



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: B57

Contact: DON BANNON

Manufacturer / Model: FLUKE / 52 II

Description: THERMOCOUPLE THERMOMETER

Serial No: 85480050

Asset No: 010636

Procedure: DIGITAL THERMOMETERS - 6 NOV 07

Work Order: 303078040

Date Issued: Dec 19, 2007

Calibration Date: Dec 19, 2007

***Calibration Due:** Dec 19, 2008

Calibration Location: Bldg. 64

Environment: Temp. 73.0°F Hum. 45 %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.

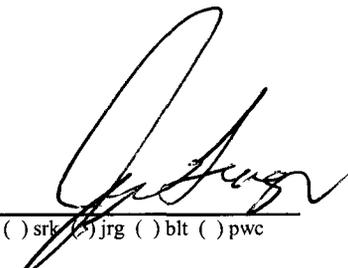
*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. **Found/Left = adjustment and/or repair was not required, As Left = adjusted and/or repaired was required. The client has sole responsibility 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: None

Standards Used

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


Reviewed by: () wgh () srl (x) jrg () blt () pwc
Metrology Technician


Measurements by: Mark Romerd
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303078040	Mfr:	Fluke	Technician:	Mark Romero
Asset No:	010636	Model:	52 II	Cal Date:	19-Dec-07
Serial No:	85480050	Type:	Temperature Meter		
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Type J	°F	°F	°F	°F	°F	Result
	-300	-299.7	0.3	1.1	0.57	Pass
	110	109.9	0.1	0.6	0.31	Pass
	525	524.8	0.2	0.8	0.37	Pass
	940	939.6	0.4	1.0	0.37	Pass
	1350	1350	0.0	1.2	0.37	Pass
	°C	°C	°C	°C	°C	
	-200	-199.7	0.3	0.7	0.33	Pass
	40	40.0	0.0	0.3	0.21	Pass
	275	275.0	0.0	0.4	0.32	Pass
	510	509.9	-0.1	0.6	0.32	Pass
	750	749.8	-0.2	0.7	0.32	Pass
Type K	°F	°F	°F	°F	°F	
	-300	-299.1	0.9	1.1	0.57	Pass
	390	389.8	0.2	0.7	0.55	Pass
	1075	1074	1.0	1.0	0.55	Pass
	1760	1759	1.0	1.4	0.55	Pass
	2450	2449	1.0	1.7	0.84	Pass
	°C	°C	°C	°C	°C	
	-150	-149.8	0.2	0.6	0.40	Pass
	210	209.8	-0.2	0.4	0.32	Pass
	575	574.6	-0.4	0.6	0.32	Pass
	940	939.5	-0.5	0.8	0.32	Pass
	1300	1299	-1.0	1.0	0.47	Pass
Type T	°F	°F	°F	°F	°F	
	-370	-368.6	1.4	2.2	0.57	Pass
	0	-0.1	0.1	0.5	0.55	Pass
	212	211.8	0.2	0.6	0.55	Pass
	392	391.7	0.3	0.7	0.55	Pass
	730	729.5	0.5	0.9	0.84	Pass
	°C	°C	°C	°C	°C	
	-225	-224.3	0.7	1.4	0.40	Pass
	32	32.0	0.0	0.3	0.32	Pass
	100	99.9	-0.1	0.4	0.32	Pass
	200	199.9	-0.1	0.4	0.32	Pass
	390	389.8	-0.2	0.5	0.47	Pass

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303078040	Mfr:	Fluke	Technician:	Mark Romero
Asset No:	010636	Model:	52 II	Cal Date:	19-Dec-07
Serial No:	85480050	Type:	Temperature Meter		

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Type E	°F	°F	°F	°F	°F	Result
	-230	-229.8	0.2	0.8	0.57	Pass
	32	31.8	0.2	0.3	0.55	Pass
	100	99.7	0.3	0.4	0.55	Pass
	900	899.3	0.7	0.8	0.55	Pass
	1800	1799	1.0	1.2	0.84	Pass
	°C	°C	°C	°C	°C	
	-145	-144.8	0.2	0.7	0.40	Pass
	0	-0.1	-0.1	0.5	0.32	Pass
	40	39.9	-0.1	0.5	0.32	Pass
	500	499.7	-0.3	0.8	0.32	Pass
	950	949.5	-0.5	1.0	0.47	Pass
Difference	°F	°F	°F	°F	°F	
T1-T2	0	0.0	0.0	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	-299.5	0.5	1.1	0.57	Pass
	110	109.9	0.1	0.6	0.31	Pass
	525	524.7	0.3	0.8	0.37	Pass
	940	939.5	0.5	1.0	0.37	Pass
	1350	1350.0	0.0	1.2	0.37	Pass
	°C	°C	°C	°C	°C	
	-200	-199.6	0.4	0.7	0.33	Pass
	40	39.9	-0.1	0.3	0.21	Pass
	275	274.9	-0.1	0.4	0.32	Pass
	510	509.8	-0.2	0.6	0.32	Pass
	750	749.7	-0.3	0.7	0.32	Pass
Type K	°F	°F	°F	°F	°F	
	-300	-299.2	0.8	1.1	0.57	Pass
	390	389.8	0.2	0.7	0.55	Pass
	1075	1074.0	1.0	1.0	0.55	Pass
	1760	1759.0	1.0	1.4	0.55	Pass
	2450	2449.0	1.0	1.7	0.84	Pass
	°C	°C	°C	°C	°C	
	-150	-150.0	0.0	0.6	0.40	Pass
	210	209.8	-0.2	0.4	0.32	Pass
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		-230	-229.5	0.5	0.8	0.57	Pass
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°C		°C	°C	°C	°C		
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0		0.0	0.0	0.5	0.32	Pass	
40		39.9	-0.1	0.5	0.32	Pass	
500		499.7	-0.3	0.8	0.32	Pass	
950		949.6	-0.4	1.0	0.47	Pass	

END OF REPORT