

## 6. BANDEDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, and §90.691

FCC: §22.359

### LIMITS

FCC: §22.359, §24.238,

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.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

### TEST PROCEDURE

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency (704, 716, 824, 849, 1710 and 1755, 1850 and 1910MHz)

Set a marker to point the corresponding band edge frequency in each test case.

Set display line at -13 dBm

Set resolution bandwidth to at least 1% of emission bandwidth.

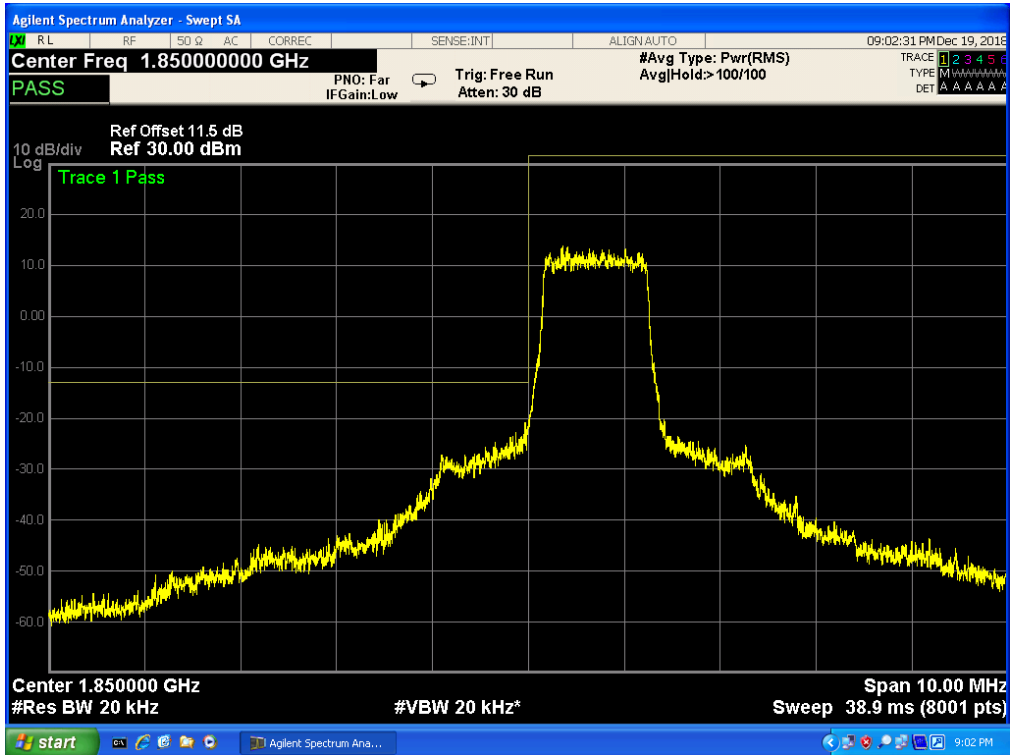
### MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 17

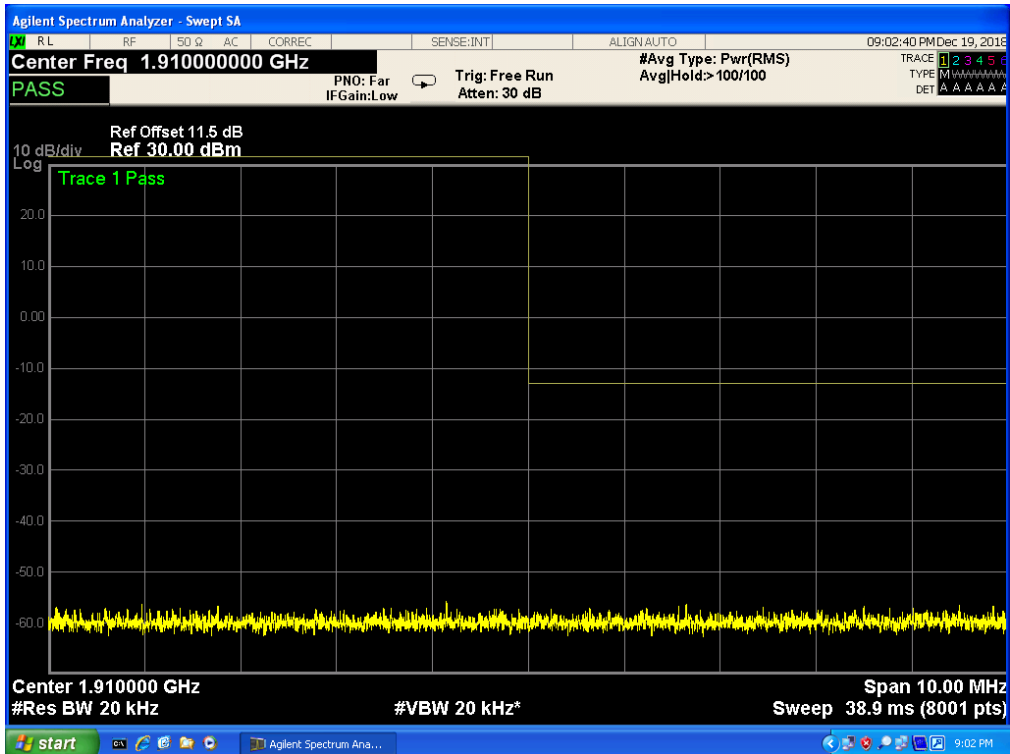
### RESULTS

6.1 LTE BAND 2

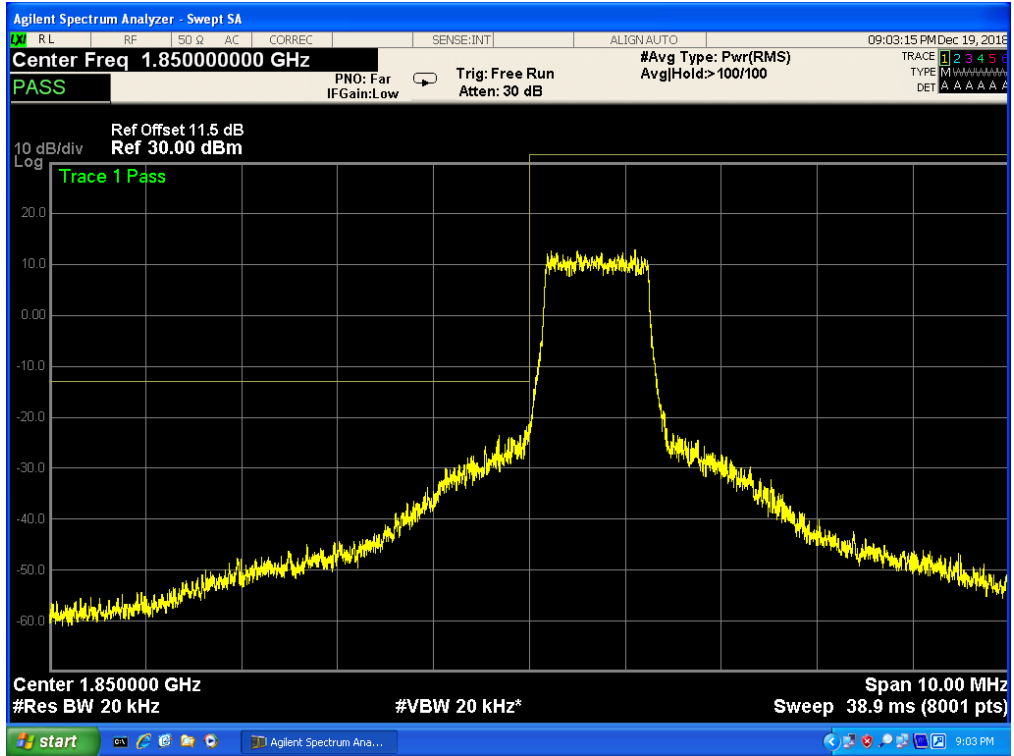
Band 2, UL Channel 18607, UL Frequency 1850.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK



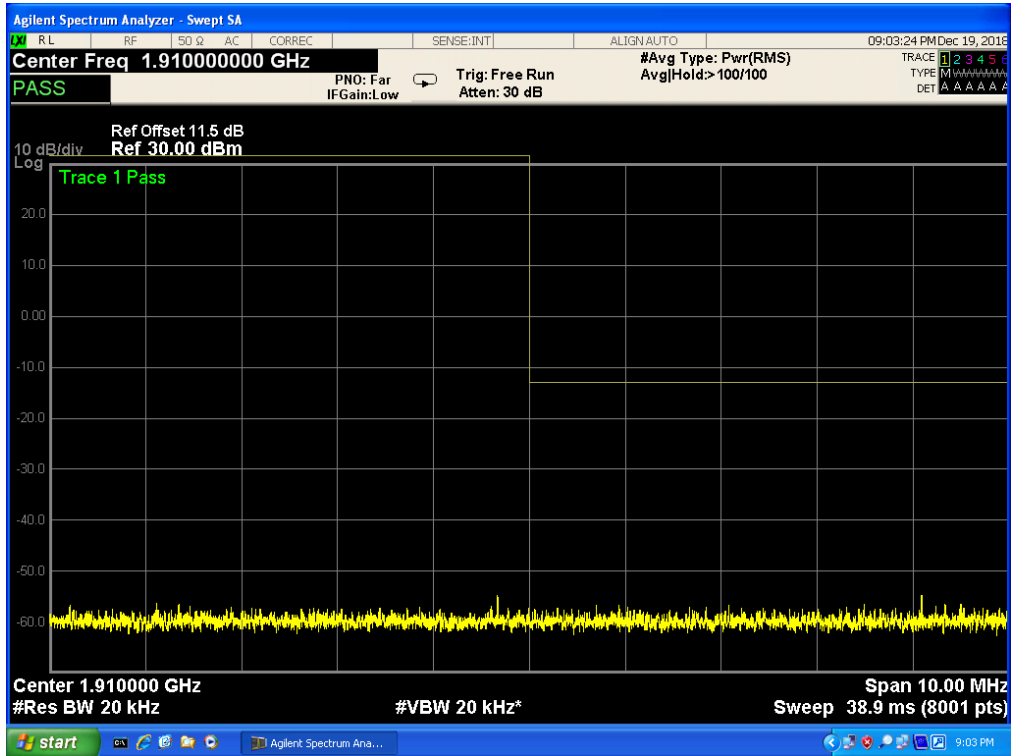
Band 2, UL Channel 18607, UL Frequency 1850.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK



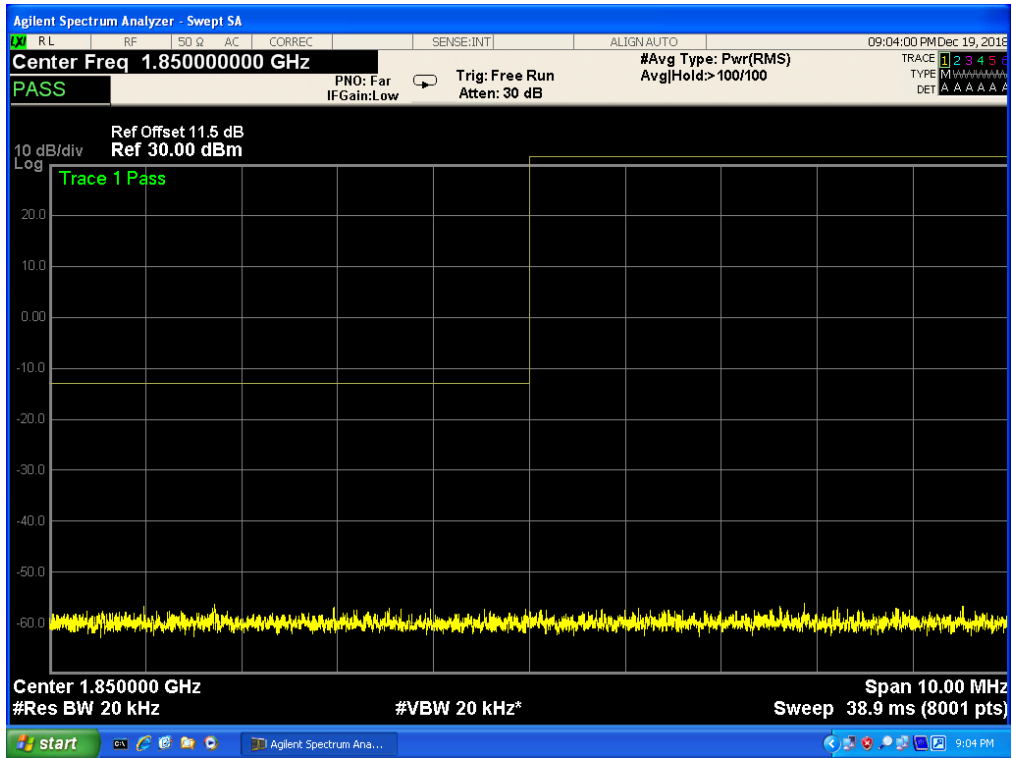
Band 2, UL Channel 18607, UL Frequency 1850.7, BW 1.4, NO. RB 6, RB POS. Low, 16QAM



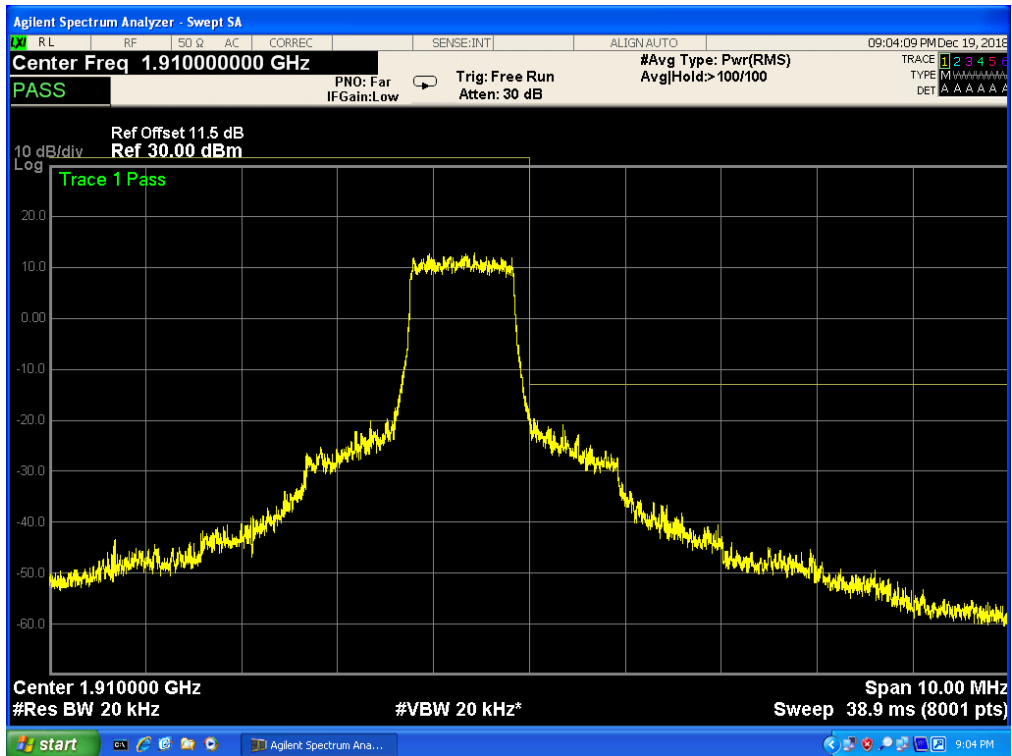
Band 2, UL Channel 18607, UL Frequency 1850.7, BW 1.4, NO. RB 6, RB POS. Low, 16QAM



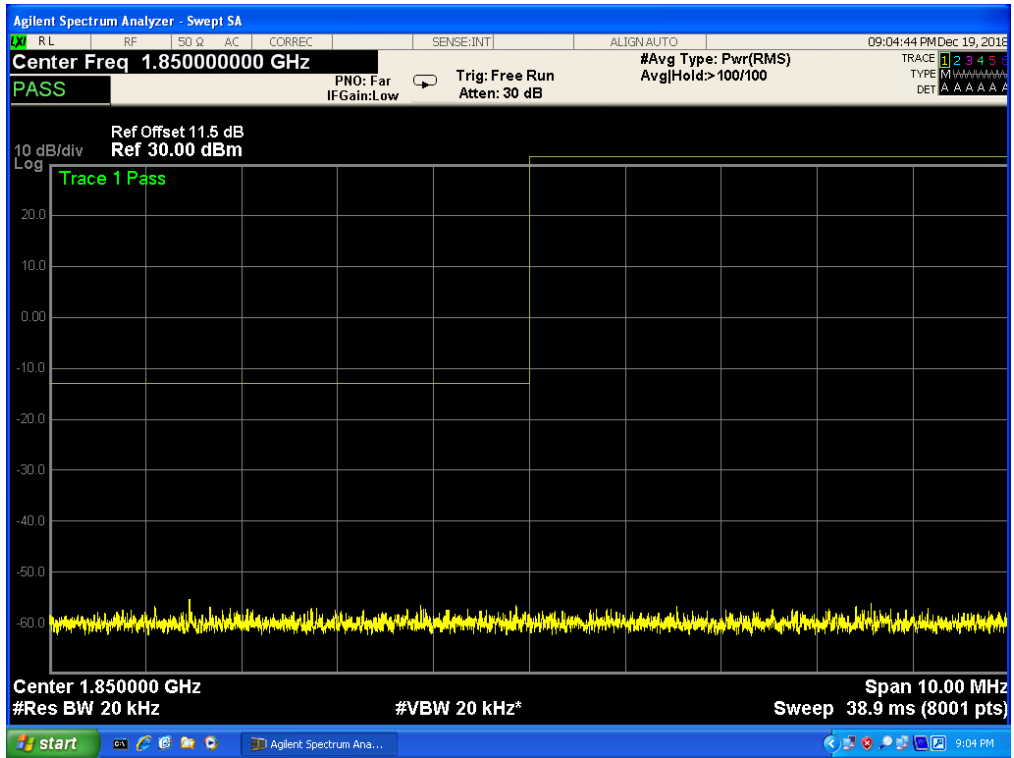
Band 2, UL Channel 19193, UL Frequency 1909.3, BW 1.4, NO. RB 6, RB POS. Low, QPSK



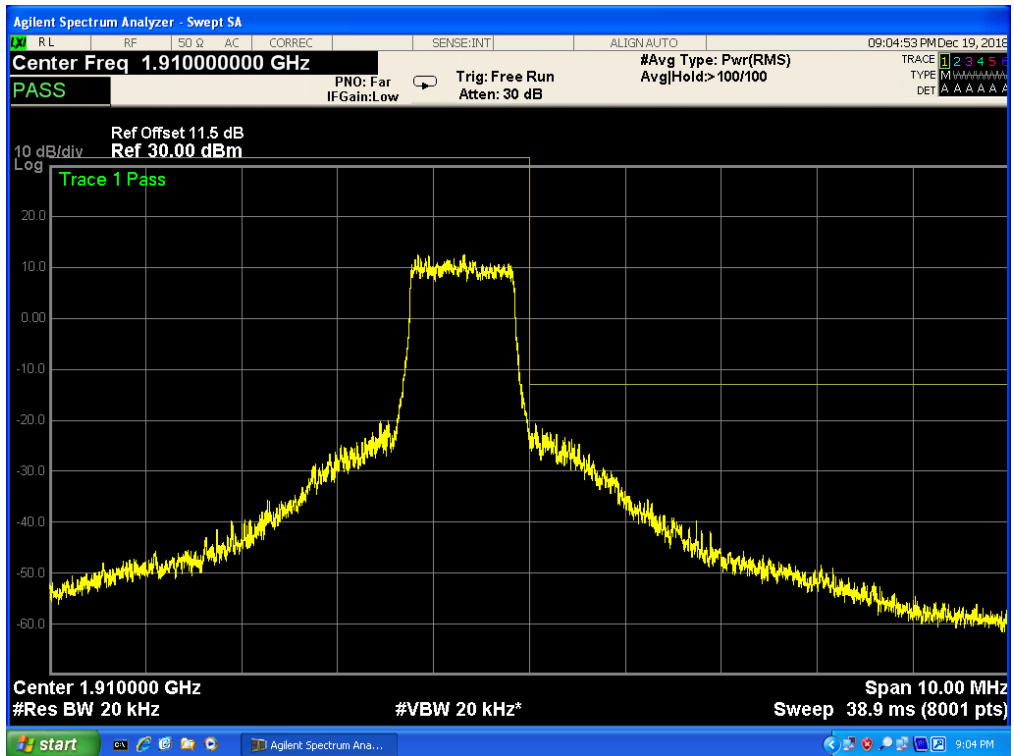
Band 2, UL Channel 19193, UL Frequency 1909.3, BW 1.4, NO. RB 6, RB POS. Low, QPSK



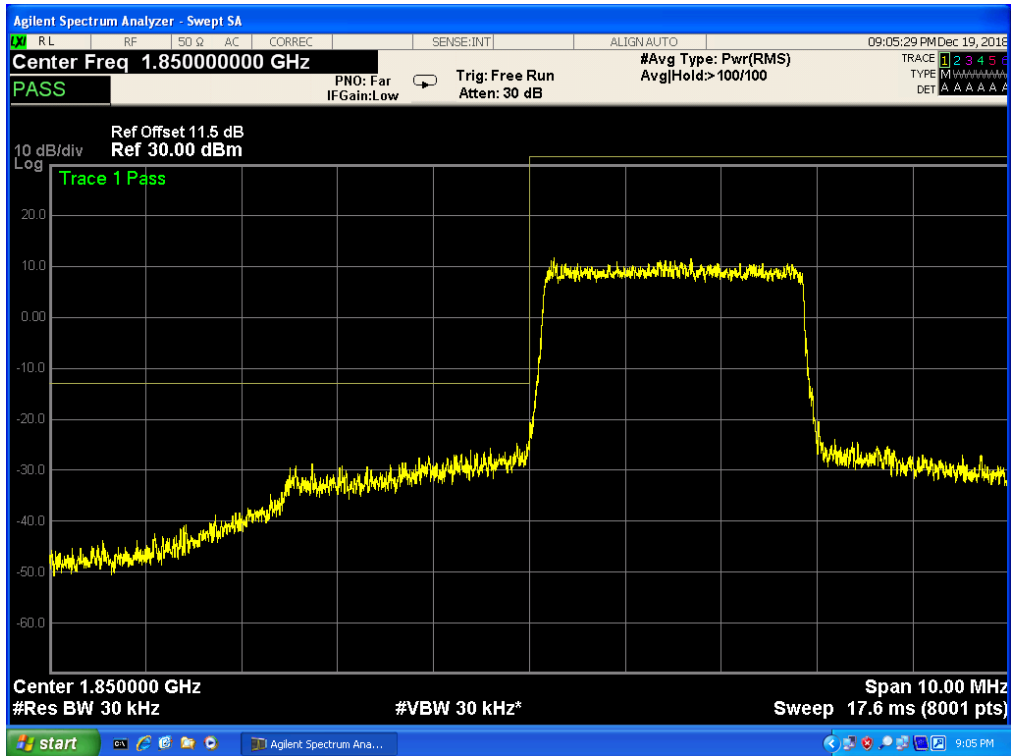
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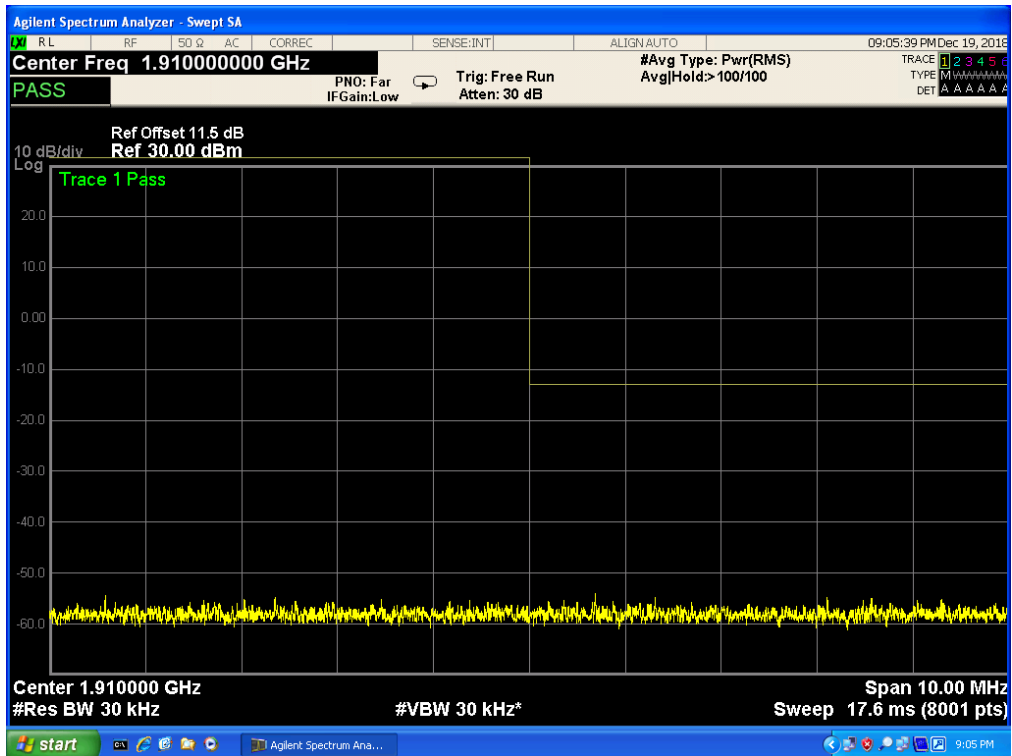
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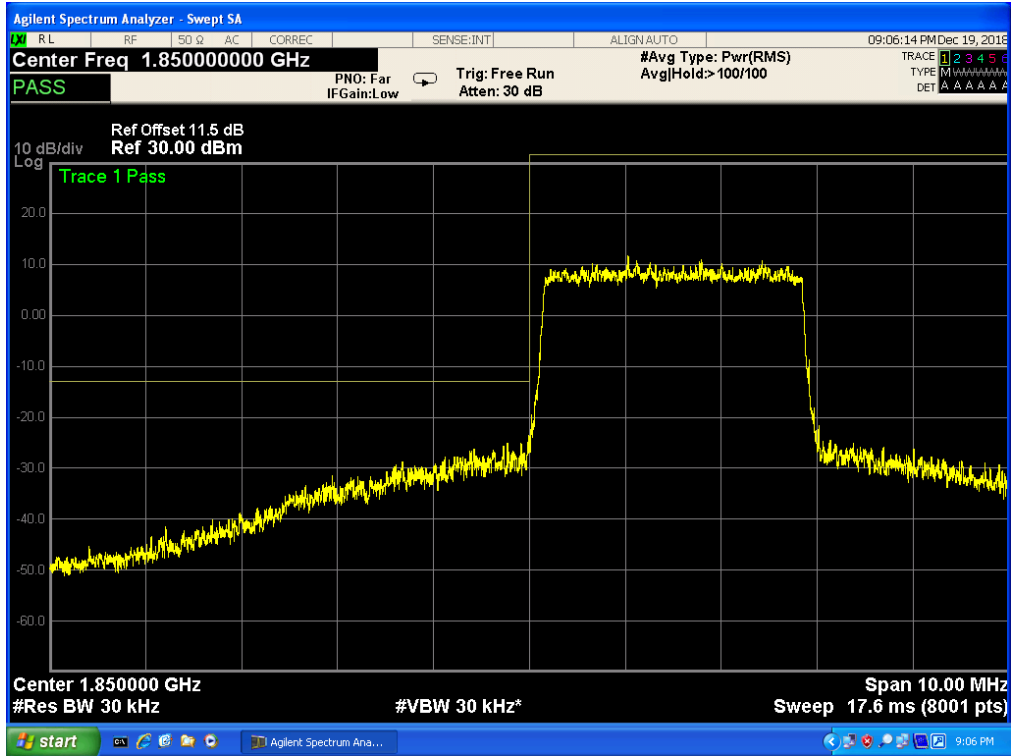
Band 2, UL Channel 18615, UL Frequency 1851.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK



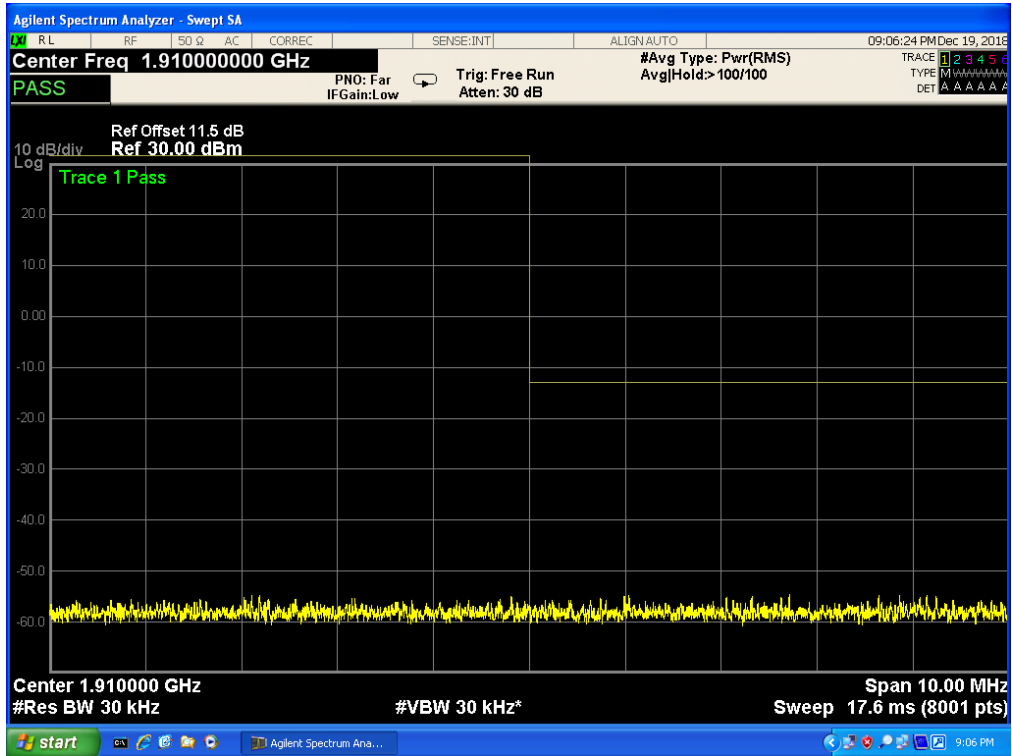
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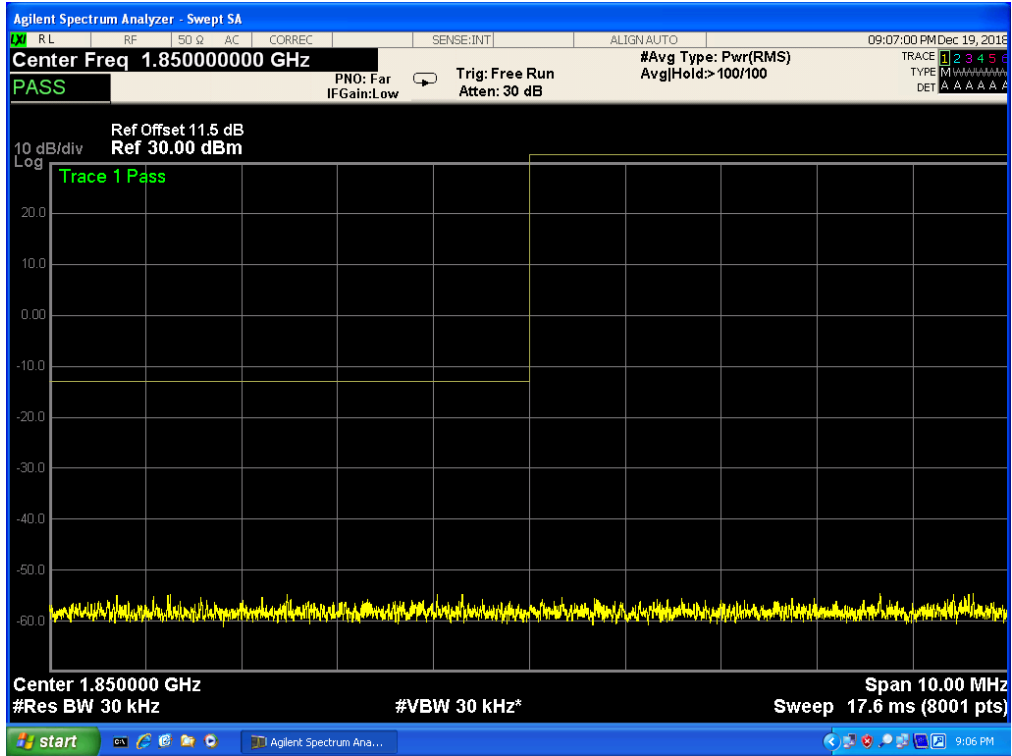
Band 2, UL Channel 18615, UL Frequency 1851.5, BW 3.0, NO. RB 15, RB POS. Low, 16QAM



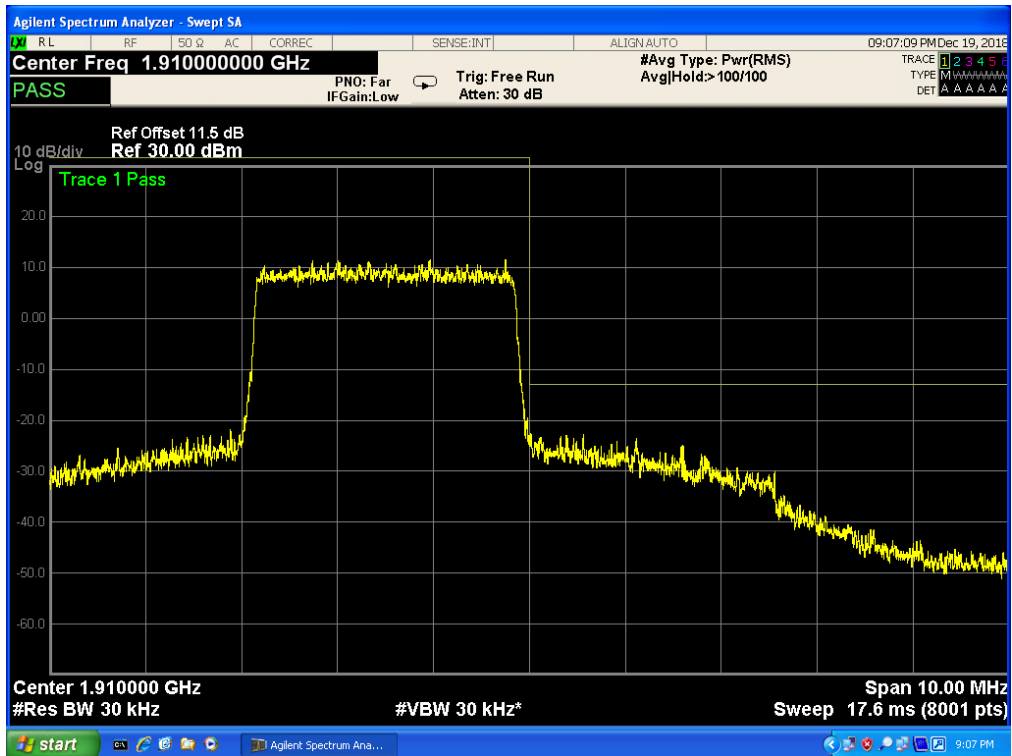
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Band 2, UL Channel 19185, UL Frequency 1908.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK

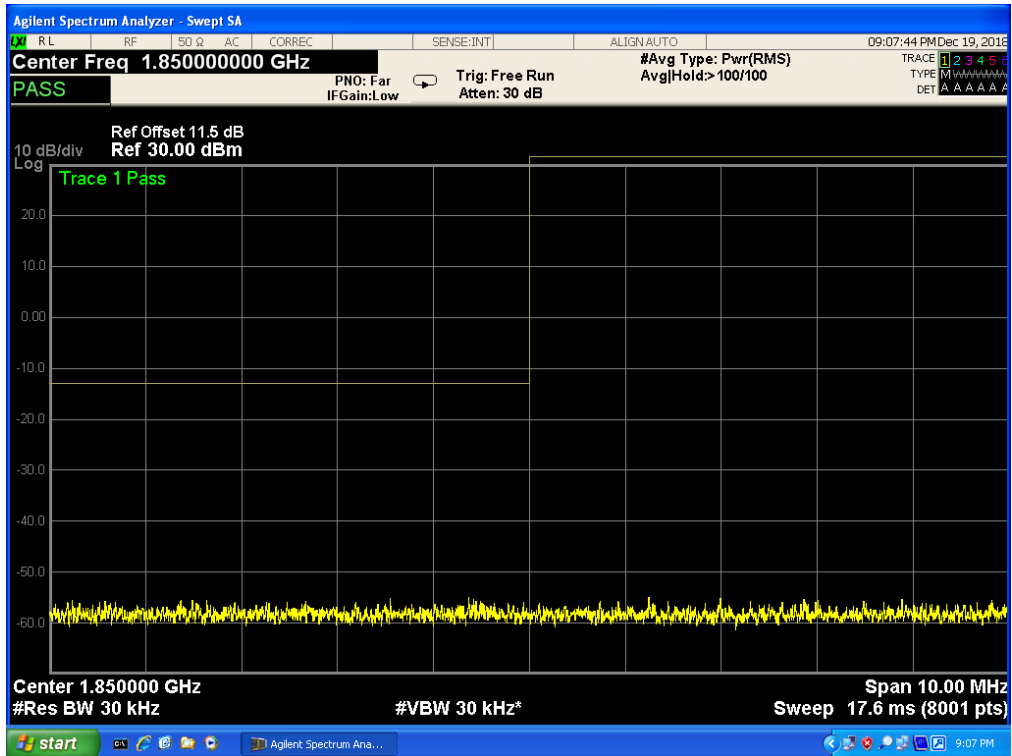


Band 2, UL Channel 19185, UL Frequency 1908.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK

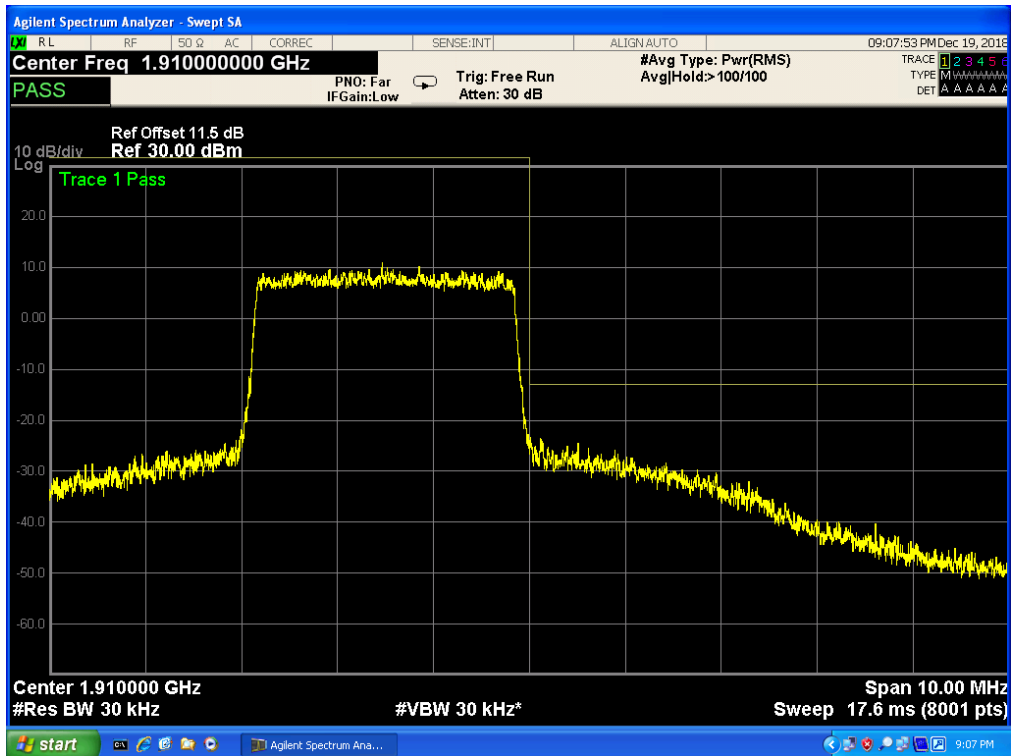




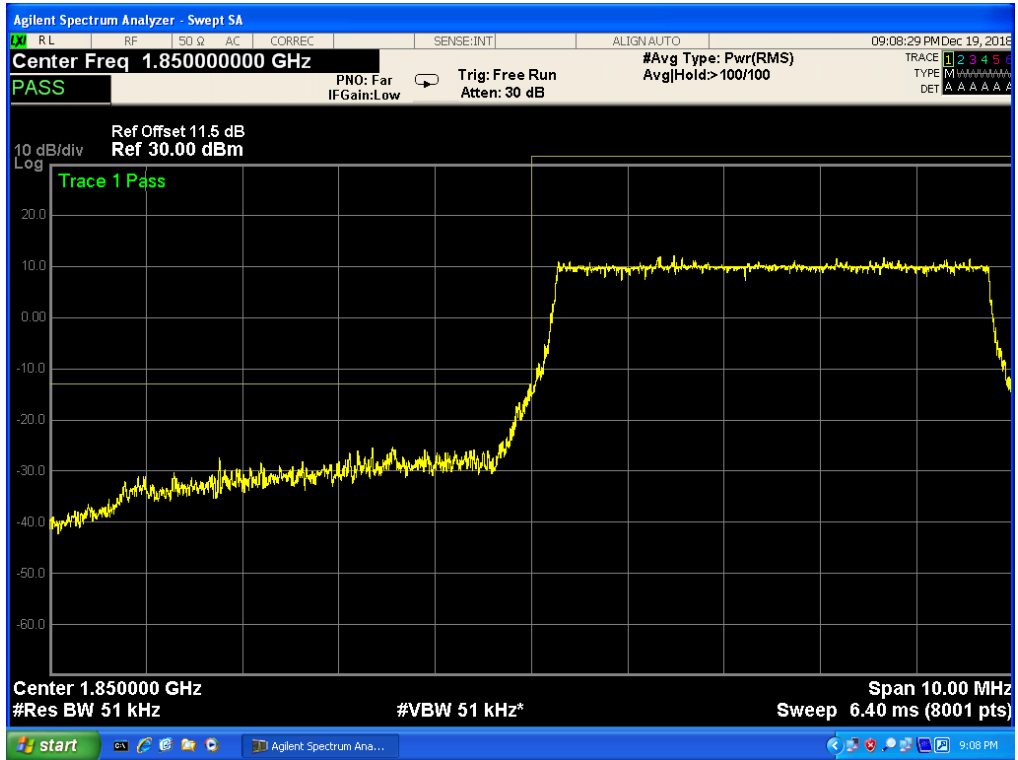
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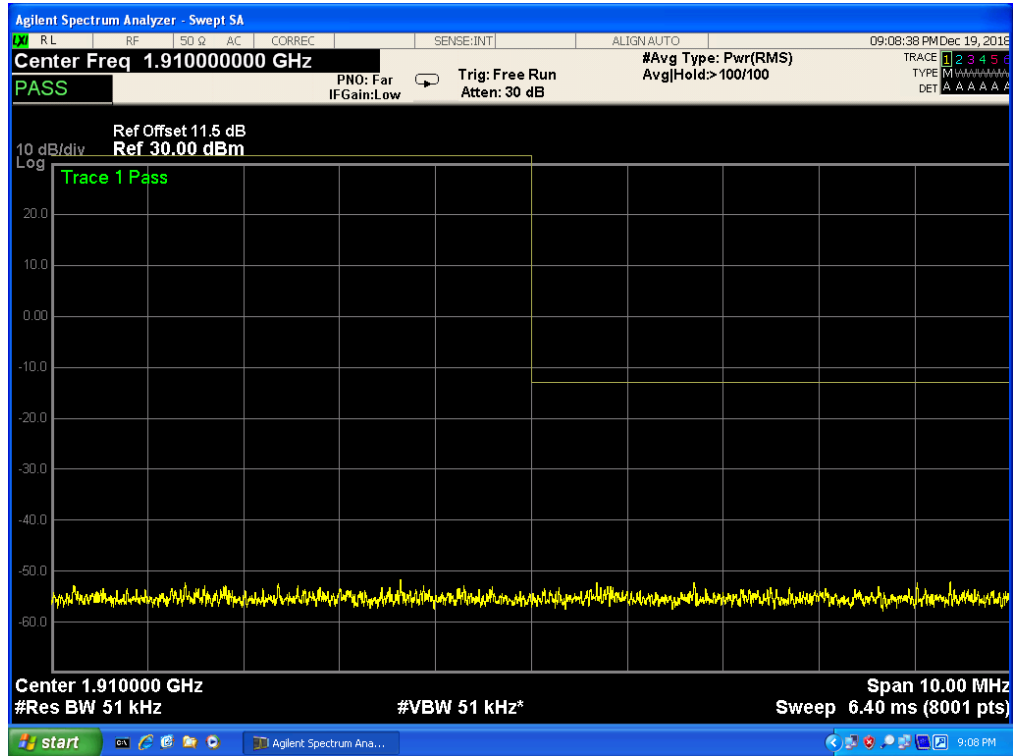
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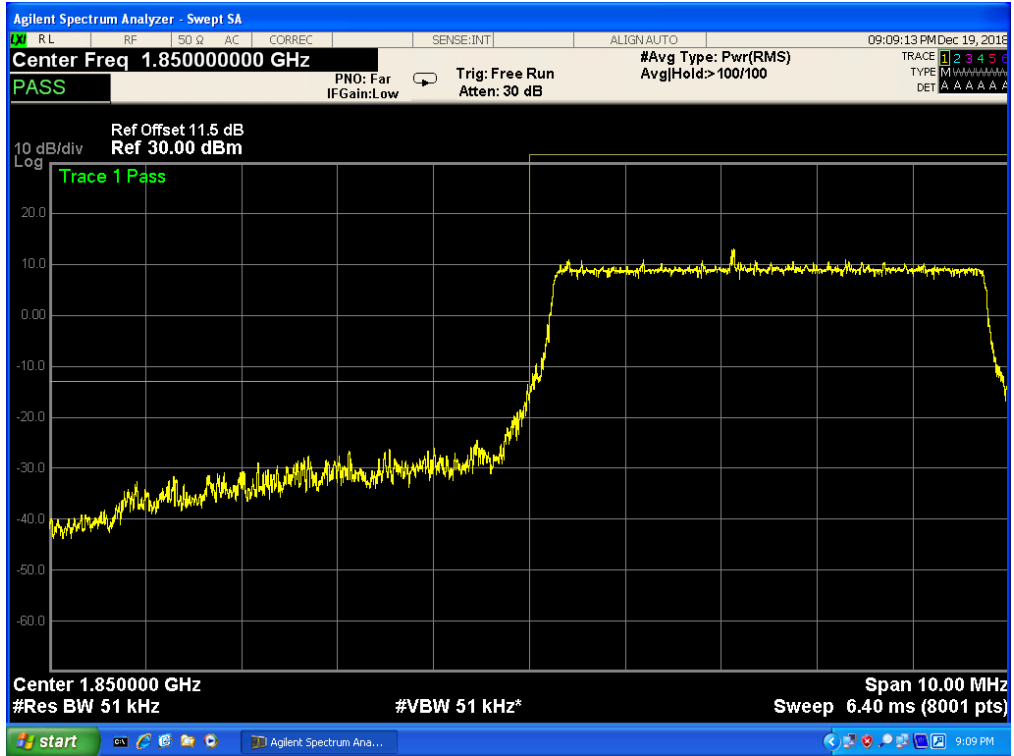
Band 2, UL Channel 18625, UL Frequency 1852.5, BW 5.0, NO. RB 25, RB POS. Low, QPSK



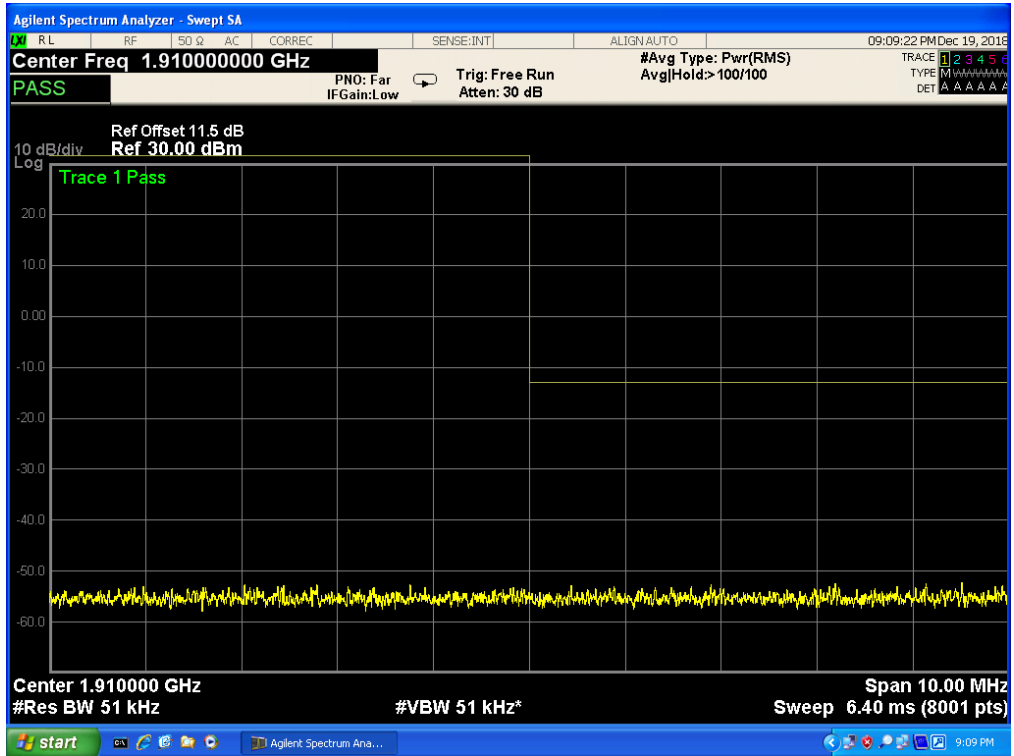
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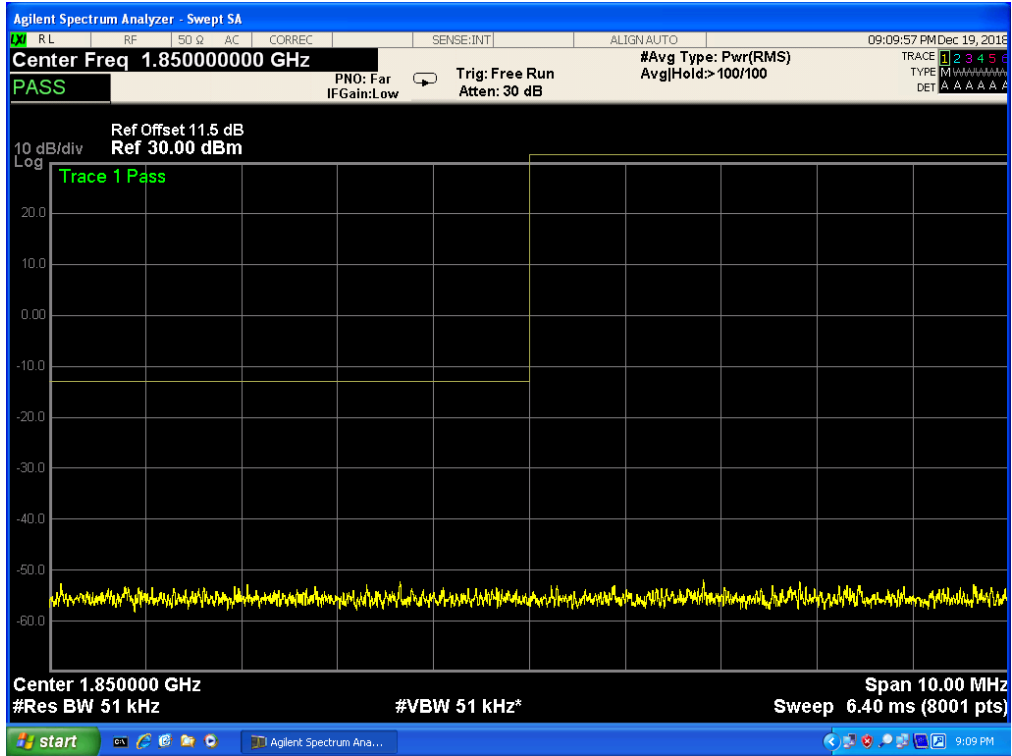
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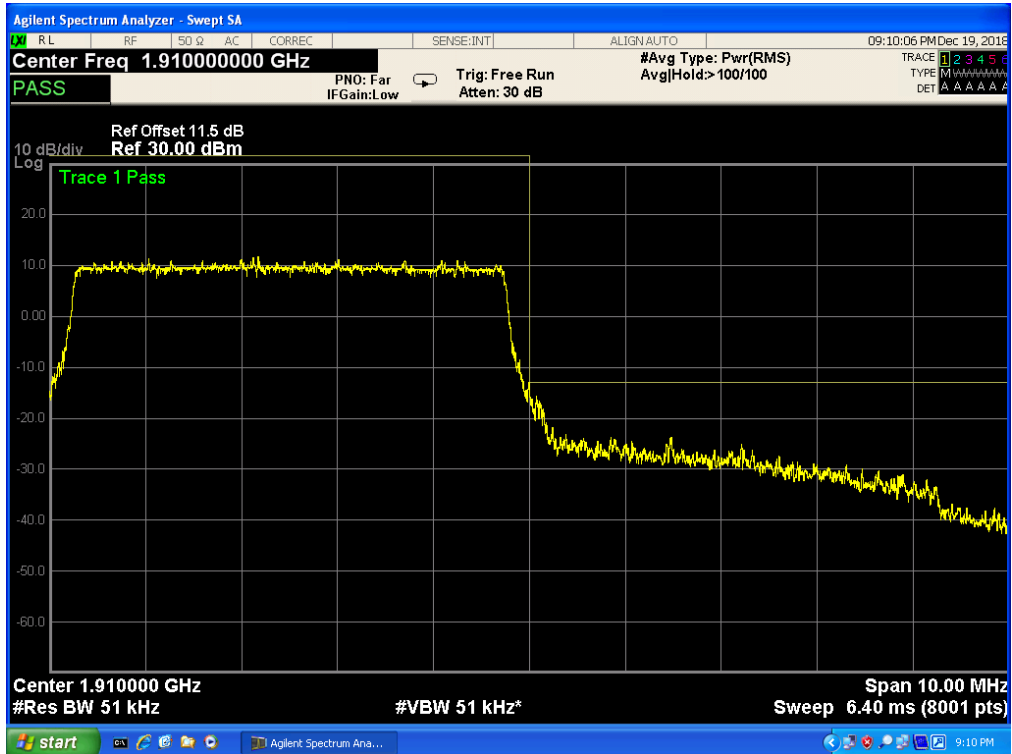
Band 2, UL Channel 18625, UL Frequency 1852.5, BW 5.0, NO. RB 25, RB POS. Low, 16QAM



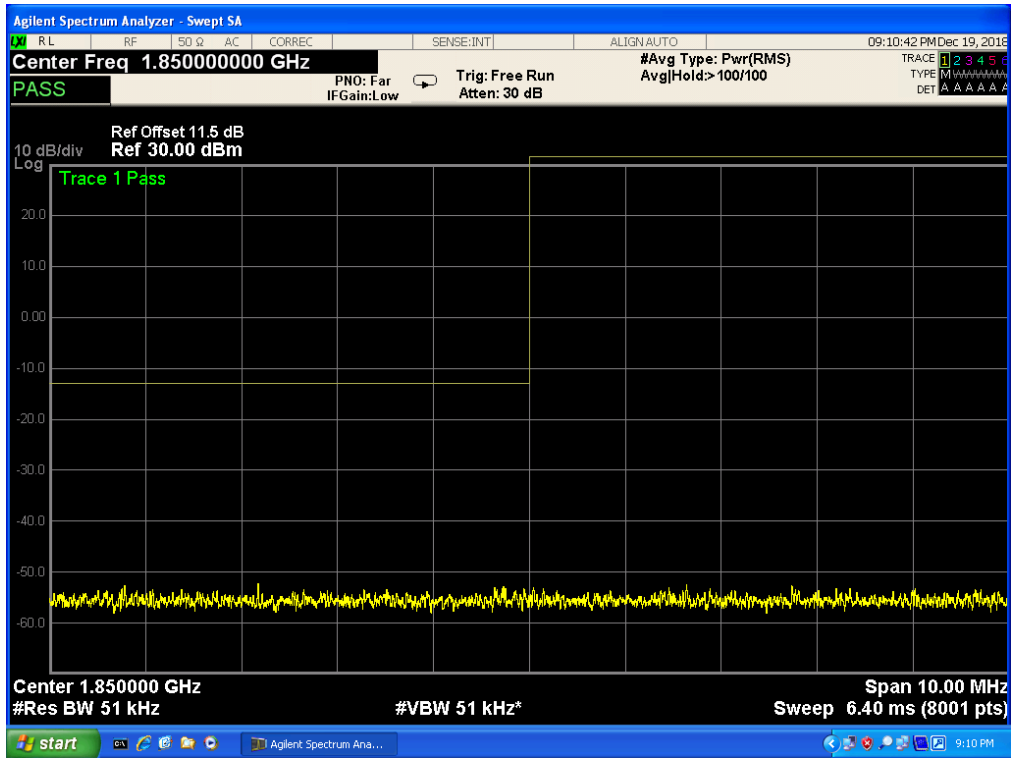
Band 2, UL Channel 19175, UL Frequency 1907.5, BW 5.0, NO. RB 25, RB POS. Low, QPSK



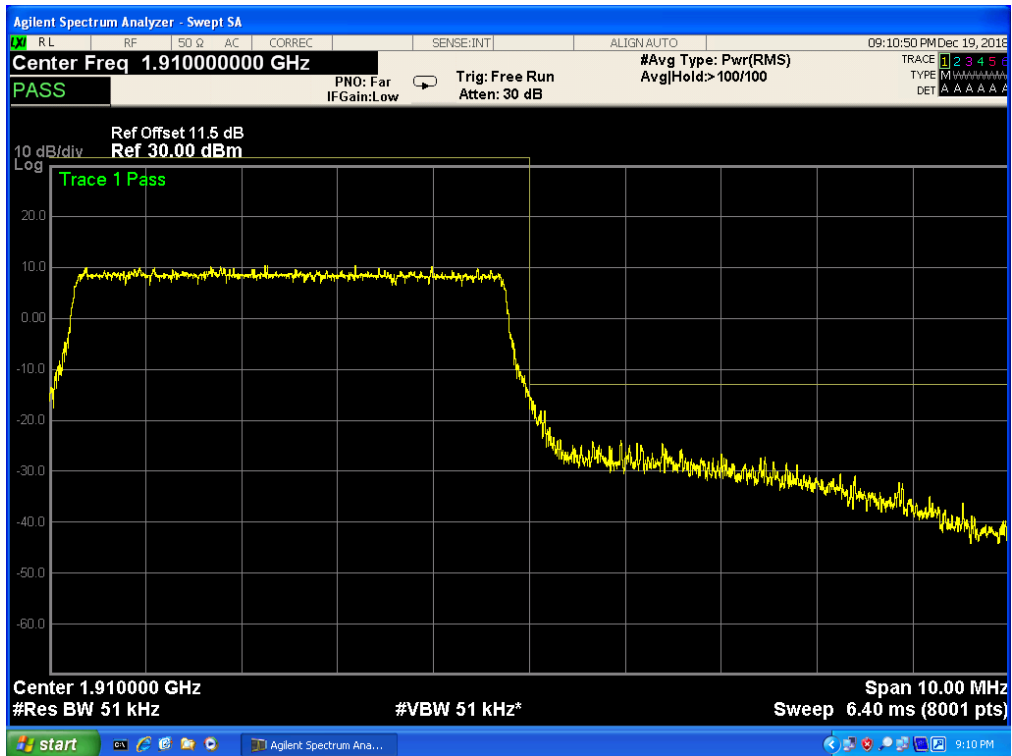
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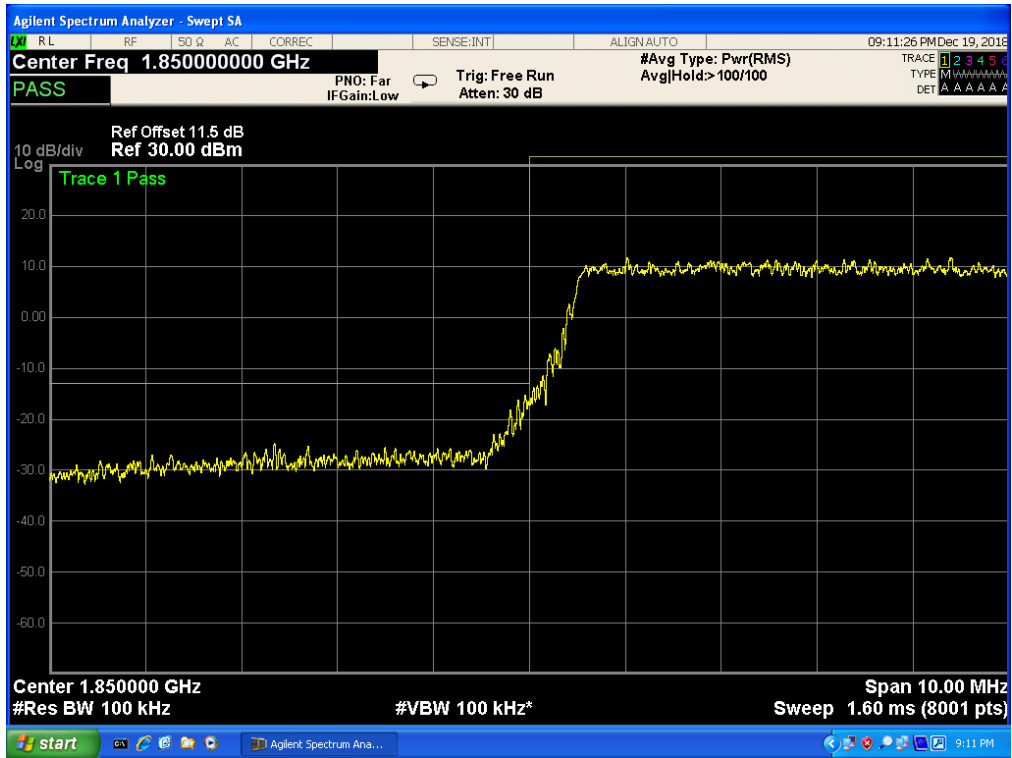
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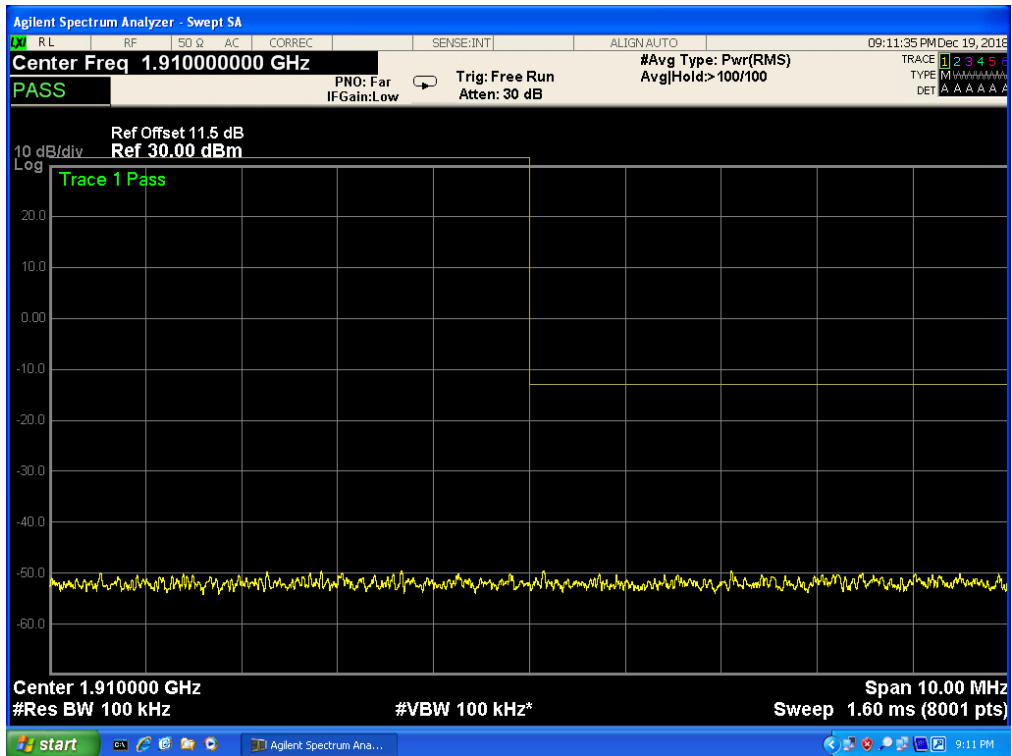
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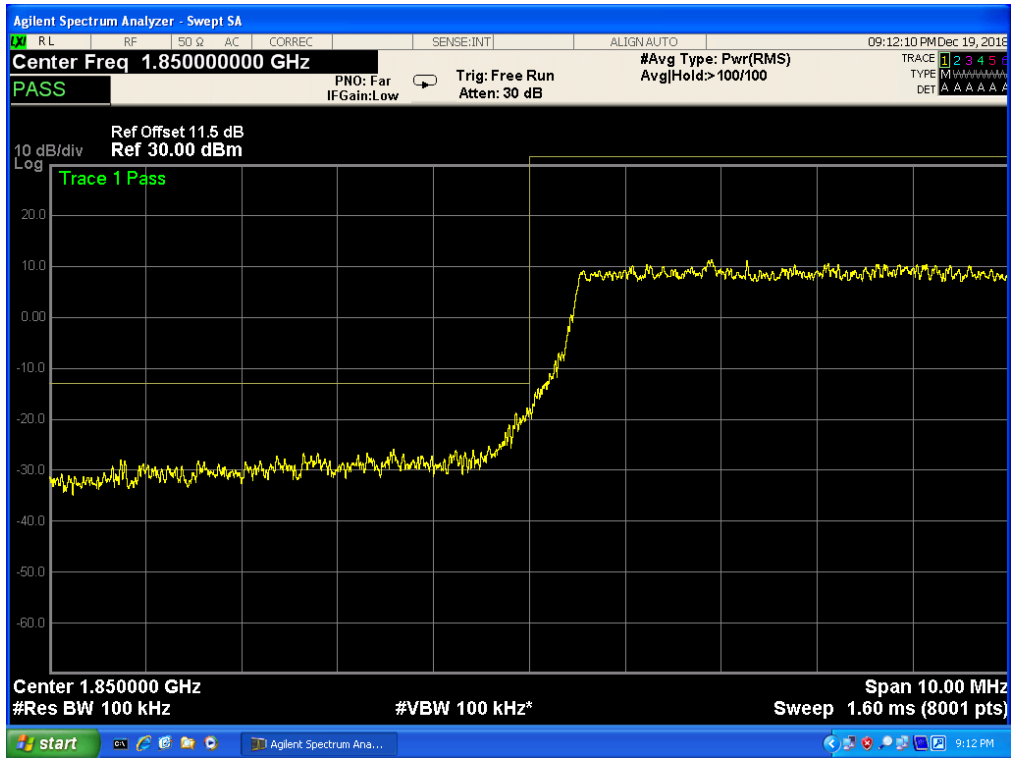
Band 2, UL Channel 18650, UL Frequency 1855.0, BW 10.0, NO. RB 50, RB POS. Low, QPSK



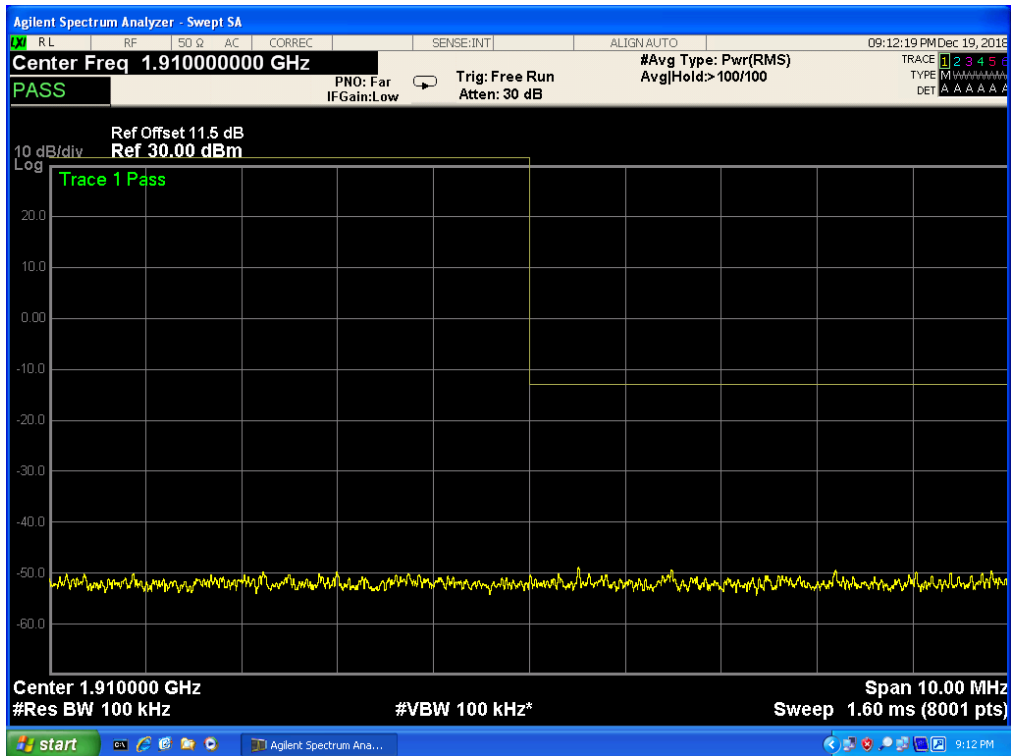
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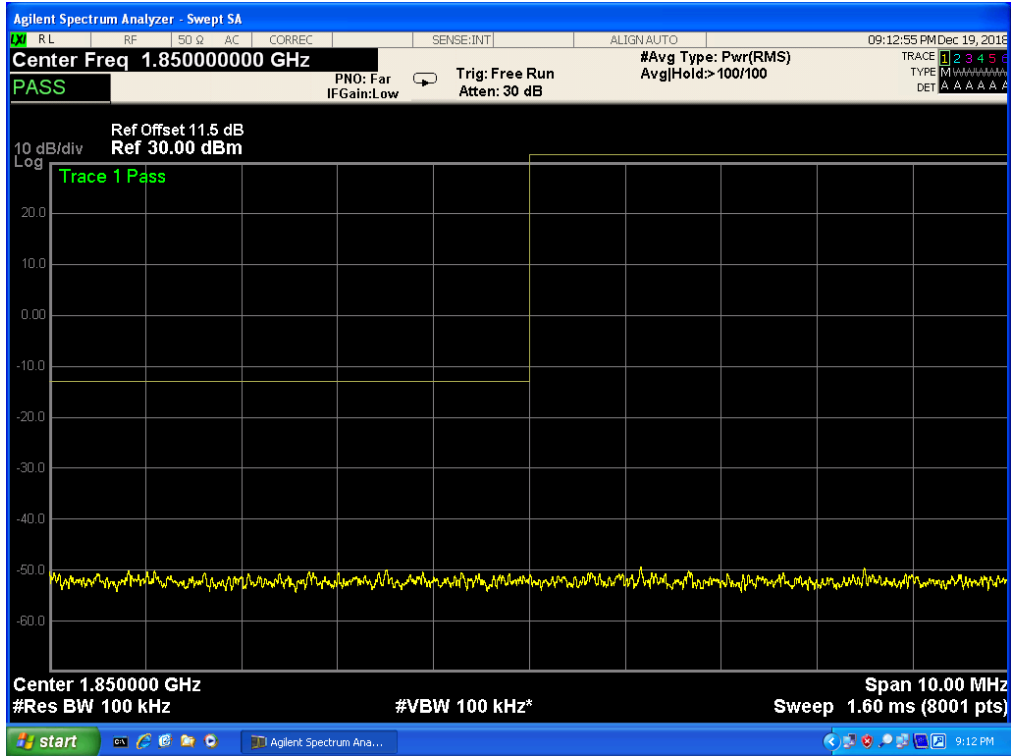
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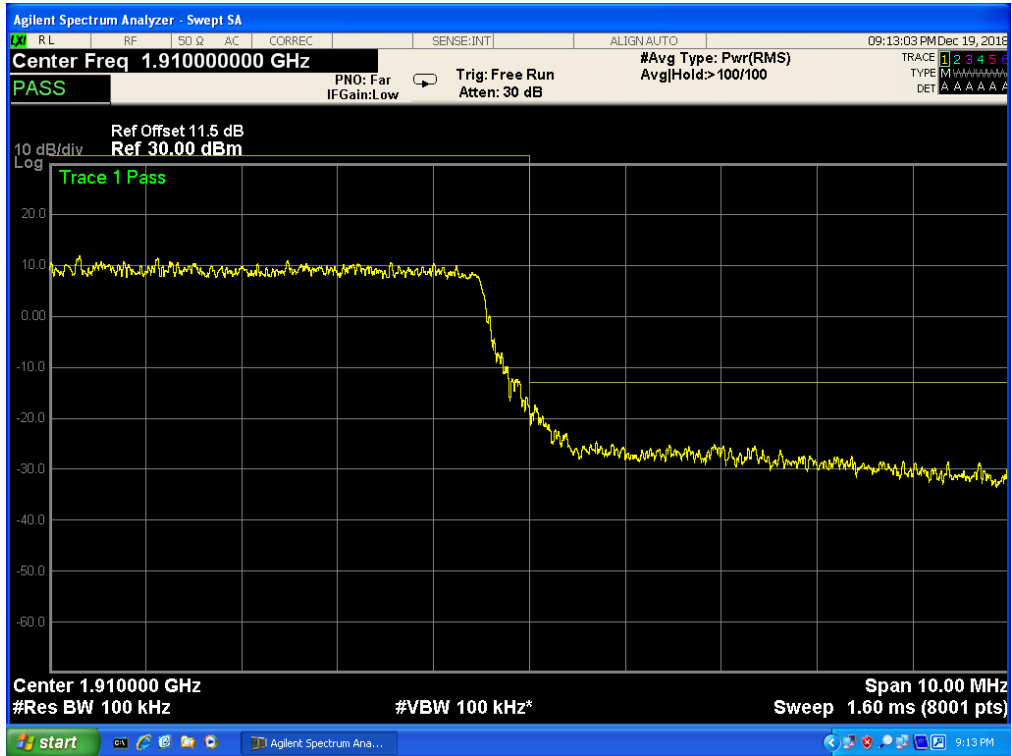
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Band 2, UL Channel 19150, UL Frequency 1905.0, BW 10.0, NO. RB 50, RB POS. Low, QPSK

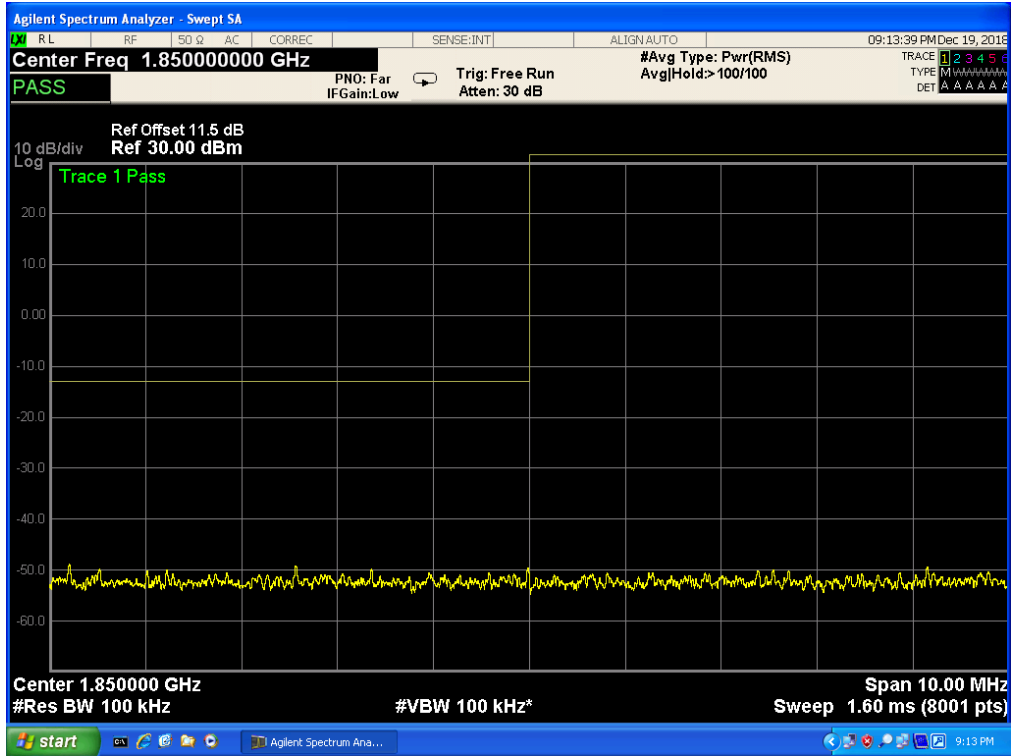


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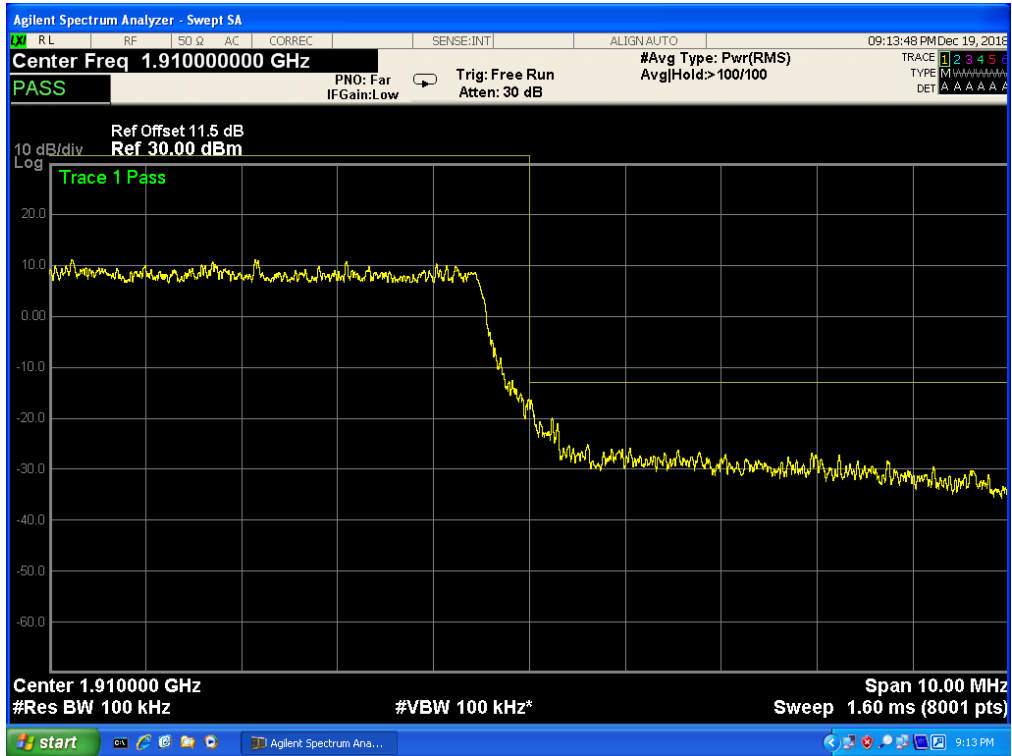




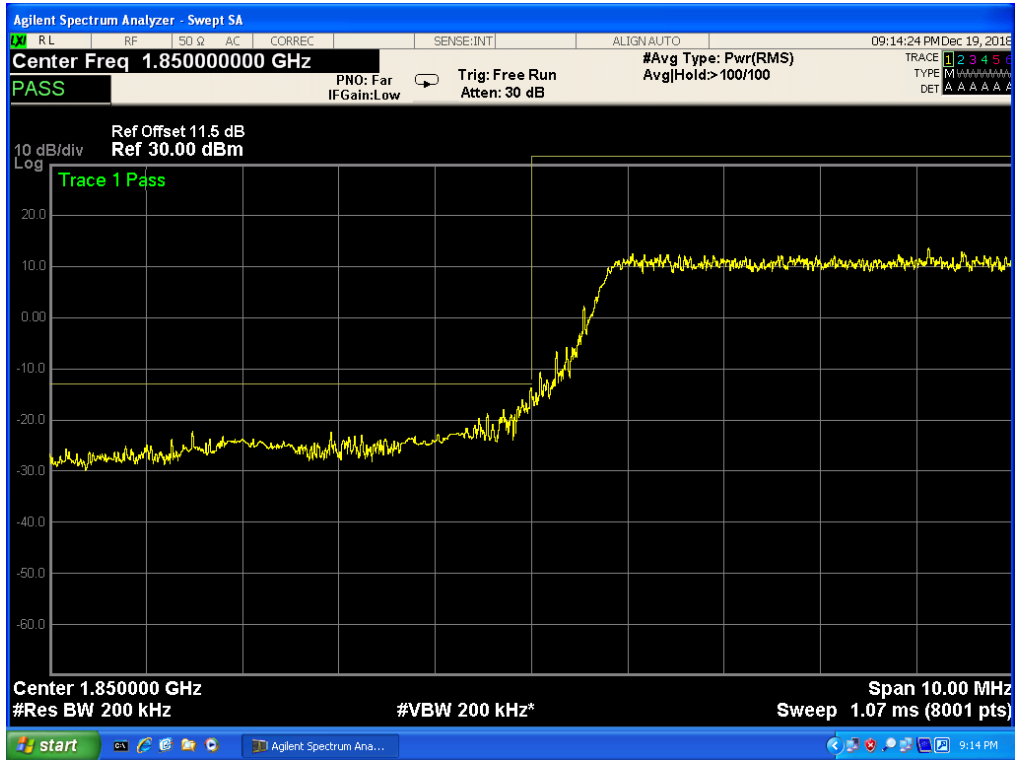
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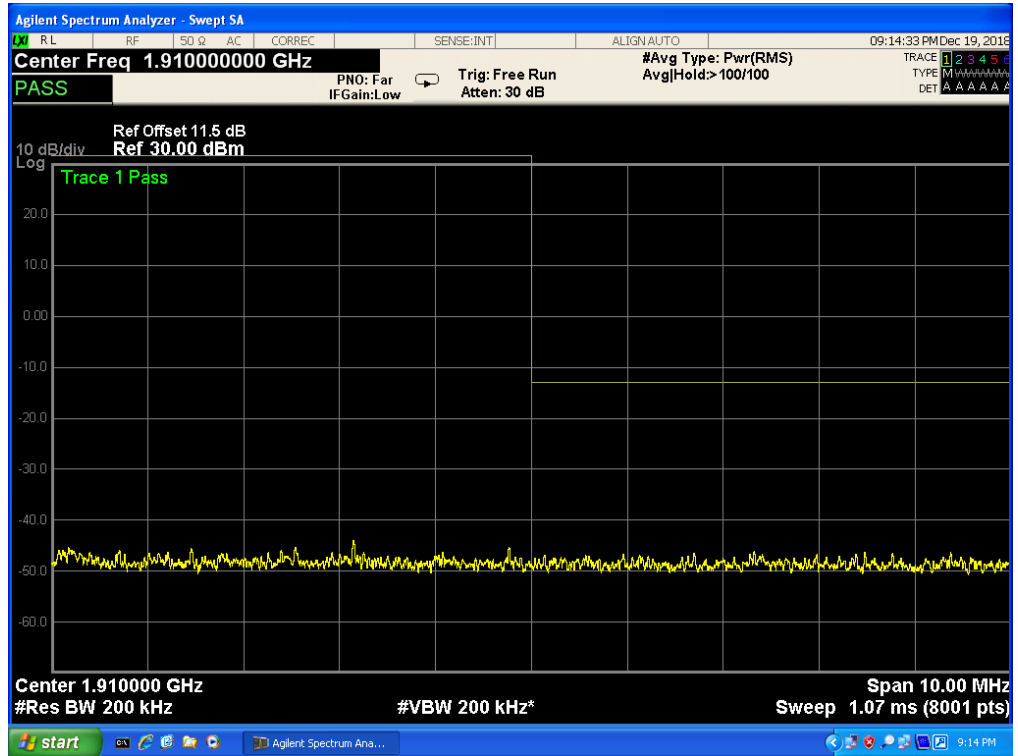
Band 2, UL Channel 19150, UL Frequency 1905.0, BW 10.0, NO. RB 50, RB POS. Low, 16QAM



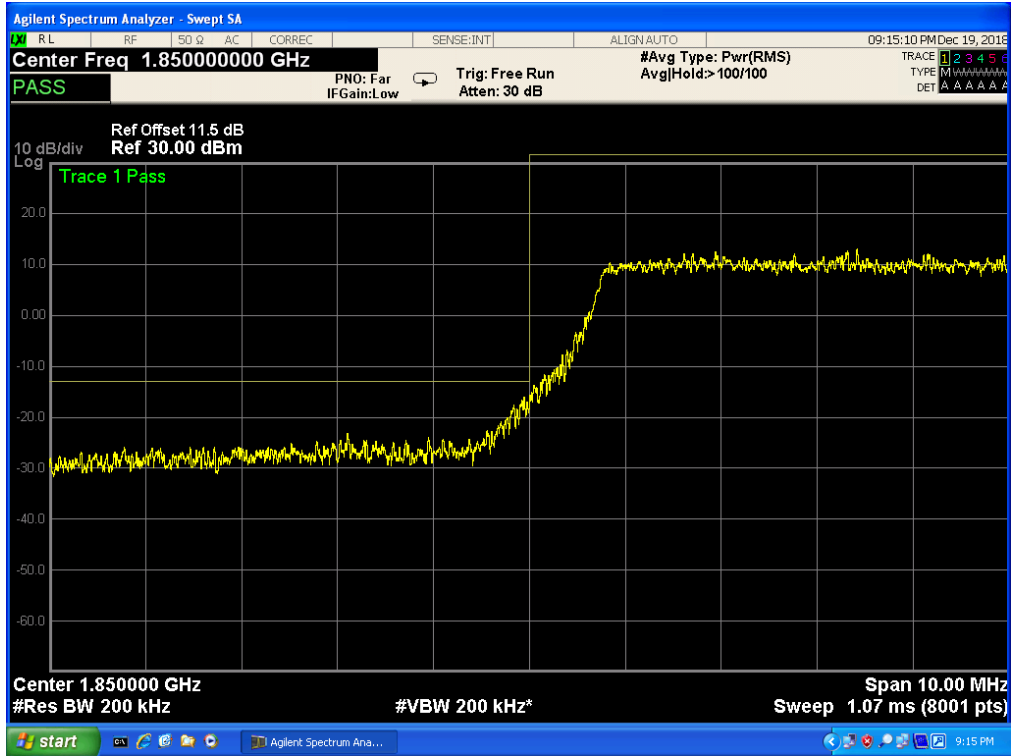
Band 2, UL Channel 18675, UL Frequency 1857.5, BW 15.0, NO. RB 75, RB POS. Low, QPSK



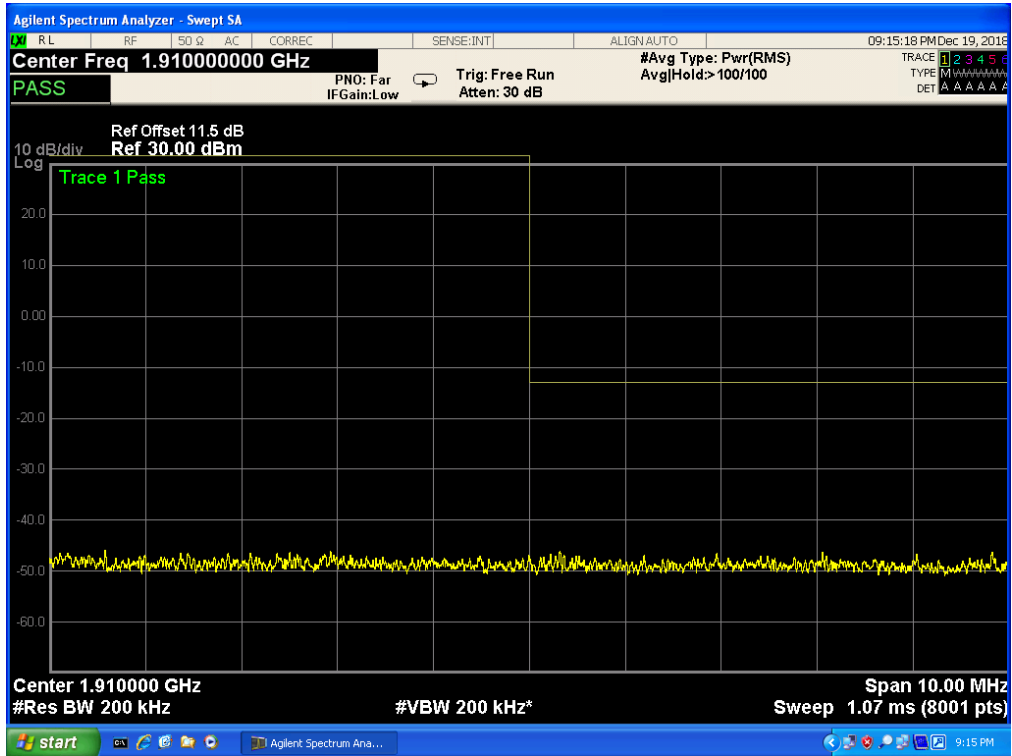
Band 2, UL Channel 18675, UL Frequency 1857.5, BW 15.0, NO. RB 75, RB POS. Low, QPSK



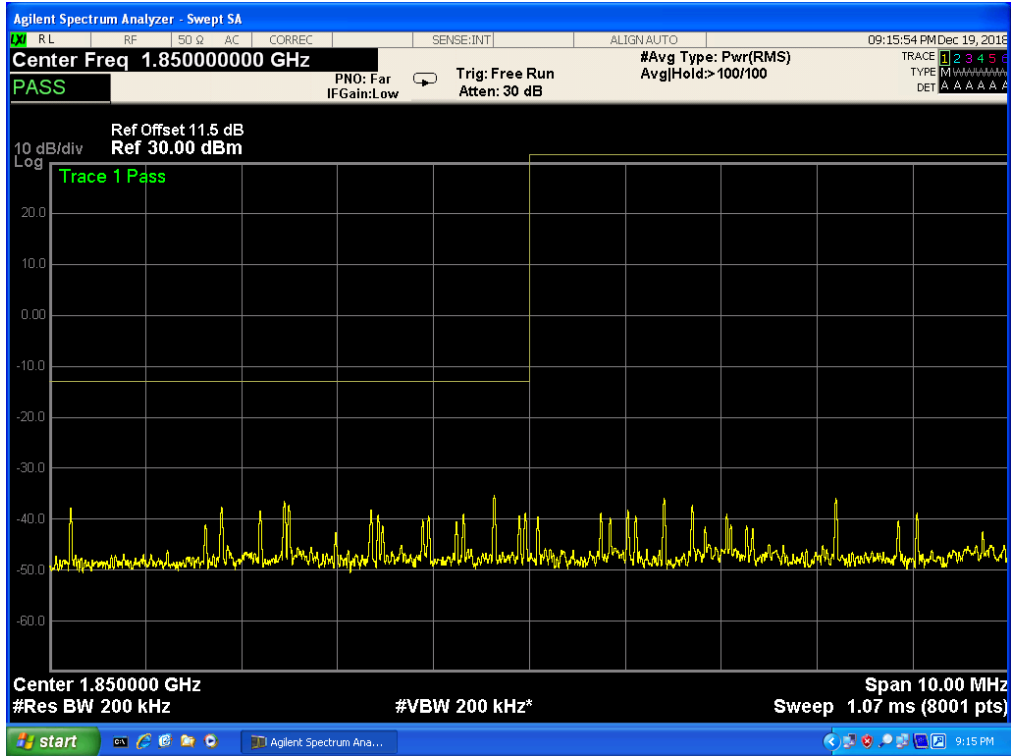
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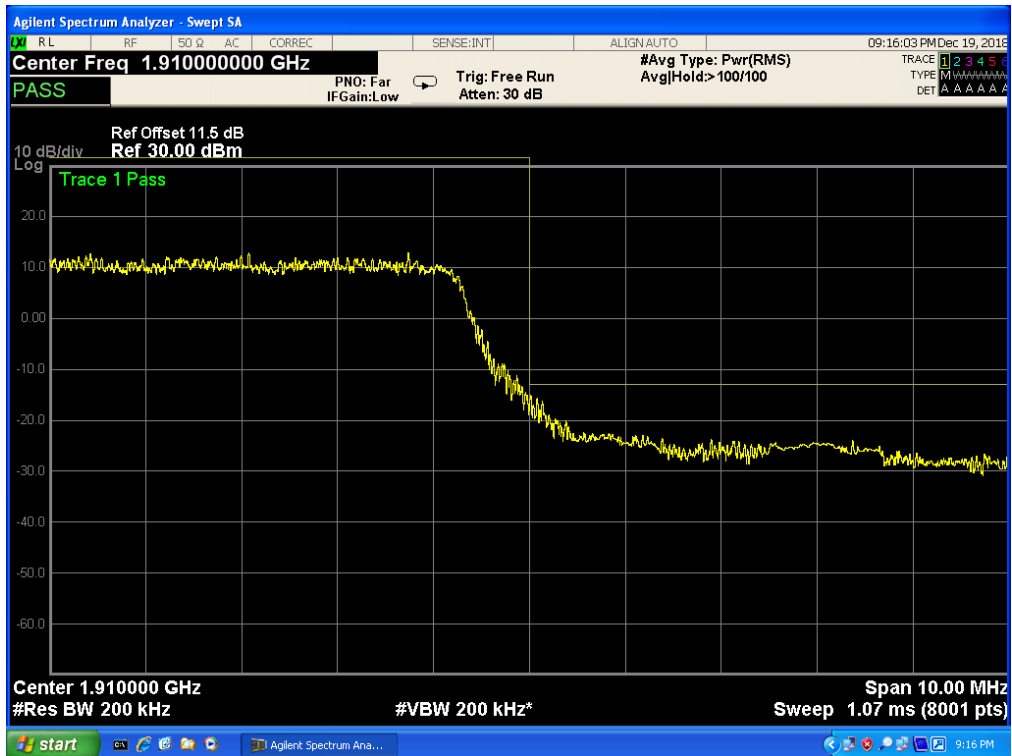
Band 2, UL Channel 18675, UL Frequency 1857.5, BW 15.0, NO. RB 75, RB POS. Low, 16QAM



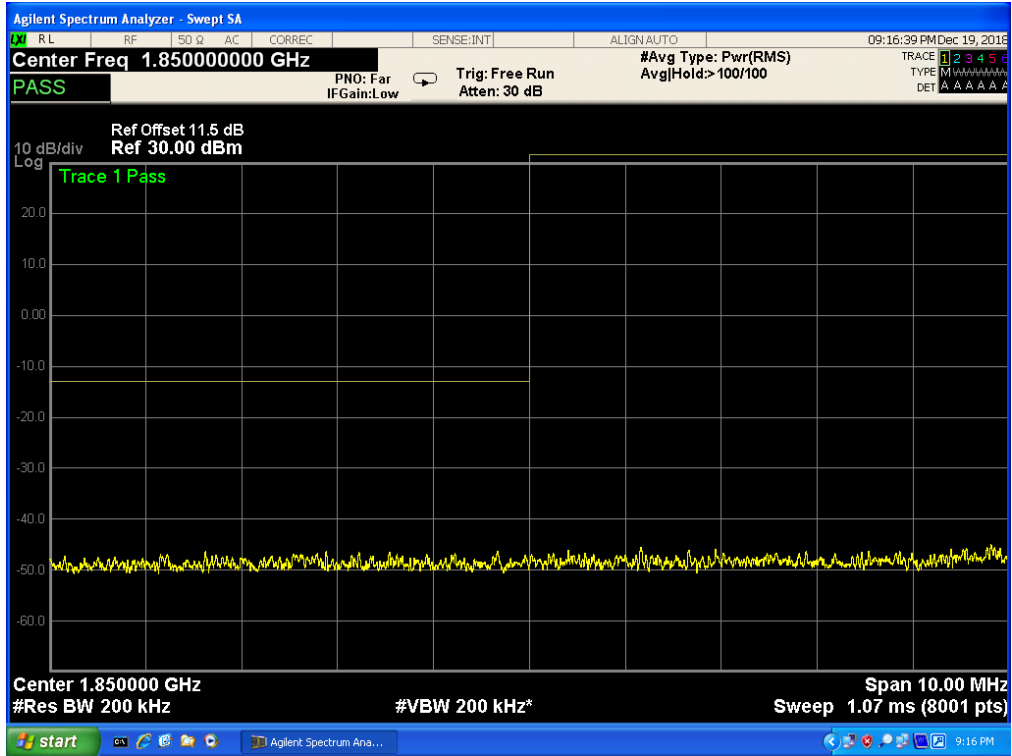
Band 2, UL Channel 19125, UL Frequency 1902.5, BW 15.0, NO. RB 75, RB POS. Low, QPSK



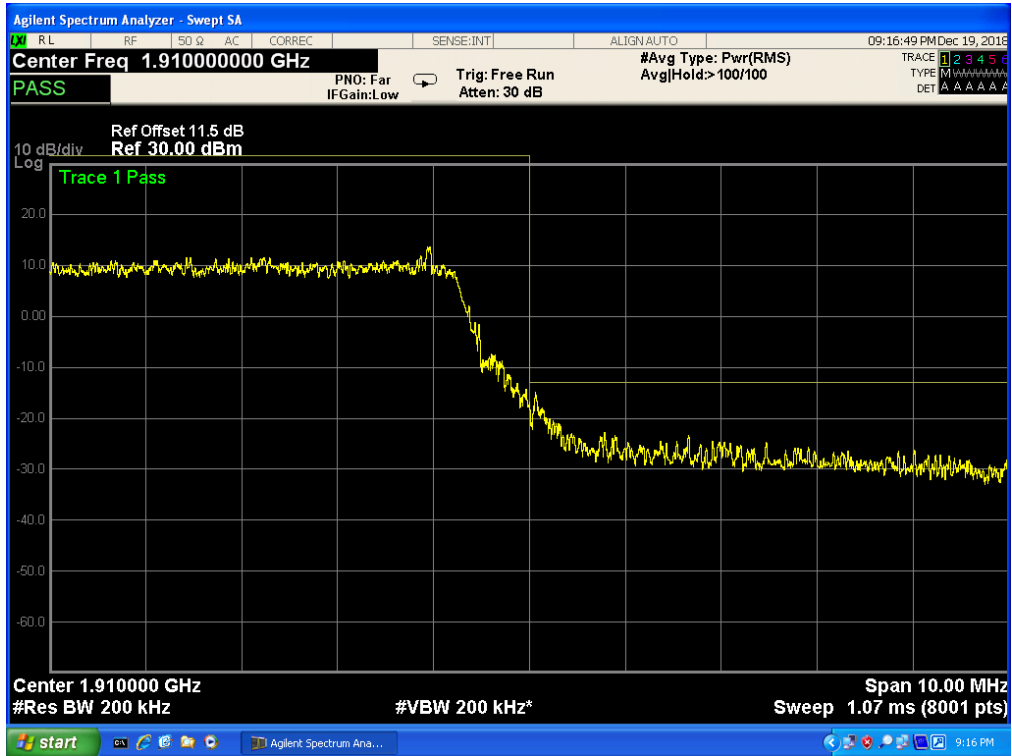
Band 2, UL Channel 19125, UL Frequency 1902.5, BW 15.0, NO. RB 75, RB POS. Low, QPSK



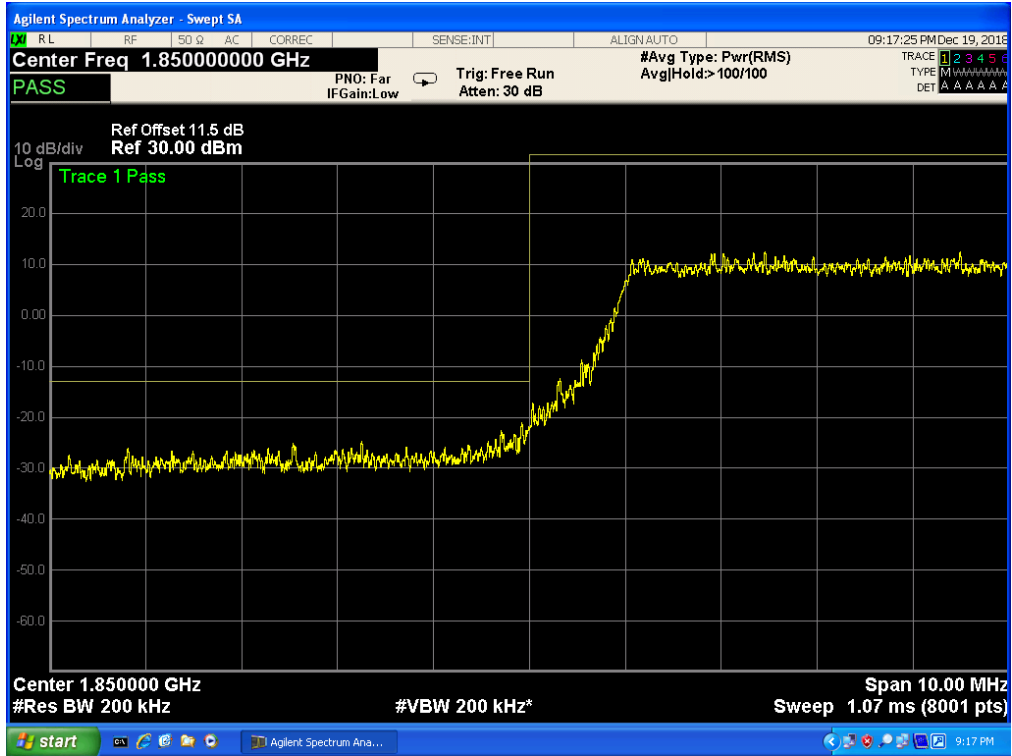
Band 2, UL Channel 19125, UL Frequency 1902.5, BW 15.0, NO. RB 75, RB POS. Low, 16QAM



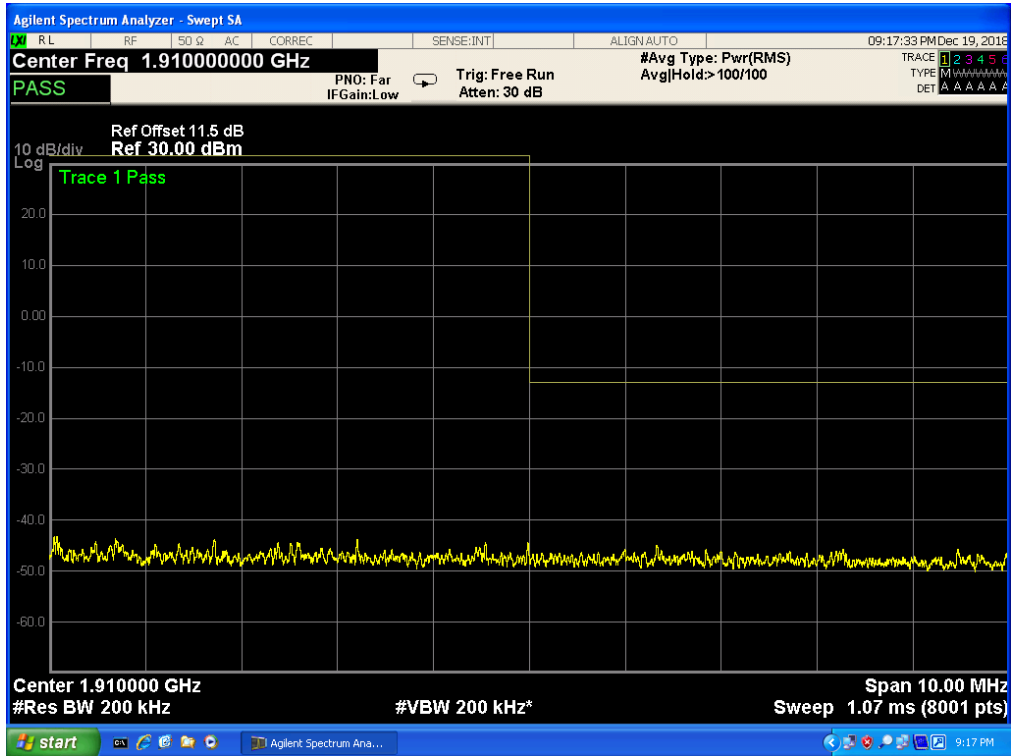
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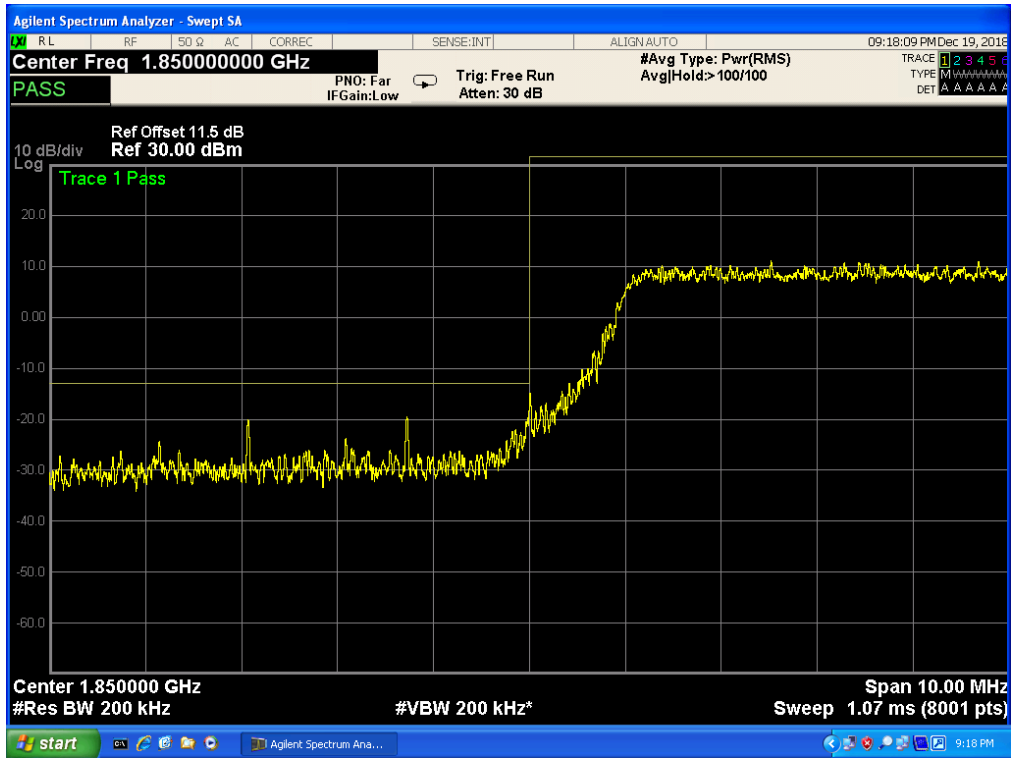
Band 2, UL Channel 18700, UL Frequency 1860.0, BW 20.0, NO. RB 100, RB POS. Low, QPSK



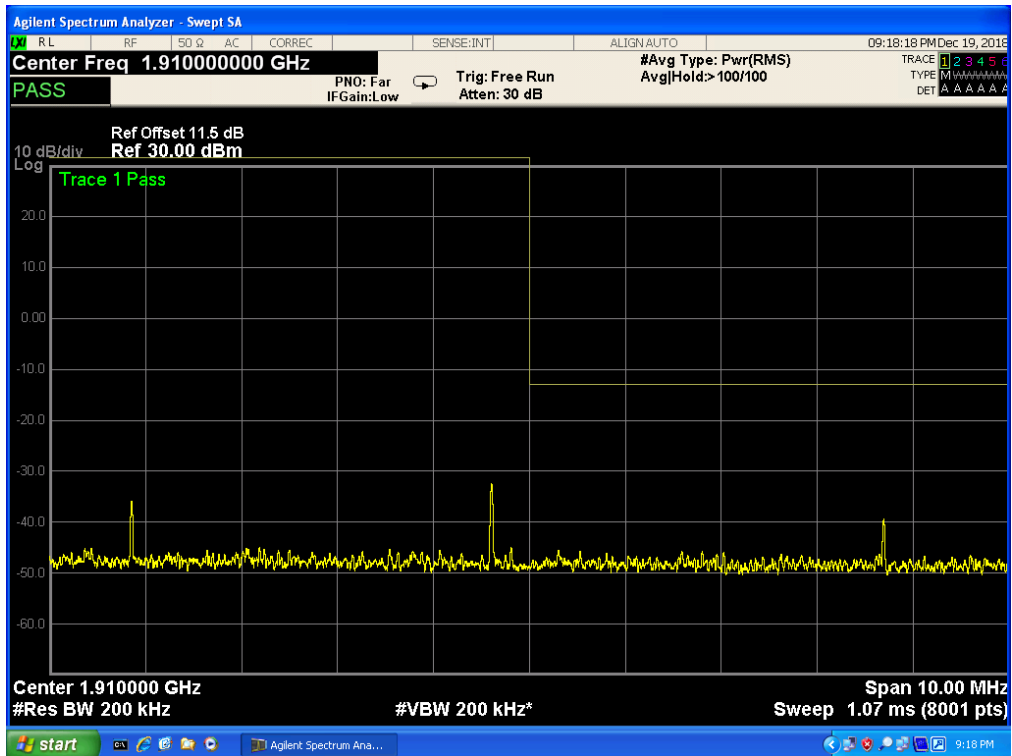
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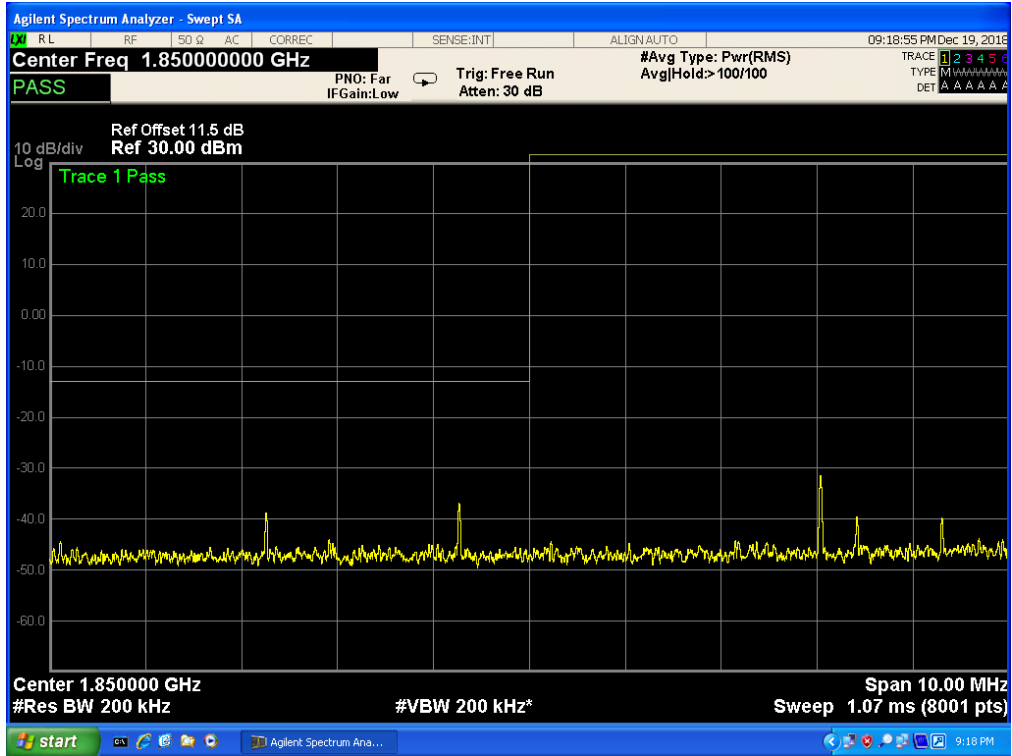
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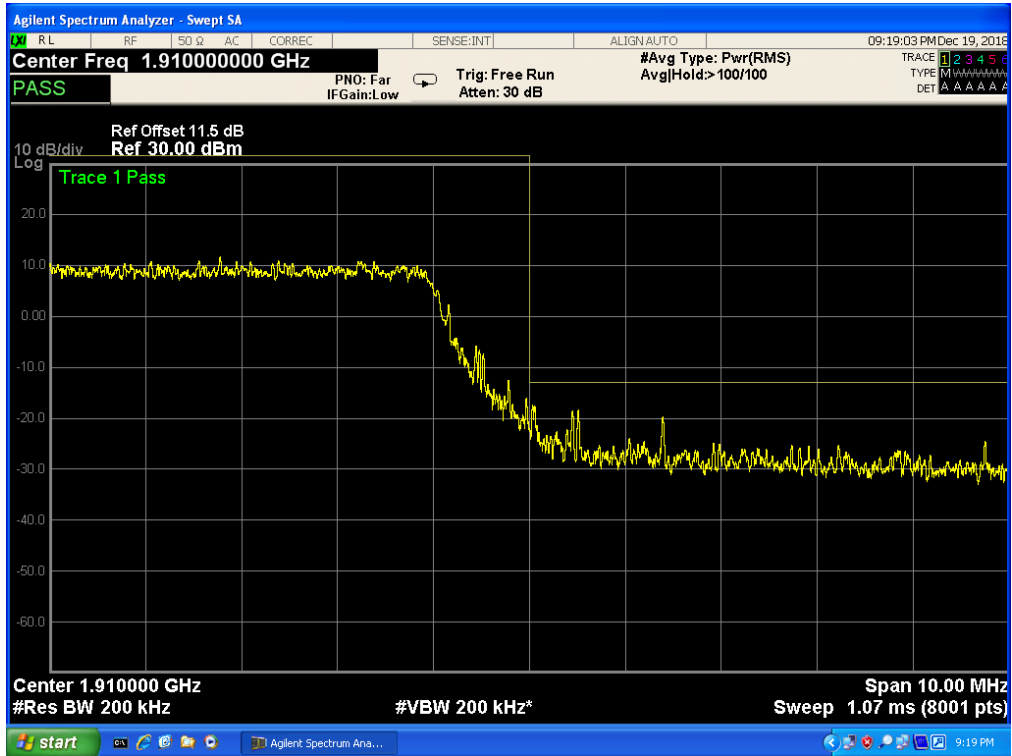
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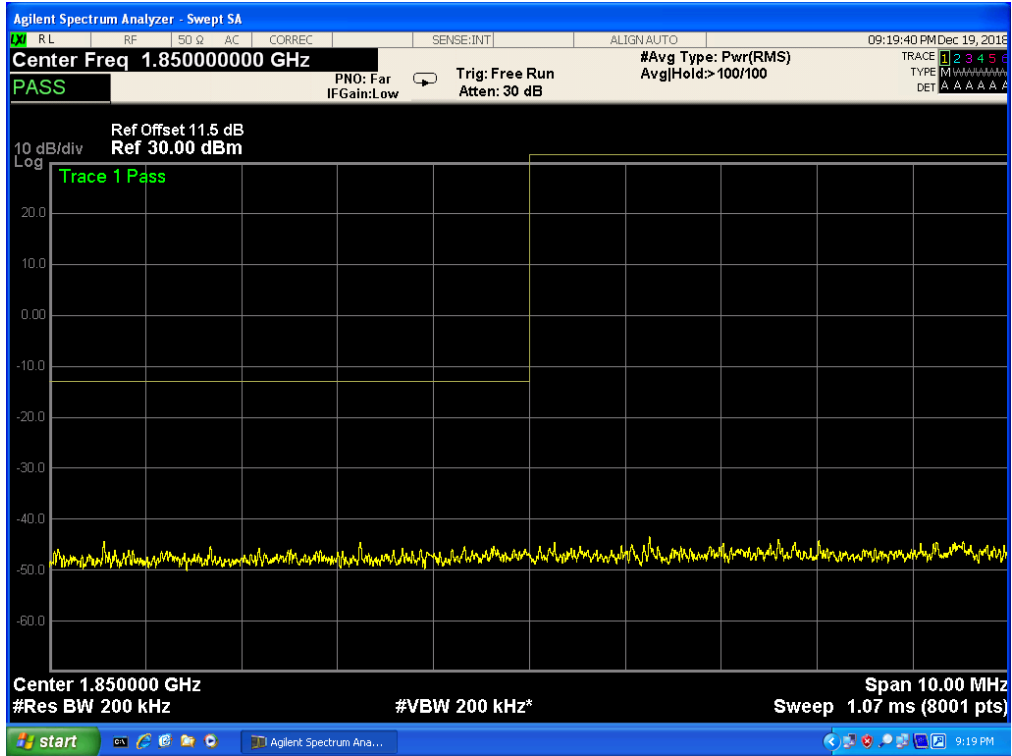


Band 2, UL Channel 19100, UL Frequency 1900.0, BW 20.0, NO. RB 100, RB POS. Low, QPSK

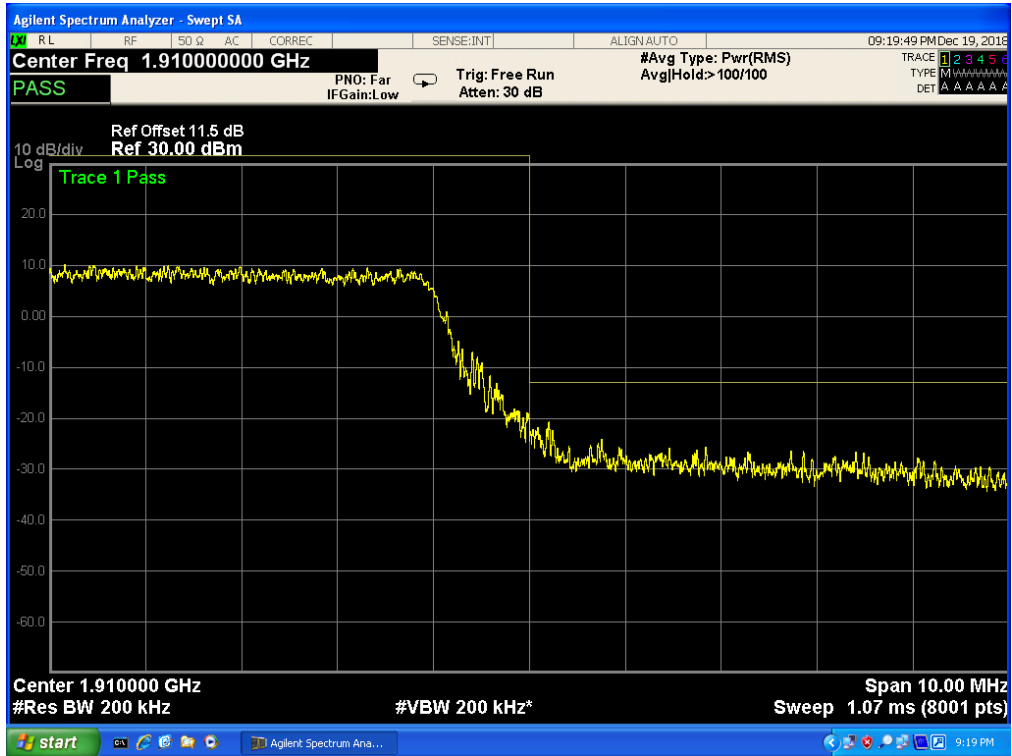




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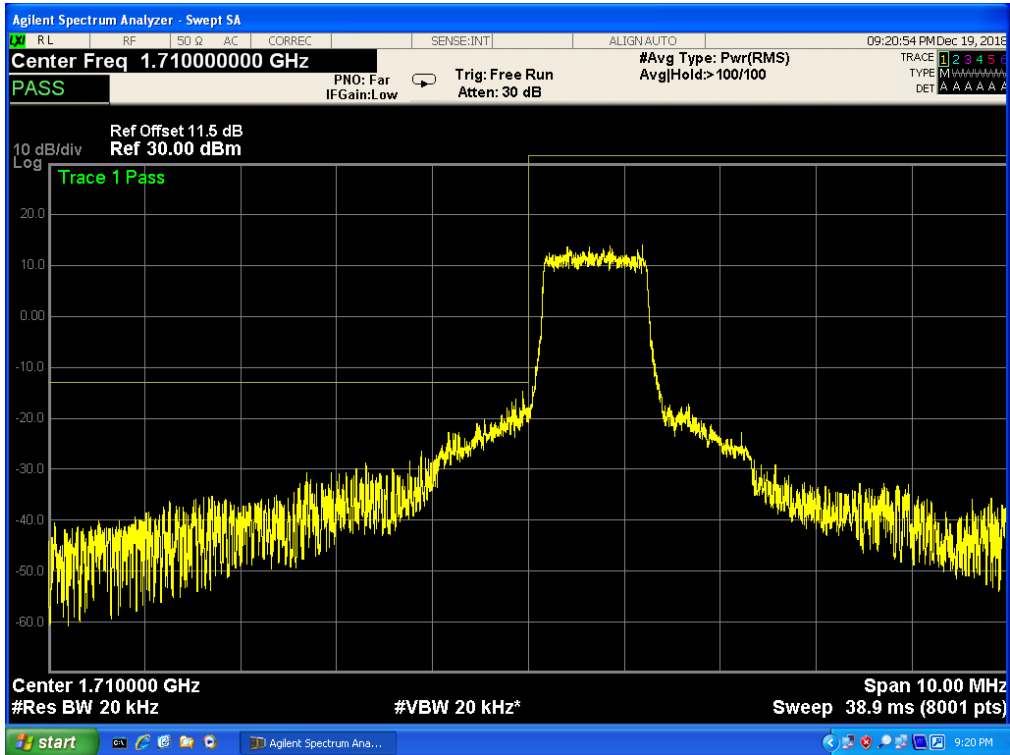


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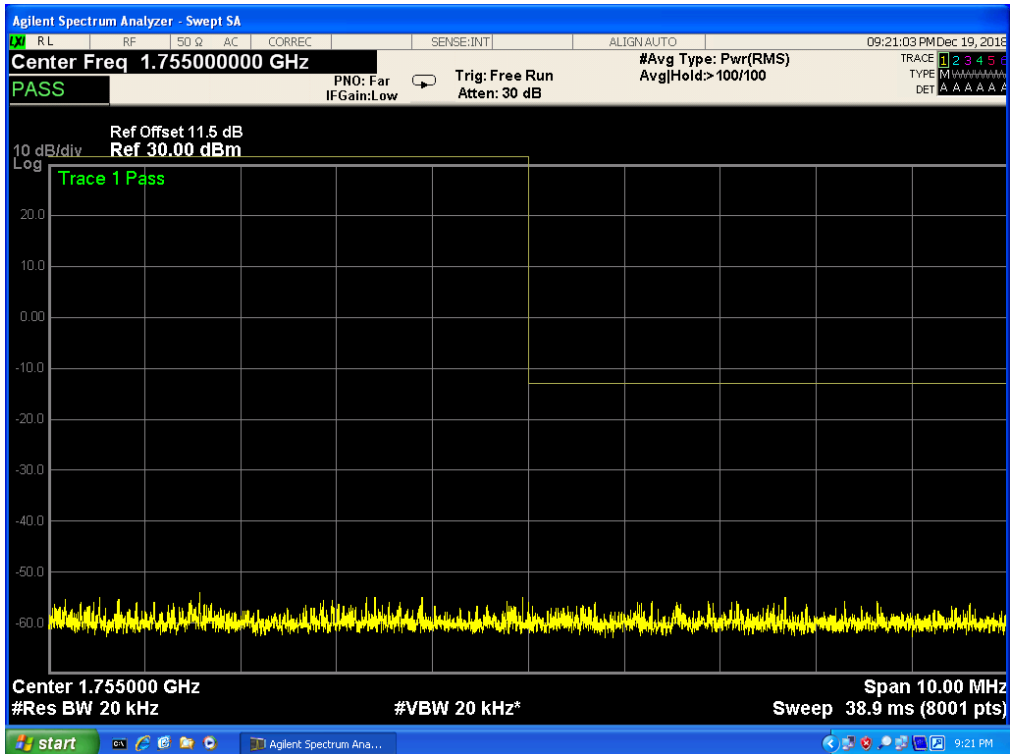


### 6.2 LTE BAND 4

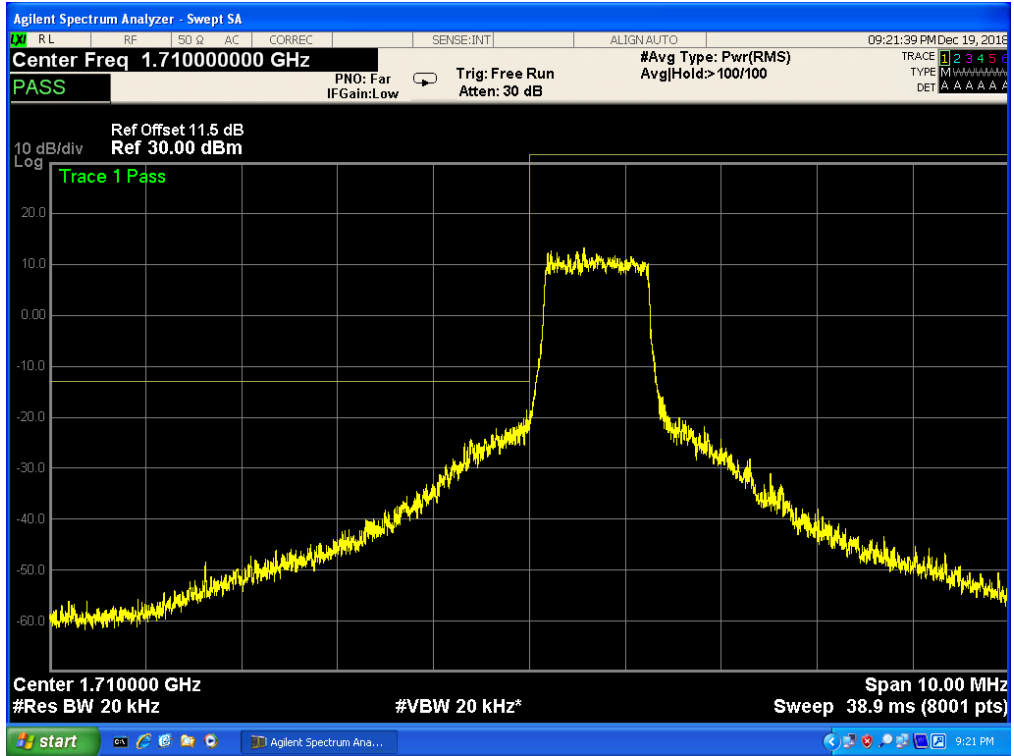
Band 4, UL Channel 19957, UL Frequency 1710.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK



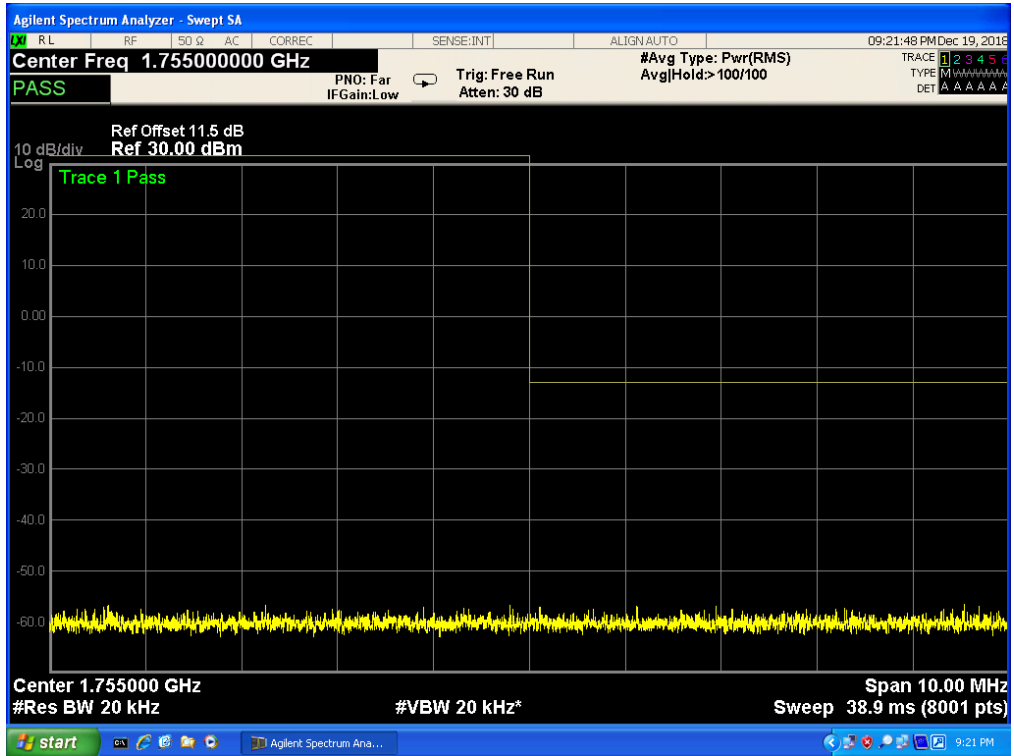
Band 4, UL Channel 19957, UL Frequency 1710.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK



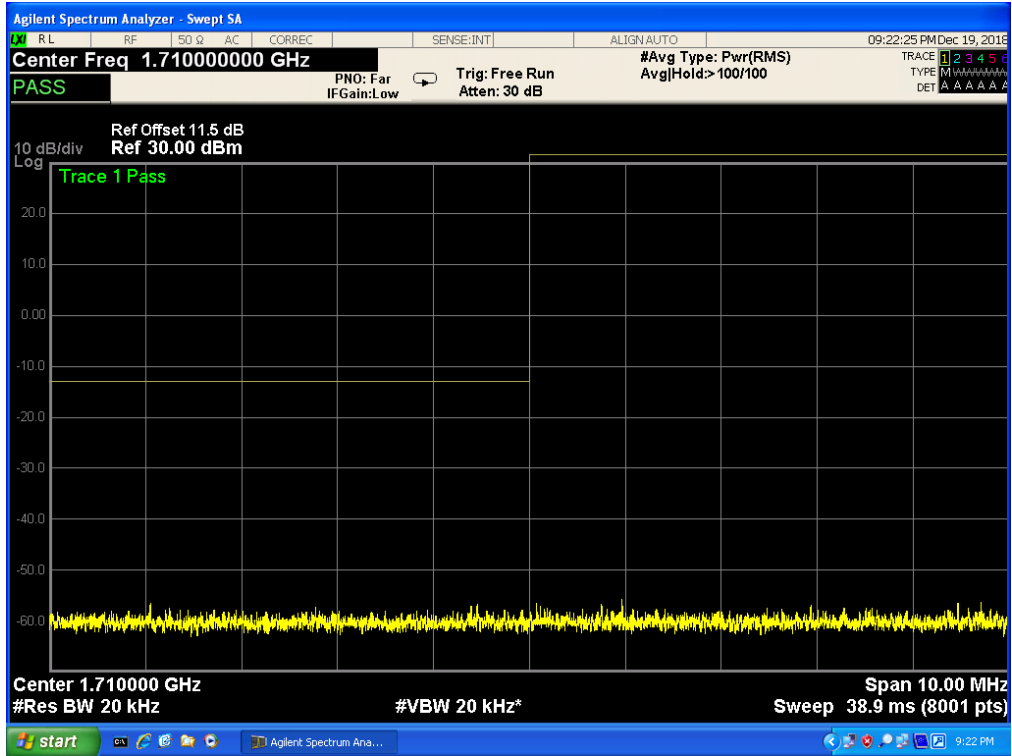
Band 4, UL Channel 19957, UL Frequency 1710.7, BW 1.4, NO. RB 6, RB POS. Low, 16QAM



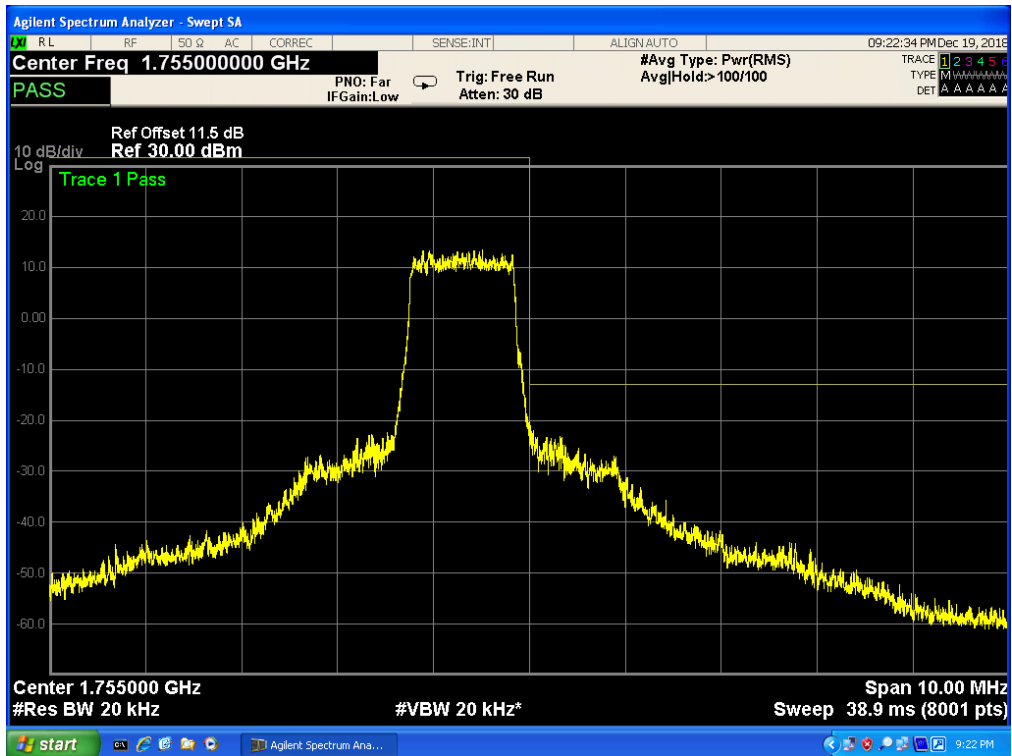
Band 4, UL Channel 19957, UL Frequency 1710.7, BW 1.4, NO. RB 6, RB POS. Low, 16QAM



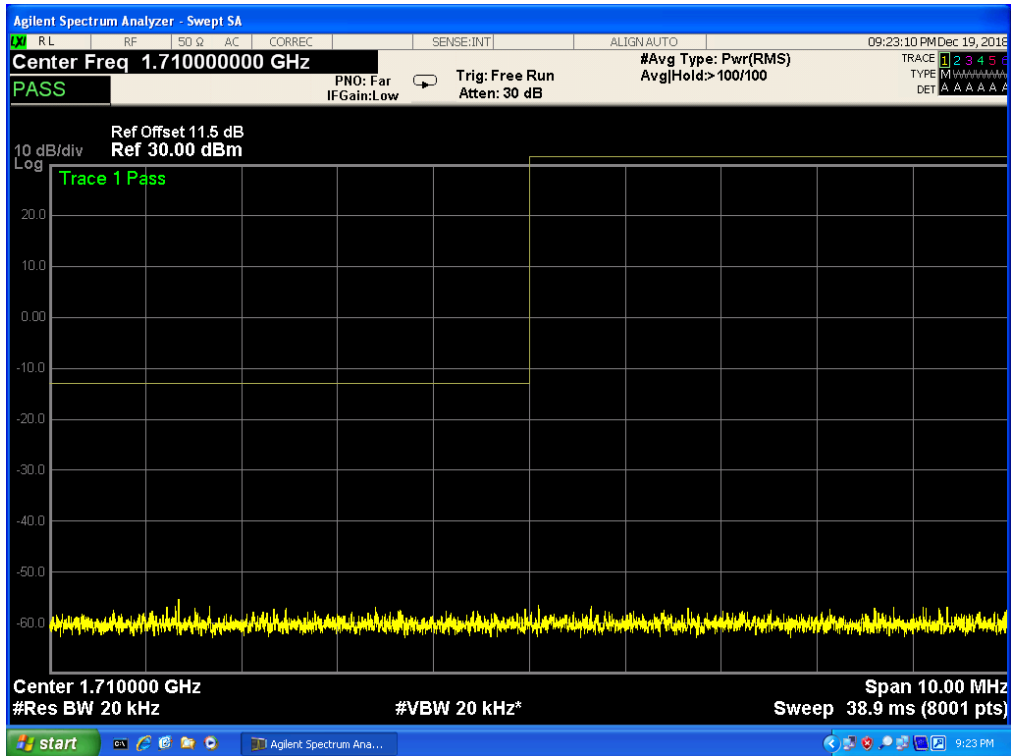
Band 4, UL Channel 20393, UL Frequency 1754.3, BW 1.4, NO. RB 6, RB POS. Low, QPSK



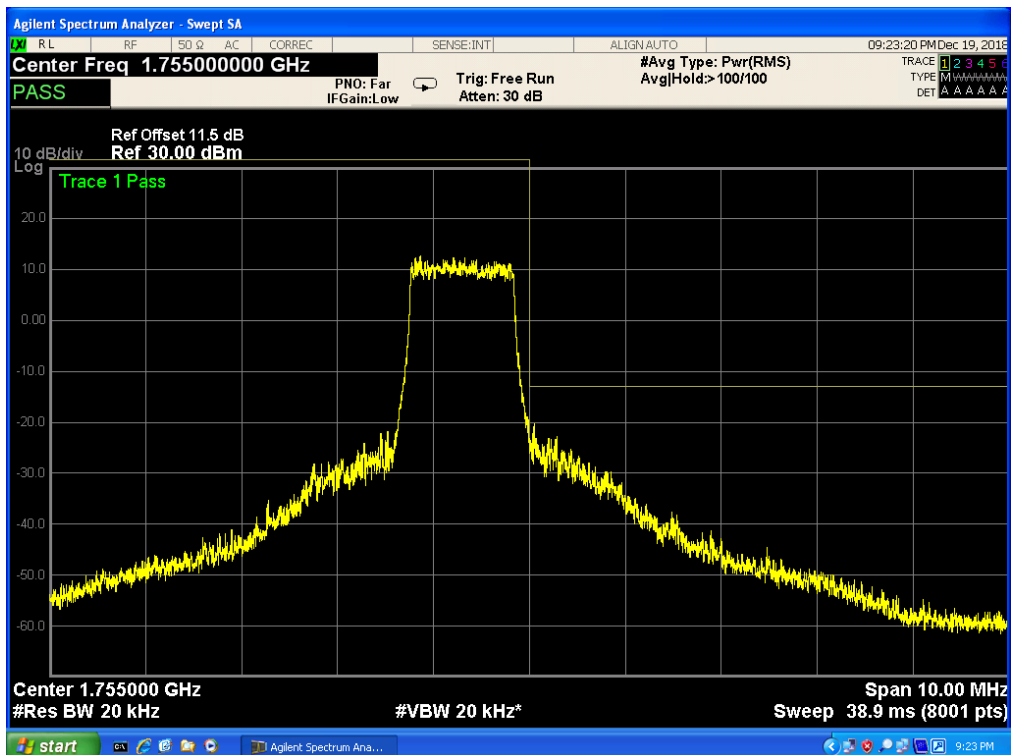
Band 4, UL Channel 20393, UL Frequency 1754.3, BW 1.4, NO. RB 6, RB POS. Low, QPSK



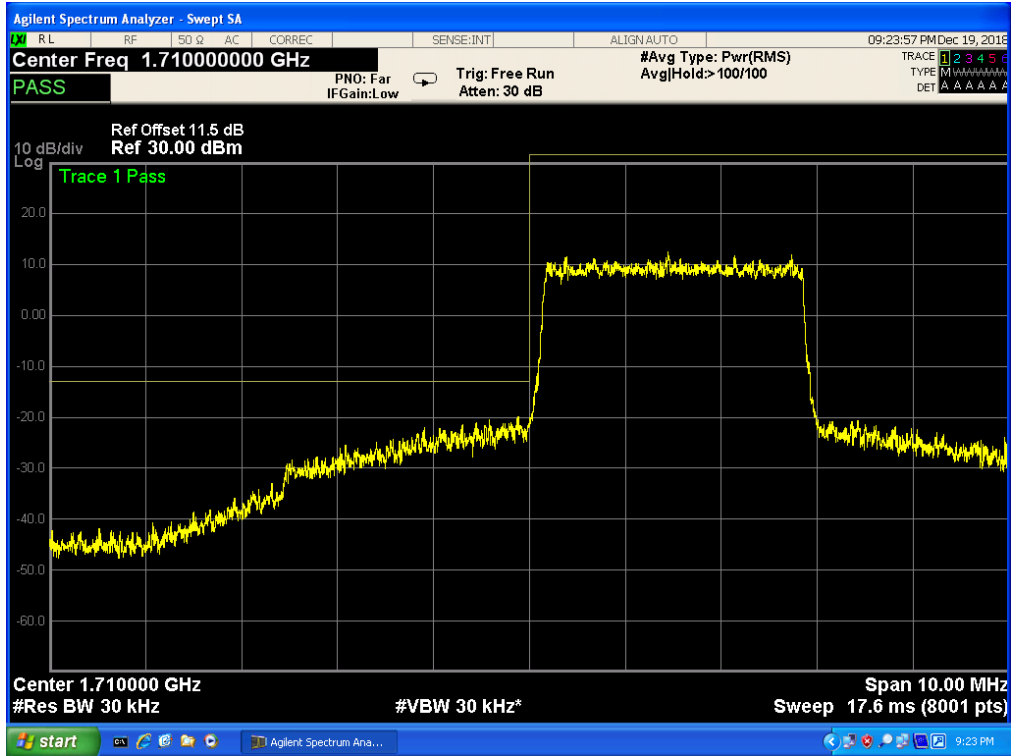
Band 4, UL Channel 20393, UL Frequency 1754.3, BW 1.4, NO. RB 6, RB POS. Low, 16QAM



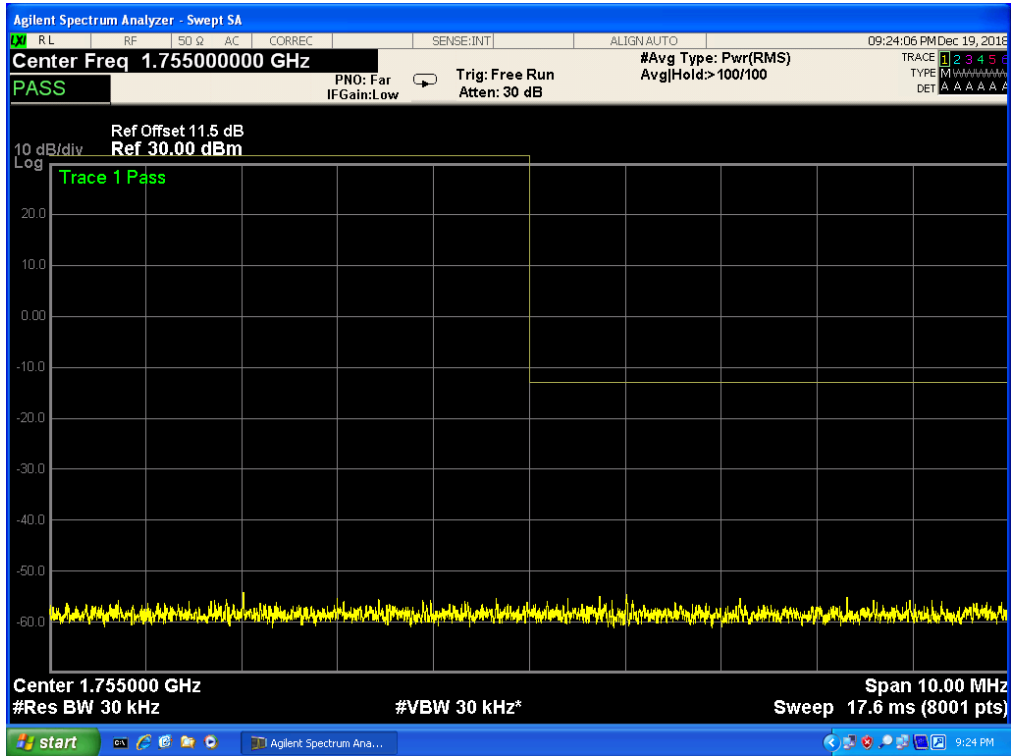
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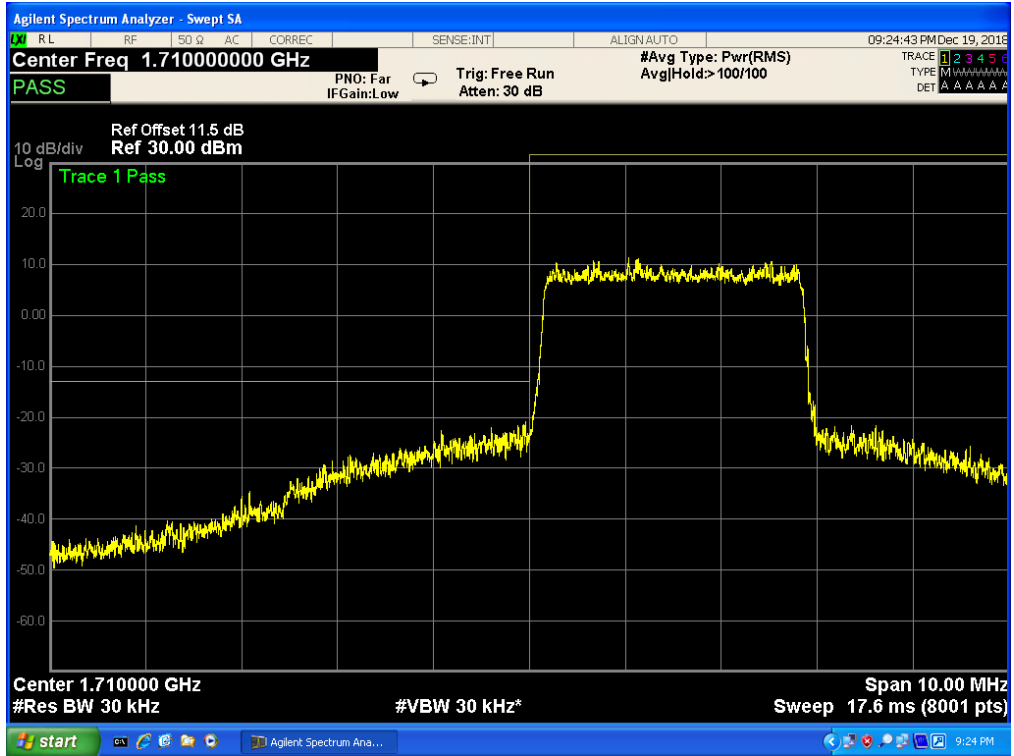
Band 4, UL Channel 19965, UL Frequency 1711.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK



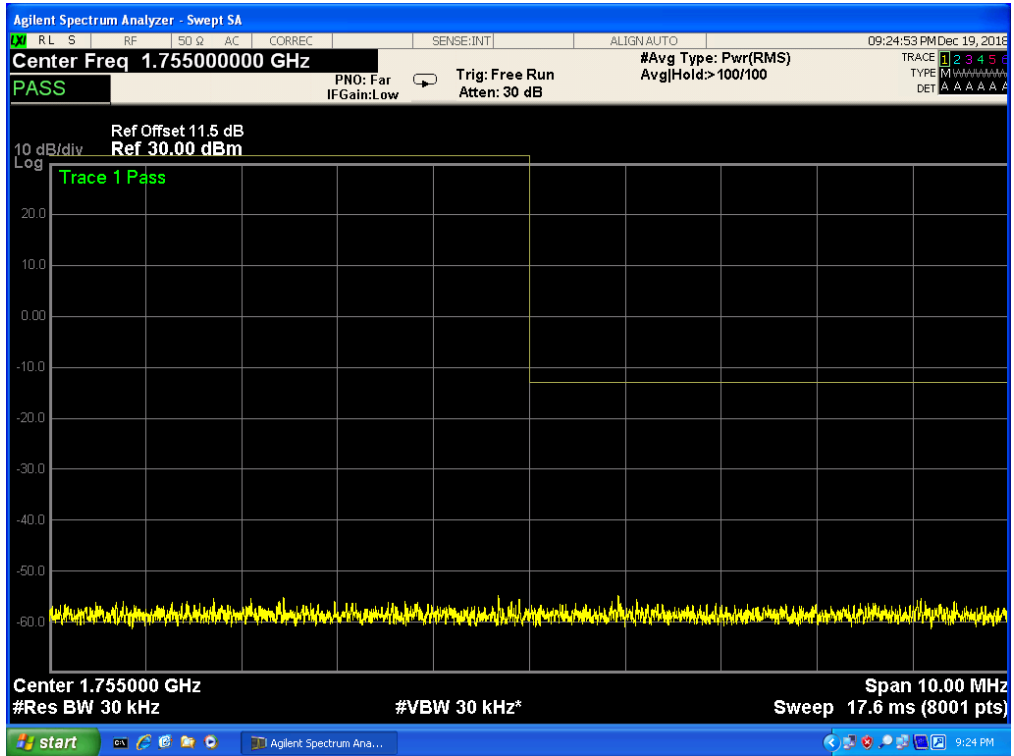
Band 4, UL Channel 19965, UL Frequency 1711.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK



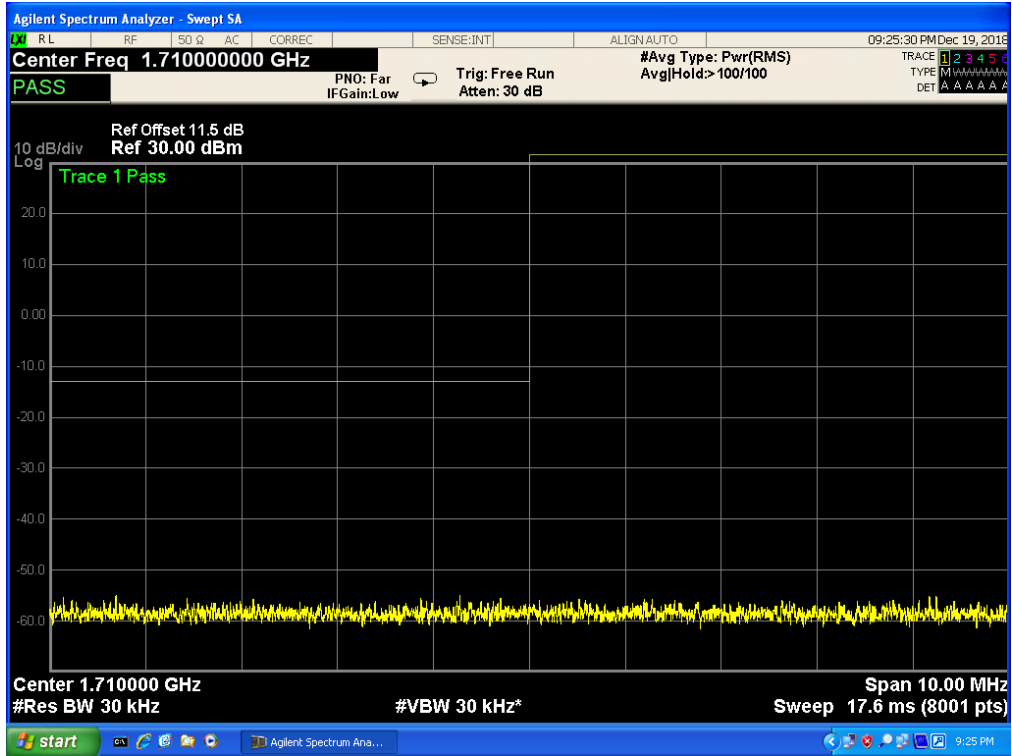
Band 4, UL Channel 19965, UL Frequency 1711.5, BW 3.0, NO. RB 15, RB POS. Low, 16QAM



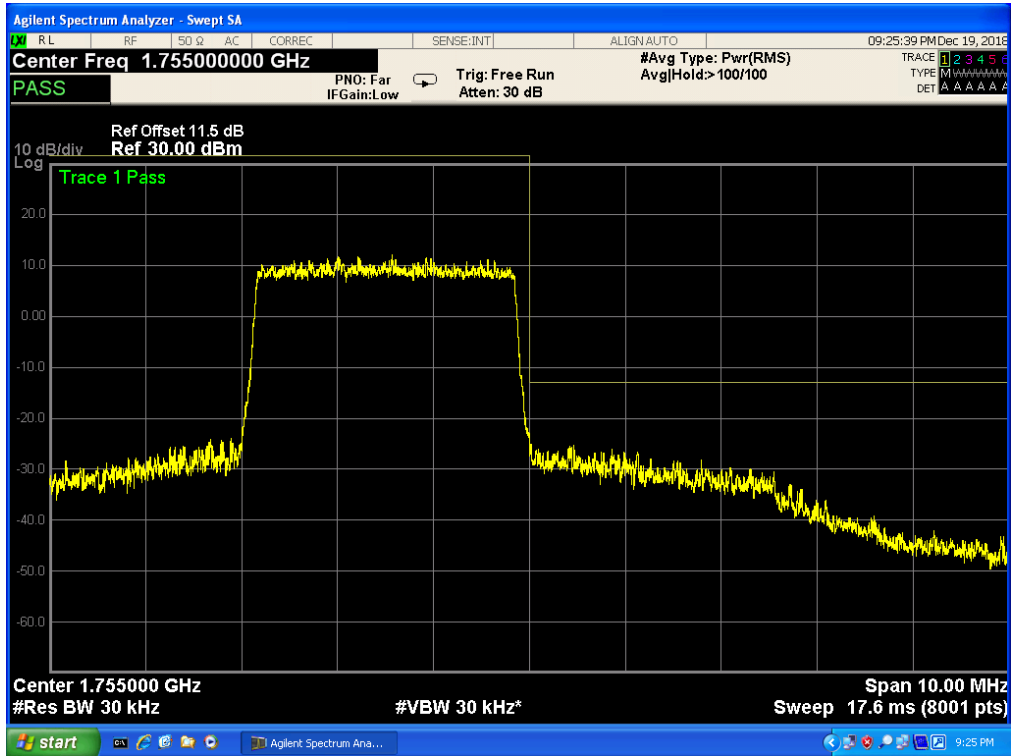
Band 4, UL Channel 19965, UL Frequency 1711.5, BW 3.0, NO. RB 15, RB POS. Low, 16QAM



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

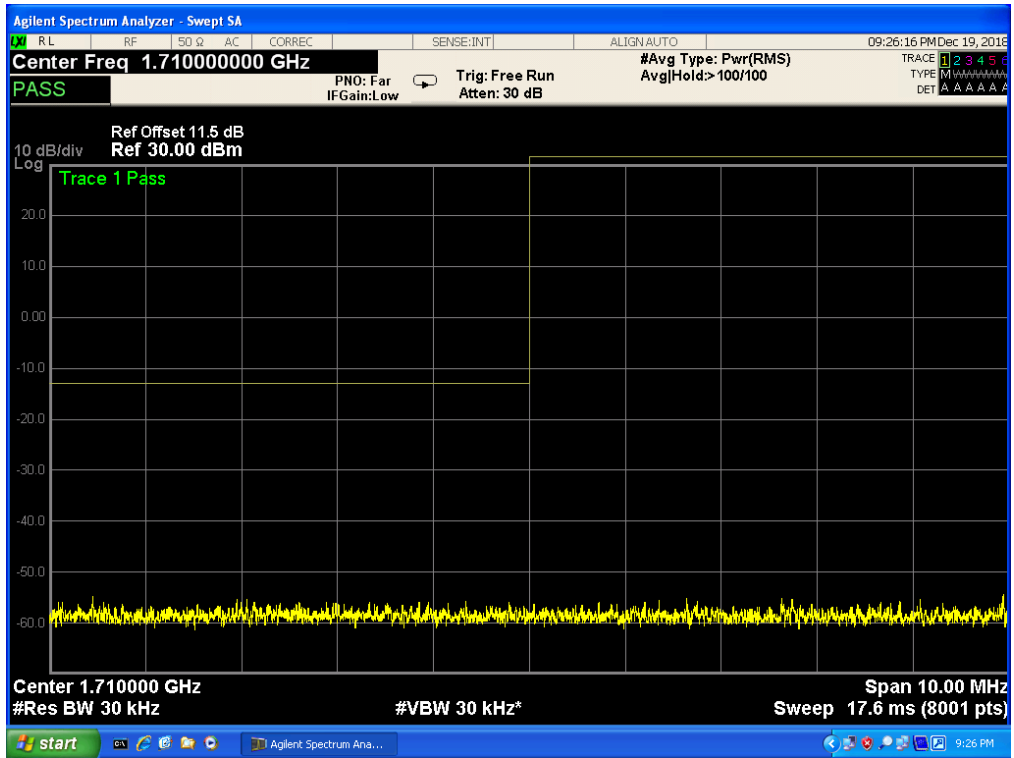


Band 4, UL Channel 20385, UL Frequency 1753.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK

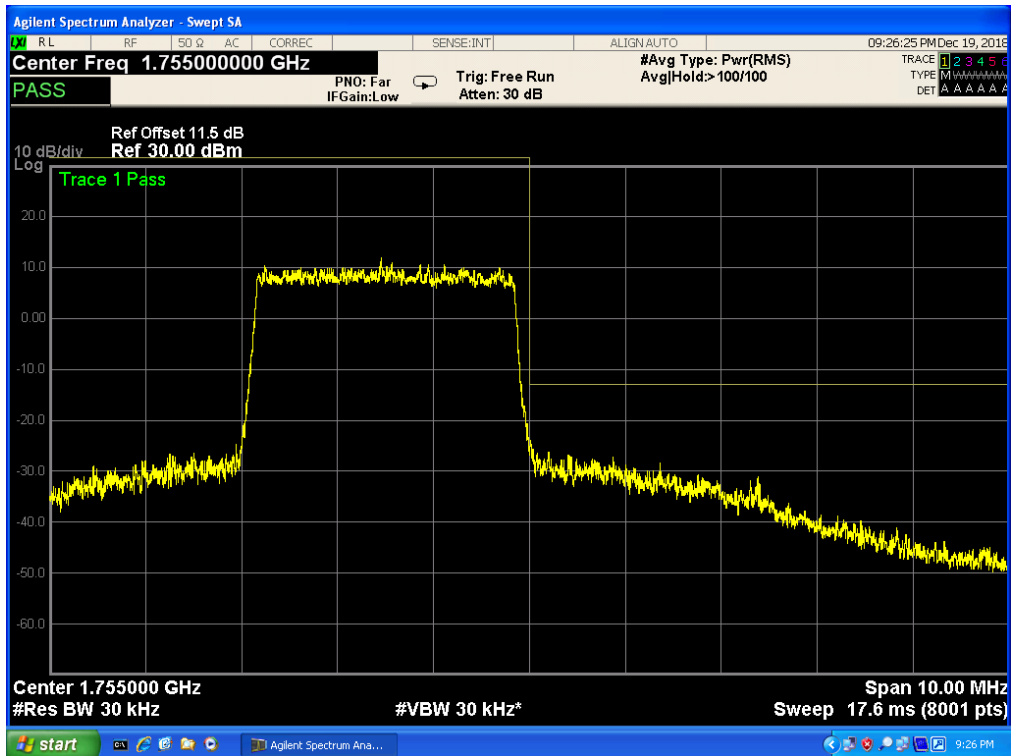




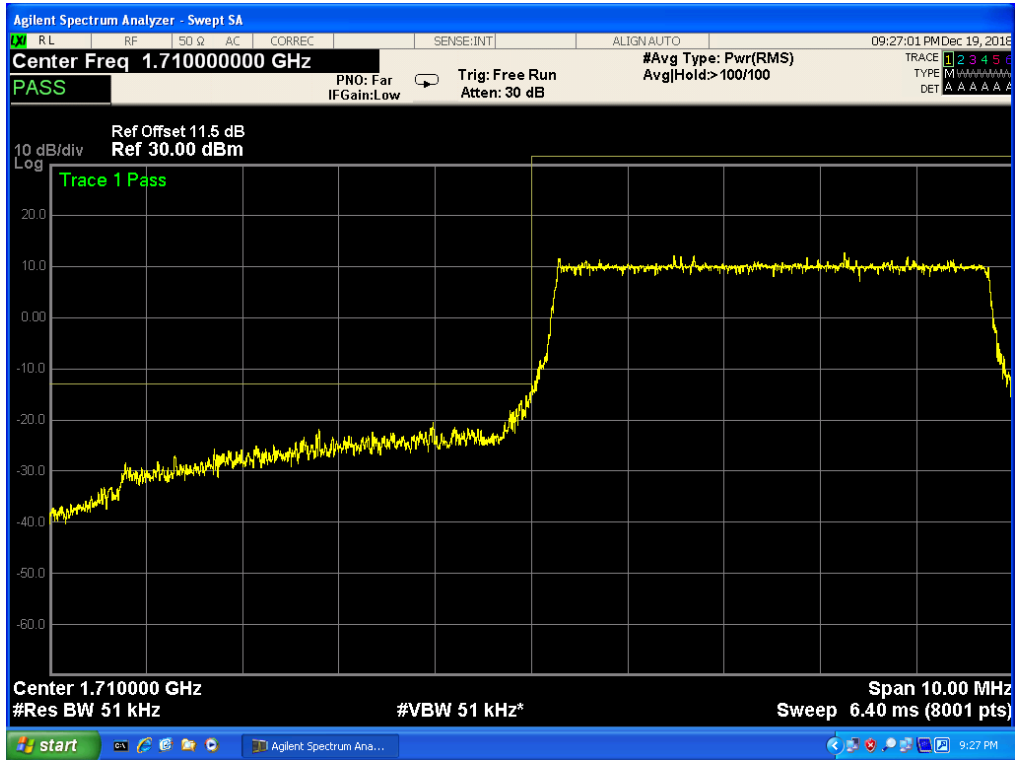
Band 4, UL Channel 20385, UL Frequency 1753.5, BW 3.0, NO. RB 15, RB POS. Low, 16QAM



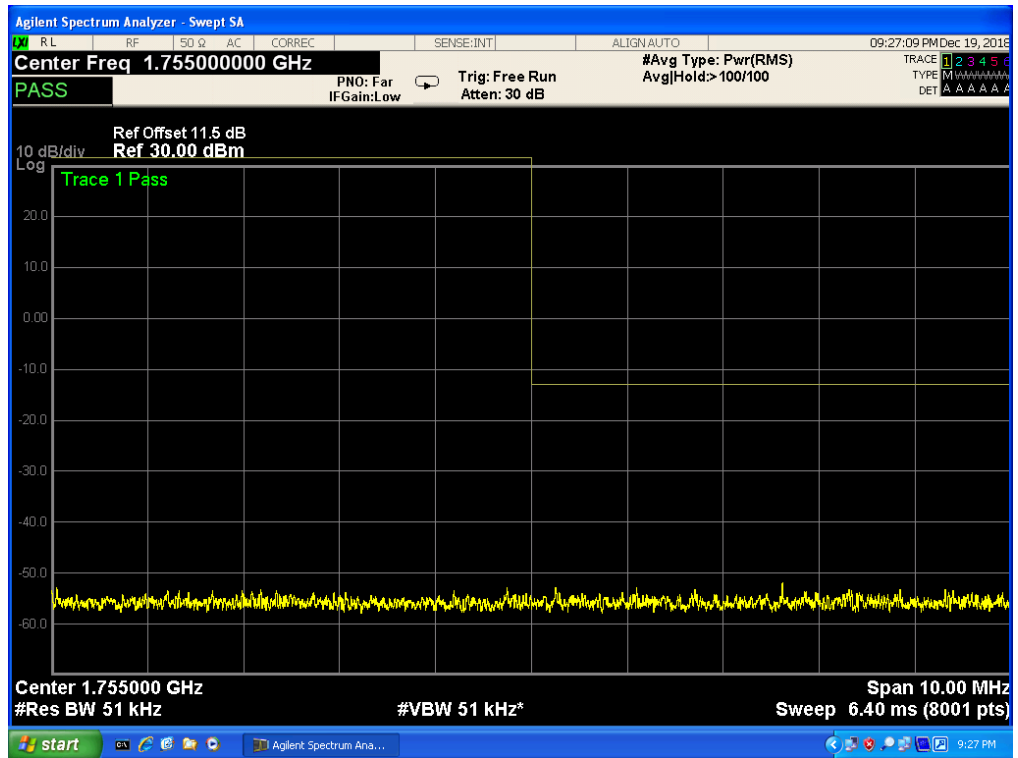
Band 4, UL Channel 20385, UL Frequency 1753.5, BW 3.0, NO. RB 15, RB POS. Low, 16QAM



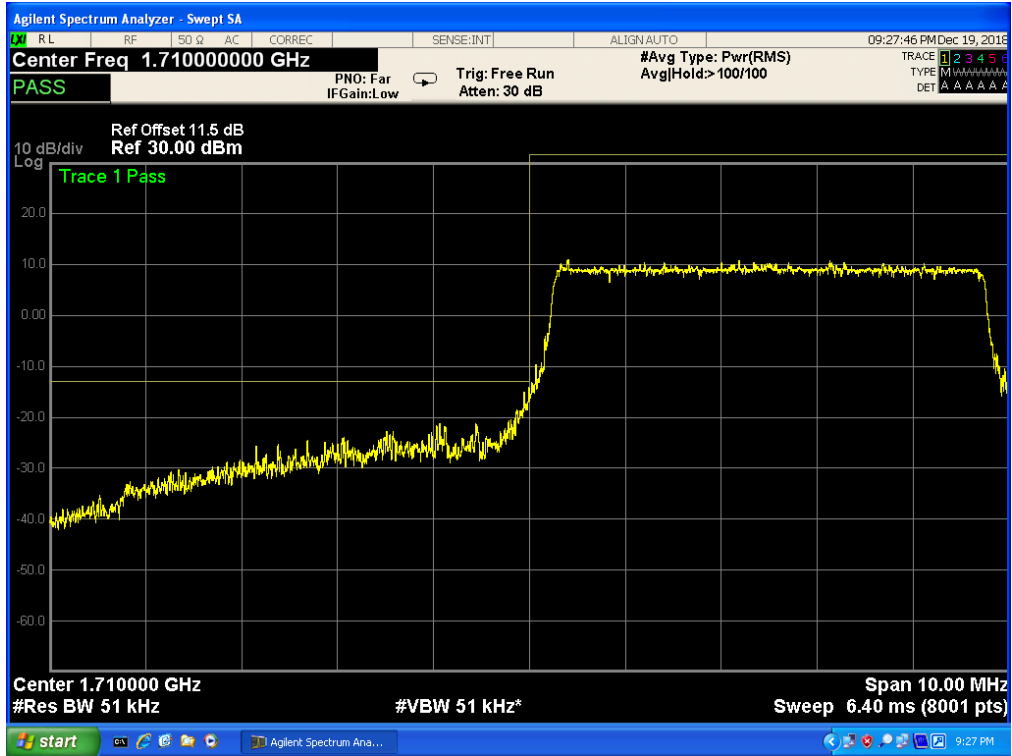
Band 4, UL Channel 19975, UL Frequency 1712.5, BW 5.0, NO. RB 25, RB POS. Low, QPSK



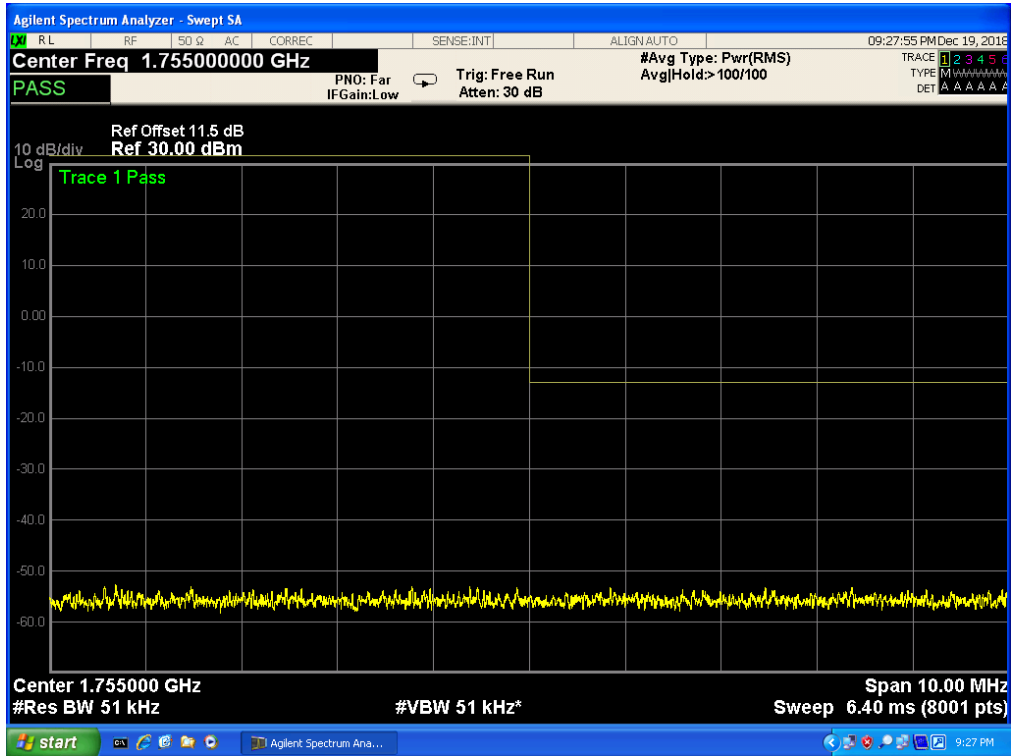
Band 4, UL Channel 19975, UL Frequency 1712.5, BW 5.0, NO. RB 25, RB POS. Low, QPSK



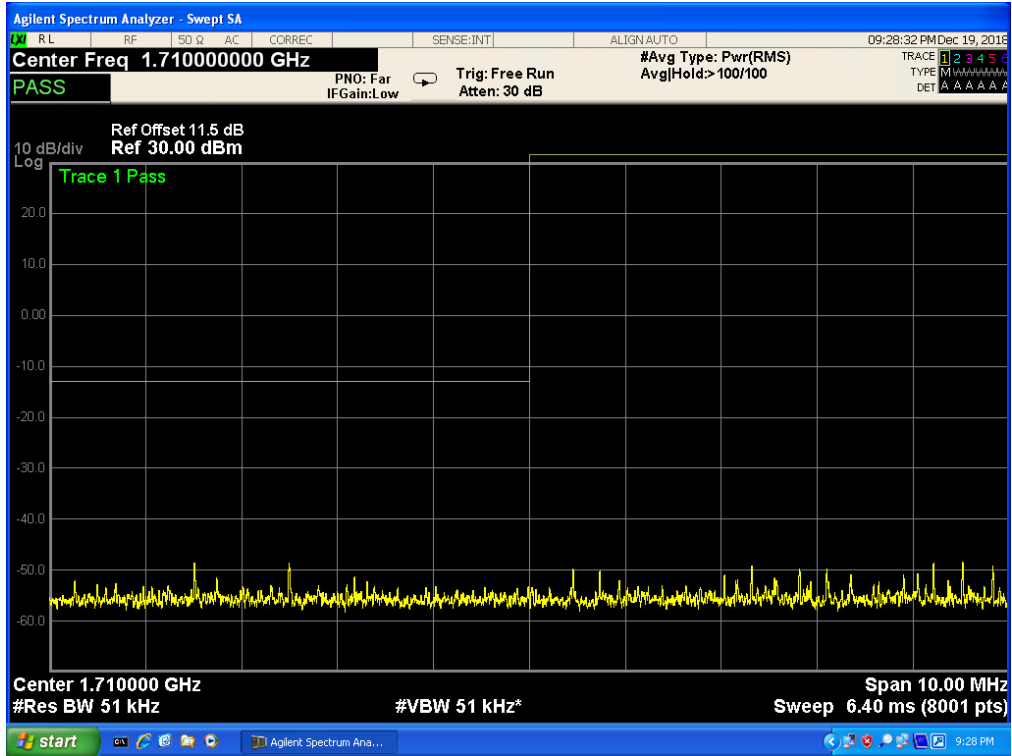
Band 4, UL Channel 19975, UL Frequency 1712.5, BW 5.0, NO. RB 25, RB POS. Low, 16QAM



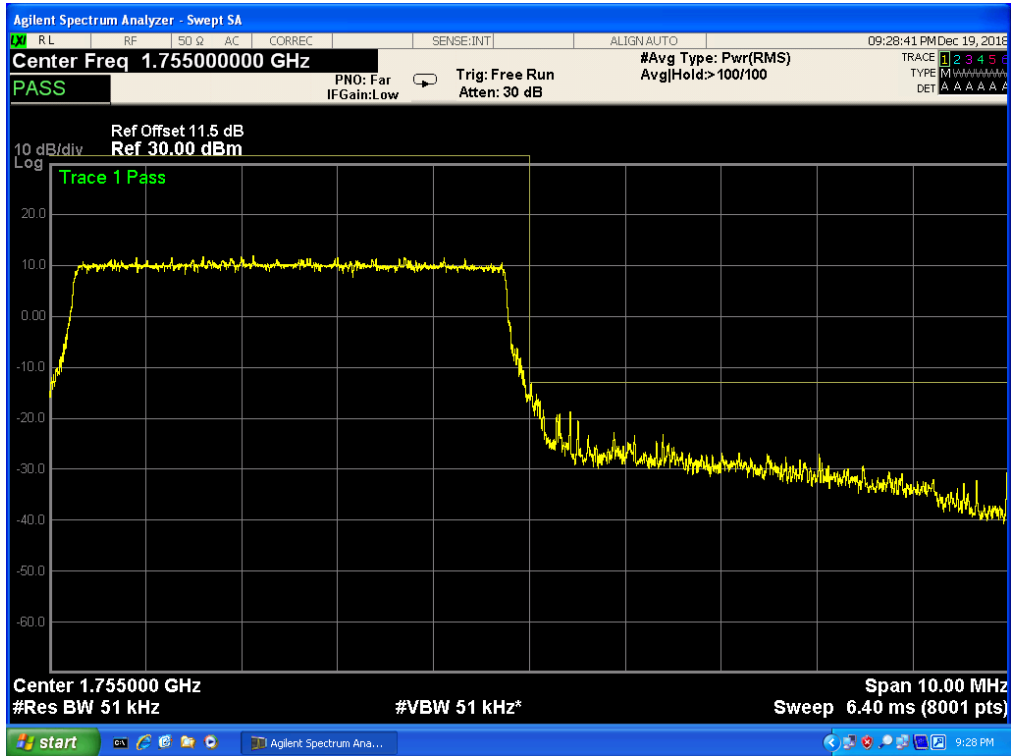
Band 4, UL Channel 19975, UL Frequency 1712.5, BW 5.0, NO. RB 25, RB POS. Low, 16QAM



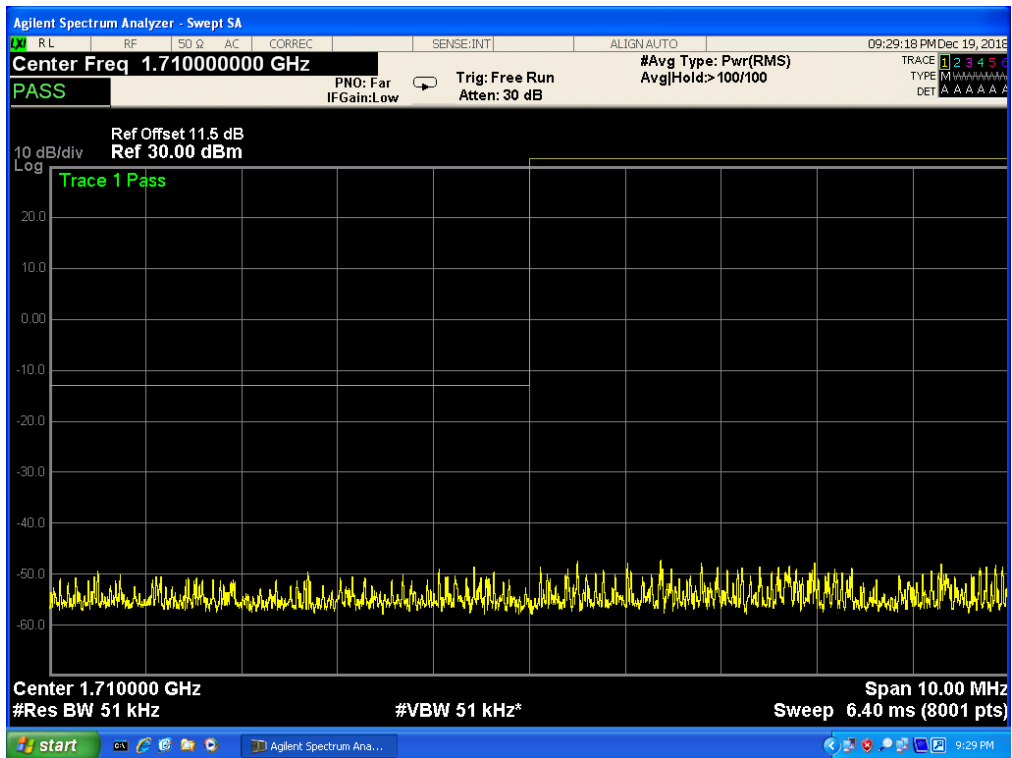
Band 4, UL Channel 20375, UL Frequency 1752.5, BW 5.0, NO. RB 25, RB POS. Low, QPSK



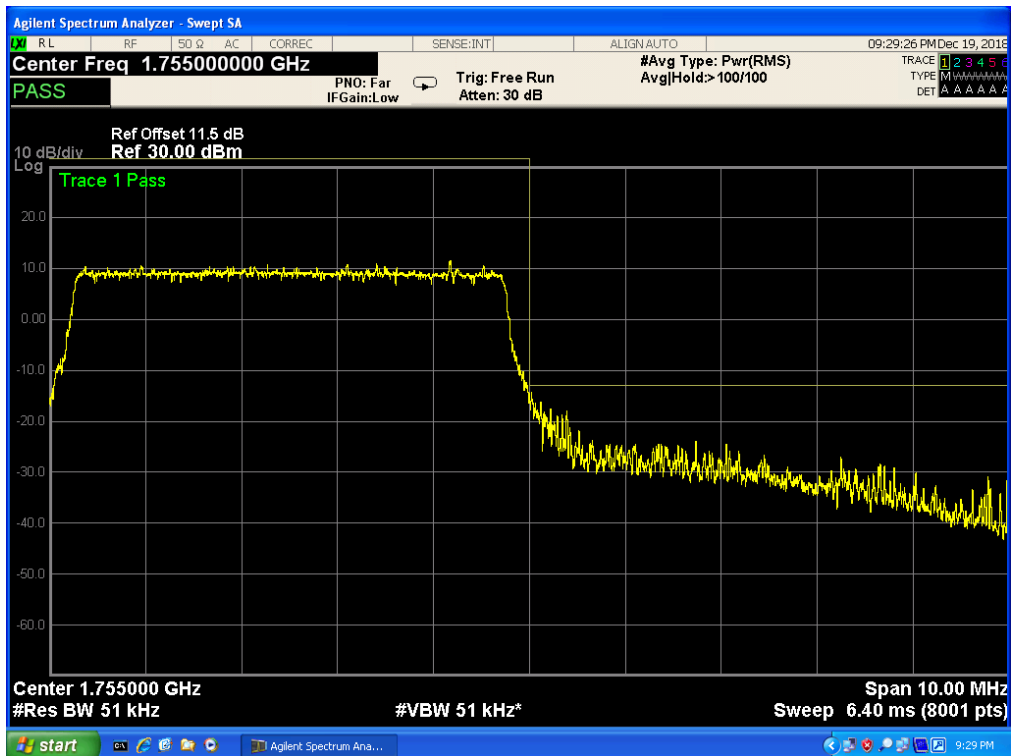
Band 4, UL Channel 20375, UL Frequency 1752.5, BW 5.0, NO. RB 25, RB POS. Low, QPSK



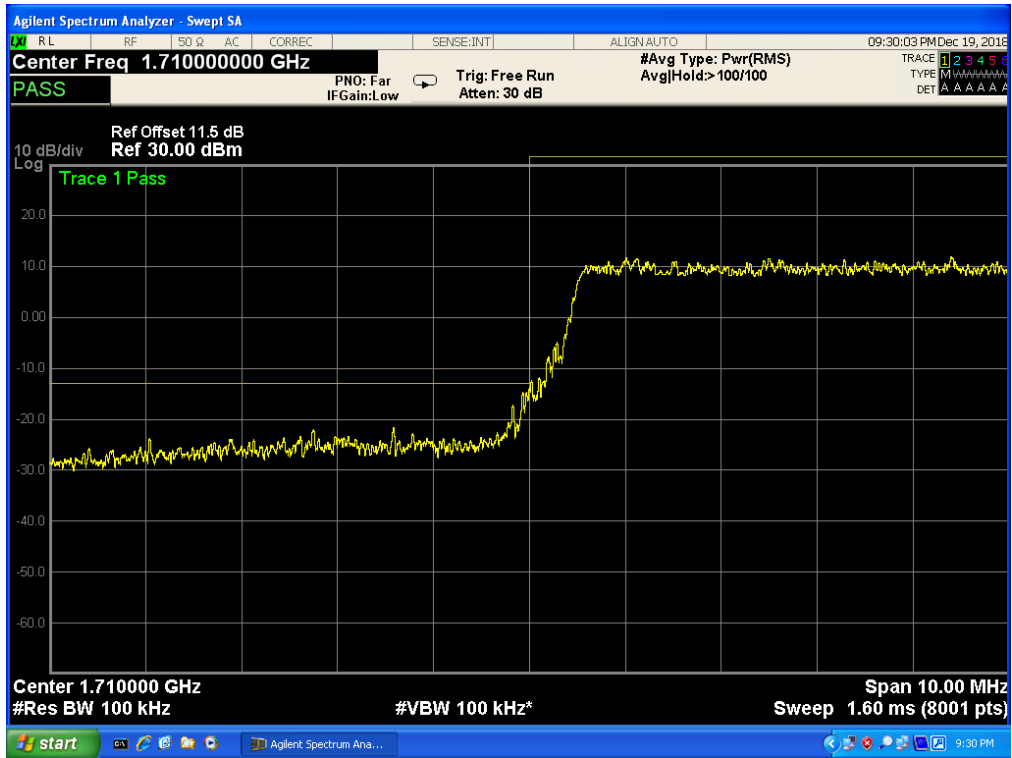
Band 4, UL Channel 20375, UL Frequency 1752.5, BW 5.0, NO. RB 25, RB POS. Low, 16QAM



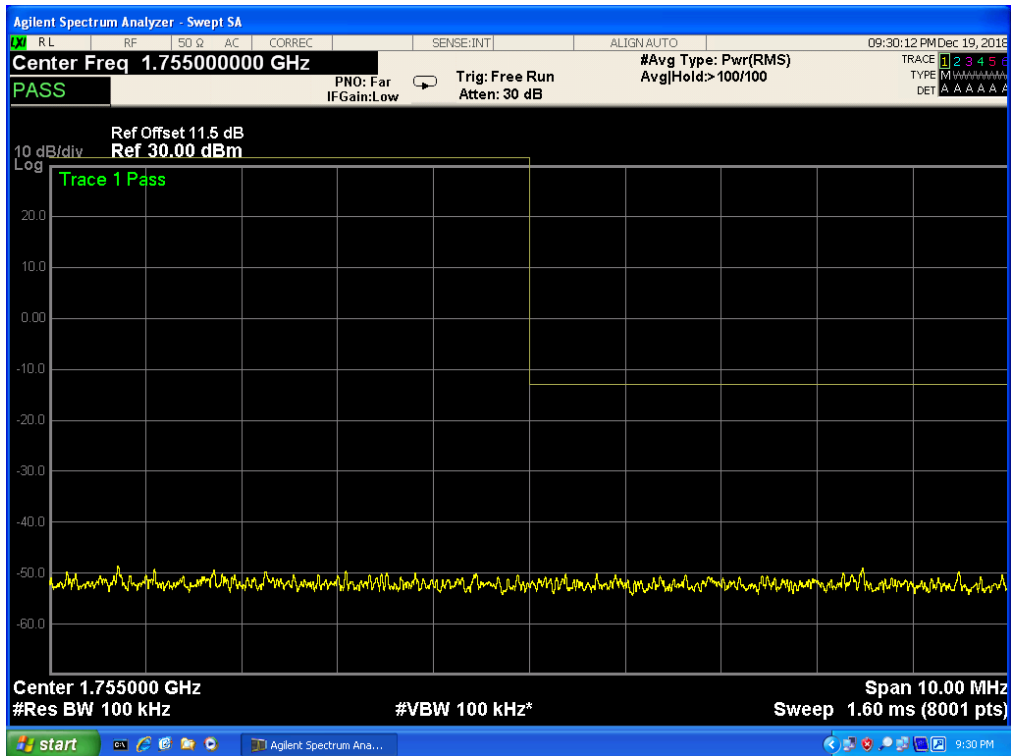
Band 4, UL Channel 20375, UL Frequency 1752.5, BW 5.0, NO. RB 25, RB POS. Low, 16QAM



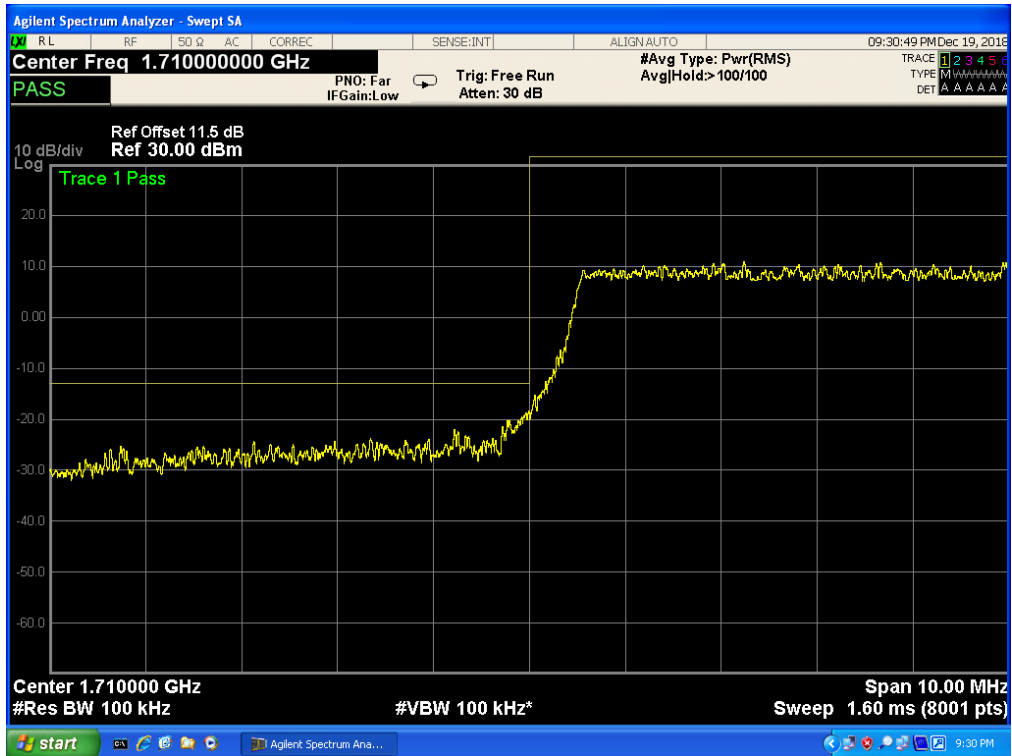
Band 4, UL Channel 2000, UL Frequency 1715.0, BW 10.0, NO. RB 50, RB POS. Low, QPSK



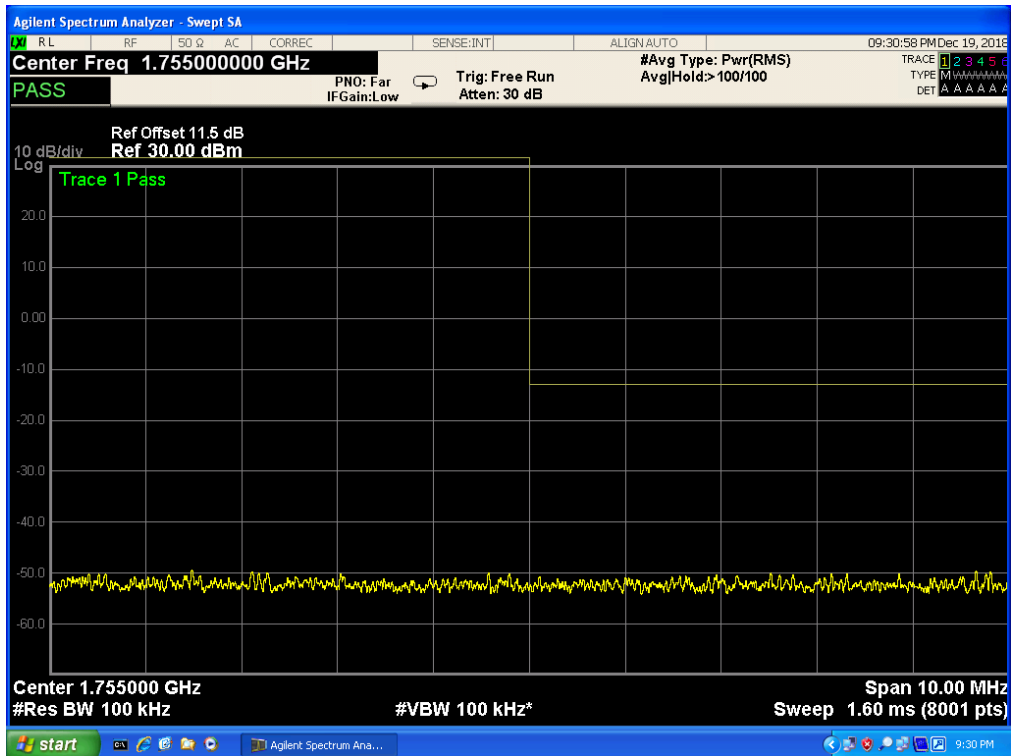
Band 4, UL Channel 2000, UL Frequency 1715.0, BW 10.0, NO. RB 50, RB POS. Low, QPSK



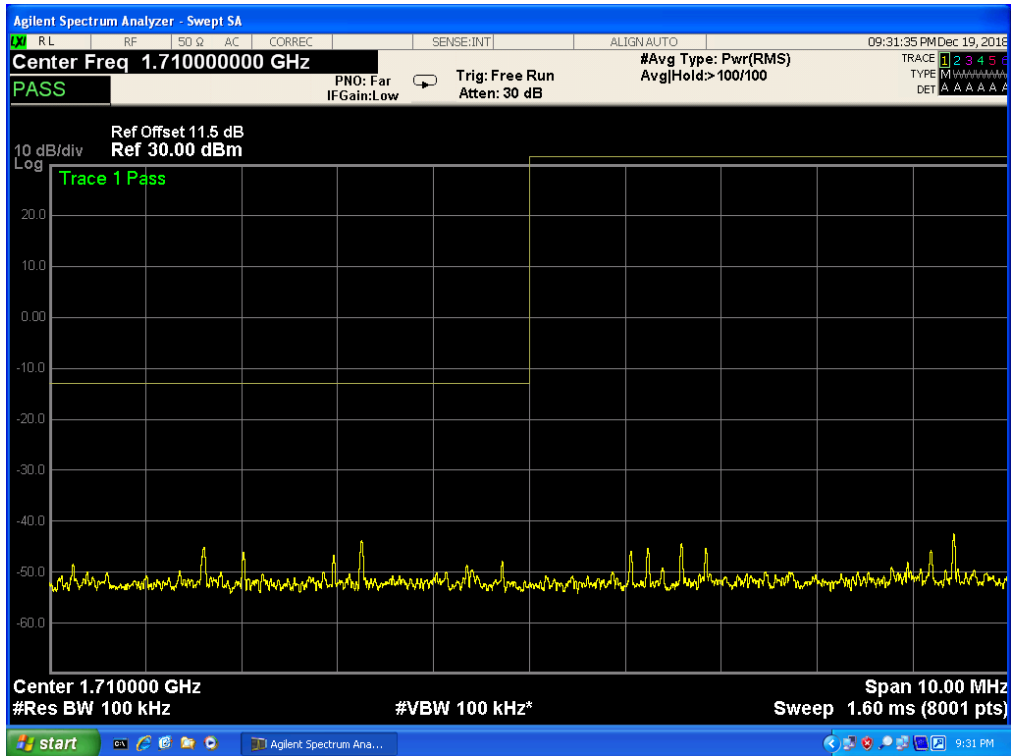
Band 4, UL Channel 2000, UL Frequency 1715.0, BW 10.0, NO. RB 50, RB POS. Low, 16QAM



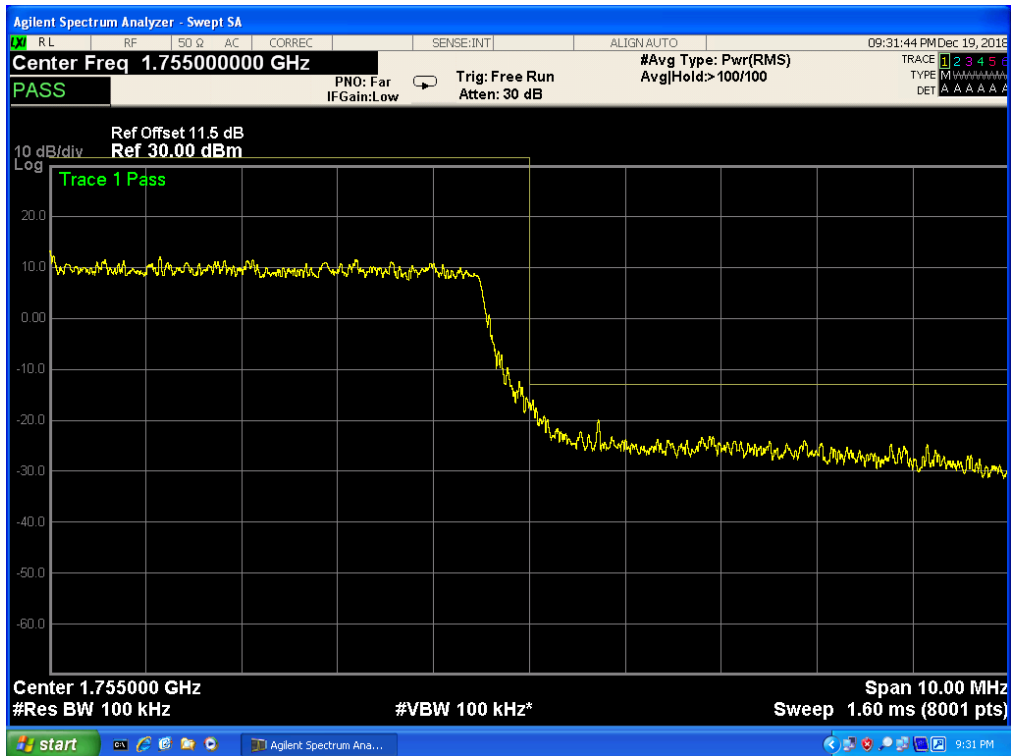
Band 4, UL Channel 2000, UL Frequency 1715.0, BW 10.0, NO. RB 50, RB POS. Low, 16QAM



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

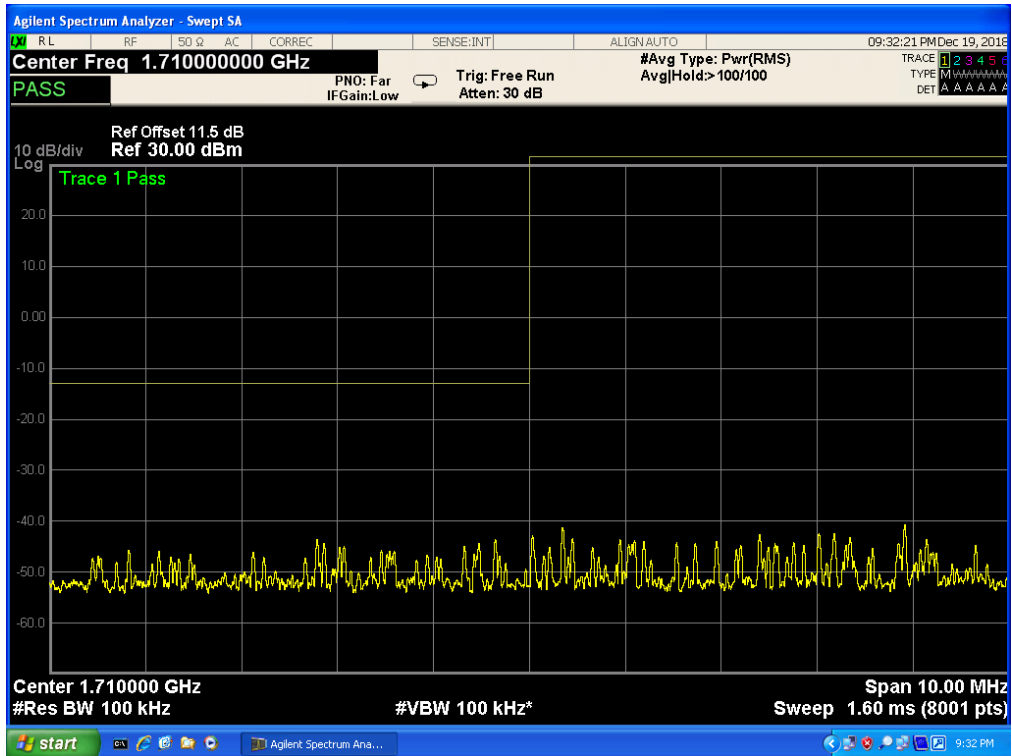


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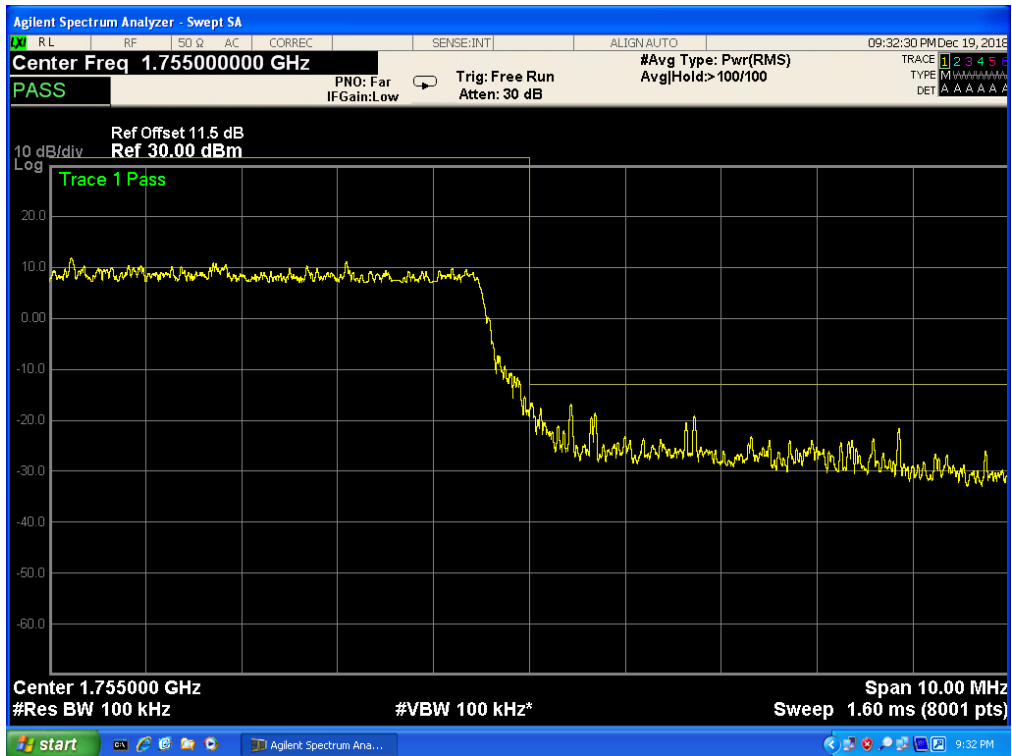




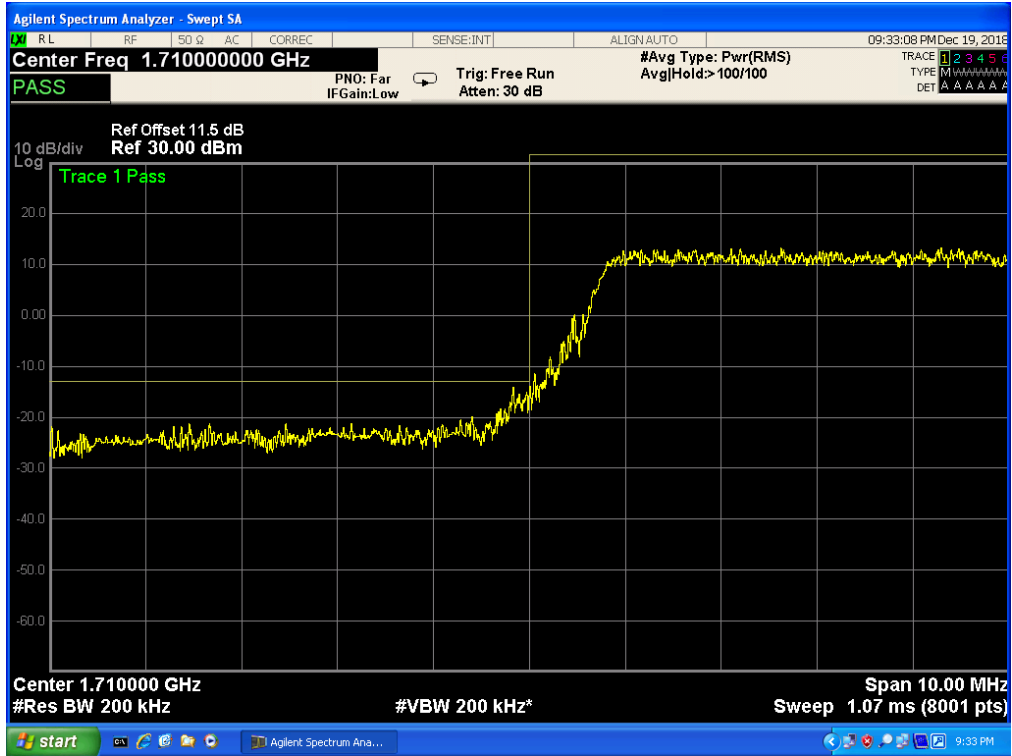
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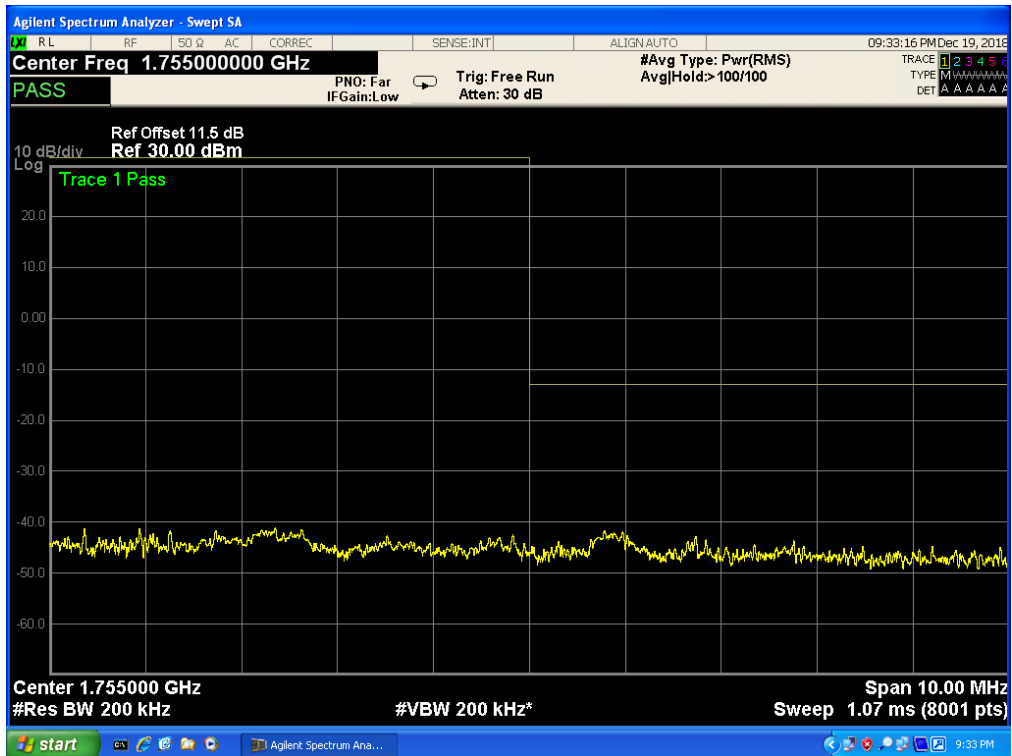
Band 4, UL Channel 20350, UL Frequency 1750.0, BW 10.0, NO. RB 50, RB POS. Low, 16QAM



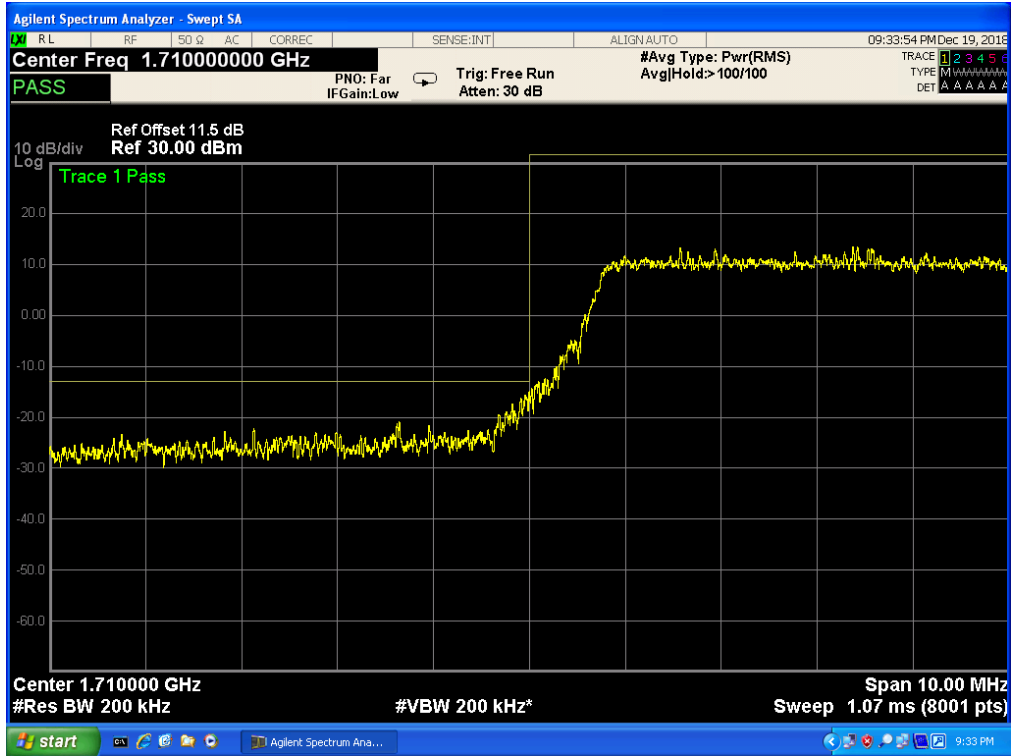
Band 4, UL Channel 20025, UL Frequency 1717.5, BW 15.0, NO. RB 75, RB POS. Low, QPSK



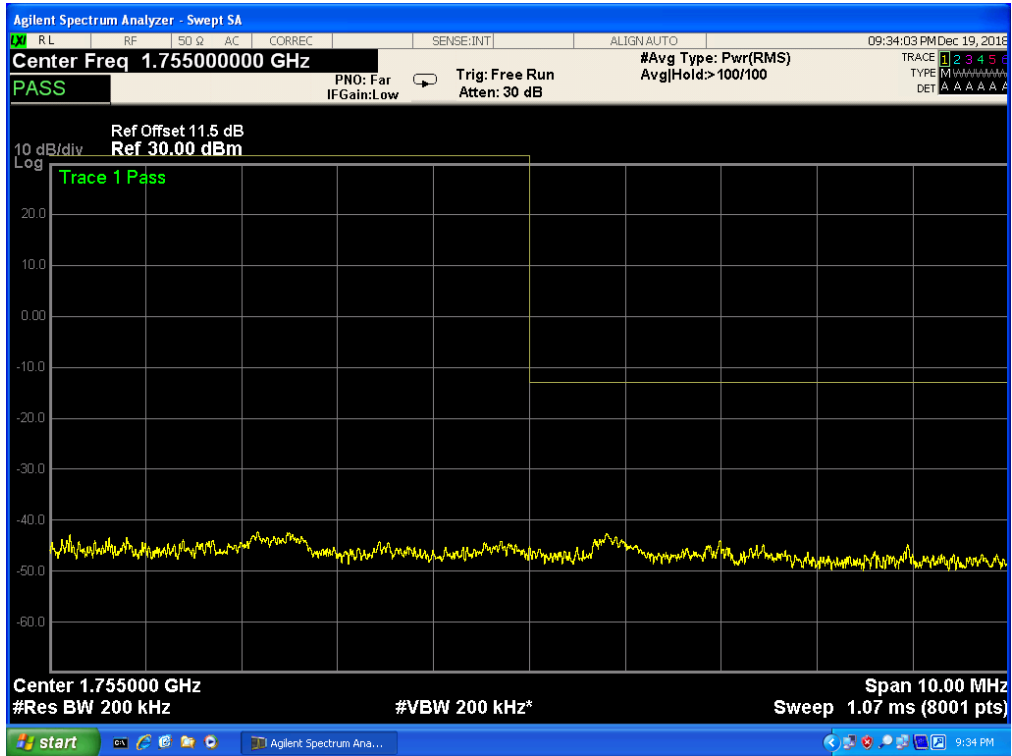
Band 4, UL Channel 20025, UL Frequency 1717.5, BW 15.0, NO. RB 75, RB POS. Low, QPSK



Band 4, UL Channel 20025, UL Frequency 1717.5, BW 15.0, NO. RB 75, RB POS. Low, 16QAM

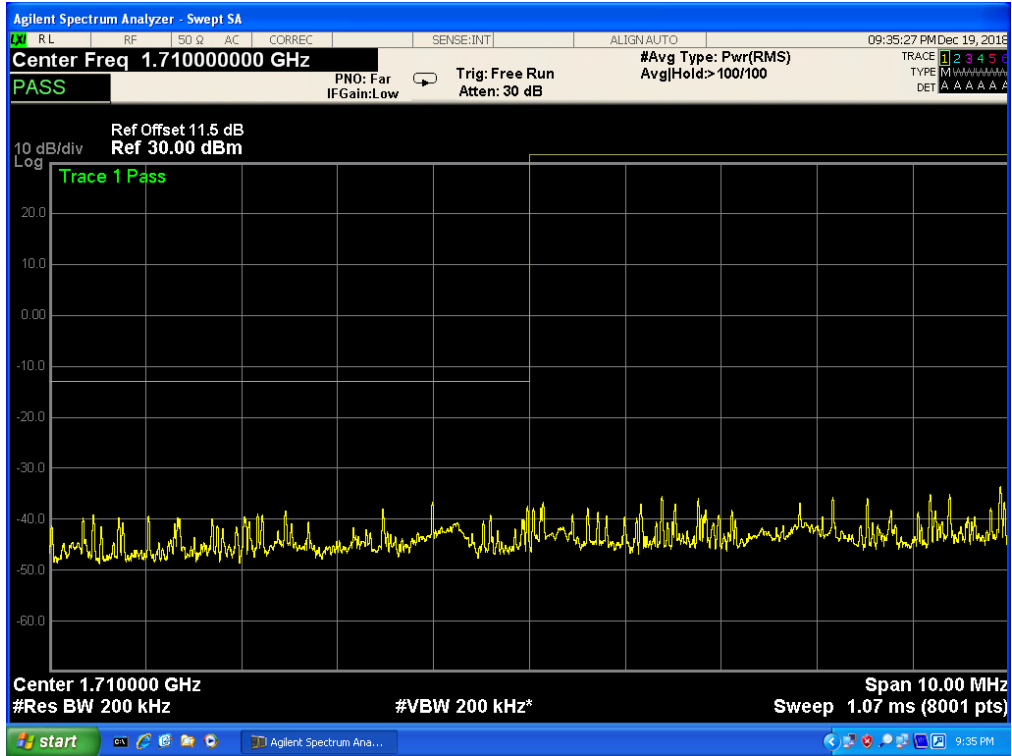


Band 4, UL Channel 20025, UL Frequency 1717.5, BW 15.0, NO. RB 75, RB POS. Low, 16QAM

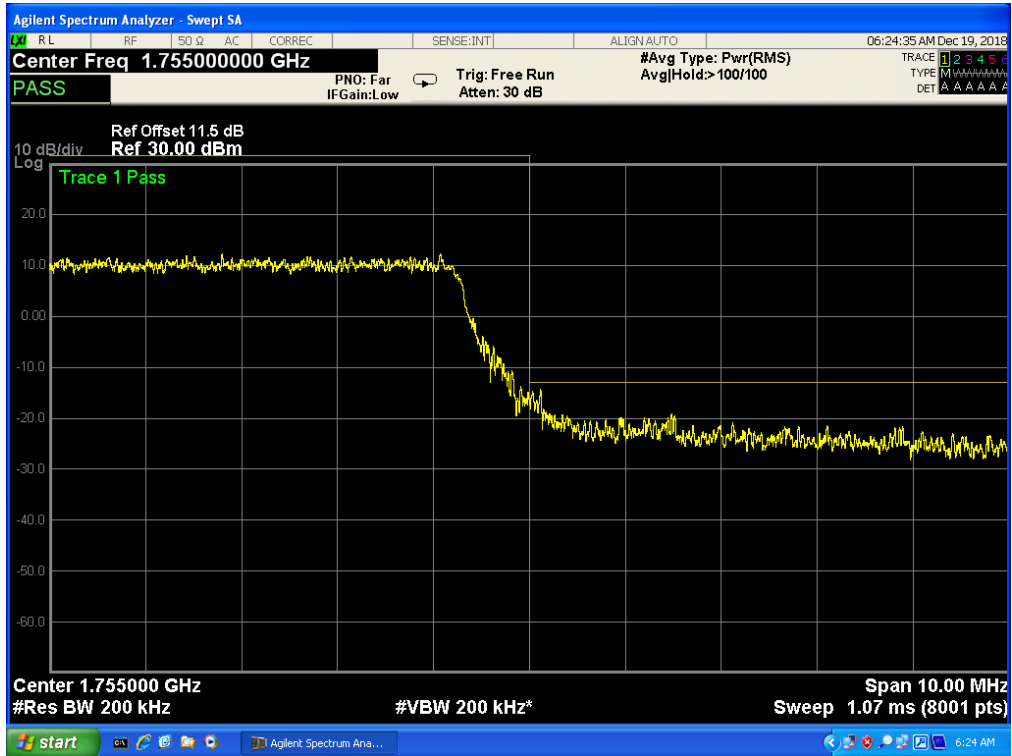




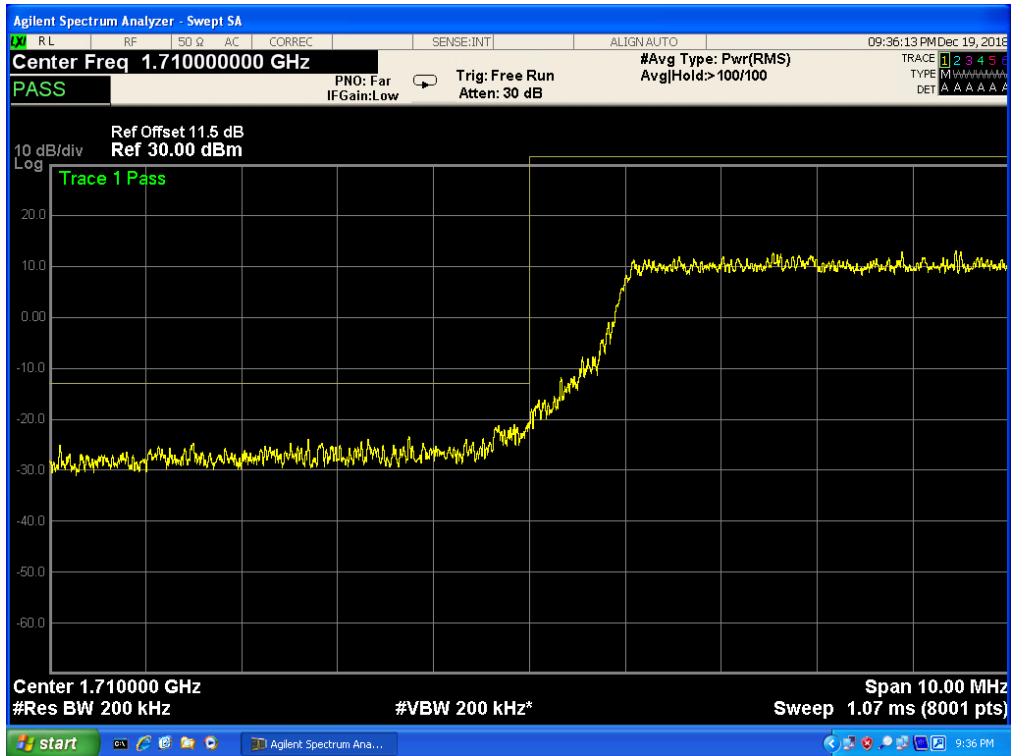
Band 4, UL Channel 20325, UL Frequency 1747.5, BW 15.0, NO. RB 75, RB POS. Low, 16QAM



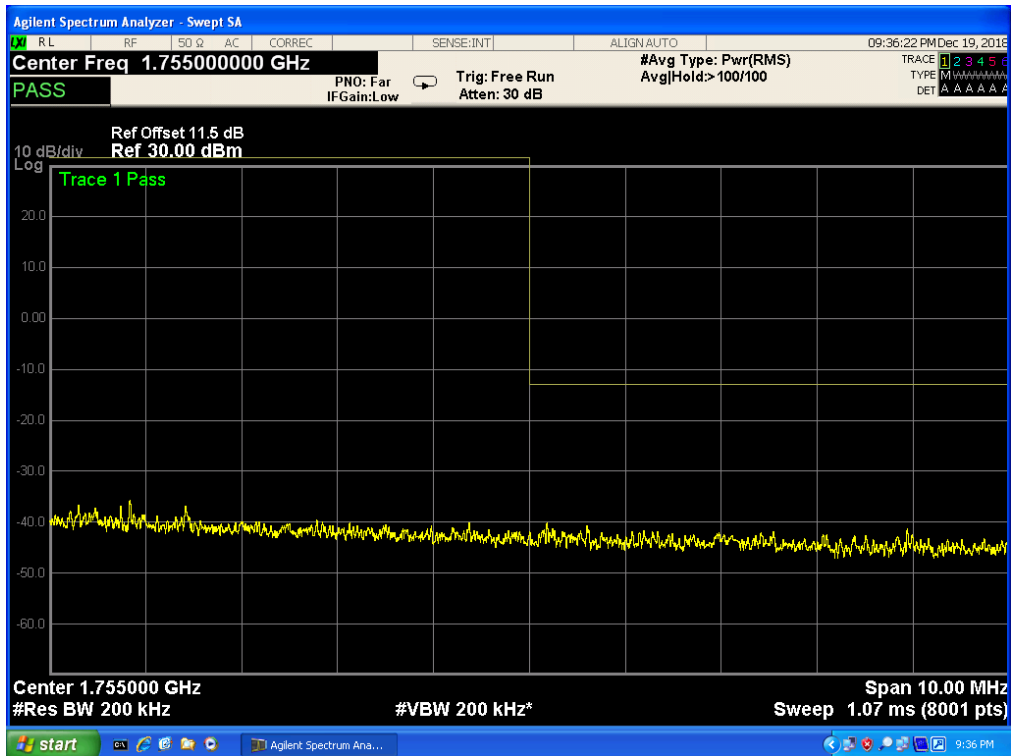
Band 4, UL Channel 20325, UL Frequency 1747.5, BW 15.0, NO. RB 75, RB POS. Low, 16QAM



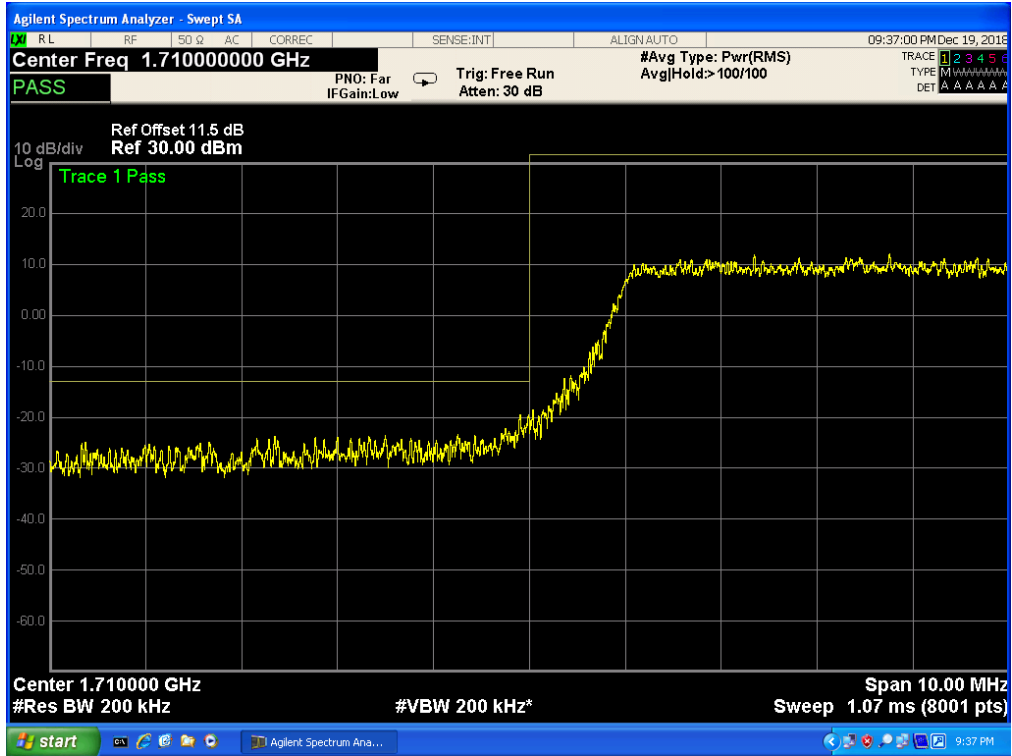
Band 4, UL Channel 2050, UL Frequency 1720.0, BW 20.0, NO. RB 100, RB POS. Low, QPSK



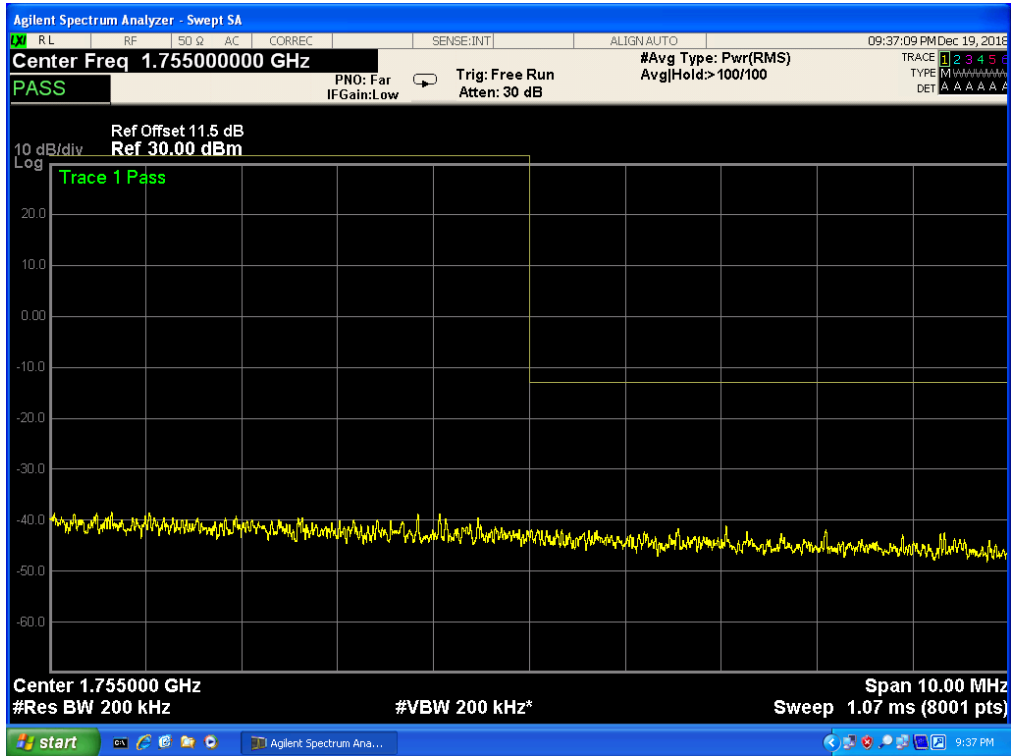
Band 4, UL Channel 2050, UL Frequency 1720.0, BW 20.0, NO. RB 100, RB POS. Low, QPSK



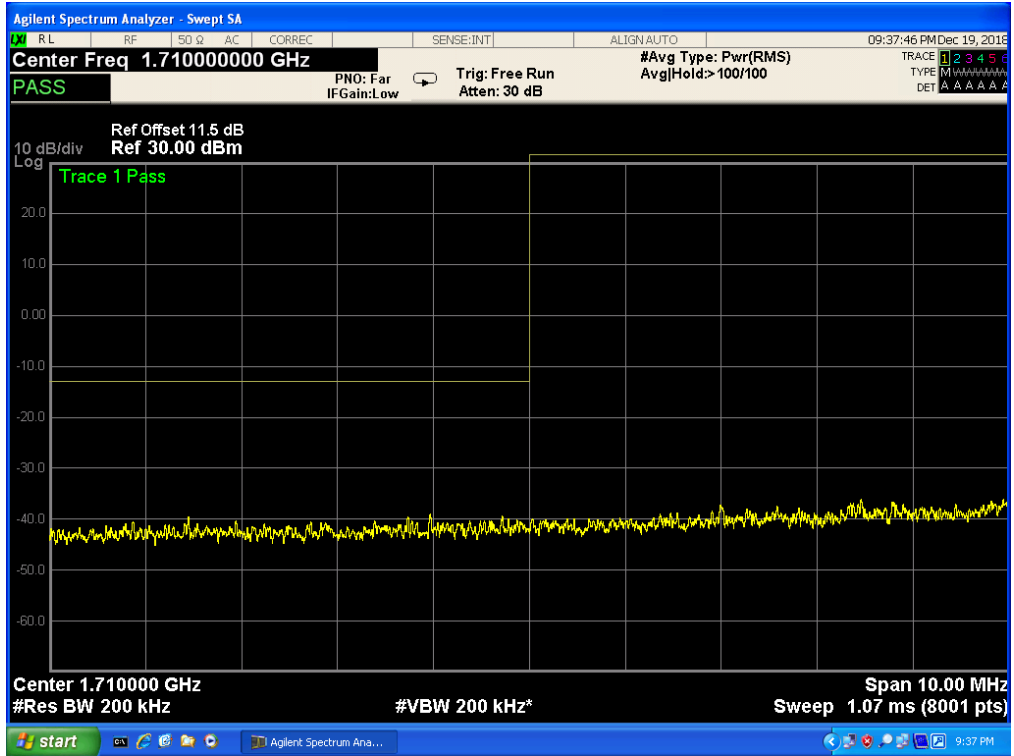
Band 4, UL Channel 20050, UL Frequency 1720.0, BW 20.0, NO. RB 100, RB POS. Low, 16QAM



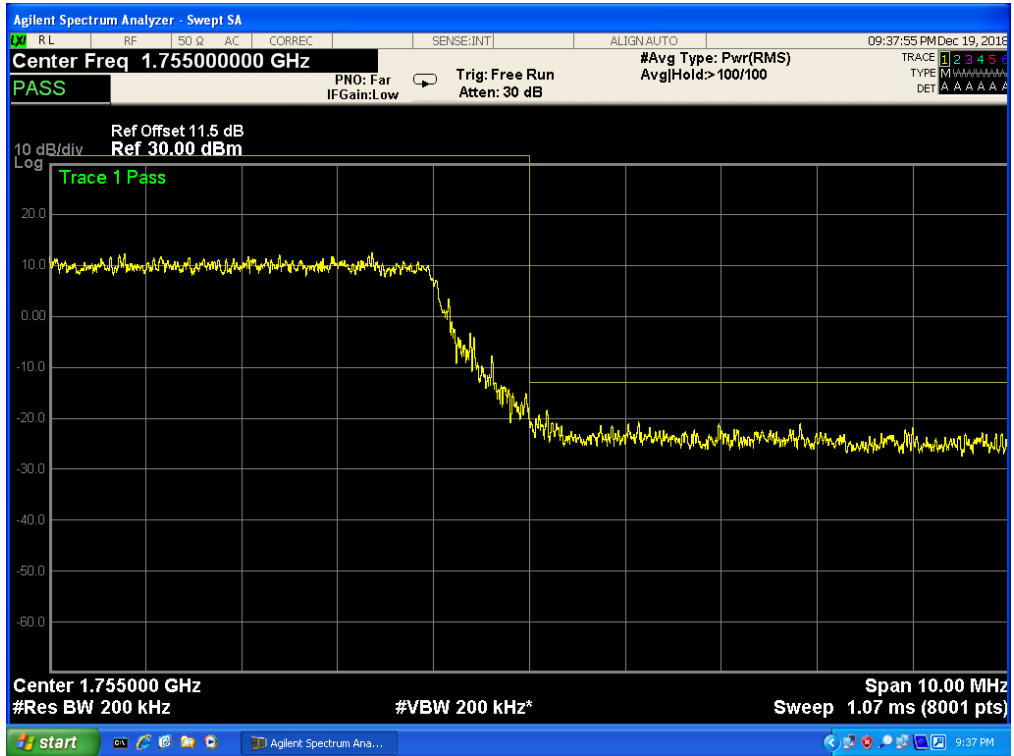
Band 4, UL Channel 20050, UL Frequency 1720.0, BW 20.0, NO. RB 100, RB POS. Low, 16QAM



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

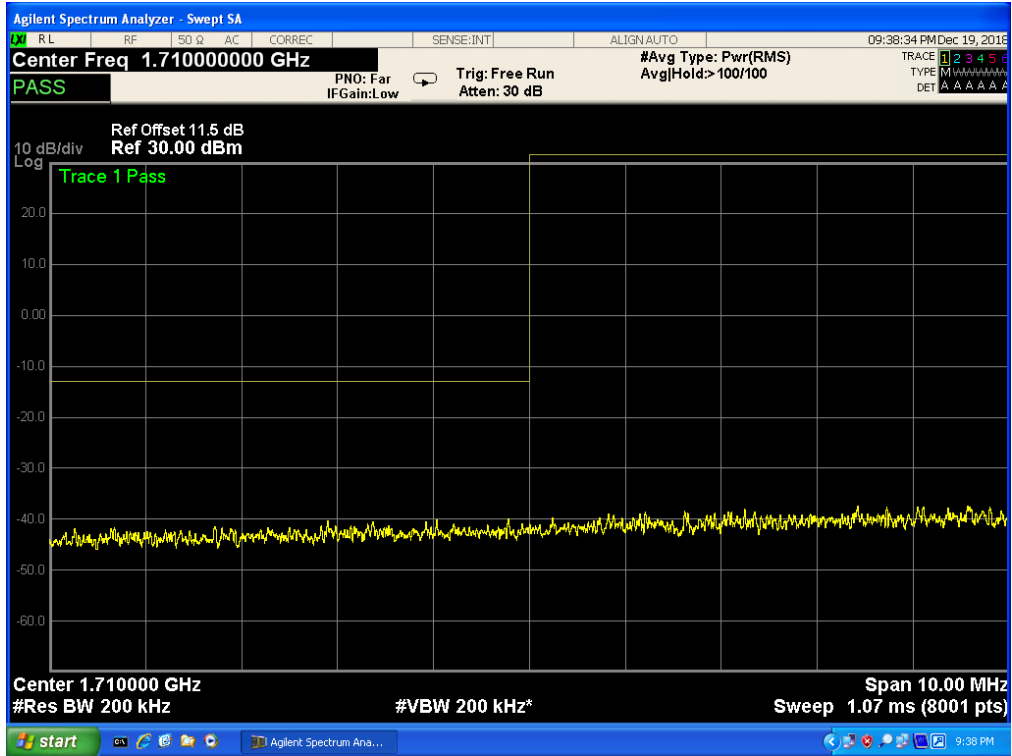


Band 4, UL Channel 20300, UL Frequency 1745.0, BW 20.0, NO. RB 100, RB POS. Low, QPSK

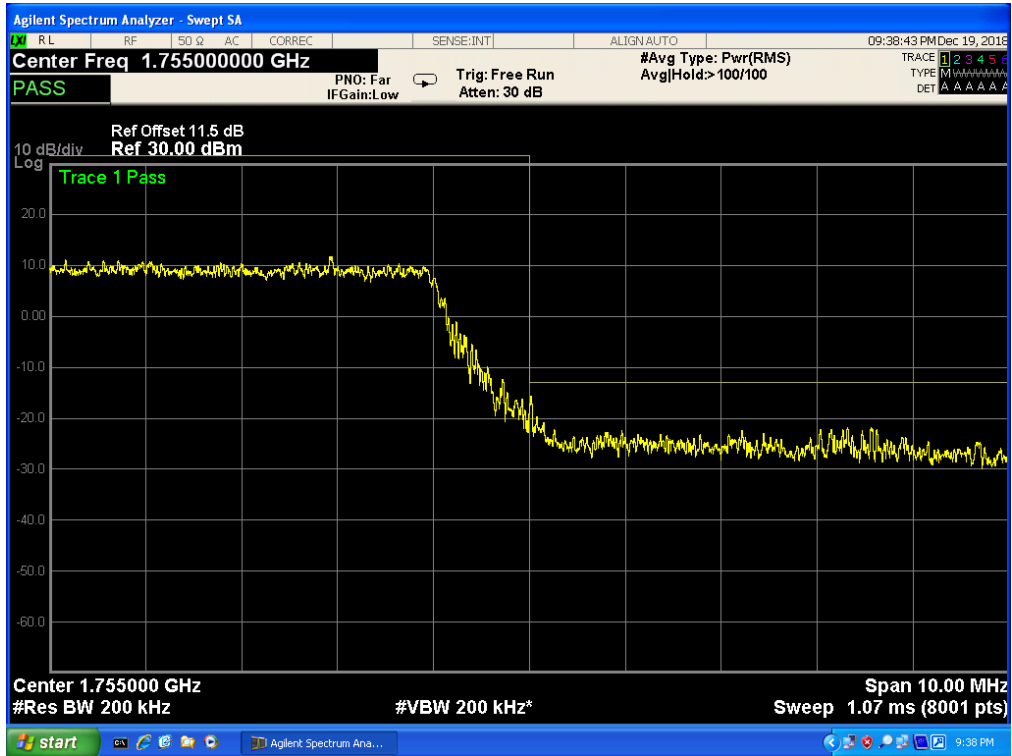




Band 4, UL Channel 20300, UL Frequency 1745.0, BW 20.0, NO. RB 100, RB POS. Low, 16QAM

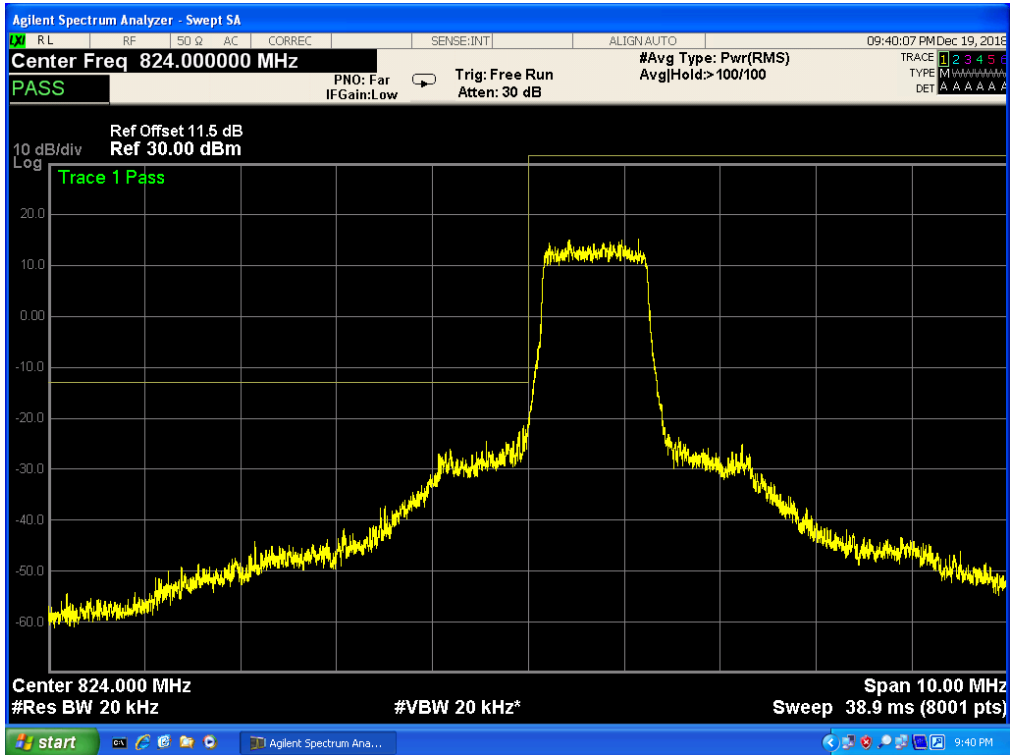


Band 4, UL Channel 20300, UL Frequency 1745.0, BW 20.0, NO. RB 100, RB POS. Low, 16QAM

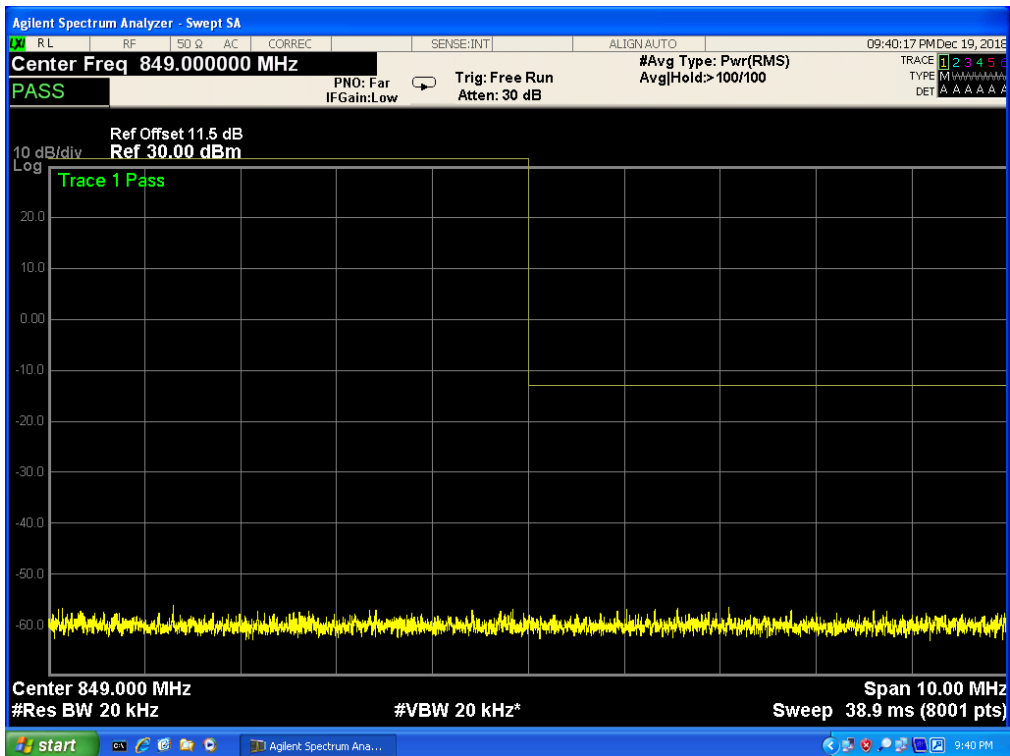


6.3 LTE BAND 5

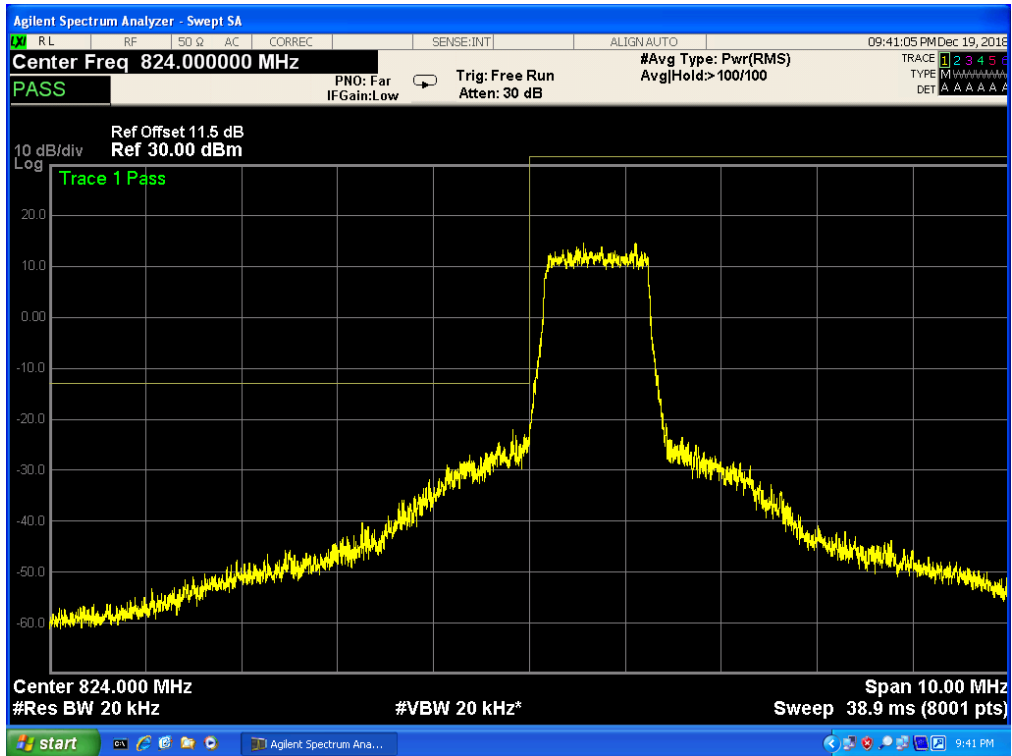
*Band 5, UL Channel 20407, UL Frequency 824.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK*



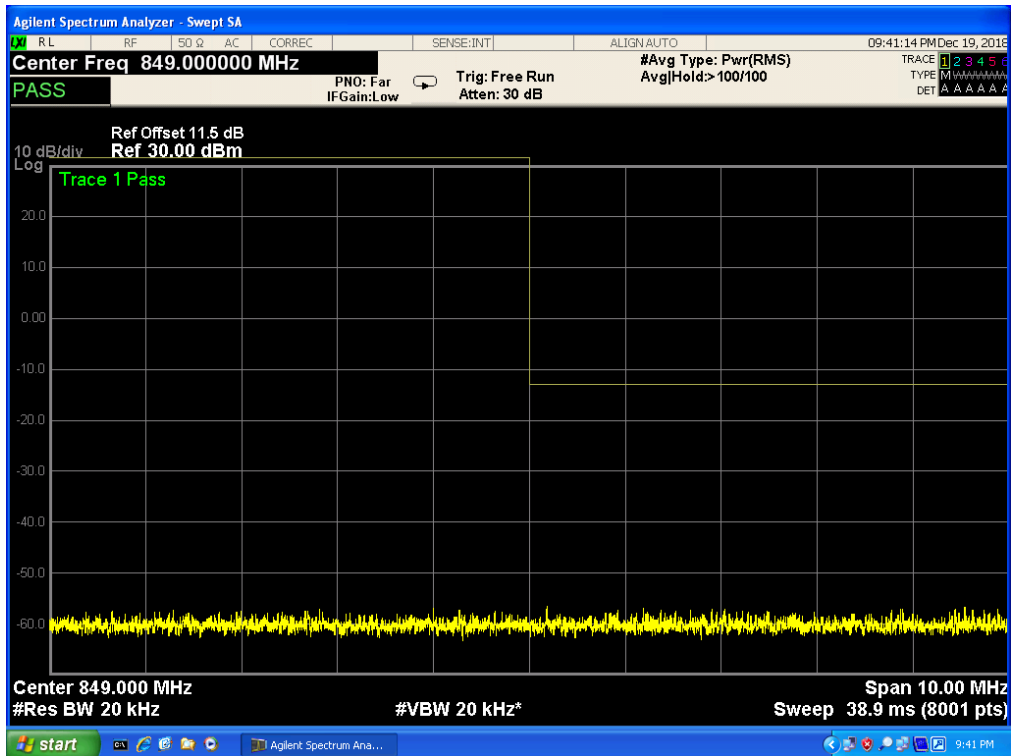
*Band 5, UL Channel 20407, UL Frequency 824.7, BW 1.4, NO. RB 6, RB POS. Low, QPSK*



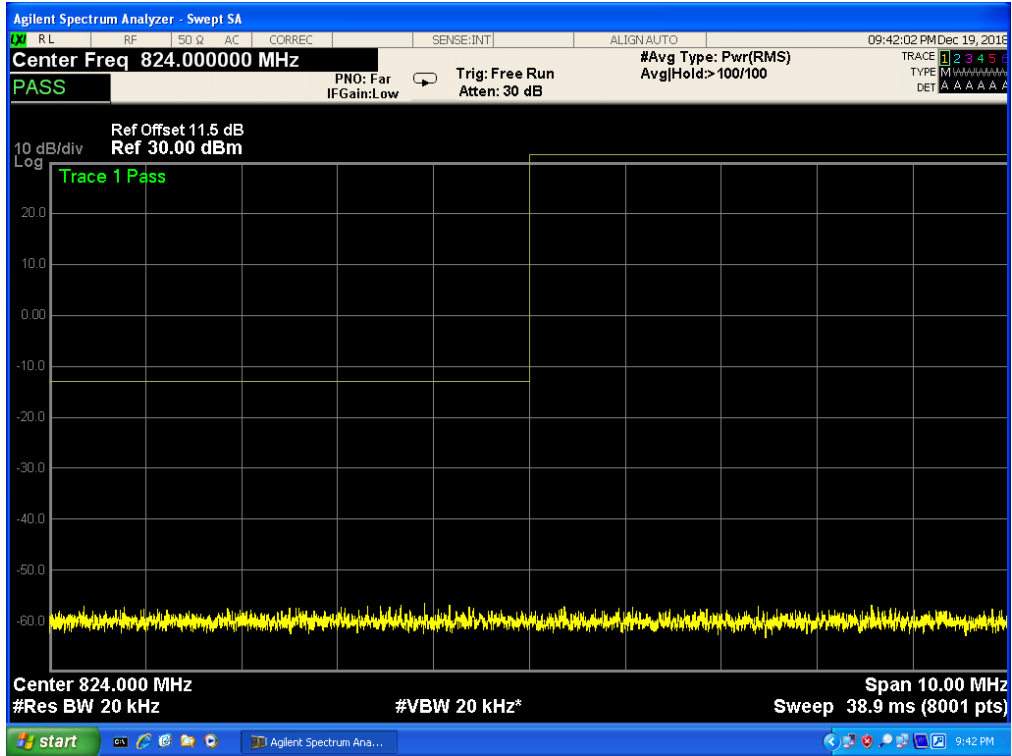
Band 5, UL Channel 20407, UL Frequency 824.7, BW 1.4, NO. RB 6, RB POS. Low, 16-QAM



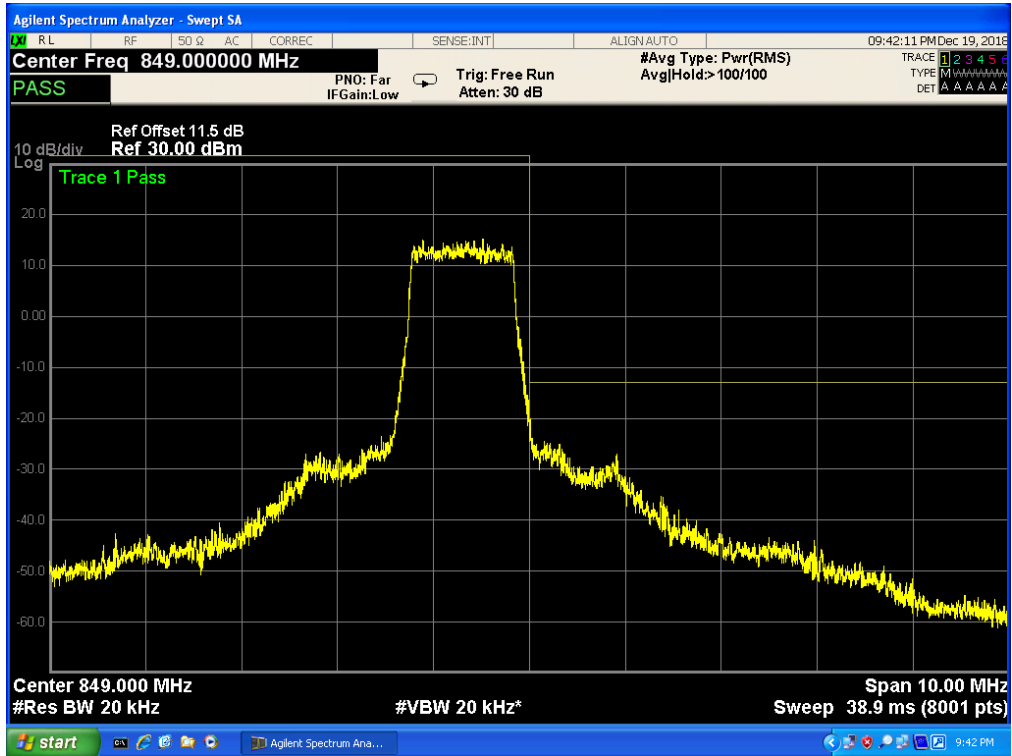
Band 5, UL Channel 20407, UL Frequency 824.7, BW 1.4, NO. RB 6, RB POS. Low, 16-QAM



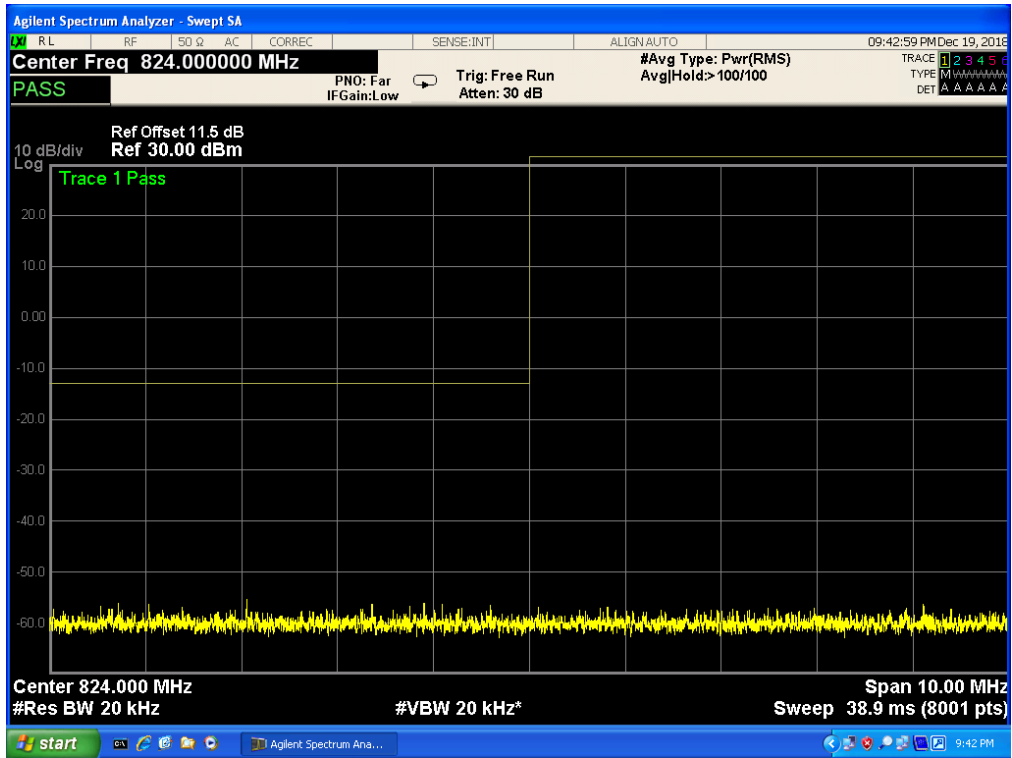
Band 5, UL Channel 20643, UL Frequency 848.3, BW 1.4, NO. RB 6, RB POS. Low, QPSK



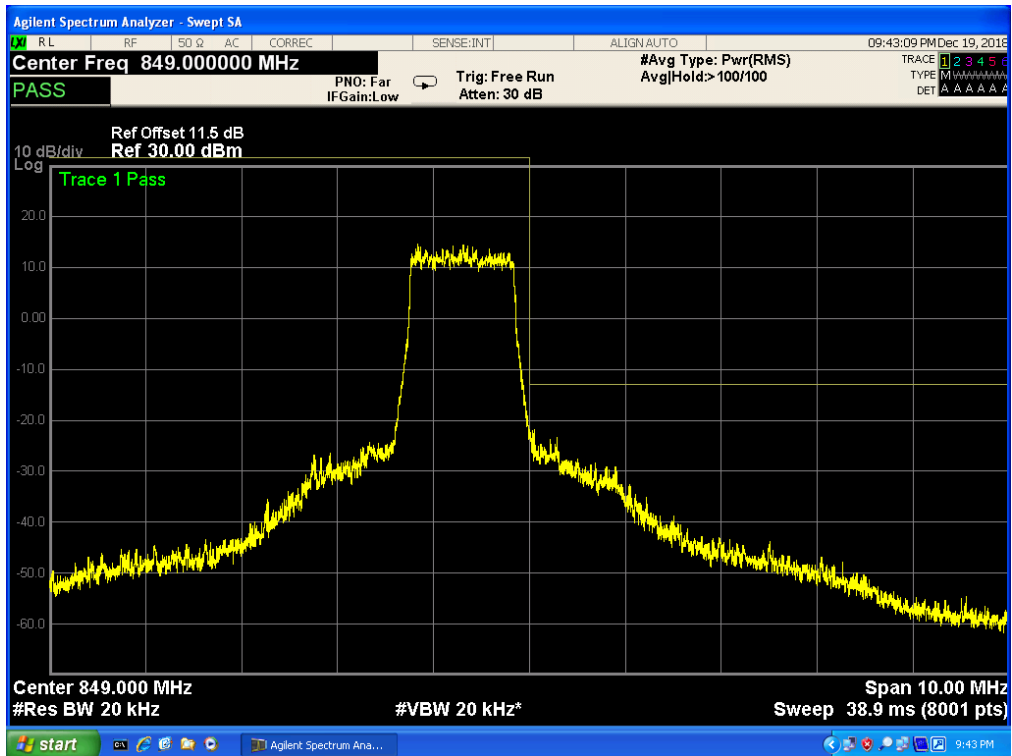
Band 5, UL Channel 20643, UL Frequency 848.3, BW 1.4, NO. RB 6, RB POS. Low, QPSK



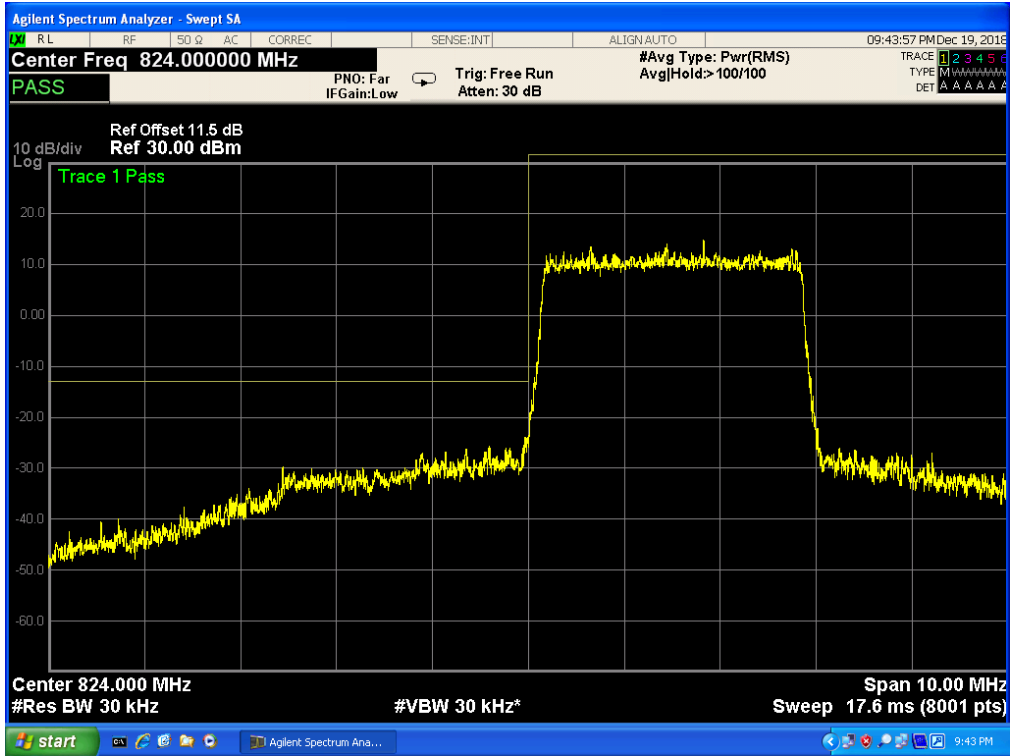
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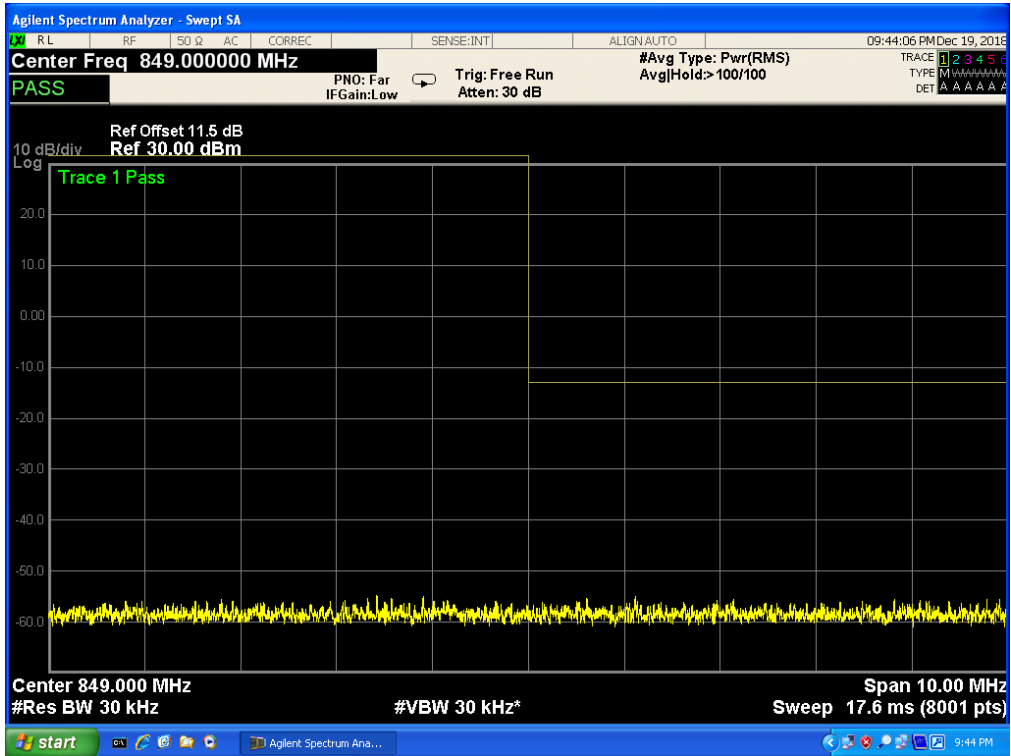
Band 5, UL Channel 20643, UL Frequency 848.3, BW 1.4, NO. RB 6, RB POS. Low, 16-QAM



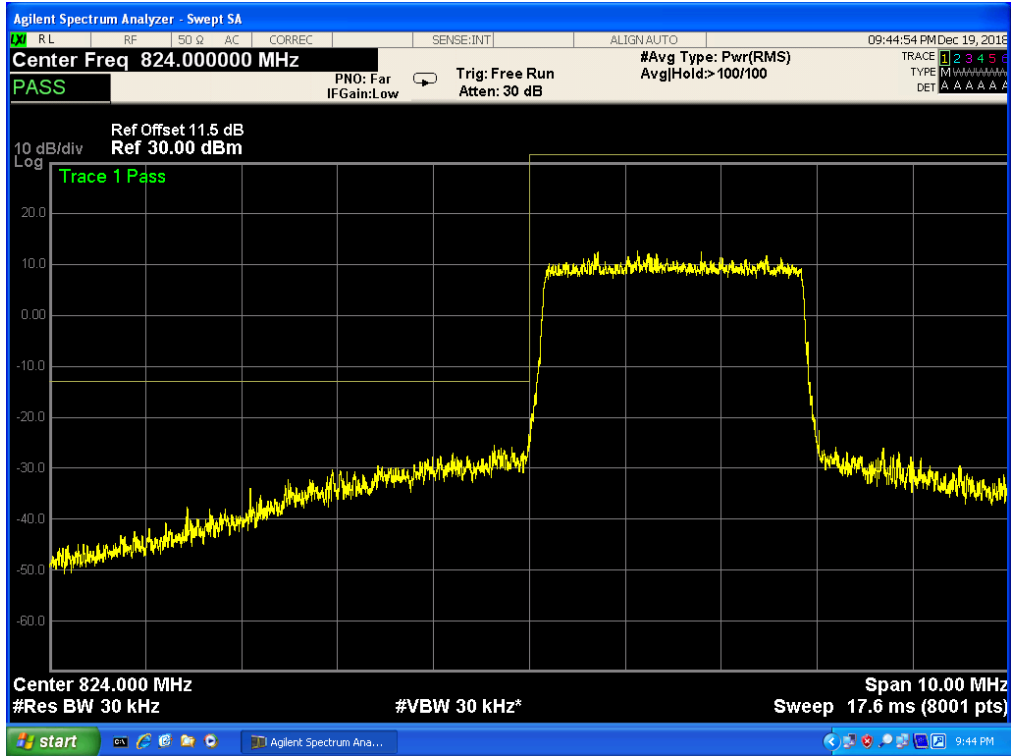
Band 5, UL Channel 20415, UL Frequency 825.5, BW 3.0, NO. RB 15, RB POS. Low, QPSK



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

