

**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION****Information supplied by customer:**

CONTACT: DEREK LO **WORK ORDER:** HK1410350
CLIENT: LAM GEOTECHNICS LIMITED
DATE RECEIVED: 2014-11-25
DATE OF ISSUE: 2014-12-02
ADDRESS: 11/F, CENTRE POINT, 181-185, GLOUCESTER ROAD,
WANCHAI, HONG KONG
PROJECT: ---

METHOD OF PERFORMANCE CHECK/ CALIBRATION:

Ref: APHA22nd ed 2130B

COMMENTS

It is certified that the item under performance check/calibration 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 Pilot Testing Limited will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1203010
Equipment No.:	---
Date of Calibration:	25-Nov-14

Remarks:

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

Mr. Peter Lee
Director

This report may not be reproduced except with prior written approval from Pilot Testing Limited.

Address: Room 1503, 15/F, Wayson Commercial House, 68-70 Lockhart Road, Wanchai, Hong Kong

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**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION**

WORK ORDER: HK1410350
DATE OF ISSUE: 2014-12-02
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1203010
Equipment No.:	---
Date of Calibration:	25-Nov-14
Date of next Calibration:	25-Feb-15

Parameters:**Turbidity**Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)
0	0.00	---
4	3.86	-3.5
10	10.2	2.0
40	39.1	-2.3
100	104	4.0
400	412	3.0
1000	994	-0.6
	Tolerance Limit (±%)	10.0

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



REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Information supplied by customer:

CONTACT: SAM LAM **WORK ORDER:** HK1510067
CLIENT: LAM GEOTECHNICS LIMITED
DATE RECEIVED: 25/02/2015
DATE OF ISSUE: 04/03/2015
ADDRESS: 11/F, CENTRE POINT, 181-185, GLOUCESTER ROAD,
WANCHAI, HONG KONG
PROJECT: ---

METHOD OF PERFORMANCE CHECK/ CALIBRATION:

Ref: APHA22nd ed 2130B

COMMENTS

It is certified that the item under performance check/calibration 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 Pilot Testing Limited will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1203010
Equipment No.:	---
Date of Calibration:	25-Feb-15

Remarks:

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

Mr. Peter Lee
Director

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**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION**

WORK ORDER: HK1510067
DATE OF ISSUE: 04/03/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1203010
Equipment No.:	---
Date of Calibration:	25-Feb-15
Date of next Calibration:	25-May-15

Parameters:**Turbidity**Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)
0	0.00	---
4	3.98	-0.5
10	10.8	8.4
40	39.8	-0.4
100	100	0.2
400	373	-6.7
1000	964	-3.6
	Tolerance Limit (±%)	10.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Information supplied by customer:

CONTACT: SAM LAM **WORK ORDER:** HK1510002
CLIENT: LAM GEOTECHNICS LIMITED
DATE RECEIVED: 06/01/2015
DATE OF ISSUE: 13/01/2015
ADDRESS: 11/F, CENTRE POINT, 181-185, GLOUCESTER ROAD,
WANCHAI, HONG KONG
PROJECT: ---

METHOD OF PERFORMANCE CHECK/ CALIBRATION:

Ref: APHA22nd ed 2130B

COMMENTS

It is certified that the item under performance check/calibration 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 Pilot Testing Limited will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1203015
Equipment No.:	---
Date of Calibration:	08/01/2015

Remarks:

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

Mr. Peter Lee
Director

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**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION**

WORK ORDER: HK1510002
DATE OF ISSUE: 13/01/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1203015
Equipment No.:	---
Date of Calibration:	08/01/2015
Date of next Calibration:	08/04/2015

Parameters:**Turbidity**Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)
0	0.00	---
4	4.20	5.0
10	9.80	-2.0
40	41.0	2.5
100	100	0.0
400	420	5.0
1000	990	-1.0
	Tolerance Limit ($\pm\%$)	10.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Information supplied by customer:

CONTACT: SAM LAM **WORK ORDER:** HK1510003
CLIENT: LAM GEOTECHNICS LIMITED
DATE RECEIVED: 06/01/2015
DATE OF ISSUE: 13/01/2015
ADDRESS: 11/F, CENTRE POINT, 181-185, GLOUCESTER ROAD,
WANCHAI, HONG KONG
PROJECT: ---

METHOD OF PERFORMANCE CHECK/ CALIBRATION:

Ref: APHA22nd ed 2130B

COMMENTS

It is certified that the item under performance check/calibration 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 Pilot Testing Limited will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1309192
Equipment No.:	---
Date of Calibration:	08/01/2015

Remarks:

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

Mr. Peter Lee
Director

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**REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION**

WORK ORDER: HK1510003
DATE OF ISSUE: 13/01/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1309192
Equipment No.:	---
Date of Calibration:	08/01/2015
Date of next Calibration:	08/04/2015

Parameters:**Turbidity**Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)
0	0.00	---
4	3.91	-2.3
10	10.2	2.0
40	40.0	0.0
100	103	3.0
400	413	3.3
1000	988	-1.2
	Tolerance Limit (±%)	10.0

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

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www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

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

WORK ORDER: HK1436509
LABORATORY: HONG KONG
DATE RECEIVED: 10/11/2014
DATE OF ISSUE: 17/11/2014


COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Dissolved Oxygen, pH, Salinity and Temperature
Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 11F100597
Equipment No.: --
Date of Calibration: 17 November, 2014

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.


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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1436509
Date of Issue: 17/11/2014
Client: LAM GEOTECHNICS LIMITED



Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 11F100597
Equipment No.: --
Date of Calibration: 17 November, 2014

Date of next Calibration: 17 February, 2015

Parameters:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.60	3.57	-0.03
6.24	6.20	-0.04
8.06	8.03	-0.03
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	4.09	+0.09
7.0	7.19	+0.19
10.0	10.02	+0.02
Tolerance Limit (pH unit)		±0.20

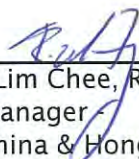
Salinity **Method Ref: APHA (21st edition), 2520B**

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	9.57	-4.3
20	19.70	-1.5
30	29.86	-0.5
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)
11.0	11.4	+0.4
21.5	21.9	+0.4
38.0	38.3	+0.3
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. Fung Lim Chee, Richard
 General Manager
 Greater China & Hong Kong



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No. : HK1510049
 Project Name : EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT
 Date of Issue : 13/02/2015

Customer : LAM GEOTECHNICS LIMITED
 Address : 11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. : HK1510049
 Test Item No. : HK1510049-01
 Test Item Details
 Test Item Description : Multifunctional Meter
 Manufacturer : YSI
 Model No. : Professional Plus
 Serial No. : 11F100597
 Performance Method : Checked according to in-house method CAL005
 (References: Temperature (Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure), pH value (APHA 21e 4500H:B), Salinity (Refer to Conductivity APHA 19e 2510B) , Dissolved oxygen (APHA 19e 4500-O,C))

Test Item Receipt Date : 12-Feb-15
 Test Item Calibration Date : 13-Feb-15
 Test Period : 12/02/2015 - 13/02/2015

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 2. Results relate to item(s) as received.
 3. \pm indicates the tolerance limit
 4. N/A = Not applicable
 5. APHA - American Public Health Association, American Water Works Association and Water Environment Federation, Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF. USA
 6. DO, pH, salinity and temperature performance check was conducted by Pilot Testing Limited.
 7. Because of high sensitivity and ease of measurement, the conductivity method (according to APHA 19e 2510) is used to determine salinity.

Approved Signatory



 Mr. Peter Lee
 (Director)

Issue Date:

13/02/2015


REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1510049
DATE OF ISSUE: 13/02/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type	Multifunctional Meter
Manufacturer	YSI
Model No.	Professional Plus
Serial No.	11F100597
Date of Calibration	13-Feb-15
Date of next Calibration	13-May-15

Parameters:

Temperature (Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No.3 Second edition March 2008: Working Thermometer Calibration Procedure)

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
10.8	10.8	0.0
20.2	20.3	+0.1
30.1	30.6	+0.5
Tolerance Limit		±2.0

pH Value (Method Ref: APHA21e, 4500H:B)

Expected Reading (pH unit)	Reference Reading (pH unit)	Display Reading (pH unit)	Deviation (pH unit)
4.0	4.05	4.06	+0.01
7.0	7.03	7.04	+0.01
10.0	9.98	9.96	+0.02
Tolerance Limit			±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCl concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	--
0.1000	12.89	12.81	-0.63
0.2000	24.80	25.20	+1.60
0.5000	58.67	59.33	+1.12
Tolerance Limit			±2.0

Dissolved Oxygen (DO) (Method Ref: APHA 19e, 4500-O, C)

Reference DO reading (mg/L)	DO reading od DO probe (mg/L)	Deviation (mg/L)
7.49	7.60	+0.11
4.56	4.67	+0.11
1.86	1.83	-0.03
Tolerance Limit		±0.20

- Remarks:
- (1) Maxium tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of Pilot Testing Limited will be followed.
 - (2) Displayed reading presents the figures shown on item under calibration/checking regardless of equipment precision or significant figures.
 - (3) Because of high sensitivity and ease of measurement, the conductivity method (accorng to APHA 19e 2510) is used to determine salinity.

- End of Report -



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No. : HK1510021
Project Name : EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT
Date of Issue : 23/01/2015

Customer : LAM GEOTECHNICS LIMITED
Address : 11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. : HK1510021
Test Item No. : HK1510021-01
Test Item Details
Test Item Description : Multifunctional Meter
Manufacturer : YSI
Model No. : Professional Plus
Serial No. : 14E100105
Performance Method : Checked according to in-house method CAL005
 (References: Temperature (Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure), pH value (APHA 21e 4500H:B), Salinity (Refer to Conductivity APHA 19e 2510B) , Dissolved oxygen (APHA 19e 4500-O,C))

Test Item Receipt Date : 15-Jan-15
Test Item Calibration Date : 16-Jan-15
Test Period : 16/01/2015 - 23/01/2015

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 2. Results relate to item(s) as received.
 3. \pm indicates the tolerance limit
 4. N/A = Not applicable
 5. APHA - American Public Health Association, American Water Works Association and Water Environment Federation, Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF. USA
 6. DO, pH, salinity and temperature performance check was conducted by Pilot Testing Limited.
 7. Because of high sensitivity and ease of measurement, the conductivity method (according to APHA 19e 2510) is used to determine salinity.

Approved Signatory :

Mr. Peter Lee
(Director)

Issue Date:

23/01/2015


REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1510021
DATE OF ISSUE: 23/01/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type	Multifunctional Meter
Manufacturer	YSI
Model No.	Professional Plus
Serial No.	14E100105
Date of Calibration	16-Jan-15
Date of next Calibration	16-Apr-15

Parameters:

Temperature (Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No.3 Second edition March 2008: Working Thermometer Calibration Procedure)

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
10.0	10.4	+0.4
19.4	19.6	+0.2
30.0	30.1	+0.1
	Tolerance Limit	±2.0

pH Value (Method Ref: APHA21e, 4500H:B)

Expected Reading (pH unit)	Reference Reading (pH unit)	Display Reading (pH unit)	Deviation (pH unit)
4.0	4.06	4.02	-0.04
7.0	7.01	7.09	+0.08
10.0	9.99	10.03	+0.04
	Tolerance Limit		±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCl concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	--
0.1000	12.89	12.69	-1.55
0.2000	24.80	25.25	1.82
0.5000	58.67	57.50	-1.99
	Tolerance Limit		±2.0

Dissolved Oxygen (DO) (Method Ref: APHA 19e, 4500-O, C)

Reference DO reading (mg/L)	DO reading od DO probe (mg/L)	Deviation (mg/L)
8.18	8.14	-0.04
5.89	5.90	0.01
4.42	4.26	-0.16
	Tolerance Limit	±0.20

- Remarks:
- (1) Maxium tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of Pilot Testing Limited will be followed.
 - (2) Displayed reading presents the figures shown on item under calibration/checking regardless of equipment precision or significant figures.
 - (3) Because of high sensitivity and ease of measurement, the conductivity method (accoriding to APHA 19e 2510) is used to determine salinity.

- End of Report -



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No. : HK1510022
 Project Name : EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT
 Date of Issue : 26/01/2015

Customer : LAM GEOTECHNICS LIMITED
 Address : 11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. : HK1510022
 Test Item No. : HK1510022-01
 Test Item Details : Multifunctional Meter
 Test Item Description : Multifunctional Meter
 Manufacturer : YSI
 Model No. : Professional Plus
 Serial No. : 14M100277
 Performance Method : Checked according to in-house method CAL005
 (References: Temperature (Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure), pH value (APHA 21e 4500H:B), Salinity (Refer to Conductivity APHA 19e 2510B) , Dissolved oxygen (APHA 19e 4500-O,C))

Test Item Receipt Date : 19-Jan-15
 Test Item Calibration Date : 19-Jan-15
 Test Period : 19/01/2015 - 26/01/2015

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 2. Results relate to item(s) as received.
 3. \pm indicates the tolerance limit
 4. N/A = Not applicable
 5. APHA - American Public Health Association, American Water Works Association and Water Environment Federation, Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF. USA
 6. DO, pH, salinity and temperature performance check was conducted by Pilot Testing Limited.
 7. Because of high sensitivity and ease of measurement, the conductivity method (according to APHA 19e 2510) is used to determine salinity.

Approved Signatory

Mr. Peter Lee
 (Director)

Issue Date:

26/01/2015


REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1510022
DATE OF ISSUE: 26/01/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type	Multifunctional Meter
Manufacturer	YSI
Model No.	Professional Plus
Serial No.	14M100277
Date of Calibration	19-Jan-15
Date of next Calibration	19-Apr-15

Parameters:

Temperature (Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No.3 Second edition March 2008: Working Thermometer Calibration Procedure)

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
10.4	10.8	+0.4
19.9	20.1	+0.2
30.2	30.0	-0.2
Tolerance Limit		±2.0

pH Value (Method Ref: APHA21e, 4500H:B)

Expected Reading (pH unit)	Reference Reading (pH unit)	Display Reading (pH unit)	Deviation (pH unit)
4.0	4.05	4.07	+0.02
7.0	7.02	7.04	+0.02
10.0	9.99	10.18	+0.19
Tolerance Limit			±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCl concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	--
0.1000	12.89	12.99	+0.74
0.2000	24.80	24.91	+0.43
0.5000	58.67	59.21	+0.93
Tolerance Limit			±2.0

Dissolved Oxygen (DO) (Method Ref: APHA 19e, 4500-O, C)

Reference DO reading (mg/L)	DO reading od DO probe (mg/L)	Deviation (mg/L)
8.28	8.22	-0.06
4.67	4.59	-0.08
1.42	1.48	+0.06
Tolerance Limit		±0.20

- Remarks:
- (1) Maxium tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of Pilot Testing Limited will be followed.
 - (2) Displayed reading presents the figures shown on item under calibration/checking regardless of equipment precision or significant figures.
 - (3) Because of high sensitivity and ease of measurement, the conductivity method (accoriding to APHA 19e 2510) is used to determine salinity.

- End of Report -



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No. : HK1510022
Project Name : EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT
Date of Issue : 26/01/2015

Customer : LAM GEOTECHNICS LIMITED
Address : 11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. : HK1510022
Test Item No. : HK1510022-01
Test Item Details
Test Item Description : Multifunctional Meter
Manufacturer : YSI
Model No. : Professional Plus
Serial No. : 14M100277
Performance Method : Checked according to in-house method CAL005
 (References: Temperature (Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure), pH value (APHA 21e 4500H:B), Salinity (Refer to Conductivity APHA 19e 2510B) , Dissolved oxygen (APHA 19e 4500-O,C))

Test Item Receipt Date : 19-Jan-15
Test Item Calibration Date : 19-Jan-15
Test Period : 19/01/2015 - 26/01/2015

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 2. Results relate to item(s) as received.
 3. \pm indicates the tolerance limit
 4. N/A = Not applicable
 5. APHA - American Public Health Association, American Water Works Association and Water Environment Federation, Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF. USA
 6. DO, pH, salinity and temperature performance check was conducted by Pilot Testing Limited.
 7. Because of high sensitivity and ease of measurement, the conductivity method (according to APHA 19e 2510) is used to determine salinity.

Approved Signatory

Mr. Peter Lee
(Director)

Issue Date:

26/01/2015


REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1510022
DATE OF ISSUE: 26/01/2015
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type	Multifunctional Meter
Manufacturer	YSI
Model No.	Professional Plus
Serial No.	14M100277
Date of Calibration	19-Jan-15
Date of next Calibration	19-Apr-15

Parameters:

Temperature (Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No.3 Second edition March 2008: Working Thermometer Calibration Procedure)

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
10.4	10.8	+0.4
19.9	20.1	+0.2
30.2	30.0	-0.2
	Tolerance Limit	±2.0

pH Value (Method Ref: APHA21e, 4500H:B)

Expected Reading (pH unit)	Reference Reading (pH unit)	Display Reading (pH unit)	Deviation (pH unit)
4.0	4.05	4.07	+0.02
7.0	7.02	7.04	+0.02
10.0	9.99	10.18	+0.19
	Tolerance Limit		±0.20

Conductivity (Method Ref: APHA 19e, 2510)

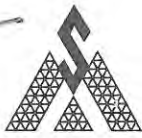
KCl concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	--
0.1000	12.89	12.99	+0.74
0.2000	24.80	24.91	+0.43
0.5000	58.67	59.21	+0.93
	Tolerance Limit		±2.0

Dissolved Oxygen (DO) (Method Ref: APHA 19e, 4500-O, C)

Reference DO reading (mg/L)	DO reading od DO probe (mg/L)	Deviation (mg/L)
8.28	8.22	-0.06
4.67	4.59	-0.08
1.42	1.48	+0.06
	Tolerance Limit	±0.20

- Remarks:
- (1) Maxium tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of Pilot Testing Limited will be followed.
 - (2) Displayed reading presents the figures shown on item under calibration/checking regardless of equipment precision or significant figures.
 - (3) Because of high sensitivity and ease of measurement, the conductivity method (accoriding to APHA 19e 2510) is used to determine salinity.

- End of Report -



CERTIFICATE OF CALIBRATION

Certificate No.: 14CA0320 04

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: B & K
Type/Model No.: 4230
Serial/Equipment No.: 1411076
Adaptors used: Yes

Item submitted by

Customer: Lam Geotechnics Limited
Address of Customer: -
Request No.: -
Date of receipt: 20-Mar-2014

Date of test: 21-Mar-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	17-Apr-2014	SCL
Preamplifier	B&K 2673	2239857	16-Apr-2014	CEPREI
Measuring amplifier	B&K 2610	2346941	24-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI
Digital multi-meter	34401A	US36087050	17-Dec-2014	CEPREI
Audio analyzer	8903B	GB41300350	15-Apr-2014	CEPREI
Universal counter	53132A	MY40003662	15-Apr-2014	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 10 hPa

Test specifications


- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory:


Huang Jian-Min/Feng Jun Qi

Date: 21-Mar-2014

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

Certificate No.: 14CA1213 01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone
Manufacturer:	B & K	B & K
Type/Model No.:	2236	4188
Serial/Equipment No.:	2100736	2288941
Adaptors used:	-	-

Item submitted by

Customer Name: Lam Geotechnics Limited
Address of Customer: -
Request No.: -
Date of receipt: 13-Dec-2014

Date of test: 13-Dec-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	20-Jun-2015	CIGISMEC
Signal generator	DS 360	33873	09-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 5 %
Air pressure: 1010 ± 5 hPa

Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of $\pm 20\%$.
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure response of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:


Huang Jian Min/Feng Jun Qi

Date: 15-Dec-2014

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 14CA1213 01 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	2.1
	C	Pass	1.0	
	Lin	Pass	2.0	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	2.2
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	A	Pass	0.3	
	C	Pass	0.3	
Frequency weightings	Lin	Pass	0.3	
	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
	R.M.S. accuracy	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
	Sound exposure level	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:		Checked by:	
Date:	Fung Chi Yip 13-Dec-2014	Date:	Lam Tze Wai 15-Dec-2014

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jul 14, 2014 Rootsmeter S/N 0438320 Ta (K) - 298
 Operator Tisch Orifice I.D. - 0005 Pa (mm) - 749.3

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3870	3.2	2.00
2	NA	NA	1.00	0.9830	6.4	4.00
3	NA	NA	1.00	0.8760	7.9	5.00
4	NA	NA	1.00	0.8340	8.8	5.50
5	NA	NA	1.00	0.6860	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9817	0.7078	1.4042	0.9957	0.7179	0.8919
0.9775	0.9944	1.9859	0.9915	1.0086	1.2613
0.9754	1.1135	2.2203	0.9894	1.1294	1.4101
0.9743	1.1683	2.3286	0.9882	1.1849	1.4790
0.9692	1.4128	2.8084	0.9830	1.4330	1.7837
Qstd slope (m) = 1.99175			Qa slope (m) = 1.24720		
intercept (b) = -0.00041			intercept (b) = -0.00026		
coefficient (r) = 0.99991			coefficient (r) = 0.99991		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/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}



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b
 Equipment no. : EL452
 Calibration Date : 18-Dec-14
 Calibration Due Date : 18-Feb-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	287	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
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	1.8130	65	66.6477
2	4.5	4.5	9.0	1.5446	55	56.3942
3	3.9	3.9	7.8	1.4380	50	51.2675
4	2.5	2.5	5.0	1.1513	42	43.0647
5	1.4	1.4	2.8	0.8616	31	31.7858

By Linear Regression of Y on X

Slope, m = 36.0094 Intercept, b = 0.7978

Correlation Coefficient* = 0.9981

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Lau Checked by : Derek Lo
 Date : 18-Dec-14 Date : 18-Dec-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA1b
 Equipment no. : EL452
 Calibration Date : 12-Feb-15
 Calibration Due Date : 12-Apr-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information			
Equipment No.	EL086	Slope, m _c	1.99175
		Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$	
Next Calibration Date	14-Jul-15		

Calibration of TSP						
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	6.6	6.6	13.2	1.8536	65	66.0431
2	5.3	5.3	10.6	1.6611	58	58.9308
3	4.0	4.0	8.0	1.4431	50	50.8024
4	2.6	2.6	5.2	1.1635	40	40.6419
5	1.5	1.5	3.0	0.8838	30	30.4814

By Linear Regression of Y on X

Slope, m = 36.6703 Intercept, b = -1.9950

Correlation Coefficient* = 1.0000

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar Checked by : Derek Lo
 Date : 12-Feb-15 Date : 12-Feb-15



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA2a
 Equipment no. : EL449

Calibration Date : 18-Dec-14
 Calibration Due Date : 18-Feb-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	287	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information				
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c
				-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$		
Next Calibration Date	14-Jul-15			

Calibration of TSP						
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	1.7983	62	63.5717
2	4.9	4.9	9.8	1.6118	55	56.3942
3	3.7	3.7	7.4	1.4006	49	50.2421
4	2.3	2.3	4.6	1.1043	40	41.0140
5	1.2	1.2	2.4	0.7977	32	32.8112

By Linear Regression of Y on X

Slope, m = 30.4893 Intercept, b = 7.8731
 Correlation Coefficient* = 0.9984
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Lau
 Date : 18-Dec-14

Checked by : Derek Lo
 Date : 18-Dec-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

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

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	291	Kelvin	Pressure, P _a
			1015 mmHg

Orifice Transfer Standard Information				
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c
				-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$		
Next Calibration Date	14-Jul-15			

Calibration of TSP						
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	1.8195	60	60.7683
2	5.0	5.0	10.0	1.6082	55	55.7042
3	3.8	3.8	7.6	1.4020	46	46.5890
4	2.2	2.2	4.4	1.0668	36	36.4610
5	1.4	1.4	2.8	0.8511	30	30.3841

By Linear Regression of Y on X

Slope, m = 32.2546 Intercept, b = 2.4526

Correlation Coefficient* = 0.9972

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar Checked by : Derek Lo
 Date : 12-Feb-15 Date : 12-Feb-15



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA3a
 Equipment no. : EL333

Calibration Date : 18-Dec-14
 Calibration Due Date : 18-Feb-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	287	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	5.5	5.5	11.0	1.7076	56	57.4196
2	4.3	4.3	8.6	1.5099	47	48.1914
3	3.2	3.2	6.4	1.3026	44	45.1154
4	2.5	2.5	5.0	1.1513	38	38.9633
5	1.2	1.2	2.4	0.7977	25	25.6337

By Linear Regression of Y on X

Slope, m = 33.6450 Intercept, b = -0.4658
 Correlation Coefficient* = 0.9920
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Lau
 Date : 18-Dec-14

Checked by : Derek Lo
 Date : 18-Dec-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA3a
 Equipment no. : EL333
 Calibration Date : 12-Feb-15
 Calibration Due Date : 12-Apr-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
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	1.7673	52	52.8345
2	4.7	4.7	9.4	1.5642	47	47.7542
3	3.6	3.6	7.2	1.3690	41	41.6579
4	2.3	2.3	4.6	1.0943	35	35.5617
5	1.4	1.4	2.8	0.8538	28	28.4493

By Linear Regression of Y on X

Slope, m = 26.4964 Intercept, b = 6.0181

Correlation Coefficient* = 0.9989

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar Checked by : Derek Lo
 Date : 12-Feb-15 Date : 12-Feb-15



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a Calibration Date : 18-Dec-14
 Equipment no. : EL390 Calibration Due Date : 18-Feb-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	287	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
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	1.7835	65	66.6477
2	4.7	4.7	9.4	1.5785	52	53.3182
3	3.5	3.5	7.0	1.3622	45	46.1407
4	2.2	2.2	4.4	1.0801	32	32.8112
5	1.4	1.4	2.8	0.8616	27	27.6844

By Linear Regression of Y on X

Slope, m = 41.9297 Intercept, b = -10.5801
 Correlation Coefficient* = 0.9901
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Lau Checked by : Derek Lo
 Date : 18-Dec-14 Date : 18-Dec-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA4a Calibration Date : 12-Feb-15
 Equipment no. : EL390 Calibration Due Date : 12-Apr-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	290	Kelvin	Pressure, P _a
			1018 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
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	6.5	6.5	13.0	1.8395	58	58.9308
2	5.2	5.2	10.4	1.6453	51	51.8184
3	4.1	4.1	8.2	1.4610	43	43.6900
4	2.7	2.7	5.4	1.1856	30	30.4814
5	1.3	1.3	2.6	0.8228	22	22.3530

By Linear Regression of Y on X

Slope, m = 37.3358 Intercept, b = -10.4734
 Correlation Coefficient* = 0.9906
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar Checked by : Derek Lo
 Date : 12-Feb-15 Date : 12-Feb-15



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5b
 Equipment no. : EL222

Calibration Date : 4-Dec-14
 Calibration Due Date : 4-Mar-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	288	Kelvin	Pressure, P _a
			1021 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	5.8	5.8	11.6	1.7462	60	61.2642
2	4.6	4.6	9.2	1.5552	54	55.1378
3	3.5	3.5	7.0	1.3566	48	49.0114
4	2.3	2.3	4.6	1.0997	41	41.8639
5	1.4	1.4	2.8	0.8580	34	34.7164

By Linear Regression of Y on X

Slope, m = 29.6907 Intercept, b = 9.1139
 Correlation Coefficient* = 0.9997
 Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Lau
 Date : 4-Dec-14

Checked by : Derek Lo
 Date : 4-Dec-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA5b
 Equipment no. : EL222

Calibration Date : 04-Feb-15
 Calibration Due Date : 04-Apr-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	289	Kelvin	Pressure, P _a
			1024 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis
	(up)	(down)	(difference)			
1	5.4	5.4	10.8	1.6845	59	60.2271
2	4.4	4.4	8.8	1.5206	54	55.1231
3	3.4	3.4	6.8	1.3367	50	51.0399
4	2.2	2.2	4.4	1.0753	42	42.8736
5	1.4	1.4	2.8	0.8578	37	37.7696

By Linear Regression of Y on X						
Slope, m	=	27.2571	Intercept, b	=	14.1098	
Correlation Coefficient*	=	0.9987				
Calibration Accepted	=	Yes/No**				

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

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar
 Date : 04-Feb-15

Checked by : Derek Lo
 Date : 04-Feb-15



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA6a
 Equipment no. : EL448
 Calibration Date : 18-Dec-14
 Calibration Due Date : 18-Feb-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	287	Kelvin	Pressure, P _a
			1026 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041
Last Calibration Date	14-Jul-14	$\left(\frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	14-Jul-15				

Calibration of TSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC <small>(W(P_a/1013.3x298/T_a)^{1/2}/35.31)</small> Y-axis
	(up)	(down)	(difference)			
1	6.1	6.1	12.2	1.7983	55	56.3942
2	5.3	5.3	10.6	1.6763	49	50.2421
3	3.5	3.5	7.0	1.3622	41	42.0393
4	2.2	2.2	4.4	1.0801	36	36.9126
5	1.2	1.2	2.4	0.7977	25	25.6337

By Linear Regression of Y on X

Slope, m = 28.5508 Intercept, b = 3.9029

Correlation Coefficient* = 0.9912

Calibration Accepted = Yes/No**

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

** Delete as appropriate.

Remarks : _____

Calibrated by : Henry Lau Checked by : Derek Lo
 Date : 18-Dec-14 Date : 18-Dec-14



Lam Geotechnics Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location : CMA6a
 Equipment no. : EL448
 Calibration Date : 12-Feb-15
 Calibration Due Date : 12-Apr-15

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition						
Temperature, T _a	290	Kelvin	Pressure, P _a	1018	mmHg	
Orifice Transfer Standard Information						
Equipment No.	EL086	Slope, m _c	1.99175	Intercept, b _c	-0.00041	
Last Calibration Date	14-Jul-14	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$				
Next Calibration Date	14-Jul-15					
Calibration of TSP						
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	6.5	6.5	13.0	1.8395	60	60.9628
2	5.2	5.2	10.4	1.6453	54	54.8666
3	4.0	4.0	8.0	1.4431	48	48.7703
4	2.7	2.7	5.4	1.1856	40	40.6419
5	1.6	1.6	3.2	0.9128	32	32.5135
By Linear Regression of Y on X						
Slope, m	=	30.7375	Intercept, b	=	4.3570	
Correlation Coefficient*	=	1.0000				
Calibration Accepted	=	Yes/No**				

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

** Delete as appropriate.

Remarks : _____

Calibrated by : LuLu Mar
 Date : 12-Feb-15
 Checked by : Derek Lo
 Date : 12-Feb-15