

## Fact sheet of the interlaboratory comparison:

### **Mass calibration – 2023\_v1**

#### **1. Context and objectives:**

As every year since 2018, CT2M organizes in 2023 a European-wide inter-laboratory comparison on mass calibration. Since January 1, 2023, CT2M is accredited for the organization of inter-laboratory comparisons on mass calibration, according to the scope of accreditation n°1-7127 (scope available on [www.cofrac.fr](http://www.cofrac.fr)) .

You are a calibration laboratory or a testing laboratory performing its own calibrations: this inter-laboratory comparison is organized for you.

The objectives of this proficiency testing are to:

- Evaluate the performance of the participants to achieve mass calibration,
- Improve client confidence of participants,
- Identify differences between participants.



#### **2. Proficiency testing item:**

The nominal masses of the entities to be calibrated in this inter-laboratory comparison are:

**5mg, 50mg, 500mg, 5g, 50g, 500g and 5kg**

The weights are calibrated at the beginning and end of the round by a reference laboratory whose uncertainties are:

Weight	5mg	50mg	500mg	5g	50g	500g	5kg
Uncertainties	2,0 µg	4,0 µg	8,0 µg	16 µg	30 µg	0,26 mg	2,6 mg

The metrological traceability of the reference value is guaranteed by the accreditation according to ISO 17025 of the reference laboratory.

#### **3. Calibration method:**

The most appropriate calibration method is the comparison of the mass to be calibrated with a standard mass of equivalent nominal value, using a comparator or a balance. Numbers of repetitions and calibration cycles are left to the participant's choice. His own procedure must be used as well as his own calibration means (standards, comparators/balances).

**Participants may register for one or more masses; it is not mandatory to calibrate all the proposed entities. In addition, any laboratory may participate, regardless of its uncertainty.**

A detailed protocol will be provided to each participant at the beginning of the campaign.

#### **4. Organization of the proficiency testing:**

Each participant must calibrate the masses within one or two weeks. All the masses will circulate successively from one participant to the other.

CT2M will provide the participants with an Excel form to use to register its results. For each calibrated mass, the participants must indicate at least the following results:

- ✓ Conventional value of the calibrated mass,
- ✓ Associated expanded uncertainty (k=2).

## 5. Assigned values and evaluation of performance:

The objectives of the performance evaluation of this inter-laboratory comparison are:

- The evaluation of the ability of each participant to obtain results in agreement with the results of all the participants (z-score or z'-score depending on the number of participants),
- The evaluation of the ability of each participant to obtain results close to an independent reference value taking into account the claimed expanded uncertainty (En score).

Two assigned values will therefore be established to meet each of these objectives:

- The robust average of the participants' results determined from the A algorithm defined in ISO 13528.
- The "reference value" determined from the reference laboratory results.

The standard deviation for proficiency assessment and the uncertainties of the assigned values will be determined in order to establish the performance scores of each participant for each entity.

## 6. Report(s):

At the end of the round, a statistical analysis will be performed, and a final report will be sent to the participants. This report will contain the results of all the participants (rendered with a codification to respect anonymity), the detection of outliers, the assigned values and their uncertainties, the performance scores of the participants and all other elements useful for the interpretation.

Intermediate reports may be provided as the study progresses if many participants require a round period longer than 6 months.

The final report will be distributed to all participants and to the reference laboratory.

## 7. Provisional schedule:

Key steps	Estimated deadline
End of registration	February, the 21 <sup>th</sup> 2023
Emailing of the detail protocol and the results form	February, the 27 <sup>th</sup> 2023
Launching of the round	February, the 27 <sup>th</sup> 2023
Publication of the final report	Dependant on the number of participants

## 8. Reciprocal commitments:

### CT2M commitments:

The CT2M undertakes to:

- ensure the confidentiality of the identity and results of participants (\*),
- carrying out the performance evaluation in complete impartiality,

- organize the PT and process the results in accordance with the reference applicable documents (ISO 17043, ISO 13528) within COFRAC accreditation (accreditation scope n°1-7127 available on [www.cofrac.fr](http://www.cofrac.fr)).

(\*) The data obtained and generated during the inter-laboratory comparison may be consulted during internal or external audits. Auditors are systematically subject to a confidentiality agreement. For communication purposes (conferences, articles, etc.), the results may be used but in a totally anonymous manner. The transport of the test item from one participant to another necessarily entails the partial loss of anonymity concerning the identity of the previous participant and the following participant. Registration for this inter-laboratory comparison implies acceptance of this condition.

#### Participant commitments:

The participants in this inter-laboratory comparison undertake to:

- respect the protocol provided for carrying out the calibrations,
- provide their results within the deadlines defined by the organizer,
- not to communicate with any other participant who may be known in order to avoid any risk of collusion,
- transmit all the necessary information of the successful completion of the inter-laboratory comparison to all the persons concerned within their laboratory,
- inform the CT2M of any malfunction.

### **9. Registration and contact:**

If you are interested in participating in this inter-laboratory comparison, please complete the associated registration form " Registration form - ILC 2023 – Mass calibration\_v1" and return it by email to [cilmasses@ct2m.fr](mailto:cilmasses@ct2m.fr).

For further information please contact us by:

- ✓ Email: [cilmasses@ct2m.fr](mailto:cilmasses@ct2m.fr)
- ✓ Phone: +33 (0)4 90 50 90 14