

TECHNICAL SPECIFICATIONS

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# IQxel-MW™ 7G

Connectivity and Cellular Test System  
up to 7.3 GHz

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## Port Descriptions

### Front Panel

2-port



8-port



16-port



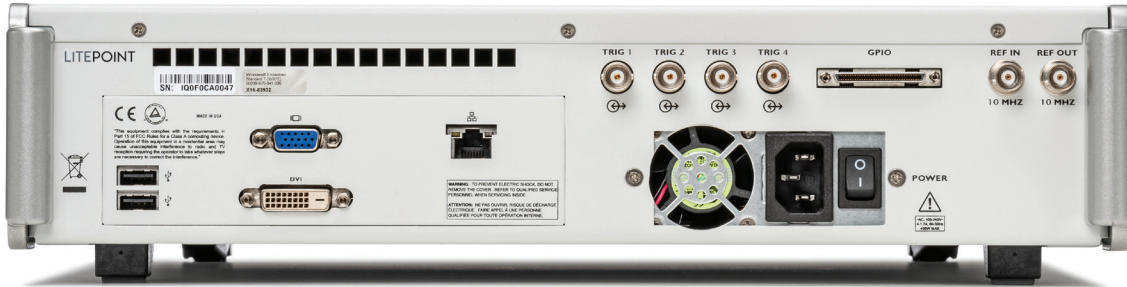
| I/O                 | Function  | Type              |
|---------------------|---|-------------------|
| Power Switch        | Power On/Off  | Pushbutton Switch |
| RF1A/RF1B/RF1C/RF1D | RF input/output   | N female          |
| RF2A/RF2B/RF2C/RF2D | RF input/output   | N female          |
| RF3A/RF3B/RF3C/RF3D | RF input/output   | N female          |
| RF4A/RF4B/RF4C/RF4D | RF input/output   | N female          |
| Power Indicator     | LED green – powered up, running<br>LED orange – powered up, standby   | LED indicator     |
| Session Indicator   | LED green – remote session active<br>LED red – remote session lock  | LED indicator     |
| Status Indicator    | LED green – no faults/errors detected<br>LED orange – software error detected<br>LED red – hardware fault detected  | LED Indicator     |
| RF port 1 indicator | LED green – ports RF1 A/B, C/D are in one of the following status:<br>OFF/IN<br>IN/OFF<br>IN/IN<br>LED orange – ports RF1 A/B, C/D are in one of the following status:<br>OUT/IN<br>IN/OUT<br>LED red – ports RF1 A/B, C/D are in one of the following status:<br>OFF/OUT<br>OUT/OFF<br>OUT/OUT | LED indicator     |
| RF port 2 indicator | LED green – ports RF2 A/B, C/D are in one of the following status:<br>OFF/IN<br>IN/OFF<br>IN/IN<br>LED orange – ports RF2 A/B, C/D are in one of the following status:<br>OUT/IN<br>IN/OUT<br>LED red – ports RF2 A/B, C/D are in one of the following status:<br>OFF/OUT<br>OUT/OFF<br>OUT/OUT | LED indicator     |
| RF port 3 indicator | LED green – ports RF3 A/B, C/D are in one of the following status:<br>OFF/IN<br>IN/OFF<br>IN/IN<br>LED orange – ports RF3 A/B, C/D are in one of the following status:<br>OUT/IN<br>IN/OUT<br>LED red – ports RF3 A/B, C/D are in one of the following status:<br>OFF/OUT<br>OUT/OFF<br>OUT/OUT | LED indicator     |

| I/O                 | Function  | Type          |
|---------------------|---|---------------|
| RF port 4 indicator | LED green – ports RF4 A/B, C/D are in one of the following status:<br>OFF/IN<br>IN/OFF<br>IN/IN<br>LED orange – ports RF4 A/B, C/D are in one of the following status:<br>OUT/IN<br>IN/OUT<br>LED red – ports RF4 A/B, C/D are in one of the following status:<br>OFF/OUT<br>OUT/OFF<br>OUT/OUT | LED indicator |
| USB (2 ports)       | USB 2.0 compatible connection to external controller  | USB Type A    |

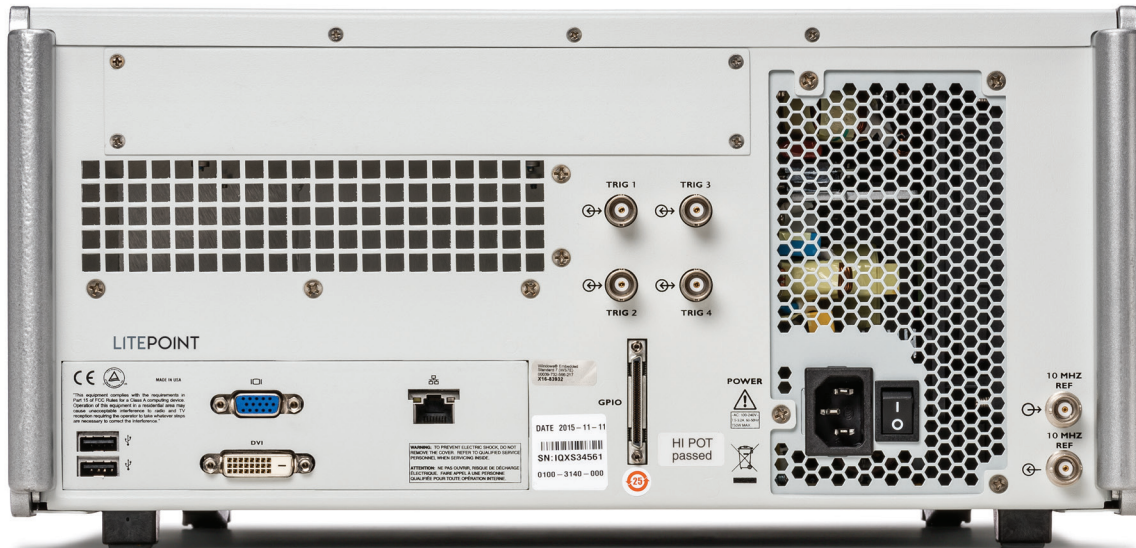
## Port Descriptions

### Rear Panel

2-port  
8-port



16-port



## Rear Panel

| I/O                       | Function   | Type   |
|---------------------------|--|--|
| 10 MHz ref input          | 10 MHz reference input                               | BNC female   |
| 10 MHz ref output         | 10 MHz reference output                              | BNC female   |
| Marker out / trigger in 1 | TTL compatible                                       | BNC female   |
| Marker out / trigger in 2 | TTL compatible                                       | BNC female   |
| Marker out / trigger in 3 | TTL compatible                                       | BNC female   |
| Marker out / trigger In 4 | TTL compatible                                       | BNC female   |
| USB (2 ports)             | USB 2.0 compatible connection to external controller | USB Type A   |
| AC in                     | AC power input                                       | 100 to 240 VAC (automatically switched)<br>50 to 60 Hz, Includes hard power switch |
| DVI port                  | Display  | DVI-D  |
| VGA port                  | Display  | VGA-15 pin   |
| Communication I/O LAN     | 1000 Base-T LAN                                      | RJ-45  |
| GPIO                      | General purpose input/output                         | 50-pin connector   |

## General Hardware Specifications

### Vector Signal Analyzer (VSA)

| Parameters                          | Ports      | Value  |
|-------------------------------------|------------|--|
| Frequency Range                     | RF1 to RF4 | 400 to 7300 MHz (TDD)<br>400 to 3800 MHz (FDD)   |
| IF Bandwidth                        | RF1 to RF4 | 200 MHz  |
| Input Power                         | RF1 to RF4 | +34 dBm (average)<br>+36 dBm (peak)  |
| Input Power Accuracy                | RF1 to RF4 | Specification for Input > -40 dBm:<br>± 0.5 dB (400 MHz – 3800 MHz)<br>± 1 dB (3800 MHz – 7300 MHz)<br>Typical:<br>± 0.4 dB (400 MHz – 3800 MHz)<br>± 0.5 dB (3800 MHz – 7300 MHz)   |
| Input return loss                   | RF1 to RF4 | 17 dB (400 to 3800 MHz), typical<br>14 dB (3800 to 7300 MHz), typical  |
| Spurious (signal applied)           | RF1 to RF4 | < -52 dBc (CW, for signal levels greater than -20 dBm)   |
| Spectral Flatness                   | RF1 to RF4 | Specification: ≤ ± 1 dB (± 100 MHz)<br>Typical: ± 0.50 dB (± 100 MHz)  |
| Inherent spurious floor (no signal) | RF1 to RF4 | RF1 to RF4 ≤ -80 dBm   |
| Noise Figure                        | RF1 to RF4 | ≤ 30 dB at minimum input attenuation   |
| Integrated Phase Noise              | RF1 to RF4 | ≤ 0.3 degrees (100 Hz to 1 MHz)<br>0.2 degrees (100 Hz to 1 MHz), typical  |
| Signal to Noise Ratio               | RF1 to RF4 | ≥ 55 dB 100 kHz RBW  |
| Sample data rates                   |            | 10, 20, 30.72, 40, 80, 160, 240 MHz  |
| Waveform Capture Duration           |            | at 10 MHz sampling data rate: 9600 ms<br>at 20 MHz sampling data rate: 4800 ms<br>at 30.72 MHz sampling data rate: 3125 ms<br>at 40 MHz sampling data rate: 2400 ms<br>at 80 MHz sampling data rate: 1200 ms<br>at 160 MHz sampling data rate: 600 ms<br>at 240 MHz sampling data rate: 400 ms |



## RF Analyzer – Signal Trigger

| Parameter                       | Range                              |         |
|---------------------------------|------------------------------------|---------|
| Absolute minimum value          | Wideband RF                        | -40 dBm |
|                                 | Video (Level or Edge)              | -40 dBm |
| Absolute maximum value          | Limited by the maximum input power |         |
| Edge trigger relative threshold | Up to -40 dB below RLEV            |         |
| Level accuracy                  | ± 2 dB                             |         |

## Vector Signal Generator (VSG)

| Parameters   | Ports  | Value   |
|--|--|---|
| Frequency Range  | RF1 to RF4   | 400 to 7300 MHz (TDD)<br>400 to 3800 MHz (FDD)  |
| IF Bandwidth   | RF1 to RF4   | 200 MHz   |
| Output Power Range (CW)  | RF1 to RF4   | 1 port active:<br>+5 to -130 dBm (< 6000 MHz)<br>+2 to -130 dBm (≥ 6000 MHz)<br>All ports active:<br>0 to -130 dBm (≤ 4900 MHz)<br>-10 to -130 dBm (> 4900 MHz)   |
| Output Power Range (CW)<br>(VSG1 + VSG2 through internal combiner) |  | 1 port active: -5 to -130 dBm<br>All ports active: -10 to -130 dBm<br>Max delta between VSG1 + VSG2 < 12 dB   |
| Output Power Accuracy  | RF1 to RF4<br>(1 port active)                            | Specifications and [Typical]:<br>± 0.5 dB @ levels ≥ -50 dBm (400 MHz to 3800 MHz)<br>± 1 dB [0.7 dB] @ levels ≥ -50 dBm (3800 MHz to 7300 MHz)<br>± 0.75 dB @ -100 to < -50 dBm (400 MHz to 3800 MHz)<br>± 1 dB @ -100 to < -50 dBm (3800 MHz to 7300MHz)  |
|  | RF1 to RF4<br>(Broadcast mode, all ports active)         | Specifications and [Typical]:<br>± 0.75 dB @ levels ≥ -50 dBm (600 MHz to 3800 MHz)<br>± 1.25 dB [1 dB] @ levels ≥ -50 dBm (3800 MHz to 7300 MHz)<br>± 1 dB @ -100 to < -50 dBm (600 MHz to 3800 MHz)<br>± 1.5 dB @ -100 to < -50 dBm (3800 MHz to 7300MHz) |
|  | RF1 to RF4<br>(1 port active, through internal combiner) | Specifications:<br>± 1dB @ levels ≥ -50 dBm (400 MHz to 3800 MHz)<br>± 1.25 dB levels @ levels ≥ -50 dBm (3800 MHz to 7300 MHz)<br>± 1.25 dB @ levels < -50 dBm (400 MHz to 3800 MHz)<br>± 1.5 dB @ levels < -50 dBm (3800 MHz to 7300 MHz)                 |
| Output return loss   | RF1 to RF4   | 17 dB, 400 to 3800 MHz, typical<br>14 dB, 3800 to 7300 MHz, typical   |



| Parameters                        | Ports      | Value  |   |
|-----------------------------------|------------|--|---|
| Spurious (in channel)             | RF1 to RF4 | Specification:   | $\leq -40$ dBc (200 MHz, $> -55$ dBm) (CW)            |
|                                   |            | Typical:   | $\leq -50$ dBc (200 MHz, $> -55$ dBm) (CW)            |
| Spurious (out of channel)         | RF1 to RF4 | Out-of-band ( $> \pm 100$ MHz from carrier)  | $\leq -40$ dBc (CW, excluding harmonics distortions)  |
| Spectral Flatness                 | RF1 to RF4 | Specification:   | $\pm 1$ dB ( $\pm 100$ MHz)                           |
|                                   |            | Typical:   | $\pm 0.50$ dB ( $\pm 100$ MHz)                        |
| Integrated Phase Noise (TDD Mode) |            | $\leq 0.3$ degrees (100 Hz to 1 MHz)   |   |
| Integrated Phase Noise (FDD Mode) |            | $\leq 0.4$ degrees (100 Hz to 1 MHz)   |   |
| Signal to Noise Ratio             |            | Specification:   | $\geq 60$ dB (100 KHz signal BW), power level -40 dBm |
|                                   |            | Typical:   | $\geq 70$ dB (100 KHz signal BW), power level -40 dBm |
| Carrier leakage                   |            | $\leq -40$ dBc (CW output) for Power $> -50$ dBm   |   |
| Gap power                         |            | $\leq -90$ dBm/100 kHz   |   |
| Sampling data rate                |            | 10, 20, 30.72, 40, 80, 160, 240 MHz  |   |
| Waveform Playback Duration        |            | at 10 MHz sampling data rate: 9600 ms<br>at 20 MHz sampling data rate: 4800 ms<br>at 30.72 MHz sampling data rate: 3125 ms<br>at 40 MHz sampling data rate: 2400 ms<br>at 80 MHz sampling data rate: 1200 ms<br>at 160 MHz sampling data rate: 600 ms<br>at 240 MHz sampling data rate: 400 ms |   |

#### Port Isolation

| Measurement            | Value   |
|------------------------|---|
| Port to Port Isolation | VSA-to-VSA:<br>100 dB, $< 2500$ MHz, typical<br>90 dB, $> 2500$ MHz, typical<br>VSG-to-VSG:<br>90 dB, $< 2500$ MHz, typical<br>80 dB, $> 2500$ MHz, typical<br>VSG-to-VSA:<br>100 dB, $< 2500$ MHz, typical<br>80 dB, $> 2500$ MHz, typical |

## Timebase

| Parameters                                       | Value  |
|--|--|
| Oscillator type                                  | OCXO   |
| Frequency  | 10 MHz   |
| Initial accuracy (25°C, after 60 minute warm-up) | < +/- 0.05 ppm   |
| Maximum aging                                    | < +/- 0.1 ppm per year                                   |
| Temperature stability                            | < +/-0.05 ppm over 0°C to 50°C range, referenced to 25°C |
| Warm-up time (to within ±0.1ppm at 25°C)         | 30 minutes   |

## Wireless LAN 802.11a/b/g/n/p/j/ah/af, 802.11ac (Wi-Fi 5), 802.11ax (Wi-Fi 6) Measurement Specifications

| Controls      | Description   | Performance  |
|---------------|---|--|
| EVM           | EVM averaged over payload based on standard requirements (Typical)                    | Residual loopback EVM (preamble only channel estimation):<br><br>≤ -48 dB (+20 to -20 dBm)<br>2.4 GHz frequency band<br>802.11ax waveform, 40 MHz, MCS 11<br>power levels from -5 to +20 dBm measured with an external amplifier<br><br>≤ -48 dB (+20 to -18 dBm)<br>5 and 6 GHz frequency bands<br>802.11ax waveform, 80 MHz, MCS 11<br>power levels from -8 to +20 dBm measured with an external amplifier |
|               | EVM averaged over payload based on standard requirements (Nominal)                    | Residual loopback EVM (preamble only channel estimation):<br>≤ -49 dB (-10 dBm)<br><br>Conditions:<br>Measured at 7015 MHz<br>Averaged over 20 packets<br>802.11ax waveform, 80 MHz, MCS 11<br>Using low distortion mode   |
| Peak power    | Peak power over all symbols (dBm)   | VSA power accuracy:<br>± 0.5 dB (400 MHz – 3800 MHz)<br>± 1 dB (3800 MHz – 7300 MHz)   |
| RMS power     | All: average power of complete data capture (dBm)                                     |  |
|               | No gap: average power over all symbols after removal of any gap between packets (dBm) |  |
| Max avg power | Peak value of the amplitude as a moving average over 40 samples (dBm)                 |  |

|   |   |  |
|---|---|--|
| I/Q amplitude error                                   | I/Q amplitude imbalance (%) and approximate contribution to EVM (dB)  |  |
| I/Q phase error                                       | I/Q phase imbalance (degrees) and approximate contribution to EVM (dB)  |  |
| Frequency error                                       | Carrier frequency error (kHz)   | VSA measurement error:<br>≤ ± 0.2 ppm calibrated               |
| RMS phase noise                                       | Integrated phase noise (degrees)  | VSA integrated phase noise:<br>< 0.3 degrees (100 Hz to 1 MHz) |
| PSD   | Power spectral density (dBm/RBW per 100kHz)   |  |
| Spectral mask   | Transmit spectrum mask  |  |
| Spectral flatness                                     | Reflects variation of signal energy as a function of OFDM subcarrier number   | VSA flatness over 160 MHz BW: ± 1 dB                           |
| CCDF (complementary cumulative distribution function) | Probability of peak signal power being greater than a given power level versus peak-to-average power ratio (dB)   |  |
| Power on / power down ramp                            | On: relative power level (% of average) versus time (CCK signals only)<br>Power-on time from 10% to 90%<br>Power-on time from 90% power level to start of packet<br>(Not provided for OFDM signals)<br><br>Off: relative power level (% of average) versus time (CCK signals only)<br>Power-off time from 90% to 10%<br>Power-off time from 90% power level to end of packet<br>(Not provided for OFDM signals) |  |
| Eye diagram   | I and Q channels versus time (DSSS signals only)  |  |
| PSDU data   | Recovered binary data sequence, including the MAC header and Frame Check Sequence, if present   |  |
| Raw capture data                                      | I and Q signals versus time   |  |
| General waveform analysis                             | DC offset, RMS level, minimum/maximum amplitude, peak-to-peak amplitude, RMS I- and Q-channel levels  |  |

## 802.11ax (Wi-Fi 6) Waveform Generation

| Feature                       | Configuration   |
|-------------------------------|---|
| PPDU format                   | HE-SU, HE-MU, HE-EXT-SU (extended range), HE-TRIG (trigger based)   |
| Bandwidth                     | 20 MHz, 40 MHz, 80 MHz, 160 MHz, 80 + 80 MHz  |
| Modulation                    | BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, 4096-QAM   |
| OFDMA                         | HE-MU (Downlink), HE-TRIG PPDU (Uplink)   |
| MU MIMO                       | Downlink, Uplink, up to 8 users   |
| HE PPDU configuration         | HE-LTF, GI time, SIG-A, SIG-B   |
| DCM (Dual Carrier Modulation) | On, Off   |
| Coding type                   | LDPC, BCC   |
| HE-MU PPDU configuration      | Per RU configuration: Station ID, size, user number, index, segment, power boost factor, MCS index, spatial mapping |
| Trigger Frame configuration   | Per RU configuration: index, RU allocation, MCS index, target RSSI  |
| HE-TRIG based PPDU            | Per RU configuration: size, user number, index, MCS index, spatial mapping  |

## 802.11ax (Wi-Fi 6) Waveform Analysis

| Feature                                | Configuration   |
|--|---|
| PPDU format                            | HE-SU, HE-MU, HE-EXT-SU (extended range), HE-TRIG (trigger based)   |
| TX Quality Info                        | PSDU analysis and decode including HE-LTF, GI time, SIG-A, SIG-B and CRC, user number, RU index, size, MCS index  |
| Downlink OFDMA & MU-MIMO analysis      | Per User/RU composite and individual EVM and Power results  |
| Uplink HE-TRIG PPDU & MU-MIMO analysis | Per User/RU composite and individual EVM and Power results including EVM of unoccupied tones  |
| Trigger Frame analysis                 | Decode of common info fields and user info fields   |
| Trigger Based Test                     | <p>Dual ended test designed to verify STA and AP compliance for HE-TRIG PPDU:<br/>Downlink transmission of Trigger frame with configurable index, RU allocation, MCS index, target RSSI</p> <p>Uplink analysis of STA Carrier Frequency Offset (CFO) in the HE-TRIG PPDU per user/RU</p> <p>Uplink analysis of time offset between the trigger frame and the STA HE-TRIG PPDU per user/RU</p> |

## MIMO System Performance

The additional specifications in the table below apply to the complete IQxel-MW 7G MIMO system.

| Measurement                  | Range             |
|------------------------------|-------------------|
| VSA capture trigger accuracy | $\leq \pm 3.5$ ns |
| VSA start trigger accuracy   | $\leq \pm 3.5$ ns |

## Bluetooth® (1.0, 2.0, 2.1, 3.0) Measurement Specifications

For performance refer to general VSA/VSG hardware specifications

| Controls                             | Description   |
|--------------------------------------|---|
| TX output power                      | Transmit DUT output power (dBm)   |
| TX output spectrum                   | Transmit DUT power spectral density   |
| 20 dB bandwidth                      | Bandwidth between the $\pm 20$ dB down points of the modulation waveform                      |
| In-band emissions (Adjacent channel) | Spurious emission measured at $\pm 5$ MHz of DUT TX frequency only                            |
| Modulation characteristics           | Average and peak frequency deviation (Hz)   |
| Carrier frequency tolerance          | Carrier frequency offset (Hz)   |
| Carrier frequency drift              | Carrier frequency change over the Bluetooth burst (Hz)  |
| Relative transmit power (EDR)        | Average power of complete data capture (dBm)  |
| Carrier frequency stability (EDR)    | Frequency drift over the Bluetooth EDR burst duration (Hz)                                    |
| Receive sensitivity <sup>1</sup>     | Receive sensitivity test using LitePoint or user-generated waveforms. Includes Dirty Packets. |
| Maximum input signal level           | Assuming single-ended BER measurement   |
| RMS EVM (EDR)                        | RMS EVM for Bluetooth EDR   |
| Peak EVM (EDR)                       | Peak EVM for Bluetooth EDR  |

Note 1: IQxel-MW 7G supports testing sensitivity with Dirty Packets

## Bluetooth® (4.0, 4.1, 4.2) Measurement Specifications

For performance refer to general VSA/VSG hardware specifications

| Controls   | Description  |
|--|--|
| Output power at NOC <sup>1</sup>                       |  |
| Output power at EOC <sup>1</sup>                       |  |
| In-band emissions at NOC <sup>1</sup>                  | Spurious emission measured at $\pm 5$ MHz of DUT TX frequency only     |
| In-band emissions at EOC <sup>1</sup>                  |  |
| Modulation characteristics                             | Average and peak frequency deviation (Hz)                              |
| Carrier frequency offset and drift at NOC <sup>1</sup> | Carrier frequency offset (Hz) and change over the Bluetooth burst (Hz) |
| Carrier frequency offset and drift at EOC <sup>1</sup> |  |
| Receiver sensitivity at NOC <sup>1,2</sup>             | Receive sensitivity test using LitePoint or user-generated waveforms   |
| Receiver sensitivity at EOC <sup>1,2</sup>             |  |
| C/I and receiver selectivity performance <sup>3</sup>  |  |
| Blocking performance <sup>3</sup>                      |  |
| Intermodulation performance                            |  |
| Maximum input signal level                             | Assuming single-ended BER measurement                                  |
| PER report integrity                                   | Verifies the DUT PER report mechanism                                  |

Note 1: NOC and EOC tests are the same except for the operating conditions which do not impact the test equipment requirements

Note 2: External signal source required for these measurements (not LitePoint supplied)

Note 3: IQxel-MW 7G provides the wanted signal only. No interfering signal is available

## Bluetooth® 5 Measurement Specifications

For performance refer to general VSA/VSG hardware specifications

| Measurement  | Description   |
|--|---|
| In-band emissions                                    | Spurious emission measured at $\pm 5$ MHz of DUT TX frequency only.<br>Tested at 1 Mbps, 2 Mbps               |
| Modulation Characteristics                           | Average and peak frequency deviation (Hz).<br>Tested at 1 Mbps, 2 Mbps, 125 kbps                              |
| Carrier Frequency offset and drift                   | Carrier frequency offset (Hz) and change over the Bluetooth burst (Hz).<br>Tested at 1 Mbps, 2 Mbps, 125 kbps |
| Stable Modulation Characteristics                    | Tested at 1 Mbps, 2 Mbps  |
| Receiver Sensitivity                                 | Receive sensitivity test using LitePoint or user-generated waveforms.<br>Tested at 1 Mbps, 2 Mbps, 125 kbps   |
| Receiver Sensitivity – Stable Modulation Index       | Tested at 1 Mbps, 2 Mbps, 500 kbps, 125 kbps  |
| Maximum Input signal level                           | Assuming single-ended BER measurement.<br>Tested at 1 Mbps, 2 Mbps  |
| Maximum Input signal level – Stable Modulation Index | Tested at 1 Mbps, 2 Mbps  |
| C/I and Receiver Selectivity Performance             | Tested at 1 Mbps, 2 Mbps, 500 kbps, 125 kbps  |
| Blocking Performance                                 | Tested at 1 Mbps, 2 Mbps  |
| Intermodulation Performance                          | Tested at 1 Mbps, 2 Mbps  |
| PER Report Integrity                                 | Verifies the DUT PER report mechanism.<br>Tested at 1 Mbps, 2 Mbps, 500 kbps, 125 kbps                        |



## Bluetooth® 5.1 Measurement Specifications

For performance refer to general VSA/VSG hardware specifications

| Measurement  | Description  |
|--|--|
| Output Power, with Constant Tone Extension                       | Verifies maximum peak and average power emitted when transmitting with a Constant Tone Extension.  |
| Carrier Frequency offset and drift, with Constant Tone Extension | Verifies carrier frequency offset and carrier drift of the transmitted Constant Tone Extension portion in a transmitted signal with a Constant Tone Extension. Tested at 1 Mbps, 2 Mbps. |
| IQ Samples Coherency, AoD Receiver                               | Verifies relative phase values derived from the I/Q values sampled at AoD Receiver from a Constant Tone Extension. Tested at 1 Mbps, 2 Mbps, 1 $\mu$ s Slot, 2 $\mu$ s Slot.             |
| IQ Samples Coherency, AoA Receiver <sup>1</sup>                  | Verifies relative phase values derived from the I/Q values sampled at AoA Receiver from a Constant Tone Extension. Tested at 1 Mbps, 2 Mbps, 2 $\mu$ s Slot.                             |
| IQ Samples Dynamic Range, AoD Receiver                           | Verifies the I/Q values sampled at AoD Receiver when varying the dynamic range of the Constant Tone Extension. Tested at 1 Mbps, 2 Mbps, 1 $\mu$ s Slot, 2 $\mu$ s Slot.                 |
| IQ Samples Dynamic Range, AoA Receiver <sup>1</sup>              | Verifies the I/Q values sampled at AoA Receiver when varying the dynamic range of the Constant Tone Extension. Tested at 1 Mbps, 2 Mbps, 2 $\mu$ s Slot.                                 |

Note 1: Test requires an external splitter

## ZigBee (802.15.4), Z-wave (ITU-T G.9959), Wi-SUN (MR-FSK IEEE 802.15.4g)

For performance refer to general VSA/VSG hardware specifications

| Measurement   | Description   |
|---|---|
| Output power  | Transmit DUT output power (dBm)   |
| Power spectral density                                | Transmit DUT power spectral density   |
| Center Frequency Tolerance                            | Tx center frequency tolerance   |
| EVM   | Offset: compensate the I and Q offset in OQPSK<br>Normal: no compensation applied                               |
| Other modulation quality measurements                 | LO leakage, clock error, phase error, symbol clock error  |
| CCDF (complementary cumulative distribution function) | Probability of peak signal power being greater than a given power level versus peak-to-average power ratio (dB) |

## DECT (ETSI EN 300 176-1)

For performance refer to general VSA/VSG hardware specifications

| Measurement         | Description                                |
|---------------------|--|
| Power               | Normal Transmit Power                      |
| Power vs. time      | Power time template                        |
| Frequency offset    | Frequency offset                           |
| Frequency drift     | Frequency drift during packet transmission |
| Frequency deviation | S field, B field, whole packet             |

## Navigation<sup>1</sup>

| Measurement                     | Description  |
|---------------------------------|--|
| Test Capability                 | Carrier-to-noise ratio   |
|                                 | GPS: L1, L2, L5<br>GLONASS: 1598 to 1606 MHz<br>COMPASS: 1561.098 (+/- 2.046) MHz<br>Galileo: 1559 to 1593 MHz |
| Number of simultaneous channels | 1  |
| Output power range              | -60 to -130 dBm  |
| Level accuracy                  | ± 0.75 dB  |

Note 1: Navigation is a standard feature included with general purpose RF function

## General and Environmental

| Parameter                     | Description   |
|-------------------------------|---|
| Dimensions                    | 8-port: 14.5" W x 3.2" H x 20.5" D (368 mm x 82 mm x 521 mm)<br>16-port: 16.75" W x 7.4" H x 24" D (426 mm x 188 mm x 610 mm) |
| Weight                        | 8-port: 26 lbs (11.8 kg)<br>16-port: 49.2 pounds (22.3 kg)  |
| Power consumption (maximum)   | 8-port: 200 W<br>16-port: 350 W   |
| Power consumption (average)   | 8-port: 150 W<br>16-port: 300 W   |
| Power requirements            | 100 - 240 VAC, 50-60 Hz   |
| Supported browsers            | Google Chrome, Mozilla Firefox  |
| Operating temperature         | +10°C to +50°C  |
| Storage temperature           | -20°C to +70°C (IEC EN60068-2-1, 2, 14)   |
| Specification validity        | 20°C to 35°C<br>60 minutes warm-up time at ambient temperature  |
| Operating humidity            | 15% to 95% relative humidity, non-condensing (IEC EN60068-2-30)   |
| EMC                           | EN61326-1 Class A, EN55011  |
| EMI (Immunity)                | EN61000-4   |
| Safety                        | IEC 61010-1, EN61010-1, UL61010-1:2012 and CAN/CSA-C22.2 No. 61010-1-12   |
| Mechanical vibration          | IEC 60068-2-6 for Sine Vibration and MIL-STD 810G for Random Vibration  |
| Mechanical shock              | ASTM D3332-99   |
| Recommended connector torque  | 8 in-lbs (90 N-cm)  |
| Recommended calibration cycle | 12 months   |
| Warranty                      | 12 months hardware, 12 months software updates  |

## Order Codes

| Code          | Product  |
|---------------|--|
| 0100-MW7G-006 | IQxel-M2W 7G (2x2) test system with 2 RF ports active. Includes 2VSA / 2VSG, 400 to 7300 MHz. Includes WLAN measurement suite software for SISO 802.11a/b/g/n/p    |
| 0100-MW7G-002 | IQxel-M8W 7G (2x4) test system with 4 RF ports active. Includes 2VSA / 2VSG, 400 to 7300 MHz. Includes WLAN measurement suite software for SISO 802.11a/b/g/n/p    |
| 0100-MW7G-001 | IQxel-M8W 7G (2x8) test system with 8 RF ports active. Includes 2VSA / 2VSG, 400 to 7300 MHz. Includes WLAN measurement suite software for SISO 802.11a/b/g/n/p    |
| 0100-MW7G-007 | IQxel-M16W 7G (4x4) test system with 4 RF ports active. Includes 4VSA / 4VSG, 400 to 7300 MHz. Includes WLAN measurement suite software for SISO 802.11a/b/g/n/p   |
| 0100-MW7G-004 | IQxel-M16W 7G (4x8) test system with 8 RF ports active. Includes 4VSA / 4VSG, 400 to 7300 MHz. Includes WLAN measurement suite software for SISO 802.11a/b/g/n/p   |
| 0100-MW7G-003 | IQxel-M16W 7G (4x16) test system with 16 RF ports active. Includes 4VSA / 4VSG, 400 to 7300 MHz. Includes WLAN measurement suite software for SISO 802.11a/b/g/n/p |
| 0300-MW7G-001 | 802.11ac VHT80 (80MHz signal bandwidth) software license   |
| 0300-MW7G-057 | 802.11ac VHT160 (80+80MHz and 160MHz signal bandwidth) software license (Requires 802.11ac VHT80 license)  |
| 0300-MW7G-069 | 802.11ax software license (Requires 802.11ac VHT80 license for 80MHz signal bandwidth or 802.11ac VHT160 license for 160MHz signal bandwidth)                      |
| 0300-MW7G-061 | WLAN MIMO software license. Enables MIMO option for 802.11n, 802.11ac, and 802.11ax (Requires associated 802.11 technology license)                                |
| 0150-MW7G-003 | WLAN MIMO kit. Includes MIMO software license and tester synchronization cables  |
| 0300-MW7G-003 | Sequence Based Test (SBT) software license, also enables Trigger Based Test (TBT) for 802.11ax   |
| 0300-MW7G-089 | WiFi Traffic Sniffer software license (Requires 802.11ax license)  |
| 0300-MW7G-002 | Bluetooth measurement suite software license. Supports Bluetooth 1.0 - 4.x   |
| 0300-MW7G-071 | Bluetooth 5 measurement suite software license (Requires Bluetooth 1.0 - 4.x license)  |
| 0300-MW7G-008 | Zigbee measurement suite software license. Includes measurement capability for Zigbee, Wi-SUN and Z-wave   |
| 0300-MW7G-009 | DECT measurement suite software license  |
| 0300-MW7G-044 | 802.11ah measurement suite software license  |
| 0300-MW7G-059 | 802.11af measurement suite software license  |
| 0300-MW7G-065 | Sigfox measurement suite software license  |
| 0300-MW7G-055 | LTE measurement suite software license   |
| Others        | Contact LitePoint for additional cellular technologies order codes   |

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## LITEPOINT TECHNICAL SUPPORT

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