

# BIPM-SIM Training course: KCDB 2.0

*Case study: SIM internal  
procedures for intra-RMO  
review of CMCs*

BIPM Capacity Building and  
Knowledge Transfer Programme  
(CBKT)

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SIM TC Chair

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Calibration and measurement capabilities in the context of the CIPM MRA Guidelines for their review, acceptance and maintenance CIPM MRA-G-13

<https://www.bipm.org/documents/20126/43742162/CIPM-MRA-G-13.pdf/f8b8c429-42e0-4cf1-dc6c-bc60ab7f371a>

# CIPM MRA-G-13

## 5.1 Intra-regional review

Each RMO is responsible for establishing the process for an intra-RMO review to assure that CMCs submitted to the JCRB review have sufficient technical support. Unlike the JCRB review, the intra-regional review does not have deadlines programmed in the KCDB web platform. The RMO TC/WG Chair may engage local reviewers in the CMC review process.



**SIM REFERENCE DOCUMENT Nº 05**  
**SIM Procedure for Review of Calibration and Measurement Capabilities**  
**Submitted on the KCDB 2.0 Platform of the CIPM MRA**

This SIM Reference Document denoted SIM-D-05, specifies requirements and the procedures for reviewing CMCs declared by NMIs being Member or Associate of SIM under CIPM's *Mutual Recognition Arrangement* (CIPM MRA) of national measurement standards and of calibration and measurement certificates issued by national metrology institutes (NMIs) or their designated institutes (DIs) (<http://www.bipm.org/en/cipm-mra>).

## IntraRMO Review of CMCs

*SIM TC and QSTF establish the general guidelines and procedures for SIM MWG to follow during the intraRMO review. **In addition, each SIM MWG can establish its own mechanisms that follow the SIM TC and QSTF procedures and JCRB rules.***







CMCS

COMPARISONS

NEWS

STATISTICS

Home &gt; Pending actions

[Reset all](#)

COMPARE CMCS

SELECT ALL



EXPORT XLS

## Metrology area

☒ Chemistry and Biology

Show 10 entries

&lt; 1 2 3 4 5 ... 86 &gt;

## Category

- ☒ Advanced materials
- ☒ Biological fluids and materials
- ☒ Electrolytic conductivity

[Extend list](#) [Deselect list](#)

## Group

- ☒ Cell Analysis Working Group
- ☒ Electrochemical Analysis Working

<input type="checkbox"/> CMC STATE	CMC IDENTIFIER	METROLOGY AREA	GROUP	CATEGORY	ANALYTE	SUBMITTING RMO	COUNTRY	RMC COM
<input checked="" type="checkbox"/> M	<a href="#">AFRIMETS-QM-ZA-0000012H-4</a>	QM	Gas Analysis Working Group	Gases	carbon dioxide	AFRIMETS	South Africa	AFRIM
<input type="checkbox"/> M	<a href="#">AFRIMETS-QM-ZA-0000012I-2</a>	QM	Gas Analysis Working Group	Gases	propane	AFRIMETS	South Africa	AFRIM
<input type="checkbox"/> M	<a href="#">AFRIMETS-QM-ZA-0000012J-2</a>	QM	Gas Analysis Working Group	Gases	nitrogen monoxide	AFRIMETS	South Africa	AFRIM

## CMC detail view

### CMC Identifier

Metrology Area

Chemistry and Biology

RMO

Intra-Africa Metrology System

Country

South Africa

Institute

National Metrology Institute of South Africa

CMC Identifier

AFRIMETS-QM-ZA-0000012H-4

Sub-category

Environmental

Group

Gas Analysis Working Group

Measurand

Matrix

nitrogen

CAS number

124-38-9

Analyte or component

carbon dioxide

Quantity

Amount-of-substance fraction

### Information to reviewer

Clear description of supporting evidence for this claim

INTI has successfully participated in CCQM-K19.2018. INTI has been evaluated by a Peer Review in July 2017 with satisfactory results. Since 1998 INTI has implemented a Management Quality System. The staff of INTI has extensive experience in chemical and metrological activities. INTI has participated in many regional and CCQM key comparisons and pilot study comparisons for inorganic analysis. INTI is an active member of the SIM and BIPM Working groups.

Details of calibrants used and assessment of their purity/certification

NIST 186 NIST 188 NIST 191

Exact nature of service delivered

Assignment of value by INTI of a material supplied by the client

[→ Read or add comments](#)

### COMMENTS ON SIM-QM-AR-00000NSS-1



WRITER

Maria Mabel Puelles (SIM, INTI) *commented on 6 April 2022*

**COMMENT (Technical)**

“ Yes Angelique, I wrote in Comments for the publication "Temp 25°C"  
Excuse me, Daniela, which is the QMS document?

PILOT, REVIEWER, TC\_CHAIR, WG\_CHAIR, WRITER

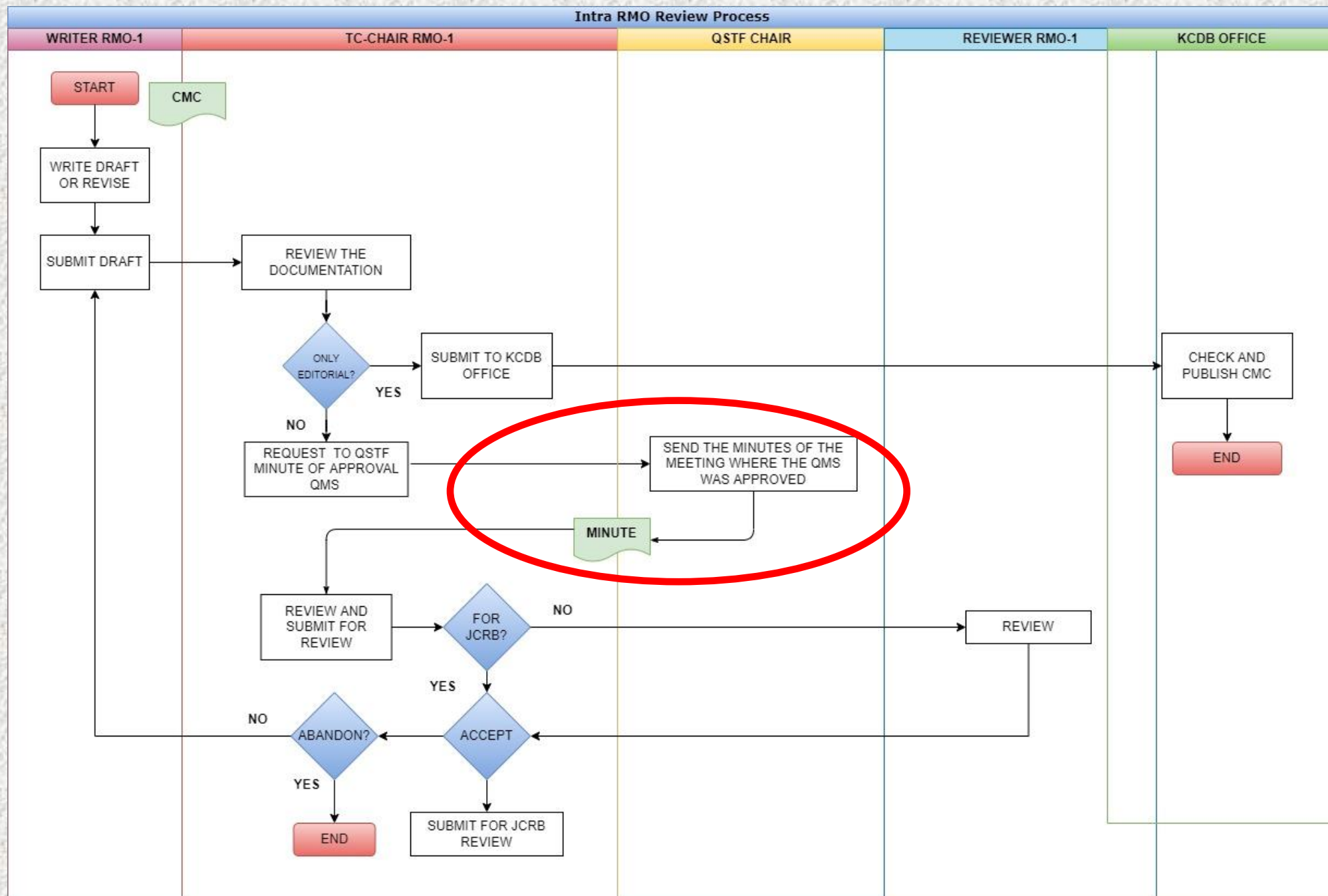
Angelique BOTHA (AFRIMETS, NMISA) *commented on 4 April 2022*

**COMMENT (Technical)**

PRINT

QUIT







NMI/DI



QSTF (Chair/Deputy-Chair/Secretariat)



QSTF members

**Standards**

ISO 17025

ISO 17043

ISO 17034

**CIPM-MRA**

CIPM MRA-G-12

CIPM MRA-G-13

**Review  
procedures**

QSTF 00

QSTF 1

QSTF 3

QSTF 4

Implement the QMS to  
support the CMC

Develop an  
assessment of the  
QMS and the technical  
area that will support  
the CMC

Request space at the  
next meeting to make a  
presentation of the QMS

Submission of the  
documentation in the  
Sharepoint of the QSTF

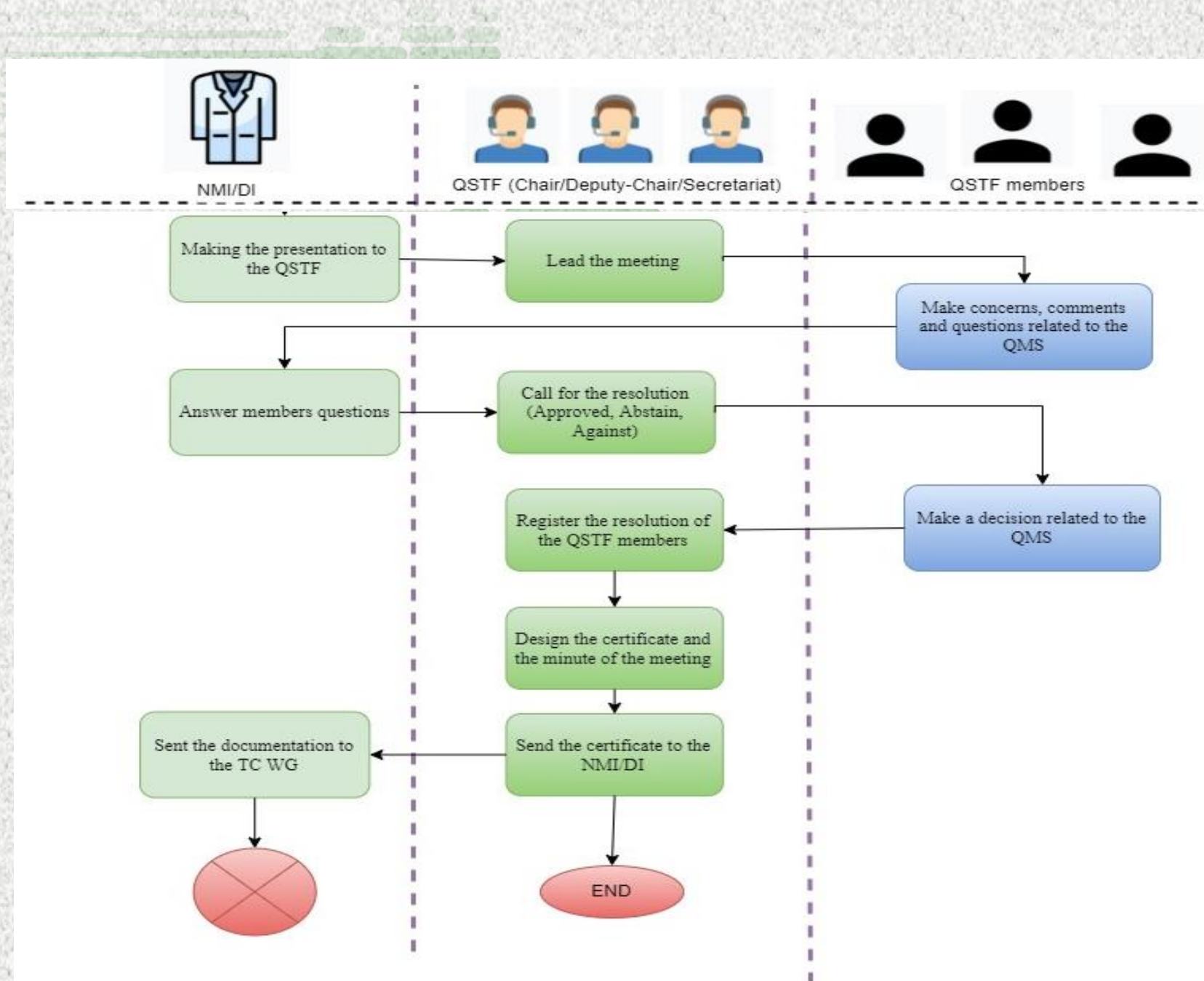
Review the  
agenda and sheduled the  
presentation

Share the agenda and  
make the call to the QSTF  
meeting

Review documentation







# Electricity and Magnetism

The BIPM key comparison database



## CLASSIFICATION OF SERVICES IN ELECTRICITY AND MAGNETISM

Version No 9 (dated 04 June 2020)

### METROLOGY AREA: ELECTRICITY AND MAGNETISM

#### BRANCH: DC VOLTAGE, CURRENT, AND RESISTANCE

1. **DC voltage** (up to 1100 V, for higher voltages see 8.1)
  - 1.1 **DC voltage sources**
    - 1.1.1 Single values<sup>1</sup>: *standard cell, solid state voltage standard*
    - 1.1.2 Low value ranges (below or equal to 10 V): *DC voltage source, multifunction calibrator*
    - 1.1.3 Intermediate values (above 10 V to 1100 V): *DC voltage source, multifunction calibrator*
    - 1.1.4 Noise voltages (for noise currents see 3.1.5, for RF noise see 11.4): *DC voltage source, DC amplifier*
  - 1.2 **DC voltage meters**
    - 1.2.1 Very low values (below or equal to 1 mV): *nanovoltmeter, microvoltmeter*
    - 1.2.2 Intermediate values (above 1 mV to 1100 V): *DC voltmeter, multimeter, multifunction transfer standard*
  - 1.3 **DC voltage ratios** (for input voltages up to 1100 V)
    - 1.3.1 Up to 1100 V: *resistive divider, ratio meter*
    - 1.3.2 Attenuation: *attenuators*

Categories	Primary reviewer	Secondary reviewer
DC voltage	Lucas Di Lillo (INTI)	David Avilés (CENAM)
Resistance	Felipe Hernandez (CENAM)	Wendler Kai (NRC)
DC current	Regis Landim (Inmetro)	Isabel Castro (ICE)
Impedance	Marcel Coté (NRC)	Andrew Koffman (NIST)
Ac voltage	Lucas Di Lillo (INTI)	Sara Campos (CENAM)
Ac current	Sara Campos (CENAM)	Ghislain Granger (NRC)
Power	Daniel Slomovitz (UTE)	Harold Park (NRC)
HV & HC	José Luis Casais (INTI)	Marlin Kraft (NIST)
E&M fields	Perry Wilson (NIST)	Israel Garcia
RF	Ronald Ginley (NIST)	





Flow and  
volume

The chair and vice chair split the workload of the review. No other members of the WG participate in the review process

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# Photometry and Radiometry

In general they follow SIM-D-05 with some changes to take into account specific CCPR guidelines

## Rules for review of CMC claims and requirements for supporting evidence

### 1. INTRODUCTION

This document sets out the guidelines to be followed when reviewing the acceptability of CMCs submitted for inclusion in the BIPM KCDB. It describes the approach used to determine what level of review is needed for each quantity and the evidence that is required to support this review.

[https://www.bipm.org/documents/20126/56931775/CCPR-G9\\_rules+for+CMC+review.pdf/27924be5-4ea8-0d5c-9927-336ba79adbc7](https://www.bipm.org/documents/20126/56931775/CCPR-G9_rules+for+CMC+review.pdf/27924be5-4ea8-0d5c-9927-336ba79adbc7)



# Chemistry and Biology

The MWG-9 in general follows the rules in SIM-D-05 document but they have not carried out any intra-RMO CMC review using the KCDB 2.0 yet. The last reviews were the following:

- The last update from INMETRO in acoustics and vibration was carried out via e-mail and using the old JCRB CMC system. The publication of the updated CMCs using entirely the old system was made directly on the KCDB 2.0.
- The review of 5 ultrasound CMCs from Inmetro started using the KCDB 2.0 only for the JCRB review stage. The intra-RMO stage was conducted previously using the former procedure by exchanging e-mails
- NRC recently requested update of only format issues in their already published CMCs and therefore they did not need to be submitted to the intra-RMO review process neither the JCRB review. It was implemented directly by the KCDB coordination.

## Time & Frequency

Before the KCDB 2.0 database was implemented, the intra-RMO CMC's in time and frequency were managed by the WG chair.

Since the implementation of the KCDB 2.0 database, they have had no CMC from SIM to review. In case we have a presentation, we will manage it like the rest of the reviews: We have agreed which INM reviews the CMCs for each Metrology Area. NRC reviews the CMC's in "Time difference", INM or INTI review the "Frequency" CMC's and CENAMEP or ICE review "Time Interval".

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## Ionizing Radiation and Radioactivity

Due to the relatively small group, the TC handles intra-RMO CMC review in the same manner as the inter-RMO review. And that is, the CMCs are sent to the entire membership. The chair requires at least two individuals perform the review from different NMI/DIs and normally we receive comments from 3-4 members.

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Lenght

They do not have implemented a procedure other than the one indicated in SIM-D-05 document.

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## Questionnaire Which May Be Used for the Review of CMCs

<b>NMI/DI:</b>	
<b>Person responsible:</b>	
<b>Metrology area</b> <b>Branch:</b> <b>Service:</b> <b>Sub-service:</b> (Consistent with items in KCDB)	(Please specify area, branch and service to which the information reported below applies)

Review Process			
	Yes	No	Comments
<b>Participation in comparisons</b>			
<b>CC or RMO KCs?</b>			(Please name comparison identifier)
<b>Supplementary Comparisons?</b>			(Please name comparison identifier)
<b>Past comparisons?</b>			(CIPM, RMO or others, please specify)
<b>Bilateral comparisons?</b>			(Please specify)

Technical activities			
Measurement methods			(Brief description of method used)
Traceability of standards			(Name NMIs/DIs which provide traceability)
Written measurement instructions			(Written procedures available? Language?)
Uncertainty budgets			(Are they already available? If yes, are they calculated following the ISO Guide to the Expression of Uncertainty in Measurement?)
Key publications			(Please specify)



Quality management system			
Status of implementation of QMS?			(ISO/IEC 17025 and/or 17034 fully implemented?)
Self-declared or accredited QM system?			(If accredited, please name accreditation body)
Which CMCs are covered by the accreditation?			(Are all CMCs covered by the accreditation? If no, please specify the corresponding areas of measurement)
Which CMCs are covered by self-declaration?			(List here all areas of measurement which are not covered by accreditation)
Engagement in TC-Quality			. (Participation in meetings and other activities)
QM system reviewed by TC-Quality?			(Meeting when the QMS was presented, status of review)

***NMI submission should include a technical note that provides detailed description/explanation of all the CMC edits with the relevant technical information to support the claims.***

Additional information			
Participation in RMO technical activities?			(Projects, meetings, etc.; please specify)
Visits of technical experts?			(Please specify name and date of visit)
On-site visits by peers?			(Please specify name and date of visit)
Any other information?			(i.e. publications, etc.)

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Home

https://www.bipm.org/kcdb/

Configuración y más (Alt+F)

→ [Supplementary comparisons by state or economy](#)

→ [More comparison statistics](#)

KCDB

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Help on the KCDB

FAQ

API KCDB

Contact

CIPM MRA

Participants

About the CIPM MRA

JCRB

Policy documents

Guidance on Comparisons

Guidance on CMCs

CLASSIFICATION OF SERVICES

Acoustics, Ultrasound and Vibration

Chemistry and Biology

Electricity and Magnetism

Ionizing Radiation

Length


Mass and related quantities

Photometry and Radiometry

Thermometry

Time and Frequency


AFRIMETS

BIPM

ROOMET


EURAMET

ULFMET

IM

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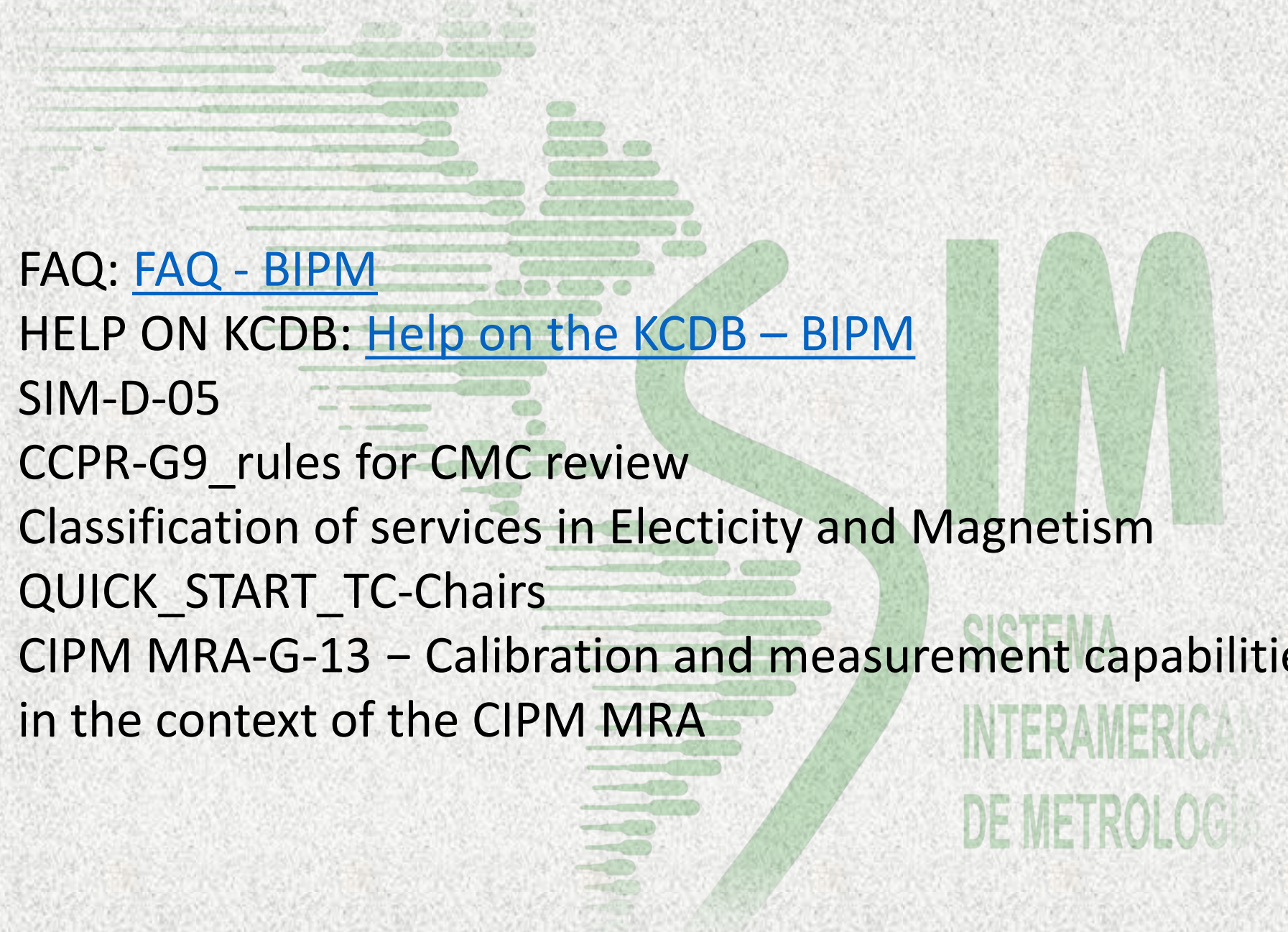
ACCEPT



ESP LAA

19:28 15/4/2022



- 
- FAQ: [FAQ - BIPM](#)
  - HELP ON KCDB: [Help on the KCDB – BIPM](#)
  - SIM-D-05
  - CCPR-G9\_rules for CMC review
  - Classification of services in Electricity and Magnetism
  - QUICK\_START\_TC-Chairs
  - CIPM MRA-G-13 – Calibration and measurement capabilities in the context of the CIPM MRA



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Thanks for your attention!!!

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