

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F.Yeung
 Date : 09/12/2017

Sampler

Model : TE-5170
 Serial Number : S/N 0816

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
 Ta(K) : 292

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.4	3.419	1.658	54	54.69
2	13 holes	8.8	3.004	1.459	50	50.64
3	10 holes	7.0	2.679	1.302	45	45.57
4	7 holes	4.6	2.172	1.060	38	38.48
5	5 holes	2.5	1.601	0.786	30	30.38

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 28.420 Intercept(b): 8.341 Correlation Coefficient(r): 0.9981

Checked by: Magnum Fan

Date: 12/12/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F. Yeung
 Date : 09/12/2017

Sampler

Model : TE-5170
 Serial Number : S/N 8162

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
 Ta(K) : 292

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	10.8	3.328	1.614	53	53.67
2	13 holes	8.7	2.987	1.451	48	48.61
3	10 holes	6.2	2.522	1.227	42	42.53
4	7 holes	4.3	2.100	1.025	34	34.43
5	5 holes	3.0	1.754	0.859	26	26.331

Notes: $Z = \sqrt{\frac{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \sqrt{\frac{Pa/Pstd)(Tstd/Ta)}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 34.475 Intercept(b): -2.704 Correlation Coefficient(r): 0.9933

Checked by: Magnum Fan

Date: 12/12/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
Calibrated by : P.F. Yeung
Date : 09/12/2017

Sampler

Model : TE-5170
Serial Number : S/N 1253

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 20 March 2017
Slope (m) : 2.08464
Intercept (b) : -0.036840
Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
Ta(K) : 292

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	13.0	3.651	1.769	50	50.64
2 13 holes	9.5	3.121	1.515	45	45.57
3 10 holes	7.6	2.792	1.357	40	40.51
4 7 holes	5.0	2.264	1.104	33	33.42
5 5 holes	3.0	1.754	0.859	25	25.32

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 28.134 Intercept(b): 1.930 Correlation Coefficient(r): 0.9960

Checked by: Magnum Fan

Date: 12/12/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
Calibrated by : P.F. Yeung
Date : 09/12/2017

Sampler

Model : TE-5170
Serial Number : S/N 0146

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 20 March 2017
Slope (m) : 2.08464
Intercept (b) : -0.036840
Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
Ta(K) : 292

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.4	3.419	1.658	54	54.69
2 13 holes	8.8	3.004	1.459	50	50.64
3 10 holes	7.0	2.680	1.303	45	45.57
4 7 holes	4.6	2.172	1.060	38	38.48
5 5 holes	2.6	1.633	0.801	30	30.38

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 28.847 Intercept(b): 7.718 Correlation Coefficient(r): 0.9977

Checked by: Magnum Fan

Date: 12/12/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F.Yeung
 Date : 09/12/2017

Sampler

Model : TE-5170
 Serial Number : S/N 3957

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1018
 Ta(K) : 292

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.8	3.623	1.756	54	54.69
2 13 holes	9.4	3.105	1.507	50	50.64
3 10 holes	7.1	2.698	1.312	43	43.55
4 7 holes	4.4	2.124	1.037	34	34.43
5 5 holes	2.6	1.633	0.801	28	28.36

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \sqrt{Pa/Pstd)(Tstd/Ta)}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 28.930 Intercept(b): 5.227 Correlation Coefficient(r): 0.9939

Checked by: Magnum Fan

Date: 12/12/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
Calibrated by : P.F.Yeung
Date : 09/02/2018

Sampler

Model : TE-5170
Serial Number : S/N 0816

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
Service Date : 20 March 2017
Slope (m) : 2.08464
Intercept (b) : -0.036840
Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1017
Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.5	3.597	1.743	52	52.91
2	13 holes	9.5	3.136	1.522	47	47.82
3	10 holes	7.0	2.692	1.309	40	40.70
4	7 holes	4.8	2.229	1.087	35	35.61
5	5 holes	2.3	1.543	0.758	28	28.49

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 25.228 Intercept(b): 8.717 Correlation Coefficient(r): 0.9969

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F. Yeung
 Date : 09/02/2018

Sampler

Model : TE-5170
 Serial Number : S/N 8162

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	10.7	3.328	1.614	52	52.91
2	13 holes	8.6	2.984	1.449	48	48.84
3	10 holes	6.8	2.653	1.290	43	43.75
4	7 holes	4.8	2.229	1.087	35	35.61
5	5 holes	3.2	1.820	0.891	28	28.49

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 34.451

Intercept(b): -1.705

Correlation Coefficient(r): 0.9966

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F. Yeung
 Date : 09/02/2018

Sampler

Model : TE-5170
 Serial Number : S/N 1253

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	13.8	3.780	1.831	50	50.87
2	13 holes	10.8	3.344	1.622	45	45.79
3	10 holes	8.2	2.914	1.415	40	40.70
4	7 holes	5.6	2.408	1.173	33	33.58
5	5 holes	3.8	1.983	0.969	26	26.45

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \sqrt{Pa/Pstd}(Tstd/Ta)$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 28.118 Intercept(b): 0.059 Correlation Coefficient(r): 0.9971

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F. Yeung
 Date : 09/02/2018

Sampler

Model : TE-5170
 Serial Number : S/N 0146

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 289

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.3	3.420	1.658	54	54.94
2 13 holes	9.3	3.103	1.506	50	50.87
3 10 holes	7.2	2.730	1.327	45	45.79
4 7 holes	4.7	2.206	1.076	40	40.70
5 5 holes	3.0	1.762	0.863	33	33.58

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 26.132 Intercept(b): 11.566 Correlation Coefficient(r): 0.9973

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F. Yeung
 Date : 09/02/2018

Sampler

Model : TE-5170
 Serial Number : S/N 3957

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 March 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.036840
 Correlation Coefficient(r) : 0.99994

Standard Condition

Pstd (hpa) : 1013
 Tstd (K) : 298.18

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	13.5	3.738	1.811	57	57.99
2	13 holes	11.2	3.405	1.651	50	50.87
3	10 holes	8.2	2.914	1.415	45	45.79
4	7 holes	5.6	2.408	1.173	37	37.65
5	5 holes	3.6	1.930	0.944	30	30.52

Notes: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

Sampler Calibration Relationship (Linear Regression)

Slope(m): 30.692 Intercept(b): 1.634 Correlation Coefficient(r): 0.9966

Checked by: Magnum Fan

Date: 13/02/2018

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 18 October 2017

Brand of Test Meter: Davis

Model: Vantage Pro 2 (s/n: AS160104014)

Location : Roof of Tuen Mun Firestation

Procedures :

- 1. Wind Still Test : The wind speed sensor was hold by hand until it keep still
- 2. Wind Speed Test : The wind meter was on-site calibrated against the Anemometer
- 3. Wind Direction Test : The wind meter was on-site calibrated against the marine compass at four directions

Results:

Wind Still Test


Wind Speed (m/s)
0.00


Wind Speed Test

Davis (m/s)	Anemometer (m/s)
0.7	0.8
1.2	1.4
2.5	2.8

Wind Direction Test

Davis (o)	Marine Compass (o)
272	270
1	0
91	90
181	180

Calibrated by: 
Yeung Ping Fai
(Technical Officer)

Checked by : 
Ho Kam Fat
(Senior Technical Officer)



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C175727
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-2277)

Date of Receipt / 收件日期 : 3 October 2017

Description / 儀器名稱 : Anemometer

Manufacturer / 製造商 : Lutron

Model No. / 型號 : AM-4201

Serial No. / 編號 : AF.27513

Supplied By / 委託者 : Envirotech Services Co.

Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 13 October 2017

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.


The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- Testo Industrial Services GmbH, Germany

Tested By
測試

:


H C Chan
Engineer

Certified By
核證

:


K C Lee
Engineer

Date of Issue
簽發日期

:

16 October 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel 電話: 2927 2606

Fax 傳真: 2744 8986

E-mail 電郵: callab@suncreation.com

Website 網址: www.suncreation.com

Certificate of Calibration

校正證書

Certificate No. : C175727

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 10 measurements at each calibration point.
3. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL386	Multi-function Measuring Instrument	S16493

4. Test procedure : MA130N.

5. Results :

Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
1.9	1.7	+0.2	0.2	2.0
4.0	3.8	+0.2	0.2	2.0
6.0	5.9	+0.1	0.3	2.0
8.0	8.0	0.0	0.3	2.0
10.0	10.1	-0.1	0.4	2.0

Remarks : - The Measured Corrections are defined as :
Value = Applied Value - UUT Reading

- The expanded uncertainties are for a level of confidence of 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部深印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited Calibration & Testing Laboratory

c/o 4F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

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