AMD ZCU102 with Renesas ClockMatrix, ITU-T G.8261

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1. Results Summary

Standard	Test Case	Results
G.8261	Noise Generation	Pass
G.8261	Holdover	Pass
G.8261	Test Case 12 (SyncE Assist)	Pass
G.8261	Test Case 13 Network Traffic Model 2 (SyncE Assist)	Pass
G.8261	Test Case 14 Network Traffic Model 2 (SyncE Assist)	Pass
G.8261	Test Case 15 Network Traffic Model 2 (SyncE Assist)	Pass
G.8261	Test Case 16 Network Traffic Model 2 (SyncE Assist)	Pass
G.8261	Test Case 17 (10µs) Network Traffic Model 2 (SyncE Assist)	Pass
G.8261	Test Case 17 (200µs) Network Traffic Model 2 (SyncE Assist)	Pass
G.8261	Test Case 12	Pass
G.8261	Test Case 13 Network Traffic Model 2	Pass
G.8261	Test Case 14 Network Traffic Model 2	Pass
G.8261	Test Case 15 Network Traffic Model 2	Pass
G.8261	Test Case 16 Network Traffic Model 2	Pass
G.8261	Test Case 17 (10µs) Network Traffic Model 2	Pass
G.8261	Test Case 17 (200µs) Network Traffic Model 2	Pass
G.8261	Test Case12 Network Traffic Model 2 (SinglePath)	Pass
G.8261	Test Case13 Network Traffic Model 2 (SinglePath)	**Fail** (expected)
G.8261	Test Case14 Network Traffic Model 2 (SinglePath)	**Fail** (expected)
G.8261	Test Case15 Network Traffic Model 2 (SinglePath)	Pass
G.8261	Test Case16 Network Traffic Model 2 (SinglePath)	Pass
G.8261	Test Case17b (10µs) Network Traffic Model 2 (SinglePath)	Fail (expected)
G.8261	Test Case17b (200µs) Network Traffic Model 2 (SinglePath)	**Fail** (expected)

1.1 Notes on Testing with SyncE Assistance

SyncE from the Calnex measurement equipment (Paragon Neo and Paragon X) is used as the physical layer assistance for each test in this report. The quality level of the SyncE level is manually set greater than or equal to the quality level threshold in the PCM4L Json configuration file.

```
"physicalPllClockCategory": 1,
"physicalPllClockCategoryThreshold": 1,
```

The SyncE recovered clock is an input to a DPLL channel running in DPLL Mode with the G.8262 EEC1 preset. The output from this DPLL is filtered (3mHz filter bandwidth) and used as a combo source for the PTP DPLL.

1.2 Notes on Testing with a Physical Layer Clock

FTS and PTS with SyncE Assistance test both use a SyncE clock from the test equipment as an additional clock source. In both cases, a DPLL (configured for ITU-T G.8262 EEC1) is locked to the SyncE source and is connected to the PTP DPLL via the combo bus. For FTS there is no filter on the combo bus connection. For PTS with SyncE Assistance there is a 3mHz filter on the combo bus connection.

Synced software is used to manage the SyncE clock based on the QL level from the test equipment for tests required a physical layer clock. A category 1 (QL-PRTC) SyncE source from the test equipment is connected to the SyncE input on Clock Matrix and is qualified before PTP (PCM4L/PTP4l) is started.

1.3 Notes on Single Path Operation

When operating in single path mode, only the Sync packets from the master are used for timing. This results in an unknown floor delay. A floor delay is manually entered by the user in the PCM4L Json file:

```
"floorDelayEstimateSeconds": 0.000008800,
```

The test description contains the floor delay estimate used in each case. The floor delay estimate changes depending on the PDV pattern being tested as well as the inherent delay in the measurement device.

2. Test Configuration

Table 1. Test Configuration 1

Device Under Test	AMD + CM
Oscillator	Rakon M6141 TCXO
1pps Source	Symmetricom TP5000
Instrument	Paragon Neo
Instrument Serial Number	36081
Ethernet Interface	Optical
CAT Version	27.0.21154.2116 [S]
Sections using this Configuration	3, 4, 13, 19, 25

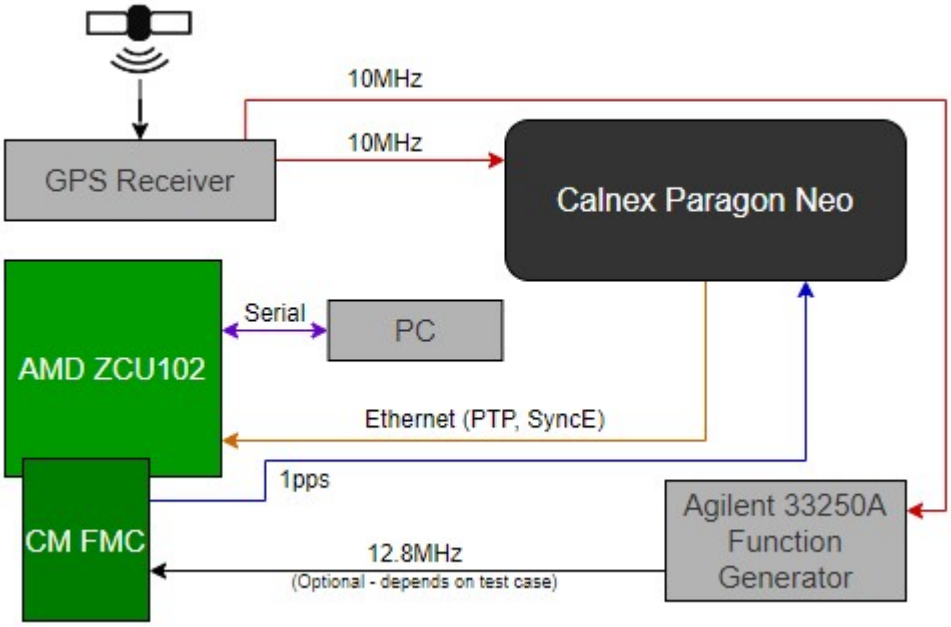


Figure 1. Equipment Configuration 1

Table 2. Test Configuration 2

Device Under Test	AMD + CM
Oscillator	Rakon M6141 TCXO
1pps Source	Symmetricom TP5000
Instrument	Paragon X
Instrument Serial Number	25060
Ethernet Interface	Optical
CAT Version	27.0.21154.2116 [S]
Sections using this Configuration	5–11, 14, 20–24

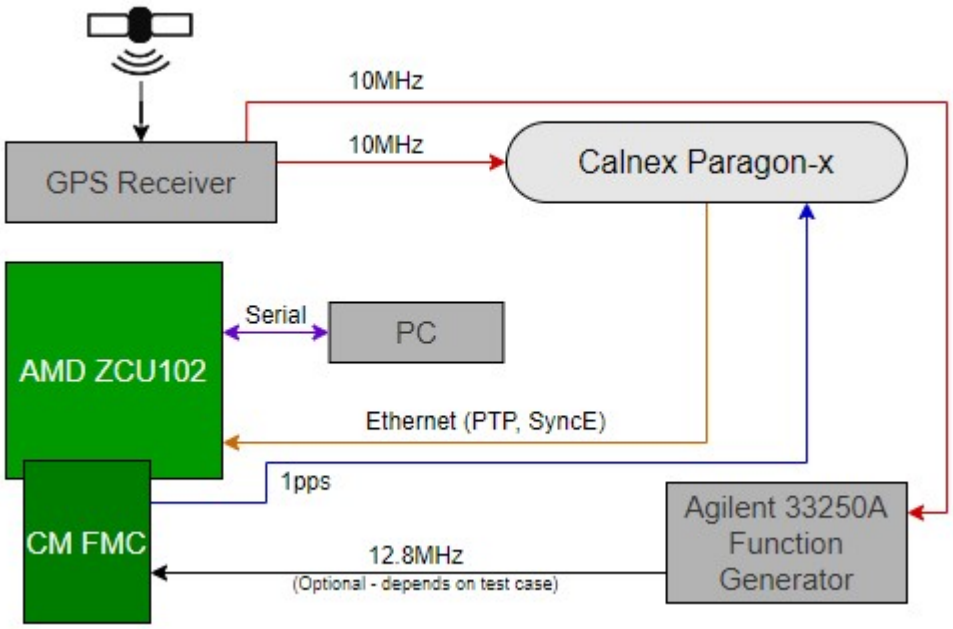


Figure 2. Equipment Configuration 2

Table 3. Test Configuration 3

Device Under Test	AMD + CM
1pps Source	Symmetricom TP5000
Software Version	4.2.1-rc7
Instrument	Paragon X
Instrument Serial Number	25060
Ethernet Interface	Optical
CAT Version	28.10.22111.2025 [S] (C)
Sections using this Configuration	12, 15

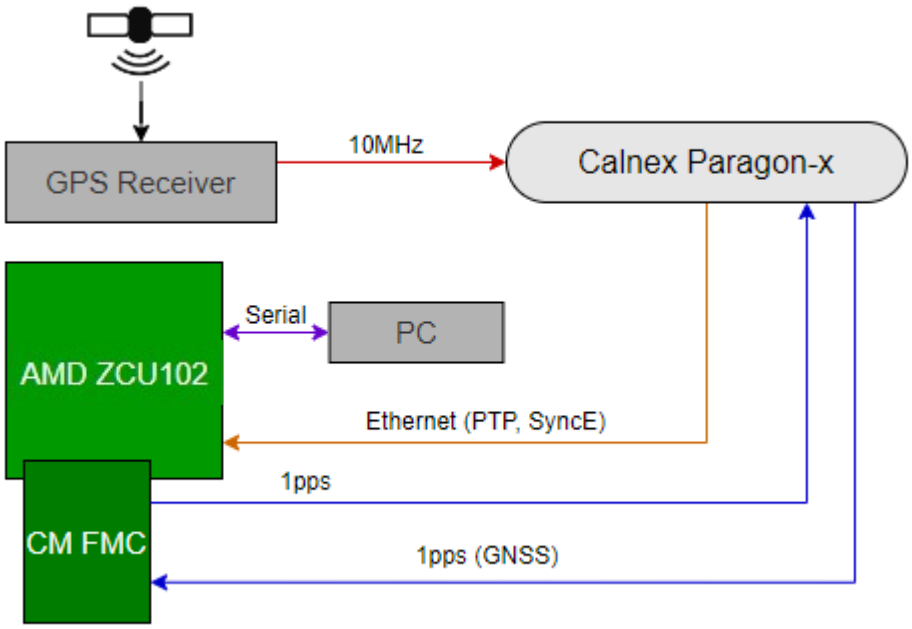


Figure 3. Equipment Configuration 3

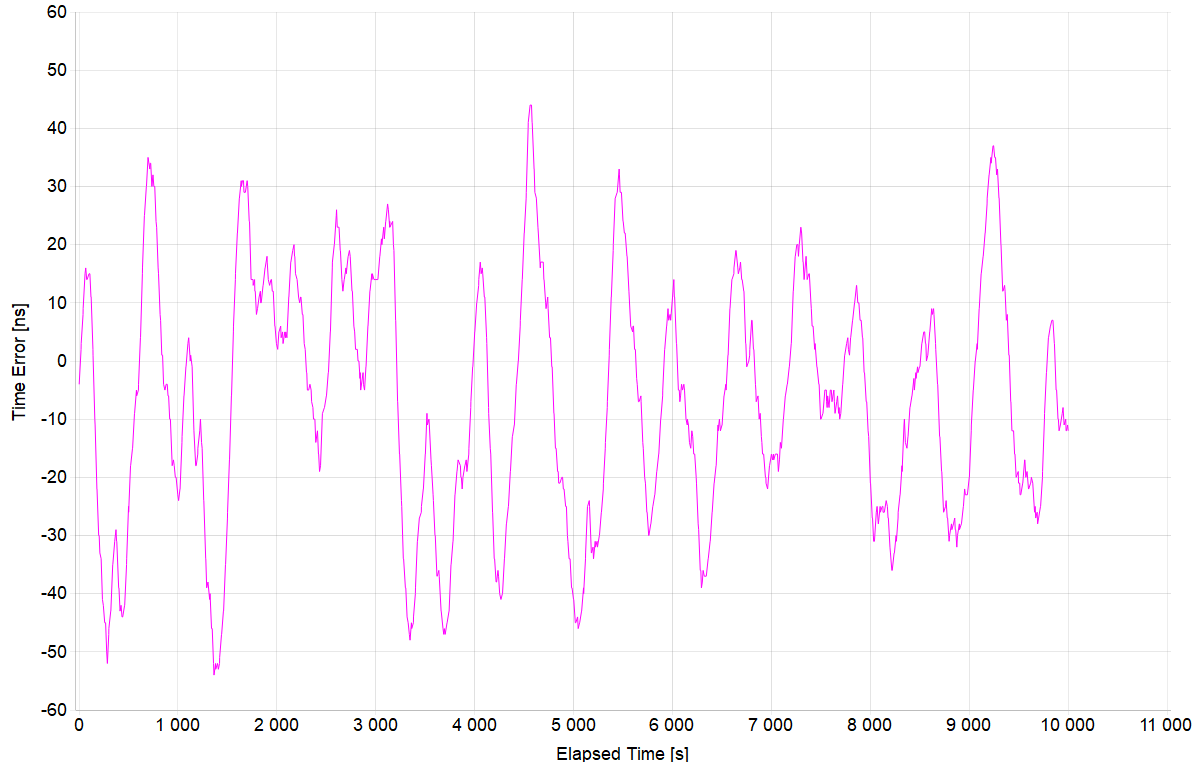
3. G.8261: Noise Generation

Test Description	Noise Generation
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Beginning of Test	2022-04-05 8:50:09 PM
Test Duration	02:46:40
Test Configuration	1
Time to Phase Lock (s)	61

All Mask Results	**Pass**
Mask ONEPPS	
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

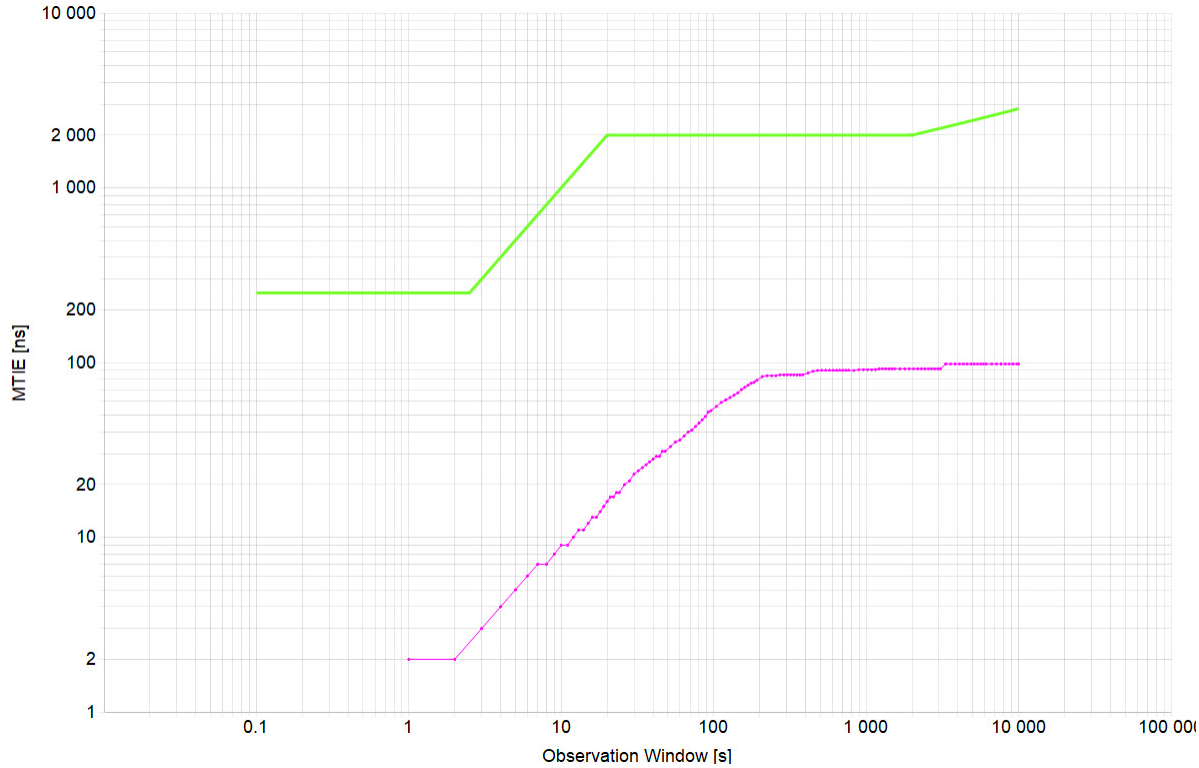
3.1 ONEPPS Analysis

Offset Removal Applied	On
Zero Offset	-4ns



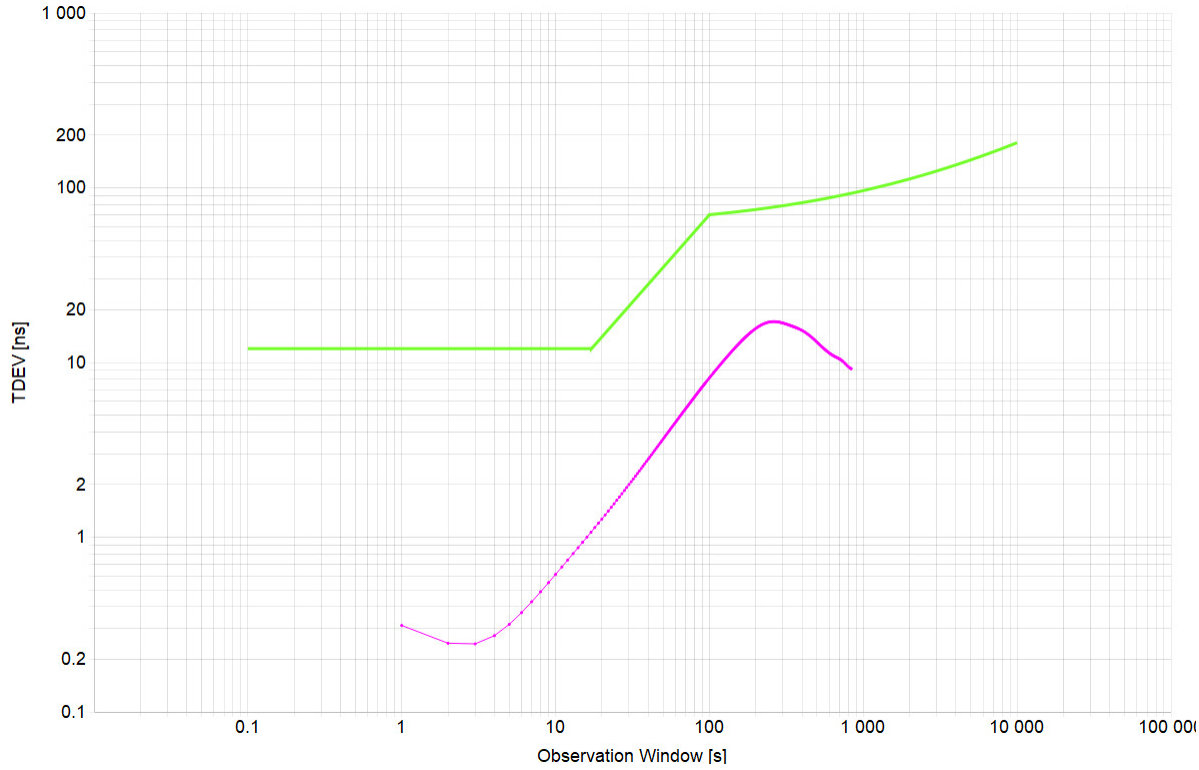
Mean [ns]	-6.92
Min [ns]	-54
Max [ns]	44
Max-Min [ns]	98

3.2 MTIE Analysis



Min [ns]	2
Max [ns]	98
Max-Min [ns]	96

3.3 TDEV Analysis



Min [ns]	0.245
Max [ns]	17.127
Max-Min [ns]	16.882

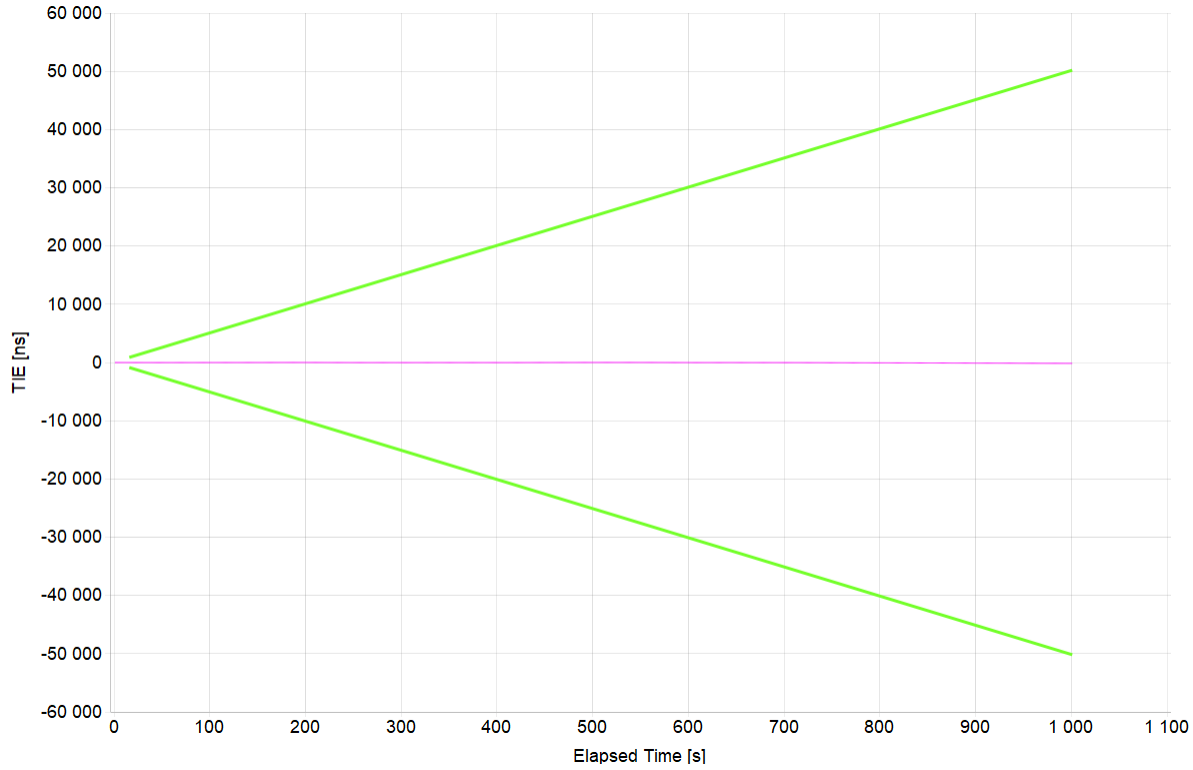
4. G.8261: Holdover

Test Description	Holdover
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Beginning of Test	2022-04-05 8:50:09 PM
Test Duration	00:16:40
Test Configuration	1
Time to Phase Lock (s)	N/A

All Mask Results	**Pass**
Mask TIE	G.8262 EEC Opt. 1 Long-Term Holdover Const. Temp.
Mask TIE Result	**Pass**

1. This test is a continuation of the previous Noise Generation test. This allows for an appropriate amount of settling time before collecting holdover data (10 000s). The results are split because holdover requires a different mask than noise generation.

4.1 TIE Analysis



Mean [ns]	-36.272
Min [ns]	-155
Max [ns]	2
Max-Min [ns]	157

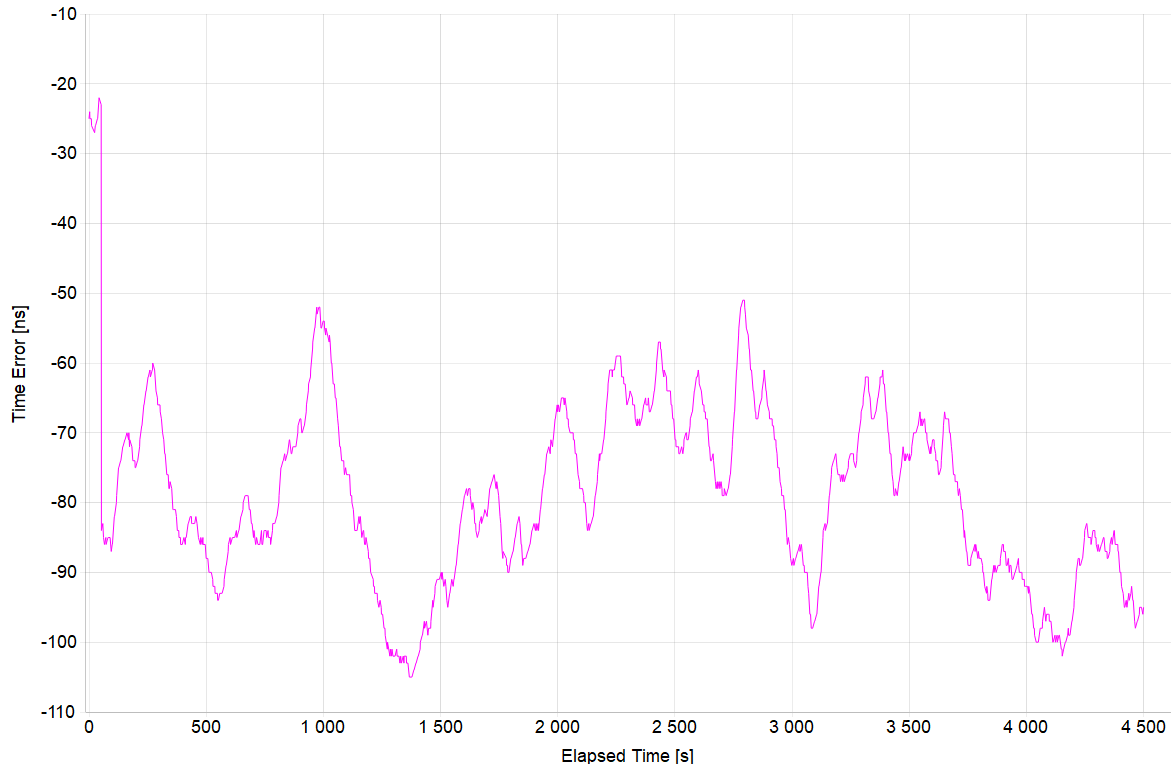
5. G.8261: Test Case 12 (SyncE Assist)

Test Description	Test Case 12
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	01:15:00
Time to Phase Lock (s)	378

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

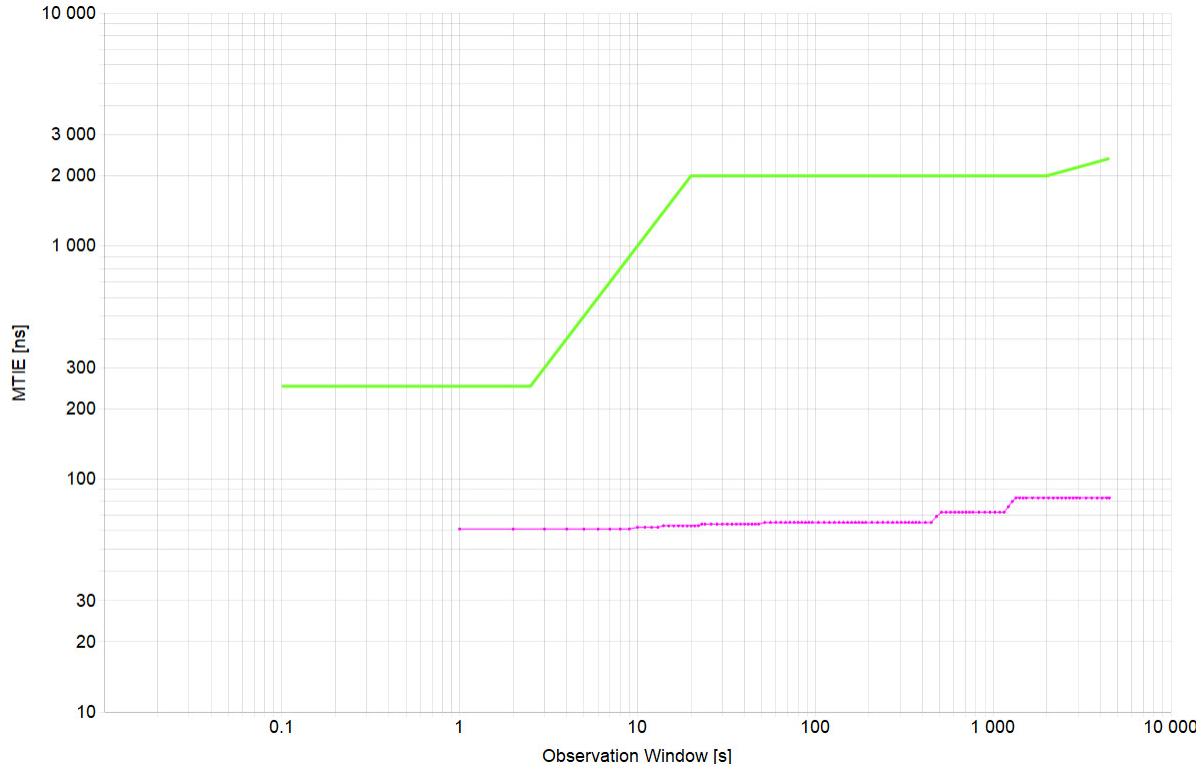
5.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-25ns



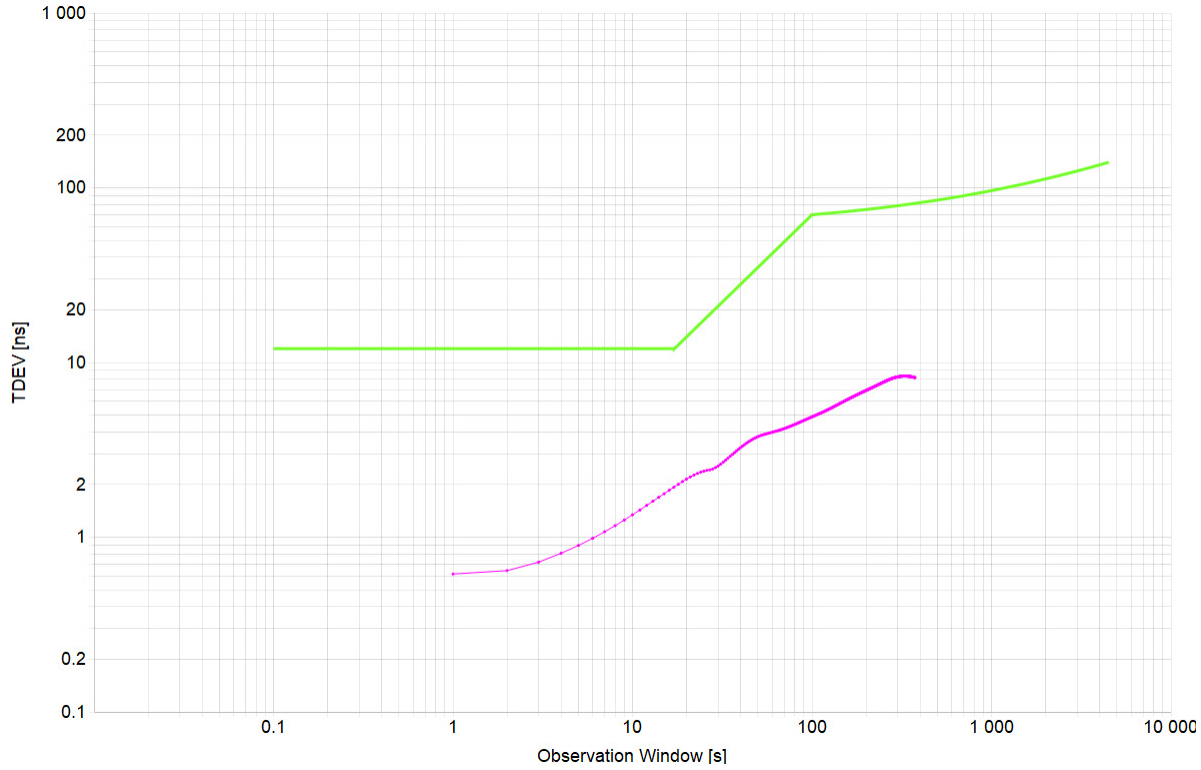
Mean [ns]	-78.845
Min [ns]	-105
Max [ns]	-22
Max-Min [ns]	83

5.2 MTIE Analysis



Min [ns]	61
Max [ns]	83
Max-Min [ns]	22

5.3 TDEV Analysis



Min [ns]	0.616
Max [ns]	8.357
Max-Min [ns]	7.741

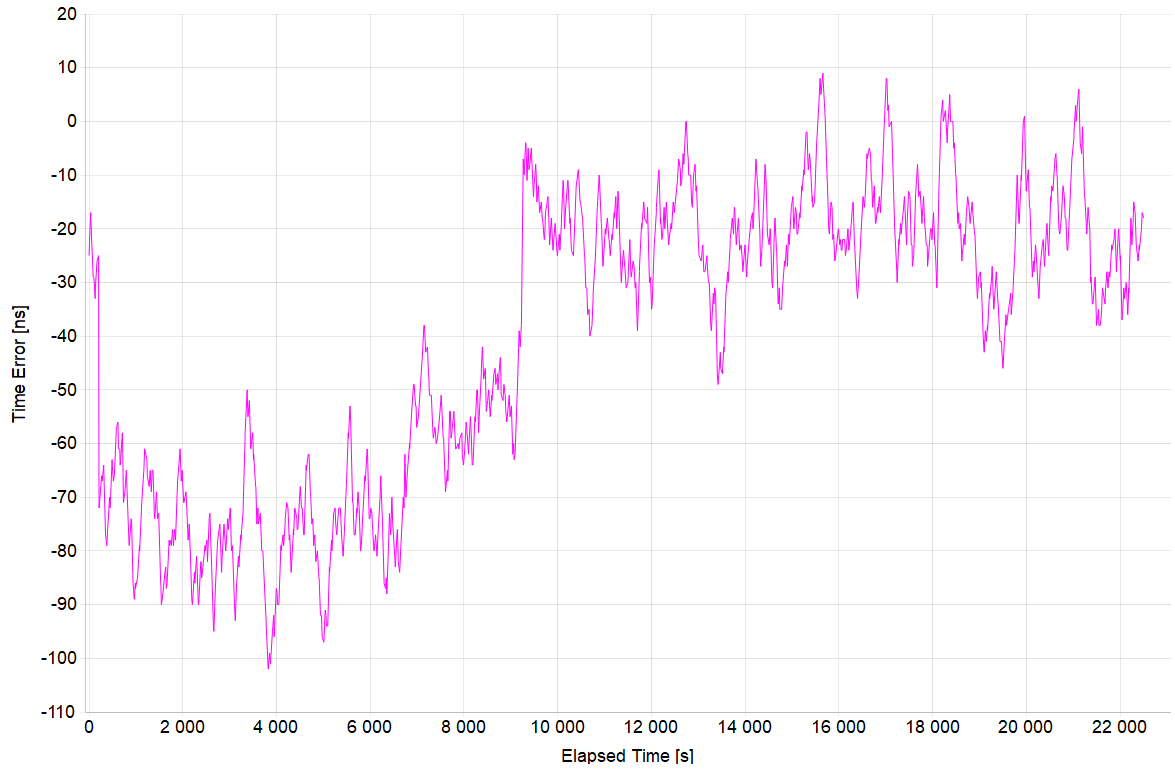
6. G.8261: Test Case 13b (SyncE Assist)

Test Description	Test Case 13b
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	06:15:00
Time to Phase Lock (s)	377

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

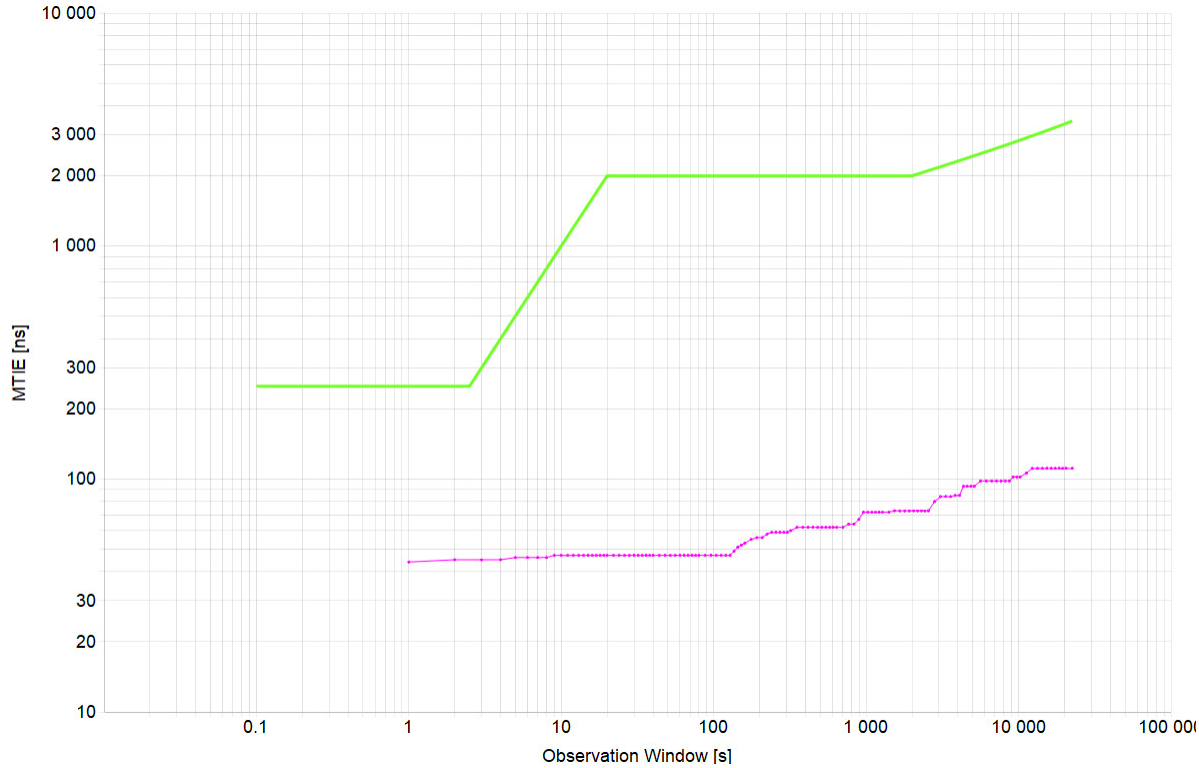
6.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-25ns



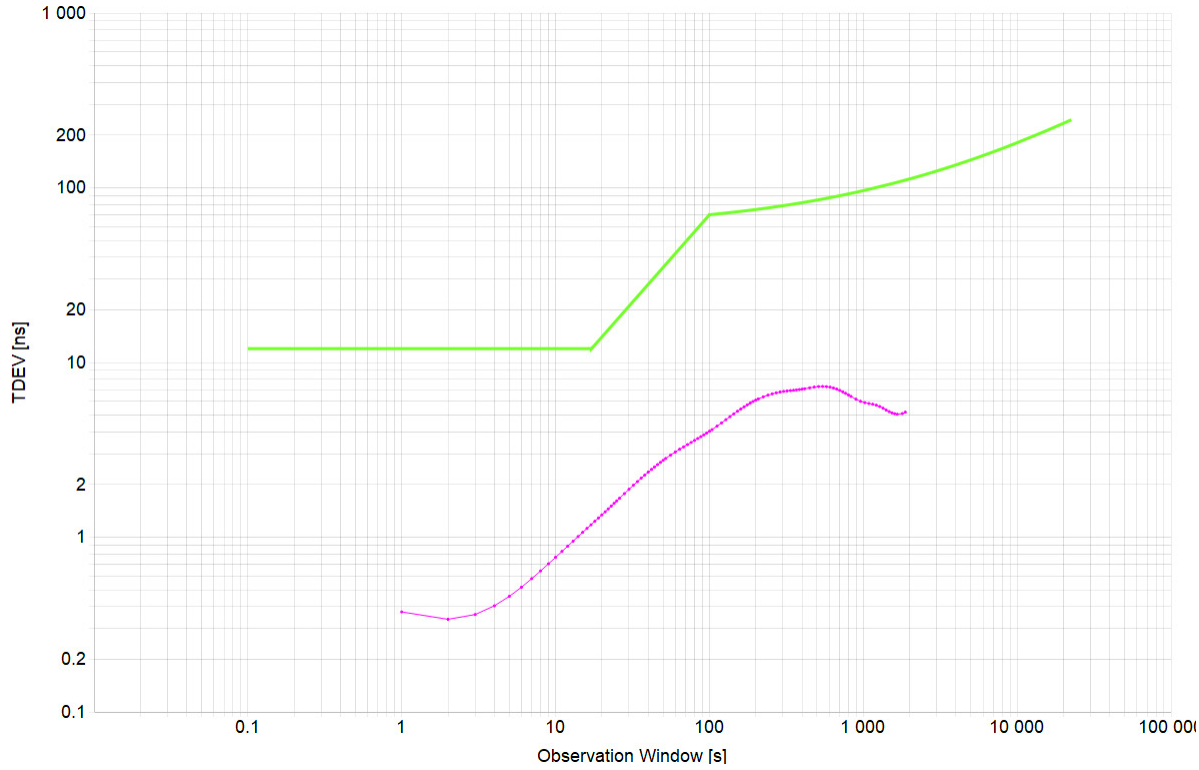
Mean [ns]	-39.958
Min [ns]	-102
Max [ns]	9
Max-Min [ns]	111

6.2 MTIE Analysis



Min [ns]	44
Max [ns]	111
Max-Min [ns]	67

6.3 TDEV Analysis



Min [ns]	0.339
Max [ns]	7.289
Max-Min [ns]	6.95

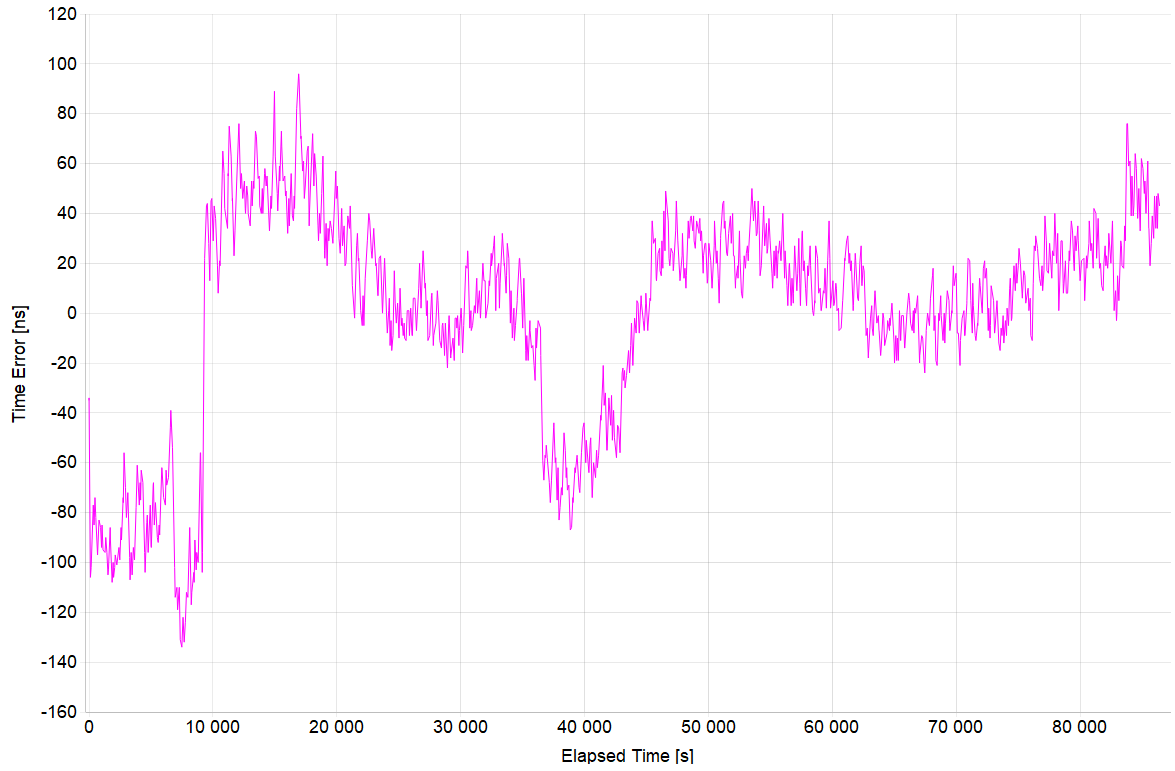
7. G.8261: Test Case 14b (SyncE Assist)

Test Description	Test Case 14b
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	24:00:01
Time to Phase Lock (s)	379

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

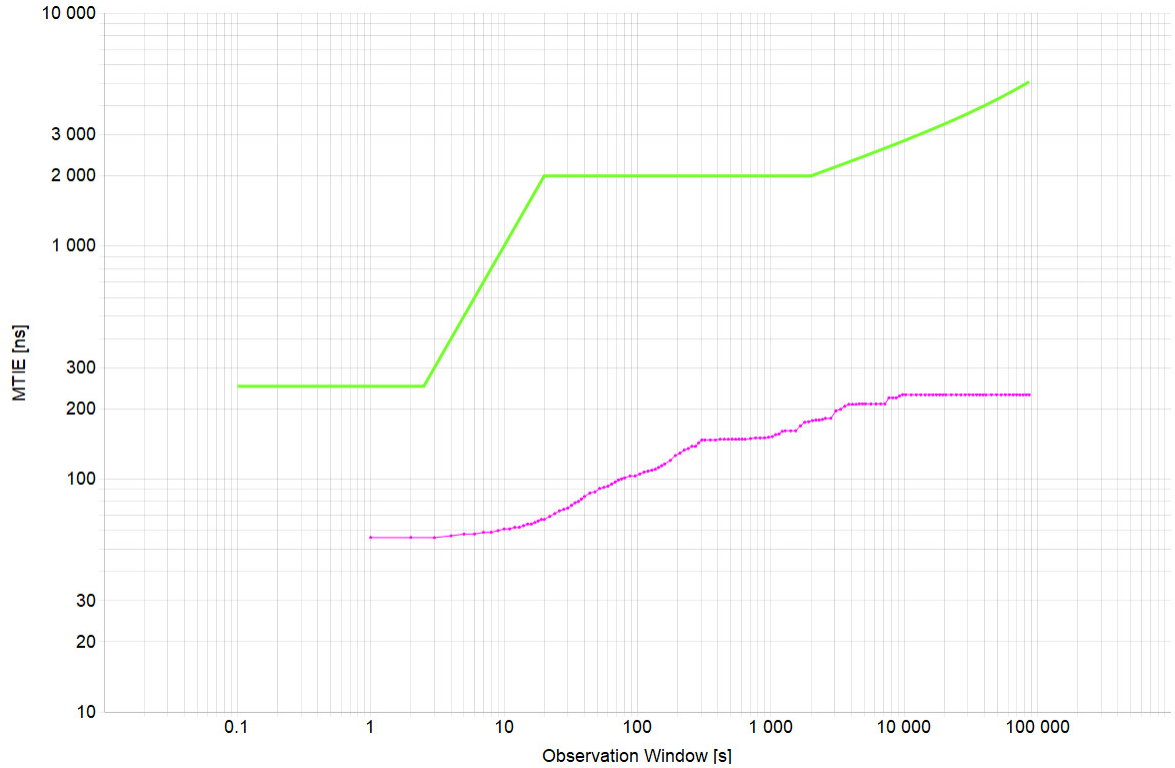
7.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-35ns



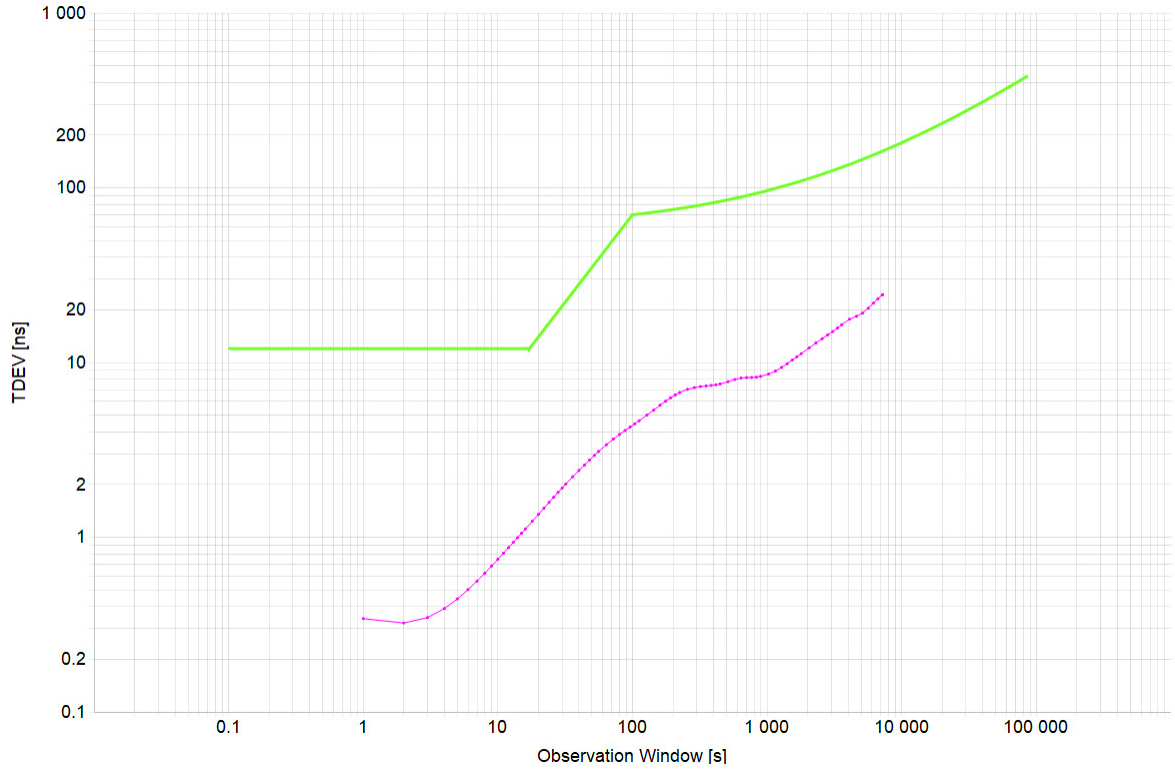
Mean [ns]	0.536
Min [ns]	-134
Max [ns]	96
Max-Min [ns]	230

7.2 MTIE Analysis



Min [ns]	56
Max [ns]	230
Max-Min [ns]	174

7.3 TDEV Analysis



Min [ns]	0.323
Max [ns]	24.415
Max-Min [ns]	24.092

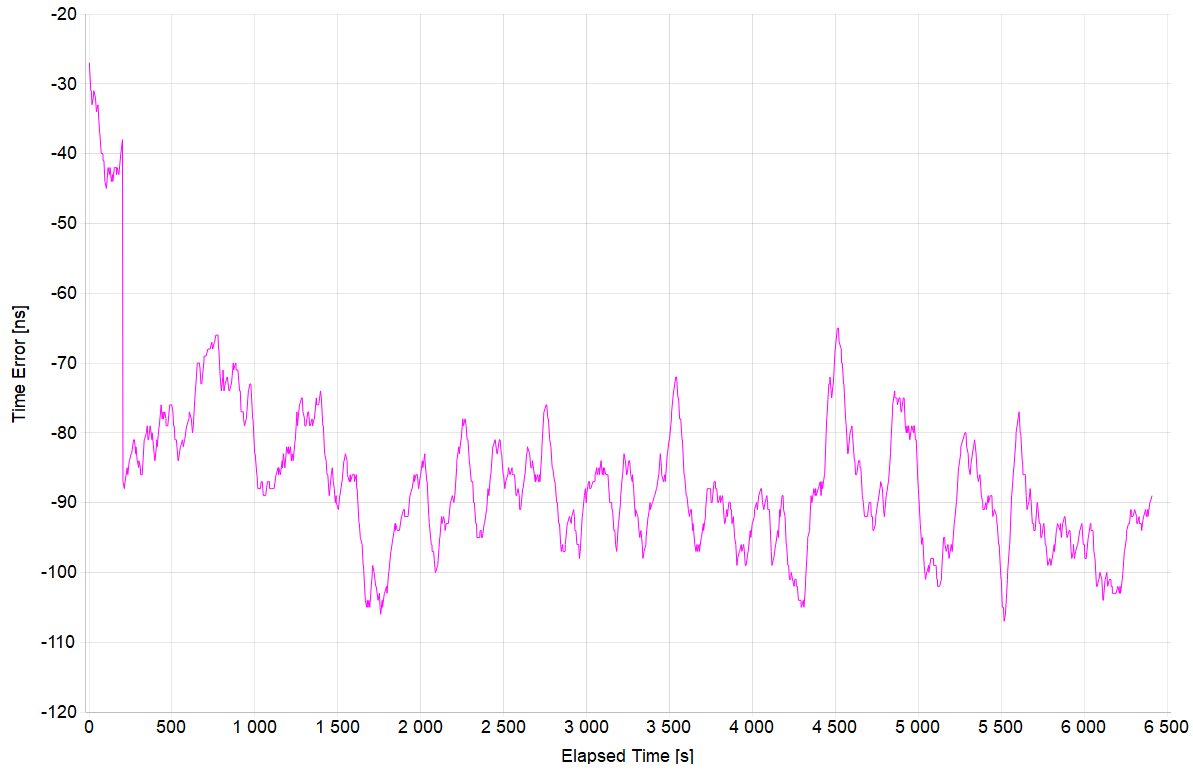
8. G.8261: Test Case 15b (SyncE Assist)

Test Description	Test Case 15b
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	01:46:50
Time to Phase Lock (s)	389

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

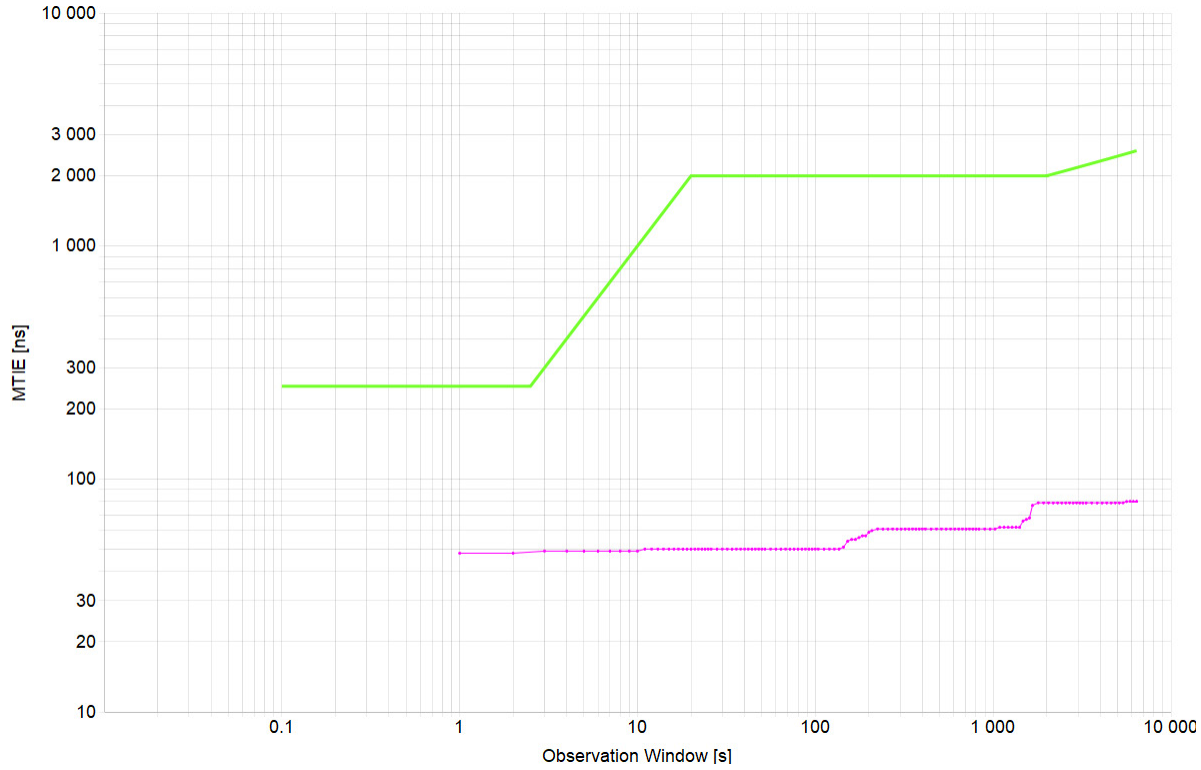
8.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-27ns



Mean [ns]	-86.473
Min [ns]	-107
Max [ns]	-27
Max-Min [ns]	80

8.2 MTIE Analysis



Min [ns]	48
Max [ns]	80
Max-Min [ns]	32

8.3 TDEV Analysis

Min [ns]	0.462
Max [ns]	5.596
Max-Min [ns]	5.135

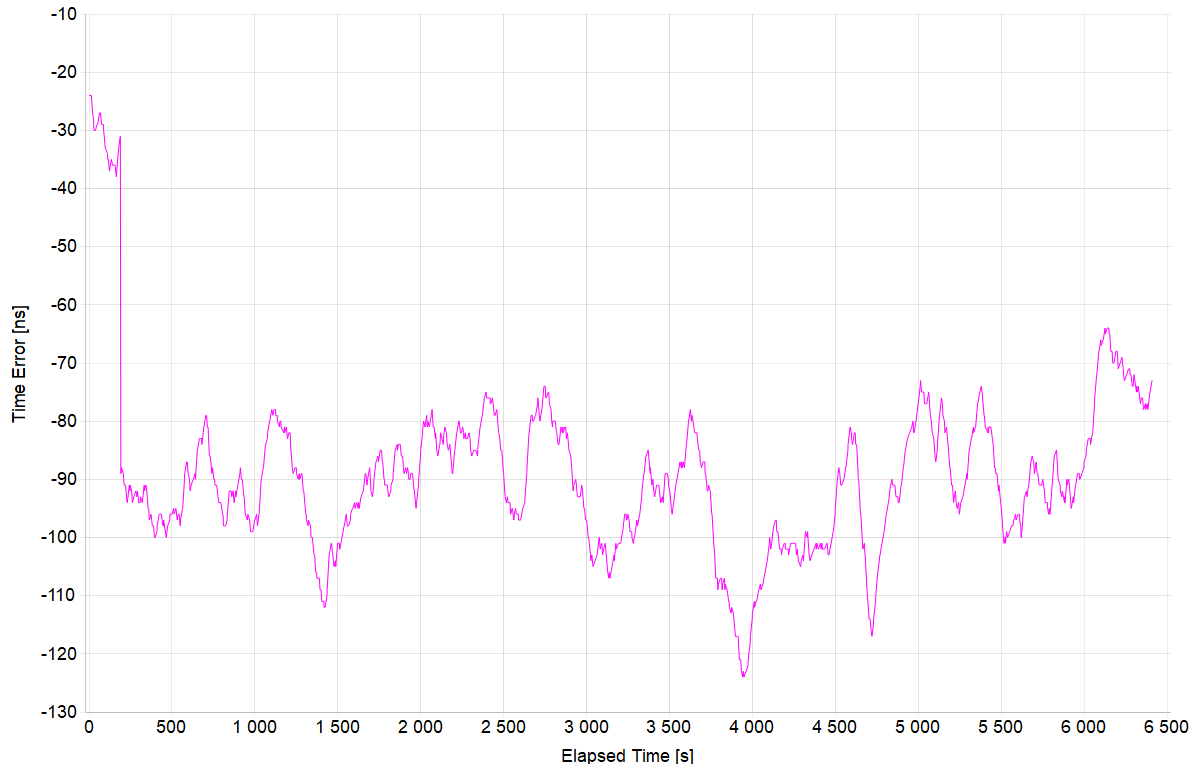
9. G.8261: Test Case 16b (SyncE Assist)

Test Description	Test Case 16b
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	01:46:50
Time to Phase Lock (s)	378

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

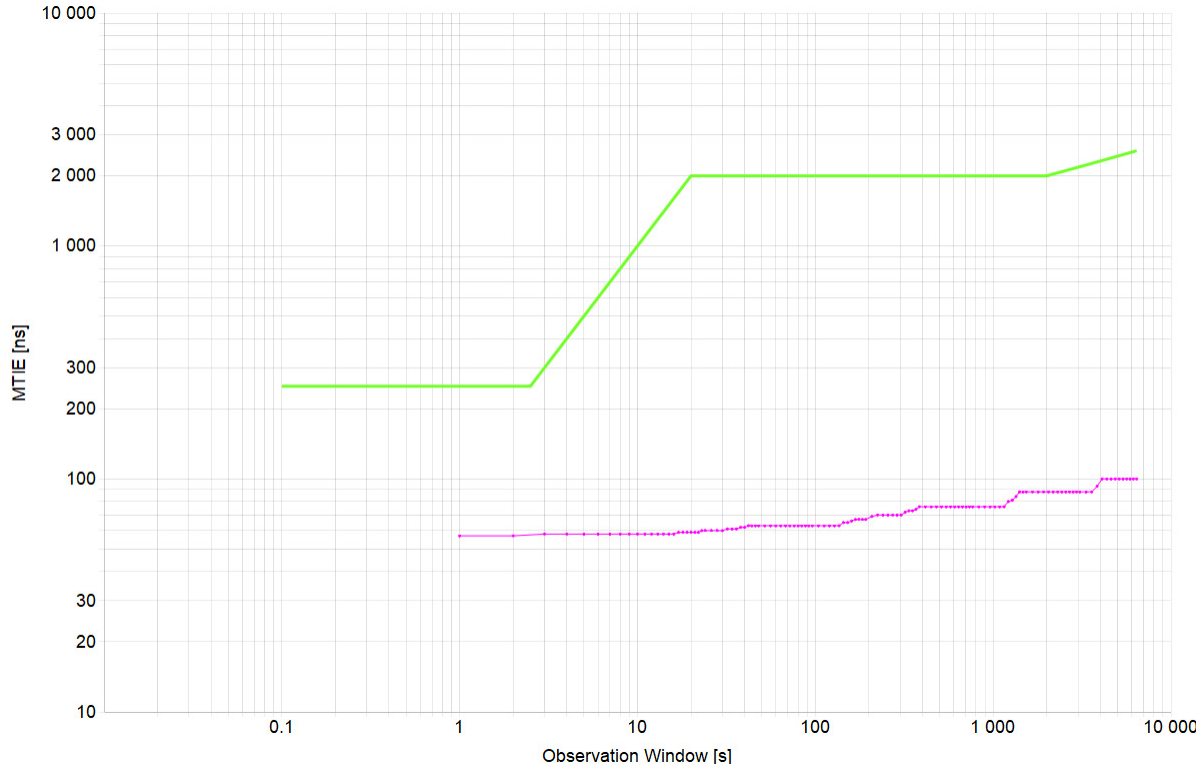
9.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-24ns



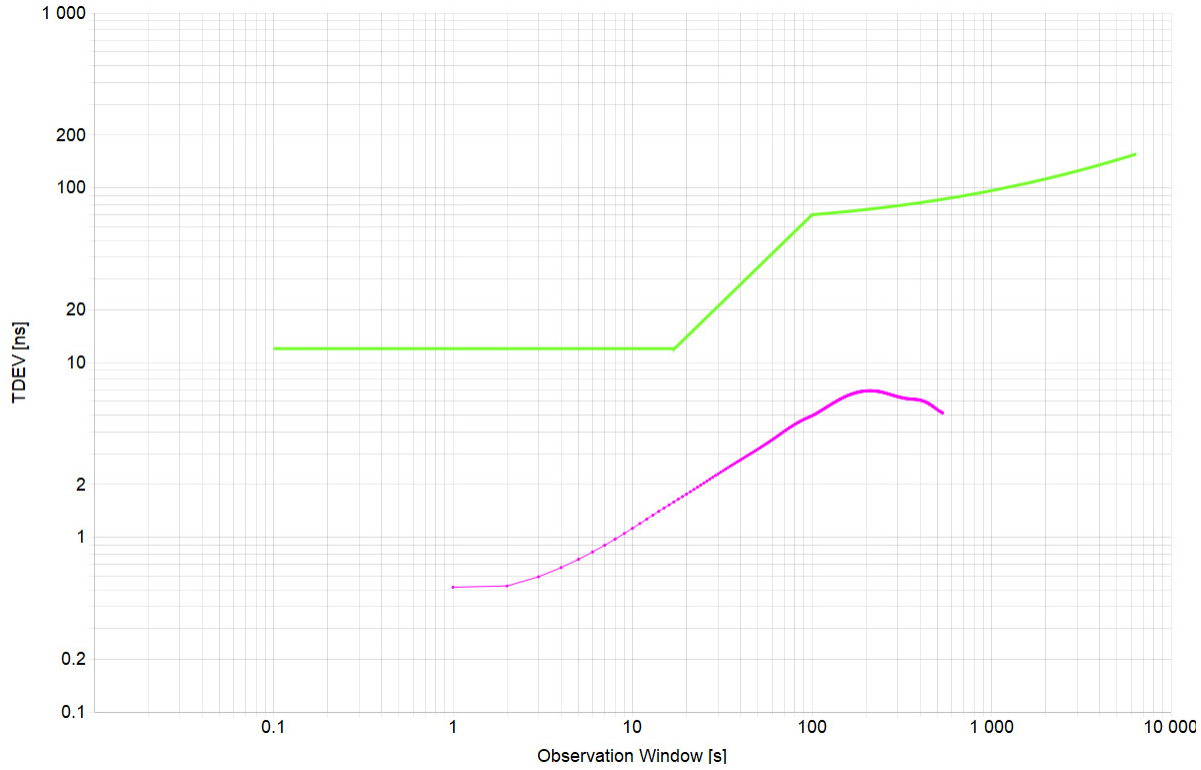
Mean [ns]	-89.238
Min [ns]	-124
Max [ns]	-24
Max-Min [ns]	100

9.2 MTIE Analysis



Min [ns]	57
Max [ns]	100
Max-Min [ns]	43

9.3 TDEV Analysis



Min [ns]	0.517
Max [ns]	6.887
Max-Min [ns]	6.37

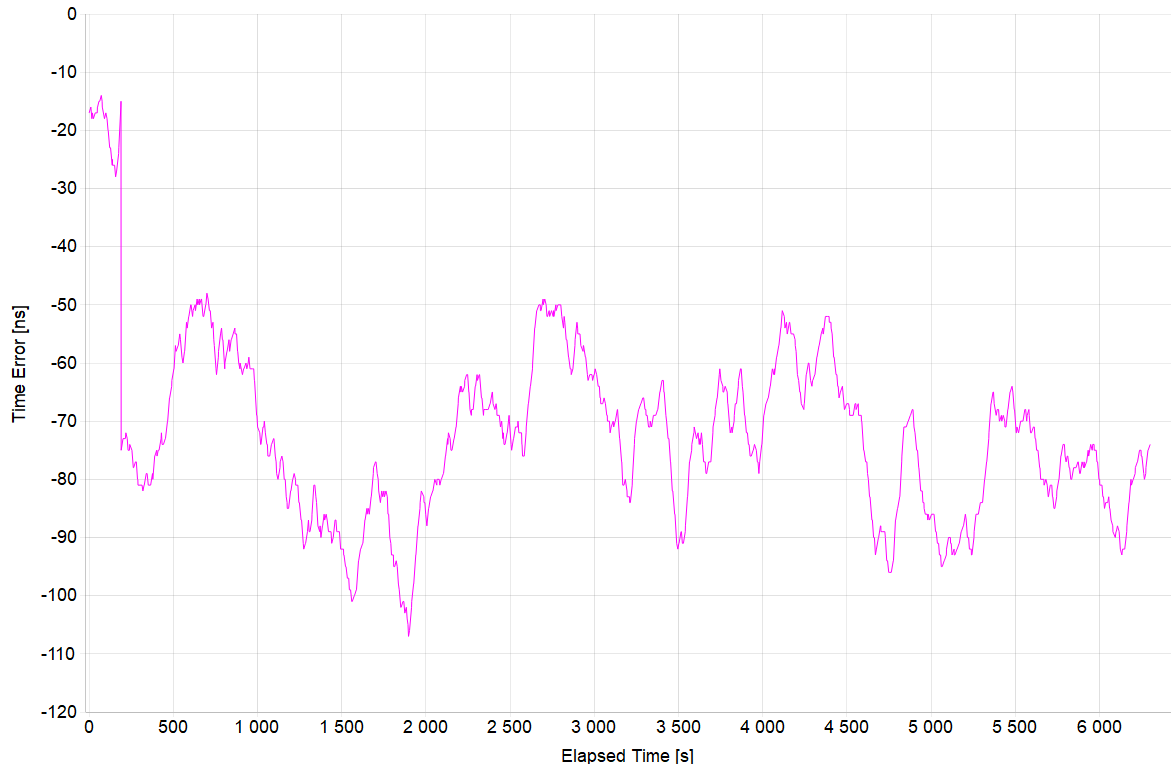
10. G.8261: Test Case 17b_10us (SyncE Assist)

Test Description	Test Case 17b_10us
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	01:45:00
Time to Phase Lock (s)	374

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

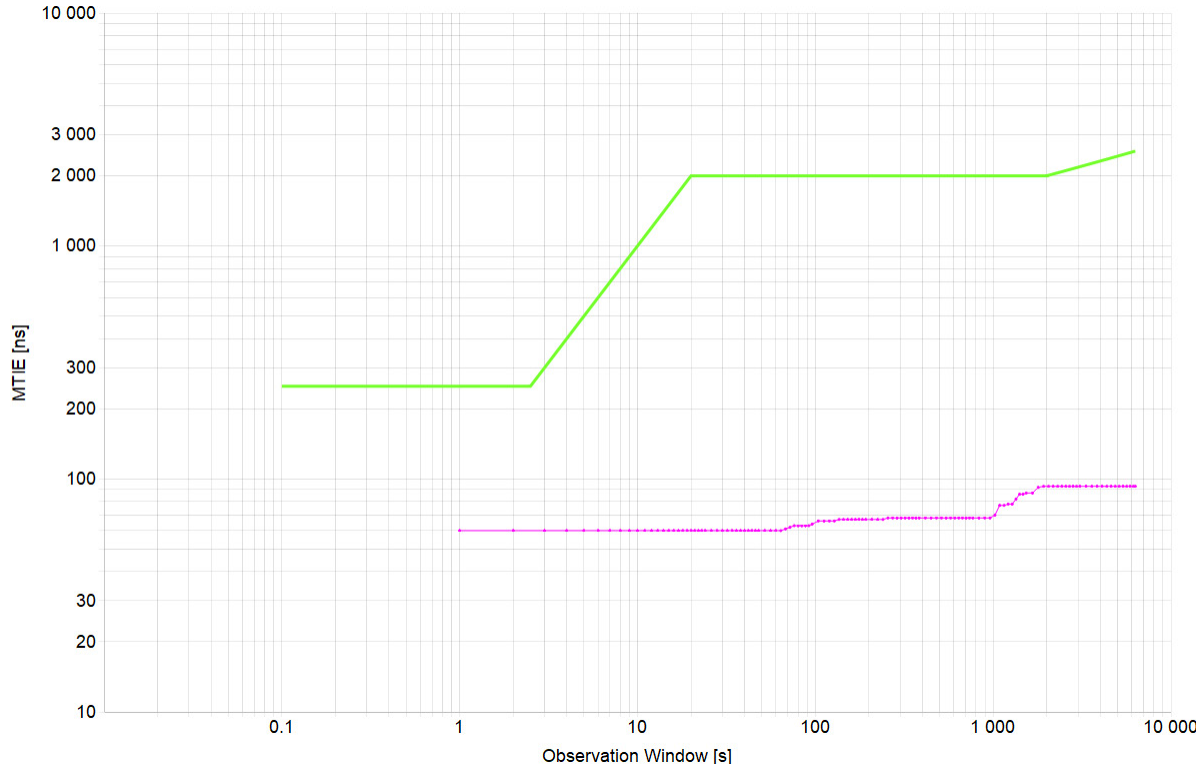
10.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-17ns



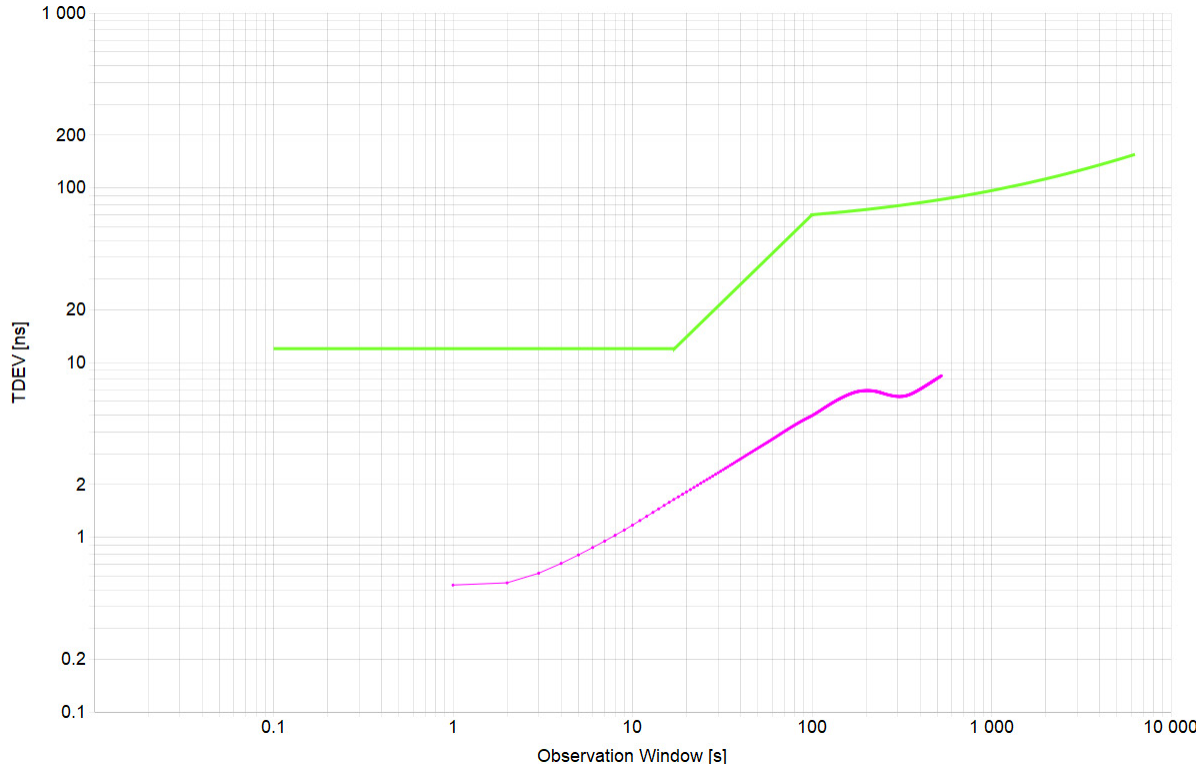
Mean [ns]	-72.085
Min [ns]	-107
Max [ns]	-14
Max-Min [ns]	93

10.2 MTIE Analysis



Min [ns]	60
Max [ns]	93
Max-Min [ns]	33

10.3 TDEV Analysis



Min [ns]	0.532
Max [ns]	8.382
Max-Min [ns]	7.849

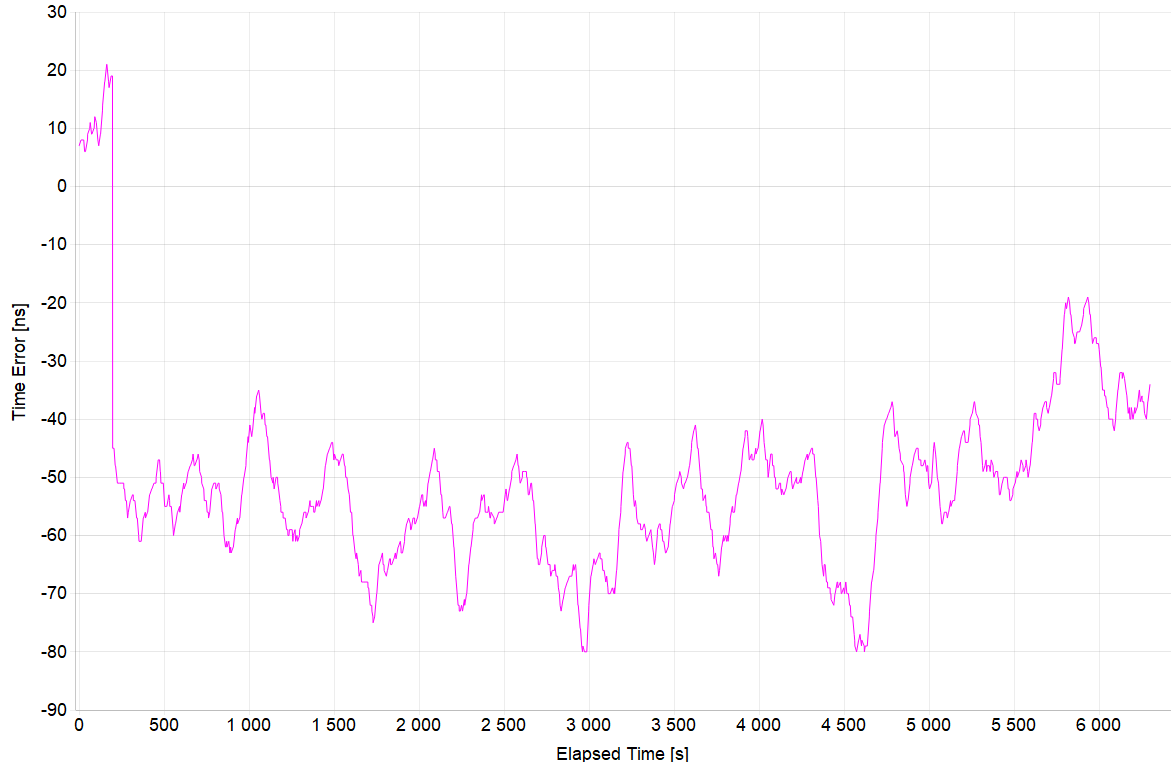
11. G.8261: Test Case 17b_200us (SyncE Assist)

Test Description	Test Case 17b_200us
Report Date	22-04-27_17-35-10
Packet Rate (pkt/s)	16
Test Duration	01:45:00
Time to Phase Lock (s)	373

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

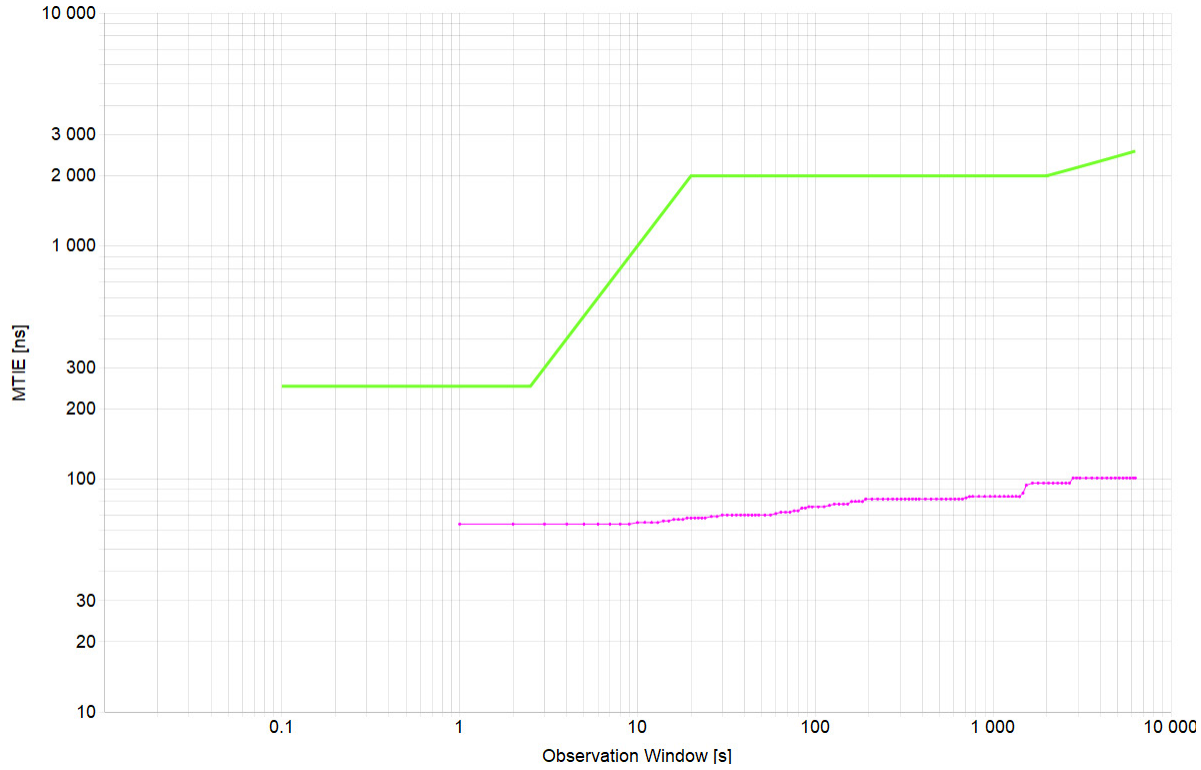
11.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	7ns



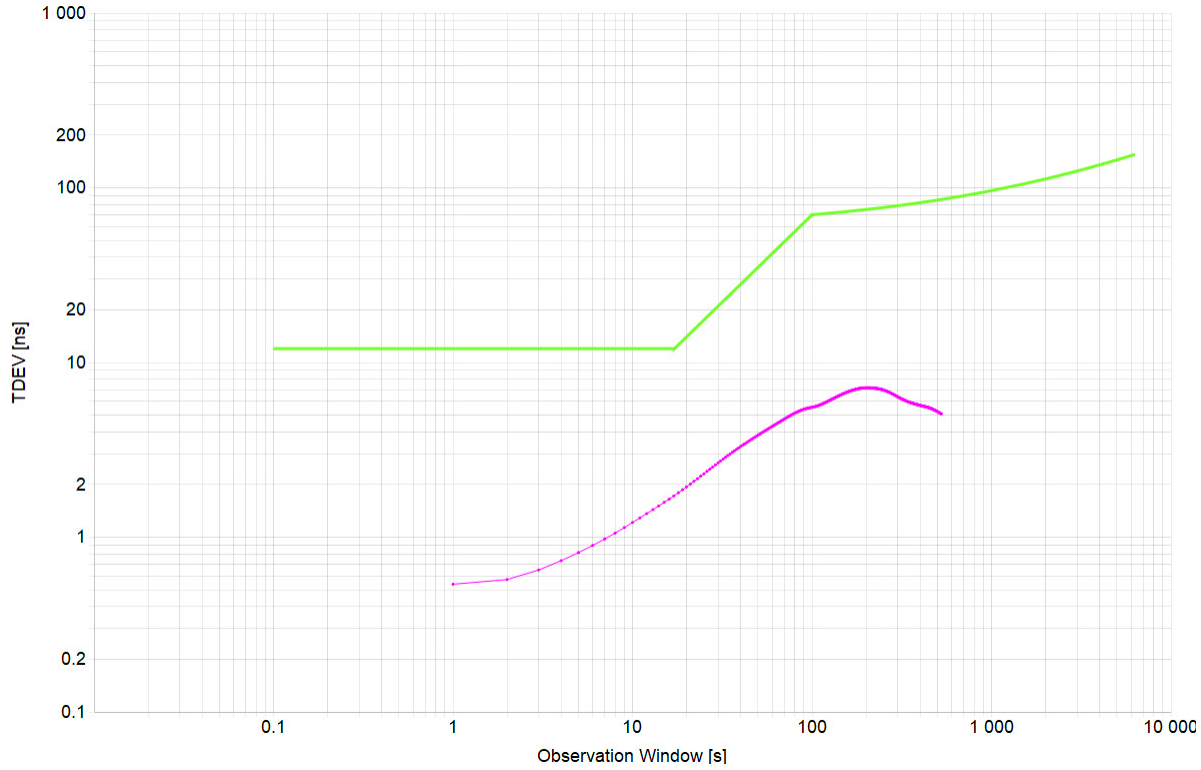
Mean [ns]	-50.782
Min [ns]	-80
Max [ns]	21
Max-Min [ns]	101

11.2 MTIE Analysis



Min [ns]	64
Max [ns]	101
Max-Min [ns]	37

11.3 TDEV Analysis



Min [ns]	0.538
Max [ns]	7.162
Max-Min [ns]	6.624

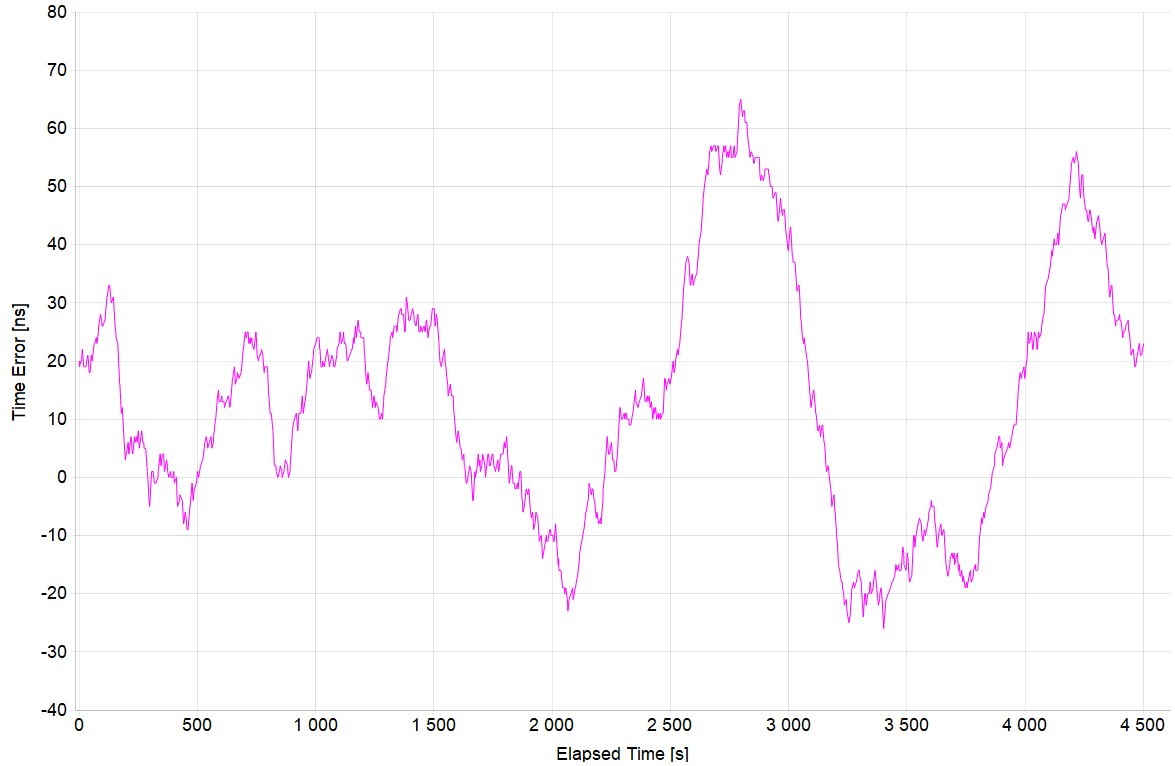
12. G.8261: Test Case 12

Test Description	Test Case 12
Report Date	22-10-18_13-29-39
Packet Rate (pkt/s)	16
Test Duration	01:15:00
Test Configuration	2
Time to Phase Lock (s)	372
Oscillator	Rakon M6141 MiniOcxo

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

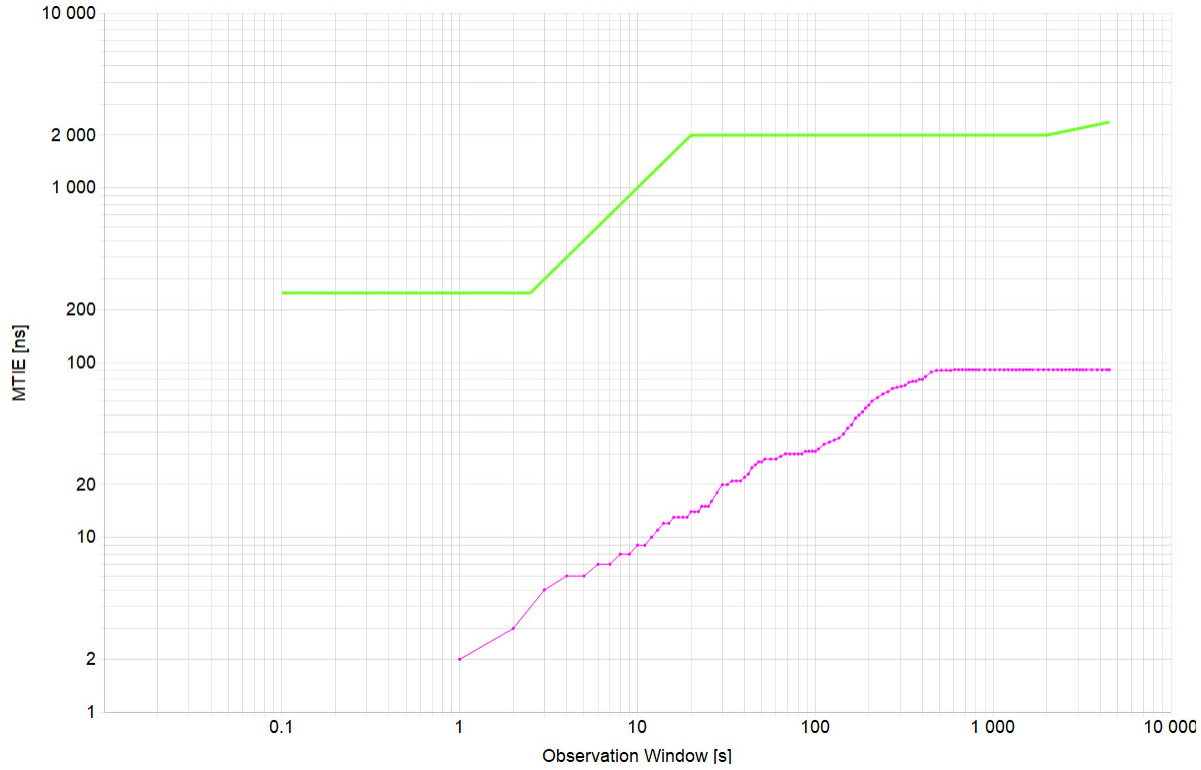
12.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	20ns



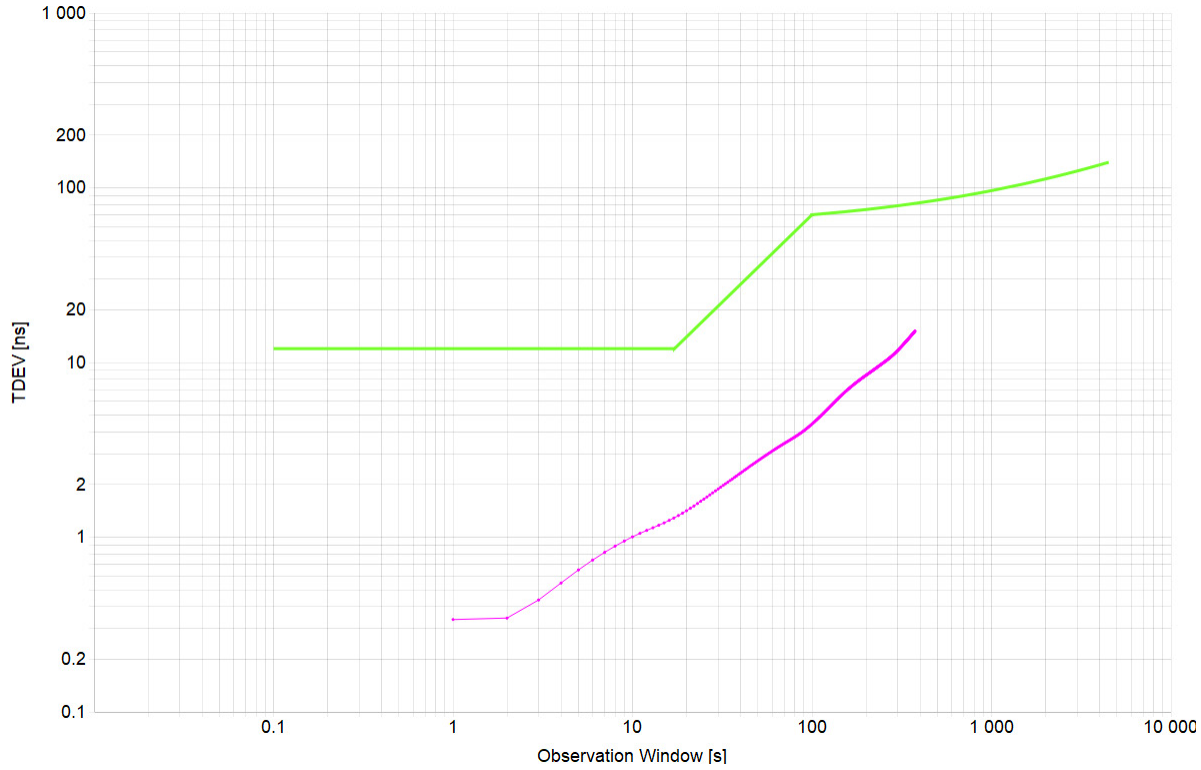
Mean [ns]	13.247
Min [ns]	-26
Max [ns]	65
Max-Min [ns]	91

12.2 MTIE Analysis



Min [ns]	2
Max [ns]	91
Max-Min [ns]	89

12.3 TDEV Analysis



Min [ns]	0.338
Max [ns]	15.117
Max-Min [ns]	14.779

13. G.8261: Test Case 13 Network Traffic Model 2

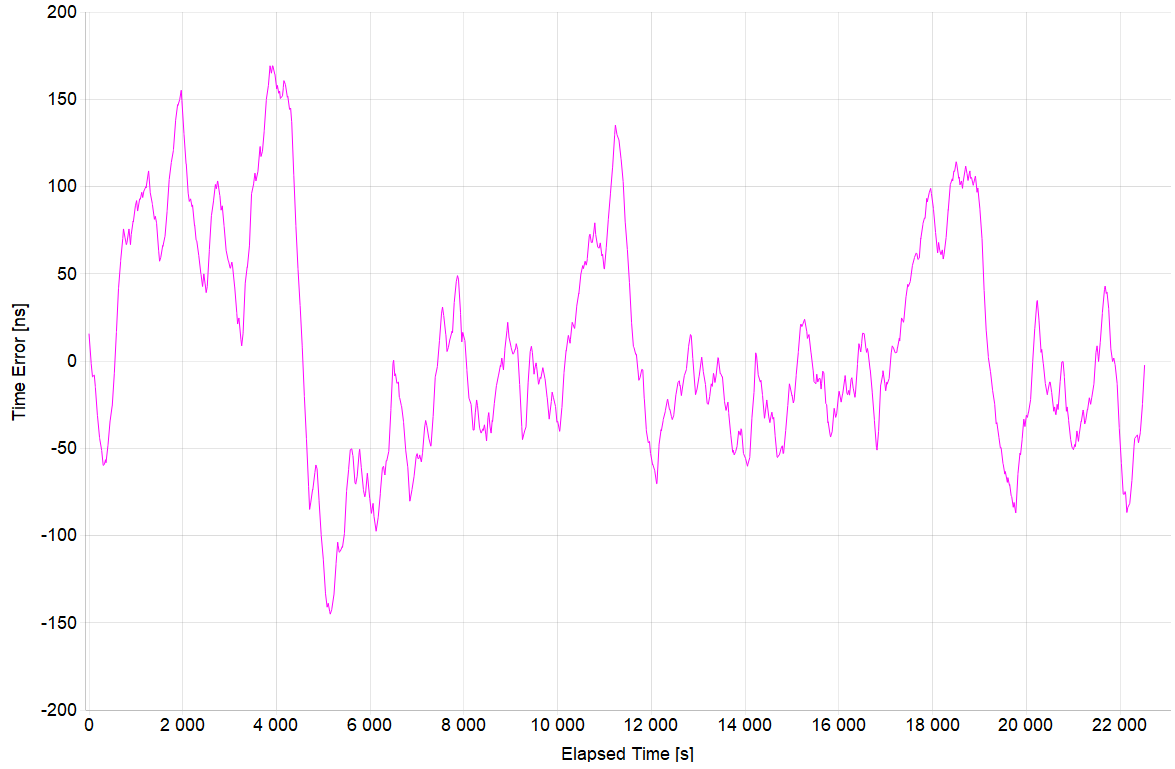
Test Description	Test Case 13 Network Traffic Model 2
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Test Duration	06:15:22
Test Configuration	1
Time to Phase Lock (s)	63

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

1. Data presented in the images below was collected using the following procedure:
   - Start PTP
   - Stabilize for 600s
   - Start PDV
   - Start Data Capture
2. This results in a short time to phase lock (see above table).Lock time under PDV conditions was measured to be 372s. The following procedure was used for locking under PDV conditions:
   - Start PDV
   - Start PTP
   - Start Data Capture

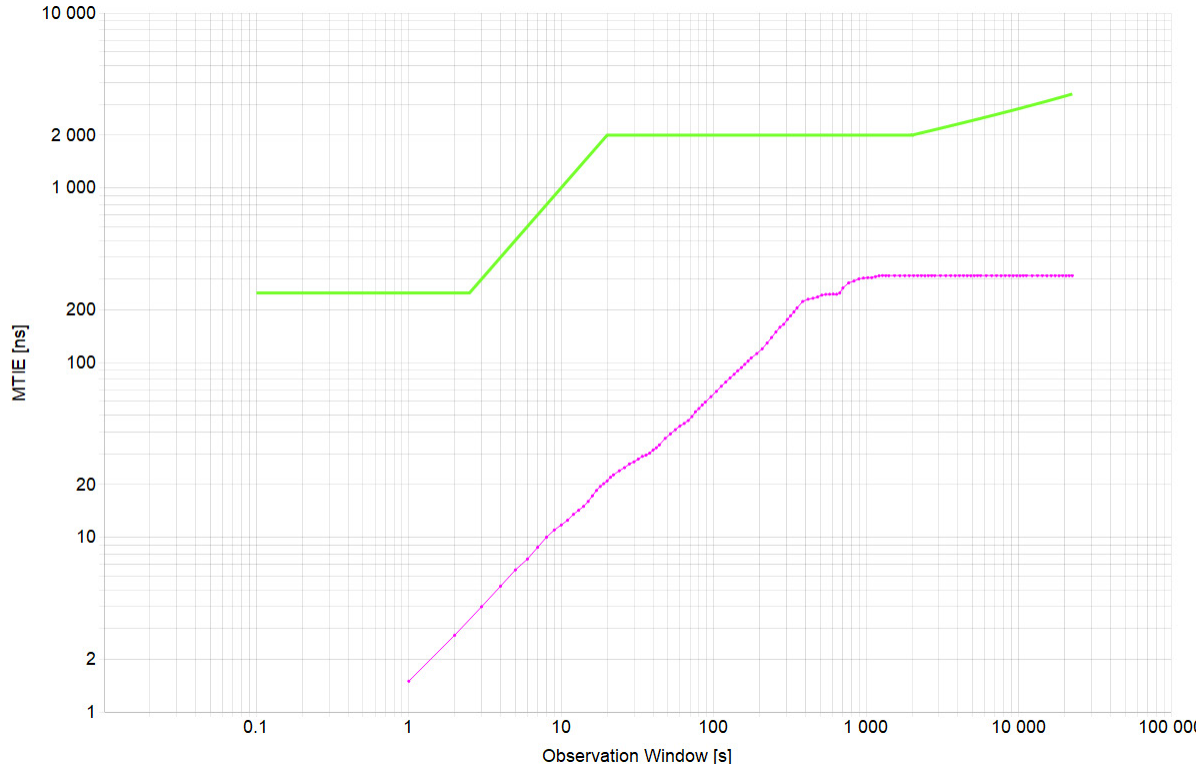
13.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	15.677ns



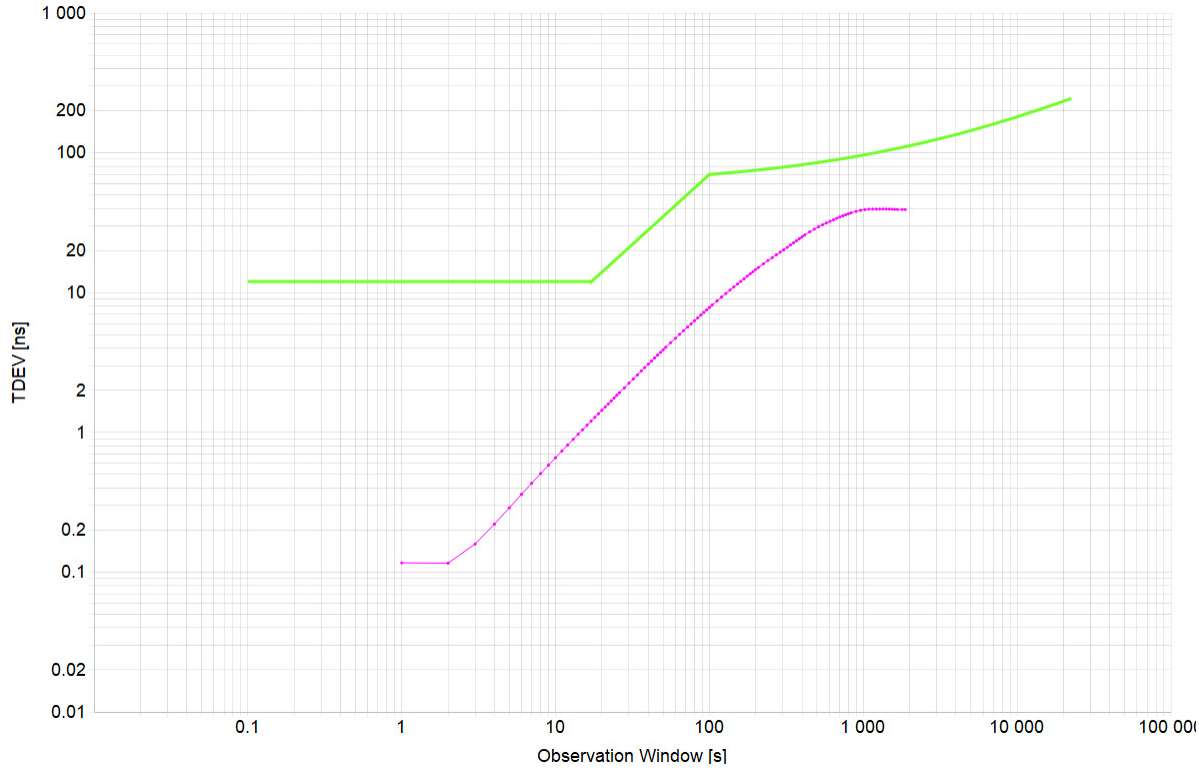
Mean [ns]	7.238
Min [ns]	-145.073
Max [ns]	169.177
Max-Min [ns]	314.25

13.2 MTIE Analysis



Min [ns]	1.5
Max [ns]	314.25
Max-Min [ns]	312.75

13.3 TDEV Analysis



Min [ns]	0.116
Max [ns]	39.584
Max-Min [ns]	39.468

14. G.8261: Test Case 14 Network Traffic Model 2

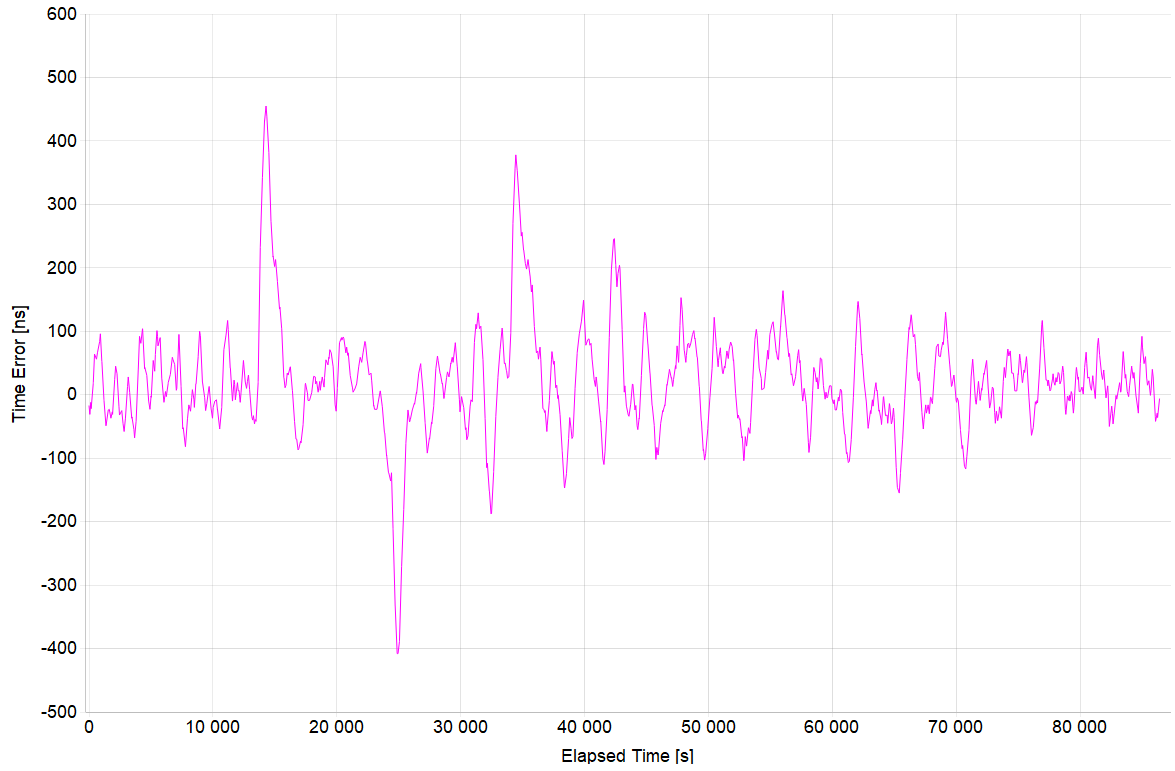
Test Description	Test Case 14 Network Traffic Model 2
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Test Duration	24:00:01
Test Configuration	2
Time to Phase Lock (s)	62

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

1. Data presented in the images below was collected using the following procedure:
   - Start PTP
   - Stabilize for 600s
   - Start PDV
   - Start Data Capture
2. This results in a short time to phase lock (see above table).Lock time under PDV conditions was measured to be 370s. The following procedure was used for locking under PDV conditions:
   - Start PDV
   - Start PTP
   - Start Data Capture

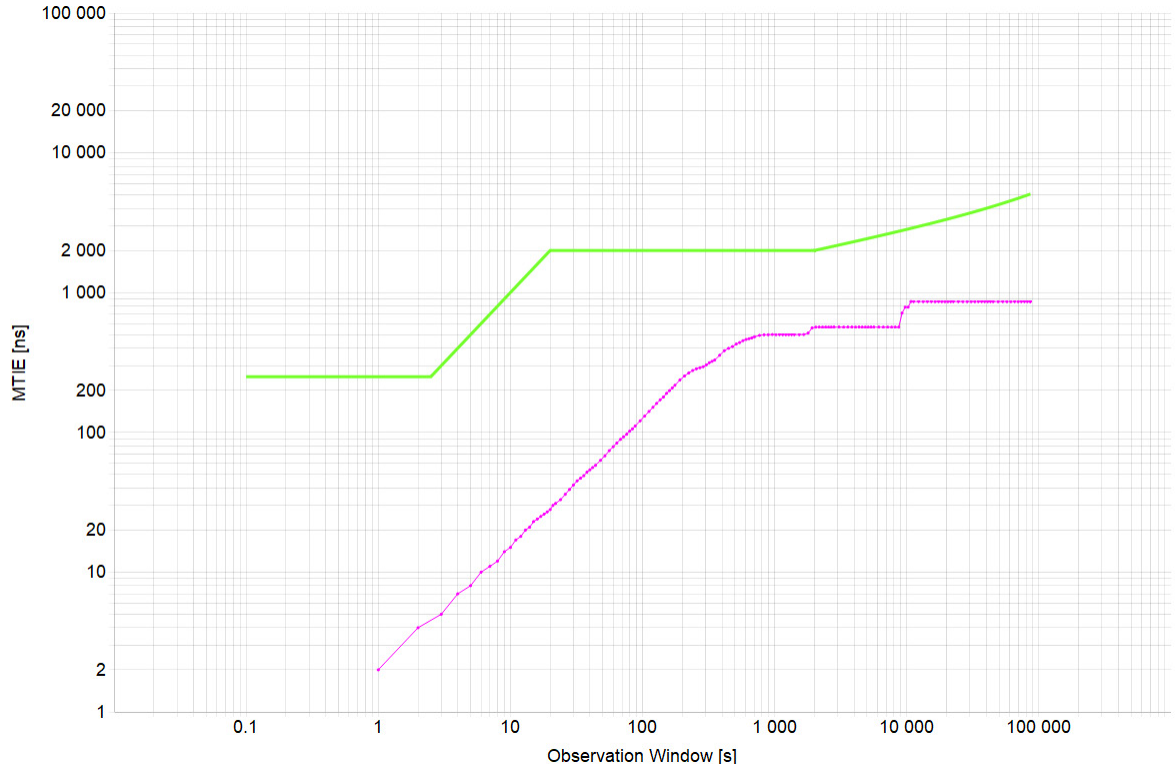
14.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-17ns



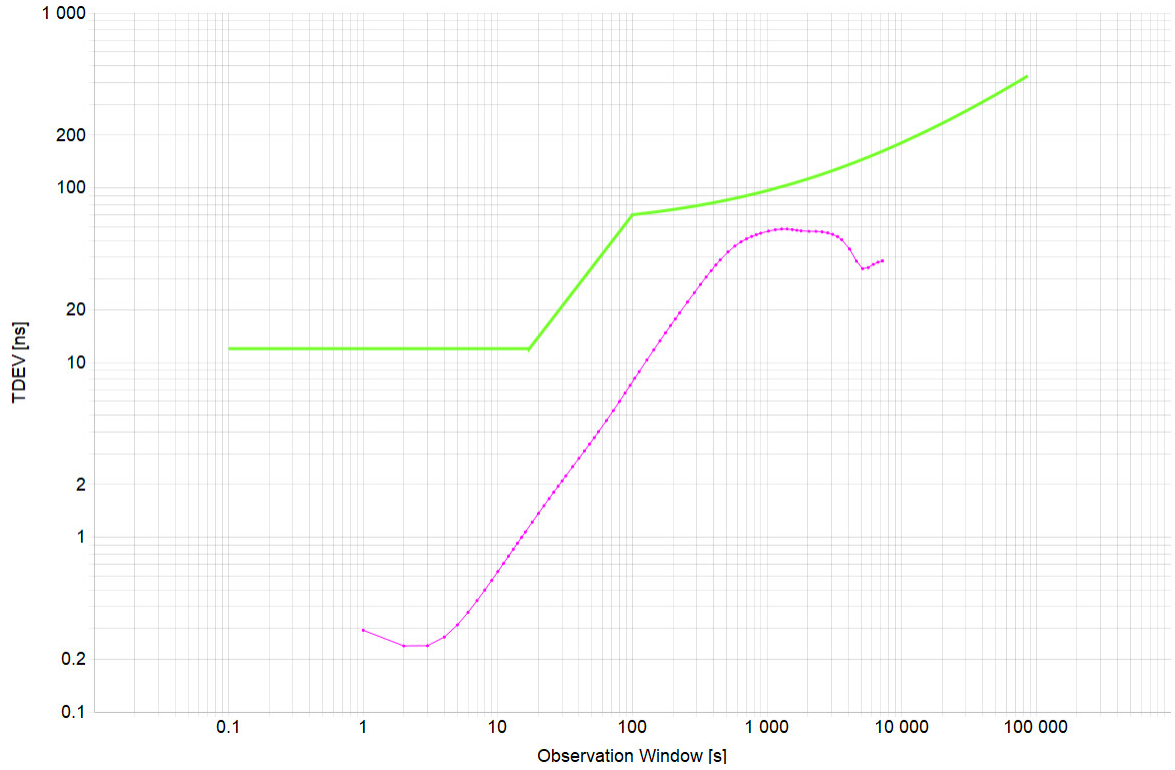
Mean [ns]	21.13
Min [ns]	-408
Max [ns]	455
Max-Min [ns]	863

14.2 MTIE Analysis



Min [ns]	2
Max [ns]	863
Max-Min [ns]	861

14.3 TDEV Analysis



Min [ns]	0.239
Max [ns]	58.038
Max-Min [ns]	57.8

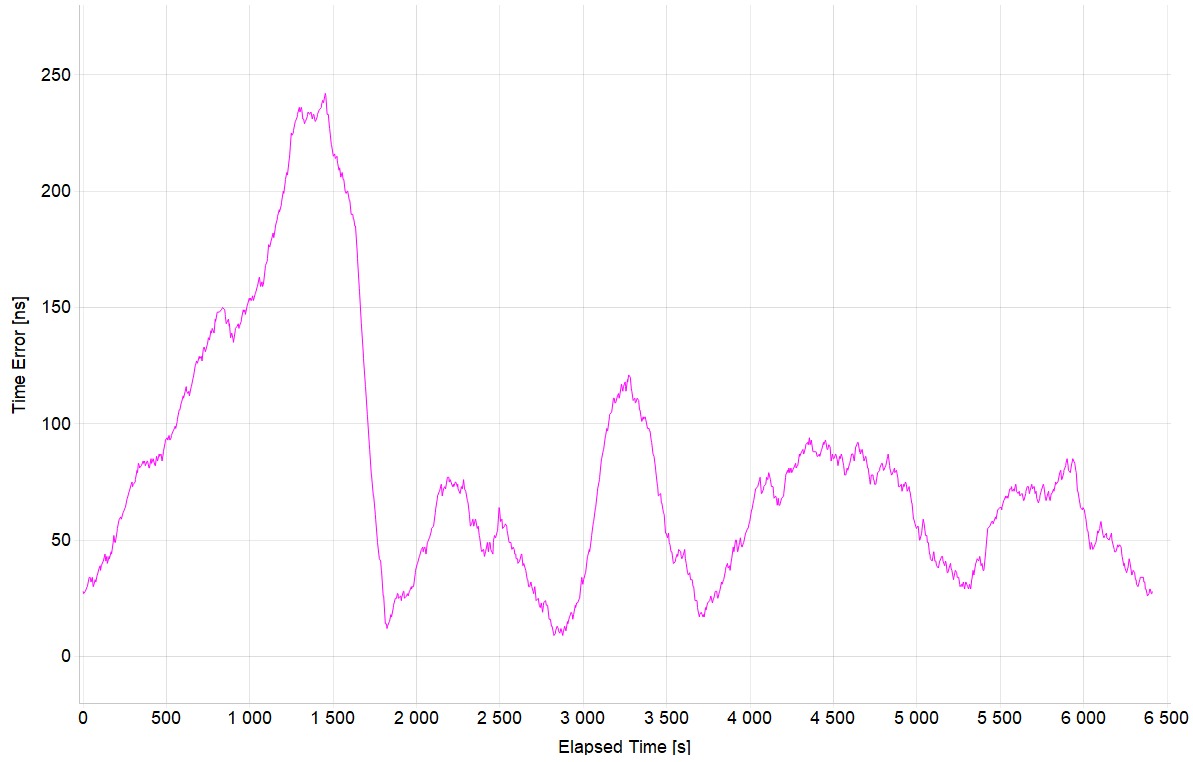
15. G.8261: Test Case 15b

Test Description	Test Case 15b
Report Date	22-10-18_13-29-39
Packet Rate (pkt/s)	16
Test Duration	01:46:50
Test Configuration	2
Time to Phase Lock (s)	372
Oscillator	Rakon M6141 MiniOcxo

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

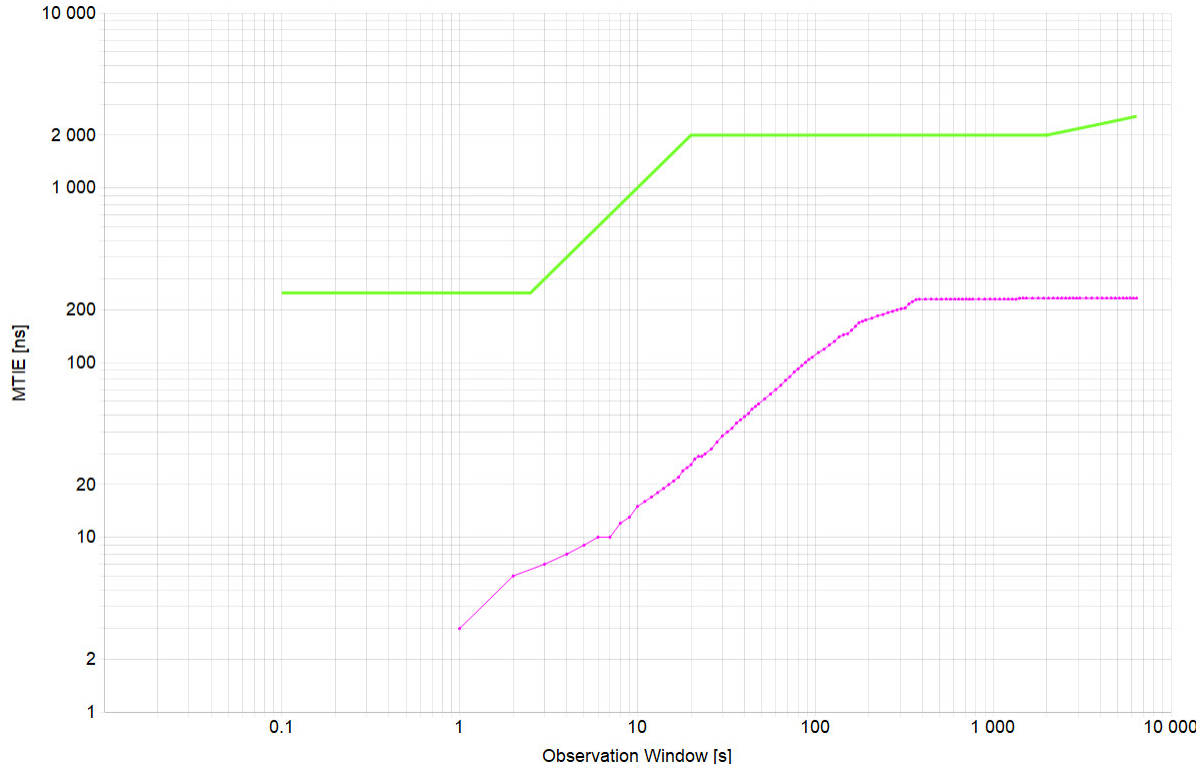
15.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	28ns



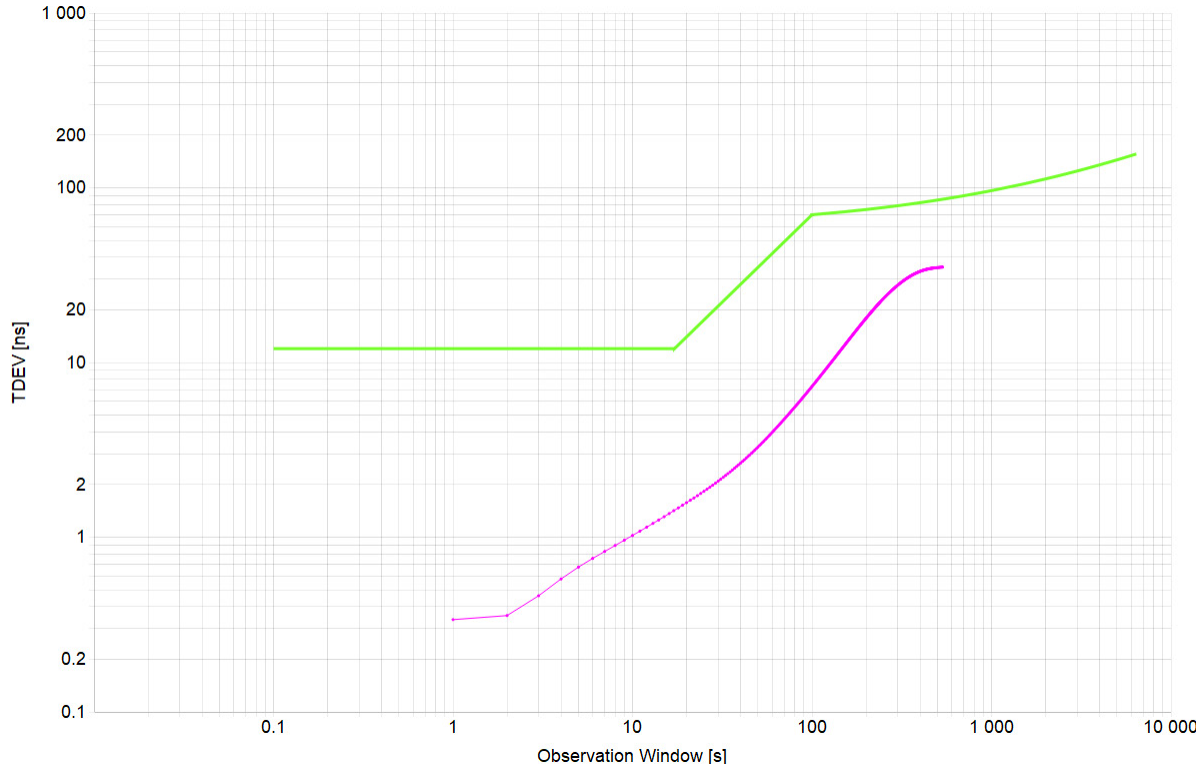
Mean [ns]	79.26
Min [ns]	9
Max [ns]	242
Max-Min [ns]	233

15.2 MTIE Analysis



Min [ns]	3
Max [ns]	233
Max-Min [ns]	230

15.3 TDEV Analysis



Min [ns]	0.337
Max [ns]	35.161
Max-Min [ns]	34.823

16. G.8261: Test Case 16 Network Traffic Model 2

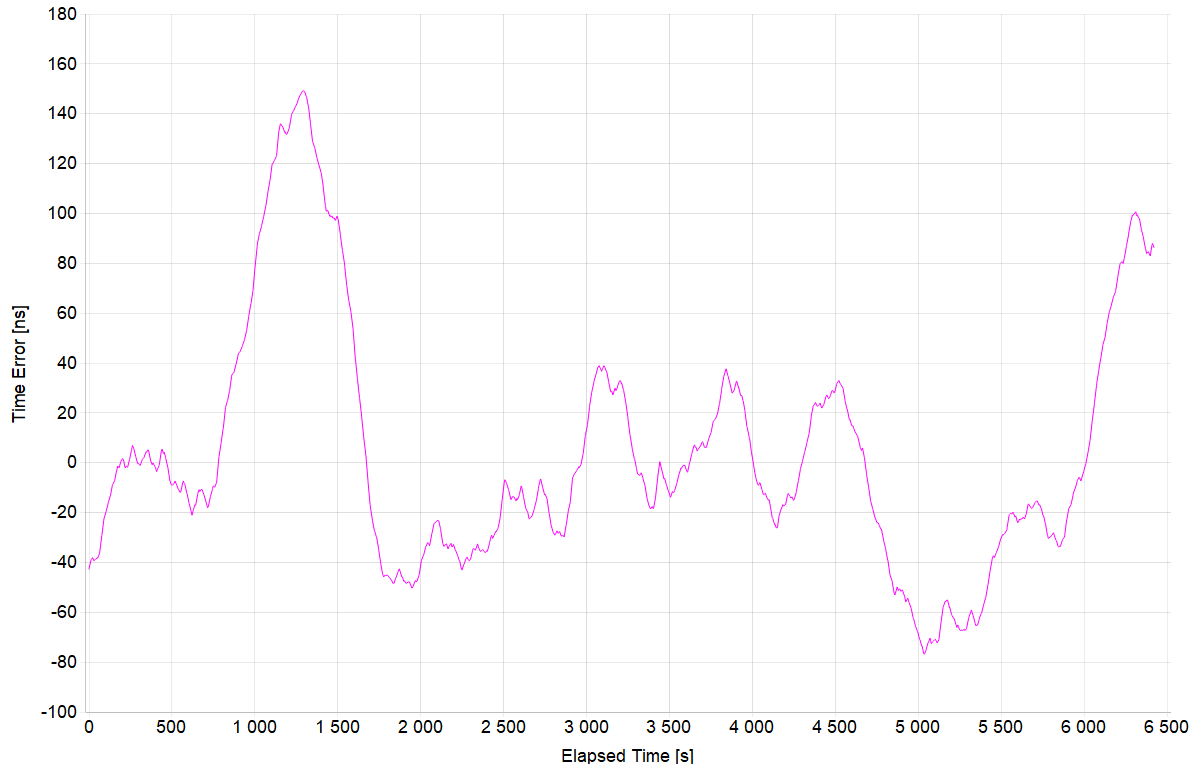
Test Description	Test Case 16 Network Traffic Model 2
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Test Duration	01:47:02
Test Configuration	1
Time to Phase Lock (s)	61

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

1. Data presented in the images below was collected using the following procedure:
   - Start PTP
   - Stabilize for 600s
   - Start PDV
   - Start Data Capture
2. This results in a short time to phase lock (see above table).Lock time under PDV conditions was measured to be 372s. The following procedure was used for locking under PDV conditions:
   - Start PDV
   - Start PTP
   - Start Data Capture

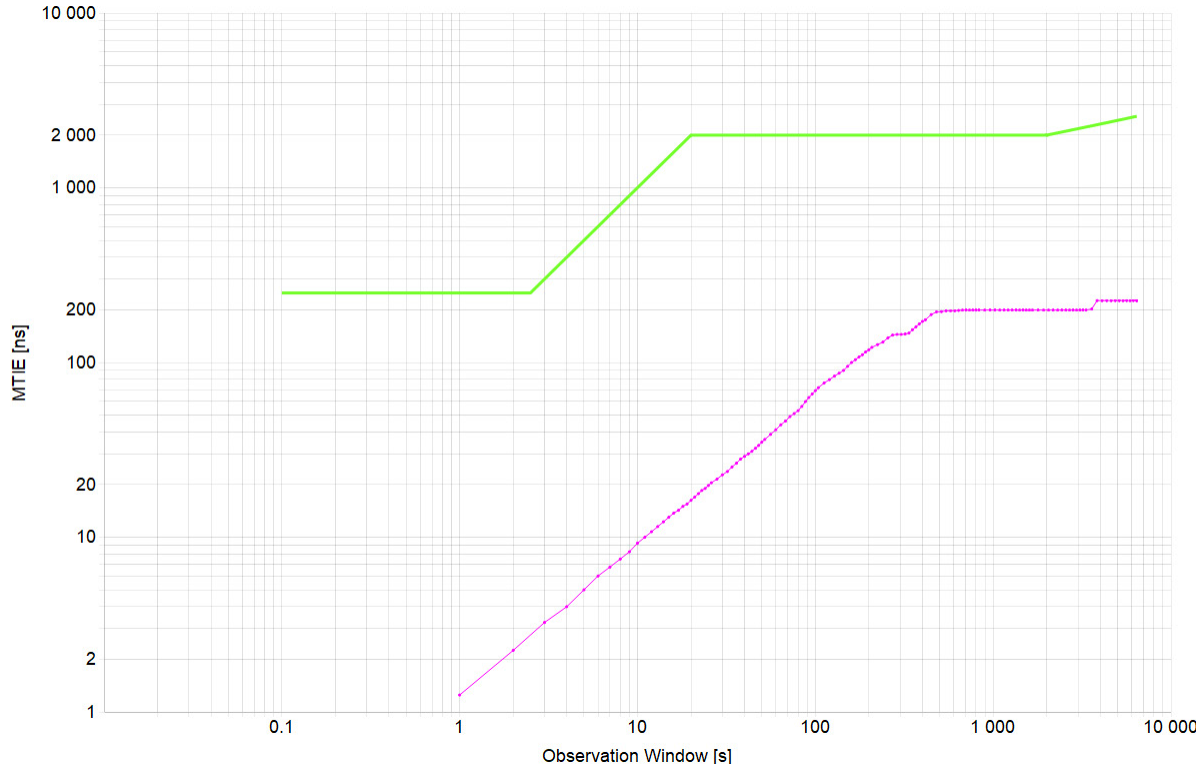
16.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-42.823ns



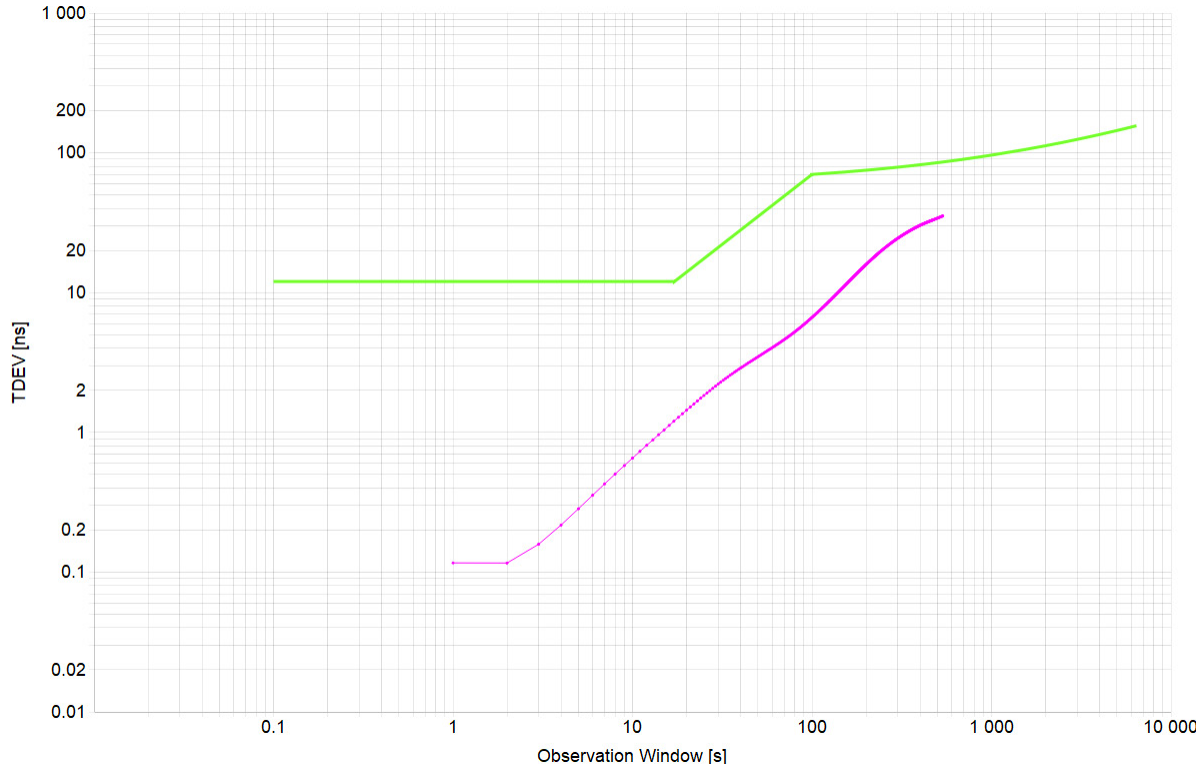
Mean [ns]	3.558
Min [ns]	-76.823
Max [ns]	149.177
Max-Min [ns]	226

16.2 MTIE Analysis



Min [ns]	1.25
Max [ns]	226
Max-Min [ns]	224.75

16.3 TDEV Analysis



Min [ns]	0.116
Max [ns]	35.344
Max-Min [ns]	35.227

17. G.8261: Test Case 17 (10µs) Network Traffic Model 2

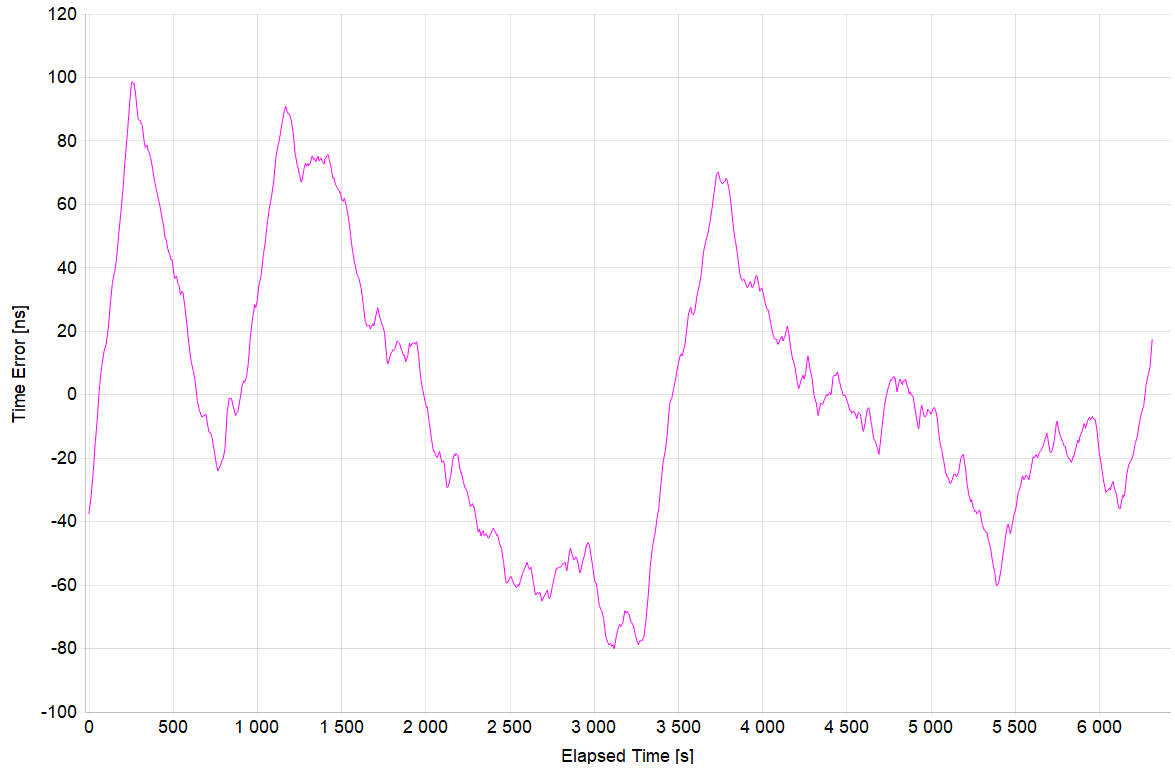
Test Description	Test Case 17 (10µs) Network Traffic Model 2
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Test Duration	01:45:12
Test Configuration	1
Time to Phase Lock (s)	63

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

1. Data presented in the images below was collected using the following procedure:
   - Start PTP
   - Stabilize for 600s
   - Start PDV
   - Start Data Capture
2. This results in a short time to phase lock (see above table).Lock time under PDV conditions was measured to be 558s. The following procedure was used for locking under PDV conditions:
   - Start PDV
   - Start PTP
   - Start Data Capture

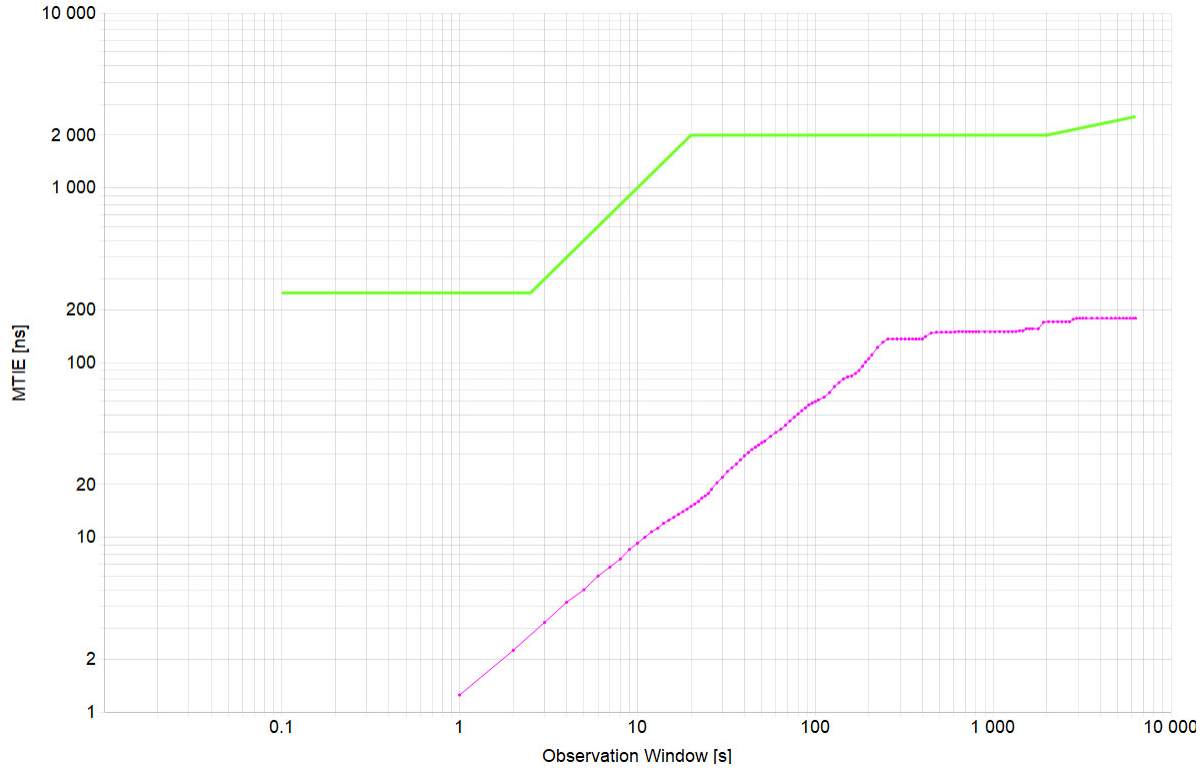
17.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-37.573ns



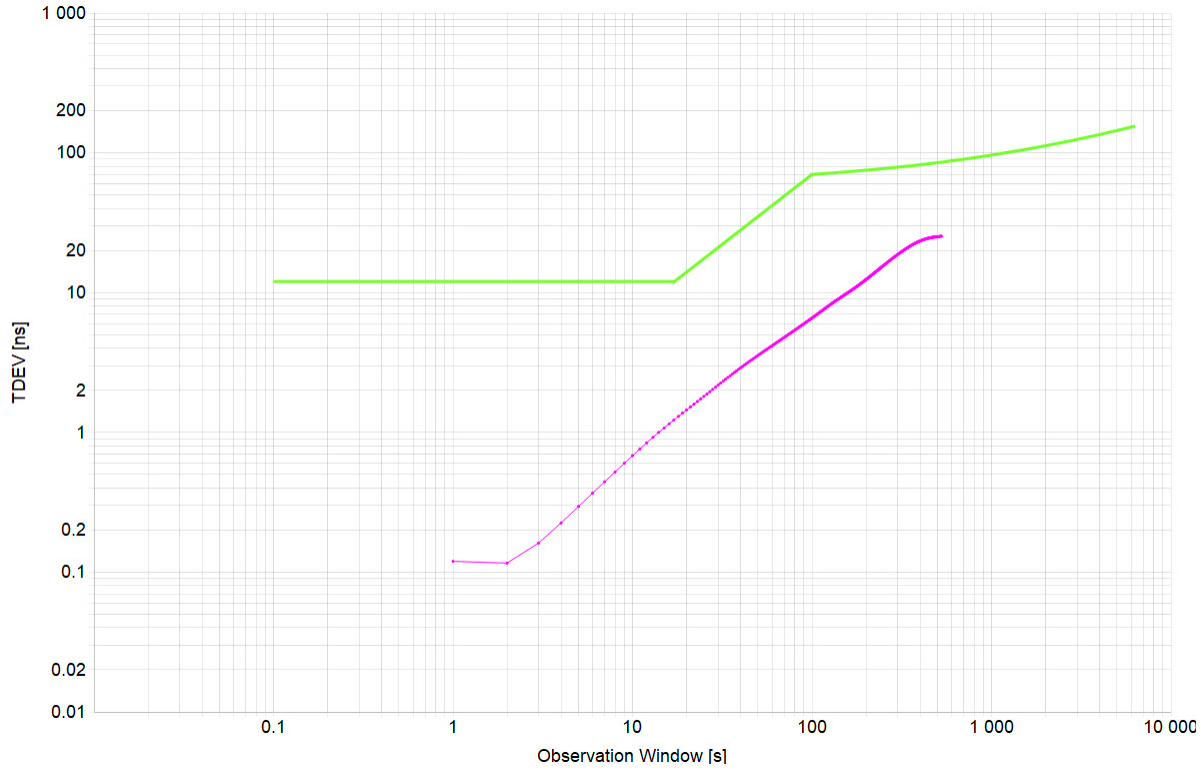
Mean [ns]	-0.911
Min [ns]	-80.073
Max [ns]	98.677
Max-Min [ns]	178.75

17.2 MTIE Analysis



Min [ns]	1.25
Max [ns]	178.75
Max-Min [ns]	177.5

17.3 TDEV Analysis



Min [ns]	0.116
Max [ns]	25.315
Max-Min [ns]	25.199

18. G.8261: Test Case 17 (200µs) Network Traffic Model 2

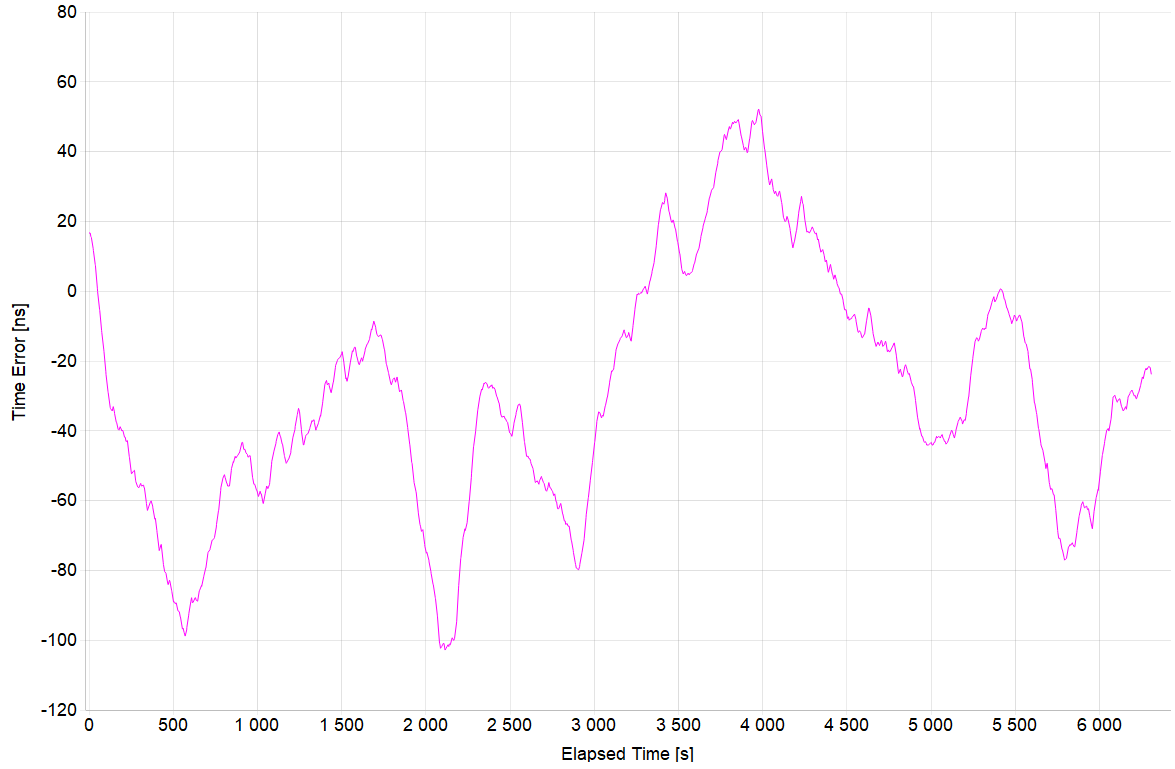
Test Description	Test Case 17 (200µs) Network Traffic Model 2
Report Date	22-04-27_15-55-48
Packet Rate (pkt/s)	16
Test Duration	01:45:07
Test Configuration	1
Time to Phase Lock (s)	56

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

1. Data presented in the images below was collected using the following procedure:
   - Start PTP
   - Stabilize for 600s
   - Start PDV
   - Start Data Capture
2. This results in a short time to phase lock (see above table).Lock time under PDV conditions was measured to be 374s. The following procedure was used for locking under PDV conditions:
   - Start PDV
   - Start PTP
   - Start Data Capture

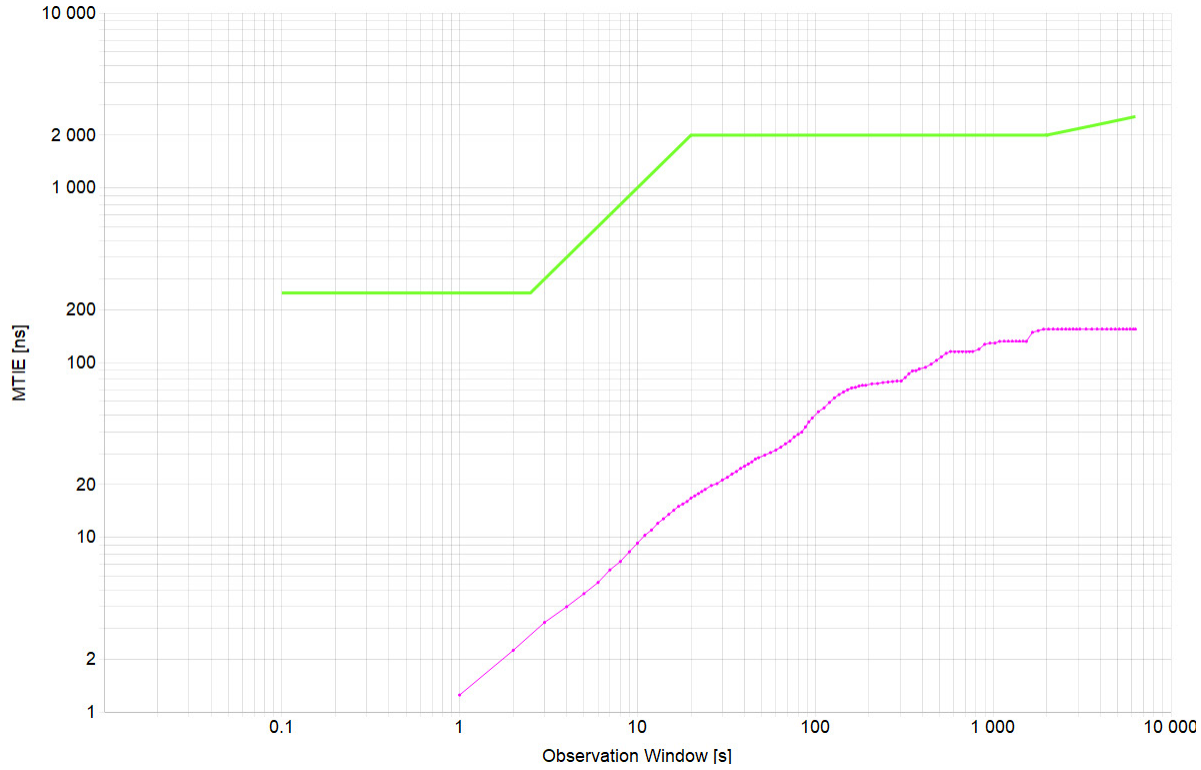
18.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	16.677ns



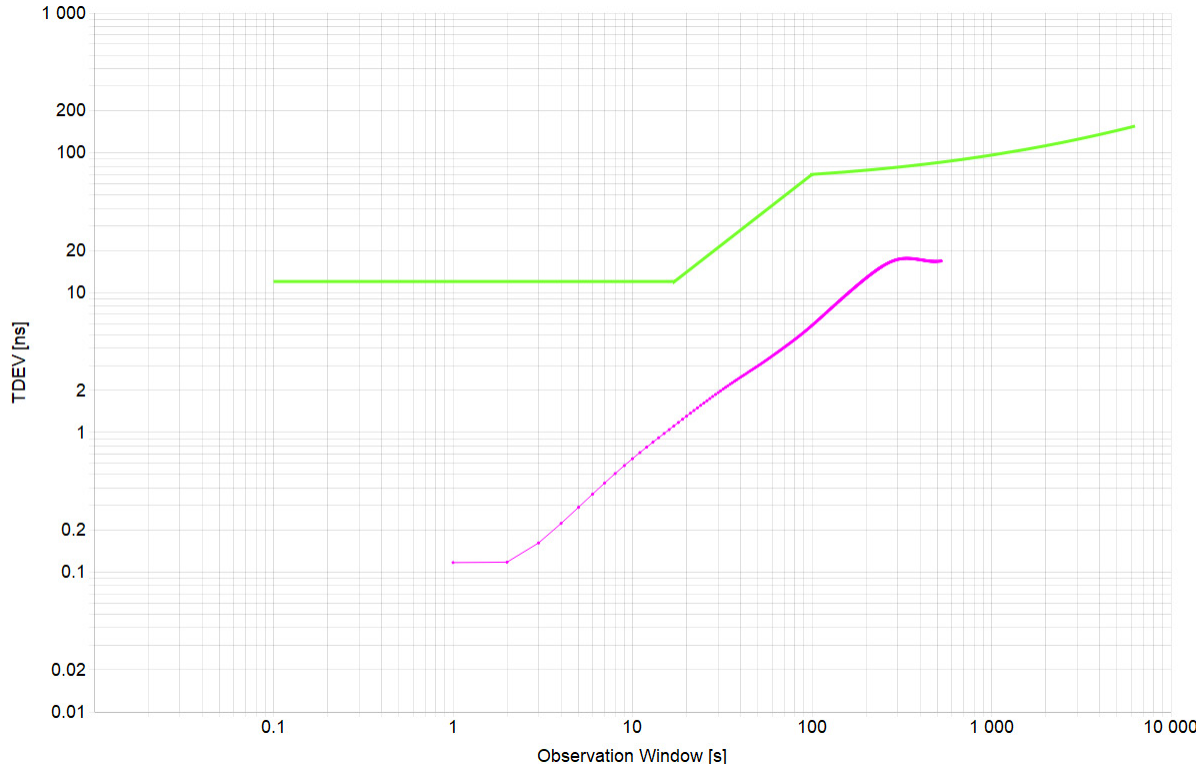
Mean [ns]	-29.338
Min [ns]	-102.823
Max [ns]	52.177
Max-Min [ns]	155

18.2 MTIE Analysis



Min [ns]	1.25
Max [ns]	155
Max-Min [ns]	153.75

18.3 TDEV Analysis



Min [ns]	0.117
Max [ns]	17.569
Max-Min [ns]	17.452

19. G.8261: Test Case 12 (SinglePath)

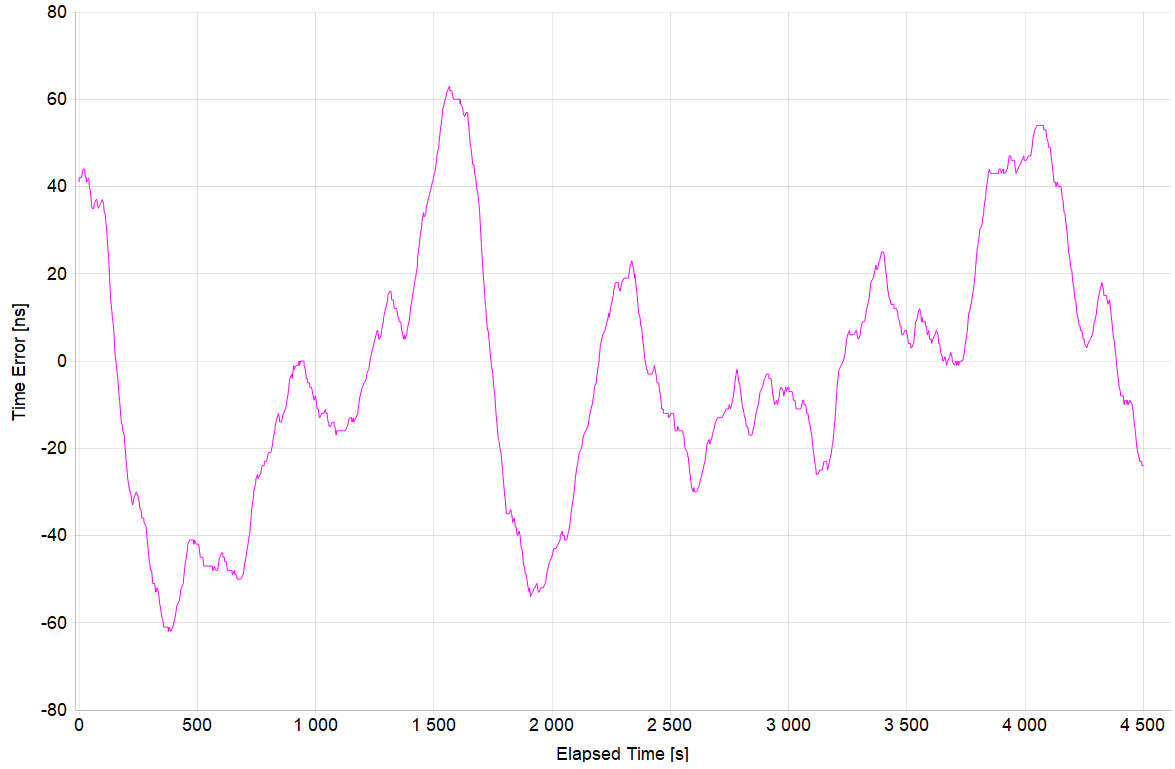
Test Description	Test Case 12
Report Date	22-04-27_17-14-34
Packet Rate (pkt/s)	16
Test Duration	01:15:01
Test Configuration	1
Time to Phase Lock (s)	452
Floor Delay Estimate (ns)	8780

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

1. Test Case 12 delay request PDV was used on the sync packets for this test. The Test Case 12 sync packet PDV has a Gaussian distribution that cannot be tracked in Single Path mode.

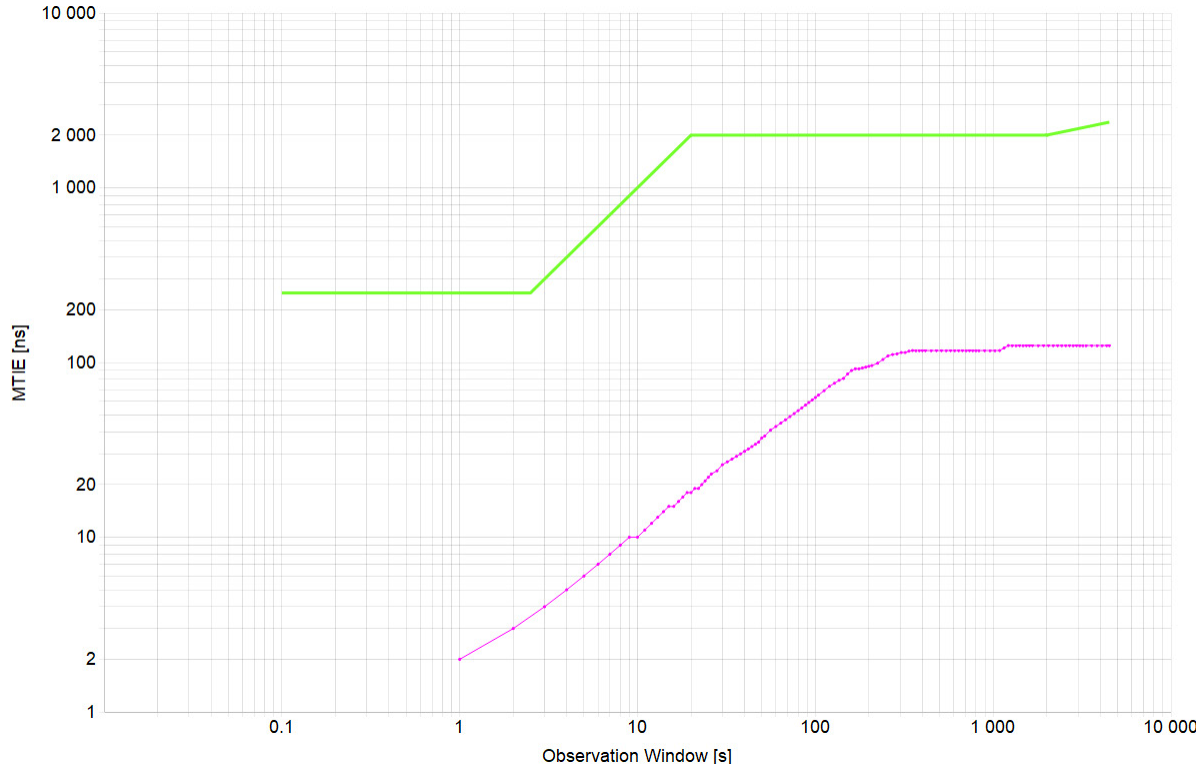
19.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	41ns



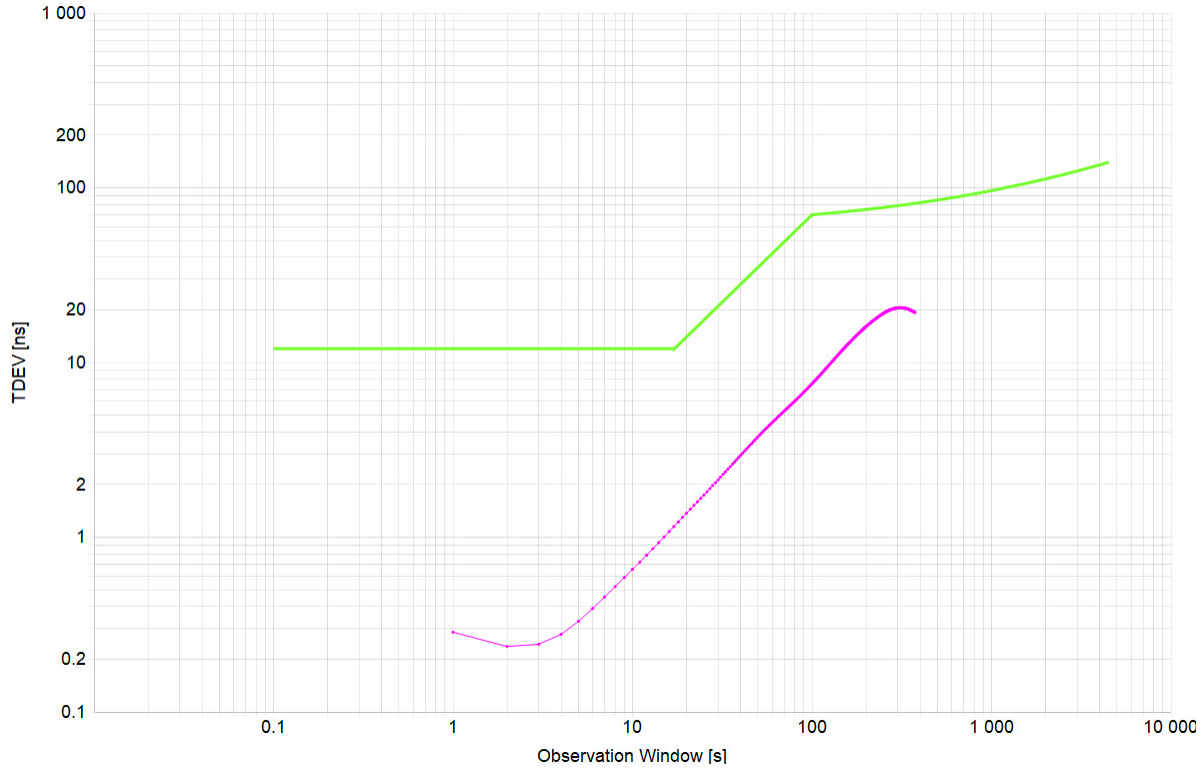
Mean [ns]	-2.588
Min [ns]	-62
Max [ns]	63
Max-Min [ns]	125

19.2 MTIE Analysis



Min [ns]	2
Max [ns]	125
Max-Min [ns]	123

19.3 TDEV Analysis



Min [ns]	0.237
Max [ns]	20.581
Max-Min [ns]	20.344

20. G.8261: Test Case 13b (SinglePath)

Test Description	Test Case 13 Network Traffic Model 2
Report Date	22-04-27_17-14-34
Packet Rate (pkt/s)	16
Test Duration	06:15:01
Test Configuration	2
Time to Phase Lock (s)	372
Floor Delay Estimate (ns)	6730

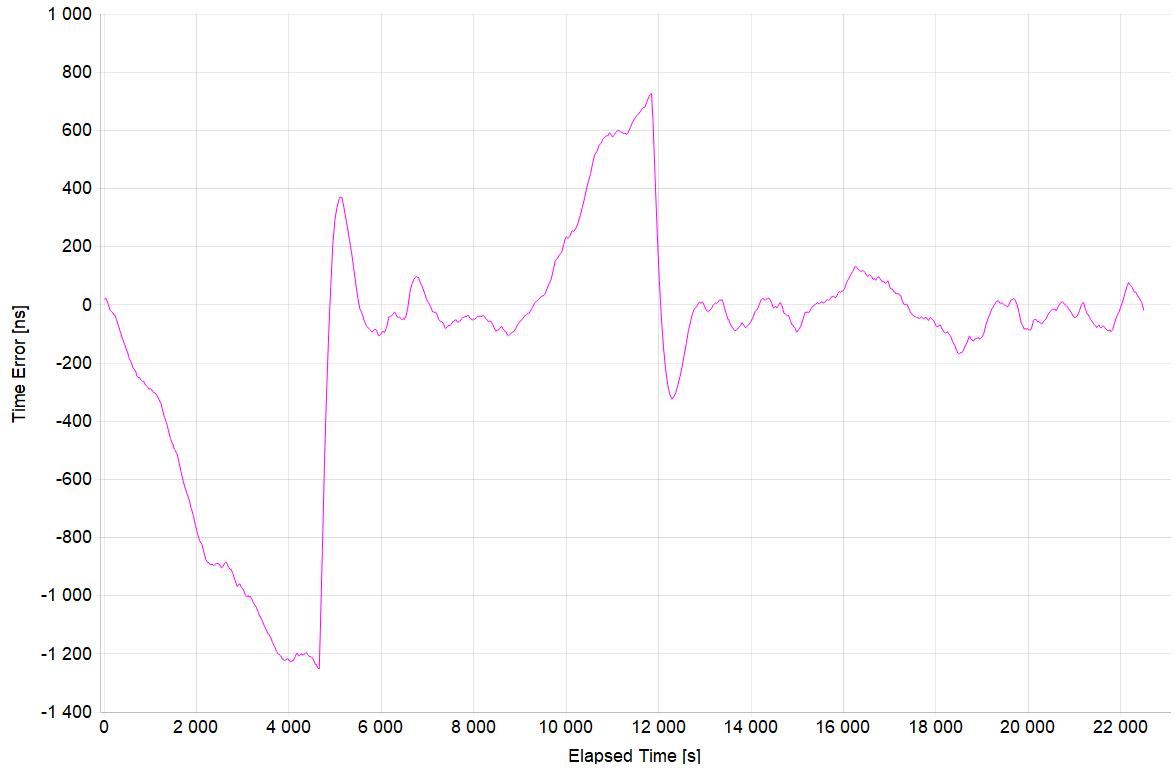
All Mask Results	**Fail**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Fail**

1. This test is expected to fail the G.8261 EEC Option 1 masks.

   The PDV pattern does not have a solid noise floor during the first 3600s (the PDV follows a Gaussian distribution).When there is a solid noise floor after the first 3600s, the performance returns to normal. At 7200 the noise distribution returns to Gaussian and the change in performance can be seen in the Time Error plot. At 14400, the distribution is again Gaussian, but at this point the servo has had enough time to collect information on the PDV and maintain good performance throughout the Gaussian noise distribution portion from 14400 to 18000s.

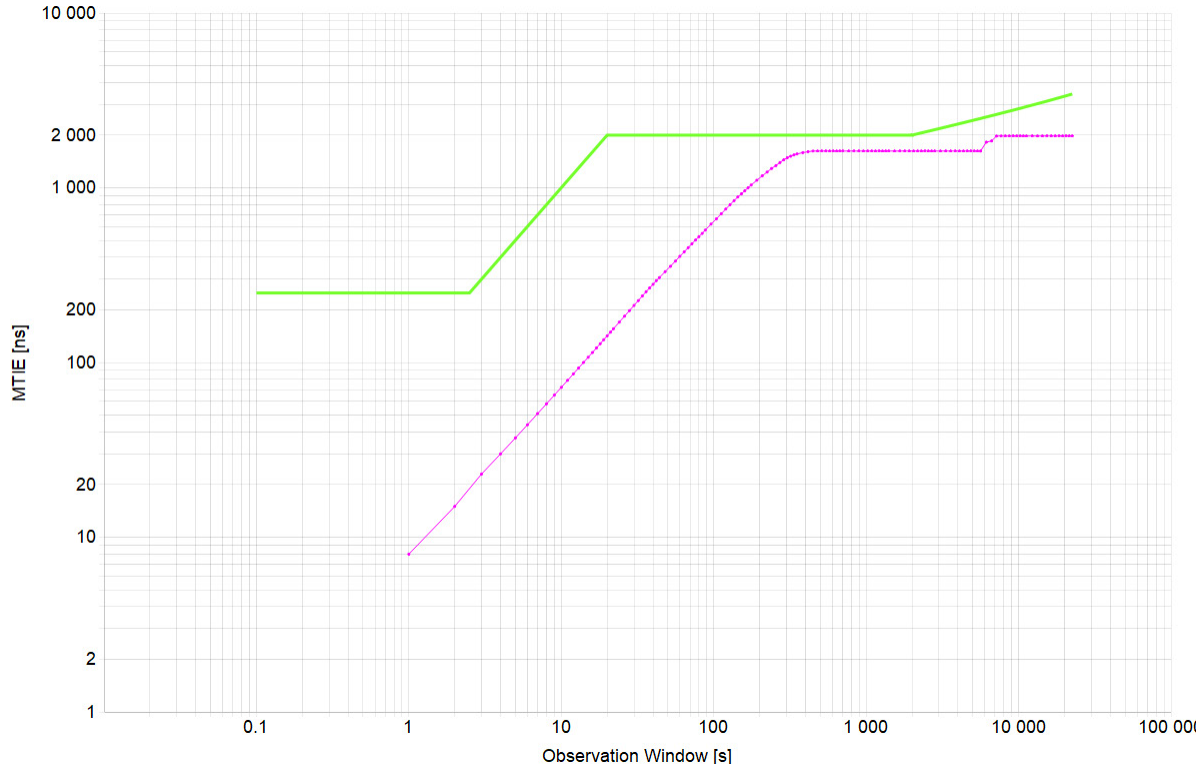
20.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	19ns



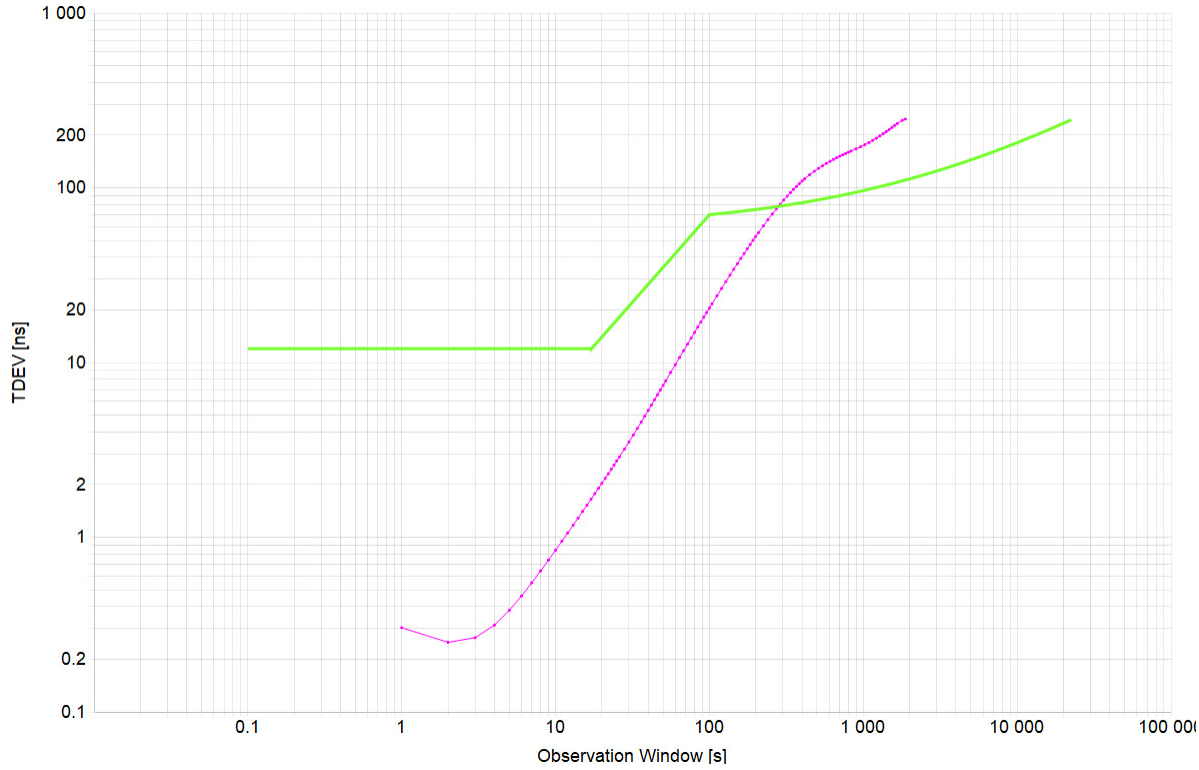
Mean [ns]	-125.643
Min [ns]	-1252
Max [ns]	726
Max-Min [ns]	1978

20.2 MTIE Analysis



Min [ns]	8
Max [ns]	1978
Max-Min [ns]	1970

20.3 TDEV Analysis



Min [ns]	0.25
Max [ns]	247.036
Max-Min [ns]	246.786

21. G.8261: Test Case 14b (SinglePath)

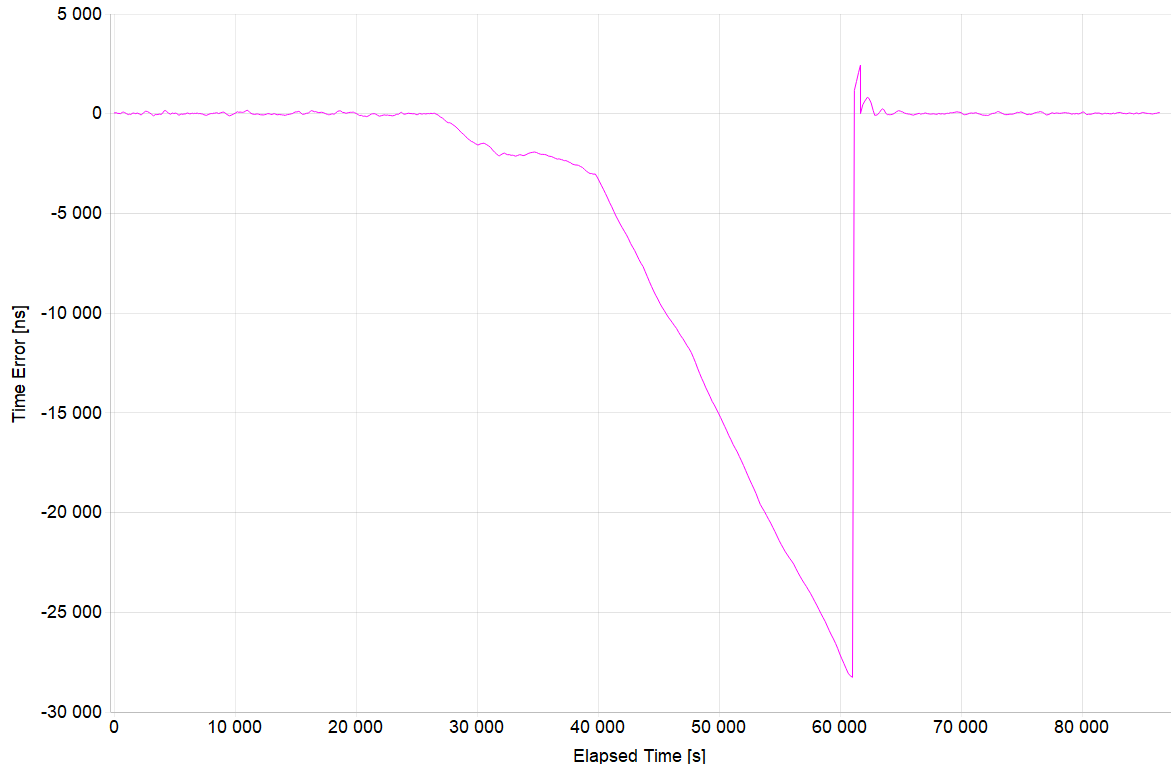
Test Description	Test Case 14 Network Traffic Model 2
Report Date	22-04-27_17-14-34
Packet Rate (pkt/s)	16
Test Duration	24:00:01
Test Configuration	2
Time to Phase Lock (s)	372
Floor Delay Estimate (ns)	6730

All Mask Results	**Fail**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Fail**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Fail**

1. This test is expected to fail the G.8261 EEC Option 1 masks.
   In this PDV pattern, the noise floor gradually increases for 12 hours and then decreases for 12 hours. At Approximately 26000, lock is lost because of the change in PDV noise floor. When the PDV pattern noise floor decreases to the previous level at around 62000, time lock is restored.

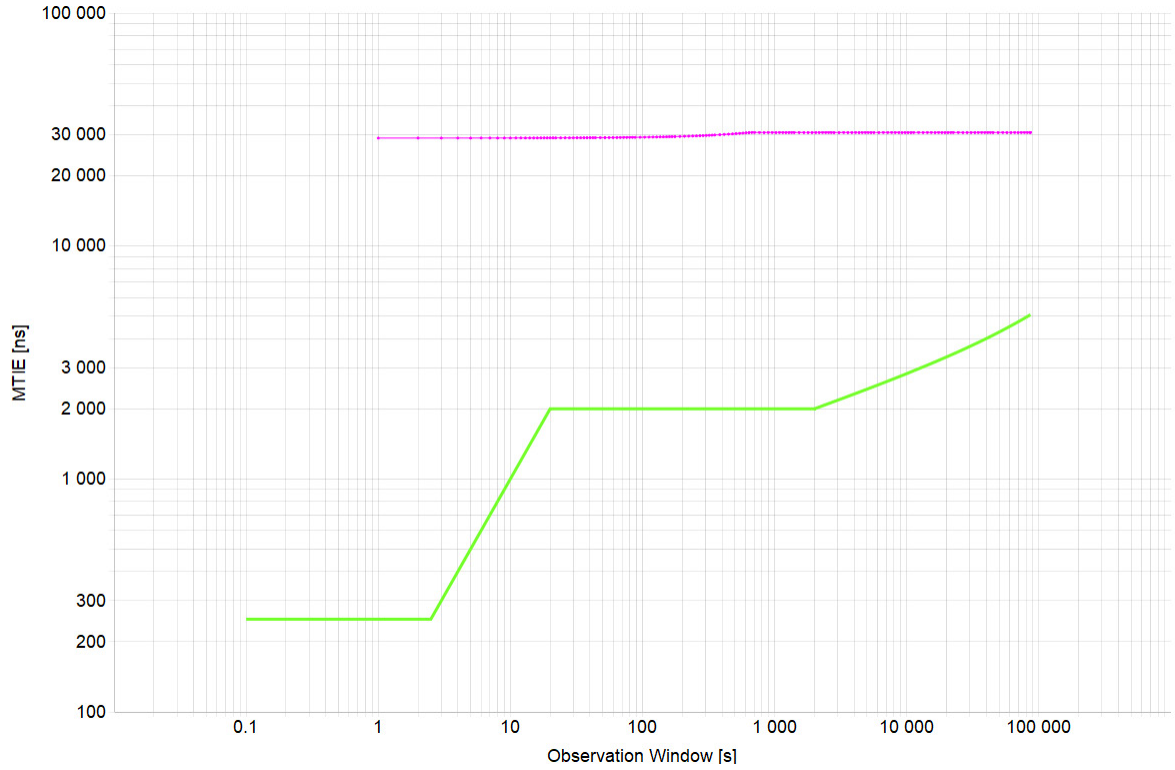
21.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	52ns



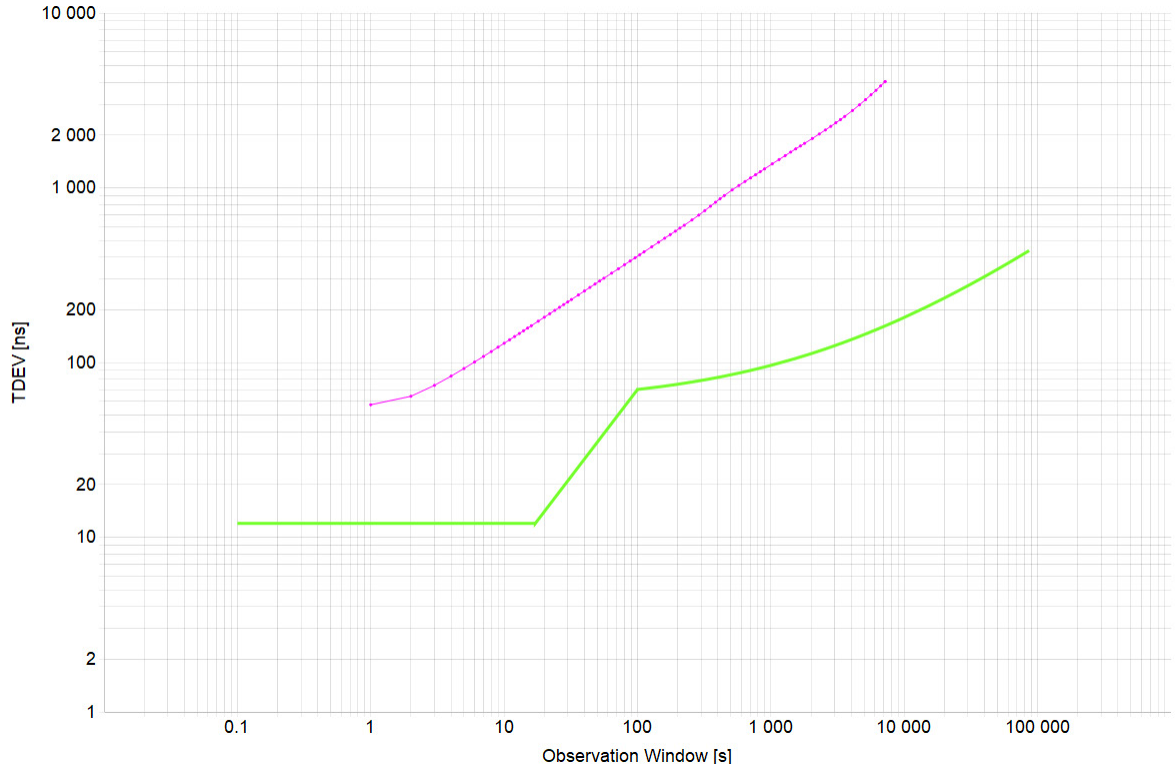
Mean [ns]	-4102.269
Min [ns]	-28266
Max [ns]	2442
Max-Min [ns]	30708

21.2 MTIE Analysis



Min [ns]	29056
Max [ns]	30708
Max-Min [ns]	1652

21.3 TDEV Analysis



Min [ns]	57.272
Max [ns]	4053.098
Max-Min [ns]	3995.826

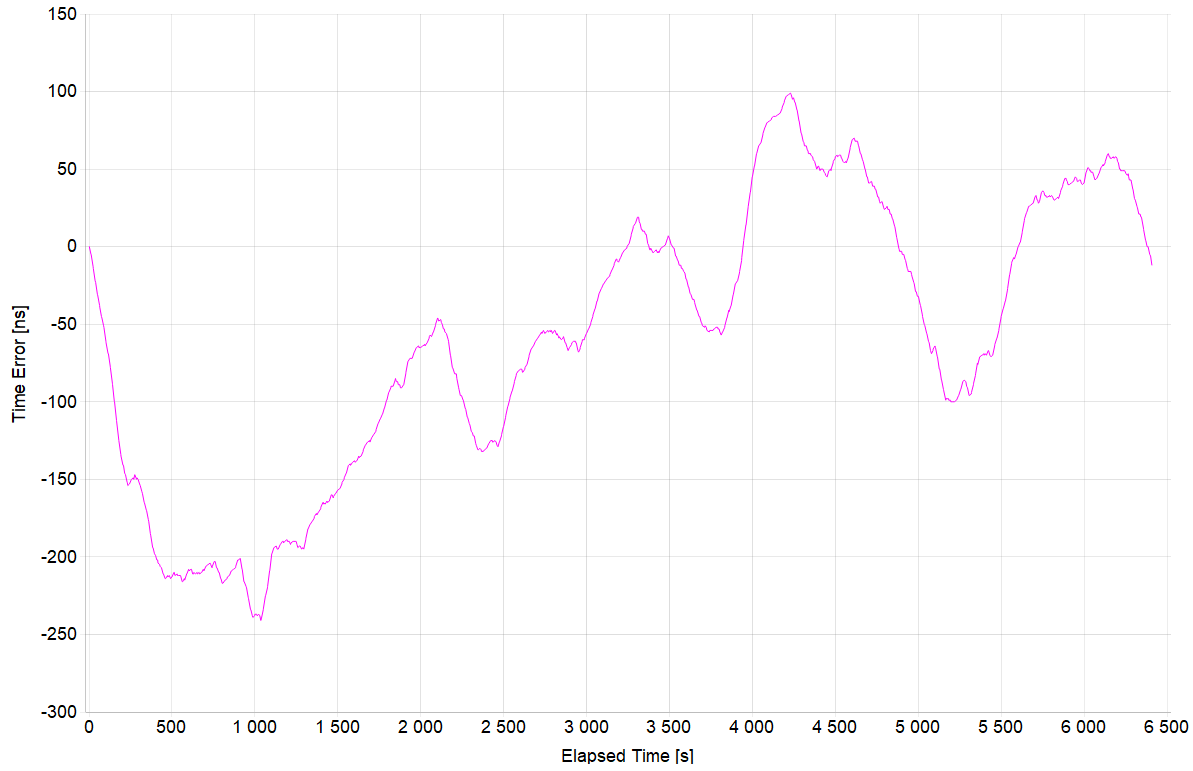
22. G.8261: Test Case 15b (SinglePath)

Test Description	Test Case 15 Network Traffic Model 2
Report Date	22-04-27_17-14-34
Packet Rate (pkt/s)	16
Test Duration	01:46:50
Test Configuration	2
Time to Phase Lock (s)	373
Floor Delay Estimate (ns)	6730

All Mask Results	**Pass**
Mask ONEPPS	
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

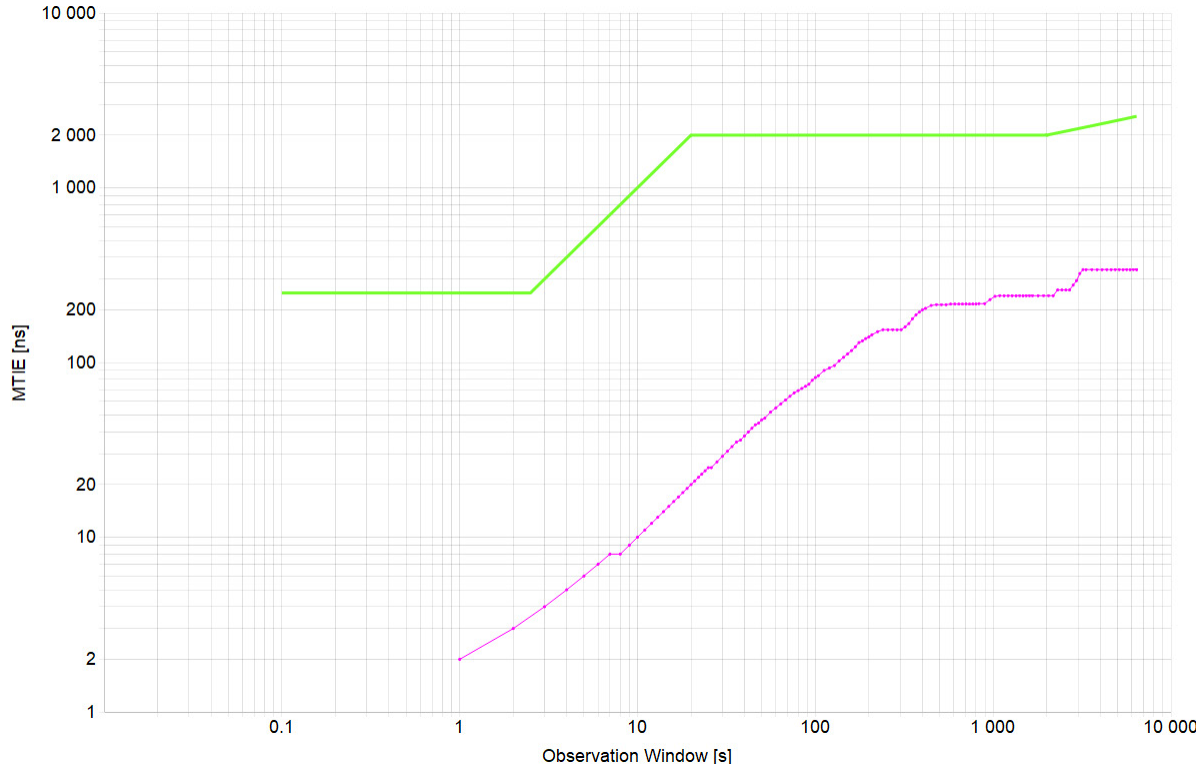
22.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	0ns



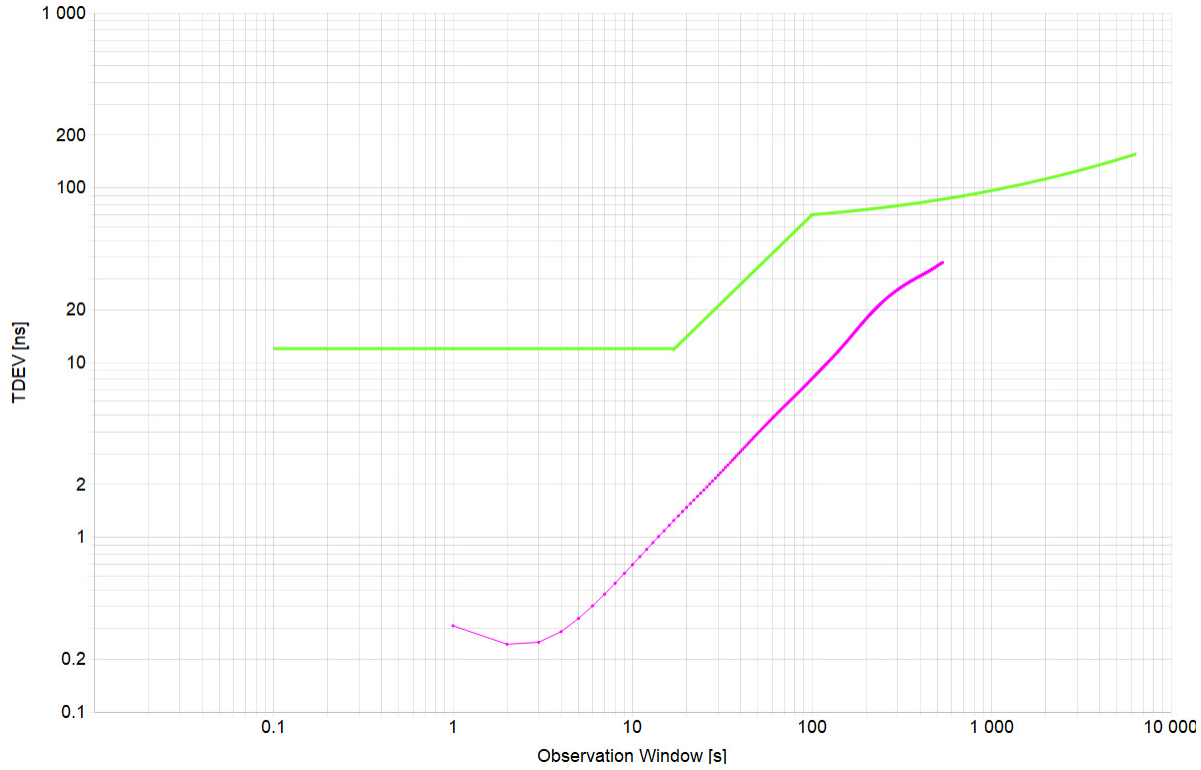
Mean [ns]	-59.645
Min [ns]	-241
Max [ns]	99
Max-Min [ns]	340

22.2 MTIE Analysis



Min [ns]	2
Max [ns]	340
Max-Min [ns]	338

22.3 TDEV Analysis



Min [ns]	0.244
Max [ns]	37.331
Max-Min [ns]	37.087

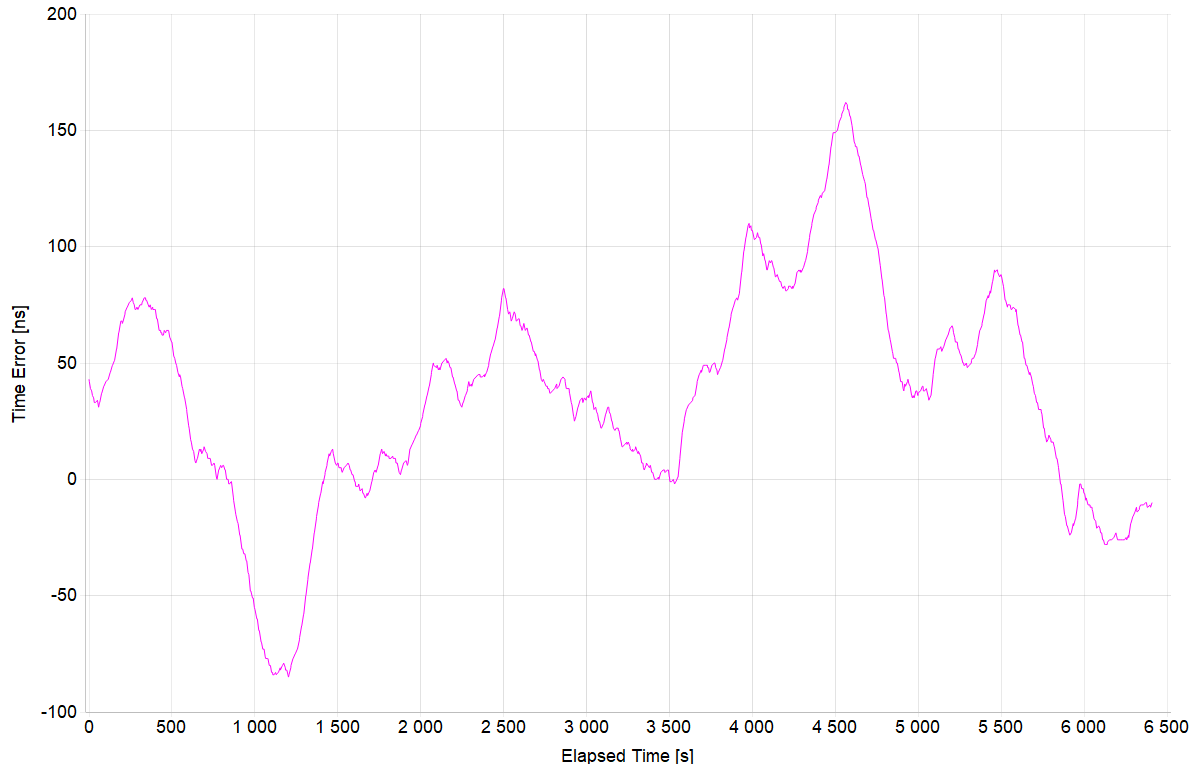
23. G.8261: Test Case 16b (SinglePath)

Test Description	Test Case 16 Network Traffic Model 2
Report Date	22-04-27_17-14-34
Packet Rate (pkt/s)	16
Test Duration	01:46:50
Test Configuration	2
Time to Phase Lock (s)	373
Floor Delay Estimate (ns)	6730

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Pass**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Pass**

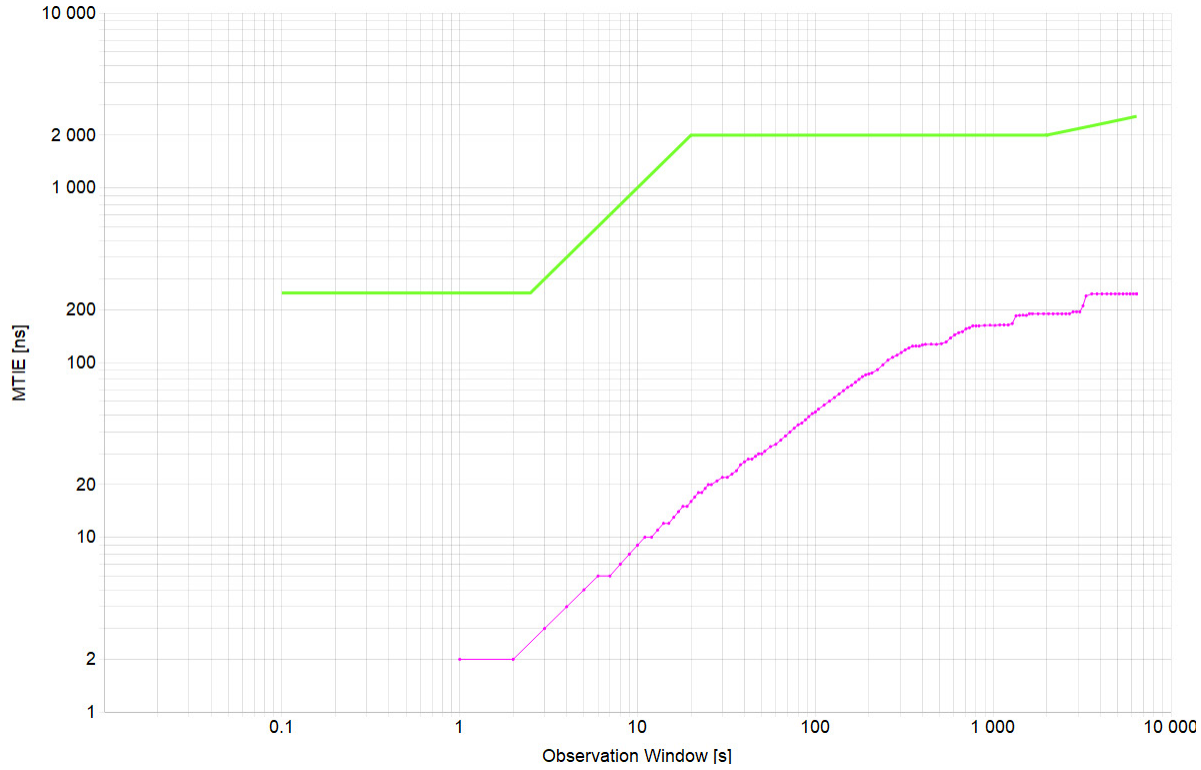
23.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	43ns



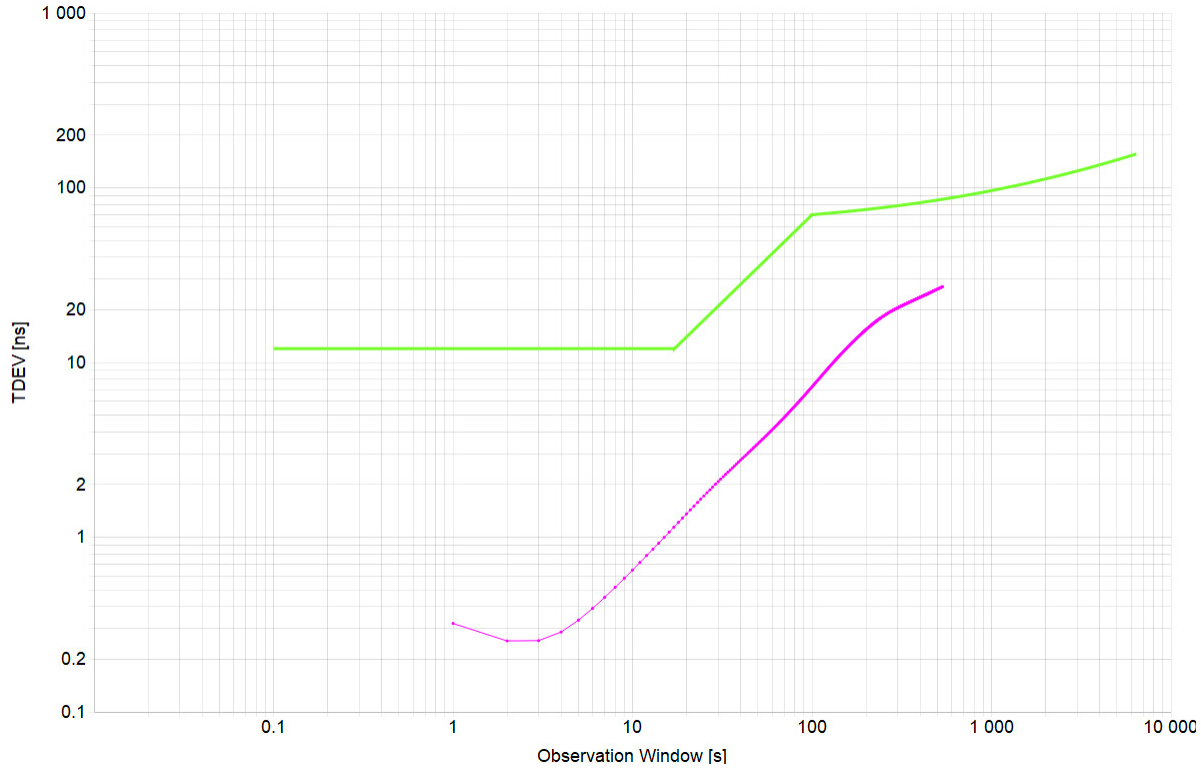
Mean [ns]	35.313
Min [ns]	-85
Max [ns]	162
Max-Min [ns]	247

23.2 MTIE Analysis



Min [ns]	2
Max [ns]	247
Max-Min [ns]	245

23.3 TDEV Analysis



Min [ns]	0.255
Max [ns]	27.141
Max-Min [ns]	26.886

24. G.8261: Test Case 17b_10us (SinglePath)

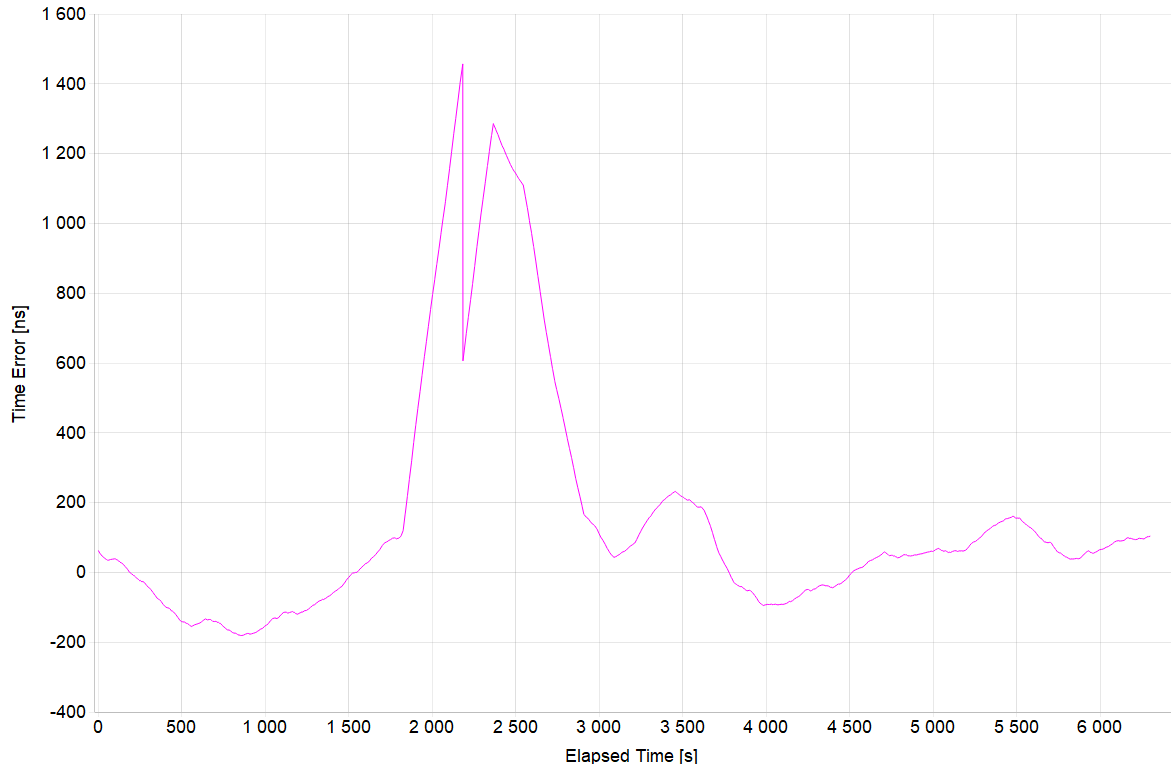
Test Description	Test Case17b (10µs) Network Traffic Model 2
Report Date	22-04-28_08-58-37
Packet Rate (pkt/s)	16
Test Duration	01:45:00
Test Configuration	2
Time to Phase Lock (s)	571
Floor Delay Estimate (ns)	6730

All Mask Results	**Fail**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Fail**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Fail**

1. This test is expected to fail the G.8261 EEC Option 1 masks.
   In this PDV pattern there is a prolonged noise floor change of 10µs at 1800s. This causes a loss of lock. In single path mode, large changes in PDV floor cannot be tolerated. Once the noise floor returns to normal, time lock is restored.

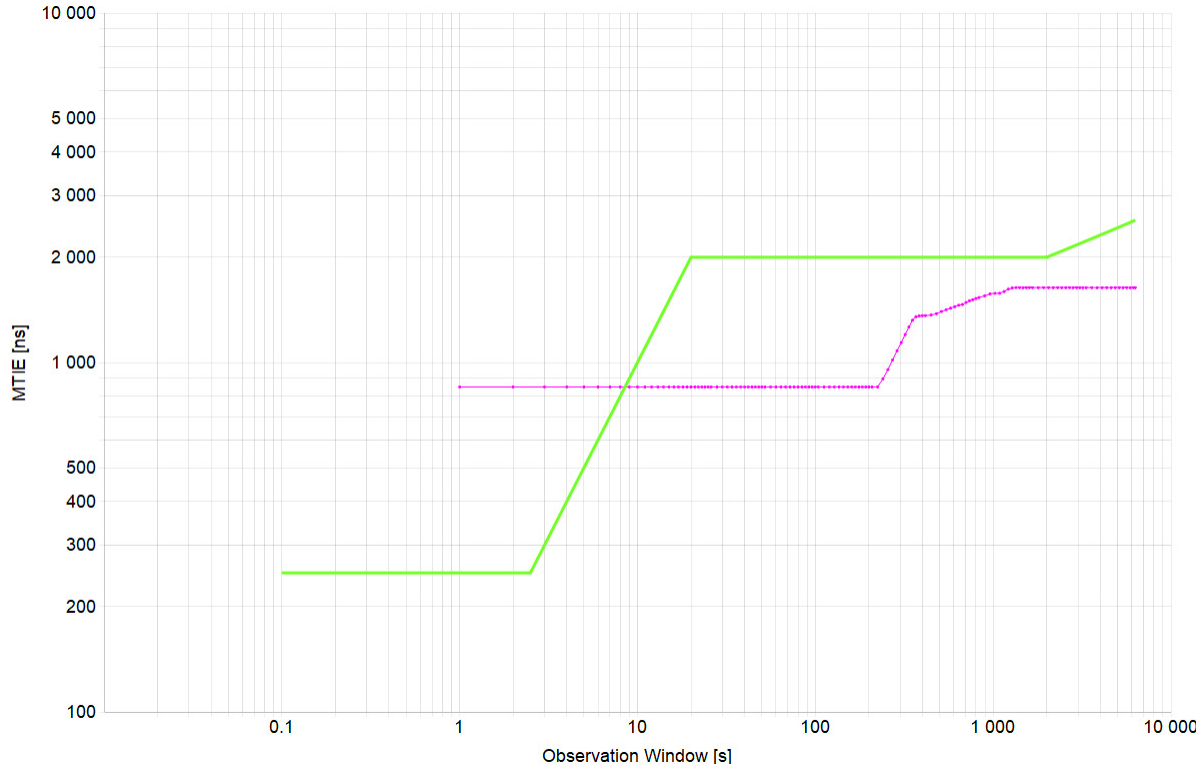
24.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	63ns



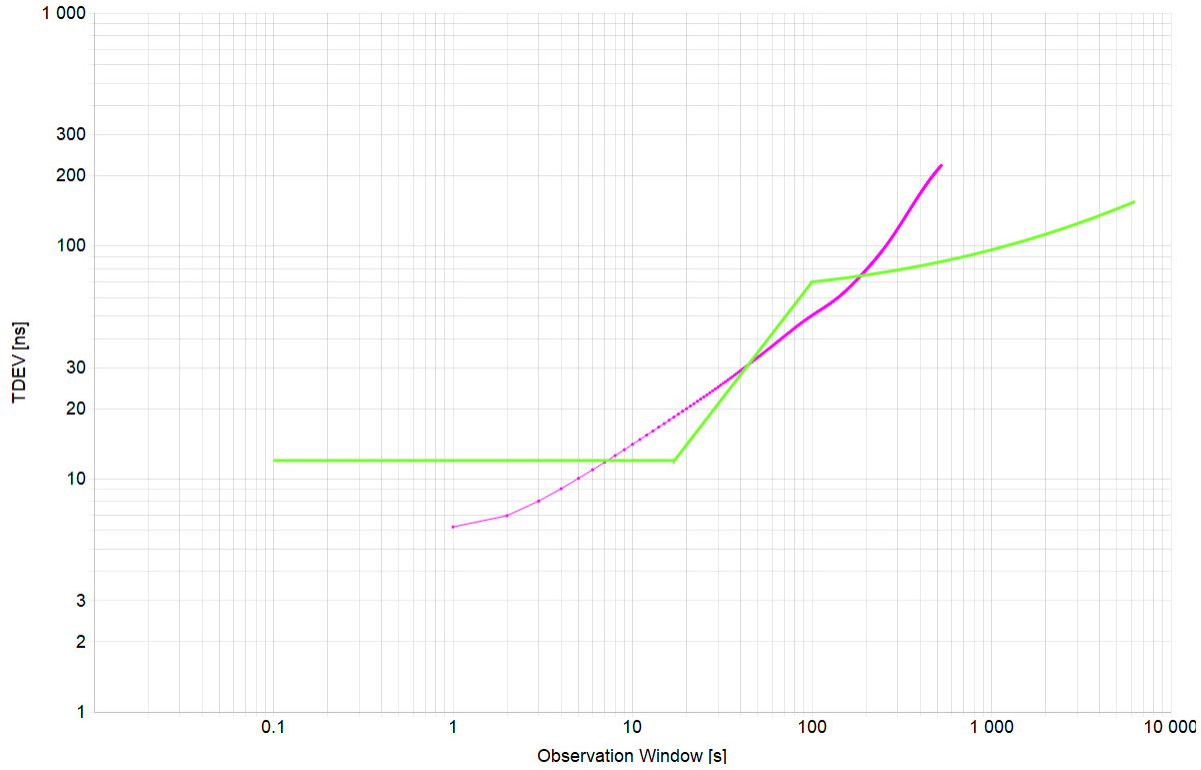
Mean [ns]	155.328
Min [ns]	-181
Max [ns]	1457
Max-Min [ns]	1638

24.2 MTIE Analysis



Min [ns]	851
Max [ns]	1638
Max-Min [ns]	787

24.3 TDEV Analysis



Min [ns]	6.225
Max [ns]	221.567
Max-Min [ns]	215.342

25. G.8261: Test Case 17b_200us (SinglePath)

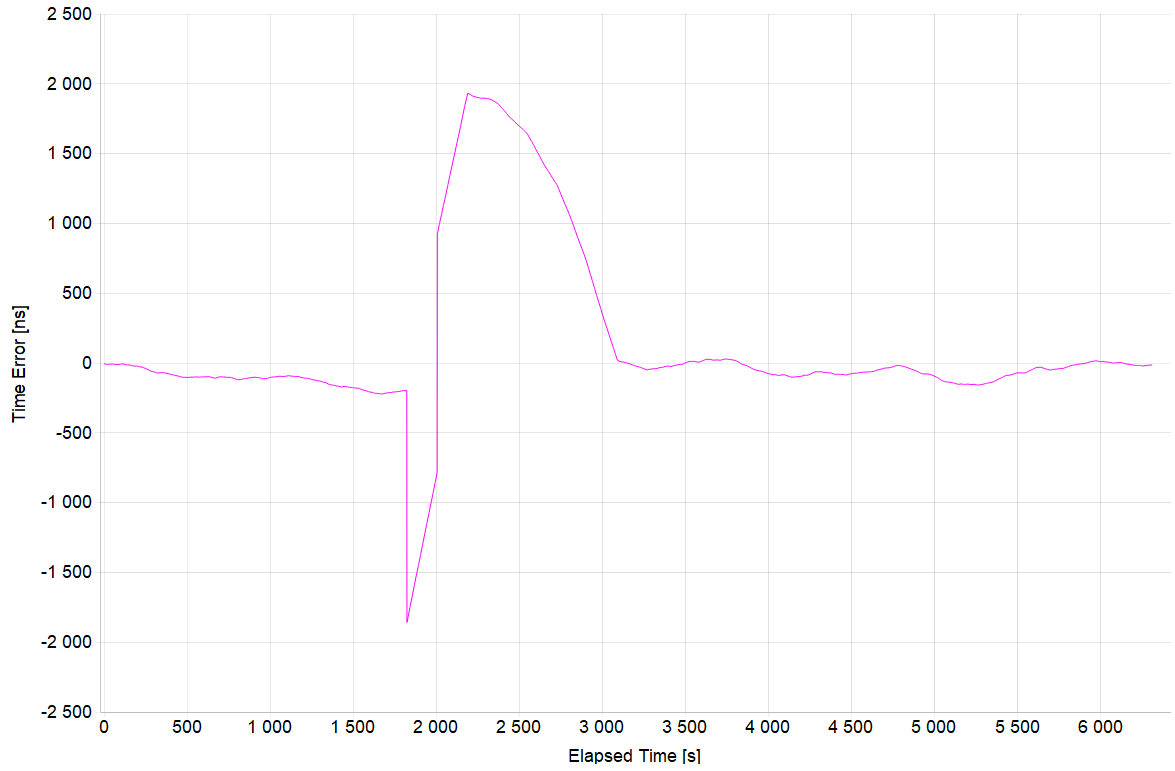
Test Description	Test Case17b (200µs) Network Traffic Model 2
Report Date	22-04-27_17-14-34
Packet Rate (pkt/s)	16
Test Duration	01:45:11
Test Configuration	1
Time to Phase Lock (s)	372
Floor Delay Estimate (ns)	8780

All Mask Results	**Fail**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261 EEC Opt. 1 Wander Limit
Mask MTIE Result	**Fail**
Mask TDEV	G.8261 EEC Opt. 1 Wander Limit
Mask TDEV Result	**Fail**

1. This test is expected to fail the G.8261 EEC Option 1 masks.
   In this PDV pattern there is a prolonged noise floor change of 200µs at 1800s. This causes a loss of lock. In single path mode, large changes in PDV floor cannot be tolerated. Once the noise floor returns to normal, time lock is restored.

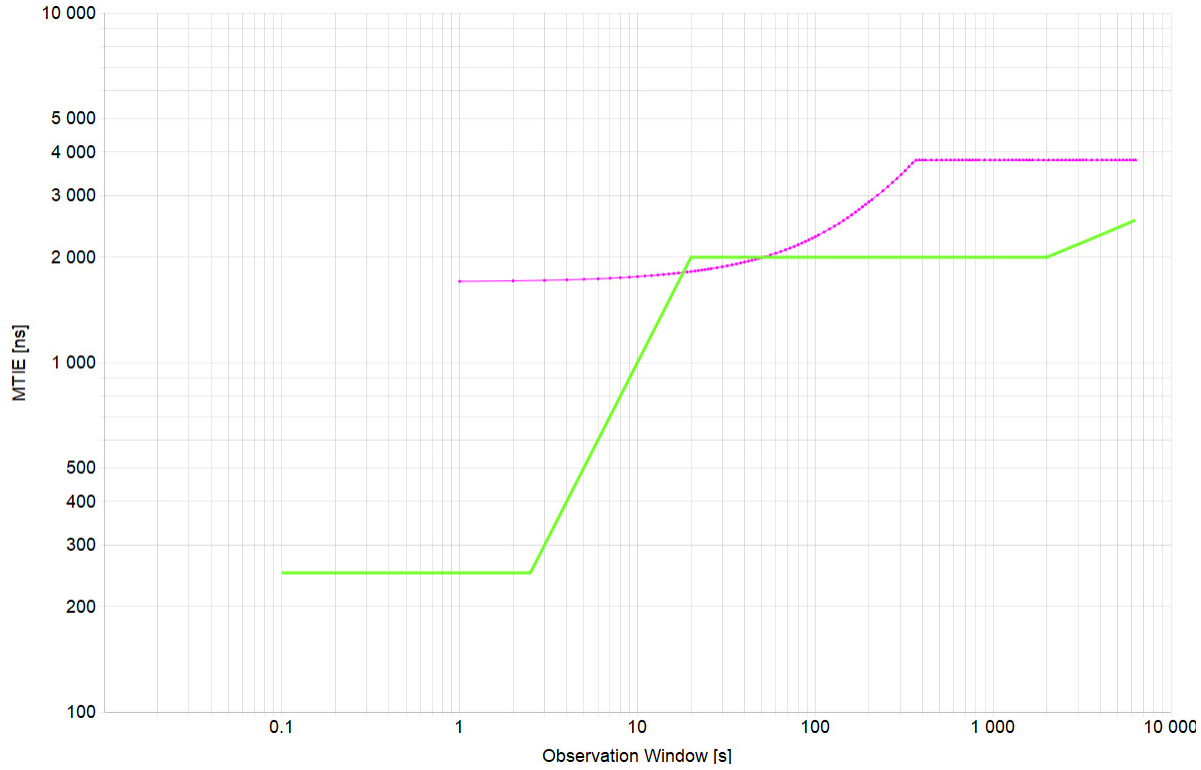
25.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-5.703ns



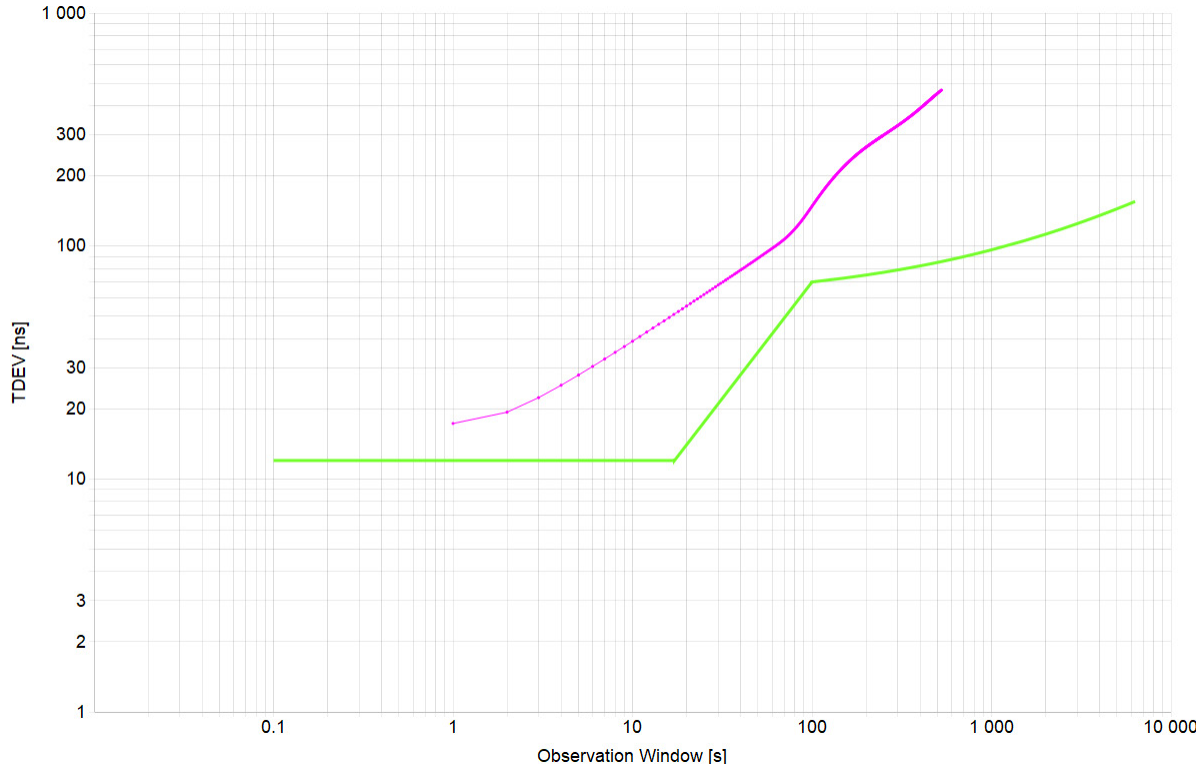
Mean [ns]	129.587
Min [ns]	-1859.203
Max [ns]	1932.297
Max-Min [ns]	3791.5

25.2 MTIE Analysis



Min [ns]	1706.25
Max [ns]	3791.5
Max-Min [ns]	2085.25

25.3 TDEV Analysis



Min [ns]	17.298
Max [ns]	466.594
Max-Min [ns]	449.296

26. Revision History

Revision	Date	Description
1.01	Jul 16, 2024	Replaced Xilinx with AMD throughout document.
1.00	May 3, 2023	Initial release.

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