High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Greenview Terrance
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 16:15

Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

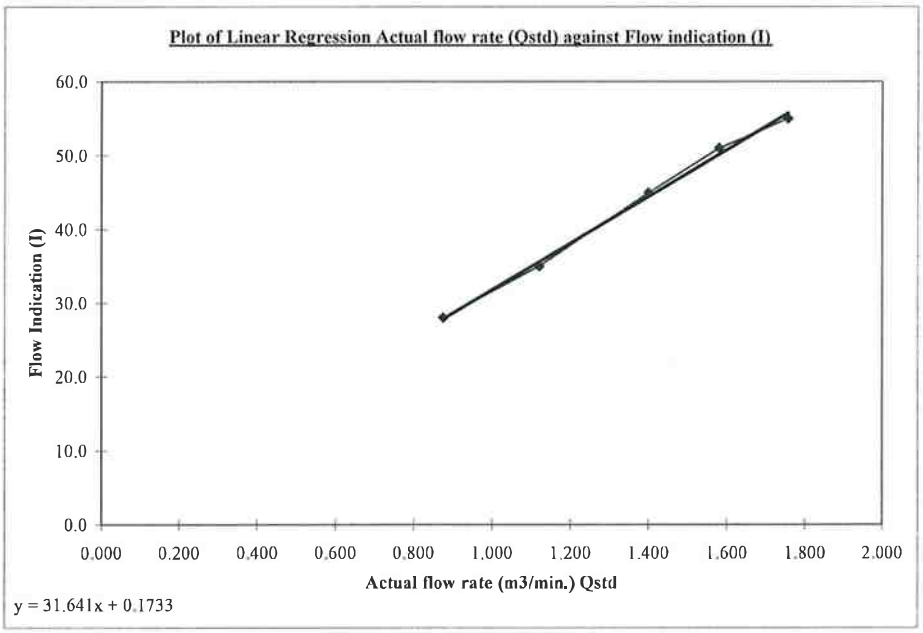
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

$$Flow\,(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times \left(\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b\right)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.6	3.545	1.756	55.0
2	10.2	3.190	1.581	51.0
3	8.0	2.825	1.401	45.0
4	5.1	2.256	1.121	35.0
5	3.1	1.759	0.876	28.0

Correlation Coefficient : 0.9982



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10-10-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 10-10-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Greenview Terrance
Calibration Date: 09-Dec-08
Calibration Due Date 09-Feb-09
Time: 16:57

Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

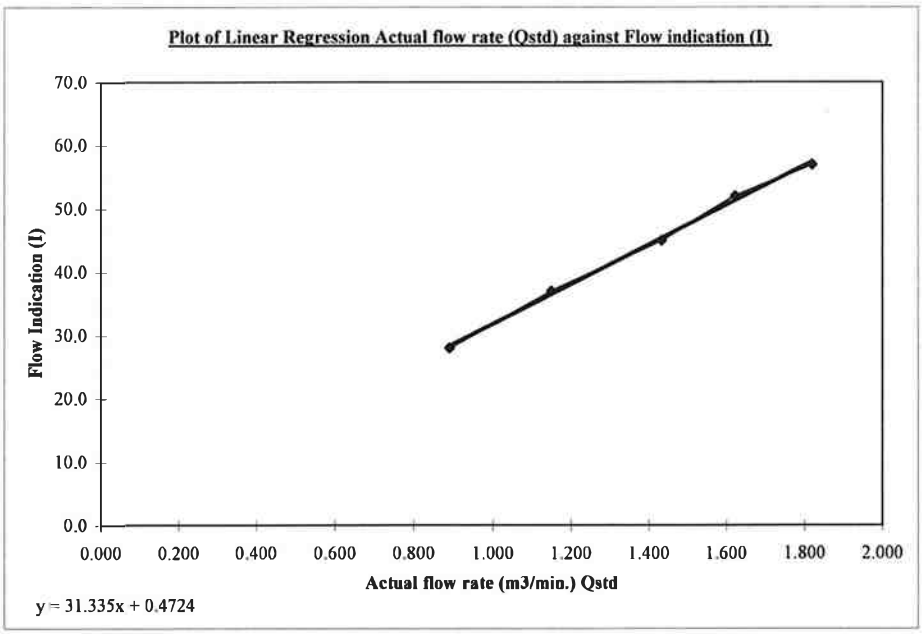
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	764.0
Calibration temp. (K) Ta:	292.1

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times \left(\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b\right)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	13.1	3.673	1.819	57.0
2	10.4	3.273	1.622	52.0
3	8.1	2.888	1.433	45.0
4	5.2	2.314	1.150	37.0
5	3.1	1.787	0.890	28.0

Correlation Coefficient : 0.9989



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 11-12-08
(Ho)

Checked by: **Tang Hiu Yeung** **Date:** 11-12-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Ho Fung College
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 08:30

Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

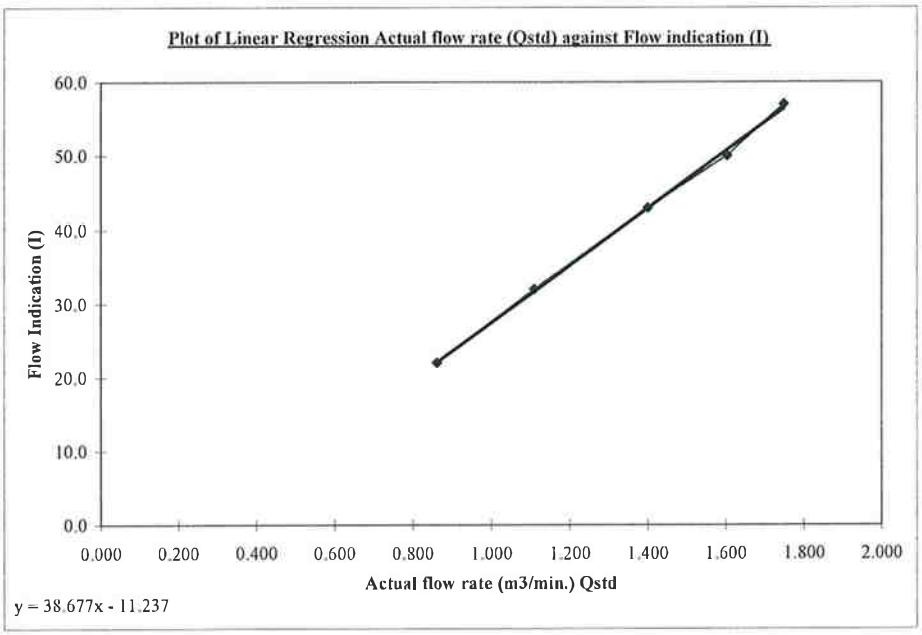
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.5	3.531	1.749	57.0
2	10.5	3.236	1.604	50.0
3	8.0	2.825	1.401	43.0
4	5.0	2.233	1.110	32.0
5	3.0	1.730	0.862	22.0

Correlation Coefficient : 0.9993



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10-10-08
(HO)

Checked by: **Tang Hiu Yeung** **Date:** 10-10-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: **Design and Construction of Tsuen Wan Drainage Tunnel**
Monitoring Location: **Ho Fung College**
Calibration Date: **09-Dec-08**
Calibration Due Date **09-Feb-09**
Time: **17:59**

Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

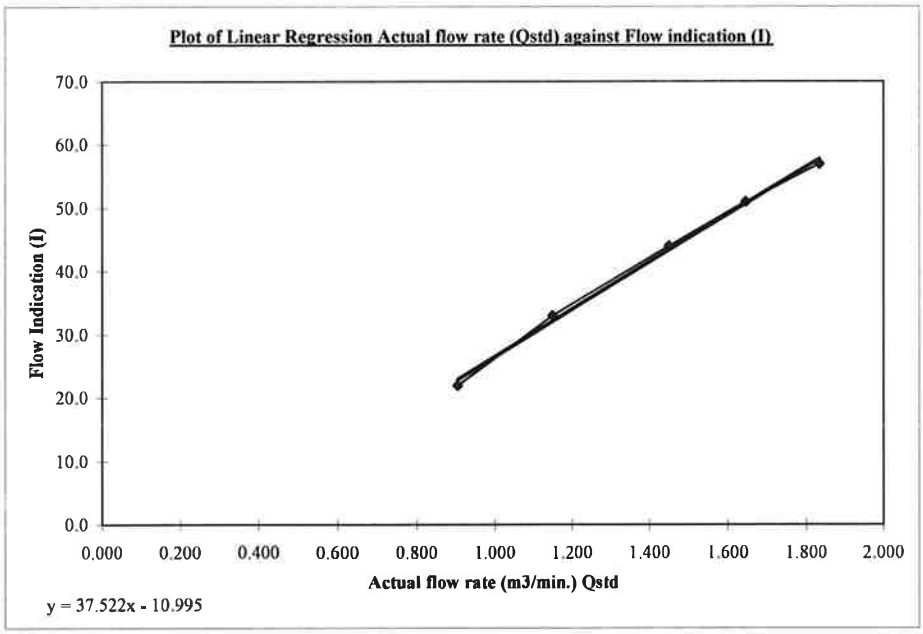
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	764.0
Calibration temp. (K) Ta:	292.1

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times \left(\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b\right)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	13.3	3.701	1.833	57.0
2	10.7	3.319	1.645	51.0
3	8.3	2.924	1.450	44.0
4	5.2	2.314	1.150	33.0
5	3.2	1.815	0.904	22.0

Correlation Coefficient : 0.9983



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 11-12-08
(HO)

Checked by: **Tang Hiu Yeung** **Date:** 11-12-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Heng Hoi Chi Hong Ship Temple
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 10:58

Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

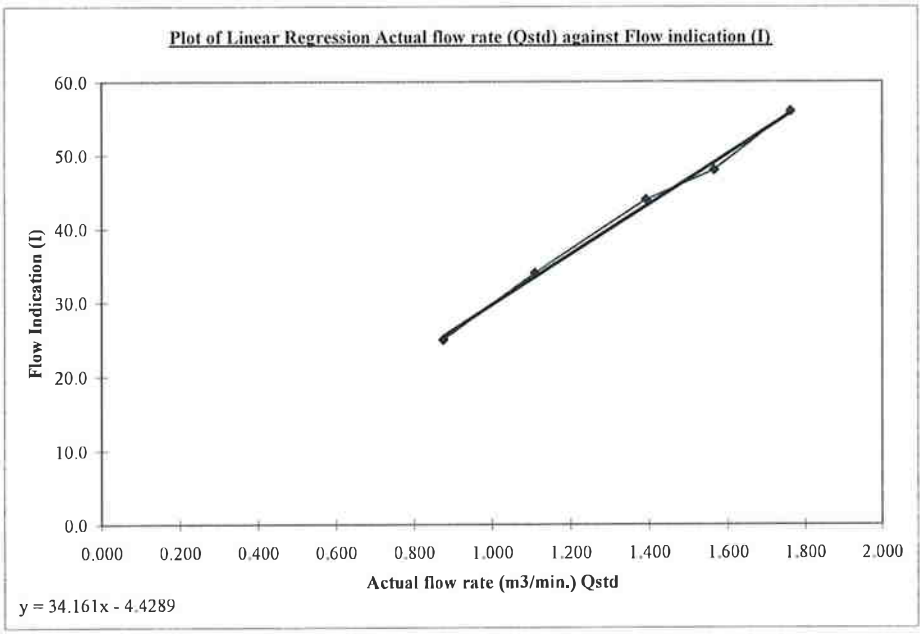
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrected), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.7	3.559	1.763	56.0
2	10.0	3.158	1.566	48.0
3	7.9	2.807	1.393	44.0
4	5.0	2.233	1.110	34.0
5	3.1	1.759	0.876	25.0

Correlation Coefficient : 0.9980



Remark
1HPa = 0.750062 mmHg

Calibrated by: Mak Kei Ho (HO) **Date:** 10-10-08

Checked by: Tang Hiu Yeung ( ) **Date:** 10.10.08

High Volume Air Sampler Calibration Worksheet

Project Title: **Design and Construction of Tsuen Wan Drainage Tunnel**
Monitoring Location: **Heng Hoi Chi Hong Ship Temple**
Calibration Date: **09-Dec-08**
Calibration Due Date **09-Feb-09**
Time: **12:30**

Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

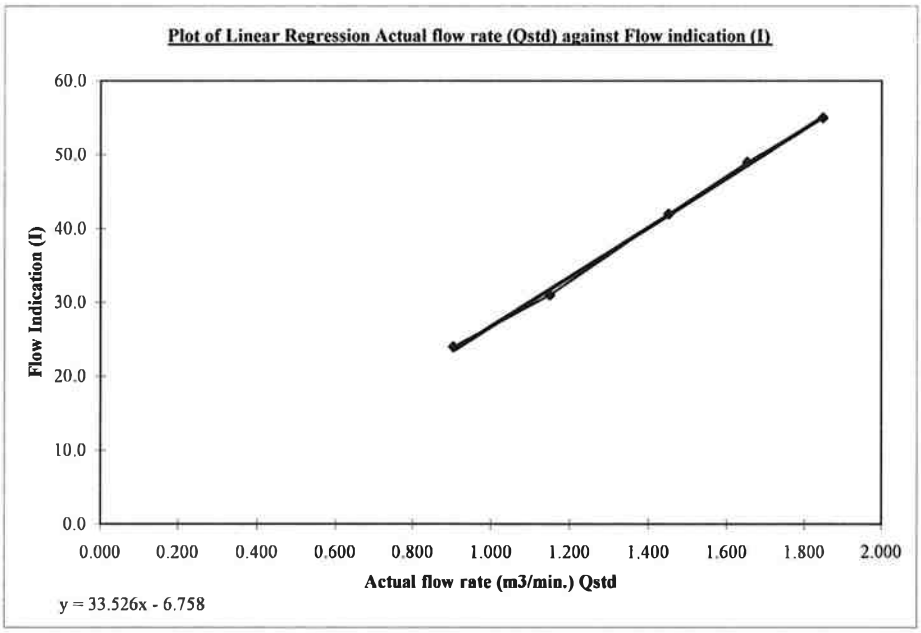
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	764.0
Calibration temp. (K) Ta:	292.1

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times \left(\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b\right)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	13.5	3.729	1.847	55.0
2	10.8	3.335	1.653	49.0
3	8.3	2.924	1.450	42.0
4	5.2	2.314	1.150	31.0
5	3.2	1.815	0.904	24.0

Correlation Coefficient : 0.9992



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** (Ho) **Date:** 11-12-08

Checked by: **Tang Hiu Yeung** ( ) **Date:** 11-12-08

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Long Beach Gardan
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 15:45

Sampler Model:	TE5005X
Serial No.:	0390
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

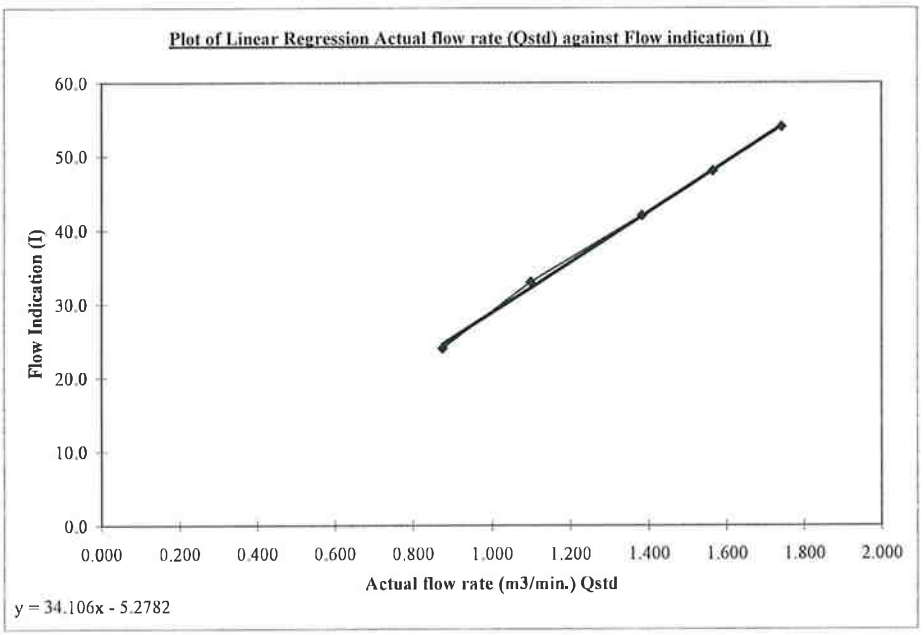
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.4	3.517	1.742	54.0
2	10.0	3.158	1.566	48.0
3	7.8	2.789	1.384	42.0
4	4.9	2.211	1.099	33.0
5	3.1	1.759	0.876	24.0

Correlation Coefficient : 0.9991



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10.10-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 10-10-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Long Beach Gardan
Calibration Date: 09-Dec-08
Calibration Due Date 09-Feb-09
Time: 15:45

Sampler Model:	TE5005X
Serial No.:	0390
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

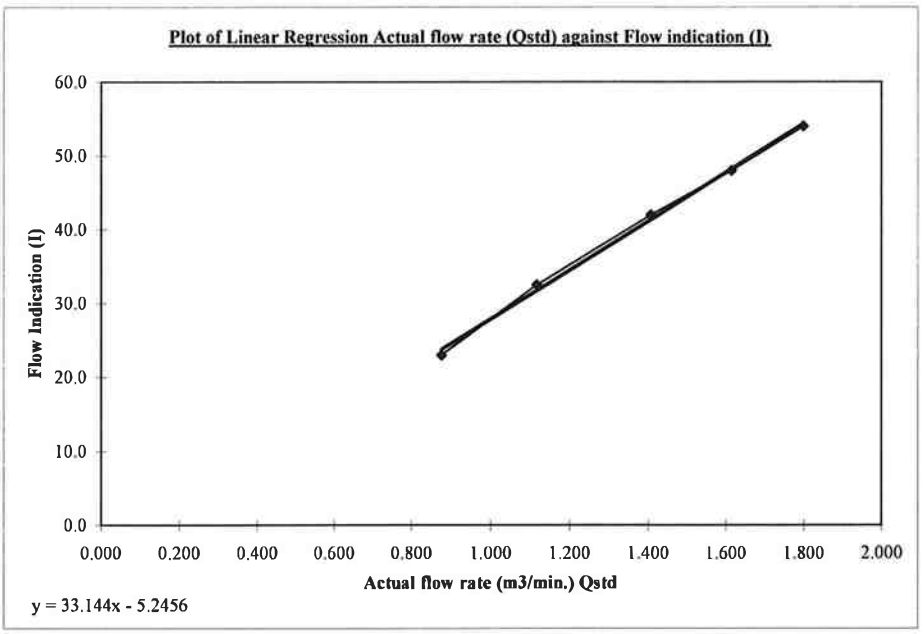
Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	764.0
Calibration temp. (K) Ta:	292.1

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.8	3.631	1.798	54.0
2	10.3	3.257	1.614	48.0
3	7.8	2.834	1.406	42.0
4	4.9	2.246	1.116	32.5
5	3.0	1.758	0.876	23.0

Correlation Coefficient : 0.9985



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 11-12-08
(MK)

Checked by: **Tang Hiu Yeung** **Date:** 11-12-08
( )

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 28, 2008 Rootsmeter S/N 9833620 Ta (K) - 296
Operator - Tisch Orifice I.D. - 517N Pa (mm) - 749.3

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4040	3.2	2.00
2	NA	NA	1.00	0.9940	6.4	4.00
3	NA	NA	1.00	0.8860	7.9	5.00
4	NA	NA	1.00	0.8450	8.8	5.50
5	NA	NA	1.00	0.6980	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9883	0.7039	1.4090		0.9957	0.7092	0.8889
0.9841	0.9901	1.9926		0.9915	0.9975	1.2570
0.9820	1.1084	2.2278		0.9894	1.1167	1.4054
0.9809	1.1608	2.3365		0.9882	1.1695	1.4740
0.9756	1.3977	2.8179		0.9829	1.4082	1.7777
Qstd slope (m) =		2.02953		Qa slope (m) =		1.27086
intercept (b) =		-0.01939		intercept (b) =		-0.01223
coefficient (r) =		0.99999		coefficient (r) =		0.99999
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

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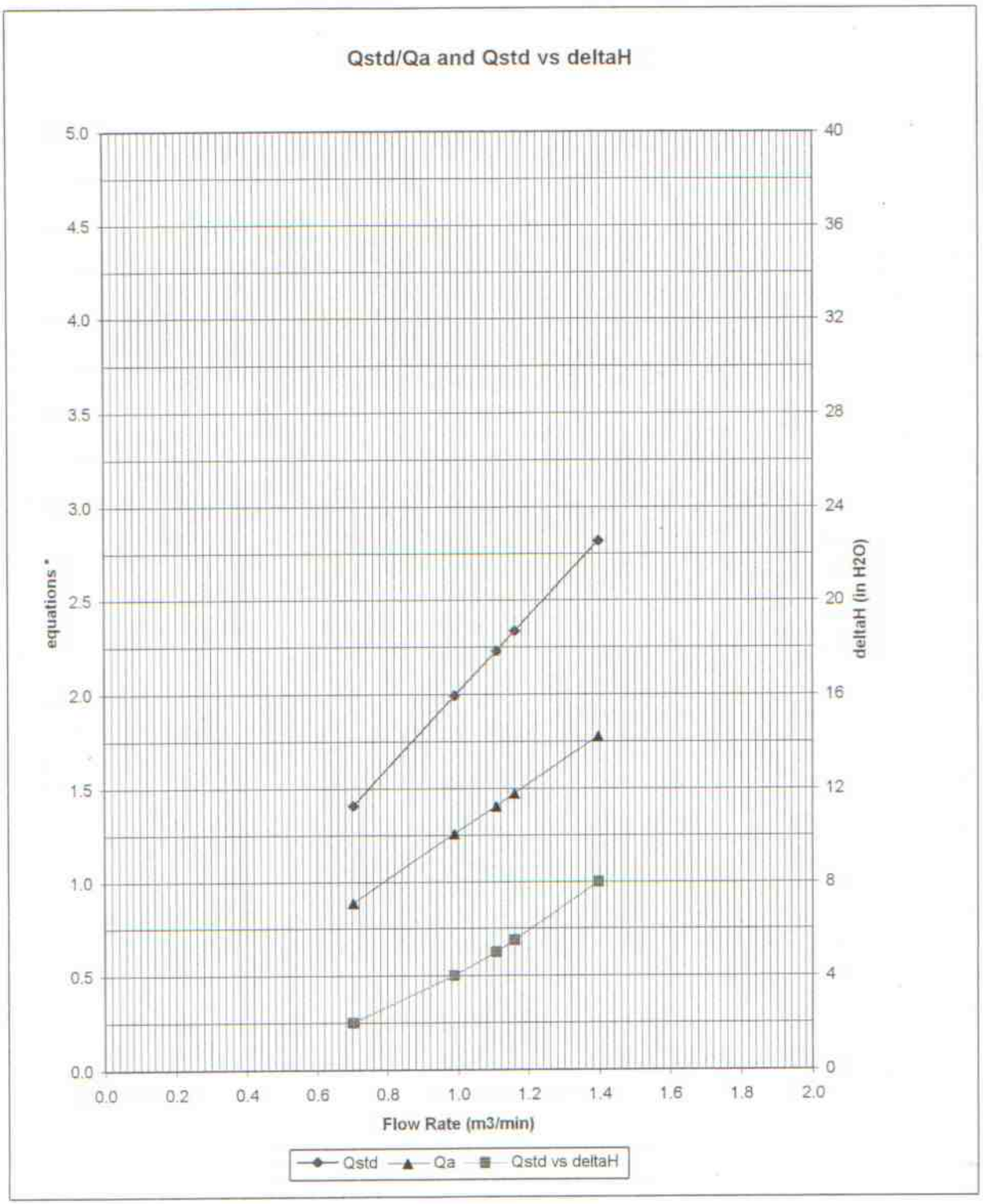
AIR POLLUTION MONITORING EQUIPMENT



#517N

*** y-axis equations:**

Qstd series: $\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$

Qa series: $\sqrt{(\Delta H\ (Ta\ /\ Pa))}$

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Certificate No. **80026** Page 1 of 3 Pages

Customer : Hyder Consulting Limited

Address : Room 3801., Hopewell Centre, 183 Queen's Road East, Wan Chai, Hong Kong

Order No. : Q72325 **Date of receipt :** 3-Jan-08

Item Tested

Description : Sound Level Meter

Manufacturer : B&K

Model : 2238 **Serial No.** : 2285726

Test Conditions

Date of Test : 17-Jan-08 **Supply Voltage** : --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : Z01.

Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S017	Multi-Function Generator	C071115	14-Mar-08	SCL-HKSAR
S024	Sound Level Calibrator	71791	16-Jul-08	NIM-PRC & SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. 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 International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : P.F. Wong

Approved by : Dorothy Cheuk

Date: 17-Jan-08

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range	Freq. Wgt.	Bandwith	Center Freq.		
20 ~ 100	A	BB/F	--	94.03	93.9
	A	BB/S	--		93.9
	C	BB/F	--		93.9
40 ~ 120	A	BB/F	--	94.03	94.0
	A	BB/F	--	113.97	113.8

IEC 651 Type 1 Spec. : ± 0.7 dB
Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB
Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
140	114.0	114.0	0.0	± 0.7 dB
130	104.0	104.0	0.0	
120	94.0	94.0 (Ref.)	- -	
110	84.0	84.0	0.0	
100	74.0	74.0	0.0	
90	64.0	64.0	0.0	
80	54.0	54.0	0.0	

Uncertainty : ± 0.1 dB

3.2 Differential level linearity

UUT Range	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.0	0.0	± 0.4 dB
	94.0	94.0 (Ref.)	- -	
	95.0	95.0	0.0	± 0.2 dB
	104.0	103.9	0.1	± 0.3 dB
	105.0	104.9	0.1	± 1.0 dB

Uncertainty : ± 0.1 dB

Calibration Certificate

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	- 39.3	- 39.4 dB, ± 1.5 dB
63 Hz	- 26.1	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.1	- 16.1 dB, ± 1 dB
250 Hz	- 8.7	- 8.6 dB, ± 1 dB
500 Hz	- 3.2	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+ 1.2	+ 1.2 dB, ± 1 dB
4 kHz	+ 1.0	+ 1.0 dB, ± 1 dB
8 kHz	- 1.1	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	- 6.7	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.9	± 0.5 dB
$1/10^2$	40.0	39.6	
$1/10^3$	40.0	39.4	± 1.0 dB
$1/10^4$	40.0	39.1	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric pressure : 1 015 hPa.

---------- END ----------

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Calibration Certificate

Certificate No. 80027 Page 1 of 2 Pages

Customer : Hyder Consulting Limited

Address : Room 3801., Hopewell Centre, 183 Queen's Road East, Wan Chai, Hong Kong

Order No. : Q72325 **Date of receipt :** 3-Jan-08

Item Tested

Description : Sound Level Calibrator

Manufacturer : B&K

Model : Type 4231 **Serial No.** : 1770806

Test Conditions

Date of Test : 17-Jan-08 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S014	Spectrum Analyzer	73602	7-Jul-08	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	71791	16-Jul-08	NIM-PRC & SCL-HKSAR
S041	Universal Counter	73453	22-Aug-08	SCL-HKSAR

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. 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 International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : P.F. Wong

Approved by : Dorothy Cheuk

Date: 17-Jan-08

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 68-75, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Wissenschaftlich-Technische Werkstätten GmbH
Dr.Karl-Slevogt-Str.1 D-82362 Weilheim

Manufacturer's Test Certificate
Hersteller - Prüfzertifikat

Product / Produkt:	**Multi-parameter instrument / Mehrparameter-Meßgerät**
Model / Modell:	**pH/Oxi 340i**
Serial no. / Serien-Nr.	**08101283**

The a.m. product has been checked by us and complies with the demanded specifications.

Accuracy of the pH measurement:
≤ 0,01 pH ± 1 digit

Accuracy of the voltage measurement:
≤ 1 mV ± 1 digit

Accuracy of the oxygen measurement:
≤ 0,5% of measured value ± 1 digit

Accuracy of the temperature measurement:
≤ 0,1 K ± 1 digit

The test equipment used for checking is regularly calibrated by means of a precision multimeter (HP 3458A, Ser.-No. 2823 A 09038) which itself is annually calibrated in a laboratory accredited to the national German Calibration Service DKD (EADS Deutschland GmbH, DKD-K-01901). This ensures the traceability to national and international standards.

Das oben genannte Produkt wurde von uns geprüft und entspricht den geforderten Spezifikationen.

Genauigkeit der pH-Messung:
≤ 0,01 pH ± 1 Digit

Genauigkeit der Spannungsessung:
≤ 1 mV ± 1 Digit

Genauigkeit der Sauerstoff-Messung:
≤ 0,5% vom Meßwert ± 1 Digit

Genauigkeit der Temperaturmessung:
≤ 0,1 K ± 1 Digit

Die zur Prüfung eingesetzten Prüfmittel werden regelmäßig anhand eines Präzisionsmultimeters (HP 3458A, Ser.-Nr. 2823 A 09038) kalibriert, das seinerseits jährlich in einem DKD-Labor kalibriert wird (EADS Deutschland GmbH, DKD-K-01901). Damit ist der Anschluß an nationale und internationale Normale gewährleistet.

Weilheim, 07.04.2008
WISSENSCHAFTLICH-TECHNISCHE WERKSTÄTTEN GMBH
Dr.K.Löhnert
Quality Manager / Leiter Qualitätssicherung

TEST REPORT

Report No. : 107244N
Project Name : Calibration of Field measurement equipment
Customer : Hyder Consulting Limited
Address : 47/F, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong

Lab Job No.	: J651	**Lab Sample No.**	: 21456/1
Sample Description	: One Turbidimeter and four turbidity standards.		
Sample Receipt Date	: 13-10-2008	**Test Period**	: 14-10-2008

Test Information

Test Parameter	Test Procedure
Calibraion of Turbidimeter and Turbidity Standard	In-house Method IC 42

Notes : 1. This report shall not be reproduced, except in full, without prior written approval from Lam Laboratories Limited.
2. Results related to sample(s) as received.
3. Results satisfy all in-house QA/QC protocols as attached.

Authorized Signatory : WONG Yau Tim (Operation Manager)

Issue Date : 14-10-2008

TEST REPORT

Report No. : 107244N
Project Name : Calibration of Field measurement equipment
Customer : Hyder Consulting Limited
Lab Job No. : J651 **Lab Sample No.** : 21456/1

Test Results

Value re-assigmnemt for Turbidity Standards:

Customer Ref.	Measured value (NTU)
STD 1	0.00
STD 2	17.74
STD 3	102
STD 4	893

Linearity check for Turbidimeter:

Serial No.	Linearity range (NTU)
215619	0-100

- End of Report -

CERTIFICATE OF ANALYSIS

Batch: HK0816176
Date of Issue: 03/10/2008
Client: HYDER CONSULTING LTD
Client Reference:

Calibration of pH System

Item : Multi-parameter Instrument / Mehrparameter-MeBgerat

Model No. : WTW pH / Oxi 340i

Serial No. : 08101283

Equipment No.: --

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 4500-H^+B

Date of Calibration : 03 October, 2008

Testing Results :

Expected Reading	Recording Reading
4.00	3.90
7.00	6.98
10.0	9.95
Allowing Deviation	± 0.2

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0816176
Date of Issue: 03/10/2008
Client: HYDER CONSULTING LTD
Client Reference:

Calibration of DO System

Item : Multi-parameter Instrument / Mehrparameter-MeBgerat

Model No. : WTW pH / Oxi 340i

Serial No. : 08101283

Equipment No. : --

Calibration Method : This meter was calibrated in accordance with standard method APHA (18th Ed.) 4500-0C & G

Date of Calibration : 03 October, 2008

Testing Results :

Expected Reading	Recording Reading
3.41 mg/L 5.62 mg/L 7.34 mg/L	3.46 mg/L 5.48 mg/L 7.37 mg/L
Allowing Deviation	±0.2 mg/L

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong