

Certificate No.

23166

Page

1

4 Pages

Customer: Lam Geotechnics Limited

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

Order No.: Q21208

Date of receipt

24-May-12

Item Tested

Description: Precision Integrating Sound Level Meter

Manufacturer: Rion

Model

: NL-14

Serial No.

: 10303242

Test Conditions

Date of Test:

5-Jun-12

Supply Voltage

Ambient Temperature:

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

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

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

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

Main Test equipment used:

Equipment No. Description

Cert. No.

Traceable to

S017

Multi-Function Generator

C101623

SCL-HKSAR

S024

Sound Level Calibrator

15136

NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

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

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

Calibrated by

6-Jun-12

Date:

This Certificate is issued by

Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong

Tel: 2425 8801 Fax: 2425 8646

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Results:

1. SPL Accuracy

	UUT Set	ting			UUT Rea	ding (dB)
Level Range (dB)	Filter	Weight	Time Const.	Applied Value (dB)	Before adjust.	After adjust.
40 – 100	OFF	L _P	Fast	94.0		94.1
40 - 100	OII	L _{PA}	Fast		*92.2	94.1
		DIA.	Slow			94.1
		L _{PC}	Fast	1		94.1
60 – 120	OFF	L _P	Fast	94.0		94.0
00 – 120	OII	L_{PA}	Fast			94.0
		DPA	Slow			94.0
		L_{PC}	Fast	45		94.0
60 – 120	OFF	L _P	Fast	114.0		114.1
00 - 120	OH	L_{PA}	Fast			114.1
		LPA	Slow			114.1
		L _{PC}	Fast			114.1

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : $\pm 0.2 \text{ dB}$

2. Level Stability: 0.1 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty: ± 0.01 dB



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3. Linearity

3.1 Level Linearity

UUT Range	Applied	UUT Reading	Variation	IEC 651 Type 1 Spec.
(dB)	Value (dB)	(dB)	(dB)	(Primary Indicator Range)
140	114.0	113.9	-0.1	± 0.7 dB
130	104.0	103.9	-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	54.2	+0.2	=

Uncertainty: ± 0.1 dB

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.1	+0.1	± 0.4 dB
	94.0	94.0 (Ref.)		
	95.0	95.0	0.0	± 0.2 dB

Uncertainty: ± 0. 1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.0	$-39.4 \text{ dB}, \pm 1.5 \text{ dB}$
63 Hz	-25.9	- 26.2 dB, ± 1.5 dB
125 Hz	-15.9	- 16.1 dB, ± 1 dB
250 Hz	-8.5	- 8.6 dB, ± 1 dB
500 Hz	-3.2	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	$0 \text{ dB}, \pm 1 \text{ dB}$
2 kHz	+1.1	+ 1.2 dB, ± 1 dB
4 kHz	+0.8	+ 1.0 dB, ± 1 dB
8 kHz	-1.5	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-7.2	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty: ± 0.1 dB



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5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	
1/10	40.0	39.9	± 0.5 dB
$1/10^2$	40.0	39.7	
$1/10^3$	40.0	39.4	± 1.0 dB
1/10 ⁴	40.0	39.3	

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: 1 000 hPa.

4. *Out of Specification

----- END -----



Certificate No. 23167

Page 1 of 2 Pages

Customer: Lam Geotechnics Limited

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

Order No.: Q21208

Date of receipt

24-May-12

Item Tested

Description: Sound Level Calibrator

Manufacturer: Rion

Model : NC-73

Serial No.

: 10465798

Test Conditions

Date of Test:

6-Jun-12

Supply Voltage

.

Ambient Temperature :

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

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: F21, Z02.

Test Results

All results were within the manufacturer's specification.

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

Main Test equipment used:

ption	Cert. No.		Traceable to
rum Analyzer	13535		NIM-PRC & SCL-HKSAR
Level Calibrator	15136		NIM-PRC & SCL-HKSAR
rsal Counter	15610		SCL-HKSAR
Level Meter	16338		SCL-HKSAR
	iption rum Analyzer d Level Calibrator rsal Counter d Level Meter	rum Analyzer 13535 d Level Calibrator 15136 rsal Counter 15610	rum Analyzer 13535 I Level Calibrator 15136 rsal Counter 15610

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 :

6-Jun-12

Date:

Dorothy Cheuk

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. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	94.43	± 1 dB

Uncertainty: ± 0.2 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.982 kHz	± 2 %

Uncertainty: ± 0.1 %

3. Level Stability: 0.0 dB Uncertainty: ± 0.01 dB

4. Total Harmonic Distortion : < 0.5 %

Mfr's Spec. : < 3 %

Uncertainty: ± 2.3 % of reading

Remark: 1. UUT: Unit-Under-Test

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

----- END -----



ALS Technichem (HK) Ptv Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:

MS EMILY KONG

CLIENT:

LAM GEOTECHNICS LIMITED

ADDRESS:

11/F., CENTRE POINT,

181-185 GLOUCESTER ROAD,

WAN CHAI, HONG KONG

PROJECT:

WORK ORDER:

HK1221110

LABORATORY:

HONG KONG

DATE RECEIVED:

10/08/2012

DATE OF ISSUE:

14/08/2012

COMMENTS

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

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

Scope of Test:

Dissolved Oxygen, pH, Salinity and Temperature

Description:

YSI SONDE

Brand Name:

YSI

Model No.:

YSI Professional plus 11H100476

Serial No.: Equipment No.:

Date of Calibration: 13 August, 2012

NOTES

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

ISSUING LABORATORY: HONG KONG

Address

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: Email: 852-2610 2021

hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: Date of Issue: HK1221110 14/08/2012

Client:

LAM GEOTECHNICS LIMITED



Description:

YSI SONDE

Brand Name:

YSI

Model No.:

YSI Professional plus

Serial No.:

11H100476

Equipment No.:

__

Date of Calibration:

13 August, 2012

Date of next Calibration:

13 November, 2012

Parameters:

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.10	3.06	-0.04
5.65	5.64	-0.01
8.19	8.18	-0.01
	Tolerance Limit (±mg/L)	0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.02	0.02
7.0	7.02	0.02
10.0	9.86	-0.14
	Tolerance Limit (±unit)	0.20

Salinity

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

Method Rel. Al IIA (213) culti	JII), 23200	
Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	
10	9.74	-2.6
20	18.89	-5.6
30	28.96	-3.5
	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)
9.5	9.8	0.3
20.5	21.2	0.7
39.5	38.3	-1.2
	Tolerance Limit (°C)	2.0

Mr Chan Kwok Fai, Godfrey Laboratory Manager – Hong Kong

ALS Technichem (HK) Pty Ltd

ALS Environmental



佳力高試驗中心有限公司 CASTCO TESTING CENTRE LTD.

TEST REPORT Performance Check / Calibration of Turbidity Meter

Date of issue: 31-07-2012

Page 1 of 1 page(s)

Castco LRN: EN0120726-13

Sample details as supplied by customer:-

Customer: Lam Geotechnics Ltd.

Customer Ref. No.: --

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

Contract No.: --

Job Title: --

Sample Identification No.: --

Date Sampled: --

Laboratory Test Results:-

Date of sample received: 26-07-2012

Test period: 27-07-2012

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)	Method
0	0.06		
5	4.53	-9.4	
10	9.08	-9.2	ENV-WAT-TUR
50	46.0	-8.0	ENV-WAI-TUR
100	101	+1.0	
200	190	-5.0	

Remark(s):

- 1. Test results only relate to the specimen tested.
- 2. Compliance requirement : Tolerance Limit \pm 10.0%.
- 3. Turbidity meter model No.: HACH 2100P.
- 4. Turbidity meter serial No.: 931000003861.
- 5. Next Calibration due date: 27-10-2012.
- 6. Reference method: APHA 21st Ed. 2130B (Nephelometric method).

Checked by

H T MA

Certified by:

End of Report

LEE STEPHEN SHU HANG

Form No. ENV CAL Tur T1 dd 26/06/2012

Chief Chemist



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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

	l 19, 2012 Tisch	Rootsmeter Orifice I.I	D / = .	138320 0005	Ta (K) - Pa (mm) -	298 751.84
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1 2 3 4 5	NA NA NA NA NA	NA NA NA NA NA	1.00 1.00 1.00 1.00 1.00	1.3840 0.9760 0.8730 0.8340 0.6890	3.2 6.4 7.9 8.8 12.7	2.00 4.00 5.00 5.50 8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9850 0.9809 0.9788 0.9777 0.9725	0.7117 1.0050 1.1212 1.1723 1.4115	1.4066 1.9892 2.2240 2.3326 2.8132		0.9957 0.9915 0.9894 0.9883 0.9831	0.7194 1.0159 1.1333 1.1850 1.4268	0.8903 1.2591 1.4078 1.4765 1.7807
Qstd slo intercep coeffici	t (b) =	2.01145 -0.02803 0.99995		Qa slop intercep coeffici	t (b) = ent (r) =	1.25953 -0.01774 0.99995
v axis =	SORT [H2O(- Pa/760)(298/	Ta)]	'y axis =	SQRT [H20 ([a/Pa)]

CALCULATIONS

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

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

Qa = Va/Time

For subsequent flow rate calculations:

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



Location :		CMA1b				Calbra	tion Date	:	13-Aug-12
Equipment no.		EL452			Calbra	tion Due Dat	:	13-Oct-12	
CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER						
				mbient Co	ndition				
Temperature, T _a		305		1	Pressure, P	, a	T	1015	mmHg
. , ,									
	ı		Orifice Tra	I I	dard Informa	<u> </u>			
Equipment No.		EL086		Slope, m _c 2.01145 Intercept,					-0.02803
Last Calibration Date		19-Jul-12	2	(HxP _a /1013.3x298/T _a					1/2
Next Calibration Date		19-Jul-1	3		=	$m_c x$	$Q_{std} + b_c$		
			C	alibration	of RSP				
Calibration	Mar	nometer R	eading	C	std	Continu	ious Flow		IC
Point	Н (inches of	water)	(m ³	/ min.)	Reco	rder, W	(W(P _a /1	013.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-	axis	(C	FM)		Y-axis
1	6.0	6.0	12.0	1.7	7177		60		59.3572
2	5.0	5.0	10.0	1.5	5692		54		53.4215
3	4.0	4.0	8.0	1.4	1050		47		46.4965
4	2.5	2.5	5.0	1.1	1137	;	36		35.6143
5	1.5	1.5	3.0	0.8	3658	:	24		23.7429
By Linear Regression of	Y on X		•	•		•			
	Slope, m	=	41.2	723	Inte	ercept, b =	= -1	1.3427	
Correlation C	oefficient*	=	0.99	991					
Calibration	Accepted	=	Yes/l	No**					
* if Correlation Coefficier	nt < 0.990,	check and	I recalibratio	n again.					
** Delete as appropriate.									
Remarks :									
<u> </u>									
		Fung				Checke	ed by		Derek Lo
Calibrated by .	1	3-Aug-12				Date	 ,	· —	13-Aug-12
Date		- / wy 12				Date		·	



Location		CIVIA ID				Calbratio	on Date	•	10-001-12
Equipment no.		EL452				Calbratio	on Due Dat	:	16-Dec-12
CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER						
				mbient Co	ondition				
Temperature, T _a		301		Kelvin	Pressure, P	a		1010	mmHg
			Orifice Tra	nsfer Stan	dard Informa	ation			
Equipment No.		EL086		Slope, m _c	2.0114	45 II	ntercept, be	=	-0.02803
Last Calibration Date		19-Jul-1	2	(H x P _a / 1013.3 x 298 / 1					1/2
Next Calibration Date		19-Jul-1	3						
			c	alibration	of RSP				
Calibration	Mar	nometer R	eading	c) _{std}		IC		
Point	Н (inches of	water)	(m ³	n ³ / min.) Recorde		der, W	(W(P _a /1	013.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-	X-axis (CFM		M)		Y-axis
1	6.1	6.1	12.2	1.	7389	62	2		61.5897
2	5.0	5.0	10.0	1.5	5757	55	5		54.6360
3	4.1	4.1	8.2	1.4	4281	48	3		47.6824
4	2.5	2.5	5.0	1.1	1182	36	6		35.7618
5	1.4	1.4	2.8	0.8	8403	25	5		24.8346
By Linear Regression of	Y on X								
	Slope, m	=	40.7	641	Inte	ercept, b =	-9	9.7338	
Correlation Co	oefficient*	=	0.99	994					
Calibration	Accepted	=	Yes/l	No**					
* if Correlation Coefficier	nt < 0.990,	, check and	I recalibratio	n again.					
** Delete as appropriate.									
Remarks :									
Calibrated by		Sam				Checked	l by	:	Derek Lo
Date :	1	6-Oct-12				Date		:	16-Oct-12



Location :		CMA5a				Calbr	ation Date	:	13-Aug-12
Equipment no.		EL380				Calbr	ation Due Dat	۱:	13-Oct-12
								-	
CALIBRATION OF COM	ITINUOU:	S FLOW R	<u>ECORDER</u>						
			Δ.	Ambient Co	ndition				
Temperature, T _a		305	5	Kelvin	Pressure, P	a		101	15 mmHg
			Orifice Tra	nsfer Stan	dard Inform	ation			
Equipment No.		EL086		Slope, m _c	2.011	45	Intercept, b	С	-0.02803
Last Calibration Date		19-Jul-1	2		(Hxl	P _a / 10	13.3 x 298	/ 7	a) 1/2
Next Calibration Date		19-Jul-1	3				$x Q_{std} + b_c$		
			C	Calibration	of RSP				
Calibration	Mar	nometer R	eading	C	std	Contir	nuous Flow		IC
Point	Н (inches of	water)	(m ³	/ min.)	Recorder, W			P _a /1013.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)) X-	axis	((CFM)		Y-axis
1	6.1	6.1	12.2	1.	7318	58			57.3786
2	5.0	5.0	10.0	1.5	5692		52		51.4429
3	3.7	3.7	7.4	1.3	3519		44		43.5286
4	2.4	2.4	4.8	1.0	0915		35	34.6250	
5	1.4	1.4	2.8	0.8	3369		26		25.7215
By Linear Regression of	Y on X								
	Slope, m	=	35.3	3013	Int	ercept, b	= -	-3.92	263
Correlation Co	oefficient*	=	0.99	999					
Calibration	Accepted	=	Yes/	No**					
* if Correlation Coefficier	nt < 0.990	check and	d recalibratio	n again					
ii Gerreialieri Geerreia		, orroon arn	a roodiibratio	ir again.					
** Delete as appropriate.									
Remarks :									
Calibrated by		Fung				Chec	ked by	:	Derek Lo
Date	1	3-Aug-12				Date		:	13-Aug-12



Location :	CMA5a						ation Date	:_	16-Oct-12
Equipment no.		EL380				Calbr	ation Due Dat	: _	16-Dec-12
CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER						
			A	mbient Co	ondition				
Temperature, T _a		301		Kelvin	Pressure, P	a		1010) mmHg
			Orifice Tra	nsfer Stan	dard Informa	ation			
Equipment No.		EL086		Slope, m _c	2.0114	45	Intercept, b	С	-0.02803
Last Calibration Date		19-Jul-1	2		(HxF	P _a / 10	13.3 x 298	/ T	a) ^{1/2}
Next Calibration Date		19-Jul-1	3	$= m_c \times Q_{std} + b_c$					
			C	alibration	of RSP				
Calibration	Mar	nometer R	eading	Q _{std} Continuous Flow					IC
Point	Н (inches of	water)	(m ³	/ min.) Recorder, W		(W(P _a /1013.3x298/T _a) ^{1/2} /3		
	(up)	(down)	(difference)	x-	X-axis (CF		(CFM)		Y-axis
1	6.1	6.1	12.2	1.	7389		57		56.6228
2	5.0	5.0	10.0	1.	5757		52		51.6559
3	3.8	3.8	7.6	1.3	3754		45		44.7022
4	2.4	2.4	4.8	1.0	0959		35		34.7684
5	1.5	1.5	3.0	0.	8693		27		26.8213
By Linear Regression of	Y on X								
	Slope, m	=	34.5	420	Inte	ercept, b	=	3.063	33
Correlation Co	oefficient*	=	0.99	997					
Calibration	Accepted	=	Yes/	Ne**					
* if Correlation Coefficier	nt < 0.990,	check and	d recalibratio	n again.					
** Delete as appropriate.									
Remarks :									
Calibrated by		Sam				Chec	ked by	:	Derek Lo
Date :	1	6-Oct-12				Date		:_	16-Oct-12



Location :		CMA4a				Calbr	ation Date	:	13-Aug-12
Equipment no.		EL390				Calbra	ation Due Dat	: -	13-Oct-12
								_	
CALIBRATION OF CON	ITINUOUS	S FLOW RI	ECORDER					_	
			A	mbient Co	ndition				
Temperature, T _a		305		Kelvin	Pressure, P	a		101	5 mmHg
			Orifice Tra	nsfer Stan	dard Informa	ation			
Equipment No.		EL086		Slope, m _c	2.0114	45	Intercept, b	С	-0.02803
Last Calibration Date		19-Jul-12	2		(HxI	P _a / 10	13.3 x 298	/ T	a) ^{1/2}
Next Calibration Date		19-Jul-13	3	=	m_c	$(Q_{std} + b_c)$;		
			C	alibration	of RSP				
Calibration	Mar	nometer Re	eading	Q	std	Contin	uous Flow		IC
Point	Н (inches of v	water)	(m ³ /	(m³ / min.) Recorde		order, W	(W(F	P _a /1013.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-	axis	(CFM)		Y-axis
1	6.1	6.1	12.2	1.7	'318		60		59.3572
2	5.0	5.0	10.0	1.5	6692		53		52.4322
3	3.7	3.7	7.4	1.3	3519		45		44.5179
4	2.5	2.5	5.0	1.1	137		36		35.6143
5	1.4	1.4	2.8	0.8	369		26		25.7215
By Linear Regression of	Y on X								
	Slope, m	=	37.3	619	Int	ercept, b	= -	5.81	54
Correlation Co	oefficient*	=	0.99	996					
Calibration	Accepted	=	Yes/	No**					
* if Correlation Coefficier	nt < 0.990,	check and	l recalibratio	n again.					
** Delete as appropriate.									
Remarks :									
Calibrated by		Fung				Checl	ked by	:	Derek Lo
Date	1	3-Aug-12				Date		: -	13-Aug-12
Date								_	



Location :		CMA4a				Calbra	tion Date	:	16-Oct-12
Equipment no.		EL390				Calbra	tion Due Dat	ı :	16-Dec-12
CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER						
			Α	mbient Co	ndition				
Temperature, T _a		301	l	Kelvin	Pressure, P	a		1010	mmHg
			Orifice Tra	nsfer Stan	dard Informa	ation			
Equipment No.		EL086		Slope, m _c	2.0114	45	Intercept, b	С	-0.02803
Last Calibration Date		19-Jul-1	2	$(H \times P_a / 1013.3 \times 298 / T_a)^{-1/2}$					1/2
Next Calibration Date		19-Jul-1	3	$= m_c \times Q_{std} + b_c$					
			C	alibration	of RSP				
Calibration	Mar	nometer R	eading	c	l _{std}	Continu		IC	
Point	Н (inches of	water)	(m ³	³ / min.) Records		rder, W	(W(P _a /1	1013.3x298/T _a) ^{1/2} /35.31)
	(up)	(down)	(difference)	X-	X-axis (CFI		FM)		Y-axis
1	6.1	6.1	12.2	1.	7389		60		59.6030
2	5.0	5.0	10.0	1.5	5757		53		52.6493
3	3.8	3.8	7.6	1.3	3754		44		43.7088
4	2.4	2.4	4.8	1.0	0959		34		33.7750
5	1.4	1.4	2.8	0.8	3403		23		22.8478
By Linear Regression of	Y on X								
	Slope, m	=	40.4	660	Inte	ercept, b	=	11.1111	<u> </u>
Correlation Co	oefficient*	=	0.99	994					
Calibration	Accepted	=	Yes/	Ne**					
* if Correlation Coefficier	nt < 0.990.	. check and	d recalibratio	n again.					
** Delete as appropriate.									
Remarks :									
Calibrated by		Sam				Check	ed by	:	Derek Lo
Date :	1	6-Oct-12				Date		:	16-Oct-12



Calibration Due Dat	Location :		CMA3a		Calbration Date :					13-Aug-12
Temperature, T_s 305 Kelvin Pressure, P_s 1015 mmHg	Equipment no.		EL888				Calbr	ation Due Da	۱:	13-Oct-12
Temperature, T_s 305 Kelvin Pressure, P_s 1015 mmHg									-	
Temperature, T_s 305 Kelvin Pressure, P_s 1015 mmHg										
Temperature, T _a 305 Kelvin Pressure, P _a 1015 mmHg	CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER						
Stope, m				Α	mbient Co	ndition				
Equipment No. EL086 Slope, m; 2.01145 Intercept, bc -0.02803	Temperature, T _a		305	,	Kelvin	Pressure, P	a		101	15 mmHg
Last Calibration Date 19-Jul-12				Orifice Tra	nsfer Stan	dard Inform	ation			
Next Calibration Date 19-Jul-13	Equipment No.		EL086		Slope, m _c	2.011	45	Intercept, b	С	-0.02803
Calibration Manometer Reading Q std Continuous Flow IC	Last Calibration Date		19-Jul-1	2		(HxI	P _a / 10)13.3 x 298	/7	a) ^{1/2}
Calibration Manometer Reading Point Q and (m³ / min.) Continuous Flow (W(P₂/1013.3x298/T₂)¹²²/35.31) IC (W(P₂/1013.3x298/T₂)¹²²/35.31) 1 6.0 6.0 12.0 1.7177 48 47.4858 2 4.7 4.7 9.4 1.5219 41 40.5608 3 3.9 3.9 7.8 1.3875 36 35.6143 4 2.4 2.4 4.8 1.0915 24 23.7429 5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/Ne** 1.8.3502 **if Correlation Coefficient < 0.990, check and recalibration again. **Delete as appropriate. **Remarks :	Next Calibration Date		19-Jul-1	3		=	m_c	$x Q_{std} + b_{o}$;	
Point H (inches of water) (up) (down) (difference) (m³ / min.) Recorder, W (W(P₂/1013.3x2990T₂) ^{1/2} /35.31) 1 6.0 6.0 12.0 1.7177 48 47.4858 2 4.7 4.7 9.4 1.5219 41 40.5608 3 3.9 3.9 7.8 1.3875 36 35.6143 4 2.4 2.4 4.8 1.0915 24 23.7429 5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Slope, m = 38.5754				C	alibration	of RSP				
(up) (down) (difference) X-axis (CFM) Y-axis 1	Calibration	Mar	nometer R	eading	c	Q _{std} Continuous Flow				IC
1 6.0 6.0 12.0 1.7177 48 47.4858 2 4.7 4.7 9.4 1.5219 41 40.5608 3 3.9 3.9 7.8 1.3875 36 35.6143 4 2.4 2.4 4.8 1.0915 24 23.7429 5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Slope, m = 38.5754 Intercept, b = -18.3502 Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/No** ** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo Date : 13-Aug-12	Point	Н (inches of	water)	(m ³	/ min.) Recorder, W			(W(P _a /1013.3x298/T _a) ^{1/2} /	
2 4.7 4.7 9.4 1.5219 41 40.5608 3 3.9 3.9 7.8 1.3875 36 35.6143 4 2.4 2.4 4.8 1.0915 24 23.7429 5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Slope, m = 38.5754 Intercept, b = -18.3502 Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/No** * if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo		(up)	(down)	(difference)	X-	axis (CFM)		(CFM)		Y-axis
3 3.9 3.9 7.8 1.3875 36 35.6143 4 2.4 2.4 4.8 1.0915 24 23.7429 5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Slope, m = 38.5754 Intercept, b = -18.3502 Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/Ne** * if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo	1	6.0	6.0	12.0	1.	7177 48		48		47.4858
4 2.4 2.4 4.8 1.0915 24 23.7429 5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Slope, m = 38.5754 Intercept, b = -18.3502 Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/Ne** * if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks : Checked by : Derek Lo Lagrange (13-August 2)	2	4.7	4.7	9.4	1.5	5219 41		41		40.5608
5 1.5 1.5 3.0 0.8658 15 14.8393 By Linear Regression of Y on X Slope, m = 38.5754 Intercept, b = -18.3502 Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/Ne** * if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks : Checked by : Derek Lo Logical School (13-Aug-12)	3	3.9	3.9	7.8	1.3	3875		36		35.6143
By Linear Regression of Y on X Slope, m = 38.5754	4	2.4	2.4	4.8	1.0	0915		24		23.7429
Slope, m = 38.5754 Intercept, b = -18.3502 Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/Ne** * if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo	5	1.5	1.5	3.0	0.8	3658		15		14.8393
Correlation Coefficient* = 0.9997 Calibration Accepted = Yes/Ne** * if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo	By Linear Regression of	Y on X								
* if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. **Calibrated by : Fung Checked by : Derek Lo 13-Aug-12 **Date : 13-Aug-12		Slope, m	=	38.5	754	Int	ercept, b	= -	18.3	502
* if Correlation Coefficient < 0.990, check and recalibration again. ** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo	Correlation Co	pefficient*	=	0.99	997					
** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo : 13-Aug-12	Calibration	Accepted	=	Yes/l	No**					
** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo : 13-Aug-12										
** Delete as appropriate. Remarks: Calibrated by : Fung Checked by : Derek Lo : 13-Aug-12	****			1 19 6						
Calibrated by : Fung Checked by : Derek Lo	a if Correlation Coefficier	it < 0.990,	cneck and	recalibratio	n agaın.					
Calibrated by : Fung	** Delete as appropriate.									
13-Aug-12	Remarks :									
13-Aug-12										
. 13-Aug-12 Date : 13-Aug-12	Calibrated by		Fung				Chec	ked by	:	Derek Lo
		1:	3-Aug-12				Date		:	13-Aug-12



Location :	: CMA3a						Calbration Date : 16-Oct-12				
Equipment no. :		EL888				Calbr	ation Due Dat	: _	16-Dec-12		
								_			
CALIBRATION OF CON	ITINUOUS	S FLOW R									
	ı		Α	mbient Co	ondition						
Temperature, T _a		301		Kelvin	Pressure, P	a		1010) mmHg		
			Orifice Tra	nsfer Stan	dard Informa	ation					
Equipment No.		EL086		Slope, m _c	2.0114	45	Intercept, b	С	-0.02803		
Last Calibration Date		19-Jul-1	2		a) ^{1/2}						
Next Calibration Date		19-Jul-1	3		=	m_c	$(Q_{std} + b_{c})$:			
			C	alibration	of RSP						
Calibration	Mar	ometer R	eading	C	Q _{std} Continuous Flow						
Point	Н (і	inches of	water)	(m ³	/ min.) Recorder, W			(W(P _a /1013.3x298/T _a) ^{1/2} /35.3			
	(up)	(down)	(difference)	X-	axis	(CFM)			Y-axis		
1	6.1	6.1	12.2	1.	7389		50		49.6691		
2	4.7	4.7	9.4	1.	5281		42		41.7221		
3	4.0	4.0	8.0	1.	4108		38		37.7485		
4	2.4	2.4	4.8	1.0	0959		24		23.8412		
5	1.4	1.4	2.8	0.	8403		14		13.9074		
By Linear Regression of	Y on X										
	Slope, m	=	40.2	808	Inte	ercept, b	= -	19.90	65		
Correlation Co	oefficient*	=	0.99	994							
Calibration	Accepted	=	Yes/	No**							
* if Correlation Coefficier	nt < 0.990,	check and	d recalibratio	n again.							
** Delete as appropriate.											
Remarks :											
Calibrated by		Sam				Chec	ked by	:	Derek Lo		
Date	1	6-Oct-12				Date		: -	16-Oct-12		
-								_			



Location		CIVIAZA				Calbrat	ion Date	•	13-Aug-12
Equipment no.		EL449				Calbrat	ion Due Dat	:	13-Oct-12
CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER						
				mbient Co	ndition				
Temperature, T _a		305	;	Kelvin	Pressure, P	a		101	5 mmHg
			Orifice Tra	nsfer Stan	dard Informa	ation			
Equipment No.		EL086		Slope, m _c	2.011	45	Intercept, be	С	-0.02803
Last Calibration Date		19-Jul-12	2	(HxP _a /1013.				/ T	a) 1/2
Next Calibration Date		19-Jul-1	3	$= m_c \times Q_{std} + b_c$					
			C	alibration	of RSP				
Calibration	Mar	nometer R	eading	IC					
Point	Н(inches of	water)	(m ³	/ min.)	der, W	W (W(P _a /1013.3x298/T _a)		
	(up)	(down)	(difference)	X-	X-axis (CFM		FM)		Y-axis
1	6.0	6.0	12.0	1.7	7177	Ę	51		50.4536
2	5.0	5.0	10.0	1.5	5692	4	14		43.5286
3	3.9	3.9	7.8	1.0	3875	3	36		35.6143
4	2.5	2.5	5.0	1.1	1137	2	26		25.7215
5	1.4	1.4	2.8	0.8	3369	1	14		13.8500
By Linear Regression of	Y on X								
	Slope, m	=	40.8	952	Int	ercept, b =	= -2	20.3	530
Correlation Co	oefficient*	=	0.99	992					
Calibration	Accepted	=	Yes/	No**					
* if Correlation Coefficier	nt < 0.990,	, check and	l recalibratio	n again.					
** 5									
** Delete as appropriate.									
Remarks :									
Calibrated by		Fung				Checke	d by	: -	Derek Lo
Date :	1	3-Aug-12				Date		:_	13-Aug-12



Location :	: CMA2a					: 16-Oct-12				
Equipment no.		EL449		Calbration Due Dat : 16-					16-Dec-12	
CALIBRATION OF COM	NTINUOUS	S FLOW R	ECORDER							
				mbient Co	ondition					
Temperature, T _a								1010	mmHg	
			0 'C T							
		=1			dard Inform				0.0000	
Equipment No.		EL086					Intercept, b			
Last Calibration Date	19-Jul-12 $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$) "-		
Next Calibration Date		19-Jul-1	3		=	m _c z	$(Q_{std} + b_{c})$;		
			C	alibration	of RSP					
Calibration	Mar	nometer R	eading	d	Q _{std} Continuo		nuous Flow	IC		
Point	Н (inches of	water)	(m ³	/ min.)	Recorder, W		(W(P _a /1013.3x298/T _a) ^{1/2} /35.31)		
	(up)	(down)	(difference)	X-	X-axis		(CFM)		Y-axis	
1	6.0	6.0	12.0	1.	1.7247		53		52.6493	
2	5.0	5.0	10.0	1.5757		45		44.7022		
3	4.0	4.0	8.0	1.4	1.4108		38		37.7485	
4	2.5	2.5	5.0	1.	1.1182		26		25.8279	
5	1.5	1.5	3.0	0.8693		15		14.9007		
By Linear Regression of	Y on X									
	Slope, m	=	43.3	273	Int	ercept, b	= -2	22.882	2	
Correlation Coefficient* =			0.99	0.9992			'			
Calibration Accepted = Yes				No**						
* if Correlation Coefficier	nt < 0.990,	, check and	d recalibratio	n again.						
** Delete as appropriate										
Remarks :										
		Sam				Chec	ked by	:	Derek Lo	
Calibrated by	1	6-Oct-12				Date	•	. —	16-Oct-12	
Date										



Location		CIVIAGA		Calbration Da				•	13-Aug-12		
Equipment no. :		EL448		Calbratio			ion Due Dat	:	13-Oct-12		
CALIBRATION OF CON	HINUOUS	S FLOW R	ECORDER								
	ı		A	mbient Co	ndition		1				
Temperature, T _a		305 Kelvin Pressure, P _a					1015	mmHg			
			Orifice Tra	nsfer Stan	dard Informa	ation					
Equipment No.		EL086		Slope, m _c	ope, m _c 2.01145 In			tercept, bc -0.02803			
Last Calibration Date	19-Jul-12				$(HxP_a/1013.3x298/T_a)^{1/2}$						
Next Calibration Date		19-Jul-1	3		=	$m_c x$	$m_c \times Q_{std} + b_c$				
			C	alibration	of RSP						
Calibration	Manometer Reading						ous Flow		IC		
Point		inches of				Reco	rder, W	(W(P _a /1	013.3x298/T _a) ^{1/2} /35.31)		
	(up)	(down)	(difference)				·M)		Y-axis		
1	6.2	6.2	12.4		,		61	60.3465			
2	5.0	5.0	10.0		1.5692		53	52.4322			
3	4.1	4.1	8.2				46	45.5072			
4	2.5	2.5	5.0		1.4223 46 1.1137 34				33.6358		
5	1.5	1.5	3.0				24		23.7429		
		1.0	3.0	0.0	J030		24		25.1425		
By Linear Regression of			44.0	400							
			41.3		Inte	ercept, b =	= -1	12.3623			
Correlation Coefficient* = —			0.99	993							
Calibration Accepted = Yes/Ne**											
* if Correlation Coefficier	st ~ 0 000	check and	l recalibratio	n again							
ii Correlation Coemicier	11 < 0.550,	, oneon and	recambiano	ir agairi.							
** Delete as appropriate.											
Remarks :											
		Fung				Checke	ed by	:	Derek Lo		
Calibrated by	1	3-Aug-12				Date		. —	13-Aug-12		
Date	10 / lug 12					Jule		·			



Location :	: CMA6a			Calbration Date				: 16-Oct-12			
Equipment no.	EL448					Calbr	ation Due Da	1:	16-Dec-12		
CALIBRATION OF CON	ITINUOUS	S FLOW R	ECORDER								
				mbient Co	ndition						
Temperature, T _a		301		Kelvin Pressure, Pa				1010	mmHg		
			Orifice Tra	nsfer Stan	dard Informa	ation					
Equipment No.	EL086			Slope, m _c 2.01145 I			Intercept, b	-0.02803			
Last Calibration Date	19-Jul-12				$(HxP_a/1013.3x298/T_a)^{1/2}$						
Next Calibration Date		$= m_c \times Q_{std} + b_c$									
			C	alibration	of RSP						
Calibration	Mar	nometer R	eading	G	std	Contin	uous Flow		IC		
Point	Н (inches of	water)	(m ³	/ min.)	Rec	order, W	(W(P _a /1013.3x298/T _a) ^{1/2} /35.31)			
	(up)	(down)	(difference)	X-	axis	(CFM)	Y-axis			
1	6.0	6.0	12.0	1.	7247		61		60.5963		
2	5.0	5.0	10.0	1.5	5757	7 54			53.6427		
3	4.0	4.0	8.0	1.4	1 108	8 46			45.6956		
4	2.5	2.5	5.0	1.	.1182 34		34		33.7750		
5	1.5	1.5	3.0	0.8	0.8693 23		23		22.8478		
By Linear Regression of	Y on X										
	Slope, m	=	43.8	163	Into	ercept, b	= -	15.39	16		
Correlation Coefficient* =			0.99	0.9996							
Calibration Accepted =				No**							
* if Correlation Coefficier	nt < 0.990.	check and	d recalibratio	n again.							
				ga							
** Delete as appropriate.											
Remarks :											
Calibrated by		Sam				Chec	ked by	:	Derek Lo		
Date .	16-Oct-12				Date				: 16-Oct-12		