

BUREAU INTERNATIONAL DES POIDS ET MESURES
ORGANISATION INTERGOUVERNEMENTALE DE LA CONVENTION DU METRE
PAVILLON DE BRETEUIL F-92312 SEVRES CEDEX TEL. +33 1 45 07 70 70 FAX. +33 1 45 34 20 21 tai@bipm.org

1 - Coordinated Universal Time UTC and its local realizations UTC(k). Computed values of $[UTC-UTC(k)]$ and uncertainties valid for the period of this Circular.
From 2009 January 1, 0h UTC, $TAI-UTC = 34$ s. From 2012 July 1, 0h UTC, $TAI-UTC = 35$ s.

Date 2011/12 0h UTC	DEC 29	JAN 3	JAN 8	JAN 13	JAN 18	JAN 23	JAN 28	Uncertainty/ns Notes		
MJD	55924	55929	55934	55939	55944	55949	55954	u_A	u_B	u
Laboratory k	[UTC-UTC(k)]/ns									
AOS (Borowiec)	-1.6	-1.7	-1.0	0.2	2.4	3.5	0.3	0.3	5.2	5.2
APL (Laurel)	8.6	5.0	4.2	6.4	-3.0	-4.3	-	1.0	5.2	5.3
AUS (Sydney)	776.5	782.2	773.4	760.9	751.8	737.7	736.6	0.3	5.2	5.2
BEV (Wien)	-2.0	6.3	20.9	38.8	52.1	65.2	72.0	1.5	3.3	3.6
BIM (Sofiya)	1361.5	1357.8	1355.0	1366.3	1368.9	1368.3	1380.1	1.5	7.1	7.3
BIRM (Beijing)	-2162.6	-2239.9	-2326.6	-2433.8	-2554.6	-2677.2	-2802.1	1.5	20.1	20.1
BY (Minsk)	51.3	54.2	60.0	66.1	66.8	66.8	69.1	1.5	7.1	7.3
CAO (Cagliari)	-6131.8	-6147.2	-6160.7	-6168.8	-6182.4	-6196.9	-6209.0	1.6	7.1	7.3
CH (Bern)	-5.2	-5.5	-7.0	-9.6	-8.8	-9.4	-11.1	0.3	1.8	1.8
CNM (Queretaro)	25.6	22.9	27.5	10.5	5.0	-4.5	-13.4	2.0	5.2	5.6
CNMP (Panama)	44.8	35.8	35.8	23.8	37.7	39.0	43.3	3.0	5.2	6.0
DLR (Oberpfaffenhofen)	35.2	47.0	51.3	38.0	29.9	15.4	0.2	0.3	5.2	5.2
DMDM (Belgrade)	2.5	17.4	21.7	19.3	5.8	0.5	-6.0	2.0	7.1	7.4
DTAG (Frankfurt/M)	38.9	48.5	48.9	44.1	39.2	34.7	31.9	0.3	10.0	10.1
EIM (Thessaloniki)	-0.9	7.6	6.8	15.6	14.9	4.0	13.4	7.5	5.2	9.1
HKO (Hong Kong)	108.5	123.4	126.4	136.9	146.2	141.7	143.6	2.5	5.2	5.8
IFAG (Wetzell)	-550.6	-555.7	-561.6	-570.0	-571.9	-570.4	-578.0	0.3	5.1	5.2
IGNA (Buenos Aires)	5787.3	5845.4	5911.7	5970.6	6028.2	-	-	1.5	5.2	5.4
INPL (Jerusalem)	-409.0	-415.6	-421.1	-432.2	-437.6	-443.7	-452.0	0.7	20.1	20.1
INTI (Buenos Aires)	66.0	34.2	63.1	-7.6	50.2	92.5	124.8	3.0	20.0	20.3
IPQ (Caparica)	-18.9	0.6	2081.8	-15.1	-10.3	-7.9	-11.1	0.4	7.1	7.1 (1)
IT (Torino)	-3.1	-5.5	-7.4	-9.4	-9.5	-10.9	-12.7	0.3	1.9	1.9
JATC (Lintong)	28.3	22.1	5.4	6.2	3.4	7.4	1.8	1.4	5.0	5.2
JV (Kjeller)	27.3	22.2	22.3	44.4	26.6	23.5	15.9	5.0	20.1	20.7
KEBS (Nairobi)	-	1237.4	1339.5	1437.9	-	1619.2	1730.0	1.5	20.1	20.1 (2)
KIM (Serpong-Tangerang)	-202.1	-189.6	-156.1	-154.8	-136.3	-140.6	-152.8	2.0	20.0	20.1
KRIS (Daejeon)	19.5	20.5	23.6	26.3	27.8	28.6	27.8	0.3	5.1	5.1
KZ (Astana)	-150.7	-155.6	-191.1	-203.2	-237.1	-249.8	-281.7	1.5	20.0	20.1
LT (Vilnius)	20.0	26.1	55.4	55.1	55.0	56.0	70.8	2.0	5.2	5.5
MIKE (Espoo)	-3.6	-4.7	-4.8	-4.9	-4.7	-4.8	-5.4	0.3	7.1	7.1

Date 2011/12 0h UTC	DEC 29	JAN 3	JAN 8	JAN 13	JAN 18	JAN 23	JAN 28	Uncertainty/ns Notes		
MJD	55924	55929	55934	55939	55944	55949	55954	u_A	u_B	u
Laboratory k	[UTC-UTC(k)]/ns									
MKEH (Budapest)	-60095.6	-60289.8	-60482.2	-60701.4	-60917.3	-61120.5	-61328.2	1.5	20.0	20.1
MSL (Lower Hutt)	57.0	100.4	116.5	119.0	110.7	113.6	108.4	1.5	20.1	20.1
NAO (Mizusawa)	39.1	41.0	39.0	48.3	42.4	42.1	39.2	2.0	20.1	20.2
NICT (Tokyo)	10.6	8.2	6.9	5.0	3.3	-0.1	-2.2	0.3	4.7	4.7
NIM (Beijing)	-11.2	-11.4	-11.8	-12.4	-9.8	-11.1	-10.2	0.7	5.2	5.2
NIMB (Bucharest)	-752.7	-749.3	-763.1	-776.5	-774.8	-792.1	-805.3	0.3	20.0	20.0
NIMT (Pathumthani)	581.6	627.7	673.2	721.6	771.5	819.6	836.9	1.0	20.1	20.1
NIS (Cairo)	-694.8	-701.3	-702.0	-704.6	-711.2	-713.8	-725.6	0.8	7.1	7.2
NIST (Boulder)	5.7	4.5	3.7	2.7	2.5	1.4	-0.2	0.3	5.0	5.0
NMIJ (Tsukuba)	3.4	0.3	-1.6	-3.7	-3.8	-4.3	-5.3	0.3	5.1	5.1
NMLS (Sepang)	-519.6	-537.9	-554.5	-576.8	-580.2	-589.0	-603.4	1.5	20.1	20.1
NPL (Teddington)	6.5	7.8	9.6	11.1	11.5	10.4	9.1	0.3	5.2	5.2
NPLI (New-Delhi)	-185.5	-192.6	-200.5	-205.0	-215.9	-239.5	-241.3	2.0	7.1	7.4
NRC (Ottawa)	-20.2	-19.5	-26.0	-30.4	-38.3	-27.8	-25.7	0.3	5.2	5.2
NRL (Washington DC)	7.7	5.2	4.7	4.2	3.2	2.5	3.4	0.3	5.2	5.2
NTSC (Lintong)	8.8	18.0	15.1	12.9	12.0	7.9	10.6	1.4	4.9	5.1
ONBA (Buenos Aires)	-5597.6	-5611.5	-	-5642.1	-5677.4	-5711.6	-5734.1	4.0	5.2	6.6
ONRJ (Rio de Janeiro)	-6.5	-12.7	-17.6	-24.6	-17.2	-11.8	-30.9	3.9	7.0	8.0
OP (Paris)	-8.7	-15.1	-18.5	-21.2	-27.2	-24.8	-25.1	0.3	1.8	1.8
ORB (Bruxelles)	2.3	4.8	6.0	6.7	6.7	4.5	3.5	0.3	5.2	5.2
PL (Warszawa)	-3.1	-2.7	9.6	21.2	32.5	41.5	47.8	1.5	5.1	5.3
PTB (Braunschweig)	-2.2	-3.3	-3.1	-3.2	-3.4	-4.2	-4.6	0.2	1.4	1.5
ROA (San Fernando)	3.9	-0.4	-3.3	-6.8	-8.9	-9.8	-10.7	0.3	5.1	5.2
SCL (Hong Kong)	30.3	27.6	22.5	17.7	13.0	14.7	14.7	2.5	10.0	10.3
SG (Singapore)	-3.0	1.9	7.8	11.2	21.6	25.1	25.3	0.3	5.1	5.1
SIQ (Ljubljana)	-606.0	-609.7	-625.3	-627.3	-647.9	-644.0	-657.6	4.0	20.0	20.4
SMD (Bruxelles)	9.2	3.7	1.2	5.4	4.8	2.6	-3.1	1.5	19.9	19.9
SMU (Bratislava)	-76.9	-66.2	-80.2	-66.9	-63.6	-64.2	-33.8	1.0	20.0	20.1
SP (Boras)	4.6	5.2	6.6	4.8	-0.4	-2.4	-5.0	0.3	1.7	1.8
SU (Moskva)	-1.5	-0.6	-3.3	-2.8	-3.8	-4.6	-4.4	1.0	5.2	5.3
TCC (Concepcion)	587.7	583.8	603.2	632.5	646.5	663.6	686.0	0.3	5.2	5.2
TL (Chung-Li)	29.3	28.7	28.6	27.8	25.3	21.7	18.7	0.3	4.9	4.9
TP (Praha)	-20.2	-19.9	-16.3	-19.4	-22.3	-29.5	-23.4	0.3	5.1	5.1
UA (Kharkov)	2.4	-10.4	-17.7	-21.3	-23.2	-26.0	-36.0	1.5	20.0	20.0
UME (Gebze-Kocaeli)	1411.7	1471.8	31.4	41.2	45.6	48.6	57.6	1.0	7.0	7.1 (3)
USNO (Washington DC)	4.4	2.6	3.4	3.7	3.6	2.7	1.8	0.3	4.0	4.0
VMI (Ha Noi)	-29.4	-35.8	-37.5	-18.4	-16.2	-8.0	-10.6	0.3	20.0	20.0
VSL (Delft)	2.0	0.3	1.9	3.4	10.6	9.0	10.5	0.3	1.7	1.8
ZA (Pretoria)	2720.6	2676.3	2633.8	2592.3	2549.4	2505.4	2451.5	1.5	19.7	19.8

- Notes on section 1:

- (1) IPQ : Time step of UTC(IPQ) of about -2100 ns on MJD 55932.355.
- (2) KEBS : Kenya Bureau of Standards, Nairobi, Kenya.
- (3) UME : Apparent time step of UTC(UME) of about +1440 ns on MJD 55929.54.

2 - International Atomic Time TAI and Local atomic time scales TA(k). Computed values of [TAI-TA(k)].

Date 2011/12 0h UTC	DEC 29	JAN 3	JAN 8	JAN 13	JAN 18	JAN 23	JAN 28
MJD	55924	55929	55934	55939	55944	55949	55954
Laboratory k	[TAI-TA(k)]/ns						
CH (Bern)	39030.3	38961.6	38891.8	38821.9	38754.8	38685.8	38616.2
F (Paris)	167676.1	167674.1	167673.1	167672.8	167671.6	167672.2	167669.1
IT (Torino)	83101.5	81721.4	80344.6	78966.0	77589.4	76208.1	74830.1
JATC (Lintong)	-50874.1	-50898.9	-50926.7	-50954.5	-50983.3	-51005.6	-51033.5
KRIS (Daejeon)	39334.4	39392.1	39452.0	39511.5	39568.2	39624.5	39677.7
NICT (Tokyo)	-26.8	-20.8	-13.9	-6.9	-1.3	4.8	14.2
NIST (Boulder)	-45371351.7	-45371542.5	-45371732.3	-45371922.3	-45372111.5	-45372301.6	-45372492.2
NRC (Ottawa)	25674.4	25654.1	25626.5	25600.9	25572.1	25561.5	25542.5
NTSC (Lintong)	13430.7	13460.9	13487.7	13515.1	13541.2	13571.6	13597.6
ONRJ (Rio de Janeiro)	-10456.7	-10480.3	-10507.5	-10526.8	-10551.4	-10574.3	-10598.1
PL (Warszawa)	-9794.9	-9810.8	-9829.2	-9844.7	-9864.4	-9879.9	-9895.7
PTB (Braunschweig)	-328536.5	-328521.1	-328509.2	-328498.2	-328487.1	-328472.9	-328466.5
SG (Singapore)	8557.0	8586.9	8615.8	8641.2	8672.6	8700.1	8727.3
SU (Moskva)	27279991.0	27280138.3	27280282.9	27280430.8	27280577.1	27280723.1	27280870.2
TL (Chung-Li)	-489.4	-491.4	-493.7	-494.9	-496.1	-500.2	-502.6
USNO (Washington DC)	-35099653.1	-35099945.1	-35100236.1	-35100528.9	-35100820.2	-35101111.8	-35101403.8

(1)

- Note on section 2:

- (1) SU : Listed values are TAI-TA(SU) - 2.80 seconds.

3 - Difference between the normalized frequencies of EAL (free atomic time scale) and TAI.

	Interval of validity	$f(EAL)-f(TAI)$
Steering correction	55924 - 55954	6.526×10^{-13} (2011 DEC 29 - 2012 JAN 28)
New correction	55954 - 55984	6.521×10^{-13} (2012 JAN 28 - 2012 FEB 27)
New correction foreseen	55984 - 56014	6.516×10^{-13} (2012 FEB 27 - 2012 MAR 28)

4 - Duration of the TAI scale interval.

TAI is a realization of coordinate time TT. The following tables give the fractional deviation d of the scale interval of TAI from that of TT (the SI second on the geoid), i.e. the fractional frequency deviation of TAI with the opposite sign: $d = -y_{TAI}$. In this section, a frequency over a time interval is defined as the ratio of the end-point phase difference to the duration of the interval. Whenever needed, the instability of EAL should be expressed as the quadratic sum of three components with τ in days: (1) a white frequency noise of $2.0 \times 10^{-15} / \sqrt{\tau}$, (2) a flicker frequency noise of 0.4×10^{-15} and (3) a random walk frequency noise of $1.0 \times 10^{-16} \times \sqrt{\tau}$. The relation between EAL and TAI is given in *Circular T* and the *BIPM Annual Report on Time Activities*.

In the first table, d is obtained, on the given periods of estimation by comparison of the TAI frequency with that of the given individual Primary Frequency Standards (PFS). In this table: u_A is the uncertainty originating in the instability of the PFS, u_B is the combined uncertainty from systematic effects, $u_{1/Lab}$ is the uncertainty in the link between the PFS and the clock participating to TAI, including the uncertainty due to the dead-time, $u_{1/TAI}$ is the uncertainty in the link to TAI, u is the quadratic sum of all four uncertainty values. Ref(u_B) is a reference giving information on the values of u_B or is the *Circular T* where the reference was first given. $u_B(Ref)$ is the u_B value stated in this references. Note that all uncertainties may vary over time and that the current u_B values are generally not the same as the peer reviewed values given in Ref(u_B). See "<http://www.bipm.org/jsp/en/TimeFtp.jsp>" for previous issues of *Circular T* and individual Reports of Evaluation of Primary Frequency Standards that explain changes in uncertainties. All values are expressed in 10^{-15} and are valid only for the stated period of estimation.

Standard	Period of Estimation	d	u_A	u_B	$u_{1/Lab}$	$u_{1/TAI}$	u	Ref(u_B)	$u_B(Ref)$	Note
PTB-CS1	55924 55954	-9.99	6.00	8.00	0.00	0.13	10.00	T148	8.	(1)
PTB-CS2	55924 55954	-0.19	3.00	12.00	0.00	0.13	12.37	T148	12.	(1)
NPL-CsF2	55914 55939	3.18	0.23	0.23	0.12	0.27	0.44	T284	0.23	(2)
NPL-CsF2	55944 55954	4.36	0.34	0.23	0.03	0.53	0.67	T284	0.23	(2)
SYRTE-F01	55929 55949	2.11	0.20	0.44	0.41	0.28	0.69	T227	0.72	(3)
SYRTE-F02	55924 55949	3.23	0.20	0.29	0.12	0.23	0.44	T227	0.65	(3)
SYRTE-F0M	55924 55949	2.63	0.30	0.60	0.20	0.23	0.74	T184	0.80	(3)
PTB-CSF1	55919 55949	4.34	0.20	0.74	0.05	0.13	0.78	T162	1.40	(4)
PTB-CSF2	55919 55939	4.96	0.21	0.44	0.17	0.19	0.55	T287	0.41	(4)

Notes:

- (1) Continuously operating as a clock participating to TAI
- (2) Report 01 FEB. 2012 by NPL
- (3) Report 03 FEB. 2012 by LNE-SYRTE
- (4) Report 03 FEB. 2012 by PTB

The second table gives the BIPM estimate of d , based on all available PFS measurements over the period MJD 55564-55954, taking into account their individual uncertainties and characterizing the instability of EAL as noted above. u is the computed standard uncertainty of d

Period of estimation	d	u	
55924-55954	3.5×10^{-15}	0.3×10^{-15}	(2011 DEC 29 - 2012 JAN 28)

5 - Relations of UTC and TAI with predictions of UTC(k) disseminated by GNSS and their System Times.

$$\begin{aligned}
 [UTC-GPS \text{ time}] &= -15 \text{ s} + C_0, & [TAI-GPS \text{ time}] &= 19 \text{ s} + C_0, & \text{global uncertainty is of the order of 10 ns.} \\
 [UTC-UTC(USNO)_GPS] &= C_0', & [TAI-UTC(USNO)_GPS] &= 34 \text{ s} + C_0', & \text{global uncertainty is of the order of 10 ns.} \\
 [UTC-GLONASS \text{ time}] &= C_1, & [TAI-GLONASS \text{ time}] &= 34 \text{ s} + C_1, & \text{global uncertainty is of the order of hundreds ns.} \\
 [UTC-UTC(SU)_GLONASS] &= C_1', & [TAI-UTC(SU)_GLONASS] &= 34 \text{ s} + C_1', & \text{global uncertainty is of the order of hundreds ns.}
 \end{aligned}$$

[UTC(USNO)_GPS] and [UTC(SU)_GLONASS] are, respectively, UTC(USNO) and UTC(SU) as predicted by USNO and SU and disseminated by GPS and GLONASS. The C_0 and C_0' values provide realizations of GPS time and of the prediction of UTC(USNO) broadcast by GPS, as obtained using the values [UTC-UTC(OP)] and the GPS data taken at the Paris Observatory, corrected for IGS precise orbits, clocks and ionosphere maps. The C_1 and C_1' values provide realizations of GLONASS time and of the prediction of UTC(SU) broadcast by GLONASS, as obtained using the values [UTC-UTC(AOS)] and the GLONASS data taken at the Astrogeodynamical Observatory Borowiec (AOS). N_0 , N_0' , N_1 and N_1' are the numbers of measurements; when N_0 , N_0' , N_1 or N_1' is 0, the corresponding values in the table are interpolated. The standard deviations σ_0 , σ_0' , σ_1 and σ_1' characterize the dispersion of individual measurements. The actual uncertainty of users' access to GPS and GLONASS times may differ from these values. For this edition of circular, $\sigma_0=1.2$ ns, $\sigma_0'=1.3$ ns, $\sigma_1=7.1$ ns, $\sigma_1'=7.0$ ns

2011/12 0h UTC	MJD	C_0 /ns	N_0	C_0' /ns	N_0'	C_1 /ns	N_1	C_1' /ns	N_1'
DEC 29	55924	-0.8	89	2.0	89	-163.4	84	-324.6	84
DEC 30	55925	-0.3	88	1.1	89	-164.8	85	-326.4	86
DEC 31	55926	0.0	52	2.0	52	-167.5	80	-329.3	80
JAN 1	55927	-0.1	52	0.8	52	-169.5	79	-331.6	79
JAN 2	55928	1.2	88	0.2	89	-170.6	89	-332.8	87
JAN 3	55929	0.2	88	-1.9	89	-169.7	89	-332.3	89
JAN 4	55930	-2.0	90	-1.7	90	-170.4	86	-334.3	86
JAN 5	55931	-3.7	89	-0.6	85	-173.5	84	-338.1	83
JAN 6	55932	-1.6	89	-1.0	89	-173.9	84	-338.5	84
JAN 7	55933	-0.6	88	0.1	88	-173.2	88	-338.2	88
JAN 8	55934	-0.8	90	2.3	90	-174.8	80	-340.1	80
JAN 9	55935	0.2	89	4.5	89	-174.6	84	-340.0	84
JAN 10	55936	0.2	89	1.2	85	-175.9	89	-341.5	89
JAN 11	55937	-0.1	89	0.9	89	-178.8	89	-344.6	89
JAN 12	55938	1.6	90	4.8	90	-182.5	89	-349.0	87
JAN 13	55939	1.2	89	1.1	89	-180.3	87	-348.3	87
JAN 14	55940	2.2	89	1.1	89	-172.7	83	-341.8	83
JAN 15	55941	3.3	88	3.5	88	-169.4	82	-339.2	82
JAN 16	55942	4.4	90	1.9	90	-170.3	84	-341.9	82
JAN 17	55943	2.2	89	0.3	89	-173.1	81	-347.2	81
JAN 18	55944	2.2	88	1.1	89	-171.6	85	-347.8	82
JAN 19	55945	3.1	88	2.4	88	-169.7	81	-346.6	81
JAN 20	55946	1.7	89	1.3	90	-169.5	79	-346.8	79
JAN 21	55947	1.3	89	0.2	89	-168.7	89	-346.3	89
JAN 22	55948	-0.3	89	-1.0	89	-164.7	84	-342.1	84
JAN 23	55949	0.1	86	-1.1	87	-162.3	88	-338.7	88
JAN 24	55950	-0.6	90	-2.2	90	-163.5	81	-338.0	82
JAN 25	55951	0.2	88	1.2	89	-163.1	89	-335.7	87
JAN 26	55952	0.0	89	1.5	89	-163.1	88	-333.9	88
JAN 27	55953	-1.4	88	-0.6	89	-164.2	78	-332.9	78
JAN 28	55954	-1.7	90	-2.0	90	-166.9	83	-334.0	83

6 - Time links used for the computation of TAI and their uncertainties.

The time links used in the elaboration of this *Circular T* are listed in this section. The technique for the link is indicated as follows: GPS SC for GPS all-in-view single-channel C/A data; GPS MC for GPS all-in-view multi-channel C/A data; GPS P3 for GPS all-in-view multi-channel dual-frequency P code data; GPS PPP for GPS Precise Point Positioning technique; GPS GT for 'GPS time' observations; GLN MC for GLONASS common-view multi-channel C/A data; GPSGLN for the combination of GPS MC and GLN MC links; TWGPPP/TWGPP3 for the combined smoothing of TWSTFT and GPS PPP/GPS P3; INT LK for internal cable link and TWSTFT for two-way satellite time and frequency transfer data.

For each link, the following uncertainties are provided: u_A is the standard uncertainty accounting for measurement noise and random effects with typical duration between 1 day and 30 days. u_B is the estimated uncertainty of the calibration.

The calibration type of the link is indicated as: GPS EC for GPS equipment calibration; TW EC for two-way equipment calibration; LC (technique) for a link calibrated using 'technique'; BC (technique) for a link calibrated using 'technique' to transfer a past equipment calibration through a discontinuity of link operation. DIC is used for direct internal calibration.

The calibration dates indicate: the most recent calibration results for the two laboratories in the case of EC and the most recent calibration of the link in the case of LC and BC.
NA stands for not available, in this case estimated values are provided.

Link	Type	u_A /ns	u_B /ns	Calibration Type	Calibration Dates
AOS /PTB	TWGPPP	0.3	5.0	BC(GPS MC)	2008 May
APL /PTB	GPS MC	1.0	5.0	GPS EC/GPS EC	2003 Dec/2006 Sep
AUS /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2010 Oct/2004 Aug
BEV /PTB	GPS MC	1.5	3.0	BC(TWSTFT)	2008 Jan
BIM /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2007 Nov
BIRM/PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2006 Sep
BY /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2008 Jun/2006 Sep
CAO /PTB	GPSGLN	1.6	7.0	LC(GPS MC)	2011 Oct
CH /PTB	TWGPPP	0.3	1.0	LC(TWSTFT)/BC(GPS PPP)	2008 Sep/2009 Aug
CNM /PTB	GPS MC	2.0	5.0	BC(GPS SC)	2008 May
CNMP/PTB	GPS MC	3.0	5.0	GPS EC/GPS EC	2004 May/2006 Sep
DLR /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2007 Feb/2004 Aug
DMDM/PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2007 Jan/2006 Sep
DTAG/PTB	GPSPPP	0.3	10.0	LC(GPS MC)	2009 Jul
EIM /PTB	GPS MC	7.5	5.0	GPS EC/GPS EC	2007 May/2003 Aug
HKO /PTB	GPS MC	2.5	5.0	GPS EC/GPS EC	2004 Sep/2006 Sep
IFAG/PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2003 Jun/2004 Aug
IGNA/PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2004 Aug/2006 Sep
INPL/PTB	GPS P3	0.7	20.0	NA /GPS EC	NA /2004 Aug
INTI/PTB	GPS MC	3.0	20.0	NA /GPS EC	NA /2006 Sep

Link	Type	u_A /ns	u_B /ns	Calibration Type	Calibration Dates
IPQ /PTB	GPSPPP	0.4	7.0	LC(GPS MC)	2010 Aug
IT /PTB	TWGPPP	0.3	1.2	LC(TWSTFT)/BC(GPS PPP)	2008 Sep/2009 Aug
JATC/NTSC	INT LK	0.2	1.0	DIC	/2006 Sep
JV /PTB	GPS GT	5.0	20.0	NA /GPS EC	NA /2003 Aug
KEBS/PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2006 Sep
KIM /PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2006 Sep
KRIS/PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2005 Aug/2004 Aug
KZ /PTB	GPSGLN	1.5	20.0	NA /GPS EC	NA /2006 Sep
LT /PTB	GPS MC	2.0	5.0	GPS EC/GPS EC	2006 Oct/2006 Sep
MIKE/PTB	GPSPPP	0.3	7.0	NA /GPS EC	NA /2004 Aug
MKEH/PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2006 Sep
MSL /PTB	GPS P3	1.5	20.0	NA /GPS EC	NA /2004 Aug
NAO /PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2006 Sep
NICT/PTB	TWGPPP	0.3	5.0	LC(GPS P3)	2009 Jun
NIM /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2009 Dec/2004 Aug
NIMB/PTB	GPSPPP	0.3	20.0	NA /GPS EC	NA /2006 Sep
NIMT/PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NIS /PTB	GPS P3	0.8	7.0	LC(GPS MC)	2010 Jun
NIST/PTB	TWGPPP	0.3	5.0	LC(TWSTFT)/BC(GPS PPP)	2005 May/2009 Aug
NMIJ/PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2002 Apr/2004 Aug
NMLS/PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2006 Sep
NPL /PTB	TWGPPP	0.3	5.0	LC(GPS P3)	2008 Sep/2009 Nov
NPLI/PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2005 Jul/2006 Sep
NRC /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2003 Nov/2004 Aug
NRL /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2002 May/2004 Aug
NTSC/PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2004 Sep/2006 Sep
ONBA/PTB	GPS MC	4.0	5.0	GPS EC/GPS EC	2004 Jul/2006 Sep
ONRJ/PTB	GPS MC	4.0	7.0	GPS EC/GPS EC	2011 Dec/2006 Sep
OP /PTB	TWGPPP	0.3	1.1	LC(TWSTFT)/BC(GPS PPP)	2008 Sep/2009 Aug
ORB /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2003 Jul/2004 Aug
PL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2006 Oct/2006 Sep
ROA /PTB	TWGPPP	0.3	5.0	LC(TWSTFT)/BC(GPS PPP)	2005 May/2009 Aug
SCL /PTB	GPS MC	2.5	10.0	LC(GPS SC)	1993 May
SG /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2010 Mar/2004 Aug
SIQ /PTB	GPS SC	4.0	20.0	NA /GPS EC	NA /2003 Aug
SMD /PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2006 Sep
SMU /PTB	GPSGLN	1.0	20.0	NA /GPS EC	NA /2006 Sep
SP /PTB	TWGPPP	0.3	1.0	LC(TWSTFT)/BC(GPS PPP)	2006 Mar/2009 Aug
SU /PTB	GPSGLN	1.0	5.0	LC(GPS MC)	2009 May
TCC /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2011 Feb/2004 Aug
TL /PTB	TWGPPP	0.3	5.0	LC(GPS PPP)	2011 Dec
TP /PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2009 Feb/2004 Aug
UA /PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2006 Sep
UME /PTB	GPSGLN	1.0	7.0	GPS EC/GPS EC	2005 Dec/2006 Sep
USNO/PTB	GPSPPP	0.3	5.0	GPS EC/GPS EC	2001 /2004 Aug
VMI /PTB	GPSPPP	0.3	20.0	NA /GPS EC	NA /2004 Aug
VSL /PTB	TWGPPP	0.3	1.0	LC(TWSTFT)/BC(GPS PPP)	2006 Mar/2009 Aug
ZA /PTB	GPS P3	1.5	20.0	NA /GPS EC	NA /2004 Aug