

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

Date 2008 MJD Laboratory k	0h UTC	JAN 29	FEB 3	FEB 8	FEB 13	FEB 18	FEB 23	FEB 28	Uncertainty/ns			Notes
		54494	54499	54504	54509	54514	54519	54524	u_A	u_B	u	
					[UTC-UTC(k)]/ns							
AOS (Borowiec)		1.5	-0.4	0.1	1.1	3.2	3.2	2.9	1.5	5.1	5.4	
APL (Laurel)		6.9	-4.3	-12.5	-11.8	-9.3	-9.0	-14.1	1.5	5.1	5.3	
AUS (Sydney)		106.9	96.0	113.9	115.4	124.5	126.1	127.3	1.5	5.1	5.3	
BEV (Wien)		-60.7	-60.5	-45.7	-28.9	-16.5	-0.3	3.3	1.5	5.1	5.3	
BIM (Sofiya)		-6011.1	-6034.0	-6048.2	-6082.5	-6108.7	-6118.4	-6135.7	2.0	7.1	7.4	
BIRM (Beijing)		-	-4571.0	-4611.2	-4641.2	-4673.5	-4710.0	-4741.1	2.0	20.0	20.1	
BY (Minsk)		213.9	217.4	207.5	211.3	221.0	219.9	226.9	7.0	20.0	21.2	
CAO (Cagliari)		-1552.9	-1583.8	-1610.6	-1618.8	-1621.9	-1639.2	-1674.2	1.5	7.1	7.3	
CH (Bern)		-1.6	-4.3	-7.2	-10.7	-15.7	-12.9	-11.5	0.6	1.5	1.6	
CNM (Queretaro)		-32.4	-39.7	-44.3	-41.9	-42.5	-47.0	-47.4	5.0	5.1	7.1	
CNMP (Panama)		85.0	85.7	107.7	102.9	116.0	103.7	119.5	3.0	5.1	6.0	
DLR (Oberpfaffenhofen)		-43.1	-39.7	-37.1	-25.5	-19.8	-13.0	-10.2	0.7	5.1	5.2	
DTAG (Frankfurt/M)		213.5	196.8	181.3	173.4	168.8	165.4	170.8	4.0	10.0	10.8	
EIM (Thessaloniki)		2.5	1.0	-1.4	4.4	2.3	-1.2	-0.6	3.0	20.0	20.3	
HKO (Hong Kong)		76.4	73.0	68.3	73.1	68.9	57.6	53.1	2.5	5.1	5.7	
IFAG (Wetzell)		-412.6	-409.1	-402.0	-397.7	-384.5	-382.4	-377.1	0.7	5.1	5.2	
IGMA (Buenos Aires)		-	-	-	-	-	-	-	-	-	-	
INPL (Jerusalem)		-	-	-	-	-	-	-	-	-	-	
IT (Torino)		-0.4	-2.2	-1.7	-1.3	-1.2	-2.0	-3.1	0.5	1.5	1.6	
JATC (Lintong)		-6.2	-8.5	-8.3	-6.1	-3.8	1.1	6.2	1.4	4.9	5.1	
JV (Kjeller)		5893.8	6022.9	6147.4	6268.4	6385.9	6540.7	6642.1	5.0	20.0	20.6	
KIM (Serpong-Tangerang)		-	-290.4	-294.8	-283.4	-270.5	-130.3	-155.5	4.0	20.0	20.4	(1)(2)
KRIS (Daejeon)		-14.8	-11.4	-10.8	-11.7	-11.4	-16.9	-18.8	0.7	5.1	5.1	
LDS (Leeds)		-	-	-	-	-	-	-	-	-	-	
LT (Vilnius)		229.8	236.1	237.8	246.9	250.9	250.1	274.1	1.5	5.1	5.3	
LV (Riga)		827.9	891.0	945.6	1005.7	1061.4	1123.1	1184.8	2.0	7.1	7.4	
MIKE (Espoo)		-120.3	-135.7	-133.6	-132.7	-131.2	-137.8	-118.8	4.9	19.8	20.4	
MKEH (Budapest)		-982.5	-1179.8	-1377.6	-1558.7	-1756.4	-1960.7	-2167.0	2.5	20.0	20.2	
MSL (Lower Hutt)		-124.0	-82.1	-20.8	6.5	21.5	1.3	-42.7	1.0	20.0	20.0	
NAO (Mizusawa)		10.2	25.3	56.5	58.6	71.2	83.0	82.6	3.0	19.9	20.1	

Date 2008	0h UTC	JAN 29	FEB 3	FEB 8	FEB 13	FEB 18	FEB 23	FEB 28	Uncertainty/ns			Notes
MJD		54494	54499	54504	54509	54514	54519	54524	u_A	u_B	u	
Laboratory k		[UTC-UTC(k)]/ns										
NICT (Tokyo)		-29.3	-32.2	-30.0	-26.3	-21.8	-20.6	-15.8	0.5	4.6	4.6	
NIM (Beijing)		-52.3	-49.9	-47.8	-51.4	-51.4	-57.5	-50.3	1.5	19.7	19.7	
NIMB (Bucharest)		-1134.6	-1149.9	-1159.2	-1200.7	-1216.8	-1229.7	-1213.0	2.0	20.0	20.1	
NIMT (Bangkok)		-780.3	-811.1	-846.4	-867.2	-874.7	-868.2	-868.0	1.0	20.0	20.1	
NIS (Cairo)		33.0	32.8	26.4	16.7	13.6	9.6	5.9	2.5	7.1	7.5	
NIST (Boulder)		-2.3	-3.8	-2.9	-5.1	-5.3	-6.7	-8.4	0.5	4.9	5.0	
NMIJ (Tsukuba)		13.3	15.0	16.5	17.1	20.7	20.1	20.7	0.7	5.0	5.1	
NMLS (Sepang)		-215.4	-208.8	-194.6	-179.0	-179.7	-170.7	-164.4	2.0	20.0	20.1	
NPL (Teddington)		32.9	36.2	33.3	35.4	27.6	20.1	13.5	1.5	5.1	5.4	
NPLI (New-Delhi)		14.7	13.5	15.8	9.2	8.7	1.2	-1.3	2.5	7.1	7.5	
NRC (Ottawa)		-59.5	-52.7	-50.0	-51.3	-46.8	-42.9	-43.4	3.0	5.1	5.9	
NRL (Washington DC)		129.8	144.3	158.0	169.0	169.4	150.3	133.1	0.7	5.1	5.2	
NTSC (Lintong)		12.4	8.4	5.8	7.7	10.5	7.6	2.7	1.4	4.8	5.0	
ONBA (Buenos Aires)		-800.9	-801.1	-823.7	-837.6	-841.6	-850.2	-864.9	2.5	5.1	5.7	
ONRJ (Rio de Janeiro)		8.3	-4.5	-16.0	-9.2	-0.4	-0.4	-4.3	3.9	19.5	19.9	
OP (Paris)		-12.2	-8.0	-2.9	-1.8	-6.2	-4.8	2.3	0.5	1.5	1.6	
ORB (Bruxelles)		-20.0	-21.4	-24.3	-28.0	-26.7	-27.4	-26.9	0.7	5.1	5.2	
PL (Warszawa)		16.4	26.6	1.9	-4.2	-9.4	-10.0	-0.4	1.5	4.9	5.1	
PTB (Braunschweig)		16.6	10.8	8.8	5.7	13.2	15.8	11.4	0.2	1.2	1.2	
ROA (San Fernando)		14.3	6.9	5.4	1.4	4.0	-0.6	-3.4	0.7	5.0	5.0	
SCL (Hong Kong)		20.8	16.4	14.6	-0.9	3.9	-2.1	-2.3	3.0	10.0	10.5	
SG (Singapore)		78.0	75.5	75.8	77.1	77.5	72.4	54.0	2.0	7.1	7.4	
SIQ (Ljubljana)		-3204.8	-3092.1	-3006.7	-2933.3	-2825.6	-2729.8	-2595.1	5.0	20.0	20.7	
SMU (Bratislava)		-285.5	-285.7	-287.3	-297.8	-312.9	-316.1	-309.7	5.0	20.0	20.6	
SP (Boras)		23.9	26.1	31.2	32.3	26.7	22.4	17.1	0.5	1.5	1.6	
SU (Moskva)		-3.9	-6.8	-6.3	-1.9	2.4	2.2	1.4	3.0	5.1	5.9	
TCC (Concepcion)		-8541.7	-8562.8	-8598.5	-8622.0	-8647.8	-8658.6	-8711.9	6.0	5.1	7.9	
TL (Chung-Li)		15.4	14.8	12.4	13.5	12.3	10.8	9.8	0.7	5.0	5.1	
TP (Praha)		-8.0	-15.0	-20.2	-22.6	-21.6	-14.6	-1.8	0.9	5.1	5.2	
UME (Gebze-Kocaeli)		97.5	101.9	108.3	118.3	117.8	121.6	114.9	1.5	7.1	7.3	
USNO (Washington DC)		0.0	0.8	1.7	0.2	1.6	0.4	0.5	0.4	1.8	1.8	
VMI (Ha Noi)		-	-371.7	-366.7	-359.4	-353.2	-350.6	-342.3	1.0	20.0	20.1	(3)
VSL (Delft)		-50.4	-50.2	-48.2	-47.8	-50.5	-43.2	-44.2	0.5	1.5	1.6	
ZA (Pretoria)		-	-	-	-	-	-	-	-	-	-	
ZMDM (Belgrade)		2368.2	2407.3	2434.0	2468.0	2507.5	2540.6	2573.0	2.0	7.1	7.3	

- Notes on section 1:

- (1) KIM : Research Centre for Calibration, Instrumentation and Metrology - The Indonesian Institute of Sciences, Serpong-Tangerang - Indonesia.
 (2) KIM : Time step of UTC(KIM) of -120 ns on MJD 54517.0.
 (3) VMI : Vietnam Metrology Institute, Ha Noi - Vietnam.

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

Date 2008	0h UTC	JAN 29	FEB 3	FEB 8	FEB 13	FEB 18	FEB 23	FEB 28	
MJD		54494	54499	54504	54509	54514	54519	54524	
Laboratory k		$[TAI-TA(k)]/ns$							
CH (Bern)		53381.4	53357.1	53338.1	53316.6	53293.5	53268.9	53243.9	
F (Paris)		168253.1	168251.4	168251.8	168249.5	168248.2	168245.9	168244.8	
IT (Torino)		69641.3	69773.2	69901.1	70030.7	70166.2	70291.8	70420.8	
JATC (Lintong)		-43723.1	-43752.3	-43779.9	-43807.1	-43834.1	-43861.5	-43888.9	
KRIS (Daejeon)		21049.9	21129.2	21206.2	21282.2	21359.2	21430.8	21505.4	
NICT (Tokyo)		38.4	37.5	36.7	39.1	41.8	41.5	42.4	
NIST (Boulder)		-45316470.3	-45316661.8	-45316850.9	-45317043.1	-45317233.3	-45317424.7	-45317616.4	
NRC (Ottawa)		30991.5	30994.7	31011.3	31017.6	31019.1	31033.8	31041.4	
NTSC (Lintong)		5895.6	5921.4	5948.6	5979.5	6010.9	6039.4	6068.5	
ONRJ (Rio de Janeiro)		-2240.3	-2256.5	-2268.3	-2280.8	-2296.8	-2317.0	-2337.2	
PL (Warszawa)		-4580.5	-4577.0	-4588.6	-4594.2	-4599.8	-4607.8	-4611.4	
PTB (Braunschweig)		-357388.2	-357389.0	-357386.0	-357384.2	-357371.6	-357363.9	-357363.4	
SU (Moskva)		27246013.5	27246060.7	27246110.9	27246165.0	27246219.4	27246270.2	27246321.6	(1)
TL (Chung-Li)		633.4	636.0	639.0	635.7	637.2	633.7	635.3	
USNO (Washington DC)		-35014401.9	-35014702.6	-35015004.2	-35015309.3	-35015610.4	-35015914.2	-35016216.7	

- 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	54494 - 54524	6.772×10^{-13}	(2008 JAN 29 - 2008 FEB 28)
New correction	54524 - 54554	6.769×10^{-13}	(2008 FEB 28 - 2008 MAR 29)
New correction foreseen	54554 - 54584	6.766×10^{-13}	(2008 MAR 29 - 2008 APR 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 $3.0 \times 10^{-15} / \sqrt{\tau}$, (2) a flicker frequency noise of 0.5×10^{-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, $Ref(u_B)$ is a reference giving information on the stated value of u_B or is the *Circular T* where this reference was first given, $u_{1/Lab}$ 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. All values are expressed in 10^{-15} .

Standard	Period of Estimation	d	u_A	u_B	Ref(u_B)	$u_{1/Lab}$	$u_{1/Tai}$	u	Note
PTB-CS1	54494 54524	-9.7	5.0	8.0	T148	0.0	0.1	9.4	(1)
PTB-CS2	54494 54524	7.5	3.0	12.0	T148	0.0	0.1	12.4	(1)
NMIJ-F1	54504 54519	3.2	0.9	3.9	T213	0.4	0.9	4.1	(2)
SYRTE-FOM	54499 54524	3.4	0.2	0.7	T184	0.1	0.4	0.8	(3)
SYRTE-JPO	54494 54524	2.9	1.0	6.3	T160	0.3	0.3	6.4	(4)

Notes:

- (1) Continuously operating as a clock participating to TAI.
- (2) Report 29 February 2008 by NMIJ.
- (3) Report 7 March 2008 by LNE-SYRTE.
- (4) Report 5 March 2008 by LNE-SYRTE.

The second table gives the BIPM estimate of d , based on all available PFS measurements over the period MJD 54134-54524, 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
54494-54524	3.1×10^{-15}	0.7×10^{-15} (2008 JAN 29 - 2008 FEB 28)

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

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

The C_0 values provide a realization of GPS time, as obtained using the values $[\text{UTC-UTC}(OP)]$ 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 $[\text{UTC-UTC}(AOS)]$ 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 σ and σ_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, $\sigma_0 = 2.7 \text{ ns}$, $\sigma_1 = 11.2 \text{ ns}$

Date 2008	0h UTC	MJD	C_0/ns	N_0	C_1/ns	N_1
JAN 29		54494	0.2	45	-1071.8	67
JAN 30		54495	0.6	44	-1068.1	80
JAN 31		54496	-1.1	44	-1061.6	71
FEB 1		54497	-1.7	44	-1062.5	79
FEB 2		54498	-1.6	45	-1059.1	77
FEB 3		54499	-2.4	43	-1057.5	83
FEB 4		54500	0.0	44	-1056.2	82
FEB 5		54501	1.2	42	-1050.7	84
FEB 6		54502	1.9	38	-1048.2	82
FEB 7		54503	1.9	44	-1048.3	78
FEB 8		54504	1.5	44	-1044.6	81
FEB 9		54505	-1.0	43	-1037.6	85
FEB 10		54506	-1.4	45	-1031.6	79
FEB 11		54507	0.6	42	-1028.8	79
FEB 12		54508	1.0	43	-1031.0	62
FEB 13		54509	1.4	44	-1030.8	63
FEB 14		54510	-0.4	46	-1022.9	72
FEB 15		54511	-4.1	43	-1020.3	73
FEB 16		54512	-5.4	41	-1024.7	51
FEB 17		54513	-1.1	39	-1025.8	57
FEB 18		54514	1.8	45	-1020.1	70
FEB 19		54515	1.4	44	-1007.6	75
FEB 20		54516	3.9	44	-1004.5	76
FEB 21		54517	1.1	41	-1004.8	71
FEB 22		54518	-0.1	45	-998.1	83
FEB 23		54519	-2.4	44	-996.1	71
FEB 24		54520	-4.4	43	-1004.2	77
FEB 25		54521	-4.0	41	-1005.2	75
FEB 26		54522	-2.7	45	-999.2	74
FEB 27		54523	-0.7	44	-997.2	79
FEB 28		54524	-0.4	44	-999.4	80

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; 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 MC	2.0	7.0	GPS EC/GPS EC	2007 Nov
BIRM/PTB	GPS MC	2.0	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	BC(GPS PPP)	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	4.0	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	BC(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
KIM /PTB	GPS MC	4.0	20.0	NA /GPS EC	NA /2004 Jul
KRIS/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Aug/2004 Aug
LDS /PTB	NA				
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(TWSTFT)	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 MC	1.5	5.0	GPS EC/GPS EC	2002 Jun/2004 Jul
NPLI/PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 Jul/2004 Jul
NRC /PTB	GPS SC	3.0	5.0	GPS EC/GPS EC	2006 Mar/2004 Jul
NRL /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2002 May/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	BC(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 PPP)	2005 May
SCL /PTB	GPS MC	3.0	10.0	LC(GPS SC)	1993 May
SG /PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2007 Jan/2004 Jul
SIQ /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug
SMU /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2004 Jul
SP /PTB	TWSTFT	0.5	1.0	BC(GPS PPP)	2006 Mar
SU /PTB	GPS SC	3.0	5.0	GPS EC/GPS EC	2003 Apr/2004 Jul
TCC /PTB	GPS SC	6.0	5.0	GPS EC/GPS EC	2004 May/2004 Jul
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	2.0	BC(TW X-Band)	2005 May
VMI /PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
VSL /PTB	TWSTFT	0.5	1.0	BC(GPS PPP)	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