

## **Appendix D. 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. : AII20101  
Date of Issue : 24 December 2019  
Page No. : 1 of 2

### PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.  
Flat 2207, Yu Fun House,  
Yu Chui Court, Shatin  
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 : 16H104234  
Date of Received : Dec 23, 2019  
Date of Calibration : Dec 23, 2019  
Date of Next Calibration<sup>(a)</sup> : Mar 22, 2020

### PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H <sup>+</sup> 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<sup>(b,c)</sup>

#### (1) pH at 25°C

Target (pH unit)	Displayed Reading <sup>(d)</sup> (pH Unit)	Tolerance <sup>(e)</sup> (pH Unit)	Results
4.00	4.07	0.07	Satisfactory
7.42	7.48	0.06	Satisfactory
10.01	10.20	0.19	Satisfactory

Tolerance of pH should be less than  $\pm 0.20$  (pH unit)

#### (2) Temperature


Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
15.0	15.2	0.2	Satisfactory
30.0	30.1	0.1	Satisfactory
49.0	49.0	0.0	Satisfactory

Tolerance limit of temperature should be less than  $\pm 2.0$  (°C)

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#### Remark(s): -

- <sup>(a)</sup> The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.  
<sup>(b)</sup> The results relate only to the calibrated equipment as received  
<sup>(c)</sup> The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.  
<sup>(d)</sup> "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.  
<sup>(e)</sup> The "Tolerance Limit" mentioned is referenced to YSI product specifications.

  
LEE Chun-ning, Desmond  
Senior Chemist



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## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI120101  
Date of Issue : 24 December 2019  
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
0.45	0.55	0.10	Satisfactory
4.27	4.30	0.03	Satisfactory
6.41	6.55	0.14	Satisfactory
8.20	8.31	0.11	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.50$  (mg/L)

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ( $\mu\text{S}/\text{cm}$ )	Displayed Reading ( $\mu\text{S}/\text{cm}$ )	Tolerance (%)	Results
0.001	146.9	154.1	4.90	Satisfactory
0.01	1412	1388	-1.70	Satisfactory
0.1	12890	12817	-0.57	Satisfactory
0.5	58670	59446	1.32	Satisfactory
1.0	111900	110937	-0.86	Satisfactory

Tolerance limit of conductivity should be less than  $\pm 10.0$  (%)

#### (5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.92	-0.80	Satisfactory
20	20.18	0.90	Satisfactory
30	30.41	1.37	Satisfactory

Tolerance limit of salinity should be less than  $\pm 10.0$  (%)

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.10	--	Satisfactory
10	10.08	0.8	Satisfactory
20	20.11	0.5	Satisfactory
100	100.37	0.4	Satisfactory
800	798.42	-0.2	Satisfactory

Tolerance limit of turbidity should be less than  $\pm 10.0$  (%)

~ END OF REPORT ~

#### Remark(s): -

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

<sup>(g)</sup> 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. : AI120102  
Date of Issue : 24 December 2019  
Page No. : 1 of 2

### PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.  
Flat 2207, Yu Fun House,  
Yu Chui Court, Shatin  
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 : 17E100747  
Date of Received : Dec 23, 2019  
Date of Calibration : Dec 23, 2019  
Date of Next Calibration<sup>(a)</sup> : Mar 22, 2020

### PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H <sup>+</sup> 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<sup>(b,c)</sup>

#### (1) pH at 25°C

Target (pH unit)	Displayed Reading <sup>(d)</sup> (pH Unit)	Tolerance <sup>(e)</sup> (pH Unit)	Results
4.00	4.05	0.05	Satisfactory
7.42	7.45	0.03	Satisfactory
10.01	10.18	0.17	Satisfactory

Tolerance of pH should be less than  $\pm 0.20$  (pH unit)

#### (2) Temperature


Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
15.0	15.1	0.1	Satisfactory
30.0	30.1	0.1	Satisfactory
49.0	49.2	0.2	Satisfactory

Tolerance limit of temperature should be less than  $\pm 2.0$  (°C)

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#### Remark(s): -

- <sup>(a)</sup> The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.  
<sup>(b)</sup> The results relate only to the calibrated equipment as received  
<sup>(c)</sup> The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.  
<sup>(d)</sup> "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.  
<sup>(e)</sup> The "Tolerance Limit" mentioned is referenced to YSI product specifications.

  
LEE Chun-ning, Desmond  
Senior Chemist





## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI120102  
Date of Issue : 24 December 2019  
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
0.45	0.52	0.07	Satisfactory
4.27	4.22	-0.05	Satisfactory
6.41	6.56	0.15	Satisfactory
8.20	8.30	0.10	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.50$  (mg/L)

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ( $\mu\text{S}/\text{cm}$ )	Displayed Reading ( $\mu\text{S}/\text{cm}$ )	Tolerance (%)	Results
0.001	146.9	154.3	5.04	Satisfactory
0.01	1412	1459	3.33	Satisfactory
0.1	12890	12914	0.19	Satisfactory
0.5	58670	57886	-1.34	Satisfactory
1.0	111900	110832	-0.95	Satisfactory

Tolerance limit of conductivity should be less than  $\pm 10.0$  (%)

#### (5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.89	-1.10	Satisfactory
20	20.14	0.70	Satisfactory
30	30.33	1.10	Satisfactory

Tolerance limit of salinity should be less than  $\pm 10.0$  (%)

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.09	--	Satisfactory
10	10.03	0.3	Satisfactory
20	20.16	0.8	Satisfactory
100	100.28	0.3	Satisfactory
800	798.47	-0.2	Satisfactory

Tolerance limit of turbidity should be less than  $\pm 10.0$  (%)

~ END OF REPORT ~

#### Remark(s): -

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

<sup>(g)</sup> 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. : A1120100  
 Date of Issue : 24 December 2019  
 Page No. : 1 of 2

## PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.  
 Flat 2207, Yu Fun House,  
 Yu Chui Court, Shatin  
 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 : 17H105557  
 Date of Received : Dec 23, 2019  
 Date of Calibration : Dec 23, 2019  
 Date of Next Calibration<sup>(a)</sup> : Mar 22, 2020

## PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H <sup>+</sup> 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<sup>(b,c)</sup>

### (1) pH at 25°C

Target (pH unit)	Displayed Reading <sup>(d)</sup> (pH Unit)	Tolerance <sup>(e)</sup> (pH Unit)	Results
4.00	4.03	0.03	Satisfactory
7.42	7.44	0.02	Satisfactory
10.01	10.17	0.16	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	14.9	-0.1	Satisfactory
30.0	30.0	0.0	Satisfactory
49.0	49.0	0.0	Satisfactory

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

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### Remark(s): -

- <sup>(a)</sup> The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
- <sup>(b)</sup> The results relate only to the calibrated equipment as received
- <sup>(c)</sup> The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- <sup>(d)</sup> "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- <sup>(e)</sup> The "Tolerance Limit" mentioned is referenced to YSI product specifications.

  
 LEE Chun-ning, Desmond  
 Senior Chemist



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## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AII20100  
Date of Issue : 24 December 2019  
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
0.45	0.58	0.13	Satisfactory
4.27	4.33	0.06	Satisfactory
6.41	6.51	0.10	Satisfactory
8.20	8.29	0.09	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.50$  (mg/L)

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ( $\mu\text{S/cm}$ )	Displayed Reading ( $\mu\text{S/cm}$ )	Tolerance (%)	Results
0.001	146.9	150.2	2.25	Satisfactory
0.01	1412	1369	-3.05	Satisfactory
0.1	12890	12928	0.29	Satisfactory
0.5	58670	58921	0.43	Satisfactory
1.0	111900	111994	0.08	Satisfactory

Tolerance limit of conductivity should be less than  $\pm 10.0$  (%)

#### (5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.88	-1.20	Satisfactory
20	19.92	-0.40	Satisfactory
30	29.58	-1.40	Satisfactory

Tolerance limit of salinity should be less than  $\pm 10.0$  (%)

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.12	--	Satisfactory
10	9.98	-0.2	Satisfactory
20	19.88	-0.6	Satisfactory
100	100.33	0.3	Satisfactory
800	797.84	-0.3	Satisfactory

Tolerance limit of turbidity should be less than  $\pm 10.0$  (%)

~ END OF REPORT ~

#### Remark(s): -

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

<sup>(g)</sup> 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

Test Report No. : AI120046  
Date of Issue : 12 December 2019  
Page No. : 1 of 2

### PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.  
Flat 2207, Yu Fun House,  
Yu Chui Court, Shatin,  
New Territories, Hong Kong  
Attn: Mr. Thomas Wong

### PART B – SAMPLE INFORMATION

Description of Samples : Titrette® bottle-top burette, 50mL  
Brand Name : BRAND  
Model Number : 1224B90  
Serial Number : 10N64701  
Date of Received : Dec 05, 2019  
Date of Calibration : Dec 09, 2019  
Date of Next Calibration<sup>(a)</sup> : Mar 08, 2020


### PART C – CALIBRATION REQUESTED

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

~ Continued On Next Page ~

Remark(s): -

<sup>(a)</sup> The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.

  
LEE Chun-ning Desmond  
Senior Chemist





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## CALIBRATION REPORT

Test Report No. : AI120046  
Date of Issue : 12 September 2019  
Page No. : 2 of 2

### PART D – RESULT<sup>(b),(c)</sup>

Water temperature: 22.0°C

Environmental conditions of the calibration:

Relative humidity: 51%

Z-Factor: 1.0026

Nominal volume: 3.0ml

Trial	Range: (1-4)	Range: (16-19)	Range: (23-26)	Range: (34-37)	Range: (42-45)
1	2.9864	2.9869	2.9850	2.9643	2.9811
2	3.0017	2.9854	2.9854	2.9834	2.9817
3	2.9916	2.9877	2.9911	2.9945	2.9848
4	2.9897	2.9948	2.9916	2.9838	2.9774
5	2.9963	2.9910	2.9906	2.9857	2.9857
6	2.9932	2.9928	2.9831	2.9807	2.9861
7	2.9875	2.9897	2.9907	2.9843	2.9973
8	2.9865	2.9933	3.0012	2.9722	2.9823
9	2.9891	2.9787	2.9931	2.9924	2.9789
10	2.9853	2.9864	2.9933	2.9837	2.9869
Average (g)	2.9907	2.9887	2.9905	2.9825	2.9842
Standard deviation	0.0051	0.0047	0.0052	0.0088	0.0056
Converted volume (mL)	2.9984	2.9964	2.9982	2.9902	2.9919
Error (%)	-0.0518	-0.1206	-0.0591	-0.3268	-0.2694
RSD (%)	0.1717	0.1581	0.1729	0.2949	0.1861

### Acceptance Criteria<sup>(d)</sup>

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

~ END OF REPORT ~

#### Remark(s): -

<sup>(b)</sup> The results relate only to the tested sample as received

<sup>(c)</sup> The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

<sup>(d)</sup> The "acceptance criteria" is applicable for similar equipment used by QPT or quoted from relevant international standards.