AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

Station	Tung Chung Dev	elopment Pier (A	MS2)	Operator:	Shum Ka	ım Yuen	
Cal. Date:	11-May-12			Next Due Date:			
Equipment No.:	A-001-78T			Serial No.	33	33	
			Ambient	Condition			
Temperati	ure, Ta (K)	300.9	Pressure, F	Pa (mmHg)		756.4	
•							
			Orifice Transfer S	tandard Informatio	n		
Seria	al No:	843	Slope, mc	2.00834	Interce		-0.02923
Last Calibr	ration Date:	15-Nov-11			= [DH x (Pa/760) x		
Next Calib	ration Date:	15-Nov-12		Qstd = {[DH x (Pa/760) x (298/Ta)]	^{/2} -bc} / mc	
-		4					
			Calibration of	of TSP Sampler			
		Í	Orfice		HV	S Flow Recorde	ar er
Resistance Plate No.	DH (orifice), in. of water	[DH x (Pa/7	760) x (298/Ta)] ^{1/2}	Qstd (m³/min) X - axis	Flow Recorder Reading (CFM)		Flow Recorder (CFM) Y-axis
18	8.2		2.84	1.43	44.0	4;	3.68
13	7.3		2.68	1.35	41.0	4(0.71
10	5.5		2.33	1.17	35.0	34	4.75
7	3.9		1.96		26.0	2!	5.81
5	2.0		1,40	0.71	17.0	16	6.88
By Linear Regr Slope , mw =	ression of Y on X 38.1104			intercept, bw =	-10.	7655	
Correlation Co.	efficient* =		.9955	•			
*If Correlation C	oefficient < 0.990,	check and reca	ibrate.				
			Set Point	Calculation			
From the TSP F	Field Calibration Cu	urve. take Qstd =					
	ssion Equation, th			•			
, tom the regre	Colon Equation, an	O 1 MAINT MODE	,			. '	
		mv	v x Qstd + bw = IC	x [(Pa/760) x (298/	Ta)] ^{1/2}		
Therefore, Set I	Point: IC = (mw x l	Ostd + bw) x l()	760 / Pa) x (Ta / 29	98)1 ^{1/2} =		39.06	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	4		, , , , , , , , , , , , , , , , , , , ,	73		<u> </u>	<u></u>
							
Remarks:							
				<u> </u>			
QC Reviewer:	k H is	WEK	Signature:	H/ke		Date:	Haz-12
AO LONONOL.	13:14	41127	2	- I III Theregoe			

D:\HVS Calibration Certificate (Existing)\

AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

tation	Site Boundary of	Site Office (WA2	!} (AMS3A)	Operator:	Shum Ka	m Yuen	
al. Date:	11-May-12			Next Due Date:	11-Ju	I-12	
quipment No.:	A-001-79T			Serial No.	338	34	*****
				Condition			
	T	0000				756.4	
Temperatu	ire, Ta (K)	300.9	Pressure, P	a (numy)		100.4	
			Orlfice Transfer St	andard Information	n		
Seria	l No:	843	Slope, mc	2.00834	Interce		-0.02923
Last Calibr	ation Date:	15-Nov-11		mc x Qstd + bc =	= [DH x (Pa/760) x	[298/Ta)] 1/2	
Next Calib	ration Date:	15-Nov-12		Qstd = {[DH x (F	Pa/760) x (298/Ta)]	^{/2} -bc} / mc	
		•	A 111 - 11	aren e - L			
10000	T CONTRACTOR		SEAN PROPERTY OF STATE OF STAT	f TSP Sampler	LIV.	Flow Recorde	
Resistance Plate No.	DH (orifice), in. of water		Orfice (60) x (298/Ta)] ^{1/2}	Qstd (m³/min) X axis	Flow Recorder Reading (CFM)	Continuous F Reading IC (0	low Recorder
18	8.1		2.83	1.42	47.0	46	66
13	6.8		2.59	1.30	41.0	40	.71
10	5.3		2.29	1.15	33.0	32	.76
, 0			1.96	0.99	23.0	22	.83
7	1 3.9	1	טע.ן	1 0.00			
7 5	3.9 2.5		1.57	0.80	15.0	14	.89
5 By Linear Regi	2.5 ression of Y on X 51.9317		1.57		15.0	14 2 64 5	.89
5 By Linear Regulation & Stope , mw = Correlation Co	2.5 ression of Y on X 51.9317 refficient* =	0	1.57 9.9961	0.80	15.0		.89
5 Sy Linear Regulation of the control of the contr	2.5 ression of Y on X 51.9317	0	1.57 9.9961	0.80	15.0		.89
5 Sy Linear Regulation of the control of the contr	2.5 ression of Y on X 51.9317 refficient* =	0	1.57 9.9961 librate.	0.80	15.0		.89
5 by Linear Registrope, mw = Correlation Co If Correlation C	2.5 ression of Y on X 51.9317 refficient* = coefficient < 0.990,	check and reca	1.57 3.9961 librate.	Intercept, bw =	15.0		.89
5 By Linear Regional Stope, mw = Correlation Confection Confectio	2.5 ression of Y on X 51.9317 refficient* =	check and reca	1.57 9.9961 librate. Set Point = 1.30m ³ /min	Intercept, bw =	15.0		
by Linear Regional Stope, mw = Correlation Confection C	2.5 ression of Y on X 51.9317 refficient* = coefficient < 0.990,	check and reca	1.57 9.9961 Set Point 1.30m³/min arding to	Intercept, bw =	-27.3		
5 By Linear Regional Stope, mw = Correlation Confection Confectio	2.5 ression of Y on X 51.9317 refficient* = coefficient < 0.990,	check and reca	1.57 9.9961 Set Point 1.30m³/min arding to	Intercept, bw =	-27.3		
5 By Linear Regional Stope, mw = Correlation Confection Confection Confection Confection Confection the TSP Form the Regree	2.5 ression of Y on X 51.9317 refficient* = coefficient < 0.990, rield Calibration Coession Equation, the	check and reca urve, take Qstd = e "Y" value acco	1.57 9.9961 Set Point 1.30m³/min arding to	Intercept, bw = Calculation x [(Pa/760) x (298/	-27.3		

D:\HVS Calibration Certificate (Existing)\6\

AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

Station	Hong Kong SkyC	ity Marriott Hotel ((AMS7)	Operator:	Shum Ka	am Yuen		
Cal. Date:	Date: 11-May-12			Next Due Date:	11-Ju	ul-12	_	
Equipment No.:	A-001-80T			Serial No.	33	85	_	
			Ambient	Condition				
Temperatu	re Ta (K)	300.9	Pressure, F			756.4		
Tomporate	10, 14 (14)			. (
		0	rifice Transfer S	tandard Informatio	n a seminar se			
Seria	l No:	843	Slope, mc	2.00834	Interce	ept, bc	-0.02923	
Last Calibr	ation Date:	15-Nov-11						
Next Calibr	ation Date:	15-Nov-12		Qstd = {[DH x (I	Pa/760) x (298/Ta)]	^{1/2} -bc} / mc		
		,						
			Galibration of	fTSP Sampler				
		O ₁	fice		HV	S Flow Recorder		
Resistance Plate No.	DH (orifice), in. of water	_ [DH x (Pa/76	0) x (298/Ta)] ^{1/2}	Qstd (m ³ /min) X · axis	Flow Recorder Reading (CFM)	Continuous Flo Reading IC (CF		
18	7.7		2.75	1.39	44.0	43.6	8	
13	6.7	1	2.57	1.2 9	38.0	37.7	3	
10	5.5		2.33	1.17	32.0	31.7	7	
7	4.1	2	2.01	1.02	26.0	25.8	1	
5	3.6		1.88	0.95	22.0	21.8	4	
Slope , mw =	ession of Y on X 48.0909	PANE.		Intercept, bw =	-23.	8334		
Correlation Cod	efficient* =	0.9	917					
If Correlation Co	oefficient < 0.990,	check and recalib	rate.					
			Set Point	Calculation	Manufacture and the second			
rom the TSP F	ield Calibration Cu	ırve, take Qstd = 1	SELECTION OF THE SELECT					
		e "Y" value accord						
	,		•					
		mw:	x Qstd + bw = IC	x [(Pa/760) x (298/	Γa)] ^{1/2}			
Thorofore Set F	Point: IC = 1 mw v	Qstd + bw) x [(76	:0/Paly/Ta/20	98 11 ^{1/2} =		38.96		
moreiore, ocl f	onit, io - (inst x	GOOD ON JA IL TO	OTTO INC TOTAL	,		90.00	_	
Remarks:								
				11.		.)	J	
QC Reviewer:	K. H. (SHEK	Signature:	Tike.		Date:	101 12	



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 - No Operator		Rootsmeter Orifice I.I	-	438320 0843	Ta (K) - Pa (mm) -	294 748.03
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1 2 3 4 5	NA NA NA NA NA	NA NA NA NA NA	1.00 1.00 1.00 1.00 1.00	1.3810 0.9810 0.8760 0.8370 0.6890	3.2 6.4 7.8 8.8 12.7	2.00 4.00 5.00 5.50 8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9934 0.9891 0.9871 0.9859 0.9807	0.7193 1.0083 1.1269 1.1779 1.4233	1.4125 1.9976 2.2334 2.3424 2.8251		0.9957 0.9915 0.9895 0.9882 0.9830	0.7210 1.0107 1.1295 1.1807 1.4267	0.8866 1.2538 1.4018 1.4703 1.7732
Qstd slo	t (b) =	2.00834 -0.02923 0.99994		Qa slope intercept coefficie	t (b) =	1.25759 -0.01835 0.99994
y axis =	SQRT[H20(1	Pa/760)(298/1	ra)]	y axis =	SQRT [H20 ([a/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 = $1/m\{ [SQRT(H2O(Pa/760)(298/Ta))] - b \}$

 $Qa = 1/m\{[SQRT H2O(Ta/Pa)] - b\}$

Type: Manuf	facturer/Brand:		_	Laser Du SIBATA	ıst Monit	tor		
Model	No.:			LD-3				
	ment No.:			A.005.07				
Sensit	ivity Adjustment	Scale Setti	ng: _	557 CPI	<u>/</u>			
Opera	tor:			Mike She	k (MSKN	1)		
Standa	rd Equipment							
Equip	ment:	Dunn	recht & Pa	toobniek '	TEOM®			
Venue			rport (Pui \			phool)		
Model			s 1400AB	ing seco	nuary 30	11001)		
Serial		Contr		DAB21989	00803			
Serial	INO.	Sens	100.000	00C14365		K _o : 12500		
Last C	Calibration Date*:		y 2012	70014300	3000		9	
*Remar	ks: Recommend	ed interval	for hardwar	e calibrat	ion is 1 y	/ear		
Calibra	tion Result							
	ivity Adjustment ivity Adjustment					557 CP		
Hour	Date	Tir	ne	Amb		Concentration	Total	Count/
	(dd-mm-yy)			Cond		(mg/m ³)	Count ²	Minute ³
				Temp (°C)	R.H. (%)	Y-axis		X-axis
1	02-06-12	13:30	- 14:30	27.9	63	0.04070	1628	27.13
2	02-06-12	14:30	- 15:30	27.9	63	0.04167	1669	27.82
3	02-06-12	15:30	- 16:30	28.2	64	0.04283	1713	28.55
4	02-06-12	16:30	- 17:30	28.1	63	0.04146	1655	27.58
Note:	Monitoring of 2. Total Count Count/minut	was logged	by Laser I	Dust Mon	itor	shnick TEOM®		
	ar Regression of	Y or X						
	(K-factor):		0.0015					
Correl	ation coefficient:	2.5	0.9951					
Validit	y of Calibration F	Record:	1 June 20)13				
Remark	s:		и					
				44				
00.0	aviewer VM/F		Signa		4/	Date	a. A lune	2012

Model Equip	ment No.: tivity Adjustment	Scale Setting:		Laser Du SIBATA LD-3 A.005.09 797 CPM	a 1			
	rd Equipment			-				
Stariua	ru Equipment							
Equipi Venue		Rupprecht Cyberport				chool)		
Model		Series 140						
Serial	No:	Control:		AB21989		V : 4050	20	
Last C	Calibration Date*:	Sensor: 5 May 201		00C14365	9803	K _o : _1250	<i></i>	
*Remar	ks: Recommend	ed interval for ha	ardwar	e calibrat	ion is 1 y	/ear		
Calibra	tion Result		#* 5 ### N	W 11				
	ivity Adjustment ivity Adjustment						CPM CPM	
Hour	Date (dd-mm-yy)	Time		Amb Cond Temp (°C)	Service and the service and th	Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
1	02-06-12	13:30 - 1	4:30	27.9	63	0.04070	1626	27.10
2	02-06-12		5:30	27.9	63	0.04167	1667	27.78
3	02-06-12		6:30	28.2	64	0.04283	1708	28.47
4	02-06-12		7:30	28.1	63	0.04146	1659	27.65
	Total Count	lata was measur was logged by L te was calculated Y or X	aser [d by (T	Dust Moni	tor	shnick TEOM®		
	ation coefficient:							
Validit	y of Calibration F		ıne 20	13				
Remark	s:							
				2003				
QC Re	eviewer: <i>YW F</i>	-una :	Signat	ture:	4/	Da	ate: 4 June	2012

Model Equip	facturer/Brand: l No.: ment No.: tivity Adjustment	Scale Sett	- - - ing: _	Laser Do SIBATA LD-3 A.005.10 753 CPI	a	tor		
Opera	ator:			Mike She	k (MSKN	<i>1</i>)		
Standa	rd Equipment							
	e: No.:	Cybe Serie Cont Sens 5 Ma	sor: 12 ay 2012	Ying Seco 0AB21989 00C14369	99803 59803	K _o : _1250	00	
Calibra	tion Result							
	tivity Adjustment tivity Adjustment						CPM CPM	
Hour	Date (dd-mm-yy)	Ti	ime		dition R.H. (%)	Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
1	02-06-12	12:45	- 13:45	27.9	63	0.04041	1613	26.88
2	02-06-12	13:45	- 14:45	27.9	63	0.04085	1631	27.18
3	02-06-12	14:45	- 15:45	27.9	63	0.04154	1663	27.72
4	02-06-12	15:45	- 16:45	28.1	64	0.04272	1711	28.52
Slope	2. Total Count 3. Count/minut ar Regression of (K-factor):	was logge e was calc Y or X	d by Laser	Dust Mon	itor	ashnick TEOM [®]		
	y of Calibration F		1 June 20	013				
Remark	ks:							
QC R	eviewer: <i>YW F</i>	ung	Signa	ature:	V	Da	ate: _4 June	e 2012

Type.				Laser Du	ıst Moni	tor		
Model	facturer/Brand:		_	SIBATA LD-3B		·		
	ment No.:		_	LD-3B A.005.12				
	tivity Adjustment	Scale Setting	_	805 CPI				
Opera	ator:			Mike Shek (MSKM)				
Standa	rd Equipment						 	
		4.000	-					
Equip			echt & Pa					<u>_</u>
Venue			oort (Pui \	ing Seco	ndary Sc	chool)		
Model			1400AB		2000			
Serial	No:	Contro		DAB21989		1/ 40500		
1 4 6	No. 17 to 2 12 to 4 to 4 to	Senso		00C14368	9803	K _o : <u>12500</u>		
Last C	Calibration Date*:	4 June	2011					
*Remar	ks: Recommend	ed interval fo	or hardwar	e calibra	tion is 1 y	/ear		
Calibra	tion Result						****	
Canbra	uon Kesuk							
	tivity Adjustment					805 CF 805 CF		
Sensi	tivity Adjustment	Scale Setting	g (After C	anbration):	805 CF	'IVI	
Hour	Date	Tim	e	1	pient	Concentration	Total	Count/
	(dd-mm-yy)				dition	(mg/m ³)	Count ²	Minute ³
-				Temp (°C)	R.H. (%)	Y-axis		X-axis
1	02-07-11	09:30 -	10:30	31.1	70	0.04305	1843	30.72
2	02-07-11	10:30 -	11:30	31.1	71	0.04257	1826	30.43
3	02-07-11	11:30 -	12:30	31.2	71	0.04424	1893	31.55
4	02-07-11	12:30 -	13:30	31.2	71	0.04632	1994	33.23
Note:	Monitoring of 2. Total Count Count/minut	was logged	by Laser I	Dust Mon	itor	shnick TEOM [®]		
	ar Regression of	Y or X						
	(K-factor):	_	0.0014					
Correl	lation coefficient:	سب	0.9947					
Validit	ty of Calibration F	Record:	1 July 20	12				
Remark	(e:							
Cinair								
			•			3.000 Jan		
					1/			
QC R	eviewer: YW F	-una	Signa	ture:	1	Date	e: 4 July	2011

Model Equipr	acturer/Brand: No.: ment No.: ivity Adjustment	Scale Setti		Laser Dust Monitor SIBATA LD-3B A.005.13a 643 CPM				
Opera		Scale Setti		Mike She		<u>/)</u>		
Standa	rd Equipment							
Equipr Venue Model Serial Last C	: No.:	Cybe Serie Cont Sens	***************************************		ndary So 99803	chool) K _o : <u>12500</u>		
	ks: Recommend	ed interval	for hardwar	e calibra	tion is 1 y	/ear		***************************************
Sensit	ivity Adjustment ivity Adjustment					643 CF		***************************************
Hour	Date (dd-mm-yy)	Tiı	me	Amb Cond Temp (°C)	oient dition R.H. (%)	Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
1	02-06-12		- 14:30	27.9	63	0.04070	1623	27.05
3	02-06-12 02-06-12	14:30 15:30	- 15:30 - 16:30	27.9 28.2	63 64	0.04167 0.04283	1663 1771	27.72
4	02-06-12	40.00	- 10.30 - 17:30	28.1	63	0.04263	1656	27.60
Slope	Monitoring of 2. Total Count 3. Count/minular Regression of (K-factor): ation coefficient:	was logged te was calco Y or X	d by Laser [Dust Mon	itor	ashnick TEOM®		
Validit	y of Calibration F	Record:	1 June 20	113	·····			
Remark	s:					VALUE		
QC Re	eviewer: <i>YW F</i>	- unq	Signal	ture:	4/	Date	e: 4 June	∋ 2012

Type: Manu Mode	facturer/Brand:		(-	Laser D SIBATA LD-3B	ust Mon	itor		
	ment No.:))-	A.005.14	12			
	itivity Adjustment	t Scale Setting	g: -	786 CP		-		
Opera			-	Mike She		M)		
Standa	ard Equipment							
Equip	ment:	Ruppre	echt & Pa	atashnick	TFOM®			Ti Ti
Venue	e:			Ying Seco		chool)		
Mode	l No.:		1400AB	Thig Good	oridary C	orioon		
Serial	No:	Contro		0AB2198	99803			
		Sensor		00C1436		K _o : 12500	<u> </u>	
Last C	Calibration Date*				00000			
	ks: Recommend	ded interval fo	r hardwa	re calibra	tion is 1	year		
Calibra	tion Result							
Sensit	tivity Adjustment tivity Adjustment	Scale Setting Scale Setting	(Before (After C	Calibration alibration	on):):		PM PM	
Hour	Date	Time	9	Amb	pient	Concentration ¹	Total	Count/
	(dd-mm-yy)			Cond	dition	(mg/m ³)	Count ²	Minute ³
				Temp	R.H.	Y-axis	0.000,000,000	X-axis
		- 1		(°C)	(%)			
1	02-06-12	13:15 -	14:15	27.9	63	0.04073	1746	29.10
3	02-06-12	14:15 -	15:15	27.9	63	0.04154	1778	29.63
4	02-06-12 02-06-12	15:15 -	16:15	28.1	64	0.04269	1830	30.50
Note:		16:15 -	17:15	28.1	64	0.04136	1769	29.48
	Total Count Count/minut	was logged be e was calcula	y Laser D	Dust Mon	itor	shnick TEOM®		
By Linea	ar Regression of							
Slope	(K-factor):		0.0014					
Correla	ation coefficient:	_0	.9963		3			
Validity	of Calibration F	Record: 1	June 20	13				
Remark	s:							
						19		
QC Re	viewer: YW F	ung	Signati	ure:	4/	Date	e: 4 June	2012

Type:	acturer/Brand:			Laser Du SIBATA	st Monit	tor		
Model				LD-3B				
	ment No.:			A.005.15	а			
200	ivity Adjustment	Scale Setting:		786 CPN	1			
Opera	tor:		_	Mike She	k (MSKN	1)		
Standa	rd Equipment							
Equips	mont:	Dunnessh	4 0 D-4	ta a busials."	TEOM®			
Equipr Venue		Rupprech Cyberpor				shool)		
Model		Series 14		ing Seco	iluary 30	,11001)	- 10 - 50/n 2 - 50	
Serial		Control:		AB21989	0803			
Serial	INO.	Sensor:		00C14365		K _o : 12500		
Last C	alibration Date*:	5 May 20		70014300	3000	N ₀	-0.0	
		80 Sec 20 20 20	638			4		
*Remar	ks: Recommend	ed interval for h	ardwar	e calibrat	ion is 1 y	/ear		
Calibra	tion Result							
		S 1 S (5		0 111 11		704 00		
	ivity Adjustment	and the second of the second o				734 CP		
Sensit	ivity Adjustment	Scale Setting (A	After Ca	alibration)	:	734 CP	IVI	
Hour	Date	Time		Amb	ient	Concentration ¹	Total	Count/
	(dd-mm-yy)			Cond		(mg/m ³)	Count ²	Minute ³
	, ,,,,			Temp	R.H.	Y-axis		X-axis
				(°C)	(%)			
1	02-06-12	13:15 - 1	14:15	27.9	63	0.04073	1748	29.13
2	02-06-12	14:15 - 1	15:15	27.9	63	0.04154	1780	29.67
3	02-06-12	15:15 - 1	16:15	28.1	64	0.04269	1826	30.43
4	02-06-12		17:15	28.1	64	0.04136	1773	29.55
Note:		lata was measu				shnick TEOM®		
		was logged by						
	Count/minut	e was calculate	d by (T	otal Cour	nt/60)			
By Line	or Dograpaion of	VorV						
	ar Regression of (K-factor):		014					
	ation coefficient:		949					
Correi	ation coefficient.	0.9	949					
Validit	y of Calibration F	Record: 1 J	une 20	13				
Remark	is:							
N .		A TOUR		100000 10000000000000000000000000000000	dia .		81	
00 B	eviewer: YW F	Eupa	Signat	turo:	1/	Date	e: 4 June	2012



G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. 香港黄竹坑這37號利達中心地下,9樓,12樓,13樓及20樓 E-mail: smec@cigismec.com Website: www.cigismec.com



CERTIFICATE OF CALIBRATION

Certificate No.: Item tested

Sound Level Meter (Type 1)

Page

Tel (852) 2873 6860 Fax: (852) 2555 7533

2

Description: Manufacturer: Type/Model No.:

Rion Co., Ltd. NL 31

11CA1221 01-01

Microphone Rion Co., Ltd. UC-53A

Preamp Rion Co., Ltd NH-21

Serial/Equipment No.:

00320534 / N.007.02A

90526

03581

Adaptors used:

Item submitted by Customer Name:

AECOM ASIA CO., LTD.

Address of Customer:

Request No.: Date of receipt:

21-Dec-2011

Date of test:

23-Dec-2011

Reference equipment used in the calibration

Description: Multi function sound calibrator Signal generator Signal generator

Model: B&K 4226 Serial No. 2288444

Expiry Date: 09-May-2012

Traceable to: CIGISMEC

DS 360 DS 360 33873 61227

30-May-2012 30-May-2012

CEPREI CEPREI

Ambient conditions

Temperature: Relative humidity:

Air pressure:

(22 ± 1) °C (60 ± 10) % (1000 ± 5) hPa

Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580; Part 1: 1997 1, and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and 2, replaced by an equivalent capacitance within a tolerance of ±20%.
- 3. The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

/Feng Jun Qi

Actual Measurement data are documented on worksheets.

Approved Signatory:

Date:

16-Jan-2012

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

Soils & Materia's Engineering Co., Ltd.

Form No.CARP152 1/Issue 1/Rev.C/01/02/2007



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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

11CA1221 01-01

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1. **Electrical Tests**

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these telerances.

Test:	Subtest:	Status:	Uncertanity (dB) / Coverage Factor
Self-generated noise	A	Pass	0.3
	C	Pass	0.8 2.1
	Lin	Pass	1.6 2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3
	Reference SPL on all other ranges	Pass	0.3
	2 dB below upper limit of each range	Pass	0.3
	2 dB above lower limit of each range	Pass	0.3
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3
Frequency weightings	A	Pass	0.3
	С	Pass	0.3
	Lin	Pass	0.3
Time weightings	Single Burst Fast	Pass	0.3
	Single Burst Slow	Pass	0.3
Peak response	Single 100µs rectangular pulse	Pass	0.3
R.M.S. accuracy	Crest factor of 3	Pass	0.3
Time weighting I	Single burst 5 ms at 2000 Hz	N/A	N/A
	Repeated at frequency of 100 Hz	N/A	N/A
Time averaging	1 ms burst duty factor 1/103 at 4kHz	Pass	0.3
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0,3
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4
Overload indication	SPL	Pass	0.3
	Leq	Pass	0.4

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Uncertanity (dB) / Coverage Factor
A	Mariable A and Approximate	_	
Acoustic response	Weighting A at 125 Hz	Pass	0.3
	Weighting A at 8000 Hz	Pass	0.5
	The state of the s		and the second s

3, Response to associated sound calibrator

N/A

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is

assumed unless expligitly stated.

Calibrated by:

Date:

Fung Chi Yip 3-Dec-2011 Checked by:

Date:

16-Jan-2012

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

End

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Form No.CARP152-2/Issue 1/Rev C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

11CA0830 02

Page

2

Item tested

Description:

Sound Level Meter (Type 1)

Microphone

Preamp

Manufacturer:

Rion Co., Ltd.

Rion Co., Ltd.

Rion Co., Ltd.

Type/Model No.:

NL-31

UC-53A

NH-19

Serial/Equipment No.: Adaptors used:

00320528 / N.007.03A

90565

75883

Item submitted by

Customer Name:

AECOM ASIA CO., LTD.

Address of Customer:

Request No.: Date of receipt:

30-Aug-2011

Date of test:

31-Aug-2011

Reference equipment used in the calibration

Description: Multi function sound calibrator Signal generator

Model: B&K 4226 DS 360

DS 350

Serial No. 2288444 33873

61227

Expiry Date: 09-May-2012 30-May-2012 30-May-2012

Traceable to: CIGISMEC CEPREI

CEPRE

Signal generator **Ambient conditions**

Temperature:

(23 ± 1) °C $(60 \pm 5) \%$

Relative humidity: Air pressure:

(1000 ± 5) hPa

Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3. between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

eng Jun Q

Actual Measurement data are documented on worksheets.

Approved Signatory:

Date:

31-Aug-2011

Company Chop:

Comments: The results reported illuthis certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:	11CA0830 02	Page	2	of	2
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1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Uncertanity (dB) / Coverage Factor
Solf-generated noise	Α	Pass	0.3
	С	Pass	0.8 2.1
	Lin	Pass	1.6 2.2
Linearity range for Lec	At reference range, Step 5 dB at 4 kHz	Pass	0.3
	Reference SPL on all other ranges	Pass	0.3
	2 dB below upper limit of each range	Pass	0.3
	2 dB above lower limit of each range	Pass	0.3
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3
Frequency weightings	Α	Pass	0.3
	С	Pass	0.3
	Lîn	Pass	0.3
Time weightings	Single Burst Fast	Pass	0.3
	Single Burst Slow	Pass	0.3
Peak response	Single 100µs rectangular pulse	Pass	0.3
R.M.S. accuracy	Crest factor of 3	Pass	0.3
Time weighting I	Single burst 5 ms at 2000 Hz	N/A	N/A
	Repeated at frequency of 100 Hz	N/A	N/A
Time averaging	1 ms burst duty factor 1/103 at 4kHz	Pass	0.3
	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4
Overload indication	SPL	Pass	0.3
	Leg	Pass	0.4

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test;	Subtest	Status	Uncertanity (dB) / Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3
	Weighting A at 8000 Hz	Pass	0.5

3, Response to associated sound calibrator

N/A

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

 \sim

Fung Chi Yip 1 1-Aug-2011 Checked by

Date:

J.Q. Feng / 31-Aug-20/1

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

End

Soils & Materials Engineering Co., Ltd.

Form No.CARP152-2/Issue 1/Rev.C/01/02/2007



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CERTIFICATE OF CALIBRATION

Certificate No.:

11CA0711 01-05

Page:

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1

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Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer: Type/Model No.: Rion Co., Ltd. NC-73

Serial/Equipment No.:

10307223 / N.004.08

Adaptors used:

Item submitted by

Curstomer:

AECOM ASIA CO. LTD.

Address of Customer:

Request No.: Date of receipt:

11-Jul-2011

Date of test:

13-Jul-2011

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	18-May-2012	SCL
Preamplifier	B&K 2673	2239657	14-Dec-2011	CEPREI
Measuring amplifier	B&K 2610	2346941	15-Dec-2011	CEPREI
Signal generator	DS 360	61227	30-May-2012	CEPREI
Digital multi-meter	34401A	US36087050	09-Dec-2011	CEPREI
Audio analyzer	8903B	GB41300350	27-May-2012	CEPREI
Universal counter	53132A	MY40003662	30-May-2012	CEPREI

Ambient conditions

Temperature: Relative humidity:

Air pressure:

22 ± 1 °C $55 \pm 5 \%$ 990 ± 5 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B 1, and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique. 2.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference 3, pressure of 1013,25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Hyang Jian

Approved Signatory:

Date:

13-Jul-2011

Company Chop:

Comments: The results reported in this optificate refer to the condition of the instrument on the date of calibra carry no implication regarding the long-term stability of the instrument.

@ Soits & Materials Engineering Co., Ltd

Form No.CARP156-1/Issue 1/Rev.D/01/03/2007



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Tel : (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

11CA0711 01-05

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1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with

Frequency	Output Sound Pressure	Measured Output	(Output level in dB re 20 μPa) Estimated Uncertainty dB
Shown	Level Setting	Sound Pressure Level	
Hz	dB	dB	
1000	94.00	93.70	0.10

Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.002 dB

Estimated uncertainty

0.005 dB

3, **Actual Output Frequency**

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 989.2 Hz

Estimated uncertainty

0.2 Hz

Coverage factor k = 2.2

Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.7%

Estimated uncertainty

0.7%

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

End

Checked by:

Date:

Date:

Chan Chun Lan 13-Jul-2011

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

Soils & Materials Engineering Co., Ltd.

Form No.CARP156-2/Issue 1/Rev.C/01/05/2005



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CERTIFICATE OF CALIBRATION

Certificate No.:

12CA0321 01-04

Page:

of

2

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer:

Rion Co., Ltd. NC-73

Type/Model No.: Serial/Equipment No.:

10186482 / N.004.09

Adaptors used:

, o . o o . o

Item submitted by

Curstomer:

AECOM ASIA CO., LTD.

Address of Customer:

-

Request No.:

21-Mar-2012

Date of receipt:

Date of test:

21-Mar-2012

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	18-May-2012	SCL
Preamplifier	B&K 2673	2239857	05-Jan-2013	CEPREI
Measuring amplifier	B&K 2610	2346941	29-Dec-2012	CEPREI
Signal generator	DS 360	61227	30-May-2012	CEPREI
Digital multi-meter	34401A	US36087050	16-Dec-2012	CEPREI
Audio analyzer	8903B	GB41300350	27-May-2012	CEPREI
Universal counter	53132A	MY40003662	30-May-2012	CEPREI

Ambient conditions

Temperature:

21 ± 1 ℃ 60 ± 10 %

Relative humidity: Air pressure:

1005 ± 5 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- 2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 3. The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

Details of the performed measurements are presented on page 2 of this certificate.

m Min/Feng Jun Qi

Approved Signatory:

Date:

23-Mar-2012

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

Soils & Meterials Engineering Co., Ltd.

Form No.CARP156-1/Issue 1/Rev.D/01/03/2007

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综合試驗有限公司

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.	Certi	tifica	te N	lo.:
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12CA0321 01-04

Page:

2

1. Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

	Frequency Shown Hz	Output Sound Pressure Level Setting	Measured Output Sound Pressure Level d8	(Output level in dB re 20 µPa) Estimated Uncertainty dB
***************************************	1000	94.00	93.59	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.002 dB

Estimated uncertainty

0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 990.9 Hz

Estimated uncertainty

 $0.2\ Hz$

Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.6%

Estimated uncertainty

0.7%

Date:

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

End

Date:

Checked by:

21-Mar-2012()

Chan Chun Lam 23-Mar-2012

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No.CARP156-2/issue 1/Rev.C/01/05/200

Work Order:

HK1212870

Date of Issue:

17/05/2012

Client:

AECOM ASIA COMPANY LIMITED



Description:

Brand Name:

Sonde

Model No.:

YSI

Serial No.:

6820 V2 12A101544

Equipment No.:

R1

Date of Calibration:

17 May, 2012

Date of next Calibration:

17 August, 2012

Parameters:

Conductivity

Method Ref: APHA (20th edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
142.6	149.0	4.5
6667	6176	-7.4
12890	12440	-3.5
58670	58420	-0.4
	Tolerance Limit (±%)	10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
6.13	6.30	0.17
7.66 8.06	7.51 8.14	-0.15 0.08
	Tolerance Limit (±mg/L)	0.20

Salinity

Method Ref: APHA (21st edition), 2520B

121704 11017 4 70 1 (2 201 2411017) 2 2 2 2 2		
Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.07	
10	9.97	-0.3
20	19.76	-1.2
30	30.17	0.6
	Tolerance Limit (±%)	10.0

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
18.5	18.41	-0.1
27.0	26.72	-0.3
30:0	29.95	-0.1
	Tolerance Limit (°C)	2.0

Mr. Fung Lim Chee, Richard

General Manager /

Greater China & Hong Kong

Work Order:

HK1212870

Date of Issue:

17/05/2012

Client:

AECOM ASIA COMPANY LIMITED



Description:

Sonde

Brand Name:

YSI

Model No.:

6820 V2

Serial No.:

12A101544

Equipment No.:

R1

Date of Calibration:

17 May, 2012

Date of next Calibration:

17 August, 2012

Parameters:

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Toleraпсе (pH unit)
4.0	4.16	0.16
7.0	7.16	0.16
10.0	10.10	0.10
	Tolerance Limit (±unit)	0.2

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.1	
4	4.3	7.5
10	10.5	5.0
20	20.4	2.0
50	51.6	3.2
100	97.5	-2.5
	Tolerance Limit (±%)	10.0

Mr. Fung Lim Chee, Richard General Manager

Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd

Work Order:

HK1212871

Date of Issue:

17/05/2012

Client:

AECOM ASIA COMPANY LIMITED



Description:

Sonde

Brand Name:

YSI

Model No.:

6820 V2

Serial No.: Equipment No.: 12A101545 R1

Date of Calibration:

17 May, 2012

Date of next Calibration:

17 August, 2012

Parameters:

Conductivity

Method Ref: APHA (20th edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
142.6	150.0	5.2
6667	6162	-7.6
12890	12140	-5.8
58670	58500	-0.3
	Tolerance Limit (±%)	10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000; G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
6.13	6.28	0.15
7.66	7.56	-0.10
8.06	8.11	0.05
1	Tolerance Limit (±mg/L)	0.20

Salinity

Method Ref: APHA (21st edition), 25208

ethod Ref: APHA (21st edition), 252UB		
Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.09	***
10	9.58	-4 .2
20	19.16	-4.2
30	29.42	-1.9
30	29.42	
	Tolerance Limit (±%)	10.0

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
18.5	18.43	-0.1
27.0	26.68	~0.3
30.0	29.90	-0.1
	Tolerance Limit (°C)	2.0

Mr. Fung Lim Chee, Richard General Manager 7

Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd

ALS Environmental

Page 2 of 3

Work Order:
Date of Issue:

HK1212871

Client:

17/05/2012 AECOM ASIA COMPANY LIMITED



Description:

Sonde YSI

Brand Name: Model No.:

YSI 6820 V2

Serial No.:

12A101545

Equipment No.:

R1

Date of Calibration:

17 May, 2012

Date of next Calibration:

17 August, 2012

Parameters:

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.12	0.12
7.0	7.18	0.18
10.0	9,99	-0.01
	Tolerance Limit (±unit)	0.2

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
^	0.1	
0	4.2	5.0
10	10.7	7.0
20	20.2	1.0
50	51.5	3.0
100	99.4	-0.6
	Tolerance Limit (±%)	10.0

Mr. Fung Lim Chee, Richard General Manager -

Greater China & Hong Kong

Work Order:

HK1210014

Date of Issue:

20/04/2012

Client:

AECOM ASIA COMPANY LIMITED



Description:

YSI Sonde

Brand Name:

YSI

Model No.:

YSI 6820 - C - M

Serial No.:

W.026.29

Equipment No.:

W.026.29

Date of Calibration:

17 April, 2012

Date of next Calibration:

17 July, 2012

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Method Ren / R Thr (215t carton), 25105		
Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	152.6	3.9
6667	6720	0.8
12890	12194	-5.4
58670	52994	-9.7
	Tolerance Limit (%)	10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.87	5.01	0.14
5.61	5.69	0.08
7.64	7.76	0.12
	Tolerance Limit (±mg/L)	0.20

Salinity

Method Ref: APHA (21st edition), 2520B

Method Ref. AFHA (21st edition), 2320B					
Expected Read	ling (NTU)	isplayed Reading (NTU)	Tolerance (%)		
0		0.02			
10		9.96	-0.4		
20		18.24	-8.8		
30		27.38	-8.7		
		Tolerance Limit (±%)	10.0		

Mr Chan Kwok Fai, Godfrey Laboratory Manager Hong Kong

Work Order:

HK1210014

Date of Issue:

20/04/2012

Client:

AECOM ASIA COMPANY LIMITED

Description:

YSI Sonde

Brand Name:

YSI

Model No.:

YSI 6820 - C - M

Serial No.:

W.026.29

Equipment No.:

W.026.29

Date of Calibration:

17 April, 2012

Date of next Calibration:

17 July, 2012

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
18.0 27.0 31.5	18.11 27.52 31.26	0.1 0.5 -0.2
	Tolerance Limit (°C)	2.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
Expected Reading (NTO)	Displayed Reading (1110)	1010101100 (1)
0	0.1	 5.0
4	4.2	3.0
10	10.3	-3.5
20	19.3 50.2	0.4
50	101.3	1.3
100	101.5	1.5
	Tolerance Limit (±%)	10.0

Laboratory Manager - Hong Kong

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Mr Chan Kwok Fai Godfrey

Work Order:

HK1211773

Date of Issue:

10/05/2012

Client:

AECOM ASIA COMPANY LIMITED

Description:

pH Meter

Brand Name:

Thermo Orion

Model No.:

230A+

Serial No.:

Equipment No.:

020739

Date of Calibration:

W.039.05 08 May, 2012

Date of next Calibration:

08 August, 2012

Parameters:

pH Value

Method Ref: APHA 21st Ed. 4500H:B

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Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)			
4.0 7.0	3.99 6.94	-0.01 -0.06			
10.0	10.08	0.08			
	Tolerance Limit (±unit)	0.2			

Mr. Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

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