



# Certificate of Calibration

## 校正證書

Certificate No. : C222149  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC22-0579 )      Date of Receipt / 收件日期 : 29 March 2022

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 / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$       Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$   
Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

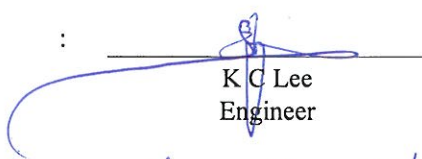
DATE OF TEST / 測試日期 : 23 April 2022

### 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
- Fluke Everett Service Center, USA

Tested By :   
測試 : K C Lee  
Engineer

Certified By :   
核證 : H C Chan  
Engineer

Date of Issue : 27 April 2022  
簽發日期

The test equipment used for calibration is traceable to the National 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. : C222149

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 using the B & K Acoustic Calibrator 4231, S/N : 3003246 was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

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)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1	± 1.1

- 6.1.2 Linearity

Range (dB)	Parameter	Frequency Weighting	Time Weighting	Applied Value		UUT Reading (dB)
				Level (dB)	Freq. (kHz)	
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.0

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)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1	Ref.
	L <sub>ASP</sub>		S			94.1	± 0.3

The test equipment used for calibration is traceable to the National 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. : C222149  
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)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L <sub>AFP</sub>	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 ± 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 <sub>CFP</sub>	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	93.2	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration is traceable to the National 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. : C222149  
證書編號

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2791360

- 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 :  $\pm 0.30$  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  
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 is traceable to the National 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。



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C222148  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC22-0579 )

Date of Receipt / 收件日期 : 29 March 2022

Description / 儀器名稱 : Sound Calibrator

Manufacturer / 製造商 : Brüel & Kjær

Model No. / 型號 : 4231

Serial No. / 編號 : 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 / 溫度 : (23 ± 2)°C

Relative Humidity / 相對濕度 : (50 ± 25)%

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 23 April 2022

### 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
- Fluke Everett Service Center, USA

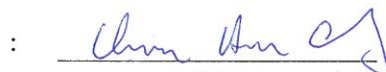
Tested By

測試

  
K/C Lee  
Engineer

Certified By

核證

  
H C Chan  
Engineer

Date of Issue

簽發日期

27 April 2022

The test equipment used for calibration is traceable to the National 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。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, 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四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C222148

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	C213954
CL281	Multifunction Acoustic Calibrator	AV210017
TST150A	Measuring Amplifier	C221750

- 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 :

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 is traceable to the National 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。

ENVIROTECH SERVICES CO.

**High-Volume TSP Sampler**  
**5-Point Calibration Record**

Location : AMS5(Ma Wan Chung Village)  
Calibrated by : P.F.Yeung  
Date : 12/01/2023

**Sampler**

Model : TE-5170  
Serial Number : S/N3640

**Calibration Orifice and Standard Calibration Relationship**

Serial Number : 2454  
Service Date : 15 December 2022  
Slope (m) : 2.06918  
Intercept (b) : -0.04220  
Correlation Coefficient(r) : 0.99997

**Standard Condition**

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

**Calibration Condition**

Pa (hpa) : 1013  
Ta(K) : 293

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1   18 holes	12.0	3.026	1.483	56	56.48
2   13 holes	9.2	2.649	1.301	50	50.43
3   10 holes	6.4	2.210	1.088	45	45.39
4   7 holes	4.2	1.790	0.885	37	37.32
5   5 holes	2.7	1.435	0.714	30	30.26

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): 33.503      Intercept(b): 7.317      Correlation Coefficient(r): 0.9952

Checked by: Magnum Fan

Date: 12/01/2023



# Certificate of Calibration

Calibration Certification Information			
Cal. Date: December 15, 2022	Rootsmeter S/N: 438320	Ta: 295	°K
Operator: Jim Tisch		Pa: 742.4	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: <b>2454</b>		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4060	3.2	2.00
2	3	4	1	0.9980	6.4	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8520	8.8	5.50
5	9	10	1	0.7040	12.7	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
0.9826	0.6988	1.4049	0.9957	0.7082	0.8914
0.9783	0.9803	1.9868	0.9914	0.9934	1.2607
0.9763	1.0970	2.2213	0.9894	1.1116	1.4095
0.9751	1.1445	2.3297	0.9881	1.1598	1.4783
0.9700	1.3778	2.8097	0.9829	1.3962	1.7829
<b>QSTD</b>	m=	<b>2.06918</b>	<b>QA</b>	m=	<b>1.29568</b>
	b=	<b>-0.04220</b>		b=	<b>-0.02677</b>
	r=	<b>0.99997</b>		r=	<b>0.99997</b>

Calculations			
Vstd=	$\Delta Vol \left( \frac{Pa - \Delta P}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left( \frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

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



## EQUIPMENT CALIBRATION RECORD

Type : Laser Dust Monitor  
 Manufacturer / Brand : SIBATA  
 Model No.: LD-5R  
 Equipment No.: LD-5R-002  
 Serial No.: 861988  
 Sensitivity Adjustment Scale Setting : 621 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: 3-May-2022

### Calibration Result

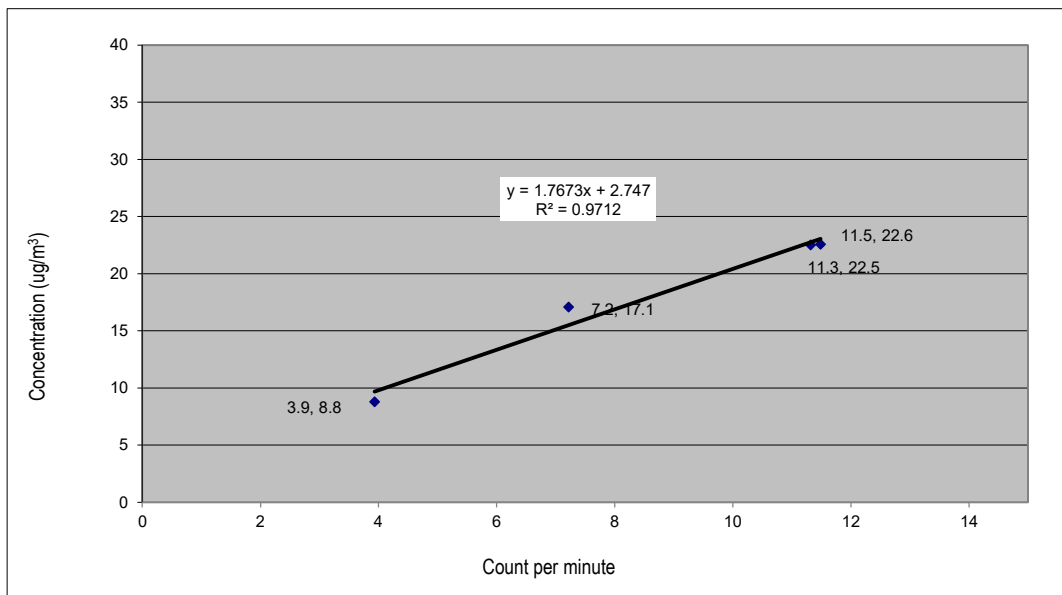
Sensitivity Adjustment Scale Setting (Before Calibration) : 621 CPM  
 Sensitivity Adjustment Scale Setting (After Calibration) : 621 CPM

Date (dd-mmm-yy)	Time		Ambient Condition		Concentration (ug/m <sup>3</sup> ) Y-axis	Total Count	Count/Minute X-axis
			Temp (°C)	R.H. (%)			
02-Jun-22	15:36	16:36	30.0	73%	22.5	679	11.3
02-Jun-22	16:42	17:42	31.4	63%	22.6	689	11.5
22-Jun-22	09:00	10:00	27.3	68%	17.1	433	7.2
22-Jun-22	12:40	13:40	27.7	63%	8.8	236	3.9

Be Linear Regression of Y or X

Slope (K-factor): 1.7673 Intercept,b: 2.7470  
 Correlation coefficient (R): 0.9997

Remark: Strong Correlation (R>0.8)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Recorded by: Irene Tsang

Signature: 

Date: 12-Jul-22

Checked by: Ruby Law

Signature: 

Date: 12-Jul-22



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  
www.alsglobal.com

## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

<b>CONTACT:</b>	MR W S CHAN	<b>WORK ORDER:</b>	HK2245496
<b>CLIENT:</b>	AECOM ASIA COMPANY LIMITED	<b>SUB-BATCH:</b>	0
<b>ADDRESS:</b>	1501-10, 15/F, TOWER 1, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, NEW TERRITORIES, HONG KONG	<b>LABORATORY:</b>	HONG KONG
		<b>DATE RECEIVED:</b>	15-Nov-2022
		<b>DATE OF ISSUE:</b>	21-Nov-2022

### SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. 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 laboratory or quoted from relevant international standards.

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

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	[YSI]/ [6820 V2]
Serial No./ Equipment No.:	[12A101545]/ [W.026.35]
Date of Calibration:	15-November-2022

### GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2245496  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 21-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [12A101545]/ [W.026.35]  
Date of Calibration: 15-November-2022 Date of Next Calibration: 15-February-2023

## PARAMETERS:

### Conductivity

Method Ref: APHA (23rd edition), 2510B

Expected Reading ( $\mu\text{S}/\text{cm}$ )	Displayed Reading ( $\mu\text{S}/\text{cm}$ )	Tolerance (%)
146.9	142	-3.3
6667	6663	-0.1
12890	12828	-0.5
58670	56738	-3.3
	Tolerance Limit (%)	$\pm 10.0$

### Dissolved Oxygen

Method Ref: APHA (23rd edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.00	3.02	+0.02
5.75	5.69	-0.06
7.85	7.88	+0.03
	Tolerance Limit (mg/L)	$\pm 0.20$

### pH Value

Method Ref: APHA (23rd edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.97	-0.03
7.0	6.95	-0.05
10.0	9.96	-0.04
	Tolerance Limit (pH unit)	$\pm 0.20$

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2245496  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 21-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [12A101545]/ [W.026.35]  
Date of Calibration: 15-November-2022 Date of Next Calibration: 15-February-2023

## PARAMETERS:

### Turbidity

Method Ref: APHA (23rd edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	4.0	+0.0
10	10.3	+3.0
20	19.8	-1.0
50	47.7	-4.6
100	95.3	-4.7
	Tolerance Limit (%)	±10.0

### Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.04	--
10	10.45	+4.5
20	19.85	-0.7
30	28.73	-4.2
	Tolerance Limit (%)	±10.0

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2245496  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 21-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [12A101545]/ [W.026.35]  
Date of Calibration: 15-November-2022      Date of Next Calibration: 15-February-2023

## 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	10.58	+0.1
20.0	20.32	+0.3
39.5	39.02	-0.5
	Tolerance Limit (°C)	±2.0

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics



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  
www.alsglobal.com

## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

<b>CONTACT:</b>	MR W S CHAN	<b>WORK ORDER:</b>	HK2242816
<b>CLIENT:</b>	AECOM ASIA COMPANY LIMITED	<b>SUB-BATCH:</b>	0
<b>ADDRESS:</b>	1501-10, 15/F, TOWER 1, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD, SHATIN, NEW TERRITORIES, HONG KONG	<b>LABORATORY:</b>	HONG KONG
		<b>DATE RECEIVED:</b>	31-Oct-2022
		<b>DATE OF ISSUE:</b>	08-Nov-2022

### SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. 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 laboratory or quoted from relevant international standards.

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

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Salinity and Temperature
Brand Name/ Model No.:	[YSI]/ [Pro Quatro]
Serial No./ Equipment No.:	[21G105346/21G100583]/ [W.041.01]
Date of Calibration:	03-November-2022

### GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2242816  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 08-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [Pro Quatro]  
Serial No./ Equipment No.: [21G105346/21G100583]/ [W.041.01]  
Date of Calibration: 03-November-2022 Date of Next Calibration: 03-February-2023

## PARAMETERS:

### Conductivity

Method Ref: APHA (23rd edition), 2510B

Expected Reading (mS/cm)	Displayed Reading (mS/cm)	Tolerance (%)
146.9	159.0	+8.2
6667	7106	+6.6
12890	13086	+1.5
58670	59860	+2.0
	Tolerance Limit (%)	±10.0

### Dissolved Oxygen

Method Ref: APHA (23rd edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.04	2.85	-0.19
4.53	4.44	-0.09
7.87	7.69	-0.18
	Tolerance Limit (mg/L)	±0.20

### pH Value

Method Ref: APHA (23rd edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.03	+0.03
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.

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2242816  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 08-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [Pro Quatro]  
Serial No./ Equipment No.: [21G105346/21G100583]/ [W.041.01]  
Date of Calibration: 03-November-2022 Date of Next Calibration: 03-February-2023

## PARAMETERS:

### Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.01	--
10	10.87	+8.7
20	21.82	+9.1
30	31.55	+5.2
	Tolerance Limit (%)	±10.0

### 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)
13.5	13.6	+0.1
22.5	22.3	-0.2
38.5	38.0	-0.5
	Tolerance Limit (°C)	±2.0

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics





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  
www.alsglobal.com

## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR W S CHAN  
**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:** HK2245495  
**SUB-BATCH:** 0  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 15-Nov-2022  
**DATE OF ISSUE:** 21-Nov-2022

### SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. 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 laboratory or quoted from relevant international standards.

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

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type: Multifunctional Meter  
Service Nature: Performance Check  
Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [00H1019]/ [W.026.09]  
Date of Calibration: 15-November-2022

### GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2245495  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 21-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [00H1019]/ [W.026.09]  
Date of Calibration: 15-November-2022 Date of Next Calibration: 15-February-2023

## PARAMETERS:

### Conductivity

Method Ref: APHA (23rd edition), 2510B

Expected Reading ( $\mu\text{S}/\text{cm}$ )	Displayed Reading ( $\mu\text{S}/\text{cm}$ )	Tolerance (%)
146.9	142.0	-3.3
6667	6685	+0.3
12890	12515	-2.9
58670	56108	-4.4
	Tolerance Limit (%)	$\pm 10.0$

### Dissolved Oxygen

Method Ref: APHA (23rd edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.00	2.94	-0.06
5.75	5.87	+0.12
7.85	7.90	+0.05
	Tolerance Limit (mg/L)	$\pm 0.20$

### pH Value

Method Ref: APHA (23rd edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.98	-0.02
7.0	6.97	-0.03
10.0	10.00	+0.00
	Tolerance Limit (pH unit)	$\pm 0.20$

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2245495  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 21-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [00H1019]/ [W.026.09]  
Date of Calibration: 15-November-2022 Date of Next Calibration: 15-February-2023

## PARAMETERS:

### Turbidity

Method Ref: APHA (23rd edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.1	--
4	4.2	+5.0
10	9.4	-6.0
20	20.1	+0.5
50	49.7	-0.6
100	98.0	-2.0
	Tolerance Limit (%)	±10.0

### Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.03	--
10	10.42	+4.2
20	19.97	-0.2
30	28.87	-3.8
	Tolerance Limit (%)	±10.0

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2245495  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 21-Nov-2022  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [00H1019]/ [W.026.09]  
Date of Calibration: 15-November-2022 Date of Next Calibration: 15-February-2023

## 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	10.41	-0.1
20.0	20.02	+0.0
39.5	39.40	-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.

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics



## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR W S CHAN  
**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:** HK2305983  
**SUB-BATCH:** 0  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 14-Feb-2023  
**DATE OF ISSUE:** 20-Feb-2023

### SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. 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 laboratory or quoted from relevant international standards.

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

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type: Multifunctional Meter  
Service Nature: Performance Check  
Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [00H1019]/ [W.026.09]  
Date of Calibration: 14-February-2023

### GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Mr Chan Siu Ming, Vice  
Manager - Inorganics

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2305983  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 20-Feb-2023  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [00H1019]/ [W.026.09]  
Date of Calibration: 14-February-2023 Date of Next Calibration: 14-May-2023

## PARAMETERS:

### Turbidity

Method Ref: APHA (23rd edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	3.9	-2.5
10	9.8	-2.0
20	20.5	+2.5
50	47.9	-4.2
100	98.7	-1.3
	Tolerance Limit (%)	±10.0

### Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.04	--
10	10.06	+0.6
20	19.51	-2.4
30	29.10	-3.0
	Tolerance Limit (%)	±10.0

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

Mr Chan Siu Ming, Vice  
Manager - Inorganics



## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR W S CHAN  
**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:** HK2305984  
**SUB-BATCH:** 0  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 14-Feb-2023  
**DATE OF ISSUE:** 20-Feb-2023

### SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. 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 laboratory or quoted from relevant international standards.

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

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type: Multifunctional Meter  
Service Nature: Performance Check  
Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [12A101545]/ [W.026.35]  
Date of Calibration: 14-February-2023

### GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Mr Chan Siu Ming, Vice  
Manager - Inorganics

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**WORK ORDER:** HK2305984  
**SUB-BATCH:** 0  
**DATE OF ISSUE:** 20-Feb-2023  
**CLIENT:** AECOM ASIA COMPANY LIMITED

Equipment Type: Multifunctional Meter  
Brand Name/ Model No.: [YSI]/ [6820 V2]  
Serial No./ Equipment No.: [12A101545]/ [W.026.35]  
Date of Calibration: 14-February-2023 Date of Next Calibration: 14-May-2023

## PARAMETERS:

### Turbidity

Method Ref: APHA (23rd edition), 2130B


Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.2	--
4	3.7	-7.5
10	10.4	+4.0
20	20.3	+1.5
50	48.1	-3.8
100	100.8	+0.8
	Tolerance Limit (%)	±10.0

### Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.02	--
10	9.80	-2.0
20	19.11	-4.5
30	28.82	-3.9
	Tolerance Limit (%)	±10.0

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

  
Mr Chan Siu Ming, Vice  
Manager - Inorganics