High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

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	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
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	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

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

 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	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-Jan-23	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	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

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

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

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

CINOTECH

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				
Next Calibration Date:	31-Jan-23				

$$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$$
$$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$$

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Calibration Point	Orifice			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	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

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

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

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

File No. MA16034/05/0040

Project No.   AM1 - Tin Hau Temple

Date: 9-Feb-23   Next Due Date: 12-Apr-23   Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	292.5	Pressure, Pa (mmHg)	762.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05928	Intercept, bc	-0.03491
Last Calibration Date:	16-Jan-23	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	16-Jan-24	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			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	13.3	3.69	62.78	10.1	3.21
2	10.5	3.28	55.85	7.4	2.75
3	7.7	2.81	47.91	5.5	2.37
4	5.7	2.41	41.30	3.5	1.89
5	3.4	1.86	32.03	2.0	1.43

By Linear Regression of Y on X

Slope , mw =   0.0580   Intercept, bw :   -0.4535

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.08

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 9-Feb-23

Checked by: Henry Leung   Signature: Date: 9-Feb-23

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   AM2 - Sai Tso Wan Recreation Ground

Date: 9-Feb-23   Next Due Date: 12-Apr-23   Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	292.5	Pressure, Pa (mmHg)	762.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05928	Intercept, bc	-0.03491
Last Calibration Date:	16-Jan-23	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	16-Jan-24	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			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	13.6	3.73	63.48	9.7	3.15
2	10.8	3.32	56.63	7.2	2.71
3	8.0	2.86	48.82	5.5	2.37
4	5.6	2.39	40.94	3.8	1.97
5	3.4	1.86	32.03	2.3	1.53

By Linear Regression of Y on X

Slope , mw =   0.0505   Intercept, bw :   -0.0949

Correlation coefficient* =   0.9986

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298)$ =   4.22

Remarks:

Conducted by: Wong Shing Kwai   Signature: _____   Date: 9-Feb-23

Checked by: Henry Leung   Signature: _____   Date: 9-Feb-23

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CinoTech

File No.　MA16034/03/0040

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

Date:　　9-Feb-23　　Next Due Date:　　11-Apr-23　　Operator:　　SK

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

Ambient Condition			
Temperature, Ta (K)	292.5	Pressure, Pa (mmHg)	762.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05928	Intercept, bc	-0.03491
Last Calibration Date:	16-Jan-23	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	16-Jan-24	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			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	13.2	3.67	62.54	9.2	3.07
2	10.4	3.26	55.58	6.9	2.66
3	8.3	2.91	49.72	5.3	2.33
4	5.3	2.33	39.85	3.3	1.84
5	3.0	1.75	30.13	2.2	1.50

By Linear Regression of Y on X

Slope , mw =　　**0.0486**　　　　　　**Intercept, bw =**　　**-0.0343**

Correlation coefficient* =　　　**0.9949**

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$　　　**4.13**

Remarks:

Conducted by:　　Wong Shing Kwai　　Signature:　　　　Date:　　9-Feb-23

Checked by:　　Henry Leung　　Signature:　　　　Date:　　9-Feb-23

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

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	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-Jan-23	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			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	12.7	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.

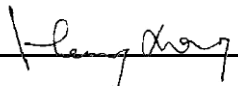| Set Point Calculation |
|---|

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

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

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

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

| 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 -

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

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

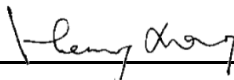|			
Description:	Laser Dust Monitor	Date of Calibration	29-Jan-23
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	31-Mar-23
Model No.:	LD-3B		
Serial No.:	2Y6194		
Equipment No.:	SA-01-02	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	578
Tisch Calibration Orifice No.:	3864	After Sensitivity Adjustment	578
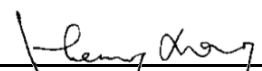
Calibration of 1 hr TSP			
Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute X-axis	Mass concentration (μg/m^3) Y-axis
1	4080	70.0	135.0
2	3600	62.0	117.0
3	2880	50.0	95.0
Average		**60.7**	**115.7**

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, (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: _____   Approved by: _____

Technical Officer (Wong Shing Kwai)   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** Mass Concentration (µg/m3) **X-axis**	**HVS** 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

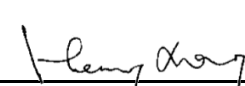|			
Description:	Digital Dust Indicator	Date of Calibration	29-Jan-23
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	31-Mar-23
Model No.:	LD-5R		
Serial No.:	8Y2373		
Equipment No.:	SA-01-05	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	657
Tisch Calibration Orifice No.:	3864	After Sensitivity Adjustment	657

Calibration of 1 hr TSP		
	Laser Dust Monitor	**HVS**
Calibration Point	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

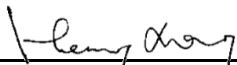It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

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		
	Laser Dust Monitor	**HVS**
Calibration Point	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

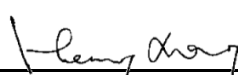|			
Description:	Digital Dust Indicator	Date of Calibration	29-Jan-23
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	31-Mar-23
Model No.:	LD-5R		
Serial No.:	972778		
Equipment No.:	SA-01-07	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	735 CPM
Tisch Calibration Orifice No.:	3864	After Sensitivity Adjustment	735 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (μg/m3) **X-axis**	**HVS** 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: _____ Approved by: _____

Technical Officer (Wong Shing Kwai) 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

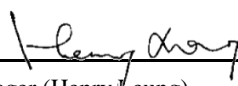Tisch Calibration Orifice No.:   3864   After Sensitivity Adjustment   744 CPM

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: _____   Approved by: _____

Technical Officer (Wong Shing Kwai)   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

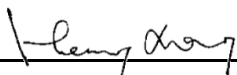|			
Description:	Digital Dust Indicator	Date of Calibration	29-Jan-23
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	31-Mar-23
Model No.:	LD-5R		
Serial No.:	972780		
Equipment No.:	SA-01-09	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	739 CPM
Tisch Calibration Orifice No.:	3864	After Sensitivity Adjustment	739 CPM

Calibration of 1 hr TSP		
	Laser Dust Monitor	**HVS**
Calibration Point	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: _____   Approved by: _____

Technical Officer (Wong Shing Kwai)   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

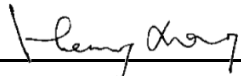|			
Description:	Digital Dust Indicator	Date of Calibration	29-Jan-23
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	31-Mar-23
Model No.:	LD-5R		
Serial No.:	972781		
Equipment No.:	SA-01-10	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	734 CPM
Tisch Calibration Orifice No.:	3864	After Sensitivity Adjustment	734 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration (μg/m3) **X-axis**	**HVS** 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: _____   Approved by: _____

Technical Officer (Wong Shing Kwai)   Project Manager (Henry Leung)

TISCH Environmental

Certificate of Calibration

Calibration Certification Information

Cal. Date: January 16, 2023	**Rootsmeter S/N:** 438320	**Ta:** 293 °K
Operator: Jim Tisch		**Pa:** 749.0 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	1.4440	3.2	2.00
2	3	4	1	1.0220	6.4	4.00
3	5	6	1	0.9100	8.0	5.00
4	7	8	1	0.8710	8.8	5.50
5	9	10	1	0.7210	12.8	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)
0.9981	0.6912	1.4159	0.9957	0.6896	0.8845
0.9938	0.9724	2.0024	0.9915	0.9701	1.2509
0.9917	1.0898	2.2388	0.9893	1.0872	1.3985
0.9906	1.1373	2.3480	0.9883	1.1346	1.4668
0.9853	1.3665	2.8318	0.9829	1.3633	1.7690

QSTD	m=	2.09452	**QA**	m=	1.31155
	b=	-0.03493		b=	-0.02182
	r=	0.99995		r=	0.99995

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

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
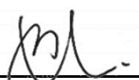
2. Performance check of Wind Direction

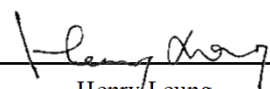| Wind Direction (^{o})		Difference D (^{o})
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

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: _____   Approved by: _____

Wong Shing Kwai   Henry Leung

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   18-Feb-2023

Next Due Date   18-Aug-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
1.2	1.3	-0.1
2.5	2.5	0.0
3.8	3.9	-0.1

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: _____   Approved by: _____

Wong Shing Kwai   Henry Leung