

Key comparisons BIPM.L-K11, APMP.L-K11 and APMP.L-K11.1

MEASURAND: Absolute frequency of the reference component of the corresponding recommended radiation for the practical realization of the definition of the metre

WAVELENGTH: 633 nm (recommended frequency: 473 612 353 604 kHz)

df_i : absolute frequency measured for Standard i , shifted by $f_0 = 473\,612\,353\,000$ kHz, $df_i = f_i - f_0$

u_{i1} : standard uncertainty stemming from the measurement of Standard i

u_{i2} : estimated uncertainty propagated from the uncertainty in the values of the working parameters for Standard i

u_{ic} : root-sum-square of u_{i1} and u_{i2} , given at a confidence level of 68 % assuming a large number of degrees of freedom

Laboratory	Standard i	df_i / kHz	u_{i1} / kHz	u_{i2} / kHz	u_{ic} / kHz	Key comparison	Campaign
NIS	NIS-165	603.8	0.16	1.7	1.7	BIPM.L-K11	CI-2004
IPQ	IPQ2	602.7	0.91	2.0	2.2	BIPM.L-K11	CI-2004
VNIIM	VNIIM2	603.6	0.13	0.8	0.8	BIPM.L-K11	CI-2004
NMISA	CSIR-04	599.0	0.14	3.3	3.3	BIPM.L-K11	CI-2004
NIM	NIM-D1	595.1	0.09	1.9	1.9	BIPM.L-K11	CII-2004
LNE-INM	INM9	602.3	0.04	1.6	1.6	BIPM.L-K11	CII-2004
NMi-VSL	NMi-5	597.6	0.22	2.3	2.3	BIPM.L-K11	CII-2004
SP	SP2	602.9	0.73	6.8	6.8	BIPM.L-K11	CII-2004
DFM	DK1	607.2*	0.28	2.1	2.1	BIPM.L-K11	CI-2005
EIM	EIM-1	610.7	0.26	2.0	2.0	BIPM.L-K11	CI-2005
INM(RO)	INM PHT/HE/97	612.7	0.18	4.1	4.1	BIPM.L-K11	CI-2005
SMU	SMU-1	606.9	0.20	2.4	2.4	BIPM.L-K11	CI-2005
NMIJ	NRLM-03	607.2	0.70	5.3	5.3	BIPM.L-K11	Additional measurements
UME	UME-L3	600.6	0.10	1.2	1.2	BIPM.L-K11	

* value corrected for a known offset of -2.1 kHz

Key comparisons BIPM.L-K11, APMP.L-K11 and APMP.L-K11.1 (Continued)

MEASURAND: Absolute frequency of the reference component of the corresponding recommended radiation for the practical realization of the definition of the metre

WAVELENGTH: 633 nm (recommended frequency: 473 612 353 604 kHz)

df_i : absolute frequency measured for Standard i , shifted by $f_0 = 473\,612\,353\,000$ kHz, $df_i = f_i - f_0$

u_{i1} : standard uncertainty stemming from the measurement of Standard i

u_{i2} : estimated uncertainty propagated from the uncertainty in the values of the working parameters for Standard i

u_{ic} : root-sum-square of u_{i1} and u_{i2} , given at a confidence level of 68 % assuming a large number of degrees of freedom

Laboratory	Standard i	df_i / kHz	u_{i1} / kHz	u_{i2} / kHz	u_{ic} / kHz	Key comparison	Campaign
NML-SIRIM	NML-SIRIM-1	607.7	0.08	2.2	2.2	BIPM.L-K11	CI-2006
CEM	CEM2	609.1	0.09	2.0	2.0	BIPM.L-K11	CI-2006
IPQ	IPQ3	601.5	0.22	2.5	2.5	BIPM.L-K11	CI-2006
NPLI	NPL-I(1)	607.1	0.07	2.4	2.4	BIPM.L-K11	CII-2005
INRIM	INRIM 4/P	605.7	0.10	2.8	2.8	BIPM.L-K11	CII-2006
LNE-INM	INM 125	605.3	0.16	1.8	1.8	BIPM.L-K11	CII-2006
KRISS	KRISS-R061	609.2	0.18	1.5	1.5	BIPM.L-K11	CII-2006
NIS	NIS-165	602.6	0.14	2.0	2.0	BIPM.L-K11	CII-2006
UME	UME-L3	602.3	0.19	1.1	1.1	BIPM.L-K11	CII-2006
NIM	NIM-D1	595.5	0.7	1.9	2.0	APMP.L-K11	-
NMIJ	NRLM-03	606.5	1.5	5.1	5.3	APMP.L-K11	-
NMISA	CSIR-04	598.2	1.0	3.3	3.4	APMP.L-K11	-
NML-SIRIM	NML-SIRIM-1	609.0	0.7	1.9	2.0	APMP.L-K11	-
SCL	SCL-1	605.5	0.8	3.4	3.5	APMP.L-K11	-
NIMT	NIMT-1	609.7	1.1	2.0	2.3	APMP.L-K11	-
NIM	NIM-C4	606.7	1.6	2.1	2.6	APMP.L-K11	-
MSL	MSL-1	604.5	0.7	2.1	2.2	APMP.L-K11	-
CMS/ITRI	NML-4	608.9	1.3	1.9	2.3	APMP.L-K11	-
KRISS	KRISS-R061	609.7	0.12	1.75	1.75	APMP.L-K11.1	-
VMI-STAMEQ	VMI-V01-TB1.01	609.6	0.17	1.78	1.79	APMP.L-K11.1	-

BIPM.L-K11, APMP.L-K11, and APMP.L-K11.1 (633 nm):
 $df_i = f_i - f_0$ and corresponding uncertainty u_{ic}
 $f_0 = 473\,612\,353\,000$ kHz

