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BUREAU INTERNATIONAL DES POIDS ET MESURES
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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. From 2009 January 1, 0h UTC, *TAI-UTC* = 34 s.

Date 2008 0h UTC	NOV 29	DEC 4	DEC 9	DEC 14	DEC 19	DEC 24	DEC 29	Uncertainty/ns			Notes
MJD	54799	54804	54809	54814	54819	54824	54829	u_A	u_B	u	
Laboratory *k*	[*UTC-UTC*(*k*)]/ns										
AOS (Borowiec)	11.5	7.9	5.4	1.6	-1.3	-3.3	-6.8	0.6	5.1	5.1	
APL (Laurel)	8.6	12.6	19.7	8.6	1.5	1.8	-7.4	1.5	5.0	5.3	
AUS (Sydney)	687.5	714.3	743.6	760.6	781.2	814.8	841.7	1.5	5.0	5.3	
BEV (Wien)	-86.1	-86.2	-91.2	-98.8	-97.5	-98.8	-100.9	1.5	3.2	3.5	
BIM (Sofiya)	-6866.8	-6888.4	-6923.0	-6945.4	-6947.9	-6961.1	-6975.0	2.0	7.1	7.4	
BIRM (Beijing)	-6625.6	-6668.7	-6705.1	-6734.8	-6781.6	-6810.3	-6843.8	2.0	20.0	20.1	
BY (Minsk)	137.4	128.3	135.1	135.2	135.7	148.9	148.0	7.0	20.0	21.2	
CAO (Cagliari)	-2445.6	-2452.9	-2455.6	-2477.9	-2511.9	-2533.9	-2545.6	1.5	7.1	7.2	
CH (Bern)	-7.6	-11.1	-14.1	-13.4	-5.8	-7.3	-14.8	0.6	1.4	1.5	
CNM (Queretaro)	24.2	22.5	19.4	13.3	10.0	13.3	19.7	2.5	5.0	5.6	
CNMP (Panama)	25.8	21.9	46.6	39.1	42.6	53.4	64.7	3.0	5.1	5.9	
DLR (Oberpfaffenhofen)	-18.9	-25.0	-34.7	-38.9	-47.9	-52.1	-50.6	0.7	5.1	5.2	
DTAG (Frankfurt/M)	33.1	24.9	23.8	18.8	12.7	0.3	-2.9	4.0	10.0	10.8	
EIM (Thessaloniki)	4.6	2.3	5.8	-2.4	-4.0	-4.3	-5.3	3.0	5.1	5.9	
HKO (Hong Kong)	-50.6	-52.6	-58.0	-59.4	-54.5	-50.7	-58.9	2.5	5.1	5.6	
IFAG (Wettzell)	-128.4	-126.9	-121.1	-117.0	-115.5	-110.3	-106.0	0.7	5.1	5.1	
IGMA (Buenos Aires)	-	-	-	-	-	-	-	-	-	-	
INPL (Jerusalem)	-	-	-	-	-	-	-	-	-	-	
INTI (Buenos Aires)	-237.9	-238.0	-259.0	-264.9	-277.2	-285.3	-291.9	4.0	20.0	20.4	
IT (Torino)	43.0	37.4	32.6	29.0	22.1	17.3	10.2	0.6	1.4	1.5	
JATC (Lintong)	-13.7	-13.5	-7.3	-15.3	-14.3	-19.5	-19.5	1.4	4.8	5.0	
JV (Kjeller)	13214.7	13320.8	13394.1	13501.3	13581.3	13685.5	13808.3	5.0	20.0	20.6	
KIM (Serpong-Tangerang)	-288.0	-262.3	-274.5	-283.0	-279.7	-	-	3.0	20.0	20.3	
KRIS (Daejeon)	2.8	-8.1	-13.1	-16.3	-13.0	-7.6	-22.3	0.7	5.0	5.1	
KZ (Astana)	-457.7	-501.9	-550.8	-597.6	-639.7	-682.1	-729.9	2.0	20.0	20.1	
LDS (Leeds)	-	-	-	-	-	-	-	-	-	-	
LT (Vilnius)	575.3	553.9	560.7	546.5	553.8	525.3	517.6	1.5	5.1	5.3	
LV (Riga)	2461.7	2483.2	2502.9	2524.5	2543.5	2567.5	2584.2	2.0	7.1	7.4	
MIKE (Espoo)	-82.9	-76.4	-81.3	-82.2	-70.8	-59.8	-72.2	5.0	19.9	20.5	
MKEH (Budapest)	-13399.2	-13616.6	-13816.0	-14024.2	-14222.9	-14435.3	-14639.3	2.5	20.0	20.2	

Date 2008 0h UTC	NOV 29	DEC 4	DEC 9	DEC 14	DEC 19	DEC 24	DEC 29	Uncertainty/ns			Notes
MJD	54799	54804	54809	54814	54819	54824	54829	u_A	u_B	u	
Laboratory k				[UTC-$UTC(k)$]/ns							
MSL (Lower Hutt)	-451.7	-420.7	-389.5	-364.7	-335.3	-305.3	-275.2	1.0	20.0	20.0	
NAO (Mizusawa)	26.5	27.1	33.4	37.6	43.5	48.0	49.0	3.0	20.0	20.3	
NICT (Tokyo)	0.3	3.1	1.6	1.5	-5.6	-9.6	-14.7	0.7	4.5	4.6	
NIM (Beijing)	-93.0	-88.0	-76.6	-76.2	-87.3	-111.6	-113.5	1.0	20.0	20.0	
NIMB (Bucharest)	-126.9	-143.5	-147.3	-151.9	-166.0	-151.6	-163.4	2.0	20.0	20.1	
NIMT (Bangkok)	271.3	258.0	238.4	234.5	218.9	204.3	193.1	1.0	20.0	20.1	
NIS (Cairo)	-	66.9	60.8	50.4	37.7	28.0	13.2	1.5	7.1	7.2	
NIST (Boulder)	0.5	0.6	0.7	2.1	2.5	3.0	4.1	0.5	4.9	4.9	
NMIJ (Tsukuba)	76.0	70.3	67.6	68.6	63.0	60.0	56.7	0.7	5.1	5.1	
NMLS (Sepang)	-	439.1	435.8	431.1	425.6	429.1	427.8	2.0	20.0	20.1	
NPL (Teddington)	-30.6	-32.1	-31.1	-29.4	-29.1	-25.8	-24.4	0.6	5.0	5.1	
NPLI (New-Delhi)	-11.5	-17.8	-19.5	-26.9	-36.5	-37.6	-40.8	2.5	7.1	7.5	
NRC (Ottawa)	23.9	21.9	17.4	15.3	15.1	17.8	18.0	0.7	5.1	5.1	(1)
NRL (Washington DC)	6.5	1.2	0.1	0.8	-2.9	-2.7	-3.2	0.7	5.1	5.2	
NTSC (Lintong)	-5.9	1.0	9.6	7.4	0.2	-2.7	-4.9	1.4	4.7	4.9	
ONBA (Buenos Aires)	-1503.6	-1517.8	-1533.1	-1545.8	-1571.7	-1590.9	-1596.1	2.5	5.1	5.7	
ONRJ (Rio de Janeiro)	2.9	-1.0	-0.1	0.3	-15.8	-14.1	-23.6	3.9	19.5	19.9	
OP (Paris)	-23.4	-28.6	-33.3	-39.9	-47.1	-51.7	-54.8	0.5	1.4	1.5	
ORB (Bruxelles)	-12.6	-20.0	-26.5	-27.9	-30.7	-31.4	-34.4	0.7	5.1	5.1	
PL (Warszawa)	-41.4	-39.5	-36.3	-47.1	-49.3	-42.8	-36.7	1.5	4.9	5.1	
PTB (Braunschweig)	-0.2	-2.0	-4.0	-11.1	-15.0	-12.2	-13.1	0.3	1.0	1.1	
ROA (San Fernando)	95.4	91.6	80.8	73.3	74.8	71.7	69.5	0.7	5.0	5.0	
SCL (Hong Kong)	-25.7	-32.2	-32.1	-30.1	-29.6	-25.6	-27.5	3.0	9.9	10.4	
SG (Singapore)	-17.9	-20.4	-15.7	-19.5	-18.9	-22.6	-22.9	3.0	5.1	5.9	
SIQ (Ljubljana)	-768.1	-763.5	-780.2	-790.5	-829.9	-879.0	-957.0	5.0	20.0	20.6	
SMU (Bratislava)	53.8	48.1	59.6	61.1	59.7	56.2	49.9	5.0	20.0	20.6	
SP (Boras)	10.7	8.3	6.4	7.2	6.3	6.4	4.3	0.5	1.4	1.5	
SU (Moskva)	1.4	-3.2	-6.4	-1.8	-0.8	2.8	4.2	3.0	5.1	5.9	
TCC (Concepcion)	205.2	205.2	201.3	210.3	214.4	223.6	222.6	1.5	20.0	20.1	
TL (Chung-Li)	12.1	8.5	7.5	8.8	12.1	14.0	14.3	0.7	4.8	4.9	
TP (Praha)	11.6	7.1	4.6	0.0	1.3	0.4	-0.6	0.9	5.1	5.2	
UA (Kharkov)	16.1	16.9	8.5	-1.9	-9.2	-10.3	-27.1	2.5	6.1	6.6	
UME (Gebze-Kocaeli)	277.6	270.9	287.8	299.1	345.6	335.5	289.4	1.5	7.1	7.2	
USNO (Washington DC)	-0.9	-3.6	-6.0	-7.0	-7.5	-7.6	-5.7	0.4	1.3	1.3	
VMI (Ha Noi)	0.9	13.7	17.1	19.4	30.5	38.7	41.7	1.0	20.0	20.1	
VSL (Delft)	74.7	66.1	47.7	39.4	22.5	13.0	0.6	0.7	1.4	1.6	
ZA (Pretoria)	-	-	-	-	-	-	-	-	-	-	
ZMDM (Belgrade)	4172.9	4193.8	4234.1	4269.4	4298.9	4329.3	4350.2	2.0	7.0	7.3	

- Note on section 1:

(1) NRC : Erratum, Corrected values /ns:

MJD	*UTC-UTC*(*NRC*)
54769	36.8
54774	30.3
54779	27.1
54784	18.1
54789	17.7
54794	25.1

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

Date 2008 0h UTC	NOV 29	DEC 4	DEC 9	DEC 14	DEC 19	DEC 24	DEC 29	
MJD	54799	54804	54809	54814	54819	54824	54829	
Laboratory *k*				[*TAI-TA*(*k*)]/ns				
CH (Bern)	51349.2	51283.5	51222.2	51164.1	51120.4	51076.6	51025.6	
F (Paris)	168159.0	168154.4	168153.4	168151.4	168148.3	168146.7	168145.8	
IT (Torino)	77748.6	77881.6	78013.5	78149.3	78280.8	78416.0	78549.6	
JATC (Lintong)	-45311.6	-45336.9	-45357.7	-45385.9	-45414.1	-45439.1	-45463.3	
KRIS (Daejeon)	25772.8	25839.8	25912.1	25986.2	26065.7	26147.0	26210.9	
NICT (Tokyo)	133.0	135.8	136.5	137.5	134.5	133.6	131.8	
NIST (Boulder)	-45328163.0	-45328355.4	-45328547.8	-45328738.9	-45328930.9	-45329122.4	-45329313.3	
NRC (Ottawa)	31945.6	32037.1	32052.8	32064.5	32081.4	32105.8	32124.5	
NTSC (Lintong)	7603.2	7630.1	7660.7	7684.8	7710.0	7738.1	7767.9	
ONRJ (Rio de Janeiro	-3851.9	-3885.6	-3907.9	-3931.1	-3952.1	-3968.6	-3993.8	
PL (Warszawa)	-5049.7	-5061.8	-5065.4	-5075.4	-5083.8	-5094.2	-5106.5	
PTB (Braunschweig)	-356993.4	-356987.6	-356982.1	-356981.8	-356978.2	-356967.9	-356961.3	
SU (Moskva)	27250156.9	27250240.9	27250326.3	27250419.4	27250509.0	27250602.0	27250693.3	(1)
TL (Chung-Li)	336.7	326.4	324.7	323.2	317.4	315.9	308.5	
USNO (Washington DC)	-35032783.1	-35033084.7	-35033387.2	-35033687.2	-35033988.2	-35034288.6	-35034588.2	

- 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	54799 - 54829	6.736×10^{-13}	(2008 NOV 29 - 2008 DEC 29)
New correction	54829 - 54859	6.731×10^{-13}	(2008 DEC 29 - 2009 JAN 28)
New correction foreseen	54859 - 54889	6.726×10^{-13}	(2009 JAN 28 - 2009 FEB 27)

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-CS2	54799 54829	4.3	3.0	12.0	T148	0.0	0.2	12.4	(1)
NIST-F1	54814 54829	4.1	0.4	0.3	T214	0.5	0.6	0.9	(2)
SYRTE-JPO	54799 54814	6.7	1.3	6.3	T160	0.3	0.6	6.5	(3)
SYRTE-FO1	54799 54829	4.6	0.6	0.5	T227	0.1	0.3	0.8	(3)
SYRTE-FO2	54799 54829	4.9	0.6	0.5	T227	0.1	0.3	0.8	(3)

Notes:
(1) Continuously operating as a clock participating to TAI
(2) Report 30 DEC. 2008 by NIST
(3) Report 07 JAN. 2009 by LNE-SYRTE

The second table gives the BIPM estimate of d, based on all available PFS measurements over the period MJD 54439-54829, 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	
54799-54829	4.6×10^{-15}	0.5×10^{-15}	(2008 NOV 29 - 2008 DEC 29)

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

[*UTC-GPS time*] = -14 s + C_0, [*TAI-GPS time*] = 19 s + C_0, global uncertainty is of order 10 ns.
[*UTC-GLONASS time*] = 0 s + C_1, [*TAI-GLONASS time*] = 33 s + C_1, global uncertainty is of order hundreds ns.

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 σ_0 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, σ_0 = 2.8 ns, σ_1 = 12.6 ns

Date 2008	0h UTC	MJD	C_0/ns	N_0	C_1/ns	N_1
NOV	29	54799	-6.3	47	-148.4	77
NOV	30	54800	-5.5	48	-152.2	69
DEC	1	54801	-4.0	47	-153.4	71
DEC	2	54802	-4.0	46	-151.9	79
DEC	3	54803	-6.7	47	-146.9	65
DEC	4	54804	-5.6	48	-148.6	72
DEC	5	54805	-2.6	48	-149.5	68
DEC	6	54806	-3.1	47	-143.8	65
DEC	7	54807	-5.4	47	-138.3	71
DEC	8	54808	-6.5	46	-137.5	79
DEC	9	54809	-8.3	48	-137.2	71
DEC	10	54810	-8.5	49	-134.9	73
DEC	11	54811	-7.2	48	-130.9	73
DEC	12	54812	-6.2	41	-129.2	70
DEC	13	54813	-9.6	42	-130.6	69
DEC	14	54814	-9.6	47	-130.4	79
DEC	15	54815	-8.5	48	-131.3	76
DEC	16	54816	-9.8	47	-130.1	69
DEC	17	54817	-11.0	48	-135.2	80
DEC	18	54818	-9.6	48	-133.0	80
DEC	19	54819	-9.2	46	-122.7	68
DEC	20	54820	-7.8	47	-120.9	78
DEC	21	54821	-4.3	48	-117.2	71
DEC	22	54822	-1.5	48	-113.8	66
DEC	23	54823	-2.8	46	-112.4	65
DEC	24	54824	-6.8	46	-102.6	77
DEC	25	54825	-9.6	47	-93.8	81
DEC	26	54826	-11.5	49	-91.9	67
DEC	27	54827	-14.6	48	-86.5	78
DEC	28	54828	-16.3	45	-82.2	76
DEC	29	54829	-15.8	35	-80.4	64

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	TWSTFT	0.5	5.0	BC(GPS MC)	2008 May
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	3.0	BC(TWSTFT)	2008 Jan
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 MC	2.5	5.0	BC(GPS SC)	2008 May
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	5.0	GPS EC/GPS EC	2007 May/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				
INTI/PTB	GPS MC	4.0	20.0	NA /GPS EC	NA /2004 Jul
IT /PTB	TWSTFT	0.5	1.0	BC(TWSTFT)	2006 Mar

Link	Type	u_A/ns	u_B/ns	Calibration Type	Calibration Dates
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
KIM /PTB	GPS MC	3.0	20.0	NA /GPS EC	NA /2004 Jul
KRIS/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Aug/2004 Aug
KZ /PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2004 Jul
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 MC	3.0	20.0	NA /GPS EC	NA /2004 Jul
NICT/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Jun/2004 Aug
NIM /PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
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	1.5	7.0	GPS EC/GPS EC	2005 May/2004 Jul
NIST/PTB	TWSTFT	0.5	5.0	BC(GPS EC)	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	TWSTFT	0.5	5.0	LC(GPS MC)	2006 Dec
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
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	3.0	5.0	GPS EC/GPS EC	2004 Nov/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 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
UA /PTB	GPS MC	2.5	6.0	GPS EC/GPS EC	2006 Jun/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
VMI /PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
VSL /PTB	TWSTFT	0.7	1.0	BC(GPS PPP)	2006 Mar
ZA /PTB	NA				
ZMDM/PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2005 Mar/2004 Jul