

# Triathlon

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## System for accurate physical Wi-Fi layer measurements

A well functioning Wi-Fi system needs good quality Wi-Fi transmitters which are free of distortions.

Spirent's Triathlon is designed to generate physical layer measurements in Wi-Fi, such as distortion.

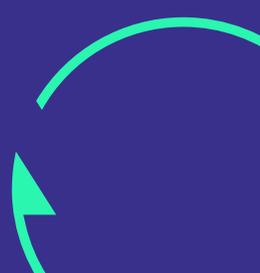
Triathlon consists of:

- Shielded chambers where the device under test is placed
- Litepoint device to capture various measurements such as EVM and the constellation
- Cabling and attenuators to connect the device under test to the Litepoint device
- Pal-6E test instrument to act as the device with which the device under test is communicating when the measurement is made
- Traffic generator to generate traffic for the measurement. The traffic generator can be used to generate various traffic loads to characterize the performance of the transmitter across this load spectrum.
- Software to control the measurement
- Software to collect the results from the Litepoint device for further analysis on the scriptMachine.
- An ability to cross probe of results between scriptMachine and Litepoint. This allows a user to view packets in Wireshark and by double clicking, view the same packets in Litepoint.

### Features

- An environment for accurate physical layer measurements
- Shielding from external environment
- Traffic generation
- Attenuation for an RvR measurement

### Benefits

- Measure physical layer properties of a transmitter across its performance range
  - Perform physical layer measurements under fully loaded conditions
  - All components of a system bundled together for ease of use
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## About octoScope

[octoScope, a Spirent Company](#), is the market leader in automated testbeds for accurate, repeatable testing of Wi-Fi and 5G network functions and devices. Our highly-realistic, automated test suites save service providers, and device and network vendors millions in troubleshooting and customer care costs by enabling them to identify problems early in the development cycle before customers are impacted. Our patented testbed technology recreates real-world conditions in controlled testing environments to evaluate the performance of the latest Wi-Fi 6 and 6E, and 5G network equipment and devices. The combination of our solutions with Spirent’s test portfolio enhances our automation and emulation capabilities, bringing even greater realism to our test suites and helping our customers innovate with unprecedented speed and efficiency.

## Testbed Details

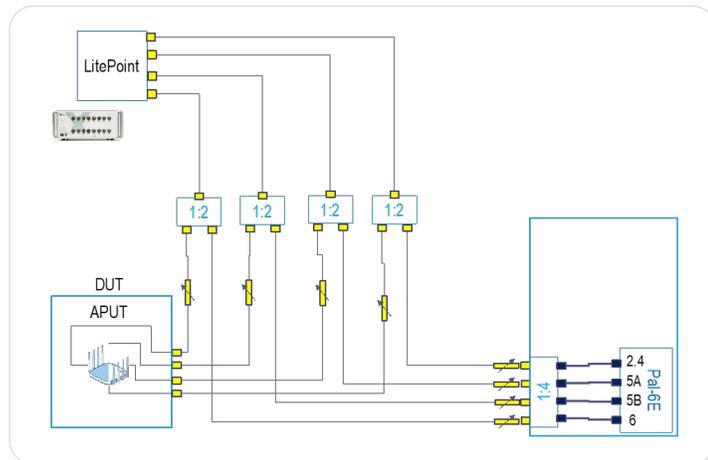


Figure 1. Testbed logical diagram

As seen in Figure 1, the system is designed to perform the measurement in a shielded environment. It is important to place the device into a shielded chamber as devices are often poorly isolated from their environment (see chamber on the bottom left). Otherwise any noise from the environment could be captured by the device and impact the measurement.

The device under test is configured in the octoBox system to communicate with the Pal-6. See chamber on the bottom right.

Litepoint is placed in the “middle” of the device under test and the Pal-6E device. The attenuators between the DUT and Litepoint are used to tune the signal level to fit in the tight envelope appropriate for Litepoint. The attenuators between the Pal-6E and Litepoint are used to create RvR -like conditions so that measurements can be performed throughout the operational range of the device under test where EVM and constellation can be studied throughout the MCS values that it supports.

The testbed is controlled from a scriptMachine. The scriptMachine uses APIs offered by the octoBox server to generate traffic in between the DUT and the Pal-6E. Various kinds of traffic profiles can be used from lightly loaded conditions to fully loaded conditions to investigate whether the DUT transmitters quality is dependent on the loading.

The scriptMachine also controls the Litepoint device to make various measurements in synchronization with the RvR stepping so that a file or multiple files for each RvR step can be generated. The raw files are transported into the scriptMachine for further analysis.

Once the Litepoint raw files are in the scriptMachine various post processing can be performed, depending on customer interest.

scriptMachine will present the captured packets in Wireshark and will allow, by a simple UI interaction, the user to alternate analysis between the scriptMachine and Litepoint.