SOUTHWEST RESEARCH INSTITUTE®

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

Certificate of Calibration

ACCREDITED
Calibration Laboratory
Certificate #0972-01

Submitted By: DIV20
Address: B51
Contact: DON BANNON
Manufacturer / Model: FLUKE / 54 II
Description: THERMOCOUPLE THERMOMETER
Serial No: 90810070
Asset No: 012159
Procedure: DIGITAL THERMOMETERS - 17 MAR 08

Work Order: 303080796
Date Issued: Apr 29, 2008
Calibration Date: Apr 29, 2008
***Calibration Due:** Apr 29, 2009
Calibration Location: Bldg. 64
Environment: Temp. 74.0°F Hum. 40 %RH
****Data Type:** FOUND-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: Calibrated Type JKTE Only

Standards Used

Asset No.	Serial No.	Manufacturer	Model	Description	Cal Due
004164	6380025	FLUKE	5500A/SC300	CALIBRATOR	Aug 24, 08

Reviewed by: ( ) srk (✓) mar ( ) wgh

Measurements by: Bob Trollinger
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303080796	Mfr:	Fluke	Technician:	blt
Asset No:	012159	Model:	54 II		
Serial No:	90810070	Type:	Temperature Meter	Cal Date:	29-Apr-08
Remarks:					
Calibrated Type JKTand E only.					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Type J	°F	°F	°F	°F	°F	Result
	-300	-299.5	0.5	1.1	0.57	Pass
	110	110.0	0.0	0.6	0.31	Pass
	525	525.1	0.1	0.8	0.37	Pass
	940	939.9	0.1	1.0	0.37	Pass
	1350	1350	0.0	1.2	0.37	Pass
	°C	°C	°C	°C	°C	
	-200	-199.6	0.4	0.7	0.33	Pass
	40	40.1	0.1	0.3	0.21	Pass
	275	275.0	0.0	0.4	0.32	Pass
	510	510.0	0.0	0.6	0.32	Pass
	750	749.9	-0.1	0.7	0.32	Pass
Type K	°F	°F	°F	°F	°F	
	-300	-299.1	0.9	1.1	0.57	Pass
	390	390.1	0.1	0.7	0.55	Pass
	1075	1075	0.0	1.0	0.55	Pass
	1760	1760	0.0	1.4	0.55	Pass
	2450	2450	0.0	1.7	0.84	Pass
	°C	°C	°C	°C	°C	
	-150	-149.7	0.3	0.6	0.40	Pass
	210	210.0	0.0	0.4	0.32	Pass
	575	575.0	0.0	0.6	0.32	Pass
	940	939.9	-0.1	0.8	0.32	Pass
	1300	1300	0.0	1.0	0.47	Pass
Type T	°F	°F	°F	°F	°F	
	-370	-369.1	0.9	2.2	0.57	Pass
	0	0.1	0.1	0.5	0.55	Pass
	212	212.1	0.1	0.6	0.55	Pass
	392	392.0	0.0	0.7	0.55	Pass
	730	729.9	0.1	0.9	0.84	Pass
	°C	°C	°C	°C	°C	
	-225	-224.4	0.6	1.4	0.40	Pass
	32	32.1	0.1	0.3	0.32	Pass
	100	100.1	0.1	0.4	0.32	Pass
	200	200.0	0.0	0.4	0.32	Pass
	390	390.0	0.0	0.5	0.47	Pass

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Measurement Report

Work Order:	303080796	Mfr:	Fluke	Technician:	blt
Asset No:	012159	Model:	54 II		
Serial No:	90810070	Type:	Temperature Meter	Cal Date:	29-Apr-08

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Type E	°F	°F	°F	°F	°F	Result
	-230	-229.9	0.1	0.8	0.57	Pass
	32	31.9	0.1	0.3	0.55	Pass
	100	99.9	0.1	0.4	0.55	Pass
	900	899.7	0.3	0.8	0.55	Pass
	1800	1800	0.0	1.2	0.84	Pass
	°C	°C	°C	°C	°C	
	-145	-144.8	0.2	0.7	0.40	Pass
	0	0.0	0.0	0.5	0.32	Pass
	40	40.0	0.0	0.5	0.32	Pass
	500	499.9	-0.1	0.8	0.32	Pass
	950	949.9	-0.1	1.0	0.47	Pass
Difference	°F	°F	°F	°F	°F	
T1-T2	0	-0.3	-0.3	1.0	.012	Pass
	°C	°C	°C	°C	°C	
T1-T2	0	0.0	0.0	0.6	.012	Pass
T2 Type J	°F	°F	°F	°F	°F	
	-300	-299.4	0.6	1.1	0.57	Pass
	110	110.0	0.0	0.6	0.31	Pass
	525	525.1	0.1	0.8	0.37	Pass
	940	939.9	0.1	1.0	0.37	Pass
	1350	1350.0	0.0	1.2	0.37	Pass
	°C	°C	°C	°C	°C	
	-200	-199.5	0.5	0.7	0.33	Pass
	40	40.2	0.2	0.3	0.21	Pass
	275	275.1	0.1	0.4	0.32	Pass
	510	510.0	0.0	0.6	0.32	Pass
	750	749.9	-0.1	0.7	0.32	Pass
Type K	°F	°F	°F	°F	°F	
	-300	-299.2	0.8	1.1	0.57	Pass
	390	390.1	0.1	0.7	0.55	Pass
	1075	1075.0	0.0	1.0	0.55	Pass
	1760	1760.0	0.0	1.4	0.55	Pass
	2450	2450.0	0.0	1.7	0.84	Pass
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	-150	-149.5	0.5	0.6	0.40	Pass
	210	210.1	0.1	0.4	0.32	Pass
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Measurement Report

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Serial No:	90810070	Type:	Temperature Meter	Cal Date:	29-Apr-08

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	100	100.1	0.1	0.4	0.32	Pass
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	390	389.9	-0.1	0.5	0.47	Pass
Type E	°F	°F	°F	°F	°F	
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	32	32.1	0.1	0.3	0.55	Pass
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	950	949.9	-0.1	1.0	0.47	Pass

END OF REPORT