

Certificate No. 06680

1 of 4 Pages

Customer: Lam Geotechnics Limited

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

Order No.: Q02553

Date of receipt

18-Nov-10

Item Tested

Description: Precision Integrating Sound Level Meter

Manufacturer: ACO

Model

: Type 6224

Serial No.

: 050112

Test Conditions

Date of Test: 19-Nov-10

Supply Voltage : --

Ambient Temperature:

 $(23 \pm 3)^{\circ}C$

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

All results were within the IEC 651 Type 1 & 804 Type I Specification.

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

Main Test equipment used:

Equipment No. Description

Cert, No.

Traceable to

S017A

Multi-Function Generator

00804

SCL-HKSAR

S024

Sound Level Calibrator

04062

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

This Certificate is issued by:

Hone Kone Catibration Ltd.

Date: 23-Nov-10

Unit 88, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT Hong Kong. Tel: 2425 8801 Fax: 2425 8646

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Results:

1. SPL Accuracy

UUT Setting				
Level Range (dB)	Weight	Time Const.	Applied Value (dB)	UUT Reading (dB)
20-100	L _A	Fast	94.0	94.3
The state of the s		Slow		94.3
	$L_{\mathbb{C}}$	Fast		94.3
30 – 120	L_A	Fast	94.0	94.4
		Slow		94.4
	L _C	Fast		94.4
3.0 – 120	L _A .	Fast	114.0	94.3
		Slow		94.3
	Lc	Fast		94.3

IEC 651 Type 1 Spec.: ± 0.7 dB

Uncertainty: ± 0.1 dB

2. Level Stability: 0.0 dB

IEC 651 Type 1 Spec. : \pm 0.3 dB

Uncertainty: ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range	Applied	UUT Rdg	Variation	IEC 651 Type 1 Spec.
(dB)	Value (dB)	(dB)	(dB)	(Primary Indicator Range)
140	114.0	114.5	+0.1	$\pm 0.7 \mathrm{dB}$
130	104,0	104.4	0.0	
120	94.0	94.4 (Ref.)		
110	84.0	84.1	-0.3	
100	74.0	74.2	-0.2	
90	64.0	64.1	-0.3	
80	54.0	54.1	-0.3	

Uncertainty: ± 0.1 dB



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3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Rdg (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.1	-0.3	± 0.4
	94.0	94.4 (Ref.)		
	95.0	95.4	0,0	± 0.2

Uncertainty: $\pm 0.1 \text{ dB}$

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.3	$-39.4 \text{ dB}_2 \pm 1.5 \text{ dB}$
63 Hz	-26.2	- 26.2 dB, ±1.5 dB
125 Hz	-16.1	- 16.1 dB, ±1 dB
250 Hz	-8.7	- 8.6 dB, ±1 dB
500 Hz	-3.3	- 3.2 dB, ±1 dB
1 kHz	0.0 (Ref)	$0 dB, \pm 1 dB$
2 kHz	+1.3	+ 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	-5.8	- 6.6 dB, $+ 3 dB \sim -\infty$

Uncertainty: ± 0.1 dB



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4. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40,0	ma hade
1/10	40.0	39.9	± 0.5 dB
1/10 ²	40.0	39.9	
$1/10^3$	40,0	40.3	± 1,0 dB
1/104	40.0	40.3	

Uncertainty: ± 0.1 dB

Remark: 1. UUT: Unit-Under-Test

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

3. Atmospheric Pressure: 1 009 hPa.

-----END -----



Certificate No. 06681

Page

1 of 2 Pages

Customer: Lam Geotechnics Limited

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

Order No.: Q02553

Date of receipt

18-Nov-10

Item Tested

Description: Sound Level Calibrator (EL469)

Manufacturer: ACO

Model

Serial No.

: 050213

Test Conditions

Date of Test: 19-Nov-10

(23 ± 3)°C

Supply Voltage : --

Ambient Temperature :

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

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

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	03926	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	04062	NIM-PRC & SCL-HKSAR
S041	Universal Counter	04461	SCL-HKSAR
S206	Sound Level Meter	04462	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

23-Nov-10

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 6B, 24/F., Well Fung Industrial Centre, No. 58:76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong. Tel: 2425 8801 Fax: 2425 8646

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Certificate No.

06681

Page 2 of 2 Pages

Results:

1. Level

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.22	± 0.3 dB

The above measured values are the mean of 3 measurements.

Uncertainty: ±0.1 dB

2. Frequency

UUT Nominal Value	Measured Value,		IEC 942 Class 1 Spec.
1 kHz	0.9834	kHz	±2%

Uncertainty: $\pm 3.6 \times 10^{-6}$

3. Level Stability: 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty: ±0.01 dB

4. Total Harmonic Distortion : < 0.2 %

IEC 942 Class 1 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. Atmospheric Pressure: 1 009 hPa.

----END ----



Certificate No. 03250A

of 3 Pages Page

Customer: Lam Geotechnics Limited

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

Order No.: Q01282

Date of receipt

14-Jun-10

Item Tested

Description: Precision Integrating Sound Level Meter

Manufacturer: ONO SOKKI

Model

: LA-5110

Serial No.

: 72302293

Test Conditions

Date of Test: 21-Jun-10

Supply Voltage : -

Ambient Temperature:

 $(23 \pm 3)^{\circ}C$

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 Class 1 specification.

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

Main Test equipment used:

Equipment No. Description

Cert. No.

Traceable to

S017

Multi-Function Generator

C101623

SCL-HKSAR

S024

Sound Level Calibrator

93758

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

P. F. Wong

This Certificate is issued by:

Date:

Hong Kong Calibration Ltd.

Unit 88, 24/F., Well Fung Industrial Centre, No. 58-75, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong,

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Certificate No. 03250A

Page 2 of 3 Pages

Results:

1. SPL Accuracy

UUT Setting					
		Frequency	Dynamic	Applied Value	UUT Reading
Level Range	Filter	Weighting	Characteristic	(dB)	(dB)
40 - 100 dB	OFF	A	FAST	94.03	94.0
			SLOW		94.0
		C	FAST	A consession	94.0
60 - 120 dB	OFF	A	FAST	94.03	94.0
			SLOW		94.0
		С	FAST	·	94.0
60 - 120 dB	OFF	A	FAST	113.97	113.9
			SLOW		113.9
		С	FAST		113.9

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty: ± 0.1 dB

2. Level Stability: 0.0 dB

IEC 651 Type 1 Spec. : \pm 0.3 dB

Uncertainty: ± 0.01 dB

3. Linearity

3.1 Level Linearity

	meanty			
UUT Range	Applied	UUT Reading	Variation	IEC 651 Type 1 Spec.
(dB)	Value (dB)	(dB)	(dB)	(Primary Indicator Range)
130	114.0	114.1	+0.1	± 0.7 dB
130	104.0	104.1	+0.1	1
120	94.0	94.0 (Ref.)]
110	84.0	84.0	0.0	
100	74.0	74.1	+0.1	
90	64.0	64.1	+0.1	1
80	54.0	54,0	0.0	

Uncertainty: ± 0.1 dB



Certificate No.

03250A

Page 3 of 3 Pages

3.2 Differential level linearity

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

Uncertainty: ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-40.5	$-39.4 dB, \pm 1.5 dB$
63 Hz	-26.9	- 26.2 dB, ± 1.5 dB
125 Hz	-16.9	- 16.1 dB, ±1 dB
250 Hz	-9.1	- $8.6 dB, \pm 1 dB$
500 Hz	-3.5	- 3.2 dB, ±1 dB
1 kHz	0.0 (Ref.)	0 dB, ±1 dB
2 kHz	+1.5	+ 1.2 dB, ±1 dB
5 kHz	+1.2	+ 1.0 dB ,±1 dB
8 kHz	-1.0	$-1.1 \text{ dB}, +1.5 \text{ dB} \sim -3 \text{ dB}$
16 kHz	-7.0	- 6.6 dB, +3 dB \sim ∞

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	044 M4
1/10	40.0	40.0	± 0.5 dB
1/10 ²	40.0	40.0	
1/10 ³	40.0	40.1	± 1.0 dB
1/104	40.0	39.9	

Uncertainty: ± 0.1 dB

Remarks: 1. UUT: Unit-Under-Test

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

3. Atmospheric Pressure: 1 000 hPa.

4. This certificate is supersede our former certificate no. 03250.

----- END -----



Certificate No.

03445

Page

of 2 Pages

Customer: Lam Geotechnics Limited

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

Order No.: Q01282

Date of receipt

14-Jun-10

Item Tested

Description : Sound Level Calibrator (EL078)

Manufacturer: ONO SOKKI

Model

: SC-2110

Serial No.

: 00393

Test Conditions

Date of Test: 21-Jun-10

Supply Voltage : -

Ambient Temperature:

 $(23 \pm 3)^{\circ}$ C

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z02.

Test Results

All results were within the IEC 942 Class 2 specification.

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

Main Test equipment used:

Equipment No. Description

Cert. No.

Due Date

Traceable to

S024

Sound Level Calibrator

93758

16-Jul-10

NIM-PRC & SCL-HKSAR

S041

Universal Counter

94005

6-Aug-10

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

This Certificate is issued by:

Hong Kong Calibration Ltd.

Date:

25-Jun-10

Unit 88, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street Kwai Chung, NT Hong Kong. Tel: 2425 8801 Fax: 2425 8546



Certificate No. 03445

Page 2 of 2 Pages

Results:

1. Level Accuracy (at 1 kHz)

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 2 Spec.
94	94.05	± 0.5 dB

Uncertainty: ± 0.2 dB

2. Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	IEC 942 Class 2 Spec.
1	0.998	± 4 %

Uncertainty: ± 0.1 %

3. Level Stability: 0.0 dB

IEC 942 Class 2 Spec. : ± 1.2 dB

Uncertainty: ± 0.01 dB

4. Total Harmonic Distortion: < 1.2 %

IEC 942 Class 1 Spec. : < 3 % Uncertainty : ± 2.3 % of reading

Remark: 1. UUT: Unit-Under-Test

- 2. The above measured values are the mean of 3 measurements.
- 3. The uncertainty claimed is for a confidence probability of not less than 95%.
- 4. Atmospheric Pressure: 1 000 hPa.

----- END -----



Certificate No.

12888

1 of 4 Pages

Customer: Lam Geotechnics Limited

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

Order No.: Q10982

Date of receipt

25-May-11

Item Tested

Description : Precision Integrating Sound Level Meter

(23 ± 3)°C

Manufacturer: Rion

Model

: NL-14

Serial No.

: 10303242

Test Conditions

Date of Test: 26-May-11

Supply Voltage : --

Relative Humidity: (50 ± 25) %

Ambient Temperature : **Test Specifications**

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

All results were within the IEC 651 Type 1 or IEC 804 Type 1 specification after adjustment.

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

Main Test equipment used:

Equipment No. Description

Cert. No.

Traceable to

S017

Multi-Function Generator

C101623

SCL-HKSAR

S024

Sound Level Calibrator

04062

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

Approved by:

Date:

26-May-11

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 88, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

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Certificate No. 12888

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Results:

1. SPL Accuracy

UUT Setting			UUT Reading (dB)				
Level Range (dB)	Filter	Weight	Time Const.	Applied Value (dB)	Before adjust.	After adjust.	
40 - 100	OFF	Lp	Fast	94.00		94.1	
(C) 100 (C)		L_{PA}	Fast		*95.0	94.1	
			Slow			94.1	
		L_{PC}	Fast			94.1	
60 – 120	OFF	OFF L _P	Lp	Fast	94.00		94.1
			L_{PA}	Fast		- S -10	94.0
			Slow			94.0	
1		L_{PC}	Fast		833	94.0	
60 - 120	OFF	60 – 120 OFF	Lp	Fast	114.00		114.0
			L_{PA}	Fast			113.9
		1100	Slow			113.9	
		L_{PC}	Fast		(100)	113.9	

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty: ± 0.2 dB

2. Level Stability: 0.1 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty: ± 0.01 dB



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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	-0.1	± 0.7 dB
130	104.0	103.8	-0.2	
120	94.0	94.0 (Ref.)		
110	84.0	83.9	-0.1	
100	74.0	74.1	+0.1	
90	64.0	64.1	+0.1	
80	54.0	54.3	+0.3	

Uncertainty: ± 0.1 dB

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.0	0.0	± 0.4 dB
	94.0	94.0 (Ref.)		
	95.0	95.0	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	-39.0	- 39.4 dB, ± 1.5 dB
63 Hz	-25.9	- 26.2 dB, ± 1.5 dB
125 Hz	-15.9	- 16.1 dB, ± 1 dB
250 Hz	-8.4	- 8.6 dB, ± 1 dB
500 Hz	-3.0	- 3.2 dB, ±1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+1.3	+ 1.2 dB, ±1 dB
4 kHz	+0.8	+ 1.0 dB, ± 1 dB
8 kHz	-1.3	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-7.1	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty: ± 0.1 dB



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5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec	
continuous	40.0	40.0	22	
1/10	40.0	39.9	± 0.5 dB	
1/102	40.0	39.6		
1/10 ³	40.0	39.2	± 1.0 dB	
1/104	40.0	39.4		

Uncertainty: ± 0.1 dB

Remark: 1. UUT: Unit-Under-Test

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

3. Atmospheric Pressure: 1 004 hPa.

4. *Out of Specification

----- END -----



12889 Certificate No.

1 of 2 Pages Page

Customer: Lam Geotechnics Limited

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

Order No.: Q10982

Date of receipt

25-May-11

Item Tested

Description : Sound Level Calibrator

Manufacturer: Rion

Model : NC-73 Serial No.

: 10465798

Test Conditions

Date of Test: 26-May-11

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 after adjustment.

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

Main Test equipment used:

Equipment N	lo. Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	03926	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	04062	NIM-PRC & SCL-HKSAR
S041	Universal Counter	04461	SCL-HKSAR
S206	Sound Level Meter	04462	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 :

Approved by:

This Certificate is issued by

Hong Kong Calibration Ltd.

26-May-11

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



Certificate No. 12889

Page 2 of 2 Pages

Results:

1. Level Accuracy (at 1 kHz)

	Measure		
UUT Nominal Value	Before Adjust.	After Adjust.	Mfr's Spec.
94 dB	*95.20 dB	93.94 dB	± 1 dB

Uncertainty: ± 0.2 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.994 kHz	± 2 %

Uncertainty: ± 0.1 %

 Level Stability: 0.0 dB Uncertainty: ± 0.01 dB

4. Total Harmonic Distortion : < 0.5 %

Mfr's Spec. : < 3 %

Uncertainty: ± 2.3 % of reading

Remark: 1. UUT: Unit-Under-Test

- The uncertainty claimed is for a confidence probability of not less than 95%.
- 3. The above measured values are the mean of 3 measurement.
- 4. Atmospheric Pressure: 1 004 hPa
- 5. *Out of Specification

----- END -----



SPECTRIS CHINA LIMITED 思百吉中國有限公司

CERTIFICATE OF CALIBRATION

Certificate No.: 2KS100612-7

Page 1 of 2

Calibration of:

Description :

Sound Level Meter

Microphone

Manufacture:

Brüel & Kjær

2250

4950

Type No. Serial No.

2722310

2698702

Client:

Lam Geotechnics Limited

11/F, Centre Point

181-185 Gloucester Road

Wanchai Hong Kong

Calibration Conditions:

Air Temperature :

23 °C

Air Pressure

101.9 kPa

Relative Humidity:

62 %

Test Specifications:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of:

Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999 The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

Test Result:

A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

Date of Calibration: 22 July, 2010

Der: Pin

Certificate issued: 22 July, 2010

Calibrated By:

Approved signatory:

Dai Bin

Jacky Leung

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Unit 706 7/F., Miramar Tower, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong 香港九龍尖沙咀彌敦道132號美麗華大廈7樓706室

Tel: (852) 2548 7486 Fax: (852) 2858 1168



CERTIFICATE OF CALIBRATION

Certificate No.: 2KS100612-7 Page 2 of 2

Results:

List of performed (sub) test with test status:

"OK" Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

"-" Means the result of the (sub)test is Outside these tolerances.

Test:	Subtest:	Status:
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Level Range Control	1000 Hz	OK
Linearity Range	SPL 10dB 4000 Hz	OK
Linearity Range	SPL 1dB 1000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging		OK
Pulse Range		OK
Overload	SPL	OK
Overload	SEL	OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

Calibration Equipment:

Brüel & Kjær's Sound	Level Meter Cali	bration System	1 B&K 9600 C	AL2238A, Ver.25.10.1999
Description :	Make & Model:	Serial No.:	Last Cal. Date:	Traceable to:
Digital Multi-meter	Datron 1281	27361	30 Sept, 2009	HKSCL (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1843103	11 Aug 2009	NPL via B&K (DANAK)

Calibrated By: Dar R M Date: 22 July 2010

Checked By : Date: 22 July, 2010

Brüel & Kjær

SPECTRIS CHINA LIMITED 思百吉中國有限公司

CERTIFICATE OF CALIBRATION

Ce	rtifi	cate	No.	•	2KS100705-2	
\mathbf{v}			1 1174		DIED TOO 7 OU D	

Page 1 of 2

Calibration of:

Description:

Sound Level Meter

Microphone

Manufacture :

Brüel & Kjær

4050

Type No.

2250

4950

Serial No. :

2722311

2698703

Client:

Lam Geotechnics Limited

11/F, Centre Point

181-185 Gloucester Road

Wanchai Hong Kong

Calibration Conditions:

Air Temperature :

23 °C

Air Pressure

101.9 **kPa**

Relative Humidity:

62 %

Test Specifications:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of:

Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999 The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

Test Result:

A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

Date of Calibration: 03 Aug, 2010

Certificate issued: 03 Aug, 2010

Approved signatory:

Calibrated By:

Davi Bon

Iacky I euno

Dai Bin

Reproduction of the complete certificate is allowed. Parts of the certificate may only be reproduced after written permission.

Unit 706 7/F., Miramar Tower, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong香港九龍尖沙咀彌敦道132號美麗華大廈7樓706室

Tel: (852) 2548 7486 Fax: (852) 2858 1168

CERTIFICATE OF CALIBRATION

Certificate No.: 2KS100705-2 Page 2 of 2

Results:

List of performed (sub) test with test status:

"OK" Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

"-" Means the result of the (sub)test is Outside these tolerances.

Test:	Subtest:	Status:
Noise	A	OK
Noise	C	OK
Noise	Lin	OK
Frequency Weighting	A	OK
Frequency Weighting	C	OK
Frequency Weighting	Lin	OK
Level Range Control	1000 Hz	OK
Linearity Range	SPL 10dB 4000 Hz	OK
Linearity Range	SPL 1dB 1000 Hz	OK
Linearity Range	Leq	OK
Linearity Range	SEL	OK
RMS Detector	CF 3	OK
RMS Detector	CF 5	OK
RMS Detector	CF 10	OK
RMS Detector	Symmetry	OK
Time Weighting	Difference Indication	OK
Time Weighting	Single Burst FAST	OK
Time Weighting	Single Burst SLOW	OK
Time Weighting	Single Burst IMPULSE	OK
Time Weighting	Repetitive Burst	OK
Time Weighting	Peak	OK
Time Averaging		OK
Pulse Range		OK
Overload	SPL	OK
Overload	SEL	OK
Acoustic Response	A	OK
Acoustic Response	Lin	OK

Calibration Equipment:

Brüel & Kjær's Sound	Level Meter Calib	ration System	B&K 9600 CA	L2238A, Ver.25.10.1999
Description:	Make & Model:	Serial No.:	Last Cal. Date:	Traceable to:
Digital Multi-meter	Datron 1281	27361	30 Sept, 2009	HKSCL (HOKLAS)
Sine/Noise Generator	B&K 1049	1314978	Test	B&K Conformance
Test Waveform Generator	B&K 5918	1482949	Test	B&K Conformance
Acoustical Calibrator	B&K 4226	1843103	11 Aug 2009	NPL via B&K (DANAK)

Calibrated By: $\mathcal{L}_{\mathcal{M}}$ & \sim

Date: 03 Aug 2010

Checked By Date: 03 Aug, 2010



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS CHERRY MAK

CLIENT: LAM GEOTECHNICS LIMITED ADDRESS: 11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD,

WAN CHAI. HONG KONG.

PROJECT:

WORK ORDER:

LABORATORY:

DATE RECEIVED:

DATE OF ISSUE:

HK1107641

HONG KONG

04/04/2011

08/04/2011

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:

Dissolved Oxygen, Salinity and Temperature

Description:

YSI

Brand Name: Model No.:

YSI 600XL 05C1607

Serial No.: Equipment No.:

EL424

Date of Calibration: 06 April, 2011

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd

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1-3 Wing Yip Street

Kwai Chung HONG KONG Phone:

852-2610 1044

Fax:

852-2610 2021

Email:

hongkong@alsglobal.com

Mr Chan Kwok Fali, Godfrey Laboratory Manager - Hong Kong

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Page 1 of 2

ADDRESS 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong PHONE +852 2610 1044 FAX +852 2610 2021 ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: Date of Issue: HK1107641

08/04/2011

Client:

LAM GEOTECHNICS LIMITED

Reference:



Description:

Sonde

Brand Name:

YSI

Model No.:

YSI 600XL 05C1607

Serial No .: Equipment No.:

EL424

Date of Calibration:

06 April, 2011

Date of next Calibration:

06 July, 2011

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)
16.0	16.1	0.1
23.0	22.5	-0.6
39.5	39.5	0.0
	Tolerance Limit (°C)	2.0

Dissolved Oxygen Method Ref: APHA (21st edition), 45000: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.88	4.94	0.06
6.06	5.90	-0.16
8.23	8.40	0.17
	Tolerance Limit (±mg/L)	0.20

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.0	0.20	251
10.0	9.96	-0.4
20.0	19.98	-0.1
30.0	30.05	0.2
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:

MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD.

WAN CHAI. HONG KONG.

PROJECT:

WORK ORDER:

HK1107886

LABORATORY:

HONG KONG

DATE RECEIVED:

07/04/2011 09/04/2011

DATE OF ISSUE:

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:

pH, Dissolved Oxygen, Salinity and Temperature

Description:

Sonde YSI

Brand Name: Model No.:

YSI Professional Plus

Serial No.:

10E100385

Equipment No.:

N/A

Date of Calibration: 08 April, 2011

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

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Kwai Chung HONG KONG Phone:

852-2610 1044

Fax:

852-2610 2021

Email:

hongkong@alsglobal.com

Fai, Godfrey Mr-Chan kwol Laboratory Manager - Hong Kong

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Page 1 of 2

ADDRESS 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong PHONE +852 2610 1044 FAX +852 2610 2021 ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:

HK1107886

Date of Issue:

09/04/2011

Client:

LAM GEOTECHNICS LIMITED

Reference:



Description:

Sonde

Brand Name:

YSI

Model No.:

YSI Professional Plus

Serial No.:

10E100385

Equipment No.:

N/A

Date of Calibration: 08 April, 2011

Date of next Calibration:

08 July, 2011

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)
16.0	15.0	-1.0
23.5	22.8	-0.7
30.7	30.0	-0.7
	Tolerance Limit (°C)	2.0

pH Value

Method Ref: ALPHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.04	0.04
7.0	6.93	-0.07
10.0	9.85	-0.15
	Tolerance Limit (±unit)	0.2

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
6.76	6.90	0.14
7.97	8.06	0.09
8.76	8.76	0.00
	Tolerance Limit (±mg/L)	0.20

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.0	0.00	
10.0	10.25	2.5
20.0	20.15	0.7
30.0	30.48	1.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey

Laboratory Manager Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:

MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD,

WAN CHAI, HONG KONG

PROJECT:

WORK ORDER:

HK1111265

LABORATORY:

HONG KONG

DATE RECEIVED:

18/05/2011

DATE OF ISSUE:

24/05/2011

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:

Turbidity

Description:

Turbidimeter

Brand Name:

HACH 2100P

Model No.: Serial No.:

0300800032283

Equipment No.:

Date of Calibration: 24 May, 2011

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

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Mr Chan Kwok Fai, Godfrey Laborator Manager - Hong Kong

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Page 1 of 2

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: Date of Issue: HK1111265

Client:

24/05/2011 LAM GEOTECHNICS LIMITED



Description:

Turbidimeter

Brand Name:

HACH 2100P

Model No.: Serial No.:

0300800032283

Equipment No.:

-

Date of Calibration: 24 May, 2011

Date of next Calibration:

24 August, 2011

Parameters:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.0	0.0	
4.0	3.9	-3.0
40.0	40.3	0.7
80.0	87.9	9.9
400.0	421.0	5.3
800.0	861.0	7.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:

MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD,

WAN CHAI, HONG KONG

PROJECT:

WORK ORDER: HK1110550

LABORATORY:

HONG KONG

DATE RECEIVED: DATE OF ISSUE:

11/05/2011 20/05/2011

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:

Turbidity

Description:

Turbidimeter

Brand Name: Model No.:

HACH 2100P

Serial No.:

1000032935

Equipment No .:

EN06

Date of Calibration: 20 May, 2011

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

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Chan Kwok Fai, Godfrey Laboratory Manager Hong Kong

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Page 1 of 2

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:

HK1110550

Date of Issue:

20/05/2011

Client:

LAM GEOTECHNICS LIMITED



Description:

Turbidimeter

Brand Name:

HACH

Model No.:

2100P 1000032935

Serial No .: Equipment No.:

EN06

Date of Calibration: 20 May, 2011

Date of next Calibration:

16 August, 2011

Parameters:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.0	0.0	1 00000 1 000000
4.0	3.9	-2.0
40.0	36.3	-9.3
80.0	76.0	-5.0
400.0	376.0	-6.0
800.0	778.0	-2.8
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fail Godfrey

ALS Technichem (HK) Pty Ltd

ALS Environmental



TISCH ENVIROMENTAL, INC. 145 SOUTH MIAMI AVE. VILLAGE OF CLEVES, 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 - Jun 28, 2010 Rootsmeter S/N 9833620 Ta (K) - Operator Tisch Orifice I.D 0005 Pa (mm) - 74										
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)				
1 2 3 4 5	NA NA NA NA NA	NA NA NA NA NA	1.00 1.00 1.00 1.00	1.3860 0.9740 0.8730 0.8320 0.6850	3.2 6.4 7.9 8.8 12.7	2.00 4.00 5.00 5.50 8.00				

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9767 0.9725 0.9704 0.9693 0.9641	0.7047 0.9985 1.1116 1.1650 1.4075	1.4006 1.9808 2.2146 2.3227 2.8013		0.9957 0.9914 0.9893 0.9882 0.9829	0.7184 1.0179 1.1332 1.1877 1.4349	0.8941 1.2645 1.4137 1.4828 1.7883
Qstd slop intercept coefficie	= (b) $=$	1.99628 -0.00699 0.99995		Qa slope intercept coefficie	t (b) =	1.25003 -0.00446 0.99995
y axis =	SQRT [H2O(I	2a/760)(298/	Ta)]	y axis =	SQRT[H20(T	`a/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa] Qa = Va/Time

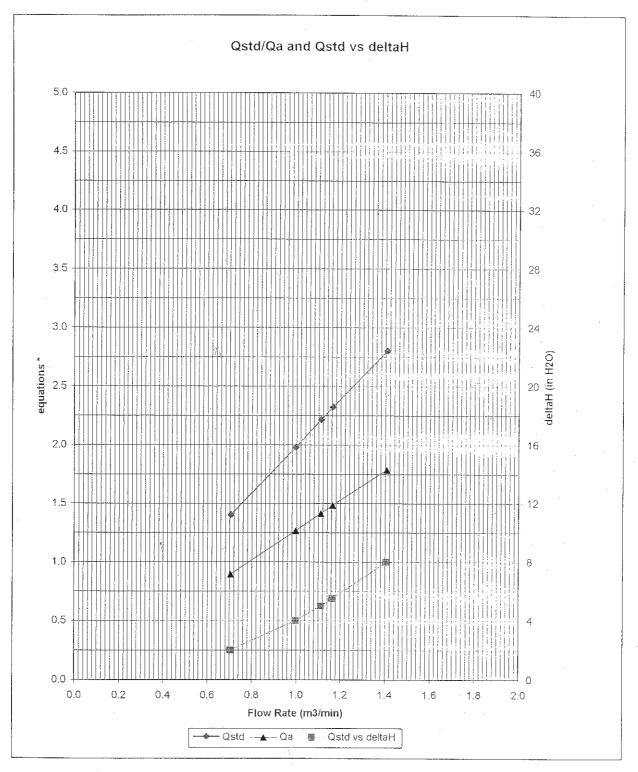
For subsequent flow rate calculations:

Qstd = $1/m\{ [SQRT (H2O (Pa/760) (298/Ta))] - b\}$ Qa = $1/m\{ [SQRT H2O (Ta/Pa)] - b\}$



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

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:

$$\sqrt{\Delta\ H\ \left(\begin{array}{c} P\ a \\ P\ s\ t\ d \end{array}\right)\left(\begin{array}{c} T\ s\ t\ d \\ T\ a \end{array}\right)}$$

Qa series:

$$\sqrt{(\Delta H (\Upsilon a / P a))}$$

#0005

	Calibratio	III Dala	ioi riigii	Volume	Sample	(ISF Sa	ilipiei)		
Location	: CMA1b)				Calbratio	on Date	:	04-May-11
Equipment no.	: EL452					Calbratio	on Due Date	:	04-Jul-11
CALIBRATION OF CON	NTINUOUS FLOW RECORDE	<u>R</u>							
			Ambi	ent Condition	on				
Temperature, T _a		290		Kelvin	Pressure, P _a			1019	mmHg
		0	rifice Transfe	r Standard I	nformation				
Equipment No.	EL	086		Slope, m _c	2.0030	00	Intercept, bc		-0.00500
Last Calibration Date	е 28-Ји	un-10		(H x P _a / 1013.3 x				T _a) ^{1/2}	
Next Calibration Date	e 28-Ju	un-11	$= m_c \times Q_{std} + b_c$						
			Calib	ration of RS	Р				
Calibration	Manomete	er Reading		Q	std	Continue	ous Flow		IC
Point	H (inches	of water)		(m³ / min.) Recorder, W			der, W	(W(P _a /1013.3x298/T _a) ^{1/2} /35.	
	(up)	(down)	(difference)	Х-	axis	(CI	FM)		Y-axis
1	6.4	6.4	12.8	1.8	3182	6	52		63.0259
2	5.0	5.0	10.0	1.6	6074	5	i3		53.8770
3	3.9	3.9	7.8	1.4	199	4	16		46.7611
4	2.5	2.5	5	1.1	373	35		35.5791	
5	1.6	1.6	3.2	0.9	104	2	25		25.4137
By Linear Regression of	Y on X								
	Slope, m	=	40.9	169	Ir	ntercept, b =		-11.4784	
	Correlation Coefficient*	=	0.99	997					
	Calibration Accepted	=	Yes/P	\lo **					
	_								
* if Correlation Coefficier	nt < 0.990, check and recalibra	ation again							
ii concidion codinoidi	it 10.000, oneok and recalibre	morr again.							
** Delete as appropriate.	·								
Remarks :									
Calibrated by	: Derek Lo	_				Checked by	,	: Cherry	y Mak
Date	: 04-May-11	-				Date		: 04-Ma	ay-11

	Calibration	II Dala I	or riigir v	volulile Sallipiei	(ISF Sai	inpiei)				
Location :	CMA2a				Calbratio	n Date	: 29-7	Apr-11		
Equipment no.	EL449				Calbratio	n Due Date	: 29-	Jun-11		
CALIBRATION OF CONTI	INUOUS FLOW RECORDER	3								
			Ambi	ent Condition						
Temperature, T _a	:	290		Kelvin Pressure , P _a	a		1019	mmHg		
		0	rifice Transfe	er Standard Information						
Equipment No.	EL0	86		Slope, m _c 2.003	300	Intercept, bc	-0.0	00500		
Last Calibration Date	28-Jui	n-10		(H.	x P _a / 1013	3.3 x 298 / 3	T _a) ^{1/2}			
Next Calibration Date	28-Jui	$= m_c \times Q_{std} + b_c$								
			Calib	ration of RSP						
Calibration	Manometer	r Reading		Q _{std} Continuous Flow IC						
Point	H (inches	of water)		(m³ / min.) Record		der, W	(W(P _a /1013.3x29	98/T _a) ^{1/2} /35.31)		
	(up)	(down)	(difference)	X-axis (C		FM)	Y-a	xis		
1	6.5	6.5	13	1.8324	5	1	51.8	439		
2	5.3	5.3	10.6	1.6548	45	5	45.7	446		
3	4.1	4.1	8.2	1.4558	38	8	38.6	288		
4	2.6	2.6	5.2	1.1598	27	7	27.4	468		
5	1.7	1.7	3.4	0.9383	15	5	15.2	482		
By Linear Regression of Y			40.4							
	Slope, m	=	40.19		Intercept, b =		-20.8256			
	Correlation Coefficient*	=	0.99 Yes/A							
	Calibration Accepted	=	1 62/4							
* if Correlation Coefficient <	< 0.990, check and recalibrat	tion again.								
** Delete as appropriate.										
Remarks :										
-										
Calibrated by :	Derek Lo				Checked by		: Cherry Ma	k		
Date :					Date		: 29-Apr-11			

Calibrated by

Date

Derek Lo

04-May-11

Lam Geotechincs Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location :	CMA3a					Calbra	tion Date	: 04-May-11		
Equipment no.	EL888					Calbra	tion Due Date	:	04-Jul-11	
CALIBRATION OF CONTIN	NUOUS FLOW RECORDE	<u>R</u>								
			Ambi	ent Conditio	n					
Temperature, T _a		295		Kelvin	Pressure, P _a			1009	mmHg	
		0	rifice Transfe	er Standard I	nformation					
Equipment No.	ELO)86		Slope, m _c	2.0030	00	Intercept, bo	-0.00500		
Last Calibration Date	28-Ju	ın-10			(H x	P _a / 10	13.3 x 298 /	$3.3 \times 298 / T_a)^{1/2}$		
Next Calibration Date	28-Ju	ın-11			=	m_c	$x Q_{std} + b_c$			
			Calib	ration of RS	P					
Calibration	Manomete	r Reading		Q	std	Contir	nuous Flow		IC	
Point	H (inches	of water)		(m³ / min.) Record		order, W	(W(P _a /1	013.3x298/T _a) ^{1/2} /35.31)		
	(up)	(down)	(difference)	X-axis		((CFM)		Y-axis	
1	5.9	5.9	11.8	1.7	225		48		48.1410	
2	4.7	4.7	9.4	1.5	377		42		42.1234	
3	3.6	3.6	7.2	1.3	461		36		36.1057	
4	2.4	2.8	5.2	1.1	443		28	28.0822		
5	1.6	1.4	3.0	0.0	698		14		14.0411	
By Linear Regression of Y o	on X									
	Slope, m	=	39.5	583	Ir	ntercept, b	=	-18.6790		
	Correlation Coefficient*	=	0.99)35						
	Calibration Accepted	=	Yes/ł	\lo **						
* if Convolution Coefficient	0.000 shock and recalibre	tion ogoin								
* if Correlation Coefficient <	о.ээо, спеск апо recalibra	uon again.								
** Delete as appropriate.										
Remarks :										

Checked by

Date

Cherry Mak

04-May-11

				oranio camp		· · · · · · · · · · · · · · · · · · ·			
Location :	CMA4a			Calbra	tion Date	:	04-May-11		
Equipment no.	EL390				Calbra	tion Due Date	:	04-Jul-11	
CALIBRATION OF CONTIL	NUOUS FLOW RECORDER	3							
			Ambi	ent Condition					
Temperature, T _a	:	293		Kelvin Pressure	e, P _a		1016	mmHg	
		0	vifica Transfa	r Standard Informati	ion.				
Equipment No.	ELO		rince Transie		00300	Intercept, bo		-0.00500	
Last Calibration Date	28-Ju							-0.00300	
Next Calibration Date	28-Ju			($(013.3 \times 298 / T_a)^{1/2}$ $\times Q_{std} + b_c$			
Next Calibration Date	20-30	11-11							
	T		Calib	ration of RSP		T			
Calibration	Manometer	r Reading		Q _{std}	Conti		IC		
Point	H (inches	of water)		(m ³ / min.)	³ / min.) Recorder, W		(W(P _a /10)13.3x298/T _a) ^{1/2} /35.31)	
	(up)	(down)	(difference)	X-axis	((CFM)		Y-axis	
1	6	6	12	1.7490		56		56.5510	
2	4.7	4.7	9.4	1.5482		49		49.4821	
3	3.7	3.7	7.4	1.3740		42		42.4132	
4	2.4	2.4	4.8	1.1071		34		34.3345	
5	1.5	1.5	3.0	0.8757		23	23.2263		
By Linear Regression of Y	on X								
	Slope, m	=	37.38	350	Intercept, b	=	-8.5502		
	Correlation Coefficient*	=	0.99	75					
	Calibration Accepted	=	Yes/A	lo **					
* if Correlation Coefficient <	0.990, check and recalibrat	ion again							
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** Delete as appropriate.									
Remarks :									
Calibrated by :	Derek Lo				Checked	by	: Che	rry Mak	
Date :	04-May-11				Date		: 04-	May-11	

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Location :	CMA5a					Calbration	n Date	:	09-Apr-11
Equipment no.	EL380					Calbration	n Due Date	:	09-Jun-11
-									
CALIBRATION OF CONTIN	IUOUS FLOW RECORDEF	₹							
			Ambie	ent Condition					
Temperature, T _a		290		Kelvin Pr	ressure, P _a			1019	mmHg
		0	rifice Transfe	r Standard In	formation				
Equipment No.	EL0	86		Slope, m _c	2.0030	00 1	Intercept, bc		-0.00500
Last Calibration Date	28-Jui	n-10		(HxP _a /10			3.3 x 298 /	T _a) ^{1/2}	
Next Calibration Date	28-Jui	n-11			=		$Q_{std} + b_c$		
			Calib	ration of RSP					
Calibration	Manometer	r Reading		Q s	td	Continuo	us Flow		IC
Point	H (inches	of water)		(m³ / n	nin.)	Record	ler, W	(W(P _a /1013	3.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-ax	cis	(CF	M)		Y-axis
1	5.9	5.9	11.8	1.7459		56	3	5	56.9266
2	4.8	4.8	9.6	1.57	50	50)	5	50.8273
3	3.7	3.7	7.4	1.38	31	44	1	4	14.7280
4	2.3	2.3	4.6	1.09	10	33	3	3	33.5460
5	1.4	1.4	2.8	0.85	17	22	2	2	22.3640
By Linear Regression of You	n X								
	Slope, m	=	38.19	982	In	ntercept, b =		-9.0993	
	Correlation Coefficient*	=	0.99	77					
	Calibration Accepted	=	Yes/A	10 **					
* if Correlation Coefficient	0.000 sheet and rocalibrat	" caoin							
* if Correlation Coefficient <	0.990, спеск апо гесанота:	IOII ayaiii.							
** Delete as appropriate.									
Remarks :									
Calibrated by :	Derek Lo					Checked by		: Cherry	Mak
Date :	09-Apr-11					Date		: 11-Ap	pr-11
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Location :	CMA5a					Calbratio	n Date	:	08-Jun-11
Equipment no.	EL380					Calbratio	on Due Date	:	08-Aug-11
CALIBRATION OF CONTIN	NUOUS FLOW RECORDER	<u> </u>							
			Ambi	ient Conditio	n				
Temperature, T _a	2	290		Kelvin F	Pressure, P _a			1019	mmHg
		0	rifice Transfe	er Standard I	nformation				
Equipment No.	EL08	86		Slope, m _c	2.0030	00	Intercept, bc		-0.00500
Last Calibration Date	28-Jun	า-10			(H x	P _a / 1013	3.3 x 298 /	T _a) ^{1/2}	
Next Calibration Date	28-Jun	1-11			=	m _c x ($Q_{std} + b_c$		
			Calib	ration of RS	Р				
Calibration	Manometer	Reading		Q	std	Continuo	ous Flow		IC
Point	H (inches o	of water)		(m³ / min.) Recorder, W			der, W	(W(P _a /1013	3.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-a	axis	(CF	-M)		Y-axis
1	5.8	5.8	11.6	1.7	'310	5	5		55.9101
2	4.7	4.7	9.4	1.5	585	49	9	4	49.8108
3	3.6	3.6	7.2	1.3	643	44	4	4	44.7280
4	2.4	2.4	4.8	1.1	144	33	3		33.5460
5	1.3	1.3	2.6	0.8	208	23	3		23.3806
By Linear Regression of Y o	n X								
	Slope, m	=	36.07		In	ntercept, b =		-6.0589	
	Correlation Coefficient*	=	0.99						
	Calibration Accepted	=	Yes/A	10 **					
* if Correlation Coefficient <	0.990, check and recalibrati	ion again.							
** Delete as appropriate.									
Remarks :				-					
									
Calibrated by :	Derek Lo					Checked by		: Cherry	, Mak
Date :	08-Jun-11					Date		: 11-Ju	
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Location :	CMA6a					Calbratio	on Date	: C	9-Apr-11
Equipment no.	EL448					Calbratic	on Due Date	: 0	9-Jun-11
CALIBRATION OF CONTIN	NUOUS FLOW RECORDER	<u>!</u>							
			Ambi	ent Condition	on				
Temperature, T _a	2	290		Kelvin	Pressure, P _a			1019	mmHg
		0	rifice Transfe	r Standard	Information				
Equipment No.	EL08	36		Slope, m _c	2.0030	00	Intercept, bc		-0.00500
Last Calibration Date	28-Jun	1-10			(Hx	P _a / 101	3.3 x 298 /	T _a) ^{1/2}	
Next Calibration Date	28-Jun	า-11			=	m _c x	$Q_{std} + b_c$		
			Calib	ration of RS	SP				
Calibration	Manometer	Reading		C	Q _{std}	Continue	ous Flow		IC
Point	H (inches o	of water)	ļ	(m ³	/ min.)	Recor	der, W	(W(P _a /1013.3	3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-	-axis	(CF	FM)	Υ	-axis
1	5.9	5.9	11.8	1.7	7459	5	56	56	5.9266
2	4.8	4.8	9.6	1.5	5750	5	50	50).8273
3	3.7	3.7	7.4	1.3	3831	4	14	44	1.7280
4	2.3	2.3	4.6	1.0	0910	3	33	33	3.5460
5	1.4	1.4	2.8	0.8	8517	2	22	22	2.3640
By Linear Regression of Y o	n X								
	Slope, m	=	38.19		In	ntercept, b =		-9.0993	
	Correlation Coefficient*	=	0.99						
	Calibration Accepted	=	Yes/A	10 **					
* if Correlation Coefficient <	0.990, check and recalibrati	ion again.							
** Delete as appropriate.									
Remarks :									
									
Calibrated by :	Dorok I o					Charled by		. Chamil	Mak
	Derek Lo					Checked by		: Cherry I	
Date :	09-Apr-11					Date		: П-Арг	·11

Location :	CMA6a					Calbration	n Date	:	08-Jun-11
Equipment no.	EL448					Calbratio	n Due Date	:	08-Aug-11
	-								
CALIBRATION OF CONTIL	NUOUS FLOW RECORDER	t							
			Ambi	ent Condition	on				
Temperature, T _a	2	290		Kelvin	Pressure, P _a			1019	mmHg
		0	rifice Transfe	r Standard	Information				
Equipment No.	EL08	36		Slope, m _c	2.0030	00 1	Intercept, bc		-0.00500
Last Calibration Date	28-Jur	1-10			(Hx	P _a / 1013	3.3 x 298 /	T _a) ^{1/2}	
Next Calibration Date	28-Jur	1-11	$= m_c \times Q_{std} + b_c$						
			Calib	ration of RS	SP				
Calibration	Manometer	Reading		c	Q _{std}	Continuo	us Flow		IC
Point	H (inches o	of water)	ļ	(m ³	/ min.)	Record	ier, W	(W(P _a /1013	3.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-	·axis	(CF	M)		Y-axis
1	5.8	5.8	11.6	1.7	7310	55	5		55.9101
2	4.7	4.7	9.4	1.5	5585	50)	ţ	50.8273
3	3.8	3.8	7.6	1.4	4016	43	3		43.7115
4	2.4	2.4	4.8	1.1	1144	32		32.5295	
5	1.4	1.4	2.8	0.8	8517	23	3		23.3806
By Linear Regression of Y	x nc								
	Slope, m	=	37.84	416	. In	ntercept, b =		-9.1124	
	Correlation Coefficient*	=	0.99	189					
	Calibration Accepted	=	Yes/4	10 **					
* if Correlation Coefficient <	< 0.990, check and recalibrati	ion again.							
** Delete as appropriate.									
Remarks :									
Telliains .									
Calibrated by :	Derek Lo					Checked by		: Cherry	
Date :	08-Jun-11					Date		: 11-Ju	n-11