

**Keysight Services**

# Standards Lab Calibration

Ensure the ongoing high accuracy of the devices you test



## Certificate of Calibration



Standards Laboratory Calibration  
Certificate Number



**Model Number** N8481H  
**Manufacturer** Keysight Technologies Inc  
**Description** Power Sensor - Thermocouple, average, 10MHz to 18GHz  
**Serial Number**  
**Customer Asset No.** 3338  
**Date of Calibration** 2 Feb 2016  
**Procedure** 8481A/H\_TP, 30 JUN 2000  
**Temperature** (23 ± 1) °C  
**Humidity** (45 ± 10) %RH

**Customer**  
**Location of Calibration**  
Keysight Technologies Inc.  
EMG Support Operation  
10090 Foothills Blvd.  
Roseville CA 95747-7102  
United States

This certifies that the equipment has been calibrated using applicable Keysight Technologies procedures and accredited to ISO/IEC 17025:2005 and ANSI/NCSL Z540.3-2006. The quality management system is registered to ISO 9001:2015.

**As Received Conditions**

The measured values of the equipment was for the purpose of characterization. No compliance statement is made relating to specification.

**Action Taken**

- Calibration Factors were updated.

**As Completed Conditions**

The measured values of the equipment was for the purpose of characterization. No compliance statement is made relating to specification.

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported expanded measurement uncertainty, which corresponds to a coverage probability of approximately 95%, is the standard uncertainty multiplied by the coverage factor k=2. Where this is not the case, coverage factor (k), effective degrees of freedom (ν<sub>eff</sub>) and coverage probability (p) are stated.

**Remarks or Special Requirements**

This calibration certificate may refer to instruments manufactured by HP, Agilent and Keysight as being manufactured by Keysight Technologies, Inc.

The test limits stated in the report correspond to the published specifications of the equipment, at the points tested.

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Wes Fischbach Roseville Serv. Cntr. Mgr.

## Offering very low measurement uncertainty

We compare your device or instrument to either a primary standard or a reference that has been directly calibrated by a national metrology institute (NMI).

Measurement accuracy is the foundation of crucial decisions your organization makes about the devices you test. The ability to ensure the ongoing precision of your in-house standards depends on calibrations that provide even lower measurement uncertainty.

We can perform these calibrations on more than 500 instruments and devices—dimensional, mechanical, optical, thermodynamic and electrical—in less time and at lower cost than NMIs.

- Accurate measurements through low measurement uncertainties
- Fast and predictable turn-around time
- Reduced calibration costs
- Compliant with ANSI/NCSL Z540.3-2006 and ISO/IEC 17025:2005.

## Count on Keysight precision and predictability

**We have six Keysight Centers of Excellence that perform these high-precision calibrations:**

- Hachioji, Japan
- El Segundo, California, USA
- Roseville, California, USA
- Santa Rosa, California, USA
- Loveland, Colorado, USA
- Winnersh, UK

What sets these six Centers of Excellence apart from our other 50 service locations around the world is that they either have Primary Standards or a collection of reference standards calibrated by an NMI. This ensures our measurement uncertainties are very low; low enough to calibrate your in-house standards.

At the Loveland, Colorado Center of Excellence there is a Josephson Junction. And in El Segundo we have fixed point temperature primary standards.

Every site conforms to exacting standards: environment, training, instrumentation, fixturing and software. Wherever you develop, manufacture or deploy your products or systems, we ensure that our measurement uncertainties are very low.





# Get very accurate calibrations for test equipment and more

## Our calibration capabilities cover a variety of disciplines:

dimensional, mechanical, optical, thermodynamic, and electrical. A partial list of instruments and devices we calibrate includes angle block sets, autocollimators, vacuum ionization gauges, weight sets, standard resistors and standard capacitors. And, we can measure the essential parameters that ensure the exacting precision of your in-house standards. When it comes time to send in your in-house standards for calibration, check with us at Keysight. You may be surprised at all we can do for you. (Table 1)

## Major accreditation bodies

- A2LA** - American Association for Laboratory Accreditation
- ANAB** - American National Accreditation Body
- CGCRE** - Coordenação Geral de Acreditação
- CNAS** - China National Accreditation Service for Conformity Assessment
- COFRAC** - Comité Français d'Accréditation
- ISRAC** - Israel Laboratory Accreditation Authority
- JCSS** - Japan Calibration Service System
- KOLAS** - Korea Laboratory Accreditation Scheme
- NABL** - National Accreditation Board for Testing and Calibration Laboratories
- NATA** - National Association of Testing Authorities
- Rakkreditatsiya** - Russian Federation for Accreditation (Poverka)
- SAC** - Singapore Accreditation Council
- SAMM** - Malaysian Department of Standards laboratory accreditation program, Skim Akreditasi Makmal Malaysia
- SANAS** - South African National Accreditation Service
- TAF** - Taiwan Accreditation Foundation
- UKAS** - United Kingdom Accreditation Service

## Providing accredited measurement uncertainty

Lower measurement uncertainty (MU) is synonymous with higher measurement accuracy. Keysight MUs are often comparable or just below what is available from national metrological institutes. Ours have been audited by the major accreditation bodies (AB) and the proof is in our Scopes of Accreditation. Your calibration report will include the measured results, the uncertainty and an accreditation symbol.

[www.keysight.com/find/accreditation](http://www.keysight.com/find/accreditation)

Electro-optic	RF, microwave & millimeter-wave	Dimensional & optical	Thermodynamic	Electrical
– Fiber optic power	– Antenna gain	– Length	– Temperature	– AC voltage
– Wavelength	– Linear antenna polarization	– Flatness	– Torque	– AC-DC difference
– Attenuation	– Linear antenna probe main component pattern	– Straightness or parallelism	– Force	– AC current
– Laser power	– Attenuation	– Thread lead	– Mass	– Capacitance
– Luminous intensity	– Frequency	– Angle	– Vacuum	– DC ratio
– Color	– Impedance	– Magnification	– Pressure	– DC resistance
– Temperature	– Impedance, reflection coefficient		– Gas flow rate	– DC voltage
	– Noise temperature, excess noise ratio (ENR)		– Dew & frost point	– Inductance
	– Phase noise		– Helium leak	– Phase angle
	– Phase shift power		– Density	– Ratio, AC current
			– Air velocity	– Ratio, AC voltage
			– Humidity	– Sinusoidal & shock sensitivity

**Table 1.** Our Standards Lab Calibration can address a wide range of measured parameters.



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APA-63 REAR ANTENNA  
APA-126 REAR ANTENNA  
APA-63 ANTERIOR ANTENNA  
APA-130 ANTERIOR REAR  
APA-140 POWER SUPPLY

## Check our record of success

Our Centers of Excellence have already established a track record of success, meeting or surpassing the demanding needs of customers in aerospace, defense, government, and more.

### Reducing calibration costs

An aerospace/defense contractor saved \$50,000 when it chose to outsource calibration of the industry's most precise digital multimeter—the Keysight 3458A. With a Keysight Standards Lab Calibration for their 3458A they no longer needed to maintain their own reference and chose to rely on Keysight. The contractor's 40-person cal lab team knows they can trust the inventory of 3458As they use to calibrate thousands of instruments.



### Ensuring high-precision testing

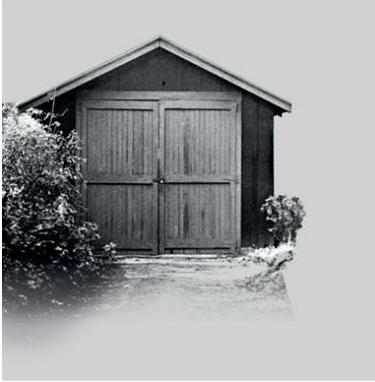
A supplier of aircraft flight instrumentation came to Keysight for calibration of the high-accuracy pressure generators and pressure gauges it uses to monitor pressure test systems. The flight instrumentation used on commercial and military aircraft must be tested under varying pressure conditions and we were able to provide the precise measurement uncertainty required for this application.



### Delivering excellent Measurement Uncertainty

A satellite manufacturer turned to Keysight for Standards Lab Calibration of environmental thermometers. They required very low measurement uncertainty to ensure the accuracy of the test systems used to verify satellite performance under extremely hot or cold temperature conditions. The accredited measurements we provided in a report supported their requirement for traceable measurements.





## Leverage nearly 80 years of measurement excellence

You've known us as Hewlett-Packard, Agilent Technologies, and now Keysight Technologies. Since 1939, the bedrock of our approach has been a commitment to measurement integrity: it ensures consistent results that correlate across test platforms as your product moves through simulation, R&D, design verification and manufacturing.

Keysight measurement science expertise ensures your confidence. We accurately measure your device's current performance and report the low measurement uncertainties.

### Let us create the calibration you need

With our accumulated experience performing Standards Lab Calibrations, we're ready to address your unique requirements. We offer a wide range of standards to ensure the ongoing precision of your in-house standards. And in many cases you can select the parameters, ranges or data points you want us to measure.

### Keysight Services

[www.keysight.com/find/KeysightServices](http://www.keysight.com/find/KeysightServices)

## Keysight Services

Accelerate technology adoption.  
Lower costs.

Today's competitive realities demand new thinking that keeps you on the leading edge while enhancing your margins.

Tangible results start with our Keysight Services: they're an industry-leading array of people, processes and tools focused on helping you implement new technologies and engineer improved processes.

### Next step

Engage with our experts today and find new ways to maximize asset utilization, streamline engineering operations and achieve lower costs.

[www.keysight.com/find/Assist](http://www.keysight.com/find/Assist)



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