

Certificate No.

96127

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of

4 Pages

Customer: Lam Environmental Services Ltd

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

Order No.: 092434

Date of receipt

24-Nov-09

Item Tested

**Description**: Precision Integrating Sound Level Meter

Manufacturer: ACO

Model

: Type 6224

Serial No.

: 30148

**Test Conditions** 

Date of Test: 26-Nov-09

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.

Due Date

Traceable to

S017

Multi-Function Generator

C081456

18-Mar-10

SCL-HKSAR

S024

Sound Level Calibrator

93758

16-Jul-10

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 :

27-Nov-09

Date:

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

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## Results:

## 1. SPL Accuracy

U	JT Setting			
Level Range (dB)	Weight	Time Const.	Applied Value (dB)	UUT Reading (dB)
20 - 100	$L_A$	Fast	94.03	94.3
		Slow	<u>=</u>	94.3
	$L_{C}$	Fast	· .	94.3
30 - 120	$L_{A}$	Fast	94.03	94.5
	2524	Slow		94.5
	$L_{C}$	Fast		94.5
30 - 120	$L_{A}$	Fast	113.97	114.2
		Slow		114.2
	$L_{C}$	Fast		114.2

IEC 651 Type 1 Spec. :  $\pm$  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	114.6	+0.1	± 0.7 dB
130	104.0	104.7	+0.2	
120	94.0	94.5 (Ref.)	H =	
110	84.0	84.5	0.0	
100	74.0	74.2	-0.3	
90	64.0	64.0	-0.5	
80	54.0	54.0	-0.5	

Uncertainty: ± 0.1 dB



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## 3.2 Differential level linearity

UUT Range	Applied Value (dB)	UUT Rdg (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.4	-0.1	± 0.4
	94.0	94.5 (Ref.)		
	95.0	95.5	0.0	± 0.2
	104.0	104.5	0.0	± 0.3
77	105.0	105.5	0.0	± 1.0

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

# 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	-25.8	- 26.2 dB, ± 1.5 dB
125 Hz	-15.7	- 16.1 dB, ± 1 dB
250 Hz	-8.3	- 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	+1.2	+ 1.2 dB, ± 1 dB
4 kHz	+0.8	+ 1.0 dB, ± 1 dB
8 kHz	-1.3	$-1.1 \text{ dB}, +1.5 \text{ dB} \sim -3 \text{ dB}$
16 kHz	-5.9	- $6.6  dB_1 + 3  dB \sim -\infty$

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



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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	
1/10	40.0	39.9	± 0.5 dB
$1/10^2$	40.0	40.1	
$1/10^3$	40.0	40.2	± 1.0 dB
$1/10^4$	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: 1 010 hPa.

----- END -----



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Page

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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 : --

Relative Humidity: (50 ± 25) %

**Test Specifications** 

**Ambient Temperature:** 

Calibration check.

Ref. Document/Procedure: Z01.

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

**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:

Hong Kong Calibration Ltd.

23-Nov-10

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

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### Results:

### 1. SPL Accuracy

U	JT Setting			
Level Range (dB)	Weight	Time Const.	Applied Value (dB)	UUT Reading (dB)
20 - 100	$L_{A}$	Fast	94.0	94.3
		Slow		94.3
	$L_{C}$	Fast		94.3
30 - 120	$L_{A}$	Fast	94.0	94.4
		Slow		94.4
347	$L_{C}$	Fast		94.4
30 – 120	$L_{A}$	Fast	114.0	94.3
		Slow		94.3
	$L_{\rm C}$	Fast		94.3

IEC 651 Type 1 Spec. :  $\pm$  0.7 dB

Uncertainty: ± 0.1 dB

2. Level Stability: 0.0 dB

IEC 651 Type 1 Spec. : ± 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	± 0.7 dB
130	104.0	104.4	0.0	
120	94.0	94.4 (Ref.)	-0-	
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:  $\pm 0.1 \text{ dB}$ 



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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: ± 0.1 dB

## 4. Frequency Weighting

## A weighting

Freque	ncy	Attenuation (	(dB)	IEC 651 Type 1 5	Spec.
31.5	Hz	-39.3		$-39.4 \text{ dB}, \pm 1.5$	i dB
63	Hz	-26.2		- 26.2 dB, $\pm$ 1.5	i 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, $\pm$ 1	dB
1 1	кHz	0.0	(Ref)	$0 \text{ dB}, \pm 1$	dB
2 1	кHz	+1.3		+ 1.2 dB, ± 1	dB
4 1	кHz	+0.9		+ 1.0 dB, ± 1	dB
8 1	кHz	-1.2		- 1.1 dB, + 1.5 dB	~ -3 dB
16 1	кHz	-5.8		- 6.6 dB, + 3 dB	~ - ∞

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	
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
$1/10^4$	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. 96128

Page 1 of 2 Pages

Customer: Lam Environmental Services Ltd

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

Order No.: Q92434 Date of receipt: 24-Nov-09

Item Tested

**Description**: Sound Level Calibrator (EL469)

Manufacturer: ACO

Model : -- Serial No. : 050213

**Test Conditions** 

Date of Test: 26-Nov-09 Supply Voltage : --

Ambient Temperature :  $(23 \pm 3)^{\circ}$ C Relative Humidity :  $(50 \pm 25)$  %

**Test Specifications** 

Calibration check.

Ref. Document/Procedure: F21, Z02.

### **Test Results**

All results were within the IEC 942 Class 1 specification after adjustment.

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

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S014	Spectrum Analyzer	93091	18-Jun-10	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	93758	16-Jul-10	NIM-PRC & SCL-HKSAR
S041	Universal Counter	94005	6-Aug-10	SCL-HKSAR
S206	Sound Level Meter	93966	5-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:

P.F. Wong

Approved by :

27-Nov-09

Date:

Dorothy Cheuk

This Certificate is issued by: Hong Kong Calibration Ltd

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

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Certificate No. 96128

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Results:

### 1. Level

	Measured Value (dB)		
UUT Nominal Value (dB)	Before adjust. After adjust.		IEC 942 Class 1 Spec.
94	*93.52	94.11	± 0.3 dB

The above measured values are the mean of 3 measurements.

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

## 2. Frequency

UUT Nominal Value	Measured Value		IEC 942 Class 1 Spec.	
1 kHz	1.016 kHz		± 2 %	

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

3. Level Stability: 0.0 dB

IEC 942 Class 1 Spec. :  $\pm$  0.1 dB

Uncertainty: ± 0.01 dB

4. Total Harmonic Distortion : < 2.9 %

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: 1010 hPa.
- 4. \*Out of Specification.

----- 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** 

Model

**Description**: Sound Level Calibrator (EL469)

Manufacturer: ACO

: ---

Serial No.

: 050213

**Test Conditions** 

Date of Test: 19-Nov-10

Supply Voltage : --

950

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 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:

P. F. Wong

Approved by:

23-Nov-10

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

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Dorothy Cheuk



Certificate No. 06681

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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		TUT Nominal Value Measured Value IEC 942 Class 1 Sp		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 :  $\pm$  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

Page

3 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**: 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 ± 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 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

This Certificate is issued by

Hong Kong Calibration Ltd.

Date:

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

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Certificate No. 03250A

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Results:

## 1. SPL Accuracy

UUT Setting					
		Frequency	Dynamic	Applied Value	<b>UUT Reading</b>
Level Range	Filter	Weighting	Characteristic	(dB)	(dB)
40 - 100 dB	OFF	A	FAST	94.03	94.0
			SLOW		94.0
		C	FAST		94.0
60 - 120 dB	OFF	A	FAST	94.03	94.0
			SLOW		94.0
	2	C	FAST		94.0
60 - 120 dB	OFF	A	FAST	113.97	113.9
	16		SLOW		113.9
		С	FAST		113.9

IEC 651 Type 1 Spec. :  $\pm$  0.7 dB

Uncertainty: ± 0.1 dB

2. Level Stability: 0.0 dB

IEC 651 Type 1 Spec. :  $\pm$  0.3 dB

Uncertainty:  $\pm 0.01 \text{ dB}$ 

# 3. Linearity

3.1 Level Linearity

J.I LCVCI	Lincarity			
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	
120	94.0	94.0 (Ref.)	( <b>-</b> -	
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	1

Uncertainty: ± 0.1 dB



Certificate No. 03250A

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## 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.)		8
	95.0	95.0	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	-40.5	- 39.4 dB, ± 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, ± 1 dB
500 Hz	-3.5	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref.)	$0 \text{ dB}, \pm 1 \text{ dB}$
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 ~-∞

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

### 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	40.0	± 0.5 dB
$1/10^2$	40.0	40.0	1
$1/10^3$	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

of 2 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: 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 ± 3)°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 8B, 24IF., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong Tel: 2425 8801 Fax: 2425 8646



Certificate No. 03445

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### 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 -----

# **ALS Laboratory Group**

ANALYTICAL CHEMISTRY & TESTING SERVICES

# ALS Technichem (HK) Ptv Ltd

**Environmental Division** 



# **CERTIFICATE OF ANALYSIS**

CONTACT:

MS CHERRY MAK

**CLIENT:** 

LAM GEOTECHNICS LIMITED

**ADDRESS:** 

11/F., CENTRE POINT.

181-185 GLOUCESTER ROAD.

WAN CHAI, HONG KONG.

PROJECT:

LABORATORY:

AMENDMENT NO:

HONG KONG

HK1019486

DATE RECEIVED: DATE OF ISSUE:

24/08/2010 12/10/2010

SAMPLE TYPE:

**EQUIPMENT** 

Batch:

No. of SAMPLES:

## **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

## **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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11/F

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**AUSTRALIA** 

Brisbane

Sydney

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Newcastle

**AMERICAS** 

Hong Kong Singapore

Vancouver

Kuala Lumpur Bogor

Santiago Amtofagasta Lima

Abbreviations: % SPK REC denotes percentage spike recovery

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.

CHK denotes duplicate check sample LOR denotes limit of reporting

LCS % REC denotes Laboratory Control Sample percentage recovery

ALS Technichem (HK) Pty Ltd

Part of the ALS Laboratory Group 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., H.K.

Phone: 852-2610 1044 Fax: 852-2610 2021 www.alsenviro.com A Campbell Brothers Limited Company

Page 1 of 2

Batch: HK1019486

Amendment No:

12/10/2010

Date of Issue:

Client: LAM GEOTECHNICS LIMITED

**Client Reference:** 

### Calibration of Multimeter

Model No.: HACH SEASION 156 Item: Multimeter

Equipment No.: EN07 ALS Lab ID: HK1019486-001 Serial No.: 1010228 Date of Calibration: 25 August, 2010

Testing Results:

Conductivity

DO

рН	Expected Reading
	4.00

4.00	4.12
7.00	7.13
10.0	9.97
Allowing Deviation	± 0.2 unit

#### Recording Reading **Testing Method: Expected Reading**

Recording Reading

146.9 uS/cm 142.4 uS/cm 6667 uS/cm 6640 uS/cm 13100 uS/cm 12890 uS/cm 60400 uS/cm 58670 uS/cm

Allowing Deviation ± 10%

Recording Reading **Temperature Expected Reading Testing Method:** 

15.5 °C 16.1 °C 26.5 °C 25.8 °C 37.0 °C 36.3 °C  $\pm 2.0^{0}$ C Allowing Deviation

Salinity **Testing Method:** 

**Expected Reading** Recording Reading 0 g/L0 g/L10.6 g/L 10.0 g/L 20.8 g/L 20.0 g/L 30.0 g/L 31.8 q/L

Allowing Deviation ± 10%

**Expected Reading** Recording Reading **Testing Method:** 

4.74 mg/L 4.71 mg/L 5.81 mg/L 5.82 mg/L 6.93 mg/L 6.81 mg/L  $\pm$  0.2 mg/L Allowing Deviation

APHA (20th edition), 4500-OC & G

APHA (20th edition), 2520 A and B

**Testing Method:** 

In-House Method

APHA (20th edition), 4500-H<sup>+</sup>B

APHA (20th edition), 2510B

Mr Chan Kwok Fail Godfrey Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd



**CONTACT:** MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG.

WORK ORDER: HK1027230

LABORATORY:

HONG KONG

DATE RECEIVED: DATE OF ISSUE:

17/11/2010

SAMPLE TYPE:

18/11/2010

**EQUIPMENT** 

No. of SAMPLES:

# **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

### **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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Kwai Chung HONG KONG

**Phone:** 852-2610 1044

Fax:

852-2610 2021

**Email:** 

hongkong@alsenviro.com

Mr. Fung Lim Chee, Richard General Manager

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Abbreviations: % SPK REC denotes percentage spike recovery

CHK denotes duplicate check sample LOR denotes limit of reporting

LCS % REC denotes Laboratory Control Sample percentage recovery

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



Work Order: Date of Issue: HK1027230

18/11/2010

Client:

LAM GEOTECHNICS LIMITED

**Client Reference:** 

# **Calibration of Multimeter**

Item:

Multimeter

Model No.: Multi 3430 Set G

ALS Lab ID:

HK1027230-001

Equipment No.: --

Date of Calibration: 18 November, 2010

Serial No.: 10410294

Testing Results:

рΗ

Expected Reading	Recording Reading
4.00	4.12
7.00	7.09
10.0	9.98
Allowing Deviation	± 0.2 unit

**Testing Method:** 

APHA (20th edition), 4500-H<sup>+</sup>B

**Temperature** 

13.9 °C 21.8 °C 32.8 °C

**Testing Method:** 

In-House Method

Salinity

Expected Reading	Recording Reading
0 g/L 10.0 g/L 20.0 g/L 30.0 g/L	0 g/L 10.3 g/L 20.6 g/L 31.0 g/L
Allowing Deviation	± 10%

**Testing Method:** 

APHA (20th edition), 2520 A and B

Dissolved Oxygen

Expected Reading	Recording Reading
5.56 mg/L 6.69 mg/L 8.39 mg/L	5.52 mg/L 6.66 mg/L 8.37 mg/L
Allowing Deviation	± 0.2 mg/L

**Testing Method:** 

APHA (20th edition), 4500-OC & G

Mr. Fung Lim Chee, Richard General Manager

ALS Technichem (HK) Pty Ltd

**ALS Environmental** 

# ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

# ALS Technichem (HK) Ptv Ltd

**Environmental Division** 



# CERTIFICATE OF ANALYSIS

**CONTACT:** 

MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD.

WAN CHAI, HONG KONG.

PROJECT:

Batch:

HK1022442

AMENDMENT NO:

LABORATORY:

HONG KONG

DATE RECEIVED: DATE OF ISSUE:

27/09/2010

SAMPLE TYPE:

12/10/2010

No. of SAMPLES:

**EQUIPMENT** 

## **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

## **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 Laboratory Manager - Hong Kong

Other ALS Environmental Laboratories

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Bogor

Hong Kong

Singapore Kuala Lumpur

Vancouver Santiago Amtofagasta

Lima

**AMERICAS** 

Abbreviations: % SPK REC denotes percentage spike recovery

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CHK denotes duplicate check sample LOR denotes limit of reporting

LCS % REC denotes Laboratory Control Sample percentage recovery

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Page 1 of 2

Batch:

HK1022442

**Amendment No:** 

12/10/2010

Date of Issue: Client:

LAM GEOTECHNICS LIMITED

**Client Reference:** 

### Calibration of Multimeter

Item:

Multimeter

Model No.: YSI Sonde 600XL

ALS Lab ID:

HK1022442-001

Equipment No.: EL424

Date of Calibration: 28 September, 2010

Serial No.: 05C1607

Testing Results:

рΗ

Expected Reading	Recording Reading
4.00 7.00 10.0	3.98 7.10 9.93
Allowing Deviation	± 0.2 unit

**Testing Method:** 

APHA (20th edition), 4500-H<sup>+</sup>B

Conductivity

1	Expected Pending	Recording Reading	
	Expected Reading	Recording Reading	
	146.9 uS/cm	144.0 uS/cm	
	6667 uS/cm	6302 uS/cm	
	12890 uS/cm	12303 uS/cm	
	58670 uS/cm	55501 uS/cm	
	Allowing Deviation	± 10%	

**Testing Method:** 

APHA (20th edition), 2510B

Temperature

Expected Reading	Recording Reading
15.0 °C 23.0 °C 35.0 °C	14.8 °C 22.7 °C 34.5 °C
Allowing Deviation	±2.0°C

**Testing Method:** 

In-House Method

Salinity

Expected Reading	Recording Reading
0 g/L 10.0 g/L 20.0 g/L 30.0 g/L	0 g/L 9.84 g/L 20.1 g/L 30.9 g/L
Allowing Deviation	± 10%

**Testing Method:** 

APHA (20th edition), 2520 A and B

DO

Expected Reading	Recording Reading
5.63 mg/L 6.63 mg/L 7.81 mg/L	5.55 mg/L 6.60 mg/L 7.92 mg/L
Allowing Deviation	± 0.2 mg/L

**Testing Method:** 

APHA (20th edition), 4500-OC & G

Mr Chan Kwok Rai, Godfrey Laboratory Manager - Hong Kong

ALS Environmental

# ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

# ALS Technichem (HK) Ptv Ltd

**Environmental Division** 



# CERTIFICATE OF ANALYSIS

CONTACT:

MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

**ADDRESS:** 

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG.

PROJECT NO.:

Batch:

HK1019685

AMENDMENT NO:

LABORATORY:

HONG KONG

DATE RECEIVED:

26/08/2010

DATE OF ISSUE: SAMPLE TYPE:

12/10/2010 **EQUIPMENT** 

No. of SAMPLES:

### **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

### **NOTES**

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## ISSUING LABORATORY: HONG KONG

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Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

#### Other ALS Environmental Laboratories

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**AMERICAS** Vancouver

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Newcastle

Hong Kong Singapore Kuala Lumpur

Bogor

Santiago Amtofagasta Lima

Abbreviations: % SPK REC denotes percentage spike recovery

CHK denotes duplicate check sample LOR denotes limit of reporting

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LCS % REC denotes Laboratory Control Sample percentage recovery

Page 1 of 2

Batch:

HK1019685

Amendment No:

1

Date of Issue:

12/10/2010

Client:

LAM GEOTECHNICS LIMITED

**Client Reference:** 

### Calibration of Turbidimeter

Item:

TURBIDIMETER

HK1019685-001

Date of Calibration: 27 August, 2010

Model No.: 2100P

Equipment No.: 1010688-1

Serial No.: 930300002705

Testing Results:

ALS Lab ID:

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.21NTU
4.00 NTU 40.0 NTU	3.84 NTU 39.4 NTU
80.0 NTU 400 NTU	76.5 NTU 386 NTU
Allowing Deviation	± 10%

**Testing Method:** 

APHA (19th edition), 2130B

Mr Chan Kwok Fai, Godfrey Laboratory Manager Hong Kong

ALS Technichem (HK) Pty Ltd

# ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

# ALS Technichem (HK) Ptv Ltd

**Environmental Division** 



# CERTIFICATE OF ANALYSIS

**CONTACT:** 

MS CHERRY MAK

CLIENT: ADDRESS: LAM GEOTECHNICS LIMITED

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG.

WORK ORDER:

HK1026497

LABORATORY:

HONG KONG

DATE RECEIVED: DATE OF ISSUE:

10/11/2010 11/11/2010

SAMPLE TYPE:

**EQUIPMENT** 

No. of SAMPLES:

## **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

### 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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Singapore

Bogor

Kuala Lumpur

**AUSTRALIA** 

Brisbane

Sydney

Melbourne

Newcastle

**AMERICAS** Vancouver

Amtofagasta

Santiaao

Lima

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Abbreviations: % SPK REC denotes percentage spike recovery

CHK denotes duplicate check sample

LOR denotes limit of reporting

LCS % REC denotes Laboratory Control Sample percentage recovery

Page 1 of 2



Batch:

HK1026497

Date of Issue:

11/11/2010

Client:

LAM GEOTECHNICS LIMITED

**Client Reference:** 

### Calibration of Turbidimeter

Item :

ALS Lab ID:

TURBIDIMETER

HK1026497-001

Date of Calibration: 10 November, 2010

Model No.: 2100P

Equipment No.: EN06

Serial No.: 1000032935

Testing Results:

Turbidity

	Expected Reading	Recording Reading
	0.00 NTU	0.20 NTU
١	0.00 NTU	***************************************
١	4.00 NTU	3.82 NTU
-	40.0 NTU	38.2 NTU
	80.0 NTU	78.5 NTU
	400 NTU	373 NTU
	Allowing Deviation	± 10%

**Testing Method:** 

APHA (19th edition), 2130B

Mr chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd

# **ALS Laboratory Group**

ANALYTICAL CHEMISTRY & TESTING SERVICES

# ALS TECHNICHEM (HK) Pty Ltd

**Environmental Division** 



# CERTIFICATE OF ANALYSIS

**CONTACT:** 

MS CHERRY MAK

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

PROJECT NO.: HK/2009/05 WAN CHAI DEVELOPMENT PHASE II AND

CENTRAL - WAN CHAI BYPASS

Batch:

LABORATORY: HONG KONG DATE RECEIVED: 24/08/2010

DATE OF ISSUE: SAMPLE TYPE:

30/08/2010 **EQUIPMENT** 

HK1019485

No. of SAMPLES:

### **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

## **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

Laboratory Manager Hong Kong

Other ALS Environmental Laboratories

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Singapore

Bogor

Kuala Lumpur

**AUSTRALIA** 

Brisbane

Sydney

Melbourne

Newcastle

**AMERICAS** Vancouver

Santiago

Amtofagasta

Abbreviations: % SPK REC denotes percentage spike recovery

CHK denotes duplicate check sample

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LOR denotes limit of reporting

LCS % REC denotes Laboratory Control Sample percentage recovery

Page 1 of 2



HK1019485

Date of Issue: 30/08/2010

Client:

LAM GEOTECHNICS LIMITED

Client Reference: HK/2009/05 WAN CHAI DEVELOPMENT PHASE II AND CENTRAL - WAN CHAI BYPASS

### Calibration of Turbidimeter

Item:

**TURBIDIMETER** 

Model No.: 2100P

ALS Lab ID: HK1019485 -001

Equipment No.: 1010687-1, EL148

Date of Calibration:

24 August, 2010

Serial No.: 931000003861

Testing Results:

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.21NTU
4.00 NTU 40.0 NTU	4.25 NTU 43.1 NTU
80.0 NTU 400 NTU	84.9 NTU 404 NTU
Allowing Deviation	± 10%

**Testing Method:** 

APHA (19th edition), 2130B

Mr Chan Kwok Fai, Godfrey Laboratory Manager Hong Kong

ALS Technichem (HK) Pty Ltd

**ALS Environmental** 



CONTACT:

MS CHERRY MAK

**CLIENT:** 

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD. WAN CHAI. HONG KONG.

WORK ORDER:

HK1027605

LABORATORY:

HONG KONG

DATE RECEIVED:

20/11/2010

**DATE OF ISSUE:** SAMPLE TYPE:

24/11/2010

**EOUIPMENT** 

No. of SAMPLES:

### **COMMENTS**

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

### **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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Mr Chan Kwok Godfrey Laboratory Manager Hong Kong

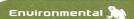
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Abbreviations: % SPK REC denotes percentage spike recovery

CHK denotes duplicate check sample LOR denotes limit of reporting

LCS % REC denotes Laboratory Control Sample percentage recovery

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



Work Order: Date of Issue: HK1027605

Client:

24/11/2010 LAM GEOTECHNICS LIMITED

**Client Reference:** 

## Calibration of Turbidimeter

Item:

**TURBIDIMETER** 

ALS Lab ID:

HK1027605-001

Date of Calibration: 22 November, 2010

Model No.: HACH 2100P

Equipment No.: EL148

Serial No.: 931000003861

Testing Results:

**Turbidity** 

Expected Reading	Recording Reading
0.00 NTU	0 27 NTU
0.00 NTU	0.27 NTU
4.00 NTU	4.24 NTU
40.0 NTU	38.7 NTU
80.0 NTU	76.1 NTU
400 NTU	392 NTU
Allowing Deviation	± 10%

**Testing Method:** 

APHA (19th edition), 2130B

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd



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 - Ju Operator		Rootsmeter Orifice I.I		833620 0005	Ta (K) - Pa (mm) -	298 745.49
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H20 (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
_					<u> </u>	3,00

# 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	t (b) =	1.99628 -0.00699 0.99995		Qa slope intercept coefficie	t (b) =	1.25003 -0.00446 0.99995
y axis =	SORT [H2O()	Pa/760) (298/'	[ [a)]	/ v axis =	SORT [H20 (7	[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

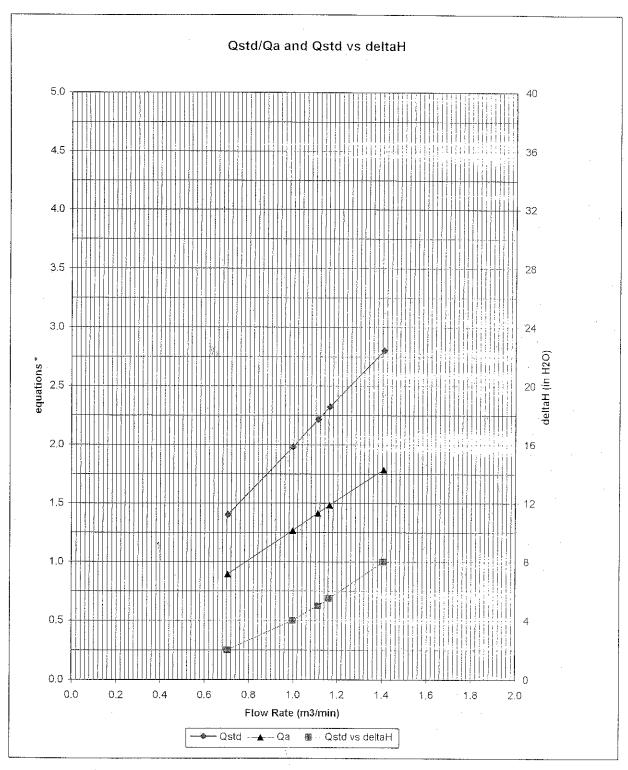
For subsequent flow rate calculations:

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:

$$\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right) \left(\frac{Tstd}{Ta}\right)}$$

Qa series:

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

#0005

### Lam Geotechincs Limited

Location :		CMA1b		gii volullie Sai		on Date	: :	09-Oct-10			
Equipment no. :	 EL452			Calbrati	on Due Date	:	09-Dec-10				
CALIBRATION OF CONT	INUOUS F	LOW REC	<u>ORDER</u>								
			ļ	Ambient Condition							
Temperature, T <sub>a</sub>	303 Kelvin Pressure, P <sub>a</sub> 1009 mmHg										
			Orifice Tra	ınsfer Standard Infori	mation						
Equipment No.	EL086	(Serial no.	9833620)	Slope, m <sub>c</sub> 1.9	9628	Intercept, bo	:	-0.06990			
Last Calibration Date		28-Jun-1	0	( H	x P <sub>a</sub> / 101	3.3 x 298 /	/T <sub>a</sub> ) <sup>1</sup>	/2			
Next Calibration Date		28-Jun-1	1		$= m_c x$	$Q_{std} + b_c$					
			(	Calibration of RSP							
Calibration	Mai	nometer Re	eading	Q <sub>std</sub>	Continuous Flow			IC			
Point	н (	inches of v	vater)	(m <sup>3</sup> / min.)	(m <sup>3</sup> / min.) Record		(W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35				
	(up)	(down)	(difference)	X-axis	X-axis (CF			Y-axis			
1	6.4	6.4	12.8	1.8086	(	60		59.3765			
2	5.1	5.1	10.2	1.6182		52		51.4596			
3	4.0	4.0	8.0	1.4371	4	46		45.5220			
4	2.4	2.4	4.8	1.1211	;	36		35.6259			
5	1.5	1.5	3.0	0.8936		24		23.7506			
By Linear Regression of Y	on X										
	Slope, m	=	37.3	775	Intercept, b =	= -{	8.2748				
Correlation C		=	0.99								
Calibration	Accepted	=	Yes/P	<del>\0</del> **							
* if Correlation Coefficient	< 0.990, ch	neck and re	calibration ag	ain.							
** Delete as appropriate.											
Remarks :											
Calibrated by	[	Derek Lo			Checke	d by	:	Cherry Mak			
Date		9-Oct-10			Date		:	9-Oct-10			

Location :		CMA2a			Calbration Date	: 02-Sep-10
Equipment no.	EL449			Calbration Due Date	e : 02-Nov-10	
CALIBRATION OF CONT	INUOUS F	LOW REC	ORDER			
			A	Ambient Condition		
Temperature, T <sub>a</sub>		305		Kelvin <b>Pressure</b> , <b>P</b> <sub>a</sub>	1	1001 mmHg
			Orifice Tra	ınsfer Standard Informa	ition	
Equipment No.	EL086	(Serial no.	9833620)	<b>Slope, m</b> <sub>c</sub> 1.996	28 Intercept, b	-0.06990
Last Calibration Date		28-Jun-1	0	(Нх	P <sub>a</sub> / 1013.3 x 298	/T <sub>a</sub> ) <sup>1/2</sup>
Next Calibration Date		28-Jun-1	1	=	$m_c \times Q_{std} + b_c$	:
			(	Calibration of RSP		
Calibration	Ma	nometer R	eading	Q <sub>std</sub>	Continuous Flow	IC
Point	н	(inches of	water)	(m <sup>3</sup> / min.)	Recorder, W	(W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31)
	(up)	(down)	(difference)	X-axis	(CFM)	Y-axis
1	6.1	6.1	12.2	1.7540	55	54.0342
2	5.0	5.0	10.0	1.5913	47	46.1747
3	4.0	4.0	8.0	1.4270	39	38.3152
4	2.4	2.4	4.8	1.1132	25	24.5610
5	1.5	1.5	3.0	0.8874	14	13.7542
By Linear Regression of Y	on X					
	Slope, m	=	46.1	153 In	tercept, b =	-27.0989
Correlation C	oefficient*	=	0.99	998		
Calibration	Accepted	=	Yes/P	<del>\0</del> **		
* if Correlation Coefficient	< 0.990, cl	heck and re	calibration ag	ain.		
** Doloto ao annicata						
** Delete as appropriate.						
Remarks :						
		- · ·				
Calibrated by		Derek Lo			Checked by	: Cherry Mak
Date :	2	2-Sep-10			Date	: 2-Sep-10

### Lam Geotechincs Limited

	anora	uon Da	ia iui mi	gri voiu	ine Sam	piei (13	or Sampi	ei)			
Location :		CMA2a C			Calbra	tion Date	:	29-Oct-10			
Equipment no.		EL449				:	29-Dec-10				
CALIBRATION OF CONT	INUOUS F	LOW REC	ORDER								
	l		ı	Ambient Co	I						
Temperature, T <sub>a</sub>	e, T <sub>a</sub> 305 Kelvin Pressure, P <sub>a</sub> 1008 mmHg										
			Orifice Tra	ınsfer Stan	dard Informa	tion					
Equipment No.	EL086	(Serial no.	9833620)	Slope, m <sub>c</sub>	1.996	28	Intercept, bo	;	-0.06990		
Last Calibration Date		28-Jun-1	0		(Hx	P <sub>a</sub> / 10	13.3 x 298 ,	$/T_a)$	1/2		
Next Calibration Date		28-Jun-1	1		=	m <sub>c</sub> x	$Q_{std} + b_c$				
			(	Calibration	of RSP						
Calibration	Ма	nometer Re	eading	C	Q <sub>std</sub>	Continuous Flow			IC		
Point	н	(inches of v	water)	(m <sup>3</sup>	(m <sup>3</sup> / min.) Recorder, W		order, W	(W(P <sub>a</sub> /	1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31)		
	(up)	(down)	(difference)	X-	-axis	(CFM)		Y-axis			
1	6.55	6.55	13.1	1.	8225		52		51.2652		
2	5.2	5.2	10.4	1.	.6276 45		45		44.3641		
3	3.95	3.95	7.9	1.	4231		40	39.4348			
4	2.5	2.5	5	1.	1393		30	29.5761			
5	1.5	1.5	3.0	0.	8904		21		20.7033		
By Linear Regression of Y	on X										
	Slope, m	=	32.3	499	In	tercept, b	= -	7.5929			
Correlation C	oefficient*	=	0.99	984	_						
Calibration	Accepted	=	Yes/	<del>\\ 0</del> **	-						
* if Correlation Coefficient	< 0.990, c	heck and re	calibration ag	jain.							
** Delete as appropriate.											
Remarks :											
Calibrated by		Derek Lo				Checke	ed by	:	Cherry Mak		
Date		29-Oct-10				Date		:	29-Oct-10		

### Lam Geotechincs Limited

	aiibidi		ıa ı∪ı ⊓l(	yıı volu	ine Sam	•	or Sampi	G1 )			
Location :		CMA4a				tion Date	:	20-Sep-10			
Equipment no.	pment no. : EL390					Calbra	tion Due Date	:	20-Nov-10		
CALIBRATION OF CONT	INUOUS F	FLOW REC	<u>ORDER</u>								
			A	Ambient Co	ondition						
Temperature, T <sub>a</sub>	e, T <sub>a</sub> 303 Kelvin Pressure, P <sub>a</sub> 1005 mmHg										
			Orifice Tra	ınsfer Stan	dard Informa	tion					
Equipment No.		EL086		Slope, m <sub>c</sub>	1.996	28	Intercept, bo	;	-0.06990		
Last Calibration Date		28-Jun-1	0		(Hx	P <sub>a</sub> / 10	13.3 x 298	/ T <sub>a</sub> )	1/2		
Next Calibration Date		28-Jun-1	1		=	$m_c x$	$Q_{std} + b_c$				
			(	Calibration	of RSP						
Calibration	Ma	nometer Re	eading	(	Q <sub>std</sub>	Continuous Flow			IC		
Point	н	(inches of v	water)	(m <sup>3</sup>	(m <sup>3</sup> / min.) Recorder, W		order, W	(W(P <sub>a</sub> /	1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31)		
	(up)	(down)	(difference)	X-	axis	(CFM)		Y-axis			
1	6.1	6.1	12.2	1.	7631		55		54.3205		
2	4.9	4.9	9.8	1.	5838		48		47.4070		
3	3.8	3.8	7.6	1.	3989		41	40.4934			
4	2.5	2.5	5.0	1.	1413		33	32.5923			
5	1.5	1.5	3.0	0.	8919		24	23.7035			
By Linear Regression of Y	on X										
	Slope, m	=	34.7	073	In	tercept, b	=	7.3531			
Correlation C	oefficient*	=	0.99	992							
Calibration	Accepted	=	Yes/	<del>\0</del> **							
* if Correlation Coefficient	~ 0 990 cl	heck and re	calibration ac	nin							
ii Gorrelation Goefficient	< 0.550, O	neek and re	canbration ag	jairi.							
** Delete as appropriate.											
Remarks :											
Calibrated by		Derek Lo				Checke	ed by	:	Cherry Mak		
Date :	2	20-Sep-10				Date		:	20-Sep-10		