Fact sheet of the interlaboratory comparison:

Stopwatch calibration 2025

1. Context and objectives:

In 2025, the CT2M organizes an international inter-laboratory comparison in the field of stopwatch calibration.

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:

- Evaluate the performance of the participants to achieve stopwatch calibration,
- Monitor the continued performance of the participants to perform stopwatch calibration,
- Improve client confidence of participants,
- Identify differences between participants,

2. Proficiency testing item:

A SEIKO model CAL.W073 digital chronograph with manual triggering (resolution/precision of 1/100 second up to 3600 seconds) will be the entity subject to calibration.

To ensure its stability, the stopwatch is calibrated at the beginning and end of the circuit by an ISO 17025 accredited laboratory, with the best calibration uncertainty of 0.005 seconds (expanded uncertainty at k=2).

3. Calibration Method:

The preferred calibration method is the comparison method using a reference value (Legal time, reference instrument, etc.).

The number of repetitions per calibration point is left to the participant's choice, which should use its routine operating procedure.

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

The stopwatch may be calibrated at the following points:

15 s, 60 s, 180 s, 600 s, 1800s et 3000 s

It is not mandatory to calibrate all the proposed points to participate in this comparison.

Furthermore, any laboratory can participate, regardless of its level of uncertainty**; however, providing the calibration uncertainty at each point is a prerequisite for participation in this ILC.**

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

4. Conditions for participation

The following conditions must be met in order to take part:

- ✓ Possess the resources and facilities needed to carry out the tests/calibrations.
- ✓ Provide an uncertainty associated with each result.

⇨ *If I wish to participate in this CIL but am unable to provide an uncertainty associated with each reported result, I can be assisted by CT2M for the estimation of my calibration uncertainties as part of this CIL (paid service).*

5. Organization of the proficiency testing:

Each participant must calibrate the stopwatch within one week. The stopwatch will circulate from one participant to another according to a schedule that considers each participant's availability.

CT2M will provide the participants with an Excel form to use to register its results. For each calibration point, participants must report at least the following data:

- ✓ Reference value (V_{ref})
- ✓ Indicated value on the stopwatch to be calibrated (V_{ch})
- ✓ Stopwatch error ($V_{ch} - V_{ref}$)
- ✓ Expanded calibration uncertainty at k=2

Participants will also need to provide additional information regarding the method and equipment used in the results file.

6. Assigned values and evaluation of performance:

The objective of the performance evaluation of this interlaboratory comparison is to assess each participant's ability to obtain a calibration result close to the reference value, considering the claimed expanded uncertainty (k=2).

To achieve this objective, a reference value will be established based on the results of the laboratory performing the calibrations for the stability study and the results of the participants traceable to the SI.

The performance score used will be the En score, which allows for a comparison of participants' results with a reference value while considering expanded uncertainties (k=2).

The rounding and interpretation rules for the En score follow those described in ISO 13528 and ISO 17043 standards.

The metrological traceability of the reference values is ensured by the ISO 17025 accreditation of the laboratory performing the calibrations for the stability study and by the accreditation of any participants whose results will be considered.

7. Report(s):

At the end of the circuit, a statistical analysis will be conducted, and a final report will be sent to the participants. This report will include the results of all participants (presented with a coding system to ensure anonymity), the detection of outliers, the assigned values and their associated uncertainties, the participants' performance scores, and all other relevant elements for interpretation.

The final report will be distributed to all participants. The final report sent by the CT2M must not be distributed by participants outside their organisation. The information contained in the report may not be used by participants for scientific publications or any other communication medium.

Intermediate reports will also be issued during the circuit, in cases where a large number of participants means that the circuit will last longer than 6 months.

8. Provisional schedule:

Key steps	Estimated deadline
End of registration	April the 18th , 2025
Emailing of the detail protocol and the results form	September the 1st , 2025
Launching of the round	June the 6th , 2025
Publication of the final report	Depending on the number of participants at the end of the circuit

9. Price

Participation fees: 590 € net total

This price is independent of the number of calibration points. This price includes the provision of the instrument to be calibrated, of the results file to be completed and the participation protocol, transport costs to the circuit launch and the supply of interim and final reports containing the analysis of results and the evaluation of performance.

For participant located in the European Union, the transport cost of the proficiency testing items to the next participant (located in the European Union) will be borne by him, who is free to choose the carrier. For the participants located outside the European Union, the transport to and from of proficiency testing items must be organised and paid for by the participant.

Option: 150 € net total (in addition to the participation fees)

In addition to the final report, you have the option of receiving a personalised individual report that includes your performance evaluation only. This individual report does not contain more information than the final CIL report.

10. Reciprocal commitments:

CT2M commitments:

The CT2M undertakes to:

- guarantee the confidentiality of participants results and respect their anonymity (*),
- carrying out the performance evaluation in complete impartiality,
- organize and process the results in accordance with the reference applicable documents (ISO 17043, ISO 13528).

(*) 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.

11. Registration and contact:

To take part in the inter-laboratory comparison “STOPWATCH ILC 2025”, please complete the registration form “CT2M: REGISTRATION FORM - ILC STOPWATCH 2025” by clicking on the following link: https://forms.office.com/e/xZ5bmc6FNM or by scanning the QR Code below:

For further information, please contact us:

- ✓ Email: cilchronometre@ct2m.fr
- ✓ Phone: +33 (0)4 90 50 90 14

Appendix: Terms of sale

1. Invoicing

Invoicing is carried out after sending the final report or an intermediate report of the proficiency testing. **The settlement is 30 days end of month of the invoice date.**

Every registration fee is due when the campaign is started and won't be cancelled or refund.

2. Loss, degradation or elimination of the test item

In case of loss, damage or elimination of the proficiency test item by a participant, the CT2M reserves the right to claim its amount or purchase and new shipment. The pricing will be based on the corresponding invoice for the items.

The CT2M cannot be held responsible for loss, disposal or non-receipt of the proficency test item.

3. Number of participants

If number of participants is insufficient for an appropriate statistical treatment, the CT2M reserves the right to cancel this inter-laboratory comparison.

4. Management and storage of personnal data

The CT2M will use the data of the participants in order to communicate with the participant during the the ILC. These datas are also used to send them intermediate and/or final reports. The data may be used for commercial purposes: communication of new features on the website, communication on new ILC or on ILC in which a participant have already participated. The data will be kept for 5 years after the last communication. (The data listed in the quotes and reports are kept for 10 years.)

The provisions governing the management of personal data under the RGPD are available on our website in the "RGPD Policy" document: https://ct2m.fr/presentation-ct2m/politique-rgpd/

In the event of refusal, an email should be sent to ct2m@ct2m.fr.