AMD ZCU102 with Renesas ClockMatrix, ITU-T G.8263

Contents

1. Results Summary

Standard	Test Case	Results
G.8263	Noise Generation	Pass
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G.8261	Test Case 13 Network Traffic Model 2 [1]	Pass
G.8261	Test Case 14 Network Traffic Model 2 [1]	Pass
G.8261	Test Case 15 Network Traffic Model 2 [1]	Pass
G.8261	Test Case 16 Network Traffic Model 2 [1]	Pass
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G.8263	Noise Tolerance - Method 1	Pass
G.8263	Noise Tolerance - Method 2 (50µs)	Pass
G.8263	Noise Tolerance - Method 2 (75µs)	Pass
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G.8263	Noise Tolerance - Method 3 (Low Frequency)	Pass

1. Results for information only, not part of ITU-T required performance testing.

2. Test Configuration

Table 1. Test Configuration

Device Under Test	AMD + CM
Oscillator	Rakon M6141
1pps Source	Symmetricom TP5000
Instrument	Paragon Neo
Instrument Serial Number	00036081
Ethernet Interface	Optical

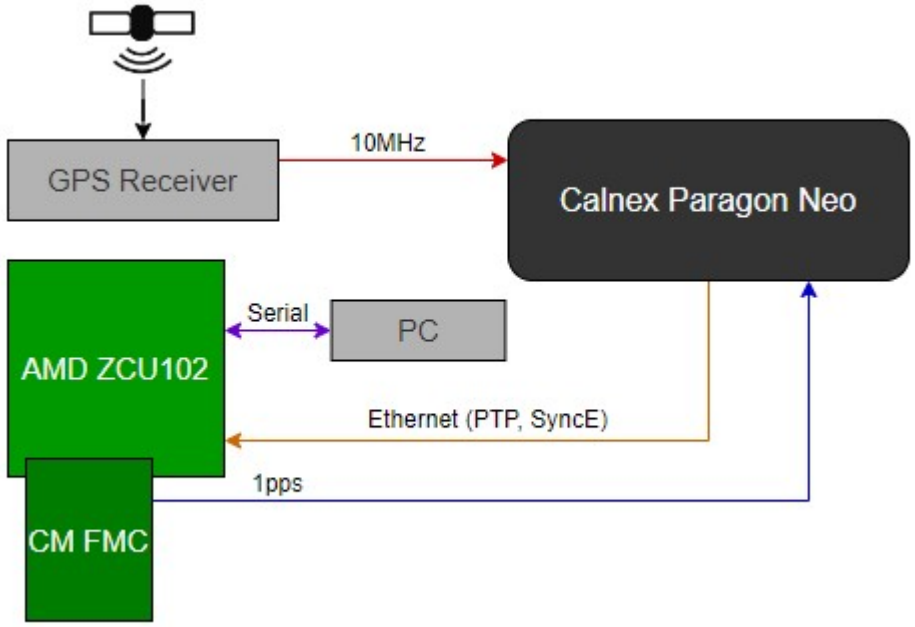


Figure 1. Equipment Configuration

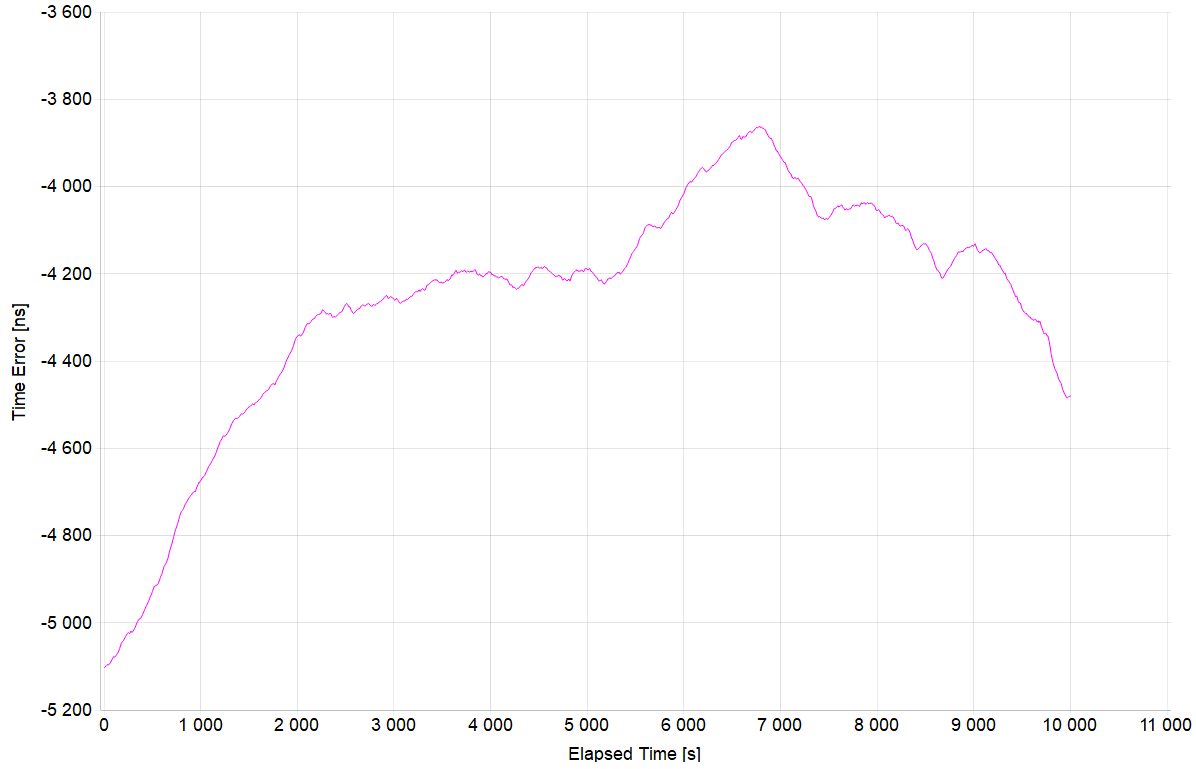
3. G.8263: Noise Generation

Test Description	Noise Generation
Report Date	22-10-18_13-29-39
Packet Rate (pkt/s)	16
Test Duration	02:46:40
Test Configuration	2
Time to Phase Lock (s)	70

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8263 PEC-S-F Wander Gen Const. Temp.
Mask MTIE Result	**Pass**

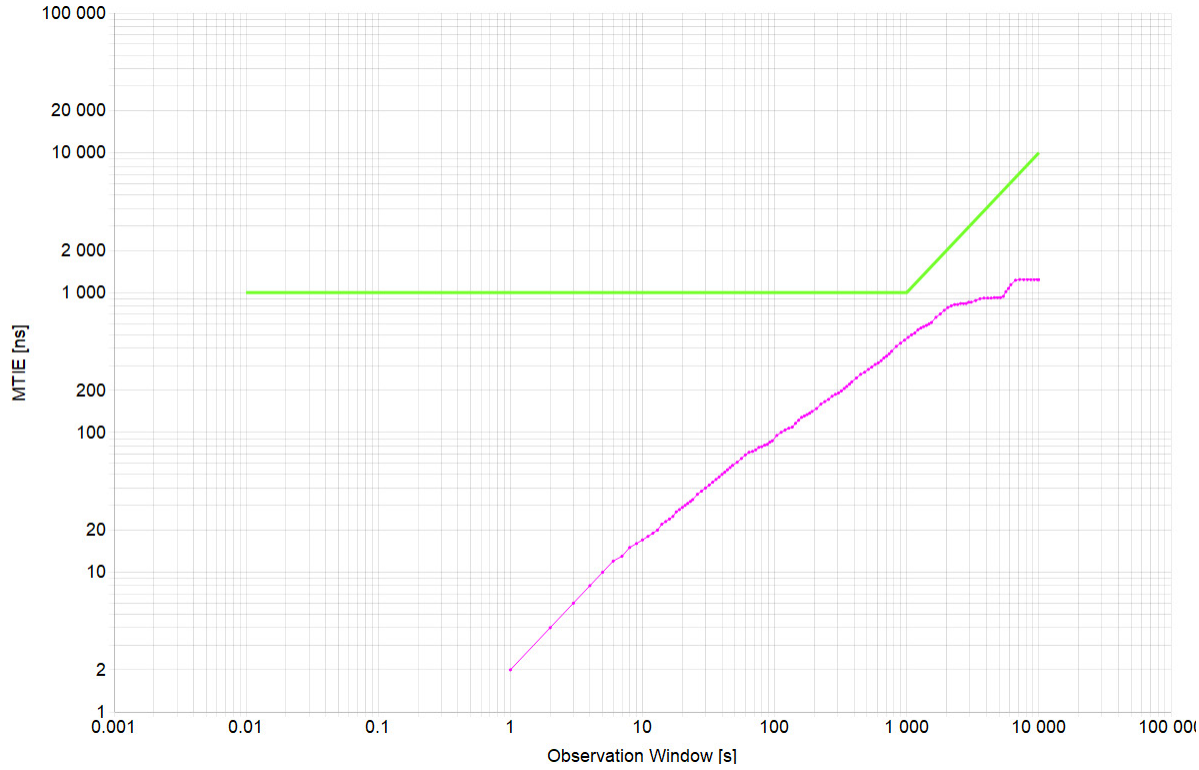
3.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-5103ns



Mean [ns]	-4263.029
Min [ns]	-5103
Max [ns]	-3863
Max-Min [ns]	1240

3.2 MTIE Analysis



Min [ns]	2
Max [ns]	1240
Max-Min [ns]	1238

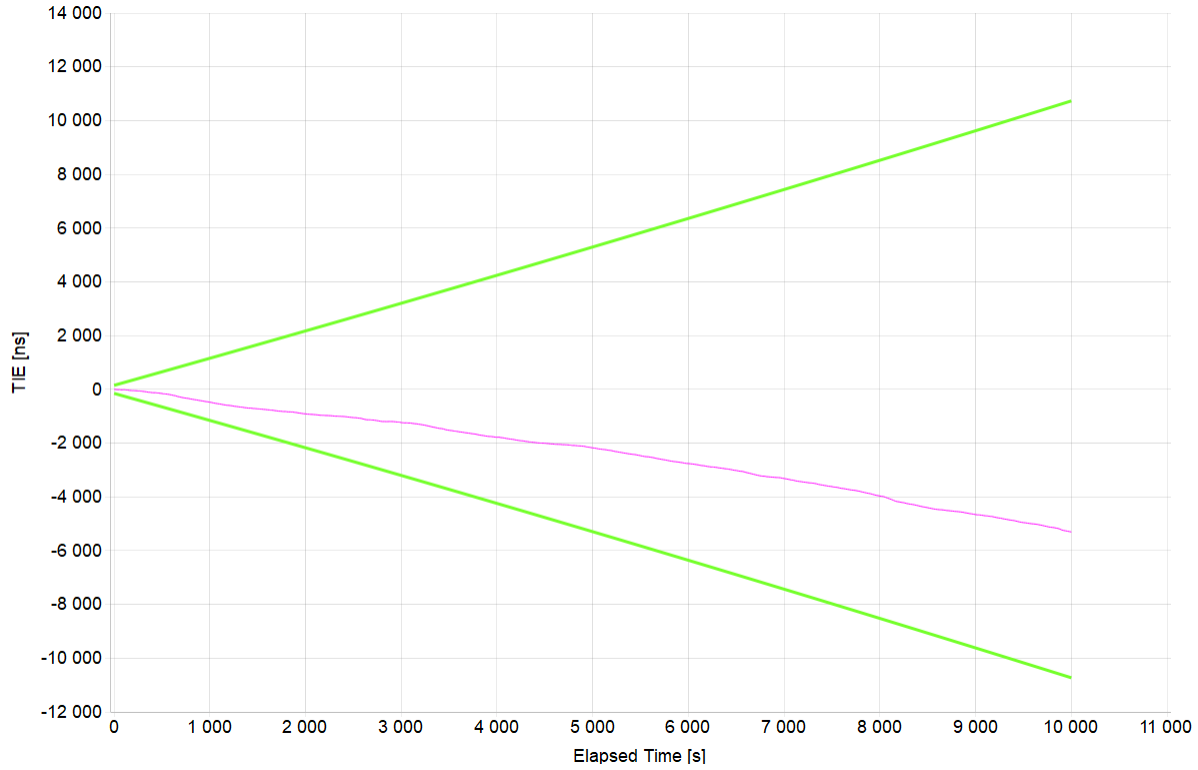
4. G.8263: Holdover

Test Description	Holdover
Report Date	22-10-18_13-29-39
Packet Rate (pkt/s)	16
Test Duration	02:46:40
Test Configuration	2
Time to Phase Lock (s)	N/A

All Mask Results	**Pass**
Mask TIE	G.8263 PEC-S-F 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]	-2392.1
Min [ns]	-5304
Max [ns]	0
Max-Min [ns]	5304

5. G.8261: Test Case 12

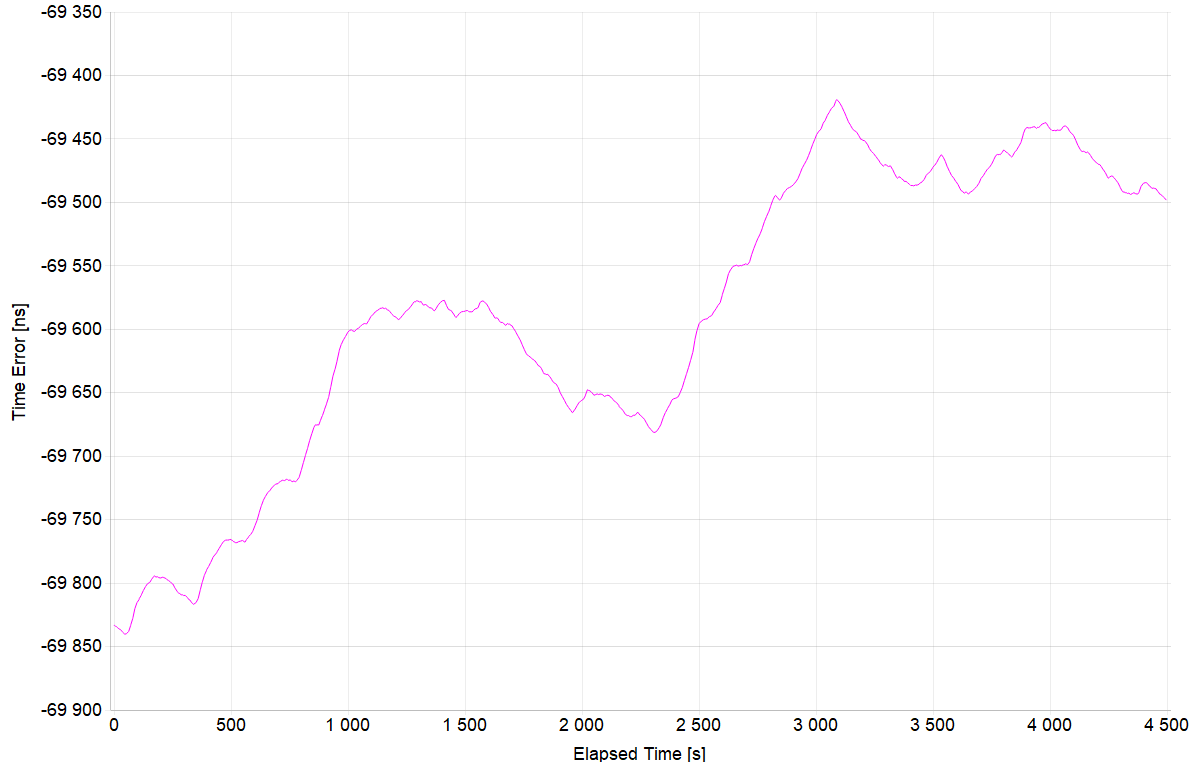
Note: Results for information only; not part of ITU-T required performance testing.

Test Description	Test Case 12
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	01:14:57
Time to Frequency Lock (s)	206

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

5.1 ONEPPS Analysis

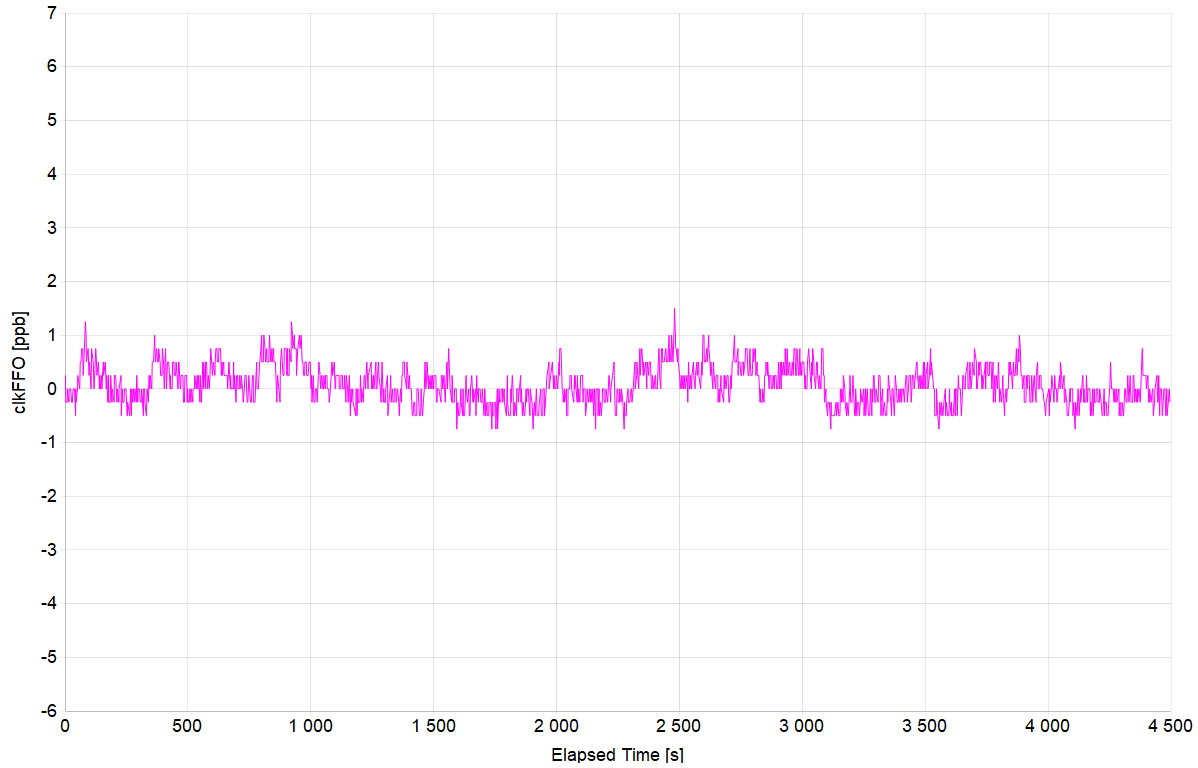
Offset Removal Applied	Off
Zero Offset	-69833.733ns



Mean [ns]	-69588.197
Min [ns]	-69840.233
Max [ns]	-69418.983
Max-Min [ns]	421.25

5.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	0.075
Min [ppb]	-0.75
Max [ppb]	1.5
Max-Min [ppb]	2.25

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

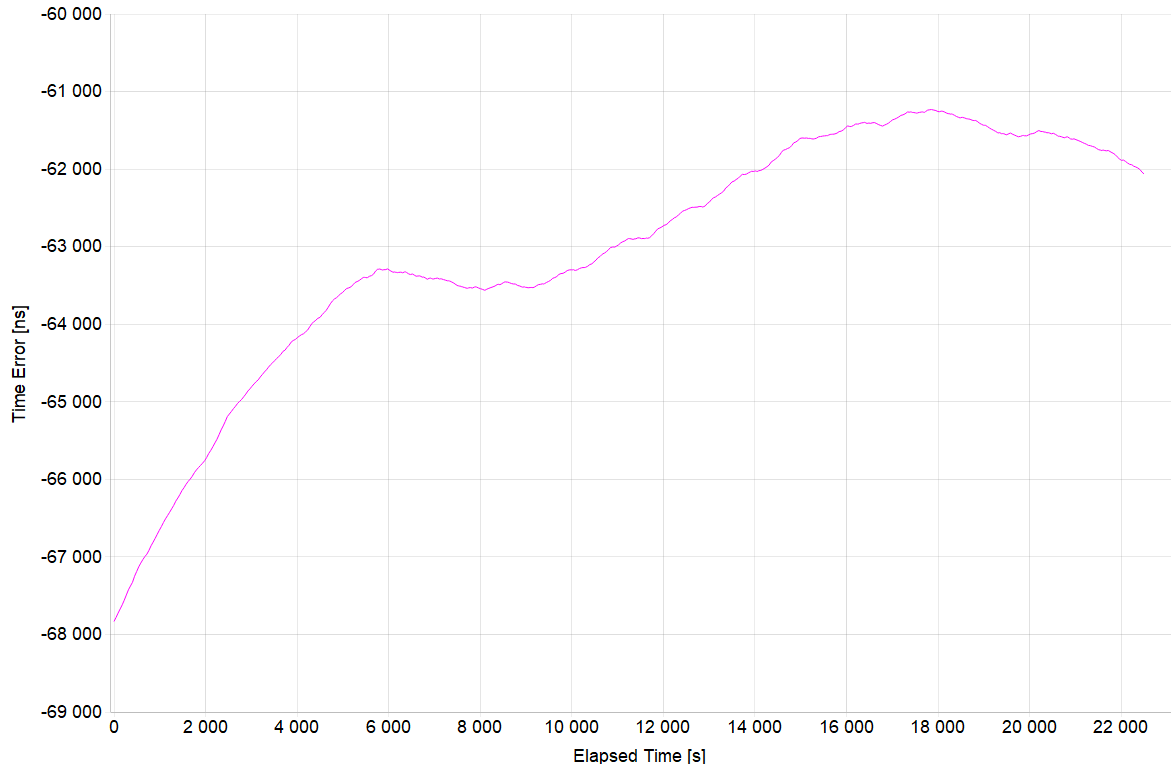
Note: Results for information only; not part of ITU-T required performance testing.

Test Description	Test Case 13 Network Traffic Model 2
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	06:14:57
Time to Frequency Lock (s)	285

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

6.1 ONEPPS Analysis

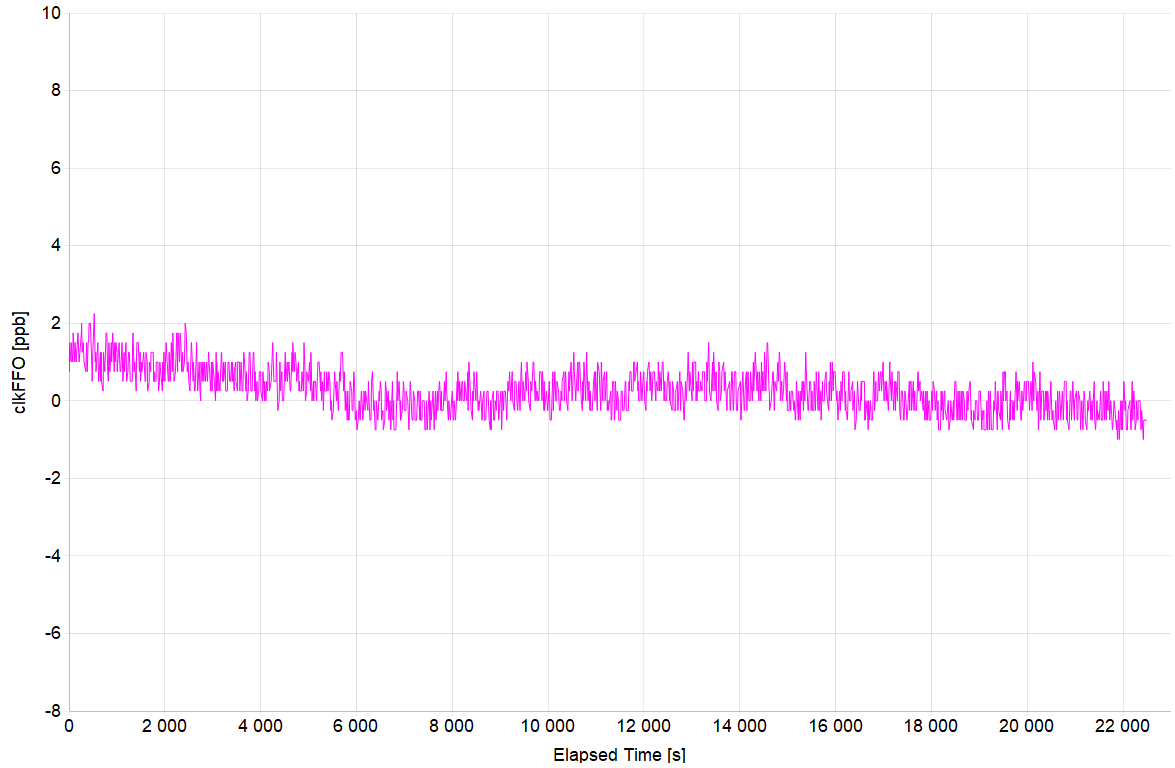
Offset Removal Applied	Off
Zero Offset	-67833.233ns



Mean [ns]	-63030.232
Min [ns]	-67833.233
Max [ns]	-61231.733
Max-Min [ns]	6601.5

6.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	0.257
Min [ppb]	-1
Max [ppb]	2.25
Max-Min [ppb]	3.25

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

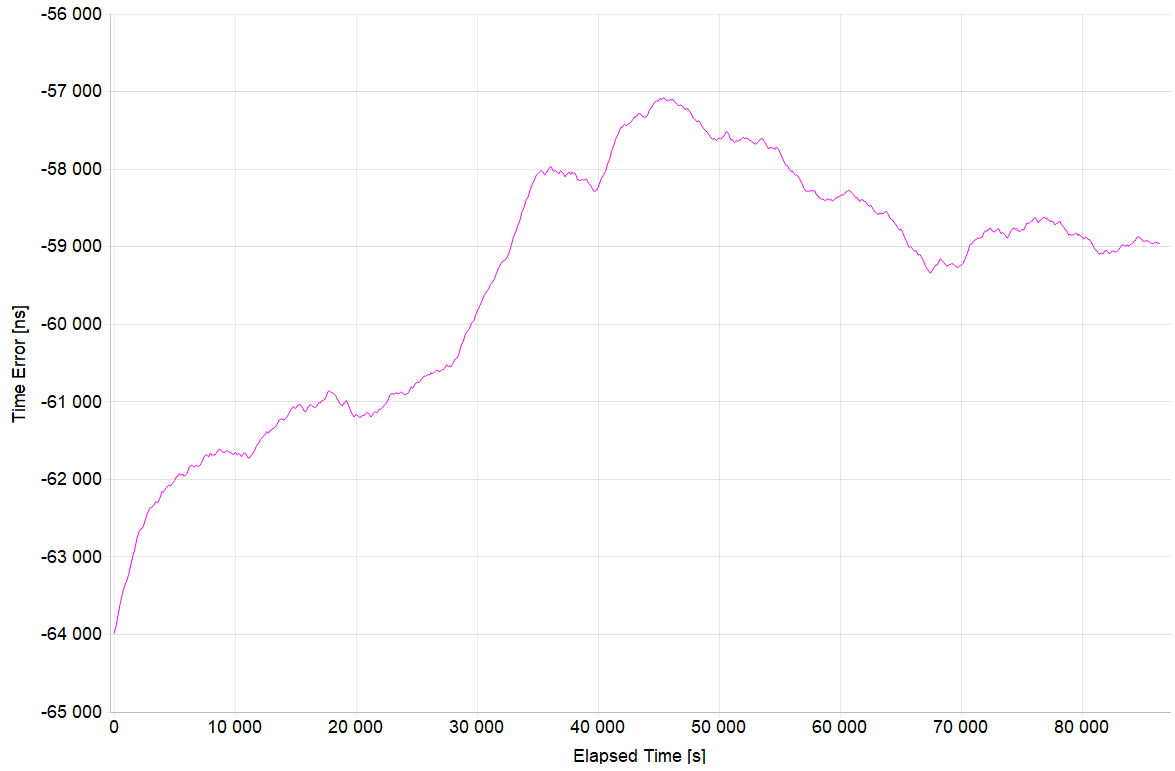
Note: Results for information only, not part of ITU-T required performance testing.

Test Description	Test Case 14 Network Traffic Model 2
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	23:59:57
Time to Frequency Lock (s)	264

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

7.1 ONEPPS Analysis

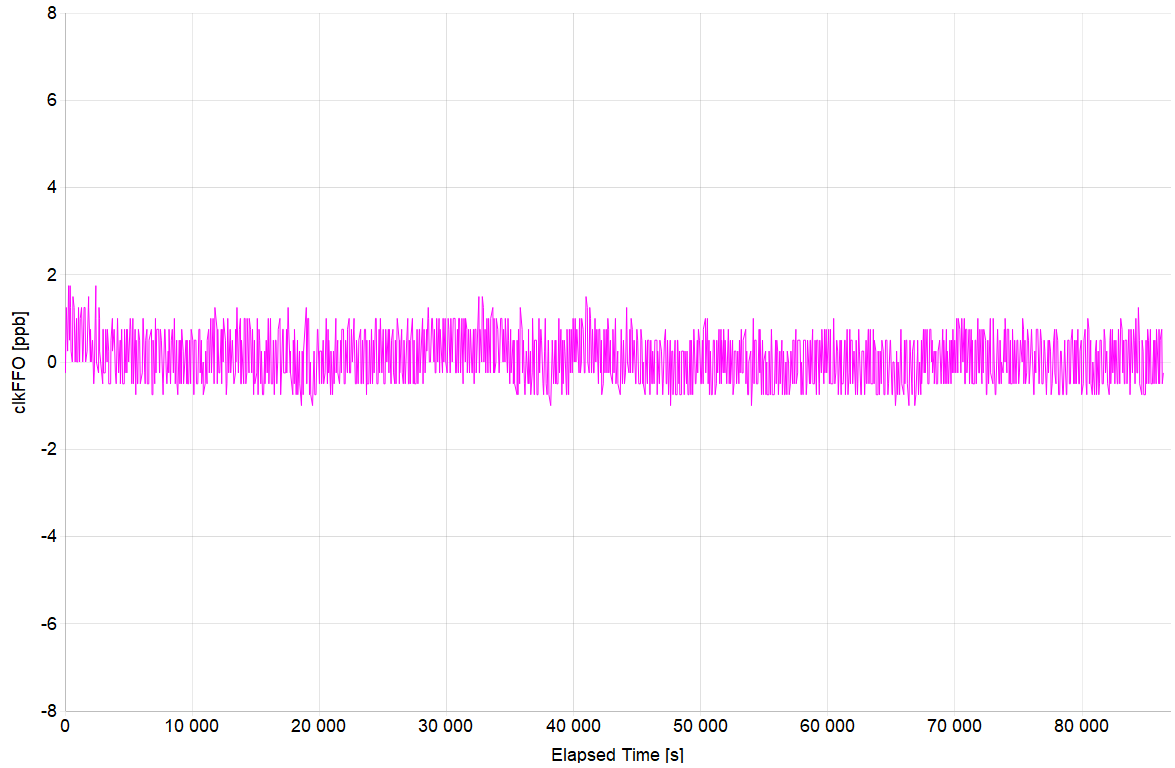
Offset Removal Applied	Off
Zero Offset	-63986.733ns



Mean [ns]	-59428.301
Min [ns]	-63986.733
Max [ns]	-57079.733
Max-Min [ns]	6907

7.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	0.058
Min [ppb]	-1
Max [ppb]	1.75
Max-Min [ppb]	2.75

8. G.8261: Test Case 15 Network Traffic Model 2

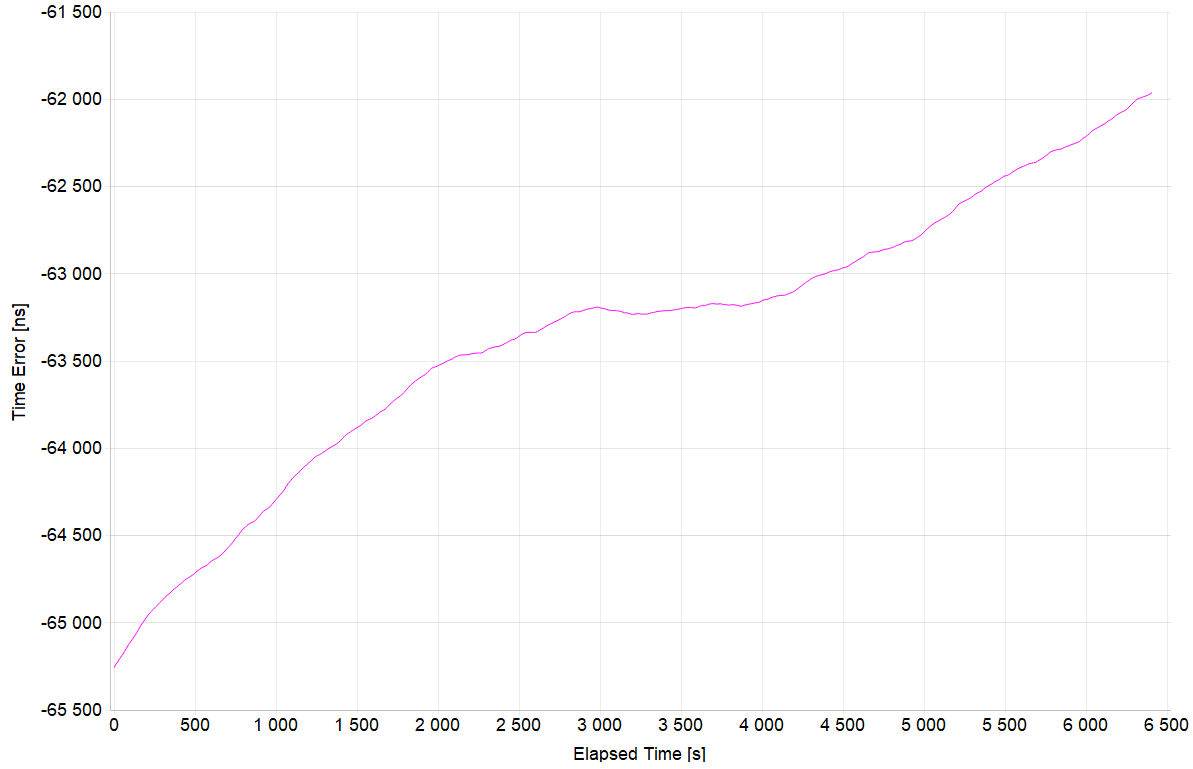
Note: Results for information only, not part of ITU-T required performance testing.

Test Description	Test Case 15 Network Traffic Model 2
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	01:46:47
Time to Frequency Lock (s)	265

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

8.1 ONEPPS Analysis

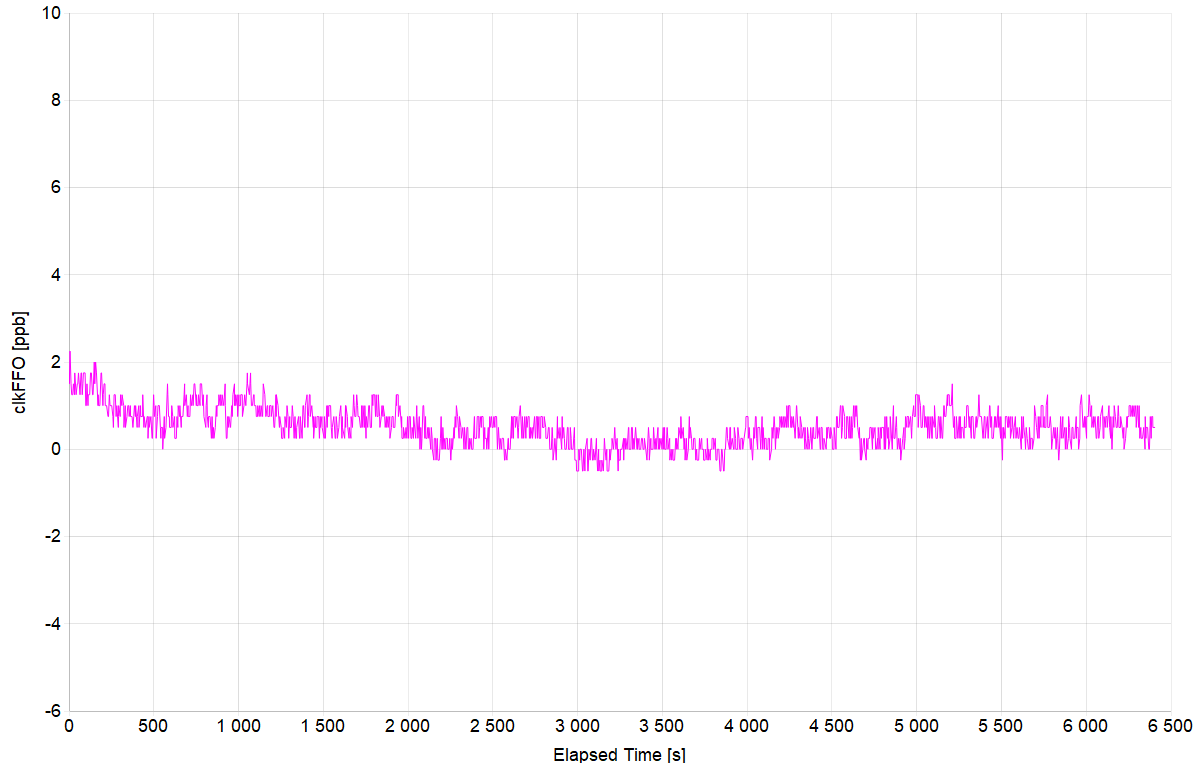
Offset Removal Applied	Off
Zero Offset	-65258.233ns



Mean [ns]	-63346.293
Min [ns]	-65258.233
Max [ns]	-61963.233
Max-Min [ns]	3295

8.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	0.514
Min [ppb]	-0.5
Max [ppb]	2.25
Max-Min [ppb]	2.75

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

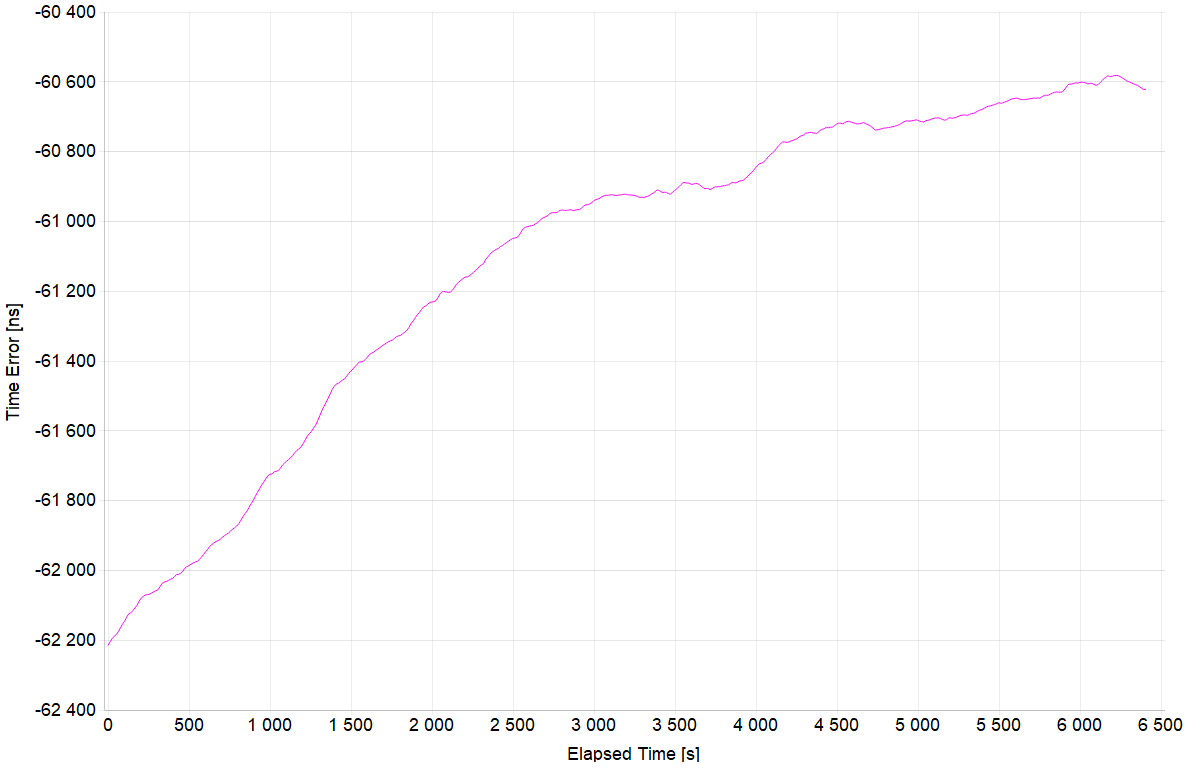
Note: Results for information only, not part of ITU-T required performance testing.

Test Description	Test Case 16 Network Traffic Model 2
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	01:46:47
Time to Phase Lock (s)	262

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

9.1 ONEPPS Analysis

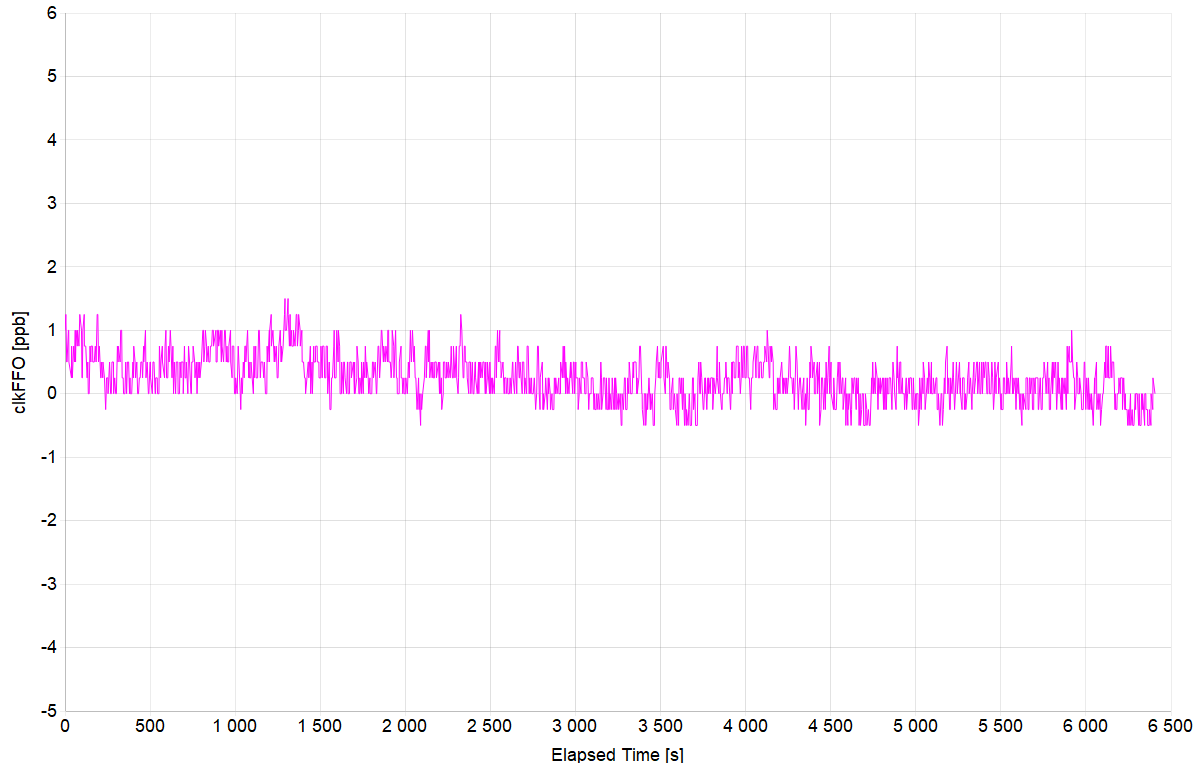
Offset Removal Applied	Off
Zero Offset	-62215.233ns



Mean [ns]	-61103.07
Min [ns]	-62215.233
Max [ns]	-60581.233
Max-Min [ns]	1634

9.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	0.249
Min [ppb]	-0.5
Max [ppb]	1.5
Max-Min [ppb]	2

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

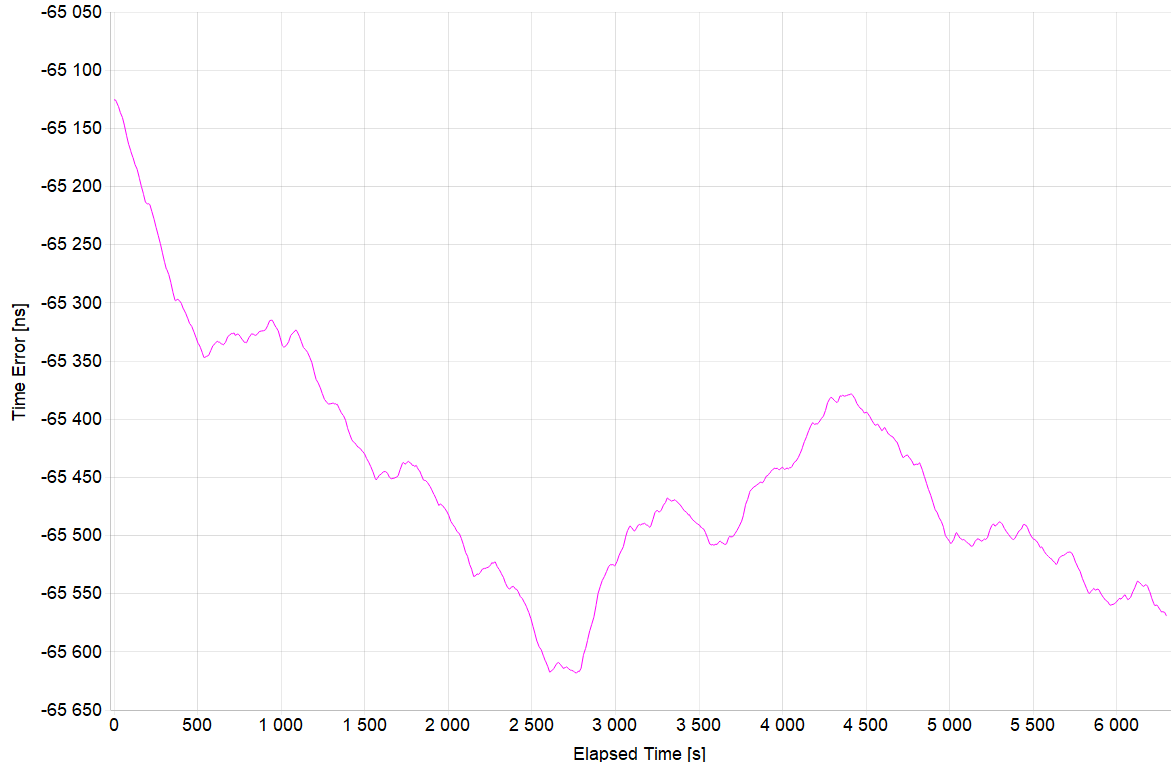
Note: Results for information only, not part of ITU-T required performance testing.

Test Description	Test Case 17(10µs) Network Traffic Model 2
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	01:44:57
Time to Phase Lock (s)	265

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

10.1 ONEPPS Analysis

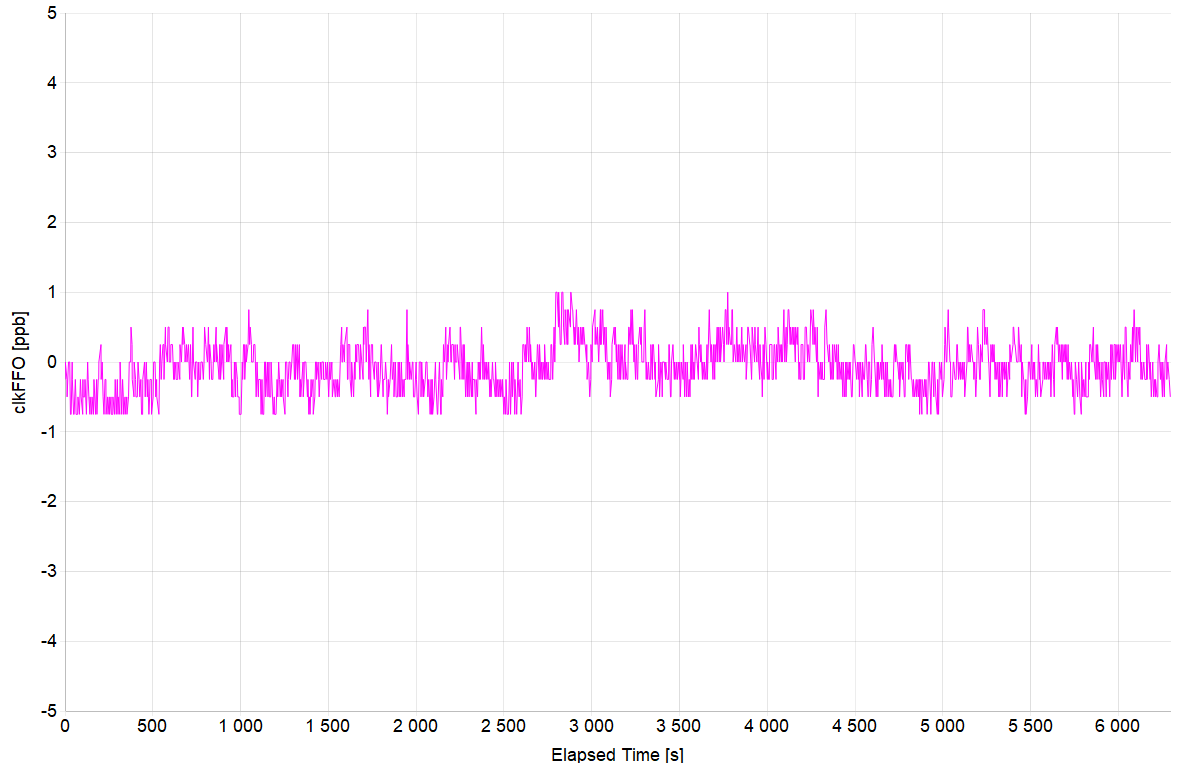
Offset Removal Applied	Off
Zero Offset	-65125.483ns



Mean [ns]	-65450.292
Min [ns]	-65618.233
Max [ns]	-65125.483
Max-Min [ns]	492.75

10.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	-0.07
Min [ppb]	-0.75
Max [ppb]	1
Max-Min [ppb]	1.75

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

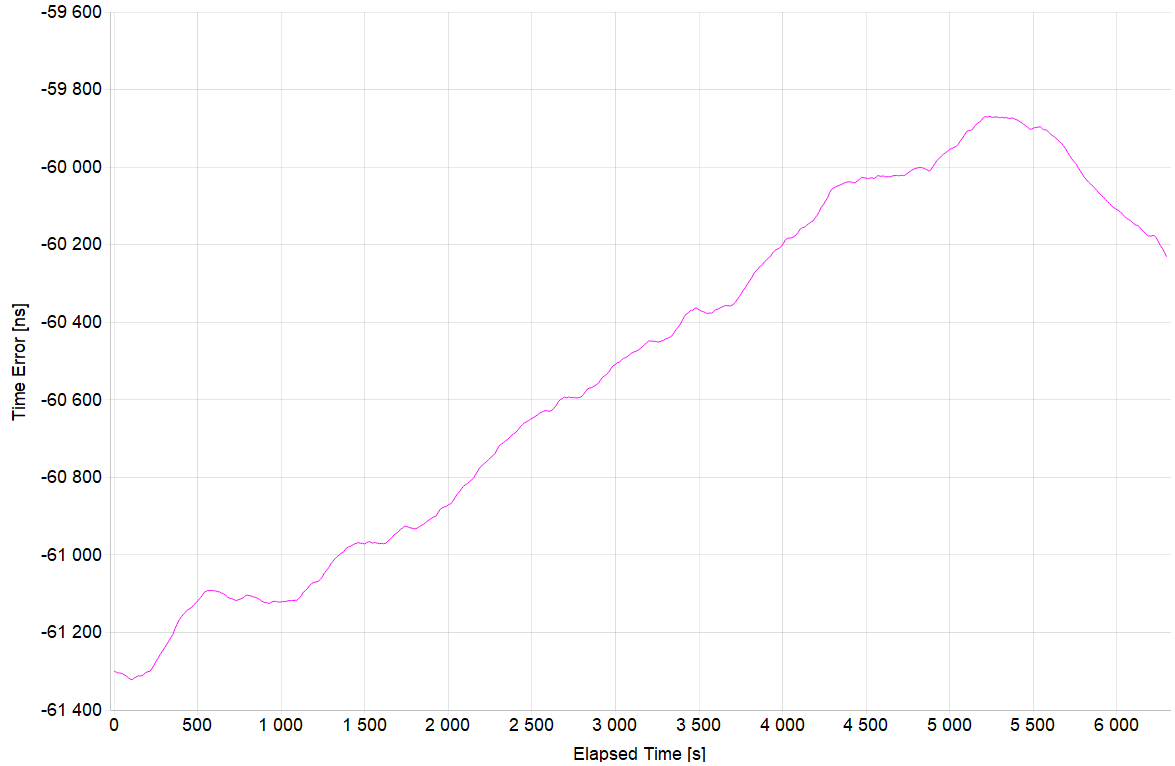
Note: Results for information only, not part of ITU-T required performance testing.

Test Description	Test Case 17(200µs) Network Traffic Model 2
Report Date	22-06-06_09-02-08
Packet Rate (pkt/s)	16
Test Duration	01:44:57
Time to Phase Lock (s)	265

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask CLKFFO	16ppb
Mask CLKFFO Result	**Pass**

11.1 ONEPPS Analysis

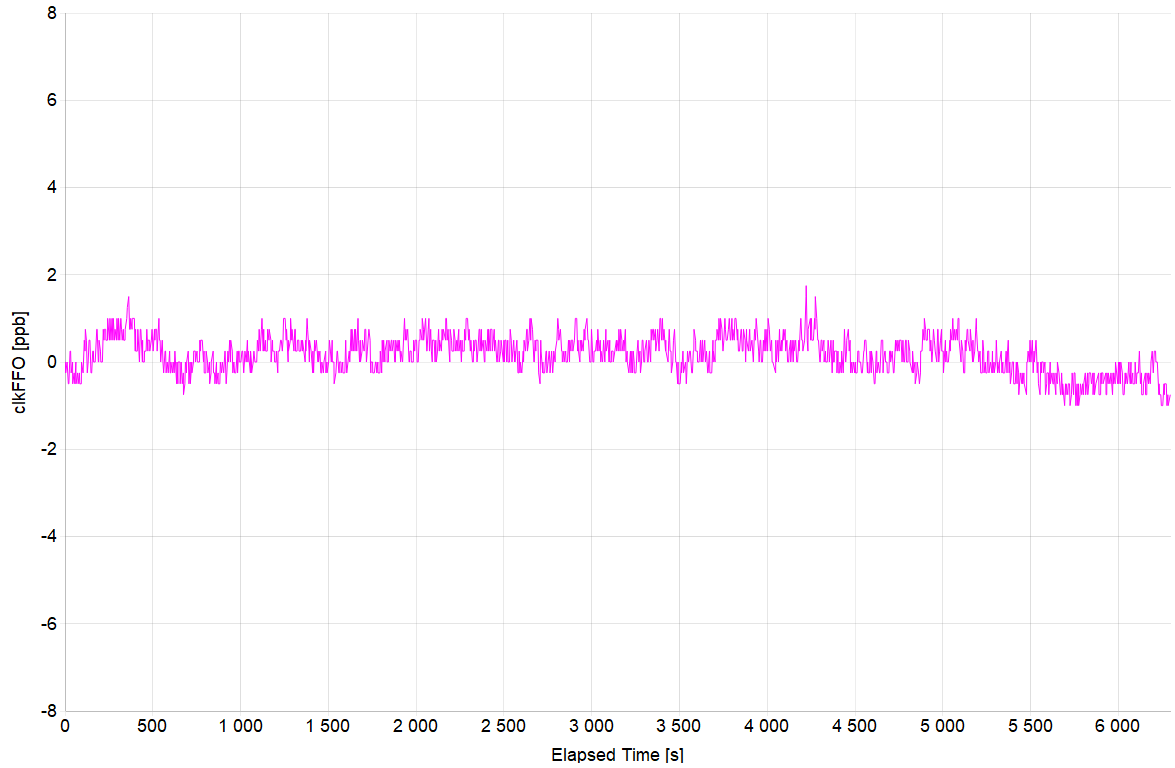
Offset Removal Applied	Off
Zero Offset	-61300.233ns



Mean [ns]	-60517.605
Min [ns]	-61321.733
Max [ns]	-59869.233
Max-Min [ns]	1452.5

11.2 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	0.17
Min [ppb]	-1.25
Max [ppb]	1.75
Max-Min [ppb]	3

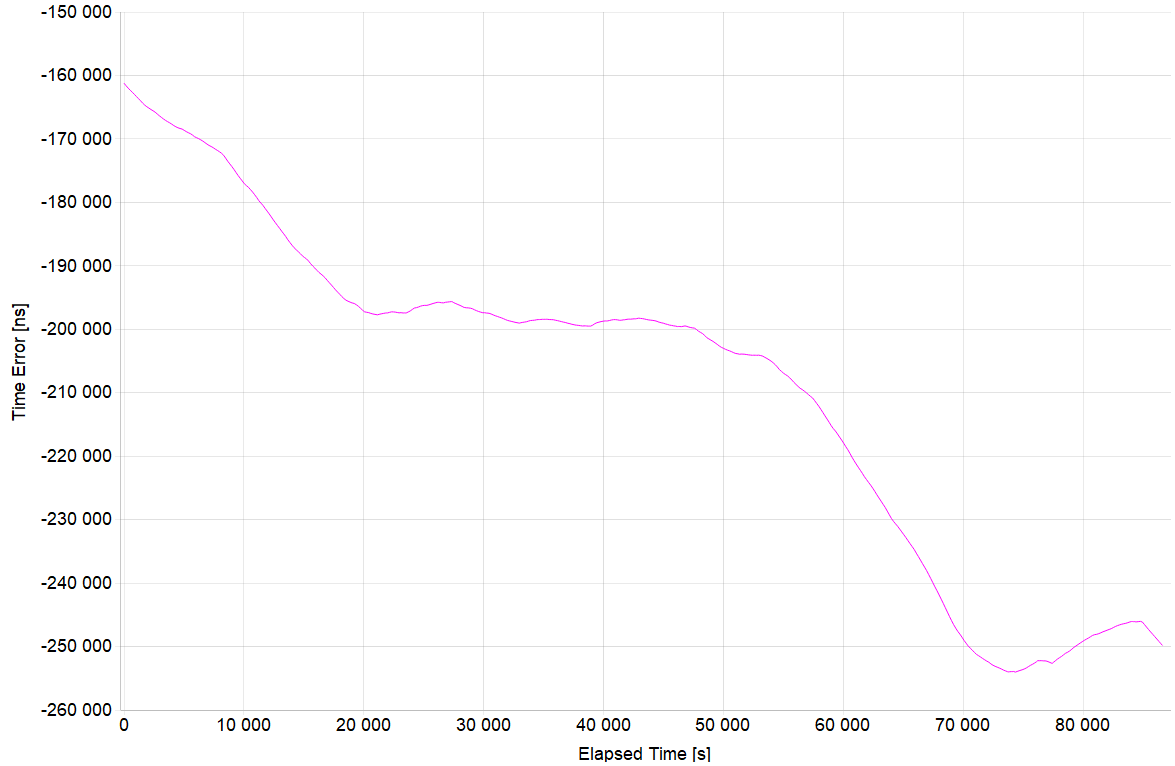
12. G.8263: Noise Tolerance - Method 1

Test Description	Noise Tolerance - Method 1
Report Date	22-06-06_15-27-12
Packet Rate (pkt/s)	16
Test Duration	24:03:43
Time to Frequency Lock (s)	311

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261.1 PEC-S-F Wander Limit Case 3
Mask MTIE Result	**Pass**
Mask CLKFFO	-
Mask CLKFFO Result	No Mask

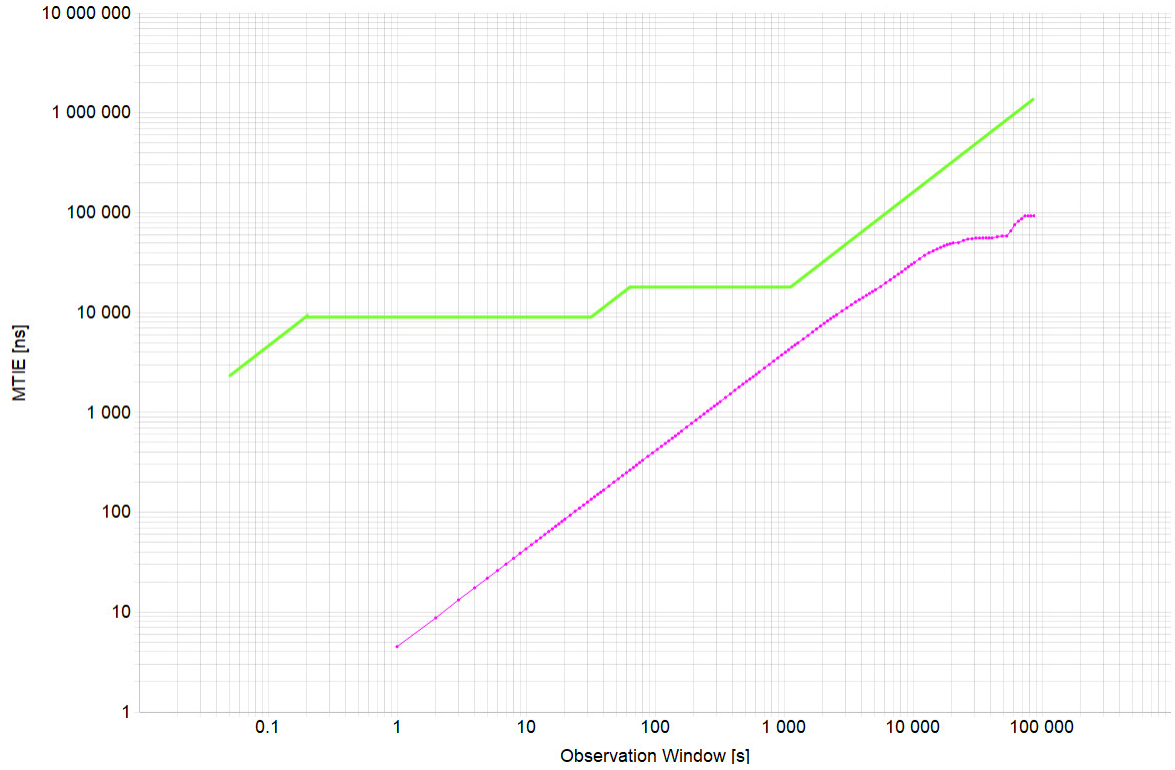
12.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-161214.483ns



Mean [ns]	-208770.37
Min [ns]	-254032.733
Max [ns]	-161214.483
Max-Min [ns]	92818.25

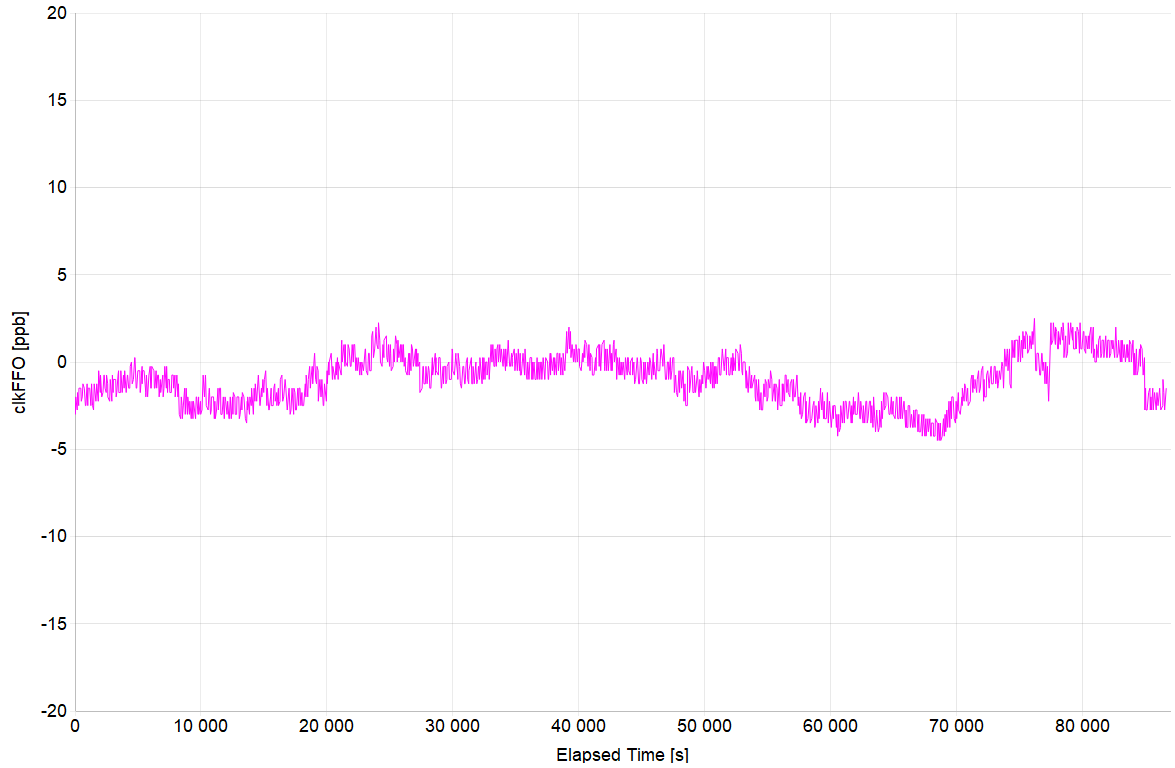
12.2 MTIE Analysis



Min [ns]	4.5
Max [ns]	92818.25
Max-Min [ns]	92813.75

12.3 CLKFFO Analysis

Averaging Time (s)	2



Mean [ppb]	-1.023
Min [ppb]	-4.5
Max [ppb]	2.5
Max-Min [ppb]	7

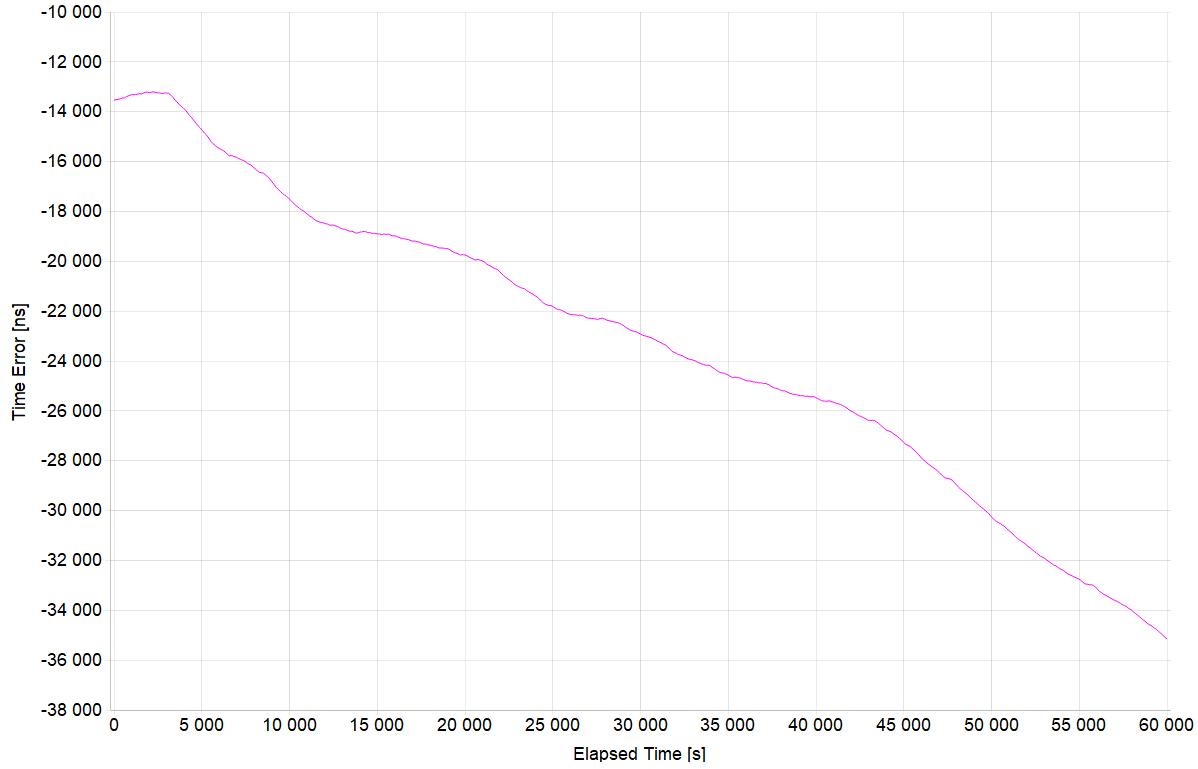
13. G.8263: Noise Tolerance - Method 2 (50µs)

Test Description	Noise Tolerance - Method 2 (50µs)
Report Date	22-06-06_11-31-25
Packet Rate (pkt/s)	16
Test Duration	16:39:57
Time to Frequency Lock (s)	72

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261.1 PEC-S-F Wander Limit Case 3
Mask MTIE Result	**Pass**

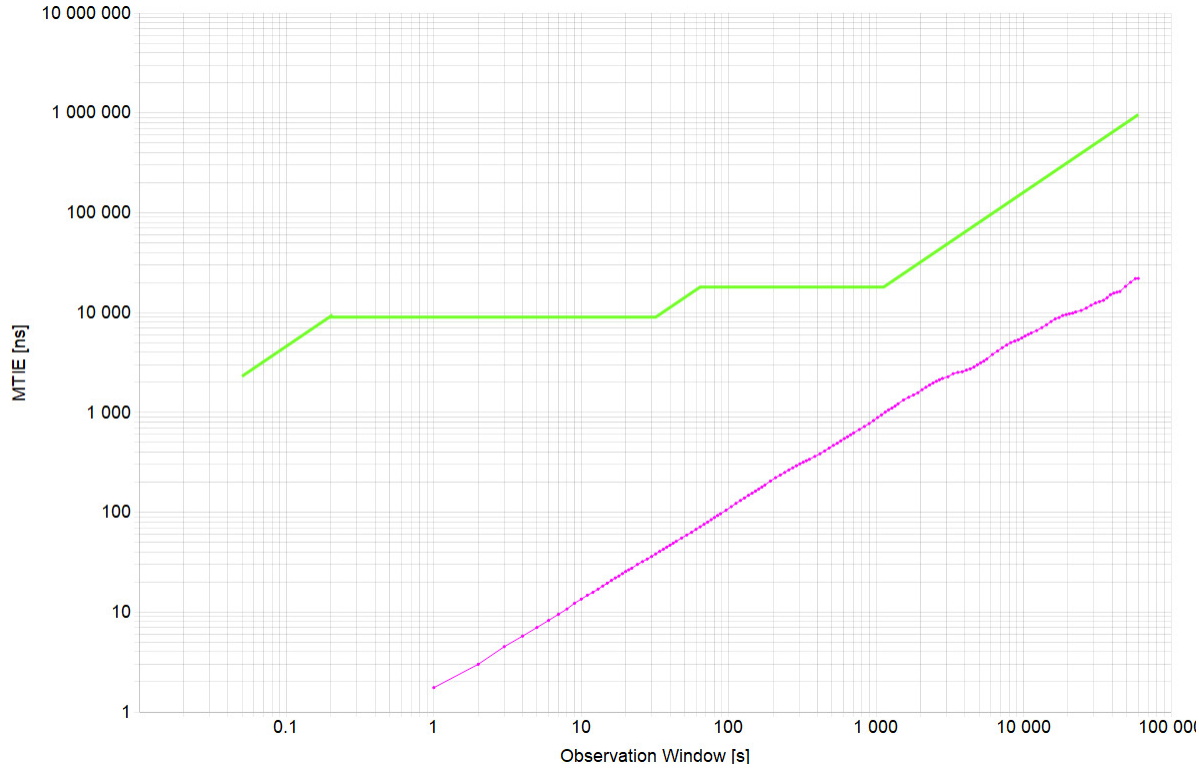
13.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-13536.233 ns



Mean [ns]	-23307.121
Min [ns]	-35143.983
Max [ns]	-13199.733
Max-Min [ns]	21944.25

13.2 MTIE Analysis



Min [ns]	1.75
Max [ns]	21944.25
Max-Min [ns]	21942.5

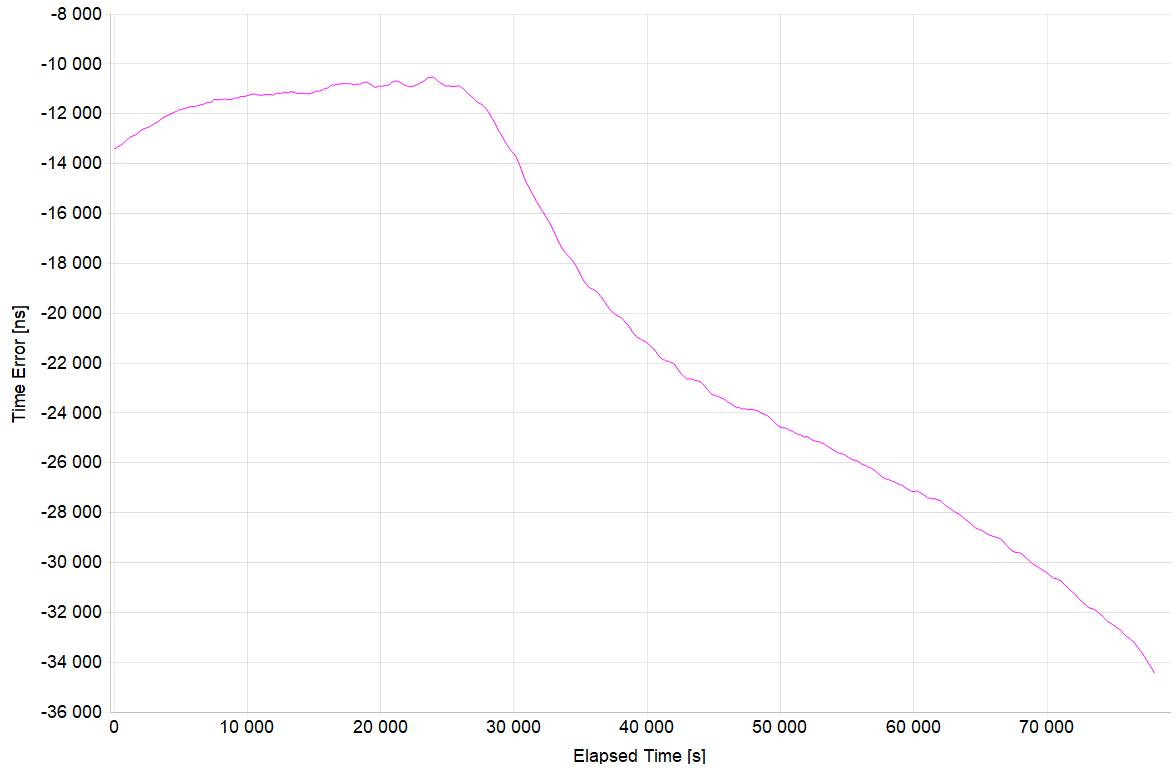
14. G.8263: Noise Tolerance - Method 2 (75µs)

Test Description	Noise Tolerance - Method 2 (75µs)
Report Date	22-06-06_11-31-25
Packet Rate (pkt/s)	16
Test Duration	21:41:05
Time to Frequency Lock (s)	70

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261.1 PEC-S-F Wander Limit Case 3
Mask MTIE Result	**Pass**

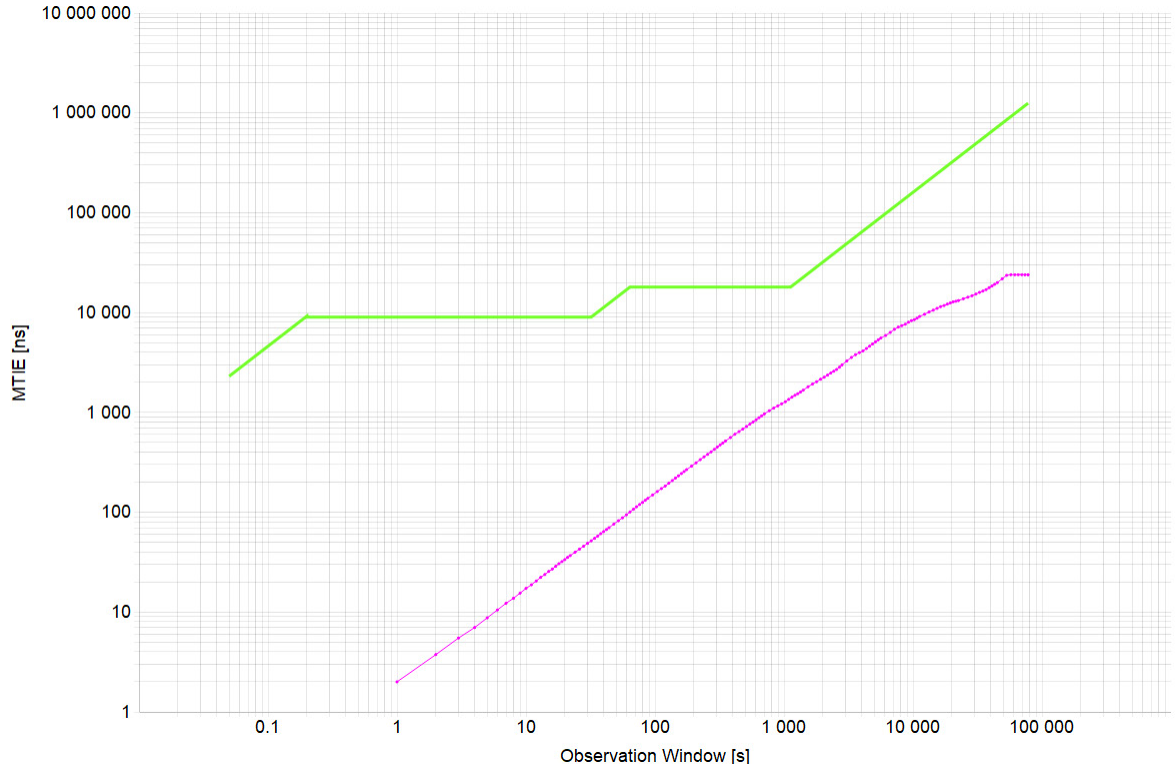
14.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-13397.483ns



Mean [ns]	-19975.532
Min [ns]	-34453.983
Max [ns]	-10525.983
Max-Min [ns]	23928

14.2 MTIE Analysis



Min [ns]	2
Max [ns]	23928
Max-Min [ns]	23926

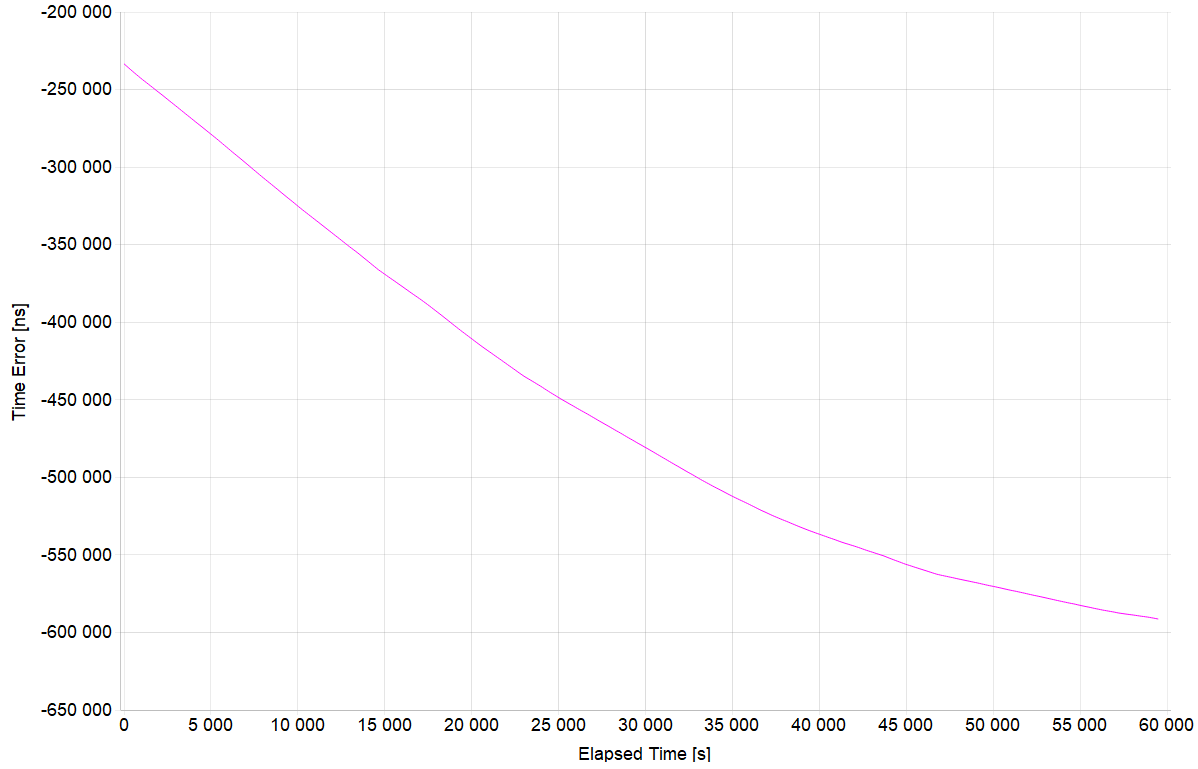
15. G.8263: Noise Tolerance - Method 2 (150µs)

Test Description	Noise Tolerance - Method 2 (150µs)
Report Date	22-06-06_11-31-25
Packet Rate (pkt/s)	16
Test Duration	16:31:37
Time to Frequency Lock (s)	799

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261.1 PEC-S-F Wander Limit Case 3
Mask MTIE Result	**Pass**

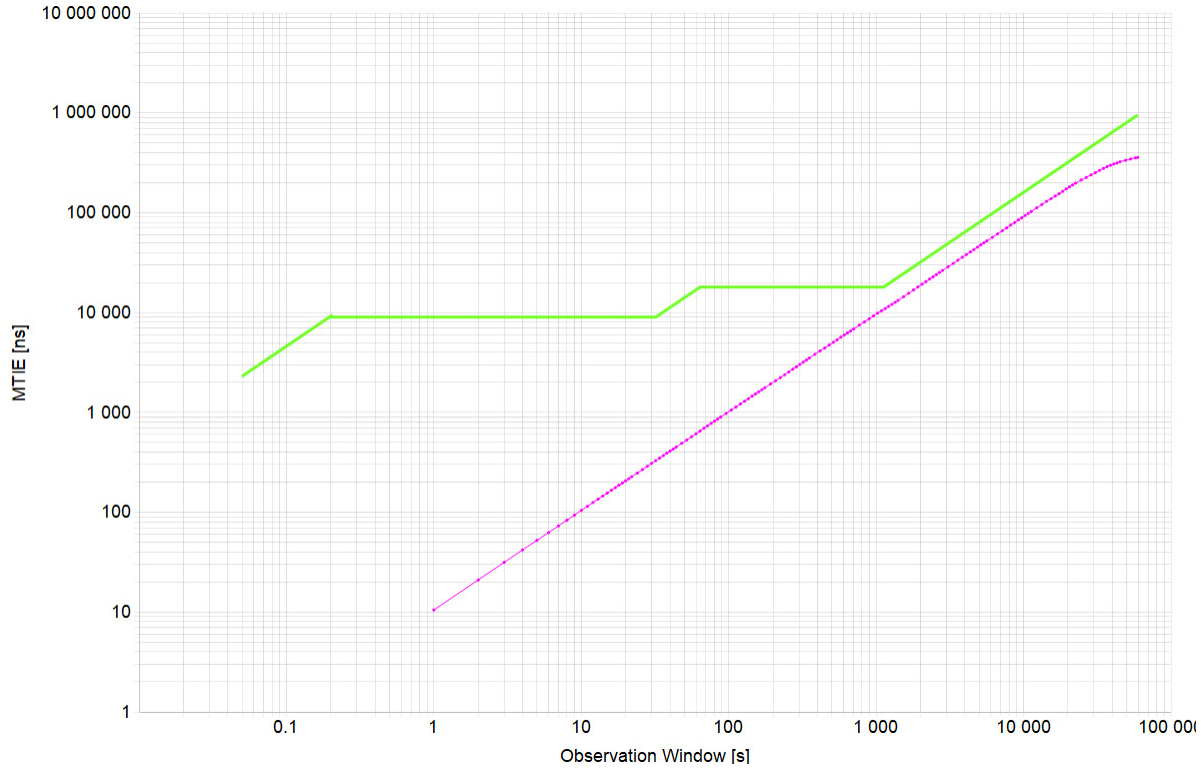
15.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-233388.733 ns



Mean [ns]	-456037.089
Min [ns]	-591349.983
Max [ns]	-233388.733
Max-Min [ns]	357961.25

15.2 MTIE Analysis



Min [ns]	10.5
Max [ns]	357963.75
Max-Min [ns]	357953.25

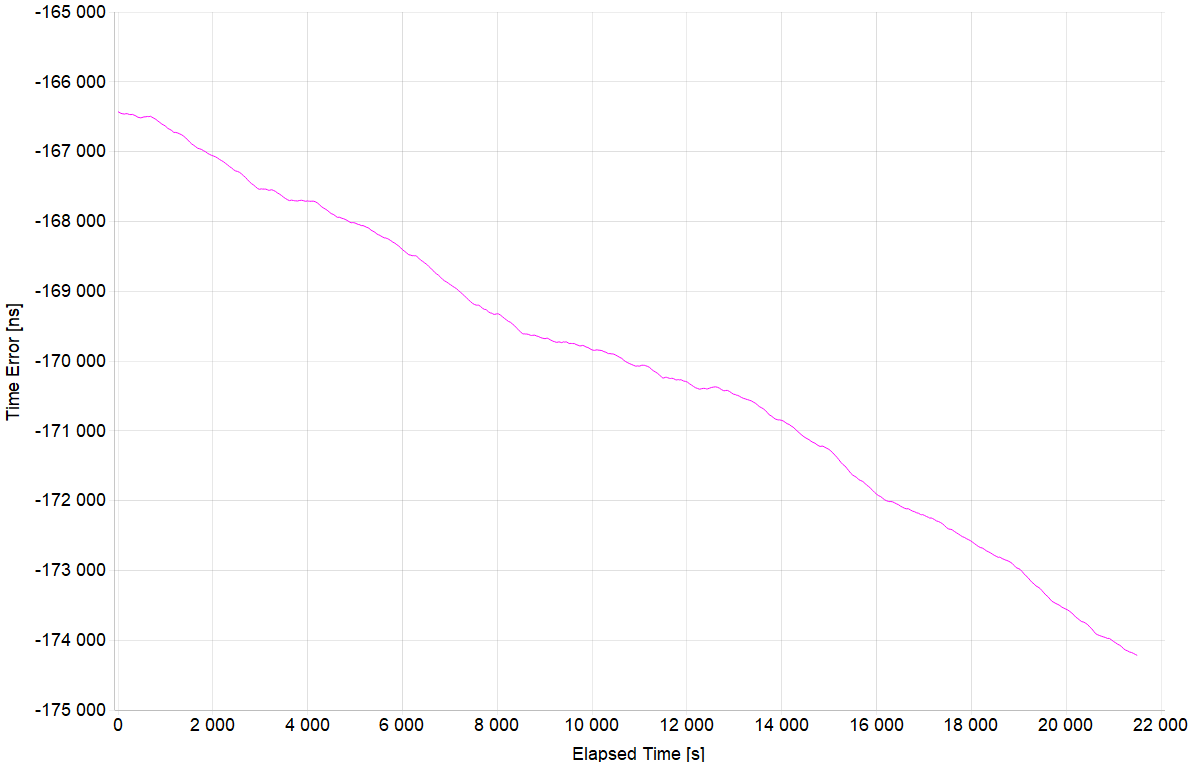
16. G.8263: Noise Tolerance - Method 3 (High Frequency)

Test Description	Noise Tolerance – Method 3 (High Frequency)
Report Date	22-06-06_11-31-25
Packet Rate (pkt/s)	16
Test Duration	05:58:17
Time to Frequency Lock (s)	689

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261.1 PEC-S-F Wander Limit Case 3
Mask MTIE Result	**Pass**

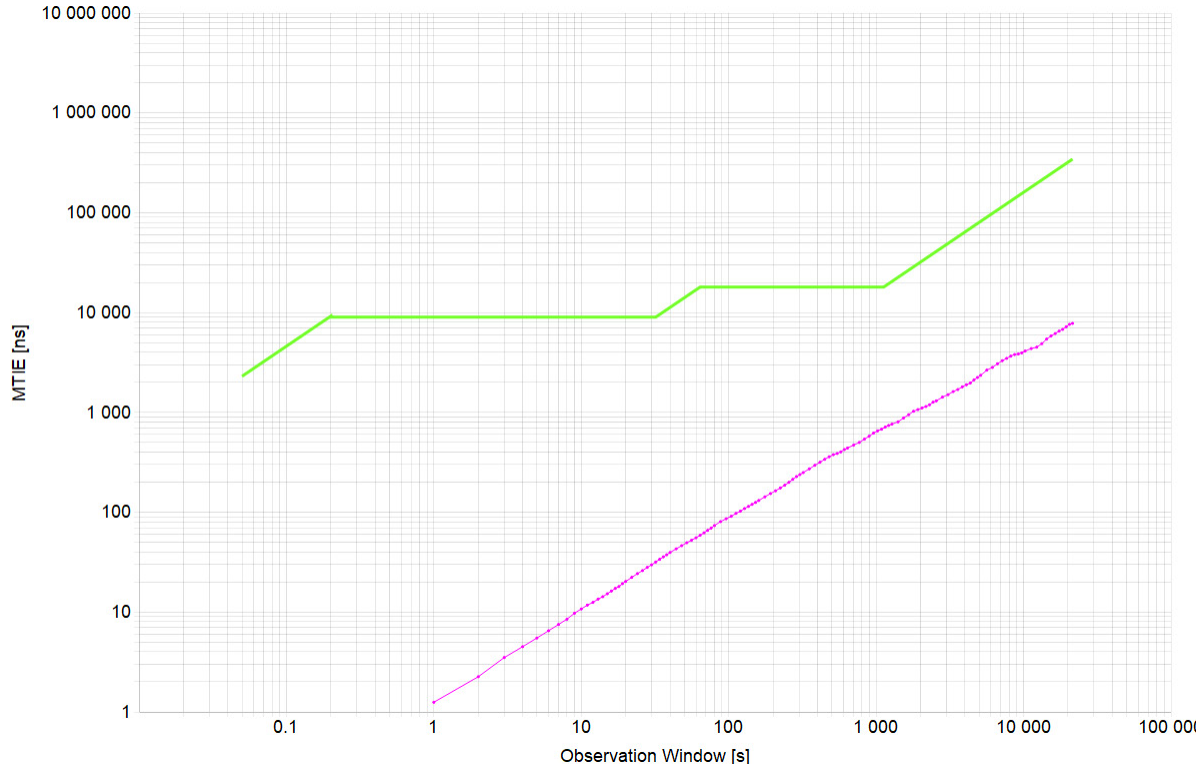
16.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-166427.733 ns



Mean [ns]	-170077.769
Min [ns]	-174216.733
Max [ns]	-166427.733
Max-Min [ns]	7789

16.2 MTIE Analysis



Min [ns]	1.25
Max [ns]	7789.25
Max-Min [ns]	7788

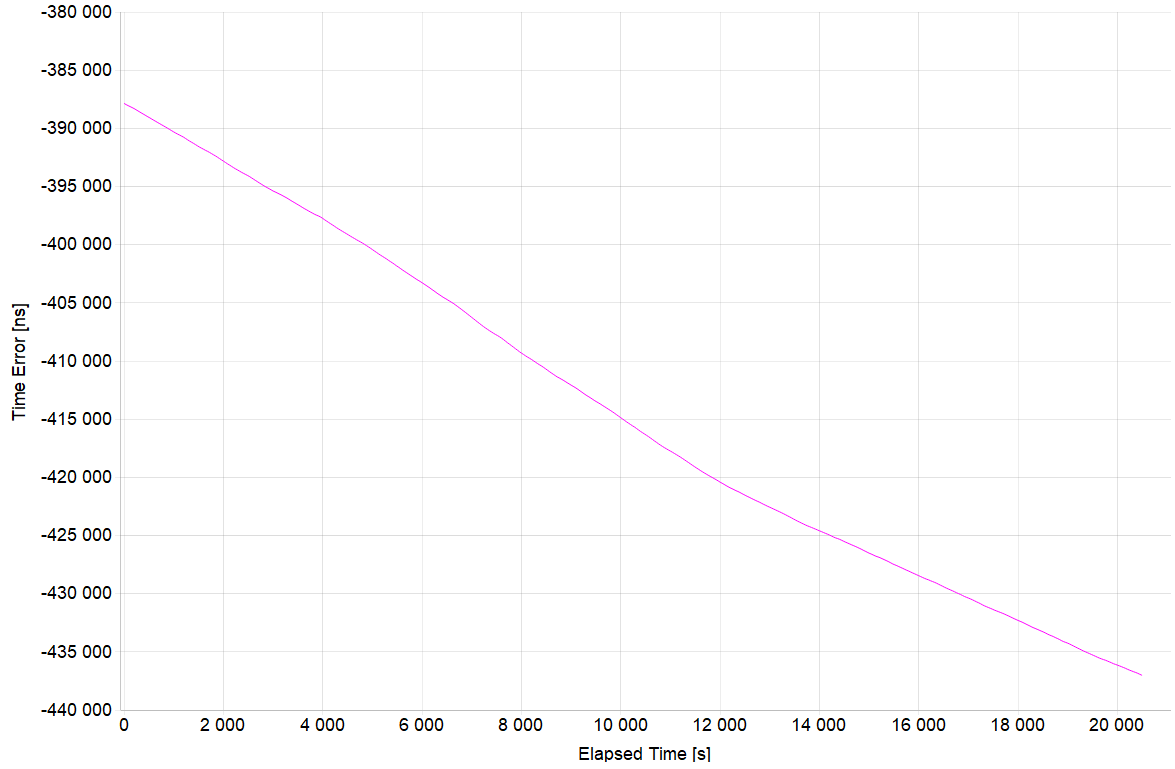
17. G.8263: Noise Tolerance - Method 3 (Low Frequency)

Test Description	Noise Tolerance – Method 3 (Low Frequency)
Report Date	22-06-06_11-31-25
Packet Rate (pkt/s)	16
Test Duration	05:41:37
Time to Frequency Lock (s)	895

All Mask Results	**Pass**
Mask ONEPPS	-
Mask ONEPPS Result	No Mask
Mask MTIE	G.8261.1 PEC-S-F Wander Limit Case 3
Mask MTIE Result	**Pass**

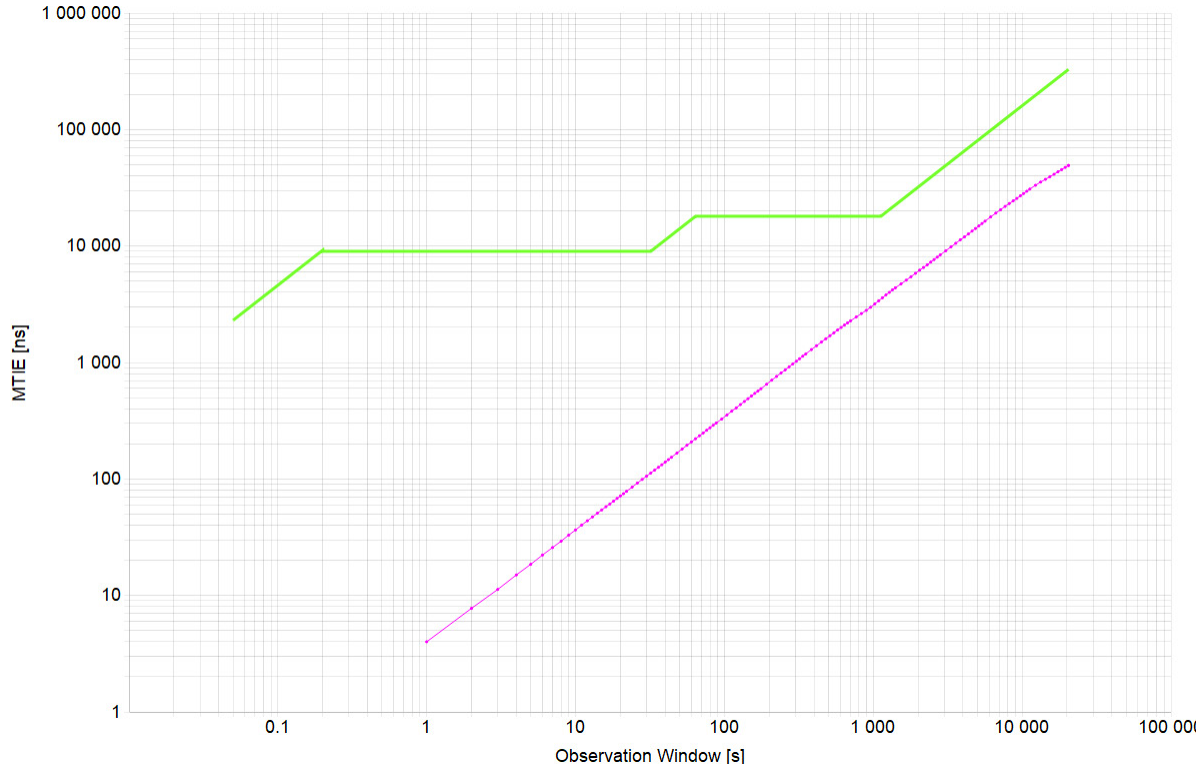
17.1 ONEPPS Analysis

Offset Removal Applied	Off
Zero Offset	-387857.483ns



Mean [ns]	-414143.482
Min [ns]	-437019.233
Max [ns]	-387857.483
Max-Min [ns]	49161.75

17.2 MTIE Analysis



Min [ns]	4
Max [ns]	49163.75
Max-Min [ns]	49159.75

18. Revision History

Revision	Date	Description
1.01	Jul 16, 2024	Replaced Xilinx with AMD throughout the document.
1.00	May 5, 2023	Initial release.

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information

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