Intercomparisons of distributed calibration objects in length		
Approved by Håkan Källgren	Date 2025-07-17	Page 1 (4)

CONTENT

ILC length 2025:1

Interlaboratory comparison (ILC) of measuring devices that will be transported.

Proficiency testing provider (PT)

Swedish Metrology and Quality AB (SMQ) is organizing this intercomparison on calibration of following objects.

List of objects

Steel gauge blocks in range 1,2-100 mm

Ceramic gauge blocks 1-90 mm

The objects above are sent in one parcel. Participants can choose which of the objects they want calibrate in this inter-comparison.

The concept for this intercomparison was suggested by an advisory group related to this calibration area.No subcontractors are involved in the intercomparison.

Participants welcome in this intercomparison.

The participation is open for three categories of laboratories:

- Accredited laboratories
- Laboratories that will apply for accreditation.
- Laboratories that want to evaluate their calibration quality.

The number of participants is limited to minimum 8 and maximum 20.

Description of the values included in the intercomparison.

The intercomparison will start and end with all objects calibrated at a reference laboratory providing the corresponding inter-comparison reference values.

The following uncertainties are expected.

The uncertainties by the reference laboratory are in the range of 0,02 µm to 0,04 µm
The values are expressed as expanded uncertainty, U on the 95 % confidence level.

As reference laboratory the MIKES Metrology, VTT Length Metrology Technical Research Centre of Finland is used.

Time schedule and quality check

The equipment for calibration will eventually be transported by different means in participating countries.

Participants shall inform the organizer (SMQ) by e-mail immediately at receiving and when sending the objects. The status of the object shall be reported in both situations. If there are any signs of impact for example scratches, a photograph shall be sent to the organizer to decide how to proceed and to inform the next participant.

Each participant will have access to the objects during maximum 5 days.

Participants shall use their own methods for calibration. The advised measuring points in the technical protocol are mandatory. It is possible to participate even if all parts cannot be calibrated.

Laboratories decide to report their actual uncertainty or their CMC-values.

After finishing calibration, the objects shall be sent to the next participant on the transportation list in the same parcel they arrived. The transport of the parcel to next laboratory shall also be arranged by the participant.

Original data from the calibration shall be sent to the organizer directly when the measurements are completed. Preferably this is done by e-mailing the reporting protocol in excel sent out in advance. But a scanned paper copy will also do. A fast delivery will help the organizer to have control that everything is as expected.

Calibration points

The participants shall calibrate the objects according to the following points:

- Gauge blocks in steel length in the centre and 4 corner points (see ISO 3650)
- Ceramic gauge blocks length in the centre and 4 corner points (see ISO 3650)

Values for the found errors shall be given for a reference temperature of 20°C.

Gauge blocks stainless steel

Nominal length, mm	Expanded Uncertainty reference laboratory, µm
0,3	0,050
1	0,050
2	0,050
5	0,050
10	0,051
50	0,066
80	0,086
100	0,100

Gauge blocks ceramic

Nominal length, mm	Expanded Uncertainty reference laboratory, µm
1,0	0,070
2,0	0,070
5,0	0,070
10,0	0,071
50,0	0,082
70,0	0,093
90,0	0,105

Statistical analysis that will be used

The organizer will arrange reference values to be used in the calculations as described in ISO/IEC 17043:2023 annex B presenting En-values (formula B5).

Reporting

Participants shall send their calibration certificate to the organizer within one week after they are finished. This shall be done as a pdf-file in a mail message.

At the end of the intercomparison a draft report will be sent to the participants within 4 weeks after receiving the last calibration certificate. The participants are encouraged to comment on the draft report within 1 week after receiving it.

The final report will be published within 2 weeks after receiving the last comments on the draft report.

If a participant does not follow the described reporting rules without giving reasonable explanations the organizer tries to extract the relevant content. If this is not possible the results will be excluded from the report.

A participant may decide to withdraw from the exercise. This might be caused by problems detected during or after having performed the measurements. However, the withdrawal in this case must be announced to the organizer before the draft report is distributed to all participants.

The participant may appeal to the full report if there are major faults in the report.

In the report each participant will be anonymous and identified by a code related to the results which is sent in a separate e-mail to each of them.

Damaged PT/ILC item

The participant shall immediately inform the organizer in case of a damage of any PT/ILC item or detected problem to allow him to take appropriate actions.

Price for participation

Price for laboratories:

- Laboratories having maximum 3 calibration technicians –basic price 750 EUR.
- Laboratories having more than 3 calibration technicians –basic price 980 EUR.
- In addition, 95 EUR on each calibrated gauge block

The basic price will be invoiced when the laboratory has registered for the ILC

Each laboratory will cover the costs for transport to next laboratory

If the laboratory decides not to fulfil their part of the agreement after they have applied, they shall still pay the basic price.