

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §27.53

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm

- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

- LTE Band 2

- LTE Band 4

- LTE Band 5

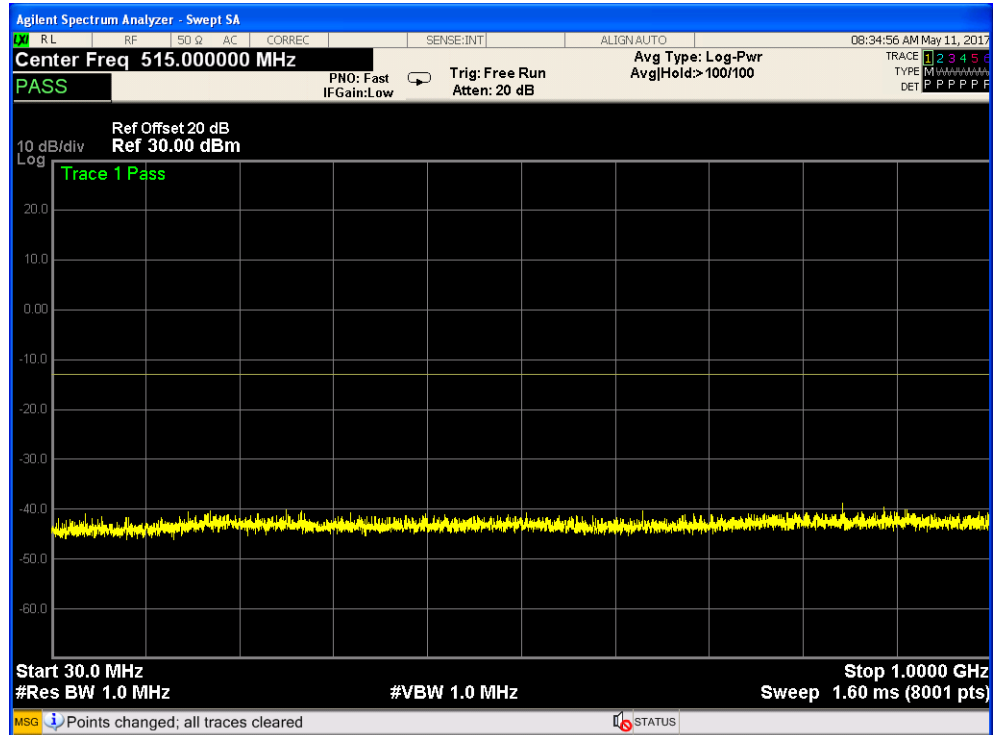
- LTE Band 7

7.1 MEASUREMENT METHOD

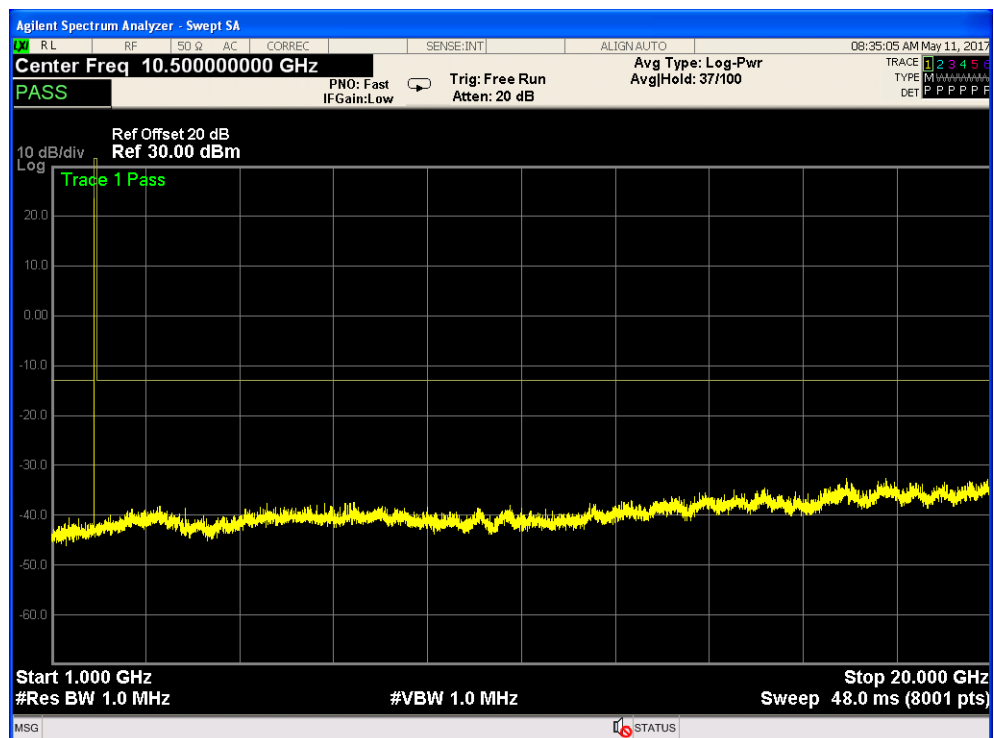
The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

7.1 LTE BAND 2

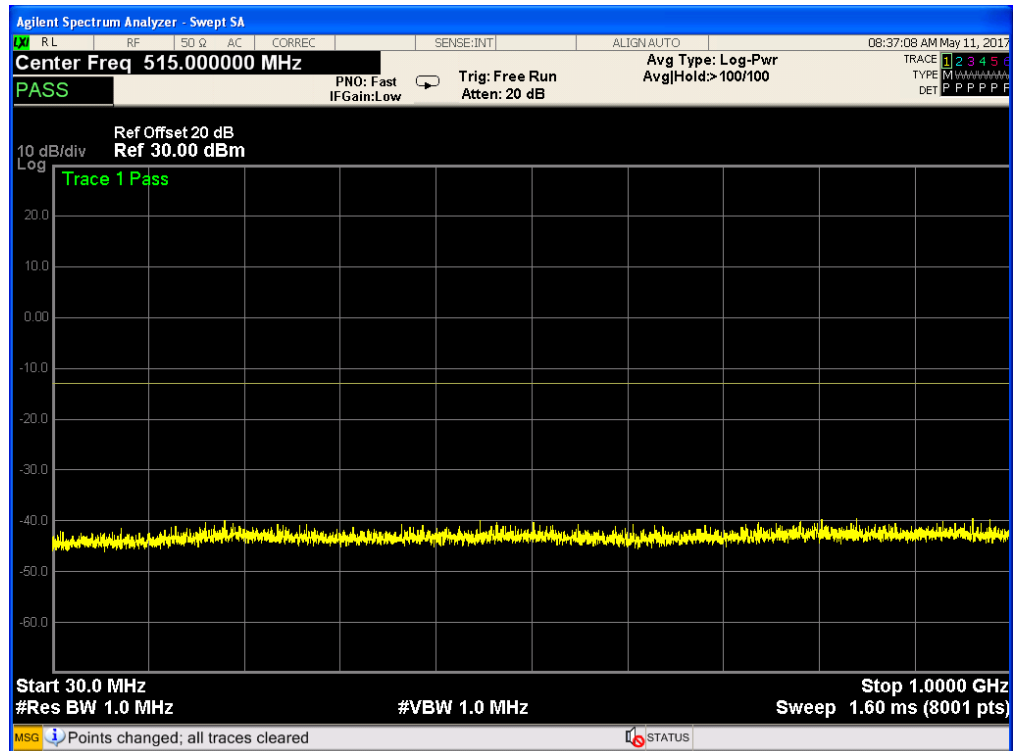
Band 2, UL Channel 18607, UL Frequency 1850.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK



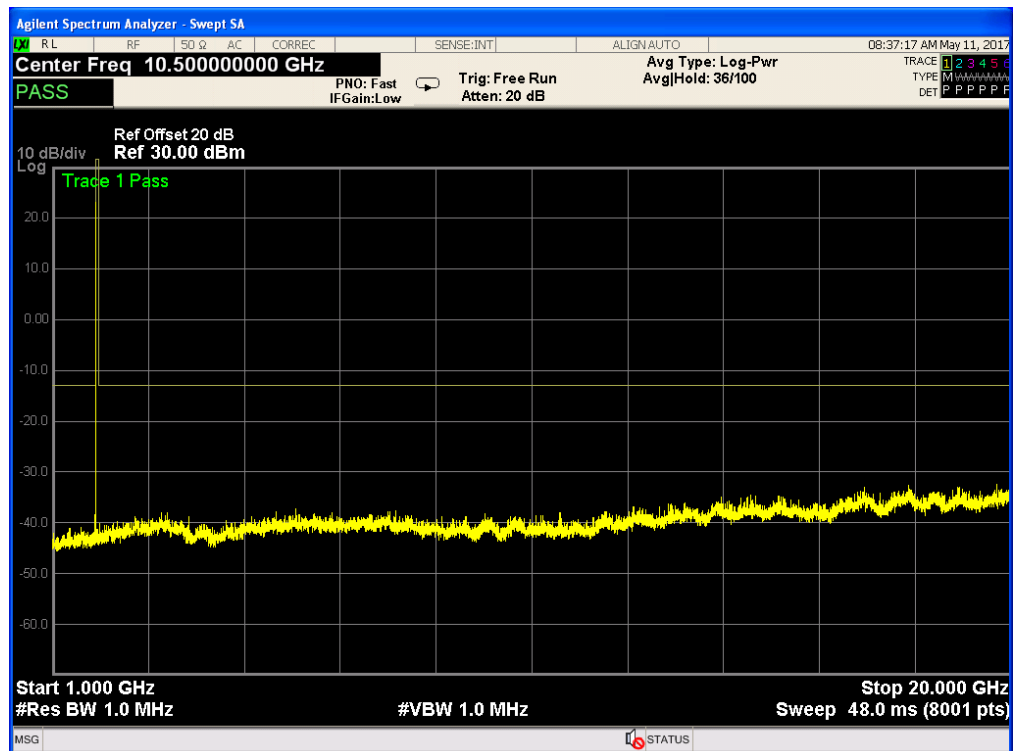
Band 2, UL Channel 18607, UL Frequency 1850.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK



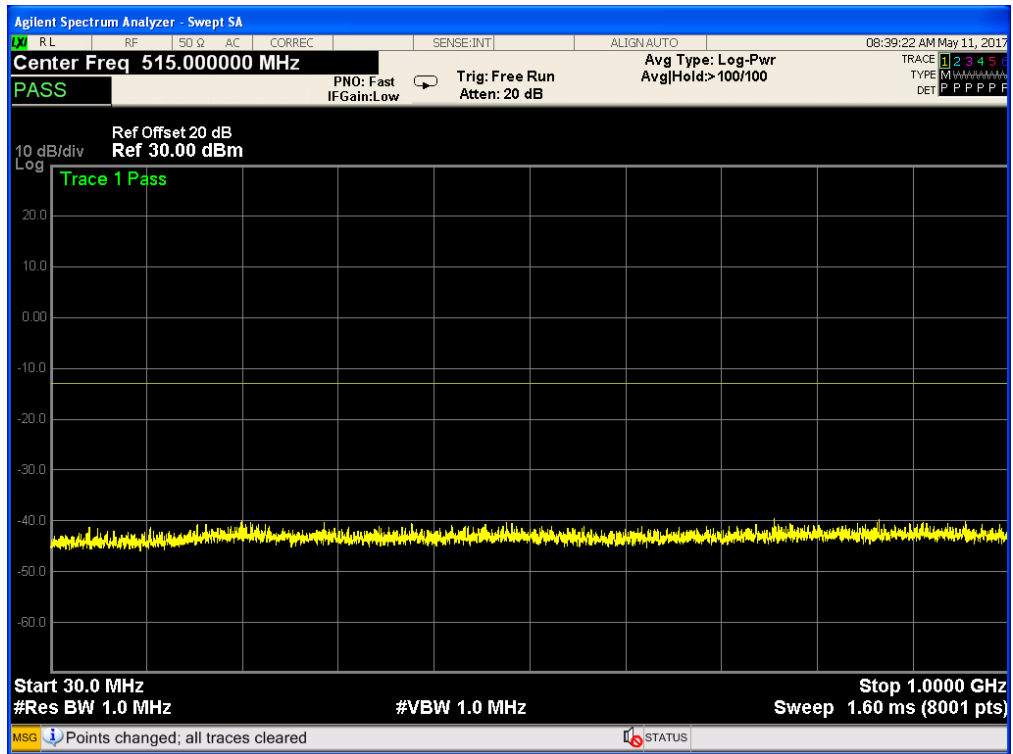
Band 2,UL Channel 18607,UL Frequency 1850.7,BW 1.4,NO. RB 6,RB POS. Low,16QAM



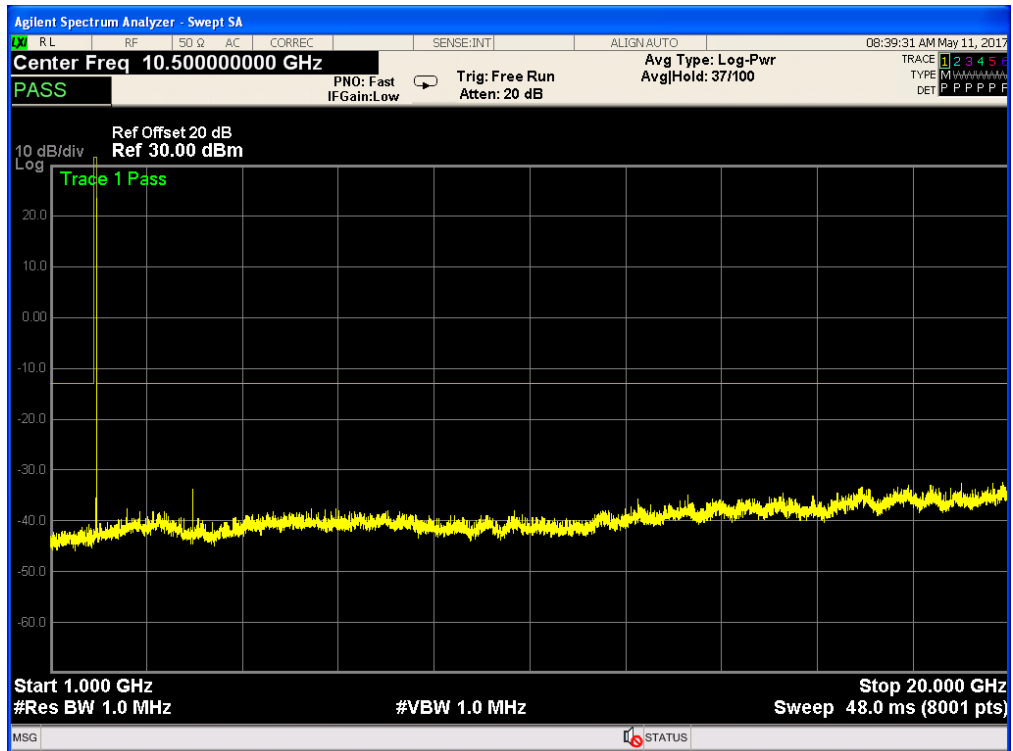
Band 2,UL Channel 18607,UL Frequency 1850.7,BW 1.4,NO. RB 6,RB POS. Low,16QAM



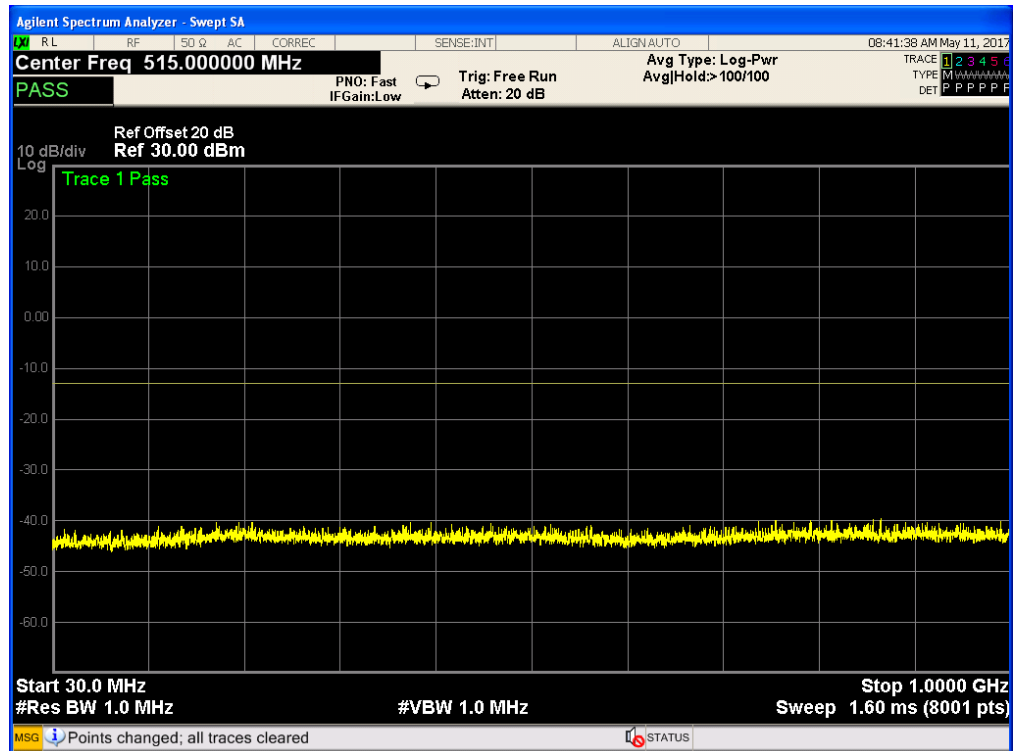
Band 2,UL Channel 19193,UL Frequency 1909.3,BW 1.4,NO. RB 6,RB POS. Low,QPSK



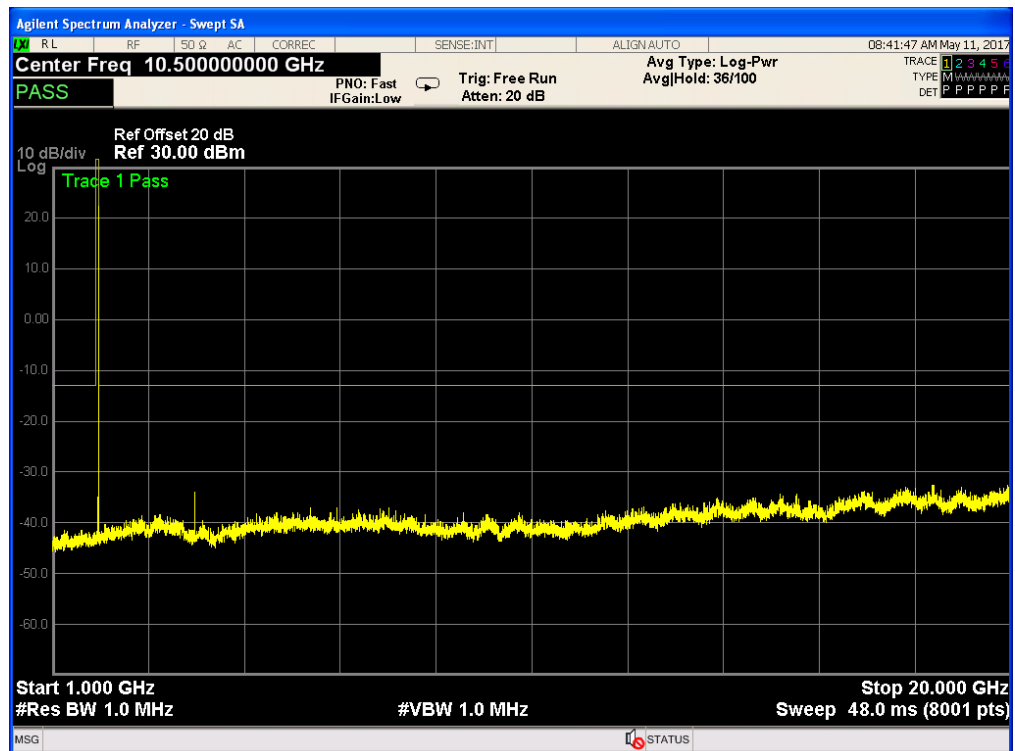
Band 2,UL Channel 19193,UL Frequency 1909.3,BW 1.4,NO. RB 6,RB POS. Low,QPSK



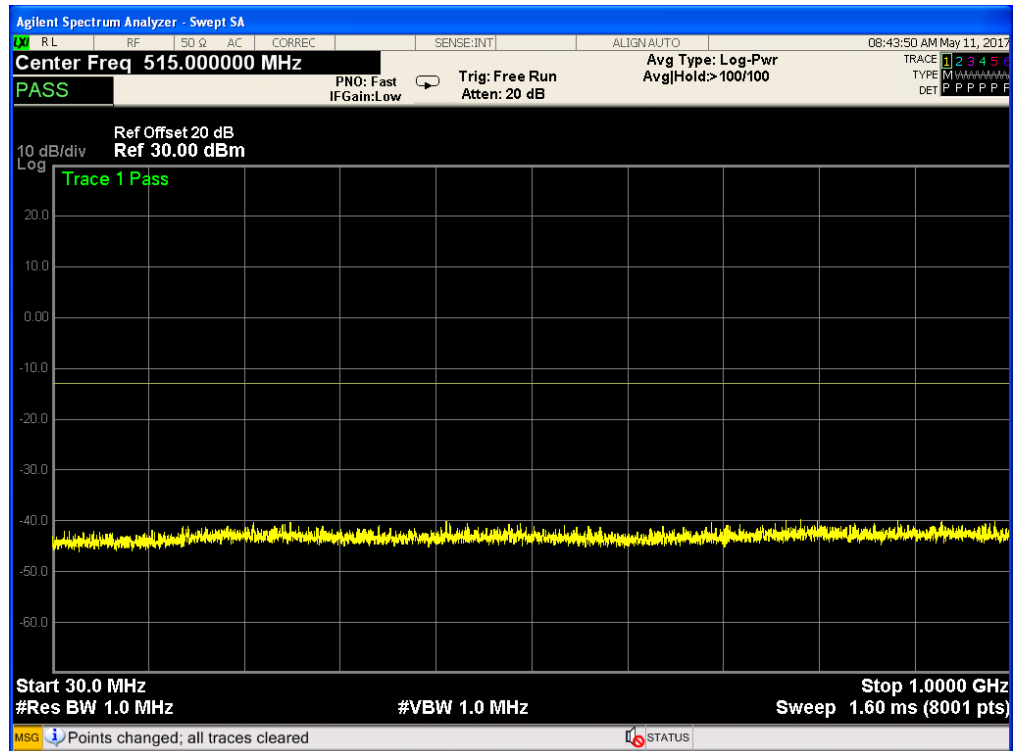
Band 2,UL Channel 19193,UL Frequency 1909.3,BW 1.4,NO. RB 6,RB POS. Low,16QAM



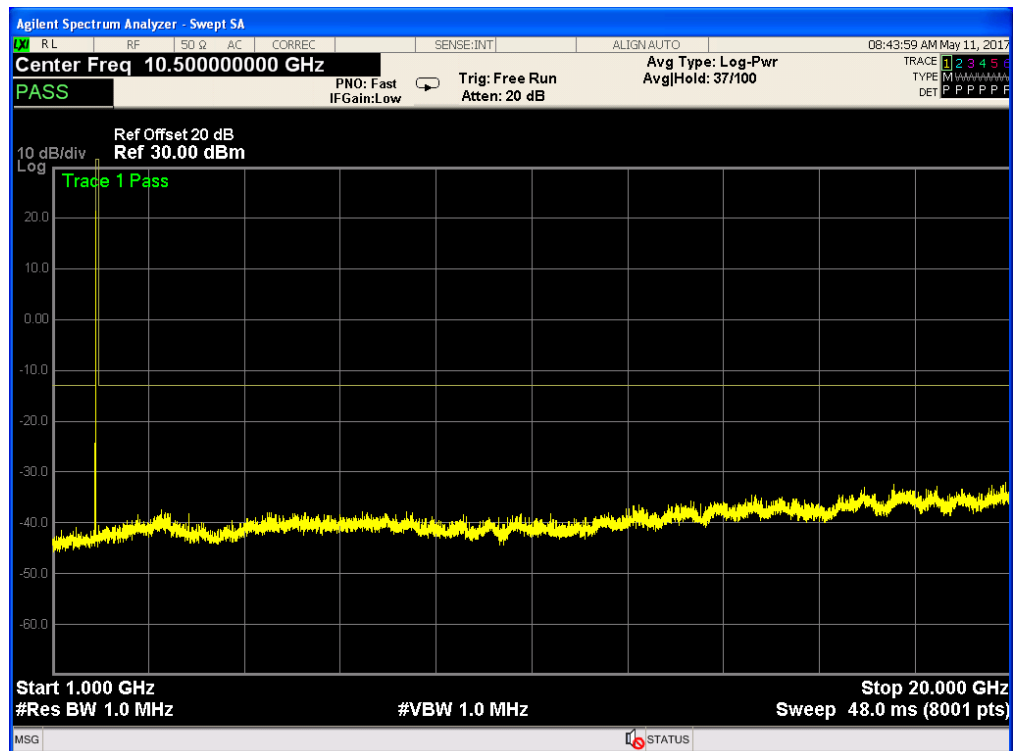
Band 2,UL Channel 19193,UL Frequency 1909.3,BW 1.4,NO. RB 6,RB POS. Low,16QAM



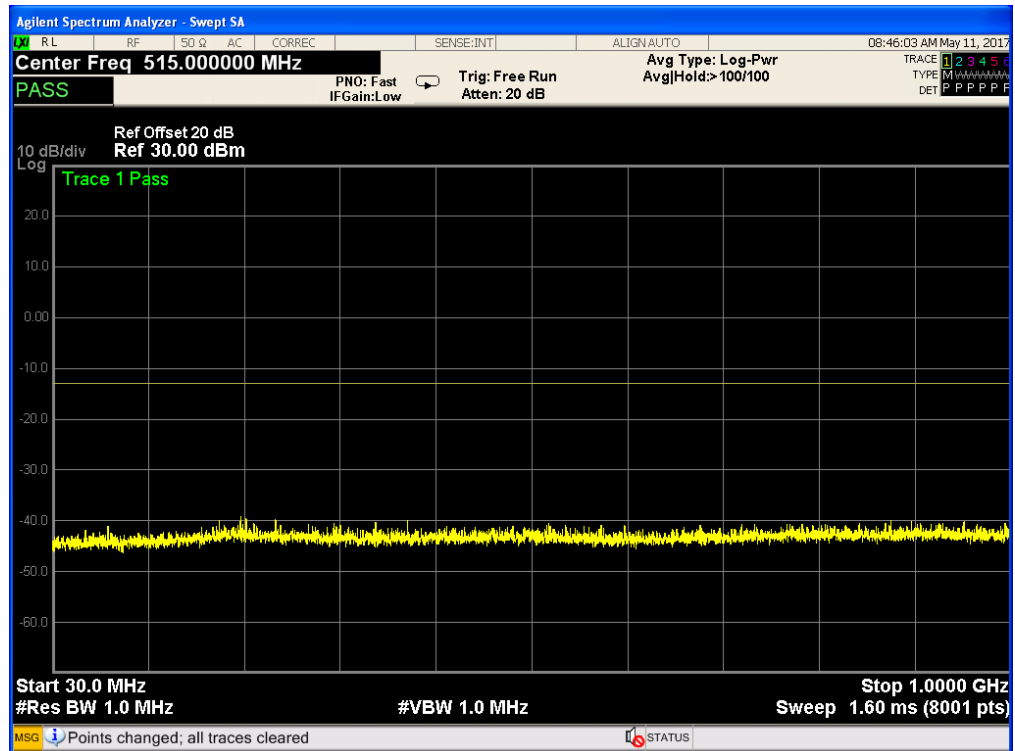
Band 2,UL Channel 18615,UL Frequency 1851.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



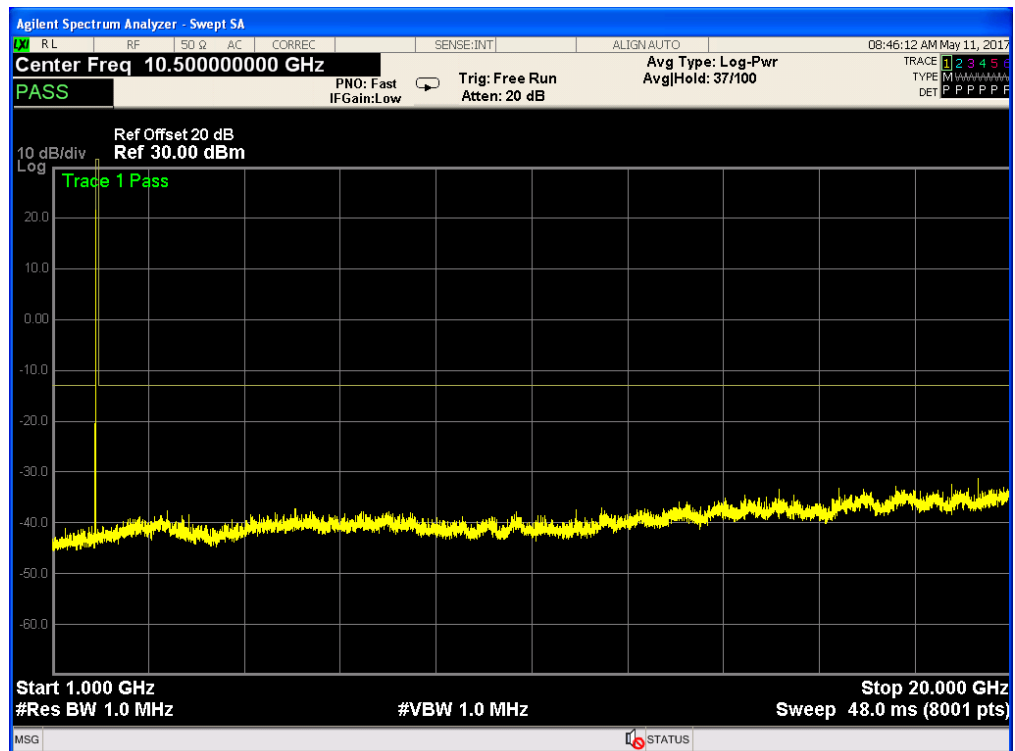
Band 2,UL Channel 18615,UL Frequency 1851.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



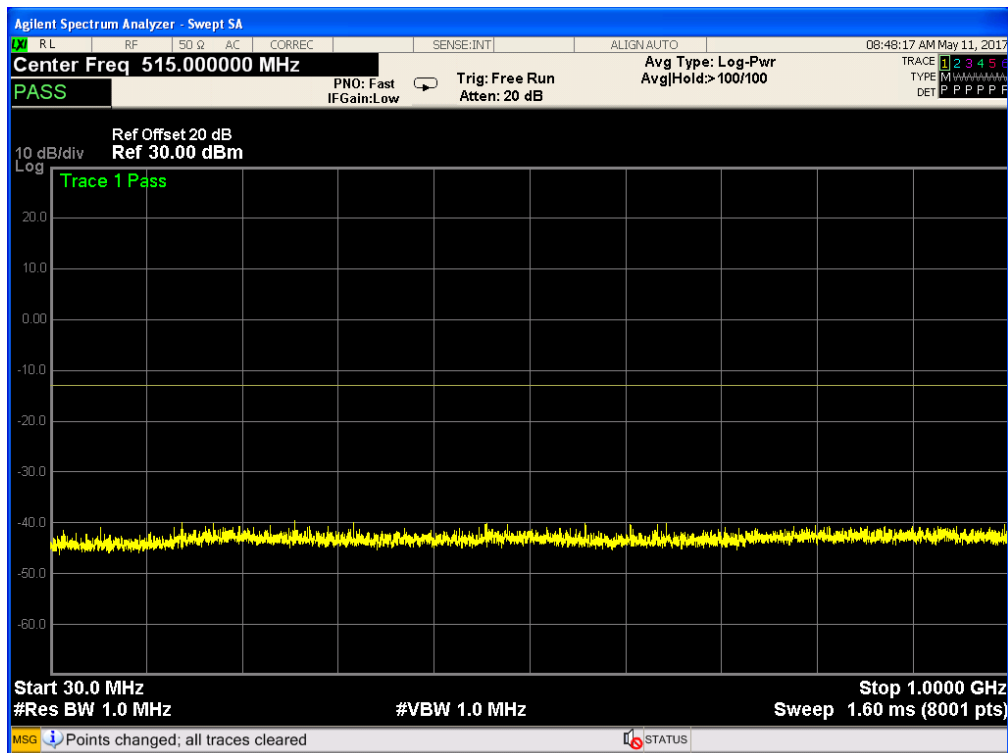
Band 2,UL Channel 18615,UL Frequency 1851.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



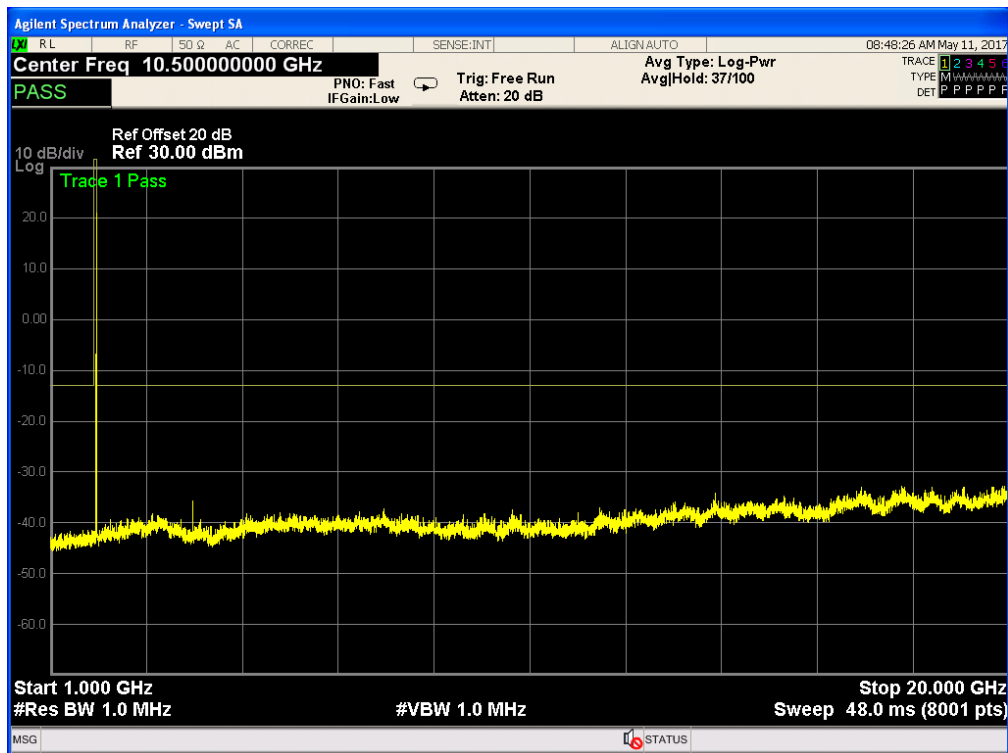
Band 2,UL Channel 18615,UL Frequency 1851.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



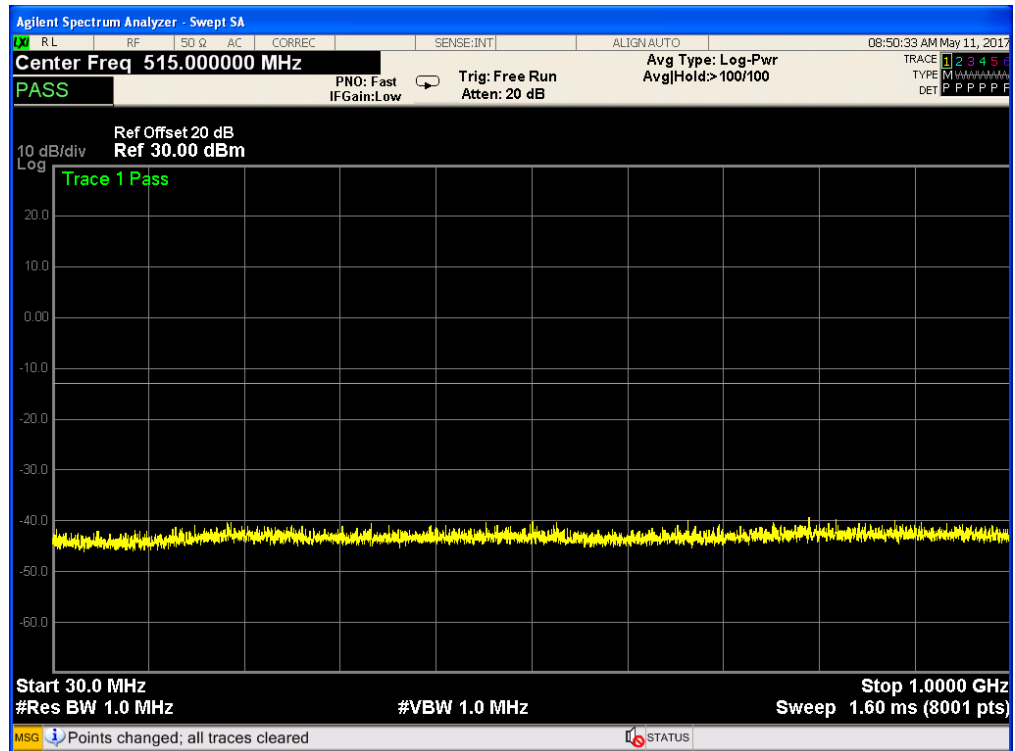
Band 2,UL Channel 19185,UL Frequency 1908.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



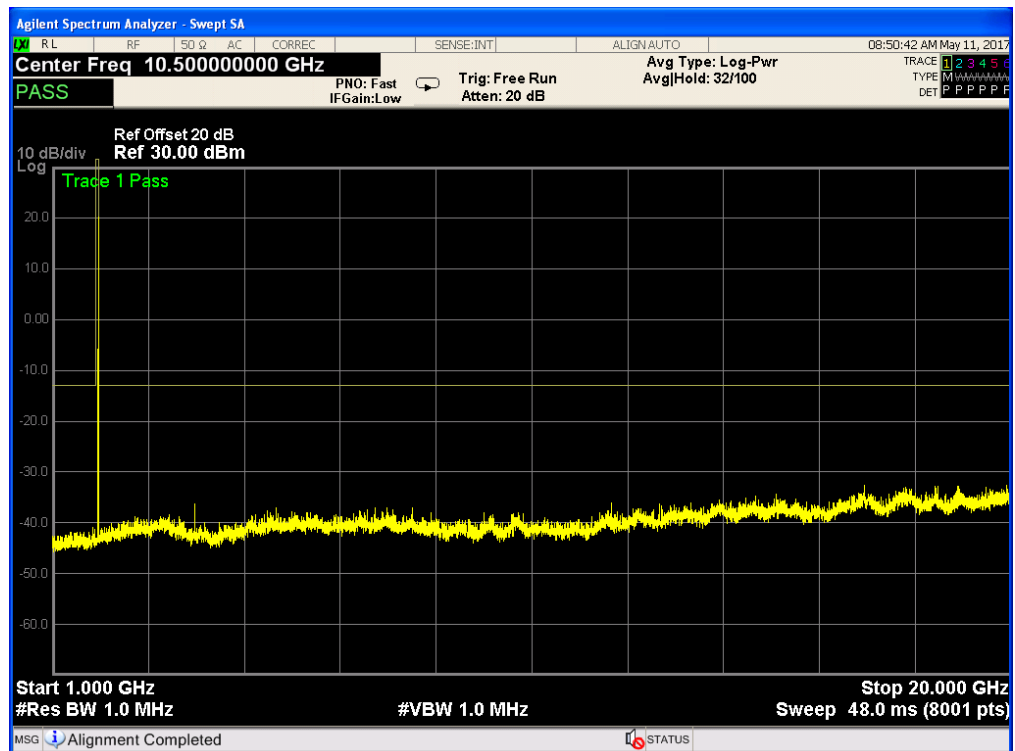
Band 2,UL Channel 19185,UL Frequency 1908.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



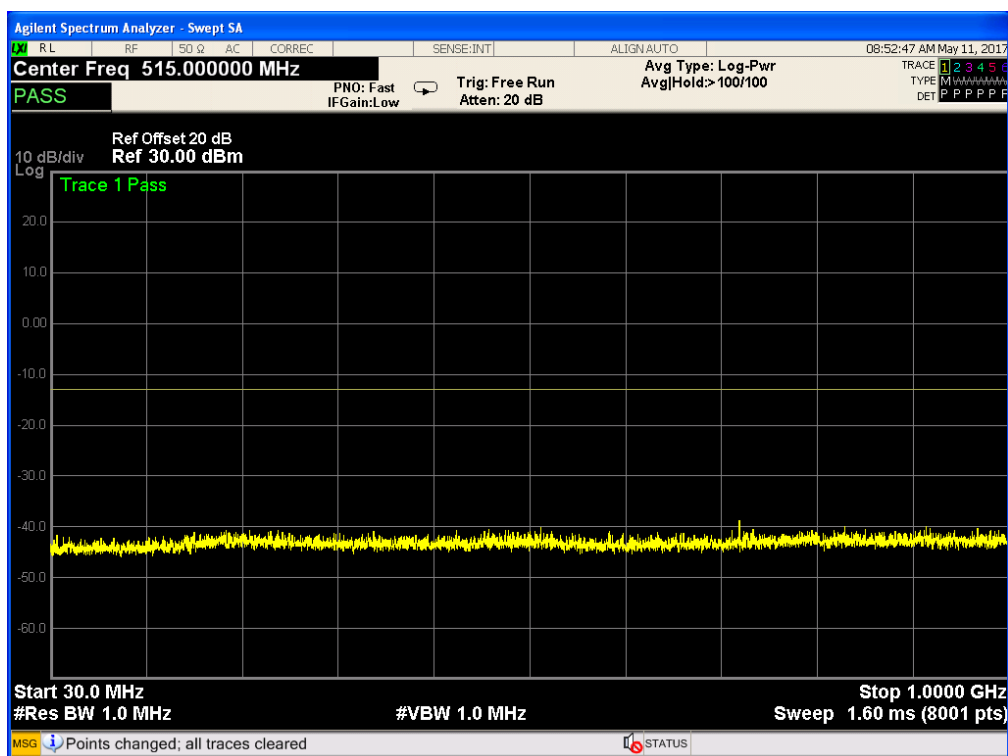
Band 2,UL Channel 19185,UL Frequency 1908.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



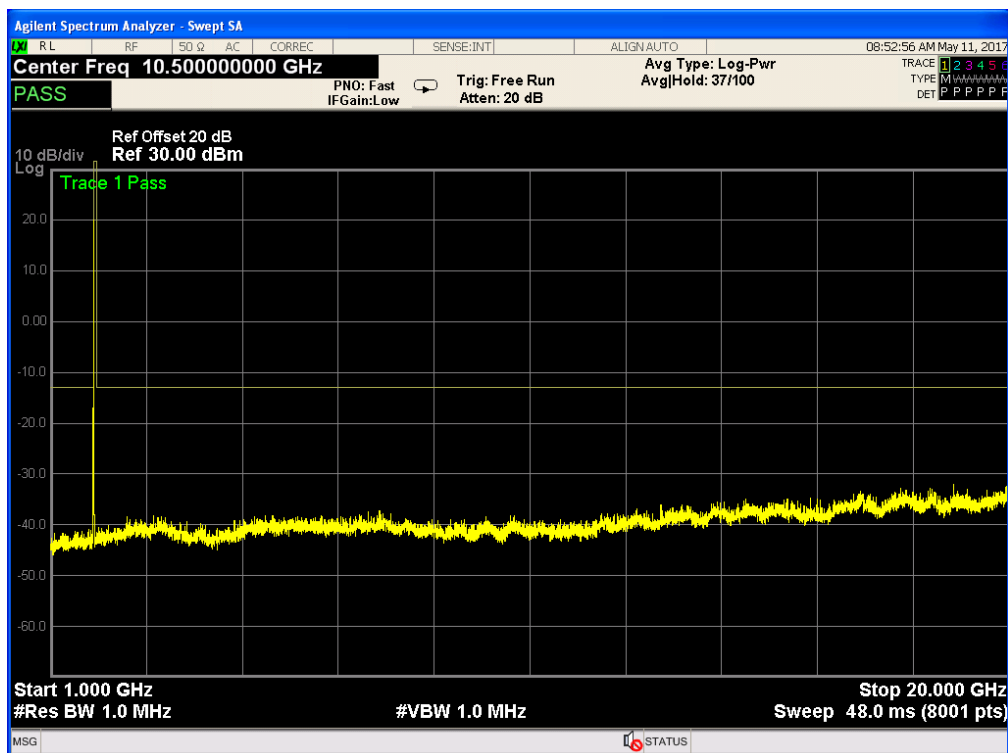
Band 2,UL Channel 19185,UL Frequency 1908.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



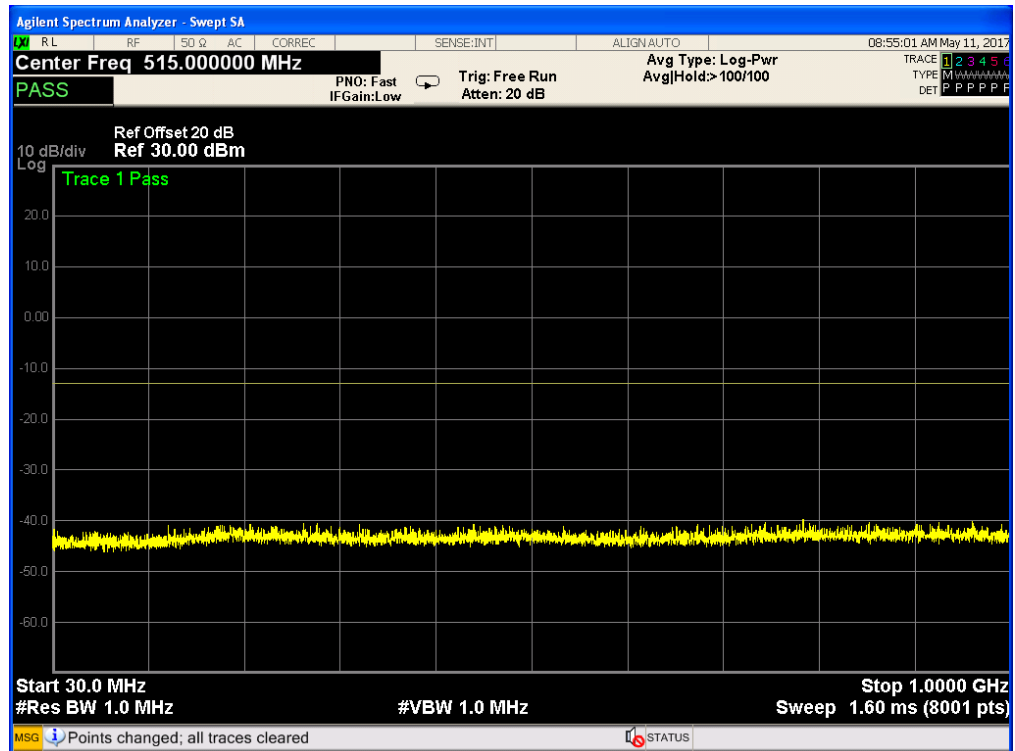
Band 2,UL Channel 18625,UL Frequency 1852.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



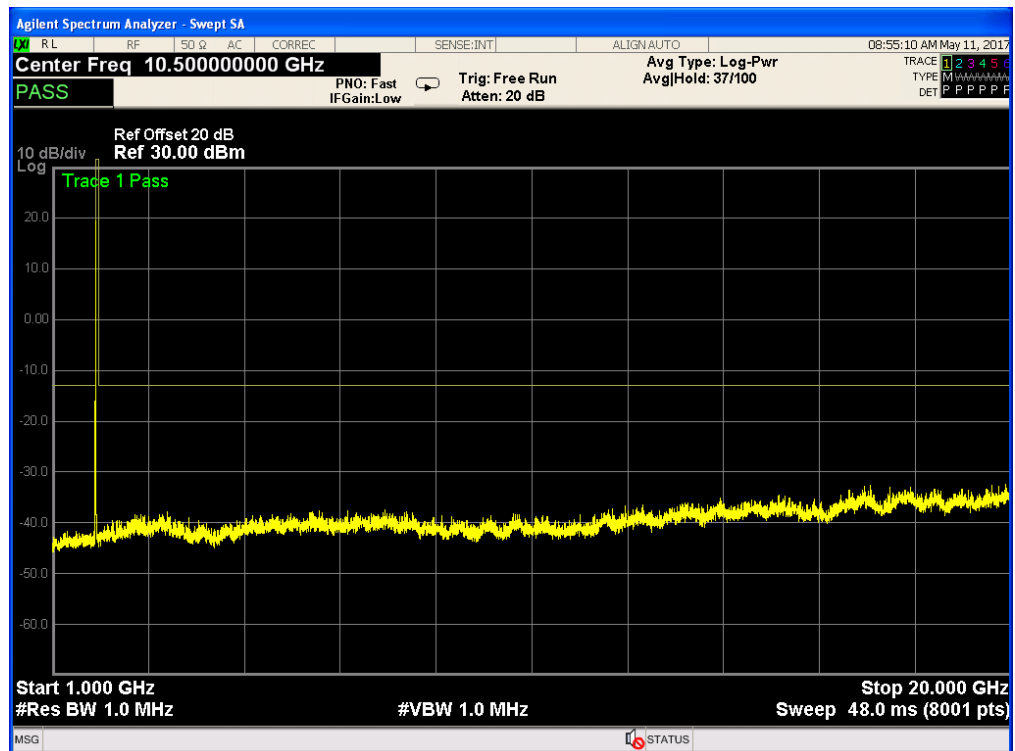
Band 2,UL Channel 18625,UL Frequency 1852.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



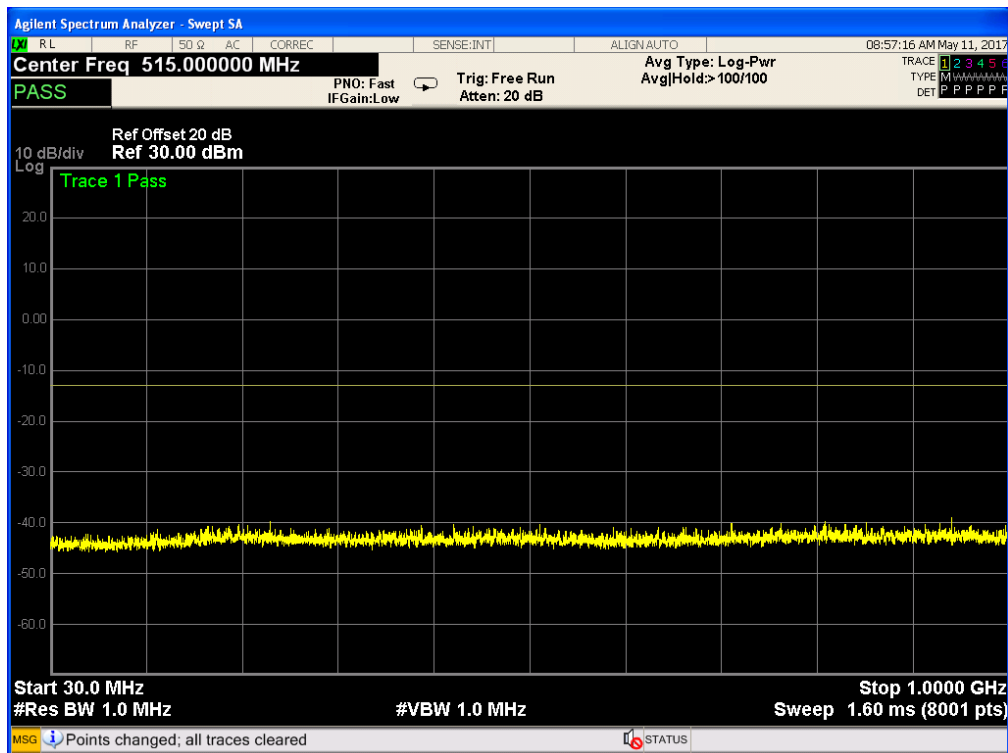
Band 2,UL Channel 18625,UL Frequency 1852.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



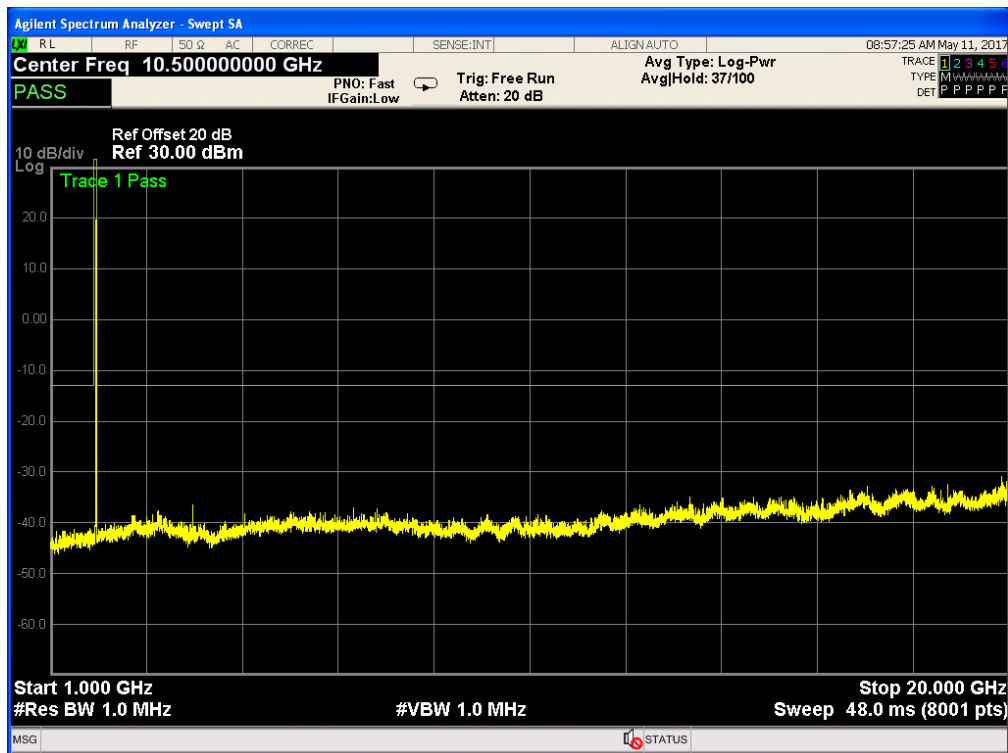
Band 2,UL Channel 18625,UL Frequency 1852.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



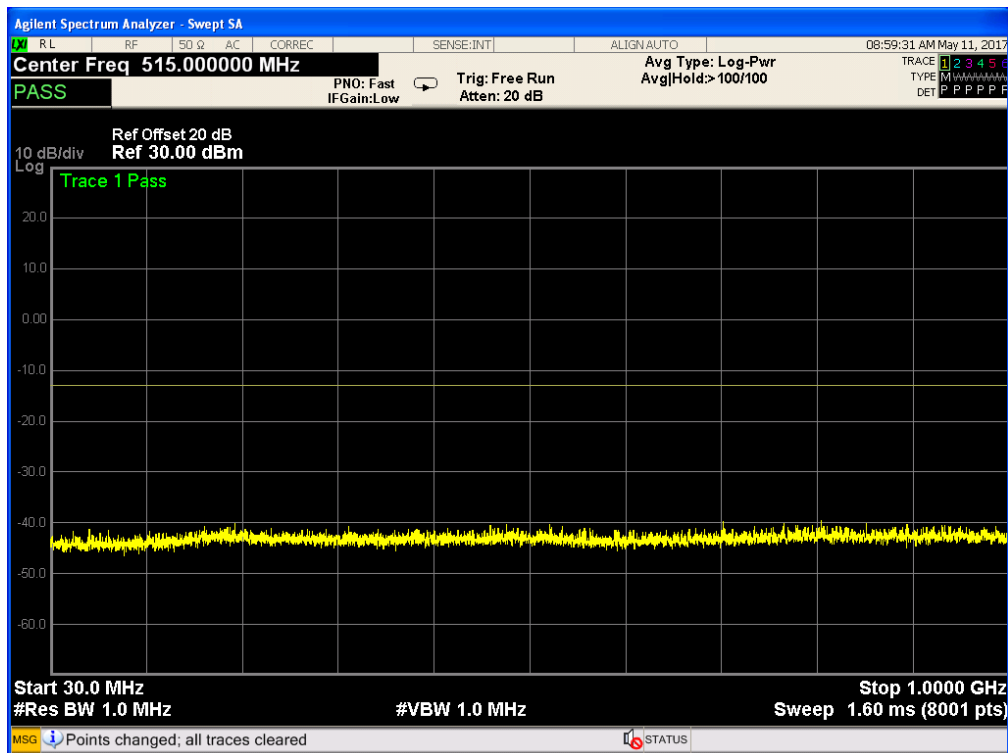
Band 2,UL Channel 19175,UL Frequency 1907.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



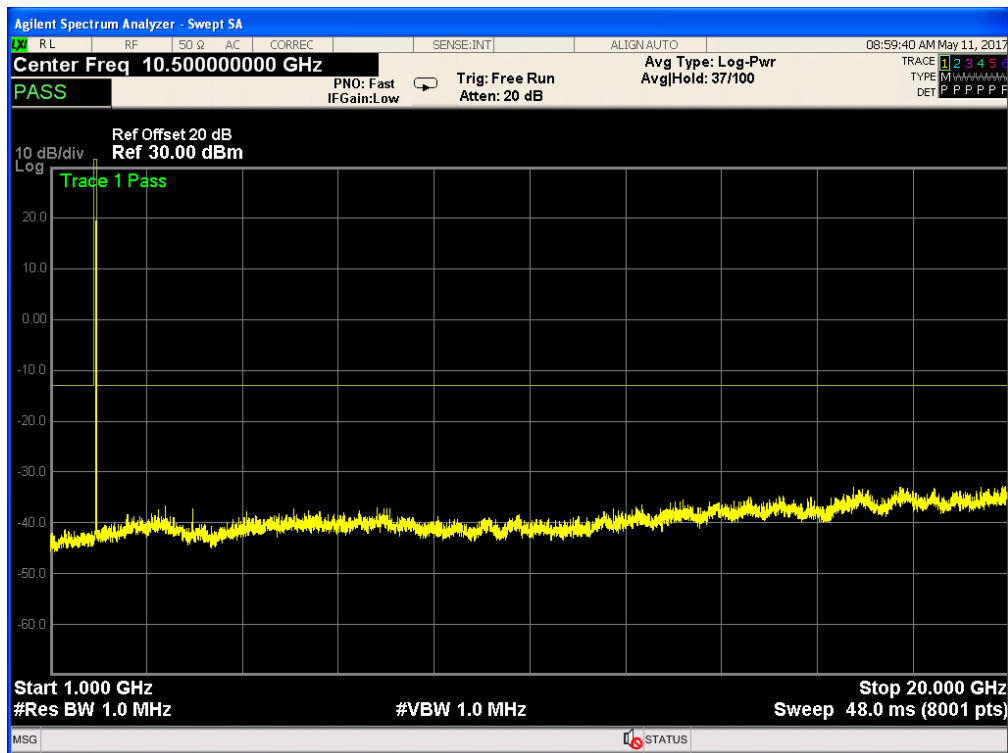
Band 2,UL Channel 19175,UL Frequency 1907.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



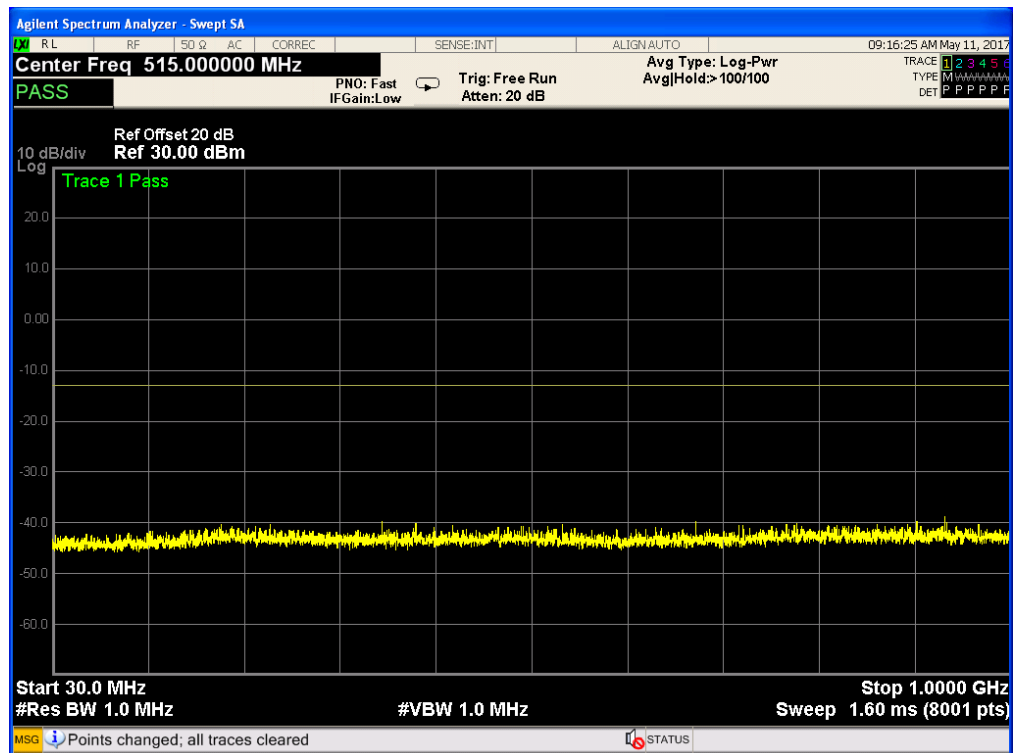
Band 2,UL Channel 19175,UL Frequency 1907.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



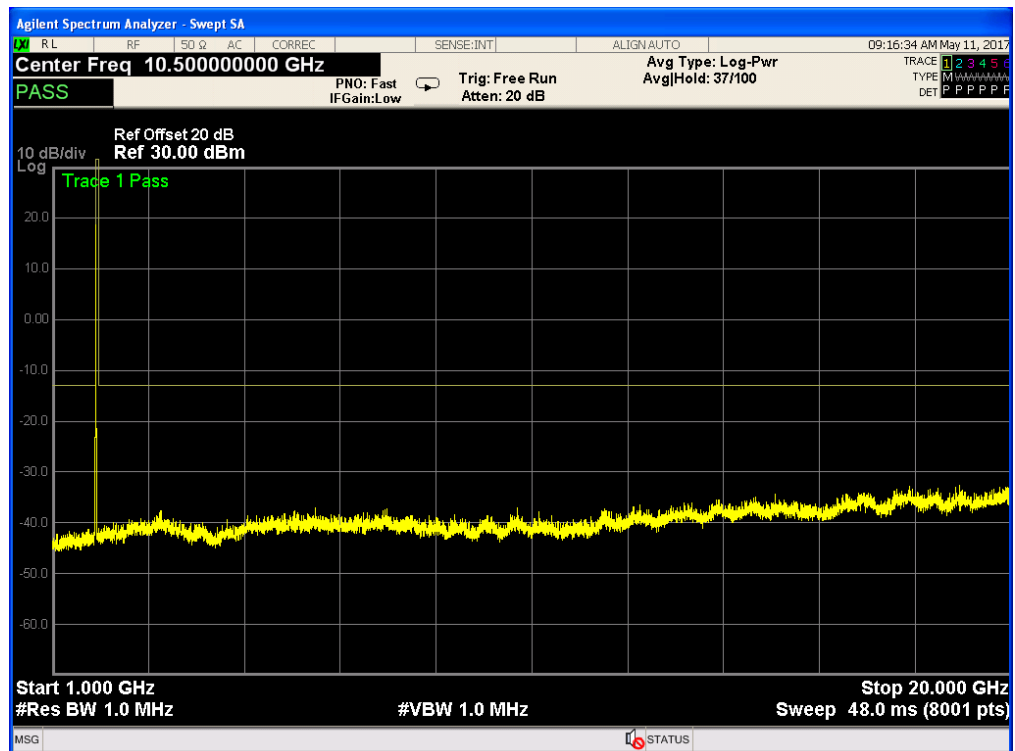
Band 2,UL Channel 19175,UL Frequency 1907.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



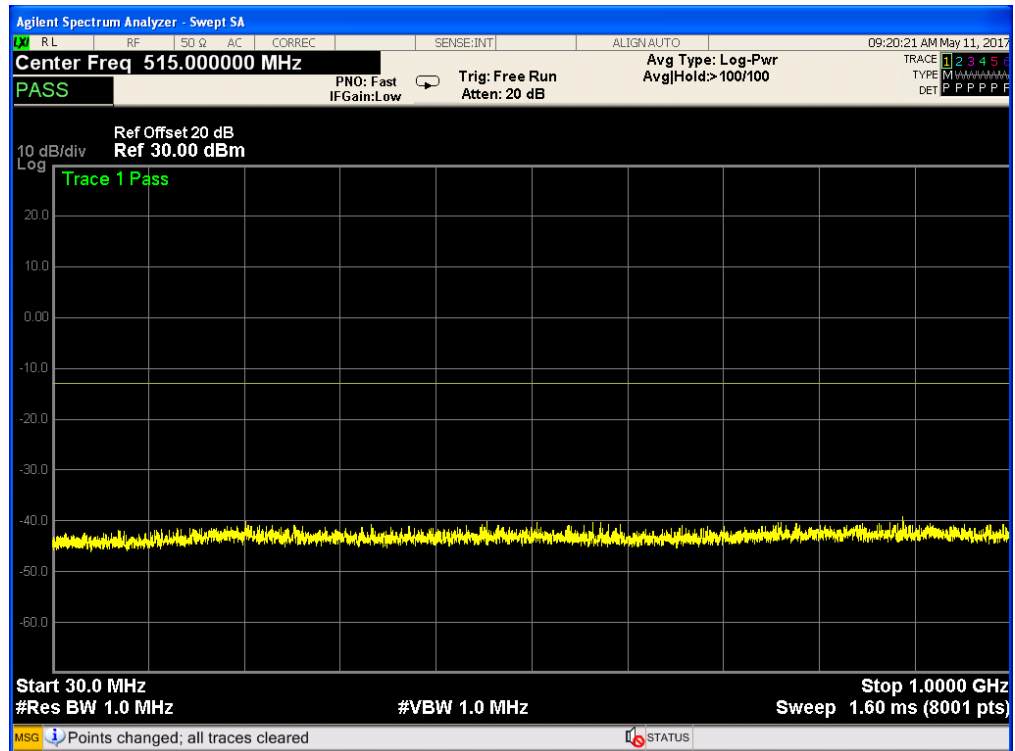
Band 2,UL Channel 18650,UL Frequency 1855.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



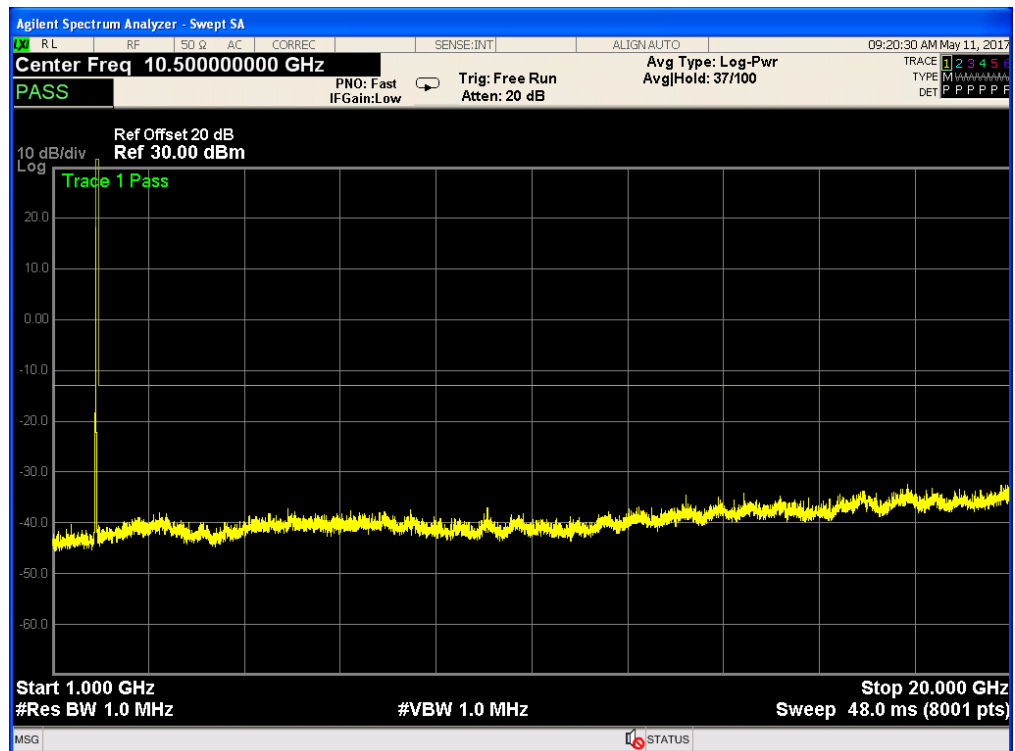
Band 2,UL Channel 18650,UL Frequency 1855.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



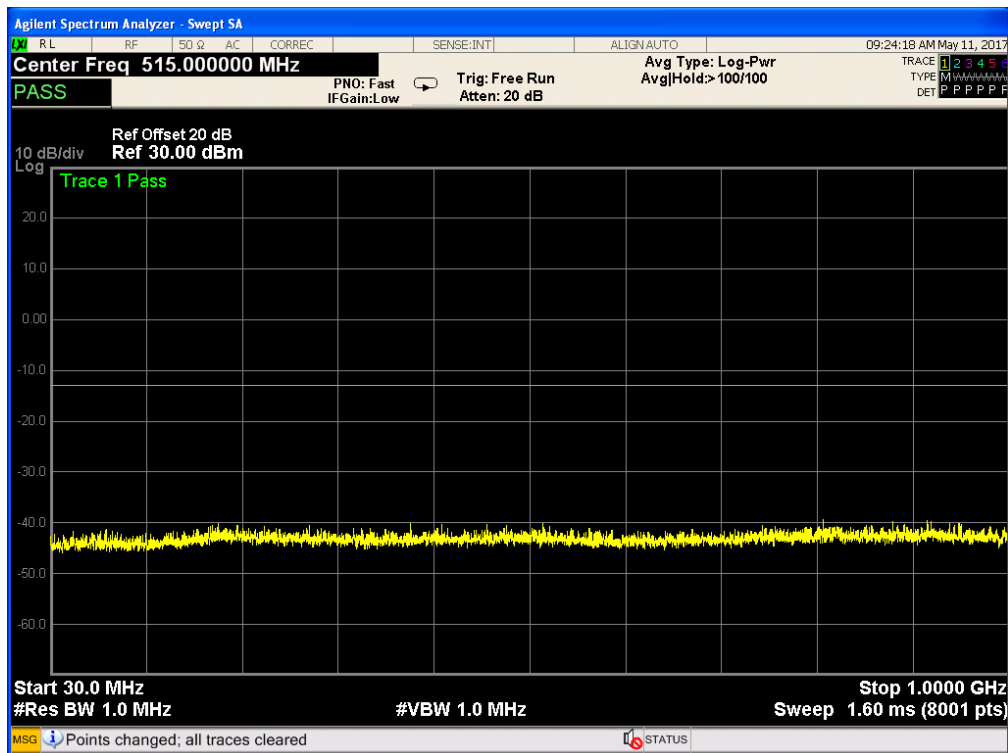
Band 2,UL Channel 18650,UL Frequency 1855.0,BW 10.0,NO. RB 50,RB POS. Low,16QAM



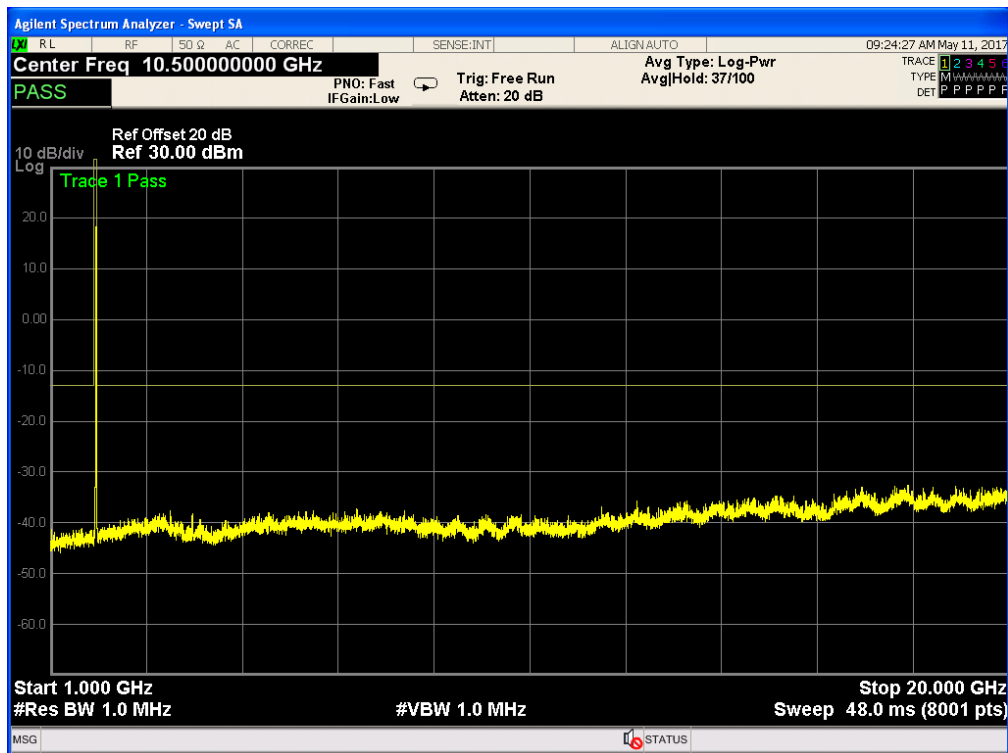
Band 2,UL Channel 18650,UL Frequency 1855.0,BW 10.0,NO. RB 50,RB POS. Low,16QAM



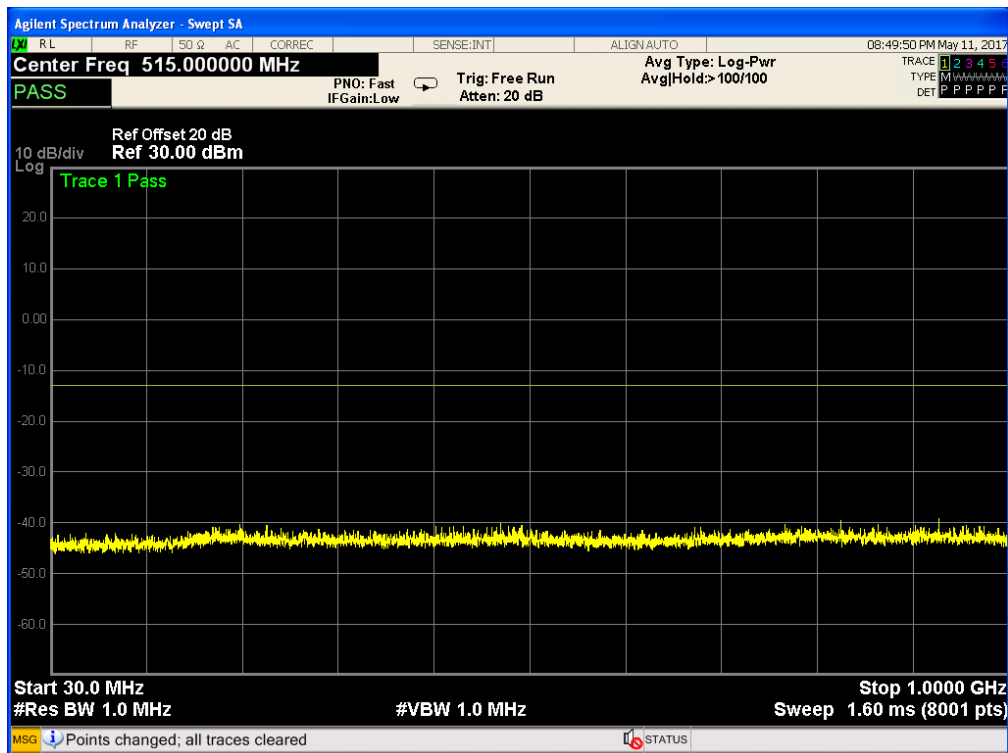
Band 2,UL Channel 19150,UL Frequency 1905.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



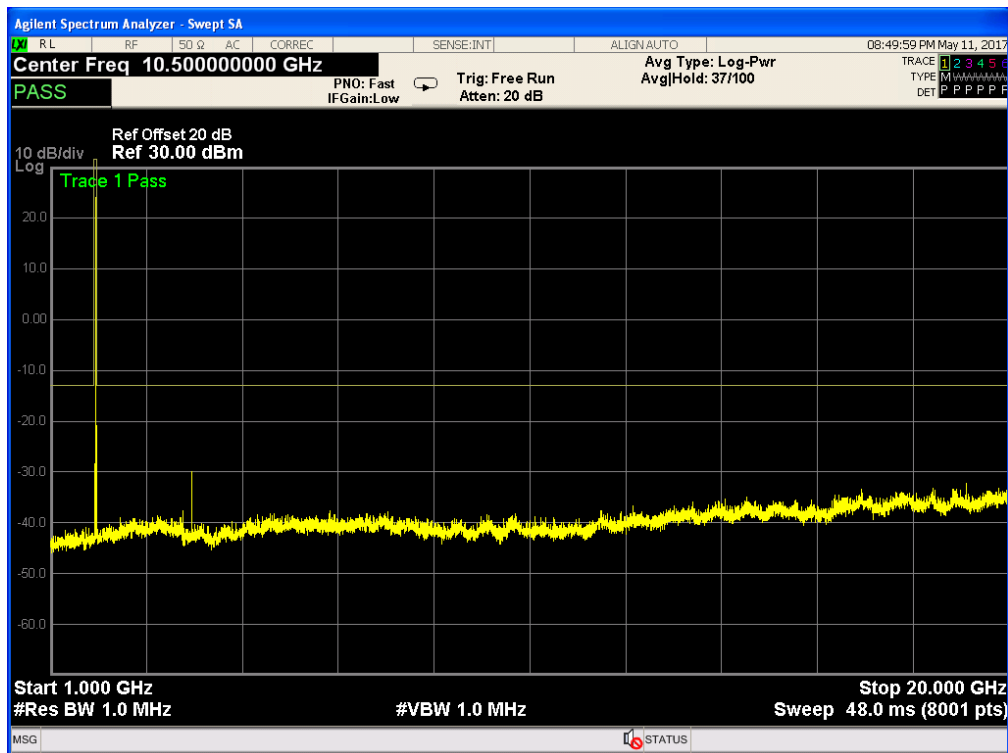
Band 2,UL Channel 19150,UL Frequency 1905.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



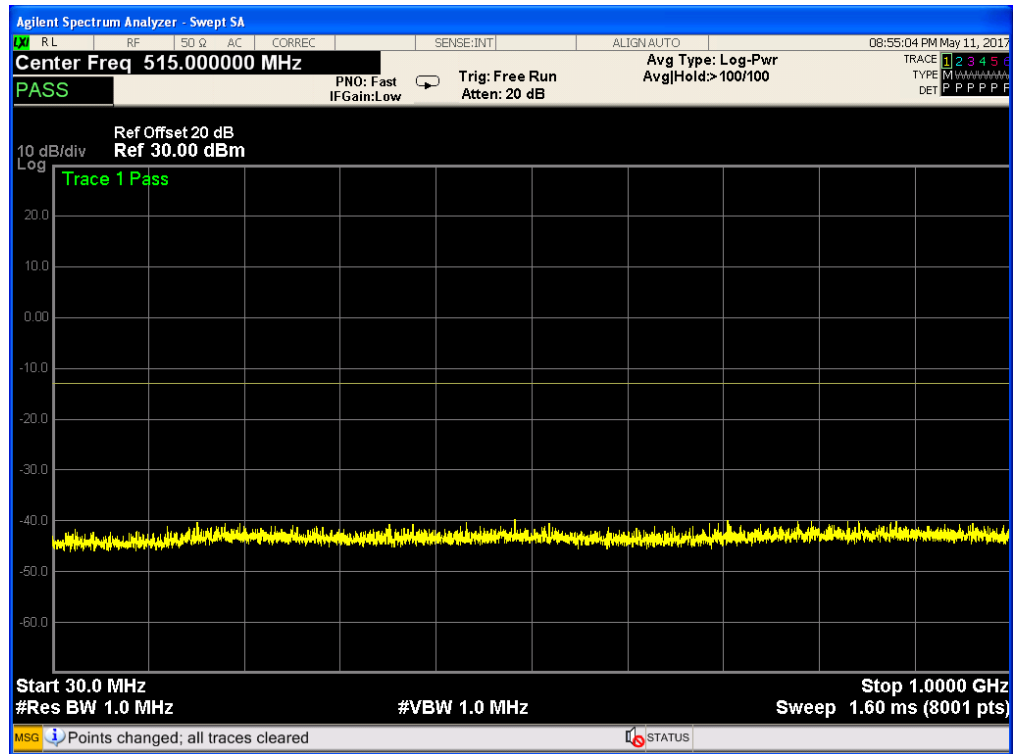
Band 2,UL Channel 19150,UL Frequency 1905.0,BW 10.0,NO. RB 1,RB POS. Low,16QAM



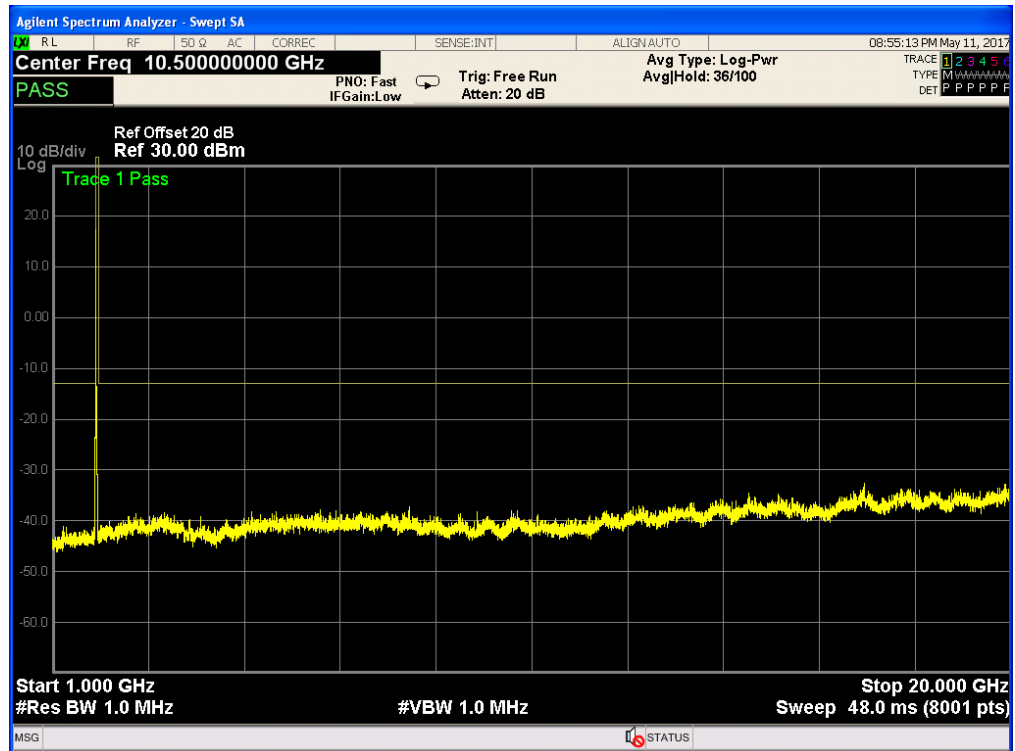
Band 2,UL Channel 19150,UL Frequency 1905.0,BW 10.0,NO. RB 1,RB POS. Low,16QAM



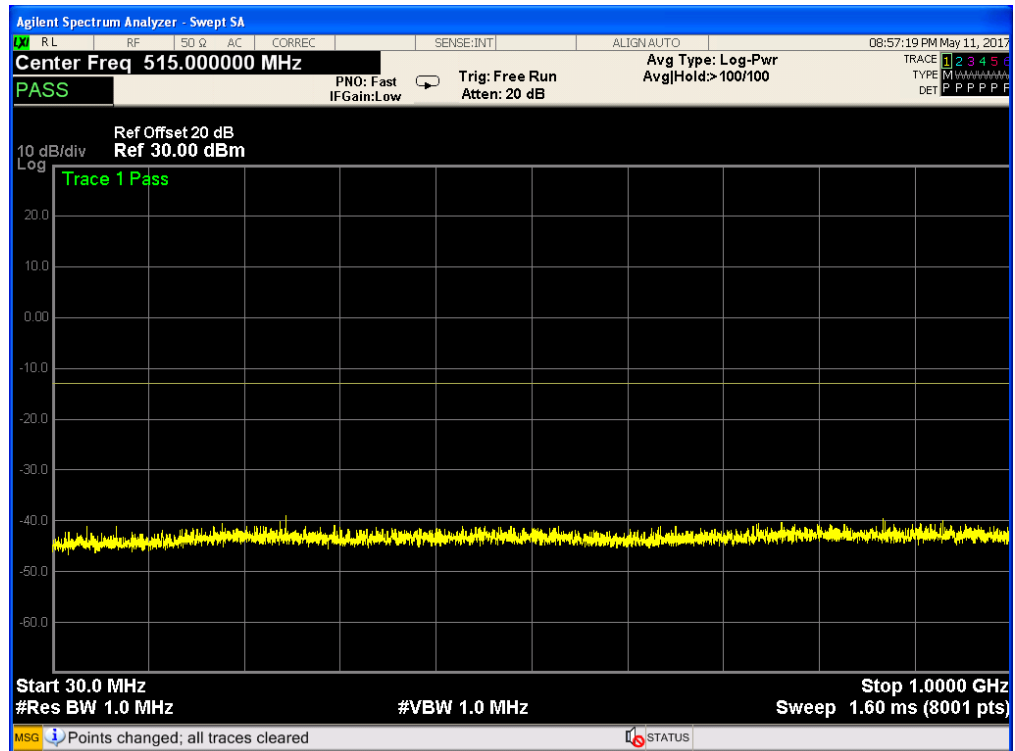
Band 2,UL Channel 18675,UL Frequency 1857.5,BW 15.0,NO. RB 75,RB POS. Low,QPSK



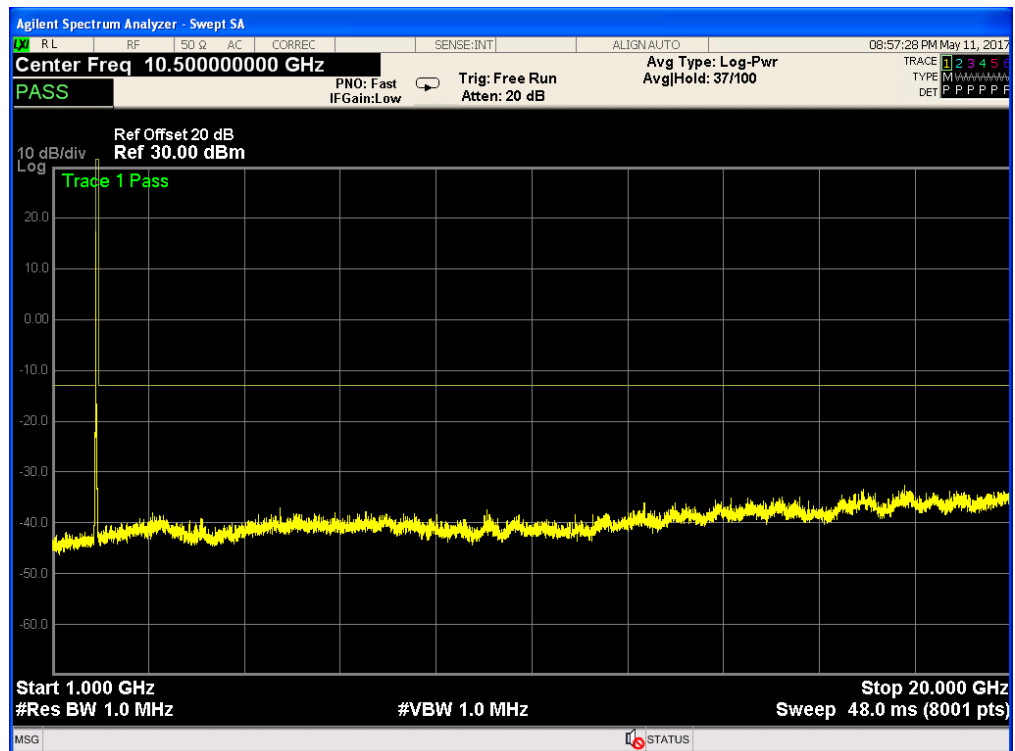
Band 2,UL Channel 18675,UL Frequency 1857.5,BW 15.0,NO. RB 75,RB POS. Low,QPSK



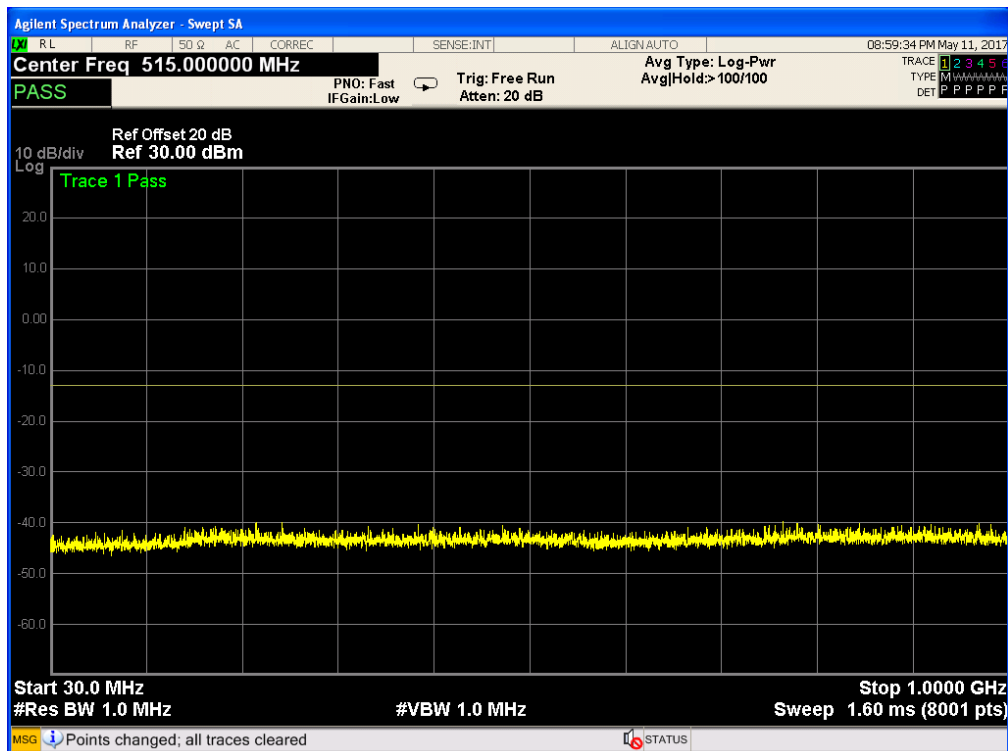
Band 2,UL Channel 18675,UL Frequency 1857.5,BW 15.0,NO. RB 75,RB POS. Low,16QAM



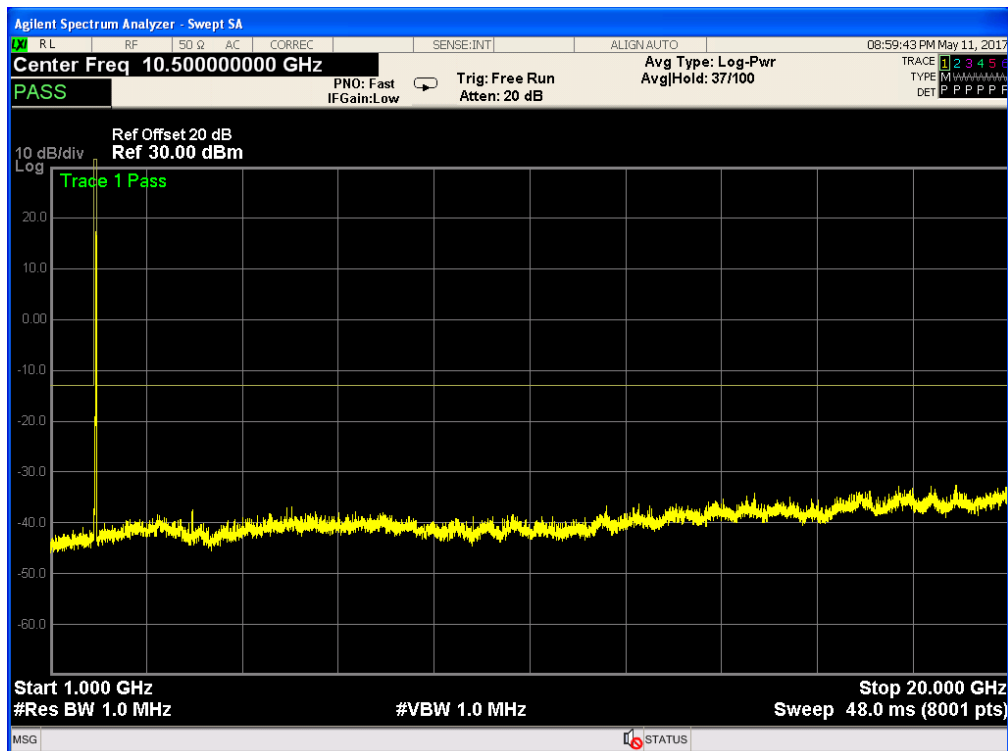
Band 2,UL Channel 18675,UL Frequency 1857.5,BW 15.0,NO. RB 75,RB POS. Low,16QAM



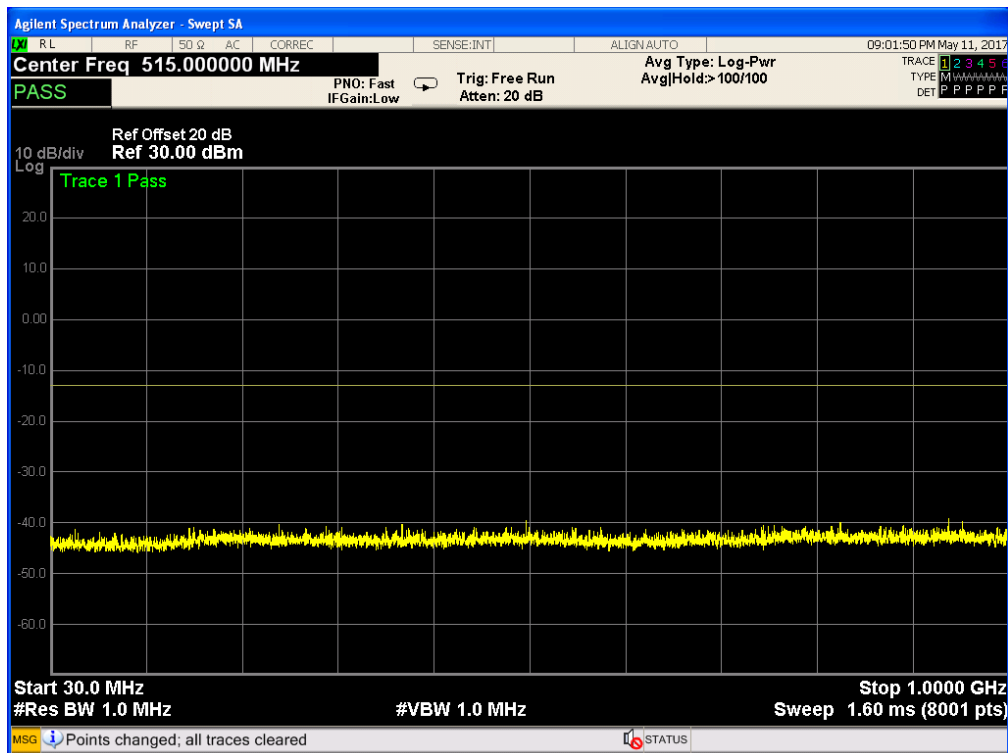
Band 2,UL Channel 19125,UL Frequency 1902.5,BW 15.0,NO. RB 75,RB POS. Low,QPSK



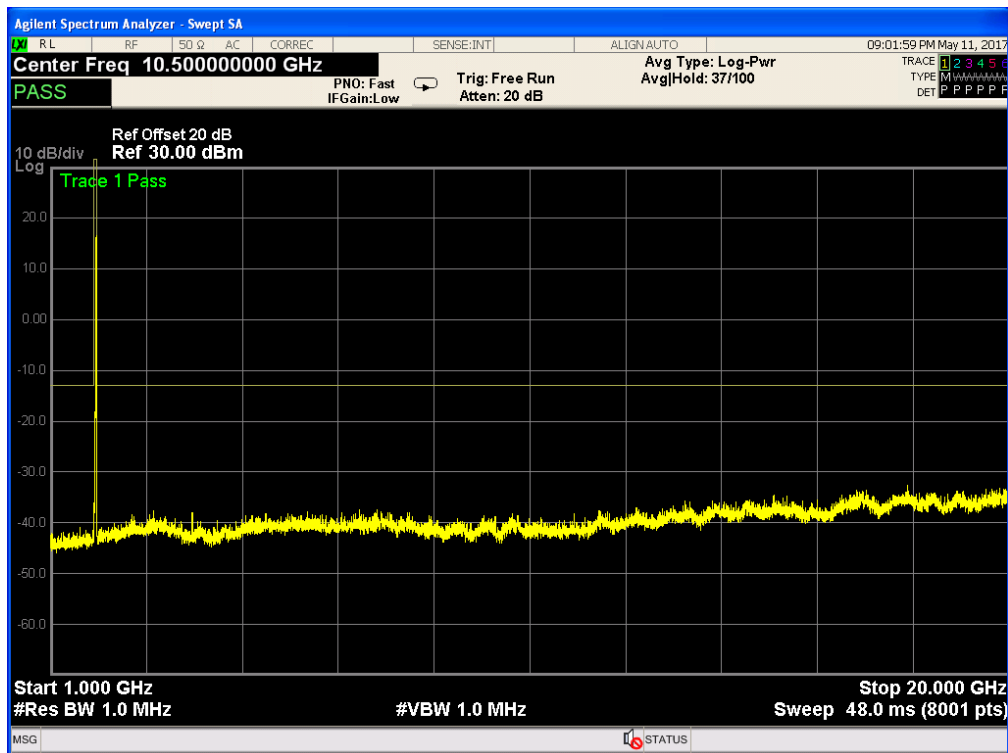
Band 2,UL Channel 19125,UL Frequency 1902.5,BW 15.0,NO. RB 75,RB POS. Low,QPSK



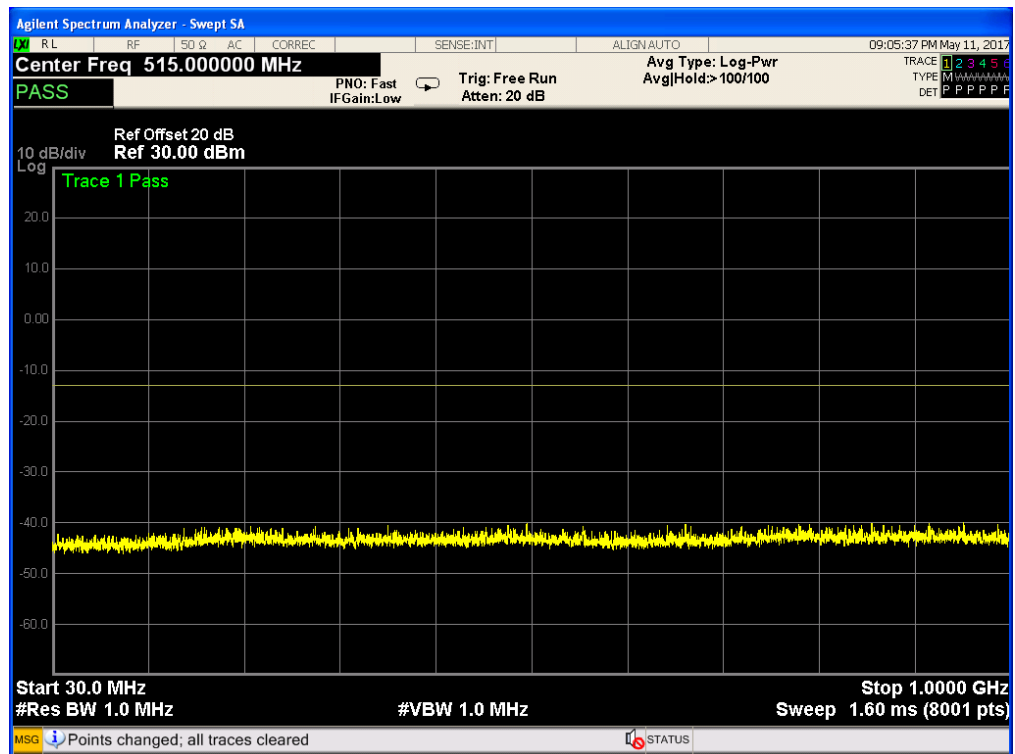
Band 2,UL Channel 19125,UL Frequency 1902.5,BW 15.0,NO. RB 75,RB POS. Low,16QAM



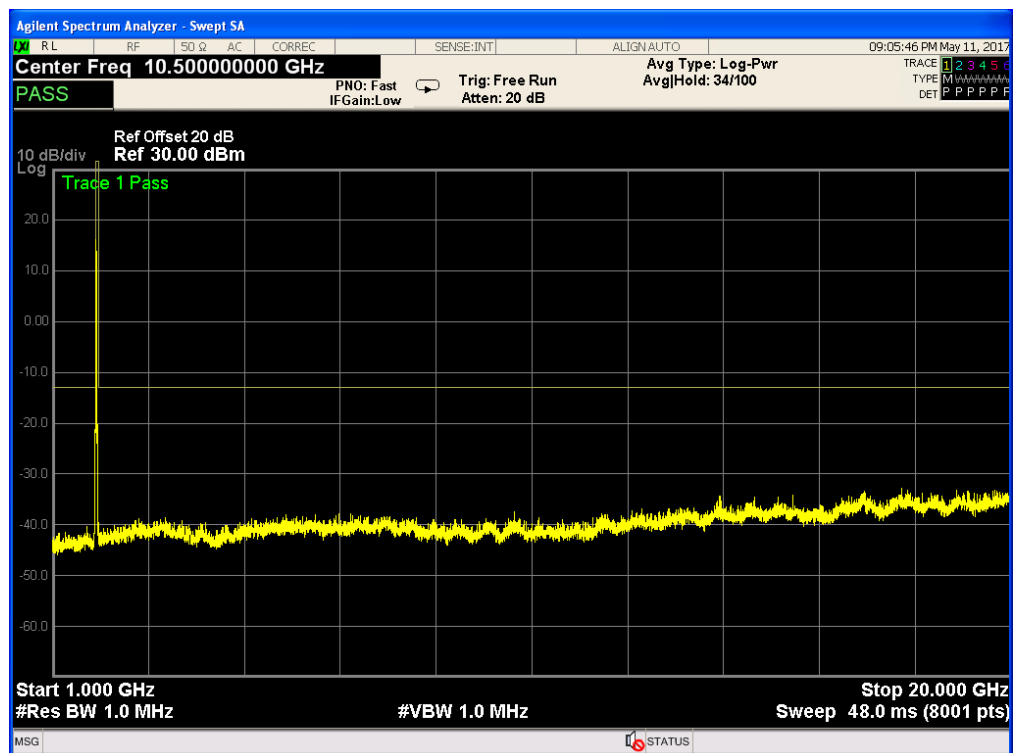
Band 2,UL Channel 19125,UL Frequency 1902.5,BW 15.0,NO. RB 75,RB POS. Low,16QAM



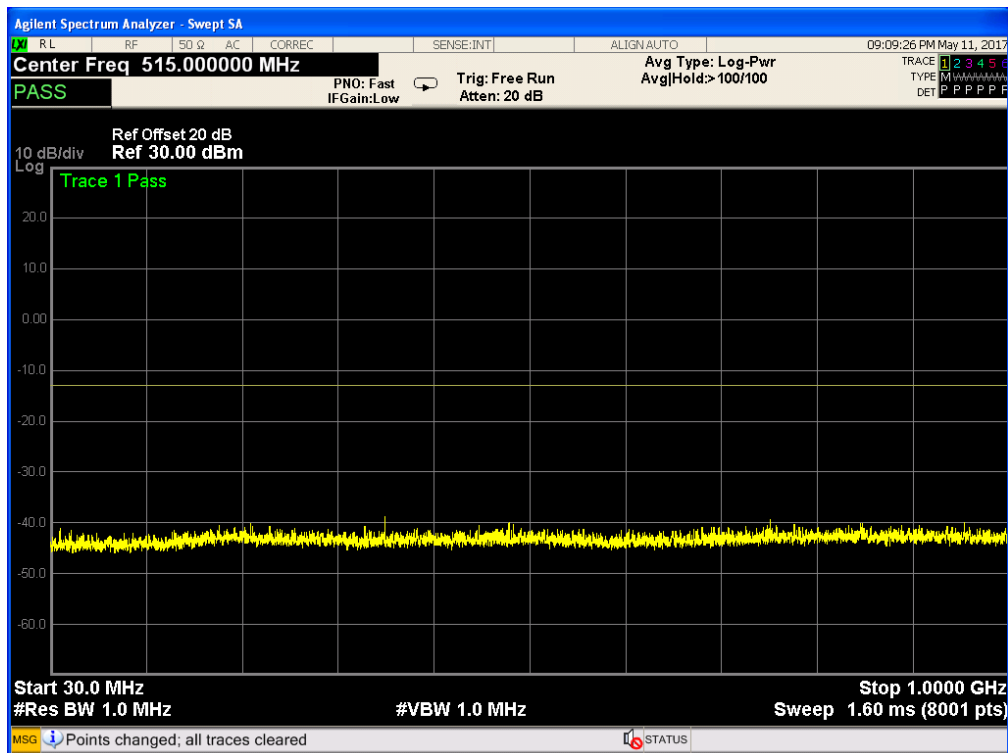
Band 2,UL Channel 18700,UL Frequency 1860.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



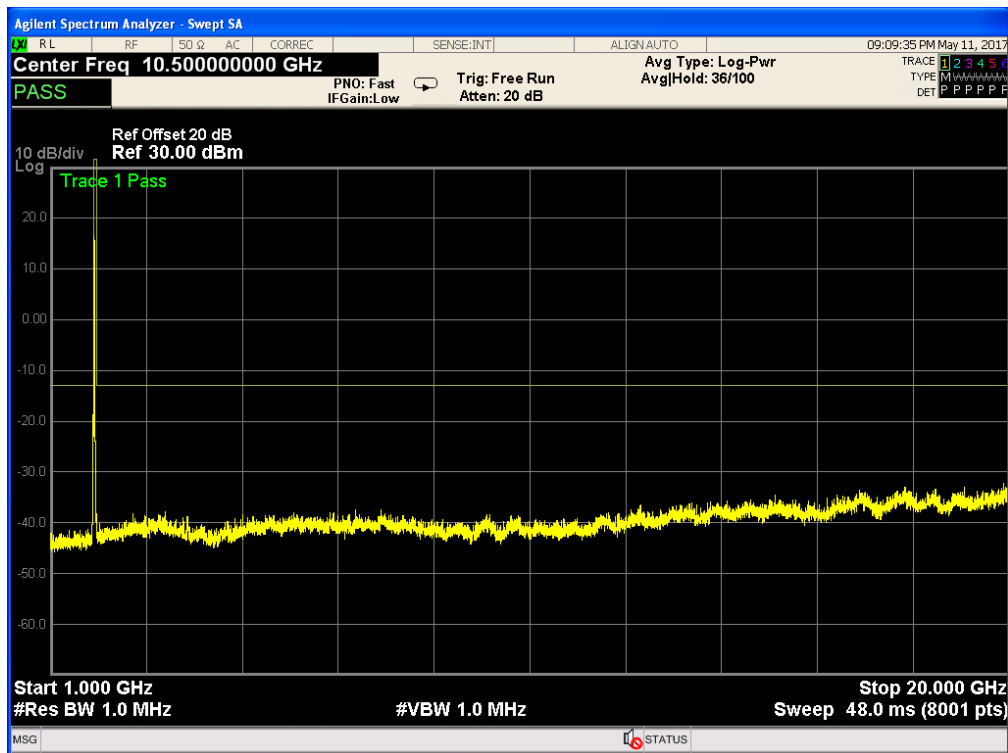
Band 2,UL Channel 18700,UL Frequency 1860.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



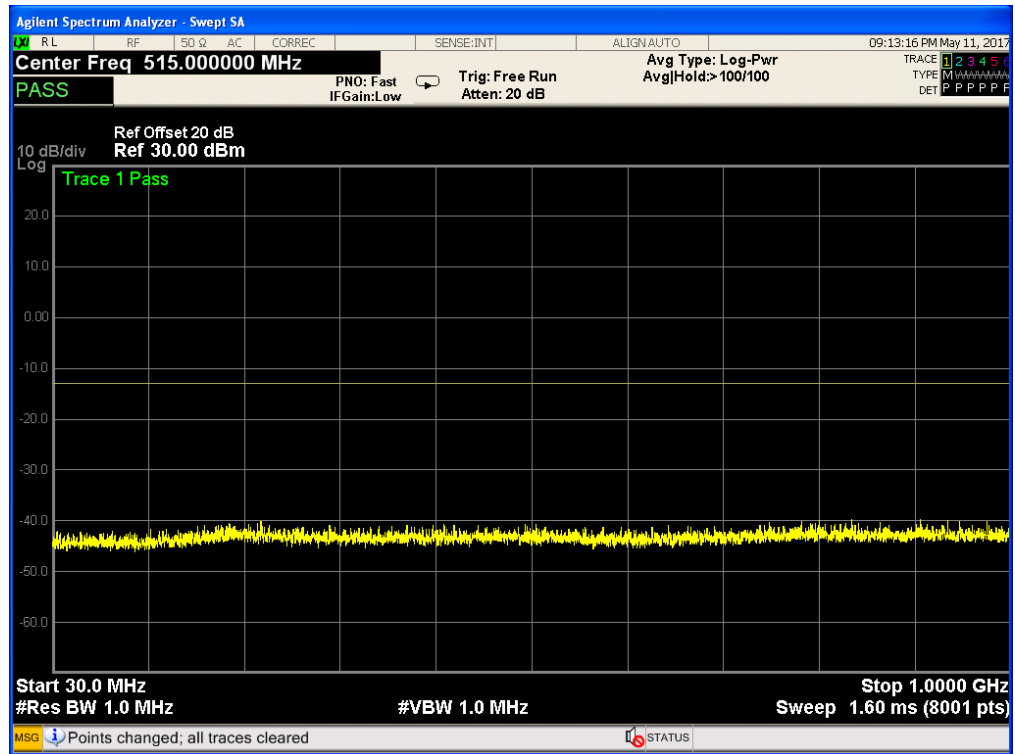
Band 2,UL Channel 18700,UL Frequency 1860.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM



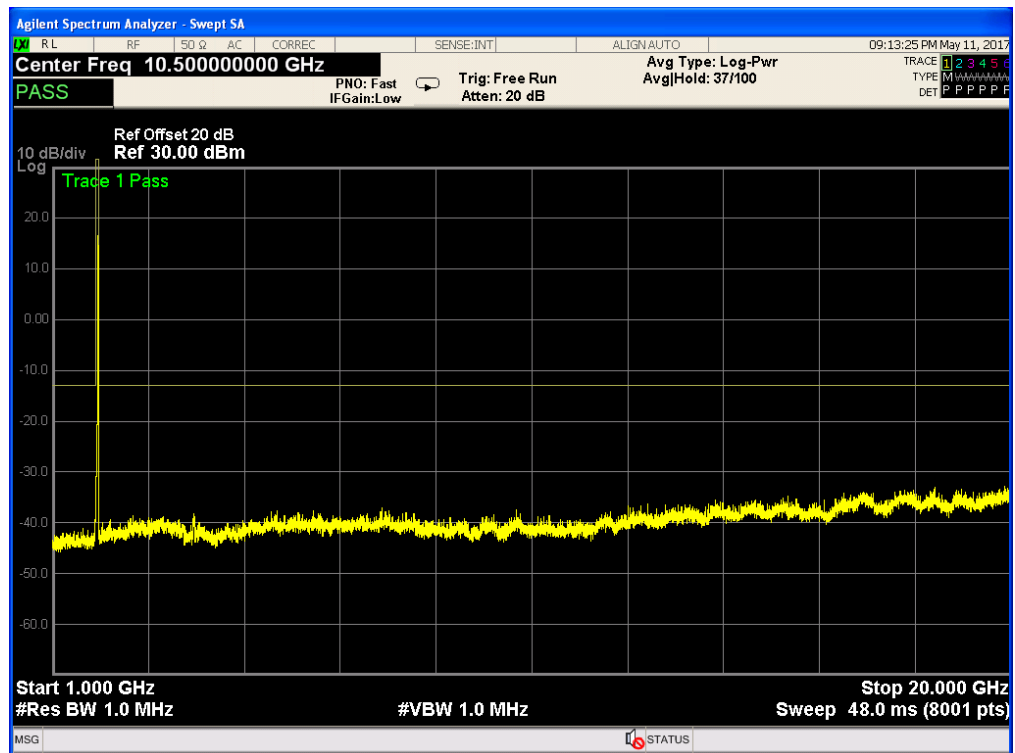
Band 2,UL Channel 18700,UL Frequency 1860.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM



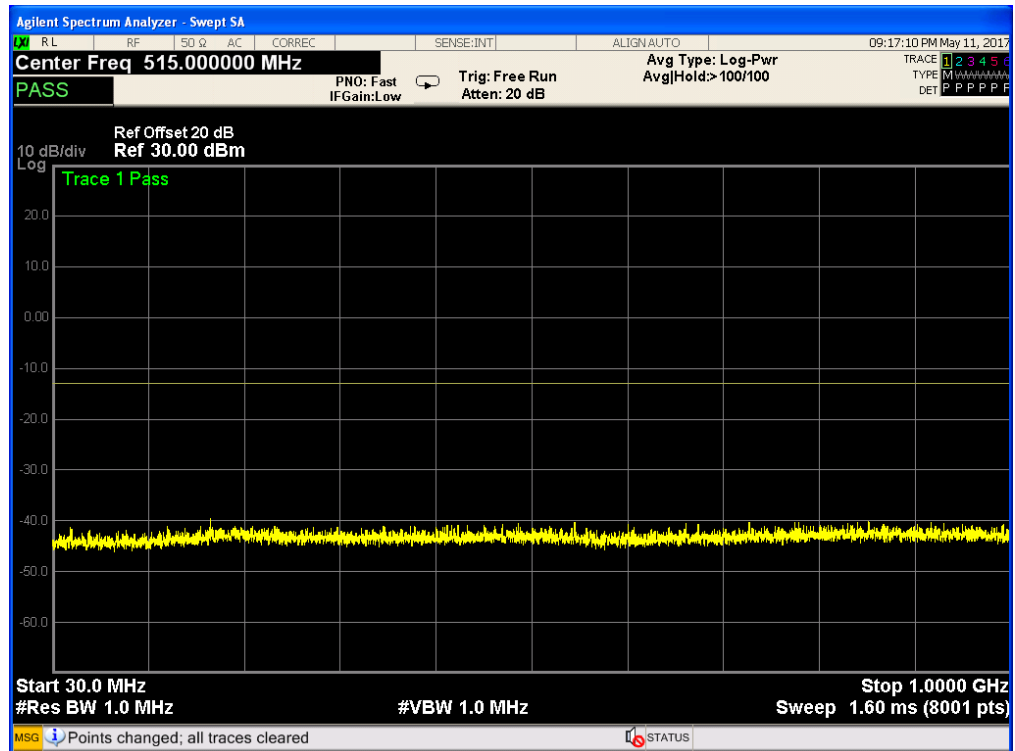
Band 2,UL Channel 19100,UL Frequency 1900.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



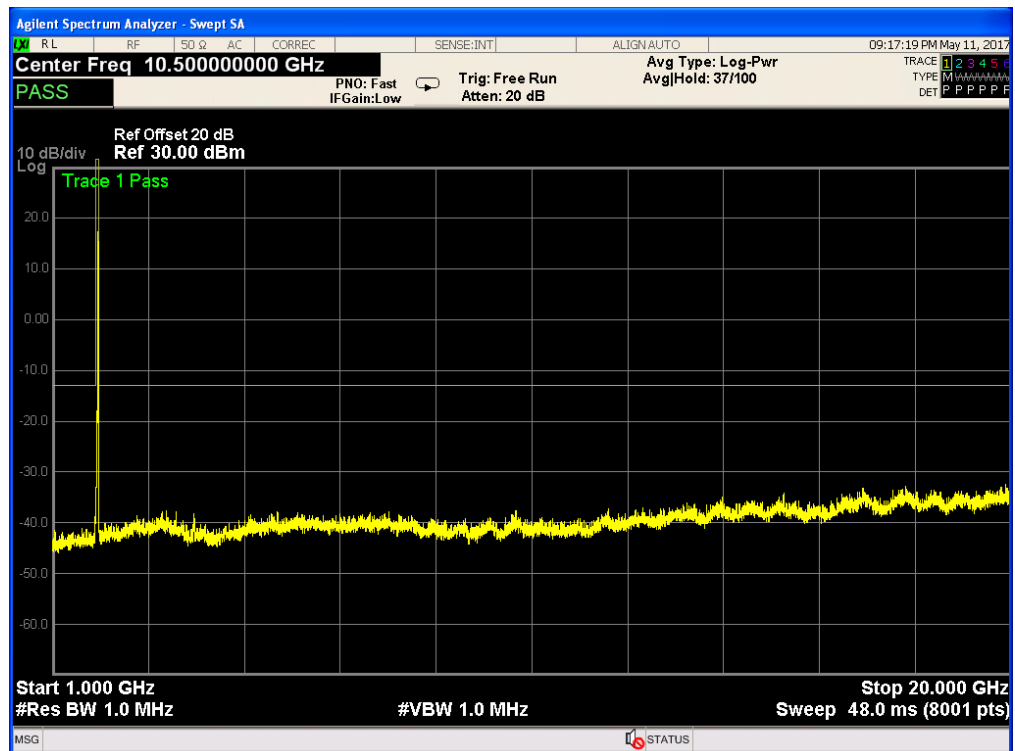
Band 2,UL Channel 19100,UL Frequency 1900.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



Band 2,UL Channel 19100,UL Frequency 1900.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM

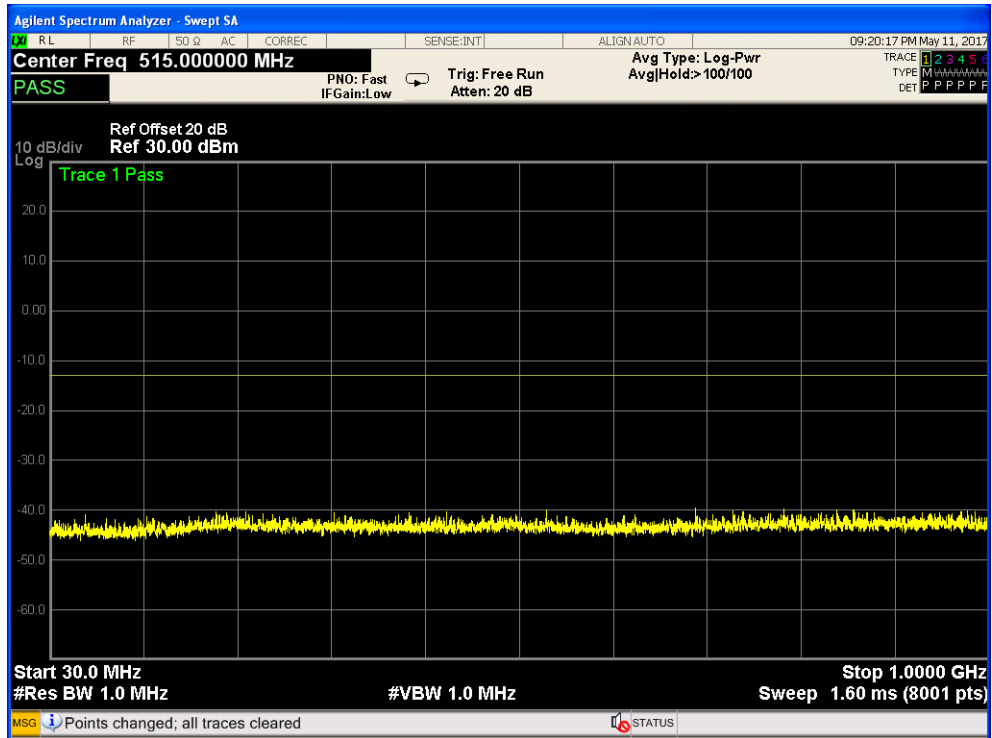


Band 2,UL Channel 19100,UL Frequency 1900.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM

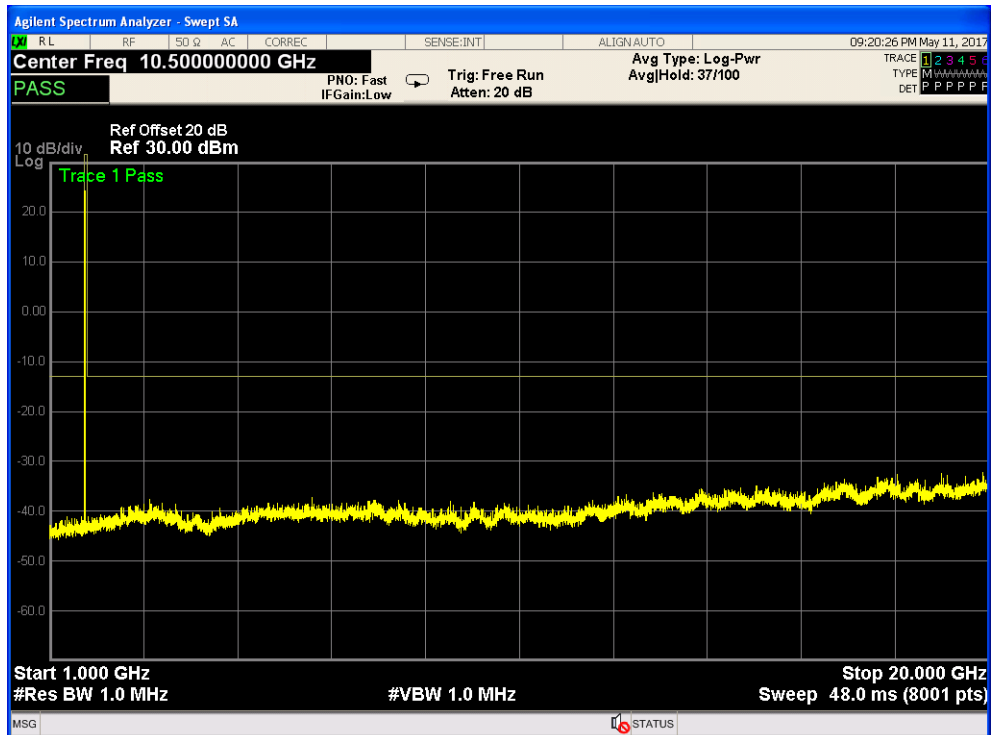


7.2 LTE BAND 4

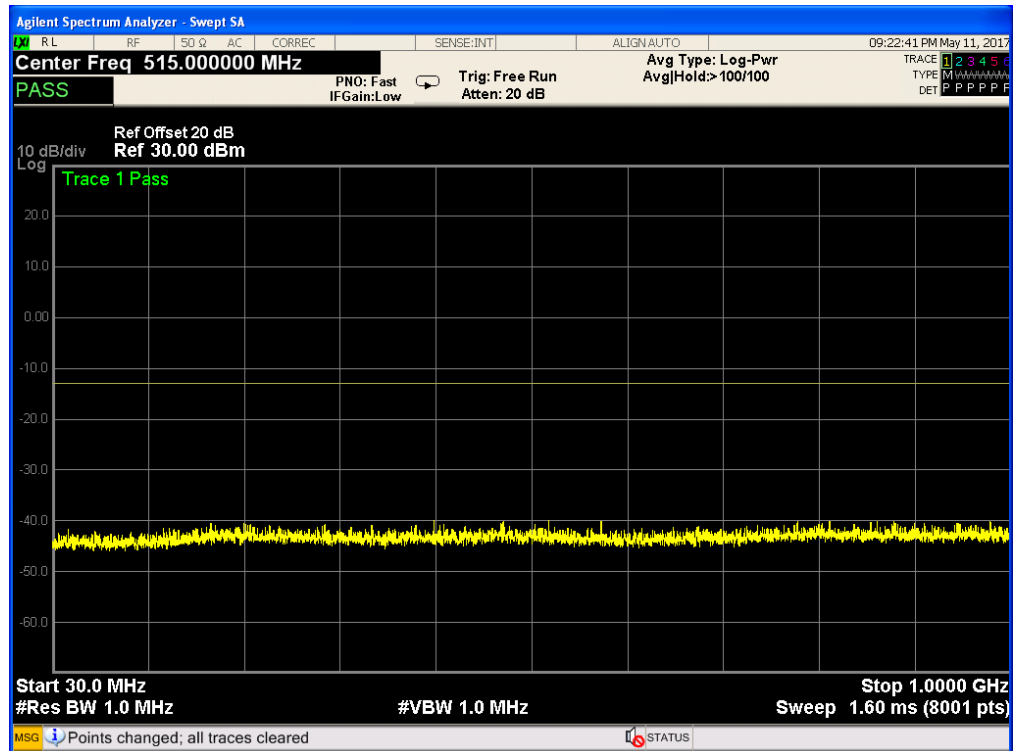
Band 4,UL Channel 19957,UL Frequency 1710.7,BW 1.4,NO. RB 6,RB POS. Low,QPSK



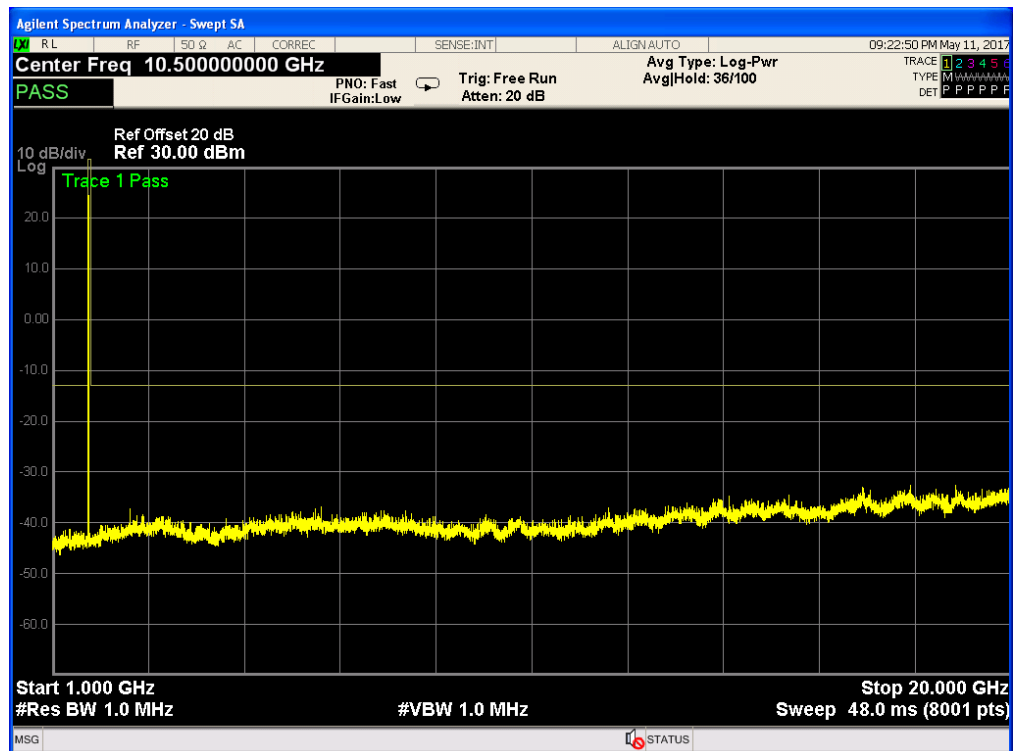
Band 4,UL Channel 19957,UL Frequency 1710.7,BW 1.4,NO. RB 6,RB POS. Low,QPSK



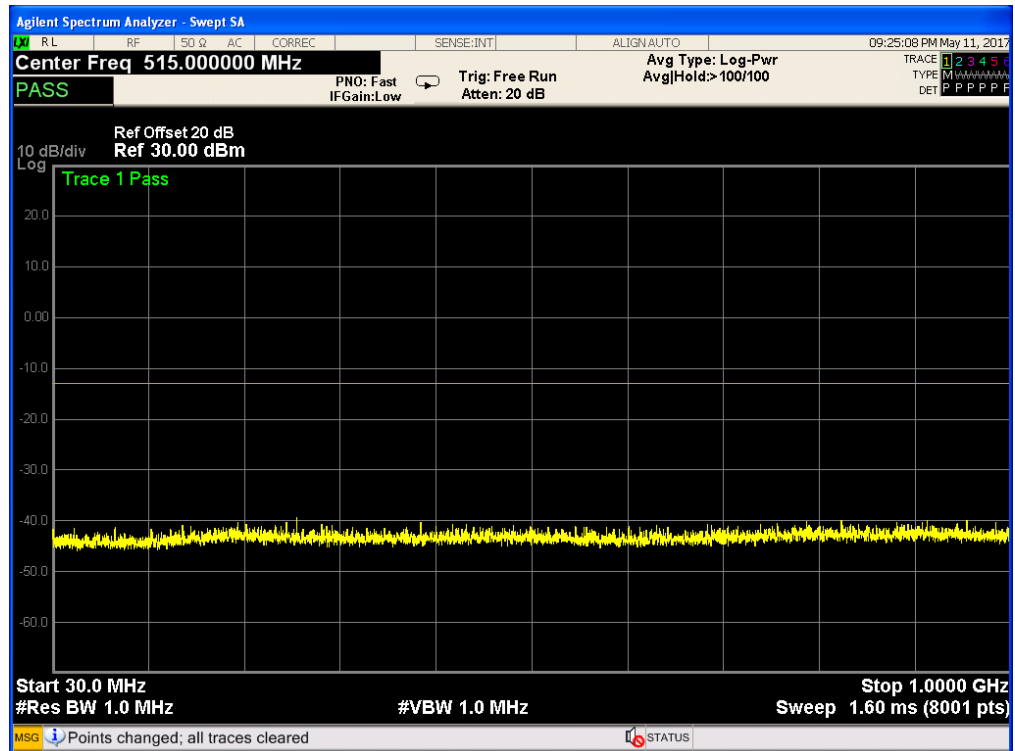
Band 4,UL Channel 19957,UL Frequency 1710.7,BW 1.4,NO. RB 6,RB POS. Low,16QAM



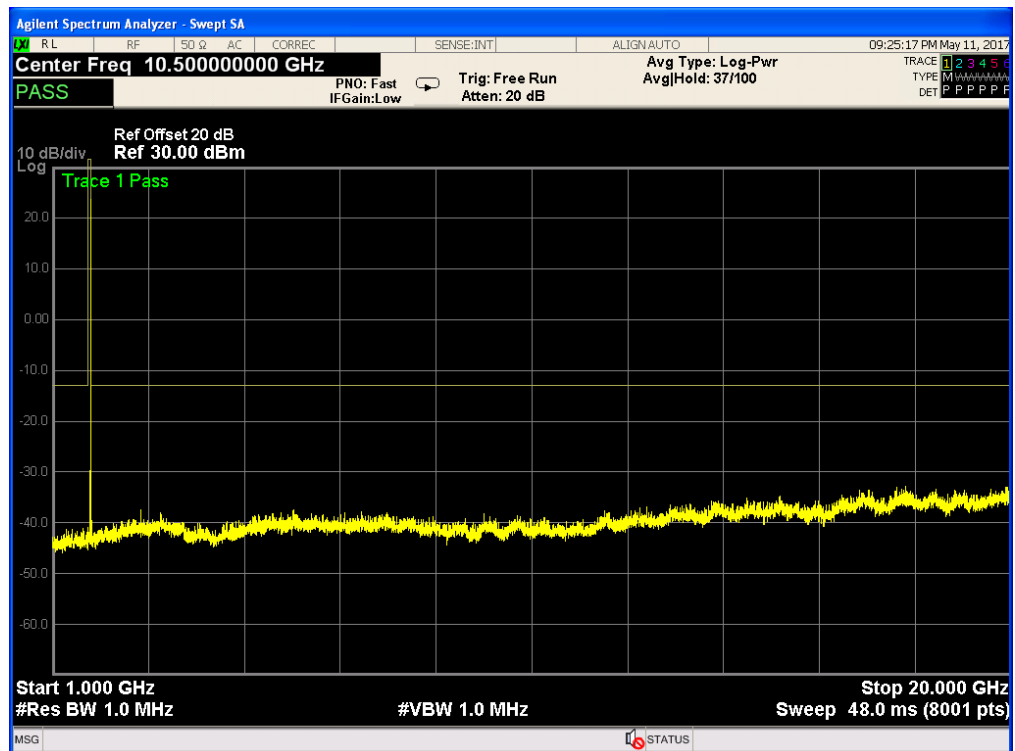
Band 4,UL Channel 19957,UL Frequency 1710.7,BW 1.4,NO. RB 6,RB POS. Low,16QAM



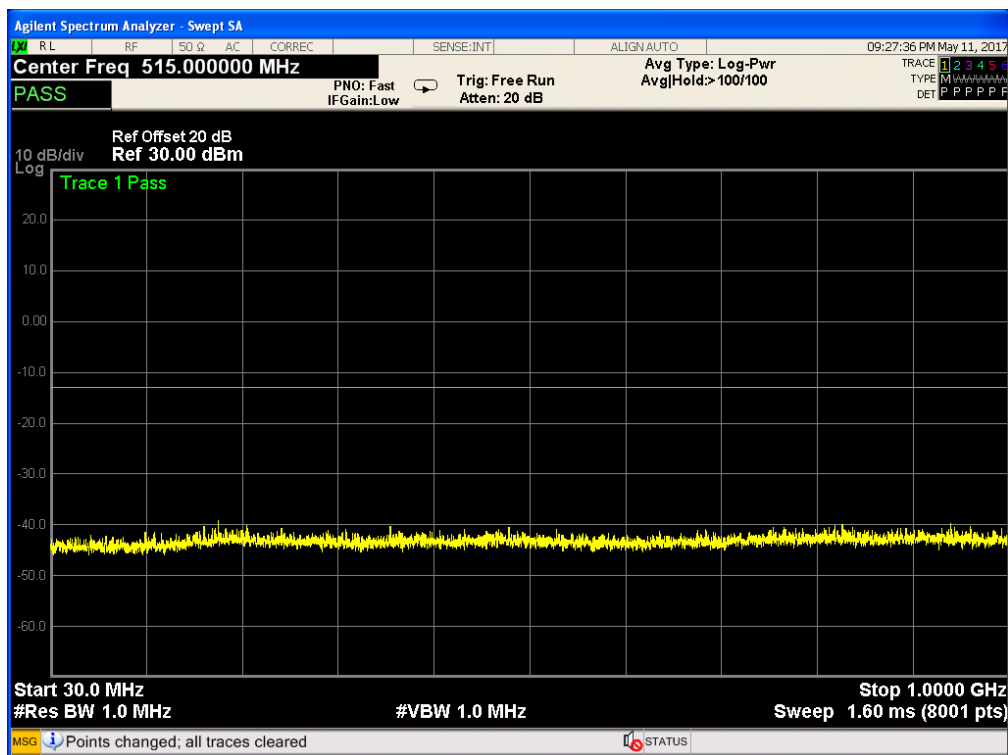
Band 4,UL Channel 20393,UL Frequency 1754.3,BW 1.4,NO. RB 6,RB POS. Low,QPSK



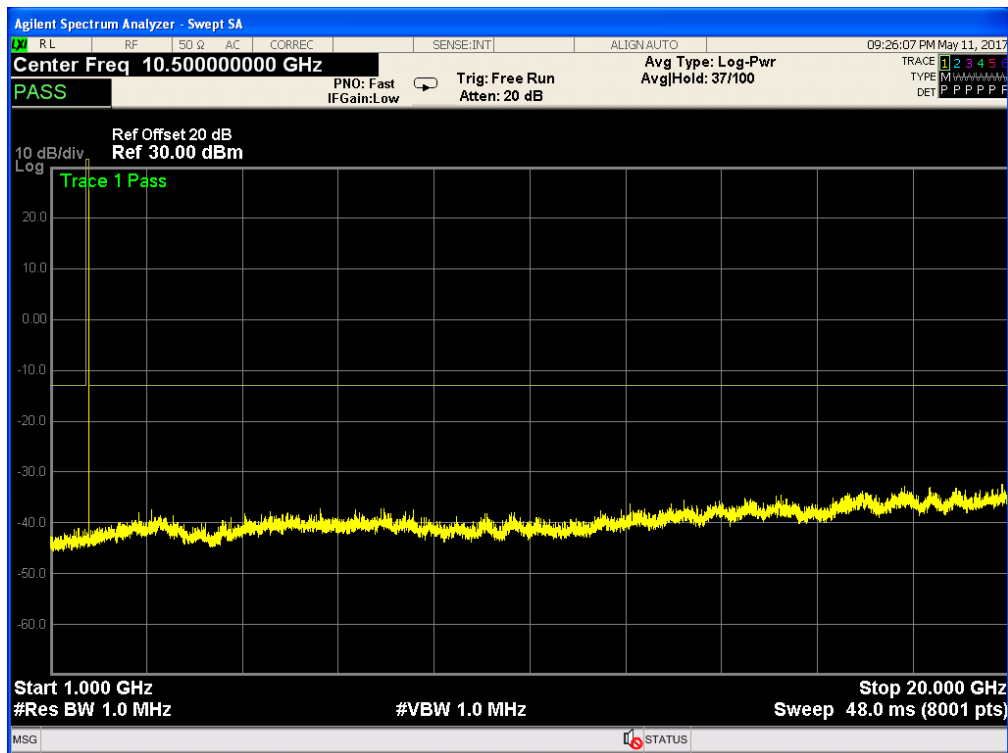
Band 4,UL Channel 20393,UL Frequency 1754.3,BW 1.4,NO. RB 6,RB POS. Low,QPSK



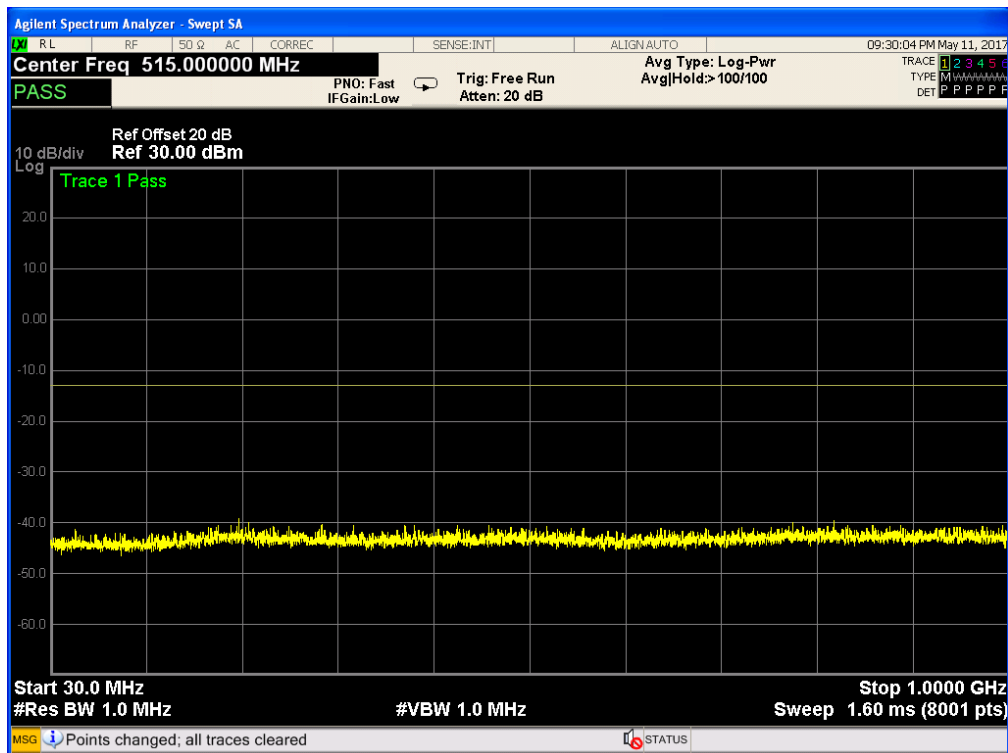
Band 4,UL Channel 20393,UL Frequency 1754.3,BW 1.4,NO. RB 6,RB POS. Low,16QAM



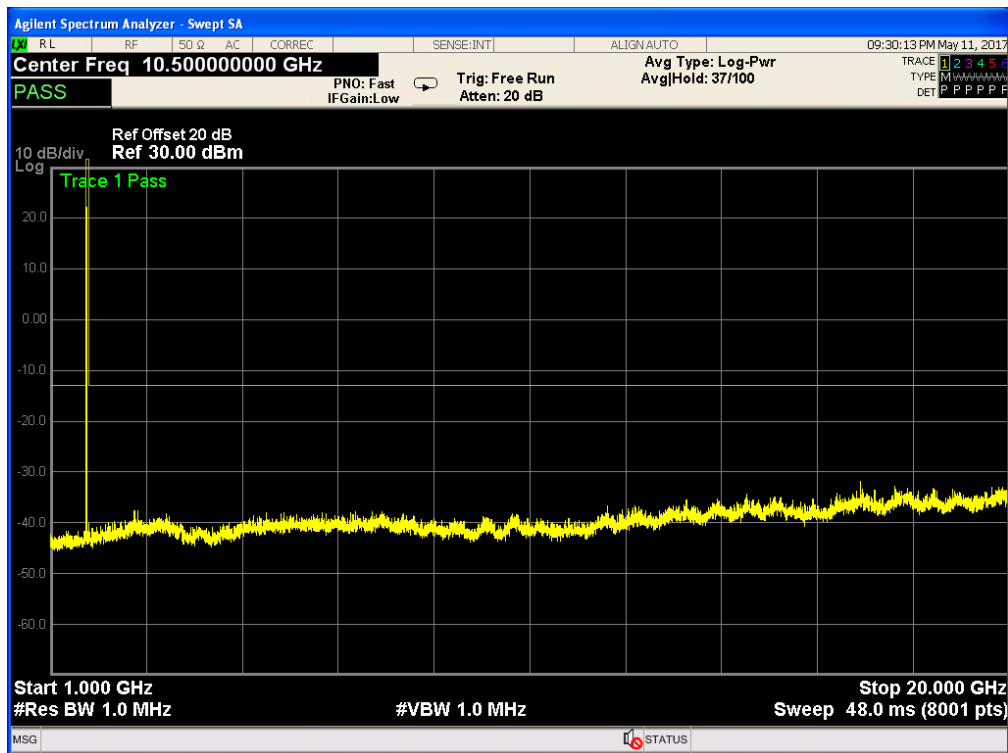
Band 4,UL Channel 20393,UL Frequency 1754.3,BW 1.4,NO. RB 6,RB POS. Low,16QAM



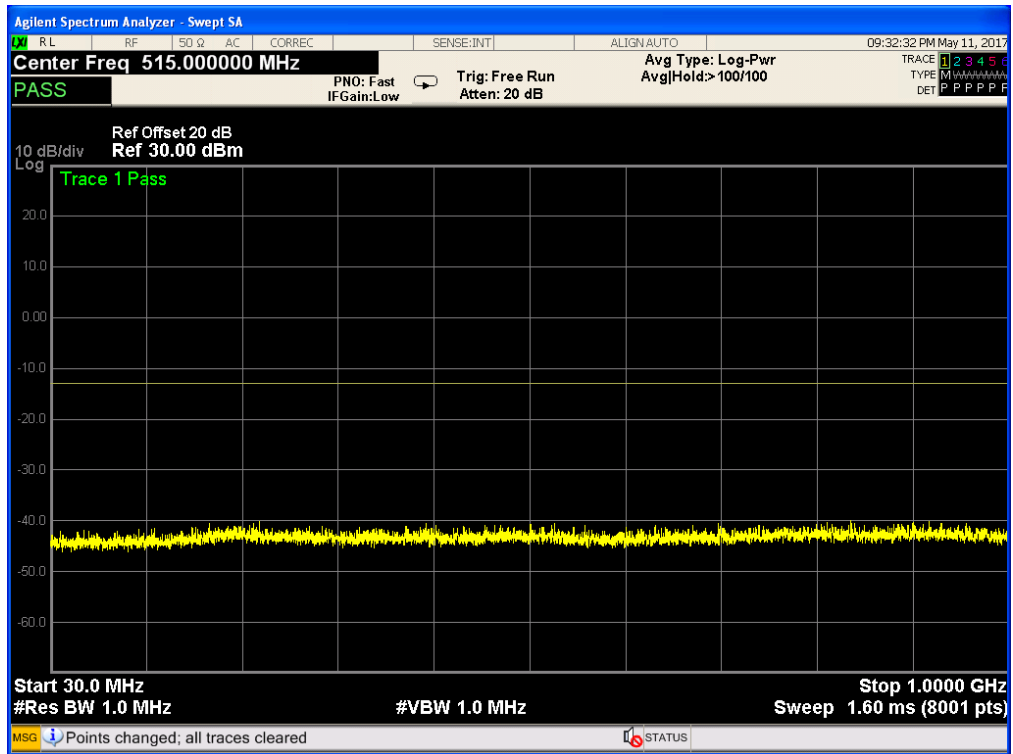
Band 4,UL Channel 19965,UL Frequency 1711.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



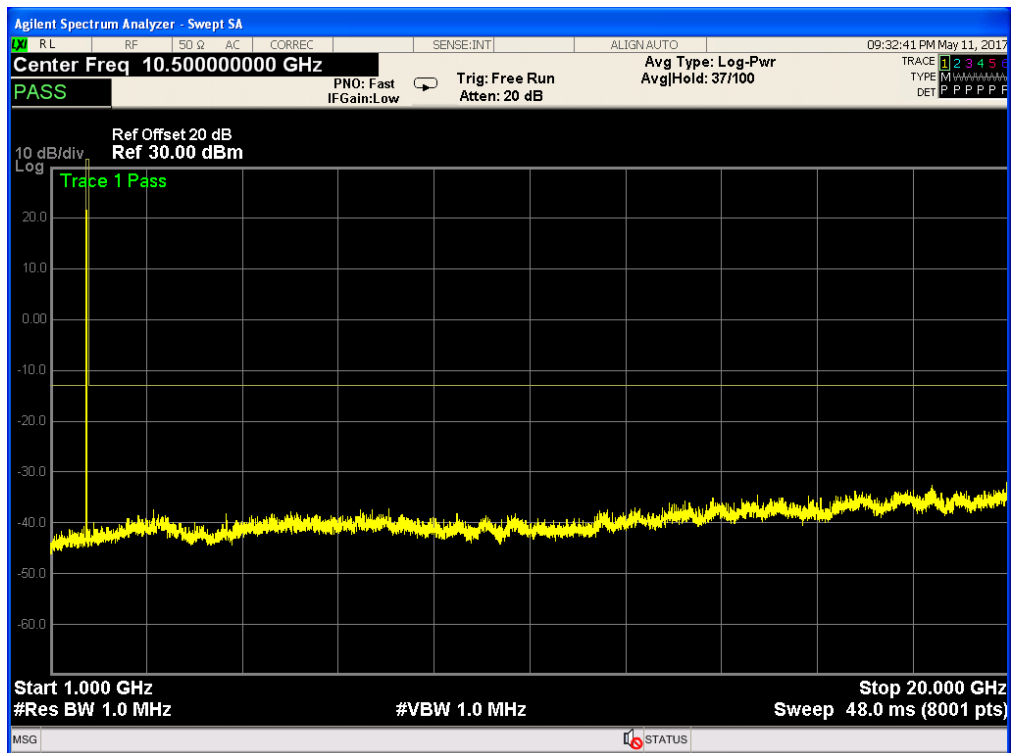
Band 4,UL Channel 19965,UL Frequency 1711.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



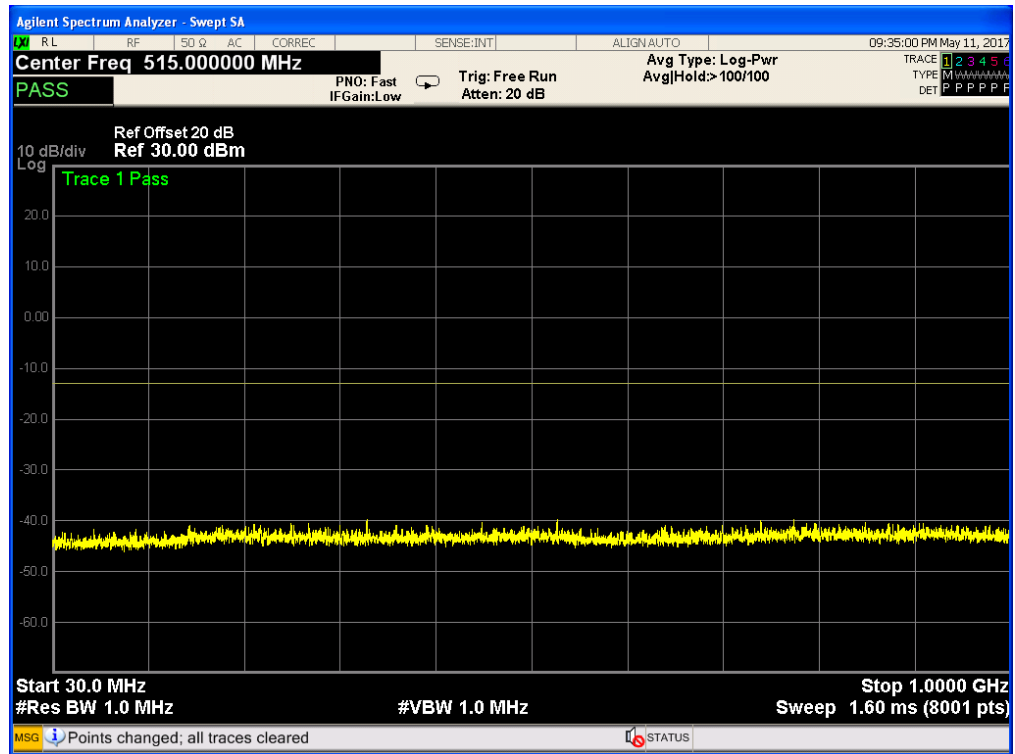
Band 4,UL Channel 19965,UL Frequency 1711.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



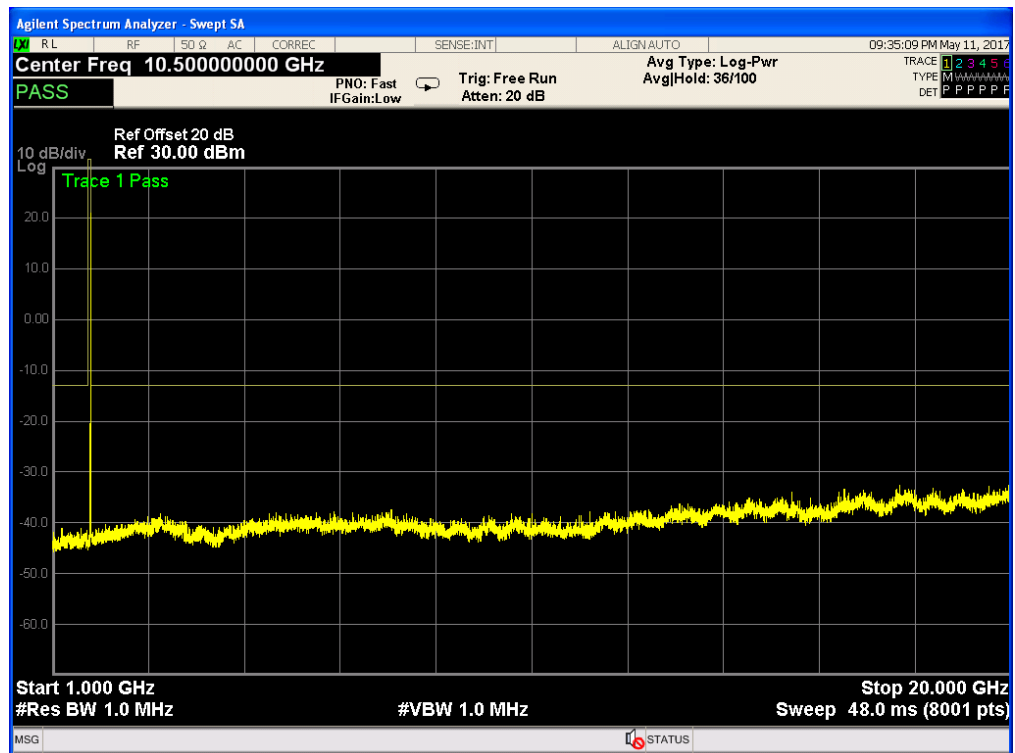
Band 4,UL Channel 19965,UL Frequency 1711.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



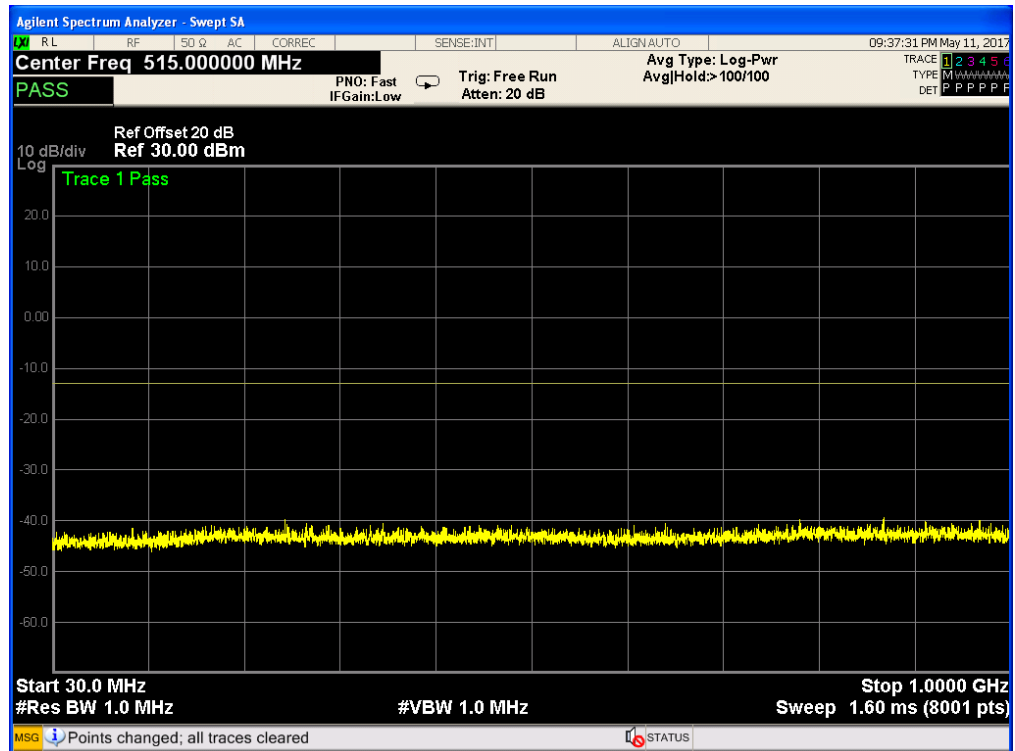
Band 4,UL Channel 20385,UL Frequency 1753.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



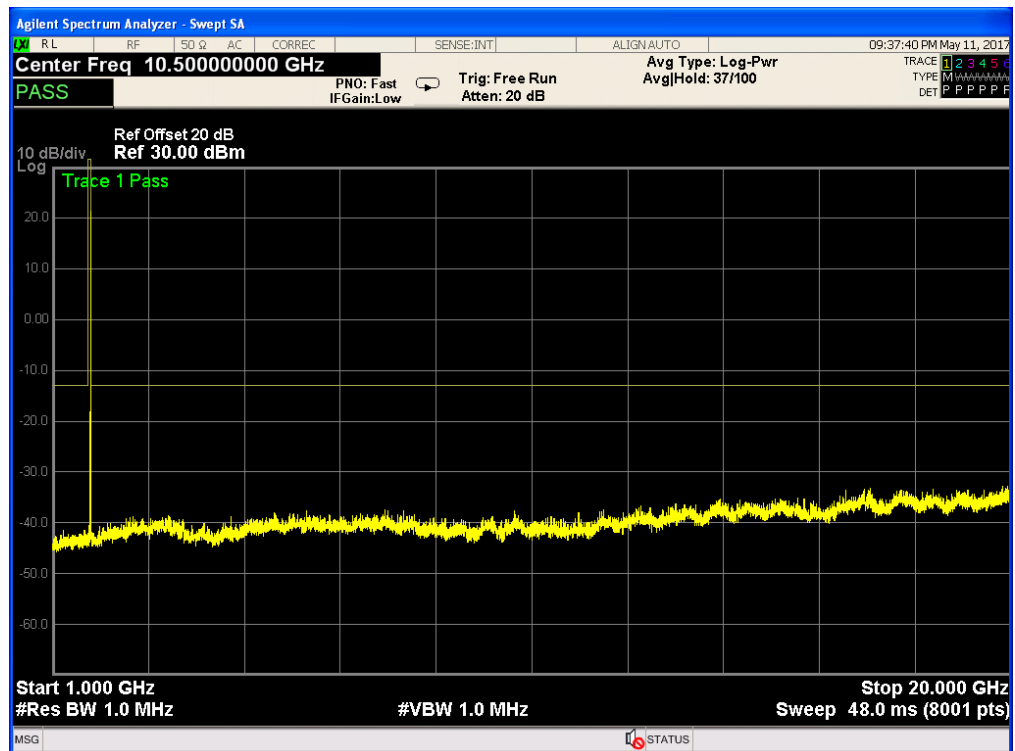
Band 4,UL Channel 20385,UL Frequency 1753.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



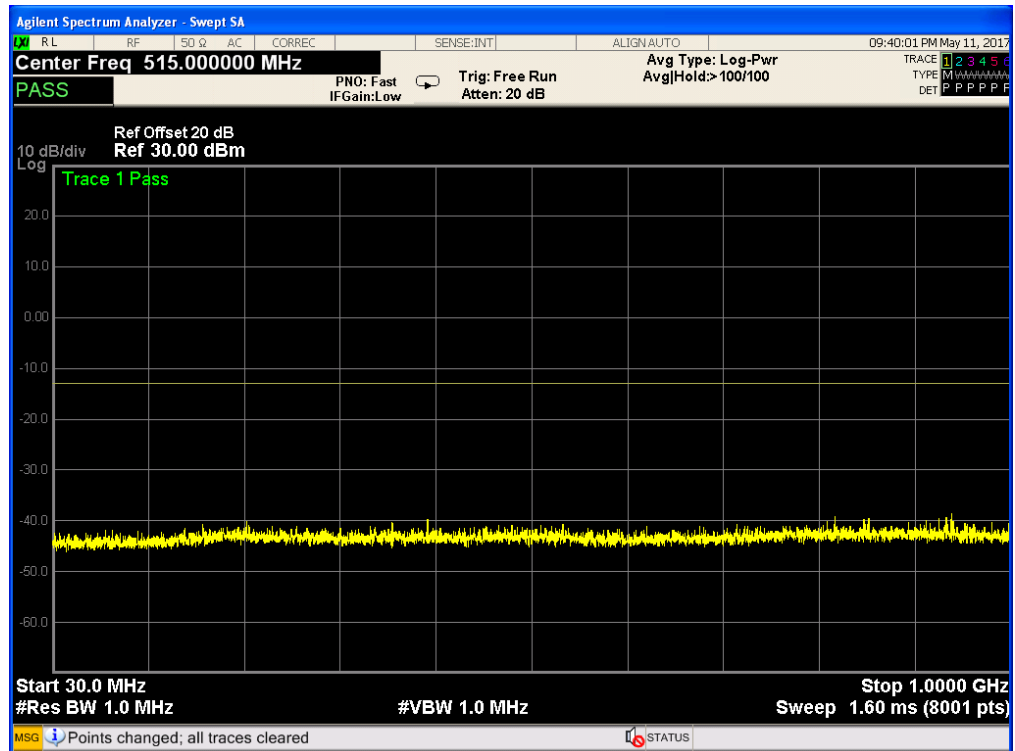
Band 4,UL Channel 20385,UL Frequency 1753.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



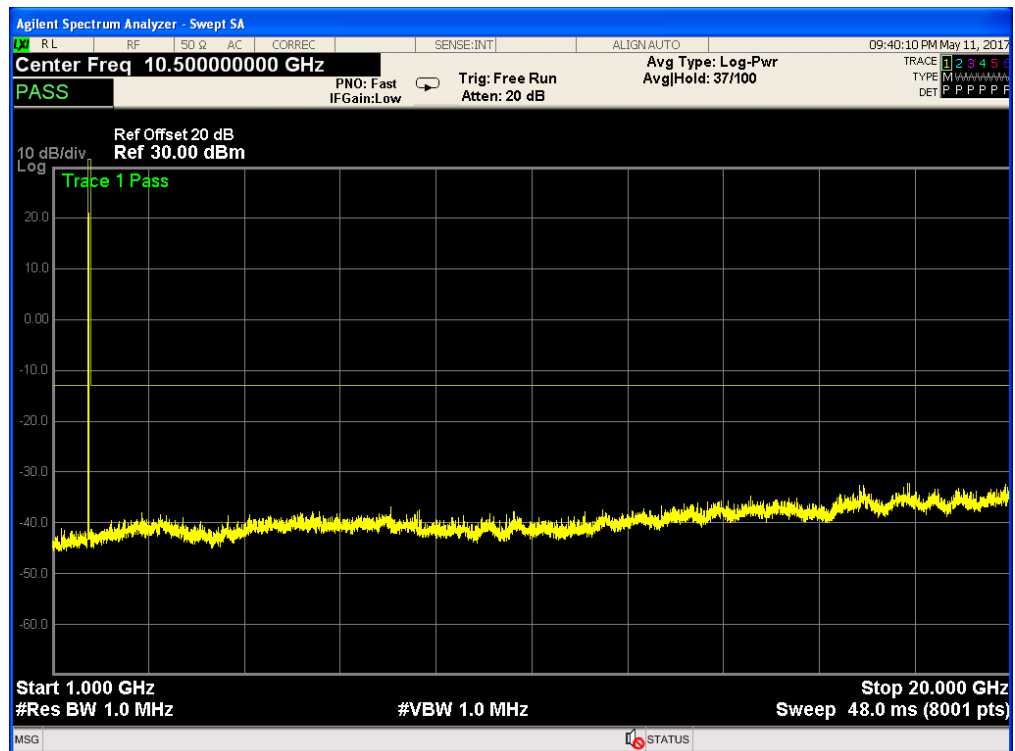
Band 4,UL Channel 20385,UL Frequency 1753.5,BW 3.0,NO. RB 15,RB POS. Low,16QAM



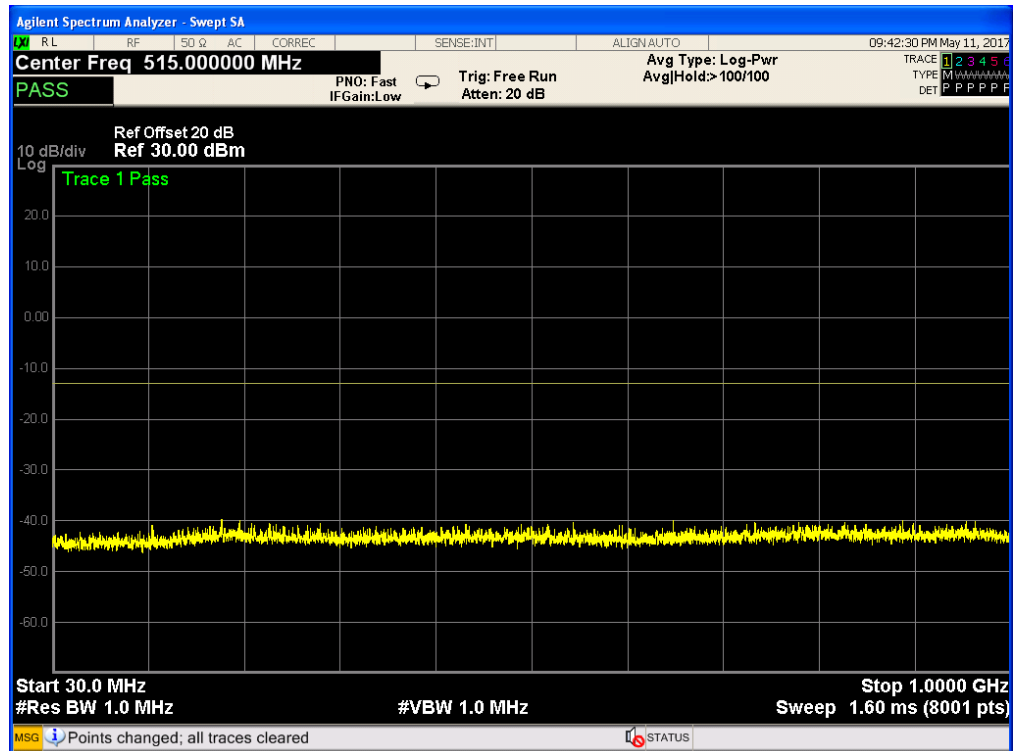
Band 4,UL Channel 19975,UL Frequency 1712.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



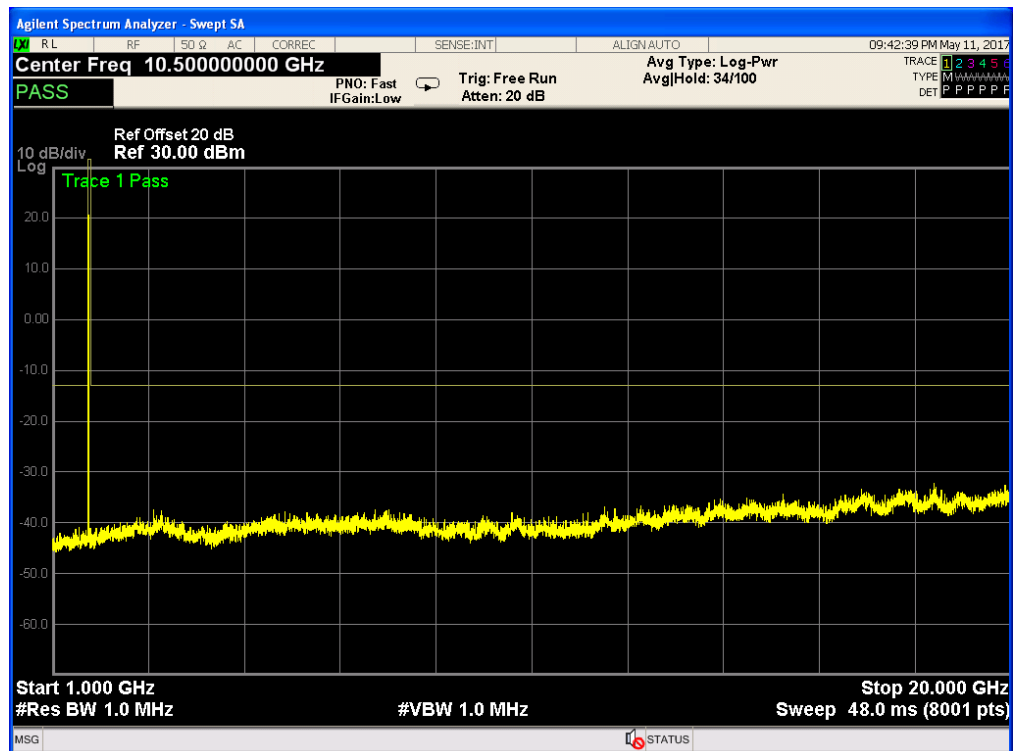
Band 4,UL Channel 19975,UL Frequency 1712.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



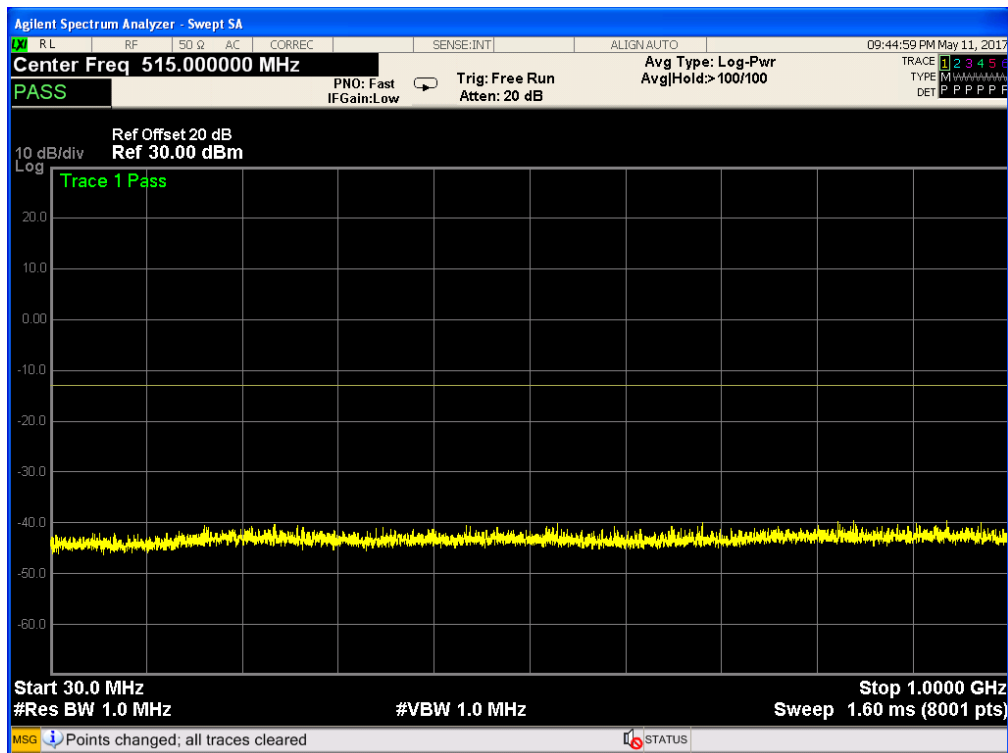
Band 4,UL Channel 19975,UL Frequency 1712.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



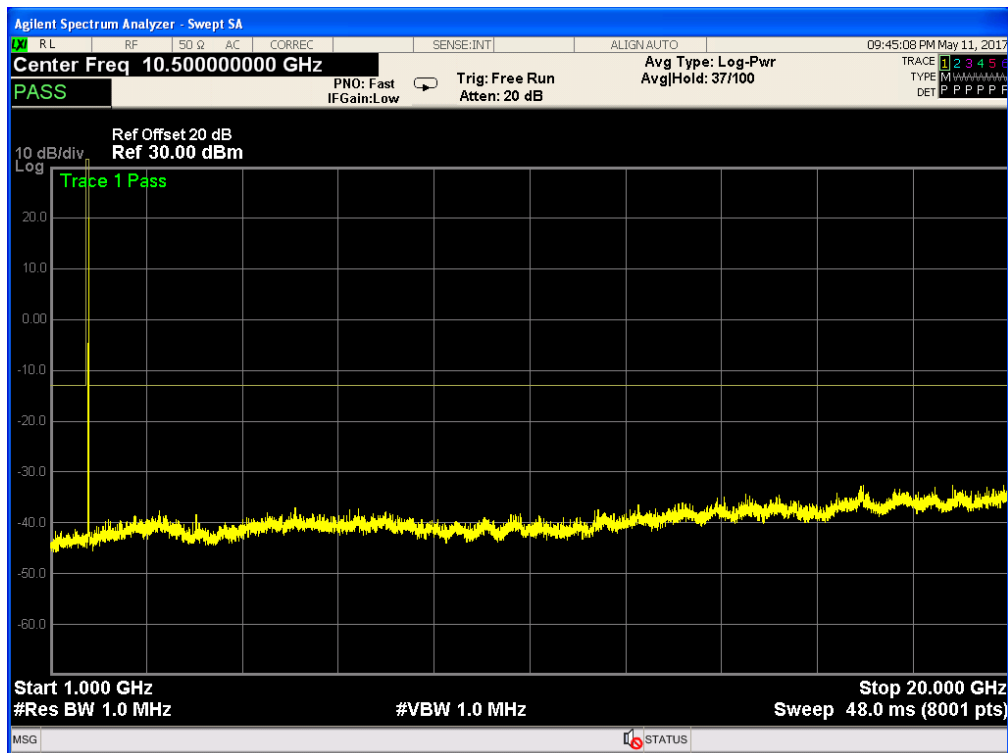
Band 4,UL Channel 19975,UL Frequency 1712.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



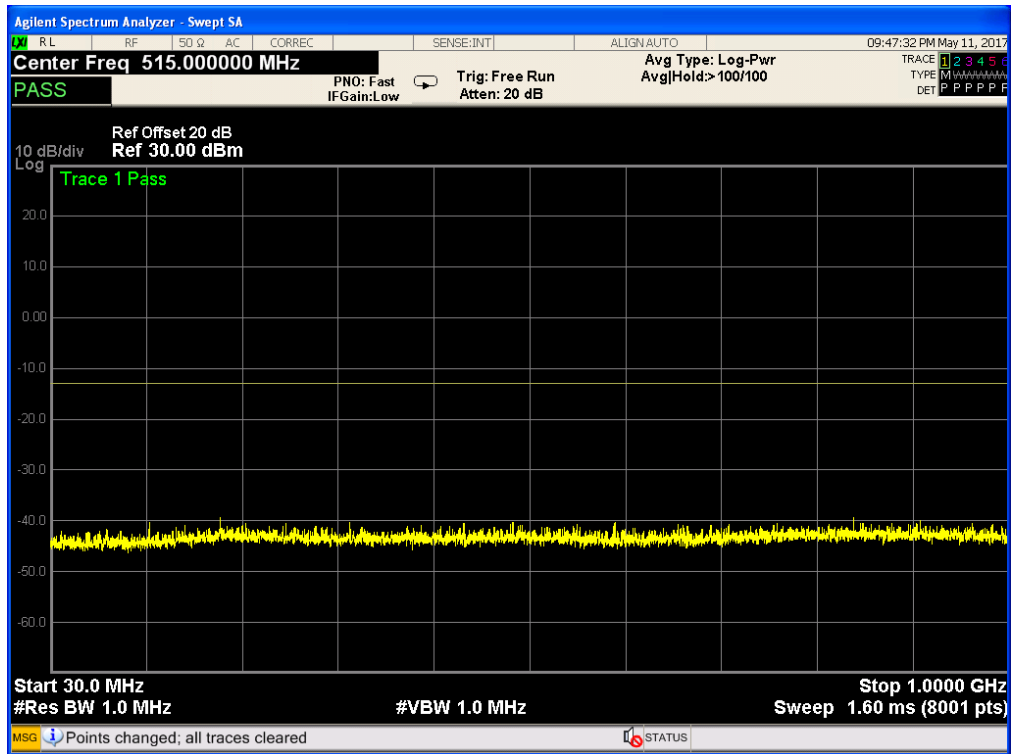
Band 4,UL Channel 20375,UL Frequency 1752.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



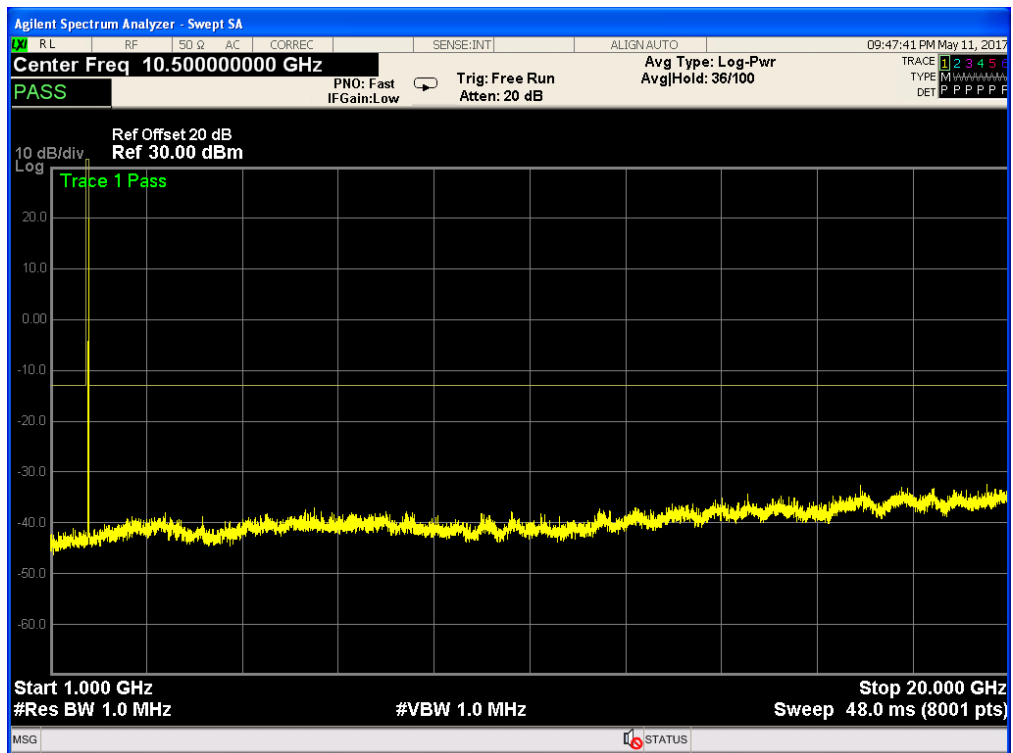
Band 4,UL Channel 20375,UL Frequency 1752.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



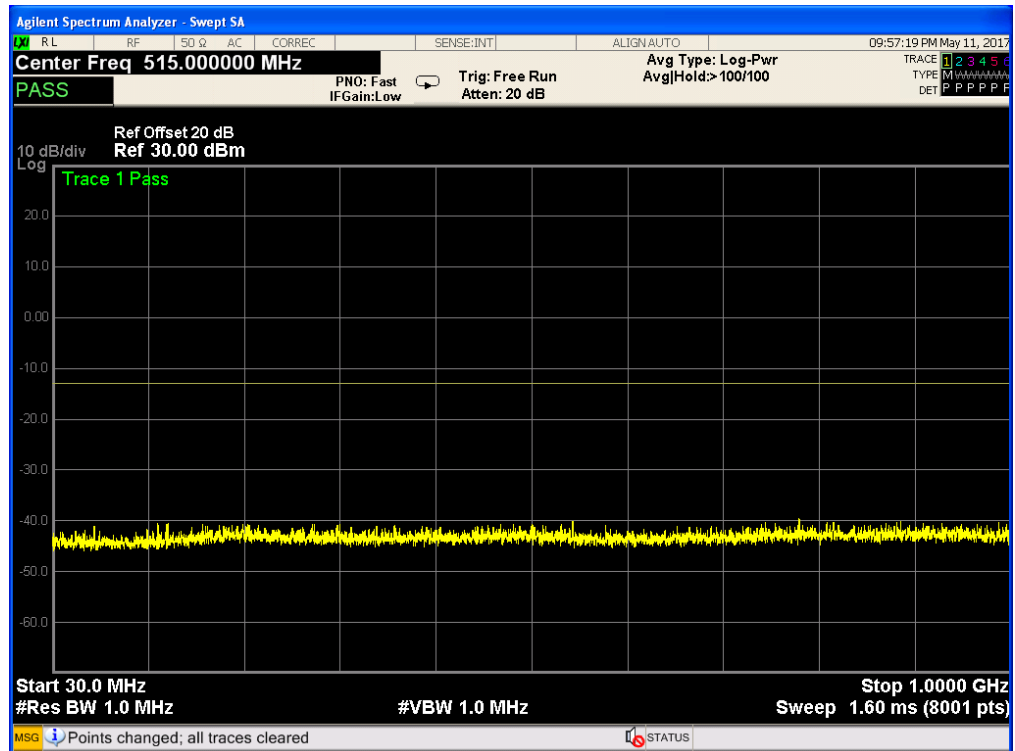
Band 4,UL Channel 20375,UL Frequency 1752.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



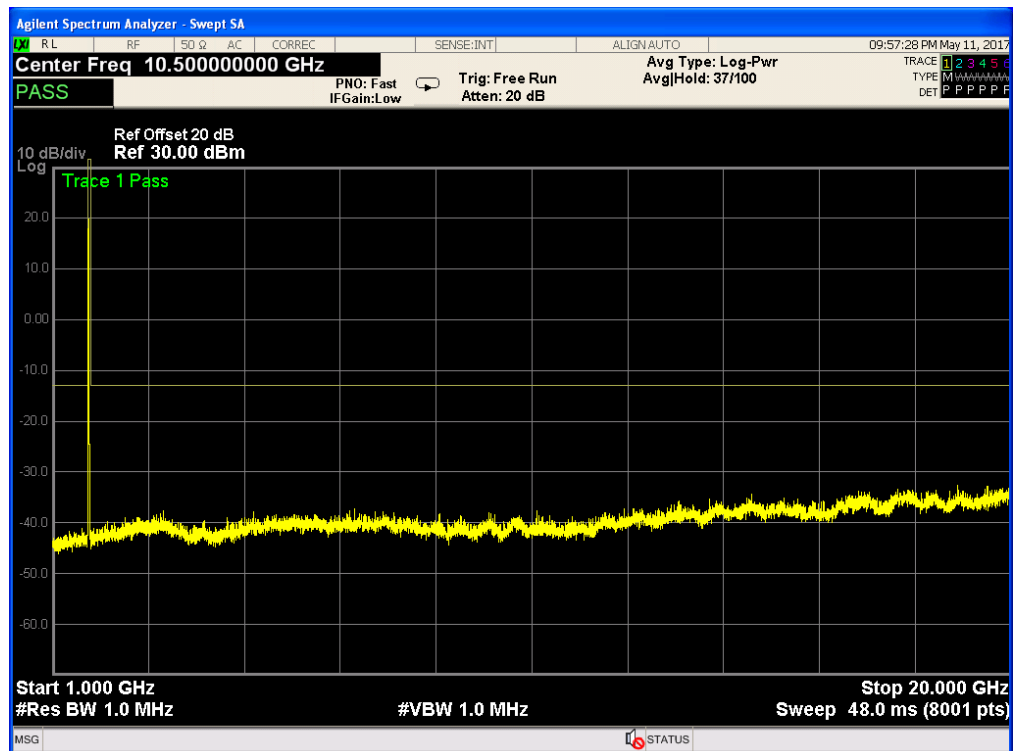
Band 4,UL Channel 20375,UL Frequency 1752.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



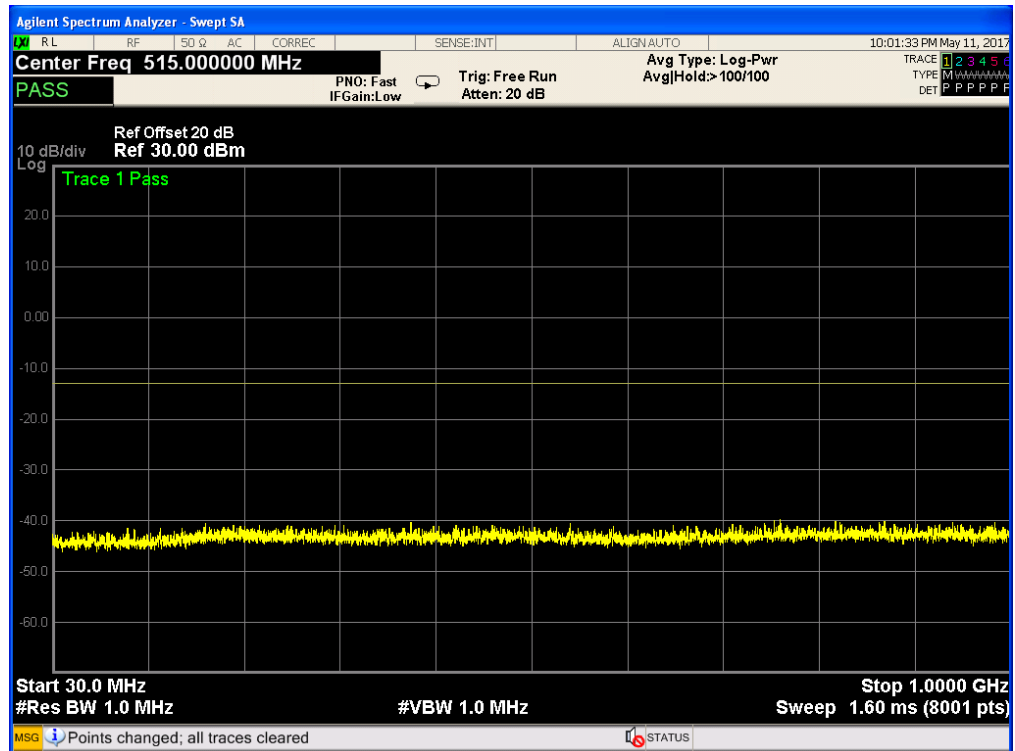
Band 4,UL Channel 20000,UL Frequency 1715.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



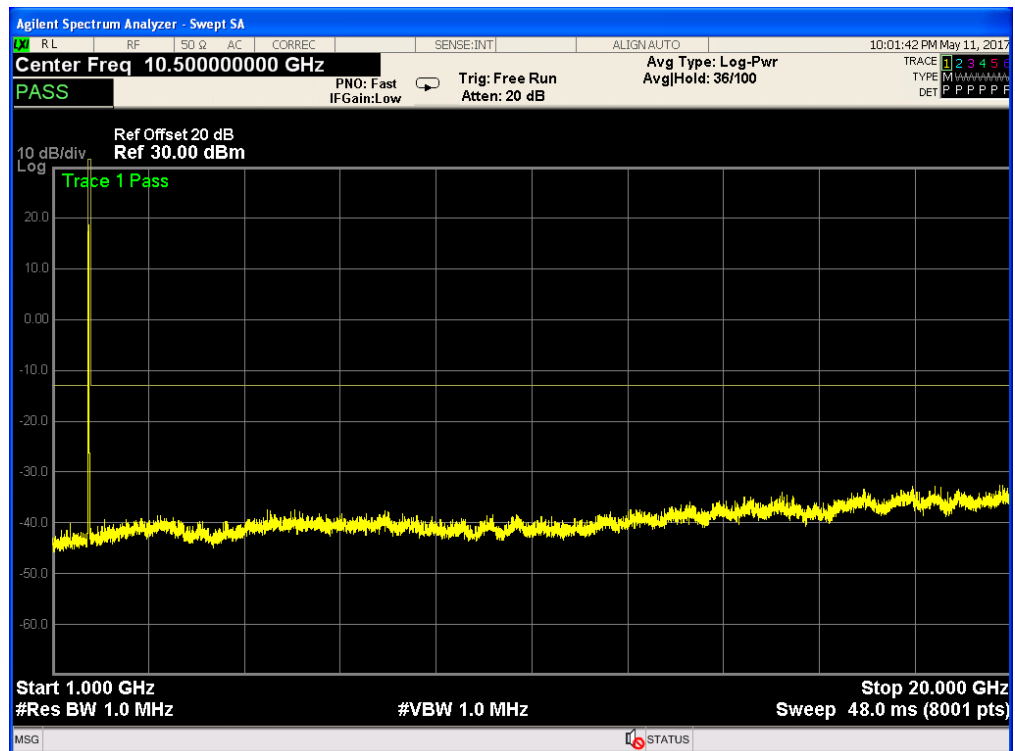
Band 4,UL Channel 20000,UL Frequency 1715.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



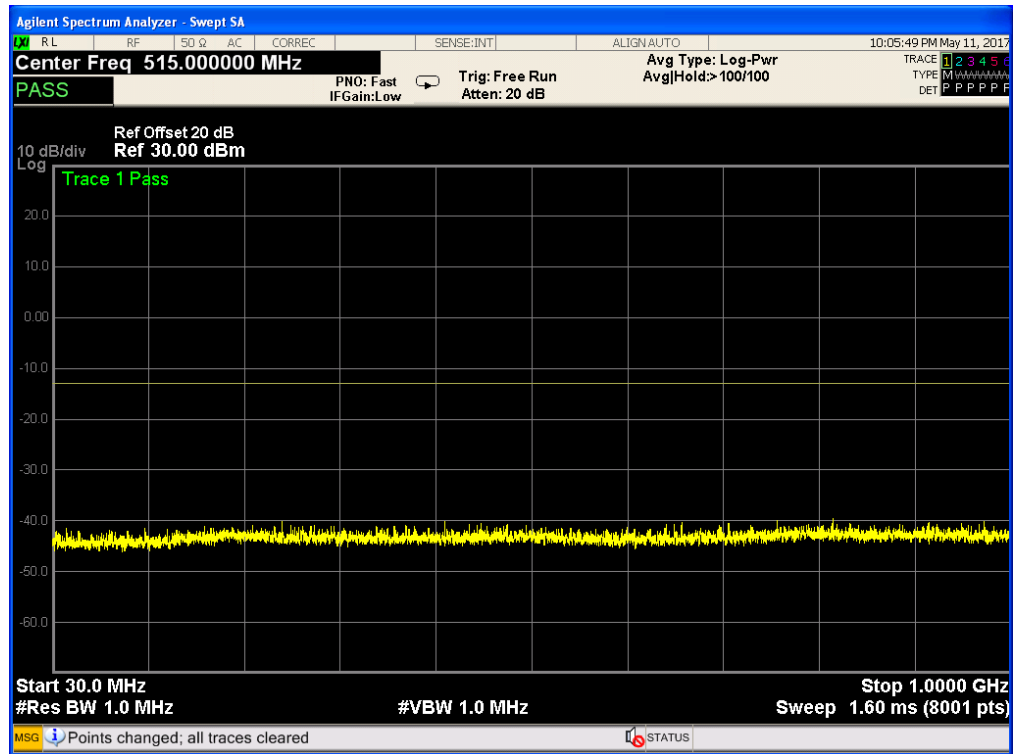
Band 4,UL Channel 20000,UL Frequency 1715.0,BW 10.0,NO. RB 50,RB POS. Low,16QAM



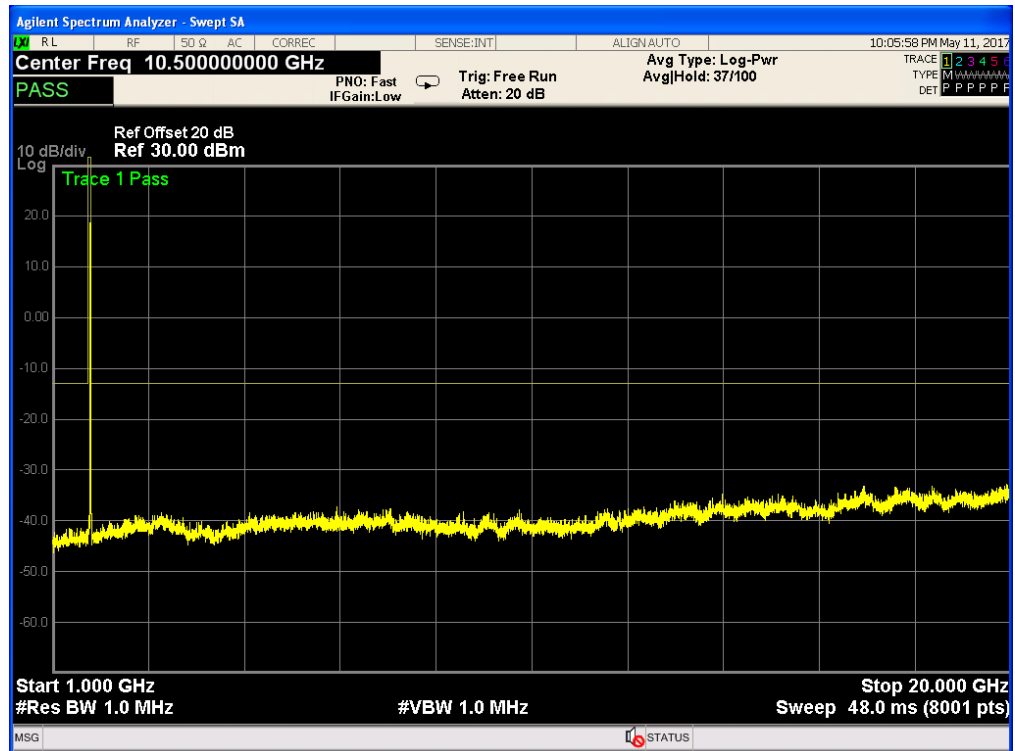
Band 4,UL Channel 20000,UL Frequency 1715.0,BW 10.0,NO. RB 50,RB POS. Low,16QAM



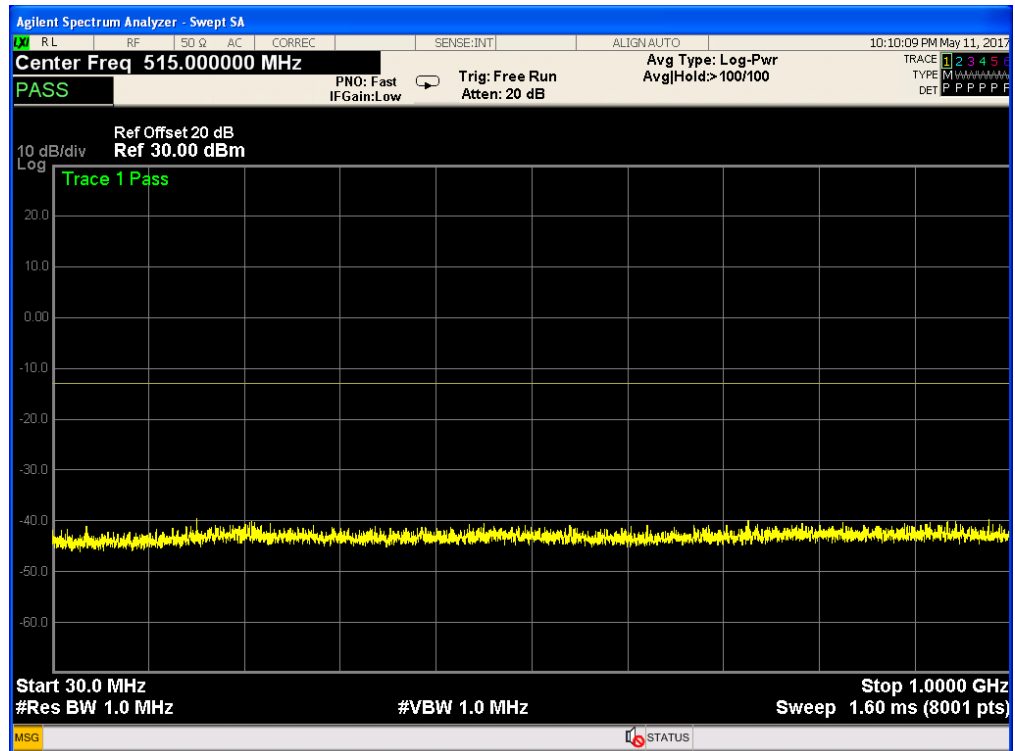
Band 4,UL Channel 20350,UL Frequency 1750.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



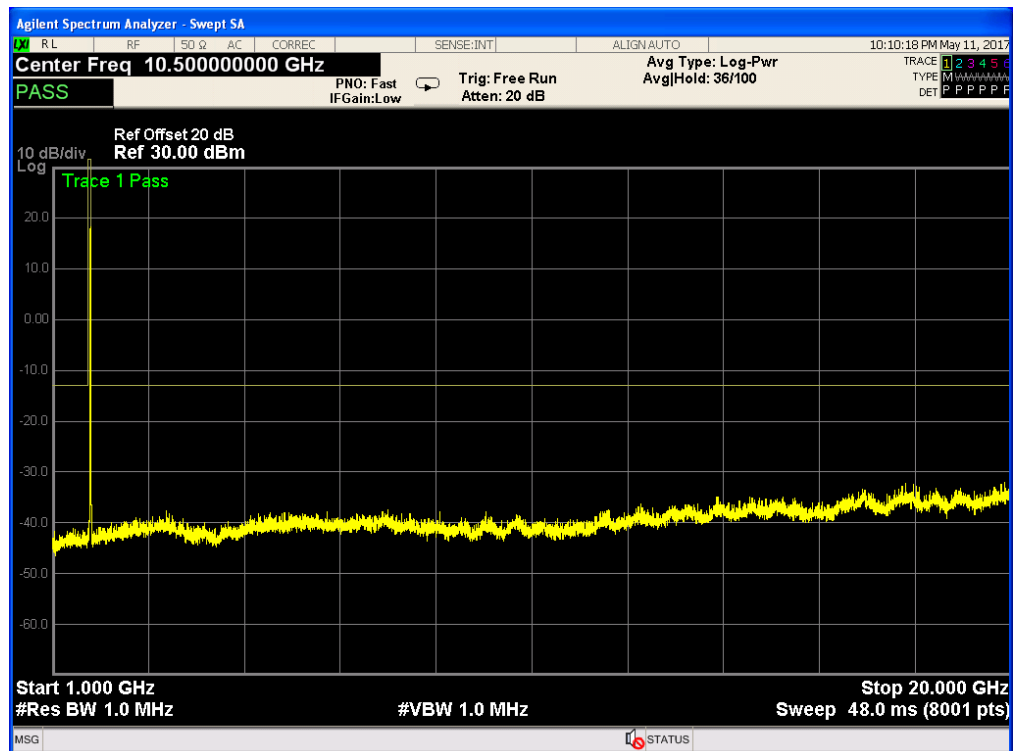
Band 4,UL Channel 20350,UL Frequency 1750.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



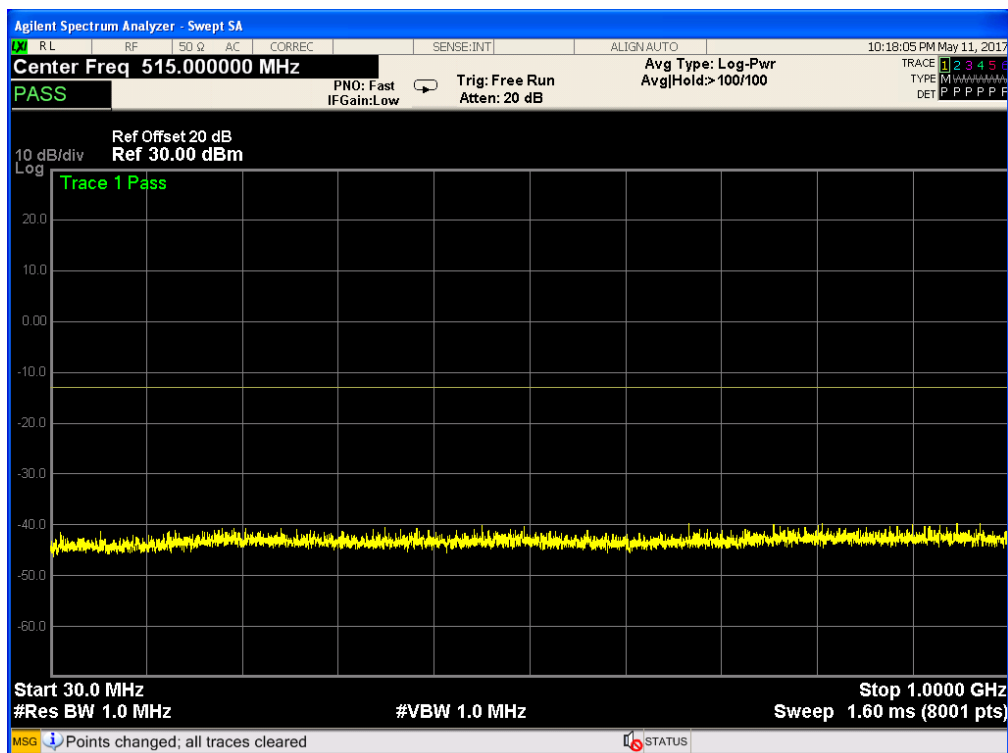
Band 4,UL Channel 20350,UL Frequency 1750.0,BW 10.0,NO. RB 50,RB POS. Low,16QAM



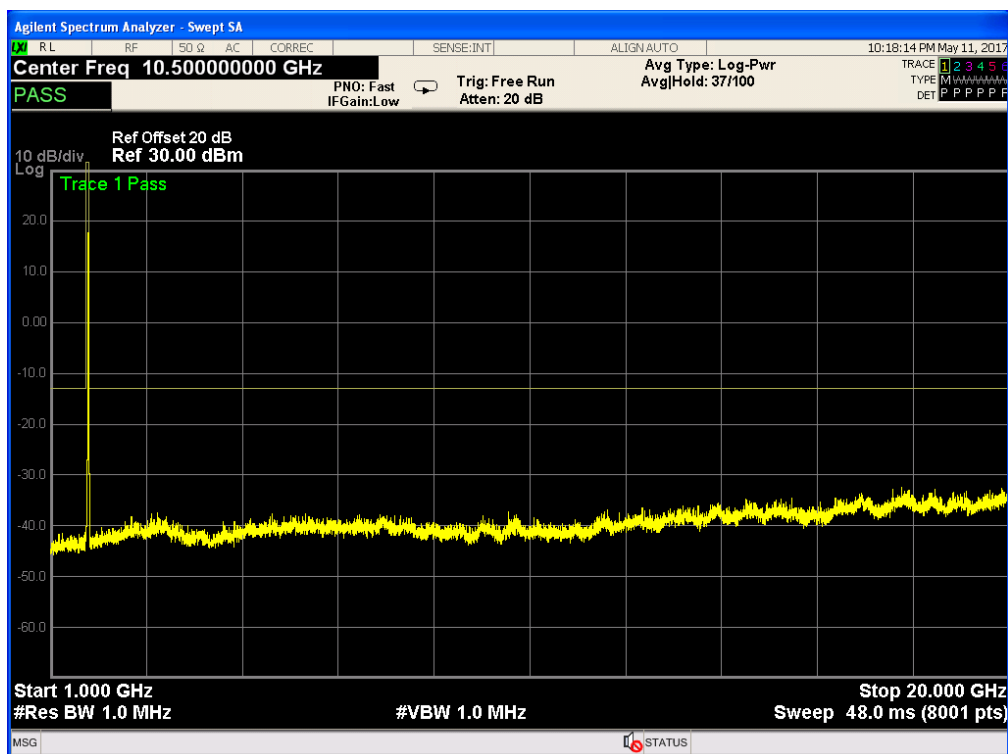
Band 4,UL Channel 20350,UL Frequency 1750.0,BW 10.0,NO. RB 50,RB POS. Low,16QAM



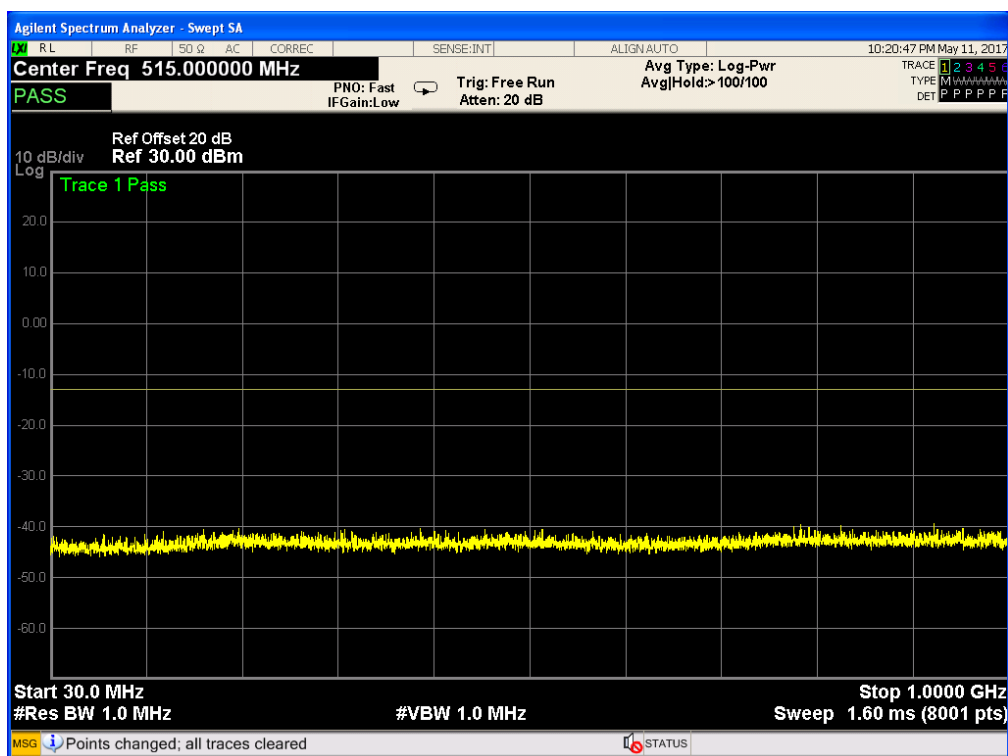
Band 4,UL Channel 20325,UL Frequency 1747.5,BW 15.0,NO. RB 75,RB POS. Low,QPSK



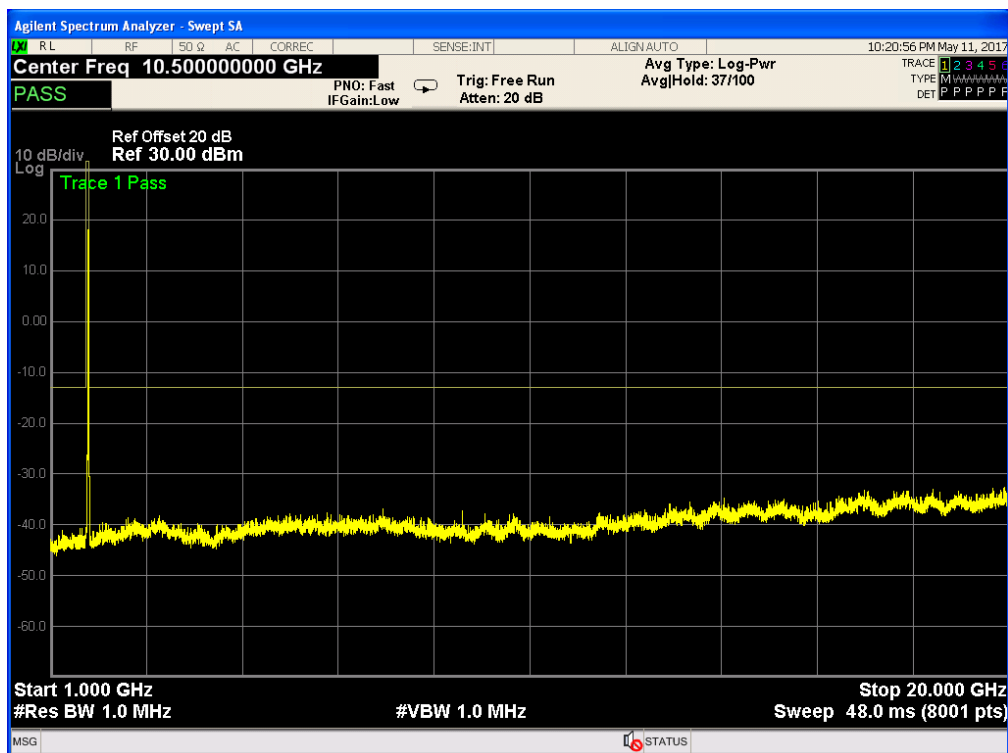
Band 4,UL Channel 20325,UL Frequency 1747.5,BW 15.0,NO. RB 75,RB POS. Low,QPSK



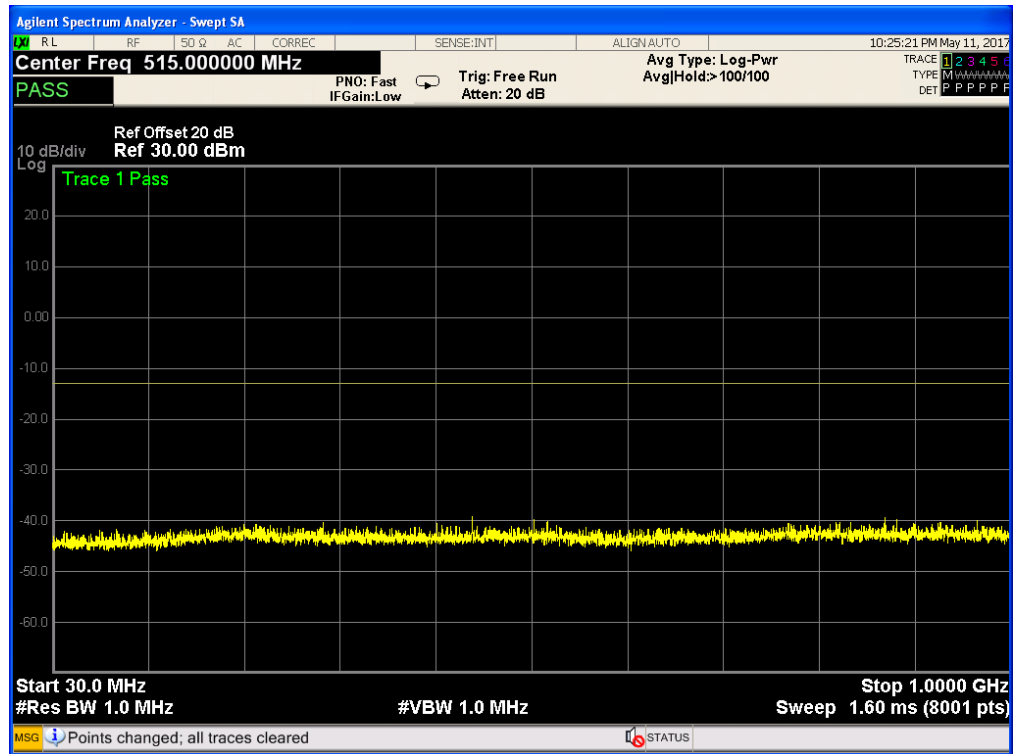
Band 4,UL Channel 20325,UL Frequency 1747.5,BW 15.0,NO. RB 75,RB POS. Low,16QAM



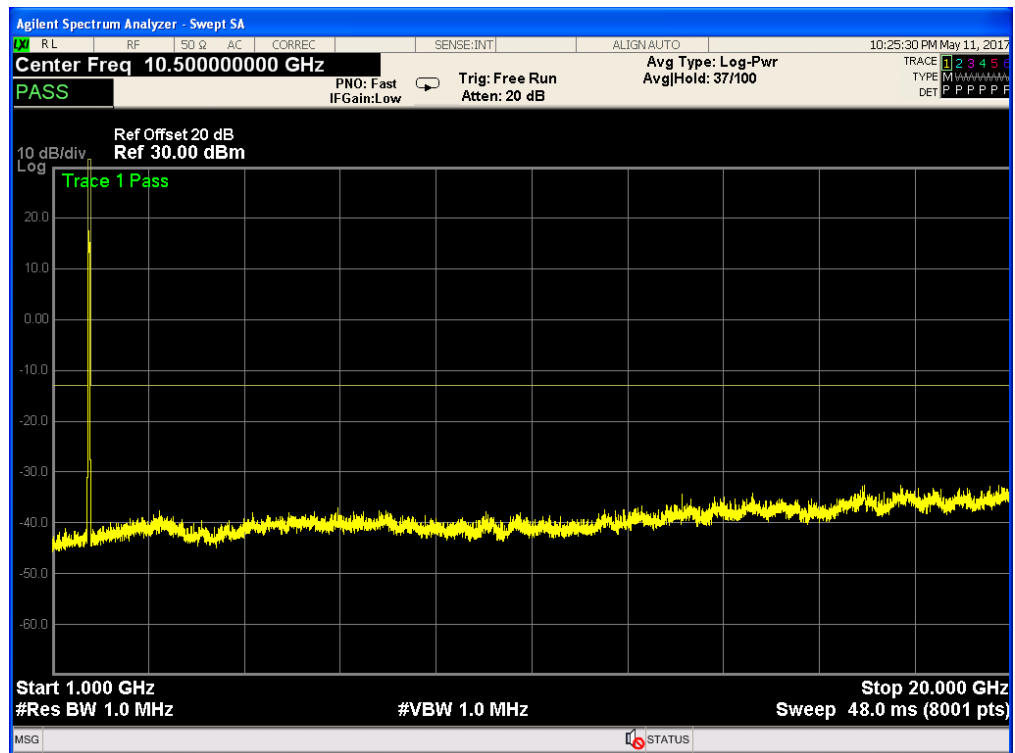
Band 4,UL Channel 20325,UL Frequency 1747.5,BW 15.0,NO. RB 75,RB POS. Low,16QAM



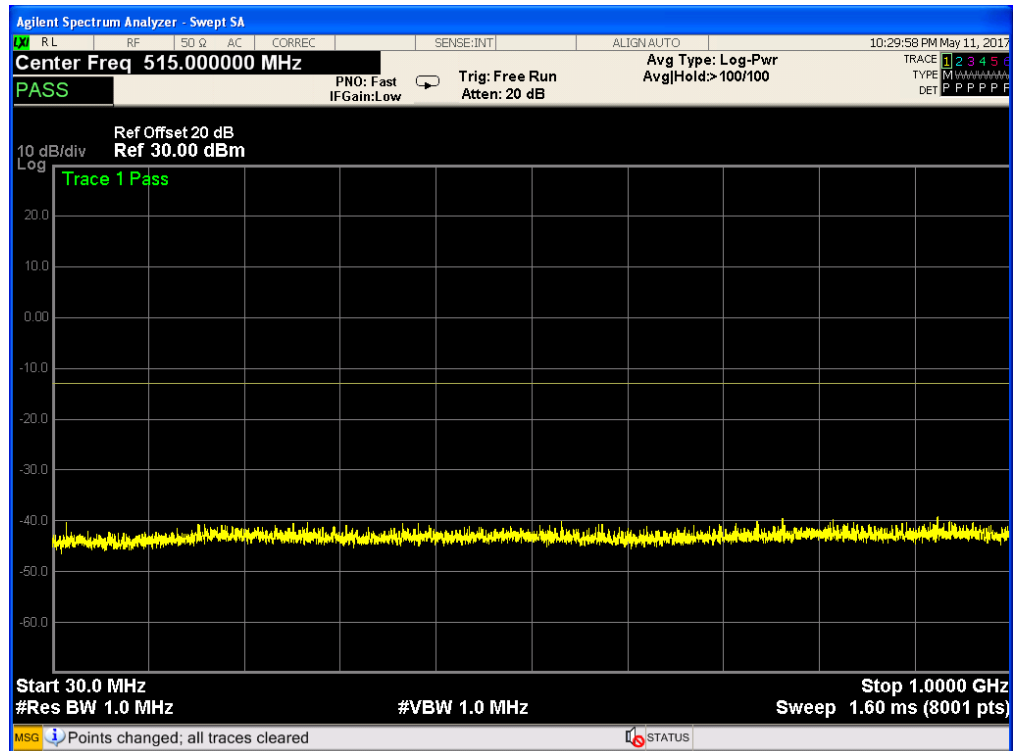
Band 4,UL Channel 20050,UL Frequency 1720.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



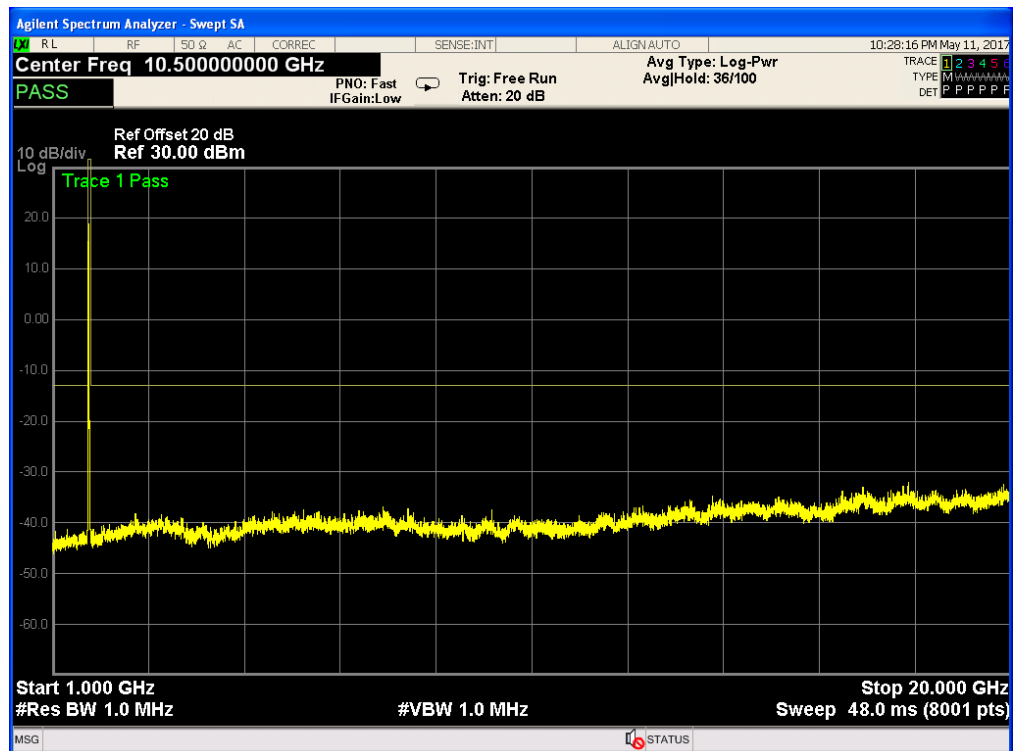
Band 4,UL Channel 20050,UL Frequency 1720.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



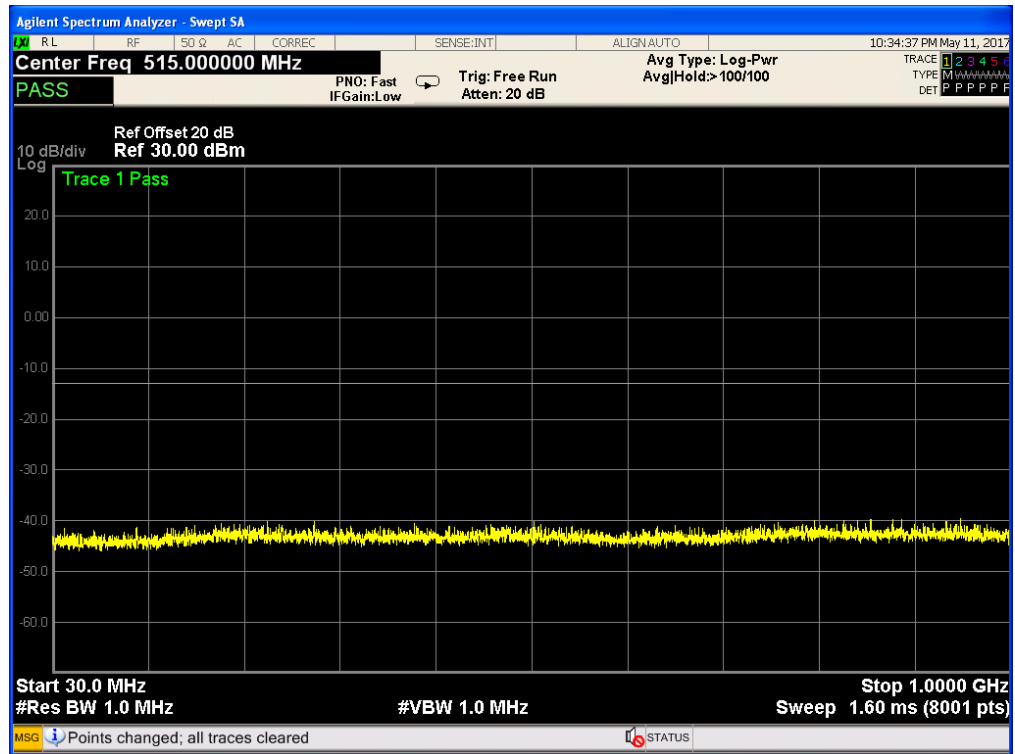
Band 4,UL Channel 20050,UL Frequency 1720.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM



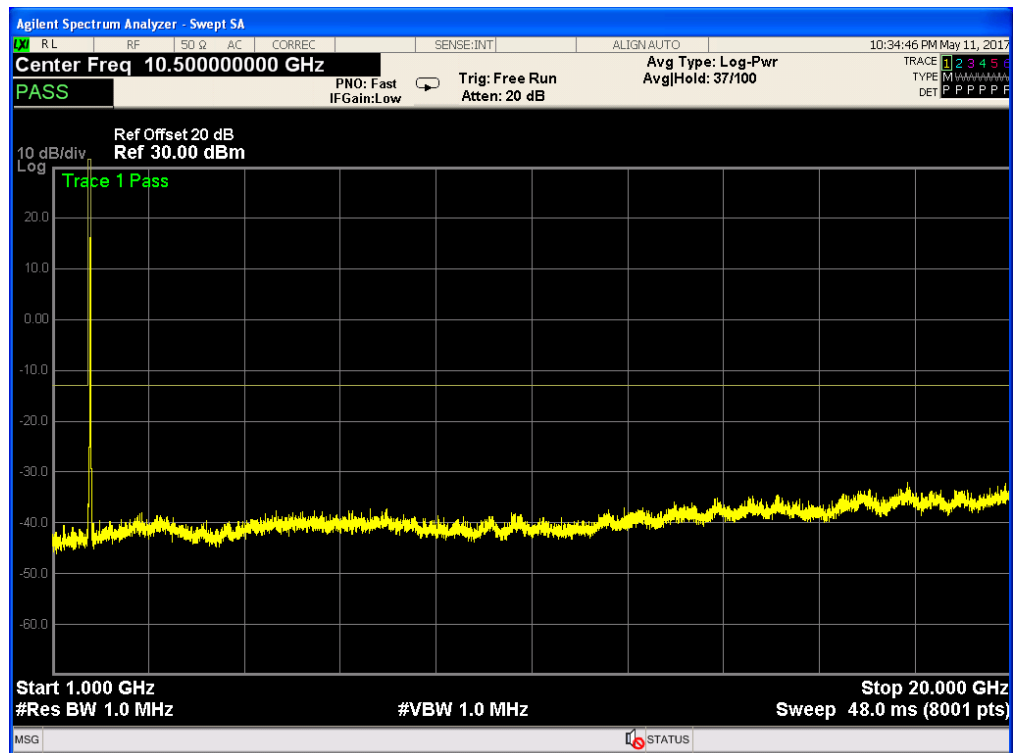
Band 4,UL Channel 20050,UL Frequency 1720.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM



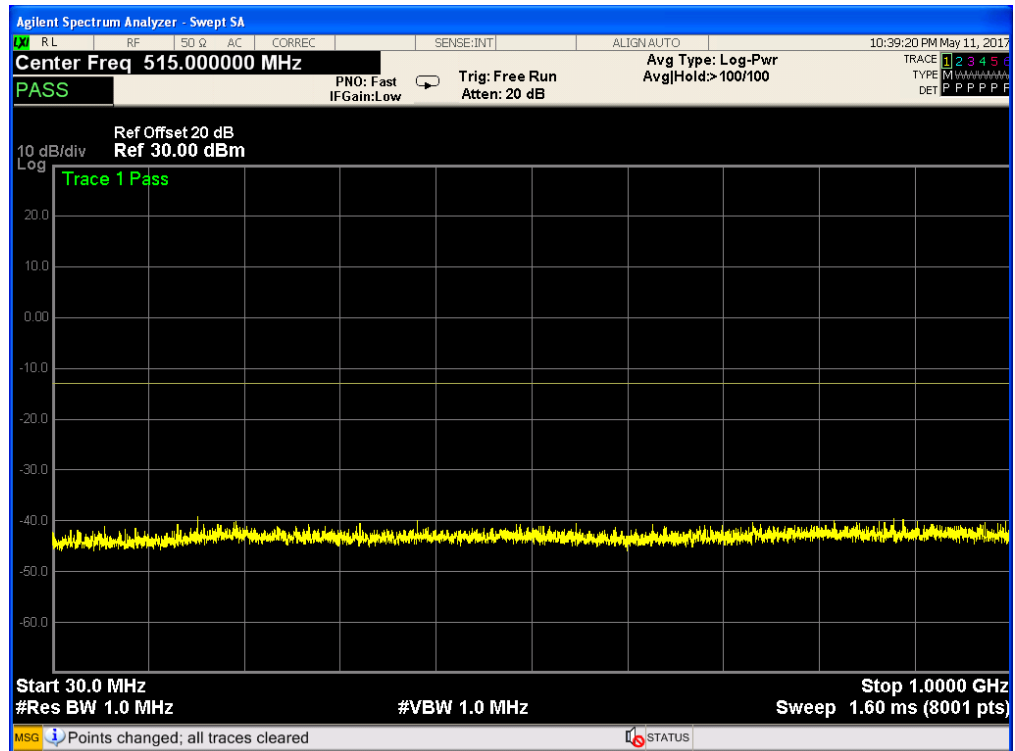
Band 4,UL Channel 20300,UL Frequency 1745.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



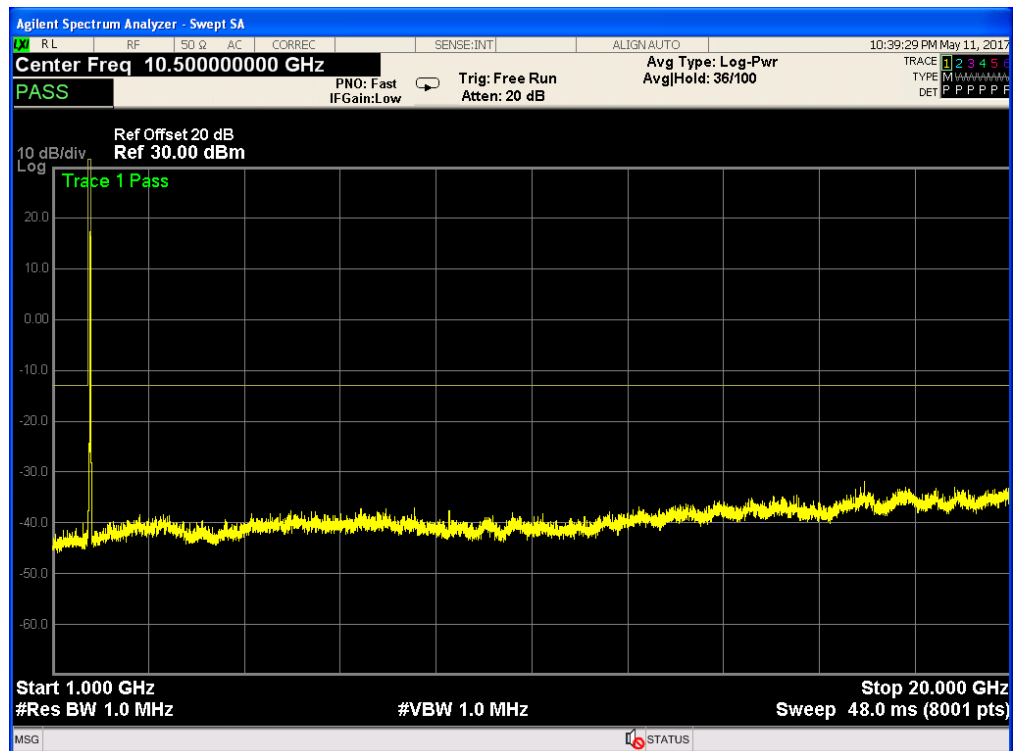
Band 4,UL Channel 20300,UL Frequency 1745.0,BW 20.0,NO. RB 100,RB POS. Low,QPSK



Band 4,UL Channel 20300,UL Frequency 1745.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM

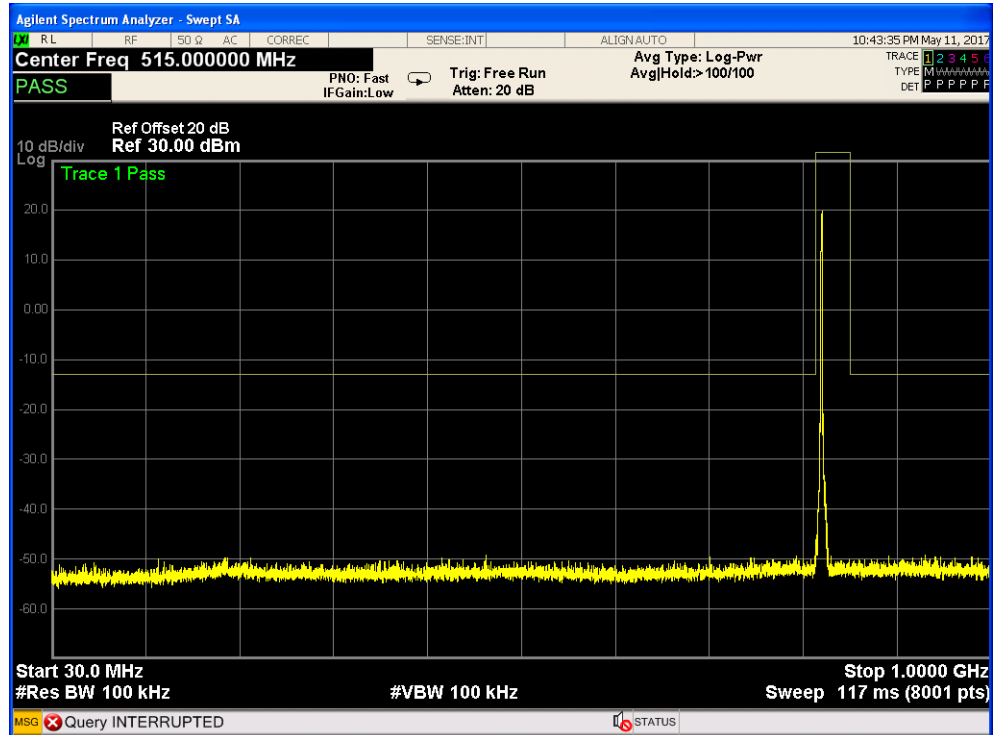


Band 4,UL Channel 20300,UL Frequency 1745.0,BW 20.0,NO. RB 100,RB POS. Low,16QAM

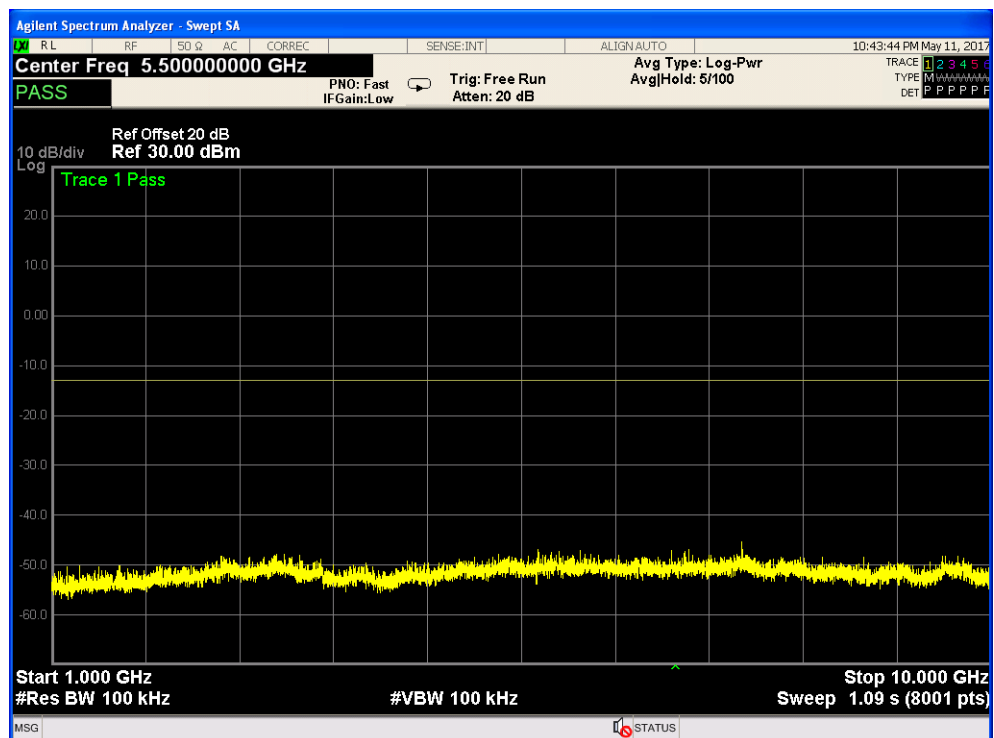


7.3 LTE BAND 5

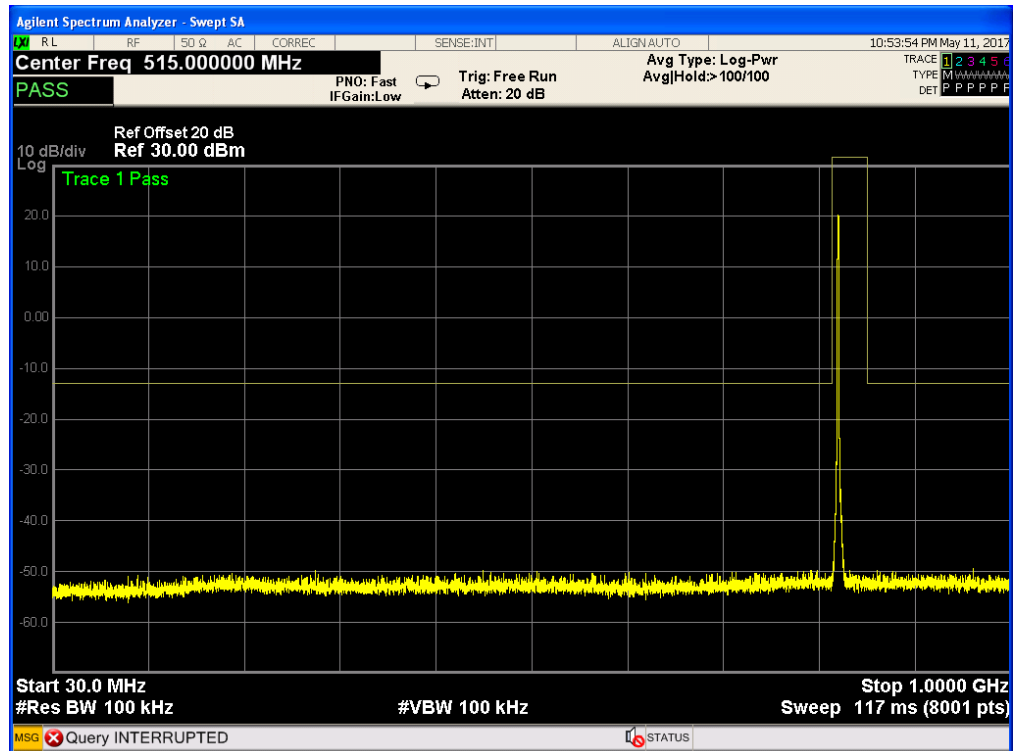
Band 5,UL Channel 20407,UL Frequency 824.7,BW 1.4,NO. RB 6,RB POS. Low,QPSK



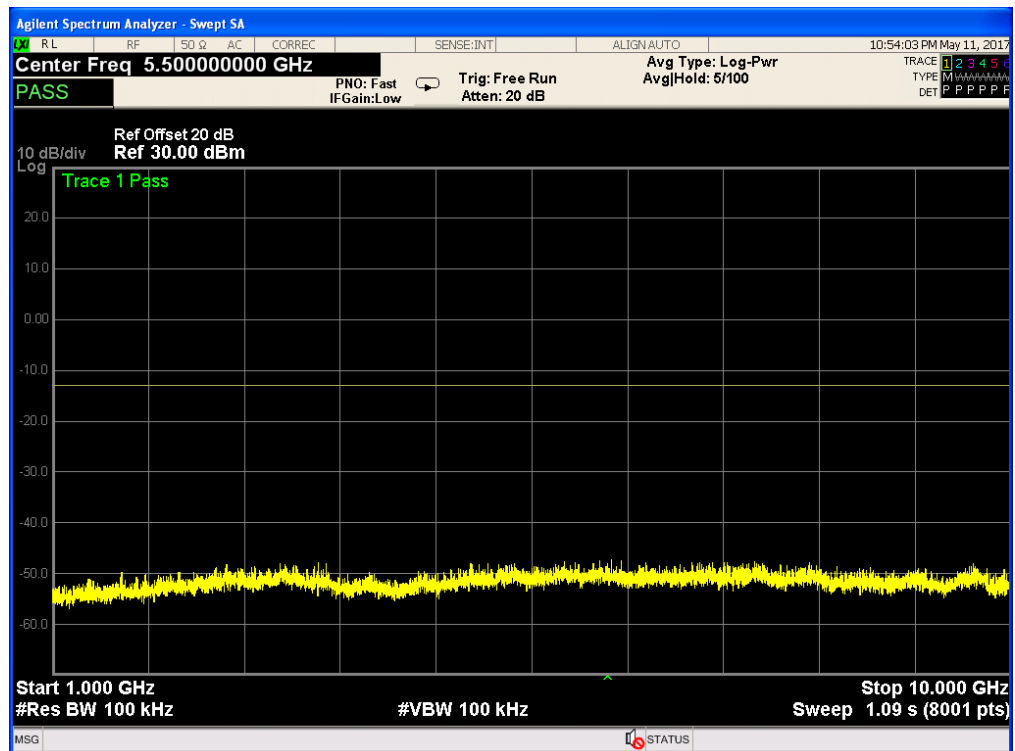
Band 5,UL Channel 20407,UL Frequency 824.7,BW 1.4,NO. RB 6,RB POS. Low,QPSK



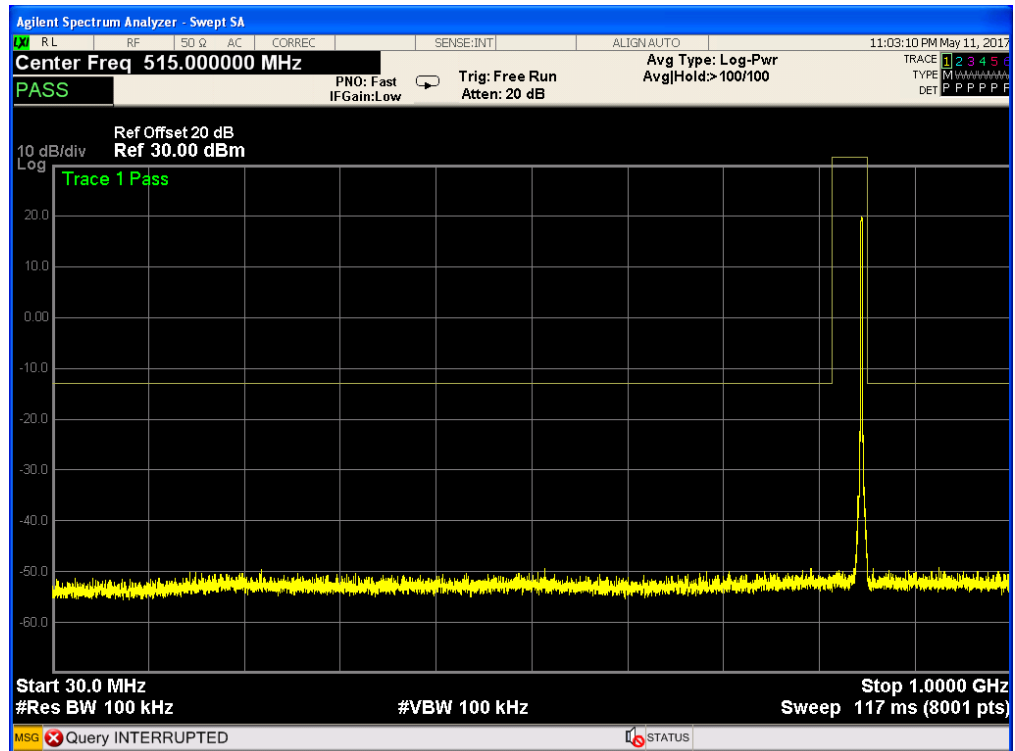
Band 5,UL Channel 20407,UL Frequency 824.7,BW 1.4,NO. RB 6,RB POS. Low,16-QAM



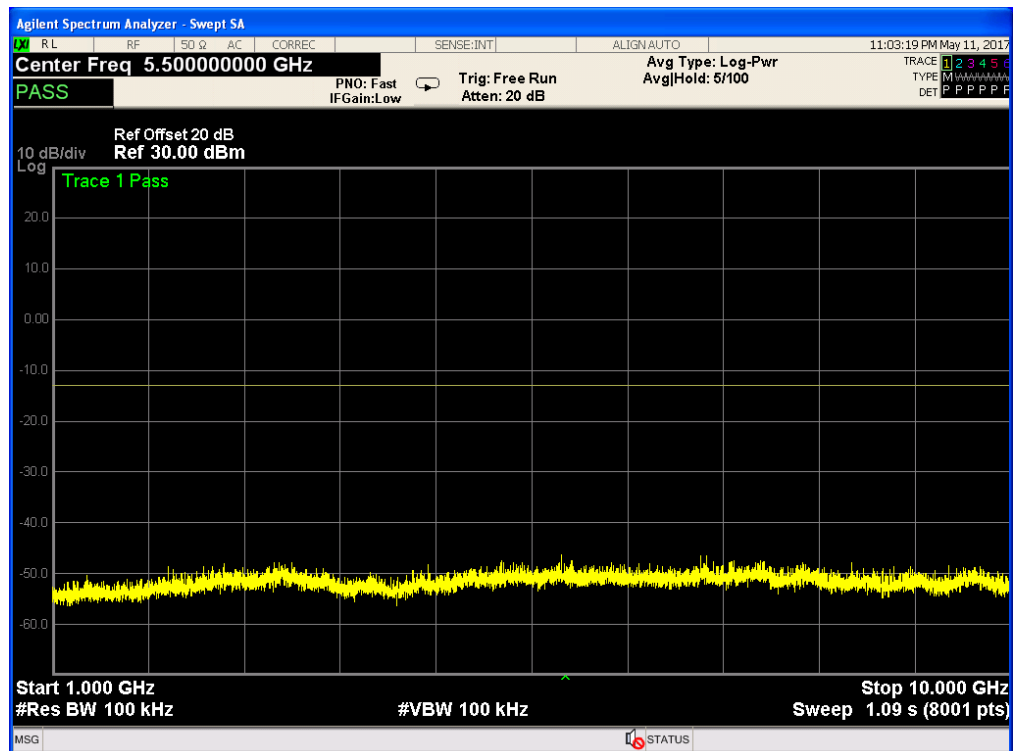
Band 5,UL Channel 20407,UL Frequency 824.7,BW 1.4,NO. RB 6,RB POS. Low,16-QAM



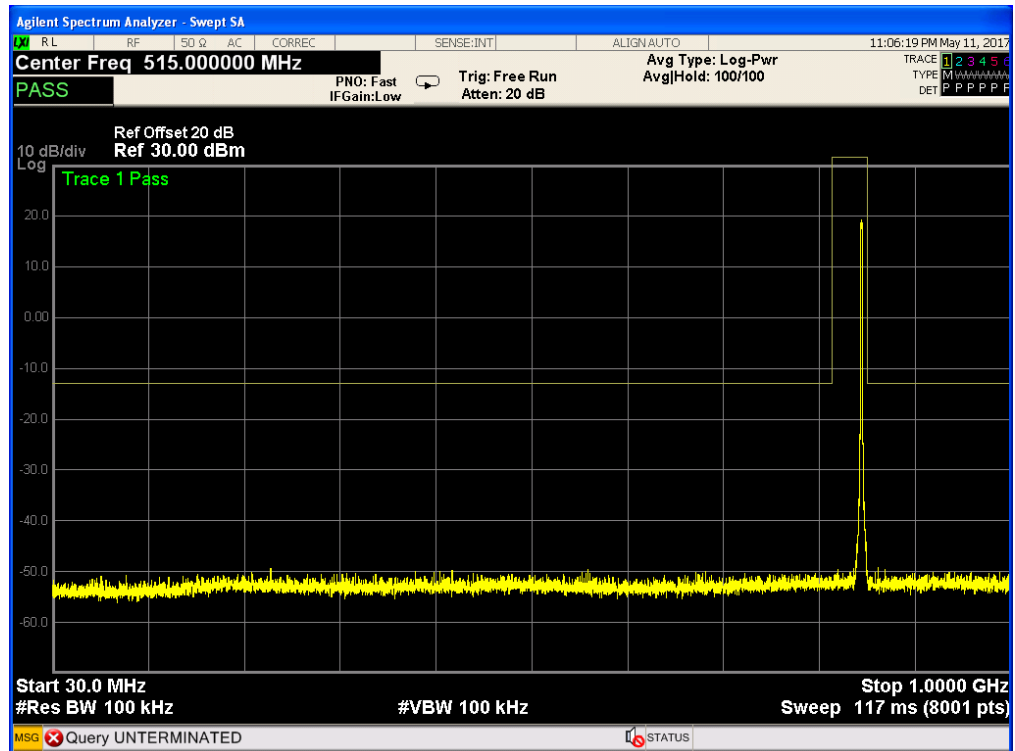
Band 5,UL Channel 20643,UL Frequency 848.3,BW 1.4,NO. RB 6,RB POS. Low,QPSK



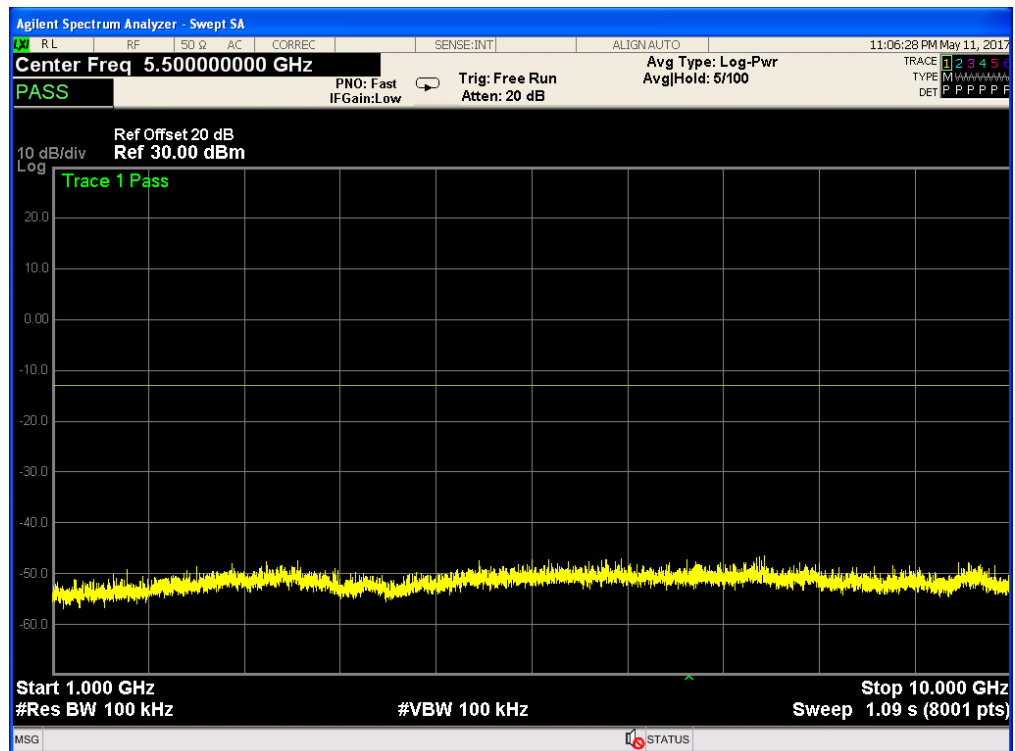
Band 5,UL Channel 20643,UL Frequency 848.3,BW 1.4,NO. RB 6,RB POS. Low,QPSK



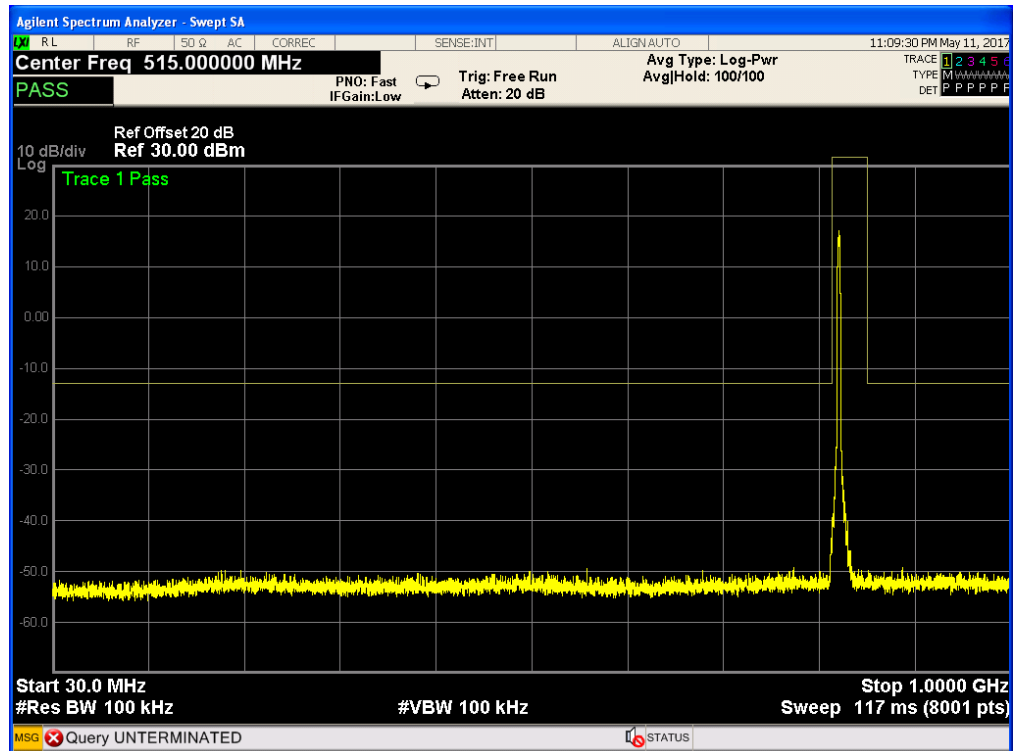
Band 5,UL Channel 20643,UL Frequency 848.3,BW 1.4,NO. RB 6,RB POS. Low,16-QAM



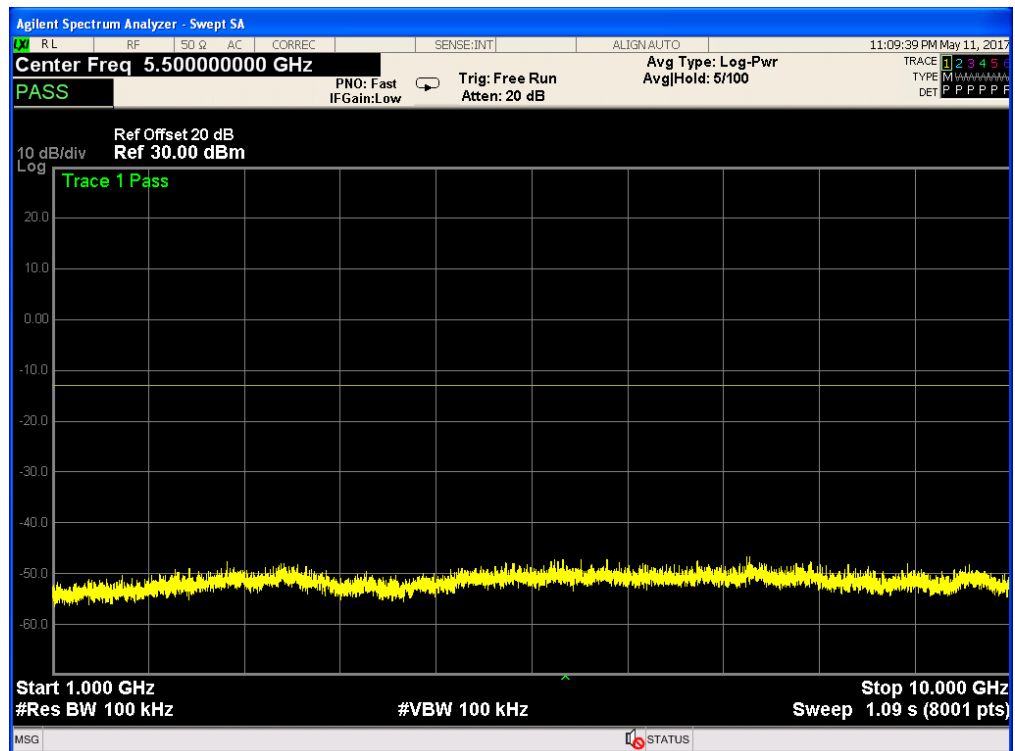
Band 5,UL Channel 20643,UL Frequency 848.3,BW 1.4,NO. RB 6,RB POS. Low,16-QAM



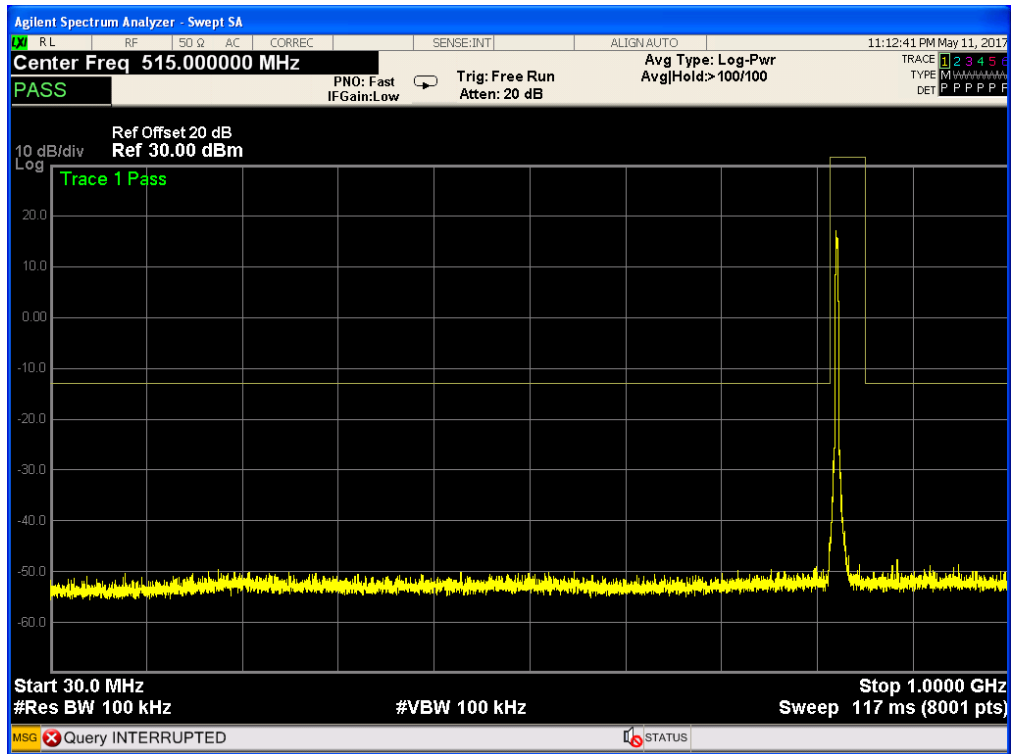
Band 5,UL Channel 20415,UL Frequency 825.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



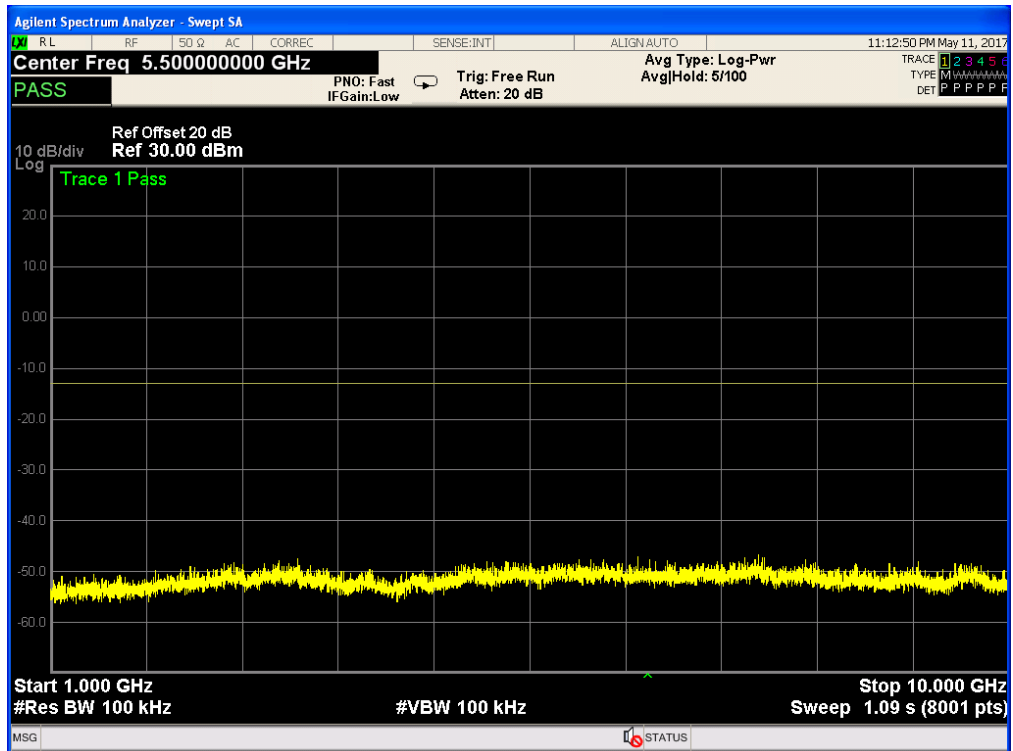
Band 5,UL Channel 20415,UL Frequency 825.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



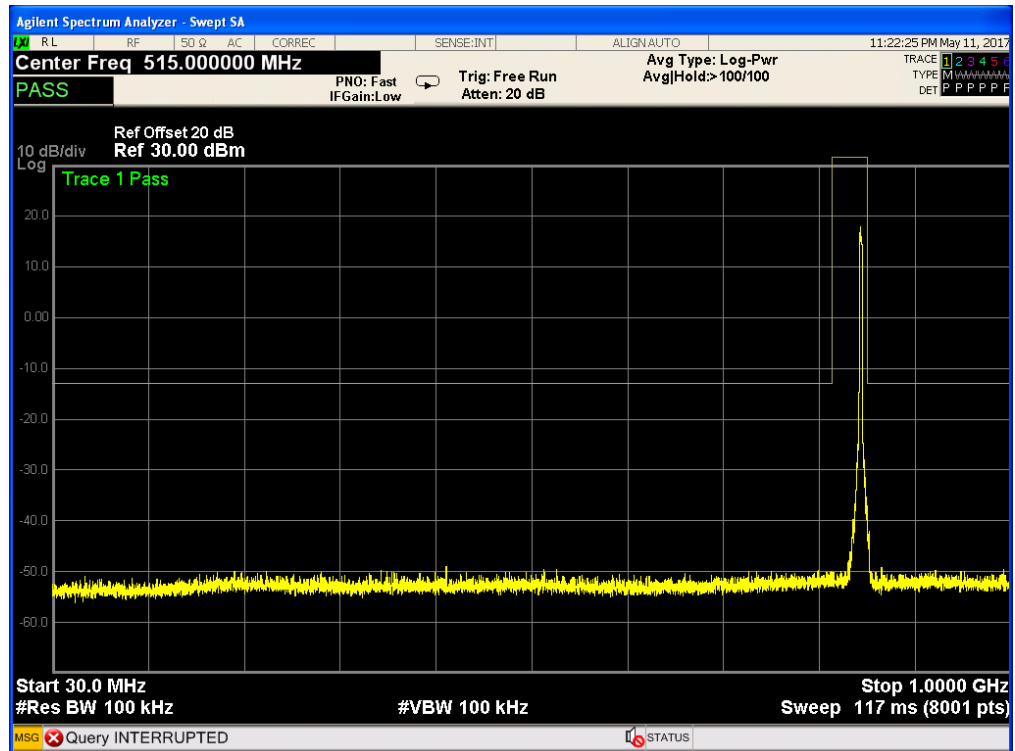
Band 5,UL Channel 20415,UL Frequency 825.5,BW 3.0,NO. RB 15,RB POS. Low,16-QAM



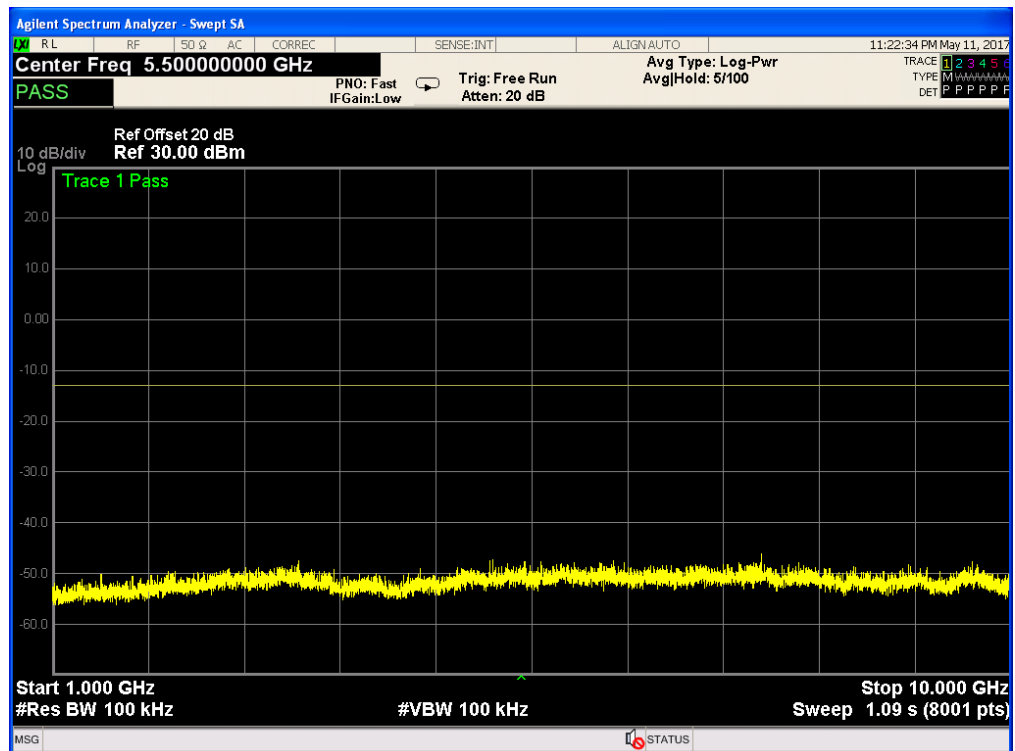
Band 5,UL Channel 20415,UL Frequency 825.5,BW 3.0,NO. RB 15,RB POS. Low,16-QAM



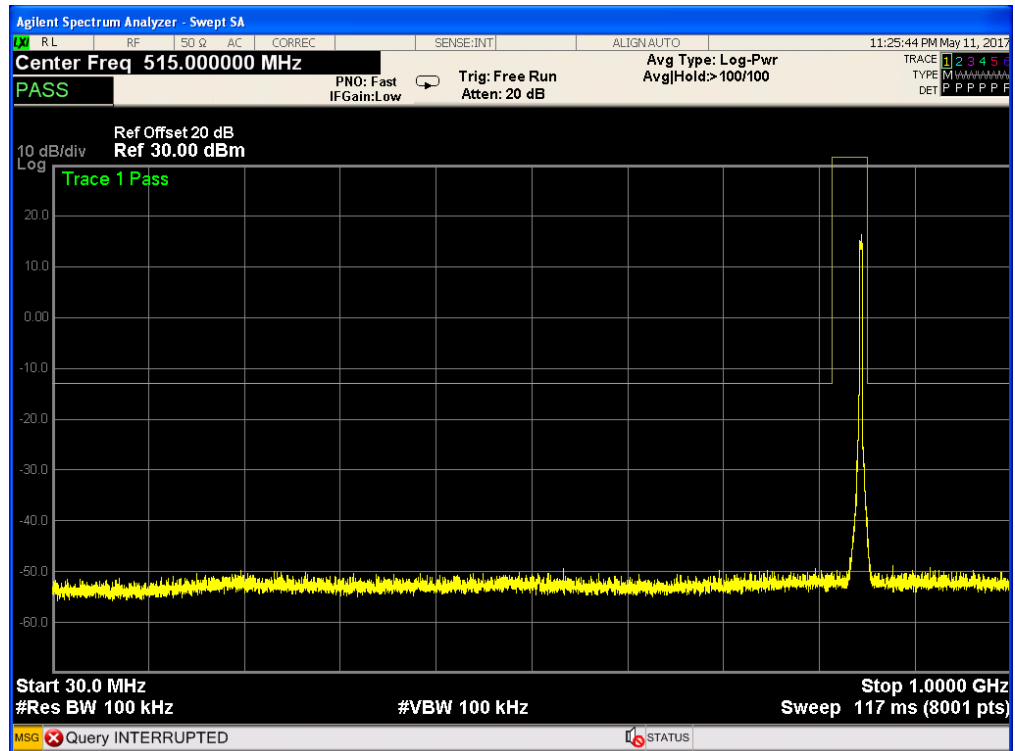
Band 5,UL Channel 20635,UL Frequency 847.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



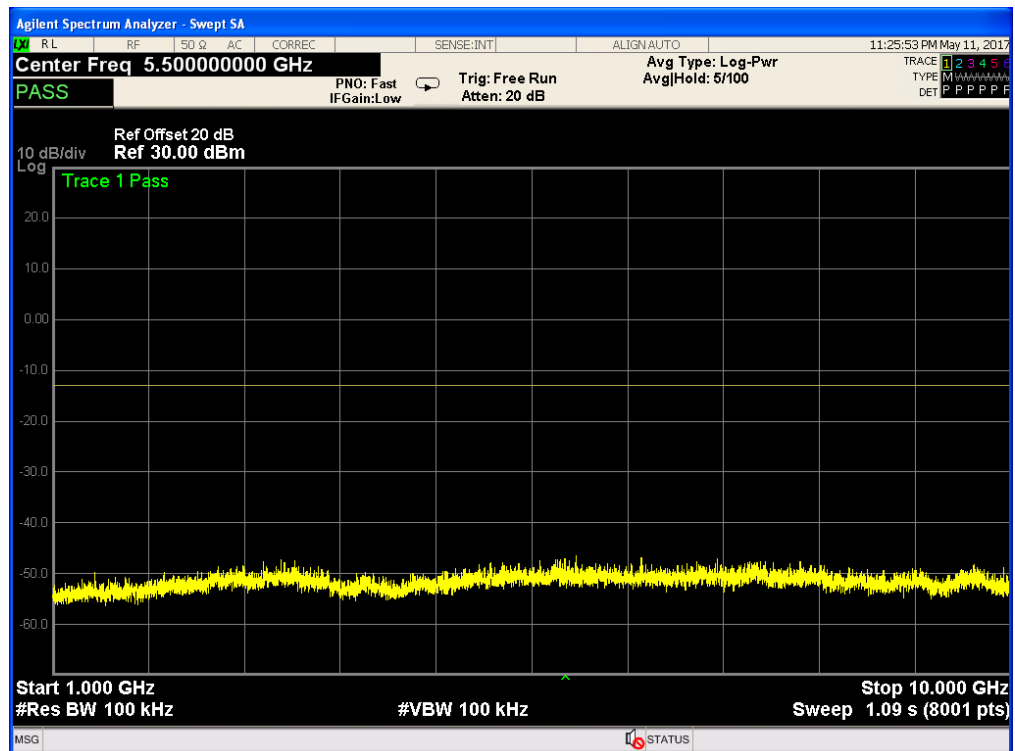
Band 5,UL Channel 20635,UL Frequency 847.5,BW 3.0,NO. RB 15,RB POS. Low,QPSK



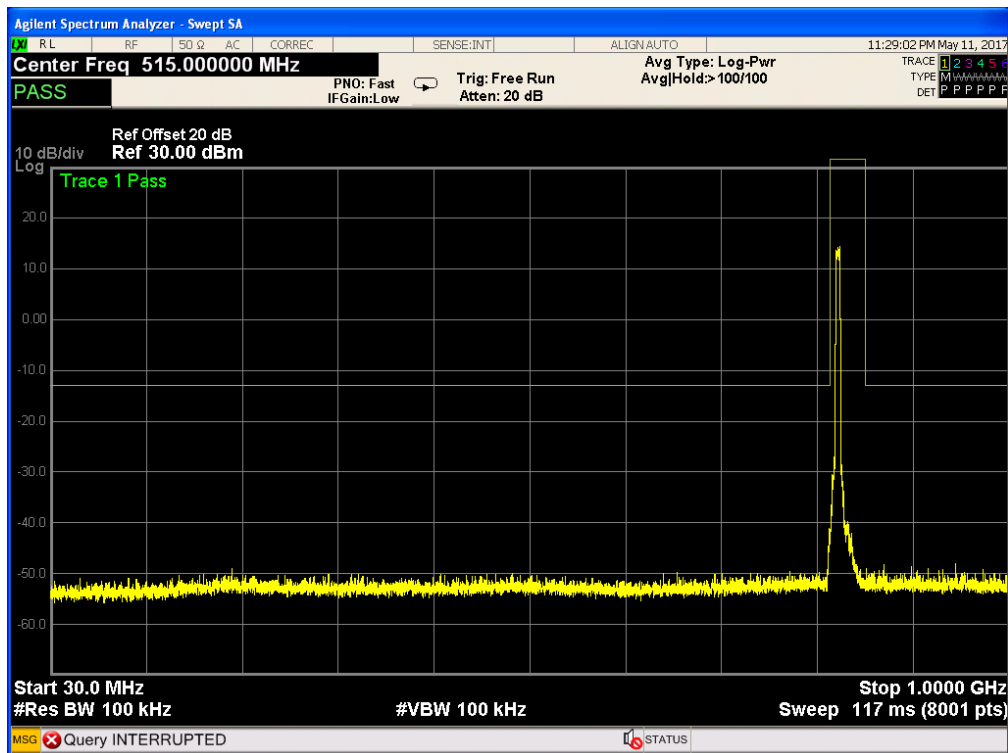
Band 5,UL Channel 20635,UL Frequency 847.5,BW 3.0,NO. RB 15,RB POS. Low,16-QAM



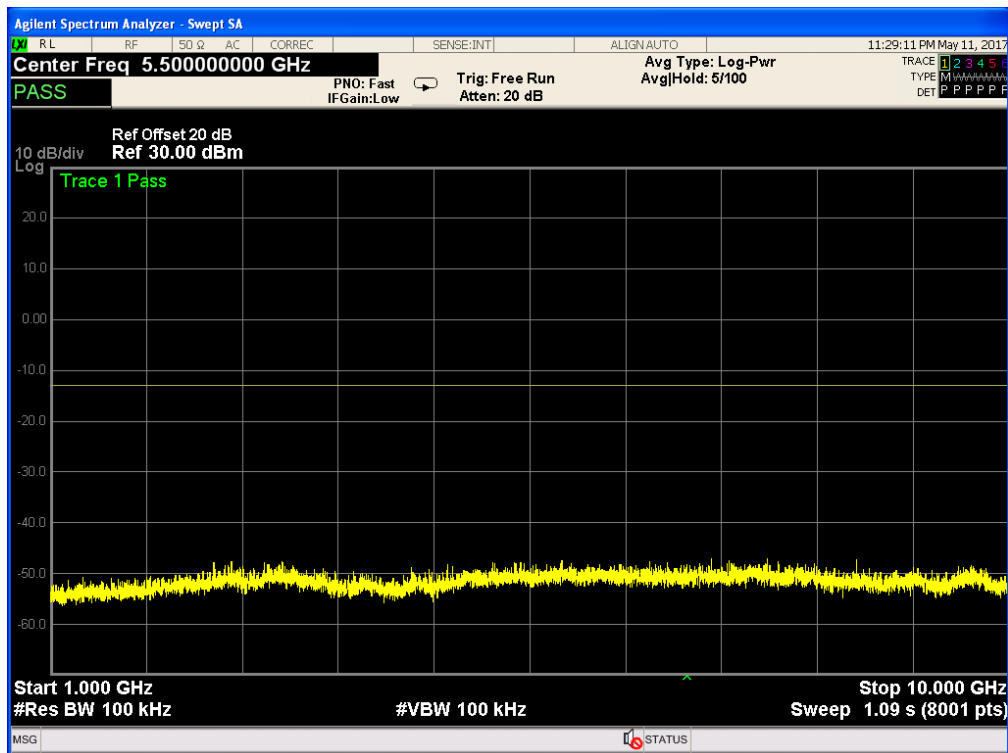
Band 5,UL Channel 20635,UL Frequency 847.5,BW 3.0,NO. RB 15,RB POS. Low,16-QAM



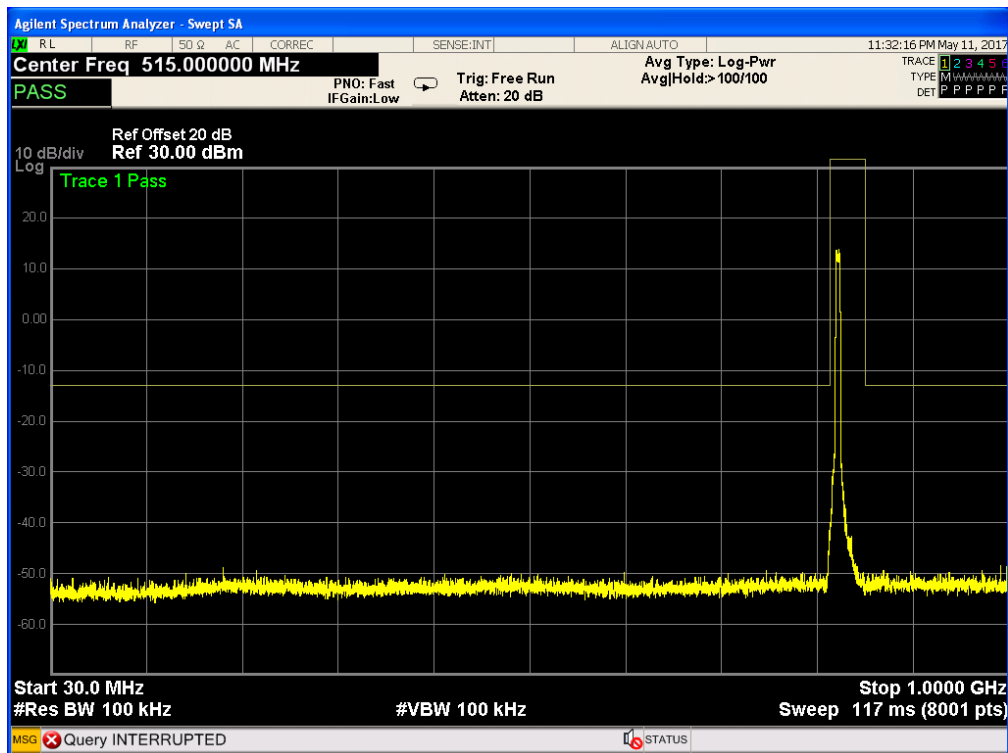
Band 5,UL Channel 20425,UL Frequency 826.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



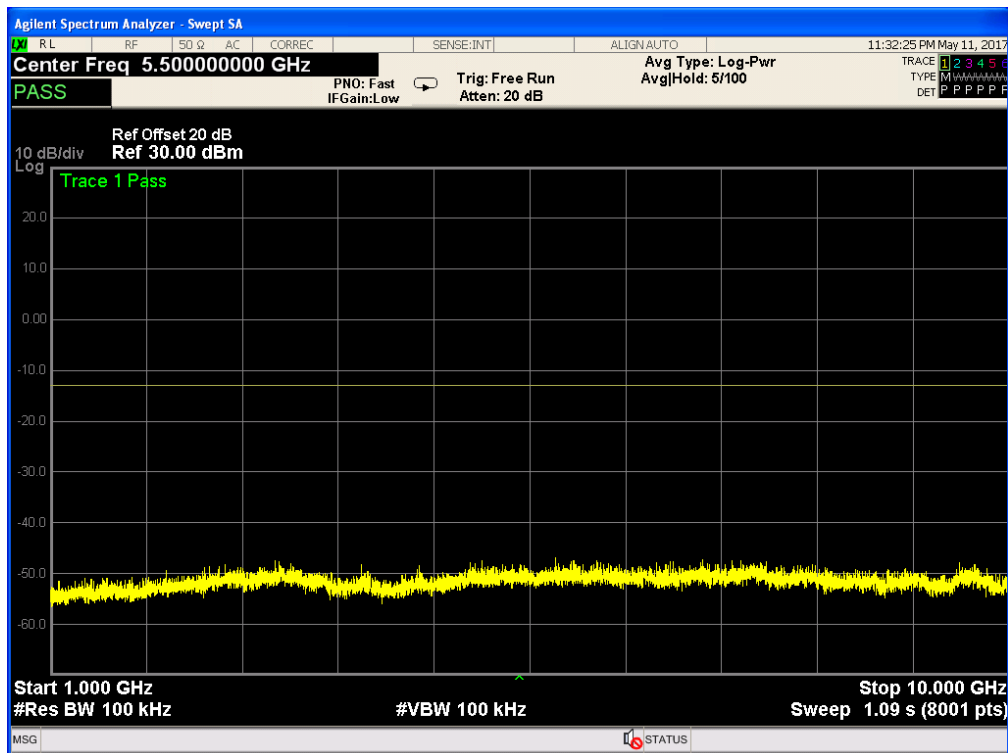
Band 5,UL Channel 20425,UL Frequency 826.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



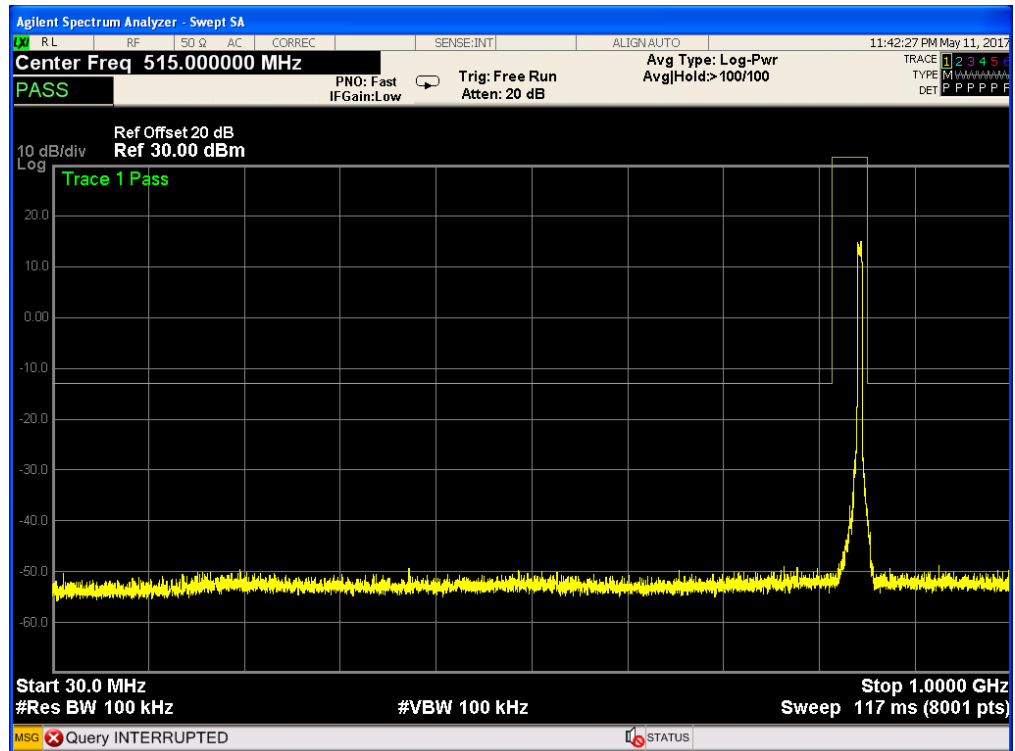
Band 5,UL Channel 20425,UL Frequency 826.5,BW 5.0,NO. RB 25,RB POS. Low,16-QAM



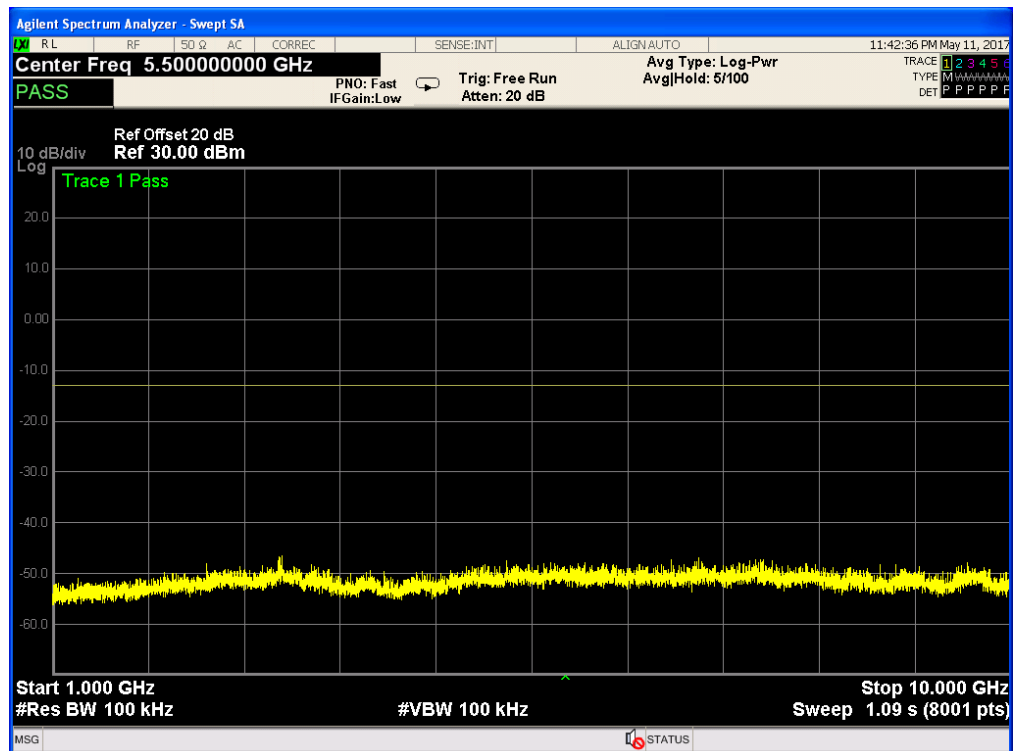
Band 5,UL Channel 20425,UL Frequency 826.5,BW 5.0,NO. RB 25,RB POS. Low,16-QAM



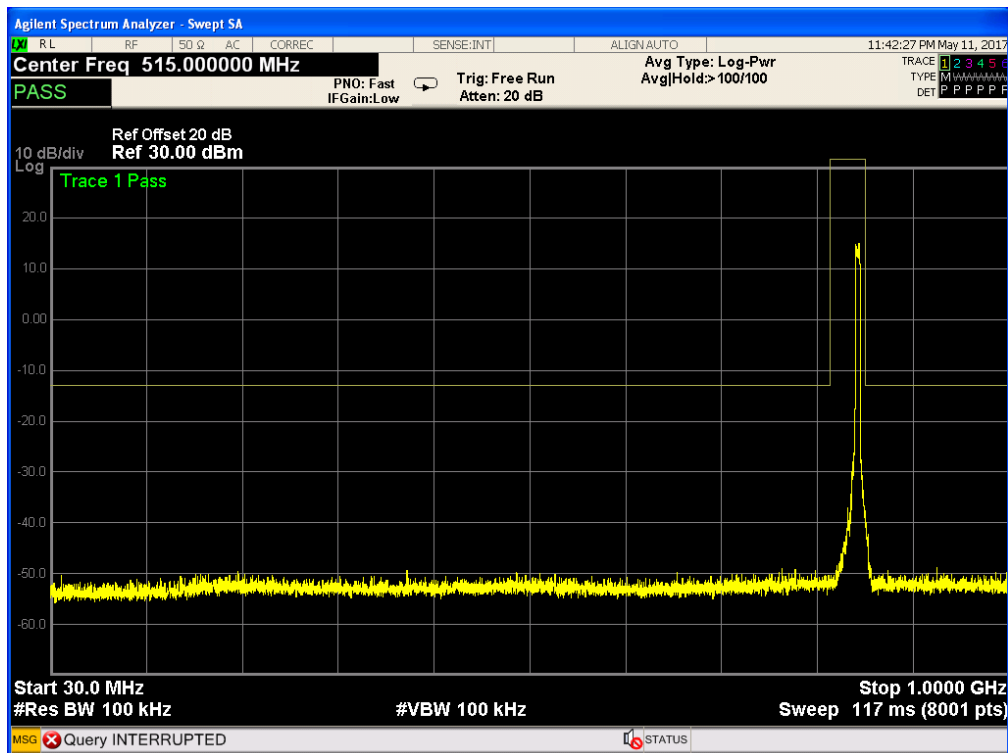
Band 5,UL Channel 20625,UL Frequency 846.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



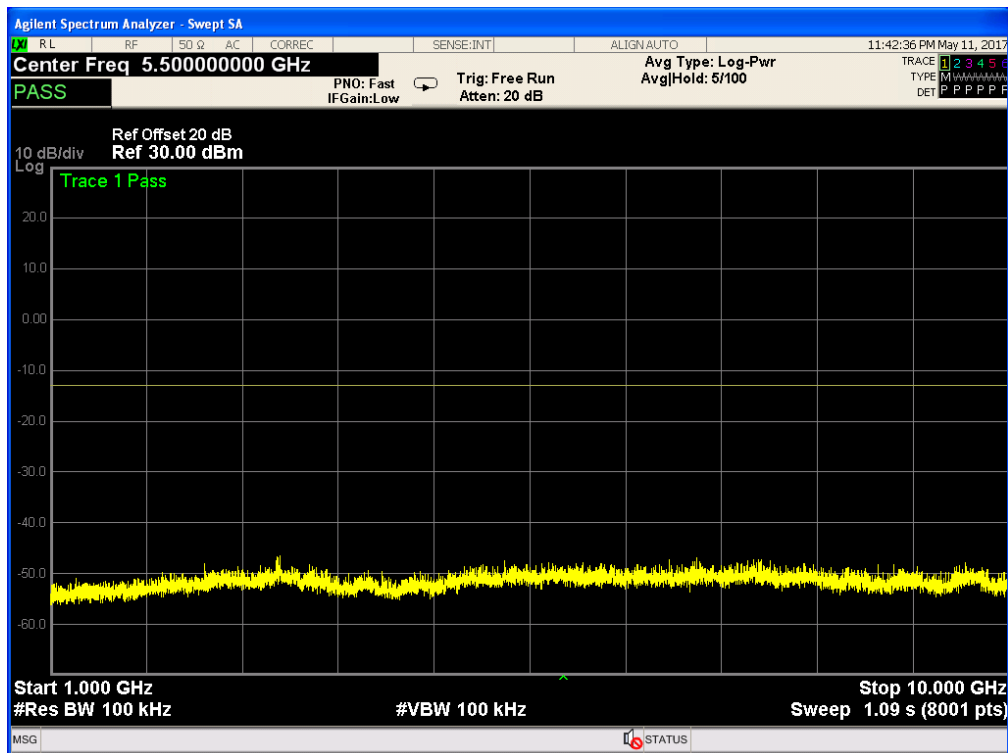
Band 5,UL Channel 20625,UL Frequency 846.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



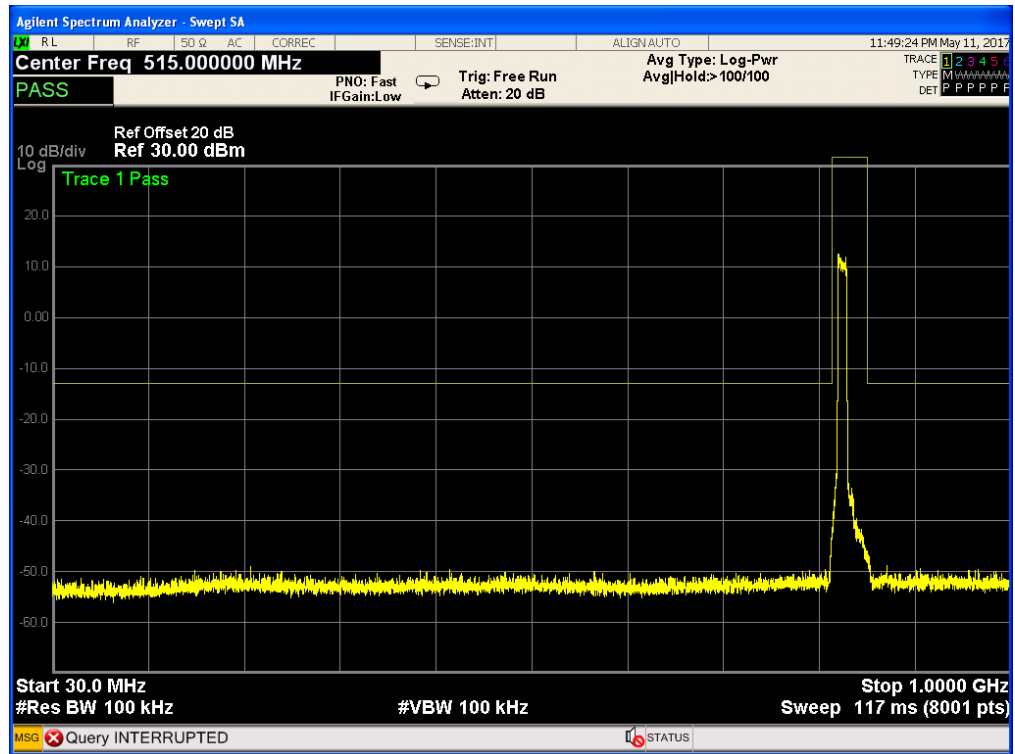
Band 5,UL Channel 20625,UL Frequency 846.5,BW 5.0,NO. RB 25,RB POS. Low,16QAM



Band 5,UL Channel 20625,UL Frequency 846.5,BW 5.0,NO. RB 25,RB POS. Low,QPSK



Band 5,UL Channel 20450,UL Frequency 829.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK



Band 5,UL Channel 20450,UL Frequency 829.0,BW 10.0,NO. RB 50,RB POS. Low,QPSK

