



Calibration Certificate

Certificate No. **23551**

Page 1 of 4 Pages

Customer : Lam Geotechnics Limited

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

Order No. : Q21462

Date of receipt : 11-Jun-12

Item Tested

Description : Digital Sound Level Meter

Manufacturer : B&K

Model : Type 2236

Serial No. : 2100736

Test Conditions

Date of Test : 12-Jun-12

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : Z01.

Test Results

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

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

Main Test equipment used:


<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C101623	SCL-HKSAR
S024	Sound Level Calibrator	15136	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

Approved by : 
Dorothy Cheuk

Date: 12-Jun-12

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

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range	Parameter	Frequency Wt.	Freq. Response		
20 - 100	SPL	dBA	F	94.0	93.8
			S		93.8
		dBC	F		93.9
		dBL	F		93.9
		1 kHz	F		93.9
40 - 120	SPL	dBA	F	94.0	93.9
		1 kHz	F		94.0
	SPL	dBA	F	114.0	114.0
			S		114.0
		dBC	F		114.0
		dBL	F		114.1
1 kHz	F	114.0			

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
140	114.0	113.8	-0.1	± 0.7 dB
130	104.0	103.9	0.0	
120	94.0	93.9 (Ref.)	--	
110	84.0	83.9	0.0	
100	74.0	73.9	0.0	
90	64.0	63.9	0.0	
90	54.0	53.9	0.0	

Uncertainty : ± 0.1 dB



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3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	83.9	0.0	± 0.4 dB
	94.0	93.9 (Ref.)	--	
	95.0	94.8	-0.1	± 0.2 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.4	- 39.4 dB, ± 1.5 dB
63 Hz	-26.1	- 26.2 dB, ± 1.5 dB
125 Hz	-16.1	- 16.1 dB, ± 1 dB
250 Hz	-8.6	- 8.6 dB, ± 1 dB
500 Hz	-3.2	- 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	+1.0	+ 1.0 dB, ± 1 dB
8 kHz	-1.1	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-6.7	- 6.6 dB, + 3 dB ~ -∞

Uncertainty : ± 0.1 dB

5. Time Averaging

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

Uncertainty : ± 0.1 dB



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6. Filter Response

Filter Setting	Attenuation (dB)	IEC 1260 Class 1 Spec.
125 Hz	-63.5	< - 61
250 Hz	-44.7	< - 42
500 Hz	-20.8	< - 17.5
707 Hz	-3.5	- 2 ~ - 5
1 kHz (Ref.)	0.0 (Ref.)	--
1.414 kHz	-3.9	- 2 ~ - 5
2 kHz	-21.2	< - 17.5
4 kHz	-44.9	< - 42
8 kHz	-63.7	< - 61

Uncertainty : ± 0.2 dB

- Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 992 hPa

----- END -----



Calibration Certificate

Certificate No. **25144**

Page 1 of 2 Pages

Customer : Lam Geotechnics Limited

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

Order No. : Q22033

Date of receipt : 2-Aug-12

Item Tested

Description : Sound Level Calibrator

Manufacturer : B & K

Model : Type 4230

Serial No. : 1411076

Test Conditions

Date of Test : 10-Aug-12

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 IEC 942 Class 1 specification.

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


Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	13535	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & SCL-HKSAR
S041	Universal Counter	15610	SCL-HKSAR
S191	6½ dgt. Multimeter	20033	NIM-PRC

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 : 
Stephen Chu

Approved by : 
Dorothy Cheuk

Date: 10-Aug-12



Calibration Certificate

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Page 2 of 2 Pages

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	93.96	± 0.3 dB

Uncertainty : ± 0.2 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.000 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 : < 1.5 %

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 measurement.

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

4. Atmospheric Pressure : 995 hPa.

----- END -----



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS EMILY KONG
CLIENT: LAM GEOTECHNICS LIMITED
ADDRESS: 11/F., CENTRE POINT,
181-185 GLOUCESTER ROAD,
WAN CHAI, HONG KONG

WORK ORDER: HK1230418
LABORATORY: HONG KONG
DATE RECEIVED: 15/11/2012
DATE OF ISSUE: 21/11/2012

PROJECT: --

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 acceptance criteria of ALS will be followed.

Scope of Test: Dissolved Oxygen, pH, Salinity and Temperature
Description: YSI SONDE
Brand Name: YSI
Model No.: YSI Professional plus
Serial No.: 11F100597
Equipment No.: --
Date of Calibration: 20 November, 2012

NOTES

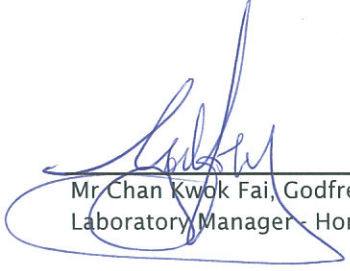
This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

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1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com


Mr. Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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Page 1 of 2

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1230418
 Date of Issue: 21/11/2012
 Client: LAM GEOTECHNICS LIMITED



Description: YSI SONDE
 Brand Name: YSI
 Model No.: YSI Professional plus
 Serial No.: 11F100597
 Equipment No.: --
 Date of Calibration: 20 November, 2012 Date of next Calibration: 20 February, 2013

Parameters:

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.67	3.65	-0.02
5.54	5.57	0.03
8.76	8.72	-0.04
Tolerance Limit (±mg/L)		0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.02	0.02
7.0	7.02	0.02
10.0	9.97	-0.03
Tolerance Limit (±unit)		0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	9.75	-2.5
20	19.95	-0.3
30	30.13	0.4
Tolerance Limit (±%)		10.0

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)
15.5	15.3	-0.2
24.0	24.3	0.3
41.0	40.2	-0.8
Tolerance Limit (°C)		2.0


 Mr. Chan Kwok Fai, Godfrey
 Laboratory Manager - Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS EMILY KONG
CLIENT: LAM GEOTECHNICS LIMITED
ADDRESS: 11/F., CENTRE POINT,
181-185 GLOUCESTER ROAD,
WAN CHAI, HONG KONG

WORK ORDER: HK1303068
LABORATORY: HONG KONG
DATE RECEIVED: 04/02/2013
DATE OF ISSUE: 14/02/2013

PROJECT: --

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 acceptance criteria of ALS will be followed.

Scope of Test: Dissolved Oxygen, pH, Salinity and Temperature
Description: YSI SONDE
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 11F100420
Equipment No.: --
Date of Calibration: 05 February, 2013

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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HONG KONG

Phone: 852-2610 1044
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Email: hongkong@alsglobal.com


Mr. Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1303068
Date of Issue: 14/02/2013
Client: LAM GEOTECHNICS LIMITED



Description: YSI SONDE
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 11F100420
Equipment No.: --
Date of Calibration: 05 February, 2013 **Date of next Calibration:** 05 May, 2013

Parameters:

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.57	2.47	-0.10
4.14	4.08	-0.06
8.21	8.23	0.02
Tolerance Limit (±mg/L)		0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.01	0.01
7.0	7.08	0.08
10.0	9.95	-0.05
Tolerance Limit (± pH unit)		0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0	--
10	9.66	-3.4
20	19.19	-4.0
30	28.36	-5.5
Tolerance Limit (±%)		10.0

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)
12.0	11.6	-0.4
21.0	21.6	0.6
40.0	40.5	0.5
Tolerance Limit (±°C)		2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.


 Mr Chan Kwok Fai, Godfrey
 Laboratory Manager - Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS EMILY KONG
CLIENT: LAM GEOTECHNICS LIMITED
ADDRESS: 11/F., CENTRE POINT,
181-185 GLOUCESTER ROAD,
WAN CHAI, HONG KONG

WORK ORDER: HK1231750
LABORATORY: HONG KONG
DATE RECEIVED: 03/12/2012
DATE OF ISSUE: 17/12/2012

PROJECT: --

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 acceptance criteria of ALS will be followed.

Scope of Test: Dissolved Oxygen, pH, Salinity and Temperature
Description: YSI SONDE
Brand Name: YSI
Model No.: YSI Professional plus
Serial No.: 11F100421
Equipment No.: --
Date of Calibration: 10 December, 2012

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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Laboratory Manager - Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1231750
Date of Issue: 17/12/2012
Client: LAM GEOTECHNICS LIMITED



Description: YSI SONDE
Brand Name: YSI
Model No.: YSI Professional plus
Serial No.: 11F100421
Equipment No.: --
Date of Calibration: 10 December, 2012 **Date of next Calibration:** 10 March, 2013

Parameters:

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.08	4.25	0.17
6.16	6.16	0.00
8.62	8.72	0.10
Tolerance Limit (\pm mg/L)		0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	3.97	-0.03
7.0	7.05	0.05
10.0	9.98	-0.02
Tolerance Limit (\pm unit)		0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	9.64	-3.6
20	19.60	-2.0
30	29.79	-0.7
Tolerance Limit (\pm %)		10.0

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading ($^{\circ}$ C)	Displayed Reading ($^{\circ}$ C)	Tolerance ($^{\circ}$ C)
13.0	12.6	-0.4
23.0	23.2	0.2
39.0	38.9	-0.1
Tolerance Limit ($^{\circ}$ C)		2.0


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



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS EMILY KONG
CLIENT: LAM GEOTECHNICS LIMITED
ADDRESS: 11/F., CENTRE POINT,
181-185 GLOUCESTER ROAD,
WAN CHAI, HONG KONG

WORK ORDER: HK1300029
LABORATORY: HONG KONG
DATE RECEIVED: 02/01/2013
DATE OF ISSUE: 09/01/2013

PROJECT: --

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 acceptance criteria of ALS will be followed.

Scope of Test: Dissolved Oxygen, pH, Salinity and Temperature
Description: YSI SONDE
Brand Name: YSI
Model No.: YSI 600XL
Serial No.: 05C1607
Equipment No.: --
Date of Calibration: 08 January, 2013

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. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1300029
Date of Issue: 15/01/2013
Client: LAM GEOTECHNICS LIMITED



Description: YSI SONDE
Brand Name: YSI
Model No.: YSI 600XL
Serial No.: 05C1607
Equipment No.: --

Date of Calibration: 08 January, 2013

Date of next Calibration:

08 April, 2013

Parameters:

Dissolved Oxygen Method Ref: APHA (21st edition), 4500: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.05	4.25	0.2
6.10	6.26	0.16
8.60	8.56	-0.04
Tolerance Limit (\pm mg/L)		0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.16	0.16
7.0	7.15	0.15
10.0	9.82	-0.18
Tolerance Limit (\pm pH Unit)		0.20

Salinity

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

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)
0	0	--
10	9.98	-0.20
20	20.13	0.65
30	30.63	2.10
Tolerance Limit (\pm %)		10.0

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Reading of Ref. thermometer ($^{\circ}$ C)	Displayed Reading ($^{\circ}$ C)	Tolerance ($^{\circ}$ C)
13.5	13.16	-0.3
21.0	19.97	-1.0
36.0	35.31	-0.7
Tolerance Limit (\pm $^{\circ}$ C)		2.0

Remark: Displayed Reading presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS EMILY KONG
CLIENT: LAM GEOTECHNICS LIMITED
ADDRESS: 11/F., CENTRE POINT,
181-185 GLOUCESTER ROAD,
WAN CHAI, HONG KONG
PROJECT: --

WORK ORDER: HK1232366
LABORATORY: HONG KONG
DATE RECEIVED: 07/12/2012
DATE OF ISSUE: 17/12/2012

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 acceptance criteria of ALS will be followed.

Scope of Test: Turbidity
Description: Turbidimeter
Brand Name: XINRUI
Model No.: WG2-3B
Serial No.: 1203010
Equipment No.: --
Date of Calibration: 14 December, 2012

NOTES

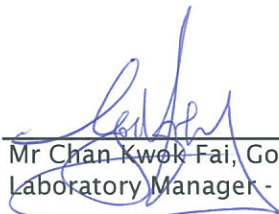
This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

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Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1232366
Date of Issue: 17/12/2012
Client: LAM GEOTECHNICS LIMITED



Description: Turbidimeter
Brand Name: XINRUI
Model No.: WG2-3B
Serial No.: 1203010
Equipment No.: --
Date of Calibration: 14 December, 2012 Date of next Calibration: 14 March, 2013

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.00	--
4	4.10	2.5
40	38.19	-4.5
80	81.59	2.0
400	372.8	-6.8
800	792.0	-1.0
	Tolerance Limit ($\pm\%$)	10.0


Mr. Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MS EMILY KONG
CLIENT: LAM GEOTECHNICS LIMITED
ADDRESS: 11/F., CENTRE POINT,
181-185 GLOUCESTER ROAD,
WAN CHAI, HONG KONG
PROJECT: --

WORK ORDER: HK1232007
LABORATORY: HONG KONG
DATE RECEIVED: 05/12/2012
DATE OF ISSUE: 13/12/2012

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 acceptance criteria of ALS will be followed.

Scope of Test: Turbidity
Description: Turbidimeter
Brand Name: WTW TURBIDMETER
Model No.: TURB 430T
Serial No.: 12110692
Equipment No.: --
Date of Calibration: 05 December, 2012

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

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Page 1 of 2

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1232007
Date of Issue: 13/12/2012
Client: LAM GEOTECHNICS LIMITED



Description: Turbidimeter
Brand Name: WTW TURBIDMETER
Model No.: TURB 430T
Serial No.: 12110692
Equipment No.: --
Date of Calibration: 05 December, 2012

Date of next Calibration: 05 March, 2013

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0	--
4	4.31	7.7
40	39.7	-0.7
80	80.1	0.1
400	395	-1.3
800	792	-1.0
	Tolerance Limit (±%)	10.0


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong



TISCH ENVIRONMENTAL, INC.
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AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jul 19, 2012 Rootmeter S/N 0438320 Ta (K) - 298
 Operator Tisch Orifice I.D. - 0005 Pa (mm) - 751.84

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3840	3.2	2.00
2	NA	NA	1.00	0.9760	6.4	4.00
3	NA	NA	1.00	0.8730	7.9	5.00
4	NA	NA	1.00	0.8340	8.8	5.50
5	NA	NA	1.00	0.6890	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9850	0.7117	1.4066	0.9957	0.7194	0.8903
0.9809	1.0050	1.9892	0.9915	1.0159	1.2591
0.9788	1.1212	2.2240	0.9894	1.1333	1.4078
0.9777	1.1723	2.3326	0.9883	1.1850	1.4765
0.9725	1.4115	2.8132	0.9831	1.4268	1.7807
Qstd slope (m) = 2.01145			Qa slope (m) = 1.25953		
intercept (b) = -0.02803			intercept (b) = -0.01774		
coefficient (r) = 0.99995			coefficient (r) = 0.99995		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

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

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

For subsequent flow rate calculations:

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

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



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b
 Equipment no. : EL452
 Calibration Date : 15-Dec-12
 Calibration Due Dat : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01145	Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	19-Jul-13				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7489	62	62.4588
2	5.0	5.0	10.0	1.5977	55	55.4070
3	4.0	4.0	8.0	1.4305	47	47.3478
4	2.5	2.5	5.0	1.1338	35	35.2590
5	1.5	1.5	3.0	0.8814	24	24.1776

By Linear Regression of Y on X

Slope, m = 43.8163 Intercept, b = -14.5928

Correlation Coefficient* = 0.9996

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 15-Dec-12 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA2a
 Equipment no. : EL449
 Calibration Date : 15-Dec-12
 Calibration Due Date : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7489	55	55.4070
2	4.9	4.9	9.8	1.5818	47	47.3478
3	3.9	3.9	7.8	1.4127	39	39.2886
4	2.5	2.5	5.0	1.1338	26	26.1924
5	1.5	1.5	3.0	0.8814	15	15.1110

By Linear Regression of Y on X

Slope, m = 46.5380 Intercept, b = -26.2367

Correlation Coefficient* = 0.9998

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 15-Dec-12 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA3a Calibration Date : 15-Dec-12
 Equipment no. : EL888 Calibration Due Date : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T_a	295	Kelvin	Pressure, P_a
			1018 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m_c	2.01145	Intercept, b_c	-0.02803
Last Calibration Date	19-Jul-12	$\left(H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	19-Jul-13				

Calibration of RSP						
Calibration Point	Manometer Reading			Q_{std} ($m^3 / min.$) X-axis	Continuous Flow Recorder, W (CFM)	IC $(W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31)$ Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7633	52	52.3848
2	4.8	4.8	9.6	1.5657	43	43.3182
3	4.1	4.1	8.2	1.4481	38	38.2812
4	2.4	2.4	4.8	1.1112	24	24.1776
5	1.5	1.5	3.0	0.8814	15	15.1110

By Linear Regression of Y on X

Slope, m = 42.1310 Intercept, b = -22.3882
 Correlation Coefficient* = 0.9997
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 15-Dec-12 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a
 Equipment no. : EL390

Calbration Date : 15-Dec-12
 Calbration Due Dat : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.01145	Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$\left(H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	19-Jul-13				

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7633	62	62.4588
2	5.0	5.0	10.0	1.5977	54	54.3996
3	3.9	3.9	7.8	1.4127	46	46.3404
4	2.5	2.5	5.0	1.1338	34	34.2516
5	1.4	1.4	2.8	0.8520	22	22.1628

By Linear Regression of Y on X

Slope, m = 43.9604 Intercept, b = -15.5072
 Correlation Coefficient* = 0.9998
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam
 Date : 15-Dec-12

Checked by : Derek Lo
 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5a Calibration Date : 15-Dec-12
 Equipment no. : EL380 Calibration Due Date : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7633	60	60.4440
2	5.1	5.1	10.2	1.6135	53	53.3922
3	3.9	3.9	7.8	1.4127	46	46.3404
4	2.4	2.4	4.8	1.1112	34	34.2516
5	1.5	1.5	3.0	0.8814	24	24.1776

By Linear Regression of Y on X

Slope, m = 40.4247 Intercept, b = -11.1112
 Correlation Coefficient* = 0.9994
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 15-Dec-12 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1e Calibration Date : 15-Dec-12
 Equipment no. : EL455 Calibration Due Dat : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.2	6.2	12.4	1.7775	63	63.4662
2	5.1	5.1	10.2	1.6135	55	55.4070
3	4.1	4.1	8.2	1.4481	47	47.3478
4	2.6	2.6	5.2	1.1560	33	33.2442
5	1.5	1.5	3.0	0.8814	22	22.1628

By Linear Regression of Y on X

Slope, m = 46.3986 Intercept, b = -19.4866

Correlation Coefficient* = 0.9992

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 15-Dec-12 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1w Calibration Date : 15-Dec-12
 Equipment no. : EL080 Calibration Due Dat : 15-Feb-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7633	58	58.4292
2	5.1	5.1	10.2	1.6135	50	50.3700
3	4.0	4.0	8.0	1.4305	41	41.3034
4	2.4	2.4	4.8	1.1112	26	26.1924
5	1.5	1.5	3.0	0.8814	15	15.1110

By Linear Regression of Y on X

Slope, m = 48.7744 Intercept, b = -28.0505

Correlation Coefficient* = 0.9998

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 15-Dec-12 Date : 15-Dec-12



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b Calibration Date : 7-Feb-13
 Equipment no. : EL452 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$\left(H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7518	61	61.5558
2	5.1	5.1	10.2	1.6162	55	55.5012
3	4.0	4.0	8.0	1.4329	46	46.4191
4	2.5	2.5	5.0	1.1357	35	35.3189
5	1.4	1.4	2.8	0.8534	23	23.2096

By Linear Regression of Y on X

Slope, m = 42.3139 Intercept, b = -13.0619
 Correlation Coefficient* = 0.9991
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA2a Calibration Date : 7-Feb-13
 Equipment no. : EL449 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$\left(H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7518	57	57.5194
2	5.0	5.0	10.0	1.6004	49	49.4465
3	4.0	4.0	8.0	1.4329	42	42.3827
4	2.5	2.5	5.0	1.1357	27	27.2460
5	1.5	1.5	3.0	0.8829	16	16.1458

By Linear Regression of Y on X

Slope, m = 47.6298 Intercept, b = -26.2640
 Correlation Coefficient* = 0.9995
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA3a Calibration Date : 7-Feb-13
 Equipment no. : EL888 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7662	54	54.4920
2	4.8	4.8	9.6	1.5683	44	44.4009
3	4.0	4.0	8.0	1.4329	39	39.3554
4	2.4	2.4	4.8	1.1131	25	25.2278
5	1.4	1.4	2.8	0.8534	15	15.1367

By Linear Regression of Y on X

Slope, m = 42.8245 Intercept, b = -21.9533
 Correlation Coefficient* = 0.9991
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a Calibration Date : 7-Feb-13
 Equipment no. : EL390 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.0	6.0	12.0	1.7518	62	62.5649
2	5.0	5.0	10.0	1.6004	54	54.4920
3	4.0	4.0	8.0	1.4329	46	46.4191
4	2.5	2.5	5.0	1.1357	32	32.2916
5	1.5	1.5	3.0	0.8829	21	21.1914

By Linear Regression of Y on X

Slope, m = 47.4825 Intercept, b = -21.2199
 Correlation Coefficient* = 0.9995
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5a Calibration Date : 7-Feb-13
 Equipment no. : EL380 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7662	60	60.5467
2	5.1	5.1	10.2	1.6162	53	53.4829
3	4.0	4.0	8.0	1.4329	46	46.4191
4	2.4	2.4	4.8	1.1131	33	33.3007
5	1.5	1.5	3.0	0.8829	22	22.2005

By Linear Regression of Y on X

Slope, m = 42.6630 Intercept, b = -14.9280
 Correlation Coefficient* = 0.9994
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1e Calibration Date : 7-Feb-13
 Equipment no. : EL455 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.2	6.2	12.4	1.7805	63	63.5741
2	5.1	5.1	10.2	1.6162	55	55.5012
3	4.0	4.0	8.0	1.4329	46	46.4191
4	2.6	2.6	5.2	1.1580	33	33.3007
5	1.6	1.6	3.2	0.9114	21	21.1914

By Linear Regression of Y on X

Slope, m = 48.6728 Intercept, b = -23.1611
 Correlation Coefficient* = 1.0000
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : MA1w Calibration Date : 7-Feb-13
 Equipment no. : EL080 Calibration Due Date : 7-Apr-13

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	294	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	2.01145
		Intercept, b _c	-0.02803
Last Calibration Date	19-Jul-12	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	19-Jul-13		

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	6.2	6.2	12.4	1.7805	60	60.5467
2	5.1	5.1	10.2	1.6162	50	50.4556
3	4.1	4.1	8.2	1.4505	42	42.3827
4	2.4	2.4	4.8	1.1131	25	25.2278
5	1.5	1.5	3.0	0.8829	14	14.1276

By Linear Regression of Y on X

Slope, m = 51.1935 Intercept, b = -31.5175
 Correlation Coefficient* = 0.9994
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Sam Checked by : Derek Lo
 Date : 7-Feb-13 Date : 7-Feb-13