

Report of Working Group 7 on Key Comparisons (13 May 2003)

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Based upon the original draft by Franco Pavese (Chair)

1. Introduction

The Working Group 7 (WG7) on Key Comparisons term of reference and working methods remained the same as in the previous term.

2. Status of the CCT key comparisons

CCT-K1 (Rhodium–Iron Resistance Thermometers: Realisations of the ITS-90 from 0.65 K to 24.6 K)

WG7 will not be involved until the Pilot formally transmits to the Chair Draft B, unless any of the Participants considers it useful to ask for help from WG7 in resolving any difficulties in reaching a unanimous consensus among the Participants.

CCT action required: CCT is not asked to take any action concerning this CCT KC. It remains in the care of WG7.

CCT-K2 (Standard Platinum Resistance Thermometers: Realisations of the ITS-90 from 13.8 K to 273.16 K)

CCT action required: The MRA procedure for CCT-K2 is finalised. CCT does not need further action.

CCT-K3 (Standard Platinum Resistance Thermometers: Realisations of the ITS-90 from 83.8 K to 933.5 K)

CCT majority approved CCT-K3 Draft B to become the Final Report on its 2001 Meeting.

When WG7 first received the draft of CCT K3 Appendix B it was unable to reach consensus. At the meeting held in Chicago (in the absence of the Working Group Chair) majority approval was reached.

WG7 notes that the MRA Technical Appendix Clause T.7 is not directly applicable to the special case of CCT-K3 because there is no KCRV (as allowed in Clause T.3). Accordingly some interpretation of the MRA will be required.

For this reason the information included in "CCT_K3_BIPM_B" could require further analysis, possibly leading to an addendum to the Appendix B entry, to be submitted for CCT approval. The same may also apply to the process of linking regional key comparisons to CCT-K3.

The CCT K3 Appendix B document received a majority approval and was transmitted to BIPM for addition to the database on February 17, 2003 and made available on the database since March 25, 2003.

CCT action required: CCT is not required to make any further action, unless a modification of Appendix B will be asked.

CCT-K4 (Fixed Point Cells: Comparisons of Al-Ag points)

WG7 received Draft B on December 20, 2001 and an amended version on January 31, 2002. WG7 approved both the Draft B and the Appendix B submission on February 1, 2002. A statement was sent electronically for voting, with the authorisation of the CCT President, to all CCT delegates.

It was approved unanimously on February 25, 2002 and sent to BIPM for inclusion in the database.

CCT action required: CCT is not asked to take any further action concerning this CCT KC.

CCT-K5 (Pyrometry: Realisations of the ITS-90 between the silver point and 1700 °C)

WG7 will not be involved until the Pilot formally transmits to the Chair Draft B, unless any of the Participants considers it useful to ask for help from WG7 in resolving any difficulties in reaching a unanimous consensus among the Participants.

CCT action required: CCT is not asked to take any immediate action concerning this CCT KC. It will remain in the care of WG7.

CCT-K6 (Humidity Standards: Dew/Frost-Point Temperature -50 °C to $+20$ °C)

WG7 received the Draft of the Protocol (revised from the time of 2001 CCT Meeting) approved by all participants on March 4, 2003. WG7 asked to clarify the meaning of (humidity) scale, contained in the Protocol, which is relevant to the KC measurand.

The Pilot agreed to re-submit the problem that “local scales” are involved, of which the measurement points are a sampling, to the Participants. WG7 is waiting for the next Pilot submission.

CCT action required: CCT is not asked to take any immediate action concerning this CCT KC. It will remain in the care of WG7.

CCT-K7 (water triple point cells)

WG7 received the Draft Protocol on September 6, 2002, after some interactions also with WG7 members, and approved it on November 11, 2002.

WG7 will not be involved until the Pilot formally transmits to the Chair Draft B, unless any of the Participants considers it useful to ask for help from WG7 in resolving any difficulties in reaching a unanimous consensus among the Participants.

CCT action required: CCT is not asked to take any action concerning this CCT KC. It remains in the care of WG7.

3. Status of non-CCT key and supplementary comparisons

RMO comparisons

EUROMET K5 (started before CCT 2000 Meeting)

The draft Protocol has been formally sent to the WG7 Chairman on 7 June 2000 and transmitted to the WG on 30 January 2001. No indications have been received whether it was formally approved or not by all participants.

APMP K3 (started before CCT 2000 Meeting)

The draft Protocol has been formally sent to the WG7 Chairman on 4 November 2000 and transmitted to the WG on 29 January 2001. The full approval from the last participants was communicated to WG7 Chair on September 25, 2001. No further action took place. The Working Group 7 needs to review the protocol.

EUROMET K3

The Protocol was approved by WG7 on May 15, 2001. No further action required so far.

APMP Comparison on Radiation Thermometer Scales

Working Group 7 has not formally approved the protocol of this key comparison even though the measurements are completed. Working Groups 7 and 5 have accepted it as allowing the assessment of the equivalence of the scale realization despite the

differences in transfer standards and source. APMP is now aware of this and shall correct accordingly as soon as possible.

APMP Thermocouples

The WG7 Chair received from Dr. Duan a request about the possibility to start an APMP thermocouple comparison. There was some correspondence, involving also other WG7 members, until about middle March 2003. No further information available.

APMP comparison equivalent to K4

The WG7 Chair received a Draft protocol from the Pilot on January 17, 2003. There were some objections from the WG7 members. All could be resolved, except that the circulation scheme does not consider at least two NMIs linking to CCT K4 for each subloop. The problem was formally placed by the Chair to the Pilot on March 11 and WG7 is waiting for the reply.

APMP K6

The WG7 has not received the Protocol for review.

On May 8, 2003 the WG7 Chair received documents concerning Draft B of this comparison, approved on January 2003 by APMP. Further action from WG7 will follow.

CCT Bilateral comparisons

NRC-NIST & NRC-PTB K5

The WG7 Chairman has received the official communications of the intention of starting these bilateral comparisons on 5 and 7 May 2001, respectively, with the indication that the Protocol that will be followed is the same of CCT-K5.

Transmitted to the WG7, it received a favourable reply on 10 May 2001. No further information was received so far.

NRC-VNIIFTRI K2

WG7 received on March 31, 2003 the Draft B Report from the CCT K2 Pilot. The protocol used is the same as for CCT K2. Further action from WG7 will follow.

4. Other issues

MRA interpretation (SUD when no KCRV is defined in Appendix B)

In the message sent to the CCT delegates by the Chairman for the approval of CCT K3 Appendix B, there was the following note:

“WG7 notes that the MRA Technical Appendix Clause T.7 is not directly applicable to the special case of CCT-K3 because there is no KCRV (as allowed in Clause T.3). Accordingly some interpretation of the MRA will be required.”

Following discussions on these issues, the Chairman of WG7 prepared a working document for the CCT, available as Doc. CCT/03-04. Working Group 7 did not review the contents prior to the transmission to CCT delegates.

Preparation of CCT discussion on SUD

Although some discussion has taken place, no WG7 report on SUD has been prepared. WG7 plans to develop such a report discussing general methods of identifying SUDs. WG7 will assist the pilots of key comparisons to apply these methods to identify SUDs.