Timing Scenario Set

Problem

Recently, the International Telecommunications Union (ITU) published a set of recommendations for precision timing in LTE-TDD and LTE-A networks. Those standards include G.8272, which sets out the maximum deviation from UTC that the PRTC's data output can exhibit without affecting quality of service on the network.

The challenge for next-generation network architects is that this margin is now just 100ns, a step-change in precision compared with previous generation (2G, 3G) architectures where μs accuracy is sufficient.

The level of timing precision required for a good quality of service means network design teams must thoroughly test the PRTC to meet this new standard.

Spirent's recommended test scenarios for testing of Primary Reference Time Clocks (PRTC) in Timing Applications.

Service Description

The PRTC's ability to process GPS and GLONASS signals can be readily tested with the Timing Scenario Set. Additional constellations (BeiDou, Galileo) or SBAS signals support can be added on request. Please contact Spirent representative for more information.

The scenario set enables users to perform recommended tests for typical timing receivers in applications relying on GNSS time. An example application is to verify compliance to ITU-T G.8272/Y.1367 with use of a Spirent GNSS simulator.
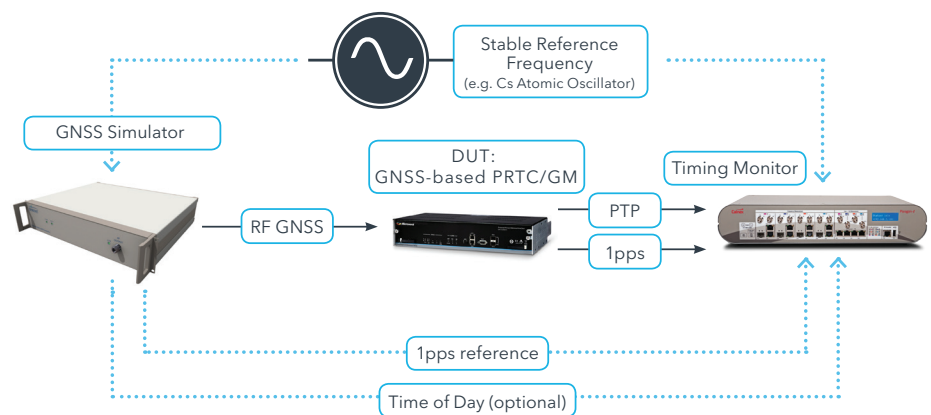

Figure 1 GNSS simulator PRTC Verification Setup

In order to run the scenarios, Spirent's GNSS simulator (GSS7000) with software package (SimGEN®, SimREPLAYplus™ or SimTEST) is required.

- Fundamental Tests: The fundamental test set ensures the DUT continues to provide its timing solution when predictable but infrequent GNSS system events (such as leap second, week roll-over) happen
- GNSS Performance Tests: Performance tests are generally designed to check the timing solution of the DUT when it is positioned outdoors under typical daily impairments such as fading, multipath and obscuration.

In order to establish quantifiable results many of the tests have different versions with GPS only,

GLONASS only or GPS+GLONASS

In addition to the test scenario set, a custom scenario generation service is also available.

This service is available separately and quoted on a case-by-case basis.

Benefits and Value

- Check and optimize software algorithm in timing receivers
- Ensure conformance to ITU G.8272 recommendation - Calibrating Timing Error for Timing Receivers
- Leverage Spirent's 30+ years of experience in GNSS testing used in crafting these recommended test scenarios
- Save precious engineering time and effort to create tests from scratch

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