

Appendix D. Calibration Certificates



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

CALIBRATION REPORT

Report No. : AG060187
Date of Issue : June 27, 2017
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PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 15M101244
Date of Received : Jun 16, 2017
Date of Calibration : Jun 16, 2017
Date of Next Calibration^(a) : Sep 16, 2017

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
Conductivity at 25°C	APHA 21e 2510 B
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	4.06	+0.06	Satisfactory
7.42	7.49	+0.07	Satisfactory
10.01	10.07	+0.06	Satisfactory


Tolerance of pH should be less than ± 0.10 (pH unit)

~ 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) 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 QPT or quoted from relevant international standards.

APPROVED SIGNATORY :


CHAN Mei-wah Amy
Assistant Lab. Manager



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PART D – CALIBRATION RESULTS (Cont'd)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16.1	16.2	+0.1	Satisfactory
23.0	22.6	-0.4	Satisfactory
37.0	36.5	-0.5	Satisfactory

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

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
8.16	8.13	-0.03	Satisfactory
3.54	3.58	+0.04	Satisfactory
0.45	0.41	-0.04	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading (μ S/cm)	Displayed Reading (μ S/cm)	Tolerance (%)	Results
146.9	146.1	-0.54	Satisfactory
1412	1451	+2.8	Satisfactory
12890	12740	-1.16	Satisfactory
58670	57408	-2.15	Satisfactory
111900	110248	-1.50	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.96	-0.4	Satisfactory
20	20.17	+0.9	Satisfactory
30	29.97	-0.1	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(d) (NTU)	Tolerance ^(e) (%)	Results
0	0	--	Satisfactory
4	3.8	-5.0	Satisfactory
20	21.9	+9.5	Satisfactory
100	98.4	-1.6	Satisfactory
800	818	+2.3	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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CALIBRATION REPORT

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PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 16J101716
Date of Received : Jun 16, 2017
Date of Calibration : Jun 16, 2017
Date of Next Calibration^(a) : Sep 16, 2017

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
Conductivity at 25°C	APHA 21e 2510 B
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	3.94	-0.06	Satisfactory
7.42	7.39	-0.03	Satisfactory
10.01	10.07	+0.06	Satisfactory

Tolerance of pH should be less than ±0.10 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16.1	15.9	-0.2	Satisfactory
23.0	22.6	-0.4	Satisfactory
37.0	36.3	-0.7	Satisfactory

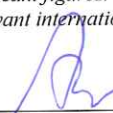
Tolerance limit of temperature should be less than ±2.0 (°C)

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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 form relevant international standards.
- ^(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 QPT or quoted form relevant international standards.

APPROVED SIGNATORY :


CHAN Mei-wah Amy
Assistant Lab. Manager



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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	0.39	-0.06	Satisfactory
3.54	3.50	-0.04	Satisfactory
8.16	8.19	+0.03	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
146.9	151.8	+3.3	Satisfactory
1412	1430	+1.3	Satisfactory
12890	12545	-2.7	Satisfactory
58670	56934	-3.0	Satisfactory
111900	109362	-2.3	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.91	-0.9	Satisfactory
20	20.12	+0.6	Satisfactory
30	30.18	+0.6	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ⁽¹⁾ (NTU)	Tolerance ⁽²⁾ (%)	Results
0	0	--	Satisfactory
4	4.1	+2.5	Satisfactory
20	19.8	-1.0	Satisfactory
100	107	+7.0	Satisfactory
800	782	-2.3	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

⁽¹⁾ "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

⁽²⁾ 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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Tel: (852) 3956 8717; Fax: (852) 3956 3928

Report of Equipment Performance Check/Calibration

Report No. : AG060181
Date of Issue : 22 June 2017
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PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment : YSI 6920 V2 Sonde (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 00019CB2
Date of Received : 16 Jun, 2017
Date of Calibration : 16 Jun, 2017
Date of Next Calibration^(a) : 16 Sep, 2017

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
Conductivity at 25°C	APHA 21e 2510 B
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	4.06	+0.06	Satisfactory
7.42	7.35	-0.07	Satisfactory
10.01	9.98	-0.03	Satisfactory

Tolerance of pH should be less than ± 0.10 (pH unit)

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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 QPT or quoted from relevant international standards.

APPROVED SIGNATORY :


FUNG Yuen-ching Aries
Laboratory Manager



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Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong

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Tel: (852) 3956 8717; Fax: (852) 3956 3928

Report of Equipment Performance Check/Calibration

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PART D – CALIBRATION RESULTS (Cont'd)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16.1	15.9	-0.2	Satisfactory
23.0	23.4	+0.4	Satisfactory
37.0	36.4	-0.6	Satisfactory

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

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.45	0.49	+0.04	Satisfactory
3.54	3.48	-0.06	Satisfactory
8.16	8.12	-0.04	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
146.9	142.4	-3.1	Satisfactory
1412	1392	-1.4	Satisfactory
12890	12382	-3.9	Satisfactory
58670	57432	-2.1	Satisfactory
111900	107938	-3.5	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.91	-0.9	Satisfactory
20	20.11	+0.6	Satisfactory
30	30.14	+0.5	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0	--	Satisfactory
4	4.1	+2.5	Satisfactory
20	20.9	+4.5	Satisfactory
100	103	+3.0	Satisfactory
800	824	+3.0	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

^(g) 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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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. : AG060182
Date of Issue : 22 June 2017
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment : YSI 6920 V2 Sonde (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 000109DF
Date of Received : 16 Jun, 2017
Date of Calibration : 16 Jun, 2017
Date of Next Calibration^(a) : 16 Sep, 2017

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
Conductivity at 25°C	APHA 21e 2510 B
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	4.03	+0.03	Satisfactory
7.42	7.43	+0.01	Satisfactory
10.01	10.05	+0.04	Satisfactory

Tolerance of pH should be less than ±0.10 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16.1	16.0	-0.1	Satisfactory
23.0	23.3	+0.3	Satisfactory
37.0	36.8	-0.2	Satisfactory

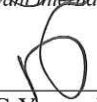
Tolerance limit of temperature should be less than ±2.0 (°C)

~ 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) 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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- ^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by QPT or quoted from relevant international standards.

APPROVED SIGNATORY :


FUNG Yuen-ching Aries
Laboratory Manager



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
0.45	0.42	-0.03	Satisfactory
3.54	3.51	-0.03	Satisfactory
8.16	8.11	-0.05	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
146.9	144.0	-2.0	Satisfactory
1412	1338	-5.2	Satisfactory
12890	12462	-3.3	Satisfactory
58670	57332	-2.3	Satisfactory
111900	108004	-3.5	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.94	-0.6	Satisfactory
20	20.02	+0.1	Satisfactory
30	30.09	+0.3	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0	--	Satisfactory
4	3.8	+5.0	Satisfactory
20	21.2	+6.0	Satisfactory
100	95.4	+4.6	Satisfactory
800	821	+2.6	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

^(g) 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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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

CALIBRATION REPORT

Test Report No. : AG060188
Date of Issue : Jun 27, 2017
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PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas Wong

PART B – SAMPLE INFORMATION

Description of Samples : Titrette bottletop burette, 50ml
Brand Name : BRAND
Model Number : 1224B90
Serial Number : 10N65665
Equipment Number : --
Date of Received : Jun 16, 2017
Date of Calibration : Jun 19, 2017
Date of Next Calibration^(a) : Sep 19, 2017

PART C – CALIBRATION REQUESTED


<u>Parameter</u>	<u>Reference Method</u>
Accuracy Test	In-house Method (Gravimetric Method)

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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.

APPROVED SIGNATORY :



CHAN Mei-wah Amy
Assistant Lab. Manager



專業化驗有限公司

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PART D – RESULT^{(b),(c)}

Water temperature: 23.5 °C

Relative humidity: 58%

z-Factor: 1.0036

Trial	Nominal volume (mL) at interval				
	3	3	3	3	3
	Range: (1-4)	Range: (16-19)	Range: (23-26)	Range: (34-37)	Range: (42-45)
1	2.9845	2.9774	2.9779	2.9887	2.9797
2	2.9891	2.9842	2.9859	2.9826	2.9866
3	2.9894	2.9745	2.9876	2.9882	2.9808
4	2.9872	2.9882	2.9838	2.9819	2.9702
5	2.9839	2.9825	2.9858	2.9875	2.9892
6	2.9828	2.9886	2.9823	2.9898	2.9805
7	2.9802	2.9845	2.9821	2.9906	2.9776
8	2.9863	2.9833	2.9814	2.9841	2.9793
9	2.9815	2.9909	2.9849	2.9811	2.9825
10	2.9849	2.9808	2.9848	2.9898	2.9807
Average	2.9850	2.9835	2.9837	2.9864	2.9807
Standard deviation	0.0031	0.0051	0.0028	0.0036	0.0051
Calculated volume (mL)	2.9957	2.9942	2.9944	2.9972	2.9914
Error (%)	-0.1425	-0.1923	-0.1870	-0.0940	-0.2853
RSD (%)	0.1022	0.1692	0.0935	0.1211	0.1702

Acceptance Criteria^(d)

Accuracy (%Error)	< ±1%	< ±1%	< ±1%	< ±1%	< ±1%
Precision (%RSD)	< 1%	< 1%	< 1%	< 1%	< 1%

~ END OF REPORT ~

Remark(s): -

^(b) The results relate only to the tested sample 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) The "acceptance criteria" is applicable for similar equipment used by QPT or quoted from relevant international standards.