

Appendix F Water Quality Equipment Calibration Certificate



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ060121
Date of Issue : 06 July 2020
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit C, 11/F, Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : UHB5F2BB
Date of Received : Jun 16, 2020
Date of Calibration : Jul 06, 2020
Date of Next Calibration^(a) : Oct 05, 2020

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter ^(b)	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(c,d)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(e) (pH Unit)	Tolerance ^(f) (pH Unit)	Results
4.00	4.06	0.06	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	9.92	-0.09	Satisfactory

Tolerance of pH should be less than ± 0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
13.0	13.34	0.34	Satisfactory
26.0	26.24	0.24	Satisfactory
48.0	47.71	-0.29	Satisfactory

Tolerance limit of temperature should be less than ± 2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
^(b) All chemical and microbiological tests were performed at unit 10-5/F and unit 10-14/F respectively of the company address stated above
^(c) The results relate only to the calibrated equipment as received
^(d) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
^(e) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(f) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

LEE Chun-ning, Desmond
Senior Chemist



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PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.00	0.11	0.11	Satisfactory
3.09	2.97	-0.12	Satisfactory
5.00	4.92	-0.08	Satisfactory
7.70	7.46	-0.24	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.33	3.30	Satisfactory
20	20.86	4.30	Satisfactory
30	31.77	5.90	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(a) (NTU)	Tolerance ^(b) (%)	Results
0	0.02	--	Satisfactory
10	9.76	-2.4	Satisfactory
20	19.0	-5.0	Satisfactory
100	95.5	-4.5	Satisfactory
800	754	-5.8	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

~ END OF REPORT ~

Remark(s): -

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ050075
Date of Issue : 25 May 2020
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit C, 11/F, Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : L20550GA
Date of Received : May 19, 2020
Date of Calibration : May 25, 2020
Date of Next Calibration^(a) : Aug 24, 2020

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter ^(b)	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(c,d)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(e) (pH Unit)	Tolerance ^(f) (pH Unit)	Results
4.00	3.98	-0.02	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	10.02	0.01	Satisfactory

Tolerance of pH should be less than ± 0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
11.0	10.95	-0.05	Satisfactory
26.0	25.90	-0.10	Satisfactory
43.0	42.85	-0.15	Satisfactory

Tolerance limit of temperature should be less than ± 2.0 (°C)

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Remark(s): -

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
^(b) All chemical and microbiological tests were performed at unit 10-5/F and unit 10-14/F respectively of the company address stated above
^(c) The results relate only to the calibrated equipment as received
^(d) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
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Date of Issue : 25 May 2020
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PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.45	0.05	-0.40	Satisfactory
3.80	3.39	-0.41	Satisfactory
5.59	5.39	-0.20	Satisfactory
7.98	7.61	-0.37	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.96	-0.40	Satisfactory
20	20.15	0.75	Satisfactory
30	30.80	2.67	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(a) (NTU)	Tolerance ^(b) (%)	Results
0	0.98	--	Satisfactory
10	9.8	-2.5	Satisfactory
20	19.5	-2.5	Satisfactory
100	97.8	-2.2	Satisfactory
800	803	0.4	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

~ END OF REPORT ~

Remark(s): -

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ080016
Date of Issue : 21 August 2020
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

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Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : A55XB7UP
Date of Received : Aug 06, 2020
Date of Calibration : Aug 21, 2020
Date of Next Calibration^(a) : Nov 20, 2020

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>	<u>Reference Method</u>
pH at 25°C	APHA 21e 4500-H ⁺ B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(b,c)

(1) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
18	18.05	+0.05	Satisfactory
30	29.79	-0.21	Satisfactory
41	40.12	+0.88	Satisfactory

Tolerance limit of temperature should be less than ± 2.0 (°C)

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Remark(s): -

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^(b) The results relate only to the calibrated equipment as received
^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.


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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ080016
Date of Issue : 21 August 2020
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PART D – CALIBRATION RESULTS (Cont'd)

(2) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.59	-4.10	Satisfactory
20	19.30	-3.50	Satisfactory
30	30.11	0.37	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

(3) Turbidity

Expected Reading (NTU)	Displayed Reading ^(d) (NTU)	Tolerance ^(e) (%)	Results
0	0.54	--	Satisfactory
10	10.30	3.0	Satisfactory
20	19.3	-3.5	Satisfactory
100	101.0	1.0	Satisfactory
800	834	4.3	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

~ END OF REPORT ~

Remark(s): -

^(d) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.



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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ080066
Date of Issue : 25 August 2020
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PART A – CUSTOMER INFORMATION

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Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : Y755D62F
Date of Received : Aug 25, 2020
Date of Calibration : Aug 25, 2020
Date of Next Calibration^(a) : Nov 24, 2020

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.08	0.08	Satisfactory
7.42	7.47	0.05	Satisfactory
10.01	10.00	-0.01	Satisfactory

Tolerance of pH should be less than ± 0.20 (pH unit)

(2) Temperature


Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
12.0	12.21	0.21	Satisfactory
21.0	21.49	0.49	Satisfactory
45.0	44.93	-0.07	Satisfactory

Tolerance limit of temperature should be less than ± 2.0 (°C)

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Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.15	0.11	-0.04	Satisfactory
3.89	4.06	0.17	Satisfactory
6.01	6.09	0.08	Satisfactory
7.71	7.69	-0.02	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.00	0.00	Satisfactory
20	20.09	0.45	Satisfactory
30	30.90	3.00	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

~ END OF REPORT ~