
Accreditation of a Danish Metrology Institute (MI)

Nr.	:	AML K 03
Dato	:	2016.12.21
Side	:	1/3

1. Objective/Purpose

The objective of this AML is to clarify how the Danish metrology institutes (MIs) can benefit from the accreditation system and how DANAK can support the participation of the MI in the CIPM MRA (The Mutual recognition arrangement of the International Committee for Weights and Measures). The Metrology Institutes (MI's) consist of the Danish *National Metrology Institute* and the *Designated Institutes* that have signed the CIPM MRA. This AML was written by a joint working group with members from Daniamet and DANAK.

2. Background

The Co-operation between BIPM (The International Bureau of Weights and Measures) and ILAC (the International Laboratory Accreditation Cooperation) has during the past years increased the mutual understanding of the processes within the MRA of CIPM and within accreditation. In 2007 BIPM and ILAC published "CALIBRATION AND MEASUREMENT CAPABILITIES", A paper by the joint BIPM/ILAC working group" in which it is made clear that BMC (the best measurement capability) and CMC (the calibration and measurement capability) are identical. This document is today an informative annex to ILAC P14 ILAC Policy for uncertainty in Calibration.

The requirements of ILAC P14 have further been implemented in DANAKs document AB 11 Uncertainty of measurement in Calibration. Later BIPM and ILAC have published "Joint ILAC – CIPM Communication regarding the Accreditation of Calibration and Measurement Services of National Metrology Institutes 7 March 2012". Daniamet and DANAK have together decided to clarify the use of these documents so that DANAK's assessment of MI's can serve the needs of the MI's in the best possible way.

3. CMC and comparisons

MI's are expected to participate in the CIPM MRA and have their CMCs accepted for publication in the KCDB (Key comparison database of BIPM). Key and supplementary comparisons are the ideal supporting evidence for the validity of submitted CMC's. However, they are not strictly required, and data from some or all of the following sources may be used [X1]:

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

Technical Committees reviewing submitted CMCs may request additional documentation before acceptance of the CMCs. Submitted CMCs are reviewed in two stages; intra-regional review and inter-regional review. This tends to slow the CMC review process within the CIPM MRA.

If a MI finds that the CIPM MRA review of CMCs is too slow, it can apply DANAK for approval of the CMCs. DANAK will review the documentation and may choose to approve the CMCs, in particular for secondary services. Thus, services may be provided under DANAK accreditation before acceptance by the CIPM MRA. In this case, calibration certificates may hold the DANAK logo but not the CIPM MRA logo.

Laboratories shall be careful in any period where CMCs in one system are not aligned with CMCs in the other system and take care that logos are used appropriately. For Danish MI's the CIPM logo shall not be used before

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accreditation for the service has been granted as required in contract with SIK (The Danish Safety Technology Authority).

4. Metrological traceability of a CMC

According to the requirements for the CIPM MRA [X1] a MI shall for a specific measurand establish the traceability to either the MI's own realization of the measurand or to another MI, where the same measurand is a part of the KCDB or to the BIPM. Traceability to accredited laboratories under the ILAC Arrangement is accepted for auxiliary influence quantities with minor uncertainty contributions. Within the CIPM there is more focus on comparisons with other laboratories with regards to the primary service. This is equivalent to the requirements for all accredited laboratories as listed in AB 3 section 3.2-3.6.

A laboratory claiming traceability to its own primary standard must document the performance of this primary standard. This is normally accomplished via key comparisons or supplementary comparisons at the primary level.

If an accredited service, which is traceable to an internal primary standard, involves methods that differ significantly from the operation of the primary standard, the laboratory will have to document competence in their accredited service through comparisons at the level of these services.

5. Technical assessors

At assessments DANAK will include technical assessors (TA) who are competent according to the EURAMET requirements so that the MI's use of the accreditation system will be a support of the MI's participation in the CIPM MRA. It is, though, the responsibility of the MI to consider whether or not the TA fulfills the EURAMET requirements. If it is found that a TA does not fulfill the EURAMET requirements, the MI can request that another TA is involved in the assessment. The evaluation of a MI can be performed in English and relevant parts of the report will be delivered in English upon demand.

6. Information processes

The service categories listed in the KCDB are not identical with the information that is available in the webtool database of DANAK. Therefore the CMC in the KCDB might not be identical with the information in webtool. The following items are important for the credibility of the listings:

- The listings in both databases have been derived by applying the same calibration procedure and the source of any differences between the listings are only the different representations of the KCDB and DANAK's webtool.
- If a CMC in the KCDB is altered based on an application from a Danish MI, the MI shall inform DANAK and apply for a change/extension of the accreditation, so that the scope of accreditation can be modified accordingly. It is recognized that there can be a delay in these processes within the CIPM MRA and with respects to the accreditation. This is considered a part of the information duty, see AB 1 point 8.1.
- If a CMC listed in the KCDB is changed as a result of a Euramet TC requiring the change (e.g. enlarging the uncertainty of the CMC), the MI shall immediately inform DANAK and apply for the change (if any) of the accreditation. This is considered a part of the information duty, see AB 1 point 8.1.
- If an application to change the CMC listed in the KCDB has not been granted, the MI shall immediately inform DANAK, if DANAK already has approved the corresponding change of the CMC. This is considered a part of the information duty, see AB 1 point 8.1.

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DANAK expects that the result of any calibration activity that is connected to one or more CMCs is the same whether it is a part of an accreditation or of the CIPM MRA. This means that there can not be two calibration procedures which would give different results depending upon whether an accredited calibration was performed or the calibration was a CIPM MRA service (In an interim period between approval in one of the two systems different templates may be maintained)