High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/05/0039

Project No. AM1 - Tin Hau Temple

Date: 9-Dec-22 Next Due Date: 9-Feb-23 Operator: SK

Equipment No.: A-01-05 Model No.: GS2310 Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	292.6	Pressure, Pa (mmHg)	761.7

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

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Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.2	3.67	62.39	9.9	3.18
2	10.4	3.26	55.43	7.3	2.73
3	7.6	2.79	47.44	5.4	2.35
4	5.6	2.39	40.78	3.4	1.86
5	3.3	1.84	31.40	1.9	1.39

By Linear Regression of Y on X

Slope , mw = 0.0578 **Intercept, bw = -0.4421**

Correlation coefficient* = 0.9983

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.09**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 10-Dec-22

Checked by: Henry Leung Signature: Date: 10-Dec-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/08/0039

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 9-Dec-22 Next Due Date: 9-Feb-23 Operator: SK

Equipment No.: A-01-08 Model No.: GS2310 Serial No. 1287

Ambient Condition			
Temperature, Ta (K)	292.6	Pressure, Pa (mmHg)	761.7

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

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Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.4	3.70	62.86	9.5	3.11
2	10.7	3.30	56.21	7.0	2.67
3	7.9	2.84	48.36	5.4	2.35
4	5.5	2.37	40.42	3.7	1.94
5	3.3	1.84	31.40	2.1	1.46

By Linear Regression of Y on X

Slope , mw = **0.0511** **Intercept, bw =** **-0.1377**

Correlation coefficient* = **0.9982**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.16**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 10-Dec-22

Checked by: Henry Leung Signature: Date: 10-Dec-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA16034/03/0039

Project No. AM3 - Yau Lai Estate, Bik Lai House

Date: 9-Dec-22 Next Due Date: 8-Feb-23 Operator: SK

Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	292.6	Pressure, Pa (mmHg)	761.7

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

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Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	13.0	3.64	61.92	9.0	3.03
2	10.3	3.24	55.16	6.8	2.63
3	8.2	2.89	49.26	5.2	2.30
4	5.2	2.30	39.31	3.2	1.81
5	2.8	1.69	28.96	2.0	1.43

By Linear Regression of Y on X

Slope , mw = **0.0488** **Intercept, bw =** **-0.0484**

Correlation coefficient* = **0.9957**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.12**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 10-Dec-22

Checked by: Henry Leung Signature: Date: 10-Dec-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA20003/55/017

Project No. CKL 2 - Flat 103 Cha Kwo Ling Village

Date: 5-Nov-22 Next Due Date: 5-Jan-23 Operator: SK

Equipment No.: A-01-55 Model No.: TE 5170 Serial No. 1956

Ambient Condition			
Temperature, Ta (K)	294.5	Pressure, Pa (mmHg)	764.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-Jan-23	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.5	3.57	60.63	9.6	3.13
2	10.5	3.27	55.61	7.3	2.73
3	8.4	2.92	49.78	5.5	2.37
4	5.1	2.28	38.88	2.9	1.72
5	2.7	1.66	28.40	1.7	1.32

By Linear Regression of Y on X

Slope , mw = **0.0560** **Intercept, bw =** **-0.3652**

Correlation coefficient* = **0.9931**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.11**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 5-Nov-22

Checked by: Henry Leung Signature: Date: 5-Nov-22

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA20003/55/018

Project No. CKL 2 - Flat 103 Cha Kwo Ling Village

Date: 5-Jan-23 Next Due Date: 7-Mar-23 Operator: SK

Equipment No.: A-01-55 Model No.: TE 5170 Serial No. 1956

Ambient Condition			
Temperature, Ta (K)	291.5	Pressure, Pa (mmHg)	767.6

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-Jan-23	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	12.7	3.62	61.56	9.8	3.18
2	10.6	3.31	56.27	7.5	2.78
3	8.5	2.96	50.43	5.6	2.40
4	5.2	2.32	39.54	3.1	1.79
5	2.8	1.70	29.12	1.9	1.40

By Linear Regression of Y on X

Slope , mw = **0.0548** **Intercept, bw =** **-0.2871**

Correlation coefficient* = **0.9926**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.15**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 5-Jan-23

Checked by: Henry Leung Signature: Date: 5-Jan-23

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00171 Issue Date : 01 Apr 2022
Application No. : HP00046

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-05

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	580287
Microphone No.	570610

Date Received : 25 Mar 2022

Test Period : 30 Mar 2022 to 30 Mar 2022

Test Requested : Performance checking for Sound Level Meter

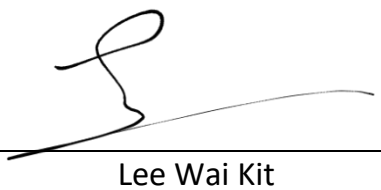
Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED



Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00171 Issue Date : 01 Apr 2022
Application No. : HP00046

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.0	0.0	± 1.5
114.0	114.2	+0.2	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00181 Issue Date : 24 May 2022
Application No. : HP00060

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-06

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	580156
Microphone No.	580804

Date Received : 16 May 2022

Test Period : 24 May 2022 to 24 May 2022

Test Requested : Performance checking for Sound Level Meter

Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00181 Issue Date : 24 May 2022
Application No. : HP00060

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	93.9	-0.1	± 1.5
114.0	114.1	+0.1	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00288 Issue Date : 10 Nov 2022
Application No. : HP00176

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Sound Level Calibrator.

Equipment No.: : N-13-03

Manufacturer: : SOUNDTEK

Other information :

Model No.	ST-120
Serial No.	181001637

Date Received : 10 Nov 2022

Test Period : 10 Nov 2022 to 10 Nov 2022

Test Requested : Performance checking for Sound Level Calibrator

Test Method : The Sound Level Meter and Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00288 Issue Date : 10 Nov 2022
Application No. : HP00176

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Description	Sound Meter
Manufacturer	BSWA Technology
Model No.	BSWA 308
Serial No.	570183
Microphone No.	570605
Equipment No.	N-12-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+ 0.1	± 0.3
114.0	114.2	+ 0.2	± 0.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Laser Dust Monitor

Date of Calibration 29-Nov-22

Manufacturer: Sibata Scientific Technology LTD.

Validity of Calibration Record 29-Jan-23

Model No.: LD-3B

Serial No.: 2Y6194

Equipment No.: SA-01-02

Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03

Before Sensitivity Adjustment 578

Tisch Calibration Orifice No.: 3864

After Sensitivity Adjustment 578

Calibration of 1 hr TSP			
Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute **X-axis**	Mass concentration ($\mu g/m^3$) **Y-axis**
1	4080	68.0	133.0
2	3600	60.0	115.0
3	2880	48.0	94.0
Average		**58.7**	**114.0**

By Linear Regression of Y on X

Slope , mw = **1.9342**

Intercept, bw = **0.5263**

Correlation coefficient* = **0.9975**

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μ g/m3)] **1.9**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Limited)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Laser Dust Monitor

Date of Calibration 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD.

Validity of Calibration Record 31-Mar-23

Model No.: LD-3B

Serial No.: 2Y6194

Equipment No.: SA-01-02

Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03

Before Sensitivity Adjustment 578

Tisch Calibration Orifice No.: 3864

After Sensitivity Adjustment 578

Calibration of 1 hr TSP			
Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute **X-axis**	Mass concentration (μg/m^3) **Y-axis**
1	4080	70.0	135.0
2	3600	62.0	117.0
3	2880	50.0	95.0
Average		**60.7**	**115.7**

By Linear Regression of Y on X

Slope , mw = **1.9868** **Intercept, bw =** **-4.8684**

Correlation coefficient* = **0.9984**

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μg/m3)] **1.9**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Limited)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Nov-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-Jan-23
Model No.: LD-5R
Serial No.: 8Y2374
Equipment No.: SA-01-04
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 652
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 652

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (µg/m3) **X-axis**	**HVS** Mass concentration (µg/m^3) **Y-axis**
1	69.0	133.0
2	62.0	115.0
3	51.0	94.0
Average	**60.7**	**114.0**

By Linear Regression of Y on X

Slope , mw = **2.1437** **Intercept, bw =** **-16.0526**

Correlation coefficient* = **0.9965**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	114.0
Particaulate Concentration by Dust Meter (µg/m^3)	60.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.9**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration: 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record: 31-Mar-23

Model No.: LD-5R

Serial No.: 8Y2374

Equipment No.: SA-01-04 — Sensitivity: 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment: 652

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment: 652

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	70.0	131.0
2	63.0	118.0
3	52.0	96.0
Average	**61.7**	**115.0**

By Linear Regression of Y on X

Slope , mw = 1.9494 — **Intercept, bw =** -5.2126

Correlation coefficient* = 0.9998

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	115.0
Particaulate Concentration by Dust Meter (µg/m^3)	61.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.9**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Nov-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-Jan-23
Model No.: LD-5R
Serial No.: 8Y2373
Equipment No.: SA-01-05
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 657
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 657

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	70.0	133.0
2	64.0	115.0
3	53.0	94.0
Average	**62.3**	**114.0**

By Linear Regression of Y on X

Slope , mw = **2.2466** **Intercept, bw =** **-26.0404**

Correlation coefficient* = **0.9923**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	114.0
Particaulate Concentration by Dust Meter (µg/m^3)	62.3
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.8**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 31-Mar-23

Model No.: LD-5R

Serial No.: 8Y2373

Equipment No.: SA-01-05 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 657

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 657

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	69.0	131.0
2	61.0	112.0
3	50.0	95.0
Average	**60.0**	**112.7**

By Linear Regression of Y on X

Slope , mw = **1.8736** **Intercept, bw =** **0.2491**

Correlation coefficient* = **0.9924**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	112.7
Particaulate Concentration by Dust Meter (µg/m^3)	60.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.9**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration: 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record: 31-Mar-23

Model No.: LD-5R

Serial No.: 972777

Equipment No.: SA-01-06 — Sensitivity: 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment: 645

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment: 645

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	67.0	134.0
2	60.0	116.0
3	49.0	96.0
Average	**58.7**	**115.3**

By Linear Regression of Y on X

Slope , mw = **2.0850** **Intercept, bw =** **-6.9879**

Correlation coefficient* = **0.9953**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	115.3
Particaulate Concentration by Dust Meter (µg/m^3)	58.7
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)]	**2.0**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Nov-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-Jan-23
Model No.: LD-5R
Serial No.: 972778
Equipment No.: SA-01-07
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 735 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 735 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	63.0	133.0
2	56.0	115.0
3	45.0	94.0
Average	**54.7**	**114.0**

By Linear Regression of Y on X

Slope , mw = **2.1437** **Intercept, bw =** **-3.1903**

Correlation coefficient* = **0.9965**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	114.0
Particaulate Concentration by Dust Meter (µg/m^3)	54.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.1**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 31-Mar-23

Model No.: LD-5R

Serial No.: 972778

Equipment No.: SA-01-07 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 735 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 735 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	64.0	134.0
2	57.0	116.0
3	46.0	95.0
Average	**55.7**	**115.0**

By Linear Regression of Y on X

Slope , mw = **2.1437** **Intercept, bw =** **-4.3340**

Correlation coefficient* = **0.9965**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	115.0
Particaulate Concentration by Dust Meter (µg/m^3)	55.7
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)]	**2.1**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Nov-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-Jan-23
Model No.: LD-5R
Serial No.: 972779
Equipment No.: SA-01-08
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 744 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 744 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	67.0	133.0
2	56.0	115.0
3	47.0	94.0
Average	**56.7**	**114.0**

By Linear Regression of Y on X

Slope , mw = **1.9385** **Intercept, bw =** **4.1495**

Correlation coefficient* = **0.9948**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	114.0
Particaulate Concentration by Dust Meter (µg/m^3)	56.7
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **2.0**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 31-Mar-23

Model No.: LD-5R

Serial No.: 972779

Equipment No.: SA-01-08 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 744 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 744 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	68.0	135.0
2	57.0	116.0
3	48.0	95.0
Average	**57.7**	**115.3**

By Linear Regression of Y on X

Slope , mw = **1.9900** **Intercept, bw =** **0.5748**

Correlation coefficient* = **0.9963**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	115.3
Particaulate Concentration by Dust Meter (µg/m^3)	57.7
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)]	**2.0**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Nov-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-Jan-23
Model No.: LD-5R
Serial No.: 972780
Equipment No.: SA-01-09
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 739 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 739 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	69.0	133.0
2	59.0	115.0
3	49.0	94.0
Average	**59.0**	**114.0**

By Linear Regression of Y on X

Slope , mw = **1.9500** **Intercept, bw =** **-1.0500**

Correlation coefficient* = **0.9990**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	114.0
Particaulate Concentration by Dust Meter (µg/m^3)	59.0
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.9**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record 31-Mar-23

Model No.: LD-5R

Serial No.: 972780

Equipment No.: SA-01-09 — Sensitivity 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment 739 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment 739 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	70.0	136.0
2	60.0	117.0
3	51.0	97.0
Average	**60.3**	**116.7**

By Linear Regression of Y on X

Slope , mw = **2.0498** **Intercept, bw =** **-7.0055**

Correlation coefficient* = **0.9990**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	116.7
Particaulate Concentration by Dust Meter (µg/m^3)	60.3
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.9**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator
Date of Calibration 29-Nov-22
Manufacturer: Sibata Scientific Technology LTD.
Validity of Calibration Record 29-Jan-23
Model No.: LD-5R
Serial No.: 972781
Equipment No.: SA-01-10
Sensitivity 0.001 mg/m3
High Volume Sampler No.: A-01-03
Before Sensitivity Adjustment 734 CPM
Tisch Calibration Orifice No.: 3864
After Sensitivity Adjustment 734 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	71.0	133.0
2	64.0	115.0
3	52.0	94.0
Average	**62.3**	**114.0**

By Linear Regression of Y on X

Slope , mw = **2.0199** **Intercept, bw =** **-11.9043**

Correlation coefficient* = **0.9943**

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	114.0
Particaulate Concentration by Dust Meter (µg/m^3)	62.3
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.8**

In-house method in according to the instruction manual:
The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____
Technical Officer (Wong Shing Kwai)

Approved by: _____
Project Manager (Henry Leung)

CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description: Digital Dust Indicator — Date of Calibration: 29-Jan-23

Manufacturer: Sibata Scientific Technology LTD. — Validity of Calibration Record: 31-Mar-23

Model No.: LD-5R

Serial No.: 972781

Equipment No.: SA-01-10 — Sensitivity: 0.001 mg/m3

High Volume Sampler No.: A-01-03 — Before Sensitivity Adjustment: 734 CPM

Tisch Calibration Orifice No.: 3864 — After Sensitivity Adjustment: 734 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor**	**HVS**
	Mass Concentration (µg/m3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	70.0	132.0
2	63.0	114.0
3	51.0	94.0
Average	**61.3**	**113.3**

By Linear Regression of Y on X

Slope , mw = 1.9639 — **Intercept, bw =** -7.1191

Correlation coefficient* = 0.9928

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	113.3
Particaulate Concentration by Dust Meter (µg/m^3)	61.3
Measureing time, (min)	60.0

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m3)] **1.8**

In-house method in according to the instruction manual:

The Dust Monitor was compared with a calibrated High Volume Sampler and The result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Those filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Calibrated by: _____

Technical Officer (Wong Shing Kwai)

Approved by: _____

Project Manager (Henry Leung)

TISCH Environmental

RECALIBRATION DUE DATE:
January 31, 2023

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	January 31, 2022	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 752.6	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3864**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4490	3.2	2.00
2	3	4	1	1.0320	6.4	4.00
3	5	6	1	0.9160	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7230	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9995	0.6898	1.4169	0.9957	0.6872	0.8839
0.9952	0.9643	2.0037	0.9915	0.9608	1.2500
0.9932	1.0843	2.2402	0.9895	1.0802	1.3976
0.9920	1.1363	2.3496	0.9883	1.1321	1.4658
0.9868	1.3649	2.8337	0.9831	1.3598	1.7678
QSTD	**m=**	**2.09281**	**QA**	**m=**	**1.31048**
	b=	**-0.02426**		**b=**	**-0.01514**
	r=	**0.99993**		**r=**	**0.99993**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key

- ΔH: calibrator manometer reading (in H2O)
- ΔP: rootsmeter manometer reading (mm Hg)
- Ta: actual absolute temperature (°K)
- Pa: actual barometric pressure (mm Hg)
- b: intercept
- m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

isch Environmental, Inc.
45 South Miami Avenue
illage of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

Certificate of Calibration - Wind Monitoring Station

Description:	Yau Lai Estate, Bik Lai House
Manufacturer:	Davis Instruments
Model No.:	Davis7440
Serial No.:	MC01010A44
Equipment No.:	SA-03-04
Date of Calibration	19-Aug-2022
Next Due Date	19-Feb-2023

1. Performance check of Wind Speed

Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V2)	D = V1 – V2
0.0	0.0	0.0
1.5	1.5	0.0
2.5	2.6	-0.1
4.0	4.0	0.0

2. Performance check of Wind Direction

Wind Direction (^{o})		Difference D (^{o})
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

Test Specification:

1. Performance Wind Speed Test - The wind meter was on-site calibrated against the anemometer

2. Performance Wind Direction Test - The wind meter was on-site calibrated against the marine compass at four direction

Calibrated by: Wong Shing Kwai

Approved by: Henry Leung