

**SOUTHWEST RESEARCH INSTITUTE
CALIBRATION LABORATORY
MEMORANDUM**

July 5, 2007

To: DON BANNON DIV20 B57

From: Institute Calibration Laboratory

Subject: Status of Calibration Supplier

Manufacturer/Model: QUADTECH 7600

Description: LCR METER

Serial Number: 3164285

Asset Number: 010232

Work Order Number: 303074749

Date Calibrated: June 20, 2007

Supplier: HAYES INSTRUMENT SERVICE, BILLERICA MA - A2LA - 978 6

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) *J*

Electronic Repair & 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: JUNE 20, 2007
Manufacturer: QUADTECH/GR
Model: 7600
Description: PRECISION RLC METER
Serial Number: 3164285
Property Number:

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#
DC 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 5 out tol _____
Returned in tol 5 out tol _____

5487

133 11/06

W.O. NO. 454369

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Hayes Instrument Service, Inc.

SUBMITTED BY SOUTHWEST RESEARCH
 MANUFACTURER QUADTECH
 MODEL NO 7600
 DESCRIPTION PRECISION RLC METER
 SERIAL NO. 3164285

CALIBRATION DATE 6-20-07
 DUE DATE 6-20-08
 CAL ENGINEER 101
 CAL PROCEDURE MFG MANUAL
 PROPERTY NO. _____

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

TEMP & HUMIDITY

APPROVED BY ZF

CALIBRATION RECORD

72° 48%

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	100.01		99.90 - 100.10	
		1.0000mH	1.0000		.9990 - 1.0010	
		10.000mH	10.001		9.990 - 10.010	
		100.00mH	100.01		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		100.00	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	
DISSIPATION		100.00uF	99.99		99.90 - 100.10	
		CHECK	PASS		PASS TEST	
	RESISTANCE		100.00Ω	100.01	99.80 - 100.20	
		10.000KΩ	10.001	9.980 - 10.020		
		1.0000MΩ	.9998	.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

