



Calibration Certificate

Certificate No. 06680

Page 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 ± 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 & 804 Type I 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>
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.

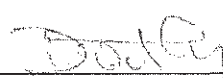
The test equipment used for calibration are traceable to International System of Units (SI).

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

Calibrated by :


P. F. Wong

Approved by :


Dorothy Cheuk

Date: 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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Results :

1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Time Const.		
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
	L _C	Fast		94.4
30 - 120	L _A	Fast	114.0	94.3
		Slow		94.3
	L _C	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. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Rdg. (dB)	Variation (dB)	IEC 651 Type 1 Spec. (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.)	--	
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 : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.3	- 39.4 dB, ± 1.5 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, ± 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 ~ - ∞

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-----



Calibration Certificate

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

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:

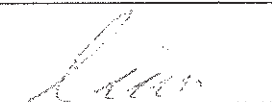
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	03926	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	04062	NIM-PRC & SCL-HKSAR
S041	Universal Counter	04461	SCL-HKSAR
S206	Sound Level Meter	04462	SCL-HKSAR

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 :


Dorothy Cheuk

Date: 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



Calibration Certificate

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	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-----



Calibration Certificate

Certificate No. 03250A

Page 1 of 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:

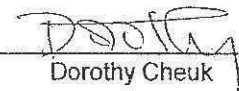
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C101623	SCL-HKSAR
S024	Sound Level Calibrator	93758	NIM-PRC & SCL-HKSAR

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

Approved by : 
Dorothy Cheuk

Date: 8-Oct-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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Calibration Certificate

Certificate No. 03250A

Page 2 of 3 Pages

Results :

1. SPL Accuracy

UUT Setting		Frequency Weighting	Dynamic Characteristic	Applied Value (dB)	UUT Reading (dB)
Level Range	Filter				
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
		C	FAST		94.0
60 - 120 dB	OFF	A	FAST	113.97	113.9
			SLOW		113.9
		C	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. : ± 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)
130	114.0	114.1	+0.1	± 0.7 dB
130	104.0	104.1	+0.1	
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	
80	54.0	54.0	0.0	

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 03250A

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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	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, ± 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 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 dB, + 1.5 dB ~ - 3 dB
16 kHz	-7.0	- 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	40.0	± 0.5 dB
1/10 ²	40.0	40.0	
1/10 ³	40.0	40.1	± 1.0 dB
1/10 ⁴	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 -----



Calibration Certificate

Certificate No. 03445

Page 1 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 ± 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 : 
P. F. Wong

Approved by : 
Dorothy Cheuk

Date: 25-Jun-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 8546

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Calibration Certificate

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 OF CALIBRATION

Certificate No. : 2KS100612-7

Page 1 of 2

Calibration of :

Description :	Sound Level Meter	,	Microphone
Manufacture :	Brüel & Kjær		
Type No. :	2250	,	4950
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

Certificate issued : 22 July, 2010

Calibrated By :

Approved signatory :


Dai Bin


Jacky Leung

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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	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 Calibration System	B&K 9600	CAL2238A, Ver.25.10.1999
Description :	Make & Model :	Serial No. :	Last Cal. Date :
Digital Multi-meter	Datron 1281	27361	30 Sept, 2009
Sine/Noise Generator	B&K 1049	1314978	Test
Test Waveform Generator	B&K 5918	1482949	Test
Acoustical Calibrator	B&K 4226	1843103	11 Aug 2009
			Traceable to:
			HKSCS (HOKLAS)
			B&K Conformance
			B&K Conformance
			NPL via B&K (DANAK)

Calibrated By : *Dar R M*
Date : 22 July 2010

Checked By : *[Signature]*
Date : 22 July, 2010

CERTIFICATE OF CALIBRATION

Certificate No. : 2KS100705-2

Page 1 of 2

Calibration of :

Description :	Sound Level Meter	,	Microphone
Manufacture :	Brüel & Kjær		
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

Calibrated By :

Approved signatory :


Dai Bin
Jacky Leung

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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 Calibration System B&K 9600 CAL2238A, Ver.25.10.1999				
Description :	Make & Model :	Serial No. :	Last Cal. Date :	Traceable to:
Digital Multi-meter	Datron 1281	27361	30 Sept, 2009	HKSCS (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 : *Dai B m*
Date : 03 Aug 2010

Checked By : *Janly*
Date : 03 Aug, 2010



ALS Technichem (HK) Pty Ltd

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: --

WORK ORDER: HK1031088
LABORATORY: HONG KONG
DATE RECEIVED: 30/12/2010
DATE OF ISSUE: 04/01/2011
SAMPLE TYPE: EQUIPMENT
No. of SAMPLES: 1

COMMENTS

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

NOTES

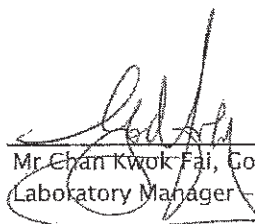
This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd
 11/F
 Chung Shun Knitting Centre
 1-3 Wing Yip Street
 Kwai Chung
 HONG KONG

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


 Mr. Chan Kwok Fai, 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

CERTIFICATE OF ANALYSIS



Work Order: HK1031088
Date of Issue: 04/01/2011
Client: LAM GEOTECHNICS LIMITED
Client Reference:

Calibration of Multimeter

Item : Sonde **Model No.:** YSI Sonde 600XL
ALS Lab ID: HK1031088 -001 **Equipment No.:** EL424
Date of Calibration: 31 December, 2010 **Serial No.:** 05C1607

Testing Results :

pH	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Expected Reading</th> <th style="width: 50%;">Recording Reading</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">4.00</td> <td style="text-align: center;">3.88</td> </tr> <tr> <td style="text-align: center;">7.00</td> <td style="text-align: center;">7.07</td> </tr> <tr> <td style="text-align: center;">10.0</td> <td style="text-align: center;">9.90</td> </tr> <tr> <td style="text-align: center;">Allowing Deviation</td> <td style="text-align: center;">± 0.2 unit</td> </tr> </tbody> </table>	Expected Reading	Recording Reading	4.00	3.88	7.00	7.07	10.0	9.90	Allowing Deviation	± 0.2 unit	Testing Method: APHA (20th edition), 4500-H ⁺ B		
Expected Reading	Recording Reading													
4.00	3.88													
7.00	7.07													
10.0	9.90													
Allowing Deviation	± 0.2 unit													
Conductivity	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Expected Reading</th> <th style="width: 50%;">Recording Reading</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">146.9 uS/cm</td> <td style="text-align: center;">146.0 uS/cm</td> </tr> <tr> <td style="text-align: center;">6667 uS/cm</td> <td style="text-align: center;">6230 uS/cm</td> </tr> <tr> <td style="text-align: center;">12890 uS/cm</td> <td style="text-align: center;">12473 uS/cm</td> </tr> <tr> <td style="text-align: center;">58670 uS/cm</td> <td style="text-align: center;">54244 uS/cm</td> </tr> <tr> <td style="text-align: center;">Allowing Deviation</td> <td style="text-align: center;">± 10%</td> </tr> </tbody> </table>	Expected Reading	Recording Reading	146.9 uS/cm	146.0 uS/cm	6667 uS/cm	6230 uS/cm	12890 uS/cm	12473 uS/cm	58670 uS/cm	54244 uS/cm	Allowing Deviation	± 10%	Testing Method: APHA (20th edition), 2510B
Expected Reading	Recording Reading													
146.9 uS/cm	146.0 uS/cm													
6667 uS/cm	6230 uS/cm													
12890 uS/cm	12473 uS/cm													
58670 uS/cm	54244 uS/cm													
Allowing Deviation	± 10%													
Temperature	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Expected Reading</th> <th style="width: 50%;">Recording Reading</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">14.5 °C</td> <td style="text-align: center;">14.9 °C</td> </tr> <tr> <td style="text-align: center;">22.5 °C</td> <td style="text-align: center;">22.3 °C</td> </tr> <tr> <td style="text-align: center;">34.0 °C</td> <td style="text-align: center;">34.3 °C</td> </tr> <tr> <td style="text-align: center;">Allowing Deviation</td> <td style="text-align: center;">±2.0°C</td> </tr> </tbody> </table>	Expected Reading	Recording Reading	14.5 °C	14.9 °C	22.5 °C	22.3 °C	34.0 °C	34.3 °C	Allowing Deviation	±2.0°C	Testing Method: In-House Method		
Expected Reading	Recording Reading													
14.5 °C	14.9 °C													
22.5 °C	22.3 °C													
34.0 °C	34.3 °C													
Allowing Deviation	±2.0°C													
Salinity	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Expected Reading</th> <th style="width: 50%;">Recording Reading</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0 g/L</td> <td style="text-align: center;">0 g/L</td> </tr> <tr> <td style="text-align: center;">10.0 g/L</td> <td style="text-align: center;">9.61 g/L</td> </tr> <tr> <td style="text-align: center;">20.0 g/L</td> <td style="text-align: center;">19.8 g/L</td> </tr> <tr> <td style="text-align: center;">30.0 g/L</td> <td style="text-align: center;">29.9 g/L</td> </tr> <tr> <td style="text-align: center;">Allowing Deviation</td> <td style="text-align: center;">± 10%</td> </tr> </tbody> </table>	Expected Reading	Recording Reading	0 g/L	0 g/L	10.0 g/L	9.61 g/L	20.0 g/L	19.8 g/L	30.0 g/L	29.9 g/L	Allowing Deviation	± 10%	Testing Method: APHA (20th edition), 2520 A and B
Expected Reading	Recording Reading													
0 g/L	0 g/L													
10.0 g/L	9.61 g/L													
20.0 g/L	19.8 g/L													
30.0 g/L	29.9 g/L													
Allowing Deviation	± 10%													
Dissolved Oxygen	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Expected Reading</th> <th style="width: 50%;">Recording Reading</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">6.61 mg/L</td> <td style="text-align: center;">6.65 mg/L</td> </tr> <tr> <td style="text-align: center;">7.94 mg/L</td> <td style="text-align: center;">8.03 mg/L</td> </tr> <tr> <td style="text-align: center;">8.69 mg/L</td> <td style="text-align: center;">8.61 mg/L</td> </tr> <tr> <td style="text-align: center;">Allowing Deviation</td> <td style="text-align: center;">± 0.2 mg/L</td> </tr> </tbody> </table>	Expected Reading	Recording Reading	6.61 mg/L	6.65 mg/L	7.94 mg/L	8.03 mg/L	8.69 mg/L	8.61 mg/L	Allowing Deviation	± 0.2 mg/L	Testing Method: APHA (20th edition), 4500-OC & G		
Expected Reading	Recording Reading													
6.61 mg/L	6.65 mg/L													
7.94 mg/L	8.03 mg/L													
8.69 mg/L	8.61 mg/L													
Allowing Deviation	± 0.2 mg/L													

 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.

WORK ORDER: HK1107641
LABORATORY: HONG KONG
DATE RECEIVED: 04/04/2011
DATE OF ISSUE: 08/04/2011

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, Salinity and Temperature
Description: Sonde
Brand Name: YSI
Model No.: YSI 600XL
Serial No.: 05C1607
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
11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
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Email: hongkong@alsglobal.com


Mr. Chan Kwok Fai, 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: HK1107641
 Date of Issue: 08/04/2011
 Client: LAM GEOTECHNICS LIMITED
 Reference: --



Description: Sonde
 Brand Name: YSI
 Model No.: YSI 600XL
 Serial No.: 05C1607
 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

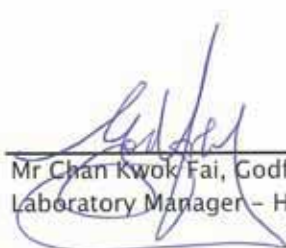
Method Ref: APHA (21st edition), 4500O: G

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	--
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

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: --

WORK ORDER: HK1100487
LABORATORY: HONG KONG
DATE RECEIVED: 06/01/2011
DATE OF ISSUE: 11/01/2011
SAMPLE TYPE: EQUIPMENT
No. of SAMPLES: 1

COMMENTS

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

NOTES

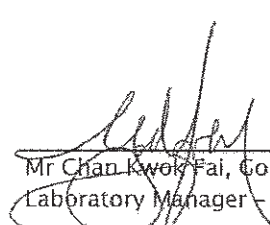
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Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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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

Page 1 of 2

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CERTIFICATE OF ANALYSIS



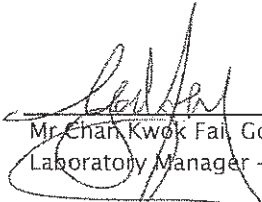
Work Order: HK1100487
Date of Issue: 11/01/2011
Client: LAM GEOTECHNICS LIMITED
Client Reference:

Calibration of Multimeter

Item : Sonde **Model No.:** YSI Professional Plus
ALS Lab ID: HK1100487-001 **Equipment No.:** --
Date of Calibration: 07 January, 2011 **Serial No.:** 10E100385

Testing Results :

pH	Expected Reading	Recording Reading	Testing Method: APHA (20th edition), 4500-H ⁺ B
	4.00	3.99	
	7.00	7.04	
	10.0	9.97	
	Allowing Deviation	± 0.2 unit	
Temperature	Expected Reading	Recording Reading	Testing Method: In-House Method
	12.5 °C	12.4 °C	
	20.5 °C	20.3 °C	
	37.0 °C	36.9 °C	
	Allowing Deviation	±2.0°C	
Salinity	Expected Reading	Recording Reading	Testing Method: APHA (20th edition), 2520 A and B
	0 g/L	0 g/L	
	10.0 g/L	10.3 g/L	
	20.0 g/L	20.5 g/L	
	30.0 g/L	30.7 g/L	
Allowing Deviation	± 10%		
Dissolved Oxygen	Expected Reading	Recording Reading	Testing Method: APHA (20th edition), 4500-OC & G
	6.35 mg/L	6.41 mg/L	
	7.29 mg/L	7.32 mg/L	
	9.44 mg/L	9.35 mg/L	
	Allowing Deviation	± 0.2 mg/L	



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



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: --

WORK ORDER: HK1105017
LABORATORY: HONG KONG
DATE RECEIVED: 03/03/2011
DATE OF ISSUE: 10/03/2011
SAMPLE TYPE: EQUIPMENT
No. of SAMPLES: 1

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

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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

CERTIFICATE OF ANALYSIS



Work Order: HK1105017
Date of Issue: 10/03/2011
Client: LAM GEOTECHNICS LIMITED
Client Reference:

Calibration of Multimeter

Item : HACH Turbidimeter Model No.: 2100P
ALS Lab ID: HK1105017 -001 Equipment No.: EL148
Date of Calibration: 08 March, 2011 Serial No.: 931000003861

Testing Results :

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.35 NTU
4.00 NTU	3.82 NTU
40.0 NTU	41.5 NTU
80.0 NTU	78.8 NTU
400 NTU	416 NTU
Allowing Deviation	± 10%

Testing Method:

APHA (19th edition), 2130B


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



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: --

WORK ORDER: HK1104129
LABORATORY: HONG KONG
DATE RECEIVED: 21/02/2011
DATE OF ISSUE: 25/02/2011
SAMPLE TYPE: EQUIPMENT
No. of SAMPLES: 1

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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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

CERTIFICATE OF ANALYSIS



Work Order: HK1104129
Date of Issue: 25/02/2011
Client: LAM GEOTECHNICS LIMITED
Client Reference:

Calibration of Multimeter

Item : HACH Turbidimeter Model No.: 2100P
ALS Lab ID: HK1104129-001 Equipment No.: --
Date of Calibration: 25 February, 2011 Serial No.: 930300002705

Testing Results :

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.27 NTU
4.00 NTU	4.35 NTU
40.0 NTU	37.0 NTU
80.0 NTU	81.9 NTU
400 NTU	432 NTU
Allowing Deviation	± 10%

Testing Method:

APHA (19th edition), 2130B


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



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: --

WORK ORDER: HK1103015
LABORATORY: HONG KONG
DATE RECEIVED: 09/02/2011
DATE OF ISSUE: 14/02/2011
SAMPLE TYPE: EQUIPMENT
No. of SAMPLES: 1

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
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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

CERTIFICATE OF ANALYSIS



Work Order: HK1103015
Date of Issue: 14/02/2011
Client: LAM GEOTECHNICS LIMITED
Client Reference:

Calibration of Multimeter

Item : Turbidimeter
ALS Lab ID: HK1103015 -001
Date of Calibration: 09 February, 2011

Model No.: 2100P
Equipment No.: EN06
Serial No.: 1000032935

Testing Results :

Turbidity

Expected Reading	Recording Reading
0.00 NTU	0.25 NTU
4.00 NTU	4.17 NTU
40.0 NTU	40.7 NTU
80.0 NTU	78.3 NTU
400 NTU	396 NTU
800 NTU	828 NTU
Allowing Deviation	± 10%

Testing Method:

APHA (19th edition), 2130B


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



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 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) - 298
 Operator Tisch Orifice I.D. - 0005 Pa (mm) - 745.49

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	1.3860	3.2	2.00
2	NA	NA	1.00	0.9740	6.4	4.00
3	NA	NA	1.00	0.8730	7.9	5.00
4	NA	NA	1.00	0.8320	8.8	5.50
5	NA	NA	1.00	0.6850	12.7	8.00

DATA TABULATION

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

CALCULATIONS

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

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

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

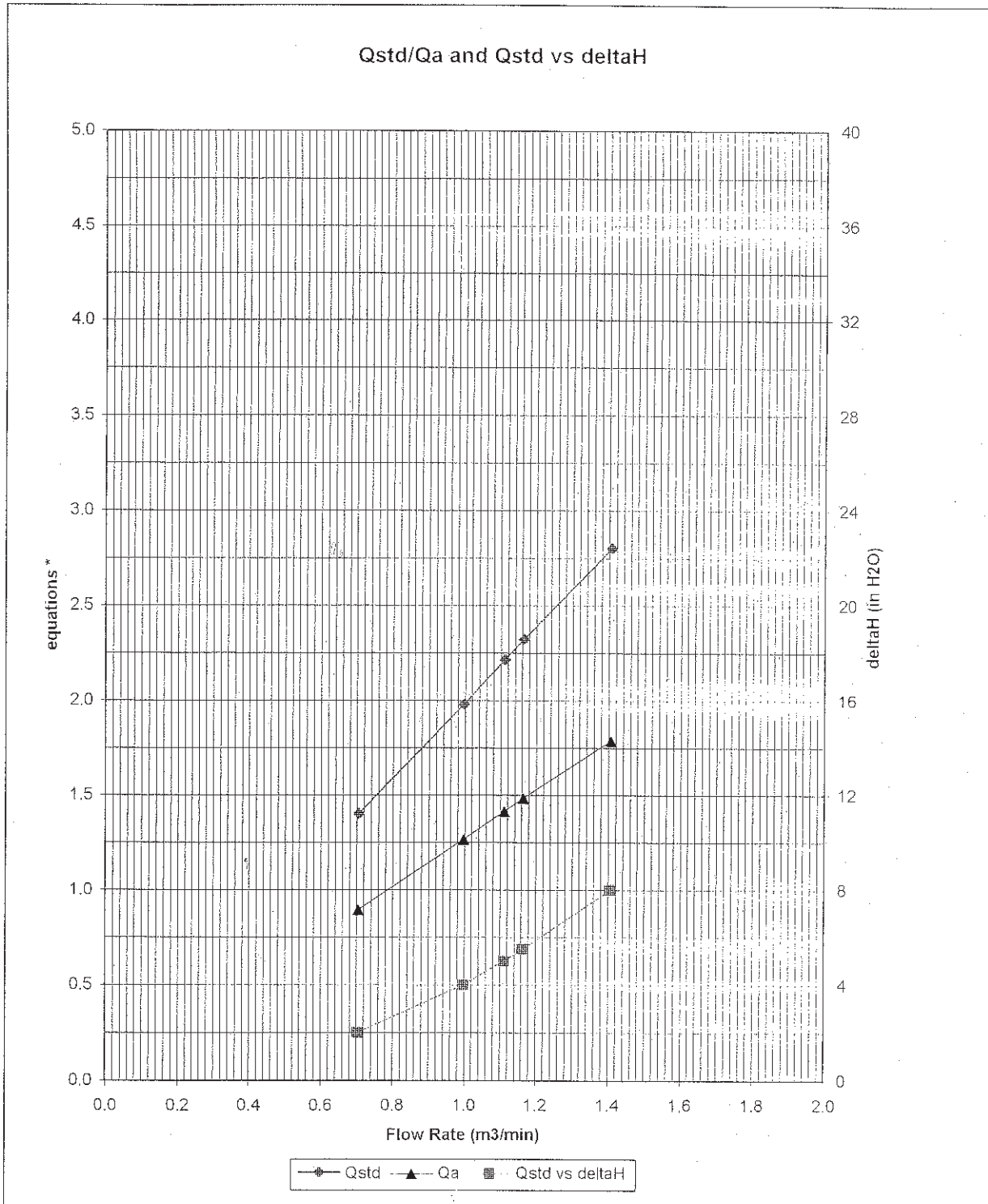
$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

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

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

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:
$$\sqrt{\Delta H \left(\frac{P_a}{P_{std}} \right) \left(\frac{T_{std}}{T_a} \right)}$$

Qa series:
$$\sqrt{(\Delta H (T_a / P_a))}$$

#0005



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b
 Equipment no. : EL452

Calibration Date : 05-Mar-11
 Calibration Due Date : 05-May-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1019 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

Calibration of RSP						
Calibration Point	Manometer Reading H (inches of water)			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	6.3	6.2	12.5	1.7968	60	60.9928
2	5.1	5.4	10.5	1.6470	53	53.8770
3	4.6	4.3	8.9	1.5165	47	47.7777
4	2.5	2.4	4.9	1.1259	36	36.5957
5	1.5	1.7	3.2	0.9104	26	26.4302

By Linear Regression of Y on X

Slope, m = 37.0414 Intercept, b = -6.6987

Correlation Coefficient* = 0.9952

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks :			
Calibrated by : <u>Derek Lo</u>		Checked by : <u>Cherry Mak</u>	
Date : <u>05-Mar-11</u>		Date : <u>06-Mar-11</u>	



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA2a Calibration Date : 28-Feb-11
 Equipment no. : EL449 Calibration Due Date : 28-Apr-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1019 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

Calibration of RSP						
Calibration Point	Manometer Reading H (inches of water)			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	6.6	6.2	12.8	1.8182	52	52.8604
2	5.3	5.4	10.7	1.6626	47	47.7777
3	4.1	4.3	8.4	1.4734	41	41.6784
4	2.6	2.4	5	1.1373	32	32.5295
5	1.7	1.7	3.4	0.9383	23	23.3806

By Linear Regression of Y on X

Slope, m = 32.3583 Intercept, b = -5.8496
 Correlation Coefficient* = 0.9966
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks :			
Calibrated by	: Derek Lo	Checked by	: Cherry Mak
Date	: 28-Feb-11	Date	: 28-Feb-11



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA3a
 Equipment no. : EL888

Calibration Date : 14-Mar-11
 Calibration Due Date : 14-May-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	295	Kelvin	Pressure, P _a
			1009 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

Calibration of RSP						
Calibration Point	Manometer Reading H (inches of water)			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	5.9	5.9	11.8	1.7225	41	41.1204
2	4.8	4.8	9.6	1.5539	36	36.1057
3	3.6	3.6	7.2	1.3461	33	33.0969
4	2.4	2.4	4.8	1.0995	27	27.0793
5	1.5	1.5	3.0	0.8698	21	21.0617

By Linear Regression of Y on X

Slope, m = 22.7581 Intercept, b = 1.6896
 Correlation Coefficient* = 0.9962
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks :

Calibrated by : Derek Lo
 Date : 14-Mar-11

Checked by : Cherry Mak
 Date : 14-Mar-11



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a
 Equipment no. : EL390

Calibration Date : 11-Mar-11
 Calibration Due Date : 11-May-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	293	Kelvin	Pressure, P _a
			1016 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, bc	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

Calibration of RSP						
Calibration Point	Manometer Reading H (inches of water)			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	5.8	5.8	11.6	1.7196	57	57.5608
2	4.7	4.7	9.4	1.5482	50	50.4920
3	3.6	3.6	7.2	1.3553	43	43.4231
4	2.4	2.4	4.8	1.1071	31	31.3050
5	1.4	1.4	2.8	0.8461	21	21.2066

By Linear Regression of Y on X

Slope, m = 42.0637 Intercept, b = -14.5276
 Correlation Coefficient* = 0.9991
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks :

Calibrated by : Derek Lo
 Date : 11-Mar-11

Checked by : Cherry Mak
 Date : 11-Mar-11



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5a Calibration Date : 10-Feb-11
 Equipment no. : EL380 Calibration Due Date : 10-Apr-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1019 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

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	6.3	6.3	12.6	1.8040	58	58.9597
2	5.1	5.1	10.2	1.6234	52	52.8604
3	3.8	3.8	7.6	1.4016	45	45.7446
4	2.5	2.5	5	1.1373	35	35.5791
5	1.5	1.5	3.0	0.8815	26	26.4302

By Linear Regression of Y on X

Slope, m = 35.3922 Intercept, b = -4.5571
 Correlation Coefficient* = 0.9995
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Derek Lo Checked by : Cherry Mak
 Date : 10-Feb-11 Date : 10-Feb-11



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5a
 Equipment no. : EL380

Calibration Date : 09-Apr-11
 Calibration Due Date : 09-Jun-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1019 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$			
Next Calibration Date	28-Jun-11	= m _c × Q _{std} + b _c			

Calibration of RSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.)	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31)
	H (inches of water)	(up)	(down)			
1	5.9	5.9	11.8	1.7459	56	56.9266
2	4.8	4.8	9.6	1.5750	50	50.8273
3	3.7	3.7	7.4	1.3831	44	44.7280
4	2.3	2.3	4.6	1.0910	33	33.5460
5	1.4	1.4	2.8	0.8517	22	22.3640

By Linear Regression of Y on X

Slope, m = 38.1982 Intercept, b = -9.0993

Correlation Coefficient* = 0.9977

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks :			
Calibrated by	: <u>Derek Lo</u>	Checked by	: <u>Cherry Mak</u>
Date	: <u>09-Apr-11</u>	Date	: <u>11-Apr-11</u>



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA6a Calibration Date : 10-Feb-11
 Equipment no. : EL448 Calibration Due Date : 10-Apr-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1019 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

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	6.4	6.4	12.8	1.8182	59	59.9762
2	5.0	5	10.0	1.6074	52	52.8604
3	3.9	3.9	7.8	1.4199	46	46.7611
4	2.5	2.5	5	1.1373	37	37.6122
5	1.5	1.5	3.0	0.8815	25	25.4137

By Linear Regression of Y on X

Slope, m = 36.1296 Intercept, b = -5.0767
 Correlation Coefficient* = 0.9965
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Derek Lo Checked by : Cherry Mak
 Date : 10-Feb-11 Date : 10-Feb-11



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA6a
 Equipment no. : EL448

Calibration Date : 09-Apr-11
 Calibration Due Date : 09-Jun-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1019 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	2.00300	Intercept, b _c	-0.00500
Last Calibration Date	28-Jun-10	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	28-Jun-11				

Calibration of RSP						
Calibration Point	Manometer Reading H (inches of water)			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	5.9	5.9	11.8	1.7459	56	56.9266
2	4.8	4.8	9.6	1.5750	50	50.8273
3	3.7	3.7	7.4	1.3831	44	44.7280
4	2.3	2.3	4.6	1.0910	33	33.5460
5	1.4	1.4	2.8	0.8517	22	22.3640

By Linear Regression of Y on X

Slope, m = 38.1982 Intercept, b = -9.0993

Correlation Coefficient* = 0.9977

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks :			
Calibrated by : <u>Derek Lo</u>		Checked by : <u>Cherry Mak</u>	
Date : <u>09-Apr-11</u>		Date : <u>11-Apr-11</u>	