

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

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## 1. Results Summary

Standard	Test Case	Results
G.8263	Noise Generation	Pass
G.8263	Holdover	Pass
G.8261	Test Case 12 <sup>[1]</sup>	Pass
G.8261	Test Case 13 Network Traffic Model 2 <sup>[1]</sup>	Pass
G.8261	Test Case 14 Network Traffic Model 2 <sup>[1]</sup>	Pass
G.8261	Test Case 15 Network Traffic Model 2 <sup>[1]</sup>	Pass
G.8261	Test Case 16 Network Traffic Model 2 <sup>[1]</sup>	Pass
G.8261	Test Case 17(10 $\mu$ s) Network Traffic Model 2 <sup>[1]</sup>	Pass
G.8261	Test Case 17(200 $\mu$ s) Network Traffic Model 2 <sup>[1]</sup>	Pass
G.8263	Noise Tolerance - Method 1	Pass
G.8263	Noise Tolerance - Method 2 (50 $\mu$ s)	Pass
G.8263	Noise Tolerance - Method 2 (75 $\mu$ s)	Pass
G.8263	Noise Tolerance - Method 2 (150 $\mu$ s)	Pass
G.8263	Noise Tolerance - Method 3 (High Frequency)	Pass
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

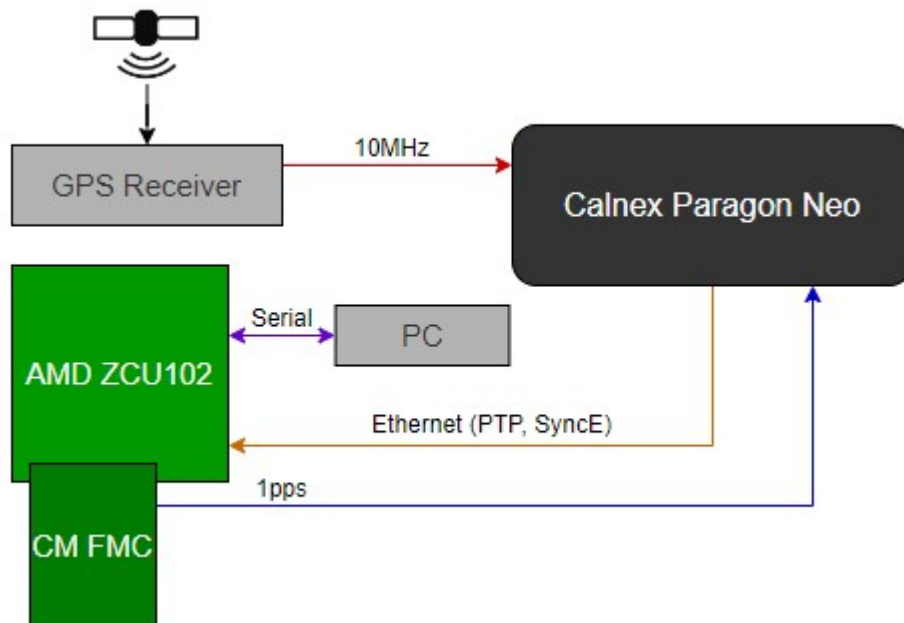


Figure 1. Equipment Configuration

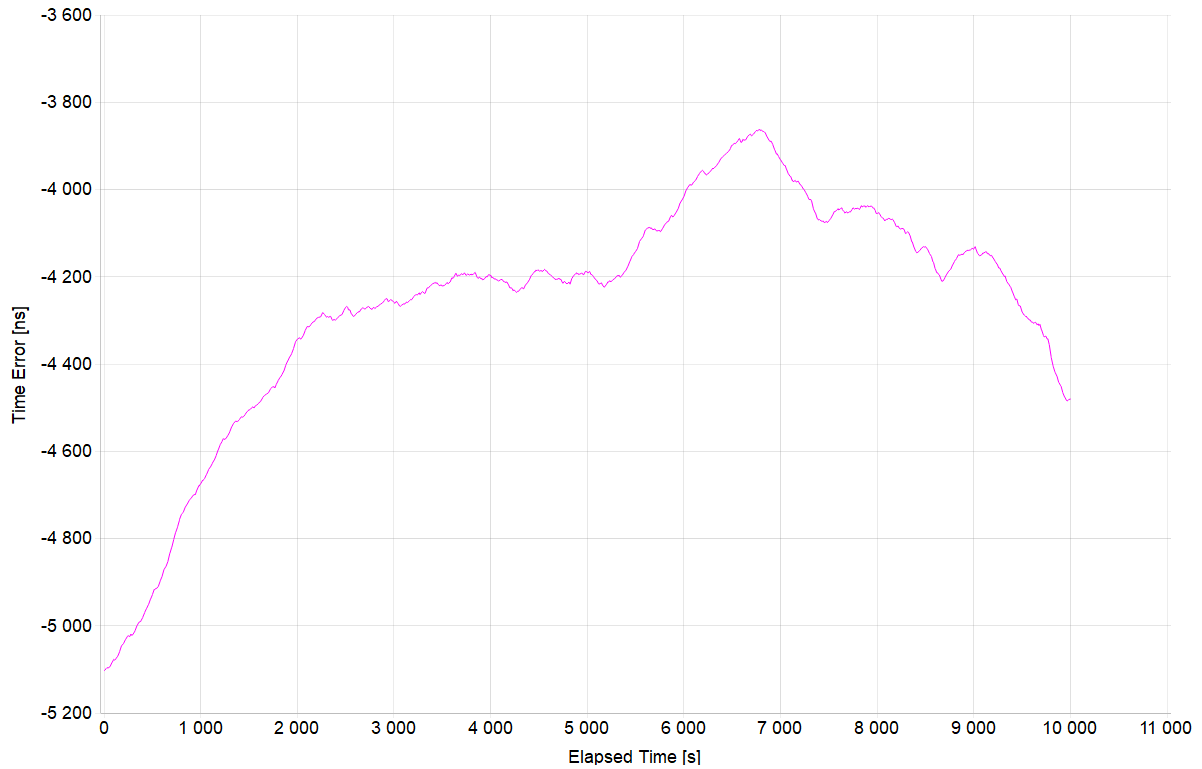
### 3. G.8263: Noise Generation

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask MTIE</b>	G.8263 PEC-S-F Wander Gen Const. Temp.
<b>Mask MTIE Result</b>	<b>Pass</b>

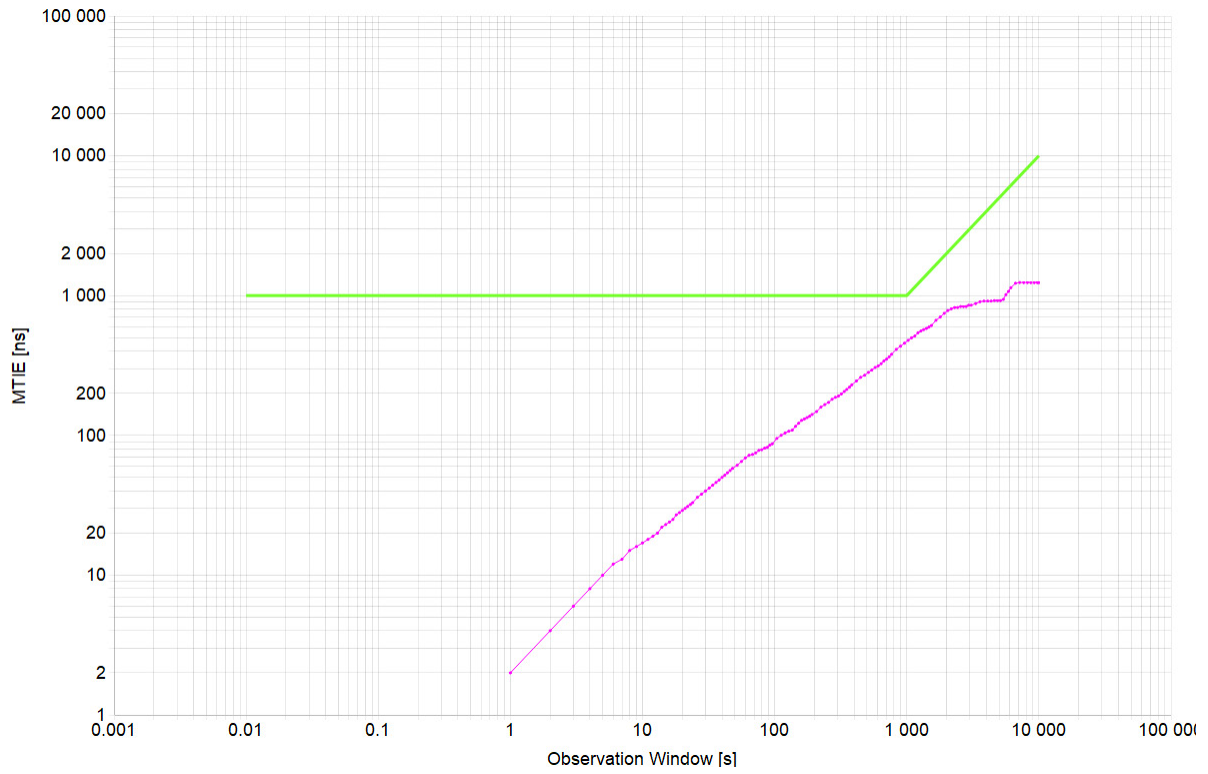
### 3.1 ONEPPS Analysis

<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-5103ns



<b>Mean [ns]</b>	-4263.029
<b>Min [ns]</b>	-5103
<b>Max [ns]</b>	-3863
<b>Max-Min [ns]</b>	1240

### 3.2 MTIE Analysis



<b>Min [ns]</b>	2
<b>Max [ns]</b>	1240
<b>Max-Min [ns]</b>	1238

## 4. G.8263: Holdover

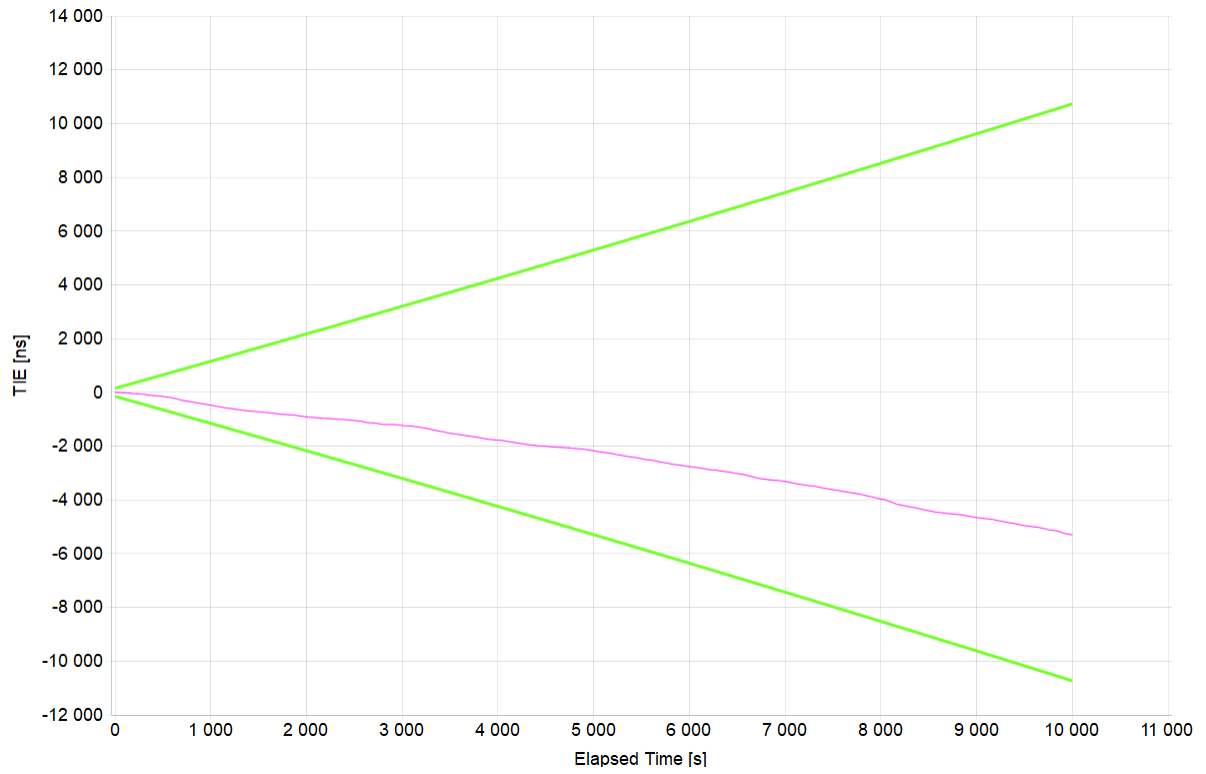
<b>Test Description</b>	Holdover
<b>Report Date</b>	22-10-18_13-29-39
<b>Packet Rate (pkt/s)</b>	16
<b>Test Duration</b>	02:46:40
<b>Test Configuration</b>	2
<b>Time to Phase Lock (s)</b>	N/A

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask TIE</b>	G.8263 PEC-S-F Long-Term Holdover Const. Temp.
<b>Mask TIE Result</b>	<b>Pass</b>

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



<b>Mean [ns]</b>	-2392.1
<b>Min [ns]</b>	-5304
<b>Max [ns]</b>	0
<b>Max-Min [ns]</b>	5304

## 5. G.8261: Test Case 12

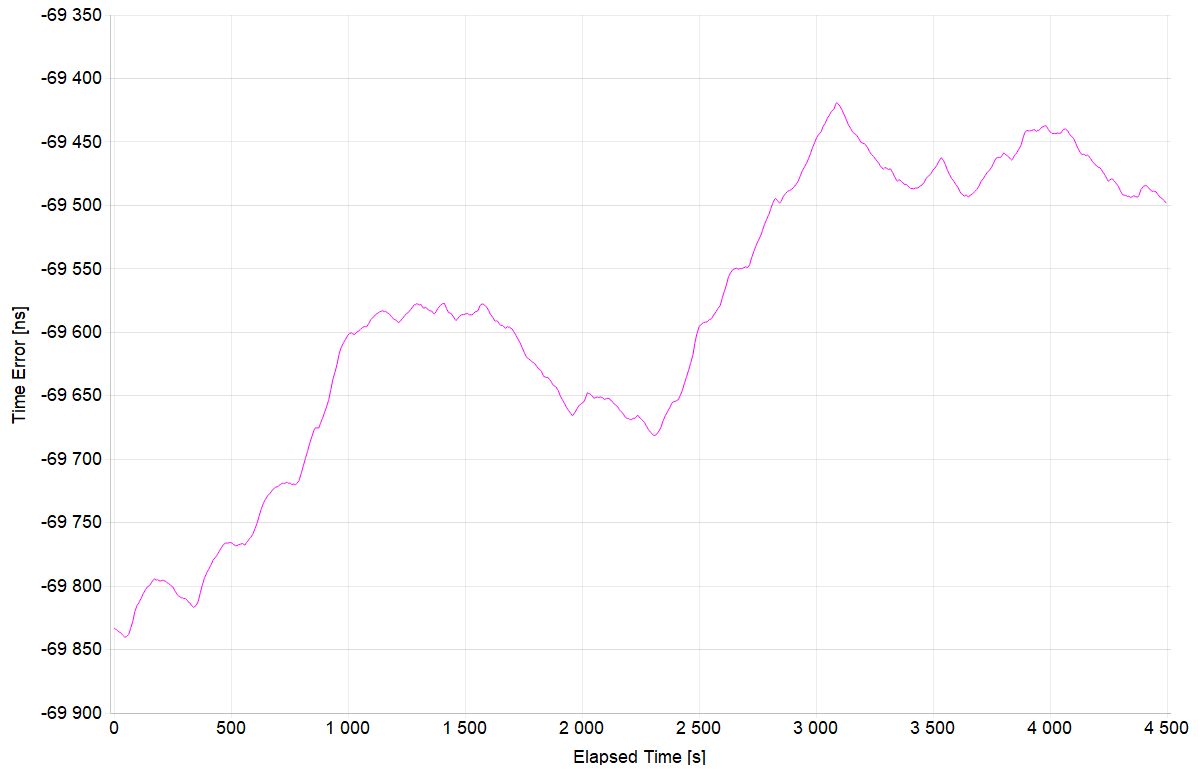
Note: Results for information only; not part of ITU-T required performance testing.

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>

### 5.1 ONEPPS Analysis

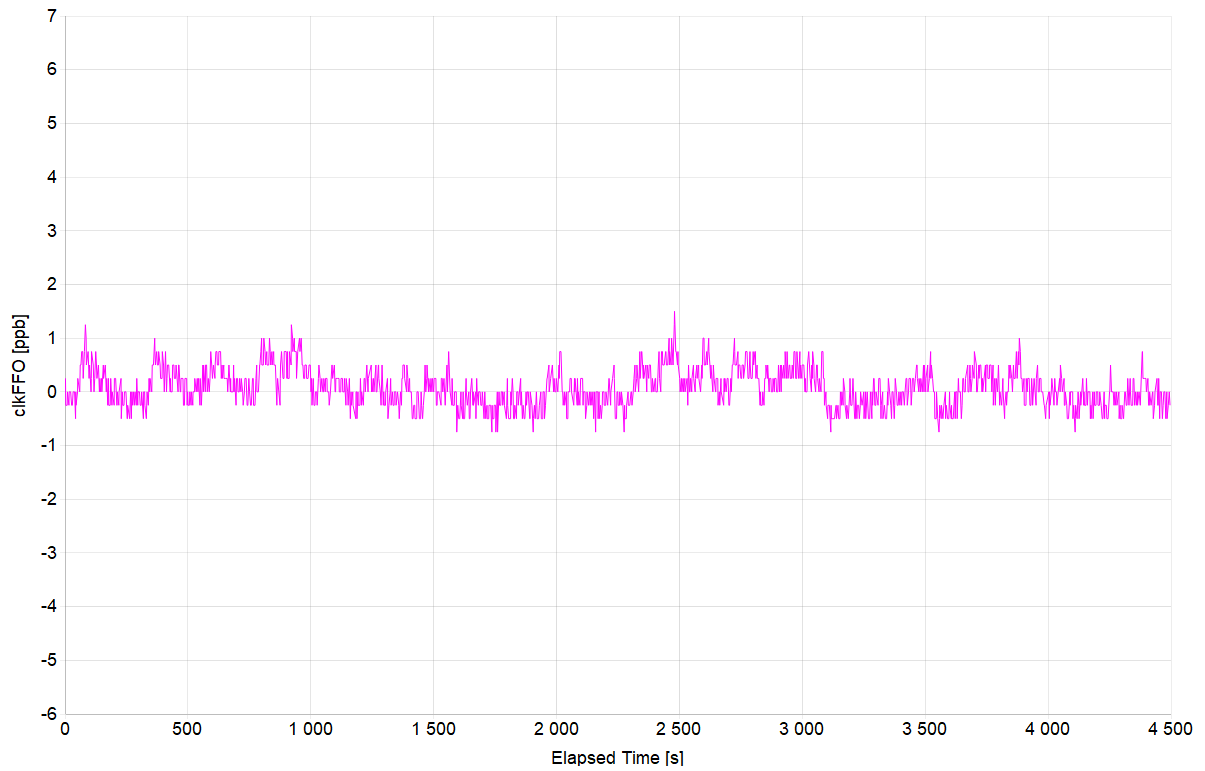
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-69833.733ns



<b>Mean [ns]</b>	-69588.197
<b>Min [ns]</b>	-69840.233
<b>Max [ns]</b>	-69418.983
<b>Max-Min [ns]</b>	421.25

## 5.2 CLKFFO Analysis

Averaging Time (s)	2
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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

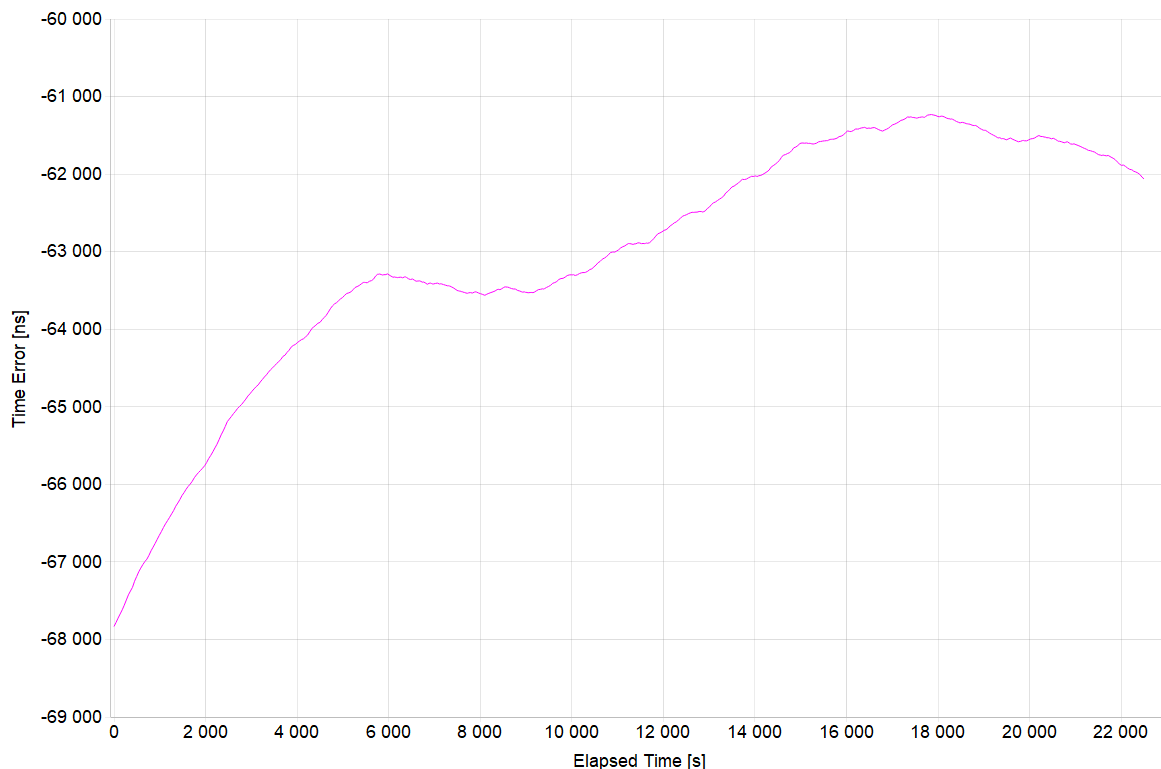
Note: Results for information only; not part of ITU-T required performance testing.

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>

## 6.1 ONEPPS Analysis

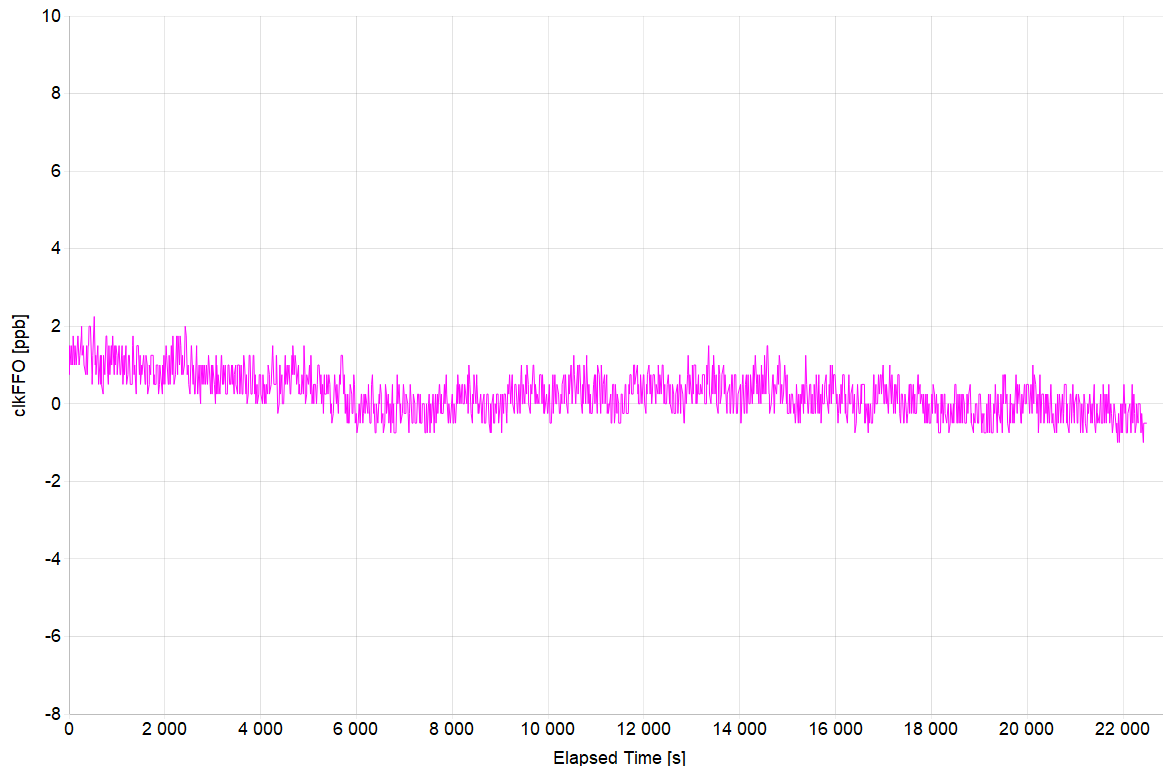
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-67833.233ns



<b>Mean [ns]</b>	-63030.232
<b>Min [ns]</b>	-67833.233
<b>Max [ns]</b>	-61231.733
<b>Max-Min [ns]</b>	6601.5

## 6.2 CLKFFO Analysis

Averaging Time (s)	2
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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.

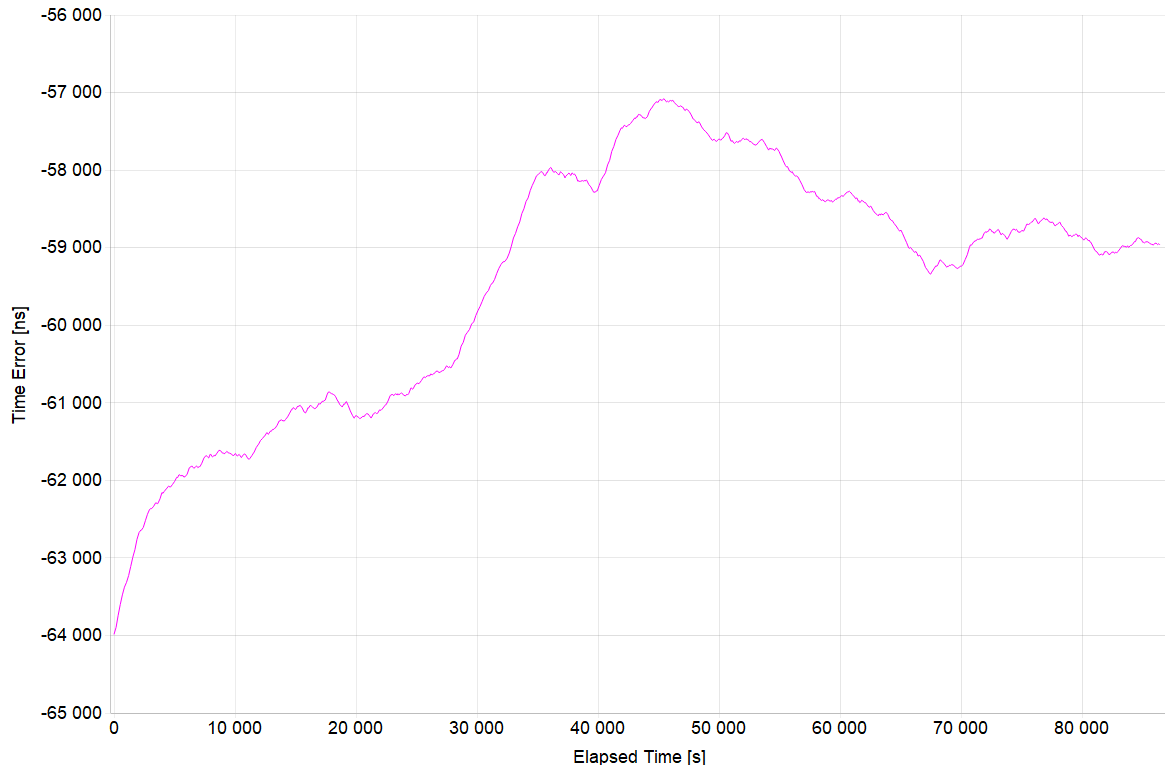
<b>Test Description</b>	Test Case 14 Network Traffic Model 2
<b>Report Date</b>	22-06-06_09-02-08
<b>Packet Rate (pkt/s)</b>	16
<b>Test Duration</b>	23:59:57
<b>Time to Frequency Lock (s)</b>	264

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>



## 7.1 ONEPPS Analysis

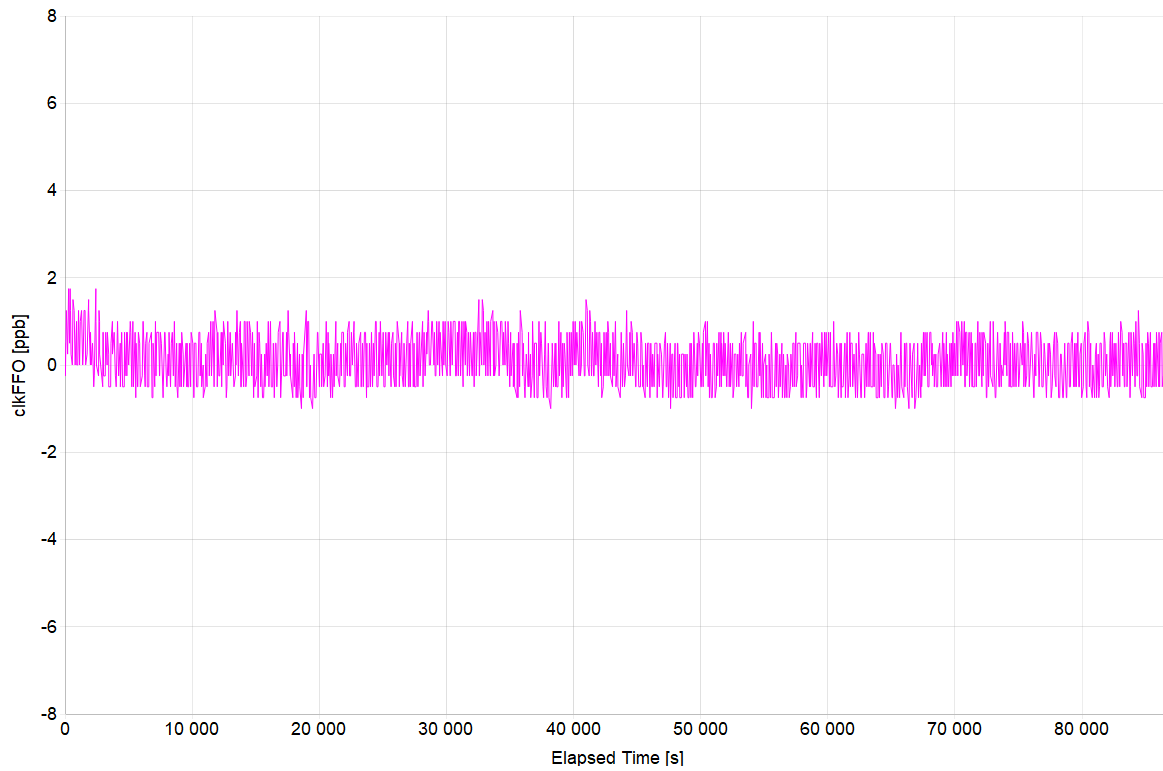
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-63986.733ns



<b>Mean [ns]</b>	-59428.301
<b>Min [ns]</b>	-63986.733
<b>Max [ns]</b>	-57079.733
<b>Max-Min [ns]</b>	6907

## 7.2 CLKFFO Analysis

<b>Averaging Time (s)</b>	2
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<b>Mean [ppb]</b>	0.058
<b>Min [ppb]</b>	-1
<b>Max [ppb]</b>	1.75
<b>Max-Min [ppb]</b>	2.75

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

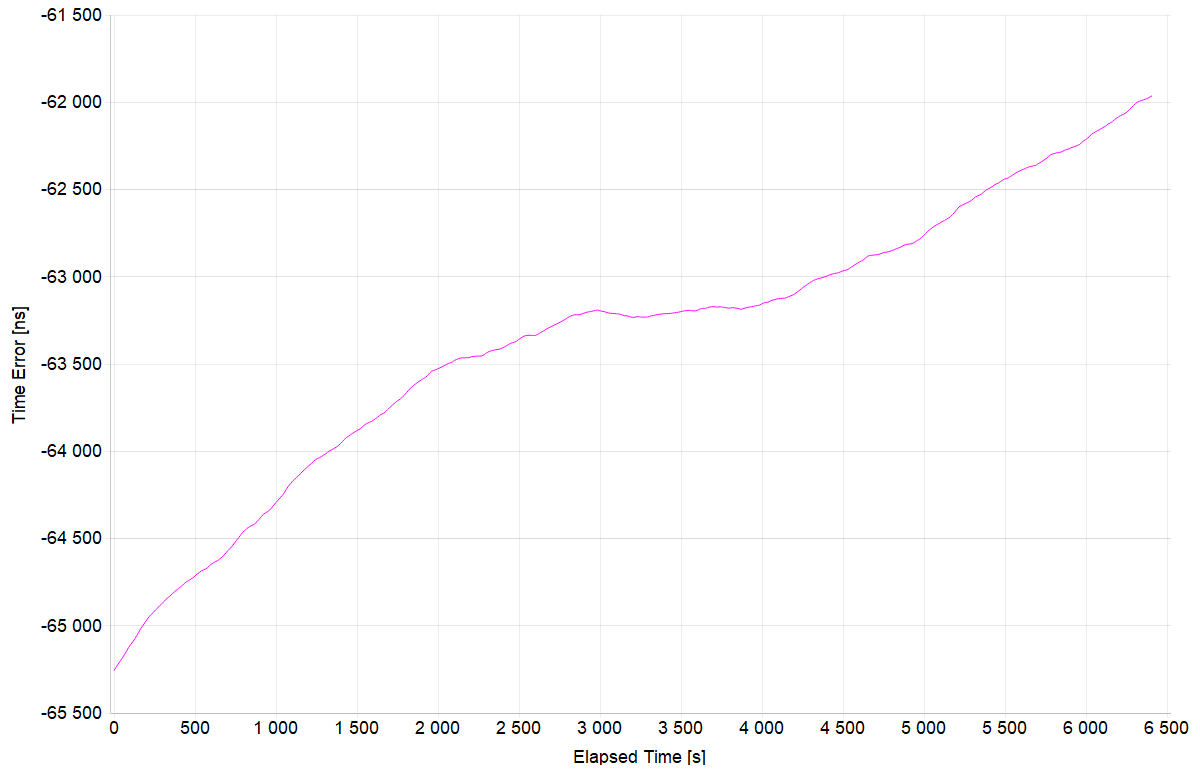
Note: Results for information only, not part of ITU-T required performance testing.

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>

## 8.1 ONEPPS Analysis

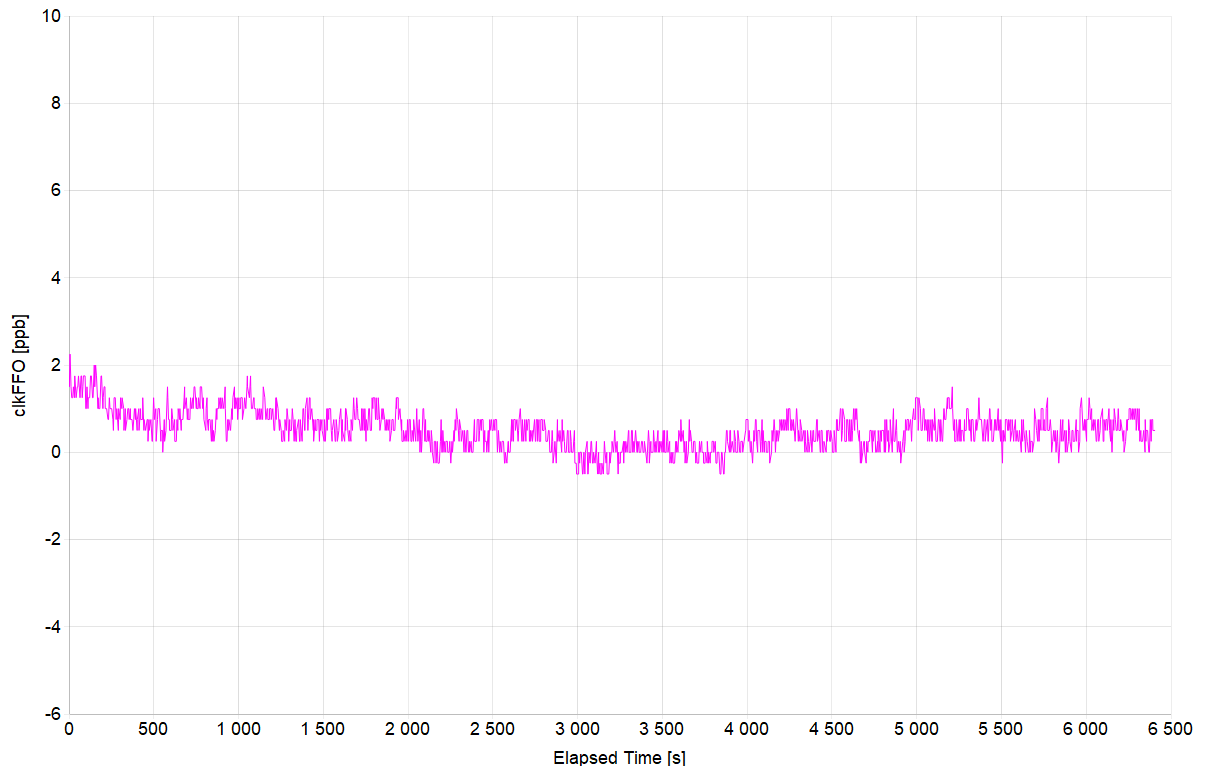
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-65258.233ns



<b>Mean [ns]</b>	-63346.293
<b>Min [ns]</b>	-65258.233
<b>Max [ns]</b>	-61963.233
<b>Max-Min [ns]</b>	3295

## 8.2 CLKFFO Analysis

Averaging Time (s)	2
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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

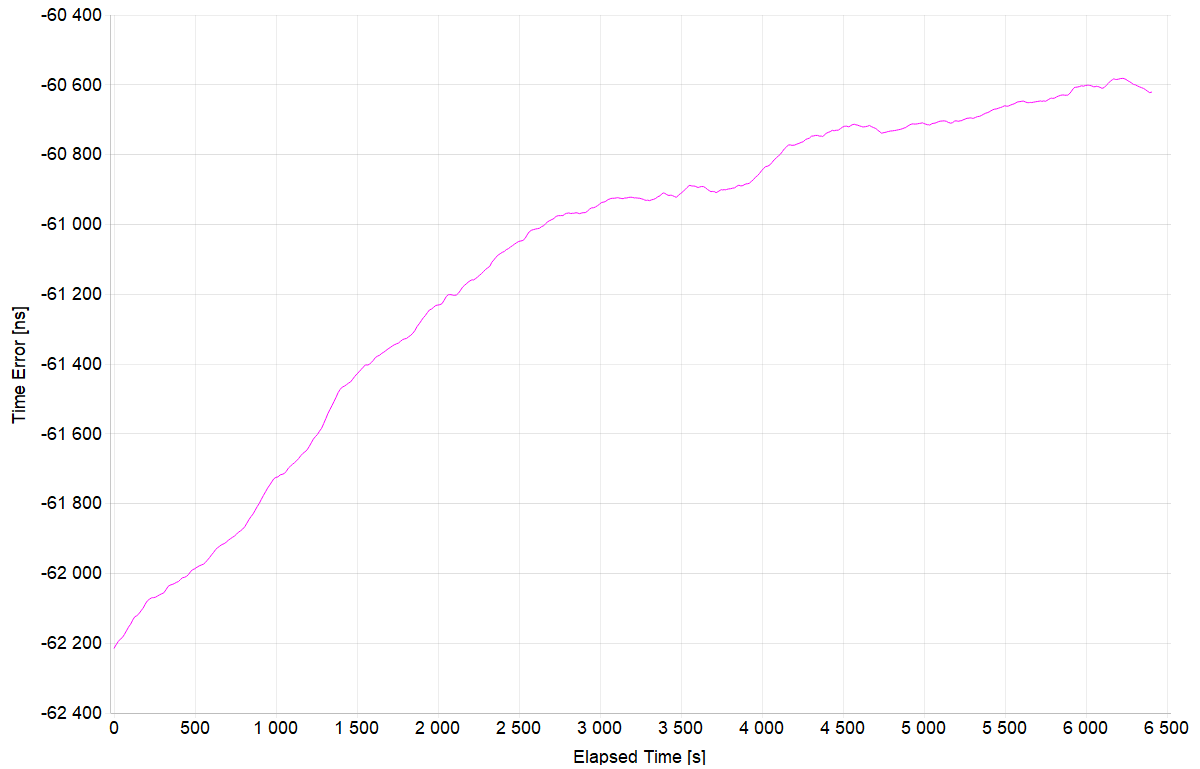
Note: Results for information only, not part of ITU-T required performance testing.

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>

### 9.1 ONEPPS Analysis

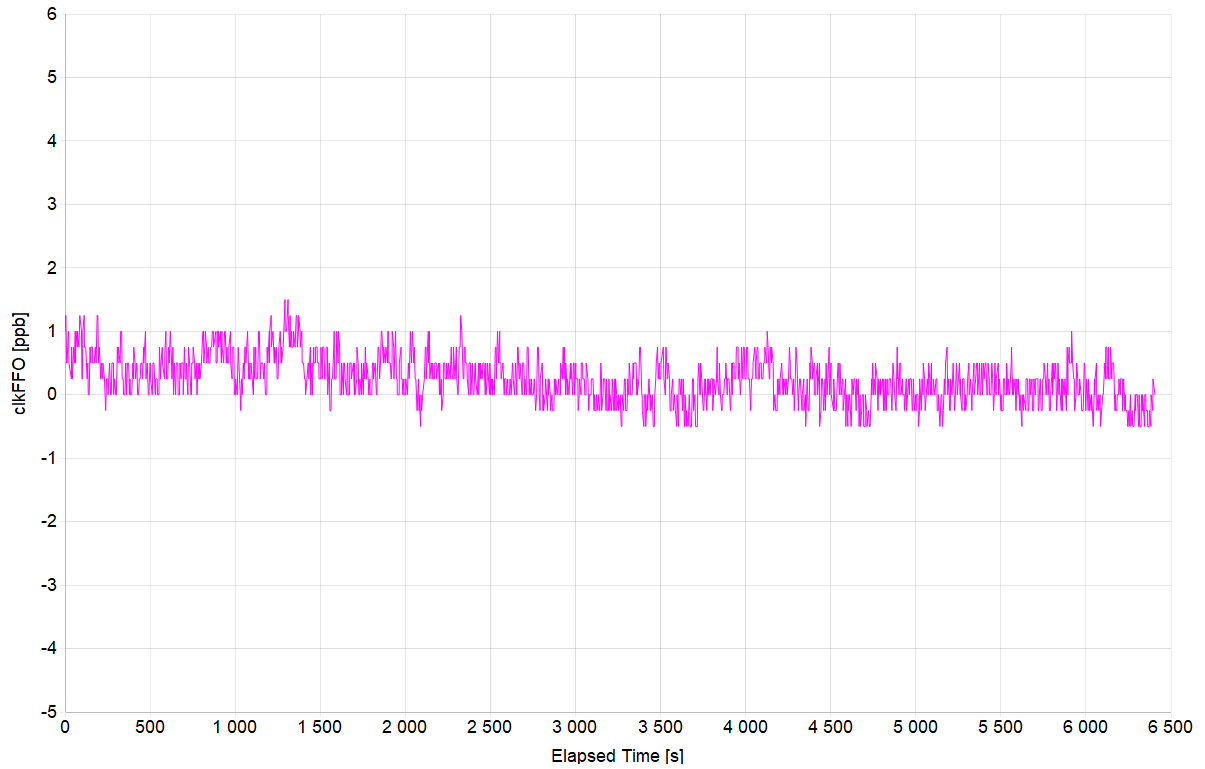
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-62215.233ns



<b>Mean [ns]</b>	-61103.07
<b>Min [ns]</b>	-62215.233
<b>Max [ns]</b>	-60581.233
<b>Max-Min [ns]</b>	1634

## 9.2 CLKFFO Analysis

<b>Averaging Time (s)</b>	2
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<b>Mean [ppb]</b>	0.249
<b>Min [ppb]</b>	-0.5
<b>Max [ppb]</b>	1.5
<b>Max-Min [ppb]</b>	2



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

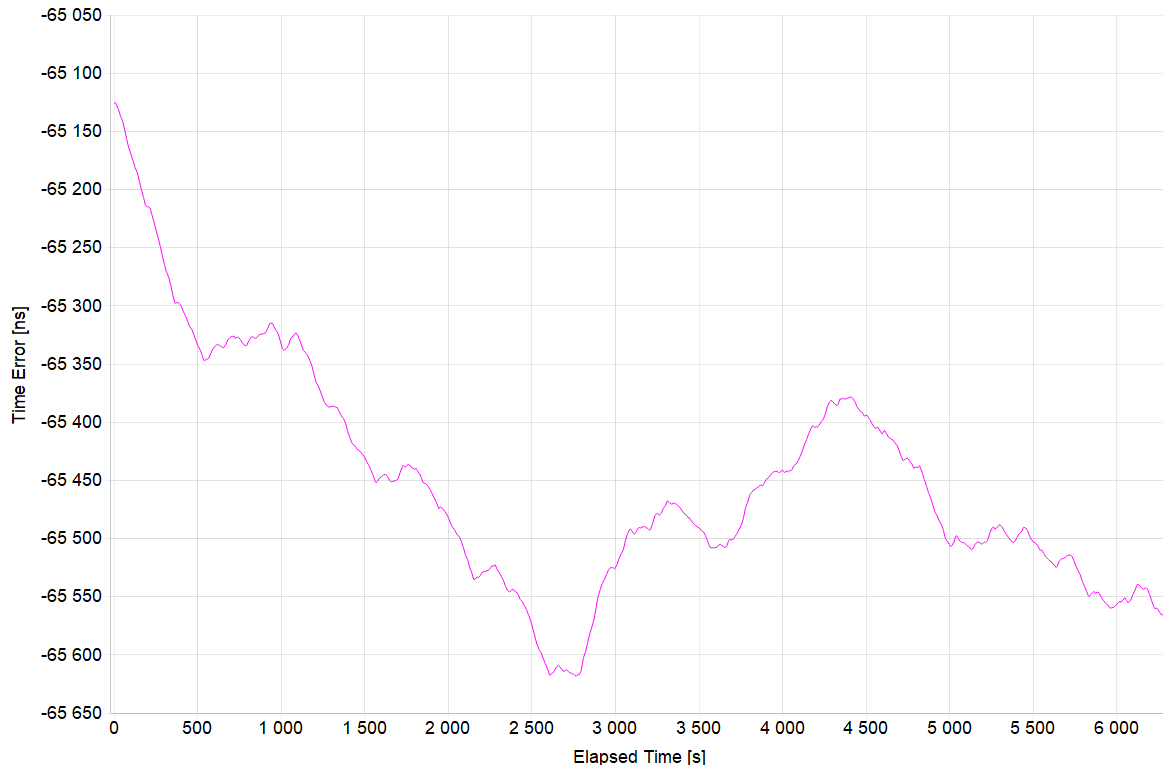
Note: Results for information only, not part of ITU-T required performance testing.

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>

### 10.1 ONEPPS Analysis

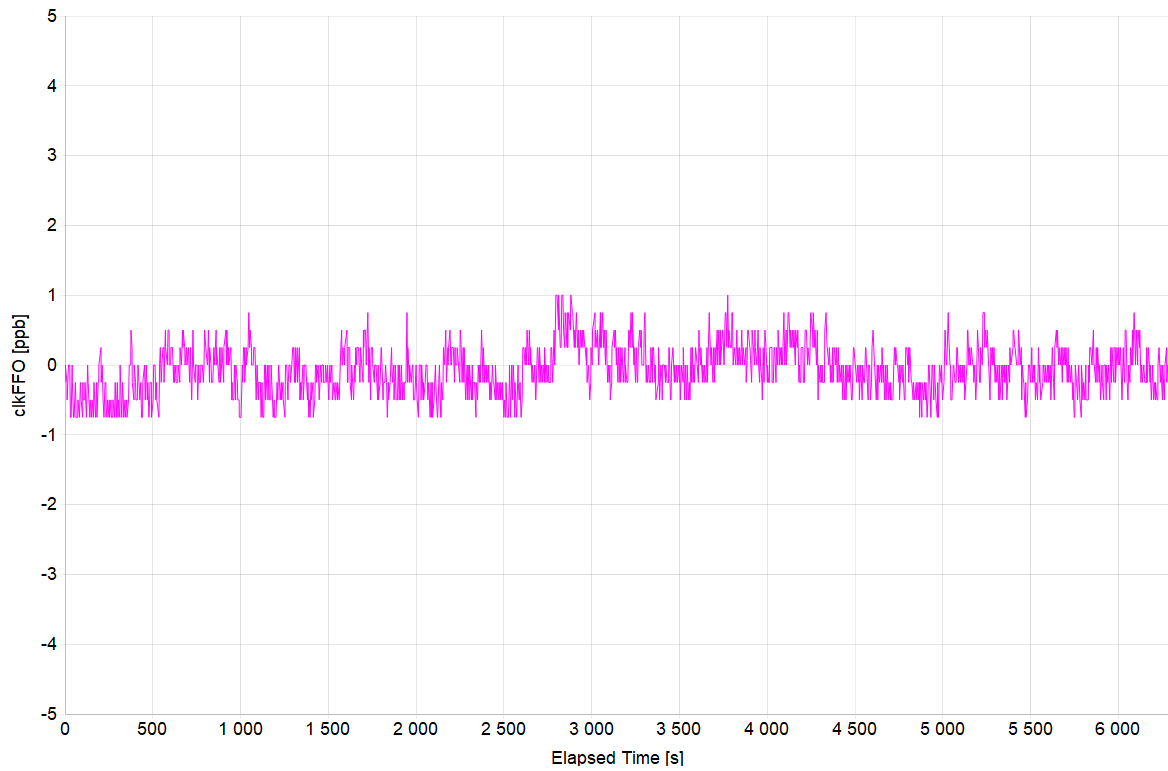
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-65125.483ns



<b>Mean [ns]</b>	-65450.292
<b>Min [ns]</b>	-65618.233
<b>Max [ns]</b>	-65125.483
<b>Max-Min [ns]</b>	492.75

## 10.2 CLKFFO Analysis

<b>Averaging Time (s)</b>	2
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<b>Mean [ppb]</b>	-0.07
<b>Min [ppb]</b>	-0.75
<b>Max [ppb]</b>	1
<b>Max-Min [ppb]</b>	1.75

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

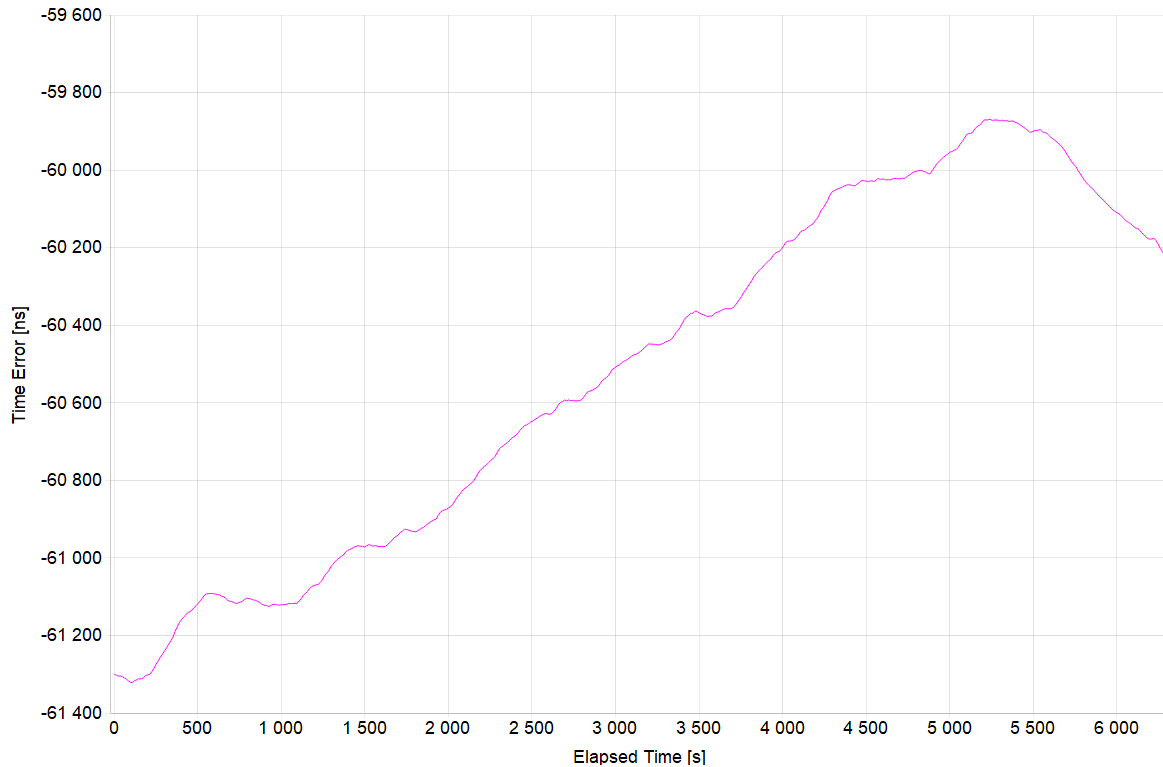
Note: Results for information only, not part of ITU-T required performance testing.

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask CLKFFO</b>	16ppb
<b>Mask CLKFFO Result</b>	<b>Pass</b>

### 11.1 ONEPPS Analysis

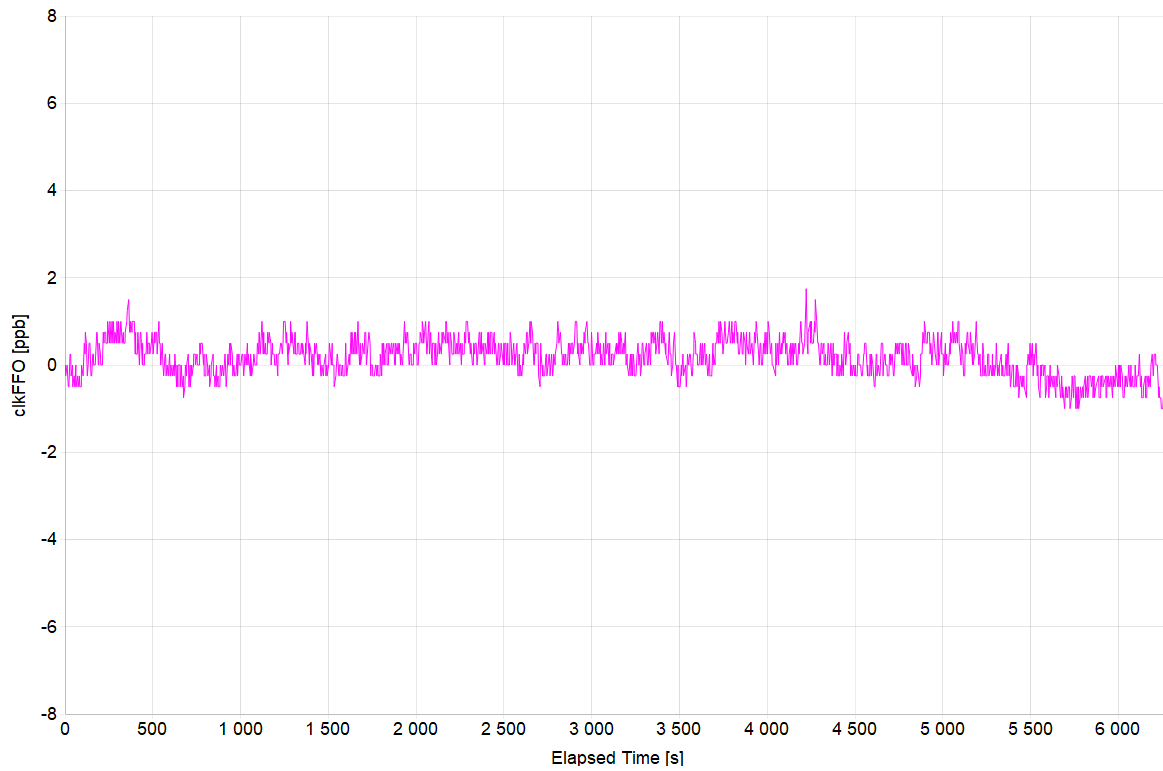
Offset Removal Applied	Off
Zero Offset	-61300.233ns



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

## 11.2 CLKFFO Analysis

<b>Averaging Time (s)</b>	2
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<b>Mean [ppb]</b>	0.17
<b>Min [ppb]</b>	-1.25
<b>Max [ppb]</b>	1.75
<b>Max-Min [ppb]</b>	3

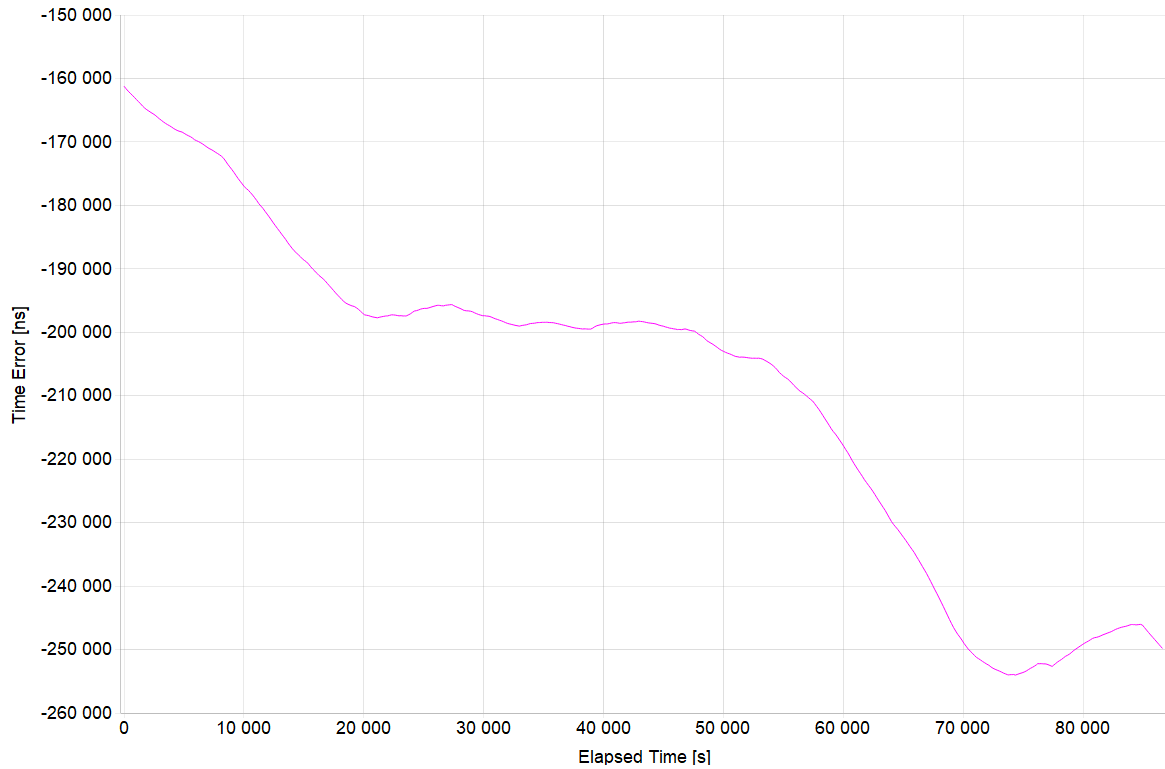
## 12. G.8263: Noise Tolerance - Method 1

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

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

## 12.1 ONEPPS Analysis

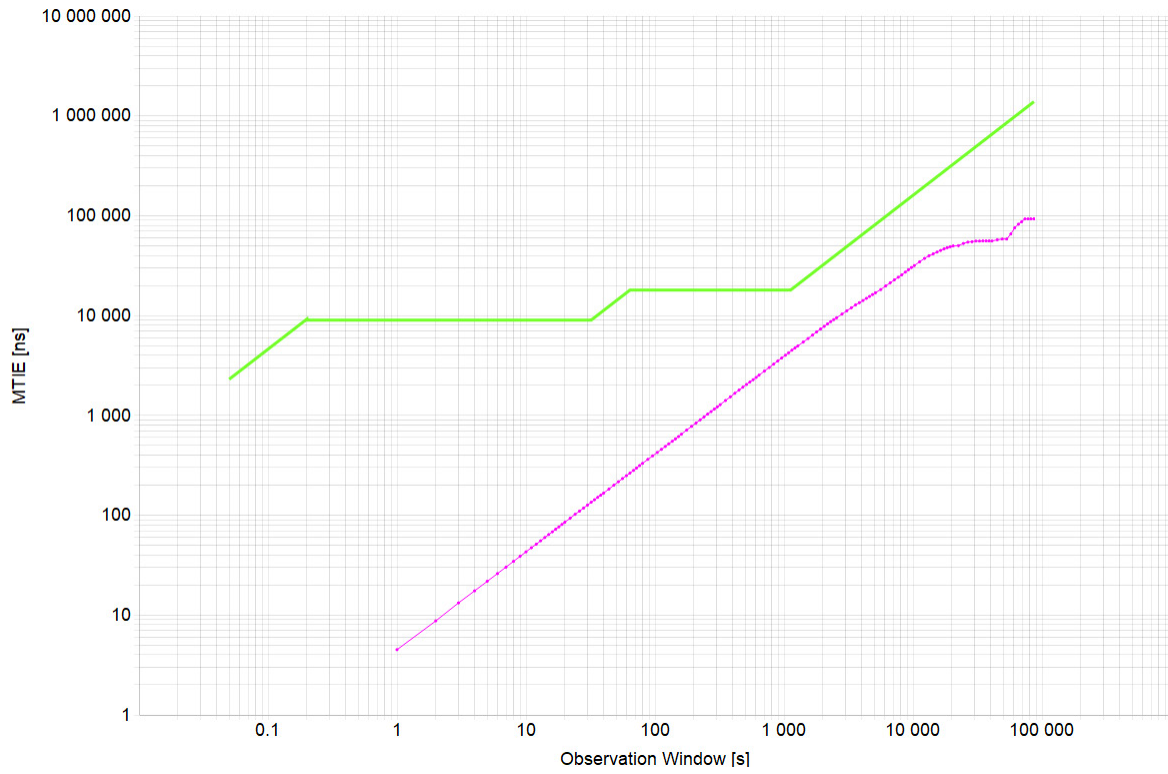
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-161214.483ns



<b>Mean [ns]</b>	-208770.37
<b>Min [ns]</b>	-254032.733
<b>Max [ns]</b>	-161214.483
<b>Max-Min [ns]</b>	92818.25



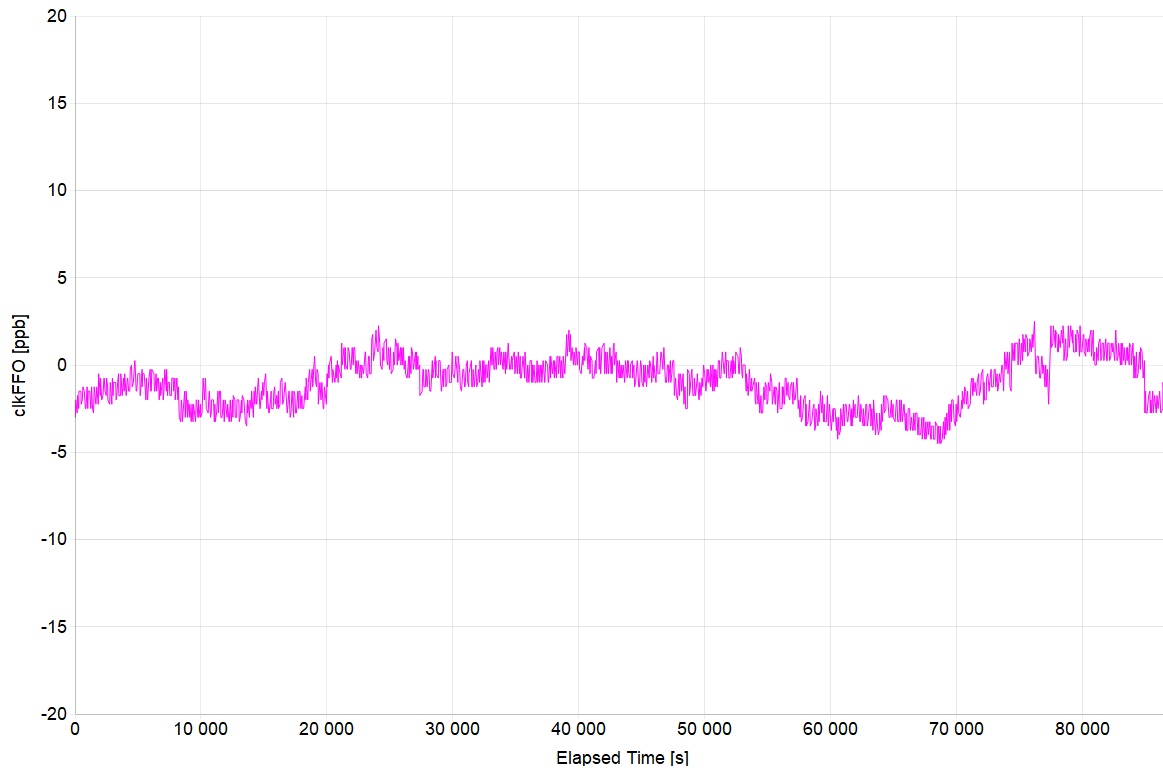
## 12.2 MTIE Analysis



<b>Min [ns]</b>	4.5
<b>Max [ns]</b>	92818.25
<b>Max-Min [ns]</b>	92813.75

### 12.3 CLKFFO Analysis

<b>Averaging Time (s)</b>	2
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<b>Mean [ppb]</b>	-1.023
<b>Min [ppb]</b>	-4.5
<b>Max [ppb]</b>	2.5
<b>Max-Min [ppb]</b>	7

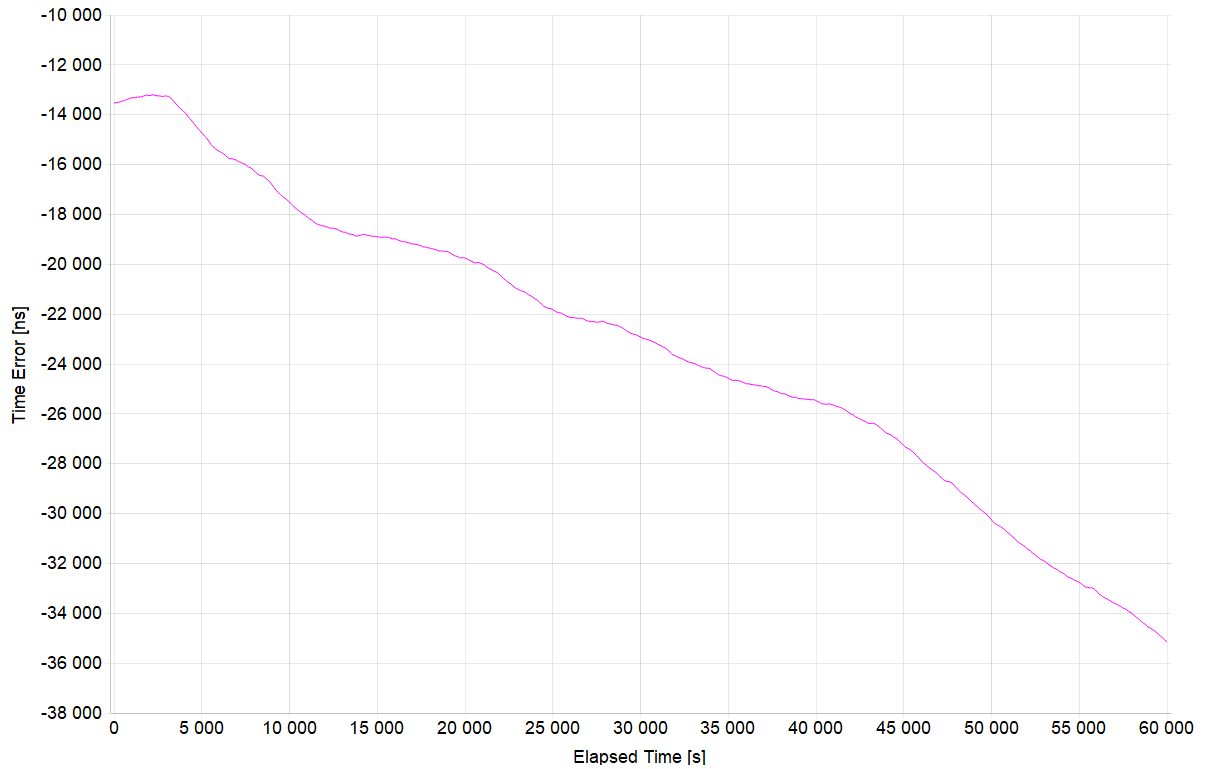
### 13. G.8263: Noise Tolerance - Method 2 (50µs)

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask MTIE</b>	G.8261.1 PEC-S-F Wander Limit Case 3
<b>Mask MTIE Result</b>	<b>Pass</b>

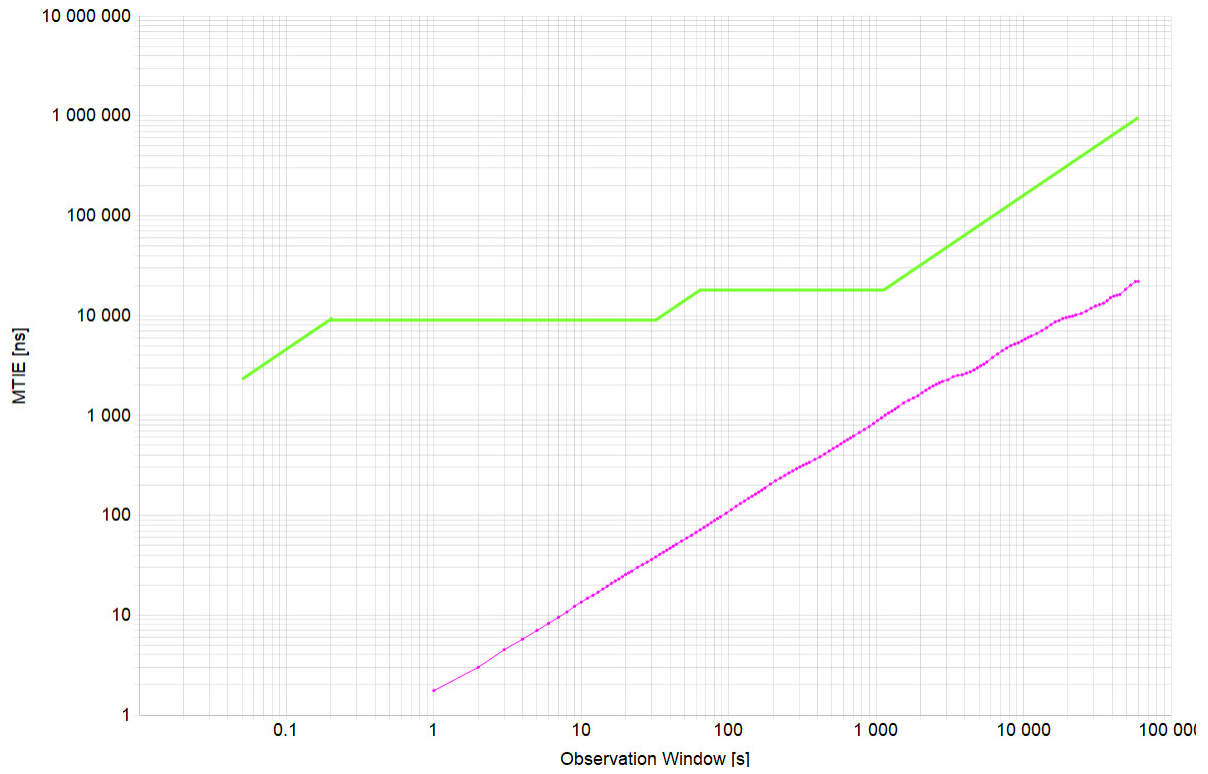
### 13.1 ONEPPS Analysis

<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-13536.233 ns



<b>Mean [ns]</b>	-23307.121
<b>Min [ns]</b>	-35143.983
<b>Max [ns]</b>	-13199.733
<b>Max-Min [ns]</b>	21944.25

### 13.2 MTIE Analysis



<b>Min [ns]</b>	1.75
<b>Max [ns]</b>	21944.25
<b>Max-Min [ns]</b>	21942.5

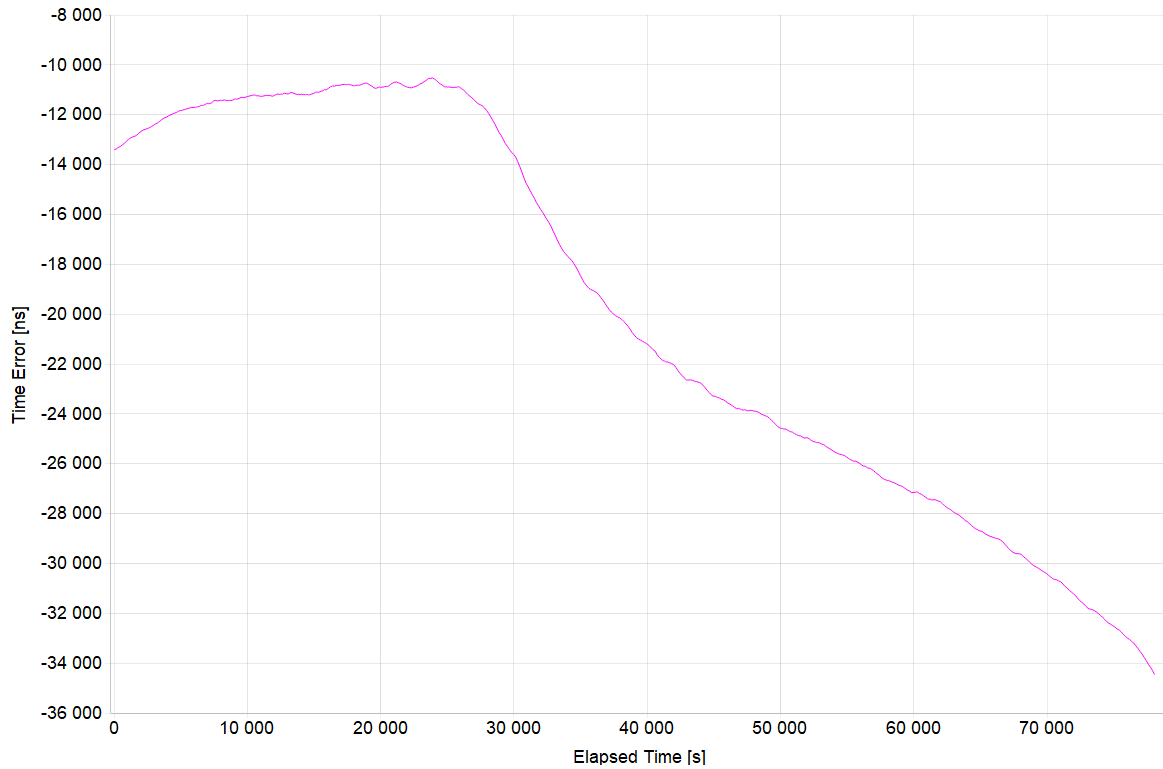
## 14. G.8263: Noise Tolerance - Method 2 (75µs)

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask MTIE</b>	G.8261.1 PEC-S-F Wander Limit Case 3
<b>Mask MTIE Result</b>	<b>Pass</b>

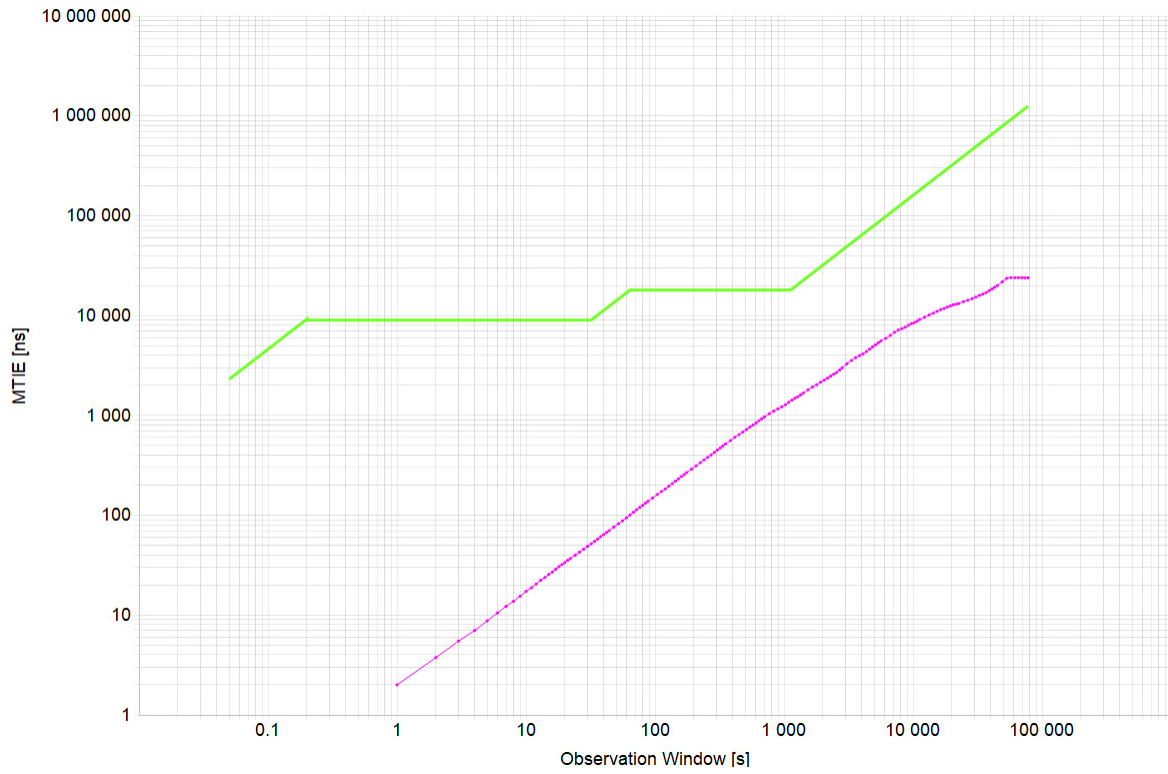
### 14.1 ONEPPS Analysis

<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-13397.483ns



<b>Mean [ns]</b>	-19975.532
<b>Min [ns]</b>	-34453.983
<b>Max [ns]</b>	-10525.983
<b>Max-Min [ns]</b>	23928

## 14.2 MTIE Analysis



<b>Min [ns]</b>	2
<b>Max [ns]</b>	23928
<b>Max-Min [ns]</b>	23926



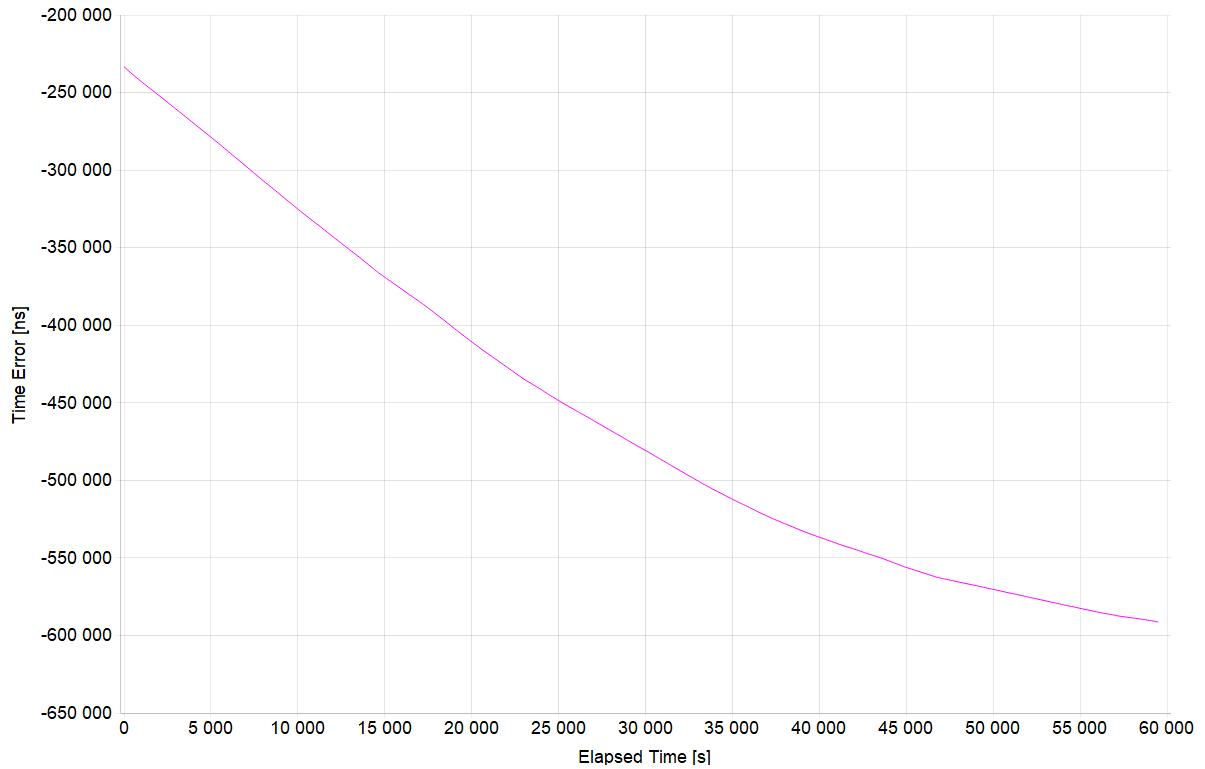
## 15. G.8263: Noise Tolerance - Method 2 (150µs)

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask MTIE</b>	G.8261.1 PEC-S-F Wander Limit Case 3
<b>Mask MTIE Result</b>	<b>Pass</b>

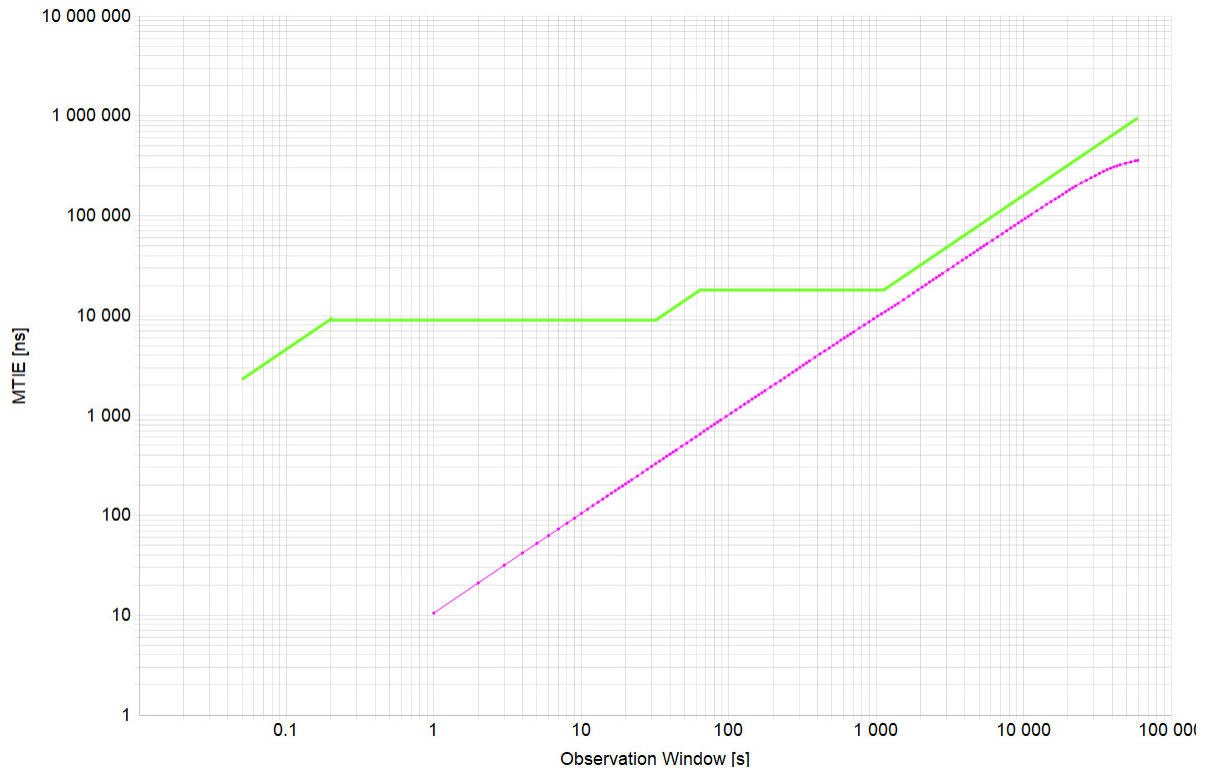
### 15.1 ONEPPS Analysis

<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-233388.733 ns



<b>Mean [ns]</b>	-456037.089
<b>Min [ns]</b>	-591349.983
<b>Max [ns]</b>	-233388.733
<b>Max-Min [ns]</b>	357961.25

## 15.2 MTIE Analysis



<b>Min [ns]</b>	10.5
<b>Max [ns]</b>	357963.75
<b>Max-Min [ns]</b>	357953.25

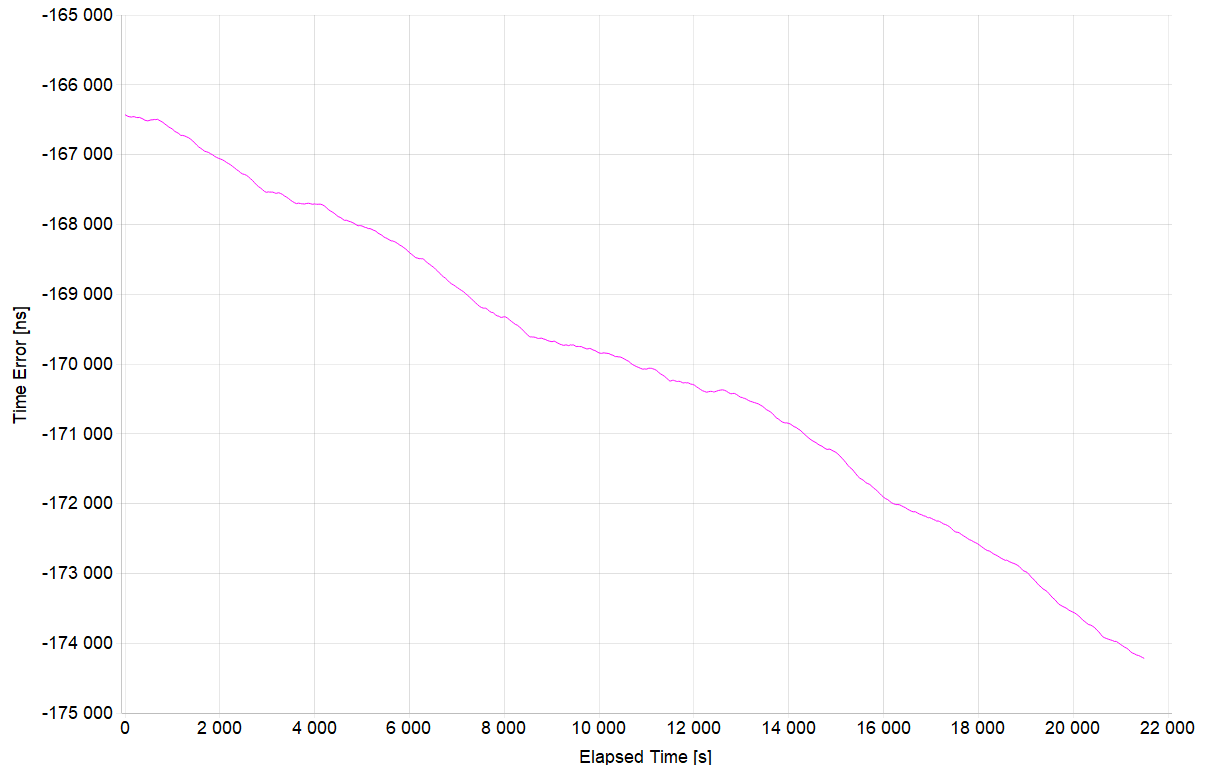
## 16. G.8263: Noise Tolerance - Method 3 (High Frequency)

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask MTIE</b>	G.8261.1 PEC-S-F Wander Limit Case 3
<b>Mask MTIE Result</b>	<b>Pass</b>

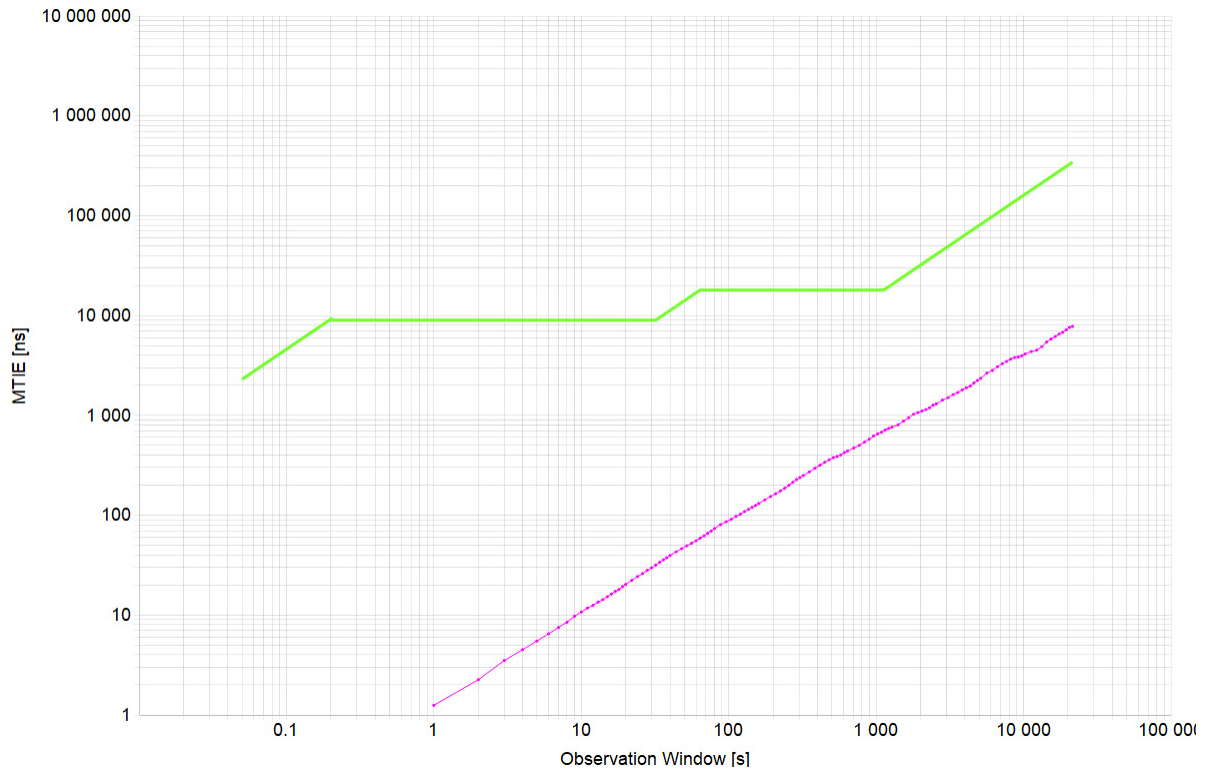
## 16.1 ONEPPS Analysis

<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-166427.733 ns



<b>Mean [ns]</b>	-170077.769
<b>Min [ns]</b>	-174216.733
<b>Max [ns]</b>	-166427.733
<b>Max-Min [ns]</b>	7789

## 16.2 MTIE Analysis



<b>Min [ns]</b>	1.25
<b>Max [ns]</b>	7789.25
<b>Max-Min [ns]</b>	7788

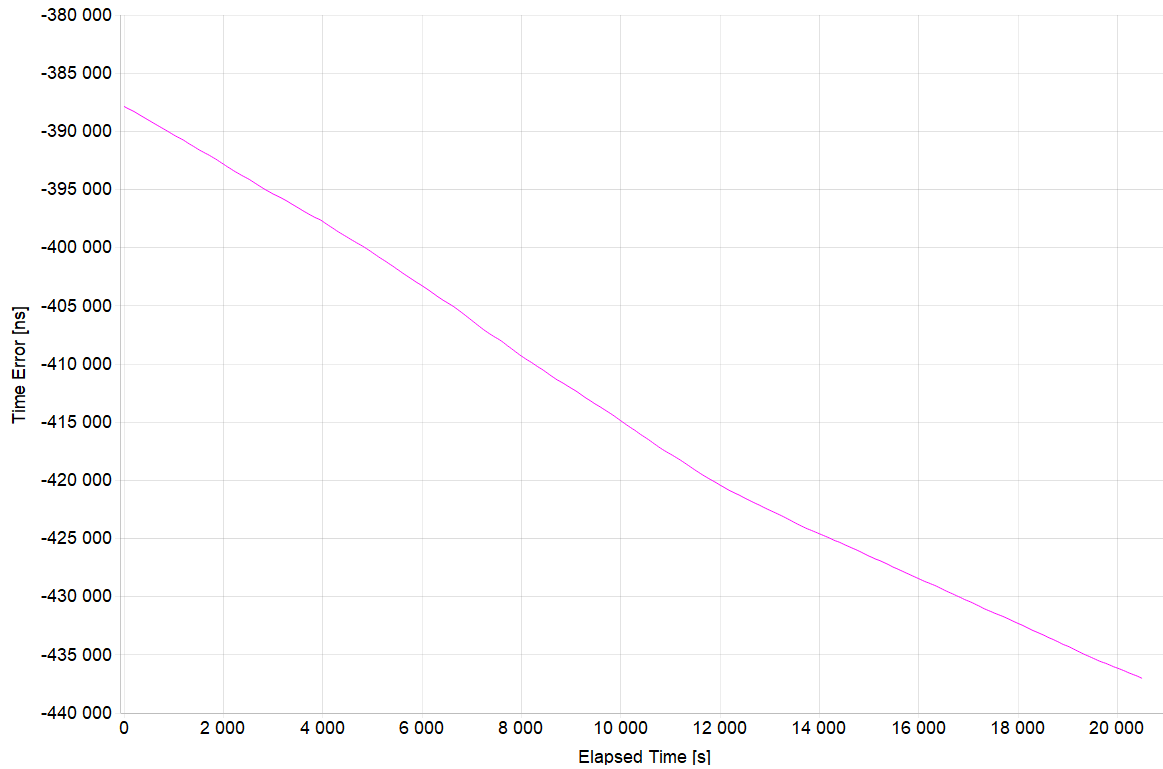
## 17. G.8263: Noise Tolerance - Method 3 (Low Frequency)

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

<b>All Mask Results</b>	<b>Pass</b>
<b>Mask ONEPPS</b>	-
<b>Mask ONEPPS Result</b>	No Mask
<b>Mask MTIE</b>	G.8261.1 PEC-S-F Wander Limit Case 3
<b>Mask MTIE Result</b>	<b>Pass</b>

### 17.1 ONEPPS Analysis

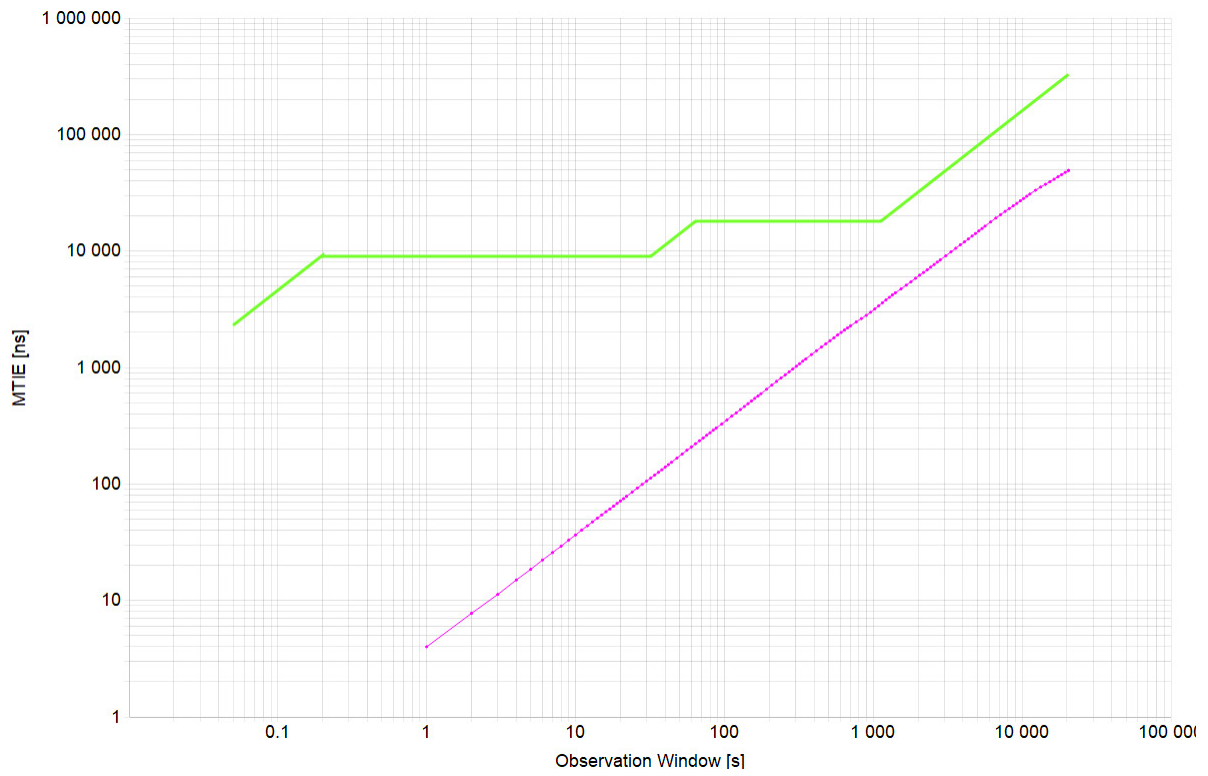
<b>Offset Removal Applied</b>	Off
<b>Zero Offset</b>	-387857.483ns



<b>Mean [ns]</b>	-414143.482
<b>Min [ns]</b>	-437019.233
<b>Max [ns]</b>	-387857.483
<b>Max-Min [ns]</b>	49161.75



## 17.2 MTIE Analysis



<b>Min [ns]</b>	4
<b>Max [ns]</b>	49163.75
<b>Max-Min [ns]</b>	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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