CCL-GD4 Key comparison planning document

Version	Date	Comment
1.0	2009-07-13	Initial copy sent by RT to AL after CCL meeting and updates sent by S-L Tan
1.1	2009-09-01	Updated for latest info on APMP.L-K1.1, added NPL to EURAMET.L-K4.2004
1.2	2009-12-17	Added AU and JP to EURAMET.L-K3.2009
1.3	2010-02-02	Added EURAMET.L-K1.2
1.4	2010-04-27	Tidying up. Added EURAMET.L-K3.1
1.5	2010-05-21	INMETRO added as CCL member for SIM, latest KC info updated
1.6	2010-06-02	Minor edits post APMP report to WG-MRA, plus EURAMET.L-K3.1 is Final
1.7	2010-06-03	Minor edits post SIM report to WG-MRA
1.8	2010-06-28	Updates to participants of CCL-K1.2010
1.9	2011-09-07	Various updates prior to WG-MRA meeting 2011
1.10	2011-09-08	Change of status EURAMET.L-K5.2004.
1.11	2011-09-20	Updates to SIM KC
1.12	2011-09-30	APMP.L-K6 Final
1.13	2011-10-04	Updated after EURAMET TC-L meeting 2011, before WG-MRA meeting
1.14	2011-10-06	Updated during WG-MRA meeting 2011
1.15	2011-10-10	Added NPL to EURAMET.L-K6 list
1.16	2011-10-21	Added EURAMET K11 data and new K11-MeP sheet
1.17	2011-12-13	Added APMP.L-K1.1.2011, sim.L-K3 -> SIM.L-K3.2008
1.18	2012-02-10	Added EUROMET.L-K1.2011 final details
1.19	2012-04-13	Updated several comparisons
1.20_euramet	2012-08-28	All EURAMET TC-L member with CMCs added with their participation data; corrected CCL-S3 & EURAMET.L-S14 mix-up; added CMC column and calculation of years from last comparison for EURAMET TC-L members; some other smaller formulations /A. Lassila
1.201	2012-10-09	Added EUROMET.L-K4.2005 and EURAMET.L-K3.1 for Estonia, S11 participants corrected, GUM added to SIM.L-K3.2008, end year of EURAMET.L-k5 chandeg to 2007, updated CMCs from EURAMET.L.11.2012
1.202	2012-10-22	Added SMU to K3.2009
1.203	2012-11-8	Added DK to K4.2005
1.3	2013-10-03	Added EURAMET.L-K8.2013
1.31	2013-10-04	Added KC CMC from EURAMET.L.14.2013 (BG K3), checked EURAMET.L.13.2012 (no KC CMCs) and added KC CMCs from EURAMET.L.12.2012 (DFM K4); added EURAMET.L-K4.1.2013, Added UME for K11 2013
1.32.	2014-09-10	Name of follow-up EURAMET.L-K4 was updated to EURAMET.L-K4.2005.1; updated VSL stopped the surface roughness; BG CCL-K11 2014 partc. added
1.33	2015-10-25	Status update of various comparisons; cross check with CCL WG-MRA list
1.34	2016-10-15	Status update of various comparisons; cross check with CCL WG-MRA list
1.34	2016-10-15	Corrections coming from the WGMRA list (participant withdrawal, or addition)
1.35	2017-10-14	Status update of various comparisons; cross check with CCL WG-MRA list
1.36	2018-10-14	Status update of various comparisons; cross check with CCL WG-MRA list (v1.43)
1.45	2019-10-09	Status update and cross-check with CCL WGMRA v1.45
1.46	2019-11-99	Updates after the WG-MRA meeting including new KCDB links
1.47	2020-08-28	Updates: EURAMET.L-K5.2016
1.48	2020-10-08	Updates prior to WG-MRA meeting
1.49	2020-10-13	Updated after EURAMET TC-L meeting 2020. Added countries to EURAMET: HA (Bosniz & Herzegovina, IMBiH), MD (Moldova, INM-MD), ME (Montenegro, MBM), MK (N Macedonia, BoM)
1.50	2020-11-11	Updated KCDB2.0 links for comparisons, updated new comparisons.
1.51	2020-12-17	Post WG-MRA updates to participation
1.52	2021-02-02	Added APMP.L-K5.2021
1.53	2021-10-04	Updated prior to WG-MRA meeting
1.54	2021-10-18	Updated after WG-MRA and prior to CCL
1.55	2021-11-18	Updated after EURAMET TC-L meeting
1.56	2022-02-23	NMIJ accepted into APMP.L-K5, no longer in EURAMET.L-K5.n01
1.57	2022-09-23	SMU no longer have interferometric gauge block CMC, some updates, full SC list
1.58	2022-09-26	Full update prior to TC-L and WG-MRA meetings
1.59	2022-09-28	Added NIS (EG) as CCL member, further updates e.g. K11
1.60	2022-10-19	Updated after EURAMET TC-L meeting
1.61	2022-11-26	Updated after WG-MRA 2022 meeting. Del A*STAR from APMP.L-K5.2021; add NIST o to APMP.L-K8.2021
1.62	2023-05-04	Adjusted EURAMET.L-K7.n01 participant blocks as not starting until Q3 2023 at earliest; corrected K3 (13, 15)
1.63	2023-08-21	Updates prior to WG-MRA meeting
1.64	2023-09-28	Further updates prior to WG-MRA and TC-L meetings

	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Years from start of last comparison
APMP																																								
AU (NMIA)	x					2					4			7				9														16							3
CN (NIM)	x										4			7				9					12									16		19					1
JP (NMIJ)	x										4			7				9					12	14							16							3
KR (KRISS)	x										4			7																	16							3
SG (A*STAR)	x													7				9					12									16		19					1
COOMET																																							
VNIIM	x										4																							19					1
EURAMET																																							
AT (BEV)	x											5												13										19					1
CH (METAS)	x		1			2					4	5											12	13							18							3
CZ (CMI, VÚGTK)	x		1									5			8					10					13						18		19					1
DE (PTB)	x		1									5			8								12								18							3
ES (CEM)	x		1					3			6	5								10				13							18	15		20				1
FI (MIKES, FGI)	x											5			8								12		13								19	20				1
FR (LNE, LNE-INM)	x		1								4	5												13									19					1
IT (INRIM)	x		1									5											12								18		19					1
NL (NMi VSL)	x		1									5												13									19					1
SK (SMU)						2						5												13															
TR (UME)	x														8										13								19	20				1
UK (NPL)	x		1								4	5												13									19	20				1
AL (DPM)																																							
BE (SMD)	x											5													13						18							3
BG (BIM)	x														8										13									20				1
DK (DANIAmet-DFM, DTU, DTI)	x		1									5										11				13								20				1
EE (Metrosert)																																							
GR (EIM)	x														8									13										20				1
HA (IMBiH)																																							
HR (HMI/FSB-LPMD)	2012																					11			13									20				1
HU (BFKH)	x											5										11												20				1
IE (NSAI NML)																																							
LT (VMT/VMC)																																							
LV (LATMB)																																							
MD (INM-MD)																																							
ME (MBM)																																							
MK (BoM)																																							
MT (MSA-NMS)																																							
NO (JV)	x											5			8										13									20				1
PL (GUM)	x														8							11			13									20				1
PT (IPQ)	x											5			8										13									20				1
RO (INM)	x														8										13							15						2
RS (DMDM)	x																								13							15						2
SE (RISE)	x		1									5												13										20				1
SI (MIRS/UM-FS/LTM)																																							
AFRIMETS																																							
EG (NIS)	x																					11			13									20				1
SA (NMISA)	x																								12							15	19					1
SIM																																							
BR (INMETRO)	x											6									10			12									19					1
CA (NRC)	x							3			4	6									10			12								15	19					1
MX (CENAM)	x							3			4	6								10				12						17								5
USA (NIST)	x					2		3			4	6									10			12									19					1

	start	stop	KCDB number & link	Status	Publication reference
1	1991	1992	EUROMET.L-K1.Prev		(Metrologia, 1995, 32, 79-86)
2	1993	1994	CCDM gauge block comparison		(Metrologia, 1998 35, 97)
3	1998	1999	SIM.L-K1.Prev.		(Metrologia, 1999, 36, 421-432)
4	1998	2000	CCL-K1		(Metrologia, 2002, 39, 165-177)
5	2002	2003	EUROMET.L-K1		(KCDB, EUROMET project #471 Final report)
6	2001	2002	SIM.L-K1		(Metrologia, 2007, 44, Tech. Suppl. 04001)
7	2005	2006	APMP.L-K1		(Metrologia, 2006, 43, Tech. Suppl. 04004)
8	1994	1996	EUROMET.L-K1.1		(KCDB, EUROMET project #471 Final report)
9	1998	2000	APMP.L-K1.1		(Metrologia, 2009, 46, Tech. Suppl. 04005)
10	2008	2010	SIM.L-K1.2007		(Metrologia, 2012, 49, Tech. Suppl. 04010)
11	2010	2010	EURAMET.L-K1.2		(Metrologia, 2012, 49, Tech. Suppl. 04005)
12	2011	2013	CCL-K1.2011		(Metrologia, 2022, 59, Tech. Suppl. 04005)
13	2012	2014	EURAMET.L-K1.2011		(Metrologia, 2016, 53, Tech. Suppl. 04003)
14	2011	2012	APMP.L-K1.1.2011		(Metrologia, 2013, 50, Tech. Suppl. 04002)
15	2021	2022	AFRIMETS.L-K1.2020	Running	
16	2020	2022	APMP.L-K1.2018	Running	
17	2018	2019	SIM.L-K1.2007.1		(Metrologia, 2021, 58, Tech. Suppl. 04002)
18	2020	2020	EURAMET.L-K1.2019		(Metrologia, 2022, 59, Tech. Suppl. 04002)
19	2022		CCL-K1.n01	Running	
20	2022		EURAMET.L-K1.n01	Running	

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	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
APMP																			
AU (NMIA)	x												2	4					
CN (NIM)	x												2	4					
JP (NMIJ)	x													4					
KR (KRISS)	x													4					
SG (A*STAR)	x													4					
COOMET																			
VNIIM	x												2						
EURAMET																			
AT (BEV)	x																3		
CH (METAS)	x						1										3		
CZ (CMI)	x																3		
DE (PTB)	x						1						2				3		
ES (CEM)	x						1										3		
FI (MIKES)	x						1										3		
FR (LNE)	x																3		
IT (INRIM)	x						1						2				3		
NL (NMi VSL)	x						1										3		
SK (SMU)	x																3		
TR (UME)	x																3		
UK (NPL)	x						1						2				3		
AL (DPM)																			
BE (SMD)																			
BG (BIM)																			
DK (DANIAmet-DFM, DTU, DTI)																			
EE (Metrosert)																			
GR (EIM)																			
HA (IMBiH)																			
HR (HMI/FSB-LPMD)																			
HU (BFKH)																			
IE (NSAI NML)																			
LT (VMT/VMC)																			
LV (LATMB)																			
MD (INM-MD)																			
ME (MBM)																			
MK (BoM)																			
MT (MSA-NMS)																			
NO (JV)																			
PL (GUM)																			
PT (IPQ)																			
RO (INM)																			
RS (DMDM)																			
SE (RISE)																			
SI (MIRS/UM-FS/LTM)																			
AFRIMETS																			
EG (NIS)	x																		
SA (NMISA)	x												2						
SIM																			
BR (INMETRO)	x																		
CA (NRC)	x												2						
MX (CENAM)	x																		
USA (NIST)	x												2						

CCL-K2 long gauges joined with CCL-K1 for future comaprisons, limited to L <= 500 mm

	start	stop	KCDB number & link	Status	Publication reference
1	1993	1995	EUROMET.L-K2.Prev		(Metrologia, 1996, 33, 485-491)
2	1999	2001	CCL-K2		(Metrologia, 2003, 40, Tech. Suppl. 04004)
3	2002	2005	EUROMET.L-K2		(Metrologia, 2006, 43, Tech. Suppl. 04003)
4	2000	2002	APMP.L-K2		(Metrologia, 2006, 43, Tech. Suppl. 04005)

	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Years from start of last comparison
APMP																																								
AU (NMIA)	x																		3						7										13					2
CN (NIM)	x													2					3						7											15				2
JP (NMIJ)	x													2					3						7											15				2
KR (KRISS)	x													2					3																		15			2
SG (A*STAR)	x																		3				6				8										15			2
COOMET																																							
VNIIM	x													2										10				8												9
EURAMET																																							
AT (BEV)																																							
CH (METAS)	x										1			2								5						12											6
CZ (CMI, VUGTK)	x										1											5	6		7		8							13					2
DE (PTB)	x										1			2								5	6			8	8	8	12										6
ES (CEM)	x										1													6										13		15			2
FI (MIKES, FGI)	x										1											5												13					2
FR (LNE, LNE-INM)	x										1			2								5				11							13						2
IT (INRIM)	x										1			2						9		5		6										13	15				2
NL (NMi VSL)	x										1											5		6									13						2
SK (SMU)	x										1			2									6				8												9
TR (UME)	x										1											5													15				2
UK (NPL)	x										1											5												13					2
AL (DPM)																																							
BE (SMD)																																							
BG (BIM)	2013																							6				8						13					2
DK (DANIAmet-DFM, DTU, DTI)																																							
EE (Metrosert)																				9																			
GR (EIM)																								6									13						
HA (IMBiH)																																							
HR (HMI/FSB-LPMD)																																							
HU (BFKH)																							6																
IE (NSAI NML)																																							
LT (VMT/VMC)																																							
LV (LATMB)																				9																			
MD (INM-MD)																																							
ME (MBM)																																							
MK (BoM)																																							
MT (MSA-NMS)																																							
NO (JV)																																							
PL (GUM)	x										1											4	6										13						2
PT (IPQ)	x																			9				6									13						2
RO (INM)	x																					5																	**13**
RS (DMDM)	x																									8								13					2
SE (RISE)																																							
SI (MIRS/UM-FS/LTM)																																							
AFRIMETS																																							
EG (NIS)																																							
SA (NMISA)	x													2					3																					**18**
SIM																																							
BR (INMETRO)	x																					4										14				15			2
CA (NRC)														2																		14			15				
MX (CENAM)	x													2								4										14			15				2
USA (NIST)	x													2								4										14							4

	start	stop	KCDB number & link	Status	Publication reference	
1	1996	1999	EUROMET.L-K3.Prev		(EUROMET Project 371, PTB-report F-43, 2001)	
2	2000	2002	CCL-K3		(Metrologia, 2009, 46, Tech. Suppl. 04004)	
3	2005	2007	APMP.L-K3		(Metrologia, 2016, 53, Tech. Suppl. 04006)	
4	2008	2010	SIM.L-K3.2008		(Metrologia, 2015, 52, Tech. Suppl. 04008)	
5 Loop 1	2010	2010				
6 Loop 2	2011	2012	EURAMET.L-K3.2009		(Metrologia, 2018, 55, Tech. Suppl. 04001)	Note: this comparison ran in 4 loops over long timescale
7 Loop 3	2013	2013				
8 Loop 4	2014	2016				
9	2008	2008	EURAMET.L-K3.1		(Metrologia, 2010, 47, Tech. Suppl. 04005)	
10	2011	2012	COOMET.L-K3	Draft B under review in WG-MRA		Awaiting pilot response to reviewer comments since Oct 2021
11	2014	2014	EURAMET.L-K3.2009.1		(Metrologia, 2015, 52, Tech. Suppl. 04011)	
12	2017	2017	EURAMET.L-K3.2009.2		(Metrologia, 2018, 55, Tech. Suppl. 04005)	
13	2021	2022	EURAMET.L-K3.n01	Running (loop B) & reporting (loop A)		
14	2019	2021	SIM.L-K3.2019		(Metrologia, 2023, 60, Tech. Suppl. 04002)	
15	2021		CCL-K3.2020	Running		

	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Years from start of last comparison
APMP																																								
AU (NMIA)	x													2						4															11					2
CN (NIM)	x													2													8												8
JP (NMIJ)																				4																				
KR (KRISS)	x													2						4														11					2
SG (A*STAR)	x																			4														11					2
COOMET																																							
VNIIM	x													2													8					10							3
EURAMET																																							
AT (BEV)	x																		3								9												7
CH (METAS)	x									1				2					3								8	9											7
CZ (CMI, VÚGTK)	x									1									3									9											7
DE (PTB)	x									1				2					3									9											7
ES (CEM)	x																		3								8	9											7
FI (MIKES, FGI)	x									1									3									9											7
FR (LNE, LNE-INM)	x									1									3									9											7
IT (INRIM)	x									1				2					3						7		8	9											7
NL (NMi VSL)	x									1									3						7			9											7
SK (SMU)																																							
TR (UME)	x									1									3									9											7
UK (NPL)	x									1				2					3							7													**10**
AL (DPM)																																							
BE (SMD)	x																		3							7													**10**
BG (BIM)																																							
DK (DANIAmet-DFM, DTU, DTI)	2012																		3									9											7
EE (Metrosert)																			3																				
GR (EIM)																			3									9											
HA (IBMiH)																																							
HR (HMI/FSB-LPMD)	x																		3									9											7
HU (BFKH)	x									1									3									9											7
IE (NSAI NML)	2012																		3									9											7
LT (VMT/VMC)																																							
LV (LATMB)																			3																				
MD (INM-MD)																																							
ME (MBM)																												9											
MK (BoM)																																							
MT (MSA-NMS)																																							
NO (JV)																																							
PL (GUM)	x									1									3									9											7
PT (IPQ)																																							
RO (INM)	x																		3	5								9											7
RS (DMDM)																																							
SE (RISE)	x									1									3									9											7
SI (MIRS/UM-FS/LTM)	x																		3							7													**10**
AFRIMETS																																							
EG (NIS)																																							
SA (NMISA)	x													2														8						11					2
SIM																																							
BR (INMETRO)	x																		3		6							8											8
CA (NRC)																			3								8												
MX (CENAM)	x													2							6							8											8
USA (NIST)	x													2							6							8											8

	start	stop	KCDB number & link		Status	Publication reference	
1	1996	1998	EUROMET.L-K4.Prev			(Metrologia, 2000, 37, 253-260)	
2	2000	2002	CCL-K4a	CCL-K4b		(KCDB)	
3	2005	2007	EUROMET.L-K4.2005			(Metrologia, 2010, 47, Tech. Suppl. 04001),	(Metrologia, 2010, 47, Tech. Suppl. 04003)
4	2008	2010	APMP.L-K4			(Metrologia, 2014, 51, Tech. Suppl. 04004)	
5	2006	2008	COOMET.L-K4.b			Abandoned	
6	2009	2010	SIM.L-K4.2009			(Metrologia, 2015, 52, Tech. Suppl. 04004)	
7	2013	2014	EURAMET.L-K4.2005.1			(Metrologia, 2020, 57, Tech. Suppl. 04003)	
8	2015	2017	CCL.K4.2015		Draft B with participants		
9	2016	2018	EURAMET.L-K4.2015			(Metrologia 2021 58 Tech. Suppl. 04004)	
10	2020	2021	COOMET.L-K4.2021		Draft A with participants		
11	2021	2023	APMP.L-K4.n01		Running		

	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Years from start of last comparison
APMP																																								
AU (NMIA)	x													2				3	4																8					2
CN (NIM)	x													2					4											6				8					2
JP (NMIJ)	x													2					4					5				6						8					2
KR (KRISS)	x													2					4															8					2
SG (A*STAR)																														6									
COOMET																																							
VNIIM																		3																						
EURAMET																																							
AT (BEV)	x																	3										6											7
CH (METAS)	x									1				2					4										6										7
CZ (CMI, VÚGTK)	x																	3											6										7
DE (PTB)										1				2																									
ES (CEM)	x									1				2				3											6							9				1
FI (MIKES, FGI)	x																	3												6									7
FR (LNE, LNE-INM)	x																	3										6							9				1
IT (INRIM)	x									1								3												6									7
NL (NMi VSL)	x									1								3												6					9				1
SK (SMU)																																							
TR (UME)																													6					8					
UK (NPL)	x									1								3										6							9				1
AL (DPM)																																							
BE (SMD)																																							
BG (BIM)																																							
DK (DANIAmet-DFM, DTU, DTI)																																							
EE (Metrosert)																																							
GR (EIM)																																							
HA (IMBiH)																																							
HR (HMI/FSB-LPMD)																																							
HU (BFKH)	x																	3											6						9				1
IE (NSAI NML)																		3																					
LT (VMT/VMC)																																							
LV (LATMB)																																							
MD (INM-MD)																																							
ME (MBM)																																							
MK (BoM)																																							
MT (MSA-NMS)																																							
NO (JV)																																							
PL (GUM)	x																	3												6				9					1
PT (IPQ)																																							
RO (INM)	x																	3											6										7
RS (DMDM)																																							
SE (RISE)	x									1								3										6											7
SI (MIRS/UM-FS/LTM)																																							
AFRIMETS																																							
EG (NIS)																																							
SA (NMISA)	x																	3											6										7
SIM																																							
BR (INMETRO)	x																	3	4															9					1
CA (NRC)																		3												6									
MX (CENAM)	x													2				3												6									7
USA (NIST)	x													2					4										6										7

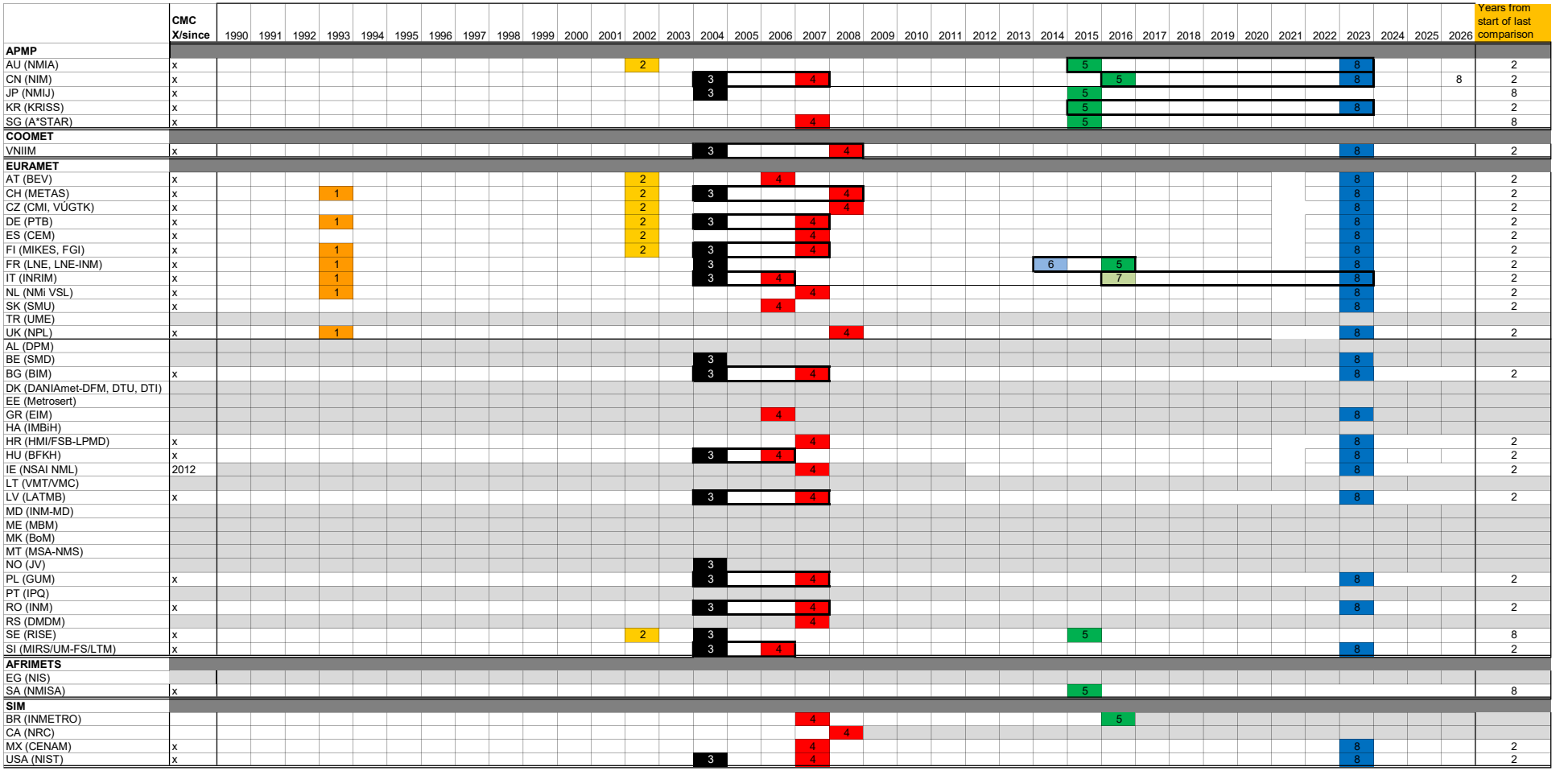
	start	stop	KCDB number & link	Status	Publication reference
1	1996	1998	EUROMET.L-K5.Prev		(PTB Report F-37, September 1999)
2	1999	2002	CCL-K5		(Metrologia, 2006, 43, Tech. Suppl. 04006)
3	2004	2007	EUROMET.L-K5.2004		(Metrologia, 2012, 49, Tech. Suppl. 04008)
4	2006	2007	APMP.L-K5.2006		(Metrologia, 2012, 49, Tech. Suppl. 04007)
5	2012	2012	APMP.L-K5.2006.1		(Metrologia, 2017, 54, Tech. Suppl. 05006)
6	2016	2017	EURAMET.L-K5.2016		(Metrologua 2020, 57, Tech. Suppl. 04002)
7	2014	2015	APMP.L-K5.2014		Abandoned
8	2021	2022	APMP.L-K5.2021	Running	
9	2022	2023	EURAMET.L-K5.n01	Running	

	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
APMP																					
AU (NMIA)	x							1							2					4	
CN (NIM)	x														2					4	
JP (NMIJ)	x														2					4	
KR (KRISS)	x																			4	
SG (A*STAR)																					
COOMET																					
VNIIM															2						
EURAMET																					
AT (BEV)	x																				
CH (METAS)	x																3				
CZ (CMI)	x							1							2		3				
DE (PTB)								1							2		3				
ES (CEM)	x																				
FI (MIKES)	x																3			4	
FR (LNE)	x														2						
IT (INRIM)	x																			4	
NL (NMi VSL)	x														2		3				
SK (SMU)																					
TR (UME)																					
UK (NPL)	x														2		3				
AL (DPM)																					
BE (SMD)																					
BG (BIM)																					
DK (DANIAmet-DFM, DTU, DTI)																					
EE (Metrosert)																					
GR (EIM)																					
HA (IMBiH)																					
HR (HMI/FSB-LPMD)																					
HU (BFKH)																					
IE (NSAI NML)																					
LT (VMT/VMC)																					
LV (LATMB)																					
MD (INM-MD)																					
ME (MBM)																					
MK (BoM)																					
MT (MSA-NMS)																					
NO (JV)																					
PL (GUM)																					
PT (IPQ)																					
RO (INM)																					
RS (DMDM)																					
SE (RISE)																					
SI (MIRS/UM-FS/LTM)																					
AFRIMETS																					
EG (NIS)																					
SA (NMISA)	x							1												4	
SIM																					
BR (INMETRO)	x																			4	
CA (NRC)								1							2					4	
MX (CENAM)	x														2						
USA (NIST)	x														2						

CCL-K6 comparison series halted. DG6 discussing new artefacts and comparisons

	start	stop	KCDB number & link	Status	Publication reference
2	2000	2003	CCL-K6		(Metrologia, 2009, 46, Tech. Suppl. 04003)
3	2004	2005	EUROMET.L-K6		(Metrologia, 2013, 50, Tech. Suppl. 04001)
1	1996	1996	SIM.L-K6.Prev.		(Proc. International Dimensional Workshop on "Metrology of the 21st Century", May 1999)
4	2008	2008	APMP.L-K6		(Metrologia, 2014, 51, Tech. Suppl. 04003)
5	2022	2024	APMP.L-S10	Being planned as supplementary comparison	

(K6-ball plate)



	start	stop	KCDB number & link	Status	Publication reference
1	1992	1993	EUROMET.L-S1		(EUROMET Project 252, Final report, BNM-LNE Report, September 1995)
2	2003	2004	EUROMET.L-S14		(Metrologia, 2003, 40, Tech. Suppl. 04002)
3	2000	2002	CCL-S3		(EUROMET.L-S14 Final Report, 2004, 38 pages)
4	2006	2008	EUROMET.L-K7.2006		(Metrologia, 2012, 49, Tech. Suppl. 04006)
5	2015	2016	APMP.L-K7		(Metrologia, 2022, 59, Tech. Suppl. 04006)
6	2014	2014	EURAMET.L-K7.2014		(Metrologia, 2015, 52, Tech. Suppl. 04007)
7	2016	2017	SIM.L-K7.2016	Draft B with participants	
8	2021		EURAMET.L-K7.n01	Draft Protocol (PTB pilot)	

K7-line scale

	CMC X/since	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Years from start of last comparison
APMP																																								
AU (NMIA)	x																			3												6	7						2
CN (NIM)	x																				3												6	7					2
JP (NMIJ)	x																				3												7						2
KR (KRISS)	x																				3												7						2
SG (A*STAR)	x																			3						5								7					2
COOMET																																							
VNIIM	x																															6			7				3
EURAMET																																							
AT (BEV)	x																								5							6							3
CH (METAS)	x													2											5							6							3
CZ (CMI, VUGTK)	x													2								4										6							3
DE (PTB)	x													2						3												6							3
ES (CEM)	x													2											5								6						3
FI (MIKES, FGI)	x													2											5														**10**
FR (LNE, LNE-INM)	x																						4		5														**10**
IT (INRIM)	x													2									4		5														**10**
NL (NMi VSL)														2																									
SK (SMU)														2																									
TR (UME)	x													2												5														**10**
UK (NPL)	x													2						3			4									6	7						3
AL (DPM)																																							
BE (SMD)																																							
BG (BIM)																																							
DK (DANIAmet-DFM, DTU, DTI)	x													2											5														**10**
EE (Metrosert)	x																					4																	**14**
GR (EIM)																																							
HA (IMBiH)																																							
HR (HMI/FSB-LPMD)	x																					4										6							3
HU (BFKH)																																							
IE (NSAI NML)																																							
LT (VMT/VMC)														2																									
LV (LATMB)																																							
MD (INM-MD)																																							
ME (MBM)																																							
MK (BoM)																																							
MT (MSA-NMS)																																							
NO (JV)																																							
PL (GUM)	x													2											5							6							3
PT (IPQ)	x													2											5														**10**
RO (INM)	x																					4										6							3
RS (DMDM)																										5													
SE (RISE)	x													2											5														**10**
SI (MIRS/UM-FS/LTM)																																							
AFRIMETS																																							
EG (NIS)	x																				3		4																**14**
SA (NMISA)	x																				3					5													**10**
SIM																																							
BR (INMETRO)	x												1								4					5													**10**
CA (NRC)													1																										
MX (CENAM)	x												1								4													7					2
USA (NIST)	x												1								3	4													7				**14**

DFM had unsuccessful participation in 6

	start	stop	KCDB number & link	Status	Publication reference
1	2000	2001	SIM.L-S2		(Metrologia, 2006, 43, Tech. Suppl. 04002)
2	2001	2002	EUROMET.L-S11		(Metrologia, 2004, 41, Tech. Suppl. 04001)
3	2008	2010	APMP.L-K8		(Metrologia, 2013, 50, Tech. Suppl. 04003)
4	2009	2011	EURAMET.L-K8		(Metrologia, 2017, 54, Tech. Suppl. 04005)
5	2013	2015	EURAMET.L-K8.2013		(Metrologia, 2015, 53, Tech. Suppl. 04001)
6	2020	2020	EURAMET.L-K8.2020	Running	
7	2021	2022	APMP.L-K8.2021	Running	

	CMC x/since YYYY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Years from last comparison
APMP																																							
AU (NMIA)																																R							
CN (NIM)	x								0	0						2	2					4										R				18			-1
JP (NMIJ)	x								0	0						2						4										R							Node
KR (KRISS)	x		0				0		0									2														R							**17**
SG (A*STAR)	x																					4										R				18			-1
COOMET																																							
VNIIM	x						0			0	0					2																R							**19**
EURAMET																																							
AT (BEV)	x										0		1								3										14							3
CH (METAS)	x		0				0															4											15						2
CZ (CMI, VÚGTK)	x					0				0	0				1								4										15						2
DE (PTB)	x		0				0					0																											Alt. Appch.
ES (CEM)	x					0	0						1					2					5												17				0
FI (MIKES, FGI)	x				0				0	0					1					3																			Node
FR (LNE, LNE-INM, CNAM)	x			0			0								1	2		2																16					1
IT (INRIM)	x						0						1			2		2																	17				0
NL (NMi VSL)	x						0								1	2										9													8
SK (SMU)	x					0											2					4									R		16						1
TR (UME)	x					0									1		2	2			3				7				11										6
UK (NPL)	x						0						1												7									17					Node
AL (DPM)																																							
BE (SMD)	x		0				0																		7														**10**
BG (BIM)	x						0						1													8													9
DK (DANIAmet-DFM, DTU, DTI)			0		0												2																						
EE (Metrosert)																																							
GR (EIM)	x																2													13									4
HA (IMBiH)																																							
HR (HMI/FSB-LPMD)	x																				3																		**14**
HU (BFKH)	x					0					0											4									14								3
IE (NSAI NML)																																							
LT (VMT/VMC)																																							
LV (LATMB)																																							
MD (INM-MD)																																							
ME (MBM)																																							
MK (BoM)																																							
MT (MSA-NMS)																																							
NO (JV)	x						0				0			1										6											17				0
PL (GUM)	x										0				1				3							9												8
PT (IPQ)	x				0	0										2		2									10											7
RO (INM)	x																2										9											7
RS (DMDM)	x	0																					5										15						2
SE (RISE)	x	0	0		0											2		2						6											17				0
SI (MIRS/UM-FS/LTM)	x																				3									12									5
SIM																																							
BR (INMETRO)	x											0									3																		**14**
CA (NRC)	x				0				0			0									3																		Node
MX (CENAM)	x								0			0									3										R								**14**	Self-cal planned
USA (NIST)	x				0				0															6															**11**	

	start	stop	KCDB number & link	Status	Publication reference					
0	1991		BIPM.L-K10		Phys. Rev. Lett., 2000, 85, 18, 3797-3800	Appl. Phys. B, 2001, 72, 221-226	Proc. SPIE, 2001, 4269, 122-133			
1	2000	2003	Calibration at BIPM							
2	2004	2006	BIPM.L-K11		(Metrologia, 2005, 42, Tech. Suppl. 04002)	(Metrologia, 2005, 42, Tech. Suppl. 04003)	(Metrologia, 2	(Metrologia, 2005, 42, Tech. Suppl. 04004)	Metrologia, 2007, 44, Tech. Suppl., 04003	Metrologia, 2007, 44, Tech. Suppl., 04004
3	2007	2009	CCL-K11	Report for 2007 - 2009	(Metrologia, 2010, 47, Tech. Suppl. 04009)					
4	2010	2010		Report for 2010	(Metrologia, 2011, 48, Tech. Suppl. 04001)					
5	2011	2011		Report for 2011	(Metrologia, 2012, 49, Tech. Suppl. 04009)					
6	2012	2012		Report for 2012	(Metrologia, 2015, 52, Tech. Suppl. 04005)					
7	2013	2013		Report for 2013	(Metrologia, 2015, 52, Tech. Suppl. 04006)					
8	2014	2014		Report for 2014	(Metrologia, 2016, 53, Tech. Suppl. 04007)					
9	2015	2015		Report for 2015	(Metrologia, 2017, 54, Tech. Suppl. 04001)					
10	2016	2016		Report for 2016	(Metrologia, 2018, 55, Tech. Suppl. 04003)					
11	2017	2017		Report for 2017	(Metrologia, 2018, 55, Tech. Suppl. 04004)					
12	2018	2018								
13	2019	2019		Report for 2018 - 2020	(Metrologia, 2022, 59, Tech. Suppl. 04001)	R = requested but postponed due to COVID				
14	2020	2020								
15	2021	2021		Report for 2021	(Metrologia, 2022, 59, Tech. Suppl. 04004)					
16	2022	2022								
17	2023	2023								

APMP.L-K11 ITRI, MSL, NIM, NIMT, NMIJ, NMISA, SIRIM, SCL 2004

PTB offers CMCs but take a different approach to K11 equivalancy (see WGMRA-19-5.9-3_CCL-K11_TechnicalProtocol_v2.96.docx)

CCL members in bold CCL observers in BOLD Italics

AFRIMETS		APMP		COOMET		GULFMET		SIM		EURAMET		
Botswana	BOBS	**Australia**	**NMIA**	Azerbaijan	AZSTAND	Kuwait	PAI	**Canada**	**NRC**	Albania	DPM	
Mauritius	MSB	Bangladesh	NML-BSTI	Belarus	BELGIM	Oman	DGSM	**Mexico**	**CENAM**	**Austria**	**BEV**	
Namibia	NSI			Cuba	NC	Qatar	QGOSM	**USA**	**NIST**	Belgium	SMD	
Seychelles	SBS	**China**	**NIM**	Kazakhstan	KazInMetr	Saudi Arabia	SASO	**USA**	**JILA**	Bosnia and Herzegovina	IMBIH	
South Africa	**NMISA**	***Chinese Taipei***	***CMS/ITRI***	**Russia**	**VNIIM**	UAE	ESMA	Antigua & Barbuda		Bulgaria	BIM	
Tanzania	TBS	Hong Kong	SCL	***Ukraine***	***NSC IM***			Barbados		Croatia	DZM	
Zambia	ZABS	India	NPLI	Uzbekistan	UzNIM SE			Dominica		Cyprus	MCIT	
Zimbabwe	NMI-SIRDC	Indonesia	SNSU-BSN					Grenada		**Czechia**	**CMI**	
		Japan	**NMIJ**					Guyana		Denmark	DFM	
Kenya	KEBS	**Korea R.O.**	**KRISS**					Jamaica	JBS	Estonia	METROSERT	
		Malaysia	NMIM					Saint Kitts & Nevis		**Finland**	**MIKES**	
Morocco	LPEE-LNM	Mongolia	MASM					Saint Lucia		**France**	**LNE**	
Tunisia	ANM	New Zealand	MSL-IRL					St Vincent & the Grenadines		**Germany**	**PTB**	
		Pakistan	NPSL					Suriname		Greece	EIM	
Egypt	NIS	Phillippines	ITDI					Trinidad & Tobago		Hungary	BFKH	
Ethiopia	NMIA									Ireland	NSAI NML	
Ghana	GSA	**Singapore**	**A*STAR**					Belize		**Italy**	**INRIM**	
Sudan	SSMO	Sri Lanka	MUSSD					Costa Rica	LACOMET	Latvia	LATMB	
		Thailand	***NIMT***					Panama	CENAMEP-AIP	Lithuania	FTMC	
		Viet Nam	VMI							Luxembourg	ILNAS	
								Bolivia	IBMETRO	Malta	MSA	
								Colmbia	INM (CO)	Moldova	NMI (MD)	
								Ecuador	INEN	Montenegro	BMM	
								Peru	INACAL	**Netherlands**	**VSL**	
										North Macedonia	BOM	
								Agentina	***INTI***	Norway	JV	
								Brazil	**INMETRO**	***Poland***	***GUM***	
								Chile	INM	***Portugal***	***IPQ***	
								Paraguay	INTN	Romania	INM	
								Uruguay	LATU	Serbia	DMDM	
										Slovakia	**SMU**	
										Slovenia	MIRS	
										Spain	**CEM**	
										Sweden	RISE	
										Switzerland	**METAS**	
										Turkey	**UME**	
										United Kingdom	**NPL**	
										Georgia	GEOSTM	applicant
										Ukraine	**ME**	applicant

Updated A Lewis
29/09/2023

Number	Title	Particioants
CCL-S1	Nanometrology: one-dimensional gratinos	METAS. ITRI. IMGC. DFM. KRISS. NIM. NIST. NMIJ. NPL. PTB. VNIIM
CCL-S2	Nanometrology: step height standards	PTB, CEM,ITRI, IMGC, DFM, GUM, KRISS, METAS, NIM, NIST, NMIJ, VSL, NPL, VNIIM
CCL-S3	Nanometrology: line scale standards	PTB, LNE, ITRI, IMGC, METAS, MIKES, NIM, NIST, NMIJ, NRC, RISE, VNIIM
CCL-S4	Nanometrology: two-dimensional gratinos	DFM. CMI. ITRI. INRIM. KRISS. METAS. MIKES. NIM. NIST. NMIJ. NPL. PTB
AFRIMETS.L-S3	Calibration of gauge blocks by mechanical comparison	NIS (EG). COSQ (Iraq). LCAE (Tunisia), NMISA (SA), NSCL (Syria)
AFRIMETS.L-S4	Calibration of gauge blocks by mechanical comparison	LCAE (Tunisia), PTB
AFRIMETS.L-S5	Mechanical determination of length	NIS (EG). BOBS (Botsw.). GSA (Ghana). KEBS (Kenya). LPEE-LNM (Morocco). MSB (Maurit.). NMIE (Ethio.). NMISA (SA). TBS (Tanz.). ZMA (Zamb.)
AFRIMETS.L-S6	Comparison on Hand Instruments	NMISA
APMP.L-S1	Thermal expansion coefficient of gauge blocks	NIMU, CENAM, CMI, INRIM, METAS, MIKES, PTB
APMP.L-S2	Nanometric lateral scale	NMU, PTB
APMP.L-S3	Gauge block by mechanical comparison	KRISS. NIMT. NML-SIRIM. NPLI. NPSL (Pakistan). KIM-LIPI. VMI-STAMEQ (Viet Nam)
APMP.L-S3.4.n01	Angle gauge blocks	NIMT, EMI (UAE), A*STAR, NMIA, NMIM (Malaysia), SASO-NMCC, SE Ukremtrteststandard, SNSU-BSn (Indonesia), CMI-STATMEQ (Viet Nam)
APMP.L-S4	Geometrical roundness measurements using error separation	NIMT, ITRI, KRISS, NIM, A*STAR, NMIA, NMU, NMISA
APMP.L-S5	Nano particles measurements	ITRI, CENAM, DFM, INMETRO, INRIM, KRISS, LNE, METAS, NIM, NIMT, NMIA, NMIJ, PTB
APMP.L-S6	Long gauge blocks by comparative method	NIMT. KRISS
APMP.L-S7	Comparison of step height measurements	NPLI, BEV, NIMT, A*STAR, MNU
APMP.L-S8	Flatness of optical flat measured by flatness interferometer	NIMT, MSL, NIM, A*STAR, NMIJ, NMISA, NPLI
APMP.L-S9	Thread	NIM, NIMT, A*STAR, PTB
APMP.L-S10	Calibration of coordinate measuring machine (CMM)	NMIJ
APMP.L-S11	Nanometrology: One-Dimensional Gratinos	NIM, KRISS, NIMT, A*STAR, NMIA, NMIJ
COOMET.L-S1	Comparison of comparators with photoelectric microscopes	NSC. KazInMetr. VNIIM
COOMET.L-S3	Comparison of high accuracy gauge block interferometers	NSC. KazStandard
COOMET.L-S6	Comparison of standard of evolvent surface	NSC, VNIIMS
COOMET.L-S7	Comparison of standards of Length	BelGIM (Belarus), GUM, KazStandard, NSC, SE Ukrmetrteststandard (Ukraine), SMU
COOMET.L-S8	Comparison of straightness and flatness national standards	UNIM (Ru). BelGIM (Belarus). KazStandard
COOMET.L-S9	Stabilized He-Ne/I2lasers at wavelength 633 nm	VNIIM. BelGIM. KazStandard. NSC
COOMET.L-S10	Comparison of length standards for measuring gear parameters	BelGIM, VNIIMS
COOMET.L-S13	Comparison of reference measuring instruments of surface parameters	NSC. VNIIMS
COOMET.L-S14	Comparison of length standards in the range from 0.001 mm to 1 mm	NSC. KazStandard
COOMET.L-S15	Comparison of flatness standards	NSC, BelGIM, VNIIMS
COOMET.L-S16	Comparison of standards in the field of surface density of coating measurements and coating thickness	PTB, UNIM (Ru)
COOMET.L-S17	Comparison of standards in the field of roundness measurements	NSC. BelGIM. VNIIMS
COOMET.L-S18	Comparison of the determination of parameters linked to involute gears	NSC. PTB. VNIIMS
COOMET.L-S19	Comparison of profiles of measuring bridges	BelGIM, KazStandard
COOMET.L-S20	Calibration of gauge blocks	NMI (MD). INM (RO). PTB. VMC
COOMET.L-S21	Interference units for measurement of tapes up to 20 m	VNIIM. BelGIM. KazStandard
COOMET.L-S22	End standards	NSC, GEOSTM (Georgia)
COOMET.L-S23	Comparison of precision range-finders	NSC, NIM
COOMET.L-S24	Comparisons of precise navigation systems GPS/GLONASS	NSC. BelGIM. NIM
COOMET.L-S25	Nanometer standards	NSC, PTB
COOMET.L-S26	Coordinates of one-dimensional standards	NSC, BelGIM, VNIIMS
COOMET.L-S27	End standards	NSC. BelGIM. FTMC (Lithuania). GEOSTM (Georgia). KazStandard. UzNIM (Uzbekistan)
COOMET.L-S28	Supplementary comparisons of standards in the field of measurement of 3D parameters of surface texture	VNIIMS. BelGIM. KazInMetr
COOMET.L-S29	Calibration of gauge blocks by inteferometry on measurement standards of length	BelGIM, KazStandard, NSC, PTB, SE Ukrmetteststandard, VNIIM
COOMET.L-S30	Involute gears using a complex standard	VNIIMS, BelGIM
COOMET.L-S31	Linear scale	BelGIM, KazStandard. NSC. SE Ukrmetrteststandard. VNIIM
COOMET.L-S32	Calibration of long distance standards	BelGIM, SE Ukrmetteststandard, VNIIFTRI, VNIIM
EUROMET.L-S1	Line scale measurement	BIPM, LNE, MIKES, INRIM, METAS, NMI-VSL, NPL, PTB, RISE
EUROMET.L-S2	Thermal expansion of gauge blocks	METAS. INRIM. NMI-VSL. NPL. PTB
EUROMET.L-S3	Oredh setting standards	TUE (NL). CEM. INRIM. METAS. NIST. VSL. PTB. RISE. MIKES
EUROMET.L-S4	External diameter of wires	LNE, METAS, NPL, PTB
EUROMET.L-S5a	Roundness	RISE, LNE, INRIM, DTH (DK), METAS, VSL, PTB
EUROMET.L-S5b	Roundness profiles	TUE (NL). INRIM. METAS. VSL. PTB. RISE
EUROMET.L-S6	Standards of thermal expansion	PTB, NMI-VSL, NPL
EUROMET.L-S7	Flatness of surface plates	PTB, VSL, NPL, MIKES
EUROMET.L-S8	Nd:YAG lasers	INRIM. PTB
EUROMET.L-S9	Two dimensional grid	NPL, PTB
EUROMET.L-S10	Squareness measurements	SMU, LNE, CEM, GUM, IPQ, METAS, MIKES, VSL, BFKH, PTB, SMIS, RISE
EUROMET.L-S11	Surface texture measurements	PTB, BEV, CEM, CMI, INRIM, DFM, GUM, IPQ, METAS, MIKES, VSL, NPL, SMU, RISE, UME, VMT
EURAMET.L-S12	Calibration of gauge blocks by mechanical comparison	NMU(IE). BEV. CMI. EIM. GUM. MIKES. MIRS. BIM (BG). NPL. BFKH. UME. VMT/VMC
EUROMET.L-S13	Cylindrical artefacts	PTB, LNE, IMRIM, METAS, NIST, VSL, RISE
EUROMET.L-S14	Steel tape measurements	METAS, BEV, CEM, CMI, GUM, INM, JV, LATMB, MIKES, MIRS, BIM, NMIA (Australia), BFKH, PTB, SMD, RISE
EUROMET.L-S15	Step height standards	PTB, CMI, INRIM, METAS, VSL
EUROMET.L-S15a	Step height standards	PTB, CMI. INRIM. MIKES. A*STAR. VSL
EUROMET.L-S16	Calibration of gauge blocks by comparison	NPL, FSB, INM, JV, LATMB, METROSERT, MSA, NML (IE), SMD
EURAMET.L-S17	Length intervals on a steel tape	METAS, METROSERT, UME
EUROMET.L-S18	Squareness measurements	SMU. MIKES
EUROMET.L-S19	Squareness measurements	SMU. GUM
EURAMET.L-S20	Laser distance measuring instruments	GUM, METROSERT, BEV, CEM, CMI, INM, INRIM, JV, METAS, MIKES, PTB, SMU, RISE
EURAMET.L-S21	Comparison of parallel thread gauges	FSBm METROSERT, BEV, INRIM, LNE,METAS, MIKES, MIRS, BFKH, UME
EURAMET.L-S22	Calibration of gauge blocks by mechanical comparison	DTI (DK). METROSERT. BEV. BMM (Montenegro). CEM. DFM. LATMB. MCCAA-SMI (Malta). MIIRS. NPL. NSAI NML. VMT/VMC
EURAMET.L-S23	High precision roundness measurement by error separation techniques	CEM, DTI, INRIM, IPQ, LNE, SMD, VSL
EURAMET.L-S24	Involute gear standards	PTB, NGML, NIM, NIMT, NMIJ, NSC
EURAMET.L-S25	Distance measurements using pocket-type laser instruments (EDMs)	CEM. BEV. VSL
EURAMET.L-S26	Depth of v-shaped grooves	PTB, BEV, CEM, GUM, INRIM, MIKES, NMISA, SP, UME, VNIIMS
EURAMET.L-S26.1	Depth of v-shaped grooves	MIKES, CEM, PTB, UME
EURAMET.L-S27	Length of stainless steel tapes	PTB, METROSERT, BEV, BFKH, BIM, BMM, CEM, CMS, GUM, INTI (Arge.), IPQ, JV, LATMB, MASM (Monq.), MIRS, NIM, RISE, SASO, SMD, UME, VNIIM, VUGTKRIGTC (CZ)
EURAMET.L-S28	Flatness of surface plates	PTB. NIM. NMIJ. VNIIMS
EURAMET.L-S29	Measurement of a 1 mm stage micrometer	BEV, CEM, DMDM, GUM, INM, INMETRO, INRIM, INTI, NIM, NIMT, NMISA, RISE, UME
EURAMET.L-S30	Determination of roundness in the equator of two alumina spheres	CEM, DTI, INRIM, LNE, VSL
EURAMET.L-S31	Transducer displacement error	MIRS. BEV. CEM. DFM. DTI. JV. METAS. MIKES. VSL
EURAMET.L-S2.2.n01	Gauge block calibration by mechanical comparison	BEV. BFKH. BIM. BMM. DFM. FTMC. LATMB. MIRS. NMI (MD). NPL. NSAI
GULFMET.L-S1	Calibration of gauge blocks by mechanical comparison	EMI (UAE), DGSM (Oman), DPM (Albania), NMIM (Malasia), PAI (Kuwait), SASA (SA), UME
GULFMET.L-S2	Calibration of gauge blocks by interferometry	UME, SASO
SIM.L-S1	Gauge blocks by mechanical comparison	NRC, CEM. INDECOPI (Peru). INMETRO. INTI. LCPN-DICTU (Chile). LPMP-UTP (Panama). NIST. SIC (Colombia)
SIM.L-S1.PREV	Short gauge blocks by mechanical comparison	CEM, CCCM (Colombia), CERTI (Brazil), CI-UNAM (MX), CIDESI (MX), INDECOPI (Peru), INMETRO, INTI, PTB, TPYCEA (ES)
SIM.L-S2	Comparison of surface roughness and step height (depth) standards	NRC, CENAM, INMETRO, INTI, NIST
SIM.L-S3.PREV	Measurement of Rockwell hardness indenter geometry	NIST, INRIM. MPA-NRW (DE). NIM. NMIJ. UM (IT)
SIM.L-S4.PREV	Linewidth standards	NIST. NPL
SIM.L-S5	Nanometrology: one-dimensional grating pitch calibration by optical diffraction	NRC, ITRI, METAS, PTB
SIM.L-S6	Gauge blocks by mechanical comparison	CENAM, BSJ (Jam.), CENAMEP AIP (Pana.), CMI, DICTUC (Chile), IBMETRO (Boliv.), INDECOPI, INEN (Ecua.), INMETRO, INTI, LACOMET (Costa R.), LATU (Uruq.), NIST, NPLI, SIC (Colom.), TTBS (CARICOM/Trin Tob.)
SIM.L-S7	Calibration of cetral length and variation of 6 steel gauge blocks	INTI. BSJ. CENAM. CANAMEP AIP. DICTUC. IBMETRO. INACAL (Peru). INEN. INM (Colombia). INMETRO. LACOMET. LATU. NIST. PAI. TTBS
SIM.L-S8	Gauge blocks measured by mechanical and interferometric technique	INTI, CENAM, DICTUC, INACAL, INM (Colombia), INMETRO, NIST, NRC