CINOTECH CONSULTANTS LIMITED

Certificate of Calibration

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

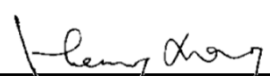|			
Description:	Digital Dust Indicator	Date of Calibration	2-Oct-21
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	2-Dec-21
Model No.:	LD-5R		
Serial No.:	972778		
Equipment No.:	SA-01-07	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	735 CPM
Tisch Calibration Orifice No.:	3864	After Sensitivity Adjustment	735 CPM

Calibration of 1 hr TSP		
Calibration Point	**Laser Dust Monitor** Mass Concentration ($\mu g/m3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	65.0	127.0
2	58.0	121.0
3	49.0	112.0
Average	**57.3**	**120.0**

By Linear Regression of Y on X

Slope , mw =	0.9404	**Intercept, bw =**	66.0829
Correlation coefficient* =	0.9991		

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	120.0
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	57.3
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m3$)]	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

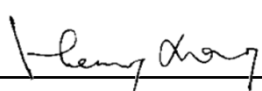|			
Description:	Digital Dust Indicator	Date of Calibration	2-Aug-21
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	2-Oct-21
Model No.:	LD-5R		
Serial No.:	972781		
Equipment No.:	SA-01-10	Sensitivity	0.001 mg/m3
High Volume Sampler No.:	A-01-03	Before Sensitivity Adjustment	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	66.0	131.0
2	57.0	125.0
3	46.0	116.0
Average	**56.3**	**124.0**

By Linear Regression of Y on X

Slope , mw = 0.7525   Intercept, bw = 81.6096

Correlation coefficient* = 0.9984

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (μg/m^3)	124.0
Particaulate Concentration by Dust Meter (μg/m^3)	56.3
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (μg/m3)]	2.2

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

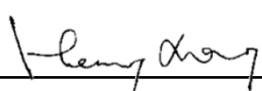It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler

Description:	Digital Dust Indicator	Date of Calibration	2-Oct-21
Manufacturer:	Sibata Scientific Technology LTD.	Validity of Calibration Record	2-Dec-21
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 ($\mu g/m3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	64.0	127.0
2	56.0	121.0
3	45.0	112.0
Average	**55.0**	**120.0**

By Linear Regression of Y on X

Slope , mw =	0.7912	**Intercept, bw =**	76.4835
Correlation coefficient* =	0.9997		

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	120.0
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	55.0
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m3$)]	2.2

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 11, 2021	**Rootsmeter S/N:** 438320	**Ta:** 297 °K
Operator: Jim Tisch		**Pa:** 750.1 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	1.4470	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9140	8.0	5.00
4	7	8	1	0.8670	8.8	5.50
5	9	10	1	0.7140	12.9	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)
0.9860	0.6814	1.4073	0.9957	0.6881	0.8899
0.9818	0.9616	1.9902	0.9915	0.9711	1.2585
0.9797	1.0719	2.2251	0.9893	1.0824	1.4071
0.9786	1.1288	2.3337	0.9883	1.1399	1.4757
0.9732	1.3630	2.8146	0.9828	1.3765	1.7798
QSTD m=	2.06566		**QA** m=	1.29348	
b=	0.00315		b=	0.00199	
r=	0.99996		r=	0.99996	

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	20-Aug-2021
Next Due Date	20-Feb-2022

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
2.8	2.7	0.1
4.0	4.1	-0.1

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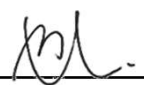
Wind Direction (^{o})		Difference D (^{o})
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

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
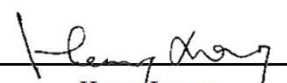
Calibrated by: _____   Approved by: _____
Wong Shing Kwai   Henry Leung

High Precision Chemical Testing Limited
Rm 1904, Technology Park,
18 On Lai Street, Shatin,
New Territories, Hong Kong
Tel: (852) 3841 4388
Email: info@hpct.com.hk

APPLICANT: **Cinotech Consultants Limited**
RM 1710, Technology Park,
18 On Lai Street,

Test Report No.:	00122
Date of Issue:	2021-05-12
Date Received:	2021-05-07
Test Period	2021-05-10 to 2021-05-10
Next Due Date:	2022-05-10

ATTN: **Mr. Henry Leung**

Certificate of Calibration

Item for calibration

Description	Integrating Sound Level Meter
Manufacturer	BSWA Technology
Model No.	BSWA 308
Serial No.	580156
Microphone No.	580804
Equipment No.	N-12-06

Test conditions:

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

Method reference:

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.

Measuring equipment：

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

****

Test Report

Results:

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.0	0.0	± 1.5
114.0	114.0	+0.1	± 1.5

REMARK:

1. The indication value was obtained from the average of ten replicated measurement.
2. The equipment being used in this calibration are regularly calibrated by laboratory according to ISO/IEC 17025.

---End of Report---

PREPARED AND CHECKED BY:
For and On Behalf of **High Precision Chemical Testing Limited**

Laboratory Director (CHAN Hon-Fai)

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   AM1 - Tin Hau Temple

Date: 10-Aug-21   Next Due Date: 10-Oct-21   Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	302	Pressure, Pa (mmHg)	754.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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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	3.60	61.56	9.6	3.07
2	9.6	3.07	52.50	7.4	2.69
3	7.4	2.69	46.10	5.4	2.30
4	5.2	2.26	38.66	3.4	1.82
5	3.0	1.71	29.37	2.0	1.40

By Linear Regression of Y on X

Slope , mw =   0.0535   Intercept, bw =   -0.1854

Correlation coefficient* =   0.9971

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.57

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 10-Aug-21

Checked by: Henry Leung   Signature: Date: 10-Aug-21

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.	AM2 - Sai Tso Wan Recreation Ground
Date:	10-Aug-21	Next Due Date:	10-Oct-21	Operator:	SK
Equipment No.:	A-01-08	Model No.:	GS2310	Serial No.	1287

Ambient Condition

Temperature, Ta (K)	302	Pressure, Pa (mmHg)	754.3

Orifice Transfer Standard Information

Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21		$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$		
Next Calibration Date:	11-Jan-22		$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} -bc\} / mc$		

Calibration of TSP Sampler

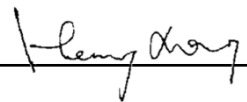| Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.4	3.62	62.02	9.0	2.97
2	10.2	3.16	54.12	6.4	2.50
3	7.9	2.78	47.63	4.9	2.19
4	5.1	2.23	38.28	3.3	1.80
5	3.0	1.71	29.37	2.0	1.40

By Linear Regression of Y on X

Slope , mw = **0.0472**   Intercept, bw = **-0.0147**

Correlation coefficient* = **0.9976**

*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: 10-Aug-21
Checked by:	Henry Leung	Signature:	Date: 10-Aug-21

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/03/0031

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

Date:	10-Aug-21	Next Due Date:	10-Oct-21	Operator:	SK
Equipment No.:	A-01-03	Model No.:	GS2310	Serial No.	10379

Ambient Condition			
Temperature, Ta (K)	302	Pressure, Pa (mmHg)	754.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$

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

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

Calibration of TSP Sampler					
Calibration Point	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	3.60	61.56	9.0	2.97
2	10.2	3.16	54.12	6.8	2.58
3	8.0	2.80	47.93	5.4	2.30
4	5.4	2.30	39.39	3.5	1.85
5	2.9	1.69	28.88	2.0	1.39

By Linear Regression of Y on X

Slope , mw =	0.0484	Intercept, bw =	-0.0251

Correlation coefficient* =   0.9994

*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-Aug-21
Checked by:	Henry Leung	Signature:		Date:	10-Aug-21

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/54/0031

Project No.   AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office

Date: 10-Aug-21   Next Due Date: 10-Oct-21   Operator: SK

Equipment No.:   A-01-54   Model No.:   TE-5170   Serial No.   1536

Ambient Condition			
Temperature, Ta (K)	302	Pressure, Pa (mmHg)	754.3

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$

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

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

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	3.62	62.02	9.4	3.03
2	10.8	3.25	55.69	7.2	2.66
3	7.6	2.73	46.72	5.1	2.23
4	5.6	2.34	40.11	3.6	1.88
5	3.0	1.71	29.37	1.9	1.36

By Linear Regression of Y on X
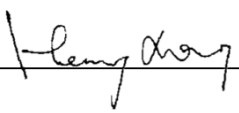
Slope , mw =   0.0508   Intercept, bw =   -0.1424

Correlation coefficient* =   0.9994

*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) =   4.25

Remarks:

Conducted by: Wong Shing Kwai   Signature: ___   Date: 10-Aug-21

Checked by: Henry Leung   Signature: ___   Date: 10-Aug-21

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   AM1 - Tin Hau Temple

Date: 9-Oct-21   Next Due Date: 9-Dec-21   Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	299.5	Pressure, Pa (mmHg)	753.6

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	3.62	62.02	9.1	3.00
2	9.8	3.11	53.24	7.0	2.63
3	7.4	2.70	46.27	5.2	2.27
4	5.2	2.27	38.80	3.2	1.78
5	3.0	1.72	29.48	2.0	1.40

By Linear Regression of Y on X

Slope , mw =   0.0506   Intercept, bw =   -0.1108

Correlation coefficient* =   0.9968

*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) =   4.32

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 9-Oct-21

Checked by: Henry Leung   Signature: Date: 9-Oct-21

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   AM2 - Sai Tso Wan Recreation Ground

Date: 9-Oct-21   Next Due Date: 9-Dec-21   Operator: SK

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

Ambient Condition			
Temperature, Ta (K)	299.5	Pressure, Pa (mmHg)	753.6

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21		$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$		
Next Calibration Date:	11-Jan-22		$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$		

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	13.2	3.61	61.78	9.0	2.98
2	10.2	3.17	54.32	6.6	2.55
3	7.9	2.79	47.81	4.9	2.20
4	5.2	2.27	38.80	3.3	1.80
5	3.0	1.72	29.48	2.0	1.40

By Linear Regression of Y on X

Slope , mw =   0.0484   Intercept, bw =   -0.0605

Correlation coefficient* =   0.9976

*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) =   4.14

Remarks:

Conducted by: Wong Shing Kwai   Signature: _____   Date: 9-Oct-21

Checked by: Henry Leung   Signature: _____   Date: 9-Oct-21

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. **MA16034/03/0032**

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

Date:	9-Oct-21	Next Due Date:	9-Dec-21	Operator:	SK
Equipment No.:	A-01-03	Model No.:	GS2310	Serial No.	10379

Ambient Condition			
Temperature, Ta (K)	299.5	Pressure, Pa (mmHg)	753.6

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

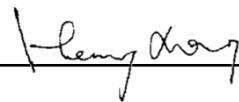| Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.3	3.62	62.02	9.1	3.00
2	10.3	3.19	54.58	6.8	2.59
3	8.2	2.84	48.71	5.4	2.31
4	5.6	2.35	40.26	3.5	1.86
5	2.9	1.69	28.99	2.0	1.40

By Linear Regression of Y on X

Slope , mw = **0.0486**   Intercept, bw = **-0.0498**

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) =   **4.22**

Remarks: _____

_____

Conducted by:	Wong Shing Kwai	Signature:		Date:	9-Oct-21
Checked by:	Henry Leung	Signature:		Date:	9-Oct-21

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

File No. MA16034/54/0032

Project No. AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office

Date:	9-Oct-21	Next Due Date:	9-Dec-21	Operator:	SK
Equipment No.:	A-01-54	Model No.:	TE-5170	Serial No.	1536

Ambient Condition			
Temperature, Ta (K)	299.5	Pressure, Pa (mmHg)	753.6

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	13.2	3.61	61.78	9.4	3.05
2	10.6	3.23	55.37	7.4	2.70
3	7.6	2.74	46.89	5.1	2.24
4	5.6	2.35	40.26	3.6	1.88
5	3.0	1.72	29.48	1.9	1.37

By Linear Regression of Y on X

Slope , mw =   0.0522   Intercept, bw =   -0.1914
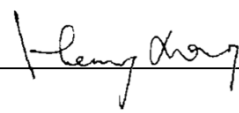
Correlation coefficient* =   0.9996

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298)$ =   4.27

Remarks:

Conducted by:	Wong Shing Kwai	Signature:		Date:	9-Oct-21
Checked by:	Henry Leung	Signature:		Date:	9-Oct-21

Calibration Certificate

0025914

Customer : Cinotech Consultants Limited RM 1710, Technology Park, 18 On Lai Street, Shatin, N.T. Hong Kong	Object 1 : SVAN957 SLM Serial No. /Ref. No. : 23851 / N-08-12 Object 2 : Microphone Serial No. /Ref. No. : 43676
Customer Code : SVEC09005	Manufacturer : Svantek
Date of calibration: 22/01/2021 Date of the recommended re-calibration: 22/01/2022	Certificate No.: 0025914 Handle by: E0002

Measuring results

Reference value	Indication value	Deviation	Allowed deviation	Object
94.0dB	93.6dB	-0.4dB	+/- 1.5dB	1
114.0dB	113.5dB	-0.5dB	+/- 1.5dB	1

Measuring equipment

index	Calibrator / Master	Traceability
1	Master Sound Meter, SVAN949,sn:8571	IEC61672
2	Sound Calibrator, SV30A sn:32580	IEC60942

Ambient conditions

Temperature   (20...26)°C   Humidity   (20...60)%RH

Measuring procedure

Calibrated by Type 1 Sound Calibrator with Master Sound Level Meter under 1kHz Frequency.

Uncertainty

+/- 0.2 dB   for probability not less than 95%.

Conformity

1. The resulted values were those obtained at the time of test and applies only to the item calibrated.
2. The measurement uncertainty was calculated according to the regulations of GUM with the coverage factor k=2 and contains the uncertainty of the measuring procedure and the uncertainty of the measuring system.
3. The equipment being used in this calibration are regularly calibrated by laboratory according to ISO/IEC17025.
4. HKAS has accredited this laboratory (HOKLAS 267) for specific calibration activities as listed in the HOKLAS directory of accredited laboratories.
5. The calibrations certificate may not be reproduced.

Measured value(s) within the allowable deviation.

Performed by	Approved by
Calibration Technician	Quality Manager

Calibration Certificate   0025247

Customer :		Object 1 :	ST-120 sound calibrator
Cinotech Consultants Limited		Serial No. /Ref. No. :	181001608
RM 1710, Technology Park,		Object 2 :	
18 On Lai Street, Shatin, N.T.		Serial No. /Ref. No. :	
Hong Kong			
Customer Code : SVEC09005		Manufacturer : Soundtek	
Date of calibration:	05/11/2020	Certificate No.:	0025247
Date of the recommended re-calibration:	05/11/2021	Handle by:	E0002

Measuring results

Reference value	Indication value	Deviation	Allowed deviation	Object
94.0dB	93.7dB	-0.3dB	+/- 0.3dB	1
114.0dB	113.6dB	-0.4dB	+/- 0.5dB	1

Measuring equipment

index	Calibrator / Master	Traceability
1	Master Sound Meter, SVAN949,sn:8571	IEC61672
2	Sound Calibrator, SV30A sn:32580	IEC60942

Ambient conditions

Temperature   (20...26)°C   Humidity   (20...60)%RH

Measuring procedure

Calibrated by Type 1 Sound Level Meter and 1kHz Sound Source .

Uncertainty

+/- 0.2 dB   for probability not less than 95%.

Conformity

1. The resulted values were those obtained at the time of test and applies only to the item calibrated.
2. The measurement uncertainty was calculated according to the regulations of GUM with the coverage factor k=2 and contains the uncertainty of the measuring procedure and the uncertainty of the measuring system.
3. The equipment being used in this calibration are regularly calibrated by laboratory according to ISO/IEC17025.
4. HKAS has accredited this laboratory (HOKLAS 267) for specific calibration activities as listed in the HOKLAS directory of accredited laboratories.
5. The calibrations certificate may not be reproduced.

Measured value(s) within the allowable deviation.

Performed by

Calibration Technician   Mr. K.L. Ng

Approved by

Quality Manager

Appleone Calibration Laboratory Ltd.   Rm1309, 13/F, No.77 Wing Hong St, Kln, HKSAR   Tel: +852 2370 4437 Fax: +852 2114 0393

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	
Manufacturer:	Sibata Scientific Technology LTD.	
Model No.:	LD-5R	
Serial No.:	972778	

Date of Calibration: 2-Aug-21

Validity of Calibration Record: 2-Oct-21

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

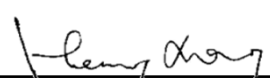After Sensitivity Adjustment: 735 CPM

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	61.0	131.0
2	56.0	125.0
3	48.0	116.0
Average	**55.0**	**124.0**

By Linear Regression of Y on X

Slope , mw = 1.1512   Intercept, bw = 60.6860

Correlation coefficient* = 0.9998

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (μg/m^3)	124.0
Particaulate Concentration by Dust Meter (μg/m^3)	55.0
Measureing time, (min)	60.0
Set Correlation Factor , SCF	
SCF = [K=High Volume Sampler / Dust Meter, (μg/m3)]	2.3

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)