



ANNUAL REPORT

OF COOMET TC 1.5 "LENGTH ANF ANGLE" for 2021

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 1.6 includes representatives of 18 COOMET member countries: Azerbaijan, Armenia, Belarus, Bulgaria, Bosnia and Herzegovina, Germany, Georgia, Kazakhstan, Kyrgyzstan, Cuba, Lithuania, Moldova, Russia, Slovakia, Tajikistan, Turkey, Uzbekistan and Ukraine.

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.

Table 1

| Project number | Project title | Participants | Status of comparisons |
|--------------------------------|--|---|--------------------------|
| 820/KZ/20 | Comparison of interference devices for measuring tapes up to 20 m | Kazakhstan, Belarus | Measurements in progress |
| 810/RU-a/20 (COOMET.L- S30) | Supplementary comparisons of measurement standards of involute gears using a complex standard | Russia, Belarus | Draft A being prepared |
| 800/BY/20 (COOMET.L- S32) | Calibration of lengths of reference linear geodetic base lines | Belarus, Russia, Ukraine | Measurements in progress |
| 776/RU-a/19 (COOMET.L- S28) | Supplementary comparisons of measurement standards in the field of measurement of 3D parameters of surface texture | Russia, Belarus, Kazakhstan | Draft B being prepared |
| 746/BY/18 (COOMET.L- S29) | Calibration of gauge blocks by interference method | Belarus, Germany, Kazakhstan, Russia, Ukraine | Measurements in progress |
| 742/UA/18 (COOMET.L- S27) | The comparison of length standards for measuring end measures in the range up from 0,5 mm to 100 mm. | Ukraine, Belarus, Lithuania, Georgia, Kazakhstan, Kyrgyz Republic, Uzbekistan | Measurements in progress |
| 705/UA/16 (COOMET.L- S26) | Measurement of one-dimensional standard for coordinate measuring machines | Ukraine, Belarus, Russia, Kazakhstan | Draft A being prepared |
| 690/RU-a/16 | Comparisons of internal and external diameter gauges | Russia, Belarus, Kazakhstan, Ukraine | Draft A being prepared |

| Project number | Project title | Participants | Status of comparisons |
|--------------------------------|---|---|-------------------------------------|
| 674/UA/15 (COOMET.L- S25) | Comparison of standards nanometer range | Ukraine, Germany | Draft A being prepared |
| 612/BY-a/13 (COOMET.L- S31) | Calibration of a 200 mm linear glass scale | Belarus, Kazakhstan, Russia, Ukraine | Technical Protocol being agreed |
| 610/UA-a/13 | Comparisons of standards of flatness | Ukraine, Russia | Draft A being prepared |
| 591/UA/12 (COOMET.L- S24) | Comparisons of precise navigation systems GPS/GLONASS | Ukraine, Belarus, China | Measurements in progress |
| 590/UA/12 (COOMET.L- S23) | Comparison of precision rangefinders | Ukraine, Belarus, China | Measurements in progress |
| 524/UA-a/11 (COOMET.L-K3) | Key comparison of the national standards unit of the plane angle | Russia, Belarus, Ukraine | Final Report under review in CCL |

In 2021 project 714/UA/17 "Comparison of standards for the measurement of end measures of length interference method in the range of 200 to 1000 mm" was excluded from the COOMET Work Program.

2. RESULTS OF RECENT MEETINGS OF TC 1.5

A regular meeting of TC 1.5 was held online on 10 to 11 November 2021.

The major issues discussed:

- report of the TC 1.5 Chair in 2020-2021;
- information about the resolutions of the 20th meeting of the COOMET Joint Committee for Measurement Standards;
- about the possibility and need to prepare standard calibration procedures within the TC;
- report of the TC 1.5 Chair O. Kostrikov and comparison coordinators on the progress in the implementation of the current projects carried out within the TC, update of comparison projects on previously planned work performed;
- presentation of the process of transformation of CMC uncertainty presentation;
- presentation of the Chair of the APMP TC for length;
- presentation of the Chair of the EURAMET TC for length;
- update of the Regulation on TC 1.5 in view of document COOMET D5:2021 "Model Regulations for COOMET Structural Bodies";
- about the implementation of the CIPM MRA;
- election of the TC 1.5 Chair.

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 for 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: work was performed to officially complete the comparisons in the KCDB conducted under the auspices of TC 1.5;
- 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): based on the discussion at the TC 1.5 meeting in 2021 it was decided to establish a working group for preparation of standard procedures in the field of length and angle. A representative of Kazakhstan Dulat Moldybaev was elected the Head of the group.

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

In 2021 project COOMET 529/RU/11 "Comparison of interference plants for measuring 20-meter long tapes" was completed.

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

In 2021-2022 TC members took part in a number of international events, conferences and seminars:

- webinar devoted to the COOMET 30th anniversary, 15 June 2021;
- webinar «The practice of implementation of the documents of the CIPM MRA and COOMET publications on carrying out and evaluation of results of calibration and comparison», 15 October 2021;
- 18th online meeting of the Consultative Committee for length under the BIPM, 25–27 October 2021;
- online BIPM course "KCDB 2.0 - Online technical exchanges on comparisons", 8 February 2022.

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

TC technical experts took part in the international review of CMCs in the field of length and angle. 23 CMC entries were reviewed.

In 2021 20 new CMC entries in the field of length and angle were published:

- KazStandard (Kazakhstan) - 1 entry;
- BelGIM (Belarus) - 10 entries;
- PTB (Germany) - 2 entries;
- VNIIM, VNIIMS (Russia) - 3 entries;
- NSC IM (Ukraine) - 4 entries.

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. ELECTION OF THE TC 1.5 CHAIR

Owing to the expiration of the term of office of the current TC 1.5 Chair in 2022 election was held by email voting on 15 to 19 November 2021.

The following persons were nominated for the TC Chair: Oleksandr Kostrikov (NSC IM, Ukraine) and Konstantin Chekirda (VNIIM, Russia). Konstantin Chekirda was elected by the majority of votes. The voting results will be submitted to the COOMET Committee for approval in 2022.

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

It is planned to hold the next meeting of the TC in September 2022 at the premises of BelGIM, Belarus, off-line. The final decision on the timing and form of the meeting will be made depending on the situation.

9. PROPOSALS TO THE RESOLUTIONS OF THE COOMET COMMITTEE

➤ To approve updated document COOMET D5.4/2022 "Regulation on the Technical Committee "Length and Angle" (TC 1.5)" (replacing COOMET D5.4/2012) – Annex 1.

TC 1.5 Chair
Oleksandr Kostrikov