EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor Manufacturer / Brand : SIBATA Model No.: LD-3B **Equipment No.:** LD-3B-001 Serial No.: 934393 Sensitivity Adjustment Scale Setting: 640 CPM

Standard Equipment

Equipment: MFC High Volume Air Sampler Venue : Dragonair Building TE-5170 Total Suspended Particulate S/N3693 Model No.: Serial No.: **Previous Calibration Date** 24/08/2017

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): Sensitivity Adjustment Scale Setting (After Calibration):

640 CPM 640 CPM

Hour	Date (dd-mmm-yy)	Time		Ambient ((ug/m ³) Total Count		(ug/m³) Total Count	Count/Minute X-axis
				Temp (°C)	R.H. (%)	Y-axis		
1	11-Oct-17	13:00	14:00	34	45%	72.6	1829	30.5
2	11-Oct-17	14:08	15:08	34	45%	59.1	1395	23.3
3	11-Oct-17	15:13	16:13	34	45%	52.3	1283	21.4
4	11-Oct-17	16:20	17:20	34	45%	57.4	1374	22.9

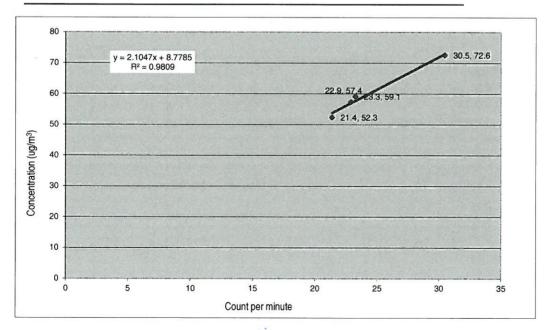
Be Linear Regression of Y or X

Slope (K-factor): Correlation coefficient :

2.1047 0.9904 Intercept,b:

8.778

Remark:



Recorded by: William Chan

Signature:

Date:

23/10/2017

Checked by: Keith Chau

Signature:

Date:

23/10/2017

EQUIPMENT CALIBRATION RECORD

 Type :
 Laser Dust Monitor

 Manufacturer / Brand :
 SIBATA

 Model No.:
 LD-3B

 Equipment No.:
 LD-3B-002

 Serial No.:
 974350

 Sensitivity Adjustment Scale Setting :
 622 CPM

Standard Equipment

 Equipment :
 MFC High Volume Air Sampler

 Venue :
 Dragonair Building

 Model No.:
 TE-5170 Total Suspended Particulate

 Serial No.:
 S/N3693

 Previous Calibration Date
 24/08/2017

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 622
Sensitivity Adjustment Scale Setting (After Calibration): 622

Hour	Date (dd-mmm-yy)	Т	Time Ambient Condition		Concentration (ug/m³)	Total Count	Count/Minute X-axis	
				Temp (°C)	R.H. (%)	Y-axis		
1	11-Sep-17	13:51	14:51	33	60%	9.7	745	12.42
2	11-Sep-17	15:01	16:01	33	60%	8.3	714	11.90
3	11-Sep-17	16:05	17:05	33	60%	13.9	1021	17.02
4	11-Sep-17	17:05	18:05	33	60%	16.1	1130	18.83

Be Linear Regression of Y or X

Slope (K-factor):

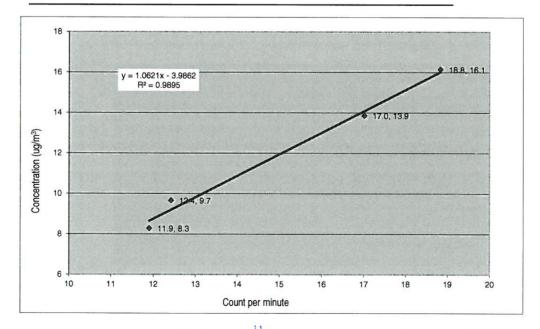
Correlation coefficient (R):

1.062 0.9947

Intercept,b:

-3.986

Remark:



Recorded by: William Chan

Signature:

Him

Date:

20/10/2017

Checked by: __Keith Chau

Signature:

Date:

20/10/2017

EQUIPMENT CALIBRATION RECORD

Type:	Laser Dust Monitor	
Manufacturer / Brand :	SIBATA	
Model No.:	LD-3B	
Equipment No.:	LD-3B-003	
Serial No.:	276018	
Sensitivity Adjustment Scale Setting :	799 CPM	

Standard Equipment

Equipment :	MFC High Volume Air Sampler
Venue :	Dragonair Building
Model No.:	TE-5170 Total Suspended Particulate
Serial No.:	S/N3693

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration) : Sensitivity Adjustment Scale Setting (After Calibration) :

799 CPM 800 CPM

Hour	Date (dd-mmm-yy)	Т	Time Ambient Condition (Concentration (ug/m³)	Total Count	Count/Minute X-axis	
				Temp (°C)	R.H. (%)	Y-axis		
1	11-Sep-17	13:51	14:51	33	60%	9.7	690	11.50
2	11-Sep-17	15:01	16:01	33	60%	8.3	622	10.37
3	11-Sep-17	16:05	17:05	33	60%	13.9	966	16.10
4	11-Sep-17	17:05	18:05	33	60%	16.1	1099	18.32

Be Linear Regression of Y or X

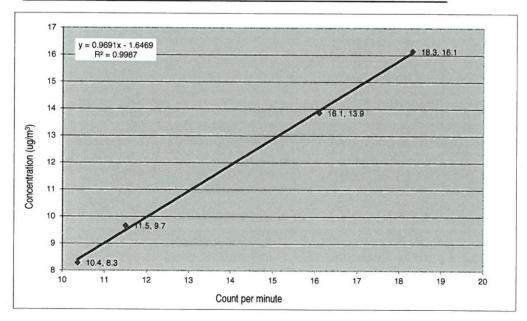
Correlation coefficient (R):

Slope (K-factor):

0.9691 0.9993 Intercept,b:

-1.6469

Remark:



Recorded by: William Chan

Signature:

Date:

20/10/2017

Checked by: Keith Chau

Signature:

Date:

20/10/2017

ENVIROTECH SERVICES CO.

<u>High-Volume TSP Sampler</u> 5-Point Calibration Record

Location : AMS2(Tung Chung New Development Pier)

Calibrated by : K.F.Ho
Date : 08/02/2018

Sampler

Model : TE-5170 Serial Number : S/N3641

Calibration Orfice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 : 20 March 2017

 Slope (m)
 : 2.08464

 Intercept (b)
 : -0.036840

 Correlation Coefficient(r)
 : 0.99994

Standard Condition

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

Calibration Condition

 Pa (hpa)
 :
 1017

 Ta(K)
 :
 289

R	lesistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.6	3.465	1.680	55	55.96
2	13 holes	9.4	3.119	1.514	50	50.87
3	10 holes	6.5	2.594	1.262	45	45.79
4	7 holes	4.4	2.134	1.041	37	37.65
5	5 holes	2.4	1.576	0.774	30	30.52

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

Sampler Calibration Relationship

Slope(m):28.038 Intercept(b): 8.990 Correlation Coefficient(r): 0.9968

Checked by: Magnum Fan Date: 12/02/2018

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler 5-Point Calibration Record

Location : AMS3B(AECOM Office)

Calibrated by : P.F.Yeung
Date : 08/02/2018

<u>Sampler</u>

Model : TE-5170 Serial Number : S/N2100

Calibration Orfice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 : 20 March 2017

 Slope (m)
 : 2.08464

 Intercept (b)
 : -0.036840

 Correlation Coefficient(r)
 : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017 Ta(K) : 289

R	lesistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic	IC	Y
		, ,		meter/min)		
1	18 holes	12.2	3.554	1.722	56	56.98
2	13 holes	9.5	3.136	1.522	50	50.87
3	10 holes	6.8	2.653	1.290	45	45.79
4	7 holes	4.4	2.134	1.041	38	38.66
5	5 holes	2.5	1.609	0.789	30	30.52

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

Sampler Calibration Relationship

Slope(m): 27.778 Intercept(b): 9.200 Correlation Coefficient(r): 0.9982

Checked by: Magnum Fan Date: 12/02/2018

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler 5-Point Calibration Record

Location : AMS7B (3RS Site Office)

Calibrated by : P.F.Yeung
Date : 06/02/2018

Sampler

Model : TE-5170 Serial Number : S/N3575

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454

 Service Date
 : 20 March 2017

 Slope (m)
 : 2.08464

 Intercept (b)
 : -0.036840

 Correlation Coefficient(r)
 : 0.99994

Standard Condition

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

Calibration Condition

 Pa (hpa)
 :
 1020

 Ta(K)
 :
 285

R	Resistance	dH [green liquid]	Z	X=Qstd	IC	Y
	Plate	(inch water)		(cubic		
				meter/min)		
1	18 holes	12.0	3.554	1.723	56	57.46
2	13 holes	9.5	3.163	1.535	51	52.33
3	10 holes	7.0	2.715	1.320	45	46.17
4	7 holes	4.7	2.224	1.085	38	38.99
5	5 holes	2.8	1.717	0.841	32	32.83

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

Sampler Calibration Relationship

Slope(m): 28.279 Intercept(b): 8.776 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 12/02/2018



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C172617

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC17-1041)

Date of Receipt / 收件日期: 9 May 2017

Description / 儀器名稱

Acoustical Calibrator

Manufacturer / 製造商 Model No. / 型號

Brüel & Kjær

Serial No. / 編號

4231 3003246

Supplied By / 委託者

Atkins China Limited

13/F., Wharf T&T Centre, Harbour City, Tsim Sha Tsui, Kowloon, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 温度 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(55 \pm 20)\%$

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

16 May 2017

TEST RESULTS / 測試結果

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

The results do not exceed manufacturer's specification.

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

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試

H T Wong Technical Officer

Certified By

核證

K C Lee Engineer Date of Issue 簽發日期

16 May 2017

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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。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗所

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C172617

證書編號

1. 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 3 measurements at each calibration point.

3. Test equipment:

> Equipment ID CL130

CL281 TST150A Description

Universal Counter

Measuring Amplifier

Multifunction Acoustic Calibrator

Certificate No. C163709

PA160023 C161175

4. Test procedure: MA100N.

5. Results:

5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		3

Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(Hz)
1	1.000 0	$1 \text{ kHz} \pm 0.1 \%$	± 0.1

Remark: The uncertainties are for a confidence probability of not less than 95 %.

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

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C173906

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC17-1606)

Date of Receipt / 收件日期: 11 July 2017

Description / 儀器名稱

Acoustical Calibrator

Manufacturer / 製造商

Brüel & Kjær

Model No./型號

4231

Serial No./編號

3004068

Supplied By / 委託者

Atkins China Limited

13/F., Wharf T&T Centre, Harbour City, Tsim Sha Tsui, Kowloon, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(55 \pm 20)\%$

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

17 July 2017

TEST RESULTS / 測試結果

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

The results do not exceed manufacturer's specification.

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

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By

測試

K C/Lee Engineer

Certified By

核證

n the C

H C Chan

Engineer

Date of Issue

17 July 2017

簽發日期

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.

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C173906

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.

The results presented are the mean of 3 measurements at each calibration point. 2.

3. Test equipment:

> Equipment ID CL130 CL281 TST150A

Description

Universal Counter

Multifunction Acoustic Calibrator Measuring Amplifier

Certificate No. C173864

PA160023 C161175

Test procedure: MA100N.

5. Results:

Sound Level Accuracy

Sound	Leverricediacy			
	UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
N	Iominal Value	(dB)	(dB)	(dB)
	94 dB, 1 kHz	94.0	± 0.2	± 0.2
	114 dB, 1 kHz	114.0	N - 07,000 x 10 - 454 - 020 00	

Frequency Accuracy 5.2

Frequency Accuracy			
UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(Hz)
1	1,000,0	$1 \text{ kHz} \pm 0.1 \%$	± 0.1

Remark: The uncertainties are for a confidence probability of not less than 95 %.

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 laborator

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

Date of Receipt / 收件日期: 18 August 2017

C174927

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC17-1938)

Description / 儀器名稱

Integrating Sound Level Meter

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

2238

Serial No./編號 Supplied By / 委託者

2684503

Atkins China Limited

13/F., Wharf T&T Centre, Harbour City. Tsim Sha Tsui, Kowloon, Hong Kong

TEST CONDITIONS/測試條件

Temperature / 溫度 :

 $(23 \pm 2)^{\circ}$ C

Line Voltage / 電壓 :

Relative Humidity / 相對濕度 :

 $(55 \pm 20)\%$

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

30 August 2017

TEST RESULTS / 測試結果

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

The results do not exceed manufacturer's specification.

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

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By

測試

K C Lee Engineer

Certified By 核證

H C Chan

Date of Issue 簽發日期

31 August 2017

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 laborator

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司-校正及檢測實驗所

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab(a suncreation.com Website/網址: www.suncreation.com

Page 1 of 4



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C174927

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.3.2. 2.
- The results presented are the mean of 3 measurements at each calibration point. 3.
- 4. Test equipment:

Equipment ID CL280 CL281

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

Certificate No. C170048 PA160023

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level:
- 6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

	UU'	Γ Setting	Applie	d Value	UUT	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading
50 - 130	L _{AFP}	A	F	94.00	(KHZ)	(dB)

6.1.1.2 After Self-calibration

	UUT	Setting		Applied	d Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec.
50 - 130	L _{AFP}	A	F	94.00	1	94.1	(dB) ± 1.1

6.1.2 Linearity

	UUT	Setting		Applied	Value	UUT
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L_{AFP}	Α	F	94.00	1	94.1 (Ref.)
				104.00		104.1
0 (1 (== =	lass 1 C			114.00		114.0

IEC 61672 Class 1 Spec. : \pm 0.6 dB per 10 dB step and \pm 1.1 dB for overall different.

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Calibration and Testing Laboratory

Certificate of Calibration

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Certificate No.:

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6.2 Time Weighting

	UUT Setting				Applied Value		IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	UUT Reading (dB)	Spec. (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.1	Ref.
	L _{ASP}		S			94.1	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

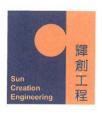
	UUT	Setting		Appl	lied Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec.
50 - 130	L _{AFP}	A	F	94.00	63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.5	-8.6 ± 1.4
					500 Hz	90.9	-3.2 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.6$
					4 kHz	95.1	$+1.0 \pm 1.6$
					8 kHz	93.0	-1.1 (+2.1; -3.1)
					12.5 kHz	89.9	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

	UUT	Setting		App	lied Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec.
50 - 130	L_{CFP}	C	F	94.00	63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.5
					250 Hz	94.1	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0; -6.0)

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

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C174927

證書編號

Remarks: - UUT Microphone Model No.: 4188 & S/N: 2682524

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : \pm 0.35 dB

 $\begin{array}{lll} 250 \; Hz - 500 \; Hz & : \pm 0.30 \; dB \\ 1 \; kHz & : \pm 0.20 \; dB \\ 2 \; kHz - 4 \; kHz & : \pm 0.35 \; dB \\ 8 \; kHz & : \pm 0.45 \; dB \\ 12.5 \; kHz & : \pm 0.70 \; dB \\ \end{array}$

104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB) 114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 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而批准。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C173907

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC17-1606)

Date of Receipt / 收件日期: 11 July 2017

Description / 儀器名稱

Integrating Sound Level Meter

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

2238

Serial No. / 編號

2800932

Supplied By / 委託者

Atkins China Limited

13/F., Wharf T&T Centre, Harbour City, Tsim Sha Tsui, Kowloon, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 温度 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(55 \pm 20)\%$

Line Voltage / 電壓

TEST SPECIFICATIONS / 測試規節

Calibration check

DATE OF TEST / 測試日期

17 July 2017

TEST RESULTS / 測試結果

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

The results do not exceed manufacturer's specification.

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

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By

測試

K C Lee Engineer

Certified By

核證

H C Chan

Date of Issue 簽發日期

17 July 2017

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而批准。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

證書編號

C173907

Certificate No.:

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

- 2. Self-calibration using the B & K Acoustic Calibrator 4231, S/N: 3004068 was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

Equipment ID

CL280 CL281

Description

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

Certificate No. C170048 PA160023

5. Test procedure: MA101N.

- 6. Results:
- 6.1 Sound Pressure Level:

6.1.1 Reference Sound Pressure Level

	UUT Setting				d Value	UUT	IEC 61672 Class 1	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec.	
50 - 130	L _{AFP}	A	F	94.00	1	94.1	± 1.1	

6.1.2 Linearity

	UUT	Setting		Applied	Value	UUT
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

IEC 61672 Class 1 Spec. : \pm 0.6 dB per 10 dB step and \pm 1.1 dB for overall different.

6.2 Time Weighting

	UUT	Setting		Applie	d Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.1	Ref.
	L _{ASP}		S			94.1	± 0.3

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。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C173907

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		App	lied Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
50 - 130	L_{AFP}	A	F	94.00	63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.6$
					4 kHz	95.1	$+1.0 \pm 1.6$
					8 kHz	92.9	-1.1 (+2.1; -3.1)
					12.5 kHz	89.8	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

	UUT	Setting		App	lied Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (Db)	Spec. (dB)
50 - 130	L_{CFP}	С	F	94.00	63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1; -3.1)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

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而批准。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C173907

證書編號

Remarks: - UUT Microphone Model No.: 4188 & S/N: 2793199

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : \pm 0.35 dB

104 dB : 1 kHz : \pm 0.10 dB (Ref. 94 dB) 114 dB : 1 kHz : \pm 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 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而批准。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

Date of Receipt / 收件日期: 18 August 2017

C174926

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC17-1938)

Description / 儀器名稱

Integrating Sound Level Meter

Manufacturer / 製造商

Brüel & Kiær

Model No. / 型號

2238

Serial No./編號

2808432

Supplied By / 委託者

Atkins China Limited

13/F., Wharf T&T Centre, Harbour City, Tsim Sha Tsui, Kowloon, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 温度 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(55 \pm 20)\%$

Line Voltage / 電壓

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

30 August 2017

TEST RESULTS / 測試結果

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

The results do not exceed manufacturer's specification.

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

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By

測試

K C Lee Engineer

Certified By

核證

H C Chan Engineer

Date of Issue

31 August 2017

簽發日期

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 laborators

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



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C174926

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to 1. warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.3.2. 2.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

Equipment ID CL280 CL281

Description 40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

Certificate No. C170048 PA160023

- 5. Test procedure: MA101N.
- 6. Results:
- Sound Pressure Level: 6.1
- 6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

	UU	Γ Setting	Applie	UUT		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.1

6.1.1.2 After Self-calibration

	UUT	Setting		Applied	Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec.
50 - 130	L _{AFP}	A	F	94.00	1	94.1	± 1.1

6.1.2 Linearity

UUT Setting		Applied Value		UUT		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Spec. : \pm 0.6 dB per 10 dB step and \pm 1.1 dB for overall different.

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

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.:

C174926

證書編號

6.2 Time Weighting

UUT Setting		Applied Value		UUT	IEC 61672 Class 1		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.1	Ref.
	L _{ASP}		S			94.1	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		Appl	ied Value	UUT	IEC 61672 Class 1
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Spec. (dB)
50 - 130	L _{AFP}	A	F	94.00	63 Hz	68.0	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	$+1.0 \pm 1.6$
					8 kHz	92.9	-1.1 (+2.1; -3.1)
					12.5 kHz	89.8	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

	UUT	Setting		Appl	ied Value	UUT	IEC 61672 Class 1
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Spec.
(dB)		Weighting	Weighting	(dB)	-	(dB)	(dB)
50 - 130	L_{CFP}	С	F	94.00	63 Hz	93.4	-0.8 ± 1.5
					125 Hz	94.0	-0.2 ± 1.5
					250 Hz	94.1	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
1					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.9	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

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

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C174926

證書編號

Remarks: - UUT Microphone Model No.: 4188 & S/N: 292904

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : \pm 0.35 dB

250 Hz - 500 Hz : $\pm 0.30 \text{ dB}$ 1 kHz : $\pm 0.20 \text{ dB}$ 2 kHz - 4 kHz : $\pm 0.35 \text{ dB}$ 8 kHz : $\pm 0.45 \text{ dB}$ 12.5 kHz : $\pm 0.70 \text{ dB}$

104 dB : 1 kHz : \pm 0.10 dB (Ref. 94 dB)

114 dB : 1 kHz : $\pm 0.10 \text{ dB}$ (Ref. 94 dB)

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. 本證書新載校正用之測試器材均可測源至國際標準。 局部複印本證書器先獲本實驗所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory c/o 4/F. Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 - 校正及檢測實驗所

⁻ The uncertainties are for a confidence probability of not less than 95 %.



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.

AH020038

Date of Issue

07 February 2018

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 ProDSS (Multi-Parameters)

Manufacturer

YSI (a xylem brand)

Serial Number

15M100005

Date of Received

Feb 06, 2018

Date of Calibration

Feb 06, 2018 to Feb 06, 2018

Date of Next Calibration(a)

May 06, 2018

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter

Reference Method

pH at 25°C Dissolved Oxygen APHA 21e 4500-H+ B APHA 21e 4500-O G

Conductivity at 25°C

APHA 21e 2510 B

Salinity

APHA 21e 2520 B

Turbidity Temperature APHA 21e 2130 B 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	3.97	-0.03	Satisfactory
7.42	7.35	-0.07	Satisfactory
10.01	10.03	+0.02	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
14.0	13.9	-0.1	Satisfactory
26.0	25.7	-0.3	Satisfactory
33.0	32.7	-0.3	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:

FUNG Yuen-ching Aries Laboratory Manager



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

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Date of Issue

07 February 2018

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	0.02	+0.02	Satisfactory
1.95	1.99	+0.04	Satisfactory
3.68	3.72	+0.04	Satisfactory
6.26	6.19	-0.07	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	143.1	-2.0	Satisfactory
0.01	1412	1401	-0.8	Satisfactory
0.1	12890	12762	-1.0	Satisfactory
0.5	58670	57936	-1.3	Satisfactory
1.0	111900	109009	-2.6	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.02	+0.2	Satisfactory
20	19.88	-0.6	Satisfactory
30	29.65	-1.2	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.1	**	
10	10.3	+3.0	Satisfactory
20	20.4	+2.0	Satisfactory
100	104.2	+4.2	Satisfactory
800	789.7	-1.3	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

[&]quot;Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

⁽⁸⁾ 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

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.

AH020039

Date of Issue

07 February 2018

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 ProDSS (Multi-Parameters)

Manufacturer

YSI (a xylem brand)

Serial Number

16H104233

Date of Received

Feb 06, 2018

Date of Calibration

Feb 06, 2018 to Feb 06, 2018

Date of Next Calibration(a)

May 06, 2018

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 ^(e) (pH Unit)	Results
4.00	4.04	+0.04	Satisfactory
7.42	7.39	-0.03	Satisfactory
10.01	10.08	+0.07	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
14.0	13.6	-0.4	Satisfactory
26.0	25.8	-0.2	Satisfactory
33.0	32.5	-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.

(d) "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:

FUNG Yuen-ching Aries Laboratory Manager



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No.

AH020039

Date of Issue

: 07 February 2018

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	0.05	+0.05	Satisfactory
1.95	1.99	+0.04	Satisfactory
3.68	3.73	+0.05	Satisfactory
6.26	6.21	-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	150.6	+2.5	Satisfactory
0.01	1412	1377	-2.5	Satisfactory
0.1	12890	12598	-2.3	Satisfactory
0.5	58670	57622	-1.8	Satisfactory
1.0	111900	107426	-4.0	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.92	-0.8	Satisfactory
20	19.79	-1.1	Satisfactory
30	29.80	-0.7	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.1		
10	10.6	+6.0	Satisfactory
20	19.4	-3.0	Satisfactory
100	95.9	-4.1	Satisfactory
800	790.1	-1.2	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

⁽⁸⁾ 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.



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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

16H104234

Date of Received

Feb 06, 2018

Date of Calibration

Feb 06, 2018 to Feb 06, 2018

Date of Next Calibration(a)

May 06, 2018

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 ^(e) (pH Unit)	Results	
4.00	4.03	+0.03	Satisfactory	
7.42	7.40	-0.02	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)	eter Displayed Reading (°C)	Tolerance (°C)	Results	
14.0	13.9	-0.1	Satisfactory	
26.0	26.1	+0.1	Satisfactory	
33.0	32.8	-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 the acceptance criteria applicable for similar equipment used by QPT or quoted form relevant international standards.

APPROVED SIGNATORY:

FUNG Yuen-ching Aries Laboratory 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
0.00	0.07	+0.07	Satisfactory
1.95	1.90	-0.05	Satisfactory
3.68	3.66	-0.02	Satisfactory
6.26	6.22	-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	149.9	+2.0	Satisfactory
0.01	1412	1362	-3.5	Satisfactory
0.1	12890	12536	-2.7	Satisfactory
0.5	58670	58006	-1.1	Satisfactory
1.0	111900	107622	-3.8	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.95	-0.5	Satisfactory
20	19.86	-0.7	Satisfactory
30	29.88	-0.4	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.1		
10	9.8	-2.0	Satisfactory
20	19.8	-1.0	Satisfactory
100	96.1	-3.9	Satisfactory
800	785.4	-1.8	Satisfactory

Tolerance limit of turbidity should be less than ± 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.

⁽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.



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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

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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

17E100747

Date of Received

Feb 01, 2018

Date of Calibration

Feb 01, 2018 to Feb 01, 2018

Date of Next Calibration(a)

May 01, 2018

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>

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 Temperature APHA 21e 2130 B 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	7.48	+0.06	Satisfactory
10.01	10.03	+0.02	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
14.0	13.8	-0.2	Satisfactory
26.0	25.8	-0.2	Satisfactory
33.0	33.1	+0.1	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.

(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.

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

APPROVED SIGNATORY:

FUNG Yuen-ching Aries Laboratory Manager



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

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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	0.03	0.03	Satisfactory
1.95	1.88	-0.07	Satisfactory
3.68	3.61	-0.07	Satisfactory
6.26	6.20	-0.06	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	144.2	-1.8	Satisfactory
0.01	1412	1383	-2.1	Satisfactory
0.1	12890	12603	-2.2	Satisfactory
0.5	58670	57995	-1.2	Satisfactory
1.0	111900	109400	-2.2	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.82	-1.8	Satisfactory
20	19.81	-1.0	Satisfactory
30	29.74	-0.9	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.1	(==)	
10	10.1	1.0	Satisfactory
20	20.4	2.0	Satisfactory
100	103.2	3.2	Satisfactory
800	781.2	-2.3	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

relevant international standards.

[&]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



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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

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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

17H105557

Date of Received

Feb 06, 2018

Date of Calibration

Feb 06, 2018 to Feb 06, 2018

Date of Next Calibration(a)

May 06, 2018

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>

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(e)(pH Unit)	Results
4.00	4.08	+0.08	Satisfactory
7.42	7.47	+0.05	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	Displayed Reading (°C)	Tolerance (°C)	Results
14.0	13.8	-0.2	Satisfactory
26.0	25.7	-0.3	Satisfactory
33.0	32.6	-0.4	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

(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.

The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by QPT or quoted form 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 Email: info@qualityprotest.com; Website: www.qualityprotest.com

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

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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	0.02	+0.02	Satisfactory
1.95	1.93	-0.02	Satisfactory
3.68	3.59	-0.09	Satisfactory
6.26	6.24	-0.02	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	143.6	-2.2	Satisfactory
0.01	1412	1394	-1.3	Satisfactory
0.1	12890	12770	-0.9	Satisfactory
0.5	58670	57972	-1.2	Satisfactory
1.0	111900	109332	-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	9.89	-1.1	Satisfactory
20	19.76	-1.2	Satisfactory
30	29.70	-1.0	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.1		
10	9.6	-4.0	Satisfactory
20	19.6	-2.0	Satisfactory
100	96.5	-3.5	Satisfactory
800	779.6	-2.6	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

⁽⁰⁾ "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 form relevant international standards.