Intercomparisons of distributed calibration objects in length		
Approved by Håkan Källgren	Date 2022-09-01 rev 2	Page 1 (4)

Innehåll

Intercomparison of measuring devices that will be transported.

ILC length 2021:2

Proficiency testing provider (PT)

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

List of objects

- Gauge block, 2 mm, 50 mm and 200 mm

- Gauge block 600 mm

Control rod/micrometre setting standard 100 mm

Control rod/micrometre setting standard 500 mm

2 point inside micrometer set 100-600 mm

- Calliper outside digital 0-600 mm

All objects above are sent in one parcel. Participants can choose which object they will calibrate.

This concept for the intercomparison was decided 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 that may participate in this comparison:

- 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 15.

Description of the values included in the intercomparison.

The intercomparison will start and end with all objects calibrated at the pilot laboratory with following CMC levels (or better) for uncertainty.

- Gauge block 2 mm ± 0,024 µm
- Gauge block 50 mm ± 0,026 µm
- Gauge block 200 mm ± 0,044 µm
- Gauge block 600 mm ± 0,072 µm
- Control rod 100 mm* ± 0,5 µm
- Control rod 500 mm* ± 0,5 µm
- 2 point micrometer inside 100–600 ± 0,5 µm
- Vernier callipers, digital 600 mm ± 0,02 mm

*Micrometer setting standards

The values are expressed as expanded uncertainty, U on the 95 % confidence level.

The reference values and respective uncertainties of these objects will be based on the calibration in the pilot laboratory before and after the distribution.

The Finnish NMI MIKES is the reference laboratory.

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 send 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. If one wishes to use further points these must be protocolled outside the protocol area in order not to disturb a quick evaluation.

Laboratories decide which uncertainty they want to state, their CMC-values or a calculated one. They should, however, indicate the choice.

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 be arranged by the participant.

Original data from the calibration shall be sent to the organizer directly when the measurements are done. Preferably by e-mailing the filled reporting protocol. But a scanned paper copy will also do. By a fast delivery, the organizer gets control that everything is as expected.

Calibration points

The participant shall calibrate according to the following points on the objects:

- Gauge block 2 mm — length in the center and 4 corner points (see ISO 3650)
- Gauge block 50 mm — length in the center and 4 corner points (see ISO 3650)
- Gauge block 200 mm — length in the center
- Gauge block 600 mm — length in the center
- Control/micrometer setting standards — 100 mm—central length
- Control/micrometer setting standards — 500 mm—central length
- 2 point inside micrometer — 100, 500 and 600 mm
- Outside digital caliper — 100, 400 and 600 mm

Statistical analyses that will be used

The organizer will arrange to have reference values that will be used in the calculations as described in ISO/IEC 17043:2010 annex B3 presenting En-values (formula B5)

Reporting

Participants shall send their calibration certificate to the organizer within 1 week after the calibrations 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 2 weeks after receiving.

The final report will be published within 3 weeks after receiving 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 be identified by a code related to the results which is send 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 other 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, 260 EUR on each calibration object as defined in list of objects above and maximum length of 500 mm
- In addition, 380 EUR on each calibration object as defined in list of objects above. Having maximum length more than 500 mm

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

The 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.

The laboratory gets a 50 % reduction of the basic price if they participated in ILC **length2021:1** when they participate in this intercomparisons.