

**SOUTHWEST RESEARCH INSTITUTE  
CALIBRATION LABORATORY  
MEMORANDUM**

**August 11, 2006**

**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:** 303069935

**Date Calibrated:** August 8, 2006

**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

Electronic Repair &amp; Calibration

530 BOSTON ROAD (RTE. 3A)  
BILLERICA, MA 01821  
TEL. (978) 663-4800  
FAX (978) 663-3812

ISO CERTIFIED



## Certificate Of Calibration

Submitted by: SOUTHWEST RESEARCH INSTITUTE  
Calibration Date: AUGUST 8, 2006  
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)

Catherine Danabu #43

Authorized Signature

Temperature &amp; Humidity

71 °F 45% ± 15% R.H.Received in tol    out tol     
Returned in tol    out tol   

STANDARD	N.I.S.T	CERT#
DC Voltage	VIA JOSEPHSON ARRAY	
AC Voltage		266615
Resistance		270155
Frequency	VLF Transmission	
	ON WWVB & LORAN C	
Mass		256080
Dimensional		267216

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

5487

101 11/02

# Hayes Instrument Service, Inc.

W.O. NO. 427863

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SUBMITTED BY Southwest Research Inst CALIBRATION DATE Aug 8, 06

MANUFACTURER QUADTECH DUE DATE Aug 8, 07

MODEL NO. 7600 CALIBRATION ENGINEER 101

DESCRIPTION PRECISION RLC METER CAL. PROCEDURE MFG MANUAL

SERIAL NO. 5158146 PROPERTY NO. CEO32711

H.I.S. REF# 775, 716, 471, 1079, 1281

TEMP & HUMIDITY  
71° 55%

APPROVED BY 77

## CALIBRATION RECORD

FUNCTION TESTED	RANGE	STANDARD VALUE	ACTUAL MEAS. VALUE	AFTER ADJUST MEAS. VALUE	TOLERANCE
SELF TEST		CHECK	PASS	NO ADJ	PASS TEST
TEST FREQUENCY		PASS	PASS	↓	PASS TEST
TEST LEVEL		PASS	PASS		PASS TEST
INDUCTANCE		100.00uH	100.02		99.90 - 100.10
		1.0000mH	1.0001		.9990 - 1.0010
		10.000mH	10.001		9.990 - 10.010
		100.00mH	100.00		99.90 - 100.10
		1.0000H	1.0000		.9990 - 1.0010
"Q"		10.000H	9.999		9.990 - 10.010
		CHECK	PASS		PASS TEST
	CAPACITANCE	100.00pF	99.99		99.90 - 100.10
		1.0000nF	.9999		.9990 - 1.0010
		1.0000uF	1.0000		.9990 - 1.0010
		10.000uF	10.000		9.990 - 10.010
		100.00uF	100.02		99.90 - 100.10
	DISSIPATION		CHECK		PASS
RESISTANCE		100.00Ω	100.02		99.80 - 100.20
		10.000KΩ	10.002		9.980 - 10.020
		1.0000MΩ	1.0000		.9980 - 1.0020
H.I.S. REFERENCE STANDARDS				CAL DATE	CYCLE
GR	STANDARD CAPACITORS	1409 SERIES	-----	6-06	12 MO
GR	STANDARD INDUCTORS	1482 SERIES	-----	5-06	6 MO
ESI	STANDARD RESISTOR	SR1 SERIES	-----	2-06	6 MO
HP	DIGITAL MULTIMETER	3458A	2823A14064	4-06	6 MO
GR	STANDARD CAPACITORS	1403 SERIES	-----	10-05	12 MO

