The Spirent Vertex® Channel Emulator is a versatile platform that offers unprecedented scalability while supporting emulation of a large number of channel models. The chassis is built to support a broad range of applications that require varying channel densities, from basic applications like two-channel SISO to complex, high channel density applications like MIMO OTA, MIMO beamforming and carrier aggregation needed for 5G scenarios.

### Technical Specifications

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<th><strong>Technical Specifications</strong></th>
<th>Description</th>
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</table>
| **RF configuration**        | - With bidirectional module: from SISO up to 8x8 MIMO with bidirectional fading  
                              - With unidirectional module: up to 2x32 and dual 2x16  
                              - Multiple instruments: Two instruments can be fully integrated into a system; additional instruments can be synchronized for more complex connection setups. |
| **RF inputs**               | Up to 16    |
| **RF outputs**              | Up to 32    |
| **Digital channels**        | Up to 256 (40MHz or 100MHz bandwidth); up to 64 (200MHz bandwidth) |
| **Bandwidth**               | 40MHz, 100MHz, 200MHz |
| **Frequency range**         | 30MHz to 5925MHz |
| **RF input**                | Input level range: -50 to +15dBm  
                              Level resolution: 0.1dB  
                              Damage level: +33dBm (Peak) |
| **RF output level**         | Min/max range: -110 to -10dBm (RMS)  
                              Resolution: 0.1dB |
| **Input and output power meters** | Modes:  
                             - Continuous  
                             - RF burst-triggering for gated input signals |
| **Residual EVM**            | -40dB typical |
| **Residual noise**          | Better than -165dBm/Hz at a set output level of -45dBm |
| **RF port VSWR**            | 1.5:1       |
| **Independent paths**       | Up to 24 paths per digital channel |
| **Delay**                   | 0 to 4000μs, 0.1ns resolution |
| **Relative path loss**      | 0 to 40dB |
| **Dynamic channel parameters** | - Sliding delay (moving propagation)  
                              - Birth-death delay  
                              - 3GPP High-Speed Train (HST) profiles log normal (shadow fading) |
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

Technical Specifications

Dynamic Environment Emulation (DEE)

Controllable parameters:
- State duration, channel output level, AWGN on/off, C/N, path on/off, relative power and delay, LOS AoA, K factor, frequency shift, Doppler velocity, MIMO branch phase, power imbalance, and correlation
- Channel model update rate: 100 times per second
- Start Method: Triggered, free play
- Play Method: Run for N loops, wrap around

Standards-based models
- LTE, Wi-Fi (802.11a/b/g, 802.11n, 802.11 ac), IMT-A, WiMAX, UMTS, CDMA2000®, HSPA, GSM, SCM/SCME (ITU-R M.2135), WINNER, Butler

Custom models
- Easy-to-use interface allows the user to create custom channel models or edit any of the standard channel models

Fading mode
- Classical, GCM, MIMO OTA

Real-time fading
- Types: Rayleigh, Rician, pure Doppler, frequency shift, phase shift
- Fading Doppler: Up to 12000Hz
- Repetition interval: >7 days
- Relative phase: 0-360 degrees, 0.1 degree resolution
- Rician K factor: -30 to +30dB
- Level crossing rate (LCR) accuracy: < ±2.5% deviation from theoretical LCR curve of the simulated vehicle velocity
- Fading power spectrum: classical 6dB, flat, classical 3dB, rounded, rounded 12dB, bell
- Correlation: programmable complex correlation between paths

IQ-playback fading
- Supports IQ playback fading

AWGN
- C/N Ratio: -40 to +40dB
- Accuracy: ±0.1dB
- Bandwidth: up to 100MHz
- Settable modes: C/N, Eb/No, N

Control interface
- PC-based GUI
- Remote programming through ethernet

Other
- 10MHz internal reference accuracy: ±1ppm