

Appendix E
Calibration Record
(Air Quality Monitoring)

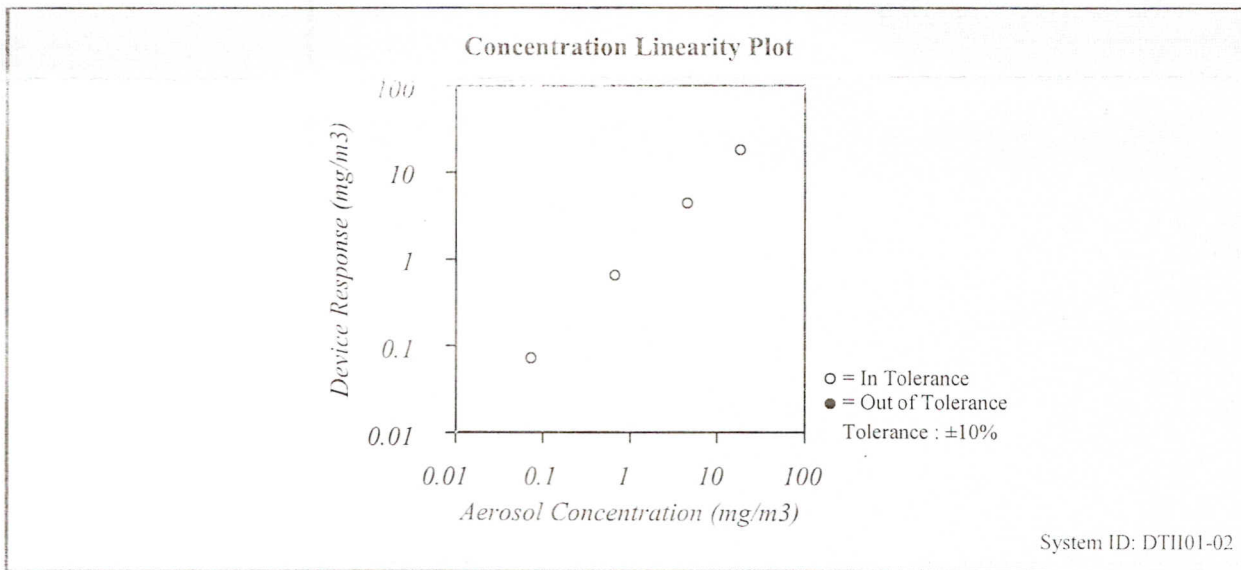


CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
 Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 <http://www.tsi.com>

Environment Condition			Model	AM510
Temperature	66.7 (19.3)	°F (°C)		
Relative Humidity	55	%RH	Serial Number	11108010
Barometric Pressure	28.92 (979.3)	inHg (hPa)		

<input checked="" type="checkbox"/> As Left	<input checked="" type="checkbox"/> In Tolerance
<input type="checkbox"/> As Found	<input type="checkbox"/> Out of Tolerance



TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	02-25-12	02-25-13	Temperature	E002873	11-14-11	11-14-12
Humidity	E002873	11-14-11	11-14-12	DC Voltage	E003314	01-03-12	01-03-13
DC Voltage	E003315	01-03-12	01-03-13	Photometer	E003319	07-26-12	01-26-13
Microbalance	M001324	01-04-11	01-04-13	Pressure	E003511	11-11-11	11-11-12
Flowmeter	E002006	03-06-12	03-06-13				

N. Johnson

 Calibrated

Final Function
 Check

August 22, 2012

 Date

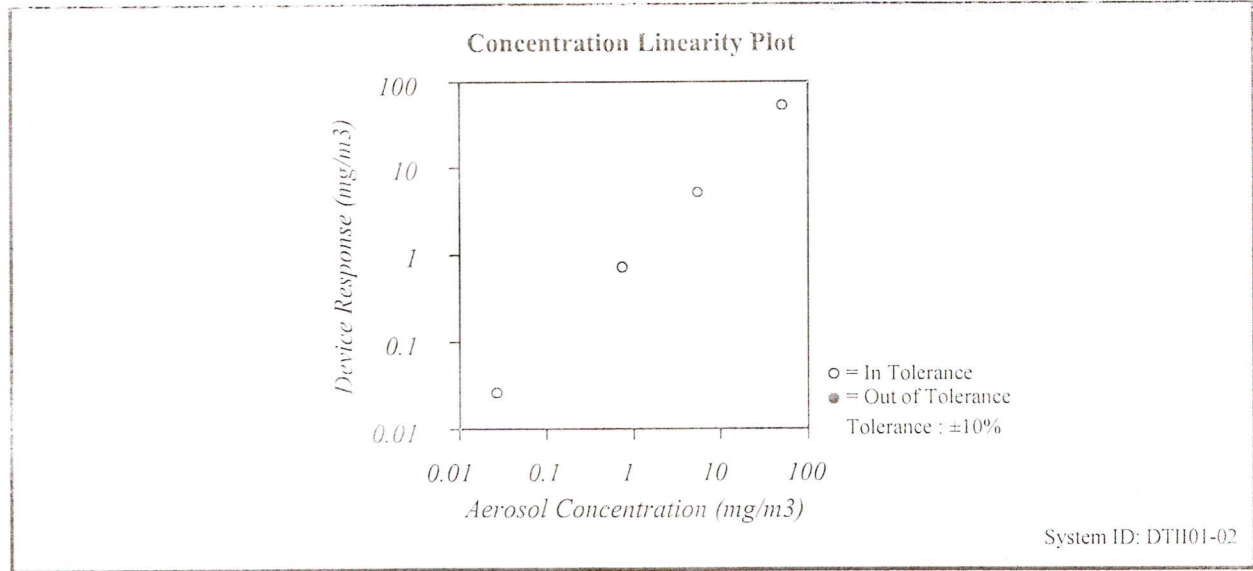


CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
 Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 <http://www.tsi.com>

Environment Condition			Model	8532
Temperature	67.8 (19.9)	°F (°C)		
Relative Humidity	51	%RH		
Barometric Pressure	29.08 (984.8)	inHg (hPa)		
			Serial Number	8532113605

<input checked="" type="checkbox"/> As Left	<input checked="" type="checkbox"/> In Tolerance
<input type="checkbox"/> As Found	<input type="checkbox"/> Out of Tolerance



FLOW AND PRESSURE VERIFICATION				SYSTEM DTH101-02			
Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow lpm	3.1	3.0	2.92 ~ 3.23	Pressure kPa	98.7	98.7	93.74 ~ 103.61

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	02-25-12	02-25-13	Temperature	E002873	11-14-11	11-14-12
Humidity	E002873	11-14-11	11-14-12	DC Voltage	E003314	01-03-12	01-03-13
DC Voltage	E003315	01-03-12	01-03-13	Photometer	E003319	07-26-12	01-26-13
Microbalance	M001324	01-04-11	01-04-13	1 um PSL	588500	n/a	n/a
2.8 um PSL	580457	n/a	n/a	10 um PSL	25875	n/a	n/a
Pressure	E003511	11-11-11	11-11-12	Flowmeter	E002006	03-06-12	03-06-13

Tammy

 Calibrated

August 31, 2012

 Date

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR2A
Calibrated by : P.F.Yeung
Date : 05/05/2013

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1061

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
Service Date : 26 Dec 2012
Slope (m) : 2.09107
Intercept (b) : -0.02838
Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
Ta(K) : 292

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.0	3.347	1.614	51	51.5
2 13 holes	8.5	2.942	1.421	44	44.4
3 10 holes	6.5	2.573	1.244	39	39.4
4 7 holes	3.8	1.967	0.954	30	30.3
5 5 holes	2.3	1.531	0.746	23	23.2

Sampler Calibration Relationship

Slope(m):32.034 Intercept(b):-0.561 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan

Date: 07/05/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR4
 Calibrated by : P.F.Yeung
 Date : 05/05/2013

Sampler

Model : GMWS-2310 ACCU-VOL
 Serial Number : S/N 1273

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
 Service Date : 26 Dec 2012
 Slope (m) : 2.09107
 Intercept (b) : -0.02838
 Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
 Ta(K) : 292

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	10.2	3.223	1.555	54	54.5
2 13 holes	8.2	2.890	1.396	47	47.4
3 10 holes	6.4	2.553	1.235	41	41.4
4 7 holes	4.2	2.068	1.003	33	33.3
5 5 holes	2.4	1.563	0.761	23	23.2

Sampler Calibration Relationship

Slope(m):38.683 Intercept(b):-6.061 Correlation Coefficient(r):0.9992

Checked by: Magnum Fan

Date: 07/05/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR3
Calibrated by : K.T.Ho
Date : 05/05/2013

Sampler
Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 7577

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
Service Date : 26 Dec 2012
Slope (m) : 2.09107
Intercept (b) : -0.02838
Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
Ta(K) : 292

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.8	3.467	1.671	59	59.5
2 13 holes	9.4	3.094	1.493	51	51.5
3 10 holes	7.0	2.670	1.291	44	44.4
4 7 holes	4.8	2.211	1.071	36	36.3
5 5 holes	2.8	1.689	0.821	26	26.2

Sampler Calibration Relationship

Slope(m): 38.481 Intercept(b): -5.252 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan

Date: 07/05/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR1
 Calibrated by : P.F.Yeung
 Date : 05/05/2013

Sampler

Model : GMWS-2310 ACCU-VOL
 Serial Number : S/N 1806

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
 Service Date : 26 Dec 2012
 Slope (m) : 2.09107
 Intercept (b) : -0.02838
 Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1023
 Ta(K) : 295

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	10.8	3.317	1.600	57	57.5
2 13 holes	8.6	2.960	1.429	50	50.5
3 10 holes	6.5	2.573	1.244	42	42.4
4 7 holes	4.4	2.117	1.026	34	34.3
5 5 holes	2.7	1.658	0.807	26	26.2

Sampler Calibration Relationship

Slope(m): 39.498 Intercept(b): -6.049 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan

Date: 07/05/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR2A
Calibrated by : P.F.Yeung
Date : 05/07/2013

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1061

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
Service Date : 26 Dec 2012
Slope (m) : 2.09107
Intercept (b) : -0.02838
Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1008
Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	12.0	3.421	1.650	56	55.3
2 13 holes	9.0	2.963	1.431	48	47.4
3 10 holes	6.5	2.518	1.218	41	40.5
4 7 holes	3.8	1.925	0.934	32	31.6
5 5 holes	2.6	1.593	0.775	26	25.7

Sampler Calibration Relationship

Slope(m):33.377 Intercept(b):-0.003 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan

Date: 10/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR4
 Calibrated by : P.F.Yeung
 Date : 05/07/2013

Sampler

Model : GMWS-2310 ACCU-VOL
 Serial Number : S/N 1273

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
 Service Date : 26 Dec 2012
 Slope (m) : 2.09107
 Intercept (b) : -0.02838
 Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1008
 Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	9.0	2.963	1.431	55	54.3
2 13 holes	7.8	2.758	1.333	50	49.4
3 10 holes	6.2	2.459	1.190	43	42.5
4 7 holes	5.0	2.208	1.070	36	35.6
5 5 holes	3.3	1.794	0.872	27	26.7

Sampler Calibration Relationship

Slope(m):49.917 Intercept(b):-17.165 Correlation Coefficient(r):0.9994

Checked by: Magnum Fan

Date: 10/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR3
Calibrated by : K.T.Ho
Date : 05/07/2013

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 7577

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
Service Date : 26 Dec 2012
Slope (m) : 2.09107
Intercept (b) : -0.02838
Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1008
Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.9	3.407	1.643	60	59.3
2 13 holes	9.2	2.996	1.446	52	51.4
3 10 holes	7.1	2.632	1.272	44	43.5
4 7 holes	5.0	2.208	1.070	34	33.6
5 5 holes	2.9	1.682	0.818	23	22.7

Sampler Calibration Relationship

Slope(m): 44.842 Intercept(b): -13.967 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan

Date: 10/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR1
Calibrated by : P.F.Yeung
Date : 05/07/2013

Sampler

Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1806

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2323
Service Date : 26 Dec 2012
Slope (m) : 2.09107
Intercept (b) : -0.02838
Correlation Coefficient(r) : 0.99996

Standard Condition

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

Calibration Condition

Pa (hpa) : 1008
Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.6	3.364	1.622	59	58.3
2 13 holes	9.4	3.028	1.462	50	49.4
3 10 holes	7.1	2.632	1.272	40	39.5
4 7 holes	5.5	2.316	1.121	30	29.6
5 5 holes	2.9	1.682	0.818	14	13.8

Sampler Calibration Relationship

Slope(m):55.609 Intercept(b):-31.890 Correlation Coefficient(r):0.9995

Checked by: Magnum Fan

Date: 10/07/2013

Appendix E
Calibration Record
(Noise Monitoring)



Certificate of Calibration 校正證書

Certificate No. : C125944
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-2530)

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00710259
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$
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 : 12 October 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

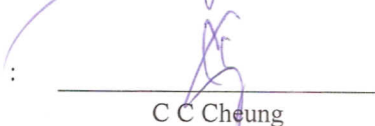
The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By
測試

: 
K C Lee

Certified By
核證

: 
C C Cheung

Date of Issue
簽發日期

: 15 October 2012

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。

Certificate of Calibration

校正證書

Certificate No. : C125944
證書編號

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 was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.3	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	93.3 (Ref.)
				104.00		103.3
				114.00		113.3

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

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.3	Ref.
			Slow			93.3	± 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室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C125944
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	66.9	-26.2 ± 1.5
					125 Hz	77.0	-16.1 ± 1.5
					250 Hz	84.6	-8.6 ± 1.4
					500 Hz	90.0	-3.2 ± 1.4
					1 kHz	93.3	Ref.
					2 kHz	94.5	+1.2 ± 1.6
					4 kHz	94.3	+1.0 ± 1.6
					8 kHz	92.3	-1.1 (+2.1 ; -3.1)
					12.5 kHz	88.9	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	C	Fast	94.00	63 Hz	92.3	-0.8 ± 1.5
					125 Hz	93.1	-0.2 ± 1.5
					250 Hz	93.3	0.0 ± 1.4
					500 Hz	93.3	0.0 ± 1.4
					1 kHz	93.3	Ref.
					2 kHz	93.1	-0.2 ± 1.6
					4 kHz	92.5	-0.8 ± 1.6
					8 kHz	90.4	-3.0 (+2.1 ; -3.1)
					12.5 kHz	86.9	-6.2 (+3.0 ; -6.0)

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB : 63 Hz - 125 Hz	: ± 0.35 dB
250 Hz - 500 Hz	: ± 0.30 dB
1 kHz	: ± 0.20 dB
2 kHz - 4 kHz	: ± 0.35 dB
8 kHz	: ± 0.45 dB
12.5 kHz	: ± 0.70 dB
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 :

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室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C126665

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-2878)

Description / 儀器名稱 : Sound Level Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10486660
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ 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 : 19 November 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By : 
測試 : K C Lee

Certified By : 
核證 : C C Cheung

Date of Issue : 21 November 2012
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.

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室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C126665
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.
- Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C123541
CL281	Multifunction Acoustic Calibrator	DC110233
TST150A	Measuring Amplifier	C120886

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.9	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.991	1 kHz ± 2 %	± 1

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

Note :

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室書面批准。

Appendix E
Calibration Record
(Water Quality Monitoring)



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR IVAN LEUNG
CLIENT: ALS TECHNICHEM (HK) PTY LTD
ADDRESS: 11/F., CHUNG SHUN KNITTING CENTRE,
1-3 WING YIP STREET,
KWAI CHUNG,
N.T., HONG KONG

WORK ORDER: HK1313720
LABORATORY: HONG KONG
DATE RECEIVED: 02/05/2013
DATE OF ISSUE: 07/06/2013

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Redox Potential
Equipment Type: Multimeter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 09K100735
Equipment No.: --
Date of Calibration: 04 May, 2013

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd
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Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1313720
 Date of Issue: 07/06/2013
 Client: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multimeter
 Brand Name: YSI
 Model No.: Professional Plus
 Serial No.: 09K100735
 Equipment No.: --

Date of Calibration: 04 May, 2013 Date of next Calibration: 04 August, 2013

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	141.5	-3.7
6667	6313	-5.3
12890	12525	-2.8
58670	56074	-4.4
Tolerance Limit (±%)		10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.19	4.08	-0.11
6.15	6.10	-0.05
8.15	8.01	-0.14
Tolerance Limit (±mg/L)		0.20

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.14	0.14
7.0	7.14	0.14
10.0	10.10	0.10
Tolerance Limit (±pH unit)		0.20

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.00	--
10	10.29	2.9
20	20.74	3.7
30	31.85	6.2
Tolerance Limit (±%)		10.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1313720
Date of Issue: 07/06/2013
Client: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multimeter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 09K100735
Equipment No.: --
Date of Calibration: 04 May, 2013

Date of next Calibration: 04 August, 2013

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical
Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.3	-0.2
22.0	22.5	0.5
37.5	38.2	0.7
Tolerance Limit (\pm °C)		2.0

Redox Potential

Method Ref: APHA (21st edition), 2580B
Method Ref: Orion Research Instruction Manual and the Laboratory Manual
the Environmental of Water, Wastewater and Soil (2nd edition), Rump & Krist (1992)

	Displayed Reading (mV)
Solution A (~234mV)	251
Solution B (~300mV)	331
Difference of Solution A & B	80
Acceptance Criteria (mV)	>66

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

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 Greater China & Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR IVAN LEUNG
CLIENT: ALS TECHNICHEM (HK) PTY LTD
ADDRESS: 11/F., CHUNG SHUN KNITTING CENTRE,
1-3 WING YIP STREET,
KWAI CHUNG,
N.T., HONG KONG

WORK ORDER: HK1318971
LABORATORY: HONG KONG
DATE RECEIVED: 01/07/2013
DATE OF ISSUE: 17/07/2013

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Turbidity
Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100 Q
Serial No.: 11050C001264
Equipment No.: --
Date of Calibration: 01 July, 2013

NOTES

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1318971
Date of Issue: 01/07/2013
Client: ALS TECHNICHEM (HK) PTY LTD



Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100 Q
Serial No.: 11050C001264
Equipment No.: --
Date of Calibration: 01 July, 2013

Date of next Calibration: 01 October, 2013

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.40	--
4	4.33	8.3
40	36.8	-8.0
80	77.3	-3.4
400	383	-4.3
800	798	-0.3
	Tolerance Limit ($\pm\%$)	10.0

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


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