

BUREAU INTERNATIONAL DES POIDS ET MESURES  
ORGANISATION INTERGOUVERNEMENTALE DE LA CONVENTION DU METRE

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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 2006 January 1, 0h UTC,  $TAI-UTC = 33$  s.

Date 2007	0h UTC	SEP 26	OCT 1	OCT 6	OCT 11	OCT 16	OCT 21	OCT 26	OCT 31	Uncertainty/ns			Notes
MJD		54369	54374	54379	54384	54389	54394	54399	54404	$u_A$	$u_B$	$u$	
Laboratory k		$[UTC-UTC(k)]/ns$											
AOS (Borowiec)		-9.9	-0.8	-1.6	-2.1	-1.3	0.3	4.2	-1.9	1.5	5.1	5.3	(1)
APL (Laurel)		-8.3	-7.7	-4.5	0.4	2.2	-1.1	-8.2	1.5	1.5	5.0	5.2	
AUS (Sydney)		78.5	75.1	80.5	82.2	79.5	87.9	102.1	115.7	1.5	5.1	5.3	
BEV (Wien)		-62.1	-68.7	-65.1	-70.4	-69.1	-70.9	-74.1	-79.5	1.5	5.0	5.2	
BIM (Sofiya)		-5693.7	-5719.1	-5728.4	-5714.9	-5732.2	-5751.5	-5759.7	-5775.8	5.0	20.0	20.6	
BIRM (Beijing)		-3701.8	-3730.8	-3762.1	-3791.0	-3814.6	-3847.7	-3878.5	-3905.9	2.5	20.0	20.2	
BY (Minsk)		228.3	233.7	235.9	239.9	247.5	54.4	67.7	71.4	7.0	20.0	21.2	(2)
CAO (Cagliari)		-1239.1	-1253.5	-1275.0	-1284.1	-1315.4	-1341.2	-1362.8	-1370.3	1.5	7.0	7.2	
CH (Bern)		-9.2	-7.8	-7.3	-7.8	-7.3	-10.5	-15.0	-13.9	0.5	1.3	1.4	
CNM (Queretaro)		34.6	30.0	33.4	28.8	32.2	34.2	29.6	18.7	5.0	5.1	7.1	
CNMP (Panama)		185.2	196.7	180.5	186.0	203.0	200.6	208.3	182.6	3.0	5.1	5.9	
DLR (Oberpfaffenhofen)		-9.6	-14.7	-17.2	-24.9	-26.0	-28.8	-23.7	-28.9	0.7	5.1	5.1	
DTAG (Darmstadt)		386.7	386.1	372.7	375.3	371.7	381.3	361.4	352.5	3.0	10.0	10.4	
EIM (Thessaloniki)		-0.8	-2.1	0.8	-0.7	-2.4	1.1	-1.5	1.1	3.0	20.0	20.2	
HKO (Hong Kong)		147.6	166.3	171.8	172.0	172.3	167.2	157.7	159.0	2.5	5.1	5.7	
IFAG (Wetzell)		-476.5	-473.3	-474.7	-482.6	-477.5	-481.0	-482.3	-485.6	0.7	5.0	5.1	
IGMA (Buenos Aires)		-	-	-	-	-	-	-	-	-	-	-	
INPL (Jerusalem)		-	-	-	-	-	-	-	-	-	-	-	
IT (Torino)		18.5	20.2	21.5	24.3	26.1	31.1	32.0	30.0	0.5	1.3	1.4	
JATC (Lintong)		13.1	7.4	1.1	-7.9	-16.0	-14.2	-10.0	-0.7	1.4	4.8	5.0	
JV (Kjeller)		3194.0	3278.9	3369.1	3466.1	3570.1	3660.9	3751.3	3874.0	5.0	20.0	20.6	
KRIS (Daejeon)		-22.1	-15.5	-7.8	-13.4	-8.9	-7.2	1.4	-11.1	0.7	5.0	5.0	
LDS (Leeds)		3558.1	3600.1	3640.1	3682.6	3734.9	3772.6	3817.3	3871.4	3.0	20.0	20.2	
LT (Vilnius)		205.8	210.2	203.1	196.0	210.2	219.2	213.7	225.2	1.5	5.0	5.3	
LV (Riga)		1569.7	1614.1	1659.9	1704.5	1755.9	1797.0	1851.1	1903.8	2.0	7.1	7.3	
MIKE (Espoo)		-101.9	-94.4	-86.1	-95.0	-95.1	-96.4	-85.0	-94.0	5.0	19.8	20.4	
MKEH (Budapest)		12528.5	12543.0	12566.5	12581.7	12595.6	12620.9	12634.7	12629.9	2.5	20.0	20.2	
MSL (Lower Hutt)		281.3	202.0	124.9	41.4	-27.0	-108.2	-105.3	-124.8	1.0	20.0	20.0	
NAO (Mizusawa)		-138.3	-180.2	-188.9	-190.0	-189.0	-191.2	-199.3	-152.6	3.0	19.9	20.1	
NICT (Tokyo)		7.6	7.9	4.7	4.3	3.5	0.2	-2.6	-2.3	0.5	4.6	4.6	

Date 2007	0h UTC	SEP 26	OCT 1	OCT 6	OCT 11	OCT 16	OCT 21	OCT 26	OCT 31	Uncertainty/ns			Notes
MJD		54369	54374	54379	54384	54389	54394	54399	54404	$u_A$	$u_B$	$u$	
Laboratory $k$		$[UTC-UTC(k)]/ns$											
NIM (Beijing)		-44.4	-42.0	-39.4	-44.6	-47.7	-53.0	-47.8	-48.5	1.5	19.8	19.8	
NIMB (Bucharest)		-984.3	-1004.8	-1009.9	-1012.8	-1034.4	-1038.7	-1036.9	-1022.9	2.0	20.0	20.1	
NIMT (Bangkok)		-149.6	-167.9	-190.3	-209.4	-232.6	-252.4	-273.2	-305.0	1.0	20.0	20.0	
NIS (Cairo)		164.4	152.8	145.3	140.8	154.8	137.3	109.9	82.4	2.5	7.1	7.5	
NIST (Boulder)		1.2	-0.3	1.7	1.5	2.3	4.0	4.5	5.8	0.5	4.9	4.9	
NMIJ (Tsukuba)		19.4	17.2	14.3	12.2	9.1	6.2	1.6	0.8	0.7	5.0	5.1	
NMLS (Sepang)		-418.4	-408.8	-393.8	-388.6	-374.3	-369.6	-364.3	-351.1	2.0	20.0	20.1	
NPL (Teddington)		3.7	-6.1	-11.4	-15.9	-20.7	-24.6	-28.2	-32.8	0.7	5.0	5.1	
NPLI (New-Delhi)		-92.9	-87.8	-85.9	-85.8	11.3	-	-	-	2.5	7.1	7.5	(3)
NRC (Ottawa)		-51.5	-51.6	-49.3	-49.2	-54.5	-57.1	-54.0	-53.7	0.7	5.0	5.1	
NTSC (Lintong)		0.8	4.8	9.1	8.8	5.5	-1.7	-9.3	-11.2	1.4	4.7	4.9	
ONBA (Buenos Aires)		-603.9	-598.8	-607.4	-624.7	-636.9	-640.2	-643.3	-650.3	2.5	5.1	5.7	
ONRJ (Rio de Janeiro)		-5.2	-0.6	5.6	2.6	1.8	2.1	0.8	-12.1	4.0	20.0	20.4	
OP (Paris)		-8.6	-8.2	-12.3	-15.6	-22.5	-28.8	-29.6	-34.7	0.5	1.3	1.4	
ORB (Bruxelles)		80.9	82.4	80.7	80.9	82.1	78.6	72.3	68.1	0.7	5.0	5.1	
PL (Warszawa)		6.7	-10.9	-11.8	-5.8	-2.2	-7.1	4.7	-5.3	1.4	4.8	5.0	
PTB (Braunschweig)		-36.1	-31.2	-32.3	-32.1	-31.1	-27.9	-25.2	-20.2	0.2	0.9	0.9	
ROA (San Fernando)		9.2	7.7	0.8	-2.6	1.2	3.4	2.8	3.6	0.7	4.9	5.0	
SCL (Hong Kong)		-46.3	-46.9	-45.8	-49.0	-48.1	-44.2	-39.7	-33.9	3.0	10.0	10.5	
SIQ (Ljubljana)		-4714.6	-4684.1	-6028.8	-5920.7	-5717.6	-5637.3	-5522.4	-5433.0	5.0	20.0	20.6	(4)
SG (Singapore)		16.4	4.6	-7.0	-20.5	-39.4	-50.6	-61.4	-67.0	2.0	7.1	7.3	
SMU (Bratislava)		-184.7	-178.0	-179.2	-191.0	-190.0	-199.1	-198.8	-203.6	5.0	19.9	20.5	
SP (Boras)		0.6	2.6	-3.7	-5.2	-3.1	-0.6	5.2	11.4	0.5	1.3	1.4	
SU (Moskva)		3.7	4.4	6.0	5.0	6.1	9.2	9.0	8.6	3.0	5.0	5.8	
TCC (Concepcion)		-7922.4	-7942.6	-7960.8	-7958.9	-7959.9	-7978.1	-8020.6	-8040.7	1.5	20.0	20.1	
TL (Chung-Li)		7.0	8.0	9.2	8.2	9.7	14.6	15.2	15.8	0.7	5.0	5.0	
TP (Praha)		-17.7	-4.1	-3.2	5.2	14.7	16.7	21.6	9.6	0.9	5.0	5.1	
UME (Gebze-Kocaeli)		65.1	68.3	62.7	68.4	72.6	64.4	69.8	65.6	1.5	7.0	7.2	
USNO (Washington DC)		-0.6	-1.7	-1.8	-3.0	-3.3	-2.4	-0.9	0.0	0.4	1.1	1.2	
VSL (Delft)		41.0	52.3	43.9	38.8	18.0	2.2	-5.0	-9.1	0.5	1.3	1.4	
ZA (Pretoria)		-	-	-	3627.9	3571.5	3501.7	3430.1	3359.1	2.5	20.0	20.2	
ZMDM (Belgrade)		1655.9	1690.2	1724.8	1748.4	1769.8	1800.0	1820.8	1850.4	2.0	7.0	7.3	

-Notes on section 1:

- (1) AOS : Change of master clock on MJD 54374.5
- (2) BY : Time step of UTC(BY) of +200 ns on MJD 54394.0
- (3) NPLI: Time step of UTC(NPLI) of -50 ns on MJD 54388.0
- (4) SIQ : Time step of UTC(SIQ) of about +1350 ns on MJD 54378.0

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

Date 2007	0h UTC	SEP 26	OCT 1	OCT 6	OCT 11	OCT 16	OCT 21	OCT 26	OCT 31
MJD		54369	54374	54379	54384	54389	54394	54399	54404
Laboratory <i>k</i>					[TAI- <i>TA(k)</i> ]/ns				
CH (Bern)		53739.5	53730.5	53721.2	53711.8	53703.4	53691.3	53677.9	53668.7
F (Paris)		168283.4	168286.0	168284.9	168283.2	168279.8	168278.1	168278.7	168279.6
IT (Torino)		66348.4	66481.9	66615.0	66748.6	66876.2	67014.1	67143.9	67277.7
JATC (Lintong)		-42994.2	-43022.7	-43052.7	-43086.8	-43115.8	-43145.5	-43173.9	-43202.6
KRIS (Daejeon)		19134.8	19217.2	19300.4	19371.6	19452.1	19529.8	19613.8	19679.2
NICT (Tokyo)		51.3	52.6	51.2	51.4	52.7	51.4	52.3	51.0
NIST (Boulder)		-45311720.1	-45311912.1	-45312100.6	-45312291.3	-45312481.0	-45312669.7	-45312859.2	-45313047.9
NRC (Ottawa)		30728.9	30741.6	30750.9	30760.8	30771.0	30781.3	30796.9	30808.6
NTSC (Lintong)		5213.7	5240.0	5265.0	5290.1	5319.0	5343.3	5372.2	5399.9
ONRJ (Rio de Janeiro)		-1885.6	-1894.6	-1898.1	-1910.9	-1921.3	-1931.8	-1946.4	-1962.9
PL (Warszawa)		-4458.7	-4466.3	-4473.6	-4475.5	-4478.7	-4480.2	-4482.0	-4485.4
PTB (Braunschweig)		-357566.8	-357556.7	-357552.7	-357547.3	-357541.5	-357533.3	-357525.7	-357515.4
SU (Moskva)		27244840.5	27244883.5	27244928.3	27244971.4	27245016.9	27245065.0	27245109.7	27245154.2 (1)
TL (Chung-Li)		629.5	631.9	632.5	633.6	638.7	642.4	644.0	645.0
USNO (Washington DC)		-35006816.9	-35007122.1	-35007425.1	-35007729.4	-35008034.0	-35008336.8	-35008640.0	-35008942.3

- 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	54369 - 54404	$6.787 \times 10^{-13}$	(2007 SEP 26 - 2007 OCT 31)
New correction	54404 - 54434	$6.784 \times 10^{-13}$	(2007 OCT 31 - 2007 NOV 30)
New correction foreseen	54434 - 54464	$6.779 \times 10^{-13}$	(2007 NOV 30 - 2007 DEC 30)

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  $\tau$  in days: (1) a white frequency noise of  $3.0 \times 10^{-15} / \sqrt{\tau}$ , (2) a flicker frequency noise of  $0.5 \times 10^{-15}$  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,  $\text{Ref}(u_B)$  is a reference giving information on the stated value of  $u_B$  or is the *Circular T* where this reference was first given,  $u_{1/\text{lab}}$  is the uncertainty in the link between the PFS and the clock participating to TAI, including the uncertainty due to the dead-time,  $u_{1/\text{TAI}}$  is the uncertainty in the link to TAI,  $u$  is the quadratic sum of all four uncertainty values. All values are expressed in  $10^{-15}$ .

Standard	Period of Estimation	$d$	$u_A$	$u_B$	$\text{Ref}(u_B)$	$u_{1/\text{Lab}}$	$u_{1/\text{TAI}}$	$u$	Note
PTB-CS1	54369 54404	-15.0	5.0	8.0	T148	0.0	0.1	9.4	(1)
PTB-CS2	54369 54404	0.2	3.0	12.0	T148	0.0	0.1	12.4	(1)
SYRTE-FOM	54344 54374	2.1	0.1	0.9	T183	0.1	0.3	1.0	(2)
SYRTE-FOM	54374 54384	3.8	0.2	0.9	T183	0.1	0.9	1.3	(3)
SYRTE-FOM	54389 54404	1.0	0.2	0.9	T183	0.1	0.6	1.1	(3)
SYRTE-JPO	54369 54404	3.8	0.8	6.3	T160	0.3	0.3	6.4	(4)
PTB-CSF1	54369 54384	1.2	1.0	1.0	T162	0.1	0.2	1.4	(5)
NIST-F1	54384 54399	4.1	0.3	0.3	T214	0.3	0.6	0.8	(6)
NPL-CsF1	54369 54399	8.2	0.7	1.8	T205	0.2	0.5	2.0	(7)
NICT-CsF1	54369 54384	4.5	1.0	1.8	T236	0.3	0.6	2.2	(8)

Notes:

- (1) Continuously operating as a clock participating to TAI.
- (2) Report 5 October by LNE-SYRTE
- (3) Report 5 November by LNE-SYRTE
- (4) Report 7 November by LNE-SYRTE
- (5) Report 23 October by PTB
- (6) Report 30 October by NIST
- (7) Report 7 November by NPL
- (8) Report 7 November by NICT

The second table gives the BIPM estimate of  $d$ , based on all available PFS measurements over the period MJD 54009-54404, 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	$d$	$u$	
54369-54404	$3.1 \times 10^{-15}$	$0.5 \times 10^{-15}$	(2007 SEP 26 - 2007 OCT 31)

5 - Relations of UTC and TAI with GPS time and GLONASS time.

$$\begin{aligned}
 [UTC-GPS \text{ time}] &= -14 \text{ s} + C_0, & [TAI-GPS \text{ time}] &= 19 \text{ s} + C_0, & \text{global uncertainty is of order 10 ns.} \\
 [UTC-GLONASS \text{ time}] &= 0 \text{ s} + C_1, & [TAI-GLONASS \text{ time}] &= 33 \text{ s} + C_1, & \text{global uncertainty is of order hundreds ns.}
 \end{aligned}$$

The  $C_0$  values provide a realization of GPS time, 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  $C_1$  values provide a realization of GLONASS time, as obtained using the values  $[UTC-UTC(AOS)]$  and the GLONASS data taken at the Astrogeodynamical Observatory Borowiec (AOS).  $N_0$  and  $N_1$  are the numbers of measurements, when  $N_0$  or  $N_1$  is 0, the corresponding values of  $C_0$  or  $C_1$  are interpolated. The standard deviations  $\sigma_0$  and  $\sigma_1$  characterize the dispersion of individual measurements. The actual uncertainty of user's access to GPS and GLONASS times may differ from these values. For this circular,  $\sigma_0 = 2.6 \text{ ns}$ ,  $\sigma_1 = 17.6 \text{ ns}$

Date 2007	0h UTC	MJD	$C_0/\text{ns}$	$N_0$	$C_1/\text{ns}$	$N_1$
SEP 26		54369	-4.4	44	-999.7	77
SEP 27		54370	-2.8	46	-992.4	84
SEP 28		54371	-2.0	45	-974.4	76
SEP 29		54372	-4.9	44	-966.6	72
SEP 30		54373	-4.5	45	-976.7	83
OCT 1		54374	-2.6	46	-975.5	73
OCT 2		54375	-2.2	45	-972.6	73
OCT 3		54376	-3.8	44	-977.5	74
OCT 4		54377	-1.1	44	-984.7	77
OCT 5		54378	-0.4	44	-989.1	85
OCT 6		54379	0.8	44	-989.9	75
OCT 7		54380	-0.7	43	-993.0	77
OCT 8		54381	-1.8	43	-998.6	83
OCT 9		54382	-2.9	38	-1001.3	82
OCT 10		54383	-4.3	45	-1001.2	69
OCT 11		54384	-5.5	45	-999.6	75
OCT 12		54385	-7.5	45	-1003.0	75
OCT 13		54386	-6.3	46	-1010.9	73
OCT 14		54387	-5.0	45	-1018.5	66
OCT 15		54388	-4.7	45	-1014.9	82
OCT 16		54389	-1.8	43	-1014.2	85
OCT 17		54390	-2.7	46	-1029.1	81
OCT 18		54391	-4.1	44	-1023.8	68
OCT 19		54392	-6.7	43	-992.6	71
OCT 20		54393	-5.2	44	-974.8	54
OCT 21		54394	-2.5	45	-993.3	76
OCT 22		54395	-1.5	47	-997.8	66
OCT 23		54396	-2.0	45	-934.2	65
OCT 24		54397	-1.0	41	-947.7	13
OCT 25		54398	-0.9	42	-995.7	73
OCT 26		54399	1.7	42	-988.4	64
OCT 27		54400	0.0	42	-991.8	81
OCT 28		54401	-5.3	43	-989.3	79
OCT 29		54402	-2.4	44	-982.3	86
OCT 30		54403	-1.6	40	-987.2	57
OCT 31		54404	-3.0	40	-1001.3	87

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 GT for 'GPS time' observations; 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 statistical uncertainty evaluated by taking into account the level of phase noise in the raw data, the interpolation interval between data points and the effects with typical duration between 5 and 30 days.  $u_B$  is the estimated uncertainty on 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	GPS MC	1.5	5.0	GPS EC/GPS EC	2003 Sep/2004 Jul
APL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2003 Dec/2004 Jul
AUS /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2004 Nov/2004 Jul
BEV /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Dec/2004 Jul
BIM /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2004 Jul
BIRM/PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2004 Jul
BY /PTB	GPS SC	7.0	20.0	NA /GPS EC	NA /2004 Jul
CAO /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2004 Nov/2004 Jul
CH /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2006 Jun
CNM /PTB	GPS SC	5.0	5.0	GPS EC/GPS EC	2005 Nov/2004 Jul
CNMP/PTB	GPS MC	3.0	5.0	GPS EC/GPS EC	2004 May/2004 Jul
DLR /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2007 Feb/2004 Aug
DTAG/PTB	GPS MC	3.0	10.0	GPS EC/GPS EC	1998 May/2004 Jul
EIM /PTB	GPS MC	3.0	20.0	NA /GPS EC	NA /2003 Aug
HKO /PTB	GPS MC	2.5	5.0	GPS EC/GPS EC	2004 Sep/2004 Jul
IFAG/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jun/2004 Aug
IGMA/PTB	NA				
INPL/PTB	NA				
IT /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2006 Mar
JATC/NTSC	INT LK	0.2	1.0	DIC	/2006 Sep

Link	Type	$u_A$ /ns	$u_B$ /ns	Calibration Type	Calibration Dates
JV /PTB	GPS GT	5.0	20.0	NA /GPS EC	NA /2003 Aug
KRIS/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Aug/2004 Aug
LDS /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2004 Jul
LT /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Nov/2004 Jul
LV /PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2006 Feb/2004 Jul
MIKE/PTB	GPS MC	5.0	20.0	NA /GPS EC	NA /2004 Jul
MKEH/PTB	GPS SC	2.5	20.0	NA /GPS EC	NA /2004 Jul
MSL /PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NAO /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2004 Jul
NICT/PTB	TWSTFT	0.5	5.0	BC(GPS P3)	2007 Mar
NIM /PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2004 Jul
NIMB/PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2004 Jul
NIMT/PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NIS /PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 May/2004 Jul
NIST/PTB	TWSTFT	0.5	5.0	BC(GPS P3)	2005 May
NMIJ/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2002 Apr/2004 Aug
NMLS/PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2004 Jul
NPL /PTB	GPS P3	0.7	5.0	NA/GPS EC	NA /2004 Aug
NPLI/PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 Jul/2004 Jul
NRC /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Nov/2004 Aug
NTSC/PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2004 Sep/2004 Jul
ONBA/PTB	GPS MC	2.5	5.0	GPS EC/GPS EC	2004 Jul/2004 Jul
ONRJ/PTB	GPS MC	4.0	20.0	NA /GPS EC	NA /2004 Jul
OP /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2006 Mar
ORB /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jul/2004 Aug
PL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Oct/2004 Jul
ROA /PTB	TWSTFT	0.7	5.0	BC(GPS P3)	2005 May
SCL /PTB	GPS MC	3.0	10.0	LC(GPS SC)	1993 May
SIQ /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug
SG /PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2007 Jan/2004 Jul
SMU /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2004 Jul
SP /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2006 Mar
SU /PTB	GPS SC	3.0	5.0	GPS EC/GPS EC	2003 Apr/2004 Jul
TCC /PTB	GPS P3	1.5	20.0	NA /GPS EC	NA /2004 Aug
TL /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 May/2004 Aug
TP /PTB	GPS P3	0.9	5.0	LC(GPS SC)	2004 Jul
UME /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2005 Dec/2004 Jul
USNO/PTB	TWSTFT	0.5	1.1	BC(TW X-Band)	2005 May
VSL /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2006 Mar
ZA /PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2004 Jul
ZMDM/PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2005 Mar/2004 Jul