



**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 Oct 2019

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 : LY031111(7)

Report Number : AY0062665(3)

Report Issued Date : 20 Nov 2019

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Lau Yan Kin
Senior Manager
Environmental Division



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

TABLE OF CONTENT

1. Introduction	2
2. Marine Water Quality Monitoring	3 – 5
3. Results and Observations	5
Appendix	
Appendix I – Location of Monitoring Stations	
Appendix II – Report for Laboratory Test(s)	



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

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 Oct 2019.
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	24 Oct 2019	E.coli, Total Residual Chlorine (TRC), Chlorination by-products (CBPs) and Contaminants of Concern (COCs)



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

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 24 Oct 2019.



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

2. MARINE WATER QUALITY MONITORING

Monitoring Requirements

- 2.1. Monitoring was taken at three water depths, namely, 1m below water surface, mid-depth and 1m above sea bed, except 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 24 Oct 2019.

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. AY0062664(2)**.

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



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

Monitoring Parameters 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



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene		TG-ENV-WW-78	0.5
1,4-dichlorobenzene		(Headspace GC-MS)	0.5
Hexachlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	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 24 Oct 2019 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 24 Oct 2019 and QC report are shown in **Appendix II – Report no. AY0062664(2)**.



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

Report No.: AY0062665(3)

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

Appendix I - Location of Monitoring Stations

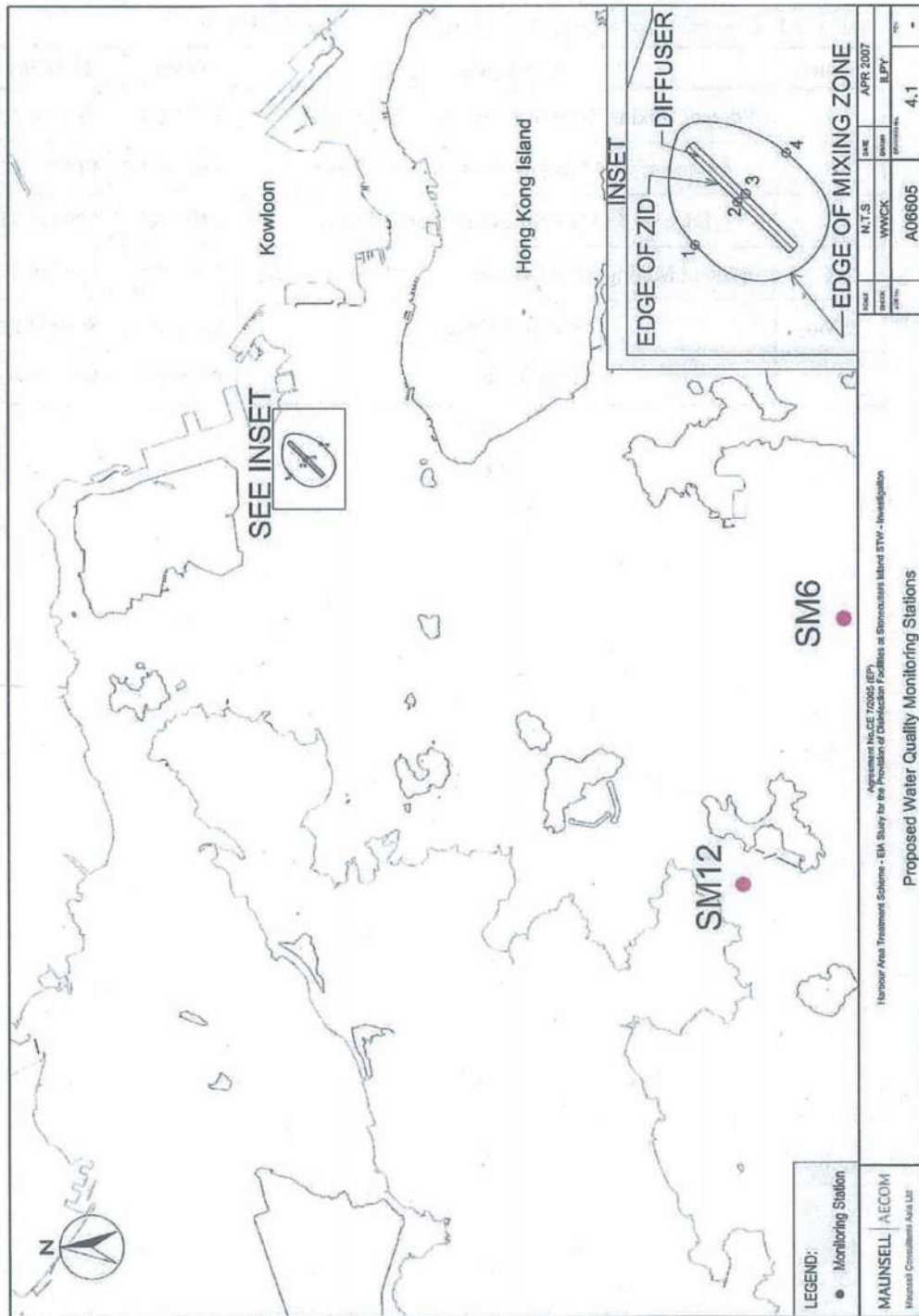


CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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





CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0062665(3)

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

Appendix II - Report for Laboratory Test(s)



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2) Date: 20 Nov 2019

Application No. : LY031111(7)

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.

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

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

Page 1 of 16



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2) Date: 20 Nov 2019

Application No. : LY031111(7)

Sampling Date : 24 Oct 2019.

Date Received : 24 Oct 2019.

Test Period : 24 Oct 2019 to 13 Nov 2019.

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. Tetrachloroethylene
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

Page 2 of 16



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2)

Date: 20 Nov 2019

Application No. : LY031111(7)

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.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date : 24-Oct-2019

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	17:35	9.8	1.0	120	28.0	28.0	30.7	30.7	8.4	8.4	5.5	5.5	83.1	83.1	3.5	3.5	0.01	0.01
			4.9	120	28.0	28.0	31.0	31.0	8.4	8.4	5.4	5.4	81.6	81.6	3.2	3.2	0.01	0.01
			8.8	110	27.9	27.9	31.3	31.3	8.4	8.4	5.2	5.2	78.5	78.5	3.7	3.7	0.02	0.02
2	17:29	10.2	1.0	460	28.0	28.0	30.9	30.9	8.4	8.4	5.5	5.5	83.1	83.1	3.4	3.4	<0.01	<0.01
			5.1	450	27.9	27.9	31.0	31.0	8.4	8.4	5.3	5.3	80.1	80.1	3.6	3.6	<0.01	<0.01
			9.2	130	27.9	27.9	31.2	31.2	8.4	8.4	5.1	5.1	77.0	77.0	3.7	3.7	0.01	0.01
3	17:23	10	1.0	120	28.0	28.0	30.8	30.8	8.4	8.4	5.2	5.2	78.5	78.5	3.8	3.8	0.03	0.03
			5.0	130	28.0	28.0	30.9	30.9	8.4	8.4	5.1	5.1	76.4	76.4	3.7	3.7	0.03	0.03
			9.0	140	28.0	28.0	31.2	31.2	8.4	8.4	5.0	5.0	75.5	75.5	3.8	3.8	<0.01	<0.01
4	17:16	9.7	1.0	96	28.1	28.1	31.2	31.2	8.4	8.4	5.6	5.6	84.6	84.6	3.7	3.7	0.01	0.01
			4.8	90	28.0	28.0	31.7	31.7	8.4	8.4	5.4	5.4	81.6	81.6	3.3	3.3	0.02	0.02
			8.7	89	28.0	28.0	31.8	31.8	8.4	8.4	5.2	5.2	78.5	78.5	3.9	3.9	<0.01	<0.01
SM6	15:49	15.7	1.0	11	28.1	28.1	31.2	31.2	8.5	8.5	5.7	5.7	87.0	87.0	2.8	2.8	<0.01	<0.01
			7.9	27	28.0	28.0	31.3	31.3	8.5	8.5	5.6	5.6	84.6	84.6	3.5	3.5	0.01	0.01
			14.7	51	27.9	27.9	31.4	31.4	8.5	8.5	5.5	5.5	83.1	83.1	4.3	4.3	0.01	0.01
SM12	15:08	9.4	1.0	9	28.0	28.0	31.3	31.3	8.5	8.5	6.0	6.0	91.5	91.5	3.8	3.8	0.01	0.01
			4.7	11	27.9	27.9	31.5	31.5	8.5	8.5	5.7	5.7	86.6	86.6	4.2	4.2	0.02	0.02
			8.4	10	27.7	27.7	31.8	31.8	8.6	8.6	5.5	5.5	84.0	84.0	8.2	8.2	0.02	0.02



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date : 24-Oct-2019

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Bromoform (µg/L)	Bromodichloromethane (µg/L)	Chloroform (µg/L)	Dibromochloromethane (µg/L)	Bromoacetic acid (µg/L)	Chloroacetic acid (µg/L)	Dibromoacetic acid (µg/L)
1	17:35	9.8	1.0	0.2	<0.1	<0.1	<5	<2	<2	<2
			4.9	0.2	<0.1	<0.1	<2	<2	<2	<2
			8.8	0.1	<0.1	<0.1	<2	<2	<2	<2
2	17:29	10.2	1.0	0.3	<0.1	<0.1	<5	<2	<2	<2
			5.1	0.2	<0.1	<0.1	<2	<2	<2	<2
			9.2	0.1	<0.1	<0.1	<2	<2	<2	<2
3	17:23	10	1.0	0.2	<0.1	<0.1	<5	<2	<2	<2
			5.0	0.2	<0.1	<0.1	<2	<2	<2	<2
			9.0	0.3	<0.1	<0.1	<2	<2	<2	<2
4	17:16	9.7	1.0	0.3	<0.1	<0.1	<5	<2	<2	<2
			4.8	0.3	<0.1	<0.1	<2	<2	<2	<2
			8.7	0.2	<0.1	<0.1	<2	<2	<2	<2
SM6	15:49	15.7	1.0	0.3	<0.1	<0.1	<5	<2	<2	<2
			7.9	0.2	<0.1	<0.1	<2	<2	<2	<2
			14.7	0.1	<0.1	<0.1	<2	<2	<2	<2
SM12	15:08	9.4	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			4.7	<0.1	<0.1	<0.1	<2	<2	<2	<2
			8.4	<0.1	<0.1	<0.1	<2	<2	<2	<2
			LRV	<0.1	<0.1	<0.1	<5	<2	<2	<2



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date 24-Oct-2019

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Dichloroacetic acid (µg/L)	Trichloroacetic acid (µg/L)
1	17:35	9.8	1.0	<2	<2
			4.9	<2	<2
			8.8	<2	<2
2	17:29	10.2	1.0	<2	<2
			5.1	<2	<2
			9.2	<2	<2
3	17:23	10	1.0	<2	<2
			5.0	<2	<2
			9.0	<2	<2
4	17:16	9.7	1.0	<2	<2
			4.8	<2	<2
			8.7	<2	<2
SM6	15:49	15.7	1.0	<2	<2
			7.9	<2	<2
			14.7	<2	<2
SM12	15:08	9.4	1.0	<2	<2
			4.7	<2	<2
			8.4	<2	<2
		LRV		<2	<2

Page 6 of 16



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date : 24-Oct-2019

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)		1,1,1-trichloroethylene (µg/L)		1,1,2-trichloroethane (µg/L)		Tetrachloroethylene (µg/L)		
						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
1	17:35	9.8	1.0	<20	<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	<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	<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	17:29	10.2	1.0	<20	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.2	<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	17:23	10	1.0	<20	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.0	<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	17:16	9.7	1.0	<20	<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	<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	<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	15:49	15.7	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			7.9	<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
			14.7	<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	15:08	9.4	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			4.7	<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
			8.4	<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	<0.5	<0.5	<0.5	<0.5		



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date 24-Oct-2019

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-eresol (µg/L)	Pentachlorophenol (µg/L)
1	17:35	9.8	1.0	<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
2	17:29	10.2	1.0	<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
3	17:23	10	9.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	17:16	9.7	5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	15:49	15.7	1.0	<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
SM12	15:08	9.4	8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			14.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.4	<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



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date 24-Oct-2019

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	17:35	9.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
2	17:29	10.2	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.1	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.2	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
3	17:23	10	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
4	17:16	9.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			4.8	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			8.7	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
SM6	15:49	15.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			7.9	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			14.7	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
SM12	15:08	9.4	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			4.7	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			8.4	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
LRV				<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

Marine Water Quality

Sampling Date 24-Oct-2019

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)	
				<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1	17:35	9.8	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.9	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			8.8	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
2	17:29	10.2	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			9.2	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
3	17:23	10	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			9.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
4	17:16	9.7	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.8	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			8.7	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SM6	15:49	15.7	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.9	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			14.7	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SM12	15:08	9.4	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.7	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			8.4	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			LRV	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 20 Nov 2019

Report No. : AY0062664(2)

Application No. : LY031111(7)

QC Report

Sampling Date : 24-Oct-2019

Parameter	Method Blank (µg/L)	Acceptance Criteria (µg/L)	QC Recovery (%)	Acceptance Criteria (%)	Spike Recovery (%)	Acceptance Criteria (%)	Duplicate (RPD) (%)	Acceptance Criteria (%)
Bromoform	<0.02	<0.02	112	80-120	125	70-130	8	70-130
Bromodichloromethane	<0.02	<0.02	116	80-120	116	70-130	13	70-130
Chloroform	<0.02	<0.02	109	80-120	85	70-130	11	70-130
Dibromochloromethane	<1	<1	95	80-120	89	70-130	16	70-130
Bromoacetic acid	<0.4	<0.4	103	80-120	97	70-130	8	70-130
Chloroacetic acid	<0.4	<0.4	92	80-120	103	70-130	12	70-130
Dibromoacetic acid	<0.4	<0.4	89	80-120	86	70-130	5	70-130
Dichloroacetic acid	<0.4	<0.4	113	80-120	96	70-130	14	70-130
Trichloroacetic acid	<0.4	<0.4	97	80-120	114	70-130	7	70-130
Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	98	80-120	105	70-130	9	70-130
Carbon tetrachloride	<0.1	<0.1	103	80-120	113	70-130	5	70-130
1,1-dichloroethane	<0.1	<0.1	116	80-120	94	70-130	6	70-130
1,2-dichloroethane	<0.1	<0.1	96	80-120	103	70-130	11	70-130
1,1-dichloroethylene	<0.1	<0.1	103	80-120	82	70-130	8	70-130
1,2-dichloropropane	<0.1	<0.1	85	80-120	91	70-130	5	70-130
Tetrachloroethylene	<0.1	<0.1	104	80-120	86	70-130	15	70-130
1,1,1-trichloroethane	<0.1	<0.1	93	80-120	93	70-130	12	70-130
1,1,2-trichloroethane	<0.1	<0.1	82	80-120	84	70-130	7	70-130
Trichloroethylene	<0.1	<0.1	97	80-120	106	70-130	10	70-130
2-chlorophenol	<0.1	<0.1	112	80-120	104	70-130	4	70-130
2,4-dichlorophenol	<0.1	<0.1	107	80-120	95	70-130	6	70-130
p-chloro-m-cresol	<0.1	<0.1	109	80-120	107	70-130	6	70-130
Pentachlorophenol	<0.1	<0.1	95	80-120	98	70-130	9	70-130
2,4,6-trichlorophenol	<0.1	<0.1	110	80-120	88	70-130	14	70-130
Bis(2-chloroethoxy) methane	<0.1	<0.1	87	80-120	112	70-130	11	70-130
Chlorobenzene	<0.1	<0.1	96	80-120	97	70-130	12	70-130
1,4-dichlorobenzene	<0.1	<0.1	103	80-120	105	70-130	7	70-130
Hexachlorobenzene	<0.005	<0.005	94	80-120	109	70-130	5	70-130
Hexachlorocyclopentadiene	<0.5	<0.5	106	80-120	94	70-130	9	70-130
Hexachloroethane	<0.1	<0.1	108	80-120	104	70-130	16	70-130
1,2,4-trichlorobenzene	<0.1	<0.1	91	80-120	87	70-130	5	70-130
Alpha-BHC	<0.005	<0.005	114	80-120	103	70-130	7	70-130
Beta-BHC	<0.005	<0.005	104	80-120	92	70-130	8	70-130
Gamma-BHC	<0.005	<0.005	115	80-120	111	70-130	4	70-130



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2)

Date: 20 Nov 2019

Application No. : LY031111(7)

Calibration Certificate



Calibration Certificate

Certificate No.: CC0201908

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 :	14 August 2019

3. Date of performance of the calibration

Date of calibration :	16 August 2019
Next Calibration date :	16 November 2019



Authorized Signatory

Warren Yeung *Warren Yeung*

Company Chop:

Certificate issue date: 19 August 2019

- The certificate shall not reproduced except in full without the written approval of CAL LAB LTD
- The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 1 of 3
cc0201908

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2)

Date: 20 Nov 2019

Application No. : LY031111(7)



4. Result of Calibration

a) Temperature

Reference reading (°C)	Display Reading (°C)	Error of indication (°C)
15.08	15.4	0.3
25.04	25.3	0.3
35.06	34.6	-0.5

b) Dissolved Oxygen

Reference reading (mg/L)	Display Reading (mg/L)	Error of indication
0.00	0.00	0.00
3.81	4.07	0.26
7.92	8.08	0.16

c) Conductivity at 25°C

Reference reading (uS/cm)	Display Reading (uS/cm)	Error of indication (%)
145.3	151.3	4.1
1433	1487	3.8
13066	13305	1.8
59127	57934	-2.0
1114644	1096755	-1.6

d) Salinity

Reference reading (ppt)	Display Reading (ppt)	Error of indication (%)
10	9.95	-0.5
20	19.90	-0.5
30	29.92	-0.3

e) Oxidation-Reduction Potential (ORP)

Reference reading (mV)	Display Reading (mV)	Error of indication (mV)
+231	+229	-2

- The certificate shall not reproduced except in full without the written approval of CAL LAB LTD.
- The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 2 of 3
cc0201908

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel: (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2)

Date: 20 Nov 2019

Application No. : LY031111(7)



f) pH at 25°C

Reference reading	Display Reading	Error of indication
4.00	4.01	0.01
6.86	6.84	-0.02
9.18	9.20	0.02
10.01	10.04	0.03

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 ***

1. The certificate shall not reproduced except in full without the written approval of CAL LAB LTD
2. The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 3 of 3
cc0201908

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website: callab.com.hk



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2)

Date: 20 Nov 2019

Application No. : LY031111(7)



Calibration Certificate

Certificate No.: CC0211908

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 :	14 August 2019

3. Date of performance of the calibration

Date of calibration :	16 August 2019
Date of next calibration :	16 November 2019



Authorized Signatory

Warren Yeung *Warren Yeung*

Company Chop:

Certificate issue date: 19 August 2019

- The certificate shall not be reproduced except in full without the written approval of CAL LAB LTD
- The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 1 of 2
cc0211908

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel : (852)25680105 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0062664(2)

Date: 20 Nov 2019

Application No. : LY031111(7)



a) Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	0.00	0.0
10	9.96	-0.4
20	20.6	0.6
100	102	2.0
800	810	1.3

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 ***

1. The certificate shall not reproduced except in full without the written approval of CAL LAB LTD
2. The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 2 of 2
cc0211908

Cal Lab Limited
Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong
Tel: (852)25680106 Fax:(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

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