Recommendation & Water Analysis Report

for

Centara Grand Mirage Beach Resort Pattaya

March, 2023

บริษัท เทสท์ เทค จำกัด

30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150

Tel. 0 – 2893-4211 - 17 Fax : 0 – 2893-4218

TEST TECH

บริษัท เทสท์ เทค จำกัด TEST TECH CO., LTD.
30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150
30, 32 RAMA II Soi 63, Rama II Rd., Samaedam, Bangkhunthian, Bangkok 10150
Tel. 0 – 2893-4211-17 Fax : 0 – 2893-4218

SRR NO. 66L03385

Messrs : Centara Grand Mirage Beach Resort Pattaya

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

Factory Site : Centara Grand Pattaya **Date :** March 31, 2023

Recommendation For : Water Analysis of March, 2023

Report Reference : R07284-92, R06858-59, R06782-85, R06786-87, R06860/66

RECOMMENDATION

1. Raw Water

1.1 Storage Tank :

- Iron was not found.
- Turbidity was low.
- Manganese was low.
- 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 routein 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 high.
- Manganese was found.
- 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 routein 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 not 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 # 1817, South A # 1716)

- Total Hardness was like raw water.
- Turbidity was low.
- Iron was high.
- 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 # 1817, South A # 1716)

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

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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 and Manganese 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 (1817) : 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.

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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 0.81 ppm.
   - Coliform/ E.Coli was not found.

3) Lazy Pool :
   - pH was normal.
   - Chlorine was found 0.91 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 Na_2CO_3 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.

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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 ~159 mg/L was in Pattaya Regulation (≤ 1000 mg/l).

The owner should pay for treatment following regulation rate.

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 27/03/2023

Report Date : 28/03/2023

Report No. : R07284/66

Parameters	Unit	Method	TW05982 /66 Water in Storage Tank	TW05983 /66 Soft Water System (Main Point)	TW05984 /66 Hot Water System (Main Point)	Standard [a]
pH (25°C)#	-	Based on SM 2017 (4500-H^+ B)	7.6	7.5	7.4	6.5-8.5
Turbidity#	NTU	SM 2017 (2130 B)	0.53	3.81	0.66	5
Conductivity#	uS/cm	SM 2017 (2510 B)	286	295	291	-
*Dissolved Solids	mg/L as NaCl	Electrical Conductivity	172	177	175	1000
Total Hardness@	mg/L as $CaCO_3$	SM 2017 (2340 C)	62	66	67	300
Chloride@	mg/L as Cl^-	SM 2017 (4500-Cl^- B)	32	32	32	250
Total Iron#	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	0.28	0.12	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)	1.72	1.62	2.28	50
Sulfate#	mg/L as SO_4^{2-}	Based on SM 2017 (4500-SO_4^{2-} E)	31.00	29.86	31.30	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.

บริษัท เทสท์เทค จำกัด

Analyst
28/03/2023

Technical Manager
28/03/2023

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

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 27/03/2023

Report Date : 28/03/2023

Report No. : R07285/66

Parameters	Unit	Method	TW05982 /66 Water in Storage Tank	TW05983 /66 Soft Water System (Main Point)	TW05984 /66 Hot Water System (Main Point)	Standard [a]
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 1.1	not found
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found	not found
Sample Condition		**Observation**	Clear	Clear	Clear	

Copy

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

28/03/2023

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Technical Manager

28/03/2023

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Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 27/03/2023

Report Date : 28/03/2023

Report No. : R07286/66

Parameters	Unit	Method	TW05985 /66 Guest Room Cold Water (North A1817)	TW05986 /66 Guest Room Cold Water (South A1716)	Standard [a]
pH (25°C)#	-	Based on SM 2017 (4500-H^+ B)	7.5	7.4	6.5-8.5
Turbidity#	NTU	SM 2017 (2130 B)	< 0.50	0.55	5
Conductivity#	uS/cm	SM 2017 (2510 B)	291	291	-
*Dissolved Solids	mg/L as NaCl	Electrical Conductivity	175	175	1000
Total Hardness@	mg/L as $CaCO_3$	SM 2017 (2340 C)	61	60	300
Chloride@	mg/L as Cl^-	SM 2017 (4500-Cl^- B)	32	30	250
Total Iron#	mg/L as Fe	SM 2017 (3500-Fe B)	0.43	0.11	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)	2.25	2.33	50
Sulfate#	mg/L as SO_4^{2-}	Based on SM 2017 (4500-SO_4^{2-} E)	33.11	31.00	250
Sample Condition		**Observation**	Colorless, a little bit Particles	Clear	

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บริษัท เทสท์เทค จำกัด

Analyst
28/03/2023

Technical Manager
28/03/2023

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 27/03/2023

Report Date : 28/03/2023

Report No. : R07287/66

Parameters	Unit	Method	TW05985 /66 Guest Room Cold Water (North A1817)	TW05986 /66 Guest Room Cold Water (South A1716)	Standard [a]
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	not found
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found
Sample Condition		**Observation**	Colorless, a little bit Particles	Clear	

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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

28/03/2023

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Technical Manager

28/03/2023

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Accreditation No. 1201/54

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)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 15/03/2023

Received Date : 15/03/2023

Report Date : 28/03/2023

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 27/03/2023

Report No. : R07288/66

Parameters	Unit	Method	TW05987 /66 Guest Room Hot Water (North A1817)	TW05988 /66 Guest Room Hot Water (South A1716)	Standard [a]
pH (25°C)#	-	Based on SM 2017 (4500-H^+ B)	7.5	7.4	6.5-8.5
Turbidity#	NTU	SM 2017 (2130 B)	< 0.50	0.78	5
Conductivity#	uS/cm	SM 2017 (2510 B)	291	293	-
*Dissolved Solids	mg/L as NaCl	Electrical Conductivity	175	176	1000
Total Hardness@	mg/L as $CaCO_3$	SM 2017 (2340 C)	62	66	300
Chloride@	mg/L as Cl^-	SM 2017 (4500-Cl^- B)	30	32	250
Total Iron#	mg/L as Fe	SM 2017 (3500-Fe B)	0.11	0.11	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	2.28	50
Sulfate#	mg/L as SO_4^{2-}	Based on SM 2017 (4500-SO_4^{2-} E)	32.21	31.30	250
Sample Condition		**Observation**	Clear	Clear	

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Analyst
28/03/2023

Technical Manager
28/03/2023

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Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 27/03/2023

Report Date : 28/03/2023

Report No. : R07289/66

Parameters	Unit	Method	TW05987 /66 Guest Room Hot Water (North A1817)	TW05988 /66 Guest Room Hot Water (South A1716)	Standard [a]
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	not found
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found
Sample Condition		**Observation**	Clear	Clear	

Copy

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

28/03/2023

บริษัท เทสท์เทค จำกัด

Technical Manager

28/03/2023

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Accreditation No. 1201/54

TESTING NO.0001

Analysis/Test Report

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

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 15/03/2023

Received Date : 15/03/2023

Report Date : 28/03/2023

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 27/03/2023

Report No. : R07290/66

Parameters	Unit	Method	TW05989 /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)	1188	< 2500
*Dissolved Solids	mg/L as NaCl	Electrical Conductivity	713	< 2000
*P-Alkalinity	mg/L as $CaCO_3$	Titration	< 1	-
*M-Alkalinity	mg/L as $CaCO_3$	Titration	80	-
Total Hardness@	mg/L as $CaCO_3$	SM 2017 (2340 C)	220	< 100
Chloride@	mg/L as Cl^-	SM 2017 (4500-Cl^- B)	176	< 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)	164	-
*Silica	mg/L as SiO_2	SM 2017 (4500-SiO_2 C)	23.76	-
*Total Phosphorus	mg/L as P	Stannous Chloride	0.04	-
Sample Condition		**Observation**	Clear	

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5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ

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บริษัท เทสท์เทค จำกัด

Analyst
28/03/2023

Technical Manager
28/03/2023

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บริษัท เทสท์ เทค จำกัด TEST TECH CO.,LTD
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30, 32 Rama II Soi 63 Rama II Rd., Samaedam, Bangkhunthian, Bangkok 10150
Tel. 0-2893-4211-17 Fax: 0-2893-4218

ilac-MRA LABORATORY ACCREDITATION BLA-DSS TESTING NO.0001 TEST TECH

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 27/03/2023

Report Date : 28/03/2023

Report No. : R07291/66

Parameters	Unit	Method	TW05989 /66
			Cooling Water
Legionella spp.	CFU/L	ISO 11731 : 2017	not detected
Sample Condition		**Observation**	Clear

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Analyst
28/03/2023

บริษัท เทสท์เทค จำกัด

Technical Manager
28/03/2023

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 15/03/2023

Received Date : 15/03/2023

Report Date : 28/03/2023

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 27/03/2023

Report No. : R07292/66

Parameters	Unit	Method	TW05990 /66	Standard [a]
			Chilled Water	(Chilled Water)
* pH (25°C)	-	Based on SM 2017 (4500-H^+ B)	10.4	7.5 - 9.5
Conductivity #	uS/cm	SM 2017 (2510 B)	956	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	574	-
* P-Alkalinity	mg/L as $CaCO_3$	Titration	115	-
* M-Alkalinity	mg/L as $CaCO_3$	Titration	245	-
Total Hardness @	mg/L as $CaCO_3$	SM 2017 (2340 C)	10	-
Chloride @	mg/L as Cl^-	SM 2017 (4500-Cl^- B)	42	-
* Total Iron	mg/L as Fe	SM 2017 (3500-Fe B)	4.20	< 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)	33.71	-
Silica #	mg/L as SiO_2	SM 2017 (4500-SiO_2 C)	4.33	-
* Nitrite	mg/L as NO_2^-	SM 2017 (4500-NO_2^- B)	49.48	500 - 1000
Sample Condition		**Observation**	Light Yellow, a little bit Particles	

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5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ (Chilled Water)

Analyst
28/03/2023

บริษัท เทสท์เทค จำกัด

Technical Manager
28/03/2023

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54
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** : Drinking Water

Sampling by : Test Tech Co., Ltd. **Sampling Method** : Grab

Sampling Date : 15/03/2023 **Sampling Time** : 11:30 AM

Received Date : 15/03/2023 **Analytical Date** : 15 - 22/03/2023

Report Date : 23/03/2023 **Report No.** : R06858/66

Parameters	Unit	Method	TW05991 /66 Drinking Water (Canteen)	TW05992 /66 Drinking Water (Oasis Kitchen)	TW05993 /66 Drinking Water (Guest Room 1817)	Standard [a]
pH (25°C)#	-	Based on SM 2017 (4500-H^+ B)	7.3	7.6	7.2	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)	284	284	285	-
*Dissolved Solids	mg/L as NaCl	Electrical Conductivity	170	170	171	-
Total Hardness@	mg/L as $CaCO_3$	SM 2017 (2340 C)	58	58	58	≤ 100.0
Chloride@	mg/L as Cl^-	SM 2017 (4500-Cl^- B)	30	30	30	≤ 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)	0.41	0.37	0.39	≤ 4.0
Sulfate#	mg/L as SO_4^{2-}	Based on SM 2017 (4500-SO_4^{2-} E)	35.52	31.30	31.30	≤ 250.0
Sample Condition		**Observation**	Clear	Clear	Clear	

Remark :
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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))

บริษัท เทสท์เทค จำกัด

Analyst
23/03/2023

Technical Manager
23/03/2023

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 22/03/2023

Report Date : 23/03/2023

Report No. : R06859/66

Parameters	Unit	Method	TW05991 /66 Drinking Water (Canteen)	TW05992 /66 Drinking Water (Oasis Kitchen)	TW05993 /66 Drinking Water (Guest Room 1817)	Standard [a]
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 1.1	< 2.2
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found	negative
Sample Condition		**Observation**	Clear	Clear	Clear	

Copy

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

2. 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
23/03/2023

บริษัท เทสท์เทค จำกัด

Technical Manager
23/03/2023

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30, 32 Rama II Soi 63 Rama II Rd., Samaedam, Bangkhunthian, Bangkok 10150 Tel. 0-2893-4211-17 Fax: 0-2893-4218

30th Anniversary

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 : 15/03/2023

Received Date : 15/03/2023

Report Date : 22/03/2023

Sample Type : Swimming Water

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 20/03/2023

Report No. : R06782/66

Parameters	Unit	Method	TW05994 /66	TW05995 /66	Standard [a]
			Main Pool	Lab Pool	
pH (25°C)	-	Based on SM 2017 (4500-H^+ B)	7.5	7.4	7.2-8.4
Residual Chlorine	mg/L as Cl_2	DPD Colorimetric	0.92	0.81	0.6-1.0
Sample Condition		**Observation**	Clear	Clear	

Copy

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

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

Analyst
22/03/2023

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Technical Manager
22/03/2023

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 20/03/2023

Report Date : 22/03/2023

Report No. : R06783/66

Parameters	Unit	Method	TW05994 /66	TW05995 /66	Standard [a]
			Main Pool	Lab Pool	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.8	< 1.8	< 10
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		**Observation**	Clear	Clear	

COPY

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

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Analyst

22/03/2023

Technical Manager

22/03/2023

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30, 32 Rama II Soi 63 Rama II Rd., Samaedam, Bangkhunthian, Bangkok 10150 Tel. 0-2893-4211-17 Fax: 0-2893-4218

30th Anniversary

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 : 15/03/2023

Received Date : 15/03/2023

Report Date : 22/03/2023

Sample Type : Swimming Water

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 20/03/2023

Report No. : R06784/66

Parameters	Unit	Method	TW05996 /66 Lazy Pool	TW05997 /66 18th Flr Pool	Standard a
pH (25°C)	-	Based on SM 2017 (4500-H^+ B)	7.6	7.7	7.2-8.4
Residual Chlorine	mg/L as Cl_2	DPD Colorimetric	0.91	0.92	0.6-1.0
Sample Condition		**Observation**	Clear	Clear	

Copy

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

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

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Analyst
22/03/2023

Technical Manager
22/03/2023

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Tel. 0-2893-4211-17 Fax: 0-2893-4218

Accreditation No. 1201/54

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 : 15/03/2023

Received Date : 15/03/2023

Report Date : 22/03/2023

Sample Type : Swimming Water

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 20/03/2023

Report No. : R06785/66

Parameters	Unit	Method	TW05996 /66 Lazy Pool	TW05997 /66 18th Flr Pool	Standard a
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.8	< 1.8	< 10
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		**Observation**	Clear	Clear	

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

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

Analyst

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Technical Manager

22/03/2023

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30th Anniversary

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 : 15/03/2023

Received Date : 15/03/2023

Report Date : 22/03/2023

Sample Type : Ice

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 20/03/2023

Report No. : R06786/66

Parameters	Unit	Method	TW05998 /66 Canteen (Cube)	TW05999 /66 Banquet (Flake)	Standard [a]
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 2.2
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		**Observation**	Clear	Clear	

COPY

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

2. 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

22/03/2023

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Technical Manager

22/03/2023

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30th Anniversary

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 : 15/03/2023

Received Date : 15/03/2023

Report Date : 22/03/2023

Sample Type : Ice

Sampling Method : Grab

Sampling Time : 11:30 AM

Analytical Date : 15 - 20/03/2023

Report No. : R06787/66

Parameters	Unit	Method	TW06000 /66 Flames	TW06001 /66 Oasis Kitchen (Flake)	Standard [a]
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 2.2
E. coli	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		**Observation**	Clear	Clear	

COPY

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

2. 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
22/03/2023

บริษัท เทสท์เทค จำกัด

Technical Manager
22/03/2023

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บริษัท เทสท์ เทค จำกัด TEST TECH CO.,LTD
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30, 32 Rama II Soi 63 Rama II Rd., Samaedam, Bangkhunthian, Bangkok 10150
Tel. 0-2893-4211-17 Fax: 0-2893-4218

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 : 15/03/2023

Sampling Time : 11:30 AM

Received Date : 15/03/2023

Analytical Date : 15 - 22/03/2023

Report Date : 23/03/2023

Report No. : R06860/66

Parameters	Unit	Method	TW06002 /66	Standard [a]
			Effluent	
pH	-	SM 2017 (4500-H^+ B)	6.7	-
BOD	mg/L	SM 2017 (5210 B, 4500-O G)	159	≤ 1000
Total Suspended Solids	mg/L	SM 2017 (2540 D)	200	-
* Oil & Grease	mg/L	SM 2017 (5520 D)	72.7	-
Sample Condition		**Observation**	Light Gray, Cloud, Black Particles	

Copy

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

บริษัท เทสท์เทค จำกัด

Analyst

23/03/2023

Technical Manager

23/03/2023

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