Annex D1

Calibration Certificates for Dust Monitoring Equipment

TSP SAMPLER CALIBRATION CACULATION SPREADSHEET

Location ID: AM1		Date of Calibration:	30-Dec-22
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	30-Mar-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1028	Corrected Pressure (mm Hg)	771.1
Temperature (^{o}C)	15.0	Temperature (K)	288

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.06918
Model:	TE-5025A	Qstd Intercept	-0.04220
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H20(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.8	5.9	11.7	1.715	56	57.39	Slope= 31.435
13	4.1	4.2	8.3	1.447	51	52.27	Intercept= 4.839
10	3.2	3.2	6.4	1.273	44	45.09	Corr. Coeff.= 0.9937
7	2.1	2.1	4.2	1.035	36	36.89	
5	1.3	1.4	2.7	0.834	30	30.75	

Calulations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

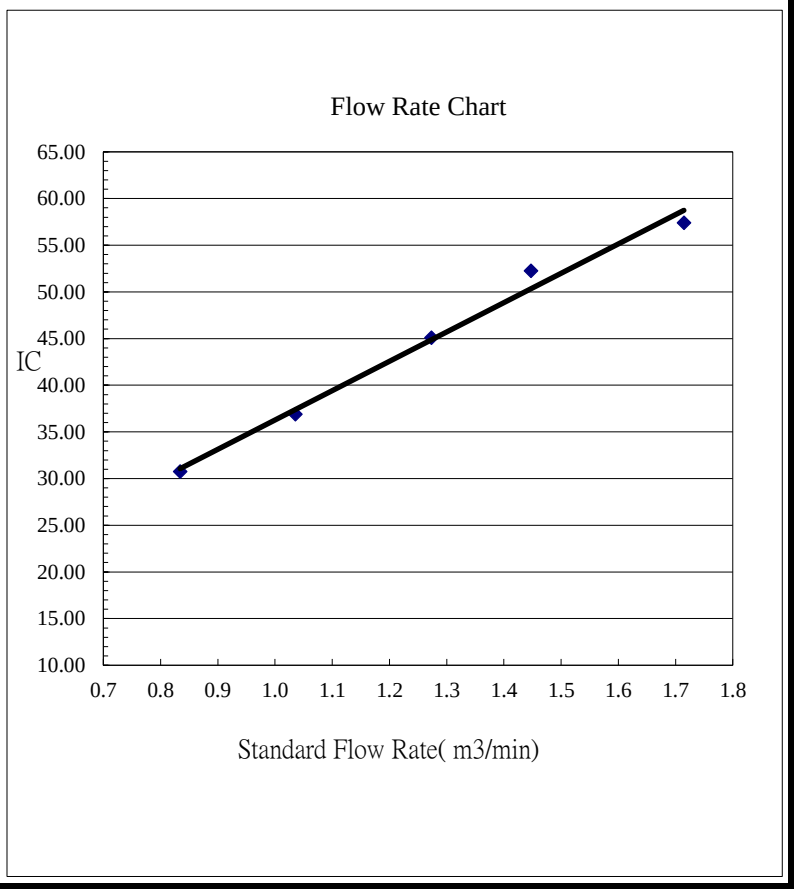
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CACULATION SPREADSHEET

Location ID: AM2		Date of Calibration:	30-Dec-22
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	30-Mar-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1028	Corrected Pressure (mm Hg)	771.1
Temperature (^{o}C)	15.0	Temperature (K)	288

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.06918
Model:	TE-5025A	Qstd Intercept	-0.04220
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H20(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	6.6	6.6	13.2	1.820	56	57.39	Slope= 29.619
13	5.2	5.1	10.3	1.610	50	51.24	Intercept= 3.516
10	3.6	3.6	7.2	1.349	42	43.04	Corr. Coeff.= 0.9987
7	2.2	2.2	4.4	1.059	35	35.87	
5	1.3	1.4	2.7	0.834	27	27.67	

Calulations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

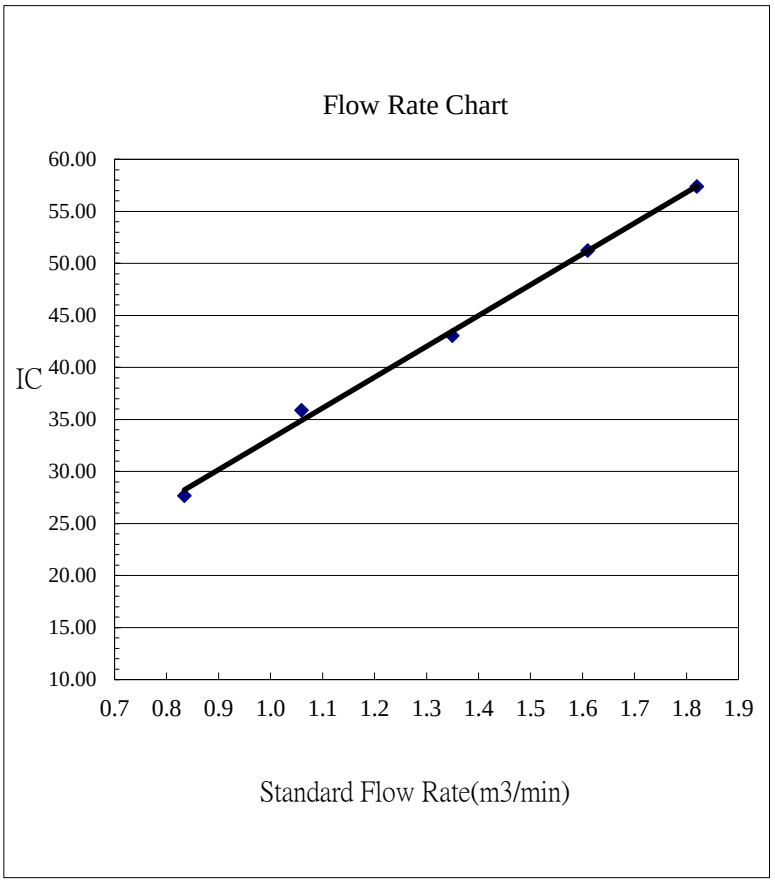
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CACULATION SPREADSHEET

Location ID: AM3		Date of Calibration:	30-Dec-22
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	30-Mar-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1028	Corrected Pressure (mm Hg)	771.1
Temperature (^{o}C)	15.0	Temperature (K)	288

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.06918
Model:	TE-5025A	Qstd Intercept	-0.04220
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H20(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.6	5.7	11.3	1.685	62	63.54	Slope= 25.266
13	4.4	4.4	8.8	1.490	57	58.42	Intercept= 20.862
10	3.1	3.1	6.2	1.254	51	52.27	Corr. Coeff.= 0.9996
7	2.0	2.1	4.1	1.023	46	47.14	
5	1.3	1.2	2.5	0.804	40	40.99	

Calulations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

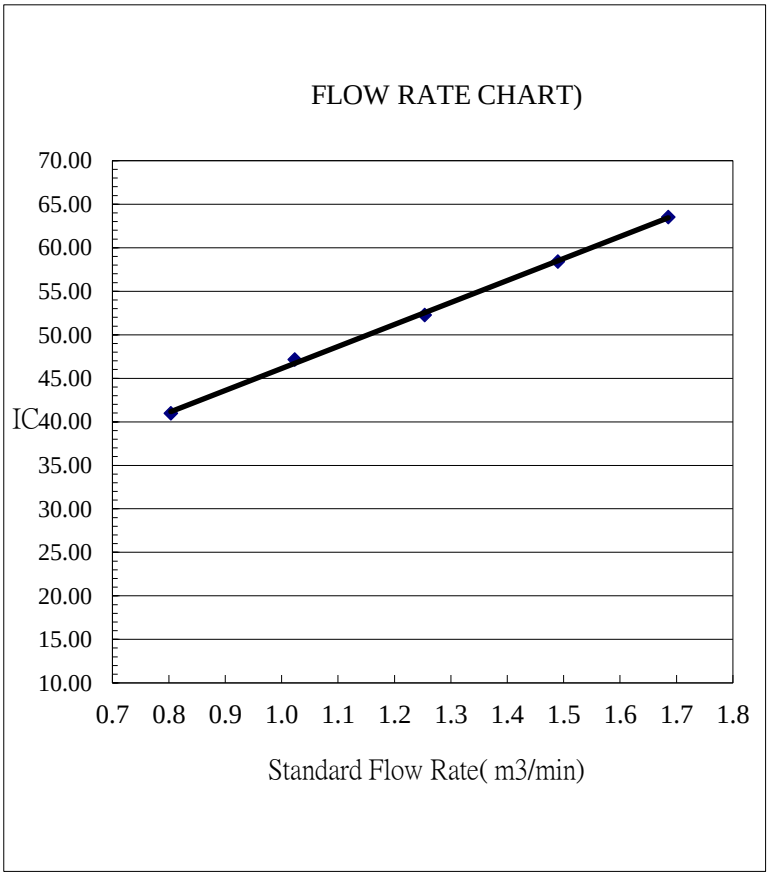
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CACULATION SPREADSHEET

Location ID: AM4		Date of Calibration:	30-Dec-22
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	30-Mar-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1028	Corrected Pressure (mm Hg)	771.1
Temperature (^{o}C)	15.0	Temperature (K)	288

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.06918
Model:	TE-5025A	Qstd Intercept	-0.04220
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H20(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	6.6	6.7	13.3	1.827	60	61.49	Slope= 28.006
13	5.4	5.4	10.8	1.648	54	55.34	Intercept= 9.869
10	3.7	3.8	7.5	1.377	47	48.17	Corr. Coeff.= 0.9975
7	2.2	2.3	4.5	1.071	40	40.99	
5	1.5	1.5	3.0	0.878	33	33.82	

Calulations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure