Silicom Ltd.
Connectivity Solutions

# OPEN RAN VIRTUALIZED ARCHITECTURE FOR CONNECTIVITY & TIMING DISTRIBUTION

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*ITSF 2022*

# Reference O-RAN Architecture

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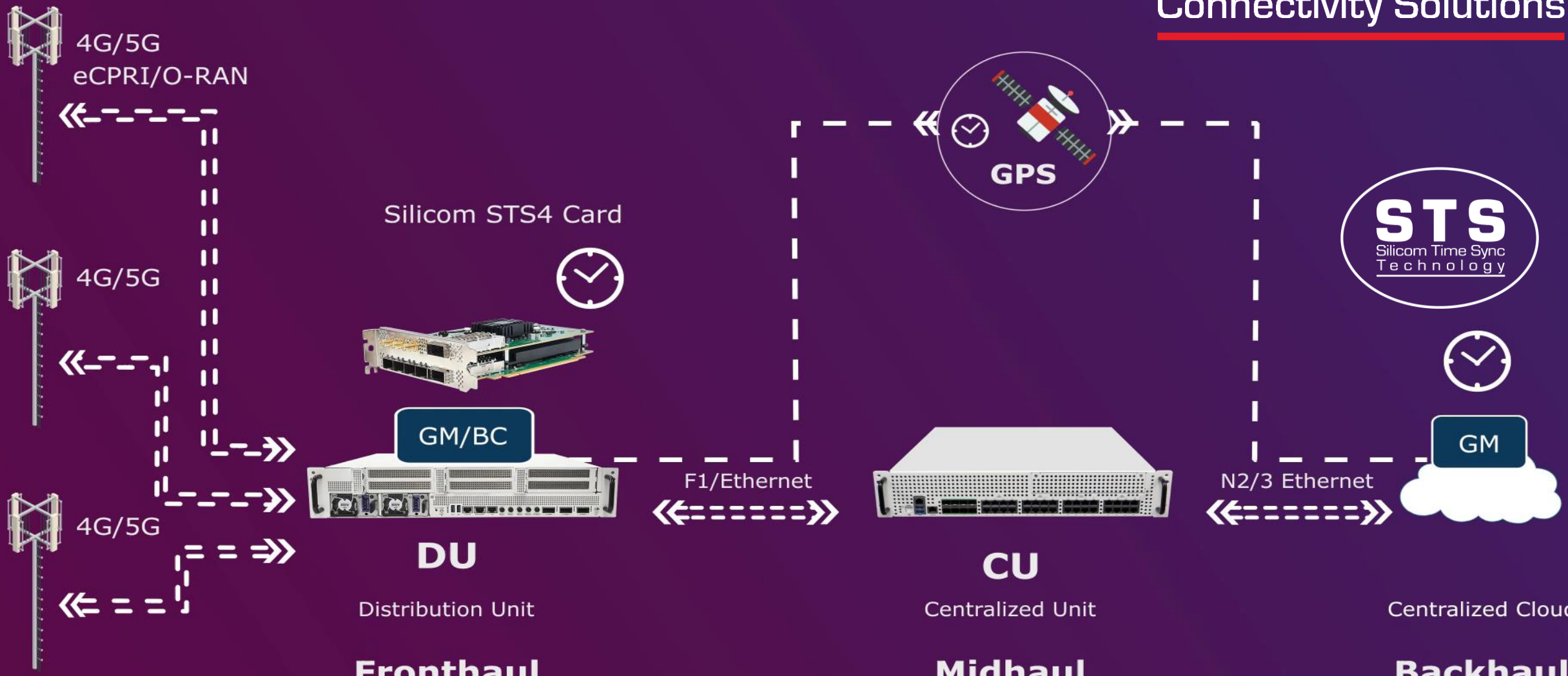
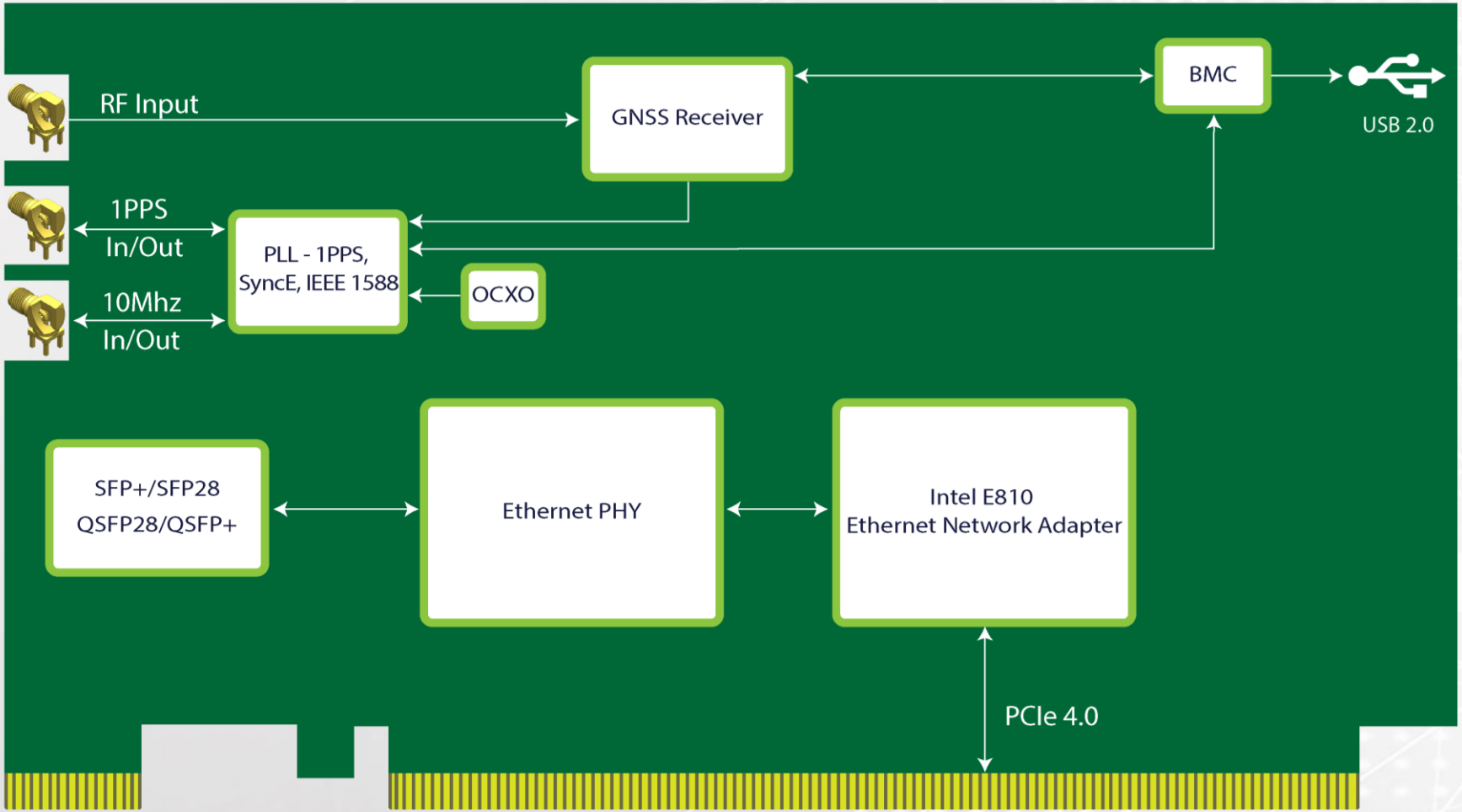
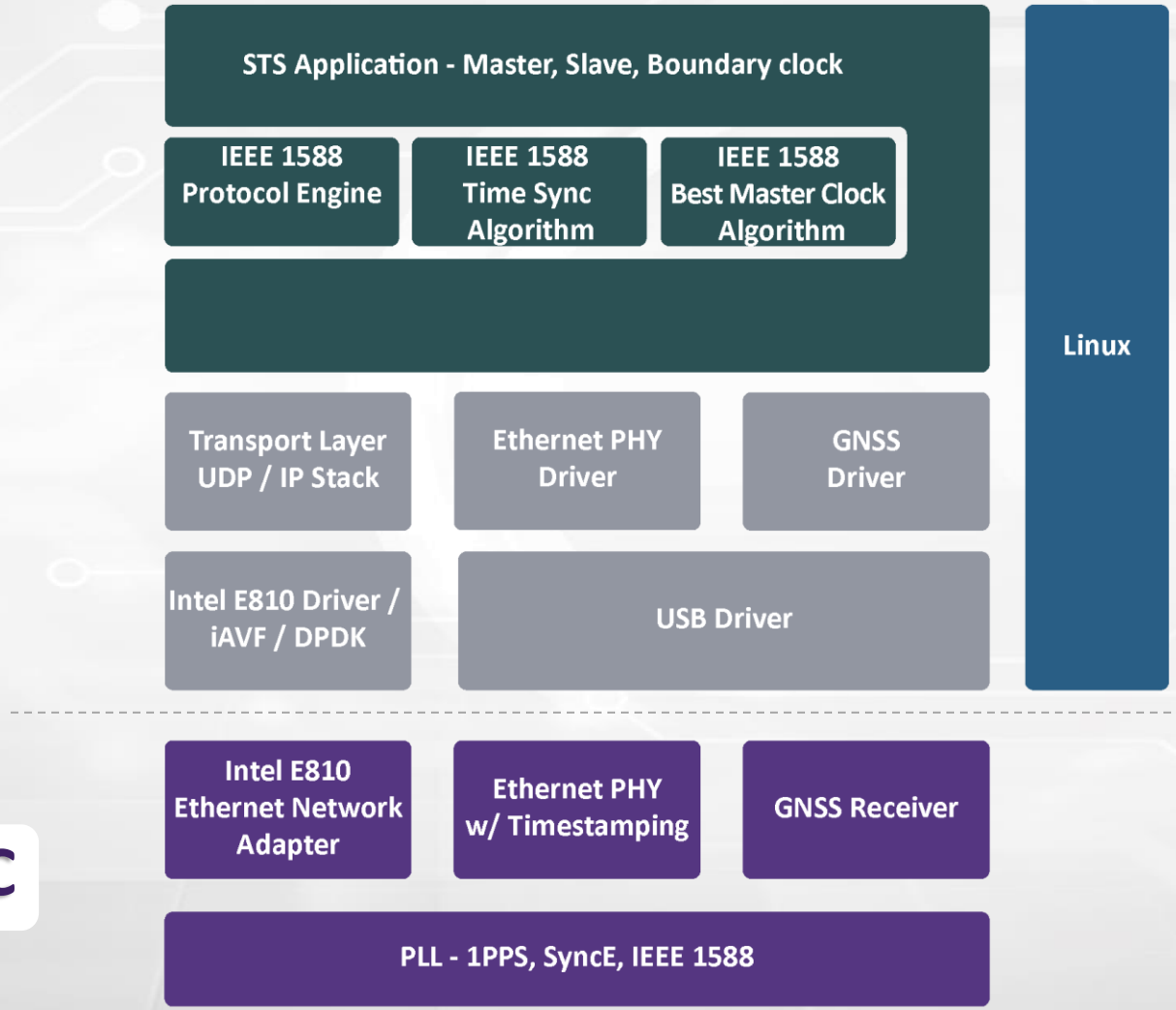


# Silicom Time Sync NIC Architecture



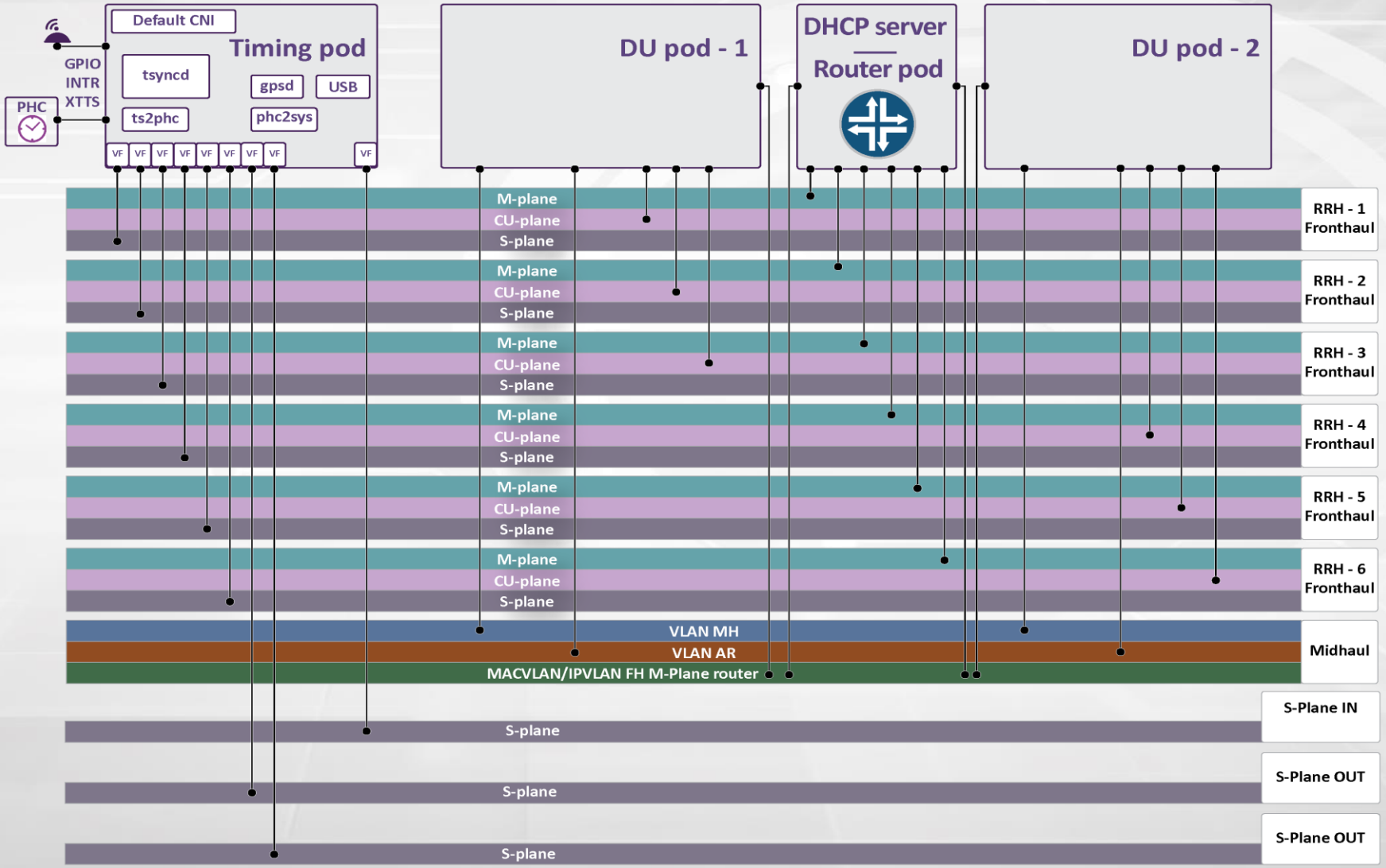
# STS NIC - High Level Architecture – SW/HW

**Host**




**STS PCIe NIC**

# DU Server Architecture – An Example



# Red Hat Openshift Reference Architecture

OpenShift Controller node

OpenShift Worker node

Red Hat Enterprise Linux CoreOS

STS Silicom Time Sync Technology Silicom Card HW

sts-operator-config cr

sts-config cr

watches

watches

Silicom controller Pod

Manager

creates

sts-nfd cr

Nfd controller Pod

Manager

watches

timing sync Pod

set time clk

grpc_tsync

PTP/Synce timing stats

tsyncd

gpsd

phc2sys

system

sts-plugin Pod

sts-plugin

nfd-worker Pod

nfd-worker

HW Clock adjustments

/dev/ttyACM

/dev/ptp<x>

/sys/bus/pci

Quality PLL + accurate OCXO

GNSS RECEIVER U-BLOX

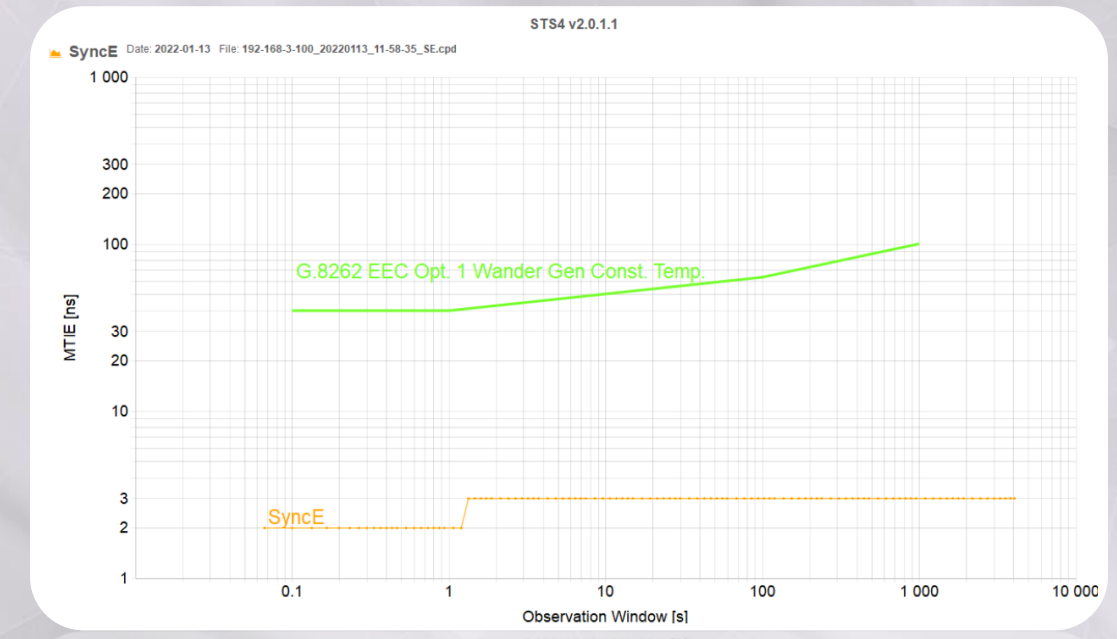
E810 Controller

PTP, SyncE Time Stamper PHY

https://cloud.redhat.com/blog/a-guide-to-the-silicom-time-sync-sts-operator-on-openshift

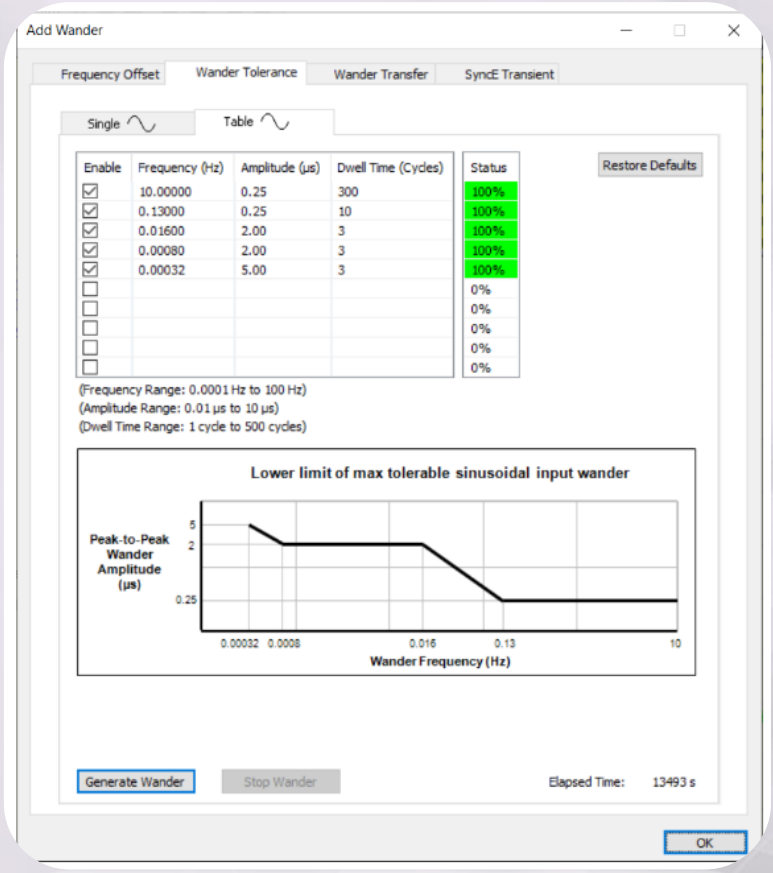
# Compliance Report - G.8262

## Wander generation – G.8262 Section 8.1

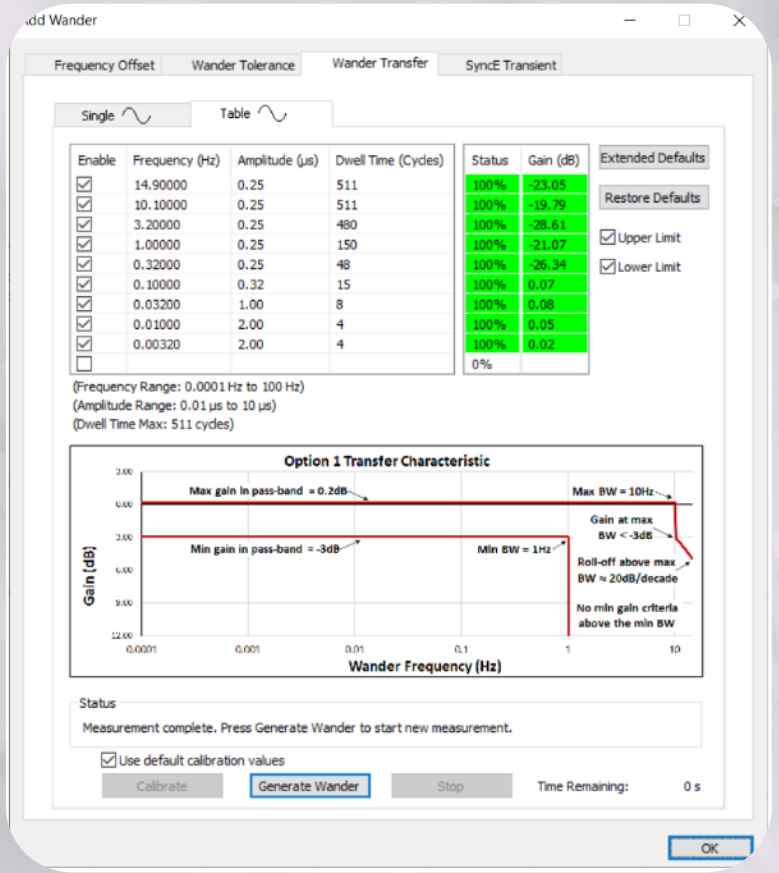



# Compliance Report - G.8262

## Wander tolerance – G.8262 Section 9.1

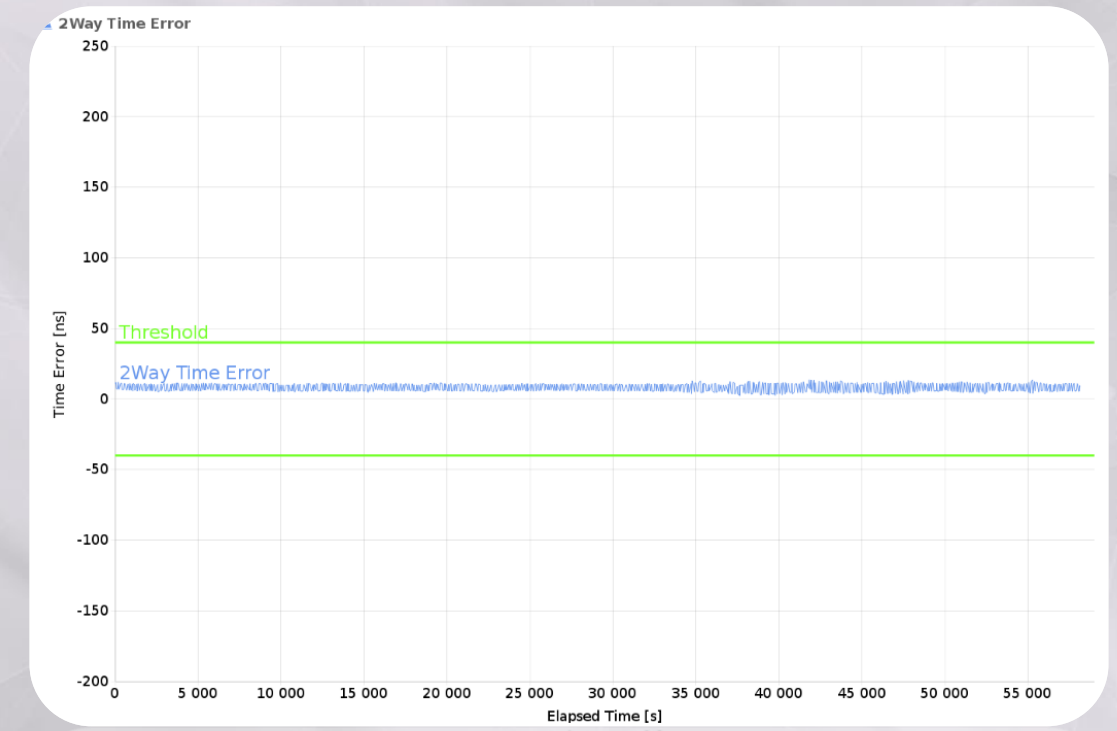



## Noise transfer – G.8262 Section 10.1



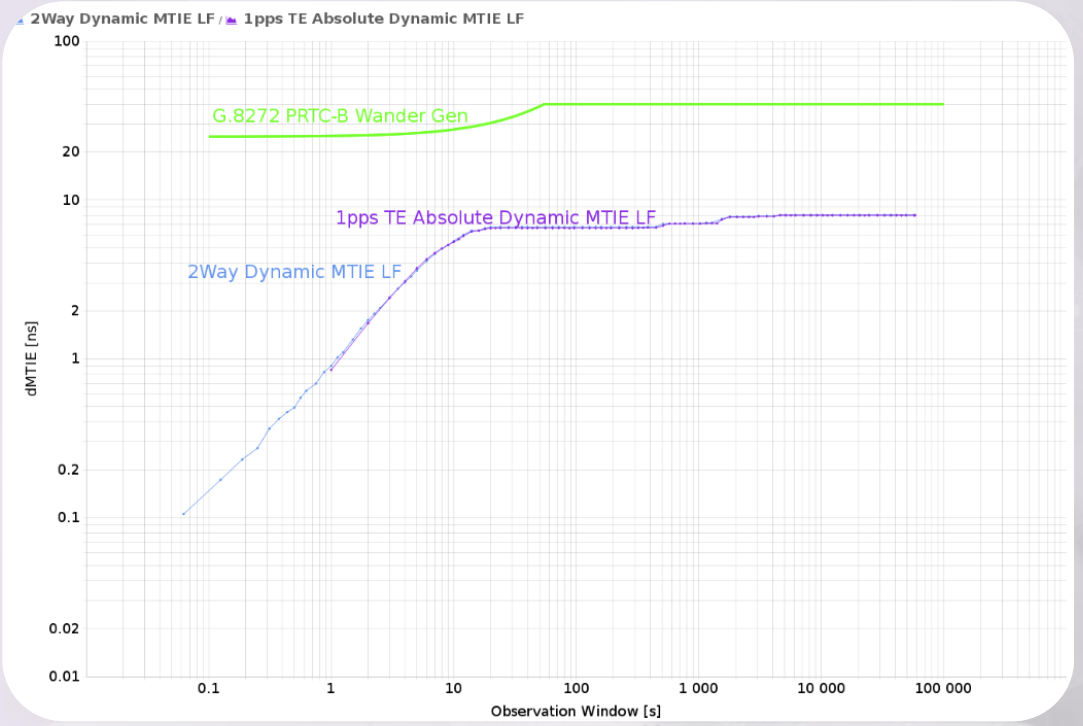
# Compliance Report - G.8272 PRTC-B

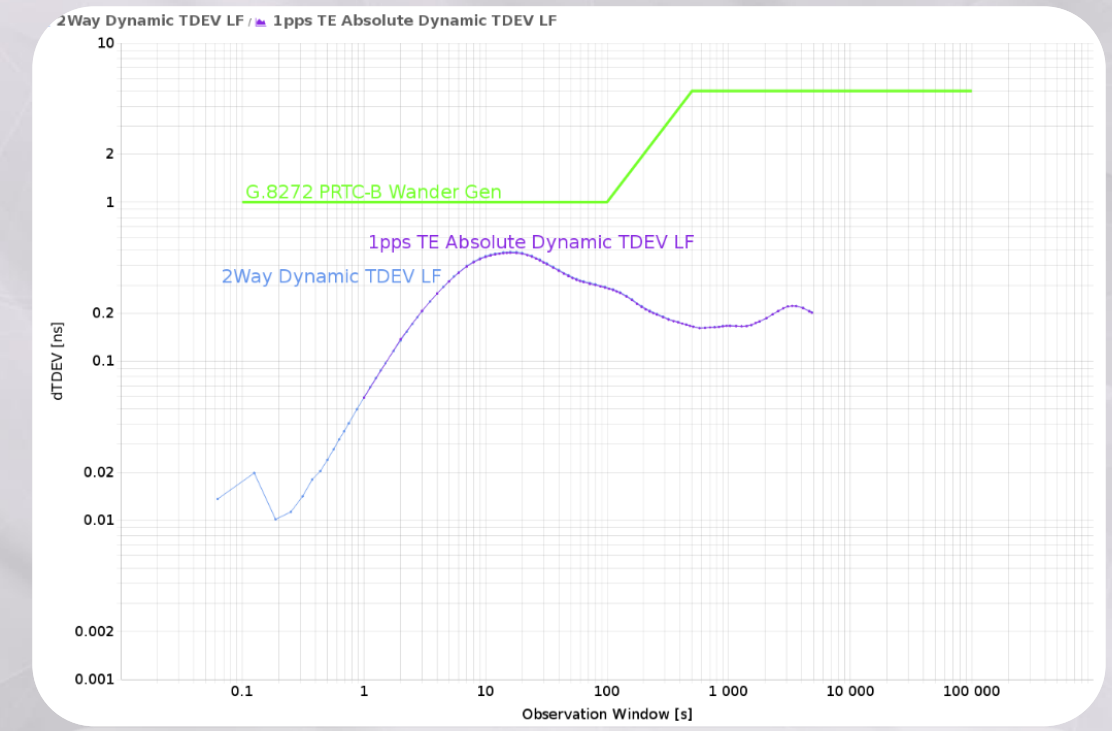
| Slot | 2Way |
|---|---|
| Description | |
| Measurement Start | 2022-06-12 14:06:26 (local instrument time) |
| Measurement Stop | 2022-06-13 06:15:21 (local instrument time) |
| Mask Time Error | 0.04 µs |
| Mask Result | Pass |
| Mask Time Error (Filtered) | 0.04 µs |
| Mask Result | Pass |
| Mask Avg Time Error (cTE) | 0.04 µs |
| Mask Result | Pass |
| Mask Dynamic TE LF | 0.04 µs |
| Mask Result | Pass |
| Mask Dynamic TE HF | 0.2 µs |
| Mask Result | Pass |
| Mask Dynamic MTIE LF | G.8272 PRTC-B Wander Gen |
| Mask Dynamic MTIE LF Result | Pass |
| Mask Dynamic TDEV LF | G.8272 PRTC-B Wander Gen |
| Mask Dynamic TDEV LF Result | Pass |



# Compliance Report - G.8272 PRTC-B

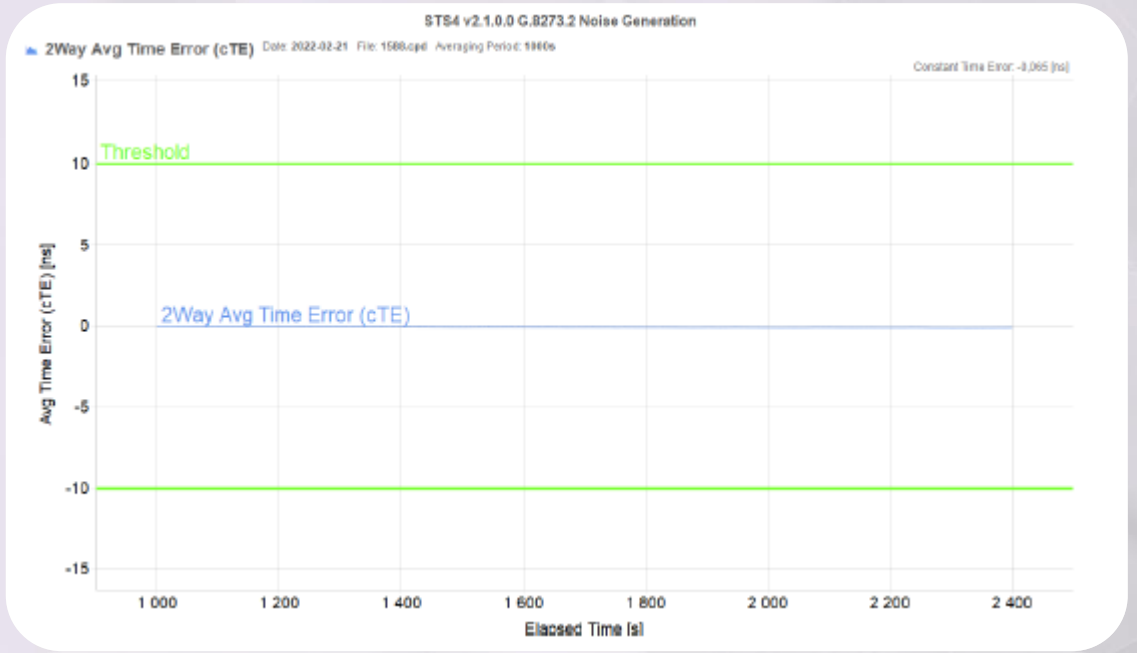
## Wander generation – 2Way & 1PPS



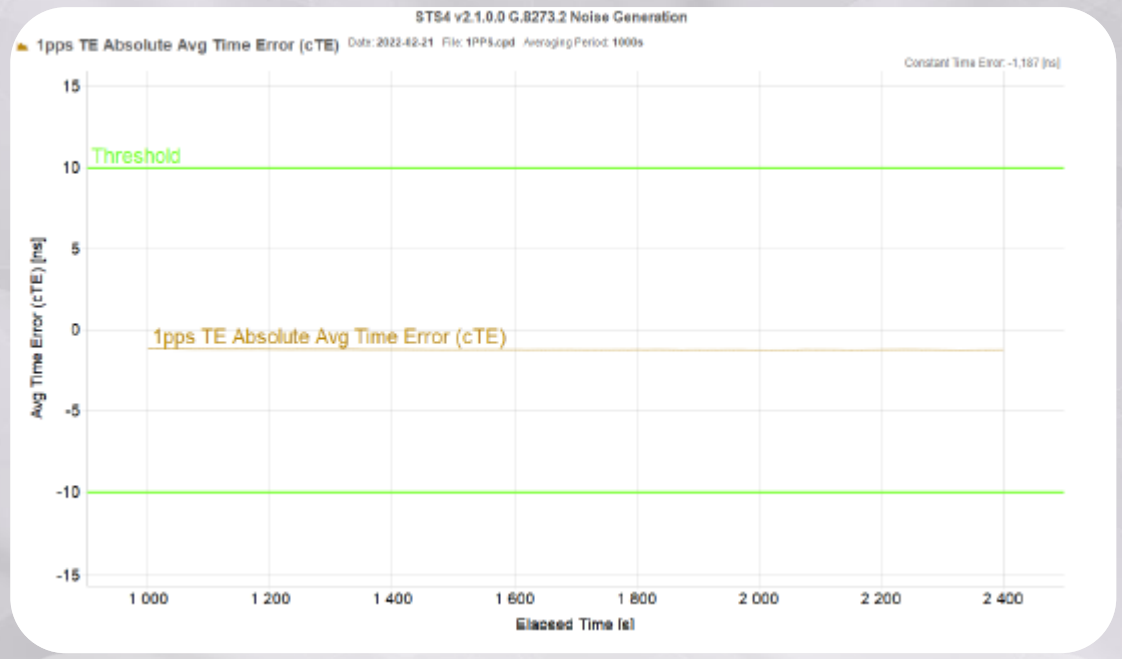



# Compliance Report - G.8273.2 Class-C

## Noise Generation - 2Way Avg Time Error (cTE)

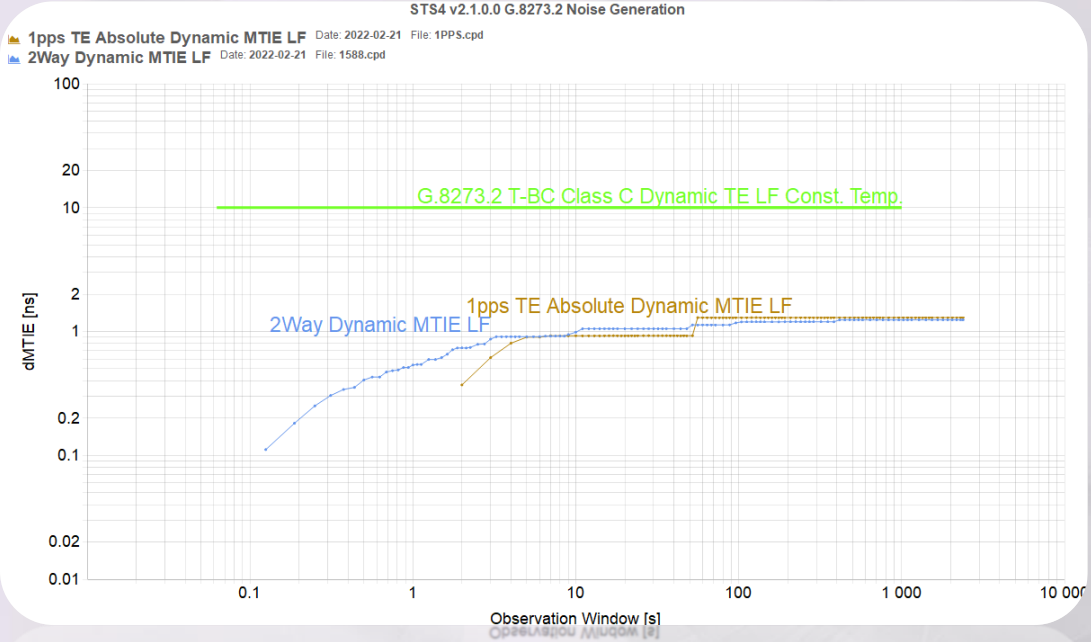


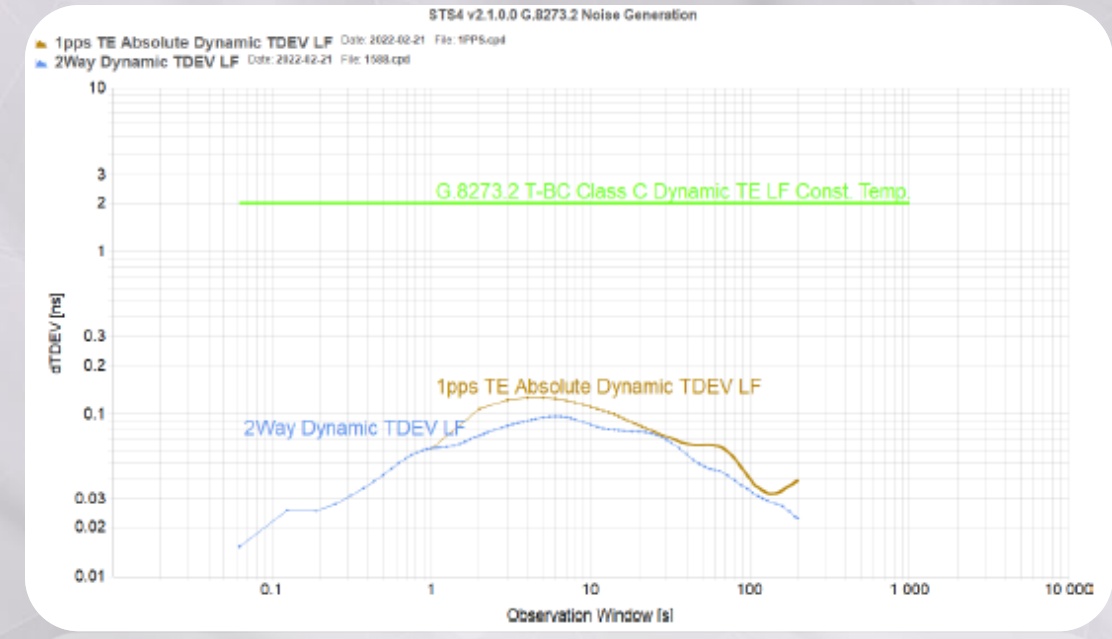

## Noise Generation – 1PPS Time Error (cTE)



# Compliance Report - G.8273.2 Class-C

## Dynamic Time Error – 2Way & 1PPS




# Questions ?

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