

CCT Working Group for Key Comparisons Report to the CCT May 2017

1. Terms of reference and tasks

The terms of reference of the WG-KC are to oversee all aspects of Key Comparison documentation, starting with the Technical Protocol and ending with the Draft B Report and the KCDB entry, including the provision of advice to pilots on the calculations of the Degrees of Equivalence, the Key Comparison Reference Value and the linkage between RMO and CIPM Key Comparisons.

WG-KC is tasked with:

- Examining all relevant documents for each key comparison, starting with the protocol and ending with the Draft B Report
- Advising the pilot laboratory in preparing the text of the entry to Appendix B of the CIPM MRA as required, and to approve the Draft B report on behalf of the CCT for inclusion into the BIPM Key Comparison Data Base (KCDB)
- Advising the pilot laboratory about the preparation of a comparison status document
- Reviewing and commenting on supplementary comparisons Draft B reports.

Sometimes the WG-KC is consulted only in the final stage of a comparison, for example when the pilot submits the Draft B for approval, without having had the protocol reviewed by the WG-KC. This practice is discouraged because eventual flaws in the comparison design cannot be fixed at such late stage.

A review of SC's protocols and reports from the WG-KC is not mandatory. When requested, the WG-KC reviews also SC's protocols and reports.

2. Chairmanship and membership

The chair K. Hill resigned during the last CCT meeting (May 2014). In the same meeting, the new chair A. Peruzzi was nominated. Nevertheless, K. Hill carried out the duties of the chair for one additional year, until his retirement from NRC on 15/05/2015. K. Hill, with his systematic and continuous efforts, substantially increased the efficiency of the WG-KC and all the members thanked him for his contribution.

As anticipated in the CCT meeting report 2014, due to increased workload, the recruitment of additional members was required. Helen McEvoy (NPL) and Edgar Mendez-Lango (CENAM) were recruited in 2015 and Christopher Meyer (NIST) and Inseok Yang (KRISS) were recruited in 2016.

The WG currently includes 13 experts:

Andrea Peruzzi (chair)	VSL (the Netherlands)
Stephanie Bell	NPL (United Kingdom)
Robert Benyon	INTA (Spain)
Helen McEvoy	NPL (United Kingdom)
Edgar Mendez-Lango	CENAM (Mexico)
Christopher Meyer	NIST (USA)
Steffen Rudtsch	PTB (Germany)
Richard Rusby	NPL (United Kingdom)
Gregory Strouse	NIST (USA)
Andrew Todd	NRC (Canada)
Rod White	MSL (New Zealand)
Yoshiro Yamada	NMIJ (Japan)
Inseok Yang	KRISS (Korea)

3. Performed reviews and KCDB status

Since the last CCT meeting in 2014, the services of the WG-KC were requested by 50 different comparisons.

- For the following 18 comparisons, the Draft B Report was approved:

Comparison ID	Type	Starting year	Draft B approved
CCT-K6	KC	2001	24-04-15
CCT-K2.5	KC	2006	15-01-15
CCT-K3.2	KC	2010	19-09-16
CCT-S1	SC	2006	18-02-16
APMP.T-K3.4	KC	2011	12-05-16
APMP.T-K7	KC	2007	22-05-16
APMP.T-S6	SC	2009	23-12-16
APMP.T-S7	SC	2010	25-03-16
COOMET.T-K5	KC	2014	25-06-15
COOMET.T-S1	SC	2014	2-07-15
EURAMET.T-K1	KC	2008	10-04-17
EURAMET.T-K3.5	KC	2013	18-07-14
SIM.T-K6.1	KC	2011	31-08-15
SIM.T-K6.2	KC	2008	12-08-14
SIM.T-K6.3	KC	2009	23-10-14
SIM.T-K6.5	KC	2014	17-05-16
SIM.T-K9.1	KC	2012	12-05-15
SIM.T-S5	SC	2013	12-11-14

- 2 comparisons were declared abandoned on request of the pilot:

Comparison ID	Type	Starting year	Declared abandoned
APMP.T-K6.1	KC	2012	8-09-14
EURAMET.T-K3.2	KC	2009	15-05-17

- 27 new comparisons were initiated (and one of them already completed)

Comparison ID	Type	Protocol submitted	Protocol approved
CCT-K6.2	KC	24-10-14	7-01-15
CCT-K8	KC	26-11-16	22-02-17
CCT-K10	KC	22-07-14	22-09-14
APMP.T-K6.2013	KC	29-04-15	23-10-15
APMP.T-K9	KC	2-06-15	2-12-16
APMP.T-S9	SC	8-05-14	1 st review sent 16-07-15
APMP.T-S13	SC	29-04-15	2 nd review sent 23-10-15
APMP.T-S14	SC	9-11-16	1 st review sent 22-02-17
APMP.T-S15	SC	23-03-17	1 st review sent 19-04-17
APMP.T-S16	SC	16-03-17	1 st review sent 04-04-17
COOMET.T-S2	SC	11-03-16	27-05-16
EURAMET.T-K6.2	KC	5-05-17	1 st review due 29-05-17
EURAMET.T-K7.4	KC	29-02-16	20-09-16
EURAMET.T-K8.1	KC	5-05-17	1 st review due 29-05-17
EURAMET.T-K9	KC	25-11-14	18-02-15
EURAMET.T-K9.1	KC	6-09-16	3-05-17
EURAMET.T-K9.2	KC	6-03-17	1 st review sent 11-04-17
EURAMET.T-S5	SC	1-03-16	12-05-16
EURAMET.T-S6	SC	18-05-16	1 st review sent 01-08-16

SIM.T-K6.5	KC	5-12-14	25-03-15
SIM.T-K6.6	KC	12-10-16	2 nd review sent 13-08-17
SIM.T-K6.7	KC	9-05-17	1 st review due 29-05-17
SIM.T-S7	SC	26-08-15	2 nd review sent 11-07-16
SIM.T-S9	SC	12-10-16	1 st review sent 16-12-16
SIM.T-S10	SC	22-03-17	1 st review sent 19-04-17
GULFMET.T-K9	KC	18-01-17	2 nd review due 22-05-17
GULFMET.T-S1	SC	3-05-17	2 nd review due 22-05-17

- 4 comparisons, initiated before May 2014 but not yet completed, requested WG-KC action:

Comparison ID	Type	Protocol submitted	Protocol approved	Draft B submitted	Draft B approved
AFRIMETS.T-S4	SC	19-02-13	no	14-09-15	no (issues)
AFRIMETS.T-S5	SC	13-12-16	no	13-12-16	no (issues)
APMP.T-K7.1	KC	21-11-11	6-02-12	7-11-16	not yet
EURAMET.T-S4	SC	3-03-14	no	4-03-14	not yet

- 25 running comparisons did not request WG-KC action since May 2014:

Comparison ID	Pilot	Starting year	Status in KCDB	Last communication WG-KC/Pilot
CCT-K1.1	NIST	2006	Report in progress, Draft A	Comments on protocol sent to pilot in 2006
CCT-K2.2	INRIM	2005	In progress	WG-KC not contacted
CCT-K4.1	NMIA	2012	In progress	Protocol approved in 2012
CCT-K6.1	NPL	2005	Report in progress, Draft A	Status report received in 2011 (measurement completed)
CCT-K9	NIST	2011	Measurements completed	Protocol approved in 2012
CCT-S2	LNE/CNAM	2007	Report in progress, Draft A	WG-KC not contacted (but strictly not required)
CCT-S3	NMIJ	2007	Report in progress, Draft A	WG-KC not contacted (but strictly not required)
AFRIMETS.T-S1	NMISA	2009	Report in progress, Draft B	Comments on report sent to pilot in 2012
AFRIMETS.T-S2	NMISA	2012	In progress	Comments on protocol sent to pilot in 2012
AFRIMETS.T-S3	NMISA	2012	In progress	WG-KC not contacted (but strictly not required)
APMP.T-K3.5	KRISS	2011	Measurements completed	Protocol submitted in 2011 but not equivalent to K3
APMP.T-K3.6	NIM	2013	Planned	Protocol approved in 2013
APMP.T-K4.1	NIM	2013	Planned	Protocol approved in 2013
APMP.T-K8	NMIJ	2012	In progress	Comments on protocol sent to pilot in 2012
APMP.T-S8	NML Philippines	2013	In progress	Comments on protocol sent to pilot in 2013
APMP.T-S11	NMIJ	2013	In progress	Protocol approved in 2013
APMP.T-S12	NMIJ	2013	In progress	Protocol approved in 2013
COOMET.T-K3.3	VNIIM	2014	Planned	Protocol approved in 2013
EURAMET.T-K3.4	MIRS/UL-FE/LMK	2011	Report in progress, Draft A	Comments on protocol sent to pilot in 2013
EURAMET.T-K8	PTB	2013	Report in progress, Draft A	Protocol approved in 2013
EURAMET.T-S3	CEM	2013	In progress	Protocol approved in 2014
SIM.T-S3	LCPNT Chile	2012	Report in progress, Draft B	Comments on report sent to pilot in 2012
SIM.T-S4	PTB	2012	Report in progress, Draft B	Comments on report sent to pilot in 2012
SIM.T-S6	NIST	2012	Report in progress, Draft A	WG-KC not contacted (but strictly not required)
SIM.T-S8	INN Chile (?)	2014	In progress	WG-KC not contacted (but strictly not required)

Including the 50 comparisons approved before May 2014, The KCDB currently displays 111 comparisons.

4. Consistency of RMO KC protocols with parent CIPM KC protocols

The CIPM MRA-D-05 requires that "*The RMO key comparison must follow the same protocol as a preceding CIPM key comparison.*" The requirement to comply with all aspects of the parent CIPM comparison has the effect of freezing-in historical practices that may be obsolete. The WG-KC agreed that protocols should reflect the current practice rather than the historical practice, so RMO KC protocols do not have to be identical to the parent CIPM KC protocol. Of course, changes that jeopardize the link cannot be accepted.

5. Templates to guide the comparison pilots in preparing protocols and reports

In order to improve the quality of protocols and reports, with consequent reduced workload for comparison pilots and WG-KC reviewers, two templates were prepared to be used by the comparison pilots when preparing protocols and reports (one template for protocols and one template for reports).

Such templates, besides forcing the writer to give the appropriate section structure to the document, remind the writer all the elements that must be included in each section, based on the MRA document CIPM MRA-D-05.

6. Review process

In the past, three reviewers per document were appointed. There was some speculation on the sustainability of maintaining 3 reviewers per document. During the WG-KC meeting at TEMPMEKO2016, it was agreed that the preferred number of reviewers per document remains three, but some flexibility is allowed. For example, two reviewers is acceptable when the review concerns a Supplementary Comparison.

7. Meetings and interactions between members

Since the previous CCT meeting (2014), the WG-KC convened twice:

- on June 29th, 2016, in Zakopane, Poland (during TEMPMEKO2016)
- on May 30th, 2017, at BIPM, Paris (prior to the CCT meeting 2017).

The core of the WG-KC work is carried out by uploading/downloading documents and comments from the Discussion Forum of the BIPM website. When needed, a more direct email exchange between members takes place.