

# **CALIBRATION LABORATORY**

**Accredited and ISO 17025**

**RF and Electric Instrumentation**



# CALIBRATION LABORATORY

## Accredited Permanent Calibration laboratory



**ACCREDIA CALIBRATION CENTRE LAT N° 103**

### Measurable and Generable

*Frequency*

*HF Power*

### Field Strength

*Electric*

*Magnetic*

## Permanent Calibration laboratory

### ISO 9001 ISO 17025 QUANTITIES

*Voltage*

*Current*

*Current for Current clamps*

*Resistance*

*Capacitance*

*Temperature*

*Attenuation*

*Frequency*

*RF Power*

*VSWR*

*High Frequency Impedance*

*Electric field Strength*

*Magnetic field Strength*

*Pulses*

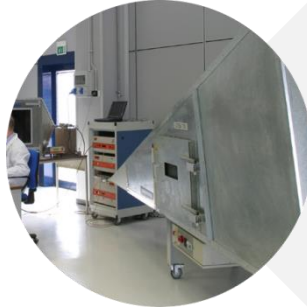
*Power Flux Density*

*Voltage Transients*

# Accredited Permanent Calibration laboratory



ACCREDIA CALIBRATION CENTRE LAT N° 103



## ACCREDIA Accredited Calibrations UNI CEI EN ISO/IEC 17025

Established in 1997, the TESEO Metrological Laboratory was Accredited by the National Metrological Institute in 1998 for calibration of RF quantities, and in 2003 for Electromagnetic Field calibrations. Equipped with two metrological rooms with different temperature-controlled levels, the Accredited Calibration Centre is today able to perform calibrations and checks on most of key instruments for EMC applications

### HF Power

Generable : 10 kHz ÷ 100 kHz	from 10 nW to 5 mW
Generable : 100 kHz ÷ 18 GHz	from 1 nW to 5 mW
Measurable : 10 kHz ÷ 18 GHz	from 10 nW to 100 mW
Measurable : 10 MHz ÷ 18 GHz	from 1 nW to 100 mW
Measurable : 100 kHz ÷ 4 GHz	from 10 nW to 10 W

### Frequency

Generable: from 1 Hz to 18 GHz
Measurable: from 1 Hz to 2.7 GHz

### Electric Field Strength (Field Probes)

10 kHz ÷ 200 MHz	from 1 to 200 V/m
200 MHz ÷ 3 GHz	from 1 to 60 V/m

### Magnetic Field Strength (Field Probes)

10 kHz ÷ 200 MHz	from 2.65 to 530 mA/m
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ACCREDIA CALIBRATION CENTRE LAT N° 103

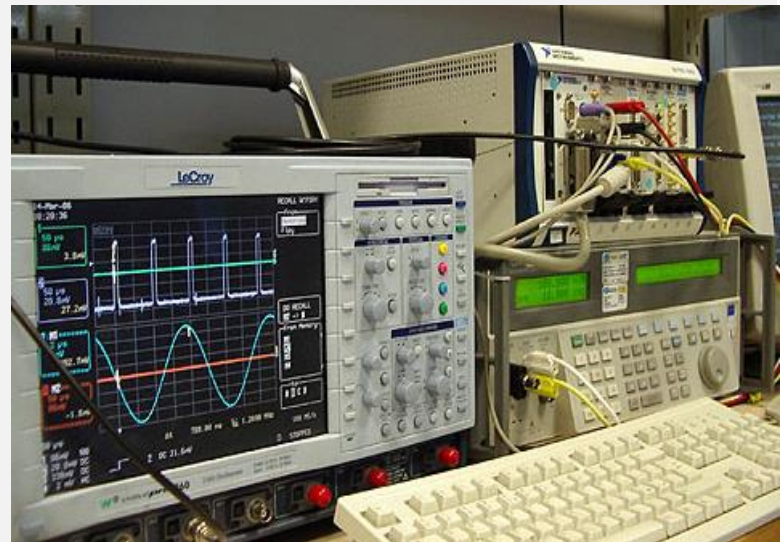
# Permanent Calibration laboratory



CALIBRATION CENTRE ISO 9001 – ISO 17025

<b>Voltage</b>	DC 0 ÷ 1020V; AC 1mV ÷ 1020V 10 Hz ÷ 500 kHz
<b>Current</b>	DC 0 ÷ 11A; AC 0.01μA ÷ 11A 10 Hz ÷ 10 kHz
<b>Current for Current clamps</b>	AC 0.01μA ÷ 1000A; AC 0.01μA ÷ 600A 10 Hz ÷ 1 kHz
<b>Resistance</b>	Short ÷ 330MΩ
<b>Capacitance</b>	330pF ÷ 1100μF
<b>Temperature (Thermocouples)</b>	330pF ÷ 1100μF
<b>Temperature (Thermom. chains)</b>	-40°C ÷ 180°C
<b>Attenuation</b>	0dB ÷ 60dB 10 kHz ÷ 18 GHz

<b>Frequency</b>	1 Hz ÷ 20 GHz
<b>RF Power</b>	10 kHz ÷ 18 GHz +57dBm ÷ -60dBm
<b>VSWR</b>	10 kHz ÷ 18 GHz
<b>High Frequency Impedance</b>	10 kHz ÷ 18 GHz
<b>Electric field Strength</b>	10 kHz ÷ 18 GHz from 1 V/m to 10 kV/m
<b>Magnetic field Strength</b>	10 kHz ÷ 1 GHz from 200 mA/m to 80 A/m
<b>Power Flux Density</b>	10 kHz ÷ 3 GHz from 265 nW/cm <sup>2</sup> to 24 mW/cm <sup>2</sup>
<b>Pulses</b>	from 0 to 20 kV DC ÷ 2 GHz
<b>Voltage transients</b>	(min 500ps rise-time)



## Calibrations according to the UNI EN ISO 9001:2015 quality system

Operating in ISO9001 and ISO17025 Quality System, TESEO uses for its Calibration activities First-Line and Second-Line Standards and validated Calibration Procedures allowing to perform calibrations and checks on measurement fields ranging from DC to 40GHz, for power levels up to 10kW and voltages over 30kV.



# On-Site Calibrations



CALIBRATION CENTRE ISO 9001 – ISO 17025

**Voltage** DC 0 ÷ 1020V; AC 1mV ÷ 1020V  
10 Hz ÷ 500 kHz

**Current** DC 0 ÷ 11A; AC 0.01μA ÷ 11A  
10 Hz ÷ 10 kHz

**Current for  
Current clamps** AC 0.01μA ÷ 1000A; AC 0.01μA ÷ 600A  
10 Hz ÷ 1 kHz

**Resistance** Short ÷ 330MΩ

**Capacitance** 330pF ÷ 1100μF

**Temperature  
(Thermocouples)** 330pF ÷ 1100μF

**Attenuation** 0dB ÷ 60dB  
10 kHz ÷ 18 GHz

**Frequency** 1 Hz ÷ 20 GHz

**RF Power** 10 kHz ÷ 18 GHz  
+57dBm ÷ -60dBm

**VSWR** 10 kHz ÷ 18 GHz

**High Frequency  
Impedance** 10 kHz ÷ 18 GHz

**Pulses** from 0 to 20 kV  
DC ÷ 2 GHz

**Voltage  
transients** (min 500ps rise-time)

## On-Site Calibrations according to the UNI EN ISO 9001:2015 quality system

Thanks to a Second-Line Standards equipment, TESEO can perform calibrations directly at Customer's facility. Thanks to this Service, the calibration process becomes more safe, avoiding to ship delicate equipment by courier, faster, by booking exactly the days for calibrations, as well cheaper, especially for medium/large instrument stocks.



# National Instruments Calibrations



NATIONAL INSTRUMENTS CALIBRATION ISO 9001 – ISO 17025



## NATIONAL INSTRUMENTS Calibrations UNI CEI EN ISO/IEC 17025:2017

For years partner of National Instruments as Alliance Member, TESEO extends the services on NI products with calibration and adjustment of boards and measurement - acquisition systems.

The TESEO Calibration Laboratory is equipped with NI validated procedures for calibration and readjustment.

<b>Voltage</b>	DC 0 ÷ 1020V; AC 1mV ÷ 1020V 10 Hz ÷ 500 kHz
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<b>Current</b>	DC 0 ÷ 11A; AC 0.01μA ÷ 11A 10 Hz ÷ 10 kHz
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<b>Temperature (Simulator)</b>	-210°C ÷ 1370°C
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<b>High Frequency Impedance</b>	10 kHz ÷ 18 GHz
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<b>Resistance</b>	Short ÷ 330MΩ
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<b>Capacitance</b>	330pF ÷ 1100μF
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<b>Attenuation</b>	0dB ÷ 60dB 10 kHz ÷ 18 GHz
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<b>Frequency</b>	1 Hz ÷ 20 GHz
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<b>LF and RF Power</b>	10 Hz ÷ 18 GHz +57dBm ÷ -60dBm
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<b>VSWR</b>	10 kHz ÷ 18 GHz
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<b>Analog I/O Functions</b>	1 Hz ÷ 20 GHz
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<b>Digital I/O Functions</b>	1 Hz ÷ 20 GHz
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# External Partners Calibrations



ACCREDITED AND ISO 9001 QUANTITIES



## QUANTITIES

AC and DC Voltage

AC and DC Current

AC Current for Current clamps

Resistance

Capacitance

Inductance

Temperature

Time and Frequency

Pulses (ESD, Bursts, Surges)

Voltage/Current Ratio

Voltage transients

LF and RF Power

Optical Quantities

Attenuation

Gain for Amplifier

Antenna Factor for antennas

Electromagnetic Field Strength

Flux Density

Harmonic Distortion

AM and FM Modulation Capacity

RF Current for Clamps

VSWR

High Frequency Impedance

Illumination

Pressure

Sound



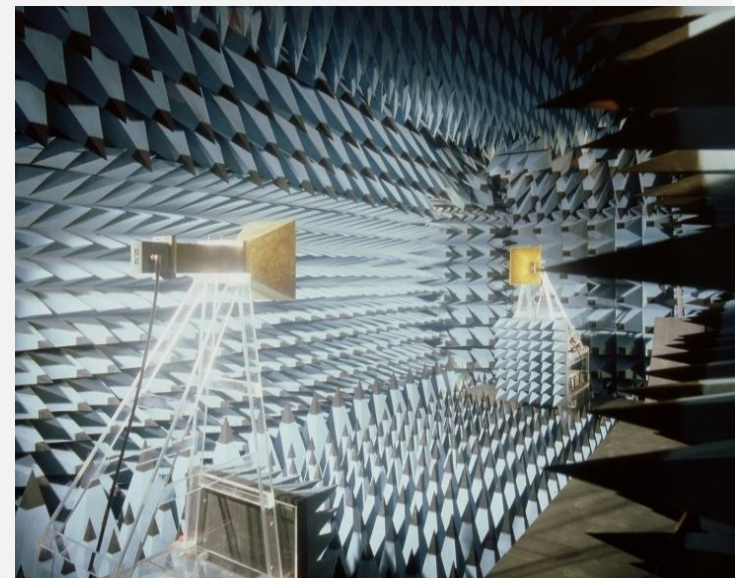
Italian Accreditation Body

Dutch Accreditation Council

Austrian Accreditation

## ILAC Signatory Accredited Calibrations and UNI CEI EN ISO/IEC 17025:2005 Calibrations

Further than Accredited Calibration performed in his Accredited Calibration Laboratory, TESEO offers a wide range of Accredited Calibrations covering almost all the Electric and Electronic Quantities, thanks to exclusive collaboration with National and International Accredited Partners.



# Additional Services

**+** Calibrations Management



## Booking of the calibration in order to reduce the turn-around time

To minimize the calibration time, our laboratory can be booked for your instruments.

## Fast Calibrations (24H) on demand

When applicable, upon request we can grant the calibration time in maximum 24 hours (shipping time excluded)



## Auto-recall

We will remind you the expiry calibration date of your equipment when in our database. Then the new calibration can be booked at your convenience.

## Pick-Up and Delivery

TESEO can also manage the instrument pick-up and subsequent delivery after calibration completion. This service is carried out by our Technical personnel, or by dedicated transports by trusted carriers



## Yearly and multi-yearly framework contracts

Optimization of your administrative costs and calibration management, granted turn-around time, one single interface for all your periodical calibration needs.

## Maintenance and repair quotations

What happens if an instrument is found faulty or out-of-specs during calibration? TESEO can manage all repair procedures in order to always assure the full-functionality.



## Consultancy

Any doubt about how to calibrate your instruments? TESEO offers consultancy about the metrological confirmation of your equipment.

## Professional training

On measurement methods and uncertainty of measurement evaluation, with ISO 17025:2017 deployment trainings.





# Metrological Laboratory