Annex D1

Calibration Certificates for Dust Monitoring Equipment

TSP SAMPLER CALIBRATION CACULATION SPREADSHEET

Location ID: AM1		Date of Calibration:	1-Mar-23
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	1-May-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1021	Corrected Pressure (mm Hg)	769.8
Temperature (^{o}C)	22.0	Temperature (K)	295

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	5.8	11.6	1.681	54	54.49	Slope= 28.903
13	4.1	4.1	8.2	1.417	49	49.45	Intercept= 7.093
10	3.1	3.1	6.2	1.235	43	43.39	Corr. Coeff.= 0.9943
7	2.3	2.2	4.5	1.055	37	37.34	
5	1.4	1.3	2.7	0.822	30	30.27	

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)

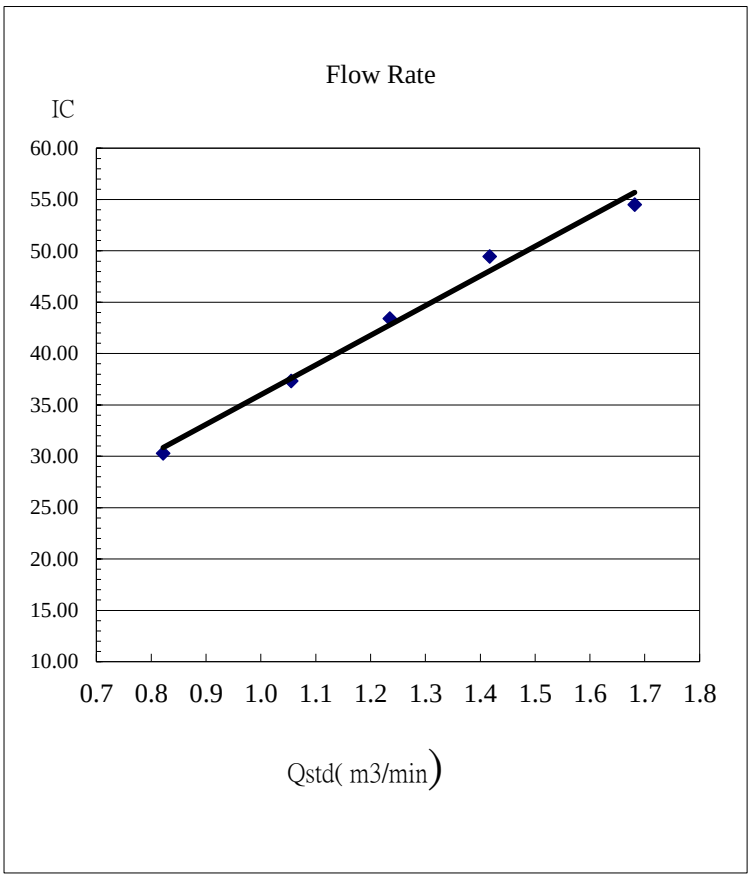
m = sampler slope

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:	1-Mar-23
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	1-May-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1021	Corrected Pressure (mm Hg)	769.8
Temperature (^{o}C)	22.0	Temperature (K)	295

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	6.0	6.0	12.0	1.710	56	56.51	Slope= 29.915
13	4.5	4.5	9.0	1.484	51	51.47	Intercept= 5.440
10	3.8	3.7	7.5	1.356	44	44.40	Corr. Coeff.= 0.9932
7	2.3	2.2	4.5	1.055	36	36.33	
5	1.3	1.3	2.6	0.807	30	30.27	

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)

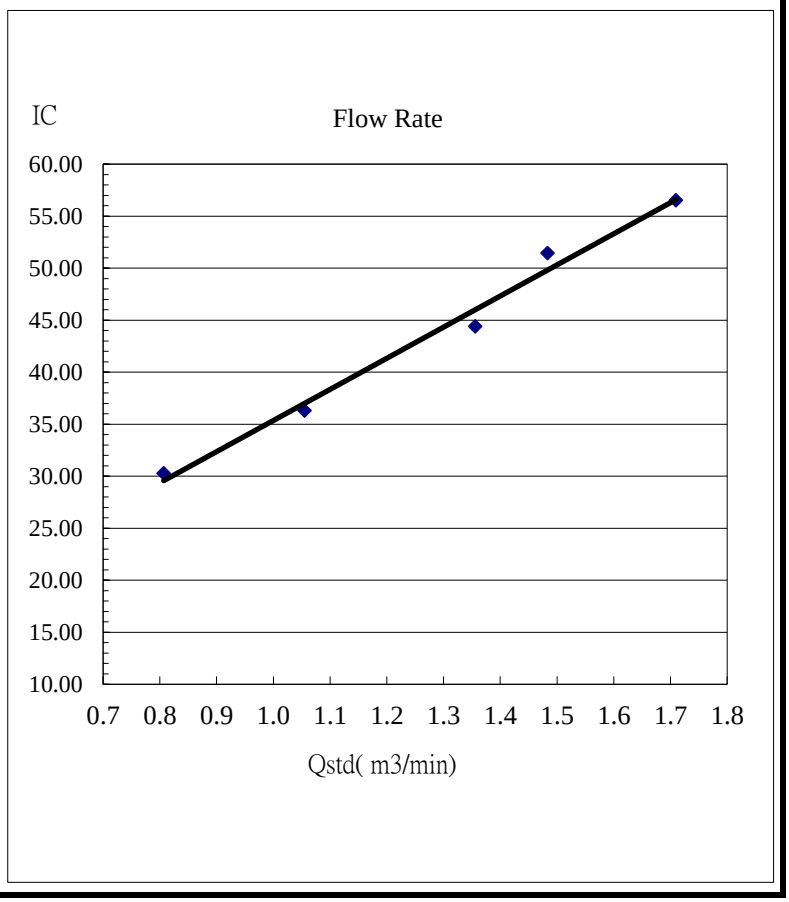
m = sampler slope

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:	1-Mar-23
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	1-May-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1021	Corrected Pressure (mm Hg)	769.8
Temperature (^{o}C)	22.0	Temperature (K)	295

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	5.6	11.2	1.653	64	64.59	Slope= 27.886
13	4.4	4.4	8.8	1.467	58	58.53	Intercept= 18.083
10	3.0	3.0	6.0	1.215	52	52.48	Corr. Coeff.= 0.9970
7	2.1	2.1	4.2	1.020	45	45.41	
5	1.2	1.2	2.4	0.776	40	40.37	

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)

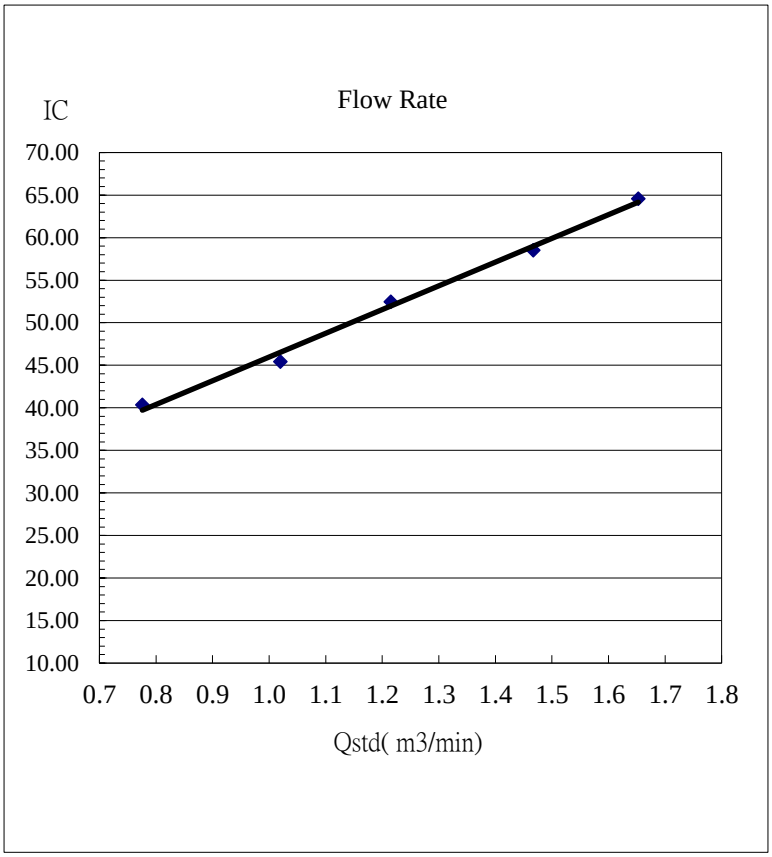
m = sampler slope

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:	1-Mar-23
Name and Model :	TISCH HVS Model TE-5170	Next Calibration Date:	1-May-23
		Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1021	Corrected Pressure (mm Hg)	769.8
Temperature (^{o}C)	22.0	Temperature (K)	295

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	6.4	6.4	12.8	1.765	60	60.55	Slope= 32.771
13	5.1	5.1	10.2	1.578	53	53.49	Intercept= 2.288
10	3.7	3.7	7.4	1.347	46	46.42	Corr. Coeff.= 0.9996
7	2.5	2.4	4.9	1.100	38	38.35	
5	1.5	1.4	2.9	0.851	30	30.27	

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