# Spirent Stack-Vertex

Advanced Channel Modeling

As Wi-Fi devices are used, there are a number of challenges that occur in the environment. A station can move closer or further away from the access point and perhaps be impacted with varying speeds. Obstructions in between the station and the access point can change. As the signal propagates between the station and the access point there are multiple reflections of the signal that constantly vary based on characteristics in the environment. Wi-Fi devices adapt to these changes dynamically as they try to optimize the throughput and the performance of the link.

Perfecting the device adaption to these changing channel conditions is a process that takes a lot of testing. Test engineers need tools to emulate typical channel conditions.

Spirent's Stack-Vertex, combines two Octobox chambers with Vertex an advanced, programmable RF channel emulator. This testbed can be used to test various wireless devices including Wi-Fi access points and stations. The stack is useful when characterizing the behavior of a device in complicated channel environments. In Stack-Vertex, this characterization can be performed easily Over The Air (OTA). The Stack is applicable for both Wi-Fi and cellular / 5G applications.
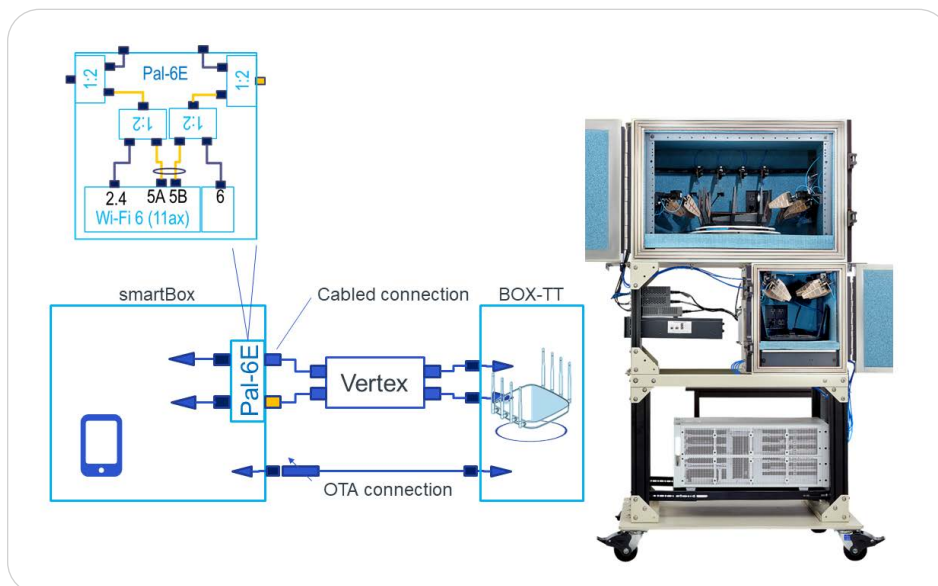
Key Features

- The world's most scalable channel emulation platform, Spirent's Vertex Channel Emulator now integrated with two Octobox chambers.

- Powerful Wi-Fi Access Point and Station testing.

- Bring accurate real world channel modeling and corner cases into the lab to reduce field testing.

Typical Application Scenarios

- Emulate typical channel conditions in various deployment scenarios: home, office, factory floor, warehouse, hospital, school, etc.

- Emulate end point movement including Doppler shifts, delay changes and varying signal level.

- Sweep received signal strength (RSSI) to produce data throughput versus RSSI curves

- Test all Wi-Fi channel models for both indoor and outdoor applications

Stack-Vertex enables testing across all standard Wi-Fi Channel Models in addition to unlimited customized models.

Indoor spatial channel models: n, ac and Wi-Fi 6/6e

Model	rms Delay Spread (ns)	Number of Clusters	Taps / Cluster	Propagation Scenario	Usage Model
A	0	1	1	Flat fading	Gaussian channel-like
B	15	2	5, 7	Indoor residential	Intra room, room to room
C	30	2	10, 8	Indoor residential / small office	Enclosed office meeting, conference or classroom
D	50	3	16, 7, 4	Indoor typical office	Offices—cube farms, open areas and large classrooms
E	100	4	15, 12, 7, 4	Indoor large office / warehouse	Indoor hotspots with large rooms
F	150	5	15, 12, 7, 3, 2, 2	Large space indoor (pseudo-outdoor)	Large indoor hotspot—airport

Outdoor spatial channel models: ITU-IMT UMi and Uma, added for Wi-Fi 6/6e

Channel Model	Scenario	DS (ns)
UMi	LOS	65
UMi	NLOS	129
UMi	O-to-I	240
UMa	LOS	93
UMa	NLOS	363

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**

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