



## ANNUAL REPORT OF COOMET TC 1.5 «LENGTH AND ANGLE» for 2022

### 1. GENERAL CHARACTERISTICS OF COOPERATION, including information on the list of works and/or projects performed and on the participants of cooperation, as well as problems and prospects for the development of cooperation in the field "Length and Angle"

#### 1.1 General characteristics of cooperation in the subject field

COOMET TC 1.5 includes representatives of 16 COOMET member countries: Armenia, Azerbaijan, Belarus, Bulgaria, Bosnia and Herzegovina, Germany, Georgia, Kazakhstan, Kyrgyzstan, Cuba, Moldova, Russia, Slovakia, Tajikistan, Turkey, Uzbekistan.

The participation of representatives of Ukraine and Lithuania in the TC 1.5 has been suspended.

Vladimir Makarevich (BelGIM, Belarus) appointed Deputy Chairman of the TC 1.5.

New TC 1.5 members have been appointed from Armenia (Alexander Levin), Kyrgyzstan (Zhibek Begaliyeva), Moldova (Kristina Muntean) and Tajikistan (Abdujalol Nasriddinov).

The main task of the TC is to implement cooperation of COOMET member countries in the field of "Length and Angle", including such areas of activity as:

- organization of key and supplementary comparisons of national measurement standards of COOMET member countries to support CMCs, which are currently submitted or will be submitted in the near future by COOMET member countries;
- preparation and regional review of data on calibration and measurement capabilities (CMC) of COOMET member countries;
- cooperation with the relevant technical committees of other regional metrology organizations, participation in interregional reviews of CMC of other RMOs.

#### 1.2 Information about the list of works and/or projects performed and about the participants of cooperation

Information on the list of works and/or projects performed is given in Table 1. 1.

Table 1

Project number	Project title	Participants	Information about the progress of comparisons
820/KZ/20	Comparison of interference devices for measuring tapes up to 20 m	Kazakhstan, Belarus	The technical protocol is being clarified. It is required to register comparisons in KCDB and transfer the topic to the agreed state.
810/RU-a/20 (COOMET.L- S30)	Supplementary comparisons of measurement standards of involute gears using a complex standard	Russia, Belarus	Draft A is being prepared. Comments on the report were received from BelGIM.
800/BY/20 (COOMET.L- S32)	Calibration of lengths of reference linear geodetic base lines	Belarus, Russia	Measurements in progress.
776/RU-a/19 (COOMET.L- S28)	Key comparisons of standards in the field of measurement of 3D parameters of surface texture	Russia, Belarus, Kazakhstan	Draft B under review in CCL.

<sup>1</sup> Information on the progress of work is given as of 03.15.2023

Project number	Project title	Participants	Information about the progress of comparisons
746/BY/18 (COOMET.L- S29)	Calibration of gauge blocks by interferometry	Belarus, Germany, Kazakhstan, Russia	Measurements in progress.
742/UA/18 (COOMET.L- S27)	The comparison of length standards for measuring gauge blocks in the range from 0,5 mm to 100 mm	Ukraine, Lithuania, Uzbekistan, Kyrgyzstan	Draft A will be prepared in the first half of 2023.
705/UA/16 (COOMET.L- S26)	Measurement of one-dimensional standard for coordinate measuring machines.	Belarus, Russia, Kazakhstan	Measurements completed. A new comparison coordinator will be appointed (VNIIMS, Russia). Draft A is being prepared.
690/RU-a/16	Comparisons of internal and external diameter gauges	Russia, Belarus, Kazakhstan, Ukraine	Draft A is being prepared. Further processing of measurement results within the framework of the COOMET.L-K4.2021 comparisons is impossible without publishing the results of the comparisons CCL-K4.2015.
674/UA/15 (COOMET.L- S25)	Comparison of standards nanometer range	Ukraine, Germany	Measurements completed. Draft A will be prepared in the first half of 2023
612/BY-a/13 (COOMET.L- S31)	Calibration of a 200 mm linear glass scale	Belarus, Kazakhstan, Russia	The Technical protocol is being approved.
591/UA/12 (COOMET.L- S24)	Comparisons of precise navigation systems GPS/GLONASS	Ukraine, China	Draft B is being approved by the participants of the comparisons.
590/UA/12 (COOMET.L- S23)	Comparison of precision rangefinders	Ukraine, China	Draft B under review in CCL.
524/UA-a/11 (COOMET.L-K3)	Intercomparison of the national standards unit of the plane angle	Russia, Belarus, Ukraine	The final report was sent to the CCL expert in 2021. No response received.

In 2022 project 610/UA-a/13 «Comparisons of standards of flatness » was excluded from the COOMET Work Program (the reason for exclusion is that the project has lost its relevance).

## 2. RESULTS OF RECENT MEETINGS OF TC 1.5

A regular meeting of TC 1.5 was held on November 28-29, 2022 in a hybrid format (offline - BelGIM (Belarus) and online).

Key topics:

- decisions of the COOMET Committee and the Council of the President of COOMET concerning the activities of the TC;
- information on the activities of the TC 1.5 in 2021-2022;
- about changes in the TC membership, the appointment of the Deputy Chair of TC 1.5 and the need to change the structure of the TC 1.5 in terms of creating subcommittees;
- decisions of the 21st and 22nd meetings of the COOMET Joint Committee for Measurement Standards;

- the progress of COOMET comparison and updating of the TC 1.5 work program;
- proposed projects;
- implementation of the CIPM MRA Agreement, including the organization of comparisons and CMC expertise;
- on the state of work on comparisons lasting over 5 years;
- about the possibility and necessity of developing of standard calibration methods within the TC;
- possibilities of holding a training events under the aegis of TC 1.5;
- capabilities of the BIPM e-learning platform and creating COOMET courses under the aegis of TC 1.5.

Main decisions taken:

- 1 To consider it inappropriate to change the structure of the TC 1.5 in terms of creating subcommittees.
- 2 Update the list of technical experts on CMC expertise and assessment of the QMS of NMIs/NIs COMET in the area of responsibility of T K 1.5 and identify candidates for technical experts.
- 3 Appoint the coordinators of the fields responsible for the examination of the CMC.
- 4 Update the list of participants on projects of comparisons included in the COOMET work program and speed up the preparation of reports on comparisons (brief information on the progress of work on projects is given in paragraph 1.2).
- 5 The expediency of organizing the following comparisons within TC 1.5 has been agreed upon:
  - comparison of interference devices for measuring tapes up to 20 m;
  - comparisons of thread gauges measuring systems;
  - comparisons of stabilized He-Ne/I<sub>2</sub> lasers at wavelength 633 nm;
  - comparison of standards for the measurement of gage blocks in the range up from 200 to 1000 mm by interferometry;
  - calibration of line scale 1000 mm;
  - comparison of the national standards of the unit of the plane angle;
  - calibration of step height standards
- 6 To approve the proposal of NMI of China on the organization in 2023 technical training on the topics "Calibration of gauge blocks", "Calibration of calipers, micrometers and dial indicators".

### **3. RESULTS OF THE IMPLEMENTATION OF THE COOMET STRATEGY AND COOMET DEVELOPMENT PROGRAM (concerning the activities of TC 1.5)**

TC 1.5 members took part in the implementation of a number of events, provided in the COOMET Development Program for 2020-2022 and in the Roadmap for the implementation of the COOMET Strategy for 2020-2025, namely:

- 9. (Ind-a.1.9) Carrying out of an analysis of the timeframe for conducting COOMET comparisons and taking corrective actions for its reduction:
  - clarification of the status and completion dates of comparisons conducted under the auspices of TC 1.5;
  - request for information from the NMI of Ukraine about the intentions and deadlines for the completion of comparisons 800/BY/20 (COOMET.L-S32), 746/BY-a/18 (COOMET.L-S29), 742/UA-a/18 (COOMET.L-S27), 705/UA-a/16, (COOMET.L-S26), 674/UA-a/15 (COOMET.L-S25), 591/UA-a/12 (COOMET.L-S24), 590/UA-a/12 (COOMET.L-S23);
  - decision on the appointment of VNIIMS (Russia) as the coordinator of project 705/UA-a/16 (COOMET.LS 26);
  - contact with NM-MD (Moldova) to clarify the status and timing of the completion of comparisons 676/MD/15 (COOMET.LS 20) due to the need to update the information in KCDB at the request of CCL;
- 78. Drawing up and implementation of a Plan for the preparation of COOMET recommendations, having requirements for calibration of various groups of measuring instruments (Guide on calibration): at the TC 1.5 meeting in 2022, it was discussed about expediency of developing of the standard calibration procedures, based on the discussion it was decided to survey CEEMS with them in order to identify the possibility of assisting in the development of calibration procedures.

**4. REVIEW OF COMPLETED PROJECTS AND INFORMATION ON THE USE OF THE OBTAINED RESULTS**

There are no completed projects in 2022.

**5. ISSUES OF INTERACTION WITH INTERNATIONAL AND REGIONAL ORGANIZATIONS IN THIS FIELD OF COOPERATION**

No information available.

**6. WORK ON PARTICIPATION IN THE IMPLEMENTATION OF INTERNATIONAL AGREEMENTS (FOR EXAMPLE, THE CIPM MRA, ETC.)**

Interregional examination of CMC was not carried out in 2022.

A new CMC in the field of length and angle was published in 2022 (PTB, Germany).

The lists of COOMET technical experts on CMC review and COOMET technical experts on peer review of the QMS of NMIs/DIs within the area of responsibility of TC 1.5 were updated.

**7. INFORMATION ON THE EXPECTED VENUE AND DATE OF THE NEXT MEETINGS OF TC 1.5**

It is planned to hold a regular meeting of the TC in September - October 2023, Saint-Petersburg. The final decision on the timing and form of the meeting will be made depending on the situation.

TC 1.5 Chair

*Konstantin Chekirda*