

**SOUTHWEST RESEARCH INSTITUTE
CALIBRATION LABORATORY
MEMORANDUM**

October 6, 2008

To: DON BANNON DIV20 B51

From: Institute Calibration Laboratory

Subject: Status of Calibration Supplier

Manufacturer/Model: QUADTECH 7600

Description: LCR METER

Serial Number: 5158146

Asset Number: 011742

Work Order Number: 303083095

Date Calibrated: September 25, 2008

Supplier: HAYES INSTRUMENT SERVICE, BILLERICA MA - A2LA - 978 (

Remarks:

☒ Supplier is on the Approved Suppliers List (ASL).

☐ Supplier is not on the Approved Suppliers List.

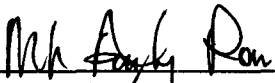
☐ Calibration is ISO 17025 accredited.

☒ Calibration is not ISO 17025 accredited.

☐ There is no known supplier to meet ISO 17025 accreditation at this time.

Please contact the Institute Calibration Laboratory, extension 5215, if you have any questions about the condition of this equipment or calibration documentation.

Attachment(s) 2


Reviewed by: ☐ srk ☐ mar ☐ wgh

Electronic Repair & Calibration



530 BOSTON ROAD (RTE. 3A)
BILLERICA, MA 01281
TEL. (978) 663-4800
FAX. (978) 663-3812
WEB: hayesinstruments.com

Certificate of Calibration

Submitted by: SOUTHWEST RESEARCH INSTITUTE
9303 WEST COMMERCE RD
SAN ANTONIO, TX 78238

Calibration Date: September 25, 2008
Due Date: September 25, 2009

Manufacturer: QUADTECH/GR

Model: 7600

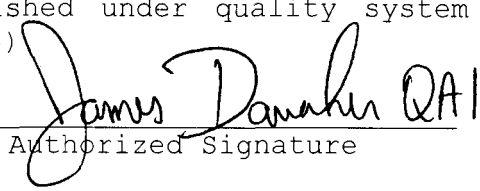
Description: PRECISION RLC METER

Serial Number: 5158146

Property Number: CE032711

The above unit was calibrated in accordance with purchase order requirements on the date noted above and was performing in accordance with the manufacturer's specifications at the time of release from this laboratory. This certification was performed using standards maintained by this laboratory, which are periodically certified traceable to the National Institute of Standards and Technology. The cycling and certification of all standards of measurement used by Hayes Instrument Service meet the requirements of ISO-9001:2000, MIL-STD-45662A, ISO/IEC 17025:2005, ISO-10012:1992 and ANSI/NCSL Z540-1-1994. The calibration standards used have an uncertainty error of no more than 1/4 of the tolerance of the equipment being calibrated, or have an accuracy that ensures the equipment being calibrated will be within required tolerances. (Accomplished under quality system manual, QM-100 dated 04/06/04 Rev. D2004)

STANDARD N.I.S.T Trace CERT#
DC Voltage VIA JOSEPHSON ARRAY
AC Voltage 2D7709
Resistance 071907
Frequency VLF Transmission
ON WWVB & LORAN C
Mass 268730
Dimensional 270003


Authorized Signature

Temperature & Humidity
72°F ± 5° 45% ± 25% R.H.

Received in tol X out tol ____
Returned in tol X out tol ____

5487

133 11/06

W.O. NO. 498267

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Hayes Instrument Service, Inc.

SUBMITTED BY	<u>SOUTH WEST RESEARCH</u>	CALIBRATION DATE	<u>SEPT 25, 08</u>
MANUFACTURER	<u>QUADTECH</u>	DUE DATE	<u>SEPT 25, 09</u>
MODEL NO	<u>7600</u>	CAL ENGINEER	<u>101</u>
DESCRIPTION	<u>PRECISION RLC METER</u>	CAL PROCEDURE	<u>MFG MANUAL</u>
SERIAL NO.	<u>5158146</u>	PROPERTY NO.	<u>CEO 32911</u>

H.I.S. Ref # 775, 716, 471, 1079, 1281, 1417

TEMP & HUMIDITY

APPROVED BY JH CALIBRATION RECORD71° 40%

FUNCTION TESTED	RANGE	STANDARD VALUE	ACTUAL MEAS. VALUE	AFTER ADJUST MEAS. VALUE	TOLERANCE
SELF TEST		CHECK	<u>PASS</u>	<u>NO ADJ</u>	PASS TEST
TEST FREQUENCY		PASS	<u>PASS</u>		PASS TEST
TEST LEVEL		PASS	<u>PASS</u>		PASS TEST
INDUCTANCE		100.00uH	<u>100.01</u>		99.90 - 100.10
		1.0000mH	<u>1.0000</u>		.9990 - 1.0010
		10.000mH	<u>10.000</u>		9.990 - 10.010
		100.00mH	<u>100.00</u>		99.90 - 100.10
		1.0000H	<u>1.0000</u>		.9990 - 1.0010
		10.000H	<u>10.000</u>		9.990 - 10.010
"Q"		CHECK	<u>PASS</u>		PASS TEST
CAPACITANCE		100.00pF	<u>100.00</u>		99.90 - 100.10
		1.0000nF	<u>1.0000</u>		.9990 - 1.0010
		1.0000uF	<u>1.0000</u>		.9990 - 1.0010
		10.000uF	<u>10.000</u>		9.990 - 10.010
		100.00uF	<u>100.00</u>		99.90 - 100.10
DISSIPATION		CHECK	<u>PASS</u>		PASS TEST
RESISTANCE		100.00Ω	<u>100.01</u>		99.80 - 100.20
		10.000KΩ	<u>10.000</u>		9.980 - 10.020
		1.0000MΩ	<u>1.0000</u>		.9980 - 1.0020

H.I.S. REFERENCE STANDARDS

Mfg	Description	Model #	Serial #	Cal Date	Cal Cycle
GENERAL RADIO	STANDARD CAPACITORS	1409 SERIES	----	<u>6-08</u>	12 mo
GENERAL RADIO	STANDARD INDUCTORS	1482 SERIES	----	<u>5-08</u>	6 mo
ELECTRO SCIENTIFIC INDUSTRIES	STANDARD RESISTOR	SR1 SERIES	----	<u>8-08</u>	6 mo
HEWLETT PACKARD	DIGITAL MULTIMETER	3458A	2823A14064	<u>4-08</u>	6 mo
GENERAL RADIO	CAPACITORS	1403 SERIES	<u>10-07</u>	12 mo
HIS	QUADTECH CAL KIT	7000-1	<u>11-06</u>	24 mo

