High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.	AM1 - Tin Hau Temple				
Date:	9-Oct-22	Next Due Date:	9-Dec-22	Operator:	SK
Equipment No.:	A-01-05	Model No.:	GS2310	Serial No.	10599

Ambient Condition			
Temperature, Ta (K)	300.1	Pressure, Pa (mmHg)	762.4

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	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	3.64	61.87	9.8	3.12
2	10.4	3.22	54.76	7.3	2.70
3	7.6	2.75	46.87	5.4	2.32
4	5.5	2.34	39.93	3.4	1.84
5	3.3	1.81	31.02	1.9	1.38

By Linear Regression of Y on X

Slope , mw = **0.0568**   Intercept, bw : **-0.3939**

Correlation coefficient* = **0.9989**

*If Correlation Coefficient < 0.990, check and recalibrate.

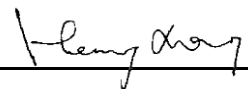| Set Point Calculation |
|---|

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) =   **4.22**

Remarks:

Conducted by:	Wong Shing Kwai	Signature:	Date:	10-Oct-22
Checked by:	Henry Leung	Signature:	Date:	10-Oct-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.	AM2 - Sai Tso Wan Recreation Ground				
Date:	9-Oct-22	Next Due Date:	9-Dec-22	Operator:	SK
Equipment No.:	A-01-08	Model No.:	GS2310	Serial No.	1287

Ambient Condition				
Temperature, Ta (K)	300.1	Pressure, Pa (mmHg)		762.4

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	13.5	3.67	62.33	9.5	3.08
2	10.7	3.26	55.54	7.0	2.64
3	7.9	2.81	47.78	5.4	2.32
4	5.5	2.34	39.93	3.7	1.92
5	3.3	1.81	31.02	2.2	1.48

By Linear Regression of Y on X

Slope , mw = 0.0499   **Intercept, bw :** -0.0761

Correlation coefficient* = 0.9984

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.31

Remarks:

Conducted by:	Wong Shing Kwai	Signature:		Date:	10-Oct-22
Checked by:	Henry Leung	Signature:		Date:	10-Oct-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/03/0038

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

Date:	9-Oct-22	Next Due Date:	9-Dec-22	Operator:	SK
Equipment No.:	A-01-03	Model No.:	GS2310	Serial No.	10379

Ambient Condition			
Temperature, Ta (K)	300.1	Pressure, Pa (mmHg)	762.4

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	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	12.9	3.58	60.94	9.0	2.99
2	10.3	3.20	54.50	6.8	2.60
3	8.2	2.86	48.67	5.2	2.28
4	5.1	2.25	38.47	3.2	1.79
5	2.8	1.67	28.61	1.9	1.38

By Linear Regression of Y on X

Slope , mw = 0.0498   Intercept, bw : -0.0959

Correlation coefficient* = 0.9972

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

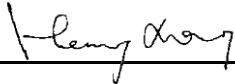From the TSP Field Calibration Curve, take Qstd = 43 CFM

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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298)$ = **4.20**

Remarks:

Conducted by:	Wong Shing Kwai	Signature:		Date:	10-Oct-22
Checked by:	Henry Leung	Signature:		Date:	10-Oct-22

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	\multicolumn{3}{c}{$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$}
Next Calibration Date:	31-Jan-23	\multicolumn{3}{c}{$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$}

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

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

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

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

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	\multicolumn{4}{c}{$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$}
Next Calibration Date:	31-Jan-23	\multicolumn{4}{c}{$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$}

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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	13.0	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

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

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

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	12.5	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 x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   **4.11**

Remarks:

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

hpC

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

Report No.   :   00288

Application No.   :   HP00176

Issue Date   :   10 Nov 2022

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

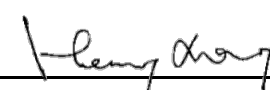|			
Description:	Laser Dust Monitor	Date of Calibration	29-Nov-22
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	29-Jan-23
Model No.:	LD-3B		
Serial No.:	2Y6194		
Equipment No.:	SA-01-02	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	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
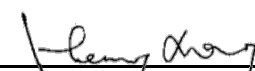
Set Correlation Factor , SCF
SCF = [K=High Volume Sampler / Dust Meter, (μ g/m3)]   1.9

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: _____   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-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

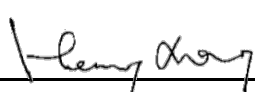It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description:	Digital Dust Indicator	Date of Calibration	29-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** Mass Concentration (μg/m3) **X-axis**	**HVS** 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: _____   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

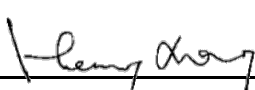|			
Description:	Digital Dust Indicator	Date of Calibration	29-Nov-22
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	29-Jan-23
Model No.:	LD-5R		
Serial No.:	972778		
Equipment No.:	SA-01-07	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment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

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

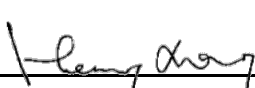|			
Description:	Digital Dust Indicator	Date of Calibration	29-Nov-22
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	29-Jan-23
Model No.:	LD-5R		
Serial No.:	972779		
Equipment No.:	SA-01-08	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment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

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

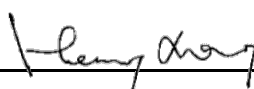|			
Description:	Digital Dust Indicator	Date of Calibration	29-Nov-22
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	29-Jan-23
Model No.:	LD-5R		
Serial No.:	972780		
Equipment No.:	SA-01-09	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment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

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

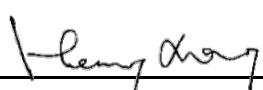|			
Description:	Digital Dust Indicator	Date of Calibration	29-Nov-22
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	29-Jan-23
Model No.:	LD-5R		
Serial No.:	972781		
Equipment No.:	SA-01-10	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment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

Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor Mass Concentration (μg/m3) **X-axis**	HVS Mass concentration ($\mu g/m^3$) **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 ($\mu g/m^3$)	114.0
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	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)

TISCH Environmental

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			QA		
	m=	2.09281		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:

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

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

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
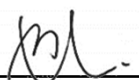
2. Performance check of Wind Direction

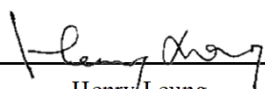| Wind Direction (^{o})		Difference D (^{o})
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

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