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Notations

As presented in [Petit et al., 2001] for the Z12-T, the calibration of a geodetic system is divided in (up to) 6 different parts (Figure 1)

- X_P = Delay of the 1PPS-in with respect to the laboratory reference
- X_O = Delay of the “internal reference” with respect to the 1PPS-in

$(X_P + X_O) = \text{REFDLY.}$

- X_C = antenna cable delay
- $[X_D = \text{short cable} + \text{splitter delay}]$

$(X_C + X_D) = \text{CABDLY.}$ In practice, X_D is generally not used.

- X_R = receiver internal delay, measured from the “internal reference”
- X_S = antenna delay

$(X_R + X_S) = \text{INTDLY.}$

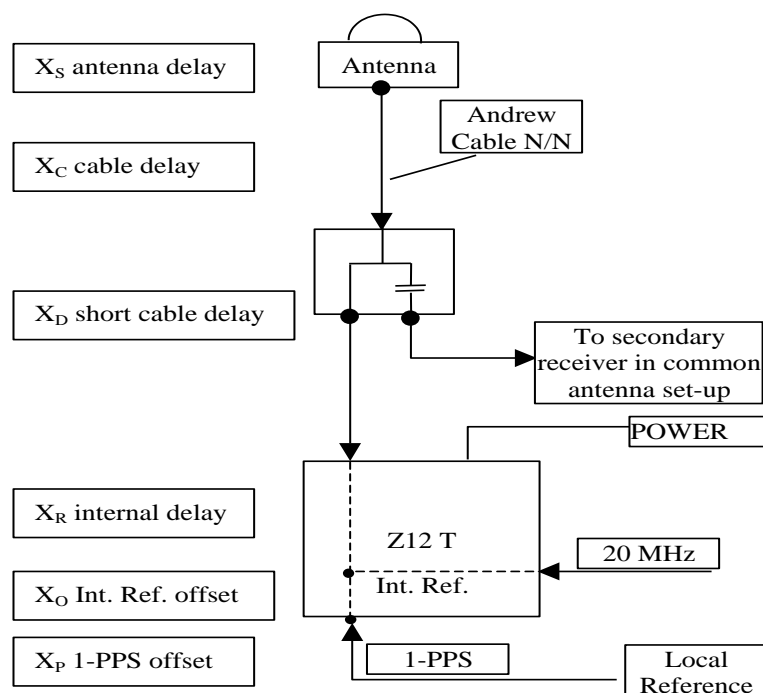


Figure 1: Definition of the different delays used in the most general set-up of a geodetic system (here shown for a Z12-T) from [Petit et al, 2001].

3/ phase 3

Laboratories: BIPM, USNO, NIST

3.1/ BIPM (23175)

Period

MJD 60119 to 60127

Delays

BP2G: (cf page 5)
REFDLY = 53.51 ns (68.52-15.01)
CABDLY = 176.38 ns (C211)

BP21: (cf page 4)
REFDLY = 43.41 ns (58.42-15.01)
CABDLY = 140.80 ns (C201)

Setup at the BIPM

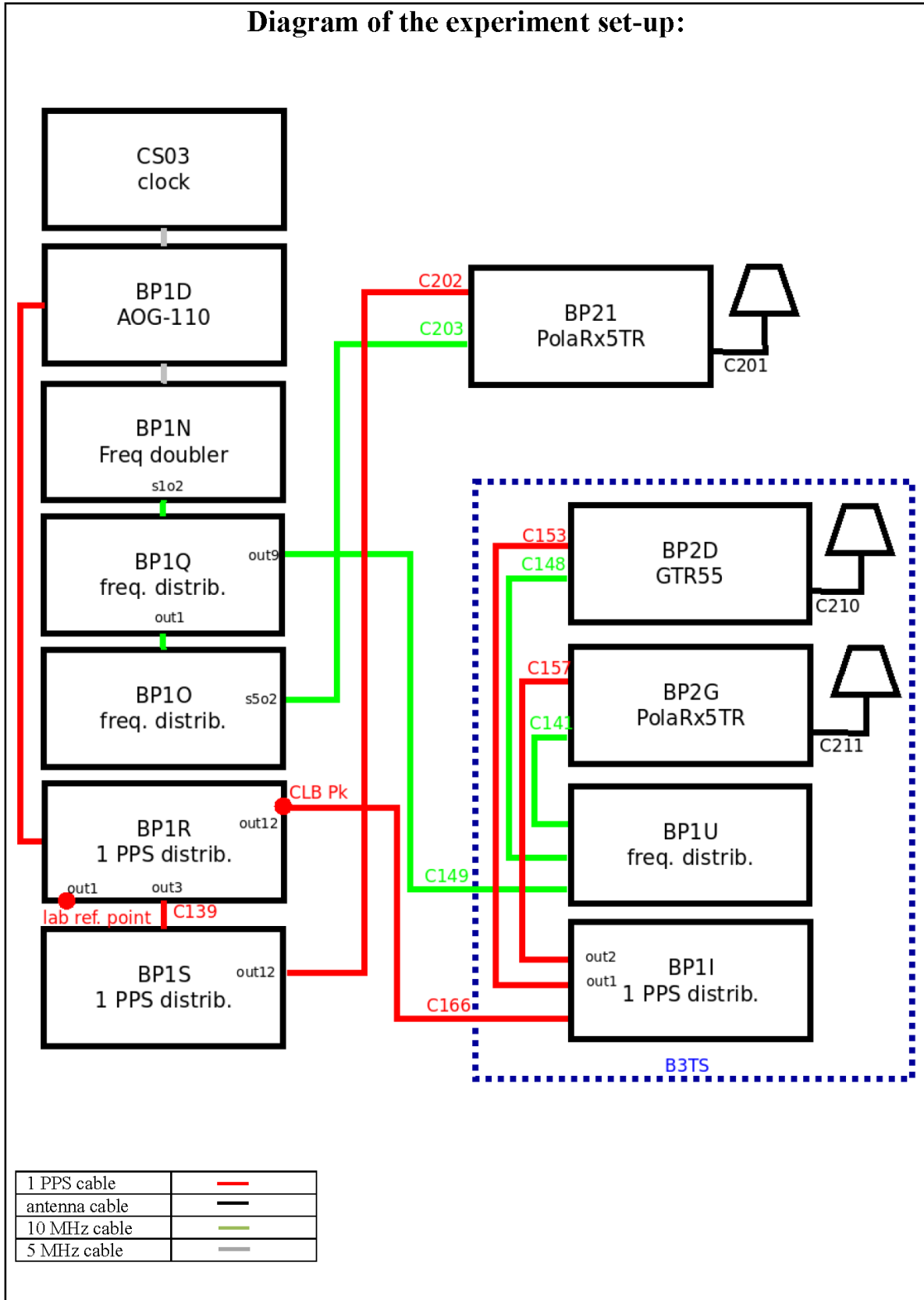
Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	BIPM	
Date and hour of the beginning of measurements:	MJD 60119	
Date and hour of the end of measurements:	MJD 60127	
Information on the system		
	Local:	Travelling:
4-character BIPM code	BP21	BP2G
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx5TR 4701229	Septentrio PolaRx5TR 4701533
1 PPS trigger level /V:		
• Antenna cable maker and type: Phase stabilised cable (Y/N):	LMR-195	HYLM195
Length outside the building /m:	~ 15 m	~ 15 m
• Antenna maker and type: Antenna serial number:	Septentrio SEPCHOKE B3E6 5253	Septentrio SEPCHOKE B3E6 6023
Temperature (if stabilised) /°C		
Measured delays /ns		
(if needed fill box "Additional Information" below)		
	Local:	Travelling:
• Delay from local UTC to receiver 1 PPS-in:	43.41 ns	53.51 ns
Delay from 1 PPS-in to internal Reference (if different): <small>(see section 2 for details)</small>	PPSin compensation enable	PPSin compensation enable
• Antenna cable delay:	140.80 ns	176.38 ns
Splitter delay (if any):		(1)
Additional cable delay (if any):		(1)
Data used for the generation of CGGTTS files		
• INT DLY (GPS) /ns:		
• INT DLY (Galileo) /ns:		
• INT DLY (GLONASS) /ns:		
• CAB DLY /ns:		
• REF DLY /ns:		
• Coordinates reference frame:		
Latitude or X /m:		
Longitude or Y /m:		
Height or Z /m:		
General information		
• Rise time of the local UTC pulse:		
• Is the laboratory air conditioned:		
Set temperature value and uncertainty:		22 ± 1°C
Set humidity value and uncertainty:		

(1) For a trip with closure, not needed if the traveling equipment is used in the same set-up throughout.

Diagram of the experiment set-up:



Log of Events / Additional Information :

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure delays is a Time Interval Counter (TIC), model 53230A, maker Keysight, S/N MY58390132, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

The delay between the laboratory reference point and the 1 PPS input connector of the B3TS (CLB P_k) is 0 ns.

BP2G-BP21

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 188251
 Compute baseline with sin(elev) between 0.05 and 0.90
 Apriori codes biases from 36831 high elev obs : 7.705 7.264
 Iteration 0: Obs used = 278946; Huge residuals = 10; Large residuals = 26900
 Iteration 1: Obs used = 278956; Huge residuals = 0; Large residuals = 26878
 Computed code bias (P1/P2)/m = 6.798 6.347
 Computed baseline (X,Y,Z)/m = -3.083 0.179 3.918
 RMS of residuals /m = 0.748

Number of phase differences to fit baseline
 L1/L2 = 177312
 L5 = 100909
 A priori baseline (X,Y,Z)/m = -3.083 0.179 3.918
 25916 clock jitters computed out of 25916 intervals
 AVE jitter /ps = -1.7 RMS jitter /ps = 4.0

Iter 1 Large residuals L1= 9
 Iter 1 Large residuals L2= 5
 Iter 1 Large residuals L5= 6
 Computed baseline L1 (X,Y,Z)/m = -0.576 -0.562 -0.570
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.580 -0.551 -0.569
 RMS of residuals L2 /m = 0.005
 Computed baseline L5 (X,Y,Z)/m = -0.612 -0.545 -0.557
 RMS of residuals L5 /m = 0.003

Iter 2 Large residuals L1= 9
 Iter 2 Large residuals L2= 5
 Iter 2 Large residuals L5= 6
 Computed baseline L1 (X,Y,Z)/m = -0.576 -0.562 -0.570
 RMS of residuals L1 /m = 0.004
 Computed baseline L2 (X,Y,Z)/m = -0.581 -0.551 -0.570
 RMS of residuals L2 /m = 0.005
 Computed baseline L5 (X,Y,Z)/m = -0.612 -0.545 -0.557
 RMS of residuals L5 /m = 0.003

New iteration of baseline
 New apriori baseline (X,Y,Z)/m = -3.661 -0.378 3.348
 25916 clock jitters computed out of 25916 intervals
 AVE jitter /ps = 1.1 RMS jitter /ps = 1.3

Iter 3 Large residuals L1= 9
 Iter 3 Large residuals L2= 5
 Iter 3 Large residuals L5= 6
 Computed baseline L1 (X,Y,Z)/m = 0.023 -0.127 -0.011
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.019 -0.116 -0.012
 RMS of residuals L2 /m = 0.005
 Computed baseline L5 (X,Y,Z)/m = 0.003 -0.105 -0.002
 RMS of residuals L5 /m = 0.003

WARNING Phase baseline L1 differs from a priori by > 10 cm

Final baseline L1 (X,Y,Z)/m = -3.638 -0.505 3.337

Final baseline L2 (X,Y,Z)/m = -3.643 -0.494 3.337
 Final baseline L5 (X,Y,Z)/m = -3.658 -0.483 3.347

COMPUTATION OF CODE DIFFERENCES

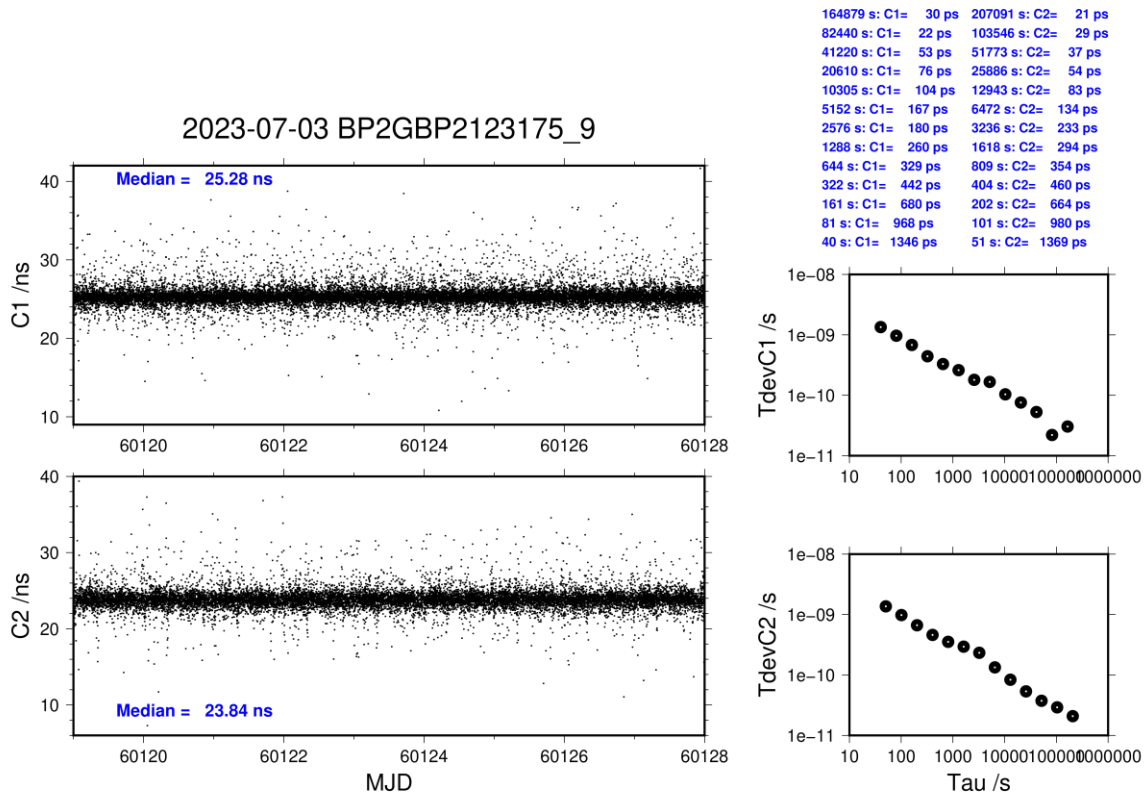
Total number of code differences = 757729

Global average of individual differences

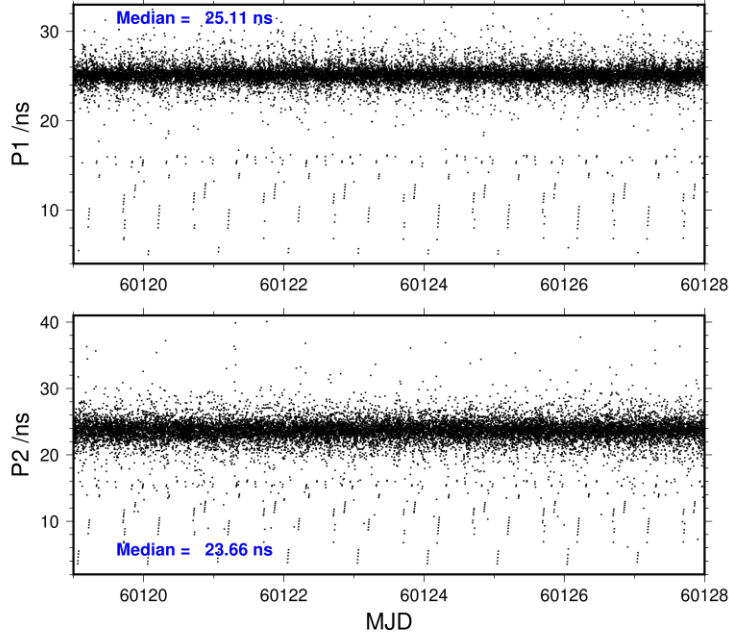
Code	#pts	ave/ns	rms/ns
C1	192383	25.341	2.792
C2	153541	23.867	2.578
P1	184990	24.901	2.769
P2	185062	23.388	3.592
E1	147510	25.259	2.476
E5	149647	24.360	2.248
BC	165939	25.198	2.440
B5	168547	24.390	2.275

Number of 300s epochs in out file = 2592

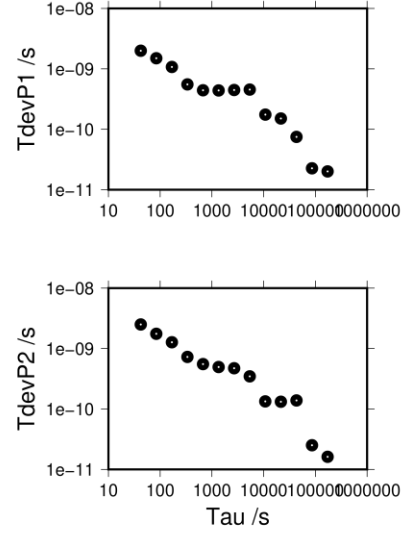
Code	#pts	median/ns	ave/ns	rms/ns
C1	19311	25.284	25.351	1.355
C2	15375	23.839	23.864	1.378
P1	18461	25.112	24.910	2.081
P2	18466	23.656	23.402	2.494
E1	14812	25.232	25.265	1.326
E5	14990	24.376	24.366	1.340
BC	16663	25.186	25.206	1.301
B5	16892	24.362	24.398	1.394



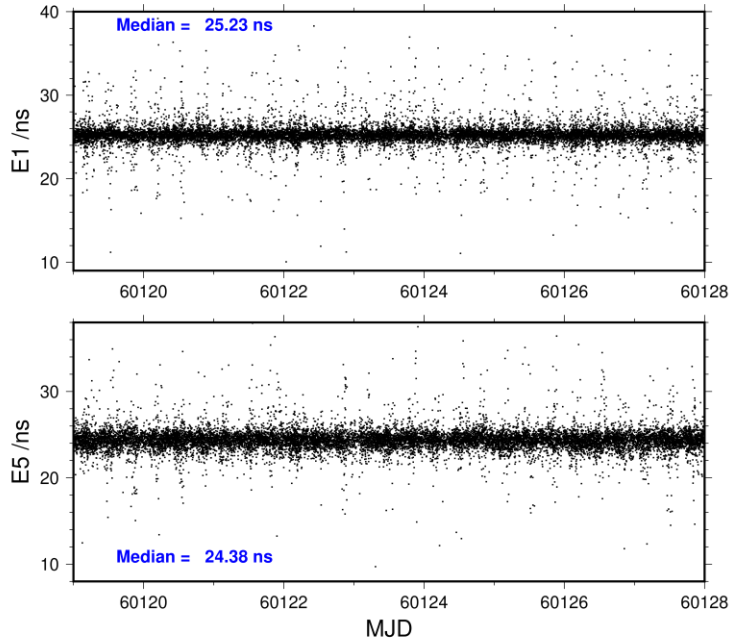
2023-07-03 BP2GBP2123175_9



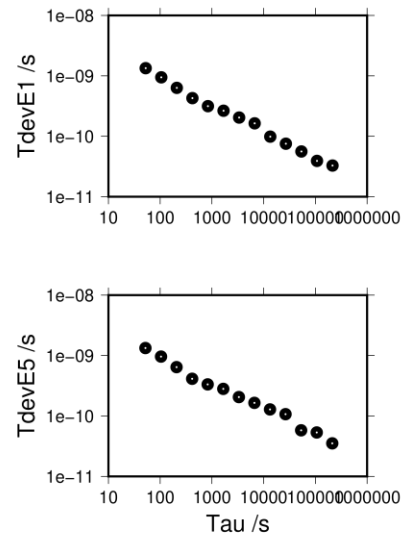
172471 s: P1= 20 ps	172425 s: P2= 16 ps
86236 s: P1= 23 ps	86212 s: P2= 25 ps
43118 s: P1= 75 ps	43106 s: P2= 139 ps
21559 s: P1= 151 ps	21553 s: P2= 132 ps
10779 s: P1= 175 ps	10777 s: P2= 134 ps
5390 s: P1= 454 ps	5388 s: P2= 347 ps
2695 s: P1= 447 ps	2694 s: P2= 473 ps
1347 s: P1= 439 ps	1347 s: P2= 495 ps
674 s: P1= 442 ps	674 s: P2= 552 ps
337 s: P1= 554 ps	337 s: P2= 726 ps
168 s: P1= 1073 ps	168 s: P2= 1271 ps
84 s: P1= 1497 ps	84 s: P2= 1755 ps
42 s: P1= 1998 ps	42 s: P2= 2505 ps



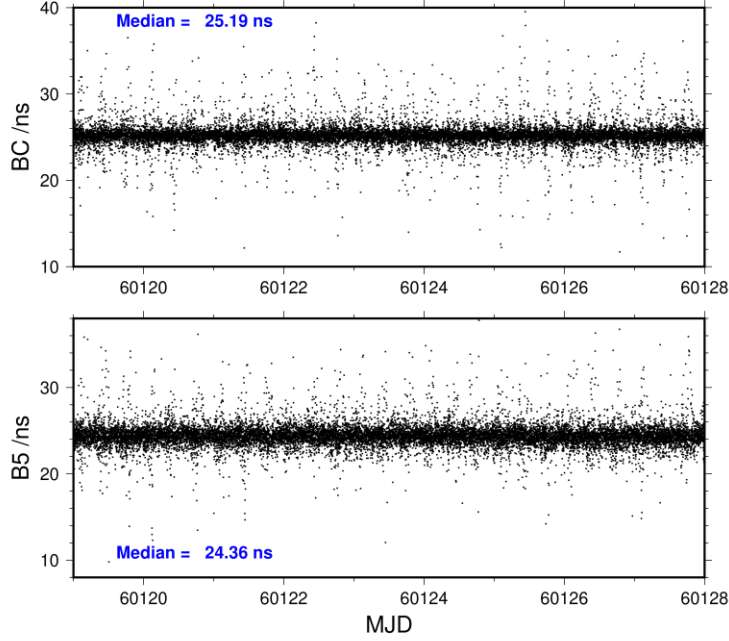
2023-07-03 BP2GBP2123175_9



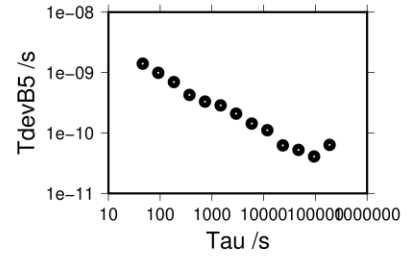
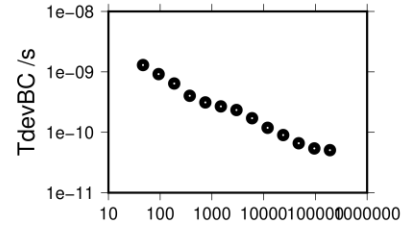
214963 s: E1= 33 ps	212410 s: E5= 35 ps
107482 s: E1= 39 ps	106205 s: E5= 53 ps
53741 s: E1= 56 ps	53103 s: E5= 58 ps
26870 s: E1= 75 ps	26551 s: E5= 107 ps
13435 s: E1= 99 ps	13276 s: E5= 128 ps
6718 s: E1= 164 ps	6638 s: E5= 165 ps
3359 s: E1= 204 ps	3319 s: E5= 206 ps
1679 s: E1= 265 ps	1659 s: E5= 281 ps
840 s: E1= 315 ps	830 s: E5= 333 ps
420 s: E1= 428 ps	415 s: E5= 412 ps
210 s: E1= 633 ps	207 s: E5= 644 ps
105 s: E1= 945 ps	104 s: E5= 963 ps
52 s: E1= 1338 ps	52 s: E5= 1332 ps



2023-07-03 BP2GBP2123175_9



191083 s:	BC= 51 ps	188492 s:	B5= 63 ps
95541 s:	BC= 54 ps	94246 s:	B5= 41 ps
47771 s:	BC= 66 ps	47123 s:	B5= 53 ps
23885 s:	BC= 90 ps	23562 s:	B5= 62 ps
11943 s:	BC= 118 ps	11781 s:	B5= 111 ps
5971 s:	BC= 171 ps	5890 s:	B5= 143 ps
2986 s:	BC= 233 ps	2945 s:	B5= 209 ps
1493 s:	BC= 268 ps	1473 s:	B5= 286 ps
746 s:	BC= 312 ps	736 s:	B5= 331 ps
373 s:	BC= 402 ps	368 s:	B5= 426 ps
187 s:	BC= 641 ps	184 s:	B5= 696 ps
93 s:	BC= 918 ps	92 s:	B5= 989 ps
47 s:	BC= 1296 ps	46 s:	B5= 1402 ps



3.2/ NRL (23208)

Period

MJD 60178 to 60181

Delays

BP2G:

REFDLY = 25.70 ns

CABDLY = 176.38 ns

(C211)

NRL2 (RL5B):

REFDLY = 8.20 ns

CABDLY = 300.10 ns

(from gzrl5b60.178)

NRL2-BP2G

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 75733
 Compute baseline with sin(elev) between 0.05 and 0.90
 Apriori codes biases from 10640 high elev obs : 56.516 56.512
 Iteration 0: Obs used = 131054; Huge residuals = 2; Large residuals = 342
 Iteration 1: Obs used = 131059; Huge residuals = 0; Large residuals = 335
 Computed code bias (P1/P2)/m = 57.145 57.160
 Computed baseline (X,Y,Z)/m = 2.965 -17.641 -17.902
 RMS of residuals /m = 0.476

Number of phase differences to fit baseline
 L1/L2 = 75269
 L5 = 41016
 A priori baseline (X,Y,Z)/m = 2.965 -17.641 -17.902
 8162 clock jitters computed out of 8163 intervals
 AVE jitter /ps = -0.0 RMS jitter /ps = 3.2

Iter 1 Large residuals L1= 1
 Iter 1 Large residuals L2= 1
 Iter 1 Large residuals L5= 587
 Computed baseline L1 (X,Y,Z)/m = -0.072 0.410 -0.307
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = -0.070 0.408 -0.303
 RMS of residuals L2 /m = 0.003
 Computed baseline L5 (X,Y,Z)/m = -0.109 0.373 -0.237
 RMS of residuals L5 /m = 0.004

Iter 2 Large residuals L1= 1
 Iter 2 Large residuals L2= 1
 Iter 2 Large residuals L5= 587
 Computed baseline L1 (X,Y,Z)/m = -0.072 0.410 -0.307
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = -0.070 0.408 -0.303
 RMS of residuals L2 /m = 0.003
 Computed baseline L5 (X,Y,Z)/m = -0.109 0.373 -0.238
 RMS of residuals L5 /m = 0.004

New iteration of baseline
 New apriori baseline (X,Y,Z)/m = 2.893 -17.232 -18.208
 8162 clock jitters computed out of 8163 intervals
 AVE jitter /ps = -0.1 RMS jitter /ps = 0.6

Iter 3 Large residuals L1= 1
 Iter 3 Large residuals L2= 1
 Iter 3 Large residuals L5= 587
 Computed baseline L1 (X,Y,Z)/m = 0.004 0.011 -0.010
 RMS of residuals L1 /m = 0.002
 Computed baseline L2 (X,Y,Z)/m = 0.005 0.009 -0.006
 RMS of residuals L2 /m = 0.003
 Computed baseline L5 (X,Y,Z)/m = -0.033 -0.017 0.057
 RMS of residuals L5 /m = 0.004

Final baseline L1 (X,Y,Z)/m = 2.898 -17.221 -18.218
 Final baseline L2 (X,Y,Z)/m = 2.899 -17.223 -18.214
 Final baseline L5 (X,Y,Z)/m = 2.861 -17.249 -18.150

COMPUTATION OF CODE DIFFERENCES

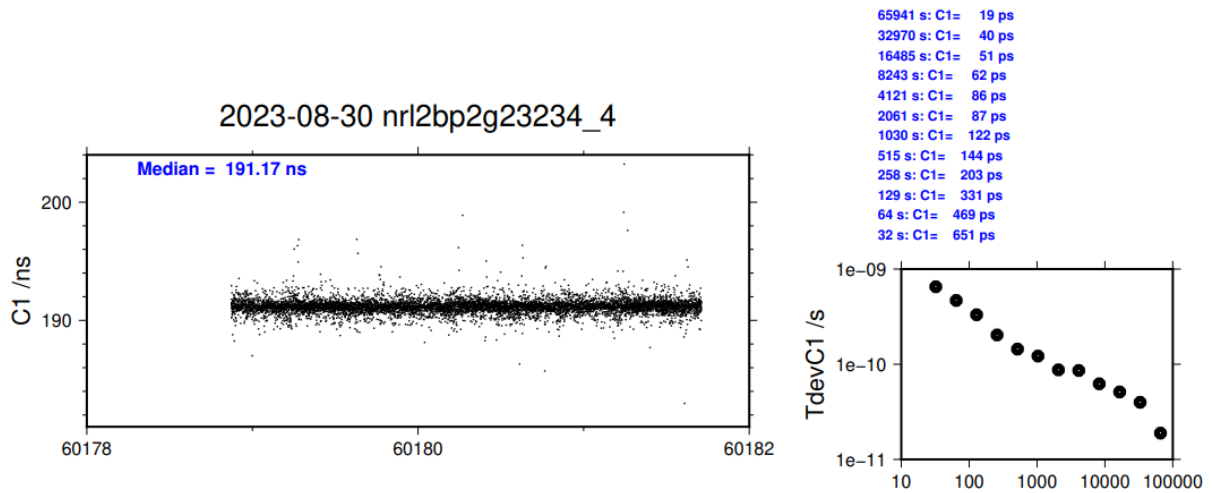
Total number of code differences = 772405

Global average of individual differences

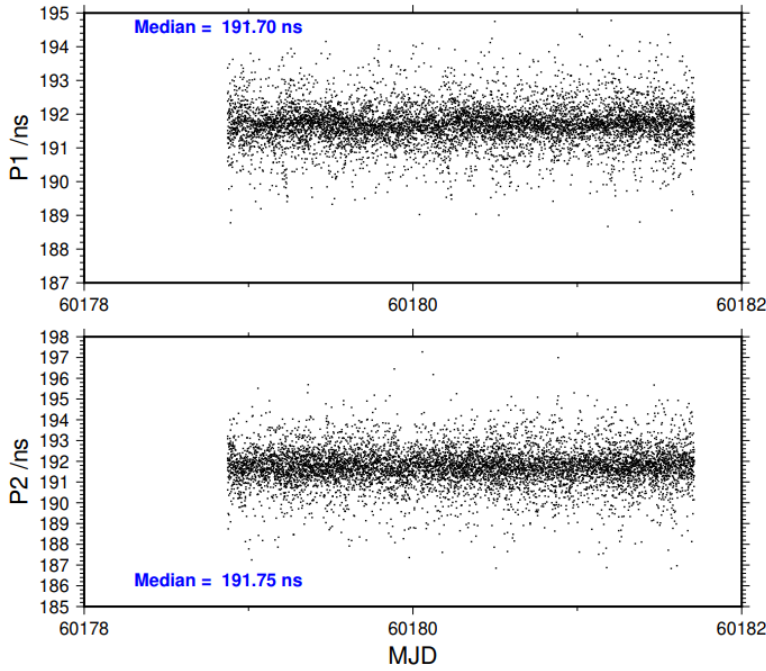
Code	#pts	ave/ns	rms/ns
C1	76229	191.171	1.345
P1	75611	191.699	1.236
P2	75611	191.745	1.670
E1	60850	191.225	0.993
E5	60921	192.291	0.918

Number of 300s epochs in out file = 5178

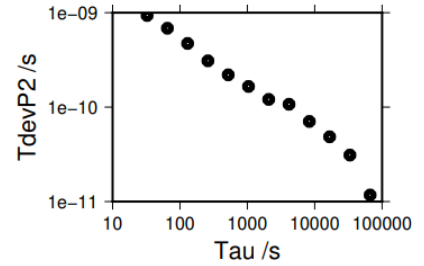
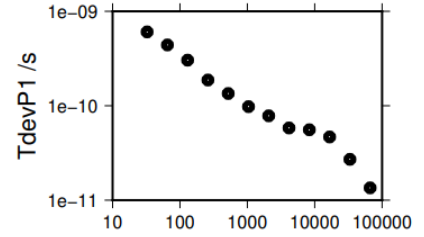
Code	#pts	median/ns	ave/ns	rms/ns
C1	7632	191.174	191.175	0.653
P1	7564	191.702	191.697	0.605
P2	7564	191.747	191.735	0.942
E1	6087	191.224	191.219	0.501
E5	6093	192.260	192.279	0.613



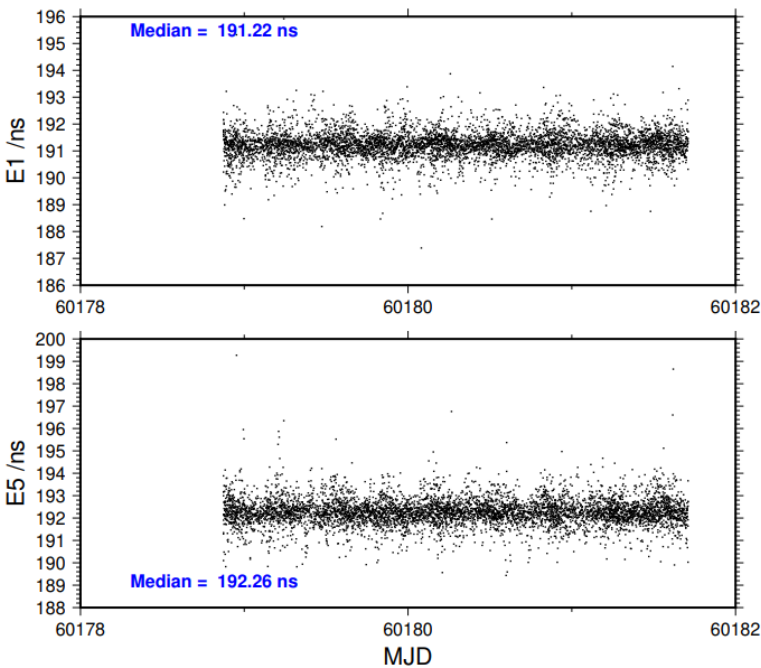
2023-08-30 nrl2bp2g23234_4



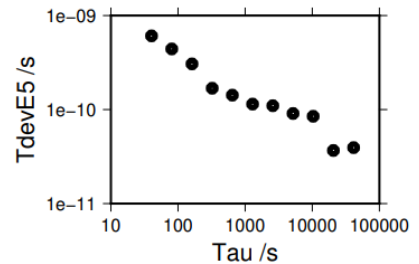
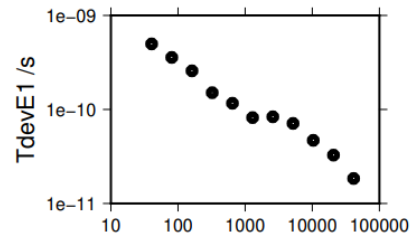
66534 s: P1= 14 ps	66534 s: P2= 12 ps
33267 s: P1= 27 ps	33267 s: P2= 31 ps
16633 s: P1= 47 ps	16633 s: P2= 48 ps
8317 s: P1= 56 ps	8317 s: P2= 71 ps
4158 s: P1= 58 ps	4158 s: P2= 107 ps
2079 s: P1= 78 ps	2079 s: P2= 121 ps
1040 s: P1= 98 ps	1040 s: P2= 166 ps
520 s: P1= 135 ps	520 s: P2= 220 ps
260 s: P1= 187 ps	260 s: P2= 309 ps
130 s: P1= 304 ps	130 s: P2= 472 ps
65 s: P1= 440 ps	65 s: P2= 684 ps
32 s: P1= 605 ps	32 s: P2= 934 ps



2023-08-30 nrl2bp2g23234_4



41340 s: E1= 18 ps	41300 s: E5= 39 ps
20670 s: E1= 33 ps	20650 s: E5= 37 ps
10335 s: E1= 47 ps	10325 s: E5= 85 ps
5168 s: E1= 71 ps	5162 s: E5= 91 ps
2584 s: E1= 84 ps	2581 s: E5= 110 ps
1292 s: E1= 82 ps	1291 s: E5= 114 ps
646 s: E1= 116 ps	645 s: E5= 142 ps
323 s: E1= 151 ps	323 s: E5= 169 ps
161 s: E1= 257 ps	161 s: E5= 306 ps
81 s: E1= 358 ps	81 s: E5= 441 ps
40 s: E1= 498 ps	40 s: E5= 608 ps



3.3/ BIPM (24004)

Period

MJD 60313 to 60319

Delays

BP2G:

REFDLY = 53.55 ns
CABDLY = 176.38 ns

(cf page 118)
(68.56-15.01)
(C211)

BP21:

REFDLY = 43.37 ns
CABDLY = 140.80 ns

(cf page 118)
(58.38-15.01)
(C201)

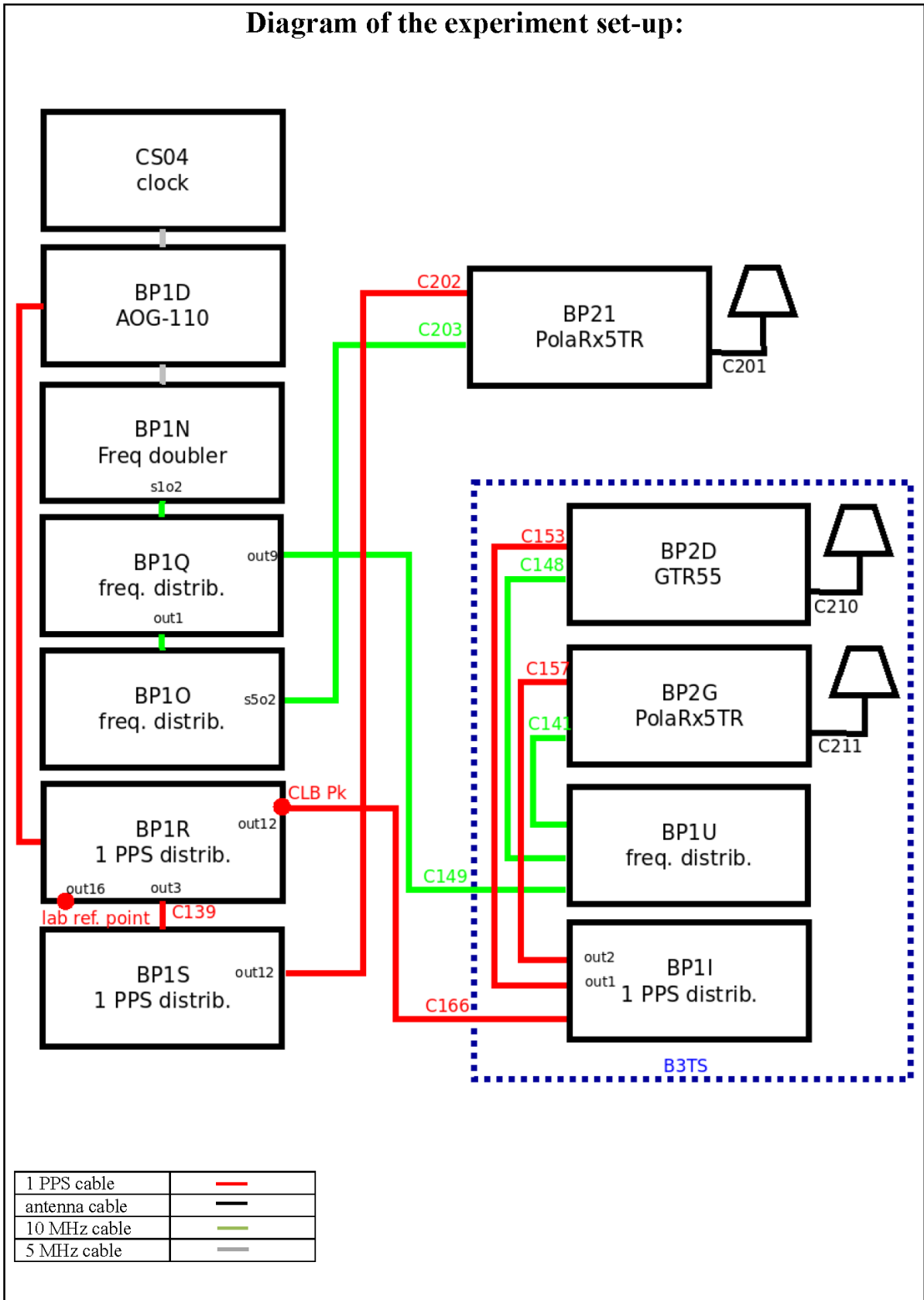
Setup at the BIPM

Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	BIPM	
Date and hour of the beginning of measurements:	MJD 60313	
Date and hour of the end of measurements:	MJD 60319	
Information on the system		
	Local:	Travelling:
4-character BIPM code	BP21	BP2G
• Receiver maker and type:	Septentrio PolaRx5TR	Septentrio PolaRx5TR
Receiver serial number:	4701229	4701533
1 PPS trigger level /V:		
• Antenna cable maker and type:	LMR-195	HYLM195
Phase stabilised cable (Y/N):		
Length outside the building /m:	~ 15 m	~ 15 m
• Antenna maker and type:	Septentrio SEPCHOKE B3E6	Septentrio SEPCHOKE B3E6
Antenna serial number:	5253	6023
Temperature (if stabilised) /°C		
Measured delays /ns		
(if needed fill box "Additional Information" below)		
	Local:	Travelling:
• Delay from local UTC to receiver 1 PPS-in:	43.37 ns	53.55 ns
Delay from 1 PPS-in to internal Reference (if different): <small>(see section 2 for details)</small>	PPSin compensation enable	PPSin compensation enable
• Antenna cable delay:	140.80 ns	176.38 ns
Splitter delay (if any):		(1)
Additional cable delay (if any):		(1)
Data used for the generation of CGGTTS files		
• INT DLY (GPS) /ns:		
• INT DLY (Galileo) /ns:		
• INT DLY (GLONASS) /ns:		
• CAB DLY /ns:		
• REF DLY /ns:		
• Coordinates reference frame:		
Latitude or X /m:		
Longitude or Y /m:		
Height or Z /m:		
General information		
• Rise time of the local UTC pulse:		
• Is the laboratory air conditioned:		
Set temperature value and uncertainty:		22 ± 1°C
Set humidity value and uncertainty:		

(1) For a trip with closure, not needed if the traveling equipment is used in the same set-up throughout.



Log of Events / Additional Information :

All measurements at BIPM carried out by L. Tisserand.

Equipment used to measure delays is a Time Interval Counter (TIC), model 53230A, maker Keysight, S/N MY58390132, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

The delay between the laboratory reference point and the 1 PPS input connector of the B3TS (CLB P_k) is 0 ns.

BP2G-BP21

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 129928
 Compute baseline with sin(elev) between 0.05 and 0.90
 Apriori codes biases from 22368 high elev obs : 7.569 7.173
 Iteration 0: Obs used = 203370; Huge residuals = 9; Large residuals = 14250
 Iteration 1: Obs used = 203359; Huge residuals = 0; Large residuals = 14252
 Computed code bias (P1/P2)/m = 6.884 6.482
 Computed baseline (X,Y,Z)/m = -1.011 0.327 1.972
 RMS of residuals /m = 0.709

Number of phase differences to fit baseline
 L1/L2 = 124635
 L5 = 66124
 A priori baseline (X,Y,Z)/m = -1.011 0.327 1.972
 18085 clock jitters computed out of 18085 intervals
 AVE jitter /ps = -1.3 RMS jitter /ps = 3.9

Iter 1 Large residuals L1= 0
 Iter 1 Large residuals L2= 2
 Iter 1 Large residuals L5= 1
 Computed baseline L1 (X,Y,Z)/m = -0.429 -0.426 -0.575
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.426 -0.417 -0.572
 RMS of residuals L2 /m = 0.004
 Computed baseline L5 (X,Y,Z)/m = -0.436 -0.428 -0.571
 RMS of residuals L5 /m = 0.003

Iter 2 Large residuals L1= 0
 Iter 2 Large residuals L2= 2
 Iter 2 Large residuals L5= 1
 Computed baseline L1 (X,Y,Z)/m = -0.429 -0.426 -0.575
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = -0.426 -0.418 -0.572
 RMS of residuals L2 /m = 0.004
 Computed baseline L5 (X,Y,Z)/m = -0.436 -0.428 -0.571
 RMS of residuals L5 /m = 0.003

New iteration of baseline
 New apriori baseline (X,Y,Z)/m = -1.438 -0.095 1.399
 18085 clock jitters computed out of 18085 intervals
 AVE jitter /ps = 0.8 RMS jitter /ps = 1.2

Iter 3 Large residuals L1= 0
 Iter 3 Large residuals L2= 2
 Iter 3 Large residuals L5= 1
 Computed baseline L1 (X,Y,Z)/m = 0.005 -0.097 -0.019
 RMS of residuals L1 /m = 0.003
 Computed baseline L2 (X,Y,Z)/m = 0.007 -0.088 -0.017
 RMS of residuals L2 /m = 0.004
 Computed baseline L5 (X,Y,Z)/m = 0.009 -0.086 -0.015
 RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -1.434 -0.191 1.380
 Final baseline L2 (X,Y,Z)/m = -1.431 -0.183 1.382

Final baseline L5 (X,Y,Z)/m = -1.429 -0.180 1.383

COMPUTATION OF CODE DIFFERENCES

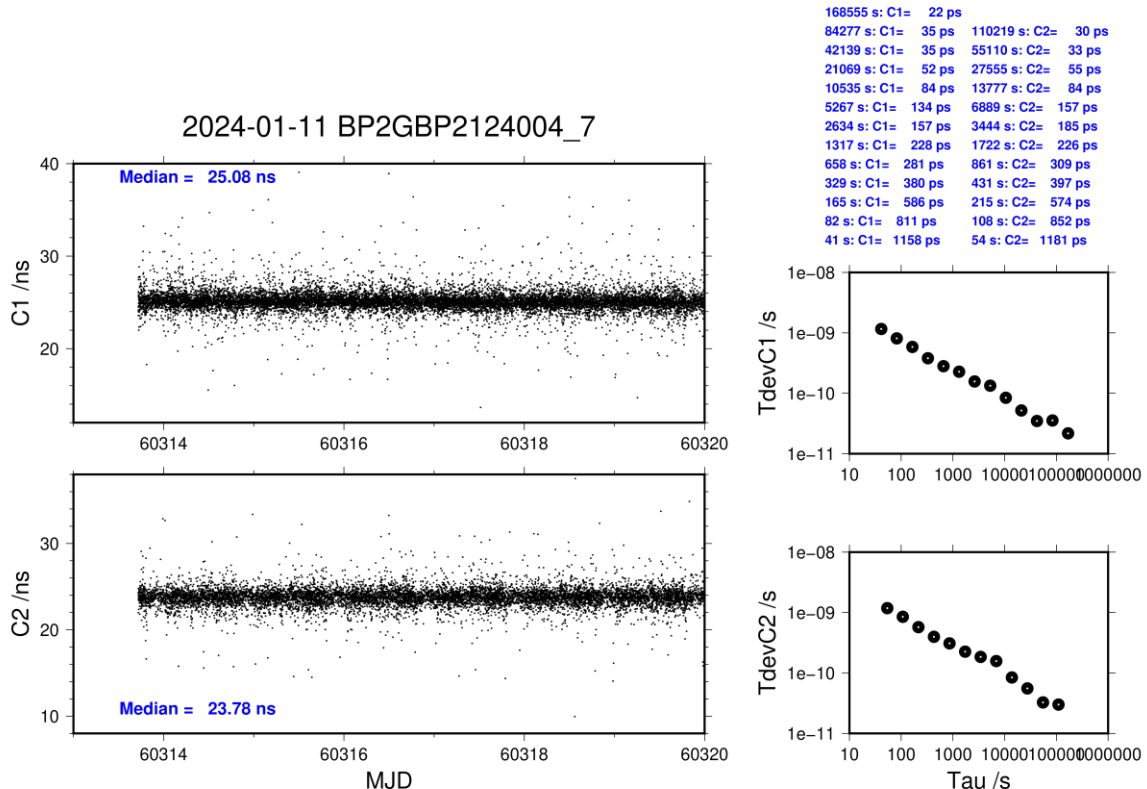
Total number of code differences = 535875

Global average of individual differences

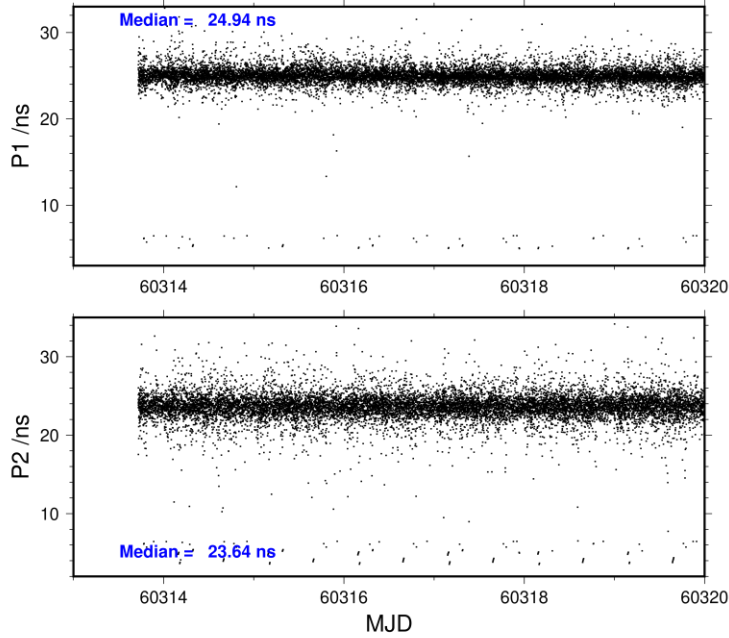
Code	#pts	ave/ns	rms/ns
C1	131892	25.128	2.482
C2	100938	23.767	2.357
P1	127415	24.897	2.391
P2	127846	23.448	3.559
E1	107157	25.081	2.318
E5	108338	24.116	2.202
BC	119554	25.089	2.251
B5	120677	24.113	2.128

Number of 300s epochs in out file = 1810

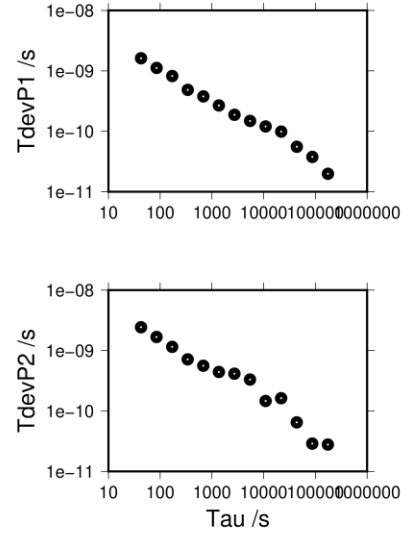
Code	#pts	median/ns	ave/ns	rms/ns
C1	13189	25.083	25.131	1.157
C2	10085	23.778	23.767	1.192
P1	12705	24.943	24.909	1.588
P2	12743	23.641	23.470	2.376
E1	10742	25.059	25.086	1.217
E5	10856	24.138	24.113	1.276
BC	11972	25.053	25.093	1.146
B5	12068	24.124	24.115	1.250



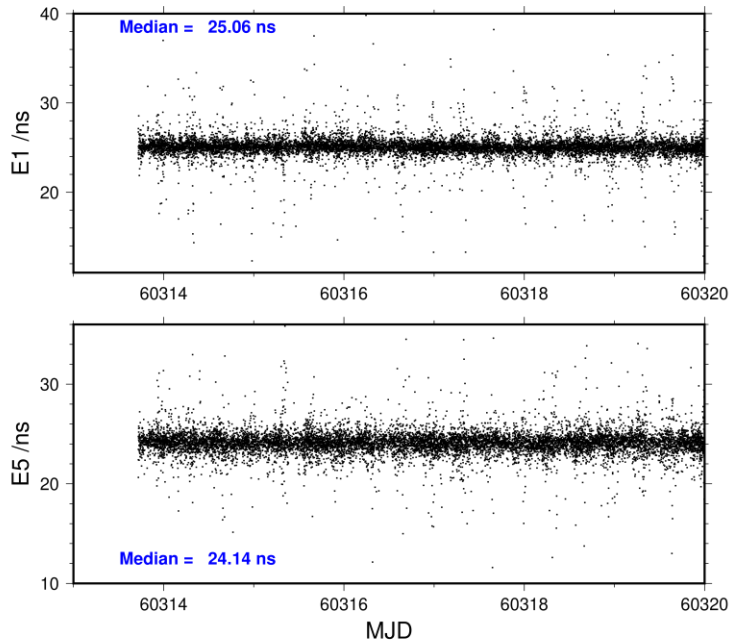
2024-01-11 BP2GBP2124004_7



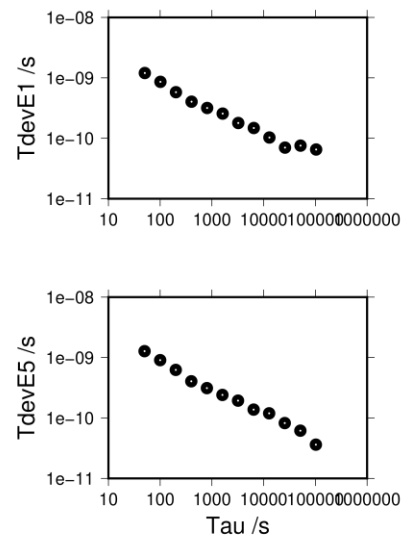
174976 s: P1= 20 ps 174454 s: P2= 28 ps
87488 s: P1= 38 ps 87227 s: P2= 29 ps
43744 s: P1= 55 ps 43614 s: P2= 65 ps
21872 s: P1= 99 ps 21807 s: P2= 163 ps
10936 s: P1= 120 ps 10903 s: P2= 146 ps
5468 s: P1= 148 ps 5452 s: P2= 331 ps
2734 s: P1= 187 ps 2726 s: P2= 414 ps
1367 s: P1= 267 ps 1363 s: P2= 443 ps
684 s: P1= 378 ps 681 s: P2= 560 ps
342 s: P1= 486 ps 341 s: P2= 716 ps
171 s: P1= 821 ps 170 s: P2= 1152 ps
85 s: P1= 1118 ps 85 s: P2= 1674 ps
43 s: P1= 1616 ps 43 s: P2= 2428 ps



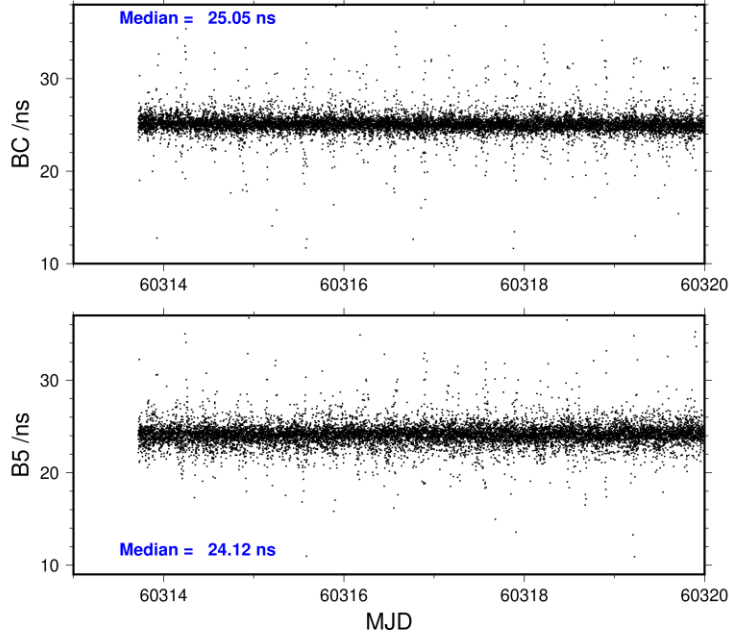
2024-01-11 BP2GBP2124004_7



103477 s: E1= 65 ps 102391 s: E5= 36 ps
51739 s: E1= 76 ps 51195 s: E5= 62 ps
25869 s: E1= 70 ps 25598 s: E5= 82 ps
12935 s: E1= 103 ps 12799 s: E5= 119 ps
6467 s: E1= 148 ps 6399 s: E5= 138 ps
3234 s: E1= 179 ps 3200 s: E5= 194 ps
1617 s: E1= 256 ps 1600 s: E5= 241 ps
808 s: E1= 318 ps 800 s: E5= 312 ps
404 s: E1= 404 ps 400 s: E5= 405 ps
202 s: E1= 580 ps 200 s: E5= 624 ps
101 s: E1= 861 ps 100 s: E5= 906 ps
51 s: E1= 1204 ps 50 s: E5= 1276 ps



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92845 s: BC=	35 ps	92107 s: B5=	40 ps
46423 s: BC=	52 ps	46053 s: B5=	49 ps
23211 s: BC=	69 ps	23027 s: B5=	72 ps
11606 s: BC=	105 ps	11513 s: B5=	106 ps
5803 s: BC=	133 ps	5757 s: B5=	177 ps
2901 s: BC=	159 ps	2878 s: B5=	205 ps
1451 s: BC=	223 ps	1439 s: B5=	241 ps
725 s: BC=	282 ps	720 s: B5=	288 ps
363 s: BC=	379 ps	360 s: B5=	381 ps
181 s: BC=	567 ps	180 s: B5=	609 ps
91 s: BC=	811 ps	90 s: B5=	880 ps
45 s: BC=	1140 ps	45 s: B5=	1270 ps

