



Calibration Certificate

Certificate No. **33624**

Page 1 of 4 Pages

Customer : Lam Geotechnics Limited

Address : 11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

Order No. : Q31494

Date of receipt : 30-May-13

Item Tested

Description : Digital Sound Level Meter

Manufacturer : B&K

Model : Type 2236

Serial No. : 2100736

Test Conditions

Date of Test : 3-Jun-13

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : Z01.

Test Results

All results were within the IEC 651 Type 1, IEC 804 Type 1 & IEC 1260 Class 1 specification.

The results are shown in the attached page(s).


Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C127181	SCL-HKSAR
S024	Sound Level Calibrator	30620	NIM-PRC & SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. 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 International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 
Liam Wong

Approved by : 
Dorothy Cheuk

Date: 3-Jun-13



Calibration Certificate

Certificate No. 33624

Page 2 of 4 Pages

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range	Parameter	Frequency Wt.	Freq. Response		
20 - 100	SPL	dBA	F	94.0	93.8
			S		93.8
		dBC	F		93.8
		dBL	F		93.9
		1 kHz	F		93.8
40 - 120	SPL	dBA	F	94.0	93.9
		1 kHz	F		93.9
	SPL	dBA	F	114.0	113.8
			S		113.8
		dBC	F		113.9
		dBL	F		113.9
1 kHz	F	113.8			

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.1 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
140	114.0	113.9	0.0	± 0.7 dB
130	104.0	103.9	0.0	
120	94.0	93.9 (Ref.)	--	
110	84.0	83.9	0.0	
100	74.0	73.9	0.0	
100	64.0	63.9	0.0	
100	54.0	53.9	0.0	

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 33624

Page 3 of 4 Pages

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	83.9	0.0	± 0.4 dB
	94.0	93.9 (Ref.)	- -	
	95.0	94.9	0.0	± 0.2 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.6	- 39.4 dB, ± 1.5 dB
63 Hz	-26.4	- 26.2 dB, ± 1.5 dB
125 Hz	-16.3	- 16.1 dB, ± 1 dB
250 Hz	-8.8	- 8.6 dB, ± 1 dB
500 Hz	-3.3	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1 dB
4 kHz	+0.9	+ 1.0 dB, ± 1 dB
8 kHz	-1.2	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-6.8	- 6.6 dB, + 3 dB ~ -∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.9	± 0.5 dB
1/10 ²	40.0	39.8	
1/10 ³	40.0	39.7	± 1.0 dB
1/10 ⁴	40.0	39.5	

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 33624

Page 4 of 4 Pages

6. Filter Response

Filter Setting	Attenuation (dB)	IEC 1260 Class 1 Spec.
125 Hz	-63.6	< - 61
250 Hz	-44.8	< - 42
500 Hz	-21.0	< - 17.5
707 Hz	-3.7	- 2 ~ - 5
1 kHz (Ref.)	0.0 (Ref.)	--
1.414 kHz	-4.1	- 2 ~ - 5
2 kHz	-21.4	< - 17.5
4 kHz	-45.0	< - 42
8 kHz	-63.9	< - 61

Uncertainty : ± 0.2 dB

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 996 hPa

4. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

----- END -----



Calibration Certificate

Certificate No. **34228**

Page 1 of 2 Pages

Customer : Lam Geotechnics Limited

Address : 11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

Order No. : Q31610

Date of receipt : 21-Jun-13

Item Tested

Description : Sound Level Calibrator

Manufacturer : Rion

Model : NC-73

Serial No. : 10707358

Test Conditions

Date of Test : 25-Jun-13

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the manufacturer's specification.

The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	30259	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	30620	NIM-PRC & SCL-HKSAR
S041	Universal Counter	28347	SCL-HKSAR
S206	Sound Level Meter	30655	SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. 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 International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by :


Liam Wong

Approved by :


Dorothy Cheuk

Date: 25-Jun-13

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

The copyright of this certificate is owned by Hong Kong Calibration Ltd.. It may not be reproduced except in full.



Calibration Certificate

Certificate No. 34228

Page 2 of 2 Pages

Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	93.88 dB	± 1 dB

Uncertainty : ± 0.2 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.995 kHz	± 2 %

Uncertainty : ± 0.1 %

3. Level Stability : 0.0 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.2 %

Mfr's Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. The above measured values were the mean of 3 measurements.

4. Atmospheric Pressure : 999 hPa

----- END -----



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

AIR POLLUTION MONITORING EQUIPMENT
 ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jul 15, 2013 Rootsometer S/N 0438320 Ta (K) - 300
 Operator Tisch Orifice I.D. - 0005 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	1.3910	3.2	2.00
2	NA	NA	1.00	0.9830	6.4	4.00
3	NA	NA	1.00	0.8800	7.9	5.00
4	NA	NA	1.00	0.8380	8.8	5.50
5	NA	NA	1.00	0.6930	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9884	0.7106	1.4090	0.9958	0.7159	0.8888
0.9843	1.0013	1.9926	0.9916	1.0087	1.2570
0.9822	1.1161	2.2278	0.9895	1.1244	1.4054
0.9811	1.1708	2.3365	0.9884	1.1795	1.4740
0.9760	1.4084	2.8180	0.9832	1.4188	1.7777
Qstd slope (m) = 2.01968			Qa slope (m) = 1.26469		
intercept (b) = -0.02746			intercept (b) = -0.01732		
coefficient (r) = 0.99999			coefficient (r) = 0.99999		
y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta})]$			y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Ta}/\text{Pa})]$		

CALCULATIONS

$$\text{Vstd} = \text{Diff. Vol} [(\text{Pa} - \text{Diff. Hg}) / 760] (298 / \text{Ta})$$

$$\text{Qstd} = \text{Vstd} / \text{Time}$$

$$\text{Va} = \text{Diff Vol} [(\text{Pa} - \text{Diff Hg}) / \text{Pa}]$$

$$\text{Qa} = \text{Va} / \text{Time}$$

For subsequent flow rate calculations:

$$\text{Qstd} = 1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta}))] - b \}$$

$$\text{Qa} = 1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Ta}/\text{Pa}))] - b \}$$



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b Calibration Date : 18-Jan-14
 Equipment no. : EL452 Calibration Due Date : 18-Mar-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01968
		Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	15-Jul-14		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.2	6.2	12.4	1.7951	60	61.3077
2	5.1	5.1	10.2	1.6294	51	52.1116
3	4.1	4.1	8.2	1.4623	41	41.8936
4	2.5	2.5	5.0	1.1449	25	25.5449
5	1.5	1.5	3.0	0.8899	13	13.2833

By Linear Regression of Y on X

Slope, m = 53.1762 Intercept, b = -34.7843
 Correlation Coefficient* = 0.9992
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Checked by : Derek Lo
 Date : 18-Jan-14 Date : 18-Jan-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b
 Equipment no. : EL452

Calibration Date : 15-Mar-14
 Calibration Due Dat : 15-May-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	298	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.2	6.2	12.4	1.7586	60	60.0503
2	5.1	5.1	10.2	1.5962	51	51.0428
3	4.0	4.0	8.0	1.4152	40	40.0335
4	2.5	2.5	5.0	1.1217	24	24.0201
5	1.5	1.5	3.0	0.8719	12	12.0101

By Linear Regression of Y on X

Slope, m = 54.5933 Intercept, b = -36.4179
 Correlation Coefficient* = 0.9993
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Felix Li
 Date : 15-Mar-14

Checked by : Derek Lo
 Date : 15-Mar-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA2a Calibration Date : 18-Jan-14
 Equipment no. : EL449 Calibration Due Date : 18-Mar-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01968
		Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	15-Jul-14		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7807	59	60.2859
2	5.1	5.1	10.2	1.6294	51	52.1116
3	4.0	4.0	8.0	1.4446	42	42.9154
4	2.5	2.5	5.0	1.1449	28	28.6103
5	1.4	1.4	2.8	0.8602	16	16.3487

By Linear Regression of Y on X

Slope, m = 47.6578 Intercept, b = -25.3287
 Correlation Coefficient* = 0.9993
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Checked by : Derek Lo
 Date : 18-Jan-14 Date : 18-Jan-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA2a
 Equipment no. : EL449

Calibration Date : 15-Mar-14
 Calibration Due Dat : 15-May-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	298	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7445	59	59.0495
2	5.0	5.0	10.0	1.5806	50	50.0419
3	4.0	4.0	8.0	1.4152	41	41.0344
4	2.5	2.5	5.0	1.1217	28	28.0235
5	1.4	1.4	2.8	0.8428	15	15.0126

By Linear Regression of Y on X

Slope, m = 48.3583 Intercept, b = -26.2139

Correlation Coefficient* = 0.9990

Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Felix Li
 Date : 15-Mar-14

Checked by : Derek Lo
 Date : 15-Mar-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA3a
 Equipment no. : EL333

Calibration Date : 20-Feb-14
 Calibration Due Date : 20-Apr-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	288	Kelvin	Pressure, P _a
			1020 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01968
		Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	15-Jul-14		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7786	62	63.2754
2	5.0	5.0	10.0	1.6115	52	53.0697
3	4.0	4.0	8.0	1.4428	41	41.8434
4	2.5	2.5	5.0	1.1435	25	25.5143
5	1.6	1.6	3.2	0.9175	13	13.2674

By Linear Regression of Y on X

Slope, m = 58.0066 Intercept, b = -40.5854
 Correlation Coefficient* = 0.9992
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry
 Date : 20-Feb-14

Checked by : Derek Lo
 Date : 20-Feb-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a Calibration Date : 18-Jan-14
 Equipment no. : EL390 Calibration Due Date : 18-Mar-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7662	60	61.3077
2	5.1	5.1	10.2	1.6294	52	53.1334
3	3.9	3.9	7.8	1.4266	41	41.8936
4	2.5	2.5	5.0	1.1449	26	26.5667
5	1.5	1.5	3.0	0.8899	14	14.3051

By Linear Regression of Y on X

Slope, m = 53.7145 Intercept, b = -34.2208
 Correlation Coefficient* = 0.9994
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Checked by : Derek Lo
 Date : 18-Jan-14 Date : 18-Jan-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a
 Equipment no. : EL390

Calibration Date : 15-Mar-14
 Calibration Due Dat : 15-May-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	298	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7302	60	60.0503
2	5.1	5.1	10.2	1.5962	52	52.0436
3	4.0	4.0	8.0	1.4152	42	42.0352
4	2.5	2.5	5.0	1.1217	28	28.0235
5	1.5	1.5	3.0	0.8719	15	15.0126

By Linear Regression of Y on X

Slope, m = 51.8132 Intercept, b = -30.3615
 Correlation Coefficient* = 0.9994
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Felix Li
 Date : 15-Mar-14

Checked by : Derek Lo
 Date : 15-Mar-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5a Calibration Date : 18-Jan-14
 Equipment no. : EL380 Calibration Due Date : 18-Mar-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01968
		Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	15-Jul-14		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7662	60	61.3077
2	5.0	5.0	10.0	1.6135	51	52.1116
3	4.0	4.0	8.0	1.4446	42	42.9154
4	2.5	2.5	5.0	1.1449	26	26.5667
5	1.5	1.5	3.0	0.8899	13	13.2833

By Linear Regression of Y on X

Slope, m = 54.6083 Intercept, b = -35.6736
 Correlation Coefficient* = 0.9998
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Checked by : Derek Lo
 Date : 18-Jan-14 Date : 18-Jan-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5a
 Equipment no. : EL380

Calibration Date : 15-Mar-14
 Calibration Due Dat : 15-May-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	298	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	5.9	5.9	11.8	1.7158	60	60.0503
2	5.0	5.0	10.0	1.5806	52	52.0436
3	4.0	4.0	8.0	1.4152	42	42.0352
4	2.4	2.4	4.8	1.0993	25	25.0210
5	1.5	1.5	3.0	0.8719	13	13.0109

By Linear Regression of Y on X						
Slope, m	=	55.6207	Intercept, b	=	-35.9089	
Correlation Coefficient*	=	0.9996				
Calibration Accepted	=	Yes/No**				

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Felix Li
 Date : 15-Mar-14

Checked by : Derek Lo
 Date : 15-Mar-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1w Calibration Date : 18-Jan-14
 Equipment no. : EL080 Calibration Due Date : 18-Mar-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01968
		Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	15-Jul-14		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7807	59	60.2859
2	5.0	5.0	10.0	1.6135	51	52.1116
3	4.0	4.0	8.0	1.4446	42	42.9154
4	2.5	2.5	5.0	1.1449	27	27.5885
5	1.4	1.4	2.8	0.8602	14	14.3051

By Linear Regression of Y on X

Slope, m = 50.3357 Intercept, b = -29.4556

Correlation Coefficient* = 0.9997

Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Checked by : Derek Lo
 Date : 18-Jan-14 Date : 18-Jan-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1w
 Equipment no. : EL080

Calibration Date : 15-Mar-14
 Calibration Due Dat : 15-May-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	298	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7445	60	60.0503
2	5.1	5.1	10.2	1.5962	51	51.0428
3	4.0	4.0	8.0	1.4152	43	43.0361
4	2.5	2.5	5.0	1.1217	28	28.0235
5	1.5	1.5	3.0	0.8719	15	15.0126

By Linear Regression of Y on X

Slope, m = 50.8923 Intercept, b = -29.2661

Correlation Coefficient* = 0.9995

Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Felix Li
 Date : 15-Mar-14

Checked by : Derek Lo
 Date : 15-Mar-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1e Calibration Date : 18-Jan-14
 Equipment no. : EL455 Calibration Due Dat : 18-Mar-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01968
		Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	15-Jul-14		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7807	60	61.3077
2	5.0	5.0	10.0	1.6135	51	52.1116
3	4.1	4.1	8.2	1.4623	43	43.9372
4	2.5	2.5	5.0	1.1449	29	29.6321
5	1.5	1.5	3.0	0.8899	16	16.3487

By Linear Regression of Y on X

Slope, m = 49.7270 Intercept, b = -27.8685

Correlation Coefficient* = 0.9994

Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Checked by : Derek Lo
 Date : 18-Jan-14 Date : 18-Jan-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1e
 Equipment no. : EL455

Calibration Date : 15-Mar-14
 Calibration Due Dat : 15-May-14

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	298	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01968	Intercept, b _c	-0.02746
Last Calibration Date	15-Jul-13	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	15-Jul-14				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7445	60	60.0503
2	5.0	5.0	10.0	1.5806	51	51.0428
3	4.1	4.1	8.2	1.4326	43	43.0361
4	2.5	2.5	5.0	1.1217	27	27.0226
5	1.6	1.6	3.2	0.9001	15	15.0126

By Linear Regression of Y on X

Slope, m = 53.0505 Intercept, b = -32.6976

Correlation Coefficient* = 0.9999

Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Felix Li
 Date : 15-Mar-14

Checked by : Derek Lo
 Date : 15-Mar-14