

輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C045685

## Certificate of Calibration

*This is to certify that the equipment*

*Description : Precision Integrating Sound Level Meter*

*Manufacturer : ONO SOKKI*

*Model No. : LA-5110*

*Serial No. : 72700154*

*has been calibrated for the specific items and ranges.  
The results are shown in the Calibration Report No. C045685.*

*The equipment is supplied by*

*Co. Name : Atkins China Limited*

*Address : 15/F, Miramar Tower, 132 Nathan Road, Tsim Sha Tsui, Kowloon*

*Date of Issue : 30 December 2004*

Certified by :

  
C F Leung

The test equipment used for calibration are traceable to the National Standards as specified in this report.  
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

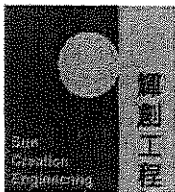
c/o G/F, LCK Telephone Exchange Building, 2 Yuet Lun Street, Lai Chi Kok, Kowloon, Hong Kong.

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C045685

## Calibration Report

### ITEM TESTED

DESCRIPTION : Precision Integrating Sound Level Meter  
MANUFACTURER : ONO SOKKI  
MODEL NO. : LA-5110  
SERIAL NO. : 72700154

### TEST CONDITIONS

AMBIENT TEMPERATURE :  $(23 \pm 2)^{\circ}\text{C}$  RELATIVE HUMIDITY :  $(55 \pm 15)\%$   
LINE VOLTAGE : ---

### TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 29 December 2004

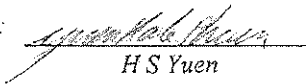
JOB NO. : IC04-3635

### TEST RESULTS

The results apply to the particular unit-under-test only.  
All calibration points 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 Brüel & Kjær Calibration Laboratory, Denmark

Tested by :

  
H S Yuen

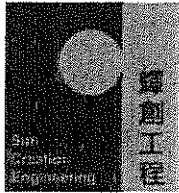
Date : 30 December 2004

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# Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 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.
CL281	Multifunction Acoustic Calibrator	12909

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 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weighting	Response	Level (dB)	Freq. (kHz)		
40 - 100	Lp	A	Fast	94.00	1	94.0	± 0.7

### 6.1.2 Linearity

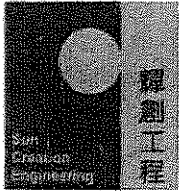
UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Weighting	Response	Level (dB)	Freq. (kHz)	
60 - 120	Lp	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 651 Type 1 Spec. : ±0.4 dB per 10 dB step and ±0.7 dB for overall different.

## 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weighting	Response	Level (dB)	Freq. (kHz)		
40 - 100	Lp	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.1
			Imp			94.0	± 0.1

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# Calibration Report

## 6.3 Frequency Weighting

### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weighting	Response	Level (dB)	Freq. (Hz)		
40 - 100	Lp	A	Fast	94.00	31.5	55.0	-39.4 ± 1.5
					63	67.7	-26.2 ± 1.5
					125	77.8	-16.1 ± 1.0
					500	90.7	-3.2 ± 1.0
					1 k	94.0	Ref.
					2 k	95.2	+1.2 ± 1.0

### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weighting	Response	Level (dB)	Freq. (Hz)		
40 - 100	Lp	C	Fast	94.00	31.5	90.8	-3.0 ± 1.5
					63	93.1	-0.8 ± 1.5
					125	93.9	-0.2 ± 1.0
					500	94.0	0.0 ± 1.0
					1 k	94.0	Ref.
					2 k	93.8	-0.2 ± 1.0

Remarks : - Mfr's Spec. : IEC651 Type 1

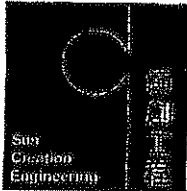
- Uncertainties of Applied Value : 94 dB : 31.5 Hz - 125 Hz : ± 0.35 dB
- 500 Hz : ± 0.30 dB
- 1 kHz : ± 0.20 dB
- 2 kHz : ± 0.35 dB
- 104 dB : 1 kHz : ± 0.30 dB
- 114 dB : 1 kHz : ± 0.30 dB

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

Note :

The values given in this Calibration Report 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 National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C045684

## Certificate of Calibration

*This is to certify that the equipment*

*Description : Sound Calibrator (P022X0077701)*

*Manufacturer : ONO SOKKI*

*Model No. : SC-2110*

*Serial No. : 00461*

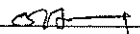
*has been calibrated for the specific items and ranges.  
The results are shown in the Calibration Report No. C045684.*

*The equipment is supplied by*

*Co. Name : Atkins China Limited*

*Address : 15/F, Miramar Tower, 132 Nathan Road, Tsim Sha Tsui, Kowloon*

*Date of Issue : 30 December 2004*

Certified by :   
C F Leung

The test equipment used for calibration are traceable to the National Standards as specified in this report.  
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Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C045684

## Calibration Report

### ITEM TESTED

DESCRIPTION : Sound Calibrator (P022X0077701)  
MANUFACTURER : ONO SOKKI  
MODEL NO. : SC-2110  
SERIAL NO. : 00461

### TEST CONDITIONS

AMBIENT TEMPERATURE :  $(23 \pm 2)^{\circ}\text{C}$  RELATIVE HUMIDITY :  $(55 \pm 15)\%$   
LINE VOLTAGE : ---

### TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 29 December 2004

JOB NO. : IC04-3641

### TEST RESULTS

The results apply to the particular unit-under-test only.  
All calibration points are within user'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
- The Brüel & Kjær Calibration Laboratory, Denmark

Tested by :

  
H S Yuen

Date : 30 December 2004

The test equipment used for calibration are traceable to the National Standards as specified in this report.  
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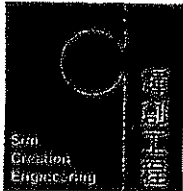
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# Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL126	Sound Level Meter	C043496
CL130	Universal Counter	C042857
CL281	Multifunction Acoustic Calibrator	12909

4. Test procedure : MA100N.

5. Results :

- 5.1 Sound Level Accuracy

<u>UUT Nominal Value</u>	<u>Measured Value (dB)</u>	<u>User's Spec. (dB)</u>	<u>Uncertainty of Measured Value (dB)</u>
94 dB, 1 kHz	94.0	± 0.5	± 0.2

- 5.2 Frequency Accuracy

<u>UUT Nominal Value (kHz)</u>	<u>Measured Value (Hz)</u>	<u>User's Spec.</u>	<u>Uncertainty of Measured Value (Hz)</u>
1	999.2	1 kHz ± 1 %	± 0.1

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

Note :

The values given in this Calibration Report 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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