CMA Testing and Certification Laboratories
廠商會檢定中心

Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities add Marine Water Samples in Urban Area, Lantau and Outlying Islands to the Drainage Service Department

Provision of Routine Marine Water Quality Monitoring Services

Report for the Month of Jan 2020

Contract No. : DE/2018/02

Applicant : SEWAGE TREATMENT DIVISION 2
ELECTRICAL AND MECHANICAL BRANCH
DRAINAGE SERVICES DEPARTMENT

Address : STONECUTTERS ISLAND SEWAGE TREATMENT WORKS.,
NGONG SHUNG ROAD, NGONG SHUEN CHAU,
KOWLOON, HONG KONG

Application Number : LY041452(5)

Report Number : AZ0007466(1)

Report Issued Date : 17 Feb 2020

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
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TABLE OF CONTENT

EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing and Certification Laboratory (CMA Testing) for Contract No. DE/2018/02 "Term Contract for Provision of Sampling and analysing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities and Marine Water Samples in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2018-2020)''. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Routine Marine Water Quality Monitoring (rMWQM) of Project in Jan 2020.

2. In accordance with the Final EM&A Manual, environmental monitoring has been conducted in the reporting month with a Quarterly Basis for various parameters as summarized in **Table I**.

Table I Summary Table for Environmental Monitoring Works Conducted in the Reporting Month

Monitoring Parameters	Monitoring Date	Laboratory Testing Parameters
Marine Water Quality	14 Jan 2020	E.coli, Total Residual Chlorine (TRC), Chlorination by-products (CBPs) and Contaminants of Concern (COCs)

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1. INTRODUCTION

1.1. CMA Testing was commissioned by Drainage Services Department (DSD) to undertake the operation phase environmental monitoring for Advance Disinfection Facilities (ADF) at Stonecutters Island Sewage Treatment Works (SCISTW) (thereafter called the "the Services").

1.2. The operation phase monitoring, which include effluent quality monitoring, marine water quality monitoring and emergency discharge monitoring, is to monitor the effluent and marine water quality impact of ADF during its operation phase.

1.3. This is the water quality monitoring report prepared by CMA Testing that documented the results and findings of Operation Phase Water Quality Monitoring works conducted for Routine Marine Water Quality Monitoring (rMWQM) of Project on 14 Jan 2020.

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2. MARINE WATER QUALTIY MONITORING

Monitoring Requirements

2.1. Monitoring was taken at three water depths, namely, 1m below water surface, mid-depth and 1m above sea bed, expect where the water depth is less than 6m, in which case the mid-depth station may be omitted. If the water depth be less than 3m, only the mid-depth station will be monitored.

2.2. Six samples (replicates) at each monitoring stations were collected by collecting the same amount of water sample at each depth.

2.3. One grab sample was collected at each water depth for E.coli analysis.

Monitoring Locations

2.4. Six monitoring stations were designated for the marine water quality monitoring programme. The locations are summarized in Table 2.1 and shown on **Figure 2.**

Table 2.1 Proposed Marine Water Quality Monitoring Stations

Station	Description	Coordinates	
		Easting	Northing
1	Edge of Mixing Zone (northwest of effluent diffuser)	829762.00	819604.47
2	Edge of ZID (northwest of effluent diffuser)	830117.99	819251.93
3	Edge of ZID (southeast of effluent diffuser)	830186.21	819184.37
4	Edge of Mixing Zone (southeast of effluent diffuser)	830525.00	818848.87
SM6	Control Station	826179.81	805902.89
SM12	Control Station	819524.19	808420.40

Monitoring Schedule

2.5. The marine water quality monitoring was conducted coincide with effluent quality monitoring on 14 Jan 2020.

Monitoring Equipment

2.6. The equipment used in the marine water quality monitoring in the reporting month is summarized in Table 2.2. Copies of calibration certificates are shown in **Appendix II-Report no. AZ0007465(0).**

Table 2.2 Marine Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Water Sampler	Kahlsico Water Sampler	1
Water Depth Detector	Seafarer 700	1
Positioning System	Global Positioning System (GPS)	1
Multi-parameter Water Quality System	Model YSI 6920 V2	1

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Monitoring Parameter s and Frequency

2.7. Marine Water sampling on E.coli, Total Residual Chlorine (TRC), Chlorination By-Products (CBPs) and the Contaminants of Concern (COCs) shall be performed quarterly throughout the contract period.

2.8. The list of parameters to be analysed as well as the corresponding analytical methods and detection limit are listed in Table 2.3

Table 2.3 Analytical Methods for Laboratory Analysis for Marine Water Samples

Parameters		Analytical Method	Limit of Reporting (µg/L)
TRC and Potential CBPs			
Total residual Chlorine		APHA 21ed 4500 Cl G	10
Bromoform	Tri-halomethanes (THMs)	TG-ENV-WW-78 (Headspace GC-MS)	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	TG-ENV-WW-79 (GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Bacteria			
E.coli		Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/097 Issue 3, Environmental Protection Department, HK.	1 cfu/100ml
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	TG-ENV-WW-78 (Headspace GC-MS)	20
Carbon tetrachloride			0.5
1,1-dichloroethane			0.5
1,2-dichloroethane			0.5
1,1-dichloroethylene			0.5
1,2-dichloropropane			0.5
Tetrachloroethylene			0.5
1,1,1-trichloroethane	Halogenated Aliphatics		0.5
1,1,2-trichloroethane			0.5
Trichloroethylene			0.5
2-chlorophenol	Phenols & Haloethers	TG-ENV-WW-80 (GC-MS)	0.5
2,4-dichlorophenol			0.5
p-chloro-m-cresol			0.5

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Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	TG-ENV-WW-78 (Headspace GC-MS)	0.5
1,4-dichlorobenzene			0.5
Hexachlorobenzene		USEPA 625	0.01
Hexachlorocyclopentadiene			2.5
Hexachloroethane			0.5
1,2,4-trichlorobenzene			0.5
Alpha-BHC			0.01
Beta-BHC			0.01
Gamma-BHC			0.01

3. RESULTS AND OBSERVATIONS

Weather and Sea Condition

3.1. The weather condition was Fine while the sea condition was moderate during the sampling period 14 Jan 2020 in the reporting month.

Marine Water Quality

3.2. The in-situ measurement results including dissolved oxygen, turbidity, salinity, pH and temperature of the marine water monitoring. Also, the results of marine water quality monitoring conducted on 14 Jan 2020 and QC report are shown in **Appendix II – Report no. AZ0007465(0).**

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Appendix I - Location of Monitoring Stations

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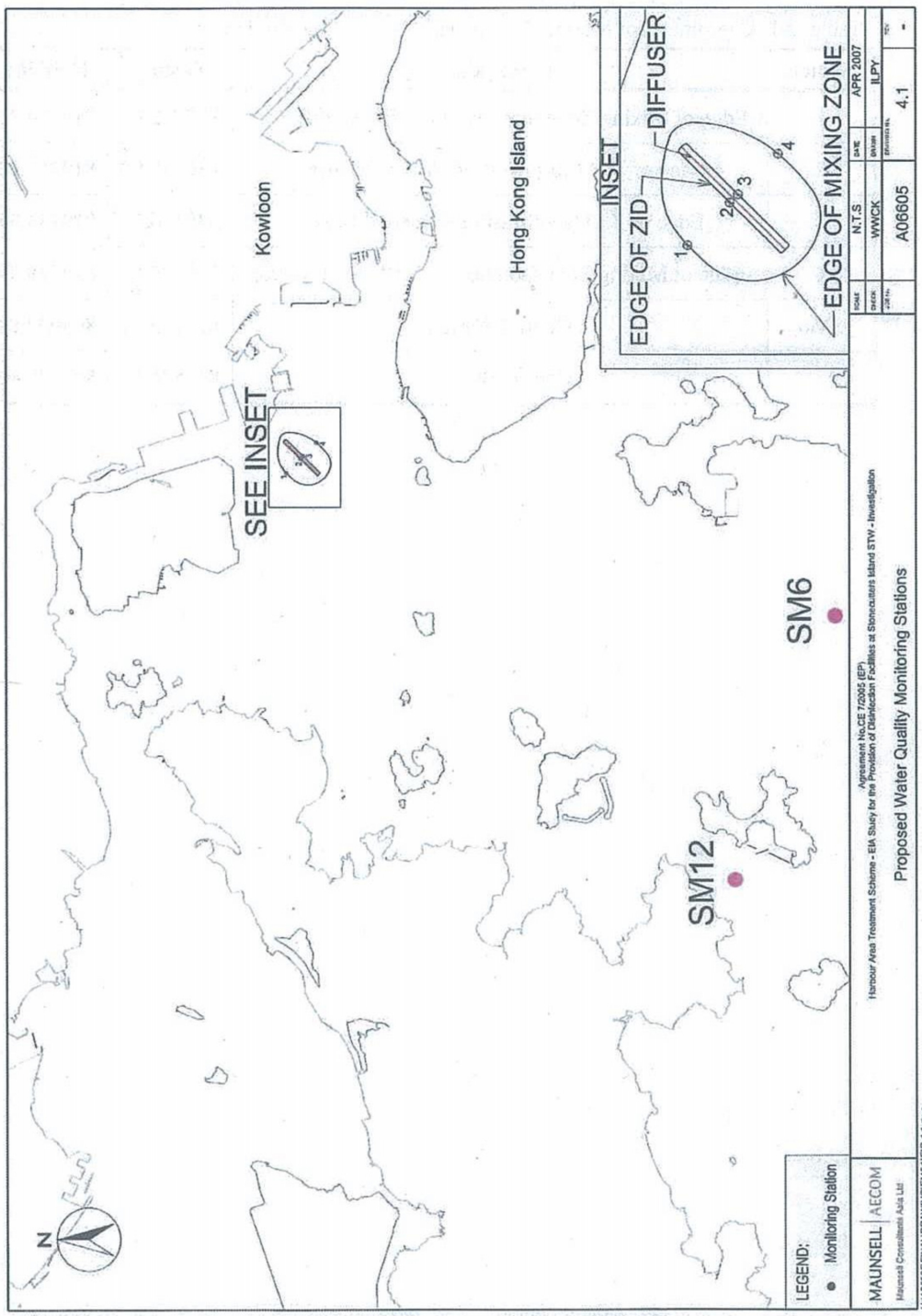

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Appendix II - Report for Laboratory Test(s)

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CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Applicant : SEWAGE TREATMENT DIVISION 2
ELECTRICAL AND MECHANICAL BRANCH
DRAINAGE SERVICES DEPARTMENT
STONECUTTERS ISLAND SEWAGE TREATMENT WORKS.,
NGONG SHUNG ROAD, NGONG SHUEN CHAU,
KOWLOON, HONG KONG

Contract No. : DE/2018/02

Project Name : Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities and Marine Water Samples in Urban Area, Lantau and Outlying Islands to the Drainage Services Department

Sample Description : Eighteen (18) marine water samples sampled by the staff of CMA Industrial Development Foundation Limited.
Samples were refrigerated during delivery.

Sample ID : Refer to Sample ID on page 4 to 11.

Sampling Location :

Station	Description	Coordinates	
		Easting	Northing
1	Edge of Mixing Zone (northwest of effluent diffuser)	829762.00	819604.47
2	Edge of ZID (northwest of effluent diffuser)	830117.99	819251.93
3	Edge of ZID (southeast of effluent diffuser)	830186.21	819184.37
4	Edge of Mixing Zone (southeast of effluent diffuser)	830525.00	818848.87
SM6	Control Station	826179.81	805902.89
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For and on behalf of
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Authorized Signature : _____

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Sampling Date : 14 Jan 2020.

Date Received : 14 Jan 2020.

Test Period : 14 Jan 2020 to 6 Feb 2020.

Test Requested :

1. Temperature (on-site measurement)
2. pH (on-site measurement)
3. Salinity (on-site measurement)
4. Dissolved Oxygen (DO) (mg/L) (on-site measurement)
5. Dissolved Oxygen (DOS) (% saturation) (on-site measurement)
6. Turbidity (on-site measurement)
7. Total Residual Chlorine (on-site measurement)
8. E. coli count
9. Bromoform
10. Bromodichloromethane
11. Chloroform
12. Dibromochloromethane
13. Bromoacetic acid
14. Chloroacetic acid
15. Dibromoacetic acid
16. Dichloroacetic acid
17. Trichloroacetic acid
18. Methylene chloride
19. Carbon tetrachloride
20. 1,1-dichloroethane
21. 1,2-dichloroethane
22. 1,1-dichloroethylene
23. 1,2-dichloropropane
24. Tetrachloroethlyene
25. 1,1,1-trichloroethane
26. 1,1,2-trichloroethane
27. Trichloroethylene
28. 2-chlorophenol
29. 2,4-dichlorophenol
30. p-chloro-m-cresol
31. Pentachlorophenol
32. 2,4,6-trichlorophenol
33. Bis(2-chloroethoxy) methane
34. Chlorobenzene
35. 1,4-dichlorobenzene
36. Hexachlorobenzene
37. Hexachlorocyclopentadiene
38. Hexachloroethane
39. 1,2,4-trichlorobenzene
40. Alpha-BHC
41. Beta-BHC
42. Gamma-BHC

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Test Method :
1-5. In house method (By multimeter)
6. APHA 2130B
7. APHA 21ed 4500 Cl G
8. Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/097 Issue 3, Environmental Protection Department, HK.
9. TG-ENV-WW-78 (Headspace GC-MS)
10. TG-ENV-WW-78 (Headspace GC-MS)
11. TG-ENV-WW-78 (Headspace GC-MS)
12. TG-ENV-WW-78 (Headspace GC-MS)
13. TG-ENV-WW-79 (GC-ECD)
14. TG-ENV-WW-79 (GC-ECD)
15. TG-ENV-WW-79 (GC-ECD)
16. TG-ENV-WW-79 (GC-ECD)
17. TG-ENV-WW-79 (GC-ECD)
18. TG-ENV-WW-78 (Headspace GC-MS)
19. TG-ENV-WW-78 (Headspace GC-MS)
20. TG-ENV-WW-78 (Headspace GC-MS)
21. TG-ENV-WW-78 (Headspace GC-MS)
22. TG-ENV-WW-78 (Headspace GC-MS)
23. TG-ENV-WW-78 (Headspace GC-MS)
24. TG-ENV-WW-78 (Headspace GC-MS)
25. TG-ENV-WW-78 (Headspace GC-MS)
26. TG-ENV-WW-78 (Headspace GC-MS)
27. TG-ENV-WW-78 (Headspace GC-MS)
28. TG-ENV-WW-80 (GC-MS)
29. TG-ENV-WW-80 (GC-MS)
30. TG-ENV-WW-80 (GC-MS)
31. TG-ENV-WW-80 (GC-MS)
32. TG-ENV-WW-80 (GC-MS)
33. TG-ENV-WW-80 (GC-MS)
34. TG-ENV-WW-78 (Headspace GC-MS)
35. TG-ENV-WW-78 (Headspace GC-MS)
36. USEPA 625
37. USEPA 625
38. USEPA 625
39. USEPA 625
40. USEPA 625
41. USEPA 625
42. USEPA 625

Test Result : Refer to results on page 4 to 11.

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TEST REPORT

Report No. : AZ0007465(0)

Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	E.coli (CFU/100mL)	Temperature (°C)		Salinity (ppt)		pH		DO (mg/L)		DOS (%)		Turbidity (NTU)		TRC (mg/L)	
1	15:45 - 15:50	9.7	1.0	170	20.3	20.3	31.0	31.0	8.4	8.4	6.6	6.6	87.0	87.0	3.5	3.5	0.01	0.01
			4.9	260	20.1	20.1	31.3	31.3	8.4	8.4	6.5	6.5	84.8	84.8	3.2	3.2	0.02	0.02
			8.7	290	20.0	20.0	31.4	31.4	8.4	8.4	6.4	6.4	84.5	84.5	3.7	3.7	0.02	0.02
2	15:57 - 16:00	10.1	1.0	490	20.2	20.2	30.8	30.8	8.3	8.3	6.9	6.9	90.9	90.9	3.4	3.4	0.02	0.02
			5.1	710	20.2	20.2	31.1	31.1	8.3	8.3	6.8	6.8	89.8	89.8	3.6	3.6	0.03	0.03
			9.1	580	20.1	20.1	31.3	31.3	8.3	8.3	6.7	6.7	88.4	88.4	3.7	3.7	0.01	0.01
3	16:07 - 16:12	9.8	1.0	490	20.2	20.2	30.7	30.7	8.3	8.3	6.9	6.9	90.2	90.2	3.8	3.8	0.01	0.01
			4.9	490	20.1	20.1	31.1	31.1	8.3	8.3	6.7	6.7	88.4	88.4	3.7	3.7	0.03	0.03
			8.8	590	20.1	20.1	31.3	31.3	8.3	8.3	6.6	6.6	86.5	86.5	3.8	3.8	0.03	0.03
4	15:34 - 15:40	9.9	1.0	220	20.4	20.4	30.4	30.4	8.3	8.3	6.9	6.9	89.9	89.9	3.7	3.7	0.03	0.03
			4.9	420	20.1	20.1	31.1	31.1	8.3	8.3	6.5	6.5	85.8	85.8	3.3	3.3	0.03	0.03
			8.8	470	20.0	20.0	31.3	31.3	8.3	8.3	6.2	6.2	81.4	81.4	3.9	3.9	0.02	0.02
SM6	14:18 - 14:22	14.6	1.0	<1	19.9	19.9	32.0	32.0	8.3	8.3	7.6	7.6	101.4	101.4	4.0	4.0	0.02	0.02
			7.3	4	19.9	19.9	32.0	32.0	8.3	8.3	7.6	7.6	100.6	100.6	3.6	3.6	<0.01	<0.01
			13.6	6	19.9	19.9	32.0	32.0	8.3	8.3	7.6	7.6	100.3	100.3	4.6	4.6	0.01	0.01
SM12	13:46 - 13:50	9.0	1.0	<1	20.1	20.1	31.8	31.8	8.3	8.3	7.7	7.7	102.6	102.6	3.5	3.5	0.01	0.01
			4.5	<1	20.1	20.1	31.8	31.8	8.3	8.3	7.7	7.7	102.2	102.2	4.7	4.7	<0.01	<0.01
			8.0	2	20.1	20.1	31.8	31.8	8.2	8.2	7.7	7.7	102.0	102.0	3.8	3.8	<0.01	<0.01

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Bromoform (µg/L)		Bromodichloromethane (µg/L)		Chloroform (µg/L)		Dibromochloromethane (µg/L)		Bromacetic acid (µg/L)		Chloroacetic acid (µg/L)		Dibromoacetic acid (µg/L)	
1	15:45 - 15:50	9.7	1.0	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			8.7	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
2	15:57 - 16:00	10.1	1.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			5.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			9.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
3	16:07 - 16:12	9.8	1.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			4.9	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			8.8	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
4	15:34 - 15:40	9.9	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			8.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
SM6	14:18 - 14:22	14.6	1.0	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			7.3	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			13.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
SM12	13:46 - 13:50	9.0	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			4.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			8.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			LRV	<0.1		<0.1		<0.1		<5		<2		<2		<2	

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TEST REPORT

Report No. : AZ0007465(0)

Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Dichloroacetic acid (µg/L)		Trichloroacetic acid (µg/L)	
1	15:45 - 15:50	9.7	1.0	<2	<2	<2	<2
			4.9	<2	<2	<2	<2
			8.7	<2	<2	<2	<2
2	15:57 - 16:00	10.1	1.0	<2	<2	<2	<2
			5.1	<2	<2	<2	<2
			9.1	<2	<2	<2	<2
3	16:07 - 16:12	9.8	1.0	<2	<2	<2	<2
			4.9	<2	<2	<2	<2
			8.8	<2	<2	<2	<2
4	15:34 - 15:40	9.9	1.0	<2	<2	<2	<2
			4.9	<2	<2	<2	<2
			8.8	<2	<2	<2	<2
SM6	14:18 - 14:22	14.6	1.0	<2	<2	<2	<2
			7.3	<2	<2	<2	<2
			13.6	<2	<2	<2	<2
SM12	13:46 - 13:50	9.0	1.0	<2	<2	<2	<2
			4.5	<2	<2	<2	<2
			8.0	<2	<2	<2	<2
			LRV	<2		<2	

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Methylene chloride (µg/L)		Carbon tetrachloride (µg/L)		1,1-dichloroethane (µg/L)		1,2-dichloroethane (µg/L)		1,1- dichloroethylene (µg/L)		1,2-dichloropropane (µg/L)		Tetrachloroethylene (µg/L)	
1	15:45 - 15:50	9.7	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.7	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	15:57 - 16:00	10.1	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.1	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.1	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3	16:07 - 16:12	9.8	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.8	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	15:34 - 15:40	9.9	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.8	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	14:18 - 14:22	14.6	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.3	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			13.6	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	13:46 - 13:50	9.0	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.5	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			LRV	<20		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	1,1,1-trichloroethane (µg/L)		1,1,2-trichloroethane (µg/L)		Trichloroethylene (µg/L)		2-chlorophenol (µg/L)		2,4-dichlorophenol (µg/L)		p-chloro-m-cresol (µg/L)		Pentachlorophenol (µg/L)	
1	15:45 - 15:50	9.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	15:57 - 16:00	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3	16:07 - 16:12	9.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	15:34 - 15:40	9.9	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	14:18 - 14:22	14.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			13.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	13:46 - 13:50	9.0	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			LRV	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	2,4,6-trichlorophenol (µg/L)		Bis(2-chloroethoxy) methane (µg/L)		Chlorobenzene (µg/L)		1,4-dichlorobenzene (µg/L)		Hexachlorobenzene (µg/L)		Hexachlorocyclopentadiene (µg/L)		Hexachloroethane (µg/L)	
1	15:45 - 15:50	9.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
2	15:57 - 16:00	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			5.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
3	16:07 - 16:12	9.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
4	15:34 - 15:40	9.9	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
SM6	14:18 - 14:22	14.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			7.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			13.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
SM12	13:46 - 13:50	9.0	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			8.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			LRV	<0.5		<0.5		<0.5		<0.5		<0.01		<2.5		<0.5	

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TEST REPORT

Report No. : AZ0007465(0)

Date: 17 Feb 2020

Application No. : LY041452(5)

Marine Water Quality

Sampling Date 14-Jan-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	1,2,4-trichlorobenzene (µg/L)		Alpha-BHC (µg/L)		Beta-BHC (µg/L)		Gamma-BHC (µg/L)	
1	15:45 - 15:50	9.7	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.9	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.7	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2	15:57 - 16:00	10.1	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.1	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			9.1	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3	16:07 - 16:12	9.8	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.9	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.8	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	15:34 - 15:40	9.9	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.9	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.8	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SM6	14:18 - 14:22	14.6	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.3	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			13.6	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SM12	13:46 - 13:50	9.0	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.5	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			LRV	<0.5		<0.01		<0.01		<0.01	

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

QC Report

Sampling Date 14-Jan-2020

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Total Residual Chlorine	<0.01	<0.01	97	85-115	83	85-115	<1	≤20

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Bromoform	<0.02	<0.02	96	80-120	92	70-130	9	≤20
Bromodichloromethane	<0.02	<0.02	114	80-120	109	70-130	4	≤20
Chloroform	<0.02	<0.02	113	80-120	114	70-130	14	≤20
Dibromochloromethane	<1	<1	93	80-120	83	70-130	6	≤20
Bromoacetic acid	<0.4	<0.4	95	80-120	78	70-130	14	≤20
Chloroacetic acid	<0.4	<0.4	90	80-120	82	70-130	8	≤20
Dibromoacetic acid	<0.4	<0.4	96	80-120	86	70-130	12	≤20
Dichloroacetic acid	<0.4	<0.4	110	80-120	91	70-130	8	≤20
Trichloroacetic acid	<0.4	<0.4	114	80-120	103	70-130	5	≤20

Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	97	80-120	84	70-130	7	≤20
Carbon tetrachloride	<0.1	<0.1	106	80-120	104	70-130	7	≤20
1,1-dichloroethane	<0.1	<0.1	108	80-120	109	70-130	8	≤20
1,2-dichloroethane	<0.1	<0.1	112	80-120	86	70-130	2	≤20
1,1-dichloroethylene	<0.1	<0.1	96	80-120	97	70-130	6	≤20
1,2-dichloropropane	<0.1	<0.1	101	80-120	93	70-130	9	≤20
Tetrachloroethylene	<0.1	<0.1	93	80-120	112	70-130	14	≤20
1,1,1-trichloroethane	<0.1	<0.1	96	80-120	106	70-130	12	≤20
1,1,2-trichloroethane	<0.1	<0.1	104	80-120	84	70-130	7	≤20
Trichloroethylene	<0.1	<0.1	93	80-120	95	70-130	10	≤20
2-chlorophenol	<0.1	<0.1	93	80-120	91	70-130	4	≤20
2,4-dichlorophenol	<0.1	<0.1	102	80-120	82	70-130	6	≤20
p-chloro-m-cresol	<0.1	<0.1	106	80-120	89	70-130	6	≤20
Pentachlorophenol	<0.1	<0.1	108	80-120	93	70-130	9	≤20
2,4,6-trichlorophenol	<0.1	<0.1	104	80-120	93	70-130	14	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	109	80-120	88	70-130	11	≤20
Chlorobenzene	<0.1	<0.1	111	80-120	104	70-130	12	≤20
1,4-dichlorobenzene	<0.1	<0.1	92	80-120	81	70-130	9	≤20
Hexachlorobenzene	<0.005	<0.005	95	80-120	96	70-130	8	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	104	80-120	88	70-130	6	≤20
Hexachloroethane	<0.1	<0.1	93	80-120	103	70-130	7	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	105	80-120	96	70-130	10	≤20
Alpha-BHC	<0.005	<0.005	94	80-120	102	70-130	4	≤20
Beta-BHC	<0.005	<0.005	92	80-120	108	70-130	6	≤20
Gamma-BHC	<0.005	<0.005	111	80-120	104	70-130	6	≤20

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

Calibration Certificate

CALIBRATION

Calibration Certificate

Certificate No.: CC0231911

1. Description

Calibration item :	a) pH at 25°C b) Temperature c) Dissolve Oxygen d) Conductivity at 25°C e) Salinity f) Oxidation-Reduction Potential (ORP)
Equipment description :	Multiparaters Instrument
Manufacturer :	YSI
Type / Model No. :	Professional Plus
Serial No. :	Meter: 17F104341
Assigned equipment no. :	N/A
Adjustment :	N/A
Remark :	Received with good condition

2. Customer information

Customer :	CMA Testing and Certification Laboratories
Address :	Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung Street, Fotan, Shatin, NT, Hong Kong
Date of receipt :	13 November 2019

3. Date of performance of the calibration

Date of calibration :	14 November 2019
Next Calibration date :	14 February 2020

Authorized Signatory
Warren Yeung

Company Chop:
Certificate issue date: 18 November 2019

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2. The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 1 of 3
cc0231911

Cal Lab Limited
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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

CALIBRATION

4. Result of Calibration

a) Temperature

Reference reading (°C)	Display Reading (°C)	Error of indication (°C)
15.02	15.2	0.2
24.85	24.9	0.0
35.04	34.8	-0.2

b) Dissolved Oxygen

Reference reading (mg/L)	Display Reading (mg/L)	Error of indication
0.00	0.00	0.00
3.82	3.97	0.15
7.94	8.08	0.14

c) Conductivity at 25°C

Reference reading (uS/cm)	Display Reading (uS/cm)	Error of indication (%)
145.3	155.0	6.7
1433	1501	4.7
13066	13251	1.4
59127	58133	-1.7
1114644	1093507	-1.9

d) Salinity

Reference reading (ppt)	Display Reading (ppt)	Error of indication (%)
10	9.98	-0.2
20	19.92	-0.4
30	29.85	-0.5

e) Oxidation-Reduction Potential (ORP)

Reference reading (mV)	Display Reading (mV)	Error of indication (mV)
+231	+230	-1

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TEST REPORT

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CALIBRATION

f) pH at 25°C

Reference reading	Display Reading	Error of indication
4.00	4.07	0.07
6.86	6.82	-0.04
9.18	9.14	-0.04
10.01	9.95	-0.06

5. Reference method for calibration

pH at 25°C	APHA 21e 4500-H B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Temperature	JJG 130-2011
Salinity	APHA 21e 2520 B
Oxidation-Reduction Potential (ORP)	APHA 21e 2580 B

6. Environment condition of calibration

Temperature ; °C	18 – 25 °C
Relative humidity ; %RH	< 75 %RH

*** End of Certificate ***

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Page 3 of 3
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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

CALIBRATION

Calibration Certificate

Certificate No.: CC0241911

1. Description

Calibration item :	a) Turbidity
Equipment description :	Portable Turbidimeter
Manufacturer :	Hach
Type / Model No. :	2100Q
Serial No. :	17040C057757
Assigned equipment no. :	N/A
Adjustment :	N/A
Remark :	Received with good condition

2. Customer information

Customer :	CMA Testing and Certification Laboratories
Address :	Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung Street, Fotan, Shatin, NT, Hong Kong
Date of receipt :	13 November 2019

3. Date of performance of the calibration

Date of calibration :	14 November 2019
Date of next calibration :	14 February 2020

Authorized Signatory
Warren Yeung

Company Chop:
Certificate issue date: 18 November 2019

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TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

CALIBRATION Result of Calibration

a) Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	0.00	0.0
10	10.1	1.0
20	20.2	1.0
100	108	8.0
800	816	2.0

5. Reference method for calibration

Turbidity	APHA 21e 2130B

6. Environment condition of calibration

Temperature ; ˚C	18 – 25 ºC
Relative humidity ; %RH	< 75 %RH

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CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)

CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No.	:	AZ0008290(8)	Date : 25 Feb 2020
Application No.	:	LZ003543(4)	
Applicant	:	CMA INDUSTRIAL DEVELOPMENT FOUNDATION LIMITED ROOM 1302, YAN HING CENTRE, 9-13 WONG CHUK YEUNG STREET, FO TAN, SHATIN, N.T., HONG KONG.	
Instrument	:	HACH Portable Colorimeter (DR300)	
Serial No.	:	19030A000277	
Date Received	:	03 Jan 2020.	
Test Period	:	06 Jan 2020 to 06 Jan 2020.	
Date of next checking	:	05 Apr 2020	
Test Method	:	APHA 23e 4500Cl-G	
Test Result	:	Refer to the results on page 2.	

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Tang Tsz Wang
Deputy Manager

Page 1 of 2

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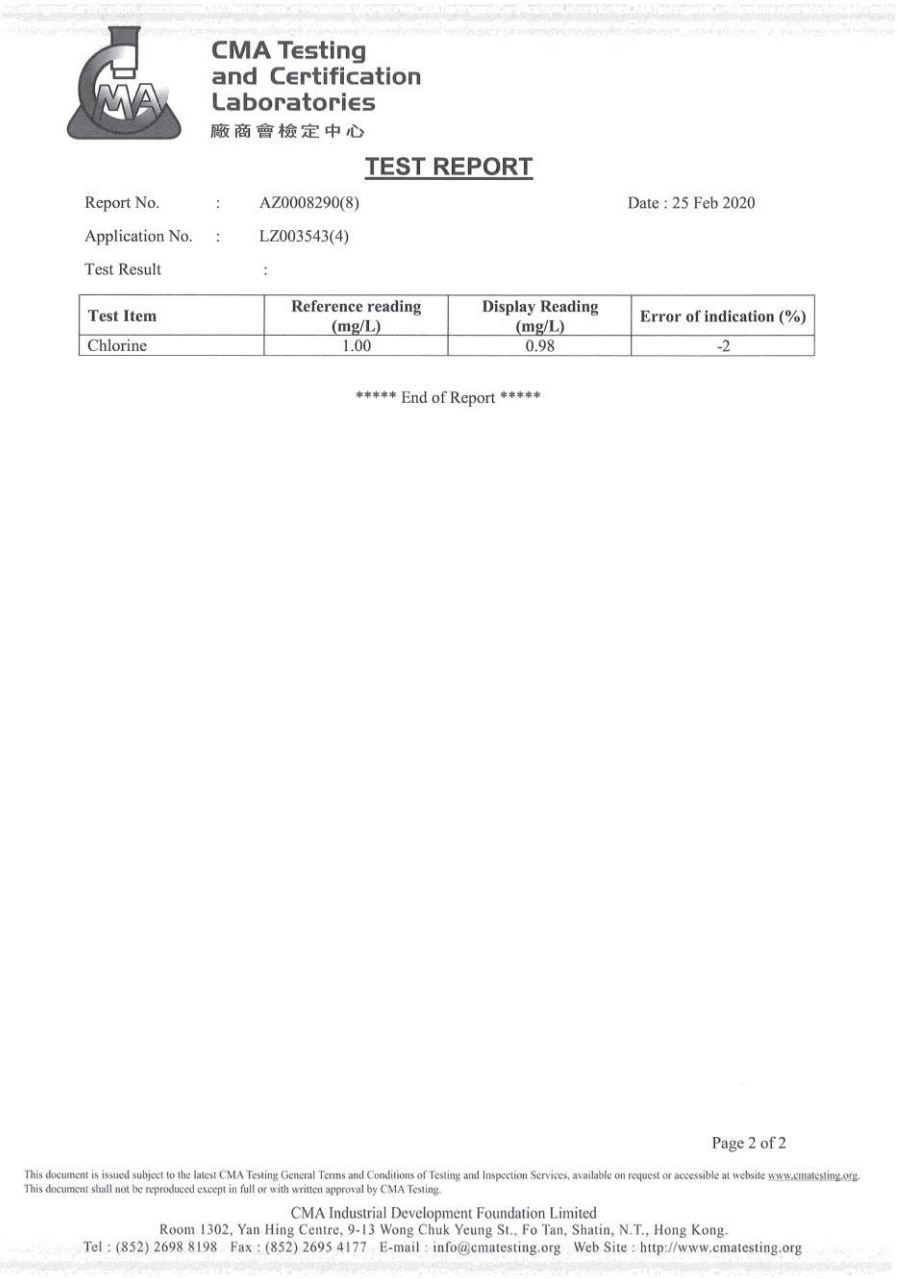
TEST REPORT

Report No. : AZ0007465(0) Date: 17 Feb 2020

Application No. : LY041452(5)



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TEST REPORT

Report No. : AZ0008290(8) Date : 25 Feb 2020

Application No. : LZ003543(4)

Test Result :

Test Item	Reference reading (mg/L)	Display Reading (mg/L)	Error of indication (%)
Chlorine	1.00	0.98	-2

***** End of Report *****

Page 2 of 2

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***** End of Report *****

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