≤750	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	≤10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	8.0	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Phenol	mg/L	0.005	0.01	0.15	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 B, D	Rayong
Temperature *	Degree C	-	-	33.0	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	5200	≤9000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Sansoen Khuiyoksui ทะเบียนเลขที่ ว-323-จ-0005 , Thanasoun Namakunna ทะเบียนเลขที่ ว-204-จ-0101

Technical Management

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

TESTING

No.0042

Lot ID: 2523231

Date Received : Apr 10, 2025

Date Reported : Apr 22, 2025

Report Number : 3253727-1

Page 2 of 2

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

TESTING
No.0009

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

Lot ID: 2523231

Date Received : Apr 10, 2025

Date Reported : Apr 22, 2025

Report Number : 3253727-2

Page 1 of 1

Sample Number	2523231-1
Sampled Date	Apr 10, 2025 2:40 PM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	Apr 10, 2025
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Physical Property	Yellow, some odour, solid and a lot of turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Volatile Organics Compounds							
Benzene *	mg/L	0.00015	0.0005	0.0218	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 6200 B	Bangkok
Water Testing							
Flow rate *	m3/hr	-	-	40.0	No Standard	Flow meter	Rayong
Nitrate as N *	mg/L	0.015	0.05	<0.05	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-NO3 (E)	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Sansoen Khuiyoksui , Thanasoun Namakunna

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- Sampling is not included in scope of accreditation ISO/IEC 17025

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Siriluk Bunnak
Section Head

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

TESTING

No.0042

Lot ID: 2538110

Date Received : May 15, 2025

Date Reported : May 23, 2025

Report Number : 3288750-1

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location: GTG

Page 1 of 2

Sample Number	2538110-1
Sampled Date	May 15, 2025 2:00 PM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	May 15, 2025
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	74.5	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	293	≤750	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	≤10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	8.2	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Phenol	mg/L	0.005	0.01	0.04	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 B, D	Rayong
Temperature *	Degree C	-	-	31.7	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	5700	≤9000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	53	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Wasan Kinunti ทะเบียนเลขที่ ว-323-จ-0019 , Thanasoun Namakunna ทะเบียนเลขที่ ว-204-จ-0101

Remark :

Technical Management

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

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88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O : PMM-23-21

Project Name : Environmental Monitoring

Project Location : GTG

TESTING

No.0042

Lot ID: 2538110

Date Received : May 15, 2025

Date Reported : May 23, 2025

Report Number : 3288750-1

Page 2 of 2

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- Sampling is not included in scope of accreditation ISO/IEC 17025

Technical Management



Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

TESTING
No.0009

Lot ID: 2538110

Date Received : May 15, 2025

Date Reported : May 23, 2025

Report Number : 3288750-2

Page 1 of 1

Sample Number	2538110-1						
Sampled Date	May 15, 2025 2:00 PM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	May 15, 2025						
Condition of Sample	Contained in two glass vials, one amber glass bottle and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Volatile Organics Compounds							
Benzene	mg/L	0.00015	0.0005	0.0247	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 6200 B	Bangkok
Water Testing							
Flow rate *	m3/hr	-	-	50.0	No Standard	Flow meter	Rayong
Nitrate as N *	mg/L	0.015	0.05	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-NO3 (E)	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Wasan Kinunti , Thanasoun Namakunna

Remark :

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Siriluk Bunnak
Section Head

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Analysis / Test Report

TESTING

No.0042

Lot ID: 2559224

Date Received : Jun 20, 2025

Date Reported : Jun 28, 2025

Report Number : 3338749-1

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Page 1 of 2

Sample Number	2559224-1						
Sampled Date	Jun 20, 2025 1:35 PM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	Jun 20, 2025						
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	42.9	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	205	≤750	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	≤10	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	8.0	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Phenol	mg/L	0.005	0.01	0.01	≤1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 5530 B, D	Rayong
Temperature *	Degree C	-	-	34.0	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	4880	≤9000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	54	≤300	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Narunat thammasaro ทะเบียนเลขที่ ว-323-จ-0052 , Kardbundit Kitisupavanit ทะเบียนเลขที่ ว-204-จ-0001

Remark :

Technical Management

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

TESTING

No.0042

Lot ID: 2559224

Date Received : Jun 20, 2025

Date Reported : Jun 28, 2025

Report Number : 3338749-1

Page 2 of 2

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Technical Management



Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-0028

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-0001

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Analysis / Test Report

TESTING

No.0009

Lot ID: 2559224

Date Received : Jun 20, 2025

Date Reported : Jun 28, 2025

Report Number : 3338749-2

Client : Map Ta Phut Olefins Co., Ltd.

88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Page 1 of 1

Sample Number	2559224-1						
Sampled Date	Jun 20, 2025 1:35 PM						
Sample Description	Wastewater						
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit						
Date Analysis Commenced	Jun 20, 2025						
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Volatile Organics Compounds							
Benzene	mg/L	0.00015	0.0005	0.0128	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 6200 B	Bangkok
Water Testing							
Flow rate *	m3/hr	-	-	45.0	No Standard	Flow meter, Analyzed by Client	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Narunat thammassaro , Kardbundit Kitisupavanit

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Nanthawadee Somboon
Specialist 2

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150

P/O :

Project Name : Environmental Monitoring

Project Location :

Lot ID: 2559224

Date Received : Jun 20, 2025

Date Reported : Jun 28, 2025

Report Number : 3338749-3

Page 1 of 1

Sample Number	2559224-1
Sampled Date	Jun 20, 2025 1:35 PM
Sample Description	Wastewater
Location	คุณภาพน้ำจากระบบบำบัดน้ำเสียขั้นต้น MOC Check Pit
Date Analysis Commenced	Jun 25, 2025
Condition of Sample	Contained in one amber glass bottle, two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Nitrate as N	mg/L	0.015	0.05	0.45	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 24th ed., 2023, part 4500-NO3 (E)	Rayong

Guideline : Criteria of wastewater characteristic from factory discharge to central wastewater treatment plant of RIL Industrial Estate.

Sampling By : Narunat thammasaro , Kardbundit Kitisupavanit

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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Photchana Seeda
Scientist (4)

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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ภาคผนวก 6ข

ใบรับรองผลการตรวจวัดระดับเสียงในสถานประกอบการ



Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 254015

Date Received : Feb 13, 2025
Date Reported : Feb 19, 2025
Report Number: 3237405-1

Page 1 of 1

Sample Number 254015-1
Parameter Noise (Leq 12 hrs.)
Location Gas Turbine Generator
Measurement Date Feb 11, 2025
Measurement by Panuwat Wangbong

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
02:26 PM - 03:26 PM	74.5	77.7	74.3
03:26 PM - 04:26 PM	74.4	77.5	74.2
04:26 PM - 05:26 PM	74.4	77.6	74.2
05:26 PM - 06:26 PM	74.4	79.0	74.2
06:26 PM - 07:26 PM	74.5	79.7	74.3
07:26 PM - 08:26 PM	74.5	78.4	74.4
08:26 PM - 09:26 PM	74.7	78.3	74.4
09:26 PM - 10:26 PM	74.8	77.8	74.6
10:26 PM - 11:26 PM	74.9	79.0	74.7
11:26 PM - 12:26 AM	82.0	83.3	81.3
12:26 AM - 01:26 AM	81.7	83.5	81.0
01:26 AM - 02:26 AM	79.8	82.2	79.0
Leq Average 12 hrs. (dB(A))	77.4		
Lmax (dB(A))		83.5	
Standard (dB(A))	87	140	
Reference Method : ISO1996-1 and 1996-2			
Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๔๖			

Technical Manager

Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

Client : Map Ta Phut Olefins Co., Ltd.
88/3, 3191 Road, T. Map Ta Phut, A. Maung, Rayong Thailand 21150
P/O : PMM-23-21
Project Name : Environmental Monitoring
Project Location : GTG

Lot ID: 2523182

Date Received : Apr 11, 2025
Date Reported : Apr 21, 2025
Report Number: 3253726-1

Page 1 of 1

Sample Number 2523182-1
Parameter Noise (Leq 12 hrs,)
Location Gas Turbine Generator
Measurement Date Apr 10, 2025
Measurement by Wichan Choonharat

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:04 AM - 10:04 AM	76.4	77.2	76.2
10:04 AM - 11:04 AM	76.3	77.0	76.1
11:04 AM - 12:04 PM	76.4	77.4	76.1
12:04 PM - 01:04 PM	76.4	77.5	75.9
01:04 PM - 02:04 PM	75.3	76.6	74.9
02:04 PM - 03:04 PM	75.4	76.5	75.0
03:04 PM - 04:04 PM	73.7	76.4	73.4
04:04 PM - 05:04 PM	73.8	75.3	73.6
05:04 PM - 06:04 PM	73.9	74.9	73.7
06:04 PM - 07:04 PM	73.8	74.4	73.7
07:04 PM - 08:04 PM	73.8	74.4	73.7
08:04 PM - 09:04 PM	73.8	74.7	73.7


Leq Average 12 hrs. (dB(A)) 75.1
Lmax (dB(A)) 77.5
Standard (dB(A)) 87
Reference Method : ISO1996-1 and 1996-2
Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๕๖

Technical Manager



Chonticha Subongkoch
Scientist (3)

Approved by


Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Stack	Total Suspended Particulate	Console Control Unit	BKK_FS0496	1-Dec-24	1-Jun-25	6
Stack	Total Suspended Particulate	Console Control Unit	BKK_FS0448	30-Nov-24	30-May-25	6
Stack	Total Suspended Particulate	Pitot Tube	BKK_FS0541	30-Nov-24	1-Jun-25	6
Stack	Total Suspended Particulate	Flue gas Analyzer	BKK_FS1158	27-Sep-24	27-Sep-25	12
Stack	Total Suspended Particulate	Digital Balance	BKK_EN0309	5-Nov-24	5-Nov-25	12
Stack (CEMs)	Oxides of Nitrogen	Analyzer , System calibration, Standard gas	-	-	-	-
Stack (CEMs)	Sulfur Dioxide	Analyzer , System calibration, Standard gas	-	-	-	-
Stack (CEMs)	Oxygen	Analyzer , System calibration, Standard gas	-	-	-	-
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0668	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0667	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0666	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0665	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0184	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0185	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0397	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	High Volume	RYG_FS0668	-	-	On site Calibration
Ambient	Particulate Matter (PM-10)	Digital Balance	RYG_EN0001	22-Feb-24	22-Feb-25	12
Ambient	Particulate Matter (PM-10)	Digital Balance	RYG_EN0001	20-Feb-25	20-Feb-26	12
Ambient	Total Suspended Particulate	High Volume	RYG_FS0663	-	-	On site Calibration
Ambient	Total Suspended Particulate	High Volume	RYG_FS0662	-	-	On site Calibration
Ambient	Total Suspended Particulate	High Volume	RYG_FS0661	-	-	On site Calibration
Ambient	Total Suspended Particulate	High Volume	RYG_FS0291	-	-	On site Calibration
Ambient	Total Suspended Particulate	Digital Balance	RYG_EN0001	22-Feb-24	22-Feb-25	12
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	RYG_FS0533	4-Jan-25	4-Jul-25	6
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	RYG_FS0264	4-Jan-25	4-Jul-25	6
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	RYG_FS0455	4-Jan-25	4-Jul-25	6
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	RYG_FS0453	4-Jan-25	4-Jul-25	6
Ambient	Sulfur Dioxide	SO ₂ Analyzer	RYG_FS0532	4-Jan-25	4-Jul-25	6
Ambient	Sulfur Dioxide	SO ₂ Analyzer	RYG_FS0263	4-Jan-25	4-Jul-25	6
Ambient	Sulfur Dioxide	SO ₂ Analyzer	RYG_FS0454	4-Jan-25	4-Jul-25	6
Ambient	Sulfur Dioxide	SO ₂ Analyzer	RYG_FS0452	4-Jan-25	4-Jul-25	6
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0649	17-Jan-25	16-Jul-26	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0647	15-Jan-25	14-Jul-26	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0611	26-Jun-24	26-Dec-25	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0648	16-Jan-25	15-Jul-26	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0609	18-Jul-24	18-Jan-26	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0610	26-Jun-24	26-Dec-25	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0611	26-Jun-24	26-Dec-25	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0647	15-Jan-25	14-Jul-26	18
Noise	Leq 24 hrs	Sound Calibrator	RYG_FS0215	22-Oct-24	22-Oct-25	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0627	21-Jan-25	21-Jan-26	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0622	21-Jan-25	21-Jan-26	12
Noise	Noise Annoyance	Sound Calibrator	RYG_FS0215	22-Oct-24	22-Oct-25	12
Noise	Noise Annoyance	Sound Level Meter	RYG_FS0627	21-Jan-25	21-Jan-26	12
Noise	Noise Annoyance	Sound Level Meter	RYG_FS0622	21-Jan-25	21-Jan-26	12
Noise	Noise Annoyance	Sound Level Meter	RYG_FS0628	21-Jan-25	21-Jan-26	12
Noise	Noise Annoyance	Sound Level Meter	BKK_FS0130	9-Apr-24	8-Apr-25	12
Noise	Leq 12 hrs	Sound Calibrator	RYG_FS0215	22-Oct-24	22-Oct-25	12
Noise	Leq 12 hrs	Sound Level Meter	RYG_FS0491	27-Jan-25	26-Jan-26	12
Noise	Leq 12 hrs	Sound Calibrator	RYG_FS0213	16-Jan-25	16-Jan-26	12
Noise	Leq 12 hrs	Sound Level Meter	RYG_FS0303	23-Aug-24	23-Aug-25	12



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Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Water Lab	Benzene	Gas Chromatography (MSD)	BKK_EN0059	13-Dec-23	13-Jun-25	18
Rayong Lab	BOD	DO meter with Sensor	RYG_EN0032	20-Jan-25	20-Jul-26	18
Rayong Lab	BOD	Incubator	RYG_EN0154	1-Nov-24	1-May-26	18
Rayong Lab	BOD	Burette	RYG_EN0216	24-Sep-24	24-Sep-25	12
Rayong Lab	COD	Spectrophotometer	RYG_EN0037	18-Mar-25	18-Sep-26	18
Rayong Lab	Oil & Grease	Electronic Balance	RYG_EN0002	20-Feb-25	20-Feb-26	12
Rayong Lab	Oil & Grease	Hot Air Oven	RYG_EN0213	19-Mar-25	19-Mar-26	12
Rayong Lab	Oil & Grease	Water Bath	RYG_EN0061	21-Mar-24	21-Sep-25	18
Rayong Lab	pH at 25 °C	pH meter	RYG_EN0183	19-Jan-24	19-Jul-25	18
Rayong Lab	Phenol	SPECTROPHOTOMETER	RYG_EN0037	18-Mar-25	18-Sep-26	18
Rayong Lab	Temperature	pH meter	RYG_FS0607	28-Nov-24	28-Nov-25	12
Rayong Lab	Total Dissolved Solids 180°C	Electronic Balance	RYG_EN0002	20-Feb-25	20-Feb-26	12
Rayong Lab	Total Dissolved Solids 180°C	Hot Air Oven	RYG_EN0010	21-Mar-24	21-Sep-25	18
Rayong Lab	Total Suspended Solids	Electronic Balance	RYG_EN0002	20-Feb-25	20-Feb-26	12
Rayong Lab	Total Suspended Solids	Hot Air Oven	RYG_EN0010	21-Mar-24	21-Sep-25	18
Rayong Lab	Nitrate	Spectrophotometer	RYG_EN0037	18-Mar-25	18-Sep-26	18



CONSOLE CONTROL UNIT CALIBRATION TEST REPORT

Calibration of Date : 1 Dec 24
Next Cal. Date : 1 Jun 25
Barometric Pressure (mmHg) : 756.5
Relative Humidity (%) : 56.0
Temperature (C°) : 32.0

Reference Dry Gas Meter Data

Calibration No. : C-011224-BKK_FS0496
Dry Gas Meter ID : BKK_FS0629
Serial No. : 1412087
Correction Factor (Y) : 1.0000
Model No. : XC-572-V
Next Calibration Date : 10 Jun 25

ΔH (mm-H ₂ O)	Θ Minutes	Reference Dry Gas Meter Calibration						Console Control Drygas Meter						Dry Gas Meter Correction Factor (Y)	Orifice Calibration Factor (Y)	ΔAvg (Y)
		Vr (Liters)			Tr (°C)			Vm (Liters)			Ti (°C)					
		Final	Initial	Total	Final	Initial	Total	Final	Initial	Total	Final	Initial	Total			
15	12.05	150.00	0.00	150.00	30.0	127.7244.2	127.7069.4	150.80	30.0	30.0	30.0	31.0	31.0	31.0	0.9864	43.4566
25	9.22	150.00	0.00	150.00	31.0	127.7408.4	127.7296.6	151.80	31.0	31.0	31.0	31.0	31.0	31.0	0.9860	42.1005
50	6.40	150.00	0.00	150.00	31.0	127.7564.0	127.7474.8	151.40	31.0	31.0	31.0	32.0	32.0	32.0	0.9805	42.0781
80	5.05	150.00	0.00	150.00	32.0	127.7765.6	127.7685.6	151.80	32.0	32.0	32.0	32.0	32.0	32.0	0.9767	42.0196
120	4.12	150.00	0.00	150.00	32.0	127.7885.6	127.7733.8	151.80	32.0	32.0	32.0	32.0	32.0	32.0	0.9850	42.8543

Y Ratio of reading of reference to dry gas meter : tolerance for individual values ± 0.02 from average.

ΔAvg : Orifice pressure differential that equates to 21.24 in of air @ 25 C and 760 mm of mercury, mmH₂O : tolerance for individual values ± 5.08 from average.

Procedure: 40 CFR 60 APP A METH SEC 5.3 & 7

Calibrated by:

(Mr. Atsawared Jorsaw)

Field Scientist(2)

Approved by:

Mr. Samart Roo-ngan

Field Specialist(1)

FORM NO.: F 06-024 REVISION NO.: ISSUE DATE: 1 Jul 24



DIGITAL TEMPERATURE CALIBRATION DATA SHEET

Calibration Date : 1 Dec 24		Ambient Temperature (°C) 32			
Calibration sheet No. : C-011224-BKK_FS0497		Relative Humidity (%) : 56			
Digital Temperature ID : BKK_FS0497		Reference Temperature ID BKK_FS1144			
Serial No. : 1412087		Serial No. : 201090006013			
Model : XC-572-V		Model : Digicon-CC-VT-MS			
Next Calibrate :		28 Nov 25			
Location	Reference Temperature °C	Digital Temperature °C	Error °C	MPE	Pass / Fail
Stack	0	1	1	±3	Pass
	25	25	0	±3	Pass
	50	50	0	±3	Pass
	100	100	0	±3	Pass
	150	150	0	±3	Pass
	200	201	1	±3	Pass
Probe	250	250	0	±3	Pass
	300	300	0	±3	Pass
	500	499	-1	±3	Pass
	100	100	0	±3	Pass
	120	121	1	±3	Pass
	140	140	0	±3	Pass
Oven	100	101	1	±3	Pass
	120	121	1	±3	Pass
	140	140	0	±3	Pass
Filter	100	101	1	±3	Pass
	120	120	0	±3	Pass
	140	140	0	±3	Pass
Exit	0	0	0	±3	Pass
	10	10	0	±3	Pass
	20	20	0	±3	Pass
Meter	0	0	0	±3	Pass
	25	25	0	±3	Pass
	50	50	0	±3	Pass
AUX	0	0	0	±3	Pass
	25	25	0	±3	Pass
	50	50	0	±3	Pass

MPE : (Maximum permissible error of measurement) ค่าความผิดพลาดสูงสุดของการวัดที่อนุญาต

Calibrated by :

(Mr. Atsawared Jorsaw)

Field Scientist (2)

Approved by :

Mr. Samart Roo-ngan

Specialist (1)

FORM NO.: F 06-027 REVISION NO.: 2 ISSUE DATE: 16/2/23

PROBE NOZZLE DIAMETER
CALIBRATION DATA SHEET

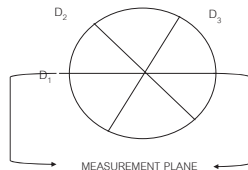
Calibration Date : 1 Dec 24		Nozzle Set ID. : BKK_FS0502			
Calibration Sheet No. : C-011224-BKK_FS0502		Vernier Caliper ID. : RYG_FS0539			
Nozzle ID #	Nozzle Diameter (cm.)			Hi - Lo ΔD	$(D_1 + D_2 + D_3) / 3$ D_{avg}
	D_1	D_2	D_3		
1	0.315	0.315	0.315	0.000	0.315
2	0.475	0.475	0.475	0.000	0.475
3	0.530	0.530	0.530	0.000	0.530
4	0.635	0.635	0.635	0.000	0.635
5	0.790	0.790	0.790	0.000	0.790
6	0.950	0.950	0.950	0.000	0.950
7	1.110	1.110	1.110	0.000	1.110
8	1.270	1.270	1.270	0.000	1.270
9	1.600	1.600	1.600	0.000	1.600

Where :

D₁, D₂, D₃ = There different nozzle diameters at 60 degrees to each other, each measured the nearest 0.025 mm.

ΔD = Maximum distance between any two diameters, must be ≤ 0.100 mm.

D_{avg} = (D₁ + D₂ + D₃) / 3



Calibrated by : S.Thongon
(Mr. Suwicha Thong-On)
Field Scientist (2)

Approved by : S.P.
(Mr. Samart Roo-ngan)
Field Specialist (1)

FORM NO.: F 06-024 REVISION NO.: 2 ISSUE DATE: 16-2-23



CONSOLE CONTROL UNIT CALIBRATION TEST REPORT

Barometric Pressure (mmHg) : 756.5
Relative Humidity (%) : 48.0
Temperature (C°) : 32.0

Reference Dry Gas Meter Data

Calibration No. : C-301124-BKK_FS0448
Dry Gas Meter ID : BKK_FS0448
Serial No. : 1901983
Correction Factor (Y) : 1.0000
Model No. : XC-572-V
Next Calibration Date : 10 Jun 25

ΔH (mm H ₂ O)	Θ Minutes	Reference Dry Gas Meter Calibration						Console Control Dry Gas Meter						Dry Gas Meter Correction Factor (Y)	Office Calibration Factor (Y)	ΔAvg
		Vr (liters)			Tr (°C)	Vr (liters)			Ti (°C)	To (°C)	Avg.Tm (°C)					
		Final	Initial	Total		Final	Initial	Total								
15	12.41	149.96	0.00	149.96	31.0	427988.0	427032.0	156.00	31.0	31.0	31.0	0.9559	47.5143			
25	9.86	150.06	0.00	150.06	31.0	427953.0	427966.0	157.00	31.0	31.0	31.0	0.9565	46.9317			
50	6.89	150.00	0.00	150.00	31.0	427526.0	427372.0	156.00	31.0	31.0	31.0	0.9569	48.7939			
80	5.21	150.00	0.00	150.00	31.0	427697.0	427541.0	156.00	31.0	31.0	31.0	0.9541	44.6399			
120	4.25	150.01	0.00	150.01	31.0	427874.2	427718.0	156.00	31.0	31.0	31.0	0.9493	44.5511			
											Ave		46.4882			

Y Ratio of reading of reference to dry gas meter : tolerance for individual values ± 0.02 from average.

ΔAvg : Orifice pressure differential that equates to 21.24 in of air @ 25 C and 760 mm of mercury, mmH₂O : tolerance for individual values ± 5.08 from average.

Procedure: 40 CFR 60 APP A METH SEC 5.3 & 7

Calibrated by:

(Mr. Nontanon Krampier)

Field Scientist(3)

Approved by:

Mr. Samart Roo-ngan

Field Specialist(1)

FORM NO.: F 06-024 REVISION NO.: ISSUE DATE: 1 Jul 24





DIGITAL TEMPERATURE CALIBRATION DATA SHEET

Calibration Date :	30 Nov 24	Ambient Temperature (°C)	32
Calibration sheet No. :	C-301124-BKK_FS0448	Relative Humidity (%) :	48
Digital Temperature ID :	BKK_FS0485	Reference Temperature ID	BKK_FS1144
Serial No. :	1901983	Serial No. :	201090006013
Model :	XC-572-V	Model :	Digicon-CC-VT-MS
		Next Calibrate :	28 Nov 25

Location	Reference Temperature °C	Digital Temperature °C	Error °C	MPE	Pass / Fail
Stack	0	2	2	±3	Pass
	25	23	-2	±3	Pass
	50	48	-2	±3	Pass
	100	98	-2	±3	Pass
	150	147	-3	±3	Pass
	200	197	-3	±3	Pass
	250	247	-3	±3	Pass
	300	297	-3	±3	Pass
	500	497	-3	±3	Pass
	Probe	100	99	-1	±3
120		119	-1	±3	Pass
140		139	-1	±3	Pass
Oven	100	100	0	±3	Pass
	120	119	-1	±3	Pass
	140	139	-1	±3	Pass
Filter	100	98	-2	±3	Pass
	120	118	-2	±3	Pass
	140	139	-1	±3	Pass
Exit	0	2	2	±3	Pass
	10	12	2	±3	Pass
	20	21	1	±3	Pass
Meter	0	0	0	±3	Pass
	25	25	0	±3	Pass
	50	50	0	±3	Pass
AUX	0	2	2	±3	Pass
	25	23	-2	±3	Pass
	50	48	-2	±3	Pass

MPE : (Maximum permissible error of measurement) ค่าความผิดพลาดสูงสุดของเครื่องมือวัด

Calibrated by :  (Mr.Khanetson khampet)
Field Scientist (3)

Approved by :  (Mr.Smart Roo-ngan)
Specialist (1)

FORM NO.: F 06-027 REVISION NO.: 2 ISSUE DATE: 16/2/23



PROBE NOZZLE DIAMETER CALIBRATION DATA SHEET

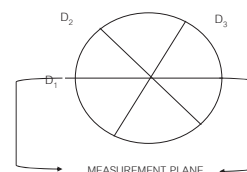
Calibration Date :		30 Nov 24		Nozzle Set ID. :	BKK_FS0454
Calibration Sheet No. :		C-301124-BKK_FS0454		Vernier Caliper ID.:	RYG_FS0539
Nozzle ID #	Nozzle Diameter (cm.)			Hi - Lo	$(D_1 + D_2 + D_3) / 3$ D_{avg}
	D ₁	D ₂	D ₃	ΔD	
1	0.315	0.315	0.315	0.000	0.315
2	0.475	0.475	0.475	0.000	0.475
3	0.530	0.530	0.530	0.000	0.530
4	0.635	0.635	0.635	0.000	0.635
5	0.790	0.790	0.790	0.000	0.790
6	0.950	0.950	0.950	0.000	0.950
7	1.110	1.110	1.110	0.000	1.110
8	1.270	1.270	1.270	0.000	1.270
9	1.600	1.600	1.600	0.000	1.600

Where :

D₁, D₂, D₃ = There different nozzle diameters at 60 degrees to each other, each measured the nearest 0.025 mm.

ΔD = Maximum distance between any two diameters, must be ≤ 0.100 mm.

D_{avg} = (D₁ + D₂ + D₃) / 3



Calibrated by :  (Mr. Suwicha Thong-On)
Field Scientist (2)

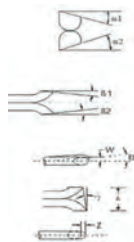
Approved by :  (Mr.Smart Roo-ngan)
Field Specialist (1)

FORM NO.: F 06-028 REVISION NO.: 1 ISSUE DATE: 16/2/23




Type S Pitot Tube Calibration


Date Calibration 30-Nov-24 Due Date 1-Jun-25
Pitot ID BKK_FS0541 Inclinometer ID BKK_FS1131
Pitot SN - Vernier ID BKK_FS1405



Parameter	Value	Allowable Range	Check
α1	3.7	-10° < α1 < +10°	OK
α2	2.3	-10° < α2 < +10°	OK
β1	-0.7	-5° < β1 < +5°	OK
β2	5.3	-5° < β2 < +5°	OK
γ	4.6	-	-
θ	1.2	-	-
Z = A tan γ	0.085	Z ≤ 0.125"	OK
W = A tan θ	0.022	W ≤ 0.031"	OK
Dt	0.375	0.188" to 0.375"	OK
A/2Dt	1.413	1.05 ≤ PA/Dt ≤ 1.5	OK
A	1.06	2.1Dt ≤ A ≤ 3Dt	OK

Certify that pitot tube/probe meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification fact of 0.84 . See 40 CFR Pt. 60, App. A, EPA Method 2.

Calibrated by :  (Mr.Prasert Surakhan)
Enviro Field Services Scientist (3)

Approved by :  (Mr.Smart Roo-ngan)
Enviro Field Services Specialist (1)

FORM NO.: F 06-124 REVISION NO.: 0 ISSUE DATE: 25/12/23

ENTECH
Difference For Greater Value

Calibration Certificate 

Certificate No: G 670682
Date of issue : 30-Sep-24

Instrument description : Flue Gas Analyzer
Instrument model : Testo 340
Instrument serial no. : 63119029
Control unit serial no. : -
ID no. or control no. : BKK_FS1158
Manufacturer : Testo SE & Co. KGaA
Probe description : -
Probe model : -
Probe serial no. : -
Customer name : ALS LABORATORY GROUP (THAILAND) CO.,LTD.
Customer address : 104 Phatthanakan 40, Phatthanakan Road, Khwaeng Phatthanakan, Khet Suan Luang, Bangkok, 10250 Thailand

Total pages of certificate : 2 Pages
Receiving no. : L-243690
Receiving date. : 24-Sep-24
Parameter of calibration : Gas Calibration(Oxygen 2.50,10.04,21.02 %vol, Carbon Monoxide 80.18,302,1007 ppm, Nitric Oxide 30.0, 151.5, 322.5 ppm, Sulphur Dioxide 50.36, 100.8, 600.8 ppm)

REVIEW BY 
APPROVED BY 
NEXT CAL. DATE 27/9/25

Condition of UUC. : Used
Ambient condition : All of the Measurement were carried out the stabilized laboratory
Temperature : 23 ±5 °C
Humidity : 55 ± 15 %RH
Calibration place : 17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Lakki, Bangkok 10210
Calibration procedure no. : This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurement. Multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. This certificate is applied only to item under test. Environmental condition.
This Calibration Certificate may not be reproduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.
This calibration certificate documents are traceability to national standards; which realize measurement according to the International System of Units (SI).

Date of calibration : 27-Sep-24

 Mr. Kwanchai Khamsoung
Calibration Technician

 Mrs. Nongluck Wongttee
Technical Manager

FM-CL-09-C Rev.0

Page 1 of 2

Issued Date 26/02/16

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O ₂) 2.50 % Vol	2412/23	Linde	27-Aug-27
Oxygen (O ₂) 10.04 % Vol	CG-0153-21	Nimt	18-Nov-26
Oxygen (O ₂) 21.02 % Vol	CG-0041-22	Nimt	10-Feb-27
Carbon monoxide (CO) 80.18 ppm	CG-0002-24	Nimt	11-Jan-29
Carbon monoxide (CO) 302 ppm	1915/23	Linde	16-Jun-25
Carbon monoxide (CO) 1007 ppm	1870/24	Linde	17-Jun-26
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.5 ppm	0161/23	Linde	22-Jan-25
Nitric Oxide (NO) 322.5 ppm	1974/23	Linde	17-Jul-25
Sulphur Dioxide (SO ₂) 50.36 ppm	2004/23	Linde	17-Jul-25
Sulphur Dioxide (SO ₂) 100.8 ppm	3507/22	Linde	09-Nov-24
Sulphur Dioxide (SO ₂) 600.8 ppm	2003/23	Linde	17-Jul-25

Measured room conditions

Temperature : 22.9 °C Humidity : 65.8 %RH Pressure : 1011.2 mbar

Calibration conditions

Gas Temperature : 23 °C Flow rate : 600 ml/min Gas pressure : 1013.4 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O ₂ (%Vol)	2.50	2.46	-0.04	0.15
O ₂ (%Vol)	10.04	9.94	-0.10	0.20
O ₂ (%Vol)	21.02	21.11	0.09	0.30
CO (ppm)	80.18	80	-0.18	3.0
CO (ppm)	302	302	0	6.0
CO (ppm)	1007	1008	1	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.5	154	2.5	8.0
NO (ppm)	322.5	325	2.5	12
SO ₂ (ppm)	50.36	52	1.64	6.0
SO ₂ (ppm)	100.8	101	0.2	6.0
SO ₂ (ppm)	600.8	603	2.2	13

Remark : 1 cmol/mol = 1 %vol. 1 μmol/mol = 1 ppm, O₂, NO, SO₂ New Sensor

End of Report

Accredited by

NSC-TISI-TIS 17025

Calibration 0426

Calibration certificate

Calibration Certificate No. 24BCI0440

Object	Electronic non-automatic weighing instrument	This calibration certificate documents the traceability to national standards.
Manufacturer	Sartorius	Uncertainties of measurements are taken into account when only statements of compliance are made.
Type	SECURA224-1S	This certificate was prepared by Sartorius Corporation in accordance to the current ISO/IEC 17025:2017 standard and Sartorius Work Instruction (Method) SOP WI 08.
Serial QM Ident. no.	38304165 BKK_EN0309	This certificate relate and apply this equipment only.
Customer	ALS Laboratory Group (Thailand)Co., Ltd.	
	104 Phatthanakarn 40,Phattanakarn Rd.,Khwaeng Phatthanakarn ,Khet Suan Luang,Bangkok 10250	
Order no.	246928	
Number of pages	4	
Date of calibration	05 Nov 2024	

REVIEW BY *Junda K*

APPROVED BY *Sinuk P*

NEXT CAL DATE.....05/11/25

This calibration certificate may not be reproduced other than in full except with the permission of NSC-TISI-TIS-17025 and the issuing laboratory. Calibration certificates without signature are not valid.

The user is obliged to have the object recalibrated at appropriate intervals.

Date	05 Nov 2024	Approval of the Calibration Certificate	Person in charge
		<i>Chonchai Inthana</i>	<i>Chonchai Inthana</i>
		Mr. Chonchai Inthana	Chonchai Inthana

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 Bangkok

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Page 1 | 4

Calibration certificate No.: 24BCI0440

Calibration Certificate

Calibration object

Single range instrument

Model	SECURA224-1S
Serial Number	38304165
QM Ident. no Inventory no.	BKK_EN0309 ---
Maximum capacity (Max. load)	220.0000 g
Measured range	220.0000 g
Scale interval	0.0001 g

Place of calibration

Address	According to page 1
Department Cost center	Laboratory Department. ---
Building Floor	--- 1st Floor.
Room	Laboratory Room.
Maximum temperature variation at place of calibration	5 K

Calibration procedure

EURAMET cg-18, V4.0 - Guidelines on the Calibration of Non-Automatic Weighing Instruments

Test equipment

Test equipment type	Test equipment ID	Valid until
Thermometer	MHB-382SD s/nB011342 Traceable to SI unit through DKSH	21 Aug 2025
Test weight set OIML R111 E2	Certificate No.M2308197S .E2(Traceable to SI unit through TCS)	23 Aug 2025

Calibration certificate No.: 24BCI0440

Calibration Certificate

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

Date of calibration	05 Nov 2024
Temperature at place of calibration Temp. diff.	19.6 °C 0.4 K
Twights - T _{place}	
Measuring conditions	The installation site is suitable. The device was levelled. Balance was loaded up to Max before test.
Comments	Humidity 68.0 %RH.

Measurement results | Measurement uncertainties

Repeatability	Eccentricity
Test load (nominal): 10 g 100 g	Test load (nominal): 100 g
10 g	100 g
1	Center
2	Front left
3	Back left
4	Back right
5	Front right
6	Maximum deviation from centric loading indication
7	Δ _{lecc} max = 0.0001 g
8	
9	
10	
s = 0.00007 g	s = 0.00005 g

Testload	Indication	Error	Expansion factor	Uncertainty	Uncertainty relative
L	I	E	k	U(E)	U _{rel} (E)
0.0100 g	0.0100 g	0.0000 g	2.00	0.00016 g	1.6 %
0.0500 g	0.0500 g	0.0000 g	2.00	0.00013 g	0.26 %
0.1000 g	0.1000 g	0.0000 g	2.00	0.00013 g	0.13 %
0.5000 g	0.5000 g	0.0000 g	2.00	0.00013 g	0.027 %
1.0000 g	1.0000 g	0.0000 g	2.00	0.00013 g	0.013 %
2.0000 g	2.0000 g	0.0000 g	2.00	0.00013 g	0.0067 %
5.0000 g	5.0000 g	0.0000 g	2.00	0.00014 g	0.0027 %
10.0000 g	10.0000 g	0.0000 g	2.00	0.00014 g	0.0014 %
20.0000 g	20.0000 g	0.0000 g	2.00	0.00014 g	0.00071 %
200.0000 g	199.9999 g	-0.0001 g	2.00	0.00028 g	0.00014 %
210.0000 g	210.0000 g	0.0000 g	2.00	0.00031 g	0.00015 %
Maximum error of indication		E _{max} = 0.0001 g			

U_{rel}(E) is the quotient of U(E) and test load L. The uncertainty of measurement U(E) is valid only if error E is considered. You will find reference notes on the uncertainty of measurement in use under Appendix to the calibration certificate. Interpretation of measurement results.
Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented Expansion factor, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

End of calibration certificate

Uncertainty of measurement in use

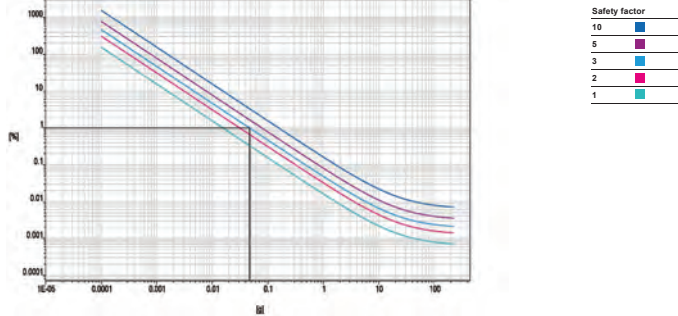
Device adjusted before measurement Yes
Temperature deviation considered 1 K (isoCAL active)
Temperature coefficient considered $2 \cdot 10^{-4}/K$

Uncertainty of the weighing result $U_{g1}(W)$ $U_{g1}(W) = 0.00016 \text{ g} + 6.42 \cdot 10^{-4} \cdot R$

Reference note: The current uncertainty of measurement is calculated by entering of the reading R into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

Indication in % from max load	Net indication R	Uncertainty $U_{g1}(W)$	Uncertainty relative $U_{g1}(W)_{rel}$
1 %	2.2000 g	0.00017 g	0.0079 %
25 %	55.0000 g	0.00051 g	0.00093 %
50 %	110.0000 g	0.00087 g	0.00079 %
75 %	165.0000 g	0.0012 g	0.00074 %
100 %	220.0000 g	0.0016 g	0.00071 %

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy 1.00 %
Safety factor 3
Minimum sample weight 0.0470 g

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129 Rama 9 Road, Huaykwang
10310 Bangkok

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Page 4 | 4



Lot No. 2512800-1

ANALYZER CALIBRATION DATA

Client : Map Ta Phut Olefins Co., Ltd. Location : Naphtha Cracking Heater Stack (H-100H)
Date : 11 Feb 25 Test Operator : Worawich T.

O₂ ANALYZER
Model : TELEDYNE API T200H Serial No. : 922
Span (%) : 25

	Cylinder Value (%)	Initial Analyzers Calibration Response (%)	Final Analyzers Calibration Response (%)	Difference (Percent of Span)
Zero Gas	0.00	0.00	0.00	0.00
Low-Level Gas	7.98	8.01	7.99	0.08
Span Gas	16.04	16.04	16.06	0.08

NO_x ANALYZER
Model : TELEDYNE API T200H Serial No. : 922
Span (ppm) : 100

	Cylinder Value (ppm)	Initial Analyzers Calibration Response (ppm)	Final Analyzers Calibration Response (ppm)	Difference (Percent of Span)
Zero Gas	0.00	0.01	0.03	0.02
Low-Level Gas	50.32	50.10	49.79	0.31
Span Gas	80.48	80.46	80.27	0.19

SO₂ ANALYZER
Model : TELEDYNE API T100H Serial No. : 534
Span (ppm) : 100

	Cylinder Value (ppm)	Initial Analyzers Calibration Response (ppm)	Final Analyzers Calibration Response (ppm)	Difference (Percent of Span)
Zero Gas	0.00	0.00	0.01	0.01
Low-Level Gas	50.27	49.88	49.56	0.32
Span Gas	79.51	79.49	79.11	0.38

CO ANALYZER
Model : TELEDYNE API T300M Serial No. : 844
Span (ppm) : 100

	Cylinder Value (ppm)	Initial Analyzers Calibration Response (ppm)	Final Analyzers Calibration Response (ppm)	Difference (Percent of Span)
Zero Gas	0.00	0.02	0.05	0.03
Low-Level Gas	49.99	49.68	49.42	0.26
Span Gas	79.95	79.93	79.38	0.55

Calibrated by

Norawich T.

(Mr. Worawich Tongpoom)
Environmental Field Scientist (3)

FORM NO.: F 06-062 REVISION NO.: 4 ISSUE DATE: 18/01/24
ALS Laboratory Group

Page 1 of 5.



Lot No. 2512800-1

SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Map Ta Phut Olefins Co., Ltd. Location : Naphtha Cracking Heater Stack (H-100H)
Date : 11 Feb 25 Test Operator : Worawich T.

O₂ ANALYZER
Cylinder Conc. (%) : 16.04 Span (%) : 25

	O ₂ Analyzer Calibration Response	Initial Values		Final Values		Drift (% of Span)
		System Calibration Response	System Cal Bias (% of Span)	System Calibration Response	System Cal Bias (% of Span)	
Zero Gas	0.00	0.00	0.00	0.01	0.04	0.04
Upscale Gas	16.04	16.01	0.12	15.98	0.24	0.12

NO_x ANALYZER
Cylinder Conc. (ppm) : 80.49 Span (ppm) : 100

	NO _x Analyzer Calibration Response	Initial Values		Final Values		Drift (% of Span)
		System Calibration Response	System Cal Bias (% of Span)	System Calibration Response	System Cal Bias (% of Span)	
Zero Gas	0.01	0.03	0.02	0.06	0.05	0.03
Upscale Gas	80.46	79.77	0.69	79.39	1.07	0.38

SO₂ ANALYZER
Cylinder Conc. (ppm) : 79.51 Span (ppm) : 100

	SO ₂ Analyzer Calibration Response	Initial Values		Final Values		Drift (% of Span)
		System Calibration Response	System Cal Bias (% of Span)	System Calibration Response	System Cal Bias (% of Span)	
Zero Gas	0.00	0.02	0.02	0.01	0.01	0.01
Upscale Gas	79.49	79.09	0.40	78.94	0.55	0.15

CO ANALYZER
Cylinder Conc. (ppm) : 79.95 Span (ppm) : 100

	CO Analyzer Calibration Response	Initial Values		Final Values		Drift (% of Span)
		System Calibration Response	System Cal Bias (% of Span)	System Calibration Response	System Cal Bias (% of Span)	
Zero Gas	0.02	0.09	0.07	0.06	0.04	0.03
Upscale Gas	79.93	79.48	0.45	79.52	0.41	0.04

Calibrated by

Norawich T.

(Mr. Worawich Tongpoom)

Environmental Field Scientist (3)

FORM NO.: F 06-063 REVISION NO.: 4 ISSUE DATE: 18/01/24
ALS Laboratory Group

Page 2 of 5.



EMISSION TEST RESULT

Client : Map Ta Phut Olefins Co., Ltd. Run # 1
Date : 11 Feb 25 Location : Naphtha Cracking Heater Stack (H-100H)
Start Time : 11:20 Test Operator : Worawich T.
SO₂ Analyzer Model : TELEDYNE API T100H Finish Time : 11:40
NO_x/O₂ Analyzer Model : TELEDYNE API T200H Serial No. : 534
CO/CO₂ Analyzer Model : TELEDYNE API T300M Serial No. : 922
Serial No. : 844

Time (min)	O ₂ (%)	CO ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)	Remark
11:20	4.91	8.79	38.88	2.17	2.28	
11:21	4.90	8.80	39.06	2.16	2.26	
11:22	4.86	8.81	39.18	2.11	2.27	
11:23	5.00	8.82	39.14	2.17	2.28	
11:24	5.08	8.79	38.99	2.12	2.24	
11:25	5.03	8.71	38.90	2.17	2.24	
11:26	5.04	8.72	38.91	2.10	2.19	
11:27	4.96	8.75	38.98	2.14	2.18	
11:28	5.05	8.77	39.15	2.12	2.22	
11:29	4.93	8.75	39.25	2.10	2.19	
11:30	4.84	8.82	39.32	2.13	2.21	
11:31	4.94	8.85	39.34	2.14	2.21	
11:32	5.15	8.79	39.29	2.15	2.21	
11:33	5.14	8.67	39.13	2.14	2.23	
11:34	5.01	8.68	39.07	2.13	2.23	
11:35	4.94	8.77	39.22	2.13	2.17	
11:36	4.91	8.82	39.36	2.14	2.19	
11:37	4.85	8.81	39.52	0.88	2.19	
11:38	5.01	8.82	39.54	0.07	2.25	
11:39	5.09	8.75	39.32	0.10	2.21	
11:40	4.99	8.71	39.12	0.11	2.18	
Average	4.98	8.77	39.17	1.79	2.22	

Norawich T.

(Mr. Worawich Tongpoom)

Environmental Field Scientist (3)

FORM NO.: F 06-060 REVISION NO.: 1 ISSUE DATE: 18/01/24
ALS Laboratory Group

Page 3 of 5.



EMISSION TEST RESULT

Client		Run #	Location
Map Ta Phut Olefins Co., Ltd.		2	Naphtha Cracking Heater Stack (H-100H)
Date		Test Operator	Finish Time
11 Feb 25		Worawich T.	12:01
Start Time		Serial No.	Serial No.
11:41		534	922
SO ₂ Analyzer Model	Model	Serial No.	Serial No.
TELEDYNE API T100H	Model	534	922
NO _x /O ₂ Analyzer Model	Model	Serial No.	Serial No.
TELEDYNE API T200H	Model	534	922
CO/CO ₂ Analyzer Model	Model	Serial No.	Serial No.
TELEDYNE API T300M	Model	534	922

Time (min)	O ₂ (%)	CO ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)	Remark
11:41	4.51	8.83	39.08	0.10	2.21	
11:42	4.53	8.84	38.99	0.14	2.15	
11:43	4.54	8.81	38.98	0.13	2.16	
11:44	4.59	8.80	38.91	0.12	2.26	
11:45	4.62	8.83	38.83	0.14	2.21	
11:46	4.64	8.85	38.79	0.22	2.18	
11:47	5.04	8.86	38.81	0.20	2.21	
11:48	5.09	8.71	38.81	0.19	2.23	
11:49	4.92	8.73	38.18	0.25	2.17	
11:50	4.88	8.80	39.39	0.26	2.21	
11:51	4.80	8.87	39.55	0.29	2.25	
11:52	4.81	8.89	39.60	0.28	2.21	
11:53	5.00	8.85	39.40	0.32	2.21	
11:54	5.09	8.74	39.22	0.35	2.23	
11:55	4.96	8.71	39.16	0.38	2.27	
11:56	4.97	8.77	39.37	0.36	2.21	
11:57	4.90	8.80	39.51	0.43	2.20	
11:58	4.80	8.84	39.69	0.39	2.21	
11:59	4.79	8.90	39.78	0.48	2.16	
12:00	4.89	8.91	39.83	0.48	2.23	
12:01	5.00	8.85	39.90	0.49	2.20	
Average	4.92	8.82	39.28	0.29	2.21	

Norawich T.

(Mr. Worawich Tongpoom)

Environmental Field Scientist (3)

FORM NO.: F-06-060 REVISION NO.: 1 ISSUE DATE: 18/01/24

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Page 4 of 5.



EMISSION TEST RESULT

Client		Run #	Location
Map Ta Phut Olefins Co., Ltd.		3	Naphtha Cracking Heater Stack (H-100H)
Date		Test Operator	Finish Time
11 Feb 25		Worawich T.	12:22
Start Time		Serial No.	Serial No.
12:02		534	922
SO ₂ Analyzer Model	Model	Serial No.	Serial No.
TELEDYNE API T100H	Model	534	922
NO _x /O ₂ Analyzer Model	Model	Serial No.	Serial No.
TELEDYNE API T200H	Model	534	922
CO/CO ₂ Analyzer Model	Model	Serial No.	Serial No.
TELEDYNE API T300M	Model	534	922

Time (min)	O ₂ (%)	CO ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)	Remark
12:02	4.92	8.81	39.88	0.51	2.24	
12:03	4.85	8.84	39.87	0.52	2.15	
12:04	4.90	8.87	39.92	0.57	2.16	
12:05	4.92	8.84	39.85	0.60	2.24	
12:06	4.87	8.85	39.80	0.62	2.19	
12:07	4.81	8.84	39.83	0.51	2.22	
12:08	4.75	8.89	39.90	0.47	2.19	
12:09	4.84	8.92	40.00	0.48	2.22	
12:10	5.03	8.86	39.92	0.50	2.24	
12:11	5.00	8.74	39.80	0.53	2.25	
12:12	4.88	8.77	39.81	0.53	2.26	
12:13	4.85	8.86	39.90	0.59	2.23	
12:14	4.87	8.86	39.97	0.62	2.24	
12:15	4.85	8.86	39.99	0.63	2.23	
12:16	5.01	8.83	40.05	0.66	2.27	
12:17	5.11	8.72	39.94	0.71	2.21	
12:18	5.01	8.69	39.83	0.73	2.29	
12:19	4.92	8.73	39.88	0.75	2.22	
12:20	4.88	8.78	39.94	0.77	2.28	
12:21	4.83	8.81	39.96	0.79	2.30	
12:22	4.72	8.86	39.96	0.83	2.28	
Average	4.90	8.82	39.90	0.61	2.23	

Norawich T.

(Mr. Worawich Tongpoom)

Environmental Field Scientist (3)

FORM NO.: F-06-060 REVISION NO.: 1 ISSUE DATE: 18/01/24

Page 5 of 5.

ALS Laboratory Group



Airgas Specialty Gases
Airgas USA LLC
6141 Eastern Road
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS Grade of Product: EPA PROTOCOL STANDARD

Customer:	AIR LIQUIDE (THAILAND) LTD E04N199E3HA0002	Reference Number:	160-402340013-1
Part Number:	GN0027214	Cylinder Volume:	247.2 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2215 PSIG
PGVP Number:	A12022	Valve Outlet:	660
Gas Code:	CO,NO,NOX,SO2,BALN	Certification Date:	Feb 11, 2023

Expiration Date: Feb 11, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 820R-12/01, using the assay procedures listed. Analytical methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 6.7 megapascals

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	80.00 PPM	80.45 PPM	G1	±1.0% NIST Traceable	02/04/2022, 02/11/2022
CARBON MONOXIDE	80.00 PPM	79.55 PPM	G1	±1.0% NIST Traceable	02/04/2022, 02/11/2022
NITRIC OXIDE	80.00 PPM	80.47 PPM	G1	±1.0% NIST Traceable	02/04/2022, 02/11/2022
SULFUR DIOXIDE	80.00 PPM	79.51 PPM	G1	±1.0% NIST Traceable	02/04/2022, 02/11/2022
NITROGEN	Balance				

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	06010212	KAL004777	98.48 PPM CARBON MONOXIDE/NITROGEN	±1.0%	Oct 18, 2024
NTRM	200610-16	CC733106	98.61 PPM NITRIC OXIDE/NITROGEN	±1.0%	Oct 06, 2026
NTRM	200610-04	CC708044	98.81 PPM NITRIC OXIDE/NITROGEN	±1.0%	Oct 06, 2026
GMS	124206889139	CC323707	4.097 PPM NITROGEN DIOXIDE/NITROGEN	±1.0%	Sep 03, 2024
NTRM	11010419	KAL004813	99.6 PPM SULFUR DIOXIDE/NITROGEN	±1.0%	Jul 28, 2023

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicotel ISO FTIR AUP2010245 CO	FTIR	Feb 03, 2022
Nicotel ISO FTIR AUP2010245 NO	FTIR	Feb 10, 2022
Nicotel ISO FTIR AUP2010245 NO2	FTIR	Jan 27, 2022
Nicotel ISO FTIR AUP2010245 SO2	FTIR	Jan 20, 2022

Triad Data Available Upon Request

NOTES: Gross Weight: 48.5 Kg
Net Weight: 8.1 Kg



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Page 1 of 160-402340013-1



Airgas Specialty Gases
Airgas USA, LLC
6141 Eastern Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol

Part Number:	E04N199E3HA00023	Reference Number:	160-401754137-1
Cylinder Number:	GN0024388	Cylinder Volume:	247.2 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2215 PSIG
PGVP Number:	A12020	Valve Outlet:	660
Gas Code:	CO,NO,NOX,SO2,BALN	Certification Date:	Mar 26, 2020

Expiration Date: Mar 26, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 820R-12/01, using the assay procedures listed. Analytical methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 6.7 megapascals

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	50.00 PPM	50.32 PPM	G1	±1.0% NIST Traceable	03/19/2020, 03/26/2020
CARBON MONOXIDE	50.00 PPM	49.99 PPM	G1	±1.0% NIST Traceable	03/19/2020, 03/26/2020
NITRIC OXIDE	50.00 PPM	50.32 PPM	G1	±1.0% NIST Traceable	03/19/2020, 03/26/2020
SULFUR DIOXIDE	50.00 PPM	50.27 PPM	G1	±1.0% NIST Traceable	03/19/2020, 03/26/2020
NITROGEN	Balance				

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	11010130	KAL004536	97.31 PPM CARBON MONOXIDE/NITROGEN	±1.0%	Oct 04, 2022
NTRM	13010405	KAL003984	97.80 PPM NITRIC OXIDE/NITROGEN	±1.0%	Jul 23, 2025
NTRM	13010405	KAL003984	97.80 PPM NOX/NITROGEN	±1.0%	Jul 23, 2025
NTRM	16010235	KAL004419	97.89 PPM SULFUR DIOXIDE/NITROGEN	±1.0%	Dec 23, 2021

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR - CO - 000928781	FTIR	Mar 12, 2020
MKS FTIR - NO - 000928781	FTIR	Mar 05, 2020
MKS FTIR - NOX - 000928781	FTIR	Mar 05, 2020
MKS FTIR - SO2 - 000928781	FTIR	Mar 19, 2020

Triad Data Available Upon Request

NOTES: Gross Weight: 47.7 Kg, Net Weight: 7.5 Kg



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Page 1 of 160-401754137-1

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer: AIR LIQUIDE (THAILAND) LTD
Part Number: E02N192E3H-A0000
Cylinder Number: GN0027033
Laboratory: 124 - Plumsteadville - PA
PGVP Number: A12022
Gas Code: O2,BALN

Reference Number: 160-402340009-1
Cylinder Volume: 248.4 CF
Cylinder Pressure: 2214 PSIG
Valve Outlet: 590
Certification Date: Feb 10, 2022

Expiration Date: Feb 10, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gasphase Calibration Standards (May 2017)" document EPA 820-R-18-031, using the assay procedure listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration medium. All concentrations are on a molar/basis basis unless otherwise noted.
Do Not Use This Cylinder Below 100 psig, Lb. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Date
OXYGEN	8.00 %	7.975 %	G1	+/- 0.4% NIST Traceable	02/10/2022
NITROGEN	Balance				
CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	10010035	X002176	9.967 % OXYGEN/NITROGEN	+/- 0.5%	Apr 18, 2022
ANALYTICAL EQUIPMENT					
Instrument/Make/Model	Analytical Principle		Last Multipoint Calibration		
SIEMENS CYMAT 6 - N1-WB-051 - 02	PARAMAGNETIC		Jan 27, 2022		

Triad Data Available Upon Request

NOTES: Gross Weight: 48.3 Kg
Net Weight: 8.1 Kg



Approved for Release

Page 1 of 168-402340009-1

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer: AIR LIQUIDE (THAILAND) LTD
Part Number: E02N192E3H-A0001
Cylinder Number: GN0027201
Laboratory: 124 - Plumsteadville - PA
PGVP Number: A12022
Gas Code: O2,BALN

Reference Number: 160-402340010-1
Cylinder Volume: 249.8 CF
Cylinder Pressure: 2214 PSIG
Valve Outlet: 590
Certification Date: Feb 02, 2022

Expiration Date: Feb 02, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gasphase Calibration Standards (May 2017)" document EPA 820-R-18-031, using the assay procedure listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration medium. All concentrations are on a molar/basis basis unless otherwise noted.
Do Not Use This Cylinder Below 100 psig, Lb. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Date
OXYGEN	15.00 %	15.04 %	G1	+/- 0.4% NIST Traceable	02/02/2022
NITROGEN	Balance				
CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	99010035	X000228	23.30 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2022
ANALYTICAL EQUIPMENT					
Instrument/Make/Model	Analytical Principle		Last Multipoint Calibration		
SIEMENS CYMAT 6 - N1-WB-051 - 02	PARAMAGNETIC		Jan 27, 2022		

Triad Data Available Upon Request

NOTES: Gross Weight: 48.8 Kg
Net Weight: 8.2 Kg



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Page 1 of 168-402340010-1



Lot No. 2522842-1

ANALYZER CALIBRATION DATA

Client : Map Ta Phut Olefins Co., Ltd. Location : Naphtha Cracking Heater Stack 8 H-100H
Date : 25 Apr 25 Test Operator : Anuvat M.

O₂ ANALYZER
Model : TELEDYNE API T200H Serial No. : 923
Span (%) : 25

	Cylinder Value (%)	Initial Analyzers Calibration Response (%)	Final Analyzers Calibration Response (%)	Difference (Percent of Span)
Zero Gas	0.00	0.11	0.00	0.44
Low-Level Gas	7.98	8.00	7.80	0.80
Span Gas	16.04	16.00	16.00	0.00

NO_x ANALYZER
Model : TELEDYNE API T200H Serial No. : 923
Span (ppm) : 100

	Cylinder Value (ppm)	Initial Analyzers Calibration Response (ppm)	Final Analyzers Calibration Response (ppm)	Difference (Percent of Span)
Zero Gas	0.00	0.11	0.12	0.01
Low-Level Gas	50.32	49.60	49.00	0.60
Span Gas	80.91	79.70	79.00	0.70

Calibrated by

Anuvat M

(Mr. Anuvat Moungepair)
Environmental Field Scientist (2)



Lot No. 2522842-1

SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Map Ta Phut Olefins Co., Ltd. Location : Naphtha Cracking Heater Stack 8 H-100H
Date : 25 Apr 25 Test Operator : Anuvat M.

O₂ ANALYZER
Cylinder Conc. (%) : 16.04 Span (%) : 25

	O ₂ Analyzer Calibration Response	Initial Values		Final Values		Drift (% of Span)
		System Calibration Response	System Cal Bias (% of Span)	System Calibration Response	System Cal Bias (% of Span)	
Zero Gas	0.11	0.00	0.44	0.12	0.04	0.48
Upscale Gas	16.00	15.97	0.52	15.70	1.20	0.68

NO_x ANALYZER
Cylinder Conc. (ppm) : 80.91 Span (ppm) : 100

	NO _x Analyzer Calibration Response	Initial Values		Final Values		Drift (% of Span)
		System Calibration Response	System Cal Bias (% of Span)	System Calibration Response	System Cal Bias (% of Span)	
Zero Gas	0.11	0.00	0.11	0.00	0.11	0.00
Upscale Gas	79.70	79.70	0.00	79.40	0.30	0.30

Calibrated by

Anuvat M

(Mr. Anuvat Moungepair)
Environmental Field Scientist (2)



CEMs Data

Client Name		Map Ta Phu Orefins Co., Ltd.				Date		25 Apr 25				
Plant Name		MOC				Location		Naphega Cracking Heater Stack 8 H-100H				
Run No: 1						Run No: 2						
Time Base : 21 min						Time Base : 21 min						
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	
25 Apr 25	11:15	-	31.84	-	4.57	-	25 Apr 25	11:36	-	31.94	-	4.62
25 Apr 25	11:16	-	31.86	-	4.62	-	25 Apr 25	11:37	-	31.97	-	4.58
25 Apr 25	11:17	-	31.86	-	4.71	-	25 Apr 25	11:38	-	32.17	-	4.52
25 Apr 25	11:18	-	31.88	-	4.64	-	25 Apr 25	11:39	-	32.38	-	4.53
25 Apr 25	11:19	-	31.89	-	4.55	-	25 Apr 25	11:40	-	32.58	-	4.48
25 Apr 25	11:20	-	31.90	-	4.56	-	25 Apr 25	11:41	-	32.79	-	4.43
25 Apr 25	11:21	-	32.20	-	4.61	-	25 Apr 25	11:42	-	32.99	-	4.40
25 Apr 25	11:22	-	32.20	-	4.62	-	25 Apr 25	11:43	-	33.19	-	4.37
25 Apr 25	11:23	-	32.08	-	4.59	-	25 Apr 25	11:44	-	33.32	-	4.37
25 Apr 25	11:24	-	32.08	-	4.59	-	25 Apr 25	11:45	-	33.32	-	4.37
25 Apr 25	11:25	-	32.08	-	4.59	-	25 Apr 25	11:46	-	33.32	-	4.37
25 Apr 25	11:26	-	32.08	-	4.59	-	25 Apr 25	11:47	-	33.32	-	4.37
25 Apr 25	11:27	-	32.08	-	4.59	-	25 Apr 25	11:48	-	33.32	-	4.37
25 Apr 25	11:28	-	32.08	-	4.59	-	25 Apr 25	11:49	-	33.32	-	4.37
25 Apr 25	11:29	-	32.23	-	4.64	-	25 Apr 25	11:50	-	33.32	-	4.37
25 Apr 25	11:30	-	32.40	-	4.69	-	25 Apr 25	11:51	-	33.28	-	4.55
25 Apr 25	11:31	-	32.38	-	4.70	-	25 Apr 25	11:52	-	33.52	-	4.53
25 Apr 25	11:32	-	32.78	-	4.64	-	25 Apr 25	11:53	-	33.74	-	4.57
25 Apr 25	11:33	-	32.78	-	4.65	-	25 Apr 25	11:54	-	33.98	-	4.48
25 Apr 25	11:34	-	31.96	-	4.65	-	25 Apr 25	11:55	-	34.44	-	4.68
25 Apr 25	11:35	-	31.81	-	4.65	-	25 Apr 25	11:56	-	34.43	-	4.56
Max			32.45		4.71		Max		33.32		4.72	
Avg			31.90		4.62		Avg		33.25		4.58	

Run No: 3						
Time Base : 21 min						
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
25 Apr 25	11:57	31.43	4.53	-	31.93	4.67
25 Apr 25	11:58	31.62	4.58	-	32.19	4.68
25 Apr 25	11:59	32.10	4.58	-	31.85	4.54
25 Apr 25	12:00	32.68	4.61	-	31.62	4.54
25 Apr 25	12:01	31.62	4.62	-	31.46	4.58
25 Apr 25	12:02	31.94	4.65	-	31.63	4.52
25 Apr 25	12:03	31.71	4.64	-	31.79	4.73
25 Apr 25	12:04	31.85	4.54	-	31.29	4.73
25 Apr 25	12:05	31.78	4.53	-	31.28	4.69
25 Apr 25	12:06	31.40	4.51	-	31.48	4.68
25 Apr 25	12:07	31.40	4.51	-	30.91	4.49
25 Apr 25	12:08	31.40	4.51	-	30.91	4.49
25 Apr 25	12:09	31.40	4.51	-	30.91	4.49
25 Apr 25	12:10	31.40	4.51	-	30.91	4.49
25 Apr 25	12:11	31.40	4.51	-	30.91	4.49
25 Apr 25	12:12	31.40	4.51	-	30.91	4.49
25 Apr 25	12:13	31.58	4.56	-	30.91	4.49
25 Apr 25	12:14	31.65	4.57	-	30.91	4.53
25 Apr 25	12:15	31.47	4.50	-	31.75	4.57
25 Apr 25	12:16	31.32	4.52	-	30.16	4.58
25 Apr 25	12:17	31.29	4.67	-	30.17	4.68
Max		32.10	4.67	-	32.19	4.73
Avg		31.57	4.55	-	31.22	4.55

Run No: 5						
Time Base : 21 min						
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
25 Apr 25	12:39	31.70	4.67	-	32.23	4.62
25 Apr 25	12:40	32.39	4.62	-	32.37	4.68
25 Apr 25	12:41	31.43	4.69	-	32.45	4.62
25 Apr 25	12:42	31.52	4.62	-	32.48	4.62
25 Apr 25	12:43	31.43	4.53	-	32.04	4.58
25 Apr 25	12:44	31.24	4.49	-	32.03	4.68
25 Apr 25	12:45	31.25	4.49	-	32.25	4.61
25 Apr 25	12:46	31.49	4.46	-	32.10	4.58
25 Apr 25	12:47	31.39	4.56	-	32.07	4.58
25 Apr 25	12:48	31.42	4.58	-	32.04	4.58
25 Apr 25	12:49	31.52	4.68	-	32.34	4.53
25 Apr 25	12:50	31.40	4.68	-	32.29	4.57
25 Apr 25	12:51	31.40	4.68	-	32.29	4.57
25 Apr 25	12:52	31.40	4.68	-	32.29	4.57
25 Apr 25	12:53	31.40	4.68	-	32.29	4.57
25 Apr 25	12:54	31.40	4.68	-	32.29	4.57
25 Apr 25	12:55	31.40	4.68	-	32.29	4.57
25 Apr 25	12:56	31.40	4.68	-	32.29	4.57
25 Apr 25	12:57	31.47	4.69	-	31.96	4.73
25 Apr 25	12:58	31.88	4.55	-	31.96	4.68
25 Apr 25	12:59	32.33	4.58	-	31.97	4.58
Max		32.10	4.76	-	32.45	4.73
Avg		31.39	4.63	-	32.14	4.65

Reference Method Data

Client Name		Map Ta Phu Orefins Co., Ltd.				Date	25 Apr 25				
Plant Name		MOC				Location	Naphega Cracking Heater Stack 8.H-100H				
Run No: 1						Run No: 2					
Time Base : 21 min						Time Base : 21 min					
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%
25 Apr 25	11:15	32.74	4.65	-	4.63	25 Apr 25	11:38	32.74	4.65	-	4.74
25 Apr 25	11:16	32.74	4.65	-	4.83	25 Apr 25	11:37	32.68	4.68	-	4.82
25 Apr 25	11:17	32.68	4.76	-	4.76	25 Apr 25	11:38	32.71	4.77	-	4.66
25 Apr 25	11:18	32.64	4.66	-	4.80	25 Apr 25	11:39	32.64	4.74	-	4.82
25 Apr 25	11:19	32.68	4.62	-	4.71	25 Apr 25	11:40	32.74	4.62	-	4.62
25 Apr 25	11:20	32.71	4.71	-	4.71	25 Apr 25	11:41	32.68	4.77	-	4.77
25 Apr 25	11:21	32.72	4.71	-	4.71	25 Apr 25	11:42	32.71	4.61	-	4.71
25 Apr 25	11:22	32.76	4.78	-	4.71	25 Apr 25	11:43	32.77	4.76	-	4.76
25 Apr 25	11:23	32.73	4.66	-	4.86	25 Apr 25	11:44	32.81	4.72	-	4.72
25 Apr 25	11:24	32.63	4.62	-	4.68	25 Apr 25	11:45	32.68	4.68	-	4.68
25 Apr 25	11:25	32.71	4.71	-	4.71	25 Apr 25	11:46	32.81	4.80	-	4.80
25 Apr 25	11:26	32.62	4.69	-	4.67	25 Apr 25	11:47	32.59	4.88	-	4.88
25 Apr 25	11:27	32.94	4.67	-	4.67	25 Apr 25	11:48	32.67	4.76	-	4.76
25 Apr 25	11:28	32.94	4.72	-	4.72	25 Apr 25	11:49	32.57	4.73	-	4.73
25 Apr 25	11:29	32.80	4.63	-	4.63	25 Apr 25	11:50	32.67	4.71	-	4.71
25 Apr 25	11:30	32.74	4.65	-	4.65	25 Apr 25	11:51	32.61	4.68	-	4.68
25 Apr 25	11:31	32.68	4.61	-	4.61	25 Apr 25	11:52	32.56	4.66	-	4.66
25 Apr 25	11:32	32.63	4.74	-	4.74	25 Apr 25	11:53	32.59	4.79	-	4.79
25 Apr 25	11:33	32.60	4.80	-	4.80	25 Apr 25	11:54	32.61	4.87	-	4.87
25 Apr 25	11:34	32.60	4.82	-	4.82	25 Apr 25	11:55	32.58	4.73	-	4.73
25 Apr 25	11:35	32.53	4.77	-	4.77	25 Apr 25	11:56	32.61	4.64	-	4.64
Max		32.94	4.86	-	4.86	Max		32.94	4.82	-	4.82
Avg		32.72	4.75	-	4.75	Avg		32.72	4.75	-	4.75

Run No: 3						
Time Base : 21 min						
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
25 Apr 25	11:57	32.64	4.67	-	31.93	4.67
25 Apr 25	11:58	32.65	4.72	-	32.19	4.73
25 Apr 25	11:59	32.68	4.75	-	32.45	4.68
25 Apr 25	12:00	32.70	4.70	-	32.71	4.71
25 Apr 25	12:01	32.68	4.61	-	32.95	4.71
25 Apr 25	12:02	32.63	4.77	-	33.61	4.71
25 Apr 25	12:03	32.76	4.71	-	33.64	4.68
25 Apr 25	12:04	32.81	4.68	-	33.41	4.63
25 Apr 25	12:05	32.97	4.68	-	33.50	4.70
25 Apr 25	12:06	32.80	4.70	-	33.67	4.76
25 Apr 25	12:07	32.78	4.84	-	33.72	4.73
25 Apr 25	12:08	32.67	4.78	-	33.88	4.82
25 Apr 25	12:09	32.72	4.71	-	33.65	4.61
25 Apr 25	12:10	32.71	4.71	-	33.63	4.76
25 Apr 25	12:11	32.71	4.72	-	33.57	4.78
25 Apr 25	12:12	32.71	4.73	-	33.45	4.77
25 Apr 25	12:13	32.68	4.74	-	33.53	4.68
25 Apr 25	12:14	32.67	4.68	-	33.61	4.68
25 Apr 25	12:15	32.68	4.63	-	33.67	4.71
25 Apr 25	12:16	32.60	4.82	-	33.64	4.74
25 Apr 25	12:17	32.53	4.77	-	33.74	4.62
Max		32.94	4.89	-	34.08	4.88
Avg		32.72	4.75	-	33.70	4.74

Run No: 5						
Time Base : 21 min						
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
25 Apr 25	12:39	32.68	4.64	-	32.45	4.79
25 Apr 25	12:40	32.81	4.84	-	34.53	4.78
25 Apr 25	12:41	32.65	4.79	-	34.65	4.79
25 Apr 25	12:42	32.57	4.73	-	34.33	4.78
25 Apr 25	12:43	32.52	4.69	-	34.35	4.82
25 Apr 25	12:44	32.49	4.65	-	34.27	4.79
25 Apr 25	12:45	32.58	4.61	-	34.29	4.78
25 Apr 25	12:46	32.73	4.65	-	34.35	4.73
25 Apr 25	12:47	32.77	4.67	-	34.43	4.71
25 Apr 25	12:48	32.70	4.78	-	34.50	4.69
25 Apr 25	12:49	32.73	4.74	-	34.46	4.87
25 Apr 25	12:50	32.86	4.74	-	34.41	4.88
25 Apr 25	12:51	32.91	4.61	-	34.34	4.74
25 Apr 25	12:52	32.92	4.70	-	34.31	4.75
25 Apr 25	12:53	32.61	4.62	-	34.14	4.72
25 Apr 25	12:54	32.49	4.74	-	34.09	4.75
25 Apr 25	12:55	32.44	5.03	-	34.16	4.72
25 Apr 25	12:56	32.16	4.68	-	34.17	4.68
25 Apr 25	12:57	32.49	4.70	-	33.79	4.65
25 Apr 25	12:58	32.49	4.70	-	33.81	4.65
25 Apr 25	12:59	32.17	4.76	-	33.56	4.75
Max		34.17	5.03	-	34.65	4.89
Avg		32.63	4.76	-	34.27	4.78



CEMs Data

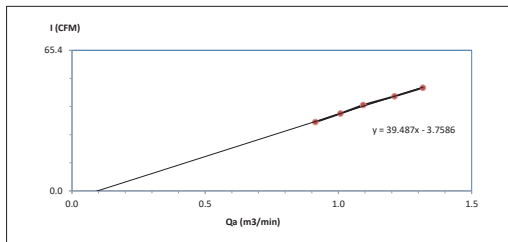
Client Name				Map Ta Phu Orefins Co., Ltd.		Date		25 Apr 25					
Plant Name				MOC		Location		Naphega Cracking Heater Stack 8 H-100H					
Run No: 7				Time Base : 21 min		Run No: 8				Time Base : 21 min			
Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%	Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
25 Apr 25	13:21	-	31.38	-	4.69	-	25 Apr 25	13:42	-	31.98	-	4.61	-
25 Apr 25	13:22	-	31.31	-	4.61	-	25 Apr 25	13:43	-	31.75	-	4.53	-
25 Apr 25	13:23	-	31.60	-	4.69	-	25 Apr 25	13:44	-	31.49	-	4.52	-
25 Apr 25	13:24	-	31.34	-	4.68	-	25 Apr 25	13:45	-	31.43	-	4.46	-
25 Apr 25	13:25	-	31.74	-	4.65	-	25 Apr 25	13:46	-	31.48	-	4.46	-
25 Apr 25	13:26	-	31.66	-	4.65	-	25 Apr 25	13:47	-	31.74	-	4.46	-
25 Apr 25	13:27	-	31.64	-	4.62	-	25 Apr 25	13:48	-	31.74	-	4.47	-
25 Apr 25	13:28	-	31.64	-	4.62	-	25 Apr 25	13:49	-	31.74	-	4.47	-
25 Apr 25	13:29	-	32.19	-	4.56	-	25 Apr 25	13:50	-	32.05	-	4.50	-
25 Apr 25	13:30	-	32.12	-	4.50	-	25 Apr 25	13:51	-	31.91	-	4.48	-
25 Apr 25	13:31	-	31.86	-	4.40	-	25 Apr 25	13:52	-	31.52	-	4.47	-
25 Apr 25	13:32	-	31.75	-	4.37	-	25 Apr 25	13:53	-	31.30	-	4.47	-
25 Apr 25	13:33	-	31.74	-	4.37	-	25 Apr 25	13:54	-	31.25	-	4.47	-
25 Apr 25	13:34	-	31.75	-	4.37	-	25 Apr 25	13:55	-	31.25	-	4.47	-
25 Apr 25	13:35	-	31.75	-	4.37	-	25 Apr 25	13:56	-	31.25	-	4.47	-
25 Apr 25	13:36	-	31.75	-	4.37	-	25 Apr 25	13:57	-	31.25	-	4.47	-
25 Apr 25	13:37	-	31.75	-	4.37	-	25 Apr 25	13:58	-	31.25	-	4.47	-
25 Apr 25	13:38	-	31.75	-	4.37	-	25 Apr 25	13:59	-	31.25	-	4.47	-
25 Apr 25	13:39	-	31.75	-	4.37	-	25 Apr 25	14:00	-	31.52	-	4.49	-
25 Apr 25	13:40	-	31.69	-	4.52	-	25 Apr 25	14:01	-	31.75	-	4.56	-
25 Apr 25	13:41	-	31.34	-	4.65	-	25 Apr 25	14:02	-	31.15	-	4.54	-
Max			32.19		4.69		Max			32.05		4.50	



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 756.3
Calibrate Location : ឃុំបឹងកក់ (ស្រែចម្ការ) Temperature (°C) : 31.4
Calibrate Date : 10-Feb-25 High Volume ID : RYG_FS0668
CalibrationSheet No. : C-100225-RYG_FS0668 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 6267
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	1.8	0.913	32	Slope : 39.4866 Intercept : -3.7586 Correlation Coefficient : 0.9984
2	2.2	1.007	36	
3	2.6	1.093	40	
4	3.2	1.210	44	
5	3.8	1.317	48	



Calibrated by Panuwat W
(Mr. Panuwat Wanghong)
RYG-Field Services Scientist(1)

Approved by Spts
(Mr. Supot Salamteh)
RYG-Field Services Section Head

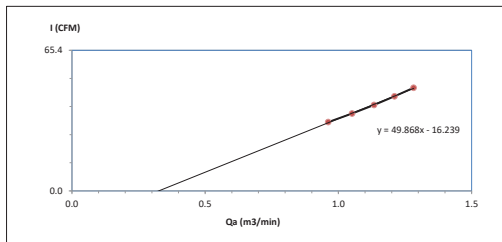
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 756.3
Calibrate Location : ឃុំបឹងកក់ (ស្រែចម្ការ) Temperature (°C) : 31.4
Calibrate Date : 10-Feb-25 High Volume ID : RYG_FS0667
CalibrationSheet No. : C-100225-RYG_FS0667 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 6266
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	2.0	0.962	32	Slope : 49.8676 Intercept : -16.2388 Correlation Coefficient : 0.9991
2	2.4	1.051	36	
3	2.8	1.134	40	
4	3.2	1.210	44	
5	3.6	1.282	48	



Calibrated by Panuwat W
(Mr. Panuwat Wanghong)
RYG-Field Services Scientist(1)

Approved by Spts
(Mr. Supot Salamteh)
RYG-Field Services Section Head

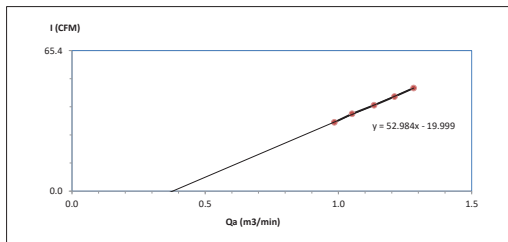
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 756.3
Calibrate Location : ឃុំបឹងកក់ (ស្រែចម្ការ) Temperature (°C) : 31.4
Calibrate Date : 10-Feb-25 High Volume ID : RYG_FS0666
CalibrationSheet No. : C-100225-RYG_FS0666 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 6265
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	2.1	0.985	32	Slope : 52.9839 Intercept : -19.9988 Correlation Coefficient : 0.9995
2	2.4	1.051	36	
3	2.8	1.134	40	
4	3.2	1.210	44	
5	3.6	1.282	48	



Calibrated by Panuwat W
(Mr. Panuwat Wanghong)
RYG-Field Services Scientist(1)

Approved by Spts
(Mr. Supot Salamteh)
RYG-Field Services Section Head

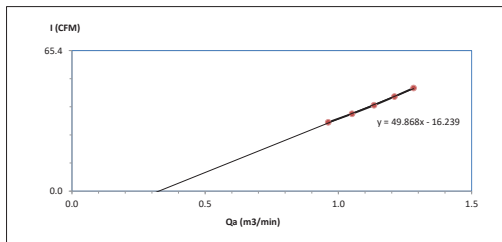
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 756.3
Calibrate Location : ឃុំបឹងកក់ (ស្រែចម្ការ) Temperature (°C) : 31.4
Calibrate Date : 10-Feb-25 High Volume ID : RYG_FS0665
CalibrationSheet No. : C-100225-RYG_FS0665 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 6264
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	2.0	0.962	32	Slope : 49.8676 Intercept : -16.2388 Correlation Coefficient : 0.9991
2	2.4	1.051	36	
3	2.8	1.134	40	
4	3.2	1.210	44	
5	3.6	1.282	48	



Calibrated by Panuwat W
(Mr. Panuwat Wanghong)
RYG-Field Services Scientist(1)

Approved by Spts
(Mr. Supot Salamteh)
RYG-Field Services Section Head

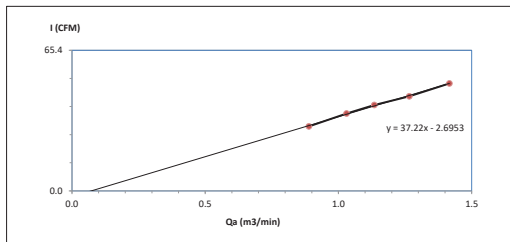
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 755.4
Calibrate Location : เขตเทศบาลเมือง (เมืองหลวง) Temperature (°C) : 31.5
Calibrate Date : 16-Mar-25 High Volume ID : RYG_FS0184
CalibrationSheet No. : C-160325-RYG_FS0184 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 4792
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	1.7	0.889	30	Slope : 37.2202 Intercept : -2.6953 Correlation Coefficient : 0.9986
2	2.3	1.030	36	
3	2.8	1.134	40	
4	3.5	1.266	44	
5	4.4	1.416	50	



Calibrated by P. Sirirot
(Mr. Siriwit Ruangsom)
RYG-Field Services Scientist(2)

Approved by Spt S
(Mr. Supot Salamteh)
RYG-Field Services Section Head

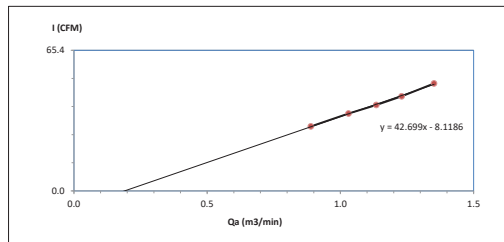
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 755.4
Calibrate Location : เขตเทศบาลเมือง 2 Temperature (°C) : 31.5
Calibrate Date : 16-Mar-25 High Volume ID : RYG_FS0185
CalibrationSheet No. : C-160325-RYG_FS0185 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 4793
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	1.7	0.889	30	Slope : 42.6991 Intercept : -8.1186 Correlation Coefficient : 0.9990
2	2.3	1.030	36	
3	2.8	1.134	40	
4	3.3	1.230	44	
5	4.0	1.351	50	



Calibrated by P. Sirirot
(Mr. Siriwit Ruangsom)
RYG-Field Services Scientist(2)

Approved by Spt S
(Mr. Supot Salamteh)
RYG-Field Services Section Head

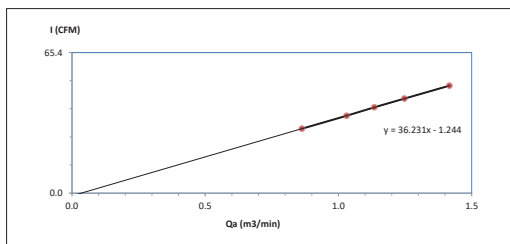
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 755.4
Calibrate Location : เขตเทศบาล Temperature (°C) : 31.5
Calibrate Date : 16-Mar-25 High Volume ID : RYG_FS0397
CalibrationSheet No. : C-160325-RYG_FS0397 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 5687
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	1.6	0.863	30	Slope : 36.2313 Intercept : -1.2440 Correlation Coefficient : 0.9999
2	2.3	1.030	36	
3	2.8	1.134	40	
4	3.4	1.248	44	
5	4.4	1.416	50	



Calibrated by P. Sirirot
(Mr. Siriwit Ruangsom)
RYG-Field Services Scientist(2)

Approved by Spt S
(Mr. Supot Salamteh)
RYG-Field Services Section Head

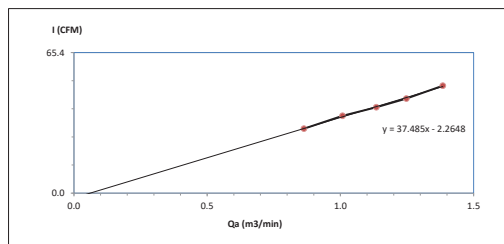
FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 755.4
Calibrate Location : เขตเทศบาล Temperature (°C) : 31.5
Calibrate Date : 16-Mar-25 High Volume ID : RYG_FS0668
CalibrationSheet No. : C-160325-RYG_FS0668 High Volume Model : TE-5009X
Calibrator ID : RYG_FS0205 High Volume S/N : 6267
Calibrator Model : TE-5028A Calibrator Slope : 0.95561
Calibrator S/N : 1166 Calibrator Intercept : -0.02266

Test No.	Delta H ₂ O (inch)	Qa (m ³ /min)	I: Chart (CFM)	Linear Regression
1	1.6	0.863	30	Slope : 37.4849 Intercept : -2.2648 Correlation Coefficient : 0.9985
2	2.2	1.008	36	
3	2.8	1.134	40	
4	3.4	1.248	44	
5	4.2	1.384	50	



Calibrated by P. Sirirot
(Mr. Siriwit Ruangsom)
RYG-Field Services Scientist(2)

Approved by Spt S
(Mr. Supot Salamteh)
RYG-Field Services Section Head

FORM NO.: F 06-074 REVISION NO.:2 ISSUE DATE: 20/11/23



SARTORIUS

NSC-TISI-TIS 17025
CALIBRATION 0426

Certificate of Calibration

Model Number : LA130S-F Certificate No. : 24BCI0058
Description : Analytical Balance Issued Date : Friday, February 23, 2024
Serial Number : 25409664 Reference No. : 229196
ID No. : RYG_EN0001
Manufacturer : Sartorius Page No. : 1 of 2

Customer Name : ALS Laboratory Group (Thailand) Co., Ltd. (Rayong Branch)
616/10 Moo 5 T.Maenam Khu, A.Pluek Daeng, Rayong 21140, Thailand

Calibrated Place : ALS Laboratory Group (Thailand) Co., Ltd. (Balance Room)
616/10 Moo 5 T.Maenam Khu, A.Pluek Daeng, Rayong 21140, Thailand

Calibrated By : Mr.Chonchai Inthana
Calibration Date : Thursday, February 22, 2024

Calibration Procedure No. : This calibration was conducted by
Using in-house calibration procedure number (WI-003)
Based on UKAS LAB 14 : 2019

Metrological data :
Capacity : 150 g Readability : 0.0001 g
Ambient Conditions :
Temperature : 23.6 °C ± 5.0 °C
Humidity : 54.0 % RH ± 10.0 % RH
Pressure : ±

Reasons for calibration
☐ New Installation ☐ Service / Repair ☒ Re-calibration/ Maintenance
Equipment Condition : ☒ Good Operate ☐ Fail

Measurement Method UKAS Publication Ref :Lab 14

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor ($k=2$) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The calibration certificate documents the traceability to National Standards, which realize the unit of measurement according to the International Standard System of Units (SI). Report of Tolerance came from list of Sartorius Metrological Specifications.

Traceability:

Model Number	Description	Traceability	Certificate No.	Due Date
YCS011-522-00	Sartorius weight set 1mg - 3000g E2.YCS011-522-00	TCS	M2308197S	23-Aug-2025
MHB-382SD	Humidity/Barometer/Temp. Lutron MHB-382SD	DKSH	C19231845	23-Aug-2024

This certificate relate and apply this equipment only.

This certificate may not be reproduced other than in full except with the prior written approval of the Verification Operation Division Sartorius (Thailand) Co., Ltd.

SOP FM 33 63 February 2022

Mr.Chonchai Inthana(Technical Manager)



SARTORIUS

Certificate of Calibration

Model Number : LA130S-F Certificate No. : 24BCI0058
Description : Analytical Balance Issued Date : Friday, February 23, 2024
Serial Number : 25409664 Reference No. : 229196
ID No. : RYG_EN0001
Manufacturer : Sartorius Page No. : 2 of 2

Calibration Results : Without Adjustment

Repeatability	Eccentricity (Off-center loading error)
The repeatability is the ability of a weighing instrument to display nearly identical results under constant test conditions when the same load within a measurement range is placed repeatedly on the weighing pan in the same manner. The standard deviation is used to express reproducibility quantitatively.	The off-center loading error is related by the difference between the result of the load, i.e. 1/2 or 1/4 of maximum capacity, placed in the middle of the weighing pan and between each of four additional measurement points (positions defined according to OIML R76).
Nominal Value : (Low Load) 10 g Tolerance 0.0001 g Nominal Value : (High Load) 100 g Tolerance 0.0001 g Standard Deviation 0.00005 0.00008	Nominal value : 50 g Tolerance 0.0004 g Difference 1 - 2 -0.0001 3 0.0003 4 0.0002 5 0.0000 6 -

Linearity

The linearity, also called linearity error, describes the deviation of the characteristic curve of a weighing instrument from the linear slope.

Tolerance		0.0002 g		
Nominal Value	Conventional Mass Value	Displayed Value	Deviation	Uncertainty
(g)	(g)	(g)	(g)	(g)
0.01	0.0100	0.0100	0.0000	0.00020
0.05	0.0500	0.0500	0.0000	0.00021
0.1	0.1000	0.1000	0.0000	0.00021
0.5	0.5000	0.5000	0.0000	0.00021
1	1.0000	1.0000	0.0000	0.00021
2	2.0000	2.0000	0.0000	0.00021
5	5.0000	5.0000	0.0000	0.00021
10	10.0000	10.0001	0.0001	0.00024
20	20.0000	20.0001	0.0001	0.00021
100	100.0000	99.9999	-0.0001	0.00024

End of Report

End of Report

SOP FM 33 03 February 2022

SARTORIUS



NSC-TISI-TIS 17025
CALIBRATION 0426

Accredited by

NSC-TISI-TIS 17025
Calibration 0426

Calibration certificate

Calibration Certificate No. 25BK0001

Object	Electronic non-automatic weighing instrument	This calibration certificate documents the traceability to national standards.
Manufacturer	Sartorius	Uncertainties of measurements are taken into account when only statements of compliance are made.
Type	LA130S-F	This certificate was prepared by Sartorius Corporation in accordance to the current ISO/IEC 17025:2017 standard and Sartorius Work Instruction (Method) SOP WI 08.
Serial QM Ident. no.	25409664 RYG_EN0001	This certificate relate and apply this equipment only.
Customer	ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch) 616/10 Moo 5 T.Maenam Khu, A.Pluek Daeng, Rayong 21140, Thailand.	
Order no.	2230	
Number of pages	4	
Date of calibration	20 Feb 2025	

This calibration certificate may not be reproduced other than in full except with the permission of NSC-TISI-TIS-17025 and the issuing laboratory. Calibration certificates without signature are not valid.

The user is obliged to have the object recalibrated at appropriate intervals.

Date 06 Mar 2025 Approval of the Calibration Certificate Person in charge
Mr. Chonchai Inthana Kachen Lalee

Calibration certificate No.: 25BK0001

Calibration Certificate

Calibration object

Single range instrument

Model	LA130S-F
Serial Number	25409664
QM Ident. no Inventory no.	RYG_EN0001 ---
Maximum capacity (Max. load)	150.0000 g
Measured range	150.0000 g
Scale interval	0.0001 g

Place of calibration

Address	According to page 1
Department Cost center	Laboratory Department. ---
Building Floor	--- 1st Floor.
Room	Balance Room.
Maximum temperature variation at place of calibration	5 K

Calibration procedure

EURAMET cg-18, V4.0 - Guidelines on the Calibration of Non-Automatic Weighing Instruments

Test equipment

Test equipment type	Test equipment ID	Valid until
Thermometer	MHB-382SD s/nB011342 Traceable to SI unit through DKSH	21 Aug 2025
Test weight set OIML R111 E2	Certificate No.M2308197S .E2(Traceable to SI unit through TCS)	23 Aug 2025

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

Date of calibration 20 Feb 2025
Temperature at place of calibration | Temp. diff. 24.5 °C | 1.0 K
Weights - T place
Measuring conditions The installation site is suitable. The device was levelled. Balance was loaded up to Max before test.
Comments Humidity 58.0 %RH.

Measurement results | Measurement uncertainties

Repeatability		Eccentricity	
Test load (nominal): 10 g 100 g		Test load (nominal): 50 g	
10 g	100 g	Center	50.0000 g
1	10.0000 g	100.0000 g	50.0001 g
2	9.9999 g	100.0000 g	50.0000 g
3	10.0000 g	99.9999 g	49.9999 g
4	10.0000 g	100.0000 g	50.0001 g
5	10.0000 g	99.9999 g	
6	9.9999 g	99.9999 g	
7	10.0000 g	100.0000 g	
8	10.0000 g	100.0000 g	
9	10.0000 g	100.0000 g	
10	10.0000 g	100.0000 g	
s = 0.00004 g		s = 0.00005 g	

Testload <i>L</i>	Indication <i>I</i>	Error <i>E</i>	Expansion factor <i>k</i>	Uncertainty <i>U(E)</i>	Uncertainty relative <i>U_{rel}(E)</i>
0.0100 g	0.0100 g	0.0000 g	2.00	0.00012 g	1.2 %
0.0500 g	0.0500 g	0.0000 g	2.00	0.00013 g	0.25 %
0.1000 g	0.1000 g	0.0000 g	2.00	0.00013 g	0.13 %
0.5000 g	0.5000 g	0.0000 g	2.00	0.00013 g	0.026 %
1.0000 g	1.0000 g	0.0000 g	2.00	0.00013 g	0.013 %
2.0000 g	2.0000 g	0.0000 g	2.00	0.00013 g	0.0065 %
5.0000 g	5.0000 g	0.0000 g	2.00	0.00013 g	0.0026 %
10.0000 g	10.0000 g	0.0000 g	2.00	0.00013 g	0.0013 %
20.0000 g	20.0000 g	0.0000 g	2.00	0.00014 g	0.00069 %
100.0000 g	100.0000 g	0.0000 g	2.00	0.00021 g	0.00021 %
150.0000 g	149.9999 g	-0.0001 g	2.00	0.00028 g	0.00019 %
Maximum error of indication		E _{max} = 0.0001 g			

U_{rel}(E) is the quotient of *U(E)* and test load *L*. The uncertainty of measurement *U(E)* is valid only if error *E* is considered. You will find reference notes on the uncertainty of measurement in use under: Appendix to the calibration certificate | Interpretation of measurement results.
Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented Expansion factor, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

End of calibration certificate

Uncertainty of measurement in use

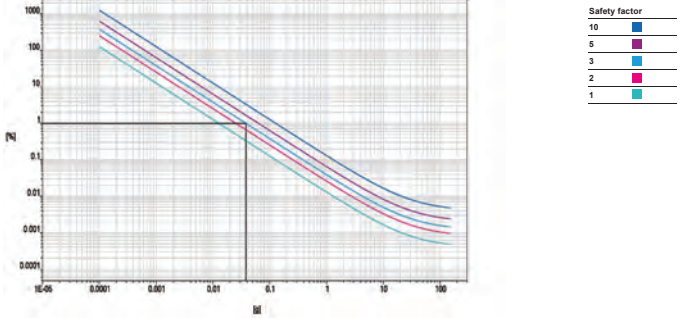
Device adjusted before measurement Yes
Temperature deviation considered 1.5 K (isoCAL active)
Temperature coefficient considered 1 · 10⁻⁴ /K

Uncertainty of the weighing result *U_g(W)* *U_g(W) = 0.00013 g + 3.96 · 10⁻⁴ · R*

Reference note: The current uncertainty of measurement is calculated by entering of the reading *R* into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

Indication in % from max load	Net indication <i>R</i>	Uncertainty <i>U_g(W)</i>	Uncertainty relative <i>U_g(W)_{rel}</i>
1 %	1.5000 g	0.00014 g	0.0091 %
25 %	37.5000 g	0.00028 g	0.00074 %
50 %	75.0000 g	0.00043 g	0.00057 %
75 %	112.5000 g	0.00058 g	0.00051 %
100 %	150.0000 g	0.00072 g	0.00048 %

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

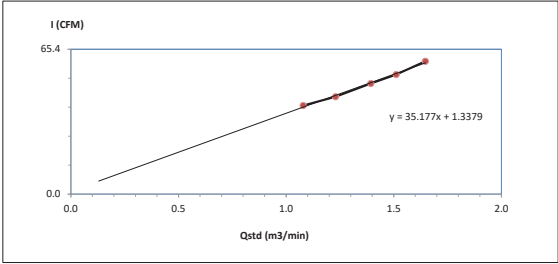
Process accuracy 1.00 %
Safety factor 3
Minimum sample weight 0.0380 g



High Volume Air Sampler Calibration Worksheet

Project Site: Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg): 756.3
Calibrate Location: หมู่บ้านหนอง (เนินพยอม) Temperature (°C): 31.4
Calibrate Date: 10-Feb-25 High Volume ID: RYG_FS0663
CalibrationSheet No.: C-100225-RYG_FS0663 High Volume Model: TE-5009X
Calibrator ID: RYG_FS0205 High Volume S/N: 6260
Calibrator Model: TE-5028A Calibrator Slope: 1.52567
Calibrator S/N: 1166 Calibrator Intercept: -0.03613

Test No.	Delta H ₂ O (inch)	Q ₃₁₂ (m ³ /min)	I: Chart (CFM)	Linear Regression	
1	2.6	1.0793	40	Slope :	35.1773
2	3.4	1.2290	44	Intercept :	1.3379
3	4.4	1.3932	50	Correlation Coefficient :	0.9966
4	5.2	1.5114	54		
5	6.2	1.6470	60		



Calibrated by: *Paruwal W*
(Mr. Panuwat Wanghong)
RYG-Field Services Scientist(1)

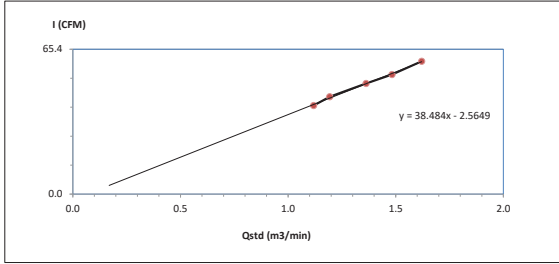
Approved by: *Spts*
(Mr. Supot Salantekh)
RYG-Field Services Section Head



High Volume Air Sampler Calibration Worksheet

Project Site: Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg): 756.3
Calibrate Location: หมู่บ้านหนอง (เนินพยอม) Temperature (°C): 31.4
Calibrate Date: 10-Feb-25 High Volume ID: RYG_FS0662
CalibrationSheet No.: C-100225-RYG_FS0662 High Volume Model: TE-5009X
Calibrator ID: RYG_FS0205 High Volume S/N: 6259
Calibrator Model: TE-5028A Calibrator Slope: 1.52567
Calibrator S/N: 1166 Calibrator Intercept: -0.03613

Test No.	Delta H ₂ O (inch)	Q ₁₅₄ (m ³ /min)	I : Chart (CFM)	Linear Regression	
1	2.8	1.1187	40	Slope :	38.4836
2	3.2	1.1934	44	Intercept :	-2.5649
3	4.2	1.3620	50	Correlation Coefficient :	0.9981
4	5.0	1.4827	54		
5	6.0	1.6208	60		



Calibrated by: *Paruwal W*
(Mr. Panuwat Wanghong)
RYG-Field Services Scientist(1)

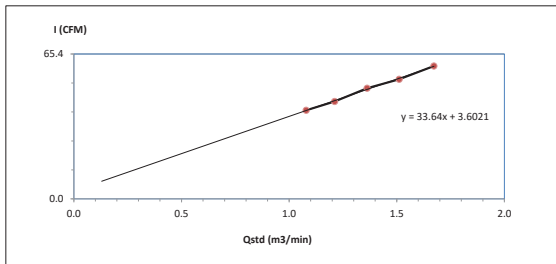
Approved by: *Spts*
(Mr. Supot Salantekh)
RYG-Field Services Section Head



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 756.3
Calibrate Location : เขตบางนา Temperature (°C) : 31.4
Calibrate Date : 10-Feb-25 High Volume ID : RYG_FS0661
CalibrationSheet No.: C-100225-RYG_FS0661 High Volume Model : TE-5009X
Calibrator ID: RYG_FS0205 High Volume S/N : 6258
Calibrator Model : TE-5028A Calibrator Slope : 1.52567
Calibrator S/N : 1166 Calibrator Intercept : -0.03613

Test No.	Delta H ₂ O (inch)	Q _{std} (m ³ /min)	I: Chart (CFM)	Linear Regression
1	2.6	1.0793	40	Slope : 33.6403 Intercept : 3.6021 Correlation Coefficient : 0.9986
2	3.3	1.2114	44	
3	4.2	1.3620	50	
4	5.2	1.5114	54	
5	6.4	1.6728	60	



Calibrated by Panuwat W
(Mr. Panuwat Wangbong)
RYG-Field Services Scientist(1)

Approved by Spts
(Mr. Supot Salamteh)
RYG-Field Services Section Head

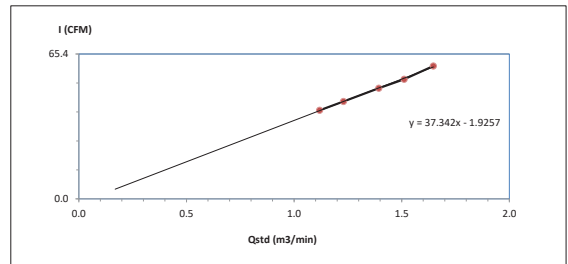
FORM NO.: F 06-073 REVISION NO.:2 ISSUE DATE: 20/11/23



High Volume Air Sampler Calibration Worksheet

Project Site : Map Ta Phut Olefins Co., Ltd. Barometric Pressure (mm Hg) : 756.3
Calibrate Location : เขตบางนา Temperature (°C) : 31.4
Calibrate Date : 10-Feb-25 High Volume ID : RYG_FS0291
CalibrationSheet No.: C-100225-RYG_FS0291 High Volume Model : TE-5170D
Calibrator ID: RYG_FS0205 High Volume S/N : 5333
Calibrator Model : TE-5028A Calibrator Slope : 1.52567
Calibrator S/N : 1166 Calibrator Intercept : -0.03613

Test No.	Delta H ₂ O (inch)	Q _{std} (m ³ /min)	I: Chart (CFM)	Linear Regression
1	2.8	1.1187	40	Slope : 37.3417 Intercept : -1.9257 Correlation Coefficient : 0.9991
2	3.4	1.2290	44	
3	4.4	1.3932	50	
4	5.2	1.5114	54	
5	6.2	1.6470	60	



Calibrated by Panuwat W
(Mr. Panuwat Wangbong)
RYG-Field Services Scientist(1)

Approved by Spts
(Mr. Supot Salamteh)
RYG-Field Services Section Head

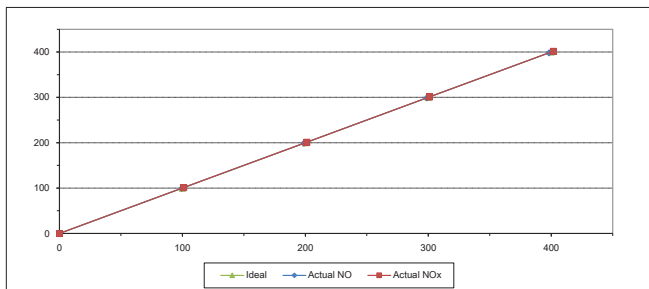
FORM NO.: F 06-073 REVISION NO.:2 ISSUE DATE: 20/11/23



MULTIPOINT CALIBRATION REPORT

Calibration Date : 4-Jan-25 Equipment Name : NOx Analyzer
Manufacturer : Teledyne API Model : T200
Serial No. : 7238 Equipment ID : RYG_FS0533
Calibrator Manufacturer : Teledyne API Model : 700
Serial No. : 947
Std. Gas Concentration (PPM) : 55.88 Cylinder No. : GN0027222
Cylinder Pressure (psi) : 1800 Certified By : Airgas Inc.
Certified Date : 9-Feb-22 Expired Date : 9-Feb-30

Point	CALIBRATION RESULTS						
	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	99.50	-0.50	-0.50	101.10	1.10	1.10
2	200.00	198.90	-1.10	-0.55	201.20	1.20	0.60
3	300.00	298.80	-1.20	-0.40	301.00	1.00	0.33
4	400.00	398.30	-1.70	-0.42	401.80	1.80	0.45
AVERAGE (%)				-0.35			0.52



Calibrated By Mr. Jirawut Sakam
Field Environmental Scientist (3)

Approved By Mr. Sarayuth Jitranont
Assistant General Manager

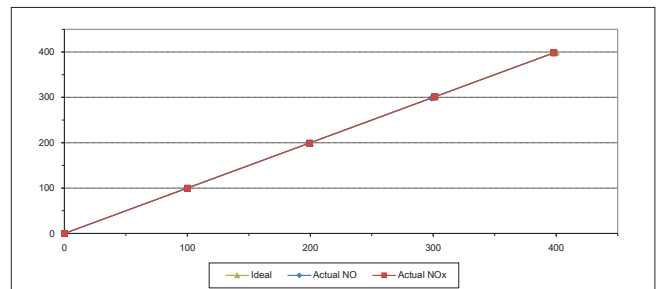
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date : 4-Jan-25 Equipment Name : NOx Analyzer
Manufacturer : HORIBA Model : APNA-370
Serial No. : 8G314J3K Equipment ID : RYG_FS0264
Calibrator Manufacturer : Teledyne API Model : 700
Serial No. : 947
Std. Gas Concentration (PPM) : 55.88 Cylinder No. : GN0027222
Cylinder Pressure (psi) : 1800 Certified By : Airgas Inc.
Certified Date : 9-Feb-22 Expired Date : 9-Feb-30

Point	CALIBRATION RESULTS						
	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.05	0.05	0.05	0.10	0.10	0.10
1	100.00	99.20	-0.80	-0.80	100.10	0.10	0.10
2	200.00	198.70	-1.30	-0.65	199.30	-0.70	-0.35
3	300.00	298.60	-1.40	-0.47	301.40	1.40	0.47
4	400.00	398.20	-1.80	-0.45	398.20	-1.80	-0.45
AVERAGE (%)				-0.46			-0.03



Calibrated By Mr. Jirawut Sakam
Field Environmental Scientist (3)

Approved By Mr. Sarayuth Jitranont
Assistant General Manager

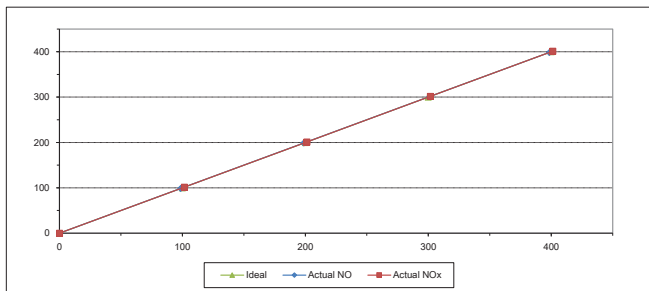
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-25	Equipment Name	NOx Analyzer
Manufacturer	HORIBA	Model	APNA-370
Serial No.	ALPOVOWY	Equipment ID	RYG_FS0455
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	55.88	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS						
	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	98.60	-1.40	-1.40	101.60	1.60	1.60
2	200.00	198.80	-1.20	-0.60	201.30	1.30	0.65
3	300.00	301.30	1.30	0.43	301.70	1.70	0.57
4	400.00	398.50	-1.50	-0.38	401.30	1.30	0.33
AVERAGE (%)				-0.37			0.65



Calibrated By

(Mr.Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sarayuth Jittrantont)
Assistant General Manager

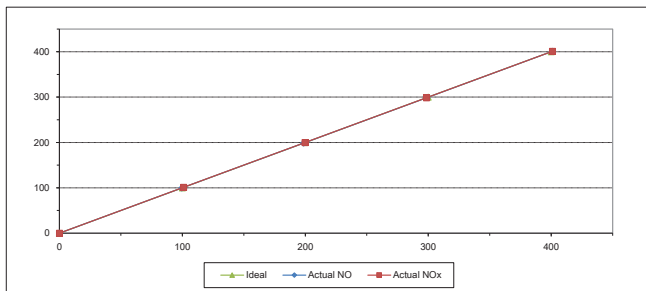
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-25	Equipment Name	NOx Analyzer
Manufacturer	HORIBA	Model	APNA-370
Serial No.	AWXG87CR	Equipment ID	RYG_FS0453
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	55.88	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS						
	Ideal	Actual NO	Error NO	%Error NO	Actual NOx	Error NOx	%Error NOx
ZERO	0.00	0.10	0.10	0.10	0.10	0.10	0.10
1	100.00	99.60	-0.40	-0.40	101.10	1.10	1.10
2	200.00	198.60	-1.40	-0.70	199.80	-0.20	-0.10
3	300.00	299.00	-1.00	-0.33	298.60	-1.40	-0.47
4	400.00	401.20	1.20	0.30	401.10	1.10	0.28
AVERAGE (%)				-0.21			0.18



Calibrated By

(Mr.Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sarayuth Jittrantont)
Assistant General Manager

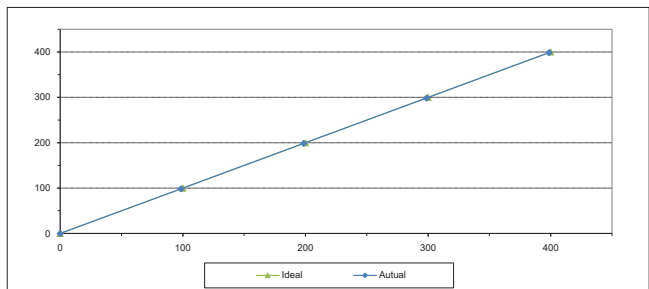
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-25	Equipment Name	SO2 Analyzer
Manufacturer	Teledyne API	Model	T100
Serial No.	6060	Equipment ID	RYG_FS0532
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	56.3	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS			
	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	98.50	-1.50	-1.50
2	200.00	198.60	-1.40	-0.70
3	300.00	298.70	-1.30	-0.43
4	400.00	398.70	-1.30	-0.33
AVERAGE (%)				-0.57



Calibrated By

(Mr.Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sarayuth Jittrantont)
Assistant General Manager

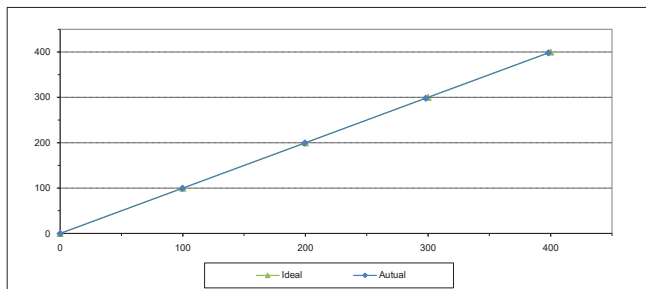
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-25	Equipment Name	SO2 Analyzer
Manufacturer	HORIBA	Model	APSA-370
Serial No.	YPRXJJ20	Equipment ID	RYG_FS0263
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	56.3	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS			
	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	99.70	-0.30	-0.30
2	200.00	199.40	-0.60	-0.30
3	300.00	298.20	-1.80	-0.60
4	400.00	398.10	-1.90	-0.47
AVERAGE (%)				-0.31



Calibrated By

(Mr.Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sarayuth Jittrantont)
Assistant General Manager

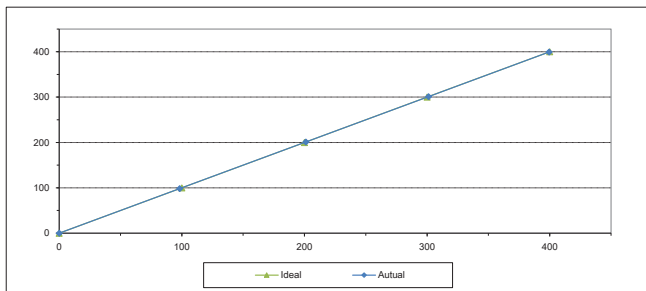
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-25	Equipment Name	SO2 Analyzer
Manufacturer	HORIBA	Model	APSA-370
Serial No.	H0S3D9FA	Equipment ID	RYG_FS0454
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	56.3	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS			
	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	98.30	-1.70	-1.70
2	200.00	201.10	1.10	0.55
3	300.00	301.20	1.20	0.40
4	400.00	399.50	-0.50	-0.13
AVERAGE (%)				-0.16



Calibrated By

(Mr.Jirawat Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sareyuth Jitranont)
Assistant General Manager

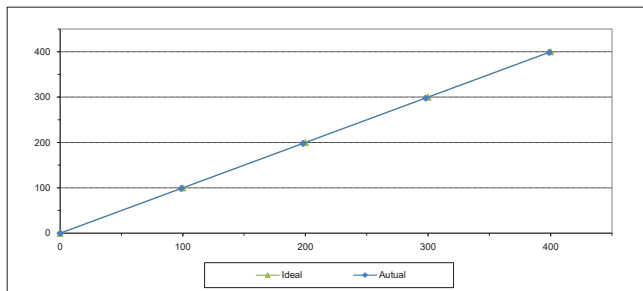
ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	4-Jan-25	Equipment Name	SO2 Analyzer
Manufacturer	HORIBA	Model	APSA-370
Serial No.	90U0XJ31	Equipment ID	RYG_FS0452
Calibrator Manufacturer	Teledyne API	Model	700
Serial No.	947		
Std. Gas Concentration (PPM)	56.3	Cylinder No.	GN0027222
Cylinder Pressure (psi)	1800	Certified By	Airgas Inc.
Certified Date	9-Feb-22	Expired Date	9-Feb-30

Point	CALIBRATION RESULTS			
	Ideal	Actual	Error	%Error
ZERO	0.00	0.10	0.10	0.10
1	100.00	98.80	-1.20	-1.20
2	200.00	198.00	-2.00	-1.00
3	300.00	298.00	-2.00	-0.67
4	400.00	398.80	-1.20	-0.30
AVERAGE (%)				-0.61



Calibrated By

(Mr.Jirawat Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sareyuth Jitranont)
Assistant General Manager

ALS Laboratory Group
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



JIRANATEE ASSOCIATES CO., LTD.

Jirantee Associates Co., Ltd.
63/14 13, 62/35-36
Pongkham 2, 37, Rd. Wattana, Bangkok
(Bangkok 10000) (Thailand)
Tel: +6620880812
Mobile: +6620880812
E-mail: jirantee@jirantee.com
Web site: www.jirantee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department.



NSC - TIS - TIS 17025
CALIBRATION 0367

Certificate Number

CWS-006-68

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS RECEIVED

CUSTOMER

Cup anemometer

Novalyne

Sensor: WS-03FA

Data logger: 110-WS-25DL-D

Sensor: WSD-A5980

Data logger: A5980

RYG_FS0649

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

Khet Suan Luang, Bangkok 10250 Thailand.

Calibration procedure:

The Cup anemometer was calibrated against

Standard air velocity transducer model: B55V32

and pilot tube with precision differential pressure

meter model: DPM2500 in air flow calibration of

6000-type wind tunnel gain 500 m/s over test

section area. The WFL-002 based on IEC 61400-

12-1 Wind energy generation systems - Part 12-1:

Power performance measurements of

electricity producing wind turbines, March 2017

was used as a calibration guideline.

Page 2 of 2 Pages

MEASUREMENT RESULTS¹

The Cup anemometer, Unit Under Calibration (UUC) was exercised at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pilot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted as a stand vertical tube of the glove plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

U_{ref} (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	U_{ref} (m/s)	Error (m/s)	$U(95\%)$ (m/s)
1.023	24.66	24.75	0.9	0.1	0.31
2.246	24.88	24.75	2.0	-0.2	0.31
3.076	24.44	24.75	3.0	-0.1	0.31
4.204	24.50	24.75	4.0	-0.2	0.31
4.96	24.30	24.75	4.9	0.0	0.31
5.97	24.70	24.75	5.9	0.0	0.31
7.03	24.30	24.75	7.0	0.0	0.31
7.97	24.62	24.75	8.1	0.1	0.31
9.23	24.20	24.75	9.1	0.1	0.31
9.98	24.30	24.75	10.1	0.1	0.31
11.09	24.16	24.75	11.2	0.1	0.31
12.00	24.10	24.75	12.2	0.2	0.31
13.05	24.20	24.75	13.2	0.2	0.31
13.98	24.12	24.75	14.3	0.3	0.31
15.03	24.36	24.75	15.1	0.2	0.31
15.97	24.22	24.75	16.3	0.3	0.31

Remark:

¹Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

²Velocity of standard

³Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jirantee Associates Co., Ltd. The Cup anemometer shows may differ from the calibrated one. Remark: The purpose of the set-up is to be used as a guide to the customer.



JIRANATEE ASSOCIATES CO., LTD.

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM MANUFACTURER MODEL/TYPE

Wind Direction Sensor
: Novallux
: Sensor: WS-02FA

SERIAL NUMBER

Data logger: 110-WS-250L-D
: Sensor: WSD-AS980

ID NUMBER CONDITION AS-RECEIVED CUSTOMER

Data logger: AS980
: RYG_F50649
: Used Item

RECEIVED DATE MEASUREMENT DATE ISSUE DATE

: 10 Jan 2025
: 17 Jan 2025
: 20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature: 23.0 ± 3.0 °C
Relative Humidity: 55.0 ± 15.0 %RH
Atmospheric Pressure: 1010 ± 10 hPa

PLACE OF CALIBRATION

: Elliptical wind tunnel of Jirantee Associates Co., Ltd.

CALIBRATION CONDITION

Wind tunnel cross-section area¹: 800 cm²
Wind direction typical area²: 129 cm²
Diameter of mounting pipe³: 1 mm
Blockage ratio of test object⁴: 0.143 (-)

Preconditioning Measurement Condition

: 24 hours at ambient conditions.
The average values during measurement are (24.4)°C, (52.4) %RH and (1017.3) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values

Calibrated by:
[X] Mr. Sorawit Thachalad
[X] Miss Jittaporn Lertsomphol



Approved signatory:
Mr. Parinya Isoncharoen
Calibration Department Manager

Remarks:
¹ Bridge cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "a/b"

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counter-clockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

Air speed	D _{me}	D _{unc}	Error	U (k=2)
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
	0.000	0	0	0.80
	45.000	41	-4	0.80
	90.000	87	-3	0.80
5.02	135.000	133	-2	0.80
	180.000	182	2	0.80
	225.000	229	4	0.80
	270.000	274	4	0.80
	315.000	320	5	0.80

Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

⁶ Direction of standard

⁷ Direction of Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

Certificate No.: CDT-030-68

MEASUREMENT ITEM MANUFACTURER MODEL/TYPE

Data Logger with Temperature sensor
: Novallux
: 110-WS-250L-D

SERIAL NUMBER

: AS980

ID NUMBER

: RYG_F50649

CONDITION AS-RECEIVED CUSTOMER

: Used Item
: ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khuasorn Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE MEASUREMENT DATE ISSUE DATE

: 10 Jan 2025
: 17 Jan 2025
: 20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature: 23.0 ± 3.0 °C
Relative Humidity: 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:

The temperature calibration was done by In-House calibration method as WYCI-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: T1-0047-24, Certificate number: EH-0113-24

Reference Used During Calibration:

1. Standard Temperature Probe
Model: STS-100 ASO, Serial No.: 667682-08,
Due date: 26 Mar 2025
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407,
D0581 Due date: 21 Oct 2025

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Continuation of Certificate of Calibration Number CDT-030-68

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with temperature sensor Model: HMP60 S/N: V1520214.
Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.078	19.6	-0.3	0.095
80	25.067	24.8	-0.3	0.095
80	30.054	29.7	-0.4	0.095
80	35.035	34.7	-0.3	0.095
80	40.019	39.7	-0.3	0.095

UUC: Unit Under Calibration

End of Certificate of Calibration



Calibrated by:
[X] Mr. Sorawit Thachalad
[X] Miss Jittaporn Lertsomphol
[X] Miss Ruangsri Poommit



Approved signatory:
Mr. Parinya Isoncharoen
Calibration Department Manager

THIS CERTIFICATE MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

Certificate No. : CRT-004-68

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

Relative humidity with data logger

Novalyxa

Data logger: 110-WS-250L-D

Sensor: H4M60

Data logger: AS980

Sensor: V1920214

RVG_F50649

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

Khet Suan Luang, Bangkok 10250 Thailand

RECEIVED DATE

10 Jan 2025

MEASUREMENT DATE

17 Jan 2025

ISSUE DATE

20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature

23.0 ± 3.0 °C

Relative Humidity

55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration

TABULATION OF RESULTS:

The table on next page give the measured values

Calibration procedure:

The Relative humidity and Air Temperature calibration was done by in-house calibration method as WI-CL-009 and WI-EL-070 according to comparison method with Standard, Chilled Mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

Traceability:

The measurements were traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TH04148-24 and Jiranatee Associates Co., Ltd. Certificate number: CRT-026-68

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Calibrated by:

☐ Mr. Sorawat Thairuad

☒ Mr. Ittaram Lertsomphol

☐ Ms. Ruangsak Phoommit



Approved signatory:

Mr. Parinyal Boonchutorn
Calibration Department Manager

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Continuation of Certificate of Calibration Number: CRT-004-68

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty ± (%RH)
29.71	59.85	59.9	0.0	0.78
29.74	51.27	51.7	0.4	1.3
29.75	82.85	83.2	0.4	2.1

UUC*: Unit Under Calibration

End of Certificate of Calibration



Calibrated by:

☐ Mr. Sorawat Thairuad

☒ Mr. Ittaram Lertsomphol

☐ Ms. Ruangsak Phoommit

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

Certificate No. : CFB-004-68

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

Digital barometer

Novalyxa

Sensor: 110-WS-250P

Data logger: 110-WS-250L-D

Sensor: BP-AS980

Data logger: AS980

RVG_F50649

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd,

Khwaeng Suan Luang, Khet Suan Luang,

Bangkok 10250 Thailand

RECEIVED DATE

10 Jan 2025

MEASUREMENT DATE

17 Jan 2025

ISSUE DATE

20 Jan 2025

CONDITION OF THIS RESULT OF CALIBRATION:

1. Calibration effort for calibration sequence C

2. The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level.

3. Calibration conditions:

4. Condition

☒ Normal ☐ Abnormal

Pressure transmitting medium

Air

P₁ (20°C, 1 bar)

1.19 kg/m³

P_{max}

154246.31 %

T_{amb}

22.940.11 °C

P_{max}

1015.441.7 mbar

5. The certificate is valid only to the item calibrated on date and place of calibration

Calibration procedure:

The Digital barometer was calibrated against Digital pressure calibrator, The WI-CL-021 was used as a calibration guideline

Traceability:

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0009-24

Reference Used During Calibration:

1. Absolute Pressure Transducer

Model: LPS230Q, Serial No.: 41031210P

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Calibrated by:

☒ Mr. Sorawat Thairuad

☐ Mr. Ittaram Lertsomphol



Approved signatory:

Mr. Parinyal Boonchutorn
Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

Certificate No. : CFB-004-68

Page 1 of 2 Pages

MEASUREMENT RESULTS

☐ Without adjustment ☒ With adjustment

CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

STD (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
950.06	951.4	1.3	0.37
970.07	970.9	0.8	0.38
990.10	990.6	0.5	0.38
1010.05	1010.1	0.0	0.38
1030.07	1029.5	-0.5	0.37
1050.05	1049.0	-1.1	0.37

Note: UUC* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

End of certificate





JIRANATEE ASSOCIATES CO., LTD.

Jirantee Associates Co., Ltd.
43/14-15, 43/15-36,
Pattana 3, 3/11, 4/1, Vithayakarn, Bangkok 10110 (Thailand)
Tel: +662 004 0012
Mobile: +662 004 0013
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-TIS 17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department



Certificate Number

CVS-004-68

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

Cup anemometer
Novolyne
Sensor: WS-02FA
Data logger: 110 WS-250L-D
Sensor: WSD-A5977
Data logger: A5977
RYG_F50647
Used item
ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

Calibration procedure

The Cup anemometer was calibrated against Standard air velocity transducer against NSC/0367 and pilot tube with precision differential pressure meter model: DPM300 in an air flow section of Eiffel-type wind tunnel with 500mm cross test section area. The WFL 002 used as IEC 61400-12-1, Wind energy generation systems - Part 12-1: Power performance measurement of electricity producing wind turbines. March 2017 was used as calibration guideline.

Traceability

The certificate provides a traceability of the measurement to recognized the national standards and to realization of the international system of units [SI] through the NMPT (National Metrology Institute of Thailand) via Certificate Number: NMV-0007-24 and K19 0005-24

Uncertainty of Measurement

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature

Relative Humidity

Atmospheric Pressure

23.0 ± 3.0 °C
55.0 ± 15.0 %RH
1010 ± 10 hPa

PLACE OF CALIBRATION

Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS

Wind tunnel cross-section area: 900 cm²
Wind direction (pilot area): 100 cm²
Diameter of mounting pipe: - mm
Blockage ratio of test object: 0.111 [-]

Preconditioning

Measurement Condition

24 hours at ambient conditions.
The average values during measurement are (24.1) °C, (54.2) %RH and (1016.4) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

Mr. Somsak Thongkiet
Mr. Jiraporn Lertkarnkarn

Approved signature:

Mr. Jiraporn Lertkarnkarn
Calibration Department Manager

REVIEW BY

APPROVED BY

NEXT CAL DATE

14/ 07/ 26

Remark:

1. Result cross-section area of the wind tunnel
2. Projected cross-section area of the tested object include mounting pipe
3. Diameter of mounting pipe
4. Ratio "to"

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Page 2 of 2 Pages

MEASUREMENT RESULTS

The Cup anemometer, Unit Under Calibration (UUC) was exercise at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pilot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted at a round vertical tube of the gauge plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

V _{ref} [m/s]	Temp. wind tunnel [°C]	Temp. room [°C]	V _{ref} [m/s]	Error [m/s]	U (k=2) [m/s]
0.950	24.10	24.05	0.9	0.1	0.45
2.203	24.20	24.05	2.1	-0.1	0.31
3.010	24.10	24.05	2.9	-0.1	0.55
4.200	24.10	24.05	4.1	-0.1	0.31
4.95	24.20	24.05	5.0	0.0	0.68
5.97	24.10	24.05	5.9	-0.1	0.36
7.01	24.20	24.05	6.9	-0.1	0.43
7.96	24.10	24.05	7.8	-0.1	0.61
9.01	24.10	24.05	9.0	-0.1	0.54
9.95	24.10	24.05	9.9	-0.1	0.66
11.06	24.00	24.05	10.9	-0.2	0.71
11.99	24.26	24.05	11.8	-0.2	0.63
13.03	24.04	24.05	13.0	0.0	0.89
13.95	24.30	24.05	14.0	0.0	0.83
15.02	24.12	24.05	14.9	-0.1	0.69
15.95	24.26	24.05	15.9	0.0	0.71

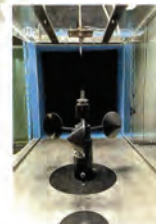
Remark:

1. Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

2. Velocity of standard

3. Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not to scale due to testing geometry.



JIRANATEE ASSOCIATES CO., LTD.

Jirantee Associates Co., Ltd.
43/14-15, 43/15-36,
Pattana 3, 3/11, 4/1, Vithayakarn, Bangkok 10110 (Thailand)
Tel: +662 004 0012
Mobile: +662 004 0013
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-TIS 17025
CALIBRATION 0367

Wind direction measurement laboratory
Calibration services department



Certificate Number

CV-D-004-68

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

Wind Direction Sensor

Novolyne

Sensor: WS-02FA

Data logger: 110 WS-250L-D

Sensor: WSD-A5977

Data logger: A5977

RYG_F50647

Used item

ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

Calibration procedure:

The wind direction sensor was calibrated against Standard Rotary Encoder model: A5900779 (INDR-F3.5-10) in an air flow section of Eiffel-type wind tunnel using 200 cm² cross-section area. The WFL 002 fitted as IEC 61400-12-1, Wind energy generation systems - Part 12-1: Power performance measurement of electricity producing wind turbines. March 2017 was used as a calibration guideline.

Traceability

The certificate provides a traceability of the measurement to recognized the national standards and to realization of the international system of units [SI] through the NMPT (National Metrology Institute of Thailand) via Certificate Number: NMV-0007-24.

Uncertainty of Measurement

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature

Relative Humidity

Atmospheric Pressure

23.0 ± 3.0 °C
55.0 ± 15.0 %RH
1010 ± 10 hPa

PLACE OF CALIBRATION

Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION

Wind tunnel cross-section area: 900 cm²
Wind direction (pilot area): 129 cm²
Diameter of mounting pipe: - mm
Blockage ratio of test object: 0.143 [-]

Preconditioning

Measurement Condition

24 hours at ambient conditions.
The average values during measurement are (24.47°C, (59.7) %RH and (1011.0) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

Mr. Somsak Thongkiet
Mr. Jiraporn Lertkarnkarn

Approved signature:

Mr. Jiraporn Lertkarnkarn
Calibration Department Manager

REVIEW BY

APPROVED BY

NEXT CAL DATE

14/ 07/ 26

Remark:

1. Result cross-section area of the wind tunnel
2. Projected cross-section area of the tested object include mounting pipe
3. Diameter of mounting pipe
4. Ratio "to"

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Certificate Number

CV-D-004-68

Page 2 of 2 Pages

MEASUREMENT RESULTS

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counterclockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

Air speed m/s	D ^{cw} Degree (°)	D ^{ccw} Degree (°)	Error Degree (°)	U (k=2) Degree (°)
4.99	0.000	0	0	0.80
	45.000	41	-4	0.80
	90.000	87	-3	0.80
	135.000	131	-4	0.80
	180.000	177	-3	0.80
	225.000	225	0	0.80
	270.000	274	4	0.80
	315.000	319	4	0.80

Remark:

1. Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

2. Direction of standard

3. Direction of Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CDT-026-68

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Data Logger with Temperature sensor

: Novalys

: 110-WS-250L-D

: A5977

: RYG_F50647

: ALS Laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd.,

: Khwaeng Suan Luang, Khet Suan Luang,

: Bangkok 10250 Thailand.

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

: 10 Jan 2025

: 15 Jan 2025

: 20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C

Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:

The temperature calibration was done by In-House calibration method as WCL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:

The measurement result are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: IT-0047-24. Certificate number: ER 0113-24.

Reference Used During Calibration:

1. Standard Temperature Probe

Model: STS-100 A500, Serial No.: 667682-09,

Due date: 26 Mar 2025

2. Digital Temperature Indicator

Model: DTI-1000-A MX II, Serial No.: 671407-

06591 Due date: 21 Oct 2025

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".



Approved signatory:

Mr. Pannya looncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number CDT-026-68

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with temperature sensor Model: HMP60 S/N: V1920212. Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.077	19.8	-0.3	0.099
80	25.066	24.8	-0.3	0.099
80	30.053	29.8	-0.3	0.099
80	35.034	34.7	-0.3	0.099
80	40.019	39.7	-0.3	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration



Continuation of Certificate of Calibration Number CRT-002-68

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty (%RH)
29.72	59.84	58.6	-1.3	0.78
29.73	51.26	49.0	-2.3	1.3
29.74	82.85	79.7	-3.2	2.1

UUC*: Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-002-68

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Relative humidity with data logger

: Novalys

: Data Logger: 110-WS-250L-D

: Sensor: HMP60

: Data Logger: A5977

: Sensor: V1920212

: RYG_F50647

: Used item

: ALS Laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

: 10 Jan 2025

: 15 Jan 2025

: 20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C

Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:

The Relative Humidity and Air Temperature calibration was done by In-House calibration method as WCL-002 and WCL-010 according to comparison method with Standard chilled Mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

Traceability:

The measurements are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TH046-24 and Jirantee Associates Co., Ltd. Certificate number: CDT-026-68.

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".



Approved signatory:

Mr. Pannya looncharoen
Calibration Department Manager

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CERTIFICATE OF CALIBRATION

Certificate No. : CN-002-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Digital barometer
MANUFACTURER : Novalyx
MODEL/TYPE : Sensor: 110-WS-25BP
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: BP-A5977
Data logger: AS977
ID NUMBER : RVG_F50647
CONDITION AS-RECEIVED
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jan 2025
MEASUREMENT DATE : 15 Jan 2025
ISSUE DATE : 20 Jan 2025

Calibration procedure:
The Digital barometer was calibrated against digital pressure calibration, 710-WS-25DL-D, was used as a calibration guide.

Traceability:
The measurement results are traceable to the international system of units (SI) through the NMf (National Metrology Institute of Thailand) via Certificate number: MP-0005-34

Reference Used During Calibration:
1. Absolute Pressure Transducer
Model: K12250, Serial No.: 4100126P

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

CONDITION OF THIS RESULT OF CALIBRATION:

- Calibration effort for calibration sequence C
- The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level
- Calibration conditions:
☒ Normal ☐ Abnormal
Pressure transmitting medium : Air
 p_1 (20°C, 1 bar) : 1.19 kg/m³
 p_{max} : (62.4±2.6) %
 p_{min} : (23.5±0.1) %
 p_{max} : (1011.0±1.6) mbar
- The certificate is valid only to the item calibrated on date and place of calibration



Approved signature: Mr. Pinyo Boonchanon
Calibration Department Manager

Calibrated by:
Mr. Sorawat Thachalad
Jirantee Associate Laboratory

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY



CERTIFICATE OF CALIBRATION

Certificate No. : CN-002-68

Page 2 of 2 Pages

MEASUREMENT RESULTS : ☐ Without adjustment ☒ With adjustment
CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

STD (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
950.02	951.4	1.4	0.37
970.08	971.3	1.2	0.38
990.07	990.8	0.8	0.38
1010.07	1010.4	0.3	0.38
1030.02	1029.9	-0.1	0.37
1050.08	1049.5	-0.6	0.37

Note: UUC* Unit Under Calibration
To convert the result in report unit to Pa should be multiply by 100

End of certificate



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Cup anemometer
MANUFACTURER : Novalyx
MODEL/TYPE : Sensor: WSD-02F
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: WSD-A5912
Data logger: AS912
ID NUMBER : RVG_F50611
CONDITION AS-RECEIVED
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 16 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:
Ambient condition in the laboratory are as follows:
Temperature : 23.0 ± 0.3 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION : Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS : Wind tunnel cross-section area¹ : 900 cm²
Wind direction frontal area² : 100 cm²
Diameter of mounting pipe³ : -
Blockage ratio of test object⁴ : 0.111 [-]

Preconditioning : 24 hours at ambient conditions.
Measurement Condition : The average values during measurement are (24.0) °C, (44.0) %RH and (1003.0) hPa.

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibrated by:
☒ Mr. Sorawat Thachalad
☐ Miss Jitraporn Lertsomphon



Approved signature: Mr. Pinyo Boonchanon
Calibration Department Manager

REVIEW BY: Sorawat Thachalad
APPROVED BY: Pinyo Boonchanon
26/12/25

Remark:
¹ Nozzle cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio $\frac{A_o}{A_t}$

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

The Cup anemometer, Unit Under Calibration (UUC) was exercise at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

V_{std} (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	V_{std} (m/s)	Error (m/s)	U (k=2) (m/s)
1.000	24.00	24.00	0.8	-0.2	0.31
1.999	24.08	24.00	1.7	-0.3	0.31
2.971	24.00	24.00	2.8	-0.2	0.31
4.094	24.00	24.00	3.8	-0.3	0.31
4.99	23.82	24.00	5.0	0.0	0.31
6.03	24.22	24.00	6.0	0.0	0.31
7.04	23.80	24.00	7.0	0.0	0.31
7.97	24.18	24.00	8.0	0.0	0.31
8.99	23.54	24.00	9.1	0.3	0.31
9.99	23.98	24.00	10.1	0.1	0.31
11.00	23.80	24.00	11.2	0.2	0.31
11.99	23.92	24.00	12.2	0.2	0.31
13.00	23.80	24.00	13.3	0.3	0.31
14.06	23.82	24.00	14.4	0.4	0.31
15.04	23.80	24.00	15.4	0.4	0.31
15.99	23.80	24.00	16.4	0.4	0.31

Remark:

⁵ Calibration results only count for the tested circumstances and environmental condition during which calibration took place

⁶ Velocity of standard

⁷ Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CDT-104-67

Page 1 of 2 Pages

MEASUREMENT ITEM
MANUFACTURER
MODEL/TYPE
SERIAL NUMBER
ID NUMBER
CONDITION AS-RECEIVED
CUSTOMER

: Data Logger with Temperature sensor
: Novalynx
: 110-WS-25DL-D
: AS912
: RYG_F50611
: Used Item
: ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwang Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:

The temperature calibration was done by In-House calibration method as WP-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TF-0047-24, Certificate number: ER-0101-23

Reference Used During Calibration:

1. Standard Temperature Probe
Model: STS-100 AS00, Serial No.: 667882-09,
Due date: 26 Mar 2025
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 673407-
00591 Due date: 14 Sep 2024

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".

Calibrated by:

☐ Mr. Sornwut Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangsri Poommit



Approved signature:

Mr. Panyia Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number CDT-104-67

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 3: This equipment was connected with temperature sensor Model: HMP60 S/N: U3911247.
Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.065	19.6	-0.5	0.099
80	25.058	24.6	-0.5	0.099
80	30.048	29.7	-0.3	0.099
80	35.033	34.7	-0.4	0.14
80	40.045	39.5	-0.5	0.099

UUC*: Unit Under Calibration

Remark: The reported uncertainty of measurement is 0.14, based on standard uncertainty multiplied by a coverage factor k=2.14 providing a level of confidence of approximately 95%.

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-016-67

Page 1 of 2 Pages

MEASUREMENT ITEM
MANUFACTURER
MODEL/TYPE
SERIAL NUMBER
ID NUMBER
CONDITION AS-RECEIVED
CUSTOMER

: Relative humidity with data logger
: Novalynx
: Data Logger: 110-WS-25DL-D
Sensor: HMP60
: Data Logger: AS912
Sensor: US911247
: RYG_F50611
: Used Item
: ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwang Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:

The Relative humidity and Air Temperature calibration was done by In-House Calibration method as WP-CL-009 and WP-CL-010 according to comparison method with Standard chilled mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

Traceability:

The measurements are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TM-0079-23 and through Jiranatee Associates Co., Ltd. Certificate number: CDT-001-67.

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".

Calibrated by:

☐ Mr. Sornwut Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangsri Poommit



Approved signature:

Mr. Panyia Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number: CRT-016-67

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.
Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty ± (%RH)
29.80	19.60	18.6	-1.0	0.83
29.80	50.55	48.0	-2.6	1.3
29.81	81.61	77.8	-3.8	2.3

UUC*: Unit Under Calibration

End of Certificate of Calibration





JIRANATEE ASSOCIATES CO., LTD.

Jirantee Associates Co., Ltd.
90/14 15, 10/25-26
Petchburi 27/1 Rd. Nonthaburi, Bangkok
Bangkok 10000 (Thailand)
Tel: +662-088232
Mobile: +662-099453
E-mail: jnc-calibration@jirantee.com
Web site: www.jirantee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department



NSC-TIS-17025
CALIBRATION 0367

Certificate Number

CWS-005-68

CERTIFICATE OF CALIBRATION

Page 1 of 3 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS RECEIVED

CUSTOMER

Cup anemometer

Novaminc

Sensor: WS-02F

Data logger: 110-WS-250L-0

Sensor: WSD-AS978

Data logger: AS978

RVC_F50648

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthananan 40, Phatthananan Rd, Khwaeng Suan Luang,

Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

10 Jan 2025

16 Jan 2025

20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

PLACE OF CALIBRATION

Effel-type wind tunnel of Jirantee Associates Co., Ltd.

CALIBRATION CONDITIONS

Wind tunnel cross-section area¹

900 cm²

Wind direction frontal area²

100 cm²

Diameter of mounting pipe³

mm

Blockage ratio of test object⁴

0.111 [-]

Preconditioning

24 hours at ambient conditions.

Measurement Condition

The average values during measurement are (24.3) °C, (67.9) %RH and (1011.9) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

Mr. Sarawat Thirakulchai

Mr. Sarawat Thirakulchai



Approved signature:

Mr. Sarawat Thirakulchai

Calibration Department Manager

REVIEW BY:

APPROVED BY:

NEXT CAL DATE:

15/ 07/ 26

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Page 2 of 3 Pages

MEASUREMENT RESULTS⁵

The Cup anemometer, Unit Under Calibration (UUC) was exercised at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 20 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 5 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

V_{ref} (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	V_{ref} (m/s)	Error (m/s)	U (k=2) (m/s)
0.998	24.10	24.25	0.9	-0.1	0.31
2.242	24.14	24.25	2.0	-0.2	0.31
3.112	24.14	24.25	3.0	-0.1	0.31
4.235	24.12	24.25	4.0	-0.2	0.31
4.94	24.12	24.25	5.0	0.1	0.31
5.98	24.30	24.25	6.0	0.0	0.31
7.03	24.10	24.25	7.2	0.1	0.31
7.97	24.22	24.25	8.2	0.2	0.31
9.03	24.10	24.25	9.3	0.2	0.31
9.95	24.10	24.25	10.2	0.2	0.31
11.02	24.16	24.25	11.2	0.2	0.31
11.99	24.26	24.25	12.3	0.3	0.31
13.04	24.32	24.25	13.4	0.4	0.31
13.98	24.12	24.25	14.4	0.4	0.31
15.01	24.26	24.25	15.4	0.4	0.31
15.97	24.10	24.25	16.4	0.4	0.31

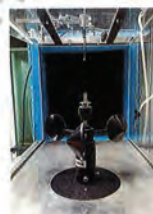
Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

⁶ Velocity of standard

⁷ Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jirantee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



JIRANATEE ASSOCIATES CO., LTD.

Jirantee Associates Co., Ltd.
90/14 15, 10/25-26
Petchburi 27/1 Rd. Nonthaburi, Bangkok
Bangkok 10000 (Thailand)
Tel: +662-088232
Mobile: +662-099453
E-mail: jnc-calibration@jirantee.com
Web site: www.jirantee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-17025
CALIBRATION 0367

Wind direction measurement laboratory
Calibration services department



NSC-TIS-17025
CALIBRATION 0367

Certificate Number

CWD-005-68

CERTIFICATE OF CALIBRATION

Page 1 of 3 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS RECEIVED

CUSTOMER

Wind Direction Sensor

Novaminc

Sensor: WS-02F

Data logger: 110-WS-250L-0

Sensor: WSD-AS978

Data logger: AS978

RVC_F50648

Used item

ALS laboratory group (Thailand) Co., Ltd.

104 Phatthananan 40, Phatthananan Rd, Khwaeng Suan Luang,

Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

10 Jan 2025

16 Jan 2025

20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature: 23.0 ± 3.0 °C

Relative Humidity: 55.0 ± 15.0 %RH

Atmospheric Pressure: 1010 ± 10 hPa

PLACE OF CALIBRATION

Effel-type wind tunnel of Jirantee Associates Co., Ltd.

CALIBRATION CONDITION

Wind tunnel cross-section area¹

900 cm²

Wind direction frontal area²

129 cm²

Diameter of mounting pipe³

mm

Blockage ratio of test object⁴

0.143 [-]

Preconditioning

24 hours at ambient conditions.

Measurement Condition

The average values during measurement are (24.4) °C, (62.9) %RH and (1013.5) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

Mr. Sarawat Thirakulchai

Mr. Sarawat Thirakulchai



Approved signature:

Mr. Sarawat Thirakulchai

Calibration Department Manager

Remark:
¹ Rectangular cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "a"/"b"

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Certificate Number

CWD-005-68

Page 2 of 3 Pages

MEASUREMENT RESULTS⁵

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counter-clockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

Air speed m/s	D_{ref} Degree (°)	D_{ref} Degree (°)	Error Degree (°)	U (k=2) Degree (°)
5.01	45.000	47	-3	0.80
	90.000	88	-2	0.80
	135.000	135	8	0.80
	180.000	182	2	0.80
	225.000	228	3	0.80
	270.000	273	3	0.80
	315.000	318	3	0.80
	360.000	359	-1	0.80

Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

⁶ Direction of standard

⁷ Direction of Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

Certificate No. : CDT-028-68

MEASUREMENT ITEM
MANUFACTURER : Data Logger with Temperature sensor
MODEL/TYPE : Novalynx
SERIAL NUMBER : 110-WS-25D1-D
ID NUMBER : AS978
CONDITION AS RECEIVED : RYG, JS0648
CUSTOMER : Used item
ALS Laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jan 2025
MEASUREMENT DATE : 16 Jan 2025
ISSUE DATE : 20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as ISO/IEC 17025:2017 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT).
Certificate number: 11-0047-24, Certificate number: ER-0113-24

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09,
Due date: 26 Mar 2025
2. Digital Temperature Indicator
Model: DTI-1000-A Mk II, Serial No.: 671407-00591 Due date: 21 Oct. 2025

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

Calibrated by:
☐ Mr. Sorawit Thachalad
☒ Miss Jittaporn Lertsomphol
☐ Miss Ruangrumpai Phoummil

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Continuation of Certificate of Calibration Number CDT-028-68

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with temperature sensor Model: HMP60 S/N: V1920213.
Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.077	19.6	-0.5	0.099
80	25.066	24.6	-0.5	0.099
80	30.054	29.6	-0.5	0.099
80	35.035	34.5	-0.5	0.099
80	40.018	39.5	-0.5	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration



Continuation of Certificate of Calibration Number: CRT-003-68

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.
Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty ±(%RH)
29.71	19.86	18.5	-1.4	0.78
29.75	51.21	49.0	-2.2	1.3
29.75	82.84	80.0	-2.9	2.1

UUC*: Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

Certificate No. : CRT-003-68

MEASUREMENT ITEM
MANUFACTURER : Relative humidity with data logger
MODEL/TYPE : Novalynx
SERIAL NUMBER : Data Logger: 110-WS-25D1-D
ID NUMBER : Sensor: HMP60
CONDITION AS RECEIVED : Data Logger: AS978
CUSTOMER : Sensor: V1920213
Used item
ALS Laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jan 2025
MEASUREMENT DATE : 16 Jan 2025
ISSUE DATE : 20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:
The Relative humidity and Air Temperature calibration was done by In-House calibration method as WI-CL-004 and WI-CL-030 according to comparison method with Standard, Chilled Mirror Hygrometer with Temperature sensor and Standard Humidity generator chamber.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT).
Certificate number: TH0846-24 and Jiranatee Associates Co., Ltd. Certificate number: CDT-028-68.

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

Calibrated by:
☐ Mr. Sorawit Thachalad
☒ Miss Jittaporn Lertsomphol
☐ Miss Ruangrumpai Phoummil

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

Certificate No. : CPR-003-68

Page 1 of 2 Pages

MEASUREMENT ITEM : Digital barometer
MANUFACTURER : Novalyne
MODEL/TYPE : Sensor: 110-WS-25BP
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: BP-A5978
Data logger: A5978
ID NUMBER : RYG_F50648
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan Rd, Phatthanakan Rd,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jan 2025
MEASUREMENT DATE : 16 Jan 2025
ISSUE DATE : 20 Jan 2025

Calibration procedure:
The Digital barometer was calibrated against Digital pressure calibration. The WI-C003 was used as a calibration guideline.

Traceability:
The measurement results are traceable to the international system of units (SI) through the NMi (National Metrology Institute of Thailand) via Certificate number: MP-0009-24

Reference Used During Calibration:
1. Absolute Pressure Transducer
Model: GPC500, Serial No.: 4100126P

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

CONDITION OF THIS RESULT OF CALIBRATION:

- Calibration effort for calibration sequence C
- The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level
- Calibration conditions:
4. Condition: ☒ Normal ☐ Abnormal
Pressure transmitting medium: Air
 p_1 (20°C, 1 bar): 1.19 kg/m³
 p_{max} : (55.3±2.3) %
 t_{amb} : (23.1±0.3) °C
 p_{max} : (1013.2±0.7) mbar
- The certificate is valid only to the item calibrated on date and place of calibration

Calibrated by:
Mr. Jiraporn Lertsomphol
Miss Jiraporn Lertsomphol



Approved signatory:
Mr. Parinya Booncharon
Calibration Department Manager

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CERTIFICATE OF CALIBRATION

Certificate No. : CPR-003-68

Page 2 of 2 Pages

MEASUREMENT RESULTS : ☐ Without adjustment ☒ With adjustment
CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

STD (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
950.13	951.7	1.6	0.38
970.13	971.1	1.0	0.37
990.09	990.6	0.5	0.37
1010.05	1010.0	0.0	0.37
1029.99	1029.5	-0.5	0.38
1050.07	1049.0	-1.1	0.37

Note: UUC* Unit Under Calibration

To convert the result in report unit to Pa should be multiply by 100

End of certificate



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Cup anemometer
MANUFACTURER : Novalynx
MODEL/TYPE : Sensor: WS-02F
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: WSD-A5910
Data logger: A5910
ID NUMBER : RYG_F50609
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan Rd, Phatthanakan Rd,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 08 Jul 2024
MEASUREMENT DATE : 18 Jul 2024
ISSUE DATE : 18 Jul 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 0.3 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010.0 ± 10 hPa

PLACE OF CALIBRATION : Effel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS : Wind tunnel cross-section area¹ : 900 cm²
Wind direction frontal area² : 100 cm²
Diameter of mounting pipe³ : mm
Blockage ratio of test object⁴ : 0.111 [-]

Preconditioning : 24 hours at ambient conditions.
Measurement Condition : The average values during measurement are (23.8) °C, (44.9) %RH and (1003) hPa.

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibrated by:
☒ Mr. Sorawit Thachad
☐ Miss Jiraporn Lertsomphol



Approved signatory:
Mr. Parinya Booncharon
Calibration Department Manager

REVIEW BY: *Wongkorn P.*
APPROVED BY: *Wongkorn P.*
NEXT CAL DATE: 15/1/26

Remarks:
¹ Nozzle cross-section area of the wind tunnel
² Frontal cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "a" to "b"

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Page 2 of 2 Pages

MEASUREMENT RESULTS¹

The Cup anemometer, Unit Under Calibration (UUC) was exercise at 30 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the power plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

Vel ² (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	Vel ³ (m/s)	Error (m/s)	U (k=2) (m/s)
0.997	23.70	23.80	0.9	-0.1	0.31
2.021	23.90	23.80	1.8	-0.2	0.31
2.990	23.70	23.80	2.9	-0.1	0.31
4.004	23.70	23.80	3.8	-0.3	0.31
4.97	23.72	23.80	5.0	0.0	0.31
5.97	23.60	23.80	6.0	0.0	0.31
7.04	23.80	23.80	7.0	0.0	0.31
7.98	23.62	23.80	8.0	0.0	0.31
9.00	23.72	23.80	9.1	0.1	0.31
9.98	23.50	23.80	10.1	0.1	0.31
10.97	23.70	23.80	11.1	0.1	0.31
12.04	23.50	23.80	12.1	0.1	0.31
12.96	23.80	23.80	13.3	0.1	0.31
14.10	23.50	23.80	14.2	0.1	0.31
15.04	23.70	23.80	15.2	0.2	0.31
15.97	23.60	23.80	16.2	0.2	0.31

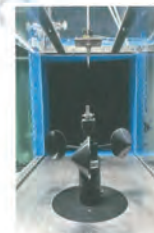
Remarks:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

² Velocity of standard

³ Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.





JIRANATEE ASSOCIATES CO.,LTD.

Jiranatee Associates Co.,Ltd
63/14-15, 67/25-36
Petchburi 17/1, Rd. Wattana, Bangkok,
Bangkok 10600 (Thailand)
Tel: +6683999453
Mobile: +6683999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-17025
CALIBRATION 0367

Wind direction measurement laboratory
Calibration services department.



NSC - TIS - TIS 17025
CALIBRATION 0367

Certificate Number

CWD-026-67

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Wind Direction Sensor
MANUFACTURER : Novallux
MODEL/TYPE : Sensor: WS-02F
Data logger: 110-WS-250L-D
SERIAL NUMBER : Sensor: WSO-AS910
Data logger: AS910
ID NUMBER : RVG_FS0609
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 08 Jul 2024
MEASUREMENT DATE : 18 Jul 2024
ISSUE DATE : 18 Jul 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION : Effel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION : Wind tunnel cross-section area¹ : 900 cm²
Wind direction frontal area² : 129 cm²
Diameter of mounting pipe³ : - mm
Blockage ratio of test object⁴ : 0.143 [-]

Preconditioning : 24 hours at ambient conditions.
Measurement Condition : The average values during measurement are (22.2)°C, (47.5) %RH and (1001.7) hPa.

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibrated by:
☒ Mr. Sorawit Thachalad
☐ Miss Jittaporn Lertsomphol



Approved signatory: Mr. Parinya Boonchareon
Calibration Department Manager

Remark:
¹ Nuclei cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "a" to "b"

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NSC - TIS - TIS 17025
CALIBRATION 0367

Calibration procedure:
The wind direction sensor was calibrated against Standard Rotary Encoder model: AX009175-DMD4-P3-S-UD in an close test-section of Effel-type wind tunnel with 900 cm² open test-section area. The WS-02F is based on IEC 61400-12-1. Wind energy generation system - Part 12-1: Power performance measurements of electricity producing wind turbines, March 2017 was used as a calibration guideline.

Traceability:
This certificate provides a traceability of the measurement to the national standards, and to realization of the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: DA-0036-23.

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Certificate Number

CWD-026-67

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counterclockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below

Air speed	D ¹ _{me}	D ¹ _{ref}	Error	U (k=2)
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
	0.000	0	0	0.80
	45.000	44	-1	0.80
	90.000	87	-3	0.80
	135.000	131	-4	0.80
	180.000	176	-4	0.80
	225.000	222	-3	0.80
	270.000	272	2	0.80
	315.000	320	5	0.80

Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place.

¹ Direction of standard

² Direction of Unit Under Calibration

End of Certificate of Calibration



JIRANATEE ASSOCIATES CO.,LTD.

Jiranatee Associates Co.,Ltd
63/14-15, 67/25-36
Petchburi 17/1, Rd. Wattana, Bangkok,
Bangkok 10600 (Thailand)
Tel: +6683999453
Mobile: +6683999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TIS-17025
CALIBRATION 0367

Temperature measurement laboratory
Calibration services department.



NSC - TIS - TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-121-67

Page 1 of 2 Pages

MEASUREMENT ITEM : Data Logger with Temperature sensor
MANUFACTURER : Novallux
MODEL/TYPE : 110-WS-250L-D
SERIAL NUMBER : AS910
ID NUMBER : RVG_FS0609
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 08 Jul 2024
MEASUREMENT DATE : 18 Jul 2024
ISSUE DATE : 18 Jul 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WCI-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: IT-0047-24, Certificate number: ER-0103-23

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 AS00, Serial No.: 667682-09,
Due date: 26 Mar 2025
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 673407-
00591 Due date: 14 Sep 2024

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Calibrated by:
☒ Mr. Sorawit Thachalad
☒ Miss Jittaporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved signatory: Mr. Parinya Boonchareon
Calibration Department Manager

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JIRANATEE ASSOCIATES CO.,LTD.

Continuation of Certificate of Calibration Number CDT-121-67

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 3: This equipment was connected with temperature sensor Model: HMP60 S/N: U3641223.
Dimension: Diameter 12 mm, Length 80 mm.

Immersion Depth	Standard Reading	UUC Reading	Error	Uncertainty
(mm)	(°C)	(°C)	(°C)	(°C)
80	20.047	19.6	-0.4	0.099
80	25.043	24.6	-0.4	0.099
80	30.034	29.7	-0.3	0.099
80	35.028	34.7	-0.3	0.099
80	40.018	39.5	-0.5	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-023-67

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Relative humidity with data logger

: Novalyra

: Data Logger: 110-WS-250L-D

: Sensor: HMP90

: Data Logger: AS910

: Sensor: US641223

: RYG_F50609

: Used item

: ALS laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

: 08 Jul 2024

MEASUREMENT DATE

: 18 Jul 2024

ISSUE DATE

: 18 Jul 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature

: 23.0 ± 3.0 °C

Relative Humidity

: 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:

The relative humidity and Air Temperature calibration was done by In-House Calibration method as WI-CL-009 and WI-CL-010 according to comparison method with Standard Chilled Mirror Hygrometer with Temperature sensor and Standard Humidity generator chamber.

Traceability:

The measurements are traceable to the International System of Units (SI) through National Institute of Metrology (NIMT). Certificate number: TH-0079-23 and through Jiranatee Associates Co., Ltd. Certificate number: CDT-001-67.

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".

Calibrated by:

- ☐ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol
☐ Miss Ruangsri Phoommit



Approved signature:

[Signature]

Mr. Parinya Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number: CRT-023-67

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

Air Temperature [°C]	Standard Reading [%RH]	UUC Reading [%RH]	Error [%RH]	Uncertainty [%RH]
29.79	19.50	17.7	-1.8	0.83
29.81	50.52	47.9	-2.7	1.3
29.80	81.80	78.0	-3.8	2.3

UUC: Unit Under Calibration

End of Certificate of Calibration



Certificate Number

CWS-016-67

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Cup anemometer

: Novalyra

: Sensor: WS-02F

: Data Logger: 110-WS-250L-D

: Sensor: WSD-AS911

: Data Logger: AS911

: RYG_F50610

: Used item

: ALS laboratory group (Thailand) Co., Ltd.

: 104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,

: Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE

: 10 Jun 2024

MEASUREMENT DATE

: 26 Jun 2024

ISSUE DATE

: 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature

: 23.0 ± 3.0 °C

Relative Humidity

: 55.0 ± 15.0 %RH

Atmospheric Pressure

: 1010 ± 10 hPa

PLACE OF CALIBRATION

: Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS

: Wind tunnel cross-section area¹

: 900 cm²

: Wind direction frontal area²

: 100 cm²

: Diameter of mounting pipe³

: mm

: Blockage ratio of test object⁴

: 0.111 [-]

Preconditioning

: 24 hours at ambient conditions.

Measurement Condition

: The average values during measurement are (24.6) °C, (41.4) %RH and (1002.0) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

- ☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol



Approved signature:

[Signature]

Mr. Parinya Booncharoen
Calibration Department Manager

Remarks:

¹ Actual cross-section area of the wind tunnel

² Projected cross-section area of the test object include mounting pipe

³ Diameter of mounting pipe

⁴ Ratio "a/b"

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Certificate Number

CWS-016-67

Page 2 of 2 Pages

MEASUREMENT RESULTS¹

The Cup anemometer, Unit Under Calibration (UUC) was exercised at 30 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

v_{ref} [m/s]	Temp. wind tunnel [°C]	Temp. room [°C]	v_{UUC} [m/s]	Error [m/s]	U [k=2] [m/s]
0.993	24.50	24.60	0.8	-0.2	0.31
2.014	24.70	24.60	1.7	-0.3	0.31
2.965	24.68	24.60	2.8	-0.2	0.31
4.131	24.64	24.60	3.8	-0.3	0.31
4.97	24.50	24.60	4.8	-0.1	0.31
5.98	24.46	24.60	6.0	0.0	0.31
7.04	24.50	24.60	7.1	0.0	0.31
7.96	24.32	24.60	8.1	0.1	0.31
9.02	24.70	24.60	9.1	0.1	0.31
9.98	24.30	24.60	10.2	0.2	0.31
11.02	24.70	24.60	11.3	0.3	0.31
11.99	24.30	24.60	12.3	0.3	0.31
13.03	24.70	24.60	13.3	0.3	0.31
14.05	24.30	24.60	14.4	0.4	0.31
15.05	24.70	24.60	15.4	0.4	0.31
15.99	24.46	24.60	16.4	0.4	0.31

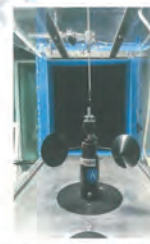
Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place.

² Velocity of standard

³ Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



End of Certificate of Calibration

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION

CALIBRATION CONDITION

Preconditioning

Measurement Condition

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Remarks:

- * Aging correction area of the wind tunnel
- * Projected cross-section area of the tested object include mounting pipe
- * Diameter of mounting pipe
- * Ratio "a"

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Calibration procedure:

The wind direction sensor was calibrated against Standard Rotary Encoder, model: AX009T5-DM04-P3-S-10 in an close test-section of Effel-type wind tunnel with 900 cm² test-section area. The W-CL-008 taped an REC-63000-12-1. Wind energy generation system, - Part 12-1. Power performance measurements of electricity producing wind turbines, March 2017 was used as a calibration guideline.

Traceability:

This certificate provides a traceability of the measurement to the recognized the national standards, and to realization of the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: DN-0036-23.

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Wind tunnel cross-section area¹ 900 cm²
Wind direction from tape² 129 cm²
Diameter of mounting pipe³ - mm
Blockage ratio of test object⁴ 0.143 [-]

Preconditioning

Measurement Condition

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Remarks:

- * Aging correction area of the wind tunnel
- * Projected cross-section area of the tested object include mounting pipe
- * Diameter of mounting pipe
- * Ratio "a"

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Page 2 of 2 Pages

MEASUREMENT RESULTS¹

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counterclockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

Air speed	D ¹ _{me}	D ¹ _{ref}	Error	U (k=2)
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
0.000	0	0	0	0.80
45.000	45	45	0	0.80
90.000	89	89	-1	0.80
135.000	132	132	-3	0.80
180.000	177	177	-3	0.80
225.000	223	223	-2	0.80
270.000	270	270	0	0.80
315.000	318	318	3	0.80

Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place.

² Direction of standard

³ Direction of Unit Under Calibration

End of certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CPH-006-67

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

CONDITION OF THIS RESULT OF CALIBRATION:

1. Reference Standard Instrument:

Instrument Model Serial No. Certificate No. Due Date

Absolute Pressure Transducer CPG2500 4100126P MP-0009-24 27 Dec 2024

2. The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level.

3. Calibration conditions:

4. Condition ☒ Normal ☐ Abnormal

Pressure transmitting medium : Air

p_{in} (20°C, 1 bar) : 1.19 kg/m³

p_{amb} : (55±15) %

t_{amb} : (23±3) °C

p_{amb} : (1010±10) mbar

5. The certificate is valid only to the item calibrated on date and place of calibration

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Calibration procedure:

The Digital barometer was calibrated against Digital pressure calibrator, The W-CL-003 was used as a calibration guideline.

Traceability:

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0009-24

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Wind tunnel cross-section area¹ 900 cm²
Wind direction from tape² 129 cm²
Diameter of mounting pipe³ - mm
Blockage ratio of test object⁴ 0.143 [-]

Preconditioning

Measurement Condition

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

Remarks:

- * Aging correction area of the wind tunnel
- * Projected cross-section area of the tested object include mounting pipe
- * Diameter of mounting pipe
- * Ratio "a"

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CERTIFICATE OF CALIBRATION

Certificate No. : CPH-006-67

Page 2 of 2 Pages

MEASUREMENT RESULTS

☐ Without adjustment ☒ With adjustment

CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

STD	UUC*	Error	Uncertainty (k=2)
(mbar)	(mbar)	(mbar)	(mbar)
950.15	951.6	1.5	0.37
970.11	971.0	0.9	0.37
990.06	990.7	0.7	0.37
1010.08	1010.4	0.3	0.37
1030.07	1030.1	0.0	0.37
1050.07	1049.8	-0.3	0.37

Note: UUC* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

End of certificate



CERTIFICATE OF CALIBRATION

Certificate No. : CPH-006-67

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

CONDITION OF THIS RESULT OF CALIBRATION:

1. Reference Standard Instrument:

Instrument Model Serial No. Certificate No. Due Date

Absolute Pressure Transducer CPG2500 4100126P MP-0009-24 27 Dec 2024

2. The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level.

3. Calibration conditions:

4. Condition ☒ Normal ☐ Abnormal

Pressure transmitting medium : Air

p_{in} (20°C, 1 bar) : 1.19 kg/m³

p_{amb} : (55±15) %

t_{amb} : (23±3) °C

p_{amb} : (1010±10) mbar

5. The certificate is valid only to the item calibrated on date and place of calibration

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Calibration procedure:

The Digital barometer was calibrated against Digital pressure calibrator, The W-CL-003 was used as a calibration guideline.

Traceability:

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0009-24

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2. Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Wind tunnel cross-section area¹ 900 cm²
Wind direction from tape² 129 cm²
Diameter of mounting pipe³ - mm
Blockage ratio of test object⁴ 0.143 [-]

Preconditioning

Measurement Condition

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

Remarks:

- * Aging correction area of the wind tunnel
- * Projected cross-section area of the tested object include mounting pipe
- * Diameter of mounting pipe
- * Ratio "a"

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CERTIFICATE OF CALIBRATION

Certificate No. : CDT-103-67

Page 1 of 2 Pages

MEASUREMENT ITEM : Data Logger with Temperature sensor
MANUFACTURER : Novallym
MODEL/TYPE : 110-WS-250L-D
SERIAL NUMBER : AS911
ID NUMBER : RYG_FS0610
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd.,
Khaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WI-CL-002 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT).
Certificate number: TT-0047-24, Certificate number: ER-0103-23

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 AS00, Serial No.: 667682-09,
Due date: 26 Mar 2025
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 672407-00591 Due date: 14 Sep 2024

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Calibrated by:
☐ Mr. Sorawit Thachalad
☒ Miss Jittaporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved signatory:
Mr. Parniya Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number CDT-103-67

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 3: This equipment was connected with temperature sensor Model: HMP60 S/N: U3911245.
Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.054	19.8	-0.2	0.16
80	25.051	24.8	-0.2	0.16
80	30.046	29.9	-0.1	0.099
80	35.034	34.8	-0.2	0.099
80	40.043	39.8	-0.2	0.099

UUC*: Unit Under Calibration

Remark: The reported uncertainty of measurement is 0.16, based on standard uncertainty multiplied by a coverage factor k=2.23 providing a level of confidence of approximately 95%.

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-015-67

Page 1 of 2 Pages

MEASUREMENT ITEM : Relative humidity with data logger
MANUFACTURER : Novallym
MODEL/TYPE : 110-WS-250L-D
SERIAL NUMBER : Sensor: HMP60
Data Logger: AS911
ID NUMBER : Sensor: U3911245
CONDITION AS-RECEIVED : RYG_FS0610
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:
The Relative Humidity and Air Temperature calibration was done by In-House calibration method as WI-CL-009 and WI-CL-010 according to comparison method with Standard Chilled Mirror Hygrometer with Temperature sensor and standard Humidity generator chamber.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TH-0079-23 and through Jiranatee Associates Co., Ltd. Certificate number: CDT-001-67.

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement"

Calibrated by:
☐ Mr. Sorawit Thachalad
☒ Miss Jittaporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved signatory:
Mr. Parniya Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number CRT-015-67

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty (%RH)
29.60	19.61	17.6	-2.0	0.83
29.80	50.48	47.4	-3.0	1.3
29.81	81.62	77.5	-4.1	2.3

UUC*: Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Cup anemometer
MANUFACTURER : Novalyne
MODEL/TYPE : Sensor: WS-02F
Data logger: 110-WS-250L-D
SERIAL NUMBER : Sensor: WSD-A5912
Data logger: A5912
ID NUMBER : RYG_J50611
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 0.0 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION

: Effel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITIONS

: Wind tunnel cross-section area¹ : 900 cm²
Wind direction frontal area² : 100 cm²
Diameter of mounting pipe³ : - mm
Blockage ratio of test object⁴ : 0.111 [-]

Preconditioning

: 24 hours at ambient conditions.

Measurement Condition

: The average values during measurement are (24.0) °C, (44.0) %RH and (1003.0) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachachai
☐ Miss Jitraporn Lerttamporn



Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

Remark:

¹ Nozzle cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "a/b"

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Page 2 of 2 Pages

MEASUREMENT RESULTS¹

The Cup anemometer, Unit Under Calibration (UUC) was exercise at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted on a round vertical tube of the lower plate at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

V_{std} [m/s]	Temp. wind tunnel [°C]	Temp. room [°C]	V_{std} [m/s]	Error [m/s]	U (k=2) [m/s]
1.000	24.00	24.00	0.8	-0.2	0.31
1.993	24.08	24.00	1.7	-0.3	0.31
2.971	24.00	24.00	2.8	-0.2	0.31
4.004	24.00	24.00	3.8	-0.3	0.31
4.99	23.82	24.00	5.0	0.0	0.31
6.03	24.22	24.00	6.0	0.0	0.31
7.04	23.80	24.00	7.0	0.0	0.31
7.97	24.18	24.00	8.0	0.0	0.31
8.99	23.54	24.00	9.1	0.3	0.31
9.99	23.98	24.00	10.1	0.1	0.31
11.00	23.80	24.00	11.2	0.2	0.31
11.99	23.92	24.00	12.2	0.2	0.31
13.00	23.80	24.00	13.3	0.3	0.31
14.06	23.82	24.00	14.4	0.4	0.31
15.04	23.80	24.00	15.4	0.4	0.31
15.99	23.80	24.00	16.4	0.4	0.31

Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

² Velocity of standard

³ Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Jiranatee Associates Co., Ltd. The Cup anemometer shown may differ from the calibrated one. Remark: The proportion of the set-up is not true to scale due to imaging geometry.



CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Wind Direction Sensor
MANUFACTURER : Novalyne
MODEL/TYPE : Sensor: WS-02F
Data logger: 110-WS-250L-D
SERIAL NUMBER : Sensor: WSD-A5912
Data logger: A5912
ID NUMBER : RYG_J50611
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:
Temperature : 23.0 ± 0.0 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION

: Effel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION

: Wind tunnel cross-section area¹ : 900 cm²
Wind direction frontal area² : 129 cm²
Diameter of mounting pipe³ : - mm
Blockage ratio of test object⁴ : 0.143 [-]

Preconditioning

: 24 hours at ambient conditions.

Measurement Condition

: The average values during measurement are (23.9) °C, (52.6) %RH and (1005.3) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachachai
☐ Miss Jitraporn Lerttamporn



Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

Remark:

¹ Nozzle cross-section area of the wind tunnel
² Projected cross-section area of the tested object include mounting pipe
³ Diameter of mounting pipe
⁴ Ratio "a/b"

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Page 2 of 2 Pages

MEASUREMENT RESULTS¹

The wind direction sensor was calibrated against standard rotary encoder by comparison method. During calibration, the measurement was carried out at 45° intervals in clockwise and counterclockwise directions after offset adjustment has been made. The flow speed of wind tunnel (usually 5 m/s) is kept constant while the sensor is rotated around its vertical axis. The results of calibration and associated measurement uncertainties are reported in the table below.

Air speed m/s	D^{+}_{std} Degree (°)	D^{-}_{std} Degree (°)	Error Degree (°)	U (k=2) Degree (°)
	0.000	0	0	0.80
	45.000	45	-2	0.80
	90.000	87	-3	0.80
5.01	135.000	131	-4	0.80
	180.000	177	-3	0.80
	225.000	225	0	0.80
	270.000	271	1	0.80
	315.000	318	3	0.80

Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

² Direction of standard

³ Direction of Unit Under Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CPR-007-67

Page 1 of 2 Pages

MEASUREMENT ITEM : Digital barometer
MANUFACTURER : Novolynx
MODEL/TYPE : Sensor: 110-WS-25BP
Data logger: 110-WS-25DL-0
SERIAL NUMBER : Sensor: BP-A5912
Data logger: A5912
ID NUMBER : RYG_FS0611
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan Rd.,
Khwang Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.
RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

Calibration procedure:

The Digital barometer was calibrated against Digital pressure calibrator. The WI-CL-003 was used as a calibration guideline.

Traceability:

The measurement results are traceable to the international system of units (SI) through the NIMT (National Metrology Institute of Thailand) via Certificate number: MP-0009-24

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

CONDITION OF THIS RESULT OF CALIBRATION:

1. Reference Standard Instrument:

Instrument	Model	Serial No.	Certificate No.	Due Date
Absolute Pressure Transducer	CPG2500	4100126P	MP-0009-24	27 Dec 2024

2. Calibration effort for calibration sequence B

The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level.

3. Calibration conditions:

4. Condition
Pressure transmitting medium : ☒ Normal ☐ Abnormal
Air
 p_0 (20°C, 1 bar) : 1.013 kg/m³
 p_{max} : (55±15) %
 t_{amb} : (28±3) °C
 p_{max} : (1010±10) mbar

5. The certificate is valid only to the item calibrated on date and place of calibration

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol



Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

THIS CERTIFICATE REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

CERTIFICATE OF CALIBRATION

Certificate No. : CPR-007-67

Page 2 of 2 Pages

MEASUREMENT RESULTS : ☐ Without adjustment ☒ With adjustment

CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below:

STD (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
950.11	951.9	1.8	0.37
970.08	971.3	1.2	0.37
990.08	991.0	0.9	0.37
1010.09	1010.4	0.3	0.37
1030.05	1029.9	-0.2	0.37
1050.08	1049.3	-0.8	0.37

Note: UUC* Unit Under Calibration

: To convert the result in report unit to Pa should be multiply by 100

End of certificate



CERTIFICATE OF CALIBRATION

Certificate No. : CDT-104-67

Page 1 of 2 Pages

MEASUREMENT ITEM : Data Logger with Temperature sensor
MANUFACTURER : Novolynx
MODEL/TYPE : 110-WS-25DL-0
SERIAL NUMBER : A5912
ID NUMBER : RYG_FS0611
CONDITION AS-RECEIVED : Used item
CUSTOMER : ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan Rd.,
Khwang Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand.
RECEIVED DATE : 10 Jun 2024
MEASUREMENT DATE : 26 Jun 2024
ISSUE DATE : 26 Jun 2024

Calibration procedure:

The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:

The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-0047-24, Certificate number: ER-0101-23

Reference Used During Calibration:

1. Standard Temperature Probe
Model: STS-100 AS00, Serial No.: 667682-05,
Due date: 26 Mar 2025
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00581 Due date: 14 Sep 2024

Uncertainty of Measurement:

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpi Phoommit



Approved signature:

Mr. Parinya Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number CDT-104-67

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 3: This equipment was connected with temperature sensor Model: HMP60 S/N: U3911247.
Dimension: Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.065	19.6	-0.5	0.099
80	25.058	24.6	-0.5	0.099
80	30.048	29.7	-0.3	0.099
80	35.033	34.7	-0.4	0.14
80	40.045	39.5	-0.5	0.099

UUC*: Unit Under Calibration

Remark: The reported uncertainty of measurement is 0.14, based on standard uncertainty multiplied by a coverage factor $k=2.14$ providing a level of confidence of approximately 95%.

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-016-67

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

- ☐ Mr. Sorawat Thachalad
- ☐ Mr. Jitraporn Lertsomphol
- ☐ Mr. Ruangsungjai Phoommit



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

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Continuation of Certificate of Calibration Number: CRT-016-67

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty (%RH)
29.80	19.60	18.6	-1.0	0.83
29.80	50.55	48.0	-2.6	1.3
29.81	81.61	77.8	-3.8	2.3

UUC*: Unit Under Calibration

End of Certificate of Calibration



Iranatee Associates Co., Ltd.



Certificate Number

CV-5-004-68

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

RECEIVED DATE

MEASUREMENT DATE

ISSUE DATE

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature : 23.0 ± 3.0 °C
Relative Humidity : 55.0 ± 15.0 %RH
Atmospheric Pressure : 1010 ± 10 hPa

PLACE OF CALIBRATION

Eiffel type wind tunnel of Iranatee Associates Co., Ltd.

CALIBRATION CONDITIONS

Wind tunnel cross-section area¹ : 900 cm²
Wind direction (azimuth angle)² : 100 °
Diameter of mounting pipe³ : mm
Blockage ratio of test object⁴ : 0.111 [-]

Preconditioning

Measurement Condition

24 hours at ambient conditions.
The average values during measurement are (24.1) °C, (54.2) %RH and (1016.4) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

- ☐ Mr. Sorawat Thachalad
- ☐ Mr. Jitraporn Lertsomphol
- ☐ Mr. Ruangsungjai Phoommit



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

REVIEW BY:

APPROVED BY:

NEXT CAL DATE 14/ 07/ 26

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Certificate Number

CV-5-004-68

Page 2 of 2 Pages

MEASUREMENT RESULTS⁵

The Cup anemometer, Unit Under Calibration (UUC) was exercised at 10 m/s for 5 minutes prior to calibration being performed. The standard air velocity 0.5 m/s to 5 m/s was calculated by a standard air velocity transducer which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section and the standard air velocity 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 50 mm away from wind tunnel nozzle and installed 40 mm away from top of the test section. UUC was mounted at a round vertical tube of the gauge glass at center of test section. The calibration was carried out under both rising and falling air velocity in the range of 1 m/s to 16 m/s at calibration interval of 1 m/s. The results of calibration and associated measurement uncertainties are reported in the table below.

V _{std} (m/s)	Temp. wind tunnel (°C)	Temp. room (°C)	V _{uuc} (m/s)	Error (m/s)	U (k=2) (m/s)
0.990	24.10	24.05	0.9	-0.1	0.45
2.203	24.20	24.05	2.1	-0.1	0.31
3.010	24.10	24.05	2.9	-0.1	0.55
4.200	24.10	24.05	4.1	-0.1	0.31
4.95	24.20	24.05	5.0	0.0	0.68
5.97	24.10	24.05	5.9	-0.1	0.36
7.03	24.20	24.05	6.9	-0.1	0.43
7.96	24.10	24.05	7.8	-0.1	0.61
9.01	24.10	24.05	9.0	-0.1	0.54
9.95	24.10	24.05	9.9	-0.1	0.66
11.06	24.05	24.05	10.9	-0.2	0.71
11.99	24.28	24.05	11.8	-0.2	0.63
13.03	24.04	24.05	13.0	0.0	0.89
13.95	24.30	24.05	14.0	0.0	0.83
15.02	24.12	24.05	14.9	-0.1	0.69
15.95	24.26	24.05	15.9	0.0	0.71

Remarks:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

¹ Velocity of standard

² Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the Cup anemometer calibration in the wind tunnel of Iranatee Associates Co., Ltd. The Cup anemometer should only differ from the calibrated one. Remark: The proportion of this set-up is not subject to property.



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-002-68

Page 1 of 2 Pages

MEASUREMENT ITEM

Relative humidity with data logger

MANUFACTURER

Novolyne

MODEL/TYPE

Data Logger: 110-WS-250L-D

SERIAL NUMBER

Sensor: HMP90

ID NUMBER

Data Logger: A5977

CONDITION AS-RECEIVED

Sensor: V1920212

CUSTOMER

RYG, FS0647

Used item
ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand

RECEIVED DATE

10 Jan 2025

MEASUREMENT DATE

15 Jan 2025

ISSUE DATE

20 Jan 2025

ENVIRONMENTAL CONDITIONS:

Ambient condition in the laboratory are as follow:

Temperature

23.0 ± 3.0 °C

Relative Humidity

55.0 ± 15.0 %RH

NOTED: The certificate is valid only to the item calibrated on date and place of calibration

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibration procedure:
The Relative humidity and Air Temperature calibration was done by in-house calibration method as WI-CL-009 and WI-CL-030 according to comparison method with Standard Chilled Mirror hygrometer with Temperature sensor and standard Humidity generator chamber.

Traceability:
The measurements are traceable to the International System of Units (SI) through National Institute of Metrology Thailand (NIMT). Certificate number: TH046-24 and Jiranatee Associates Co., Ltd. Certificate number: CRT-002-68.

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".

Calibrated by:

☒ Mr. Sorapong Thachulad

☒ Miss Wetraruen Lertsomphol

☒ Miss Rungroj Phomsom



Approved signatory:

Mr. Parinya Boonchareon
Calibration Department Manager

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Continuation of Certificate of Calibration Number: CRT-002-68

Page 2 of 2 Pages

Measurement Results:

The results of calibration and associated measurement uncertainties are reported in the table below.

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Table 1: The results of calibration of relative humidity at 30 °C are reported in table below.

Calibration Range: 20%RH to 80%RH

Air Temperature (°C)	Standard Reading (%RH)	UUC Reading (%RH)	Error (%RH)	Uncertainty ± (%RH)
28.72	59.84	58.6	-1.3	0.78
29.73	51.26	49.0	-2.3	1.3
29.74	82.85	79.7	-3.2	2.1

UUC*: Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CRT-002-68

Page 1 of 2 Pages

MEASUREMENT ITEM

Digital barometer

MANUFACTURER

Novolyne

MODEL/TYPE

Sensor: 110-WS-25BP

SERIAL NUMBER

Data Logger: 110-WS-250L-D

ID NUMBER

Sensor: BP-A5977

CONDITION AS-RECEIVED

Data Logger: A5977

CUSTOMER

RYG, FS0647

Used item
ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd,
Khwaeng Suan Luang, Khet Suan Luang,
Bangkok 10250 Thailand

RECEIVED DATE

10 Jan 2025

MEASUREMENT DATE

15 Jan 2025

ISSUE DATE

20 Jan 2025

Calibration procedure:
The Digital barometer was calibrated against Digital pressure calibration, the WI-CL-003 was used as a calibration guideline.

Traceability:
The measurement results are traceable to the International System of Units (SI) through the NIMT (National Metrology Institute of Thailand) for Certificate number: MP-0009-34
Reference Unit Under Calibration:
1. Absolute Pressure Transducer
Model: K2C2500, Serial No.: 41001216P

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM "Evaluation of measurement data - Guide to the expression of uncertainty in measurement".

CONDITION OF THIS RESULT OF CALIBRATION:

- Calibration effort for calibration sequence C
- The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level
- Calibration conditions:
- Condition: ☒ Normal ☐ Abnormal
Pressure transmitting medium: Air
 p_h (20°C, 1 bar): 1.19 kg/m³
 p_{atm} : (1013.25 ± 0.3) hPa
 t_{amb} : (23.540 ± 0.1) °C
 p_{ref} : (1013.01 ± 0.6) mbar
- The certificate is valid only to the item calibrated on date and place of calibration

Calibrated by:

☒ Mr. Sorapong Thachulad

☒ Miss Wetraruen Lertsomphol



Approved signatory:

Mr. Parinya Boonchareon
Calibration Department Manager

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CERTIFICATE OF CALIBRATION

Certificate No. : CRT-002-68

Page 1 of 2 Pages

MEASUREMENT RESULTS

☐ Without adjustment ☒ With adjustment

CALIBRATION IN THE RANGE OF : 950 mbar to 1050 mbar

The results of calibration and associated measurement uncertainties are reported in the table below.

STD (mbar)	UUC* (mbar)	Error (mbar)	Uncertainty (k=2) (mbar)
950.02	951.4	1.4	0.37
970.08	971.3	1.2	0.38
990.07	990.8	0.8	0.38
1010.07	1010.4	0.3	0.38
1030.02	1029.9	-0.1	0.37
1050.08	1049.5	-0.6	0.37

Note: UUC* Unit Under Calibration

To convert the result in report unit to Pa should be multiply by 100

End of certificate



Cert. No. : ACC24054
Pages : 1 of 3

Calibration Certificate

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : NC-74
Serial No.: 34178123
ID No.: RYG_FS0215

REVIEW BY *Sgt. S.*
APPROVED BY *[Signature]*
NEXT CAL DATE: 22-Oct-25

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 18 OCTOBER 2024
Calibration Date : 22 OCTOBER 2024
Date of Issue : 24 OCTOBER 2024

Calibrated by : Nathakorn Pisutpaisan

Approved by : *T. Petchur.*
(Thanakul Petchurai)

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Cert. No. : ACC24054
Job No. : VC68AC0015
Pages : 2 of 3

Calibration Procedure : CP-AC-03

Calibration Method :

This equipment was calibrated by follow on IEC-60942-2003 Standard.

The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL_BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL_BP 20/0267	15-FEB-25
Digital Multimeter	33461A	MY60024273	EEL_BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25
Audio Analyzer	AVR-3360A	V744B6069	EF-0009-24	09-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

T. Petchur.

Cert. No. : ACC24054
Job No. : VC68AC0015
Pages : 3 of 3

Result of calibration :

1. Sound pressure level

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	94.09	0.09	0.14	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1001.5	0.1	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Acceptance limit (%)
1.55	0.10	3.0

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petchur.

Cert. No. : ACL25081
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-S2A / Microphone UC-59 / Preamplifier NH-25
Serial No.: 01120936 / 21737 / 22325
ID No.: RYG_FS0627

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 07 JANUARY 2025
Calibration Date : 21 - 23 JANUARY 2025
Date of Issue : 24 JANUARY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by : *T. Petchur.*
(Thanakul Petchurai)

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Cert. No. : ACL25081
Job No. : VC68AC0059
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL_BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL_BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL_BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

T. Petch

Cert. No. : ACL25081
Job No. : VC68AC0059
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

T. Petch

Cert. No. : ACL25081
Job No. : VC68AC0059
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.2

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	8.7
C - weight	13.9
Flat	19.5

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.4	0.4	0.4	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.5	0.5	0.5	+ 1.5, - 2.5

T. Petch

Cert. No. : ACL25081
Job No. : VC68AC0059
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.0	±1.0
125	0.0	0.0	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.0	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	94.0	0.0	± 0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.1

T. Petch

Cert. No. : ACL25081
Job No. : VC68AC0059
Pages : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	53.9	-0.1	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	38.9	-0.1	±0.8
34.0	33.9	-0.1	±0.8
30.0	29.9	-0.1	±0.8
29.0	28.9	-0.1	±0.8
28.0	27.9	-0.1	±0.8
27.0	26.9	-0.1	±0.8
26.0	25.9	-0.1	±0.8
25.0	24.9	-0.1	±0.8

T. Petchur

Cert. No. : ACL25081
Job No. : VC68AC0059
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

T. Petchur

Cert. No. : ACL25081
Job No. : VC68AC0059
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.6	0.0	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petchur

451-451/1 Sirinthon Road, Bangbunru, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com



Cert. No. : ACL25080
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No. : 00920831 / 22191 / 22220
ID No. : RYG_FS0622

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHWANG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 07 JANUARY 2025
Calibration Date : 21 - 23 JANUARY 2025
Date of Issue : 24 JANUARY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by :

T. Petchur
(Thanakul Petchurai)

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

Cert. No. : ACL25080
Job No. : VC68AC0059
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL_BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL_BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL_BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

Signature

Cert. No. : ACL25080
Job No. : VC68AC0059
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Signature

Cert. No. : ACL25080
Job No. : VC68AC0059
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.6

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	8.7
C - weight	13.7
Flat	19.3

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.4	0.4	0.4	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.6	0.6	0.6	+ 1.5, - 2.5

Signature

Cert. No. : ACL25080
Job No. : VC68AC0059
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.0	±1.0
125	0.1	0.1	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.1	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	94.0	0.0	± 0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.1

Signature

Cert. No. : ACL25080
Job No. : VC68AC0059
Pages : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	53.9	-0.1	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	38.9	-0.1	±0.8
34.0	33.9	-0.1	±0.8
30.0	29.9	-0.1	±0.8
29.0	28.9	-0.1	±0.8
28.0	28.0	0.0	±0.8
27.0	26.9	-0.1	±0.8
26.0	25.9	-0.1	±0.8
25.0	25.0	0.0	±0.8

T. Petchur

Cert. No. : ACL25080
Job No. : VC68AC0059
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0; -3.0
	2	8	117.0	117.0	0.0	1.0; -1.5
	200	800	134.0	134.1	0.1	±0.5
Slow	2	8	108.0	108.0	0.0	1.0; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0; -3.0
	2	8	108.0	108.0	0.0	1.0; -1.5
	200	800	128.0	128.0	0.0	±0.5

T. Petchur

Cert. No. : ACL25080
Job No. : VC68AC0059
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.5	-0.1	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petchur

Cert. No. : ACL25082
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-S2A / Microphone UC-59 / Preamplifier NII-25
Serial No. : 01120937 / 21845 / 22326
ID No. : RYG FS0628

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 07 JANUARY 2025
Calibration Date : 21 - 23 JANUARY 2025
Date of Issue : 24 JANUARY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by : *T. Petchur*
(Thanakul Petchurai)

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Cert. No. : ACL25082
Job No. : VC68AC0059
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL.BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL.BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL.BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

S. Petch.

Cert. No. : ACL25082
Job No. : VC68AC0059
Pages : 3 of 8**Summary of Measurement Result :**

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

S. Petch.

Cert. No. : ACL25082
Job No. : VC68AC0059
Page : 4 of 8**Result of calibration :**

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
13.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	10.8
C - weight	14.2
Flat	19.8

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.3	0.3	0.3	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.4	0.4	0.4	+ 1.5, - 2.5

S. Petch.

Cert. No. : ACL25082
Job No. : VC68AC0059
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	0.0	0.0	±1.0
125	0.0	0.0	0.0	±1.0
250	0.0	0.0	-0.1	±1.0
500	0.0	0.0	-0.1	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	94.0	0.0	± 0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.1

S. Petch.

Cert. No. : ACL25082
Job No. : VC68AC0059
Pages : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	132.9	-0.1	±0.8
132.0	131.9	-0.1	±0.8
131.0	130.9	-0.1	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	54.0	0.0	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	39.0	0.0	±0.8
34.0	34.0	0.0	±0.8
30.0	30.0	0.0	±0.8
29.0	29.0	0.0	±0.8
28.0	28.0	0.0	±0.8
27.0	27.0	0.0	±0.8
26.0	26.0	0.0	±0.8
25.0	25.1	0.1	±0.8

T. Petchur

Cert. No. : ACL25082
Job No. : VC68AC0059
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

T. Petchur

Cert. No. : ACL25082
Job No. : VC68AC0059
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.4	0.0	±2.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	89.5	0.0	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petchur

Cert. No. : ACL24109
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52 / Microphone UC-59 / Preamplifier NH-25
Serial No. : 00764916 / 09843 / 65042
ID No. : BKK_FS0130

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 03 APRIL 2024
Calibration Date : 09-11 APRIL 2024
Date of Issue : 12 APRIL 2024

Calibrated by : Nathakorn Pisutpaisan

Approved by : T. Petchur
(Thanakul Petchurai)

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SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Srinthorn Road, Bangbunmu, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com



Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
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Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL_BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL_BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL_BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KA1	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

- 3.1 National Institute of Metrology (Thailand).
- 3.2 Thailand Institute of Scientific and Technological Research (TISTR).

J. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Srinthorn Road, Bangbunmu, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com



Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

J. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Srinthorn Road, Bangbunmu, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com



Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (dB)
A - weight	10.8
C - weight	15.8
Flat	21.5

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.1	0.1	0.2	± 1.0
1000	0.1	0.1	0.1	± 0.7
8000	1.3	1.4	1.4	+ 1.5, - 2.5

J. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Srinthorn Road, Bangbunmu, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com



Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.0	±1.0
125	0.0	0.0	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.0	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
1eq	94.0	94.0	0.0	± 0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.1

J. Petch

Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	54.0	0.0	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	39.0	0.0	±0.8
34.0	34.0	0.0	±0.8
30.0	30.0	0.0	±0.8
29.0	29.0	0.0	±0.8
28.0	28.0	0.0	±0.8
27.0	27.1	0.1	±0.8
26.0	26.0	0.0	±0.8
25.0	25.0	0.0	±0.8

T. Petchur

Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Auto	94.0	94.0	0.0	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±2.0
One	136.4	136.0	-0.4	±2.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	132.9	-0.1	±1.0
Positive half cycle	135.4	135.1	-0.3	±1.0
Negative half cycle	135.4	135.1	-0.3	±1.0

T. Petchur

Cert. No. : ACL24109
Job No. : VC67AC0075
Pages : 8 of 8

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.5	-0.1	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A-weight	137.0	137.0	0.0	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petchur

Cert. No. : ACL25106
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NII-24
Serial No. : 00709746 / 187332 / 01297
ID No. : RYG_FS0491

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 14 JANUARY 2025
Calibration Date : 27-29 JANUARY 2025
Date of Issue : 30 JANUARY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by : T. Petchur
(Thanakul Petchurai)

REVIEW BY : S.T.S.
APPROVED BY : T. Petchur
NEXT CAL DATE : 26/01/2026

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

Cert. No. : ACL25106
Job No. : VC68AC0064
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL_BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL_BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL_BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

Z. Petch.

Cert. No. : ACL25106
Job No. : VC68AC0064
Pages : 3 of 8**Summary of Measurement Result :**

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

Z. Petch.

Cert. No. : ACL25106
Job No. : VC68AC0064
Page : 4 of 8**Result of calibration :**

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.8

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	13.4
C - weight	20.0
Flat	25.5

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.3	0.3	0.3	±1.5
1000	0.2	0.2	0.2	±1.0
8000	2.1	2.1	2.1	±5.0

Z. Petch.

Cert. No. : ACL25106
Job No. : VC68AC0064
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	-0.1	-0.1	±2.0
125	-0.1	0.0	-0.1	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.0	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	±0.2
C - weight	94.0	94.0	0.0	±0.2
Flat	94.0	94.0	0.0	±0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	±0.1
Slow	94.0	94.0	0.0	±0.1
Leq	94.0	94.0	0.0	±0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	±0.3

Z. Petch.

Cert. No. : ACL25106
Job No. : VC68AC0064
Pages : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	± 1.1
136.0	136.0	0.0	± 1.1
135.0	135.0	0.0	± 1.1
134.0	134.0	0.0	± 1.1
133.0	132.9	-0.1	± 1.1
132.0	131.9	-0.1	± 1.1
131.0	130.9	-0.1	± 1.1
129.0	129.0	0.0	± 1.1
124.0	124.0	0.0	± 1.1
119.0	119.0	0.0	± 1.1
114.0	114.0	0.0	± 1.1
109.0	109.0	0.0	± 1.1
104.0	104.0	0.0	± 1.1
99.0	99.0	0.0	± 1.1
94.0	94.0	0.0	± 1.1
89.0	89.0	0.0	± 1.1
84.0	84.0	0.0	± 1.1
79.0	79.0	0.0	± 1.1
74.0	74.0	0.0	± 1.1
69.0	69.0	0.0	± 1.1
64.0	64.0	0.0	± 1.1
59.0	59.0	0.0	± 1.1
54.0	54.0	0.0	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	39.0	0.0	± 1.1
34.0	34.0	0.0	± 1.1
30.0	30.0	0.0	± 1.1
29.0	29.0	0.0	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.9	-0.1	± 1.1
26.0	26.0	0.0	± 1.1
25.0	25.0	0.0	± 1.1

T. Petch.

Cert. No. : ACL25106
Job No. : VC68AC0064
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	108.0	0.0	1.5 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

T. Petch.

Cert. No. : ACL25106
Job No. : VC68AC0064
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.4	0.0	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±2.0
Positive half cycle	135.4	135.1	-0.3	±2.0
Negative half cycle	135.4	135.1	-0.3	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle	0.0	±1.5
89.5	89.5		

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petch.

INNOVATIVE INSTRUMENT CALIBRATION LAB
INNOVATIVE INSTRUMENT CO., LTD. HEAD OFFICE
7/139 MOO 13, SOI SUNTINAKORN 11 TAMBON BANG KAEOL,
AMPHOE BANG PHI SAMUT PRAKARN PROVINCE 10540 THAILAND
TEL: (660-2116-5800-1 FAX: (660-2116-7140)

Certificate of Calibration

Customer

Name : ALS Laboratory Group Thailand Co., Ltd.
Address : 104 Soi Phatthanakan 40, Phatthanakan Road, Suan Luang,
Bangkok 10250

Certificate No : 25-ACT-010

Request No : Req-2025-0091

Unit Under Calibration Details

Measurement item : Acoustic Calibrator
Manufacturer : RION
Model : NC-74
Serial Number : 34178121
ID : RYG_FS0213Class : 1
Range : 94 dB / 1000 Hz
Instrument Status : Used

Calibration Environment and Details

Temperature : (23 ±2 °C)
Humidity : (50 ± 20 %RH)
Barometric Pressure : (1013 ±10.0 hPa)
Received Date : 15 January 2025
Calibration Date : 16 January 2025
Location of Calibration : LAB 1 Acoustic
Calibration Procedure : In-house method CP-ACT-02 based on IEC 60942:2017 Electroacoustics - Sound calibrators

REVIEW BY : *Manish?*
APPROVED BY : *[Signature]*
NEXT CAL DATE : 16/01/26

Reference Standard	Model	Serial Number	Traceable	Due Calibration
Sound Calibrator	SV 35A	58079	EEL	12 June 2025
THD Multimeter	2015	1047765	NIMT	16 January 2025

Traceability : This certificate provides traceability of measurement to recognized national standard, and to the realization of the international System of Units (SI).

Note

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor $k = 2$, providing a level of confidence approximately 95 %.

Calibrated By :

Mr. Noppadon Luangart
Service Calibration Engineer

Approved By :

Mr. Pacit Mathavorn
Calibration Engineer Supervisor

Issue Date : 16 January 2025

Certificate No : 25-ACT-010

Request No : Req-2025-0091

Sound pressure level

Calibration Results : Without Adjustment

Calibration Range (dB)	Without Adjustment (dB)		Adjustment (dB)		Uncertainty (± dB)	Acceptance limit Class 1 (± dB)	Result
	Measured	Deviated value	Measured	Deviated value			
94 dB / 1000 Hz	94.11	0.11	-	-	0.13	0.25	Pass

Frequency of Sound pressure level

Calibration Range (Hz)	Without Adjustment		Adjustment		Uncertainty (± %)	Acceptance limit Class 1 (± %)	Result
	Measured (Hz)	Deviated	Measured (Hz)	Deviated			
94 dB / 1000 Hz	1000.00	0.00	-	-	0.01	0.70	Pass

Total Harmonic Distortion plus Noise of Sound pressure level (THD+N %)

Calibration Range (Hz)	Without Adjustment		Adjustment		Uncertainty (± %)	Acceptance limit Class 1 (± %)	Result
	Measured (%)	Deviated	Measured (%)	Deviated			
94 dB / 1000 Hz	1.21	-	-	-	0.40	2.5	Pass

Note :

Function	Maximum-permitted Uncertainty of measurement
Sound pressure level	0.15 dB
Frequency	0.20%
Total distortion+noise	0.50%

- Acceptance limit was IEC60942:2017 Class 1

- The calibration results exclude the calibrator pressure correction

- The calibration results exclude the microphone volume correction

The results related only to the item calibrated. The certificate shall not be reproduced except in full, without written approval of the Innovative Instrument Co., Ltd.

FM-708-ACT-02 Rev.03 Issue date 5/6/24

Certificate No : 25-ACT-010

Request No : Req-2025-0091

Decision Rule for Statements of Conformity

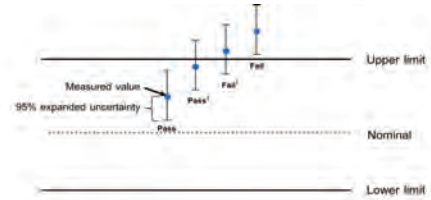
The standard decision rule employed for the statements of conformity to each calibration result will be applied using ILAC-G8:09/2019; Guidelines on the Reporting of Compliance with Specification as following Fig. and statements

Pass – The measurement result plus the expanded uncertainty with a 95% coverage probability were within the limit.

Pass¹ – The measurement result was within the limit. However, a portion of the expanded uncertainty of measurement at 95% exceeds the limit.

Fail¹ – The measurement result was out of the limit. However, a portion of the expanded uncertainty of measurement at 95% is within the limit.

Fail – The measurement result plus the expanded uncertainty with a 95% coverage probability were outside the limit.



End of Calibration

The results related only to the item calibrated. The certificate shall not be reproduced except in full, without written approval of the Innovative Instrument Co., Ltd.

FM-708-ACT-02 Rev.03 Issue date 5/6/24

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunruj, Bangplud, Bangkok, 10700 Thailand
Tel: +66 2433 8331 Email: calibration@sithiphorn.com



Cert. No. : ACL24260
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42 / Microphone UC-52 / Preamplifier NH-24
Serial No.: 00472130 / 169816 / 72464
ID No.: RYG_FS0303

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHUWAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 ± 3) °C
Pressure : (101.3 ± 3) kPa
Relative Humidity : (50.0 ± 20) %

Received Date : 09 AUGUST 2024
Calibration Date : 23 AUGUST 2024
Date of Issue : 26 AUGUST 2024



Calibrated by : Nathakorn Pisutpaisan

Approved by :

T. Petchurai
(Thanakul Petchurai)

This certificate is issued in accordance with the requirements of ISO/IEC 17025 standard, may not be reproduced other than in full, except with the prior written approval of the head of Calibration Laboratory.

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunruj, Bangplud, Bangkok, 10700 Thailand
Tel: +66 2433 8331 Email: calibration@sithiphorn.com



Cert. No. : ACL24260
Job No. : VC67AC0140
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items were made by observation of each Instruments display and also with SLM's display.

Condition of this result of calibration :

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL_BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL_BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL_BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KA1	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

T. Petchurai

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

459-459/1 Sirinthorn Road, Bangbunruj, Bangplud, Bangkok, 10700 Thailand
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Cert. No. : ACL24260
Job No. : VC67AC0140
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

T. Petch

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CALIBRATION LABORATORY

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Tel. +66 2433 8331 Email : calibration@sithiporn.com



Cert. No. : ACL24260
Job No. : VC67AC0140
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.50000003

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	7.8
C - weight	14.8
Flat	20.5

3. Acoustical signal tests of frequency weightings

Meter free-field acoustic response at a level of 84 dB

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	1.3	1.4	1.4	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	-4.1	-4.0	-4.0	±5.0

T. Petch

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Job No. : VC67AC0140
Pages : 5 of 8

4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency (Hz)	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	0.0	±2.0
125	0.0	0.0	0.0	±1.5
250	0.0	0.0	0.0	±1.5
500	0.0	0.0	-0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±2.0
4000	0.0	0.0	0.0	±3.0
8000	0.0	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	94.0	0.0	± 0.1

6. Long - term stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.3

T. Petch

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Job No. : VC67AC0140
Pages : 6 of 8

7. Level linearity on the reference level range

Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
137.0	137.0	0.0	± 1.1
136.0	135.9	-0.1	± 1.1
135.0	135.0	0.0	± 1.1
134.0	134.0	0.0	± 1.1
133.0	132.9	-0.1	± 1.1
132.0	131.9	-0.1	± 1.1
131.0	130.9	-0.1	± 1.1
129.0	129.0	0.0	± 1.1
124.0	124.0	0.0	± 1.1
119.0	119.0	0.0	± 1.1
114.0	114.0	0.0	± 1.1
109.0	109.0	0.0	± 1.1
104.0	104.0	0.0	± 1.1
99.0	99.0	0.0	± 1.1
94.0	94.0	0.0	± 1.1
89.0	89.0	0.0	± 1.1
84.0	84.0	0.0	± 1.1
79.0	79.0	0.0	± 1.1
74.0	74.0	0.0	± 1.1
69.0	69.0	0.0	± 1.1
64.0	64.0	0.0	± 1.1
59.0	59.0	0.0	± 1.1
54.0	54.0	0.0	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	39.0	0.0	± 1.1
34.0	34.0	0.0	± 1.1
30.0	30.0	0.0	± 1.1
29.0	29.0	0.0	± 1.1
28.0	28.1	0.1	± 1.1
27.0	27.1	0.1	± 1.1
26.0	26.1	0.1	± 1.1
25.0	25.0	0.0	± 1.1

T. Petch

SITHIPORN ASSOCIATES CO., LTD.
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461-491/1 Srinthorn Road, Bangbunru, Bangkok, 10700 Thailand
Tel : +66 2433 8331 Email : calibration@sithiporn.com



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Job No. : VC67AC0140
Pages : 7 of 8

8. Level linearity including the level range control

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.1	0.1	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.5 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	108.0	0.0	1.5 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
SEL	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

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Job No. : VC67AC0140
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, L _{peak} (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.4	0.0	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.0	0.0	±2.0
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	89.5	0.0	±1.5

12. High level stability

Frequency Weighting	SLM Display at initial (dB)	SLM Display at final (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	137.0	137.0	0.0	±0.3

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

T. Petch.

T. Petch.

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Certificate of System Qualification

GC-OQ + GCMS-OQ



Agilent CrossLab Compliance Services

System ID: GM-7
Organization Name: ALS Laboratory Group (Thailand) Co., Ltd.
Organization Location: 104 Patthanakarn 40, Patthanakarn Rd., Khwang Suan Luang, Khet Suan Luang, Bangkok.

Date: December 13, 2023 3:32:46 PM
EQP Name: AgilentRecommended, AgilentRecommended
EQP Revision: GC.02.50, GCMS.02.50
Overall Qualification Status: Pass

System Inspection and Basic Safety and Operation

Name: 7890
Setpoint Status: Pass

Overall System Inspection and Basic Safety and Operation Test Status
Pass

Inlet Pressure Accuracy

Name: 7890
Front SSL
Setpoint Status: Pass
Setpoint: 25.0 psi
Actual: 25.0 psi
Accuracy: 0.0 psi
Agilent Recommended: <= 1.2

Overall Inlet Pressure Accuracy Test Status
Pass

GC Oven Temperature Accuracy

Name: 7890

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

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Agilent CrossLab Compliance Services

Setpoint Status: Pass
Zone: Oven
Setpoint/Actual
Temperature: 230.0 232.3 °C
Accuracy: 2.3 °C
Agilent Recommended: >= -1.0 % setpoint in K (-5.0 °C)
<= 1.0 % setpoint in K (5.0 °C)

Setpoint Status: Pass
Zone: Oven
Setpoint/Actual
Temperature: 100.0 100.7 °C
Accuracy: 0.7 °C
Agilent Recommended: >= -1.0 % setpoint in K (-3.7 °C)
<= 1.0 % setpoint in K (3.7 °C)

Overall GC Oven Temperature Accuracy Test Status
Pass

GC Oven Temperature Stability

Name: 7890
Setpoint Status: Pass
Setpoint/Average
Temperature: 100.0 100.4 °C
Stability: 0.0 °C
Agilent Recommended: <= 0.5

Overall GC Oven Temperature Stability Test Status
Pass

Log Amp

Tested Combination1 Front SSL / External SQ
Name: 5977A
Setpoint Status: Pass

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Overall Log Amp Test Status
Pass

RFPA

Tested Combination1	Front	SSL	/ External	SQ
Name:	5977A			
Setpoint Status:	Pass			
Amu:	1050	m/z	Drift After Five Minutes:	RFPA Voltage:
			2 mV	504 mV
Agilent Recommended:	>= -100	and	<= 100	<= 1100

Overall RFPA Test Status
Pass

Tune EI

Tested Combination1	Front	SSL	/ External	SQ
Name:	5977A			
Setpoint Status:	Pass			
Filament:	1			
Setpoint Status:	Pass			
Filament:	2			

Overall Tune EI Test Status
Pass

Signal to Noise EI

Tested Combination1	Front	SSL	/ External	SQ
Name:	5977A			

Source:	EI - Extractor	Filament:	1
Setpoint Status:	Pass		
Signal to Noise:	11318		
Agilent Recommended:	>= 1200		

Source:	EI - Extractor	Filament:	2
Setpoint Status:	Pass		
Signal to Noise:	16588		
Agilent Recommended:	>= 1200		

Overall Signal to Noise EI Test Status

Pass

NOTE: This test's 0 comment(s) and 6 deviation(s) are available in the Attachments section.

Instrument Details

Purpose

This section describes the as found system configuration.

Details

System	
System ID	GM-7
Manufacturer	Agilent Technologies
Name	7890
Tested Combination1	
Injection Technique	Manual Injection
Inlet	Front
Detector	External
LTM Included?	No
Sampler 1	
Manufacturer	Agilent Technologies
Type	Manual Injection
Usage	Sample Injection
Syringe Volume (µL)	10
Mainframe 1	
Manufacturer	Agilent Technologies
Name	7890
Model Number	G3442B
Serial Number	CN14133181
Firmware Revision	B.02.03
Oven Type	Standard

Inlet 1	
Manufacturer	Agilent Technologies
Name	7890
Type	SSL
Location	Front
Carrier Gas	Helium
Control Type	Electronic Pressure Control (EPC)
Purged Inlet	Yes
Detector 1	
Manufacturer	Agilent Technologies
Name	Mass Spectrometer
Type	Mass Spectrometer
Location	External
Mass Spectrometer 1	
Manufacturer	Agilent Technologies
Type	SQ
Name	5977A
Serial Number	US1415M209
Firmware Revision	5977 8.00.21
High Vacuum System	Turbo Pump
Scouting Run Standard	OPN Std
MS EI Source 1	
Manufacturer	Agilent Technologies
Source Type	EI - Extractor
Number of filaments	2

Electronic Signature

Purpose

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Details

Full Name of Signer: Supasak Nimsongtham
Logged On User Name: supasak.nimsongtham@agilent.com
Signature Creation Date: December 13, 2023
Reason for Signature: Executed protocol and published this original version of document

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System ID: GM-7

Page 7 / 16

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKW492
System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 10:22:24 AM	Auth	SessionCreated	Session	None
December 13, 2023 10:22:24 AM	Start	Configuration	Session	None
December 13, 2023 10:22:24 AM	Auth	Entitlement	Licensing	User is FieldEngineer and does not require an unlock code
December 13, 2023 10:23:53 AM	Auth	EqLoaded	Session	EQ details for primary technique [GC] - File path: [ProtocolPackageGo\Configuration]one02.50Go.02.50.aeqs, EQP File Name: [Go.02.50.aeqs], EQP Name: [AgilentRecommended]Probi- oid Revision [Go.02.50] EQP details for hyphenated technique [GMA] - File path: [ProtocolPackageGoMaGo\Conf]one02.50GoMa.02.50.aeqs, EQP File Name: [GoMa.02.50.aeqs], EQP Name: [AgilentRecommended]
December 13, 2023 10:23:56 AM	End	Configuration	Session	None
December 13, 2023 10:23:58 AM	Start	Qualification	Session	OQ
December 13, 2023 10:23:58 AM	Start	Execution	System Inspection and Basic Safety and Operation - 7890 - Qualitative Test - No supports associated	None

Page 1 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 8 / 16

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKW492
System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 10:24:10 AM	End	Execution	System Inspection and Basic Safety and Operation - 7890 - Qualitative Test - No supports associated	Run Count : 1
December 13, 2023 10:24:11 AM	Start	Execution	Intel Pressure Accuracy - Front SSL - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
December 13, 2023 10:24:15 AM	End	Execution	Intel Pressure Accuracy - Front SSL - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
December 13, 2023 10:24:17 AM	Start	Execution	GC Oven Temperature Accuracy - 7890 - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
December 13, 2023 10:32:09 AM	Auth	Data	GC Oven Temperature Accuracy - 7890 - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
December 13, 2023 10:32:11 AM	End	Execution	GC Oven Temperature Accuracy - 7890 - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Run Count : 1
December 13, 2023 10:32:12 AM	Start	Execution	GC Oven Temperature Accuracy - 7890 - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
December 13, 2023 10:34:58 AM	Auth	Data	GC Oven Temperature Accuracy - 7890 - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
December 13, 2023 10:34:59 AM	End	Execution	GC Oven Temperature Accuracy - 7890 - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Run Count : 1

Page 2 / 8

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 9 / 16

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKW492
System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 10:35:00 AM	Start	Execution	GC Oven Temperature Stability - 7890 - Temperature - Oven - S: 100.0°C - L: <= 0.5°C	None
December 13, 2023 10:35:27 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: >= 1250	None
December 13, 2023 10:36:39 AM	Start	Execution	GC Oven Temperature Stability - 7890 - Temperature - Oven - S: 100.0°C - L: <= 0.5°C	None
December 13, 2023 10:55:10 AM	Auth	Data	GC Oven Temperature Stability - 7890 - Temperature - Oven - S: 100.0°C - L: <= 0.5°C	Manual Data Entry
December 13, 2023 10:55:12 AM	End	Execution	GC Oven Temperature Stability - 7890 - Temperature - Oven - S: 100.0°C - L: <= 0.5°C	Run Count : 1
December 13, 2023 10:55:13 AM	Start	Execution	Log Amp - 5977A SQ - Source: None EI - Extractor	None
December 13, 2023 10:56:42 AM	End	Execution	Log Amp - 5977A SQ - Source: EI - Extractor	Run Count : 1
December 13, 2023 10:56:43 AM	Start	Execution	RPPA - 5977A SQ - Source: EI - Extractor	None
December 13, 2023 11:04:44 AM	End	Execution	RPPA - 5977A SQ - Source: EI - Extractor	Run Count : 1
December 13, 2023 11:04:45 AM	Start	Execution	Tune EI - 5977A SQ - Source: None EI - Extractor Filament 1 (Qualitative - No supports associated)	None
December 13, 2023 11:32:36 AM	End	Execution	Tune EI - 5977A SQ - Source: None EI - Extractor Filament 1 (Qualitative - No supports associated)	Run Count : 1

Page 3 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 10 / 16

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKKX492

System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 11:32:38 AM	Start	Execution	Tune EI - S977A SQ - Source: - Noise EI - Extractor Filament 2 (Qualitative - No septants associated)	None
December 13, 2023 11:33:06 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	None
December 13, 2023 11:49:38 AM	Start	Execution	Tune EI - S977A SQ - Source: - Noise EI - Extractor Filament 2 (Qualitative - No septants associated)	None
December 13, 2023 11:49:42 AM	End	Execution	Tune EI - S977A SQ - Source: - Noise EI - Extractor Filament 2 (Qualitative - No septants associated)	Run Count : 1
December 13, 2023 11:49:43 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	None
December 13, 2023 11:49:48 AM	Auto	AutoClosed	Session	None
December 13, 2023 12:00:39 PM	Auto	AutoRestarted	Session	None
December 13, 2023 12:06:40 PM	Auto	SessionReloaded	Session	None
December 13, 2023 12:06:42 PM	Start	Qualification	Session	OQ
December 13, 2023 12:06:42 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	None

Page 4 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 11 / 15

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKKX492

System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 12:37:33 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F1.D
December 13, 2023 12:38:19 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Run Count : 1
December 13, 2023 12:39:51 PM	Auto	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Deviation Met for Run Count : 1
December 13, 2023 12:39:51 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	None
December 13, 2023 12:40:15 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F1.D
December 13, 2023 12:42:00 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Run Count : 2
December 13, 2023 12:42:00 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	None
December 13, 2023 12:42:47 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F2.D

Page 5 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 12 / 15

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKKX492

System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 12:43:54 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Run Count : 1
December 13, 2023 1:54:41 PM	Auto	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Deviation Met for Run Count : 2
December 13, 2023 1:54:41 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	None
December 13, 2023 1:54:50 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F1.D
December 13, 2023 1:55:22 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Run Count : 3
December 13, 2023 1:56:00 PM	Auto	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Deviation Met for Run Count : 3
December 13, 2023 1:56:50 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	None
December 13, 2023 2:14:32 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F1.D

Page 6 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 13 / 15

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKKX492

System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 2:15:03 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 1 - L: == 1200	Run Count : 4
December 13, 2023 2:25:07 PM	Auto	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Deviation Met for Run Count : 1
December 13, 2023 2:25:07 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	None
December 13, 2023 2:25:20 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F2.D
December 13, 2023 2:25:41 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Run Count : 2
December 13, 2023 2:26:51 PM	Auto	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Deviation Met for Run Count : 2
December 13, 2023 2:26:51 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	None
December 13, 2023 2:27:01 PM	Auto	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ - Source: EI - Extractor using Filament 2 - L: == 1200	Data file Path : D:\MassHunter\GCMS\data\OQ02023GSN_F2.D

Page 7 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 14 / 15

User Name: supasak.nimsongham
Report Generated by Hostname: ASBKKW9492
System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 2:27:42 PM	End	Elevation	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	Run Count : 3
December 13, 2023 2:29:14 PM	Audit	Test/Unlocked	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	Deviation Used for Run Count : 3
December 13, 2023 2:29:14 PM	Start	Execution	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	None
December 13, 2023 2:34:02 PM	Start	Execution	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	None
December 13, 2023 2:41:28 PM	Start	Execution	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	None
December 13, 2023 2:42:42 PM	Audit	Data	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	Data File Path : D:\MassHunter\GMS1\Index\IQ2023\SN_F2_001.D
December 13, 2023 2:44:32 PM	End	Execution	Signal to Noise E1 - Liquid Injection, Front SSL, SQ - Source: E1 - Extractor using Filament 2 - L1 >= 1200	Run Count : 4
December 13, 2023 2:44:58 PM	End	Qualification	Session	OQ
December 13, 2023 2:44:58 PM	Start	Reporting	Session	None

Page 8 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 15 / 16

User Name: supasak.nimsongham
Report Generated by Hostname: ASBKKW9492
System ID: GM-7
Print Date: December 13, 2023 3:32:47 PM

GM-7-2023 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
December 13, 2023 3:01:22 PM	Audit	Acq/Closed	Session	None
December 13, 2023 3:29:10 PM	Audit	Acq/Restarted	Session	None
December 13, 2023 3:29:10 PM	Audit	Session/Reloaded	Session	None
December 13, 2023 3:29:13 PM	Start	Qualification	Session	OQ
December 13, 2023 3:31:33 PM	Audit	Reporting	Session	Report Generated : Certificate
December 13, 2023 3:32:15 PM	Audit	Reporting	Session	Report Generated : Report

Page 9 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

Page 16 / 16



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL.0-2717-3000-29 FAX.0-2719-9484



Certificate of Calibration

Cert. No.: 25LM10
Page.: 1 of 2

Equipment : DO Meter with Sensor

Manufacturer : YSI

Model : 5000-115V

Serial No. : 15E102796

ID No. : RYG_EN0032

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.
(Rayong Branch)
616/10 Moo 5 T. Maenam Khu, A. Pluakdaeng,
Rayong 21140 Thailand

Location : TPA On Site Calibration Laboratory

Received Order : 17 January 2025

Calibrated Date : 20 January 2025

Ambient Temperature : (26 ± 10) °C

Relative Humidity : (50 ± 30) %

AC Line Voltage : (220 ± 22) V

Calibrated by : Warakorn Lemgatrakul

Approved by :
Approved Signatory

() Chakrit Waewwanjua
(✓) Suwit Imjai
() Kunchit Promprat

Issue Date : 23 January 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : DO Meter with Sensor
Condition As-Received : Used Item
Reference : 2501-0600DSC-2

Cert. No.: 25LM10
Page.: 2 of 2

Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT01 according to comparison with Industrial Platinum Resistance Thermometer (IPRT) into Temperature Bath.

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Digital Thermometer	2188080	2411022	TPA	17 Sep 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration :- (*) Without Adjustment

Function : Temperature measurement.

This instrument was connected with temperature sensor, S/N.: 15E100464

Calibration Point (°C)	Immersion Depth (mm)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty (± °C)	Coverage Factor k
20.00	60	20.002	19.81	-0.192	0.15	2.00

UUC* : Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-00-



Certificate of Testing

Cert.No.: 25TW15
Page.: 1 of 2

Equipment : DO Meter
Manufacturer : YSI
Model : 5000-115V
Serial No. : 15E102796
ID No. : RYG_EN0032
Received Date : 17 January 2025
Test Date : 20 January 2025
Reference : 2501-0600DSC-1
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
(Rayong Branch)
616/10 Moo 5, T.Maenam Khu, A.Pluakdaeng,
Rayong 21140, Thailand
Laboratory Condition :
Temperature (25 ± 5) °C
Humidity (50 ± 20) %
In - house method : CP-CH9
by Comparison Technique with Azide Modification Method
Test Procedure :

Tested by : Walalak Sirthean

Approved by :

Approved Signatory

() Pornthippa Tameyakul
() Ponpan Paipim
(✓) Sathip Meangmai

Issue Date : 21 January 2025



Cert.No.: 25TW15
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :
This certification is traceable to the International System of Unit through the reference standards
laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

Instruments	Serial No.	ID No.	Certificate No.	Due Date
1. Burette	-	130BU10	23CG1172	22 Mar 2025
2. Balance	14233821	110RC001	24MM131	04 July 2025

2. Standard Material :-

Material	Manufacturer	Lot.No.	Assay
Sodium Thiosulfate 5-Hydrate AR	KEMAUS	Z203162447	99.6%

Result : Dissolved Oxygen Meter Adjustment With Air 100 %
Dissolved Oxygen Probe No.: 15E100464

Titration Method (Azide Modification Method) (mg/L)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.20	8.20	0.0084

This report was certified only for the instrument we tested. It is allowable to use for study
Intend to use for advertising and referral purpose is prohibited. This report may not be reproduced
other in full, without written approval of the laboratory

-000-



Certificate of Calibration

Cert. No.: 24TM1663
Page : 1 of 3

Equipment : Low Temp. Incubator
Manufacturer : Memmert
Model : IPP750
Serial No. : V818.0084
ID No. : RYG_EN0154

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd. Rayong Branch
616/10 Moo 5, T.Maenam Khu,
A.Pluakdaeng,
Rayong 21140, Thailand
Location : BOD Room

Received Order : 01 November 2024
Calibration Date : 01 November 2024
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %
AC Line Voltage : (220 ± 22) V

Calibrated by : Krisda Malee

Approved by :

Approved Signatory

() Ponpan Paipim
() Suwit Imjai
(✓) Kunchit Promprat

Issue Date : 07 November 2024

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Equipment : Low Temp. Incubator
Condition As-Received : Used Item
Reference : 2411-0002OC-1

Cert. No.: 24TM1663
Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 based on TLAS G-20 according to direct
measurement method with Data Acquisition which connected with Resistance Temperature Detector (RTD).
The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Data Acquisition	MY44073381	24LM73	TPA	18 May 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

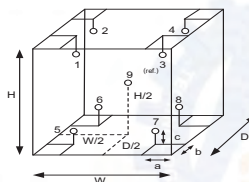
3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration : (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close



Probe Installation Details :

a = 10 cm
b = 10 cm
c = 10 cm

Dimension of Chamber :

D = 0.60 m
W = 1.0 m
H = 1.2 m
Capacity = 0.72 m³

Environment during calibration		
	Beginning	Finished
Temp. (°C)	24	25
REL.Humid. (%)	55	53
AC Supply (Volt)	220	221

Position :	Ref. Std. ID No.:
1	1RTD-2/1
2	1RTD-2/2
3	22-01RTD-03
4	1RTD-2/4
5	1RTD-2/5
6	1RTD-2/6
7	23-01RTD-07
8	1RTD-2/8
9 (ref.)	23-01RTD-09



Equipment : Low Temp. Incubator
Condition As-Received : Used Item
Reference : 2411-0002OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Close

Cert. No.: 24TM1663
Page : 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor k
20.0	20.0	20.0	0.026	0.26	0.53	2

Calibration Point (°C)	Measured Temperature (°C)									Uncertainty (±°C)
	1	2	3	4	5	6	7	8	9 (ref.)	
20.0	20.071	19.915	20.273	20.179	19.977	19.782	20.056	20.026	20.033	0.30

Average* : The average of 30 values in each position.

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

Temperature uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k , providing a level of confidence of approximately 95 %.

-00-



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL.0-2717-3000-29 FAX.0-2719-9484



Certificate of Calibration

Cert.No.: 24CG3711
Page.: 1 of 2

Equipment : Burette
Capacity : 50 mL
Serial No. : -
ID. No. : RYG_EN0216
Manufacturer : Witeg
Made in : Germany
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.
Rayong Branch
616/10 Moo 5, T.Maenam Khu, A.Pluakdaeng
Rayong 21140, Thailand

Ambient Temperature : (20 ± 2.5) °C
Relative Humidity : (50 ± 10) %
Barometric Pressure : 756 mmHg
Calibration Procedure : ASTM E 542 - 01

Calibrated by : Sa-ngeunkam Wongsu

Approved by :
Approved Signatory

(✓) Srisuda Khamtha
() Ponpan Paipim
() Unnopphol Harachai

Issue Date : 24 September 2024

The Uncertainties are for a confidence probability of approximately 95%

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Equipment : Burette
Received Date : 19 September 2024
Condition As-Received : Used Item
Calibration Date : 24 September 2024
Reference : 2409-0756DSC-3

Cert.No.: 24CG3711
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

Instruments	Model	Serial No.	ID. No.	Certificate No.	Traceability	Due date
1) Balance	XP205	B134206712	140RC007	24MM316	TPA	15 July 2025
2) Data Logger	HL-20D	20683159	140EC012	23H2174	TPA	10 Oct 2024
3) Thermometer	-	1594592	140EC010	241175	TPA	20 Feb 2025

This certification is traceable to SI Unit

2. The certificate is valid only to the item calibrated on date and place of calibration.

3. True value is converted to true volume at the standard temperature of 20 °C

Calibration result :

Nominal capacity (mL)	Reading (mL)	Uncertainty (± mL)	k Factor
10	10.0259	0.0082	2.00
20	20.0214	0.0085	2.00
30	30.0006	0.0089	2.00
40	40.0003	0.0094	2.00
50	49.9988	0.011	2.00

Remark mL = cm³

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k , providing a level of confidence of approximately 95 %.

-00-



Certificate of Calibration

Equipment: SPECTROPHOTOMETER
Model: DR6000
Serial No. (or ID.): 1627845 (RYG_EN0037)
Manufacturer: HACH
Condition: In Condition
Certificate No.: C06250109
Issued Date: 18 March 2025
Job No.: WO-00064379
Page: 1 of 3

Customer: ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)
616/10 Moo 5 T.Maenam Khu,
A.Pluakdaeng, Rayong 21140, Thailand.

Environment Condition: Temperature 24.4 °C ± 0.3 °C
Humidity 60.8 %RH ± 3.5 %RH

Calibration Place: ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)
(Wet Chemistry Lab)
616/10 Moo 5 T.Maenam Khu, A.Pluakdaeng, Rayong 21140, Thailand

Calibration By: Mr.Preecha Phoosaisai
Calibration Date: 18 March 2025
The Method used: In house method, CAL-WI-24, base on ASTM E 275-08 and ASTM E 387-04
Traceability: This certificate is traceable to the CRM maintained by National Institute of Standards and Technology (NIST) through Starna Scientific Limited.

The standard for Wavelength Certificate No. 111583 and 111584
The standard for Photometric Certificate No. 9114984 and 111588
The standard for Stray light Certificate No. 111586 and 111585
The standard for Spectral resolution Certificate No. 111587

(Mr. Preecha Phoosaisai)
Person in charge

(Miss Kaewkan Suradech)
Authorized signatory

This certificate is issued in the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.
The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM).
These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.
DKSH Technology Limited
2535 Sukhumvit Road, Bangkok, Thailand 10110
2535 Sukhumvit Road, Bangkok, Thailand 10110
Phone: +66 2638 7100 Email: info@dksh.com Website: www.dksh.com

Delivering Growth - in Asia and Beyond.

CAL-FM-C06-16 (1 Mar 2024)

Calibration Results:
Without Adjustment

Wavelength Accuracy (nm), The spectral bandwidth of Std at 2 nm and UUC at 2 nm				
Standard Wavelength	Unit Under Calibration	Correction	Uncertainty	
418.61	418.5	0.11	0.13	
536.66	536.7	-0.04	0.13	
637.98	638.3	-0.32	0.13	
748.48	748.8	-0.32	0.13	
807.03	807.5	-0.47	0.13	
Photometric Accuracy (Absorbance)				
Wavelength	Standard absorbance	Unit Under Calibration	Correction	Uncertainty
420 nm	0.0000	0.000	0.0000	0.0045
	0.2930	0.291	0.0020	0.0045
	0.5168	0.518	-0.0012	0.0045
	1.0298	1.031	-0.0012	0.0045
440 nm	0.0000	0.000	0.0000	0.0045
	0.2867	0.285	0.0017	0.0045
	0.5073	0.508	-0.0007	0.0045
	1.0083	1.009	-0.0007	0.0045
465 nm	0.0000	0.000	0.0000	0.0045
	0.2516	0.250	0.0016	0.0045
	0.4595	0.461	-0.0015	0.0045
	0.9334	0.935	-0.0016	0.0045
548.1 nm	0.0000	0.000	0.0000	0.0045
	0.2461	0.246	0.0001	0.0045
	0.4652	0.466	-0.0008	0.0045
	0.9468	0.948	-0.0012	0.0045
590 nm	0.0000	0.000	0.0000	0.0045
	0.2594	0.259	0.0004	0.0045
	0.5040	0.505	-0.0010	0.0045
	1.0032	1.004	-0.0008	0.0045
635 nm	0.0000	0.000	0.0000	0.0045
	0.2579	0.258	-0.0001	0.0045
	0.4971	0.497	0.0001	0.0045
	0.9720	0.973	-0.0010	0.0045

DKSH Technology Limited
2533 Sukhumvit Road, Bangkok, Thailand 10260
Phone: +66 2079 7000 Email: info@dksh.com Website: www.dksh.com

Delivering Growth - in Asia and Beyond.

CAL-FM-C06-1E 11 Mar 2024

Calibration Results:
Without Adjustment

Photometric Accuracy (Absorbance)				
Wavelength	Standard absorbance	Unit Under Calibration	Correction	Uncertainty
235 nm	0.0000	0.000	0.0000	0.0080
	0.7355	0.738	-0.0025	0.0080
257 nm	0.0000	0.000	0.0000	0.0080
	0.8574	0.857	0.0004	0.0080
313 nm	0.0000	0.000	0.0000	0.0080
	0.2864	0.290	-0.0036	0.0080
350 nm	0.0000	0.000	0.0000	0.0080
	0.6374	0.637	0.0004	0.0080
Stray light *				
Standard: cut-off	UUC: Wavelength (nm)	UUC: Transmission (%)	Absorbance (A)	
260.62 +/- 0.11 nm	260.6	1.7	1.770	
391.44 +/- 0.11 nm	391.4	1.4	1.854	
Spectral Resolution *				
Nominal Concentration 0.02 % v/v	Peak	Trough	Ratio	SBW
Standard Wavelength (nm)	268.66	266.69	1.38	2.00
UUC: Wavelength (nm)	268.2	266.2		
Std Absorbance (A)	0.4565	0.2780		
UUC: Absorbance (A)	0.413	0.299		

* Calibration Marked * Not TISI Accredited * in this Certificate have been included for completeness.

The End of Certificate

DKSH Technology Limited
2533 Sukhumvit Road, Bangkok, Thailand 10260
Phone: +66 2079 7000 Email: info@dksh.com Website: www.dksh.com

Delivering Growth - in Asia and Beyond.

CAL-FM-C06-1E 11 Mar 2024

ใบตรวจสอบสภาพเครื่องวัดสิ่งแวดล้อม

เลขที่ใบงาน: WO-00064379

ชนิดเครื่องวัด: SPECTROPHOTOMETER รุ่น: DR8000

หมายเลขเครื่อง: 1627845

ตรวจสอบ (วัน)		รายการตรวจสอบ		ตรวจสอบ (ส่ง)		หมายเหตุ
18 Mar 2025				18 Mar 2025		
ปกติ	ไม่ปกติ			ปกติ	ไม่ปกติ	
		General				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. ความสมบูรณ์เครื่อง		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. ความสะอาด (ของใส่ตัวอย่าง, ภายใน-นอกเครื่อง)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. สวิตช์ เปิด - ปิด เครื่อง (On-Off Switch)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. ปุ่มกด (Keypad)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. หน้าจอ (Display, Screen Contrast)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		Spectrophotometer				
<input type="checkbox"/>	<input type="checkbox"/>	6. แบตเตอรี่ไฟฟ้า (Battery Backup) >= 2.5 VDC		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	7. ตัวควบคุมความยาวคลื่น (Wavelength Control)		<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. ความยาวคลื่น (Wavelength Check)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	*
<input checked="" type="checkbox"/>	<input type="checkbox"/>	9. แสงยูวีผ่านแสง (UV < 3,000 hour)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	13.5 Hours
<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. แสงผ่านแสง (Visible < 5,000 hour)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	893.0 Hours
<input checked="" type="checkbox"/>	<input type="checkbox"/>	11. ช่องวัดหลายตัวอย่าง (Carousel Module)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		pH Meter and Conductivity Meter				
<input type="checkbox"/>	<input type="checkbox"/>	12. อิเล็กโทรด (Electrode and Connection Cable)		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	13. ระดับสารละลายใน Electrode (Level KCl)		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	14. ฝาปิดปกป้อง Electrode (Dust Protection Hood)		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	15. ขาจับอิเล็กโทรด (Stand)		<input type="checkbox"/>	<input type="checkbox"/>	
		Turbidimeter				
<input type="checkbox"/>	<input type="checkbox"/>	16. ค่าความขุ่นที่ต่ำสุด (No Sample)		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	17. ระดับการส่องสว่างของแสง (>= 2.5 ไม่น้อย 3.0)		<input type="checkbox"/>	<input type="checkbox"/>	
		Automatic titrator				
<input type="checkbox"/>	<input type="checkbox"/>	18. สภาพ Piston Burettes		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	19. Function Rinsing and Dosing		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	20. ระบบท่อสายยางและอุปกรณ์ประกอบ		<input type="checkbox"/>	<input type="checkbox"/>	

เพิ่มปริมาณตัวอย่าง: * 656.1nm = 656.1nm

* 486.0nm = 485.7nm

Mr.Preecha Phooarsai
Service Engineer

DKSH Technology Limited
2533 Sukhumvit Road, Bangkok, Thailand 10260
Phone: +66 2079 7000 Email: info@dksh.com Website: www.dksh.com

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CAL-FM-R31-03 20 Jul 2022

Accredited by

NSC-TISI-TIS 17025

Calibration 0426



Calibration certificate

Calibration Certificate No. 25BKU004

Object	Electronic non-automatic weighing instrument	This calibration certificate documents the traceability to national standards.
Manufacturer	Sartorius	Uncertainties of measurements are taken into account when only statements of compliance are made.
Type	MSE224S-100-DU	This certificate was prepared by Sartorius Corporation in accordance to the current ISO/IEC 17025:2017 standard and Sartorius Work Instruction (Method) SOP WI 08.
Serial QM Ident. no.	26207038 RYG_EN0002	This certificate relate and apply this equipment only.
Customer	ALS Laboratory Group (Thailand) Co., Ltd. (Rayong Branch)	
Order no.	2230	616/10 Moo 5 T.Maenam Khu, A.Pluaeng Daeng, Rayong 21140, Thailand.
Number of pages	4	
Date of calibration	20 Feb 2025	

This calibration certificate may not be reproduced other than in full except with the permission of NSC-TISI-TIS-17025 and the issuing laboratory. Calibration certificates without signature are not valid.

The user is obliged to have the object recalibrated at appropriate intervals.

Date	06 Mar 2025	Approval of the Calibration Certificate	Person in charge
		Mr. Chonchai Inthana	Kachen Lalee

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang
10310 BangkokVerical®
Version 6.5

Page 1 | 4

Calibration object

Single range instrument

Model	MSE224S-100-DU
Serial Number	26207038
QM Ident. no Inventory no.	RYG_EN0002 ---

Maximum capacity (Max. load)	220.0000 g
Measured range	220.0000 g
Scale interval	0.0001 g

Place of calibration

Address	According to page 1
Department Cost center	Laboratory Department. ---
Building Floor	--- 1st Floor.
Room	Balance Room.
Maximum temperature variation at place of calibration	5 K

Calibration procedure

EURAMET cg-18, V4.0 - Guidelines on the Calibration of Non-Automatic Weighing Instruments

Test equipment

Test equipment type	Test equipment ID	Valid until
Thermometer	MHB-382SD s/nB011342 Traceable to SI unit through DKSH	21 Aug 2025
Test weight set OIML R111 E2	Certificate No.M2308197S ,E2(Traceable to SI unit through TCS)	23 Aug 2025

Adjustment Status

The measuring device was internally adjusted before the calibration.

Environmental and measuring conditions

Date of calibration	20 Feb 2025
Temperature at place of calibration Temp. diff.	24.4 °C 0.6 K
Tw Weights - T place	
Measuring conditions	The installation site is suitable. The device was levelled. Balance was loaded up to Max before test.
Comments	Humidity 50.2 %RH.

Measurement results | Measurement uncertainties

Repeatability		Eccentricity	
Test load (nominal): 10 g 200 g		Test load (nominal): 100 g	
10 g	200 g	Center	100.0000 g
1 10.0000 g 200.0000 g		Front left	99.9998 g
2 10.0000 g 200.0001 g		Back left	100.0000 g
3 10.0001 g 200.0001 g		Back right	100.0000 g
4 10.0000 g 200.0000 g		Front right	100.0000 g
5 10.0001 g 200.0000 g		Maximum deviation from centric loading indication	
6 10.0001 g 200.0001 g		Δecc max = 0.0002 g	
7 10.0000 g 200.0000 g			
8 10.0000 g 200.0001 g			
9 10.0001 g 200.0000 g			
10 10.0000 g 200.0000 g			
s = 0.00005 g s = 0.00005 g			

Error of indication

Testload <i>L</i>	Indication <i>I</i>	Error <i>E</i>	Expansion factor <i>k</i>	Uncertainty <i>U(E)</i>	Uncertainty relative <i>U_{rel}(E)</i>
0.0100 g	0.0100 g	0.0000 g	2.00	0.00013 g	1.3 %
0.1000 g	0.1000 g	0.0000 g	2.00	0.00013 g	0.13 %
0.5000 g	0.5000 g	0.0000 g	2.00	0.00013 g	0.027 %
1.0000 g	1.0000 g	0.0000 g	2.00	0.00013 g	0.013 %
5.0000 g	5.0000 g	0.0000 g	2.00	0.00014 g	0.0027 %
10.0000 g	10.0000 g	0.0000 g	2.00	0.00014 g	0.0014 %
20.0000 g	20.0000 g	0.0000 g	2.00	0.00014 g	0.00072 %
50.0000 g	50.0000 g	0.0000 g	2.00	0.00016 g	0.00032 %
100.0000 g	100.0001 g	0.0001 g	2.00	0.00021 g	0.00021 %
200.0000 g	200.0000 g	0.0000 g	2.00	0.00034 g	0.00017 %
220.0000 g	220.0000 g	0.0000 g	2.00	0.00039 g	0.00018 %
Maximum error of indication		E _{max} = 0.0001 g			

U_{rel}(E) is the quotient of *U(E)* and test load *L*. The uncertainty of measurement *U(E)* is valid only if error *E* is considered. You will find reference notes on the uncertainty of measurement in use under: Appendix to the calibration certificate | Interpretation of measurement results.
Reference note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the documented Expansion factor, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

End of calibration certificate

Interpretation of measurement results | Appendix to the calibration certificate

Uncertainty of measurement in use

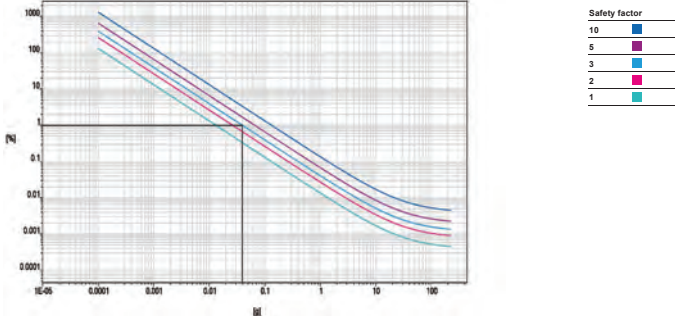
Device adjusted before measurement	Yes
Temperature deviation considered	1.5 K (isoCAL active)
Temperature coefficient considered	1 · 10 ⁻⁴ K

Uncertainty of the weighing result $U_{95}(W)$ $U_{95}(W) = 0.00013 \text{ g} + 3.95 \cdot 10^{-6} \cdot R$

Reference note: The current uncertainty of measurement is calculated by entering of the reading *R* into this formula. In relation to this, there is no need for a correction of the indication error. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied with an Expansion factor of 2, determined in accordance with the European Calibration Guideline EURAMET cg-18, V4.0. There is a 95 % probability that the value of the measurand will be in the assigned value range.

Indication in % from max load	Net indication <i>R</i>	Uncertainty <i>U₉₅(W)</i>	Uncertainty relative <i>U₉₅(W)_{rel}</i>
1 %	2.2000 g	0.00014 g	0.0063 %
25 %	55.0000 g	0.00035 g	0.00063 %
50 %	110.0000 g	0.00056 g	0.00051 %
75 %	165.0000 g	0.00078 g	0.00047 %
100 %	220.0000 g	0.00100 g	0.00045 %

Graphic realization of the relative uncertainty of measurement | process accuracy



Displayed example

Process accuracy	1.00 %
Safety factor	3
Minimum sample weight	0.0395 g

Metrology
SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhloi, Saraburi 18110, Thailand
Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100
Bangkok Tel : +668 9205 6851 , +669 8247 2360
Website : www.scieco.co.th E-Mail : calibrate@scg.com



Certificate No. T250454

Page 1 of 3

Certificate of Calibration

Equipment : Chamber (Oven)

Manufacturer : MEMMERT

Model : UF 110

Serial No. : B423.0853

Customer Code : RYG_EN0213

ID No. : T5884A5

Customer : ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)

616/10 Moo 5 T.Maenam Khu,

A.Pluakdaeng, Rayong 21140

Customer Location : ENVIRONMENT LABORATORY

Date of Receipt : 12 March 2025

Calibrated By : Sujjar Naknakred (Site Calibration Manager)

Approved By : Boonchai Suriyawong (Site Calibration Manager)

Date of Issue : 21 MAR 2025

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrology.



Certificate No. T250454

Page 2 of 3

Calibration Report

Equipment : Chamber (Oven)
Date of Calibration : 19 March 2025
Environment : Temperature : 26.5-26.9 °C
Line Voltage : 223.9-231.3 V
Relative Humidity : 55 - 65 %RH

Condition of this results of calibration :

- This equipment was calibrated by insert nine resistance thermometer detectors into its chamber , the other one resistance thermometer detector use for ambient temperature measurement . The calibration was done in according to WI-T20 (based on ASTM E145-94 (Reapproved 2019) and AS2853-1986).
All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 ohm	27-CH1-10	T240709	19 April 2025
DATA LOGGER	34970A	T149	T240709	19 April 2025

3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center (NSC-TISI-TIS 17925 CALIBRATION 0244)

4. Condition of calibrated item : good

Equipment Description :

Time Constant 1 Hour 44 Minute At 104 °C
Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max
☒ Close
☐ Not Available

5. Adjustment :

() without adjustment (X) after adjustment

Approved By

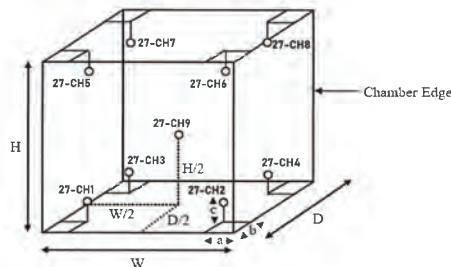
FM-L15 I18/18-08-66



Certificate No. T250454

Page 3 of 3

Calibration Report



Remark : Internal Dimensions of Chamber : W (Width) = 56 cm ., H (Height) = 48 cm. and D (Depth) = 40 cm.
Size of Installed Standard sensor number 27-CH1 to number 27-CH8 : a = 5 cm. b = 5 cm. and c = 5 cm.
Size of Installed Standard sensor number 27-CH9 : W/2 = 56 cm./2, H/2 = 48 cm./2 and D/2 = 40 cm./2

Measurement Results

Average Standard Reading at each position (°C)									
Calibration Point	27-CH1	27-CH2	27-CH3	27-CH4	27-CH5	27-CH6	27-CH7	27-CH8	27-CH9
104	103.84	104.10	104.10	104.48	103.73	104.14	103.95	103.57	104.22
180	179.41	179.92	180.80	181.37	179.54	179.52	179.82	179.41	180.31

Chamber (Oven)		Temperature Distribution				
Setting °C	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)
	Min	Max				
104.0	103.9	104.1	104.0	0.08	0.65	0.42
180.0	-	180.0	180.01	0.17	1.26	0.49

* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 % .

End of Certificate.

Approved By

FM-L15 I18/18-08-66



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL.0-2717-3000-29 FAX.0-2719-9484



Certificate of Calibration

Cert. No.: 24TM635
Page : 1 of 3

Equipment : Water Bath
Manufacturer : Memmert
Model : WNB22
Serial No. : L513.0648
ID No. : RYG_EN0061

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)
616/10 Moo 5, T. Maenam Khu,
A. Pluakdaeng,
Rayong 21140, Thailand
Location : Wet Chemistry Lab

Received Order : 21 March 2024
Calibration Date : 21 March 2024
Ambient Temperature : (26 ± 10) °C
Relative Humidity : (50 ± 30) %

Calibrated by : Man Pattanapongpaiboon

Approved by :

() Pornthipha Tameyakul
() Unnophol Harachai
(✓) Suwit Imjai

Issue Date : 23 March 2024

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2403-0563OC-4
Procedure Used :-

Cert. No.: 24TM635
Page : 2 of 3

Calibration were conducted using in-house calibration procedure CP-OT04 Based on ASTM E715 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer (IPRT).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Data Acquisition	MY57013711	23LM115	TPA	11 Jul 2024

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

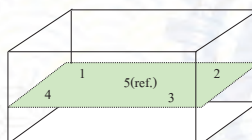
Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Heat transfer medium used : Water

	Environmental		AC Voltage Supply
	(°C)	(%R.H.)	(Volt)
Beginning of Calibration	25	55	222
Finished of Calibration	25	57	223



Position :	Ref. Std. ID No.:
1	4803988-001
2	4803988-002
3	4803988-003
4	4803988-004
5(ref.)	4803988-005



Equipment : Water Bath
Condition As-Received : Used Item
Reference : 2403-0563OC-4
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source

Cert. No.: 24TM635
Page : 3 of 3

Calibration point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Average* Standard Reading (°C)					Uncertainty (± °C)
			Position					
			1	2	3	4	5 (ref.)	
85.0	85.0	85.0	84.428	84.424	84.489	84.507	84.477	0.18

Calibration point (°C)	Uniformity (°C)	Stability (± °C)	Coverage Factor k
85.0	0.19	0.11	2

Average* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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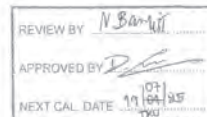
TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES & EQUIPMENT CALIBRATION AND TESTING SERVICES
330 KAPPA NAKHON RAOU 18, 80/111 ALIANG, BANGKOK 10700
TEL: 02-27170000 FAX: 02-27170001



Cert.No.: 24CH96
Page.: 1 of 3

Certificate of Calibration

Equipment : pH Meter
Manufacturer : Mettler Toledo
Model : SevenCompact S220
Serial No. : C104059480
ID No. : RYG_EN0183
Condition As-Received : Used Item
Received Date : 18 January 2024
Calibration Date : 19 January 2024
Reference : 2401-0578DSC-2
Submitted by : ALS Laboratory Group (Thailand) Co., Ltd. (Rayong Branch)
616/10 Moo 5, T.Maenam Khu,
A.Puakdaeng, Rayong 21140, Thailand



Ambient Temperature : (25 ± 2.5) °C
Relative Humidity : (50 ± 15) %
Calibration Procedure : In - house - method
- CP-CH5 by direct measurement with standard voltage calibrator and direct measurement with certified reference material (CRM)
- CP-CH8 by comparison with temperature standard

Calibrated by : Warakorn Lemgagrakul

Approved by :
Approved Signatory

(✓) Sallhip Meangmai
() Warakorn Lemgagrakul
() Porpan Paipim

Issue Date : 24 January 2024

The Uncertainties are for a confidence probability of approximately 95%.

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A 0062654



Cert.No.: 24CH96
Page.: 2 of 3

Condition of this calibration result

1. Reference Standard Instrument

Instrument	Serial No.	ID No.	Cert. No.	Due Date
1) Document Process Calibrator	54030049	130RC116	23E2802	27 Aug 2024
2) Ref. Standard Thermometer	4982054	110RC044	23I908	26 July 2024

This certification is traceable to the International System of Unit maintained through:-
- Technology Promotion Association (Thailand-Japan)

2. Certified Reference Materials

The measurement results are traceable to SI through CPA chem Ltd.,
ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

Buffer Solution	Manufacturer	Lot No.	Exp. date
pH 4.008	CPA chem	840102	27 Nov 2025
pH 6.866	CPA chem	840104	02 Nov 2024
pH 9.997	CPA chem	840106	02 Nov 2024

3. This certificate is valid only to the item calibrated on date and place of calibration.

Calibration Results

Function : mV Measurement

Performing standard curve by Fluke at pH (4,7,10)

Unit Under Calibration	Nominal Value	Standard Voltage Input	Actual Reading		Uncertainty of Measurement	Coverage factor
	pH	mV	mV	pH	(± mV)	k
pH Meter S/N.: C104059480	4.000	177.48	177.4	4.000	0.058	2.00
	7.000	0.00	0.0	7.000	0.058	2.00
	10.000	-177.48	-177.5	10.000	0.058	2.00



Cert.No.: 24CH96
Page.: 3 of 3

Calibration Results

Function : pH Measurement

Performing three buffers standard curve by using buffer nominal pH (4.01,7.00,10.01)

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading (mV)	Uncertainty of pH Measurement (±)	Coverage factor k
pH Electrode S/N.: 3225367	4.008	4.013	176.0	0.0054	2.07
	6.866	6.983	2.2	0.0084	2.00
	9.997	9.995	-174.1	0.0065	2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe:

- Model : InLab®Expert Pro-ISM
- Serial No. : 3225367

Dimension of probe

- Length : 120 mm.
- Diameter : 12 mm.
- Immersion Depth : 100 mm.

Calibration Point (°C)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty of measurement (± °C)	Coverage factor k
25.0	25.001	25.2	0.199	0.13	2.00

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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1198286



Certificate of Calibration

Certificate No.: 24E289
Page: 1 of 2

Equipment: pH Meter
Manufacturer: Mettler Toledo
Model: SevenCompact S220
Serial No.: C104059480
ID No.: RYG_EN0183
Condition As-Received: Used Item
Received Date: 18 January 2024
Calibration Date: 23 January 2024
Reference: 2401-0575DSC
Submitted by: ALS Laboratory Group (Thailand) Co., Ltd. (Rayong Branch)
Ambient Temperature: $(23 \pm 2) ^\circ\text{C}$
Relative Humidity: $(50 \pm 10) \%$
Procedure used: Calibration were conducted using calibration procedure No. CP-E17 According to EURAMET 03-15.

Condition of this result of calibration

1. Reference standards instruments:

Instrument	Model	Serial No.	Certificate No.	Due Date
1) Multi-Product Calibrator	5500A	6315011	E209300035	29 May 2024
2) This result of calibration was made on requested at the point specified by customer.				
3) The certificate is valid only to the item calibrated on date and place of calibration.				
4) This Certification is traceable to the International System of Unit maintained through:-				
-NA Caltechnologies Co., Ltd., ANAB Accredited No. Calibration AC-2658				

Calibrated by: Wulchanaporn Wongchakrunkit
Issue Date: 24 January 2024
Approved Signatory:

0333296



Cert. No.: 24E289
Page: 2 of 2

Result of calibration > (°) Without adjustment () After adjustment

Function: DC voltage measurement	Range: 2000 mV	Standard Value	UUC* Reading	Error	Uncertainty
		(mV)	(mV)	(mV)	(± µV)
		-200.0000	-200.0	0.0	68
		-150.0000	-150.0	0.0	65
		-100.0000	-100.0	0.0	63
		-50.0000	-50.0	0.0	61
		0.0000	0.0	0.0	58
		50.0000	50.0	0.0	61
		100.0000	99.9	-0.1	63
		150.0000	149.9	-0.1	65
		200.0000	199.9	-0.1	68

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95 %.

UUC* = Unit Under Calibration.

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1198963



Certificate of Calibration

Cert.No.: 24CH1489
Page: 1 of 3

Equipment: pH Meter
Manufacturer: Mettler Toledo
Model: SevenGo S2
Serial No.: C232588422
ID No.: RYG_FS0607
Condition As-Received: Used Item
Received Date: 27 November 2024
Calibration Date: 28 November 2024
Reference: 2411-0871DSC-3
Submitted by: ALS Laboratory Group (Thailand) Co., Ltd. Rayong Branch
616/10 Moo 5, T. Maenam Khu, A. Pluakdaeng, Rayong 21140, Thailand
Ambient Temperature: $(25 \pm 2.5) ^\circ\text{C}$
Relative Humidity: $(50 \pm 15) \%$
Calibration Procedure: In-house method:
- CP-CH5 by direct measurement with DC voltage standard and direct measurement with certified reference material (CRM)
- CP-CH8 by comparison with temperature standard
Calibrated by: Walalak Sirinthean
Approved by:
() Unnopphol Harachai
() Ponpan Paipim
(✓) Sathip Meangmai
Issue Date: 30 November 2024

REVIEW BY: P. Thaya T.
APPROVED BY: S. S.
NEXT CAL DATE: 28/11/25

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Cert.No.: 24CH1489
Page: 2 of 3

Condition of this calibration result

1. Reference Standard Instrument

Instrument	Serial No.	ID No.	Cert. No.	Due Date
1) Document Process Calibrator	54030049	130RC116	24E2759	25 Aug 2025
2) Ref. Standard Thermometer	4982054	110RC044	24I757	14 July 2025

- This Certification is traceable to SI Through Technology Promotion Association (Thailand - Japan)

2. Certified Reference Materials

: The measurement results are traceable to SI through Hach Lenge GmbH Ltd., Deutsche Akkreditierungsstelle, Accredited No. D-RM-15184-01-00
: The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

Buffer Solution	Manufacturer	Lot No.	Exp. date
pH 4.008	CPA chem	1034203	27 Sep 2026
pH 6.999	Hach Lenge GmbH	C03145	28 Feb 2026
pH 10.010	CPA chem	1034205	27 Sep 2025

3. This certificate is valid only to the item calibrated on date and place of calibration.

Calibration Results

Function: mV Measurement

Performing standard curve by Document Process Calibrator at pH (4,7,10)

Unit Under Calibration	Nominal Value	Standard Voltage Input	Actual Reading		Uncertainty of Measurement (± mV)	Coverage factor k
			mV	pH		
pH Meter S/N: C232588422	4.00	177.48	178	4.00	0.58	2.00
	7.00	0.00	0	7.00	0.58	2.00
	10.00	-177.48	-177	10.00	0.58	2.00



Cert.No.: 24CH1489
Page: 3 of 3

Calibration Results

Function : pH Measurement

Performing three buffers standard curve by using buffer nominal pH (4,7,10)

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading (mV)	Uncertainty of pH Measurement (\pm)	Coverage factor k
pH Electrode S/N.: 2465870	4.008 6.999 10.010	4.01 7.00 10.01	160 -16 -187	0.0071 0.0085 0.0085	2.00 2.00 2.00

Function : Temperature Measurement

(*) Without adjustment

This equipment was connected with Temperature Probe;

- Model : InLabExpert Go-ISM

- Serial No. : 2465870

Dimension of probe

- Length : 120 mm.

- Diameter : 12 mm.

- Immersion Depth : 100 mm.

Calibration Point ($^{\circ}\text{C}$)	Standard Temperature ($^{\circ}\text{C}$)	UUC* Reading ($^{\circ}\text{C}$)	Error ($^{\circ}\text{C}$)	Uncertainty of measurement (\pm $^{\circ}\text{C}$)	Coverage factor k
25.0	25.000	25.2	0.200	0.13	2.00
45.0	45.001	45.3	0.299	0.13	2.00

Remark : - UUC* = Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k , providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250
TEL.0-2717-3000-29 FAX.0-2719-9484



Certificate of Calibration

Cert. No.: 24TM632
Page : 1 of 3

Equipment : Hot Air Oven
Manufacturer : Memmert
Model : UFE 500
Serial No. : G511.1572
ID No. : RYG_EN0010
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)
616/10 Moo 5 T. Maenam Khu,
A. Pluakdaeng,
Rayong 21140 Thailand
Location : Oven Room
Received Order : 21 March 2024
Calibration Date : 21 March 2024
Ambient Temperature : (26 ± 10) $^{\circ}\text{C}$
Relative Humidity : (50 ± 30) %
Calibrated by : Man Pattanapongpaiboon
Approved by :
Approved Signatory
() Ponthippa Tameyakul
() Unnopphol Harachai
(x) Suwit Imjai

Issue Date : 22 March 2024

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Hot Air Oven
Condition As-Received : Used Item
Reference : 2403-0563OC-1

Cert. No.: 24TM632
Page : 2 of 3

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector (RTD) and Thermocouple Type T.

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Data Acquisition	MY57013711	23LM115	TPA	11 Jul 2024

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association (Thailand - Japan)

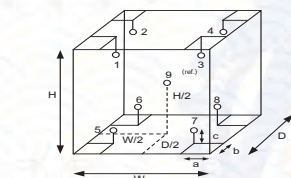
Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close

Environment during calibration		
	Beginning	Finished
Temp. ($^{\circ}\text{C}$)	27	27
REL.Humid. (%)	57	59
AC Supply (Volt)	222	224

Ref. Std. ID No. : @ Calibration Point		
Position :	(180) $^{\circ}\text{C}$	(104) $^{\circ}\text{C}$
1	18-18TC-01	18-18RTD-01
2	18-18TC-02	18-18RTD-02
3	18-18TC-03	18-18RTD-03
4	18-18TC-04	18-18RTD-04
5	18-18TC-05	18-18RTD-05
6	18-18TC-06	23-18RTD-06
7	18-18TC-07	18-18RTD-07
8	18-18TC-08	22-18RTD-08
9 (ref.)	18-18TC-09	18-18RTD-09



Probe Installation Details : Dimension of Chamber :
a = 5.0 cm D = 0.40 m
b = 5.0 cm W = 0.56 m
c = 5.0 cm H = 0.48 m
Capacity = 0.11 m³



Equipment : Hot Air Oven
Condition As-Received : Used Item
Reference : 2403-0563OC-1
Result of Calibration :- (*) Without Adjustment
Function of UUC* : Temperature Source
Fresh air setting : Close

Cert. No.: 24TM632
Page : 3 of 3

Calibration Point ($^{\circ}\text{C}$)	UUC* Setting ($^{\circ}\text{C}$)	UUC* Reading ($^{\circ}\text{C}$)	Temperature stability (\pm $^{\circ}\text{C}$)	Temperature uniformity ($^{\circ}\text{C}$)	Overall Variation ($^{\circ}\text{C}$)	Coverage Factor k
104.0	104.0	104.0	0.051	0.59	0.62	2
180.0	180.0	180.0	0.15	1.3	1.7	2

Calibration Point ($^{\circ}\text{C}$)	Measured Temperature ($^{\circ}\text{C}$)									Uncertainty (\pm $^{\circ}\text{C}$)
	1	2	3	4	5	6	7	8	9 (ref.)	
104.0	103.921	103.786	103.757	103.759	103.950	103.817	104.213	103.672	103.673	0.42
180.0	179.614	179.270	179.145	179.599	180.001	180.423	180.293	180.629	179.429	1.1

Average* : The average of 30 values in each position.

Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.

Temperature uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.

UUC* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k , providing a level of confidence of approximately 95 %.

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ภาคผนวก ง

สำเนาหนังสือใบอนุญาตขึ้นทะเบียนห้องปฏิบัติการ
วิเคราะห์เอกชนกับกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๕

กรมโรงงานอุตสาหกรรม

ถนนพระรามที่ ๖ แขวงทุ่งพญาไท

เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒ ๐ พฤศจิกายน ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอลแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๔ สิงหาคม ๒๕๖๖

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ แผ่น

๓. ขอบข่ายสารเคมีที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท เอลแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๕๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐
ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอลแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย ตามสิ่งที่ส่งมาด้วย ๑


ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ ๑๔๑ ราย ตามสิ่งที่ส่งมาด้วย ๒

ค. ของข่ายสารเคมีที่ได้รับขึ้นทะเบียนไว้ในรายชื่อ น้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกูล
หรือวัสดุที่ไม่ใช้แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ กันยายน ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ
กรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นสุดของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ผ่านเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายธีระ จันทรัตน์)

นักวิทยาศาสตร์เชี่ยวชาญ วิชาการแผน

ผู้ชำนาญการวิจัยและเตือนภัยมลพิษโรงงาน

ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๕๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



“อุตสาหกรรมก้าวหน้าไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอลแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ๖-๒๐๕๔
ที่ อก ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๕ ลงวันที่ ๒ ๐ พฤศจิกายน ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย

๑) นางสาวยุพาพร จันทรัตน์

๒) นางสาวชัชชนัย โกมารกุล ณ นคร

๓) นายศรายุทธ จิตรานนท์

๔) นางสาวกนกกร เอนก

๕) นายสุริยา สอนแก้ว

๖) นายวิชาญ ชุมพรีรัตน์

ทะเบียนเลขที่ ๖-๒๐๕๔-ค-๐๐๐๑

ทะเบียนเลขที่ ๖-๒๐๕๔-ค-๐๐๐๒

ทะเบียนเลขที่ ๖-๒๐๕๔-ค-๐๐๐๓

ทะเบียนเลขที่ ๖-๒๐๕๔-ค-๐๐๐๔

ทะเบียนเลขที่ ๖-๒๐๕๔-ค-๐๐๐๕

ทะเบียนเลขที่ ๖-๒๐๕๔-ค-๐๐๐๖

รับ

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
เลขทะเบียน ๖๒๐๔
ที่ อก ๐๓๐๐(๑)/ ๑๖๑๖๘ ลงวันที่ ๒๐ พฤศจิกายน ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๘๘ ราย

- ๑) นายภาณุวัฒน์ กิตติคุณวัฒน์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๑
- ๒) นายภัทรพล สว่างใจธรรม ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๒
- ๓) นายกรธิป เชื้อกษัยคำ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๓
- ๔) นายศิริโชค พงษ์ประสม ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๔
- ๕) นายณัฐวุฒิ ดั่งแพง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๕
- ๖) นางสาวจินดา ไชจุลธรรม ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๖
- ๗) นางสาววิจิตร น้อยแสงี่ยม ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๗
- ๘) นางสาวชนัญญาญจน์ อิมขม ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๘
- ๙) นางสาวนรินทร์ สายเล้ง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๐๙
- ๑๐) นางสาวนันทวี สมบูรณ์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๐
- ๑๑) นางสาวศรียา เบลิมถาวรค์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๑
- ๑๒) นางสาวอัญชลี มงคลจิรวุฒิ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๒
- ๑๓) นางสาวศิริลักษณ์ บุนนาค ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๓
- ๑๔) นายพนงค์ จันทบุรินทร์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๔
- ๑๕) นายบรรณเศรษฐ์ โกลย์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๕
- ๑๖) นายธินา จริยา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๖
- ๑๗) นางสาวณัฏฐิพร แก้วมัน ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๗
- ๑๘) นางสาวสุวิมล ชัยเรืองวุฒิ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๘
- ๑๙) นางสาวสุชดา ธรรมถาวร ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๑๙
- ๒๐) นางสาวเมิกา ชัยเดชมงคล ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๐
- ๒๑) นางสาวศศิธร หนูสวัสดิ์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๑
- ๒๒) นางสาวเสาวลักษณ์ ภูนาอำพร ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๒
- ๒๓) นายอภิสิทธิ์ สิงหา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๓
- ๒๔) นายกิตติสิทธิ์ ไทศลพิสุทธิ์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๔
- ๒๕) ว่าที่ร้อยตรีหญิง พรรณีภา ขำเจริญ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๕
- ๒๖) นางจิตา คำแก้ว ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๖
- ๒๗) นางสาวอรธรรม รักยง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๗
- ๒๘) นางสาวณัฏฐิน แยมกรานต์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๘
- ๒๙) นายจุลเดช วรินทร์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๒๙
- ๓๐) นางสาวดาญรัตน์ ร้องคำ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๐
- ๓๑) นายพรมมี ศรีปัดเนตร ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๑
- ๓๒) นายจิต ศุ่ณเฒิบ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๒
- ๓๓) ว่าที่ร้อยตรี เบลิมเกียรติ อมศรีเสริม ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๓
- ๓๔) นางสาวริยา สร้างนา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๔
- ๓๕) นายอนุพงศ์ รัตนศรีประเสริฐ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๕

๓๖) นางสาวจุฑารัตน์...

- ๓๖) นางสาวจุฑารัตน์ โอนสันเทียะ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๖
- ๓๗) นางสาวจรรณ พิมภักกิตยา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๗
- ๓๘) นางสาวปราศรัยทิพย์ กิจไพศาลศักดิ์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๘
- ๓๙) นางสาวเดือนใจ ทางกลาง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๓๙
- ๔๐) นางสาวจิราพร ศิริเวช ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๐
- ๔๑) นายรากร ผู้ภักษ์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๑
- ๔๒) นายพนง วิริยะสทกิจ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๒
- ๔๓) นายอมิต เจนจบ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๓
- ๔๔) นายคณิศร จำเพียร ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๔
- ๔๕) นายภูวิช พรหมสะอาด ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๕
- ๔๖) นายอนเดช โกคำพิพัฒน์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๖
- ๔๗) นายชวลิต วงษ์จันทร์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๗
- ๔๘) นายอาทิตย์ ศรีเสน ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๘
- ๔๙) นายเจษฎินทร คงศักดิ์ไทย ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๔๙
- ๕๐) นายจรัส บุญยง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๐
- ๕๑) นายอนาณัติ เอนา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๑
- ๕๒) นายอภิวัฒน์ ทุมหนู ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๒
- ๕๓) นางสาวสุภาวัญญู มาก ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๓
- ๕๔) นางสาวจิตพร ขวาลสมบุญรินทร์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๔
- ๕๕) นางสาวธิดา บุญเพ็ง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๕
- ๕๖) นางสาวกานดา นามวัฒน์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๖
- ๕๗) นางสาวจุฑารัตน์ ตั้งสร้างเป็น ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๗
- ๕๘) นายธีรวัฒน์ ปวงสุข ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๘
- ๕๙) นายอิทธิพล ยะโส ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๕๙
- ๖๐) นายประจักษ์ วรณัฐชัย ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๐
- ๖๑) นายชยธร พวงทิพย์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๑
- ๖๒) นางสาวกนกวรรณ จันทบาล ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๒
- ๖๓) นายสิทธิโชค ธงเงิน ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๓
- ๖๔) นางศิวารม ใจบุญ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๔
- ๖๕) นางสาวพรรณธิดา พุ่มคง ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๕
- ๖๖) นายณวัตร ศรีวิริยะ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๖
- ๖๗) นายสุวิชา ทองอ่อน ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๗
- ๖๘) นายวิญญู บุญตะนัย ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๘
- ๖๙) นายสมบุญ บุตรจันทร์ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๖๙
- ๗๐) นายวิรัตน์ ไชยเมธา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๗๐
- ๗๑) นายณยศน์ เพิ่มพูน ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๗๑
- ๗๒) นายจิรณัฐ ขาละออ ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๗๒
- ๗๓) นายอัสรี นามบุรี ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๗๓
- ๗๔) นายอัครศ จอสา ทะเบียนเลขที่ ๖-๒๐๔-๖-๐๐๗๔

๗๕) นายประเสริฐ...

๗๕) นายประเสริฐ สุระขันธ์
๗๖) นายภูล จันทรัมย์
๗๗) นายพิรพงษ์ ทองอุดมปริตตา
๗๘) นายณุกพล ทองนุช
๗๙) นายอนุวัฒน์ ม่วงแพร
๘๐) นายเจตศราวุฒิ ปัตตะมะ
๘๑) นายภุชยะ สยารรณ์
๘๒) นายพิชัย บุญองค์
๘๓) นายภาณุพงศ์ โอมวงศ์
๘๔) นายสามภร คูบสี
๘๕) นายสัญญา โกศรีนาม
๘๖) นายณัฐวุฒิ ศรีประเสริฐ
๘๗) นายชวลิต นาคพนม
๘๘) นายพงศธร ชัยทิพย์
๘๙) นายสิทธิโชค ทาสีดา
๙๐) นายอนกร อินสุตา
๙๑) นางสาววณิชชา ขาติวันชัย
๙๒) นางสาวพิมพ์ตะวัน มีนกุล
๙๓) นางสาวพรรณิณ สิงห์สมบุญ
๙๔) นางสาวอุภาภิน พรหมจันทร์
๙๕) นายธีรติ ทวีราช
๙๖) นายจักริน พันธ์วิชา
๙๗) นายธีรชัย สุขเปี้ย
๙๘) นายอรนนท์ เต๊ะทองคำ
๙๙) นายอดุล สมนอก
๑๐๐) นายทักษ์ณัย อุบลศรี
๑๐๑) นายธนศร นามะกุลณา
๑๐๒) นายธิติพงศ์ บัวแดง
๑๐๓) นายณนชัย อยู่แก้ว
๑๐๔) นายณัฐพล คุณสุทธิ์
๑๐๕) นายณัฏฐ์ สาริน
๑๐๖) นายปิยะนัฐ พลมะศรี
๑๐๗) นายพงษ์สิริ โสมเขียว
๑๐๘) นายพีรพัฒน์ กำคำ
๑๐๙) นายภาณุพงศ์ มานิตย์
๑๑๐) นายมงคล ผลาทิพย์
๑๑๑) นายสิรินทน์ ทองอัน
๑๑๒) นายอนชา ทนสมัย
๑๑๓) นายอดิศักดิ์ ผะไ

รูป

๑๑๔) นายอนันชัย...

๑๑๔) นายอนันชัย วิสุม
๑๑๕) นายวรจ ตีนัก
๑๑๖) นายแสงตะวัน นตะสัถ
๑๑๗) นายยุทธพงศ์ รัตนะ
๑๑๘) นายชัยวุฒิ ไชยชนะนิจ
๑๑๙) นายวิศุทธิ์ ศรีธรรมมา
๑๒๐) นายมนทกร เสือห้อง
๑๒๑) นายกำชัย สุทธะ
๑๒๒) นางสาวณัฐกรณ บุญตะนัย
๑๒๓) นางสาวพัชรินทร์ แสนสร้อย
๑๒๔) นายไพรัชย์ เปี่ยมพิมาย
๑๒๕) นางสาวศุภมาศ ทองมาก
๑๒๖) นางสาวลลิตา จิตรสว่าง
๑๒๗) นางสาวไมพร เล็กเขียว
๑๒๘) นางสาวกฤติมาพร คัมภ์แก่น
๑๒๙) นางสาวสุลรัตน์ ภาณุภูมิ
๑๓๐) นางสาวไพรินทร์ ศรีวั
๑๓๑) นางสาวทิพนตร ฝูปัญญา
๑๓๒) นางสาวธิดา ปานทอง
๑๓๓) นางสาวอริสา ทองนล
๑๓๔) นางสาวอรยา คำคล่อง
๑๓๕) นางสาวสุดาภรณ์ สุนทรสนาม
๑๓๖) นางสาวอัญชลี คำจันทร์
๑๓๗) นายบุญฤทธิ์ เอี่ยมเทศ
๑๓๘) นางสาวศรดา บัณเฑรา
๑๓๙) นางสาวพาดิ์ คุณนา
๑๔๐) นางสาวจิราเจต พงดา
๑๔๑) นางสาวอารยา มีชัย
๑๔๒) นางสาววิชุดา นาคผลญ
๑๔๓) นางสาวนันทิยา จันทะถน
๑๔๔) นายกิตติพงศ์ แซ่ลี
๑๔๕) นายอนุวัติ ภูภิวิล
๑๔๖) นายธีรพล แสงทอง
๑๔๗) นายศักดิ์พัฒน์ บุญมัน
๑๔๘) นายฐิติวัตร เอมอุไร
๑๔๙) นายชัยณรงค์ ศรีบุรินทร์
๑๕๐) นางสาวอัจฉราวรรณ ส่วนสนอง
๑๕๑) นางสาวณัฐภาพ สิงหา
๑๕๒) นายภิรมเรศ เทยมโต

รูป

๑๕๓) นางสาวอุบล...

เอกสารแนบท้ายหนังสือรับรองอายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แล็บอราทอรี กรุป (ประเทศไทย) จำกัด เลขทะเบียน ๖-๒๐๔
ที่ อก ๐๓๐๑(๑)/ ๑๖๑๖๘ ลงวันที่ ๒๐ พฤศจิกายน ๒๕๖๖

ค. ขอบข่ายสามารถพิเศษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๗๔ รายการ
น้ำเสีย จำนวน 60 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldicarb	High-Performance Liquid Chromatographic Method ⁽⁴⁾
2	Aldicarb Sulfone	High-Performance Liquid Chromatographic Method ⁽⁴⁾
3	Aldicarb Sulfoxide	High-Performance Liquid Chromatographic Method ⁽⁴⁾
4	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
5	Arsenic	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
6	Barium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
7	α-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
8	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
9	δ-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
10	γ-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
11	Biochemical Oxygen Demand	Mass Spectrometric Method ⁽⁴⁾ 1) 5-Day BOD Test, Azide Modification Method ⁽⁴⁾ 2) 5-Day BOD Test, Membrane Electrode Method ⁽⁴⁾
12	Carbaryl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
13	Carbofuran	High-Performance Liquid Chromatographic Method ⁽⁴⁾
14	Cadmium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
15	Chemical Oxygen Demand	1) Closed Reflux, Colorimetric Method ⁽⁴⁾ 2) Closed Reflux, Titrimetric Method ⁽⁴⁾
16	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
17	Chromium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
18	Color	ADMI Weighted-Ordinate Spectrophotometric Method ⁽⁴⁾

สมช

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Copper	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
20	Cyanide	Distillation, Colorimetric Method ⁽⁴⁾
21	2,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
22	4,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
23	2,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
24	4,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
25	2,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
26	4,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
27	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
28	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
29	Endosulfan I	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
30	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
31	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
32	Endrin Aldehyde	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
33	Formaldehyde	Mass Spectrometric Method ⁽⁴⁾
34	Free Chlorine	Distillation, Colorimetric Method ⁽³⁾ 1) DPD Ferrous Titrimetric Method ⁽⁴⁾ 2) DPD Colorimetric Method ⁽⁴⁾
35	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
36	Heptachlor Epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
37	Hexavalent Chromium	Colorimetric Method ⁽⁴⁾
38	3-Hydroxycarbofuran	High-Performance Liquid Chromatographic Method ⁽⁴⁾
39	Lead	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾

40 Manganese...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
40	Manganese	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
41	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass spectrometric Method ⁽⁴⁾
42	Methiocarb	High-Performance Liquid Chromatographic Method ⁽⁴⁾
43	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
44	Methomyl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
45	Nickel	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
46	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method ⁽⁴⁾ 2) Soxhlet Extraction Method ⁽⁴⁾
47	Oxamyl	High-Performance Liquid Chromatographic Method ⁽⁴⁾
48	Propoxur	High-Performance Liquid Chromatographic Method ⁽⁴⁾
49	pH	Electrometric Method ⁽⁴⁾
50	Phenols	1) Distillation, Chloroform Extraction Method ⁽⁴⁾ 2) Distillation, Direct Photometric Method ⁽⁴⁾
51	Selenium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
52	Sulfide	Iodometric Method ⁽⁴⁾
53	Temperature	Laboratory and Field Methods ⁽⁴⁾
54	Total Dissolved Solids	Dried at 180 °C ⁽⁴⁾
55	Total Kjeldahl Nitrogen	Semi-Micro Kjeldahl Method ⁽⁴⁾
56	Total Phosphorous	Digestion, Colorimetric Method ⁽⁴⁾
57	Total Suspended Solids	Dried from 103-105 °C ⁽⁴⁾
58	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
59	Trivalent Chromium	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation ⁽⁴⁾
60	Zinc	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁴⁾

น้ำดื่ม...

หน้าติด จำนวน 126 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
2	Acetone	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
5	Antimony	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
6	Arsenic	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
8	Barium	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
9	Benzo(a)anthracene	Mass Spectrometric Method ⁽⁴⁾ Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
11	Benzo(b)fluoranthene	Mass Spectrometric Method ⁽⁴⁾ Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
13	Benzoic Acid	Mass Spectrometric Method ⁽⁴⁾ Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
15	Benzo[g,h,i]perylene	Mass Spectrometric Method ⁽⁴⁾ Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
16	Beryllium	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

3mg/L

18 Bis(2-ethylhexyl)phthalate...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
23	Cadmium	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
27	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
28	p-Chloroaniline	Mass Spectrometric Method ⁽⁴⁾ Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
29	Chlorobenzene	Mass Spectrometric Method ⁽⁴⁾ Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
32	2-Chlorophenol	Mass Spectrometric Method ⁽⁴⁾ Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
33	Chromium	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
34	Chromium (III)	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation ⁽⁴⁾
35	Chromium (VI)	Colorimetric Method ⁽⁴⁾

3mg/L

36 Chrysene...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
37	Cyanide	Distillation, Colorimetric Method ⁽⁴⁾
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
39	DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
40	DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
41	DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
43	Di-n-Butyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
47	3,3-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

3mg

ลำดับที่	สารเคมี	วิธีวิเคราะห์
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
57	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
58	Diethyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
63	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
64	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
65	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
69	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
70	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
74	α-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
75	β-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

3mg

ลำดับที่	สารเคมี	วิธีวิเคราะห์
76	γ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
79	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
81	Lead	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
83	Mercury	Mass Spectrometric Method ⁽⁴⁾ 1) Digestion, Cold Vapor Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
84	Methanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
86	Methyl bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
87	Methylene chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
90	Methyl tert-butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
92	Nickel	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾

94 N-Nitrosodiphenylamine...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
95	N-Nitrosodi-n-Propylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
96	Polychlorinated Biphenyls - PCB 1016 - PCB 1221 - PCB 1232 - PCB 1242 - PCB 1248 - PCB 1254 - PCB 1260	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
98	pH	Electrometric Method ⁽⁴⁾
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
100	Phenol	1) Distillation, Chloroform Extraction Method ⁽⁴⁾ 2) Distillation, Direct Photometric Method ⁽⁴⁾ 3) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
102	Selenium	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
103	Silver	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ⁽⁴⁾
104	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
105	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
106	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
107	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
108	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽⁴⁾
109	TPH (C ₅ -C ₆)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(4,25)

110 TPH (C₈-C₁₆)...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
110	TPH (C ₈ -C ₁₆)	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^(9,22)
111	TPH (C ₁₆ -C ₃₅)	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^(9,22)
112	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
113	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
114	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
115	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
116	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
117	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
118	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
119	Vanadium	1) Digestion, Inductively Coupled Plasma Method ⁽²⁾ 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁴⁾
120	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
121	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
122	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
123	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
124	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
125	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
126	Zinc	1) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁴⁾

3my

อากาศเสีย...

อากาศเสีย (ต่อเนื่องจาก) จำนวน 28 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Antimony	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
2	Arsenic	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
3	Beryllium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
4	Cadmium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
5	Carbon Monoxide	1) Instrumental Analyzer Method ⁽⁵⁾ 2) Sampling Bag Non-Dispersive Infrared Method ⁽⁵⁾
6	Chlorine	1) Absorption Sampling, Ion Chromatographic Method ⁽⁵⁾ 2) Isokinetic Sampling, Ion Chromatographic Method ⁽⁵⁾
7	Chromium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
8	Cobalt	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
9	Copper	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ⁽⁵⁾ 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
10	Cresol	2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ⁽⁵⁾
11	Dioxins	Absorption Sampling, Gas Chromatographic Method ⁽⁵⁾ Isokinetic Sampling ⁽⁵⁾
12	Hydrogen Chloride	1) Absorption Sampling, Ion Chromatographic Method ⁽⁵⁾ 2) Isokinetic Sampling, Ion Chromatographic Method ⁽⁵⁾
13	Hydrogen Fluoride	1) Absorption Sampling, Ion Chromatographic Method ⁽⁵⁾ 2) Isokinetic Sampling, Ion Chromatographic Method ⁽⁵⁾
14	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ⁽⁵⁾

3my

15 Lead...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
15	Lead	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
16	Manganese	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
17	Mercury	1) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ^[5]
18	Nickel	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
19	Opacity	Ringelmann's Method ^[2]
20	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method ^[5] 2) Absorption Sampling, Alkaline Permanganate/Colorimetric Method ^[5]
21	Selenium	3) Instrumental Analyzer Method ^[5] 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
22	Sulfur Dioxide	2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5] 1) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5]
23	Sulfuric Acid	2) Instrumental Analyzer Method ^[5] Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5]
24	Tellurium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
25	Tin	2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5] 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
26	Total Suspended Particulate	2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5] 1) Isokinetic Sampling, Gravimetric Method ^[5] 2) Paired Train, Isokinetic Sampling, Gravimetric Method ^[5]

ลำดับที่	สารเคมี	วิธีวิเคราะห์
27	Vanadium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
28	Xylene	Adsorption Sampling, Gas Chromatographic Method ^[5]

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 35 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,2,6] 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,28] 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,2,6]
2	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,17] 3) Digestion, Inductively Coupled Plasma Method ^[7,16] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,17]
3	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,17] 3) Digestion, Inductively Coupled Plasma Method ^[7,16] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,17]
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[1,6,17] 3) Digestion, Inductively Coupled Plasma Method ^[7,16] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[7,17]

3 mg/L

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	Dieldrin	2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26) 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
20	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,4,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
21	Lindane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^(1,6,20) 2) Waste Extraction, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ^(1,6,30) 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽²⁰⁾ 4) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽³⁰⁾ 5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method ⁽²¹⁾
23	Methoxychlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic /Mass Spectrometric Method ^(11,26)
24	Mirex	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic /Mass Spectrometric Method ^(11,26)
25	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,4,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
26	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,4,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
27	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic Method ^(11,26)

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ลำดับที่	สารเคมี	วิธีวิเคราะห์
28	- 2-Chlorobiphenyl - 2,3-Dichlorobiphenyl - 2,2',5'-Trichlorobiphenyl - 2,4',5'-Trichlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4,6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5'-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5,6-Heptachlorobiphenyl - 2,2',3,4',5,5',6-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl Pentachlorophenol	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26) Electrometric Method ^(23,24) 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
29	pH	
30	Selenium	

31 Silver...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
31	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
32	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
33	Toxaphene	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,9,26) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,26) 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,26) 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
34	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)
35	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^(1,6,16) 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(1,6,17) 3) Digestion, Inductively Coupled Plasma Method ^(7,16) 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^(7,17)

ดิน...

ดิน จำนวน 125 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Acenaphthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
2	Acetone	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25) 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ⁽¹³⁾
3	Aldrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
4	Anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
5	Antimony	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
7	Atrazine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
8	Barium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
9	Benz(a)anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)

11 Benzo(b)fluoranthene

ลำดับที่	สารเคมี	วิธีวิเคราะห์
11	Benzo(b)fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
12	Benzo(k)fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
13	Benzoic acid	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
14	Benzo(a)pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
15	Benzo(g,h,i)perylene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
17	Bis(2-chloroethyl)ether	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
18	Bis(2-ethylhexyl)phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
21	Butanol	Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
22	Butyl Benzyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

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23 Cadmium...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method ^(7.16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7.17)
24	Carbazole	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
25	Carbon Disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
27	Chlordane	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
28	p-Chloroaniline	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
32	2-Chlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
33	Chromium	1) Digestion, Inductively Coupled Plasma Method ^(7.16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7.17)
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method, Calculation Method ^(7.8.16,19) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method, Calculation Method ^(7.8.17,19)
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^(8.19)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
36	Chrysene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
37	Cyanide	Extraction, Distillation, Colorimetric Method ^(27.28,29)
38	2,4-D	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
39	DDD	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
40	DDE	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
41	DDT	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
42	Dibenz(a,h)anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
43	Di-n-Butyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)
47	3,3-Dichlorobenzidine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10.26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11.26)
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15.25)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
53	2,4-Dichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
57	Dieldrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
58	Diethyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
59	2,4-Dimethylphenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
60	2,4-Dinitrophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
61	2,4-Dinitrotoluene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
62	2,6-Dinitrotoluene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
63	Di-n-Octyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
64	Endosulfan	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
65	Endrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
67	Fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
68	Fluorene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
69	Heptachlor	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
70	Heptachlor epoxide	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
71	Hexachlorobenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
73	n-Hexane	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23) 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ⁽¹³⁾

ลำดับที่	สารเคมี	วิธีวิเคราะห์
74	α-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
75	β-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
76	γ-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
77	Hexachlorocyclopentadiene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
78	Hexachloroethane	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
79	Indeno(1,2,3-cd)pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
80	Isophorone	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
81	Lead	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
82	Manganese	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽²⁰⁾ 2) Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry ⁽²¹⁾ 3) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method ⁽³⁰⁾

84

ลำดับที่	สารเคมี	วิธีวิเคราะห์
84	Methanol	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25) 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
85	Methoxychlor	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
86	Methyl Bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
87	Methylene Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
88	2-methylphenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
89	2-Methylnaphthalene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
90	Methyl tert-Butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
91	Naphthalene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
92	Nickel	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
93	Nitrobenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
94	N-Nitrosodiphenylamine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
95	N-Nitrosodi-n-propylamine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

96

ลำดับที่	สารเคมี	วิธีวิเคราะห์
96	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260 - 2-Chlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4',6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5'-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5,6'-Heptachlorobiphenyl - 2,2',3,4',5,5',6'-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl Pentachlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
97	Phenanthrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
98		1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
99	Phenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
100	Pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
101	Selenium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
102	Silver	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
103	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
105	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
106	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
107	Toxaphene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
108	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
109	TPH (C ₈ -C ₁₆)	1) Automate Extraction, Gas Chromatographic Method ^(12,21) 2) Solvent Extraction, Gas Chromatographic Method ^(12,22) 3) Ultrasonic Extraction, Gas Chromatographic Method ^(22,31)
110	TPH (C ₁₆ - C ₃₅)	1) Automate Extraction, Gas Chromatographic Method ^(11,22) 2) Solvent Extraction, Gas Chromatographic Method ^(12,22) 3) Ultrasonic Extraction, Gas Chromatographic Method ^(22,31)
111	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
112	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
113	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
114	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
115	2,4,5-Trichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
116	2,4,6-Trichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
117	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
118	Vanadium	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)
119	Vinyl Acetate	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
120	Vinyl Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
121	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
122	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
123	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
124	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,23)
125	Zinc	1) Digestion, Inductively Coupled Plasma Method ^(7,16) 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^(7,17)

เอกสารอ้างอิง

- กระทรวงอุตสาหกรรม, ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2566. เรื่อง การจัดการสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว. ราชกิจจานุเบกษา. 31 พฤษภาคม 2566. เล่มที่ 140 ตอนพิเศษ 126 ง.
- กระทรวงอุตสาหกรรม, ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณเคมีภัณฑ์ที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้กลั่นเป็นเชื้อเพลิง. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125 ง.
- สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพมหานคร: 2547.
- APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC: APHA, 2023.

5. United States...

- United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2023.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. SW-846, 2014.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Acid Digestion of Sludges and Sediments and Soils. SW-846 Method 3050B, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Alkaline Digestion for Hexavalent Chromium. SW-846 Method 3060A, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Separatory Funnel Liquid-Liquid Extraction. SW-846 Method 3510C, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Soxhlet Extraction. SW-846 Method 3540C, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Automated Soxhlet Extraction. SW-846 Method 3541, 1994.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Microscale Solvent Extraction (MSE). SW-846 Method 3570, 2002.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Volatile Organic Compounds (VOCs) in Various Sample Matrices Using Equilibrium Headspace Analysis. SW-846 Method 5021A, 2014.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Purge-and-Trap for Aqueous Samples. SW-846 Method 5030B, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. SW-846 Method 5035, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Inductively Coupled Plasma-Atomic Emission Spectrometry. SW-846 Method 6010B, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Inductively Coupled Plasma-Mass Spectrometry. SW-846 Method 6020A, 2007.
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Antimony and Arsenic (Atomic Absorption, Borohydride Reduction). SW-846 Method 7062, 1994. เพิ่มใหม่
- United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Chromium, Hexavalent (Colorimetric). SW-846 Method 7196A, 1992. 3mg/l
- United States...

20. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique). SW-846 Method 7471B, 2007.
21. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Mercury in Solids and Solutions by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry. SW-846 Method 7473, 2007.
22. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Nonhalogenated Organics by Gas Chromatography. SW-846 Method 8015C, 2007.
23. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. pH Electrometric Measurement. SW-846 Method 9040C, 2004.
24. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Soil and Waste pH. SW-846 Method 9045D, 2004.
25. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). SW-846 Method 8260D, 2018.
26. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). SW-846 Method 8270E, 2018.
27. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Total and Amenable Cyanide: Distillation SW-846 Method 9010B, 1996.
28. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Cyanide Extraction Procedure for Solids and Oil. SW-846 Method 9013A, 1996.
29. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Cyanide in Waters and Extracts Using Titrimetric and Manual Spectrophotometric Procedures. SW-846 Method 9014, 2014.
30. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Mercury in Sediment and Tissue Samples by Atomic Fluorescence Spectrometry. SW-846 Method 7474, 2007.
31. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Ultrasonic Extraction. SW-846 Method 3550C, 2007.

[Signature]



ที่ อก ๐๓๑๑(๑)/ ๔ ๑ ๑ ๑

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๕ เมษายน ๒๕๖๗

เรื่อง เปลี่ยนแปลงบุคลากรห้องปฏิบัติการวิเคราะห์
เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๕ มีนาคม ๒๕๖๗

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ความละเอียดแล้วแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้อยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย

๑) นางสาวพรรณธิดา พุ่มคง ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๕

๒) นายกัญชัย สุทธิยะ ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๑

๓) นางสาวศุภรดา ชื่นมยุรา ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๘

๒. ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑๒ ราย

๑) นางสาวฐานิดา กลิ่นเขียว ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๒

๒) นางสาวกัญญ์วิมล สัยคำ ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๓

๓) นางสาวณัฐนันท์ กันทะวงศ์ ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๔

๔) นายอำนาจ วงศาเคน ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๕

๕) นายฤกษ์พล ปัญญาวงศ์ ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๖

๖) นายอนุชากร พรรษา ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๗

๗) นายวิชิตนทร ห่องสามสวน ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๘

๘) นายอนุพงษ์ศักดิ์ โสภากะ ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๙

๙) นายศักดิ์กรินทร์ ปานเพ็ง ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๐

๑๐) นายณัฐพล ชุ่มชื่น ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๑

๑๑) นายธนา สุภาพันธ์ ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๒

๑๒) นายบรรณ แก้วพงษ์ชา ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๓

อนึ่ง หนังสือฉบับนี้...

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ในวันที่ ๒ กันยายน ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายพรยศ กลั่นกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th





ที่ อภ ๐๓๐๖/ ๗ ๙ ๓ ๘

กรมโรงงานอุตสาหกรรม
ถนนพหลโยธินที่ ๒ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐๔ สิงหาคม ๒๕๖๗

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๒๗ พฤษภาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด จำนวน ๓ แผ่น

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออายุ
หนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๓๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕
ตำบลแม่ไม้ อำเภอลำทะเมนชัย จังหวัดระยอง ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย)

จัดทำ ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

- ก. ผู้ควบคุมห้องปฏิบัติการวิเคราะห์เอกชน
- ๑) นายเดช ช่างชน
 - ๒) นางวิภาวดี บริรักษ์
 - ๓) นายสุพจน์ สลามเต๊ะ

ข. เจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน

- ๑) นายณัฐพงษ์ เพ็งพานา
- ๒) นางสาวกัลยพรรณ รักดี
- ๓) นางสาวจุฑารัตน์ สีทองหลาง
- ๔) นางสาวจิตสุภา ประเทืองสุข
- ๕) นายศรศรีวิทย์ คุ้ยเกษ
- ๖) นายณัฐวุฒิ ออมพรมราช
- ๗) นายจิตรกร สีวะสา
- ๘) นายศุภนาทิจ สุวรรณรัตน์
- ๙) นายสิทธิพันธ์ เสนาจิ๋ว
- ๑๐) นายอนุวัฒน์ เตมา
- ๑๑) นายสุรวิทย์ นราพงษ์
- ๑๒) นายณัฐพล เจียงวิวงศ์
- ๑๓) นายชานนท์ บุญชื่น
- ๑๔) นายณัฐกานต์ วงศ์อินทร์อยู่
- ๑๕) นายอนันต์ โพธิ์พระทอง

๑๖) นายณัฐพล...

- ๑๖) นายณัฐพล ถ้ากลาง
- ๑๗) นายศุภณัฐ ทัฬหีพันธ์
- ๑๘) นายสันต์ คินันติ
- ๑๙) นายวรัญญู ฉิมพาลี
- ๒๐) นายศุภณัฐ สุกุลกิตติมงคล
- ๒๑) นายเอกชัย ถันทอง
- ๒๒) นายพงษ์เทพ สีทธิเสาะ
- ๒๓) นายทินกร กุมาชัย
- ๒๔) นางสาวนันทิยา บุญจันทร์
- ๒๕) นายสิทธิชัย ยัมพินาย
- ๒๖) นางสาวปภาณัน พลอดทอง
- ๒๗) นางสาวพจนนา สีดา
- ๒๘) นางสาวอนันดา กลุศิริวงศ์
- ๒๙) นายพิทยา ทองแดง
- ๓๐) นางสาวชลธิชา สิบงศ
- ๓๑) ว่าที่ร้อยตรี รณชัย ม่วงมา
- ๓๒) นายวรวิทย์ พิบา
- ๓๓) นายศักดิ์รินทร์ จรัสกาย
- ๓๔) นายสุรศักดิ์ สาทิน
- ๓๕) นายสพพร ธาแก้ว
- ๓๖) นายสุทธิรัตน์ ไชยรัตน์
- ๓๗) นายวัลลภ หันไยเนาว์
- ๓๘) นางสาวนาถิ์ เจริญตระกูล
- ๓๙) นายณนະสิริ วงศ์ไชย
- ๔๐) นายชัยนุสรณ์ เลิศนันทกุลชัย
- ๔๑) นายสัจจา เพ็ชรแสง
- ๔๒) นายกัมพล มณีสัมพันธ์
- ๔๓) นายธรรณพ อธิกุลินดา
- ๔๔) นายศุภชัย วงศ์สุริยดา
- ๔๕) นายเสาว ตันโพธิ์
- ๔๖) นางสาวกิตติยา สัตยาภิรักษ์
- ๔๗) นางสาวศิริรัตน์ ศิริมงคล
- ๔๘) นายพัฒน นิกิตร์เศรษฐ์
- ๔๙) นายศิริวิทย์ เรืองสม
- ๕๐) นายปารเมศ ลัดดาคุณ
- ๕๑) นายอนุชา ธรรมะโร
- ๕๒) นางสาวศุภรัตน์ โสจันทร์

๕๒) นายพชรกร เล็งเจริญ

๕๓) นายทิวากร เชื้อมาก

๕๔) นายอนุรักษ์ ทองขจรศักดิ์

๕๕) นายอภิชาติ วิลาศ

๕๖) นางจรัสระวี ศรีรักษา

๕๘) นายประสาธมิตร เตือนเพชร

๕๙) นายภาณุวัฒน์ วังนง

๖๐) นายสันติ ชัยชนะ

๖๑) นายพิณกร กุลชาติ

ค. ขอบข่ายชนิดสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน อากาศเสีย ตามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒๘ มิถุนายน ๒๕๗๑ หากประสงค์จะต่ออายุหนังสือ รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงาน อุตสาหกรรมภายใน ๖๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายพริตศ กิตนอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๕๙ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ enw@dw.mail.go.th



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน บริษัท เอแอลเอส แลเบอร์ทอรี กรุป (ประเทศไทย) จำกัด เลขทะเบียน ว-๓๒๓ ที่ อก ๐๓๒๐/ ๗ ๙๓ ๘ ลงวันที่ ๐๔ สิงหาคม ๒๕๖๗

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๔ รายการ น้ำเสีย จำนวน 14 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method ^[2] 2) 5-Day BOD Test, Azide Modification Method ^[2]
2	Chemical Oxygen Demand	1) Open Reflux, Titrimetric Method ^[2] 2) Closed Reflux, Colorimetric Method ^[2] 3) Closed Reflux, Titrimetric Method ^[2]
3	Color	ADMI Weighted-Ordinate Spectrophotometric Method ^[2]
4	Cyanide	Distillation, Colorimetric Method ^[2]
5	Formaldehyde	Distillation, Colorimetric Method ^[1]
6	Free Chlorine	DPD Ferrous Titrimetric Method ^[2]
7	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method ^[2]
8	pH	Electrometric Method ^[2]
9	Phenols	1) Distillation, Chloroform Extraction Method ^[2] 2) Distillation, Direct Photometric Method ^[2]
10	Sulfide	ZnS Precipitation, Iodometric Method ^[2]
11	Temperature	Field Method ^[2]
12	Total Dissolved Solids	Dried at 180 °C ^[2]
13	Total Kjeldahl Nitrogen	Semi-Macro Kjeldahl Method ^[2]
14	Total Suspended Solids	Dried at 103-105 °C ^[2]

น้ำใต้ดิน จำนวน 3 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Cyanide	Distillation, Colorimetric Method ^[2]
2	pH	Electrometric Method ^[2]
3	Phenols	Distillation, Direct Photometric Method ^[2]

อากาศเสีย..

อากาศเสีย (ปล่อยระบาย) จำนวน 7 รายการ

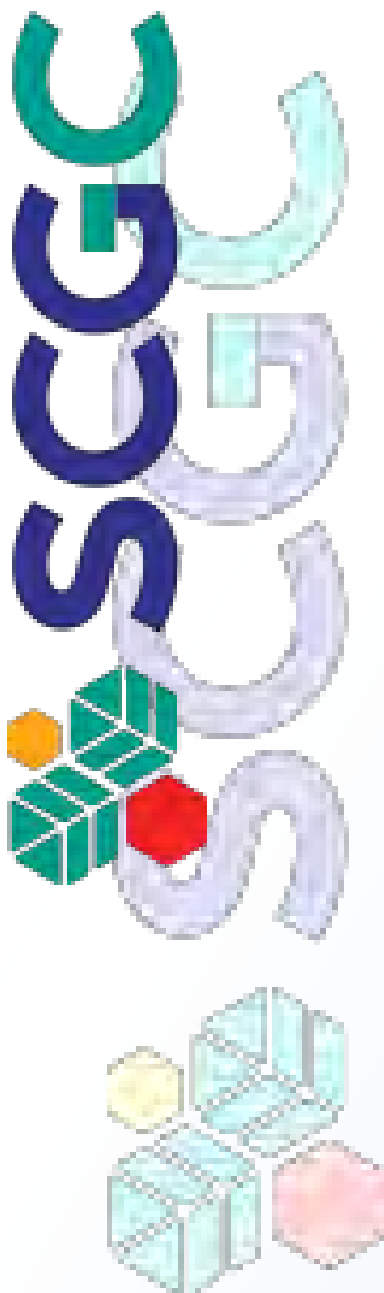
ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Carbon Monoxide	1) Sampling Bag, Non-Dispersive Infrared Method ^[5] 2) Instrumental Analyzer Method ^[9]
2	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[5]
3	Opacity	Ringelmann's Method ^[5,6]
4	Oxide of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method ^[8] 2) Instrumental Analyzer Method ^[10]
5	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Acid Method ^[5] 2) Instrumental Analyzer Method ^[11]
6	Sulfuric Acid	Isokinetic Sampling, Barium - Titrimetric Method ^[6]
7	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method ^[7]

เอกสารอ้างอิง

1. รงชัย พรหมสวัสดิ์ และวิบูลย์ลักษณ์ วิสุมศักดิ์, บรรณาธิการ, (2547) คู่มือวิเคราะห์น้ำเสีย, พิมพ์ครั้งที่ 4, กรุงเทพฯ: สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย.
2. APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC : APHA, 2023
3. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงกลั่นเป็นเชื้อเพลิง. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125ง
4. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำของโรงงาน. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125ง
5. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2017.
6. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2019.

7. United States...

7. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2020.
8. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2023.
9. United States Environmental Protection Agency. Determination of Carbon Monoxide Emission from Stationary Sources; Instrumental Analyzer Procedure. 40 CFR 60. Appendix A Method 10, 2017.
10. United States Environmental Protection Agency. Determination of Oxide of Nitrogen Emission from Stationary Sources; Instrumental Analyzer Procedure. 40 CFR 60. Appendix A Method 7E, 2023.
11. United States Environmental Protection Agency. Determination of Sulfur dioxide Emission from Stationary Sources; Instrumental Analyzer Procedure. 40 CFR 60. Appendix A Method 6C, 2017.



✉ bangkok@alsglobal.com



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