

# Spirent AION

## Spirent TestCenter Wi-Fi Standard and Advanced Bundles

### Overview

**Spirent AION** is a flexible delivery platform that enables users to achieve improved deployment and provisioning for all their cloud and network testing needs. It is designed to deliver ultimate flexibility in how Spirent TestCenter platforms are purchased and utilized.

The extended platform combines a wealth of industry-leading test solutions with a flexible licensing architecture to support a wide range of next-generation solution-based domain applications.

AION offers a centralized management hub to help leverage software and hardware functionalities across all lab users and locations for a simplified management and decision-making process:

- **Flexible purchasing options** available via subscription, consumption-based, and perpetual plans, with the ability to license different bandwidth, scale, and protocol bundles.
- **Flexible deployment options** offered include cloud-delivery, on-prem, and laptop-hosted licensing services.

Enhanced user serviceability delivers always-on platform services from auto-discovery and inventory management to user and workspace administration, notifications, and log aggregation.

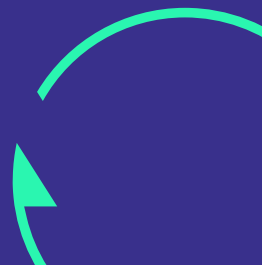
### Application Overview

Spirent TestCenter wireless local area network (WLAN) test solutions support the highest performing and most realistic WLAN multi-client or Access Points (AP) emulation for direct functionality and performance testing of AP and client devices. There are multiple Spirent TestCenter platforms such as C2 and C50 appliances and MX2 test modules available to test Wi-Fi 6 and Wi-Fi 6E Access Points (AP) or devices with fully integrated multiple 10Gbe Base-T Ethernet ports and Wi-Fi radio interfaces.

The test solutions offer pre-deployment lab device testing or post-deployment field and live Wi-Fi networking testing. Typical use cases include Wi-Fi connectivity, security, new Wi-Fi features, and Layer 2 to Layer 7 traffic throughput performance testing, among others. Spirent TestCenter IQ tool along with the full automation capabilities enables the solution for smart testing data storage, testing results display, and test report generations.

Most TestCenter protocol bundles can be used on Spirent WLAN platforms. These Wi-Fi Standard and Advanced Bundles contain software features required to perform the unique methodologies and results report generation related to Wi-Fi functional and performance testing.

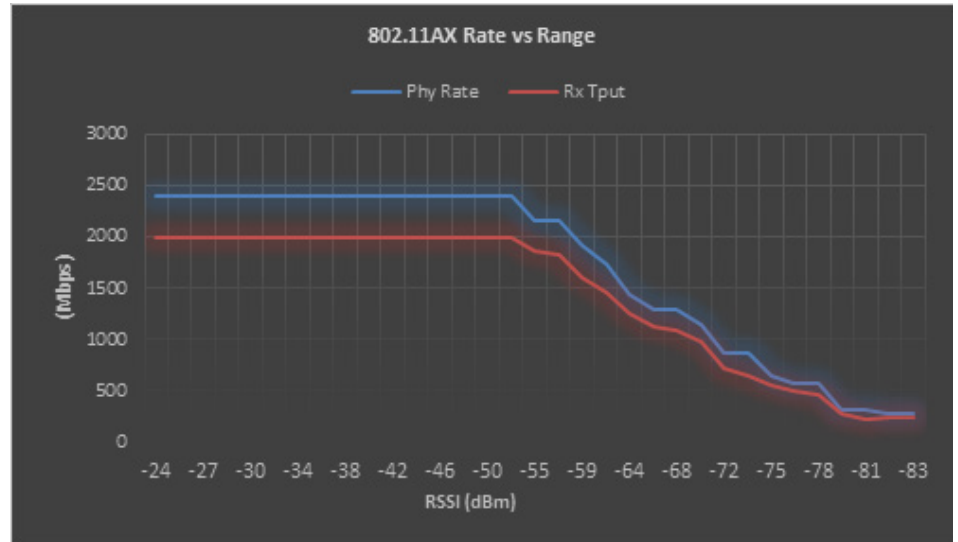
- Conductive or OTA testing
- Multi-client emulation WLAN AP testing scenarios
- AP emulation for Wi-Fi client device testing
- Functional, performance, and scalability testing
- Stability testing
- WPA/WPA2/WPA3 Security and authentication type testing
- Full enterprise 802.1X EAP authentication support
- AP interwork with legacy IEEE 802.11 mode clients
- Association processing and DHCP timing testing
- RFC2544 benchmark performance testing
- UDP stateless and TCP stateful traffic testing
- Application layer traffic testing
- 802.11ax feature testing
- Advanced features such as roaming, airtime fairness, band steering
- Easy rate vs range testing
- Actionable analytics and intuitive test report generation with Spirent TestCenter IQ



The **Wi-Fi Standard Bundle** features include a Wizards-based rate vs range for either UDP and TCP traffic with the internal controllable channel attenuators, and the latest Wi-Fi Alliance (WFA) WPA3 and Enhanced Open protocols.

The **Wi-Fi Advanced Bundle** features cover select testing cases such as Wi-Fi AP emulation, noise generation, 802.11 K/V/R roaming, etc.

Both bundles will continually be updated with new features and test packages. The items listed in the Technical Specifications table provide an overview of the currently supported features along with a few items delivered in the near future.



## Features and Benefits

### AP Emulation

Spirent TestCenter WLAN Wi-Fi 6/6E hardware platforms are available to emulate multiple Wi-Fi 6 (IEEE 802.11ax) access points (APs) with realistic 802.11 a/b/g/n/ac/ax WLAN interface to support from legacy IEEE 802.11 a/b/g/n/ac to the latest IEEE 802.11ax standard. These testers enable users to easily build up a testbed involving the emulated reference APs with a validated golden performance and the devices under test (DUTs), a task that was previously one of the most challenging ones in wireless interface testing. The DUTs can be a wide range of portable WLAN devices such as smartphones, tablets, laptops, internet of thing (IoT) devices, etc. The feasible connections between the emulated APs and DUTs can be either directly RF cabled conductive connection or a shielded RF environment such as a RF isolation chamber for OTA link for both WLAN functional and data traffic experiment. The solutions cover basic WLAN connectivity, control message, and data throughput testing containing advanced Wi-Fi 6 features such as 1024QAM, OFDMA, MU-MIMO, BSS color, TWT, etc. and UDP and TCP traffic and throughput performance test methodologies for convenient manual trials or fully automated test suites.

### Rate vs Range (RvR)

RvR is a Wizards based testing suite and is supported with those Spirent WLAN hardware platforms that have the built-in internal channel attenuators. To run a RvR testing, a traffic profile needs to be selected prior to setup the internal channel attenuation for an automated testing iteration over attenuation levels. With the new TCP traffic support, the RvR feature can provide both UDP and TCP testing results. Here a TCP traffic can be selected from various types from either Enhanced L4/7 or ALP. When Enhanced L2/7 is selected, traffic type can be all those including application layer traffics supported with the Enhanced L4/7.

### IEEE 802.11 k/v/r Fast Transition Roaming

IEEE 802.11 k/v/r based fast transition roaming is supported with multi-client amongst multiple APs (SSIDs) that support 802.11 k/v/r roaming protocols. It has a set of configurable roaming threshold settings. The testing focus is to real-time report the roaming statistical results. 802.11 k/v/r roaming for emulated clients are disabled by default and need to be manually enabled to activate the feature before an association process. 802.11k, 802.11v and 802.11r can be enabled or disabled either independently or together.

### WPA3 and Enhanced Open Security

WPA3 and Enhanced Open are newly introduced Wi-Fi security protocols by WFA as the next generation security for Wi-Fi. They are becoming mandatory for the latest Wi-Fi 6/6E APs and devices. All Spirent Wi-Fi 6/6E WLAN solutions support the new Enhanced Open and WPA3 personal and 802.1X based EAP type enterprise authentications. The supported security types are listed as below:

- Enhanced Open
- WPA/WPA2/WPA3 Personal
- WPA2/WPA3 Personal
- WPA3 Personal
- WPA3 Enterprise

A list of EAP types in the enterprise authentication are as below:

- EAP-TLS
- EAP-TTLS
- EAP-PEAP
- EAP-FAST
- EAP-AKA/AKA'
- EAP-SIM

### Wi-Fi Noise Generation

Wi-Fi noise generation needs to allocate a Wi-Fi radio interface for Wi-Fi traffic transmission without an association or connection with an AP. At this point, Wi-Fi noise generation transmits out normal Wi-Fi traffic subject to Wi-Fi CSMA/CD contention mechanism with a pre-configured Wi-Fi PHY and MAC layer such as channel, 802.11 mode, GI, MCS type, etc. along with desired traffic. The port level configuration for the Wi-Fi radio interface is still completely applicable while a port is selected for the noise generation purpose. The example use cases with this new Wi-Fi noise generation is for co-channel and adjunct channel traffic co-existing testing. This feature is only supported with the hardware platforms that support high performance and scalability testing, not on those high radio count (HRC) platforms.

## Technical Specifications

Feature	Description
<b>Wi-Fi Standard Bundle</b>	
Rate vs Range	Rate vs range testing package with UDP and TCP traffic. Results report generated with TCIQ. The feature only works for the platforms with the built-in channel attenuators (0- 63.5dB).
WPA3 and Enhanced Open	WPA3 personal and enterprise authentication support on 2.4GHz, 5GHz, and 6GHz band. The enhanced open mode support. The feature supported on all Spirent Wi-Fi 6/6E solutions
Web Authentication Testing	Web authentication (Captive portal) testing. Requires enhanced L4/7 domain license
<b>Wi-Fi Advanced Bundle</b>	
Wi-Fi AP Emulation Package	Set Wi-Fi radio as a full scale and featured reference AP for client testing. Support up to 16 virtual SSIDs
Wi-Fi Noise Generation	Set a Wi-Fi port as a Wi-Fi transmitter only mode for designed noise generation. Configurable on the
802.11 K/V/R Roaming	IEEE 802.11 k/v/r based fast transition roaming support with configurable roaming threshold settings and roaming statistical results report. 802.11 k/v/r roaming is enabled such as an emulated client can perform roaming amongst APs that support 802.11 k/v/r roaming protocols. 802.11k, 802.11v and 802.11r can be enabled or disabled independently.
Hotspot 2.0 Support (To be released in 2021)	Hotspot 2.0 support for the emulated clients for Wi-Fi offloading testing.
BBF TR-398i2 Testing Suite (To be released in 2021)	Spirent TestCenter Wizards based automated testing suites covering test cases defined in BBF TR-398i2 Spec with IEEE 802.11ax (Wi-Fi 6) support. Use the TestCenter IQ as the results report for each TR-398i2 test case with pass/fail. Support individual test case or multiple test case selections.

## Ordering Information

Product Number	Description
AON-DL-WIFI	Wi-Fi Standard Bundle
AON-DL-WIFI-ADV	Wi-Fi Advanced ADD ON Bundle

### About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks. We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled. For more information visit: [www.spirent.com](http://www.spirent.com)

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