Table of contents

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) = REFDLY.

- X_C = antenna cable delay
- [X_D = short cable + splitter delay]

(X_C + X_D) = 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) = INTDLY.

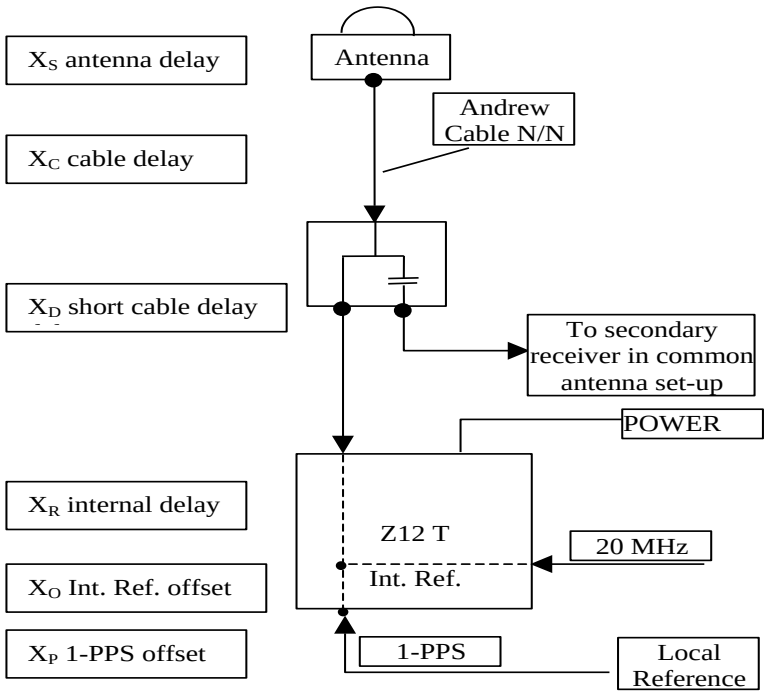


Figure 1: Definition of the different delays used in the most general set-up of a geodetic system (here shown for a Z12-T) from [Petit et al, 2001].

1/ phase 1

Laboratories: BIPM, NICT, TL

1.1/ BIPM (20176)

Period

MJD 59024 to 59029

Delays

BP1J: (cf page 4)

X_O = 142.07 ns (157.54-15.47)

X_P = 53.62 ns (59.17-5.55)

REFDLY = 195.69 ns

CABDLY = 235.70 ns (C131)

BP25: (cf page 5)

REFDLY = 53.51 ns (59.06-5.55)

CABDLY = 176.24 ns (C208)

BP21:

receiver PPS-in compensation = 29.56 ns

X_O = 78.12-48.80 = 29.32 ns

REFDLY = 43.25 ns (48.81-5.56)

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 59024
Date and hour of the end of measurements:	MJD 59029

Information on the system

	Local:	**Travelling:**
4-character BIPM code	BP21	BP1J
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx5TR 4701229	Septentrio PolaRx4proTR 27
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 MC 5131
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:	43.25 ns	53.62 ns
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)	PPSin compensation enable	142.07 ns
• Antenna cable delay:	140.80 ns	235.70 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.

Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	BIPM
Date and hour of the beginning of measurements:	MJD 59024
Date and hour of the end of measurements:	MJD 59029

Information on the system

	Local:	Travelling:
4-character BIPM code	BP21	BP25
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx5TR 4701229	Mesit GTR55 1808001
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	Novatel GNSS-850 NMLK18070096N
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:	43.25 ns	53.51 ns
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)	PPSin compensation enable	
• Antenna cable delay:	140.80 ns	176.24 ns
Splitter delay (if any):		(1)
Additional cable delay (if any):		(1)

Data used for the generation of CGGTTS files

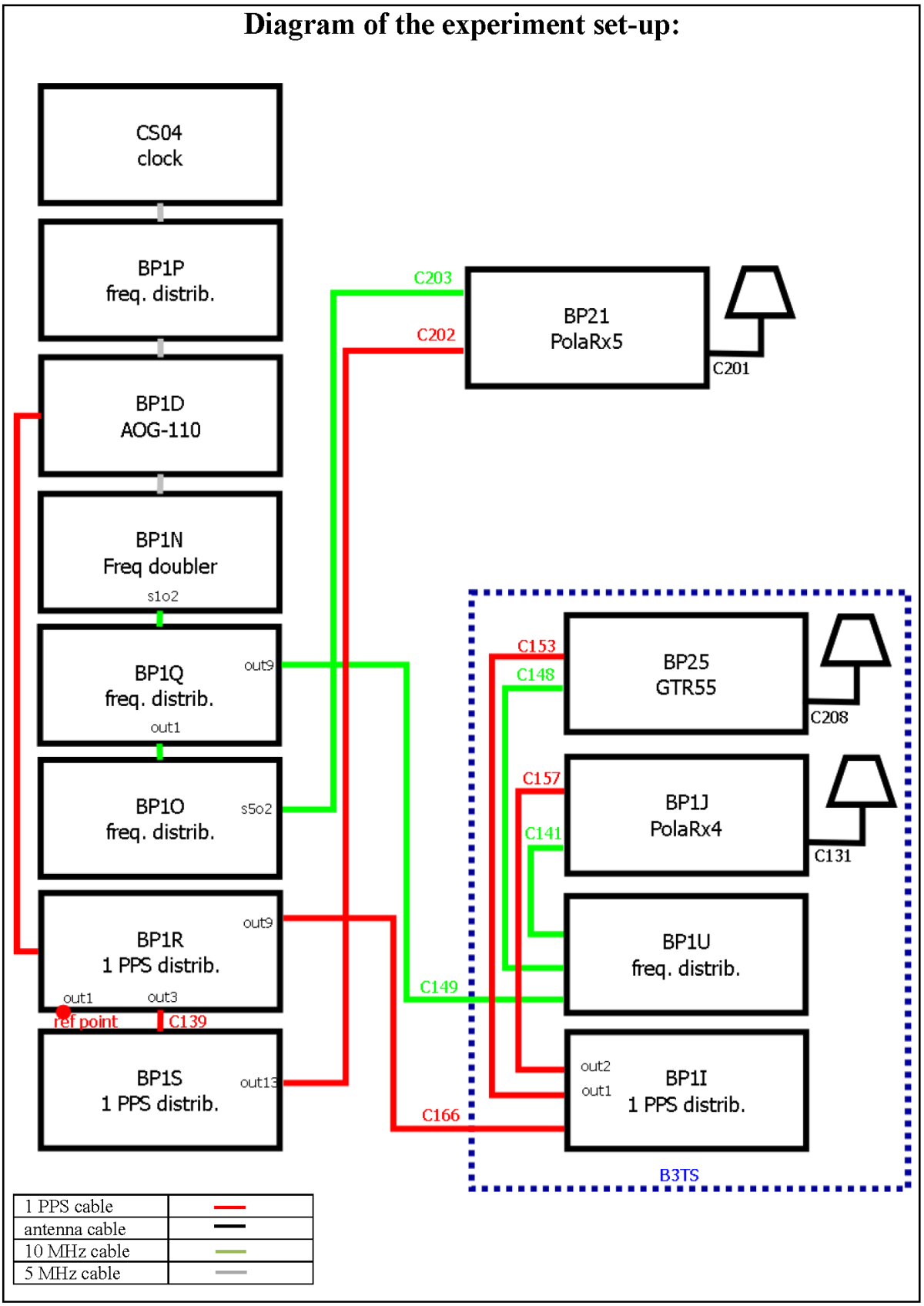
• INT DLY (GPS) /ns:	
• INT DLY (Galileo) /ns:	
• INT DLY (GLONASS) /ns:	
• CAB DLY /ns:	
• REF DLY /ns:	
• Coordinates reference frame:	
Latitude or X /m:	
Longitude or Y /m:	
Height or Z /m:	

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 are two Time Interval Counter (TIC), model SR620, maker Stanford Research Systems, with measurement uncertainty typically less than 0.5 ns (using external reference frequency as timebase).

TIC serial number 4680 used for local receivers.
TIC serial number 5482 used for traveling receivers.

BP1J-BP21

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 118492
Number of huge residuals = 1. New iteration
Computed code bias (P1/P2)/m = -9.861 -9.590
Computed baseline (X,Y,Z)/m = -3.979 -0.803 2.942
RMS of residuals /m = 0.593

Number of phase differences to fit baseline
L1/L2 = 115203
L5 = 51449
A priori baseline (X,Y,Z)/m = -3.979 -0.803 2.942
17263 clock jitters computed out of 17264 intervals
AVE jitter /ps = 0.4 RMS jitter /ps = 4.1

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 8
Iter 1 Large residuals L5= 1
Computed baseline L1 (X,Y,Z)/m = 0.338 0.186 0.358
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.339 0.186 0.360
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.339 0.197 0.373
RMS of residuals L5 /m = 0.003

Iter 2 Large residuals L1= 0
Iter 2 Large residuals L2= 8
Iter 2 Large residuals L5= 1
Computed baseline L1 (X,Y,Z)/m = 0.338 0.186 0.358
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.339 0.186 0.360
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.339 0.197 0.373
RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m = -3.641 -0.618 3.300
Final baseline L2 (X,Y,Z)/m = -3.640 -0.617 3.302
Final baseline L5 (X,Y,Z)/m = -3.640 -0.606 3.314

COMPUTATION OF CODE DIFFERENCES

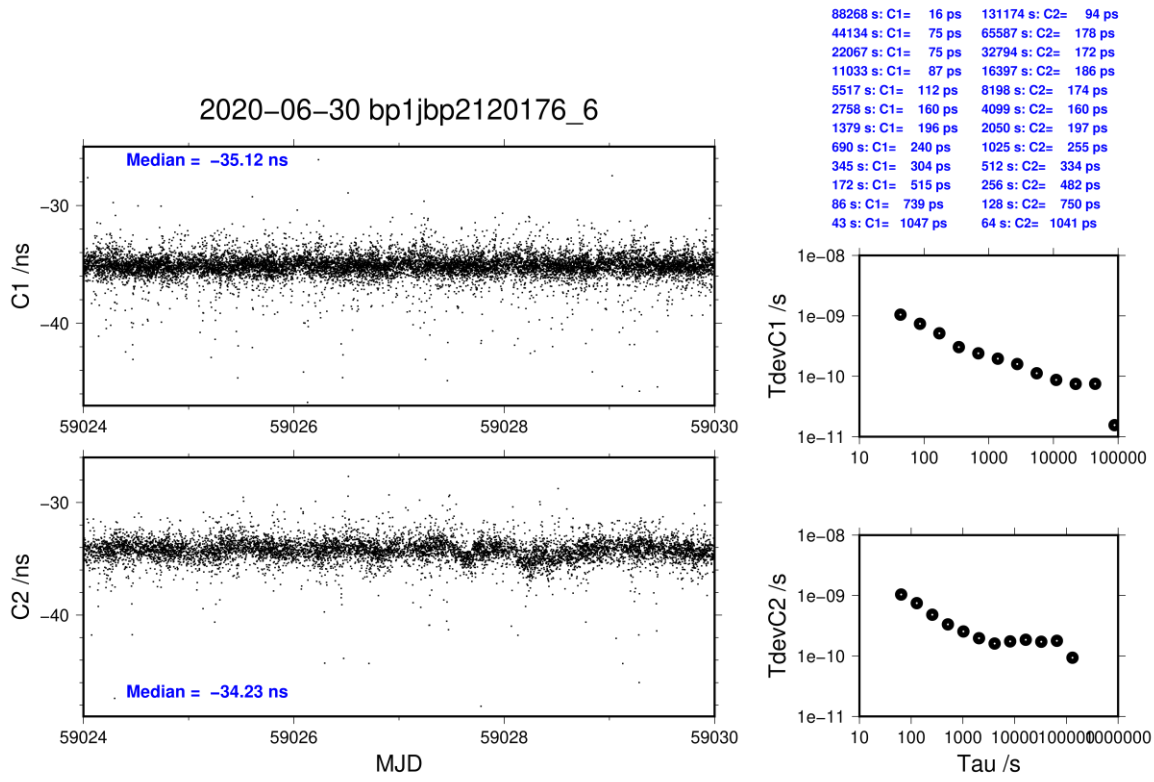
Total number of code differences = 309212

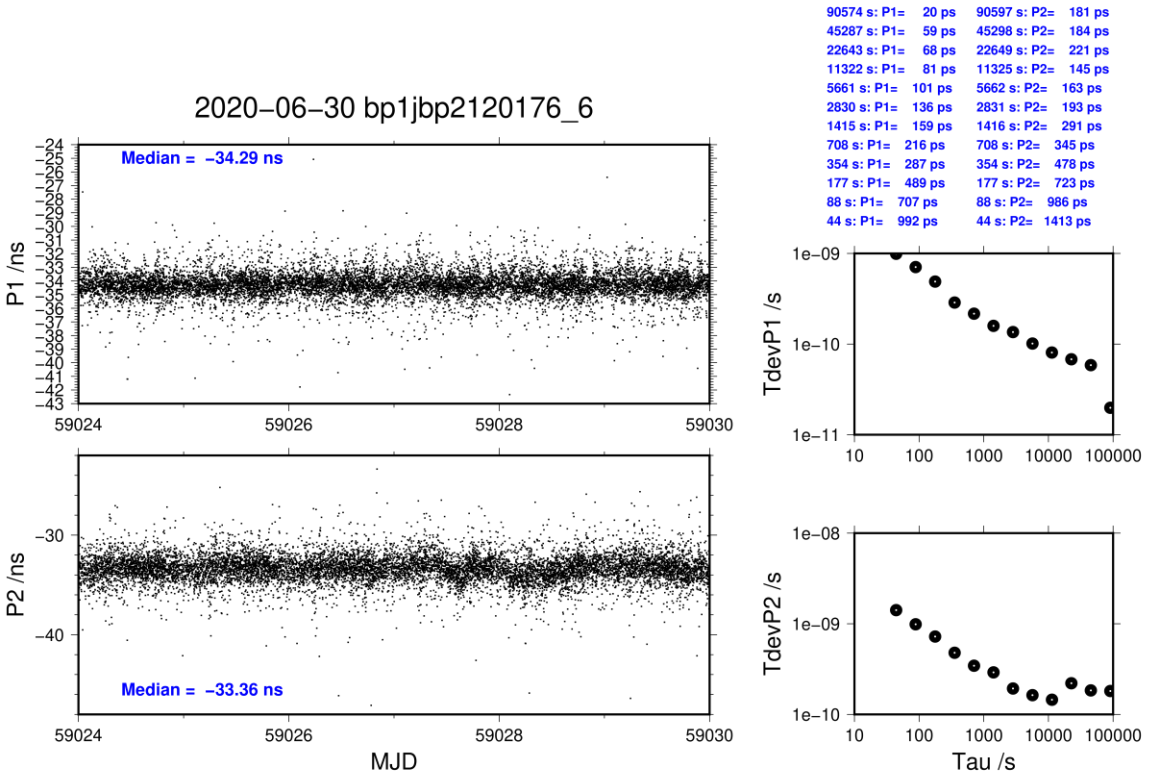
Global average of individual differences

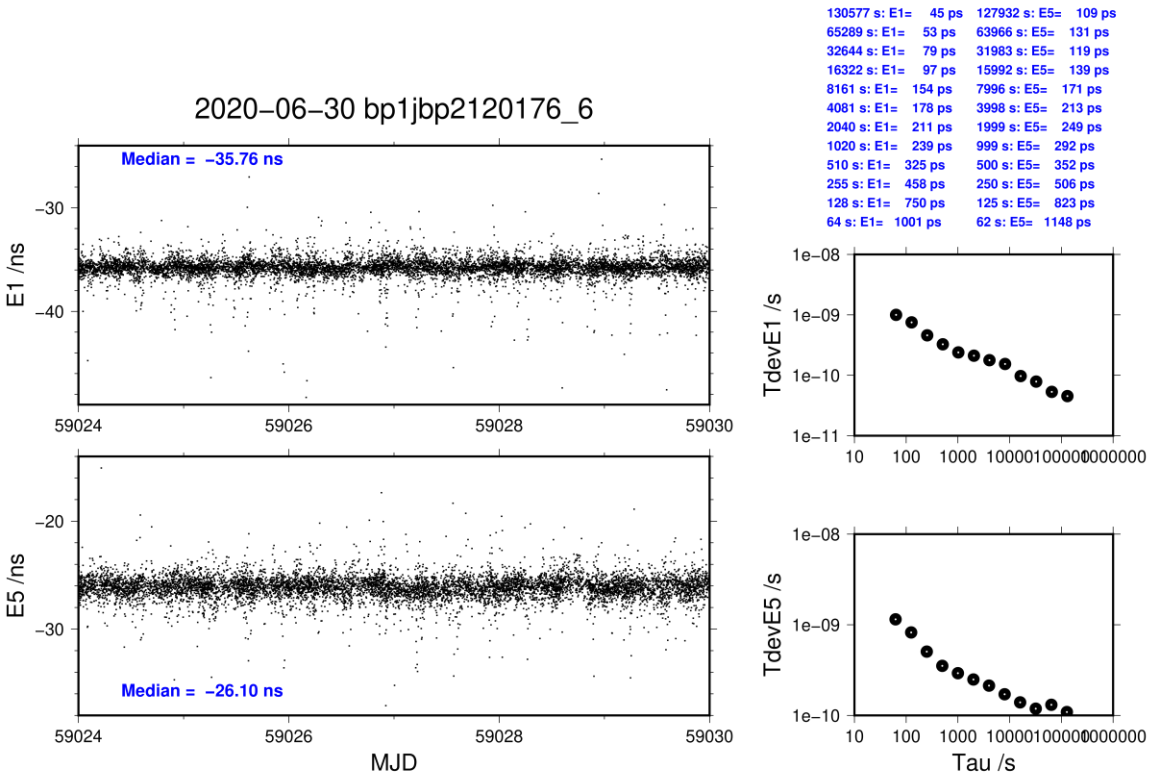
Code	#pts	ave/ns	rms/ns
C1	120608	-35.127	2.038
C2	80927	-34.245	1.959
P1	117785	-34.289	1.842
P2	117748	-33.384	2.599
E1	81384	-35.764	1.818
E5	82871	-26.140	1.806

Number of 300s epochs in out file = 1728

Code	#pts	median/ns	ave/ns	rms/ns
C1	12022	-35.115	-35.123	1.035
C2	8090	-34.234	-34.266	1.066
P1	11716	-34.292	-34.271	0.977
P2	11713	-33.362	-33.373	1.441
E1	8127	-35.756	-35.778	1.016
E5	8295	-26.103	-26.153	1.152




2020−06−30 bp1jbp2120176_6
Median = −34.29 ns
Median = −33.36 ns
P1 /ns
P2 /ns
MJD
90574 s: P1= 20 ps
45287 s: P1= 59 ps
22643 s: P1= 68 ps
11322 s: P1= 81 ps
5661 s: P1= 101 ps
2830 s: P1= 136 ps
1415 s: P1= 159 ps
708 s: P1= 216 ps
354 s: P1= 287 ps
177 s: P1= 489 ps
88 s: P1= 707 ps
44 s: P1= 992 ps
90597 s: P2= 181 ps
45298 s: P2= 184 ps
22649 s: P2= 221 ps
11325 s: P2= 145 ps
5662 s: P2= 163 ps
2831 s: P2= 193 ps
1416 s: P2= 291 ps
708 s: P2= 345 ps
354 s: P2= 478 ps
177 s: P2= 723 ps
88 s: P2= 986 ps
44 s: P2= 1413 ps
TdevP1 /s
TdevP2 /s
Tau /s


2020−06−30 bp1jbp2120176_6
Median = −35.76 ns
Median = −26.10 ns
E1 /ns
E5 /ns
MJD
130577 s: E1= 45 ps
65289 s: E1= 53 ps
32644 s: E1= 79 ps
16322 s: E1= 97 ps
8161 s: E1= 154 ps
4081 s: E1= 178 ps
2040 s: E1= 211 ps
1020 s: E1= 239 ps
510 s: E1= 325 ps
255 s: E1= 458 ps
128 s: E1= 750 ps
64 s: E1= 1001 ps
127932 s: E5= 109 ps
63966 s: E5= 131 ps
31983 s: E5= 119 ps
15992 s: E5= 139 ps
7996 s: E5= 171 ps
3998 s: E5= 213 ps
1999 s: E5= 249 ps
999 s: E5= 292 ps
500 s: E5= 352 ps
250 s: E5= 506 ps
125 s: E5= 823 ps
62 s: E5= 1148 ps
TdevE1 /s
TdevE5 /s
Tau /s

BP25-BP21

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 115765
Number of huge residuals = 1. New iteration
Computed code bias (P1/P2)/m = 3.415 5.135
Computed baseline (X,Y,Z)/m = -4.357 0.663 4.139
RMS of residuals /m = 0.551

Number of phase differences to fit baseline
L1/L2 = 111929
L5 = 50467
A priori baseline (X,Y,Z)/m = -4.357 0.663 4.139
17232 clock jitters computed out of 17233 intervals
AVE jitter /ps = -0.3 RMS jitter /ps = 5.0

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 2
Iter 1 Large residuals L5= 12
Computed baseline L1 (X,Y,Z)/m = -0.160 -0.099 -0.063
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = -0.130 -0.095 -0.044
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = -0.134 -0.095 -0.049
RMS of residuals L5 /m = 0.004

Iter 2 Large residuals L1= 0
Iter 2 Large residuals L2= 2
Iter 2 Large residuals L5= 12
Computed baseline L1 (X,Y,Z)/m = -0.160 -0.099 -0.063
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = -0.130 -0.095 -0.044
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = -0.134 -0.095 -0.049
RMS of residuals L5 /m = 0.004

Final baseline L1 (X,Y,Z)/m = -4.517 0.563 4.076
Final baseline L2 (X,Y,Z)/m = -4.487 0.568 4.095
Final baseline L5 (X,Y,Z)/m = -4.491 0.568 4.089

COMPUTATION OF CODE DIFFERENCES

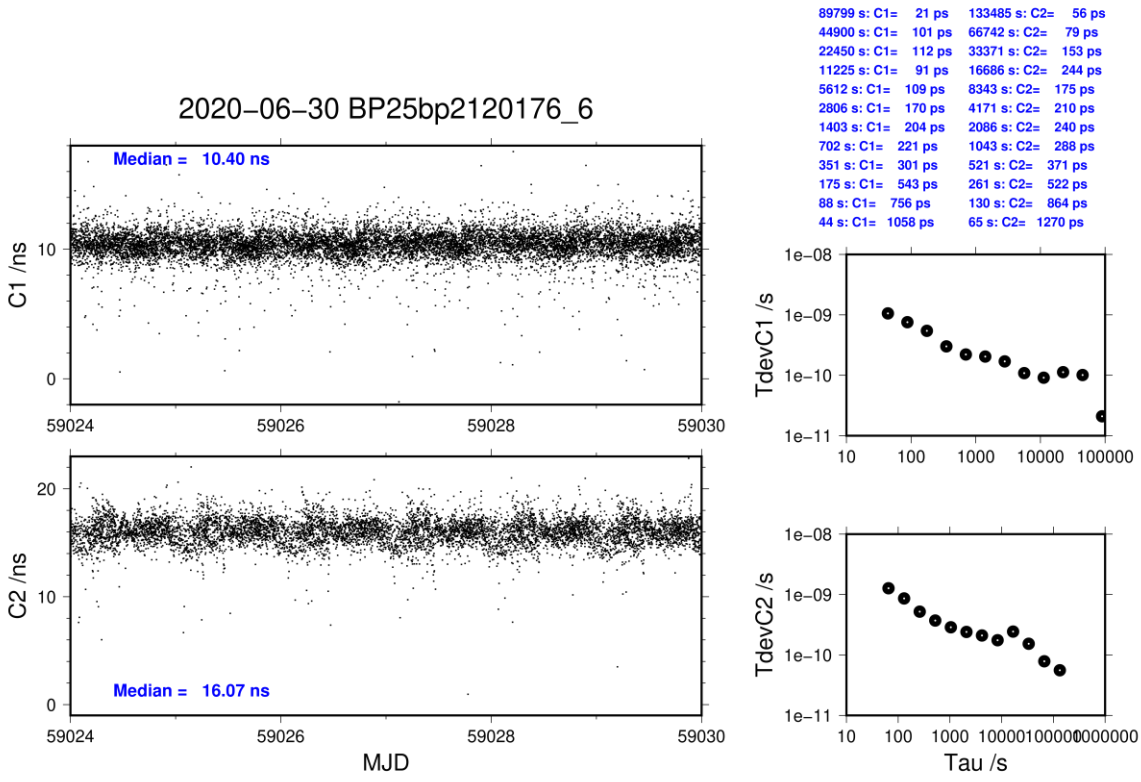
Total number of code differences = 407006

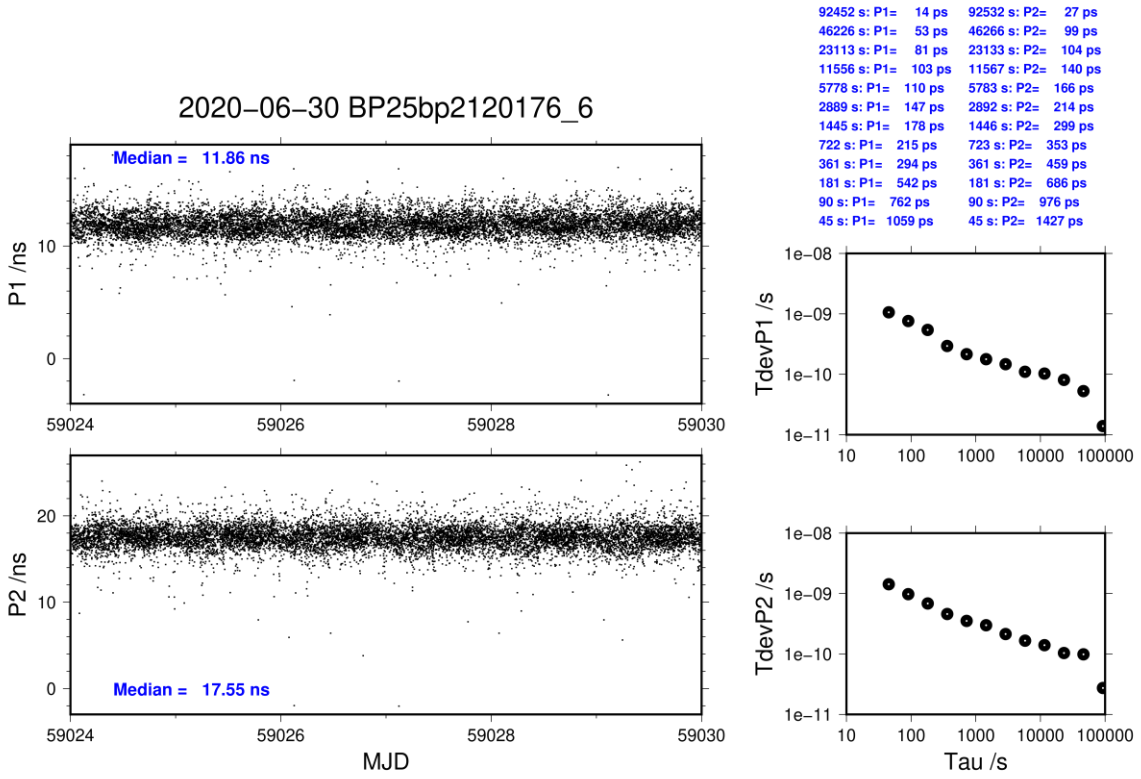
Global average of individual differences

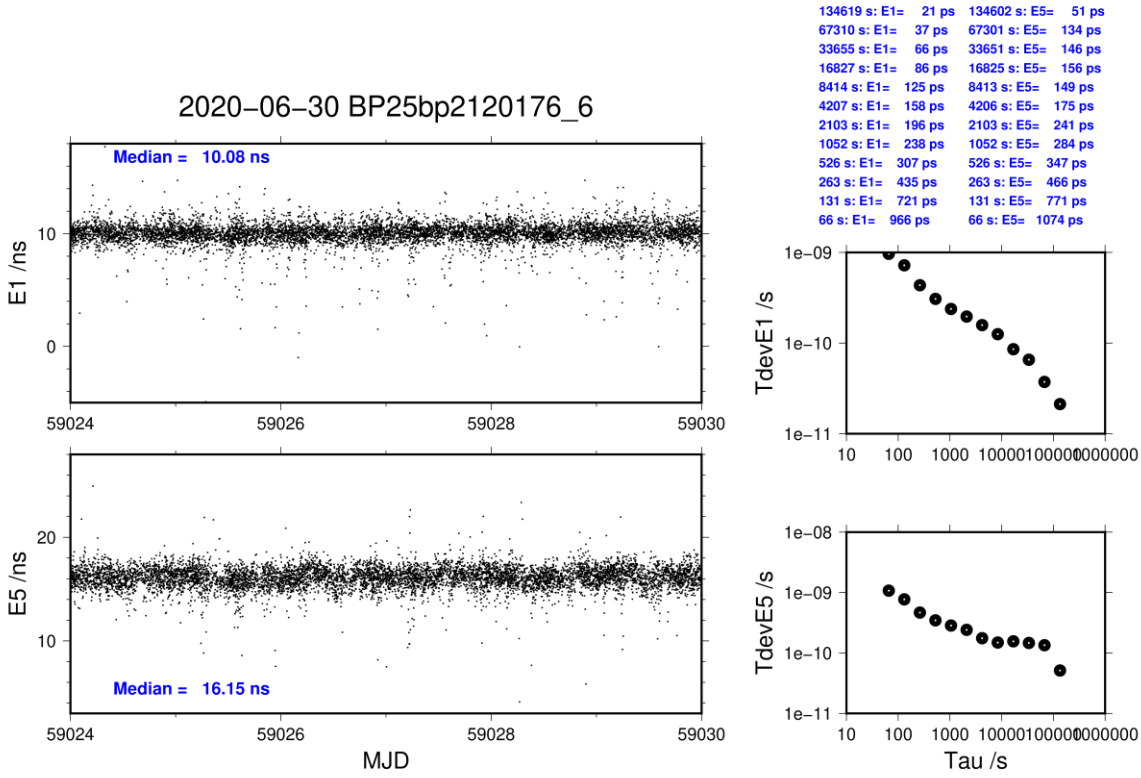
Code	#pts	ave/ns	rms/ns
C1	118425	10.366	1.900
C2	79590	16.048	1.983
P1	115569	11.839	1.887
P2	115292	17.540	2.428
E1	79031	10.054	1.639
E5	79099	16.132	1.632

Number of 300s epochs in out file = 1728

Code	#pts	median/ns	ave/ns	rms/ns
C1	11817	10.403	10.378	1.059
C2	7950	16.071	16.033	1.236
P1	11478	11.862	11.892	1.051
P2	11468	17.551	17.540	1.413
E1	7883	10.079	10.042	0.973
E5	7884	16.147	16.114	1.084




2020−06−30 BP25bp2120176_6
Median = 11.86 ns
Median = 17.55 ns
P1 /ns
P2 /ns
MJD
92452 s: P1= 14 ps
46226 s: P1= 53 ps
23113 s: P1= 81 ps
11556 s: P1= 103 ps
5778 s: P1= 110 ps
2889 s: P1= 147 ps
1445 s: P1= 178 ps
722 s: P1= 215 ps
361 s: P1= 294 ps
181 s: P1= 542 ps
90 s: P1= 762 ps
45 s: P1= 1059 ps
92532 s: P2= 27 ps
46266 s: P2= 99 ps
23133 s: P2= 104 ps
11567 s: P2= 140 ps
5783 s: P2= 166 ps
2892 s: P2= 214 ps
1446 s: P2= 299 ps
723 s: P2= 353 ps
361 s: P2= 459 ps
181 s: P2= 686 ps
90 s: P2= 976 ps
45 s: P2= 1427 ps
TdevP1 /s
TdevP2 /s
Tau /s


2020−06−30 BP25bp2120176_6
Median = 10.08 ns
Median = 16.15 ns
E1 /ns
E5 /ns
MJD
134619 s: E1= 21 ps
67310 s: E1= 37 ps
33655 s: E1= 66 ps
16827 s: E1= 86 ps
8414 s: E1= 125 ps
4207 s: E1= 158 ps
2103 s: E1= 196 ps
1052 s: E1= 238 ps
526 s: E1= 307 ps
263 s: E1= 435 ps
131 s: E1= 721 ps
66 s: E1= 966 ps
134602 s: E5= 51 ps
67301 s: E5= 134 ps
33651 s: E5= 146 ps
16825 s: E5= 156 ps
8413 s: E5= 149 ps
4206 s: E5= 175 ps
2103 s: E5= 241 ps
1052 s: E5= 284 ps
526 s: E5= 347 ps
263 s: E5= 466 ps
131 s: E5= 771 ps
66 s: E5= 1074 ps
TdevE1 /s
TdevE5 /s
Tau /s

1.2/ NICT (20231)

Period

MJD 59079 to 59102

Delays

BP1J: (cf page 20)
- X_O = 148.00 ns (404.2-256.2)
- X_P = 255.72 ns (202.1+53.62)
- REFDLY = 403.72 ns
- CABDLY = 235.70 ns (C131)

BP25: (cf page 20)
- REFDLY = 255.61 ns (202.1+53.51)
- CABDLY = 176.24 ns (C208)

NC4S: (cf page 15)
- X_O = 148.20 ns
- X_P = 167.50 ns
- REFDLY = 315.70 ns

NC5S: (vf page 16)
- X_O = 57.00 ns
- X_P = 209.80 ns
- REFDLY = 266.80 ns

NC5G: (cf page 17)
- REFDLY = 171.30 ns
- CABDLY = 268.70 ns)

Setup at the NICT

Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	National Institute of Information and Communication Technology
Date and hour of the beginning of measurements:	**19/08/2020 0 h UTC**
Date and hour of the end of measurements:	

Information on the system

	Local:	**Travelling:**
4-character BIPM code	NC4S	BP1J / BP25
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx4 TR Pro S/N: 3102252	
1 PPS trigger level /V:		
• Antenna cable maker and type: Phase stabilised cable (Y/N):	FUJIKURA 8D-SFA-LITE Phase stabilized: No	
Length outside the building /m:		
• Antenna maker and type: Antenna serial number:	AeroAntenna AT1675-120SW S/N: 5411	
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:	167.5 ns	
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)	148.2 ns (167.5 + 148.2 = 315.7 ns)	
• Antenna cable delay:		(1)
Splitter delay (if any):		(1)
Additional cable delay (if any):		(1)

Data used for the generation of CGGTTS files

• INT DLY (GPS) /ns:	278.1 ns (C1), 276.7 ns (P1), 276.4 ns (P2)
• INT DLY (GLONASS) /ns:	
• CAB DLY /ns:	
• REF DLY /ns:	314.7 ns
• Coordinates reference frame:	
Latitude or X /m:	-3942091.40
Longitude or Y /m:	3368261.97
Height or Z /m:	3701993.34

General information

• Rise time of the local UTC pulse:	
• Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	24 degree C
Set humidity value and uncertainty:	40 %

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

Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	National Institute of Information and Communication Technology
Date and hour of the beginning of measurements:	**19/08/2020 0 h UTC**
Date and hour of the end of measurements:	

Information on the system

	Local:	**Travelling:**
4-character BIPM code	NC5S	BP1J / BP25
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx5 TR S/N: 4701293	
1 PPS trigger level /V:		
• Antenna cable maker and type: Phase stabilised cable (Y/N):	FUJIKURA 8D-SFA-LITE Phase stabilized: No	
Length outside the building /m:		
• Antenna maker and type: Antenna serial number:	NovAtel GPS-703-GGG-MV NMFV16270013R	
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:	209.8 ns	
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)	57.0 ns (209.8 + 57.0 = 266.8 ns)	
• Antenna cable delay:		(1)
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 (GLONASS) /ns:	
• CAB DLY /ns:	
• REF DLY /ns:	
• Coordinates reference frame:	
Latitude or X /m:	-3942090.06
Longitude or Y /m:	3368263.34
Height or Z /m:	3701993.59

General information

• Rise time of the local UTC pulse:	
• Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	24 degree C
Set humidity value and uncertainty:	40 %

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

Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	National Institute of Information and Communication Technology
Date and hour of the beginning of measurements:	**19/08/2020 0 h UTC**
Date and hour of the end of measurements:	

Information on the system

	Local:	**Travelling:**
4-character BIPM code	NC5G	BP1J / BP25
• Receiver maker and type: Receiver serial number:	Dicom GTR50 S/N: 0801404	
1 PPS trigger level /V:		
• Antenna cable maker and type: Phase stabilised cable (Y/N):	Andrew Heliax FSJ4-50B Phase stabilized: No	
Length outside the building /m:		
• Antenna maker and type: Antenna serial number:	NovAtel GPS-702-GG P/N: 01017577	
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:	171.3 ns	
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)		
• Antenna cable delay:	268.7 ns	(1)
Splitter delay (if any):		(1)
Additional cable delay (if any):		(1)

Data used for the generation of CGGTTS files

• INT DLY (GPS) /ns:	-29.9 ns (C1), -30.9 ns (P1), -19.0 ns (P2)
• INT DLY (GLONASS) /ns:	
• CAB DLY /ns:	268.7 ns
• REF DLY /ns:	170.2 ns
• Coordinates reference frame:	
Latitude or X /m:	-3942088.21
Longitude or Y /m:	3368252.34
Height or Z /m:	3702001.40

General information

• Rise time of the local UTC pulse:	
• Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	24 degree C
Set humidity value and uncertainty:	40 %

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

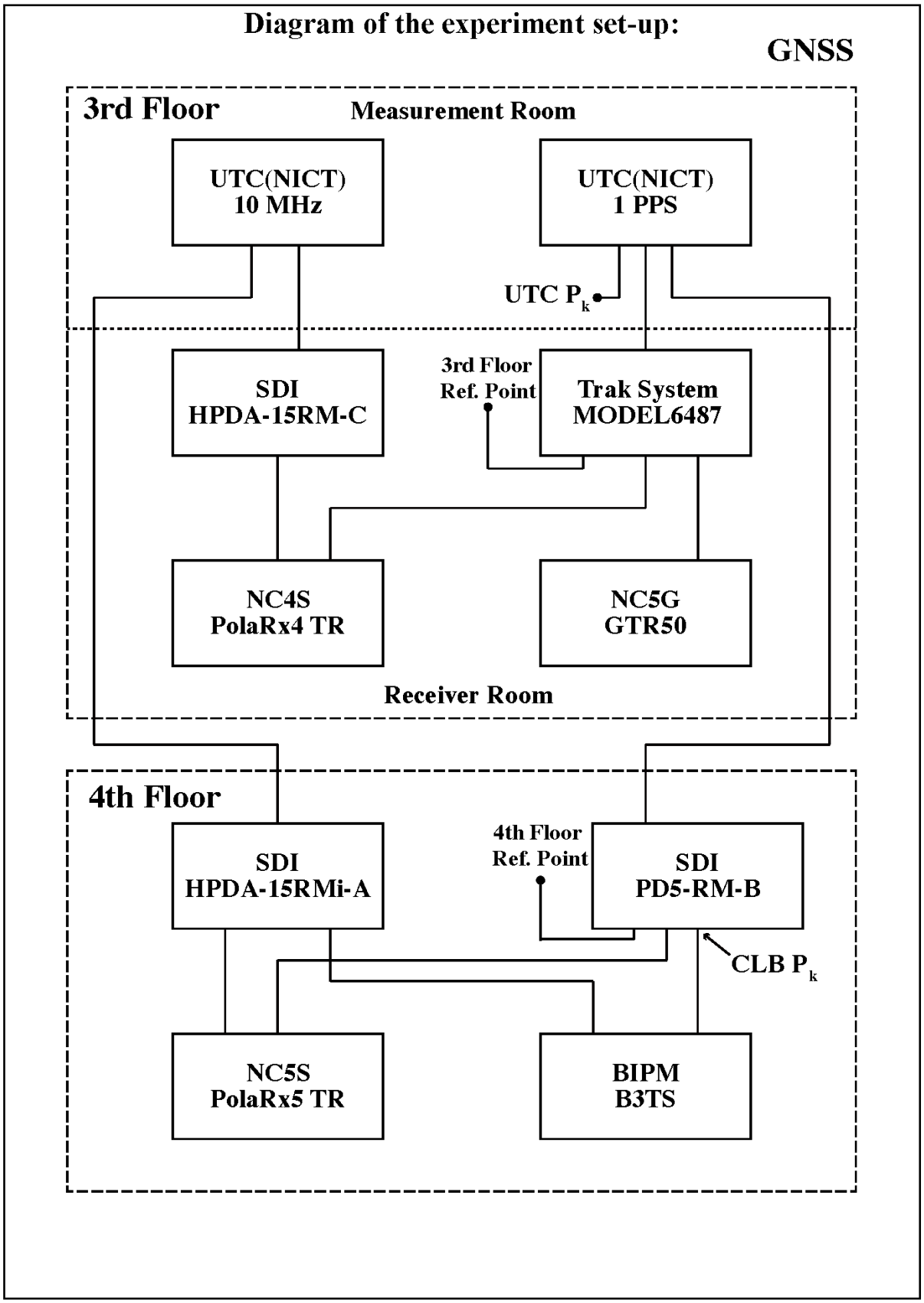


Diagram of the experiment set-up:
GNSS
3rd Floor
Measurement Room
UTC(NICT)
10 MHz
UTC(NICT)
1 PPS
UTC P k
SDI
HPDA-15RM-C
3rd Floor
Ref. Point
Trak System
MODEL6487
NC4S
PolaRx4 TR
NC5G
GTR50
Receiver Room
4th Floor
SDI
HPDA-15RMi-A
4th Floor
Ref. Point
SDI
PD5-RM-B
CLB P k
NC5S
PolaRx5 TR
BIPM
B3TS

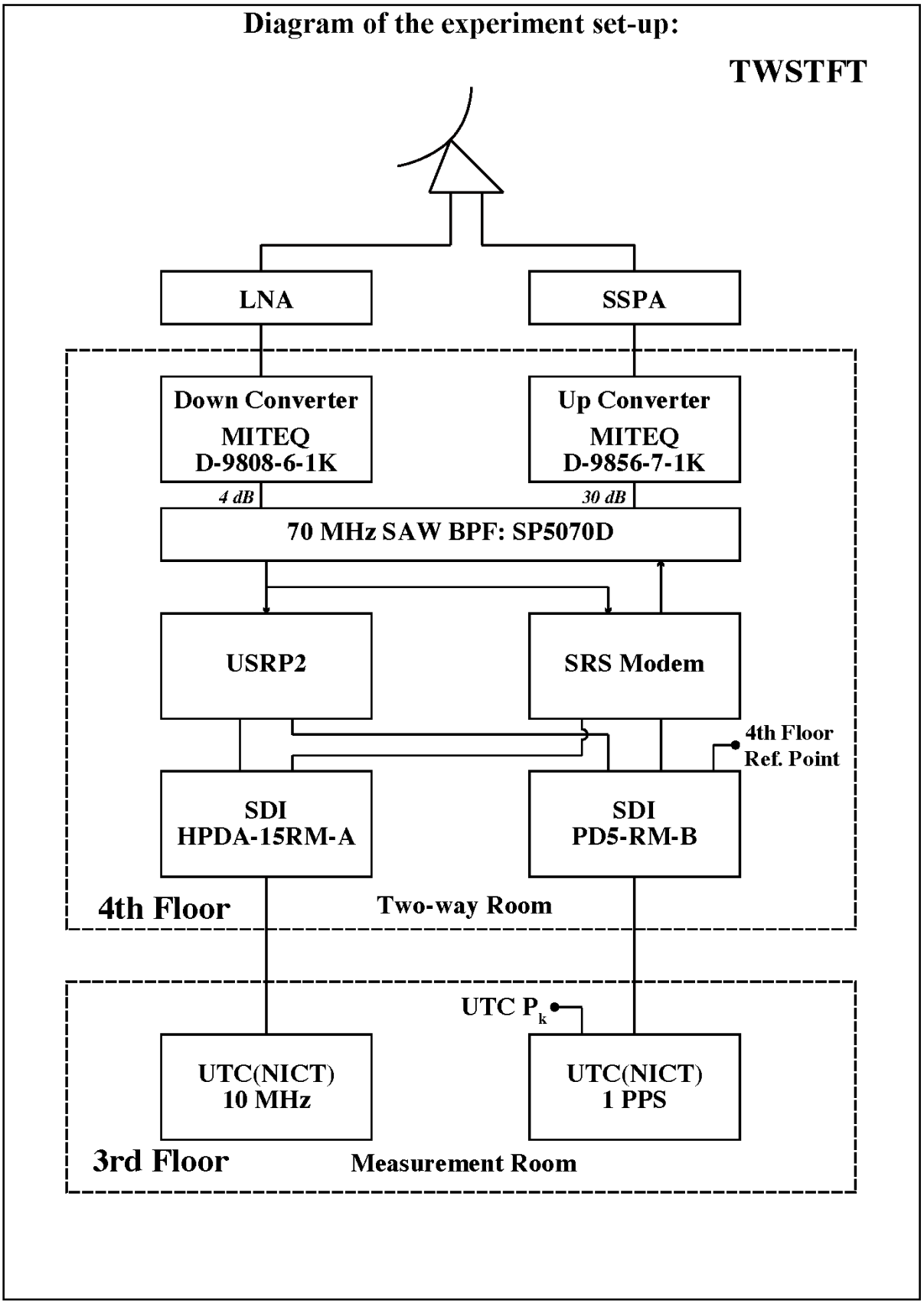


Diagram of the experiment set-up:
TWSTFT
LNA
SSPA
Down Converter
MITEQ
D-9808-6-1K
Up Converter
MITEQ
D-9856-7-1K
4 dB
30 dB
70 MHz SAW BPF: SP5070D
USRP2
SRS Modem
4th Floor
Ref. Point
SDI
HPDA-15RM-A
SDI
PD5-RM-B
4th Floor
Two-way Room
UTC P k
UTC(NICT)
10 MHz
UTC(NICT)
1 PPS
3rd Floor
Measurement Room

Log of Events / Additional Information :

1. UTC(NICT) – each reference points measured by clock transportation
   3rd floor reference point (GNSS) = 162.9 ns
   4th floor reference point (GNSS) = 209.3 ns
   4th floor reference point (TWSTFT) = 478.5 ns

2. Reference delay measurements, 18/08/2020
   UTC(NICT) – B3TS CLB Pk = 202.1 ns
   UTC(NICT) – BP1J input = 256.2 ns
   UTC(NICT) – BP1J output = 404.2 ns

3. Reference delay measurements, 08/09/2020
   UTC(NICT) – SRS input = 559.5 ns
   UTC(NICT) – USRP input = 563.0 ns

NC4S-BP1J

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 617661
Number of huge residuals = 432. New iteration
Number of huge residuals = 2. New iteration
Computed code bias (P1/P2)/m = 23.380 23.276
Computed baseline (X,Y,Z)/m = 17.755 13.172 3.034
RMS of residuals /m = 0.445

Number of phase differences to fit baseline
L1/L2 = 607316
L5 = 280659
A priori baseline (X,Y,Z)/m = 17.755 13.172 3.034
68012 clock jitters computed out of 68012 intervals
AVE jitter /ps = -0.1 RMS jitter /ps = 5.2

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 5
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.058 -0.006 -0.026
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = 0.061 -0.005 -0.026
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.056 -0.004 -0.021
RMS of residuals L5 /m = 0.003

Iter 2 Large residuals L1= 0
Iter 2 Large residuals L2= 5
Iter 2 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.058 -0.006 -0.026
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = 0.061 -0.005 -0.026
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.056 -0.004 -0.021
RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 17.813 13.166 3.009
Final baseline L2 (X,Y,Z)/m = 17.816 13.167 3.008
Final baseline L5 (X,Y,Z)/m = 17.811 13.167 3.013

COMPUTATION OF CODE DIFFERENCES

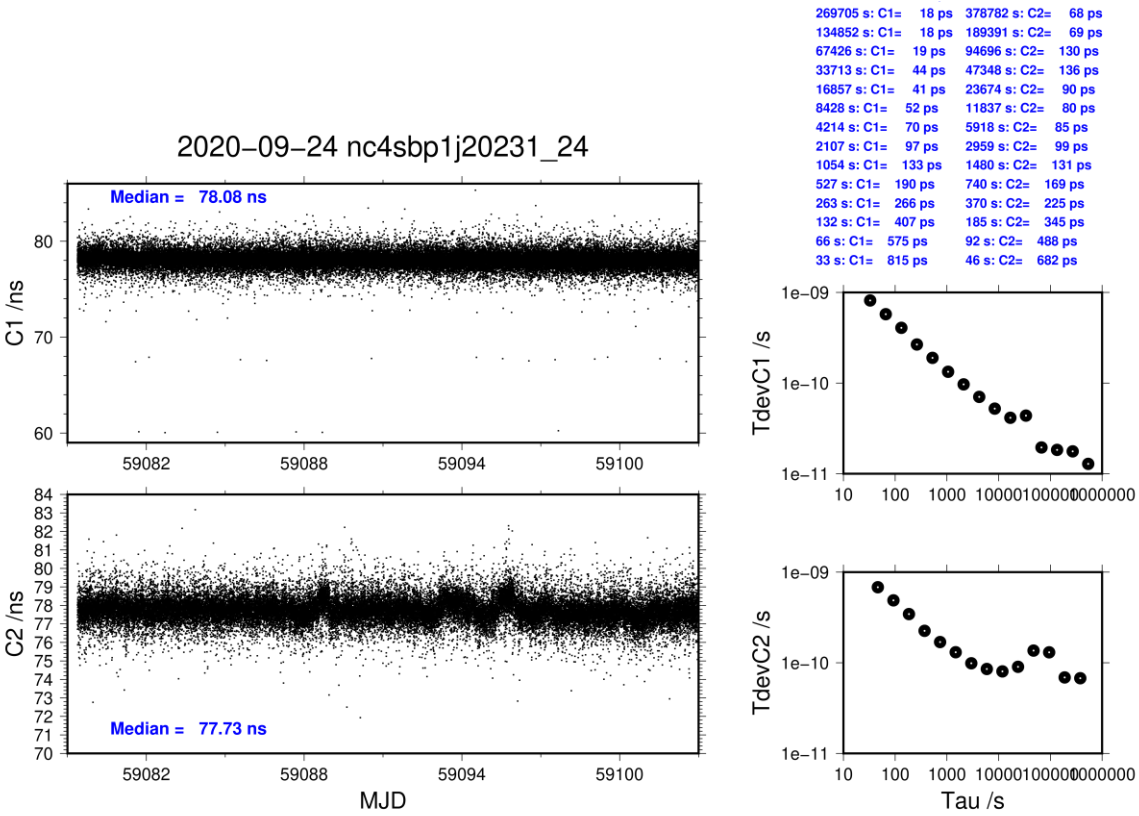
Total number of code differences = ******

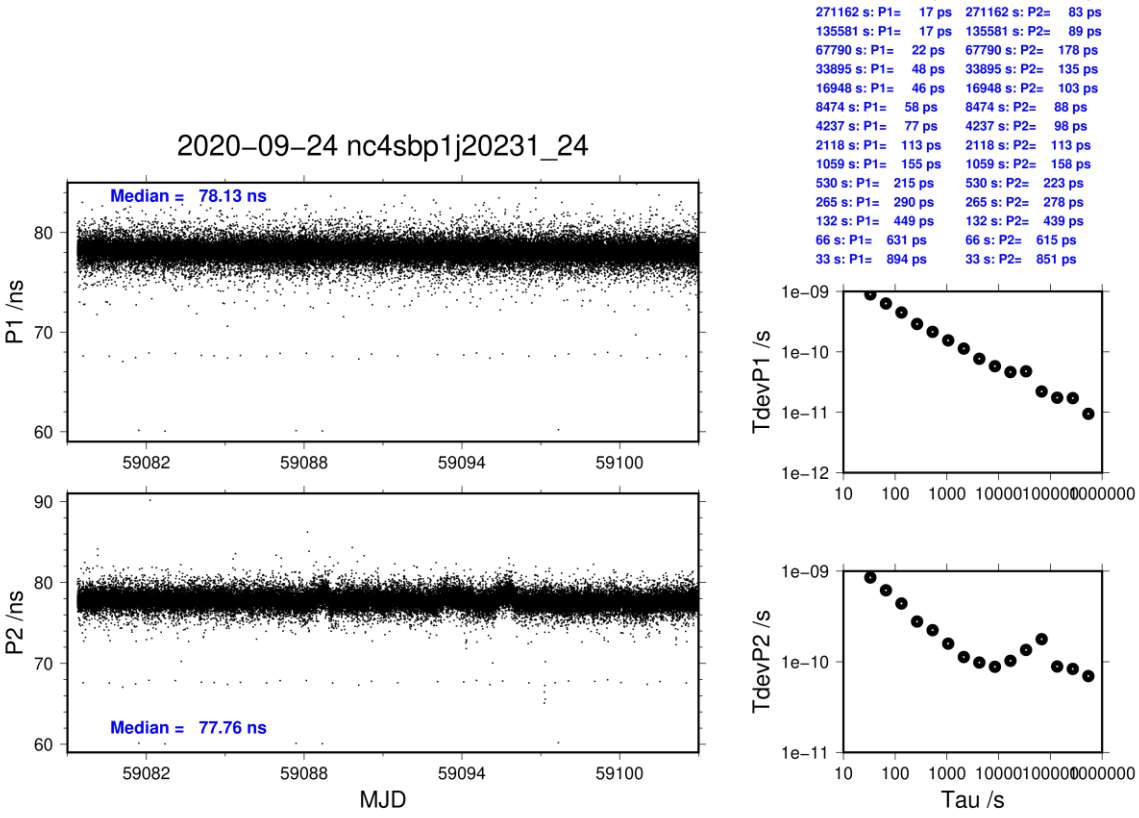
Global average of individual differences

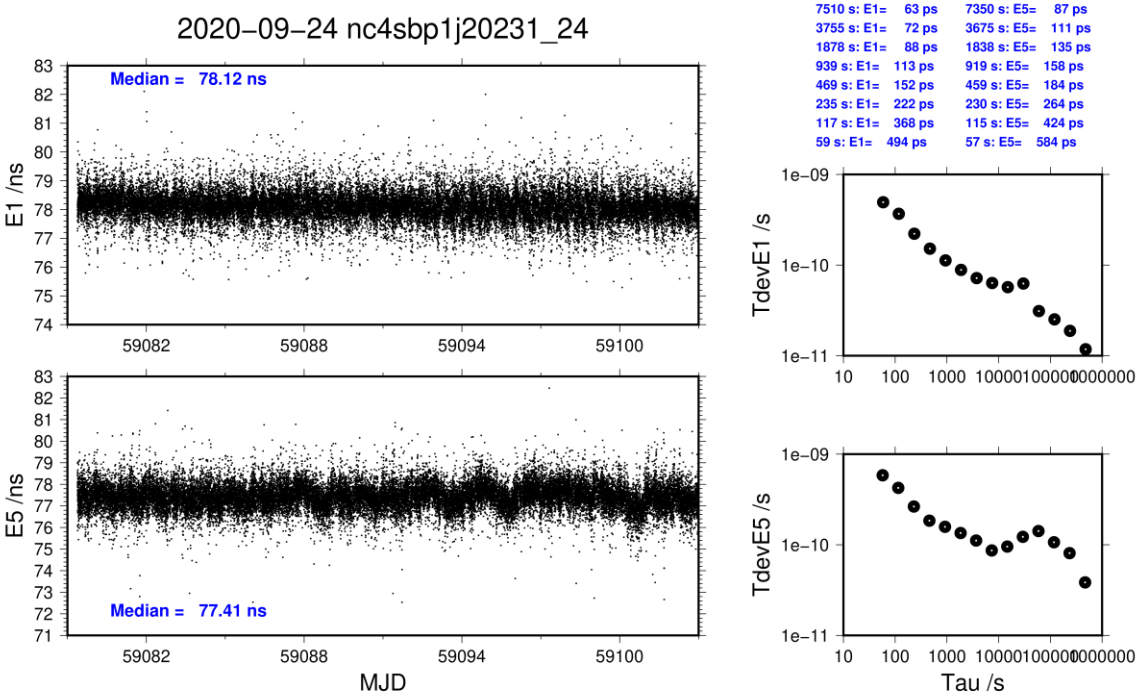
Code	#pts	ave/ns	rms/ns
C1	620242	78.063	1.855
C2	441865	77.742	1.572
P1	617213	78.093	1.907
P2	617255	77.752	1.350
E1	347801	78.116	0.950
E5	355730	77.410	0.887

Number of 300s epochs in out file = 6802

Code	#pts	median/ns	ave/ns	rms/ns
C1	61973	78.083	78.070	0.809
C2	44127	77.728	77.742	0.714
P1	61640	78.126	78.102	0.890
P2	61640	77.764	77.757	0.890
E1	34775	78.116	78.118	0.500
E5	35532	77.411	77.413	0.622




2020−09−24 nc4sbp1j20231_24
Median = 78.13 ns
Median = 77.76 ns
P1 /ns
P2 /ns
MJD
271162 s: P1= 17 ps 271162 s: P2= 83 ps
135581 s: P1= 17 ps 135581 s: P2= 89 ps
67790 s: P1= 22 ps 67790 s: P2= 178 ps
33895 s: P1= 48 ps 33895 s: P2= 135 ps
16948 s: P1= 46 ps 16948 s: P2= 103 ps
8474 s: P1= 58 ps 8474 s: P2= 88 ps
4237 s: P1= 77 ps 4237 s: P2= 98 ps
2118 s: P1= 113 ps 2118 s: P2= 113 ps
1059 s: P1= 155 ps 1059 s: P2= 158 ps
530 s: P1= 215 ps 530 s: P2= 223 ps
265 s: P1= 290 ps 265 s: P2= 278 ps
132 s: P1= 449 ps 132 s: P2= 439 ps
66 s: P1= 631 ps 66 s: P2= 615 ps
33 s: P1= 894 ps 33 s: P2= 851 ps
TdevP1 /s
TdevP2 /s
Tau /s


2020−09−24 nc4sbp1j20231_24
Median = 78.12 ns
Median = 77.41 ns
E1 /ns
E5 /ns
MJD
480650 s: E1= 12 ps 470410 s: E5= 38 ps
240325 s: E1= 19 ps 235205 s: E5= 81 ps
120163 s: E1= 25 ps 117602 s: E5= 107 ps
60081 s: E1= 31 ps 58801 s: E5= 142 ps
30041 s: E1= 63 ps 29401 s: E5= 122 ps
15020 s: E1= 57 ps 14700 s: E5= 95 ps
7510 s: E1= 63 ps 7350 s: E5= 87 ps
3755 s: E1= 72 ps 3675 s: E5= 111 ps
1878 s: E1= 88 ps 1838 s: E5= 135 ps
939 s: E1= 113 ps 919 s: E5= 158 ps
469 s: E1= 152 ps 459 s: E5= 184 ps
235 s: E1= 222 ps 230 s: E5= 264 ps
117 s: E1= 368 ps 115 s: E5= 424 ps
59 s: E1= 494 ps 57 s: E5= 584 ps
TdevE1 /s
TdevE5 /s
Tau /s

NC4S-BP25

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 539316
Computed code bias (P1/P2)/m = 7.732 6.248
Computed baseline (X,Y,Z)/m = 17.352 13.033 2.621
RMS of residuals /m = 0.376

Number of phase differences to fit baseline
L1/L2 = 533709
L5 = 251282
A priori baseline (X,Y,Z)/m = 17.352 13.033 2.621
66205 clock jitters computed out of 66205 intervals
AVE jitter /ps = -0.2 RMS jitter /ps = 4.5

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 0
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.104 -0.021 -0.015
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = 0.111 -0.026 -0.025
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = 0.109 -0.026 -0.020
RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 17.455 13.012 2.605
Final baseline L2 (X,Y,Z)/m = 17.463 13.007 2.596
Final baseline L5 (X,Y,Z)/m = 17.461 13.007 2.601

COMPUTATION OF CODE DIFFERENCES

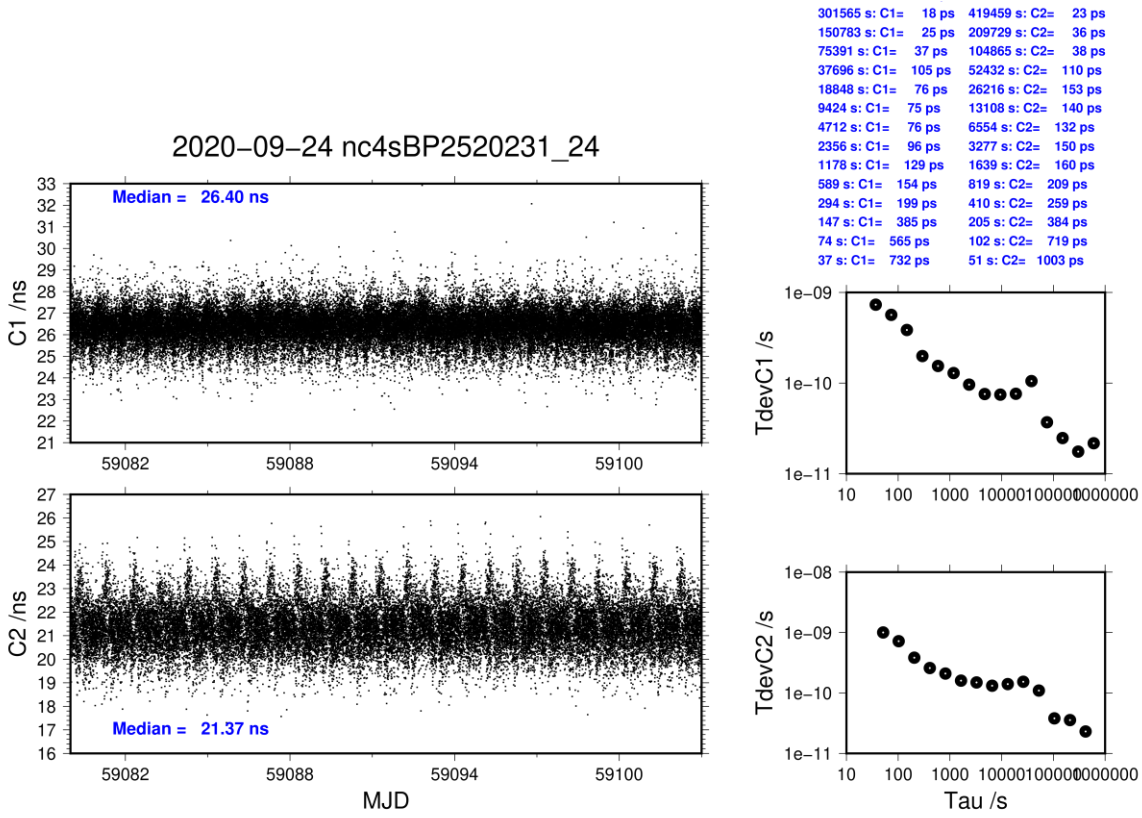
Total number of code differences = ******

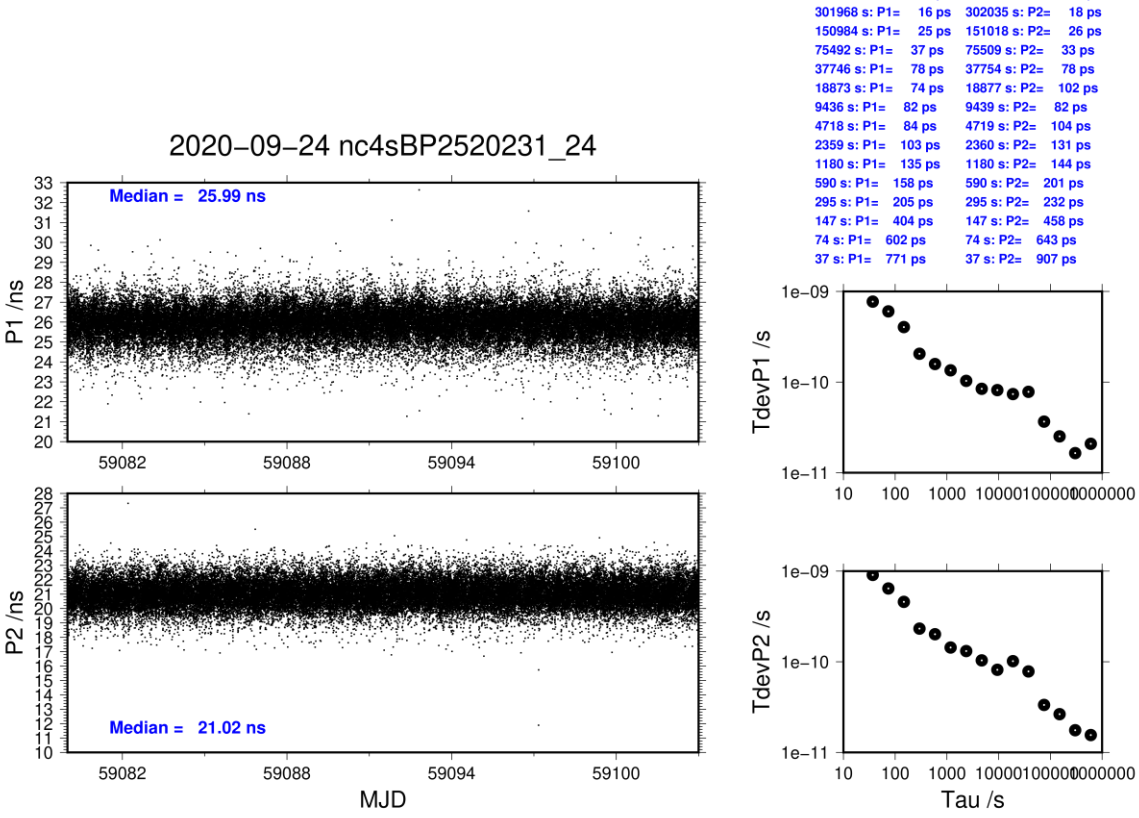
Global average of individual differences

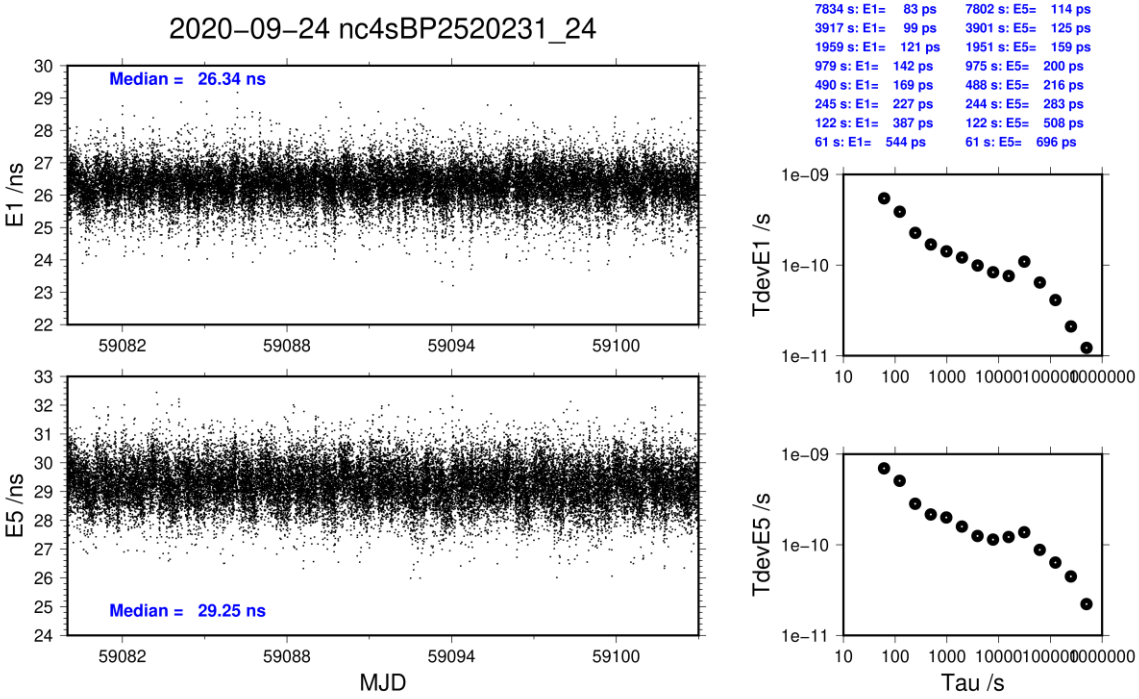
Code	#pts	ave/ns	rms/ns
C1	540008	26.368	1.285
C2	388298	21.409	1.370
P1	539291	25.955	1.331
P2	539187	21.029	1.221
E1	324897	26.329	0.835
E5	326241	29.259	0.892

Number of 300s epochs in out file = 6624

Code	#pts	median/ns	ave/ns	rms/ns
C1:	53975	26.400	26.372	0.752
C2:	38805	21.366	21.408	0.977
P1:	53903	25.988	25.959	0.790
P2:	53891	21.020	21.030	0.897
E1:	32464	26.339	26.326	0.550
E5:	32597	29.254	29.260	0.715




2020−09−24 nc4sBP2520231_24
Median = 25.99 ns
Median = 21.02 ns
P1 /ns
P2 /ns
MJD
301968 s: P1= 16 ps
150984 s: P1= 25 ps
75492 s: P1= 37 ps
37746 s: P1= 78 ps
18873 s: P1= 74 ps
9436 s: P1= 82 ps
4718 s: P1= 84 ps
2359 s: P1= 103 ps
1180 s: P1= 135 ps
590 s: P1= 158 ps
295 s: P1= 205 ps
147 s: P1= 404 ps
74 s: P1= 602 ps
37 s: P1= 771 ps
302035 s: P2= 18 ps
151018 s: P2= 26 ps
75509 s: P2= 33 ps
37754 s: P2= 78 ps
18877 s: P2= 102 ps
9439 s: P2= 82 ps
4719 s: P2= 104 ps
2360 s: P2= 131 ps
1180 s: P2= 144 ps
590 s: P2= 201 ps
295 s: P2= 232 ps
147 s: P2= 458 ps
74 s: P2= 643 ps
37 s: P2= 907 ps
TdevP1 /s
TdevP2 /s
Tau /s


2020−09−24 nc4sBP2520231_24
Median = 26.34 ns
Median = 29.25 ns
E1 /ns
E5 /ns
MJD
501392 s: E1= 12 ps
250696 s: E1= 21 ps
125348 s: E1= 41 ps
62674 s: E1= 64 ps
31337 s: E1= 109 ps
15668 s: E1= 76 ps
7834 s: E1= 83 ps
3917 s: E1= 99 ps
1959 s: E1= 121 ps
979 s: E1= 142 ps
490 s: E1= 169 ps
245 s: E1= 227 ps
122 s: E1= 387 ps
61 s: E1= 544 ps
499346 s: E5= 22 ps
249673 s: E5= 45 ps
124837 s: E5= 64 ps
62418 s: E5= 88 ps
31209 s: E5= 137 ps
15605 s: E5= 122 ps
7802 s: E5= 114 ps
3901 s: E5= 125 ps
1951 s: E5= 159 ps
975 s: E5= 200 ps
488 s: E5= 216 ps
244 s: E5= 283 ps
122 s: E5= 508 ps
61 s: E5= 696 ps
TdevE1 /s
TdevE5 /s
Tau /s

NC5S-BP1J

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 593164
Number of huge residuals = 716. New iteration
Computed code bias (P1/P2)/m = 72.914 72.708
Computed baseline (X,Y,Z)/m = 16.409 11.804 2.717
RMS of residuals /m = 0.524

Number of phase differences to fit baseline
L1/L2 = 585698
L5 = 270867
A priori baseline (X,Y,Z)/m = 16.409 11.804 2.717
65132 clock jitters computed out of 65132 intervals
AVE jitter /ps = 0.1 RMS jitter /ps = 4.8

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 3
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = -0.020 -0.000 0.063
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = -0.033 0.016 0.075
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = -0.041 0.016 0.082
RMS of residuals L5 /m = 0.003

Iter 2 Large residuals L1= 0
Iter 2 Large residuals L2= 3
Iter 2 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = -0.020 -0.000 0.063
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = -0.033 0.016 0.075
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = -0.041 0.016 0.082
RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 16.388 11.804 2.780
Final baseline L2 (X,Y,Z)/m = 16.375 11.820 2.792
Final baseline L5 (X,Y,Z)/m = 16.368 11.820 2.799

COMPUTATION OF CODE DIFFERENCES

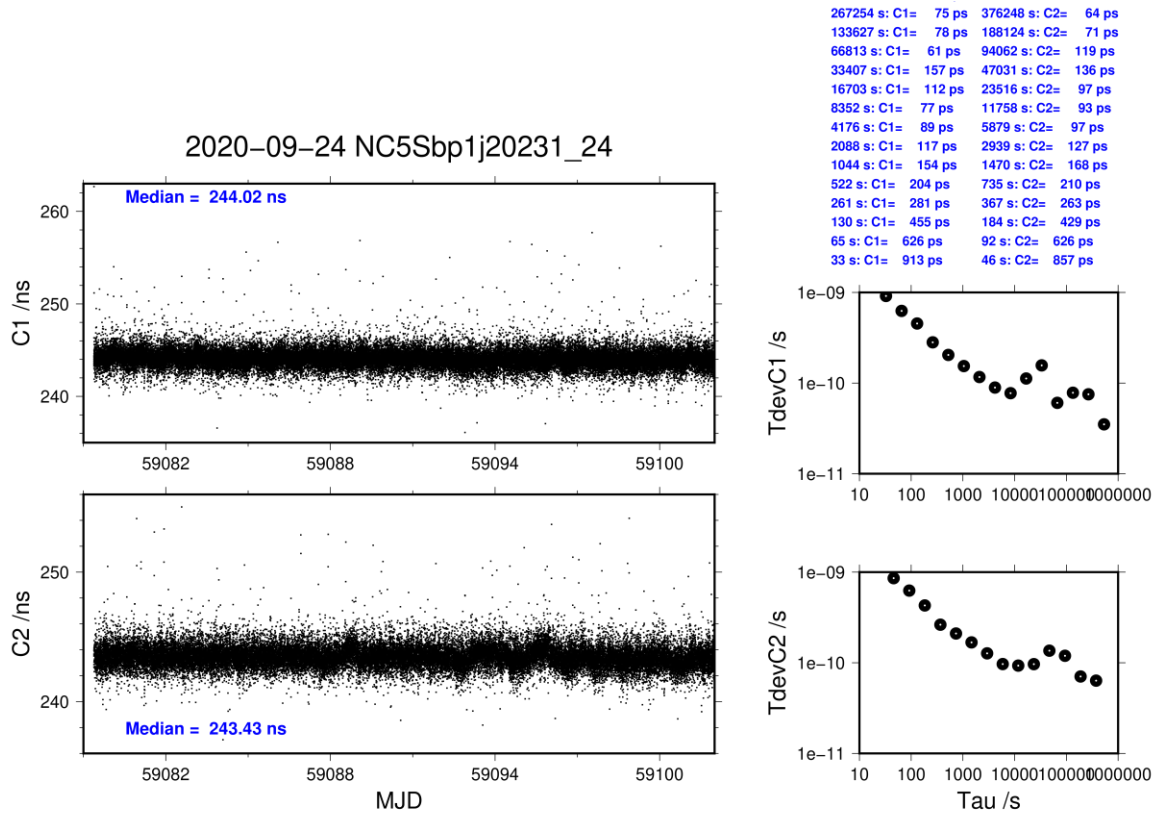
Total number of code differences = ******

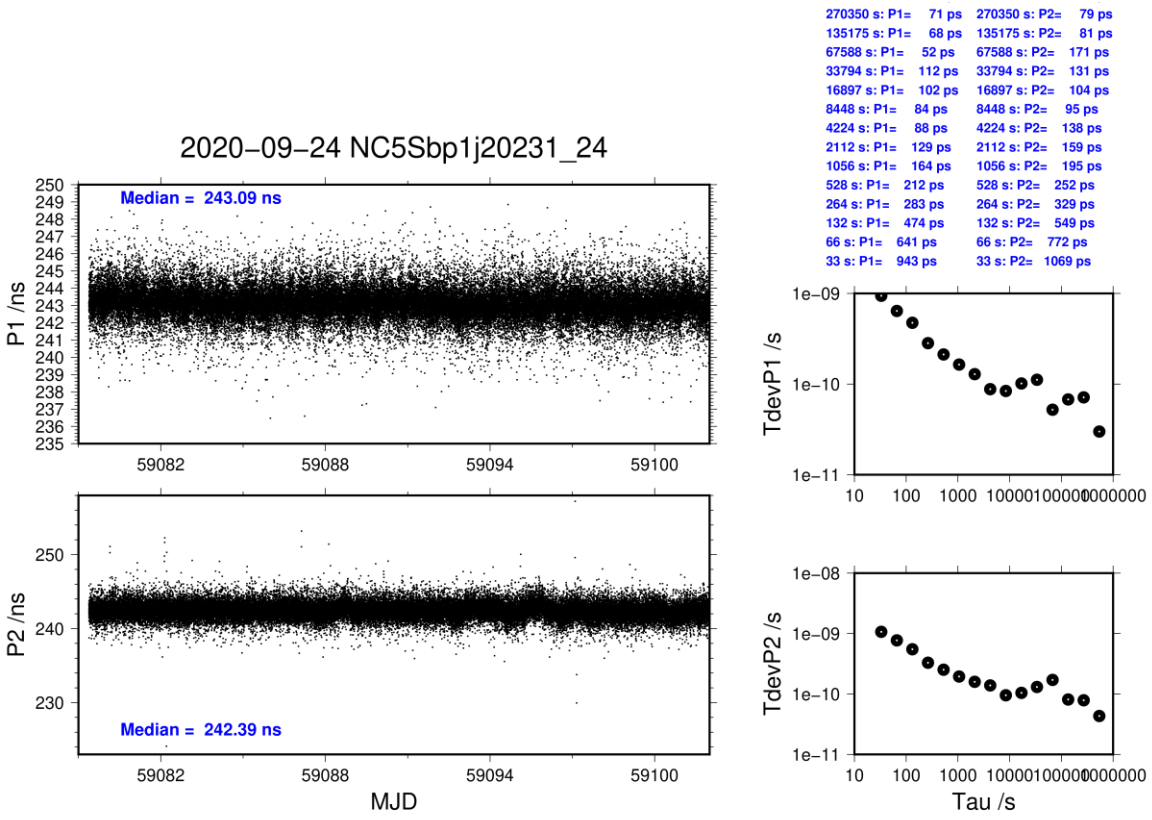
Global average of individual differences

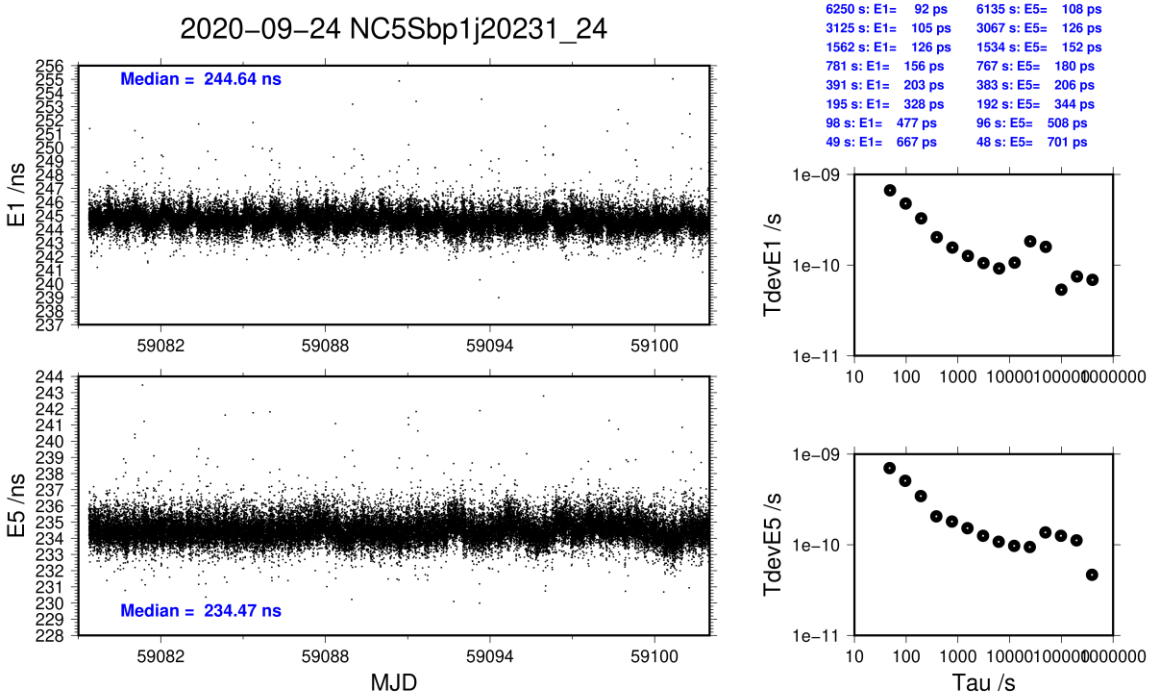
Code	#pts	ave/ns	rms/ns
C1	598882	244.059	1.909
C2	425767	243.466	1.766
P1	592727	243.123	1.874
P2	592739	242.394	1.810
E1	399769	244.672	1.312
E5	408182	234.520	1.105

Number of 300s epochs in out file = 6514

Code	#pts	median/ns	ave/ns	rms/ns
C1	59893	244.021	244.052	0.915
C2	42543	243.430	243.469	0.885
P1	59207	243.092	243.113	0.936
P2	59207	242.392	242.409	1.096
E1	40019	244.641	244.677	0.706
E5	40768	234.471	234.525	0.739




2020−09−24 NC5Sbp1j20231_24
Median = 243.09 ns
Median = 242.39 ns
P1 /ns
P2 /ns
MJD
270350 s: P1= 71 ps
135175 s: P1= 68 ps
67588 s: P1= 52 ps
33794 s: P1= 112 ps
16897 s: P1= 102 ps
8448 s: P1= 84 ps
4224 s: P1= 88 ps
2112 s: P1= 129 ps
1056 s: P1= 164 ps
528 s: P1= 212 ps
264 s: P1= 283 ps
132 s: P1= 474 ps
66 s: P1= 641 ps
33 s: P1= 943 ps
270350 s: P2= 79 ps
135175 s: P2= 81 ps
67588 s: P2= 171 ps
33794 s: P2= 131 ps
16897 s: P2= 104 ps
8448 s: P2= 95 ps
4224 s: P2= 138 ps
2112 s: P2= 159 ps
1056 s: P2= 195 ps
528 s: P2= 252 ps
264 s: P2= 329 ps
132 s: P2= 549 ps
66 s: P2= 772 ps
33 s: P2= 1069 ps
TdevP1 /s
TdevP2 /s
Tau /s


2020−09−24 NC5Sbp1j20231_24
Median = 244.64 ns
Median = 234.47 ns
E1 /ns
E5 /ns
MJD
399979 s: E1= 69 ps
199989 s: E1= 75 ps
99995 s: E1= 54 ps
49997 s: E1= 159 ps
24999 s: E1= 183 ps
12499 s: E1= 106 ps
6250 s: E1= 92 ps
3125 s: E1= 105 ps
1562 s: E1= 126 ps
781 s: E1= 156 ps
391 s: E1= 203 ps
195 s: E1= 328 ps
98 s: E1= 477 ps
49 s: E1= 667 ps
392630 s: E5= 47 ps
196315 s: E5= 112 ps
98158 s: E5= 126 ps
49079 s: E5= 137 ps
24539 s: E5= 94 ps
12270 s: E5= 97 ps
6135 s: E5= 108 ps
3067 s: E5= 126 ps
1534 s: E5= 152 ps
767 s: E5= 180 ps
383 s: E5= 206 ps
192 s: E5= 344 ps
96 s: E5= 508 ps
48 s: E5= 701 ps
TdevE1 /s
TdevE5 /s
Tau /s

NC5S-BP25

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 515330
Number of huge residuals = 52. New iteration
Computed code bias (P1/P2)/m = 57.229 55.643
Computed baseline (X,Y,Z)/m = 15.994 11.711 2.333
RMS of residuals /m = 0.470

Number of phase differences to fit baseline
L1/L2 = 510081
L5 = 240528
A priori baseline (X,Y,Z)/m = 15.994 11.711 2.333
63112 clock jitters computed out of 63112 intervals
AVE jitter /ps = 0.2 RMS jitter /ps = 4.1

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 0
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.047 -0.048 0.042
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.042 -0.040 0.047
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = 0.040 -0.040 0.051
RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m = 16.041 11.663 2.375
Final baseline L2 (X,Y,Z)/m = 16.036 11.671 2.380
Final baseline L5 (X,Y,Z)/m = 16.034 11.670 2.384

COMPUTATION OF CODE DIFFERENCES

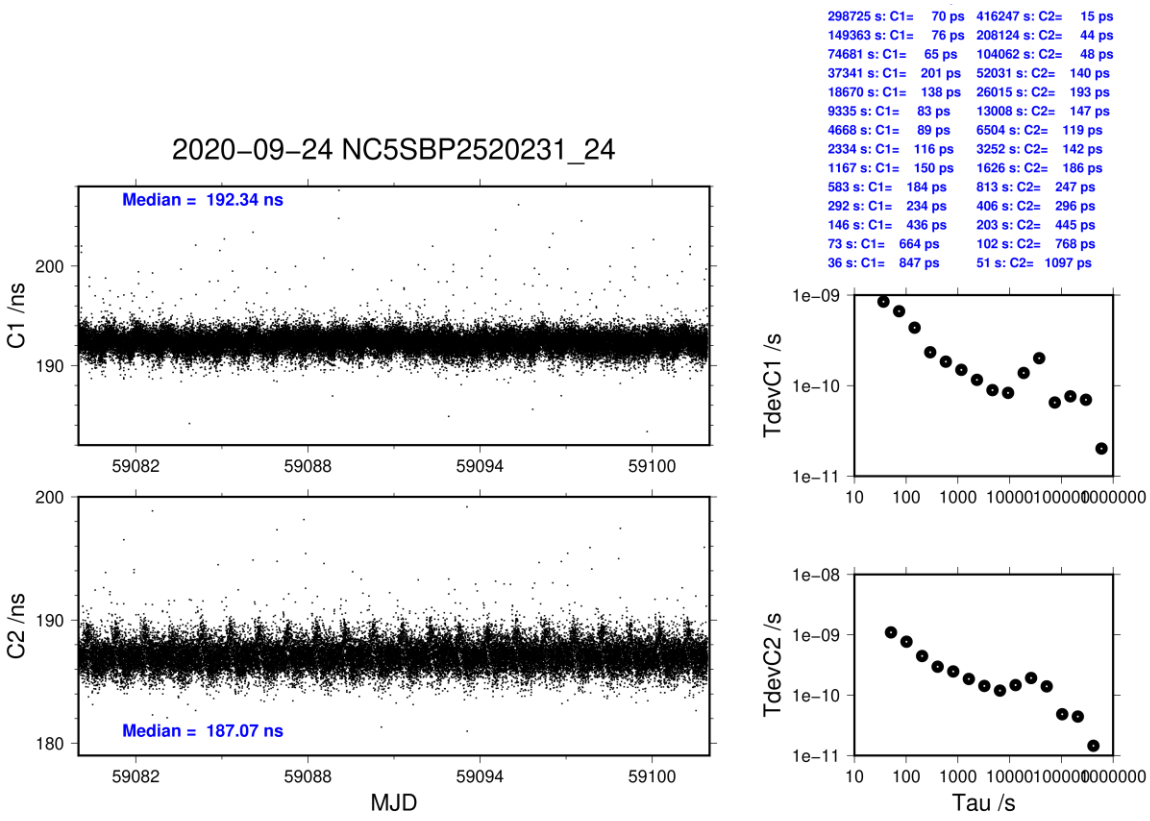
Total number of code differences = ******

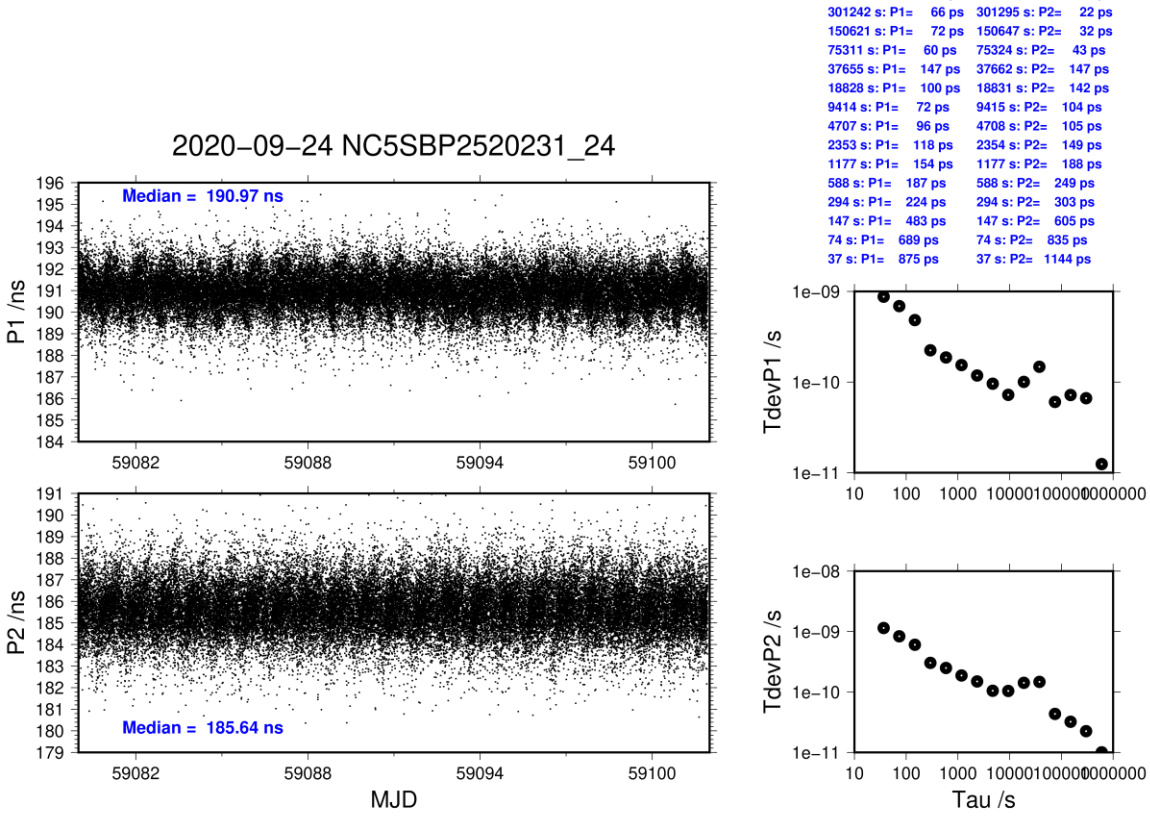
Global average of individual differences

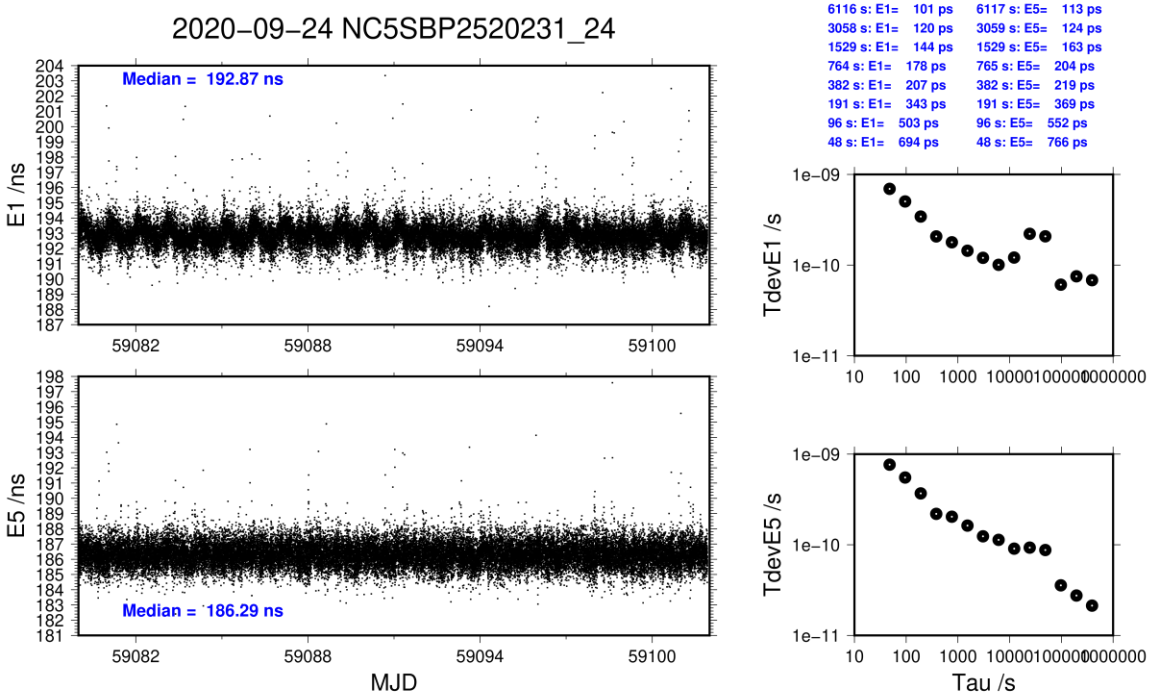
Code	#pts	ave/ns	rms/ns
C1	519179	192.341	1.470
C2	372724	187.109	1.600
P1	515337	190.956	1.414
P2	515235	185.645	1.755
E1	396389	192.880	1.209
E5	396446	186.305	1.055

Number of 300s epochs in out file = 6315

Code	#pts	median/ns	ave/ns	rms/ns
C1	51946	192.339	192.333	0.890
C2	37280	187.068	187.115	1.073
P1	51512	190.967	190.947	0.914
P2	51503	185.640	185.658	1.153
E1	39645	192.868	192.884	0.752
E5	39637	186.293	186.310	0.777




2020−09−24 NC5SBP2520231_24
Median = 190.97 ns
Median = 185.64 ns
P1 /ns
P2 /ns
MJD
301242 s: P1= 66 ps
301295 s: P2= 22 ps
150621 s: P1= 72 ps
150647 s: P2= 32 ps
75311 s: P1= 60 ps
75324 s: P2= 43 ps
37655 s: P1= 147 ps
37662 s: P2= 147 ps
18828 s: P1= 100 ps
18831 s: P2= 142 ps
9414 s: P1= 72 ps
9415 s: P2= 104 ps
4707 s: P1= 96 ps
4708 s: P2= 105 ps
2353 s: P1= 118 ps
2354 s: P2= 149 ps
1177 s: P1= 154 ps
1177 s: P2= 188 ps
588 s: P1= 187 ps
588 s: P2= 249 ps
294 s: P1= 224 ps
294 s: P2= 303 ps
147 s: P1= 483 ps
147 s: P2= 605 ps
74 s: P1= 689 ps
74 s: P2= 835 ps
37 s: P1= 875 ps
37 s: P2= 1144 ps
TdevP1 /s
TdevP2 /s
Tau /s


2020−09−24 NC5SBP2520231_24
Median = 192.87 ns
Median = 186.29 ns
E1 /ns
E5 /ns
MJD
391416 s: E1= 68 ps
391495 s: E5= 21 ps
195708 s: E1= 75 ps
195747 s: E5= 28 ps
97854 s: E1= 61 ps
97874 s: E5= 36 ps
48927 s: E1= 207 ps
48937 s: E5= 88 ps
24463 s: E1= 221 ps
24468 s: E5= 93 ps
12232 s: E1= 121 ps
12234 s: E5= 91 ps
6116 s: E1= 101 ps
6117 s: E5= 113 ps
3058 s: E1= 120 ps
3059 s: E5= 124 ps
1529 s: E1= 144 ps
1529 s: E5= 163 ps
764 s: E1= 178 ps
765 s: E5= 204 ps
382 s: E1= 207 ps
382 s: E5= 219 ps
191 s: E1= 343 ps
191 s: E5= 369 ps
96 s: E1= 503 ps
96 s: E5= 552 ps
48 s: E1= 694 ps
48 s: E5= 766 ps
TdevE1 /s
TdevE5 /s
Tau /s

NC5G-BP1J

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 552481
Computed code bias (P1/P2)/m = 34.892 34.892
Computed baseline (X,Y,Z)/m = 14.703 22.894 -5.061
RMS of residuals /m = 0.605

Number of phase differences to fit baseline
L1/L2 = 443231
L5 = 0
A priori baseline (X,Y,Z)/m = 14.703 22.894 -5.061
57395 clock jitters computed out of 58861 intervals
AVE jitter /ps = -4.4 RMS jitter /ps = 53.4

Iter 1 Large residuals L1= 330
Iter 1 Large residuals L2= 330
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = -0.000 -0.016 0.025
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = -0.004 -0.009 0.029
RMS of residuals L2 /m = 0.004
No computed baseline L5, will use L1/L2

Iter 2 Large residuals L1= 330
Iter 2 Large residuals L2= 330
Iter 2 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = -0.000 -0.016 0.025
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = -0.004 -0.009 0.029
RMS of residuals L2 /m = 0.004
No computed baseline L5, will use L1/L2

Final baseline L1 (X,Y,Z)/m = 14.702 22.878 -5.036
Final baseline L2 (X,Y,Z)/m = 14.698 22.885 -5.032
Final baseline L5 (X,Y,Z)/m = 14.700 22.881 -5.034

COMPUTATION OF CODE DIFFERENCES

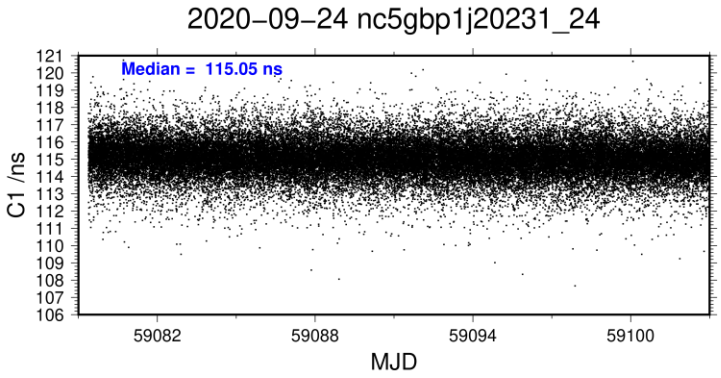
Total number of code differences = 555186

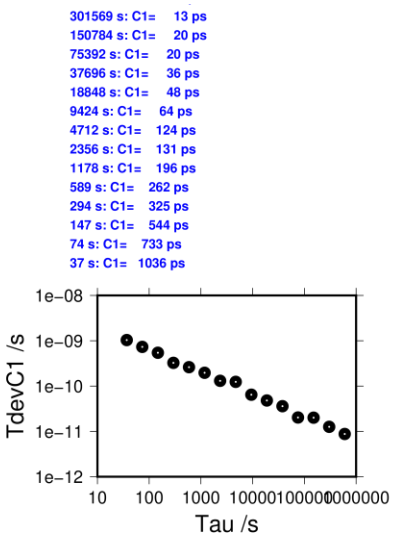
Global average of individual differences

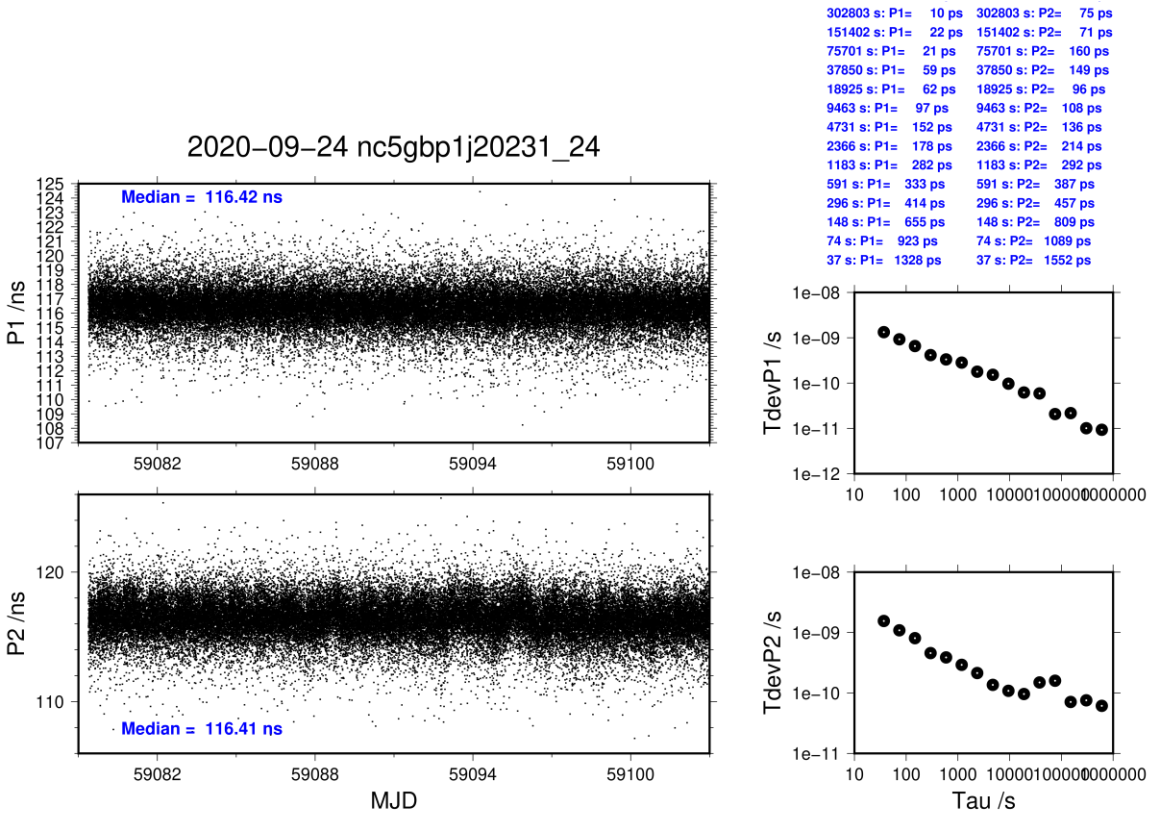
Code	#pts	ave/ns	rms/ns
C1	554392	115.039	1.771
P1	552041	116.394	2.152
P2	552046	116.379	2.263

Number of 300s epochs in out file = 6802

Code	#pts	median/ns	ave/ns	rms/ns
C1	55425	115.051	115.046	1.040
P1	55199	116.425	116.410	1.317
P2	55199	116.407	116.398	1.558






2020−09−24 nc5gbp1j20231_24
Median = 116.42 ns
Median = 116.41 ns
P1 /ns
P2 /ns
MJD
302803 s: P1= 10 ps 302803 s: P2= 75 ps
151402 s: P1= 22 ps 151402 s: P2= 71 ps
75701 s: P1= 21 ps 75701 s: P2= 160 ps
37850 s: P1= 59 ps 37850 s: P2= 149 ps
18925 s: P1= 62 ps 18925 s: P2= 96 ps
9463 s: P1= 97 ps 9463 s: P2= 108 ps
4731 s: P1= 152 ps 4731 s: P2= 136 ps
2366 s: P1= 178 ps 2366 s: P2= 214 ps
1183 s: P1= 282 ps 1183 s: P2= 292 ps
591 s: P1= 333 ps 591 s: P2= 387 ps
296 s: P1= 414 ps 296 s: P2= 457 ps
148 s: P1= 655 ps 148 s: P2= 809 ps
74 s: P1= 923 ps 74 s: P2= 1089 ps
37 s: P1= 1328 ps 37 s: P2= 1552 ps
TdevP1 /s
TdevP2 /s
Tau /s

NC5G-BP25

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 535376
Number of huge residuals = 4. New iteration
Computed code bias (P1/P2)/m = 19.221 17.844
Computed baseline (X,Y,Z)/m = 14.279 22.775 -5.459
RMS of residuals /m = 0.590

Number of phase differences to fit baseline
L1/L2 = 427035
L5 = 0
A priori baseline (X,Y,Z)/m = 14.279 22.775 -5.459
55868 clock jitters computed out of 57285 intervals
AVE jitter /ps = -4.5 RMS jitter /ps = 53.4

Iter 1 Large residuals L1= 292
Iter 1 Large residuals L2= 292
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.061 -0.049 0.023
RMS of residuals L1 /m = 0.005
Computed baseline L2 (X,Y,Z)/m = 0.065 -0.044 0.020
RMS of residuals L2 /m = 0.004
No computed baseline L5, will use L1/L2

Iter 2 Large residuals L1= 292
Iter 2 Large residuals L2= 292
Iter 2 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.061 -0.049 0.023
RMS of residuals L1 /m = 0.005
Computed baseline L2 (X,Y,Z)/m = 0.065 -0.044 0.020
RMS of residuals L2 /m = 0.004
No computed baseline L5, will use L1/L2

Final baseline L1 (X,Y,Z)/m = 14.340 22.726 -5.436
Final baseline L2 (X,Y,Z)/m = 14.344 22.731 -5.439
Final baseline L5 (X,Y,Z)/m = 14.342 22.728 -5.437

COMPUTATION OF CODE DIFFERENCES

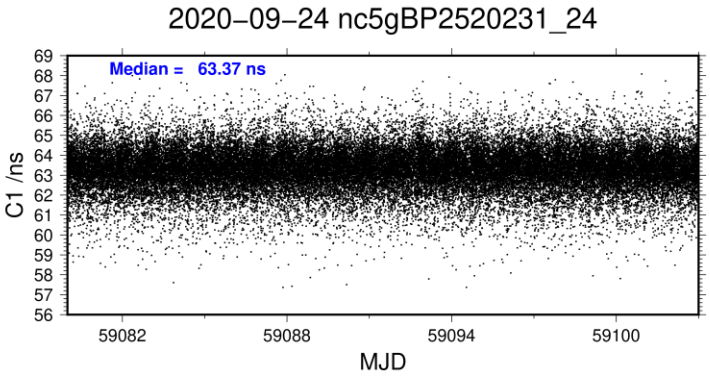
Total number of code differences = 537534

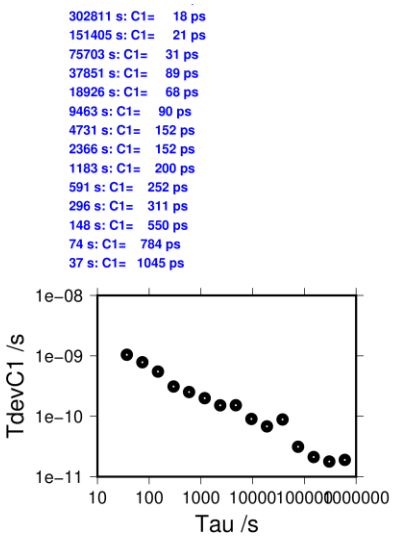
Global average of individual differences

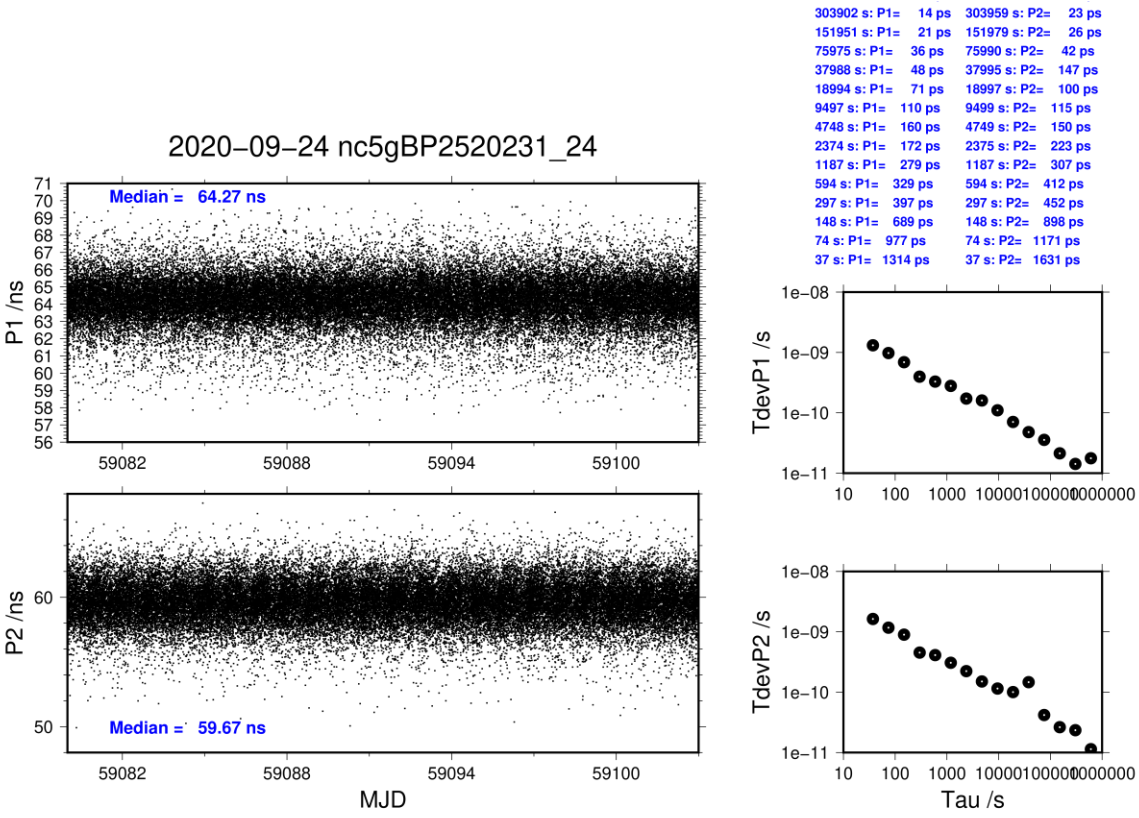
Code	#pts	ave/ns	rms/ns
C1	537281	63.308	1.522
P1	535284	64.212	1.955
P2	535181	59.620	2.271

Number of 300s epochs in out file = 6624

Code	#pts	median/ns	ave/ns	rms/ns
C1	53753	63.368	63.324	1.069
P1	53560	64.269	64.235	1.338
P2	53550	59.671	59.642	1.650






2020−09−24 nc5gBP2520231_24
Median = 64.27 ns
Median = 59.67 ns
P1 /ns
P2 /ns
MJD
303902 s: P1= 14 ps
303959 s: P2= 23 ps
151951 s: P1= 21 ps
151979 s: P2= 26 ps
75975 s: P1= 36 ps
75990 s: P2= 42 ps
37988 s: P1= 48 ps
37995 s: P2= 147 ps
18994 s: P1= 71 ps
18997 s: P2= 100 ps
9497 s: P1= 110 ps
9499 s: P2= 115 ps
4748 s: P1= 160 ps
4749 s: P2= 150 ps
2374 s: P1= 172 ps
2375 s: P2= 223 ps
1187 s: P1= 279 ps
1187 s: P2= 307 ps
594 s: P1= 329 ps
594 s: P2= 412 ps
297 s: P1= 397 ps
297 s: P2= 452 ps
148 s: P1= 689 ps
148 s: P2= 898 ps
74 s: P1= 977 ps
74 s: P2= 1171 ps
37 s: P1= 1314 ps
37 s: P2= 1631 ps
TdevP1 /s
TdevP2 /s
Tau /s

1.3/ TL (20305)

Period

MJD 59153 to 59165

Delays

BP1J: (cf page 40)
- X_O = 139.08 ns (139.08)
- X_P = 53.62 ns (0+53.62)
- REFDLY = 192.70 ns
- CABDLY = 235.70 ns (C131)

BP25: (cf page 40)
- REFDLY = 53.51 ns (0+53.51)
- CABDLY = 176.24 ns (C208)

TLT0 (TWTF): (cf page 40)
- REFDLY = 157.92 ns (25.58+132.34)
- CABDLY = 119.8 ns

TLT1: (cf page 42)
- REFDLY = 0 ns
- CABDLY = 0 ns
- TOTDLY =
  - P1: 415.3 ns
  - P2: 424.3 ns

TLT3: (cf page 45)
- REFDLY = 25.64 ns
- CABDLY = 143.6 ns

TLT5: (cf page 47)
- REFDLY = 14.59 ns
- CABDLY = 0 ns
- TOTDLY =
  - P1: 205.04 ns
  - P2: 203.63 ns

Setup at the TL

Annex A - Information Sheet

Laboratory: TL	
Date and hour of the beginning of measurements:	2020-10-31 00:00:00 UTC
Date and hour of the end of measurements:	2020-11-20 23:59:00 UTC

Information on the system

	Local:	Travelling:
4-character BIPM code	TLT0[1]	B3TS
● Receiver maker and type: Receiver serial number:	Septentrio PolaRx4TR Pro 3008014	BP1J/BP25
1 PPS trigger level /V:	1 V	1 V
● Antenna cable maker and type: Phase stabilized cable (Y/N):	Andrew FSJ, yes	-
Length outside the building /m:	~ 30	~5
● Antenna maker and type: Antenna serial number:	ASH701945C_M SCIS CR620012101	-
Temperature (if stabilized) /°C	23	23

Measured delays/ns

(if needed fill box "Additional Information" below)

	Local:	Travelling:
● Delay from local UTC to receiver 1 PPS-in:	25.583±0.020 ns	0[2]
Delay from 1 PPS-in to internal Reference (if different):	132.341±0.114 ns	BP25: 139.080±0.134 ns
● Antenna cable delay:	~ 119.8 ns	(1)
Splitter delay (if any):	Null	(1)
Additional cable delay (if any):	Null	(1)

Data used for the generation of CGGTTS files

● INT DLY (GPS) /ns:	P1:24.462, P2: 22.990[3]
● INT DLY (GLONASS) /ns:	No measurement
● CAB DLY /ns:	Included in INTDLY
● REF DLY /ns:	Included in INTDLY
● Coordinates reference frame:	WGS-84
Latitude or X /m:	-2994428.57
Longitude or Y /m:	4951309.08
Height or Z /m:	2674496.72

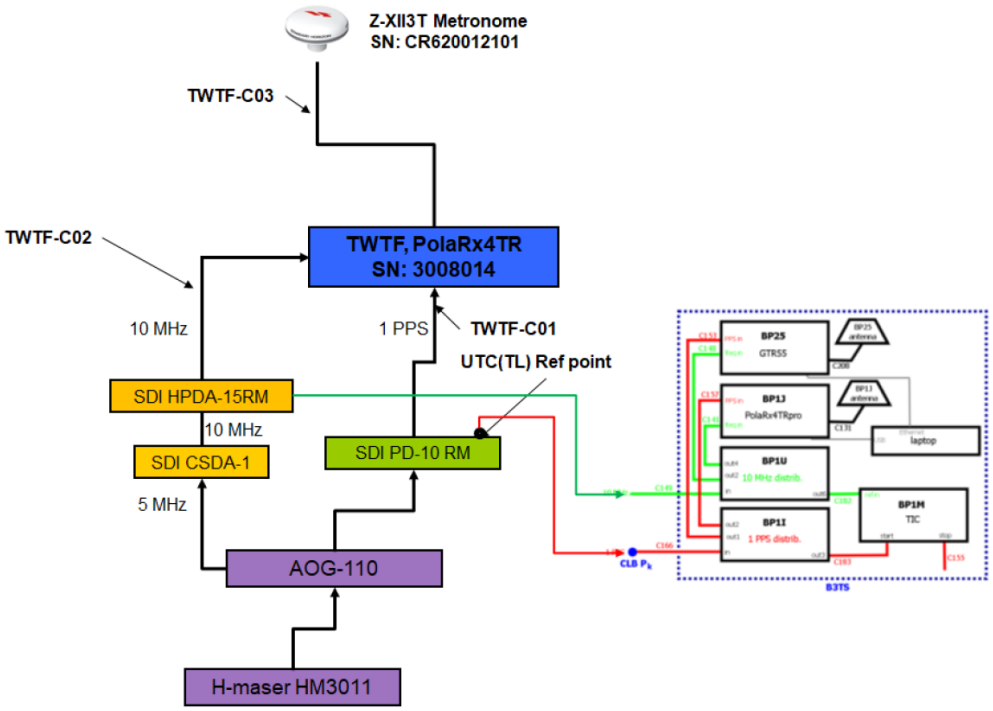
General information

● Rise time of the local UTC pulse:	3 ns
● Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	23 ± 1 °C
Set humidity value and uncertainty:	No humidity control

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

[1] IGS station name: TWTF, IERS DOME number: 23603S002
[2] The Cable C166 of B3TS is connected to the UTC(TL) ref point, the delay from UTC(TL) to the input of cable C166 is 0 ns.
[3] The P1 and P2 INTDLY of TLT0 used for generating CGGTTS is actually TOTDLY, already including CABDLY and REFDLY

Diagram of the experiment set-up:



Annex A - Information Sheet

Laboratory: TL	
Date and hour of the beginning of measurements:	2020-10-31 00:00:00 UTC
Date and hour of the end of measurements:	2020-11-20 23:59:00 UTC

Information on the system

	Local:	Travelling:
4-character BIPM code	TLT1	B3TS
● Receiver maker and type: Receiver serial number:	Ashtech Z-XII3T Metronome RT919994504	BP1J/BP25
1 PPS trigger level /V:	1 V	1 V
● Antenna cable maker and type: Phase stabilised cable (Y/N):	Andrew FSJ, Yes	-
Length outside the building /m:	~ 30	~5
● Antenna maker and type: Antenna serial number:	SEPCHOKE_B3E6 SPKE 5006	-
Temperature (if stabilised) /°C	23	23

Measured delays/ns

	Local:	Travelling:
● Delay from local UTC to receiver 1 PPS-in:	No measurement	0[1]
Delay from 1 PPS-in to internal Reference (if different):	-	-
● Antenna cable delay:	No measurement	(1)
Splitter delay (if any):	Null	(1)
Additional cable delay (if any):	Null	(1)

Data used for the generation of CGGTTS files

● INT DLY (GPS) /ns:	P1: 415.3, P2: 424.3[2]
● INT DLY (GLONASS) /ns:	No measurement
● CAB DLY /ns:	included in INT DLY
● REF DLY /ns:	included in INT DLY
● Coordinates reference frame:	
Latitude or X /m:	-2994425.54
Longitude or Y /m:	4951311.80
Height or Z /m:	2674498.30

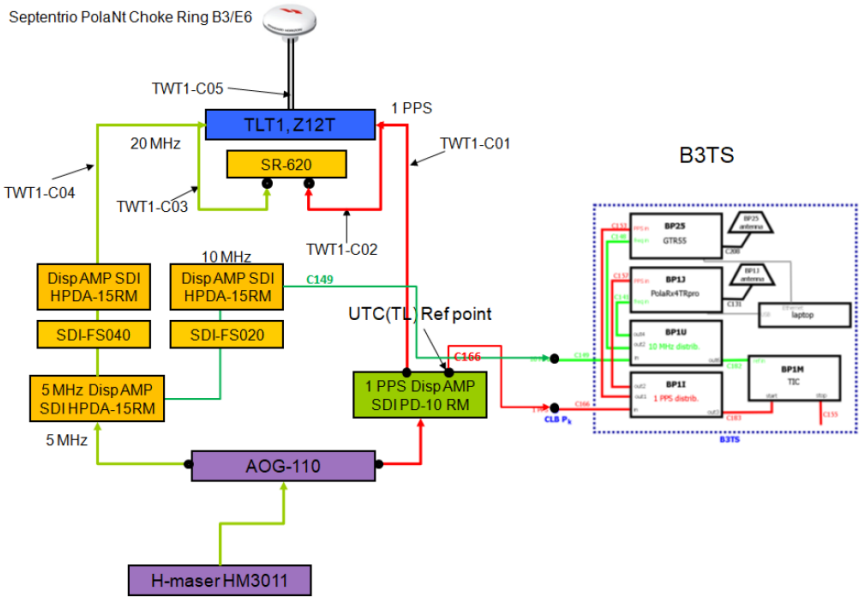
General information

● Rise time of the local UTC pulse:	3 ns
● Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	23 ± 1 °C
Set humidity value and uncertainty:	No humidity control

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

[1] The Cable C166 of B3TS is connected to the UTC(TL) ref point, the delay from UTC(TL) to the input of cable C166 is 0 ns.
[2] The P1 and P2 INTDLY of TLT1 used for generating CGGTTS is actually TOTDLY, already including CABDLY and REFDLY

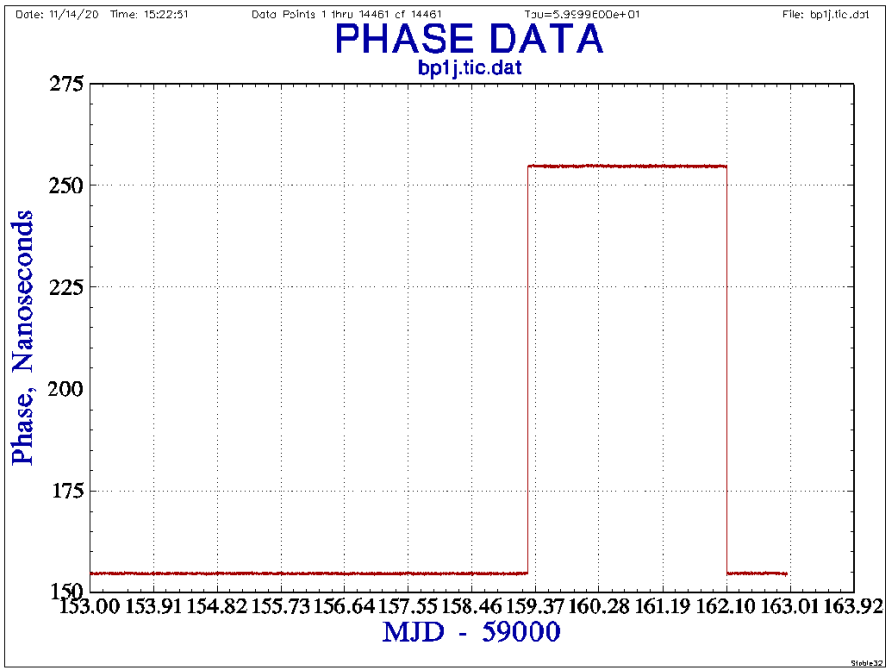
Diagram of the experiment set-up:



- The latch points of the TLT1 are re-defined from its external 20 MHz frequency input to be the external 1 PPS reference. The time difference between its external reference 1 PPS and 20 MHz frequency inputs were measured by a time interval counter (SR-620) and compensated into the pseudorange measurement of the RINEX files of TLT1. (reference paper: *Shinn-Yan Lin et al, "A Modification of Z12T Metronome Time Transfer System", 2014 EFTF*)

Log of Events / Additional Information:

- BP1J 1 PPS out jumped -100 ns at 2020-11-06 08:13:57 UTC, and jumped back to origin value when reset BP1J and restart measurement at 2020-11-09 05:20:00 UTC



Annex A - Information Sheet

Laboratory: TL	
Date and hour of the beginning of measurements:	2020-10-31 00:00:00 UTC
Date and hour of the end of measurements:	2020-11-20 23:59:00 UTC

Information on the system

	Local:	Travelling:
4-character BIPM code	TLT3	BP0U/BP1C
● Receiver maker and type: Receiver serial number:	Dicom GTR-50 1403002	-
1 PPS trigger level /V:	1 V	1 V
● Antenna cable maker and type: Phase stabilised cable (Y/N):	Andrew FSJ, yes	-
Length outside the building /m:	~ 35	~5
● Antenna maker and type: Antenna serial number:	SEPCHOKE_B3E6 SPKE 5024	-
Temperature (if stabilised) /°C	23	23

Measured delays/ns

(if needed fill box "Additional Information" below)

	Local:	Travelling:
● Delay from local UTC to receiver 1 PPS-in:	25.641±0.015 ns	0
Delay from 1 PPS-in to internal Reference (if different):	No measurement	-
● Antenna cable delay:	~ 143.6 ns	(1)
Splitter delay (if any):	Null	(1)
Additional cable delay (if any):	Null	(1)

Data used for the generation of CGGTTS files

● INT DLY (GPS) /ns:	P1:82.4, P2: 86.1[1]
● INT DLY (GLONASS) /ns:	No measurement
● CAB DLY /ns:	Included in INT DLY
● REF DLY /ns:	Included in INT DLY
● Coordinates reference frame:	
Latitude or X /m:	-2994424.46
Longitude or Y /m:	4951312.87
Height or Z /m:	2674496.83

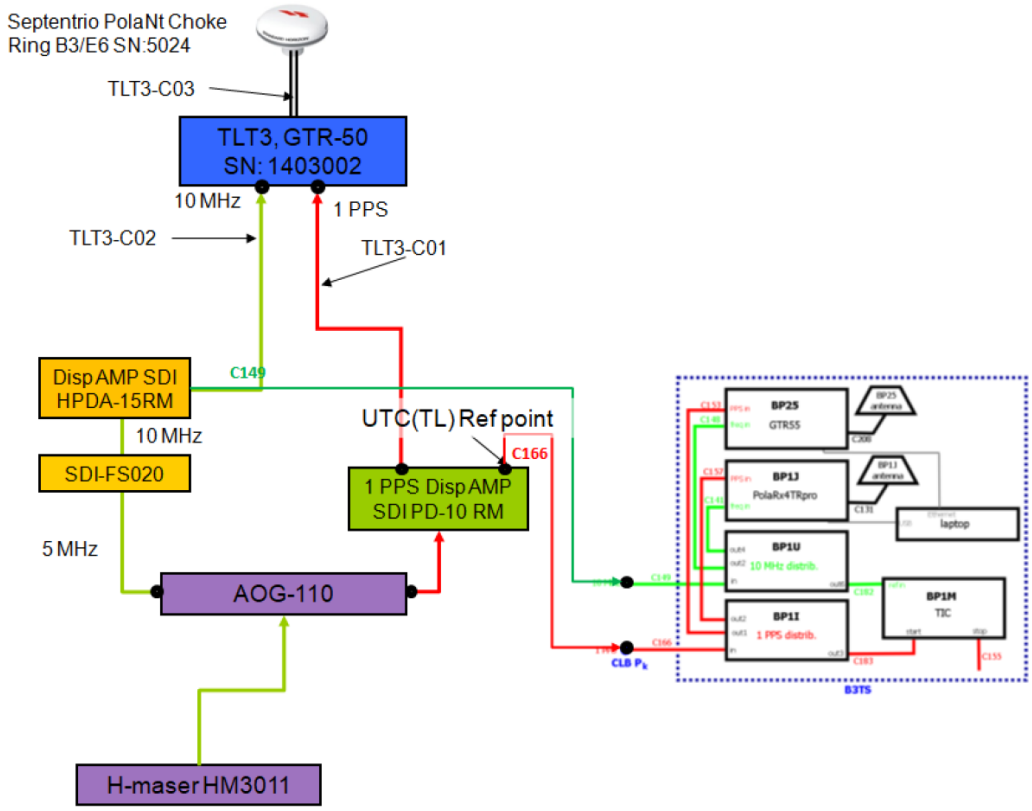
General information

● Rise time of the local UTC pulse:	3 ns
● Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	23 ± 1 °C
Set humidity value and uncertainty:	No humidity control

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

[1] The P1 and P2 INTDLY of TLT3 used for generating CGGTTS is actually TOTDLY, already including CABDLY and REFDLY

Diagram of the experiment set-up:



Annex A - Information Sheet

Laboratory: TL	
Date and hour of the beginning of measurements:	2020-10-31 00:00:00 UTC
Date and hour of the end of measurements:	2020-11-20 23:59:00 UTC

Information on the system

	Local:	Travelling:
4-character BIPM code	TLT5	B3TS
● Receiver maker and type: Receiver serial number:	Septentrio PolaRx5TR 3227923	BP1J/BP25
1 PPS trigger level /V:	1 V	1 V
● Antenna cable maker and type: Phase stabilised cable (Y/N):	Andrew FSJ, yes	-
Length outside the building /m:	~ 35	~5
● Antenna maker and type: Antenna serial number:	SEPCHOKE_B3E6 SPKE 5303	-
Temperature (if stabilised) /°C	23	23

Measured delays/ns

(if needed fill box "Additional Information" below)

	Local:	Travelling:
● Delay from local UTC to receiver 1 PPS-in:	14.593±0.017 ns	0[1]
Delay from 1 PPS-in to internal Reference (if different):	-	-
● Antenna cable delay:	No measurement	(1)
Splitter delay (if any):	Null	(1)
Additional cable delay (if any):	Null	(1)

Data used for the generation of CGGTTS files

● INT DLY (GPS) /ns:	P1:205.04, P2: 203.63[2]
● INT DLY (GLONASS) /ns:	No measurement
● CAB DLY /ns:	Included in INTDLY
● REF DLY /ns:	Included in INTDLY
● Coordinates reference frame:	WGS-84
Latitude or X /m:	-2994423.91
Longitude or Y /m:	+4951311.91
Height or Z /m:	+2674499.18

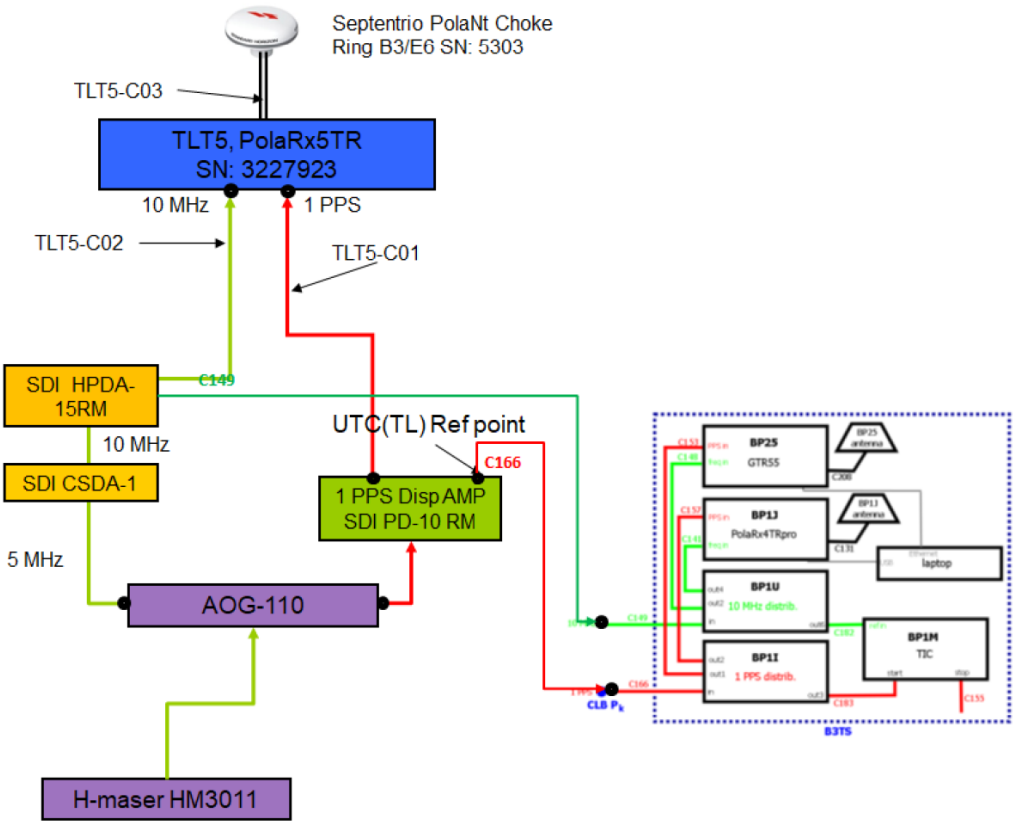
General information

● Rise time of the local UTC pulse:	3 ns
● Is the laboratory air conditioned:	Yes
Set temperature value and uncertainty:	23 ± 1 °C
Set humidity value and uncertainty:	No humidity control

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

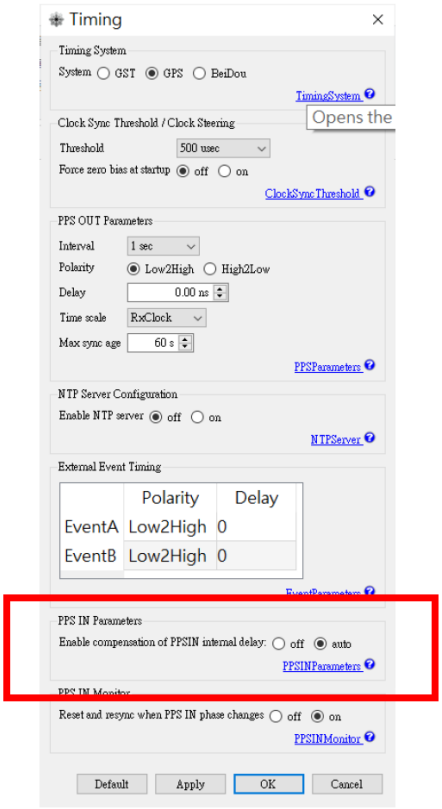
[1] The Cable C166 of B3TS is connected to the UTC(TL) ref point, the delay from UTC(TL) to the input of cable C166 is 0 ns.
[2] The P1 and P2 INTDLY of TLT5 used for generating CGGTTS is actually TOTDLY, already including CABDLY and REFDLY

Diagram of the experiment set-up:



Log of Events / Additional Information:

The timing configuration of TLT5, the PPS-IN parameter enable compensation of PPSIN internal delay is set to be "auto"



TLT0-BP1J

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 343207
Number of huge residuals = *****. New iteration
Number of huge residuals = 18. New iteration
Computed code bias (P1/P2)/m = -21.664 -20.937
Computed baseline (X,Y,Z)/m = -9.457 -6.763 -1.998
RMS of residuals /m = 0.351

Number of phase differences to fit baseline
L1/L2 = 324996
L5 = 14408
A priori baseline (X,Y,Z)/m = -9.457 -6.763 -1.998
36370 clock jitters computed out of 36615 intervals
AVE jitter /ps = -0.3 RMS jitter /ps = 43.5

Iter 1 Large residuals L1= 8
Iter 1 Large residuals L2= 8
Iter 1 Large residuals L5= 1
Computed baseline L1 (X,Y,Z)/m = 0.010 -0.017 -0.019
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.011 -0.022 -0.021
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = 0.021 -0.073 -0.043
RMS of residuals L5 /m = 0.005

Iter 2 Large residuals L1= 8
Iter 2 Large residuals L2= 8
Iter 2 Large residuals L5= 1
Computed baseline L1 (X,Y,Z)/m = 0.010 -0.017 -0.019
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.011 -0.022 -0.021
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = 0.021 -0.073 -0.043
RMS of residuals L5 /m = 0.005

Final baseline L1 (X,Y,Z)/m = -9.447 -6.781 -2.017
Final baseline L2 (X,Y,Z)/m = -9.447 -6.785 -2.019
Final baseline L5 (X,Y,Z)/m = -9.437 -6.836 -2.040

COMPUTATION OF CODE DIFFERENCES

Total number of code differences = 815455

Global average of individual differences

Code	#pts	ave/ns	rms/ns
C1	266814	-72.257	1.312
C2	191648	-70.004	1.658
P1	266167	-72.216	1.358
P2	266167	-69.786	1.364
E1	180660	-71.930	1.034
E5	716	-96.379	0.929

Number of 300s epochs in out file = 3737

Code	#pts	median/ns	ave/ns	rms/ns
C1	26666	-72.217	-72.251	0.646
C2	19162	-69.991	-69.997	0.767
P1	26593	-72.172	-72.210	0.705
P2	26592	-69.782	-69.786	0.890
E1	18061	-71.898	-71.922	0.566
E5	73	-96.314	-96.403	0.595

1.4/ BIPM (20344)

Period

MJD 59192 to 59198

Delays

BP1J: (cf page 53)

X_O = 141.90 ns (171.37-29.47)

X_P = 53.49 ns

REFDLY = 195.69 ns

CABDLY = 235.70 ns (C131)

BP25: (cf page 54)

REFDLY = 53.40 ns

CABDLY = 176.24 ns (C208)

BP21: (cf page 53)

receiver PPS-in compensation = 29.64 ns

REFDLY = 43.26 ns

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 59192
Date and hour of the end of measurements:	MJD 59198

Information on the system

	Local:	**Travelling:**
4-character BIPM code	BP21	BP1J
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx5TR 4701229	Septentrio PolaRx4proTR 27
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 MC 5131
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:	43.26 ns	53.49 ns
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)	PPSin compensation enable	141.90 ns
• Antenna cable delay:	140.80 ns	235.70 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.

Annex A - Information Sheet

(to be repeated for each calibrated system)

Laboratory:	BIPM
Date and hour of the beginning of measurements:	MJD 59192
Date and hour of the end of measurements:	MJD 59198

Information on the system

	Local:	Travelling:
4-character BIPM code	BP21	BP25
• Receiver maker and type: Receiver serial number:	Septentrio PolaRx5TR 4701229	Mesit GTR55 1808001
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	Novatel GNSS-850 NMLK18070096N
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:	43.26 ns	53.40 ns
Delay from 1 PPS-in to internal Reference (if different): (see section 2 for details)	PPSin compensation enable	
• Antenna cable delay:	140.80 ns	176.24 ns
Splitter delay (if any):		(1)
Additional cable delay (if any):		(1)

Data used for the generation of CGGTTS files

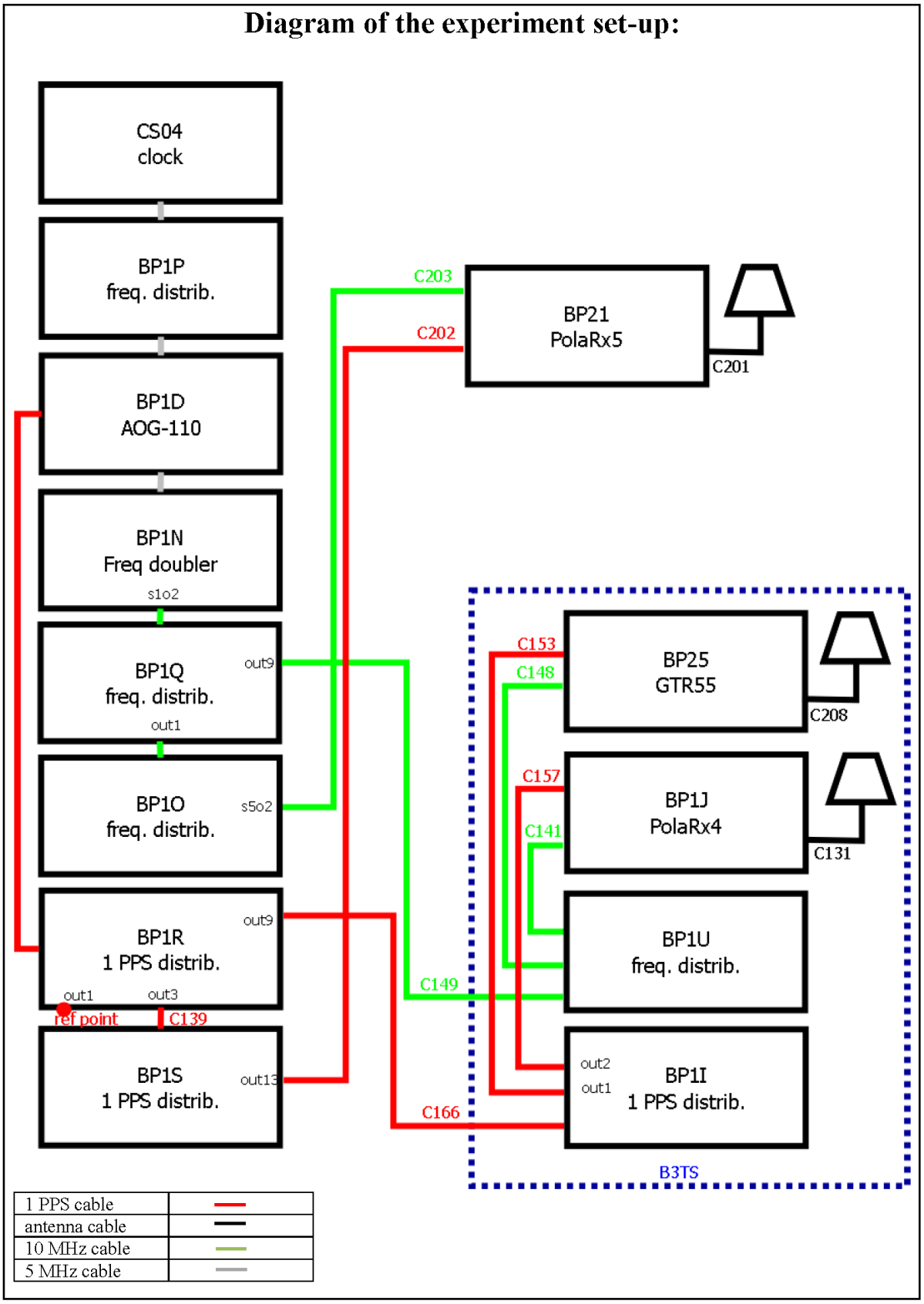
• INT DLY (GPS) /ns:	
• INT DLY (Galileo) /ns:	
• INT DLY (GLONASS) /ns:	
• CAB DLY /ns:	
• REF DLY /ns:	
• Coordinates reference frame:	
Latitude or X /m:	
Longitude or Y /m:	
Height or Z /m:	

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).

BP1J-BP21

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 143383
Apriori codes biases from 27359 high elev obs : -10.166 -9.913
Iteration 0: Obs used = 223759; Huge residuals = 0; Large residuals = 10289
Iteration 1: Obs used = 223759; Huge residuals = 0; Large residuals = 10289
Computed code bias (P1/P2)/m = -9.867 -9.543
Computed baseline (X,Y,Z)/m = -3.959 -0.984 2.828
RMS of residuals /m = 0.692

Number of phase differences to fit baseline
L1/L2 = 138999
L5 = 69985
A priori baseline (X,Y,Z)/m = -3.959 -0.984 2.828
20091 clock jitters computed out of 20091 intervals
AVE jitter /ps = 1.2 RMS jitter /ps = 3.8

Iter 1 Large residuals L1= 3
Iter 1 Large residuals L2= 6
Iter 1 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.351 0.287 0.474
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.354 0.283 0.473
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = 0.360 0.296 0.477
RMS of residuals L5 /m = 0.003

Iter 2 Large residuals L1= 3
Iter 2 Large residuals L2= 6
Iter 2 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = 0.351 0.287 0.474
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.354 0.283 0.473
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = 0.360 0.296 0.477
RMS of residuals L5 /m = 0.003

New iteration of baseline
New apriori baseline (X,Y,Z)/m = -3.607 -0.699 3.302
20091 clock jitters computed out of 20091 intervals
AVE jitter /ps = -0.5 RMS jitter /ps = 1.1

Iter 3 Large residuals L1= 3
Iter 3 Large residuals L2= 6
Iter 3 Large residuals L5= 0
Computed baseline L1 (X,Y,Z)/m = -0.003 0.065 0.019
RMS of residuals L1 /m = 0.003
Computed baseline L2 (X,Y,Z)/m = 0.001 0.062 0.018
RMS of residuals L2 /m = 0.004
Computed baseline L5 (X,Y,Z)/m = -0.001 0.066 0.026
RMS of residuals L5 /m = 0.003

Final baseline L1 (X,Y,Z)/m =	-3.609	-0.634	3.321
Final baseline L2 (X,Y,Z)/m =	-3.606	-0.637	3.320
Final baseline L5 (X,Y,Z)/m =	-3.607	-0.633	3.329

COMPUTATION OF CODE DIFFERENCES

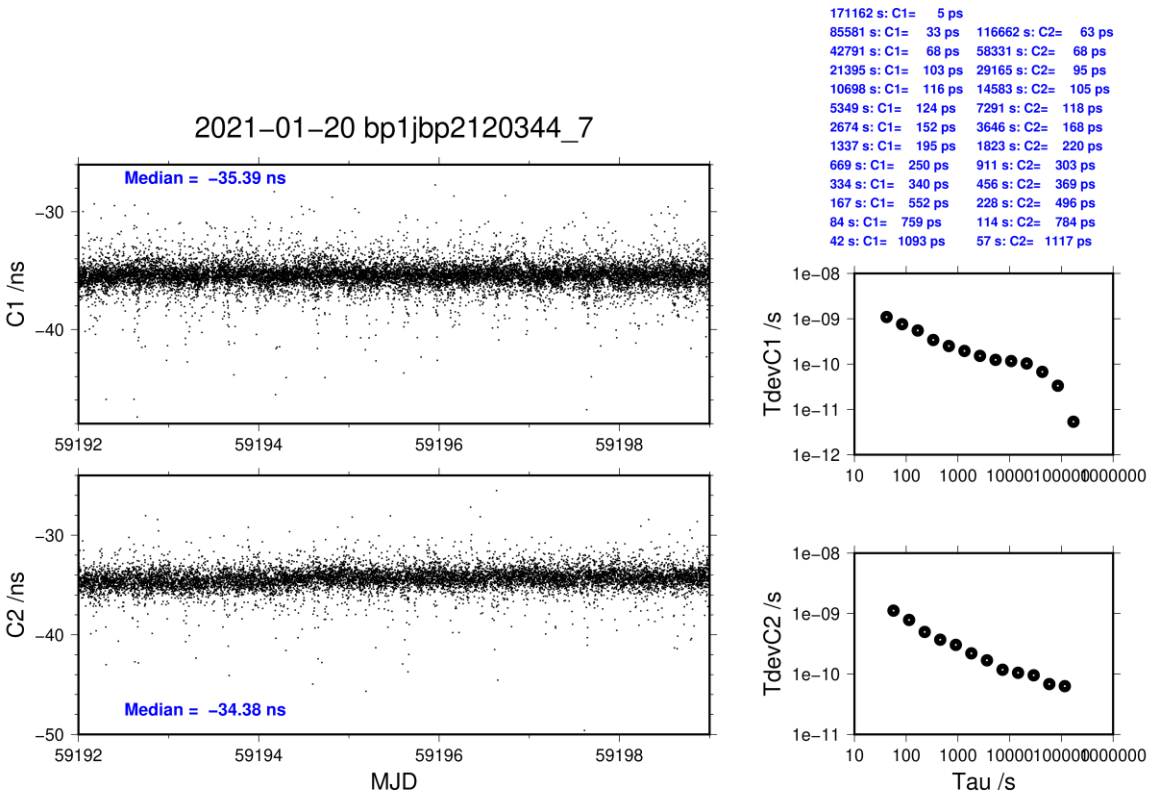
Total number of code differences = 378073

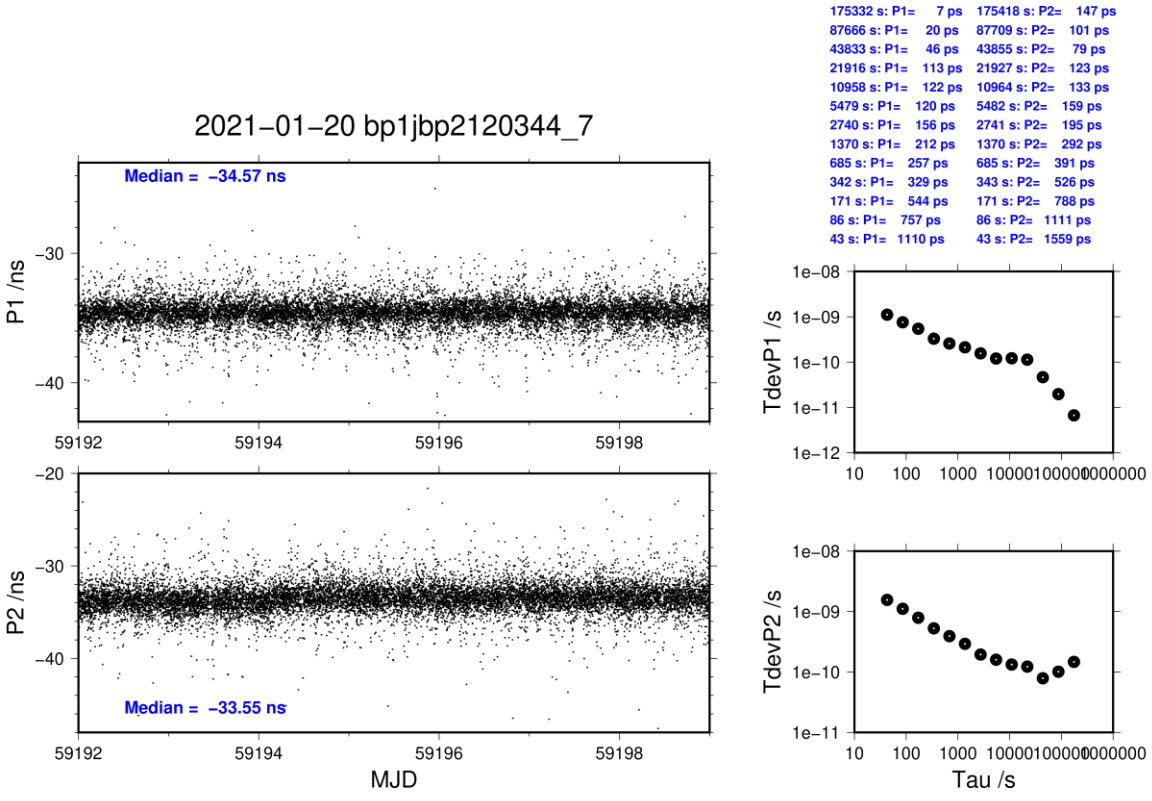
Global average of individual differences

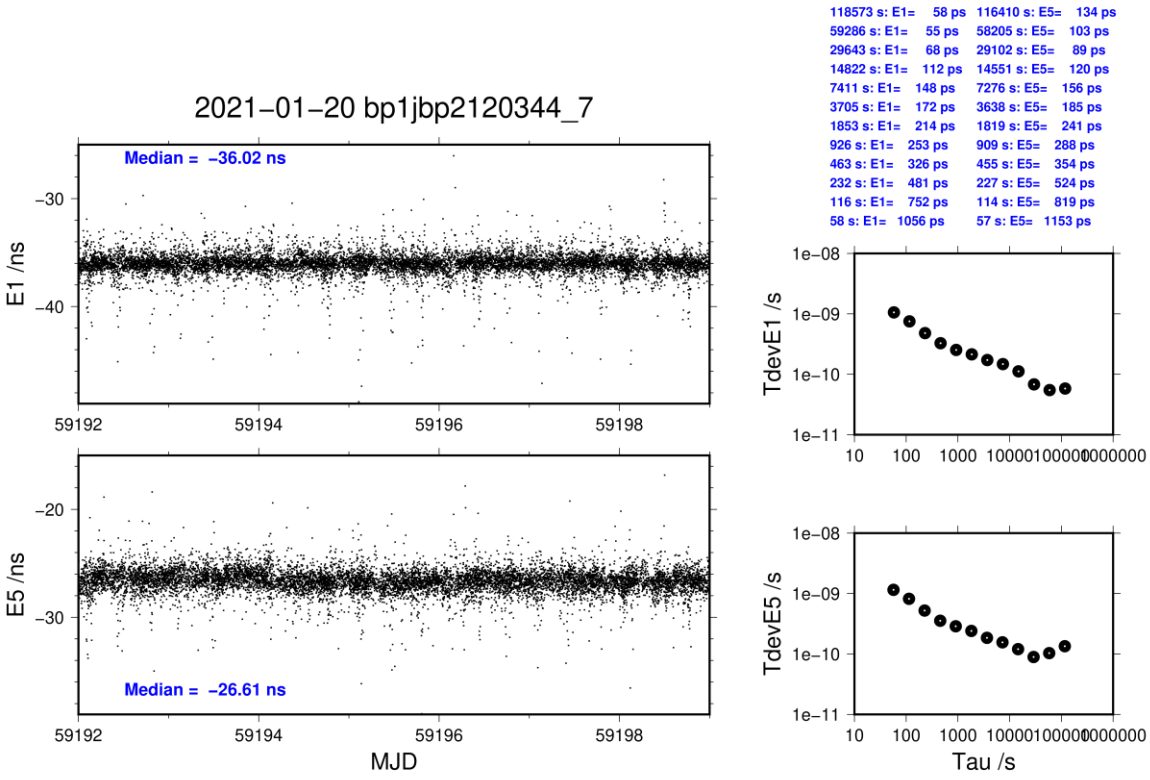
Code	**#pts**	**ave/ns**	**rms/ns**
C1	144991	-35.378	2.208
C2	106261	-34.364	2.111
P1	141931	-34.593	2.054
P2	141826	-33.507	2.890
E1	104292	-36.018	1.971
E5	106323	-26.616	1.841

Number of 300s epochs in out file = 2013

Code	**#pts**	**median/ns**	**ave/ns**	**rms/ns**
C1	14467	-35.388	-35.386	1.084
C2	10613	-34.381	-34.394	1.120
P1	14123	-34.569	-34.595	1.089
P2	14116	-33.553	-33.516	1.577
E1	10442	-36.021	-36.041	1.049
E5	10636	-26.605	-26.636	1.161


2021−01−20 bp1jbp2120344_7
Median = −35.39 ns
Median = −34.38 ns
C1 /ns
C2 /ns
MJD
171162 s: C1= 5 ps
85581 s: C1= 33 ps
42791 s: C1= 68 ps
21395 s: C1= 103 ps
10698 s: C1= 116 ps
5349 s: C1= 124 ps
2674 s: C1= 152 ps
1337 s: C1= 195 ps
669 s: C1= 250 ps
334 s: C1= 340 ps
167 s: C1= 552 ps
84 s: C1= 759 ps
42 s: C1= 1093 ps
116662 s: C2= 63 ps
58331 s: C2= 68 ps
29165 s: C2= 95 ps
14583 s: C2= 105 ps
7291 s: C2= 118 ps
3646 s: C2= 168 ps
1823 s: C2= 220 ps
911 s: C2= 303 ps
456 s: C2= 369 ps
228 s: C2= 496 ps
114 s: C2= 784 ps
57 s: C2= 1117 ps
TdevC1 /s
TdevC2 /s
Tau /s


2021−01−20 bp1jbp2120344_7
Median = −34.57 ns
Median = −33.55 ns
P1 /ns
P2 /ns
MJD
175332 s: P1= 7 ps
87666 s: P1= 20 ps
43833 s: P1= 46 ps
21916 s: P1= 113 ps
10958 s: P1= 122 ps
5479 s: P1= 120 ps
2740 s: P1= 156 ps
1370 s: P1= 212 ps
685 s: P1= 257 ps
342 s: P1= 329 ps
171 s: P1= 544 ps
86 s: P1= 757 ps
43 s: P1= 1110 ps
175418 s: P2= 147 ps
87709 s: P2= 101 ps
43855 s: P2= 79 ps
21927 s: P2= 123 ps
10964 s: P2= 133 ps
5482 s: P2= 159 ps
2741 s: P2= 195 ps
1370 s: P2= 292 ps
685 s: P2= 391 ps
343 s: P2= 526 ps
171 s: P2= 788 ps
86 s: P2= 1111 ps
43 s: P2= 1559 ps
TdevP1 /s
TdevP2 /s
Tau /s


2021−01−20 bp1jbp2120344_7
Median = −36.02 ns
Median = −26.61 ns
E1 /ns
E5 /ns
MJD
118573 s: E1= 58 ps 116410 s: E5= 134 ps
59286 s: E1= 55 ps 58205 s: E5= 103 ps
29643 s: E1= 68 ps 29102 s: E5= 89 ps
14822 s: E1= 112 ps 14551 s: E5= 120 ps
7411 s: E1= 148 ps 7276 s: E5= 156 ps
3705 s: E1= 172 ps 3638 s: E5= 185 ps
1853 s: E1= 214 ps 1819 s: E5= 241 ps
926 s: E1= 253 ps 909 s: E5= 288 ps
463 s: E1= 326 ps 455 s: E5= 354 ps
232 s: E1= 481 ps 227 s: E5= 524 ps
116 s: E1= 752 ps 114 s: E5= 819 ps
58 s: E1= 1056 ps 57 s: E5= 1153 ps
TdevE1 /s
TdevE5 /s
Tau /s

BP25-BP21

COMPUTATION OF BASELINE

Number of codes to fit baseline and biases = 139456
Apriori codes biases from 27397 high elev obs : 3.821 5.390
Iteration 0: Obs used = 221276; Huge residuals = 0; Large residuals = 4842
Iteration 1: Obs used = 221276; Huge residuals = 0; Large residuals = 4842
Computed code bias (P1/P2)/m = 3.613 5.199
Computed baseline (X,Y,Z)/m = -5.111 -0.701 4.547
RMS of residuals /m = 0.622

Number of phase differences to fit baseline
L1/L2 = 135196
L5 = 68777
A priori baseline (X,Y,Z)/m = -5.111 -0.701 4.547
20139 clock jitters computed out of 20139 intervals
AVE jitter /ps = -0.2 RMS jitter /ps = 4.7

Iter 1 Large residuals L1= 0
Iter 1 Large residuals L2= 5
Iter 1 Large residuals L5= 7
Computed baseline L1 (X,Y,Z)/m = 0.034 -0.047 0.078
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = 0.050 -0.045 0.087
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.039 -0.041 0.081
RMS of residuals L5 /m = 0.004

Iter 2 Large residuals L1= 0
Iter 2 Large residuals L2= 5
Iter 2 Large residuals L5= 7
Computed baseline L1 (X,Y,Z)/m = 0.034 -0.047 0.078
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = 0.050 -0.045 0.087
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.039 -0.041 0.081
RMS of residuals L5 /m = 0.004

New iteration of baseline
New apriori baseline (X,Y,Z)/m = -5.069 -0.748 4.629
20139 clock jitters computed out of 20139 intervals
AVE jitter /ps = 0.3 RMS jitter /ps = 0.2

Iter 3 Large residuals L1= 0
Iter 3 Large residuals L2= 5
Iter 3 Large residuals L5= 7
Computed baseline L1 (X,Y,Z)/m = 0.005 -0.025 -0.001
RMS of residuals L1 /m = 0.004
Computed baseline L2 (X,Y,Z)/m = 0.020 -0.024 0.008
RMS of residuals L2 /m = 0.005
Computed baseline L5 (X,Y,Z)/m = 0.012 -0.022 0.003
RMS of residuals L5 /m = 0.004

Final baseline L1 (X,Y,Z)/m =	-5.064	-0.772	4.629
Final baseline L2 (X,Y,Z)/m =	-5.048	-0.771	4.638
Final baseline L5 (X,Y,Z)/m =	-5.057	-0.769	4.632

COMPUTATION OF CODE DIFFERENCES

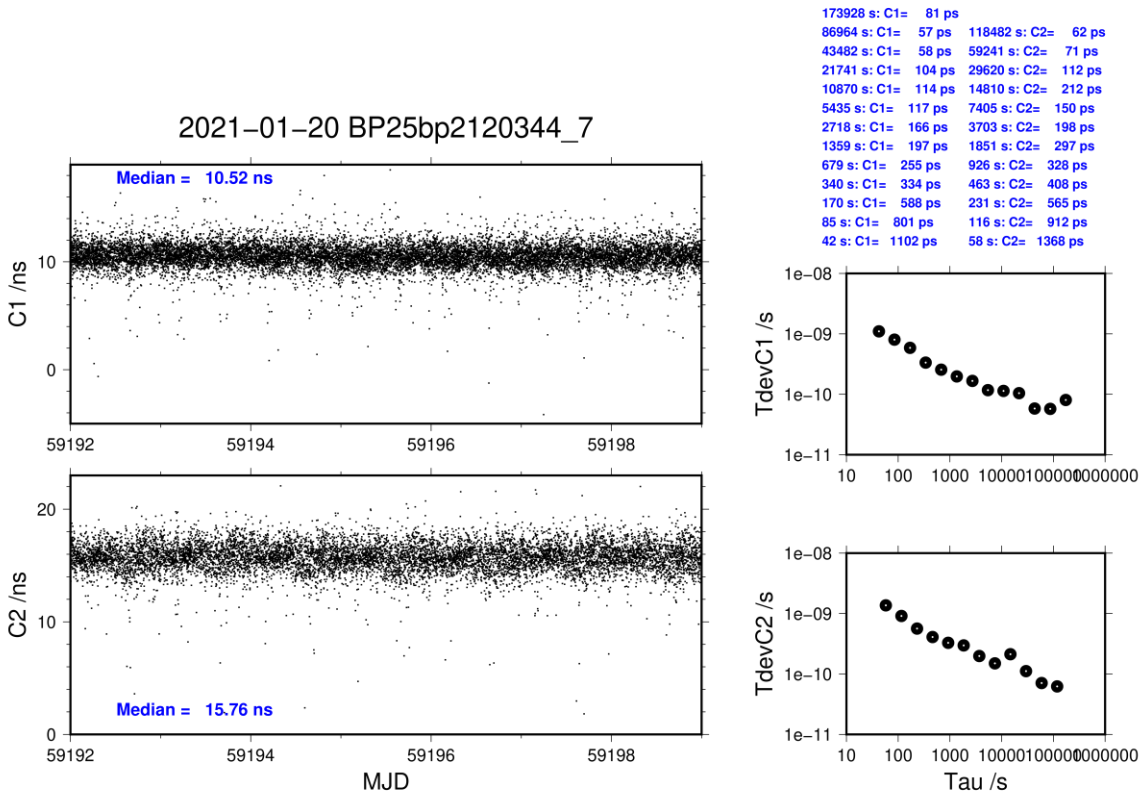
Total number of code differences = 497561

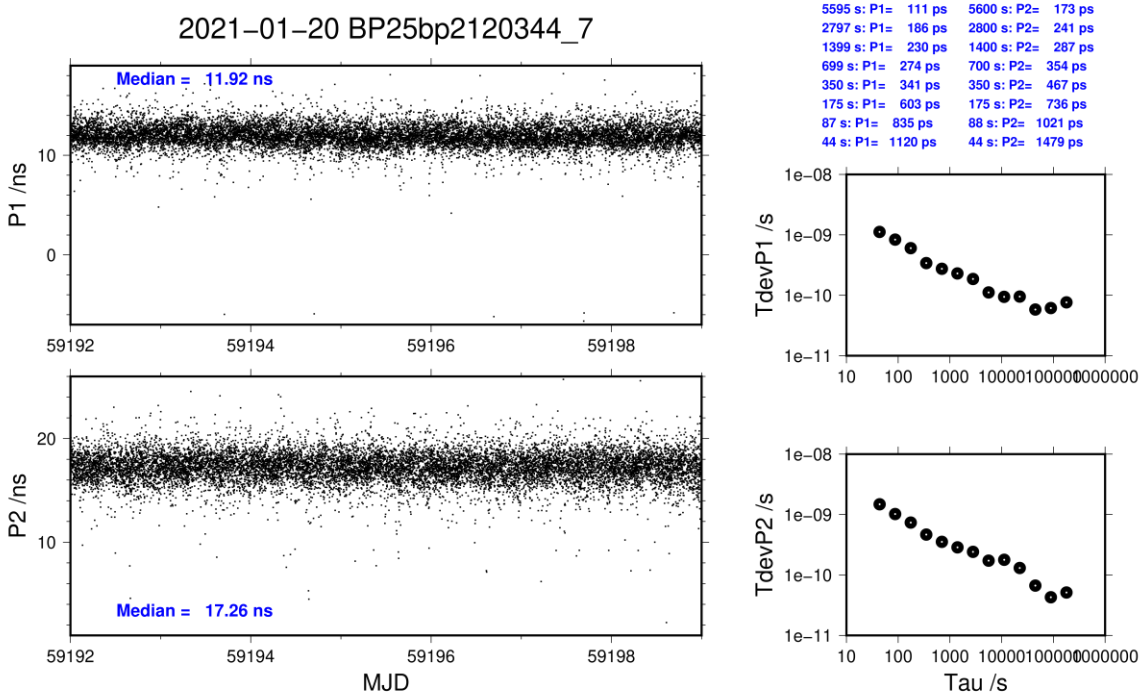
Global average of individual differences

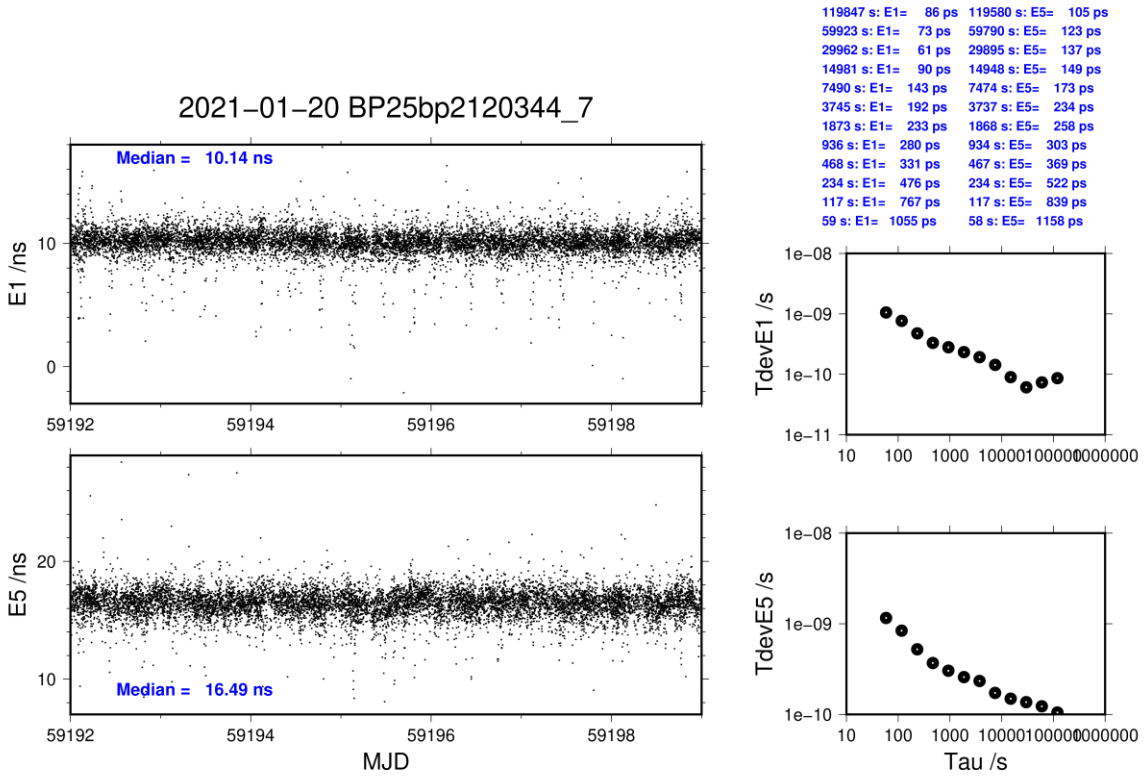
Code	**#pts**	**ave/ns**	**rms/ns**
C1	142474	10.501	1.978
C2	104694	15.744	2.088
P1	139163	11.916	1.929
P2	138932	17.251	2.558
E1	103437	10.102	1.784
E5	103816	16.441	1.737

Number of 300s epochs in out file = 2016

Code	**#pts**	**median/ns**	**ave/ns**	**rms/ns**
C1	14237	10.517	10.515	1.120
C2	10450	15.760	15.729	1.319
P1	13831	11.922	11.957	1.155
P2	13818	17.264	17.233	1.473
E1	10331	10.137	10.086	1.067
E5	10354	16.490	16.432	1.179


2021−01−20 BP25bp2120344_7
Median = 10.52 ns
Median = 15.76 ns
C1 /ns
C2 /ns
MJD
173928 s: C1= 81 ps
86964 s: C1= 57 ps 118482 s: C2= 62 ps
43482 s: C1= 58 ps 59241 s: C2= 71 ps
21741 s: C1= 104 ps 29620 s: C2= 112 ps
10870 s: C1= 114 ps 14810 s: C2= 212 ps
5435 s: C1= 117 ps 7405 s: C2= 150 ps
2718 s: C1= 166 ps 3703 s: C2= 198 ps
1359 s: C1= 197 ps 1851 s: C2= 297 ps
679 s: C1= 255 ps 926 s: C2= 328 ps
340 s: C1= 334 ps 463 s: C2= 408 ps
170 s: C1= 588 ps 231 s: C2= 565 ps
85 s: C1= 801 ps 116 s: C2= 912 ps
42 s: C1= 1102 ps 58 s: C2= 1368 ps
TdevC1 /s
TdevC2 /s
Tau /s


2021−01−20 BP25bp2120344_7
Median = 11.92 ns
Median = 17.26 ns
P1 /ns
P2 /ns
MJD
179033 s: P1= 76 ps 179202 s: P2= 51 ps
89517 s: P1= 61 ps 89601 s: P2= 43 ps
44758 s: P1= 58 ps 44800 s: P2= 67 ps
22379 s: P1= 95 ps 22400 s: P2= 130 ps
11190 s: P1= 94 ps 11200 s: P2= 178 ps
5595 s: P1= 111 ps 5600 s: P2= 173 ps
2797 s: P1= 186 ps 2800 s: P2= 241 ps
1399 s: P1= 230 ps 1400 s: P2= 287 ps
699 s: P1= 274 ps 700 s: P2= 354 ps
350 s: P1= 341 ps 350 s: P2= 467 ps
175 s: P1= 603 ps 175 s: P2= 736 ps
87 s: P1= 835 ps 88 s: P2= 1021 ps
44 s: P1= 1120 ps 44 s: P2= 1479 ps
TdevP1 /s
TdevP2 /s
Tau /s


2021−01−20 BP25bp2120344_7
Median = 10.14 ns
E1 /ns
10
0
59192
59194
59196
59198
E5 /ns
20
10
Median = 16.49 ns
MJD
119847 s: E1= 86 ps 119580 s: E5= 105 ps
59923 s: E1= 73 ps 59790 s: E5= 123 ps
29962 s: E1= 61 ps 29895 s: E5= 137 ps
14981 s: E1= 90 ps 14948 s: E5= 149 ps
7490 s: E1= 143 ps 7474 s: E5= 173 ps
3745 s: E1= 192 ps 3737 s: E5= 234 ps
1873 s: E1= 233 ps 1868 s: E5= 258 ps
936 s: E1= 280 ps 934 s: E5= 303 ps
468 s: E1= 331 ps 467 s: E5= 369 ps
234 s: E1= 476 ps 234 s: E5= 522 ps
117 s: E1= 767 ps 117 s: E5= 839 ps
59 s: E1= 1055 ps 58 s: E5= 1158 ps
TdevE1 /s
1e−08
1e−09
1e−10
1e−11
10
100
1000
TdevE5 /s
Tau /s