

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

		/ Rootsmeter Orifice I.I		438320 0005	Ta (K) - Pa (mm) -	293 - 759.46
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	1.3960 0.9970 0.8910 0.8500 0.6990	3.2 6.4 7.8 8.7 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)
1.0120 1.0078 1.0058 1.0047 0.9993	0.7249 1.0108 1.1288 1.1820 1.4296	1.4257 2.0163 2.2543 2.3643 2.8514		0.9958 0.9916 0.9896 0.9885 0.9832	0.7133 0.9946 1.1107 1.1630 1.4066	0.8784 1.2423 1.3889 1.4567
Qstd slop intercept coefficie	t (b) = ent (r) =	2.02533 -0.03593 0.99983	n e n	Qa slope intercept coefficie	t (b) = ent (r) =	1.26823 -0.02214 0.99983
y axis =	SQRT[H20(I	Pa/760)(298/5	Γa)]	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	:	ACL1	Calibration Date	:	16-Jan-18
Equipment no.	:	HVS014	Calibration Due Date	: -	16-Mar-18

CALIBRATION OF CONTINUOUS FLOW RECORDER

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

Orifice Transfer Standard Information									
Equipment No.	Ori001	Slope, m _c	2.02533	Intercept, bc	-0.03593				
Last Calibration Date	20-Mar-17	(HxP _a /1013.3 x 298/T _a) ^{1/2}							
Next Calibration Date	20-Mar-18		= m	$_{\rm c}$ x Q $_{\rm std}$ + b $_{\rm c}$					

Calibration of TSP									
Calibration	Manometer Reading			Q _{std}	Continuous Flow	IC			
Point	Н (inches of v	water)	(m ³ / min.)	Recorder, W	(W(P _a /1013.3x298/T _a) ^{1/2} /35.31)			
	(up)	(down)	(difference)	X-axis	(CFM)	Y-axis			
1	1.5	1.5	3.0	0.8839	38	38.4866			
2	2.4	2.4	4.8	1.1133	46	46.5890			
3	3.7	3.7	7.4	1.3781	56	56.7171			
4	4.7	4.7	9.4	1.5509	61	61.7811			
5	6.0	6.0	12.0	1.7500	65	65.8323			
By Linear Regression of Y o	n X								
	Slope, m	=	32.42	255 In	tercept, b = 10.	.5851			
Correlation C	oefficient*	=	0.99	43					

			Intercept, b =	10.5851
Correlation Coefficient*	=	0.9943	_	
Calibration Accepted	=	Yes/No**		

Calibrated by	: <u></u>	Jackey MA	Checked by :	Pauline Wong
Date	:	16-Jan-18	Date :	16-Jan-18

 $[\]ensuremath{^*}$ if Correlation Coefficient < 0.990, check and recalibration again.



Location	:	ACL1	Calibration Date :	:	09-Mar-18
Equipment no.	:	HVS014	Calibration Due Date :	: -	09-May-18

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition									
Temperature, T _a	288	Kelvin Pressure , P _a	1023	mmHg					

Orifice Transfer Standard Information									
Equipment No.	Ori001	Slope, m _c	2.02533	Intercept, bc	-0.03593				
Last Calibration Date	20-Mar-17	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$							
Next Calibration Date	20-Mar-18		= <i>m</i>	$c \times Q_{std} + b_c$					

Calibration of TSP									
Calibration	Mai	nometer Re	eading	Q _{std}	Continuous Flow	IC			
Point	H (inches of water)		(m ³ / min.)	Recorder, W	(W(P _a /1013.3x298/T _a) ^{1/2} /35.31)				
	(up)	(down)	(difference)	X-axis	(CFM)	Y-axis			
1	1.5	1.5	3.0	0.8918	42	42.9269			
2	2.4	2.4	4.8	1.1234	48	49.0594			
3	3.5	3.5	7.0	1.3529	56	57.2359			
4	4.6	4.6	9.2	1.5484	63	64.3904			
5	5.9	5.9	11.8	1.7512	66	67.4566			
By Linear Regression of Y o	n X								
	Slope, m	=	30.07	784 In	itercept, b = 16.	1029			
Correlation C	oefficient*	=	0.99	34					

* if Correlation	Coofficient	~ 0.000	chack s	and rocali	hration	again
II COITEIAUON	Coemicient	< U.99U.	CHECK	anu recan	DIALIOII	auaiii.

Calibration Accepted

Calibrated by	:	Jackey MA	Checked by :	Pauline Wong
Date	:	09-Mar-18	Date :	09-Mar-18

Yes/No**



Location	:	ACL2a	Calibration Date	:	16-Jan-18
Equipment no.	:	HVS011	Calibration Due Date	:	16-Mar-18

CALIBRATION OF CONTINUOUS FLOW RECORDER

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

Orifice Transfer Standard Information								
Equipment No.	Ori001	Slope, m _c	2.02533	Intercept, bc	-0.03593			
Last Calibration Date	20-Mar-17	(HxP _a /1013.3 x 298/T _a) ^{1/2}						
Next Calibration Date	20-Mar-18	$m_c \times Q_{std} + b_c$						

Calibration of TSP								
Calibration	Mai	nometer Re	eading	Q _{std}	Continuous Flow	IC		
Point	Н (inches of v	vater)	(m ³ / min.)	Recorder, W	(W(P _a /1013.3x298/T _a) ^{1/2} /35.31)		
	(up)	(down)	(difference)	X-axis	(CFM)	Y-axis		
1	1.5	1.5	3.0	0.8839	30	30.3841		
2	2.4	2.4	4.8	1.1133	38	38.4866		
3	3.7	3.7	7.4	1.3781	46	46.5890		
4	5.0	5.0	10.0	1.5991	52	52.6658		
5	6.4	6.4	12.8	1.8068	58	58.7427		
By Linear Regression of Y	on X							
	Slope, m	=	30.43	339 Int	tercept, b =	4.0978		
Correlation Coefficient*		=	0.99	89				
Calibration Accepted		=	Yes/4					

* if Correlation Coefficient < 0.990	, check and recalibration again.
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	Remarks:	As per client's provided information	, the equipment reference no. of	the calibrated High Volume Sampler has been
--	----------	--------------------------------------	----------------------------------	---

re-assigned from EL111 to HVS011 with respect to the update in quality management system.

 Calibrated by
 :
 Jackey MA
 Checked by
 :
 Pauline Wong

 Date
 :
 16-Jan-18
 Date
 :
 16-Jan-18



Location	:	ACL2a	Calibration Date	:	09-Mar-18
Equipment no.	:	HVS011	Calibration Due Date	:	09-May-18

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition						
Temperature, T _a	288	Kelvin	Pressure, P _a	1023	mmHg	

Orifice Transfer Standard Information							
Equipment No.	Ori001	Slope, m _c	2.02533	Intercept, bc	-0.03593		
Last Calibration Date	20-Mar-17	$(Hx P_a / 1013.3 x 298 / T_a)^{1/2}$					
Next Calibration Date	20-Mar-18	$m_c \times Q_{std} + b_c$					

Calibration of TSP								
Calibration	Ma	nometer Re	eading	Q _{std}	Continuous Flow	IC		
Point	Н (inches of v	water)	(m ³ / min.)	Recorder, W	(W(P _a /1013.3x298/T _a) ^{1/2} /35.31)		
	(up)	(down)	(difference)	X-axis	(CFM)	Y-axis		
1	1.6	1.6	3.2	0.9205	30	30.6621		
2	2.5	2.5	5.0	1.1462	38	38.8387		
3	4.0	4.0	8.0	1.4451	46	47.0152		
4	5.2	5.2	10.4	1.6452	52	53.1476		
5	6.5	6.5	13.0	1.8373	58	59.2801		
By Linear Regression of Y on X								
	Slope, m	=	30.63	303 Int	tercept, b =	2.9422		
Correlation Coefficient* =		0.99	91					
Calibration Accepted		=	Yes/P					

if Correlation Coefficient < 0.990	check and recalibration again.
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Remarks : As per client's provided information, the equipment reference no. of the calibrated High Volume Sampler has been

re-assigned from EL111 to HVS011 with respect to the update in quality management system.

 Calibrated by
 :
 Jackey MA
 Checked by
 :
 Pauline Wong

 Date
 :
 09-Mar-18
 Date
 :
 09-Mar-18



香港黄竹坑道37號利達中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail; smec@cigismec.com Website: www.cigismec.com Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

17CA0904 02

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Item tested

Description:

Sound Level Meter (Type 1)

Microphone

Preamp

of

Manufacturer: Type/Model No.: B & K 2250-L B & K 4950 2827240 B & K ZC0032 21213

Serial/Equipment No.: Adaptors used: 3006790

40

Item submitted by

Customer Name:

Lam Geotechnics Limited

Address of Customer:

Request No.:

04 Can 2017

Date of receipt:

04-Sep-2017

Date of test:

09-Sep-2017

Reference equipment used in the calibration

Description:

Model:

Serial No.

Expiry Date:

Traceable to:

Multi function sound calibrator Signal generator B&K 4226

2288444

08-Sep-2018 25-Apr-2018 CIGISMEC

Signal generator Signal generator DS 360 DS 360 33873 61227

25-Apr-2018 01-Apr-2018 CEPREI

Ambient conditions

Temperature:

21 ± 1 °C

Relative humidity:

50 ± 10 %

Air pressure:

1015 ± 5 hPa

Test specifications

 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.

 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 ±20%.

 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 responsess 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

Min/Feng Jun Qi

Actual Measurement data are documented on worksheets.

Approved Signatory:

Date:

09-Sep-2017

Company Chop:

SENGINESQUE SENGINESQUE ARCHIVE

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.

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Form No CARP152-1/Issue 1/Rev C/01/02/2007



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CERTIFICATE OF CALIBRATION

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Certificate No.:

17CA0904 02

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1 1

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 Uncertanity (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
The contract of the contract o	С	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	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	
Frequency weightings	A C	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	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	Crest factor of 3	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 1/103 at 4kHz	Pass	0.3	
150.55	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	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 Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz Weighting A at 8000 Hz	Pass Pass	0.3 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.

Calibrated by:

Lai Sheng Jie

Checked by:

Fung Chi Yip

Date:

09-Sep-2017

Date: 09-Sep-2017

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.

 $\mathbb D$ Soils & Materials Engineering Co . Ltd

Form No CARP152-2/Issue 1/Rev C/01/02/2007



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CERTIFICATE OF CALIBRATION

Certificate No.:

17CA0524 01

LxT1

0004796

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Item tested

Description: Manufacturer: Type/Model No.:

Adaptors used:

Sound Level Meter (Type 1)

Larson Davis

PCB 377B02 155507

Microphone Preamp PCB PRMLxT1L 042621

Item submitted by

Serial/Equipment No.:

Customer Name

Lam Environmental Service Ltd.

Address of Customer:

Request No.: Date of receipt:

24-May-2017

Date of test:

25-May-2017

Reference equipment used in the calibration

Description:

Multi function sound calibrator Signal generator

Model: B&K 4226

DS 360

Serial No. 2288444

61227

Expiry Date: 18-Jun-2017 01-Apr-2018

Traceable to: CIGISMEC CEPREI

Ambient conditions

Temperature:

21 ± 1 °C 50 ± 10 % 1010 ± 5 hPa

Relative humidity: Air pressure:

Test specifications

The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 1, and the lab calibration procedure SMTP004-CA-152

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 +20%.

The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3. between the free-field and pressure responsess 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.

eng Jung

Actual Measurement data are documented on worksheets.

Huang Ju

Approved Signatory:

26-May-2017

Company Chop:

The results reported whis 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

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Form No CARP152-1/Issue 1/Rev C/01/02/2007



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CERTIFICATE OF CALIBRATION

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Certificate No.:

17CA0524 01

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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 Uncertanity (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	2.1
	Lin	Pass	1.6	2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	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	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	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	Crest factor of 3	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 1/103 at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	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 Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz Weighting A at 8000 Hz	Pass Pass	0.3 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

Calibrated by:

Checked by:

Date:

25-May-2017

Date:

Fund Chi Yip 26-May-2017

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.

Soils & Materials Engineering Co., Ltd.

Form No CARP152-2/Issue 1/Rev C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

17CA1124 02

Page:

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer: Type/Model No.: Larson Davis CAL200

Serial/Equipment No.: Adaptors used:

13128

Item submitted by

Curstomer:

Lam Environmental Service Ltd.

Address of Customer: Request No.

Date of receipt:

24-Nov-2017

Date of test:

30-Nov-2017

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-Apr-2018	SCL
Preamplifier	B&K 2673	2239857	05-May-2018	CEPREI
Measuring amplifier	B&K 2610	2346941	03-May-2018	CEPREI
Signal generator	DS 360	61227	01-Apr-2018	CEPREI
Digital multi-meter	34401A	US36087050	25-Apr-2018	CEPREI
Audio analyzer	8903B	GB41300350	21-Apr-2018	CEPREI
Universal counter	53132A	MY40003662	22-Apr-2018	CEPREI

Ambient conditions

Temperature:

22 ± 1 °C

Relative humidity: Air pressure:

50 ± 10 % 1005 ± 5 hPa

Test specifications

- 1. 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. 2.
- 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.

Feng

Approved Signatory:

Date: 30-Nov-2017 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

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Form No CARP156-1/Issue 1 Rev D 01 03 2007



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CERTIFICATE OF CALIBRATION

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Certificate No.:

17CA1124 02

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1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

Frequency	Output Sound Pressure	Measured Output	(Output level in dB re 20 µPa) Estimated Expanded Uncertainty dB
Shown	Level Setting	Sound Pressure Level	
Hz	dB	dB	
1000	94.0	94.01	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.010 dB

Estimated expanded uncertainty

0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 999.5 Hz

Estimated expanded uncertainty

0.1 Hz

Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.5 %

Estimated expanded uncertainty

0.7 %

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.

Calibrated by:

End

MANAGEMENT TO

Checked by:

Lam Tze War

Date:

Fung Chi Yip 30-Nov-2017

Date:

30-Nov-2017

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.

C Soils & Materials Engineering Co. Ltd.

From No CARRISE SHARM URAN CIRCUS DOOR

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. HOKLAS 028 - CAL) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific calibration activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this certificate were determined by this laboratory in accordance with its terms of accreditation. Such terms of accreditation stipulate that the results shall be traceable to the International System of Units (S.I.) or recognised measurement standards. This certificate shall not be reproduced except in full.



Information supplied by customer:

CONTACT:

MR. SAM LAM

WORK ORDER: HK1810086

CLIENT:

LAM GEOTECHNICS LIMITED

DATE RECEIVED: 23/01/2018 DATE OF ISSUE:

25/01/2018

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:	24/01/2018	

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

Approved Signatory:

Ms. Wong Po Yan, Pauline Assistant Laboratory Manager Issue Date:

25/01/2018



WORK ORDER:

HK1810086

DATE OF ISSUE: 25/01/2018

CLIENT:

LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter	
Brand Name:	Xin Rui	
Model No.:	WGZ-3B	
Serial No.:	1309192	
Equipment No.:		
Date of Calibration:	24/01/2018	
Date of next Calibation:	24/04/2018	

Parameters:

Turbidity

Method Ref: APHA 22nd ed. 2130B

Michiga Rei. Mi III 22 Ca. 2150		The second secon	
Expected Reading (NTU)	Display Reading (NTU)	Tolerance	
0	0.00		
4	4.12	3.0%	
10	10.4	4.0%	
40	43.0	7.4%	
100	107	7.0%	
400	416	4.1%	
1000	1000	0.0%	
	Tolerance Limit (±)	10%	

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



Information supplied by customer:

CONTACT:

MR. SAM LAM

WORK ORDER: HK1810102

CLIENT:

LAM GEOTECHNICS LIMITED

DATE RECEIVED: 29/01/2018 DATE OF ISSUE:

01/02/2018

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.:	1403009	
Equipment No.:		
Date of Calibration:	01/02/2018	

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

Approved Signatory:

Ms. Wong Po Yan, Pauline Assistant Laboratory Manager Issue Date:

01/02/2018



WORK ORDER:

HK1810102

DATE OF ISSUE:

01/02/2018

CLIENT:

LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter	
Brand Name:	Xin Rui	52 TA 102 (C. C. C
Model No.:	WGZ-3B	
Serial No.:	1403009	
Equipment No.:		
Date of Calibration:	01/02/2018	
Date of next Calibation:	01/05/2018	3 <u>8</u> .

Parameters:

Turbidity

Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance	
0	0.00		-
4	4.09	2.3%	
10	9.35	-6.5%	
40	41.6	3.9%	
100	105	5.4%	
400	382	-4.5%	
000	1000	0.0%	
	Tolerance Limit (±)	10%	

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



Information supplied by customer:

CONTACT:

MR. SAM LAM

WORK ORDER: HK1810091

CLIENT:

LAM GEOTECHNICS LIMITED

DATE OF ISSUE:

DATE RECEIVED: 25/01/2018

25/01/2018

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:	Turbidity Meter	
Brand Name:	PCE Instruments	
Model No.:	PCE-TUM 20	
Serial No.:	Q942542	
Equipment No.:		
Date of Calibration:	25/01/2018	

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.

Approved Signatory:

Ms. Wong Po Yan, Pauline Assistant Laboratory Manager Issue Date:

25/01/2018



WORK ORDER:

HK1810091

DATE OF ISSUE:

25/01/2018

CLIENT:

LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidity Meter	
Brand Name:	PCE Instruments	
Model No.:	PCE-TUM 20	
Serial No.:	Q942542	
Equipment No.:		
Date of Calibration:	25/01/2018	
Date of next Calibation:	25/04/2018	

Parameters:

Turbidity

Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance	
0	0.00		
4	4.17	4.3%	
20	21.8	9.2%	
40	42.5	6.2%	
100	98.0	-2.0%	
400	397	-0.8%	
800	870	8.8%	
	Tolerance Limit (±)	10%	

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



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No.

: HK1810025

Project Name

EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT

Date of Issue

: 08/01/2018

Customer Address : LAM ENVIRONMENTAL SERVICES LIMITED

: 11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. Test Item No. HK1810025 HK1810025-01

Test Item No.

.....

Test Item Description Manufacturer Sonde YSI

Model No.

Professional Plus

Serial No.

14M100277

Performance Method

Checked according to in-house method CAL005

(References: Temperature (Section 6 of Intermational 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 Test Item Calibration Date 05/01/2018 05/01/2018

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. ± indicates the tolerance limit
- 4. N/A = Not applicable
- 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.
- Because of high sensitivity and ease of measurement, the conductivity method (according to APHA 19e 2510) is used to determine salinity.

Approved Signatory

Ms. Wong Po Yan, Pauline
(Assistant Laboratory Manager)

Issue Date:

08/01/2018



WORK ORDER:

HK1810025

DATE OF ISSUE:

08/01/2018

CLIENT:

LAM ENVIRONMENTAL SERVICES LIMITED

Equipment Type	Sonde	
Manufacturer	YSI	
Model No.	Professional Plus	
Serial No.	14M100277	
Date of Calibration	05-Jan-18	
Date of next Calibation	05-Apr-18	

Parameters:

Temperature (Method Ref: Section 6 of Intermational Accreditation New Zealand Technical

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

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)				
5.2	5.2	0.0				
13.6	13.6	0.0				
22.7	22.7		22.7 0.0	22.7 0.0	22.7	0.0
To	olerance 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	3.98	4.07	0.09
7.0	7.11	7.10	-0.01
10.0	10.07	10.09	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	11.3	11.2	-0.62
0.2000	23.2	23.3	0.43
0.5000	51.9	52.4	0.96
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)	
8.10	8.13	0.03	
7.72	7.65	-0.07	
4.48	4.40	-0.08	
	Tolerance Limit	±0.20	an or over

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 (according to APHA 19e 2510) is used to determine salinity.



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No.

: HK1711109

Project Name

EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT

Date of Issue

01/12/2017

Customer

: LAM ENVIRONMENTAL SERVICES LIMITED

Address

11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No.

HK1711109 : HK1711109-01

Test Item No. **Test Item Details**

Sonde

Test Item Description Manufacturer

YSI

Model No.

Professional Plus

Serial No.

16J100298

Performance Method

Checked according to in-house method CAL005

(References: Temperature (Section 6 of Intermational 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 Test Item Calibration Date 28/11/2017 01/12/2017

- 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. ± 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

Issue Date:

01/12/2017

Ms. Wong Po Yan, Pauline (Assistant Laboratory Manager)



WORK ORDER:

HK1711109

DATE OF ISSUE:

01/12/2017

CLIENT:

LAM ENVIRONMENTAL SERVICES LIMITED

Equipment Type	Sonde	
Manufacturer	YSI	
Model No.	Professional Plus	
Serial No.	16J100298	
Date of Calibration	01-Dec-17	
Date of next Calibation	01-Mar-18	

Parameters:

Temperature (Method Ref: Section 6 of Intermational Accreditation New Zealand Technical

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

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)	
4.3	4.3	0.0	
14.4	14.4	0.0	
22.7	23.3	0.6	
T	olerance 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	4.10	4.11	0.01
7.0	7.08	7.06	-0.02
10.0	10.30	10.20	-0.10
	Tolerance Limit		±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCI concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	
0.1000	11.4	11.4	0.00
0.2000	23.1	22.7	-1.73
0.5000	51.0	51.8	1.57
	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)
7.63	7.54	-0.09
6.31	6.30	-0.01
3.95	4.04	0.09
	Tolerance Limit	±0.20

Remarks:

- (1) Maxium tolerance and calibration frequency stated in the report, unless otherwwise 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 (according to APHA 19e 2510) is used to determine salinity.



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No.

· HK1810229

Project Name

EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT

Date of Issue

12/03/2018

Customer

: LAM ENVIRONMENTAL SERVICES LIMITED

Address

11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. Test Item No.

HK1810229 HK1810229-01

Test Item Details

: Sonde

Test Item Description Manufacturer

YSI

Model No.

Professional Plus

Serial No.

16J100298

Performance Method

Checked according to in-house method CAL005

(References: Temperature (Section 6 of Intermational 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 Test Item Calibration Date 06/03/2018 12/03/2018

- 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. ± 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

Ms. Wong Po Yan, Pauline (Assistant Laboratory Manager) Issue Date:

12/03/2018



WORK ORDER: HK1810229 **DATE OF ISSUE:** 12/03/2018

CLIENT: LAM ENVIRONMENTAL SERVICES LIMITED

Equipment Type	Sonde
Manufacturer	YSI
Model No.	Professional Plus
Serial No.	16J100298
Date of Calibration	12-Mar-18
Date of next Calibation	12-Jun-18

Parameters:

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

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
6.3	6.3	0.0
15.3	15.3	0.0
25.4	25.5	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	4.01	4.01	0.00
7.0	7.06	7.14	0.08
10.0	10.00	10.06	0.06
Tolerance Limit			±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCI concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	
0.1000	11.3	11.2	-0.88
0.2000	22.0	22.1	0.45
0.5000	51.0	50.4	-1.18
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)
7.61	7.60	-0.01
6.99	6.84	-0.15
5.34	5.45	0.11
	Tolerance Limit	±0.20

Remarks:

- (1) Maxium tolerance and calibration frequency stated in the report, unless otherewise 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 (according to APHA 19e 2510) is used to determine salinity.



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No. : HK1711081

Project Name : EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT

: 27/12/2017 Date of Issue

Customer : LAM ENVIRONMENTAL SERVICES LIMITED

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

Calibration Job No. Test Item No.

HK1711081 HK1711081-01

Test Item Details

Sonde

Test Item Description

YSI

Manufacturer Model No. Serial No.

Professional Plus 17F100236

Performance Method

Checked according to in-house method CAL005

(References: Temperature (Section 6 of Intermational 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

21/12/2017 22/12/2017

Test Item Calibration Date

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. ± 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

Ms. Wong Po Yan, Pauline

(Assistant Laboratory Manager)

Issue Date:

27/12/2017



WORK ORDER: DATE OF ISSUE: HK1711081 27/12/2017

CLIENT:

LAM ENVIRONMENTAL SERVICES LIMITED

Equipment Type	Sonde	
Manufacturer	YSI	
Model No.	Professional Plus	
Serial No.	17F100236	
Date of Calibration	22-Dec-17	2000
Date of next Calibation	22-Mar-18	

Parameters:

Temperature (Method Ref: Section 6 of Intermational Accreditation New Zealand Technical

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

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
5.9	5.9	0.0
15.1	15.1	0.0
28.0	28.0	0.0
To	olerance 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	4.07	3.95	-0.12
7.0	7.02	6.90	-0.12
10.0	10.03	10.04	0.01
	Tolerance Limit		±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCI concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	
0.1000	11.4	11.2	-1.75
0.2000	22.8	22.7	-0.44
0.5000	57.3	56.8	-0.87
	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)
7.37	7.40	0.03
6.62	6.57	-0.05
5.45	5.51	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 (according to APHA 19e 2510) is used to determine salinity.

- End of Report -



EQUIPMENT PERFORMANCE CHECK / CALIBRATION REPORT

Report No.

: HK1810254

Project Name

EQUIPMENT PERFORMANCE CHECK/CALIBRATION REPORT

Date of Issue

14/03/2018

Customer Address

: LAM ENVIRONMENTAL SERVICES LIMITED

: 11/F., CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

Calibration Job No. Test Item No.

: HK1810254 : HK1810254-01

Test Item Details

: Sonde

Test Item Description Manufacturer

YSI

Model No. Serial No.

Professional Plus 17F100236

Performance Method

Checked according to in-house method CAL005

(References: Temperature (Section 6 of Intermational 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 Test Item Calibration Date 13/03/2018 14/03/2018

- 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. ± 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

Issue Date:

14/03/2018

Ms. Wong Po Yan, Pauline (Assistant Laboratory Manager)



WORK ORDER: DATE OF ISSUE: HK1810254

CLIENT:

14/03/2018 LAM ENVIRONMENTAL SERVICES LIMITED

Equipment Type	Sonde	
Manufacturer	YSI	
Model No.	Professional Plus	
Serial No.	17F100236	
Date of Calibration	14-Mar-18	12010
Date of next Calibation	14-Jun-18	

Parameters:

Temperature (Method Ref: Section 6 of Intermational Accreditation New Zealand Technical

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

Reference Reading (°C)	Display Reading (°C)	Deviation (°C)
5.8	5.8	0.0
16.1	16.1	0.0
25.5	25.5	0.0
To	olerance 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	4.00	4.04	0.04
7.0	7.10	7.16	0.06
10.0	10.02	10.02	0.00
	Tolerance Limit		±0.20

Conductivity (Method Ref: APHA 19e, 2510)

KCI concentration (mol/L)	Reference Reading (ms/cm)	Display Reading (ms/cm)	Deviation (%)
0.0000	0.00	0.00	
0.1000	11.6	11.5	-0.86
0.2000	23.1	22.8	-1.30
0.5000	50.2	50.0	-0.40
	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)	
7.88	7.90	0.02	
6.94	6.93	-0.01	
4.68	4.79	0.11	
	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 (according to APHA 19e 2510) is used to determine salinity.

- End of Report -