Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **XL2 Audio and Acoustic Analyzer**
- Serial Number: **A2A-15269-E0**

- Certificate Issued: **19 February 2019**
- Certificate Number: **43515-A2A-15269-E0**

- Results: **PASSED**
  (for detailed report see next page)

Tested by: M. Frick

Signature:

Stamp:

NTi Audio AG
Im alten Riet 102
LI - 9494 Schaan
www.nti-audio.com

Calibration of: XL2 Audio and Acoustic Analyzer
Serial Number: A2A-15269-E0
Date: 19 February 2019

- Detailed Calibration Test Results:

		reference	actual	unit	actual error	XL2 tolerance	calibration uncertainty[2]
RMS Level @ 1kHz, XLR Input		0.1	**0.100**	V	≤0.1%	±0.5%	±0.10%
		1	**0.999**	V	-0.1%	±0.5%	±0.09%
		10	**9.978**	V	-0.2%	±0.5%	±0.09%
Flatness, XLR Input[1]	20 Hz	1	**0.995**	V	-0.5%	±1.1%	±0.09%
	20 kHz	1	**1.003**	V	0.3%	±1.1%	±0.09%
Frequency		1000	**999.99**	Hz	≤0.003%	±0.003%	±0.01%
Residual Noise	XLR		**< 2 uV**			<2 uV	±0.50%
THD+N @ 0 dBu, 1 kHz, XLR Input			**-100.4**	dB		typ. -100 dB	±0.50%

- Test Conditions: Temperature: **23.4** °C
  Relative Humidity: **32** %

- Calibration Equipment Used:

- Agilent Multimeter, Typ 34401A, Serial No. MY 5300 4607
  Last calibration: 15.08.2018, Next calibration: 15.08.2019
  Calibrated by ELCAL to the national standards maintained
  at Swiss Federal Office of Metrology. SCS 0002

- FX100 Audio Analyzer, Serial No. 10408
  Last Calibration: 27.04.2018, Next Calibration: 27.04.2019
  Manufacturer calibration based on Agilent 34410, Serial No. MY47014254,
  Last Calibration: 11.05.2018, Next Calibration: 11.05.2019
  which is calibrated by ELCAL to national standards maintained
  at Swiss Federal Office of Metrology. SCS 002

[1] The specified tolerance +/-0.1 dB @ 1V = +/- 1.1%

[2] The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道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

HOKLAS 028
CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0529 04

Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	Larson Davis	PCB	PCB
Type/Model No.:	LxT1	377B02	PRMLxT1L
Serial/Equipment No.:	0005098	173736	042838
Adaptors used:	-	-	-

Item submitted by

Customer Name:	Lam Environmental Service Ltd
Address of Customer:	-
Request No.:	-
Date of receipt:	29-May-2018

Date of test: 01-Jun-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	08-Sep-2018	CIGISMEC
Signal generator	DS 360	61227	23-Apr-2019	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	50 ± 10 %
Air pressure:	1005 ± 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 ±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 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.

Actual Measurement data are documented on worksheets.

Approved Signatory: Feng Junqi **Date:** 01-Jun-2018 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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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

HOKLAS 028
CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0529 04 Page 2 of 2

1, Electrical Tests

The electrical tests were perfomed 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	
	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 $1/10^3$ 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	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 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: Fung Chi Yip Date: 01-Jun-2018

Checked by: Lam Tze Wai Date: 01-Jun-2018

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.

Calibration Certificate

Certificate Number 2018010851

Customer:
LAM Environmental Services Ltd
11/F Centre Point
181-185 Gloucester Road
Wanchai, , Hong Kong

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	13098	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	29 Oct 2018		
Initial Condition	Inoperable	***Calibration Due***			
		Temperature	23	°C	± 0.3 °C
Description	Larson Davis CAL200 Acoustic Calibrator	***Humidity***	34	%RH	± 3 %RH
		Static Pressure	101.2	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	09/06/2018	09/06/2019	001021
Larson Davis Model 2900 Real Time Analyzer	04/10/2018	04/10/2019	001051
Microphone Calibration System	03/07/2018	03/07/2019	005446
1/2" Preamplifier	09/20/2018	09/20/2019	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/07/2018	08/07/2019	006507
1/2 inch Microphone - RI - 200V	05/10/2018	05/10/2019	006510
Pressure Transducer	07/18/2018	07/18/2019	007368

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 18CA1023 02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Larson Davis
Type/Model No.:	CAL200
Serial/Equipment No.:	13437
Adaptors used:	-

Item submitted by

Curstomer:	Lam Geotechnics Ltd.
Address of Customer:	-
Request No.:	-
Date of receipt:	23-Oct-2018

Date of test: 24-Oct-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	20-Apr-2019	SCL
Preamplifier	B&K 2673	2239857	27-Apr-2019	CEPREI
Measuring amplifier	B&K 2610	2346941	08-May-2019	CEPREI
Signal generator	DS 360	33873	24-Apr-2019	CEPREI
Digital multi-meter	34401A	US36087050	23-Apr-2019	CEPREI
Audio analyzer	8903B	GB41300350	23-Apr-2019	CEPREI
Universal counter	53132A	MY40003662	24-Apr-2019	CEPREI

Ambient conditions

Temperature:	20 ± 1 °C
Relative humidity:	50 ± 10 %
Air pressure:	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.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, 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: Feng Junqi **Date:** 24-Oct-2018 **Company Chop:**

SOILS & MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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HOKLAS 028
CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA1023 02 **Page:** 2 **of** 2

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.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	93.77	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 = 0.015 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 = 1000.2 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.

- End -

Calibrated by: Fung Chi Yip **Checked by:** Shek Kwong Tat

Date: 24-Oct-2018 **Date:** 24-Oct-2018

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.

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1811054
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 24/10/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1811054
PROJECT ITEM NO.	: HK1811054-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: AEROSOL MASS MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: AEROCET - 831
SERIAL NO.	: W15449
EQUIPMENT NO.	: ---
RECEIPT DATE	: 18/10/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 23/10/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : _____ Issue Date: 24/10/2018

Wong Po Yan Pauline
(Assistant Laboratory Manager)

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	24/10/2018
REPORT NO.	:	HK1811054

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	AEROSOL MASS MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	AEROCET - 831
SERIAL NO.	:	W15449
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	23/10/2018

STANDARD EQUIPMENT

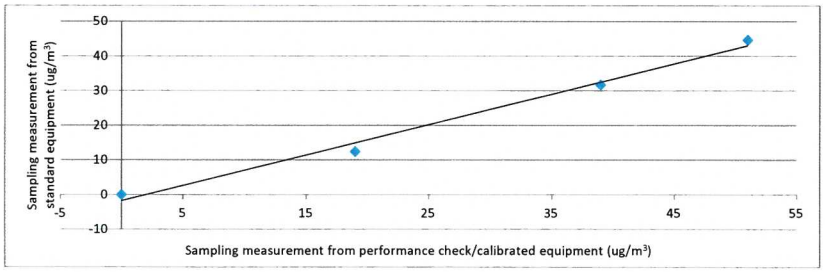
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	25/7/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	23/10/2018,9:05:00 AM	25.3	1017	0	0
1	23/10/2018,10:20:00 AM	25.3	1017	45	51
2	23/10/2018,11:22:00 AM	25.3	1017	32	39
3	23/10/2018,12:29:00 PM	25.3	1017	12	19

Linear Regression of Y on X

Slope (K- factor)	:	0.8800
Correlation Coefficient	:	0.9945
Validity of Performance Check / Calibration Record	:	23/10/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.

2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.

3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: Lau, Natalie Signature: _____ Date: 23/10/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 24/10/2018

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1810819
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 16/8/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1810819
PROJECT ITEM NO.	: HK1810819-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: AEROSOL MASS MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: AEROCET - 831
SERIAL NO.	: W16848
EQUIPMENT NO.	: ---
RECEIPT DATE	: 14/8/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 15/8/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : Wong Po Yan Pauline
(Assistant Laboratory Manager)

Issue Date: 16/8/2018

PILOT TESTING

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	16/8/2018
REPORT NO.	:	HK1810819

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	AEROSOL MASS MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	AEROCET - 831
SERIAL NO.	:	W16848
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	15/8/2018

STANDARD EQUIPMENT

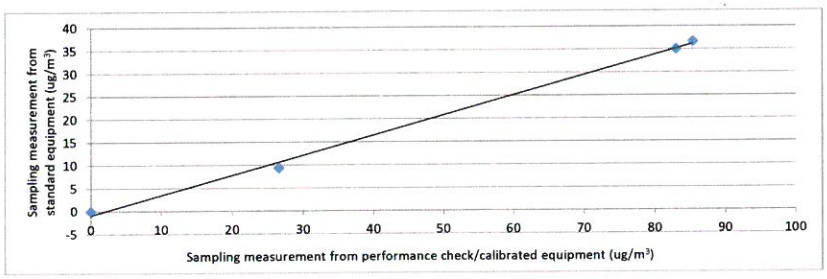
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	25/7/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	15/8/2018,9:05:00 AM	28.2	999	0	0
1	15/8/2018,10:20:00 AM	28.2	999	37	85
2	15/8/2018,11:22:00 AM	28.2	999	35	83
3	15/8/2018,12:29:00 PM	28.2	999	9	27

Linear Regression of Y on X

Slope (K- factor)	:	0.4400
Correlation Coefficient	:	0.9988
Validity of Performance Check / Calibration Record	:	15/8/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.

2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.

3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: Lau, Natalie Signature: _____ Date: 15/8/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 16/8/2018

Room B12, Block B, 5/F, Tonic Industrial Centre, 19 Lam Hing Street, Kowloon Bay, Kowloon
Tel: (852) 2527 6691 Email: info@pilot-testing.com

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	MET ONE INSTRUMENTS
Model Number	:	831
Serial Number	:	R14332
Performance Check Date	:	27-Feb-19, 14-Mar-19

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	4-Feb-19

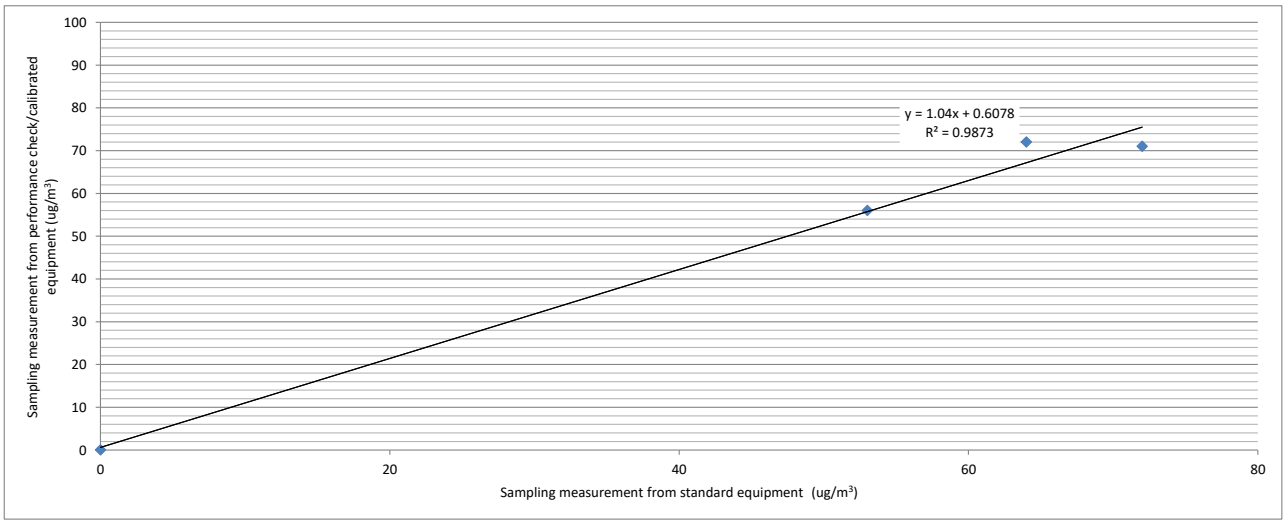
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check	27/2/19	1016	24	0	0
1	27/2/19 09:52	1016	24	53	56
2	14/3/19 09:32	1018	22	64	72
3	27/2/19 11:00	1016	24	72	71

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.0000
Correlation Coefficient	:	0.9936
Validity of Performance Check / Calibration Record	:	13/3/2020



Operator: Henry Lau Date: 14-Mar-19

Checked by: Chan Ka Chun Date: 21-Mar-19

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1810826
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 16/8/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1810826
PROJECT ITEM NO.	: HK1810826-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: PARTICULATE MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: BT 645
SERIAL NO.	: X19295
EQUIPMENT NO.	: ---
RECEIPT DATE	: 16/8/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 16/8/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

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2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : Issue Date: 16/8/2018

Wong Po Yan Pauline
(Assistant Laboratory Manager)

PILOT TESTING

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	16/8/2018
REPORT NO.	:	HK1810826

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	PARTICULATE MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	BT 645
SERIAL NO.	:	X19295
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	16/8/2018

STANDARD EQUIPMENT :

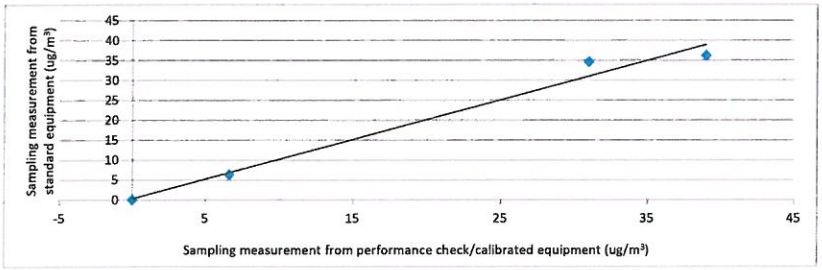
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	25/7/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	16/8/2018,8:30:00 AM	27.8	1000	0	0
1	16/8/2018,2:16:00 PM	27.8	1000	36	39
2	16/8/2018,3:21:00 PM	27.8	1000	35	31
3	16/8/2018,4:24:00 PM	27.8	1000	6	7

Linear Regression of Y on X

Slope (K- factor)	:	1.0000
Correlation Coefficient	:	0.9901
Validity of Performance Check / Calibration Record	:	16/8/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.

2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.

3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: Lau, Natalie Signature: _____ Date: 16/8/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 16/8/2018

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1810827
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 16/8/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1810827
PROJECT ITEM NO.	: HK1810827-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: PARTICULATE MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: BT 645
SERIAL NO.	: X19296
EQUIPMENT NO.	: ---
RECEIPT DATE	: 16/8/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 16/8/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : Wong Po Yan Pauline
(Assistant Laboratory Manager)

Issue Date: 16/8/2018

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	16/8/2018
REPORT NO.	:	HK1810827

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	PARTICULATE MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	BT 645
SERIAL NO.	:	X19296
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	16/8/2018

STANDARD EQUIPMENT :

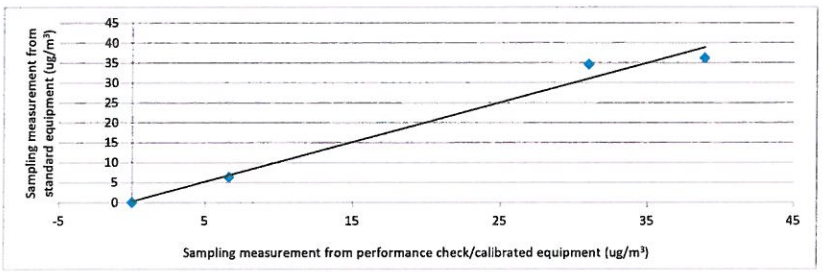
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	25/7/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	16/8/2018,8:30:00 AM	27.8	1000	0	0
1	16/8/2018,2:16:00 PM	27.8	1000	36	39
2	16/8/2018,3:21:00 PM	27.8	1000	35	31
3	16/8/2018,4:24:00 PM	27.8	1000	6	7

Linear Regression of Y on X

Slope (K- factor)	:	1.0000
Correlation Coefficient	:	0.9904
Validity of Performance Check / Calibration Record	:	16/8/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.

2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.

3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: Lau, Natalie Signature: _____ Date: 16/8/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 16/8/2018

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1810828
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 22/8/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1810828
PROJECT ITEM NO.	: HK1810828-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: PARTICULATE MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: BT 645
SERIAL NO.	: X19297
EQUIPMENT NO.	: ---
RECEIPT DATE	: 16/8/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 17/8/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : Issue Date: 22/8/2018

Wong Po Yan Pauline
(Assistant Laboratory Manager)

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	22/8/2018
REPORT NO.	:	HK1810828

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	PARTICULATE MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	BT 645
SERIAL NO.	:	X19297
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	17/8/2018

STANDARD EQUIPMENT

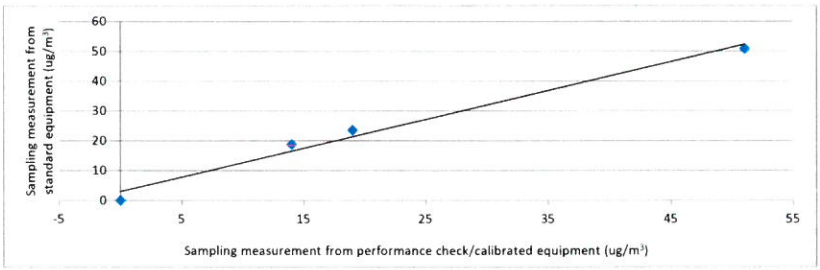
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	25/7/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	17/8/2018,7:20:00 AM	28	1005	0	0
1	17/8/2018,8:24:00 PM	28	1005	51	51
2	17/8/2018,9:26:00 PM	28	1005	24	19
3	17/8/2018,10:28:00 PM	28	1005	19	14

Linear Regression of Y on X

Slope (K- factor)	:	1.0000
Correlation Coefficient	:	0.9921
Validity of Performance Check / Calibration Record	:	17/8/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.

2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.

3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: Lau, Natalie Signature: _____ Date: 17/8/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 22/8/2018

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	MET ONE INSTRUMENTS
Model Number	:	BT-645
Serial Number	:	X19299
Performance Check Date	:	10-Jan-19

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	4-Dec-18

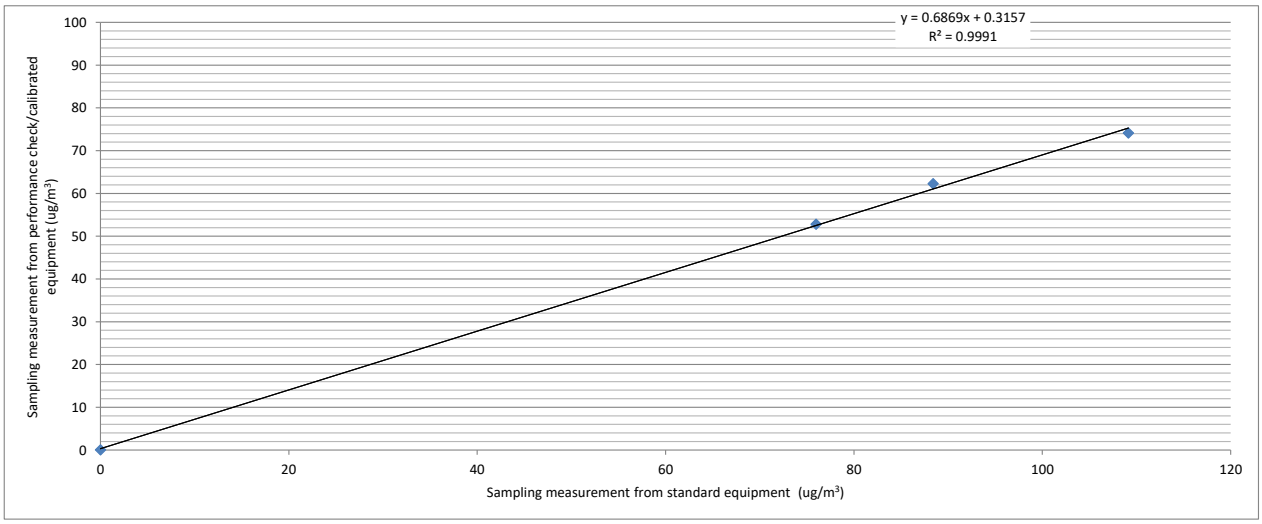
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Temp (˚C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check	10/1/19 07:00	19	1020	0	0
1	10/1/19 08:05	19	1020	109	74
2	10/1/19 09:25	19	1020	88	62
3	10/1/19 10:27	19	1020	76	53

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.5000
Correlation Coefficient	:	0.9995
Validity of Performance Check / Calibration Record	:	10/1/2020



Operator: Henry Lau Date: 14/1/19

Checked by: Chan Ka Chun Date: 14/1/19

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	MET ONE INSTRUMENTS
Model Number	:	BT-645
Serial Number	:	R22584
Performance Check Date	:	27-Feb-19

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	4-Dec-18

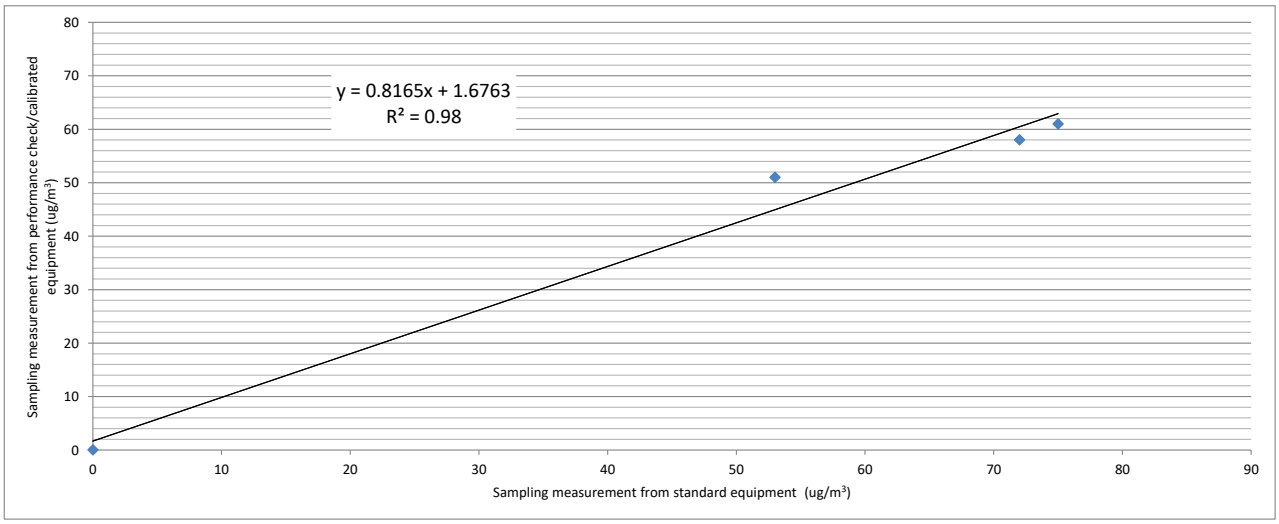
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check	27/2/19	1016	21	0	0
1	27/2/19 08:45	1016	21	75	61
2	27/2/19 09:52	1016	21	53	51
3	27/2/19 11:00	1016	21	72	58

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.3000
Correlation Coefficient	:	0.9900
Validity of Performance Check / Calibration Record	:	27/2/2020



Operator: Henry Lau Date: 27-Feb-19

Checked by: Chan Ka Chun Date: 4-Mar-19

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	MET ONE INSTRUMENTS
Model Number	:	BT-645
Serial Number	:	R22586
Performance Check Date	:	27-Feb-19, 14-Mar-19

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	4-Feb-19

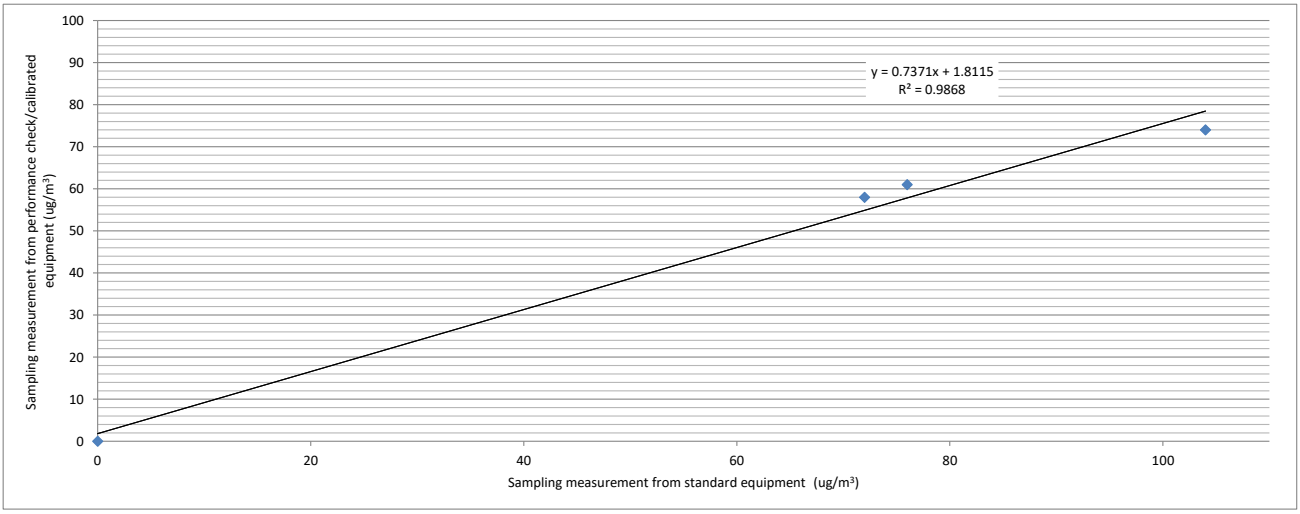
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check	27/2/19	1018	22	0	0
1	27/2/19 11:00	1016	24	72	58
2	27/2/19 08:45	1016	24	76	61
3	14/3/19 08:30	1018	22	104	74

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.4000
Correlation Coefficient	:	0.9934
Validity of Performance Check / Calibration Record	:	13/3/2020



Operator:	Henry Lau	Date:	14-Mar-19
Checked by:	Chan Ka Chun	Date:	21-Mar-19

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1810447
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 13/5/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1810447
PROJECT ITEM NO.	: HK1810447-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: AEROSOL MASS MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: AEROCET - 831
SERIAL NO.	: W14016
EQUIPMENT NO.	: ---
RECEIPT DATE	: 9/5/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 11/5/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : _____ Issue Date: 13/5/2018

Wong Po Yan Pauline
(Assistant Laboratory Manager)

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	13/5/2018
REPORT NO.	:	HK1810447

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	AEROSOL MASS MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	AEROCET - 831
SERIAL NO.	:	W14016
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	11/5/2018

STANDARD EQUIPMENT

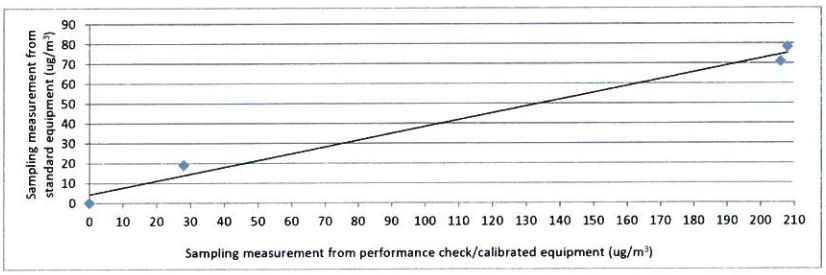
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	27/4/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	11/5/2018,9:00:00 AM	24	1014	0	0
1	11/5/2018,10:05:00 AM	24	1014	78	208
2	11/5/2018,11:29:00 AM	24	1014	71	206
3	11/5/2018,12:35:00 AM	24	1014	19	28

Linear Regression of Y on X

Slope (K- factor)	:	0.3400
Correlation Coefficient	:	0.9925
Validity of Performance Check / Calibration Record	:	11/5/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.

2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.

3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: MA Ching Him, Jackey Signature: _____ Date: 11/5/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 13/5/2018

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street, Kwai Chung
N.T., Hong Kong
T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	CHAN KA CHUN	WORK ORDER:	HK1911549
CLIENT:	LAM ENVIRONMENTAL SERVICES LTD		
ADDRESS:	11/F CENTRE POINT, 181-185 GLOUCESTER ROAD, WANCHAI, HONG KONG	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	18-Mar-2019
		DATE OF ISSUE:	25-Mar-2019

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.

Scope of Test:	Dissolved Oxygen, pH Value, Salinity and Temperature
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	Professional Plus
Serial No.:	14E100105
Equipment No.:	--
Date of Calibration:	22 March, 2019

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 Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1911549

SUB-BATCH: 0
DATE OF ISSUE: 25-Mar-2019
CLIENT: LAM ENVIRONMENTAL SERVICES LTD

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 14E100105
Equipment No.: --
Date of Calibration: 22 March, 2019 Date of Next Calibration: 22 June, 2019

PARAMETERS:

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.92	4.76	-0.16
6.80	6.60	-0.20
8.33	8.30	-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	4.03	+0.03
7.0	7.12	+0.12
10.0	10.17	+0.17
	Tolerance Limit (pH unit)	±0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.10	+1.0
20	19.12	-4.4
30	27.23	-9.2
	Tolerance Limit (%)	±10.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1911549

SUB-BATCH: 0
DATE OF ISSUE: 25-Mar-2019
CLIENT: LAM ENVIRONMENTAL SERVICES LTD

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 14E100105
Equipment No.: --
Date of Calibration: 22 March, 2019 Date of Next Calibration: 22 June, 2019

PARAMETERS:

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

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
9.5	9.8	+0.3
23.0	22.8	-0.2
41.0	40.6	-0.4
	Tolerance Limit (^{o}C)	±2.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street, Kwai Chung
N.T., Hong Kong
T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR CHAN KA CHUN	WORK ORDER:	HK1903364
CLIENT:	LAM ENVIRONMENTAL LTD		
ADDRESS:	11/F, CENTRE POINT, 181 - 185 GLOUCESTER ROAD WAN CHAI	SUB-BATCH: LABORATORY: DATE RECEIVED: DATE OF ISSUE:	0 HONG KONG 21-Jan-2019 30-Jan-2019

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 principle as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Dissolved Oxygen, pH Value, Salinity and Temperature
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	Professional Plus
Serial No.:	16J100298
Equipment No.:	--
Date of Calibration:	29 January, 2019

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.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1903364

SUB-BATCH: 0
DATE OF ISSUE: 30-Jan-2019
CLIENT: LAM ENVIRONMENTAL LTD

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 16J100298
Equipment No.: --
Date of Calibration: 29 January, 2019 Date of Next Calibration: 29 April, 2019

PARAMETERS:

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.38	2.24	-0.14
6.07	6.04	-0.03
8.90	8.92	+0.02
	Tolerance Limit (mg/L)	±0.20

pH Value

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

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.18	+0.18
7.0	6.80	-0.20
10.0	9.81	-0.19
	Tolerance Limit (pH unit)	±0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.23	+2.3
20	19.76	-1.2
30	29.21	-2.6
	Tolerance Limit (%)	±10.0

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

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1903364

SUB-BATCH: 0
DATE OF ISSUE: 30-Jan-2019
CLIENT: LAM ENVIRONMENTAL LTD

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 16J100298
Equipment No.: --
Date of Calibration: 29 January, 2019 Date of Next Calibration: 29 April, 2019

PARAMETERS:

Temperature

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

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
11.0	10.8	-0.2
21.0	22.1	+1.1
38.0	37.5	-0.5
	Tolerance Limit (^{o}C)	±2.0

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

Ms. Lin Wai Yu
Assistant Manager - Inorganic

FT Laboratories Ltd
科達測檢試驗所有限公司

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Information supplied by customer:

CONTACT:	**MR. CHAN KA CHUN**	**JOB REFERENCE NO.:**	**22777053-C18V5302**
CLIENT:	**LAM ENVIRONMENTAL SERVICES LTD**		
DATE RECEIVED:	**18/03/2019**		
DATE OF ISSUE:	**27/03/2019**		
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 FT Laboratories Ltd will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1807063
Equipment No.:	---
Date of Calibration:	22/03/2019

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.

Certified By: _____ Issue Date: 27/03/2019

HO Lai Sze
Senior Chemist

Address: Lot No. DD77 Section 1552 S.A. ss 1RP, Ng Chow South Road, Ping Che, N.T., H. K..
Tel: 27584861, Fax: 27588962

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

WORK ORDER: 22777053-C18V5302
DATE OF ISSUE: 27/03/2019
CLIENT: LAM ENVIRONMENTAL SERVICES LTD

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1807063
Equipment No.:	---
Date of Calibration:	22/03/2019
Date of next Calibation:	21/06/2019
Lab ID:	H190085-02

Parameters:
Turbidity

Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance
0	0.00	---
4	4.00	0.0%
10	9.92	-0.8%
40	39.54	-1.2%
100	99.08	-0.9%
400	404	1.1%
1000	922	-7.8%
	Tolerance Limit (±)	10%

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

Address: Lot No. DD77 Section 1552 S.A. ss 1RP, Ng Chow South Road, Ping Che, N.T., H. K..
Tel: 27584861, Fax: 27588962

FT Laboratories Ltd
科達測檢試驗所有限公司

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Information supplied by customer:

CONTACT:	**MR. CHAN KA CHUN**	**JOB REFERENCE NO.:**	**22787053-B23V2602**
CLIENT:	**LAM GEOTECHNICS LIMITED**		
DATE RECEIVED:	**31/01/2019**		
DATE OF ISSUE:	**31/01/2019**		
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 FT Laboratories Ltd will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1807079
Equipment No.:	---
Date of Calibration:	31/01/2019

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.

Certified By: _____
HO Lai Sze
Senior Chemist

Issue Date: 31/01/2019

Address: Lot No. DD77 Section 1552 S.A. ss 1RP, Ng Chow South Road, Ping Che, N.T., H. K..
Tel: 27584861, Fax: 27588962

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

WORK ORDER: 22787053-B23V2602
DATE OF ISSUE: 31/01/2019
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1807079
Equipment No.:	---
Date of Calibration:	31/01/2019
Date of next Calibation:	30/04/2019
Lab ID:	H190048-02

Parameters:
Turbidity

Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance
0	0.00	---
4	3.94	-1.5%
10	10.01	0.1%
40	39.89	-0.3%
100	98.91	-1.1%
400	396	-1.0%
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.

Address: Lot No. DD77 Section 1552 S.A. ss 1RP, Ng Chow South Road, Ping Che, N.T., H. K..
Tel: 27584861, Fax: 27588962

PILOT TESTING

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO.	: HK1811049
PROJECT NAME	: PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	: 24/10/2018
CUSTOMER	: LAM ENVIRONMENTAL SERVICES LTD
ADDRESS	: 11/F, CENTRE POINT, 181-185 GLOUCESTER ROAD, WAN CHAI, HONG KONG

REPORT NO.	: HK1811049
PROJECT ITEM NO.	: HK1811049-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT	
TYPE	: AEROSOL MASS MONITOR
MANUFACTURER	: MET ONE INSTRUMENTS
MODEL NO.	: AEROCET - 831
SERIAL NO.	: W15448
EQUIPMENT NO.	: ---
RECEIPT DATE	: 18/10/2018
PERFORMANCE CHECK / CALIBRATION DATE	: 18/10/2018

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

Notes : 1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory : Issue Date: 24/10/2018

Wong Po Yan Pauline
(Assistant Laboratory Manager)

REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME	:	PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE	:	24/10/2018
REPORT NO.	:	HK1811049

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE	:	AEROSOL MASS MONITOR
MANUFACTURER	:	MET ONE INSTRUMENTS
MODEL NO.	:	AEROCET - 831
SERIAL NO.	:	W15448
EQUIPMENT NO.	:	---
PERFORMANCE CHECK / CALIBRATION DATE	:	18/10/2018

STANDARD EQUIPMENT

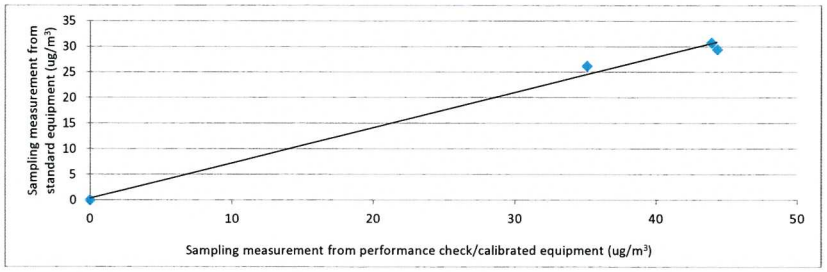
	:	
TYPE	:	HIGH VOLUME AIR SAMPLER
MANUFACTURER	:	TISCH
MODEL NO.	:	TE-5170
EQUIPMENT REF NO.	:	PTL_HV002
LAST CALIBRATION DATE	:	25/7/2018

EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check[1]	18/10/2018,9:05:00 AM	22.5	1015	0	0
1	18/10/2018,2:16:00 PM	22.5	1015	31	44
2	18/10/2018,3:18:00 PM	22.5	1015	30	44
3	18/10/2018,4:21:00 PM	22.5	1015	26	35

Linear Regression of Y on X

Slope (K- factor)	:	0.7000
Correlation Coefficient	:	0.9962
Validity of Performance Check / Calibration Record	:	18/10/2019



Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.
2. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
3. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: Lau, Natalie Signature: _____ Date: 18/10/2018

Checked by: Wong Po Yan, Pauline Signature: _____ Date: 24/10/2018