

Gulf Association for Metrology

GULFMET...

***Gulfmet Technical Committee for
Thermometry***

Miltiadis Anagnostou

TC-T Report

CCT November 2020

Gulmet 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:](#)
Directorate General for Specifications and Measurements ([SASO-NMCC](#))
- [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](#))

***Gulmet 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](#))

TC-T committee



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

- **TC Chair:** *Dr. Miltiadis Anagnostou, Head of Temperature & Humidity Lab, EMI, UAE*
- **TC Secretary:** *Eng. Ahmed Al Breiki, Senior Metrologist in Temperature & Humidity Lab, EMI, UAE*

TC-T Gulfmet meetings

Meeting	Date	Place	Participation
1	22/11/15	Riyadh, Saudi Arabia	UAE, SAUDI ARABIA, KOREA, TURKEY
2	24/04/16	Dubai, U.A.E.	UAE, SAUDI ARABIA, TURKEY
3	21/11/16	Dubai, U.A.E.	UAE, QATAR, SAUDI ARABIA, TURKEY
4	16/04/17	Abu Dhabi, U.A.E.	UAE, SAUDI ARABIA, TURKEY
5	12/11/17	Kuwait City, Kuwait	UAE, SAUDI ARABIA, KUWAIT, TURKEY
6	24/04/18	Istanbul, Turkey	UAE, SAUDI ARABIA, KUWAIT, QATAR, TURKEY
7	30/10/18	Kuwait City, Kuwait	UAE, SAUDI ARABIA, QATAR, OMAN, BAHRAIN, KUWAIT, TURKEY
8	22/04/19	Muscat, Oman	UAE, BAHRAIN, SAUDI ARABIA, OMAN, QATAR
9	16/06/20	Web Meeting	UAE, SAUDI ARABIA, OMAN, QATAR, TURKEY
10	06/10/20	Web Meeting	UAE, SAUDI ARABIA, OMAN, QATAR, BAHRAIN, TURKEY

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



EMI, UAE

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

- Thermocouples: -80 to 1100 °C
- Thermocouples at fixed points: Zn, Al, Ag, Cu



Calibration Capabilities of Members



SASO NMCC, SAUDI ARABIA



الهيئة السعودية للمواصفات والمقاييس والجودة
Saudi Standards, Metrology and Quality Org.

- SPRTs: Ar to Ag fixed points
- Thermocouples: -40 to 1200 °C
- Thermocouples at fixed points:
Sn, Zn, Al, Ag, Cu
- Radiation Thermometers: -50 to 1600 °C
- Relative Humidity Sensors: 10 to 95 %rh

Calibration Capabilities of Members

BSMD, BAHRAIN

- Digital thermometers: 0 to 60 °C
- Medical thermometers: Contact and IR

QGOSM, QATAR

- Digital thermometers
- PRTs and Thermocouples
- Starting fixed point calibrations (currently at WTP)

Running Comparisons

Title	Description	Status	Participants	Pilot
EURAMET.T-K7-4	Comparison of Triple Point of Water Cells	Draft A report March 2020 v1 June 2020 v2	UME, EMI, SASO, JNMI (Jordan), IMBIH (Bosnia)	UME
GULFMET.T-K9	SPRT Calibration at Hg, H ₂ O, Ga, In, Sn, Zn	Draft A report April 2019	UME, EMI, SASO	UME
GULFMET.T-S1	Relative Humidity Comparison at: 11, 30, 50, 70, 95 %rh and 0, 23, 70 °C	Draft A report October 2019	UME, EMI, SASO	UME
GULFMET.T-S2	Radiation Thermometer Calibration: -20, 0, 50, 100, 200, 400, 600, 800, 1000, 1200, 1400, 1600 °C	Measurements Finished, protocol is pending approval	UME, SASO	UME
GULFMET.T-S3	Platinum Resistance Thermometer Calibration -70 to 250 °C	Measurements finished, Draft A report under prep.	EMI, UME, SASO, QATAR STANDARDS	EMI

CMCs



- Institutes of UAE and Saudi Arabia are close to submit CMCs, which is not yet done, mainly because all comparisons are in draft A report state.
- According to a recent BIPM/JCRB proposal, Gulfmet members should submit CMCs which will be reviewed in three stages:
 - First internally within Gulfmet using KCDB 2.0
 - Then submitted manually for review in an other selected RMO
 - Finally submit them for the JCRB review using KCDB 2.0

Gulfmet research and capacity building

- There was a Gulfmet research project run by EMI, UAE between November 2017 and April 2019 with title:

“Design, Manufacture, Testing and Distribution of Reference Equipment for Testing Clinical Infra-red (IR) ear Thermometers”

It was a research and capacity building project, aiming to build the calibration capability facilities required (black bodies) for the calibration of IR ear thermometers.

There were 7 black bodies built that were distributed to the Gulfmet member states during the 8th meeting of the committee. Also there were distributed operating instructions of how to use the black bodies for the calibration of IR ear thermometers and uncertainty budget evaluation instructions.

Interaction with other RMO's and BIPM committees

- TC-T Chair is participating to CCT working group meetings for CMCs, Key Comparisons, and the main CCT meeting
- Gulfmet members (EMI or SASO NMCC) are participating in APMP TC-T meetings in 2017, 2018, 2019 and 2020.

Thank you!

