

**To:** Don Bannon, Div 20, Ext 5118

**From:** Walt Hill, Metrology Group Leader  
Institute Calibration Laboratory

**Date:** Apr. 18, 2007

**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.

When the as-found results are near the specification limit, +/- a margin less than the measurement uncertainty, it is not possible to state in-tolerance or out-of-tolerance with a 95% level of confidence. It is the Institute Calibration Laboratory policy that the client is made aware of this situation because the end-user is taking some of the risk that the instrument listed below may not meet the end-user measurement requirements.

Your review/evaluation should be conducted in accordance with your organizational quality policy and procedural requirements. If we can be of further assistance, please contact the Calibration Laboratory at 522-5215.

**Manufacturer:** Vaisala **Model:** HMP77B

**Description:** Humidity/Temp Meter

**Serial Number:** Z0750005

**Asset Number:** 10701 **User ID Number:**

**Last Calibration:** April 11, 2006

**Date Received for Service:** Mar. 30, 2007 **Work Order Number:** 303073837

**Service Requested:** Scheduled calibration

**Remarks:** Humidity out of tol. See Measurement Report

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303073837	Mfr:	Vaisala	Technician:	blt
Asset No:	010701	Model:	HMP77B	w- MI70 Meter	
Serial No:	Z0750005	Type:	Temp/Humidity Meter		Cal Date:
Remarks:	Calibrated with Vaisala MI70 SN Z0730015				
	Per customer Limits set to +/-1.0°C				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found
Humidity	%RH	%RH	%RH	%RH	%RH	Result
at 25 °C	20.30	20.00	-0.30	2.0	0.58	Pass
	40.05	40.01	-0.04	2.0	0.58	Pass
	59.99	59.46	-0.53	2.0	0.58	Pass
	80.02	78.52	-1.50	2.0	0.58	Pass
Temperature	° C	° C	° C	° C	° C	
25 °C at %RH	25.049	24.92	-0.13	1	0.062	Pass
Set Points	25.124	25.01	-0.11	1	0.062	Pass
	25.158	25.04	-0.12	1	0.062	Pass
	25.490	25.35	-0.14	1	0.062	Pass
Humidity	%RH	%RH	%RH	%RH	%RH	
at 50 °C	20.19	19.95	-0.24	2.0	0.58	Pass
	40.41	40.61	0.20	2.0	0.58	Pass
	59.98	59.65	-0.33	2.0	0.58	Pass
	79.88	77.79	-2.09	2.0	0.58	Fail
Temperature	° C	° C	° C	° C	° C	
50 °C at %RH	48.712	48.46	-0.25	1	0.062	Pass
Set Points	48.718	48.47	-0.25	1	0.062	Pass
	48.694	48.41	-0.28	1	0.062	Pass
	48.533	48.47	-0.06	1	0.062	Pass
Humidity	%RH	%RH	%RH	%RH	%RH	
at 70 °C	19.99	19.49	-0.50	2.0	0.58	Pass
	39.96	39.72	-0.24	2.0	0.58	Pass
	59.95	59.35	-0.60	2.0	0.58	Pass
	79.87	76.56	-3.31	2.0	0.58	Fail
Temperature	° C	° C	° C	° C	° C	
70 °C at %RH	67.821	67.35	-0.47	1	0.062	Pass
Set Points	67.781	67.40	-0.38	1	0.062	Pass
	67.945	67.60	-0.34	1	0.062	Pass
	67.954	67.79	-0.16	1	0.062	Pass

END OF REPORT



# SOUTHWEST RESEARCH INSTITUTE®

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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:** VAISALA / HMP77B

**Description:** HUMIDITY/TEMPERATURE PROBE

**Serial No:** Z0750005

**Asset No:** 010701

**Procedure:** HUMIDITY-DEW POINT - 19 MAY 2006

**Work Order:** 303073837

**Date Issued:** Apr 20, 2007

**Calibration Date:** Apr 20, 2007

**\*Calibration Due:** Apr 20, 2008

**Calibration Location:** Bldg. 64

**Environment:** Temp. 73.0°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:** Calibrated as a system with Vaisala MI70 Indicator S/N Z0730015, AN 010699

### Standards Used

Asset No.	Serial No.	Manufacturer	Model	Description	Cal Due
009414	A25788	HART SCIENTIFIC	1502A	TEMPERATURE READOUT	Oct 05, 07
010692	632656	HART SCIENTIFIC	5618	RTD (385)	Oct 05, 07
006404	9806123	THUNDER SCIENTIFIC	2500	HUMIDITY GENERATOR	Jun 06, 07

Reviewed by: ( ) wgh ( / ) srk ( ) jrg ( ) blt ( ) pwc

Metrology Technician

m:\a2la1.rpt Rev date August 15, 2005

Measurements by: Bob Trollinger

Metrology Technician

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303073837	Mfr:	Vaisala	Technician:	blt	
Asset No:	010701	Model:	HMP77B	w- MI70 Meter		
Serial No:	Z0750005	Type:	Temp/Humidity Meter		Cal Date:	20-Apr-07

Remarks: Calibrated with Vaisala MI70 SN Z0730015  
Per customer Limits set to +/-1.0°C

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Left
Humidity	%RH	%RH	%RH	%RH	%RH	Result
at 25 °C	20.00	20.28	0.28	2.0	0.58	Pass
	40.00	41.01	1.01	2.0	0.58	Pass
	60.00	60.95	0.95	2.0	0.58	Pass
	79.76	79.88	0.12	2.0	0.58	Pass
Temperature	° C	° C	° C	° C	° C	
25 °C at %RH	25.096	25.00	-0.10	1	0.062	Pass
Set Points	25.121	25.05	-0.07	1	0.062	Pass
	25.086	25.00	-0.09	1	0.062	Pass
	24.954	24.88	-0.07	1	0.062	Pass
Humidity	%RH	%RH	%RH	%RH	%RH	
at 50 °C	20.21	20.49	0.28	2.0	0.58	Pass
	40.28	41.24	0.96	2.0	0.58	Pass
	60.00	60.72	0.72	2.0	0.58	Pass
	79.93	79.99	0.06	2.0	0.58	Pass
Temperature	° C	° C	° C	° C	° C	
50 °C at %RH	47.801	47.35	-0.45	1	0.062	Pass
Set Points	48.782	48.34	-0.44	1	0.062	Pass
	48.954	48.53	-0.42	1	0.062	Pass
	49.077	48.73	-0.35	1	0.062	Pass
Humidity	%RH	%RH	%RH	%RH	%RH	
at 70 °C	19.98	19.89	-0.09	2.0	0.58	Pass
	39.48	39.87	0.39	2.0	0.58	Pass
	59.87	60.23	0.36	2.0	0.58	Pass
	80.06	78.71	-1.35	2.0	0.58	Pass
Temperature	° C	° C	° C	° C	° C	
70 °C at %RH	67.269	66.59	-0.68	1	0.062	Pass
Set Points	67.549	66.93	-0.62	1	0.062	Pass
	67.828	67.23	-0.60	1	0.062	Pass
	68.485	68.03	-0.45	1	0.062	Pass

END OF REPORT