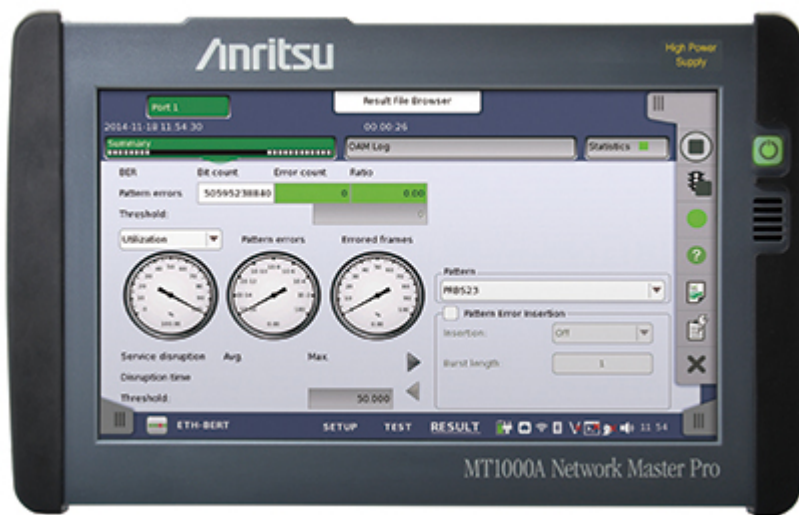


Evaluating Time Sync Variation by Measuring PTP Wander with MT1000A

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Improved Time Synchronization Measurement for 5G Mobile Network I&M



Vienna, Austria, October 6, 2021 – Anritsu Corporation has added a function for PTP wander, a metrics for evaluating frequency variations as low as 10 Hz to the PTP*1 network time synchronization error to the company's smallest-in-class 100 Gbps Network Master Pro [MT1000A](#).

5G networks require high real-time communications supporting anticipated new services in various industries, such as autonomous vehicles, smart factories, telemedicine, etc. PTP wander is a key index expressing long-term time synchronization stability. Adding this improved time sync measurement to the MT1000A will play an important role in assuring 5G network quality.

Development Background

Due to their advantages of ultra-high speeds, high reliability and

low latency, and multiple simultaneous connections, 5G communications networks are spreading into various use scenarios.

Of these, high-reliability and low-latency communications are key features for implementing various industrial use cases, such as autonomous vehicles, smart factories, telemedicine, etc. Applications using these mission-critical technologies demand the smallest possible communications latency to facilitate equipment peer-to-peer communications at the highest speeds in almost real time, while also requiring precision time synchronization between each equipment.

Additionally, implementing low-latency communications requires support for MEC*2 architectures in 5G networks, and precision time synchronization is essential to achieving communications between MEC systems distributed at each site.

Implementing time synchronization uses network technologies called SyncE*3 and PTP and assuring high accuracy and high stability synchronization using these technologies is linked to operators' service quality guarantees about high speeds and low latency.

Anritsu has been building instruments with built-in jitter and wander test functions to measure instabilities in networks ranging from the SDH/SONET era to modern transport networks, contributing to development of core and metro networks. Based on this long experience and high-level technologies, the company has now added this new time error PTP wander measurement function to MT1000A time synchronization measurements. Measuring wander supports quantitative evaluation of long-term synchronization stability. In addition, support for measurement of new time-synchronization networks called PTS*4 will help assure customers' service quality guarantees.

Product Outline

The MU100090B is a GNSS*5 disciplined oscillator supporting the GPS, QZSS, Galileo, Beidou, and GLONASS. It can receive signals from each artificial satellite system and outputs UTC-traceable reference time and 10-MHz frequency signals. This reference timing is supplied to the portable MT1000A supporting SyncE and PTP up to 25 Gbps to measure network time synchronization accuracy.

Moreover, combination with the SyncE Wander MU100011A-021 and MU100090B software options facilitates ITU-T recommended pass/fail evaluation of network-supplied Ethernet frequency accuracy.

When used with the Site Over Remote Access MX109020A software, multiple MT1000A units located at separate sites can be remotely operated and monitored from a central office to support speedy troubleshooting when synchronization problems occur.

Technical Terms

***1 PTP**

Abbreviation for Precision Time Protocol; IEEE1588v2 protocol for matching time between devices to achieve nanosecond-level time synchronization accuracy.

***2 MEC**

Abbreviation for Multi-access Edge Computing; technology for implementing ultra-low-latency internet access by deploying cloud servers near to consumers.

***3 SyncE**

Abbreviation for Synchronous Ethernet standard; unlike asynchronous Ethernet, uses ITU-T standardized frequency synchronization to improve communications quality.

***4 PTS**

Abbreviation for Partial Timing Support; one form of time-synchronization architecture using PTP assuming some network equipment does not support PTP. Profile standardized by ITU-T G.8275.2.

***5 GNSS**

Abbreviation for Global Navigation Satellite System; positioning system using artificial satellites. GPS is one type of GNSS operated by US, along with EU's Galileo, Russia's GLONASS, China's Beidou, and Japan's QZSS.

About Anritsu

Anritsu Corporation (www.anritsu.com), a global provider of innovative communications test and measurement solutions for 125 years. Anritsu's philosophy engages customers as true partners to

help develop wireless, optical, microwave/RF, and digital solutions for R&D, manufacturing, installation, and maintenance applications, as well as multidimensional service assurance solutions for network monitoring and optimization. Anritsu also provides precision microwave/RF components, optical devices, and high-speed electrical devices for communication products and systems. The company develops advanced solutions for 5G, M2M, IoT, as well as other emerging and legacy wireline and wireless communication markets. With offices throughout the world, Anritsu has approximately 4,000 employees in over 90 countries.

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