## Appendix E

Copies of
Calibration
Certificates for Air
and Water Quality
Monitoring

Location : ASR 5
Calibrated by : P.F.Yeung
Date : 09/12/2018

Sampler

Model : TE-5170 Serial Number : S/N 0816

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 :
 19 Mar 2018

 Slope (m)
 :
 2.05242

 Intercept (b)
 :
 -0.01383

 Correlation Coefficient(r)
 :
 0.99994

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1021 Ta(K) : 289

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.0	3.531	1.727	55	56.07
2	13 holes	9.3	3.109	1.521	50	50.97
3	10 holes	7.6	2.810	1.376	45	45.88
4	7 holes	4.9	2.257	1.106	37	37.72
5	5 holes	3.2	1.824	0.895	29	29.56

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, X = Z/m-b, Y(Corrected Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}$ 

Sampler Calibration Relationship (Linear Regression)

Slope(m):31.906 Intercept(b):1.755 Correlation Coefficient(r): 0.9976

Location : ASR10
Calibrated by : P.F.Yeung
Date : 09/12/2018

Sampler

Model : TE-5170 Serial Number : S/N 8162

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 :
 19 Mar 2018

 Slope (m)
 :
 2.05242

 Intercept (b)
 :
 -0.01383

 Correlation Coefficient(r)
 :
 0.99994

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1021 Ta(K) : 289

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	10.6	3.319	1.624	54	55.05
2	13 holes	8.7	3.007	1.472	50	50.97
3	10 holes	6.4	2.579	1.263	46	46.89
4	7 holes	4.2	2.089	1.025	38	38.74
5	5 holes	2.3	1.546	0.760	32	32.62

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, X = Z/m-b, Y(Corrected Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}$ 

#### Sampler Calibration Relationship (Linear Regression)

Location : AQMS1
Calibrated by : P.F.Yeung
Date : 09/12/2018

Sampler

Model : TE-5170 Serial Number : S/N 1253

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 :
 19 Mar 2018

 Slope (m)
 :
 2.05242

 Intercept (b)
 :
 -0.01383

 Correlation Coefficient(r)
 :
 0.99994

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1021 Ta(K) : 289

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.8	3.647	1.784	50	50.97
2	13 holes	9.6	3.159	1.546	45	45.88
3	10 holes	7.5	2.792	1.367	40	40.78
4	7 holes	4.8	2.234	1.095	34	34.66
5	5 holes	2.8	1.706	0.838	28	28.54

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b, Y(Corrected Flow)=IC\*{SQRT(Pa/Pstd)(Tstd/Ta)}

#### Sampler Calibration Relationship (Linear Regression)

Location : ASR 1
Calibrated by : P.F.Yeung
Date : 09/12/2018

Sampler

Model : TE-5170 Serial Number : S/N 0146

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 :
 19 Mar 2018

 Slope (m)
 :
 2.05242

 Intercept (b)
 :
 -0.01383

 Correlation Coefficient(r)
 :
 0.99994

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1021 Ta(K) : 289

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	13.2	3.704	1.811	58	59.13
2	13 holes	9.4	3.126	1.530	52	53.01
3	10 holes	7.6	2.810	1.376	47	47.91
4	7 holes	4.8	2.234	1.095	40	40.78
5	5 holes	3.0	1.766	0.867	33	33.64

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, X = Z/m-b, Y(Corrected Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}$ 

#### Sampler Calibration Relationship (Linear Regression)

Location : ASR 6
Calibrated by : P.F.Yeung
Date : 09/12/2018

Sampler

Model : TE-5170 Serial Number : S/N 3957

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 :
 19 Mar 2018

 Slope (m)
 :
 2.05242

 Intercept (b)
 :
 -0.01383

 Correlation Coefficient(r)
 :
 0.99994

**Standard Condition** 

Pstd (hpa) : 1013 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1021 Ta(K) : 289

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.5	3.604	1.763	60	61.17
2	13 holes	10.2	3.256	1.593	53	54.03
3	10 holes	6.7	2.639	1.292	46	46.89
4	7 holes	4.8	2.234	1.095	38	38.74
5	5 holes	3.0	1.766	0.867	30	30.58

 $Notes: Z = SQRT\{dH(Pa/Pstd)(Tstd/Ta)\}, X = Z/m-b, Y(Corrected Flow) = IC*\{SQRT(Pa/Pstd)(Tstd/Ta)\}$ 

#### Sampler Calibration Relationship (Linear Regression)

Slope(m):33.190 Intercept(b): 2.403 Correlation Coefficient(r): 0.9961



RECALIBRATION DUE DATE:

March 19, 2019

# Certificate of Calibration

**Calibration Certification Information** 

Cal. Date: March 19, 2018

Rootsmeter S/N: 438320

Ta: 294

°K

Operator: Jim Tisch
Calibration Model #:

TE-5025A

Calibrator S/N: 2454

**Pa:** 746.8 mm Hg

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4300	3.2	2.00
2	3	4	1	1.0040	6.4	4.00
3	5	6	1	0.9030	7.9	5.00
4	7	8	1	0.8590	8.7	5.50
5	9	10	1	0.7080	12.8	8.00

Data Tabulation						
Vstd	Qstd	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$		Qa	√∆H(Ta/Pa)	
(m3)	(x-axis)	(y-axis)	Va	(x-axis)	(y-axis)	
0.9917	0.6935	1.4113	0.9957	0.6963	0.8874	
0.9874	0.9835	1.9959	0.9914	0.9875	1.2549	
0.9854	1.0913	2.2315	0.9894	1.0957	1.4030	
0.9843	1.1459	2.3405	0.9883	1.1506	1.4715	
0.9789	1.3826	2.8227	0.9829	1.3882	1.7747	
QSTD	m=	2.05242		m=	1.28519	
	b=	-0.01383	QA	b=	-0.00869	
	r=	0.99994		r=	0.99994	

	Calculation	ns		
Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	Va=	ΔVol((Pa-ΔP)/Pa)	
Qstd=	Vstd/∆Time	Qa= Va/ΔTime		
	For subsequent flow ra	te calculatio	ns:	
Qstd=	$1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$	Qa=	$1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$	

	Standard Conditions
Tstd:	298.15 °K
Pstd:	760 mm Hg
	Key
ΔH: calibrator	manometer reading (in H2O)
ΔP: rootsmete	er manometer reading (mm Hg)
Ta: actual abs	olute temperature (°K)
Pa: actual bar	ometric pressure (mm Hg)
b: intercept	
m: slope	

#### RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

FAX: (513)467-9009



## 輝創工程有限公司

Sun Creation Engineering Limited Calibration & Testing Laboratory

## Certificate of Calibration

Certificate No.: C184960

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-1761)

Date of Receipt / 收件日期: 23 August 2018

Description / 儀器名稱 :

Anemometer

Manufacturer / 製造商

Lutron

Model No. / 型號

AM-4201

Serial No./編號 Supplied By / 委託者

AF.27513

Envirotech Services Co.

Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,

New Territories, Hong Kong

TEST CONDITIONS/測試條件

Temperature / 溫度 :

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$ 

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

5 September 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- Testo Industrial Services GmbH, Germany

Tested By

測試

T L Shek

Certified By

核證

Tel/電話: (852) 2927 2606

Assistant Engineer

Date of Issue 簽發日期

6 September 2018

Engineer

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Fax/傳真: (852) 2744 8986



## 輝創工程有限公司

## Sun Creation Engineering Limited

Calibration & Testing Laboratory

## Certificate of Calibration 校正證書

Certificate No.:

C184960

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 10 measurements at each calibration point.

3. Test equipment:

CL386

**Equipment ID** 

Description

Multi-function Measuring Instrument

Certificate No.

S16493

4. Test procedure: MA130N.

5. Results:

Air Velocity

Applied	UUT	He He		
Value	Reading	Value Measurement Uncerta		ertainty
(m/s)	(m/s)	(m/s)	Expanded Uncertainty (m/s)	Coverage Factor
2.0	1.7	+0.3	0.2	2.0
4.0	3.8	+0.2	0.3	2.0
6.0	5.8	+0.2	0.3	2.0
8.0	7.9	+0.1	0.3	2.0
10.0	10.0	0.0	0.4	2.0

Remarks: - The Measured Corrections are defined as: Value = Applied Value - UUT Reading

- The expanded uncertainties are for a level of confidence of 95 %.

Note:

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

#### ENVIROTECH SERVICES CO.

### **Calibration Report of Wind Meter**

Date of Calibration :	30 September 2018					
Brand of Test Meter:	Davis					
Model:	Vantage Pro 2 ( s/n: AS160104014)					
Location:	Roof of Tuen Mun Firestation					
Procedures:						
1. Wind Still Test:	The wind speed sensor was hold by hand un	til it keep still				
2.Wind Speed Test:	The wind meter was on-site calibrated again	st the Anemometer				
3.Wind Direction Test:	The wind meter was on-site calibrated again	st the marine compass at four directions				
Results:						
Wind Still Test						
	Wind Speed (m/s)					
	0.00					
Wind Speed Test						
	Davis (m/s)	Anemometer (m/s)				
1.6						
	3.2					
	4.8	4.1				
Wind Direction Test						

Davis (o)	Marine Compass (o)
270	270
359	0
89	90

180

Calibrated by:

Yeung Ping Fai

(Technical Officer)

Checked by:

Ho Kam Fat

(Senior Technical Officer)

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#### 專業化驗有限公司

#### **OUALITY 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.

AH100180

Date of Issue

26 October 2018

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

Oct 26, 2018

Date of Calibration

Oct 26, 2018

Date of Next Calibration<sup>(a)</sup>

Jan 26, 2019

#### 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 APHA 21e 2130 B

Turbidity 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 <sup>(e)</sup> (pH Unit)	Results
4.00	4.05	0.05	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	9.98	-0.03	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
10.8	10.7	-0.1	Satisfactory
23.5	23.4	-0.1	Satisfactory
45.0	45.5	0.5	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 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.

"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by QPT or quoted form relevant international standards.

APPROVED SIGNATORY:



#### 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.

AH100180

Date of Issue

26 October 2018

Page No.

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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	0.00	0.00	Satisfactory
1.70	1.81	0.11	Satisfactory
4.79	4.81	0.02	Satisfactory
7.70	7.74	0.04	Satisfactory

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

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (μS/cm)	Tolerance (%)	Results
0.001	146.9	153.0	4.2	Satisfactory
0.01	1412	1359	-3.8	Satisfactory
0.1	12890	12520	-2.9	Satisfactory
0.5	58670	57672	-1.7	Satisfactory
1.0	111900	112190	0.3	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	10.11	1.1	Satisfactory
20	20.47	2.3	Satisfactory
30	30.18	0.6	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	0.40	<b>33 48</b>	
10	9.80	-2.0	Satisfactory
20	19.36	-3.2	Satisfactory
100	102.34	2.3	Satisfactory
800	803.10	0.4	Satisfactory

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

Remark(s): -

<sup>~</sup> END OF REPORT ~

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

<sup>(</sup>b) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.



Report No.

AI010202

Date of Issue

24 January, 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

Jan 23, 2019

Date of Calibration

Jan 23, 2019

Date of Next Calibration(a)

Apr 23, 2019

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

**Parameter** 

Reference Method

pH at 25°C

APHA 21e 4500-H+ B APHA 21e 4500-O G

Dissolved Oxygen 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 <sup>(e)</sup> (pH Unit)	Results
4.00	3.97	-0.03	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.04	0.03	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	9.9	-0.1	Satisfactory
19.0	18.8	-0.2	Satisfactory
44.0	44.2	0.2	Satisfactory

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

#### ~ CONTINUED ON NEXT PAGE ~

#### Remark(s): -

The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

The results relate only to the calibrated equipment as received

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

"Displayed Reading" denotes the figure shown on item under calibration/checking regardless of equipment precision or significant figures.

The "Tolerance Limit" mentioned is referenced to YSI product specifications.

APPROVED SIGNATORY:



Report No.

AI010202

Date of Issue

24 January, 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
0.00	0.00	0.00	Satisfactory
4.70	4.55	-0.15	Satisfactory
6.84	6.84	0.00	Satisfactory
9.08	9.08	0.00	Satisfactory

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

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (μS/cm)	Tolerance (%)	Results
0.001	146.9	160.1	9.0	Satisfactory
0.01	1412	1388	-1.7	Satisfactory
0.1	12890	12746	-1.1	Satisfactory
0.5	58670	57244	-2.4	Satisfactory
1.0	111900	110348	-1.4	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	9.96	-0.4	Satisfactory
20	20.00	0.0	Satisfactory
30	30.21	0.7	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	0.00	122	-
10	10.00	0.0	Satisfactory
20	20.00	0.0	Satisfactory
100	97.40	-2.6	Satisfactory
800	780.90	-2.4	Satisfactory

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

~ END OF REPORT ~

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

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



AI010080 Report No.

08 January, 2019 Date of Issue

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

YSI ProDSS (Multi-Parameters) Name of Equipment

Manufacturer YSI (a xylem brand)

16H104233 Serial Number Dec 31, 2018 Date of Received Dec 31, 2018 Date of Calibration Mar 31, 2019 Date of Next Calibration(a)

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

Reference Method **Parameter** APHA 21e 4500-H<sup>+</sup> B pH at 25°C APHA 21e 4500-O G Dissolved Oxygen APHA 21e 2510 B Conductivity at 25°C Salinity APHA 21e 2520 B APHA 21e 2130 B Turbidity

Section 6 of international Accreditation New Zealand Technical Temperature

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	3.92	-0.08	Satisfactory
7.42	7.23	-0.19	Satisfactory
10.01	10.15	0.14	Satisfactory

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

#### (2) Temperature

Reading of Ref. thermometer	Displayed Reading (°C)	Tolerance (°C)	Results
(°C) 8.8	9.0	0.2	Satisfactory
18.0	17.3	-0.7	Satisfactory
39.5	38.9	-0.6	Satisfactory

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

~ CONTINUED ON NEXT PAGE ~

#### Remark(s): -

- The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.
- The results relate only to the calibrated equipment as received
- The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- "Displayed Reading" denotes the figure shown on item under calibration/checking regardless of equipment precision or significant figures.

  The "Tolerance Limit" mentioned is referenced to YSI product specifications.

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AI010080

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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
0.41	0.33	-0.08	Satisfactory
5.71	5.59	-0.12	Satisfactory
7.78	7.68	-0.10	Satisfactory
9.33	9.28	-0.05	Satisfactory

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

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (μS/cm)	Tolerance (%)	Results
0.001	146.9	153.2	4.3	Satisfactory
0.01	1412	1350	-4.4	Satisfactory
0.1	12890	12848	-0.3	Satisfactory
0.5	58670	57860	-1.4	Satisfactory
1.0	111900	111233	-0.6	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	-1.2	Satisfactory
20	19.80	-1.0	Satisfactory
30	30.30	1.0	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	0.31		
10	10.08	0.8	Satisfactory
20	19.88	-0.6	Satisfactory
100	98.74	-1.3	Satisfactory
800	730.58	-8.7	Satisfactory

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

~ END OF REPORT ~

#### Remark(s): -

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

<sup>(8)</sup> The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.



#### 專業化驗有限公司

#### **OUALITY 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

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## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No.

AH100181

Date of Issue

26 October 2018

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#### 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

Oct 26, 2018

Oct 26, 2018

Date of Calibration

Date of Next Calibration(a)

Jan 26, 2019

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

Parameter

Reference Method

pH at 25°C

APHA 21e 4500-H+ B

Dissolved Oxygen Conductivity at 25°C APHA 21e 4500-O G 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 <sup>(e)</sup> (pH Unit)	Results
4.00	4.07	0.07	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.01	0.00	Satisfactory

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

#### (2) Temperature

Reading of Ref. thermometer	Displayed Reading (°C)	Tolerance (°C)	Results
10.8	10.7	-0.1	Satisfactory
23.5	23.3	-0.2	Satisfactory
45.0	45.7	0.7	Satisfactory

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

#### ~ CONTINUED ON NEXT PAGE ~

#### Remark(s): -

The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

The results relate only to the calibrated equipment as received

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

"Displayed Reading" denotes the figure shown on item under calibration/checking regardless of equipment precision or significant figures.

The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by QPT or quoted form relevant international standards.

APPROVED SIGNATORY:



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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)

#### (3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.00	0.00	0.00	Satisfactory
1.70	1.77	0.07	Satisfactory
4.79	4.83	0.04	Satisfactory
7.70	7.81	0.11	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.20$  (mg/L)

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (μS/cm)	Tolerance (%)	Results
0.001	146.9	150.0	2.1	Satisfactory
0.01	1412	1439	1.9	Satisfactory
0.1	12890	11949	-7.3	Satisfactory
0.5	58670	58670	0.0	Satisfactory
1.0	111900	111563	-0.3	Satisfactory

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

#### (5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.13	1.3	Satisfactory
20	20.16	0.8	Satisfactory
30	30.26	0.9	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	0.30	( <del>**</del>	
10	9.70	-3.0	Satisfactory
20	19.76	-1.2	Satisfactory
100	98.33	-1.7	Satisfactory
800	804.22	0.5	Satisfactory

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

~ END OF REPORT ~

<sup>&</sup>quot;Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures. The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.



Report No. : AI010203

Date of Issue : 24 January, 2019

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#### 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 : Jan 23, 2019

Date of Calibration : Jan 23, 2019

Date of Next Calibration<sup>(a)</sup> : Apr 23, 2019

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

ParameterReference MethodpH at 25°CAPHA 21e 4500-H\* BDissolved OxygenAPHA 21e 4500-O GConductivity at 25°CAPHA 21e 2510 BSalinityAPHA 21e 2520 BTurbidityAPHA 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 <sup>(e)</sup> (pH Unit)	Results
4.00	4.01	0.01	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.03	0.02	Satisfactory

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

#### (2) Temperature

Reading of Ref. thermometer	Displayed Reading (°C)	Tolerance (°C)	Results
10.0	9.9	-0.1	Satisfactory
19.0	19.1	0.1	Satisfactory
44.0	44.2	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 form relevant international standards.

(b) The results relate only to the calibrated equipment as received

(e) 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 referenced to YSI product specifications.

APPROVED SIGNATORY:



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AI010203

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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	0.00	0.00	Satisfactory
4.70	4.54	-0.16	Satisfactory
6.84	6.98	0.14	Satisfactory
9.08	9.08	0.00	Satisfactory

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

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (μS/cm)	Tolerance (%)	Results
0.001	146.9	158.8	8.1	Satisfactory
0.01	1412	1374	-2.7	Satisfactory
0.1	12890	12735	-1.2	Satisfactory
0.5	58670	57949	-1.2	Satisfactory
1.0	111900	110477	-1.3	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	20.00	0.0	Satisfactory
30	30.28	0.9	Satisfactory

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

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.00	· <u>=</u>	Value 1
10	10.00	0.0	Satisfactory
20	20.00	0.0	Satisfactory
100	98.20	-1.8	Satisfactory
800	783.00	-2.1	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

<sup>(</sup>g) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.



Report No.

AI010081

Date of Issue

08 January, 2019

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#### 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 31, 2018

Date of Calibration

Dec 31, 2018

Date of Next Calibration(a)

Mar 31, 2019

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

**Parameter** 

Reference Method

pH at 25°C

APHA 21e 4500-H+ B

Dissolved Oxygen Conductivity at 25°C APHA 21e 4500-O G 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) nH 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	7.55	0.13	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	Displayed Reading (°C)	Tolerance (°C)	Results
8.8	9.2	0.4	Satisfactory
18.0	17.6	-0.4	Satisfactory
39.5	39.3	-0.2	Satisfactory

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

#### ~ CONTINUED ON NEXT PAGE ~

Remark(s): -

The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

The results relate only to the calibrated equipment as received

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"Displayed Reading" denotes the figure shown on item under calibration/checking regardless of equipment precision or significant figures.

The "Tolerance Limit" mentioned is referenced to YSI product specifications.

APPROVED SIGNATORY:



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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
0.41	0.32	-0.09	Satisfactory
5.71	5.63	-0.08	Satisfactory
7.78	7.91	0.13	Satisfactory
9.33	9.23	-0.10	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.20$  (mg/L)

#### (4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (μS/cm)	Tolerance (%)	Results
0.001	146.9	155.4	5.8	Satisfactory
0.01	1412	1366	-3.3	Satisfactory
0.1	12890	12823	-0.5	Satisfactory
0.5	58670	57898	-1.3	Satisfactory
1.0	111900	111575	-0.3	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	10.06	0.6	Satisfactory
20	20.02	0.1	Satisfactory
30	30.79	2.6	Satisfactory

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

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.22		
10	9.89	-1.1	Satisfactory
20	20.68	3.4	Satisfactory
100	98.82	-1.2	Satisfactory
800	748.91	-6.4	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

<sup>(</sup>g) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.