

Certificate of Calibration

校正證書

Certificate No. : C165055
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1996) Date of Receipt / 收件日期 : 30 August 2016

Description / 儀器名稱 : Integrating Sound Level Meter
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2381580
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 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check


DATE OF TEST / 測試日期 : 8 September 2016


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
Project Engineer

Date of Issue : 9 September 2016
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。

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- 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.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C160077
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level :

- 6.1.1 Reference Sound Pressure Level

- 6.1.1.1 Before Self-calibration

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

- 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFF}	A	F	94.00	1	94.0	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFF}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		113.9

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

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6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 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				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
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	94.0	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	91.0	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

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Certificate of Calibration

校正證書

Certificate No. : C165055
證書編號

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2379759

- 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.

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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 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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Certificate of Calibration 校正證書

Certificate No. : C163909
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1579)

Date of Receipt / 收件日期 : 13 July 2016

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 : $(23 \pm 2)^\circ\text{C}$
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 : 19 July 2016

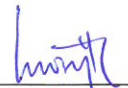
TEST RESULTS / 測試結果

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).

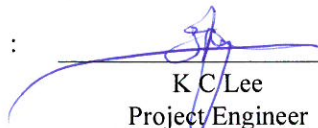
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- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By
測試


H T Wong
Technical Officer

Certified By
核證


K C Lee
Project Engineer

Date of Issue
簽發日期

19 July 2016

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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Certificate of Calibration

校正證書

Certificate No. : C163909

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 :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C163709
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

- 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	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

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.

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ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location : AMS5(Ma Wan Chung Village)
Calibrated by : K.F.Ho
Date : 29/09/2016

Sampler

Model : TE-5170
Serial Number : S/N3640

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 14 Mar 2016
Slope (m) : 2.10326
Intercept (b) : -0.06696
Correlation Coefficient(r) : 0.99989

Standard Condition

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

Calibration Condition

Pa (hpa) : 1004
Ta(K) : 300

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	10.2	3.169	1.539	62	61.52
2 13 holes	8.0	2.806	1.366	54	53.58
3 10 holes	5.8	2.390	1.168	44	43.66
4 7 holes	4.0	1.984	0.975	34	33.74
5 5 holes	2.5	1.569	0.778	26	25.80

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

Sampler Calibration Relationship

Slope(m): 47.730 Intercept(b): -11.954

Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan

Date: 04/10/2016

ENVIROTECH SERVICES CO.

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High-Volume TSP Sampler
5-Point Calibration Record

Location : AMS5(Ma Wan Chung Village)
Calibrated by : K.F.Ho
Date : 25/11/2016

Sampler

Model : TE-5170
Serial Number : S/N3640

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 14 Mar 2016
Slope (m) : 2.10326
Intercept (b) : -0.06696
Correlation Coefficient(r) : 0.99989

Standard Condition

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

Calibration Condition

Pa (hpa) : 1013
Ta(K) : 302

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.4	3.354	1.626	57	56.62
2 13 holes	9.2	3.013	1.464	51	50.66
3 10 holes	6.5	2.533	1.236	44	43.71
4 7 holes	4.5	2.107	1.034	36	35.76
5 5 holes	2.6	1.602	0.793	27	26.82

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

Sampler Calibration Relationship

Slope(m): 35.545 Intercept(b): -1.034 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan

Date: 26/11/2016

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location : AMS6(Dragonair Building)
Calibrated by : P.F.Yeung
Date : 08/09/2016

Sampler

Model : TE-5170
Serial Number : S/N3639

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 14 Mar 2016
Slope (m) : 2.10326
Intercept (b) : -0.06696
Correlation Coefficient(r) : 0.99989

Standard Condition

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

Calibration Condition

Pa (hpa) : 1003
Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.3	3.312	1.606	52	51.23
2 13 holes	9.0	2.956	1.437	47	46.30
3 10 holes	6.5	2.512	1.226	41	40.39
4 7 holes	4.2	2.019	0.992	35	34.48
5 5 holes	2.7	1.619	0.802	29	28.57

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

Sampler Calibration Relationship

Slope(m): 27.774 Intercept(b): 6.517

Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan

Date: 15/09/2016

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location : AMS6(Dragonair Building)
Calibrated by : P.F.Yeung
Date : 04/11/2016

Sampler

Model : TE-5170
Serial Number : S/N3639

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 14 Mar 2016
Slope (m) : 2.10326
Intercept (b) : -0.06696
Correlation Coefficient(r) : 0.99989

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
Ta(K) : 301

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1 18 holes	11.2	3.333	1.617	54	53.78
2 13 holes	9	2.988	1.452	48	47.81
3 10 holes	6.5	2.539	1.239	42	41.83
4 7 holes	4.2	2.041	1.002	35	34.86
5 5 holes	2.6	1.606	0.795	28	27.89

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

Sampler Calibration Relationship

Slope(m): 30.888 Intercept(b): 3.514

Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan

Date: 08/11/2016



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELAND, OH
 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
 Operator Tisch Orifice I.D. - 2454 Pa (mm) - 745.49

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4020	3.2	2.00
2	NA	NA	1.00	1.0060	6.4	4.00
3	NA	NA	1.00	0.9010	7.9	5.00
4	NA	NA	1.00	0.8590	8.8	5.50
5	NA	NA	1.00	0.7090	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9866	0.7037	1.4078	0.9957	0.7102	0.8896
0.9824	0.9765	1.9909	0.9914	0.9855	1.2581
0.9803	1.0880	2.2259	0.9893	1.0980	1.4066
0.9792	1.1399	2.3345	0.9882	1.1504	1.4753
0.9738	1.3735	2.8155	0.9828	1.3862	1.7792
Qstd slope (m) = 2.10326			Qa slope (m) = 1.31703		
intercept (b) = -0.06696			intercept (b) = -0.04232		
coefficient (r) = 0.99989			coefficient (r) = 0.99989		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760) (298/Ta))] - b}
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}

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 :	Tung Chung Pier
Model No.:	TE-5170 Total Suspended Particulate
Serial No.:	S/N3641
Previous Calibration Date	29/09/2016

Calibration Result

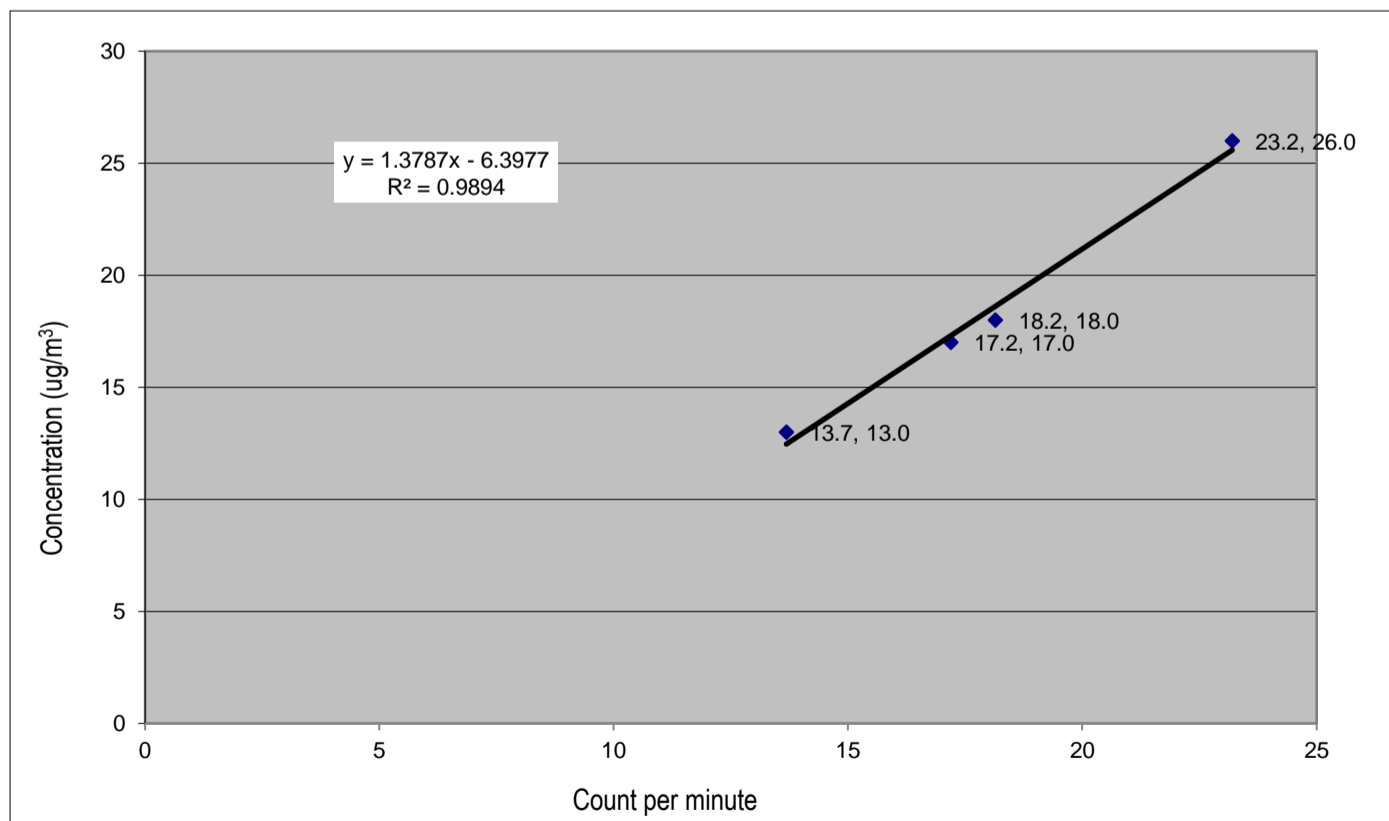
Sensitivity Adjustment Scale Setting (Before Calibration) :	799 CPM
Sensitivity Adjustment Scale Setting (After Calibration) :	799 CPM

Hour	Date (dd-mmm-yy)	Time		Ambient Condition		Concentration (ug/m ³) Y-axis	Total Count	Count/Minute X-axis
				Temp (°C)	R.H. (%)			
1	26/10/2016	13:59	14:59	30.7	64%	18	1089	18.15
2	26/10/2016	15:12	16:12	30.9	59%	13	821	13.68
3	26/10/2016	16:21	17:21	30.9	61%	17	1032	17.20
4	26/10/2016	17:30	18:30	30.9	61%	26	1392	23.20

Be Linear Regression of Y or X

Slope (K-factor):	1.3787	Intercept,b:	-6.398
Correlation coefficient :	0.9947		

Remark: _____



Recorded by: <u>Ray Cheng</u>	Signature: <u></u>	Date: <u>25/11/2016</u>
Checked by: <u>Ketih Chau</u>	Signature: <u></u>	Date: <u>25/11/2016</u>



ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T +852 2610 1044 F +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

CONTACT: MR MIKE SHEK
CLIENT: AECOM ASIA COMPANY LIMITED
ADDRESS: 1501-10, 15/F, TOWER 1,
GRAND CENTRAL PLAZA,
138 SHATIN RURAL COMMITTEE ROAD,
SHATIN, NEW TERRITORIES, HONG KONG

WORK ORDER: HK1642743
SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 25/10/2016
DATE OF ISSUE: 02/11/2016

COMMENTS

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

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Conductivity, Dissolved Oxygen, Salinity, pH, Turbidity and Temperature
Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6820 V2
Serial No.: 12A101545
Equipment No.: W.026.35
Date of Calibration: 25 October, 2016

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.

Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Work Order: HK1642743
Sub-batch: 0
Client: AECOM ASIA COMPANY LIMITED
Date of Issue: 02/11/2016



Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6820 V2
Serial No.: 12A101545
Equipment No.: W.026.35
Date of Calibration: 25 October, 2016

Date of next Calibration: 25 January, 2017

Parameters:

Conductivity

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	144.5	-1.6
6667	6680	+0.2
12890	12840	-0.4
58670	58450	-0.4
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.45	3.43	-0.02
5.50	5.52	+0.02
7.80	7.77	-0.03
	Tolerance Limit (mg/L)	±0.20

Temperature

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

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.46	0.0
21.0	21.03	0.0
38.0	37.92	-0.1
	Tolerance Limit (°C)	±2.0

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



 Mr Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Work Order: HK1642743
Sub-Batch: 0
Client: AECOM ASIA COMPANY LIMITED
Date of Issue: 02/11/2016



Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6820 V2
Serial No.: 12A101545
Equipment No.: W.026.35
Date of Calibration: 25 October, 2016

Date of next Calibration: 25 January, 2017

Parameters:

Salinity

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

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)
0	0.00	--
10	10.06	+0.6
20	20.04	+0.2
30	29.95	-0.2
	Tolerance Limit (%)	±10.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	3.9	-2.5
10	10.2	+2.0
20	20.2	+1.0
50	50.4	+0.8
100	100.4	+0.4
	Tolerance Limit (%)	±10.0

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	3.99	-0.01
7.0	7.01	+0.01
10.0	9.98	-0.02
	Tolerance Limit (pH Unit)	±0.20

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


 Mr Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong



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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR MIKE SHEK
CLIENT: AECOM ASIA COMPANY LIMITED
ADDRESS: 1501-10, 15/F, TOWER 1,
GRAND CENTRAL PLAZA,
138 SHATIN RURAL COMMITTEE ROAD,
SHATIN, NEW TERRITORIES, HONG KONG

WORK ORDER: HK1642745
SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 25/10/2016
DATE OF ISSUE: 02/11/2016

COMMENTS

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

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Conductivity, Dissolved Oxygen, Salinity, pH, Turbidity and Temperature
Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6820 V2
Serial No.: 12D100972
Equipment No.: W.026.36
Date of Calibration: 25 October, 2016

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.


Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Work Order: HK1642745
Sub-batch: 0
Client: AECOM ASIA COMPANY LIMITED
Date of Issue: 02/11/2016



Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6820 V2
Serial No.: 12D100972
Equipment No.: W.026.36
Date of Calibration: 25 October, 2016

Date of next Calibration: 25 January, 2017

Parameters:

Conductivity

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	146.0	-0.6
6667	6670	+0.0
12890	12740	-1.2
58670	58710	+0.1
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.45	3.46	+0.01
5.50	5.47	-0.03
7.80	7.76	-0.04
	Tolerance Limit (mg/L)	±0.20

Temperature

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

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.44	-0.1
21.0	21.01	+0.0
38.0	37.94	-0.1
	Tolerance Limit (°C)	±2.0

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

Mr Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Work Order: HK1642745
Sub-Batch: 0
Client: AECOM ASIA COMPANY LIMITED
Date of Issue: 02/11/2016



Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6820 V2
Serial No.: 12D100972
Equipment No.: W.026.36
Date of Calibration: 25 October, 2016

Date of next Calibration: 25 January, 2017

Parameters:

Salinity

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

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)
0	0.00	--
10	10.04	+0.4
20	20.06	+0.3
30	30.05	+0.2
	Tolerance Limit (%)	±10.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	4.0	0.0
10	10.1	+1.0
20	20.2	+1.0
50	49.7	-0.6
100	99.7	-0.3
	Tolerance Limit (%)	±10.0

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.02	+0.02
7.0	7.03	+0.03
10.0	10.03	+0.03
	Tolerance Limit (pH Unit)	±0.20

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


 Mr Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong