

Appendix F Water Quality Equipment Calibration Certificate



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

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI080157
Date of Issue : 06 Sep, 2019
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit 1908, Nos. 301-305
Castle Peak Road, Kwai Chung
N.T., HK
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : BGY9CKD
Date of Received : Aug 30, 2019
Date of Calibration : Aug 30, 2019 – Sep 05, 2019
Date of Next Calibration^(a) : Nov 29, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>	<u>Reference Method</u>
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^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	3.98	-0.02	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.11	0.10	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
9.8	9.99	0.19	Satisfactory
27.4	27.3	-0.10	Satisfactory
43.0	42.78	-0.22	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.
^(d) "Displayed Reading" denotes the figure 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.


LEE Chun-ning, Desmond
Senior Chemist



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

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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
8.18	8.23	0.05	Satisfactory
6.48	6.67	0.19	Satisfactory
3.5	3.68	0.18	Satisfactory
0.19	0.66	0.47	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	9.72	-2.80	Satisfactory
20	19.7	-1.50	Satisfactory
30	29.2	-2.67	Satisfactory

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

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.02	--	Satisfactory
10	9.72	-2.8	Satisfactory
20	19.8	-1.0	Satisfactory
100	100	0.0	Satisfactory
800	819	2.4	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. : AI070052
Date of Issue : 12 July, 2019
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit 1908, Nos. 301-305
Castle Peak Road, Kwai Chung
N.T., HK
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 15M101091
Date of Received : Jul 09, 2019
Date of Calibration : Jul 11, 2019
Date of Next Calibration^(a) : Oct 11, 2019

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
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) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.10	0.1	Satisfactory
7.42	7.28	-0.14	Satisfactory
10.01	10.10	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
15.0	15.0	0.0	Satisfactory
25.0	25.5	0.5	Satisfactory
52.0	53.7	1.7	Satisfactory

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

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^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(e) The "Tolerance Limit" mentioned is referenced to YSI product specifications.


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Senior Chemist



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Report No. : AI070052
Date of Issue : 12 July, 2019
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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
7.68	7.75	0.07	Satisfactory
5.81	5.71	-0.1	Satisfactory
3.20	3.38	0.18	Satisfactory
0.20	0.1	-0.10	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	-0.4	Satisfactory
20	20.26	1.3	Satisfactory
30	30.97	3.2	Satisfactory

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

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.24	--	Satisfactory
10	10.58	5.8	Satisfactory
20	20.00	0.0	Satisfactory
100	97.60	-2.4	Satisfactory
800	770.00	-3.8	Satisfactory

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

~ END OF REPORT ~

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI080021
Date of Issue : 12 Aug, 2019
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit 1908, Nos. 301-305
Castle Peak Road, Kwai Chung
N.T., HK
Attn: Mr. Nelson TSUI

PART B – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : L20550GA
Date of Received : Aug 01, 2019
Date of Calibration : Aug 01, 2019 – Aug 08, 2019
Date of Next Calibration^(a) : Nov 01, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>	<u>Reference Method</u>
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^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.10	0.10	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.09	0.08	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
14.0	14.37	0.37	Satisfactory
27.0	27.25	0.25	Satisfactory
50.0	49.40	-0.60	Satisfactory

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

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^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(e) The "Tolerance Limit" mentioned is referenced to YSI product specifications.


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Senior Chemist



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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI080021
Date of Issue : 12 Aug, 2019
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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
8.17	8.16	-0.01	Satisfactory
5.27	5.00	-0.27	Satisfactory
3.52	3.21	-0.31	Satisfactory
0.01	0.00	-0.01	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	9.88	-1.2	Satisfactory
20	20.40	2.0	Satisfactory
30	30.41	1.4	Satisfactory

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

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.28	--	Satisfactory
10	10.0	0.0	Satisfactory
20	21.0	5.0	Satisfactory
100	103	3.0	Satisfactory
800	806	0.8	Satisfactory

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

~ END OF REPORT ~

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AMENDMENT CALIBRATION REPORT

Amendment Test Report No. : AI100146A
Amendment Test Report Date of Issue : 13 November 2019

Superseded Test Report No. : AI100146
Superseded Test Report Date of Issue : 23 October 2019

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PART A – CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit 1908, Nos. 301-305
Castle Peak Road, Kwai Chung
N.T., HK
Attn: Mr. Nelson TSUI

PART B – CHANGE OF INFORMATION

This amendment report supersedes any previous report number AI100146 dated 23 October 2019 with this reference, the details as indicated below in the selected checkbox:

Supersede relevant page(s) of previous report by the attached:

_____ (page no)


Supersede whole previous report by the attached amendment test report.

The superseded pages or the superseded report become invalid. Please destroy them immediately or return to our office for cancellation

Amendment detail(s):

No.	Description of the amendment	Reason of the amendment
1	Name of Equipment	Typo
2	Serial Number	Typo

~ CONTINUED ON NEXT PAGE ~



FUNG Yuen-ching Aries
Laboratory Manager



專業化驗有限公司

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AMENDMENT CALIBRATION REPORT

Amendment Test Report No. : AI100146A
Amendment Test Report Date of Issue : 13 November 2019

Superseded Test Report No. : AI100146
Superseded Test Report Date of Issue : 23 October 2019

Page No. : 2 of 3

PART C – DESCRIPTION

Name of Equipment : Multi Water Quality Checker U-53
Manufacturer : Horiba
Serial Number : UHB5F2BB
Date of Received : Oct 15, 2019
Date of Calibration : Oct 23, 2019
Date of Next Calibration^(a) : Jan 22, 2020

PART D – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>	<u>Reference Method</u>
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.
Oxidation-Reduction Potential	APHA 22e 2580 B

PART E – 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	7.50	0.08	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
10.0	10.06	0.06	Satisfactory
27.1	27.23	0.13	Satisfactory
45.1	45.05	0.05	Satisfactory

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

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Amendment Test Report Date of Issue : 13 November 2019

Superseded Test Report No. : AI100146
Superseded Test Report Date of Issue : 23 October 2019

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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
7.43	7.40	-0.03	Satisfactory
5.00	5.11	+0.11	Satisfactory
2.00	1.67	-0.33	Satisfactory
0.11	0.34	+0.23	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	9.68	-3.2	Satisfactory
20	19.84	0.8	Satisfactory
30	30.48	1.6	Satisfactory

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

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.53	--	Satisfactory
10	9.40	-6.0	Satisfactory
20	18.96	-5.2	Satisfactory
100	93.9	-6.1	Satisfactory
800	751	-6.1	Satisfactory

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

(6) Oxidation-Reduction Potential

Expected Reading (mV)	Displayed Reading (mV)	Tolerance (mV)	Results
228	236	8	Satisfactory

Tolerance limit of Oxidation-Reduction Potential should be less than ± 10 (mV)

~ END OF REPORT ~

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