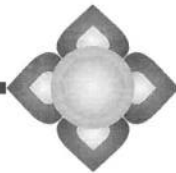


ประเมินผลคุณภาพน้ำใช้ และน้ำดื่ม

เสนอ

Centara Grand Mirage Beach Resort Pattaya



มกราคม 2566

บริษัท เทสต์ เทค จำกัด

30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150
Tel. 0 - 2893-4211 - 17 Fax : 0 - 2893-4218



Messrs : Centara Grand Mirage Beach Resort Pattaya
Address : 277 Moo 5 , Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand
Factory Site : Centara Grand Pattaya Date : 27 มกราคม 2566
Recommendation For : คุณภาพน้ำใช้และน้ำดื่มประจำเดือนมกราคม 2566
Report Reference : R01945-53, R01532-33, R01441-46, R01642/66

RECOMMENDATION

1. คุณภาพน้ำใช้

1.1 Storage Tank : คุณภาพน้ำ มีค่าความขุ่นต่ำ ค่าเหล็กตรวจไม่พบ ค่าความกระด้างมีค่าต่ำ, ค่าคลอไรด์มีค่าต่ำ
ตรวจไม่พบเชื้อ Coliform/E.Coli (คุณภาพน้ำมีค่าสารละลายต่างๆ ใกล้เคียงจากเดือนธันวาคม 2565)

หมายเหตุ : การดูแล

- เติมน้ำจืดในระบบผลิตน้ำ และน้ำซึ่ก่อนเก็บในถังพัก
- ตรวจสอบถังพัก 2 ครั้ง/เดือน และล้างถังเพื่อลดการสะสมของเหล็ก
- ควบคุมเลขบวการปรับสภาพน้ำส่วนต่อเนื่อง

1.2 Soft Water (Main Point) :

- pH ปกติ, ความขุ่นต่ำ
- ค่าความกระด้าง มีค่าต่ำ
- ค่าเหล็กตรวจไม่พบ
- ค่าเมกานีสตรวจไม่พบ
- ตรวจไม่พบเชื้อ Coliform, E.Coli
- คุณภาพน้ำทางเคมีอื่น ๆ ปกติอยู่ในมาตรฐาน

หมายเหตุ : การดูแลระบบ

- ควบคุมค่าเหล็กของน้ำในถังพักให้มีค่าต่ำ เพื่อลดการสะสมของเหล็กใน Softener
- ล้างกลับระบบ Softener ให้บ่อย เพื่อลดการสะสมของเหล็กและเชื้อในระบบกรอง
- ตรวจสอบค่าความกระด้าง และควบคุมการล้างเกลือ Softener ให้ต่อเนื่อง
เพื่อควบคุมค่าความกระด้าง และควบคุมการล้างเกลือที่ตกค้างให้หมด ก่อนใช้งานปกติ
- ควรเติมน้ำจืดในถังพักน้ำใช้ และ Regenerate Softener ด้วยน้ำหลังเติมน้ำจืด
เพื่อลดการสะสมของเหล็กใน Softener และฆ่าเชื้อที่สะสมในระบบกรอง

1.3 Hot Water System (Main Point) :

- ค่า pH ปกติ, ความขุ่นต่ำ
- ค่าเหล็กตรวจไม่พบ
- ค่าแมงกานีสตรวจไม่พบ
- ตรวจไม่พบ Coliform/E.Coli
- ค่าความกระด้างต่ำ

หมายเหตุ : - ควร Flushing ในระบบผลิตน้ำร้อน เพื่อลดการสะสมของเหล็กในระบบ
- ควบคุม Softener เพื่อควบคุมความกระด้างในระบบผลิตน้ำร้อน อาจก่อให้เกิดปัญหาตะกอนในระบบ

1.4 Guest Room Usage Water (Cold Water) : คุณภาพน้ำเย็นห้องพักแขก 2 จุด North A # 1135

และ South A # 1134 พบค่าดังนี้

- ค่าเหล็กตรวจไม่พบ
- ค่าแมงกานีสตรวจไม่พบ
- ค่าความกระด้างและคลอไรด์ใกล้เคียงน้ำในถังพัก
- ตรวจไม่พบ Coliform/ E.Coli

หมายเหตุ : ในกรณีไม่ค่อยเปิดใช้ห้อง ควร Flushing ท่อก่อนเปิดใช้ในโซนที่ไม่ค่อยเปิดห้องพัก เพื่อลดการสะสมของเหล็ก/แมงกานีสในเส้นท่อ
- ตรวจสอบการเติมคลอรีนในถังพักน้ำประปา เพื่อฆ่าเชื้อที่สะสม

1.5 Guest Room Usage Water (Hot Water) : คุณภาพน้ำ 2 จุด คือ North A # 1135

และ South A# 1134 พบค่าดังนี้

- คุณภาพน้ำทางเคมีพบความขุ่นต่ำ
- ค่าเหล็กต่ำ
- ค่าแมงกานีสตรวจไม่พบ
- ตรวจไม่พบ Coliform/E.Coli
- ค่าความกระด้างและคลอไรด์ใกล้เคียงน้ำในถังพัก

หมายเหตุ : ควร Flushing ระบบท่อ ก่อนเปิดใช้ห้องพักเพื่อป้องกันการสะสมของตะกอนเหล็กในเส้นท่อ

1.6 Cooling :

- 1) คุณภาพน้ำมีค่าการนำไฟฟ้าปกติ
- 2) ค่าความกระด้างสูง
- 3) ค่าเหล็กตรวจไม่พบ
- 4) เคมิป้องกันตะกรัน (phosphate) มีค่าต่ำ ควรตรวจสอบการเติมเคมี
- 5) ตรวจไม่พบ Legionella spp.

การดูแล

- ตรวจสอบระบบ Softener และผลิตน้ำ Soft ใช้เป็น Make Up Water ให้เพียงพอ และควบคุมการล้างเกลือ เพื่อควบคุมค่าความกระด้าง ≤ 20 ppm
- ควบคุมการเติมเคมีป้องกันตะกรัน และตะไคร้ น้ำ เนื่องจาก เคมิป้องกันตะกรัน (phosphate) ยังต่ำ
- ควบคุมการระบายน้ำทิ้ง ให้สม่ำเสมอ เพื่อควบคุมค่า การนำไฟฟ้า ≤ 2500 umhos/cm

1.7 Chilled Water : คุณภาพน้ำเหลืองใสมีตะกอน และค่าเหล็กมีค่าสูง ค่า Nitrite ตรวจพบ มีค่าต่ำกว่าเกณฑ์

ควบคุม

มีค่า pH สูง

หมายเหตุ : - ควรเติมเคมีเพิ่มในรอบการบำรุงรักษาถัดไป โดยล้างระบบก่อนเติมเคมีเพื่อลดการสะสมของเหล็กก่อนเติมเคมี

2. น้ำดื่ม

- 1) Canteen : ค่าความกระด้างต่ำกว่ามาตรฐาน ค่าเหล็กและ ค่าแมงกานีสตรวจไม่พบ
คุณภาพน้ำทางเคมีอื่นๆ อยู่ในมาตรฐาน ตรวจไม่พบ Coliform/E.Coli
- 2) Oasis Kitchen : ค่าความกระด้างต่ำกว่ามาตรฐาน ค่าเหล็กและ ค่าแมงกานีสตรวจไม่พบ
คุณภาพน้ำทางเคมีอื่นๆ อยู่ในมาตรฐาน ตรวจไม่พบ Coliform/E.Coli
- 3) Guest Room (1134) : ค่าความกระด้างต่ำ, ค่าเหล็กและ ค่าแมงกานีสตรวจไม่พบ
ตรวจไม่พบ Coliform/E.Coli

การดูแล :

- ล้างระบบกรอง Softener และล้างสม่ำเสมอ เพื่อลดค่าความกระด้าง
- Flushing line ด้วยน้ำหลังเติมคลอรีน เพื่อฆ่าเชื้อแบคทีเรียที่สะสมในระบบ
- ตรวจสอบความสะอาดของถังและแท่งคาร์บอนน้ำดื่ม

3. Swimming Pool :

1) Main Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.92 pm
- ตรวจไม่พบ Coliform/ E.Coli

2) Lab Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.97 ppm
- ตรวจไม่พบ Coliform/ E.Coli

3) Lazy Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.96 ppm
- ตรวจไม่พบ Coliform/E.Coli

4) 18th Flr Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.92 ppm
- ตรวจไม่พบ Coliform/E.Coli

หมายเหตุ : การดูแล

1. ควรตรวจสอบ pH สม่าเสมอในกรณีค่า pH ต่ำให้ปรับด้วยโซดาไฟหรือโซดาแอช และปรับด้วยกรดเกลือในกรณีค่า pH สูง
2. ตรวจสอบคลอรีนและเติมให้สม่าเสมอ
3. หมุนเวียนน้ำผ่านกรอง เพื่อไม่ให้ตะกอนสะสม และเชื้อแบคทีเรีย

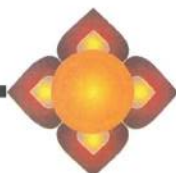
4. น้ำแข็ง :

- 1) Canteen (Cube) : ตรวจไม่พบ Coliform/E.Coli
- 2) Banquet (Flake) : ตรวจไม่พบ Coliform/E.Coli
- 3) Flames : ตรวจไม่พบ Coliform/E.Coli
- 4) Oasis Kitchen (Flake) : ตรวจไม่พบ Coliform/E.Coli

การดูแล :

1. เติมน้ำคลอรีนในน้ำประปา และล้างระบบผลิตน้ำแข็งด้วยน้ำหลังเติมน้ำคลอรีน
 2. ตรวจสอบความสะอาดระบบผลิตน้ำแข็ง
 3. ภาชนะตักน้ำแข็งต้องสะอาด และถังบรรจุต้องสะอาด และควรล้างทุกวัน
 4. อย่าแช่อาหารปะปนในถังบรรจุน้ำแข็ง
 5. ในกรณีน้ำแข็งซื้อ ควรตรวจสอบถังบรรจุ
5. น้ำเสียออกจากระบบ : ลักษณะน้ำเหลืองขุ่น BOD ~ 148 mg/l และอยู่ในเกณฑ์การควบคุมของ
พัตยา ในการปล่อยน้ำทิ้งลงระบบบำบัดรวม (BOD \leq 1000 mg/l) โดยต้องจ่ายค่าบริการบำบัดน้ำทิ้ง
ตามข้อกำหนด

Recommendation & Water Analysis Report
for
Centara Grand Mirage Beach Resort Pattaya



January, 2023

บริษัท เทสต์ เทค จำกัด

30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงสามตำ เขตบางขุนเทียน กรุงเทพฯ 10150
Tel. 0 – 2893-4211 - 17 Fax : 0 – 2893-4218



SRR NO. 66L00534

Messrs : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5 , Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Factory Site : Centara Grand Pattaya Date : January 27, 2023

Recommendation For : Water Analysis of January, 2023

Report Reference : R01945-53, R01532-33, R01441-46, R01642/66

RECOMMENDATION

1. Raw Water

1.1 Storage Tank :

- Iron was not found.
- Turbidity was not found.
- Manganese was not found.
- Coliform/ E.Coli was not found.
- Hardness was low.

Note : - Storage Tank should be check and cleaned 1 -2 time/month to reduce iron accumulation.
- Chlorine should be routine added into buied-water and feeding into raw water to prevent bacterial growth.
- Softener in next step treatment must be taken care.

1.2 Soft Water (Main Point) :

- Hardness was low.
- Iron was not high.
- Manganese was not high.
- Coliform/ E.Coli was not found.

Note : The system should be operated.

- Water storage tank should be checked and cleaned if iron and bacteria accumulation.
- Softener should be flushing with low iron of raw water to reduce iron and bacteria accumulation, Rinsing step must be checked before use.
- The regeneration with salt should be routine operation to control hardness.

- Chlorine should be added in storage tank and back wash softener/regeneration should be done with chlorinated – water to prevent bacteria growth and accumulation.

1.3 Hot Water System (Main Point) :

- Hardness was low.
- Iron was low.
- Manganese was not found.
- Coliform/E.Coli was not found.

Note : The system should be checked.

- Raw water storage tank cleaning and flushing should be done increase of iron accumulation.
- Hot water unit should be flushing with low iron water.
- Metal type in hot water system and pipe line should be checked to prevent Galvanic Corrosion Problems.

1.4 Guest Room Usage Water (Cold Water) : (North A # 1135, South A # 1134)

- Total Hardness was like raw water.
- Turbidity was low.
- Iron was not found.
- Manganese was not found.
- Coliform/ E.Coli was not found.

Note : In the room which not usually open, flushing pipe line before open should be done to reduce iron and bacteria accumulation.

- Chlorine should be routine added into water supply.

1.5 Guest Room Usage Water (Hot Water) : (North A # 1135, South A # 1134)

- Hardness was like raw water.
- Turbidity was low.
- Iron was low.
- Manganese was not found.
- Coliform/E.Coli was not found.



Note:

- Flushing of pipe – line before used should be done to reduce iron accumulation in pipe line.
- Soft water before hot water machine should be checked.

1.6 Cooling

- 1) Conductivity was low. Hardness was high.
- 2) Iron was not found.
- 3) Antiscale and anticorrosion chemicals including with biocide should be adding into system.
- 4) Legionella spp. was not found.

- Note :**
- Bleed off should be controlled.
 - Softener should be checked about regeneration cycle to control hardness < 20 ppm.
 - Cooling water must be drained and adding new make up water to reduce TDS.

- 1.7 Chilled :** Iron was high. pH was high Anticorrosion chemical (Nitrite) was low for control. Anti corrosion chemical should be added after cleaning, incase of maintenance.

2. Drinking Water :

- 1) Canteen : Hardness was low. Iron was not found. Manganese was not found.
Other water quality was in standard. Coliform/E.Coli was not found.
- 2) Oasis Kitchen : Hardness was low. Manganese was not found.
Iron was not found. Other water quality was in standard. Coliform/E.Coli was not found.
- 3) Guest Room (1134) : Other water quality was in standard. Hardness was low. Iron was not found.
Manganese was not found. Coliform/E.Coli was not found.

Note :

- Chlorine feeding into raw water should be done.
- Clean unit and Tank with chlorination water should be done.
- Drinking water treatment unit should be cleaned and regenerate to reduce hardness.

3. Swimming Water :

- 1) Main Pool : On used.
 - pH was normal.
 - Chlorine was found 0.92 ppm.
 - Coliform/ E.Coli was not found.
- 2) Lab Pool : On used.
 - pH was normal.
 - Chlorine was found 0.97 ppm.
 - Coliform/ E.Coli was not found.
- 3) Lazy Pool :
 - pH was normal.
 - Chlorine was found 0.96 ppm.
 - Coliform/E.Coli was not found.
- 4) 18th Flr Pool
 - pH was normal.
 - Chlorine was found 0.92 ppm.
 - Coliform/E.Coli was not found.

Recommendation :

1. pH should be routine checked. If pH low, the feeding of NaOH or Na₂CO₃ should be done.
If pH high , the pH adjustment by HCl should be added.
2. Chlorine should be routine checked to control ~ 1 – 3 ppm
3. Circulation water should be passed through filter for reduce bacteria accumulation.

4. Ice

- 1) Canteen (Cube) : Coliform/E.Coli was not found.
- 2) Banquet (Flake) : Coliform/E.Coli was not found.
- 3) Flames : Coliform/E.Coli was not found.
- 4) Oasis Kitchen (Flake) : Coliform/E.Coli was not found.

Recommendation : The ice machine should be disinfection by.

1. Flushing system by chlorine – added water should be done.
2. Scoop equipment should be cleaned without contamination.
3. Ice machine and filter system should be cleaned.
4. Ice box should be cleaned.

5. **Waste Water** : BOD of Effluent ~148 mg/L was in Pattaya Regulation (≤ 1000 mg/l).

The owner should pay for treatment following regulation rate.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 12/01/2023

Received Date : 12/01/2023

Report Date : 19/01/2023

Sample Type : Drinking Water

Sampling Method : Grab

Sampling Time : 10:30 AM

Analytical Date : 12 - 17/01/2023

Report No. : R01532/66

Parameters	Unit	Method	TW00915 /66	TW00916 /66	TW00917 /66	Standard ^a
			Drinking Water (Canteen)	Drinking Water (Oasis Kitchen)	Drinking Water (Guest Room 1134)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.1	7.1	7.1	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	< 0.50	< 0.50	< 0.50	≤ 5.0
Conductivity [#]	uS/cm	SM 2017 (2510 B)	299	298	299	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	179	179	179	-
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	65	68	68	≤ 100.0
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	36	34	34	≤ 250.0
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	< 0.10	< 0.10	≤ 0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	< 0.04	≤ 0.05
Nitrate Nitrogen [#]	mg/L as NO ₃ ⁻ -N	SM 2017 (4500-NO ₃ ⁻ E)	0.58	0.54	0.57	≤ 4.0
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	31.30	29.29	29.20	≤ 250.0
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

19/01/2023

Technical Manager

19/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Drinking Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 17/01/2023

Report Date : 19/01/2023

Report No. : R01533/66

Parameters	Unit	Method	TW00915 /66	TW00916 /66	TW00917 /66	Standard ^a
			Drinking Water (Canteen)	Drinking Water (Oasis Kitchen)	Drinking Water (Guest Room 1134)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found	negative
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 20172. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
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Analyst

19/01/2023

Technical Manager

19/01/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 16/01/2023

Report Date : 18/01/2023

Report No. : R01441/66

Parameters	Unit	Method	TW00918 /66	TW00919 /66	Standard ^a
			Main Pool	Lab Pool	
pH (25°C)	-	Based on SM 2017 (4500-H ⁺ B)	7.4	7.5	7.2-8.4
Residual Chlorine	mg/L as Cl ₂	DPD Colorimetric	0.92	0.97	0.6-1.0
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)



Analyst

18/01/2023



Technical Manager

18/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 16/01/2023

Report Date : 18/01/2023

Report No. : R01442/66

Parameters	Unit	Method	TW00918 /66	TW00919 /66	Standard ^a
			Main Pool	Lab Pool	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.8	< 1.8	< 10
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205, dated October 14, B.E.2530 (1987)



Analyst

18/01/2023



Technical Manager

18/01/2023

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Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 16/01/2023

Report Date : 18/01/2023

Report No. : R01443/66

Parameters	Unit	Method	TW00920 /66	TW00921 /66	Standard ^a
			Lazy Pool	18 th Flr Pool	
pH (25°C)	-	Based on SM 2017 (4500-H ⁺ B)	7.3	7.6	7.2-8.4
Residual Chlorine	mg/L as Cl ₂	DPD Colorimetric	0.96	0.92	0.6-1.0
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205, dated October 14, B.E.2530 (1987)



Analyst

18/01/2023

Technical Manager

18/01/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 12/01/2023

Received Date : 12/01/2023

Report Date : 18/01/2023

Sample Type : Swimming Water

Sampling Method : Grab

Sampling Time : 10:30 AM

Analytical Date : 12 - 16/01/2023

Report No. : R01444/66

Parameters	Unit	Method	TW00920 /66	TW00921 /66	Standard ^a
			Lazy Pool	18 th Flr Pool	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.8	< 1.8	< 10
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)

Analyst

18/01/2023

Technical Manager

18/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Ice

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 16/01/2023

Report Date : 18/01/2023

Report No. : R01445/66

Parameters	Unit	Method	TW00922 /66	TW00923 /66	Standard ^a
			Canteen (Cube)	Banquet (Flake)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 20172. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

18/01/2023

Technical Manager

18/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Ice

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 16/01/2023

Report Date : 18/01/2023

Report No. : R01446/66

Parameters	Unit	Method	TW00924 /66	TW00925 /66	Standard ^a
			Flames	Oasis Kitchen (Flake)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 20172. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

18/01/2023

Technical Manager

18/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

TESTING
NO.0001

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Waste Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 19/01/2023

Report Date : 20/01/2023

Report No. : R01642/66

Parameters	Unit	Method	TW00926 /66	Standard ^a
			Effluent	
pH	-	SM 2017 (4500-H ⁺ B)	7.4	-
BOD	mg/L	SM 2017 (5210 B, 4500-O G)	148	≤ 1000
Total Suspended Solids	mg/L	SM 2017 (2540 D)	88	-
* Oil & Grease	mg/L	SM 2017 (5520 D)	71.0	-
Sample Condition		Observation	Light Yellow, Cloud	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked " * " on this report are not included in scope of Accreditation

3. a : ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 22 (พ.ศ. 2544) เรื่อง กำหนดอัตราค่าบริการบำบัดน้ำเสียของระบบบำบัดน้ำเสียรวมเมืองพัทยา



Analyst

20/01/2023



Technical Manager

20/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01945/66

Parameters	Unit	Method	TW00906 /66	TW00907 /66	TW00908 /66	Standard ^a
			Water in Storage Tank	Soft Water System (Main Point)	Hot Water System (Main Point)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.5	7.2	7.1	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	< 0.50	< 0.50	< 0.50	5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	298	302	303	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	179	181	182	1000
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	68	70	71	300
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	34	36	34	250
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	< 0.10	0.11	0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	< 0.04	0.1
Nitrate [#]	mg/L as NO ₃ ⁻	SM 2017 (4500-NO ₃ ⁻ E)	1.73	2.10	2.30	50
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	31.91	29.65	29.53	250
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.



Analyst

24/01/2023

Technical Manager

24/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01946/66

Parameters	Unit	Method	TW00906 /66	TW00907 /66	TW00908 /66	Standard ^a
			Water in Storage Tank	Soft Water System (Main Point)	Hot Water System (Main Point)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found	not found
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

3. Coliform Bacteria < 1.1 MPN/100 mL is meaning not found



Analyst

24/01/2023

Technical Manager

24/01/2023

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Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01947/66

Parameters	Unit	Method	TW00909 /66	TW00910 /66	Standard ^a
			Guest Room Cold Water (North A 1135)	Guest Room Cold Water (South A 1134)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.5	7.2	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	< 0.50	< 0.50	5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	298	298	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	179	179	1000
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	69	68	300
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	34	34	250
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	< 0.10	0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	0.1
Nitrate [#]	mg/L as NO ₃ ⁻	SM 2017 (4500-NO ₃ ⁻ E)	1.96	1.96	50
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	36.12	31.00	250
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

Analyst

24/01/2023

Technical Manager

24/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01948/66

Parameters	Unit	Method	TW00909 /66	TW00910 /66	Standard ^a
			Guest Room Cold Water (North A 1135)	Guest Room Cold Water (South A 1134)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

3. Coliform Bacteria < 1.1 MPN/100 mL is meaning not found



Analyst

24/01/2023



Technical Manager

24/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01949/66

Parameters	Unit	Method	TW00911 /66	TW00912 /66	Standard ^a
			Guest Room Hot Water (North A 1135)	Guest Room Hot Water (South A 1134)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.7	7.2	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	0.66	< 0.50	5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	303	303	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	182	182	1000
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	70	70	300
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	32	34	250
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	0.11	< 0.10	0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	0.1
Nitrate [#]	mg/L as NO ₃ ⁻	SM 2017 (4500-NO ₃ ⁻ E)	2.36	2.48	50
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	31.60	31.60	250
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.



Analyst

24/01/2023

Technical Manager

24/01/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01950/66

Parameters	Unit	Method	TW00911 /66	TW00912 /66	Standard ^a
			Guest Room Hot Water (North A 1135)	Guest Room Hot Water (South A 1134)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

3. Coliform Bacteria < 1.1 MPN/100 mL is meaning not found



Analyst

24/01/2023



Technical Manager

24/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01951/66

Parameters	Unit	Method	TW00913 /66	Standard ^a (Cooling Water)
			Cooling Water	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	8.1	8.5 - 9.5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	582	< 2500
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	349	< 2000
* P-Alkalinity	mg/L as CaCO ₃	Titration	5	-
* M-Alkalinity	mg/L as CaCO ₃	Titration	70	-
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	128	< 100
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	68	< 400
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	< 1.0
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	-
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	53.58	-
* Silica	mg/L as SiO ₂	SM 2017 (4500-SiO ₂ C)	15.05	-
* Total Phosphorus	mg/L as P	Stannous Chloride	0.21	-
Sample Condition		Observation	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMS.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ



Analyst

24/01/2023

Technical Manager

24/01/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

TESTING
NO.0001

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01952/66

Parameters	Unit	Method	TW00913 /66
			Cooling Water
<i>Legionella spp.</i>	CFU/L	ISO 11731 : 2017	not detected
Sample Condition		Observation	Clear



Analyst

24/01/2023



Technical Manager

24/01/2023

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Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 12/01/2023

Sampling Time : 10:30 AM

Received Date : 12/01/2023

Analytical Date : 12 - 23/01/2023

Report Date : 24/01/2023

Report No. : R01953/66

Parameters	Unit	Method	TW00914 /66	Standard ^a (Chilled Water)
			Chilled Water	
* pH (25°C)	-	Based on SM 2017 (4500-H ⁺ B)	10.6	7.5 - 9.5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	994	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	596	-
* P-Alkalinity	mg/L as CaCO ₃	Titration	150	-
* M-Alkalinity	mg/L as CaCO ₃	Titration	275	-
* Total Hardness	mg/L as CaCO ₃	SM 2017 (2340 C)	8	-
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	42	-
* Total Iron	mg/L as Fe	SM 2017 (3500-Fe B)	14.21	< 1.0
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	0.19	-
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	34.01	-
Silica [#]	mg/L as SiO ₂	SM 2017 (4500-SiO ₂ C)	5.52	-
* Nitrite	mg/L as NO ₂ ⁻	SM 2017 (4500-NO ₂ ⁻ B)	52.53	500 - 1000
Sample Condition		Observation	Light Yellow, Particles	

- Remark :
1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017
 2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.
 3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.
 4. Test marked " * " on this report are not included in scope of Accreditation
 5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ (Chilled Water)



Analyst

24/01/2023

Technical Manager

24/01/2023

Reported results refer to the sample as received only.

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