



Gulf Association for Metrology GULFMET

Regional Metrology Organization(RMO)

GULFMET Technical Committee for Thermometry

CCT May 2024

Nasser Aldawood, TC-T Chair



GULFMET Member States

- Kingdom of Bahrain:
Bahrain Standards and Metrology Directorate (BSMD)
- State of Kuwait:
Public Authority for Industry (PAI)
- Sultanate of Oman:
Directorate General for Specifications and Measurements (DGSM)
- State of Qatar:
Qatar General Organization for Standards and Standardization (QGOSM)
- Kingdom of Saudi Arabia:
Saudi Standards, Metrology and Quality Org. National Measurement and Calibration Center
(SASO-NMCC)



GULFMET Member States

- United Arab Emirates:
Emirates Authority for Standardization and Metrology (ESMA) Emirates Metrology Institute (EMI) (appointed on 9th of May to be the NMI)
- Republic of Yemen:
Yemen Standardization, Metrology and Quality Control Organization (YSMO)

GULFMET established in June 2010 under the Gulf Standardization Organization (GSO) CIPM in its 104 meeting granted provisional acceptance as a RMO in October 2015



GULFMET Associate Members

- Bosnia and Herzegovina:
Institute of Metrology of Bosnia and Herzegovina (IMBIH)
- Egypt:
National Institute for Standards (NIS)
- Hong Kong:
Standards and Calibration Laboratory (SCL) Government Laboratory (GL)
- Korea:
Korea Research Institute of Standards and Science (KRISS)
- Turkey:
National Metrology Institute/TÜBİTAK Ulusal Metroloji Enstitüsü (UME)
- Iraq:
Central Organization for Standardization and Quality Control (COSQC)



TC-T committee

Established on the 22nd of November 2015 during the Riyadh (Saudi Arabia) meeting of the joint committee of TC-Thermometry.

- TC Chair: Nasser Aldawood, Supervisor of radiometry and thermal radiation Lab, SASO, Saudi Arabia
- TC Secretary: Ibrahim Alsubaie, Supervisor of humidity Lab, SASO, Saudi Arabia



TC-T Meetings 2023 - 2024

- 16th Meeting, Virtual Meeting, Wednesday 8 November 2023
- 17th Meeting, Virtual Meeting, Wednesday 29 May 2024



TC-T Comparisons

Identifier	Description	Status	Participants	Pilot	Action
EURAMET.T-K7-4	Comparison of Triple Point of Water Cells	Final Report	UME, EMI, SASO, JNMI (Jordan), IMBIH (Bosnia)	UME	Report was approved by WG-KC
GULFMET.T-K9	SPRT Calibration at Hg, H ₂ O, Ga, In, Sn, Zn	Draft B report is circulated and submitted to the CCT-WG-KC for review	UME, EMI, SASO	UME	Waiting for linking result to Euramet T-K9, CCT-T-K9
GULFMET.T-S1	Relative Humidity Comparison at: 11, 30, 50, 70, 95 %rh 0, 23, 70 °C	Draft A version 2 report is circulated. It can be considered as draft B. It will be submitted to the CCT-WG-KC for review	UME, EMI, SASO	UME	DRAFT B



TC-T Comparisons

Identifier	Description	Status	Participants	Pilot	Action
GULFMET.T-S2	Radiation Therm. Calibration: -20 to 1600 °C	Draft B report is circulated	UME, SASO	UME	Final report preparing Oct 2024
GULFMET.T-S3	Platinum Resistance Thermometer Calibration -70 to 250 °C	Draft B report	EMI, UME, SASO, QATAR STANDARDS	EMI	Reviewing the CCT KC working group comments



TC-T NEW Comparisons

- Calibration of a Noble Metal Thermocouple
Range: 419 °C to 1086 °C, Pilot lab: EMI
Participants: EMI, SASO-NMCC, QGOSM
- Comparison of IR Ear Thermometer calibration facilities
Range: 33 to 43 °C, Pilot lab: EMI, Participants: EMI, SASO-NMCC, QGOSM
- ITS-90 SPRT Calibration from the Hg TP to the Zn FP
Pilot lab: SASO-NMCC



TC-T action plan

Year 2024:

- Finalize the technical protocol for proposed comparisons (3st quarter 2024)
- Calibration of thermometer (SPRT,PRT) by fixed points in low temperature.
- Calibration of thermocouple by fixed points in low temperature and high temperature.
- Calibration of radiation thermometers by comparison.
- Calibration of hygrometers by comparison.
- Calibration of hygrometers by dew-point.



Review of CMCs

- TCT has reviewed 5 CMCs (EURAMET).
- TCT has reviewed 6 CMCs (AFRIMET).
- TCT has reviewed 3 CMCs (COOMET).



Main tasks of TC-T

- Thermometry CMCs to be prepared, reviewed and finally published in KCDB 2.0
- Organize interlaboratory comparisons to support these CMCs
- Enhance technical capabilities of the member states through training and research programs.
- Interact with other RMOs TCs and BIPM committees



Calibration Capabilities of Members

SASO NMCC, SAUDI ARABIA

- SPRTs: Ar to Ag fixed points
- Thermocouples: -80 °C to 1200 °C
- Thermocouples at fixed points: Sn, Zn, Al, Ag, Cu
- Radiation Thermometers: -20 °C to 1600 °C
- Humidity : 0 °C to 70 °C / 10 to 95 %rh
- Dew-point : 0 °C to 70 °C / 10 to 95 %rh



Calibration Capabilities of Members

EMI, UAE

- SPRTs: Hg to Al fixed points
- PRTs: -80 °C to 660 °C
- Temperature Sensors with Display Unit: -80 °C to 660 °C
- Block Calibrators: -30 °C to 660 °C
- Climatic Chambers -40 °C to 140 °C and 10 to 90%rh
- Air Temperature Sensors: 10 °C to 70 °C
- Relative Humidity Sensors: 10 to 95 %rh
- Thermocouples: -80 °C to 1100 °C
- Thermocouples at fixed points: Zn, Al, Ag, Cu



Calibration Capabilities of Members

- Institutes of UAE and Saudi Arabia are close to submit CMCs, which is not yet done, mainly because all comparisons are under the review.



- Gulfmet participant activates in other RMO such as APMP TC-T meeting and EURAMET TC-T meeting to in hands and exchange the experience.

Interaction
with other
RMO's and
BIPM
committees





Thank you for your
attention..