



COOMET Document

**COOMET
P2/2017**

COOMET Program of comparisons

Approved at the 21st meeting of COOMET President's Council (Astana, Kazakhstan, 8-9 November 2016)

APPROVED

A handwritten signature in blue ink, appearing to be "Vladimir Krutikov". The signature is fluid and cursive, written in a dark blue color.

Vladimir Krutikov
COOMET President
9 November 2016

136 projects.

AUV - Acoustics, Ultrasound and Vibrations.

6 projects

actualisation	project number	state	subject	type of comparison
08.09.2016	706/RU/16	Proposal	Comparison of longitudinal ultrasonic wave propagation velocity in solid media	pilot
25.08.2016	535/UA-a/11	Agreed	Comparison of the standards of the unit of power ultrasound in the water in the frequency range from 2 to 15 MHz	pilot
06.04.2016	626/BY-a/13	Agreed	Comparison of national standards of the sound pressure unit in air through calibration of the pressure-inch and half-inch microphones.	supplementary COOMET.AUV.A-S2
06.04.2016	609/UA-a/13	Agreed	Comparison of national standards of the sound pressure unit in air through calibration of the pressure-inch and half-inch microphones.	pilot
14.03.2016	666/UA-a/15	Agreed	Key comparison of the standards of the unit of sound pressure in the air in the frequency range from 2 Hz to 10 KHz	key COOMET.AUV.A-K5
23.08.2006	308/RU/04	Agreed	Key Comparison of the National Measurement Standards of the vibration parameters units (in regard to the vibration acceleration) in the frequency range from 20 Hz to 5 kHz	key COOMET.AUV.V-K1

EM - Electricity And Magnetism .

16 projects.

actualisation	project number	state	subject	type of comparison
10.10.2016	710/RU/16	Proposal	Conduct additional bilateral comparisons of standards of pulse voltage	pilot
10.10.2016	709/RU/16	Proposal	Conduct additional bilateral comparisons of standards of harmonic distortion	pilot
26.09.2016	707/RU/16	Proposal	Bilateral comparisons of reference switching impulse voltage measuring systems in the range from 1 to 100 kV	pilot
01.03.2016	686/MD/16	Proposal	Bilateral comparison of 1.018 V and 10 V Zener DC voltage reference standards	pilot
25.02.2016	683/RU/16	Proposal	Comparison of the standard of the Russian Federation ГЭТ 202-2012 and the standards of Finland, France and Germany in the field of reproduction and measurement of the pulse current unit over the range from 1 up to 100 kA.	pilot
25.02.2016	682/RU/16	Proposal	Comparison of the standards of the Russian Federation ГЭТ 178-2010 and ГЭТ 148-2013 and the standards of Republic of Korea, People's Republic China and Germany in the field of reproduction and measurement of the intensity units of pulse electric and magnetic fields with the pulse rise time over the range from 20 ps up to 10 ns.	pilot
27.06.2014	644/BY/14	Proposal	Supplementary comparison of standards for attenuation of the electromagnetic oscillations	supplementary

27.06.2014	643/BY/14	Proposal	Supplementary comparison of standards unit power electromagnetic oscillations	supplementary
30.08.2012	567/UA/12	Proposal	Comparisons of national standards of HF voltage	KCDB
27.08.2012	565/RU/12	Proposal	International pilot comparison of Q factor standards	supplementary COOMET.EM-S15
07.05.2009	468/RU/09	Proposal	Additional comparisons of amplitude modulation depth HF oscillations	supplementary COOMET.EM-S9
01.11.2002	267/RU/02	Proposal	Comparison of Standards the units of electromagnetic power flux density (W/m^2) at frequencies of 2,45 GHz and 10,0 GHz	supplementary COOMET.EM.RF-S1
13.07.2016	695/UA-a/16	Agreed	Key comparison of power	key COOMET.EM-K5
07.06.2016	681/RU-a/16	Agreed	Supplementary comparison of the measurement of current transformers (CTs)	supplementary
01.04.2016	604/RU-a/13	Agreed	Supplementary comparisons of reference measuring systems of electric capacitance and loss factor on AC high voltage of power frequency in the voltage range from 1 to 150 kV. Capacity: 44 pF, 100 pF, 314 pF, 1000 pF, Frequency: 50 Hz.	supplementary COOMET.EM-S18
12.05.2015	624/GE-a/13	Agreed	Comparison of electrical resistance standards at 100 Ω and 100 k Ω	supplementary COOMET.EM-S19

L - Length.

20 projects.

actualisation	project number	state	subject	type of comparison
01.09.2016	705/UA/16	Proposal	Measurement of two-dimensional standard for coordinate measuring machines.	pilot
01.04.2016	690/RU/16	Proposal	International comparisons of internal and external diameter gauges	pilot
05.10.2015	676/MD/15	Proposal	Calibration of gauge blocks by comparison	supplementary
21.09.2015	674/UA/15	Proposal	Comparison of standards nanometer range	pilot
16.02.2015	657/UA/15	Proposal	Comparison of the measurement standards of the line scales between 1 mm and 1000 mm.	pilot
01.08.2013	612/UA/13	Proposal	Comparison of line scales up to 100 mm	pilot
19.07.2013	610/UA/13	Proposal	Comparisons of standards of flatness diameter up to 300 mm	supplementary
29.12.2012	591/UA/12	Proposal	Comparisons of precise navigation systems GPS/GLONASS	supplementary
29.12.2012	590/UA/12	Proposal	Comparison of precise rangefinder systems	supplementary
29.08.2012	564/RU/12	Proposal	Comparisons of measurement standards of length unit in the field of sphere deviation measurements	supplementary
29.08.2012	563/RU/12	Proposal	Comparisons of measurement standards of length unit in the field of roundness deviation measurements	supplementary COOMET.L-S17
21.06.2011	529/RU/11	Proposal	Comparison of interferometers for measurement of tapes up to 20 m	supplementary
18.04.2011	524/UA/11	Proposal	Intercomparison of the national standards unit of the plane angle	key

				COOMET.L-K3 supplementary COOMET.L-S9
17.11.2008	440/RU/08	Proposal	International comparison of stabilized He-Ne/I ₂ lasers at 633 nm	
02.09.2016	658/BY-a/15	Agreed	Comparisons of national measurement standards for deviations from linearity and flatness; the measurement range for deviations from linearity is 0 to 50 µm, the surface length is 0.4 to 5 m.	supplementary COOMET.L-S19
24.12.2015	634/UA-a/14	Agreed	Comparison of measurement standards of gravitational acceleration unit in the range of 9.77 m/s ² to 9.85 m/s ²	supplementary COOMET.M.G-S1
24.12.2015	673/UA-a/15	Agreed	Comparison of initial measuring instruments of the parameters of involute gears.	supplementary COOMET.L-S18
09.01.2014	570/UA-a/12	Agreed	Comparisons of standards of flatness	supplementary COOMET.L-S15
09.01.2014	569/UA-a/12	Agreed	Comparison of length standards in the range of 0.001 to 1 mm	supplementary COOMET.L-S14
09.01.2014	568/UA-a/12	Agreed	Comparisons of reference measuring instruments of surface parameters	supplementary COOMET.L-S13

M - Mass And Related Quantities .

22 projects

actualisation	project number	state	subject	type of comparison
28.04.2016	694/MD/16	Proposal	Comparison of mass standards with nominal values of 100 mg, 20 g, 1 kg and 10 kg	supplementary
14.10.2015	677/BY/15	Proposal	Key comparison in field of force measurement from 0 to 5000 N, from 2 to 100 kN, from 1 to 500 kN, from 10 to 2000 kN	key
17.07.2015	670/GE/15	Proposal	Comparison of mass standards with nominal values of 100 mg, 5 g, 50 g and 1 kg	pilot
20.05.2015	665/UA/15	Proposal	Supplementary bilateral comparison in the field of mass measurements	supplementary COOMET.M.M-S2
29.10.2014	651/RU/14	Proposal	Supplementary bilateral comparison of national reference instruments for nanoindentation	supplementary COOMET.M.H-S2
12.09.2013	621/RU/13	Proposal	Supplementary comparisons of national standards of torque	supplementary
29.11.2012	586/RU/12	Proposal	Pilot comparison in the field of measurements of liquids kinematical viscosity.	pilot
28.12.2011	548/UA/11	Proposal	Supplementary bilateral comparisons of submultiply and multiply units of kilogram	supplementary
13.05.2011	528/KZ/11	Proposal	Pilot comparisons of submultiply and multiply units of kilogram	pilot
25.06.2005	341/RU/05	Proposal	Key comparison of Brinell and Vickers hardness scales	key COOMET.M.H-K1 COOMET.M.H-K2
14.01.2004	295/RU/03	Proposal	Mutual Comparisons of the He leaks in range (10 ⁻⁶ -1) m ³ . Pa/s	key
04.09.2015	638/UA-a/14	Agreed	The comparison of the national hardness standards of Super-Rockwell scales.	supplementary COOMET.M.H-S3

30.01.2015	546/UA-a/11	Agreed	Key comparisons in the field of mass measurements	key COOMET.M.M-K8
28.01.2014	589/UA-a/12	Agreed	Supplementary comparison of national measurement standards of gauge pressure in the range from 1 MPa to 10 MPa	supplementary COOMET.M.P-S1
28.01.2014	560/UA-a/12	Agreed	The comparison of the national hardness standards of Rockwell and Super-Rockwell scales.	key COOMET.M.H-K3
17.10.2013	259/RU/02	Agreed	COOMET comparisons in the field of force measurements	supplementary COOMET.M.F-S1
02.08.2013	515/UA-a/11	Agreed	Bilateral comparison of the force primary standards	supplementary COOMET.M.F-S2
18.04.2013	545/UA/11	Agreed	Comparisons of complex of static volume measuring devices	supplementary COOMET.M.FF-S6
29.03.2013	555/AZ-a/12	Agreed	Supplementary comparisons of COOMET in the field of measurements of liquids density.	supplementary COOMET.M.D-S1
28.03.2013	588/RU-a/12	Agreed	Supplementary comparisons of COOMET in the field of measurements of liquids kinematical viscosity	supplementary COOMET.M.V-S1
28.03.2013	587/RU-a/12	Agreed	Supplementary comparisons of COOMET in the field of measurements of liquids kinematical viscosity	supplementary
08.12.2011	512/RU-a/10	Agreed	Supplementary bilateral comparison of national standards of torque	supplementary COOMET.M.T-S1

F - Fluid Flow .

9 projects.

actualisation	project number	state	subject	type of comparison
01.03.2016	685/MD/16	Proposal	Comparisons of liquid flow rate standards.	pilot
01.03.2016	684/MD/16	Proposal	Comparisons of gas flow rate standards	pilot
21.01.2016	679/RU/16	Proposal	Comparisons of national standards in the field of gas flow rate and volume, gas flow rates from 1 to 100 m ³ /h	pilot
18.10.2016	680/RU-a/16	Agreed	Comparisons of national standards in the field of gas flow rate and volume, gas flow rates from 20 to 6500 m ³ /h	pilot
30.01.2015	652/UA-a/14	Agreed	Bilateral comparisons of low pressure gas volume and volume flow standards	supplementary
02.06.2013	585/UA-a/12	Agreed	Supplementary comparisons of critical nozzle - standards of transfer units for gas flow	supplementary COOMET.M.FF-S5
23.12.2009	452/SK-a/09	Agreed	Comparison of cold water flow calibration laboratories in a range of flow rates (3 - 20) m ³ /h	supplementary COOMET.M.FF-S4
15.04.2009	406/UA-a/07	Agreed	Comparisons of mass and volume units national standards	supplementary COOMET.M.FF-S2
30.07.2008	412/UA/07	Agreed	Realization of reference gas flow meter's test rigs comparisons in flow range:	supplementary

(4-160) m³/h.

COOMET.M.FF-S3

PR - Photometry And Radiometry .**13** projects.

actualisation	project number	state	subject	type of comparison
11.03.2016	688/RU/16	Proposal	Comparison on Polarization Mode Dispersion in Optical Fiber	supplementary
14.09.2015	639/BY/14	Proposal	Comparison of surface colour	supplementary
04.12.2014	653/RU/14	Proposal	Spectral Irradiance, from 200 nm to 350 nm	key COOMET.PR-K1.b.1
04.02.2014	636/UA/14	Proposal	Comparisons of luminous flux national standards	pilot
02.09.2016	689/RU-a/16	Agreed	Supplementary comparison on Wavelength for Fibre Optic	supplementary COOMET.PR-S8
14.09.2015	640/BY-a/14	Agreed	Comparison of colour, transmitted	supplementary
07.11.2013	599/RU-a/13	Agreed	Comparison of Laser Power Standards at wavelengths of 0,532; 1,064 and 10,6 mkm	supplementary COOMET.PR-S7
07.11.2013	577/RU-a/12	Agreed	Comparison on Fibre Optic Power Responsivity	supplementary COOMET.PR-S6
10.08.2011	429/CU-a/08	Agreed	Comparisons of measurement standards of the units of spectral regular transmittance in the (250 to 900) nm wavelength range	supplementary COOMET.PR-S5
10.08.2011	366/RU-a/06	Agreed	Comparison of whiteness samples using the secondary standard of the units of colour coordinates and the coloration coordinates	supplementary COOMET.PR-S1
18.04.2011	439/RU-a/08	Agreed	International comparisons of national measurement standards of the unit of an angle of rotation of a plane of polarization	supplementary COOMET.PR-S2
18.04.2011	438/RU-a/08	Agreed	International comparisons of national measurement standards of the unit of refractive index	supplementary COOMET.PR-S3
18.04.2011	368/BY-a/06	Agreed	Bilateral comparisons of the units of luminous intensity and illumination	key COOMET.PR-K3.a

QM - Amount Of Substance .**26** projects.

actualisation	project number	state	subject	type of comparison
26.09.2016	708/RU/16	Proposal	Pilot comparison "Characterization of organic substances for chemical purity by mass balance method. Anthracene"	pilot
22.06.2016	696/RU/16	Proposal	Pilot comparisons in the field of measuring the mass fraction of silver and gold in epithermal gold ore	pilot

11.04.2016	692/RU/16	Proposal	Pilot comparisons in the field of measuring of the moisture content in wood	pilot
07.04.2016	691/RU/16	Proposal	Pilot comparison " Determination of polychlorinated dibenzo-p-dioxins and dibenzofurans in fatty matrixes (pork fat)"	pilot
21.12.2015	678/RU/15	Proposal	Key comparison of national measurement standards in the field of analysis of gas mixture of C ₃ H ₈ in nitrogen	key
04.08.2015	672/RU/15	Proposal	Pilot comparisons in the field of measuring the mass fraction of iron in iron	pilot
28.04.2015	664/RU/14	Proposal	Supplementary comparisons of primary standard gas mixtures "Ambient air: Carbon monoxide (CO) in nitrogen 5 µmol/mol"	supplementary
25.12.2014	654/RU/14	Proposal	Pilot comparison measurement in the field of human serum (category 10.1): Cholesterol in human serum	pilot
07.10.2014	650/RU/14	Proposal	Pilot comparisons in the field of metals mass fraction measurements (Al, As, Ca, Mg, Pb, Sb, Au, Ag, Ni) in slag (Part II)	pilot
08.09.2014	649/RU/14	Proposal	Pilot comparison "Study in the field of measuring of formed elements of blood: erythrocytes (RBC), leukocytes (WBC)"	pilot
10.07.2014	645/RU/14	Proposal	Pilot comparisons in the field of measuring the mass fraction of copper and impurities in the oxygen-free copper wire rod KMB M001b brand for determination of copper purity	pilot
27.09.2013	622/RU/13	Proposal	Pilot comparison "Measurement of (C ₃ -C ₅) components content in mixtures of liquefied hydrocarbons"	supplementary COOMET.QM-S4
20.08.2013	618/RU/13	Proposal	Pilot comparison in the field of Ni-based alloy elemental analysis	pilot
25.07.2013	611/RU/13	Proposal	Pilot comparison in the field of food safety (category 11.2: contaminants): melamine in milk powder	pilot
26.11.2012	583/RU/12	Proposal	Pilot comparison: determination of dissolved oxygen in water concentration at the wide range	pilot
09.10.2012	575/RU/12	Proposal	Pilot comparisons in the field of air nanoparticles number concentration measurements in the size range of 20 to 500 nm	pilot
09.10.2012	574/RU/12	Proposal	Pilot comparisons in the field of air particle number concentration measurements in the size range of 0,5 µm and larger	pilot
09.10.2012	573/RU/12	Proposal	Pilot comparisons in the field of air ion number concentration measurements	pilot
25.10.2016	655/RU-a/15	Agreed	Pilot study on pH measurement of phosphate buffer (pH ~ 7.0).	pilot
18.02.2014	576/RU-a/12	Agreed	Comparison of national measurement standards in the field of analysis of gas mixture of CO ₂ , CO, C ₃ H ₈ in nitrogen ("automotive" gas mixtures)	supplementary COOMET.QM-S5
31.01.2014	615/RU-a/13	Agreed	Comparison in the field of measuring of the Ethanol mass fraction in Nitrogen.	key COOMET.QM-K93
09.01.2014	596/RU-a/13	Agreed	Determination of α-HCH, β-HCH, γ- HCH in tea	pilot
12.08.2013	608/RU-a/13	Agreed	Comparisons of primary standard gas mixtures: Gravimetry production of CO in nitrogen (3 µmol/mol)	supplementary COOMET.QM-S3
11.03.2013	556/RU-a/12	Agreed	Comparisons of primary standard gas mixtures: Gravimetry production of CH ₄ in synthetic air (100 µmol/mol)	supplementary COOMET.QM-S2

20.05.2011	484/RU-a/09	Agreed	Key comparisons of primary standards of concentration of components in gas media - SO ₂ in Nitrogen (100 µmol/mol)	key COOMET.QM-K76
20.05.2011	483/RU-a/09	Agreed	Supplementary comparison of primary standard gas mixtures: NO in Nitrogen (50 µmol/mol)	supplementary COOMET.QM-S1

RI - Ionizing Radiation .

8 projects.

actualisation	project number	state	subject	type of comparison
22.01.2014	635/DE/14	Proposal	Comparison of the national standards of air kerma for x-radiation qualities used in radiation protection, general diagnostic radiology, computed tomography and mammography	pilot
18.12.2008	445/DE/08	Proposal	Comparison of the national standards of air kerma for Cs-137 at protection level	supplementary COOMET.RI(I)-S1
18.12.2008	447/DE/08	Proposal	Comparison of the national standards of air kerma for medium-energy x-rays	KCDB
18.12.2008	446/DE/08	Proposal	Comparison of the national standards of air kerma for low-energy x-rays	KCDB
26.05.2008	423/RU/08	Proposal	Standardization of Eu-152 radionuclide solution	key COOMET.RI(II)- K2.Eu-152
29.10.2007	410/UA/07	Proposal	COOMET Regional comparisons of National standards of consumed dose unit in water for gamma-radiation Co-60	KCDB
30.03.2007	389/RU/07	Proposal	Comparison of the well-type ionization chamber (IC) calibrations factors for the medical radionuclides ("Dosecalibrators").	KCDB
14.09.2015	641/BY-a/14	Agreed	Comparison of the national standards of air kerma for x-radiation qualities used in radiation protection and diagnostic radiology	supplementary

T - Termometry .

11 projects

actualisation	project number	state	subject	type of comparison
26.08.2016	704/RU/16	Proposal	Comparisons of temperature national standards at the triple point of mercury.	pilot
10.06.2014	642/MD/14	Proposal	Comparisons for measurements in the calibration of industrial platinum resistance thermometers	pilot
17.10.2013	623/RU/13	Proposal	Bilateral comparisons of national standards of the energy of combustion by means of solid and liquid fuels	KCDB
12.02.2013	593/RU/13	Proposal	Regional key comparisons of national standards of unit of temperature in the range from 0,01 to 660,323 ° C	key COOMET.T-K3.3 COOMET.T-K9
11.02.2013	592/SK/13	Proposal	Comparisons of temperature national standards at the triple point of mercury	KCDB

29.01.2010	487/RU/10	Proposal	The regional comparisons of thermocouples of types S	supplementary COOMET.T-S1
29.01.2010	486/RU/10	Proposal	Regional comparisons of copper cells for contact thermometry	KCDB
12.07.2013	598/RU-a/13	Agreed	Pilot comparisons of national standards in the field of measuring of solids specific heat	pilot
13.12.2012	544/RU/11	Agreed	Regional comparison humidity standards of gases. Dew/frost point temperature -50 °C to +20 °C	KCDB
30.11.2012	549/RU-a/12	Agreed	The pilot thermal conductivity comparison in the range from 0.03 to 0.2 W·m ⁻¹ ·K ⁻¹ at temperature from 10 to 40 °C	pilot
16.04.2007	285/RU/03	Agreed	Regional comparisons of national standards for temperature measurements in the range from the triple point of mercury to the zinc freezing point	key COOMET.T-K3

TF - Time and Frequency.

3 projects.

actualisation	project number	state	subject	type of comparison
07.11.2013	625/RU/13	Proposal	Pilot study (comparison) of time scales of NTP-servers via INTERNET	pilot
07.05.2013	605/RU/13	Proposal	Comparison of time scales of NTP-servers via INTERNET	KCDB
06.06.2007	398/RU/07	Proposal	Comparisons of the National Standards of Time and Frequency with RF scale UTC(SU)	KCDB