

ภาคผนวก ข-51

ขั้นตอนการปฏิบัติงาน Shutdown/Turnaround และ Pre-Start Up

SE 10 013 LR-231 Loop Reactor Start up Procedure

Scope

ขอบเขต

This procedure is used to start up an SE® Train after a short duration (<4 days) shutdown.

Categories

ประเภท

Categories _____/Attributes (Operating/Other)

☒ High Risk ☐ Medium Risk ☐ Low Risk ☐ Immediate Response ☐ Other

Hazards and precautions

อันตรายและข้อควรระวัง

The table below lists job hazards and the precautions that should be taken for safety, environmental, quality, ergonomics, Good Manufacturing Practices, etc... before beginning this procedure. The Procedure Implementation Analysis can be a valuable tool for hazard evaluation.

ตารางด้านล่างนี้ระบุถึงอันตรายและข้อควรคำนึง / ระวังต่าง ๆ เกี่ยวกับเรื่องความปลอดภัย, สิ่งแวดล้อม, คุณภาพ, ทำางการทำงาน, มาตรฐานการปฏิบัติงาน, หรืออื่น ๆ ... ก่อนที่จะเริ่มปฏิบัติงาน .Procedure Implementation Analysis เป็นเครื่องมือหนึ่งที่สามารถใช้ในการประเมินอันตรายที่เกิดขึ้นได้ .

Hazard (อันตราย)	Precaution (ข้อควรคำนึง / ระวัง)
Safety Concerns: <ul style="list-style-type: none"> See safety concerns in startup procedures for each operating area. 	
Environmental Concerns: <ul style="list-style-type: none"> Maintenance Spills Liquid spills Additional concerns 	<ul style="list-style-type: none"> Ensure any maintenance performed while the train was down has been properly re-commissioned prior to start-up. The control room must be notified immediately of any spill. Liquid spills must be contained and picked up according to the block SPC/SPCC plan. See startup procedures by area for additional concerns.
Operation of positive displacement pumps	When operating positive displacement pumps (such as diaphragm or gear pumps), verify the pump suction and discharge piping is properly lined-up

Revision history**ประวัติการแก้ไข****เอกสาร**

Date (วันที่)	Revised By (แก้ไขโดย)	Changes (รายละเอียดการแก้ไข)
24-Jul-2019	Manus T	Review with no change
17-Oct-2018	Chana N.	- Remove visual indicator
30-Mar-2017	Somphop Sa.	Update Visual indicator Updated naming from " Critical " to " High Risk " align with SITE ADM 007 PUP Procedure
29-Dec-15	Chana N.	Updated footer 'Any other print out copy is defined as "uncontrolled copy" to ensure that procedure control E-file only and set interval time for 2016 as DMS planning

ภาคผนวก ข-52

ขั้นตอนการอบรมพนักงานก่อนเริ่มงาน Shutdown/Turnaround และ
Pre-Start Up

SE 10 015 SE Train Extended Shutdown

Scope

ขอบเขต

This procedure is used by qualified SE operators to shutdown the plant for turnaround in long term shutdown

ขั้นตอนการปฏิบัติงานนี้ใช้สำหรับพนักงานฝ่ายผลิตของโรงงาน SE ในการหยุดเดินระบบเป็นระยะเวลานานสำหรับการ turnaround

This procedure involves steps to adjust reactor conditions and polymer properties suitable before long term shutdown. We will increase MI to 4-5 to be suitable for clearing devo. For turnaround job. This is important for empty and start up devo system.

ขั้นตอนการปฏิบัติงานนี้เกี่ยวเนื่องกับการปรับ reactor condition และ polymer properties ให้เหมาะสมก่อนที่จะทำการ shutdown เป็นระยะเวลานาน. มันเหมาะสมที่เราจะเพิ่ม MI ไปที่ 4-5 สำหรับการ clearing devo. สำหรับ Turnaround job, การ empty และ startup ระบบ devo เป็นอะไรที่สำคัญมาก.

Antioxidant will be added about twice of normal amount. This is to prevent thermal degradation and gels/black specks after start up.

Antioxidant จะเติมเพิ่มเป็น 2 เท่าจากการเติมปกติ เพื่อเป็นการป้องกันไม่ให้ polymer เกิดการไหม้จากความร้อน ซึ่งจะทำให้เกิดปัญหา gel/black spec หลังการ startup plant.

To prepare for turnaround job after hot solvent flush completed, need to cool down and empty loop reactor, flush all catalyst component and antioxidant feed line with solvent.

สำหรับการเตรียม turnaround job หลังจากการทำ hot solvent flush เรียบร้อย ต้องทำการ cool down และ empty loop reactor, flush catalyst component และ antioxidant feed line ทั้งหมดด้วย solvent.



Categories and Attributes

ประเภทและคุณสมบัติ

Categories _____/Attributes (Operating/Other)

☒ High Risk ☐ Medium Risk ☐ Low Risk ☐ Immediate Response ☐ Other

Document and Records Management การจัดการเอกสารและบันทึกต่างๆ

The current procedure is filed in the Document Management System (procedure ฉบับนี้ จัดเก็บในรูปแบบ electronic อยู่) Electronic component, under Procedures\\Th014ndowd001\mtp_se\Approved\Procedures\Process Unit A, B, C, etc\10 Reactors
A hardcopy of this procedure is located in (applies only if hardcopy is kept) Hard copy (กรณีที่มีการจัดเก็บเป็น hardcopy) จัดเก็บอยู่ที่: แฟ้ม PUP บน SE panel
File this completed procedure checklist in (applies if checklist format is utilized) สำหรับ Procedure checklist ที่กรอกเรียบร้อยแล้วขณะปฏิบัติงาน) เฉพาะกรณีที่ เป็น checklist format) จัดเก็บอยู่ที่: SE Panel.

Validation การยืนยันว่าใช้ได้

This procedure was validated as the best known way to do this job by:
ขั้นตอนการปฏิบัติงานนี้ได้รับการยืนยันว่าเป็นวิธีที่ดีที่สุดในการปฏิบัติงานโดย
Joomponpat J./ SE Shift lead 26-May-2020
(Name ชื่อ / Job Title ตำแหน่ง) (Date วันที่)

Owner/ Approver การอนุมัติ

The last revision of this procedure was approved by:
ขั้นตอนการปฏิบัติงานนี้ได้รับการอนุมัติโดย
Jittima D./ SE Production Leader 26-May-2020
(Name ชื่อ / Job Title ตำแหน่ง) (Date วันที่)

MOC

MOC# SE2018100003 Date Approved : 17-Oct-2018
MOC# SE2019060002 Date Approved : 24-Jul-2019
MOC# SE2020050007 Date Approved : 26-May-2020

Revision history ประวัติการแก้ไขเอกสาร

The following information documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

Date	Revised By	Changes
26-May-2020	Thanakorn S.	Update scope and safety operating limit to control pressure of V-839 during purging activity (RCI action)
24-Jul-2019	Seksan C.	Update step 3
17-Oct-2018	Chana N.	Review with no change

ภาคผนวก ข-53

Pre-Start Up Safety Review Checklist

SE_036 SE Process Fluids Re-Introduction Checklist

Scope

The following checklist must be completed before Process Fluids can be introduced into piping or equipment in the plant process units.

Process Fluids are any solids, liquids or gases that are charged into a system that will be pressurized, heated, circulated, etc. used to startup a system.

Process Fluids includes all chemical which includes utilities such as air, nitrogen, steam and fuel gas or other hazardous services per definition in GMISS standard.

Exemption: Process Fluids are excluded Demin water, Cooling Tower water, process water, safety shower water which temperature less than 60C.

It is designated primarily for:

- Re-introduction of Process Fluids into an existing plant following a major turnaround.
- Re-introduction of major equipment or plant system start up that site RTO checklist cannot be covered or site RTO might not be used effectively due to the complexity of equipment or plant systems. The judgement of applying which checklist relies on the project or job owners.

The use of this checklist follows IEAT PSM requirements on re-startup after plant shutdown or turnaround.

ประกาศการนิคมอุตสาหกรรม

ข้อ ๒๙/๕ (๖), ๒๙/๒๒, ๒๙/๒๓ การทบทวนความปลอดภัยก่อนการเริ่มเดินเครื่อง
(Pre-Startup Safety Review)



ประกาศ กนอ..pdf

Checklists

There are one main checklist with 3 sub-checklist in this document:

Checklist A: Applies for

- Re-introduction of Process Fluids into an existing plant following a major turnaround.
- Re-introduction of major equipment or plant system start up that site RTO checklist cannot be covered or site RTO might not be used effectively due to the complexity of equipment or plant systems. The judgement of applying which checklist relies on the project or job owners.

Reviewer with Production Leader or Delegated person by production leader needs to sign every steps (Initials).

Recommended roles are Plant representative, Technical advisor, EH&S representative and Plant leader (or designee)

SE Process Fluids Introduction Checklist

Documentation

Document and Records Management

The current procedure is filed in the Document Management System, Electronic component, under. Blank Form folder

A hardcopy of this procedure is located in: N/A

File this completed procedure checklist in:

Validation

This procedure was validated as the best known way to do this job by:

Chana N./Technical Advisor

29-Oct-2020

(Name/Job Title)

(Date)

Approvals

This procedure was approved by:

Jittima D./SE Production Leader

29-Oct-2020

(Name/Job Title),

(Date)

Management of Change (MOC)

MOC# SE2020100014

Date Approved : 29-Oct-2020

Revision history

The following information documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

Date	Revised By	Changes
29-Oct-2020	Thanakorn S.	Create new procedure

ภาคผนวก ข-54

เกณฑ์การคัดเลือกและประเมินคุณภาพของสถานบริการสุขภาพ

เกณฑ์การคัดเลือก สถานพยาบาล/รพ. ที่รับตรวจสอบสภาพ

หัวข้อ	เกณฑ์การคัดเลือก สถานพยาบาล/รพ. ที่รับตรวจสอบสภาพ	ผ่าน	ไม่ผ่าน	หมายเหตุ
1	ต้องมีใบอนุญาตประกอบการสถานพยาบาล ชื่อสถานพยาบาลหรือที่ตั้งต้องตรงกับใบอนุญาต (ไม่ใช่เพียงศูนย์ตรวจสอบสภาพ)			
2	มีแพทย์หรือเทคนิคการแพทย์ ซึ่งมีใบประกอบโรคศิลปะควบคุมการปฏิบัติงาน			
3	มีห้องปฏิบัติการทางการแพทย์ รถเอ็กซเรย์เคลื่อนที่ ผ่านการอนุญาต			
4	มีใบรับรองคุณภาพต่างๆ ทั้งภายในและภายนอกองค์กร			
5	มีการจัดการตรวจสอบสภาพและเหมาะสมสอดคล้องกับความเสี่ยงที่ลูกจ้างได้รับ			
6	มีแพทย์อาชีวเวชศาสตร์เป็นผู้ตรวจสอบสภาพลูกจ้างปัจจัยเสี่ยง			
7	มีบุคลากรวิชาชีพ ปฏิบัติในการกิจตามคุณลักษณะปฏิบัติงาน เช่น นักโสตสัมผัสวิทยา พยาบาลอาชีวอนามัย			
8	มีการให้บริการที่แสดงถึงการควบคุมมาตรฐานการตรวจที่น่าเชื่อถือ เช่น มีอุปกรณ์การตรวจที่มีความแม่นยำสูง มีเครื่องมือที่ผ่านการทดสอบความเที่ยงตรงมีการเตรียมลูกจ้างก่อนเข้าตรวจร่างกายหรือการเก็บตัวอย่างชีวภาพต่างๆ			
9	มีห้องปฏิบัติการพิษวิทยาที่มีการควบคุมมาตรฐานการดำเนินงาน หรือมีการส่งตัวอย่างวิเคราะห์ไปยังห้องปฏิบัติการดังกล่าว เช่น ห้องปฏิบัติการที่ผ่านการรับรอง			
10	มีรูปแบบการรายงานผลตรวจสอบสภาพ ตลอดจนการจัดเก็บข้อมูล วิเคราะห์ การจัดบ้านพัก ที่สามารถอ่านได้เข้าใจง่ายและนำไปใช้ประโยชน์ในการเฝ้าระวังโรคได้			
11	สามารถให้คำแนะนำเกี่ยวกับการปฏิบัติตามข้อกำหนดเกี่ยวกับการตรวจสอบสภาพตามกฎหมาย			
12	สามารถตรวจวินิจฉัยโรคจากการทำงานได้			
13	มีบริการเสริมอื่นๆ เช่น โปรแกรมการให้ศึกษาแก่ลูกจ้าง การแนะนำต่างๆ การจัดบอร์ดประชาสัมพันธ์ ใบปลิว ฯลฯ			
14	บริการเสริมอื่นๆ ที่จะเป็นประโยชน์แก่การเฝ้าระวังโรค			

ภาคผนวก ข-55

แผนผังพื้นที่สีเขียวของกลุ่มบริษัทฯ

ภาคผนวก ข-56

ตารางการทำงานของแพทย์และพยาบาล

อา.	จ.	อ.	พ.	พ.	ศ.	ส.
1	2	3	4	5	6	7
	AIE 08.30-10.30 MTP 11.00-14.00 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์		AIE 13.00-15.00 พญ.ปารณีย์ จันทร์อ่อน เวชปฏิบัติทั่วไป	วันพ่อแห่งชาติ		
8	9	10	11	12	13	14
	AIE 08.30-10.30 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์		AIE 13.00-15.00 พญ.ปารณีย์ จันทร์อ่อน เวชปฏิบัติทั่วไป	MTP 09.00-12.00 AIE 13.30-16.30 นพ.ธนภูมิ ไกลโรตง อาชีวเวชศาสตร์	MTP 08.30-11.30 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์	
15	16	17	18	19	20	21
	AIE 08.30-10.30 MTP 11.00-14.00 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์		AIE 13.00-15.00 พญ.ปารณีย์ จันทร์อ่อน เวชปฏิบัติทั่วไป	MTP 09.00-12.00 AIE 13.30-16.30 นพ.ลิขสิทธิ์ โสนันทะ อาชีวเวชศาสตร์		
22	23	24	25	26	27	28
	AIE 08.30-10.30 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์		AIE 13.00-15.00 พญ.ปารณีย์ จันทร์อ่อน เวชปฏิบัติทั่วไป	MTP 09.00-12.00 AIE 13.30-16.30 นพ.ลิขสิทธิ์ โสนันทะ อาชีวเวชศาสตร์	MTP 08.30-11.30 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์	
29	30	31				
	AIE 08.30-10.30 MTP 11.00-14.00 นพ.นพดล คู่สุวรรณกุล ศัลยศาสตร์ออร์โธปิดิกส์	วันสิ้นปี				

NOTES:

นพ.ลิขสิทธิ์ โสนันทะ โทร. 081 985 2475
 นพ.นพดล คู่สุวรรณกุล โทร. 085 558 8839
 พญ.ปารณีย์ จันทร์อ่อน โทร. 086 971 1686

ภาคผนวก ข-57

บันทึกสถิติอุบัติเหตุ

สถิติการเกิดอุบัติเหตุ
โครงการโรงงานผลิตโพลีเอททีลีน
ของบริษัท สยามเลเทกซ์สังเคราะห์ จำกัด

ข้อมูล ณ วันที่ 31 ธันวาคม พ.ศ. 2567

ปี พ.ศ.	การบาดเจ็บ/เจ็บป่วยถึงขั้นหยุดงาน (DAWC)	ไฟไหม้ / ระเบิด
2565	0	0
2566	0	0
2567	0	0

หมายเหตุ :

DAWC = Day Away from Work Cases (กรณีหยุดงานตั้งแต่ 1 วันขึ้นไป ตามนิยามของ OSHA International Standard)



ภาคผนวก ข-58

การฝึกซ้อมแผนฉุกเฉินร่วมกับหน่วยงาน off-site pipe line ประจำปี

2567

การซ้อมแผนฉุกเฉินของหน่วยงาน Off-site pipe line
สถานการณ์สมมติ วันที่ 01 พฤศจิกายน 2567 ระหว่างเวลา 13:30 น ถึง 15:00น
ขณะทำการเปิด Valve Butene ที่คลองชักหมาก ได้กลิ่น Butene ที่บริเวณ Valve
ของบริษัท สยามโพลีเอทิลีน จำกัด
(แผนกเอสซีโอ นิคมอุตสาหกรรมเอเซีย)

**ขอบเขต
(Scope)**

ซ้อมแผนฉุกเฉินระดับ1 (นิคม)ของ บริษัท สยามโพลีเอทิลีน จำกัด (แผนกเอสซีโอ เอ็มแอนด์ที นิคมอุตสาหกรรมเอเซีย)

ซ้อมแผนฉุกเฉินตามแผนปฏิบัติการภาวะฉุกเฉิน กลุ่มนิคมอุตสาหกรรม พื้นที่มาบตาพุดจังหวัดระยอง

**วัตถุประสงค์
(Objective)**

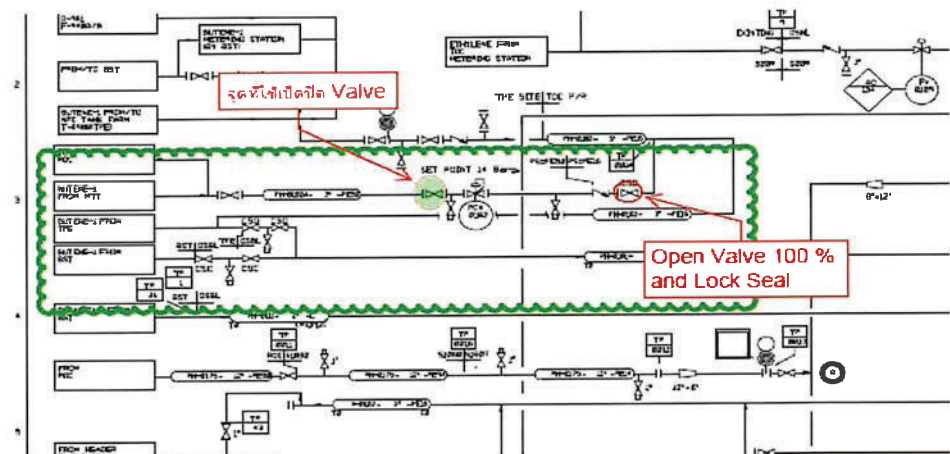
1. เพื่อซักซ้อมความพร้อมของหน่วยงานโต้ตอบภาวะฉุกเฉินของโรงงานและการใช้อุปกรณ์ ในเรื่องการควบคุม การระงับเหตุ และการเก็บกู้ เกิดการรั่วไหลของสารเคมี และเหตุเพลิงไหม้
2. เพื่อทดสอบการติดต่อประสานงานภายใน ในกรณีที่เกิดเหตุฉุกเฉินระดับโรงงาน
3. เพื่อให้พนักงาน ผู้มาติดต่อ และผู้รับเหมาในโรงงาน ค้นเคยกับวิธีปฏิบัติในการรวมพล
4. เพื่อทดสอบการติดต่อประสานงานภายนอก
5. เพื่อฝึกการแก้ปัญหาเฉพาะหน้าเพื่อลดผลกระทบที่มีต่อกระบวนการผลิต สิ่งแวดล้อมและชุมชน

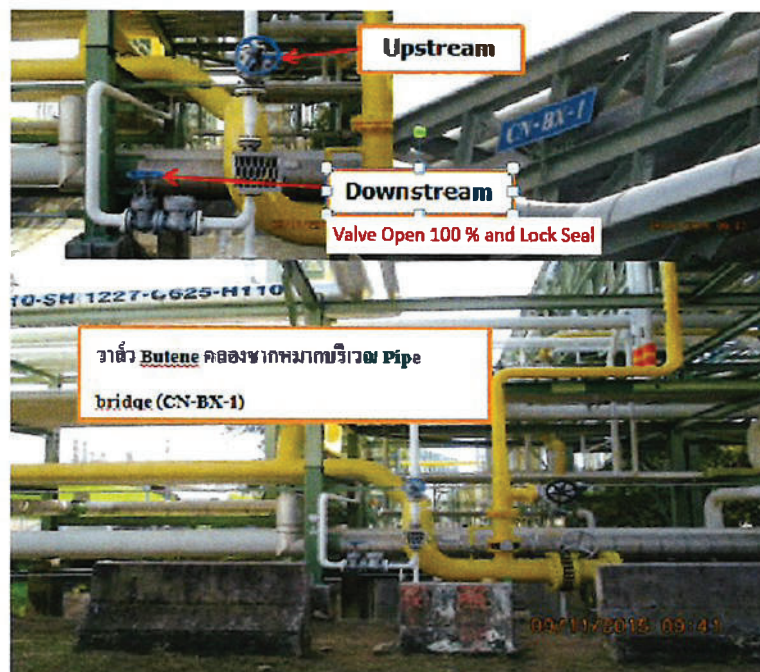
**สมมติฐาน
ของการซ้อม
แผนฯ**

(Assumption)

- ขณะทำการเปิด Valve Butene ที่คลองชักหมาก ได้กลิ่น Butene ที่บริเวณ Valve
- ได้มีการวัดค่า VOC. บริเวณ Stem Valve 3" Line Butene ที่ คลองชักหมาก วัดค่า VOC.ได้เกิน มาตราฐานวัดได้ 900 PPM.
- ไม่มีผู้บาดเจ็บ
- มีการปิดกั้นพื้นที่
- ไม่มีผลกระทบต่อชุมชนและโรงงานโดยรอบ

จุดเกิดเหตุ





สถานการณ์สมมติ (Scenario)

เวลา (Time Period)	เหตุการณ์/สถานการณ์ต้นเหตุ (Emergency Drill Scenario)
13.30 น	<p>LAC Sujin M. แจ้ง IRL ขณะทำการเปิด Valve Butene ที่คลองซากหมาก ได้กลิ่น Butene</p> <ul style="list-style-type: none"> หยุดกิจกรรมเปิด Valve แจ้ง SPE Panel รับทราบ และแจ้ง SCO IRL ทางวิทยุ SCO AIE Spare 2 <p>IRL. Suksan B. รับทราบเหตุการณ์ ให้ LAC. Sangsuree R. เป็นคนจดบันทึกและติดต่อประสานงาน</p> <ul style="list-style-type: none"> IRL ให้ LAC Truck guard แจ้ง OL SCO Off site logistics and EFT

13:45	<p><u>IRL</u></p> <p>IRL ถึงพนักงาน (คลองซากหมาก) พร้อมเอกสาร SDS และอุปกรณ์ PPE. และเครื่องมือที่ต้องใช้งาน</p> <ul style="list-style-type: none"> • IRL ประเมินสถานการณ์และให้ LAC ปิดกั้นบริเวณ • IRL แจ้งให้ LAC สวมใส่ PPE • IRL สั่งการให้ LAC ใช้เครื่องมือวัด Minirea ทำการตรวจวัด VOC. ที่บริเวณ ที่จุด Stem Valve Butene 3 " =900 PPM • IRL แจ้ง ESS มีกลิ่นสารเคมี Butene leak ที่คลองซากหมาก วัด VOC จุด Stem Valve Butene 3 " ได้ 900 PPM ,ไม่มีคนได้รับบาดเจ็บ ให้ ESS Standby เพื่อเตรียมพร้อมหากต้องการกำลังสนับสนุนจะแจ้งอีกครั้ง
13:48	<p>IRL. Suksan B.</p> <ul style="list-style-type: none"> • IRL. Suksan B. วิทยุแจ้ง K.Sangsuree R. LAC. Update OL,EFT and SE Plant เพื่อให้รับทราบถึงสถานะการณ์ <p>แจ้ง</p> <ul style="list-style-type: none"> • ตรวจพนักงานไม่มีคนบาดเจ็บ • ได้มีการใช้ Minirea วัดค่า VOC.ได้ 900 PPM. รั่วไหลที่จุด Stem Valve 3 " • สารเคมี Butene จุดเกิดเหตุ คลองซากหมาก
13:55	<p>IRL Suksan B.</p> <ol style="list-style-type: none"> 1. IRL.แจ้งให้ทาง K. Sujin M. เข้าไปทำการขันอัด Packing Valve 2. จากนั้นใช้ Minirea วัดค่า VOC.อีกครั้งเพื่อ Check ค่า พบว่าค่า VOC. เป็น 50 PPM.
14:00	<p>IRL Suksan B.</p> <ol style="list-style-type: none"> 1. IRL.แจ้งให้ทาง Sujin M. เข้าไปทำการขันอัด Packing Valve อีกครั้ง 2. จากนั้นใช้ Minirea วัดค่า VOC.อีกครั้งเพื่อ Check ค่า พบว่าค่า VOC. เป็น 0 PPM.
14:03	<p>IRL. Suksan B.</p> <p>วิทยุแจ้ง K.Sangsuree R.เพื่อ Update OL ,EFT,ESS และ SE Panel ว่าได้ทำการ Stop Leak Stem Valve แล้ววัดค่าซ้ำอีกครั้ง อ่านค่า VOC.ได้ 0 PPM.</p>
14:03 to 14:33	<p>IRL. Suksan B.</p> <p>Standby อยู่พนักงาน 30 นาที</p>

15:00	IRL. Suksan B. <ul style="list-style-type: none"> ลงบันทึก IR stamp เหตุการณ์ใน E-logbook รวมถึง Post IR review หรือ Follow up action ถ้ามี
-------	---

สิ่งที่เรียนรู้จากการซ้อมแผนฉุกเฉิน (Learning from Emergency Drill)

จากการซ้อมแผนฉุกเฉินเมื่อวันที่ 17 ตุลาคม 2566 สามารถสรุปสิ่งที่ทำได้ดี และสิ่งที่ต้องปรับปรุงของแต่ละบทบาทที่เกี่ยวข้องกับสถานการณ์ฉุกเฉินดังนี้

SCO operator IRL

สิ่งที่ดี	สิ่งที่ควรปรับปรุง
<ul style="list-style-type: none"> ได้มีการติดต่อสื่อสารที่ดี สามารถควบคุมพื้นที่ได้เป็นอย่างดี แจ้งส่วนงานที่มีส่วนเกี่ยวข้องได้ครบ 	<ul style="list-style-type: none"> ไม่มีอุปกรณ์เครื่องมือวัด ในส่วนงานของ M&T ทำให้ต้องไปยืม Plant SE. ทำให้ล่าช้า

EFT (พนักงาน)

สิ่งที่ดี	สิ่งที่ควรปรับปรุง
<ul style="list-style-type: none"> ได้มีการประเมินหน้างานรอบเพื่อล้อม Barricade และสามารถกันพื้นที่ได้อย่างรวดเร็ว ได้มีการติดต่อกับทางส่วนกลาง EFT. เป็นระยะตามสถานการณ์ มีการให้ข้อมูลกับทาง RIL. ได้เป็นอย่างดี 	

ภาคผนวก ข-59

Audit CEMs ปี 2567



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2498961

Date Received : Sep 12, 2024

Date Reported : Oct 02, 2024

Report Number : 3093879-1

Page 1 of 3

Sample Number 2498961-1
Sampled Date Sep 11, 2024
Sample Description Emission from Stationary Source
Location Furnace (GPS 47P 0727403, 1404833)
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	11 Sep 24	11:30	11:50	16.30	16.94	16.38	17.07	0.69
2	11 Sep 24	11:51	12:11	16.24	17.34	16.37	17.43	1.06
3	11 Sep 24	12:12	12:32	16.36	17.57	16.49	17.70	1.21
4	11 Sep 24	12:33	12:53	16.47	17.88	16.65	18.04	1.39
5	11 Sep 24	12:54	13:14	16.30	17.88	16.36	17.98	1.62
6	11 Sep 24	13:15	13:35	16.27	17.79	16.35	17.96	1.62
7	11 Sep 24	13:36	13:56	16.08	17.69	16.13	17.84	1.72
8*	11 Sep 24	13:57	14:17	16.14	17.90	16.17	18.05	1.88
9	11 Sep 24	14:18	14:38	16.09	17.87	16.16	17.98	1.81
10*	11 Sep 24	14:39	14:59	16.17	17.94	16.30	18.14	1.84
11*	11 Sep 24	15:00	15:20	16.16	17.98	16.15	18.16	2.00
12	11 Sep 24	15:21	15:41	16.22	17.92	16.27	18.06	1.80
Average						16.35	17.79	1.43
Confidence Coefficient (CC)								0.29
Relative Accuracy (Compared with Emission Standard : 42 ppm) (%)								4.11
Relative Accuracy Criteria ^{1/} (Compared with Emission Standard)								≤ 10%

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) compared with Emission Standard 42 ppm at 7%O2

RA Result is within Criteria

Technical Management



Wichan Choonharat

Manager

ทะเบียนเลขที่ ว-204-ค-0006

Approved by



Sarayuth Jittrantont

Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0003

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. Part of the ALS Group

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports\Stack_CEMs1.rpt



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2498961

Date Received : Sep 12, 2024

Date Reported : Oct 02, 2024

Report Number : 3093879-1

Page 2 of 3

Sample Number 2498961-1
Sampled Date Sep 11, 2024
Sample Description Emission from Stationary Source
Location Furnace (GPS 47P 0727403, 1404833)
Parameter CO

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	11 Sep 24	11:30	11:50	36.05	31.69	36.24	31.92	-4.31
2	11 Sep 24	11:51	12:11	36.56	31.31	36.87	31.48	-5.38
3	11 Sep 24	12:12	12:32	34.81	30.22	35.08	30.44	-4.63
4	11 Sep 24	12:33	12:53	34.11	29.03	34.49	29.29	-5.20
5	11 Sep 24	12:54	13:14	35.89	30.03	36.03	30.21	-5.82
6	11 Sep 24	13:15	13:35	35.91	30.79	36.09	31.08	-5.01
7	11 Sep 24	13:36	13:56	40.08	33.63	40.21	33.91	-6.29
8*	11 Sep 24	13:57	14:17	40.38	33.15	40.44	33.42	-7.01
9*	11 Sep 24	14:18	14:38	40.99	34.16	41.18	34.36	-6.82
10	11 Sep 24	14:39	14:59	36.61	30.83	36.90	31.18	-5.72
11*	11 Sep 24	15:00	15:20	38.52	31.43	38.49	31.73	-6.75
12	11 Sep 24	15:21	15:41	37.18	31.25	37.28	31.49	-5.78
Average						36.57	31.22	-5.35
Confidence Coefficient (CC)								0.48
Relative Accuracy (Compared with Emission Standard : 690 ppm) (%)								0.85
Relative Accuracy Criteria ^{1/} (Compared with Emission Standard)								≤ 5%

Reference Method : US EPA Method 10

Remark: * Sample with * is a rejected data

^{1/} Relative Accuracy Criteria of CO is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 4 (PS-4) compared with Emission Standard 690 ppm at 7%O2
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

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. Part of the ALS Group

Life Sciences

www.alsglobal.com

7780-31/ EMAIL

RIGHT SOLUTIONS RIGHT PARTNER

S:\Reports\Stack_CEMs1.rpt



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2498961

Date Received : Sep 12, 2024

Date Reported : Oct 02, 2024

Report Number : 3093879-1

Page 3 of 3

Sample Number 2498961-1
Sampled Date Sep 11, 2024
Sample Description Emission from Stationary Source
Location Furnace (GPS 47P 0727403, 1404833)
Parameter O2

Relative Accuracy Test Audit Report

Run No.	Date	Time		Raw Data at Actual		Difference
		Start	Stop	CEMs (%)	RM (%)	
1	11 Sep 24	11:30	11:50	7.07	7.10	0.03
2	11 Sep 24	11:51	12:11	7.12	7.08	-0.04
3	11 Sep 24	12:12	12:32	7.11	7.10	0.00
4	11 Sep 24	12:33	12:53	7.15	7.12	-0.03
5	11 Sep 24	12:54	13:14	7.05	7.08	0.03
6	11 Sep 24	13:15	13:35	7.07	7.13	0.06
7	11 Sep 24	13:36	13:56	7.04	7.11	0.07
8*	11 Sep 24	13:57	14:17	7.02	7.12	0.10
9	11 Sep 24	14:18	14:38	7.06	7.08	0.02
10	11 Sep 24	14:39	14:59	7.11	7.16	0.05
11*	11 Sep 24	15:00	15:20	6.99	7.13	0.14
12*	11 Sep 24	15:21	15:41	7.04	7.11	0.07
Average				7.09	7.11	0.02
Confidence Coefficient (CC)						-
Relative Accuracy (Compared in Actual) (%)						0.02
Relative Accuracy Criteria (%)						≤ 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 : Sathaporn Thakaew

Technical Management

Wichan Choonharat

Manager

ทะเบียนเลขที่ ว-204-ค-0006

Approved by

Sarayuth Jittrantont

Assistant General Manager

ทะเบียนเลขที่ ว-204-ค-0003

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. Part of the ALS Group

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports\Stack_CEMs1.rpt



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4701476446

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 24102796

Date Received : Sep 12, 2024

Date Reported : Sep 20, 2024

Report Number : 3102120-2

Page 1 of 1

Sample Number 24102796-1
Sampled Date Sep 11, 2024
Sample Description Emission from Stationary Source
Location Furnace (GPS 47P 0727403, 1404833)
Parameter Stack Temperature

Relative Accuracy Test Audit Report

Run No.	Date	Time		Temperature Data		Difference
		Start	Stop	CEMs (°C)	RM (°C)	
1	11 Sep 24	11:30	11:51	210.6	203.3	-7.3
2	11 Sep 24	11:52	12:13	210.6	201.2	-9.4
3	11 Sep 24	12:14	12:35	210.4	199.6	-10.8
4	11 Sep 24	12:46	13:07	210.6	198.3	-12.3
5	11 Sep 24	13:08	13:29	210.5	197.5	-13.0
6*	11 Sep 24	13:30	13:51	210.5	197.0	-13.5
7	11 Sep 24	13:52	14:13	210.4	198.0	-12.4
8	11 Sep 24	14:14	14:35	210.3	197.0	-13.3
9	11 Sep 24	14:36	14:57	210.4	197.6	-12.8
10*	11 Sep 24	14:58	15:19	210.6	197.0	-13.6
11	11 Sep 24	15:20	15:41	210.3	197.0	-13.3
12*	11 Sep 24	15:42	16:03	210.4	197.0	-13.4
Average				210.5	198.8	-11.6
Confidence Coefficient (CC)						1.6
Relative Accuracy ^{1/} (Compared with RM) (%)						6.6
Relative Accuracy Criteria (Compared with RM)						≤ 20 %

Reference Method : US EPA Method 2

Remark: * Sample with * is a rejected data

^{1/} Relative Accuracy Criteria of Stack Temperature is refer to 40 CFR Part 60 Appendix B : Performance Specification Test 6 (PS-6)

RA Result is within Criteria

Sampled By : Natthawut Duangpang

Technical Management

Wichan Choonharat
Manager

ทะเบียนเลขที่ ๖-204-ก-0006

Approved by

Sarayuth Jittranont
Assistant General Manager

ทะเบียนเลขที่ ๖-204-ก-0003

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.

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. Part of the ALS Group

Life Sciences

www.alsglobal.com

7780-31/ EMAIL

RIGHT SOLUTIONS RIGHT PARTNER

S:\Reports\Stack_CEMs1.rpt

ภาคผนวก ข-60

บันทึกสถิติการเจ็บป่วยของพนักงาน ที่เข้ารับการรักษายาบาลเบื้องต้นที่
ห้องปฐมพยาบาล ปี 2567

Plant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total
MTP Site													
PU	0	0	0	4	3	2	0	2	1	1	4	3	20
Latex	0	1	0	2	1	1	0	1	0	0	0	1	7
PS	0	1	0	1	2	2	2	1	2	0	4	1	16
PE	2	1	3	1	2	2	3	5	3	4	3	2	31
EBSM	1	0	4	4	3	0	0	1	1	3	5	5	27
AIE Site													
PO	2	11	3	2	6	4	6	4	7	4	6	10	65
SE	2	2	0	0	2	3	3	1	1	0	1	6	21
PG&Polyol	8	2	6	2	6	1	4	2	4	7	5	4	51

238

System	Visit Number	%	Jan-Jun
Respiratory System	47	19.75	
Digestive System	15	6.30	
Musculoskeletal System and Connective Tissue - lower extremities	9	3.78	
Nervous System	8	3.36	
Ear, Nose, Mouth and Throat	6	2.52	

System	Visit Number	%	Jul-Dec
Respiratory System	58	43.28	
Musculoskeletal System and Connective Tissue - lower extremities	29	21.64	
Skin	18	13.43	
Digestive System	9	6.72	
Circulatory System	2	1.49	
Endocrine and Nutrition	2	1.49	
Ear, Nose, Mouth and Throat	2	1.49	

ภาคผนวก ข-61

จดหมายขอข้อมูลรายงานสถิติผู้ป่วยตามกลุ่มโรค

ที่ SSLC_SE /รพ.เฉลิมพระเกียรติฯ 2501-003

20 มกราคม 2568

สำเนา

เรื่อง ขอข้อมูลรายงานสถิติผู้ป่วยตามกลุ่มโรค ประจำปี 2566-2567

เรียน ผู้อำนวยการโรงพยาบาลเฉลิมพระเกียรติสมเด็จพระเทพรัตนราชสุดาฯ สยามบรมราชกุมารี ระยอง

เนื่องด้วยบริษัท สยามเลเทกซ์สังเคราะห์ จำกัด (บริษัทฯ) ซึ่งตั้งอยู่ที่นิคมอุตสาหกรรมเอเชีย อำเภอบ้านฉาง จังหวัดระยอง จะต้องดำเนินการตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อมและมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมของโครงการโรงงานผลิตโพลีเอททีลีน ซึ่งกำหนดให้โครงการทำการรวบรวมสถิติสภาวะการเจ็บป่วยและการตรวจสุขภาพของประชาชนที่อยู่อาศัยโดยรอบพื้นที่โครงการ ของโรงพยาบาลเฉลิมพระเกียรติสมเด็จพระเทพรัตนราชสุดาฯ สยามบรมราชกุมารี ระยองหรือสำนักงานสาธารณสุขที่อยู่ใกล้เคียงพื้นที่โครงการ เป็นประจำอย่างน้อยปีละ 1 ครั้ง

ดังนั้น บริษัทฯ จึงใคร่ขอความอนุเคราะห์ขอข้อมูลรายงานสถิติผู้ป่วยตามกลุ่มโรค ประจำปี 2566-2567 จากหน่วยงานของท่านเพื่อใช้ประกอบการจัดทำรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อมและมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมของโครงการต่อไป โดยขอความกรุณาหน่วยงานของท่านส่งข้อมูลผ่านจดหมายอิเล็กทรอนิกส์ (E-mail) ที่ cdarunluck@dow.com

จึงเรียนมาเพื่อโปรดพิจารณา และขอขอบพระคุณล่วงหน้ามา ณ โอกาสนี้

ขอแสดงความนับถือ



ผู้ประสานงาน

ผู้รับเอกสาร

ตำแหน่ง

วิศวกร

วันที่

21 ม.ค. 2568

ติดต่อผู้ประสานงาน : 080-550-5741

ภาคผนวก ข-62

บันทึกปัญหา ข้อร้องเรียน

บันทึกข้อร้องเรียนจากภายนอก

กลุ่มบริษัท ดาว ประเทศไทย
ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ.2567

เดือน / ปี	รายละเอียดข้อร้องเรียน	ผู้ร้องเรียน	การแก้ไข
กรกฎาคม 2567	ไม่มีข้อร้องเรียน	-	-
สิงหาคม 2567	ไม่มีข้อร้องเรียน	-	-
กันยายน 2567	ไม่มีข้อร้องเรียน	-	-
ตุลาคม 2567	ไม่มีข้อร้องเรียน	-	-
พฤศจิกายน 2567	ไม่มีข้อร้องเรียน	-	-
ธันวาคม 2567	ไม่มีข้อร้องเรียน	-	-



ภาคผนวก ข-63

เกณฑ์การคัดเลือกห้องปฏิบัติการวิเคราะห์

APPENDIX : 1

ENVIRONMENTAL CONTRACTOR SELECTION AND REVIEW CHECKLIST

The checklist covers the following elements:

Part I	Contractor Profile <ul style="list-style-type: none">* Curriculum Vitas* Organization Chart
Part II	Item to Consideration <ul style="list-style-type: none">* Quality System* Training* Internal Audit* Quality Incidents* Facility* Equipment and Reagent* Sample Receipt, Labeling & Test Information Flow* Testing Procedure* Out of Specification Procedure* Legal and Requirement : permit
Part III	Attachment (Permit, Procedure)

ภาคผนวก ข-64

ขั้นตอนปฏิบัติงานสำหรับการจัดการน้ำฝน

SE 21 001 SE storm water handling

Scope ขอบเขต

ขั้นตอนปฏิบัติงานนี้ใช้สำหรับการจัดการกับน้ำฝน (storm water) ที่เกิดขึ้นในโรงงานของ SE เพื่อให้สอดคล้องกับ EIA โดยน้ำฝน ในช่วง 15 นาทีแรกที่รวมรวมเข้าสู่ระบบพิกน้ำส่วนกลาง ES-3060 ต้องส่งไปยังระบบบำบัดน้ำเสียของ EOU ทั้งหมด

Categories and Attributes ประเภทและคุณสมบัติ

☐ High Risk ☒ Medium Risk ☐ Low Risk ☐ Immediate Response ☐ Other

Hazard Analysis

N/A

L&EO in this procedure งานเปิดท่อและอุปกรณ์ในขั้นตอนปฏิบัติงานนี้

- งานเก็บตัวอย่างน้ำ เพื่อตรวจสอบคุณภาพก่อนส่งไปยังระบบบำบัดน้ำเสียของ EOU

Equipment Status สถานะของอุปกรณ์

The status of the equipment covered under this LEO procedure is:

☒ In Service ☐ Cleared ☐ Isolated

Procedure step ขั้นตอนการปฏิบัติงาน

Step ขั้นตอนที่	Action (and Hazard/Precaution if applicable) สิ่งที่ต้องปฏิบัติ (และอันตราย/ข้อควรระวัง กรณีถ้ามี)
1.	เมื่อมีปริมาณน้ำฝนใน sump กลาง ES-3060 เพิ่มขึ้นเกินกว่า 33 mm หรือ 45% level ของ sump ให้ panel operator ทำการปิด SLG3060B และทำการเปิด SLG3060A เพื่อ bypass น้ำฝนที่ตกใน plant ออกไปยัง EOU out fall โดยตรง และเมื่อฝนหยุดตกให้ select sluice gate กลับสภาวะปกติ Note <ul style="list-style-type: none">โดยหากเป็นกรณีที่ไฟดับ field operator สามารถทำการเปิด/ปิด SLG3060A/B ใน field โดยตรงได้
2.	หากมีน้ำฝนใน Sump 3068 หรือ 3069 ให้ทำการ line up และ transfer น้ำฝนทั้งหมดมารวมที่ main sump ES-3060 ก่อนส่งไป EOU
3.	สำหรับน้ำฝนที่มีโอกาสปนเปื้อนที่อยู่ใน sump ES-3060 ทั้งหมด ให้ lab operator ทำการ run circulate PS-3060 และเก็บ sample เพื่อ check คุณภาพน้ำและลงค่าใน LIMS ก่อนที่จะส่งไปยัง Waste Water Treatment (WWT) ของ EOU คุณภาพน้ำต้องมีค่าไม่เกินที่กำหนด <ul style="list-style-type: none">pH < 9TOC < 2,000 mg/LAppearance : Clear
4.	เมื่อค่าน้ำที่เช็คผ่านแล้ว ให้ SE panel operator ทำการแจ้ง EOU panel operator เพื่อขอ transfer น้ำไปยัง WWT
5.	เมื่อ EOU ทำการเปิด valve แล้วให้ transfer น้ำจน sump ES-3060 empty แล้วทำการหยุดระบบ PS-3060 และปิด valve line transfer ไป EOU ไว้
6.	SE panel inform EOU panel หลัง transfer เสร็จสิ้น เพื่อปิด valve ที่ line up ไปยัง WWT

Medium risk procedure signoff การเซ็นชื่อ

สำหรับ Medium Risk procedure ให้เซ็นชื่อกำกับก่อนและหลังปฏิบัติงานเพื่อให้แน่ใจว่าได้อ่านและทำความเข้าใจวิธีการปฏิบัติก่อนลงมือทำเรียบร้อยแล้ว
หรือหาก Procedure นี้ไม่สามารถทำจบได้ในกลุ่ม ๆ เดียวและต้อง Transfer procedure นี้ให้ Work crew ใหม่

หรือเปลี่ยนคนระหว่างทำงาน

Start ก่อนเริ่ม: Initials

1. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
2. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
3. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
4. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
5. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
6. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
7. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
8. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
9. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)
10. ชื่อ _____ Date วันที่ _____ Time เวลา _____
ขั้นตอนสุดท้ายที่สำเร็จก่อนส่งต่อให้ crew worker อื่น (Step# _____)

Completion ปฏิบัติงานเสร็จ (ให้ Work crew กลุ่มสุดท้าย Sign off สำหรับการ Complete procedure) : Initials

1. ชื่อ _____ Date วันที่ _____ Time เวลา _____
2. ชื่อ _____ Date วันที่ _____ Time เวลา _____
3. ชื่อ _____ Date วันที่ _____ Time เวลา _____
4. ชื่อ _____ Date วันที่ _____ Time เวลา _____
5. ชื่อ _____ Date วันที่ _____ Time เวลา _____
6. ชื่อ _____ Date วันที่ _____ Time เวลา _____
7. ชื่อ _____ Date วันที่ _____ Time เวลา _____
8. ชื่อ _____ Date วันที่ _____ Time เวลา _____

Validation การยืนยันว่าใช้ได้

Thanakorn S./ Improvement Eng.
(Name ชื่อ / Job Title ตำแหน่ง)

18-Jun-2021
(Date วันที่)

Owner/Approver การอนุมัติ

The last revision of this procedure was approved by: ขั้นตอนการปฏิบัติงานนี้ได้รับการอนุมัติโดย

Jittima D./ SE Production Leader
(Name ชื่อ / Job Title ตำแหน่ง)

18-Jun-2021
(Date วันที่)

Management of Change (MOC)

MOC# SE2021050001

Date approve: 18-Jun-2021

Revision history ประวัติการแก้ไขเอกสาร

The following information documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

ข้อมูลด้านล่างนี้เป็นการบันทึกประวัติการแก้ไขเอกสารอย่างน้อย 3 ครั้งล่าสุดที่เกิดขึ้น รวมถึงการแก้ไขที่เกิดขึ้นภายในระยะเวลา 6 เดือน

Revision history ประวัติการแก้ไขเอกสาร

Date วันที่	Revised By แก้ไขโดย	Change ประวัติการแก้ไข
18-Jun-2021	Thanakorn S.	Create new procedure

ภาคผนวก ข-65

กิจกรรม Open House



กิจกรรม Open House 2024



ภาคผนวก ค

ใบรับรองผลการตรวจวัดคุณภาพสิ่งแวดล้อม

ภาคผนวก ค-1

ผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2498959

Date Received : Sep 12, 2024

Date Reported : Sep 20, 2024

Report Number : 3093876-1C12

Page 1 of 1

Sample Number	2498959-1
Sampled Date	Sep 11, 2024
Sample Description	Air Quality
Location	บริเวณโรงรับทางเข้าพื้นที่ของโรงงาน (GPS 47P 0727421, 1404503)
Date Analysis Commenced	Sep 16, 2024
Condition of Sample	Drawn into one 6-L Canister

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Guideline Limit	Method	Guideline	Testing Location
Air Testing									
Hexane	11/09/24 - 12/09/24	ug/m3	0.60	1.76	Not Detected	No Standard	Based on US EPA Compendium Method, TO-15	-	Rayong
Toluene	11/09/24 - 12/09/24	ug/m3	0.60	1.88	3.54	No Standard	Based on US EPA Compendium Method, TO-15	-	Rayong

Guideline :

NEB : Notification of National Environment Board, B.E. 2560 (2017)

PCD : Notification of the Pollution Control Department, which was published in the Royal Government Gazette Vol. 126 Special Part 13 D dated January 27, B.E. 2552 (2009)

Sampled By : Santi Chaichana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Chontichak

Chonticha Subongkoch
Scientist (3)

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Pluaeng Pa/ong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496081

Date Received : Sep 17, 2024

Date Reported : Sep 21, 2024

Report Number : 3088447-1C12

Page 1 of 1

Sample Description	Air Quality						
Location	บริเวณทางเข้า (GPS 47P 0724381, 1402551)						
Parameter	Nitrogen dioxide (ppm)						
Measurement Date	Sep 05, 2024 - Sep 12, 2024						
Measurement by	Santi Chaichana						
	2496081-1 Sep 05, 2024	2496081-2 Sep 06, 2024	2496081-3 Sep 07, 2024	2496081-4 Sep 08, 2024	2496081-5 Sep 09, 2024	2496081-6 Sep 10, 2024	2496081-7 Sep 11, 2024
Time							
12:00 PM - 01:00 PM	0.0029	0.0006	0.0005	0.0003	0.0004	0.0003	0.0002
01:00 PM - 02:00 PM	0.0045	0.0006	0.0008	0.0004	0.0003	0.0002	0.0003
02:00 PM - 03:00 PM	0.0016	0.0005	0.0005	0.0004	0.0004	0.0004	0.0003
03:00 PM - 04:00 PM	0.0012	0.0006	0.0004	0.0003	0.0003	0.0004	0.0003
04:00 PM - 05:00 PM	0.0011	0.0007	0.0020	0.0001	0.0008	0.0003	0.0004
05:00 PM - 06:00 PM	0.0012	0.0010	0.0025	0.0004	0.0004	0.0003	0.0007
06:00 PM - 07:00 PM	0.0013	0.0011	0.0008	0.0008	0.0006	0.0001	0.0004
07:00 PM - 08:00 PM	0.0016	0.0015	0.0007	0.0013	0.0004	0.0004	0.0004
08:00 PM - 09:00 PM	0.0017	0.0016	0.0003	0.0017	0.0006	0.0007	0.0007
09:00 PM - 10:00 PM	0.0018	0.0009	0.0003	0.0007	0.0009	0.0006	0.0004
10:00 PM - 11:00 PM	0.0017	0.0008	0.0004	0.0005	0.0011	0.0013	0.0008
11:00 PM - 12:00 AM	0.0014	0.0005	0.0004	0.0004	0.0006	0.0014	0.0016
12:00 AM - 01:00 AM	0.0015	0.0006	0.0002	0.0007	0.0004	0.0012	0.0014
01:00 AM - 02:00 AM	0.0017	0.0004	0.0006	0.0004	0.0006	0.0013	0.0013
02:00 AM - 03:00 AM	0.0015	0.0007	0.0003	0.0005	0.0005	0.0014	0.0011
03:00 AM - 04:00 AM	0.0012	0.0004	0.0002	0.0003	0.0004	0.0013	0.0012
04:00 AM - 05:00 AM	0.0010	0.0006	0.0005	0.0005	0.0004	0.0011	0.0023
05:00 AM - 06:00 AM	0.0009	0.0004	0.0003	0.0004	0.0001	0.0010	0.0031
06:00 AM - 07:00 AM	0.0006	0.0003	0.0003	0.0004	0.0003	0.0007	0.0023
07:00 AM - 08:00 AM	0.0010	0.0008	0.0004	0.0005	0.0004	0.0009	0.0020
08:00 AM - 09:00 AM	0.0009	0.0007	0.0005	0.0004	0.0004	0.0007	0.0017
09:00 AM - 10:00 AM	0.0007	0.0007	0.0003	0.0019	0.0003	0.0004	0.0012
10:00 AM - 11:00 AM	0.0008	0.0006	0.0002	0.0004	0.0004	0.0003	0.0012
11:00 AM - 12:00 PM	0.0006	0.0004	0.0002	0.0003	0.0011	0.0005	0.0019
Average	0.0014	0.0007	0.0006	0.0006	0.0005	0.0007	0.0011
1hr - Maximum	0.0045	0.0016	0.0025	0.0019	0.0011	0.0014	0.0031
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

Orawan R.

Orawan Rakyoung
Scientist (3)

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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd, I hwaeng Phatthanalan an, I het Suan Luang, Bangl ol 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197

Life Sciences

www.alsglobal.com

8526-209/EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496085

Date Received : Sep 17, 2024

Date Reported : Sep 21, 2024

Report Number: 3088451-1C12

Page 1 of 1

Sample Description Air Quality
Location กรุงเทพมหานคร (GPS 47P 20730823, 1407374)
Parameter Nitrogen dioxide (ppm)
Measurement Date Sep 05, 2024 - Sep 12, 2024
Measurement by Santi Chaichana

Time	2496085-1 Sep 05, 2024	2496085-2 Sep 06, 2024	2496085-3 Sep 07, 2024	2496085-4 Sep 08, 2024	2496085-5 Sep 09, 2024	2496085-6 Sep 10, 2024	2496085-7 Sep 11, 2024
10:00 AM - 11:00 AM	0.0025	0.0041	0.0043	0.0028	0.0040	0.0038	0.0031
11:00 AM - 12:00 PM	0.0025	0.0033	0.0041	0.0026	0.0026	0.0038	0.0024
12:00 PM - 01:00 PM	0.0033	0.0031	0.0037	0.0024	0.0022	0.0100	0.0030
01:00 PM - 02:00 PM	0.0030	0.0026	0.0037	0.0022	0.0027	0.0038	0.0042
02:00 PM - 03:00 PM	0.0034	0.0193	0.0026	0.0017	0.0023	0.0033	0.0030
03:00 PM - 04:00 PM	0.0033	0.0028	0.0026	0.0031	0.0022	0.0036	0.0027
04:00 PM - 05:00 PM	0.0044	0.0027	0.0030	0.0023	0.0026	0.0036	0.0021
05:00 PM - 06:00 PM	0.0035	0.0029	0.0027	0.0023	0.0022	0.0026	0.0027
06:00 PM - 07:00 PM	0.0025	0.0028	0.0034	0.0019	0.0021	0.0025	0.0023
07:00 PM - 08:00 PM	0.0022	0.0031	0.0025	0.0017	0.0019	0.0022	0.0028
08:00 PM - 09:00 PM	0.0030	0.0031	0.0022	0.0020	0.0022	0.0020	0.0020
09:00 PM - 10:00 PM	0.0040	0.0032	0.0023	0.0027	0.0020	0.0018	0.0020
10:00 PM - 11:00 PM	0.0043	0.0026	0.0019	0.0036	0.0017	0.0028	0.0015
11:00 PM - 12:00 AM	0.0040	0.0021	0.0019	0.0034	0.0027	0.0019	0.0040
12:00 AM - 01:00 AM	0.0044	0.0020	0.0021	0.0045	0.0040	0.0023	0.0047
01:00 AM - 02:00 AM	0.0043	0.0019	0.0022	0.0027	0.0026	0.0030	0.0063
02:00 AM - 03:00 AM	0.0045	0.0019	0.0022	0.0026	0.0027	0.0033	0.0105
03:00 AM - 04:00 AM	0.0034	0.0020	0.0018	0.0021	0.0036	0.0027	0.0034
04:00 AM - 05:00 AM	0.0031	0.0024	0.0019	0.0024	0.0030	0.0029	0.0044
05:00 AM - 06:00 AM	0.0033	0.0027	0.0018	0.0025	0.0030	0.0033	0.0052
06:00 AM - 07:00 AM	0.0032	0.0023	0.0023	0.0026	0.0027	0.0032	0.0044
07:00 AM - 08:00 AM	0.0041	0.0024	0.0028	0.0023	0.0030	0.0032	0.0060
08:00 AM - 09:00 AM	0.0081	0.0029	0.0030	0.0026	0.0034	0.0089	0.0190
09:00 AM - 10:00 AM	0.0128	0.0045	0.0028	0.0027	0.0036	0.0086	0.0258
Average	0.0040	0.0034	0.0027	0.0026	0.0027	0.0037	0.0054
1hr - Maximum	0.0128	0.0193	0.0043	0.0045	0.0040	0.0100	0.0258
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)

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

Orawan R.

Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., 1 hwaeng Phatthanalan an, 1 het Suan Luang, Bangl oi 10250 Thailand PHONE +66 0 2760 3000 | FAX +66 0 2760 3197

Life Sciences

www.alsglobal.com

8525 209/ EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496090

Date Received : Sep 17, 2024

Date Reported : Sep 21, 2024

Report Number: 3088456-1C12

Page 1 of 1

Sample Description Air Quality
Location กรุงเทพมหานคร (GPS 47P 0730051, 1409677)
Parameter Nitrogen dioxide (ppm)
Measurement Date Sep 05, 2024 - Sep 12, 2024
Measurement by Santi Chaichana

Time	2496090-1 Sep 05, 2024	2496090-2 Sep 06, 2024	2496090-3 Sep 07, 2024	2496090-4 Sep 08, 2024	2496090-5 Sep 09, 2024	2496090-6 Sep 10, 2024	2496090-7 Sep 11, 2024
01:00 PM - 02:00 PM	0.0006	0.0068	0.0060	0.0044	0.0087	0.0084	0.0097
02:00 PM - 03:00 PM	0.0064	0.0075	0.0068	0.0062	0.0106	0.0083	0.0121
03:00 PM - 04:00 PM	0.0128	0.0058	0.0067	0.0065	0.0085	0.0091	0.0138
04:00 PM - 05:00 PM	0.0082	0.0051	0.0086	0.0076	0.0072	0.0080	0.0148
05:00 PM - 06:00 PM	0.0071	0.0128	0.0120	0.0084	0.0101	0.0140	0.0128
06:00 PM - 07:00 PM	0.0083	0.0147	0.0108	0.0055	0.0140	0.0110	0.0201
07:00 PM - 08:00 PM	0.0104	0.0135	0.0064	0.0089	0.0098	0.0097	0.0069
08:00 PM - 09:00 PM	0.0081	0.0107	0.0043	0.0124	0.0080	0.0082	0.0040
09:00 PM - 10:00 PM	0.0056	0.0086	0.0027	0.0075	0.0050	0.0029	0.0032
10:00 PM - 11:00 PM	0.0034	0.0046	0.0028	0.0053	0.0034	0.0010	0.0016
11:00 PM - 12:00 AM	0.0019	0.0026	0.0020	0.0027	0.0076	0.0032	0.0024
12:00 AM - 01:00 AM	0.0027	0.0023	0.0020	0.0027	0.0049	0.0041	0.0015
01:00 AM - 02:00 AM	0.0018	0.0015	0.0015	0.0015	0.0027	0.0010	0.0051
02:00 AM - 03:00 AM	0.0010	0.0013	0.0011	0.0014	0.0018	0.0018	0.0023
03:00 AM - 04:00 AM	0.0015	0.0015	0.0011	0.0016	0.0036	0.0027	0.0034
04:00 AM - 05:00 AM	0.0018	0.0026	0.0014	0.0081	0.0079	0.0025	0.0028
05:00 AM - 06:00 AM	0.0047	0.0062	0.0032	0.0101	0.0099	0.0060	0.0031
06:00 AM - 07:00 AM	0.0176	0.0130	0.0089	0.0410	0.0289	0.0393	0.0080
07:00 AM - 08:00 AM	0.0237	0.0271	0.0096	0.0383	0.0345	0.0485	0.0177
08:00 AM - 09:00 AM	0.0233	0.0190	0.0054	0.0162	0.0256	0.0204	0.0120
09:00 AM - 10:00 AM	0.0086	0.0091	0.0065	0.0110	0.0159	0.0159	0.0046
10:00 AM - 11:00 AM	0.0077	0.0129	0.0052	0.0092	0.0101	0.0141	0.0038
11:00 AM - 12:00 PM	0.0088	0.0077	0.0070	0.0078	0.0113	0.0091	0.0050
12:00 PM - 01:00 PM	0.0072	0.0064	0.0051	0.0091	0.0096	0.0086	0.0046
Average	0.0076	0.0085	0.0053	0.0097	0.0108	0.0107	0.0073
1hr - Maximum	0.0237	0.0271	0.0120	0.0410	0.0345	0.0485	0.0201
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)

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

Orawan R.

Orawan Rakyong
Scientist (3)

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., 1 hwaeng Phatthanalan an, 1 het Suan Luang, Bangl oi 10250 Thailand PHONE +66 0 2760 3000 | FAX +66 0 2760 3197

Life Sciences

www.alsglobal.com

8525 209/ EMAIL

ภาคผนวก ค-2

ผลการตรวจวัดความเร็วลมและทิศทางลม



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

Lot ID: 2496083
Date Received : Sep 16, 2024
Date Reported : Sep 24, 2024
Report Number : 3088448-1 C12

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Sample Number : 2496083-1 to 7
Parameter : Wind Speed / Wind Direction
Location : รพทพพ (GPS 47P 0724381, 1402551)
Sampling Date : Sep 05 - Sep 12, 2024
Sampling by : Santi Chaichana

Page 1 of 2

Time	Sep 05 - Sep 06, 2024			Sep 06 - Sep 07, 2024			Sep 07 - Sep 08, 2024			Sep 08 - Sep 09, 2024			Sep 09 - Sep 10, 2024			Sep 10 - Sep 11, 2024			Sep 11 - Sep 12, 2024		
	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	2.2	182.0	S	1.4	112.0	ESE	2.2	203.0	SSW	1.6	192.0	SSW	1.5	205.0	SSW	0.6	198.0	SSW	1.4	196.0	SSW
01:00 PM - 02:00 PM	0.2	-	-	0.9	102.0	ESE	0.6	202.0	SSW	0.5	204.0	SSW	2.4	204.0	SSW	0.5	208.0	SSW	1.0	212.0	SSW
02:00 PM - 03:00 PM	1.2	174.0	S	1.4	230.0	SW	0.2	-	-	1.0	202.0	SSW	0.6	208.0	SSW	1.5	196.0	SSW	1.5	193.0	SSW
03:00 PM - 04:00 PM	1.1	173.0	S	1.2	224.0	SW	1.2	197.0	SSW	1.2	212.0	SSW	1.7	202.0	SSW	1.4	200.0	SSW	1.4	204.0	SSW
04:00 PM - 05:00 PM	1.4	169.0	S	1.2	221.0	SW	1.3	195.0	SSW	1.4	205.0	SSW	0.9	198.0	SSW	1.7	195.0	SSW	2.4	195.0	SSW
05:00 PM - 06:00 PM	0.5	166.0	SSE	2.3	222.0	SW	0.5	196.0	SSW	1.6	208.0	SSW	1.0	197.0	SSW	1.4	198.0	SSW	1.9	203.0	SSW
06:00 PM - 07:00 PM	0.7	200.0	SSW	1.5	224.0	SW	0.8	198.0	SSW	1.4	210.0	SSW	0.8	199.0	SSW	0.6	196.0	SSW	0.7	197.0	SSW
07:00 PM - 08:00 PM	0.3	212.0	SSW	1.2	225.0	SW	1.0	201.0	SSW	0.6	211.0	SSW	0.8	201.0	SSW	0.9	198.0	SSW	0.9	198.0	SSW
08:00 PM - 09:00 PM	0.3	188.0	S	0.8	235.0	SW	0.6	205.0	SSW	0.9	212.0	SSW	0.7	202.0	SSW	1.1	199.0	SSW	0.5	212.0	SSW
09:00 PM - 10:00 PM	0.4	164.0	SSE	0.8	221.0	SW	0.6	203.0	SSW	0.7	213.0	SSW	1.2	203.0	SSW	1.0	200.0	SSW	0.9	199.0	SSW
10:00 PM - 11:00 PM	0.5	186.0	S	0.8	225.0	SW	0.7	204.0	SSW	0.4	223.0	SW	0.6	208.0	SSW	1.4	203.0	SSW	1.0	216.0	SW
11:00 PM - 12:00 AM	1.0	163.0	SSE	0.5	224.0	SW	1.0	207.0	SSW	0.8	213.0	SSW	0.7	211.0	SSW	0.6	201.0	SSW	0.7	200.0	SSW
12:00 AM - 01:00 AM	0.3	162.0	SSE	0.9	223.0	SW	0.8	203.0	SSW	0.6	212.0	SSW	0.8	207.0	SSW	0.6	212.0	SSW	0.8	210.0	SSW
01:00 AM - 02:00 AM	0.4	161.0	SSE	-	-	-	1.2	206.0	SSW	0.5	207.0	SSW	1.2	204.0	SSW	0.5	202.0	SSW	0.9	214.0	SSW
02:00 AM - 03:00 AM	0.8	160.0	SSE	0.8	222.0	SW	0.8	203.0	SSW	0.9	212.0	SSW	0.7	205.0	SSW	1.0	203.0	SSW	0.6	201.0	SSW
03:00 AM - 04:00 AM	0.3	159.0	SSE	0.3	221.0	SW	0.6	204.0	SSW	0.7	214.0	SW	1.0	206.0	SSW	0.6	213.0	SSW	0.5	216.0	SW
04:00 AM - 05:00 AM	1.0	158.0	SSE	0.7	227.0	SW	1.3	209.0	SSW	0.9	212.0	SSW	0.8	211.0	SSW	0.7	203.0	SSW	0.9	201.0	SSW
05:00 AM - 06:00 AM	1.1	157.0	SSE	1.0	221.0	SW	1.4	214.0	SW	0.5	216.0	SW	0.6	214.0	SW	1.5	207.0	SSW	1.4	202.0	SSW
06:00 AM - 07:00 AM	1.2	156.0	SSE	0.2	-	-	0.5	204.0	SSW	0.9	217.0	SW	0.7	206.0	SSW	1.4	203.0	SSW	0.6	215.0	SW
07:00 AM - 08:00 AM	0.4	155.0	SSE	1.0	217.0	SW	0.8	202.0	SSW	0.7	210.0	SSW	1.4	205.0	SSW	0.6	202.0	SSW	1.4	201.0	SSW
08:00 AM - 09:00 AM	0.8	154.0	SSE	0.6	212.0	SSW	1.2	200.0	SSW	0.9	209.0	SSW	1.6	204.0	SSW	1.6	200.0	SSW	1.5	230.0	SW
09:00 AM - 10:00 AM	2.2	148.0	SSE	1.3	207.0	SSW	0.6	197.0	SSW	1.1	220.0	SW	1.2	202.0	SSW	0.9	199.0	SSW	1.4	212.0	SSW
10:00 AM - 11:00 AM	1.3	138.0	SE	1.0	206.0	SSW	1.1	195.0	SSW	1.1	208.0	SSW	1.4	200.0	SSW	0.9	198.0	SSW	1.2	203.0	SSW
11:00 AM - 12:00 PM	1.2	123.0	ESE	0.8	205.0	SSW	2.4	194.0	SSW	0.5	207.0	SSW	1.7	199.0	SSW	1.5	200.0	SSW	2.4	210.0	SSW

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, A.S. 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. Phrakdaeng Rayong 21140 Thailand : PHONE +66 0 3304 8555 : FAX +66 0 3304 8556

A.S. LABORATORY GROUP (THAILAND) P.L.C. LTD. An A.S. Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

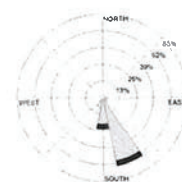
Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

Lot ID: 2496083
Date Received : Sep 16, 2024
Date Reported : Sep 24, 2024
Report Number : 3088448-1 C12

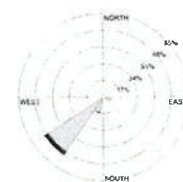
P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Page 2 of 2

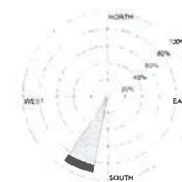
Wind Rose



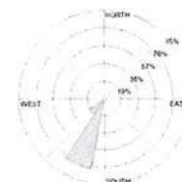
Date : Sep 05-06, 2024



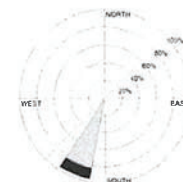
Date : Sep 06-07, 2024



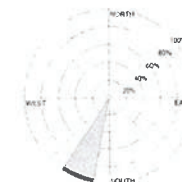
Date : Sep 07-08, 2024



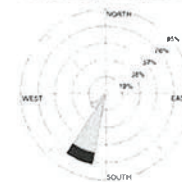
Date : Sep 08-09, 2024



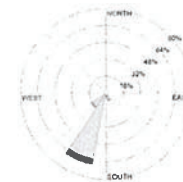
Date : Sep 09-10, 2024



Date : Sep 10-11, 2024



Date : Sep 11-12, 2024



Date : Sep 05-12, 2024

WS (m/s)	%
> 10.0	0.00
8.0-10.0	0.00
5.5-8.0	0.00
3.3-5.5	0.00
1.7-3.3	7.14
0.3-1.7	91.07
Calms	1.79

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, A.S. 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. Phrakdaeng Rayong 21140 Thailand : PHONE +66 0 3304 8555 : FAX +66 0 3304 8556

A.S. LABORATORY GROUP (THAILAND) P.L.C. LTD. An A.S. Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

Lot ID: 2496087
Date Received : Sep 16, 2024
Date Reported : Sep 24, 2024
Report Number : 3088454-1 C12

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Page 1 of 2

Sample Number : 2496087-1 to 7
Parameter : Wind Speed / Wind Direction
Location : กรุงเทพมหานคร (GPS 47P 0730823, 1407374)
Sampling Date : Sep 05 - Sep 12, 2024
Sampling by : Santi Chaichana

Time	Sep 05 - Sep 06, 2024			Sep 06 - Sep 07, 2024			Sep 07 - Sep 08, 2024			Sep 08 - Sep 09, 2024			Sep 09 - Sep 10, 2024			Sep 10 - Sep 11, 2024			Sep 11 - Sep 12, 2024		
	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	2.0	296.0	WNW	2.0	319.0	NW	1.0	293.0	WNW	1.0	266.0	W	2.0	251.0	WSW	0.5	263.0	W	1.0	255.0	WSW
11:00 AM - 12:00 PM	1.2	334.0	NNW	1.4	300.0	WNW	0.8	324.0	NW	1.1	269.0	W	0.1	-	-	3.0	321.0	NW	1.2	248.0	WSW
12:00 PM - 01:00 PM	0.6	325.0	NW	1.2	318.0	NW	0.5	206.0	SSW	0.5	5.0	N	0.7	320.0	NW	0.4	323.0	NW	1.6	261.0	W
01:00 PM - 02:00 PM	1.0	278.0	W	1.9	359.0	N	0.4	302.0	WNW	0.8	268.0	W	1.8	265.0	W	0.5	238.0	WSW	0.4	277.0	W
02:00 PM - 03:00 PM	1.1	324.0	NW	1.1	296.0	WNW	0.7	309.0	NW	1.0	259.0	W	0.0	-	-	0.1	-	-	0.0	-	-
03:00 PM - 04:00 PM	3.3	335.0	NNW	1.0	251.0	WSW	0.8	310.0	NW	1.0	261.0	W	1.0	248.0	WSW	0.6	275.0	W	0.4	306.0	NW
04:00 PM - 05:00 PM	1.1	10.0	N	0.5	315.0	NW	0.4	281.0	W	0.6	302.0	WNW	0.5	259.0	W	0.1	-	-	0.5	333.0	NNW
05:00 PM - 06:00 PM	1.0	114.0	ESE	0.4	291.0	WNW	0.6	253.0	WSW	0.8	200.0	SSW	0.5	4.0	N	0.4	280.0	W	0.3	290.0	WNW
06:00 PM - 07:00 PM	1.2	295.0	WNW	1.0	338.0	NNW	0.1	-	-	0.4	230.0	SW	0.2	-	-	0.5	278.0	W	0.4	287.0	WNW
07:00 PM - 08:00 PM	0.5	350.0	N	0.6	297.0	WNW	0.8	266.0	W	0.2	-	-	0.1	-	-	1.1	285.0	WNW	0.1	-	-
08:00 PM - 09:00 PM	0.2	-	-	0.8	291.0	WNW	0.5	309.0	NW	1.0	146.0	SE	0.3	332.0	NNW	0.2	-	-	0.5	339.0	NNW
09:00 PM - 10:00 PM	0.0	-	-	0.0	-	-	0.4	307.0	NW	0.5	328.0	NNW	0.1	-	-	0.3	348.0	NNW	0.4	326.0	NW
10:00 PM - 11:00 PM	0.6	340.0	NNW	0.3	300.0	WNW	0.3	341.0	NNW	0.9	122.0	ESE	0.5	305.0	NW	0.4	200.0	SSW	0.4	326.0	NW
11:00 PM - 12:00 AM	0.4	348.0	NNW	-	-	-	0.5	307.0	NW	0.1	-	-	0.1	-	-	0.4	166.0	SSE	0.3	330.0	NNW
12:00 AM - 01:00 AM	0.9	328.0	NNW	0.5	304.0	NW	0.3	300.0	WNW	0.1	-	-	0.4	331.0	NNW	1.0	200.0	SSW	0.1	-	-
01:00 AM - 02:00 AM	0.2	-	-	0.4	303.0	WNW	0.2	-	-	0.1	-	-	0.4	354.0	N	1.2	198.0	SSW	0.1	-	-
02:00 AM - 03:00 AM	0.5	305.0	NW	0.8	332.0	NNW	0.5	320.0	NW	0.5	36.0	NE	0.2	-	-	0.5	112.0	ESE	0.2	-	-
03:00 AM - 04:00 AM	0.3	335.0	NNW	0.6	265.0	W	0.6	318.0	NW	0.5	0.0	N	0.1	-	-	0.4	106.0	ESE	1.1	84.0	E
04:00 AM - 05:00 AM	1.0	338.0	NNW	0.4	331.0	NNW	0.4	305.0	NW	1.0	309.0	NW	0.5	325.0	NW	0.3	119.0	ESE	1.0	121.0	ESE
05:00 AM - 06:00 AM	0.5	300.0	WNW	0.2	-	-	0.5	322.0	NW	0.5	326.0	NW	0.4	322.0	NW	0.1	-	-	0.4	110.0	ESE
06:00 AM - 07:00 AM	0.5	307.0	NW	0.6	324.0	NW	0.7	315.0	NW	0.5	338.0	NNW	1.0	315.0	NW	0.2	-	-	0.2	-	-
07:00 AM - 08:00 AM	0.4	329.0	NNW	0.9	1.0	N	3.0	342.0	NNW	0.4	317.0	NW	1.1	309.0	NW	0.1	-	-	1.1	300.0	WNW
08:00 AM - 09:00 AM	0.2	-	-	1.0	288.0	WNW	0.0	-	-	0.4	273.0	W	1.3	275.0	W	0.2	-	-	1.0	302.0	WNW
09:00 AM - 10:00 AM	0.6	257.0	WSW	0.2	-	-	0.6	224.0	SW	1.8	345.0	NNW	0.5	267.0	W	0.3	215.0	SW	2.0	298.0	WNW

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 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
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



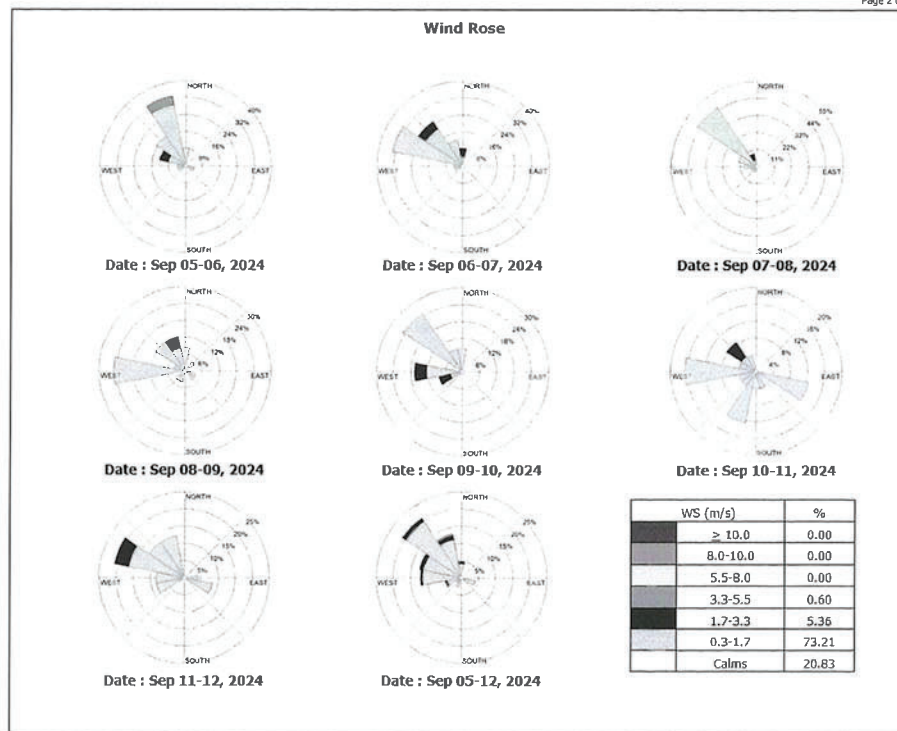
Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

Lot ID: 2496087
Date Received : Sep 16, 2024
Date Reported : Sep 24, 2024
Report Number : 3088454-1 C12

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Page 2 of 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

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
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asla Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

Lot ID: 2496091
Date Received : Sep 16, 2024
Date Reported : Sep 24, 2024
Report Number : 3088457-1 C12

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Page 1 of 2

Sample Number : 2496091-1 to 7
Parameter : Wind Speed / Wind Direction
Location : กรุงเทพมหานคร (GPS 47P 0730051, 1409677)
Sampling Date : Sep 05 - Sep 12, 2024
Sampling by : Santi Chaichana

Time	Sep 05 - Sep 06, 2024			Sep 06 - Sep 07, 2024			Sep 07 - Sep 08, 2024			Sep 08 - Sep 09, 2024			Sep 09 - Sep 10, 2024			Sep 10 - Sep 11, 2024			Sep 11 - Sep 12, 2024		
	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)	
01:00 PM - 02:00 PM	2.0	202.0	SSW	1.2	263.0	W	2.0	121.0	ESE	1.2	257.0	WSW	1.1	216.0	SW	0.2	-	-	1.0	180.0	S
02:00 PM - 03:00 PM	0.0	-	-	0.7	242.0	WSW	0.4	134.0	SE	0.1	-	-	2.0	205.0	SSW	0.1	-	-	0.6	179.0	S
03:00 PM - 04:00 PM	1.0	226.0	SW	1.2	222.0	SW	0.0	-	-	0.6	340.0	NNW	0.2	-	-	1.1	232.0	SW	1.1	188.0	S
04:00 PM - 05:00 PM	0.9	238.0	WSW	1.0	241.0	WSW	1.0	220.0	SW	0.8	227.0	SW	1.3	184.0	S	1.0	194.0	SSW	1.0	222.0	SW
05:00 PM - 06:00 PM	1.2	242.0	WSW	1.0	200.0	SSW	1.1	200.0	SSW	1.0	250.0	WSW	0.5	222.0	SW	1.3	219.0	SW	2.0	212.0	SSW
06:00 PM - 07:00 PM	0.3	257.0	WSW	2.1	223.0	SW	0.3	195.0	SSW	1.2	300.0	WNW	0.6	230.0	SW	1.0	300.0	WNW	1.5	230.0	SW
07:00 PM - 08:00 PM	0.5	251.0	WSW	1.3	320.0	NW	0.6	209.0	SSW	1.0	244.0	WSW	0.4	213.0	SSW	0.2	-	-	0.3	266.0	W
08:00 PM - 09:00 PM	0.1	-	-	1.0	240.0	WSW	0.8	229.0	SW	0.2	-	-	0.4	210.0	SSW	0.5	260.0	W	0.5	219.0	SW
09:00 PM - 10:00 PM	0.1	-	-	0.6	223.0	SW	0.4	234.0	SW	0.5	250.0	WSW	0.3	264.0	W	0.7	250.0	WSW	0.1	-	-
10:00 PM - 11:00 PM	0.2	-	-	0.6	232.0	SW	0.2	-	-	0.3	310.0	NW	0.8	255.0	WSW	0.6	200.0	SSW	0.5	300.0	WNW
11:00 PM - 12:00 AM	0.3	251.0	WSW	0.6	220.0	SW	0.3	222.0	SW	0.0	-	-	0.2	-	-	1.0	216.0	SW	0.6	298.0	WNW
12:00 AM - 01:00 AM	0.8	217.0	SW	0.3	221.0	SW	0.6	320.0	NW	0.4	250.0	WSW	0.3	267.0	W	0.2	-	-	0.3	236.0	SW
01:00 AM - 02:00 AM	0.1	-	-	0.3	234.0	SW	0.4	214.0	SW	0.2	-	-	0.4	280.0	W	0.2	-	-	0.4	240.0	WSW
02:00 AM - 03:00 AM	0.2	-	-	0.7	233.0	SW	0.8	220.0	SW	0.1	-	-	0.8	299.0	WNW	0.1	-	-	0.5	302.0	WNW
03:00 AM - 04:00 AM	0.6	238.0	WSW	0.6	320.0	NW	0.4	226.0	SW	0.5	240.0	WSW	0.3	232.0	SW	0.6	260.0	W	0.2	-	-
04:00 AM - 05:00 AM	0.1	-	-	0.1	-	-	0.2	-	-	0.3	236.0	SW	0.6	266.0	W	0.2	-	-	0.1	-	-
05:00 AM - 06:00 AM	0.8	244.0	WSW	0.5	234.0	SW	0.9	230.0	SW	0.5	233.0	SW	0.4	250.0	WSW	0.3	216.0	SW	0.5	312.0	NW
06:00 AM - 07:00 AM	0.9	245.0	WSW	0.8	266.0	W	1.0	231.0	SW	0.1	-	-	0.2	-	-	1.1	216.0	SW	1.0	326.0	NW
07:00 AM - 08:00 AM	1.0	244.0	WSW	0.0	-	-	0.1	-	-	0.5	236.0	SW	0.3	245.0	WSW	1.0	221.0	SW	0.2	-	-
08:00 AM - 09:00 AM	0.2	-	-	0.8	215.0	SW	0.4	182.0	S	0.3	185.0	S	1.0	201.0	SSW	0.2	-	-	1.0	289.0	WNW
09:00 AM - 10:00 AM	0.6	159.0	SSE	0.4	157.0	SSE	0.8	196.0	SSW	0.5	69.0	ENE	1.2	216.0	SW	1.2	112.0	ESE	1.1	300.0	WNW
10:00 AM - 11:00 AM	2.0	235.0	SW	1.1	186.0	S	0.2	-	-	0.7	225.0	SW	0.8	202.0	SSW	0.5	44.0	NE	1.0	289.0	WNW
11:00 AM - 12:00 PM	1.1	227.0	SW	0.8	221.0	SW	0.7	208.0	SSW	0.7	248.0	WSW	1.0	140.0	SE	0.5	153.0	SSE	0.8	266.0	W
12:00 PM - 01:00 PM	1.0	219.0	SW	0.6	166.0	SSE	2.0	217.0	SW	0.1	-	-	1.3	214.0	SW	1.1	233.0	SW	2.0	242.0	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 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
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



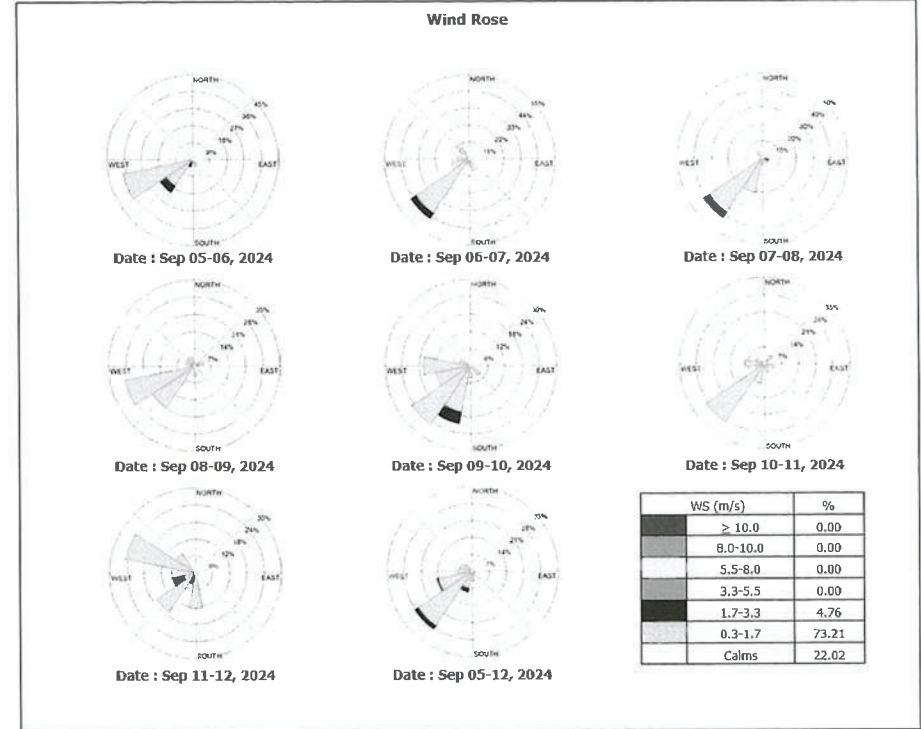
Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asla Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

Lot ID: 2496091
Date Received : Sep 16, 2024
Date Reported : Sep 24, 2024
Report Number : 3088457-1 C12

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Page 2 of 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

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
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-3

ผลการตรวจวัดคุณภาพอากาศจากแหล่งกำเนิด



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 2498961
Date Received : Sep 12, 2024
Date Reported : Sep 24, 2024
Report Number : 3093879-2

Page 1 of 1

Sample Number : 2498961-1
Sample Description : Emission from Stationary Source
Location : Furnace (GPS 47P 0727403, 1404833)
Measurement Date : Sep 11, 2024

Stack Description

Ambient Temperature	34.8 °C	Diameter	1.69 m	Oxygen	7.09 %
Ambient Pressure	752.9 mmHg	Shape	Circle	Carbon dioxide	8.22 %
Type of Process	Combustion	Stack Temperature	203 °C	Gas Velocity	3.72 m/s
Type of Fuel	Natural Gas	Moisture	14.22 %	Flow Rate	15942 Nm ³ /hr

Run No.	Sampling Time	Oxygen (%)	Carbon Dioxide (%)	Oxides of Nitrogen (ppm)		Carbon Monoxide (ppm)	
				at Actual O ₂	at 7% O ₂	at Actual O ₂	at 7% O ₂
1	11:30 AM - 11:50 AM	7.10	8.20	16.94	17.07	31.69	31.92
2	11:51 AM - 12:11 PM	7.08	8.24	17.34	17.43	31.31	31.48
3	12:12 PM - 12:32 PM	7.10	8.22	17.57	17.70	30.22	30.44
Average (ppm)		7.09	8.22	17.28	17.40	31.07	31.28
Guideline ^{1/} (ppm)				-	200	-	690
Guideline ^{2/} (ppm)				-	42	-	-
Result (mg/Nm ³)				32.52	32.74	35.58	35.83
Emission Rate at Actual O ₂ (g/s)				0.1440		0.1576	
Guideline ^{2/} (g/s)				0.57		-	
Method				US EPA Method 7E		US EPA Method 10	

Sampled By : Sathaporn Thakarn

Guideline : ^{1/}Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)
^{2/} Emission Air Standard according to EIA study of SSLC-SE Plant, Approval Letter No. Aor Kor 5104.1.1/3180 dated July 21, B.E.2558

Technical Management

Wichan Choonharat
Wichan Choonharat
Manager
ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont
Sarayuth Jitranont
Assistant General Manager
ทะเบียนเลขที่ 7-204-ก-0003

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.

ADDRESS 104 Phatthanai an 40, Phatthanai an Pd., I Iwaeng Phatthanai an, I het Suan Luang, Bangl oi 10250, THAILAND | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATOR, GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 2498961
Date Received : Sep 12, 2024
Date Reported : Sep 24, 2024
Report Number : 3093879-2

Page 1 of 1

Sample Number : 2498961-1
Sample Description : Emission from Stationary Source
Location : Furnace (GPS 47P 0727403, 1404833)
Measurement Date : Sep 11, 2024

Stack Description

Ambient Temperature	34.8 °C	Diameter	1.69 m	Oxygen	7.09 %
Ambient Pressure	752.9 mmHg	Shape	Circle	Carbon dioxide	8.22 %
Type of Process	Combustion	Stack Temperature	203 °C	Gas Velocity	3.72 m/s
Type of Fuel	Natural Gas	Moisture	14.22 %	Flow Rate	15942 Nm ³ /hr

Run No.	Sampling Time	Oxygen (%)	Carbon Dioxide (%)	Oxides of Nitrogen (ppm)	
				at Actual O ₂	At 7% O ₂
1	11:30 AM - 11:50 AM	7.10	8.20	16.94	17.07
2	11:51 AM - 12:11 PM	7.08	8.24	17.34	17.43
3	12:12 PM - 12:32 PM	7.10	8.22	17.57	17.70
Average (ppm)		7.09	8.22	17.28	17.40
Guideline ^{1/} (ppm)				-	200
Guideline ^{2/} (ppm)				-	42
Result (mg/Nm ³)				32.52	32.74
Emission Rate at Actual O ₂ (g/s)				0.1440	
Guideline ^{2/} (g/s)				0.57	
Method				US EPA Method 7E	

Sampled By : Sathaporn Thakarn

Guideline : ^{1/}Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)
^{2/} Emission Air Standard according to EIA study of SSLC-SE Plant, Approval Letter No. Aor Kor 5104.1.1/3180 dated July 21, B.E.2558

Technical Management

Wichan Choonharat
Wichan Choonharat
Manager
ทะเบียนเลขที่ 7-204-ก-0006

Approved by

Sarayuth Jitranont
Sarayuth Jitranont
Assistant General Manager
ทะเบียนเลขที่ 7-204-ก-0003

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.

ADDRESS 104 Phatthanai an 40, Phatthanai an Pd., I Iwaeng Phatthanai an, I het Suan Luang, Bangl oi 10250, THAILAND | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
ALS LABORATOR, GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 24101488
Date Received : Sep 11, 2024
Date Reported : Sep 23, 2024
Report Number: 3098845-1

Page 1 of 1

Sample Number 24101488-1
Sampled Date Sep 11, 2024
Sample Description Emission from Stationary Source
Location บริเวณตัวเครื่อง (Spin Dryer) (GPS 47P 0727474, 1404813)
Date Analysis Commenced Sep 12, 2024
Condition of Sample Extracted into one 10-L air sampling bag and one sorbent tube, refrigerated

Stack Description							
Ambient Pressure	753	mmHg	Diameter	0.82	m	Oxygen	20.9 %
Ambient Temperature	34.8	°C	Shape	Circle		Carbon Dioxide	0.0 %
Type of Process	Process		Stack Temperature	30.0	°C	Gas Velocity	13.5 m/s
Type of Fuel	*		Moisture	3.24	%	Flow Rate (Actual O2)	24156 Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
n-Octane	01:30 PM - 01:45 PM	ppm	-	1.00	<1.00	United States Environmental Protection Agency, EPA Method 18	Bangkok
Methane as Propane	01:30 PM - 01:40 PM	ppm	-	0.4	1.0	Total Hydrocarbon Analyzer, Based on US EPA Method 25A	Rayong
Non-Methane Hydrocarbon as Propane	01:30 PM - 01:40 PM	ppm	-	0.4	4.0	Total Hydrocarbon Analyzer, Based on US EPA Method 25A	Rayong
Total Hydrocarbon as Propane	01:30 PM - 01:40 PM	ppm	-	0.4	4.9	Total Hydrocarbon Analyzer, Based on US EPA Method 25A	Rayong

Sampling By : Natthawut Duangpang , Tinnakorn Kulchart

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Tanyatorn Mongkonjirawat
Supervisor

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangl ol 10250 Thailand PHONE +66 0 2760 3000 FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports_Air_Stack_NGL.rpt (11:09AM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 24101491
Date Received : Sep 11, 2024
Date Reported : Sep 23, 2024
Report Number: 3098847-1

Page 1 of 1

Sample Number 24101491-1
Sampled Date Sep 11, 2024
Sample Description Emission from Stationary Source
Location บริเวณตัวเครื่อง (Silo) (GPS 47P 0727478, 1404835)
Date Analysis Commenced Sep 12, 2024
Condition of Sample Extracted into one 10-L air sampling bag and one sorbent tube, refrigerated

Stack Description							
Ambient Pressure	753	mmHg	Diameter	0.74 x 0.76	m	Oxygen	20.9 %
Ambient Temperature	34.8	°C	Shape	Rectangular		Carbon Dioxide	0.0 %
Type of Process	Process		Stack Temperature	39.0	°C	Gas Velocity	14.0 m/s
Type of Fuel	*		Moisture	1.88	%	Flow Rate (Actual O2)	26262 Nm3/hr

Analyte	Sampled Time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
n-Octane	02:30 PM - 02:45 PM	ppm	-	1.00	<1.00	United States Environmental Protection Agency, EPA Method 18	Bangkok
Methane as Propane	02:30 PM - 03:40 PM	ppm	-	0.4	1.0	Total Hydrocarbon Analyzer, Based on US EPA Method 25A	Rayong
Non-Methane Hydrocarbon as Propane	02:30 PM - 03:40 PM	ppm	-	0.4	3.0	Total Hydrocarbon Analyzer, Based on US EPA Method 25A	Rayong
Total Hydrocarbon as Propane	02:30 PM - 03:40 PM	ppm	-	0.4	4.0	Total Hydrocarbon Analyzer, Based on US EPA Method 25A	Rayong

Sampling By : Natthawut Duangpang , Tinnakorn Kulchart

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Tanyatorn Mongkonjirawat
Supervisor

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangl ol 10250 Thailand PHONE +66 0 2760 3000 FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports_Air_Stack_NGL.rpt (11:12AM)

ภาคผนวก ค-4

ผลการตรวจวัดระดับเสียงทั่วไปและเสียงพื้นฐาน (Leq 24 hrs)



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115441-1C12

Page 1 of 1

Sample Number	2496101-1
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณเริ่มวิ่งของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date	Sep 05 - Sep 06, 2024
Measurement by	Santi Chaichana
Sound Level meter	Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	58.8	76.3	55.7
10:00 AM - 11:00 AM	57.4	73.3	55.3
11:00 AM - 12:00 PM	60.7	82.9	55.1
12:00 PM - 01:00 PM	58.1	77.0	54.8
01:00 PM - 02:00 PM	57.2	75.0	55.1
02:00 PM - 03:00 PM	57.1	75.2	55.1
03:00 PM - 04:00 PM	57.0	72.0	55.3
04:00 PM - 05:00 PM	60.8	81.3	55.5
05:00 PM - 06:00 PM	58.0	74.4	55.3
06:00 PM - 07:00 PM	58.2	77.8	55.7
07:00 PM - 08:00 PM	61.4	91.5	56.2
08:00 PM - 09:00 PM	57.8	79.7	56.4
09:00 PM - 10:00 PM	57.2	69.0	56.5
10:00 PM - 11:00 PM	56.9	69.6	56.1
11:00 PM - 12:00 AM	57.2	69.4	56.5
12:00 AM - 01:00 AM	57.1	75.2	56.4
01:00 AM - 02:00 AM	57.0	68.1	56.5
02:00 AM - 03:00 AM	57.2	62.4	56.7
03:00 AM - 04:00 AM	57.2	65.7	56.7
04:00 AM - 05:00 AM	57.4	77.1	56.4
05:00 AM - 06:00 AM	58.6	80.9	56.4
06:00 AM - 07:00 AM	61.5	81.9	56.7
07:00 AM - 08:00 AM	61.4	81.9	56.6
08:00 AM - 09:00 AM	58.9	79.3	55.8

Leq Average 24 hrs. (dB(A))	58.7		
Lmax (dB(A))		91.5	
L90 (dB(A))			56.1
Ldn (dB(A))	64.6		
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plua daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115442-1C12

Page 1 of 1

Sample Number	2496101-2
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณเริ่มวิ่งของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date	Sep 06 - Sep 07, 2024
Measurement by	Santi Chaichana
Sound Level meter	Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	56.6	67.7	54.9
10:00 AM - 11:00 AM	56.9	72.1	54.9
11:00 AM - 12:00 PM	57.6	76.4	54.9
12:00 PM - 01:00 PM	58.8	85.1	54.6
01:00 PM - 02:00 PM	57.8	74.7	55.5
02:00 PM - 03:00 PM	57.2	73.1	55.0
03:00 PM - 04:00 PM	56.9	73.6	55.1
04:00 PM - 05:00 PM	61.5	87.9	55.7
05:00 PM - 06:00 PM	63.6	93.3	57.1
06:00 PM - 07:00 PM	60.0	78.1	57.5
07:00 PM - 08:00 PM	58.7	72.1	57.3
08:00 PM - 09:00 PM	58.4	68.8	57.6
09:00 PM - 10:00 PM	57.6	68.0	56.6
10:00 PM - 11:00 PM	56.6	65.1	55.9
11:00 PM - 12:00 AM	56.7	65.8	55.9
12:00 AM - 01:00 AM	56.8	71.4	55.8
01:00 AM - 02:00 AM	56.9	68.4	56.2
02:00 AM - 03:00 AM	57.5	62.1	56.8
03:00 AM - 04:00 AM	57.5	66.2	56.7
04:00 AM - 05:00 AM	58.0	65.9	57.4
05:00 AM - 06:00 AM	58.4	67.0	57.7
06:00 AM - 07:00 AM	60.4	79.4	57.2
07:00 AM - 08:00 AM	60.8	83.2	56.3
08:00 AM - 09:00 AM	57.5	74.9	55.5

Leq Average 24 hrs. (dB(A))	58.7		
Lmax (dB(A))		93.3	
L90 (dB(A))			55.9
Ldn (dB(A))	64.4		
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plua daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant



TESTING
No.0042

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115443-1C12

Page 1 of 1

Sample Number 2496101-3
Parameter Noise (Leq 24 hrs.)
Location บริเวณริมรั้วของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date Sep 07 - Sep 08, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	56.9	72.0	54.9
10:00 AM - 11:00 AM	57.7	76.0	55.4
11:00 AM - 12:00 PM	57.5	77.5	55.4
12:00 PM - 01:00 PM	57.4	70.7	55.7
01:00 PM - 02:00 PM	59.0	86.2	55.9
02:00 PM - 03:00 PM	59.0	80.6	56.5
03:00 PM - 04:00 PM	58.7	80.9	56.1
04:00 PM - 05:00 PM	60.0	81.1	55.9
05:00 PM - 06:00 PM	58.3	78.1	56.5
06:00 PM - 07:00 PM	59.3	78.8	56.9
07:00 PM - 08:00 PM	57.9	74.8	56.3
08:00 PM - 09:00 PM	57.2	76.5	55.9
09:00 PM - 10:00 PM	56.5	65.2	55.6
10:00 PM - 11:00 PM	56.7	67.4	55.8
11:00 PM - 12:00 AM	57.7	75.6	56.7
12:00 AM - 01:00 AM	57.8	72.9	57.1
01:00 AM - 02:00 AM	57.4	69.5	56.6
02:00 AM - 03:00 AM	57.2	59.6	56.5
03:00 AM - 04:00 AM	56.9	62.9	56.2
04:00 AM - 05:00 AM	57.8	62.7	57.1
05:00 AM - 06:00 AM	58.0	72.6	57.0
06:00 AM - 07:00 AM	59.8	78.7	57.3
07:00 AM - 08:00 AM	60.4	86.4	56.4
08:00 AM - 09:00 AM	57.0	71.9	55.7

Leq Average 24 hrs. (dB(A)) 58.1
Lmax (dB(A)) 86.4
L90 (dB(A)) 56.2
Ldn (dB(A)) 64.3
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.jong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant



TESTING
No.0042

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115444-1C12

Page 1 of 1

Sample Number 2496101-4
Parameter Noise (Leq 24 hrs.)
Location บริเวณริมรั้วของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date Sep 08 - Sep 09, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	57.8	81.5	55.7
10:00 AM - 11:00 AM	56.8	68.1	55.6
11:00 AM - 12:00 PM	56.8	69.4	55.4
12:00 PM - 01:00 PM	57.1	70.1	55.6
01:00 PM - 02:00 PM	57.8	78.0	56.1
02:00 PM - 03:00 PM	57.5	74.1	56.4
03:00 PM - 04:00 PM	58.3	70.5	56.8
04:00 PM - 05:00 PM	58.4	71.1	56.9
05:00 PM - 06:00 PM	58.3	71.8	56.7
06:00 PM - 07:00 PM	59.2	73.8	57.7
07:00 PM - 08:00 PM	59.3	69.5	58.3
08:00 PM - 09:00 PM	58.4	74.8	57.1
09:00 PM - 10:00 PM	57.6	74.7	56.9
10:00 PM - 11:00 PM	57.4	65.8	56.7
11:00 PM - 12:00 AM	57.4	68.7	56.7
12:00 AM - 01:00 AM	59.1	68.6	58.2
01:00 AM - 02:00 AM	58.5	69.0	57.4
02:00 AM - 03:00 AM	58.4	65.2	57.3
03:00 AM - 04:00 AM	58.7	72.3	58.0
04:00 AM - 05:00 AM	58.3	59.9	57.9
05:00 AM - 06:00 AM	58.7	60.1	58.2
06:00 AM - 07:00 AM	59.4	69.0	58.5
07:00 AM - 08:00 AM	59.1	61.4	58.6
08:00 AM - 09:00 AM	59.1	65.7	58.4

Leq Average 24 hrs. (dB(A)) 58.3
Lmax (dB(A)) 81.5
L90 (dB(A)) 56.9
Ldn (dB(A)) 64.8
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.jong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115445-1C12

Page 1 of 1

Sample Number 2496101-5
Parameter Noise (Leq 24 hrs.)
Location บริเวณริมรั้วของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date Sep 09 - Sep 10, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	59.1	68.2	58.4
10:00 AM - 11:00 AM	58.0	61.4	57.3
11:00 AM - 12:00 PM	57.9	63.2	57.1
12:00 PM - 01:00 PM	57.9	60.2	57.1
01:00 PM - 02:00 PM	58.2	68.6	56.9
02:00 PM - 03:00 PM	57.9	64.8	57.0
03:00 PM - 04:00 PM	59.0	68.8	58.2
04:00 PM - 05:00 PM	62.3	86.0	57.9
05:00 PM - 06:00 PM	62.8	90.8	57.4
06:00 PM - 07:00 PM	60.0	84.8	56.8
07:00 PM - 08:00 PM	58.0	78.8	55.4
08:00 PM - 09:00 PM	58.2	77.1	56.0
09:00 PM - 10:00 PM	58.3	75.1	56.3
10:00 PM - 11:00 PM	62.0	87.5	56.0
11:00 PM - 12:00 AM	58.8	75.1	56.4
12:00 AM - 01:00 AM	59.5	81.5	57.7
01:00 AM - 02:00 AM	58.7	68.3	57.7
02:00 AM - 03:00 AM	58.8	70.6	58.2
03:00 AM - 04:00 AM	59.0	65.2	58.2
04:00 AM - 05:00 AM	58.2	66.7	57.6
05:00 AM - 06:00 AM	58.1	65.7	57.0
06:00 AM - 07:00 AM	57.5	61.2	57.0
07:00 AM - 08:00 AM	58.2	60.2	57.6
08:00 AM - 09:00 AM	58.4	69.6	57.9

Leq Average 24 hrs. (dB(A)) 59.2
Lmax (dB(A)) 90.8
L90 (dB(A)) 57.1
Ldn (dB(A)) 65.6
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,ong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115446-1C12

Page 1 of 1

Sample Number 2496101-6
Parameter Noise (Leq 24 hrs.)
Location บริเวณริมรั้วของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date Sep 10 - Sep 11, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	58.1	66.1	57.4
10:00 AM - 11:00 AM	58.5	70.9	57.7
11:00 AM - 12:00 PM	60.7	79.7	57.9
12:00 PM - 01:00 PM	61.9	76.0	57.7
01:00 PM - 02:00 PM	60.7	86.4	56.4
02:00 PM - 03:00 PM	61.8	92.6	55.7
03:00 PM - 04:00 PM	57.5	71.5	55.8
04:00 PM - 05:00 PM	58.4	78.5	55.6
05:00 PM - 06:00 PM	57.8	70.6	55.7
06:00 PM - 07:00 PM	57.6	70.9	55.5
07:00 PM - 08:00 PM	57.2	71.5	55.7
08:00 PM - 09:00 PM	58.8	74.2	56.6
09:00 PM - 10:00 PM	58.7	77.6	56.4
10:00 PM - 11:00 PM	61.0	88.5	57.1
11:00 PM - 12:00 AM	59.5	76.3	57.6
12:00 AM - 01:00 AM	59.3	72.8	57.8
01:00 AM - 02:00 AM	59.1	77.9	57.8
02:00 AM - 03:00 AM	57.3	67.7	56.2
03:00 AM - 04:00 AM	57.9	65.7	57.1
04:00 AM - 05:00 AM	58.2	69.7	57.3
05:00 AM - 06:00 AM	58.2	60.7	57.5
06:00 AM - 07:00 AM	59.3	64.3	58.1
07:00 AM - 08:00 AM	58.4	65.6	57.8
08:00 AM - 09:00 AM	58.5	74.1	57.8

Leq Average 24 hrs. (dB(A)) 59.2
Lmax (dB(A)) 92.6
L90 (dB(A)) 57.1
Ldn (dB(A)) 65.4
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,ong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496101

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115447-1C12

Page 1 of 1

Sample Number 2496101-7
Parameter Noise (Leq 24 hrs.)
Location บริเวณเริ่มของโครงการทางด้านทิศตะวันตกของพื้นที่ HPPO (GPS 47P 0726777, 1405417)
Measurement Date Sep 11 - Sep 12, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296517

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:00 AM - 10:00 AM	58.8	65.6	57.9
10:00 AM - 11:00 AM	59.1	65.1	58.3
11:00 AM - 12:00 PM	60.7	76.1	58.4
12:00 PM - 01:00 PM	62.3	82.8	57.5
01:00 PM - 02:00 PM	59.2	75.0	55.8
02:00 PM - 03:00 PM	58.0	68.6	56.1
03:00 PM - 04:00 PM	57.8	69.3	55.9
04:00 PM - 05:00 PM	58.0	74.4	55.8
05:00 PM - 06:00 PM	57.3	71.8	55.0
06:00 PM - 07:00 PM	59.1	84.5	55.9
07:00 PM - 08:00 PM	57.8	69.2	56.4
08:00 PM - 09:00 PM	59.8	85.1	57.0
09:00 PM - 10:00 PM	58.7	75.9	57.2
10:00 PM - 11:00 PM	61.4	87.3	57.6
11:00 PM - 12:00 AM	59.6	77.1	57.5
12:00 AM - 01:00 AM	59.4	73.9	57.3
01:00 AM - 02:00 AM	59.5	69.4	58.6
02:00 AM - 03:00 AM	58.7	69.4	58.1
03:00 AM - 04:00 AM	58.5	69.7	57.9
04:00 AM - 05:00 AM	58.8	77.1	57.7
05:00 AM - 06:00 AM	58.1	72.1	57.6
06:00 AM - 07:00 AM	58.0	66.4	57.4
07:00 AM - 08:00 AM	58.5	68.9	58.1
08:00 AM - 09:00 AM	59.2	61.7	58.6

Leq Average 24 hrs. (dB(A)) 59.2
Lmax (dB(A)) 87.3
L90 (dB(A)) 57.5
Ldn (dB(A)) 65.6
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteah
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam 1 hu A. Plual daeng Pa.yong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115466-1C12

Page 1 of 1

Sample Number 2496104-1
Parameter Noise (Leq 24 hrs.)
Location บริเวณเริ่มของโครงการทางด้านทิศใต้ของพื้นที่ HPPO (ข้างปั๊มน รถบัส ล็อค 45) (GPS 47P 0727136, 1404550)
Measurement Date Sep 05 - Sep 06, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	47.9	76.9	44.8
11:00 AM - 12:00 PM	48.7	66.3	44.6
12:00 PM - 01:00 PM	46.8	67.7	43.6
01:00 PM - 02:00 PM	53.6	77.5	44.2
02:00 PM - 03:00 PM	49.2	71.2	44.5
03:00 PM - 04:00 PM	51.0	70.7	45.8
04:00 PM - 05:00 PM	49.8	69.8	46.4
05:00 PM - 06:00 PM	52.3	69.7	49.3
06:00 PM - 07:00 PM	51.6	75.1	48.1
07:00 PM - 08:00 PM	47.9	63.8	46.4
08:00 PM - 09:00 PM	47.1	61.4	46.1
09:00 PM - 10:00 PM	47.4	59.4	46.3
10:00 PM - 11:00 PM	49.7	70.6	46.0
11:00 PM - 12:00 AM	46.7	59.9	45.3
12:00 AM - 01:00 AM	46.8	58.3	45.0
01:00 AM - 02:00 AM	47.8	69.4	44.9
02:00 AM - 03:00 AM	47.7	60.2	45.3
03:00 AM - 04:00 AM	49.0	72.8	46.2
04:00 AM - 05:00 AM	52.6	81.8	46.8
05:00 AM - 06:00 AM	53.8	74.0	48.5
06:00 AM - 07:00 AM	55.4	76.2	46.2
07:00 AM - 08:00 AM	50.6	76.9	43.7
08:00 AM - 09:00 AM	50.6	76.8	44.9
09:00 AM - 10:00 AM	49.9	67.9	44.9

Leq Average 24 hrs. (dB(A)) 50.5
Lmax (dB(A)) 81.8
L90 (dB(A)) 45.3
Ldn (dB(A)) 57.4
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteah
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam 1 hu A. Plual daeng Pa.yong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104
Date Received : Sep 16, 2024
Date Reported : Sep 25, 2024
Report Number: 3115467-1C12

Page 1 of 1

Sample Number 2496104-2
Parameter Noise (Leq 24 hrs.)
Location บริเวณริมรั้วของโครงการทางด้านทิศใต้ของพื้นที่ HPPO (ข้างมีอม รมก นลือค 45) (GPS 47P 0727136, 1404550)
Measurement Date Sep 06 - Sep 07, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	49.5	70.2	45.1
11:00 AM - 12:00 PM	51.0	72.7	46.5
12:00 PM - 01:00 PM	53.2	83.7	44.9
01:00 PM - 02:00 PM	53.6	78.2	45.0
02:00 PM - 03:00 PM	51.0	70.9	45.9
03:00 PM - 04:00 PM	50.4	71.1	45.9
04:00 PM - 05:00 PM	52.0	74.9	45.9
05:00 PM - 06:00 PM	50.5	65.4	48.0
06:00 PM - 07:00 PM	49.2	64.1	47.5
07:00 PM - 08:00 PM	57.4	82.3	45.6
08:00 PM - 09:00 PM	46.6	58.9	45.3
09:00 PM - 10:00 PM	46.1	56.3	45.3
10:00 PM - 11:00 PM	46.7	61.4	45.1
11:00 PM - 12:00 AM	55.2	80.1	45.3
12:00 AM - 01:00 AM	46.0	55.6	45.2
01:00 AM - 02:00 AM	47.8	66.6	45.3
02:00 AM - 03:00 AM	46.3	59.9	45.2
03:00 AM - 04:00 AM	46.7	61.2	45.3
04:00 AM - 05:00 AM	51.8	78.7	46.4
05:00 AM - 06:00 AM	52.5	68.5	47.9
06:00 AM - 07:00 AM	54.1	72.2	47.4
07:00 AM - 08:00 AM	52.4	71.2	46.6
08:00 AM - 09:00 AM	51.7	77.4	45.5
09:00 AM - 10:00 AM	49.2	63.7	45.2
Leq Average 24 hrs. (dB(A))	51.6		
Lmax (dB(A))		83.7	
L90 (dB(A))			45.3
Ldn (dB(A))	57.6		
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104
Date Received : Sep 16, 2024
Date Reported : Sep 25, 2024
Report Number: 3115468-1C12

Page 1 of 1

Sample Number 2496104-3
Parameter Noise (Leq 24 hrs.)
Location บริเวณริมรั้วของโครงการทางด้านทิศใต้ของพื้นที่ HPPO (ข้างมีอม รมก นลือค 45) (GPS 47P 0727136, 1404550)
Measurement Date Sep 07 - Sep 08, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	48.1	67.1	44.4
11:00 AM - 12:00 PM	47.1	65.4	44.3
12:00 PM - 01:00 PM	51.8	69.9	45.1
01:00 PM - 02:00 PM	54.6	76.0	45.9
02:00 PM - 03:00 PM	50.4	71.9	45.6
03:00 PM - 04:00 PM	51.2	83.1	45.3
04:00 PM - 05:00 PM	54.6	84.5	45.5
05:00 PM - 06:00 PM	51.4	70.9	46.4
06:00 PM - 07:00 PM	48.6	70.6	45.1
07:00 PM - 08:00 PM	47.0	60.1	45.2
08:00 PM - 09:00 PM	46.8	60.7	45.0
09:00 PM - 10:00 PM	46.8	59.1	45.6
10:00 PM - 11:00 PM	47.4	72.6	45.2
11:00 PM - 12:00 AM	45.8	67.0	44.6
12:00 AM - 01:00 AM	45.4	61.7	44.3
01:00 AM - 02:00 AM	47.5	69.4	44.5
02:00 AM - 03:00 AM	49.3	69.6	46.1
03:00 AM - 04:00 AM	46.9	62.1	45.7
04:00 AM - 05:00 AM	50.2	64.2	46.9
05:00 AM - 06:00 AM	51.1	69.5	46.0
06:00 AM - 07:00 AM	50.7	68.7	44.7
07:00 AM - 08:00 AM	48.1	64.6	44.5
08:00 AM - 09:00 AM	50.3	73.2	44.4
09:00 AM - 10:00 AM	48.5	65.2	45.1
Leq Average 24 hrs. (dB(A))	49.9		
Lmax (dB(A))		84.5	
L90 (dB(A))			45.1
Ldn (dB(A))	55.4		
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115469-1C12

Page 1 of 1

Sample Number	2496104-4
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณริมรั้วของโครงการทางด้านทิศของพื้นที่ HPPO (ข้างปั๊มน รถบัส 45) (GPS 47P 0727136, 1404550)
Measurement Date	Sep 08 - Sep 09, 2024
Measurement by	Santi Chaiachana
Sound Level meter	Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	46.4	68.0	44.0
11:00 AM - 12:00 PM	48.8	67.5	44.2
12:00 PM - 01:00 PM	52.2	78.8	43.4
01:00 PM - 02:00 PM	48.3	68.7	43.7
02:00 PM - 03:00 PM	52.2	76.1	43.9
03:00 PM - 04:00 PM	52.8	68.3	45.9
04:00 PM - 05:00 PM	49.7	68.8	47.4
05:00 PM - 06:00 PM	49.9	67.4	47.7
06:00 PM - 07:00 PM	48.6	71.5	47.0
07:00 PM - 08:00 PM	47.4	63.5	46.3
08:00 PM - 09:00 PM	47.2	59.2	46.1
09:00 PM - 10:00 PM	49.5	71.0	46.1
10:00 PM - 11:00 PM	47.3	67.1	45.4
11:00 PM - 12:00 AM	47.1	65.3	45.0
12:00 AM - 01:00 AM	50.3	68.0	45.3
01:00 AM - 02:00 AM	52.6	70.1	46.4
02:00 AM - 03:00 AM	54.5	77.9	47.1
03:00 AM - 04:00 AM	55.0	77.9	48.1
04:00 AM - 05:00 AM	51.1	71.0	47.1
05:00 AM - 06:00 AM	53.3	76.5	48.2
06:00 AM - 07:00 AM	51.8	70.1	46.9
07:00 AM - 08:00 AM	51.5	69.2	46.5
08:00 AM - 09:00 AM	53.4	76.7	45.0
09:00 AM - 10:00 AM	49.6	66.7	45.2

Leq Average 24 hrs. (dB(A))	51.1		
Lmax (dB(A))		78.8	
L90 (dB(A))			46.1
Ldn (dB(A))	58.4		
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115470-1C12

Page 1 of 1

Sample Number	2496104-5
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณริมรั้วของโครงการทางด้านทิศของพื้นที่ HPPO (ข้างปั๊มน รถบัส 45) (GPS 47P 0727136, 1404550)
Measurement Date	Sep 09 - Sep 10, 2024
Measurement by	Santi Chaiachana
Sound Level meter	Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	49.6	65.3	45.6
11:00 AM - 12:00 PM	48.4	68.1	44.6
12:00 PM - 01:00 PM	49.2	66.9	45.3
01:00 PM - 02:00 PM	50.5	72.8	45.0
02:00 PM - 03:00 PM	54.3	77.4	44.9
03:00 PM - 04:00 PM	51.4	74.4	44.8
04:00 PM - 05:00 PM	51.1	68.7	45.7
05:00 PM - 06:00 PM	53.8	83.2	45.8
06:00 PM - 07:00 PM	51.2	78.7	45.5
07:00 PM - 08:00 PM	47.5	64.6	46.2
08:00 PM - 09:00 PM	47.8	67.2	46.2
09:00 PM - 10:00 PM	49.8	77.9	45.9
10:00 PM - 11:00 PM	46.9	64.4	45.6
11:00 PM - 12:00 AM	46.2	53.7	45.4
12:00 AM - 01:00 AM	46.6	55.7	45.6
01:00 AM - 02:00 AM	47.1	68.5	45.5
02:00 AM - 03:00 AM	46.4	57.6	45.2
03:00 AM - 04:00 AM	47.4	59.7	45.2
04:00 AM - 05:00 AM	51.8	64.4	47.9
05:00 AM - 06:00 AM	56.3	76.7	47.7
06:00 AM - 07:00 AM	53.0	71.6	48.5
07:00 AM - 08:00 AM	55.2	74.7	47.5
08:00 AM - 09:00 AM	54.1	82.1	46.6
09:00 AM - 10:00 AM	49.9	68.5	45.5

Leq Average 24 hrs. (dB(A))	51.3		
Lmax (dB(A))		83.2	
L90 (dB(A))			45.6
Ldn (dB(A))	57.3		
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115471-1C12

Page 1 of 1

Sample Number	2496104-6
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณริมรั้วของโครงการทางด่านทิศใต้ของพื้นที่ HPPO (ข้างปั๊มน้ำมัน บล๊อค 45) (GPS 47P 0727136, 1404550)
Measurement Date	Sep 10 - Sep 11, 2024
Measurement by	Santi Chaichana
Sound Level meter	Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	50.0	66.3	45.6
11:00 AM - 12:00 PM	49.7	66.0	44.7
12:00 PM - 01:00 PM	48.5	65.4	44.9
01:00 PM - 02:00 PM	48.5	62.3	44.9
02:00 PM - 03:00 PM	54.9	79.5	44.4
03:00 PM - 04:00 PM	49.4	70.9	44.5
04:00 PM - 05:00 PM	54.8	80.4	46.7
05:00 PM - 06:00 PM	52.8	76.7	46.9
06:00 PM - 07:00 PM	50.9	70.1	47.4
07:00 PM - 08:00 PM	49.0	65.5	46.3
08:00 PM - 09:00 PM	49.0	56.1	47.1
09:00 PM - 10:00 PM	50.5	64.1	48.8
10:00 PM - 11:00 PM	48.9	54.9	47.5
11:00 PM - 12:00 AM	48.0	55.6	46.9
12:00 AM - 01:00 AM	51.1	73.0	47.3
01:00 AM - 02:00 AM	54.1	77.5	47.2
02:00 AM - 03:00 AM	48.0	58.5	46.4
03:00 AM - 04:00 AM	50.2	66.8	46.3
04:00 AM - 05:00 AM	54.0	77.2	46.9
05:00 AM - 06:00 AM	51.6	70.8	47.6
06:00 AM - 07:00 AM	53.7	70.9	48.9
07:00 AM - 08:00 AM	51.2	70.8	45.1
08:00 AM - 09:00 AM	50.0	74.1	44.1
09:00 AM - 10:00 AM	50.3	77.8	43.7

Leq Average 24 hrs. (dB(A))

51.4

Lmax (dB(A))

80.4

L90 (dB(A))

46.4

Ldn (dB(A))

58.0

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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteah
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496104

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115472-1C12

Page 1 of 1

Sample Number	2496104-7
Parameter	Noise (Leq 24 hrs.)
Location	บริเวณริมรั้วของโครงการทางด่านทิศใต้ของพื้นที่ HPPO (ข้างปั๊มน้ำมัน บล๊อค 45) (GPS 47P 0727136, 1404550)
Measurement Date	Sep 11 - Sep 12, 2024
Measurement by	Santi Chaichana
Sound Level meter	Serial No. 597167

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
10:00 AM - 11:00 AM	48.3	63.8	44.0
11:00 AM - 12:00 PM	47.5	64.5	44.5
12:00 PM - 01:00 PM	49.4	66.5	45.2
01:00 PM - 02:00 PM	50.3	69.9	44.7
02:00 PM - 03:00 PM	52.9	71.3	46.0
03:00 PM - 04:00 PM	50.9	73.5	45.7
04:00 PM - 05:00 PM	51.2	70.6	47.0
05:00 PM - 06:00 PM	53.8	77.2	46.7
06:00 PM - 07:00 PM	51.1	69.6	48.1
07:00 PM - 08:00 PM	51.5	72.8	47.4
08:00 PM - 09:00 PM	48.8	69.3	46.3
09:00 PM - 10:00 PM	47.7	63.0	46.3
10:00 PM - 11:00 PM	49.1	66.1	47.5
11:00 PM - 12:00 AM	50.2	68.2	47.3
12:00 AM - 01:00 AM	49.3	64.9	46.9
01:00 AM - 02:00 AM	49.8	59.7	47.8
02:00 AM - 03:00 AM	51.4	60.9	48.9
03:00 AM - 04:00 AM	52.6	64.5	49.5
04:00 AM - 05:00 AM	52.0	67.5	49.5
05:00 AM - 06:00 AM	55.5	68.5	51.3
06:00 AM - 07:00 AM	55.3	75.6	49.5
07:00 AM - 08:00 AM	52.8	73.2	45.5
08:00 AM - 09:00 AM	49.4	68.1	44.8
09:00 AM - 10:00 AM	47.9	68.7	43.7

Leq Average 24 hrs. (dB(A))

51.4

Lmax (dB(A))

77.2

L90 (dB(A))

46.7

Ldn (dB(A))

58.5

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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteah
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115494-1C12

Page 1 of 1

Sample Number 2496106-1
Parameter Noise (Leq 24 hrs.)
Location กลุ่มงานในชุมชนประมงสัตว์ประมง (บ้านคุณบุญยัง) (GPS 47P 0726338, 1405748)
Measurement Date Sep 05 - Sep 06, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296516

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	52.9	79.2	43.6
12:00 PM - 01:00 PM	49.3	71.6	42.2
01:00 PM - 02:00 PM	51.4	78.1	43.0
02:00 PM - 03:00 PM	51.7	73.3	44.5
03:00 PM - 04:00 PM	51.8	72.9	43.3
04:00 PM - 05:00 PM	52.6	74.9	43.7
05:00 PM - 06:00 PM	52.3	74.7	44.6
06:00 PM - 07:00 PM	55.7	88.6	47.0
07:00 PM - 08:00 PM	49.5	72.4	46.5
08:00 PM - 09:00 PM	47.7	67.9	45.1
09:00 PM - 10:00 PM	46.6	67.8	43.6
10:00 PM - 11:00 PM	59.2	93.3	43.2
11:00 PM - 12:00 AM	44.3	63.8	42.1
12:00 AM - 01:00 AM	44.5	69.8	41.7
01:00 AM - 02:00 AM	49.2	77.4	42.6
02:00 AM - 03:00 AM	47.4	76.8	42.2
03:00 AM - 04:00 AM	47.4	70.8	41.9
04:00 AM - 05:00 AM	50.2	71.7	43.3
05:00 AM - 06:00 AM	56.9	83.0	46.5
06:00 AM - 07:00 AM	57.5	82.5	47.2
07:00 AM - 08:00 AM	51.7	76.7	43.0
08:00 AM - 09:00 AM	48.0	68.7	41.9
09:00 AM - 10:00 AM	50.0	78.3	42.9
10:00 AM - 11:00 AM	52.5	78.6	43.7

Leq Average 24 hrs. (dB(A)) 52.6
Lmax (dB(A)) 93.3
L90 (dB(A)) 43.3
Ldn (dB(A)) 60.1
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supt S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plua daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115495-1C12

Page 1 of 1

Sample Number 2496106-2
Parameter Noise (Leq 24 hrs.)
Location กลุ่มงานในชุมชนประมงสัตว์ประมง (บ้านคุณบุญยัง) (GPS 47P 0726338, 1405748)
Measurement Date Sep 06 - Sep 07, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296516

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	51.0	75.6	42.8
12:00 PM - 01:00 PM	51.4	74.0	43.9
01:00 PM - 02:00 PM	49.2	70.2	42.1
02:00 PM - 03:00 PM	52.9	77.4	43.0
03:00 PM - 04:00 PM	52.3	81.8	44.0
04:00 PM - 05:00 PM	55.9	84.2	44.7
05:00 PM - 06:00 PM	52.6	72.7	45.2
06:00 PM - 07:00 PM	51.3	71.6	46.7
07:00 PM - 08:00 PM	49.0	66.7	46.3
08:00 PM - 09:00 PM	49.3	72.2	44.2
09:00 PM - 10:00 PM	47.3	73.0	43.3
10:00 PM - 11:00 PM	44.8	58.5	43.0
11:00 PM - 12:00 AM	46.2	66.1	43.1
12:00 AM - 01:00 AM	45.5	62.4	42.4
01:00 AM - 02:00 AM	45.0	67.2	42.6
02:00 AM - 03:00 AM	44.8	65.9	42.3
03:00 AM - 04:00 AM	46.2	63.7	43.1
04:00 AM - 05:00 AM	54.7	84.3	44.2
05:00 AM - 06:00 AM	59.7	89.5	46.4
06:00 AM - 07:00 AM	56.2	80.1	44.6
07:00 AM - 08:00 AM	50.1	74.6	42.6
08:00 AM - 09:00 AM	51.3	80.2	43.3
09:00 AM - 10:00 AM	51.0	73.9	44.6
10:00 AM - 11:00 AM	52.4	77.0	45.1

Leq Average 24 hrs. (dB(A)) 52.3
Lmax (dB(A)) 89.5
L90 (dB(A)) 43.3
Ldn (dB(A)) 59.4
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supt S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plua daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115496-1C12

Page 1 of 1

Sample Number 2496106-3
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านในชุมชนประมงมิตรปารุง (บ้านคุณบุญผดุง) (GPS 47P 0726338, 1405748)
Measurement Date Sep 07 - Sep 08, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296516

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	50.7	73.6	44.8
12:00 PM - 01:00 PM	51.8	70.8	46.5
01:00 PM - 02:00 PM	54.1	80.7	47.2
02:00 PM - 03:00 PM	52.1	75.2	44.7
03:00 PM - 04:00 PM	51.8	74.7	44.0
04:00 PM - 05:00 PM	53.3	75.3	44.6
05:00 PM - 06:00 PM	52.1	71.3	45.7
06:00 PM - 07:00 PM	52.7	76.5	47.7
07:00 PM - 08:00 PM	49.8	69.7	47.3
08:00 PM - 09:00 PM	49.0	63.1	46.7
09:00 PM - 10:00 PM	48.3	68.9	46.2
10:00 PM - 11:00 PM	46.5	63.0	43.5
11:00 PM - 12:00 AM	46.8	71.7	43.5
12:00 AM - 01:00 AM	45.6	69.3	42.7
01:00 AM - 02:00 AM	45.3	68.8	42.6
02:00 AM - 03:00 AM	45.3	65.2	41.6
03:00 AM - 04:00 AM	46.4	65.1	42.0
04:00 AM - 05:00 AM	50.7	77.5	43.6
05:00 AM - 06:00 AM	55.7	80.7	45.9
06:00 AM - 07:00 AM	53.2	77.9	44.6
07:00 AM - 08:00 AM	51.1	82.4	43.6
08:00 AM - 09:00 AM	49.3	76.4	43.8
09:00 AM - 10:00 AM	48.3	70.4	44.1
10:00 AM - 11:00 AM	50.5	78.5	44.5

Leq Average 24 hrs. (dB(A))

50.9

Lmax (dB(A))

82.4

L90 (dB(A))

44.5

Ldn (dB(A))

56.8

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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S.
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa/yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115497-1C12

Page 1 of 1

Sample Number 2496106-4
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านในชุมชนประมงมิตรปารุง (บ้านคุณบุญผดุง) (GPS 47P 0726338, 1405748)
Measurement Date Sep 08 - Sep 09, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296516

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	49.6	74.2	42.7
12:00 PM - 01:00 PM	55.9	77.8	42.7
01:00 PM - 02:00 PM	51.3	78.8	44.9
02:00 PM - 03:00 PM	48.7	69.7	44.3
03:00 PM - 04:00 PM	53.9	75.1	44.6
04:00 PM - 05:00 PM	55.9	75.0	45.0
05:00 PM - 06:00 PM	50.7	68.2	45.7
06:00 PM - 07:00 PM	50.9	71.4	46.9
07:00 PM - 08:00 PM	49.8	72.9	45.8
08:00 PM - 09:00 PM	49.5	77.8	44.5
09:00 PM - 10:00 PM	48.0	67.3	44.9
10:00 PM - 11:00 PM	49.2	66.3	44.2
11:00 PM - 12:00 AM	48.0	68.3	44.1
12:00 AM - 01:00 AM	45.8	58.0	43.6
01:00 AM - 02:00 AM	44.8	52.3	43.2
02:00 AM - 03:00 AM	45.1	57.6	42.7
03:00 AM - 04:00 AM	47.7	65.8	43.1
04:00 AM - 05:00 AM	51.6	73.1	45.4
05:00 AM - 06:00 AM	57.4	83.3	47.9
06:00 AM - 07:00 AM	59.2	88.8	48.2
07:00 AM - 08:00 AM	50.6	67.6	44.2
08:00 AM - 09:00 AM	50.0	74.4	43.1
09:00 AM - 10:00 AM	48.6	68.9	44.0
10:00 AM - 11:00 AM	52.3	70.2	45.6

Leq Average 24 hrs. (dB(A))

52.3

Lmax (dB(A))

88.8

L90 (dB(A))

44.3

Ldn (dB(A))

59.3

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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S.
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa/yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115498-1C12

Page 1 of 1

Sample Number 2496106-5
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านในชุมชนประทุมมิตรปารง (บ้านคุณบุญมี) (GPS 47P 0726338, 1405748)
Measurement Date Sep 09 - Sep 10, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296516

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	52.0	75.4	44.6
12:00 PM - 01:00 PM	50.9	69.7	44.4
01:00 PM - 02:00 PM	49.1	73.7	43.3
02:00 PM - 03:00 PM	50.4	69.4	43.6
03:00 PM - 04:00 PM	51.8	74.2	43.6
04:00 PM - 05:00 PM	55.7	80.4	44.7
05:00 PM - 06:00 PM	52.0	75.6	44.1
06:00 PM - 07:00 PM	52.3	77.1	47.4
07:00 PM - 08:00 PM	50.6	74.0	47.0
08:00 PM - 09:00 PM	49.1	73.1	46.1
09:00 PM - 10:00 PM	48.4	68.0	46.1
10:00 PM - 11:00 PM	45.8	68.9	43.7
11:00 PM - 12:00 AM	44.7	57.5	43.2
12:00 AM - 01:00 AM	52.2	85.4	42.2
01:00 AM - 02:00 AM	44.2	58.7	42.5
02:00 AM - 03:00 AM	44.3	53.3	43.1
03:00 AM - 04:00 AM	46.5	65.9	42.9
04:00 AM - 05:00 AM	47.6	65.7	43.1
05:00 AM - 06:00 AM	58.9	82.1	47.3
06:00 AM - 07:00 AM	57.3	85.8	48.3
07:00 AM - 08:00 AM	57.8	83.5	44.2
08:00 AM - 09:00 AM	54.1	87.3	42.3
09:00 AM - 10:00 AM	49.8	72.0	42.8
10:00 AM - 11:00 AM	49.7	70.5	43.6

Leq Average 24 hrs. (dB(A)) 52.6
Lmax (dB(A)) 87.3
L90 (dB(A)) 43.6
Ldn (dB(A)) 59.1
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supt S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.jong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115499-1C12

Page 1 of 1

Sample Number 2496106-6
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านในชุมชนประทุมมิตรปารง (บ้านคุณบุญมี) (GPS 47P 0726338, 1405748)
Measurement Date Sep 10 - Sep 11, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296516

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	52.9	75.0	43.6
12:00 PM - 01:00 PM	49.6	72.3	42.4
01:00 PM - 02:00 PM	47.2	67.9	42.2
02:00 PM - 03:00 PM	50.1	68.7	44.6
03:00 PM - 04:00 PM	51.6	71.4	44.6
04:00 PM - 05:00 PM	55.2	82.4	45.9
05:00 PM - 06:00 PM	53.2	78.5	45.9
06:00 PM - 07:00 PM	54.1	73.7	49.8
07:00 PM - 08:00 PM	50.8	72.7	46.5
08:00 PM - 09:00 PM	52.0	80.5	43.2
09:00 PM - 10:00 PM	49.6	72.3	43.5
10:00 PM - 11:00 PM	46.4	67.2	43.9
11:00 PM - 12:00 AM	45.7	59.2	43.3
12:00 AM - 01:00 AM	48.5	66.2	44.2
01:00 AM - 02:00 AM	46.9	61.9	43.3
02:00 AM - 03:00 AM	51.2	58.9	44.1
03:00 AM - 04:00 AM	56.7	64.7	47.8
04:00 AM - 05:00 AM	57.2	64.1	47.7
05:00 AM - 06:00 AM	56.8	81.9	47.4
06:00 AM - 07:00 AM	57.3	82.2	46.9
07:00 AM - 08:00 AM	54.4	73.4	43.5
08:00 AM - 09:00 AM	49.3	71.2	42.4
09:00 AM - 10:00 AM	47.8	69.0	41.8
10:00 AM - 11:00 AM	50.0	71.4	43.4

Leq Average 24 hrs. (dB(A)) 52.8
Lmax (dB(A)) 82.4
L90 (dB(A)) 43.9
Ldn (dB(A)) 60.3
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supt S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.jong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496106

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115500-1C12

Page 1 of 1

Sample Number	2496106-7		
Parameter	Noise (Leq 24 hrs.)		
Location	กลุ่มบ้านในชุมชนประมงมิตรบำรุง (บ้านคุณบุญยงค์) (GPS 47P 0726338, 1405748)		
Measurement Date	Sep 11 - Sep 12, 2024		
Measurement by	Santi Chaichana		
Sound Level meter	Serial No. 296516		
Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
11:00 AM - 12:00 PM	51.0	69.9	44.8
12:00 PM - 01:00 PM	52.8	78.9	43.8
01:00 PM - 02:00 PM	49.1	73.9	43.2
02:00 PM - 03:00 PM	53.9	82.7	43.4
03:00 PM - 04:00 PM	55.2	86.6	43.0
04:00 PM - 05:00 PM	53.2	72.3	44.9
05:00 PM - 06:00 PM	51.9	77.7	45.5
06:00 PM - 07:00 PM	52.1	72.7	46.6
07:00 PM - 08:00 PM	50.7	72.2	46.3
08:00 PM - 09:00 PM	49.6	69.5	47.5
09:00 PM - 10:00 PM	47.8	62.3	45.2
10:00 PM - 11:00 PM	48.2	73.9	44.8
11:00 PM - 12:00 AM	45.1	59.4	43.5
12:00 AM - 01:00 AM	46.3	70.8	43.1
01:00 AM - 02:00 AM	46.4	65.0	44.2
02:00 AM - 03:00 AM	47.4	52.5	44.5
03:00 AM - 04:00 AM	48.4	57.5	47.4
04:00 AM - 05:00 AM	49.5	65.3	47.5
05:00 AM - 06:00 AM	55.6	80.0	47.3
06:00 AM - 07:00 AM	58.4	86.2	47.0
07:00 AM - 08:00 AM	53.5	75.7	41.4
08:00 AM - 09:00 AM	52.9	76.7	41.3
09:00 AM - 10:00 AM	52.8	72.1	43.7
10:00 AM - 11:00 AM	51.2	58.9	44.1

Leq Average 24 hrs. (dB(A))

Lmax (dB(A))

L90 (dB(A))

Ldn (dB(A))

Standard (dB(A))

Reference Method : ISO1996-1 and 1996-2

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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115557-1C12

Page 1 of 1

Sample Number	2496112-1		
Parameter	Noise (Leq 24 hrs.)		
Location	กลุ่มบ้านชุมชนพุด (บ้านคุณสมจิตร) (GPS 47P 0727177, 1404390)		
Measurement Date	Sep 05 - Sep 06, 2024		
Measurement by	Santi Chaichana		
Sound Level meter	Serial No. 296518		
Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	50.3	74.8	44.0
01:00 PM - 02:00 PM	49.3	66.0	44.0
02:00 PM - 03:00 PM	56.1	86.4	44.5
03:00 PM - 04:00 PM	55.2	81.1	44.1
04:00 PM - 05:00 PM	47.3	65.7	43.9
05:00 PM - 06:00 PM	48.1	66.5	44.8
06:00 PM - 07:00 PM	51.7	78.3	45.5
07:00 PM - 08:00 PM	50.5	72.0	45.7
08:00 PM - 09:00 PM	50.7	77.4	45.0
09:00 PM - 10:00 PM	46.4	56.4	45.5
10:00 PM - 11:00 PM	45.9	56.9	45.0
11:00 PM - 12:00 AM	49.8	72.2	45.5
12:00 AM - 01:00 AM	45.3	51.8	44.5
01:00 AM - 02:00 AM	44.0	47.9	43.6
02:00 AM - 03:00 AM	43.6	48.1	42.8
03:00 AM - 04:00 AM	47.8	70.4	42.7
04:00 AM - 05:00 AM	49.5	71.3	43.3
05:00 AM - 06:00 AM	59.0	73.4	43.8
06:00 AM - 07:00 AM	58.7	81.1	45.3
07:00 AM - 08:00 AM	56.5	79.7	45.4
08:00 AM - 09:00 AM	52.1	72.1	43.1
09:00 AM - 10:00 AM	49.9	69.3	43.0
10:00 AM - 11:00 AM	50.7	71.9	43.5
11:00 AM - 12:00 PM	51.7	70.1	44.0

Leq Average 24 hrs. (dB(A))

Lmax (dB(A))

L90 (dB(A))

Ldn (dB(A))

Standard (dB(A))

Reference Method : ISO1996-1 and 1996-2

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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115558-1C12

Page 1 of 1

Sample Number 2496112-2
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านชุมชนพูน (บ้านอุดมสมบูรณ์) (GPS 47P 0727177, 1404390)
Measurement Date Sep 06 - Sep 07, 2024
Measurement by Santi Chachana
Sound Level meter Serial No. 296518

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	53.0	69.7	44.1
01:00 PM - 02:00 PM	50.4	66.4	45.4
02:00 PM - 03:00 PM	56.1	80.9	43.4
03:00 PM - 04:00 PM	49.7	70.5	43.3
04:00 PM - 05:00 PM	51.2	72.6	43.0
05:00 PM - 06:00 PM	48.9	66.5	43.2
06:00 PM - 07:00 PM	46.4	65.3	43.1
07:00 PM - 08:00 PM	45.3	55.2	44.1
08:00 PM - 09:00 PM	44.9	60.7	44.1
09:00 PM - 10:00 PM	57.8	83.4	43.2
10:00 PM - 11:00 PM	44.8	71.0	43.4
11:00 PM - 12:00 AM	44.4	51.9	43.8
12:00 AM - 01:00 AM	46.2	69.1	43.9
01:00 AM - 02:00 AM	56.5	82.3	43.4
02:00 AM - 03:00 AM	46.7	67.4	43.3
03:00 AM - 04:00 AM	46.3	68.6	42.7
04:00 AM - 05:00 AM	53.7	71.5	41.9
05:00 AM - 06:00 AM	58.6	74.0	42.0
06:00 AM - 07:00 AM	58.0	83.0	44.2
07:00 AM - 08:00 AM	54.3	72.7	44.4
08:00 AM - 09:00 AM	52.7	75.3	44.5
09:00 AM - 10:00 AM	55.8	74.9	43.5
10:00 AM - 11:00 AM	50.5	67.5	44.9
11:00 AM - 12:00 PM	49.4	66.3	45.0

Leq Average 24 hrs. (dB(A)) 53.2
Lmax (dB(A)) 83.4
L90 (dB(A)) 43.4
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plua daeng Pa/ong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115559-1C12

Page 1 of 1

Sample Number 2496112-3
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านชุมชนพูน (บ้านอุดมสมบูรณ์) (GPS 47P 0727177, 1404390)
Measurement Date Sep 07 - Sep 08, 2024
Measurement by Santi Chachana
Sound Level meter Serial No. 296518

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	51.6	72.4	44.6
01:00 PM - 02:00 PM	50.2	70.6	44.6
02:00 PM - 03:00 PM	51.9	72.9	45.8
03:00 PM - 04:00 PM	55.1	76.0	44.8
04:00 PM - 05:00 PM	48.6	66.4	43.4
05:00 PM - 06:00 PM	48.2	70.6	43.5
06:00 PM - 07:00 PM	46.8	62.5	43.6
07:00 PM - 08:00 PM	49.3	70.8	44.5
08:00 PM - 09:00 PM	47.5	70.7	44.0
09:00 PM - 10:00 PM	45.7	52.3	44.2
10:00 PM - 11:00 PM	44.5	53.1	43.8
11:00 PM - 12:00 AM	44.4	57.5	43.9
12:00 AM - 01:00 AM	44.3	62.4	43.4
01:00 AM - 02:00 AM	43.4	56.1	42.9
02:00 AM - 03:00 AM	43.5	48.9	42.9
03:00 AM - 04:00 AM	45.8	66.0	43.0
04:00 AM - 05:00 AM	54.0	73.1	42.2
05:00 AM - 06:00 AM	59.5	74.8	41.7
06:00 AM - 07:00 AM	57.7	74.5	44.1
07:00 AM - 08:00 AM	52.0	71.3	43.4
08:00 AM - 09:00 AM	52.6	72.5	43.6
09:00 AM - 10:00 AM	49.1	71.3	44.1
10:00 AM - 11:00 AM	46.9	56.5	44.5
11:00 AM - 12:00 PM	50.7	67.9	45.3

Leq Average 24 hrs. (dB(A)) 51.7
Lmax (dB(A)) 76.0
L90 (dB(A)) 43.8
Ldn (dB(A)) 59.3
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supot S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plua daeng Pa/ong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112
Date Received : Sep 16, 2024
Date Reported : Sep 25, 2024
Report Number: 3115561-1C12

Page 1 of 1

Sample Number	2496112-4
Parameter	Noise (Leq 24 hrs.)
Location	กลุ่มบ้านชุมชนพญาน (บ้านอุตสาหกรรม) (GPS 47P 0727177, 1404390)
Measurement Date	Sep 08 - Sep 09, 2024
Measurement by	Santi Chaichana
Sound Level meter	Serial No. 296518

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	51.3	73.2	43.9
01:00 PM - 02:00 PM	52.0	69.9	43.8
02:00 PM - 03:00 PM	53.6	73.5	43.8
03:00 PM - 04:00 PM	57.3	84.0	43.5
04:00 PM - 05:00 PM	50.9	70.7	43.5
05:00 PM - 06:00 PM	51.5	67.4	44.8
06:00 PM - 07:00 PM	46.4	63.8	43.6
07:00 PM - 08:00 PM	43.8	56.1	43.1
08:00 PM - 09:00 PM	43.6	55.3	42.8
09:00 PM - 10:00 PM	43.7	52.2	43.0
10:00 PM - 11:00 PM	47.8	70.5	42.8
11:00 PM - 12:00 AM	44.0	57.1	42.9
12:00 AM - 01:00 AM	43.5	53.1	42.5
01:00 AM - 02:00 AM	44.2	67.9	42.4
02:00 AM - 03:00 AM	48.6	71.3	42.3
03:00 AM - 04:00 AM	53.5	72.9	42.3
04:00 AM - 05:00 AM	59.2	82.9	41.7
05:00 AM - 06:00 AM	56.7	73.5	42.0
06:00 AM - 07:00 AM	58.4	74.9	44.3
07:00 AM - 08:00 AM	53.6	71.7	44.5
08:00 AM - 09:00 AM	53.6	74.7	44.6
09:00 AM - 10:00 AM	61.3	79.2	46.8
10:00 AM - 11:00 AM	62.0	80.7	44.4
11:00 AM - 12:00 PM	63.1	79.4	50.0

Leq Average 24 hrs. (dB(A))	55.9		
Lmax (dB(A))		84.0	
L90 (dB(A))			43.5
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112
Date Received : Sep 16, 2024
Date Reported : Sep 25, 2024
Report Number: 3115561-1C12

Page 1 of 1

Sample Number	2496112-5
Parameter	Noise (Leq 24 hrs.)
Location	กลุ่มบ้านชุมชนพญาน (บ้านอุตสาหกรรม) (GPS 47P 0727177, 1404390)
Measurement Date	Sep 09 - Sep 10, 2024
Measurement by	Santi Chaichana
Sound Level meter	Serial No. 296518

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	62.2	87.2	49.2
01:00 PM - 02:00 PM	62.1	89.8	49.2
02:00 PM - 03:00 PM	60.3	86.3	45.2
03:00 PM - 04:00 PM	54.8	82.1	44.5
04:00 PM - 05:00 PM	50.8	71.9	43.3
05:00 PM - 06:00 PM	54.2	81.2	43.5
06:00 PM - 07:00 PM	47.4	71.1	43.3
07:00 PM - 08:00 PM	44.7	63.7	43.2
08:00 PM - 09:00 PM	44.9	63.6	43.7
09:00 PM - 10:00 PM	46.4	68.8	43.8
10:00 PM - 11:00 PM	47.0	74.6	43.1
11:00 PM - 12:00 AM	48.9	82.4	43.2
12:00 AM - 01:00 AM	44.9	70.6	43.5
01:00 AM - 02:00 AM	45.1	70.8	43.0
02:00 AM - 03:00 AM	43.8	55.4	42.6
03:00 AM - 04:00 AM	47.6	73.3	42.0
04:00 AM - 05:00 AM	45.1	70.1	41.7
05:00 AM - 06:00 AM	52.2	74.9	41.6
06:00 AM - 07:00 AM	61.2	80.2	42.6
07:00 AM - 08:00 AM	56.0	78.1	43.6
08:00 AM - 09:00 AM	58.1	82.0	44.2
09:00 AM - 10:00 AM	58.3	84.7	42.7
10:00 AM - 11:00 AM	54.8	88.9	42.6
11:00 AM - 12:00 PM	51.8	75.1	43.8

Leq Average 24 hrs. (dB(A))	55.8		
Lmax (dB(A))		89.8	
L90 (dB(A))			43.3
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

Technical Management

Chontichak
Chonticha Subongkoch
Scientist (3)

Approved by

Supot S
Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115562-1C12

Page 1 of 1

Sample Number 2496112-6
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านขุนทด (บ้านคุณสมใจ) (GPS 47P 0727177, 1404390)
Measurement Date Sep 10 - Sep 11, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296518

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	57.6	90.0	43.1
01:00 PM - 02:00 PM	49.8	73.7	42.9
02:00 PM - 03:00 PM	48.4	71.8	43.5
03:00 PM - 04:00 PM	58.1	82.0	43.6
04:00 PM - 05:00 PM	56.3	81.6	43.4
05:00 PM - 06:00 PM	48.3	77.2	43.5
06:00 PM - 07:00 PM	46.3	72.3	42.8
07:00 PM - 08:00 PM	47.2	73.5	43.6
08:00 PM - 09:00 PM	44.3	62.0	43.2
09:00 PM - 10:00 PM	44.9	61.1	42.9
10:00 PM - 11:00 PM	47.7	56.0	46.8
11:00 PM - 12:00 AM	47.1	68.0	45.2
12:00 AM - 01:00 AM	45.3	53.7	44.5
01:00 AM - 02:00 AM	49.6	73.7	44.2
02:00 AM - 03:00 AM	47.8	84.1	44.3
03:00 AM - 04:00 AM	55.1	80.6	43.7
04:00 AM - 05:00 AM	51.9	76.1	42.3
05:00 AM - 06:00 AM	58.1	80.2	42.4
06:00 AM - 07:00 AM	58.9	78.8	42.7
07:00 AM - 08:00 AM	55.8	77.0	43.9
08:00 AM - 09:00 AM	52.9	77.7	42.9
09:00 AM - 10:00 AM	51.3	74.5	42.9
10:00 AM - 11:00 AM	54.1	82.4	42.8
11:00 AM - 12:00 PM	50.8	74.0	43.1

Leq Average 24 hrs. (dB(A)) 53.5
Lmax (dB(A)) 90.0
L90 (dB(A)) 43.2
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supt S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A Plual daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL



Analysis / Test Report



TESTING
No.0042

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O :

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2496112

Date Received : Sep 16, 2024

Date Reported : Sep 25, 2024

Report Number: 3115563-1C12

Page 1 of 1

Sample Number 2496112-7
Parameter Noise (Leq 24 hrs.)
Location กลุ่มบ้านขุนทด (บ้านคุณสมใจ) (GPS 47P 0727177, 1404390)
Measurement Date Sep 11 - Sep 12, 2024
Measurement by Santi Chaichana
Sound Level meter Serial No. 296518

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
12:00 PM - 01:00 PM	52.1	80.0	45.0
01:00 PM - 02:00 PM	58.6	84.3	45.3
02:00 PM - 03:00 PM	63.6	87.9	43.1
03:00 PM - 04:00 PM	53.1	75.7	42.6
04:00 PM - 05:00 PM	53.6	75.8	42.4
05:00 PM - 06:00 PM	48.6	77.3	42.9
06:00 PM - 07:00 PM	52.1	73.2	43.2
07:00 PM - 08:00 PM	53.6	80.3	43.1
08:00 PM - 09:00 PM	49.2	73.9	43.4
09:00 PM - 10:00 PM	46.1	73.7	42.7
10:00 PM - 11:00 PM	45.0	53.1	43.0
11:00 PM - 12:00 AM	44.9	61.5	43.4
12:00 AM - 01:00 AM	44.7	64.5	44.0
01:00 AM - 02:00 AM	47.3	70.4	43.3
02:00 AM - 03:00 AM	44.4	49.7	43.8
03:00 AM - 04:00 AM	46.8	71.4	44.1
04:00 AM - 05:00 AM	46.6	59.1	45.4
05:00 AM - 06:00 AM	56.4	77.3	46.1
06:00 AM - 07:00 AM	61.2	81.2	45.9
07:00 AM - 08:00 AM	57.7	77.6	44.4
08:00 AM - 09:00 AM	55.1	77.4	43.0
09:00 AM - 10:00 AM	53.4	76.9	42.5
10:00 AM - 11:00 AM	52.4	71.1	44.2
11:00 AM - 12:00 PM	53.6	73.5	43.8

Leq Average 24 hrs. (dB(A)) 55.1
Lmax (dB(A)) 87.9
L90 (dB(A)) 43.4
Ldn (dB(A)) 60.3
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

Technical Management

Chontichak

Chonticha Subongkoch
Scientist (3)

Approved by

Supt S

Supot Salamteh
Section Head

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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A Plual daeng Pa yong 21140 Thailand I PHONE +66 0 3304 8555 I FAX +66 0 3304 8556

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

8525-209/ EMAIL

ภาคผนวก ค-5

ผลการตรวจวิเคราะห์คุณภาพน้ำทิ้ง



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Water Testing
Project Location: AIE SSLC-SE Plant



TESTING
No.0042
Lot ID: 2472414
Date Received : Jul 04, 2024
Date Reported : Jul 11, 2024
Report Number : 3034173-1

Page 1 of 1

Sample Number 2472414-1
Sampled Date Jul 04, 2024 10:23 AM
Sample Description Blowdown Water
Location SE Cooling Tower
Date Analysis Commenced Jul 04, 2024
Condition of Sample Contained in one amber glass bottle and three 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	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
Oil & Grease	mg/L	*	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C		*	*	7.7	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	1460	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	*	5	9	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampling By : Wanlop Hunchainaw ทะเบียนเลขที่ 7-323-9-9457

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ 7-323-9-9446

Approved by

D. Chanchon

Dej Chanchon
Senior Manager
ทะเบียนเลขที่ 7-323-9-9442

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Rayong 21140 Thailand PHONE +66 0 3304 8555 FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/ E/HAIR

S:\Reports\AL_GL.rpt (6.06PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Water Testing
Project Location: AIE SSLC-SE Plant



TESTING
No.0042
Lot ID: 2472414
Date Received : Jul 04, 2024
Date Reported : Jul 11, 2024
Report Number : 3034173-2

Page 1 of 1

Sample Number 2472414-1
Sampled Date Jul 04, 2024 10:23 AM
Sample Description Blowdown Water
Location SE Cooling Tower
Date Analysis Commenced Jul 05, 2024
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
COD	mg/L	1.5	25	59	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampling By : Wanlop Hunchainaw ทะเบียนเลขที่ 7-323-9-9457

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)
ทะเบียนเลขที่ 7-323-9-9446

Approved by

D. Chanchon

Dej Chanchon
Senior Manager
ทะเบียนเลขที่ 7-323-9-9442

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Rayong 21140 Thailand PHONE +66 0 3304 8555 FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/ E/HAIR

S:\Reports\AL_GL.rpt (6.07PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant



TESTING
No.0042

Lot ID: 2485579

Date Received : Aug 07, 2024

Date Reported : Aug 15, 2024

Report Number : 3065669-1

Page 1 of 1

Sample Number 2485579-1
Sampled Date Aug 07, 2024 9:50 AM
Sample Description Blowdown Water
Location SE Cooling Tower
Date Analysis Commenced Aug 07, 2024
Condition of Sample Contained in two amber glass bottles and three 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	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
Oil & Grease	mg/L	*	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C		*	-	7.8	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	1570	≤3000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	*	5	11	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchanaow วัฒนพล วัฒนชัย 323-9-9457

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)

วัฒนชนา วัฒนชัย 323-9-9446

Approved by

D. Changchon

Dej Changchon
Senior Manager

เดจ ช้างชน วัฒนชัย 323-9-9442

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Payong 21140 Thailand PHONE +66 0 3304 8555 : FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/ EMAIL

5 /Report(s), All, GL rpt (4 /SPIN)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant



TESTING
No.0042

Lot ID: 2485579

Date Received : Aug 07, 2024

Date Reported : Aug 15, 2024

Report Number : 3065669-2

Page 1 of 1

Sample Number 2485579-1
Sampled Date Aug 07, 2024 9:50 AM
Sample Description Blowdown Water
Location SE Cooling Tower
Date Analysis Commenced Aug 08, 2024
Condition of Sample Contained in two amber glass bottles and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
COD	mg/L	1.5	25	\$9	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchanaow วัฒนพล วัฒนชัย 323-9-9457

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)

วัฒนชนา วัฒนชัย 323-9-9446

Approved by

D. Changchon

Dej Changchon
Senior Manager

เดจ ช้างชน วัฒนชัย 323-9-9442

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Payong 21140 Thailand PHONE +66 0 3304 8555 : FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/ EMAIL

5 /Report(s), All, GL rpt (4 /SPIN)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Water Testing
Project Location : AIE_SSLC-SE Plant



TESTING
No.0042
Lot ID: 2496230
Date Received : Sep 04, 2024
Date Reported : Sep 11, 2024
Report Number : 3088613-1

Page 1 of 1

Sample Number	2496230-1						
Sampled Date	Sep 04, 2024 10:15 AM						
Sample Description	Blowdown Water						
Location	SE Cooling Tower						
Date Analysis Commenced	Sep 04, 2024						
Condition of Sample	Contained in two amber glass bottles and three 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	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
Oil & Grease	mg/L	*	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C		*	*	7.8	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	1190	≤3000	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	*	5	7	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampling By : Surawit Narapong โทรเลขที่ 3-323-3-0011

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)
โทรเลขที่ 3-323-3-0028

Approved by

Dej Changchon

Dej Changchon
Senior Manager
โทรเลขที่ 3-323-3-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa/ong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/EMAIL

S:\Report\AI_GL.rpt (1-10PH)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Water Testing
Project Location : AIE_SSLC-SE Plant



TESTING
No.0042
Lot ID: 2496230
Date Received : Sep 04, 2024
Date Reported : Sep 11, 2024
Report Number : 3088613-2

Page 1 of 1

Sample Number	2496230-1						
Sampled Date	Sep 04, 2024 10:15 AM						
Sample Description	Blowdown Water						
Location	SE Cooling Tower						
Date Analysis Commenced	Sep 04, 2024						
Condition of Sample	Contained in two amber glass bottles and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
COD	mg/L	1.5	25	41	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
Sampling By : Surawit Narapong โทรเลขที่ 3-323-3-0011

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)
โทรเลขที่ 3-323-3-0028

Approved by

Dej Changchon

Dej Changchon
Senior Manager
โทรเลขที่ 3-323-3-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa/ong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/EMAIL

S:\Report\AI_GL.rpt (1-10PH)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant



TESTING
No.0042

Lot ID: 24107096

Date Received : Oct 03, 2024

Date Reported : Oct 15, 2024

Report Number : 3113033-1

Page 1 of 1

Sample Number 24107096-1
Sampled Date Oct 03, 2024 9:23 AM
Sample Description Blowdown Water
Location SE Cooling Tower
Date Analysis Commenced Oct 03, 2024
Condition of Sample Contained in two amber glass bottles and three 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	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
Oil & Grease	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		-	-	7.8	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1450	≤3000	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	10	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchainaow ทะเบียนเลขที่ 3-323-ก-0038

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)

ทะเบียนเลขที่ 3-323-ก-0028

Approved by

D. Changchon

Dej Changchon
Senior Manager

ทะเบียนเลขที่ 3-323-ก-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Payong 21140 Thailand PHONE +66 0 3304 8555 FAX +66 0 3304 8556

ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/ EMAIL

S:\Reports\All_GL.rpt (1:40PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant



TESTING
No.0042

Lot ID: 24107096

Date Received : Oct 03, 2024

Date Reported : Oct 15, 2024

Report Number : 3113033-2

Page 1 of 1

Sample Number 24107096-1
Sampled Date Oct 03, 2024 9:23 AM
Sample Description Blowdown Water
Location SE Cooling Tower
Date Analysis Commenced Oct 04, 2024
Condition of Sample Contained in two amber glass bottles and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
COD	mg/L	1.5	25	48	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchainaow ทะเบียนเลขที่ 3-323-ก-0038

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

Technical Management

Photchana S.

Photchana Seeda
Scientist (4)

ทะเบียนเลขที่ 3-323-ก-0028

Approved by

D. Changchon

Dej Changchon
Senior Manager

ทะเบียนเลขที่ 3-323-ก-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Payong 21140 Thailand PHONE +66 0 3304 8555 FAX +66 0 3304 8556

ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-41/ EMAIL

S:\Reports\All_GL.rpt (9:16AM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant



TESTING

No.0042

Lot ID: 24122886

Date Received : Nov 06, 2024

Date Reported : Nov 13, 2024

Report Number : 3148531-1

Page 1 of 1

Sample Number	24122886-1						
Sampled Date	Nov 06, 2024 9:44 AM						
Sample Description	Blowdown Water						
Location	SE Cooling Tower						
Date Analysis Commenced	Nov 06, 2024						
Condition of Sample	Contained in two amber glass bottles and three 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	<2.0	≤20	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	57	≤120	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	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		*	*	7.5	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	1380	≤3000	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	8	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchainao ระเบียบเลขที่ 7-323-ก-0038

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

Technical Management

Chontichak

Chonticha Subongkoch

Scientist (3)

ระเบียบเลขที่ 7-323-ก-0031

Approved by

Dej Changchon

Senior Manager

ระเบียบเลขที่ 7-323-ก-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.yong 21140 Thailand | PHONE +66 0 3304 8555 FAX +66 0 3304 8556

ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

S : Report(s), AL, GL rpt (6 / 30/11)

7760-41/ EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant



TESTING

No.0042

Lot ID: 24122887

Date Received : Dec 04, 2024

Date Reported : Dec 12, 2024

Report Number : 3148532-1

Page 1 of 1

Sample Number	24122887-1						
Sampled Date	Dec 04, 2024 9:30 AM						
Sample Description	Blowdown Water						
Location	SE Cooling Tower						
Date Analysis Commenced	Dec 04, 2024						
Condition of Sample	Contained in two amber glass bottles and three 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	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B, part 4500 - O G	Rayong
Oil & Grease	mg/L	*	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B	Rayong
pH at 25 degree C		*	*	7.6	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	1530	≤3000	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	12	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchainao ระเบียบเลขที่ 7-323-ก-0038

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

Technical Management

Photchana S.

Photchana Seeda

Scientist (4)

ระเบียบเลขที่ 7-323-ก-0028

Approved by

Dej Changchon

Senior Manager

ระเบียบเลขที่ 7-323-ก-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa.yong 21140 Thailand | PHONE +66 0 3304 8555 FAX +66 0 3304 8556

ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

S : Report(s), AL, GL rpt (2 / 30/11)

7760-41/ EMAIL



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Water Testing

Project Location : AIE_SSLC-SE Plant

TESTING

No.0042

Lot ID: 24122887

Date Received : Dec 04, 2024

Date Reported : Dec 12, 2024

Report Number : 3148532-2

Page 1 of 1

Sample Number	24122887-1
Sampled Date	Dec 04, 2024 9:30 AM
Sample Description	Blowdown Water
Location	SE Cooling Tower
Date Analysis Commenced	Dec 04, 2024
Condition of Sample	Contained in two amber glass bottles and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
COD	mg/L	1.5	25	60	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5220 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

Sampling By : Wanlop Hunchainaow ทะเบียนเลขที่ 3-323-ก-0038

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

Technical Management

Photchana S.

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ 3-323-ก-0028

Approved by

D. Changchon

Dej Changchon

Senior Manager

ทะเบียนเลขที่ 3-323-ก-0001

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 616/10 Moo 5 T. Maenam I. hu A. Plual daeng Payong 21140 Thailand PHONE +66 0 3304 8555 FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-6

ผลการตรวจวิเคราะห์คุณภาพน้ำใต้ดิน



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant



TESTING
No.0009
Lot ID: 2485519
Date Received : Aug 22, 2024
Date Reported : Aug 30, 2024
Report Number : 3097142-2

Page 1 of 1

Sample Number 2485519-1
Sampled Date Aug 22, 2024 12:23 PM
Sample Description Groundwater
Location MW-4
Date Analysis Commenced Aug 23, 2024
Condition of Sample Contained in two glass vials and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Organic Compounds							
n-Hexane *	mg/L	-	0.001	<0.001	11	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 6200 B	Bangkok
Volatile Organics Compounds							
Toluene	mg/L	0.00004	0.0005	Not Detected	5.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 6200 B	Bangkok

Guideline : Notification of the Ministry of Industry B.E. 2559 (2016) on Soil and Groundwater Contamination Criteria, Monitoring of Soil and Groundwater Quality, Report Submission and Report Preparation of Soil and Groundwater Quality, and Proposal Report of Soil and Groundwater Controlling and Reduction Measures

Sampling By : Surawit Narapong เลขที่ 323-ก-0011, Pattarapol Sawangjaitam เลขที่ 204-ก-0002

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

Technical Management

Surawit Narapong

Surawit Narapong
Scientist (3)
เลขที่ 323-ก-0011

Approved by

Kanokkorn Anek

Kanokkorn Anek
Assistant General Manager
เลขที่ 204-ก-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangl oi 10250 Thailand : PHONE +66 0 2760 3000 : FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

778-311/EHAIL

S:\reports\AL_GA.rpt (12:25PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location : AIE_SSLC-SE Plant



TESTING
No.0009
Lot ID: 2485519
Date Received : Aug 22, 2024
Date Reported : Aug 30, 2024
Report Number : 3097143-2

Page 1 of 1

Sample Number 2485519-2
Sampled Date Aug 22, 2024 11:25 AM
Sample Description Groundwater
Location MW-6
Date Analysis Commenced Aug 23, 2024
Condition of Sample Contained in two glass vials and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Organic Compounds							
n-Hexane *	mg/L	-	0.001	<0.001	11	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 6200 B	Bangkok
Volatile Organics Compounds							
Toluene	mg/L	0.00004	0.0005	Not Detected	5.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 6200 B	Bangkok

Guideline : Notification of the Ministry of Industry B.E. 2559 (2016) on Soil and Groundwater Contamination Criteria, Monitoring of Soil and Groundwater Quality, Report Submission and Report Preparation of Soil and Groundwater Quality, and Proposal Report of Soil and Groundwater Controlling and Reduction Measures

Sampling By : Surawit Narapong เลขที่ 323-ก-0011, Pattarapol Sawangjaitam เลขที่ 204-ก-0002

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

Technical Management

Surawit Narapong

Surawit Narapong
Scientist (3)
เลขที่ 323-ก-0011

Approved by

Kanokkorn Anek

Kanokkorn Anek
Assistant General Manager
เลขที่ 204-ก-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangl oi 10250 Thailand : PHONE +66 0 2760 3000 : FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-311/EHAIL

S:\reports\AL_GA.rpt (12:25PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location: AIE_SSLC-SE Plant

TESTING
No.0009
Lot ID: 2485519
Date Received : Aug 22, 2024
Date Reported : Aug 30, 2024
Report Number : 3097144-2

Page 1 of 1

Sample Number 2485519-3
Sampled Date Aug 22, 2024 12:35 PM
Sample Description Groundwater
Location MW-8
Date Analysis Commenced Aug 23, 2024
Condition of Sample Contained in two glass vials and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Organic Compounds							
n-Hexane *	mg/L	-	0.001	<0.001	11	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 6200 B	Bangkok
Volatile Organics Compounds							
Toluene	mg/L	0.00004	0.0005	Not Detected	5.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 6200 B	Bangkok

Guideline : Notification of the Ministry of Industry B.E. 2559 (2016) on Soil and Groundwater Contamination Criteria, Monitoring of Soil and Groundwater Quality, Report Submission and Report Preparation of Soil and Groundwater Quality, and Proposal Report of Soil and Groundwater Controlling and Reduction Measures

Sampling By : Surawit Narapong ทะเบียนเลขที่ ร-323-จ-0011 , Pattarapol Sawangjaitam ทะเบียนเลขที่ ร-204-จ-0002

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

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)
ทะเบียนเลขที่ ร-204-จ-0018

Approved by

Kanokkorn Anek

Kanokkorn Anek
Assistant General Manager
ทะเบียนเลขที่ ร-204-จ-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthana an 40, Phatthana an Pd., 1 hwaeng Phatthana an, 1 het Suan Luang, Bang ol 10250 Thailand PHONE +66 0 2760 3000 FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-7

ผลการตรวจวิเคราะห์คุณภาพดิน



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location: AIE_SSLC-SE Plant

Lot ID: 2469015
Date Received : Jun 19, 2024
Date Reported : Jun 28, 2024
Report Number : 3039400-1

Page 1 of 1

Sample Number	2469015-1						
Sampled Date	Jun 19, 2024 11:30 AM						
Sample Description	Soil						
Location	MW-4						
Date Analysis Commenced	Jun 20, 2024						
Condition of Sample	Packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Organic Compounds							
n-Hexane	mg/kg	-	0.2	<0.2	1000	United States Environmental Protection Agency, EPA Method 5035 and 8260 D	Bangkok
Volatile Organics Compounds							
Toluene	mg/kg	-	0.05	<0.05	520	United States Environmental Protection Agency, EPA Method 5035 and 8260 D	Bangkok

Guideline : Notification of the Ministry of Industry B.E. 2559 (2016) on Soil and Groundwater Contamination Criteria, Monitoring of Soil and Groundwater Quality, Report Submission and Report Preparation of Soil and Groundwater Quality, and Proposal Report of Soil and Groundwater Controlling and Reduction Measures

Note : Analysis Results expressed on dry basis

Sampling By : Pattarapol Sawangjaitam ทะเบียนเลขที่ ๖-204-๖-0002

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)
ทะเบียนเลขที่ ๖-204-๖-0018

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
ทะเบียนเลขที่ ๖-204-๖-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangol 10250 Thailand PHONE +66 0 2760 3000 FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports\AL_GL.rpt (1.30PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.
10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130
P/O : 4515610529
Project Name : Environmental Quality Monitoring
Project Location: AIE_SSLC-SE Plant

Lot ID: 2470039
Date Received : Jun 20, 2024
Date Reported : Jun 28, 2024
Report Number : 3039789-1

Page 1 of 1

Sample Number	2470039-1						
Sampled Date	Jun 20, 2024 10:25 AM						
Sample Description	Soil						
Location	MW-6						
Date Analysis Commenced	Jun 21, 2024						
Condition of Sample	Packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Organic Compounds							
n-Hexane	mg/kg	-	0.2	<0.2	1000	United States Environmental Protection Agency, EPA Method 5035 and 8260 D	Bangkok
Volatile Organics Compounds							
Toluene	mg/kg	-	0.05	<0.05	520	United States Environmental Protection Agency, EPA Method 5035 and 8260 D	Bangkok

Guideline : Notification of the Ministry of Industry B.E. 2559 (2016) on Soil and Groundwater Contamination Criteria, Monitoring of Soil and Groundwater Quality, Report Submission and Report Preparation of Soil and Groundwater Quality, and Proposal Report of Soil and Groundwater Controlling and Reduction Measures

Note : Analysis Results expressed on dry basis.

Sampling By : Thanasoun Namakunna ทะเบียนเลขที่ ๖-204-๖-0101

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)
ทะเบียนเลขที่ ๖-204-๖-0018

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
ทะเบียนเลขที่ ๖-204-๖-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangol 10250 Thailand PHONE +66 0 2760 3000 FAX +66 0 2760 3197
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports\AL_GL.rpt (4.32PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2470039

Date Received : Jun 20, 2024

Date Reported : Jun 28, 2024

Report Number : 3039790-1

Page 1 of 1

Sample Number 2470039-2
Sampled Date Jun 20, 2024 10:40 AM
Sample Description Soil
Location MW-8
Date Analysis Commenced Jun 21, 2024
Condition of Sample Packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Organic Compounds							
n-Hexane	mg/kg	*	0.2	<0.2	1000	United States Environmental Protection Agency, EPA Method 5035 and 8260 D	Bangkok
Volatile Organics Compounds							
Toluene	mg/kg	*	0.05	<0.05	520	United States Environmental Protection Agency, EPA Method 5035 and 8260 D	Bangkok

Guideline : Notification of the Ministry of Industry B.E. 2559 (2016) on Soil and Groundwater Contamination Criteria, Monitoring of Soil and Groundwater Quality, Report Submission and Report Preparation of Soil and Groundwater Quality, and Proposal Report of Soil and Groundwater Controlling and Reduction Measures

Note : Analysis Results expressed on dry basis.

Sampling By : Thanasoun Namakunna ๓๓๔๓๔๓๔๓ ๖-204-๖-0101

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)

๓๓๔๓๔๓๔๓ ๖-204-๖-0018

Approved by

Kanokorn Anek

Kanokorn Anek
Senior Manager

๓๓๔๓๔๓๔๓ ๖-204-๖-0004

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report 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.

ADDRESS 104 Phatthanalan an 40, Phatthanalan an Pd., I hwaeng Phatthanalan an, I het Suan Luang, Bangl ol 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197

ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-8

ผลการตรวจวัดความร้อน



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang,
Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2429593

Date Received : Apr 10, 2024

Date Reported : Apr 12, 2024

Report Number: 2937840-1

Page 1 of 1

Sample Number 2429593-1
Parameter Heat Stress (Sampling Time : 09.30 AM - 11.30 AM)
Measurement Date Apr 10, 2024
Measurement by Natthapon Jiengwareewong
Location ปฏิบัติงาน 1 พื้นที่ (ชื่อ-นามสกุล ผู้ปฏิบัติงาน : - แผนก : -)

Location	Duration (min)	WBGT (°C)	NWB (°C)	GT (°C)	DB (°C)
บริเวณพื้นที่ส่วนทำเม็ดพลาสติก	120	29.7	28.0	33.5	33.1
Average (WBGT)		29.7			
Guideline WBGT (°C)		34.0			

Reference Method : Wet Bulb Globe Temperature

Guideline:

1. Notification of Department Labour Protection and Welfare on the Criteria and Procedures for Measurement and Analysis of Working Conditions in relation to Heat, Light or Noise Levels, including Duration and Types of Business that must perform (B.E. 2561)
2. Ministerial Regulation on Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in relation to Heat, Light and Noise, B.E.2559

Technical Management

Supot Salamteh
Section Head

Approved by

Wichan Choonharat
Assistant Manager

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

ภาคผนวก ค-9

ผลการตรวจวัดระดับเสียงในบริเวณการทำงาน (Leq 8 hrs)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2485518

Date Received : Aug 21, 2024

Date Reported : Sep 03, 2024

Report Number: 3092371-1 Rev. No.1

Page 1 of 1

Sample Number 2485518-1
Parameter Noise (Leq 8 hrs.)
Location Present Production/ Process Line
Measurement Date Aug 20, 2024
Measurement by Anurak Tongkhajonsakda

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:25 AM - 10:25 AM	75.3	77.2	75.1
10:25 AM - 11:25 AM	76.5	77.7	76.3
11:25 AM - 12:25 PM	76.2	77.7	76.0
12:25 PM - 01:25 PM	77.2	78.9	77.0
01:25 PM - 02:25 PM	76.3	80.3	76.1
02:25 PM - 03:25 PM	76.7	78.1	76.5
03:25 PM - 04:25 PM	76.8	77.8	76.6
04:25 PM - 05:25 PM	76.1	77.3	75.9

Leq Average 8 hrs. (dB(A))

76.4

Lmax (dB(A))

80.3

Standard (dB(A))

90

140

Reference Method : ISO1996-1 and 1996-2

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรฐานการคุ้มครองความปลอดภัย

ในการประกอบกิจการโรงงานเกี่ยวกับสถานะแวดล้อมในการทำงาน พ.ศ.๒๕๔๖

Note : This Analysis test report is reissued to supersede report No.3092371-1, Date Reported : Aug 24, 2024 due to revise analytical information.

Technical Management

Thanita K.

Thanita Kulsuriwong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,yong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company/

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports_Air Noise rpt (5:14PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2485518

Date Received : Aug 21, 2024

Date Reported : Aug 24, 2024

Report Number: 3092372-1

Page 1 of 1

Sample Number 2485518-2
Parameter Noise (Leq 8 hrs.)
Location Cooling Tower
Measurement Date Aug 20, 2024
Measurement by Anurak Tongkhajonsakda

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:10 AM - 10:10 AM	71.1	72.9	70.9
10:10 AM - 11:10 AM	70.8	71.6	70.6
11:10 AM - 12:10 PM	71.0	72.5	70.8
12:10 PM - 01:10 PM	71.2	72.8	71.0
01:10 PM - 02:10 PM	71.3	75.1	71.0
02:10 PM - 03:10 PM	71.2	72.4	71.0
03:10 PM - 04:10 PM	71.2	72.0	70.9
04:10 PM - 05:10 PM	71.2	72.4	71.0

Leq Average 8 hrs. (dB(A))

71.1

Lmax (dB(A))

75.1

Standard (dB(A))

90

140

Reference Method : ISO1996-1 and 1996-2

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรฐานการคุ้มครองความปลอดภัย

ในการประกอบกิจการโรงงานเกี่ยวกับสถานะแวดล้อมในการทำงาน พ.ศ.๒๕๔๖

Technical Management

Thanita K.

Thanita Kulsuriwong
Scientist (4)

Approved by

Supot S.

Supot Salamteh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam I hu A. Plual daeng Pa,yong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company/

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports_Air Noise rpt (2:31PM)



Analysis / Test Report

Client : Siam Synthetic Latex Co., Ltd.

10/1 Moo 2, Asia Industrial Estate, Tambol Banchang, Amphur Banchang, Rayong 21130

P/O : 4515610529

Project Name : Environmental Quality Monitoring

Project Location : AIE_SSLC-SE Plant

Lot ID: 2485518

Date Received : Aug 21, 2024

Date Reported : Aug 24, 2024

Report Number: 3092373-1

Page 1 of 1

Sample Number 2485518-3
Parameter Noise (Leq 8 hrs.)
Location Solvent Recovery
Measurement Date Aug 20, 2024
Measurement by Anurak Tongkhajonsakda

Time	Leq (dB(A))	Lmax (dB(A))	L90 (dB(A))
09:20 AM - 10:20 AM	82.3	90.0	82.1
10:20 AM - 11:20 AM	82.5	86.2	82.3
11:20 AM - 12:20 PM	82.4	83.2	82.2
12:20 PM - 01:20 PM	82.5	83.3	82.3
01:20 PM - 02:20 PM	82.5	83.1	82.3
02:20 PM - 03:20 PM	82.6	86.4	82.4
03:20 PM - 04:20 PM	82.5	83.3	82.3
04:20 PM - 05:20 PM	82.5	84.0	82.4

Leq Average 8 hrs. (dB(A))

82.5

Lmax (dB(A))

90.0

Standard (dB(A))

90

140

Reference Method : ISO1996-1 and 1996-2

Standard : ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัย
ในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.๒๕๔๖

Technical Management

Thanita K.

Thanita Kulsuriwong
Scientist (4)

Approved by

Supot S.

Supot Salameh
Section Head

ADDRESS 616/10 Moo 5 T. Maenam I. Hu A. Plual daeng Pajong 21140 Thailand PHONE +66 0 3304 8555 FAX +66 0 3304 8556
ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

7780-31/ EMAIL

S:\Reports\Air Noise.rpt (2:31PM)

ภาคผนวก ง

เอกสารสอบเทียบเครื่องมือที่ใช้ในการวิเคราะห์



right solutions.
right partner.

รายการเครื่องมือที่ใช้ในการวิเคราะห์ / ทดสอบ

Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Stack (CEMs)	Oxides of Nitrogen	Analyzer , System calibration, Standard	BKK_FS0518	10-Jul-24	10-Jan-25	6
Stack (CEMs)	Oxides of Nitrogen	Console Control Unit	BKK_FS0523	10-Jul-24	10-Jan-25	6
Stack (CEMs)	Oxides of Nitrogen	Pitot Tube	BKK_FS0523	10-Jul-24	10-Jan-25	6
Stack	n-Octane	Console Control Unit	BKK_FS0518	10-Jul-24	10-Jan-25	6
Stack	n-Octane	Pitot Tube	BKK_FS0522	10-Jul-24	10-Jan-25	6
Stack	n-Octane	Flue gas Analyzer	RYG_FS0564	24-Apr-24	23-Apr-25	12
Stack	n-Octane	Field Rotameter	BKK_FS1004	2-Jul-24	2-Oct-24	3
Stack	n-Octane	GC-FID	BKK_EN0126	21-Apr-23	21-Oct-24	18
Stack	Total Hydrocarbon	Console Control Unit	BKK_FS0518	10-Jul-24	10-Jan-25	6
Stack	Total Hydrocarbon	Pitot Tube	BKK_FS0522	10-Jul-24	10-Jan-25	6
Stack	Total Hydrocarbon	Flue gas Analyzer	RYG_FS0564	24-Apr-24	23-Apr-25	12
Stack	Total Hydrocarbon	Total Hydrocarbon Analyzer	RYG_EN0038	25-Jul-24	25-Jul-25	12
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	RYG_FS0264	2-Jul-24	2-Jan-25	6
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	RYG_FS0261	2-Jul-24	2-Jan-25	6
Ambient	Nitrogen Dioxide	NO ₂ Analyzer	BKK_FS0797	2-Jul-24	2-Jan-25	6
Ambient	n-Hexane	GC-MSD	RYG_EN0136	5-Jan-24	4-Jul-25	18
Ambient	Toluene	GC-MSD	RYG_EN0136	5-Jan-24	4-Jul-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_FS0545	21-Jul-23	21-Jan-25	18
Ambient	Wind Speed / Wind Direction	Wind Speed / Wind Direction	RYG_FS0544	21-Jul-23	21-Jan-25	18
Noise	Leq 24 hrs	Sound Calibrator	RYG_FS0496	26-Jan-24	25-Jan-25	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0434	22-Feb-24	21-Feb-25	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0437	19-Oct-23	19-Oct-24	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0433	22-Feb-24	21-Feb-25	12
Noise	Leq 24 hrs	Sound Level Meter	RYG_FS0431	22-Feb-24	21-Feb-25	12
Noise	Leq 8 hrs	Sound Calibrator	RYG_FS0496	26-Jan-24	25-Jan-25	12
Noise	Leq 8 hrs	Sound Level Meter	RYG_FS0628	22-Jan-24	21-Jan-25	12
Noise	Leq 8 hrs	Sound Level Meter	RYG_FS0629	22-Jan-24	21-Jan-25	12
Noise	Leq 8 hrs	Sound Level Meter	RYG_FS0627	22-Jan-24	21-Jan-25	12
Heat	Heat Stress	Heat Stress Monitor	RYG_FS0231	8-Jan-24	7-Jan-25	12
Rayong Lab	pH at 25 °C	pH meter	RYG_EN0183	19-Jan-24	19-Jul-25	18
Rayong Lab	Total Dissolved Solids 180°C	Electronic Balance	RYG_EN0002	22-Feb-24	22-Feb-25	12
Rayong Lab	Total Dissolved Solids 180°C	Hot Air Oven	RYG_EN0010	21-Mar-24	21-Sep-25	18
Water Lab	n-Hexane	Gas Chromatography (MSD)	BKK_EN0059	13-Dec-23	13-Jun-25	18
Water Lab	Toluene	Gas Chromatography (MSD)	BKK_EN0059	13-Dec-23	13-Jun-25	18
Soil	n-Hexane	Gas Chromatography (MSD)	BKK_EN0059	13-Dec-23	13-Jun-25	18
Soil	Toluene	Gas Chromatography (MSD)	BKK_EN0059	13-Dec-23	13-Jun-25	18



Lot No. 2498961-1

ANALYZER CALIBRATION DATA

Client : Siam Synthetic Latex Co., Ltd. Location : Furnace
Date : 11 Sep 24 Test Operator : Sathaporn T.

O₂ ANALYZER
Model : TELEDYNE API 200EH Serial No. : 735
Span (%) : 25

	Cylinder Value (%)	Initial Analyzers Calibration Response (%)	Final Analyzers Calibration Response (%)	Difference (Percent of Span)
Zero Gas	0.00	0.01	0.01	0.00
Low-Level Gas	8.19	8.21	8.22	0.04
Span Gas	16.07	16.09	16.09	0.00

NO_x ANALYZER
Model : TELEDYNE API 200EH Serial No. : 735
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	0.02	0.00
Low-Level Gas	54.96	54.95	54.93	0.02
Span Gas	82.51	82.50	82.48	0.02

CO ANALYZER
Model : TELEDYNE API 300EM Serial No. : 425
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	0.02	0.00
Low-Level Gas	54.84	54.82	54.81	0.01
Span Gas	79.74	79.73	79.73	0.00

Calibrated by

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)



Lot No. 2498961-1

SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Siam Synthetic Latex Co., Ltd. Location : Furnace
Date : 11 Sep 24 Test Operator : Sathaporn T.

O₂ ANALYZER
Cylinder Conc. (%) : 16.07 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	0.01	0.02	0.04	0.04	0.12	0.08
Upscale Gas	16.09	16.12	0.12	16.15	0.24	0.12

NO_x ANALYZER
Cylinder Conc. (ppm) : 82.51 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	0.02	0.04	0.02	0.04	0.02	0.00
Upscale Gas	82.50	82.43	0.07	82.42	0.08	0.01

CO ANALYZER
Cylinder Conc. (ppm) : 79.74 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	0.03	0.01	0.03	0.01	0.00
Upscale Gas	79.73	79.70	0.03	79.70	0.03	0.00

Calibrated by

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)

FORM NO : F 06-063 REVISION NO : 4 ISSUE DATE: 18/01/24

ALS Laboratory Group



EMISSION TEST RESULT

Client	Siam Synthetic Latex Co., Ltd.	Run #	1
Date	11 Sep 24	Location	Furnace
Start Time	11:30	Test Operator	Sathaporn T.
SO ₂ Analyzer Model	-	Finish Time	11:50
NO _x /O ₂ Analyzer Model	TELEDYNE API 200EH	Serial No.	-
CO/CO ₂ Analyzer Model	TELEDYNE API 300EM	Serial No.	735
		Serial No.	425

Time (min)	O ₂ (%)	CO ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)	Remark
11:30	7.06	8.16	16.86	-	34.80	
11:31	7.05	8.15	16.92	-	32.13	
11:32	7.07	8.29	16.94	-	30.97	
11:33	7.06	8.24	16.90	-	30.63	
11:34	7.08	8.18	16.88	-	31.67	
11:35	7.17	8.08	16.81	-	34.66	
11:36	7.17	8.20	16.77	-	31.77	
11:37	7.15	8.20	16.78	-	28.07	
11:38	7.12	8.17	16.87	-	28.99	
11:39	7.05	8.26	16.90	-	33.03	
11:40	7.04	8.15	16.87	-	33.69	
11:41	7.09	8.26	16.82	-	32.35	
11:42	7.10	8.17	16.84	-	30.13	
11:43	7.15	8.16	16.91	-	30.59	
11:44	7.14	8.21	17.03	-	30.99	
11:45	7.10	8.23	17.12	-	32.00	
11:46	7.16	8.17	17.10	-	34.12	
11:47	7.13	8.22	17.06	-	29.48	
11:48	7.03	8.27	17.16	-	30.93	
11:49	7.05	8.25	17.19	-	30.85	
11:50	7.10	8.20	17.17	-	33.58	
Average	7.10	8.20	16.94	-	31.69	

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)

FORM NO : F 06-060 REVISION NO : 1 ISSUE DATE: 18/01/24

ALS Laboratory Group



EMISSION TEST RESULT

Client	Siam Synthetic Latex Co., Ltd.	Run #	2
Date	11 Sep 24	Location	Furnace
Start Time	11:51	Test Operator	Sathaporn T.
SO ₂ Analyzer Model	-	Finish Time	12:11
NO ₂ /O ₂ Analyzer Model	TELEDYNE API 200EH	Serial No.	-
CO/CO ₂ Analyzer Model	TELEDYNE API 300EM	Serial No.	735
		Serial No.	425

Time (min)	O ₂ (%)	CO ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)	Remark
11:51	7.08	8.24	17.20	-	30.31	
11:52	7.09	8.24	17.27	-	31.54	
11:53	7.09	8.23	17.26	-	32.53	
11:54	7.05	8.24	17.32	-	32.30	
11:55	7.08	8.19	17.30	-	31.66	
11:56	7.11	8.21	17.35	-	29.92	
11:57	7.08	8.28	17.37	-	29.64	
11:58	7.13	8.16	17.42	-	28.90	
11:59	7.17	8.23	17.36	-	28.09	
12:00	7.12	8.21	17.38	-	28.52	
12:01	7.09	8.19	17.45	-	29.00	
12:02	7.07	8.23	17.46	-	34.12	
12:03	7.06	8.26	17.43	-	31.69	
12:04	7.06	8.21	17.39	-	29.61	
12:05	7.04	8.28	17.35	-	32.68	
12:06	7.01	8.30	17.34	-	34.65	
12:07	7.02	8.26	17.29	-	32.84	
12:08	7.06	8.29	17.24	-	30.94	
12:09	7.04	8.27	17.29	-	30.75	
12:10	7.02	8.24	17.32	-	32.97	
12:11	7.02	8.32	17.33	-	34.94	
Average	7.08	8.24	17.34	-	31.31	

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)



EMISSION TEST RESULT

Client	Siam Synthetic Latex Co., Ltd.	Run #	3
Date	11 Sep 24	Location	Furnace
Start Time	12:12	Test Operator	Sathaporn T.
SO ₂ Analyzer Model	-	Finish Time	12:32
NO ₂ /O ₂ Analyzer Model	TELEDYNE API 200EH	Serial No.	-
CO/CO ₂ Analyzer Model	TELEDYNE API 300EM	Serial No.	735
		Serial No.	425

Time (min)	O ₂ (%)	CO ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)	Remark
12:12	7.02	8.29	17.39	-	33.79	
12:13	7.04	8.26	17.45	-	32.75	
12:14	7.13	8.12	17.44	-	32.45	
12:15	7.11	8.24	17.42	-	28.23	
12:16	7.02	8.23	17.50	-	29.69	
12:17	7.09	8.25	17.48	-	29.88	
12:18	7.09	8.22	17.47	-	30.41	
12:19	7.05	8.23	17.46	-	33.63	
12:20	7.09	8.22	17.54	-	31.05	
12:21	7.09	8.23	17.55	-	29.77	
12:22	7.04	8.28	17.51	-	32.72	
12:23	7.01	8.21	17.59	-	31.00	
12:24	7.02	8.25	17.58	-	32.37	
12:25	7.01	8.22	17.50	-	34.43	
12:26	7.09	8.19	17.52	-	32.83	
12:27	7.10	8.27	17.57	-	28.48	
12:28	7.17	8.19	17.67	-	25.67	
12:29	7.23	8.17	17.75	-	26.78	
12:30	7.24	8.19	17.85	-	24.54	
12:31	7.22	8.13	17.90	-	27.97	
12:32	7.17	8.22	17.91	-	26.17	
Average	7.10	8.22	17.57	-	30.22	

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)



Lot No. 2498961-1

ANALYZER CALIBRATION DATA

Client : Siam Synthetic Latex Co., Ltd. Location : Furnace
Date : 11 Sep 24 Test Operator : Sathaporn T.

O₂ ANALYZER
Model : TELEDYNE API 200EH Serial No. : 735
Span (%) : 25

	Cylinder Value (%)	Initial Analyzers Calibration Response (%)	Final Analyzers Calibration Response (%)	Difference (Percent of Span)
Zero Gas	0.00	0.01	0.01	0.00
Low-Level Gas	8.19	8.21	8.22	0.04
Span Gas	16.07	16.09	16.09	0.00

NO_x ANALYZER
Model : TELEDYNE API 200EH Serial No. : 735
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	0.02	0.00
Low-Level Gas	54.96	54.95	54.93	0.02
Span Gas	82.51	82.50	82.48	0.02

CO ANALYZER
Model : TELEDYNE API 300EM Serial No. : 425
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	0.02	0.00
Low-Level Gas	54.84	54.82	54.81	0.01
Span Gas	79.74	79.73	79.73	0.00

Calibrated by

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)



Lot No. 2498961-1

SYSTEM CALIBRATION BIAS AND DRIFT DATA

Client : Siam Synthetic Latex Co., Ltd. Location : Furnace
Date : 11 Sep 24 Test Operator : Sathaporn T.

O₂ ANALYZER
Cylinder Conc. (%) : 16.07 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	0.01	0.02	0.04	0.04	0.12	0.08
Upscale Gas	16.09	16.12	0.12	16.15	0.24	0.12

NO_x ANALYZER
Cylinder Conc. (ppm) : 82.51 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	0.02	0.04	0.02	0.04	0.02	0.00
Upscale Gas	82.50	82.43	0.07	82.42	0.08	0.01

CO ANALYZER
Cylinder Conc. (ppm) : 79.74 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	0.03	0.01	0.03	0.01	0.00
Upscale Gas	79.73	79.70	0.03	79.70	0.03	0.00

Calibrated by

Sathaporn.T

(Mr.Sathaporn Thakaew)

Environmental Field Scientist (3)



CEMs Data

Client Name Siam Synthetic Latex Co., Ltd.
Plant Name AIE_SSLC-SE PlantDate 11 Sep 24
Location Furnace

Run No: 1 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	11:30	16.30	35.31	7.12	-	-
11 Sep 24	11:31	16.28	35.51	7.11	-	-
11 Sep 24	11:32	16.31	35.29	7.10	-	-
11 Sep 24	11:33	16.35	38.45	7.09	-	-
11 Sep 24	11:34	16.27	40.79	7.07	-	-
11 Sep 24	11:35	16.24	35.20	7.06	-	-
11 Sep 24	11:36	16.44	30.74	7.05	-	-
11 Sep 24	11:37	16.38	33.23	7.04	-	-
11 Sep 24	11:38	16.22	35.96	7.03	-	-
11 Sep 24	11:39	16.28	37.45	7.03	-	-
11 Sep 24	11:40	16.23	37.60	7.03	-	-
11 Sep 24	11:41	16.28	31.96	7.04	-	-
11 Sep 24	11:42	16.25	34.28	7.05	-	-
11 Sep 24	11:43	16.41	35.08	7.06	-	-
11 Sep 24	11:44	16.36	34.69	7.07	-	-
11 Sep 24	11:45	16.32	38.28	7.07	-	-
11 Sep 24	11:46	16.35	31.29	7.08	-	-
11 Sep 24	11:47	16.16	35.33	7.09	-	-
11 Sep 24	11:48	16.21	35.90	7.10	-	-
11 Sep 24	11:49	16.19	43.62	7.11	-	-
11 Sep 24	11:50	16.35	33.95	7.11	-	-
Max		16.44	43.62	7.12	-	-
Avg		16.30	36.05	7.07	-	-

Run No: 3 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	12:12	16.28	37.12	7.03	-	-
11 Sep 24	12:13	16.27	37.83	7.03	-	-
11 Sep 24	12:14	16.39	29.76	7.03	-	-
11 Sep 24	12:15	16.15	36.23	7.02	-	-
11 Sep 24	12:16	16.26	34.38	7.02	-	-
11 Sep 24	12:17	16.14	34.01	7.02	-	-
11 Sep 24	12:18	16.21	41.50	7.02	-	-
11 Sep 24	12:19	16.12	36.43	7.04	-	-
11 Sep 24	12:20	16.37	34.37	7.06	-	-
11 Sep 24	12:21	16.21	41.36	7.08	-	-
11 Sep 24	12:22	16.09	33.47	7.10	-	-
11 Sep 24	12:23	16.12	35.36	7.12	-	-
11 Sep 24	12:24	16.09	40.86	7.14	-	-
11 Sep 24	12:25	16.27	37.38	7.16	-	-
11 Sep 24	12:26	16.48	31.95	7.18	-	-
11 Sep 24	12:27	16.71	31.51	7.20	-	-
11 Sep 24	12:28	16.71	31.40	7.21	-	-
11 Sep 24	12:29	16.77	25.61	7.21	-	-
11 Sep 24	12:30	16.65	35.91	7.20	-	-
11 Sep 24	12:31	16.65	28.18	7.19	-	-
11 Sep 24	12:32	16.73	34.54	7.18	-	-
Max		16.77	41.50	7.21	-	-
Avg		16.36	34.61	7.11	-	-

Run No: 5 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	12:54	16.53	26.61	7.06	-	-
11 Sep 24	12:55	16.36	21.82	7.04	-	-
11 Sep 24	12:56	16.35	36.41	7.01	-	-
11 Sep 24	12:57	16.21	33.41	6.99	-	-
11 Sep 24	12:58	16.25	38.05	6.99	-	-
11 Sep 24	12:59	16.27	31.24	7.01	-	-
11 Sep 24	13:00	16.27	38.07	7.02	-	-
11 Sep 24	13:01	16.13	36.90	7.03	-	-
11 Sep 24	13:02	16.31	40.14	7.04	-	-
11 Sep 24	13:03	16.39	31.78	7.05	-	-
11 Sep 24	13:04	16.25	33.46	7.06	-	-
11 Sep 24	13:05	16.32	42.81	7.07	-	-
11 Sep 24	13:06	16.28	34.62	7.08	-	-
11 Sep 24	13:07	16.29	37.27	7.09	-	-
11 Sep 24	13:08	16.23	33.89	7.09	-	-
11 Sep 24	13:09	16.58	32.73	7.09	-	-
11 Sep 24	13:10	16.23	32.10	7.09	-	-
11 Sep 24	13:11	16.36	38.53	7.09	-	-
11 Sep 24	13:12	16.14	41.58	7.08	-	-
11 Sep 24	13:13	16.38	36.92	7.08	-	-
11 Sep 24	13:14	16.41	37.31	7.08	-	-
Max		16.53	42.81	7.09	-	-
Avg		16.30	35.69	7.05	-	-

Run No: 2 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	11:51	16.36	38.40	7.12	-	-
11 Sep 24	11:52	16.38	36.46	7.13	-	-
11 Sep 24	11:53	16.44	37.25	7.14	-	-
11 Sep 24	11:54	16.29	36.49	7.15	-	-
11 Sep 24	11:55	16.34	33.81	7.15	-	-
11 Sep 24	11:56	16.35	34.91	7.16	-	-
11 Sep 24	11:57	16.33	32.42	7.17	-	-
11 Sep 24	11:58	16.46	31.30	7.18	-	-
11 Sep 24	11:59	16.33	33.62	7.17	-	-
11 Sep 24	12:00	16.34	35.00	7.16	-	-
11 Sep 24	12:01	16.31	42.76	7.14	-	-
11 Sep 24	12:02	16.10	35.11	7.13	-	-
11 Sep 24	12:03	16.29	32.68	7.12	-	-
11 Sep 24	12:04	16.10	36.55	7.10	-	-
11 Sep 24	12:05	15.85	41.56	7.09	-	-
11 Sep 24	12:06	16.02	38.64	7.08	-	-
11 Sep 24	12:07	16.24	35.96	7.06	-	-
11 Sep 24	12:08	16.21	39.94	7.05	-	-
11 Sep 24	12:09	16.06	39.14	7.05	-	-
11 Sep 24	12:10	15.97	40.06	7.04	-	-
11 Sep 24	12:11	16.18	37.32	7.04	-	-
Max		16.46	42.76	7.16	-	-
Avg		16.24	36.55	7.12	-	-

Run No: 4 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	12:33	16.57	33.57	7.17	-	-
11 Sep 24	12:34	16.41	37.79	7.17	-	-
11 Sep 24	12:35	16.58	33.58	7.16	-	-
11 Sep 24	12:36	16.37	43.84	7.15	-	-
11 Sep 24	12:37	16.41	35.67	7.14	-	-
11 Sep 24	12:38	16.46	31.02	7.14	-	-
11 Sep 24	12:39	16.43	34.04	7.15	-	-
11 Sep 24	12:40	16.41	37.60	7.15	-	-
11 Sep 24	12:41	16.50	33.50	7.16	-	-
11 Sep 24	12:42	16.49	30.29	7.16	-	-
11 Sep 24	12:43	16.55	32.99	7.17	-	-
11 Sep 24	12:44	16.57	32.37	7.18	-	-
11 Sep 24	12:45	16.39	36.70	7.18	-	-
11 Sep 24	12:46	16.42	34.74	7.19	-	-
11 Sep 24	12:47	16.37	32.50	7.20	-	-
11 Sep 24	12:48	16.64	31.37	7.19	-	-
11 Sep 24	12:49	16.65	35.78	7.16	-	-
11 Sep 24	12:50	16.53	31.46	7.14	-	-
11 Sep 24	12:51	16.47	32.79	7.12	-	-
11 Sep 24	12:52	16.43	33.40	7.10	-	-
11 Sep 24	12:53	16.34	31.20	7.08	-	-
Max		16.65	43.84	7.20	-	-
Avg		16.47	34.11	7.15	-	-

Run No: 6 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	13:15	16.30	37.72	7.08	-	-
11 Sep 24	13:16	16.39	33.10	7.08	-	-
11 Sep 24	13:17	16.34	35.60	7.07	-	-
11 Sep 24	13:18	16.29	35.37	7.08	-	-
11 Sep 24	13:19	16.36	31.76	7.08	-	-
11 Sep 24	13:20	16.49	26.95	7.06	-	-
11 Sep 24	13:21	16.55	34.55	7.06	-	-
11 Sep 24	13:22	16.38	37.12	7.08	-	-
11 Sep 24	13:23	16.35	39.74	7.08	-	-
11 Sep 24	13:24	16.02	39.32	7.08	-	-
11 Sep 24	13:25	16.18	37.94	7.08	-	-
11 Sep 24	13:26	16.22	32.65	7.08	-	-
11 Sep 24	13:27	16.21	32.75	7.08	-	-
11 Sep 24	13:28	16.21	43.52	7.08	-	-
11 Sep 24	13:29	16.27	33.90	7.07	-	-
11 Sep 24	13:30	16.22	35.97	7.06	-	-
11 Sep 24	13:31	16.24	37.98	7.05	-	-
11 Sep 24	13:32	16.08	34.99	7.05	-	-
11 Sep 24	13:33	16.14	33.45	7.04	-	-
11 Sep 24	13:34	16.18	39.05	7.03	-	-
11 Sep 24	13:35	16.17	38.09	7.03	-	-
Max		16.66	43.52	7.08	-	-
Avg		16.27	35.91	7.07	-	-



CEMs Data

Client Name Siam Synthetic Latex Co., Ltd.
Plant Name AIE_SSLC-SE PlantDate 11 Sep 24
Location Furnace

Run No: 7 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	13:36	16.17	41.55	7.02	-	-
11 Sep 24	13:37	16.00	28.51	7.01	-	-
11 Sep 24	13:38	15.95	44.30	7.02	-	-
11 Sep 24	13:39	15.94	38.34	7.02	-	-
11 Sep 24	13:40	15.62	42.00	7.02	-	-
11 Sep 24	13:41	15.91	36.86	7.02	-	-
11 Sep 24	13:42	15.66	45.15	7.02	-	-
11 Sep 24	13:43	15.95	43.07	7.02	-	-
11 Sep 24	13:44	15.99	32.55	7.03	-	-
11 Sep 24	13:45	16.18	38.95	7.03	-	-
11 Sep 24	13:46	16.24	34.61	7.03	-	-
11 Sep 24	13:47	16.09	41.56	7.03	-	-
11 Sep 24	13:48	16.15	42.44	7.04	-	-
11 Sep 24	13:49	16.20	39.30	7.05	-	-
11 Sep 24	13:50	16.21	42.21	7.06	-	-
11 Sep 24	13:51	15.94	45.19	7.06	-	-
11 Sep 24	13:52	16.11	36.56	7.07	-	-
11 Sep 24	13:53	16.00	46.39	7.08	-	-
11 Sep 24	13:54	16.16	41.69	7.08	-	-
11 Sep 24	13:55	16.32	35.44	7.08	-	-
11 Sep 24	13:56	16.29	34.54	7.10	-	-
Max		16.32	46.39	7.10	-	-
Avg		16.08	40.08	7.04	-	-

Run No: 9 Time Base : 21 min

Date	Time	SO2 ppm	NOx ppm	CO ppm	O2 Vol%	CO2 Vol%
11 Sep 24	14:18	-	15.62	41.93	7.00	-
11 Sep 24	14:19	-	16.06	48.03	7.00	-
11 Sep 24	14:20	-	16.30	41.20	7.00	-
11 Sep 24	14:21	-	16.18	32.60	7.00	-
11 Sep 24	14:22	-	16.17	41.77	7.00	-
11 Sep 24	14:23	-	16.08	38.08	7.00	-
11 Sep 24	14:24	-	16.03	41.08	7.00	-
11 Sep 24	14:25	-	16.04	40.75	7.00	-
11 Sep 24	14:26	-	15.94	45.63	7.01	-
11 Sep 24	14:27	-	16.14	39.64	7.00	-
11 Sep 24	14:28	-	16.14	40.65	7.06	-
11 Sep 24	14:29	-	16.23	36.38	7.02	-
11 Sep 24	14:30	-	15.96	46.55	7.19	-
11 Sep 24	14:31	-	15.85	41.35	7.14	-
11 Sep 24	14:32	-	16.02	37.35	7.17	-
11 Sep 24	14:33	-	15.81	41.72	7.20	-
11 Sep 24	14:34	-	16.10	44.89	7.23	-
11 Sep 24	14:35	-	16.13	40.31	7.19	-
11 Sep 24	14:36	-	16.34	36.14	7.08	-
11 Sep 24	14:37	-	16.42	37.35	7.00	-
11 Sep 24	14:38	-	16.20	42.52	7.02	-
Max		-	16.42	48.63	7.23	-
Avg		-	15.09	40.99	7.06	-



Reference Method Data

Client Name Siam Synthetic Latex Co., Ltd.
Plant Name AIE_SSCL-SE PlantDate 11 Sep 24
Location Furnace

Run No: 1							Run No: 2						
Time Base : 21 min							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%
11 Sep 24	11:30	+	15.95	34.80	7.06	8.16	11 Sep 24	11:51	+	17.20	30.31	7.08	8.24
11 Sep 24	11:31	+	15.92	32.13	7.05	8.15	11 Sep 24	11:52	+	17.27	31.54	7.09	8.24
11 Sep 24	11:32	+	16.14	30.97	7.07	8.20	11 Sep 24	11:53	+	17.26	32.53	7.09	8.23
11 Sep 24	11:33	+	15.90	30.63	7.06	8.24	11 Sep 24	11:54	+	17.32	32.30	7.05	8.24
11 Sep 24	11:34	+	16.18	31.67	7.08	8.18	11 Sep 24	11:55	+	17.30	31.66	7.08	8.19
11 Sep 24	11:35	+	16.81	34.86	7.17	8.08	11 Sep 24	11:56	+	17.35	29.92	7.11	8.21
11 Sep 24	11:36	+	16.77	31.77	7.17	8.20	11 Sep 24	11:57	+	17.37	29.64	7.08	8.28
11 Sep 24	11:37	+	16.78	28.07	7.15	8.20	11 Sep 24	11:58	+	17.42	28.30	7.13	8.16
11 Sep 24	11:38	+	16.87	26.99	7.12	8.17	11 Sep 24	11:59	+	17.36	28.09	7.17	8.23
11 Sep 24	11:39	+	16.90	33.03	7.05	8.26	11 Sep 24	12:00	+	17.39	28.52	7.12	8.21
11 Sep 24	11:40	+	16.87	33.69	7.04	8.15	11 Sep 24	12:01	+	17.45	29.00	7.09	8.19
11 Sep 24	11:41	+	16.82	32.35	7.09	8.26	11 Sep 24	12:02	+	17.46	34.12	7.07	8.23
11 Sep 24	11:42	+	16.84	30.13	7.10	8.17	11 Sep 24	12:03	+	17.43	31.69	7.06	8.26
11 Sep 24	11:43	+	16.91	30.59	7.15	8.16	11 Sep 24	12:04	+	17.39	29.51	7.06	8.21
11 Sep 24	11:44	+	17.03	30.99	7.14	8.21	11 Sep 24	12:05	+	17.35	32.68	7.04	8.28
11 Sep 24	11:45	+	17.12	32.00	7.10	8.23	11 Sep 24	12:06	+	17.34	34.65	7.01	8.30
11 Sep 24	11:46	+	17.10	34.12	7.16	8.17	11 Sep 24	12:07	+	17.29	32.84	7.02	8.26
11 Sep 24	11:47	+	17.05	29.48	7.13	8.22	11 Sep 24	12:08	+	17.24	30.94	7.06	8.29
11 Sep 24	11:48	+	17.16	30.13	7.03	8.27	11 Sep 24	12:09	+	17.29	30.75	7.04	8.27
11 Sep 24	11:49	+	17.19	30.85	7.05	8.25	11 Sep 24	12:10	+	17.32	32.97	7.02	8.24
11 Sep 24	11:50	+	17.17	33.88	7.10	8.20	11 Sep 24	12:11	+	17.33	34.34	7.02	8.32
Max		+	17.19	34.30	7.17	8.19	Max		+	17.46	34.94	7.17	8.32
Avg		+	16.94	31.19	7.10	8.20	Avg		+	17.34	31.91	7.08	8.24

Run No: 3							Run No: 4						
Time Base : 21 min							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%
11 Sep 24	12:12	+	17.39	33.79	7.02	8.29	11 Sep 24	12:31	+	17.93	27.85	7.09	8.25
11 Sep 24	12:13	+	17.45	32.75	7.04	8.26	11 Sep 24	12:34	+	17.97	28.19	7.10	8.27
11 Sep 24	12:14	+	17.44	32.45	7.13	8.12	11 Sep 24	12:35	+	17.80	31.16	7.10	8.27
11 Sep 24	12:15	+	17.42	28.23	7.11	8.24	11 Sep 24	12:36	+	17.82	29.46	7.11	8.21
11 Sep 24	12:16	+	17.50	26.19	7.02	8.23	11 Sep 24	12:37	+	17.75	34.77	7.20	8.14
11 Sep 24	12:17	+	17.48	26.18	7.09	8.25	11 Sep 24	12:38	+	17.70	31.24	7.22	8.19
11 Sep 24	12:18	+	17.47	30.41	7.09	8.22	11 Sep 24	12:39	+	17.73	27.95	7.12	8.23
11 Sep 24	12:19	+	17.46	33.63	7.05	8.23	11 Sep 24	12:40	+	17.69	28.79	7.02	8.23
11 Sep 24	12:20	+	17.54	31.05	7.09	8.22	11 Sep 24	12:41	+	17.97	31.79	7.02	8.31
11 Sep 24	12:21	+	17.55	29.77	7.09	8.23	11 Sep 24	12:42	+	17.97	30.19	7.03	8.30
11 Sep 24	12:22	+	17.51	32.72	7.04	8.28	11 Sep 24	12:43	+	17.96	26.09	7.05	8.25
11 Sep 24	12:23	+	17.59	31.00	7.01	8.21	11 Sep 24	12:44	+	17.90	27.30	7.11	8.22
11 Sep 24	12:24	+	17.58	32.37	7.02	8.25	11 Sep 24	12:45	+	17.92	26.55	7.10	8.28
11 Sep 24	12:25	+	17.50	34.43	7.01	8.22	11 Sep 24	12:46	+	17.94	29.90	7.16	8.20
11 Sep 24	12:26	+	17.52	32.83	7.10	8.19	11 Sep 24	12:47	+	17.91	26.97	7.17	8.17
11 Sep 24	12:27	+	17.57	28.48	7.10	8.27	11 Sep 24	12:48	+	17.85	28.75	7.20	8.19
11 Sep 24	12:28	+	17.67	25.67	7.17	8.19	11 Sep 24	12:49	+	17.84	27.43	7.18	8.20
11 Sep 24	12:29	+	17.75	26.78	7.23	8.17	11 Sep 24	12:50	+	17.91	28.62	7.15	8.20
11 Sep 24	12:30	+	17.65	24.54	7.24	8.19	11 Sep 24	12:51	+	17.84	26.07	7.11	8.16
11 Sep 24	12:31	+	17.90	27.97	7.22	8.13	11 Sep 24	12:52	+	17.92	28.34	7.10	8.17
11 Sep 24	12:32	+	17.91	26.17	7.17	8.22	11 Sep 24	12:53	+	17.87	28.13	7.13	8.23
Max		+	17.91	34.43	7.24	8.29	Max		+	17.97	34.77	7.23	8.31
Avg		+	17.57	30.22	7.10	8.22	Avg		+	17.98	29.03	7.12	8.22

Run No: 5							Run No: 6						
Time Base : 21 min							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%
11 Sep 24	12:54	+	17.65	26.18	7.14	8.18	11 Sep 24	13:15	+	17.83	31.65	7.14	8.23
11 Sep 24	12:55	+	17.89	24.29	7.08	8.21	11 Sep 24	13:16	+	17.79	31.48	7.15	8.25
11 Sep 24	12:56	+	17.99	25.32	7.06	8.26	11 Sep 24	13:17	+	17.72	29.18	7.18	8.17
11 Sep 24	12:57	+	17.96	29.77	7.07	8.24	11 Sep 24	13:18	+	17.74	29.80	7.16	8.10
11 Sep 24	12:58	+	17.89	28.74	7.04	8.22	11 Sep 24	13:19	+	17.79	30.24	7.16	8.14
11 Sep 24	12:59	+	17.85	30.82	7.02	8.32	11 Sep 24	13:20	+	17.80	28.29	7.21	8.18
11 Sep 24	13:00	+	17.86	32.13	7.06	8.24	11 Sep 24	13:21	+	17.80	25.93	7.16	8.18
11 Sep 24	13:01	+	17.85	31.96	7.06	8.31	11 Sep 24	13:22	+	17.91	28.90	7.12	8.25
11 Sep 24	13:02	+	17.84	32.62	7.10	8.16	11 Sep 24	13:23	+	17.52	31.22	7.09	8.23
11 Sep 24	13:03	+	17.85	31.47	7.05	8.32	11 Sep 24	13:24	+	17.91	32.47	7.03	8.26
11 Sep 24	13:04	+	17.93	30.04	7.02	8.26	11 Sep 24	13:25	+	17.86	34.21	7.02	8.28
11 Sep 24	13:05	+	17.97	28.85	7.02	8.30	11 Sep 24	13:26	+	17.83	32.58	7.05	8.19
11 Sep 24	13:06	+	17.92	33.00	7.03	8.31	11 Sep 24	13:27	+	17.82	29.64	7.11	8.17
11 Sep 24	13:07	+	17.83	31.58	7.10	8.21	11 Sep 24	13:28	+	17.84	28.46	7.16	8.16
11 Sep 24	13:08	+	17.80	30.69	7.11	8.20	11 Sep 24	13:29	+	17.82	33.25	7.15	8.19
11 Sep 24	13:09	+	17.87	29.63	7.07	8.25	11 Sep 24	13:30	+	17.82	31.62	7.13	8.18
11 Sep 24	13:10	+	17.98	29.18	7.06	8.28	11 Sep 24	13:31	+	17.80	31.51	7.15	8.14
11 Sep 24	13:11	+	17.98	26.18	7.06	8.23	11 Sep 24	13:32	+	17.72	31.97	7.16	8.19
11 Sep 24	13:12	+	17.92	30.33	7.14	8.23	11 Sep 24	13:33	+	17.62	30.61	7.13	8.16
11 Sep 24	13:13	+	17.84	33.33	7.15	8.23	11 Sep 24	13:34	+	17.66	25.91	7.10	8.29
11 Sep 24	13:14	+	17.78	32.02	7.16	8.17	11 Sep 24	13:35	+	17.70	32.35	7.10	8.20
Max		+	17.99	33.33	7.16	8.32	Max		+	17.92	34.21	7.21	8.29
Avg		+	17.88	30.03	7.08	8.25	Avg		+	17.79	30.79	7.13	8.20



Reference Method Data

Client Name Siam Synthetic Latex Co., Ltd.
Plant Name AIE_SSCL-SE PlantDate 11 Sep 24
Location Furnace

Run No: 7							Run No: 8						
Time Base : 21 min							Time Base : 21 min						
Date	Time	SO2	NOx	CO	O2	CO2	Date	Time	SO2	NOx	CO	O2	CO2
		ppm	ppm	ppm	Vol%	Vol%			ppm	ppm	ppm	Vol%	Vol%
11 Sep 24	13:36	+	17.73	31.69	7.11	8.14	11 Sep 24	13:57	+	17.85	28.75	7.13	8.15
11 Sep 24	13:37	+	17.69	32.94	7.08	8.20	11 Sep 24	13:58	+	17.92	28.53	7.08	8.24
11 Sep 24	13:38	+	17.64	33.45	7.09	8.22	11 Sep 24	13:59	+	17.89	34.10	7.07	8.21
11 Sep 24	13:39	+	17.63	36.27	7.07	8.19	11 Sep 24	14:00	+	17.87	38.33	7.15	8.11
11 Sep 24	13:40	+	17.61	34.22	7.07	8.23	11 Sep 24	14:01	+	17.81	35.20	7.06	8.25
11 Sep 24	13:41	+	17.62	34.21	7.08	8.25	11 Sep 24	14:02	+	17.85	35.94	7.12	8.22
11 Sep 24	13:42	+	17.61	32.35	7.04	8.24	11 Sep 24	14:03	+	17.86	33.65	7.18	8.12
11 Sep 24	13:43	+	17.60	35.91	7.11	8.18	11 Sep 24	14:04	+	17.86	30.45	7.06	8.31
11 Sep 24	13:44	+	17.59	35.73	7.12	8.23	11 Sep 24	14:05	+	17.91	36.08	7.08	8.23
11 Sep 24	13:45	+	17.63	31.32	7.16	8.19	11 Sep 24	14:06	+	17.91	35.62	7.14	8.21
11 Sep 24	13:46	+	17.65	32.14	7.14	8.19	11 Sep 24	14:07	+	17.85	30.74	7.09	8.26
11 Sep 24	13:47	+	17.65	31.55	7.12	8.20	11 Sep 24	14:08	+	17.92	33.11	7.08	8.21
11 Sep 24	13:48	+	17.66	34.19	7.13	8.16	11 Sep 24	14:09	+	17.89	31.90	7.17	8.13
11 Sep 24	13:49	+	17.75	35.47	7.15	8.20	11 Sep 24	14:10	+	17.92	28.68	7.05	8.26
11 Sep 24	13:50	+	17.74	33.01	7.12	8.18	11 Sep 24	14:11	+	18.00	30.89	6.99	8.26
11 Sep 24	13:51	+	17.79	32.51	7.10	8.21	11 Sep 24	14:12	+	17.89	35.74	7.15	8.11
11 Sep 24	13:52	+	17.75	36.59	7.17	8.12	11 Sep 24	14:13	+	17.86	35.58	7.18	8.22
11 Sep 24	13:53	+	17.75	31.13	7.12	8.23	11 Sep 24	14:14	+	17.95	32.57	7.11	8.18
11 Sep 24	13:54	+	17.83	35.84	7.09	8.22	11 Sep 24	14:15	+	17.98	32.51	7.13	8.13
11 Sep 24	13:55	+	17.86	34.48	7.15	8.19	11 Sep 24	14:16	+	17.89	34.57	7.19	8.19
11 Sep 24	13:56	+	17.83	29.71	7.10	8.24	11 Sep 24	14:17	+	17.98	32.98	7.08	8.22
Max		+	17.86	35.59	7.17	8.25	Max		+	18.00	38.33	7.19	8.31
Avg		+	17.69	33.63	7.11	8.20	Avg		+	17.90	33.15	7.12	8.20



CEMs Data

Client Name Sam Synthetic Latex Co., Ltd.
Plant Name AIE SSLCSE Plant

Location Furnace

Run No: 1				Run No: 2				Run No: 3				Run No: 4			
Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C
11-Sep-24	11:30	-	210.4	11-Sep-24	11:52	-	210.9	11-Sep-24	12:14	-	210.4	11-Sep-24	12:46	-	210.6
11-Sep-24	11:31	-	210.4	11-Sep-24	11:53	-	210.8	11-Sep-24	12:15	-	210.3	11-Sep-24	12:47	-	210.7
11-Sep-24	11:32	-	210.3	11-Sep-24	11:54	-	210.8	11-Sep-24	12:16	-	210.3	11-Sep-24	12:48	-	210.7
11-Sep-24	11:33	-	210.4	11-Sep-24	11:55	-	210.7	11-Sep-24	12:17	-	210.3	11-Sep-24	12:49	-	210.7
11-Sep-24	11:34	-	210.4	11-Sep-24	11:56	-	210.7	11-Sep-24	12:18	-	210.3	11-Sep-24	12:50	-	210.7
11-Sep-24	11:35	-	210.4	11-Sep-24	11:57	-	210.7	11-Sep-24	12:19	-	210.3	11-Sep-24	12:51	-	210.7
11-Sep-24	11:36	-	210.4	11-Sep-24	11:58	-	210.7	11-Sep-24	12:20	-	210.3	11-Sep-24	12:52	-	210.7
11-Sep-24	11:37	-	210.4	11-Sep-24	11:59	-	210.7	11-Sep-24	12:21	-	210.3	11-Sep-24	12:53	-	210.7
11-Sep-24	11:38	-	210.4	11-Sep-24	12:00	-	210.7	11-Sep-24	12:22	-	210.4	11-Sep-24	12:54	-	210.6
11-Sep-24	11:39	-	210.5	11-Sep-24	12:01	-	210.7	11-Sep-24	12:23	-	210.4	11-Sep-24	12:55	-	210.7
11-Sep-24	11:40	-	210.5	11-Sep-24	12:02	-	210.7	11-Sep-24	12:24	-	210.4	11-Sep-24	12:56	-	210.8
11-Sep-24	11:41	-	210.6	11-Sep-24	12:03	-	210.7	11-Sep-24	12:25	-	210.4	11-Sep-24	12:57	-	210.7
11-Sep-24	11:42	-	210.6	11-Sep-24	12:04	-	210.6	11-Sep-24	12:26	-	210.5	11-Sep-24	12:58	-	210.7
11-Sep-24	11:43	-	210.6	11-Sep-24	12:05	-	210.6	11-Sep-24	12:27	-	210.5	11-Sep-24	12:59	-	210.7
11-Sep-24	11:44	-	210.7	11-Sep-24	12:06	-	210.6	11-Sep-24	12:28	-	210.5	11-Sep-24	13:00	-	210.6
11-Sep-24	11:45	-	210.7	11-Sep-24	12:07	-	210.6	11-Sep-24	12:29	-	210.5	11-Sep-24	13:01	-	210.6
11-Sep-24	11:46	-	210.6	11-Sep-24	12:08	-	210.5	11-Sep-24	12:30	-	210.6	11-Sep-24	13:02	-	210.6
11-Sep-24	11:47	-	210.7	11-Sep-24	12:09	-	210.4	11-Sep-24	12:31	-	210.6	11-Sep-24	13:03	-	210.5
11-Sep-24	11:48	-	210.8	11-Sep-24	12:10	-	210.4	11-Sep-24	12:32	-	210.5	11-Sep-24	13:04	-	210.6
11-Sep-24	11:49	-	210.9	11-Sep-24	12:11	-	210.4	11-Sep-24	12:33	-	210.5	11-Sep-24	13:05	-	210.5
11-Sep-24	11:50	-	210.9	11-Sep-24	12:12	-	210.4	11-Sep-24	12:34	-	210.5	11-Sep-24	13:06	-	210.5
11-Sep-24	11:51	-	210.9	11-Sep-24	12:13	-	210.4	11-Sep-24	12:35	-	210.5	11-Sep-24	13:07	-	210.6
Max	-	-	210.9	Max	-	-	210.9	Max	-	-	210.6	Max	-	-	210.6
Avg	-	-	210.6	Avg	-	-	210.6	Avg	-	-	210.4	Avg	-	-	210.6



CEMs Data

Client Name Sam Synthetic Latex Co., Ltd.
Plant Name AIE SSLCSE Plant

Location Furnace

Run No: 5				Run No: 6				Run No: 7				Run No: 8			
Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C
11-Sep-24	13:08	-	210.5	11-Sep-24	13:30	-	210.4	11-Sep-24	13:52	-	210.5	11-Sep-24	14:14	-	210.4
11-Sep-24	13:09	-	210.5	11-Sep-24	13:31	-	210.4	11-Sep-24	13:53	-	210.5	11-Sep-24	14:15	-	210.4
11-Sep-24	13:10	-	210.5	11-Sep-24	13:32	-	210.3	11-Sep-24	13:54	-	210.5	11-Sep-24	14:16	-	210.4
11-Sep-24	13:11	-	210.5	11-Sep-24	13:33	-	210.4	11-Sep-24	13:55	-	210.5	11-Sep-24	14:17	-	210.4
11-Sep-24	13:12	-	210.5	11-Sep-24	13:34	-	210.4	11-Sep-24	13:56	-	210.6	11-Sep-24	14:18	-	210.4
11-Sep-24	13:13	-	210.5	11-Sep-24	13:35	-	210.4	11-Sep-24	13:57	-	210.5	11-Sep-24	14:19	-	210.4
11-Sep-24	13:14	-	210.5	11-Sep-24	13:36	-	210.4	11-Sep-24	13:58	-	210.5	11-Sep-24	14:20	-	210.3
11-Sep-24	13:15	-	210.5	11-Sep-24	13:37	-	210.5	11-Sep-24	13:59	-	210.5	11-Sep-24	14:21	-	210.4
11-Sep-24	13:16	-	210.4	11-Sep-24	13:38	-	210.5	11-Sep-24	14:00	-	210.4	11-Sep-24	14:22	-	210.4
11-Sep-24	13:17	-	210.4	11-Sep-24	13:39	-	210.4	11-Sep-24	14:01	-	210.4	11-Sep-24	14:23	-	210.4
11-Sep-24	13:18	-	210.4	11-Sep-24	13:40	-	210.5	11-Sep-24	14:02	-	210.4	11-Sep-24	14:24	-	210.4
11-Sep-24	13:19	-	210.5	11-Sep-24	13:41	-	210.5	11-Sep-24	14:03	-	210.4	11-Sep-24	14:25	-	210.3
11-Sep-24	13:20	-	210.5	11-Sep-24	13:42	-	210.5	11-Sep-24	14:04	-	210.4	11-Sep-24	14:26	-	210.3
11-Sep-24	13:21	-	210.5	11-Sep-24	13:43	-	210.5	11-Sep-24	14:05	-	210.4	11-Sep-24	14:27	-	210.3
11-Sep-24	13:22	-	210.5	11-Sep-24	13:44	-	210.6	11-Sep-24	14:06	-	210.3	11-Sep-24	14:28	-	210.3
11-Sep-24	13:23	-	210.5	11-Sep-24	13:45	-	210.6	11-Sep-24	14:07	-	210.3	11-Sep-24	14:29	-	210.3
11-Sep-24	13:24	-	210.5	11-Sep-24	13:46	-	210.6	11-Sep-24	14:08	-	210.2	11-Sep-24	14:30	-	210.3
11-Sep-24	13:25	-	210.5	11-Sep-24	13:47	-	210.6	11-Sep-24	14:09	-	210.2	11-Sep-24	14:31	-	210.3
11-Sep-24	13:26	-	210.5	11-Sep-24	13:48	-	210.6	11-Sep-24	14:10	-	210.3	11-Sep-24	14:32	-	210.3
11-Sep-24	13:27	-	210.5	11-Sep-24	13:49	-	210.6	11-Sep-24	14:11	-	210.3	11-Sep-24	14:33	-	210.2
11-Sep-24	13:28	-	210.5	11-Sep-24	13:50	-	210.6	11-Sep-24	14:12	-	210.3	11-Sep-24	14:34	-	210.2
11-Sep-24	13:29	-	210.4	11-Sep-24	13:51	-	210.5	11-Sep-24	14:13	-	210.4	11-Sep-24	14:35	-	210.2
Max	-	-	210.6	Max	-	-	210.6	Max	-	-	210.6	Max	-	-	210.4
Avg	-	-	210.5	Avg	-	-	210.5	Avg	-	-	210.4	Avg	-	-	210.3



CEMs Data

Client Name Siam Synthetic Latex Co., Ltd.
Plant Name AIE SSL-CSE PlantLocation Furnace

Run No: 9

Run No: 10

Run No: 11

Run No: 12

Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C	Date	Time	Flowrate m ³ /hr	Temperature °C
11-Sep-24	14:36	-	210.2	11-Sep-24	14:58	-	210.7	11-Sep-24	15:20	-	210.4	11-Sep-24	15:42	-	210.4
11-Sep-24	14:37	-	210.1	11-Sep-24	14:59	-	210.7	11-Sep-24	15:21	-	210.3	11-Sep-24	15:43	-	210.4
11-Sep-24	14:38	-	210.1	11-Sep-24	15:00	-	210.7	11-Sep-24	15:22	-	210.3	11-Sep-24	15:44	-	210.5
11-Sep-24	14:39	-	210.0	11-Sep-24	15:01	-	210.7	11-Sep-24	15:23	-	210.3	11-Sep-24	15:45	-	210.4
11-Sep-24	14:40	-	210.1	11-Sep-24	15:02	-	210.8	11-Sep-24	15:24	-	210.3	11-Sep-24	15:46	-	210.4
11-Sep-24	14:41	-	210.1	11-Sep-24	15:03	-	210.8	11-Sep-24	15:25	-	210.3	11-Sep-24	15:47	-	210.4
11-Sep-24	14:42	-	210.1	11-Sep-24	15:04	-	210.8	11-Sep-24	15:26	-	210.2	11-Sep-24	15:48	-	210.4
11-Sep-24	14:43	-	210.2	11-Sep-24	15:05	-	210.8	11-Sep-24	15:27	-	210.2	11-Sep-24	15:49	-	210.4
11-Sep-24	14:44	-	210.2	11-Sep-24	15:06	-	210.7	11-Sep-24	15:28	-	210.3	11-Sep-24	15:50	-	210.4
11-Sep-24	14:45	-	210.3	11-Sep-24	15:07	-	210.7	11-Sep-24	15:29	-	210.3	11-Sep-24	15:51	-	210.5
11-Sep-24	14:46	-	210.4	11-Sep-24	15:08	-	210.7	11-Sep-24	15:30	-	210.3	11-Sep-24	15:52	-	210.4
11-Sep-24	14:47	-	210.4	11-Sep-24	15:09	-	210.7	11-Sep-24	15:31	-	210.3	11-Sep-24	15:53	-	210.4
11-Sep-24	14:48	-	210.5	11-Sep-24	15:10	-	210.7	11-Sep-24	15:32	-	210.3	11-Sep-24	15:54	-	210.5
11-Sep-24	14:49	-	210.5	11-Sep-24	15:11	-	210.6	11-Sep-24	15:33	-	210.3	11-Sep-24	15:55	-	210.5
11-Sep-24	14:50	-	210.5	11-Sep-24	15:12	-	210.6	11-Sep-24	15:34	-	210.3	11-Sep-24	15:56	-	210.5
11-Sep-24	14:51	-	210.5	11-Sep-24	15:13	-	210.5	11-Sep-24	15:35	-	210.3	11-Sep-24	15:57	-	210.5
11-Sep-24	14:52	-	210.6	11-Sep-24	15:14	-	210.5	11-Sep-24	15:36	-	210.4	11-Sep-24	15:58	-	210.5
11-Sep-24	14:53	-	210.6	11-Sep-24	15:15	-	210.5	11-Sep-24	15:37	-	210.4	11-Sep-24	15:59	-	210.5
11-Sep-24	14:54	-	210.6	11-Sep-24	15:16	-	210.5	11-Sep-24	15:38	-	210.4	11-Sep-24	16:00	-	210.5
11-Sep-24	14:55	-	210.6	11-Sep-24	15:17	-	210.4	11-Sep-24	15:39	-	210.4	11-Sep-24	16:01	-	210.4
11-Sep-24	14:56	-	210.7	11-Sep-24	15:18	-	210.5	11-Sep-24	15:40	-	210.4	11-Sep-24	16:02	-	210.4
11-Sep-24	14:57	-	210.7	11-Sep-24	15:19	-	210.4	11-Sep-24	15:41	-	210.4	11-Sep-24	16:03	-	210.4
Max	-	-	210.7	Max	-	-	210.8	Max	-	-	210.4	Max	-	-	210.5
Avg	-	-	210.4	Avg	-	-	210.6	Avg	-	-	210.3	Avg	-	-	210.4

Airgas Specialty Gases
Airgas USA, LLC
6141 Easton Road
Bldg 2
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E04NI99E15A021C Reference Number: 160-402020199-1
 Cylinder Number: CC709609 Cylinder Volume: 144.4 CF
 Laboratory: 124 - Plumsteadville - PA Cylinder Pressure: 2015 PSIG
 PGVP Number: A12021 Valve Outlet: 660
 Gas Code: CO,NO,NOX,SO2,BALN Certification Date: Feb 22, 2021

Expiration Date: Feb 22, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, 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. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	55.00 PPM	54.96 PPM	G1	+/- 1.4% NIST Traceable	02/15/2021, 02/22/2021
CARBON MONOXIDE	55.00 PPM	54.84 PPM	G1	+/- 0.7% NIST Traceable	02/15/2021
NITRIC OXIDE	55.00 PPM	54.69 PPM	G1	+/- 1.1% NIST Traceable	02/15/2021, 02/22/2021
SULFUR DIOXIDE	55.00 PPM	55.55 PPM	G1	+/- 1.0% NIST Traceable	02/15/2021, 02/22/2021
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	14060753	CC434455	49.88 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Feb 13, 2026
PRM	12386	D685025	9.91 PPM AIR/NITROGEN DIOXIDE	2.0%	Feb 20, 2020
NTRM	200611-04	CC707968	49.82 PPM NITRIC OXIDE/NITROGEN	+/-1.0%	Feb 02, 2025
GMIS	124206889	CC323707	4.028 PPM NITROGEN DIOXIDE/NITROGEN	2.1%	Aug 15, 2021
NTRM	0141709	KAL003190	49.67 PPM SULFUR DIOXIDE/NITROGEN	+/- 1.0%	Jun 20, 2022

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 FTIR AUP2010245 CO	FTIR	Feb 04, 2021
Nicolet iS50 FTIR AUP2010245 NO	FTIR	Feb 11, 2021
Nicolet iS50 FTIR AUP2010245 NO2	FTIR	Feb 22, 2021
Nicolet iS50 FTIR AUP2010245 SO2	FTIR	Feb 18, 2021

Triad Data Available Upon Request

NOTES:

Gross Weight: 28.8 Kg

Net Weight: 4.8 Kg



Whitney A. Huber
 Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E04NI99E3HA0002 Reference Number: 160-402138465-1
Cylinder Number: ND11222 Cylinder Volume: 247.2 Cubic Feet
Laboratory: 124 - Plumsteadville - PA Cylinder Pressure: 2215 PSIG
PGVP Number: A12021 Valve Outlet: 660
Gas Code: CO,NO,NOX,SO2,BALN Certification Date: Jul 15, 2021

Expiration Date: Jul 15, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, 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. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	80.00 PPM	82.51 PPM	G1	+/- 1.4% NIST Traceable	07/08/2021, 07/15/2021
CARBON MONOXIDE	80.00 PPM	79.74 PPM	G1	+/- 0.5% NIST Traceable	07/08/2021
NITRIC OXIDE	80.00 PPM	82.51 PPM	G1	+/- 1.4% NIST Traceable	07/08/2021, 07/15/2021
SULFUR DIOXIDE	80.00 PPM	79.76 PPM	G1	+/- 1.0% NIST Traceable	07/08/2021, 07/15/2021
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	11010130	KAL004536	97.31 PPM CARBON MONOXIDE/NITROGEN	+/- 0.4%	Oct 04, 2022
PRM	12386	D685025	9.91 PPM AIR/NITROGEN DIOXIDE	2.0%	Feb 20, 2020
NTRM	200610-50	CC733426	98.61 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Oct 05, 2026
GMIS	124206889	CC323707	4.028 PPM NITROGEN DIOXIDE/NITROGEN	2.1%	Aug 15, 2021
NTRM	16010224	KAL003838	97.69 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.8%	Dec 23, 2021

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet IS50 FTIR AUP2010245 CO	FTIR	Jun 24, 2021
Nicolet IS50 FTIR AUP2010245 NO	FTIR	Jul 01, 2021
Nicolet IS50 FTIR AUP2010245 NO2	FTIR	Jun 30, 2021
Nicolet IS50 FTIR AUP2010245 SO2	FTIR	Jul 09, 2021

Triad Data Available Upon Request

NOTES:

Gross Weight: 48.0 Kg
Net Weight: 7.8 Kg



[Signature]
Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer: AIR LIQUIDE
(THAILAND) LTD
Part Number: E02NI84E3HA0001 Reference Number: 160-402830555-1
Cylinder Number: GN0029535 Cylinder Volume: 250.0 CF
Laboratory: 124 - Plumsteadville - PA Cylinder Pressure: 2214 PSIG
PGVP Number: A12023 Valve Outlet: 590
Gas Code: O2,BALN Certification Date: Sep 05, 2023

Expiration Date: Sep 05, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, 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. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
OXYGEN	16.00 %	16.07 %	G1	+/- 0.4% NIST Traceable	09/05/2023
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08010205	K001516	23.2 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS OXYMAT 6 - N1-W5-951 - O2	PARAMAGNETIC	Aug 16, 2023

Triad Data Available Upon Request

NOTES: Gross Weight: 50.0 Kg
Net Weight: 8.4 Kg



[Signature]
Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E02N192E33HA0000
Cylinder Number: GN0025086
Laboratory: 124 - Plumsteadville - PA
PGVP Number: A12020
Gas Code: 02,BALN
Reference Number: 160-401948144-1
Cylinder Volume: 248.4 CF
Cylinder Pressure: 2214 PSIG
Valve Outlet: 590
Certification Date: Nov 11, 2020
Expiration Date: Nov 11, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, 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 c mole/mole basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
OXYGEN	8.000 %	8.186 %	G1	+/- 0.3% NIST Traceable	11/11/20
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	10010602	1D38055	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Apr 19, 2022
ANALYTICAL EQUIPMENT					
Instrument/Make/Model			Analytical Principle	Last Multipoint Calibration	
SIEMENS OXYMAT 6 - N1-W5-951 - O2			PARAMAGNETIC	Oct 26, 2020	

NOTES:
Trade Data Available Upon Request
Gross Weight: 48.1 Kg
Net Weight: 8.2 Kg

Ch

Approved for Release

CONSOLE CONTROL UNIT CALIBRATION TEST REPORT

Calibration of Date : 10-Jul-24
Next Cal. Date : 10-Jan-25

Console Control Meter Data

Calibration No. : C-100724-BKK_F50518
Dry Gas Meter ID : BKK_F50518
Serial No. : 1504025
Model No. : XC-572-V

Barometric Pressure (mmHg) : 752.4
Relative Humidity (%) : 64.0
Temperature (C°) : 29.2

Reference Dry Gas Meter Data

Reference Dry Gas Meter ID : BKK_FS1122
Serial No. : A2003240
Correction Factor (%) : 0.9824
Next Calibration Date : 7-Nov-24



ΔH (mm-H ₂ O)	⊖ Minutes	Reference Dry Gas Meter Calibration						Console Control : Drygas Meter						Dry Gas Meter		Orifice
		Vr (liters)			Tr (°C)	Vm (liters)			Ti (°C)	To (°C)	Avg.Tm (°C)	Correction Factor (%)	Calibration Factor ΔH@			
		Final	Initial	Total		Final	Initial	Total								
15	12.00	150.00	0.00	150.00	28.0	701379.0	701230.0	149.00	29.0	29.0	29.0	0.9908		44.0579		
25	9.10	150.00	0.00	150.00	29.0	701528.0	701380.0	148.00	30.0	30.0	30.0	0.9965		42.3680		
50	6.34	150.00	0.00	150.00	29.0	701679.0	701530.0	149.00	30.0	30.0	30.0	0.9874		41.1305		
80	5.00	150.00	0.00	150.00	30.0	701830.0	701680.0	150.00	31.0	31.0	31.0	0.9780		41.0663		
120	4.08	150.00	0.00	150.00	30.0	701985.0	701835.0	150.00	31.0	31.0	31.0	0.9742		41.0164		
												Avg.	0.9854	41.9278		

Y Ratio of reading of reference to dry gas meter : tolerance for individual values ± 0.02 from average.

ΔH@ : Orifice pressure differential that equates to 21.24 in of air @ 25 C and 760 mm of mercury , mm-H2O : tolerance for individual values ± 5.08 from average.

Procedure: 40 CFR 60.APP A.METH. SEC 5.3 & 7

Calibrated by: *Saksit Phaisanvithat*

(Mr. Saksit Phaisanvithat)
RYG Field Service Scientist(4)

Approved by: *Nattapon Jitgarnsawong*

(Mr. Nattapon Jitgarnsawong)
RYG Field Service Specialist(1)



Stopwatch Calibration Test Report

Calibration Date : 10 Jul 24 Next Cal. Date : 10 Jan 25
Barometric Pressure (mmHg) : 752.4 Temperature (°C) : 29.2
Relative Humidity (%) : 64.0

Reference Stopwatch Data

Stopwatch ID No. : RYG_FS0540
Model : F808
Serial No. : E18061
Calibration Date : 4 Jul 24
Certificate No. : E-2407022

Console Control Meter Data

Dry Gas Meter No. : BKK_FS518
Model : XC-572-V
Serial No. : 1504025

Run No.	Time Actual (m:ss:ms)	Time Reading (m:ss)	Diff. (ms)	Diff. (min)
1	5:00:03	5:00	3	0.00005
2	5:00:07	5:00	7	0.00012
3	5:00:07	5:00	7	0.00012
4	5:00:08	5:00	8	0.00013
5	5:00:05	5:00	5	0.00008
6	5:00:06	5:00	6	0.00010
7	5:00:06	5:00	6	0.00010
8	5:00:06	5:00	6	0.00010
9	5:00:07	5:00	7	0.00012
10	5:00:07	5:00	7	0.00012
			Average	0.00010
			SD	0.00002



DIGITAL TEMPERATURE CALIBRATION DATA SHEET

Calibration Date :		10 Jul 24	Ambient Temperature (°C)		29.2
Calibration sheet No. :		C-10724-BKK_FS0519	Relative Humidity (%) :		64
Digital Temperature ID :			BKK_FS0519	Reference Temperature ID	RYG_FS0681
Serial No. :			1504025	Serial No. :	201090014918
Model :			XC-572-V	Model :	Digicon-CC-VT-MS
				Next Calibrate :	13 Nov 24
Location	Reference Temperature °C	Digital Temperature °C	Error °C	MPE	Pass / Fail
Stack	0	0	0	±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
	250	251	1	±3	Pass
	300	301	1	±3	Pass
Probe	500	501	1	±3	Pass
	100	100	0	±3	Pass
	120	121	1	±3	Pass
Oven	140	141	1	±3	Pass
	100	100	0	±3	Pass
	120	121	1	±3	Pass
Filter	140	141	1	±3	Pass
	100	100	0	±3	Pass
	120	121	1	±3	Pass
Exit	140	141	1	±3	Pass
	0	0	0	±3	Pass
	10	9	-1	±3	Pass
Meter	20	19	-1	±3	Pass
	0	0	0	±3	Pass
	25	25	0	±3	Pass
AUX	50	51	1	±3	Pass
	0	0	0	±3	Pass
	25	25	0	±3	Pass
	50	51	1	±3	Pass

MPE : (Maximum permissible error of measurement) ค่าความผิดพลาดสูงสุดของการวัดที่อนุญาต

Calibrate by :

Saksit Phaisanphisit

Mr. Saksit Phaisanphisit

RYG Field Service Scientist (4)

Approved by :

Nattapon Jengwareewong

Mr. Nattapon Jengwareewong

RYG Field Service Specialist (1)

Calibrated by :

Saksit Phaisanphisit

Mr. Saksit Phaisanphisit

RYG Field Service Scientist (4)

Approved by :

Nattapon Jengwareewong

Mr. Nattapon Jengwareewong

RYG Field Service Specialist (1)



PROBE NOZZLE DIAMETER CALIBRATION DATA SHEET

Calibration Date	10 Jul 24	Nozzle Set ID.:	BKK_FS0524
Calibration Sheet No.:	C-100724-BKK_FS0524	Vernier Caliper ID.:	BKK_FS1123

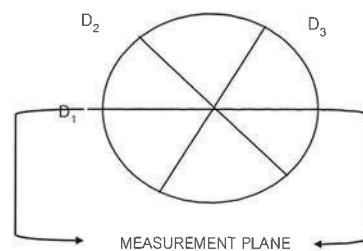
Nozzle ID #	Nozzle Diameter (cm.)			Hi - Lo	$(D_1 + D_2 + D_3) / 3$
	D ₁	D ₂	D ₃	ΔD	D _{avg}
1	0.318	0.318	0.318	0.000	0.318
2	0.472	0.474	0.475	0.003	0.474
3	0.632	0.635	0.634	0.003	0.634
4	0.792	0.792	0.792	0.000	0.792
5	0.952	0.952	0.952	0.000	0.952
6	1.091	1.110	1.092	0.019	1.098
7	1.256	1.262	1.262	0.006	1.260
8	1.601	1.598	1.600	0.003	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} = $(D_1 + D_2 + D_3) / 3$



Calibrated by : Saksit Phaisanphisut

(Mr. Saksit Phaisanphisut)

RYG Field Service Scientist (4)

Approved by : Nattapon Jiengwareewong

(Mr. Nattapol Jiengwareewong)

RYG Field Service Specialist (1)

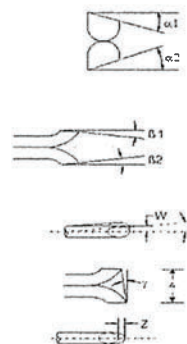
FORM NO.: F 06-124 REVISION NO.: 0 ISSUE DATE: 25/12/23



Type S Pitot Tube Calibration

Date Calibration 10-Jul-24
Pitot ID BKK_FS0523
Pitot SN -

Due Date 10-Jan-25
Inclinometer ID BKK_FS1131
Vernier ID RYG_FS0539



Parameter	Value	Allowable Range	Check
$\alpha 1$	-0.2	$-10^\circ < \alpha 1 < +10^\circ$	OK
$\alpha 2$	2.4	$-10^\circ < \alpha 2 < +10^\circ$	OK
$\beta 1$	-1.2	$-5^\circ < \beta 1 < +5^\circ$	OK
$\beta 2$	-1.6	$-5^\circ < \beta 2 < +5^\circ$	OK
γ	-1.1	-	-
θ	0.2	-	-
$Z = A \tan \gamma$	-0.018	$Z \leq 0.125"$	OK
$W = A \tan \theta$	0.003	$W \leq 0.031"$	OK
Dt	0.308	0.188" to 0.375"	OK
A/2Dt	1.494	$1.05 \leq PA/Dt \leq 1.5$	OK
A	0.92	$2.1Dt \leq A \leq 3Dt$	OK

Certify that pitot tube/porbe 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 : Saksit Phaisanphisut

(Mr. Saksit Phaisanphisut)

RYG Field Services Scientist (4)

Approved By : Nattapon Jiengwareewong

(Mr. Nattapol Jiengwareewong)

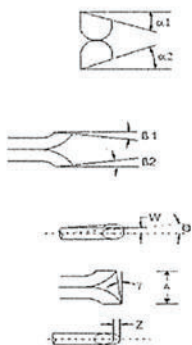
RYG Field Services Specialist (1)

FORM NO.: F 06-124 REVISION NO.: 0 ISSUE DATE: 25/12/23



Type S Pitot Tube Calibration

Date Calibration 10-Jul-24 Due Date 10-Jan-25
 Pitot ID BKK_FS0522 Inclinator ID BKK_FS1131
 Pitot SN Vernier ID RYG_FS0539



Parameter	Value	Allowable Range	Check
$\alpha 1$	-1.8	$-10^\circ < \alpha 1 < +10^\circ$	OK
$\alpha 2$	-1.4	$-10^\circ < \alpha 2 < +10^\circ$	OK
$\beta 1$	-1.7	$-5^\circ < \beta 1 < +5^\circ$	OK
$\beta 2$	-2	$-5^\circ < \beta 2 < +5^\circ$	OK
γ	-1.3	-	-
θ	-0.4	-	-
$Z = A \tan \gamma$	-0.021	$Z \leq 0.125''$	OK
$W = A \tan \theta$	-0.006	$W \leq 0.031''$	OK
Dt	0.330	0.188" to 0.375"	OK
A/2Dt	1.394	$1.05 \leq PA/Dt \leq 1.5$	OK
A	0.92	$2.1Dt \leq A \leq 3Dt$	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 factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Calibrated by: Saksit Phaisanphisut
 (Mr. Saksit Phaisanphisut)
 RYG Field Services Scientist (4)

Approved By: Natthapol Jiengwareewong
 (Mr. Natthapol Jiengwareewong)
 RYG Field Services Specialist (1)

FORM NO.: F 06-124 REVISION NO.: 0 ISSUE DATE: 25/12/23

Certificate No: G 670280
 Date of issue: 25-Apr-24

REVIEW BY Natthapol P
 APPROVED BY Natthapol P
 NEXT CAL DATE 23/4/25

Instrument description : Flue Gas Analyzer
 Instrument model : Testo 350 New
 Control unit serial no. : 03580182/1121
 Instrument serial no. : 62985049/1121
 ID no. or control no. : RYG_FS0564
 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 : 3 Pages
 Receiving no. : L-241468
 Receiving date. : 11-Apr-24
 Parameter of calibration : Gas Calibration (Oxygen 2.50, 10.04, 21.02 %vol, Carbon Monoxide 80.14, 302, 1003 ppm, Nitrogen Dioxide 30.34, 80.96, 201.9 ppm, Nitric Oxide 30.01, 151.5, 322.5 ppm, Sulphur Dioxide 50.36, 100.8, 600.8 ppm)
 Condition of UUC. : Used
 Ambient condition : All of the Measurement were carried out the stabilized laboratory
 Temperature : 23 \pm 5 $^\circ$ C
 Humidity : 55 \pm 15 %RH
 Calibration place : 17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210 THAILAND
 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 : 24-Apr-24

Kwanchai Khamdoun
 Mr. Kwanchai Khamdoun
 Calibration Technician

Nongluck Wongsettee
 Mrs. Nongluck Wongsettee
 Technical Manager

Certificate No.: G 670280

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) 80.14 ppm	CG-0040-22	Nimt	14-Feb-27
Carbon monoxide (CO) 302 ppm	1915/23	Linde	16-Jun-25
Carbon monoxide (CO) 1003 ppm	2584/23	Linde	10-Sep-25
Nitrogen Dioxide (NO ₂) 30.34 ppm	2703/22	Linde	22-Aug-24
Nitrogen Dioxide (NO ₂) 81.32 ppm	3546/23	Linde	14-Jan-26
Nitrogen Dioxide (NO ₂) 201.9 ppm	1975/23	Linde	17-Jul-25
Nitric Oxide (NO) 30.01 ppm	CG-0014-23	Nimt	19-Feb-25
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 : 22.6 °C Humidity : 64.3 %RH Pressure : 1006.6 mbar

Calibration conditions

Gas Temperature : 24 °C Flow rate : 1,200 ml/min Gas pressure : 1019.2 mbar

Calibration Results (Before adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O ₂ (%Vol)	2.50	2.44	-0.06	0.15
O ₂ (%Vol)	10.04	9.92	-0.12	0.20
O ₂ (%Vol)	21.02	21.12	0.10	0.30
CO (ppm)	80.14	80	-0.14	3.0
CO (ppm)	302	301	-1	6.0
CO (ppm)	1003	1001	-2	12
NO ₂ (ppm)	30.34	22.8	-7.54	8.0
NO ₂ (ppm)	81.32	73.4	-7.92	8.0
NO ₂ (ppm)	201.9	191.5	-10.4	12
NO (ppm)	30.01	28	-2.01	8.0
NO (ppm)	151.5	147	-4.5	8.0
NO (ppm)	322.5	308	-14.5	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	599	-1.8	13

Certificate No.: G 670280

Calibration Results (After adjustment) (Table 3)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O ₂ (%Vol)	2.50	2.44	-0.06	0.15
O ₂ (%Vol)	10.04	9.92	-0.12	0.20
O ₂ (%Vol)	21.02	21.12	0.10	0.30
CO (ppm)	80.14	80	-0.14	3.0
CO (ppm)	302	301	-1	6.0
CO (ppm)	1003	1001	-2	12
NO ₂ (ppm)	30.34	27.6	-2.74	8.0
NO ₂ (ppm)	81.32	80.2	-1.12	8.0
NO ₂ (ppm)	201.9	201.1	-0.8	12
NO (ppm)	30.01	31	0.99	8.0
NO (ppm)	151.5	153	1.5	8.0
NO (ppm)	322.5	324	1.5	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	599	-1.8	13

Remark : 1 nmol/mol = 1 %vol. 1 µmol/mol = 1 ppm.

End of Report



ROTA METER CALIBRATION RESULT JULY 2024

Rotameter ID.	Calibration Date	Regression Result	Coefficient (R ²)
BKK_FS0577	01 Jul 24	Y = 1.0001x + 0.0433	1.0000
BKK_FS0584	01 Jul 24	Y = 1.0056x - 2.7974	1.0000
BKK_FS0585	02 Jul 24	Y = 1.0315x + 3.0033	0.9998
BKK_FS0587	02 Jul 24	Y = 1.0294x + 0.71	1.0000
BKK_FS0588	01 Jul 24	Y = 0.9751x + 9.8452	0.9999
BKK_FS0591	01 Jul 24	Y = 1.0035x - 8.2303	1.0000
BKK_FS0592	02 Jul 24	Y = 1.002x + 14.273	1.0000
BKK_FS0594	02 Jul 24	Y = 1.0003x + 7.0095	1.0000
BKK_FS0595	01 Jul 24	Y = 1.0871x - 114.97	0.9985
BKK_FS1004	02 Jul 24	Y = 0.9826x + 13.51	0.9999
BKK_FS1005	02 Jul 24	Y = 1.0217x - 0.5833	0.9997
BKK_FS1006	02 Jul 24	Y = 1.149x - 1.0422	0.9981
BKK_FS1007	02 Jul 24	Y = 1.1116x + 3.3558	0.9994
BKK_FS1008	02 Jul 24	Y = 1.1273x + 0.4837	0.9999
BKK_FS1009	01 Jul 24	Y = 1.1044x - 0.8245	1.0000
BKK_FS1017	02 Jul 24	Y = 1.0488x + 2.2027	0.9998
BKK_FS1018	02 Jul 24	Y = 1.0173x - 0.1967	0.9999
BKK_FS1019	02 Jul 24	Y = 1.0022x + 5.619	1.0000
BKK_FS1026	01 Jul 24	Y = 1.072x - 2.4954	1.0000
BKK_FS1027	01 Jul 24	Y = 1.0104x - 4.4788	0.9999
BKK_FS1028	01 Jul 24	Y = 1.0009x - 3.7755	1.0000
BKK_FS1029	01 Jul 24	Y = 1.1118x - 4.4431	0.9965
BKK_FS1030	01 Jul 24	Y = 1.0159x - 6.395	1.0000
BKK_FS1031	01 Jul 24	Y = 0.9973x - 5.3371	0.9999
BKK_FS1039	02 Jul 24	Y = 0.9992x + 9.6833	0.9992
BKK_FS1040	01 Jul 24	Y = 1.0034x - 2.5343	1.0000
BKK_FS1041	02 Jul 24	Y = 1.0511x + 1.1272	0.9996
BKK_FS1042	02 Jul 24	Y = 1.0016x + 10.387	0.9995
BKK_FS1043	01 Jul 24	Y = 0.9965x + 9.3743	1.0000
BKK_FS1044	02 Jul 24	Y = 1.1237x - 0.4231	0.9981
BKK_FS1200	01 Jul 24	Y = 1.0337x - 0.1016	0.9994
BKK_FS1201	01 Jul 24	Y = 0.9871x + 5.0931	0.9986
BKK_FS1202	01 Jul 24	Y = 0.7978x + 301.39	0.9334
PHK_FS0027	02 Jul 24	Y = 1.0722x + 3.4395	0.9988
PHK_FS0028	02 Jul 24	Y = 1.0254x + 1.04	1.0000
PHK_FS0029	02 Jul 24	Y = 0.999x + 12.73	1.0000
RYG_FS0197	01 Jul 24	Y = 1.0045x + 10.291	1.0000
RYG_FS0198	01 Jul 24	Y = 1.0056x + 1.8883	1.0000
RYG_FS0199	02 Jul 24	Y = 1.0029x + 3.2381	0.9990



ROTA METER CALIBRATION RESULT JULY 2024

Rotameter ID.	Calibration Date	Regression Result	Coefficient (R ²)
RYG_FS0654	02 Jul 24	Y = 1.0421x + 1.4935	1.0000
RYG_FS0655	02 Jul 24	Y = 0.975x + 15.2	0.9994
RYG_FS0656	01 Jul 24	Y = 1.0042x + 7.1067	0.9999
RYG_FS0657	02 Jul 24	Y = 1.0337x + 1.8918	0.9998
RYG_FS0658	02 Jul 24	Y = 0.9921x + 10.87	0.9996
RYG_FS0659	01 Jul 24	Y = 1.0022x + 8.4152	1.0000
SGK_FS0135	02 Jul 24	Y = 1.0193x + 3.6833	0.9999
SGK_FS0136	02 Jul 24	Y = 1.0217x + 1.63	1.0000
SGK_FS0138	02 Jul 24	Y = 1.055x + 4.5833	0.9999
SGK_FS0139	02 Jul 24	Y = 1.0154x + 3.74	0.9998
SGK_FS0140	02 Jul 24	Y = 1.0008x + 13.353	1.0000
SGK_FS0141	02 Jul 24	Y = 1.1185x + 1.4867	0.9998
SGK_FS0142	02 Jul 24	Y = 1.0211x + 1.39	1.0000
SGK_FS0143	02 Jul 24	Y = 1.0045x + 5.6981	1.0000

Review By :

Wichan Choonharat

(Mr. Wichan Choonharat)

Enviro Field Services Manager

Approved By :

Mr. Sarayuth Jittrantont

(Mr. Sarayuth Jittrantont)

Assistant General Manager

Certificate of System Qualification

GC-OQ

System ID: CN11461066
Organization Name: ALS Laboratory Group (Thailand) Co., Ltd.
Organization Location: 104 Soi 40 Phatthanakan Rd, Khwang Suan Luang, Khet Suan Luang, Bangkok 10250

Date: April 21, 2023 3:26:38 PM
EQP Name: AgilentRecommended
EQP Revision: GC.02.52
Overall Qualification Status: Pass

CDS Logon Verification - GC

Logon: Saenguthai Tarak

Overall CDS Logon Verification - GC Test 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 Decay

Name: 7890
Front SSL

Setpoint Status: Pass
Pressure: 25.0 psi
Pressure Change: -0.1 psi /5 minutes
Agilent Recommended: >= -2.0 and <= 0.5

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Overall Inlet Pressure Decay Test Status

Pass

Inlet Pressure Accuracy

Name: 7890
Front SSL

Setpoint Status: Pass
Setpoint Actual
Inlet Pressure: 25.0 psi 25.2 psi
Accuracy: 0.2 psi
Agilent Recommended: <= 1.2

Overall Inlet Pressure Accuracy Test Status

Pass

Inlet Pressure Decay

Name: 7890
Back SSL

Setpoint Status: Pass
Pressure: 25.0 psi
Pressure Change: 0.0 psi /5 minutes
Agilent Recommended: >= -2.0 and <= 0.5

Overall Inlet Pressure Decay Test Status

Pass

Inlet Pressure Accuracy

Name: 7890
Back SSL

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Setpoint Status:

Pass

Inlet Pressure: Setpoint 25.0 psi Actual 24.8 psi
Accuracy: 0.2 psi
Agilent Recommended: ≤ 1.2

Overall Inlet Pressure Accuracy Test Status

Pass

Detector Flow Accuracy

Name:

7890

Front FID

Setpoint Status:

Pass

Flow Type:

Fuel

Setpoint: 30.0 mL/min Measured Flow: 28.9 mL/min

Accuracy: 1.1 mL/min

Agilent Recommended: ≤ 10.0 % setpoint (3.0 mL/min)

Limit is percentage of setpoint or 0.5 mL/minute, whichever is largest.

Setpoint Status:

Pass

Flow Type:

Oxidizer

Setpoint: 400.0 mL/min Measured Flow: 400 mL/min

Accuracy: 0.0 mL/min

Agilent Recommended: ≤ 10.0 % setpoint (40.0 mL/min)

Limit is percentage of setpoint or 0.5 mL/minute, whichever is largest.

Setpoint Status:

Pass

Flow Type:

Makeup

Setpoint: 25.0 mL/min Measured Flow: 24.9 mL/min

Accuracy: 0.1 mL/min

Agilent Recommended: ≤ 10.0 % setpoint (2.5 mL/min)

Limit is percentage of setpoint or 0.5 mL/minute, whichever is largest.

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Overall Detector Flow Accuracy Test Status

Pass

Detector Flow Accuracy

Name:

7890

Back FID

Setpoint Status:

Pass

Flow Type:

Fuel

Setpoint: 30.0 mL/min Measured Flow: 30.7 mL/min

Accuracy: 0.7 mL/min

Agilent Recommended: ≤ 10.0 % setpoint (3.0 mL/min)

Limit is percentage of setpoint or 0.5 mL/minute, whichever is largest.

Setpoint Status:

Pass

Flow Type:

Oxidizer

Setpoint: 400.0 mL/min Measured Flow: 399 mL/min

Accuracy: 1.0 mL/min

Agilent Recommended: ≤ 10.0 % setpoint (40.0 mL/min)

Limit is percentage of setpoint or 0.5 mL/minute, whichever is largest.

Setpoint Status:

Pass

Flow Type:

Makeup

Setpoint: 25.0 mL/min Measured Flow: 24.6 mL/min

Accuracy: 0.4 mL/min

Agilent Recommended: ≤ 10.0 % setpoint (2.5 mL/min)

Limit is percentage of setpoint or 0.5 mL/minute, whichever is largest.

Overall Detector Flow Accuracy Test Status

Pass

GC Oven Temperature Accuracy

Name:

7890

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Setpoint Status: **Pass**

Zone: **Oven**

Setpoint/Actual

Temperature: **230.0** **230.6** °C

Accuracy: **0.6** °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** **100.9** °C

Accuracy: **0.9** °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** **100.8833** °C

Stability: **0.1** °C

Agilent Recommended: **<= 0.5**

Overall GC Oven Temperature Stability Test Status

Pass

Scouting Run

Tested Combination1 Front SSL / Front FID

Injection Tower

Name: **7693A**

Date: April 21, 2023 3:26:38 PM

System ID: CN11461066

Setpoint Status: **Completed**

Injection Volume on Column: **1.0** uL

Overall Scouting Run Status

Completed

Noise and Drift

Tested Combination1 Front SSL / Front FID

Name: **7890**

Setpoint Status: **Pass**

Base Signal: **22.7** pA

ASTM Noise pA **0.06**

Drift pA/Hr **0.05**

Agilent Recommended: **<= 0.10**

Status: **Pass**

Overall Noise and Drift Test Status

Pass

Injection Precision

Tested Combination1 Front SSL / Front FID

Name: **7693A**

Setpoint Status: **Pass**

Injection Volume on Column: **1.0** uL

Area RSD: **0.32** %

Retention Time RSD: **0.67** %

Agilent Recommended: **<= 3.00**

<= 1.00

Overall Injection Precision Test Status

Pass

Signal to Noise

Date: April 21, 2023 3:26:38 PM

System ID: CN11461066

Tested Combination1

Front SSL / Front FID

Injection Tower

Name: 7890

Setpoint Status: Pass

Signal to Noise: 721755

Agilent Recommended: \geq 300000

Overall Signal to Noise Test Status

Pass

Scouting Run

Tested Combination2

Back SSL / Back FID

Injection Tower

Name: 7693A

Setpoint Status: Completed

Injection Volume on Column: 1.0 μ L

Overall Scouting Run Status

Completed

Noise and Drift

Tested Combination2

Back SSL / Back FID

Name: 7890

Setpoint Status: Pass

Base Signal: 22.6 pA

ASTM Noise

pA

0.07

Drift

pA/Hr

0.09

Agilent Recommended: \leq 0.10 \leq 2.50

Status: Pass

Pass

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Overall Noise and Drift Test Status

Pass

Injection Precision

Tested Combination2

Back SSL / Back FID

Name: 7693A

Setpoint Status:

Pass

Injection Volume on Column:

1.0 μ L

Area RSD:

1.28 %

Retention Time RSD:

0.83 %

Agilent Recommended: \leq 3.00 \leq 1.00

Overall Injection Precision Test Status

Pass

Signal to Noise

Tested Combination2

Back SSL / Back FID

Injection Tower

Name: 7890

Setpoint Status:

Pass

Signal to Noise:

2404398

Agilent Recommended: \geq 300000 \geq 300000

Overall Signal to Noise Test Status

Pass

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Instrument Details

Purpose

This section describes the as found system configuration.

Details

System

System ID	CN11461066
Manufacturer	Agilent Technologies
Name	7890
Flow Data Input	Manual Data
Temperature Data Input	Manual Data or Other Data Logging

Tested Combination1

Injection Technique	Injection Tower
Sampler Identifier	Sampler 2
Inlet	Front
Detector	Front
LTM Included?	No

Tested Combination2

Injection Technique	Injection Tower
Sampler Identifier	Sampler 3
Inlet	Back
Detector	Back
LTM Included?	No

Sampler 1

Manufacturer	Agilent Technologies
Type	Tray
Name	7693A
Model Number	G4514A
Serial Number	CN15380030
Firmware Revision	A.11.01
Vial Heater	Not Installed

Sampler 2

Manufacturer	Agilent Technologies
Type	Injection Tower
Name	7693A
Model Number	G4513A
Serial Number	CN16280128
Firmware Revision	A.10.09
Usage	Sample Injection
Location	Front
Syringe Volume (µL)	10

Sampler 3

Manufacturer	Agilent Technologies
Type	Injection Tower
Name	7693A
Model Number	G4513A
Serial Number	CN10340103
Firmware Revision	A.10.09
Usage	Sample Injection
Location	Back
Syringe Volume (µL)	10

Mainframe 1

Manufacturer	Agilent Technologies
Name	7890
Model Number	G3440A
Serial Number	CN11461066
Firmware Revision	Version 4.27
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

Inlet 2

Manufacturer	Agilent Technologies
Name	7890
Type	SSL
Location	Back
Carrier Gas	Helium
Control Type	Electronic Pressure Control (EPC)
Purged Inlet	Yes

Detector 1

Manufacturer	Agilent Technologies
Name	7890
Type	FID
Adapter	Capillary
Control Type	Electronic Pressure Control (EPC)
Location	Front
Makeup Gas	Nitrogen

Detector 2

Manufacturer	Agilent Technologies
Name	7890
Type	FID
Adapter	Capillary
Control Type	Electronic Pressure Control (EPC)
Location	Back
Makeup Gas	Nitrogen

Date: April 21, 2023 3:28:38 PM
System ID: CN11461066

Electronic Signature

Purpose

This signature page was created and published because the ACE sign-off action was executed, which is valid for the entire document, including attachments. The ACE sign-off is an electronic signature that requires two distinct identification components: unique username and personal password. The Agilent representative who has delivered this service understands the meaning and legal status of an electronic signature. As a trained official operator, the Agilent representative has a unique password and login to access ACE and electronically sign this document. (Other e-signatures can be applied to this document using a Document Content Management or other suitable method defined in your data access and control procedures.)

Details

Full Name of Signer:	Saenguthal Tarak
Logged On User Name:	saenguthal.tarak@non.agilent.com
Signature Creation Date:	April 21, 2023
Reason for Signature:	Executed protocol and published this original version of document

Regulatory Disclaimer

This document provides a protocol to verify and record instrument configuration and evidence of proper operation. It has been prepared from our interpretation of applicable regulations as well as industry best practices. The document is designed to provide an important component of a complete compliance package. Validation depends upon many factors and use of this protocol alone does not assure compliance. Agilent Technologies makes no promises or representations as to its sufficiency for any specific regulatory program.

Warranty

Agilent Technologies makes no warranty of any kind to this material, including but not limited to, the implied warranties or merchantability and fitness for a particular purpose. Agilent Technologies shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Date: April 21, 2023 3:28:38 PM
System ID: CN11461066

User Name: saonguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:21:36 AM	Audit	SessionCreated	Session	None
April 21, 2023 11:21:36 AM	Start	Configuration	Session	None
April 21, 2023 11:21:36 AM	Audit	Entitlement	Licensing	User is Nonpaying and does not require an unlock code
April 21, 2023 11:22:04 AM	Audit	EqpLoaded	Session	EQP details for primary technique [Gc] - File path: [ProtocolPacks/Gc/Configurations/02.52/Gc.02.52.eqp]. EQP File Name: [Gc.02.52.eqp], EQP Name: [AgilentRecommended].Protocol Revision :[Gc.02.52]
April 21, 2023 11:22:06 AM	End	Configuration	Session	None
April 21, 2023 11:22:14 AM	Start	Qualification	Session	OQ
April 21, 2023 11:22:14 AM	Start	Execution	CDS Logon Verification - GC : - Qualitative test	None
April 21, 2023 11:23:14 AM	End	Execution	CDS Logon Verification - GC : - Qualitative test	Run Count : 1
April 21, 2023 11:23:16 AM	Start	Execution	System Inspection and Basic Safety and Operation - 7890: - Qualitative Test - No setpoints associated	None
April 21, 2023 11:23:35 AM	End	Execution	System Inspection and Basic Safety and Operation - 7890: - Qualitative Test - No setpoints associated	Run Count : 1
April 21, 2023 11:23:37 AM	Start	Execution	Inlet Pressure Decay - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	None

Page 1 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 13 / 23

User Name: saonguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:24:01 AM	End	Execution	Inlet Pressure Decay - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	Run Count : 1
April 21, 2023 11:24:04 AM	Start	Execution	Inlet Pressure Accuracy - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
April 21, 2023 11:24:09 AM	End	Execution	Inlet Pressure Accuracy - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
April 21, 2023 11:24:11 AM	Start	Execution	Inlet Pressure Decay - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	None
April 21, 2023 11:24:43 AM	End	Execution	Inlet Pressure Decay - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	Run Count : 1
April 21, 2023 11:24:45 AM	Start	Execution	Inlet Pressure Accuracy - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
April 21, 2023 11:24:51 AM	End	Execution	Inlet Pressure Accuracy - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
April 21, 2023 11:24:53 AM	Start	Execution	Detector Flow Accuracy - Front FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	None
April 21, 2023 11:25:20 AM	Audit	Data	Detector Flow Accuracy - Front FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 21, 2023 11:25:25 AM	End	Execution	Detector Flow Accuracy - Front FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	Run Count : 1

Page 2 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 14 / 23

User Name: saenguthal.tarak
Hostname: LAPTOP-GQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:25:26 AM	Start	Execution	Detector Flow Accuracy - Front FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	None
April 21, 2023 11:25:40 AM	Audit	Data	Detector Flow Accuracy - Front FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 21, 2023 11:25:42 AM	End	Execution	Detector Flow Accuracy - Front FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 21, 2023 11:25:44 AM	Start	Execution	Detector Flow Accuracy - Front FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	None
April 21, 2023 11:28:01 AM	Audit	Data	Detector Flow Accuracy - Front FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 21, 2023 11:26:04 AM	End	Execution	Detector Flow Accuracy - Front FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 21, 2023 11:26:05 AM	Start	Execution	Detector Flow Accuracy - Back FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	None
April 21, 2023 11:28:19 AM	Audit	Data	Detector Flow Accuracy - Back FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 21, 2023 11:26:22 AM	End	Execution	Detector Flow Accuracy - Back FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 21, 2023 11:26:24 AM	Start	Execution	Detector Flow Accuracy - Back FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	None
April 21, 2023 11:26:36 AM	Audit	Data	Detector Flow Accuracy - Back FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry

Page 3 / 11

User Name: saenguthal.tarak
Hostname: LAPTOP-GQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:25:43 AM	End	Execution	Detector Flow Accuracy - Back FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 21, 2023 11:26:45 AM	Start	Execution	Detector Flow Accuracy - Back FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	None
April 21, 2023 11:27:01 AM	Audit	Data	Detector Flow Accuracy - Back FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 21, 2023 11:27:05 AM	End	Execution	Detector Flow Accuracy - Back FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 21, 2023 11:27:07 AM	Start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 21, 2023 11:27:33 AM	Audit	Data	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
April 21, 2023 11:27:35 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
April 21, 2023 11:27:37 AM	Start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 21, 2023 11:27:54 AM	Audit	Data	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry

Page 4 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 15 / 23

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 16 / 23

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:27:57 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
April 21, 2023 11:27:59 AM	Start	Execution	GC Oven Temperature Stability - 7890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	None
April 21, 2023 11:28:07 AM	Audit	Data	GC Oven Temperature Stability - 7890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	Manual Data Entry
April 21, 2023 11:28:10 AM	End	Execution	GC Oven Temperature Stability - 7890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	Run Count : 1
April 21, 2023 11:28:12 AM	Start	Execution	GC Scouting Run - Injection Tower, Front SSL, Front FID: - Part of System Preparation - No limits associated	None
April 21, 2023 11:30:27 AM	Audit	Data	GC Scouting Run - Injection Tower, Front SSL, Front FID: - Part of System Preparation - No limits associated	Data files Path : C:\Users\Public\Documents\ChromStation3\Data\OQ_GC-6_ALS_2023-04-20\OQ_GC-6_2023 2023-04-20 14-38-08\F_SC01.D\FID1A.ch
April 21, 2023 11:31:04 AM	End	Execution	GC Scouting Run - Injection Tower, Front SSL, Front FID: - Part of System Preparation - No limits associated	Run Count : 1
April 21, 2023 11:31:07 AM	Start	Execution	Noise and Drift - Front FID: - Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour	None

Page 5 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:31:43 AM	Audit	Data	Noise and Drift - Front FID: - Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour	Data files Path : C:\Users\Public\Documents\ChromStation3\Data\OQ_GC-6_ALS_2023-04-20\OQ_GC-6_2023 2023-04-20 14-38-08\IND-01-005F.D\FID1A.ch
April 21, 2023 11:32:00 AM	End	Execution	Noise and Drift - Front FID: - Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour	Run Count : 1
April 21, 2023 11:32:03 AM	Start	Execution	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	None
April 21, 2023 11:32:23 AM	Start	Execution	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	None
April 21, 2023 11:33:55 AM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\ChromStation3\Data\OQ_GC-6_ALS_2023-04-20\OQ_GC-6_2023 2023-04-20 14-38-08\Pre01-013F.D\FID1A.ch
April 21, 2023 11:33:55 AM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\ChromStation3\Data\OQ_GC-6_ALS_2023-04-20\OQ_GC-6_2023 2023-04-20 14-38-08\Pre01-014F.D\FID1A.ch

Page 6 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System ID: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:33:55 AM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Rel. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023 2023-04-20 14-36-08\Pre01-015F.D\FID 1A.ch
April 21, 2023 11:33:55 AM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Rel. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023 2023-04-20 14-36-08\Pre01-016F.D\FID 1A.ch
April 21, 2023 11:33:59 AM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Rel. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023 2023-04-20 14-36-08\Pre01-017F.D\FID 1A.ch
April 21, 2023 11:33:59 AM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Rel. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023 2023-04-20 14-36-08\Pre01-018F.D\FID 1A.ch
April 21, 2023 11:35:00 AM	End	Execution	Injection Precision - Injection Tower, Front SSL, Front FID: - GC - L (Area): <= 3.00% - L (Rel. Time): <= 1.00%	Run Count : 1
April 21, 2023 11:35:04 AM	Start	Execution	Signal to Noise - Injection Tower, Front SSL, Front FID: - Detector FID - L: >= 300000	None

Page 7 / 11

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System ID: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:35:28 AM	Audit	Data	Signal to Noise - Injection Tower, Front SSL, Front FID: - Detector FID - L: >= 300000	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023 2023-04-20 14-36-08\SN_Front.D\FID1A.ch
April 21, 2023 11:36:00 AM	End	Execution	Signal to Noise - Injection Tower, Front SSL, Front FID: - Detector FID - L: >= 300000	Run Count : 1
April 21, 2023 11:36:03 AM	Start	Execution	GC Scouting Run - Injection Tower, Back SSL, Back FID: - Part of System Preparation - No limits associated	None
April 21, 2023 11:36:36 AM	Audit	Data	GC Scouting Run - Injection Tower, Back SSL, Back FID: - Part of System Preparation - No limits associated	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023 2023-04-20 14-36-08\B_SC01.D\FID2B.ch
April 21, 2023 11:37:30 AM	End	Execution	GC Scouting Run - Injection Tower, Back SSL, Back FID: - Part of System Preparation - No limits associated	Run Count : 1
April 21, 2023 11:37:32 AM	Start	Execution	Noise and Drift - Back FID: - Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour	None

Page 8 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 20 / 23

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 19 / 23

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:28:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:38:06 AM	Audit	Data	Noise and Drift - Back FID: - Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_2023-04-20 14-36-08\WD-01--006B.D\FID 2B.ch
April 21, 2023 11:38:23 AM	End	Execution	Noise and Drift - Back FID: - Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour	Run Count : 1
April 21, 2023 11:38:32 AM	Start	Execution	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	None
April 21, 2023 11:38:51 AM	Start	Execution	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	None
April 21, 2023 11:40:17 AM	Audit	Data	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_Pre 2023-04-21 10-37-32\Pre11--004B.D\FID 2B.ch
April 21, 2023 11:40:17 AM	Audit	Data	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_Pre 2023-04-21 10-37-32\Pre11--005B.D\FID 2B.ch

Page 9 / 11

Date: April 21, 2023 3:28:38 PM
System ID: CN11461066

Page 21 / 23

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:40:17 AM	Audit	Data	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_Pre 2023-04-21 10-37-32\Pre11--006B.D\FID 2B.ch
April 21, 2023 11:40:17 AM	Audit	Data	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_Pre 2023-04-21 10-37-32\Pre11--007B.D\FID 2B.ch
April 21, 2023 11:40:21 AM	Audit	Data	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_Pre 2023-04-21 10-37-32\Pre11--008B.D\FID 2B.ch
April 21, 2023 11:40:21 AM	Audit	Data	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Data files Path : C:\Users\Public\Documents\C hemStation\3\Data\OQ_GC-6 _ALS_2023-04-20\OQ_GC-6 _2023_Pre 2023-04-21 10-37-32\Pre11--009B.D\FID 2B.ch
April 21, 2023 11:41:29 AM	End	Execution	Injection Precision - Injection Tower, Back SSL, Back FID: - GC - L (Area): <= 3.00% - L (Ret. Time): <= 1.00%	Run Count : 1
April 21, 2023 11:41:33 AM	Start	Execution	Signal to Noise - Injection Tower, Back SSL, Back FID: - Detector FID - L: >= 300000	None

Page 10 / 11

Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 22 / 23

User Name: saenguthai.tarak
Hostname: LAPTOP-CQ3SKOMV

System Id: CN11461066
Print Date: April 21, 2023 3:26:40 PM

GC-6_BKK_EN0127_ALS Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 21, 2023 11:42:22 AM	Audit	Data	Signal to Noise - Injection Tower, Back SSL, Back FID: - Detector FID - L: >= 300000	Data files Path : C:\Users\Public\Documents\ChomStation\3\1\Data\OQ_GC-6_ALS_2023-04-20\OQ_GC-6_2023-04-20 14-36-08\SN_Back.D\FID2B.ch
April 21, 2023 11:42:50 AM	End	Execution	Signal to Noise - Injection Tower, Back SSL, Back FID: - Detector FID - L: >= 300000	Run Count : 1
April 21, 2023 11:42:53 AM	End	Qualification	Session	OQ
April 21, 2023 11:42:53 AM	Start	Reporting	Session	None
April 21, 2023 12:01:47 PM	Audit	AcqClosed	Session	None
April 21, 2023 3:18:07 PM	Audit	AcqRestarted	Session	None
April 21, 2023 3:15:10 PM	Audit	SessionReloaded	Session	None
April 21, 2023 3:16:31 PM	Start	Qualification	Session	OQ
April 21, 2023 3:20:59 PM	Audit	AcqRestarted	Session	None
April 21, 2023 3:21:00 PM	Audit	SessionReloaded	Session	None
April 21, 2023 3:21:07 PM	Start	Qualification	Session	OQ
April 21, 2023 3:25:45 PM	Audit	Reporting	Session	Report Generated : Certificate

Page 11 / 11

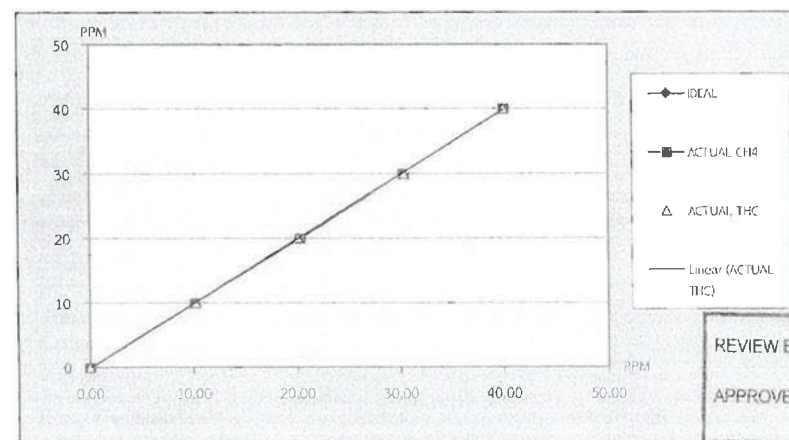
Date: April 21, 2023 3:26:38 PM
System ID: CN11461066

Page 23 / 23

CUSTOMER NAME	: ALS Laboratory Group (Thailand) Co., Ltd. [บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด]		
EQUIPMENT NAME	: THC Analyzer		
MANUFACTURER	: HORIBA	MODEL	: APHA-370
SERIAL NO	: U430GTHB		
STANDARD GAS CONCENTRATION (PPM) (CH4)	: 506.1 PPM	CYLINDER NO	: CC734373
CYLINDER PRESSURE (psig)	: 1,600 PSI	CERTIFIED DATE	: 12/05/2020
CERTIFIED BY	: AIRGAS	EXPIRED DATE	: 12/05/2028

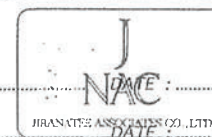
TEST RESULTS

POINT NO	TEST RESULTS						
	IDEAL	ACTUAL CH4	ERROR CH4	%ERROR CH4	ACTUAL THC	ERROR THC	%ERROR THC
ZERO	0.00	0.00	0.00	-	0.00	0.00	-
1	10.00	10.15	0.15	1.50	10.21	0.21	2.10
2	20.00	20.30	0.30	1.50	20.10	0.10	0.50
3	30.00	30.29	0.29	0.97	30.33	0.33	1.10
4	40.00	40.00	0.00	0.00	40.00	0.00	0.00
AVERAGE (%)				0.99			0.93



REVIEW BY: Thanida L.
APPROVED BY: D. [Signature]
NEXT CAL DATE: 25/07/2025

CALIBRATED BY: [Signature] DATE: 25/7/27
CHECKED BY: [Signature] DATE: 25/4/24



ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการหลังการขาย โทร 02-668-0812 # 15,16 , E-Mail : Engineer@jirantee.com
เลขที่ 63/14-15,67/35-36 ถนนเพชรเกษม 7,7/1 แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพฯ 10600 โทร 02-680812-13 โทรสาร 02-668-1889

CUSTOMER NAME : ALS Laboratory Group (Thailand) Co., Ltd. (บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด)
EQUIPMENT NAME : THC Analyzer
MANUFACTURER : HORIBA MODEL : APHA-370 SERIAL NO. : U430GTHB

TEST VALUES

NO.	THC Analyzer (APHA - 370)	UNIT	BEFORE	AFTER
1	Signal (CH4)	mV	35.60	35.80
2	Signal (THC)	mV	38.80	39.20
3	Detector	Temp °C, Standard Value : Ambient temp.(5°C to 15°C) Pressure kPa, Standard Value : (Ambient/1013x100-20)±4kPa	46.00 69.30	46.90 69.30
4	Ambient	kPa current atmospheric pressure	100.30	100.30
5	Purifire	°C, Standard Value : 390 °C to 430 °C kPa, Normal value : 8 kPa to 25 kPa	420.00 9.80	420.50 9.80
6	NMHC	°C, Standard Value : 230 °C to 260 °C	244.90	244.80
7	DC 24 V	V, Standard Value : 24 V ± 0.5 V	24.00	24.00
8	DC 5 V	V, Standard Value : 5 V ± 0.5 V	5.00	5.00
9	Bypass (Optional)	L/min, Normal value : 0.9 L/min ± 0.3 L/min	-	-
10	Over Flow (Optional)	L/min, Standard Value : 0.8 L/min or More	-	-
11	CH4 Sampling Reading	PPM	2.93	2.03
12	NMHC Sampling Reading	PPM	0.25	0.11
13	THC Sampling Reading	PPM	3.18	2.13
14	Zero Gas CH4/THC	PPM	0.13/0.18	0.00/0.00
15	Span Gas	PPM	56.19/56.43	40.00/40.00
16	Gas H2	20 PSI	20	20

Remark : Reference EX-EN-017-56 , Ambient HC Monitor APHA-370 Operation Manual Page #81

Remark : (Ambient temperature = 5°C to 40°C)

อาการที่ตรวจพบ

- Air Filter สกปรกและเสื่อมสภาพ , Filter Spooonge สกปรกและเสื่อมสภาพ

รายละเอียดการดำเนินการ

- ทำการ Service Maintenance ,เปลี่ยน Air Filter , 0.3 , เปลี่ยน Filter Spooonge , ทำ Calibration Zero/Span , Multipoint

ผลการดำเนินการ

- เครื่องมือสามารถดำเนินการตรวจวัดได้ค่าปกติ

CALIBRATED BY : จักรพงษ์

DATE : 25/7/67

CHECKED BY : สรยุทธ จิตนันท์

DATE : 25/7/67



ต้องการข้อมูลทางด้านเทคนิคเพิ่มเติม : เจ้าหน้าที่ฝ่ายบริการหลังการขาย , โทร 02-868-0812 # 15-16 , E-Mail : Engineer@jiranatee.com

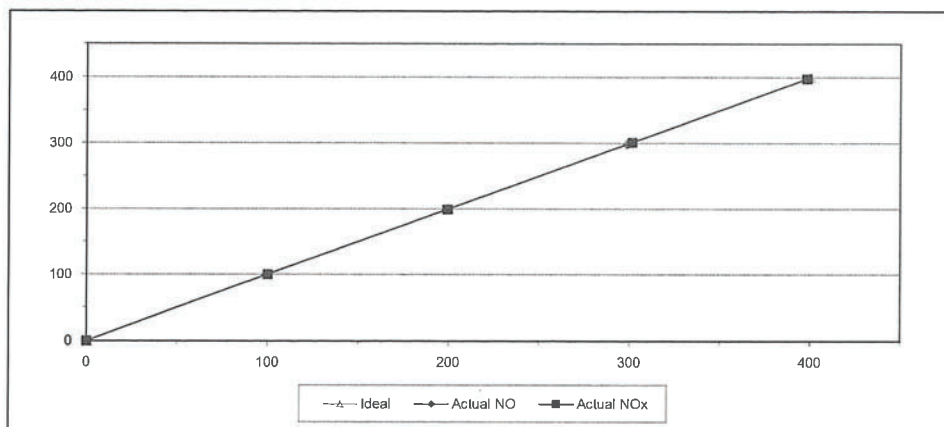
เลขที่ 63/14-15,67/35-36 ซอยเพชรเกษม 7,7/1 ถนนเพชรเกษม แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพฯ 10600 โทร 02-868-0812-13 โทรสาร 02-868-1889



MULTIPOINT CALIBRATION REPORT

Calibration Date	2-Jul-24	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	198.50	-1.50	-0.75	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	398.00	-2.00	-0.50
AVERAGE (%)				-0.48			-0.04



Calibrated By

(Mr.Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

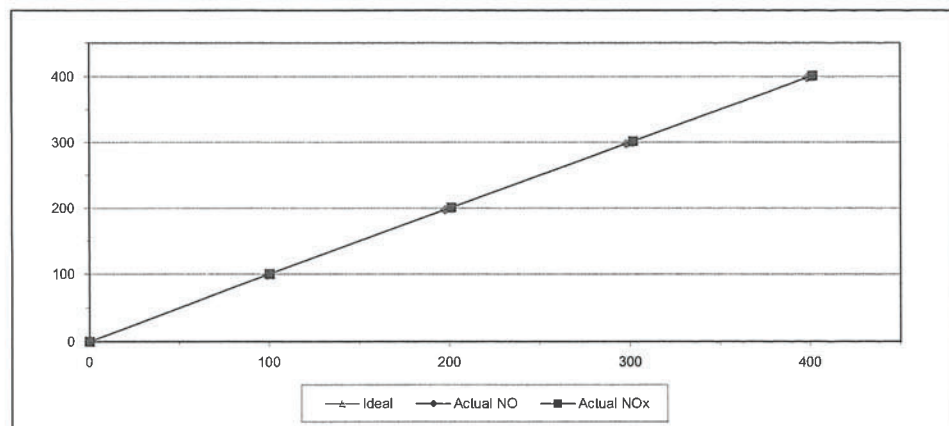
(Mr.Sarayuth Jitranont)
Assistant General Manager



MULTIPOINT CALIBRATION REPORT

Calibration Date	2-Jul-24	Equipment Name	NOx Analyzer
Manufacturer	HORIBA	Model	APNA-370
Serial No.	SEEAW53E	Equipment ID	RYG_FS0261
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	98.70	-1.30	-1.30	100.20	0.20	0.20
2	200.00	197.70	-2.30	-1.15	201.20	1.20	0.60
3	300.00	298.10	-1.90	-0.63	302.00	2.00	0.67
4	400.00	398.50	-1.50	-0.38	401.40	1.40	0.35
AVERAGE (%)				-0.67			0.38



Calibrated By

(Mr.Jirawut Sakam)
Field Environmental Scientist (3)

Approved By

(Mr.Sarayuth Jitranont)
Assistant General Manager

ALS Laboratory Group

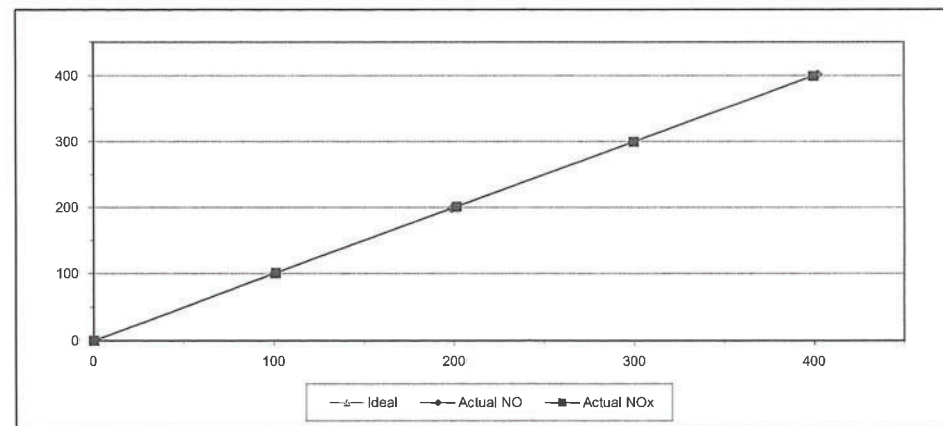
FORM NO.: F 06-056 REVISION NO.: - ISSUE DATE: 02/04/12



MULTIPOINT CALIBRATION REPORT

Calibration Date	2-Jul-24	Equipment Name	NOx Analyzer
Manufacturer	HORIBA	Model	APNA-370
Serial No.	H73KYD1M	Equipment ID	BKK_FS0797
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	99.70	-0.30	-0.30	101.00	1.00	1.00
2	200.00	198.60	-1.40	-0.70	201.30	1.30	0.65
3	300.00	299.10	-0.90	-0.30	299.70	-0.30	-0.10
4	400.00	402.10	2.10	0.53	399.50	-0.50	-0.13
AVERAGE (%)				-0.13			0.31



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

Certificate of System Qualification

GC-OQ + GCMS-OQ

System ID: RYG_EN0136
Organization Name: ALS Laboratory Group (Thailand) Co.Ltd.
Organization Location: 616/10, Moo 5, Tambol Mae Nam Khu, Pluak Daeng, Rayong,21140, Thailand
Date: January 5, 2024 10:53:24 AM
EQP Name: AgilentRecommended , AgilentRecommended
EQP Revision: GC.02.54, GCMS.02.54
Overall Qualification Status: Pass

REVIEW BY Chontichak
APPROVED BY D. M.
NEXT CAL. DATE 4/07/2025

CDS Logon Verification - GC

Logon: chonticha.khunkaew

Overall CDS Logon Verification - GC Test 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
Inlet Pressure: Setpoint 25.0 psi Actual 25 psi
Accuracy: 0.0 psi
Agilent Recommended: <= 1.2 psi

Date: January 5, 2024 10:53:24 AM
System ID: RYG_EN0136

Overall Inlet Pressure Accuracy Test Status

Pass

GC Oven Temperature Accuracy

Name: 7890
Setpoint Status: Pass
Zone: Oven
Setpoint/Actual
Temperature: 230.0 229 °C
Accuracy: -1.0 °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: 100.0 100.8 °C
Accuracy: 0.8 °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: 100.0 100.8167 °C
Stability: 0.1 °C
Agilent Recommended: <= 0.5

Overall GC Oven Temperature Stability Test Status

Pass

Date: January 5, 2024 10:53:24 AM
System ID: RYG_EN0136

Log Amp

Tested Combination1 Front SSL / External SQ

Name: 5977B

Setpoint Status: Pass

Overall Log Amp Test Status

Pass

RFPA

Tested Combination1 Front SSL / External SQ

Name: 5977B

Setpoint Status: Pass

Amu: 1050 m/z Drift After Five Minutes: 6 mV RFPA Voltage: 509 mV

Agilent Recommended: ≥ -100 and ≤ 100 ≤ 1100

Overall RFPA Test Status

Pass

Tune EI

Tested Combination1 Front SSL / External SQ

Name: 5977B

Setpoint Status: Pass

Filament: 1

Setpoint Status: Pass

Filament: 2

Overall Tune EI Test Status

Pass

Scouting Run

Date: January 5, 2024 10:53:24 AM
System ID: RYG_EN0136

Tested Combination1 Front SSL / External SQ

Manual Injection

Name: Not applicable

Source: EI - Extractor

Setpoint Status: Completed

Injection Volume on Column: 1.0 μ L

Overall Scouting Run Status

Completed

Signal to Noise EI

Tested Combination1 Front SSL / External SQ

Name: 5977B

Source: EI - Extractor Filament: 1

Setpoint Status: Pass

Signal to Noise: 5113

Agilent Recommended: ≥ 1200

Source: EI - Extractor Filament: 2

Setpoint Status: Pass

Signal to Noise: 4456

Agilent Recommended: ≥ 1200

Overall Signal to Noise EI Test Status

Pass

NOTE: This test's 2 comment(s) and 3 deviation(s) are available in the Attachments section.

Date: January 5, 2024 10:53:24 AM
System ID: RYG_EN0136

Instrument Details

Purpose
This section describes the as found system configuration.

Details

System	
System ID	RYG_EN0136
Manufacturer	Agilent Technologies
Name	7890
Flow Data Input	Manual Data
Temperature Data Input	Manual Data or Other Data Logging
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	CN16463238
Firmware Revision	B.02.04.3
Component ID/Asset No.	081117000236
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	5977B
Model Number	G7077B
Serial Number	US1701M008
Firmware Revision	5977 6.00.34
High Vacuum System	Turbo Pump
Scouting Run Standard	OFN Std
Component ID/Asset No.	081117000236
MS EI Source 1	
Manufacturer	Agilent Technologies
Source Type	EI - Extractor
Number of filaments	2

Electronic Signature

Purpose

This signature page was created and published because the ACE sign-off action was executed, which is valid for the entire document, including attachments. The ACE sign-off is an electronic signature that requires two distinct identification components: unique username and personal password. The Agilent representative who has delivered this service understands the meaning and legal status of an electronic signature. As a trained official operator, the Agilent representative has a unique password and logon to access ACE and electronically sign this document. (Other e-signatures can be applied to this document using a Document Content Management or other suitable method defined in your data access and control procedures.)

Details

Full Name of Signer: Eaknarin Puangsopa

Logged On User Name: eaknarin_puangsoa@agilent.com

Signature Creation Date: January 5, 2024

Reason for Signature: Executed protocol and published this original version of document

Regulatory Disclaimer

This document provides a protocol to verify and record instrument configuration and evidence of proper operation. It has been prepared from our interpretation of applicable regulations as well as industry best practices. The document is designed to provide an important component of a complete compliance package. Validation depends upon many factors and use of this protocol alone does not assure compliance. Agilent Technologies makes no promises or representations as to its sufficiency for any specific regulatory program.

Warranty

Agilent Technologies makes no warranty of any kind to this material, including but not limited to, the implied warranties or merchantability and fitness for a particular purpose. Agilent Technologies shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 4, 2024 10:37:31 AM	Audit	SessionCreated	Session	None
January 4, 2024 10:37:31 AM	Start	Configuration	Session	None
January 4, 2024 10:37:31 AM	Audit	Enrollment	Licensing	User is FieldEngineer and does not require an unlock code
January 4, 2024 10:39:29 AM	Audit	EqpLoaded	Session	EQP details for primary technique [Gc] - File path: (ProtocolPacks/Gc/Configurations/02.54/Gc.02.54.eqp), EQP File Name: [Gc.02.54.eqp], EQP Name: [AgilentRecommended], Protocol Revision [Gc.02.54] EQP details for hyphenated technique [GcMs] - File path: [ProtocolPacks/GcMs/Configurations/02.54/GcMs.02.54.eqp], EQP File Name: [GcMs.02.54.eqp], EQP Name: [AgilentRecommended]
January 4, 2024 10:39:40 AM	End	Configuration	Session	None
January 4, 2024 10:39:44 AM	Start	Qualification	Session	OQ
January 4, 2024 10:39:44 AM	Start	Execution	CDS Logon Verification - GC - 7890: - Qualitative test	None
January 4, 2024 10:46:00 AM	End	Execution	CDS Logon Verification - GC - 7890: - Qualitative test	Run Count : 1

User Name: eaknarin_puangsoa
Report Generated by Hostname: ASRYGWX074

System Id: RYG_EN0136
Print Date: January 5, 2024 10:53:25 AM

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 4, 2024 10:46:05 AM	Start	Execution	System Inspection and Basic Safety and Operation - 7890: - Qualitative Test - No setpoints associated	None
January 4, 2024 10:48:18 AM	End	Execution	System Inspection and Basic Safety and Operation - 7890: - Qualitative Test - No setpoints associated	Run Count : 1
January 4, 2024 10:46:22 AM	Start	Execution	Inlet Pressure Accuracy - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
January 4, 2024 10:48:52 AM	End	Execution	Inlet Pressure Accuracy - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
January 4, 2024 10:48:54 AM	Start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
January 4, 2024 10:51:05 AM	Audit	Data	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
January 4, 2024 10:51:08 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
January 4, 2024 10:51:43 AM	Start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
January 4, 2024 10:58:45 AM	Audit	Data	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry

Page 2 / 7

User Name: eaknarin_puangsoa
Report Generated by Hostname: ASRYGWX074

System Id: RYG_EN0136
Print Date: January 5, 2024 10:53:25 AM

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 4, 2024 10:58:46 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
January 4, 2024 10:58:59 AM	Start	Execution	GC Oven Temperature Stability - 7890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	None
January 4, 2024 11:23:26 AM	Audit	Data	GC Oven Temperature Stability - 7890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	Manual Data Entry
January 4, 2024 11:23:29 AM	End	Execution	GC Oven Temperature Stability - 7890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	Run Count : 1
January 4, 2024 11:23:35 AM	Start	Execution	Log Amp - 5977B SQ: - Source: EI - Extractor	None
January 4, 2024 11:43:23 AM	End	Execution	Log Amp - 5977B SQ: - Source: EI - Extractor	Run Count : 1
January 4, 2024 11:43:26 AM	Start	Execution	RFPA - 5977B SQ: - Source: EI - Extractor	None
January 4, 2024 11:53:23 AM	End	Execution	RFPA - 5977B SQ: - Source: EI - Extractor	Run Count : 1
January 4, 2024 11:53:28 AM	Start	Execution	Tune EI - 5977B SQ: - Source: - EI - Extractor Filament 1 (Qualitative - No setpoints associated)	None
January 4, 2024 1:37:26 PM	End	Execution	Tune EI - 5977B SQ: - Source: - EI - Extractor Filament 1 (Qualitative - No setpoints associated)	Run Count : 1
January 4, 2024 1:37:29 PM	Start	Execution	Tune EI - 5977B SQ: - Source: - EI - Extractor Filament 2 (Qualitative - No setpoints associated)	None

Page 3 / 7

User Name: eaknarin_puangsoa
Report Generated by Hostname: ASRYGWX074

System Id: RYG_EN0136
Print Date: January 5, 2024 10:53:25 AM

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 4, 2024 1:48:59 PM	End	Execution	Tune EI - 5977B SQ: - Source: - Run Count: 1 EI - Extractor Filament 2 (Qualitative - No setpoints associated)	
January 4, 2024 1:49:02 PM	Start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None
January 4, 2024 2:20:35 PM	Audit	AccClosed	Session	None
January 5, 2024 8:28:16 AM	Audit	AccRestarted	Session	None
January 5, 2024 8:28:18 AM	Audit	SessionReloaded	Session	None
January 5, 2024 8:28:29 AM	Start	Qualification	Session	OQ
January 5, 2024 8:28:29 AM	Start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None
January 5, 2024 9:21:29 AM	Audit	Data	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	Data files Path : D:\OQ2024\scout1.D
January 5, 2024 9:21:53 AM	End	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	Run Count: 1
January 5, 2024 9:21:56 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	None

Page 4 / 7

Date: January 5, 2024 10:53:24 AM
System ID: RYG_EN0136

User Name: eaknarin_puangsoa
Report Generated by Hostname: ASRYGWX074

System Id: RYG_EN0136
Print Date: January 5, 2024 10:53:25 AM

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 5, 2024 9:25:39 AM	End	Qualification	Session	OQ
January 5, 2024 9:25:39 AM	Start	Reporting	Session	None
January 5, 2024 9:27:46 AM	End	Reporting	Session	None
January 5, 2024 9:27:46 AM	Start	Qualification	Session	OQ
January 5, 2024 9:27:46 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	None
January 5, 2024 9:33:18 AM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Data files Path : D:\OQ2024\SN_F1.D
January 5, 2024 9:45:22 AM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Run Count: 1
January 5, 2024 9:45:32 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
January 5, 2024 9:56:15 AM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\OQ2024\SN_F2.D
January 5, 2024 10:00:19 AM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Run Count: 1

Page 5 / 7

Date: January 5, 2024 10:53:24 AM
System ID: RYG_EN0136

User Name: eaknarin_puangsoapa

System Id: RYG_EN0136

Report Generated by Hostname: ASRYGWX074

Print Date: January 5, 2024 10:53:25 AM

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 5, 2024 10:03:53 AM	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Deviation filed for Run Count : 1
January 5, 2024 10:03:53 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
January 5, 2024 10:13:48 AM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\OQ2024\SN_F02.D
January 5, 2024 10:17:58 AM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Run Count : 2
January 5, 2024 10:22:04 AM	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Deviation filed for Run Count : 2
January 5, 2024 10:22:04 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
January 5, 2024 10:22:15 AM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\OQ2024\SN_F02.D
January 5, 2024 10:25:37 AM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Run Count : 3

Page 6 / 7

User Name: eaknarin_puangsoapa

System Id: RYG_EN0136

Report Generated by Hostname: ASRYGWX074

Print Date: January 5, 2024 10:53:25 AM

ALS_OQ_RYG_EN0136 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
January 5, 2024 10:29:11 AM	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Deviation filed for Run Count : 3
January 5, 2024 10:29:11 AM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
January 5, 2024 10:42:05 AM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\OQ2024\SN_F002.D
January 5, 2024 10:46:34 AM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Run Count : 4
January 5, 2024 10:46:41 AM	End	Qualification	Session	OQ
January 5, 2024 10:46:41 AM	Start	Reporting	Session	None
January 5, 2024 10:50:27 AM	Audit	Reporting	Session	Report Generated : Certificate
January 5, 2024 10:51:07 AM	Audit	Reporting	Session	Report Generated : Report
January 5, 2024 10:51:29 AM	Audit	Reporting	Session	Report Generated : Certificate
January 5, 2024 10:52:00 AM	Audit	Reporting	Session	Report Generated : Report

Page 7 / 7



JIRANATEE ASSOCIATES CO., LTD.

Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd Wathapra, Bangkokkai,
Bangkok 10600 (Thailand)
Tel: +6608680812
Mobile: +66863999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department.



Certificate Number

CWS-017-67

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Cup anemometer
MANUFACTURER : Navalynx
MODEL/TYPE : Sensor: WS-02F
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: WSD-A5912
Data logger: A5912
ID NUMBER : RYG_FS0611
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 ± 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 (24.0) °C, (44.0) %RH and (1003.0) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:
☒ Mr. Sorawit Thachalad
☐ Miss Jittaporn Lertsomphol



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 Ratio² to¹

Calibration procedure:

The Cup anemometer was calibrated against Standard air velocity transducer model: 8455-12 and pitot tube with precision differential pressure meter model: DPM2500 in an close test-section of Eiffel-type wind tunnel with 900 cm² cross test section area. The WI-CL-007 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.

Traceability:

This certificate provides a traceability of The measurement to 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: MW-0007-24 and MW-0055-23

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'

Mr. Sorawit Thachalad
26/12/26

Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

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_{UUC} (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
4.094	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	0.1	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 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 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

: Novolyne

MODEL/TYPE

: Sensor: WS-02F
Data logger: 110-WS-25DL-D

SERIAL NUMBER

: Sensor: WSD-A5912
Data logger: A5912

ID NUMBER

: RYG_FS0611

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 ± 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 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 Thachalad
☐ Miss Jitraporn Lertsomphol



Approved signatory:

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 ² to ¹

Calibration procedure:

The wind direction sensor was calibrated against Standard Rotary Encoder model: AX4009TS-DM04-P3-S-U0 in an close test-section of Eiffel-type wind tunnel with 900 cm² cross test section area. The WI-CL-008 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.

Traceability:

This certificate provides a traceability of the measurement to 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: 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-017-67

Page 2 of 2 Pages

MEASUREMENT RESULTS ⁵

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 _{std}	D ¹ _{look}	Error	U (k=2)
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
5.01	0.000	0	0	0.80
	45.000	43	-2	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	271	1	0.80
	315.000	318	3	0.80

Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

¹ Direction of standard

¹ Direction of Unit Under Calibration

End of Certificate of Calibration



CERTIFICATE OF CALIBRATION

Certificate No. : CPR-007-67

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-A5912
Data logger: A5912
ID NUMBER : RYG_FS0611
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

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

1. Calibration effort for calibration sequence B

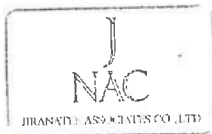
2. The UUC* was installed in vertical orientation above reference standard instrument and center of UUC* was used as the reference level.

3. Calibration conditions:

4. Condition : ☒ Normal ☐ Abnormal
Pressure transmitting medium : Air
 p_1 (20°C, 1 bar) : 1.19 kg/m³
 H_{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 Jitraporn Lertsomphol



Approved signatory
Mr. Parinya Booncharoen
Calibration Department Manager

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 : Novalynx
MODEL/TYPE : 110-WS-25DL-D
SERIAL NUMBER : A5912
ID NUMBER : RYG_FS0611
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 ± 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-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 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: 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 Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoornmit

Approved signatory:
Mr. Parinya Booncharoen
Calibration Department Manager

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





JIRANATEE ASSOCIATES CO., LTD.

Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Peichkasem 7,7/1, Rd. Watthapra, Bangkokya,
Bangkok 10600(Thailand)
Tel: +6608680812
Mobile: +66863999458
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSG-TIS-TIS 17025
CALIBRATION 0367

Relative humidity and Air Temperature measurement laboratory
Calibration services department.

CERTIFICATE OF CALIBRATION

Certificate No. : CRT-016-67

Page 1 of 2 Pages

MEASUREMENT ITEM MANUFACTURER MODEL/TYPE

: Relative humidity with data logger

: Novalynx

: Data Logger: 110-WS-25DL-D

Sensor: HMP60

SERIAL NUMBER

: Data Logger: AS912

Sensor: U3911247

ID NUMBER

: RYG_FS0611

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 ± 3.0 °C

Relative Humidity : 55.0 ± 15.0 %RH

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 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'

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 Ruangrumpai Phoommit



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager



JIRANATEE ASSOCIATES CO., LTD.

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.

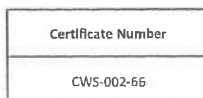
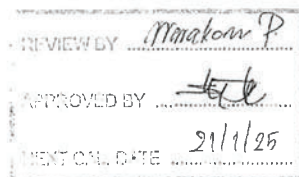
Calibration Range: 20%RH to 80%RH

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





CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER

MODEL/TYPE

SERIAL NUMBER

ID NUMBER

CONDITION AS-RECEIVED

CUSTOMER

: Cup anemometer
: Novallux
: Sensor: WS-02F
Data logger: 110-WS-25DL-D
: Sensor: WSD-A5816
Data logger: A5816
: RYG_FS0545
: 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: 8455-12 and pitot tube with precision differential pressure meter model: DPM2500 in an close test-section of Eiffel-type wind tunnel with 900 cm² cross test section area. The WI-CL-007 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.

Traceability:

This certificate provides a traceability of The measurement to 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: MW-0052-21 and MW-0066-22

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 : 11 Jul 2023
MEASUREMENT DATE : 21 Jul 2023
ISSUE DATE : 21 Jul 2023

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
Win 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 (23.9) °C, (45.7) %RH and (1008.2) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol



Approved signatory:

[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 ² to ¹

Certificate Number

CWS-002-66

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 and above 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 40 mm and 300 mm respectively away from wind tunnel nozzle, UUC was installed at center of the 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)
1.023	23.80	23.90	0.8	-0.2	0.31
2.078	24.00	23.90	1.8	-0.2	0.31
3.021	23.78	23.90	2.8	-0.2	0.31
4.148	23.92	23.90	3.9	-0.2	0.31
5.00	23.60	23.90	4.8	-0.2	0.31
5.99	23.68	23.90	5.8	-0.2	0.31
7.03	23.50	23.90	6.8	-0.2	0.31
8.16	23.60	23.90	7.9	-0.3	0.31
9.08	23.50	23.90	8.9	-0.2	0.31
10.06	23.78	23.90	9.8	-0.3	0.31
11.13	23.50	23.90	10.9	-0.2	0.31
12.11	23.78	23.90	12.0	-0.1	0.31
13.16	23.50	23.90	12.9	-0.3	0.31
14.21	23.66	23.90	14.0	-0.2	0.31
15.18	23.50	23.90	15.0	-0.2	0.31
16.26	23.58	23.90	16.0	-0.3	0.31

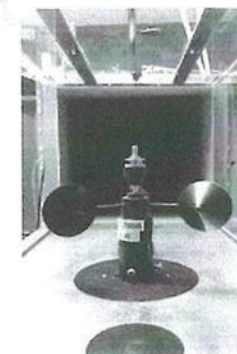
Remark:

⁵ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

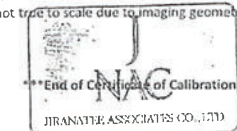
⁶ Velocity of standard

⁷ Velocity of Unit Under Calibration

PHOTO OF CALIBRATION SET-UP



Calibration set-up of the cup anemometer calibration in the wind tunnel of 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 Number

CWD-002-66

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM : Wind Direction Sensor
MANUFACTURER : Naualynx
MODEL/TYPE : Sensor: WS-02F
Data logger: 110-WS-25DL-D
SERIAL NUMBER : Sensor: WSD-AS816
Data logger: AS816
ID NUMBER : RYG_F50545
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.

Calibration procedure:
The wind direction sensor was calibrated against Standard Rotary Encoder model: AX4009TS-DM04-P3-S-U0 in an close test-section of Eiffel-type wind tunnel with 900 cm² cross test section area. The WI-CL-008 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.

Traceability:
This certificate provides a traceability of The measurement to 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: DA-0043-22

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 : 11 Jul 2023
MEASUREMENT DATE : 21 Jul 2023
ISSUE DATE : 21 Jul 2023

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 : 1010.1 ± 10 hPa

PLACE OF CALIBRATION : Eiffel-type wind tunnel of Jiranatee Associates Co., Ltd.

CALIBRATION CONDITION : Wind tunnel cross-section area¹ 900 cm²
Win 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 (23.8)°C, (46.9) %RH and (1012.4) hPa.

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibrated by:
☒ Mr. Sorawit Thachalad
☐ Miss Jittraporn Lertsomphol

Approved signatory: 
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 ² to ¹

Certificate Number

CWD-002-66

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 _{std}	D _{unc}	Error	U (k=2)
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
5.00	45.000	42	-3	1.0
	90.000	87	-3	1.0
	135.000	133	-2	1.0
	180.000	181	1	1.0
	225.000	229	4	1.0
	270.001	273	3	1.0
	315.000	317	2	1.0
	360.000	359	-1	1.0

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-038-66
Page 1 of 2

Equipment Name: Data Logger with Temperature sensor
Manufacturer: Novalynx
Model: 110-WS-25DL-D
Serial No.: A5816
ID No.: RYG_FS0545

Customer
Name: ALS laboratory group (Thailand) Co., Ltd.
Address: 104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Suan Luang, Khet Suan Luang, Bangkok
10250 Thailand.

Reference Used During Calibration

1. Standard Temperature Probe Model: STS-100 A500,
Serial No.: 667682-09, Due date: 28 Mar 2024
2. Digital Temperature Indicator Model: DTI-1000-A MK
II, Serial No.: 671407-00591 Due date: 22 July 2023

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.

Received date: 11 Jul 2023
Calibration date: 21 Jul 2023
Issue date: 21 Jul 2023

Calibration Condition

Temperature: (23±3) °C
Relative Humidity: (55±15)%

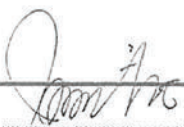
Traceability

The measurement results are traceable to the
international system of units (SI) through National
Institute of Metrology Thailand (NIMT) Certificate
number: TT-0038-23, Certificate number: ER-0092-
22

Noted: The certificate is valid only to the item calibrated on date and place of calibration.

Calibrated by
☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved Signatory: 
Mr. Parinya Booncharoen
Calibration Department Manager

Certificate No. : CDT-038-66
Page 2 of 2

Result of Calibration:- ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20-40 °C

Function:

This equipment was connected with temperature sensor Model: HMP60 S/N: T2320595.

Dimension : Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.060	19.6	-0.5	0.099
70	25.055	24.6	-0.4	0.14
70	30.050	29.7	-0.4	0.099
70	35.043	34.5	-0.5	0.099
70	40.036	39.5	-0.5	0.099

UUC* : Unit Under Calibration

The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor k=2
providing a level of confidence of approximately 95%.

*** End of Certificate ***





63/14-15,67/35-36, Soi Petchkasem7,7/1, Petchkasem Rd,
Watthapra, Bangkokyai,Bangkok 10600 Thailand.
Tel: (66) 02-8680812#13 Fax: (66) 02-8680860 www.jiranatee.com

CERTIFICATE OF CALIBRATION

Calibration No. : RH-02072023
Page 1 of 1 Pages

Measurement Item : Relative humidity with data logger
Manufacturer : Novalynx
Model/Type : 110-WS-25DL-D
Serial Number : A5816
ID No. : RYG_FS0545
Customer : ALS laboratory group (Thailand) Co., Ltd.
: 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Suan Luang, Khel Suan Luang, Bangkok
10250 Thailand.

Environmental Condition:

The measurement was carried out in an ambient temperature of (25±3)°C, and relative humidity of (50±15)%.

Measurement Method:

Unit Under Calibration (UUC) was calibrated by comparison method with standard chilled mirror hygrometer model: 1860-3 in the humidity generator chamber to determine the errors.

Traceability:

This instrument was calibrated using standard equipment whose accuracy is traceability through National Institute of Standards and Technology to the international system of units (SI) via MCS Calibration, Inc. Certificate number: 20926-601. Due date: Sep 26, 2024.

Measurement Date : Jul 21, 2023
Issued Date : Jul 21, 2023

Measurement Results:

This equipment was connected with Indoor air quality probe and Displayed (UR) on display. Model: HMP60, Serial number: T2320695.

Calibration was performed in the range of 20%RH to 80%RH

The results of calibration are reported in table below.

Determined (%RH)	Standard (Reading) (%RH)	UUC (Reading) (%RH)	Error (%RH)	Uncertainty ±(%RH)
20	20.05	17.5	-2.6	0.52
50	50.23	46.5	-3.7	0.51
80	80.25	75.5	-4.8	0.51

Performed by

- ☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved Signatory:

Mr. Parinya Booncharoen,
Calibration Department Manager

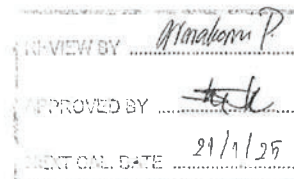


JIRANATEE ASSOCIATES CO.,LTD.

Jiranatee Associates Co.,Ltd
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd.Watthapra, Bangkokyai,
Bangkok 10600 (Thailand)
Tel: +6608680812
Mobile: +6663999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department.



Certificate Number

CWS-001-66

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM

MANUFACTURER
MODEL/TYPE

SERIAL NUMBER

ID NUMBER
CONDITION AS-RECEIVED
CUSTOMER

Cup anemometer
: Novalynx
: Sensor: WS-02F
Data logger: 110-WS-25DL-D
: Sensor: WSD-A5652
Data logger: A5652
: RYG_FS0544
: Used item
: ALS laboratory group (Thailand) Co., Ltd.
104 Phatthanakan 40, Phatthanakan Rd, Khwaeng Suan Luang,
Khet Suan Luang, Bangkok 10250 Thailand.

RECEIVED DATE : 11 Jul 2023
MEASUREMENT DATE : 21 Jul 2023
ISSUE DATE : 21 Jul 2023

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
Win 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, (41.7) %RH and (1009.1) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

- ☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol



Approved signatory:

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 ¹ to ¹

Certificate Number
CWS-001-66

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 and above 5 m/s to 30 m/s was calculated by a pitot tube with precision differential pressure meter which was installed 40 mm and 300 mm respectively away from wind tunnel nozzle, UUC was installed at center of the 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)
1.024	23.84	23.95	0.8	-0.2	0.31
2.079	24.08	23.95	1.8	-0.3	0.31
3.019	24.04	23.95	2.8	-0.2	0.31
4.150	24.12	23.95	3.9	-0.3	0.31
5.00	23.72	23.95	4.8	-0.2	0.31
5.99	23.88	23.95	5.8	-0.2	0.31
7.04	23.68	23.95	6.9	-0.2	0.31
8.15	23.64	23.95	7.9	-0.2	0.31
9.09	23.30	23.95	9.0	-0.1	0.31
10.05	23.40	23.95	9.9	-0.1	0.31
11.13	23.48	23.95	11.0	-0.2	0.31
12.11	23.40	23.95	12.0	-0.1	0.31
13.16	23.50	23.95	13.0	-0.1	0.31
14.22	23.40	23.95	14.0	-0.2	0.31
15.22	23.50	23.95	15.0	-0.2	0.31
16.27	23.44	23.95	16.1	-0.2	0.31

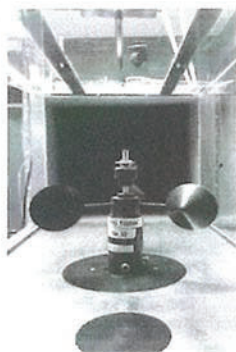
Remark:

¹ Calibration results only count for the tested circumstances and environmental conditions during which calibration took place

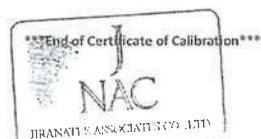
² Velocity of standard

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.



JIRANATEE ASSOCIATES CO., LTD.

Jiranatee Associates Co., Ltd
63/14-15, 67/35-36
Petchkasom 7,7/1, Rd, Watthapra, Bangkokyai,
Bangkok 10600 (Thailand)
Tel: +6608680812
Mobile: +66863999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367

Air speed measurement laboratory
Calibration services department.

Certificate Number
CWD-001-66

CERTIFICATE OF CALIBRATION

Page 1 of 2 Pages

MEASUREMENT ITEM MANUFACTURER MODEL/TYPE

: Wind Direction Sensor
: Novalynx
: Sensor: WS-02F
Data logger: 110-WS-25DL-D

SERIAL NUMBER

: Sensor: WSD-A5662
Data logger: A5662

ID NUMBER

: RYG_FS0544

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

: 11 Jul 2023

MEASUREMENT DATE

: 21 Jul 2023

ISSUE DATE

: 21 Jul 2023

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 CONDITION

: Wind tunnel cross-section area ¹	900	cm ²
: Win direction frontal area ²	129	cm ²
: Diameter of mounting pipe ³	-	mm
: Blockage ratio of test object ⁴	0.143	[-]

Preconditioning

: 24 hours at ambient conditions.

Measurement Condition

: The average values during measurement are (23.8)°C, (43.0) %RH and (1011.6) hPa.

TABULATION OF RESULTS:

The table on next page give the measured values.

Calibrated by:

☒ Mr. Sorawit Thachalad
☐ Miss Jitraporn Lertsomphol



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 Ratio² to¹

Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED
IN WRITING FROM THE LABORATORY

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'_{std}	D'_{unc}	Error	$U (k=2)$
m/s	Degree (°)	Degree (°)	Degree (°)	Degree (°)
5.00	45.000	41	-4	1.0
	90.000	87	-3	1.0
	135.000	132	-3	1.0
	180.000	180	0	1.0
	225.000	228	3	1.0
	270.000	273	3	1.0
	315.000	318	3	1.0
	360.000	359	-1	1.0

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 Number

CWD-001-66



63/14-15,67/35-36, Soi Petchkasem 7,7/1, Petchkasem Rd,
Wattthapra, Bangkokyai, Bangkok 10600 Thailand.
Tel: (66) 02-8680812#13 Fax: (66) 02-8680860 www.jiranatee.com



CERTIFICATE OF CALIBRATION

Certificate No. : CDT-037-66
Page 1 of 2

Equipment Name: Data Logger with Temperature sensor

Manufacturer: Novalynx

Model: 110-WS-25DL-D

Serial No.: A5662

ID No.: RYG_FS0544

Customer

Name: ALS laboratory group (Thailand) Co., Ltd.

Address: 104 Phatthanakan 40, Phatthanakan Rd.,
Khwaeng Suan Luang, Khet Suan Luang, Bangkok
10250 Thailand.

Received date: 11 Jul 2023

Calibration date: 21 Jul 2023

Issue date: 21 Jul 2023

Reference Used During Calibration

1. Standard Temperature Probe Model: STS-100 A500,
Serial No.: 667682-09, Due date: 28 Mar 2024

2. Digital Temperature Indicator Model: DTI-1000-A MK
II, Serial No.: 671407-00591 Due date: 22 July 2023

Calibration Condition

Temperature: (23±3)°C

Relative Humidity: (55±15)%

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-0038-23, Certificate number: ER-0092-22

Noted: The certificate is valid only to the item calibrated on date and place of calibration.

Calibrated by

- ☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved Signatory: _____

Mr. Parinya Booncharoen
Calibration Department Manager

Certificate No.: CDT-037-66
Page 2 of 2

Result of Calibration:- ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20-40 °C

Function:

This equipment was connected with temperature sensor Model: HMP60 S/N: T2320591.

Dimension : Diameter 12 mm. Length 80 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
70	20.060	19.6	-0.5	0.099
70	25.054	24.6	-0.5	0.099
70	30.050	29.7	-0.3	0.14
70	35.043	34.5	-0.5	0.099
70	40.036	39.5	-0.5	0.14

UUC* : Unit Under Calibration

The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

* End of Certificate *



CERTIFICATE OF CALIBRATION

Calibration No.: RH-01072023
Page 1 of 1 Pages

Measurement Item : Relative humidity with data logger
Manufacturer : Novalynx
Model/Type : 110-WS-25DL-D
Serial Number : A5662
ID No. : RY6_FS0544
Customer : ALS laboratory group (Thailand) Co., Ltd.
: 104 Phalthanahan 40, Phalthanahan Rd., Khwaeng Suan Luang, Khet Suan Luang, Bangkok
10260 Thailand.

Environmental Condition:

The measurement was carried out in an ambient temperature of (25±3)°C, and relative humidity of (50±15)%.

Measurement Method:

Unit Under Calibration (UUC) was calibrated by comparison method with standard chilled mirror hygrometer model: 1860-3 in the humidity generator chamber to determine the errors.

Traceability:

This instrument was calibrated using standard equipment whose accuracy is traceability through National Institute of Standards and Technology to the international system of units (SI) via MCS Calibration, Inc. Certificate number: 20926-601. Due date: Sep 26, 2024.

Measurement Date : Jul 21, 2023
Issued Date : Jul 21, 2023

Measurement Results:

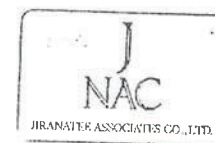
This equipment was connected with Indoor air quality probe and Displayed (UR) on display. Model: HMP60, Serial number: T2320591.


Calibration was performed in the range of 20%RH to 80%RH

The results of calibration are reported in table below.

Determined (%RH)	Standard (Reading) (%RH)	UUC (Reading) (%RH)	Error (%RH)	Uncertainty ±(%RH)
20	20.07	16.3	-3.8	0.51
50	50.23	45.0	-5.2	0.51
80	80.23	73.5	-6.7	0.51

Performed by
☐ Mr. Sorawit Thachalad
☒ Miss Jitraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit



Approved Signatory: 
Mr. Parinya Booncharoen,
Calibration Department Manager

Cert. No. : ACC24008
Pages : 1 of 3

Calibration Certificate

Equipment : SOUND CALIBRATOR
Manufacturer : RION
Model : NC-75
Serial No.: 35002736
ID No.: RYG_FS0496

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 : 19 JANUARY 2024
Calibration Date : 26 JANUARY 2024
Date of Issue : 29 JANUARY 2024

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. : ACC24008
Job No. : VC67AC0058
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-0010-23	07-FEB-24
Digital Multimeter	33461A	MY53220104	EEL.BP 30/0266	13-FEB-24
Digital Multimeter	33461A	MY53220076	EEL.BP 30/0267	13-FEB-24
Digital Multimeter	33461A	MY60024273	EEL.BP 31/0266	14-FEB-24
Programmable Attenuator	MAT-1070	62100114	EF-0011-23	08-FEB-24
Condenser Microphone	4180	2977900	AA-1001-23	14-FEB-24
Measuring Amplifier	NA-42KA1	34560495	AA-3002-23	14-FEB-24
Audio Analyzer	AVR-3360A	V744B6069	EF-0012-23	10-FEB-24

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

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
associates



Cert. No. : ACC24008
Job No. : VC67AC0058
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	93.98	-0.02	0.14	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1000.0	0.0	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Acceptance limit (%)
0.83	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 —

Signature



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

CALIBRATION CERTIFICATE

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phattankan, Khet Suan Luang, Bangkok 10250.

Calibrated at : Electrical and Electronic Standards Laboratory, Industrial Metrology and Testing Service Centre.

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Rd., A.Muang, Samutprakan 10280.

Instrument Calibrated :

Description : Sound Level Meter

Manufacturer : Rion

Model : NL-42

Serial No. : 00296517 (ID: RYG_FS0434)

Microphone : Type UC-52 No.135220

Preamplifier : Type NH-24 No.87527

Ambient Environment

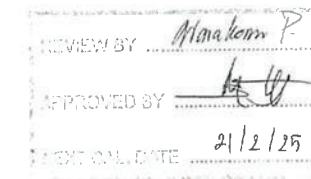
Temperature : $(23 \pm 3) ^\circ\text{C}$

Relative Humidity : $(50 \pm 15) \%$

Ambient Pressure : $(101.325 \pm 1.5) \text{ kPa}$

Standards used :

1. Band Pass Filter Wavetek 752A S/N 90010494.
2. Condenser Microphone Brüel&Kjær 4180 S/N 2889871.
3. Decade Attenuator Ando AL-205 S/N 00464602.
4. Function/Arbitrary Waveform Generator Agilent 33220A S/N MY44042668.
5. Digital Function Synthesizer NF Electronic Instruments DF-193A S/N 122037.
6. Digital Multimeter Fluke 8520A S/N 4985007.
7. Pistonphone Rion NC-72 S/N 00402446.
8. Measuring Amplifier Brüel&Kjær 2636 S/N 1537484.



Date of Receipt : 24 Jan. 2024

Date of Calibration : 22-28 Feb. 2024

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

1 / 9
Ph

FM.BLMTC.002 Rev.4

Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office

196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

9. Power Amplifier Brüel&Kjær 2706 S/N 1517650.
10. Speaker Tannoy Limited, Great Britain British Patent No. 215300.
11. Digital Multimeter Agilent 34401A S/N MY44005560.
12. Programmable Attenuator Tamagawa TPA-303A S/N 2212.

Calibration Procedure :

This instrument was calibrated by using calibration procedures no CP-102-02 and CP-102-03, which were based on IEC 61672-3 Electroacoustics - Sound Level Meters - Part 3 : Periodic tests (2013). These calibration procedures were related to the electrical and acoustic signal tests. The electrical signal test was carried out with the direct measurement method. The acoustic signal test was performed in an anechoic room with the comparison measurement method.

This instrument has been calibrated against standards maintained at the Electrical and Electronic Standards Laboratory (EEL), which are traceable to the International System of Units through the National Institute of Metrology (Thailand).

The information on actual reading is attached herewith and the uncertainty limits quoted refer to the measured values only.

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Date of Calibration : 22-28 Feb. 2024

2 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpal@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtcc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

1. Absolute Sensitivity

Reference Acoustic Signal (dB)	Measured value (dB)		Deviation value (dB)	Acceptance limit Class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
	Before adjust	After adjust				
113.96	114.3	113.9	-0.1	1.0	0.30	N/A

Note: The external calibration adjustment was firstly performed. The internal calibration adjustment was then completed at the display of 123.5 dB.

2. Self-generated noise

2.1 Normal test

Measured value (dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
19.7	0.10	N/A

2.2 The microphone of the sound level meter was replaced by electrical signal input device

Frequency Weighting	Measured value (dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
A-Weight	14.1	0.10	N/A
C-Weight	19.6	0.10	N/A
Flat	24.9	0.10	N/A

Date of Calibration : 22-28 Feb. 2024

3 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpal@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtcc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

3. Acoustical signal test of frequency weightings

Frequency (Hz)	Deviation from frequency response (dB)			Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
	A-weight	C-weight	Flat			
125	#DIV/0!	#DIV/0!	#DIV/0!	1.5	#DIV/0!	0.6
1 000	#DIV/0!	#DIV/0!	#DIV/0!	1.0	#DIV/0!	0.6
8 000	#DIV/0!	#DIV/0!	#DIV/0!	5.0	#DIV/0!	0.7

4. Electrical signal test of frequency weightings

Frequency (Hz)	Deviation from frequency response (dB)			Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
	A-weight	C-weight	Flat			
63	-0.1	-0.1	-0.1	2.0	0.20	0.6
125	-0.1	0.0	0.0	1.5	0.20	0.6
250	-0.1	0.0	0.0	1.5	0.20	0.6
500	-0.1	0.0	0.0	1.5	0.20	0.6
1 000	0.0	0.0	0.0	1.0	0.20	0.6
2 000	0.0	0.0	-0.1	2.0	0.20	0.6
4 000	0.0	0.0	0.0	3.0	0.20	0.6
8 000	0.0	0.0	0.0	5.0	0.20	0.7

Date of Calibration : 22-28 Feb. 2024

4 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpa@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtce@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

5. Long-term stability

Time	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Begin	94.0	0.0	0.3	0.10	0.1
End	94.0				

6. Frequency and time weightings at 1 kHz

6.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
A-weight	94.0	0.0	0.2	0.20	0.2
C-weight	94.0	0.0	0.2	0.20	0.2
Flat	94.1	0.1	0.2	0.20	0.2

6.2 Time weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Fast	94.0	0.0	0.1	0.20	0.2
Slow	94.0	0.0	0.1	0.20	0.2
Leq	94.0	0.0	0.1	0.20	0.2

Date of Calibration : 22-28 Feb. 2024

5 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpa@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtce@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

7. Level linearity on the reference level range

Anticipated value (dB)	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
137	137.0	0.0	1.1	0.30	0.3
136	136.0	0.0	1.1	0.30	0.3
135	135.0	0.0	1.1	0.30	0.3
133	133.0	0.0	1.1	0.30	0.3
132	132.0	0.0	1.1	0.30	0.3
131	131.0	0.0	1.1	0.30	0.3
130	130.0	0.0	1.1	0.30	0.3
129	129.0	0.0	1.1	0.30	0.3
124	124.0	0.0	1.1	0.30	0.3
119	119.0	0.0	1.1	0.30	0.3
114	114.0	0.0	1.1	0.30	0.3
109	109.0	0.0	1.1	0.30	0.3
104	104.0	0.0	1.1	0.30	0.3
99	99.0	0.0	1.1	0.30	0.3
94	94.0	0.0	1.1	0.30	0.3
89	89.0	0.0	1.1	0.30	0.3
84	84.0	0.0	1.1	0.30	0.3
79	79.0	0.0	1.1	0.30	0.3
74	74.0	0.0	1.1	0.30	0.3
69	69.0	0.0	1.1	0.30	0.3
64	63.9	-0.1	1.1	0.30	0.3
59	59.0	0.0	1.1	0.30	0.3

Date of Calibration : 22-28 Feb. 2024

6 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Sai 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chaluchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

7. Level linearity on the reference level range (cont.)

Anticipated value (dB)	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
54	53.9	-0.1	1.1	0.30	0.3
49	49.0	0.0	1.1	0.30	0.3
44	44.0	0.0	1.1	0.30	0.3
39	38.9	-0.1	1.1	0.30	0.3
34	33.9	-0.1	1.1	0.30	0.3
29	29.0	0.0	1.1	0.30	0.3
28	27.9	-0.1	1.1	0.30	0.3
27	26.9	-0.1	1.1	0.30	0.3
26	25.9	-0.1	1.1	0.30	0.3
25	24.9	-0.1	1.1	0.30	0.3

8. Level linearity including the level range control

At reference sound level on the reference level range

Range	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
30-130	94.0	94.0	0.0	1.1	0.30	0.3

Date of Calibration : 22-28 Feb. 2024

7 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Sai 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chaluchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

8. Level linearity including the level range control

At reference level at 5 dB greater than the under-range on a level range

Range	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
30-130	25	25.0	0.0	1.1	0.30	0.3

9. Tone burst response

Time Weighting	Toneburst Duration, Tb (ms)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Fast	200	126.0	0.0	±1.0	0.20	0.3
	2	108.9	-0.1	+1.0; -2.5	0.20	0.3
	0.25	100.0	0.0	+1.5; -5.0	0.20	0.3
Slow	200	119.5	-0.1	±1.0	0.20	0.3
	2	100.0	0.0	+1.0; -5.0	0.20	0.3

Date of Calibration : 22-28 Feb. 2024

8 / 9

The results relate only to the items tested/calibrated or value assigned
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 174/0167

10. Peak C sound level

Number of cycles in test signal	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Complete cycle	125.4	125.5	0.1	3.0	0.20	0.35
Positive half cycle	124.4	124.1	-0.3	2.0	0.20	0.35
Negative half cycle	124.4	124.1	-0.3	2.0	0.20	0.35

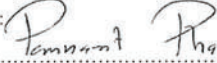
11. Overload indication

Measured value (dB)		Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Positive one-half cycle	Negative one-half cycle				
135.4	135.4	0.0	1.5	0.55	0.25

12. High-level stability

Time	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Begin	129.0	0.0	0.3	0.10	0.1
End	129.0				

Calibrated by :



(Mr. Pannasit Phasingsri)

Approved by :



Director

Electrical and Electronic Standards Laboratory

Industrial Metrology and Testing Service Centre

Date of Calibration : 22-28 Feb. 2024

Date of Issue : 29 Feb. 2024

Ref : 2011267012400347004

End of Certificate

9 / 9

The results relate only to the items tested/calibrated or value assigned
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

SITHIPORN ASSOCIATES CO.,LTD. CALIBRATION LABORATORY

451-451/1 Sirinthorn Rd., Bangbunru, Bangplud Bangkok 10700 THAILAND.
Tel.0-2435-8800 Fax.0-2433-1679 e-mail:cal-center@sithiphorn.com http://www.sithiphorn.com



Cert. No. : ACL23320
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-42/ Microphone UC-52 / Preamplifier NH-24
Serial No.: 00597167 / 179118 / 87525
ID No.: RYG_FS0437

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 \pm 3) °C
Pressure : (101.3 \pm 3) kPa
Relative Humidity : (50.0 \pm 20) %

Received Date : 11 OCTOBER 2023
Calibration Date : 19-20 OCTOBER 2023
Date of Issue : 24 OCTOBER 2023

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

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by based 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-0009-23	07-FEB-24
Waveform Generator	33511B	MY52302742	EF-0010-23	07-FEB-24
Digital Multimeter	33461A	MY53220104	EEL.BP 30/0266	13-FEB-24
Digital Multimeter	33461A	MY53220076	EEL.BP 29/0266	13-FEB-24
Digital Multimeter	34461A	MY60024273	EEL.BP 31/0266	14-FEB-24
Programmable Attenuator	MAT-1070	62100114	EF-0011-23	08-FEB-24
Condenser Microphone	4180	2977900	AA-1001-23	14-FEB-24
Measuring Amplifier	NA-42KAI	34560495	AA-3002-23	14-FEB-24

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

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
Pages : 3 of 8

Summary of Measurement Result :

Parameter	Pass	Fail	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	-	-	-	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

Note : Pass/Fail evaluation for each parameter,
will be considered together from the acceptance limit and the Maximum-permitted uncertainty of measurement.

T. Petu-

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
Pages : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.98)	93.9	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	Measured value (dB)
A - weight	11.2
C - weight	17.5
Flat	23.1

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	0.2	0.2	0.2	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	1.3	1.4	1.4	±5.0

T. Petu-

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
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	0.0	0.0	-0.1	±1.5
250	0.0	0.0	-0.1	±1.5
500	0.0	0.0	0.0	±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. Retan

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
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	133.0	0.0	± 1.1
132.0	132.0	0.0	± 1.1
131.0	131.0	0.0	± 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	63.9	-0.1	± 1.1
59.0	59.0	0.0	± 1.1
54.0	53.9	-0.1	± 1.1
49.0	48.9	-0.1	± 1.1
44.0	43.9	-0.1	± 1.1
39.0	38.9	-0.1	± 1.1
34.0	34.0	0.0	± 1.1
30.0	29.9	-0.1	± 1.1
29.0	28.9	-0.1	± 1.1
28.0	27.9	-0.1	± 1.1
27.0	26.9	-0.1	± 1.1
26.0	25.9	-0.1	± 1.1
25.0	24.9	-0.1	± 1.1

T. Retan

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
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	±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

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	133.1	0.1	±3.0
One	136.4	136.1	-0.3	±3.0

Number of cycle in test signal	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	133.0	133.1	0.1	±2.0
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

T. Petch

Continuation of Calibration Certificate

Cert. No. : ACL23320
Job No. : VC67AC0011
Pages : 8 of 8

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	89.6	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	±0.3

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



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

CALIBRATION CERTIFICATE

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phattankan, Khet Suan Luang, Bangkok 10250.

Calibrated at : Electrical and Electronic Standards Laboratory, Industrial Metrology and Testing Service Centre,

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Rd., A.Muang, Samutprakan 10280.

Instrument Calibrated :

Description : Sound Level Meter

Manufacturer : Rion

Model : NL-42

Serial No. : 00296516 (ID: RYG_FS0433)

Microphone : Type UC-52 No.180412

Preamplifier : Type NH-24 No.88182

Ambient Environment

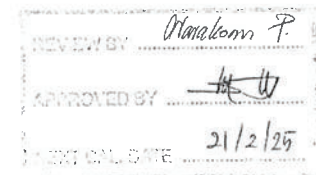
Temperature : $(23 \pm 3) ^\circ\text{C}$

Relative Humidity : $(50 \pm 15) \%$

Ambient Pressure : $(101.325 \pm 1.5) \text{ kPa}$

Standards used :

1. Band Pass Filter Wavetek 752A S/N 90010494.
2. Condenser Microphone Brüel&Kjær 4180 S/N 2889871.
3. Decade Attenuator Ando AL-205 S/N 00464602.
4. Function/Arbitrary Waveform Generator Agilent 33220A S/N MY44042668.
5. Digital Function Synthesizer NF Electronic Instruments DF-193A S/N 122037.
6. Digital Multimeter Fluke 8520A S/N 4985007.
7. Pistonphone Rion NC-72 S/N 00402446.
8. Measuring Amplifier Brüel&Kjær 2636 S/N 1537484.



Date of Receipt : 24 Jan. 2024

Date of Calibration : 22-28 Feb. 2024

1 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumatee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

9. Power Amplifier Brüel&Kjær 2706 S/N 1517650.

10. Speaker Tannoy Limited, Great Britain British Patent No. 215300.

11. Digital Multimeter Agilent 34401A S/N MY44005560.

12. Programmable Attenuator Tamagawa TPA-303A S/N 2212.

Calibration Procedure :

This instrument was calibrated by using calibration procedures no CP-102-02 and CP-102-03, which were based on IEC 61672-3 Electroacoustics - Sound Level Meters - Part 3 : Periodic tests (2013). These calibration procedures were related to the electrical and acoustic signal tests. The electrical signal test was carried out with the direct measurement method. The acoustic signal test was performed in an anechoic room with the comparison measurement method.

This instrument has been calibrated against standards maintained at the Electrical and Electronic Standards Laboratory (EEL), which are traceable to the International System of Units through the National Institute of Metrology (Thailand).

The information on actual reading is attached herewith and the uncertainty limits quoted refer to the measured values only.

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Date of Calibration : 22-28 Feb. 2024

2 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumatee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

1. Absolute Sensitivity

Reference Acoustic Signal (dB)	Measured value (dB)		Deviation value (dB)	Acceptance limit Class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
	Before adjust	After adjust				
113.96	114.1	113.9	-0.1	1.0	0.30	N/A

Note: The external calibration adjustment was firstly performed. The internal calibration adjustment was then completed at the display of 124.1 dB.

2. Self-generated noise

2.1 Normal test

Measured value (dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
18.9	0.10	N/A

2.2 The microphone of the sound level meter was replaced by electrical signal input device

Frequency Weighting	Measured value (dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
A-Weight	12.3	0.10	N/A
C-Weight	17.7	0.10	N/A
Flat	23.1	0.10	N/A

Date of Calibration : 22-28 Feb. 2024

3 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Sri 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakarn 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtce@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

3. Acoustical signal test of frequency weightings

Frequency (Hz)	Deviation from frequency response (dB)			Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
	A-weight	C-weight	Flat			
125	0.0	0.2	0.1	1.5	0.45	0.6
1 000	0.0	0.0	0.0	1.0	0.45	0.6
8 000	-0.3	-0.3	-0.3	5.0	0.45	0.7

4. Electrical signal test of frequency weightings

Frequency (Hz)	Deviation from frequency response (dB)			Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
	A-weight	C-weight	Flat			
63	-0.1	0.0	0.0	2.0	0.20	0.6
125	-0.1	0.0	0.0	1.5	0.20	0.6
250	0.0	0.0	0.0	1.5	0.20	0.6
500	0.0	0.0	0.0	1.5	0.20	0.6
1 000	0.0	0.0	0.0	1.0	0.20	0.6
2 000	0.0	0.0	0.0	2.0	0.20	0.6
4 000	0.0	0.0	0.0	3.0	0.20	0.6
8 000	0.0	0.0	0.0	5.0	0.20	0.7

Date of Calibration : 22-28 Feb. 2024

4 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Sri 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakarn 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtce@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

5. Long-term stability

Time	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
Begin	94.0	0.0	0.3	0.10	0.1
End	94.0				

6. Frequency and time weightings at 1 kHz

6.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
A-weight	94.0	0.0	0.2	0.20	0.2
C-weight	94.0	0.0	0.2	0.20	0.2
Flat	94.1	0.1	0.2	0.20	0.2

6.2 Time weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
Fast	94.0	0.0	0.1	0.20	0.2
Slow	94.0	0.0	0.1	0.20	0.2
Leq	94.0	0.0	0.1	0.20	0.2

Date of Calibration : 22-28 Feb, 2024

5 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Sri 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtcp@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

7. Level linearity on the reference level range

Anticipated value (dB)	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
137	137.1	0.1	1.1	0.30	0.3
136	136.1	0.1	1.1	0.30	0.3
135	135.1	0.1	1.1	0.30	0.3
133	133.1	0.1	1.1	0.30	0.3
132	132.1	0.1	1.1	0.30	0.3
131	131.0	0.0	1.1	0.30	0.3
130	130.0	0.0	1.1	0.30	0.3
129	129.0	0.0	1.1	0.30	0.3
124	124.0	0.0	1.1	0.30	0.3
119	119.0	0.0	1.1	0.30	0.3
114	114.0	0.0	1.1	0.30	0.3
109	109.0	0.0	1.1	0.30	0.3
104	104.0	0.0	1.1	0.30	0.3
99	99.0	0.0	1.1	0.30	0.3
94	94.0	0.0	1.1	0.30	0.3
89	89.0	0.0	1.1	0.30	0.3
84	84.1	0.1	1.1	0.30	0.3
79	79.0	0.0	1.1	0.30	0.3
74	74.0	0.0	1.1	0.30	0.3
69	69.0	0.0	1.1	0.30	0.3
64	64.0	0.0	1.1	0.30	0.3
59	59.0	0.0	1.1	0.30	0.3

Date of Calibration : 22-28 Feb, 2024

6 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Sri 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtcp@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL, BP. 173/0167

7. Level linearity on the reference level range (cont.)

Anticipated value (dB)	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
54	54.0	0.0	1.1	0.30	0.3
49	48.9	-0.1	1.1	0.30	0.3
44	44.0	0.0	1.1	0.30	0.3
39	38.9	-0.1	1.1	0.30	0.3
34	33.9	-0.1	1.1	0.30	0.3
29	28.8	-0.2	1.1	0.30	0.3
28	27.8	-0.2	1.1	0.30	0.3
27	26.9	-0.1	1.1	0.30	0.3
26	25.9	-0.1	1.1	0.30	0.3
25	24.8	-0.2	1.1	0.30	0.3

8. Level linearity including the level range control

At reference sound level on the reference level range

Range	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
30-130	94.0	94.0	0.0	1.1	0.30	0.3

Date of Calibration : 22-28 Feb. 2024

7 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Sol 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL, BP. 173/0167

8. Level linearity including the level range control

At reference level at 5 dB greater than the under-range on a level range

Range	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
30-130	25	25.0	0.0	1.1	0.30	0.3

9. Tone burst response

Time Weighting	Toneburst Duration, Tb (ms)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
Fast	200	126.0	0.0	± 1.0	0.20	0.3
	2	108.9	-0.1	+1.0; -2.5	0.20	0.3
	0.25	100.0	0.0	+1.5; -5.0	0.20	0.3
Slow	200	119.5	-0.1	± 1.0	0.20	0.3
	2	100.0	0.0	+1.0; -5.0	0.20	0.3

Date of Calibration : 22-28 Feb. 2024

8 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Sol 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 173/0167

10. Peak C sound level

Number of cycles in (test signal)	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Complete cycle	125.4	125.5	0.1	3.0	0.20	0.35
Positive half cycle	124.4	124.1	-0.3	2.0	0.20	0.35
Negative half cycle	124.4	124.1	-0.3	2.0	0.20	0.35

11. Overload indication

Measured value (dB)		Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Positive one-half cycle	Negative one-half cycle				
135.4	135.4	0.0	1.5	0.55	0.25

12. High-level stability

Time	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Begin	129.0	0.0	0.3	0.10	0.1
End	129.0				

Calibrated by :

(Mr. Pannasit Phasingsri)

Approved by :



Director

Electrical and Electronic Standards Laboratory

Industrial Metrology and Testing Service Centre

Date of Calibration : 22-28 Feb. 2024

Date of Issue : 29 Feb. 2024

Ref : 2011267012400347003

End of Certificate

9 / 9

The results relate only to the items tested/calibrated or value assigned

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : runpaig@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtcc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 171/0167

CALIBRATION CERTIFICATE

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.

Address : 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phattankan, Khet Suan Luang, Bangkok 10250.

Calibrated at : Electrical and Electronic Standards Laboratory, Industrial Metrology and Testing Service Centre.

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Rd., A.Muang, Samutprakan 10280.

Instrument Calibrated :

Description : Sound Level Meter

Manufacturer : Rion

Model : NL-42

Serial No. : 00296518 (ID: RYG_FS0431)

Microphone : Type UC-52 No.66239

Preamplifier : Type NH-24 No.34375

Standards used :

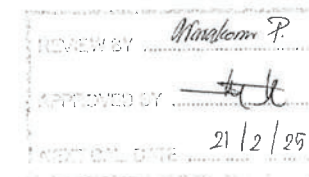
1. Band Pass Filter Wavetek 752A S/N 90010494.
2. Condenser Microphone Brüel&Kjær 4180 S/N 2889871.
3. Decade Attenuator Ando AL-205 S/N 00464602.
4. Function/Arbitrary Waveform Generator Agilent 33220A S/N MY44042668.
5. Digital Function Synthesizer NF Electronic Instruments DF-193A S/N 122037.
6. Digital Multimeter Fluke 8520A S/N 4985007.
7. Pistonphone Rion NC-72 S/N 00402446.
8. Measuring Amplifier Brüel&Kjær 2636 S/N 1537484.

Ambient Environment

Temperature : (23 ± 3) °C

Relative Humidity : (50 ± 15) %

Ambient Pressure : (101.325 ± 1.5) kPa



Date of Receipt : 24 Jan. 2024

Date of Calibration : 22-28 Feb. 2024

1 / 9

The results relate only to the items tested/calibrated or value assigned

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : runpaig@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtcc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 171/0167

9. Power Amplifier Brüel&Kjær 2706 S/N 1517650.
10. Speaker Tannoy Limited, Great Britain British Patent No. 215300.
11. Digital Multimeter Agilent 34401A S/N MY44005560.
12. Programmable Attenuator Tamagawa TPA-303A S/N 2212.

Calibration Procedure :

This instrument was calibrated by using calibration procedures no CP-102-02 and CP-102-03, which were based on IEC 61672-3 Electroacoustics - Sound Level Meters - Part 3 : Periodic tests (2013). These calibration procedures were related to the electrical and acoustic signal tests. The electrical signal test was carried out with the direct measurement method. The acoustic signal test was performed in an anechoic room with the comparison measurement method.

This instrument has been calibrated against standards maintained at the Electrical and Electronic Standards Laboratory (EEL), which are traceable to the International System of Units through the National Institute of Metrology (Thailand).

The information on actual reading is attached herewith and the uncertainty limits quoted refer to the measured values only.

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Date of Calibration : 22-28 Feb, 2024

2 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chaluchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 171/0167

1. Absolute Sensitivity

Reference Acoustic Signal (dB)	Measured value (dB)		Deviation value (dB)	Acceptance limit Class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
	Before adjust	After adjust				
113.96	114.3	113.9	-0.1	1.0	0.30	N/A

Note: The external calibration adjustment was firstly performed. The internal calibration adjustment was then completed at the display of 125.1 dB.

2. Self-generated noise

2.1 Normal test

Measured value (dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
20.2	0.10	N/A

2.2 The microphone of the sound level meter was replaced by electrical signal input device

Frequency Weighting	Measured value (dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
A-Weight	14.4	0.10	N/A
C-Weight	19.9	0.10	N/A
Flat	25.3	0.10	N/A

Date of Calibration : 22-28 Feb, 2024

3 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chaluchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 171/0167

3. Acoustical signal test of frequency weightings

Frequency (Hz)	Deviation from frequency response (dB)			Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
	A-weight	C-weight	Flat			
125	-0.1	0.2	0.1	1.5	0.45	0.6
1 000	0.0	0.0	0.0	1.0	0.45	0.6
8 000	-1.7	-1.7	-1.7	5.0	0.45	0.7

4. Electrical signal test of frequency weightings

Frequency (Hz)	Deviation from frequency response (dB)			Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
	A-weight	C-weight	Flat			
63	-0.1	-0.1	-0.1	2.0	0.20	0.6
125	-0.1	0.0	0.0	1.5	0.20	0.6
250	-0.1	0.0	0.0	1.5	0.20	0.6
500	-0.1	0.0	0.0	1.5	0.20	0.6
1 000	0.0	0.0	0.0	1.0	0.20	0.6
2 000	-0.1	0.0	-0.1	2.0	0.20	0.6
4 000	-0.1	0.0	0.0	3.0	0.20	0.6
8 000	0.0	0.0	0.0	5.0	0.20	0.7

Date of Calibration : 22-28 Feb. 2024

4 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtce@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL. BP. 171/0167

5. Long-term stability

Time	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
Begin	94.0	0.0	0.3	0.10	0.1
End	94.0				

6. Frequency and time weightings at 1 kHz

6.1 Frequency weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
A-weight	94.0	0.0	0.2	0.20	0.2
C-weight	94.0	0.0	0.2	0.20	0.2
Flat	94.1	0.1	0.2	0.20	0.2

6.2 Time weightings at 1 kHz

Frequency Weighting	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
Fast	94.0	0.0	0.1	0.20	0.2
Slow	94.0	0.0	0.1	0.20	0.2
Leq	94.0	0.0	0.1	0.20	0.2

Date of Calibration : 22-28 Feb. 2024

5 / 9

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BLMTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website: www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtce@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

7. Level linearity on the reference level range

Anticipated value (dB)	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
137	137.0	0.0	1.1	0.30	0.3
136	136.0	0.0	1.1	0.30	0.3
135	135.0	0.0	1.1	0.30	0.3
133	133.0	0.0	1.1	0.30	0.3
132	132.0	0.0	1.1	0.30	0.3
131	131.0	0.0	1.1	0.30	0.3
130	130.0	0.0	1.1	0.30	0.3
129	129.0	0.0	1.1	0.30	0.3
124	124.0	0.0	1.1	0.30	0.3
119	119.0	0.0	1.1	0.30	0.3
114	114.0	0.0	1.1	0.30	0.3
109	109.0	0.0	1.1	0.30	0.3
104	104.0	0.0	1.1	0.30	0.3
99	99.0	0.0	1.1	0.30	0.3
94	94.0	0.0	1.1	0.30	0.3
89	89.0	0.0	1.1	0.30	0.3
84	84.0	0.0	1.1	0.30	0.3
79	79.0	0.0	1.1	0.30	0.3
74	74.0	0.0	1.1	0.30	0.3
69	69.0	0.0	1.1	0.30	0.3
64	63.9	-0.1	1.1	0.30	0.3
59	59.0	0.0	1.1	0.30	0.3

Date of Calibration : 22-28 Feb. 2024

6 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpak@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10260, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mt@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

7. Level linearity on the reference level range (cont.)

Anticipated value (dB)	Measured Value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
54	53.9	-0.1	1.1	0.30	0.3
49	49.0	0.0	1.1	0.30	0.3
44	43.9	-0.1	1.1	0.30	0.3
39	39.0	0.0	1.1	0.30	0.3
34	33.9	-0.1	1.1	0.30	0.3
29	28.9	-0.1	1.1	0.30	0.3
28	27.9	-0.1	1.1	0.30	0.3
27	26.9	-0.1	1.1	0.30	0.3
26	25.9	-0.1	1.1	0.30	0.3
25	24.8	-0.2	1.1	0.30	0.3

8. Level linearity including the level range control

At reference sound level on the reference level range

Range	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (\pm dB)	Uncertainty (\pm dB)	Maximum-permitted uncertainty of measurement (\pm dB)
30-130	94.0	94.0	0.0	1.1	0.30	0.3

Date of Calibration : 22-28 Feb. 2024

7 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpak@tistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10260, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mt@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL-BP. 171/0167

8. Level linearity including the level range control

At reference level at 5 dB greater than the under-range on a level range

Range	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
30-130	25	25.0	0.0	1.1	0.30	0.3

9. Tone burst response

Time Weighting	Toneburst Duration, Tb (ms)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Fast	200	126.0	0.0	±1.0	0.20	0.3
	2	108.9	-0.1	+1.0; -2.5	0.20	0.3
	0.25	100.0	0.0	+1.5; -5.0	0.20	0.3
Slow	200	119.5	-0.1	±1.0	0.20	0.3
	2	100.0	0.0	+1.0; -5.0	0.20	0.3

Date of Calibration : 22-28 Feb. 2024

8 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : runpaigatistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Request No. 21-67/0232

MTC No. EEL-BP. 171/0167

10. Peak C sound level

Number of cycles in test signal	Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Complete cycle	125.4	125.5	0.1	3.0	0.20	0.35
Positive half cycle	124.4	124.1	-0.3	2.0	0.20	0.35
Negative half cycle	124.4	124.1	-0.3	2.0	0.20	0.35

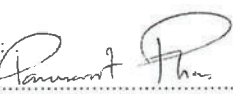
11. Overload indication

Measured value (dB)		Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Positive one-half cycle	Negative one-half cycle				
135.4	135.4	0.0	1.5	0.55	0.25

12. High-level stability

Time	Measured value (dB)	Deviated value (dB)	Acceptance limit class 2 (±dB)	Uncertainty (±dB)	Maximum-permitted uncertainty of measurement (±dB)
Begin	129.0	0.0	0.3	0.10	0.1
End	129.0				

Calibrated by :


(Mr. Pannasit Phasingsri)

Approved by :


(Mr. Pravee Klunypa)



Electrical and Electronic Standards Laboratory

Industrial Metrology and Testing Service Centre

Date of Calibration : 22-28 Feb. 2024

Date of Issue : 29 Feb. 2024

Ref : 2011267012400347001

End of Certificate

9 / 9

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.4

Head Office
35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : runpaigatistr.or.th Website:www.tistr.or.th

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

Cert. No. : ACL24082
Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-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,
KHWAENG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 \pm 3) °C
Pressure : (101.3 \pm 3) kPa
Relative Humidity : (50.0 \pm 20) %

Received Date : 11 JANUARY 2024
Calibration Date : 22-24 JANUARY 2024
Date of Issue : 24 JANUARY 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.

Cert. No. : ACL24082
Job No. : VC67AC0054
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 :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Cert. No.</u>	<u>Due Date</u>
Waveform Generator	33210A	MY48017076	EF-0009-23	07-FEB-24
Waveform Generator	33511B	MY52302742	EF-0010-23	07-FEB-24
Digital Multimeter	33461A	MY53220104	EEL.BP 30/0266	13-FEB-24
Digital Multimeter	33461A	MY53220076	EEL.BP 29/0266	13-FEB-24
Digital Multimeter	34461A	MY60024273	EEL.BP 31/0266	14-FEB-24
Programmable Attenuator	MAT-1070	62100114	EF-0011-23	08-FEB-24
Condenser Microphone	4180	2977900	AA-1001-23	14-FEB-24
Measuring Amplifier	NA-42KAI	34560495	AA-3002-23	14-FEB-24

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

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel: +66 2433 8331 Email: calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24082
 Job No. : VC67AC0054
 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...

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel: +66 2433 8331 Email: calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24082
 Job No. : VC67AC0054
 Pages : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.98)	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	Measured value (dB)
A - weight	9.9
C - weight	14.3
Flat	19.9

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	0.2	0.2	0.2	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.4	0.5	0.5	+ 1.5, - 2.5

T. Petch...

Cert. No. : ACL24082
 Job No. : VC67AC0054
 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	0.1	0.1	±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	0.1	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	-1.1	+ 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. Ratan

Cert. No. : ACL24082
 Job No. : VC67AC0054
 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	137.1	0.1	±0.8
136.0	136.0	0.0	±0.8
135.0	135.1	0.1	±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	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	24.9	-0.1	±0.8

T. Ratan

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com



Cert. No. : ACL24082
 Job No. : VC67AC0054
 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	108.0	0.0	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	128.1	0.1	±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	136.4	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	135.1	-0.3	±1.0
Negative half cycle	135.4	135.1	-0.3	±1.0

T. Retan

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com



Cert. No. : ACL24082
 Job No. : VC67AC0054
 Pages : 8 of 8

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	89.6	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. Retan

Cert. No. : ACL24083

Pages : 1 of 8

Calibration Certificate

Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.: 01120938 / 21888 / 22327
ID No.: RYG_FS0629

Condition As Found : GOOD

Customer : ALS LABORATORY GROUP (THAILAND) CO., LTD.
104 PHATTHANAKAN 40, PHATTHANAKAN ROAD,
KHWAEANG PHATTHANAKAN, KHET SUAN LUANG,
BANGKOK, 10250 THAILAND.

Location : -
Ambient Temperature : (23.0 \pm 3) °C
Pressure : (101.3 \pm 3) kPa
Relative Humidity : (50.0 \pm 20) %

Received Date : 11 JANUARY 2024
Calibration Date : 22- 24 JANUARY 2024
Date of Issue : 24 JANUARY 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.

Cert. No. : ACL24083

Job No. : VC67AC0054

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-0009-23	07-FEB-24
Waveform Generator	33511B	MY52302742	EF-0010-23	07-FEB-24
Digital Multimeter	33461A	MY53220104	EEL.BP 30/0266	13-FEB-24
Digital Multimeter	33461A	MY53220076	EEL.BP 29/0266	13-FEB-24
Digital Multimeter	34461A	MY60024273	EEL.BP 31/0266	14-FEB-24
Programmable Attenuator	MAT-1070	62100114	EF-0011-23	08-FEB-24
Condenser Microphone	4180	2977900	AA-1001-23	14-FEB-24
Measuring Amplifier	NA-42KAI	34560495	AA-3002-23	14-FEB-24

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

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24083
 Job No. : VC67AC0054
 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

7. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24083
 Job No. : VC67AC0054
 Pages : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.98)	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	9.9
C - weight	14.5
Flat	20.2

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	0.1	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.7	0.8	0.8	+ 1.5, - 2.5

7. Petch

SITHIPORN ASSOCIATES CO., LTD. CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
associates



Cert. No. : ACL24083
Job No. : VC67AC0054
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	-0.1	±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

T. Petchu-

SITHIPORN ASSOCIATES CO., LTD. CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
associates



Cert. No. : ACL24083
Job No. : VC67AC0054
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	27.0	0.0	±0.8
26.0	26.0	0.0	±0.8
25.0	25.0	0.0	±0.8

T. Petchu-

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24083
 Job No. : VC67AC0054
 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	136.3	-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	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. Peter

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24083
 Job No. : VC67AC0054
 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	89.7	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. Peter

Cert. No. : ACL24081

Pages : 1 of 8

Calibration Certificate

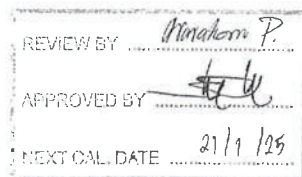
Equipment : SOUND LEVEL METER
Manufacturer : RION
Model : NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.: 01120936 / 21737 / 22325
ID No.: RYG_FS0627

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 \pm 3) °C
Pressure : (101.3 \pm 3) kPa
Relative Humidity : (50.0 \pm 20) %

Received Date : 11 JANUARY 2024
Calibration Date : 22- 24 JANUARY 2024
Date of Issue : 24 JANUARY 2024



Calibrated by : Nathakorn Pisutpaisan

Approved by :
(Thanakul Petchurai)

Cert. No. : ACL24081

Job No. : VC67AC0054

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-0009-23	07-FEB-24
Waveform Generator	33511B	MY52302742	EF-0010-23	07-FEB-24
Digital Multimeter	33461A	MY53220104	EEL.BP 30/0266	13-FEB-24
Digital Multimeter	33461A	MY53220076	EEL.BP 29/0266	13-FEB-24
Digital Multimeter	34461A	MY60024273	EEL.BP 31/0266	14-FEB-24
Programmable Attenuator	MAT-1070	62100114	EF-0011-23	08-FEB-24
Condenser Microphone	4180	2977900	AA-1001-23	14-FEB-24
Measuring Amplifier	NA-42KAI	34560495	AA-3002-23	14-FEB-24

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).

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email: calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24081
 Job No. : VC67AC0054
 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

G. Retan

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email: calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24081
 Job No. : VC67AC0054
 Pages : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.98)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
13.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Measured value (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	0.2	0.3	0.3	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.4	0.5	0.5	+ 1.5, - 2.5

G. Retan

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email: calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24081
 Job No. : VC67AC0054
 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	0.1	±1.0
125	0.1	0.1	0.0	±1.0
250	0.1	0.0	0.0	±1.0
500	0.1	0.1	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.1	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	-1.1	+ 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	94.1	0.1	± 0.1

T. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email: calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24081
 Job No. : VC67AC0054
 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	135.1	0.1	±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	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	26.0	0.0	±0.8
25.0	24.9	-0.1	±0.8

T. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24081
 Job No. : VC67AC0054
 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	116.9	-0.1	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	107.9	-0.1	1.0 ; -3.0
	200	800	127.6	127.5	-0.1	±0.5
SEL	0.25	1	99.0	98.8	-0.2	1.0 ; -3.0
	2	8	108.0	107.9	-0.1	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	136.1	-0.3	±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	135.1	-0.3	±1.0
Negative half cycle	135.4	135.1	-0.3	±1.0

Y. Petch

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand
 Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN
 associates



Cert. No. : ACL24081
 Job No. : VC67AC0054
 Pages : 8 of 8

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	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

Y. Petch



JIRANATEE ASSOCIATES CO., LTD.

Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7,7/1, Rd. Wattthapra, Bangkokkai,
Bangkok 10600 (Thailand)
Tel: +6608680812
Mobile: +66863999453
E-mail: jnac-calibration@jiranatee.com
Web site: www.jiranatee.com

Accredited calibration laboratory
ISO/IEC 17025:2017
NSC-TISI-TIS 17025
CALIBRATION 0367

Temperature measurement laboratory
Calibration services department.



NSC-TISI-TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-013-67

Page 1 of 2 Pages

MEASUREMENT ITEM : Heat Stress Monitor
MANUFACTURER : Delta OHM
MODEL/TYPE : HD32.2
SERIAL NUMBER : 15020735
ID NUMBER : RYG_FS0231
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 : 05 Jan 2024
MEASUREMENT DATE : 08 Jan 2024
ISSUE DATE : 09 Jan 2024

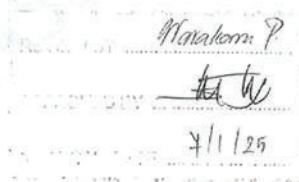
ENVIRONMENTAL CONDITIONS:

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-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-0038-23, Certificate number: ER-0101-23

Reference Used During Calibration:

1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09,
Due date: 28 Mar 2024
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-
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 Jitraporn Lertsomphol
☒ Miss Ruangrumpai Phoornmit



Approved signatory:

Mr. Parinya Booncharoen
Calibration Department Manager



JIRANATEE ASSOCIATES CO., LTD.

Continuation of Certificate of Calibration Number CDT-013-67

Page 2 of 2 Pages

Result of Calibration: ☒ Without Adjustment ☐ With Adjustment

Calibration Range: 20 – 40 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2 S/N: 15035050.
Dimension: Diameter 3.3 mm. Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.059	20.1	0.0	0.16
80	25.055	25.1	0.0	0.099
80	30.049	30.1	0.1	0.099
80	35.041	35.0	0.0	0.16
80	40.035	40.0	0.0	0.099

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2 S/N: 17023218.
Dimension: Diameter 3.3 mm. Length 205 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.059	20.1	0.0	0.099
110	25.055	25.1	0.0	0.099
110	30.049	30.1	0.1	0.099
110	35.041	35.1	0.1	0.099
110	40.035	40.1	0.1	0.099

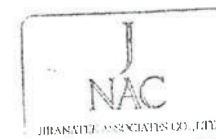
Table 3: This equipment was connected with temperature probe Model: TP3207.2 S/N: 15033221.
Dimension: Diameter 14 mm. Length 150 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
75	20.059	20.1	0.0	0.099
75	25.055	24.9	-0.2	0.099
75	30.049	29.8	-0.2	0.099
75	35.041	34.7	-0.3	0.099
75	40.035	39.5	-0.5	0.099

UUC*: Unit Under Calibration

Remark: The reported uncertainty of measurement is 0.16, based on standard uncertainty multiplied by a coverage factor $k=2.21$ providing a level of confidence of approximately 95%.

End of Certificate of Calibration





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



Cert.No.: 24CH96
Page.: 1 of 3

Certificate of Calibration

Equipment : pH Meter
Manufacturer : Mettler Toledo
Model : SevenCompact S220
Serial No. : C104059460
ID No. : RYG_EN0183
Condition As-Received: Used Item
Received Date : 18 January 2024
Calibration Date : 19 January 2024
Reference : 2401-0579DSC-2
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 ± 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 Lernagatrakul

Approved by :

(✓) Saithip Meangmai
() Warakorn Lernagatrakul
() Ponpan Paipim

Issue Date : 24 January 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.

A 0062854



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	940102	27 Nov 2025
pH 6.986	CPA chem	940104	02 Nov 2024
pH 9.997	CPA chem	940106	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 (±mV)	Coverage factor k
			mV	pH		
pH Meter	4.000	177.48	177.4	4.000	0.058	2.00
S/N.: C104059460	7.000	0.00	0.0	7.000	0.058	2.00
	10.000	-177.48	-177.5	10.000	0.058	2.00

Saithip

a 1198287



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 (\pm)	Coverage factor k
pH Electrode S/N.: 3225367	4.008	4.013	176.0	0.0054	2.07
	6.986	6.983	2.2	0.0084	2.00
	9.997	9.996	-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 (\pm °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 %.

-o0o-

Santhip

a 1198288



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG, BANGKOK 10250
TEL. 0-2717-3000-24 FAX. 0-2719-9484

**Certificate of Calibration**

Certificate No. : 24E289

Page : 1 of 2

Equipment : pH Meter
Manufacturer: Mettler Toledo
Model : SevenCompact S220
Serial No.: C104059460
ID No.: RYG_EN0183

Condition As-Received: Used Item

Received Date: 18 January 2024

Calibration Date: 23 January 2024

Reference: 2401-0579DSC

Ambient Temperature: (23 \pm 2) °CRelative Humidity: (50 \pm 10) %

Submitted by: ALS Laboratory Group (Thailand) Co.,Ltd. (Rayong Branch)

616/10 Moo 5, T.Maenam Khu, A.Pluakdaeng,

Rayong 21140, Thailand

Procedure used: Calibration were conducted using calibration procedure No. CP-E17 According to EURAMET cg-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	E2U2300035	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 : Wutchareeporn Wongchutikrane

Issue Date : 24 January 2024

Approved Signatory :

[] Phalinee Prabpaipal

[x] Nunlawat Khamchai

[] Pongsagorn Boonyaporn

B 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.

-o0o-

Sartorius (Thailand) Co., Ltd.
129 Rama 9 Road, Huaykwang, Huaykwang, Bangkok 10310
Tel: +66 2843 8381-6, e-mail: service.thailand@sartorius.com



SARTORIUS

NSC-TIS-17025
CALIBRATION 0426

Certificate

of Calibration

REVIEW BY Pravitall
APPROVED BY D
NEXT CAL. DATE 22/02/2025

Model Number : MSE224S-100-DU

Certificate No. : 24BC10089

Description : Analytical Balance

Issued Date : Friday, February 23, 2024

Serial Number : 0026207038

Reference No. : 229196

ID No. : RYG_EN0002

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.Pluak Daeng, Rayong 21140, Thailand.

Calibrated Place : ALS Laboratory Group (Thailand) Co., Ltd.(Balance Room)

616/10 Moo 5 T.Maenam Khu, A.Pluakdaeng, Rayong,21140, Thailand.

Calibrated By : Mr.Chonchai Inthana

Calibration

Calibration Date : Thursday, February 22, 2024

Procedure No. : This calibration was conducted by

Using in-house calibration procedure number (WI-003)

Based on UKAS LAB 14 : 2019

Metrological data :

Ambients Conditions:

Capacity : 220 g Readability : 0.0001 g

Temperature : 24.2 °C ± 5.0 °C

Humidity : 57.0 % RH ± 10.0 % RH

Pressure : ±

Reasons for calibration

☐ New Installation ☐ Service / Repaired ☒ Re-calibration/ MaintenanceEquipment Condition: ☒ Good Operate ☐ Fair

Measurement Method UKAS Publication Ref :Lab 14

The measurement uncertainty stated is the expended 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 realise 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 - 5000g 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.

Mr.chonchai Intrhna(Technical Manager)

SOP FM 33 03 February 2022


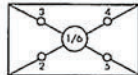


a 1198963

Certificate of Calibration

Model Number : MSE224S-100-DU Certificate No. : 24BCI0069
Description : Analytical Balance Issued Date : Friday, February 23, 2024
Serial Number : 0026207038 Reference No. : 229196
ID No. : RYG_EN0002
Manufacturer : Sartorius Page No. : 2 of 2

Calibration Results : Without Adjustment

Repeatability			Eccentricity (Off-center loading error)																
The reproducibility is the ability of a weighing instrument to display nearly identical readouts under constant test conditions when the same load within a measurement series 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 yielded by the difference between the readout of the load, i.e. 1/3 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)	20.0000	199.9999	Nominal value :	100	g														
20 g	20.0000	200.0000	Tolerance	0.0004	g														
Tolerance	20.0001	200.0000																	
0.0001 g	20.0000	199.9999	<table><tr><th></th><th>Difference</th></tr><tr><td>1</td><td>-</td></tr><tr><td>2</td><td>-0.0001</td></tr><tr><td>3</td><td>-0.0001</td></tr><tr><td>4</td><td>0.0000</td></tr><tr><td>5</td><td>-0.0001</td></tr><tr><td>6</td><td>-</td></tr></table>				Difference	1	-	2	-0.0001	3	-0.0001	4	0.0000	5	-0.0001	6	-
	Difference																		
1	-																		
2	-0.0001																		
3	-0.0001																		
4	0.0000																		
5	-0.0001																		
6	-																		
	20.0001	200.0000																	
Nominal Value : (High Load)	19.9999	200.0000																	
200 g	20.0000	200.0000																	
Tolerance	20.0000	199.9999																	
0.0001 g	19.9999	200.0001																	
	19.9999	200.0000																	
Standard Deviation	0.00007	0.00006																	


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	0.00018
0.05	0.0500	0.0500	0.0000	0.00018
0.1	0.1000	0.1000	0.0000	0.00018
0.5	0.5000	0.5000	0.0000	0.00018
1	1.0000	1.0000	0.0000	0.00018
5	5.0000	5.0000	0.0000	0.00018
10	10.0000	10.0000	0.0000	0.00018
20	20.0000	20.0000	0.0000	0.00024
50	50.0000	49.9999	-0.0001	0.00019
100	100.0000	100.0000	0.0000	0.00023
200	200.0000	199.9999	-0.0001	0.00032

End of Report.



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) °C
Relative Humidity : (50 ± 30) %
Calibrated by : Man Pattanapongpaiboon
Approved by : 
() Pornthippa 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.

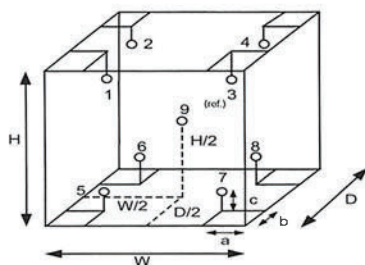
3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association (Thailand - Japan)

Result of Calibration :- (*) Without Adjustment

Function of UUC* : Temperature Source

Fresh air setting : Close



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 m ³

Environment during calibration		
	Beginning	Finished
Temp. (°C)	27	27
REL.Humid. (%)	57	59
AC Supply (Volt)	222	224

Ref. Std. ID No.: @ Calibration Point		
Position :	(180) °C	(104) °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



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 (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°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 (°C)	Measured Temperature (°C)									Uncertainty (± °C)
	Position									
	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 %.

-o0o-

REVIEW BY *Nant Sank*
APPROVED BY *KL AL*
NEXT CAL. DATE *13-Jun-25*

Certificate of System Qualification

GC-OQ + GCMS-OQ

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		Actual	
Inlet Pressure:	25.0	psi	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

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: RFP 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 6.00.21
High Vacuum System	Turbo Pump
Scouting Run Standard	OFN Std
MS EI Source 1	
Manufacturer	Agilent Technologies
Source Type	EI - Extractor
Number of filaments	2

Electronic Signature

Purpose

This signature page was created and published because the ACE sign-off action was executed, which is valid for the entire document, including attachments. The ACE sign-off is an electronic signature that requires two distinct identification components: unique username and personal password. The Agilent representative who has delivered this service understands the meaning and legal status of an electronic signature. As a trained official operator, the Agilent representative has a unique password and logon to access ACE and electronically sign this document. (Other e-signatures can be applied to this document using a Document Content Management or other suitable method defined in your data access and control procedures.)

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

Regulatory Disclaimer

This document provides a protocol to verify and record instrument configuration and evidence of proper operation. It has been prepared from our interpretation of applicable regulations as well as industry best practices. The document is designed to provide an important component of a complete compliance package. Validation depends upon many factors and use of this protocol alone does not assure compliance. Agilent Technologies makes no promises or representations as to its sufficiency for any specific regulatory program.

Warranty

Agilent Technologies makes no warranty of any kind to this material, including but not limited to, the implied warranties or merchantability and fitness for a particular purpose. Agilent Technologies shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKWX492
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	Audit	SessionCreated	Session	None
December 13, 2023 10:22:24 AM	Start	Configuration	Session	None
December 13, 2023 10:22:24 AM	Audit	Enrollment	Licensing	User is FieldEngineer and does not require an unlock code
December 13, 2023 10:23:53 AM	Audit	EqpLoaded	Session	EQP details for primary technique [Gc] - File path: [ProtocolPacks/Gc/Configurations/02_50/Gc.02.50.eqp], EQP File Name: [Gc.02.50.eqp], EQP Name: [AgilentRecommended], Protocol Revision :[Gc.02.50] EQP details for hyphenated technique [GcMs] - File path: [ProtocolPacks/GcMs/Configurations/02_50/GcMs.02.50.eqp], EQP File Name: [GcMs.02.50.eqp], EQP Name: [AgilentRecommended]
December 13, 2023 10:23:56 AM	End	Configuration	Session	None
December 13, 2023 10:23:59 AM	Start	Qualification	Session	OQ
December 13, 2023 10:23:59 AM	Start	Execution	System Inspection and Basic Safety and Operation - 7890: - Qualitative Test - No setpoints associated	None

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKXWX492

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 setpoints 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	Audit	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	Audit	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 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKXWX492

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: >= 1200	None
December 13, 2023 10:35:39 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	Audit	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: 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	RFPA - 5977A SQ; - Source: EI - Extractor	None
December 13, 2023 11:04:44 AM	End	Execution	RFPA - 5977A SQ; - Source: EI - Extractor	Run Count : 1
December 13, 2023 11:04:45 AM	Start	Execution	Tune EI - 5977A SQ; - Source: EI - Extractor Filament 1 (Qualitative - No setpoints associated)	None
December 13, 2023 11:32:36 AM	End	Execution	Tune EI - 5977A SQ; - Source: EI - Extractor Filament 1 (Qualitative - No setpoints associated)	Run Count : 1

Page 3 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKX492

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 - 5977A SQ: - Source: - None EI - Extractor Filament 2 (Qualitative - No setpoints associated)	
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 11:43:38 AM	Start	Execution	Tune EI - 5977A SQ: - Source: - None EI - Extractor Filament 2 (Qualitative - No setpoints associated)	
December 13, 2023 11:49:42 AM	End	Execution	Tune EI - 5977A SQ: - Source: - Run Count: 1 EI - Extractor Filament 2 (Qualitative - No setpoints associated)	
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	Audit	AcqClosed	Session	None
December 13, 2023 12:36:39 PM	Audit	AcqRestarted	Session	None
December 13, 2023 12:36:40 PM	Audit	SessionReloaded	Session	None
December 13, 2023 12:36:42 PM	Start	Qualification	Session	OQ
December 13, 2023 12:36:42 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

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKX492

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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data \OQ2023\S2N_F1.D
December 13, 2023 12:38:18 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	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Deviation filed 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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data \OQ2023\S2N_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 12:42:06 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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data \OQ2023\S2N_F2.D

Page 5 / 9

Date: December 13, 2023 3:32:46 PM
System ID: GM-7

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKWX492

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	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Deviation filed 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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data\VOQ2023\IS2N_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 1:56:50 PM	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Deviation filed 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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data\VOQ2023\IS2N_F1.D

Page 6 / 9

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKWX492

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	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Deviation filed 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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data\VOQ2023\IS2N_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	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Deviation filed 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	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data\VOQ2023\IS2N_F2.D

Page 7 / 9

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKWX492

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	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Run Count : 3
December 13, 2023 2:29:14 PM	Audit	TestUnlocked	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Deviation filed for Run Count : 3
December 13, 2023 2:29:14 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
December 13, 2023 2:34:02 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
December 13, 2023 2:41:26 PM	Start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	None
December 13, 2023 2:42:42 PM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Data files Path : D:\MassHunter\GCMS\1\data\10Q2023\SN_F2_001.D
December 13, 2023 2:44:32 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 1200	Run Count : 4
December 13, 2023 2:44:56 PM	End	Qualification	Session	OQ
December 13, 2023 2:44:56 PM	Start	Reporting	Session	None

Page 8 / 9

User Name: supasak.nimsongtham
Report Generated by Hostname: ASBKKWX492

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	AceClosed	Session	None
December 13, 2023 3:29:10 PM	Audit	AceRestarted	Session	None
December 13, 2023 3:29:10 PM	Audit	SessionReloaded	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

ภาคผนวก จ

สำเนาหนังสือรับรองห้องปฏิบัติการวิเคราะห์เอกชน



ที่ ออก ๐๓๒๐/ ๗ ๕๓ ๘

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐๘ สิงหาคม ๒๕๖๗

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และขณิเทศารมลพิษของห้องปฏิบัติการวิเคราะห์
เอกชน ลงวันที่ ๒๗ พฤษภาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด จำนวน ๓ แผ่น

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออายุ
หนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๓๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕
ตำบลแม่น้ำคู้ อำเภอลำลูกเกด จังหวัดระยอง ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย)
จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมห้องปฏิบัติการวิเคราะห์เอกชน

- | | |
|--------------------------|----------------------------|
| ๑) นายเดช ช่างชน | ทะเบียนเลขที่ ว-๓๒๓-ค-๐๐๐๑ |
| ๒) นางวิลาวัลย์ บริรักษ์ | ทะเบียนเลขที่ ว-๓๒๓-ค-๐๐๐๒ |
| ๓) นายสุพจน์ สลามเต๊ะ | ทะเบียนเลขที่ ว-๓๒๓-ค-๐๐๐๓ |

ข. เจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน

- | | |
|--------------------------------|----------------------------|
| ๑) นายณัฐพงษ์ เพ็งชานวน | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๑ |
| ๒) นางสาวกัลยพรรณรัตน์ รักดี | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๒ |
| ๓) นางสาวจุฑารัตน์ ลิทองหลาง | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๓ |
| ๔) นางสาวจิตสุภา ประเทืองสุข | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๔ |
| ๕) นายสรเสรีณ คุยกฤษฎ์ | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๕ |
| ๖) นายณัฐวุฒิ อดมพรมราช | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๖ |
| ๗) นายจิตรกร สีวะสา | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๗ |
| ๘) นายสิทป์วิญญ์ สุวรรณรัตน์ | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๘ |
| ๙) นายสิทธิพันธ์ เสนาชีว | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๐๙ |
| ๑๐) นายอนุเวศน์ เตมา | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๑๐ |
| ๑๑) นายสุรวิทย์ นราพงษ์ | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๑๑ |
| ๑๒) นายณัฐพล เจียงวรวงศ์ | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๑๓ |
| ๑๓) นายชานนท์ บุญขึ้น | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๑๔ |
| ๑๔) นายณัฐกานต์ วงศ์อินทร์อยู่ | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๑๕ |
| ๑๕) นายอานนท์ โพธิ์พระทอง | ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๑๖ |

๑๖) นายณัชพล...

-๒-

- ๑๖) นายณัชพล ถ้ำกลาง
- ๑๗) นายศุภณัฐ พิสัยพันธ์
- ๑๘) นายสันต์ คินันติ
- ๑๙) นายวรัญญู ฉิมพาลี
- ๒๐) นายศุภณัฐ สุกฤตติมงคลศักดิ์
- ๒๑) นายเอกชัย ถิ่นทอง
- ๒๒) นายพงษ์เทพ สิทธิเสาะ
- ๒๓) นายทินกร กุมภาชี
- ๒๔) นางสาวนันทยา เบญจพันธ์
- ๒๕) นายสิทธิชัย ยันพิมาย
- ๒๖) นางสาวปภาณิน หลอดทอง
- ๒๗) นางสาวพจนนา สีดา
- ๒๘) นางสาวธนิศา กุลศิริวงศ์
- ๒๙) นายพิทยา ทองแดง
- ๓๐) นางสาวชลธิชา สุปงกช
- ๓๑) ว่าที่ร้อยตรี รณชัย ม่วงมา
- ๓๒) นายวรารุณ พิบพา
- ๓๓) นายศักดิ์นรินทร์ จรัสกาย
- ๓๔) นายสุรศักดิ์ สาชิน
- ๓๕) นายสถาพร ภาแก้ว
- ๓๖) นายสุทธิดำรง โชคปิตินันท์
- ๓๗) นายวิมลกล หันไชยเนาว์
- ๓๘) นางสาววนาลี เจริญตระกูล
- ๓๙) นายธนะสิทธิ์ วงศ์ไชย
- ๔๐) นายชัยนุสรณ์ เลิศนันท์กุลชัย
- ๔๑) นายสัจจา เพ็ชรแสง
- ๔๒) นายกัมตภณ มณีสัมพันธ์
- ๔๓) นายธารินทร์ อ็อกจินดา
- ๔๔) นายศุภชัย วงศ์สุริย์ฉาย
- ๔๕) นายเสว ดันโพธิ์
- ๔๖) นางสาวกิตติยา สัญญาอริยาภรณ์
- ๔๗) นางสาวธิดารัตน์ ศิริมงคลโร
- ๔๘) นายพิพัฒน์ นิภัทร์เศรษฐ์
- ๔๙) นายศิริวิทย์ เรืองสม
- ๕๐) นายปารเมศ สัตยาคุณ
- ๕๑) นายณนุภาพ ธรรมสโร
- ๕๒) นางสาวศุภรัตน์ โสจันทร์

- | | |
|---------------|--------------|
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๑๗ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๑๘ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๑๙ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๐ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๑ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๒ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๓ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๔ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๕ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๖ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๗ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๘ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๒๙ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๐ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๑ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๒ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๓ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๔ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๕ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๖ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๗ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๘ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๓๙ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๐ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๑ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๒ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๓ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๔ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๕ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๖ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๗ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๘ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๔๙ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๕๐ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๕๑ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๕๒ |
| ทะเบียนเลขที่ | ว-๓๒๓-จ-๐๐๕๓ |

๕๒) นายพชรกร...

๕๒) นายพชรกร เจ็งเจริญ	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๕๔
๕๓) นายทิวากร เชื้อมาก	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๕๕
๕๔) นายอนุรักษ์ ทองขจรศักดิ์	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๕๖
๕๕) นายอภิชาติ วิลาศ	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๕๗
๕๖) นายจรัสระวี ศรีรักษา	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๕๘
๕๘) นายประสานมิตร เชื้อนเพชร	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๕๙
๕๙) นายภาณุวัฒน์ วังบง	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๐
๖๐) นายสันติ ชัยชนะ	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๑
๖๑) นายทินกร กุลชาติ	ทะเบียนเลขที่ ว-๓๒๓-จ-๐๐๖๒

ค. ขอบข่ายชนิดสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน อากาศเสีย ตามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒๘ มิถุนายน ๒๕๖๓ หากประสงค์จะต่ออายุหนังสือ รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๖๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายพรยศ กลั่นกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๙ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ airw@div.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แลบลอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ว-๓๒๓
ที่ ออก ๐๓๒๐/ ๗ ๙๓ ๘ ลงวันที่ ๐๘ สิงหาคม ๒๕๖๓

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม 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 ^[3,4]
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. ธงชัย พรรณสวัสดิ์ และวิบูลย์ลักษณ์ วิสุมิตติ, 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 กำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้แก๊สเป็นเชื้อเพลิง. 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.



ที่ อก ๐๓๒๐/ ๑ ๐ ๐ ๙ ๙



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐๔ ตุลาคม ๒๕๖๗

เรื่อง แก้อายุน้ำที่ห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง หนังสือ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขที่ Env 2024/005
ลงวันที่ ๓๐ สิงหาคม ๒๕๖๗

ตามหนังสือที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ว-๓๒๓ สถานที่ตั้งเลขที่ ๖๑๖/๑๐ หมู่ที่ ๕ ตำบลแม่น้ำคู้ อำเภอลวกแดง
จังหวัดระยอง ขอแก้ไขข้อเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน เนื่องจากมีความคลาดเคลื่อน ความละเอียด
แจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรม ได้รับทราบและดำเนินการแก้ไขรายข้อเจ้าหน้าที่ห้องปฏิบัติการ
วิเคราะห์เอกชน จำนวน ๕ ราย ตามที่แจ้งเรียบร้อยแล้ว เป็นดังนี้

- ลำดับที่ ๒๗ นางพจนา สีตา
- ลำดับที่ ๒๘ นางสาวธนิศา กุลสุริวงศ์
- ลำดับที่ ๓๐ นางชลธิชา สุนงกข
- ลำดับที่ ๓๖ นายสุทธิดำรง โชคปิณันท์
- ลำดับที่ ๔๒ นายกันตภณ มณีสัมพันธ์

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

น

(นายพรยศ กลั่นกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓๓ ๖๐๕๕ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อก ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๘

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๐ พฤศจิกายน ๒๕๖๖

เรื่อง ต่ออายุน้ำรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๔ สิงหาคม ๒๕๖๖

- สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น
- ๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ แผ่น
- ๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออายุน้ำรับ
ขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐
ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด
ต่ออายุน้ำรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

- ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย ตามสิ่งที่ส่งมาด้วย ๑
- ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ ๑๘๑ ราย ตามสิ่งที่ส่งมาด้วย ๒
- ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกล
หรือวัสดุที่ไม่ใช่แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ กันยายน ๒๕๖๙ หากประสงค์จะต่ออายุน้ำรับ
ขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ
กรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

๒๒๙๒

(นายธีระ จันทร์เดิด)

นักวิทยาศาสตร์เชี่ยวชาญ วิชาการจัดการแผน
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๕๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ว-๒๐๔
ที่ อก ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๘ ลงวันที่ ๒ ๐ พฤศจิกายน ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย

๑) นางสาวอุพาพร จันทร์เปล่ง	ทะเบียนเลขที่ ว-๒๐๔-ค-๐๐๐๑
๒) นางสาวชัชชนิ โภมารกุล ณ นคร	ทะเบียนเลขที่ ว-๒๐๔-ค-๐๐๐๒
๓) นายศรายุทธ จิตรานนท์	ทะเบียนเลขที่ ว-๒๐๔-ค-๐๐๐๓
๔) นางสาวกนกกร เอนก	ทะเบียนเลขที่ ว-๒๐๔-ค-๐๐๐๔
๕) นายสุริยา สอนแก้ว	ทะเบียนเลขที่ ว-๒๐๔-ค-๐๐๐๕
๖) นายวิชาญ ชุนหรัตน์	ทะเบียนเลขที่ ว-๒๐๔-ค-๐๐๐๖

วิภา

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ว-๒๐๔
ที่ อก ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๘ ลงวันที่ ๒ ๐ พฤศจิกายน ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑๘๑ ราย

๑) นายกาจบัณฑิต กิตติคุณวิชัย	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๑
๒) นายภัทรพล สว่างใจธรรม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๒
๓) นายนราธิป เทือกชัยคำ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๓
๔) นายศิริโชค พงษ์ประสม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๔
๕) นายณัฐภูมิ ดั่งวงแหง	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๕
๖) นางสาวจินดา โชกุลธรรม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๖
๗) นางสาวสาวิตรี น้อยเสียงม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๗
๘) นางสาวชนัญฐาญจน์ อัมขม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๘
๙) นางสาวนรินทร์ สายเสียง	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๐๙
๑๐) นางสาวนันทวดี สมบูรณ์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๐
๑๑) นางสาวศรณิยา เฉลิมธำรงค์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๑
๑๒) นางสาวธัญญธร มงคลจิรวุฒิ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๒
๑๓) นางสาวศิริลักษณ์ บุญนาค	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๓
๑๔) นายณพพงศ์ จันทร์พันธุ์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๔
๑๕) นายนเรศรชษฐ์ โกมลย์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๕
๑๖) นายธินวา จรรย์ยา	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๖
๑๗) นางสาวเกศรินทร์ แก้วมัน	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๗
๑๘) นางสาวสุวิมล ชัยเรืองวุฒิ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๘
๑๙) นางสาวสุชาดา ธรรมถาวร	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๑๙
๒๐) นางสาวเปมิกา ชัยเดชธนกุล	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๐
๒๑) นางสาวศศิธร หมุสวัสต์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๑
๒๒) นางสาวเสาวลักษณ์ ภู่นภาอำพร	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๒
๒๓) นายอภิสิทธิ์ สิงหา	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๓
๒๔) นายศักดิ์สิทธิ์ ไพศาลพิสุทธิ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๔
๒๕) ว่าที่ร้อยตรีหญิง พรรณีภา ข้าเจริญ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๕
๒๖) นางจิตตา คำภูแก้ว	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๖
๒๗) นางสาวอรรพรรณ รักยง	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๗
๒๘) นางสาวนพรัตน์ แยมกรานต์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๘
๒๙) นายจุลเดช วารินทร์	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๒๙
๓๐) นางสาวดาญรัตน์ ร้องคำ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๐
๓๑) นายพรมมี ศรีปัตนตร	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๑
๓๒) นายอุทิศ อุ่นลิ้ม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๒
๓๓) ว่าที่ร้อยตรี เฉลิมเกียรติ อมรศรีเสริม	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๓
๓๔) นางสาววริยา สร้างนา	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๔
๓๕) นายอนุพงศ์ รัตนศรีประเสริฐ	ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๕

วิภา

๓๖) นางสาวจุฑารัตน์...

๓๖) นางสาวจุฑารัตน์ โอนสันเทียะ
๓๗) นางสาวจารุวรรณ พิมพ์ภักฤติยา
๓๘) นางสาวปรางค์ทิพย์ กิจไพศาลศักดิ์
๓๙) นางสาวเตือนใจ ทางกลาง
๔๐) นางสาวจิราพร ศิริเวช
๔๑) นายวรารักษ์ ผูกกรักษ์
๔๒) นายทอง วิริยะสทกิจ
๔๓) นายธนิศ เจนจบ
๔๔) นายคณิศร ข้าเพชร
๔๕) นายภูวิช พรหมสะอาด
๔๖) นายธนเดช โภคาพิพัฒน์
๔๗) นายขวฤทธิ วงษ์จันทร์
๔๘) นายอาทิตย์ ศรีเสน
๔๙) นายเจษดินทร์ คงศักดิ์ไทย
๕๐) นายจรัส บุญยั้ง
๕๑) นายธนาณัติ เอนก
๕๒) นายอภิวัฒน์ ทุมหนู
๕๓) นางสาวสุภาวัญญู มาก
๕๔) นางสาวหัตพร ขวาลสมบุรณ์
๕๕) นางสาวธิตีมา บุญเพ็ง
๕๖) นางสาวภาณุมาศ นามวัฒน์
๕๗) นางสาวอุไรรัตน์ ทังสร้างแป้น
๕๘) นายธีรวัฒน์ ปวงสุข
๕๙) นายอิทธิพล ยะโส
๖๐) นายประพจน์ วรรณชูชัย
๖๑) นายชยธร พวงทิพย์
๖๒) นางสาวกนกวรรณ จันทบาล
๖๓) นายสิทธิโชค ธงเงิน
๖๔) นางศิวารวรรณ ใจบุญ
๖๕) นางสาวพรรณธิดา พุ่มคง
๖๖) นายนวภัทร ศรีวิริยะ
๖๗) นายสุริษา ทองอ่อน
๖๘) นายวิญญู บุญตะนัย
๖๙) นายสมบุรณ์ บุตรจันทร์
๗๐) นายวิรัตน์ ไชยณะรา
๗๑) นายนฤเบศร์ เพิ่มพูน
๗๒) นายจิรรัฐ ขวาละอ้อ
๗๓) นายอัสรี นามบุรี
๗๔) นายอัครเวศ จ่อสาว

ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๓๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๔๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๕๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๔

วิมล

๗๕) นายประเสริฐ...

๗๕) นายประเสริฐ สุระขันธ
๗๖) นายบุญกุล จันทน์นิยม
๗๗) นายพิรพงษ์ ทองคุณปรีดา
๗๘) นายนฤพล ทองนุช
๗๙) นายอนุวัฒน์ ม่วงแพร่
๘๐) นายเจตศรวุฒิ ปัตตะมะ
๘๑) นายภุชชณ สหายวรรณ
๘๒) นายพิชัย บุญยงค์
๘๓) นายภาณุพงศ์ โสมวงศ์
๘๔) นายสามารถ คุ่มปลี
๘๕) นายสัณชัย โกศรนาม
๘๖) นายณัฐวุฒิ ศรีประเสริฐ
๘๗) นายชลธิช นาคพนม
๘๘) นายพงศธร ชัยทิพย์
๘๙) นายสิทธิโชค ทาสีดา
๙๐) นายธนากร อินสุตา
๙๑) นางสาววรรณิษา ขาดิวันชัย
๙๒) นางสาวพิมพ์ตะวัน มินากุล
๙๓) นางสาวเพชรรัตน์ สิงห์สมบุญ
๙๔) นางสาวชฎาณีน พรหมจันทร์
๙๕) นายกิตติ ทวีราช
๙๖) นายจักริน หมั่นวิชา
๙๗) นายฉัตรชัย สุขเปี้ย
๙๘) นายณรรณที ต๊ะทองคำ
๙๙) นายดุลยพล สนนอก
๑๐๐) นายทักษ์ดนัย อุบลศรี
๑๐๑) นายธนศร นามะกุลณา
๑๐๒) นายธิตีพงศ์ บัวแดง
๑๐๓) นายนันทชัย อุปลัมภ
๑๐๔) นายณัฐพล คุณสุทธิ
๑๐๕) นายนันทวัฒน์ สาริน
๑๐๖) นายปิยะนัฐ พลมะศรี
๑๐๗) นายพงศ์สิริ โสมเขียว
๑๐๘) นายพิรพัฒน์ กำคำ
๑๐๙) นายภาณุพงศ์ มานิตย์
๑๑๐) นายมงคล ผลาทิพย์
๑๑๑) นายสิรินันท์ ทองอัน
๑๑๒) นายอนนชา ทันสมัย
๑๑๓) นายอดิศักดิ์ ผมไผ

ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๘๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๙๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๓

วิมล

๑๑๔) นายอนันต์ชัย...

๑๑๔) นายอนันตชัย วีสม
๑๑๕) นายวรวัชร ดีนัก
๑๑๖) นายแสงตะวัน นະตะสັต
๑๑๗) นายยุทธพงศ์ รัตนะ
๑๑๘) นายชัยณัฐ ไชยชนะนิจ
๑๑๙) นายวิศรุต ศรีธรรมมา
๑๒๐) นายนทกร เดือกม่อง
๑๒๑) นายกำชัย สุทธะ
๑๒๒) นางสาวณัฐภรณ์ บุญตะนัย
๑๒๓) นางสาวพัชรินทร์ แสนสร้อย
๑๒๔) นายไพโรจน์ เปี่ยมพิมาย
๑๒๕) นางสาวศุภมาส ทองมาก
๑๒๖) นางสาวลลิตา จิตรสว่าง
๑๒๗) นางสาวไมพร เส็กู๋เขี้ยว
๑๒๘) นางสาวกฤติมาพร คำมีแก่น
๑๒๙) นางสาวสกุลรัตน์ ภาควมี
๑๓๐) นางสาวไพรินทร์ ศรีรูปี
๑๓๑) นางสาวทิพนตร ผุยปัญญา
๑๓๒) นางสาวสาธิตา ปานทอง
๑๓๓) นางสาวอริสา ทองนวล
๑๓๔) นางสาวอรยา คำคล้อง
๑๓๕) นางสาวชุติภรณ์ สุนทรสนาน
๑๓๖) นางสาวอัญชลี คำจันทร์
๑๓๗) นายบุญฤทธิ์ เอี่ยมเทศ
๑๓๘) นางสาวศุภรดา ปันมยุรา
๑๓๙) นางสาวพาณัติ คุณนาน
๑๔๐) นางสาวจิราเจต ฟองดา
๑๔๑) นางสาวอารยา มีชัย
๑๔๒) นางสาววิชุดา นาคผจญ
๑๔๓) นางสาวนันทิยา จันทะลุน
๑๔๔) นายกิตติพงศ์ แซ่ลี
๑๔๕) นายอนุวัติ ภูถวิล
๑๔๖) นายธีรพล แสงทอง
๑๔๗) นายศักดิ์พัฒน์ บุญมัน
๑๔๘) นายธวัชวิทย์ เอมอุไร
๑๔๙) นายชัยณรงค์ ศรีบุรินทร์
๑๕๐) นางสาวอัจฉราวรรณ สอนสนอง
๑๕๑) นางสาวณัฐราพร สิงหา
๑๕๒) นายกัมมเรศ แหยมโต

ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๑๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๒

วิมล

๑๕๓) นางสาวอุบล...

๑๕๓) นางสาวอุบล เด็กศิริ
๑๕๔) นางสาวมโนรัตน์ ทองบุตร
๑๕๕) นายภาควณัฐ แทนไทย
๑๕๖) นางสาวสุภาณัฐ เมลล์พวง
๑๕๗) นางสาวพรทิศา สาตาพนม
๑๕๘) นายเอกวิทย์ วันทะนา
๑๕๙) นายไตรมณฑล ทิพย์วรรณ
๑๖๐) นายจิรเมธ ประเสริฐศิริพงษ์
๑๖๑) นายจิรายุส เกษมสุข
๑๖๒) นายจิรศักดิ์ ศรีวิชัย
๑๖๓) นายณัฐฤกษ์ สะพานแก้ว
๑๖๔) นายบุรณศักดิ์ ปะที
๑๖๕) นายปิ่นณวิญญ์ เสมอทรัพย์
๑๖๖) นายพิษณุพงษ์ ไชยา
๑๖๗) นายภัทรพงษ์ มณฑาทอง
๑๖๘) นายสันต์ ตรีนกุล
๑๖๙) นายภาณุเดช เพชรอุด
๑๗๐) นายอนุกุล วิลละแสง
๑๗๑) นายภัทรพงษ์ มีสุข
๑๗๒) นางสาวนุชวิลี ลีละทีป
๑๗๓) นางสาวสุภาวดี โกศรีนาม
๑๗๔) นางสาวอรณิศา เทียนคำ
๑๗๕) นางสาวพรเพ็ญ ขอบสอน
๑๗๖) นางสาววันวิสา ขอนพิกุล
๑๗๗) นางสาวอรรณณ เลาว์ทอง
๑๗๘) นางสาวอัยย์ลลิน เมอร์วิณณ์
๑๗๙) นางสาววิสรา คุ้มครอง
๑๘๐) นายวุฒิกร ศิริวรรณ
๑๘๑) นางสาวจารุวรรณ กระจำพันธุ์

ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๕๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๑
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๒
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๓
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๔
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๕
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๖
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๗
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๘
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๗๙
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๐
ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๑

วิมล

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ว-๒๐๐๔
ที่ อก ๐๓๑๐(๑)/ ๑๖๑๖๘ ลงวันที่ ๒๐ พฤศจิกายน ๒๕๖๖

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม 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	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]

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	Distillation, Colorimetric Method ^[3]
34	Free Chlorine	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]

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]

วิมล

น้ำใต้ดิน...

น้ำใต้ดิน จำนวน 126 รายการ

ลำดับที่	สารมลพิษ	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	1) Digestion, Inductively Coupled Plasma Method ^[4] 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^[4]
6	Arsenic	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	1) Digestion, Inductively Coupled Plasma Method ^[4] 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^[4]
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[4]
11	Benzo(b)fluoranthene	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	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	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
16	Beryllium	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]

วิมล

18 Bis(2-ethylhexyl)phthalate...

ลำดับที่	สารมลพิษ	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	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	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
29	Chlorobenzene	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	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
33	Chromium	1) Digestion, Inductively Coupled Plasma Method ^[4] 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method ^[4]
34	Chromium (III)	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]

ลำดับที่	สารมลพิษ	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]

ลำดับที่	สารมลพิษ	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]

ลำดับที่	สารมลพิษ	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	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	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]

ลำดับที่	สารมลพิษ	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 ₉)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[14,25]

ลำดับที่	สารมลพิษ	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 ^[4] 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]

อากาศเสีย (ปดองระนาบ) จ้านวน 28 รายการ

ลำดับที่	สารมลพิษ	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	Adsorption Sampling, Gas Chromatographic Method ^[5]
11	Dioxins	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]

ลำดับที่	สารมลพิษ	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] 3) Instrumental Analyzer Method ^[5]
21	Selenium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
22	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5] 2) Instrumental Analyzer Method ^[5]
23	Sulfuric Acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5]
24	Tellurium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
25	Tin	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method ^[5]
26	Total Suspended Particulate	1) Isokinetic Sampling, Gravimetric Method ^[5] 2) Paired Train, Isokinetic Sampling, Gravimetric Method ^[5]

ลำดับที่	สารมลพิษ	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	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	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]
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]

5 Beryllium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	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]
6	Cadmium	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]
7	Chlordane	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]
8	Chromium	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]
9	Chromium (III)	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,16,19] 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,17,19] 3) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,16,19] 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,17,19]

10 Chromium (VI)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method ^[1,6,19]
11	Cobalt	2) Alkaline Digestion, Colorimetric Method ^[8,19] 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]
12	Copper	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]
13	2,4-D	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]
14	DDD	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]
15	DDE	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]
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,26]

สม

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 ^[1,6,16] 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]
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]

สม

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 ^[1,6,16] 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]
26	Nickel	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]
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]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
	- 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	
28	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]
29	pH	
30	Selenium	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]

ลำดับที่	สารมลพิษ	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]
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]

31mg

ดิน จำนวน 125 รายการ

ลำดับที่	สารมลพิษ	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]

31mg

ลำดับที่	สารมลพิษ	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)

ลำดับที่	สารมลพิษ	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	สารมลพิษ	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	สารมลพิษ	วิธีวิเคราะห์
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
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 ^(15,25)
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
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	สารมลพิษ	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 ^[15,25]
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 ^[15,25]
73	n-Hexane	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[15,25] 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^[13]

ลำดับที่	สารมลพิษ	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]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
84	Methanol	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(15,25)
85	Methoxychlor	2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method ^(13,25) 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)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
96	Polychlorinated biphenyls (PCBs)	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
	- 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',5,6-Nonachlorobiphenyl	
97	Pentachlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
98	Phenanthrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26) 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

ลำดับที่	สารมลพิษ	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 ^[11,22] 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]

.115 2,4,5-Trichlorophenol...

ลำดับที่	สารมลพิษ	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 ^[15,25]
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 ^[15,25]
120	Vinyl Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[15,25]
121	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[15,25]
122	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[15,25]
123	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[15,25]
124	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[15,25]
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 กำหนดค่าปริมาณเคมีภัณฑ์ที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้กลบเป็นเชื้อเพลิง. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125 ง.
- สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.
- APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington, DC: APHA, 2023.

5. United States...

5. United States Environmental Protection Agency. Standards of Performance for New Stationary Sources. 40 CFR 60. Appendix A, 2023.
6. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. SW-846, 2014.
7. 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.
8. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Alkaline Digestion for Hexavalent Chromium. SW-846 Method 3060A, 1996.
9. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Separatory Funnel Liquid-Liquid Extraction. SW-846 Method 3510C, 1996.
10. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Soxhlet Extraction. SW-846 Method 3540C, 1996.
11. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Automated Soxhlet Extraction. SW-846 Method 3541, 1994.
12. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Microscale Solvent Extraction (MSE). SW-846 Method 3570, 2002.
13. 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.
14. 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.
15. 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.
16. 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.
17. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Inductively Coupled Plasma-Mass Spectrometry. SW-846 Method 6020A, 2007.
18. 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**
19. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste Physical/Chemical Methods. Chromium, Hexavalent (Colorimetric). SW-846 Method 7196A, 1992. **เพิ่มใหม่**

20. United States...

20. 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. **เพิ่มใหม่**



ที่ อก ๐๓๑๐(๑)/ ๕ ๑ ๒ ๑

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๕ เมษายน ๒๕๖๗

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๙ มีนาคม ๒๕๖๗

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ว-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย

- | | |
|--------------------------|----------------------------|
| ๑) นางสาวพรรณธิดา พุ่มคง | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๕ |
| ๒) นายกำชัย สุทธิระ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๒๑ |
| ๓) นางสาวศุภรดา ปันมยุรา | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๘ |

๒. ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑๒ ราย

- | | |
|-----------------------------|----------------------------|
| ๑) นางสาวฐานิดา กลิ่นเขียว | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๒ |
| ๒) นางสาวกัญญภัสสร สายคำ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๓ |
| ๓) นางสาวณัฐนันท์ กันทะวงศ์ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๔ |
| ๔) นายอำนาจ วงษาเคน | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๕ |
| ๕) นายฤทธิพล ปัญญาวงศ์ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๖ |
| ๖) นายณชากร ทรรษา | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๗ |
| ๗) นายวัชรินทร์ ผ่องสามสวน | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๘ |
| ๘) นายณัฐพงศ์ โสภา | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๙ |
| ๙) นายศักรินทร์ ปานเพ็ง | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๐ |
| ๑๐) นายณัฐพล ชุ่มชื่น | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๑ |
| ๑๑) นายธนา สุพาพันธุ์ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๒ |
| ๑๒) นายณรรธ แก้วพงษ์ษา | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๙๓ |

อนึ่ง หนังสือฉบับนี้...

- ๒ -

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ในวันที่ ๒ กันยายน ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

น

(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 อก ๐๓๑๐(๑)/ ๑๒๓๖ ๘ /



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๑๘ ธันวาคม ๒๕๖๗

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒ ธันวาคม ๒๕๖๗

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ว-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ขอพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ
เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
จำนวน ๘ ราย ได้แก่

- | | |
|-------------------------------|----------------------------|
| ๑) นายประพจน์ วรรณชูชัย | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๖๐ |
| ๒) นายจิรณัฐ ขาวละออ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๐๗๒ |
| ๓) นายพีรพัฒน์ กำคำ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๐๘ |
| ๔) นางสาวอรุยา คำคล้อง | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๓๔ |
| ๕) นายกิตติพงศ์ แซ่ลี้ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๔๔ |
| ๖) นายจิรเมธ ประเสริฐศิริพงศ์ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๐ |
| ๗) นายภัทรพงษ์ มณฑาทอง | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๖๗ |
| ๘) นางสาวจารุวรรณ กระจำพันธุ | ทะเบียนเลขที่ ว-๒๐๔-จ-๐๑๘๑ |

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



"อุตสาหกรรมก้าวหน้า ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



✉ bangkok@alsglobal.com



ALS Line Official
ID: @alsthailand



ALS Facebook
Search: ALS Thailand



right solutions.
right partner.