



**COOMET Document**

**COOMET  
D9/2014  
(November 2013)**

**COOMET Program of comparisons**

*Approved at the 18th meeting of COOMET President's Council (Bratislava, Slovakia, 20-21 November 2013)*

**APPROVED**

**Vladimir Krutikov**  
**COOMET President**  
*20 November 2013*

**COOMET PROGRAMM OF COMPARISONS**

## AUV - Acoustics, Ultrasound and Vibrations.

actualisation	project number	state	subject	type of comparison
21.06.2013	<a href="#">609/UA/13</a>	Proposal	The key comparison of the measurement standards of the pressure unit in air in the frequency range from 2 Hz to 10 kHz	KCDB
06.09.2013	<a href="#">561/RU-a/12</a>	Agreed	Pilot comparison of hydrophone calibrations in the frequency range from 3 kHz to 200 kHz	pilot
28.08.2012	<a href="#">535/UA-a/11</a>	Agreed	Comparison of the standards of the unit of power ultrasound in the water in the frequency range from 2 to 15 MHz	KCDB
10.11.2011	<a href="#">531/RU-a/11</a>	Agreed	Comparisons of free-field hydrophone calibrations in a lab water tank at low sound frequencies (from 250 Hz to 8 kHz)	supplementary COOMET.AUV.W-S1
07.05.2009	<a href="#">434/BY-a/08</a>	Agreed	Comparison of national standards for sound pressure (Pa) in air using calibration of working standard microphones	supplementary COOMET.AUV.A-S1
23.08.2006	<a href="#">308/RU/04</a>	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 .

actualisation	project number	state	subject	type of comparison
28.10.2013	<a href="#">624/GE/13</a>	Proposal	Comparison of electrical resistance standards at 100 $\Omega$ and 100 k $\Omega$	KCDB
18.04.2013	<a href="#">604/RU/13</a>	Proposal	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.	KCDB
27.11.2012	<a href="#">584/UA/12</a>	Proposal	Supplementary comparison of National standards of inductance	supplementary COOMET.EM-S14
09.10.2012	<a href="#">571/GE/12</a>	Proposal	Comparison of electric resistance coils of 10 Ohm and 100 kOhm	pilot
30.08.2012	<a href="#">566/UA/12</a>	Proposal	Comparisons of the national AC/DC voltage transfer references up to 1000 V in the frequency range from 10 Hz to 1 MHz	key COOMET.EM-K6.a
30.08.2012	<a href="#">567/UA/12</a>	Proposal	Comparisons of national standards of HF voltage	KCDB
27.08.2012	<a href="#">565/RU/12</a>	Proposal	International pilot comparison of Q factor standards	supplementary COOMET.EM-S15
27.04.2012	<a href="#">554/UA/12</a>	Proposal	Comparison of National standards of electrical capacitance	supplementary COOMET.EM-S13
17.10.2011	<a href="#">542/RU/11</a>	Proposal	Comparison of Josephson Voltage Standards at 10 V	key COOMET.EM.BIPM-K10.b
14.12.2010	<a href="#">514/RU/10</a>	Proposal	Comparison of the state primary special standard of the Russian Federation ГЭТ 178-2010 and	supplementary COOMET.EM-S16

			the reference standards of Ukraine and Germany of the intensity units of pulse electric and magnetic fields in ultrawide band short pulse range.	
25.02.2010	<a href="#">490/RU/10</a>	Proposal	Supplementary comparisons of AC high voltage measuring reference systems	supplementary COOMET.EM-S10
07.05.2009	<a href="#">468/RU/09</a>	Proposal	Additional comparisons of amplitude modulation depth HF oscillations	supplementary COOMET.EM-S9
01.11.2002	<a href="#">267/RU/02</a>	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
22.11.2012	<a href="#">516/RU-a/11</a>	Agreed	Supplementary comparison of national standard instruments in the field of measurements of magnetic loss power in electrical steel.	supplementary COOMET.EM-S12
23.12.2009	<a href="#">469/RU-a/09</a>	Agreed	International supplementary comparisons of the inductance standards for the working frequencies up to 10 MHz	supplementary COOMET.EM-S8
29.05.2009	<a href="#">449/RU-a/08</a>	Agreed	Supplementary comparisons of DC high voltage measuring reference instruments	supplementary COOMET.EM-S7
04.06.2008	<a href="#">411/RU-a/07</a>	Agreed	Key comparisons of reference instruments measuring high voltage alternating current	supplementary COOMET.EM-S6
31.10.2007	<a href="#">409/UA-a/07</a>	Agreed	Comparison of the basic reference standard of the units of maximum values of the strength of impulse electric and magnetic fields of Ukraine (ИЭМПГ) and the national standard of the units of maximum values of the strength of impulse electric and magnetic fields of the Russian Federation ГЭТ148-93.	KCDB
12.12.2005	<a href="#">345/UA/05</a>	Agreed	Keeping and maintenance of the State Standards of electrical capacitance and tangent of losses in order to provide an uniformity of measurements	key COOMET.EM-K4 COOMET.EM-S4
12.12.2005	<a href="#">344/UA/05</a>	Agreed	Keeping and maintenance of the State Standards of electrical power and power factor in order to provide an uniformity of measurements	supplementary COOMET.EM-S2

## L - Length.

actualisation	project number	state	subject	type of comparison
01.08.2013	<a href="#">612/UA/13</a>	Proposal	Comparison of line scales up to 100 mm	pilot
19.07.2013	<a href="#">610/UA/13</a>	Proposal	Comparisons of standards of flatness diameter up to 300 mm	supplementary
29.12.2012	<a href="#">591/UA/12</a>	Proposal	Comparisons of precise navigation systems GPS/GLONASS	supplementary
29.12.2012	<a href="#">590/UA/12</a>	Proposal	Comparison of precise rangefinder systems	supplementary
30.08.2012	<a href="#">570/UA/12</a>	Proposal	Comparisons of standards of flatness	supplementary
30.08.2012	<a href="#">569/UA/12</a>	Proposal	Comparison of length standards in the range of 0.001 to 1 mm	supplementary
30.08.2012	<a href="#">568/UA/12</a>	Proposal	Comparisons of reference measuring instruments of surface parameters	supplementary
29.08.2012	<a href="#">564/RU/12</a>	Proposal	Comparisons of measurement standards of length unit in the field of sphere deviation	supplementary

			measurements	
29.08.2012	<a href="#">563/RU/12</a>	Proposal	Comparisons of measurement standards of length unit in the field of roundness deviation measurements	supplementary
21.06.2011	<a href="#">529/RU/11</a>	Proposal	Comparison of interferometers for measurement of tapes up to 20 m	supplementary
14.05.2011	<a href="#">527/RU/11</a>	Proposal	Additional comparisons of surface density of coatings	supplementary
18.04.2011	<a href="#">524/UA/11</a>	Proposal	Intercomparison of the national standards unit of the plane angle	key COOMET.L-K3
09.12.2008	<a href="#">443/RU/08</a>	Proposal	Comparisons of national standards in the area of measuring surface density of coatings within the range of (0,001-1,000) kg/m <sup>2</sup> and coating thickness within the range of (1-100) µm	supplementary
17.11.2008	<a href="#">440/RU/08</a>	Proposal	International comparison of stabilized He-Ne/I <sub>2</sub> lasers at 633 nm	supplementary COOMET.L-S9
04.07.2006	<a href="#">370/RU/06</a>	Proposal	Interlaboratory comparison of length standards in the nanometer range	supplementary
22.02.2013	<a href="#">501/UA-a/10</a>	Agreed	Comparisons of optical standards of flatness	supplementary COOMET.L-S11
22.02.2013	<a href="#">450/UA-a/09</a>	Agreed	Comparison of measurement standards of length unit for roughness parameters	supplementary COOMET.L-S12

## M - Mass And Related Quantities .

actualisation	project number	state	subject	type of comparison
12.09.2013	<a href="#">621/RU/13</a>	Proposal	Supplementary comparisons of national standards of torque	supplementary
28.12.2012	<a href="#">589/UA/12</a>	Proposal	Supplementary comparison of national measurement standards of negative pressure in the range from 1 MPa to 10 MPa	supplementary
29.11.2012	<a href="#">586/RU/12</a>	Proposal	Pilot comparison in the field of measurements of liquids kinematical viscosity.	pilot
09.11.2012	<a href="#">581/GE/12</a>	Proposal	Comparison of mass standards with nominal values of 50 mg, 10 g and 1 kg	supplementary
01.11.2012	<a href="#">578/RU/12</a>	Proposal	Pilot comparison in the field of measurements of liquids density.	pilot
26.06.2012	<a href="#">560/UA/12</a>	Proposal	The comparison of the national hardness standards of Rockwell and Super-Rockwell scales.	key
28.12.2011	<a href="#">548/UA/11</a>	Proposal	Supplementary bilateral comparisons of submultiply and multiply units of kilogram	supplementary
02.12.2011	<a href="#">546/UA/11</a>	Proposal	Key comparisons of submultiply and multiply units of kilogram	key COOMET.M.M-K8
13.05.2011	<a href="#">528/KZ/11</a>	Proposal	Pilot comparisons of submultiply and multiply units of kilogram	pilot
03.09.2004	<a href="#">317/DE/04</a>	Proposal	Bilateral key comparison of National Vickers hardness standards	key
14.01.2004	<a href="#">295/RU/03</a>	Proposal	Mutual Comparisons of the He leaks in range (10 <sup>-6</sup> -1) m <sup>3</sup> . Pa/s	key
17.10.2013	<a href="#">341/RU/05</a>	Agreed	Key comparison of Brinell and Vickers hardness scales	key COOMET.M.H-K1

				COOMET.M.H-K2
17.10.2013	<a href="#">259/RU/02</a>	Agreed	COOMET comparisons in the field of force measurements	supplementary COOMET.M.F-S1
17.10.2013	<a href="#">258/RU/02</a>	Agreed	Mutual Comparisons of the results of calibrations of the multiples and submultiples of the kilogram	key COOMET.M.M-K5
02.08.2013	<a href="#">515/UA-a/11</a>	Agreed	Bilateral comparison of the force primary standards	supplementary COOMET.M.F-S2
18.04.2013	<a href="#">545/UA/11</a>	Agreed	Comparisons of complex of static volume measuring devices	supplementary COOMET.M.FF-S6
29.03.2013	<a href="#">580/RU-a/12</a>	Agreed	Supplementary bilateral comparisons of COOMET in the field of measurements of liquids density.	supplementary
29.03.2013	<a href="#">555/AZ-a/12</a>	Agreed	Supplementary comparisons of COOMET in the field of measurements of liquids density.	supplementary
28.03.2013	<a href="#">588/RU-a/12</a>	Agreed	Supplementary comparisons of COOMET in the field of measurements of liquids kinematical viscosity	supplementary
28.03.2013	<a href="#">587/RU-a/12</a>	Agreed	Supplementary comparisons of COOMET in the field of measurements of liquids kinematical viscosity	supplementary
08.12.2011	<a href="#">512/RU-a/10</a>	Agreed	Supplementary bilateral comparison of national standards of torque	supplementary COOMET.M.T-S1
20.09.2007	<a href="#">397/RU/07</a>	Agreed	The key comparison of national standards of absolute pressure in average pressure	key
31.01.2002	<a href="#">235/RU-a/01</a>	Agreed	Mutual Comparisons of the National and Secondary Standards of Pressure in the Field of Low Absolute Pressure in the Range ( $10^{-2}$ -1000) Pa	key

## F - Fluid Flow .

actualisation	project number	state	subject	type of comparison
02.06.2013	<a href="#">585/UA-a/12</a>	Agreed	Supplementary comparisons of critical nozzle - standards of transfer units for gas flow	supplementary COOMET.M.FF-S5
23.12.2009	<a href="#">452/SK-a/09</a>	Agreed	Comparison of cold water flow calibration laboratories in a range of flow rates (3 - 20) m <sup>3</sup> /h	supplementary COOMET.M.FF-S4
15.04.2009	<a href="#">406/UA-a/07</a>	Agreed	Comparisons of mass and volume units national standards	supplementary COOMET.M.FF-S2
30.07.2008	<a href="#">412/UA/07</a>	Agreed	Realization of reference gas flow meter's test rigs comparisons in flow range: (4-160) m <sup>3</sup> /h.	supplementary COOMET.M.FF-S3

## PR - Photometry And Radiometry .

actualisation	project number	state	subject	type of comparison
07.11.2013	<a href="#">599/RU-a/13</a>	Agreed	Comparison of Laser Power Standards at wavelengths of 0,532; 1,064 and 10,6 mkm	supplementary COOMET.PR-S7
07.11.2013	<a href="#">577/RU-a/12</a>	Agreed	Comparison on Fibre Optic Power Responsivity	supplementary COOMET.PR-S6
10.08.2011	<a href="#">429/CU-a/08</a>	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	<a href="#">366/RU-a/06</a>	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	<a href="#">439/RU-a/08</a>	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	<a href="#">438/RU-a/08</a>	Agreed	International comparisons of national measurement standards of the unit of refractive index	supplementary COOMET.PR-S3
18.04.2011	<a href="#">368/BY-a/06</a>	Agreed	Bilateral comparisons of the units of luminous intensity and illumination	key COOMET.PR-K3.a

#### QM - Amount Of Substance .

actualisation	project number	state	subject	type of comparison
27.09.2013	<a href="#">622/RU/13</a>	Proposal	Pilot comparison "Measurement of (C <sub>3</sub> -C <sub>5</sub> ) components content in mixtures of liquefied hydrocarbons"	pilot
20.08.2013	<a href="#">618/RU/13</a>	Proposal	Pilot comparison in the field of Ni-based alloy elemental analysis	pilot
15.08.2013	<a href="#">615/RU/13</a>	Proposal	Key comparison in the field of measuring of the ethanol mass fraction in nitrogen	KCDB
01.08.2013	<a href="#">613/RU/13</a>	Proposal	Pilot comparisons in the field of measurements of specific adsorption, specific surface area, specific volume and pore diameter in solid nanoporous substances	pilot
25.07.2013	<a href="#">611/RU/13</a>	Proposal	Pilot comparison in the field of food safety (category 11.2: contaminants): melamine in milk powder	pilot
14.02.2013	<a href="#">596/RU/13</a>	Proposal	Pilot comparison in the field of food safety /category 11.2: contaminants/: pesticides in tea	pilot
26.11.2012	<a href="#">583/RU/12</a>	Proposal	Pilot comparison: determination of dissolved oxygen in water concentration at the wide range	pilot
19.10.2012	<a href="#">576/RU/12</a>	Proposal	Key comparisons of national measurement standards in the field of analysis of gas mixture of CO <sub>2</sub> , CO, C <sub>3</sub> H <sub>8</sub> in nitrogen (automotive emission gases)	KCDB
09.10.2012	<a href="#">575/RU/12</a>	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	<a href="#">574/RU/12</a>	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	<a href="#">573/RU/12</a>	Proposal	Pilot comparisons in the field of air ion number concentration measurements	pilot
24.07.2012	<a href="#">562/RU/12</a>	Proposal	Pilot comparisons in the field of metals mass fraction measurements (Cu, Zn, Pb, Al, Ca, Sb, Mg, Au, Ag, As, Ni) in slag	pilot
04.03.2011	<a href="#">520/RU/11</a>	Proposal	Pilot comparison in the field of measurements of hydrogen ions amount content (mol/kg) in hydrochloric acid solution	pilot
04.03.2011	<a href="#">519/RU/11</a>	Proposal	Pilot comparisons in the field of ethanol mass fraction measurements in aqueous solutions	pilot
01.10.2010	<a href="#">508/RU/10</a>	Proposal	Pilot comparisons in the field of nitrogen mass fraction measurements in milk products	pilot
01.09.2009	<a href="#">479/RU/09</a>	Proposal	Supplementary comparisons in the field of moisture mass fraction measurements in cereal grain and cereal products	KCDB
12.08.2013	<a href="#">608/RU-a/13</a>	Agreed	Comparisons of primary standard gas mixtures: Gravimetry production of CO in nitrogen (3 µmol/mol)	supplementary COOMET.QM-S3
19.07.2013	<a href="#">435/RU-a/08</a>	Agreed	Pilot comparison in the field of mass concentration measurement of solid aerosol particles	pilot
11.03.2013	<a href="#">556/RU-a/12</a>	Agreed	Comparisons of primary standard gas mixtures: Gravimetry production of CH <sub>4</sub> in synthetic air (100 µmol/mol)	supplementary COOMET.QM-S2
11.03.2013	<a href="#">367/RU-a/06</a>	Agreed	Pilot comparisons in the field of measuring the blood elements (red blood cells $0,5 \cdot 10^{12} - 10 \cdot 10^{12}$ ml <sup>-1</sup> )	pilot
08.12.2011	<a href="#">540/UA-a/11</a>	Agreed	Key comparison COOMET.QM-K36. "Electrolytic conductivity 0,5 S/m"	key COOMET.QM-K36
20.05.2011	<a href="#">484/RU-a/09</a>	Agreed	Key comparisons of primary standards of concentration of components in gas media - SO <sub>2</sub> in Nitrogen (100 µmol/mol)	key COOMET.QM-K76
20.05.2011	<a href="#">483/RU-a/09</a>	Agreed	Supplementary comparison of primary standard gas mixtures: NO in Nitrogen (50 µmol/mol)	supplementary COOMET.QM-S1

## RI - Ionizing Radiation .

actualisation	project number	state	subject	type of comparison
18.12.2008	<a href="#">445/DE/08</a>	Proposal	Comparison of the national standards of air kerma for Cs-137 at protection level	supplementary COOMET.RI(I)-S1
18.12.2008	<a href="#">447/DE/08</a>	Proposal	Comparison of the national standards of air kerma for medium-energy x-rays	KCDB
18.12.2008	<a href="#">446/DE/08</a>	Proposal	Comparison of the national standards of air kerma for low-energy x-rays	KCDB
26.05.2008	<a href="#">423/RU/08</a>	Proposal	Standardization of Eu-152 radionuclide solution	key COOMET.RI(II)-K2.Eu-152
29.10.2007	<a href="#">410/UA/07</a>	Proposal	COOMET Regional comparisons of National standards of consumed dose unit in water for gamma-radiation Co-60	KCDB
30.03.2007	<a href="#">389/RU/07</a>	Proposal	Comparison of the well-type ionization chamber (IC) calibrations factors for the medical radionuclides ("Dosecalibrators").	KCDB

## T - Termometry .

actualisation	project number	state	subject	type of comparison
17.10.2013	<a href="#">623/RU/13</a>	Proposal	Bilateral comparisons of national standards of the energy of combustion by means of solid and liquid fuels	KCDB
12.02.2013	<a href="#">593/RU/13</a>	Proposal	Regional key comparisons of national standards of unit of temperature in the range from 0,01 to 660,323 ° C	KCDB
11.02.2013	<a href="#">592/SK/13</a>	Proposal	Comparisons of temperature national standards at the triple point of mercury	KCDB
29.01.2010	<a href="#">487/RU/10</a>	Proposal	The regional comparisons of thermocouples of types S	KCDB
29.01.2010	<a href="#">486/RU/10</a>	Proposal	Regional comparisons of copper cells for contact thermometry	KCDB
10.04.2001	<a href="#">229/UA/01</a>	Proposal	Intercomparison of the mercury triple point realizations	KCDB
12.07.2013	<a href="#">598/RU-a/13</a>	Agreed	Pilot comparisons of national standards in the field of measuring of solids specific heat	pilot
13.12.2012	<a href="#">544/RU/11</a>	Agreed	Regional comparison humidity standards of gases. Dew/frost point temperature -50 °C to +20 °C	KCDB
30.11.2012	<a href="#">549/RU-a/12</a>	Agreed	The pilot thermal conductivity comparison in the range from 0.03 to 0.2 W·m <sup>-1</sup> ·K <sup>-1</sup> at temperature from 10 to 40 °C	pilot
10.11.2011	<a href="#">489-a/RU/10</a>	Agreed	Regional comparisons of national standards of the energy of combustion by means of high-purity graphite	KCDB
10.11.2011	<a href="#">488/RU-a/10</a>	Agreed	Comparisons of standard methods of measuring of the heat of combustion of natural gas	KCDB
25.04.2008	<a href="#">387/UA-a/07</a>	Agreed	Regional comparisons of national standards of the unit of temperature at the fixed points of silver, gold and copper freezing.	supplementary COOMET.T-S5
16.04.2007	<a href="#">285/RU/03</a>	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.

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