

High-Volume TSP Sampler  
5-Point Calibration Record

Location : AM1 (ICC)  
 Calibrated by : K.T.Ho  
 Date : 12/06/2017

Sampler

Model : TE-5170  
 Serial Number : S/N 0767

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 20 Mar 2017  
 Slope (m) : 2.08464  
 Intercept (b) : -0.03684  
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition


Pa (hpa) : 1007  
 Ta(K) : 303

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1   18 holes	9.8	3.095	1.503	54	53.39
2   13 holes	7.8	2.761	1.342	48	47.46
3   10 holes	5.6	2.340	1.140	38	37.57
4   7 holes	3.8	1.927	0.942	30	29.66
5   5 holes	2.0	1.398	0.688	20	19.78

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): 41.883                      Intercept(b): -9.467                      Correlation Coefficient(r): 0.9991

Checked by:   
 Magnum Fan

Date: 16/06/2017

High-Volume TSP Sampler  
5-Point Calibration Record

Location : AM2A (Harbourside)  
 Calibrated by : K.T.Ho  
 Date : 12/06/2017

Sampler

Model : TE-5170  
 Serial Number : S/N 8919

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 20 Mar 2017  
 Slope (m) : 2.08464  
 Intercept (b) : -0.03684  
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1007  
 Ta(K) : 303

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1   18 holes	12.0	3.425	1.661	58	57.35
2   13 holes	9.0	2.966	1.441	50	49.44
3   10 holes	7.0	2.616	1.273	42	41.53
4   7 holes	4.4	2.074	1.013	32	31.64
5   5 holes	2.4	1.532	0.752	22	21.75

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): 39.568      Intercept(b): -8.240      Correlation Coefficient(r): 0.9994

Checked by:   
 Magnum Fan

Date: 16/06/2017



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 20, 2017 Rootmeter S/N 0438320 Ta (K) - 293  
 Operator Tisch Orifice I.D. - 2454 Pa (mm) - 759.46

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4390	3.2	2.00
2	NA	NA	1.00	1.0240	6.4	4.00
3	NA	NA	1.00	0.9170	7.9	5.00
4	NA	NA	1.00	0.8730	8.8	5.50
5	NA	NA	1.00	0.7200	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0120	0.7033	1.4257	0.9958	0.6920	0.8784
1.0078	0.9842	2.0163	0.9916	0.9683	1.2423
1.0057	1.0967	2.2543	0.9895	1.0791	1.3889
1.0045	1.1507	2.3643	0.9884	1.1322	1.4567
0.9992	1.3878	2.8514	0.9831	1.3654	1.7568
Qstd slope (m) = 2.08464			Qa slope (m) = 1.30537		
intercept (b) = -0.03684			intercept (b) = -0.02270		
coefficient (r) = 0.99994			coefficient (r) = 0.99994		
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}

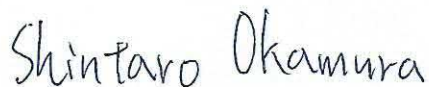
**CALIBRATION CERTIFICATE**

Date: December 21, 2016

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	276020
Sensitivity	:	0.001 mg/m <sup>3</sup>
Sensitivity Adjustment	:	787CPM
Scale Setting	:	December 16, 2016

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**

---

Shintaro Okamura

Overseas Sales Division

# TEST CERTIFICATE

Report No. 16-1879-1.

CUSTOMER : INNOTECH INSTRUMENTATION CO.LTD.



**SIBATA SCIENTIFIC TECHNOLOGY LTD.**  
DATE 19/ December /2016

APPROVE BY 	VERIFIED BY 	ISSUED BY 
----------------	-----------------	---------------

PRODUCT NAME	: Digital Dust Indicator
MODEL NUMBER	: LD-3B
SERIAL NUMBER	: 276020
CALIBRATION DATE	: 16- December -2016

Testing Category	Judging Standard	Judgment		
		Reading of Master	Reading of this Instrument	Correction
Function Test	Switch, Display, Wiring will normally function	OK		
Sensitivity Calibration	Count is $\pm 2\%$ accurate to the master by the standard calibration particle	799 CPM	795 CPM	-0.5 %
Dust Concentration Measuring	Count is $\pm 10\%$ accurate to the master under the 3 different concentration.	2053 CPM	1979 CPM	-3.6 %
		978 CPM	957 CPM	-2.1 %
Reproducibility	The difference between maximum and minimum value of sensitivity adjustment scale setting must be 5.0 % or less of maximum value. (The results of measurement of sensitivity adjustment in 5 times are within this range.)	516 CPM	507 CPM	-1.7 %
		OK		
Synthetic Judgment		Good		
		Reference Value(S)		787 CPM
		Test atmosphere		Temperature Humidity
		23 °C	45 %	


**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION**

REPORT NO. : HK1710039  
 PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER  
 DATE OF ISSUE : 17/01/2017  
 CUSTOMER : Envirotech Services Company  
 ADDRESS : Rm. 113, 1/F., MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T.

REPORT NO. : HK1710039  
 PROJECT ITEM NO. : HK1710039-01  
**PERFORMANCE CHECK / CALIBRATED EQUIPMENT**  
 TYPE : Digital Dust Indicator  
 MANUFACTURER : SIBATA  
 MODEL NO. : LD-3B  
 SERIAL NO. : 276020  
 EQUIPMENT NO. : ---  
 RECEIPT DATE : 11/01/2017  
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

**PERFORMANCE CHECK / CALIBRATION Information**

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
  2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory

Issue Date:

17/01/2017

\_\_\_\_\_  
 Wong Po Yan Pauline  
 (Testing Engineer)


**REPORT OF PERFORMANCE CHECK / CALIBRATION**

PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER  
 DATE OF ISSUE : 17/01/2017  
 REPORT NO. : HK1710039

**PERFORMANCE CHECK / CALIBRATED EQUIPMENT**

TYPE : Digital Dust Indicator  
 MANUFACTURER : SIBATA  
 MODEL NO. : LD-3B  
 SERIAL NO. : 276020  
 EQUIPMENT NO. : ---  
 SENSITIVITY ADJUSTMENT : ---  
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

**STANDARD EQUIPMENT**

TYPE : HIGH VOLUME AIR SAMPLER  
 MANUFACTURER : TISCH  
 MODEL NO. : TE-5170  
 EQUIPMENT REF NO. : PTL\_HV002  
 LAST CALIBRATION DATE : 23/11/2016

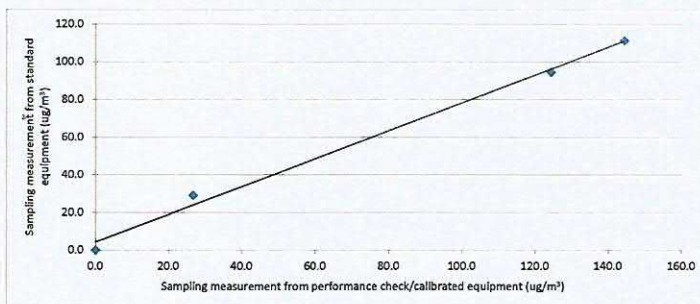
**EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:**

Sensitivity Adjustment Scale Setting (Before Performance check / Calibration): 787 CPM  
 Sensitivity Adjustment Scale Setting (After Performance check / Calibration): 787 CPM

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m <sup>3</sup> (Standard equipment) (Y - Axis)	Total Count <sup>2</sup> (Performance Check / Calibrated equipment)	Concentration in Count/Minute <sup>3</sup> (Performance Check / Calibrated equipment) (X - Axis)
Zero Check <sup>1</sup>	12/01/2017,10:00:00 AM	19	1016	0	0	0
1	12/01/2017,11:10:00 AM	19	1016	95	7462	124
2	12/01/2017,2:30:00 PM	19	1016	111	8670	145
3	12/01/2017,3:34:00 PM	19	1016	29	1600	27

**Linear Regression of Y on X**

Slope (K- factor) : 0.7  
 Correlation Coefficient : 0.9972  
 Validity of Performance Check / Calibration Record : 12/01/2018



- Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.  
 2. Total Count was measured by Digital Dust Indicator.  
 3. Count/minute was calculated by (Total Count/60)  
 4. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.  
 5. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: MA Ching Him, Jackey Signature: [Signature] Date: 12/01/2017

Checked by: Wong Po Yan, Pauline Signature: [Signature] Date: 17/01/2017

## CALIBRATION CERTIFICATE

Date: December 21, 2016

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	2Z6240
Sensitivity	:	0.001 mg/m <sup>3</sup>
Sensitivity Adjustment	:	565CPM
Scale Setting	:	December 16, 2016

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**

Shintaro Okamura

Shintaro Okamura

Overseas Sales Division



# TEST CERTIFICATE

Report No. 16-1879-2

CUSTOMER : INNOTECH INSTRUMENTATION CO.LTD.



**SIBATA SCIENTIFIC TECHNOLOGY LTD.**

DATE 19/ December /2016

APPROVE BY 	VERIFIED BY 	ISSUED BY 
---	--	--

PRODUCT NAME	: Digital Dust Indicator
MODEL NUMBER	: LD-3B
SERIAL NUMBER	: 2Z6240
CALIBRATION DATE	: 16-- December --2016

Testing Category	Judging Standard	Judgment		
		Reading of Master	Reading of this Instrument	Correction
Function Test	Switch, Display, Wiring will normally function	OK		
Sensitivity Calibration	Count is $\pm 2\%$ accurate to the master by the standard calibration particle	798 CPM	796 CPM	$-0.3\%$
Dust Concentration Measuring	Count is $\pm 10\%$ accurate to the master under the 3 different concentration.	2053 CPM	1989 CPM	$-3.1\%$
		978 CPM	966 CPM	$-1.2\%$
Reproducibility	The difference between maximum and minimum value of sensitivity adjustment scale setting must be 5.0 % or less of maximum value. (The results of measurement of sensitivity adjustment in 5 times are within this range.)	516 CPM	515 CPM	$-0.2\%$
		OK		
Synthetic Judgment		Good		
		Reference Value(S)		565 CPM
		Test atmosphere		Temperature Humidity
		23 °C		45 %


**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION**

REPORT NO. : HK1710040  
 PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER  
 DATE OF ISSUE : 17/01/2017

CUSTOMER : Envirotech Services Company  
 ADDRESS : Rm. 113, 1/F., MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T.

REPORT NO. : HK1710040  
 PROJECT ITEM NO. : HK1710040-01  
**PERFORMANCE CHECK / CALIBRATED EQUIPMENT**  
 TYPE : Digital Dust Indicator  
 MANUFACTURER : SIBATA  
 MODEL NO. : LD-3B  
 SERIAL NO. : 2Z6240  
 EQUIPMENT NO. : ---  
 RECEIPT DATE : 11/01/2017  
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

**PERFORMANCE CHECK / CALIBRATION Information**

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

- Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.  
 2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory :

Issue Date: 17/01/2017

Wong Po Yan Pauline  
 (Testing Engineer)


**REPORT OF PERFORMANCE CHECK / CALIBRATION**

PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER  
 DATE OF ISSUE : 17/01/2017  
 REPORT NO. : HK1710040

**PERFORMANCE CHECK / CALIBRATED EQUIPMENT**

TYPE : Digital Dust Indicator  
 MANUFACTURER : SIBATA  
 MODEL NO. : LD-3B  
 SERIAL NO. : 2Z6240  
 EQUIPMENT NO. : ---  
 SENSITIVITY ADJUSTMENT : ---  
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

**STANDARD EQUIPMENT**

TYPE : HIGH VOLUME AIR SAMPLER  
 MANUFACTURER : TISCH  
 MODEL NO. : TE-5170  
 EQUIPMENT REF NO. : PTL\_HV002  
 LAST CALIBRATION DATE : 23/11/2016

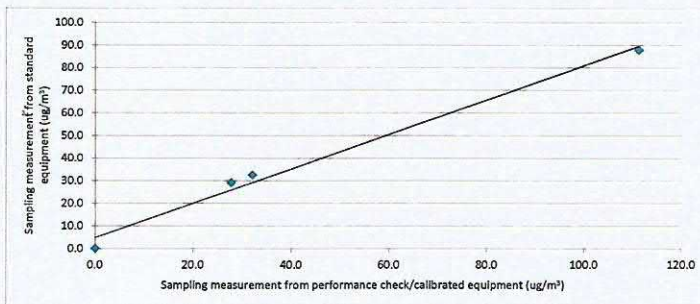
**EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:**

Sensitivity Adjustment Scale Setting (Before Performance check / Calibration): 565 CPM  
 Sensitivity Adjustment Scale Setting (After Performance check / Calibration): 565 CPM

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m <sup>3</sup> (Standard equipment) (Y - Axis)	Total Count <sup>2</sup> (Performance Check / Calibrated equipment)	Concentration in Count/Minute <sup>3</sup> (Performance Check / Calibrated equipment) (X - Axis)
Zero Check <sup>1</sup>	12/01/2017, 10:00:00 AM	19	1016	0	0	0
1	12/01/2017, 12:15:00 PM	19	1016	88	6680	111
2	12/01/2017, 1:25:00 PM	19	1016	33	1924	32
3	12/01/2017, 3:34:00 PM	19	1016	29	1664	28

**Linear Regression of Y on X**

Slope (K- factor) : 0.8  
 Correlation Coefficient : 0.9940  
 Validity of Performance Check / Calibration Record : 12/01/2018



- Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.  
 2. Total Count was measured by Digital Dust Indicator.  
 3. Count/minute was calculated by (Total Count/60)  
 4. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.  
 5. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: MA Ching Him, Jackey Signature: \_\_\_\_\_ Date: 12/01/2017

Checked by: Wong Po Yan, Pauline Signature:  Date: 17/01/2017



# Certificate of Calibration 校正證書

Certificate No. : C173613  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC17-1398 )      Date of Receipt / 收件日期 : 21 June 2017  
Description / 儀器名稱 : Sound Level Meter  
Manufacturer / 製造商 : Rion  
Model No. / 型號 : NL-52  
Serial No. / 編號 : 00131627  
Supplied By / 委託者 : Envirotech Services Co.  
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,  
New Territories, Hong Kong

## TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C      Relative Humidity / 相對濕度 : (55 ± 20)%  
Line Voltage / 電壓 : ---

## TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 4 July 2017

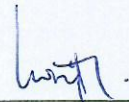
## TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.  
The results do not exceed manufacturer's specification. (after adjustment)  
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 : 4 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.  
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. : C173613  
證書編號

- 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 the internal standard (After Adjustment) was performed before the test 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	C170048
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 Adjustment

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 <sub>A</sub>	A	Fast	94.00	1	* 92.8	± 1.1

\* Out of IEC 61672 Class 1 Spec.

##### 6.1.1.2 After Adjustment

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 <sub>A</sub>	A	Fast	94.00	1	94.0	± 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 <sub>A</sub>	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 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.

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

# Certificate of Calibration

## 校正證書

Certificate No. : C173613

證書編號

### 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 <sub>A</sub>	A	Fast	94.00	1	94.0	Ref.
			Slow			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)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>A</sub>	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-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	89.6	-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 <sub>C</sub>	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-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	93.8	-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	87.6	-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室書面批准。



# Certificate of Calibration

## 校正證書

Certificate No. : C173613  
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04870

- 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 :

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

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

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

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

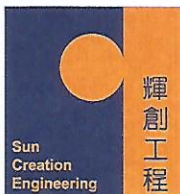
Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4 E, 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

Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: calllab@suncreation.com Website 網址: www.suncreation.com



# Certificate of Calibration 校正證書

Certificate No. : C171447  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC17-0633 )      Date of Receipt / 收件日期 : 16 March 2017

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.  
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,  
New Territories, Hong Kong

## TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C      Relative Humidity / 相對濕度 : (55 ± 20)%  
Line Voltage / 電壓 : ---

## TEST SPECIFICATIONS / 測試規範

Calibration check

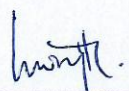
DATE OF TEST / 測試日期 : 17 March 2017


## 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  
Project Engineer

Date of Issue : 23 March 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.

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 and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C171447

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	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	93.6	± 0.5	± 0.2

### 5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.987	1 kHz ± 2 %	± 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 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。

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

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com