

SIGMA SENSORS | TEMPERATURE
CALIBRATION
LABORATORIES



CORPORATE INFORMATION

- **SIGMA SENSORS TCL** (Temperature Calibration Laboratories) **GmbH**,
ISO/IEC 17025:2017 ILAC-MRA accredited calibration laboratory
HQ Sigmaringen, Germany
- **Sigma Sensors USA** - Dallas TX based, est. 07/04/21
ISO 17025:2017 accredited / ITS 90 traceable onsite temperature calibration
- Founder: Harald Ibele (2006-08, re-) established 03/2019
- Harald.ibeale@sigma-sensors.com +49-1520-7048888 / +1-214-347-4688



SIGMA SENSORS (TCL) GmbH, SIGMARINGEN GERMANY

- Sigma Sensors is the only ISO17025:2017 accredited laboratory specializing in accredited and traceable temperature calibration for the global Semiconductor Industry.
- Sigma Sensors performs on-site calibrations of thermal chuck systems in wafer probe stations in both R&D and production wafer test environments. Also suitable for ovens, freezers, temperature enclosures, dry blocks, oil baths, other environments, sensors, thermometers etc
- Temperature range (-80°C) -40°C to +300°C (+425 °C)



IN LAB CALIBRATION



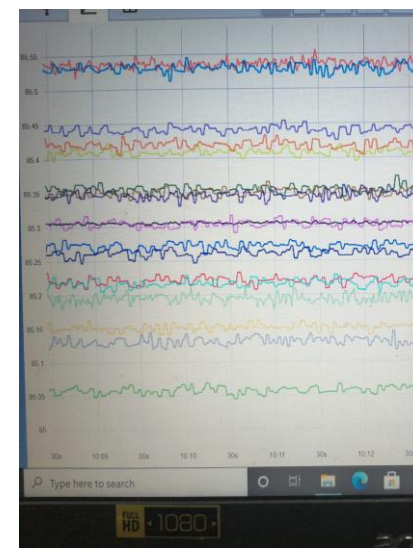
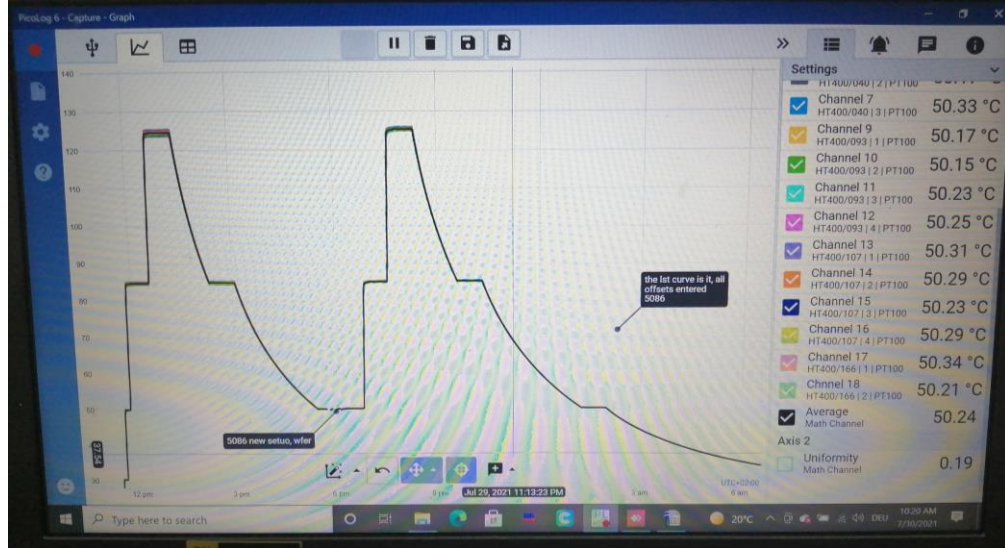
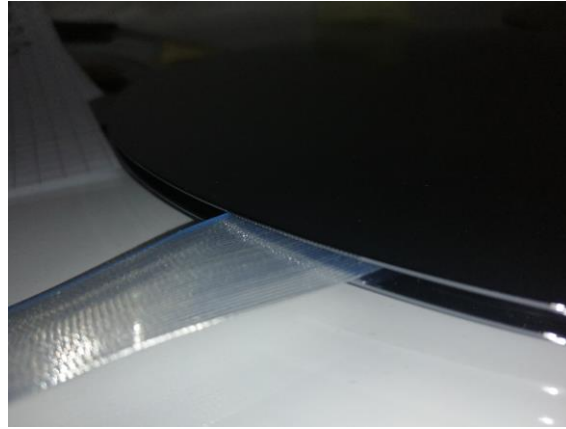
- Sigma Sensors performs accredited / traceable temperature calibrations of third-party temperature wafers to stated specifications with data and expanded uncertainty / accuracy from -60°C to +200°C
- PT-100 and Thermometer / thermometer w/ meter calibrations from -45°C to +300°C.
- Expanded cold and hot capability to -80°C and +425°C respectively.
- 2021 in Germany only – USA / Asia planned 2022



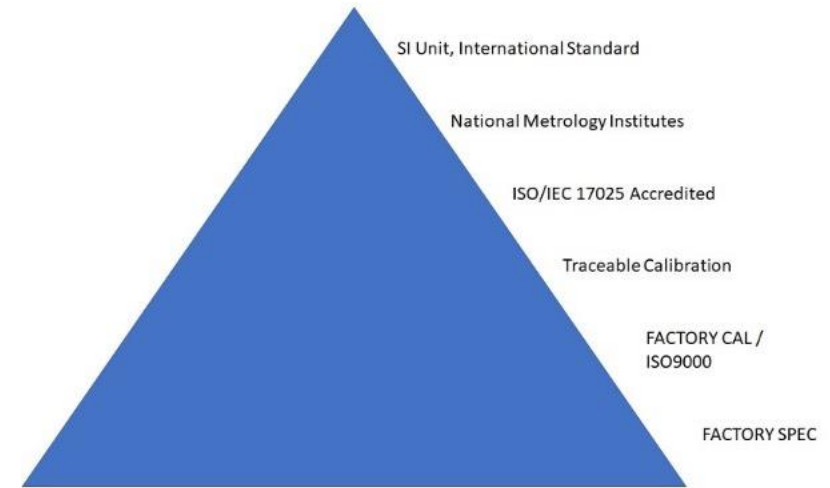
SIGMA SENSORS USA – DALLAS, TEXAS

- Performs all on-site US calibrations, both ISO17025:2017 accredited as well as non-accredited / traceable.
- US distribution COWBOY and CALIBRATIONS WAFERS (ISO17025 / ITS90 / SPEC)
- Cowboy Classic: 5-9 sensors, temperature range 0°C -140°C, accuracy 0.18K
- K1 Service Wafer: 9-13 Sensors, -40°C to +150°C, accuracy 0.15K, w/data
- K2 Calibration Wafer: 13-17 sensors, -40°C to +175°C, accuracy 0.12K, w/data
- Lab2Go, accredited: 13-17 sensors, -60°C to +200°C, accuracy <0.1K
remote calibration / certificate optional





WHY CALIBRATE (WITH SIGMA SENSORS)



- ISO 17025: The Global Standard
- ITS90: Traceability to International Standards from -80°C to $+425^{\circ}\text{C}$
- Confidence in measurement; accuracy $<0.03\text{K}$
- AS/TS 16949: satisfy audit requirements
- Convenient on-site, remote service and embedded engineer options
- Global Coverage, monthly / yearly lease / maintenance contracts



WHY COWBOY / CALIBRATION WAFER

- 4 wire PT100 technology provide the most accurate results
- Calibrated and verified at actual test temperatures -60C / +200C
- ISO/IEC 17025:2017 A2LA accredited, ILAC-MRA
- ITS90 traceability
- Accuracy / Uncertainty to <math><0.06K, k=2</math>
- Transparent processes
- 5-17+ sensors
- Cleanroom safe
- Made for global mobility
- Rugged and easy to use
- 50% survival rate 1 Meter drop test
- Shatter free options



ADVANTAGES CONTINUED

- Useable even when broken
- Upgrade path to add additional sensors and or increase required accuracy
- Modular – work with any Meter
- Complete systems or freestanding wafer
- Warranty programs SIGMA CARE and SIGMA CARE +
- SIGMA IR – infrared wafers
- Windows / Linux / IOS / Python operating systems
- Open operating system, easy customization of data display
- Save and export in pdf or excel
- USB, LAN, WIFI and LTE logging
- Solutions to fit all requirements and budgets



OPENING AND RELEASE SCHEDULES 2021

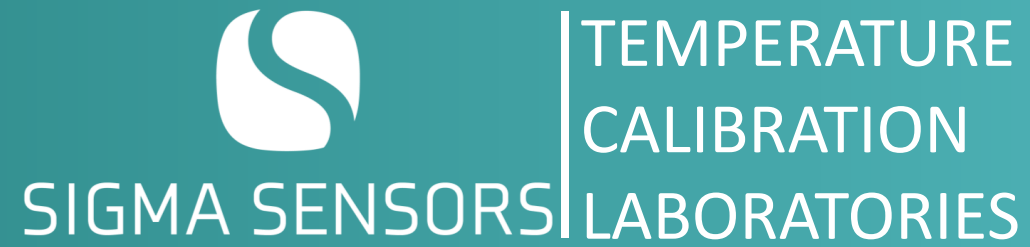
- Accredited and traceable thermal chuck and temperature wafer calibrations:
 - May 2021 Europe, July 2021 USA, September 2021 Singapore, Malaysia, Taiwan
- Freestanding Calibration Wafer for laboratory and production
- Cowboy Classic, K1, K2 Calibration Wafers, Lab2Go – lead-time 4-6 weeks
- Complete Systems for Fab in pre-serial
- Wafer Calibration – lead-time 2-4 weeks

- L2G remote calibration and remote certificate: Q3/21



HOW CAN WE
ASSIST YOU?





THANK YOU
DANKE