

Appendix V

Calibration Certificates



Certificate of Calibration

Certificate No:1056116QE6080246

Submitted By: C.L. ENVIRONMENTAL CO., LTD.
TOWNHOUSE 21 PERKINS ESTATE
KINGSTON, 19

Serial Number: QE6080246 Date Received: 9/20/2007
Customer ID: N/A Date Issued: 9/25/2007
Model: QC-10 CALIBRATOR Valid Until: 9/25/2008

Test Conditions:

Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

Model Conditions:

As Found: NONOPERATIONAL
As Left: IN TOLERANCE

SubAssemblies:

Description:

Serial Number:

Calibrated per Procedure:56V981

Reference Standard(s):

I.D. Number	Device	Last Calibration Date	Calibration Due
ET0000523	B&K / QUEST ENSEMBLE	9/5/2006	10/6/2007
S00335	FLUKE PM6666	5/11/2007	5/11/2009
T00230	FLUKE 45 MULTIMETER	3/20/2006	3/20/2008

Measurement Uncertainty:

+/- 2.6% ACOUSTIC (0.22DB)/- 1.4% VAC +/- 0.001% HZ
Estimated at 95% Confidence Level (k=2)

Calibrated By:


DREW NEVINSKI Service Technician

9/25/2007

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of Quest Technologies.

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Certificate of Calibration

Certificate No: 1056116CD6090005

Submitted By: C.L. ENVIRONMENTAL CO., LTD.
TOWNHOUSE 21 PERKINS ESTATE
KINGSTON, 19

Serial Number:	CD6090005	Date Received:	9/20/2007
Customer ID:	N/A	Date Issued:	9/25/2007
Model:	2900 SLM	Valid Until:	9/25/2008

Test Conditions:		Model Conditions:	
Temperature:	18°C to 29°C	As Found:	OUT OF TOLERANCE
Humidity:	20% to 80%	As Left:	IN TOLERANCE
Barometric Pressure:	890 mbar to 1050 mbar		

SubAssemblies:

Description:
MICROPHONE QE 7052 1/2 IN. ELECTRET
TYPE 2 PREAMP

Serial Number:

5002
N/A

Calibrated per Procedure: 56V996

Reference Standard(s):

I.D. Number	Device
ET0000523	B&K / QUEST ENSEMBLE

Last Calibration Date	Calibration Due
9/5/2006	10/6/2007

Measurement Uncertainty:

+/- 3.6% ACOUSTIC (0.3DB) +/- 1.4% VAC +/- 0.1% VDC
Estimated at 95% Confidence Level (k=2)

Calibrated By:


 DREW NEVINSKI Service Technician 9/25/2007

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Certificate of Calibration

Certificate No: 1056116HW6090020

Submitted By: C.L. ENVIRONMENTAL CO., LTD.
TOWNHOUSE 21 PERKINS ESTATE
KINGSTON, 19

Serial Number:	HW6090020	Date Received:	9/20/2007
Customer ID:	N/A	Date Issued:	9/25/2007
Model:	OB-100 FILTER	Valid Until:	9/25/2008

Test Conditions:	Model Conditions:
Temperature: 18°C to 29°C	As Found: IN TOLERANCE
Humidity: 20% to 80%	As Left: IN TOLERANCE
Barometric Pressure: 890 mbar to 1050 mbar	

SubAssemblies:
Description:

Serial Number:

Calibrated per Procedure: 59V735

Reference Standard(s):

I.D. Number	Device	Last Calibration Date	Calibration Due
ET0000523	B&K / QUEST ENSEMBLE	9/5/2006	10/6/2007

Measurement Uncertainty:

+/- 3.6% ACOUSTIC (0.3DB)
Estimated at 95% Confidence Level (k=2)

Calibrated By:  9/25/2007
DREW NEVINSKI Service Technician

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Certificate of Calibration

Certificate No: 1060571WNB100017

Submitted By:	ESL MANAGEMENT SOLUTIONS 20 WEST KINGS HOUSE ROAD KINGSTON, 10	Date Received:	5/7/2008
Serial Number:	WNB100017	Date Issued:	5/27/2008
Customer ID:		Valid Until:	5/27/2009
Model:	MULTILOG 2000 GAS MONITOR	Model Conditions:	
Test Conditions:		As Found:	OUT OF TOLERANCE
Temperature:	18 °C to 29 °C	As Left:	IN TOLERANCE
Humidity:	20% to 80%		
Barometric Pressure:	890 mbar to 1050 mbar		
SubAssemblies:			
Description/Measurement Uncertainty:		Serial Number:	
SENSOR LEL/±6%		JW002499	
SENSOR NH3/±17%		01.01746657102	
SENSOR SO2/±17%		01.05002233 124	

Estimated at 95% Confidence Level (k=2)

Calibrated per Procedure: 54V885

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
CC117690	SO2 CALIBRATION GAS	4/5/2007	2/27/2009
CC144815	NH3 CALIBRATION GAS	10/8/2007	10/7/2008
K25082	LEL CALIBRATION GAS	4/16/2008	6/4/2011

Calibrated By: *Michael Chilson* 5/27/2008
MICHAEL CHILSON Service Technician

Reviewed By: *Paul J. Jurek* 5/27/2008
Technical Manager/Deputy

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Certificate of Calibration

Certificate No: 1060571WNB100017

Submitted By: ESL MANAGEMENT SOLUTIONS
20 WEST KINGS HOUSE ROAD
KINGSTON, 10

Serial Number: WNB100017 **Date Received:** 5/7/2008

Customer ID: **Date Issued:** 5/27/2008

Model: MULTILOG 2000 GAS MONITOR **Valid Until:** 5/27/2009

Test Conditions: **Model Conditions:**

Temperature: 18 °C to 29 °C **As Found:** OUT OF TOLERANCE

Humidity: 20% to 80% **As Left:** IN TOLERANCE

Barometric Pressure: 890 mbar to 1050 mbar

SubAssemblies:

Description/Measurement Uncertainty: **Serial Number:**

SENSOR O2/±17% L06.12181679 038

SENSOR H2S/±17% 01.04917357 124

SENSOR NO2/±17% 01.12116349 038

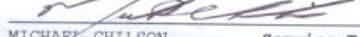
SENSOR CO (FILTERED)/±12% 02.04981559 124

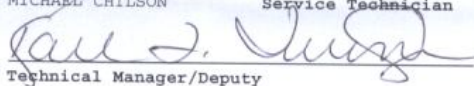
Estimated at 95% Confidence Level (k=2)

Calibrated per Procedure: 54V885

Reference Standard(s):

I.D. Number	Device	Last Calibration Date	Calibration Due
ATMOSPHERE	O2 CALIBRATION GAS	1/10/2005	1/10/2010
CC174436	NO2 CALIBRATION GAS	10/26/2006	9/20/2008
CC261880	H2S CALIBRATION GAS	2/29/2008	1/30/2009
CC62844	CO CALIBRATION GAS	4/16/2008	2/11/2013

Calibrated By:  5/27/2008
MICHAEL CHILSON **Service Technician**

Reviewed By:  5/27/2008
Paul J. Judge **Technical Manager/Deputy**

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Certificate of Calibration

Certificate No:1060571WNB100017

(A) indicates out of tolerance condition

<u>Test Type</u>			<u>As Found</u>	<u>As Left</u>	<u>Tolerance</u>
Sensor 1 Reading	A	Fail	Pass	N/A	
Sensor 2 Reading	A	Fail	Pass	N/A	
Sensor 3 Reading	A	Fail	Pass	N/A	
Sensor 4 Reading				N/A	

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Certificate of Calibration

Certificate No: 1060571WNB100017

(A) indicates out of tolerance condition

<u>Test Type</u>		<u>As Found As Left Tolerance</u>		
Sensor 1 Reading	A	Fail	Pass	N/A
Sensor 2 Reading	A	Fail	Pass	N/A
Sensor 3 Reading	A	Fail	Pass	N/A
Sensor 4 Reading	A	Fail	Pass	N/A

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ISO 9001 Certified

DR800 SERIES TEST CERTIFICATE

Model DR890

Part Number 48470-00 Serial Number 080190C66807

Inspected By DR 800 Team Date 01/09/2008

CHARACTERISTIC	STANDARD	ACTUAL
Visual Inspection	PASS/FAIL	PASS
Display Test	PASS/FAIL	PASS
Keyboard Test	PASS/FAIL	PASS
Data Transfer Adapter operation	PASS/FAIL	PASS
520 nm Stray Light	>3.500 Absorbance	4.453
520 nm Standard Gel	0.806 to 0.984 Absorbance	0.920
520 nm Blank Gel	-1.200 to -0.800 Absorbance	-0.914
610 nm Stray Light (DR850, DR890, PalmLab)	>3.500 Absorbance	4.550
610 nm Standard Gel (DR850, DR890, PalmLab)	0.913 to 1.115 Absorbance	0.961
420 nm Stray Light (DR890 & PalmLab)	>3.500 Absorbance	5.479
420 nm Standard Gel (DR890 & PalmLab)	0.200 to 0.600 Absorbance	0.323
560 nm Stray Light (DR890 & PalmLab)	>3.500 Absorbance	3.901
560 nm Standard Gel (DR890 & PalmLab)	0.630 to 0.770 Absorbance	0.710

"Test equipment used for the verification of Hach manufactured instruments is calibrated using standards traceable to National Institute of Standards and Technology (NIST) standards. Where such standards do not exist, the basis for calibration is documented."

Sustaining Engineering Approved By [Signature] Date 07/10/2008

Customer Name _____ P.O.# _____

Location _____ Hach Ref. # _____

ISO 9001 Certified

DR 2800
Certificate of Final Inspection



part no. serial no.	Gerätenummer, n°d'appareil Seriennummer, numéro de série	LPG422.99.00012 1203361
general function	allgemeine Funktion, fonction générale :	
touchscreen	Touchscreen, touchscreen	ok
interface USB	Schnittstelle USB, interface pour USB	ok
photometric data	Photometrische Werte, data photométrique:	
Water value 348 nm	Wasserwert, valeur d'eau :	
Nominal value absorbance	Sollwert Extinktion, absorbance valeur prévue :	0.050
Tolerance	Toleranz, tolérance:	0.045 ... 0.055
Actual value absorbance	Istwert Extinktion, absorbance valeur réelle :	0.049
wavelength accuracy	Wellenlängengenauigkeit, Précision de la longueur d'onde:	
inspection filter set	Prüffiltersatz, set de filtres de contrôle: # ...	002
test filter Ho	Prüffilter Ho, filtre test Ho:	
nominal value	Sollwert, valeur prévue :	360.9 nm
tolerance	Toleranz, tolérance:	358.9 ... 362.9 nm
actual value	Istwert, valeur réelle :	360.7 nm
test filter BG20/2 (Nd)	Prüffilter, filtre test BG20/2 (Nd)	
nominal value	Sollwert, valeur prévue :	807.0 nm
tolerance	Toleranz, tolérance:	805.0 ... 809.0 nm
actual value	Istwert, valeur réelle :	807.0 nm
photometrical accuracy 5-6nm	Photometrische Richtigkeit, Exactitude photométrique:	
inspection filter set	Prüffiltersatz, set de filtres de contrôle: # ...	002
cuvette NG5/2	Küvette NG5/2, cuve NG5/2	
nominal value absorbance	Sollwert Extinktion, absorbance valeur prévue:	0.620
tolerance	Toleranz, tolérance:	0.608 ... 0.632
actual value absorbance	Istwert Extinktion, absorbance valeur réelle :	0.620
cuvette NG9/1	Küvette NG9/1, cuve NG9/1	
nominal value absorbance	Sollwert Extinktion, absorbance valeur prévue:	1.456
tolerance	Toleranz, tolérance:	1.427 ... 1.485
actual value absorbance	Istwert Extinktion, absorbance valeur réelle :	1.456
straylight	Streulicht, Diffraction :	
at 340nm (with GG435/3):	bei 340nm, à 340 nm (GG435/3):	
nominal value absorbance	Sollwert Extinktion, absorbance valeur prévue:	> 2.8
actual value absorbance	Istwert Extinktion, absorbance valeur réelle :	4.8
date	Datum, date:	Apr 10, 2007
inspector	Bearbeiter, opérateur:	Fr. Petersen
sign	Unterschrift, signature :	

Please add this certificate to your documents.

Bitte verwahren Sie dieses Zertifikat bei Ihren Unterlagen auf.
S'il vous plaît, conservez scrupuleusement ce certificat dans vos archives.

HACH DR/Check™

Absorbance Standard

CERTIFICATE OF ANALYSIS

WL nm	Std No. 1 ABS Lot 12	Std No. 2 ABS Lot 12	Std No. 3 ABS Lot 12
420	0.608 ± 0.050	1.209 ± 0.100	1.789 ± 0.150
520	0.612 ± 0.050	1.233 ± 0.100	1.816 ± 0.150
560	0.596 ± 0.050	1.199 ± 0.100	1.754 ± 0.150
610	0.620 ± 0.050	1.237 ± 0.100	1.803 ± 0.150

- Certified at 25°C -

SIGNED: *Patrick J. Coleman*

for and on behalf of the Hach Company
NOTE: This certificate may be removed and affixed to a
laboratory notebook or other quality record. AR-1005-B

Kit Lot Number B218 Expiry Date: Dec 2009 27633-07A