

ENSR ASIA (HK) LTD

TSP High Volume Sampler

Field Calibration Report

Station: Access Road to Po Shan Mansions (CA1) Operator: Shum Kam Yuen
 Cal. Date: 7-May-09 Next Due Date: 7-Jul-09
 Equipment No.: A.001.46T Serial No.: 10217

Ambient Condition			
Temperature, Ta (K)	302	Pressure, Pa (mmHg)	756.6

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	2.02158	Intercept, bc	-0.02524
Last Calibration Date:	4-Nov-08	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	4-Nov-09	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	[DH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (m ³ /min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	9.8	3.10	1.55	50.0	49.56
13	6.9	2.60	1.30	42.0	41.63
10	5.3	2.28	1.14	34.0	33.70
7	3.7	1.91	0.96	28.0	27.75
5	2.8	1.66	0.83	22.0	21.80

By Linear Regression of Y on X

Slope, mw = 38.8644 Intercept, bw = -10.0179

Correlation Coefficient* = 0.9945

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m³/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]^{1/2} = 40.87

Remarks: _____

QC Reviewer: Joe Fu Signature: Joe Date: 8 May 09

ENSR ASIA (HK) LTD

TSP High Volume Sampler

Field Calibration Report

Station: Podium oh Hamilton Court (CA2) Operator: Shum Kam Yuen
 Cal. Date: 7-May-09 Next Due Date: 7-Jul-09
 Equipment No.: A.001.15T Serial No.: 10380

Ambient Condition			
Temperature, Ta (K)	302	Pressure, Pa (mmHg)	756.6

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	2.02158	Intercept, bc	-0.02524
Last Calibration Date:	4-Nov-08	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	4-Nov-09	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	[DH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (m ³ /min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	10.0	3.13	1.56	48.0	47.57
13	7.7	2.75	1.37	40.0	39.65
10	5.7	2.37	1.18	34.0	33.70
7	4.0	1.98	0.99	28.0	27.75
5	2.8	1.66	0.83	20.0	19.82

By Linear Regression of Y on X

Slope, mw = 36.5574 Intercept, bw = -9.7663

Correlation Coefficient* = 0.9936

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m³/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]^{1/2} = 38.10

Remarks: _____

QC Reviewer: Joe Fu

Signature: Joe

Date: 8 May 09

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.07a
 Sensitivity Adjustment Scale Setting: 557 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K₀: 12500
 Last Calibration Date*: 12 June 2008

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 557 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 557 CPM


Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	14-06-08	09:00 - 10:00	32.2	75	0.03113	1007	16.78
2	14-06-08	10:00 - 11:00	32.4	74	0.03566	1166	19.43
3	14-06-08	11:00 - 12:00	32.5	74	0.03146	1025	17.08
4	14-06-08	13:00 - 14:00	32.5	75	0.04583	1485	24.75

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X
 Slope (K-factor): 0.0018
 Correlation coefficient: 0.9993

Validity of Calibration Record: 13 June 2009

Remarks:

QC Reviewer: Mike Shek Signature:  Date: 16 June 2008

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.07a
 Sensitivity Adjustment Scale Setting: 557 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No.: Control: 140AB219899803
 Sensor: 1200C143659803 K_o: 12500
 Last Calibration Date*: 5 June 2009

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 557 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 557 CPM

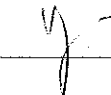
Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	06-06-09	09:00 - 10:00	30.2	76	0.04175	1392	23.20
2	06-06-09	10:00 - 11:00	30.6	76	0.03983	1330	22.17
3	06-06-09	11:00 - 12:00	31.0	75	0.04025	1339	22.31
4	06-06-09	13:00 - 14:00	31.2	76	0.04271	1426	23.77

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X
 Slope (K-factor): 0.0018
 Correlation coefficient: 0.9965

Validity of Calibration Record: 5 June 2010

Remarks:

QC Reviewer: YW Fung Signature:  Date: 8 June 2009

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.11a
 Sensitivity Adjustment Scale Setting: 799 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K₀: 12500
 Last Calibration Date*: 12 June 2008

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

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

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	06-07-08	10:00 - 11:00	29.9	81	0.01680	704	11.74
2	06-07-08	11:00 - 12:00	29.8	80	0.01748	738	12.30
3	06-07-08	12:00 - 13:00	29.6	80	0.01537	659	10.98
4	06-07-08	13:00 - 14:00	29.6	80	0.01688	730	12.17

- Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0014
 Correlation coefficient: 0.9275

Validity of Calibration Record: 5 July 2009

Remarks:

QC Reviewer: Mike Shek

Signature: 

Date: 7 July 2008



CERTIFICATE OF CALIBRATION

Certificate No.: 08CA0603 01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type I)	,	Microphone
Manufacturer:	RION CO., LTD.	,	RION CO., LTD.
Type/Model No.:	NL-31	,	UC-53A
Serial/Equipment No.:	00320528 / N.007.03A	,	88783
Adaptors used:	-	,	-

Item submitted by

Customer Name: ENSR ASIA (HK) LTD.
Address of Customer: Room 1213-1219, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Rd, Sha Tin, New Territories, HK
Request No.: -
Date of request: 03-Jun-2008

Date of test: 12-Jun-2008

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	11-Jan-2009	CIGISMEC
Signal generator	DS 360	33873	06-Dec-2008	CEPREI
Signal generator	DS 360	61227	13-Jun-2008	CEPREI

Ambient conditions

Temperature: (23 ± 2) °C
Relative humidity: (60 ± 15) %
Air pressure: (1000 ± 10) hPa

Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

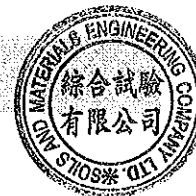
Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian-Min/Feng Jun Qi

Date: 12-Jun-2008

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

Certificate No.: 09CA0611 01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	RION CO., LTD.	,	RION CO., LTD.
Type/Model No.:	NL-31	,	UC-53A
Serial/Equipment No.:	00320528 / N.007.03A	,	88783
Adaptors used:	-	,	-

Item submitted by

Customer Name: ENSR ASIA (HK) LTD.
Address of Customer: Room 1213-1219, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Rd, Sha Tin, New Territories, HK
Request No.: -
Date of request: 10-Jun-2009

Date of test: 11-Jun-2009

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	12-Jan-2010	CIGISMEC
Signal generator	DS 360	33873	12-Jun-2009	CEPREI
Signal generator	DS 360	61227	18-Jul-2009	CEPREI

Ambient conditions

Temperature: 23 ± 1 °C
Relative humidity: 55 ± 15 %
Air pressure: 995 ± 15 hPa

Test specifications

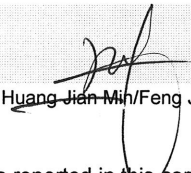
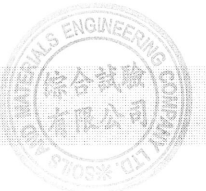
- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responses of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

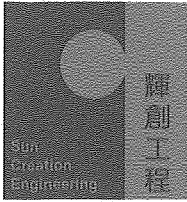
Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:  Date: 12-Jun-2009 Company Chop: 

Huang Jian-Min/Feng Jun Qi

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C083543

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10307223 (N.004.08)

*has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C083543.*

The equipment is supplied by

Co. Name : ENSR Asia (HK) Limited

*Address : 11/F., Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Rd., Shatin, N.T.*

Date of Issue : 14 July 2008

Certified by :

K C Lee

The test equipment used for testing 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 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com