Term Contract for Provision of Sampling and Analyzing of Samples for Various Sewage Treatment Facilities 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 Oct 2020

Contract No. : DE/2020/02

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 : LZ023851(8)

Report Number : AZ0051815(9)

Report Issued Date : 17 Nov 2020

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

TABLE OF CONTENT

EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing for Contract No. DE/2020/02 "Term Contract for Provision of Sampling and Analysing of Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department''. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Routine Marine Water Quality Monitoring (rMWQM) of Project in Oct 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	21 Oct 2020	E.coli, Total Residual Chlorine (TRC), Chlorination by-products (CBPs) and Contaminants of Concern (COCs)

CMA Industrial Development Foundation Limited
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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 21 Oct 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 21 Oct 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. AZ0051814(8).**

Table 2.2 Marine Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Water Sampler	Kahlsico Water Sampler	1
Water Depth Detector	Garmin Striker 4 or equivalent	1
Positioning System	Global Positioning System (GPS)	1
Chlorine Meter	HACH Pocket Colorimeter II or equivalent	1
Turbidimeter	HACH 2100Q or equivalent	1
Multi-parameter Water Quality System	YSI Professional Plus (Pro Plus) or equivalent	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 23ed 4500 Cl G	10
Bromoform	Tri-halomethanes (THMs)	USEPA 8260B	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	In house method TG-ENV-WW-79 (by 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/10/098 Issue 3, Environmental Protection Department, HK.	1 cfu/100ml
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	ISO 17943:2016 & USEPA 8206B	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	In house method TG-ENV-WW-80, 84 & 86	0.5
2,4-dichlorophenol			0.5

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p-chloro-m-cresol		(by GC-MSD)	0.5
Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	In house method TG-ENV-WW-78 (by Headspace GC/MSD) & In house method TG-ENV-WW-86 (by GC-MSD)	0.5
1,4-dichlorobenzene			0.5
Hexachlorobenzene			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 21 Oct 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 21 Oct 2020 and QC report are shown in **Appendix II – Report no. AZ0051814(8).**

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Appendix I - Location of Monitoring Stations

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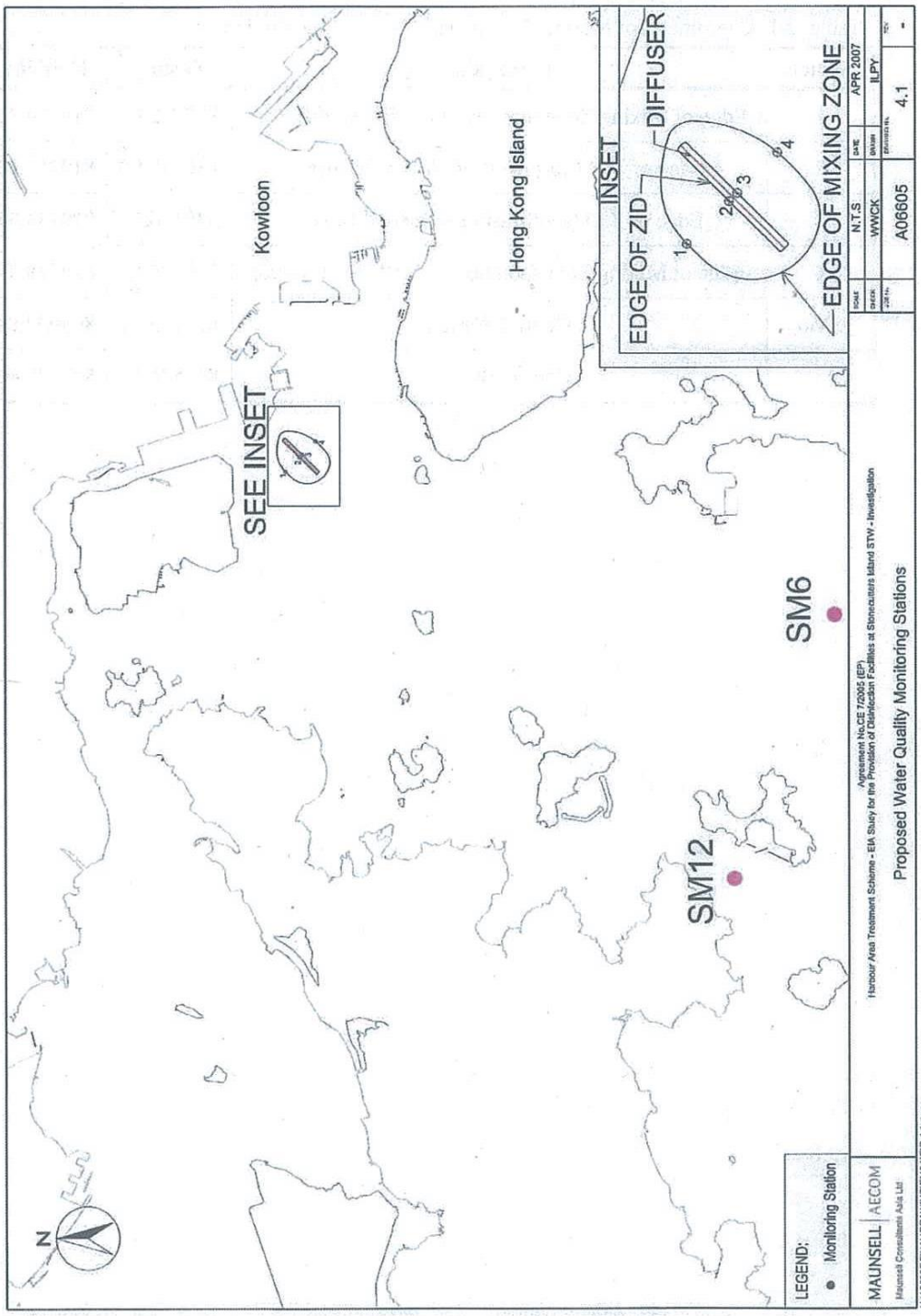

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Appendix II - Report for Laboratory Test(s)

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

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/2020/02

Project Name : Term Contract for Provision of Sampling and Analyzing of Samples for Various Sewage Treatment Facilities 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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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Sampling Date : 21 Oct 2020.

Date Received : 21 Oct 2020.

Test Period : 21 Oct 2020 to 16 Nov 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. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Test Method : 1-5. In house method (by multimeter)
6. APHA 23ed 2130 B
7. APHA 23ed 4500 Cl G
8. Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/098 Issue 3, Environmental Protection Department, HK.
9-12. USEPA 8260B
13-17. In house method TG-ENV-WW-79 (by GC-MSD)
18-27. ISO 17943:2016 & USEPA 8260B
28-33. In house method TG-ENV-WW-80, 84 & 86 (by GC-MSD)
34-42. In house method TG-ENV-WW-78 (by Headspace GC-MSD) & In house method TG-ENV-WW-86 (by GC-MSD)

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

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Marine Water Quality

Sampling Date 21-Oct-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	15:44 - 15:48	9.9	1.0	38	26.7	26.7	31.6	31.6	8.8	8.8	5.3	5.3	79.6	79.6	6.7	6.7	0.01	0.01
			5.0	52	26.8	26.8	32.6	32.6	8.8	8.8	5.7	5.7	84.8	84.8	2.6	2.6	0.03	0.03
			8.9	43	26.5	26.5	32.8	32.8	8.8	8.8	5.7	5.7	84.7	84.7	4.4	4.4	0.02	0.02
2	16:03 - 16:07	10.4	1.0	82	26.7	26.7	31.5	31.5	8.8	8.8	5.1	5.1	75.1	75.1	6.8	6.8	0.02	0.02
			5.2	67	26.7	26.7	31.6	31.6	8.8	8.8	5.1	5.1	75.3	75.3	6.2	6.2	0.04	0.04
			9.4	64	26.7	26.7	32.0	32.0	8.8	8.8	5.5	5.5	81.4	81.4	5.1	5.1	0.02	0.02
3	16:17-16:21	10.1	1.0	13	26.6	26.6	32.0	32.0	8.8	8.8	5.5	5.5	82.3	82.3	6.2	6.2	0.01	0.01
			5.1	21	26.6	26.6	32.1	32.1	8.8	8.8	5.5	5.5	81.7	81.7	5.8	5.8	0.04	0.04
			9.1	43	26.5	26.5	32.6	32.6	8.8	8.8	5.5	5.5	82.7	82.7	5.5	5.5	0.02	0.02
4	16:31-16:35	10.5	1.0	32	26.6	26.6	32.1	32.1	8.8	8.8	5.4	5.4	80.3	80.3	5.6	5.6	0.03	0.03
			5.3	8	26.6	26.6	32.3	32.3	8.8	8.8	5.4	5.4	80.4	80.4	5.4	5.4	0.04	0.04
			9.5	11	26.5	26.5	32.6	32.6	8.8	8.8	5.5	5.5	82.3	82.3	4.9	4.9	0.04	0.04
SM6	14:35-14:39	14.7	1.0	45	27.0	27.0	32.3	32.3	8.7	8.7	6.6	6.6	98.6	98.6	3.4	3.4	0.02	0.02
			7.4	92	26.9	26.9	33.3	33.3	8.7	8.7	6.5	6.5	98.2	98.2	3.9	3.9	0.02	0.02
			13.7	44	26.7	26.7	33.9	33.9	8.7	8.7	6.4	6.4	97.6	97.6	3.9	3.9	0.01	0.01
SM12	13:59-14:03	8.7	1.0	0	27.0	27.0	32.5	32.5	8.7	8.7	6.6	6.6	99.7	99.7	3.4	3.4	<0.01	<0.01
			4.4	4	27.0	27.0	33.8	33.8	8.7	8.7	6.5	6.5	99.4	99.4	3.7	3.7	<0.01	<0.01
			7.7	5	26.9	26.9	34.3	34.3	8.7	8.7	6.5	6.5	99.1	99.1	3.9	3.9	<0.01	<0.01

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Marine Water Quality

Sampling Date 21-Oct-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	15:44 - 15:48	9.9	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			5.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			8.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
2	16:03 - 16:07	10.4	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			5.2	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			9.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
3	16:17-16:21	10.1	1.0	<0.1	<0.1	<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
4	16:31-16:35	10.5	1.0	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			5.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			9.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
SM6	14:35-14:39	14.7	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			7.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			13.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
SM12	13:59-14:03	8.7	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			4.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2
			7.7	<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. : AZ0051814(8)

Date: 17 Nov 2020

Application No. : LZ023851(8)

Marine Water Quality

Sampling Date 21-Oct-2020

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Dichloroacetic acid (µg/L)		Trichloroacetic acid (µg/L)	
1	15:44 - 15:48	9.9	1.0	<2	<2	<2	<2
			5.0	<2	<2	<2	<2
			8.9	<2	<2	<2	<2
2	16:03 - 16:07	10.4	1.0	<2	<2	<2	<2
			5.2	<2	<2	<2	<2
			9.4	<2	<2	<2	<2
3	16:17-16:21	10.1	1.0	<2	<2	<2	<2
			5.1	<2	<2	<2	<2
			9.1	<2	<2	<2	<2
4	16:31-16:35	10.5	1.0	<2	<2	<2	<2
			5.3	<2	<2	<2	<2
			9.5	<2	<2	<2	<2
SM6	14:35-14:39	14.7	1.0	<2	<2	<2	<2
			7.4	<2	<2	<2	<2
			13.7	<2	<2	<2	<2
SM12	13:59-14:03	8.7	1.0	<2	<2	<2	<2
			4.4	<2	<2	<2	<2
			7.7	<2	<2	<2	<2
			LRV	<2		<2	

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Marine Water Quality

Sampling Date 21-Oct-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	12:55 - 13:00	9.5	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
			4.8	<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
			8.5	<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
2	13:03 - 13:08	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
			5.0	<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
			8.9	<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
3	13:11 - 13:15	9.6	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
			4.8	<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
			8.6	<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
4	13:18 - 13:22	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
SM6	11:29 - 11:32	14.7	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
			7.4	<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
			13.7	<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
SM12	10:50 - 10:54	8.8	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
			4.4	<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
			7.8	<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
			LRV	<20		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	

CMA Industrial Development Foundation Limited
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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Marine Water Quality

Sampling Date 21-Oct-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	12:55 - 13:00	9.5	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
			4.8	<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
			8.5	<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
2	13:03 - 13:08	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
			5.0	<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
			8.9	<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
3	13:11 - 13:15	9.6	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
			4.8	<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
			8.6	<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
4	13:18 - 13:22	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
SM6	11:29 - 11:32	14.7	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
			7.4	<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
			13.7	<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
SM12	10:50 - 10:54	8.8	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
			4.4	<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
			7.8	<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
			LRV	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Marine Water Quality

Sampling Date 21-Oct-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	12:55 - 13:00	9.5	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
			4.8	<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
			8.5	<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
2	13:03 - 13:08	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
			5.0	<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
			8.9	<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
3	13:11 - 13:15	9.6	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
			4.8	<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
			8.6	<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
4	13:18 - 13:22	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
SM6	11:29 - 11:32	14.7	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
			7.4	<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
			13.7	<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
SM12	10:50 - 10:54	8.8	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
			4.4	<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
			7.8	<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
			LRV	<0.5		<0.5		<0.5		<0.5		<0.01		<2.5		<0.5	

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Marine Water Quality

Sampling Date 21-Oct-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	12:55 - 13:00	9.5	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.8	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.5	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2	13:03 - 13:08	9.9	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.9	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3	13:11 - 13:15	9.6	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.8	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.6	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	13:18 - 13:22	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
SM6	11:29 - 11:32	14.7	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.4	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			13.7	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SM12	10:50 - 10:54	8.8	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.4	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.8	<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. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

QC Report

Sampling Date 21-Oct-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	112	85-115	103	85-115	<1	≤20

Parameter	Method Blank	Acceptance Criteria	QC Recoery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Bromoform	<0.02	<0.02	104	80-120	97	70-130	4	≤20
Bromodichloromethane	<0.02	<0.02	96	80-120	92	70-130	8	≤20
Chloroform	<0.02	<0.02	92	80-120	108	70-130	9	≤20
Dibromochloromethane	<1	<1	88	80-120	114	70-130	6	≤20
Bromoacetic acid	<0.4	<0.4	90	80-120	94	70-130	4	≤20
Chloroacetic acid	<0.4	<0.4	105	80-120	87	70-130	4	≤20
Dibromoacetic acid	<0.4	<0.4	94	80-120	82	70-130	3	≤20
Dichloroacetic acid	<0.4	<0.4	102	80-120	101	70-130	8	≤20
Trichloroacetic acid	<0.4	<0.4	111	80-120	95	70-130	6	≤20

Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	95	80-120	114	70-130	9	≤20
Carbon tetrachloride	<0.1	<0.1	88	80-120	90	70-130	4	≤20
1,1-dichloroethane	<0.1	<0.1	92	80-120	113	70-130	3	≤20
1,2-dichloroethane	<0.1	<0.1	110	80-120	108	70-130	7	≤20
1,1-dichloroethylene	<0.1	<0.1	103	80-120	92	70-130	6	≤20
1,2-dichloropropane	<0.1	<0.1	105	80-120	87	70-130	6	≤20
Tetrachloroethylene	<0.1	<0.1	105	80-120	107	70-130	8	≤20
1,1,1-trichloroethane	<0.1	<0.1	88	80-120	86	70-130	5	≤20
1,1,2-trichloroethane	<0.1	<0.1	94	80-120	86	70-130	6	≤20
Trichloroethylene	<0.1	<0.1	92	80-120	92	70-130	4	≤20
2-chlorophenol	<0.1	<0.1	103	80-120	87	70-130	3	≤20
2,4-dichlorophenol	<0.1	<0.1	94	80-120	104	70-130	9	≤20
p-chloro-m-cresol	<0.1	<0.1	104	80-120	101	70-130	9	≤20
Pentachlorophenol	<0.1	<0.1	112	80-120	112	70-130	8	≤20
2,4,6-trichlorophenol	<0.1	<0.1	87	80-120	89	70-130	8	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	109	80-120	91	70-130	6	≤20
Chlorobenzene	<0.1	<0.1	86	80-120	111	70-130	7	≤20
1,4-dichlorobenzene	<0.1	<0.1	110	80-120	102	70-130	2	≤20
Hexachlorobenzene	<0.005	<0.005	105	80-120	103	70-130	6	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	106	80-120	110	70-130	3	≤20
Hexachloroethane	<0.1	<0.1	103	80-120	87	70-130	9	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	97	80-120	92	70-130	4	≤20
Alpha-BHC	<0.005	<0.005	86	80-120	98	70-130	7	≤20
Beta-BHC	<0.005	<0.005	87	80-120	85	70-130	2	≤20
Gamma-BHC	<0.005	<0.005	98	80-120	102	70-130	5	≤20

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

Calibration Certificate

CALIBRATION

Calibration Certificate

Certificate No.: CC0372008

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: 16K101698
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 :	12 August 2020

3. Date of performance of the calibration

Date of calibration :	13 August 2020
Next Calibration date :	13 November 2020

Authorized Signatory
Warren Yeung

Company Chop:
Certificate issue date: 17 August 2020

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cc0372008

Cal Lab Limited
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Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatesting.org Web Site: http://www.cmatesting.org

TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

CALIBRATION

4. Result of Calibration

a) Temperature

Reference reading (°C)	Display Reading (°C)	Error of indication (°C)
14.98	15.3	0.3
24.92	24.7	-0.2
35.06	34.8	-0.3

b) Dissolved Oxygen

Reference reading (mg/L)	Display Reading (mg/L)	Error of indication
0.00	0.00	0.00
4.03	3.89	-0.14
8.18	8.05	-0.13

c) Conductivity at 25°C

Reference reading (uS/cm)	Display Reading (uS/cm)	Error of indication (%)
147.4	158.1	7.3
1411	1442	2.2
12846	12540	-2.4
111310	108937	-2.1

d) Salinity

Reference reading (ppt)	Display Reading (ppt)	Error of indication (%)
10	9.91	-0.9
20	19.82	-0.9
30	29.85	-0.5

Oxidation-Reduction Potential (ORP)

Reference reading (mV)	Display Reading (mV)	Error of indication (mV)
+230	+235	+5

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

CALIBRATION

e) pH at 25°C

Reference reading	Display Reading	Error of indication
4.00	3.95	-0.05
6.86	6.90	0.04
9.18	9.24	0.06
10.01	10.08	0.07

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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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

CALIBRATION

Calibration Certificate

Certificate No.: CC0362008

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 :	4 August 2020

3. Date of performance of the calibration

Date of calibration :	6 August 2020
Date of next calibration :	6 November 2020

Authorized Signatory
Warren Yeung

Company Chop:
Certificate issue date: 7 August 2020

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TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)

CALIBRATION

4. Result of Calibration

a) Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	0.00	N/A
10	10.5	5.0
20	20.1	0.5
100	97	-3.0
800	788	-1.5

5. Reference method for calibration

Turbidity	APHA 21e 2130B

6. Environment condition of calibration

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

*** End of Certificate ***

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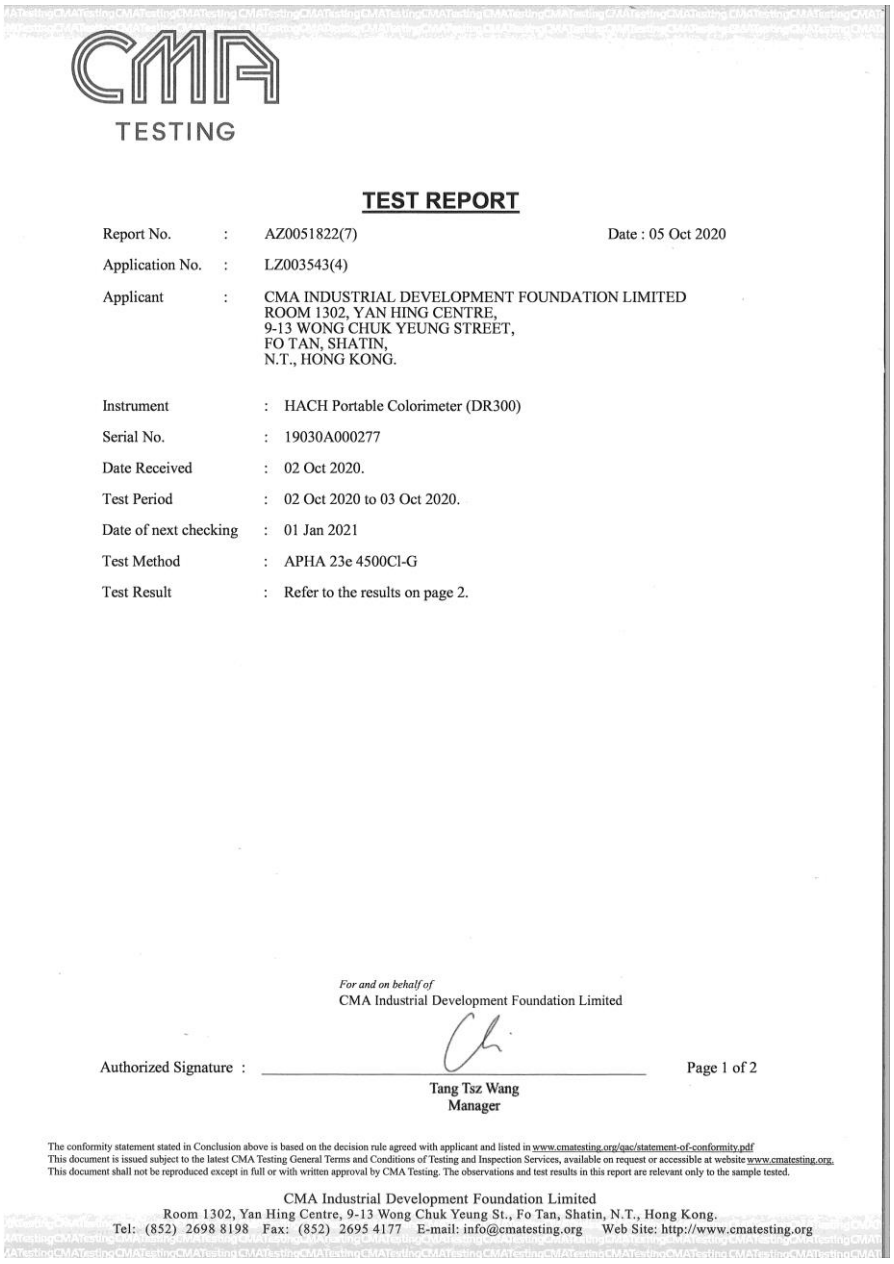
TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)



TESTING

TEST REPORT

Report No. : AZ0051822(7) Date : 05 Oct 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	:	02 Oct 2020.
Test Period	:	02 Oct 2020 to 03 Oct 2020.
Date of next checking	:	01 Jan 2021
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
Manager

Page 1 of 2

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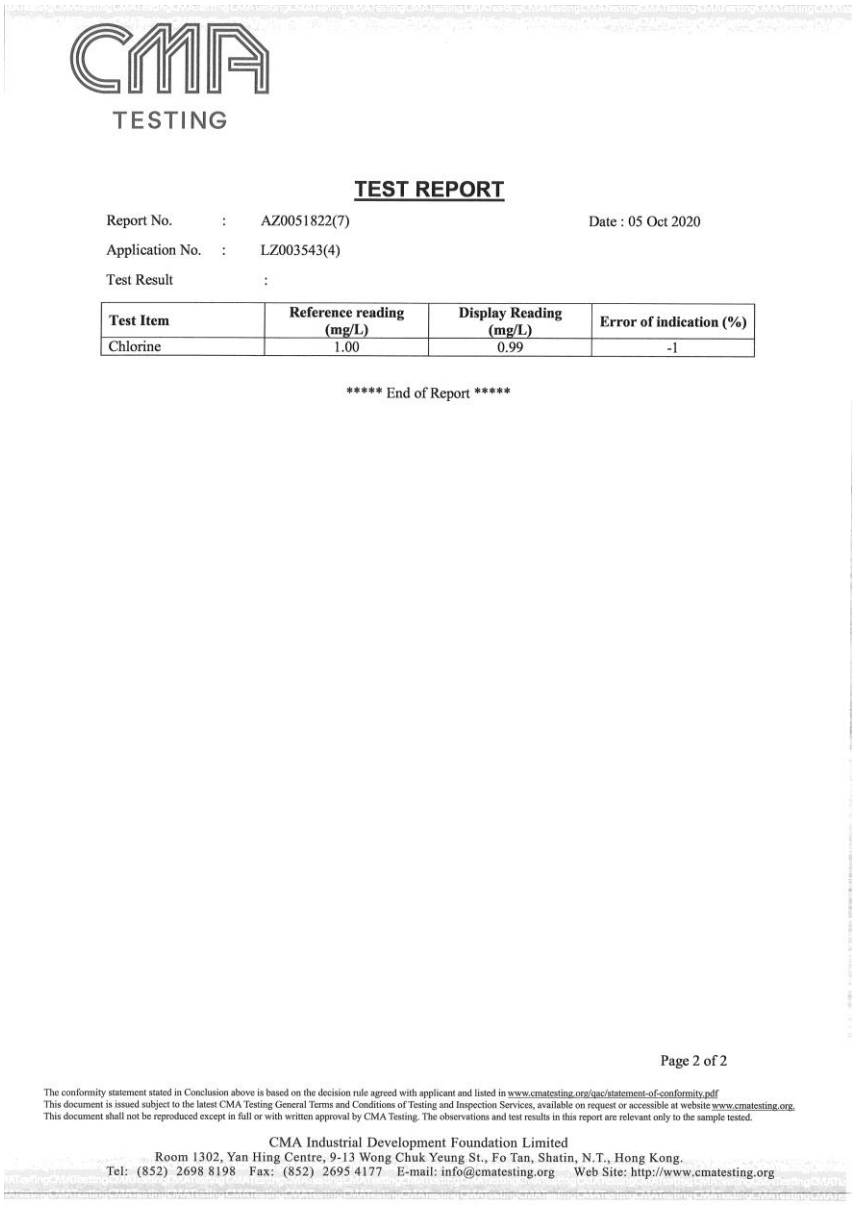
TEST REPORT

Report No. : AZ0051814(8) Date: 17 Nov 2020

Application No. : LZ023851(8)



TESTING

TEST REPORT

Report No. : AZ0051822(7) Date : 05 Oct 2020

Application No. : LZ003543(4)

Test Result :

Test Item	Reference reading (mg/L)	Display Reading (mg/L)	Error of indication (%)
Chlorine	1.00	0.99	-1

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

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The conformity statement stated in Conclusion above is based on the decision rule agreed with applicant and listed in www.cmatesting.org/qac/statement-of-conformity.pdf
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***** End of Report *****

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