

SOUTHWEST

RESEARCH

INSTITUTE

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To: Don Barron, Div 20, Ext 5118

From: Walt Hill, Manager
Institute Calibration Laboratory

Date: Jun. 04, 2008

Subject: Out-of-tolerance Notice

The purpose of this notice is to alert you of a condition, which may have caused erroneous measurements affecting safety or the quality of products or services your organization provides. The attached as-found readings are provided for your evaluation to determine if the instrument listed below had an impact and if further action is required.

Your review/evaluation should be conducted in accordance with your organizational quality policy and procedural requirements. Please contact the Institute Calibration Laboratory if you have questions at 5215.

Manufacturer: Keithley **Model:** 485

Description: Picoammeter **Serial Number:** 509163

Asset Number: 001437 **User ID Number:**

Last Calibration: May 14, 2007

Date Received for Service: May. 08, 2008 **Work Order Number:** 303081001

Service Requested: Scheduled calibration

Remarks: Out of tol. See Measurement Report.

OUT OF TOLERANCE

OUT OF TOLERANCE

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303081001	Mfr:	Keithley	Technician:	blt
Asset No:	001437	Model:	485	Cal Date:	04-Jun-08
Serial No:	509163	Type:	Picoammeter		

Remarks:

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found
DC Current	mAmp	mAmp	mAmp	mAmp	mAmp	Result
	1.9000	1.9000	0.0000	0.0020	0.00084	Pass
	uAmp	uAmp	uAmp	uAmp	uAmp	
	190.00	190.04	0.04	0.20	0.00084	Pass
	19.000	19.002	0.002	0.020	0.00084	Pass
	1.9000	1.9004	0.0004	0.0030	0.00084	Pass
	nAmp	nAmp	nAmp	nAmp	nAmp	
	190.00	190.02	0.02	0.39	0.00084	Pass
	19.000	19.124	0.124	0.077	0.00084	Fail
	1.9000	1.9099	0.0099	0.0080	0.00084	Fail
	mAmp	mAmp	mAmp	mAmp	mAmp	
	-1.9000	-1.9001	-0.0001	0.0020	0.00084	Pass
	uAmp	uAmp	uAmp	uAmp	uAmp	
	-190.00	-190.03	-0.03	0.20	0.00084	Pass
	-19.000	-19.002	-0.002	0.020	0.00084	Pass
	-1.9000	-1.9003	-0.0003	0.0030	0.00084	Pass
	nAmp	nAmp	nAmp	nAmp	nAmp	
	-190.00	-190.00	0.00	0.39	0.00084	Pass
	-19.000	-19.113	-0.113	0.077	0.00084	Fail
	-1.9000	-1.9092	-0.0092	0.0080	0.00084	Fail

END OF REPORT



SOUTHWEST RESEARCH INSTITUTE®

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-4834



Calibration Laboratory
Certificate #0972-01

Certificate of Calibration

Submitted By: DIV20

Address: B51

Contact: DON BANNON

Manufacturer / Model: KEITHLEY / 485

Description: PICOAMMETER

Serial No: 509163

Asset No: 001437

Procedure: KEITHLEY 485 & 486 - 22 MAY 07

Work Order: 303081001

Date Issued: Jun 4, 2008

Calibration Date: Jun 4, 2008

***Calibration Due:** Jun 4, 2009

Calibration Location: Bldg. 64

Environment: Temp. 74.0°F Hum. 40 %RH

****Data Type:** AS-LEFT

DivID/Location: N/A

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 2005, ANSI/NCSL Z540-1-1994 and relevant requirements of the ISO 9000-2000 standard. This certificate shall not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. This certificate shall not be used to claim product endorsement by Southwest Research Institute, American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government. Results of this calibration relate only to the instrument described above at the time of calibration and does not imply any long term stability of the instrument.

*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. **Found/Left = adjustment and/or repair was not required, As Left = adjusted and/or repaired was required. The client has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance. See Remarks or attached Measurement Report with the same Work Order number for data.

Reported uncertainty calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM) and represents an expanded uncertainty with a coverage factor of k=2 to approximate a 95% confidence level.

Remarks: None

Standards Used

Asset No.	Serial No.	Manufacturer	Model	Description	Cal Due
009829	A20602851959A	ESI	SR1050-10M	DECADE RESISTOR	Feb 27, 09
010748	20709891030E	ESI	SR1030 10 KOHM/	STANDARD RESISTOR	Apr 22, 09
000201	5195014	FLUKE	5725A	AMPLIFIER	Aug 12, 08
000182	5200003	FLUKE	5700A/EP	CALIBRATOR	Aug 12, 08

Reviewed by: srk () mar () wgh

Measurements by: Bob Trollinger
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303081001	Mfr:	Keithley	Technician:	blt
Asset No:	001437	Model:	485	Cal Date:	04-Jun-08
Serial No:	509163	Type:	Picoammeter		

Remarks:
Adjusted nAmp range.

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Left
DC Current	mAmp	mAmp	mAmp	mAmp	mAmp	Result
	1.9000	1.9000	0.0000	0.0020	0.00084	Pass
	uAmp	uAmp	uAmp	uAmp	uAmp	
	190.00	190.04	0.04	0.20	0.00084	Pass
	19.000	19.002	0.002	0.020	0.00084	Pass
	1.9000	1.9003	0.0003	0.0030	0.00084	Pass
	nAmp	nAmp	nAmp	nAmp	nAmp	
	190.00	190.02	0.02	0.39	0.00084	Pass
	19.000	18.999	-0.001	0.077	0.00084	Pass
	1.9000	1.8985	-0.0015	0.0080	0.00084	Pass
	mAmp	mAmp	mAmp	mAmp	mAmp	
	-1.9000	-1.9001	-0.0001	0.0020	0.00084	Pass
	uAmp	uAmp	uAmp	uAmp	uAmp	
	-190.00	-190.03	-0.03	0.20	0.00084	Pass
	-19.000	-19.002	-0.002	0.020	0.00084	Pass
	-1.9000	-1.9003	-0.0003	0.0030	0.00084	Pass
	nAmp	nAmp	nAmp	nAmp	nAmp	
	-190.00	-190.00	0.00	0.39	0.00084	Pass
	-19.000	-18.984	0.016	0.077	0.00084	Pass
	-1.9000	-1.8927	0.0073	0.0080	0.00084	Pass

END OF REPORT