

# **This Former Spirent Business is Now Part of VIAVI**

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# Spirent Vertex<sup>®</sup> High Frequency Converter

## Enabling Channel Emulation for 5G Applications

The Vertex High Frequency Converter (HFC) was developed to bring advanced channel emulation test capabilities to 5G applications by extending the Vertex channel emulator frequency range from radio frequency (RF) bands to higher mmWave frequency bands. Depending on the model, the Vertex HFC converts RF ranges between 0.75GHz and 6GHz to mmWave (mmW) ranges between 5.9GHz and 40.5GHz and vice versa, allowing channel characteristic simulation in millimeter band scenarios required for 5G implementation. It can also be customized to support other mmW frequencies.



### Key Features

- Supports basic 2x2 MIMO or massive MIMO applications at mmW bands
- Four models to accommodate different conversion ranges and capacities
- Supports internal or external local oscillator (LO)

### Typical Application Scenarios

The Vertex HFC can be used to inject RF channel emulation between a mmW band eNodeB (eNB) and mmW band device (Figure 1). Other scenarios include upconverting from an RF band network emulator or eNB to a mmW band device (Figure 2).

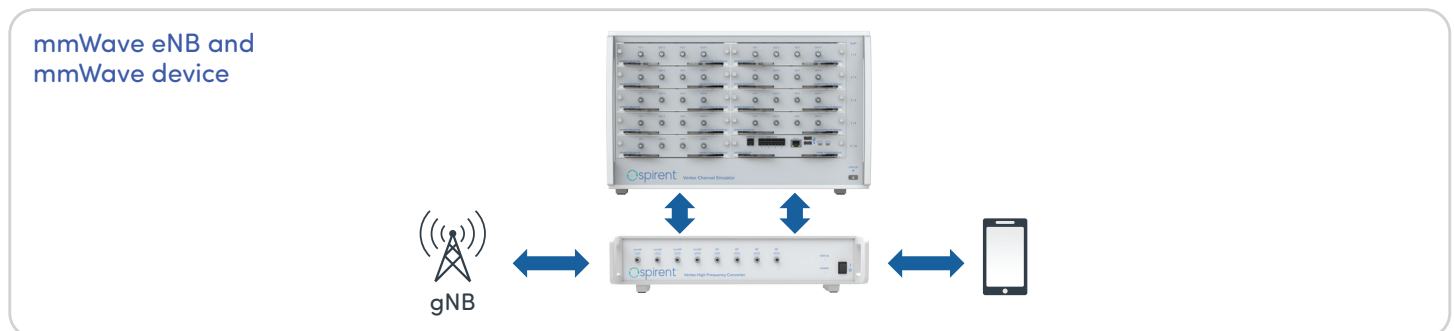


Figure 1

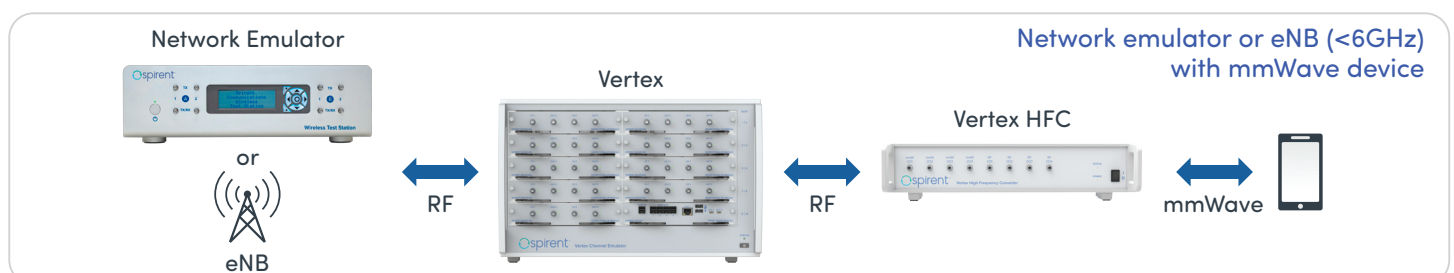


Figure 2

## Available in Four Configurations

The Vertex HFC is available in four different frequency ranges to best suit the application and accommodates up to 4 channels per instrument. An individual unit addresses entry level 2x2 bidirectional tests or multiple units can be strung together for multi-Vertex instrument applications.

| Frequency range                                 | 24.25 to 29.5GHz     | 37 to 40.5GHz        | 9-13GHz              | 5.9-10GHz            |
|-------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| Model Number                                    | VCE6-HFC-4C-27GHz    | VCE6-HFC-4C-39GHz    | VCE6-HFC-4C-11GHz    | VCE6-HFC-4C-7GHz     |
| LO                                              | 23.5GHz              | 35GHz                | 14.5GHz              | 11.75GHz             |
| External LO level                               | 4dBm                 | 4dBm                 | 4dBm                 | 4dBm                 |
| Internal RF filter                              | DC-6GHz              | DC-6GHz              | DC-6GHz              | DC-6GHz              |
| Internal mmW filter                             | 24.25 to 29.5GHz     | 37 to 40.5GHz        | 9-13GHz              | 5.9-10GHz            |
| Input frequency                                 | 0.75 to 6GHz         | 2 to 5.5GHz          | 1.5 to 5.5GHz        | 1.75 to 5.85GHz      |
| Maximum input power level to any RF/mmWave port | <27.5dBm             | <27.5dBm             | <27.55dBm            | <27.5dBm             |
| Nominal RF input power level for 5G NR, 100MHz  | -2dBm                | -2dBm                | 0dBm                 | 0dBm                 |
| Nominal mmWave power level for 5G NR, 100MHz    | -2dBm                | -2dBm                | 0dBm                 | 0dBm                 |
| Conversion loss                                 | <22dB                | <24dB                | <22dB                | <22dB                |
| 10MHz reference                                 | External             | External             | External             | External             |
| In-band spurious emission                       | -40dBc               | -40dBc               | -40dBc               | -40dBc               |
| Impedance                                       | 50 ohms              | 50 ohms              | 50 ohms              | 50 ohms              |
| Input VSWR                                      | <1.5                 | <1.5                 | <1.5                 | <1.5                 |
| Typical phase noise of LO                       | -115dBc/Hz (@100kHz) | -105dBc/Hz (@100kHz) | -125dBc/Hz (@100kHz) | -128dBc/Hz (@100kHz) |

Note: When multiple HFCs are used in a system to increase channel capacity, please be sure their external clocks are all connected to the same qualified 10MHz clock source.

### 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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