2022 ANNUAL REPORT[1]
of the COOMET Joint Committee for Measuring Standards

1 GENERAL DESCRIPTION OF COOPERATION including information on carrying out the COOMET Strategy and COOMET Development Program

JCMS members are the TC 1.1 – TC 1.12 Chairpersons. In 2021, the COOMET D5.1 "Regulations of the COOMET Joint Committee on Measurement Standards (COOMET JCMS)" (replacing COOMET D5.1/2018). The document was approved by the COOMET Committee as COOMET D5.1/2022.

In 2022, under the guidance of the JCMS the following activities were carried out, outlined in the COOMET Development Program for 2020–2022 and the Roadmap for Implementation of the COOMET Strategy for 2020–2025:

- **9. (Ind-a.1.9)** Analysis of timeframes of the COOMET comparisons and implementation of corrective measures to reduce them: joint work with the TC 1.1 – TC 1.11 Chairpersons was carried out on official completion of the KCBD comparisons.
- **19. (Ind-a.4.1)** Development and realization of the Roadmap for TC 1.2 – TC 1.11 on implementation of decisions related to the redefinition of the SI basic units: work was carried out on the planned Roadmap events.
- **46. (Ind-e.1.3)** Development of two-year COOMET Training Plans: JCMS participated in the development of the COOMET Training Plan for 2021 – 2022[2].
- **78.** Development and realization of the COOMET Recommendations Development Plan containing requirements for calibration of different types of measuring instruments (Calibration Guidelines): a discussion was held on approaches to develop the Plan.

Information on TC 1.1 – TC 1.12 meetings in 2021 is given in Table 1.

Table 1.

TC	Time and place of the meeting
TC 1.1	October 17, 2022, video conference
TC 1.2	rescheduled to 2023
TC 1.3	November 8–10, 2022, video conference
TC 1.4	December 15, 2022, video conference
TC 1.5	November 28–29, 2022, Minsk, Belarus, video conference
TC 1.6	December 08, 2022, video conference
TC 1.7	rescheduled to 2023
TC 1.8	rescheduled to 2023
TC 1.9	rescheduled to 2023
TC 1.10	November 15–16, 2022, video conference
TC 1.11	rescheduled to 2023
TC 1.12	September 12, 2022, Yekaterinburg, Russia and video conference

2 JCMS MEETING

[1] The Report provides a summary of the JCMS activities in 2022. Detailed information on cooperation within the JCMS area of responsibility is given in the reports of the TC 1.1 – TC 1.12 Chairpersons.

[2] Detailed information on the training activities held in 2022 is provided in the TC 4 Annual Report.

The 21th JCMS meeting was held online on February 10, 2022. The following issues were discussed:

- Draft COOMET Plan on developing standard calibration techniques for different groups of measuring instruments,
- COOMET comparisons lasting more than 5 years,
- COOMET activity in the field of training using the BIPM e-learning platform, and
- results of updating the COOMET Technical Experts List for CMC review and QMS assessment.

Main decisions

- To ask TC 1.1 – TC 1.12 Chairpersons when carrying out supplementary comparisons and pilot comparisons between NMIs and states with developing metrological systems (CEEMS), to consider assisting in development of measuring techniques upon request from CEEMS NMIs. To ask the pilot-NMI to indicate this aspect in the Technical protocol.
- Based on the results of the discussion, to consider it expedient to adhere to the following procedure concerning long-term comparisons in order to complete them as soon as possible:
  - If comparisons are delayed by the fault of the pilot NMI, and the TC Chairperson has exhausted their possibilities to speed up the process, the Chairperson can request the COOMET Secretariat to send a corresponding letter to the NMI on behalf of the COOMET President. Based on the results of the meeting, to ask the COOMET Secretariat to send letters in February 2022 to the pilot NMIs of the following comparisons: COOMET.AUV.V-K1, COOMET.EM-S6, COOMET.EM-S10, COOMET.EM-S7, COOMET.EM.RF-S1, and COOMET.EM-S19.
  - Moreover, in case comparisons are delayed by the fault of the pilot NMI, to consider appointing a new pilot from among the interested parties at TC meetings, making a corresponding protocol statement and form for approved COOMET topic on behalf of the new pilot NMI.
  - In case comparisons are delayed by the participating NMI (for example, no results were submitted or no responses for the pilot and/or TC Chairperson requests were given at the stage of discussions of the results), to consider at TC meetings to exclude this participant's data from the report.
  - To ask the JCMS Chairperson and the Chairperson of the relevant TC to assist the pilot in processing comparison results if any difficulties arise (if a corresponding request is received).
- To apply to the COOMET Committee to adopt a resolution to the Directors of Member States' NMIs with a request to support the activities of experts who are COOMET members and to consider reports of TC members on their Scientific Councils in order to control the implementation of the decisions of COOMET TCs meetings and/or to discuss issues with their implementation.

The 22th JCMS meeting was held online on September 22, 2022.

The following issues were discussed:

- Implementation of the CIPM MRA in terms of conducting comparisons, CMC review, and supporting countries with developing metrological systems (CEEMS),
- Implementation and updating of COOMET P6/2021 *Roadmap for the Implementation of Decisions Related to the Redefinition of the Basic Units of the International System of Units (SI) for 2020–2025*,
- Completion of the COOMET Plan COOMET Plan on developing standard calibration techniques for different groups of measuring instruments, and
- Functioning and renewal of the Board of Appeal on Comparisons of National Measurement Standards and CMC review.

Main decisions

- To ask TC Chairpersons to update the lists of Technical Experts on CMC review and, if necessary, candidates for Technical Experts, and to submit this information to the COOMET Secretariat; to register accounts of Technical Experts in the KCDB. In case an interregional CMC review cannot be carried out, to ask TC Chairpersons to notify the KCDB Office of the impossibility of conducting an review on behalf of the COOMET in advance.

– To ask TC 1.1 – TC 1.12 Chairpersons at their meetings in 2022 or by means of correspondence to discuss all the "suspended" comparisons within the area of responsibility of their TCs (including proposed comparisons that due to various reasons were not yet implemented) and prepare proposals for possible actions by the COOMET. The information is to be sent to the JCMS for generalization and further submission to the COOMET President Council.
– To ask TC 1.1 – TC 1.12 Chairpersons at their meetings in 2022 or by means of correspondence to discuss the information submitted by the CEEMS NMIs regarding organization and carrying out comparisons and calibrations of measuring standards. In case of a comparison being approved, to formalize the COOMET topics in accordance with the established procedure.
– When revising COOMET R/GM/31:2016, to ask the JCMS and the Coordinator to specify in detail the procedure for developing a calibration technique, its structure, and content of sections, as well as the process of its validation in a calibration laboratory. When planning comparisons, to ask the TC Chairpersons to request the pilot to outline the Comparison Protocol in more detail, including stages of preparation for measurements, measurements, data processing, etc. To ask the TC Chairpersons to recommend the interested CEEMS to develop their own calibration techniques based on the priority of their needs and submit draft calibration techniques at TC meetings for approval.

3 Review of the completed topics and information on the use of obtained results

Information on the COOMET projects completed in 2022 is given in the Table 2.

N	Project ID	Name	Pilot	Participants
1	730/UA/17	Pilot comparison of spectral transmittance in the UV range from 200 nm to 380 nm	SE "Ukrmetrteststandart"	BelGIM (Belarus), Ukrmetrteststandart (Ukraine), INM-MD (Moldova), NCS "IM" (Ukraine), NIM (China)
2	689/RU-a/16 COOMET.PR-S8	Supplementary comparison of measuring standards of wavelength for fibreoptics	VNIIOFI	VNIIOFI (Russia), BelGIM (Belarus), INMETRO (Brazil), NIM (China), NMISA (South Africa), PTB (Germany)
3	688/RU/16 COOMET.PR-S9	Supplementary comparison of measuring standards of polarization mode dispersion in optical fiber	VNIIOFI	VNIIOFI (Russia), INMETRO (Brazil), KRISS (Korea), METAS (Switzerland)
4	560/UA-a/12 COOMET.M.H-S5	Supplementary comparison of national measuring standards of hardness by Rockwell scale and Super-Rockwell scale	NSC IM	NSC IM (Ukraine), BelGIM (Belarus), CMI (Czechia), KazStandard (Kazakhstan), PTB (Germany)
5	366/RU-a/06 COOMET.PR-S1	Supplementary comparison of samples of whiteness using secondary measuring standard of units of color coordinates and chromaticity coordinates	VNIIOFI	VNIIOFI (Russia), BelGIM (Belarus), NSC IM (Ukraine), SE "Ukrmetrteststandard" (Ukraine)
6	812/RU/20	Development of COOMET Recommendation on ensuring the traceability of measurement results/measuring standards in COOMET	VNIIM	VNIIM (Russia) – Coordinator, COOMET Committee, TC 1.1 – TC 1.12 Chairpersons

4 PARTICIPATION IN IMPLEMENTATION OF THE CIPM MRA

From January 1, 2022 to December 31, 2022 **85 CMCs** were published in the BIPM KCDB

Area	Country	NMI	Number of CMCs
M	KZ	KazStandard	1
	UA	NSC "Institute of Metrology"	5
	UA	SE "Ivano-Frankivskstandard metrologia"	1
	AZ	AzMI	1
PR	RU	VNIIOFI	4
QM	RU	VNIIM	70
	RU	VNIIFTRI	1
	KZ	KazStandard	2
		TOTAL	**85**

For implementation of the CIPM MRA in 2021, COOMET Structural Bodies formed the COOMET Comparisons Program (P2/2022).

In 2022, works were performed (in different stages) on 88 comparisons.

On a regular basis, the following analysis is carried out: number of key and supplementary COOMET comparisons; number of completed and published COOMET comparisons; number (and percentage) of piloted COOMET comparisons of NMIs/DIs within the framework of the report on implementation of the COOMET Comparisons Program to the COOMET President's Council.

The following translations were updated:

- CIPM MRA G-13 *Calibration and measurement capabilities in the context of the CIPM MRA: Guidelines for their review, acceptance and maintenance*.
- CIPM MRA-P-11 *Overview and implementation of the CIPM MRA.*

The updated versions are posted on the COOMET portal at https://www.coomet.net/ru/organizacija/tk-1-obedinennyi-komitet-po-ehtalonam/dokumenty/.

The JCMS Chairperson (A. Chunovkina) was the main speaker at the COOMET webinar "Approaches to processing inconsistent comparisons data" (November 10, 2022).

5 COOPERATION WITH INTERNATIONAL AND REGIONAL ORGANIZATIONS IN THIS FIELD OF COOPERATION

JCMS representatives participated in the 45th JCRB meeting (March 16–17, 2022) as part of the official COOMET delegation.

Within the JCMS, Action Plan for cooperation between the COOMET and MGS was discussed, in particular, regarding exchange of information on interstate standards governing calibration techniques for measuring standards and measuring instruments, as well as availability of reference measuring techniques (methods).

JCMS Chairperson is a member of JCGM Working group on the International Vocabulary of Metrology (JCGM-WG2:VIM).

6 TIME AND PLACE OF THE NEXT MEETING

The next JCMS meetings are scheduled for February and April 2023 and will be held online.

Anna G. Chunovkina
JCMS Chairperson