Content

Intercomparison of measuring devices that will be transported.

ILC length 2021:1

Proficiency testing provider (PT)

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

List of objects

- Gauge block, 1,26 mm
- Gauge block 50 mm
- Gauge block 80 mm
- Micrometer, outside analog 75-100 mm

- Micrometer outside digital 25-50mm

- Tubular inside micrometer (2-point) 50-75 mm

- Calliper outside analog 0-150 mm

- Calliper outside digital 0-150 mm

- Dial gauge indicator (analog) 0-10 mm (10 revolutions)

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 for uncertainty.

- Gauge block 1,26 mm ± 0,03 µm
- Gauge block 50 mm ± 0,04 µm
- Gauge block 80 mm ± 0,06 µm
- Micrometres outside ± 0,005 mm
- Micrometres inside ± 0,008 mm
- Vernier callipers, analog ± 0,05 mm
- Vernier callipers, digital ± 0,025 mm
- Measuring clock, analog ± 0,005 mm

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.

RISE Sweden is appointed as the pilot 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 object for 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 is arranged in cooperation with the organizer.

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 1,26 mm — length in the centre and 4 corner points (see ISO 3650)
- Gauge block 50 mm — length in the centre and 4 corner points (see ISO 3650)
- Gauge block 80 mm — length in the centre and 4 corner points (see ISO 3650)
- Outside analogue micrometre — 80,1 85,3- and 100-mm flatness, and parallelism
- Outside digital micrometre — 27,5 37,9 and 50 mm, flatness, and parallelism
- Tubular inside micrometre (analog) — 57,7 67,6 and 75 mm,
- Analog callipers — Outside measurement 2,5, 50 and 150 mm Inside measurement 10 mm, depth measurement 25mm
- Digital callipers — Outside measurement 2,5, 50 and 150 mm Inside measurement 10 mm, depth measurement 25mm
- Dial gauge indicator — Range 10 mm (10 revolutions)
  Parameters: R, H, MPE 1/10 rev, ½ rev, 1 rev

Statistical analyses that will be used

The organiser 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 organiser within one 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 returned to the participants within 2 weeks from the time when the last participant has reported it results in a calibration certificate.

The participants are encouraged to comment on the draft report within two weeks after receiving 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

Prise 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 calibration object as defined in list of objects above.

Specific costs for transport will be added depending on the transport means.

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 will get a 50 % reduction of the basic price in next intercomparison **ILC length 2021:2** if they participate in both intercomparisons.