BIPM

ISSN 1143-1393

BUREAU INTERNATIONAL DES POIDS ET MESURES

Circular T 96 (1996 January 16)

1 - Coordinated Universal Time UTC. Computed values of UTC-UTC(k).

(From 1994 July 1, 0hUTC, to 1996 January 1, 0hUTC, TAI-UTC = 29 s)
(From 1996 January 1, 0hUTC, until further notice, TAI-UTC = 30 s)

Date 1995 0h UTC	Nov 28	Dec 8	Dec 18	Dec 28
MJD	50049	50059	50069	50079
Laboratory k	UTC-UTC(k) (Unit is one nanosecond)			
AOS (Borowiec)	-1094	-435	-259	-172
APL (Laurel)	1913	-	1946	1967
AUS (Canberra)	-401	-451	-439	-401
BEV (Wien)	11085	10604	10236	9885
BIRM (Beijing)	393	264	114	-14
CAO (Cagliari)	-	-	-	-
CH (Bern)	116	130	155	177
CRL (Tokyo)	412	381	343	311
CSAO (Lintong)	-285	-318	-246	-292
CSIR (Pretoria)	4718	4741	4796	4855
FTZ (Darmstadt)	-239	-228	-247	-256
GUM (Warszawa)	-331	-337	-341	-343
IEN (Torino)	-40	-36	-22	8
IFAG (Wettzell)	-4485	-4556	-4659	-4668
IGMA (Buenos Aires)	394	386	391	373
INPL (Jerusalem)	-2621	-2723	-2782	-2823
IPQ (Monte de Caparica)	-7782	-7885	-8003	-8116
JATC (Lintong)	1482	1419	1493	1442
KRIS (Taejon)	281	281	281	284
LDS (Leeds)	270	205	199	206
MSL (Lower Hutt)	-5326	-5447	-5330	-5326
NAOM (Mizusawa)	-3171	-3148	-3133	-3135
NAOT (Tokyo)	-3492	-3341	-3233	-3168
NIM (Beijing)	7927	7930	7928	8006
NIST (Boulder)	2	8	10	13
NMC (Sofiya)	-	-	-	-
NPL (Teddington)	27	33	38	39
NPLI (New-Delhi)	-	-	-	-
NRC (Ottawa)	-10	6	17	44
NRLM (Tsukuba)	-5768	-5627	-5487	-5342
OMH (Budapest)	12523	12801	13004	13262
ONBA (Buenos Aires)	10097	10005	9877	9549
ONRJ (Rio de Janeiro)	-1940	-1109	-234	655
OP (Paris)	69	58	61	53
ORB (Bruxelles)	318	323	339	305
PTB (Braunschweig)	2234	2230	2224	2221
RC (Habana)	-	-	-	-
ROA (San Fernando)	100	112	119	122
SCL (Hong Kong)	240	404	442	388
SO (Shanghai)	1791	1770	1758	1733
SU (Moskva)	-7202	-7224	-7246	-7268
TL (Chung-Li)	-45	-62	-59	-23
TP (Praha)	-310	-294	-284	-296
TUG (Graz)	-279	-254	-234	-217
UME (Gebze-Kocaeli)	-3163	-3148	-3128	-3115
USNO (Washington DC)(USNO MC)	10	11	11	11
VSL (Delft)	-236	-244	-234	-231

PAVILLON DE BRETEUIL F - 92312 SÈVRES CEDEX

TÉL. (CENTRAL) : + 33 1 45 07 70 70 TELEX : BIPM 631351 F TÉLÉCOPIE : + 33 1 45 34 20 21

2 - International Atomic Time TAI and local atomic time scales TA(k).

The following table gives the computed values of TAI-TA(k).

Date 1995 0h UTC		Nov 28	Dec 8	Dec 18	Dec 28
MJD		50049	50059	50069	50079
Laboratory k		TAI-TA(k) (Unit is one nanosecond)			
APL (Laurel)		3376	-	3409	3430
AUS (Canberra)		-65492	-65776	-66057	-66277
CH (Bern)		-64675	-64432	-64179	-63930
CRL (Tokyo)		62326	62742	63154	63571
CSAO (Lintong)		7132	6969	6912	6736
F (Paris)		149499	149827	150156	150472
IEN (Torino)		-543	-539	-526	-500
INPL (Jerusalem)		-314001	-315316	-316597	-317888
JATC (Lintong)		-	12659	12689	12632
KRIS (Taejon)		1908	1992	2062	2160
NIM (Beijing)		-7125	-7094	-7061	-6948
NISA (Boulder)	(1)	-45137188	-45137622	-45138060	-45138497
NRC (Ottawa)		25149	25208	25262	25333
PTB (Braunschweig)		-361166	-361170	-361176	-361179
RC (Habana)		-	-	-	-
SO (Shanghai)		-45787	-45799	-45809	-45790
SU (Moskva)	(2)	27242798	27242776	27242754	27242732
USNO (Washington DC)	(3)	-34736600	-34737262	-34737925	-34738589

3 - Notes on sections 1 and 2.

(1) NIST. TA(NISA) designates the scale AT1 of NIST.

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

(3) USNO. TA(USNO) designates the scale A1(MEAN) of USNO.

4 - [UTC - GPS time] and [TAI - GPS time].

[UTC - GPS time] = -10 s + C0 (until 1996 January 1, 0h UTC)
[UTC - GPS time] = -11 s + C0 (from 1996 January 1, 0h UTC)
[TAI - GPS time] = 19 s + C0.

Daily values of C0 are given in the following table. They are obtained as follows: the GPS data taken at the Paris Observatory, for highest elevation, are first corrected for precise satellite ephemerides and for measured ionospheric delays, and then smoothed to obtain daily values of [UTC(OP) - GPS time] at 0h UTC; daily values of C0 are derived from them using linear interpolation of [UTC - UTC(OP)].

For a given day, where N measurements are used for estimation of C0 :
- the dispersion of individual measurements is characterized by a standard deviation σ,
- the daily C0 value is characterized by the standard deviation of the mean $\sigma/\sqrt{N}$.

Date 1995 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Nov 28	50049	81	43	9
Nov 29	50050	78	33	7
Nov 30	50051	71	44	9
Dec 1	50052	66	46	11
Dec 2	50053	60	41	9
Dec 3	50054	56	34	7
Dec 4	50055	55	51	11
Dec 5	50056	52	49	11
Dec 6	50057	44	41	9
Dec 7	50058	37	37	8
Dec 8	50059	37	40	8
Dec 9	50060	38	31	7
Dec 10	50061	31	57	12
Dec 11	50062	22	34	7
Dec 12	50063	19	44	9
Dec 13	50064	17	49	10
Dec 14	50065	14	35	8
Dec 15	50066	14	36	8
Dec 16	50067	20	50	10
Dec 17	50068	27	36	8
Dec 18	50069	25	50	10
Dec 19	50070	22	49	10
Dec 20	50071	26	51	11
Dec 21	50072	30	29	6
Dec 22	50073	29	34	7
Dec 23	50074	33	35	7
Dec 24	50075	37	40	8
Dec 25	50076	39	37	8
Dec 26	50077	44	43	9
Dec 27	50078	48	51	10
Dec 28	50079	51	40	8

5 - [UTC - GLONASS time].

[UTC - GLONASS time] = C1 (modulo 1 s).

From his current observations of both the GPS and GLONASS satellite systems Prof. P. Daly, University of Leeds, establishes and reports [GPS time - GLONASS time] at ten-day intervals, together with the standard deviation σ of his daily GLONASS data. C1 is then derived using [UTC - GPS time] of section 4.

Date 1995 0h UTC	MJD	C1 (ns)	σ (ns)
Nov 28	50049	-23670	54
Dec 8	50059	-23961	52
Dec 18	50069	-24249	57
Dec 28	50079	-24569	60

6 - Difference between the normalized frequencies of EAL and TAI.

Interval of validity		f(EAL)-f(TAI)
1995 Oct. 29 - 1995 Dec. 28	50019-50079	7.35×10^{-13}

New steering correction foreseen for January-February 1996

1995 Dec. 28 - 1996 Feb. 26	50079-50139	7.34×10^{-13}

7 - Duration of the TAI scale interval.

The following table gives the duration of the TAI scale interval, expressed as its departure d from the SI second on the rotating geoid, together with its relative uncertainty σ. This is obtained, on the given period of estimation, by comparison of the TAI frequency :

- with the frequency, corrected for the black-body radiation shift, of a given individual primary frequency standard (σ is then the last communicated estimate of the uncertainty of the standard frequency), and

- with a combination computed by the BIPM of all available measurements from PTB CS2, PTB CS3 and NIST-7 consistently corrected for the black-body radiation shift (σ is then estimated by the BIPM taking into account the individual uncertainties and parameters characteristic of TAI stability).

Standard	Period of estimation	d (10^{-14} s)	σ (10^{-14})
PTB CS2	50019-50079	+2.6	1.5
PTB CS3	50019-50079	+4.3	1.4
BIPM estimate	50019-50079	+1.9	1.0