Table 6. Measurements of the 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 (in practice the SI second on the geoid), i.e. the fractional frequency deviation of TAI with the opposite sign: $d = -y_{TAI}$.

In this table, *d* is obtained on the given periods of estimation by comparison of the TAI frequency with that of the individual primary frequency standards (PFS) IT-CSF1, NICT-CSF1, NIST-F1, NMIJ-F1, PTB-CS1, PTB-CS2, PTB-CSF1, SYRTE-FO1, SYRTE-FO2, SYRTE-FOM and SYRTE-JPO for the year 2008.
Previous calibrations are available in the successive annual reports of the BIPM Time Section volumes 1 to 18 and in the BIPM annual report on time activities volume 1 and 2.

Each comparison is provided with the following information:
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,
$u_{link/lab}$ is the uncertainty in the link between the PFS and the clock participating to TAI, including the uncertainty due to dead-time,
$u_{link/TAI}$ is the uncertainty in the link to TAI, computed using the standard uncertainty of [UTC-UTC(k)],
u is the quadratic sum of all four uncertainty values.

In this table, a frequency over a time interval is defined as the ratio of the end-point phase difference to the duration of the interval.

The typical characteristics of the calibrations of the TAI frequency provided by the different primary standards over 2008 are indicated below. Reports of individual PFS evaluations may be found at http://www.bipm.org in the subdirectory named ‘data’.

Primary Standard	Type /selection	Type B std. Uncertainty	Operation	Comparison with	Number/typical duration of comp.
IT-CSF1	Fountain	$(0.5 \text{ to } 0.7)\times10^{-15}$	Discontinuous	H maser	6 / 10 to 20 d
NICT-CSF1	Fountain	$(0.8 \text{ to } 1.5)\times10^{-15}$	Discontinuous	UTC(NICT)	2 / 10-15 d
NIST-F1	Fountain	0.3×10^{-15}	Discontinuous	H maser	5 / 15 to 25 d
NMIJ-F1	Fountain	3.9×10^{-15}	Discontinuous	H maser	7 / 15 to 25 d
PTB-CS1	Beam /Mag.	8×10^{-15}	Continuous	TAI	10 / 30 d
PTB-CS2	Beam /Mag.	12×10^{-15}	Continuous	TAI	12 / 30 d
PTB-CSF1	Fountain	0.9×10^{-15}	Discontinuous	H maser	2 / 25 d
SYRTE-FO1	Fountain	$(0.4 \text{ to } 0.6)\times10^{-15}$	Discontinuous	H maser	8 / 10 to 30 d
SYRTE-FO2	Fountain	$(0.4 \text{ to } 0.6)\times10^{-15}$	Discontinuous	H maser	9 / 10 to 30 d
SYRTE-FOM	Fountain	$(0.7 \text{ to } 0.9)\times10^{-15}$	Discontinuous	H maser	6 / 10 to 30 d
SYRTE-JPO	Beam /Opt.	6.3×10^{-15}	Discontinuous	H maser	12 / 10 to 30 d

More detailed information on the characteristics and operation of individual PFS may be found in the annexes supplied by the individual laboratories.

Table 6. (Cont.)

Standard	Period of estimation	d (10^{-15})	u_A (10^{-15})	u_B (10^{-15})	Ref(u_B)	$u_{link/lab}$ (10^{-15})	$u_{link/TAI}$ (10^{-15})	u (10^{-15})	Notes
IT-CSF1	54604 54614	1.7	1.1	0.5	[1]	0.4	0.9	1.5	
IT-CSF1	54614 54634	2.5	1.0	0.5		0.2	0.5	1.2	
IT-CSF1	54649 54669	4.5	0.9	0.5		0.2	0.5	1.1	
IT-CSF1	54709 54729	2.7	0.7	0.7		0.2	0.6	1.2	
IT-CSF1	54754 54769	1.6	0.7	0.4		0.2	0.6	1.0	
IT-CSF1	54774 54789	4.3	0.8	0.7		0.2	0.6	1.2	
NICT-CsF1	54534 54544	2.9	1.0	1.5	[2]	0.3	0.9	2.0	
NICT-CsF1	54709 54724	-0.1	1.0	0.8		0.3	0.9	1.6	
NIST-F1	54469 54494	3.0	0.3	0.3	[3]	0.3	0.4	0.6	
NIST-F1	54554 54569	4.9	0.3	0.3		0.5	0.6	0.9	
NIST-F1	54654 54674	4.1	0.3	0.3		0.3	0.5	0.7	
NIST-F1	54774 54799	6.1	0.1	0.3		0.1	0.4	0.5	
NIST-F1	54814 54829	4.1	0.4	0.3		0.5	0.6	0.9	
NMIJ-F1	54504 54519	3.2	0.9	3.9	[4]	0.4	0.9	4.1	
NMIJ-F1	54529 54549	1.3	0.8	3.9		0.3	0.7	4.0	
NMIJ-F1	54559 54584	-0.1	0.7	3.9		0.3	0.5	4.0	
NMIJ-F1	54594 54614	1.2	0.8	3.9		0.3	0.7	4.0	
NMIJ-F1	54679 54704	2.9	0.7	3.9		0.3	0.5	4.0	
NMIJ-F1	54714 54739	1.6	0.7	3.9		0.3	0.5	4.0	
NMIJ-F1	54774 54789	-0.1	0.9	3.9		0.3	0.9	4.1	
PTB-CS1	54464 54494	-6.7	5.0	8.0	[5]	0.0	0.1	9.4	(1)
PTB-CS1	54494 54524	-9.7	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54524 54554	3.7	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54554 54584	2.6	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54584 54614	5.0	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54614 54644	0.4	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54644 54674	-5.7	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54674 54709	-2.1	5.0	8.0		0.0	0.1	9.4	
PTB-CS1	54709 54739	-13.1	5.0	8.0		0.0	0.2	9.4	
PTB-CS1	54739 54769	-12.5	5.0	8.0		0.0	0.2	9.4	
PTB-CS2	54464 54494	1.7	3.0	12.0	[6]	0.0	0.1	12.4	(1)
PTB-CS2	54494 54524	7.5	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54524 54554	1.2	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54554 54584	7.2	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54584 54614	0.8	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54614 54644	-1.2	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54644 54674	-1.1	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54674 54709	-3.1	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54709 54739	0.9	3.0	12.0		0.0	0.2	12.4	
PTB-CS2	54739 54769	4.7	3.0	12.0		0.0	0.2	12.4	
PTB-CS2	54769 54799	4.1	3.0	12.0		0.0	0.1	12.4	
PTB-CS2	54799 54829	4.3	3.0	12.0		0.0	0.2	12.4	
PTB-CSF1	54644 54669	6.7	0.1	0.9	[7]	0.0	0.2	0.9	
PTB-CSF1	54679 54704	6.1	0.1	0.9		0.0	0.2	0.9	

Table 6. (Cont.)

Standard	Period of estimation	d (10^{-15})	u_A (10^{-15})	u_B (10^{-15})	Ref(u_B)	$u_{link/lab}$ (10^{-15})	$u_{link/TAI}$ (10^{-15})	u (10^{-15})	Notes
SYRTE-FO1	54484 54494	2.4	0.4	0.4	[8]	0.1	0.9	1.1	
SYRTE-FO1	54554 54584	3.8	0.3	0.6		0.1	0.3	0.8	
SYRTE-FO1	54589 54599	3.9	0.7	0.6		0.1	0.9	1.3	
SYRTE-FO1	54614 54644	3.0	0.4	0.4		0.3	0.3	0.7	
SYRTE-FO1	54644 54669	2.5	0.3	0.4		0.1	0.4	0.7	
SYRTE-FO1	54734 54754	4.8	0.2	0.5		0.2	0.5	0.7	
SYRTE-FO1	54779 54794	3.8	0.3	0.4		0.1	0.6	0.8	
SYRTE-FO1	54799 54829	4.6	0.6	0.5		0.1	0.3	0.8	
SYRTE-FO2	54554 54584	4.4	0.9	0.4	[8]	0.1	0.3	1.1	
SYRTE-FO2	54589 54614	5.2	0.2	0.4		0.3	0.4	0.6	
SYRTE-FO2	54614 54644	3.9	0.3	0.4		0.2	0.3	0.6	
SYRTE-FO2	54644 54669	2.7	0.3	0.4		0.1	0.4	0.7	
SYRTE-FO2	54674 54694	3.9	0.3	0.4		0.2	0.5	0.7	
SYRTE-FO2	54714 54729	3.1	0.6	0.4		0.2	0.6	1.0	
SYRTE-FO2	54759 54769	3.6	0.3	0.5		0.2	0.9	1.1	
SYRTE-FO2	54779 54794	4.5	0.2	0.6		0.1	0.6	0.9	
SYRTE-FO2	54799 54829	4.9	0.6	0.5		0.1	0.3	0.8	
SYRTE-FOM	54464 54494	3.0	0.2	0.9	[9]	0.1	0.4	1.0	
SYRTE-FOM	54499 54524	3.4	0.2	0.7		0.1	0.4	0.8	
SYRTE-FOM	54544 54554	4.4	0.5	0.7		0.1	0.9	1.2	
SYRTE-FOM	54554 54584	3.5	0.3	0.7		0.1	0.3	0.8	
SYRTE-FOM	54589 54614	4.6	0.2	0.7		0.2	0.4	0.9	
SYRTE-FOM	54614 54639	2.8	0.2	0.7		0.1	0.4	0.8	
SYRTE-JPO	54484 54494	2.2	1.2	6.3	[10]	0.3	0.9	6.5	
SYRTE-JPO	54494 54524	2.9	1.0	6.3		0.3	0.3	6.4	
SYRTE-JPO	54544 54554	0.7	1.0	6.3		0.3	0.9	6.4	
SYRTE-JPO	54554 54584	-1.3	0.6	6.3		0.3	0.3	6.3	
SYRTE-JPO	54589 54614	1.3	0.7	6.3		0.3	0.4	6.4	
SYRTE-JPO	54614 54644	2.7	0.6	6.3		0.3	0.3	6.3	
SYRTE-JPO	54644 54674	2.5	0.5	6.3		0.3	0.3	6.3	
SYRTE-JPO	54674 54694	1.5	0.7	6.3		0.5	0.5	6.4	
SYRTE-JPO	54714 54734	-0.1	0.6	6.3		0.5	0.5	6.4	
SYRTE-JPO	54744 54769	4.0	0.9	6.3		0.3	0.4	6.4	
SYRTE-JPO	54769 54794	2.0	1.1	6.3		0.3	0.4	6.4	
SYRTE-JPO	54799 54814	6.7	1.3	6.3		0.3	0.6	6.5	

Notes:

(1) Continuously operating as a clock participating to TAI.

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