

ภาคผนวกที่ 4

สำเนาหนังสือขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน



บริษัท เอ็ม อี ที จำกัด MET Company Limited

36/659 หมู่ 6 ต.บางรักพัฒนา อ.บางบัวทอง จ. นนทบุรี 11110

36/659 Moo 6 Tambol Bangrakpattana Amphur Bangbuatong Nontaburi 11110

Tel : 0 2920 1458-9 Fax : 0 2920 1460 E-mail : met_jj@yahoo.com

PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	January 16, 2024
บริเวณพื้นที่โครงการ				Start Time	2:00 PM
Sampler Number	PM-10 No.6	Transfer Standard Type	Orifice	Stop Time	2:05 PM
Motor Serial Number	HVL-06	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

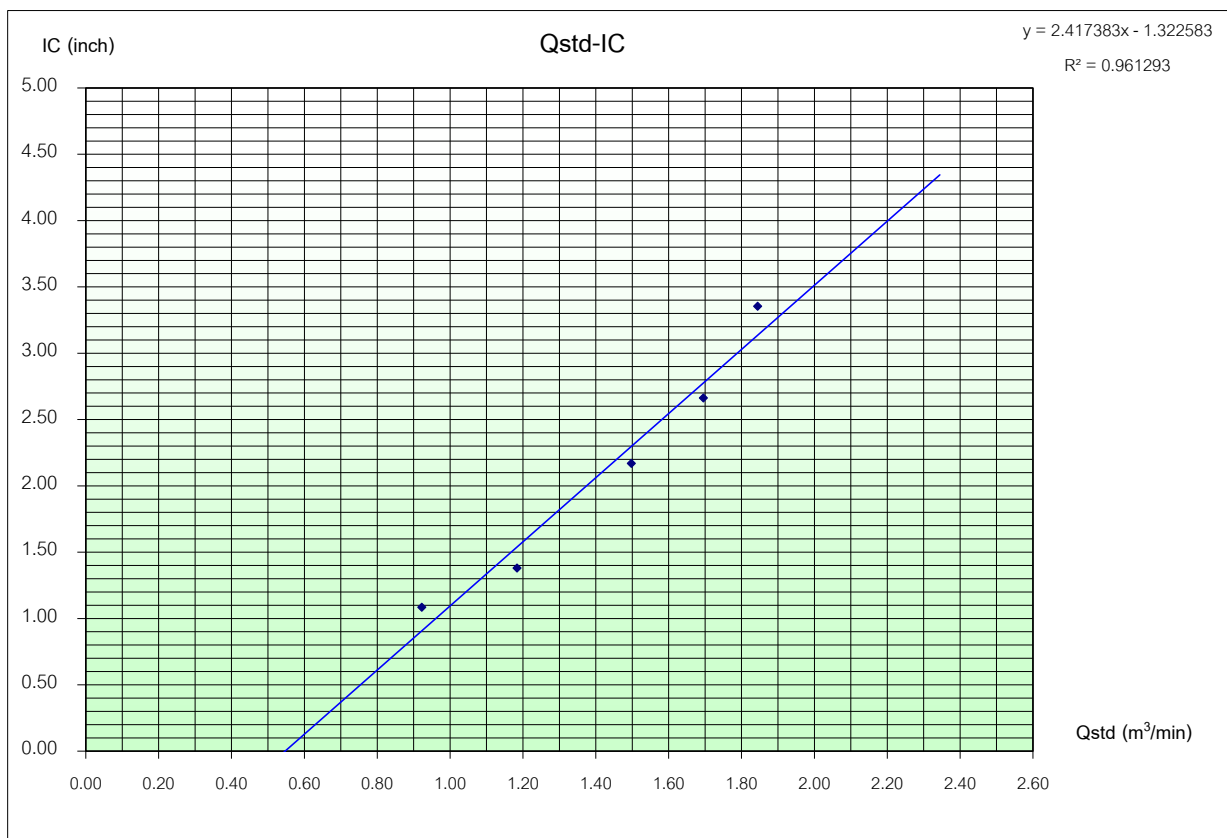
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/T_a)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.6	1.7	3.3	1.79208	0.92208	1.1	1.09	305.0	757.0		
7	2.7	2.7	5.4	2.29243	1.18357	1.4	1.38	305.0	757.0		
10	4.3	4.3	8.6	2.89300	1.49744	2.2	2.17	305.0	757.0		
13	5.5	5.5	11.0	3.27187	1.69544	2.7	2.66	305.0	757.0		
18	6.5	6.5	13.0	3.55689	1.84440	3.4	3.35	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.997347	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)		1.133	r	0.9986726	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)		0	(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

Andersen Instruments, Inc.



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Field Environmental

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Division Manager



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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	January 16, 2024
โรงเรียนศรีอยุธยาในพระอุปถัมภ์				Start Time	2:05 PM
Sampler Number	PM-10 No.7	Transfer Standard Type	Orifice	Stop Time	2:10 PM
Motor Serial Number	HVL-07	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

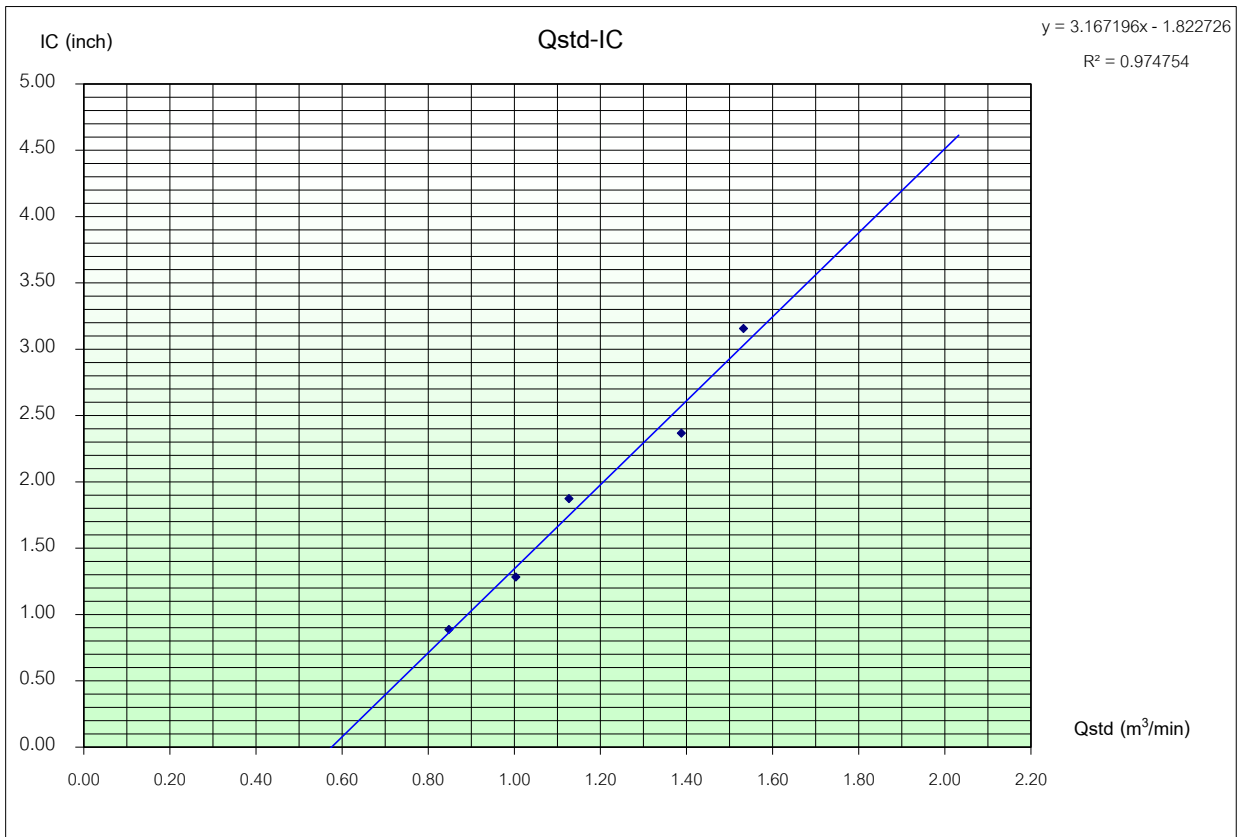
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	Sample Flow Rate Indication (inch)	$IC = [[(Pa/P_{std})(T_{std}/T_a)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.4	1.4	2.8	1.65074	0.84821	0.9	0.89	305.0	757.0		
7	1.9	2.0	3.9	1.94819	1.00366	1.3	1.28	305.0	757.0		
10	2.4	2.5	4.9	2.18372	1.12676	1.9	1.87	305.0	757.0		
13	3.7	3.7	7.4	2.68358	1.38799	2.4	2.37	305.0	757.0		
18	4.5	4.5	9.0	2.95952	1.53220	3.2	3.16	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.993306	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133		r	0.9966474	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)		0	(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	January 16, 2024
บริเวณพื้นที่โครงการ				Start Time	9:45 AM
Sampler Number	TSP No.6	Transfer Standard Type	Orifice	Stop Time	9:50 AM
Motor Serial Number	BL-06	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

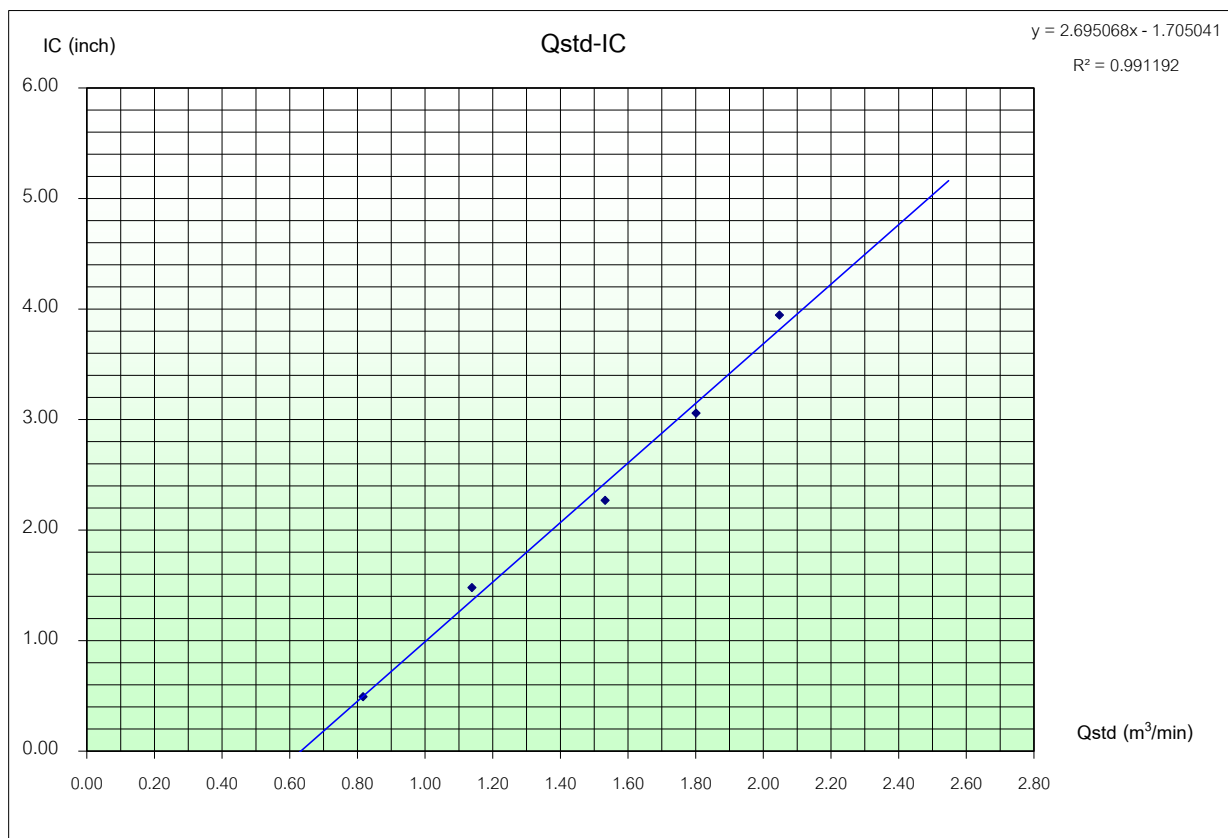
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	Sample Flow Rate Indication (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.3	1.3	2.6	1.59069	0.81683	0.5	0.49	305.0	757.0		
7	2.5	2.5	5.0	2.20589	1.13834	1.5	1.48	305.0	757.0		
10	4.5	4.5	9.0	2.95952	1.53220	2.3	2.27	305.0	757.0		
13	6.2	6.2	12.4	3.47384	1.80099	3.1	3.06	305.0	757.0		
18	8.0	8.0	16.0	3.94602	2.04776	4.0	3.95	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.992656	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)		1.133	r	0.9963212	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)		0	(Pa/Pstd)*(Tstd/Ta)			0.973192407
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	January 16, 2024
โรงเรียนศรีอยุธยาในพระอุปถัมภ์				Start Time	9:55 AM
Sampler Number	TSP No.7	Transfer Standard Type	Orifice	Stop Time	10:00 AM
Motor Serial Number	BL-07	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

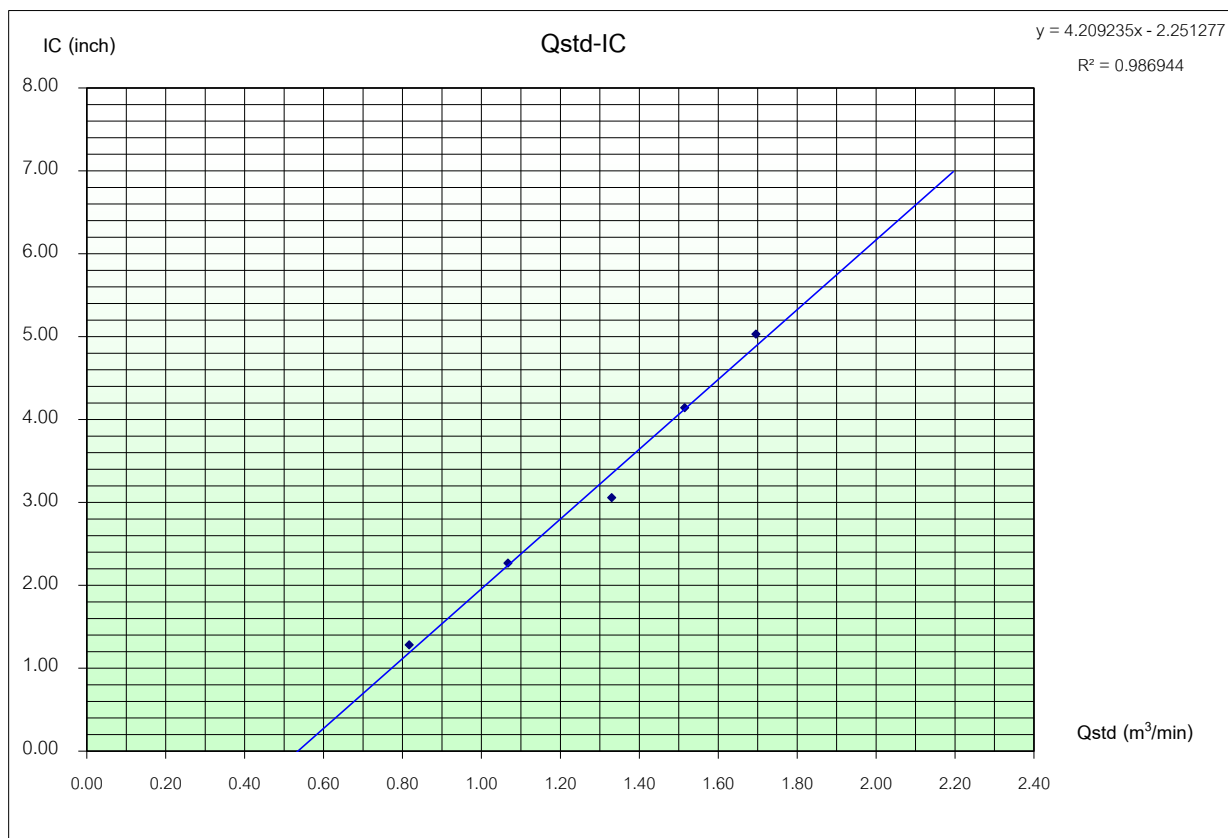
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.3	1.3	2.6	1.59069	0.81683	1.3	1.28	305.0	757.0		
7	2.2	2.2	4.4	2.06931	1.06696	2.3	2.27	305.0	757.0		
10	3.4	3.4	6.8	2.57249	1.32993	3.1	3.06	305.0	757.0		
13	4.4	4.4	8.8	2.92645	1.51492	4.2	4.14	305.0	757.0		
18	5.5	5.5	11.0	3.27187	1.69544	5.1	5.03	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.963579	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r	0.9816206	T _{NTP}	298.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	(Pa/Pstd)*(Tstd/Ta)	0.973192407			
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	February 18, 2023
Project Site				Start Time	9:25 AM
Sampler Number	TSP No.4	Transfer Standard Type	Orifice	Stop Time	9:30 AM
Motor Serial Number	BL-04	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

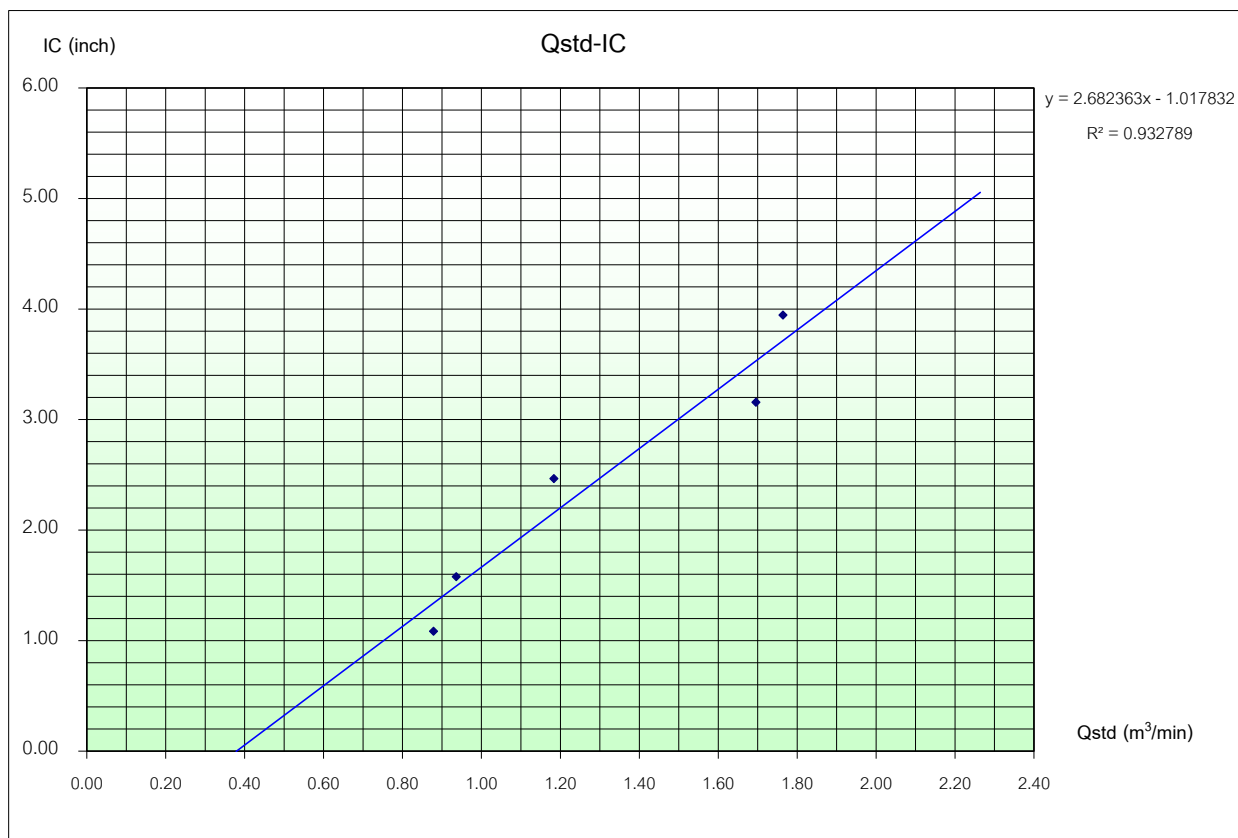
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$		Sample Flow Rate Indication	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	(°K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O		(m ³ /min)	(inch)					
5	1.5	1.5	3.0	1.70868	0.87849	1.1	1.09	305.0	757.0		
7	1.7	1.7	3.4	1.81903	0.93616	1.6	1.58	305.0	757.0		
10	2.7	2.7	5.4	2.29243	1.18357	2.5	2.47	305.0	757.0		
13	5.5	5.5	11.0	3.27187	1.69544	3.2	3.16	305.0	757.0		
18	5.9	6.0	11.9	3.40309	1.76402	4.0	3.95	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.978461	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)		1.133	r	0.9891719	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)		0	(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location		Date		February 13, 2024	
Project Site		Start Time		2:00 PM	
Sampler Number		PM-10 No.6	Transfer Standard Type	Orifice	Stop Time
Motor Serial Number		HVL-06	Calibrator Model	TE-5025A	2:05 PM
Recorder Serial Number		-	Calibrator Serial Number	1	Person

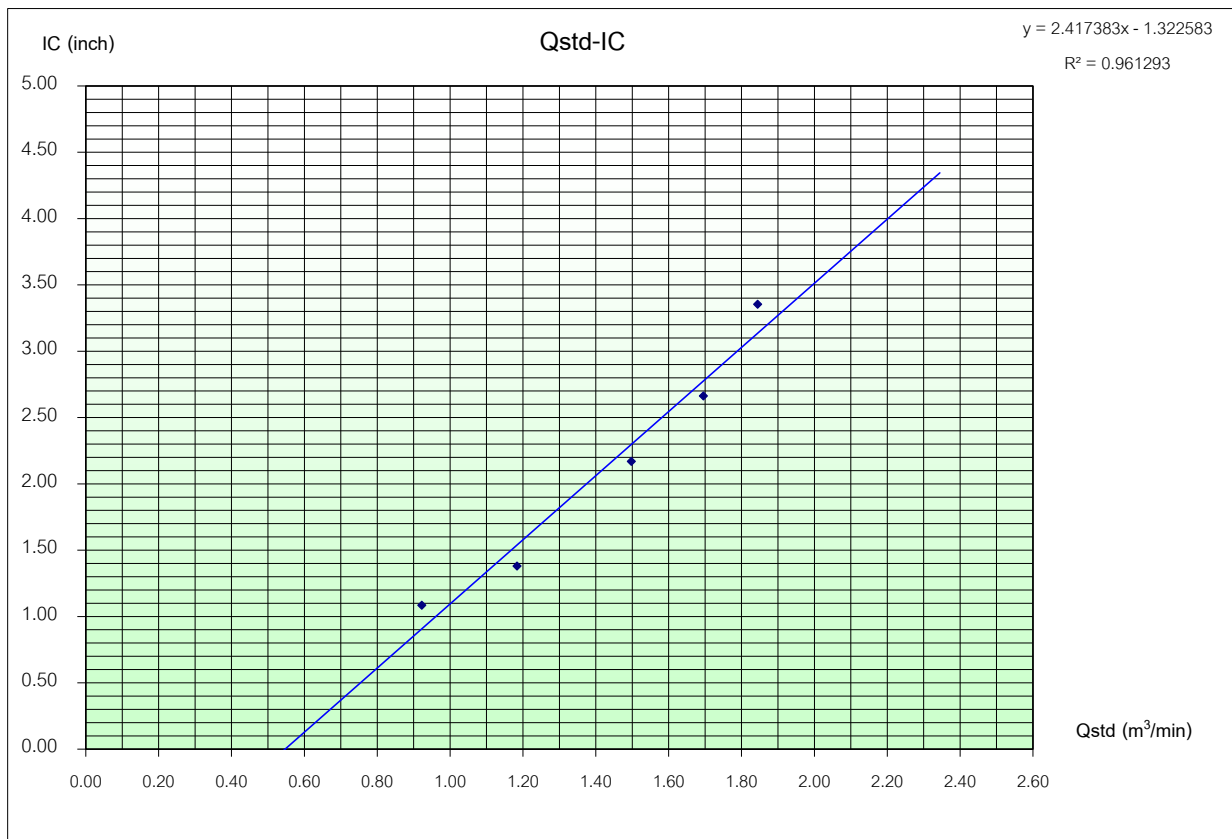
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.6	1.7	3.3	1.79208	0.92208	1.1	1.09	305.0	757.0		
7	2.7	2.7	5.4	2.29243	1.18357	1.4	1.38	305.0	757.0		
10	4.3	4.3	8.6	2.89300	1.49744	2.2	2.17	305.0	757.0		
13	5.5	5.5	11.0	3.27187	1.69544	2.7	2.66	305.0	757.0		
18	6.5	6.5	13.0	3.55689	1.84440	3.4	3.35	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.997347	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9986726	T _{NTP}	298.0	
Result							$C = (Pa/P_{std}) * (T_{std}/Ta)^{0.5}$		0.973192407
									0.986505148

COMMENT

Andersen Instruments, Inc.



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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	January 13, 2024
Project Site				Start Time	9:45 AM
Sampler Number	TSP No.6	Transfer Standard Type	Orifice	Stop Time	9:50 AM
Motor Serial Number	BL-06	Calibrator Model	TE-5025A	Person	<div></div>
Recorder Serial Number	-	Calibrator Serial Number	1		

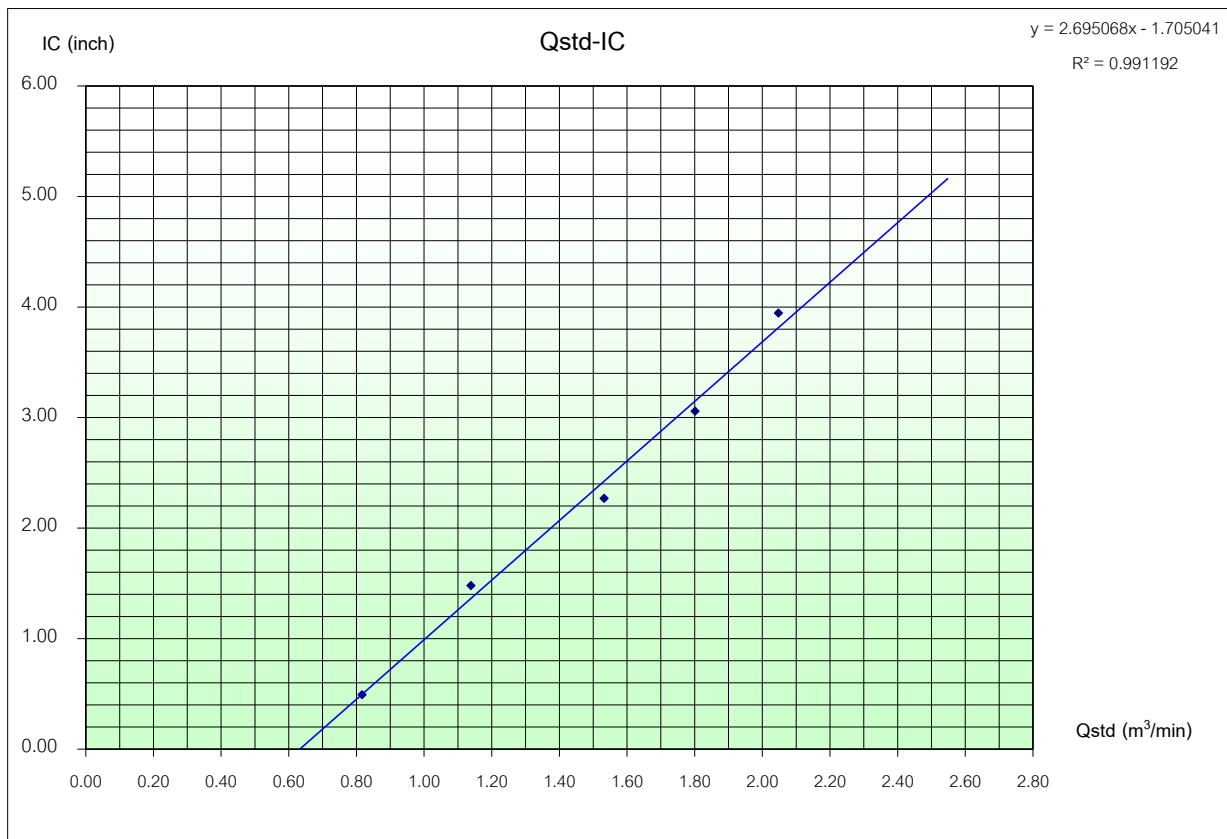
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indication (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH ₂ O								
5	1.3	1.3	2.6	1.59069	0.81683	0.5	0.49	305.0	757.0		
7	2.5	2.5	5.0	2.20589	1.13834	1.5	1.48	305.0	757.0		
10	4.5	4.5	9.0	2.95952	1.53220	2.3	2.27	305.0	757.0		
13	6.2	6.2	12.4	3.47384	1.80099	3.1	3.06	305.0	757.0		
18	8.0	8.0	16.0	3.94602	2.04776	4.0	3.95	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.992656	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r	0.9963212	T _{NTP}	298.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	(Pa/Pstd)*(Tstd/Ta)		0.973192407		
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5	0.986505148		

COMMENT

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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	January 13, 2024
Project Site				Start Time	1:40 PM
Sampler Number	PM-10 No.4	Transfer Standard Type	Orifice	Stop Time	1:45 PM
Motor Serial Number	HVL-04	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

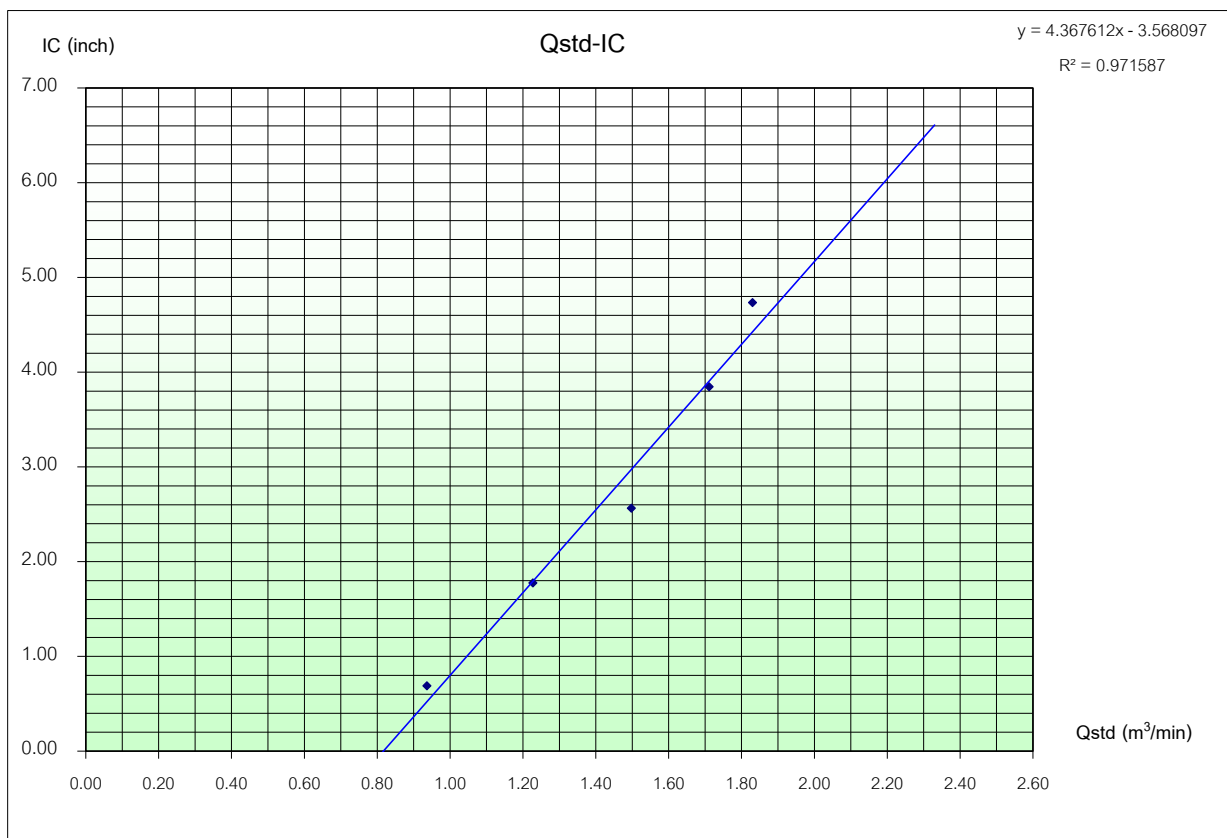
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/T_a)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.7	1.7	3.4	1.81903	0.93616	0.7	0.69	305.0	757.0		
7	2.9	2.9	5.8	2.37582	1.22715	1.8	1.78	305.0	757.0		
10	4.3	4.3	8.6	2.89300	1.49744	2.6	2.56	305.0	757.0		
13	5.6	5.6	11.2	3.30148	1.71091	3.9	3.85	305.0	757.0		
18	6.4	6.4	12.8	3.52943	1.83004	4.8	4.74	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.942435	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9707909	T _{NTP}	298.0	
Result							$C = (Pa/P_{std}) * (T_{std}/T_a)$		0.973192407
							$C = (Pa/P_{std}) * (T_{std}/T_a)^{0.5}$		0.986505148

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	March 13, 2024
Project Site				Start Time	9:45 AM
Sampler Number	TSP No.6	Transfer Standard Type	Orifice	Stop Time	9:50 AM
Motor Serial Number	BL-06	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

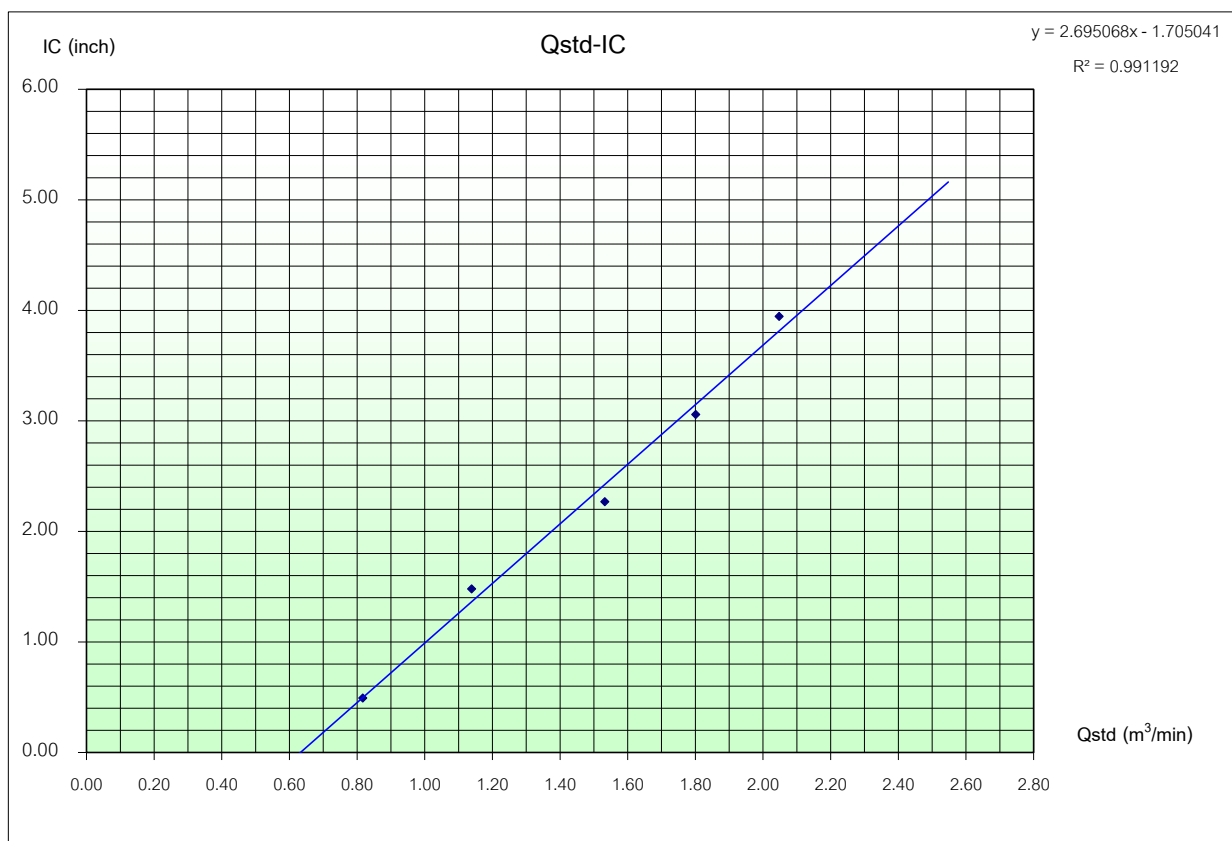
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric	Start	Stop
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$	sample Flow Rate Indicator	$IC = I[(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	(°K = °C+273)	Pressure	Meter	Meter
	Positive	Negative	ΔH_2O		(m ³ /min)	(inch)			(mmHg)		
5	1.3	1.3	2.6	1.59069	0.81683	0.5	0.49	305.0	757.0		
7	2.5	2.5	5.0	2.20589	1.13834	1.5	1.48	305.0	757.0		
10	4.5	4.5	9.0	2.95952	1.53220	2.3	2.27	305.0	757.0		
13	6.2	6.2	12.4	3.47384	1.80099	3.1	3.06	305.0	757.0		
18	8.0	8.0	16.0	3.94602	2.04776	4.0	3.95	305.0	757.0		

Linear Regression: Y ON X: Y= mX + b

Linear Regression: Pstd/Pa vs Tstd/Ta					Average		305.0	0.992656	Pstd(mmHg)	760.0
1	Slope (m)	1.91345	Linear Equation			r^2				
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r	0.9963212	T _{NTP}			
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	(Pa/Pstd)*(Tstd/Ta)	0.973192407				
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148		

COMMENT

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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	March 13, 2024
Project Site				Start Time	2:00 PM
Sampler Number	PM-10 No.6	Transfer Standard Type	Orifice	Stop Time	2:05 PM
Motor Serial Number	HVL-06	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

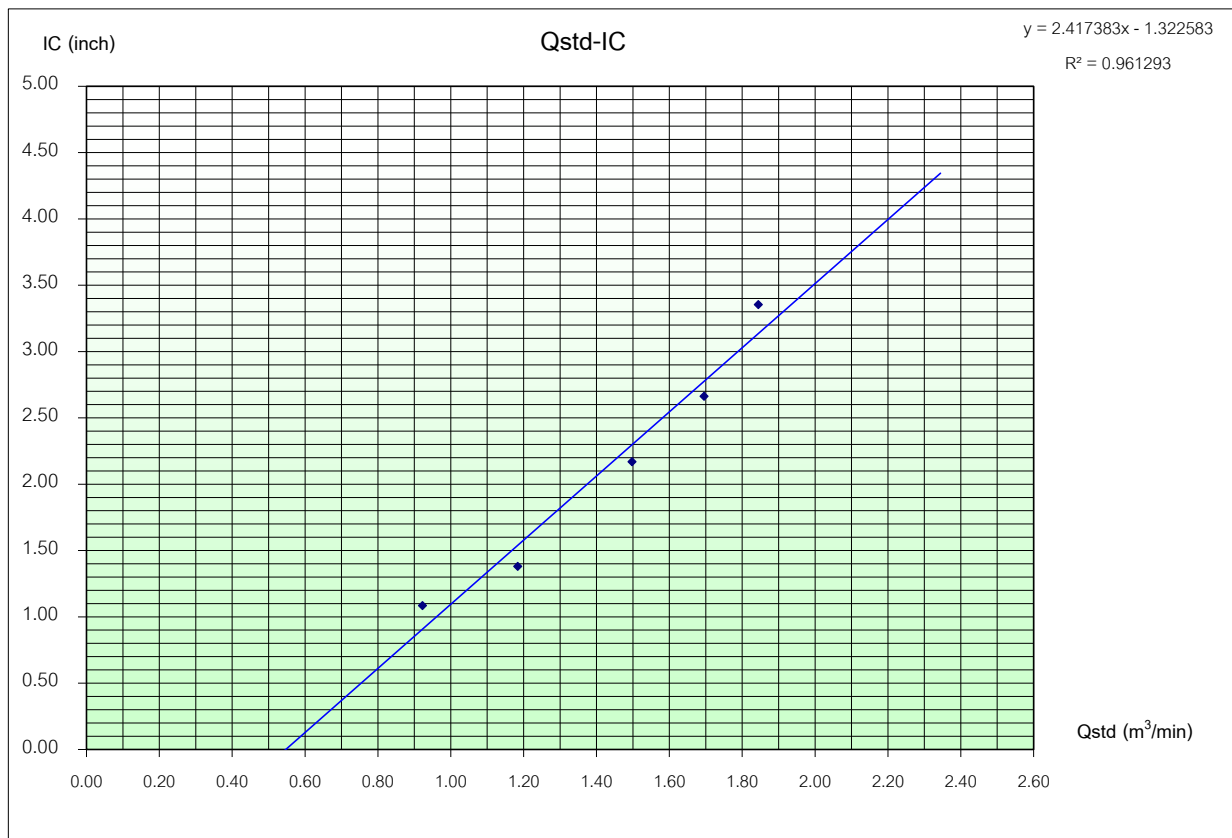
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric	Start	Stop
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	sample Flow Rate Indication (inch)	IC = I[(Pa/P _{std})(T _{std} /Ta)] ^{1/2}	(*K = °C+273)	Pressure (mmHg)	Meter	Meter
	Positive	Negative	ΔH ₂ O								
5	1.6	1.7	3.3	1.79208	0.92208	1.1	1.09	305.0	757.0		
7	2.7	2.7	5.4	2.29243	1.18357	1.4	1.38	305.0	757.0		
10	4.3	4.3	8.6	2.89300	1.49744	2.2	2.17	305.0	757.0		
13	5.5	5.5	11.0	3.27187	1.69544	2.7	2.66	305.0	757.0		
18	6.5	6.5	13.0	3.55689	1.84440	3.4	3.35	305.0	757.0		

Linear Regression: Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.997347	Pstd(mmHg)	760.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r	0.9986726				T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	(Pa/Pstd)*(Tstd/Ta)	0.973192407					
Result		C=(Pa/Pstd)*(Tstd/Ta)^0.5								0.986505148	

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	March 13, 2024
Project Site				Start Time	10:05 AM
Sampler Number	TSP No.14	Transfer Standard Type	Orifice	Stop Time	10:10 AM
Motor Serial Number	BL-14	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

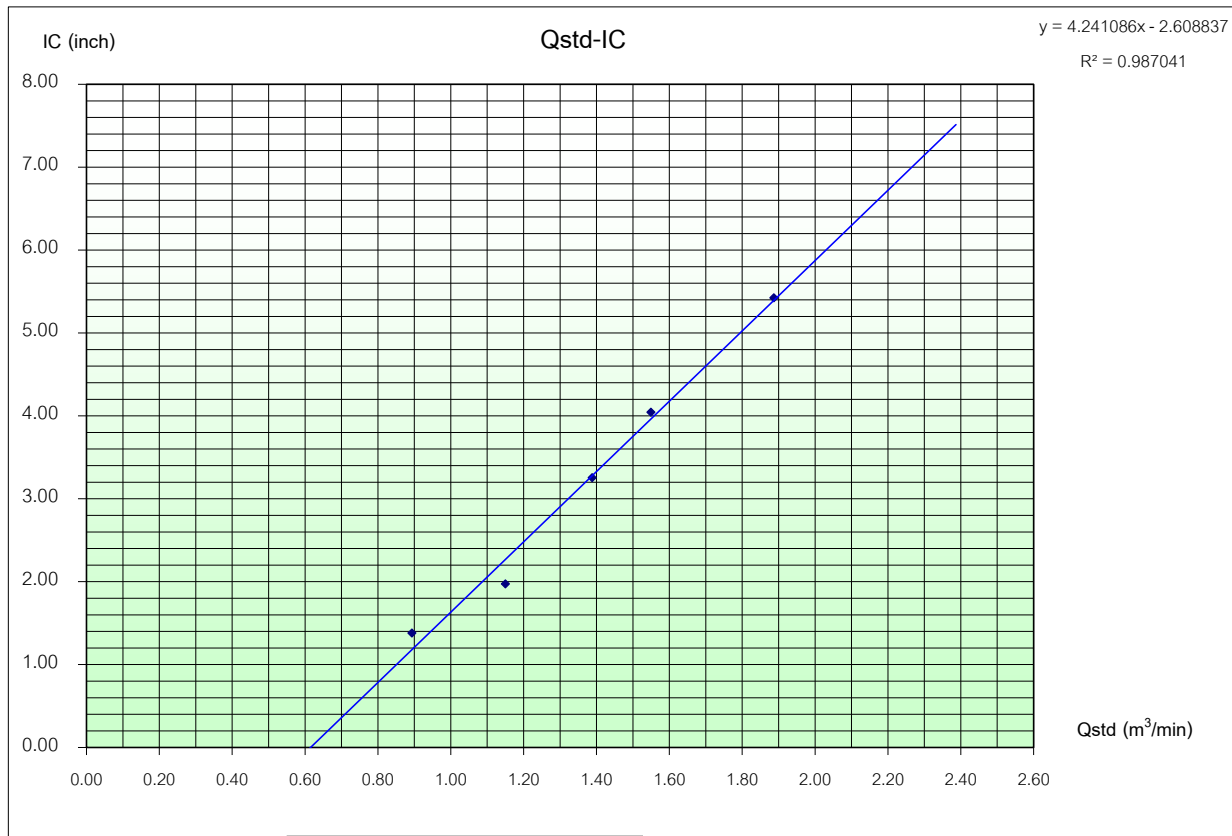
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric	Start	Stop
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	sample Flow Rate Indication (inch)	IC = I[(Pa/P _{std})(T _{std} /T _a)] ^{1/2}	(°K = °C+273)	(mmHg)	Meter	Meter
	Positive	Negative	ΔH ₂ O								
5	1.5	1.6	3.1	1.73692	0.89325	1.4	1.38	305.0	757.0		
7	2.5	2.6	5.1	2.22784	1.14981	2.0	1.97	305.0	757.0		
10	3.7	3.7	7.4	2.68358	1.38799	3.3	3.26	305.0	757.0		
13	4.6	4.6	9.2	2.99222	1.54929	4.1	4.04	305.0	757.0		
18	6.8	6.8	13.6	3.63805	1.88681	5.5	5.43	305.0	757.0		

Linear Regression: Y ON X: Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.97882	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9893533	T _{NTP}	298.0	
Result							C=(Pa/Pstd)*(Tstd/Ta)^0.5	0.973192407	0.986505148

COMMENT

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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	March 13, 2024
Project Site				Start Time	2:45 PM
Sampler Number	PM-10 No.12	Transfer Standard Type	Orifice	Stop Time	2:50 PM
Motor Serial Number	HVL-12	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

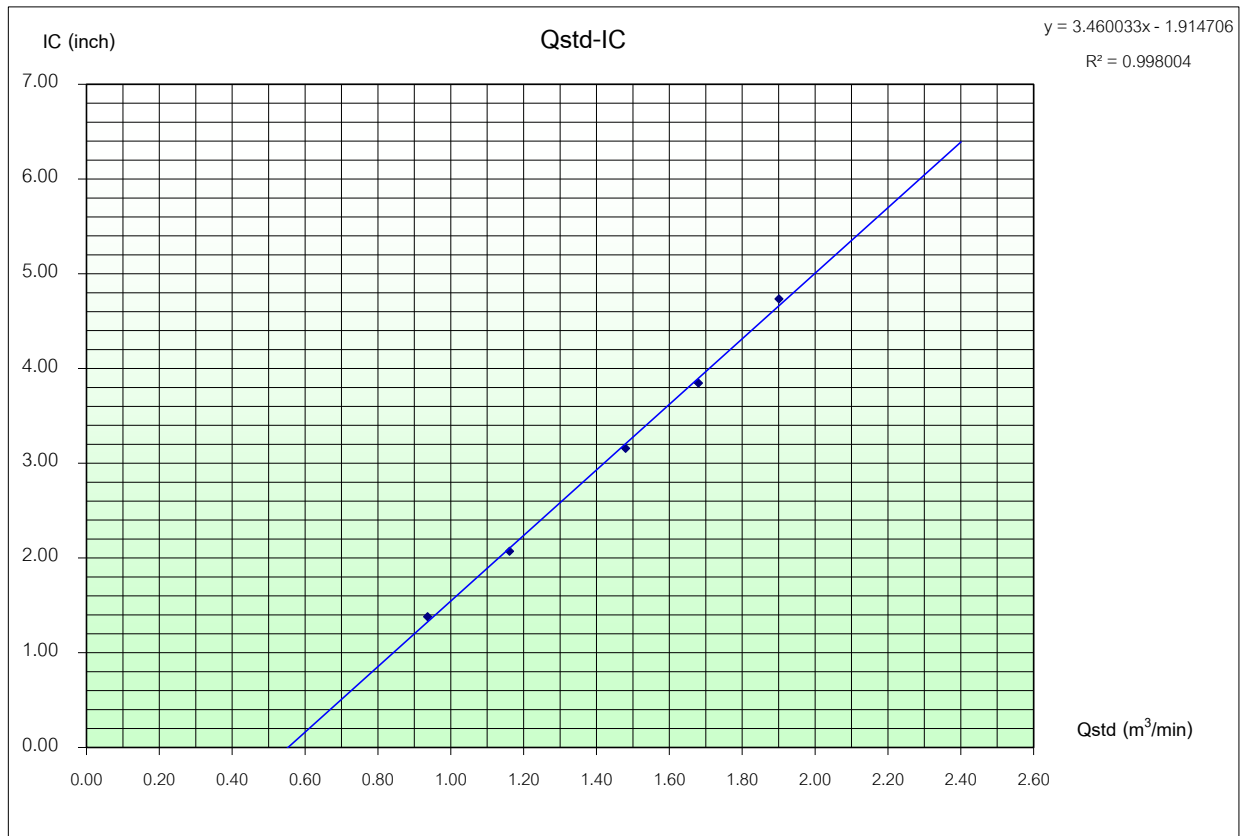
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric	Start	Stop
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	sample Flow Rate Indication (inch)	IC = I[(Pa/P _{std})(T _{std} /T _a)] ^{1/2}	(°K = °C+273)	(mmHg)	Meter	Meter
	Positive	Negative	ΔH ₂ O								
5	1.7	1.7	3.4	1.81903	0.93616	1.4	1.38	305.0	757.0		
7	2.6	2.6	5.2	2.24958	1.16117	2.1	2.07	305.0	757.0		
10	4.2	4.2	8.4	2.85916	1.47975	3.2	3.16	305.0	757.0		
13	5.4	5.4	10.8	3.24199	1.67982	3.9	3.85	305.0	757.0		
18	6.9	6.9	13.8	3.66470	1.90074	4.8	4.74	305.0	757.0		

Linear Regression: Y ON X: Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.997347	Pstd(mmHg)	760.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r	0.9986726				T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	(Pa/Pstd)*(Tstd/Ta)	0.973192407					
Result										C=(Pa/Pstd)*(Tstd/Ta)^0.5	0.986505148

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location		Date		April 7, 2024	
Project Site		Start Time		9:00 AM	
Sampler Number	TSP No.1	Transfer Standard Type	Orifice	Stop Time	9:05 AM
Motor Serial Number	BL-01	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

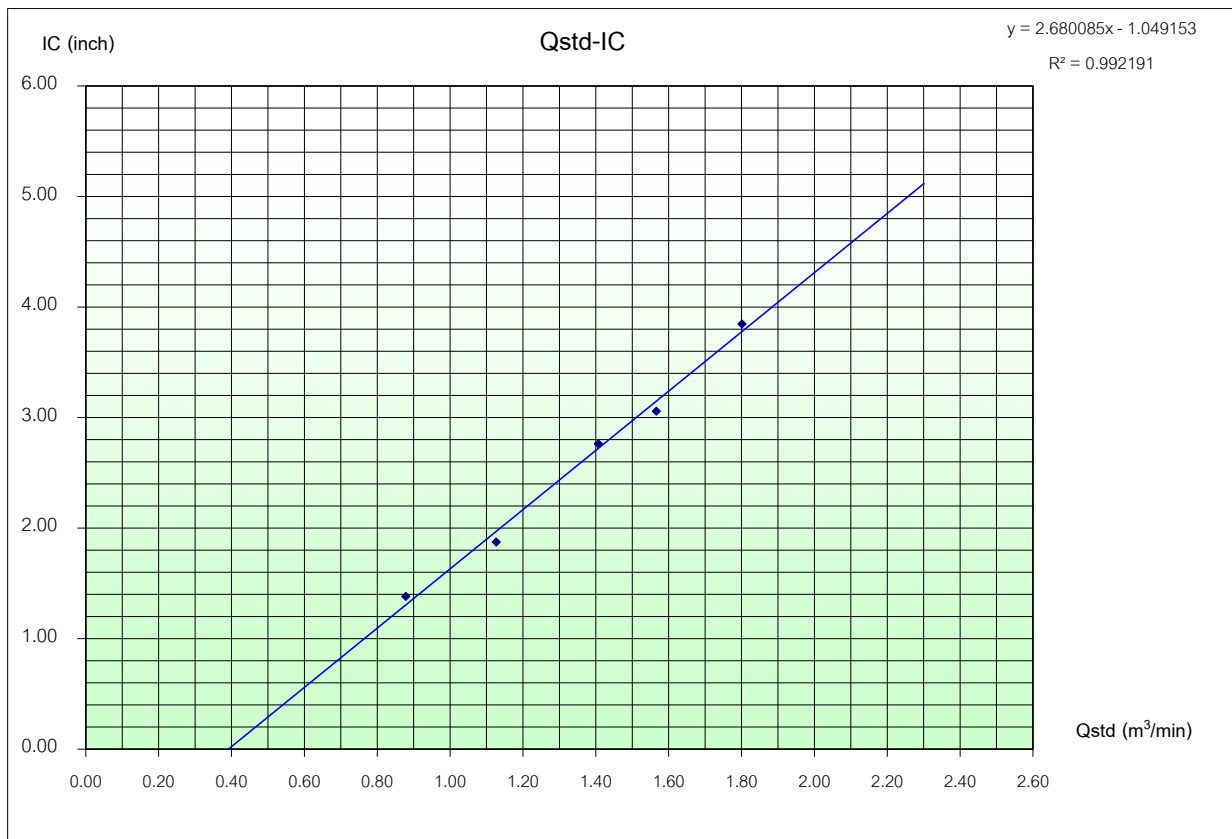
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = \{[(Pa/P_{std})(T_{std}/Ta)]^{1/2}\}$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.5	1.5	3.0	1.70868	0.87849	1.4	1.38	305.0	757.0		
7	2.4	2.5	4.9	2.18372	1.12676	1.9	1.87	305.0	757.0		
10	3.8	3.8	7.6	2.71961	1.40682	2.8	2.76	305.0	757.0		
13	4.7	4.7	9.4	3.02457	1.56620	3.1	3.06	305.0	757.0		
18	6.2	6.2	12.4	3.47384	1.80099	3.9	3.85	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.992314	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9961496	T _{NTP}	298.0	
Result							$C = (Pa/P_{std})(T_{std}/Ta)^{0.5}$		0.973192407
									0.986505148

COMMENT

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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	April 7, 2024
Project Site				Start Time	1:15 PM
Sampler Number	PM-10 No.1	Transfer Standard Type	Orifice	Stop Time	1:20 PM
Motor Serial Number	HVL-01	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

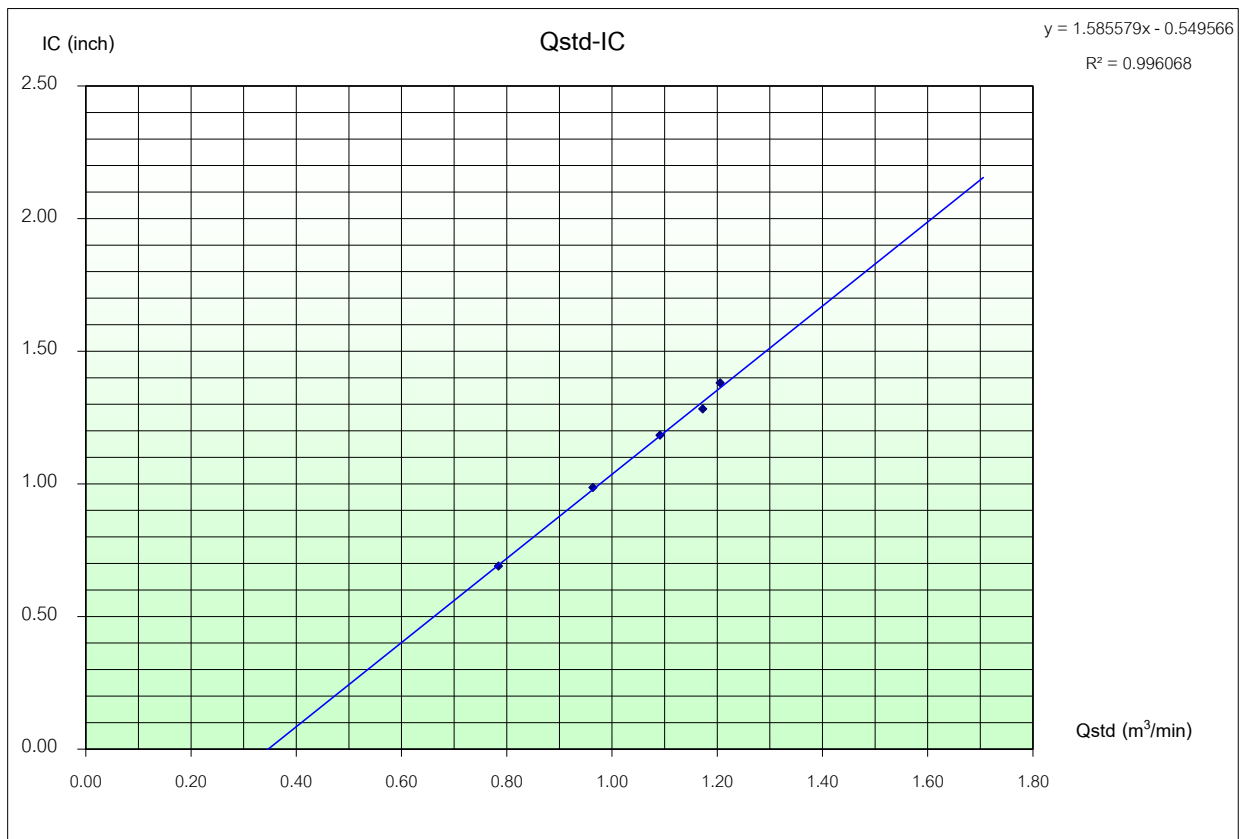
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.2	1.2	2.4	1.52829	0.78422	0.7	0.69	305.0	757.0		
7	1.8	1.8	3.6	1.87176	0.96372	1.0	0.99	305.0	757.0		
10	2.3	2.3	4.6	2.11582	1.09127	1.2	1.18	305.0	757.0		
13	2.6	2.7	5.3	2.27111	1.17242	1.3	1.28	305.0	757.0		
18	2.8	2.8	5.6	2.33450	1.20555	1.4	1.38	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.987743	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133		r	0.9938526	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0		(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location		Date		April 7, 2024	
Project Site		Start Time		9:15 AM	
Sampler Number	TSP No.3	Transfer Standard Type	Orifice	Stop Time	9:20 AM
Motor Serial Number	BL-03	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

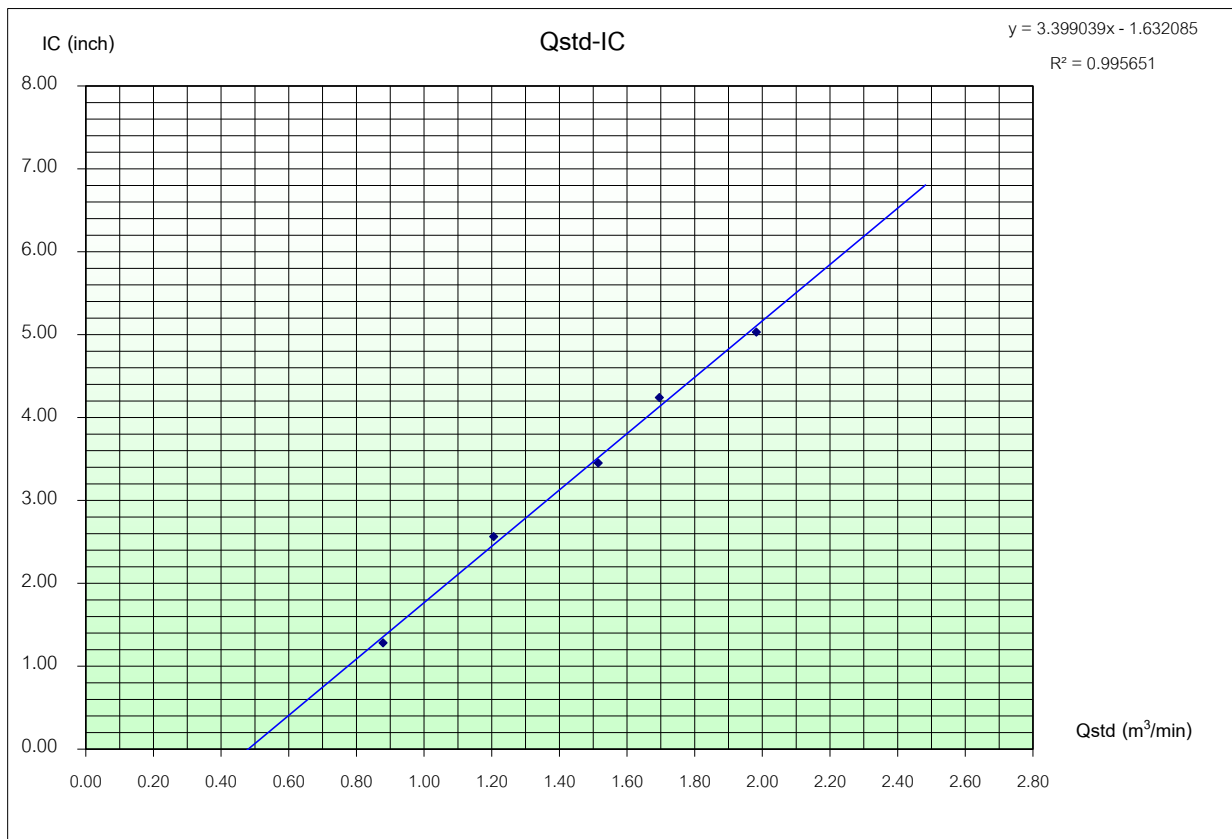
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indication (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.5	1.5	3.0	1.70868	0.87849	1.3	1.28	305.0	757.0		
7	2.8	2.8	5.6	2.33450	1.20555	2.6	2.56	305.0	757.0		
10	4.4	4.4	8.8	2.92645	1.51492	3.5	3.45	305.0	757.0		
13	5.5	5.5	11.0	3.27187	1.69544	4.3	4.24	305.0	757.0		
18	7.5	7.5	15.0	3.82072	1.98228	5.1	5.03	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.930028	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133		r	0.9643796	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0		(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

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PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location		Date		April 7, 2024	
Project Site		Start Time		1:35 PM	
Sampler Number	PM-10 No.3	Transfer Standard Type	Orifice	Stop Time	1:40 PM
Motor Serial Number	HVL-03	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

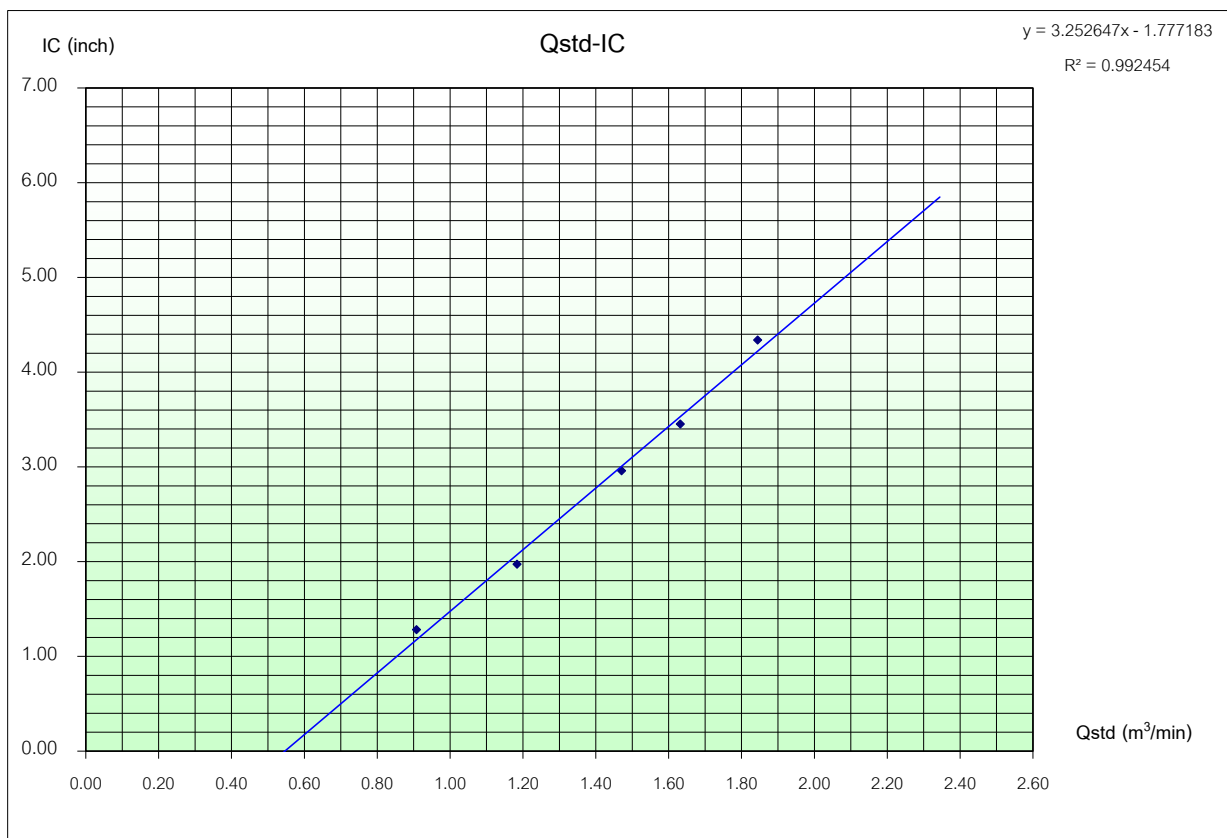
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indication (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.6	1.6	3.2	1.76471	0.90778	1.3	1.28	305.0	757.0		
7	2.7	2.7	5.4	2.29243	1.18357	2.0	1.97	305.0	757.0		
10	4.1	4.2	8.3	2.84209	1.47083	3.0	2.96	305.0	757.0		
13	5.1	5.1	10.2	3.15064	1.63209	3.5	3.45	305.0	757.0		
18	6.5	6.5	13.0	3.55689	1.84440	4.4	4.34	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.942435	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)		1.133	r	0.9707909	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)		0	(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

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TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	May 13, 2024
Project Site				Start Time	9:00 AM
Sampler Number	TSP No.1	Transfer Standard Type	Orifice	Stop Time	9:05 AM
Motor Serial Number	BL-01	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

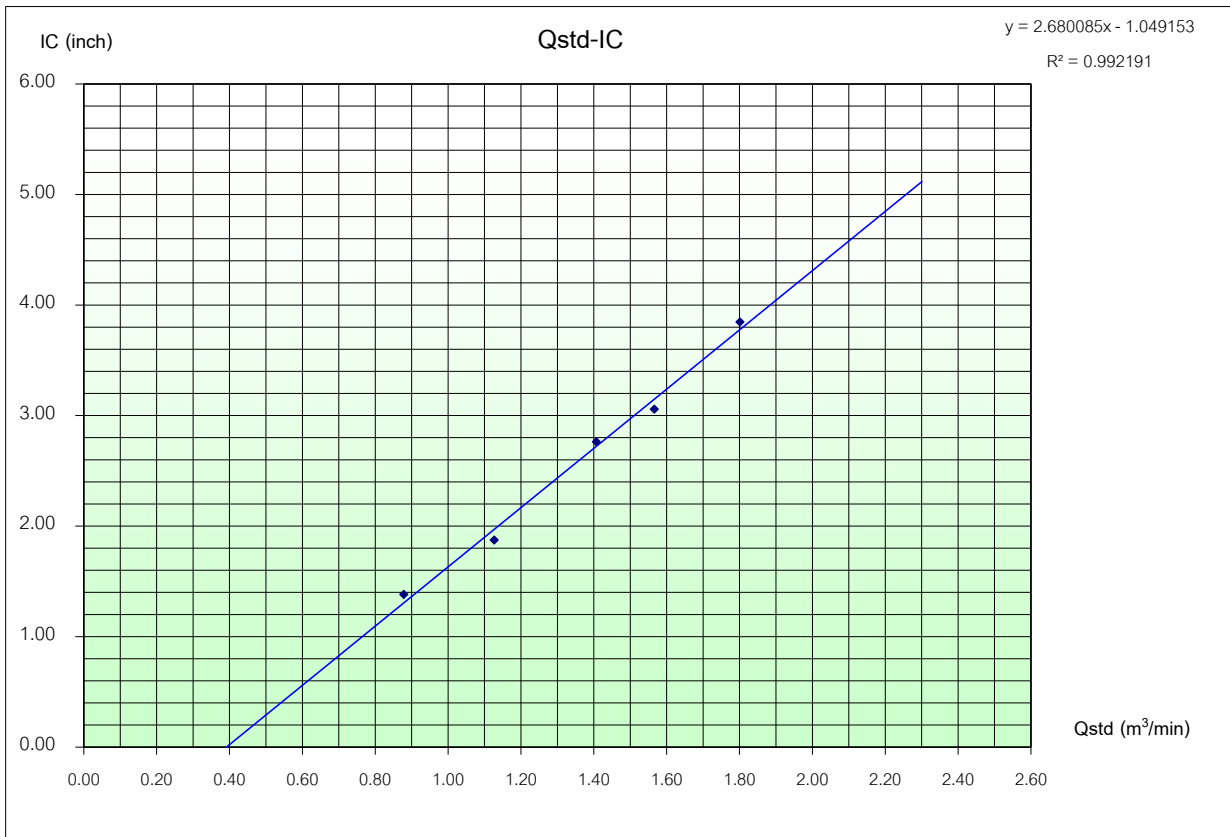
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	Qstd = (1/m)[(A-b)] (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.5	1.5	3.0	1.70868	0.87849	1.4	1.38	305.0	757.0		
7	2.4	2.5	4.9	2.18372	1.12676	1.9	1.87	305.0	757.0		
10	3.8	3.8	7.6	2.71961	1.40682	2.8	2.76	305.0	757.0		
13	4.7	4.7	9.4	3.02457	1.56620	3.1	3.06	305.0	757.0		
18	6.2	6.2	12.4	3.47384	1.80099	3.9	3.85	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.992314	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9961496	T _{NTP}	298.0	
Result						$C = (Pa/P_{std}) * (T_{std}/Ta)^{0.5}$		0.973192407	
								0.986505148	

COMMENT

Andersen Instruments, Inc.



Calibrated By

Field Environmental

Approved By

Division Manager



บริษัท เอ็ม อี ที จำกัด MET Company Limited

36/659 หมู่ 6 ต.บางรักพัฒนา อ.บางบัวทอง จ. นนทบุรี 11110

36/659 Moo 6 Tambol Bangrakpattana Amphur Bangbuatong Nontaburi 11110

Tel : 0 2920 1458-9 Fax : 0 2920 1460 E-mail : met_jj@yahoo.com

TSP HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location				Date	May 13, 2024
Project Site				Start Time	9:15 AM
Sampler Number	TSP No.3	Transfer Standard Type	Orifice	Stop Time	9:20 AM
Motor Serial Number	BL-03	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

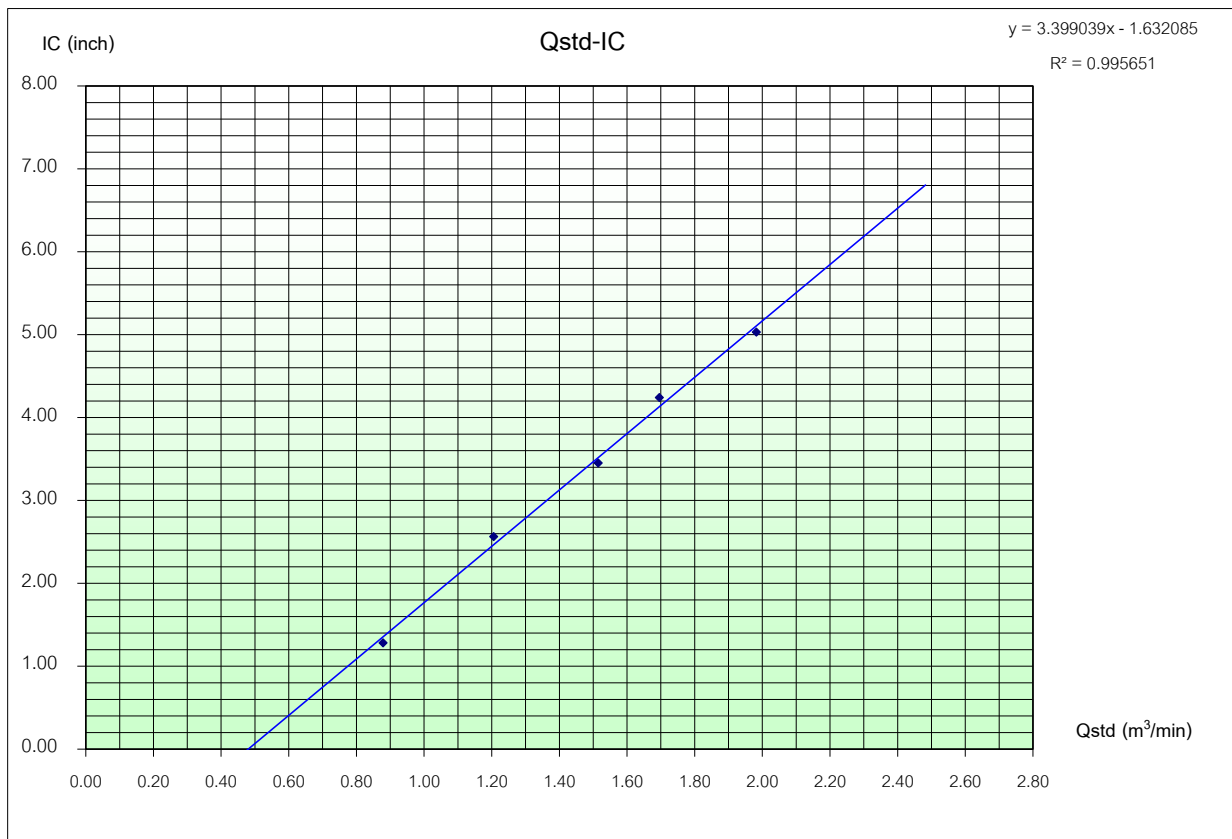
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/T_a)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.5	1.5	3.0	1.70868	0.87849	1.3	1.28	305.0	757.0		
7	2.8	2.8	5.6	2.33450	1.20555	2.6	2.56	305.0	757.0		
10	4.4	4.4	8.8	2.92645	1.51492	3.5	3.45	305.0	757.0		
13	5.5	5.5	11.0	3.27187	1.69544	4.3	4.24	305.0	757.0		
18	7.5	7.5	15.0	3.82072	1.98228	5.1	5.03	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.930028	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9643796	T _{NTP}	298.0	
Result						(Pa/Pstd)*(Tstd/Ta)		0.973192407	
						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

Andersen Instruments, Inc.



Calibrated By

Field Environmental

Approved By

Division Manager



บริษัท เอ็ม อี ที จำกัด MET Company Limited

36/659 หมู่ 6 ต.บางรักพัฒนา อ.บางบัวทอง จ. นนทบุรี 11110

36/659 Moo 6 Tambol Bangrakpattana Amphur Bangbuatong Nontaburi 11110

Tel : 0 2920 1458-9 Fax : 0 2920 1460 E-mail : met_jj@yahoo.com

PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location		Date		May 13, 2024	
Project Site		Start Time		1:15 PM	
Sampler Number	PM-10 No.1	Transfer Standard Type	Orifice	Stop Time	1:20 PM
Motor Serial Number	HVL-01	Calibrator Model	TE-5025A	Person	
Recorder Serial Number	-	Calibrator Serial Number	1		

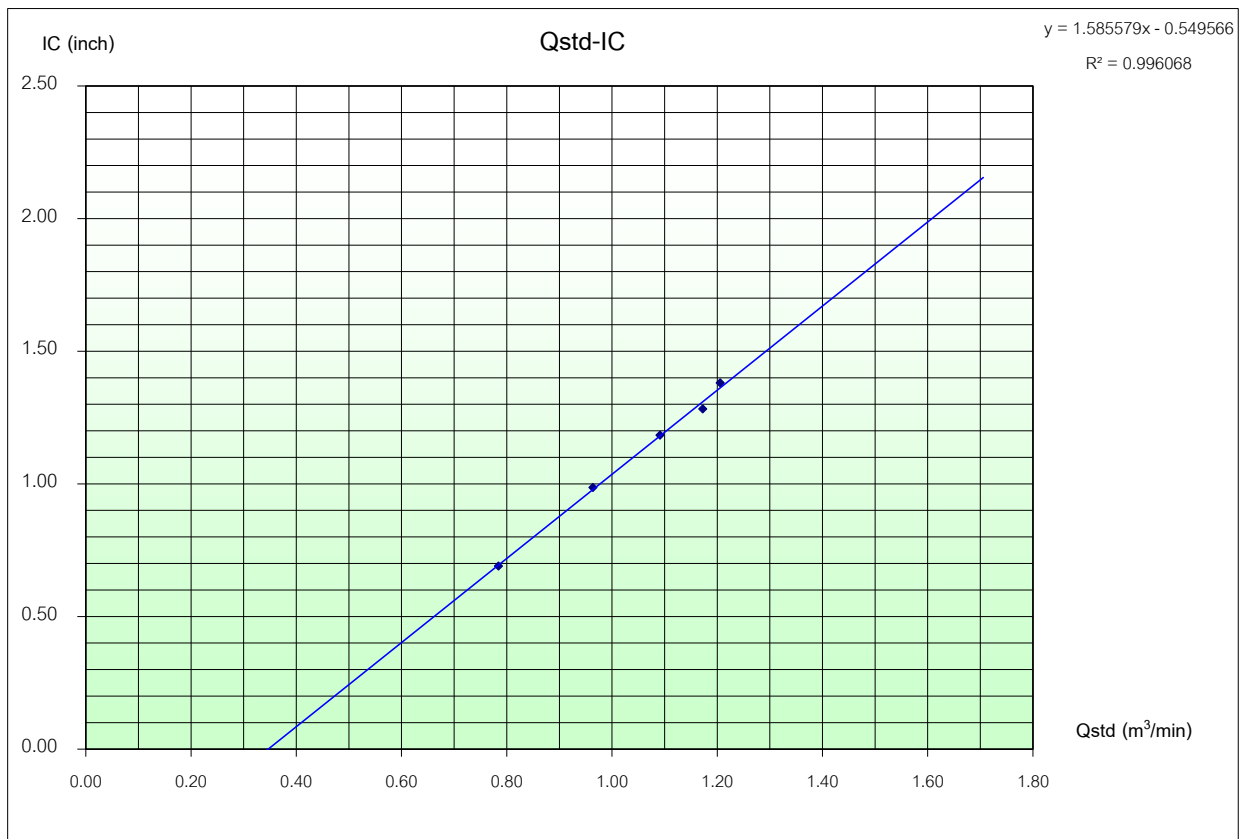
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/Ta)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/Ta)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.2	1.2	2.4	1.52829	0.78422	0.7	0.69	305.0	757.0		
7	1.8	1.8	3.6	1.87176	0.96372	1.0	0.99	305.0	757.0		
10	2.3	2.3	4.6	2.11582	1.09127	1.2	1.18	305.0	757.0		
13	2.6	2.7	5.3	2.27111	1.17242	1.3	1.28	305.0	757.0		
18	2.8	2.8	5.6	2.33450	1.20555	1.4	1.38	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation			r^2	0.987743	Pstd(mmHg)	760.0
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133		r	0.9938526	T _{NTP}	298.0
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)		0	(Pa/Pstd)*(Tstd/Ta)		0.973192407	
Result						C=(Pa/Pstd)*(Tstd/Ta)^0.5		0.986505148	

COMMENT

Andersen Instruments, Inc.



Calibrated By

Field Environmental

Approved By

Division Manager



บริษัท เอ็ม อี ที จำกัด MET Company Limited

36/659 หมู่ 6 ต.บางรักพัฒนา อ.บางบัวทอง จ. นนทบุรี 11110

36/659 Moo 6 Tambol Bangrakpattana Amphur Bangbuatong Nontaburi 11110

Tel : 0 2920 1458-9 Fax : 0 2920 1460 E-mail : met_jj@yahoo.com

PM10 HIGH VOLUME AIR SAMPLER CALIBRATION REPORT

Sampler Location		Date		May 13, 2024	
Project Site		Start Time		2:10 PM	
Sampler Number		PM-10 No.8	Transfer Standard Type	Orifice	Stop Time
Motor Serial Number		HVL-08	Calibrator Model	TE-5025A	2:15 PM
Recorder Serial Number		-	Calibrator Serial Number	1	Person

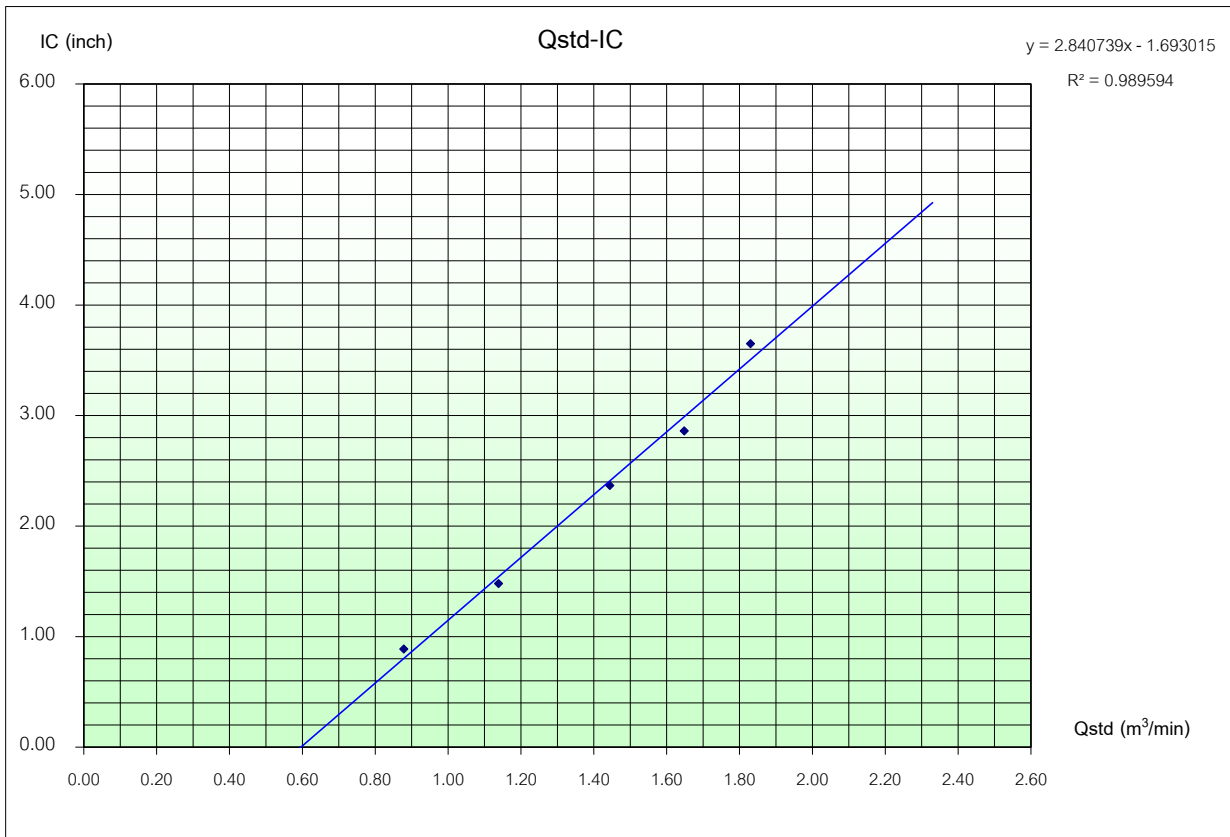
Plate No.	(Delta H)			(A)	(X)	(I)	(Y)	Temperature	Barometric Pressure	Start Meter	Stop Meter
	Pressure Drop Across Orifice (inH ₂ O)			$[\Delta H_2O(Pa/P_{std})(T_{std}/T_a)]^{1/2}$	$Q_{std} = (1/m)[(A-b)]$ (m ³ /min)	Sample Flow Rate Indicator (inch)	$IC = [[(Pa/P_{std})(T_{std}/T_a)]^{1/2}]$	("K = °C+273)	(mmHg)		
	Positive	Negative	ΔH_2O								
5	1.5	1.5	3.0	1.70868	0.87849	0.9	0.89	305.0	757.0		
7	2.5	2.5	5.0	2.20589	1.13834	1.5	1.48	305.0	757.0		
10	4.0	4.0	8.0	2.79026	1.44374	2.4	2.37	305.0	757.0		
13	5.2	5.2	10.4	3.18138	1.64815	2.9	2.86	305.0	757.0		
18	6.4	6.4	12.8	3.52943	1.83004	3.7	3.65	305.0	757.0		

Linear Regression Y ON X : Y= mX + b

1	Slope (m)	1.91345	Linear Equation		Average	305.0	757.0		
2	Intercept (b)	0.02773	Set Point Flow Rate (X) (m ³ /min)	1.133	r ²	0.95503	Pstd(mmHg)	760.0	
3	Correlation Coefficient (r)	0.99995	Final Set Flow Rate = (I)	0	r	0.9772564	T _{NTP}	298.0	
Result						$C = (Pa/P_{std}) * (T_{std}/T_a)$		0.973192407	
						$C = (Pa/P_{std}) * (T_{std}/T_a)^{0.5}$		0.986505148	

COMMENT

Andersen Instruments, Inc.



Calibrated By

Field Environmental

Approved By

Division Manager

CALIBRATION TEST REPORT FOR Partisol Air Sampler

Calibrated Date: 16 December 2023
Calibrated Due on: 15 December 2024

Report No: PM-202312018

Instruments Information

Description : SIBATA PM2.5 Sampler

Model : LV-250R

Sample flow control and reporting : 16.7 L/min

Serial No. : 110265

Environment : Temperature 25.5 °C

Instrument used for calibration [STD]

Description : Flow Meter

BIOS DryCal DC-Lite

Model : DCL-M REV. 1.08

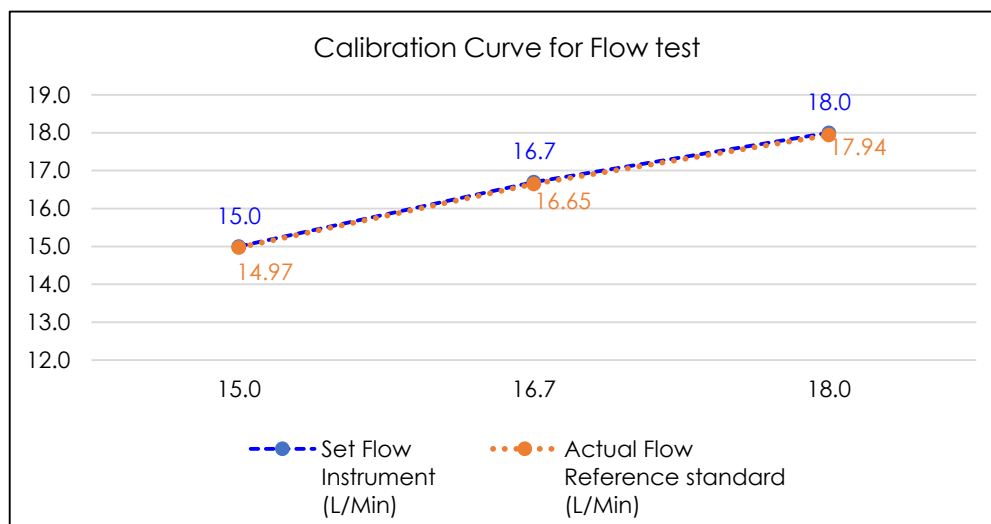
Range : 200 ml/min - 20 L/min

Serial No. : 5016

Humidity: 51 %RH

Calibration Report

Filter	Set Flow Instrument (L/Min)	Current Flow Instrument reading (L/Min)	Actual Flow Reference standard (L/Min)	Error	Drift%
47 mm	15.0	15.0	14.97	-0.03	0.20
	16.7	16.7	16.65	-0.05	0.30
	18.0	18.0	17.94	-0.06	0.33



Calibrate By :

Approve by :

Certificate of Calibration

Certificate No. : 67-200064-2

Page : 1 of 2

Submitted by : M E T Company Limited
36/659 Moo 6, T. Bangrakpattana, A. Bangbuatong, Nonthaburi 11110

Equipment : Electronic Balance
Manufacturer : AND Model : FX-2000i
Serial No. : 15639789 ID No. : MET-EB03/61
Capacity : 2200 g Resolution : 0.01 g

Environment : On site calibration was carried out at the Laboratory, M E T Company Limited
Ambient Temperature : (25.8 to 26.0) °C
Relative Humidity : (60.8 to 61.2) %
Air Pressure : 1012.0 mbar

Date of Received : 22 February 2024

Date of Calibration : 22 February 2024

Date of Issue : 23 February 2024

Calibrated by : Satja Sangkhum

Calibration Method : In-house method CAL-M2001 based on UKAS Publication ref : LAB 14
Edition 7 - November 2022

Reference Standard Instruments : This certification is traceable to the International System of Units

Standard Weights

ID No.	Cert. No.	Due Date	Traceability
F181-F1821	67-210021-1	29 Jul 2024	National Institute of Metrology (Thailand), (NIMT)

Approved by :

Laboratory Manager

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full except with the prior written approval of the Calibratech Co.,Ltd.



Certificate of Calibration

Certificate No. : 67-200064-2

Page : 2 of 2

Result of Calibration : After Adjustment

UUC Condition As-Received : Good

Departure of indication from nominal value

Nominal Value (g)	Correction (g)	Uncertainty \pm (g)	Error before Adjustment (g)
200	0.00	0.010	0.00
500	0.00	0.011	0.01
600	0.00	0.011	0.01
700	0.00	0.011	0.02
800	0.00	0.011	0.02
1000	0.00	0.011	0.03
1200	0.00	0.012	0.04
1500	0.00	0.012	0.05
2000	-0.01	0.014	0.08
2200	-0.01	0.023	0.09

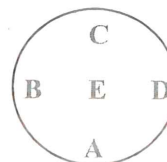
This result of calibration was found accurate as shown on date and place of calibration only.

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.06$, providing a level of confidence of approximately 95%

Eccentric error

Load test : 500 g

A	B	C	D	E	
0.00	-0.01	-0.02	-0.01	0.00	g



Repeatability

Load test : 2000 g
Stdev. : 0.004 g

- o0o -





ID LINE : IEC17025



Certificate of Calibration

Certificate Number : SPR24010268-9

Page : 1 of 3

Customer : MET CO.,LTD.

36/659 Moo. 6 Tambol Bangragpattana, Amphur Bangbuatong,
Nonthaburi 11110

Equipment Name : Sound Level Meter

Manufacturer : ACO

Model : 6236

Serial Number : 222064

ID. Number : SLM-50

Environmental Conditions

Ambient Temperature : $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$

Received Date : 18 Jan 2024

Relative Humidity : $50\% \pm 15\%$

Calibration Date : 22 Jan 2024

Location of Calibration : In-Lab

Recommend Due Date : 22 Jan 2025

Calibration Procedure : SP-CPE-04-01

Date of Issue : 23 Jan 2024

Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received. Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full, without written approval of SP Metrology System (Thailand).

Calibrated by :



Calibration Officer

Approved by :



Authorized Signatory



ID LINE : IEC17025



Calibration Report

Certificate Number : SPR24010268-9

Page : 2 of 3

Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due. Date
Sound Level Calibrator	ST-120	211203773	EEL.BP. 114/0166	17 Feb 2024

Traceability

This certification is traceable to the International System of Unit maintained at :

TISTR - Thailand Institute of Scientific and Technological Research



ID LINE : IEC17025



Result of Calibration

Certificate No. : SPR24010268-9

Page : 3 of 3

Range : 94 to 114 dB

Function : @1kHz

Select A

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty (±)
	Fast	Slow	Fast	Slow	
94	94.0	94.0	0.0	0.0	0.15
114	114.1	114.1	0.1	0.1	0.15

Select C

Unit : dB

Standard Setting	UUC Reading		Error		Uncertainty (±)
	Fast	Slow	Fast	Slow	
94	93.9	93.9	-0.1	-0.1	0.15
114	113.9	113.9	-0.1	-0.1	0.15

Note :

The result of calibration was found accurate as show on date and place of calibration only.
This Certificate is not certified for any commercial transaction.

Measurement Uncertainty

The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor $k = 2.00$, providing a level of confidence approximately 95%.

- End of Certificate -

Calibration Certificate

Part Number: 721A2601

Description: Micromate with DIN Geophone

Serial Number: UM22200

Calibration Date: **NOV 17 2023**

Calibration Reference Equipment: 714J7402

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

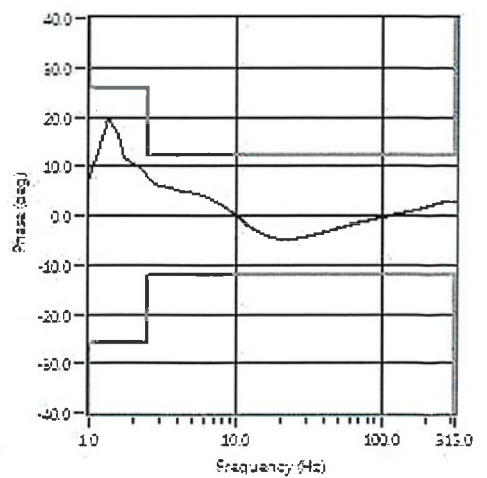
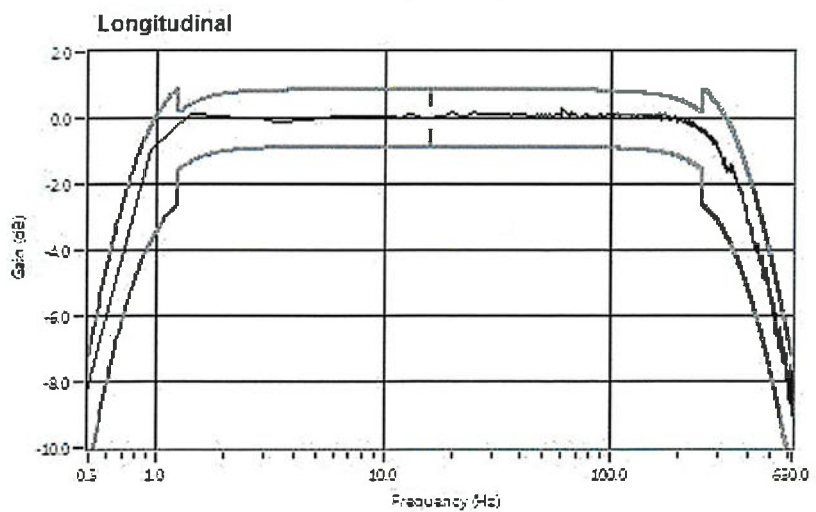
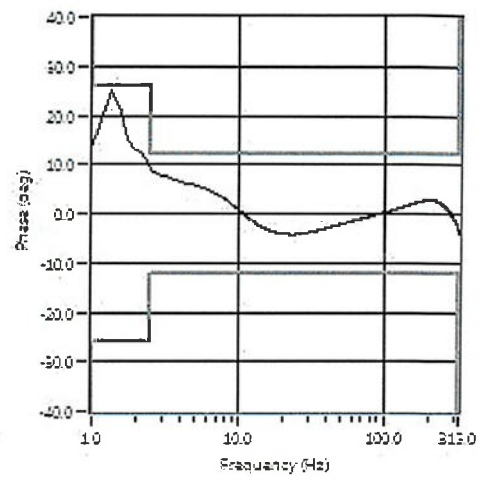
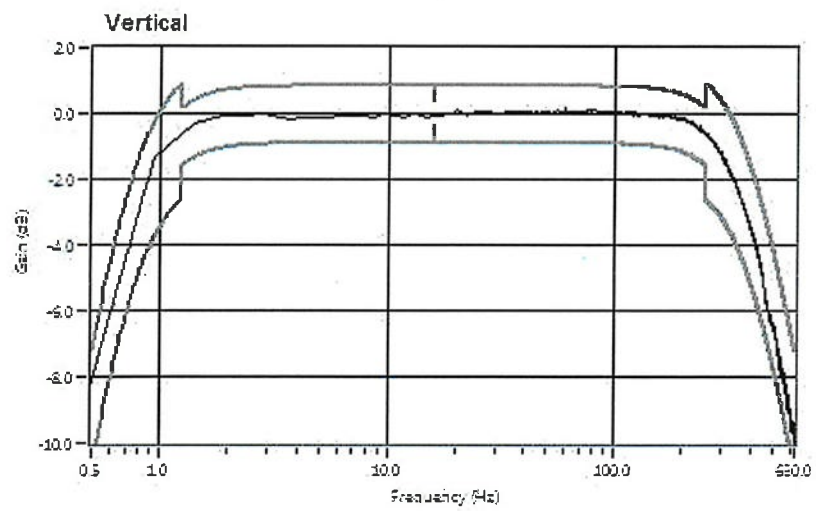
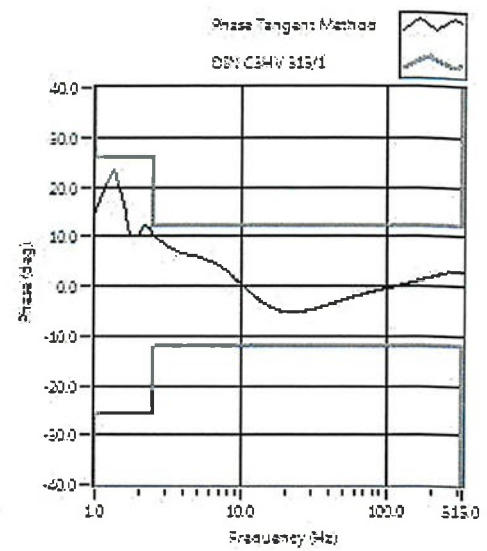
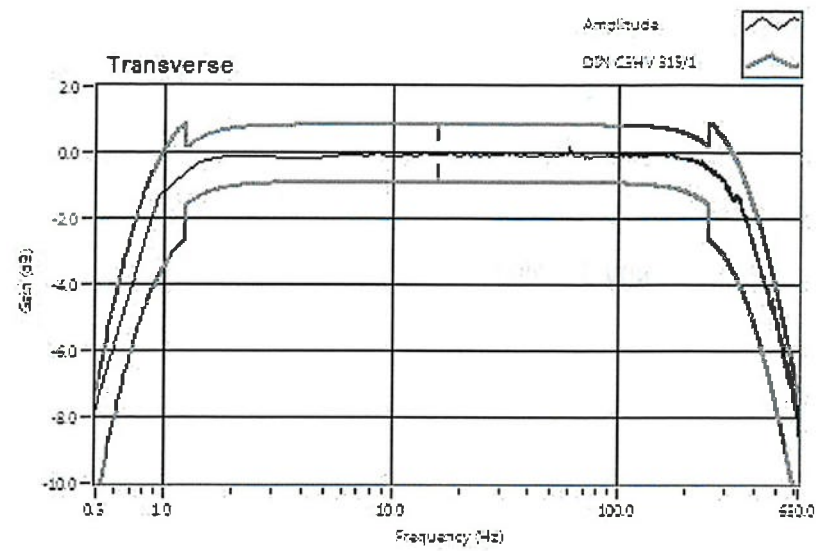
Calibrated By: _____



Instantel®

309 Legget Drive, Ottawa, Ontario, K2K 3A3, (613) 592-4642

Frequency Response of UM22200



Certificate of Calibration

Certificate No. : 67-420045-1

Page : 1 of 2

Submitted by : M E T Company Limited

36/659 Moo 6, T. Bangrakpattana, A. Bangbuatong, Nonthaburi 11110

Equipment : pH Meter with electrode

pH meter

Manufacturer : Digicon

Model : PH-235SD

Range : 0 to 14 pH pH

Resolution : 0.01 pH

Serial No. : AL.58184

ID No. : MET-PH12/67

Electrode

Model : N/A

Serial No. : TF 55306

Environment : Ambient Temperature : $(25 \pm 2) ^\circ \text{C}$

Relative Humidity : $(50 \pm 15) \%$

Date of Received : 25 April 2024

Date of Calibration : 30 April 2024

Date of Issue : 30 April 2024

Calibrated by : Permpon Chanpu

Calibration Method : In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

Reference Standard Instruments : This certification is traceable to the International System of Units

1. Multiproduct Calibrator

ID No.	Cert. No.	Due Date	Traceability
440001	23E1240	24 Mar 2025	National Institute of Metrology Thailand (NIMT)

2. Certified Reference Material (CRM)

pH	Cert. No.	Lot No.	Exp. Date	Traceability
4.008	61293328	944535	27 Nov 2025	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.986	61281486	944537	17 Nov 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
9.997	61281073	944536	17 Nov 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by

Laboratory Manager

The Uncertainties are for a confidence probability of approximately 95%

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Certificate of Calibration

Certificate No. : 67-420045-1

Page : 2 of 2

Result of Calibration :

UUC Condition As-Received : Good

Function : Electrical measurement
pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7) and (7,10)

Adjustment Curve at nominal pH	Applied Voltage (mV)	Nominal Value (pH)	UUC Reading		Correction (mV)	Uncertainty (± mV)
			(pH)	(mV)		
4, 7	177.4800	4	4.00	177	0	0.58
	0.0000	7	7.00	0	0	0.58
7,10	0.0000	7	7.00	0	0	0.58
	-177.4800	10	10.00	-177	0	0.58

Function : pH meter with electrode

Performing a three - buffer standard curve using buffer nominal pH (4,7) and (7,10)

Adjustment Curve at nominal pH	Standard Buffer (pH)	UUC Reading (pH)	Correction (pH)	Uncertainty (± pH)
4, 7	4.008	4.00	0.01	0.0097
	6.986	7.00	-0.01	0.011
7, 10	6.986	7.00	-0.01	0.012
	9.997	10.00	0.00	0.014

Remark

UUC : Unit Under Calibration

This result of calibration was found accurate as shown on date and place of calibration only.

This reported uncertainty of measurment was based on a standard uncertainty multiplied by a coverage factor $k = 2$,
providing a level of confidence of approximately 95%

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