



***GULF ASSOCIATION  
FOR  
METROLOGY  
(GULFMET)***

***Procedure for the  
Review of Calibration  
and Measurement  
Capabilities (CMCs)***

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## 1. Introduction

This GULFMET procedure specifies the requirements, tasks and responsibilities for reviewing calibration and measurement capabilities (CMC's) declared by NMIs being GULFMET Members or Associate Members under the CIPM's Mutual Recognition Arrangement of national measurement standards and of calibration and measurement certificates issued by national metrology institutes (CIPM MRA).

In order for CMC's to be approved for publication in Appendix C of the BIPM key comparison database (KCDB), maintained by the BIPM and publicly available on the Web, they must first be reviewed and approved by the appropriate TC/WG of GULFMET or other RMO<sup>1</sup> under the responsibility of the TC Chairperson according to the procedure described in clause 3. Once this approval is obtained, CMC's undergo an inter-regional review, where TC/WGs from other RMOs verify that the JCRB criteria for acceptance of data for Appendix C have been followed, thus providing the technical confidence required for publication.

CMC's recognized under the CIPM-MRA consist of the best measurement capabilities ordinarily available to the customer through the NMI's services and supported in range and uncertainty of measurement by a fully implemented Quality Management System (QMS) which has been approved and is regularly reviewed by GULFMET TC-QS.

As TC's play a key role in this process by conducting the intra-regional and inter-regional technical reviews and eventual approval of each CMC submission, this document specifies the requirements and explains the steps GULFMET TC Chairs need to follow in order to carry out this process.

## 2. CMC Review Criteria

The JCRB requires that the range and uncertainty of the CMCs submitted is consistent with information from some or all of the following sources:

1. Results of key and supplementary comparisons
2. Documented results of past CC, RMO or other comparisons (including bilateral)
3. Knowledge of technical activities by other NMIs, including publications
4. On-site peer assessment reports
5. Active participation in RMO projects
6. Other available knowledge and experience

Technical supporting evidence for CMCs is obtained mainly through the results of key comparisons (KC's) or supplementary comparisons (SC's). The former are designed to provide evidence on the proficiency of NMI's in the principal techniques in each field while the latter are undertaken by RMO's when CMC's require additional support not provided by key comparisons. Since the results of comparisons are the ideal supporting evidence for CMC's submitted for review NMIs are encouraged to participate in

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<sup>1</sup> This is necessary in the interim period when GULFMET has a provisional RMO status as explained in clause 3.2.

comparisons whenever they have the opportunity to do so. However, all other sources either not directly related to the available comparison results or for which comparison results are not yet available may be considered to underpin submitted CMC's claims. NMI's submitting the CMC's are primarily responsible for providing the information that they believe is necessary to support their claims through a questionnaire (Appendix 1) which serves as a tool providing additional information about the claimed CMCs.

### **3. GULFMET Review Process**

The GULFMET review process will consist of two parts, a technical review by the appropriate Metrology Technical Committee (TC) and a QMS review by TC-QS.

The same procedures are followed in the case of modifying CMC's already published in Appendix C when there is a change of the method of measurement or reduction of the uncertainty or increase in scope.

#### **3.1. Intra-regional Review**

Each NMI should submit its claimed CMC's through its contact persons to the relevant GULFMET TC Chair. These CMC's must have been approved by the NMI's management and fully covered by its quality management system. The CMC review is performed by direct contact between the reviewers appointed by the TC Chair and the persons responsible from the submitting NMIs until a consensus can be reached.

Any inconsistencies that are identified or additional actions that should be taken will be discussed with the TC member representing the submitting NMI. Based on these discussions, the NMI may modify its submitted CMCs, or withdraw its submission. In case that not all concerns can be resolved, the TC Chair contacts the reviewers and the submitting NMI's for resolution, the final decision being with the GULFMET TC Chair.

Once the discussions and any modifications have been completed, the GULFMET TC Chair will prepare a brief report on the review process and recommendations including notes on any unresolved inconsistencies. The report, indicating the evidence on which the TC recommendations are based, along with the approved CMC's should be sent to the submitting NMI as well as the GULFMET Secretariat. A copy of the CMCs and the report will also be sent to the GULFMET representative on the JCRB.

#### **3.2. Interim Intra-regional Review**

As GULFMET has been provisionally accepted as an RMO by the JCRB, it cannot formally fully implement the International Mutual Recognition Arrangement (MRA) between regional NMI's with regard to the intra-regional review process of CMC's submitted by member NMI's for inclusion in Appendix C of the CIPM- MRA.

However, in order to avoid impeding GULFMET member NMI's from attaining international recognition of their CMC's during this interim period, the JCRB has provided a mechanism for CMC claim submission with the review being conducted through another RMO until regular RMO status is attained by GULFMET.

In this case, once CMC's have been approved by the NMI's management they can be submitted for review, through their contact persons to the relevant GULFMET TC Chair at

set fixed dates (e.g., the bi-annual TC meeting) and for a fixed period for the intra-regional review. The TC Chair collects the CMC sets and any supporting evidence and sends them to the TC/WG chairperson of the other RMO for review. In this case the TC Chair acts to liaise between the submitting NMI and the other RMO.

Alternatively, the submitting NMI may also be granted permission (by the relevant TC and the TC-QS) to submit its CMC's independently for review by another RMO, provided the submitting NMI is an Associate Member of such other RMO and has that RMO's prior agreement for this action. The results of such a review by another RMO shall be presented to the relevant TC and TC-QS as supporting evidence of its CMC submission.

#### **4. Inter-regional Review**

The inter-regional review procedure is explained in JCRB-14/06(1) JCRB "Rules of Procedure for CMC entry into Appendix C". The CMC review process is carried out through a password protected web page which can be entered via the JCRB section of the BIPM by clicking on the link labelled "JCRB CMC site". TC Chairs can obtain a username and a password from the JCRB Executive Secretary. The CMC files to be reviewed can be downloaded from this page. The JCRB requires that CMC's submitted for publication in Appendix C are accompanied by an RMO report indicating that the local TC has approved the range and uncertainty of said CMC's and that each of them is supported by a fully implemented QMS which has been reviewed and approved by the local RMO. Once the files are posted for review, the corresponding technical contacts in each area get in touch directly with each other to exchange comments or concerns.

#### **5. Quality Management System Review**

The quality management system review process as well as the monitoring of the QMS life through annual reports and on-site visits by peers is described in the GULFMET document TC-143404-02 Version: 00 (2017) "Quality Management System review procedure".

## Appendix 1: Questionnaire for the Review of GULFMET CMC's

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

Participation in comparisons	
<b>CC or GULFMET KC's?</b>	<i>(Please name comparison identifier)</i>
<b>CC or GULFMET SC's?</b>	<i>(Please name comparison identifier)</i>
<b>Past comparisons?</b>	<i>(CIPM, GULFMET or others, please specify)</i>
<b>Bilateral comparisons?</b>	<i>(Please specify)</i>

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

Quality management system	
<b>Status of implementation of QMS?</b>	<i>(ISO/IEC 17025 and/or ISO Guide 34 fully implemented?)</i>
<b>Self-declared or accredited QMS?</b>	<i>(If accredited, please name accreditation body)</i>
<b>Which CMCs are covered by accreditation?</b>	<i>(Are all CMCs covered by the accreditation? If not, please specify the corresponding areas of measurement)</i>
<b>Which CMCs are covered by self-declaration?</b>	<i>(List here all areas of measurement which are not covered by accreditation)</i>
<b>Engagement in TC-QS?</b>	<i>(Participation in meetings and other activities)</i>
<b>QMS reviewed by TC-QS?</b>	<i>(Meeting when the QMS was presented, status of review)</i>

Additional information	
<b>Participation in GULFMET technical activities?</b>	<i>(Projects, meetings etc; please specify)</i>
<b>Visits of technical experts?</b>	<i>(Please specify name and date of visit)</i>
<b>On-site visits by peers?</b>	<i>(Please specify names and date)</i>
<b>Any other information?</b>	<i>(Please specify, if relevant)</i>