

**SOUTHWEST RESEARCH INSTITUTE  
CALIBRATION LABORATORY  
MEMORANDUM**

**August 2, 2007**

**To:** DON BANNON DIV20 B57

**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:** 303075621

**Date Calibrated:** July 27, 2007

**Supplier:** HAYES INSTRUMENT SERVICE, BILLERICA MA - A2LA - 9786

**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



## Certificate Of Calibration

Submitted by: SOUTHWEST RESEARCH INSTITUTE  
Calibration Date: JULY 27, 2007  
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-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. D 2004)

STANDARD N.I.S.T Trace CERT#  
AC Voltage VIA JOSEPHSON ARRAY  
AC Voltage 2D7709  
Resistance 270155  
Frequency VLF Transmission  
ON WWVB & LORAN C  
Mass 261559  
Dimensional 267216

  
Authorized Signature

Temperature & Humidity  
72 °F 45% ± 15% RH.

Received in tol ✓ out tol \_\_\_\_\_  
Returned in tol ✓ out tol \_\_\_\_\_

This certificate may not be reproduced except in full, without the written approval of Hayes Instruments.

*Hayes Instrument Service, Inc.*

SUBMITTED BY SOUTHWEST RESEARCH INST.  
 MANUFACTURER QUADTECH  
 MODEL NO 7600  
 DESCRIPTION PRECISION RLC METER  
 SERIAL NO. 5158146

CALIBRATION DATE July 27, 07  
 DUE DATE July 27, 08  
 CAL ENGINEER 101  
 CAL PROCEDURE MFG MANUAL  
 PROPERTY NO. CE032711

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

TEMP &amp; HUMIDITY

APPROVED BY JA CALIBRATION RECORD77° 54%

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>9.999</u>		9.990 - 10.010
		100.00uF	<u>99.98</u>		99.90 - 100.10
DISSIPATION		CHECK	<u>PASS</u>		PASS TEST
RESISTANCE		100.00Ω	<u>100.00</u>		99.80 - 100.20
		10.000KΩ	<u>9.999</u>		9.980 - 10.020
		1.0000MΩ	<u>.9998</u>		.9980 - 1.0020

## H.I.S. REFERENCE STANDARDS

Mfg	Description	Model #	Serial #	Cal Date	Cal Cycle
GENERAL RADIO	STANDARD CAPACITORS	1409 SERIES	----	<u>6-07</u>	12 mo
GENERAL RADIO	STANDARD INDUCTORS	1482 SERIES	----	<u>5-07</u>	6 mo
ELECTRO SCIENTIFIC INDUSTRIES	STANDARD RESISTOR	SR1 SERIES	----	<u>2-07</u>	6 mo
HEWLETT PACKARD	DIGITAL MULTIMETER	3458A	2823A14064	<u>4-07</u>	6 mo
GENERAL RADIO	CAPACITORS	1403 SERIES	.....	<u>10-06</u>	12 mo
HIS	QUADTECH CAL KIT	7000-1	.....	<u>11-06</u>	24 mo