

CCT/20-37

Report from WG-CMC

Jovan Bojkovski

Webex online meeting, WG CMC
CCT meeting 4. November 2020

Summary

- 1) Last meeting during the TEMPMEKO 2019 (June 2019) in Chengdu, China – representatives from APMP, COOMET and EURAMET present
- 2) 2908 (2545 in year 2017) CMCs already published in the KCDB, 66 (63 in year 2017) countries
- 3) 9+1 CMC review protocols (new review protocol on thermal diffusivity)
- 4) Members are TC-T chairs from RMOs
- 5) WG online meeting 1. October 2020, 12:00-14:00 CET, next (online) meeting, 26. November 2020 13:00-15:00 CET

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Agenda

Final version

- 1) Review of submitted CMCs – problems and suggestions
- 2) Review protocol amendments – changes
- 3) New CMC review protocols – thermal diffusivity
- 4) Decrease of number of categories (thermocouples only one category) and number of CMCs (use equations, matrices, ...)
- 5) Which comparisons cover which calibration services
- 6)* Inter-RMO review process harmonization - difficulties and delays in CMC review process in the last three years
- 7)* KCDB 2.0. and its impact to CMC review process
- 8)* Any other business

*only partially discussed during the meeting, next online meeting is foreseen on 26.November 2020 13:00-15:00 CET

Attendees:

Susanne Picard (BIPM), Jovan Bojkovski (chairman)

Efrem Kebede Ejigu (AFRIMETS/NMISA), Inseok Yang (APMP/KRISS), Anatoly Pokhodun (COOMET/VNIIM) (joined after 30 minutes), Dolores del Campo (EURAMET/CEM), Miltiadis Anagnostou (GULFMET/EMI)

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Review of submitted CMCs

- Each regional metrology organization (RMO) presented status of submitted and potential future CMCs
 - At this moment within AFRIMET CMCs which are submitted are usually of higher value when compared to other RMOs. This is resulting that they are accepted without major problems
 - APMP and EURAMET have a yearly review of CMCs in accordance with CMC review protocols
 - Within GULFMET region there are two laboratories having primary capabilities in the field of temperature and humidity (Saudi Arabia and UAE) and two laboratories having secondary capabilities (Qatar and Bahrain)
- In order to manage CMC submission efficiently, It has to be understood that the CMCs can't be submitted after these time slots and they will wait for next time slot. Appropriate documentation, such as quality system peer review/accreditation or equivalent, documents required by CMC review protocol and results of comparison should accompany and CMC submission.

Review protocol amendments - changes

- It is clear that CMC review protocols need revision
- In order to harmonize their usage and understanding, the examples of supporting documentation are needed
- Immediate changes should be done to protocol for industrial category and humidity
- There are repeating problems within interRMO review process, which are slowing down the review process

New CMC review protocols

- The final version of CMC review protocol for thermal diffusivity measurements has been sent to CCT for approval and publication
- The need for review protocol for air temperature, as a part of existing CMC review protocol for industrial thermometers should be checked within RMOs

Decrease of number of categories Comparisons → calibration services

- Current approach is based on CMC categories of instruments → maybe in the future we could think about physical quantity based approach
- When we reduce the number of CMCs and categories, we still can issue calibration certificates for other categories, which are not directly written in KCDB ?!? → harmonization with ILAC/NAB
- Ideas were that we have calibration at fixed points and calibration by comparison, one category for thermocouples at fixed points and by comparison, ...
- Usage of equations for CMCs

CCT KC in contact thermometry

KC	Measurements	Year of publication of report
CCT-K1	1997 to 2001	2006
CCT-K2	1997 to 2001	2001
CCT-K3	1997 to 2001	2003
CCT-K4	1998 to 2000	2002
CCT-K7	2002 to 2004	2006

- “How far the light shines ?”
 - It is impossible to perform comparisons for every CMC entry
 - Does the comparison in range of SPRT at fixed points also covers CMC for PRT by comparison ?
- When do we have to repeat comparison ?



Revision of the CIPM MRA implementation

- How – the CCT new suggestion how to further reduce workload
 - taking a broader view of the impact of the comparisons, while preserving the scientific objectiveness of the process
 - an example of in the fields of contact thermometry and hygrometry

KC	Range	Device calibrated in the KC	Calibration services tested by the KC in the range
CCT-K1	0.65 K to 24.5561 K	Rhodium-Iron resistance thermometers (2.2.1)	Calibration of e-H and Ne fixed point cells (1.1.1) Calibration of complete apparatus realizing fixed points for CSPRTs (1.2.1) Calibration of Rhodium-Iron resistance thermometers at fixed points (2.2.1)
CCT-K2	13.8 K to 273.16 K	Capsule-type SPRTs (1.3.1)-	Calibration of fixed point cells for CSPRTs (1.1.1) Calibration of CSPRTs at fixed points (1.3.1) Calibration of complete apparatus realizing fixed points for CSPRTs (1.2.1)
CCT-K3	83.8058 K to 660.323 °C	Long-stem SPRTs (1.3.2)	Calibration of fixed point cells for LSPRTs (1.1.1) Calibration of fixed point cells for LSPRTs (1.1.1) Calibration of complete apparatus realizing fixed points for LSPRTs (1.2.1)
CCT-K4	660.323 °C to 961.78 °C	Long-stem SPRTs (1.3.2)	Calibration of fixed point cells for LSPRTs (1.1.1) Calibration of LSPRTs at fixed points (1.3.1) Calibration of complete apparatus realizing fixed points for LSPRTs (1.2.1)
CCT-K7	273.16 K	Triple point of water cell (1.1.1)	Calibration of fixed point cells for LSPRTs (1.1.1) Calibration of LSPRTs at fixed points (1.3.1)

KC	Range	Device calibrated in the KC	Calibration services tested by the KC in the range	Other calibration services underpinned by the KC	Other services requiring traceability to other quantities
K6/K8	-50 °C to 95 °C	Dew-point Hygrometer (3.1.1)	Dew-point hygrometers (3.1.1) Dew-point generators (4.1.1)	Psychrometers (3.2.1) Other hygrometers (3.4.1) Reference gases (5.2.1)	Relative humidity sensors (3.3.1) → T Relative humidity generators (4.2.1) → T Flow mixing (4.3.1) → Q Salt solutions (5.2.1) → T

INTER-RMO review process harmonization

- the idea from APMP regarding the Issues on CMC review of Humidity
 - Humidity CMC submissions without comparison results are sometimes mistakenly approved within RMO. It is clear that at least simple comparison should be performed
 - suggested to include presented template to humidity review protocols
- the idea from EURAMET regarding the Issues on CMC review of IPRT
 - Change of service category from current “2.2.2 Industrial platinum resistance thermometers (IPRTs)” to “2.2.2 platinum resistance thermometer (PRT) by comparison”
for CCT approval

Thank you very much

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