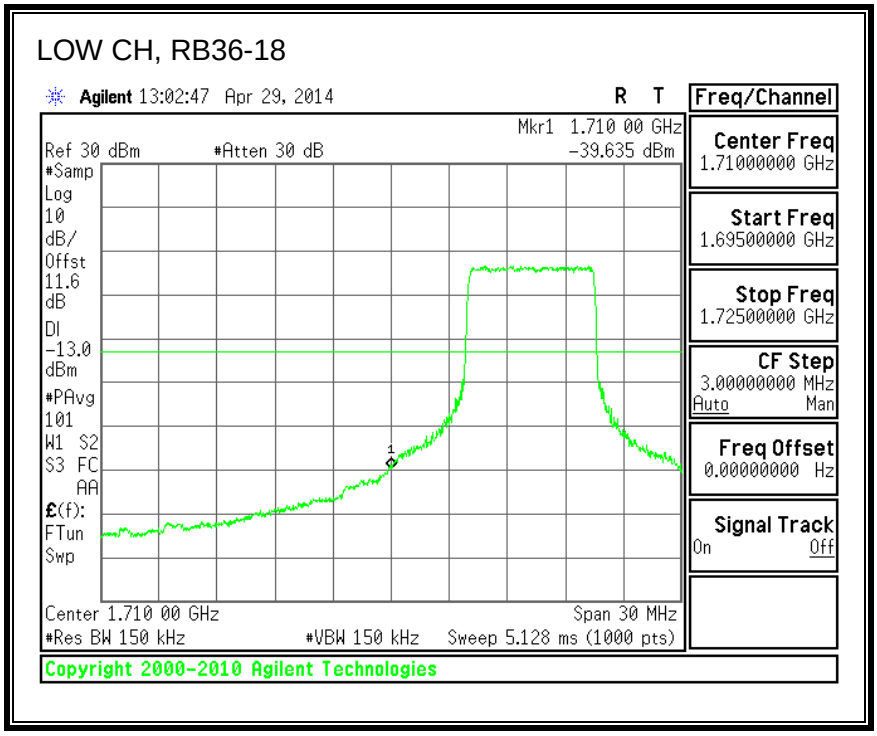
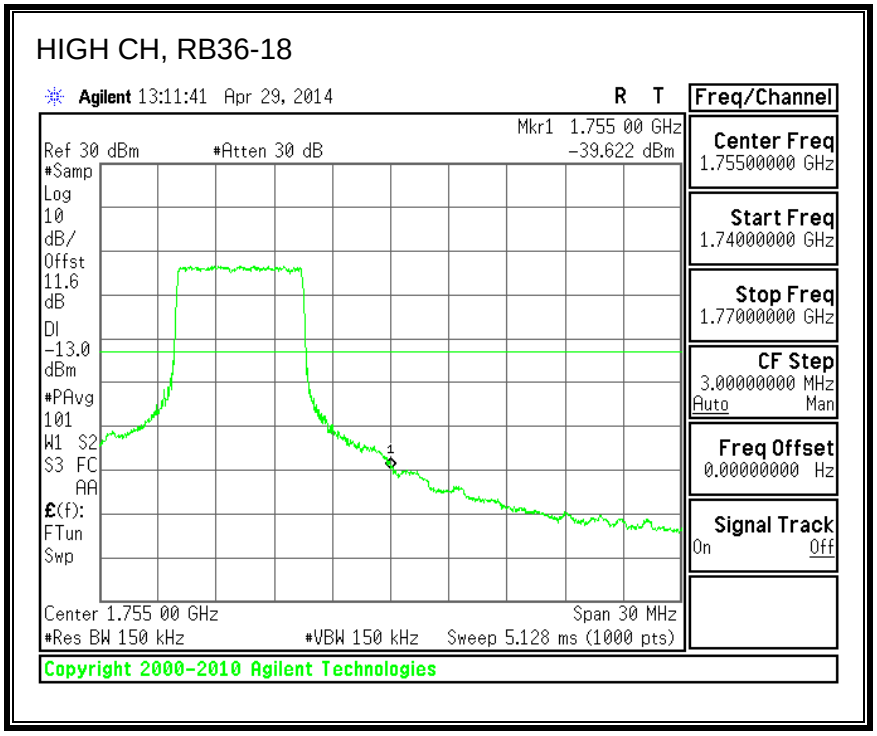
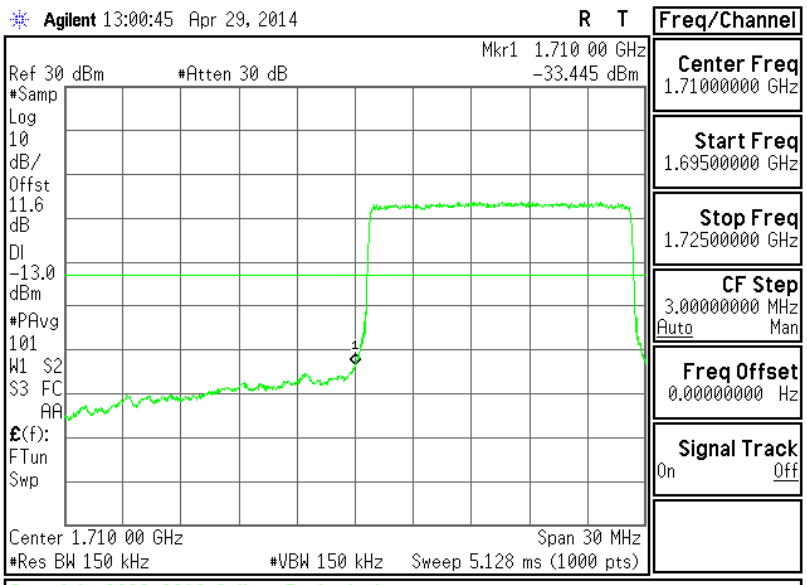
LOW CH, RB36-18



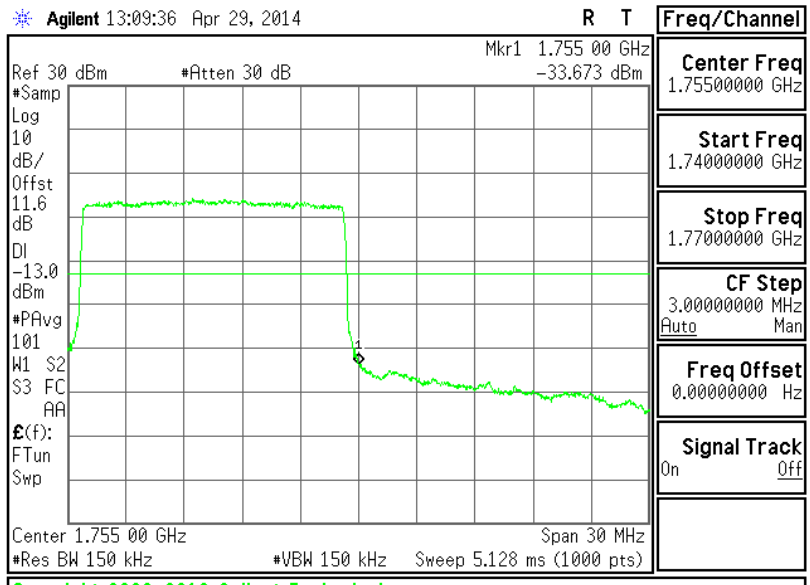

HIGH CH, RB36-18



LOW CH, RB75-0

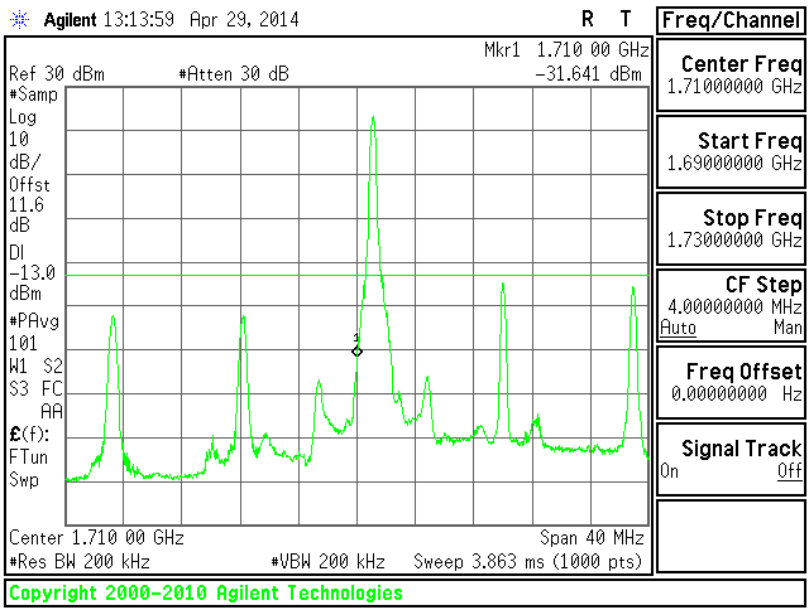



HIGH CH, RB75-0

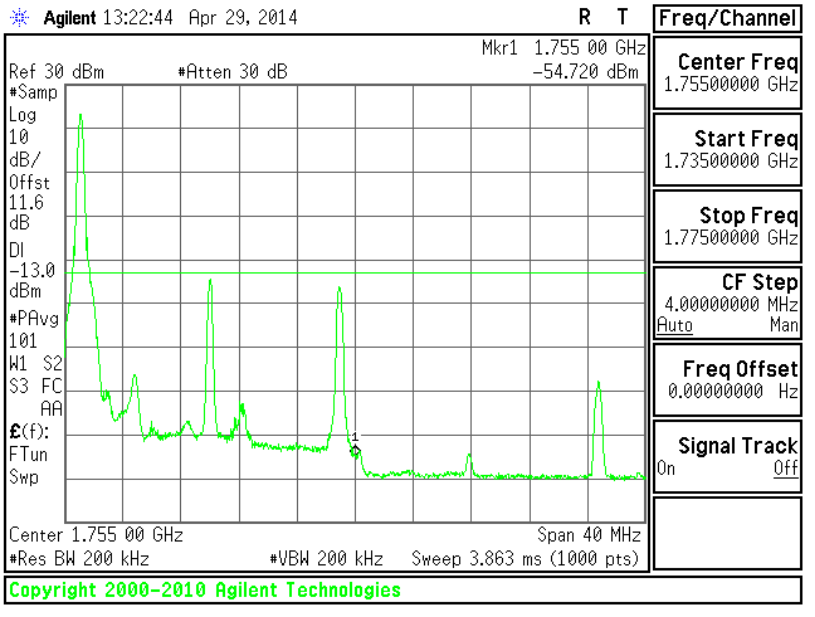


**QPSK, (20.0 MHz BAND WIDTH)**

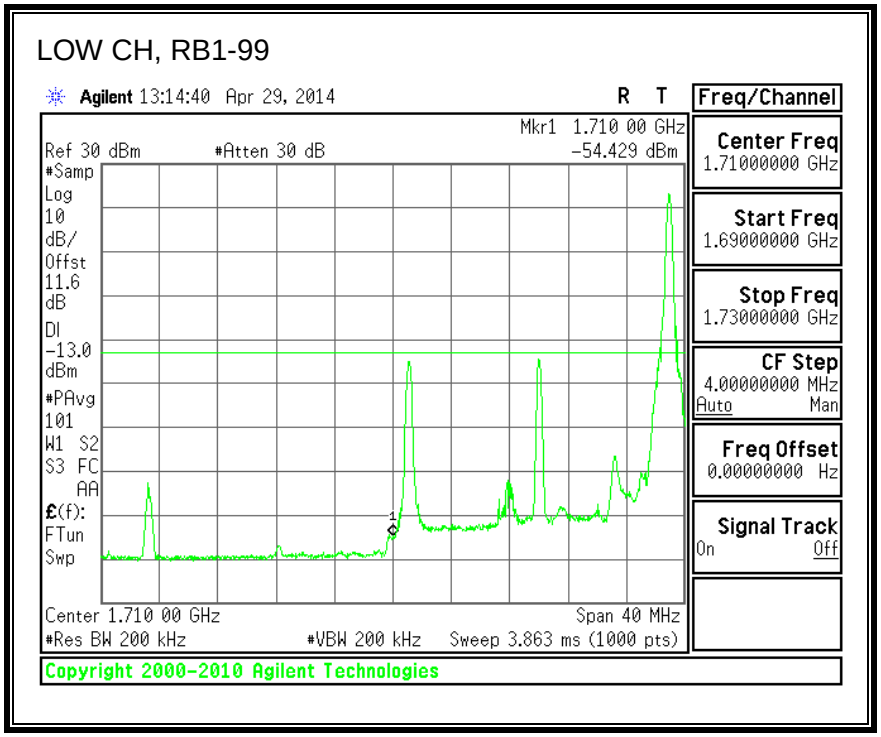
LOW CH, RB1_0



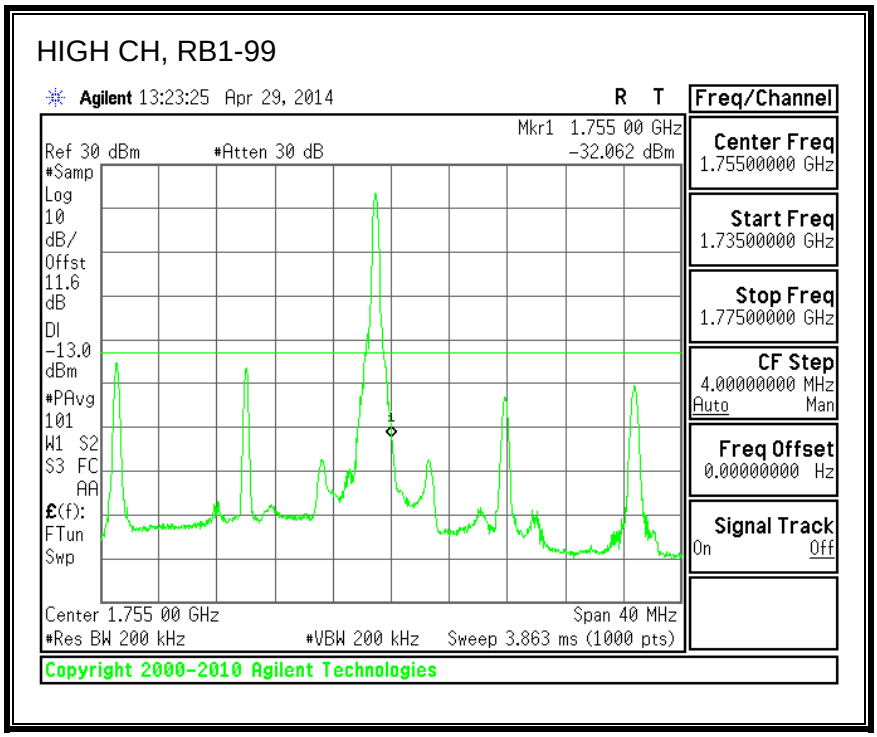

HIGH CH, RB1-0



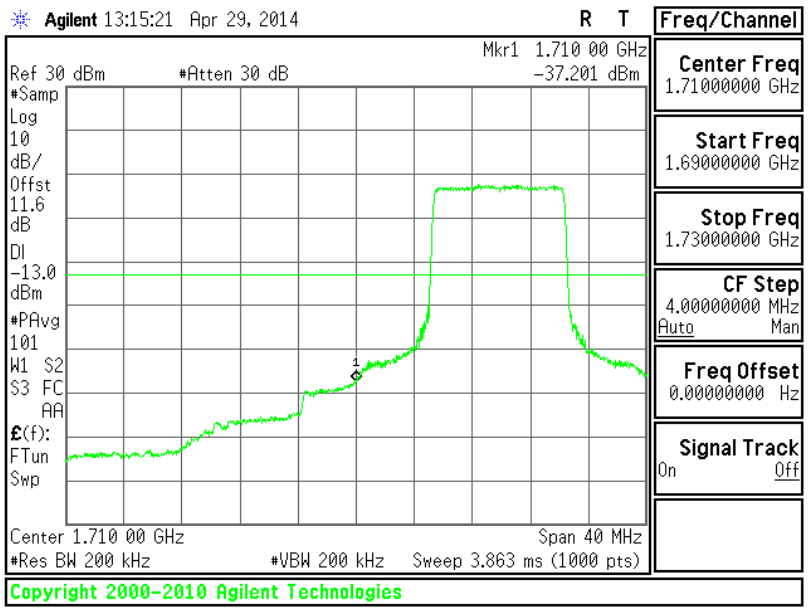
LOW CH, RB1-99



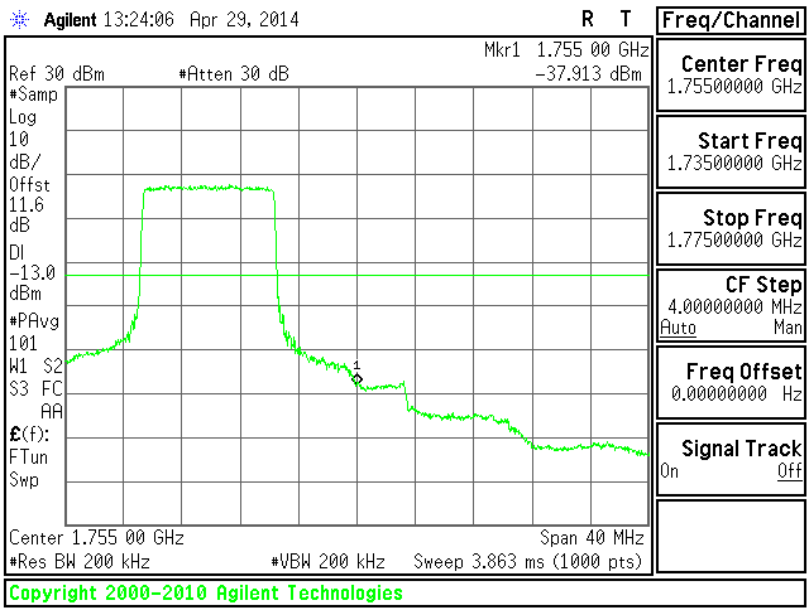

HIGH CH, RB1-99



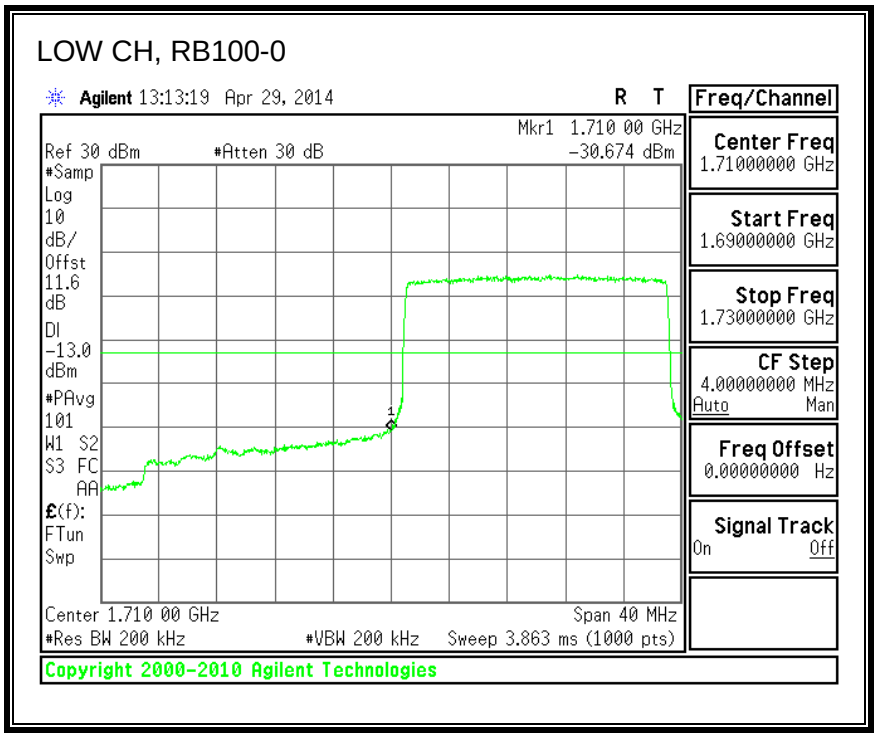
LOW CH, RB50-24



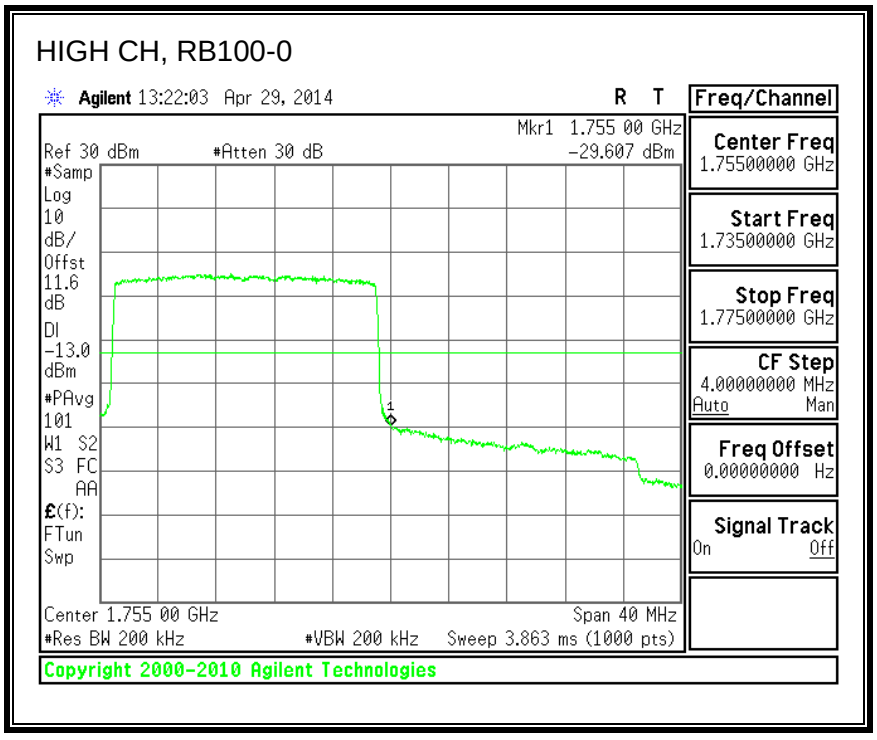

HIGH CH, RB50-24



LOW CH, RB100-0

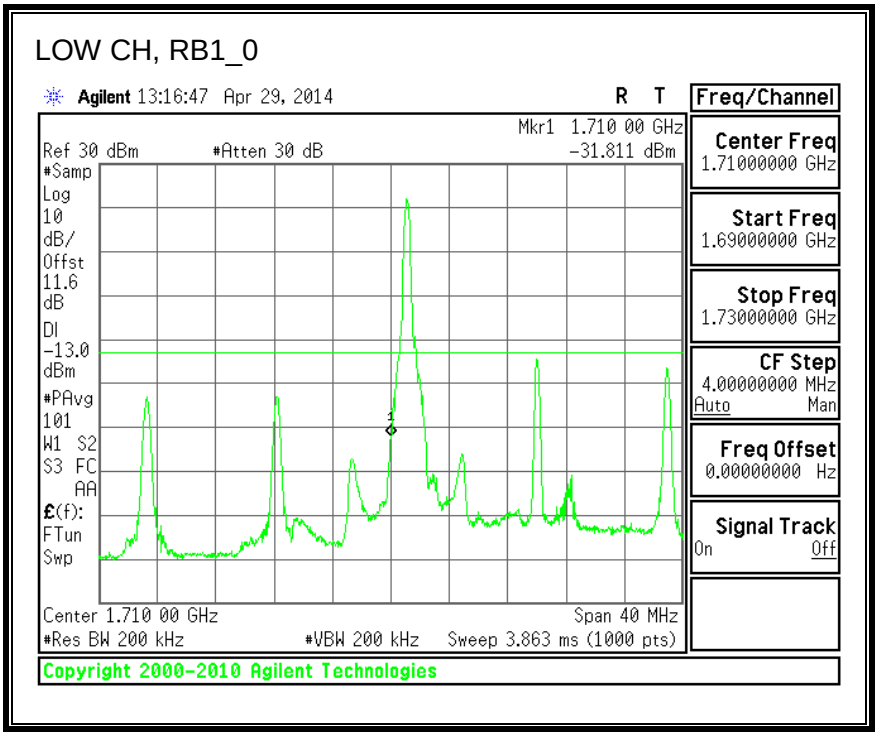



HIGH CH, RB100-0

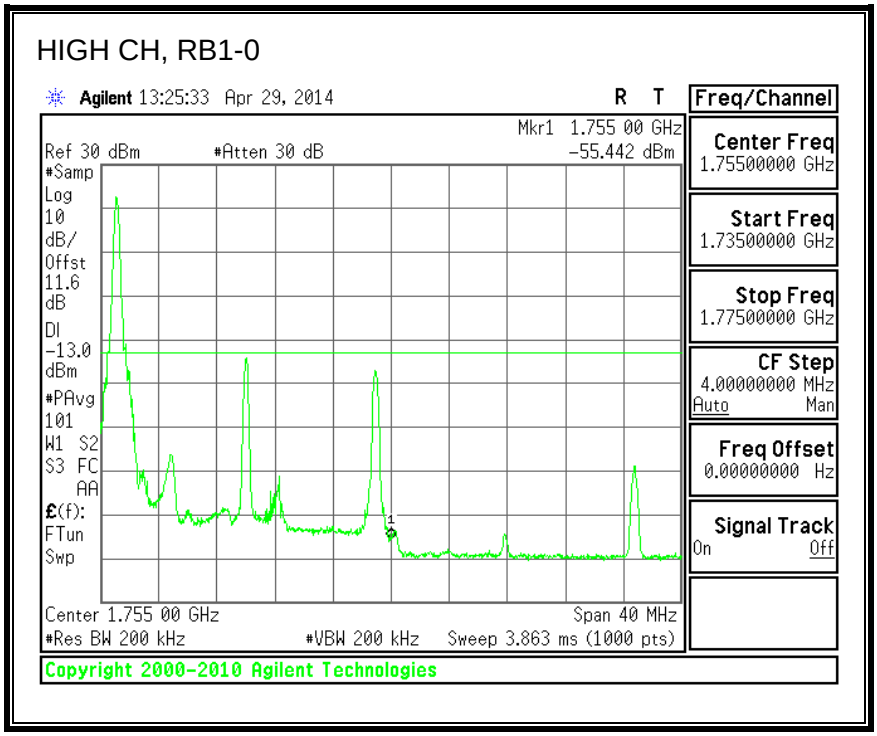


**16QAM, (20.0 MHz BAND WIDTH)**

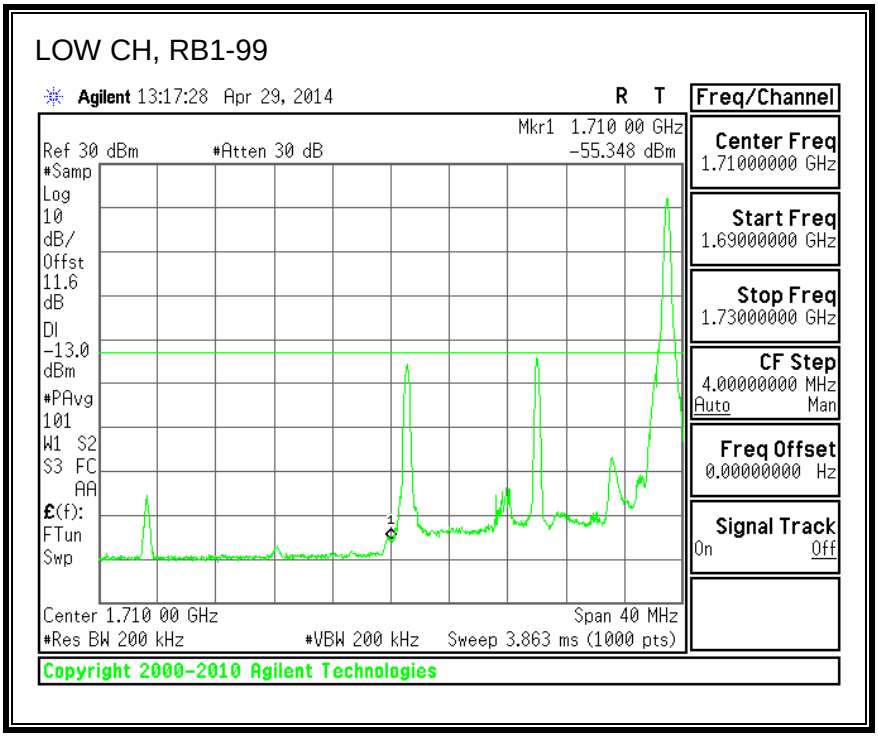
LOW CH, RB1_0



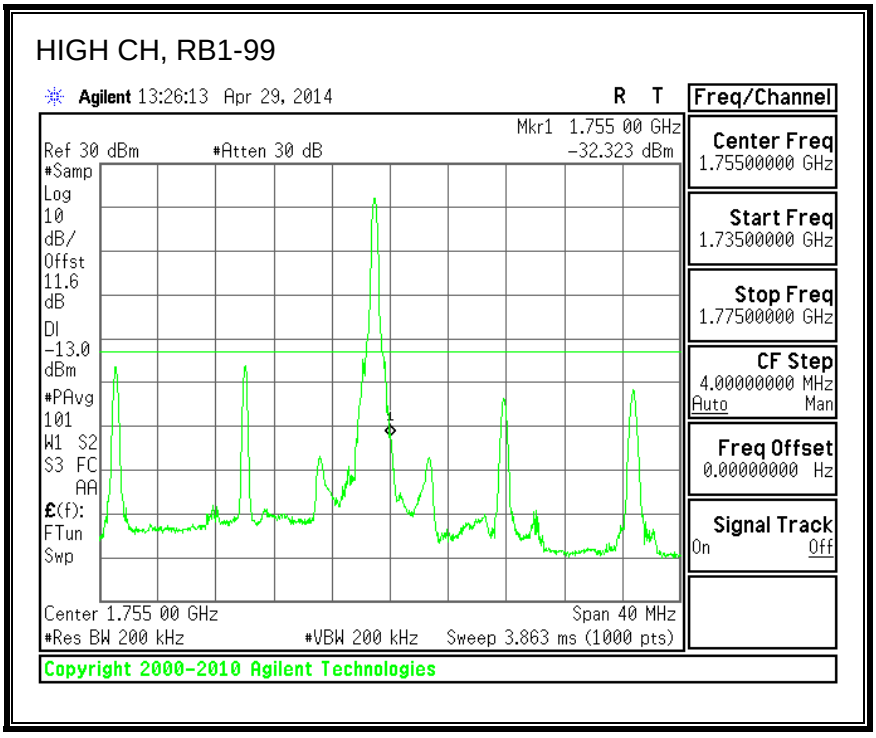

HIGH CH, RB1-0



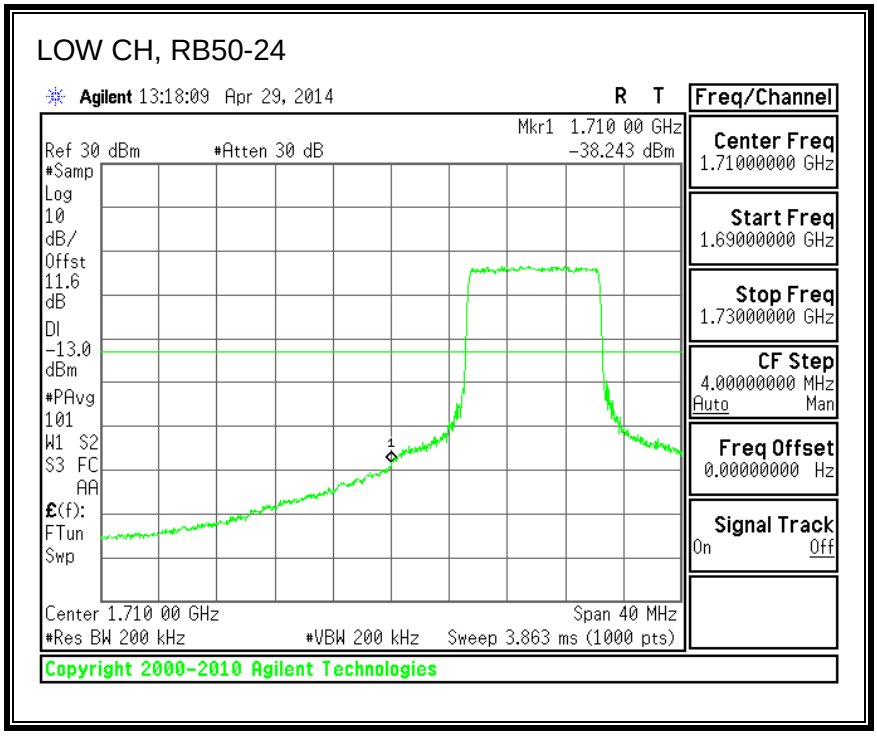
LOW CH, RB1-99



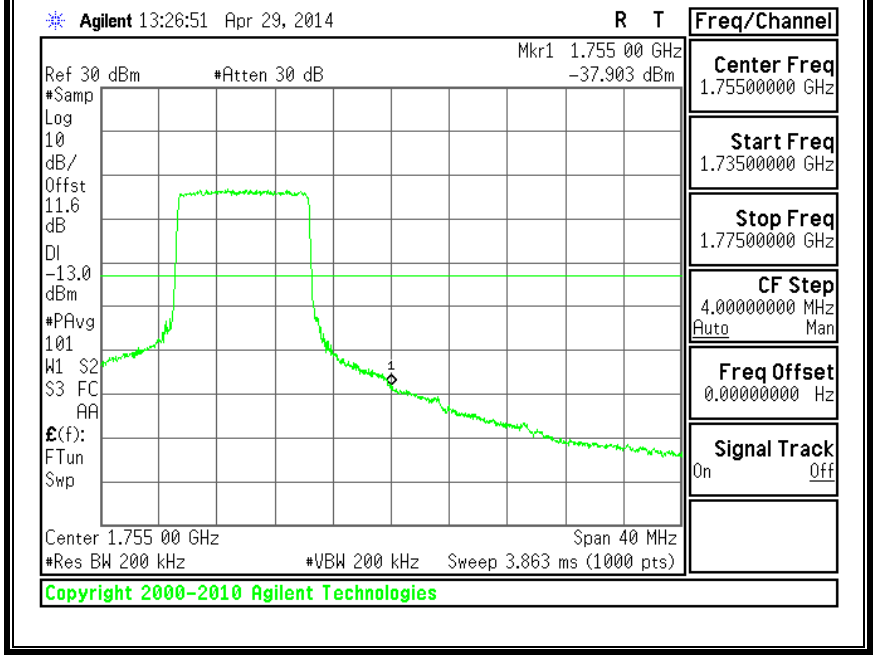

HIGH CH, RB1-99



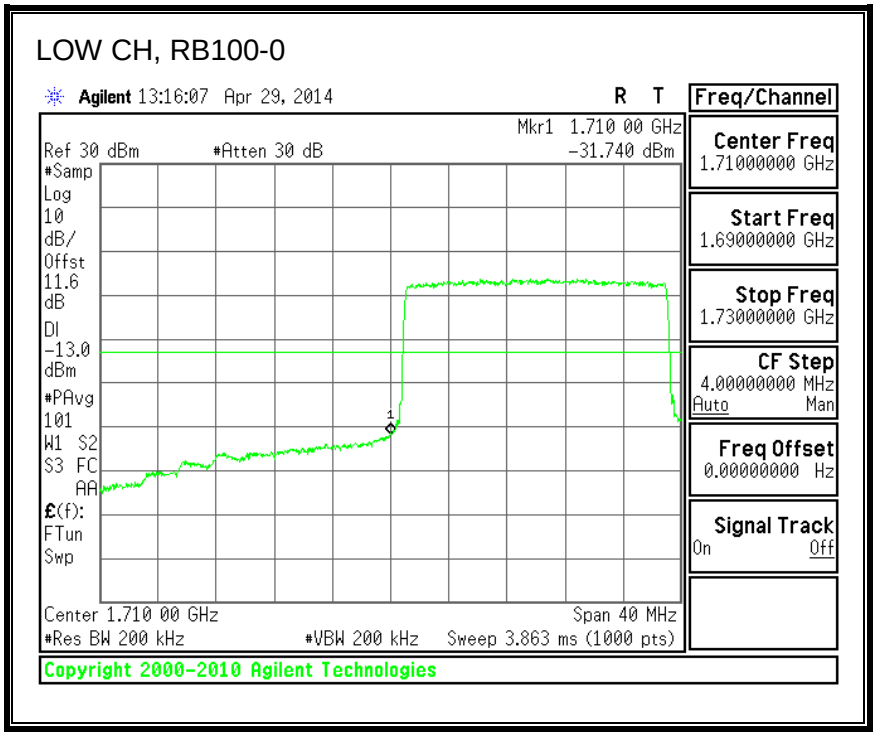
LOW CH, RB50-24



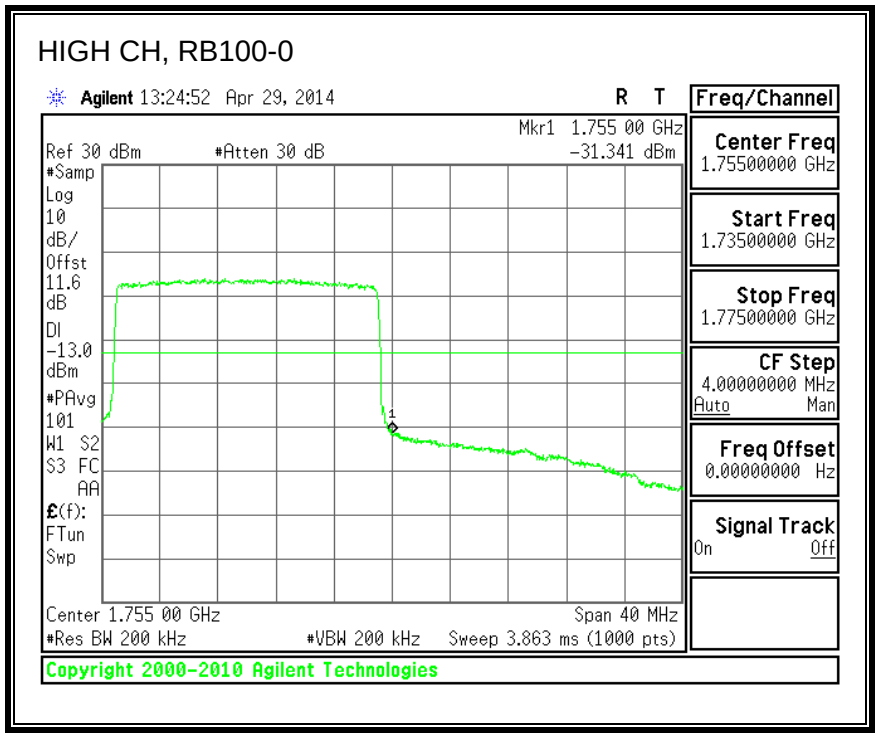

HIGH CH, RB50-24



LOW CH, RB100-0

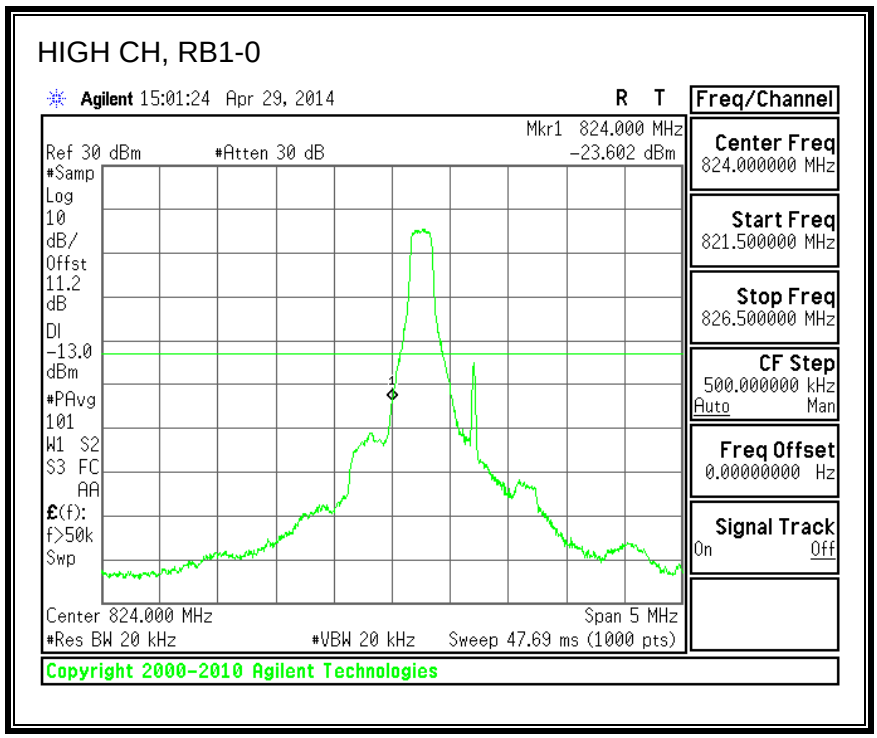


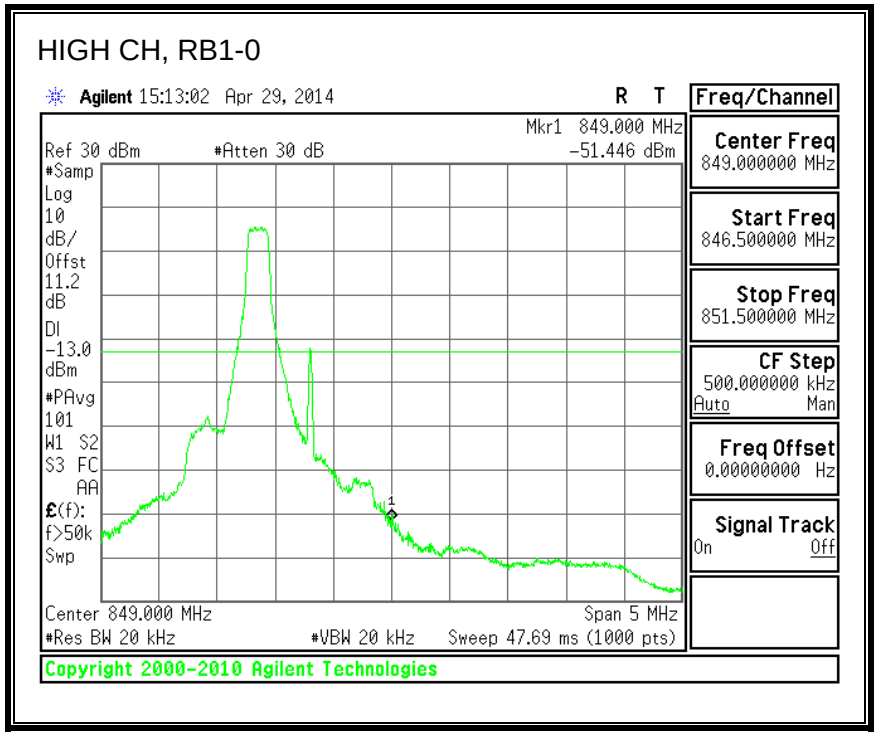

HIGH CH, RB100-0



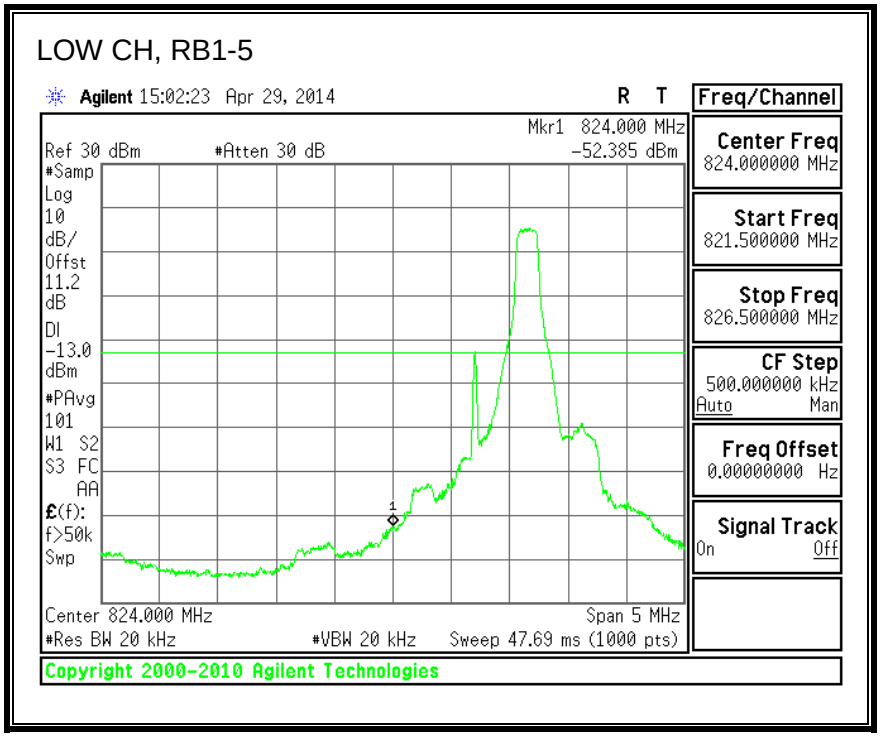
## 8.2.3. LTE BAND 5 BANDEDGE

**QPSK, (1.4 MHz BAND WIDTH)**

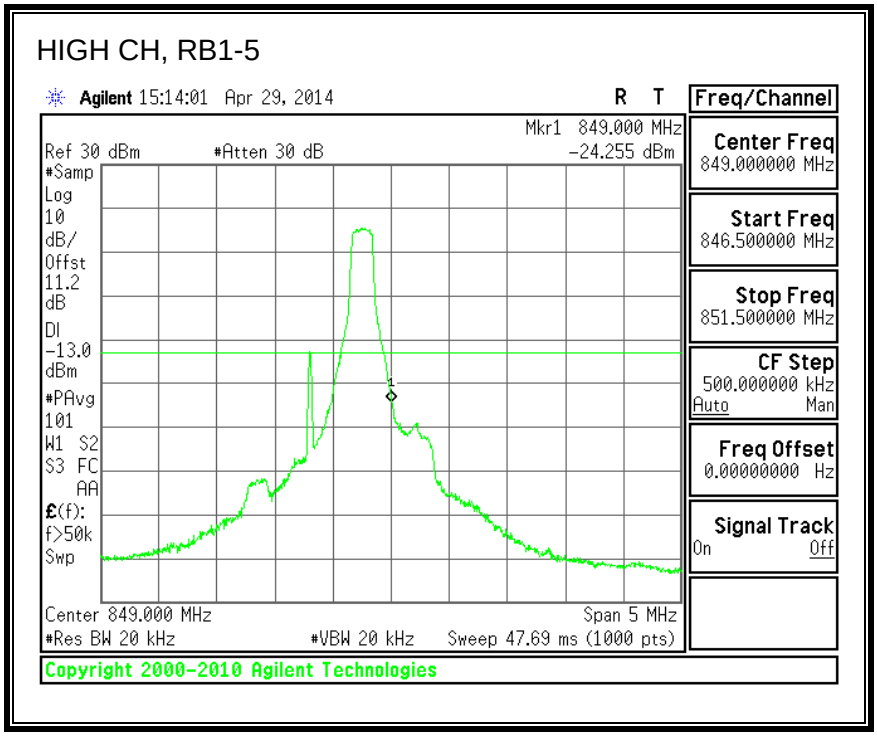


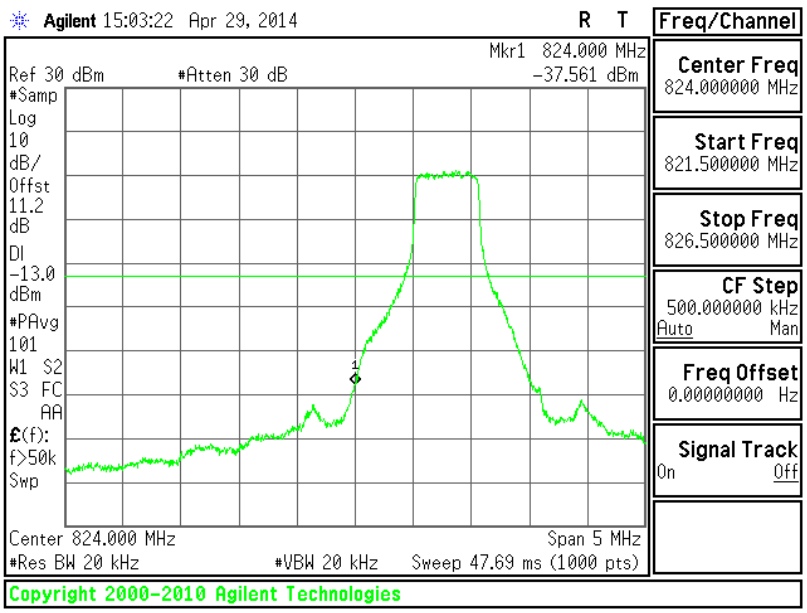
LOW CH, RB1-5



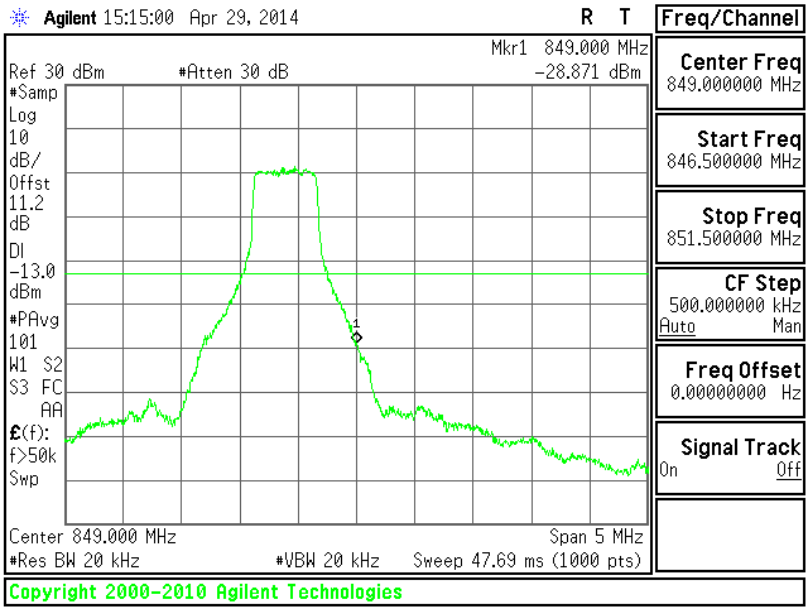

HIGH CH, RB1-5



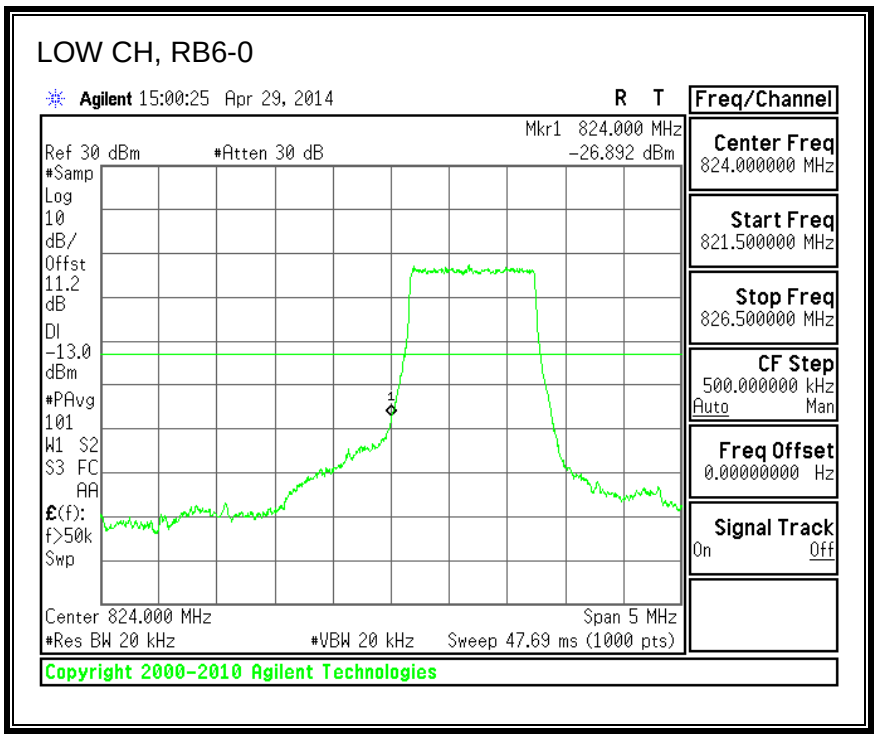
LOW CH, RB3-2



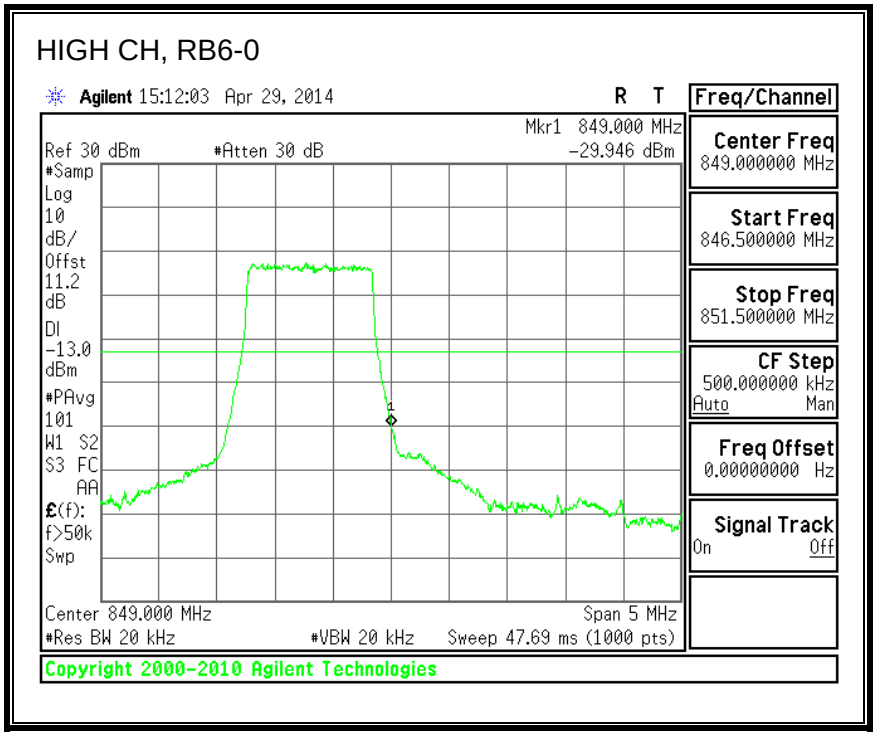

HIGH CH, RB3-2



LOW CH, RB6-0

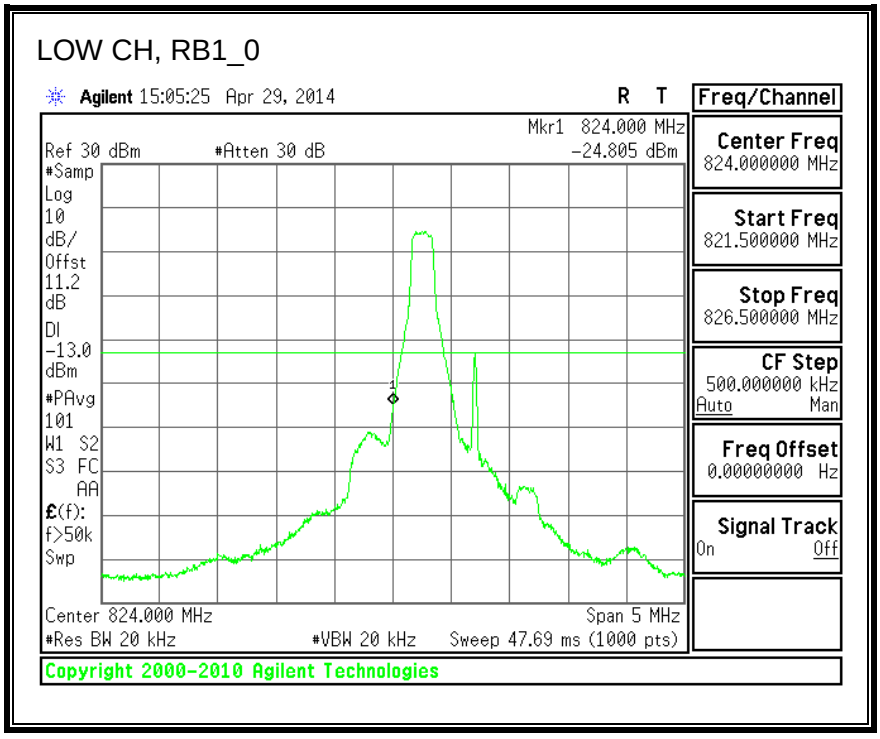



HIGH CH, RB6-0

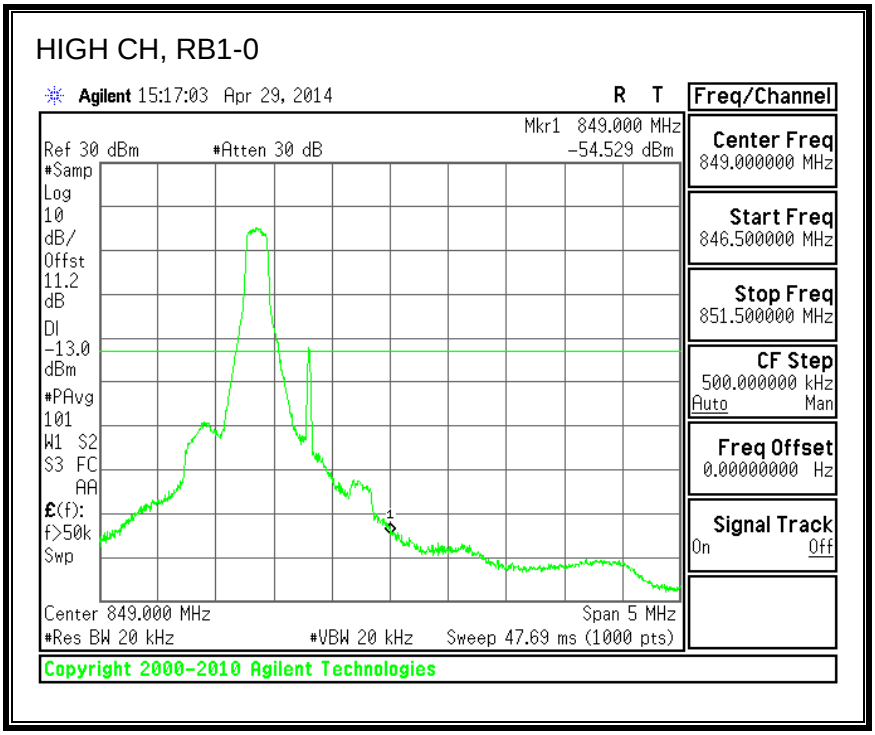


**16QAM, (1.4 MHz BAND WIDTH)**

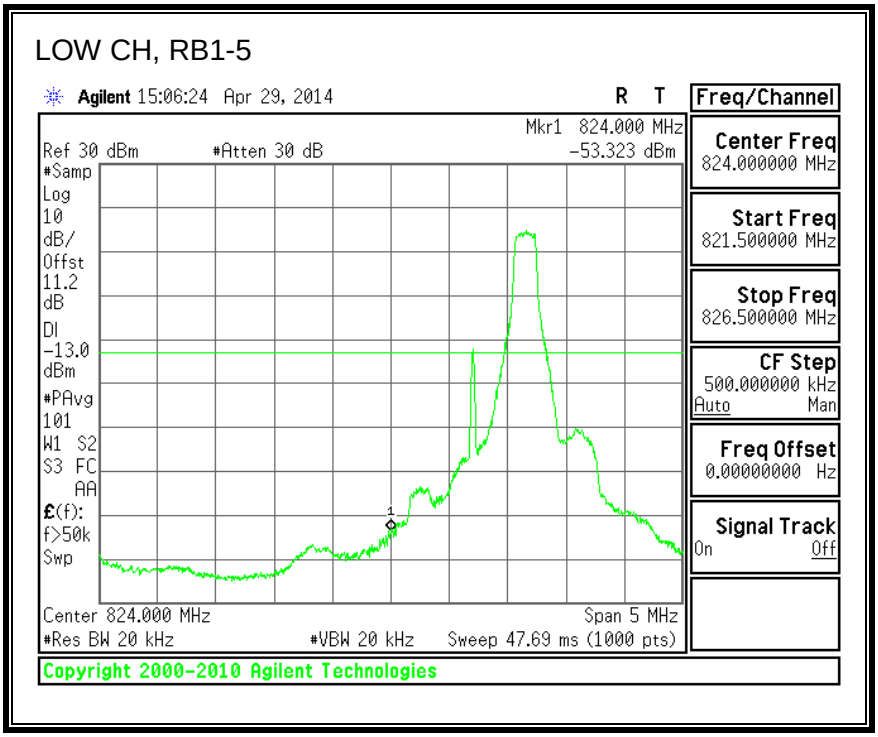
LOW CH, RB1_0



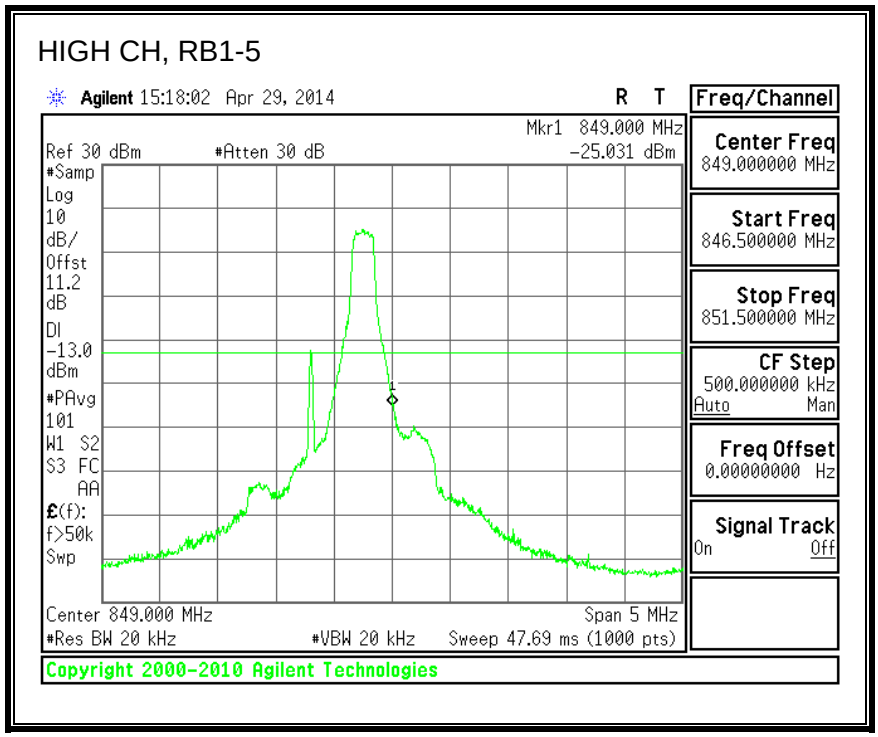

HIGH CH, RB1-0



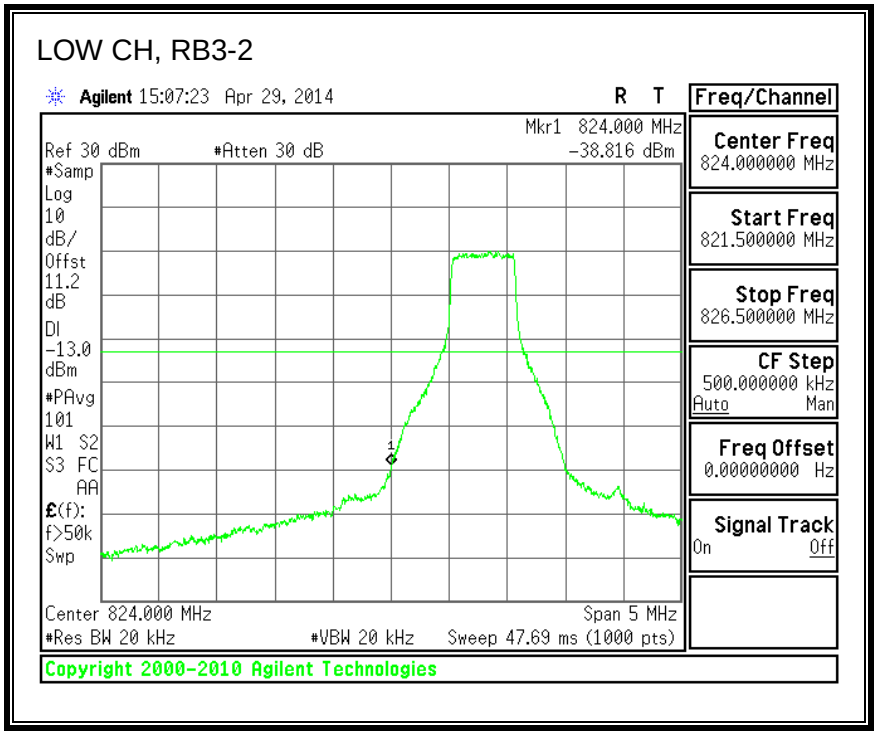
LOW CH, RB1-5



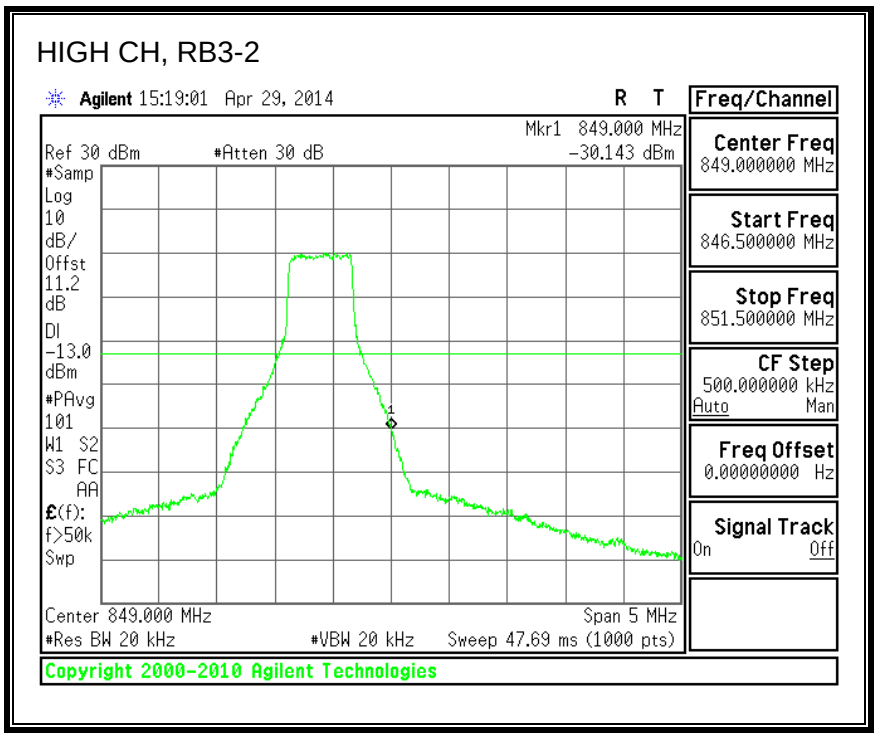

HIGH CH, RB1-5



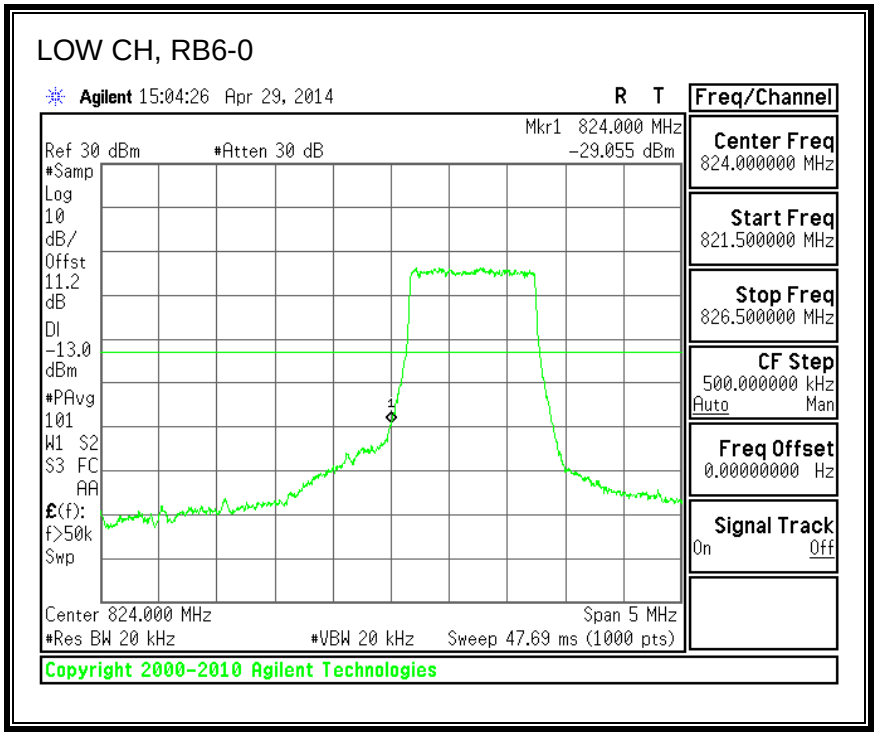
LOW CH, RB3-2



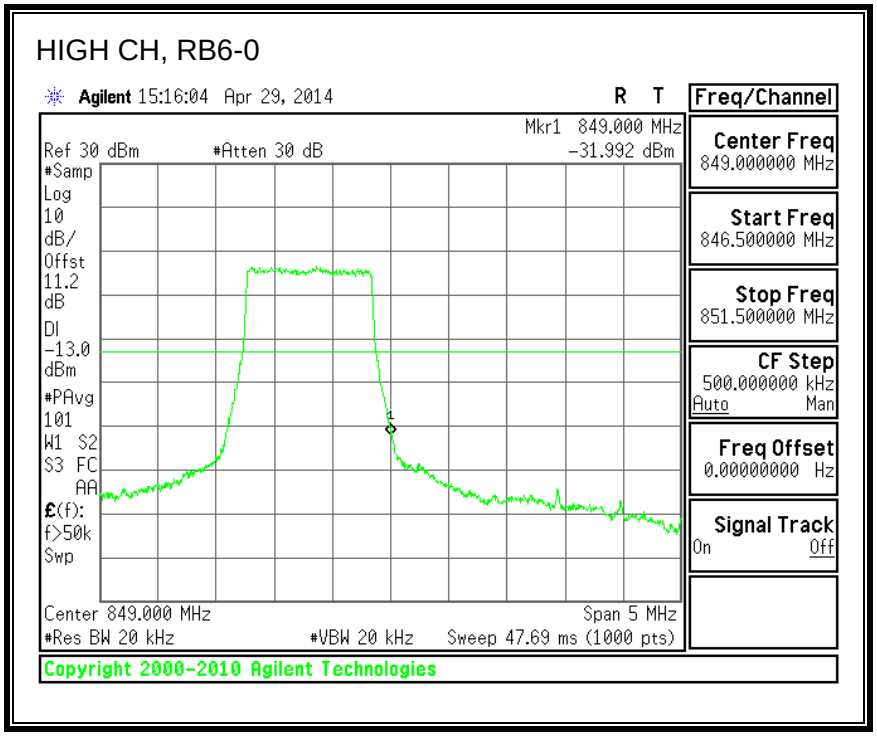

HIGH CH, RB3-2



LOW CH, RB6-0

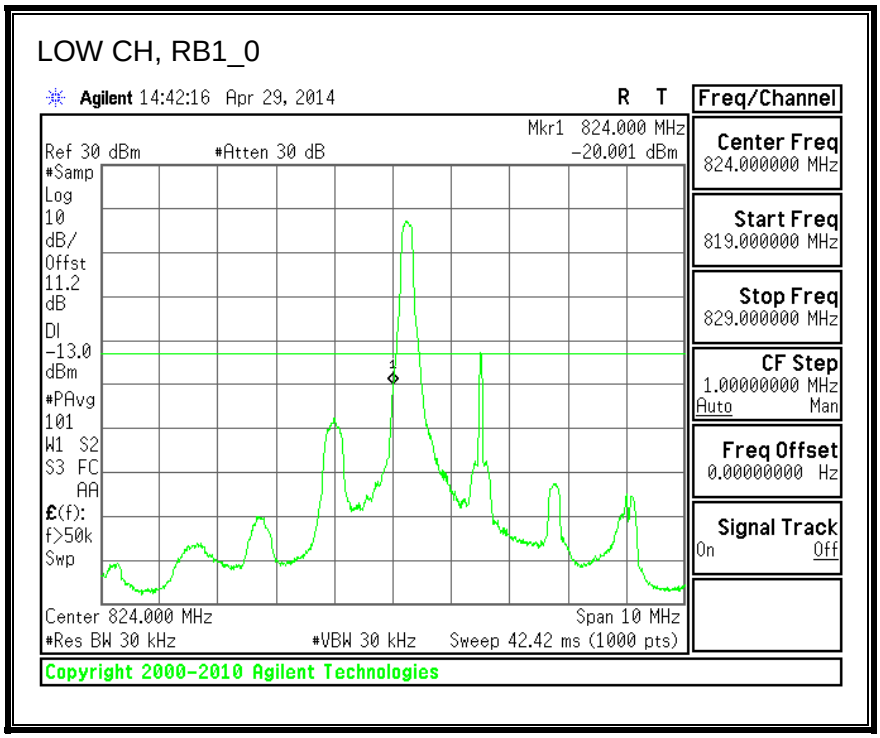



HIGH CH, RB6-0

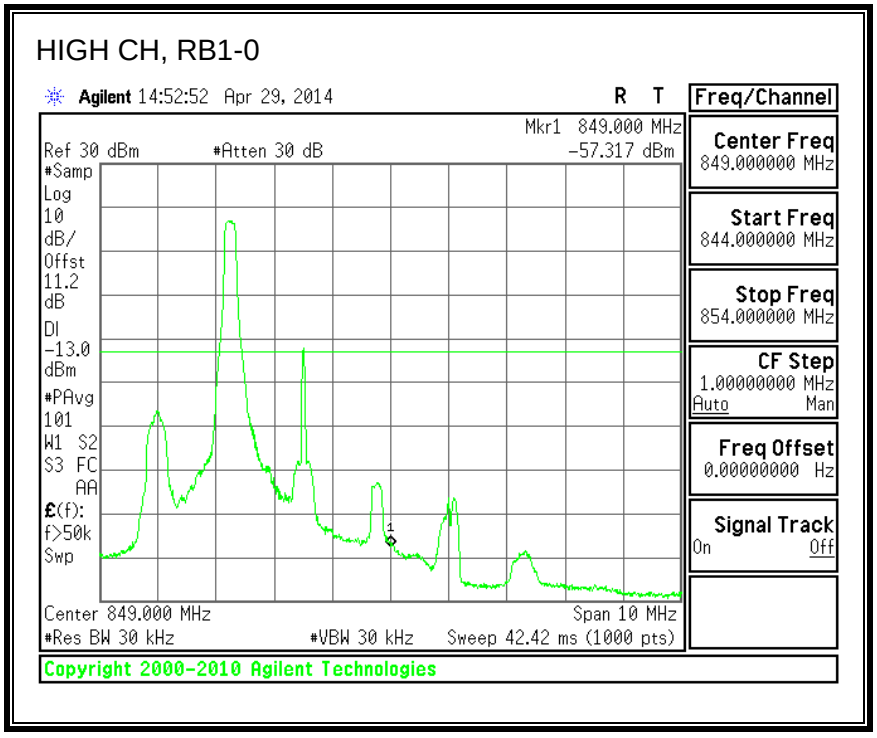


**QPSK, (3.0 MHz BAND WIDTH)**

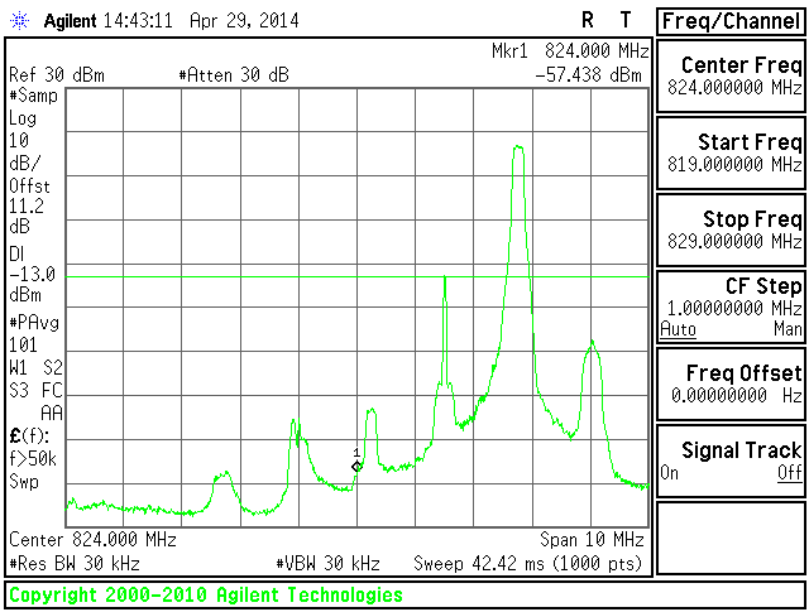
LOW CH, RB1_0



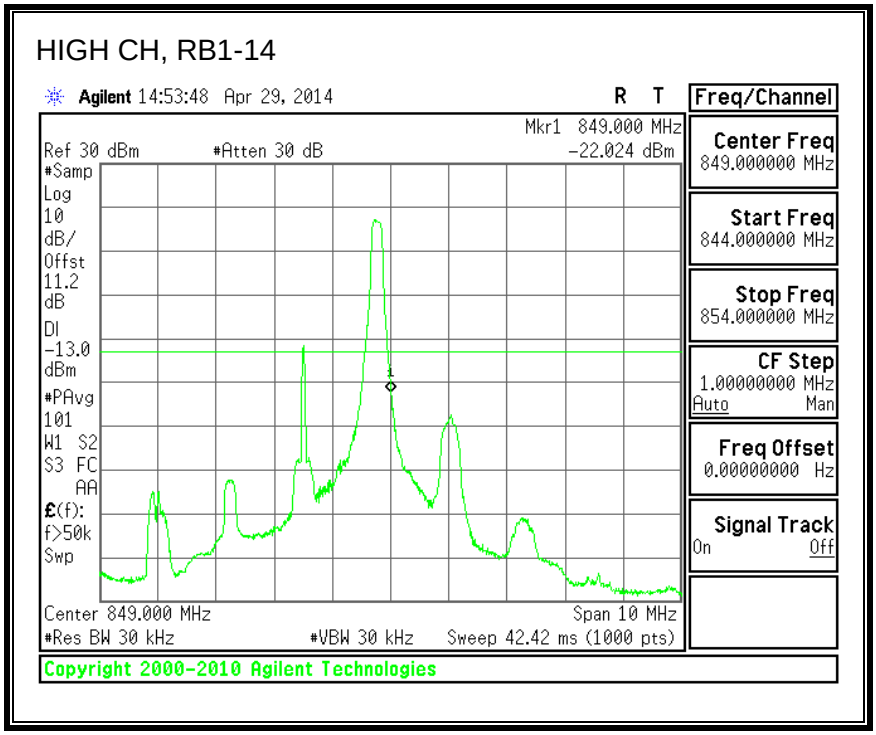

HIGH CH, RB1-0



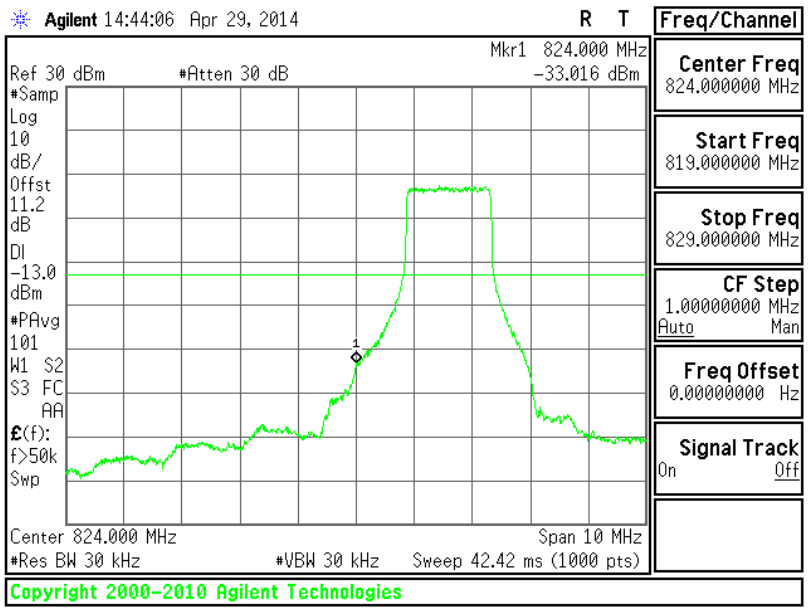
LOW CH, RB1-14



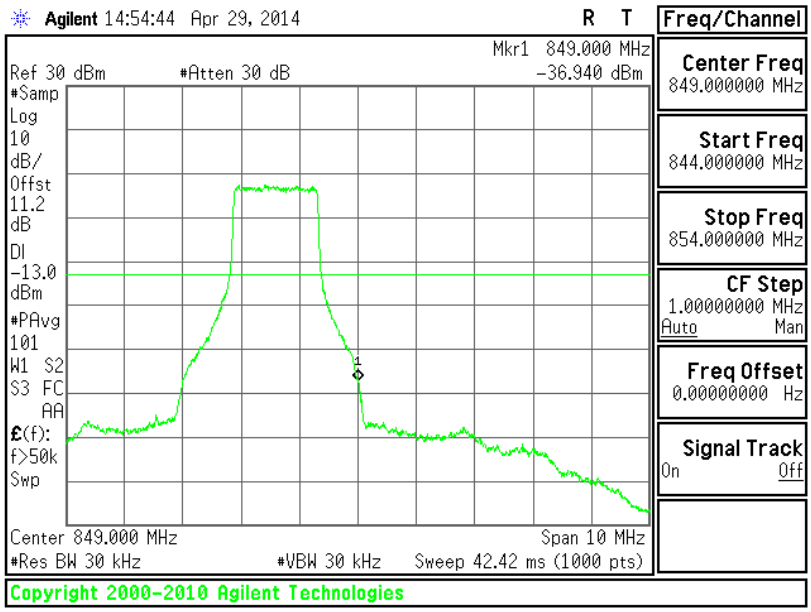

HIGH CH, RB1-14



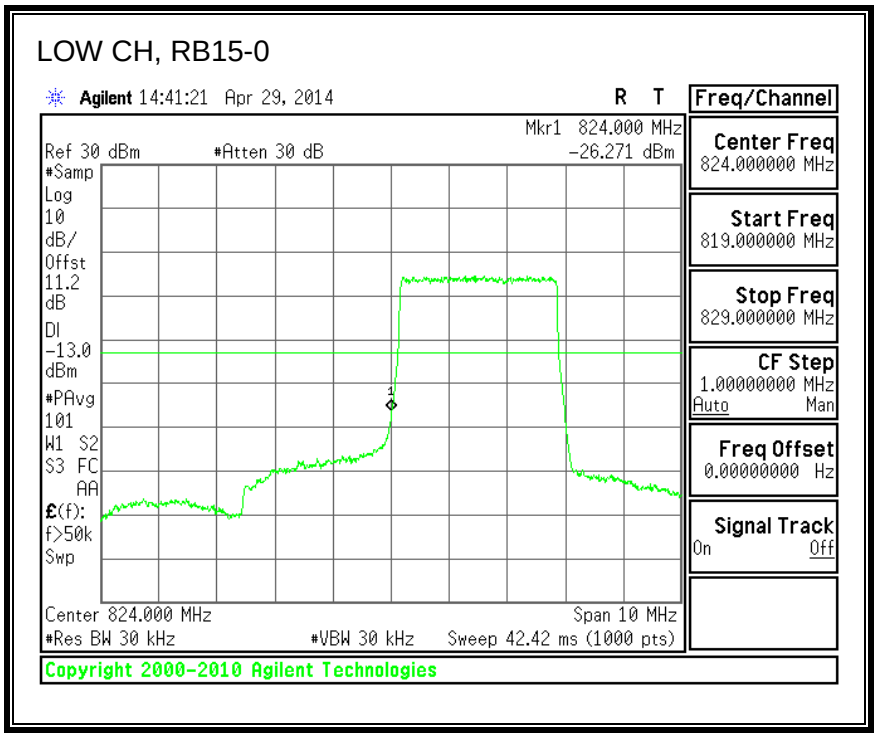
LOW CH, RB8-4



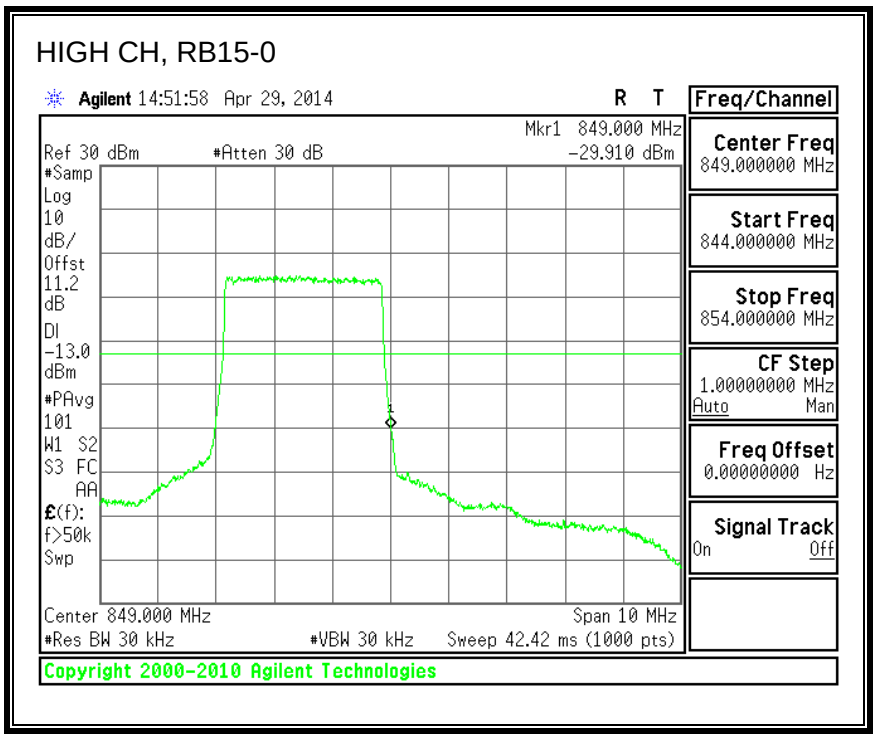

HIGH CH, RB8-4



LOW CH, RB15-0

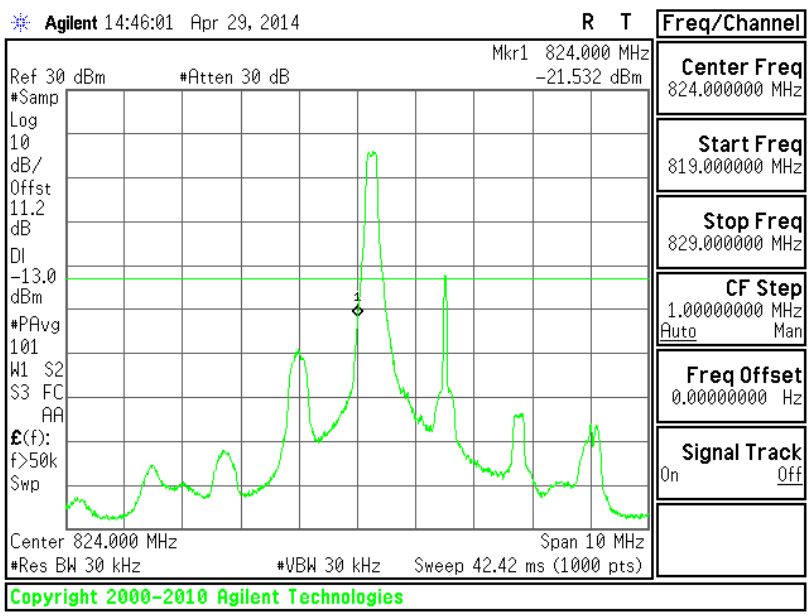



HIGH CH, RB15-0

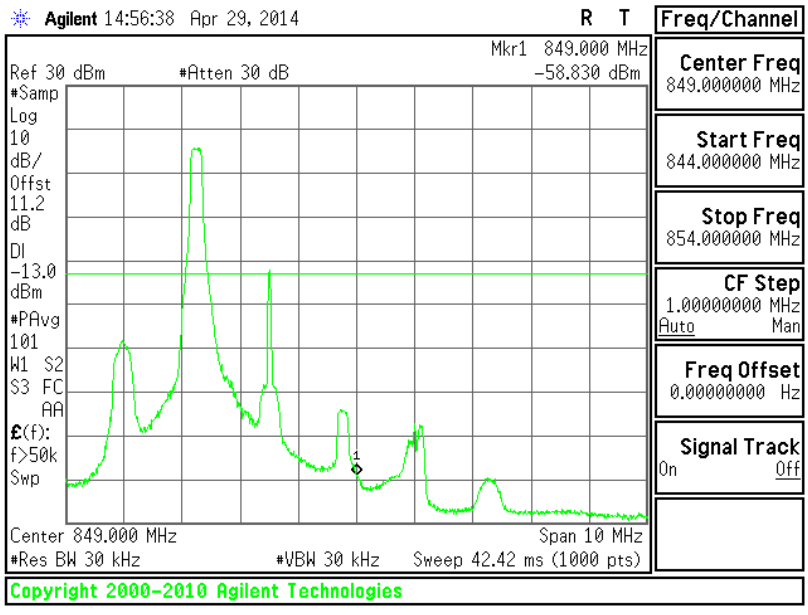


**16QAM, (3.0 MHz BAND WIDTH)**

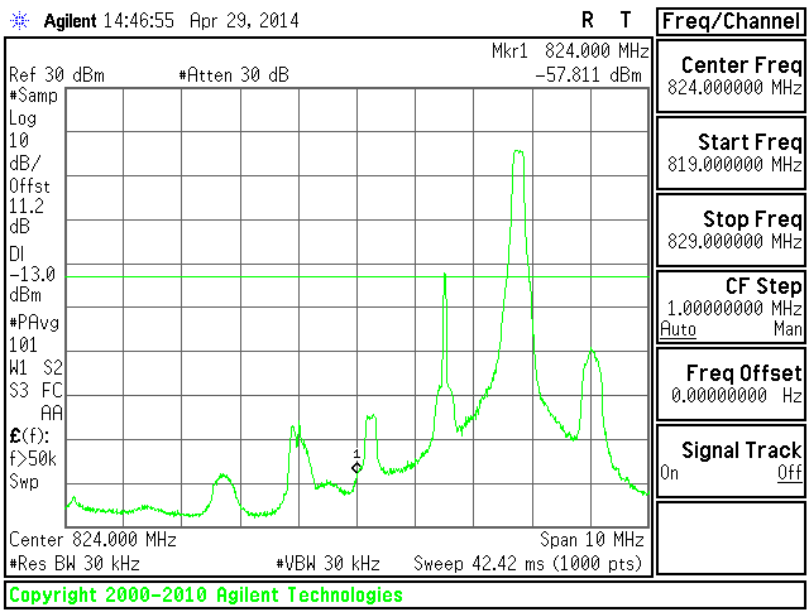
LOW CH, RB1_0



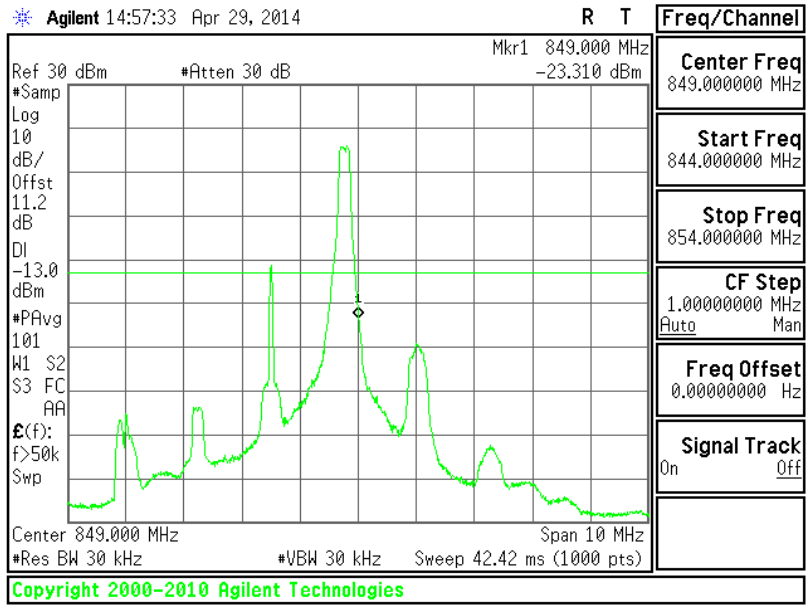

HIGH CH, RB1-0



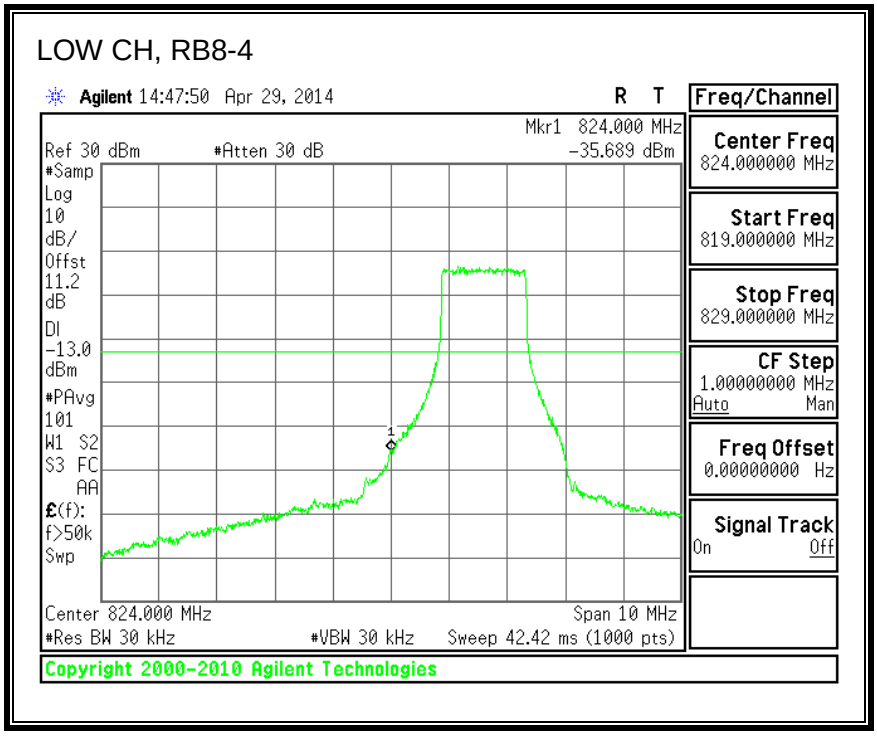
LOW CH, RB1-14



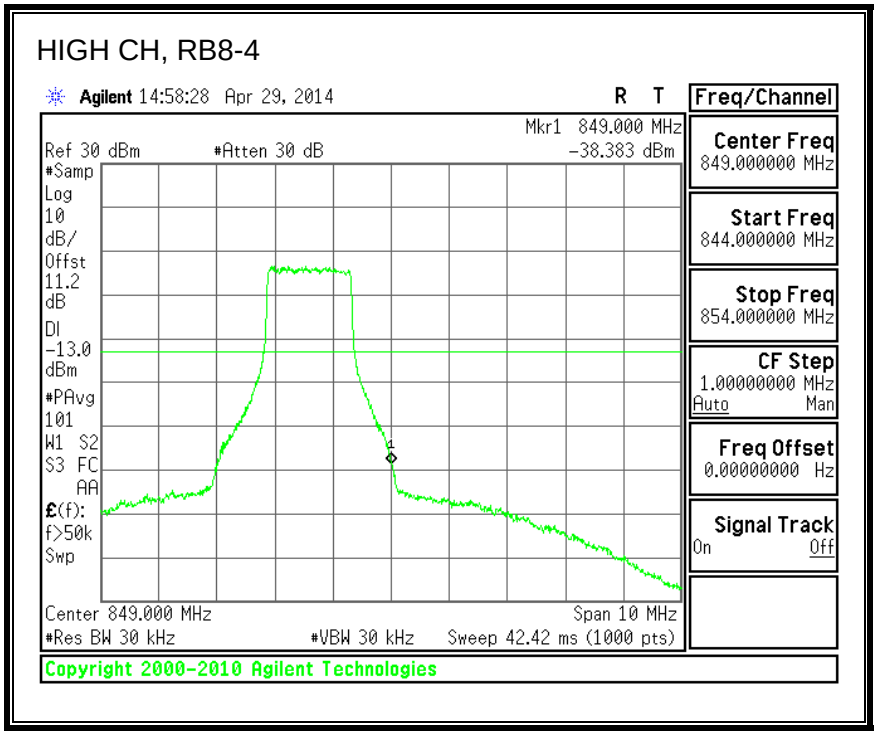

HIGH CH, RB1-14



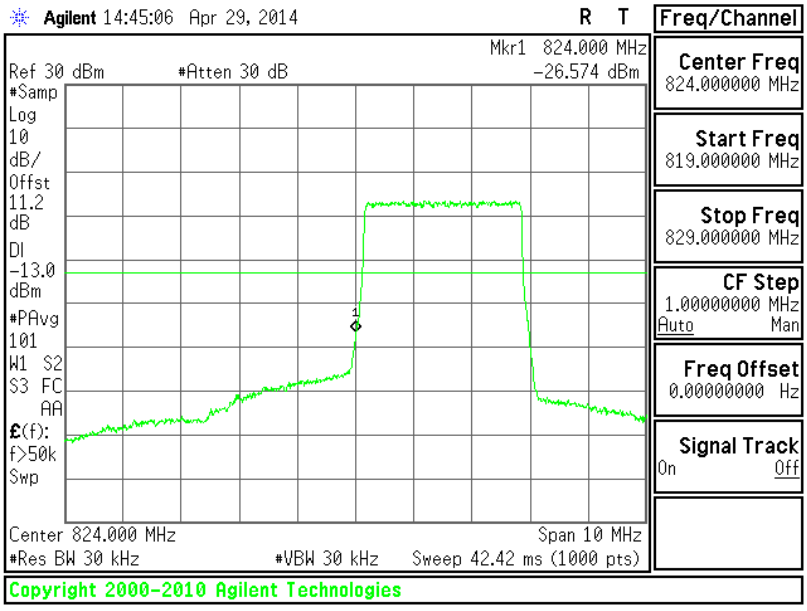
LOW CH, RB8-4



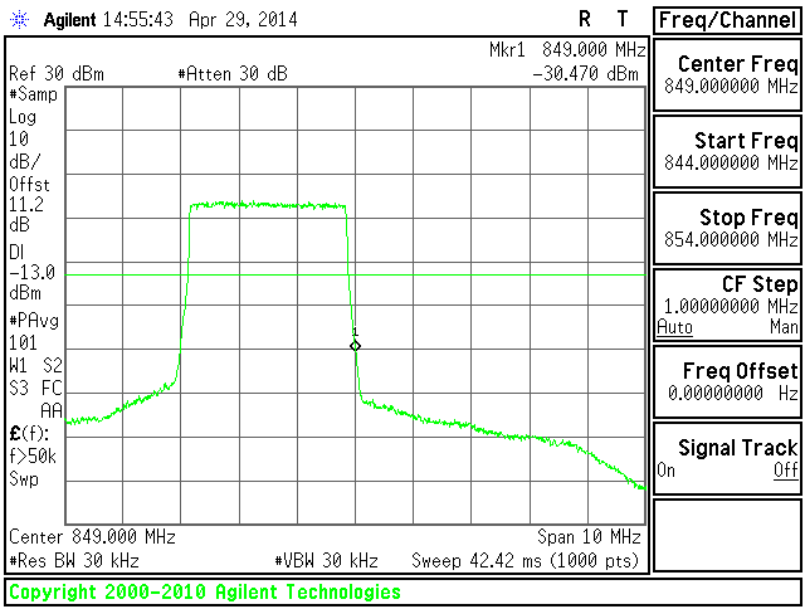

HIGH CH, RB8-4



LOW CH, RB15-0

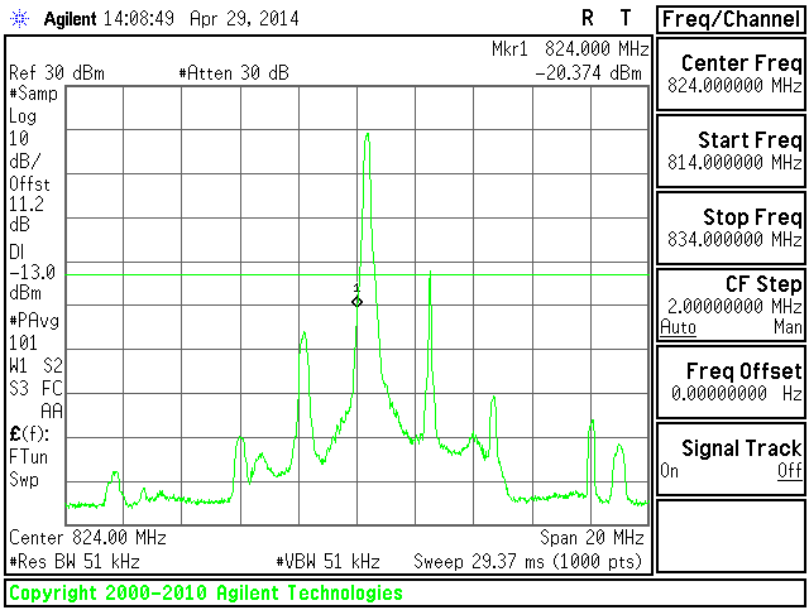



HIGH CH, RB15-0

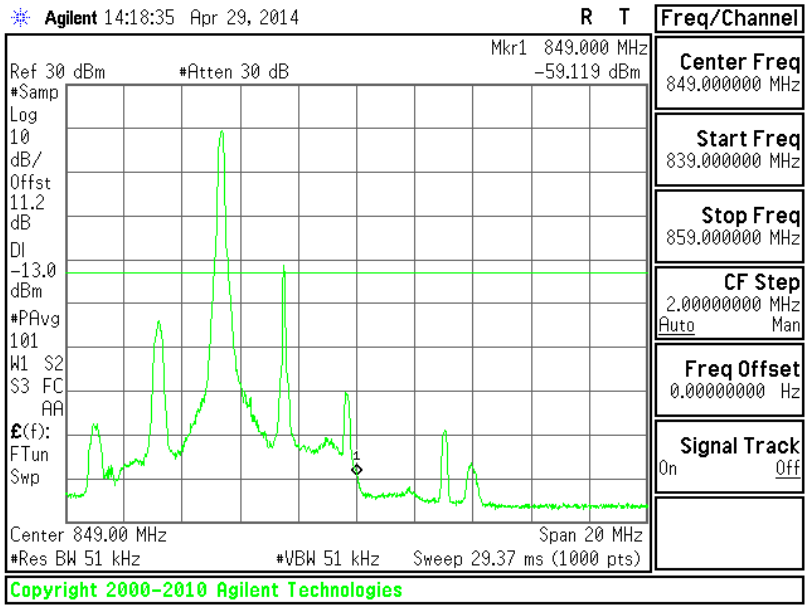


**QPSK, (5.0 MHz BAND WIDTH)**

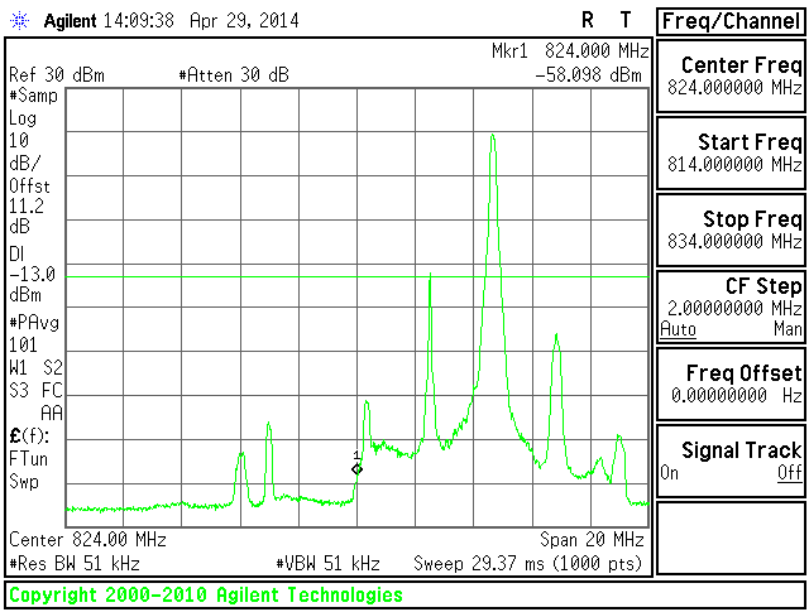
LOW CH, RB1_0



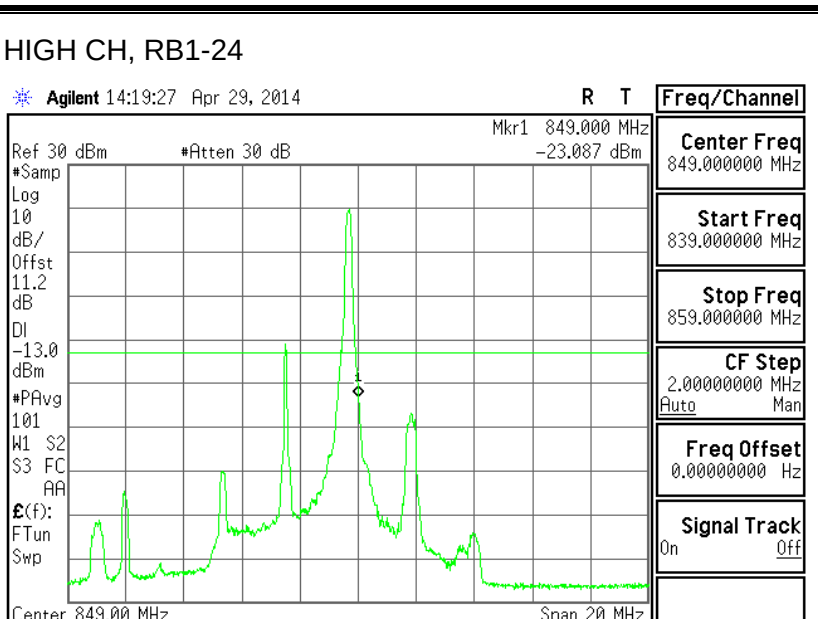

HIGH CH, RB1-0



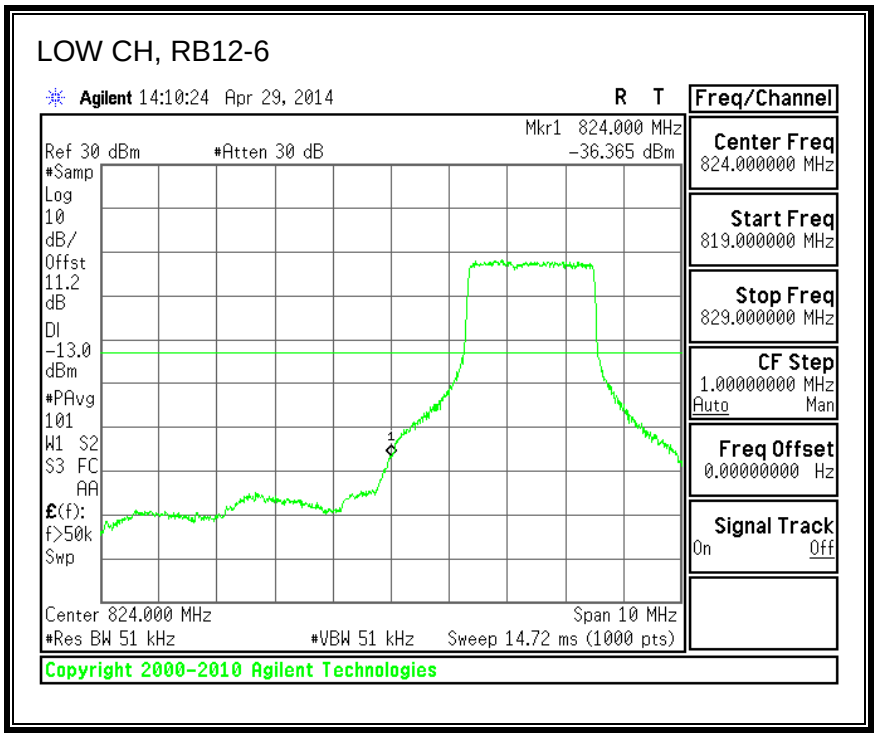
LOW CH, RB1-24



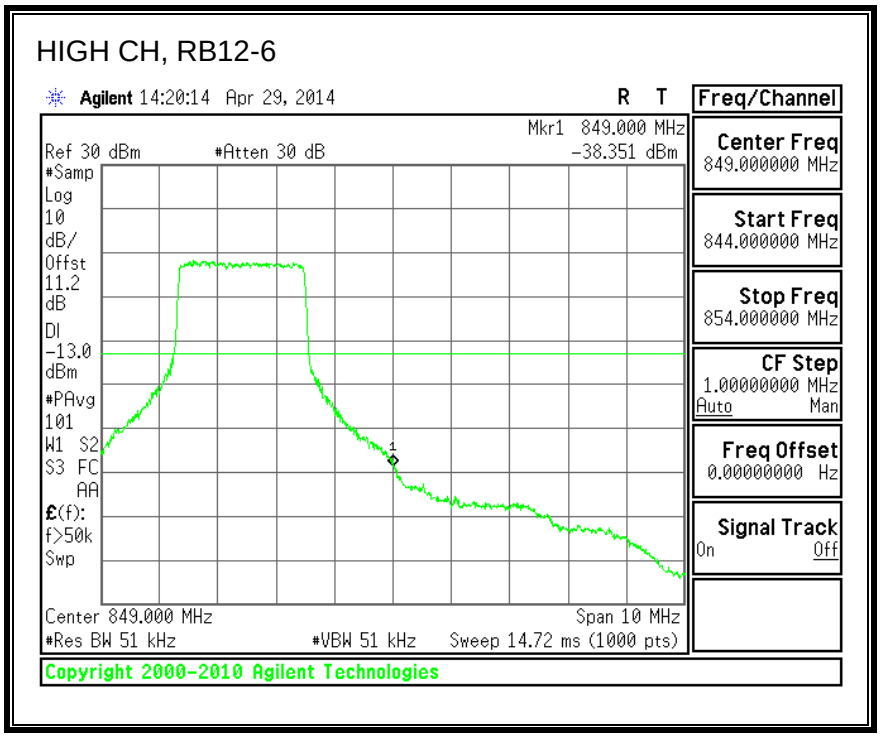

HIGH CH, RB1-24



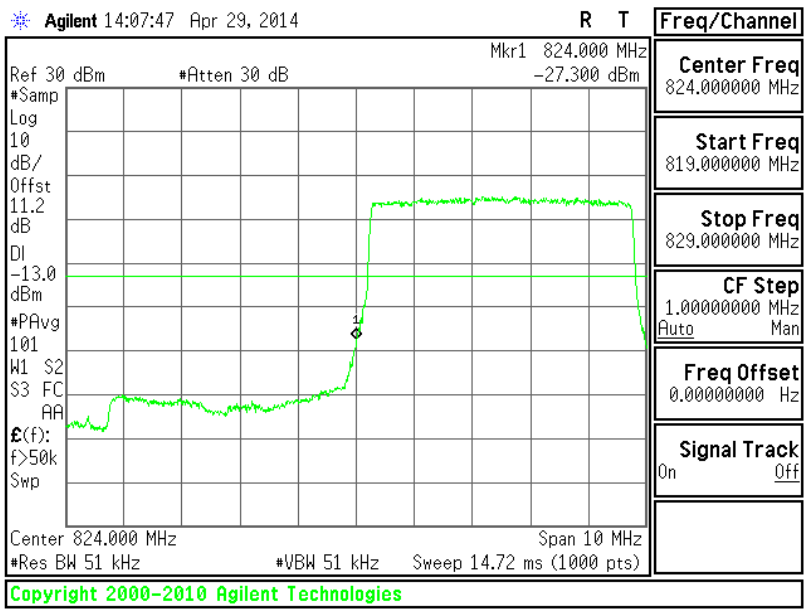
LOW CH, RB12-6



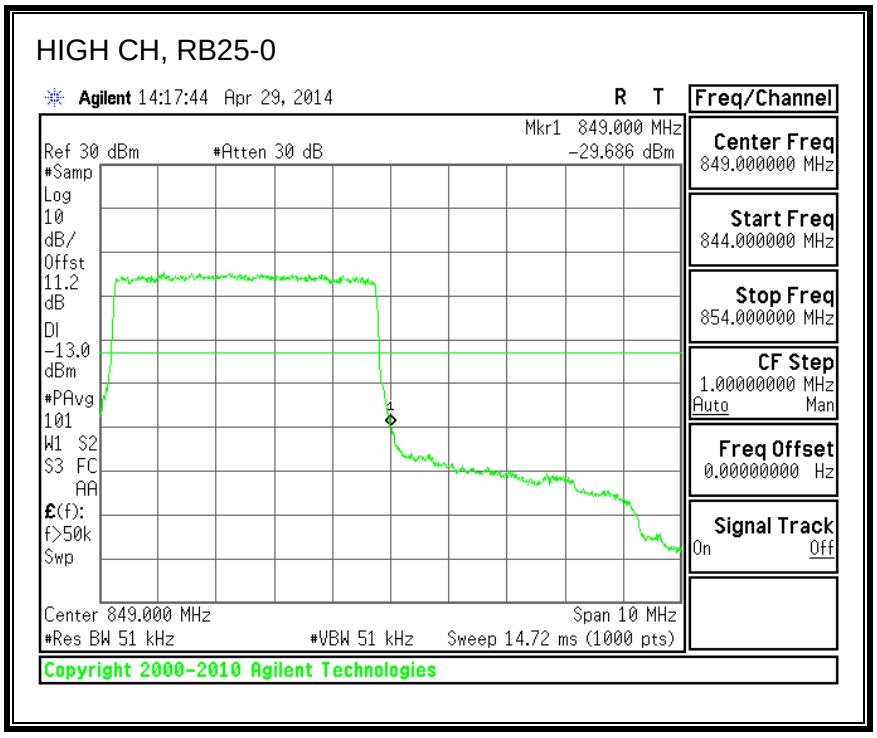

HIGH CH, RB12-6



LOW CH, RB25-0

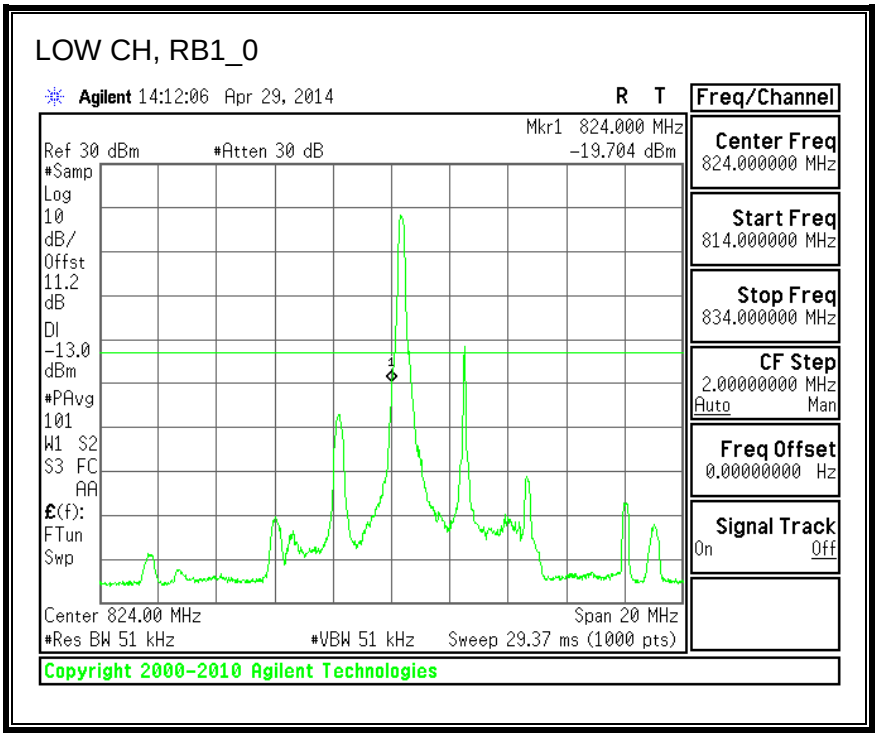



HIGH CH, RB25-0

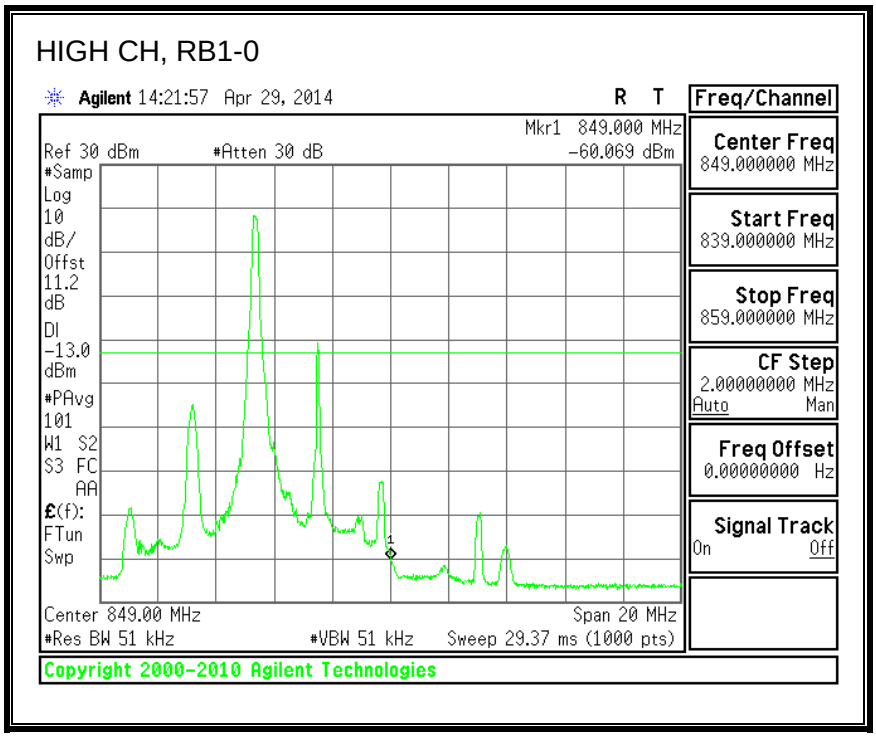


**16QAM, (5.0 MHz BAND WIDTH)**

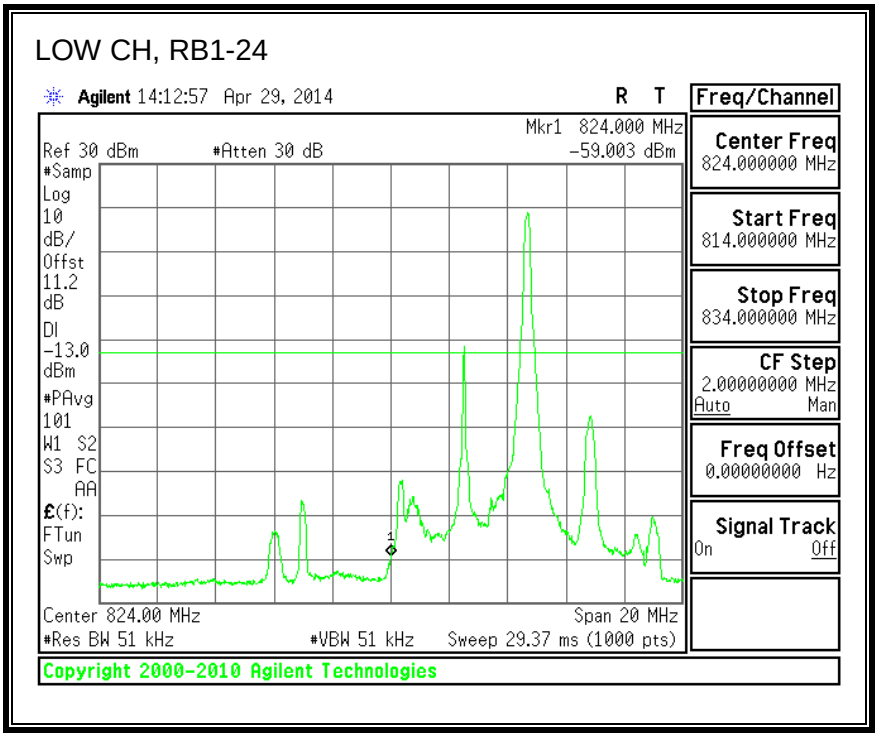
LOW CH, RB1_0



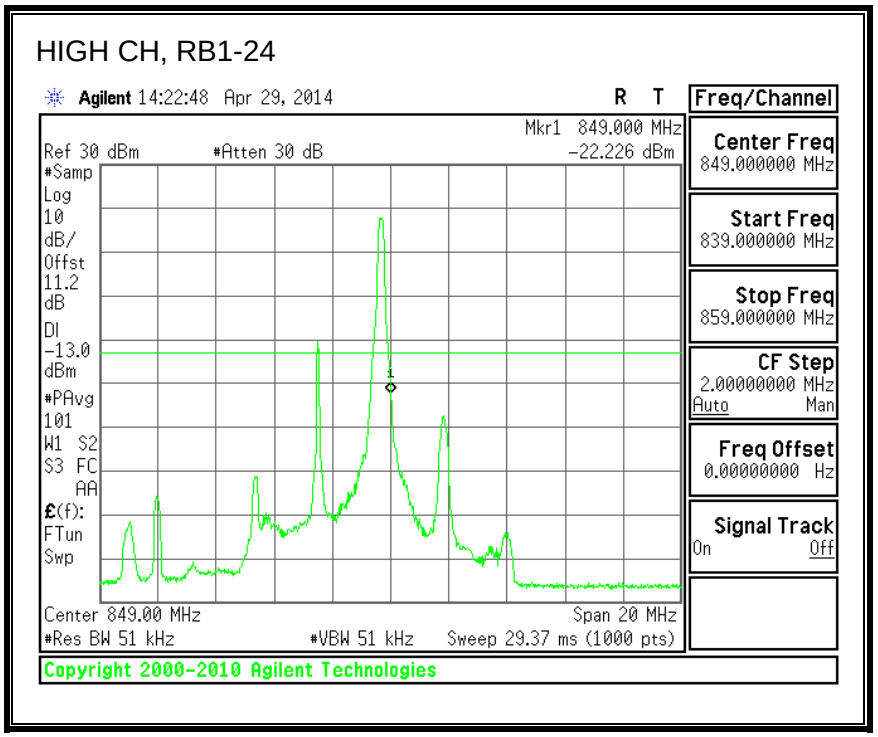

HIGH CH, RB1-0



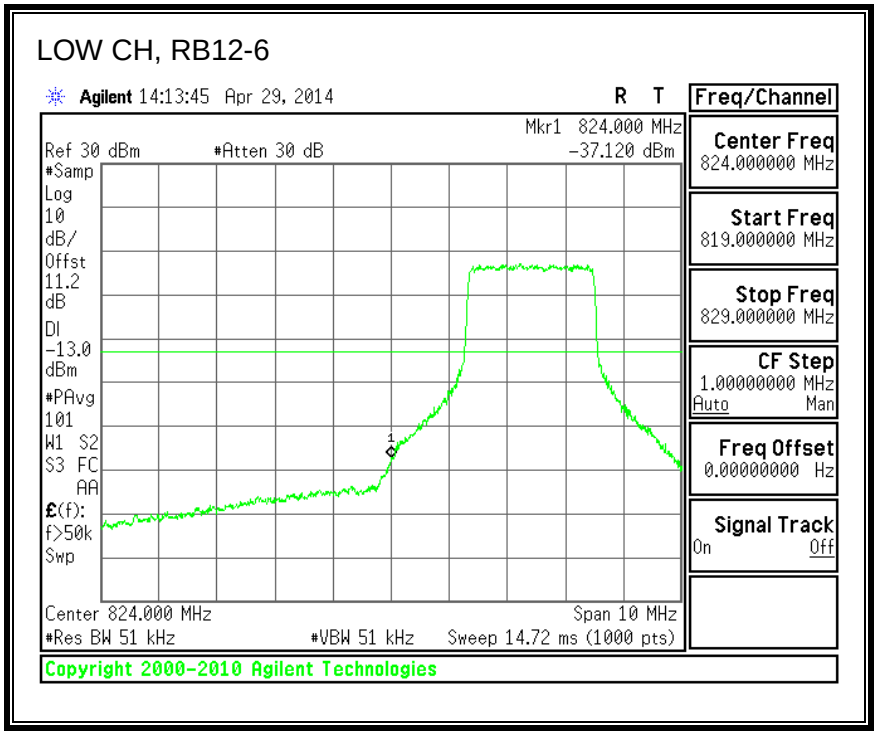
LOW CH, RB1-24



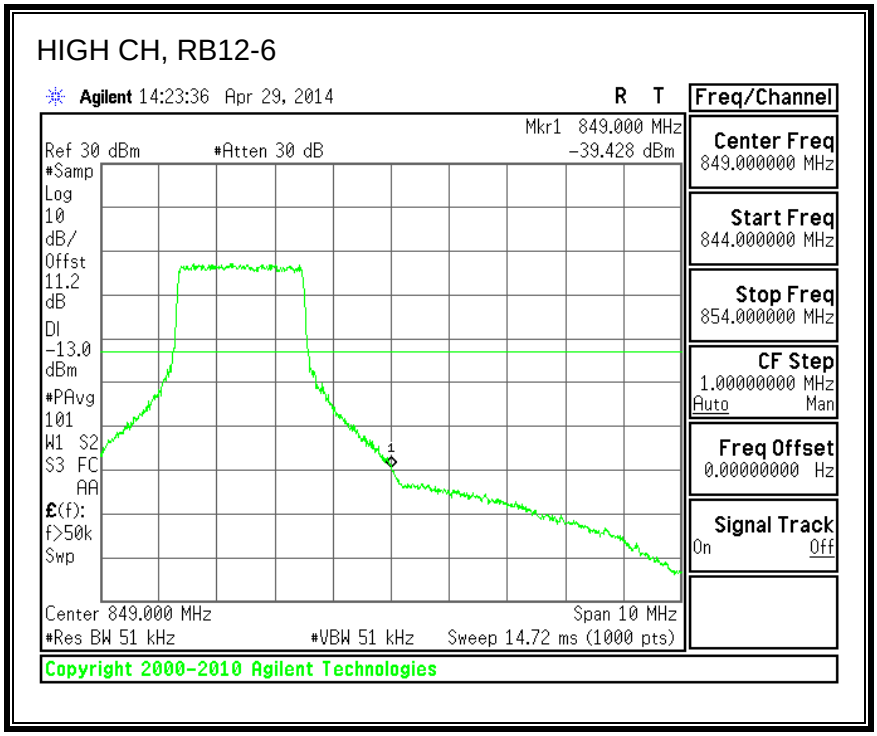

HIGH CH, RB1-24



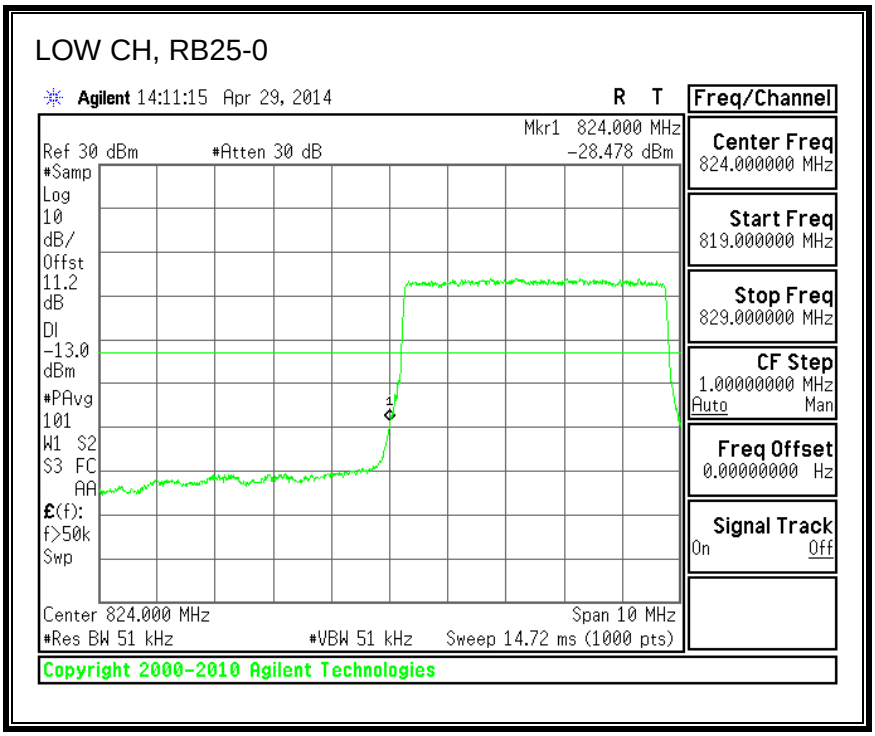
LOW CH, RB12-6



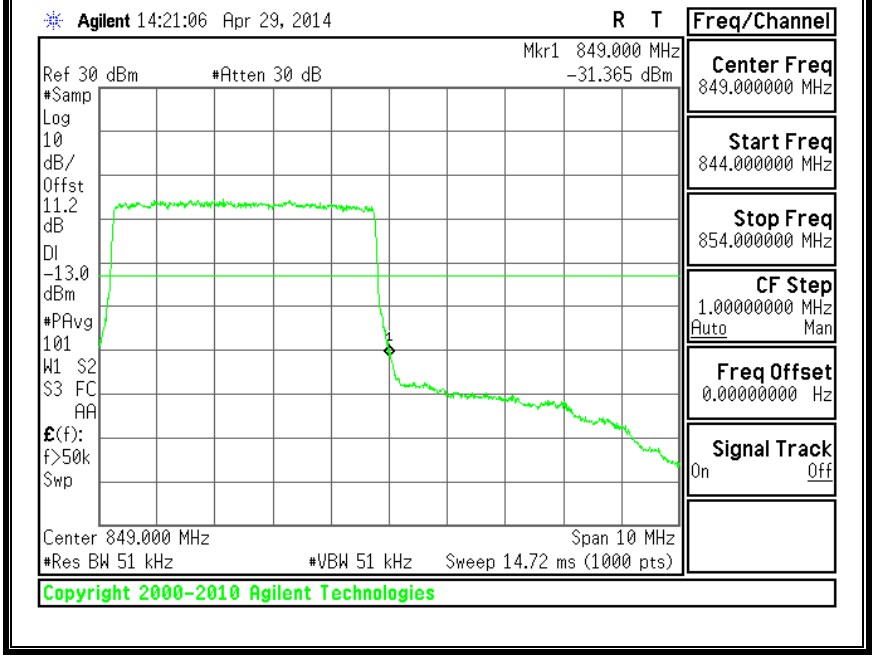

HIGH CH, RB12-6



LOW CH, RB25-0

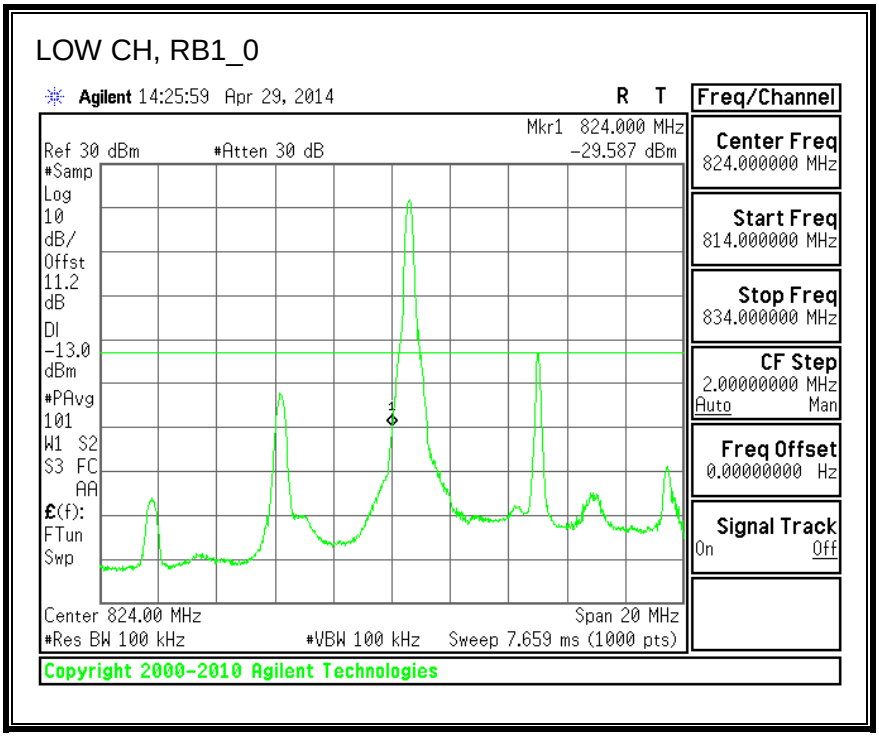



HIGH CH, RB25-0

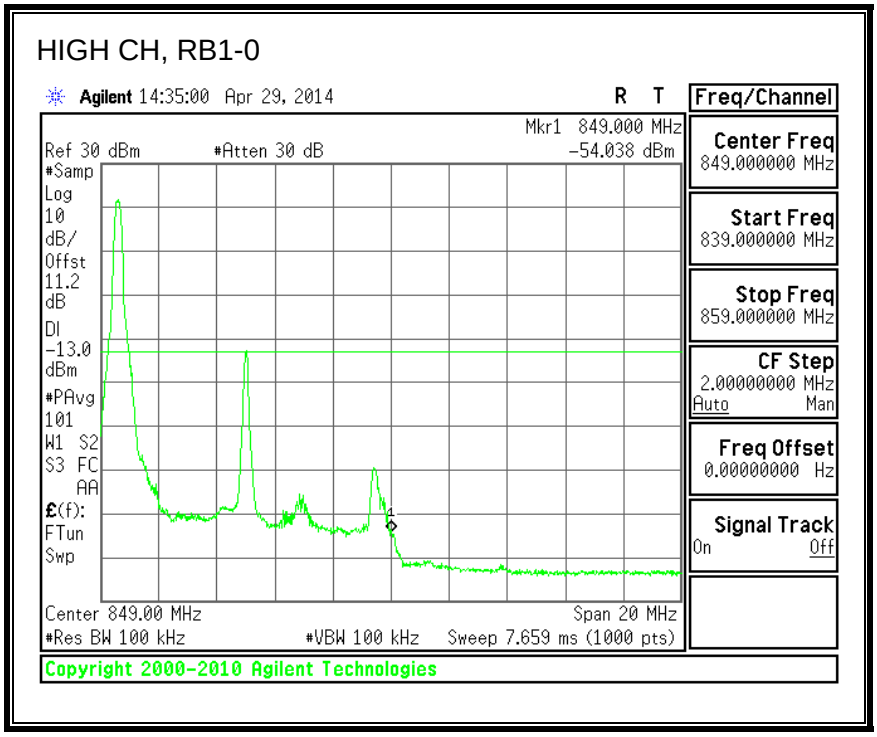


**QPSK, (10.0 MHz BAND WIDTH)**

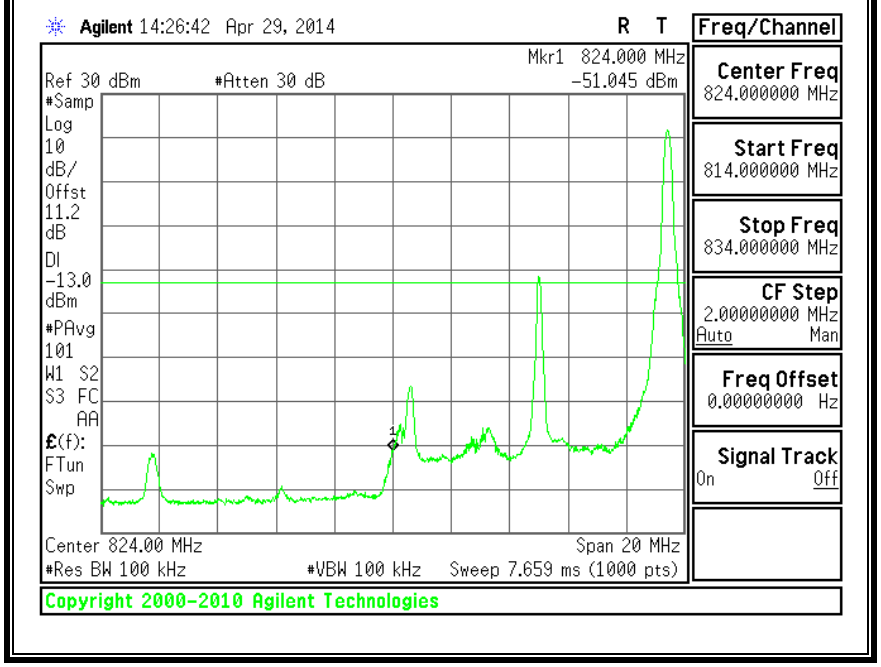
LOW CH, RB1_0



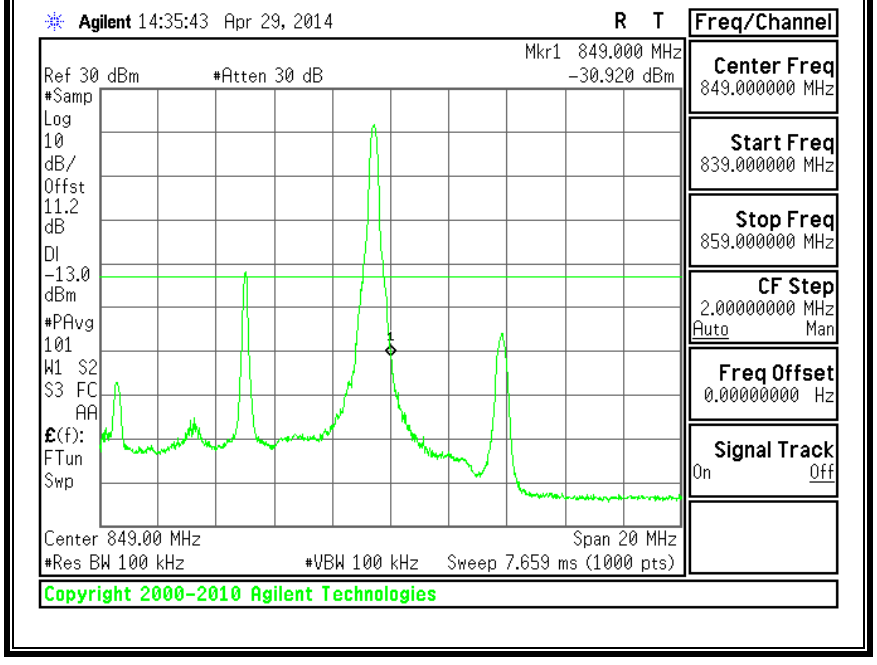

HIGH CH, RB1-0



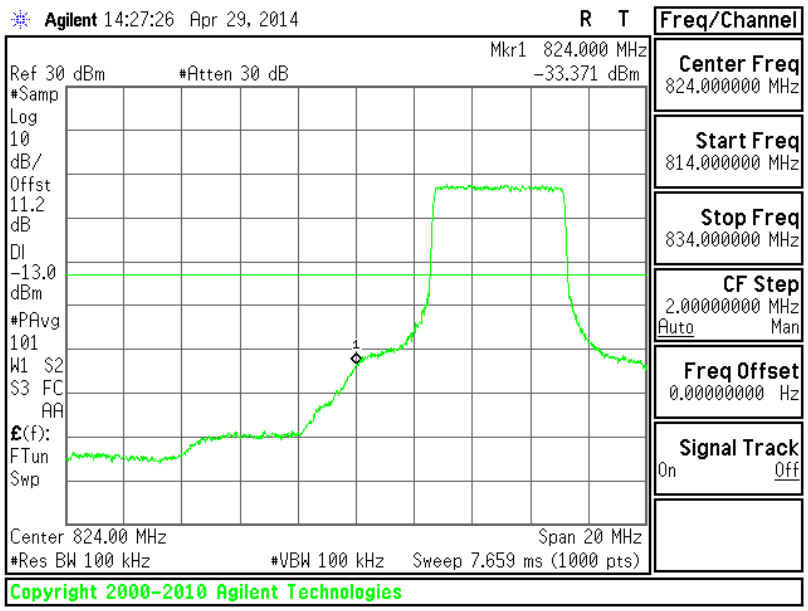
LOW CH, RB1-49



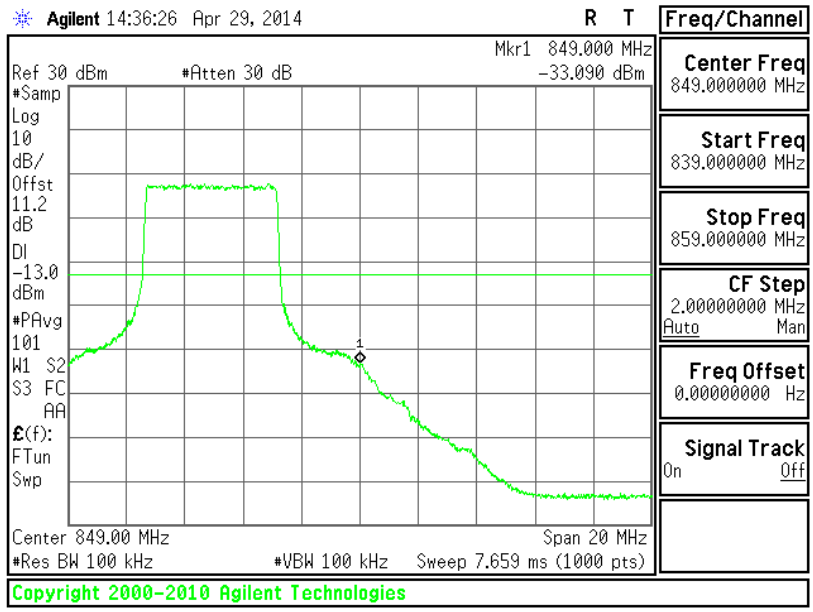

HIGH CH, RB1-49



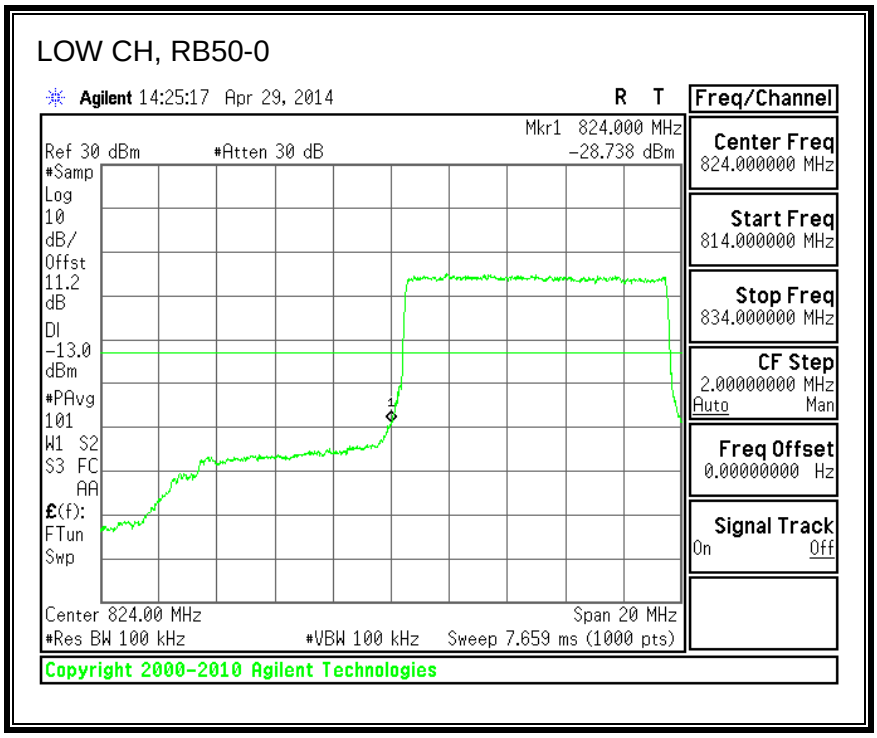
LOW CH, RB25-12



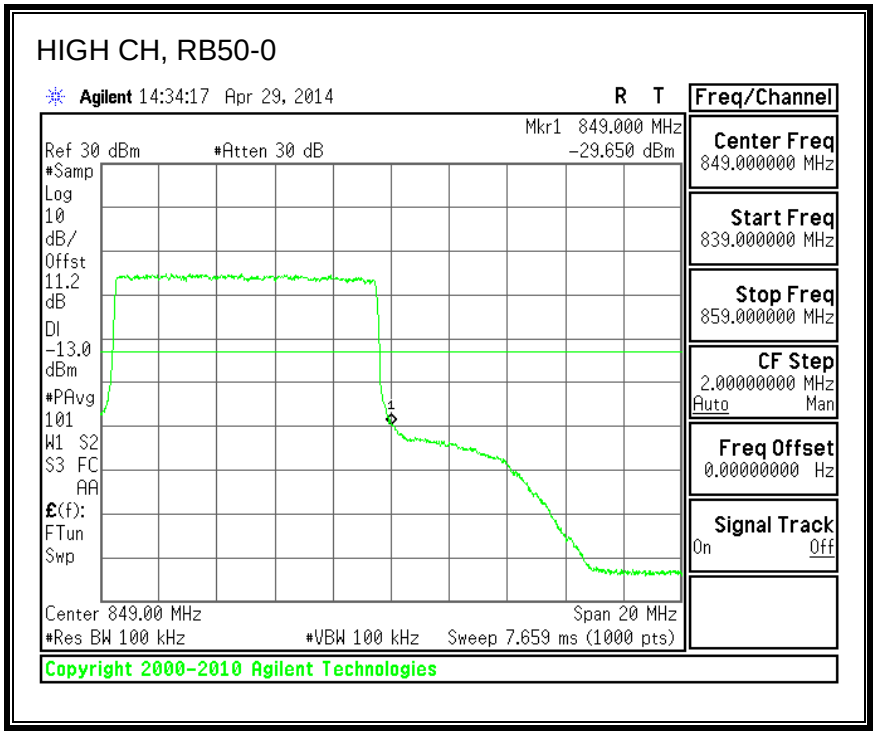

HIGH CH, RB25-12



LOW CH, RB50-0

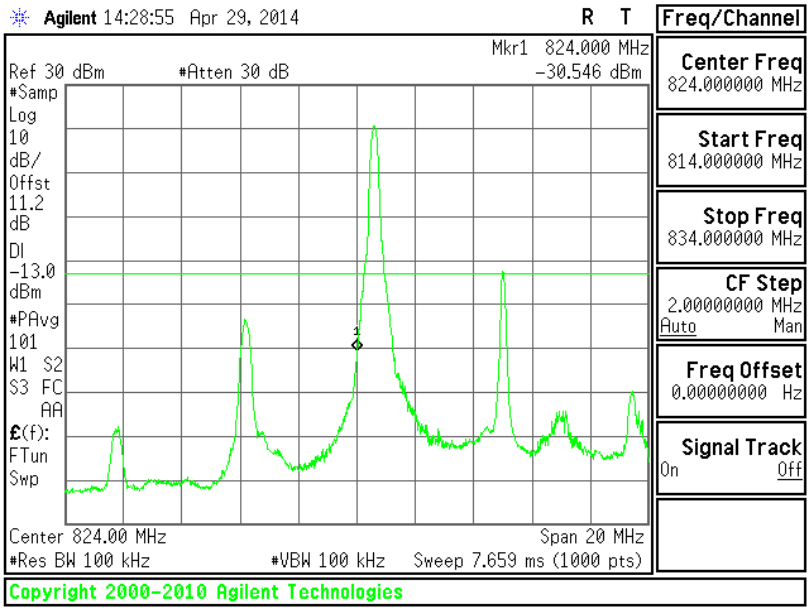



HIGH CH, RB50-0

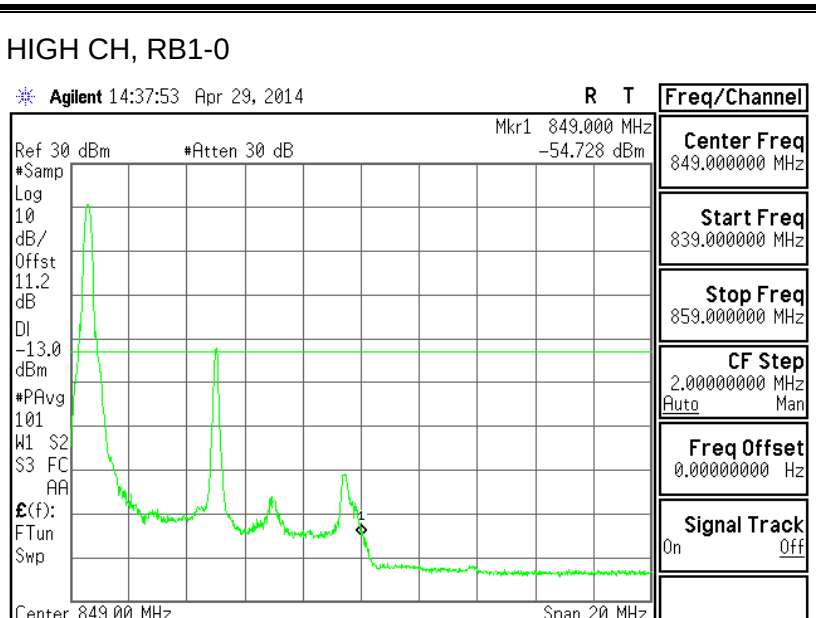


**16QAM, (10.0 MHz BAND WIDTH)**

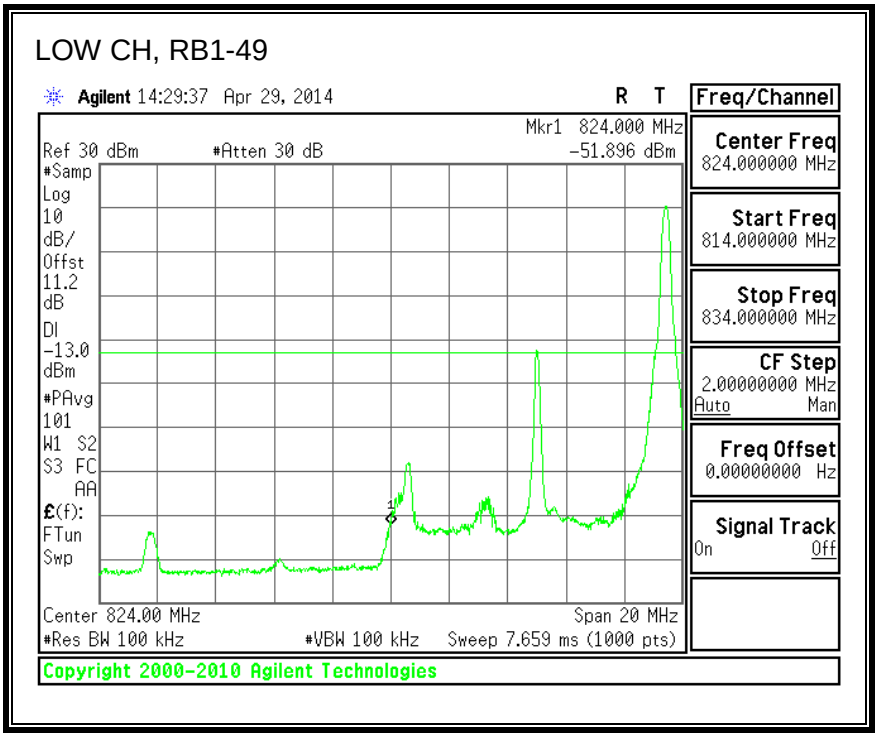
LOW CH, RB1_0



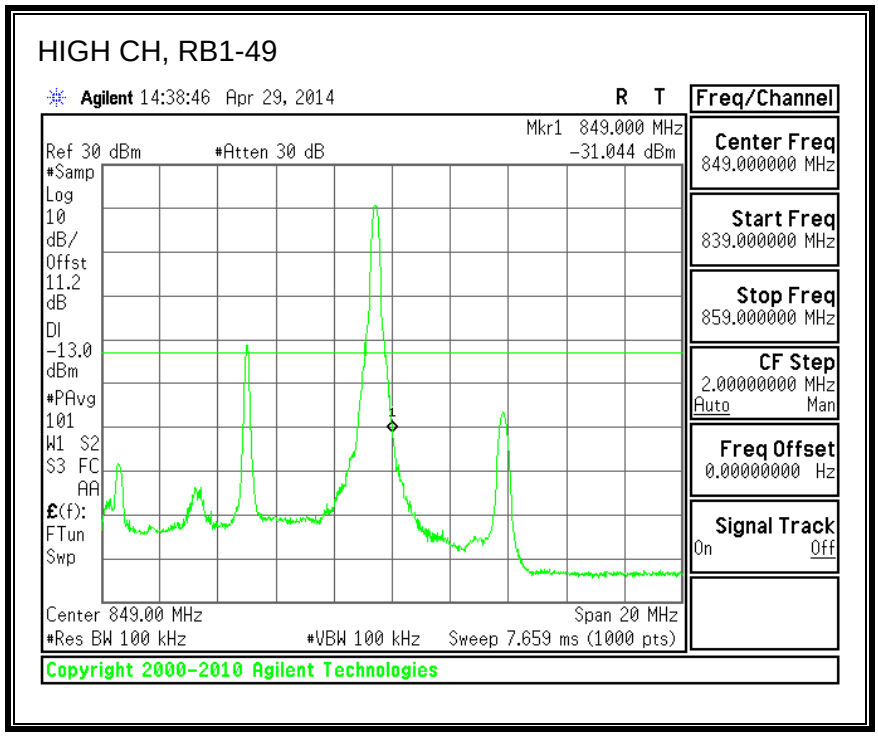

HIGH CH, RB1-0



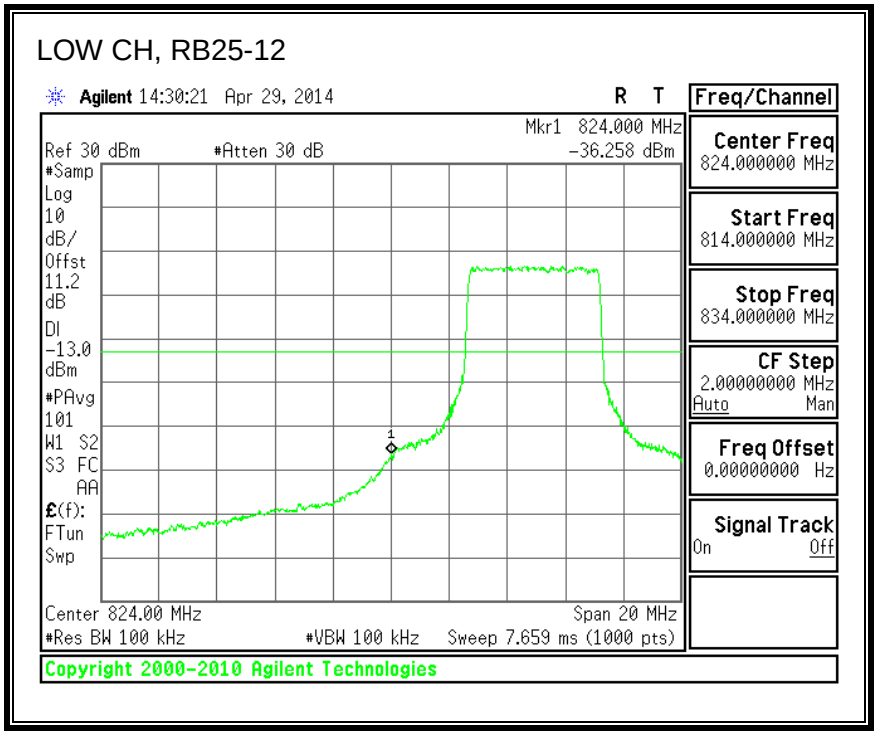
LOW CH, RB1-49



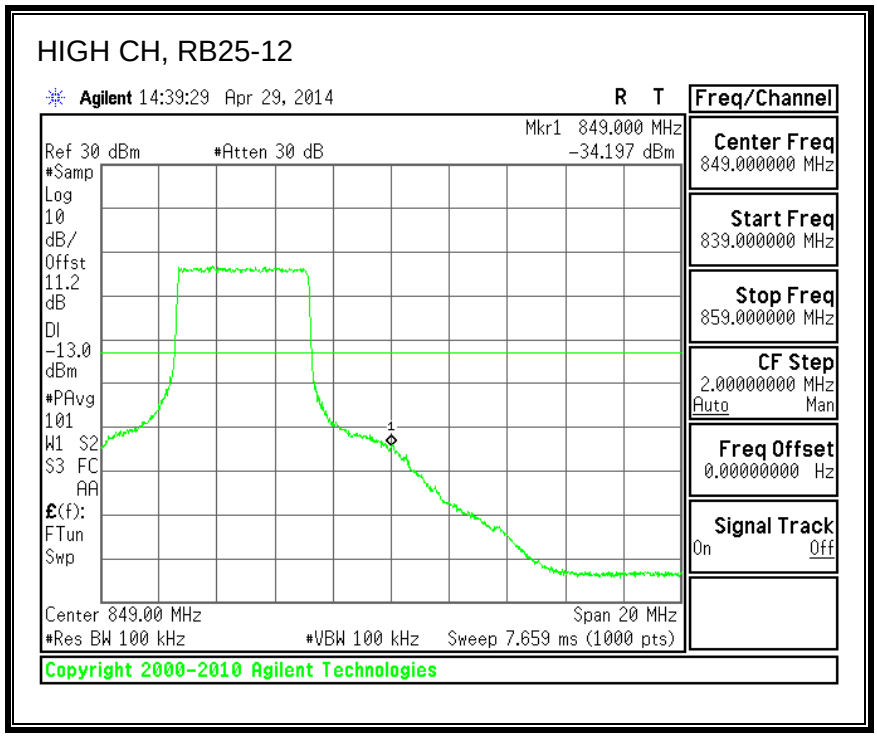

HIGH CH, RB1-49



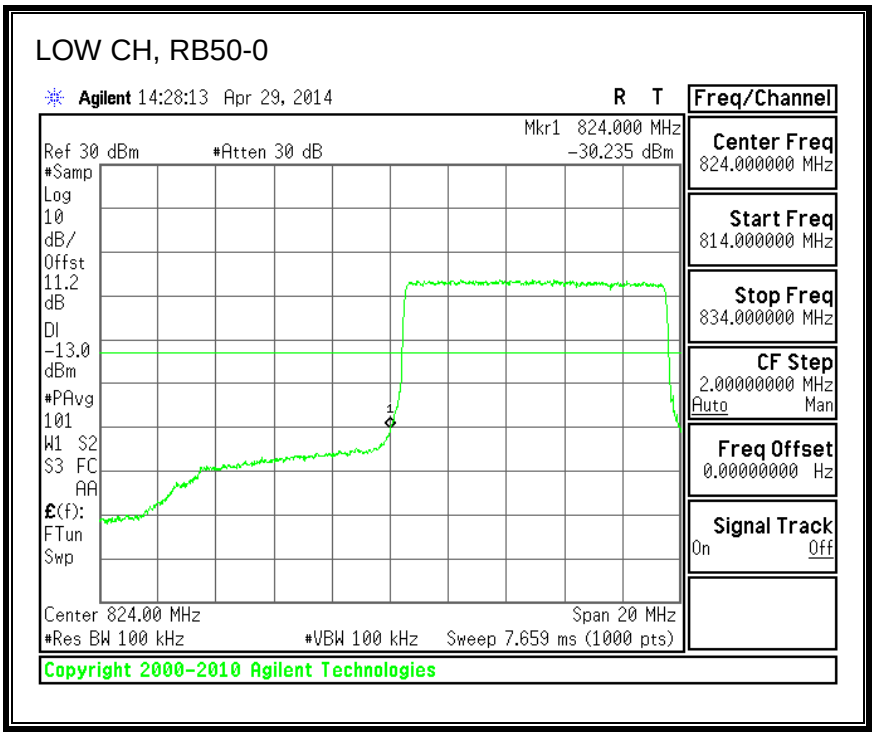
LOW CH, RB25-12



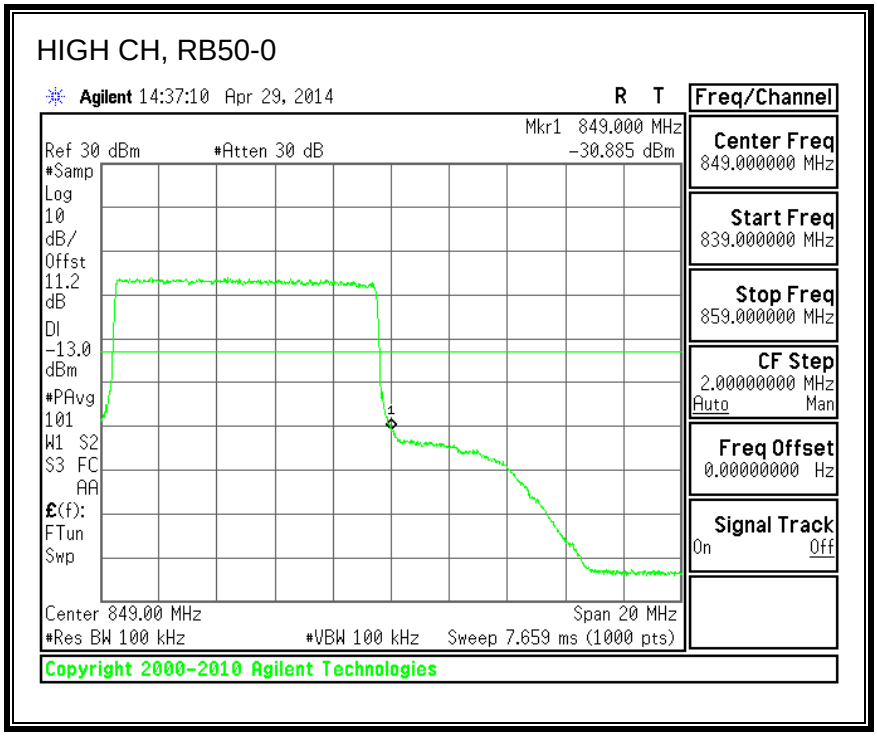

HIGH CH, RB25-12



LOW CH, RB50-0



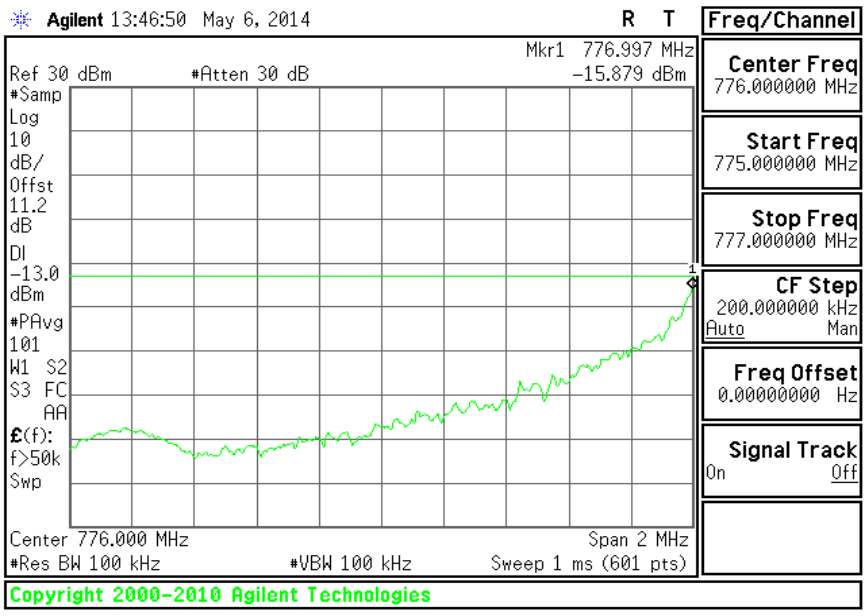

HIGH CH, RB50-0



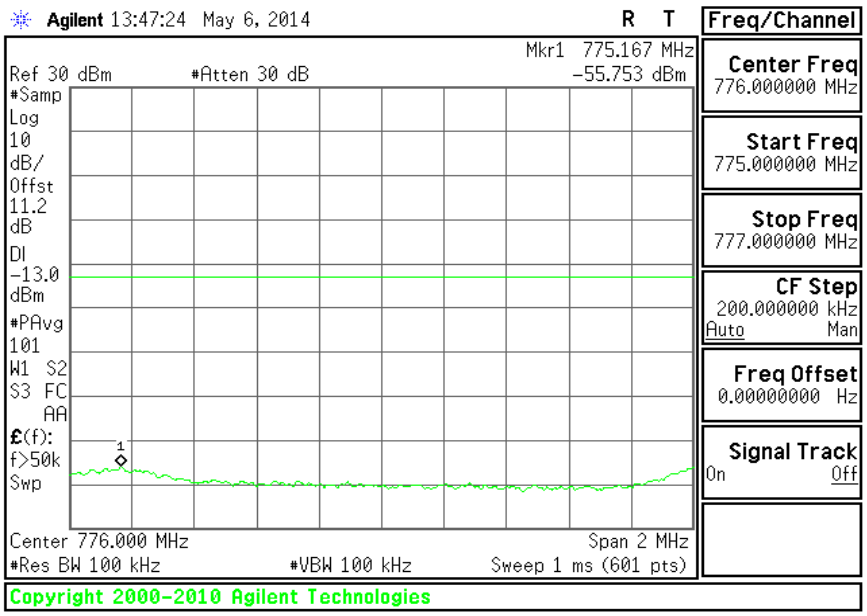
## 8.2.4. LTE BAND 13 BANDEDGE

**QPSK, 779.5 MHz, 775 – 777MHz, (5.0MHz Bandwidth)**

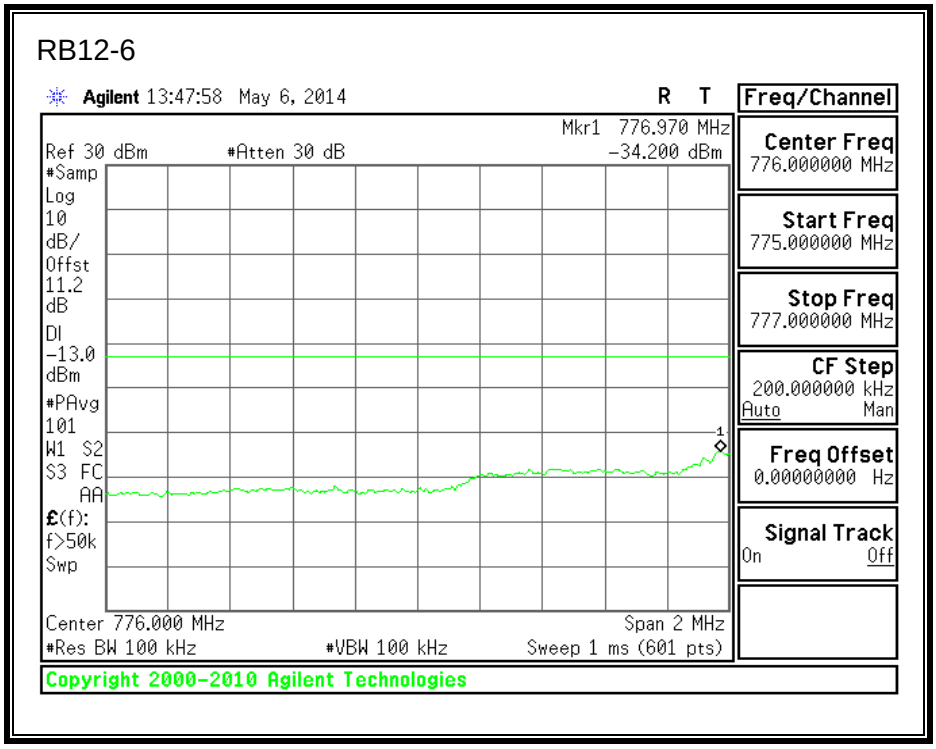
RB1-0



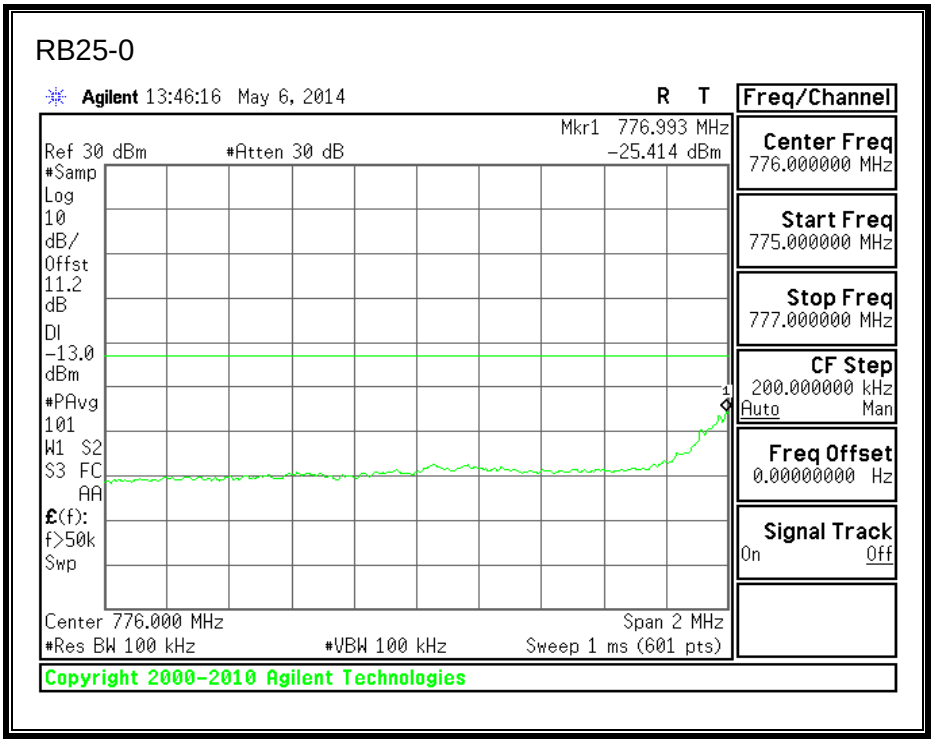

RB1-24



RB12-6

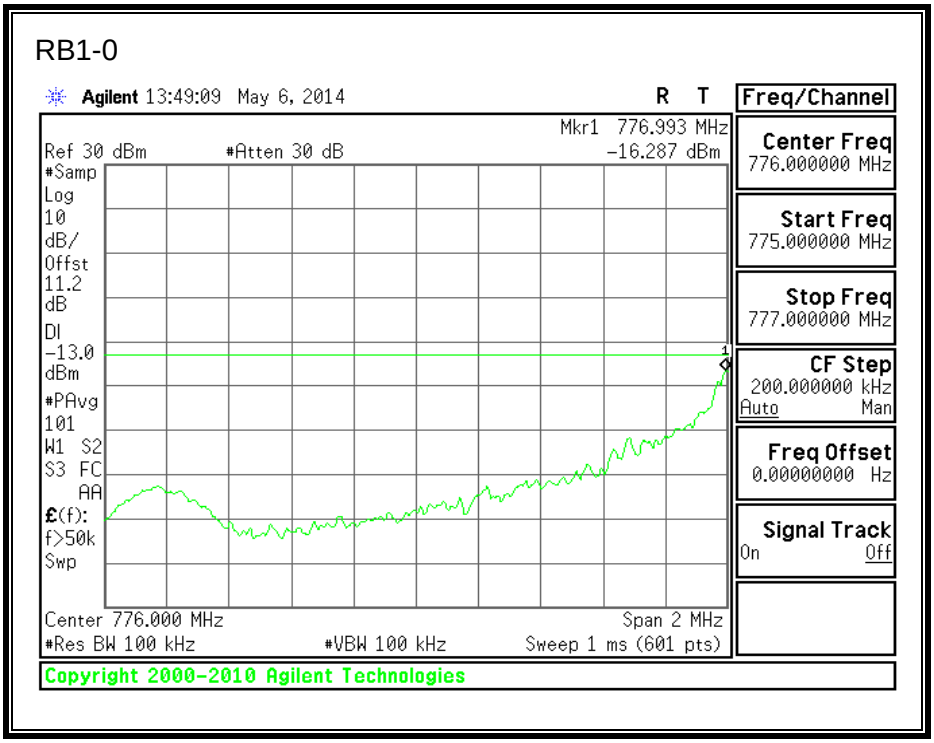



RB25-0

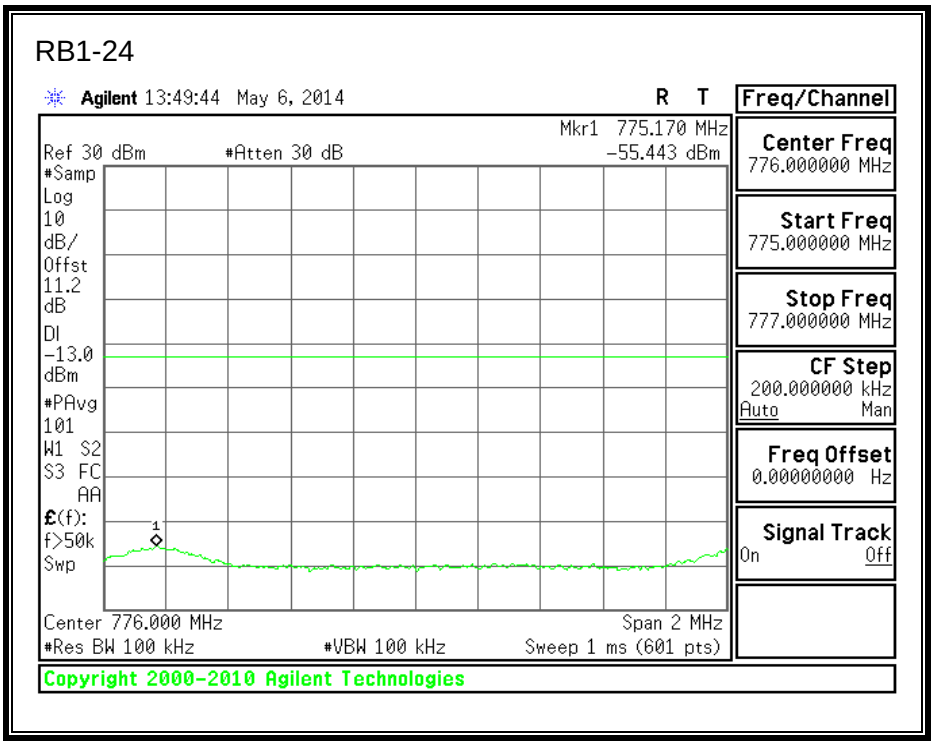


**16QAM, 779.5MHz, 775 - 777MHz, (5MHz Bandwidth)**

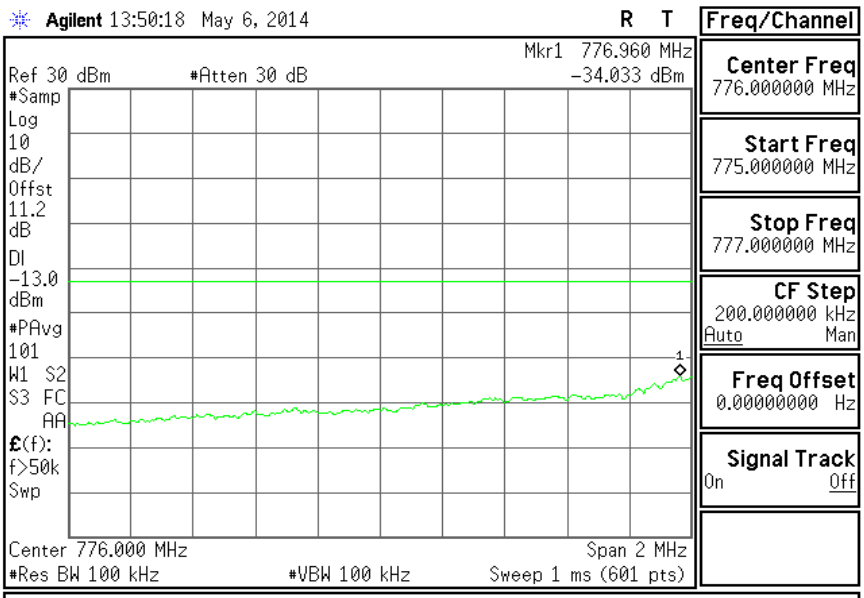
RB1-0



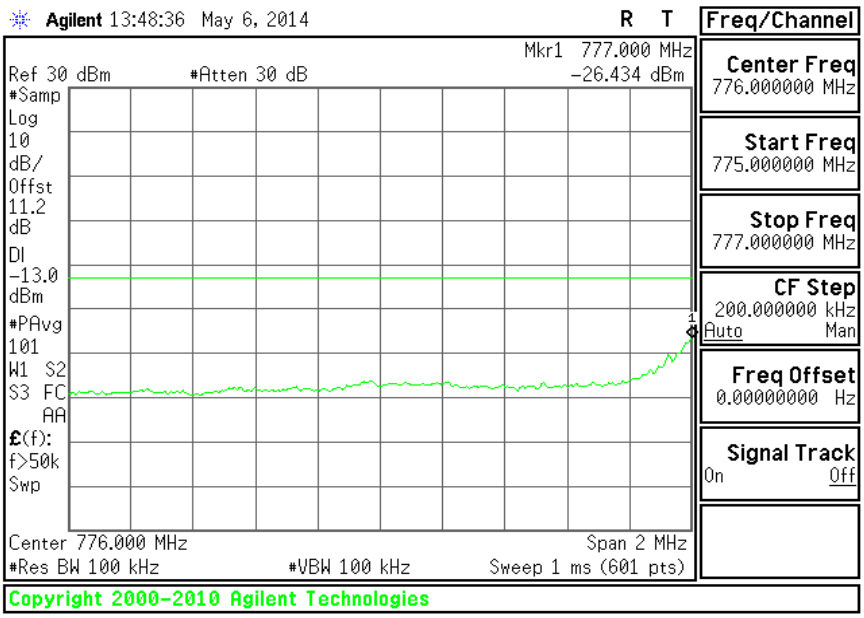

RB1-24



RB12-6

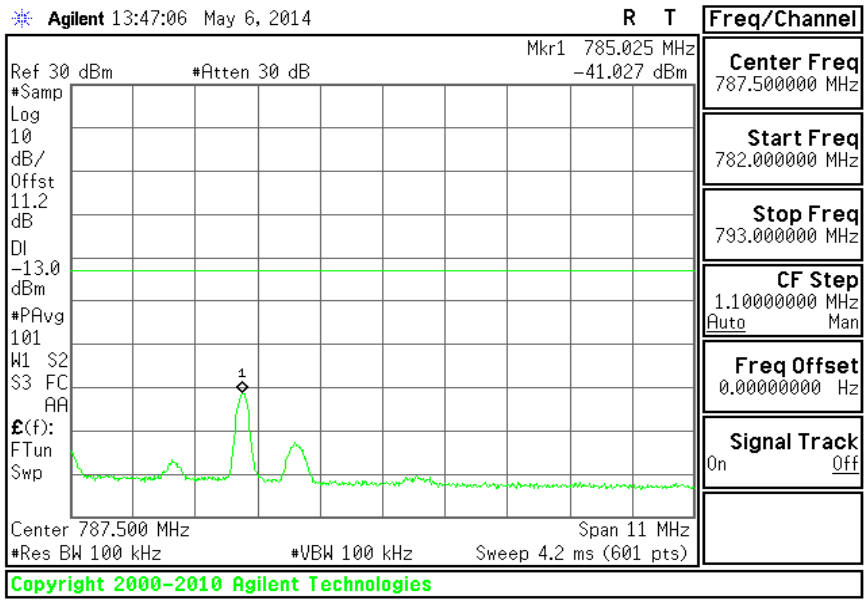



RB25-0

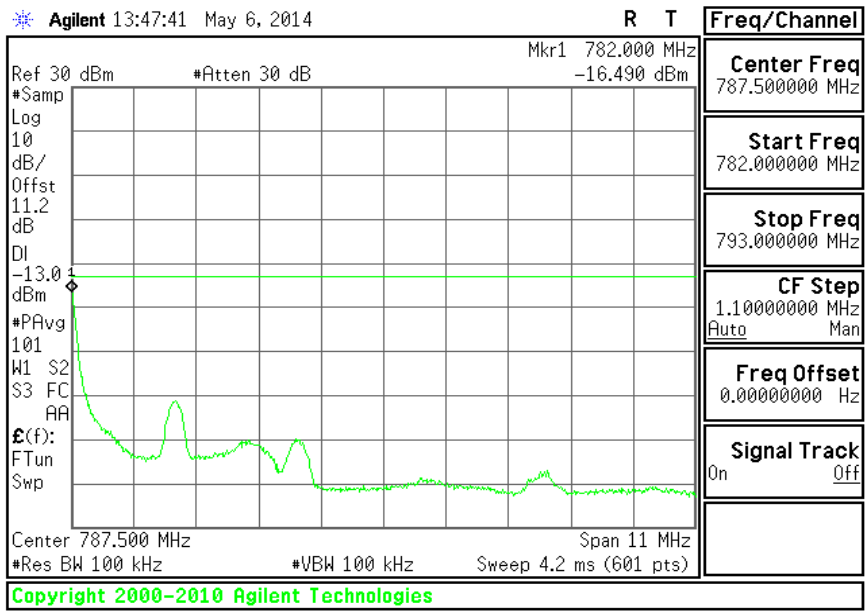


**QPSK, 779.5MHz, 13, 782 - 793MHz, (5MHz Bandwidth)**

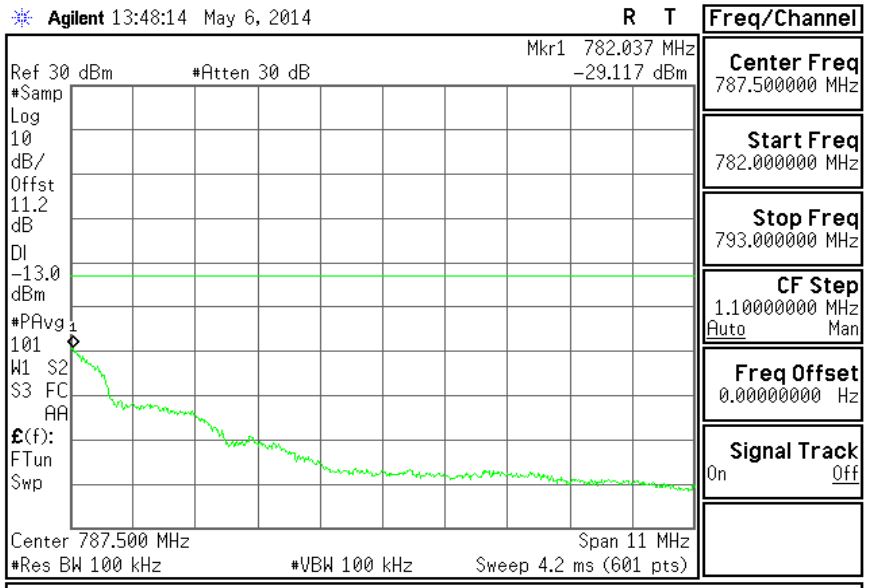
RB1-0



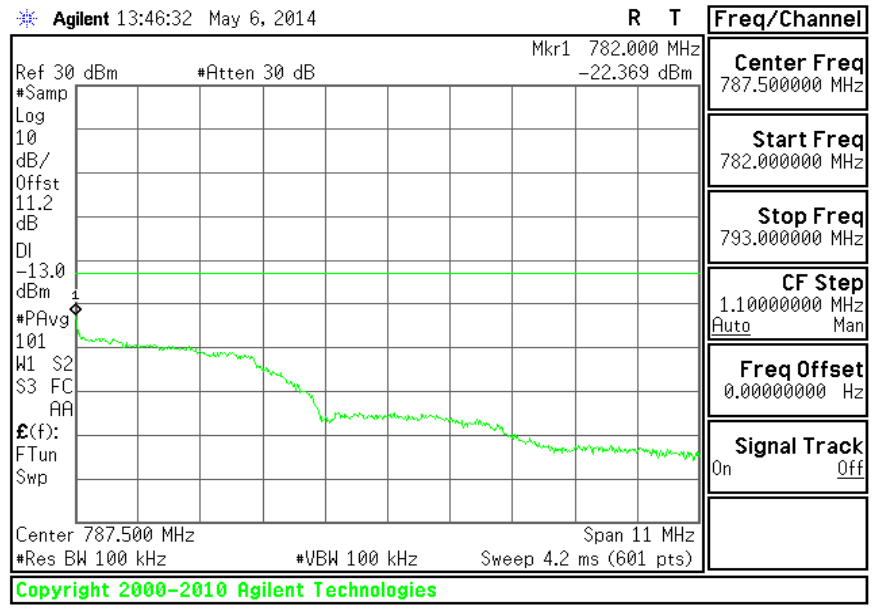

RB1-24



RB12-6

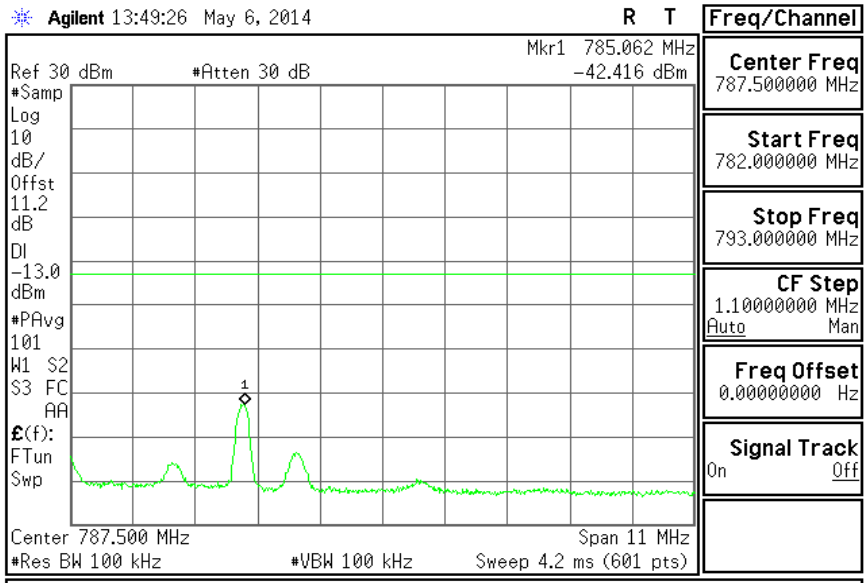



RB25-0

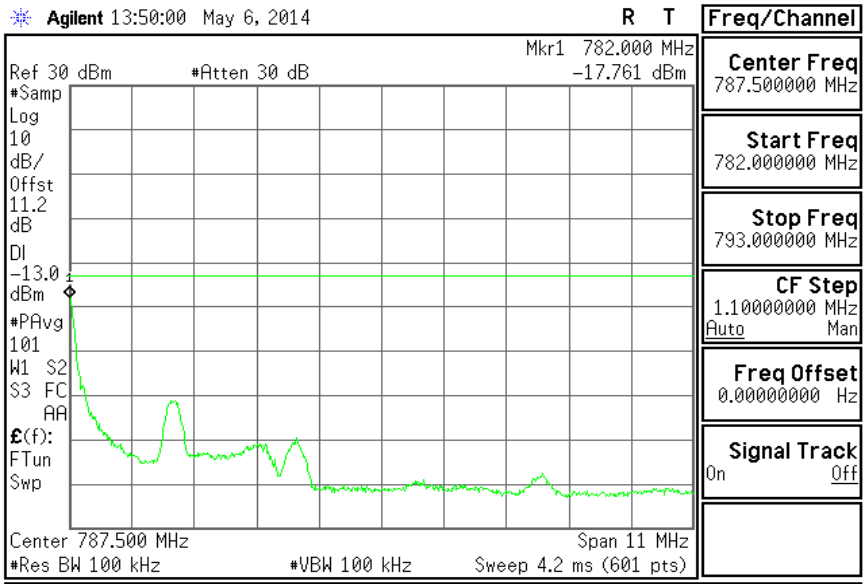


**16QAM, 779.5MHz, 783 - 793MHz, (5MHz Bandwidth)**

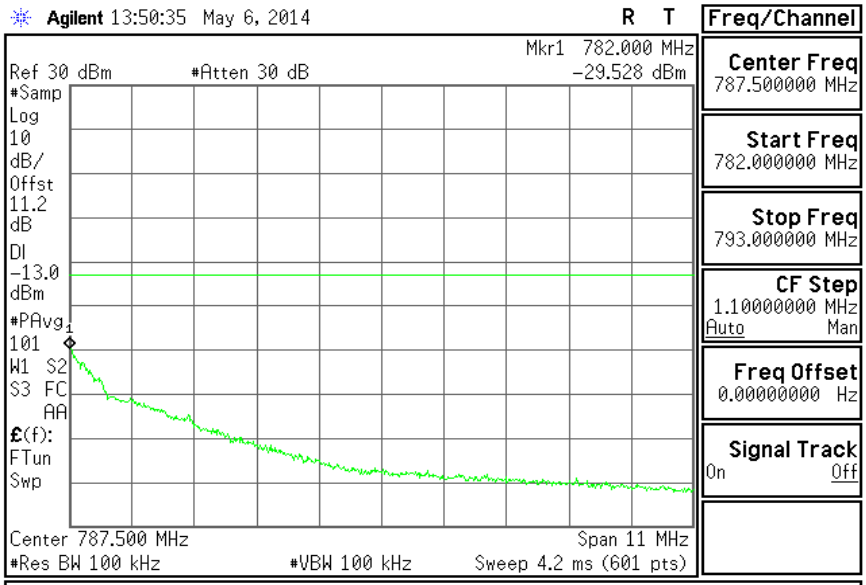
RB1-0



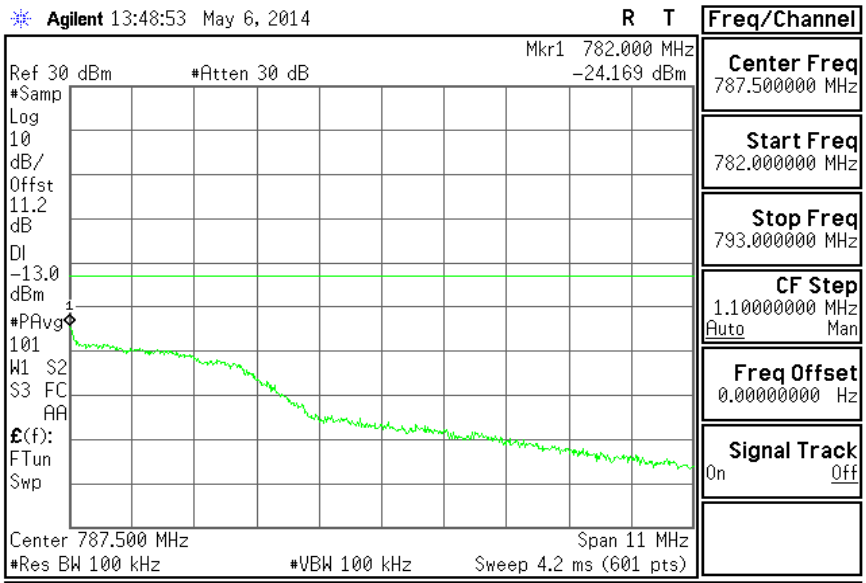

RB1-24



RB12-6

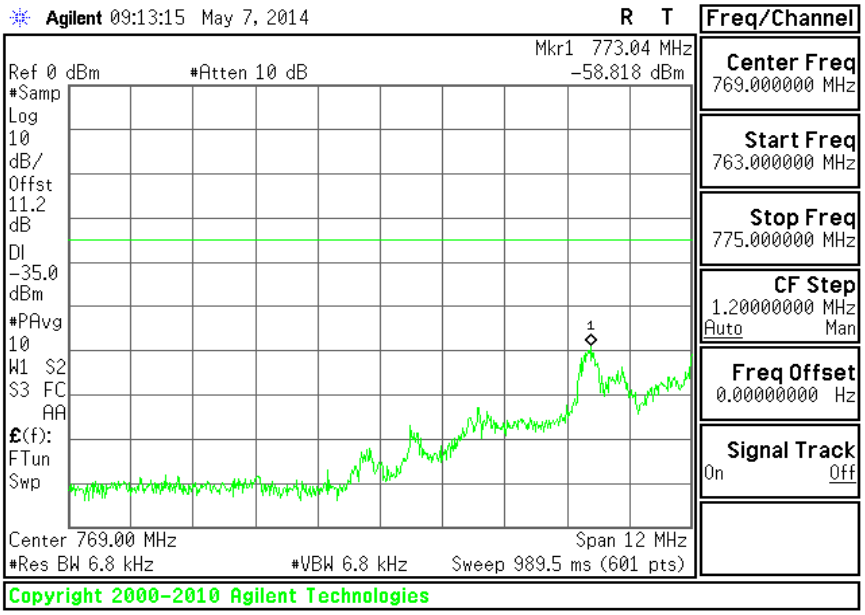



RB25-0

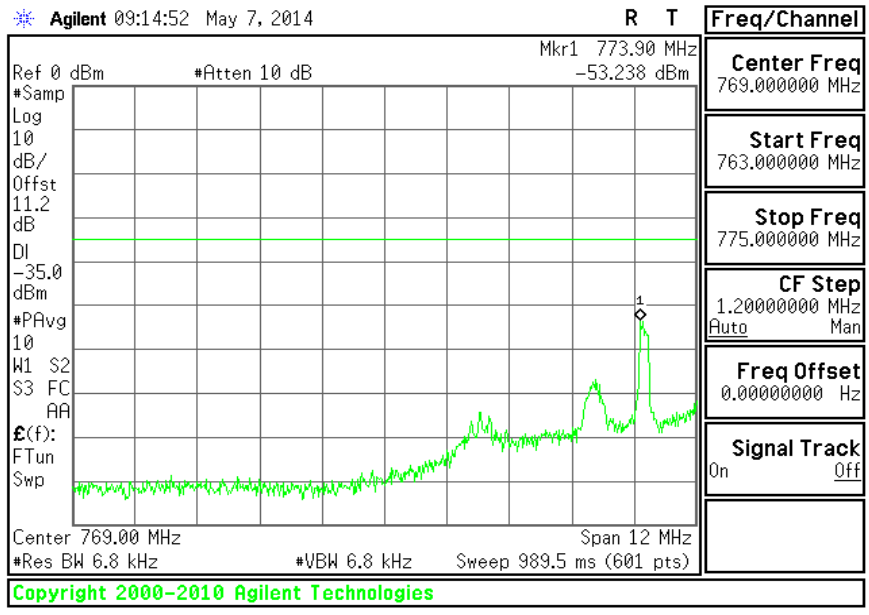


**QPSK, 779.5MHz, 763 - 775MHz, (5MHz Bandwidth)**

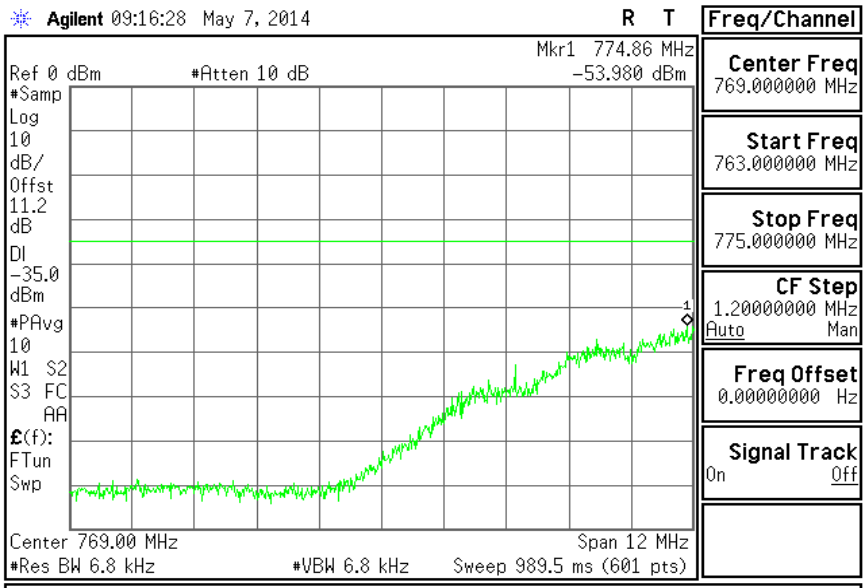
RB1-0



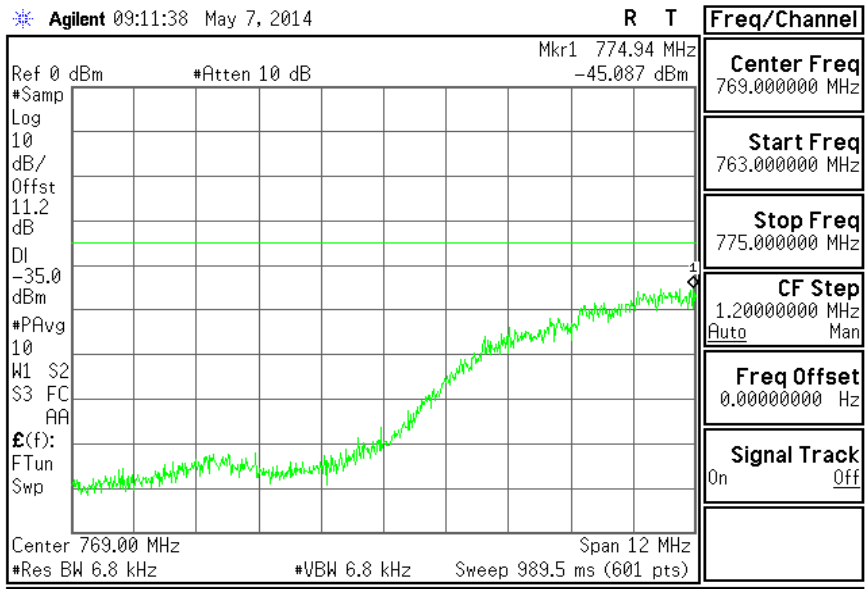

RB1-24



RB12-6

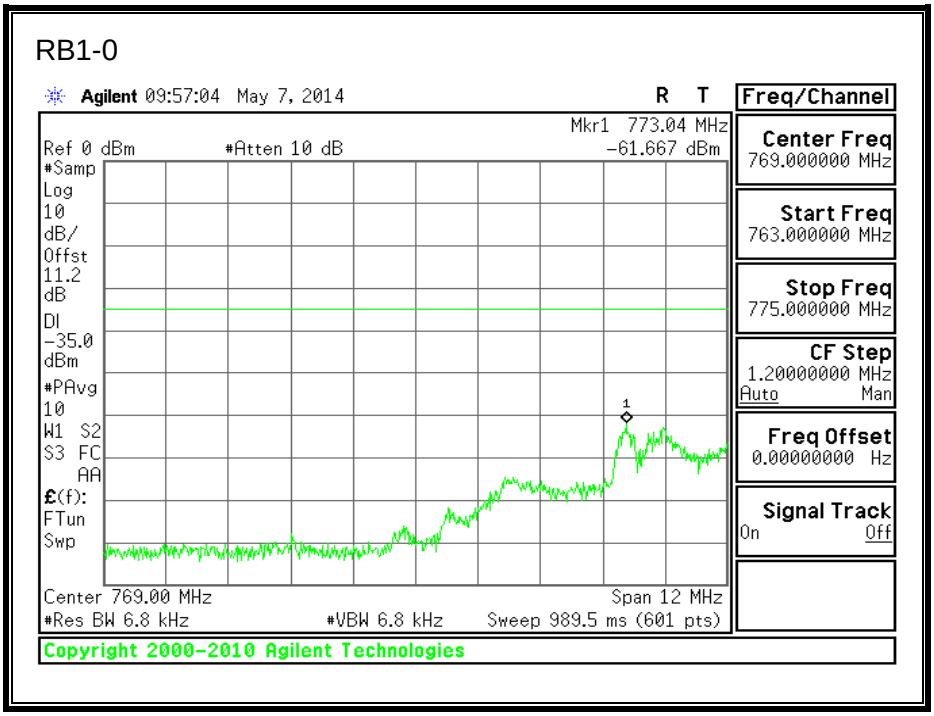



RB25-0

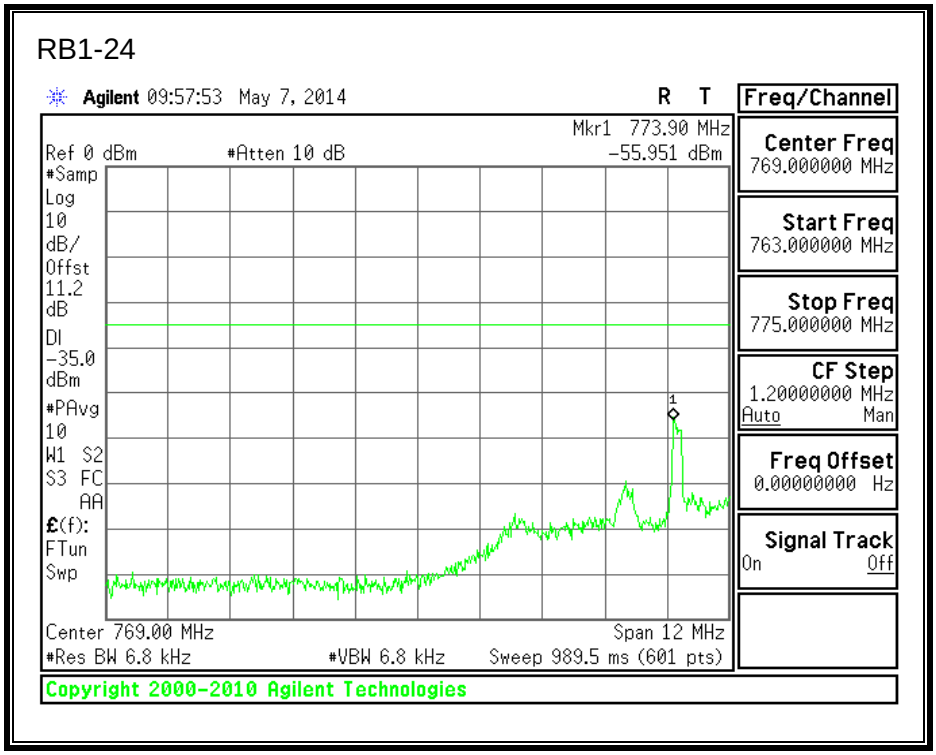


**16QAM, 779.5MHz, 763-775MHz, (5MHz Bandwidth)**

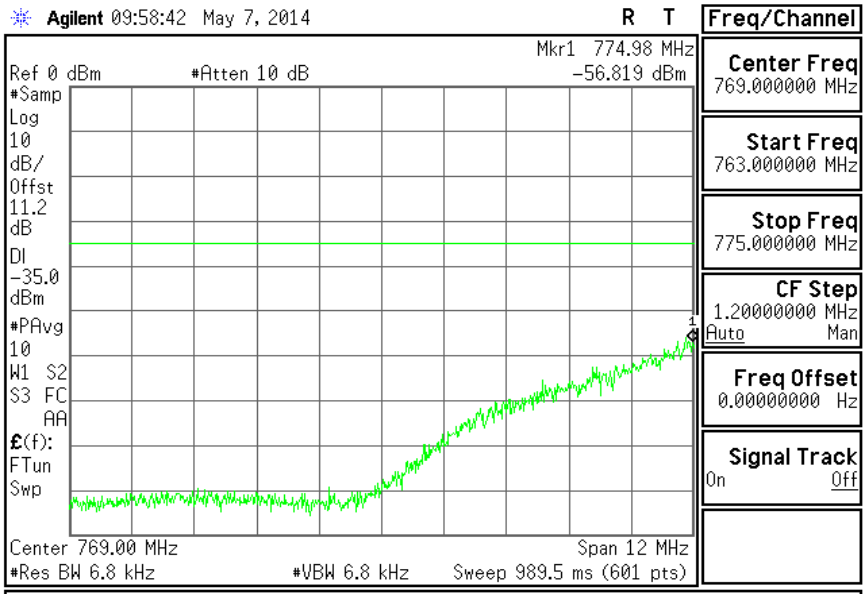
RB1-0



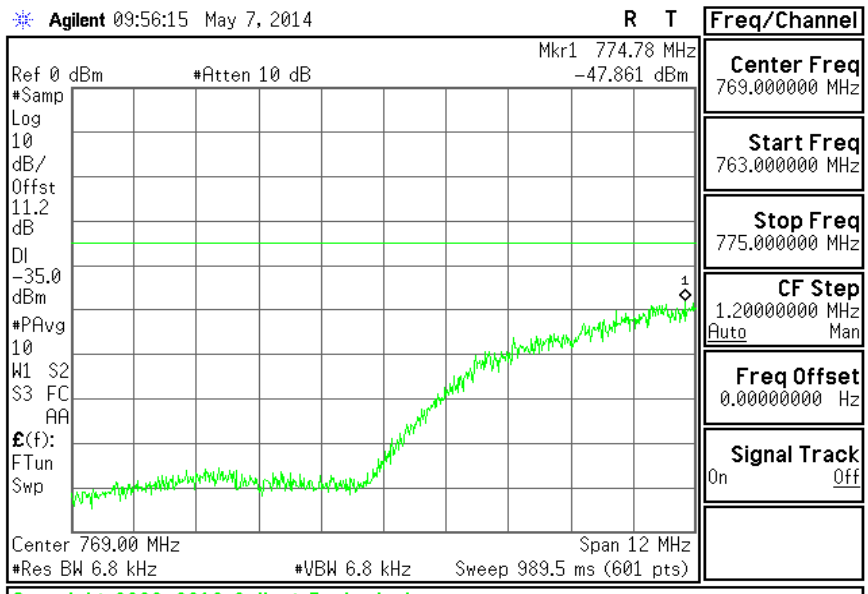

RB1-24



RB12-6

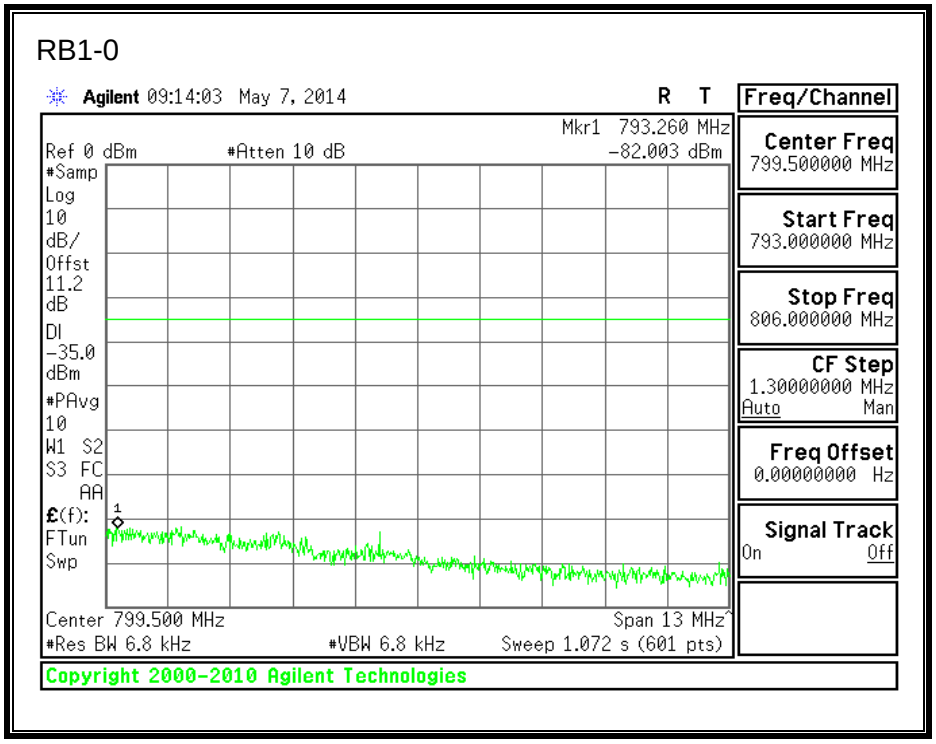



RB25-0

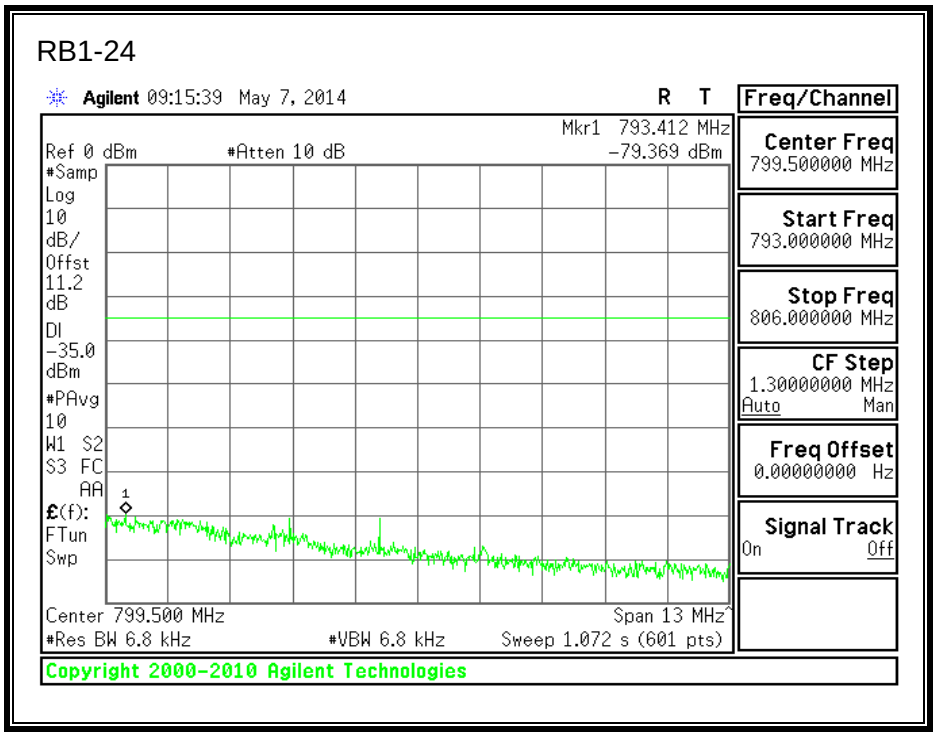


**QPSK, 779.5MHz, 793 - 806MHz, (5MHz Bandwidth)**

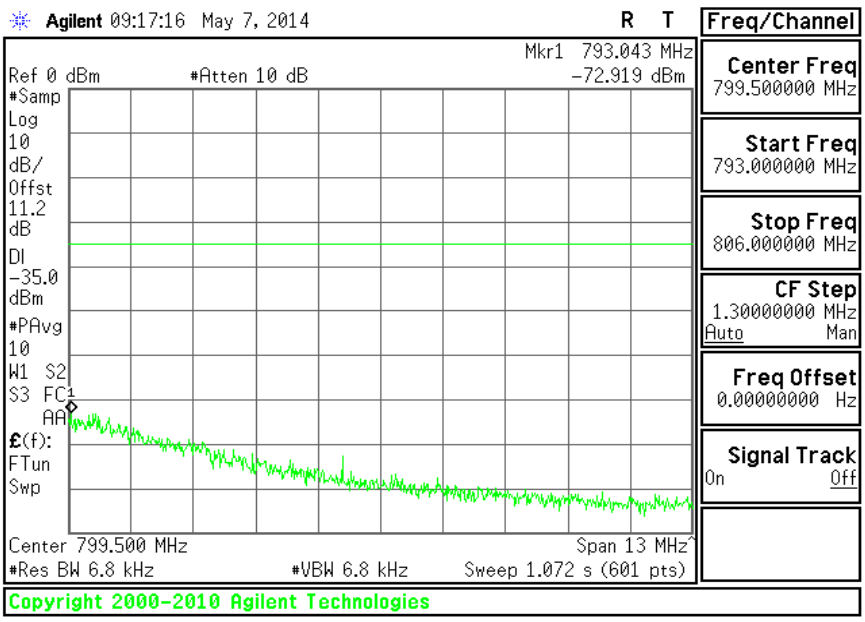
RB1-0



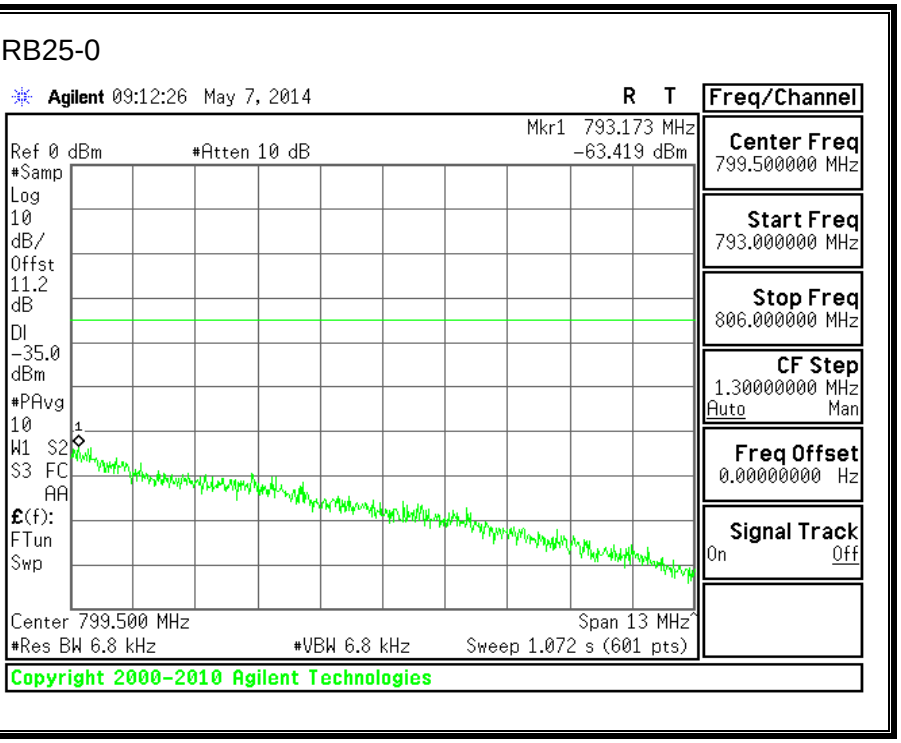

RB1-24



RB12-6

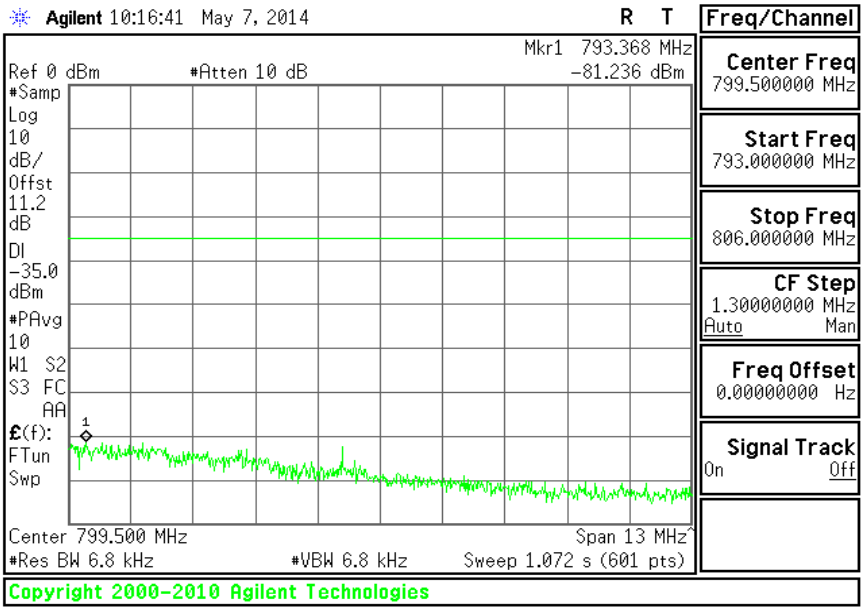



RB25-0

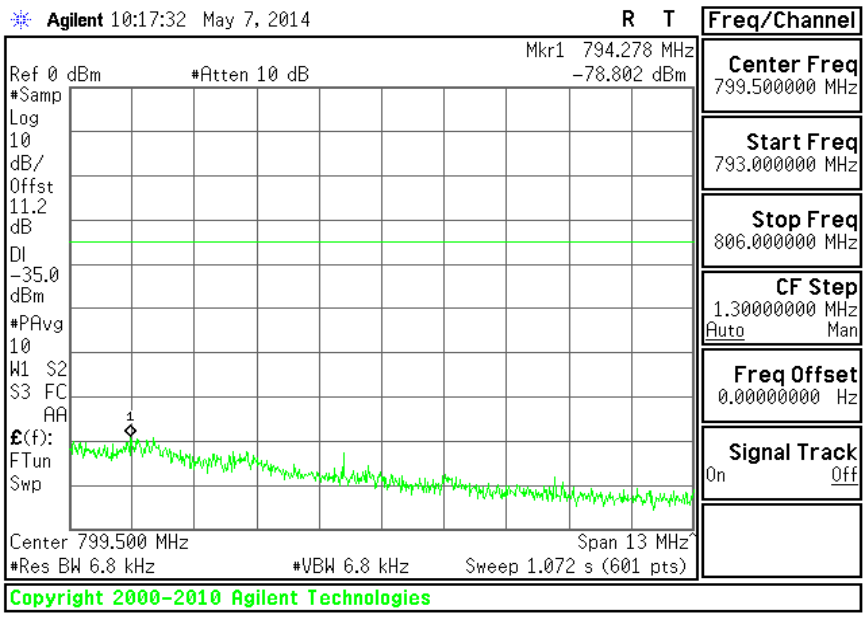


**16QAM, 779.5MHz, 793 - 806MHz, (5MHz Bandwidth)**

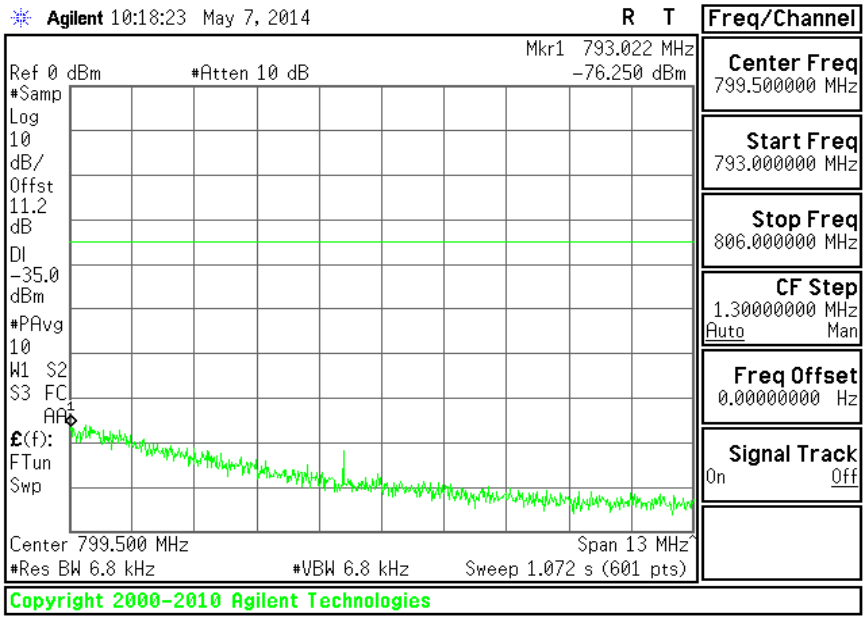
RB1-0



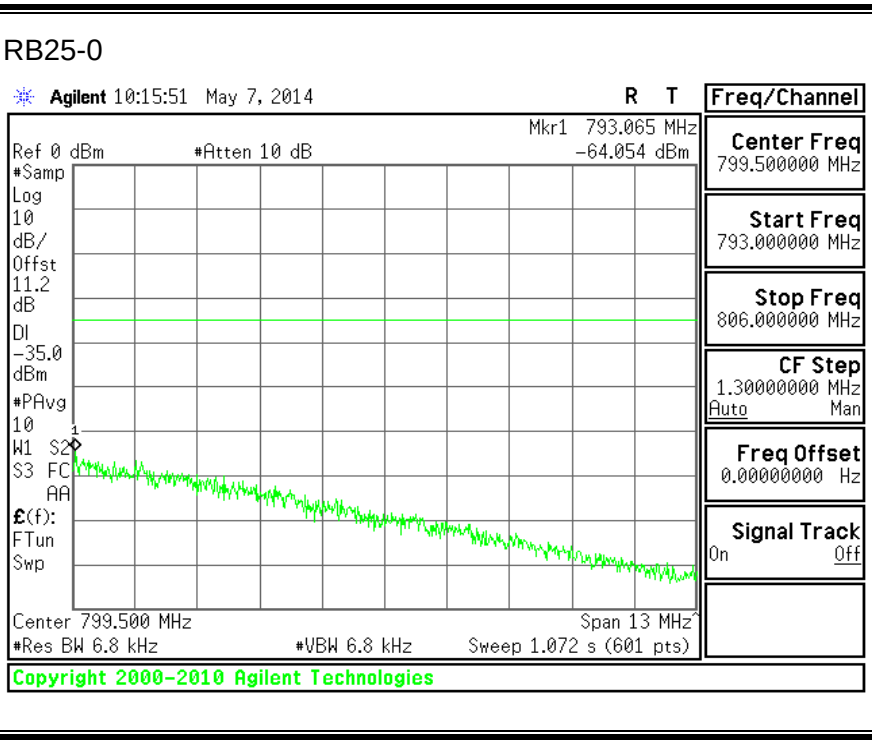

RB1-24



RB12-6

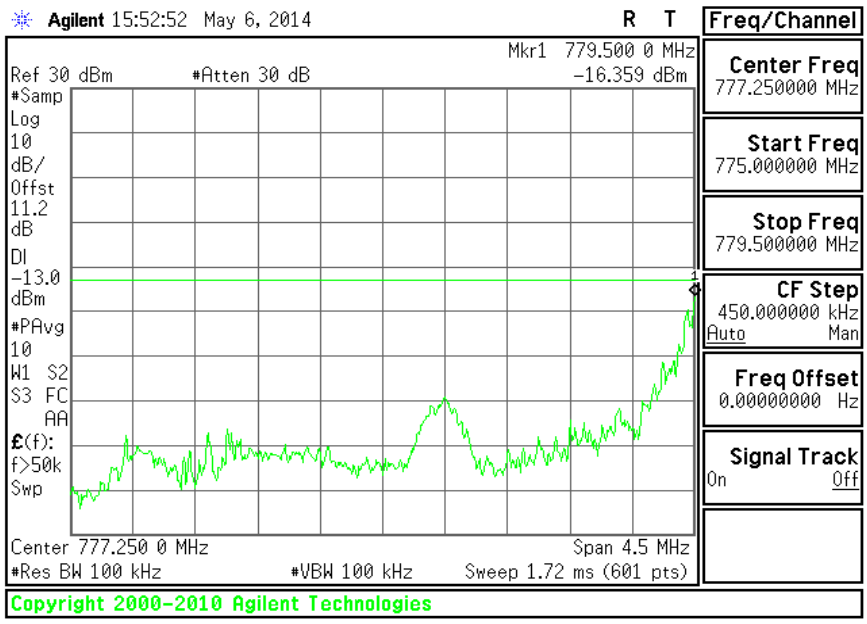



RB25-0

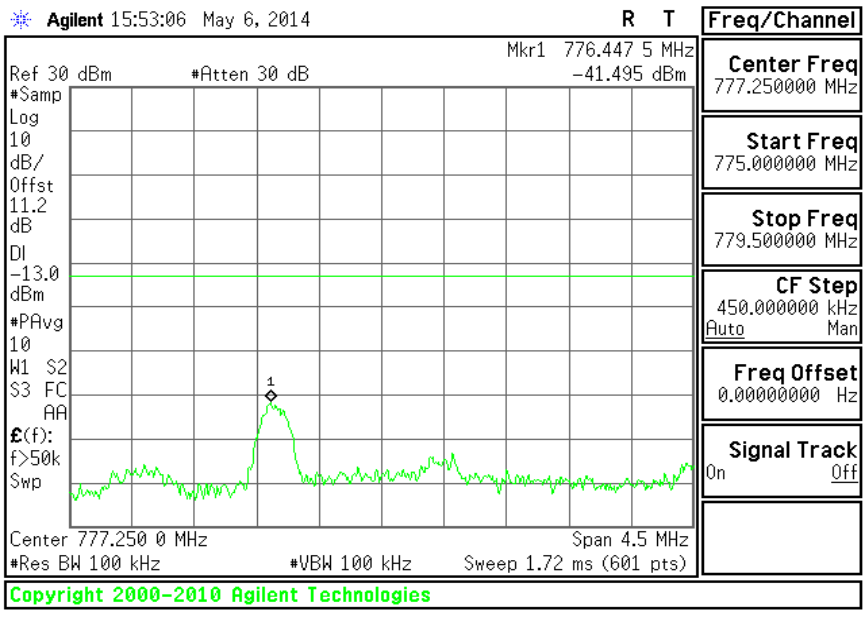


**QPSK, 782MHz, 775 – 779.5MHz, (5MHz Bandwidth)**

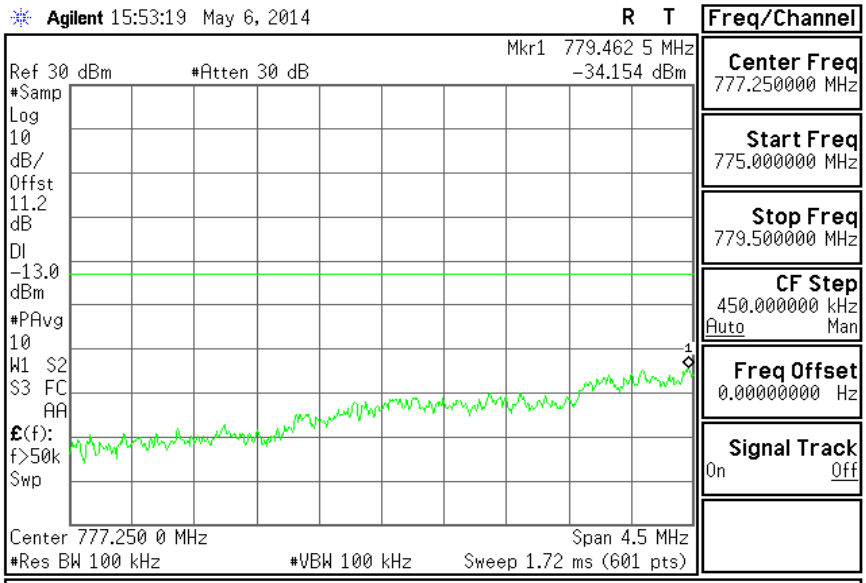
RB1-0



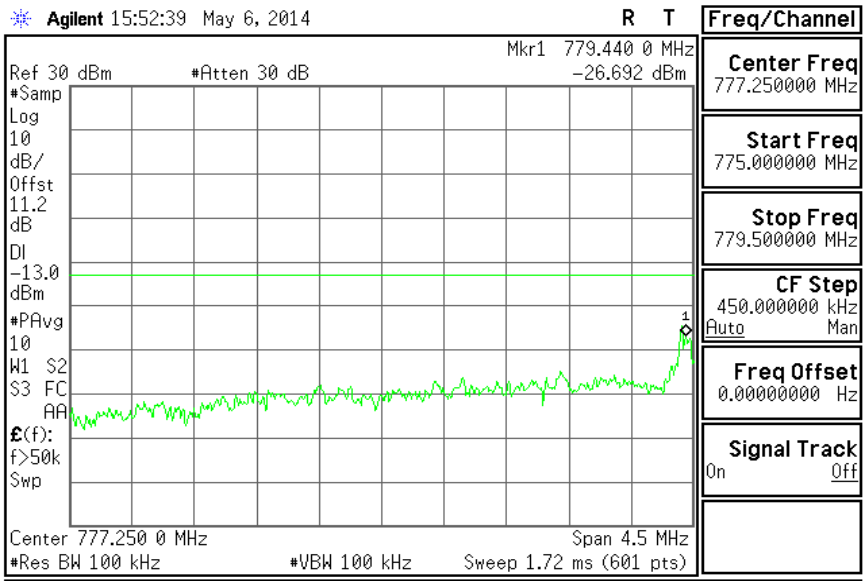

RB1-24



RB12-6

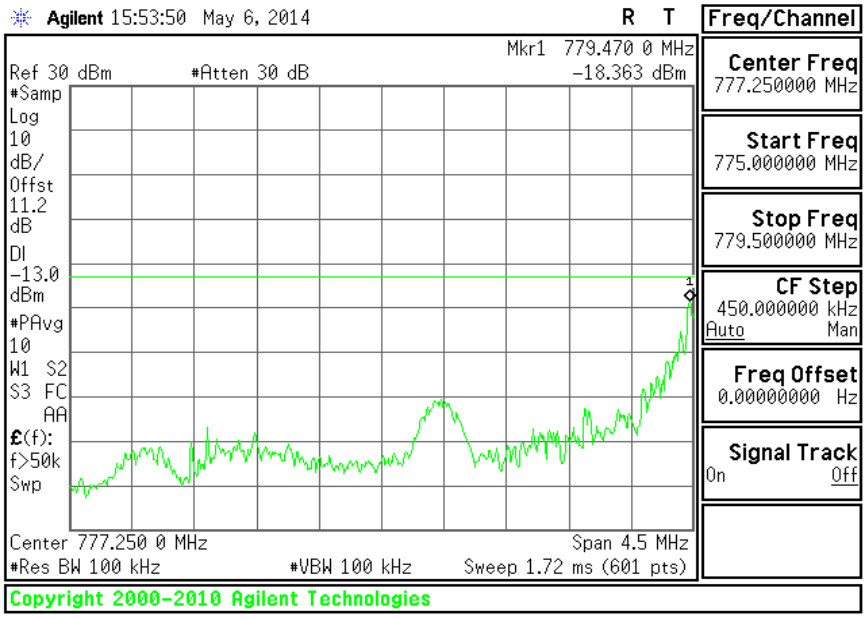



RB25-0

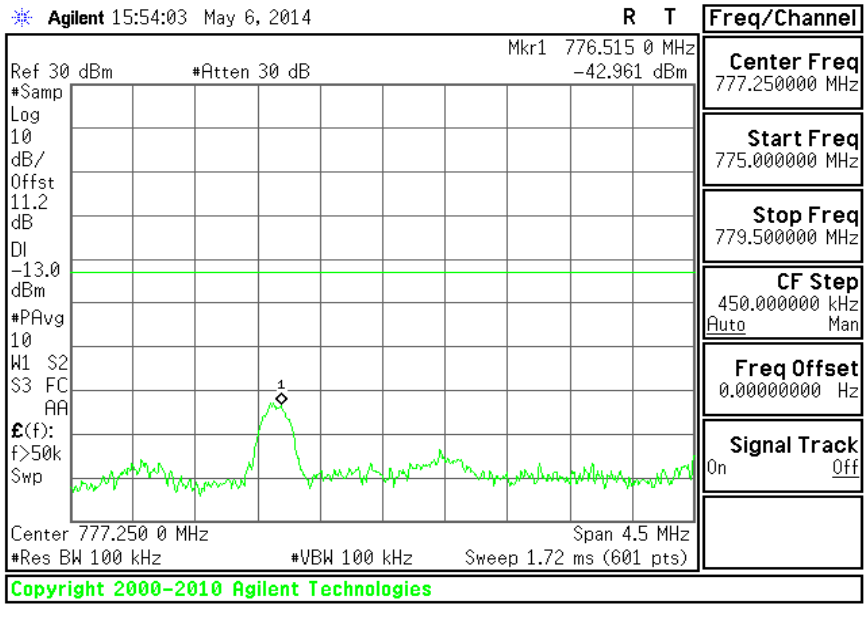


**16QAM, 782MHz, 775 - 777MHz, (5MHz Bandwidth)**

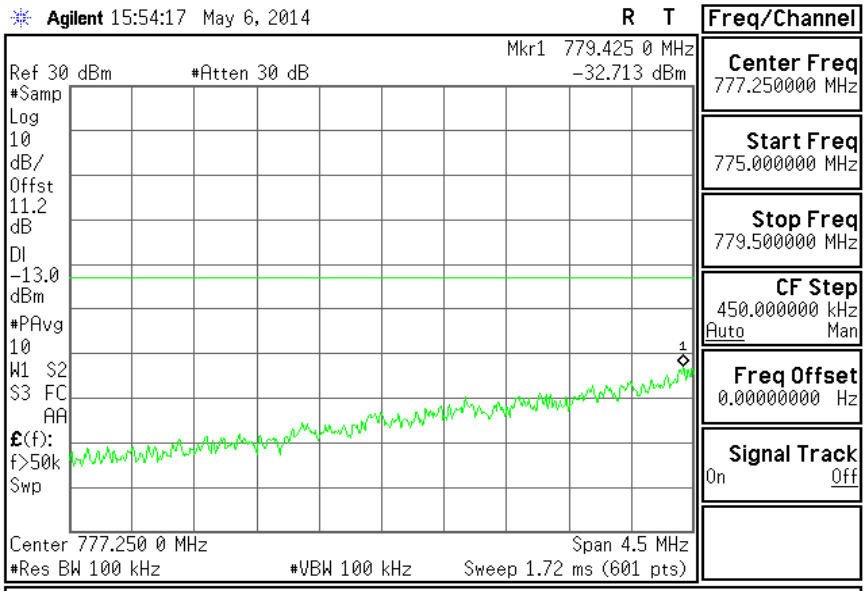
RB1-0



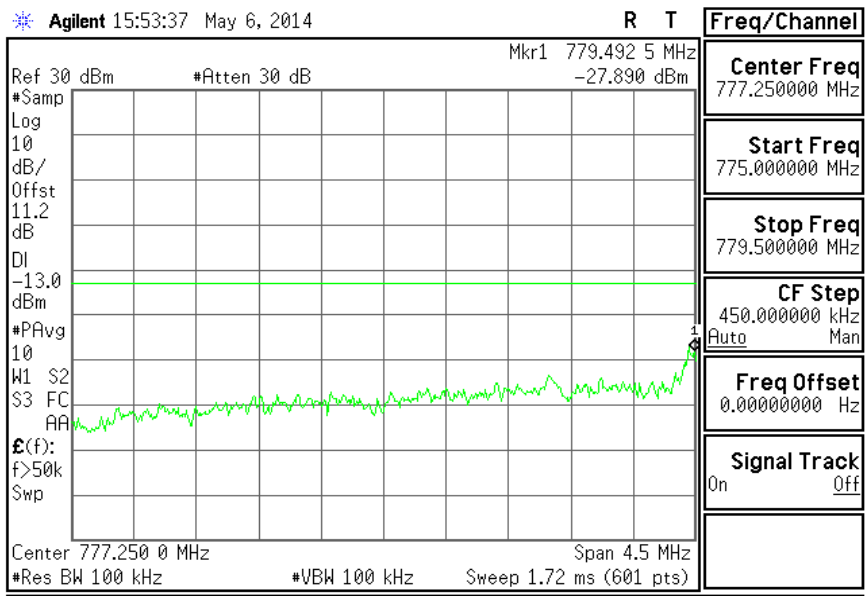

RB1-24



RB12-6

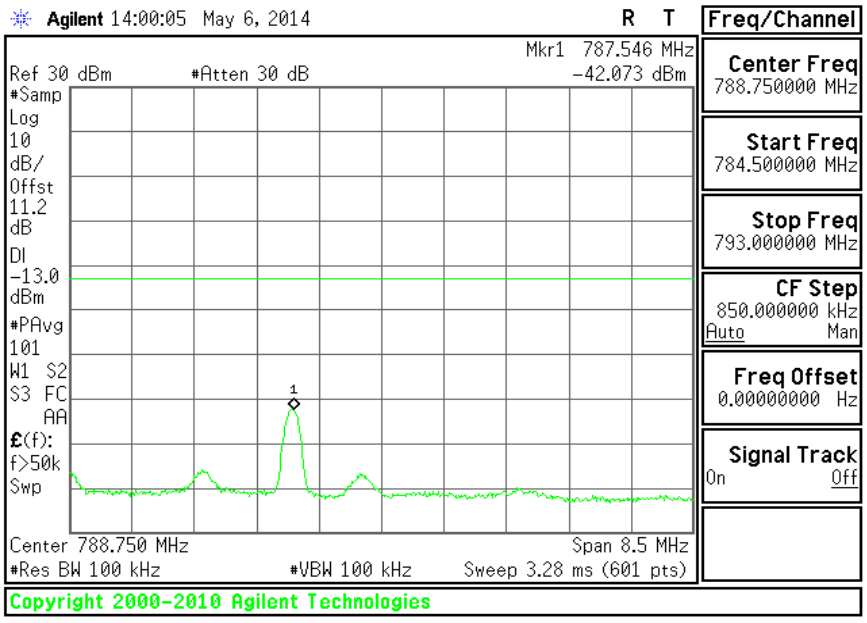



RB25-0

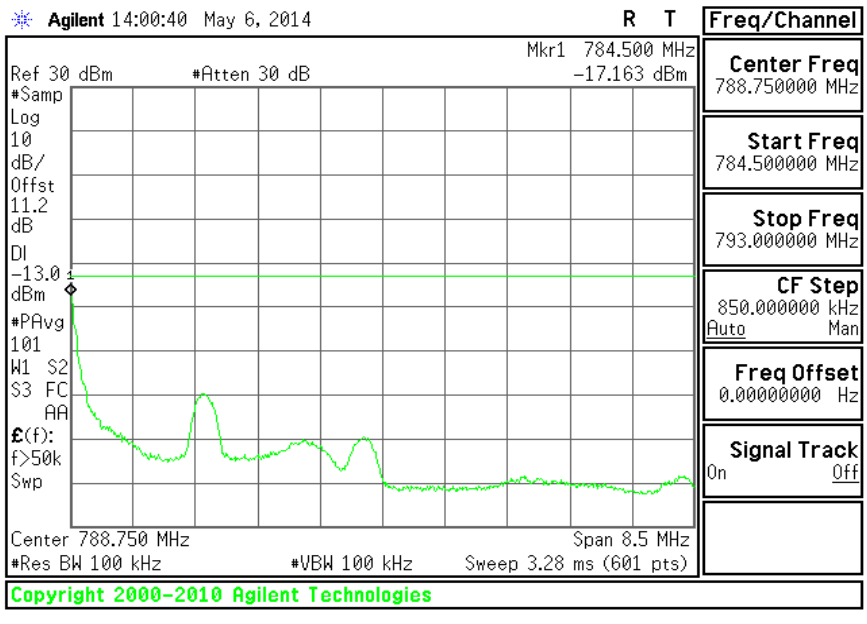


**QPSK, 782MHz, 784.5 - 793MHz, (5MHz Bandwidth)**

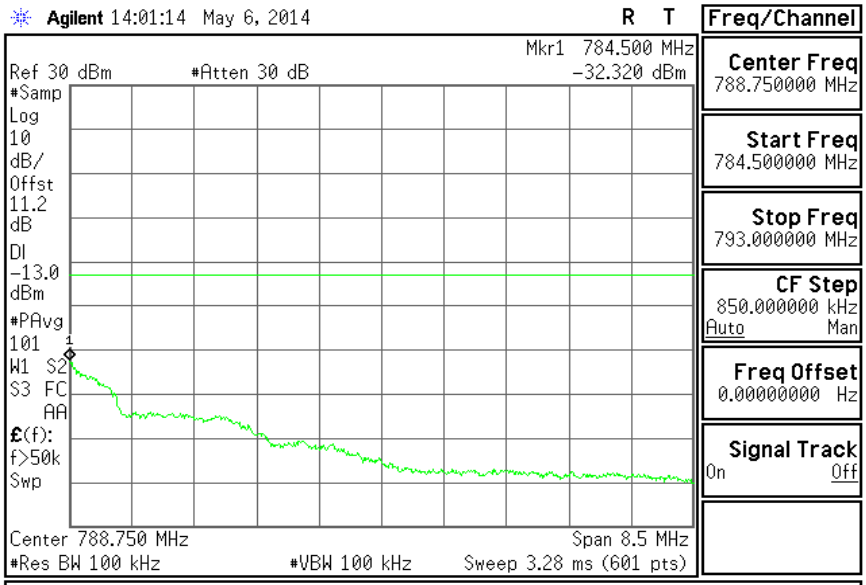
RB1-0



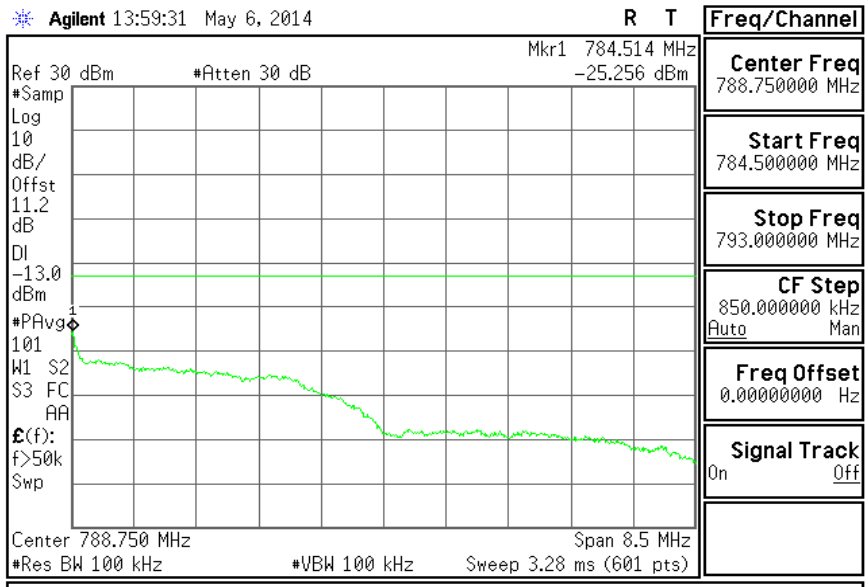

RB1-24



RB12-6

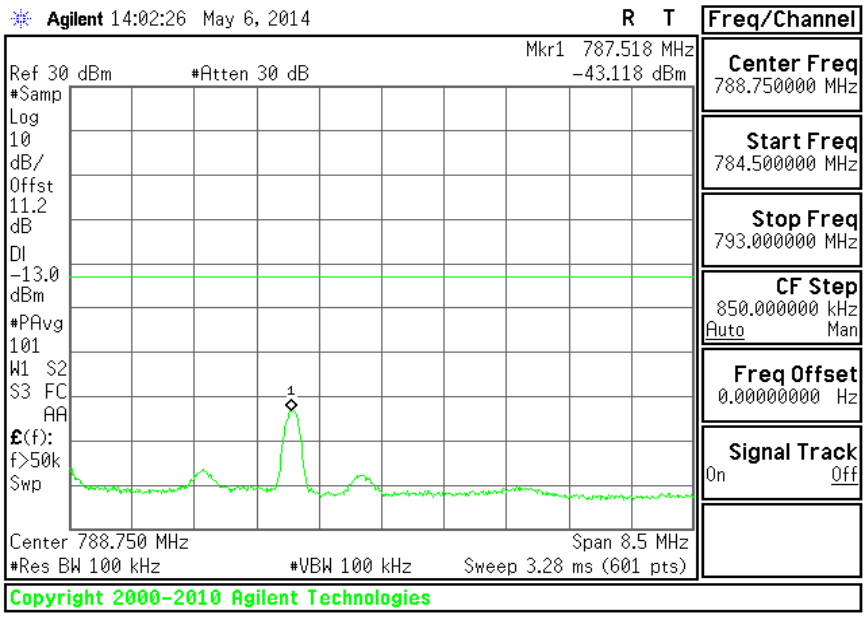



RB25-0

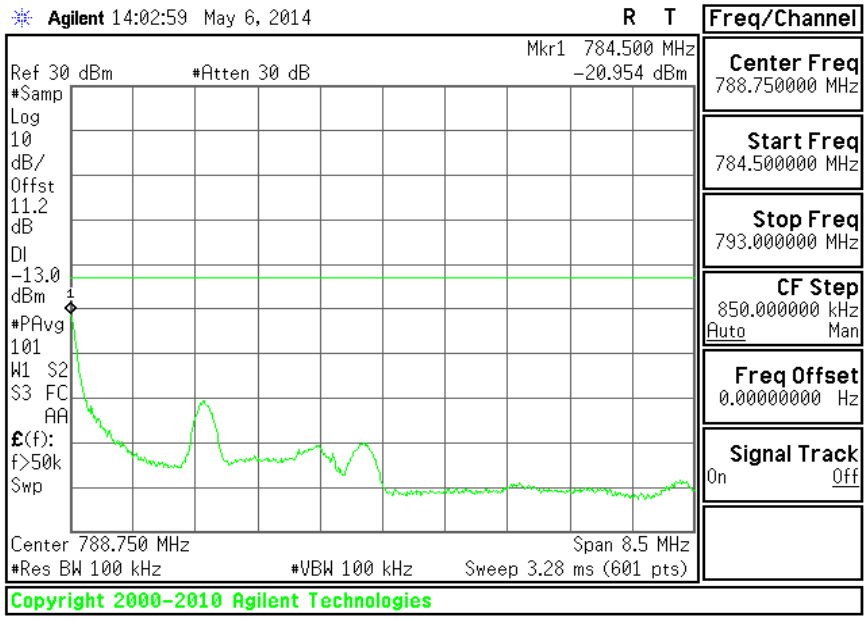


**16QAM, 782MHz, 784.5 - 793MHz, (5MHz Bandwidth)**

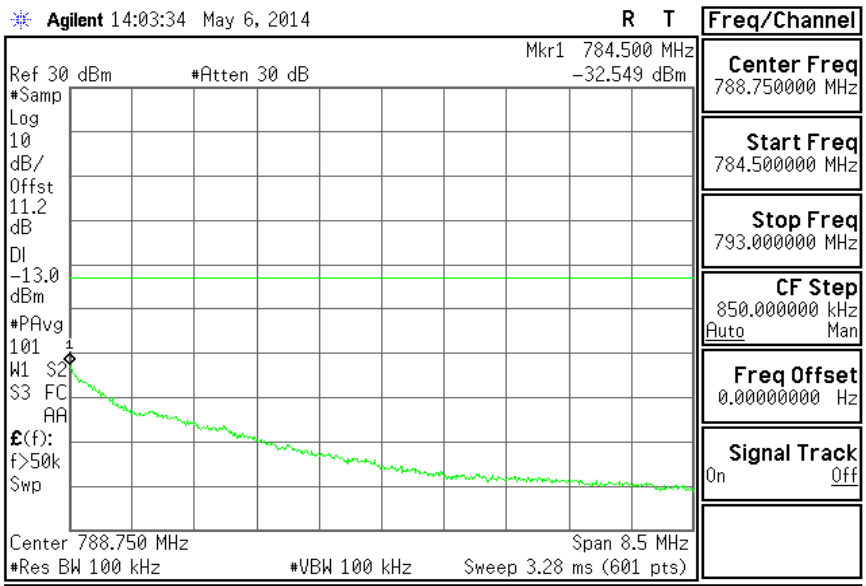
RB1-0



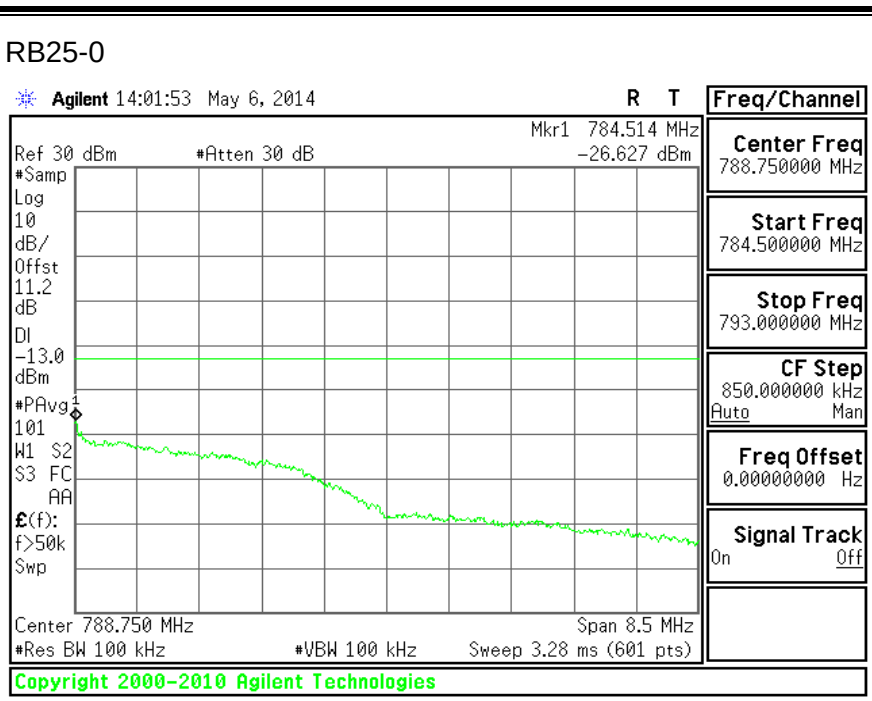

RB1-24



RB12-6

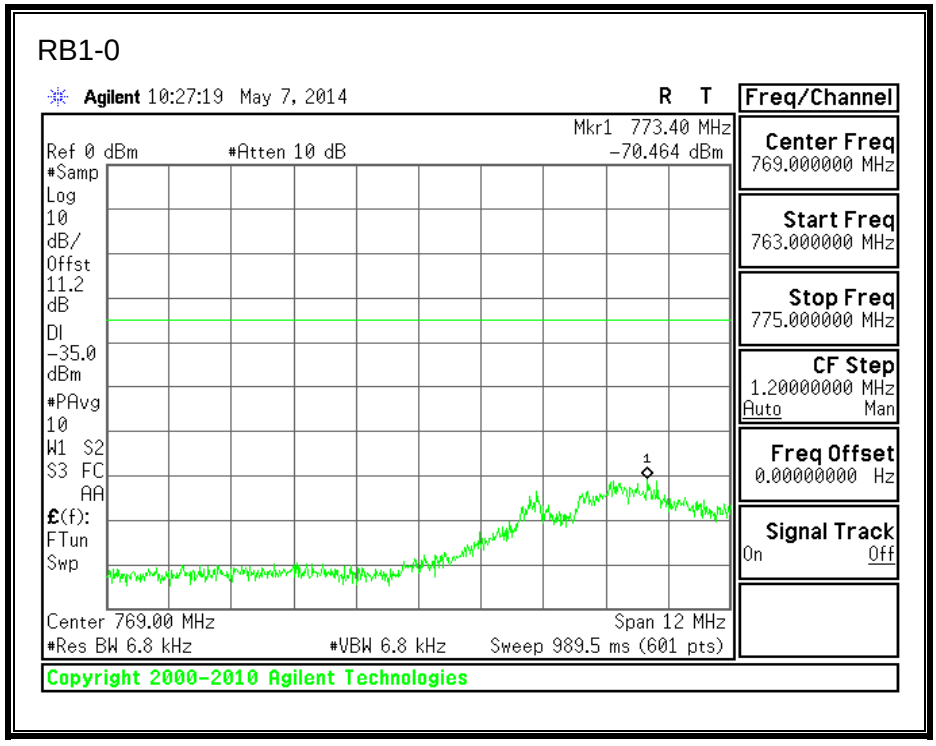



RB25-0

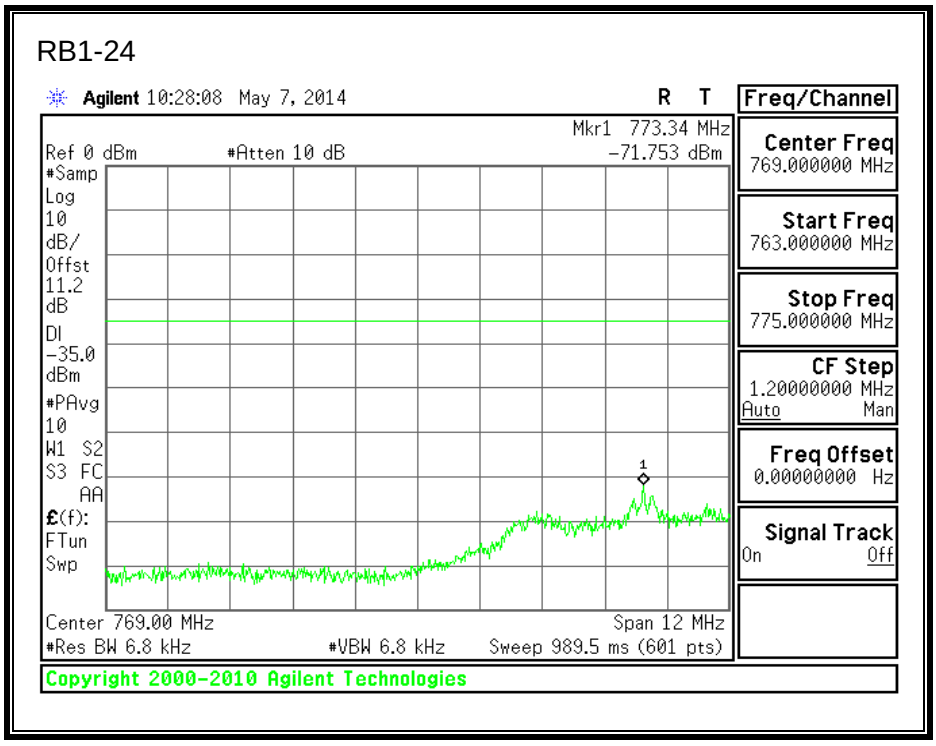


**QPSK, 782MHz, 763 - 775MHz, (5MHz Bandwidth)**

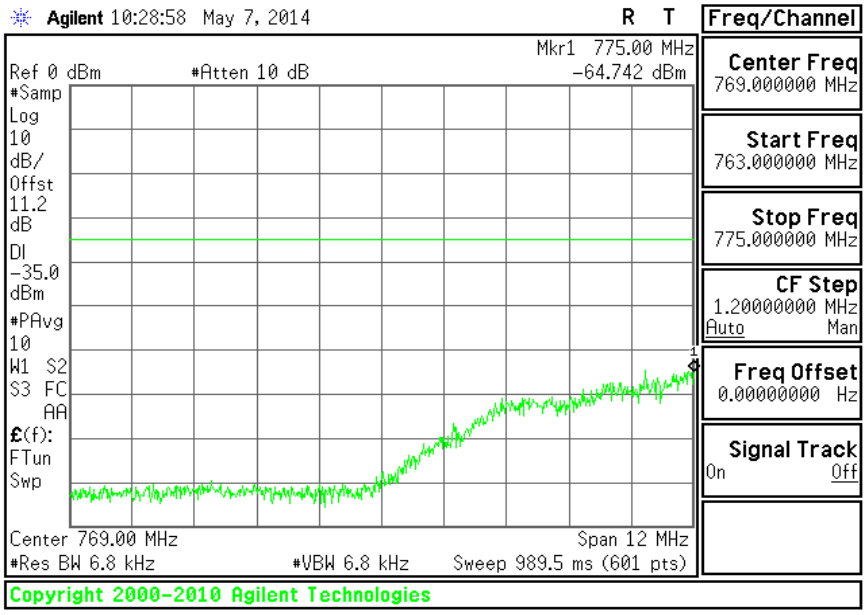
RB1-0



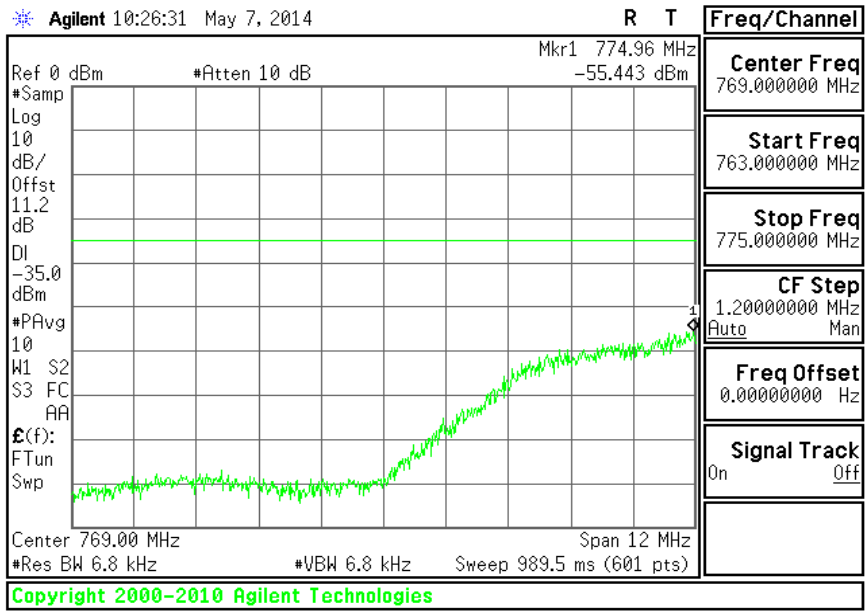

RB1-24



RB12-6

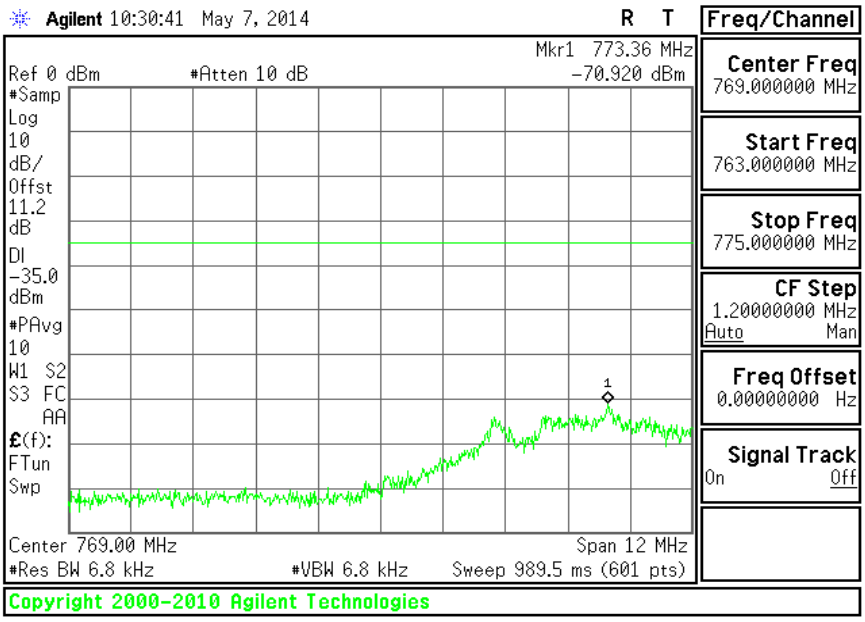



RB25-0

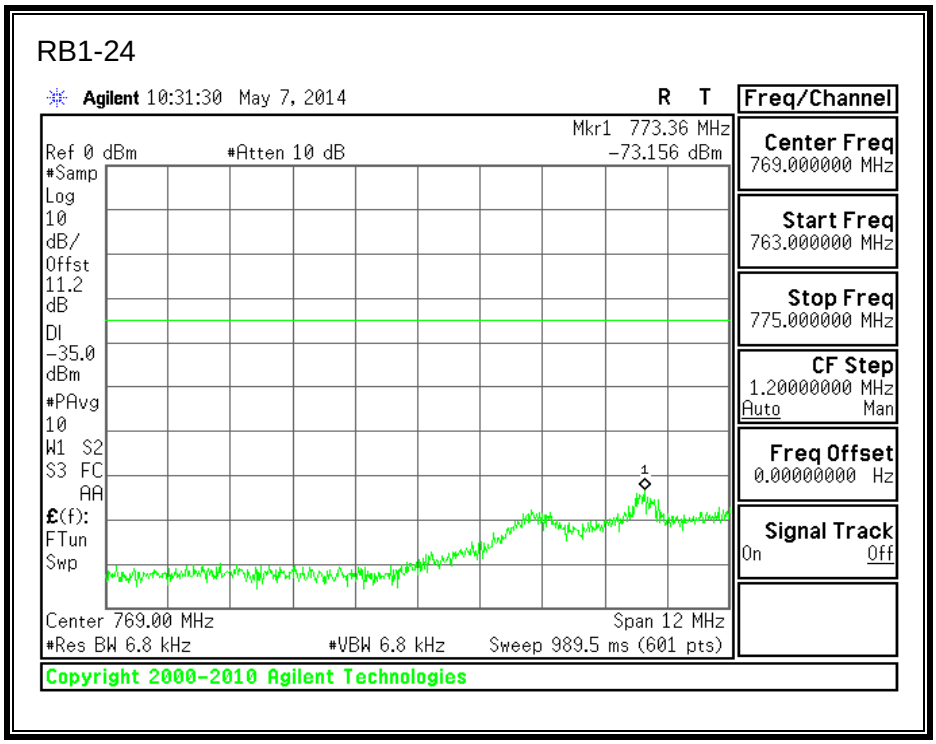


**16QAM, 782MHz, 763 - 775MHz, (5MHz Bandwidth)**

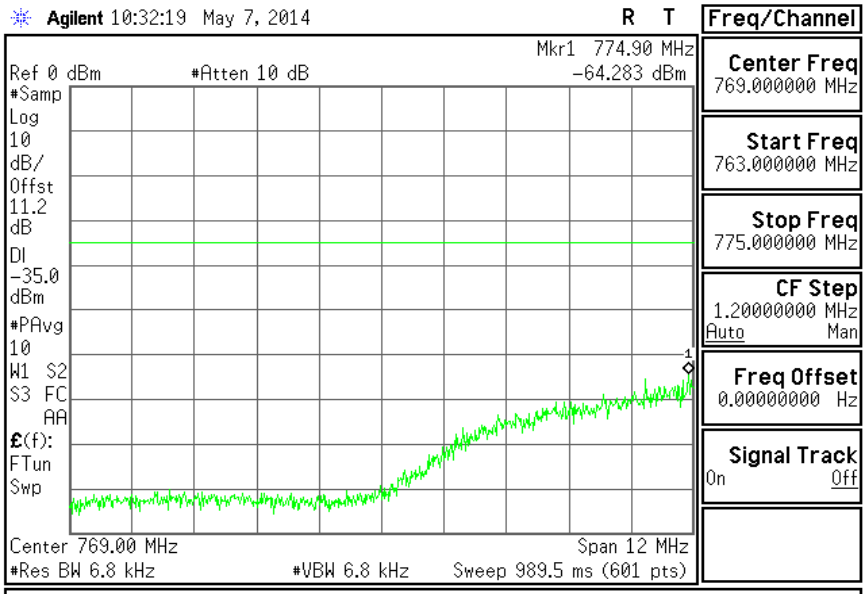
RB1-0



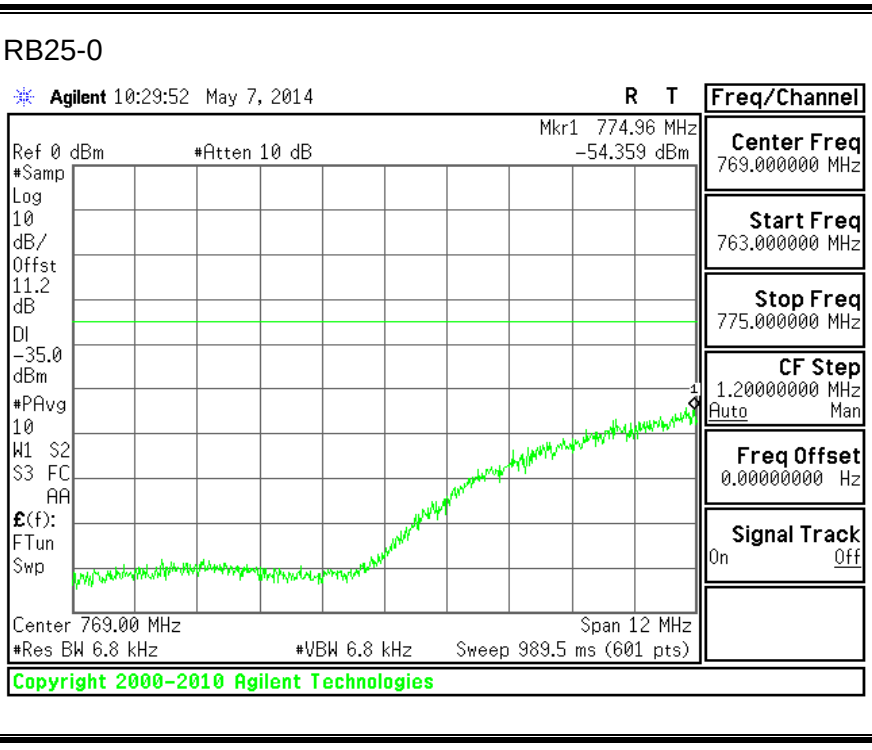

RB1-24



RB12-6

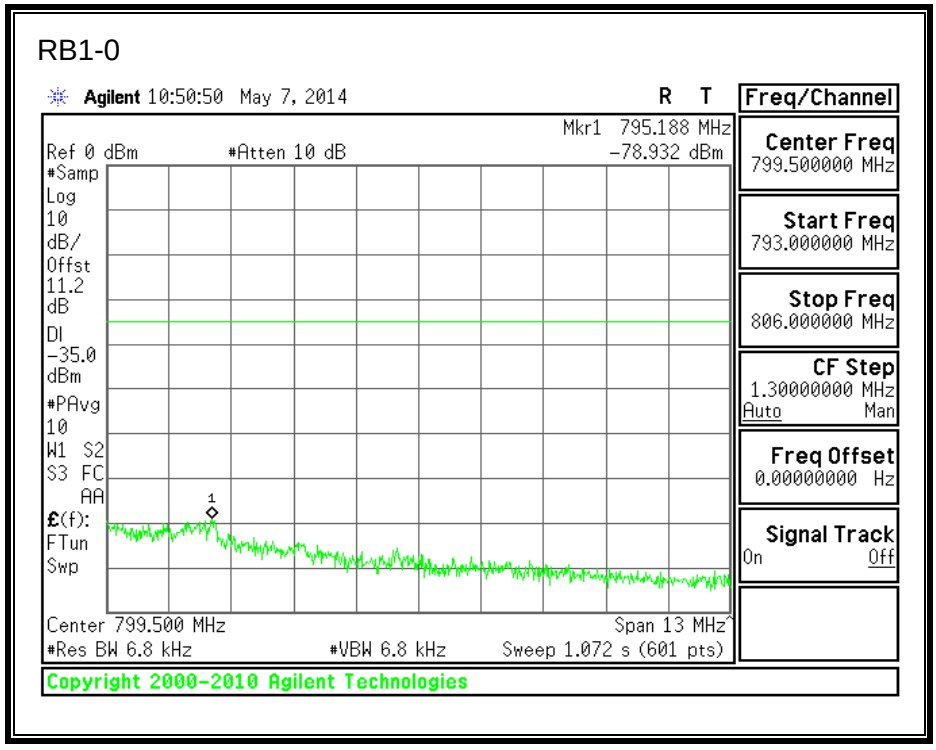



RB25-0

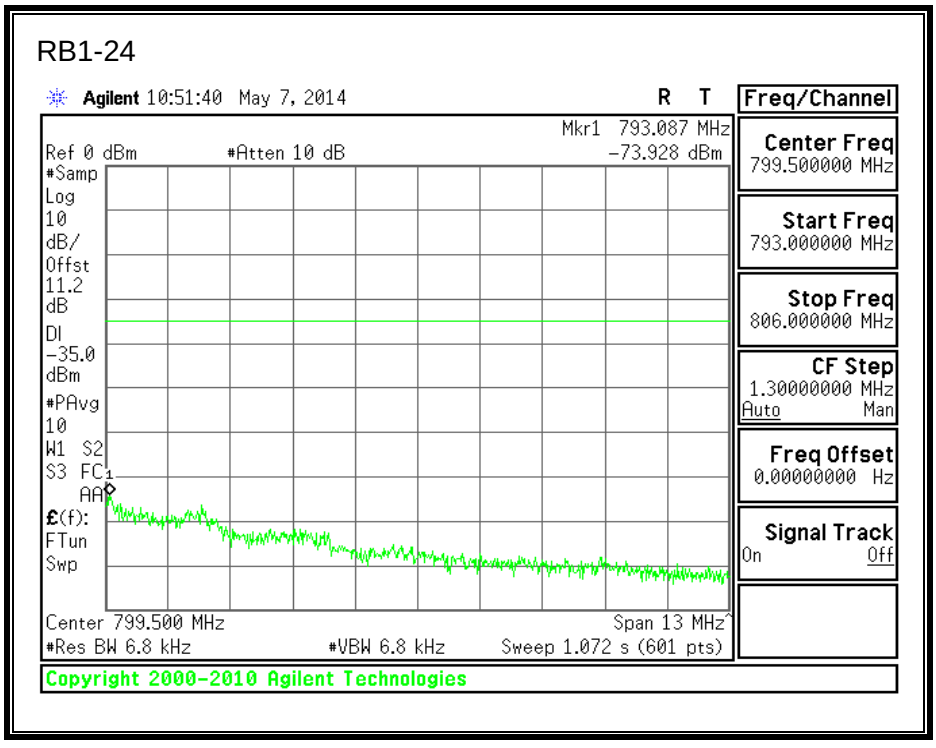


**QPSK, 782MHz, 793 - 806MHz, (5MHz Bandwidth)**

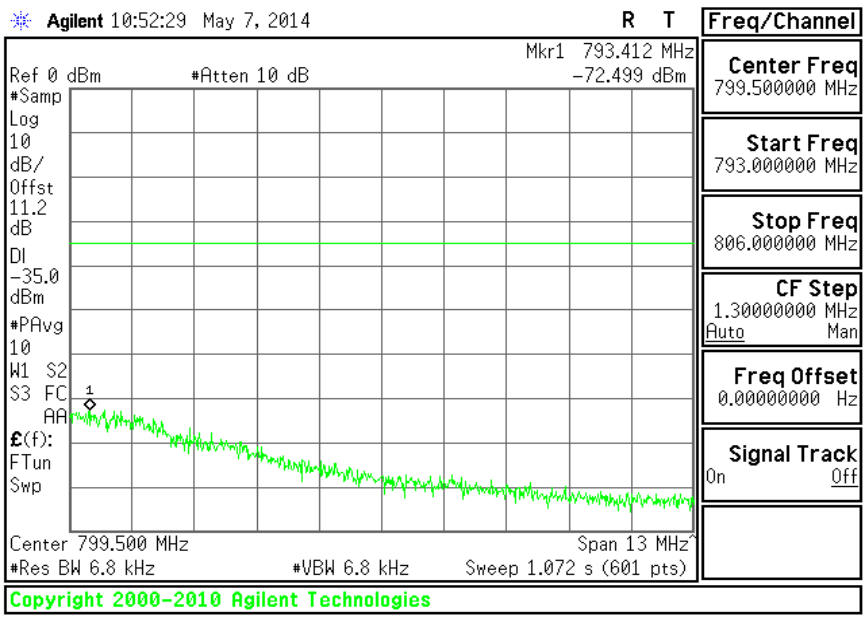
RB1-0



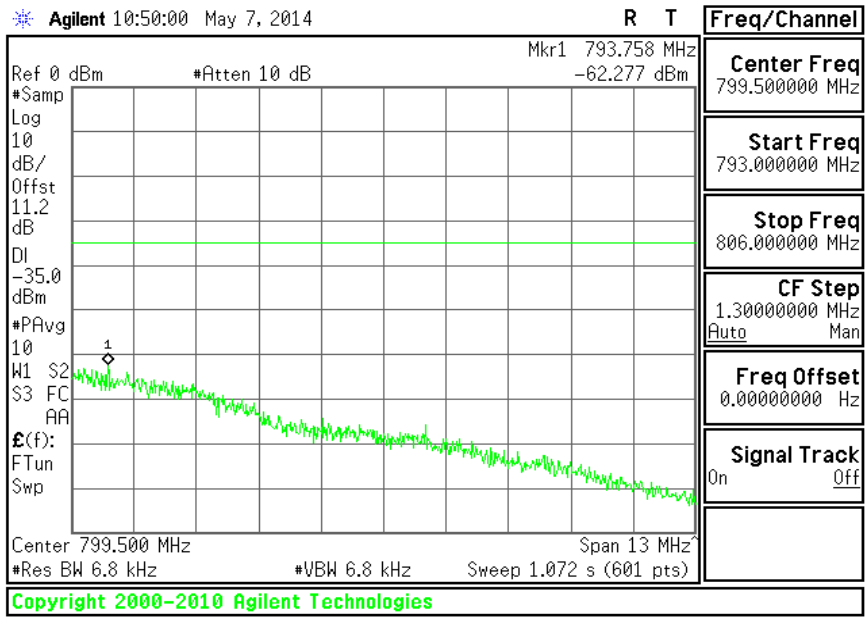

RB1-24



RB12-6

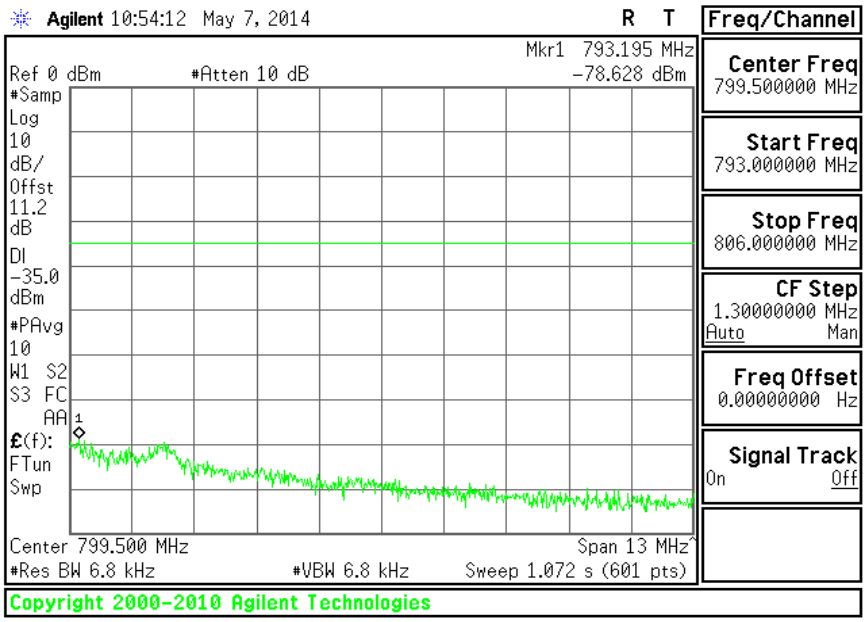



RB25-0

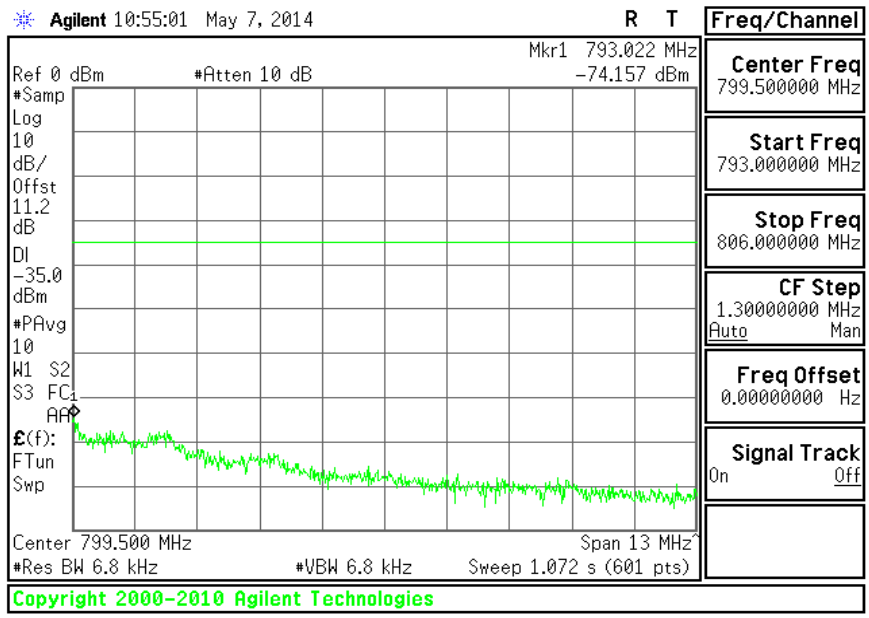


**16QAM, 782MHz, 793 - 806MHz, (5MHz Bandwidth)**

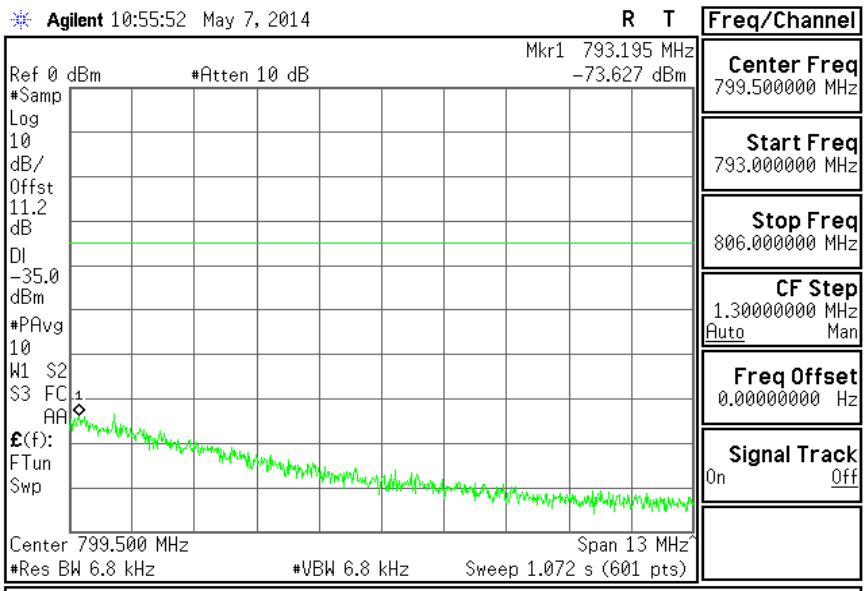
RB1-0



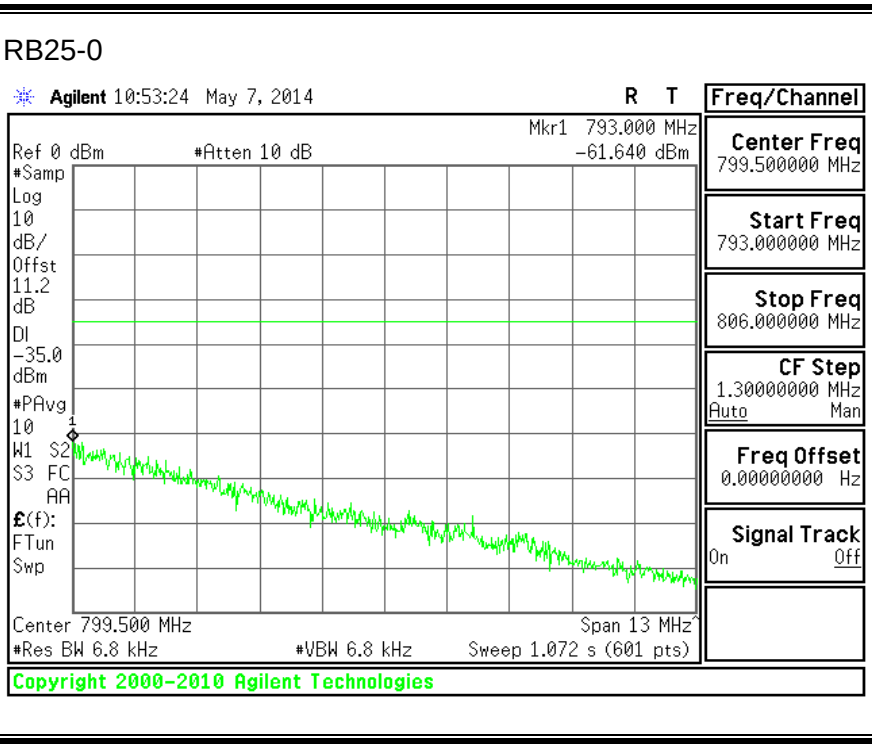

RB1-24



RB12-6

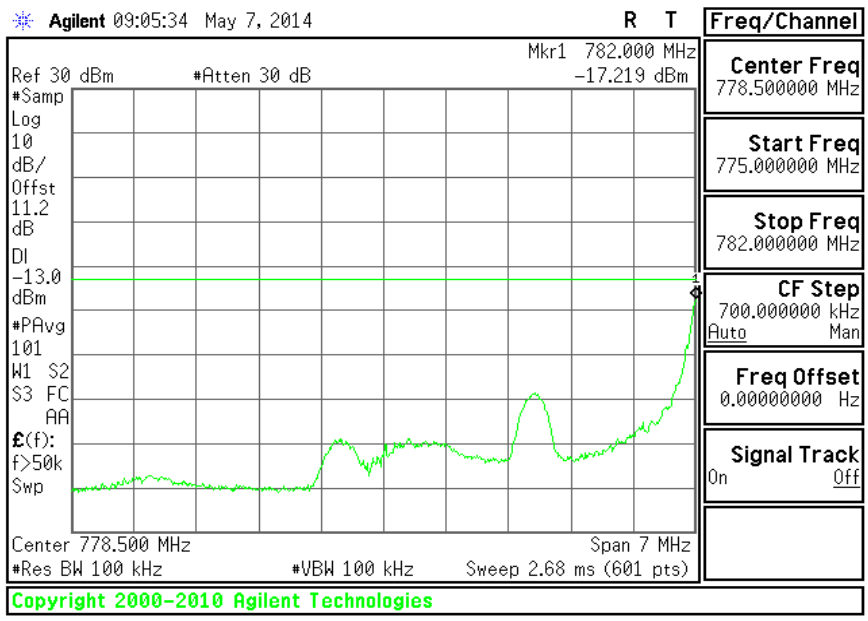



RB25-0

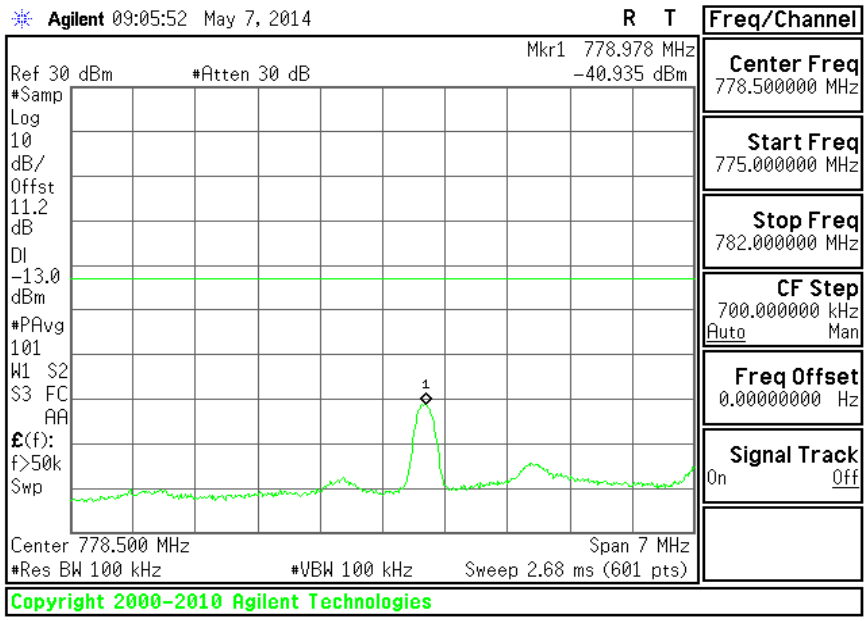


**QPSK, 784.5MHz, 775 - 782MHz, (5MHz Bandwidth)**

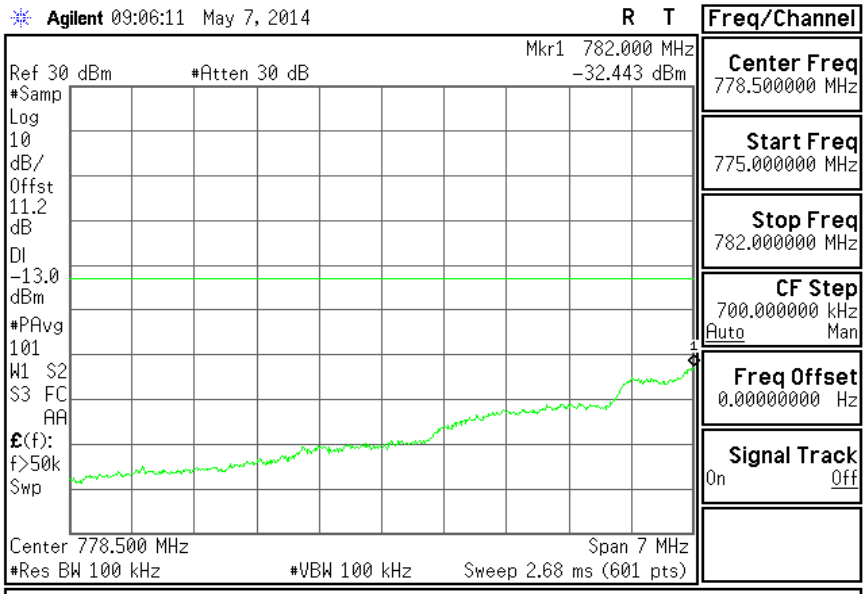
RB1-0



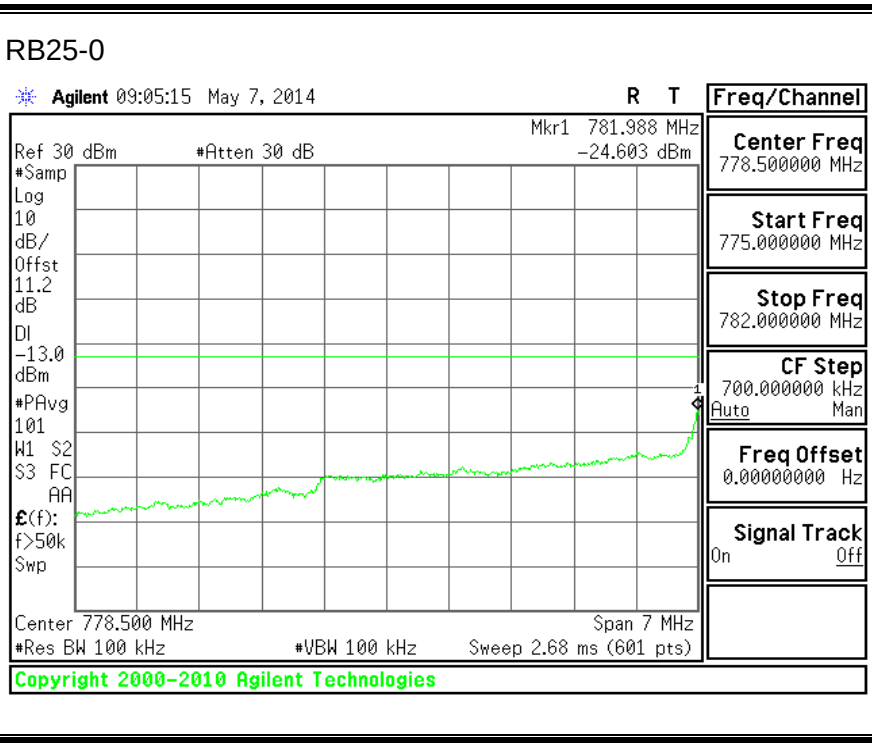

RB1-24



RB12-6

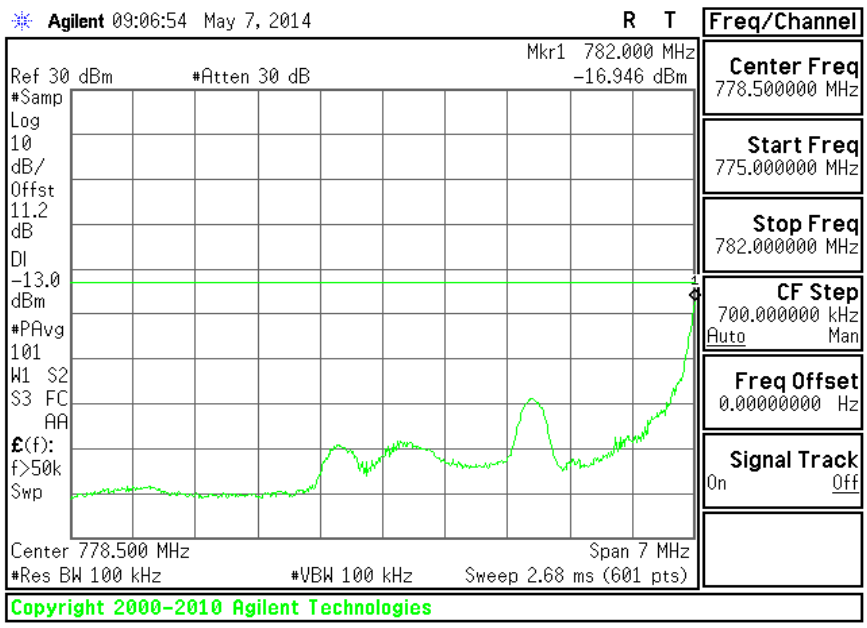



RB25-0

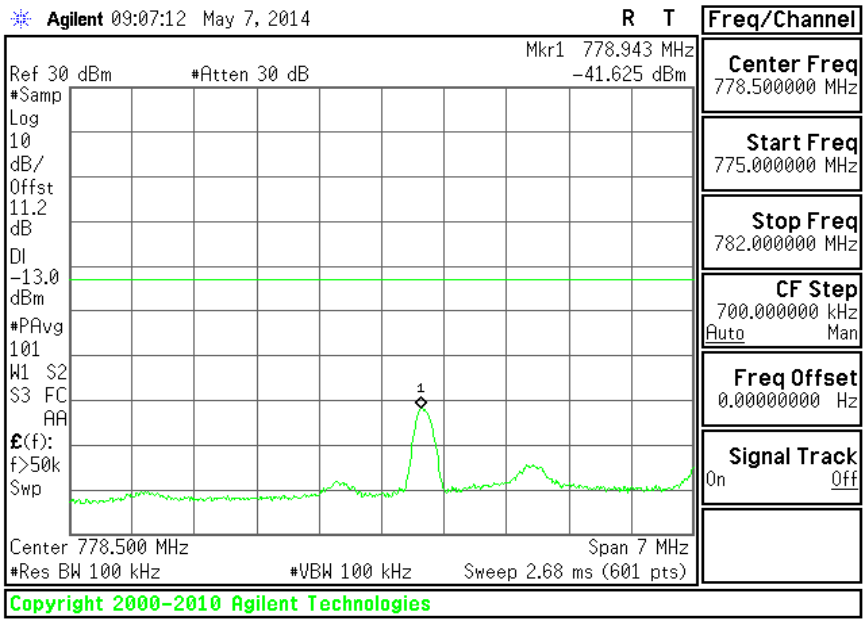


**16QAM, 784.5MHz, 775 - 782MHz, (5MHz Bandwidth)**

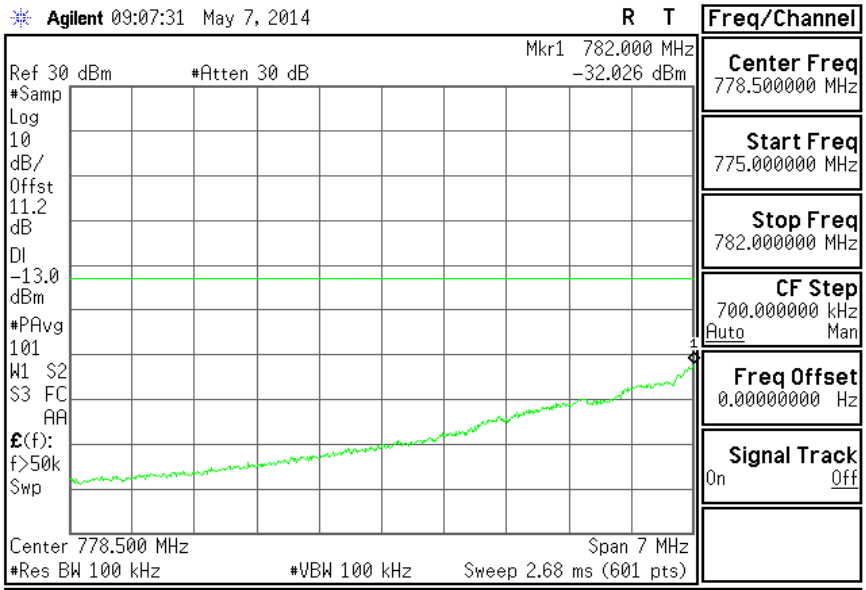
RB1-0



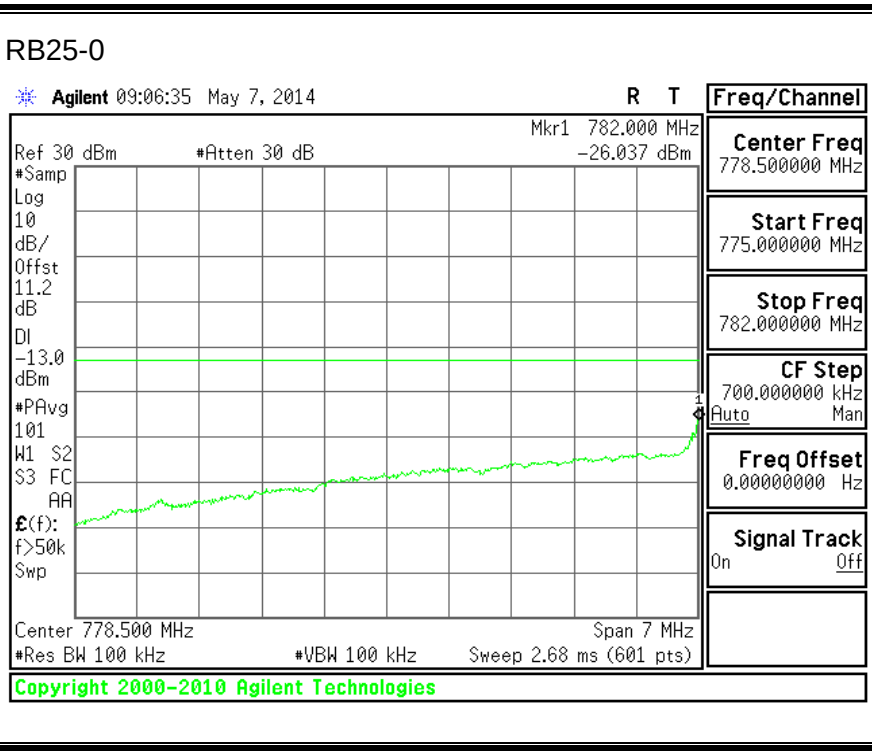

RB1-24



RB12-6

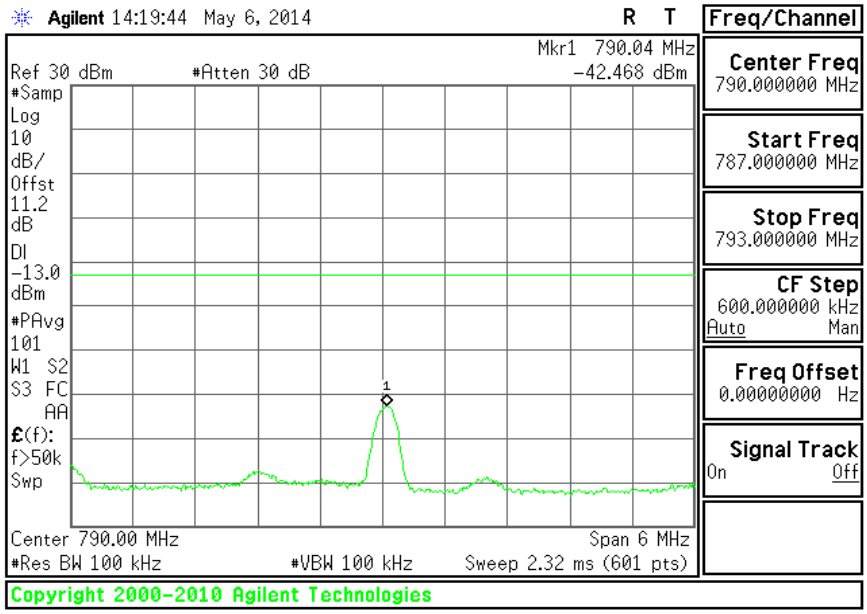



RB25-0

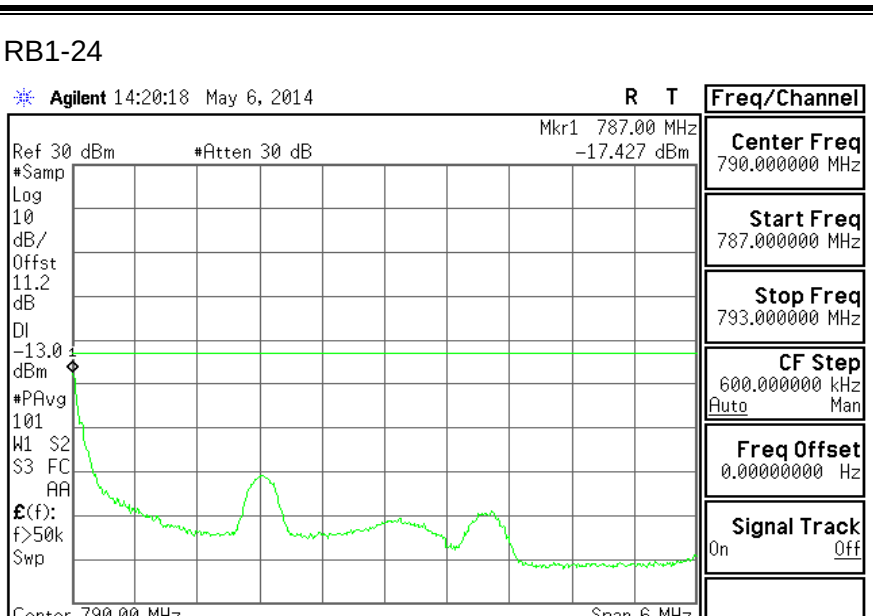


**QPSK, 784.5MHz, 787 - 793MHz, (5MHz Bandwidth)**

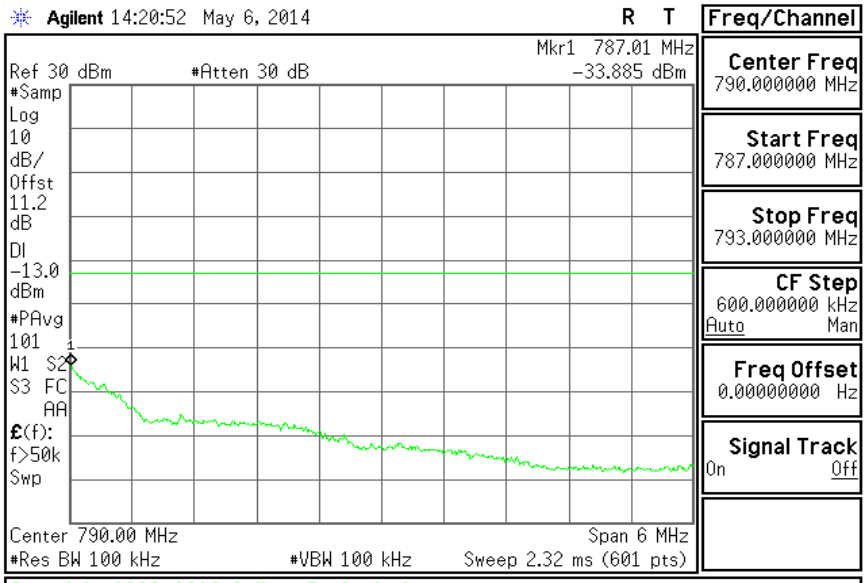
RB1-0



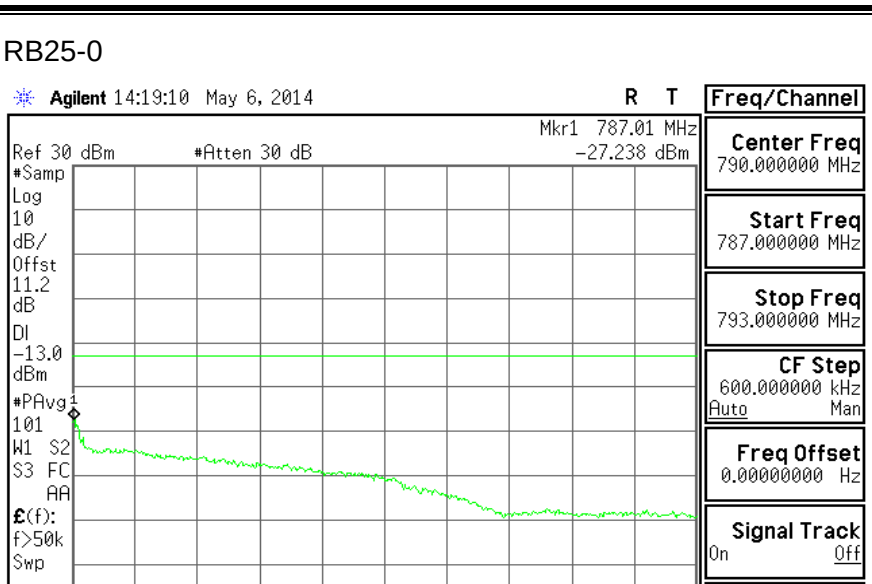

RB1-24



RB12-6

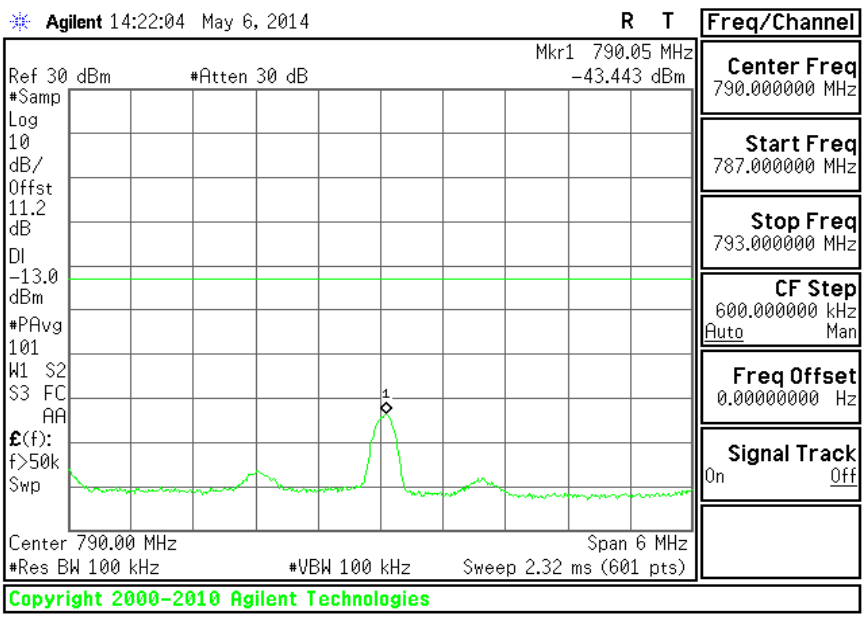



RB25-0

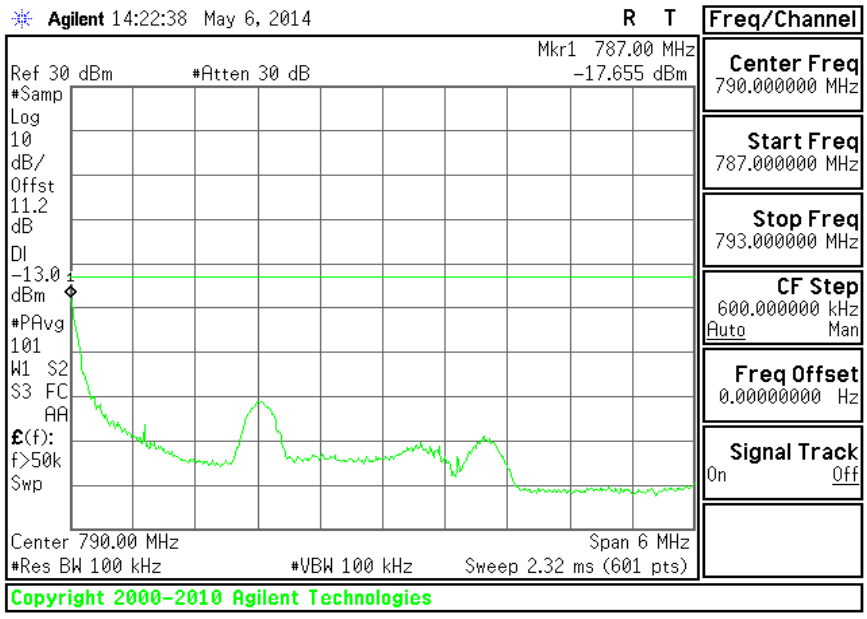


**16QAM, 784.5MHz, 787 - 793MHz, (5MHz Bandwidth)**

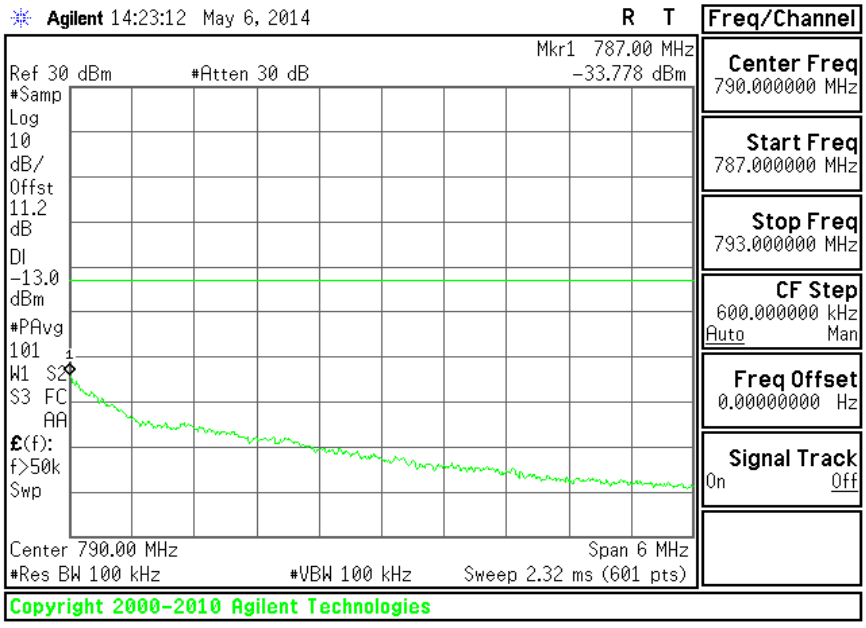
RB1-0



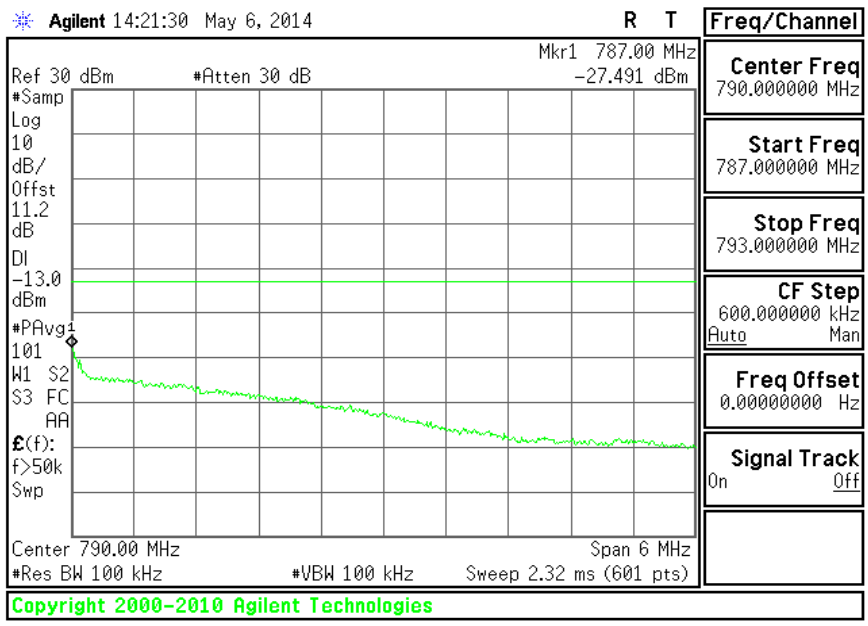

RB1-24



RB12-6

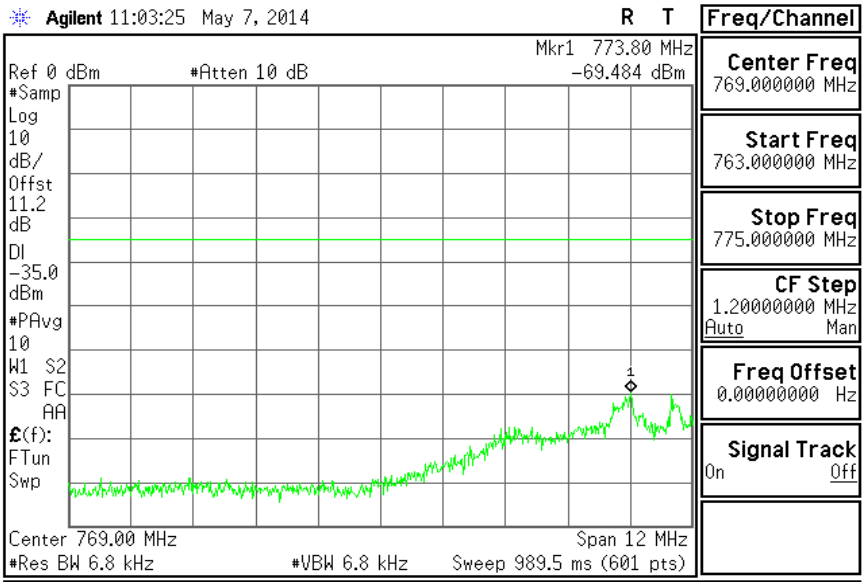



RB25-0

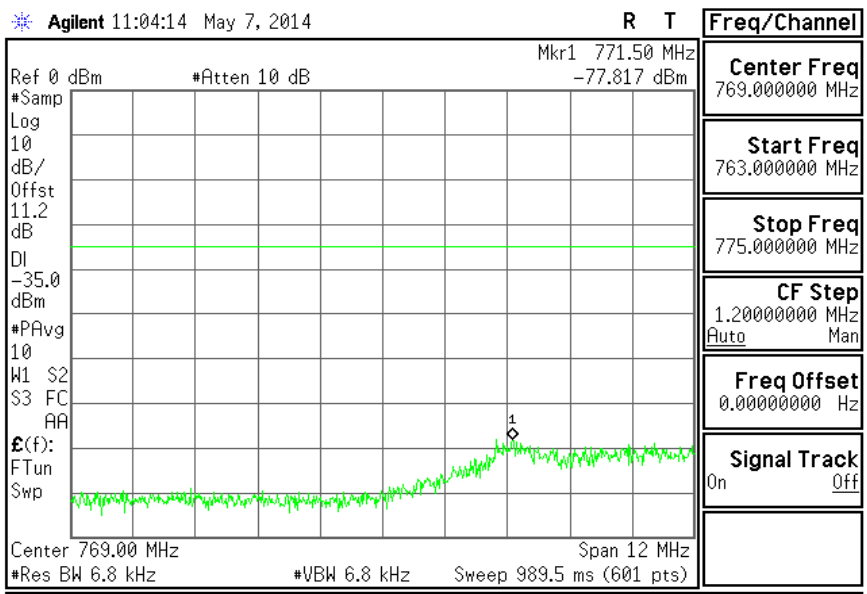


**QPSK, 784.5MHz, 763 - 775MHz, (5MHz Bandwidth)**

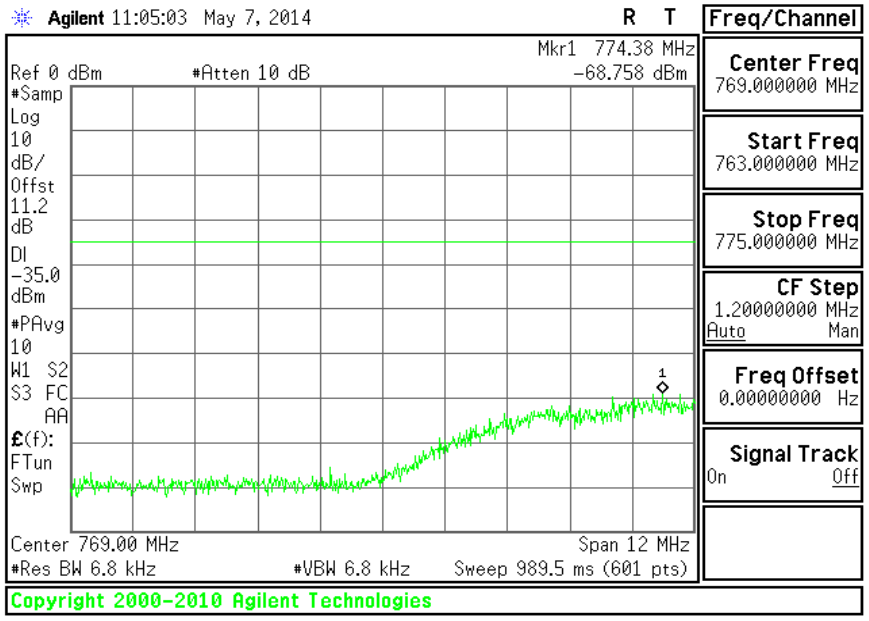
RB1-0



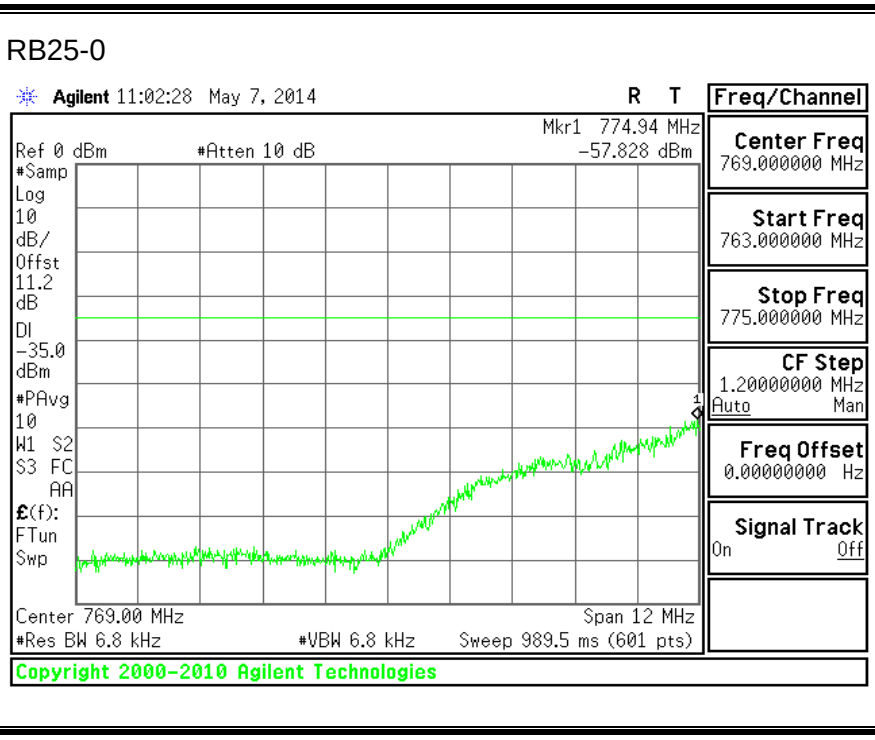

RB1-24



RB12-6

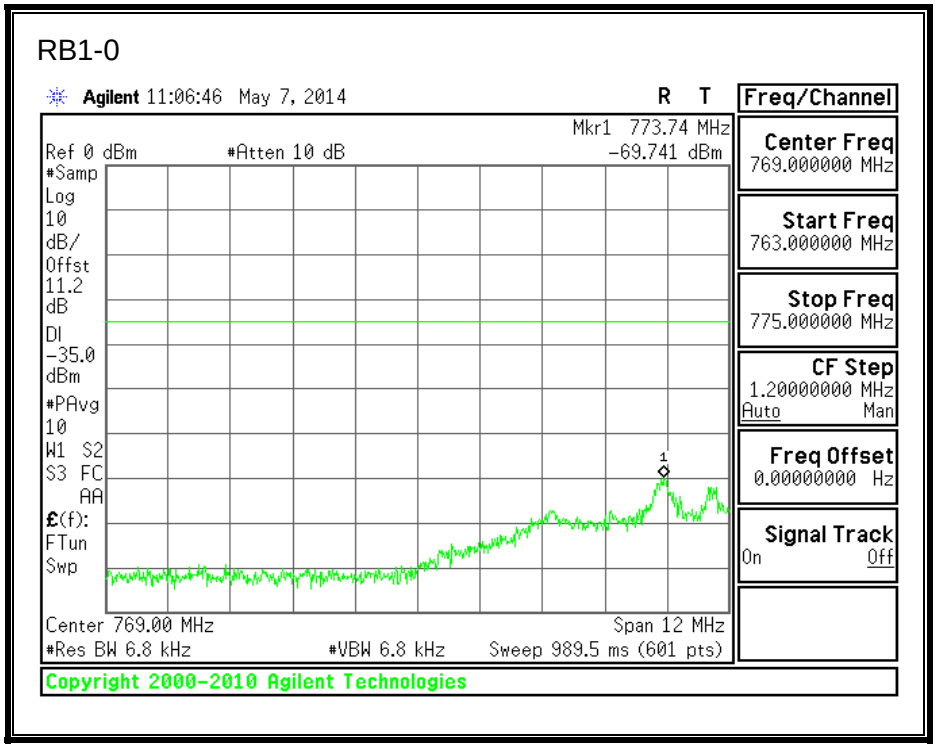



RB25-0

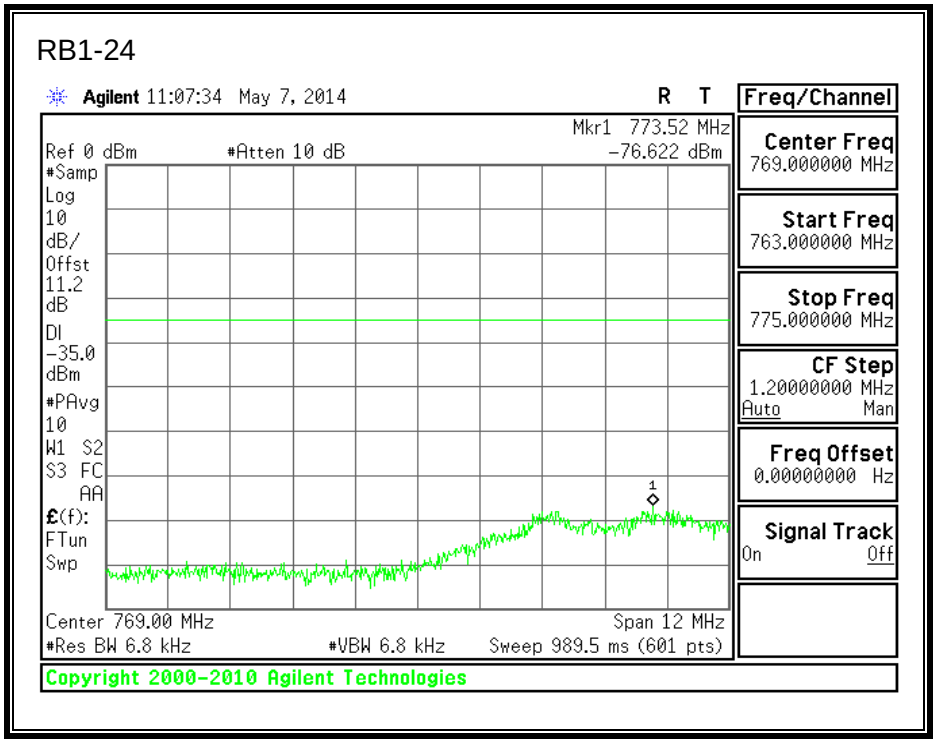


**16QAM, 784.5MHz, 763 - 775MHz, (5MHz Bandwidth)**

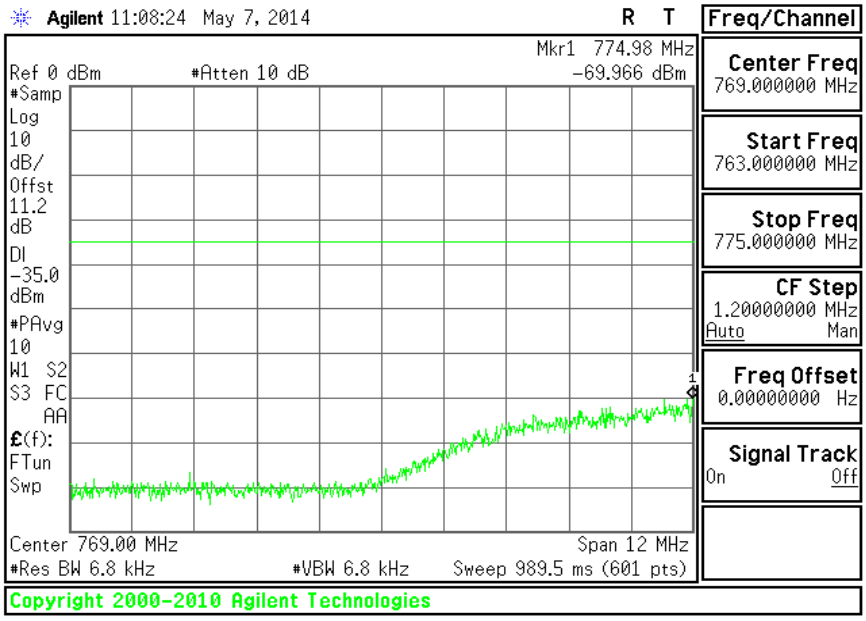
RB1-0



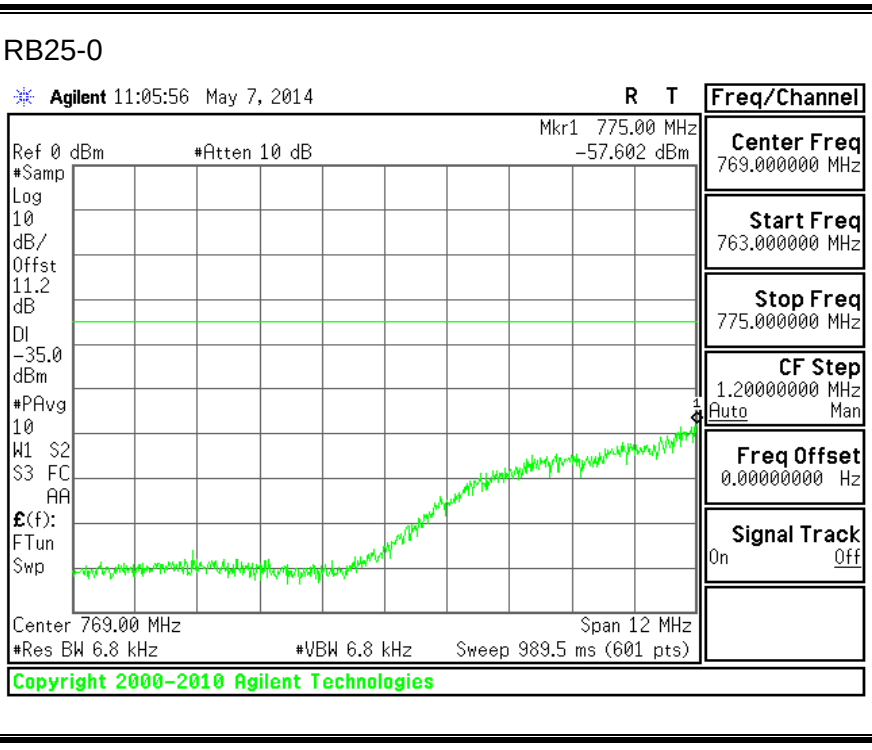

RB1-24



RB12-6

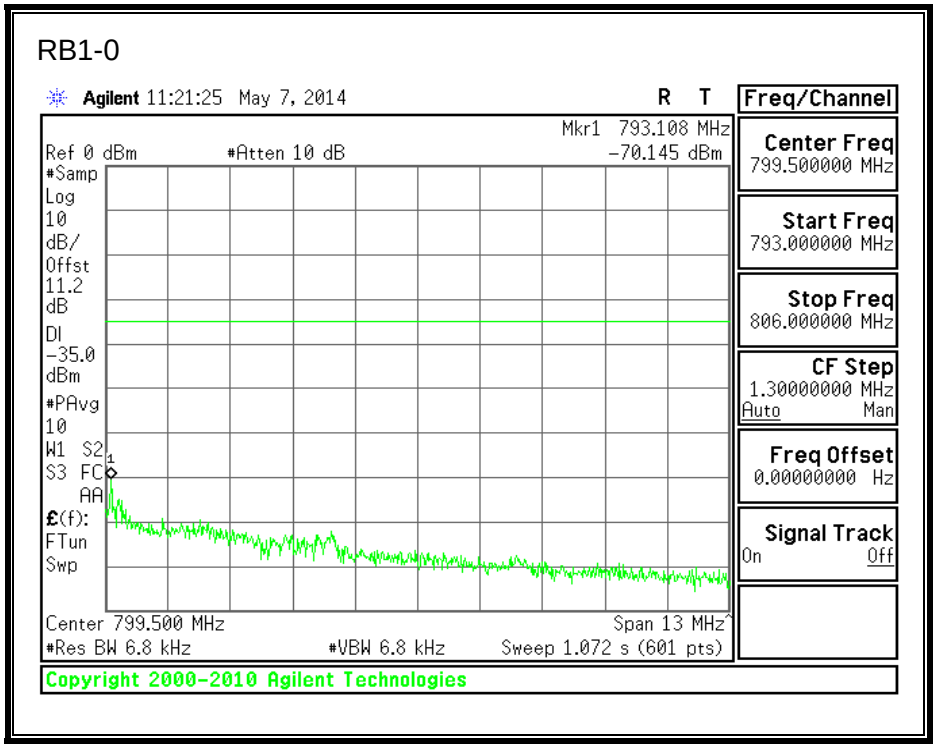



RB25-0

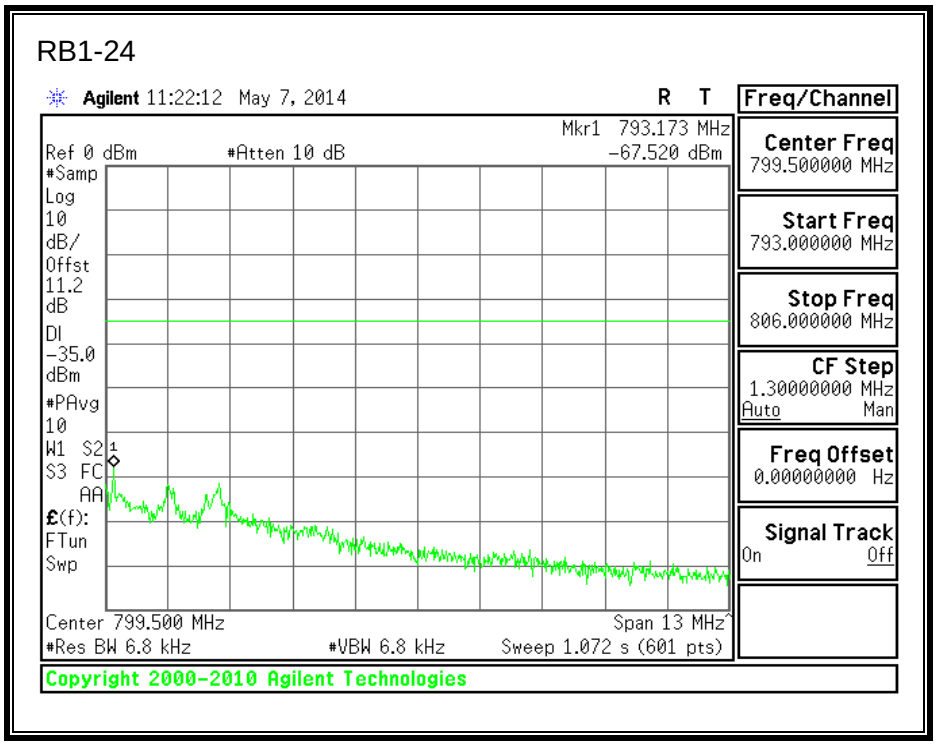


**QPSK, 784.5MHz, 793 - 806MHz, (5MHz Bandwidth)**

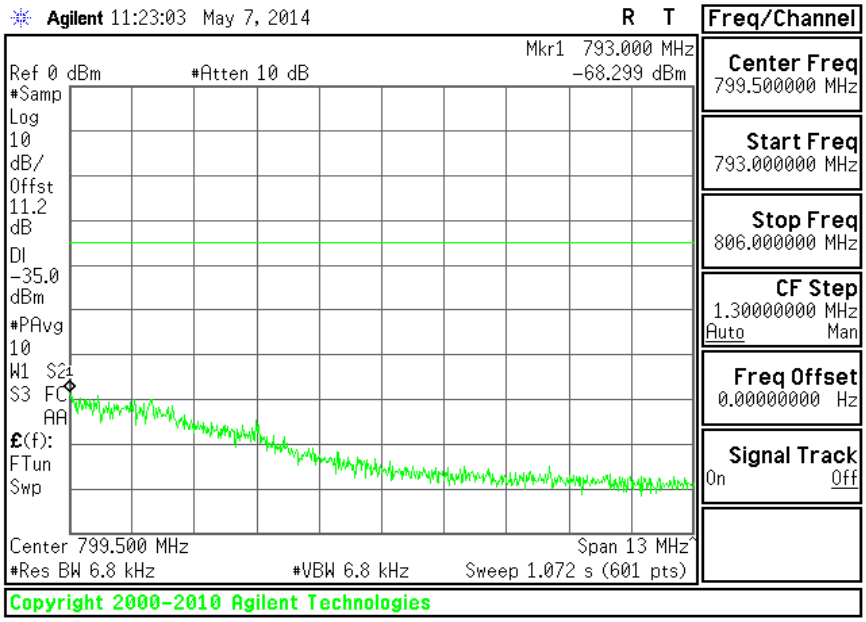
RB1-0



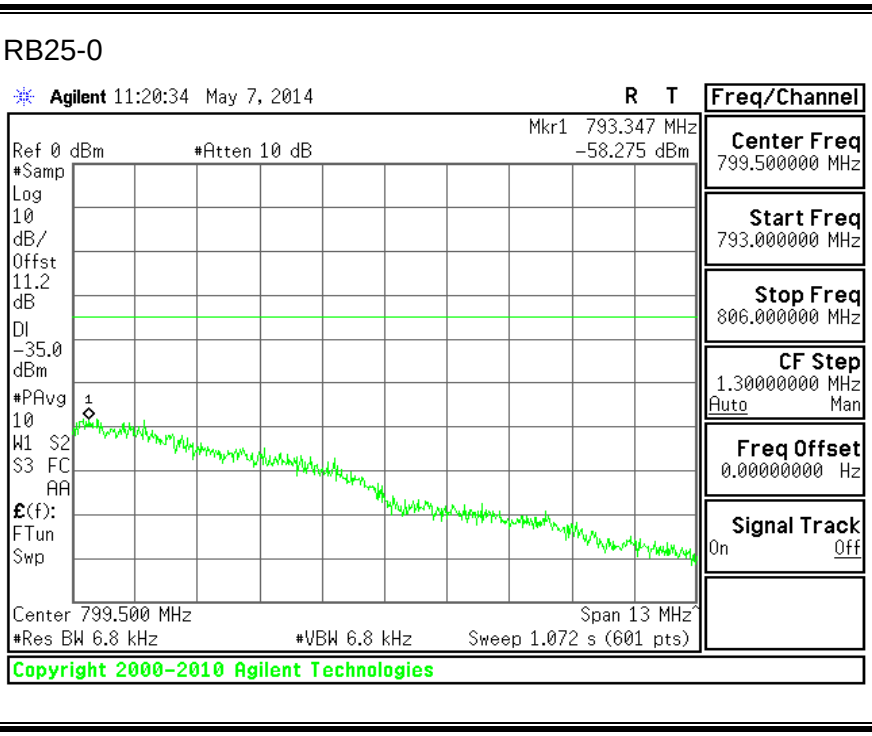

RB1-24



RB12-6

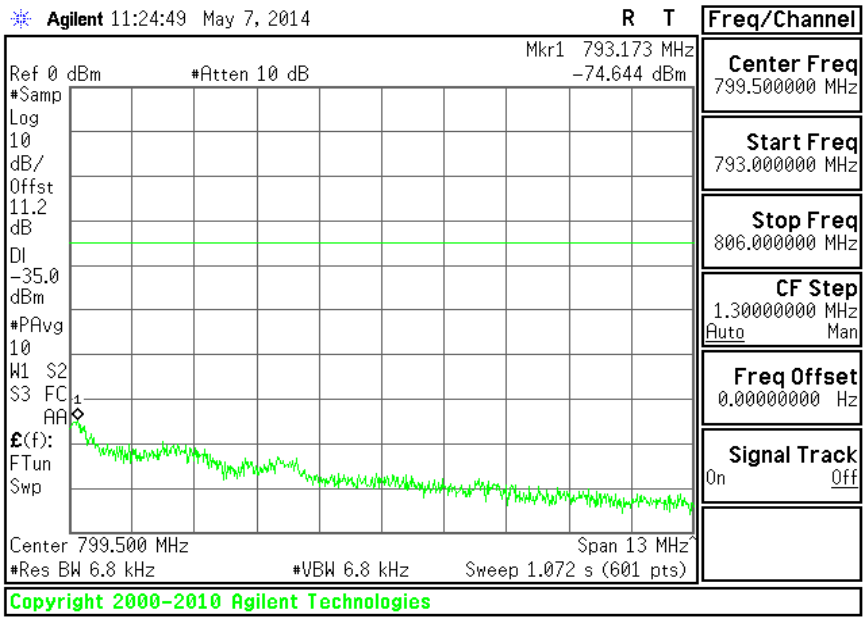



RB25-0

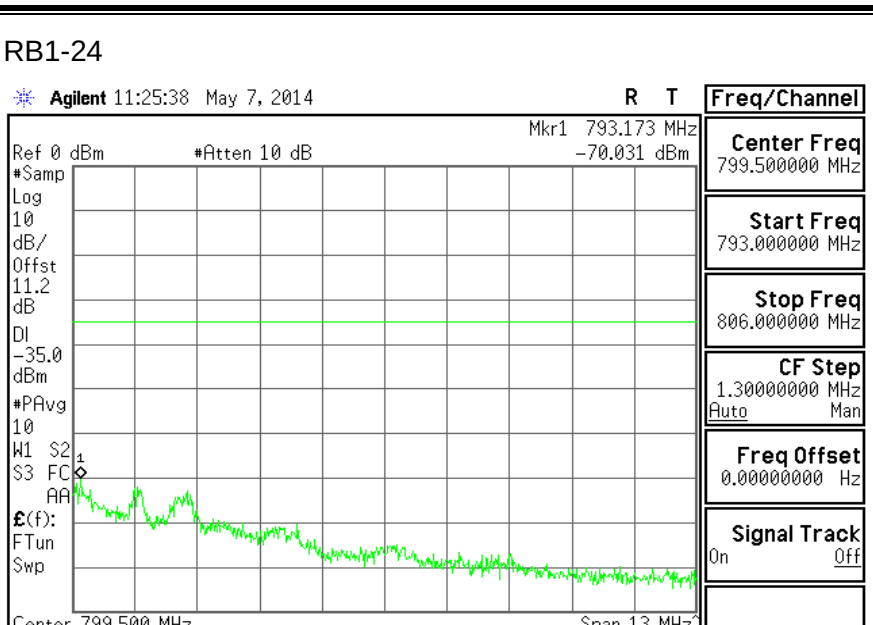


**16QAM, 784.5MHz, 793 - 806MHz, (5MHz Bandwidth)**

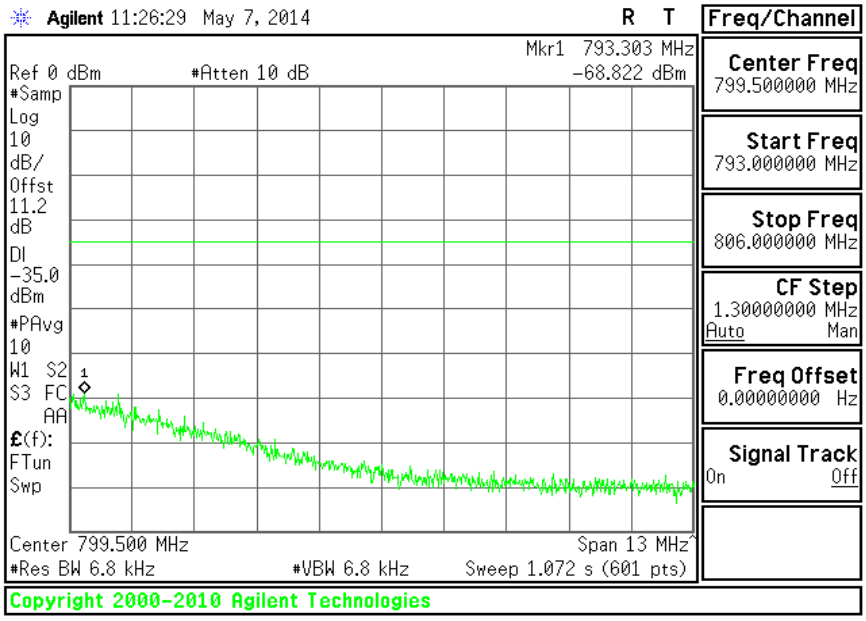
RB1-0



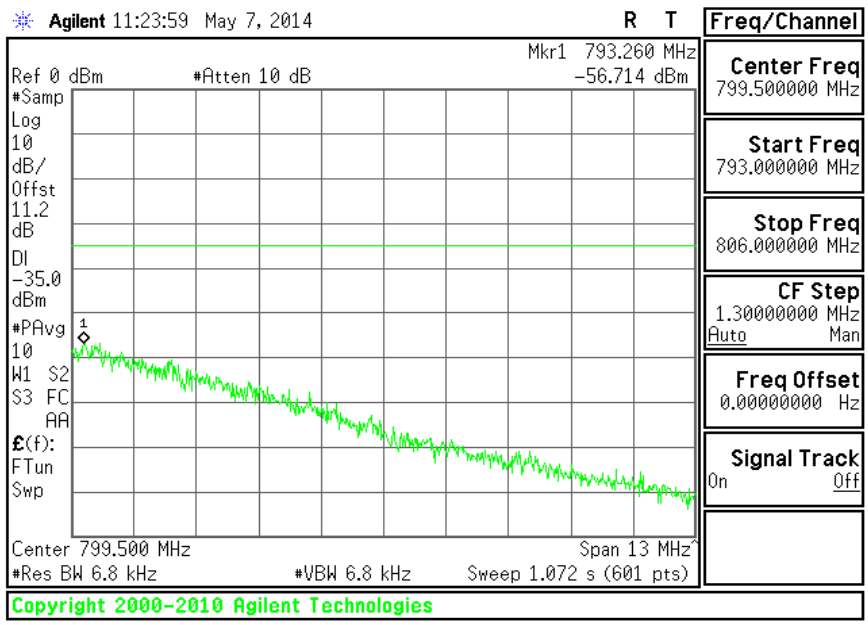

RB1-24



RB12-6

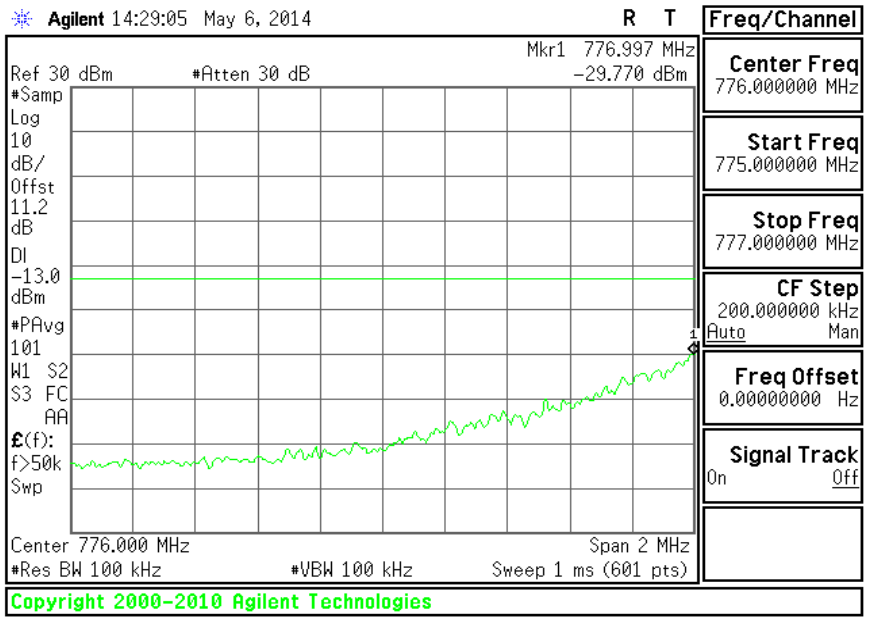



RB25-0

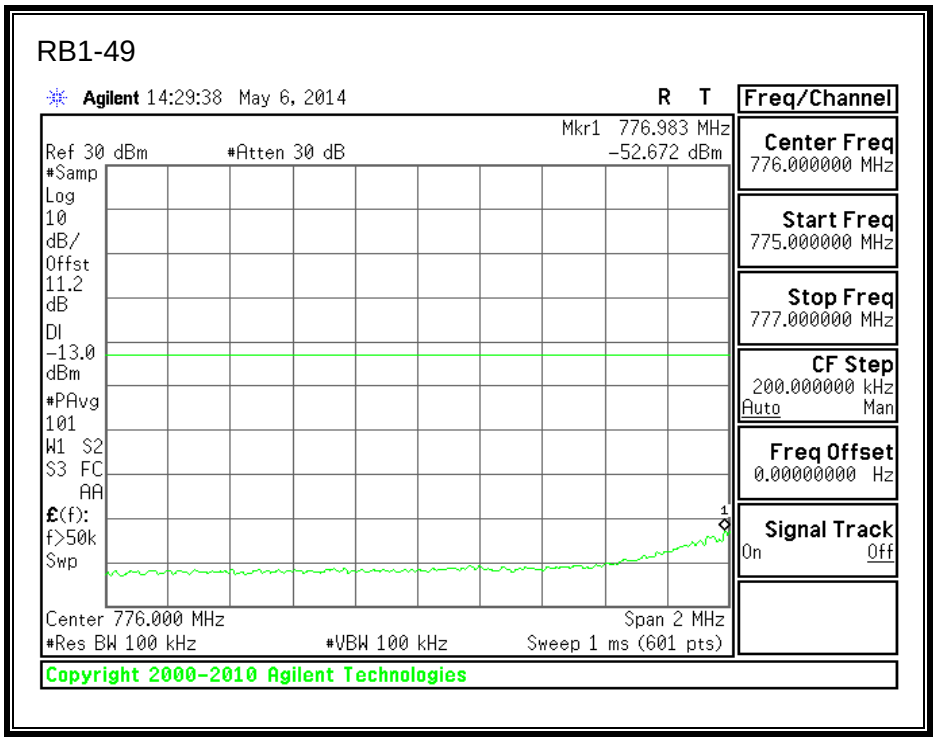


**QPSK, 782MHz, 775 - 777MHz, (10MHz Bandwidth)**

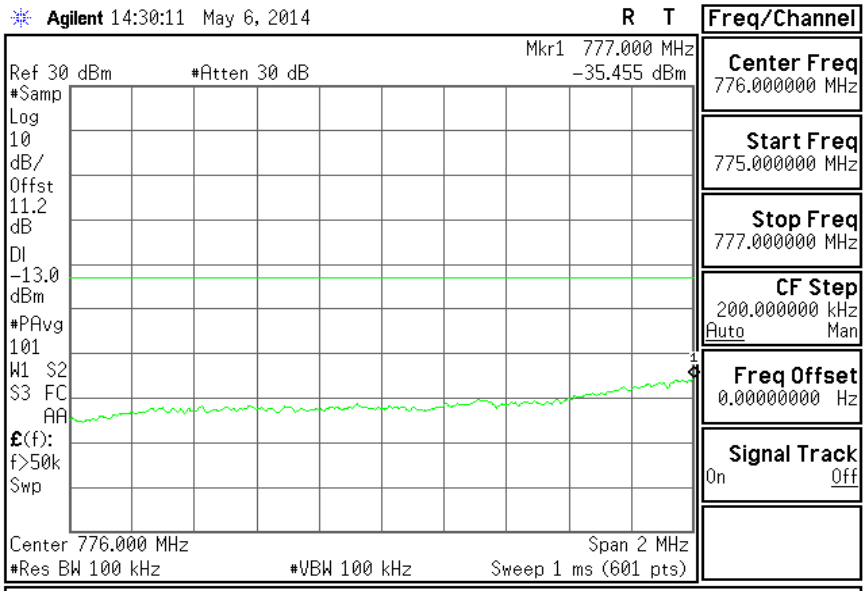
RB1-0



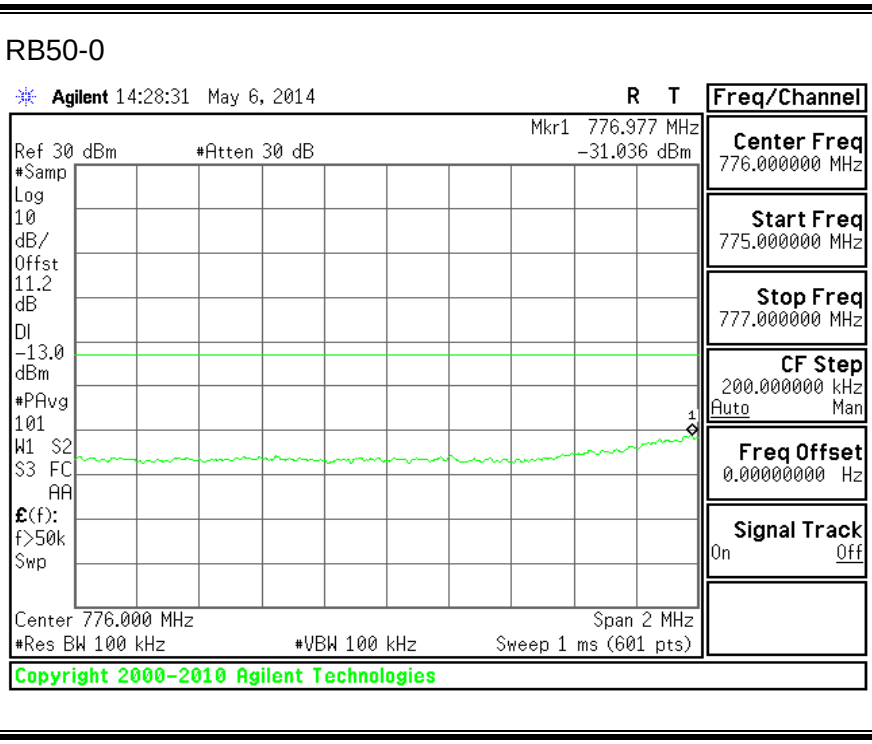

RB1-49



RB25-12

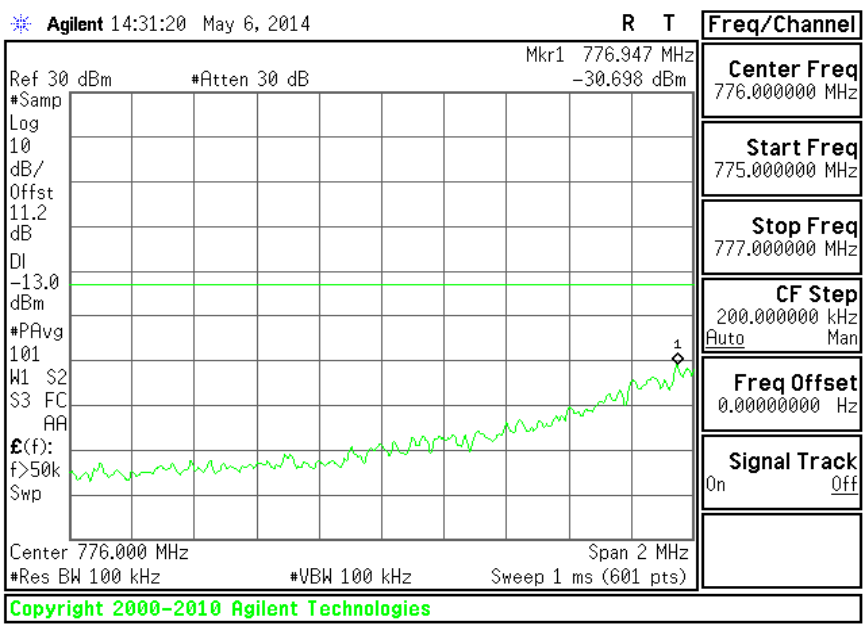



RB50-0

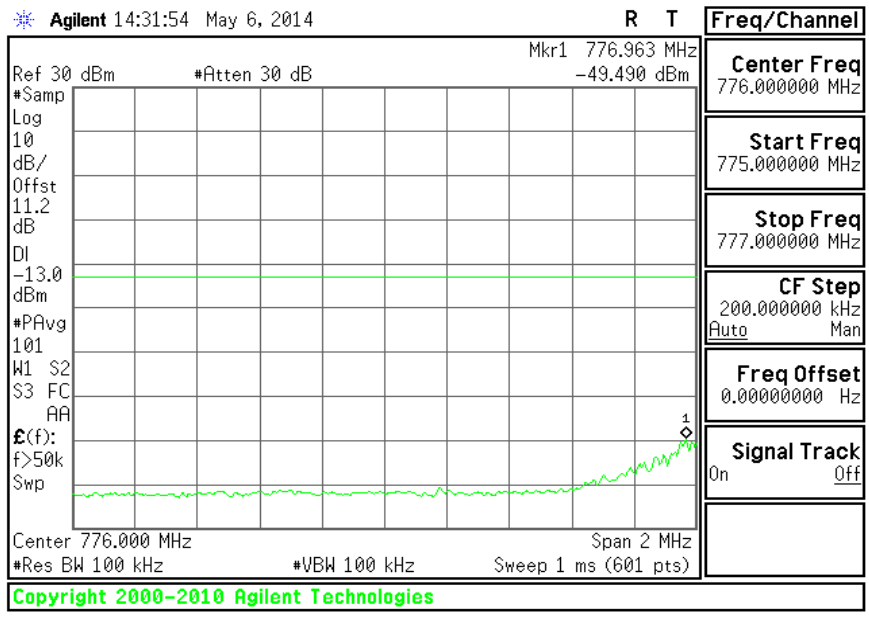


**16QAM, 782MHz, 775 - 777MHz, (10MHz Bandwidth)**

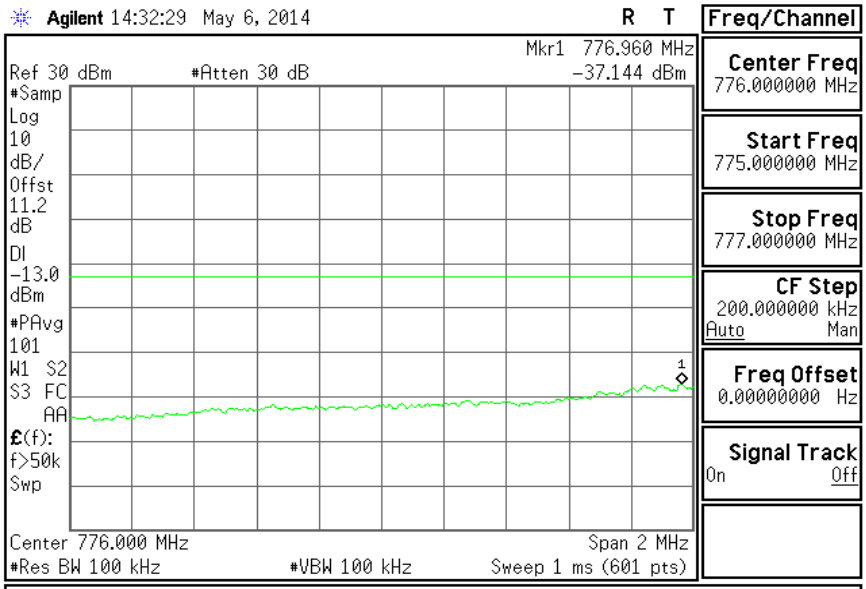
RB1-0



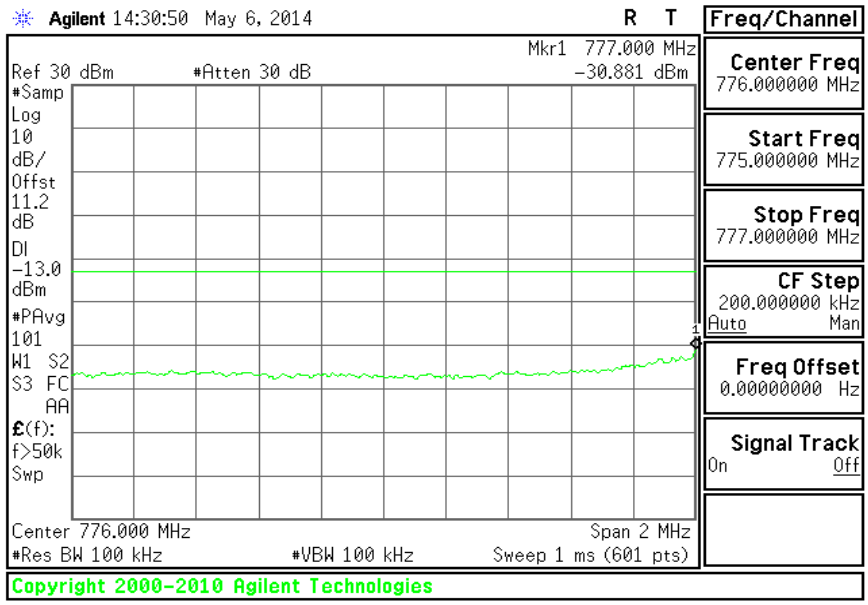

RB1-49



RB25-12

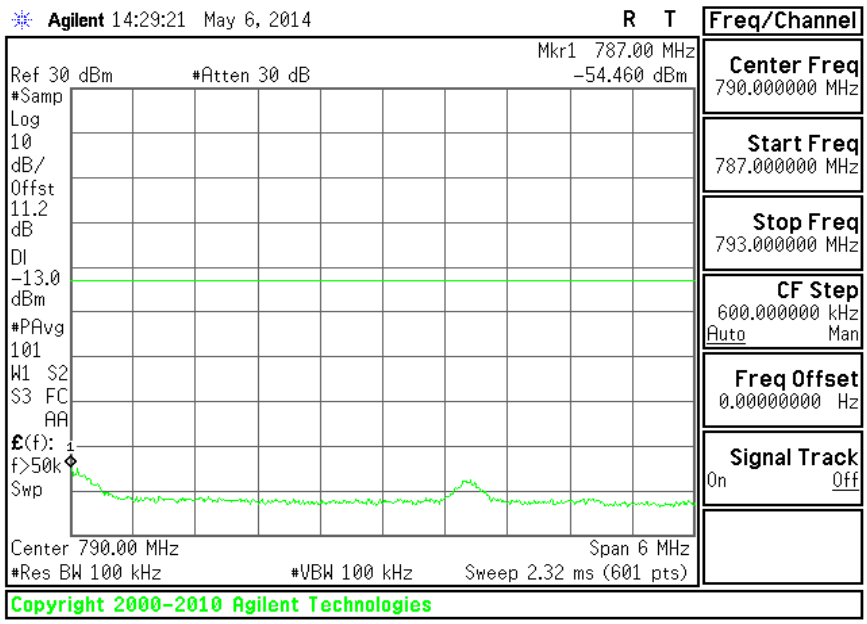



RB50-0

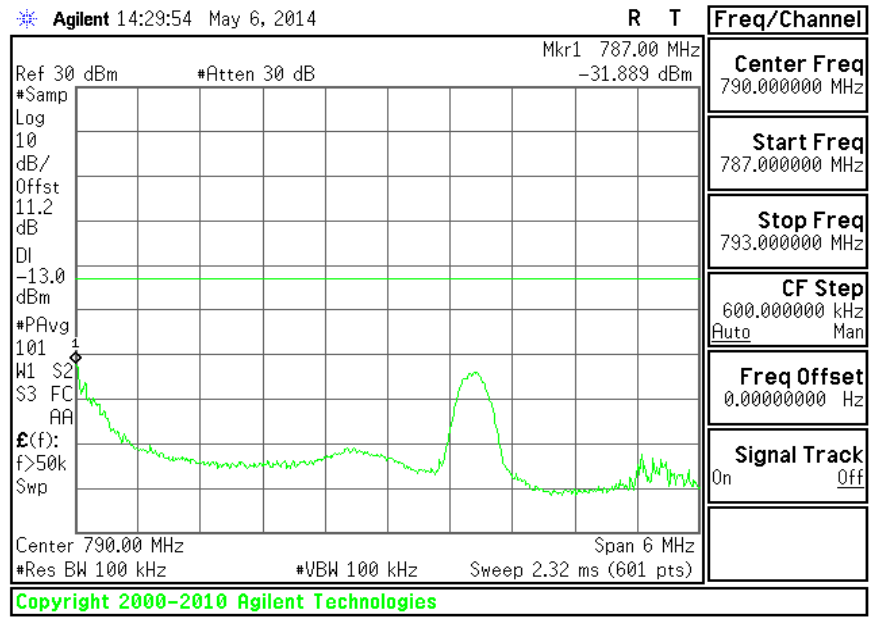


**QPSK, 782MHz, 787 - 793MHz, (10MHz Bandwidth)**

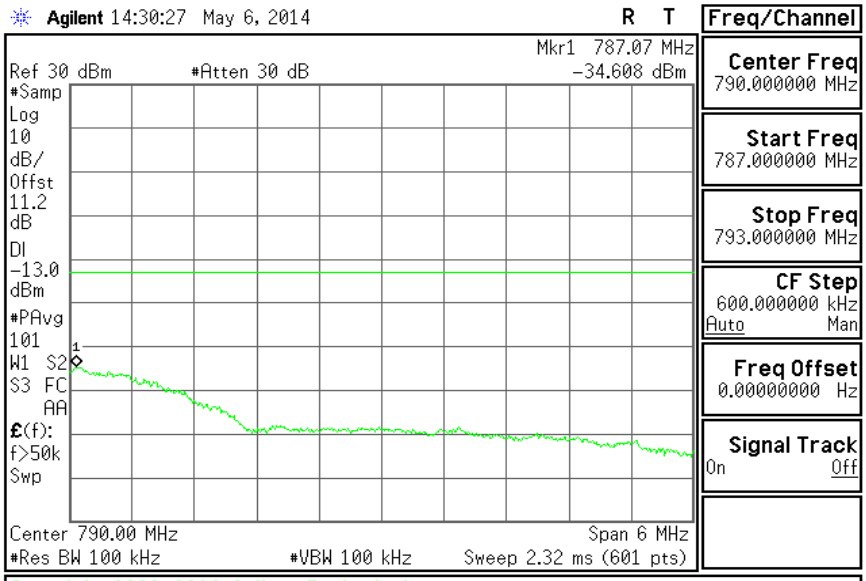
RB1-0



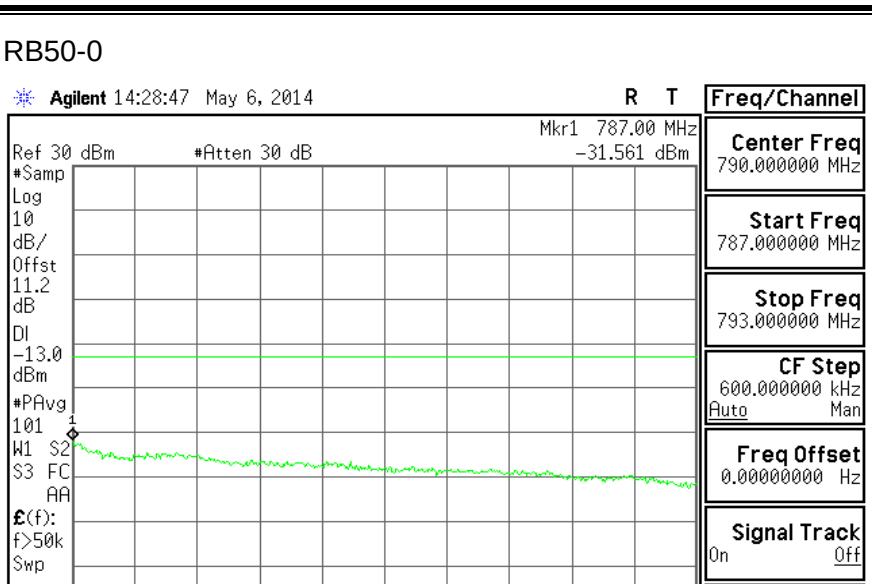

RB1-49



RB25-12

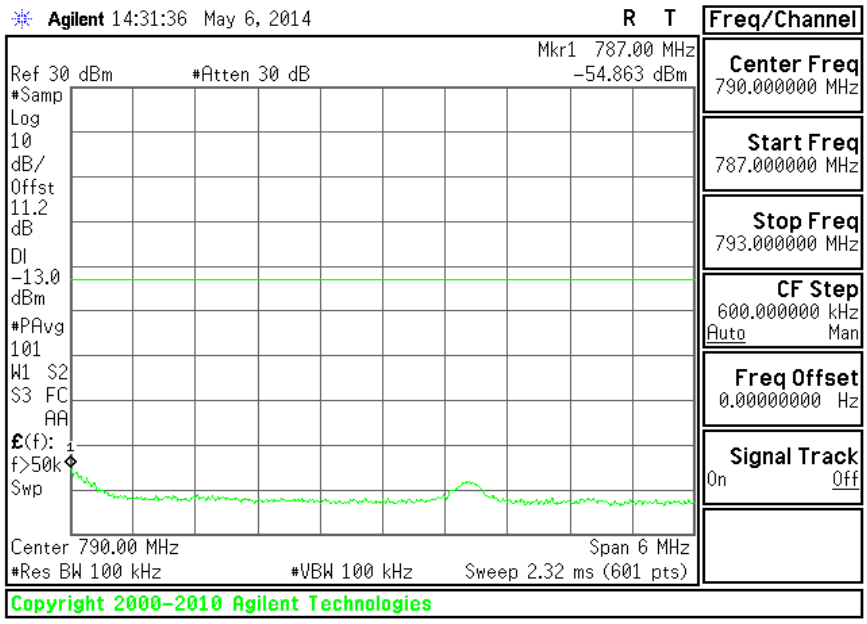



RB50-0

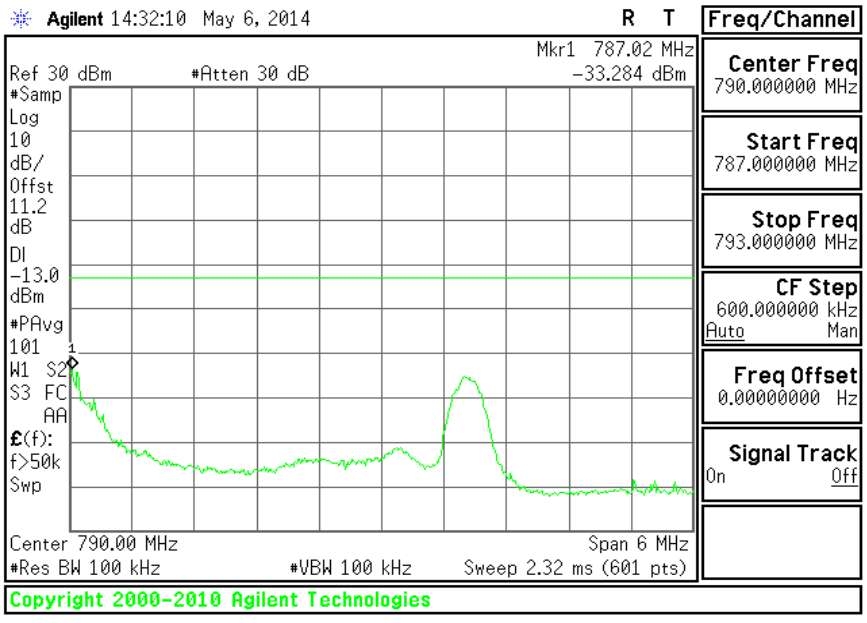


**16QAM, 782MHz, 787 - 793MHz, (10MHz Bandwidth)**

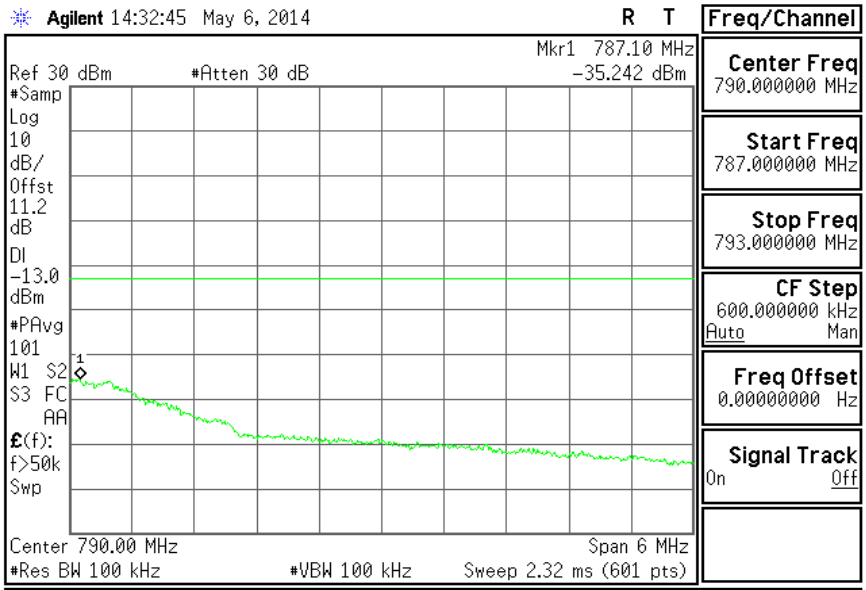
RB1-0



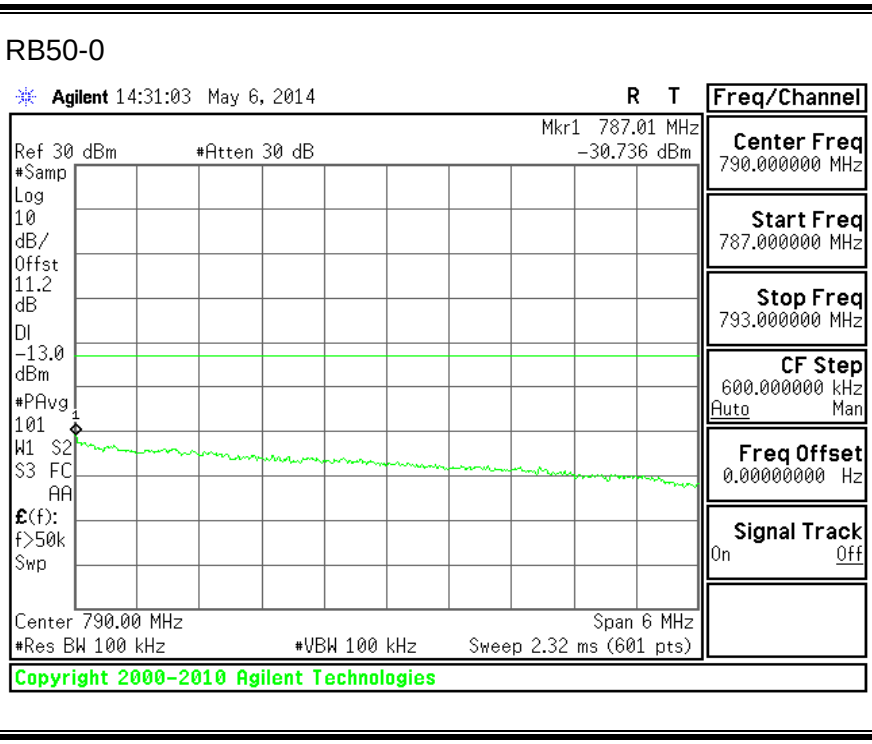

RB1-49



RB25-12

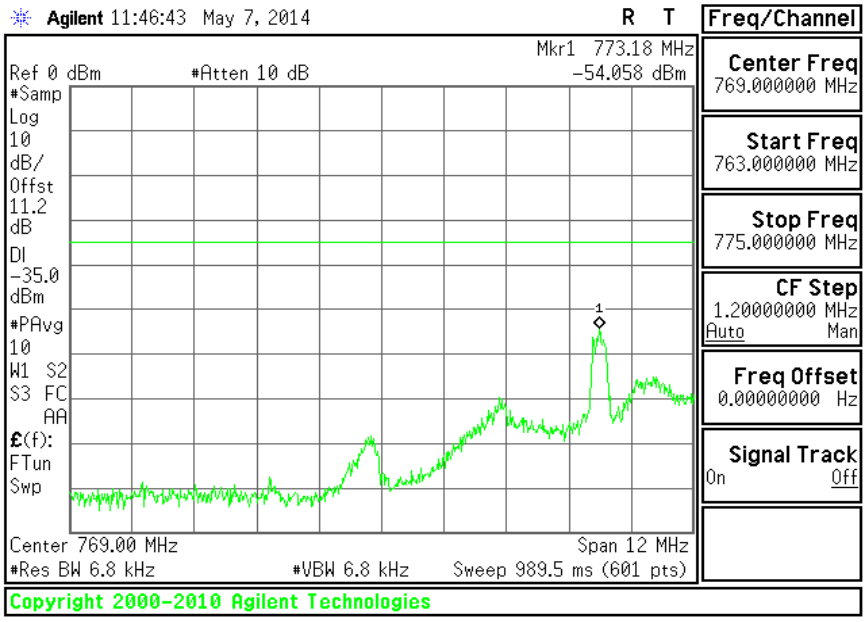



RB50-0

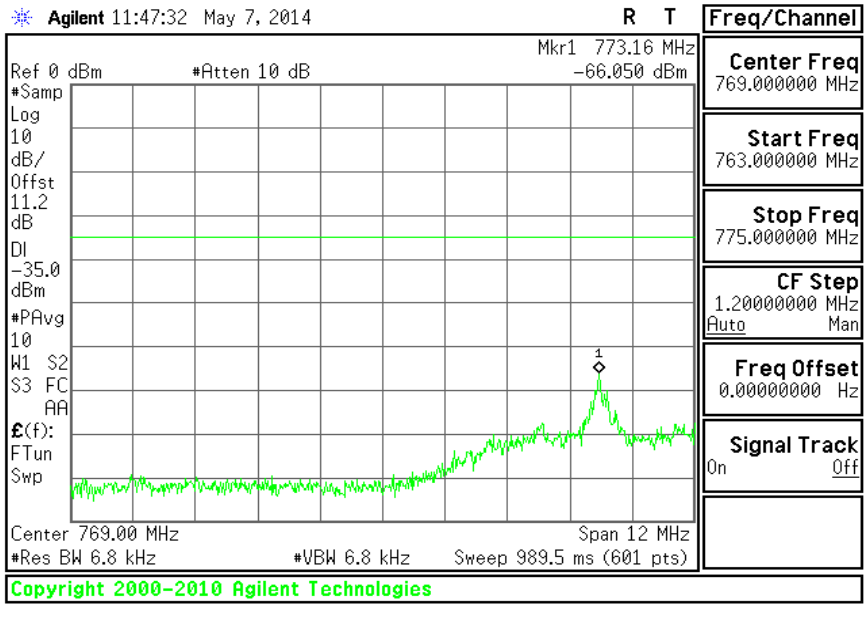


**QPSK, 782MHz, 763 - 775MHz, (10MHz Bandwidth)**

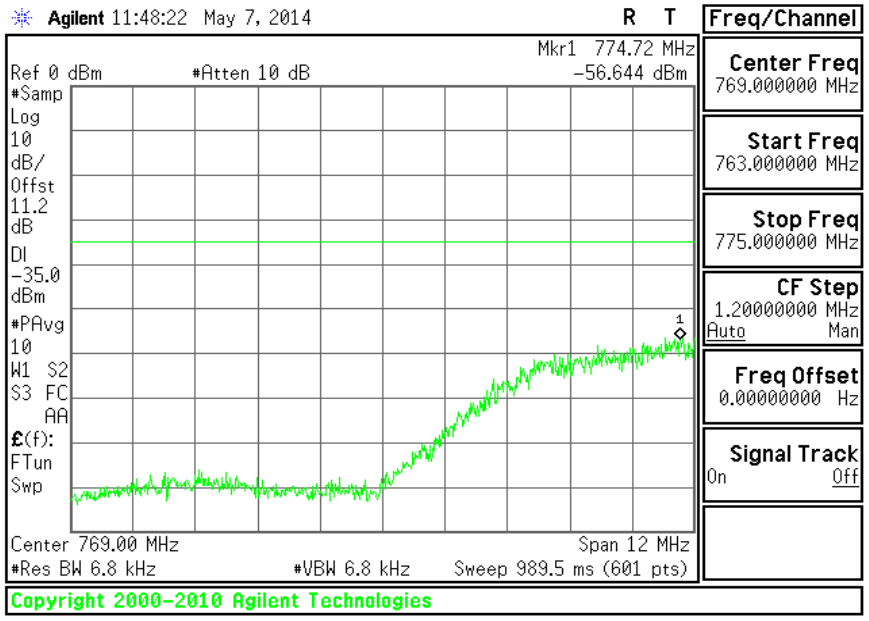
RB1-0



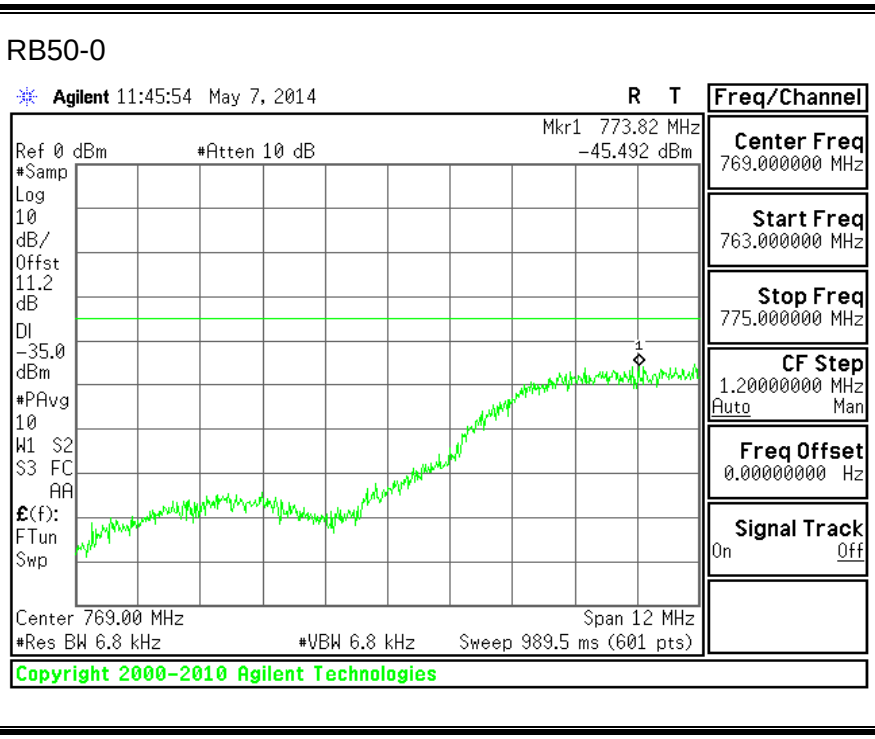

RB1-49



RB25-12

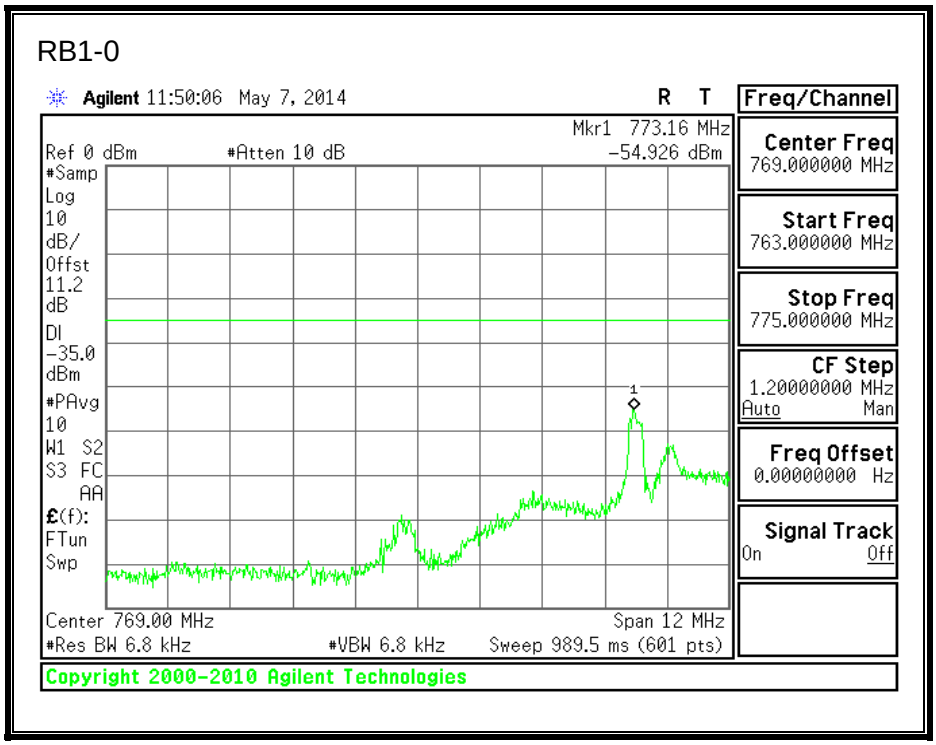



RB50-0

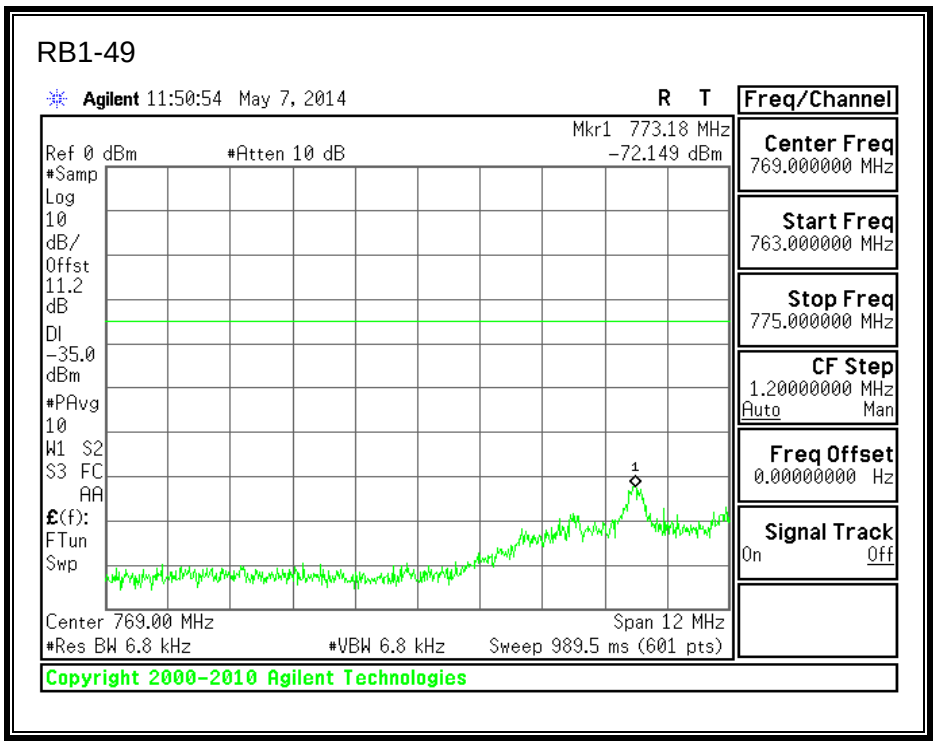


**16QAM, 782MHz, 763 - 775MHz, (10MHz Bandwidth)**

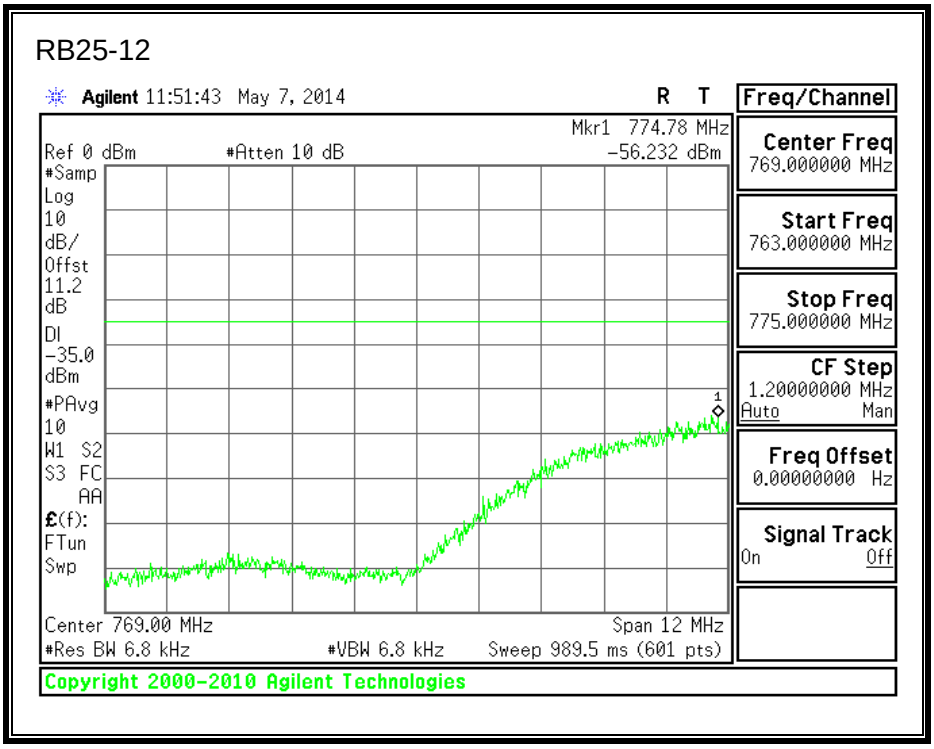
RB1-0



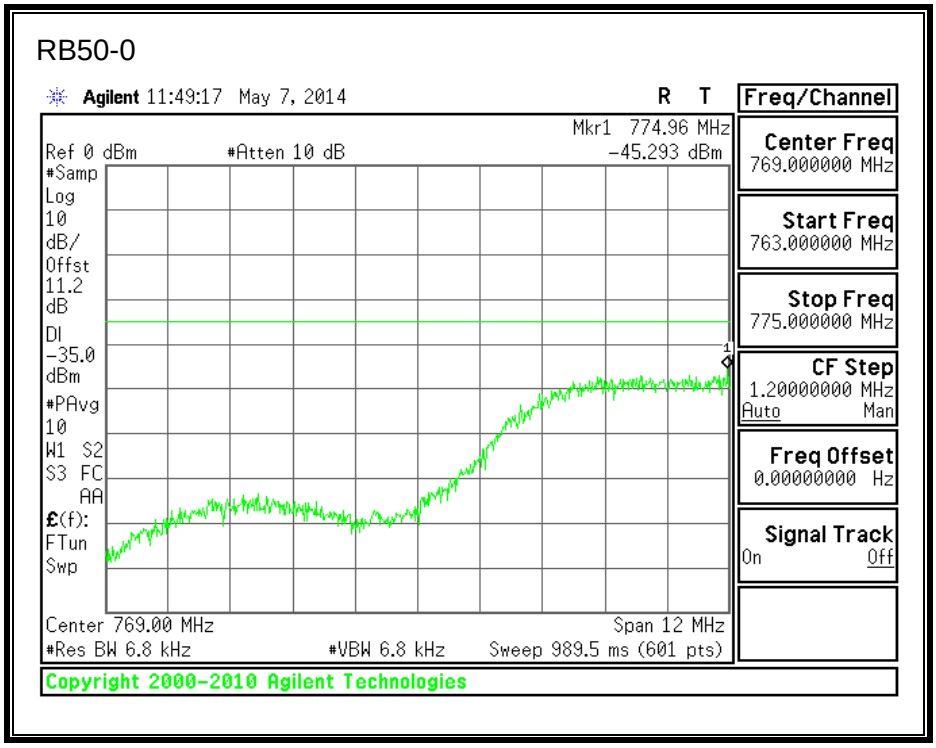

RB1-49



RB25-12

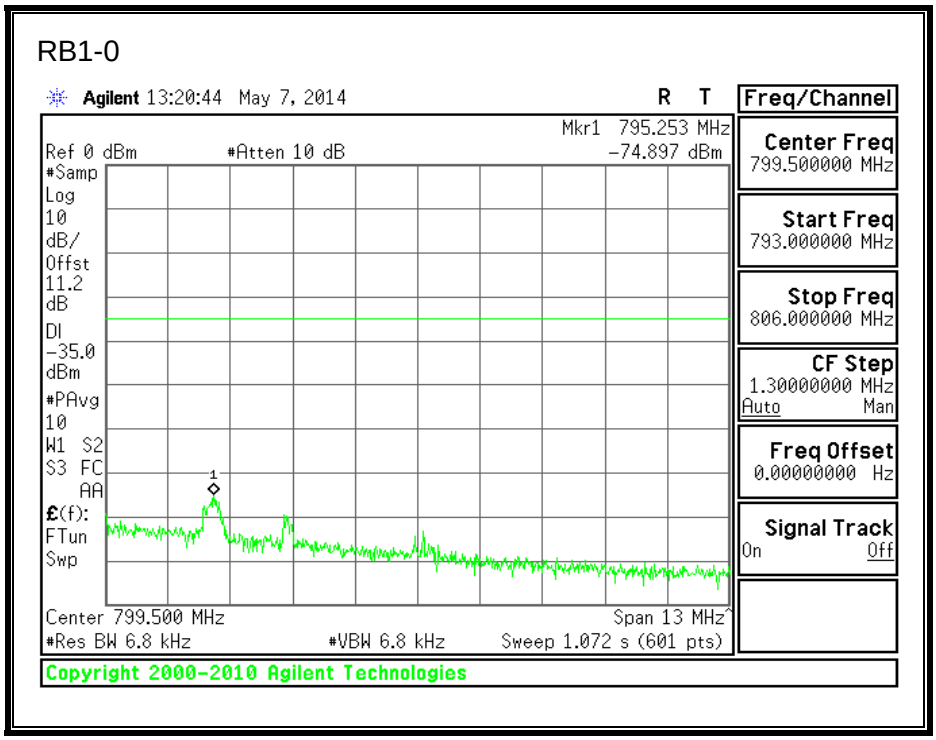



RB50-0

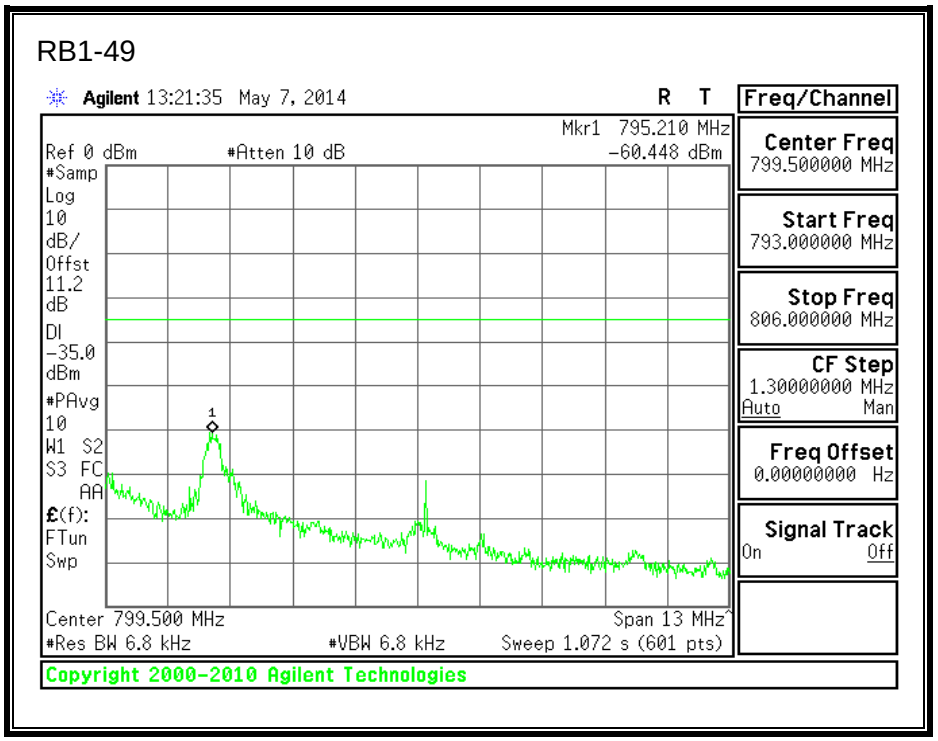


**QPSK, 782MHz, 793 - 806MHz, (10MHz Bandwidth)**

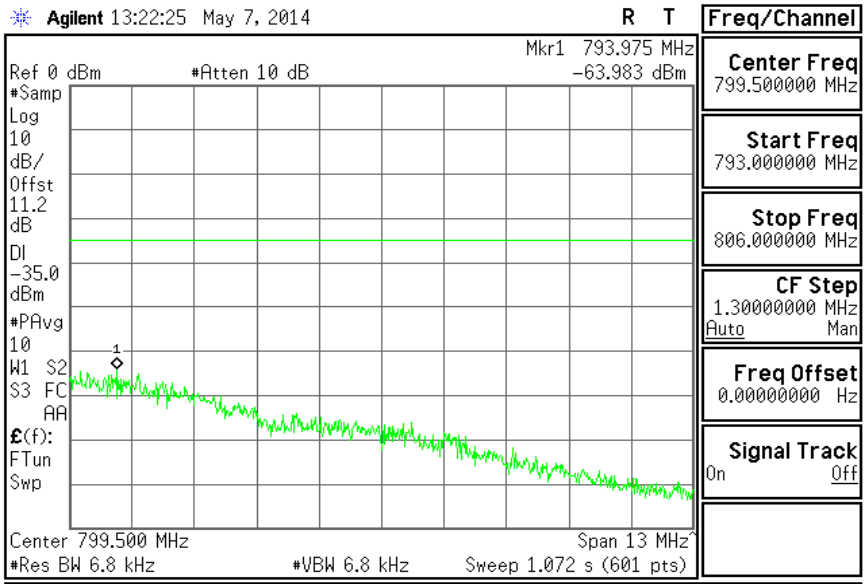
RB1-0



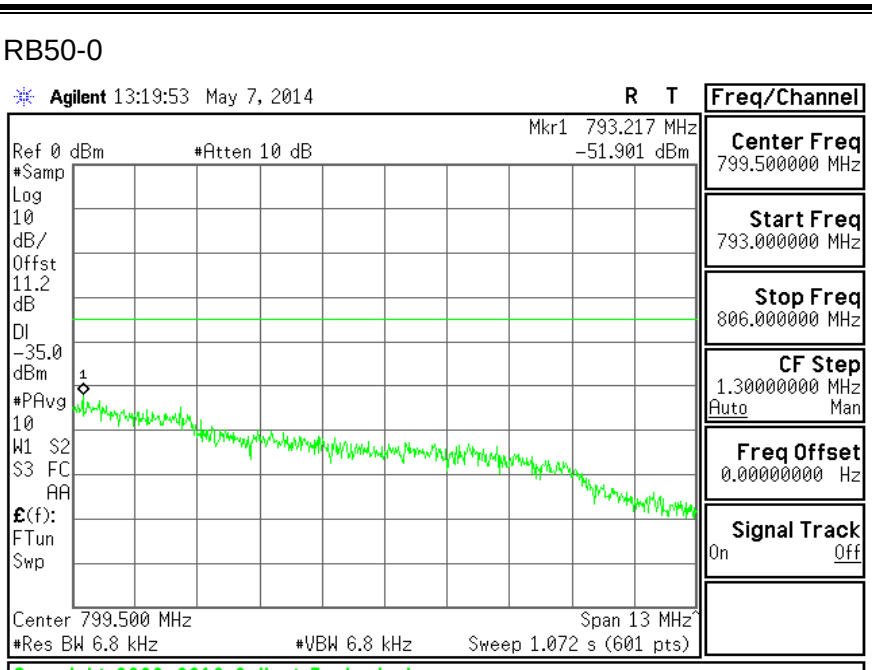

RB1-49



RB25-12

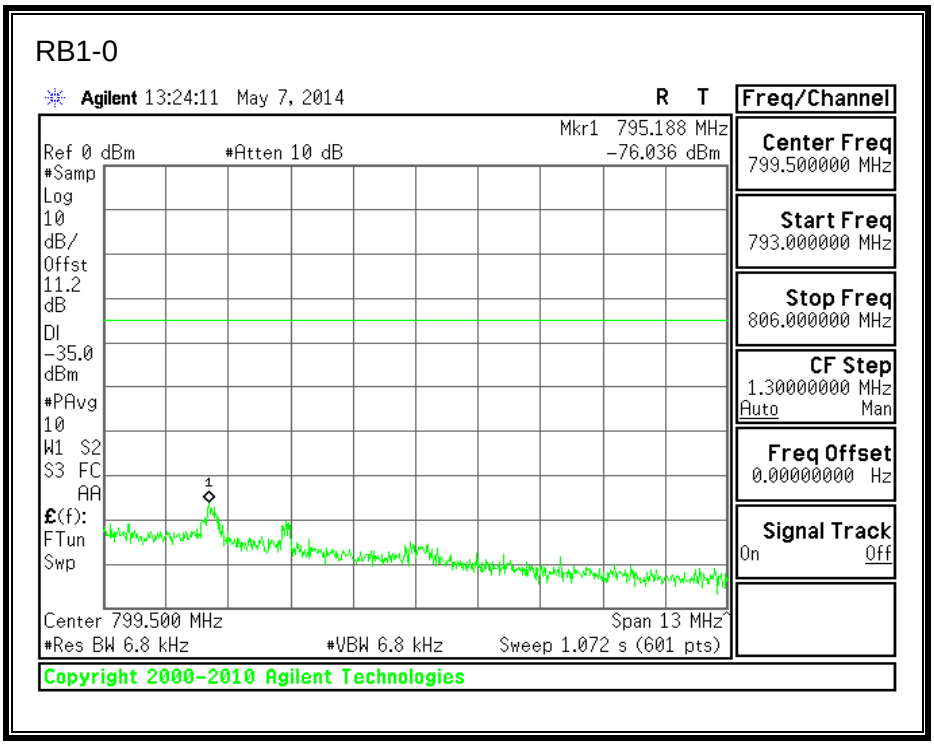



RB50-0

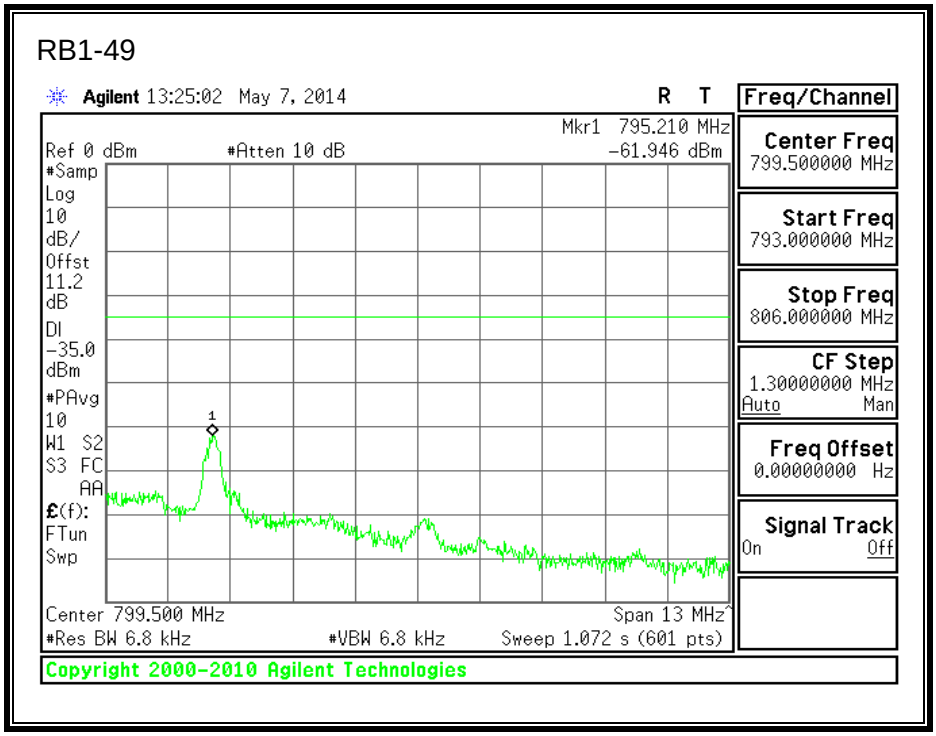


**16QAM, 782MHz, 793 - 806MHz, (10MHz Bandwidth)**

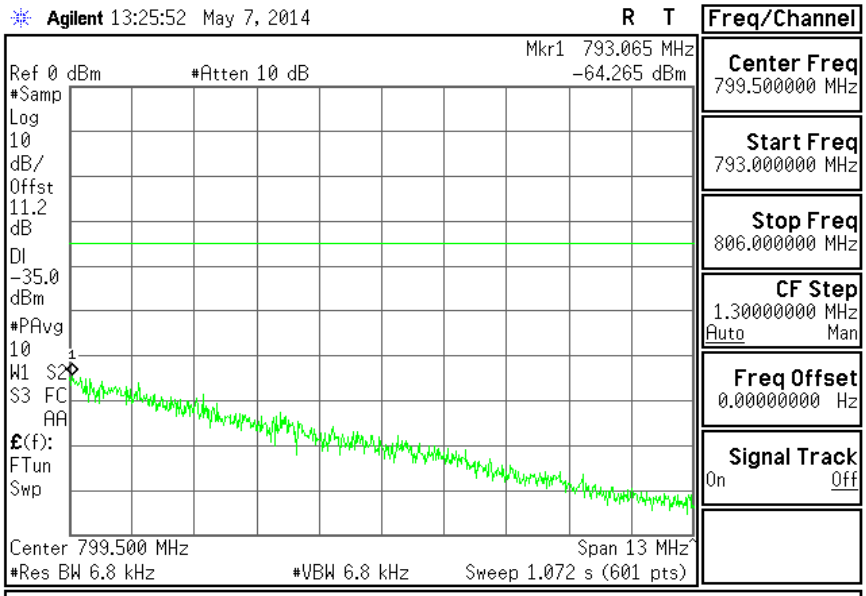
RB1-0



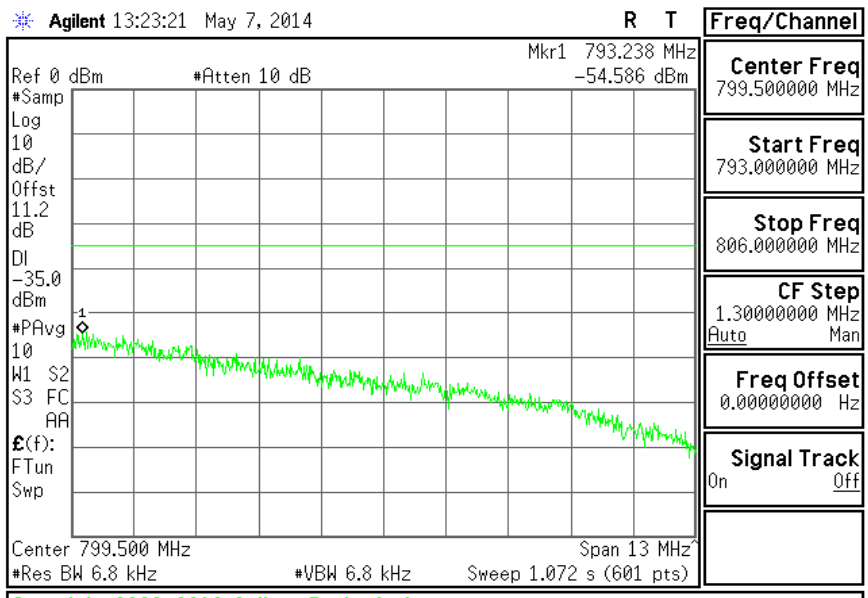

RB1-49



RB25-12



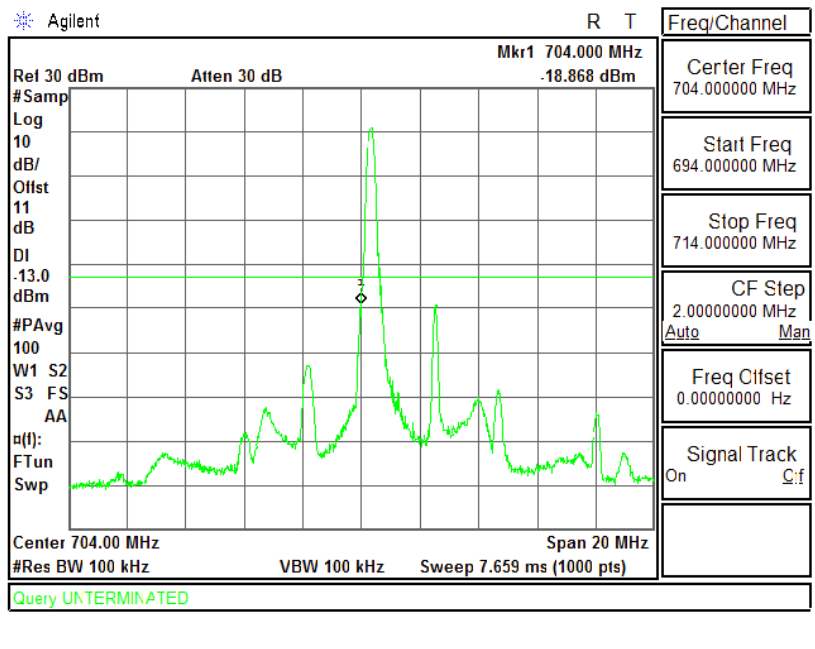

RB50-0



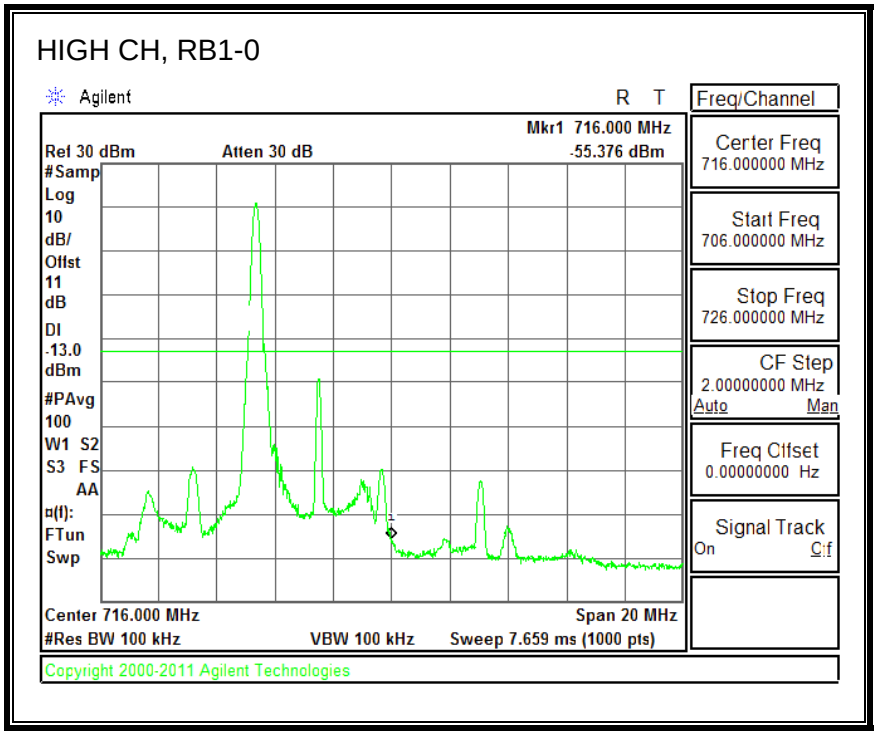
## 8.2.5. LTE BAND 17 BANDEDGE

**QPSK, (5.0 MHz BAND WIDTH)**

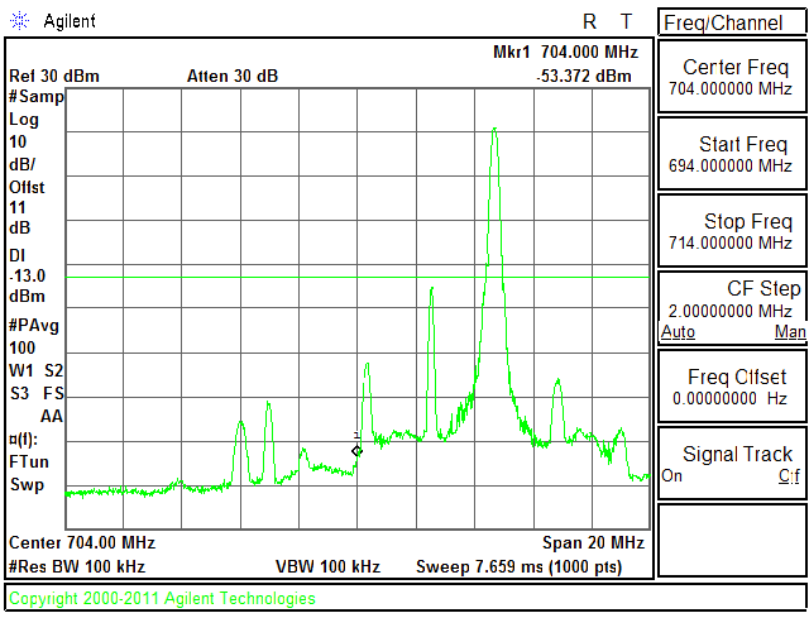
LOW CH, RB1_0



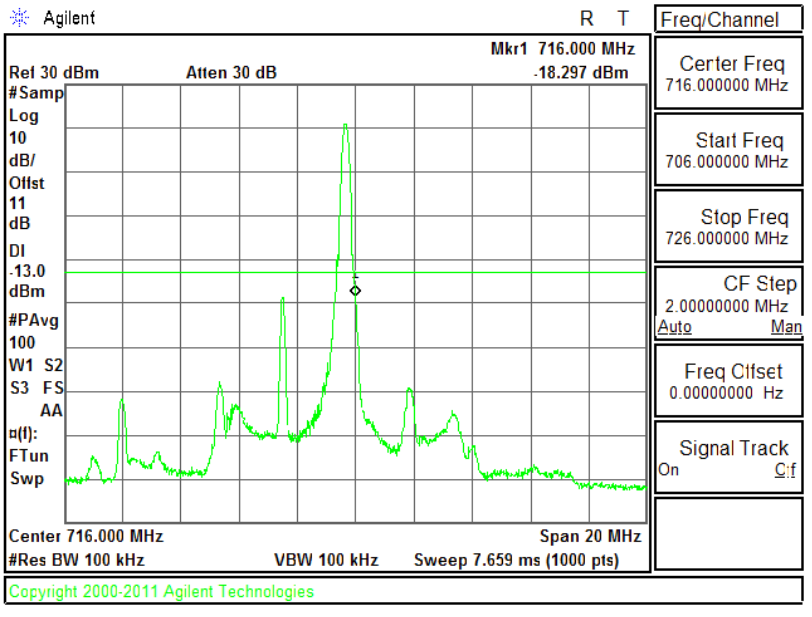

HIGH CH, RB1-0



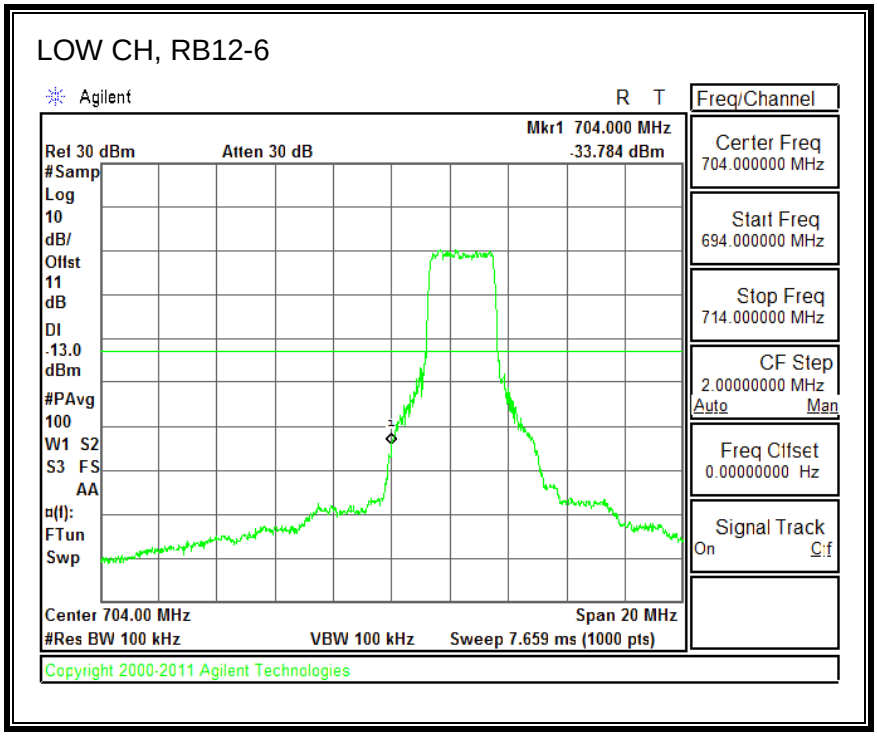
LOW CH, RB1-24



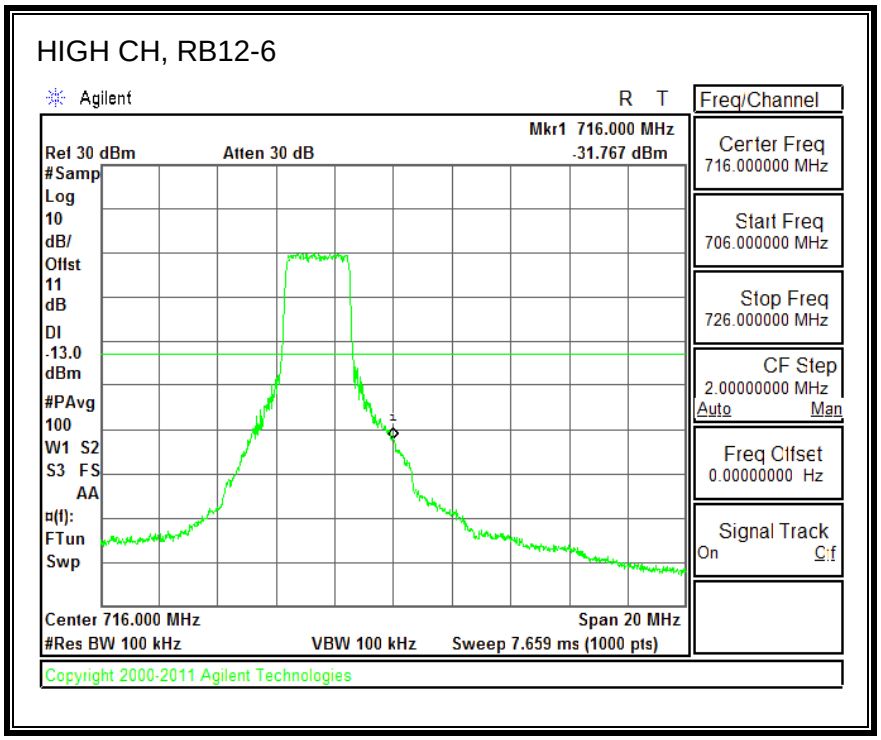

HIGH CH, RB1-24



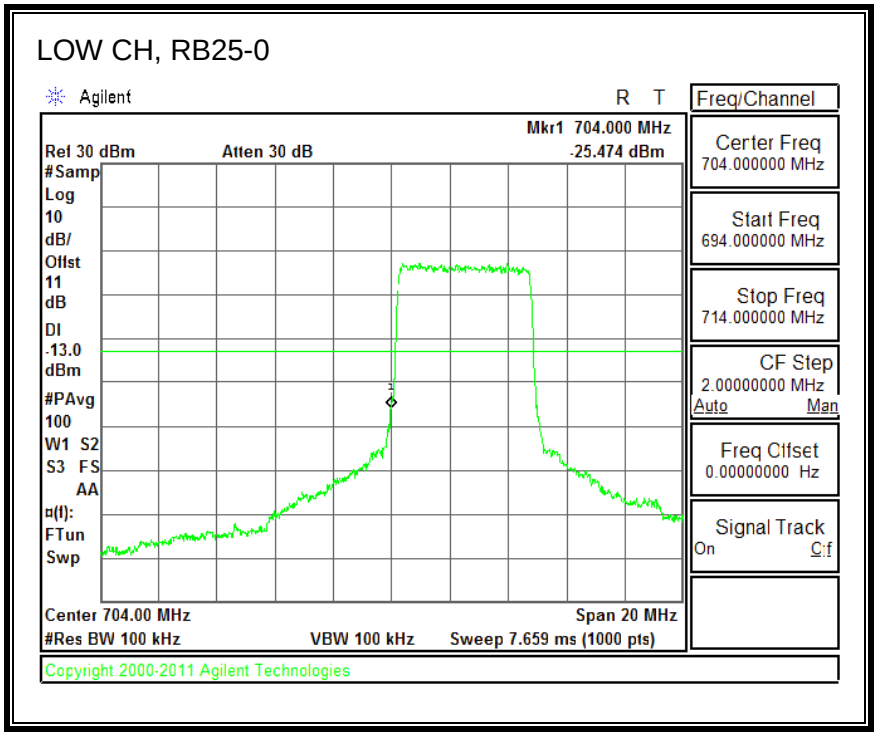
LOW CH, RB12-6



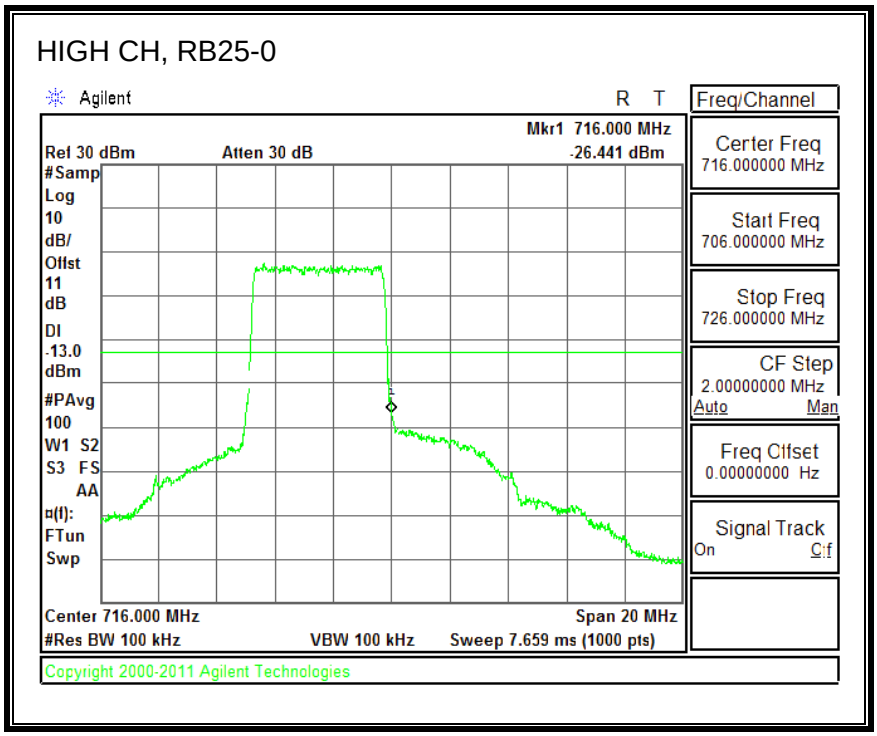

HIGH CH, RB12-6



LOW CH, RB25-0

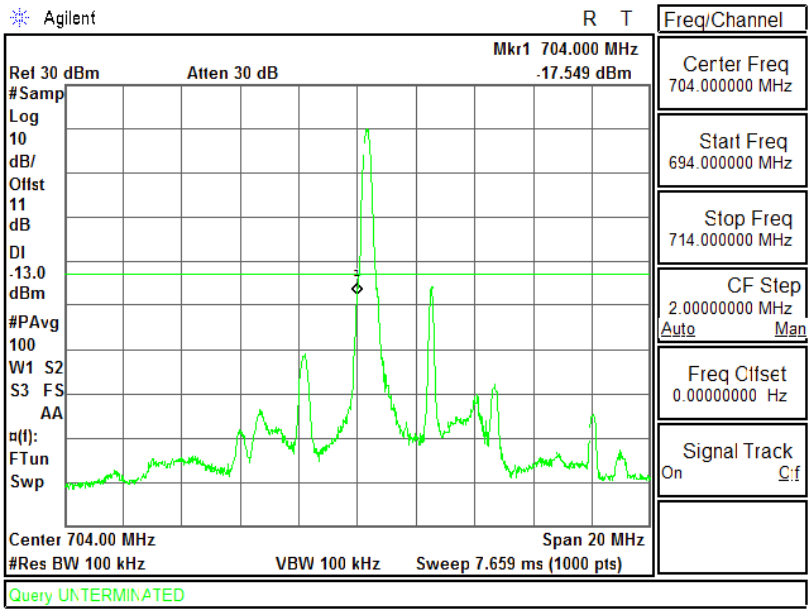



HIGH CH, RB25-0

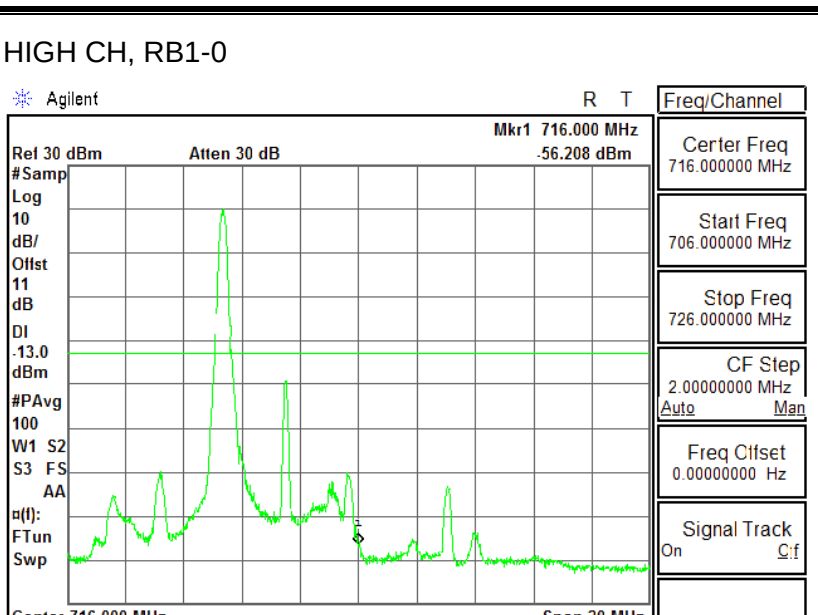


**16QAM, (5.0 MHz BAND WIDTH)**

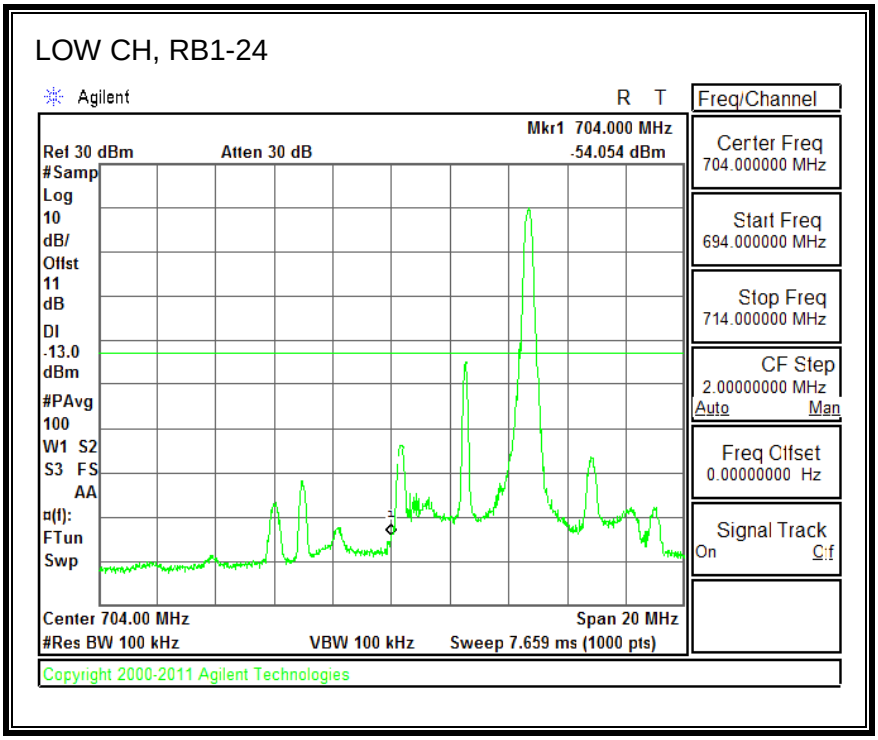
LOW CH, RB1_0



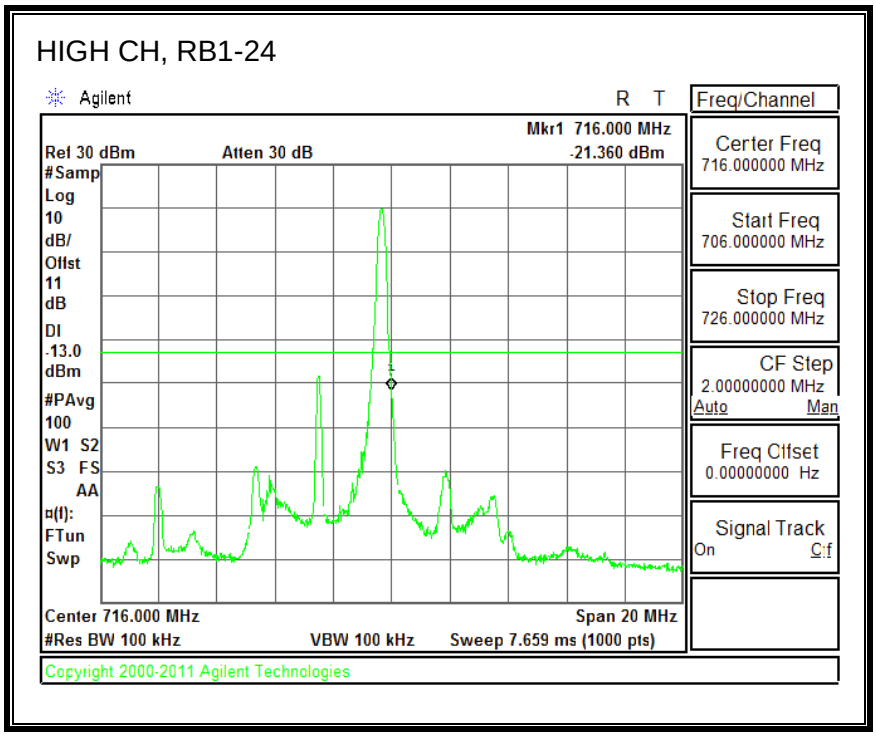

HIGH CH, RB1-0



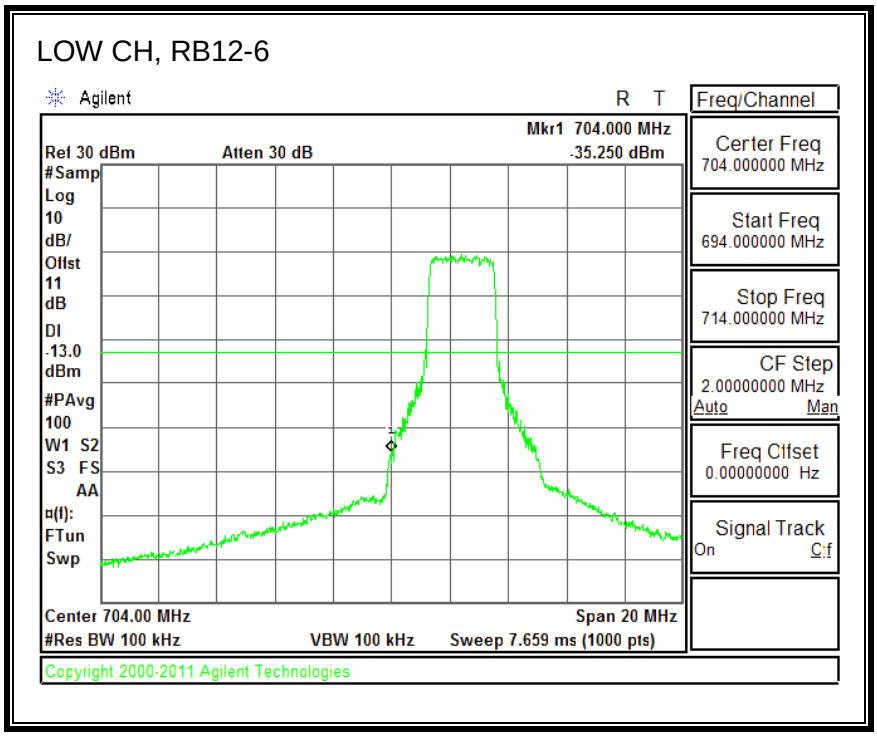
LOW CH, RB1-24



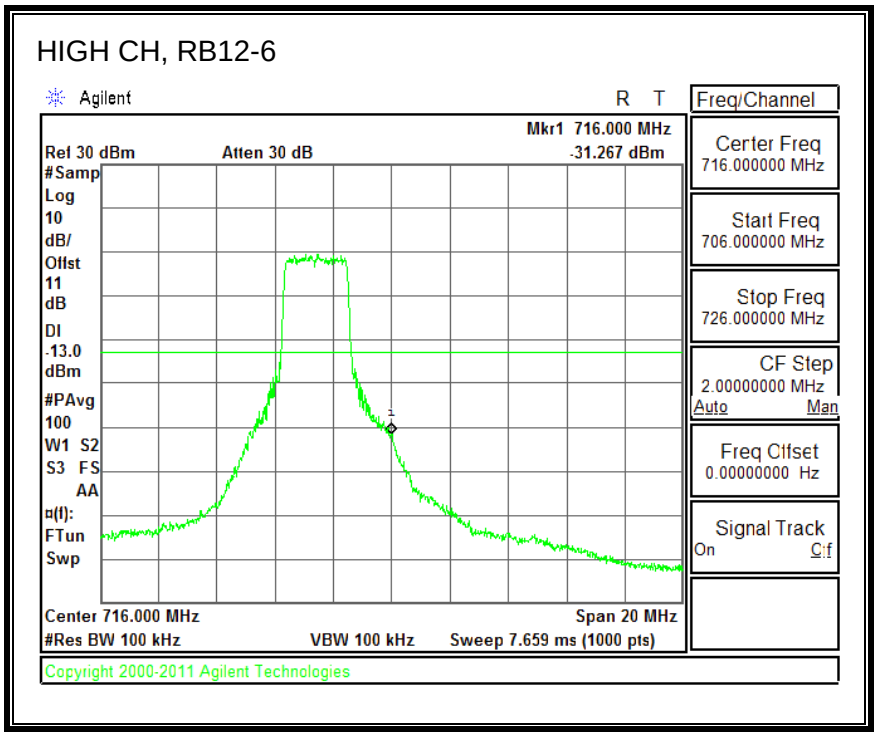

HIGH CH, RB1-24



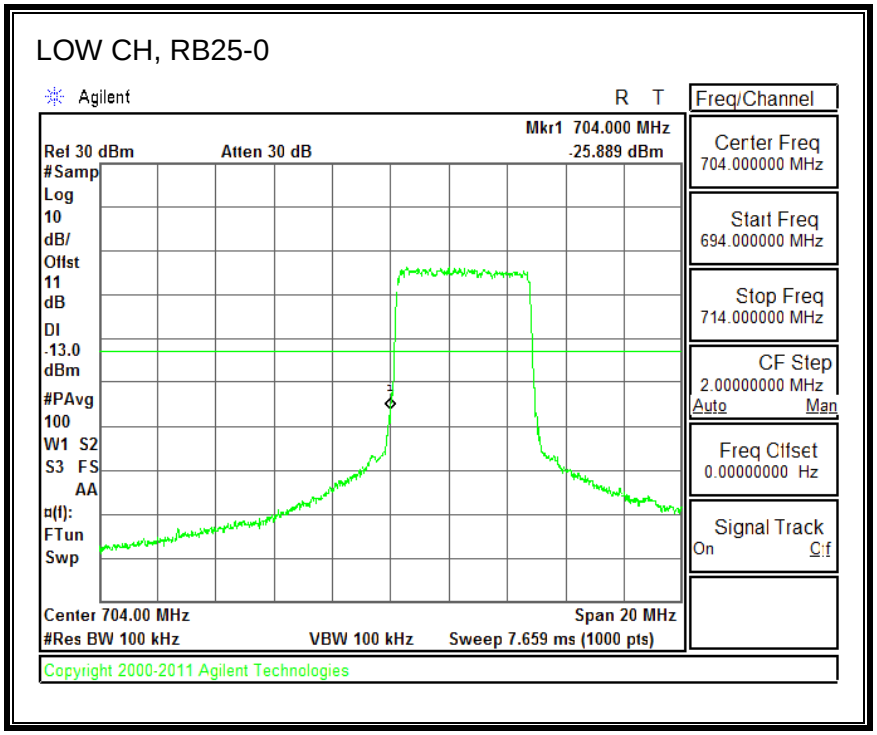
LOW CH, RB12-6



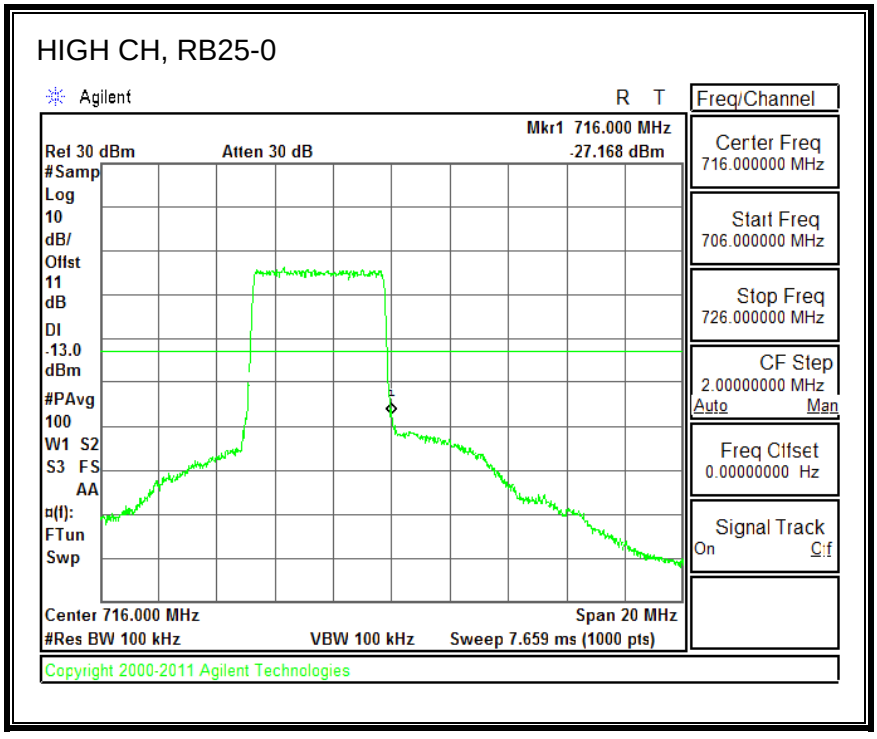

HIGH CH, RB12-6



LOW CH, RB25-0

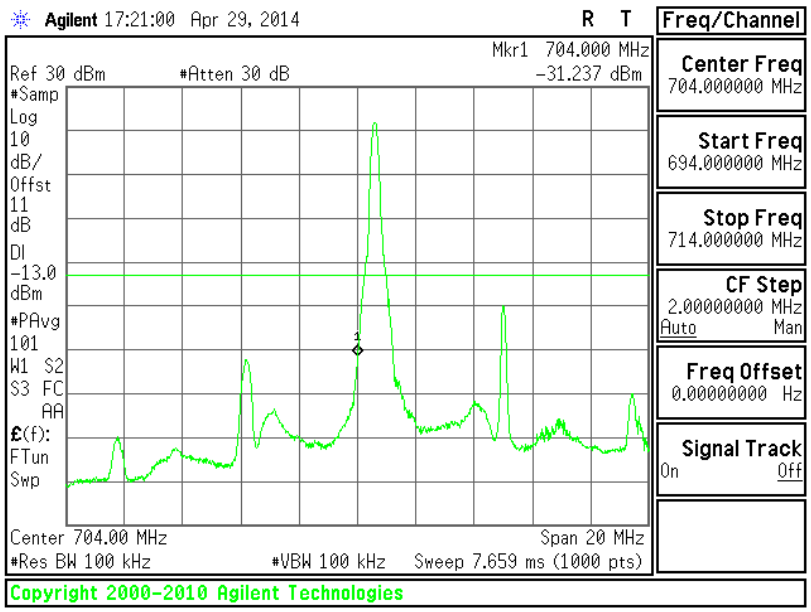



HIGH CH, RB25-0

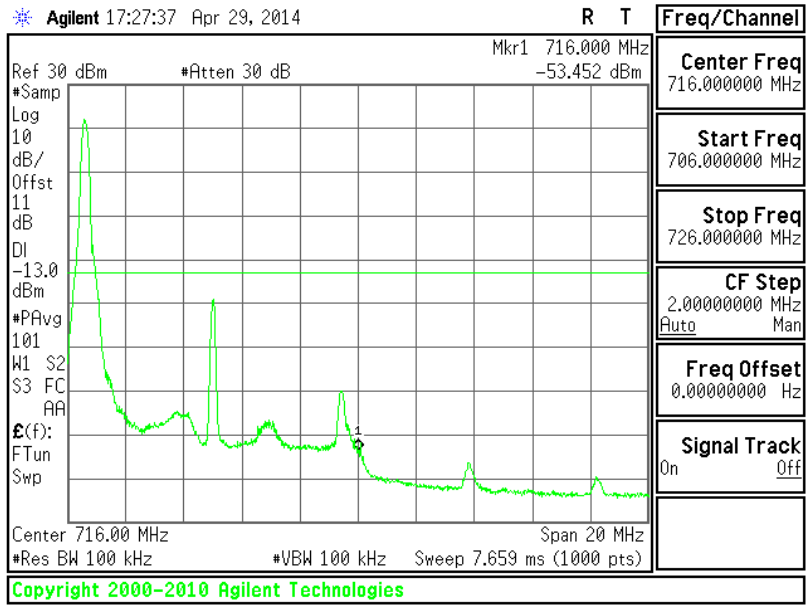


**QPSK, (10.0 MHz BAND WIDTH)**

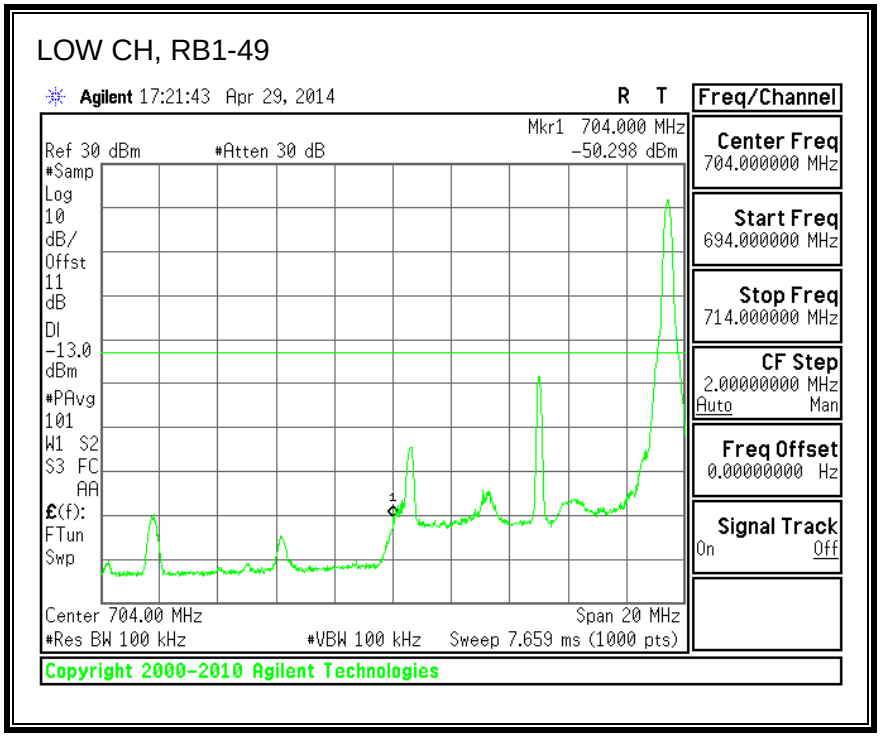
LOW CH, RB1_0



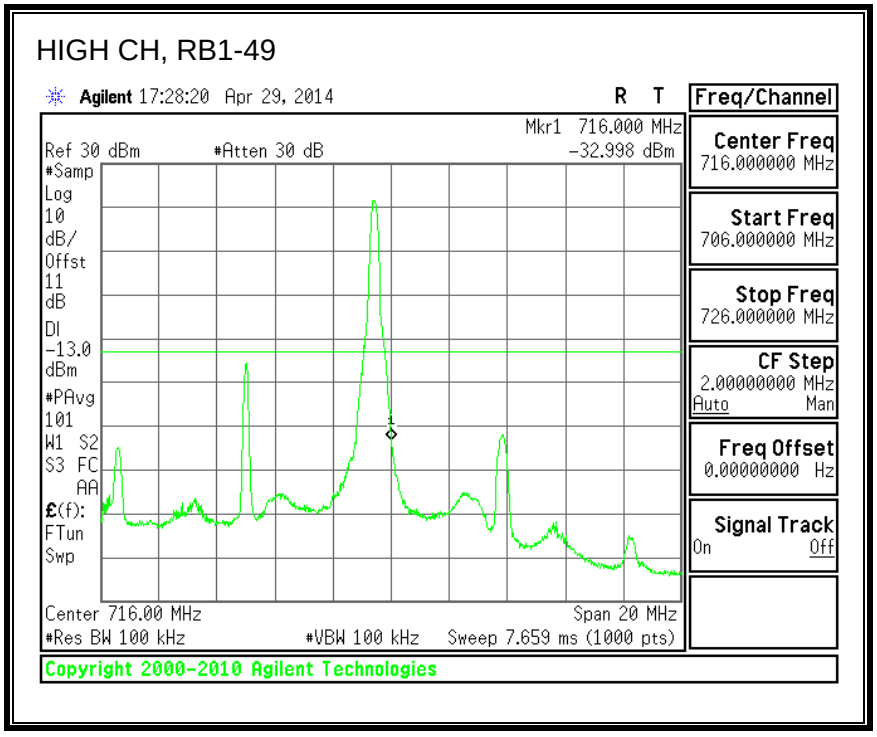

HIGH CH, RB1-0



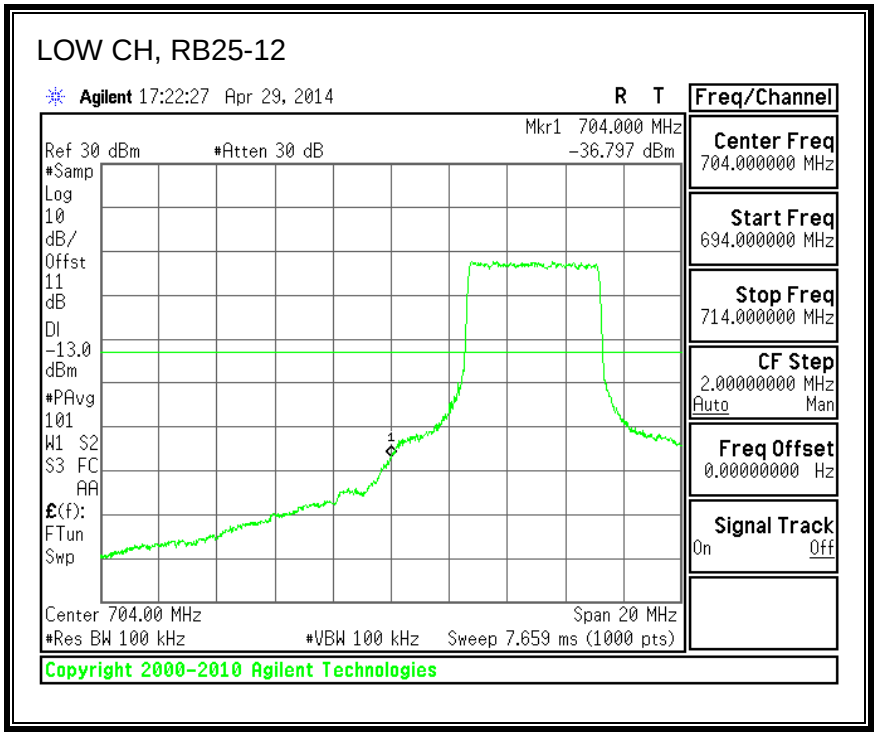
LOW CH, RB1-49



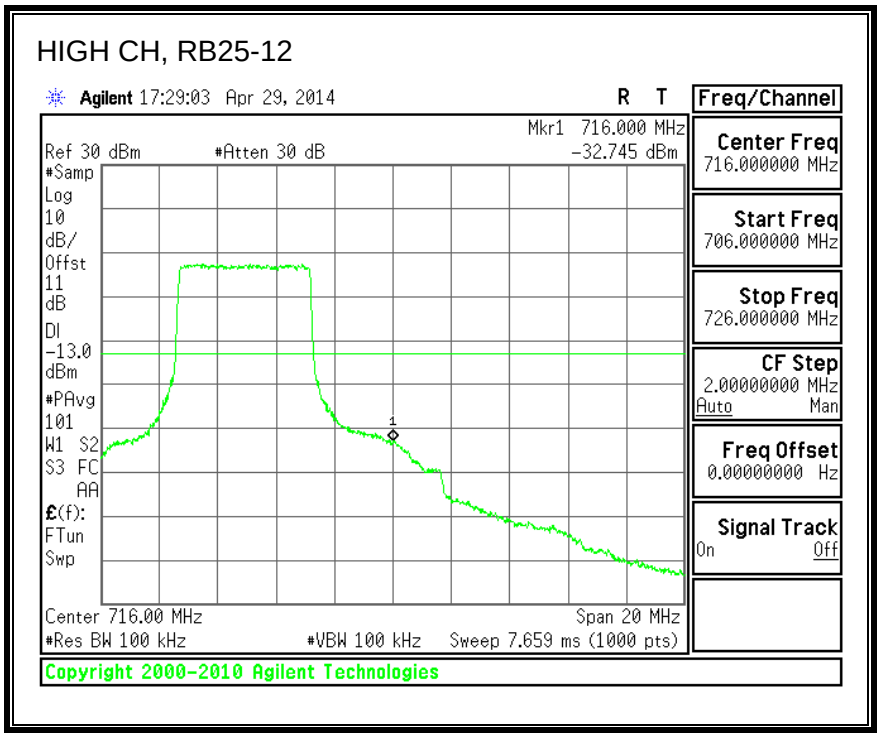

HIGH CH, RB1-49



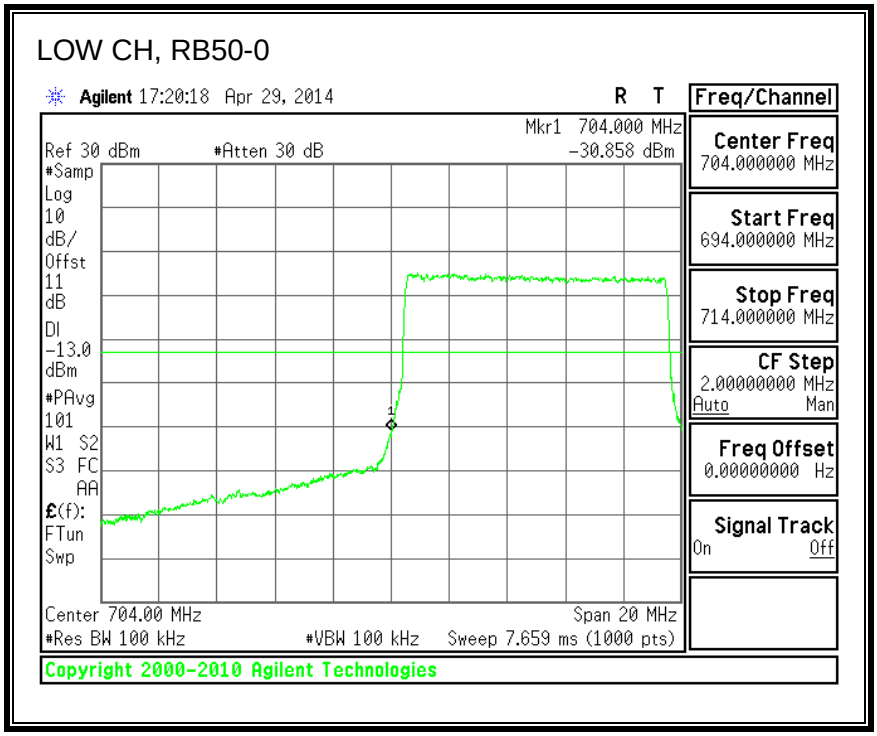
LOW CH, RB25-12



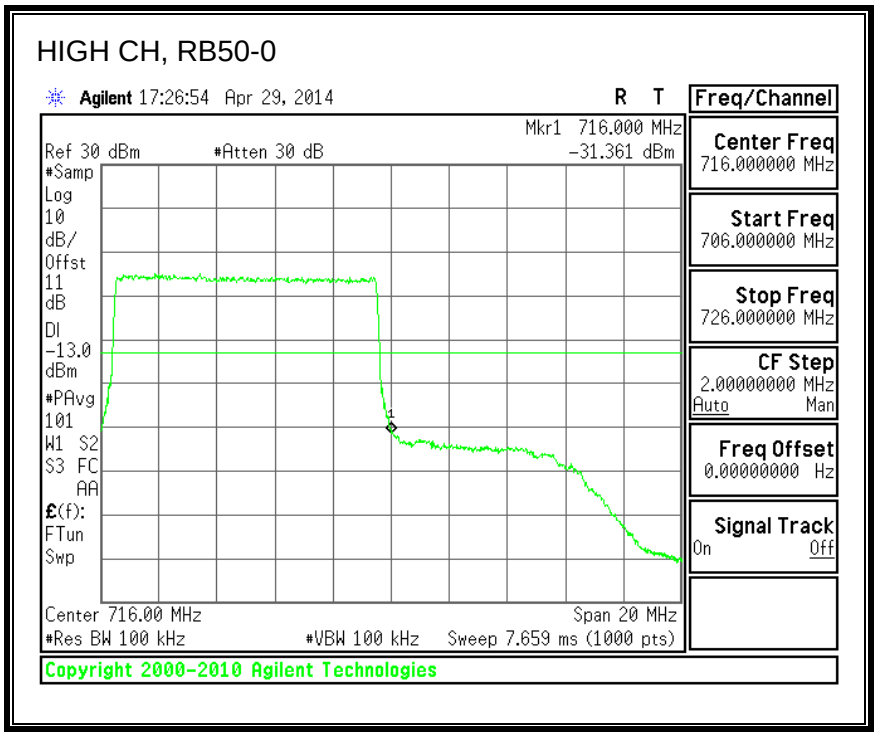

HIGH CH, RB25-12



LOW CH, RB50-0

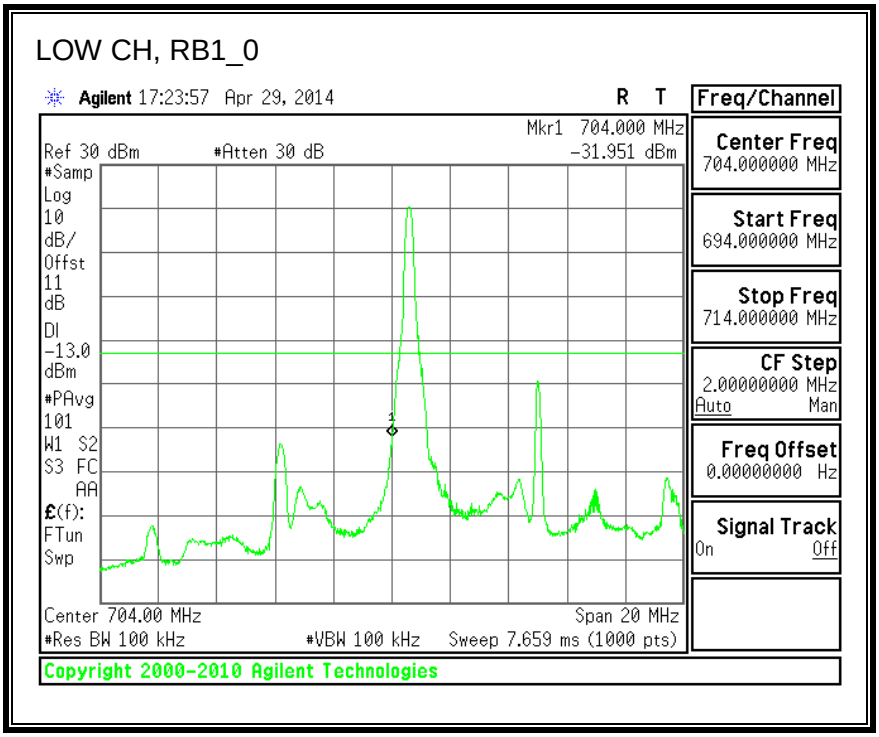



HIGH CH, RB50-0

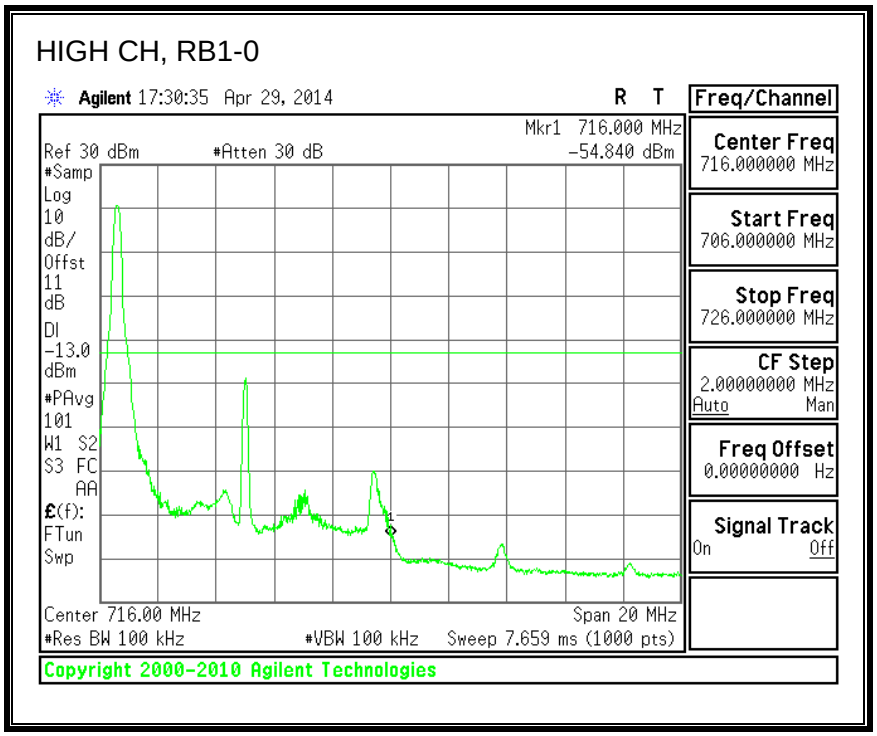


**16QAM, (10.0 MHz BAND WIDTH)**

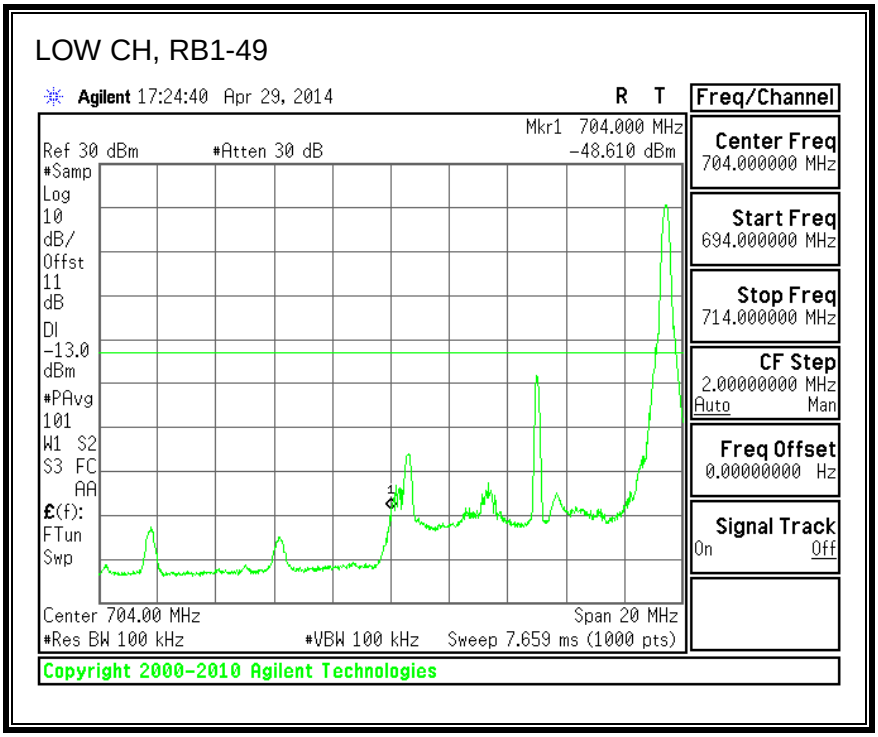
LOW CH, RB1_0



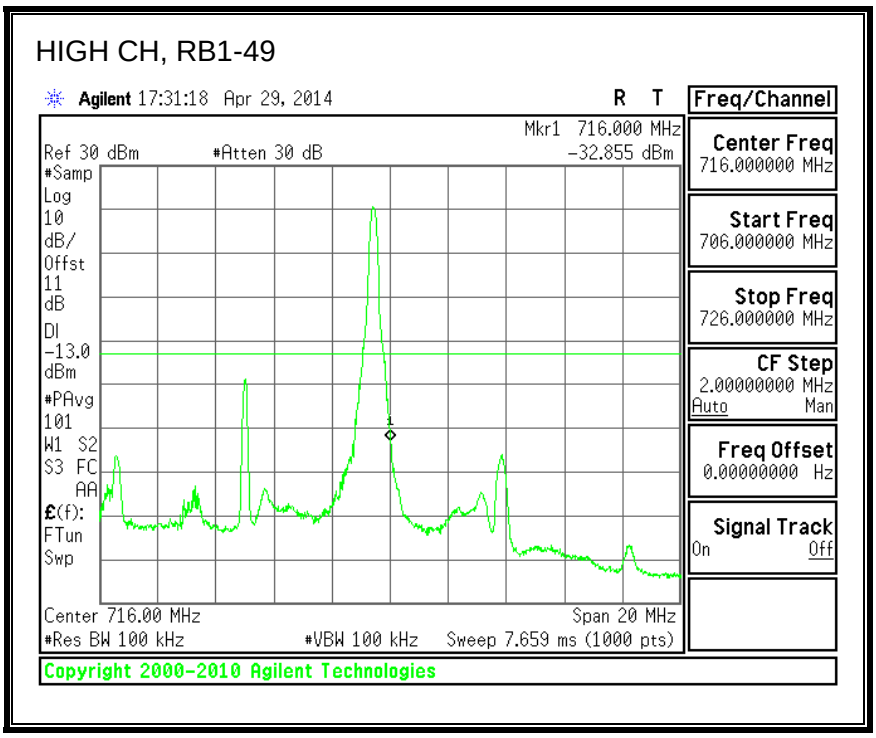

HIGH CH, RB1-0



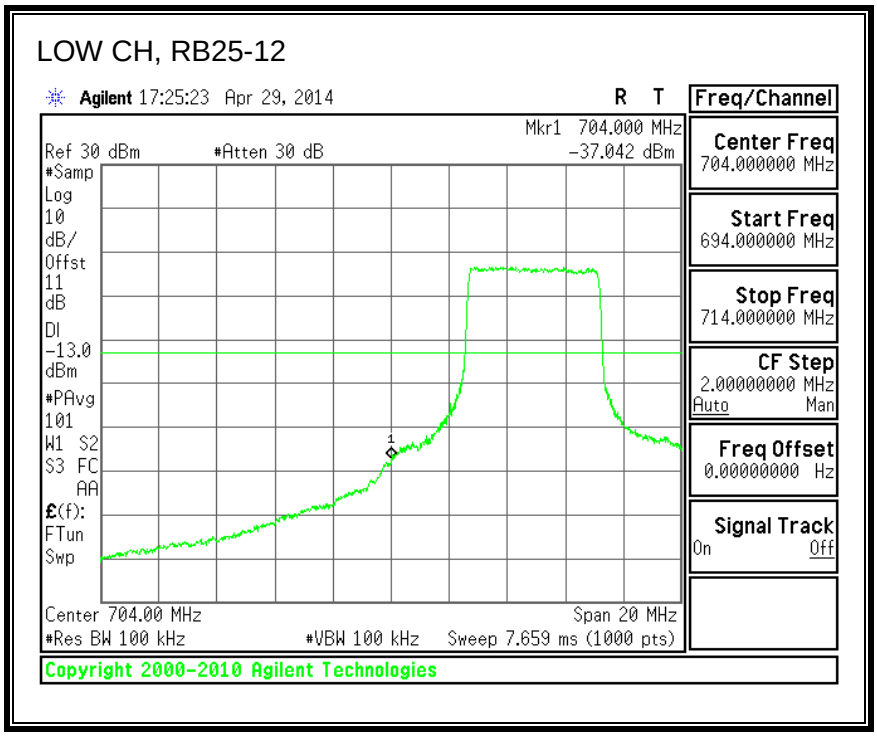
LOW CH, RB1-49



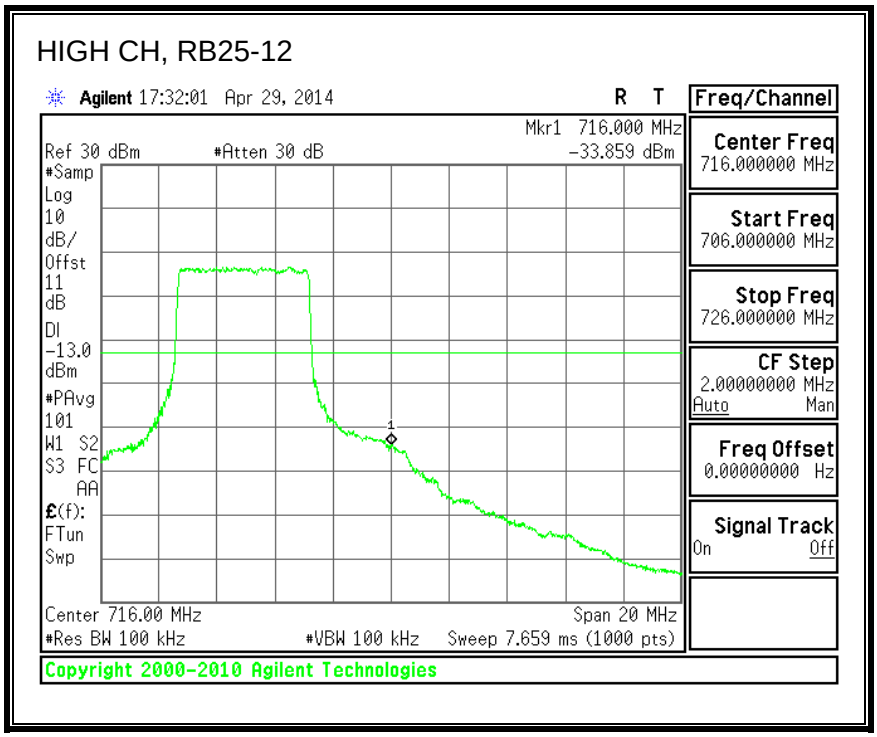

HIGH CH, RB1-49



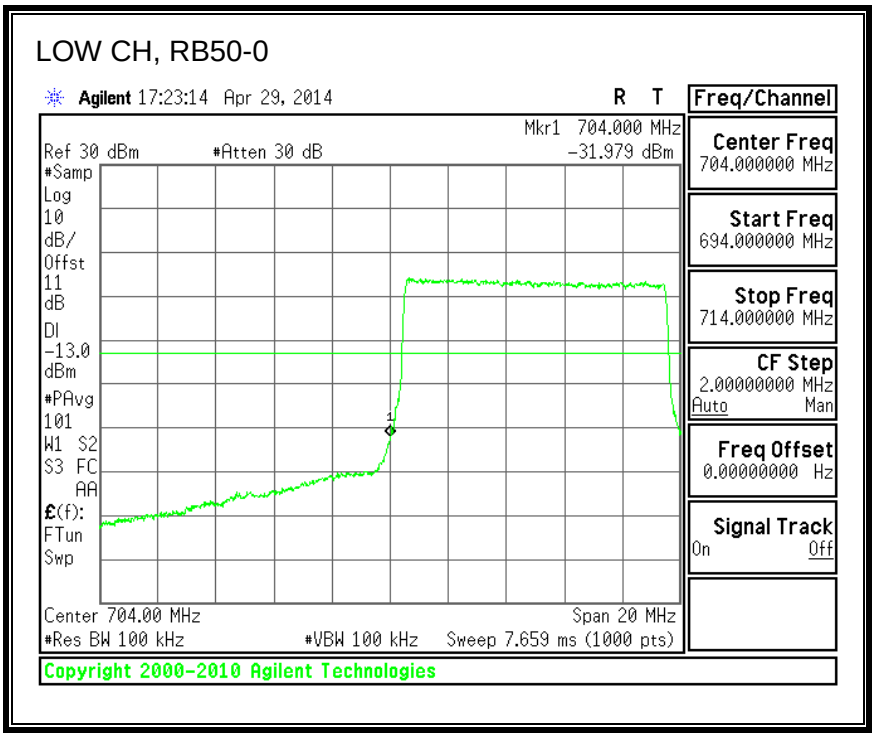
LOW CH, RB25-12



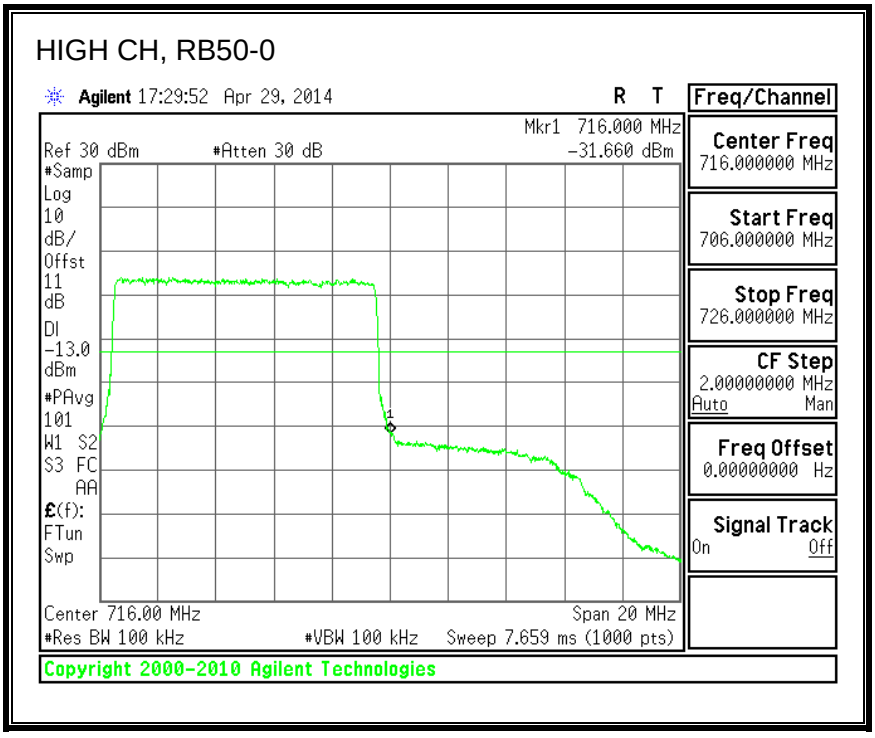

HIGH CH, RB25-12



LOW CH, RB50-0



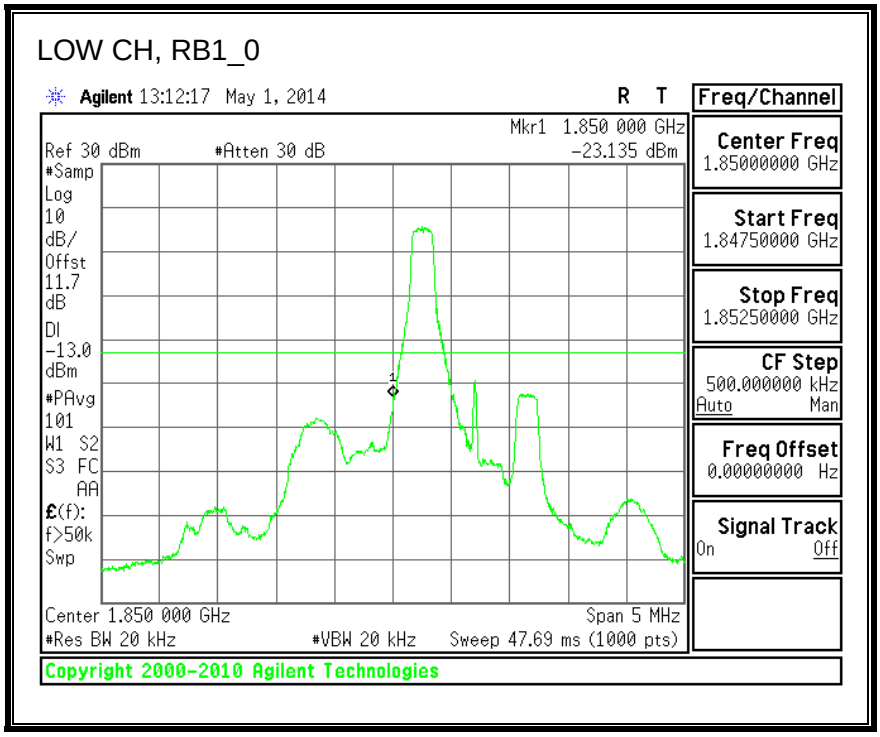

HIGH CH, RB50-0



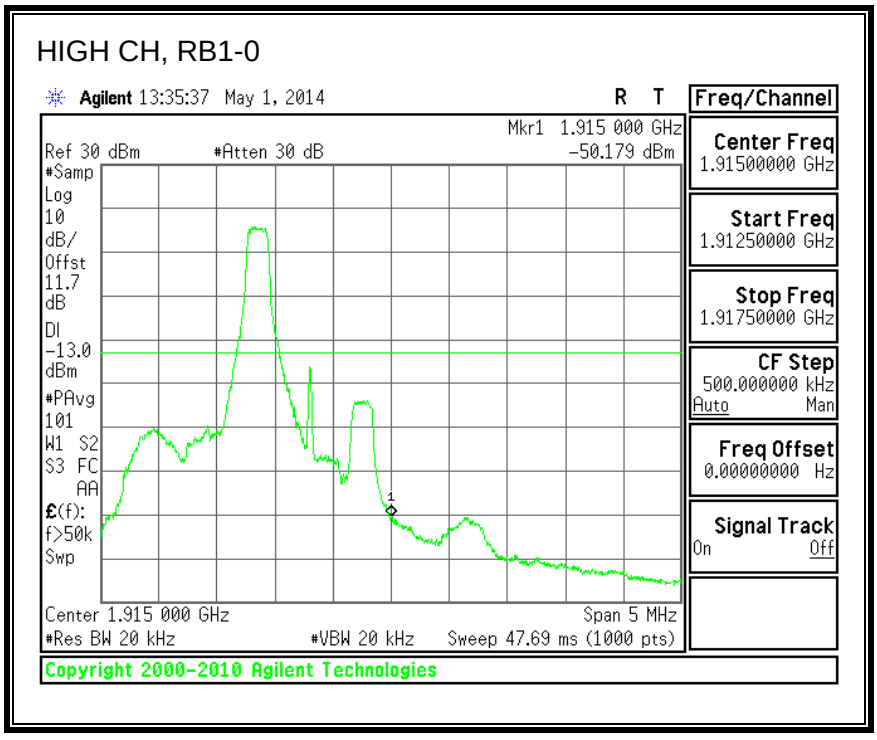
## 8.2.6. LTE BAND 25 BANDEDGE

**QPSK, (1.4 MHz BAND WIDTH)**

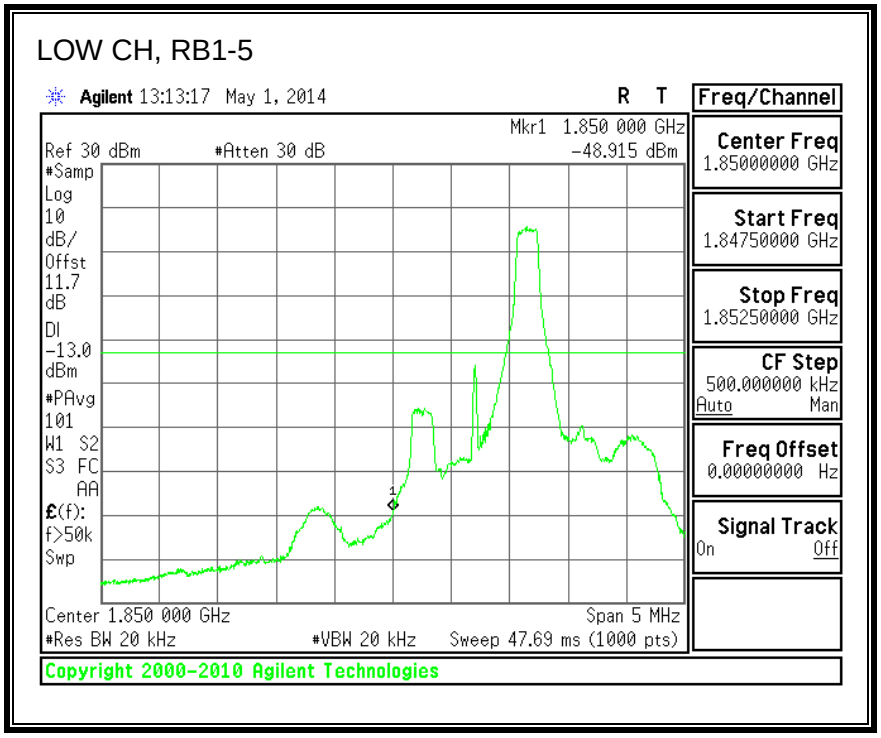
LOW CH, RB1_0



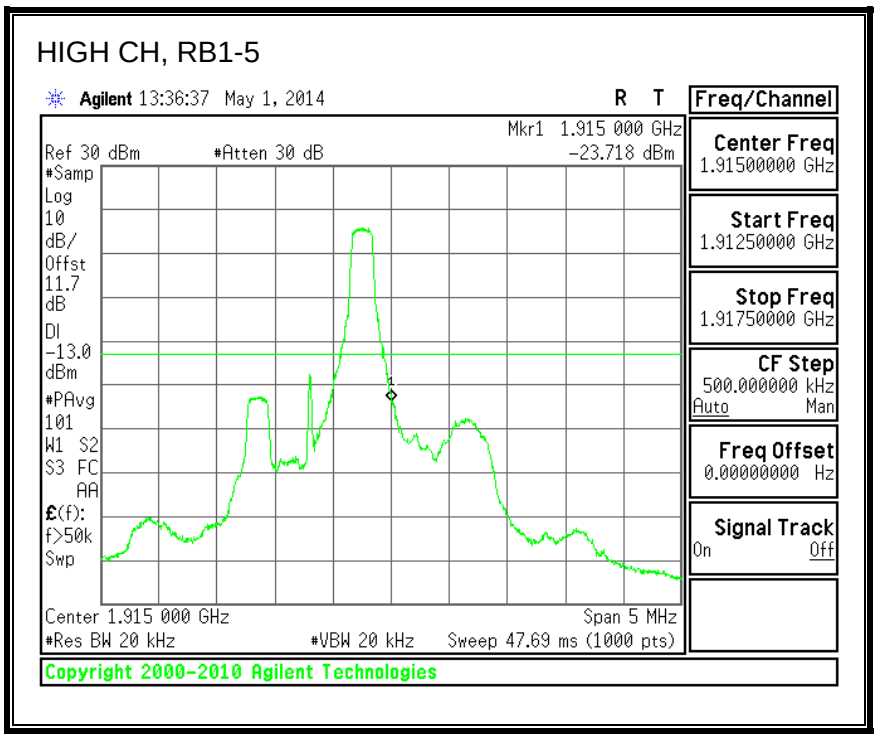

HIGH CH, RB1-0



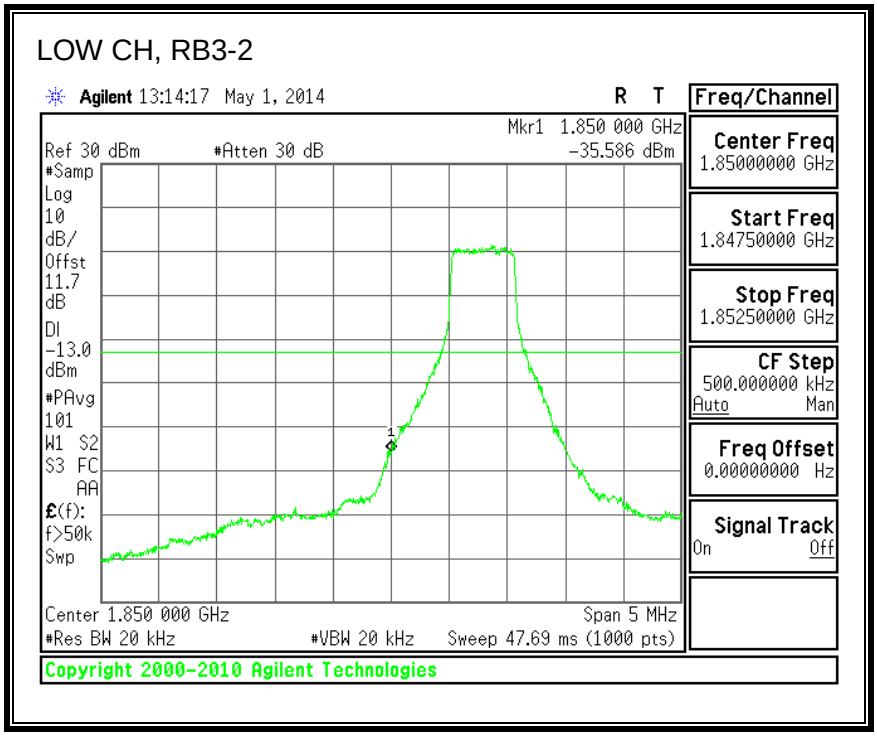
LOW CH, RB1-5



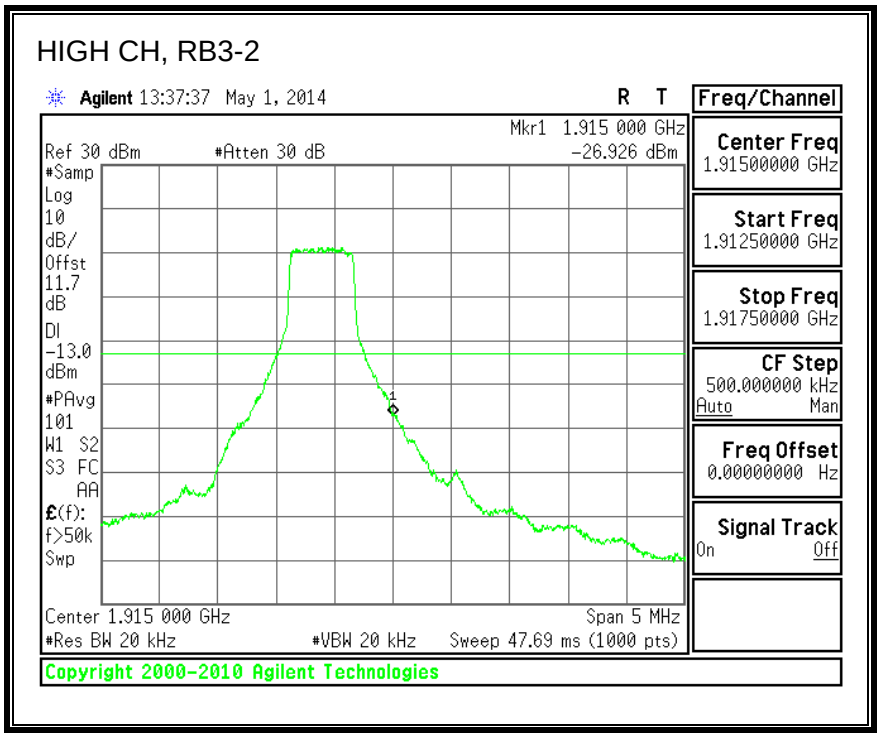

HIGH CH, RB1-5



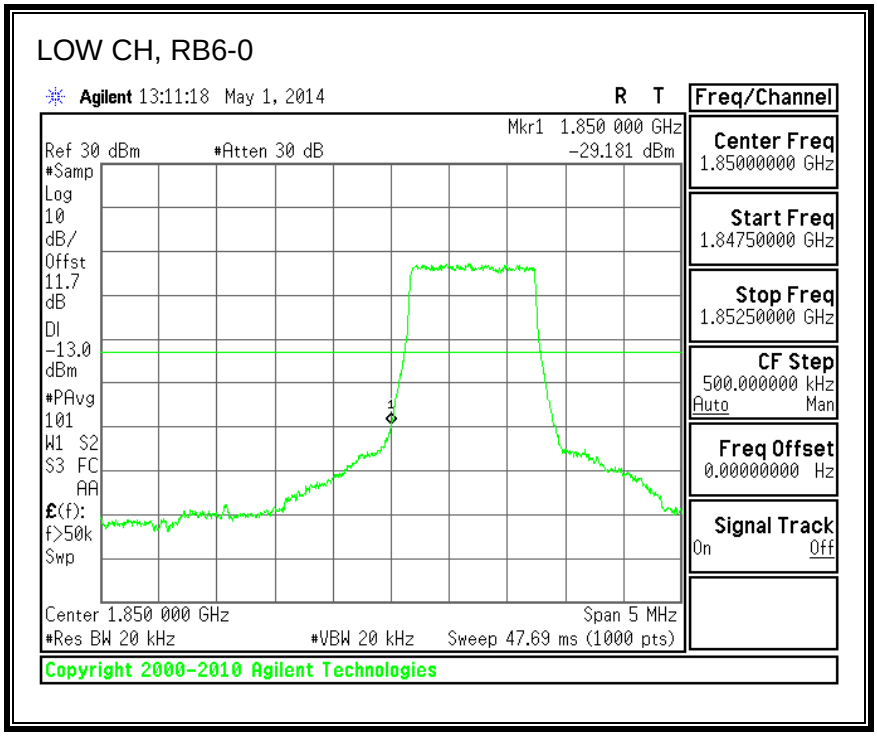
LOW CH, RB3-2



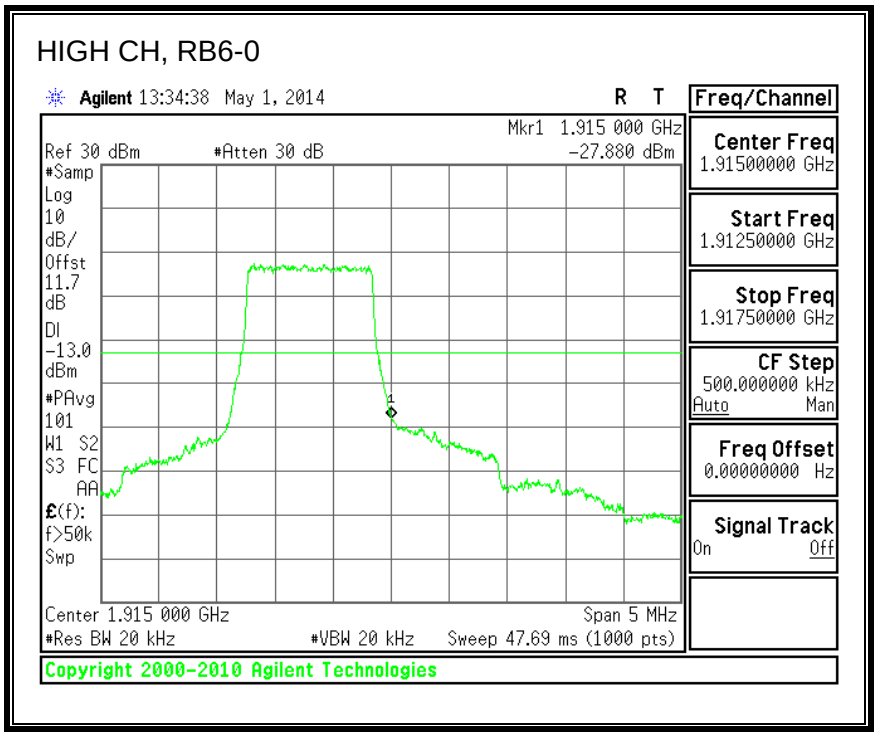

HIGH CH, RB3-2



LOW CH, RB6-0

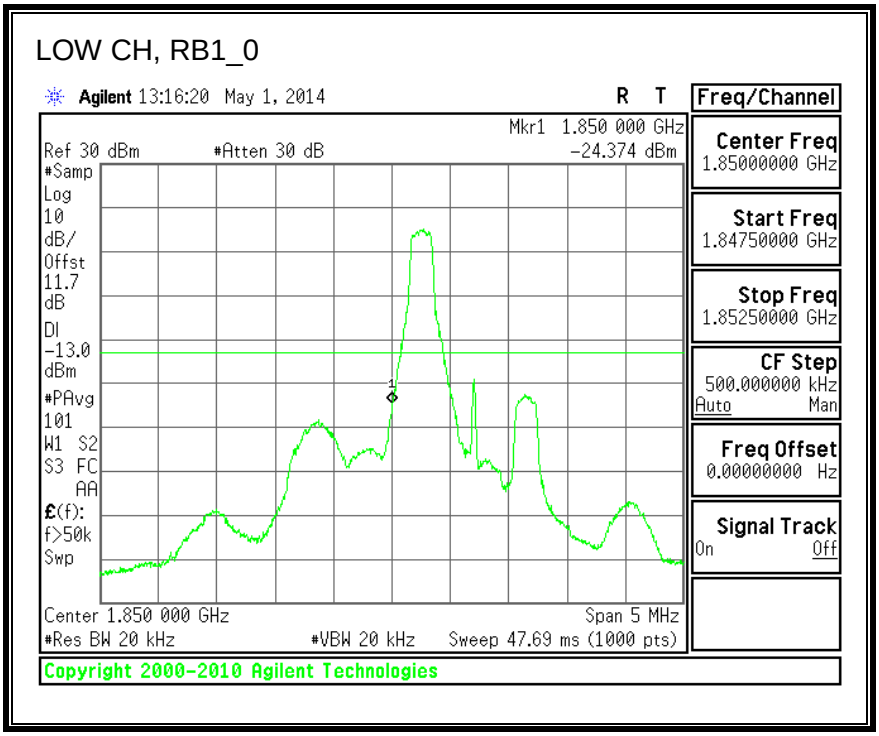



HIGH CH, RB6-0

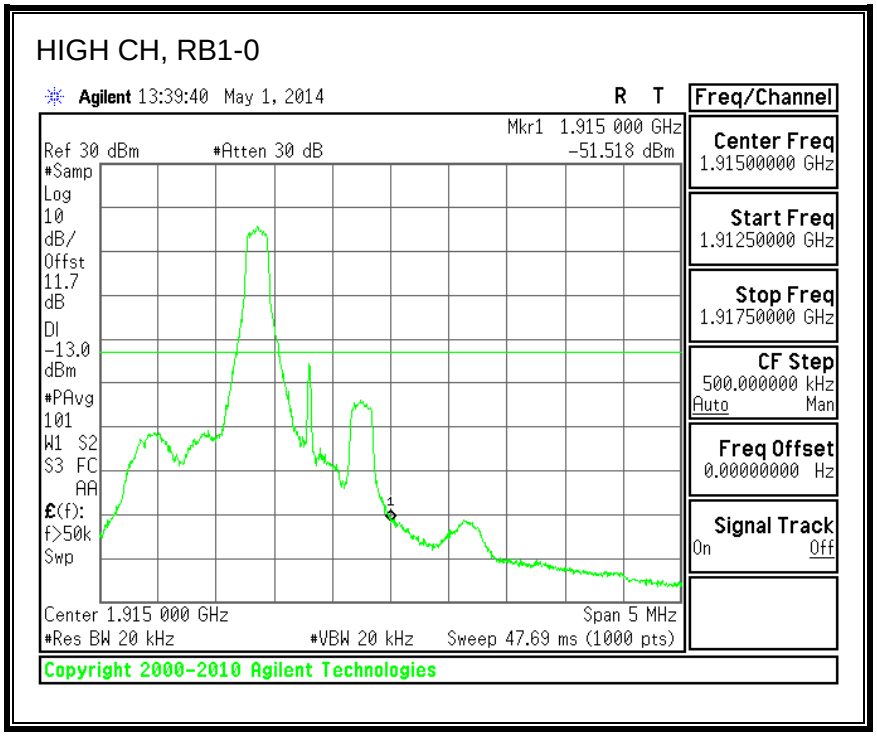


**16QAM, (1.4 MHz BAND WIDTH)**

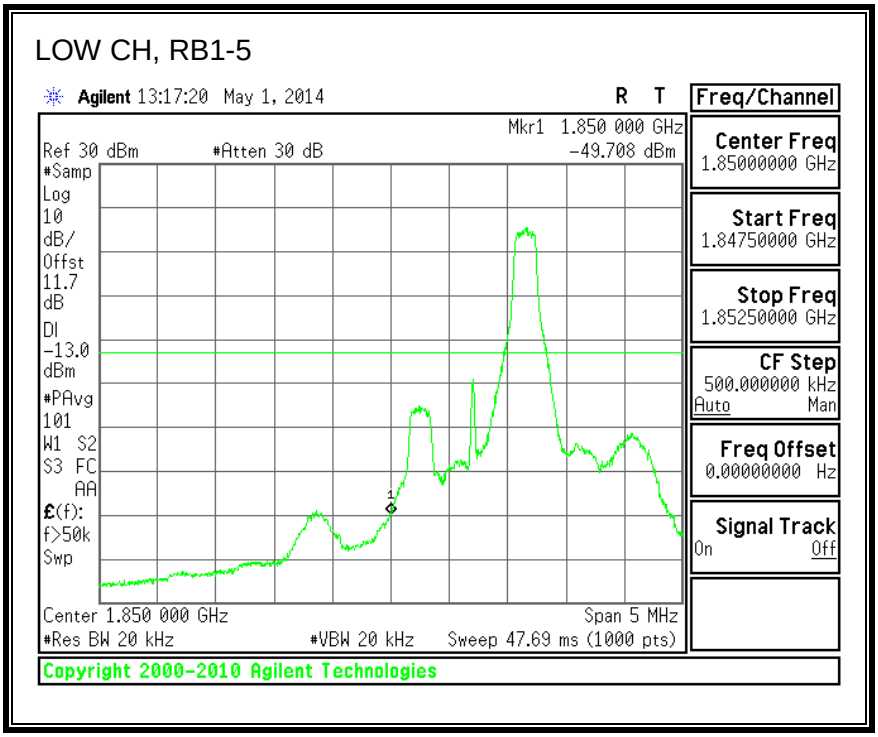
LOW CH, RB1_0



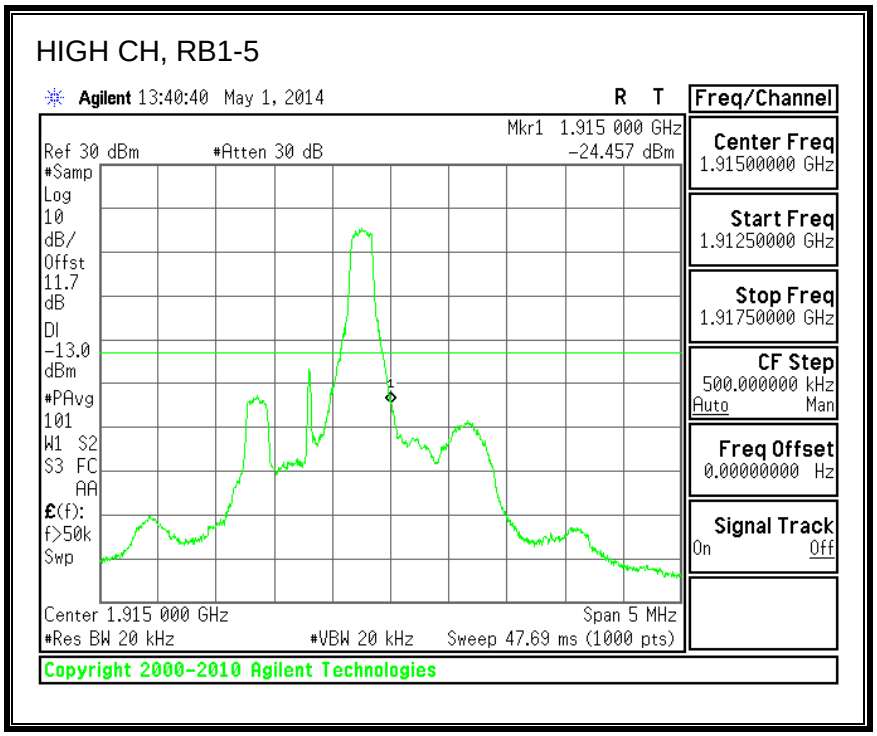

HIGH CH, RB1-0



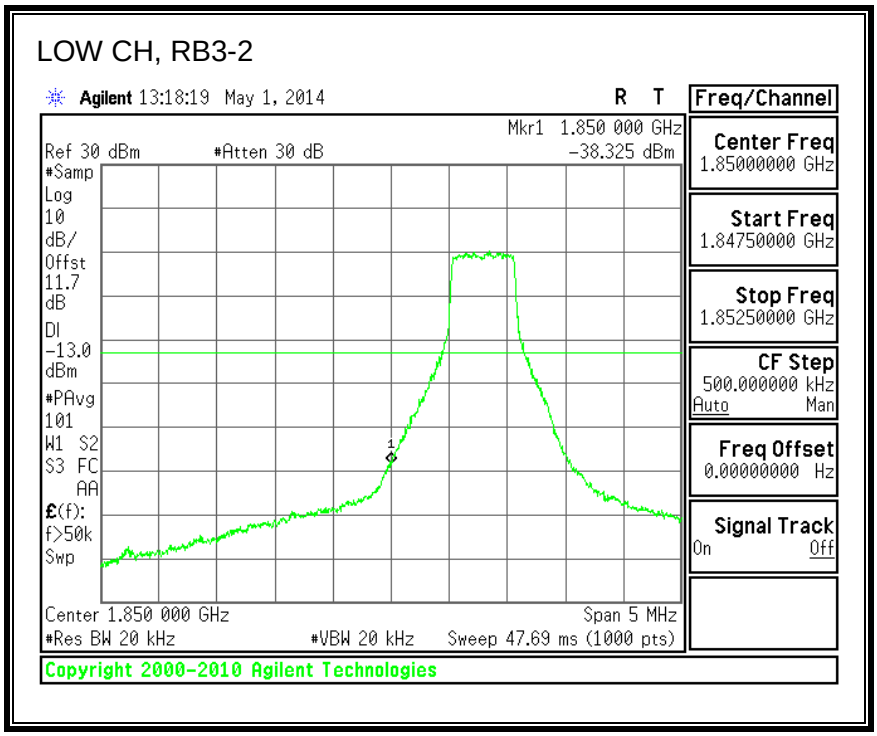
LOW CH, RB1-5



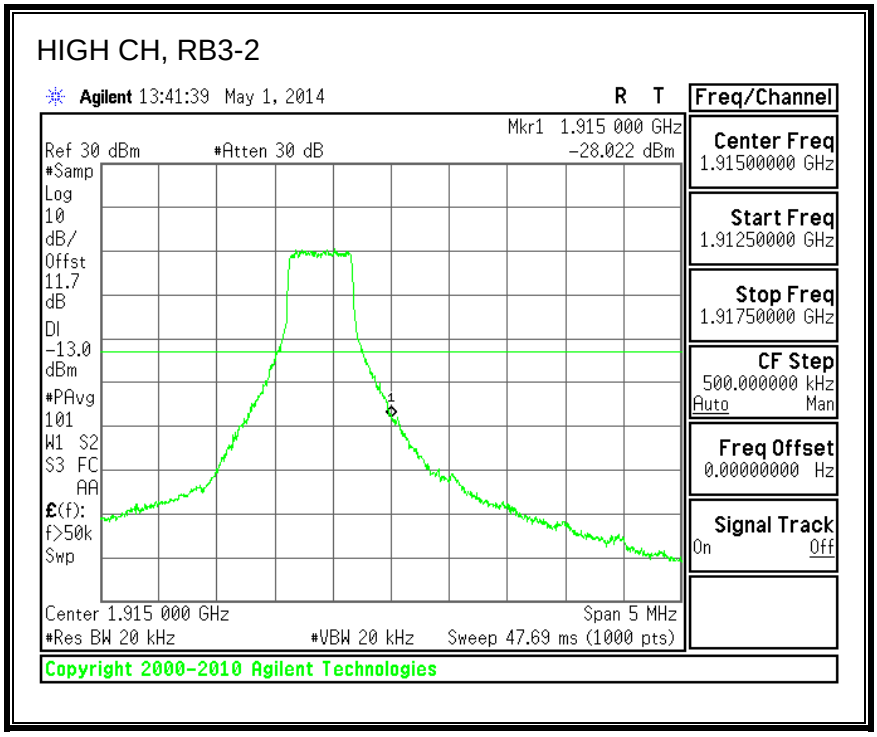

HIGH CH, RB1-5



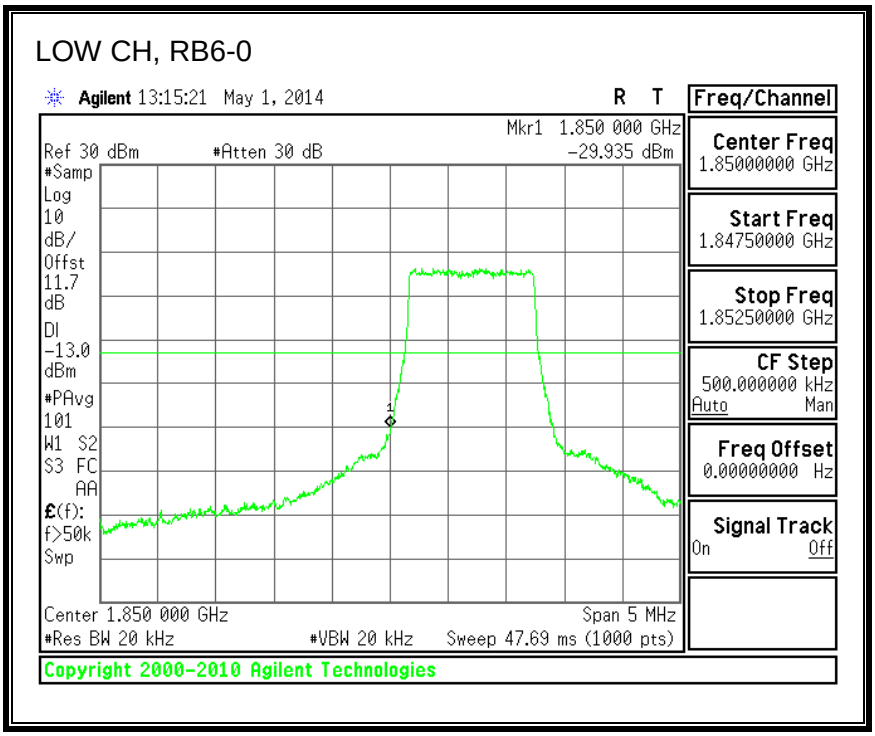
LOW CH, RB3-2



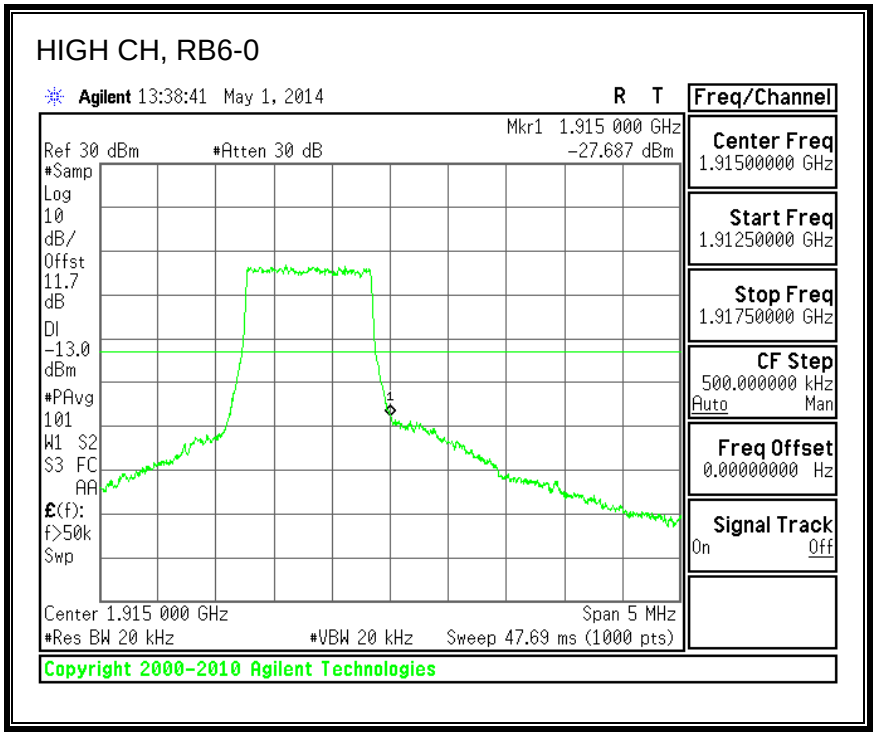

HIGH CH, RB3-2



LOW CH, RB6-0

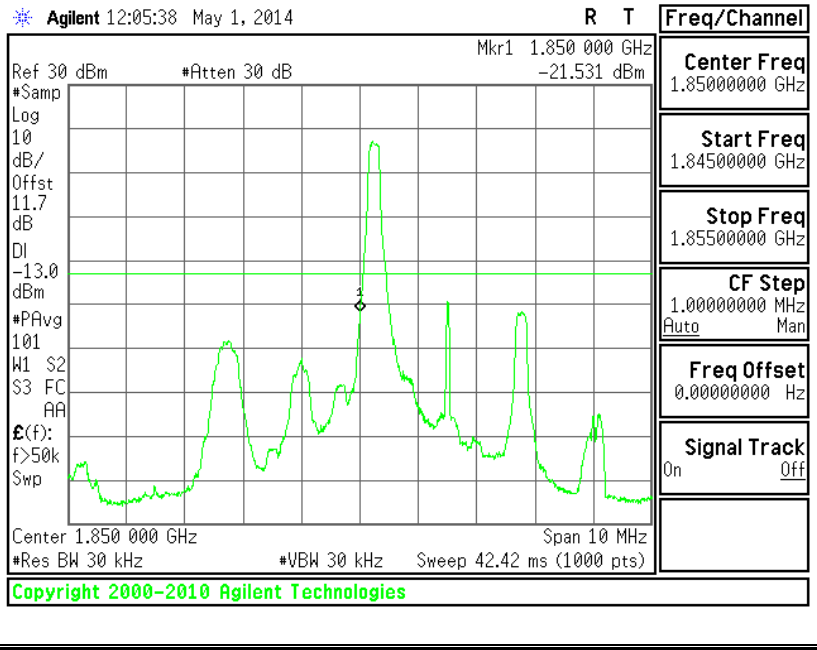



HIGH CH, RB6-0

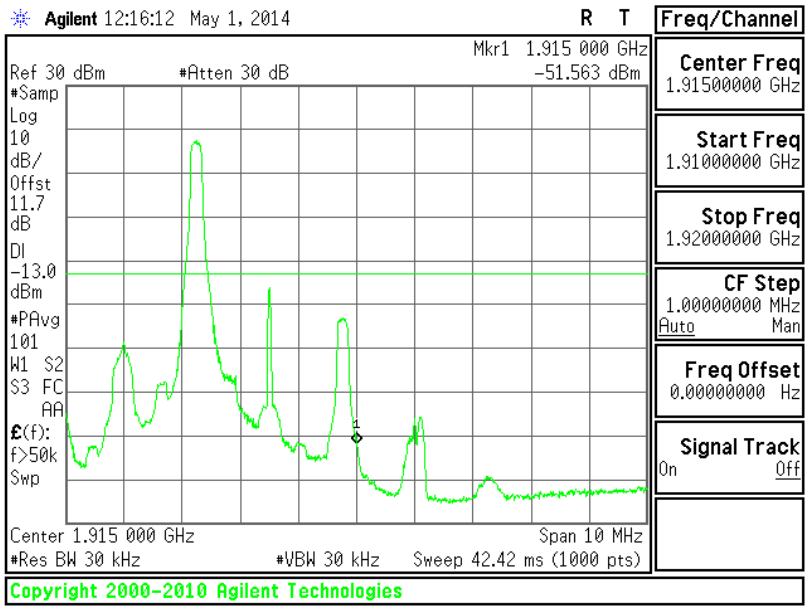


**QPSK, (3.0 MHz BAND WIDTH)**

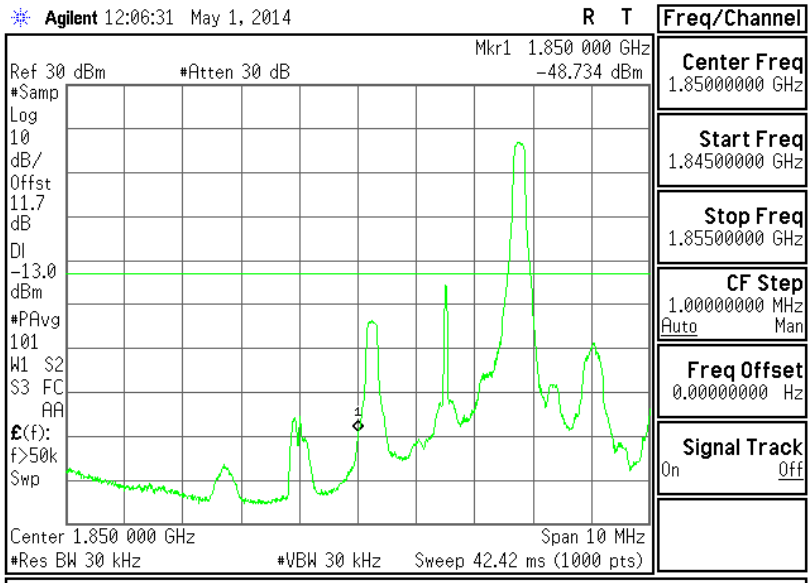
LOW CH, RB1_0



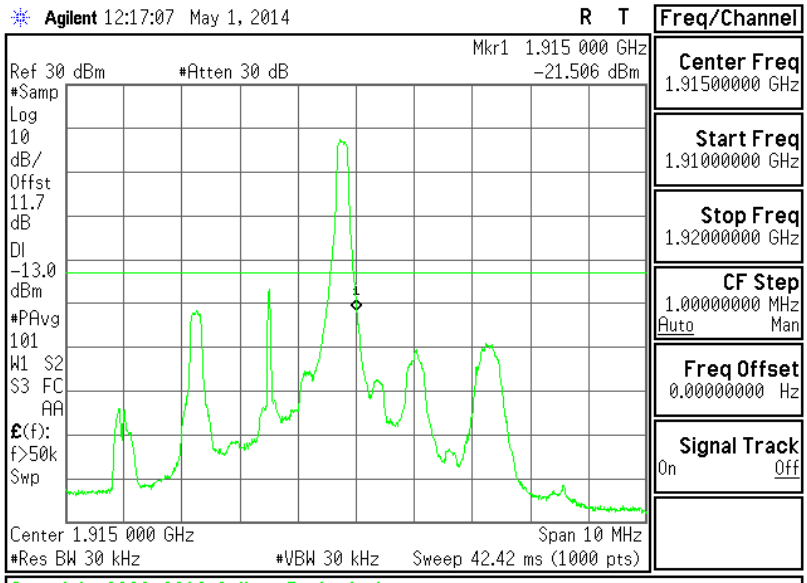

HIGH CH, RB1-0



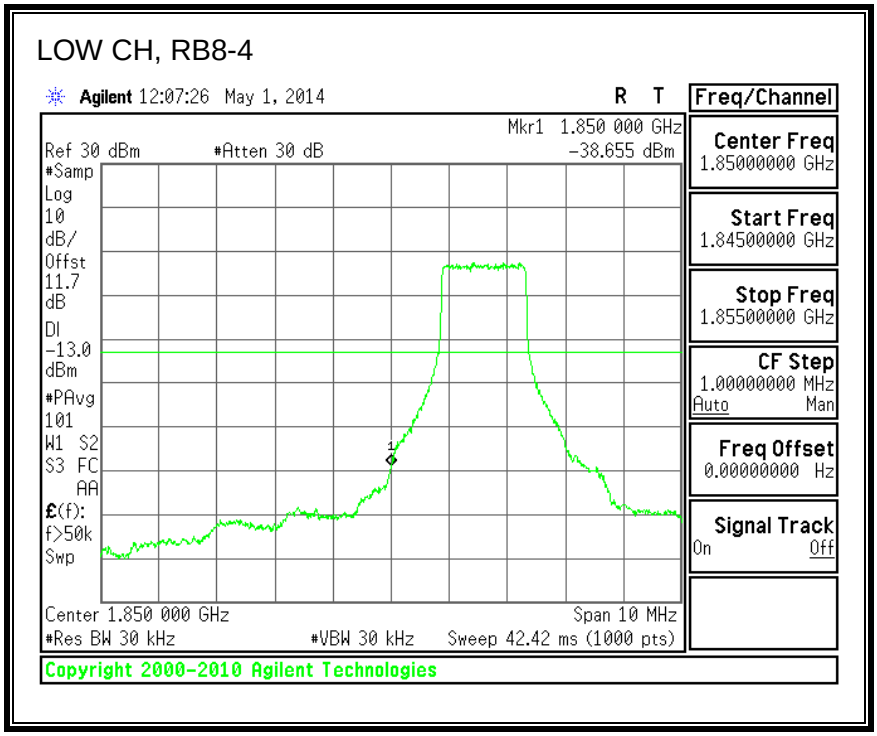
LOW CH, RB1-14



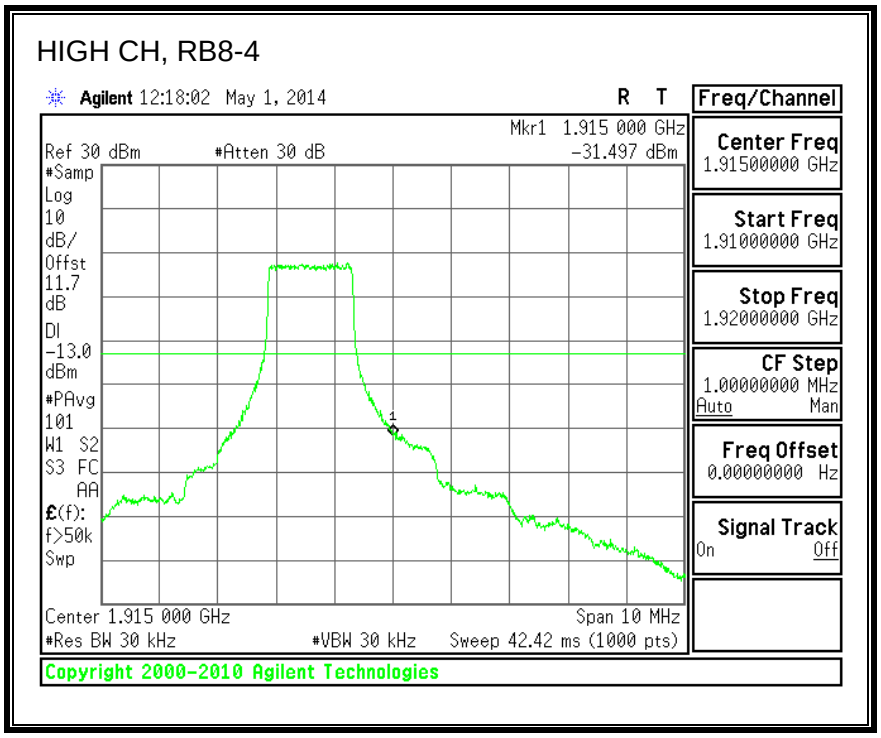

HIGH CH, RB1-14



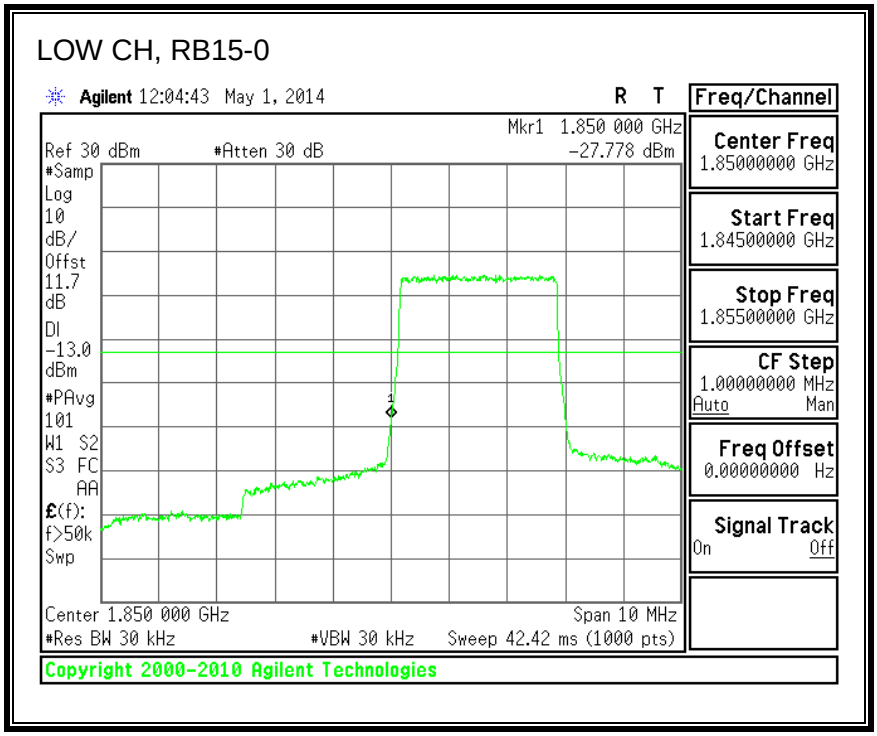
LOW CH, RB8-4



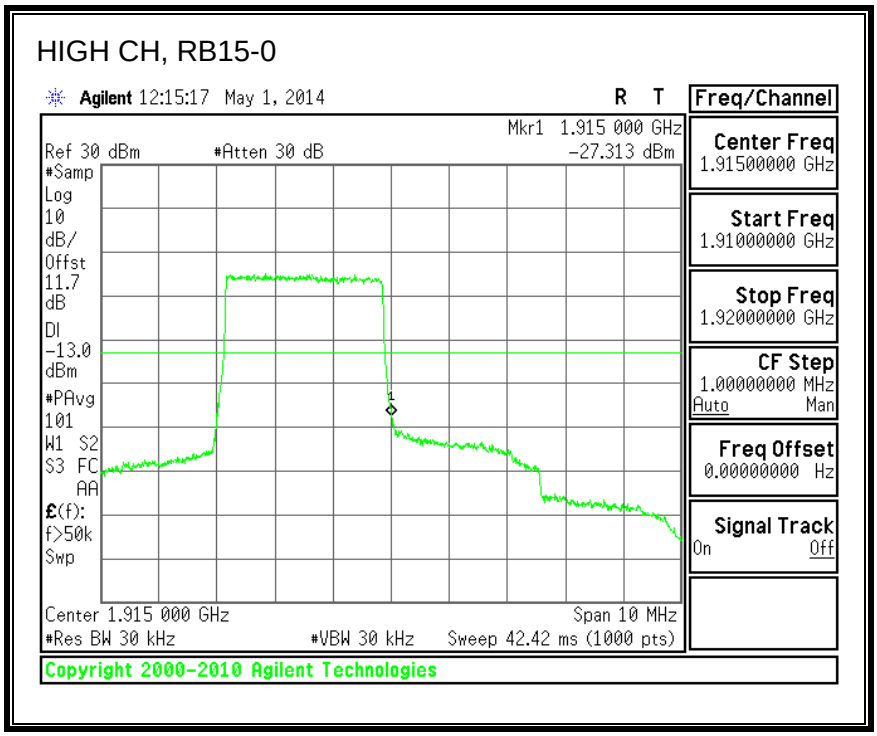

HIGH CH, RB8-4



LOW CH, RB15-0

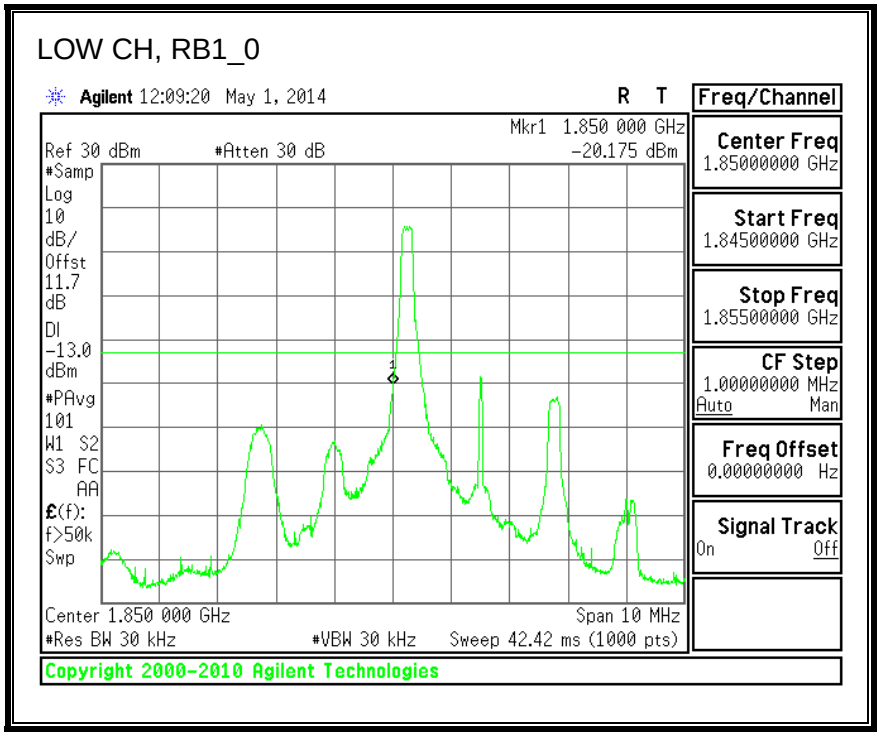



HIGH CH, RB15-0

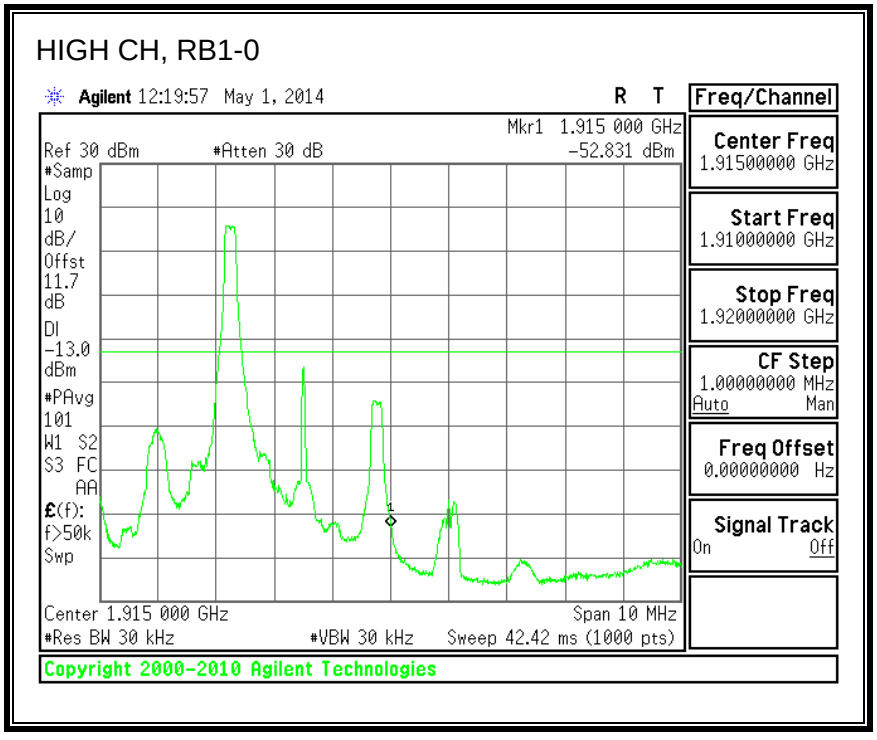


**16QAM, (3.0 MHz BAND WIDTH)**

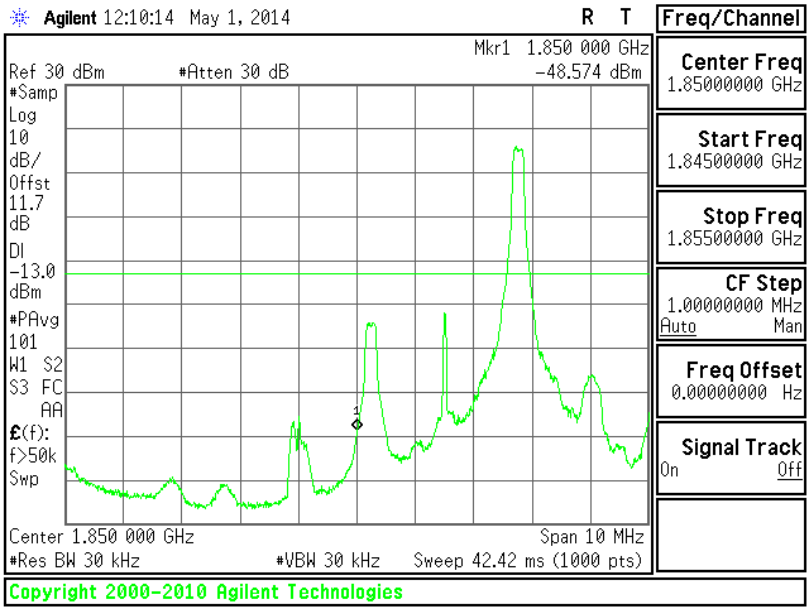
LOW CH, RB1_0



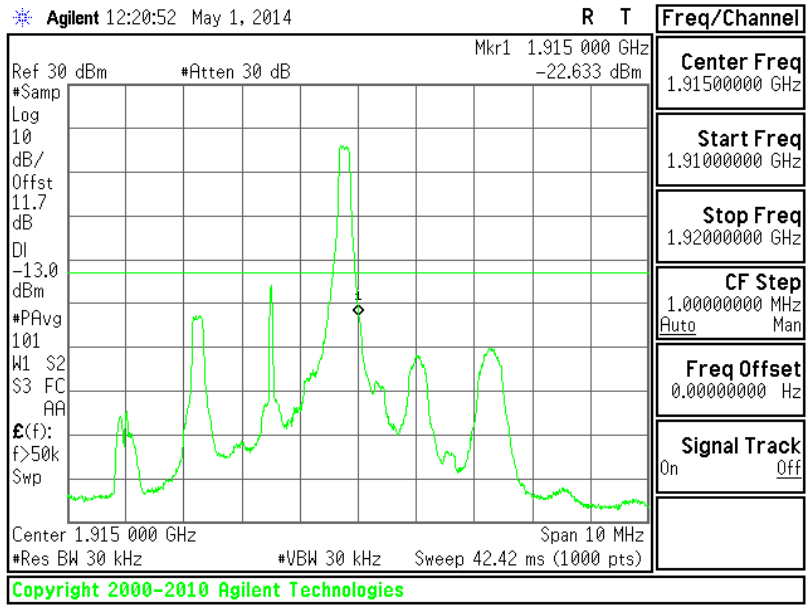

HIGH CH, RB1-0



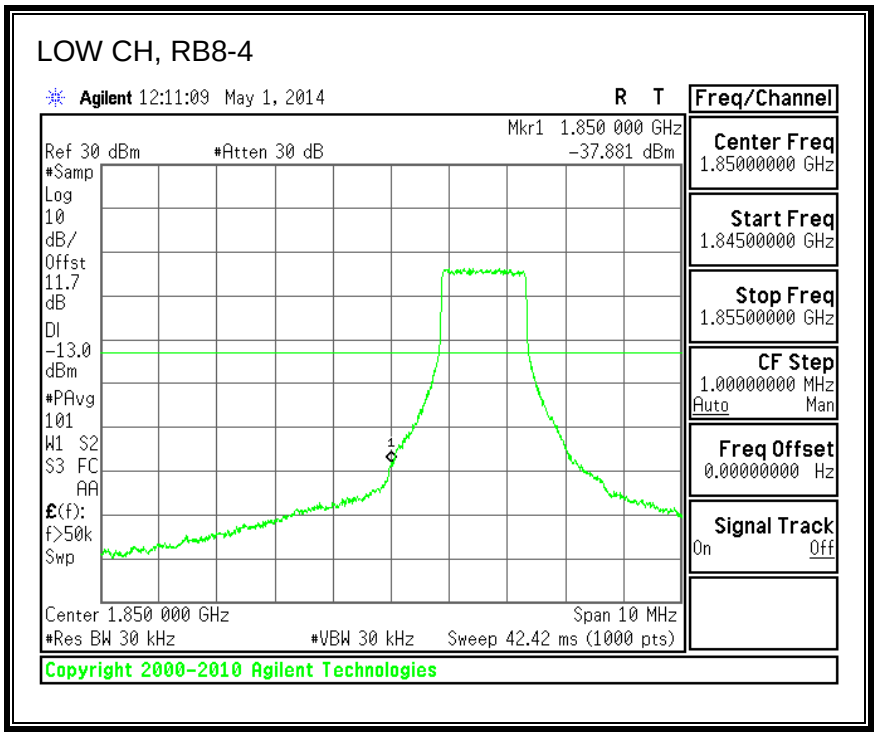
LOW CH, RB1-14



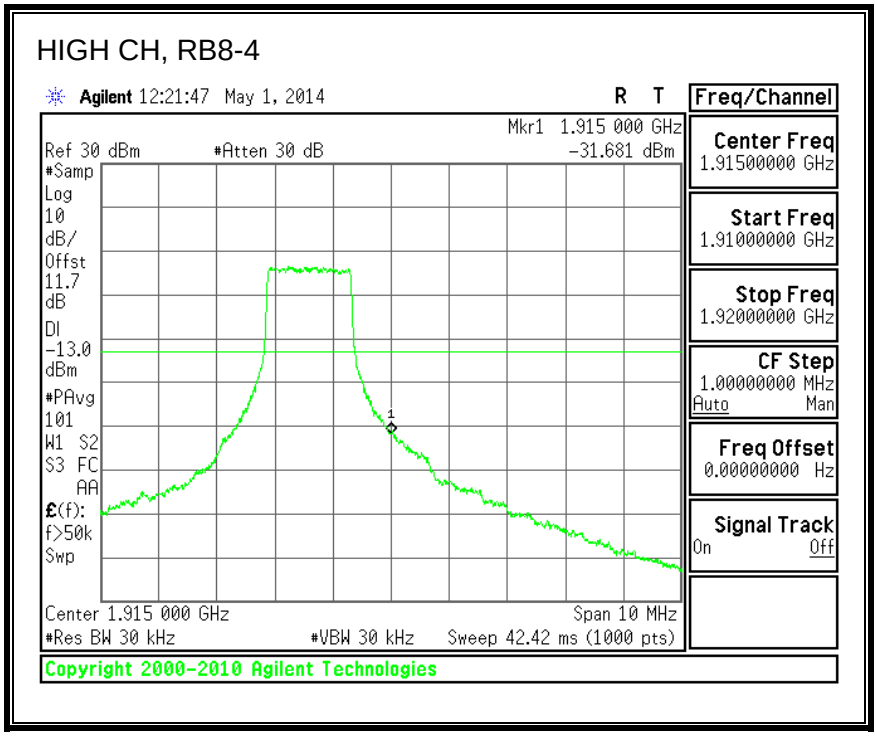

HIGH CH, RB1-14



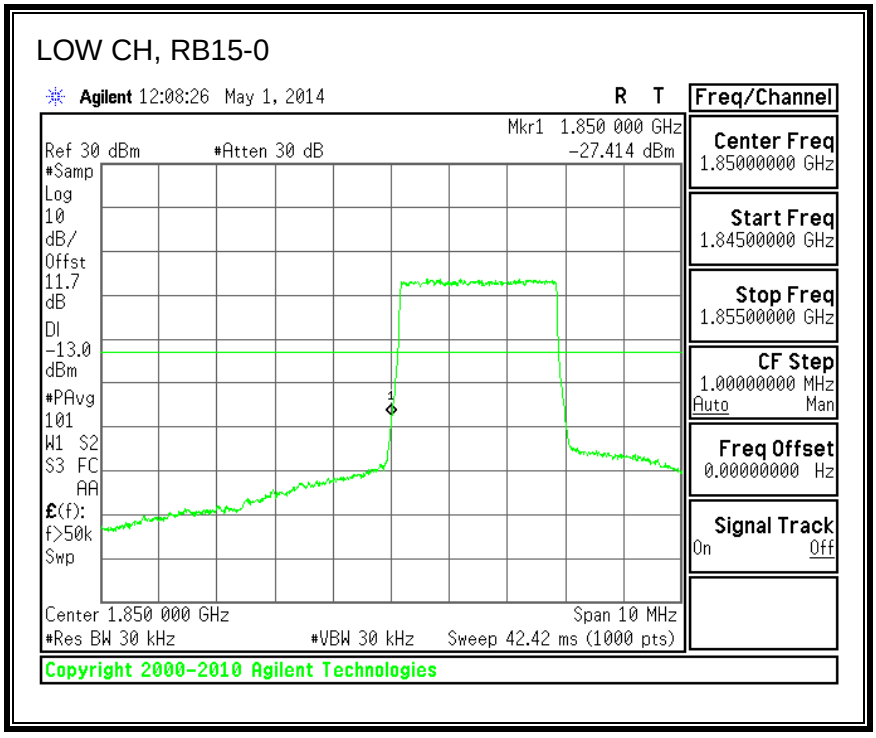
LOW CH, RB8-4



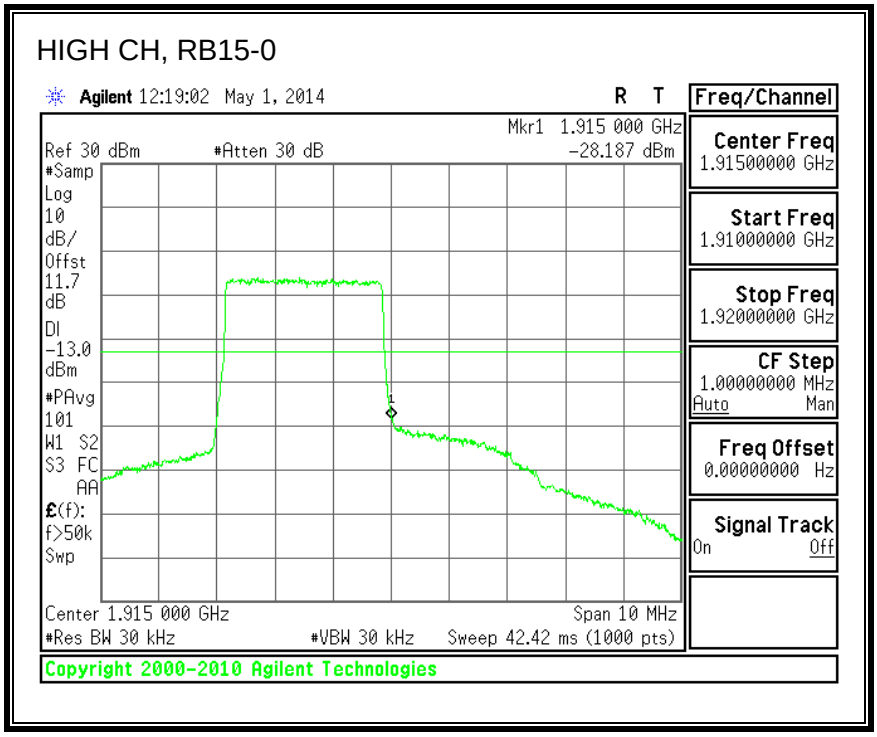

HIGH CH, RB8-4



LOW CH, RB15-0

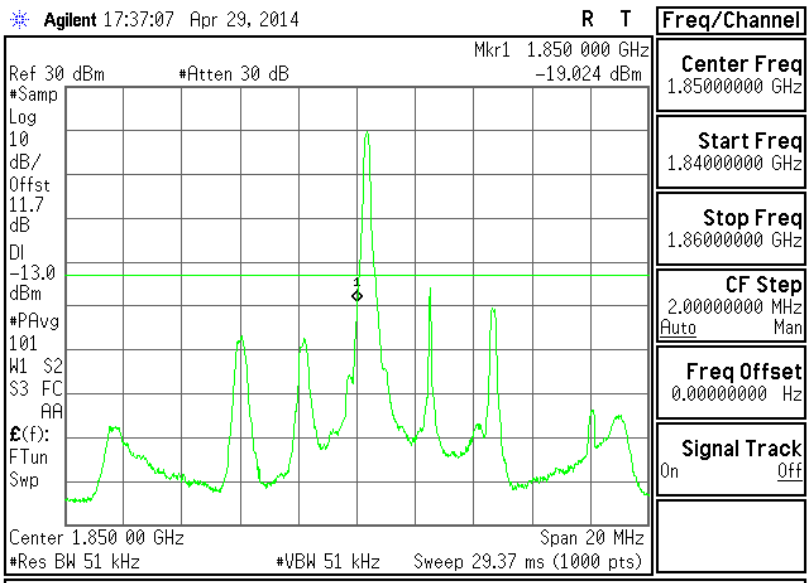



HIGH CH, RB15-0

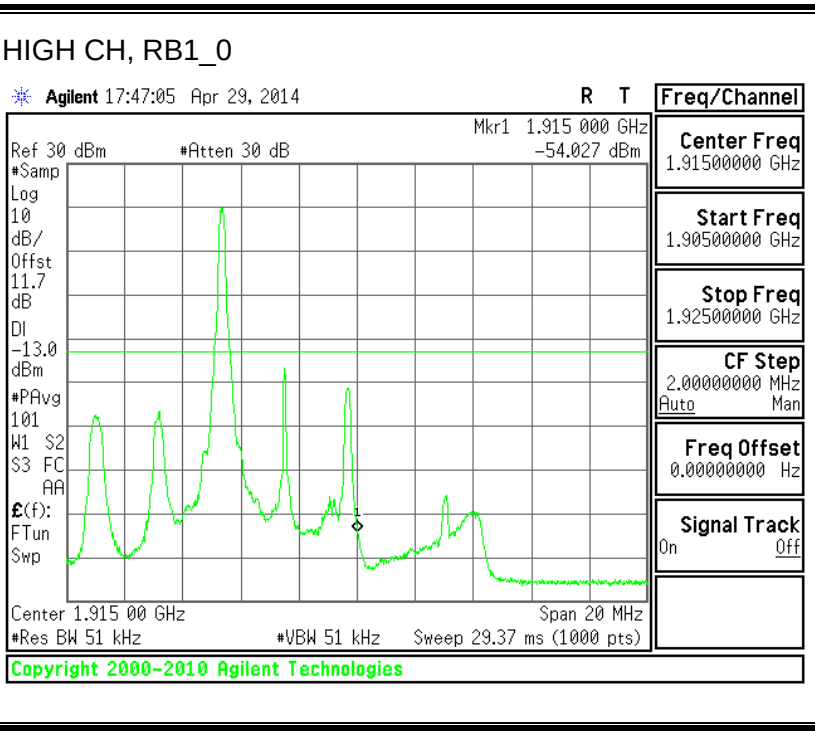


**QPSK, (5.0 MHz BAND WIDTH)**

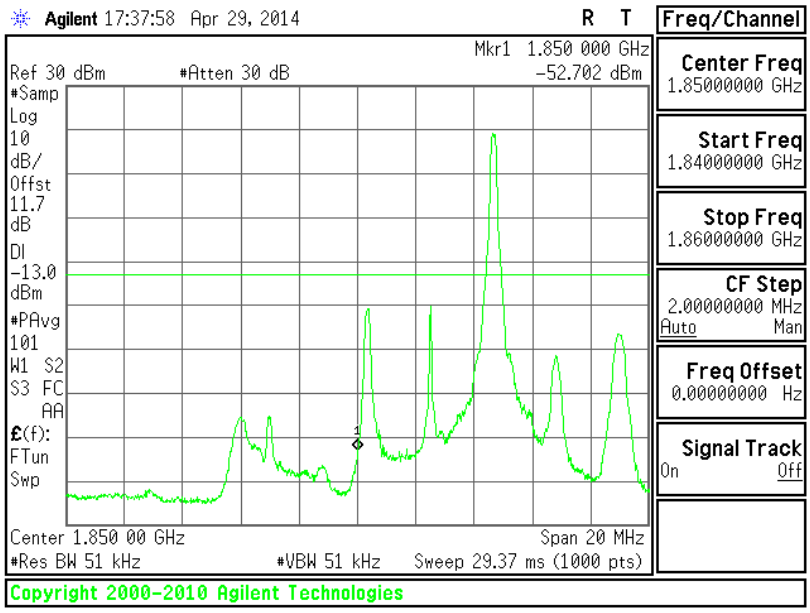
LOW CH, RB1_0



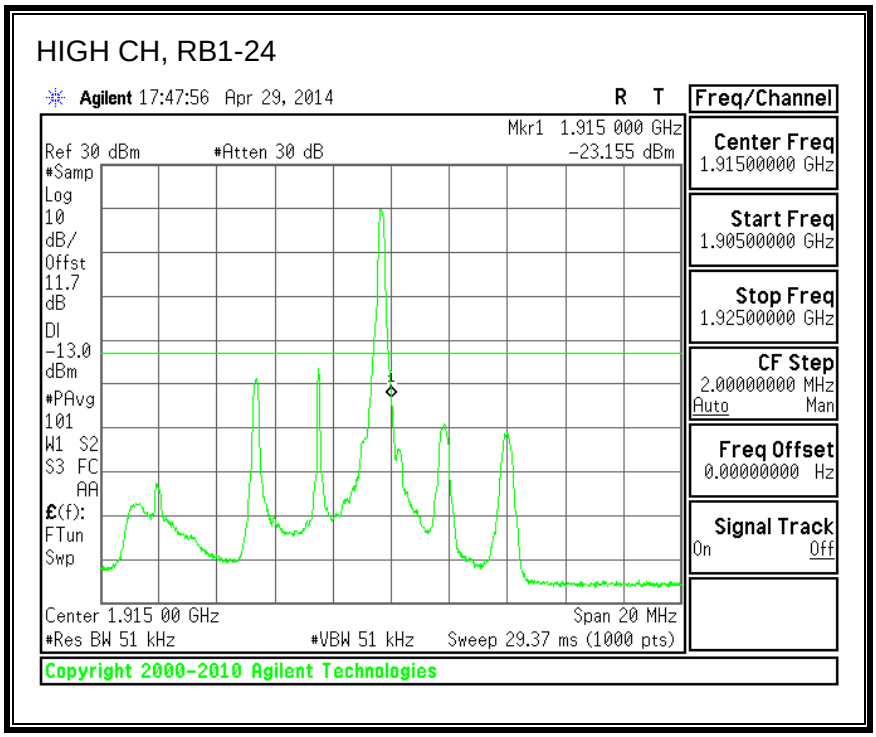

HIGH CH, RB1_0



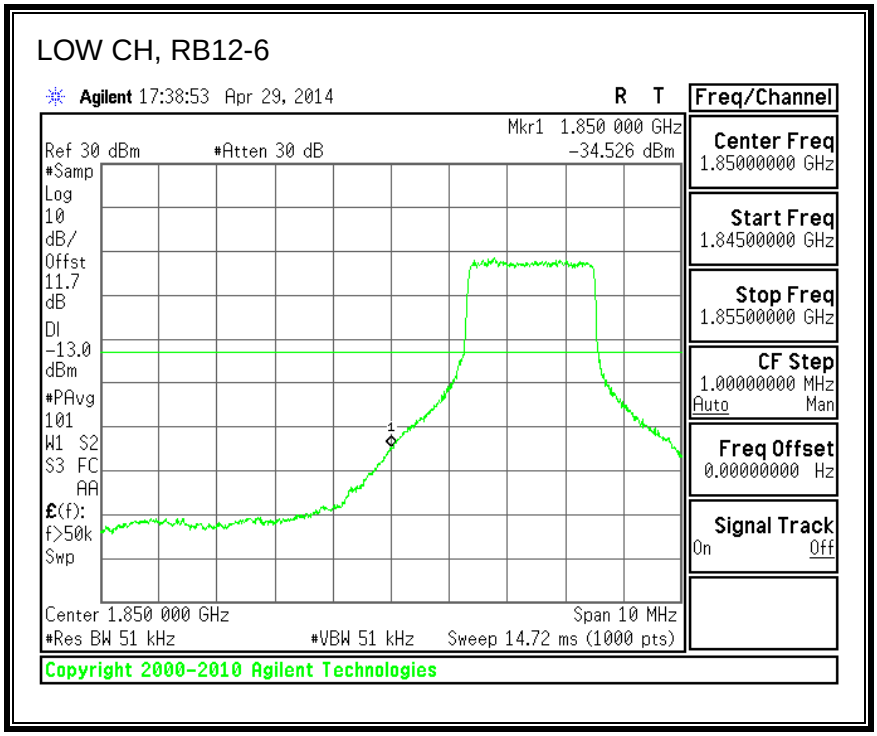
LOW CH, RB1-24



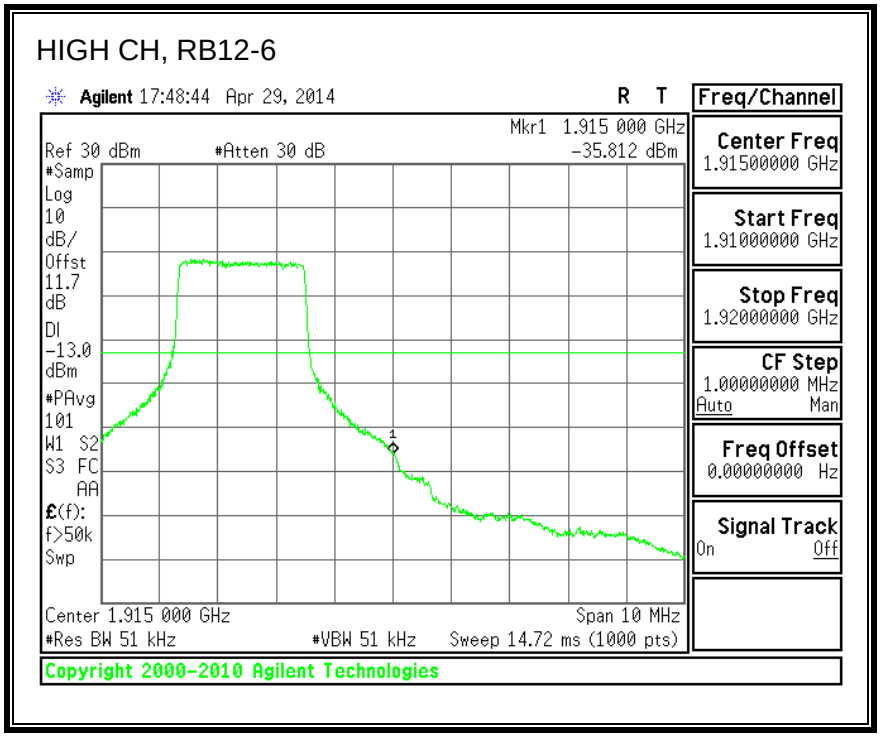

HIGH CH, RB1-24



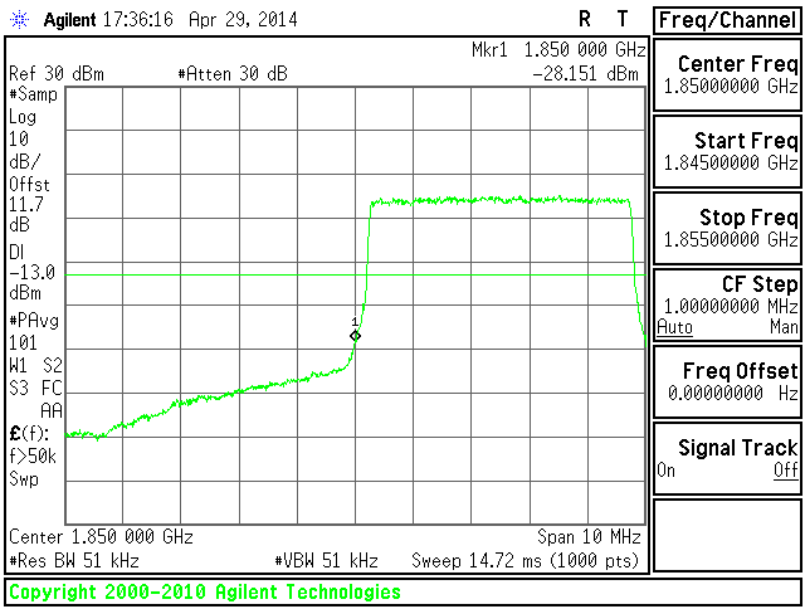
LOW CH, RB12-6



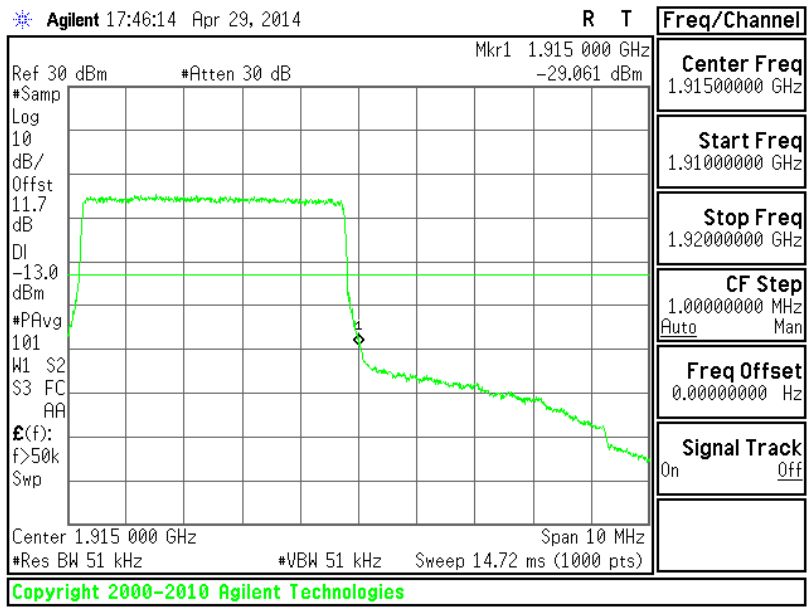

HIGH CH, RB12-6



LOW CH, RB25-0

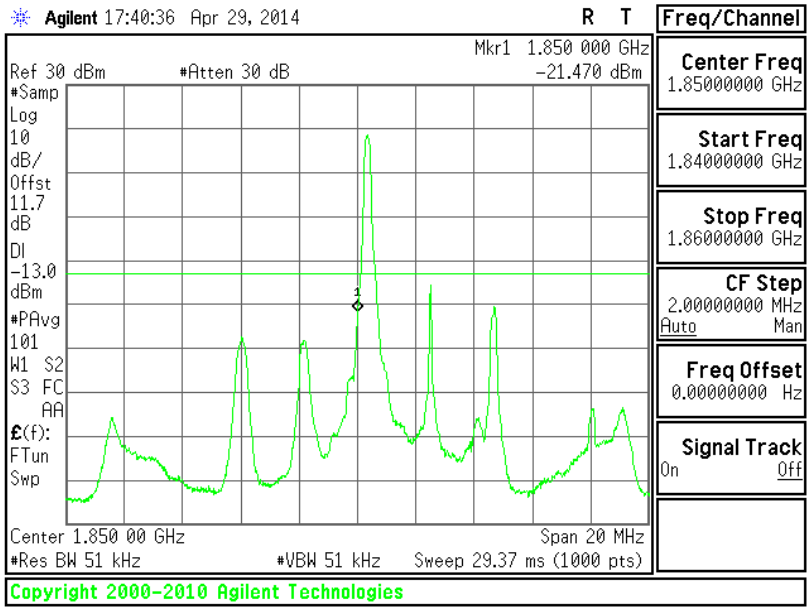



HIGH CH, RB25-0

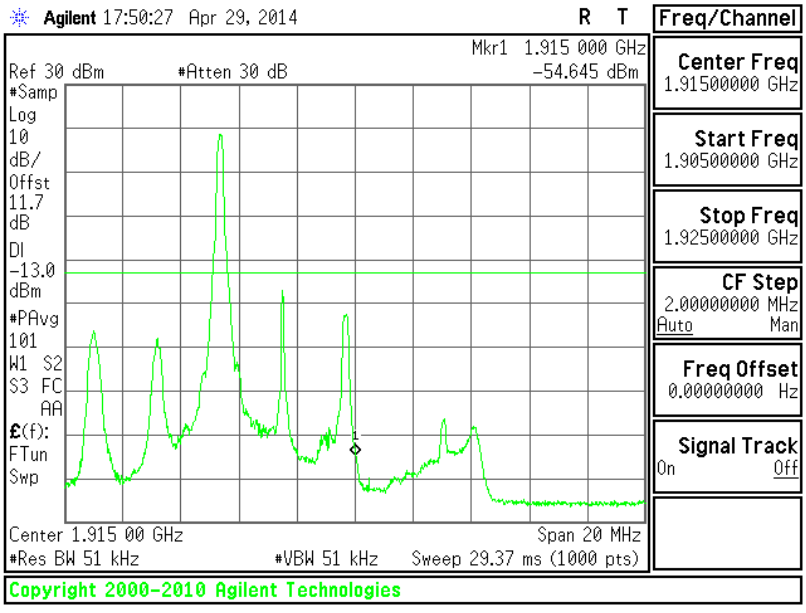


**16QAM, (5.0 MHz BAND WIDTH)**

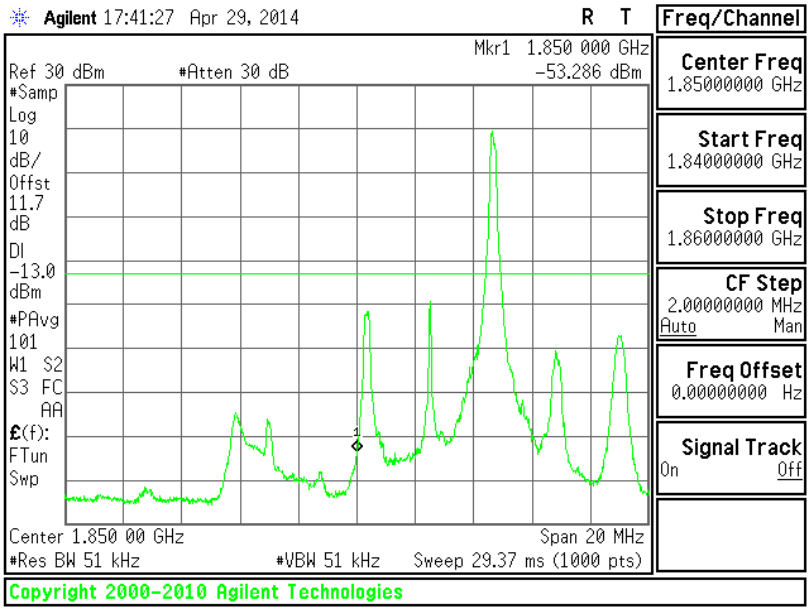
LOW CH, RB1_0



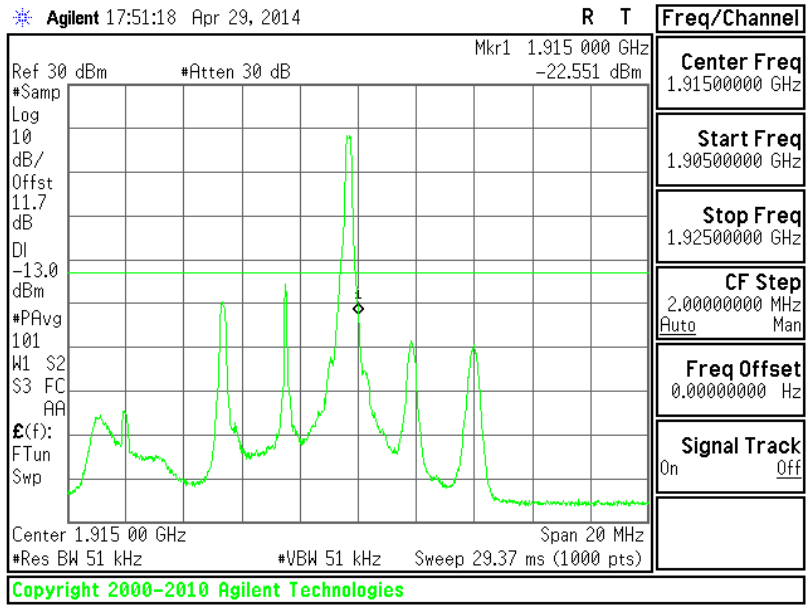

HIGH CH, RB1-0



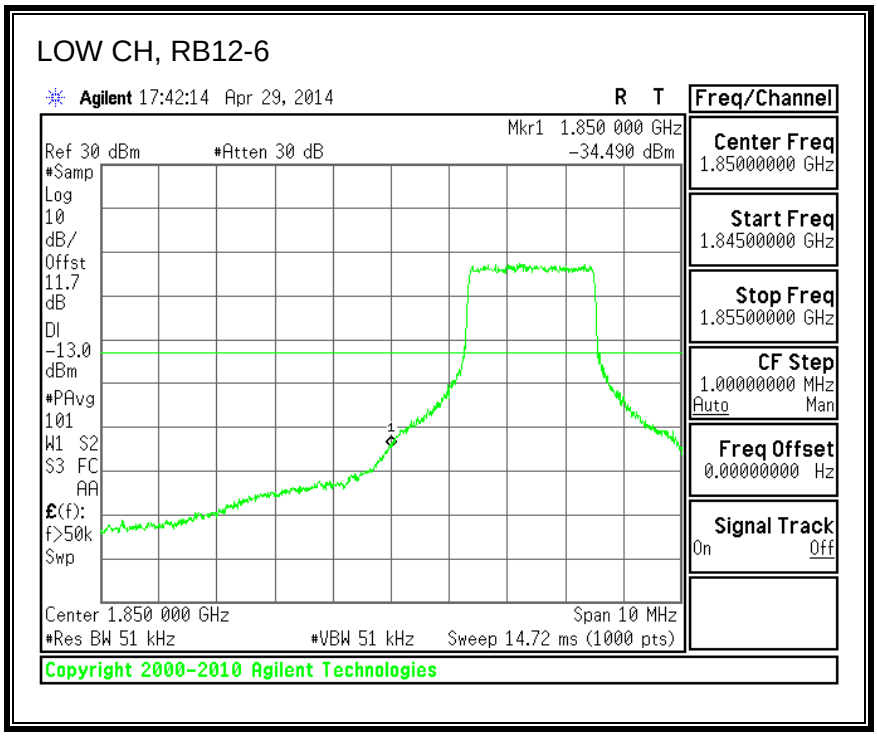
LOW CH, RB1-24



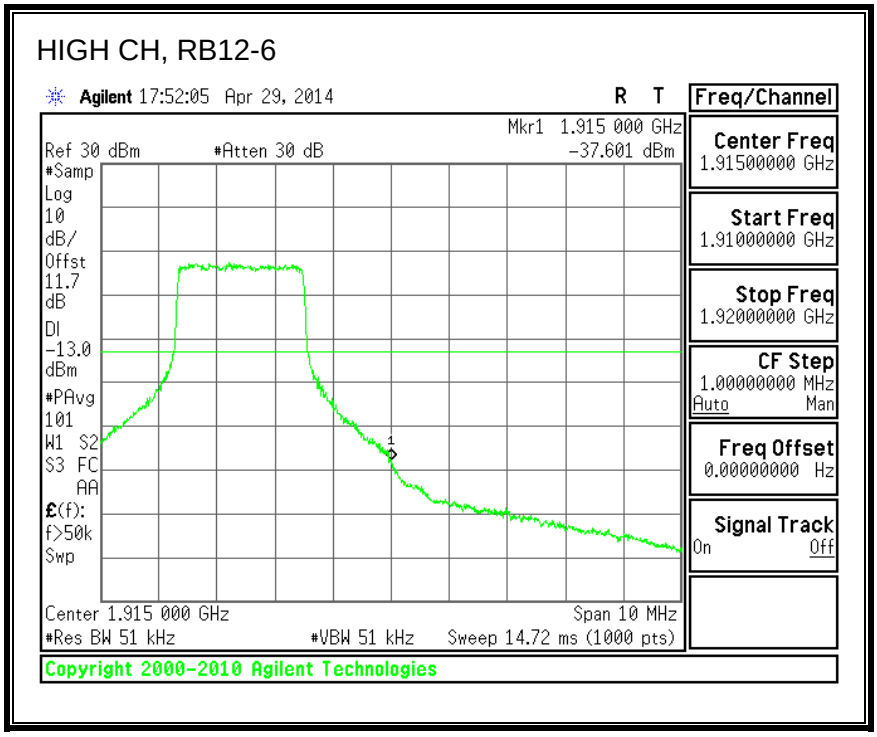

HIGH CH, RB1-24



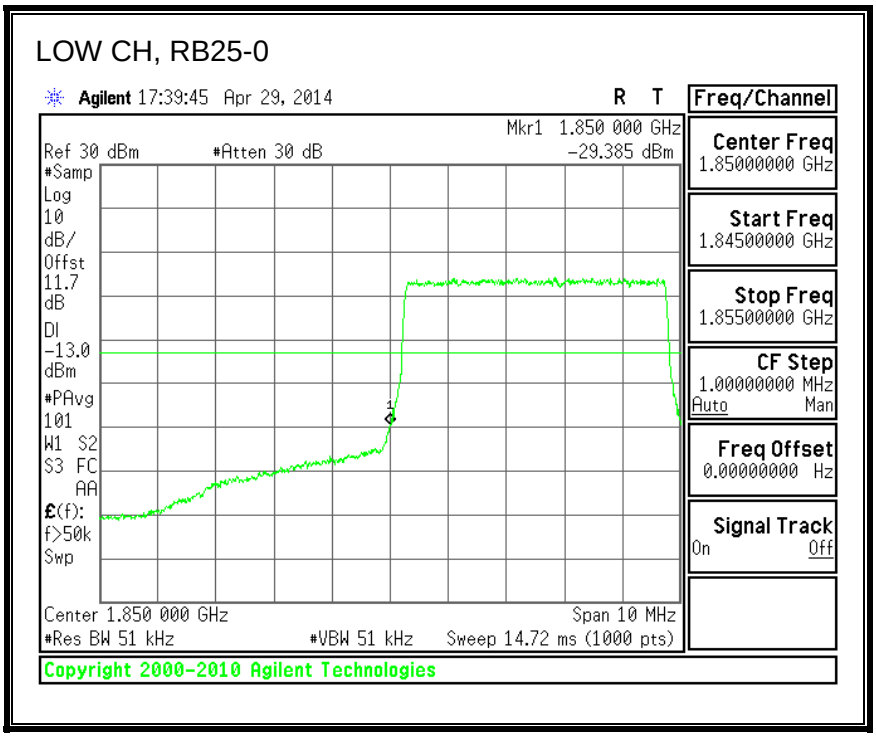
LOW CH, RB12-6



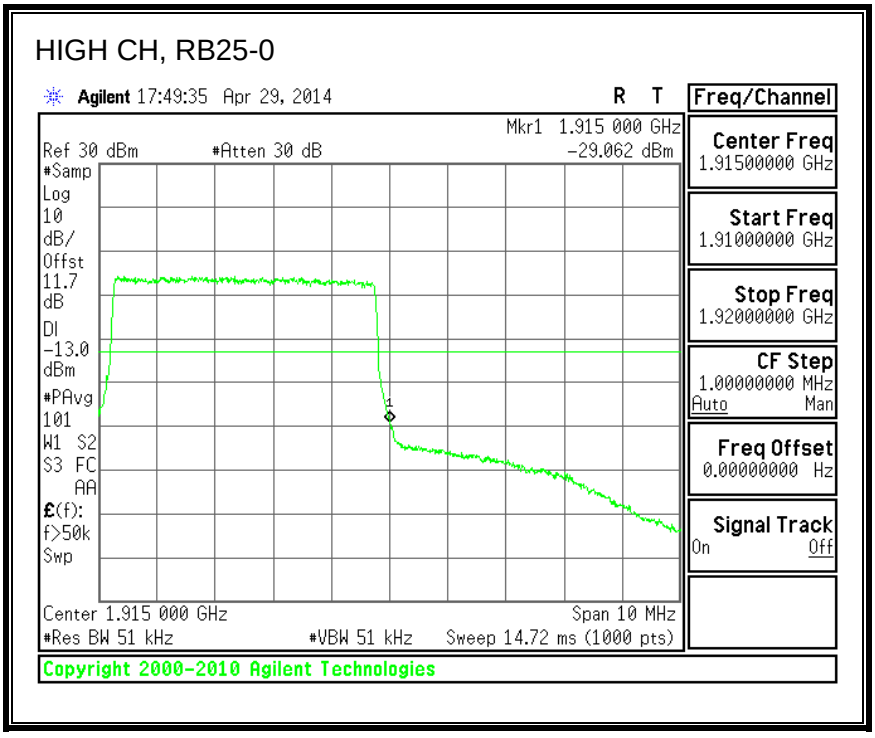

HIGH CH, RB12-6



LOW CH, RB25-0

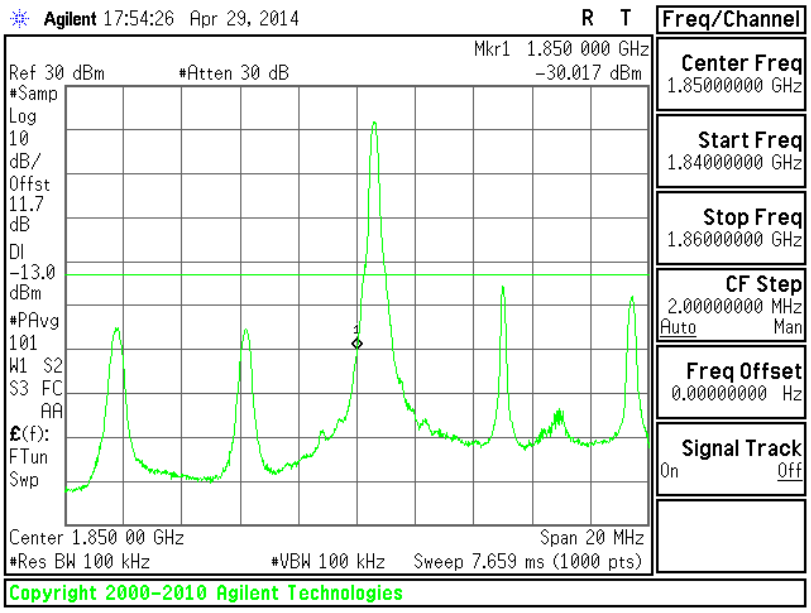



HIGH CH, RB25-0

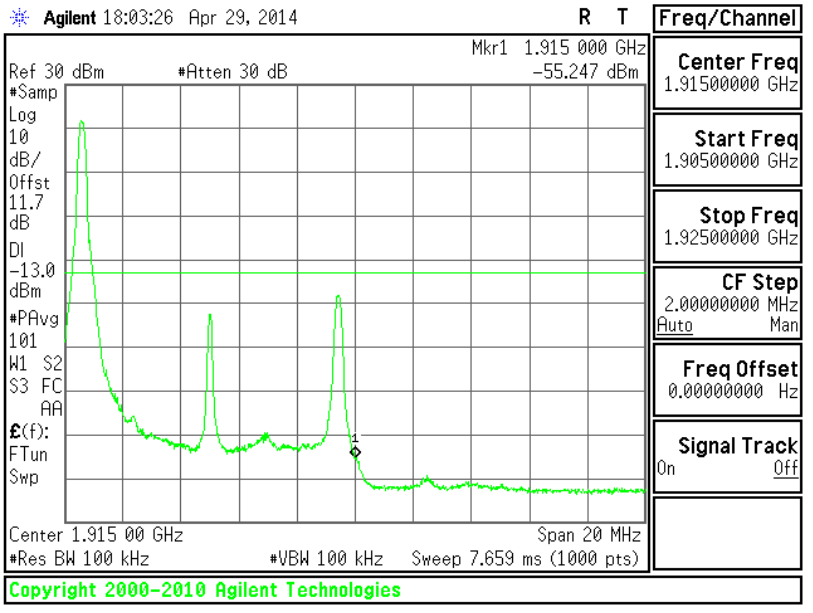


**QPSK, (10.0 MHz BAND WIDTH)**

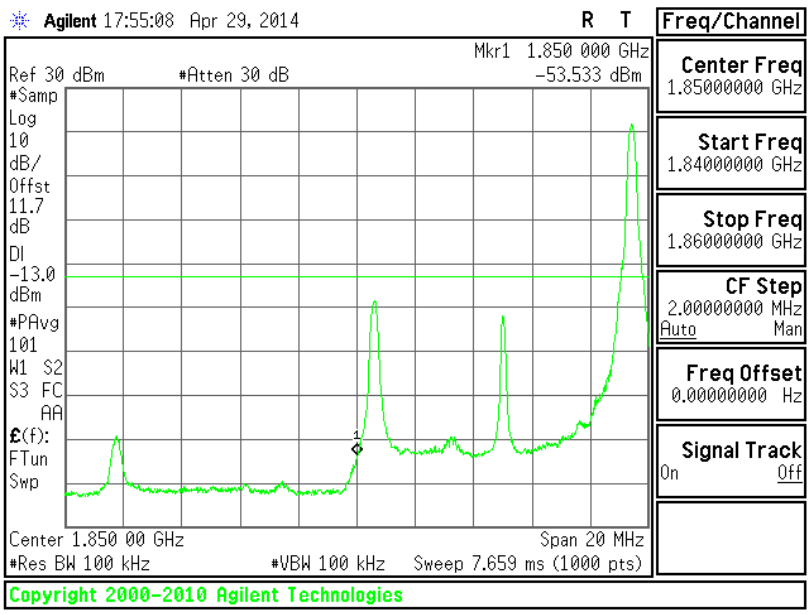
LOW CH, RB1_0



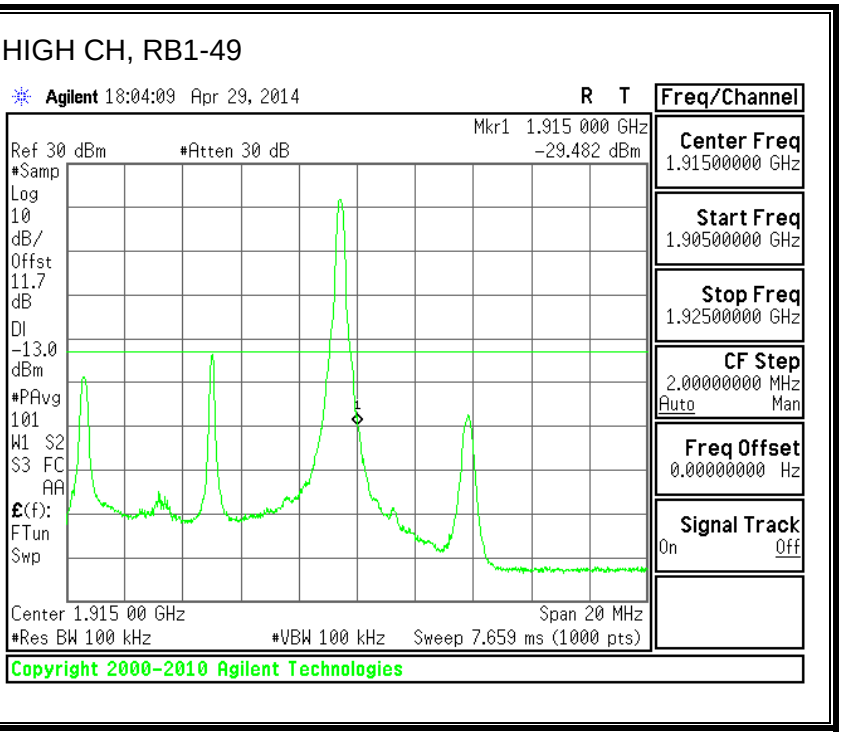

HIGH CH, RB1-0



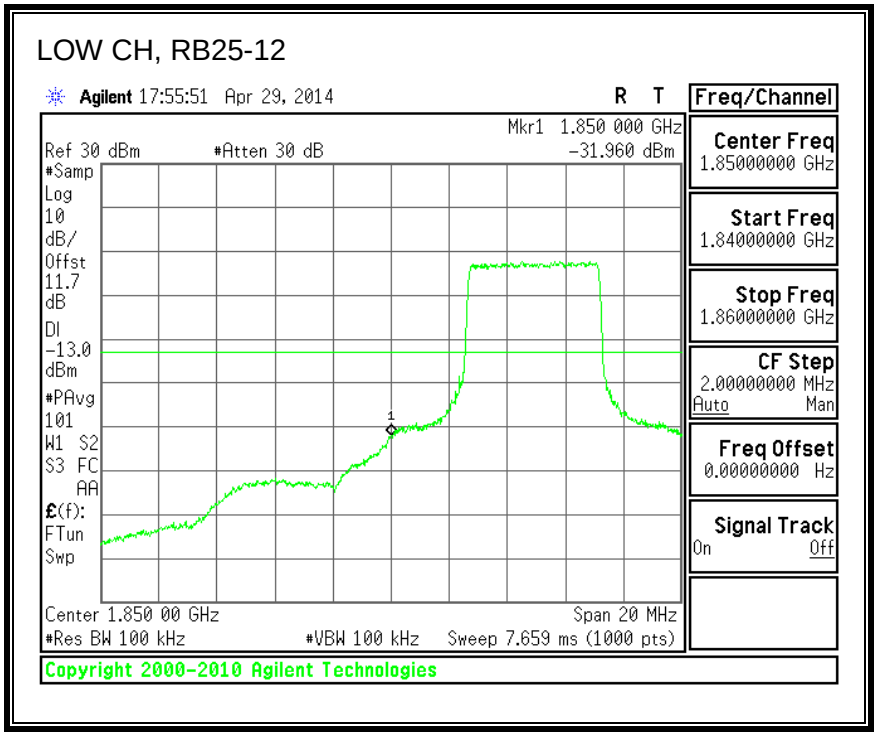
LOW CH, RB1-49



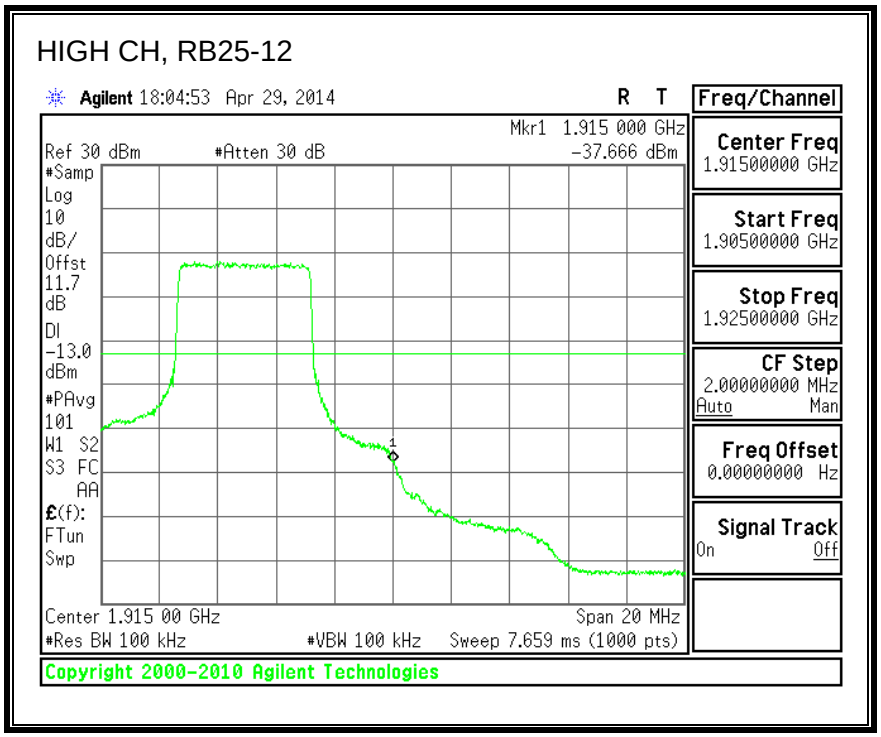

HIGH CH, RB1-49



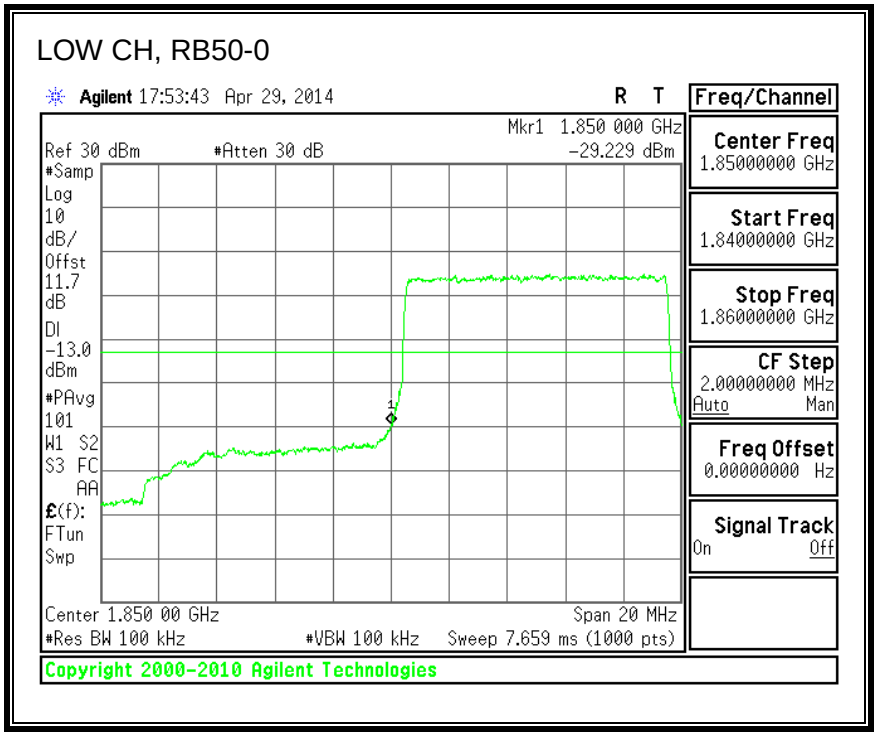
LOW CH, RB25-12



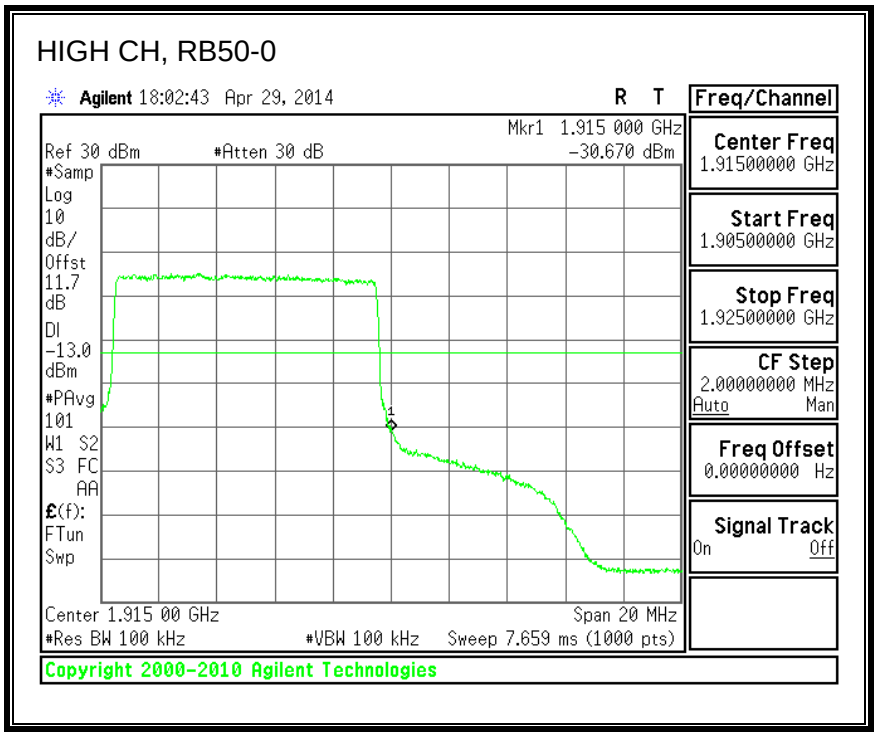

HIGH CH, RB25-12



LOW CH, RB50-0

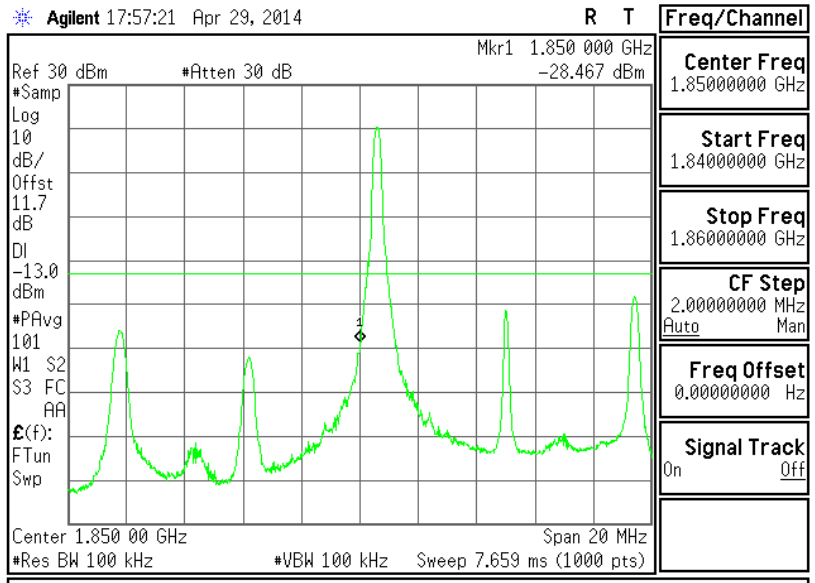



HIGH CH, RB50-0

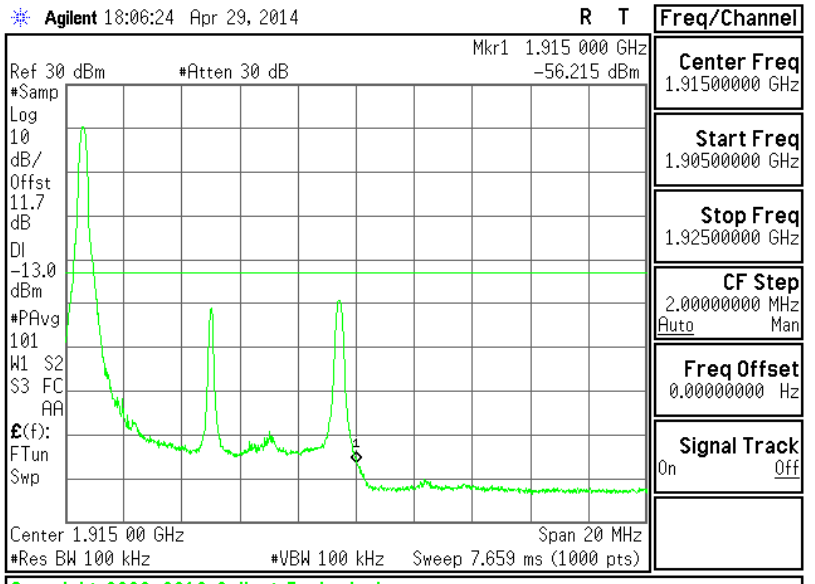


**16QAM, (10.0 MHz BAND WIDTH)**

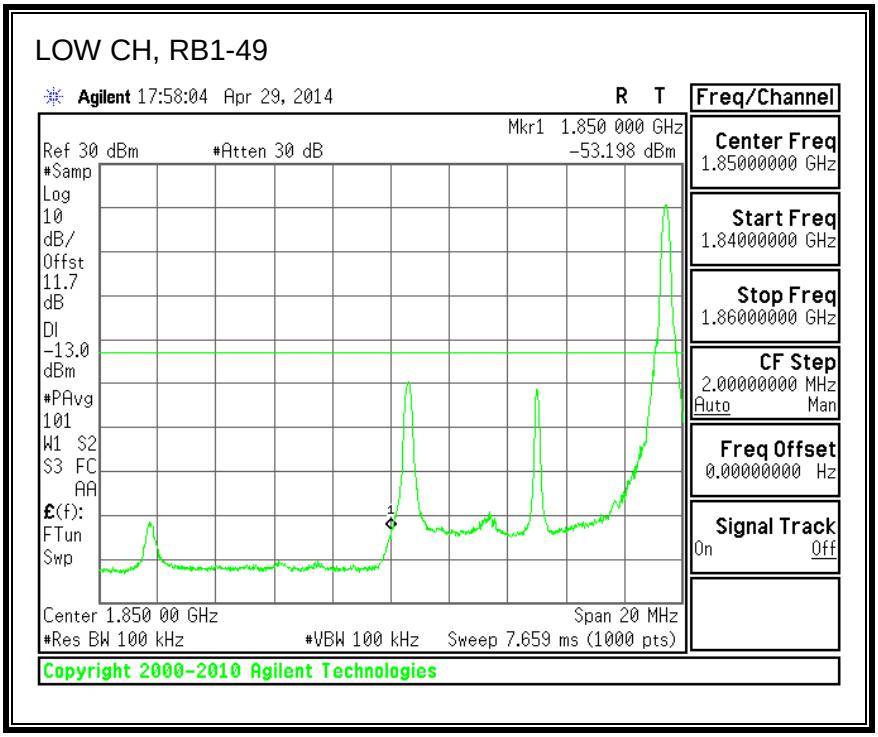
LOW CH, RB1_0



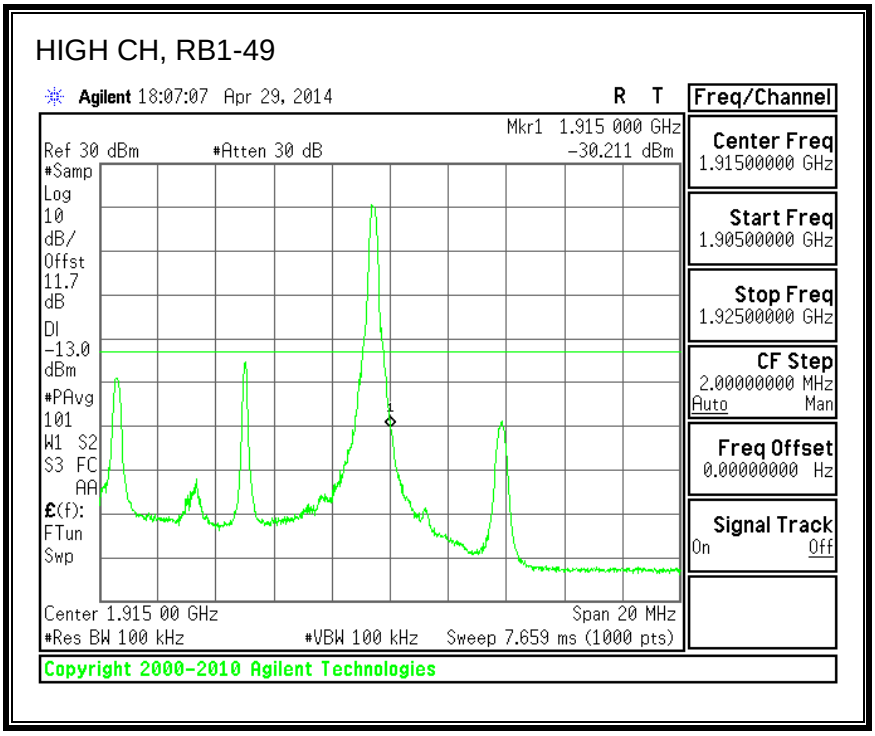

HIGH CH, RB1-0



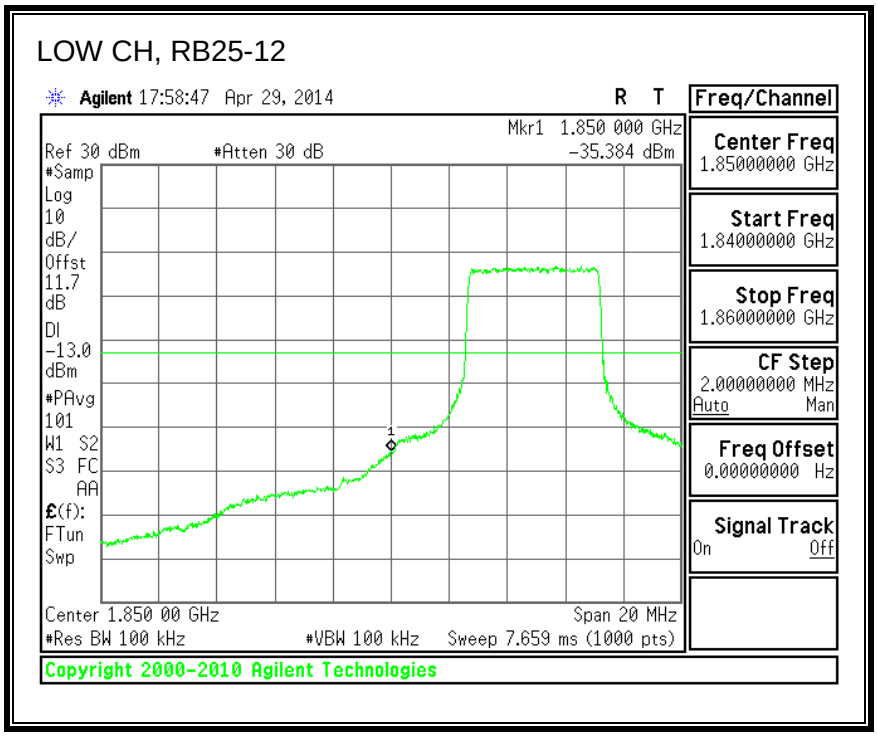
LOW CH, RB1-49



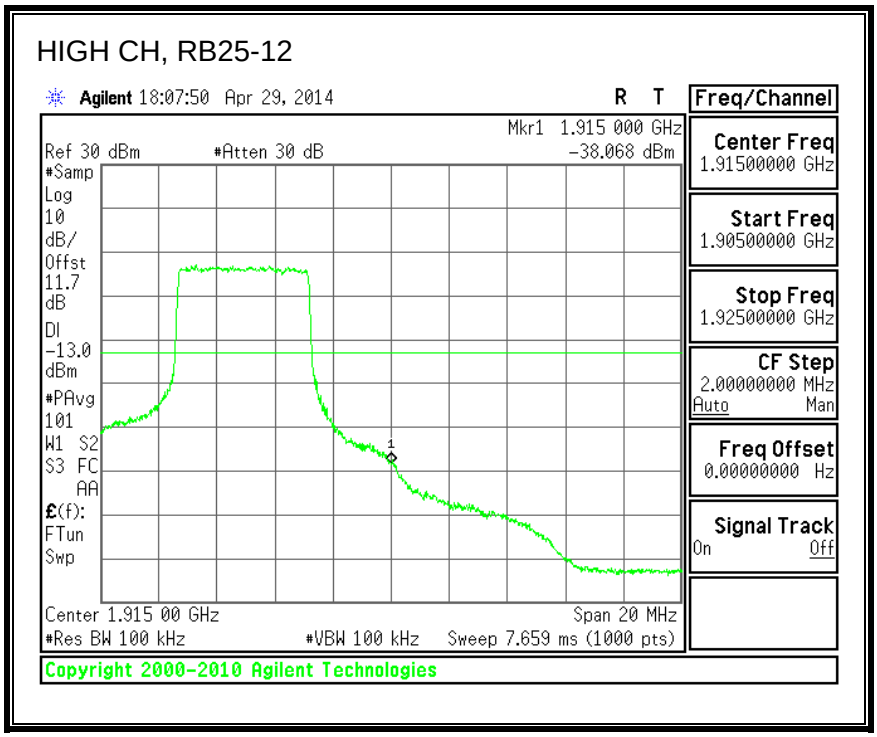

HIGH CH, RB1-49



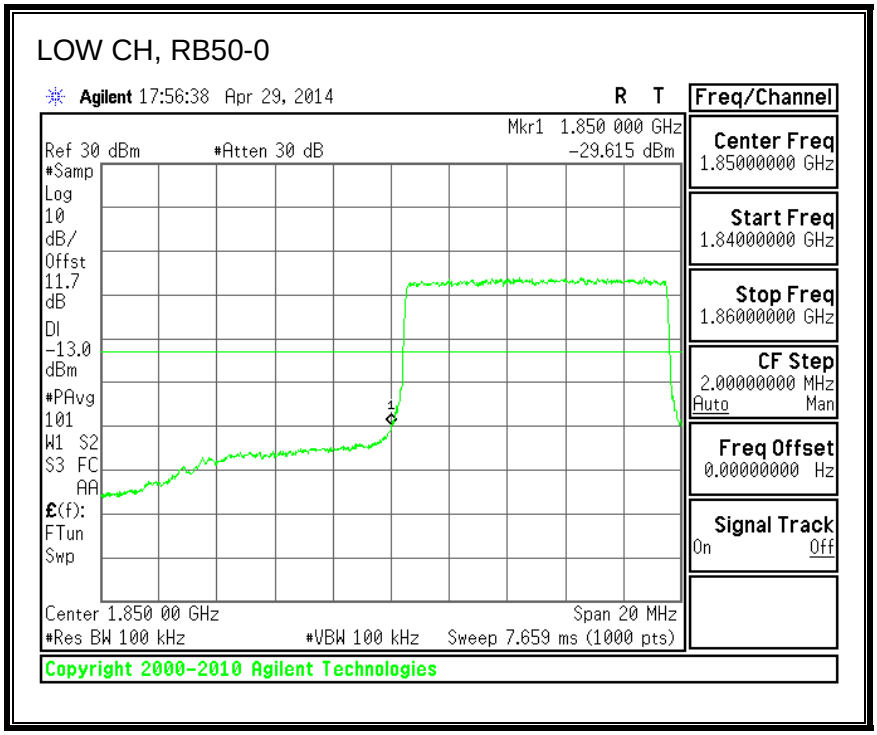
LOW CH, RB25-12



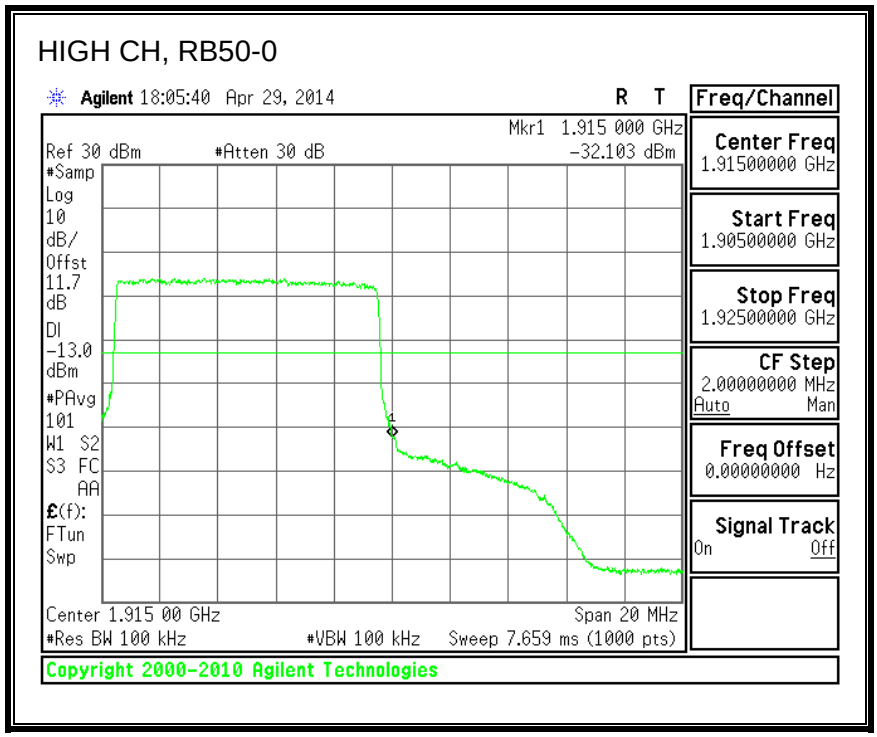

HIGH CH, RB25-12



LOW CH, RB50-0

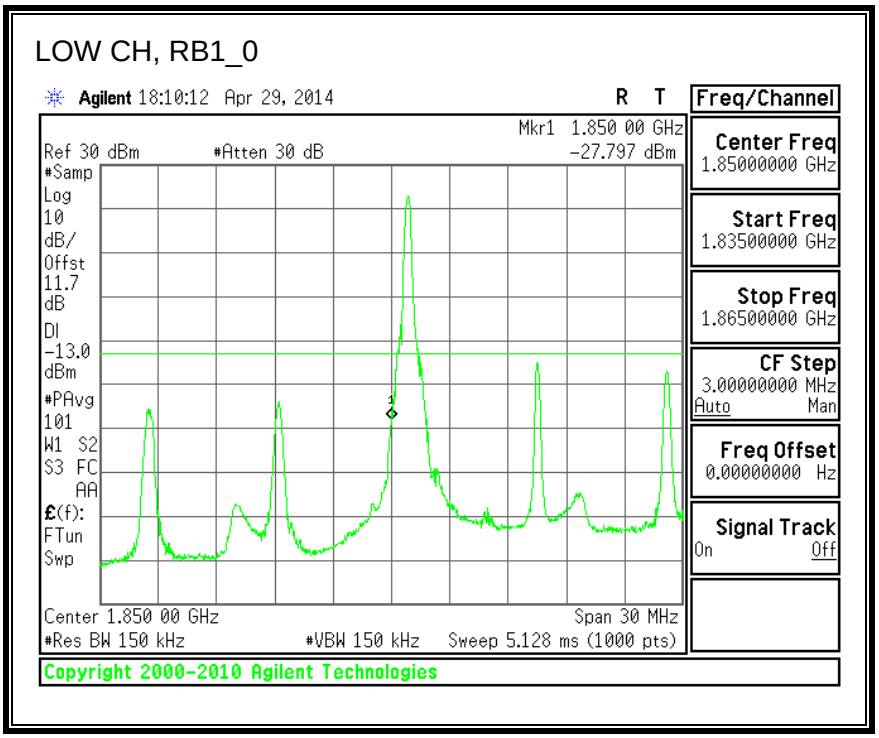



HIGH CH, RB50-0

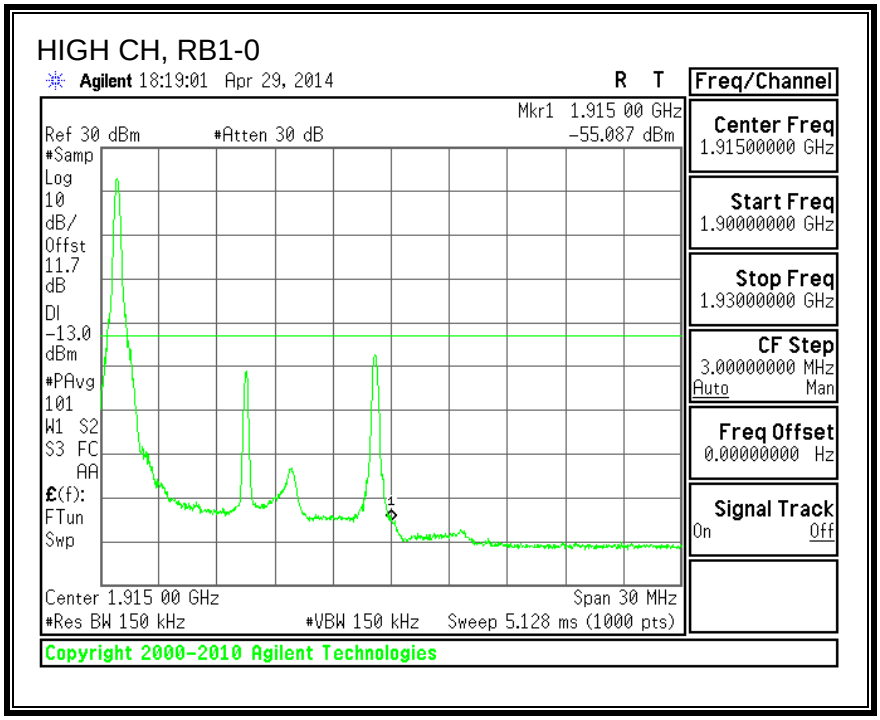


**QPSK, (15.0 MHz BAND WIDTH)**

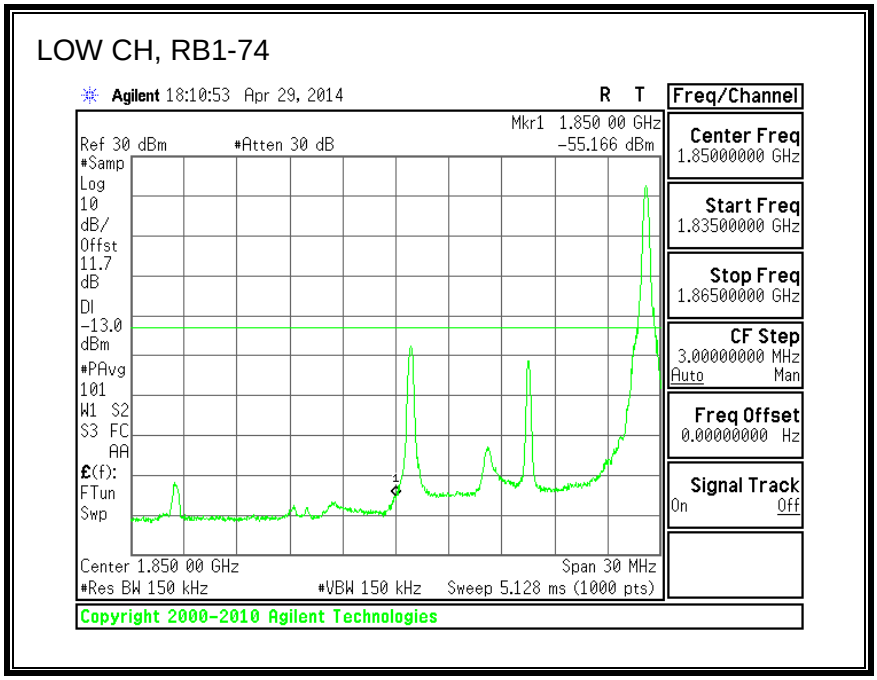
LOW CH, RB1_0



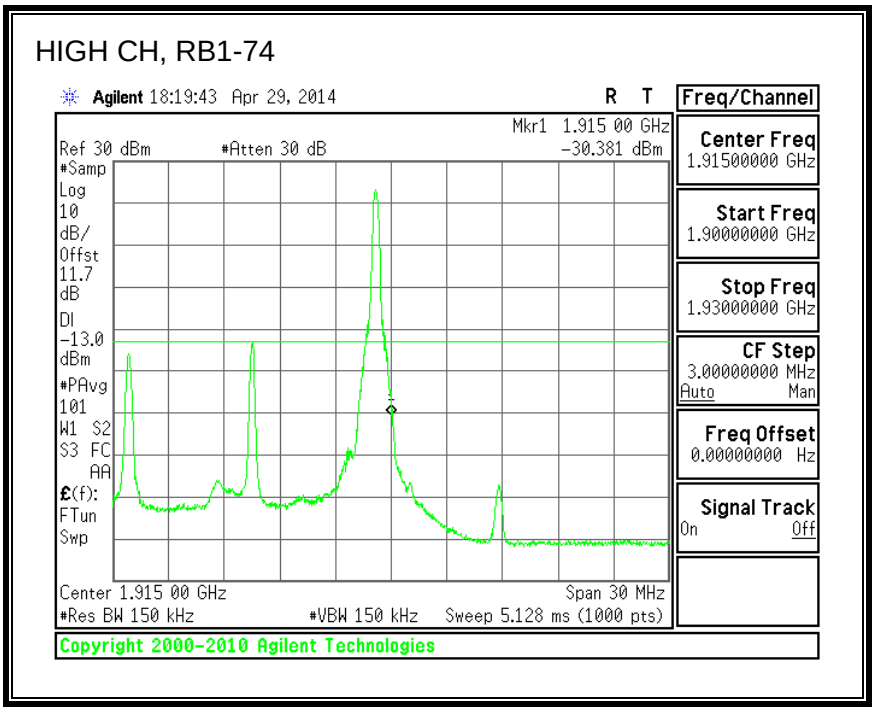

HIGH CH, RB1-0



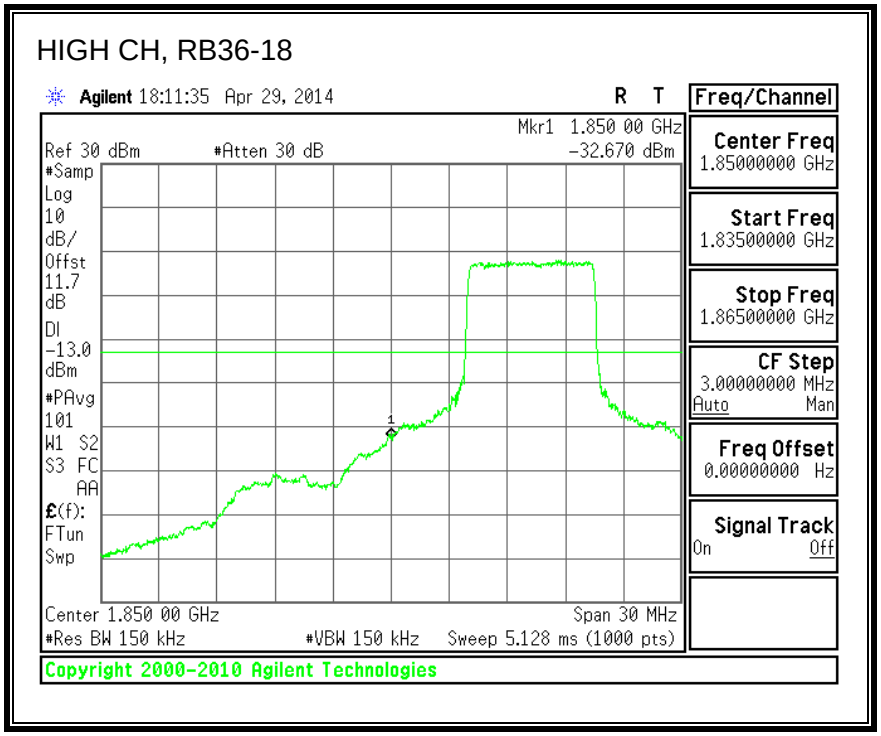
LOW CH, RB1-74



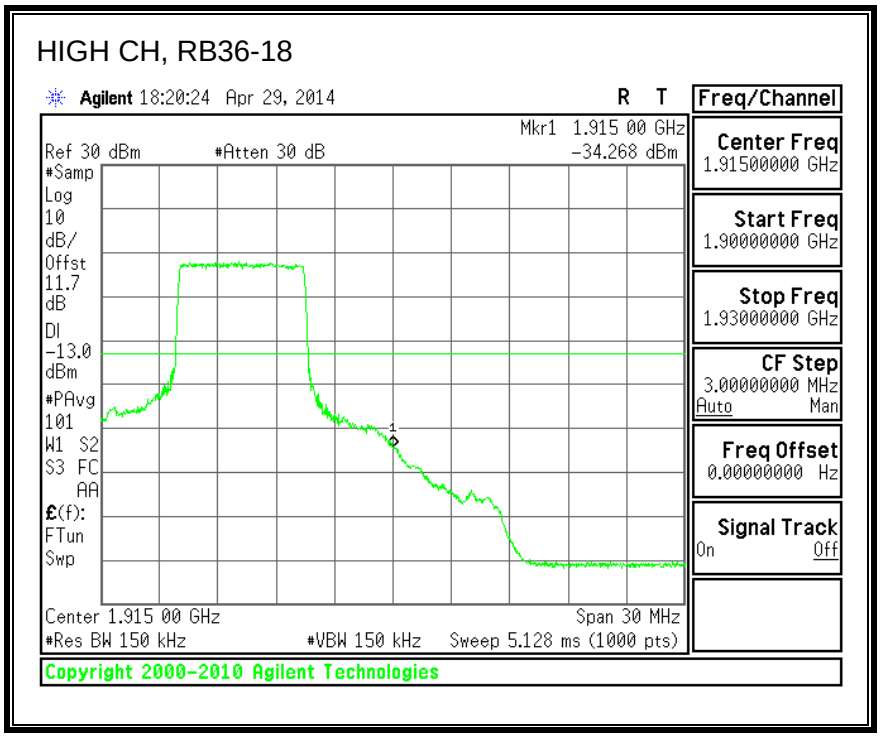

HIGH CH, RB1-74



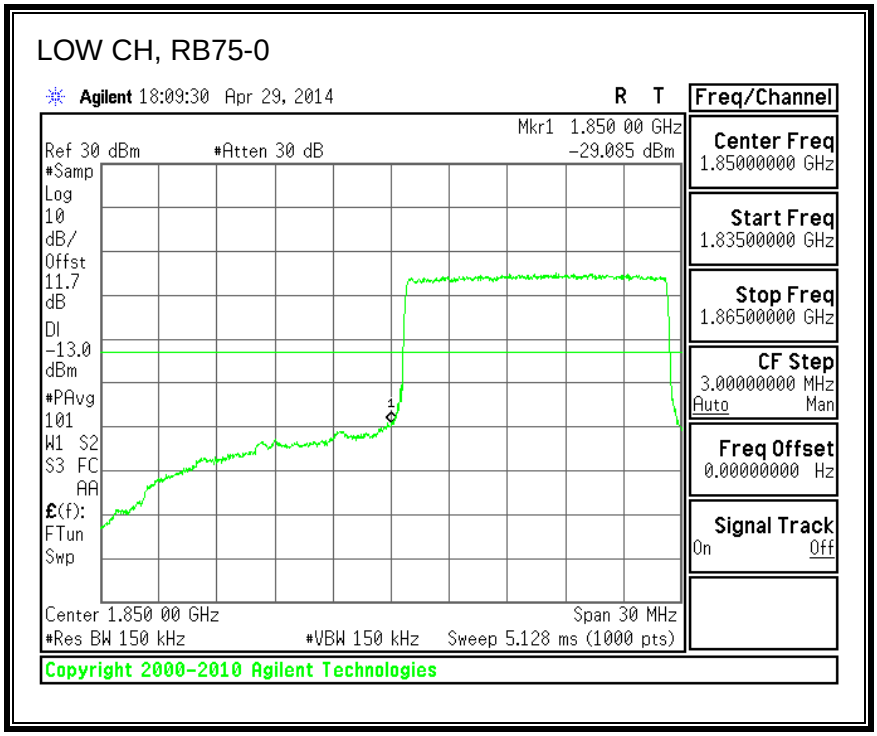
HIGH CH, RB36-18



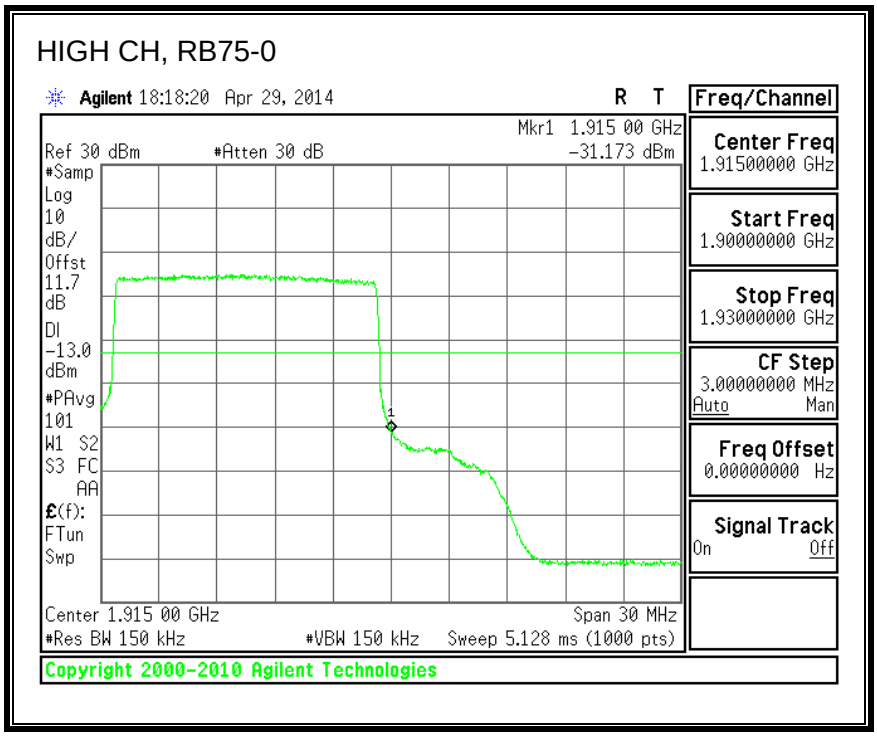

HIGH CH, RB36-18



LOW CH, RB75-0

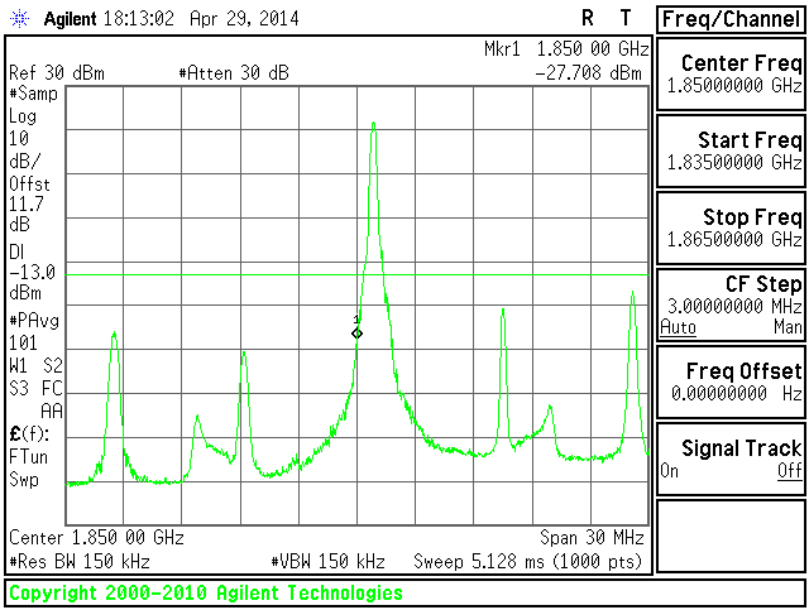



HIGH CH, RB75-0

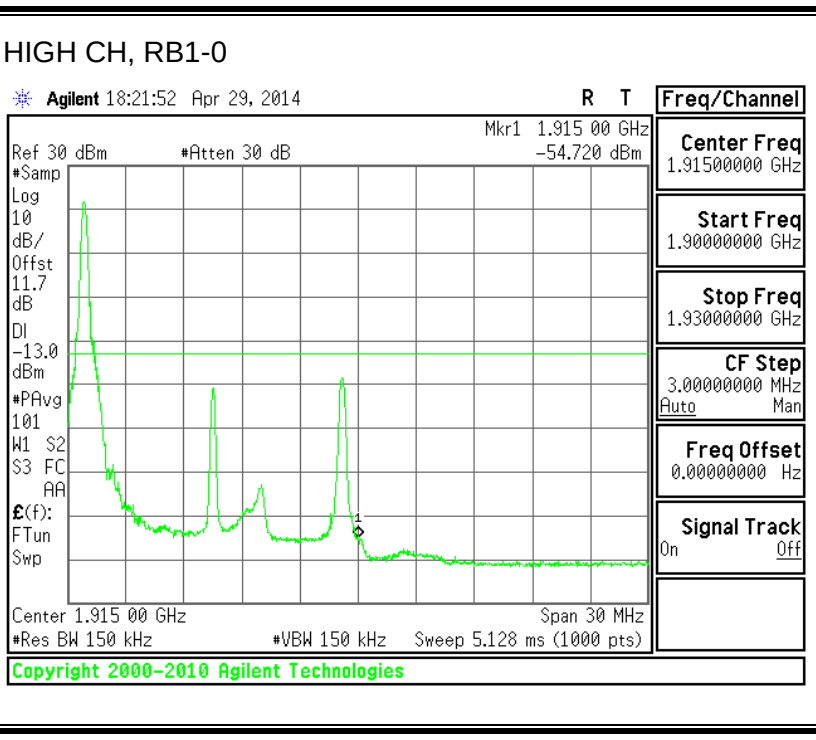


**16QAM, (15.0 MHz BAND WIDTH)**

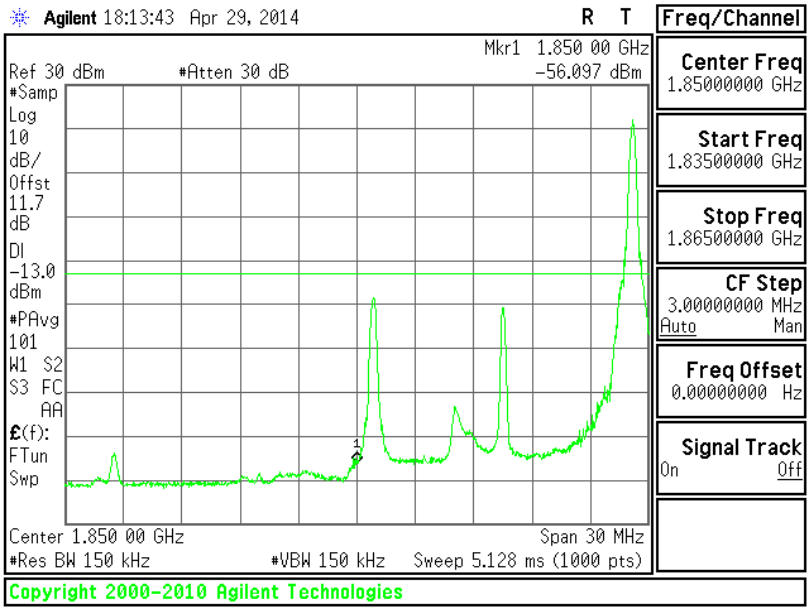
LOW CH, RB1_0



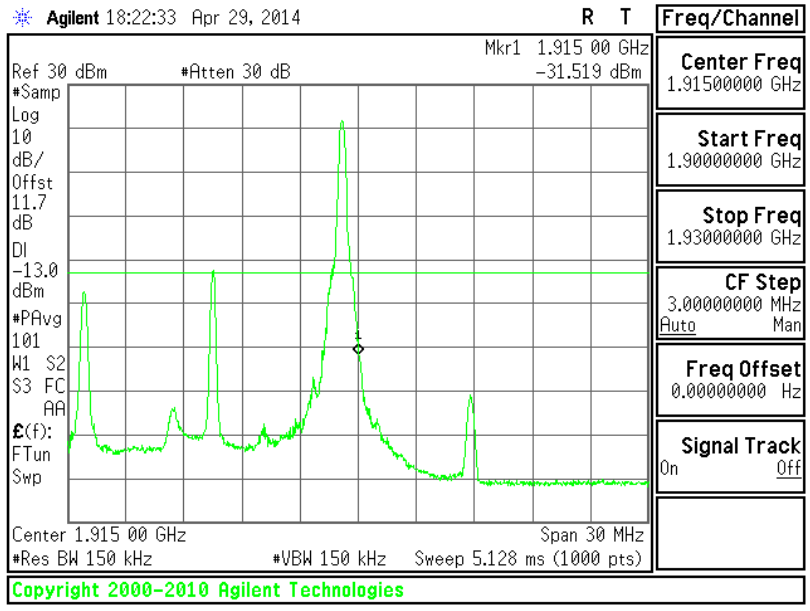

HIGH CH, RB1-0



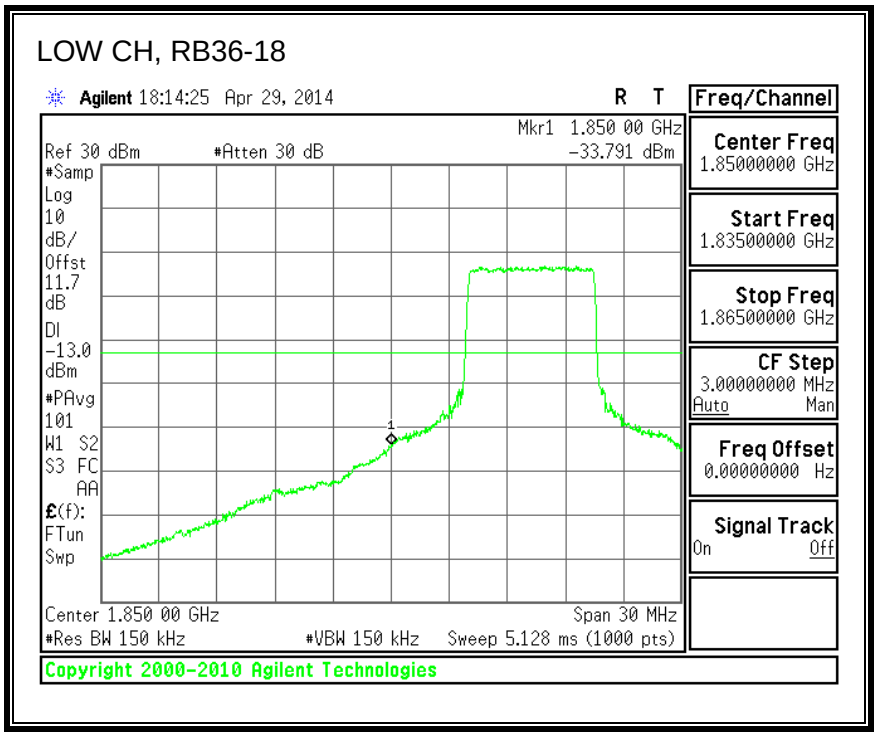
LOW CH, RB1-74



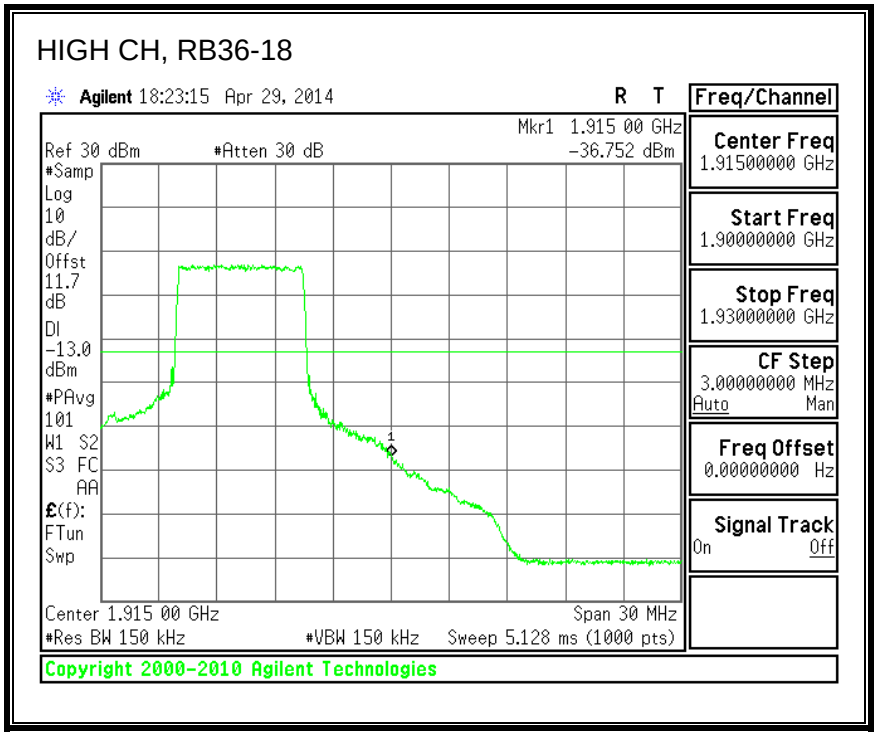

HIGH CH, RB1-74



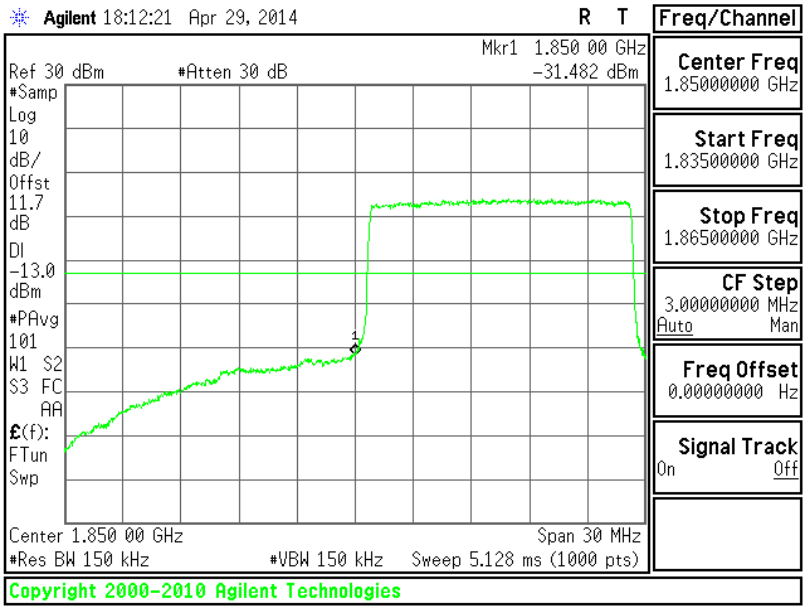
LOW CH, RB36-18



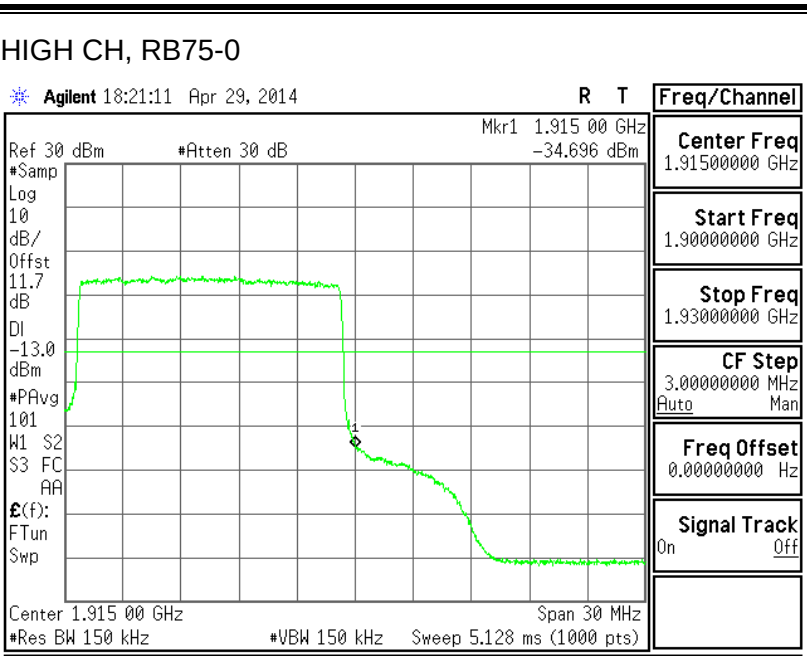

HIGH CH, RB36-18



LOW CH, RB75-0

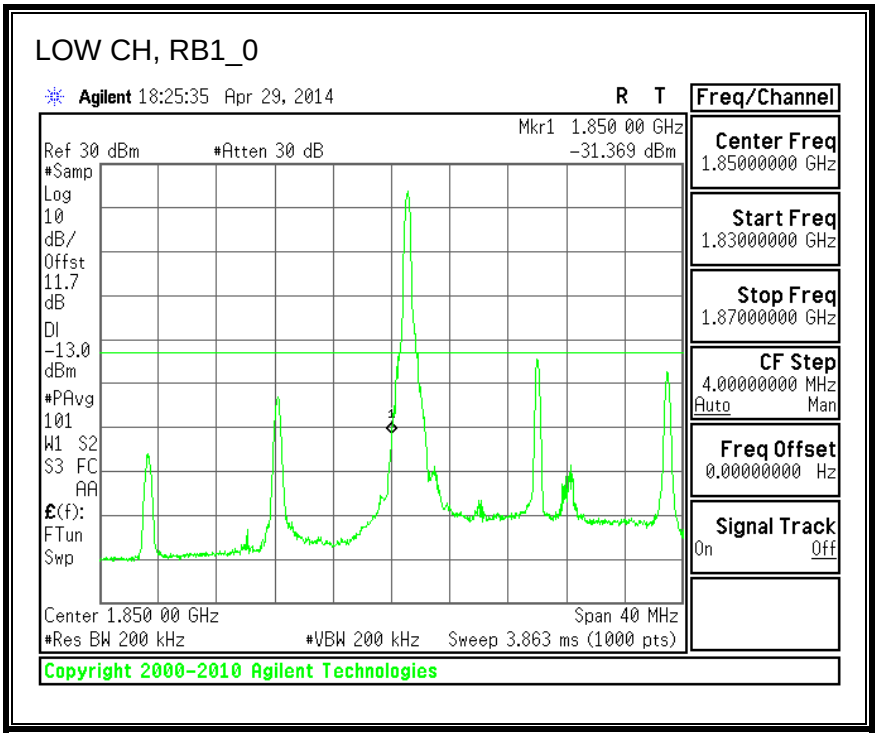



HIGH CH, RB75-0

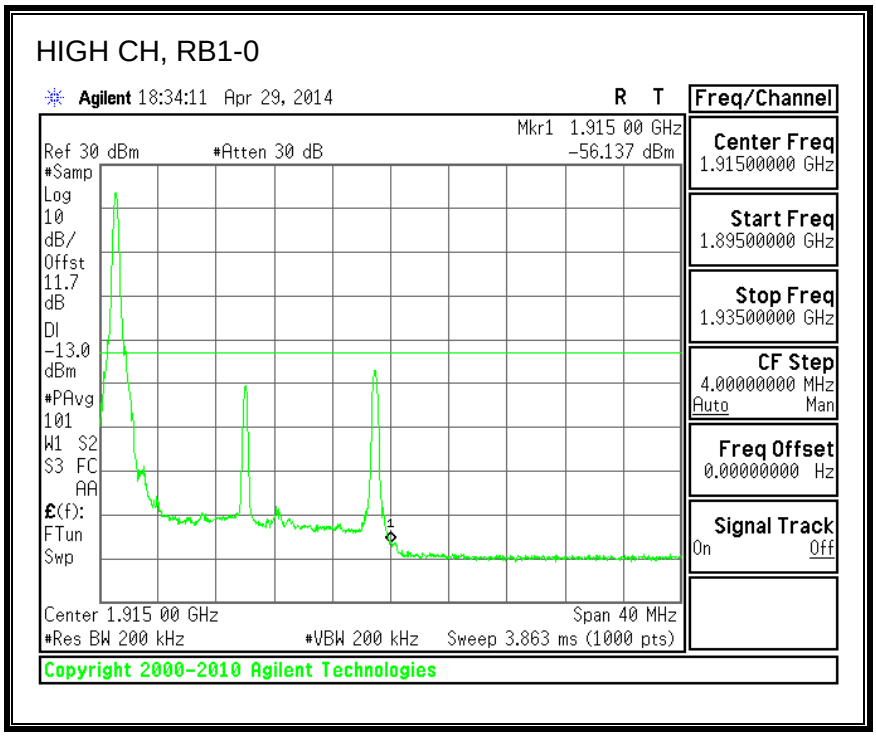


**QPSK, (20.0 MHz BAND WIDTH)**

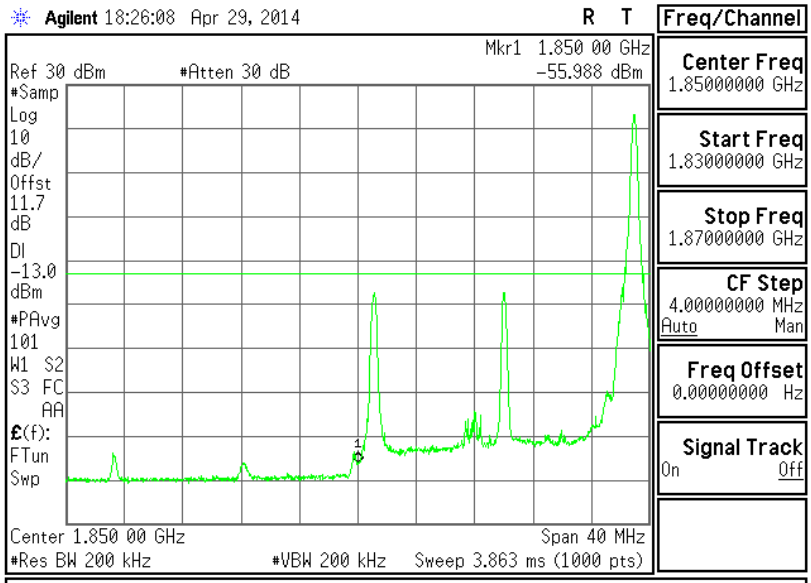
LOW CH, RB1_0



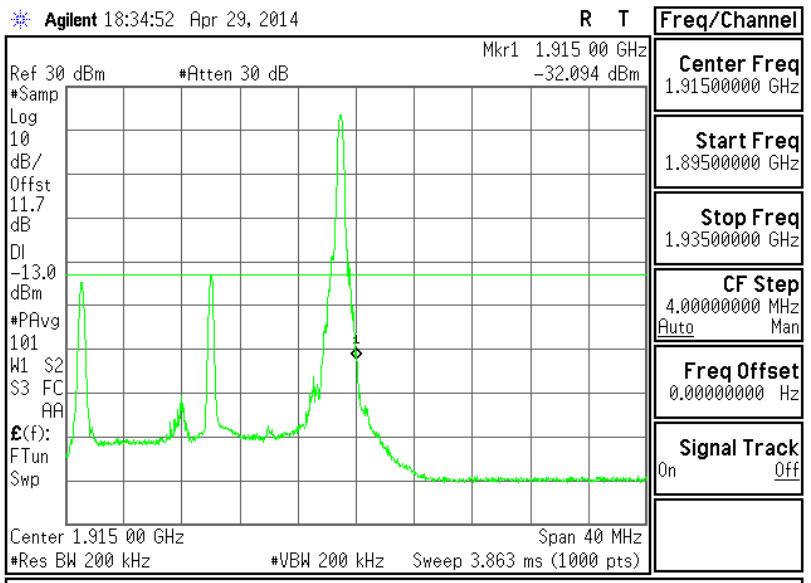

HIGH CH, RB1-0



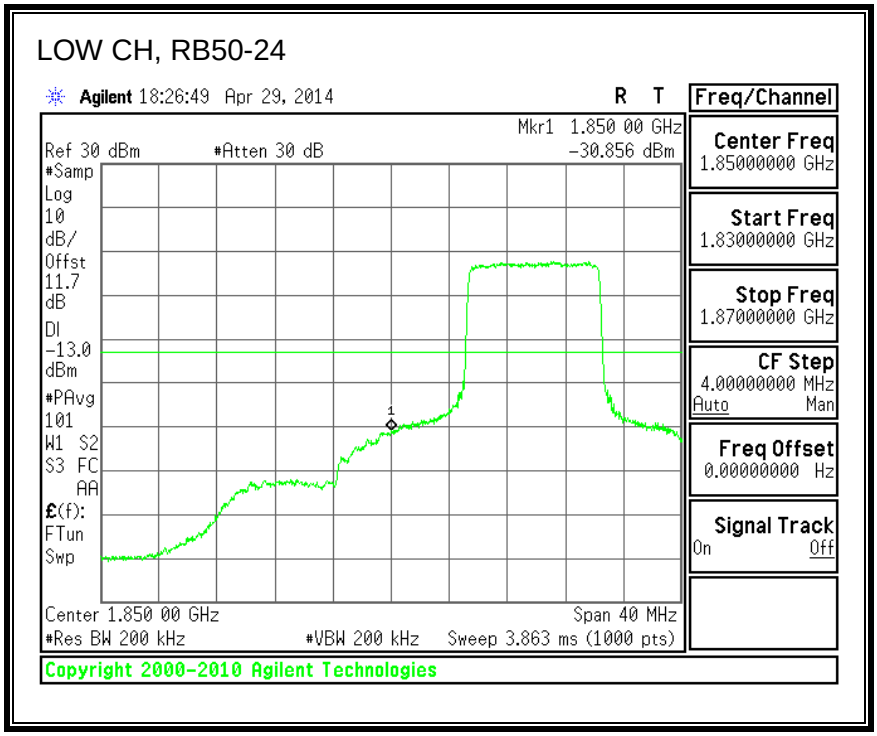
LOW CH, RB1-99



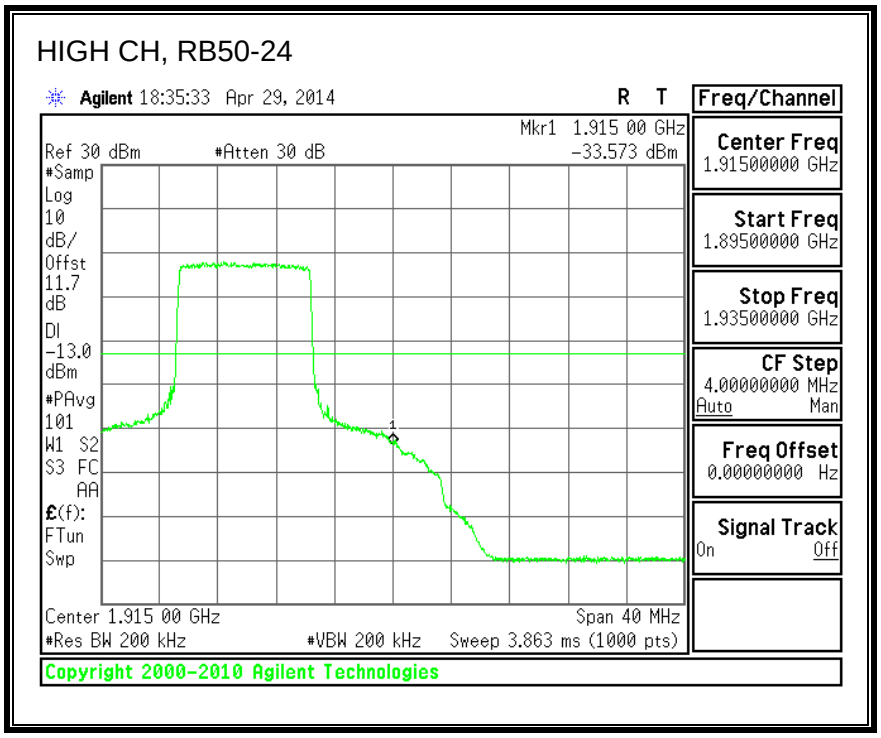

HIGH CH, RB1-99



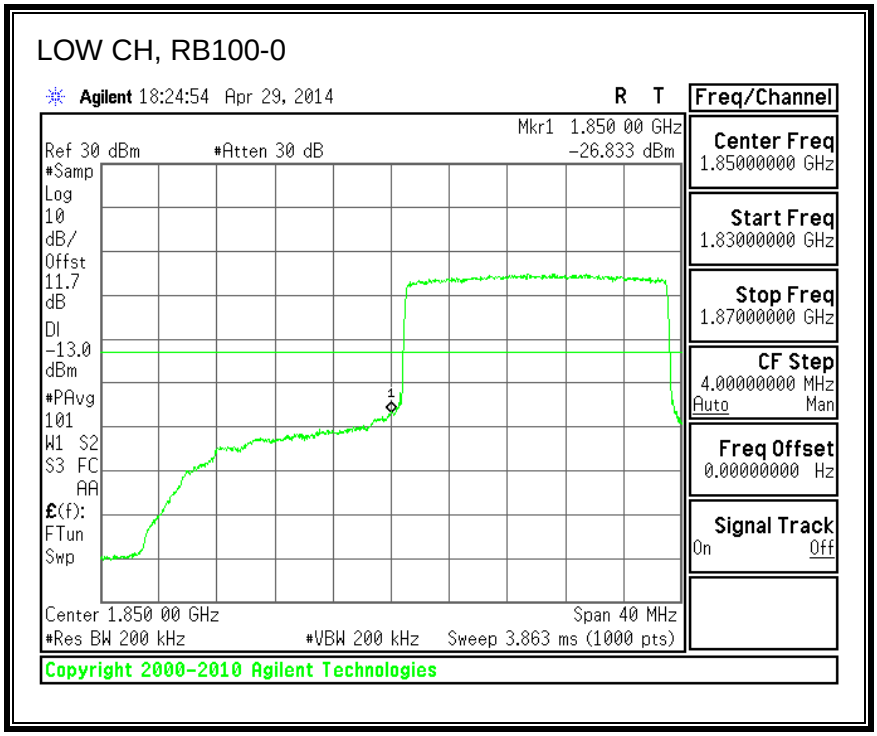
LOW CH, RB50-24



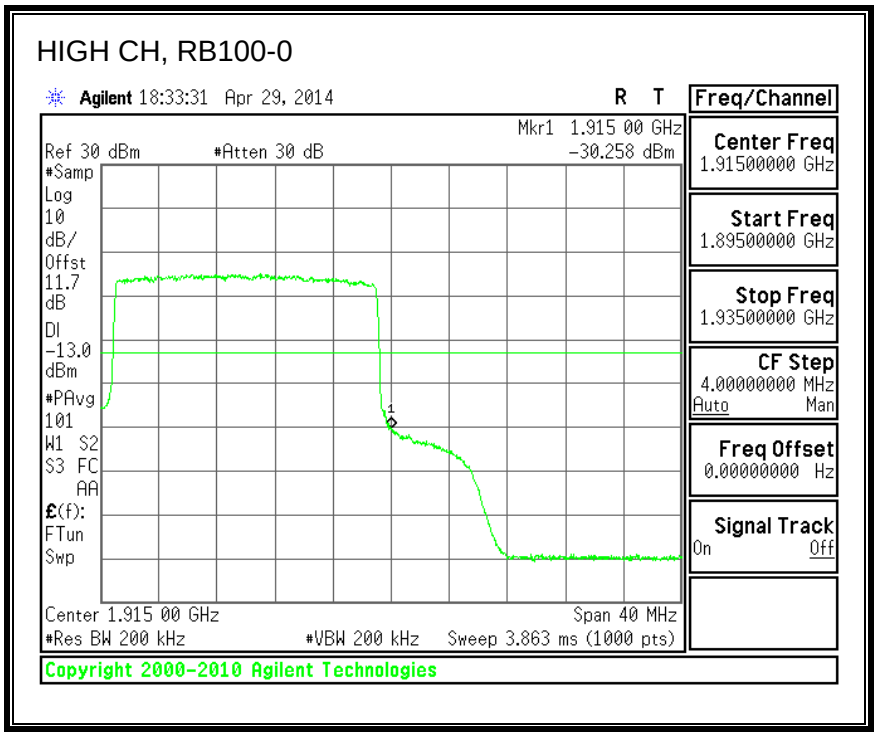

HIGH CH, RB50-24



LOW CH, RB100-0

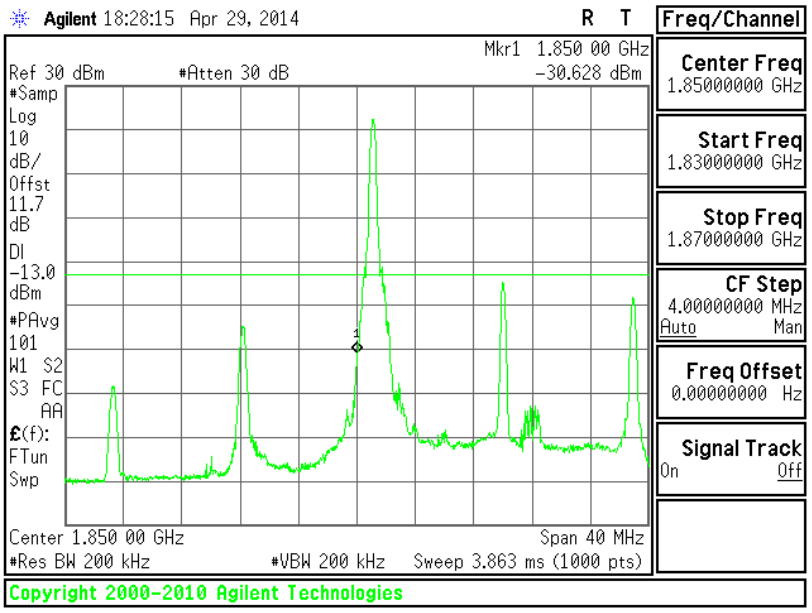



HIGH CH, RB100-0

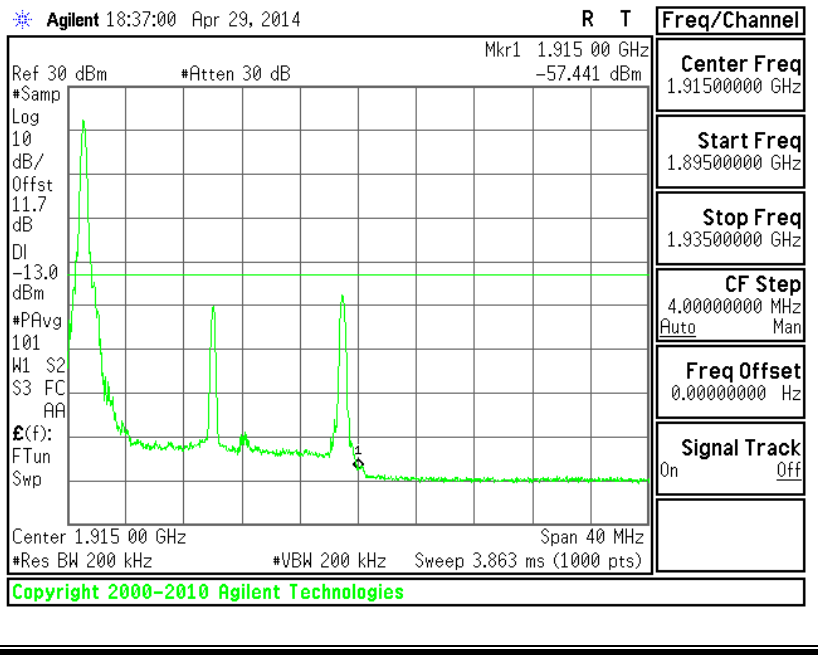


**16QAM, (20.0 MHz BAND WIDTH)**

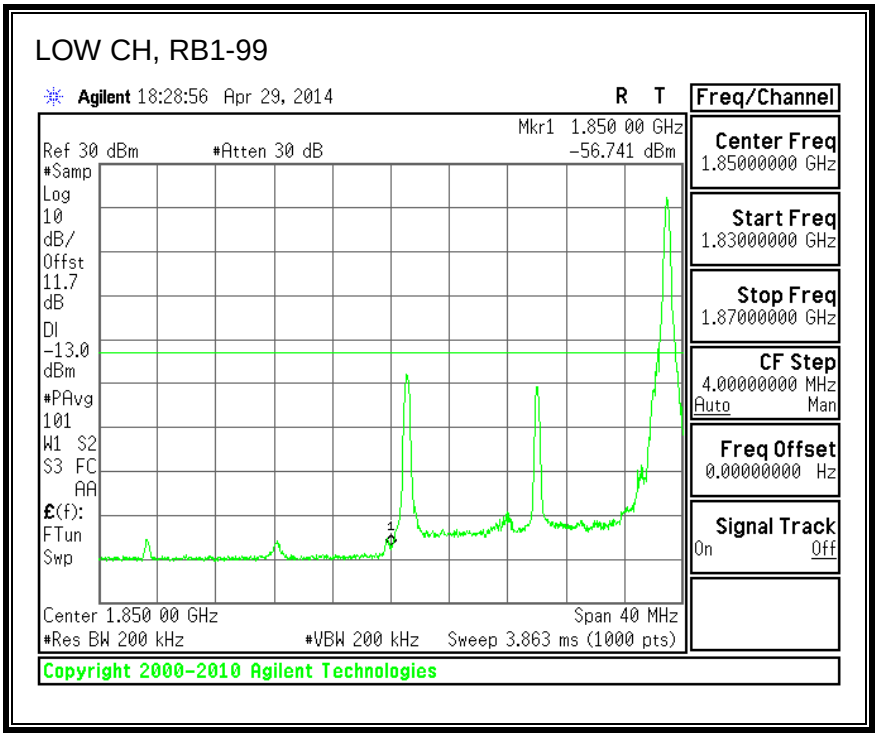
LOW CH, RB1_0



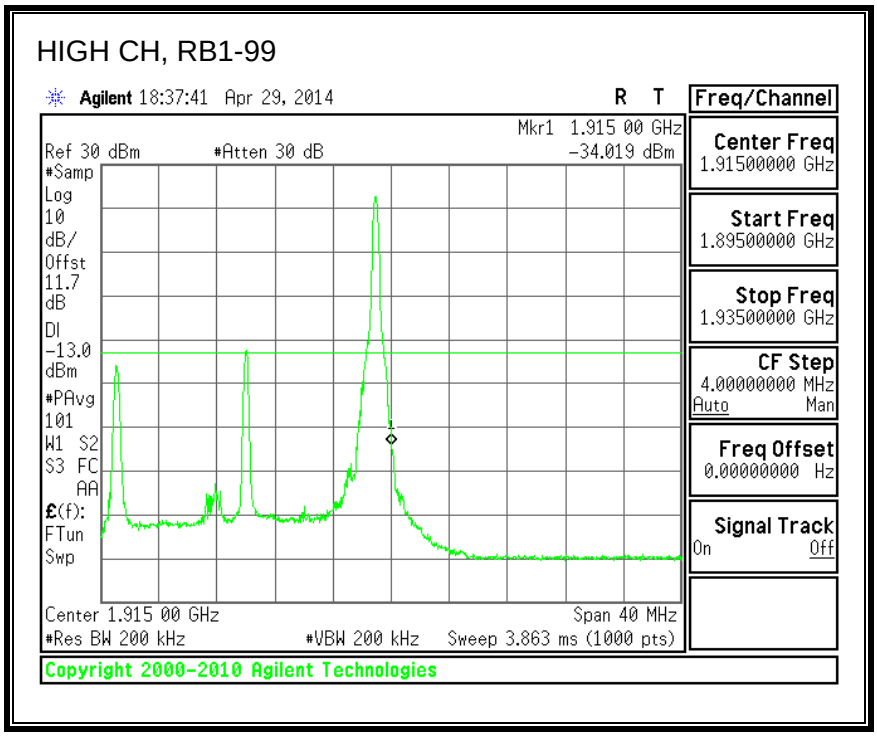

HIGH CH, RB1-0



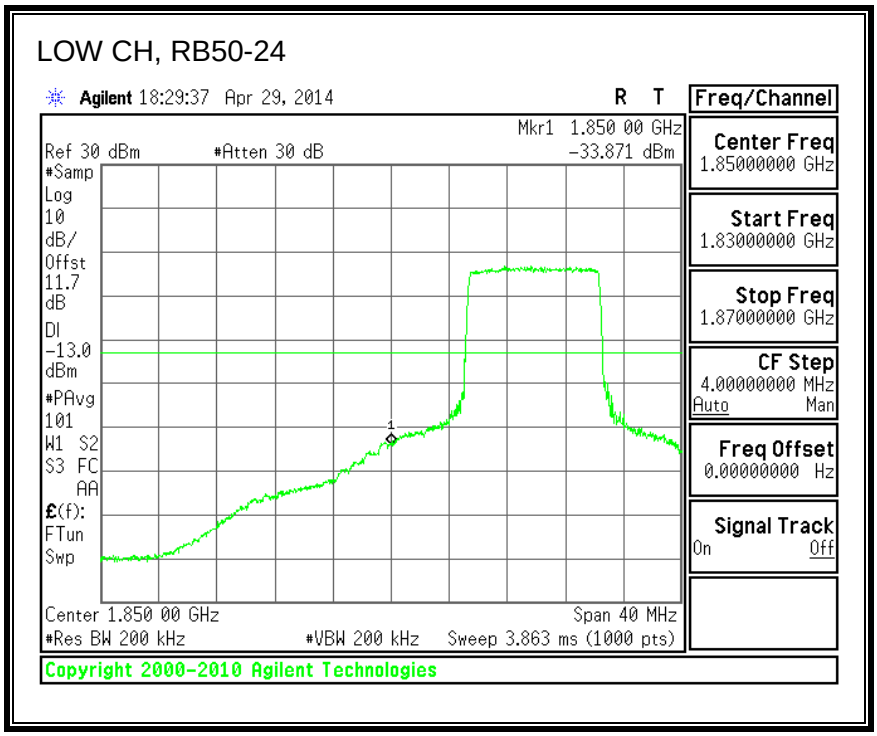
LOW CH, RB1-99



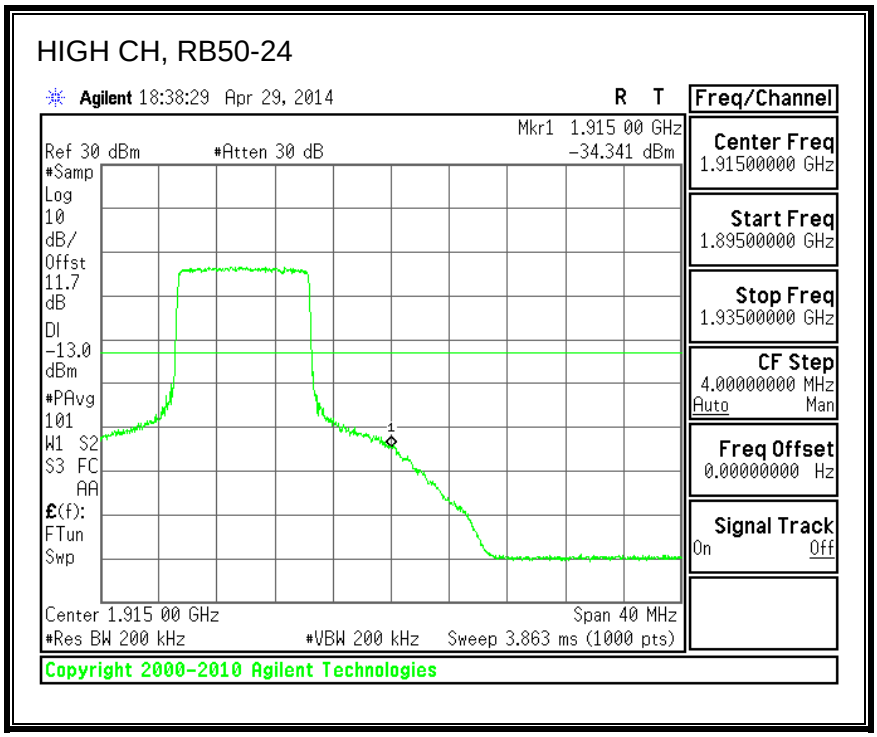

HIGH CH, RB1-99



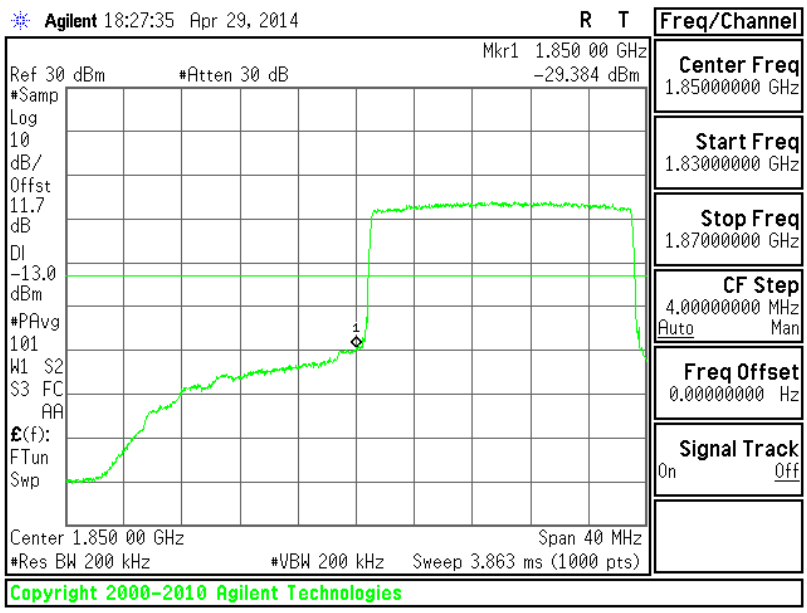
LOW CH, RB50-24



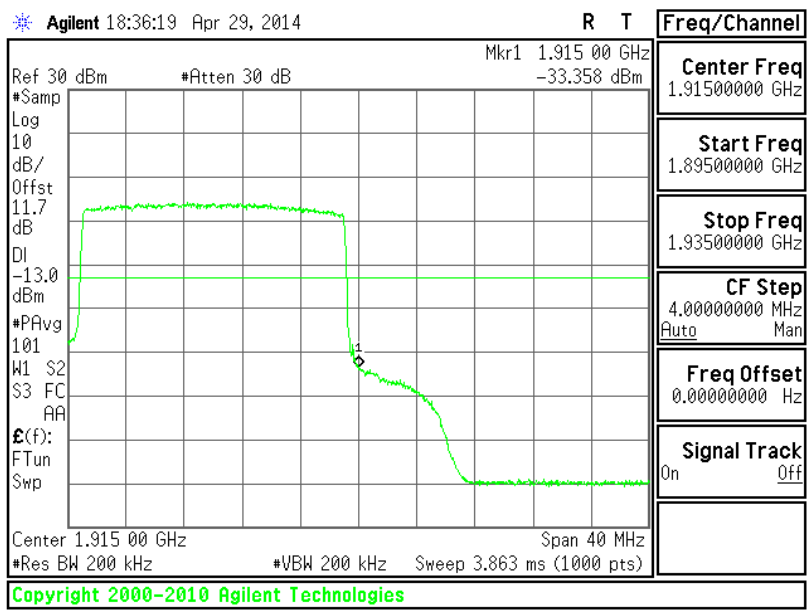

HIGH CH, RB50-24



LOW CH, RB100-0



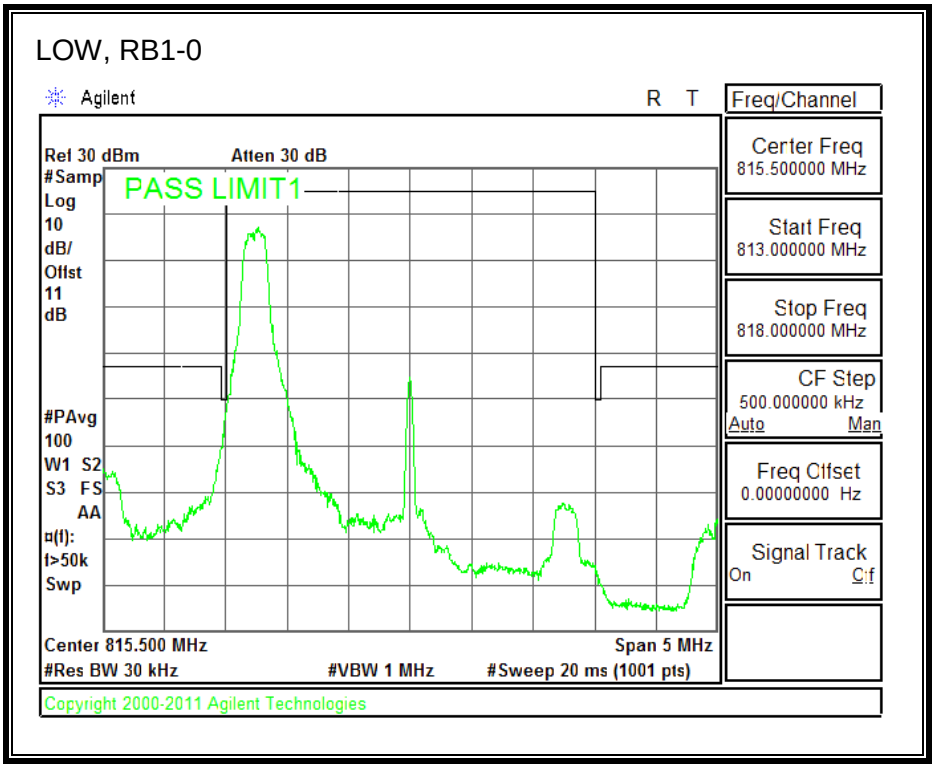

HIGH CH, RB100-0



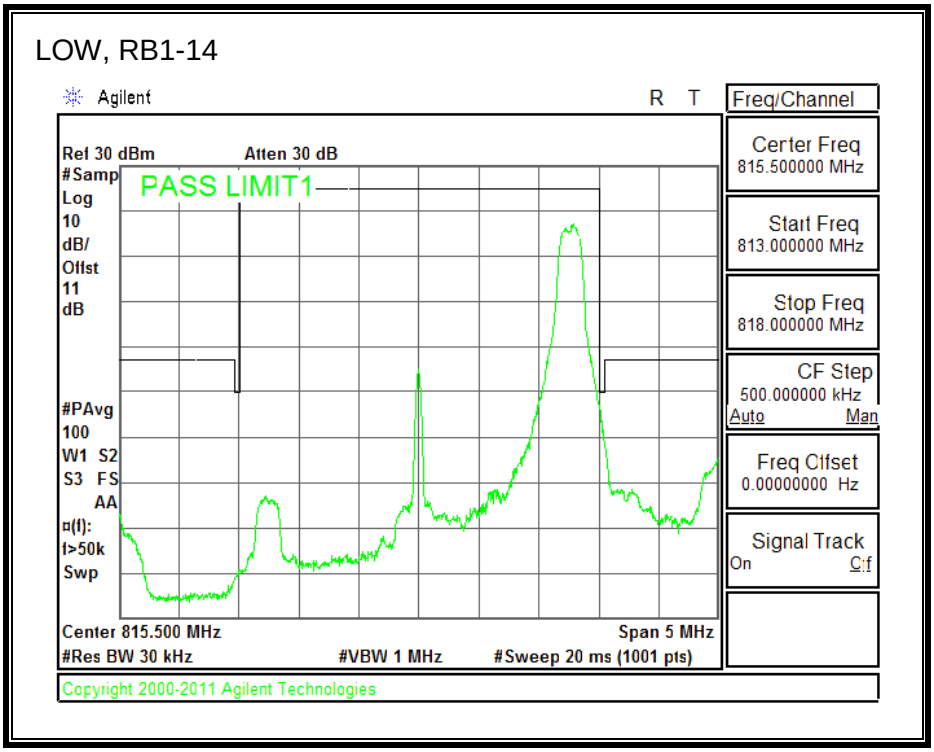
## 8.2.7. LTE BAND 26 EMISSION MASK

**QPSK, (3.0 MHz BAND WIDTH)**

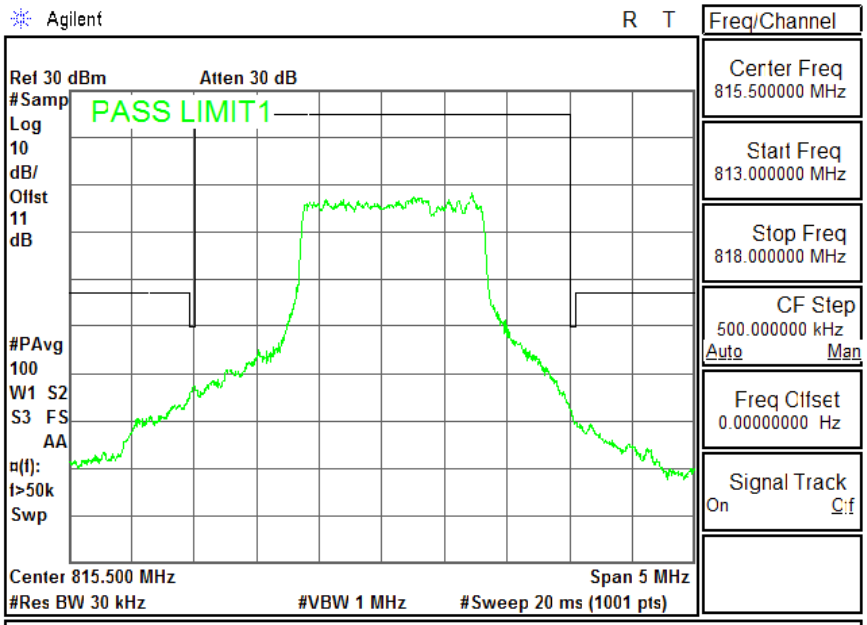
LOW, RB1-0



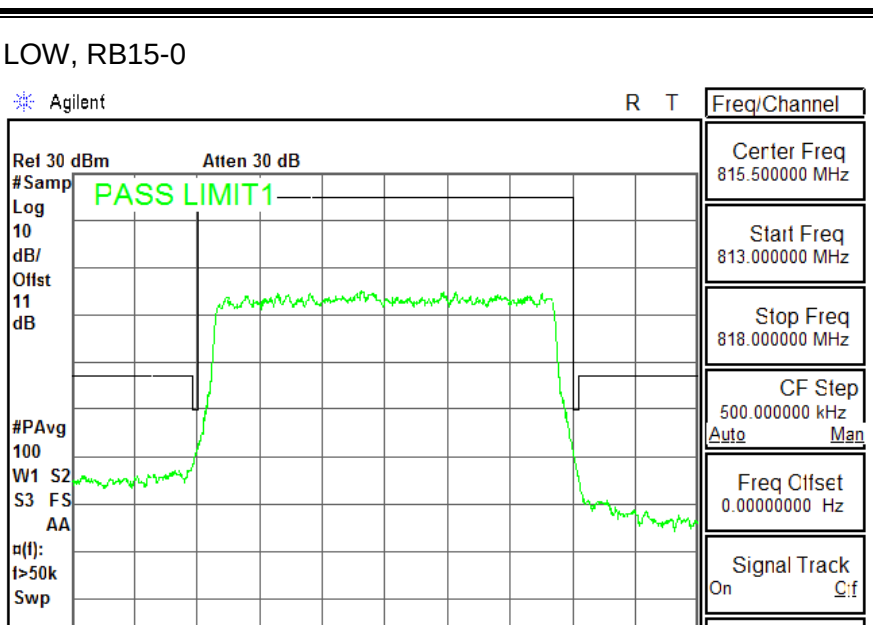

LOW, RB1-14



LOW, RB8-4

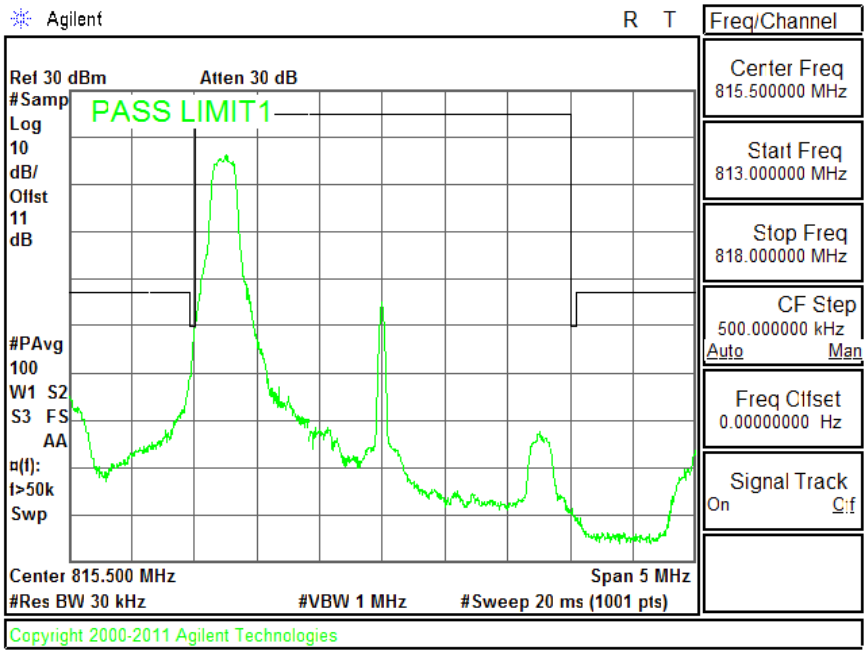



LOW, RB15-0

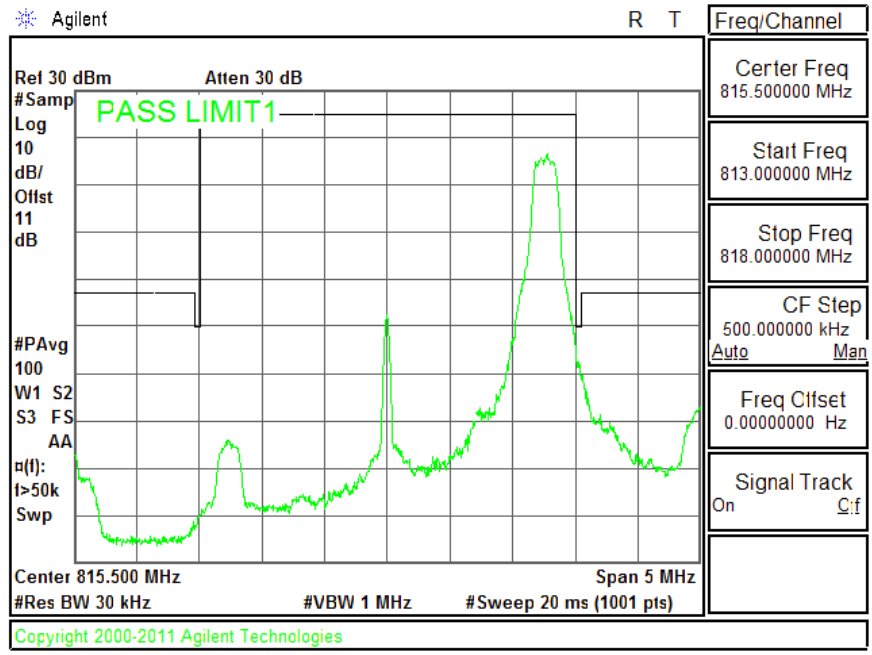


**16QAM, (3.0 MHz BAND WIDTH)**

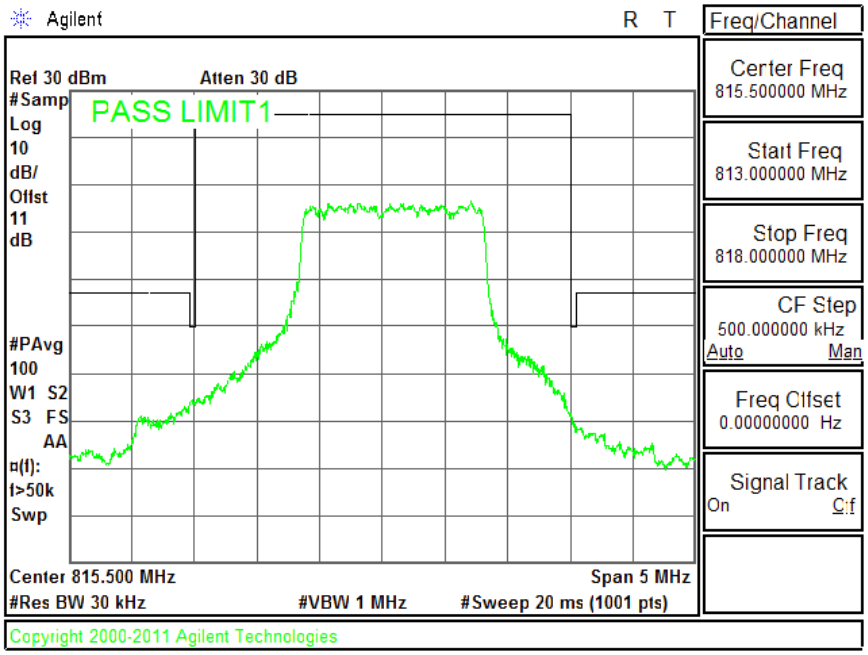
LOW, RB1-0



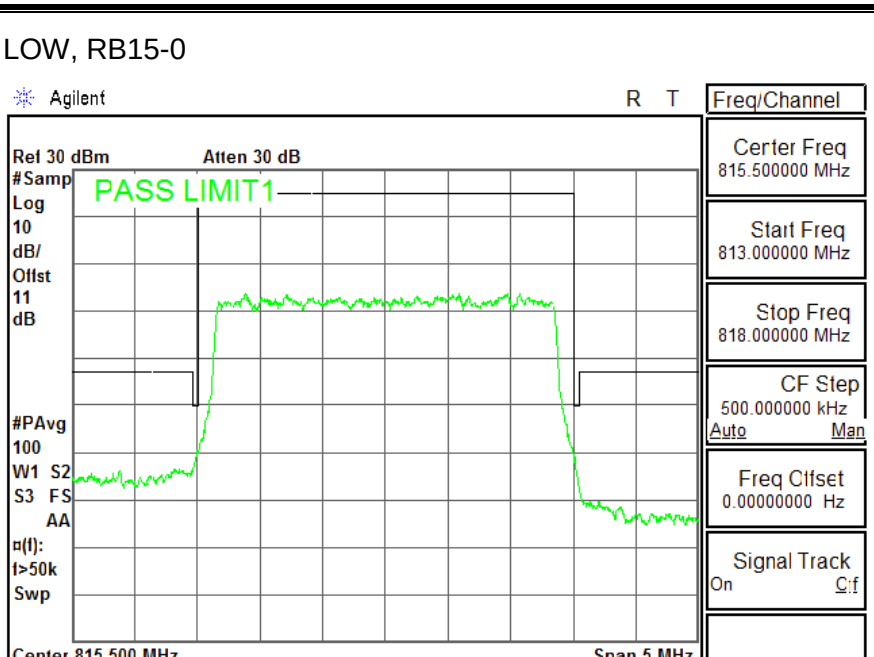

LOW, RB1-14



LOW, RB8-4

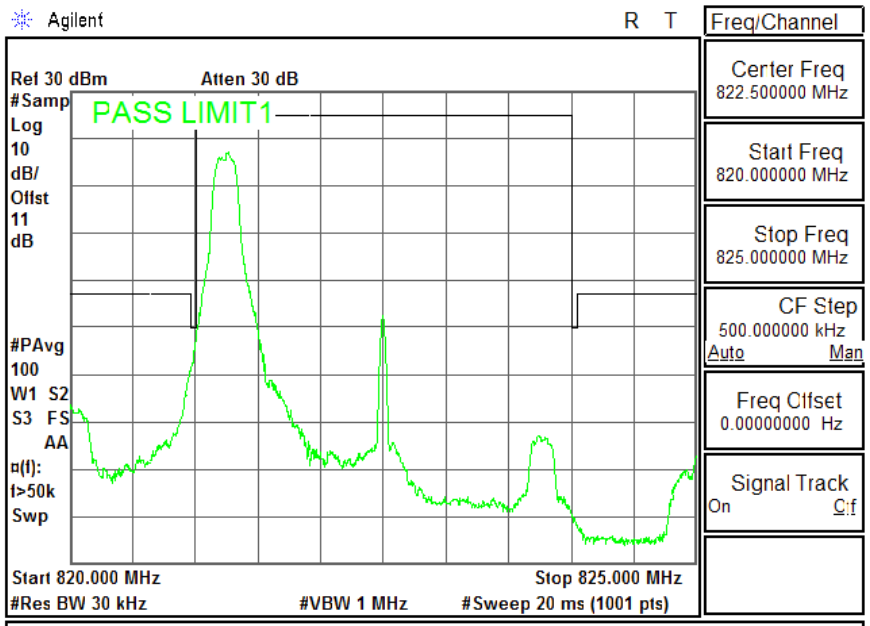



LOW, RB15-0

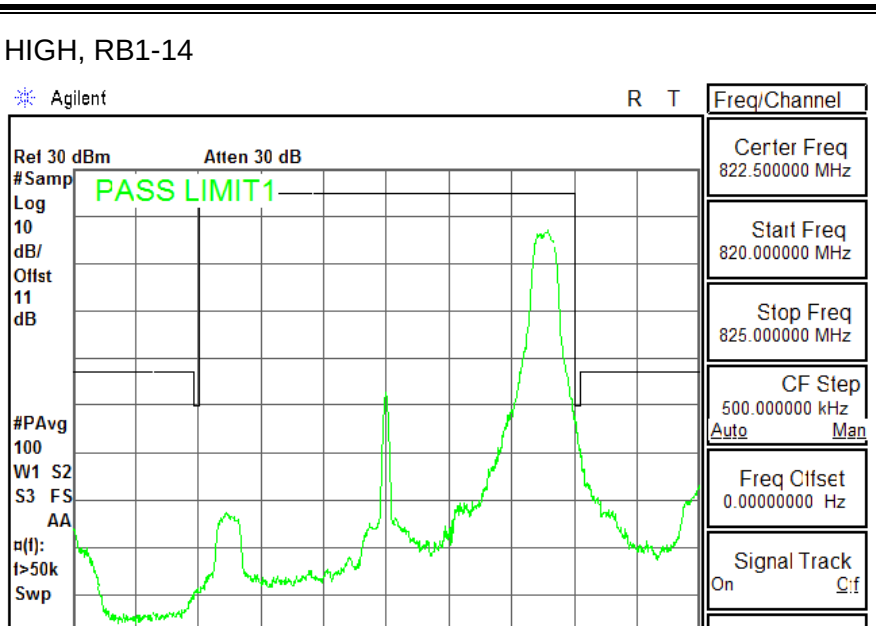


**QPSK, (3.0 MHz BAND WIDTH)**

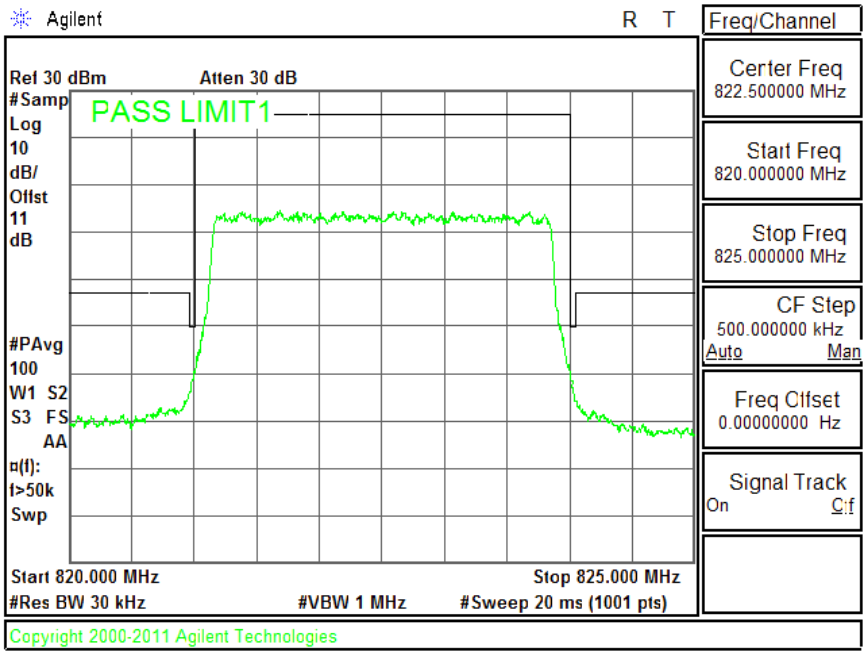
HIGH, RB1-0



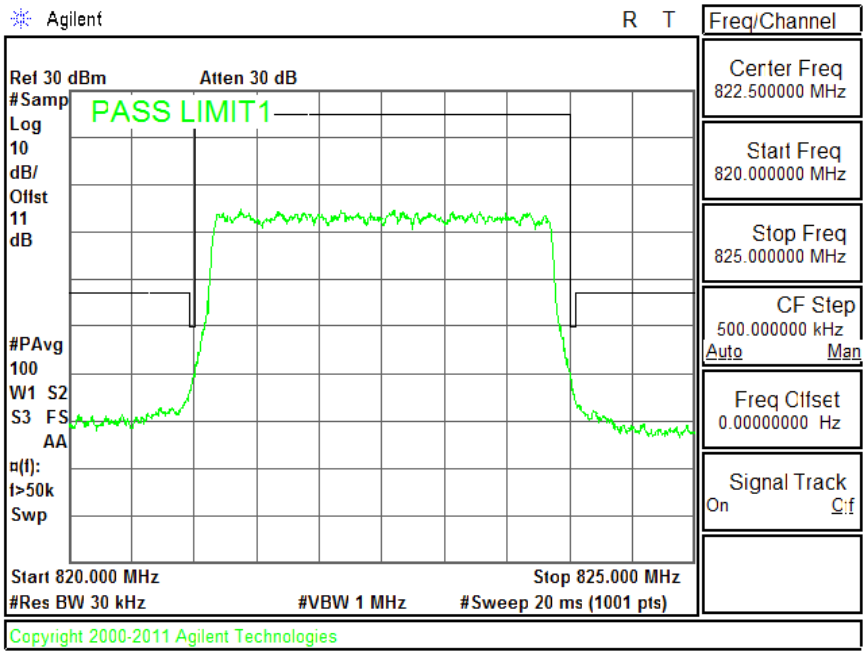

HIGH, RB1-14



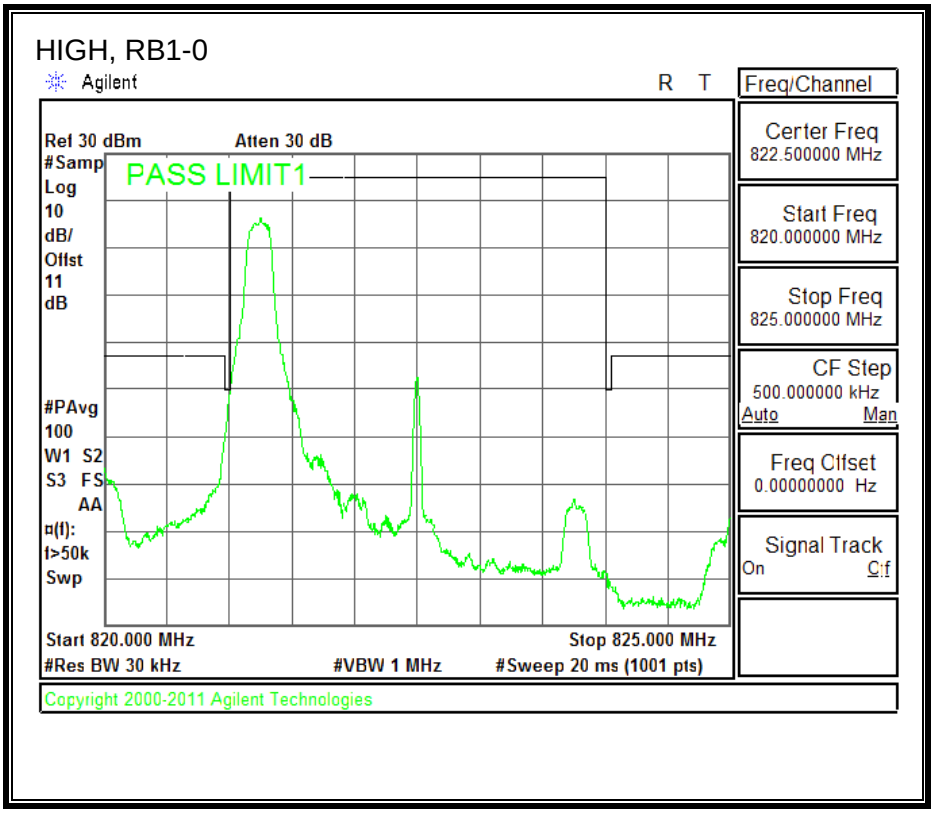
HIGH, RB8-4

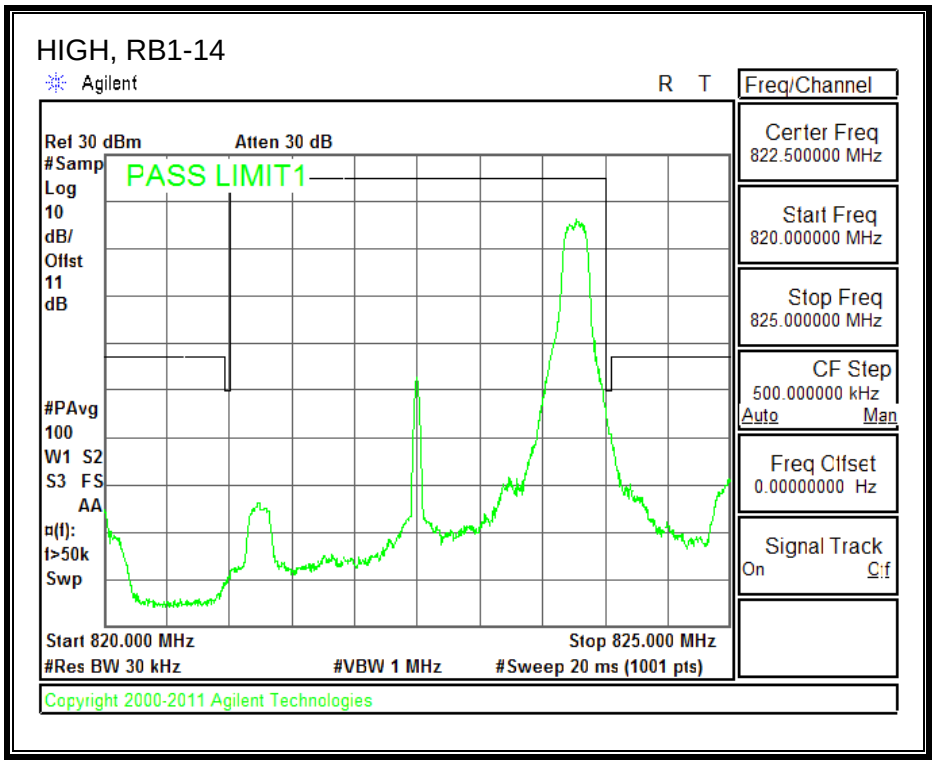



HIHG, RB15-0

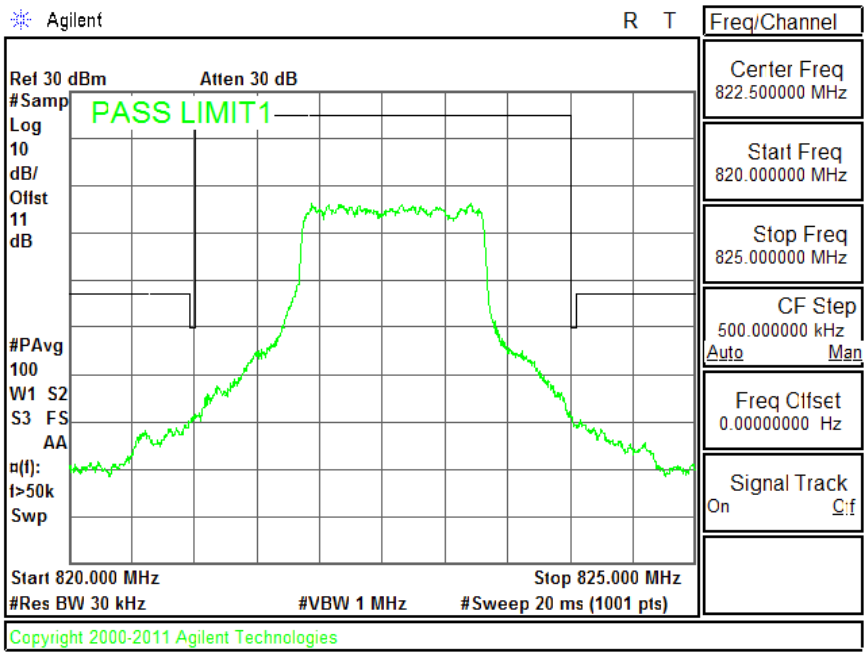


**16QAM, (3.0 MHz BAND WIDTH)**

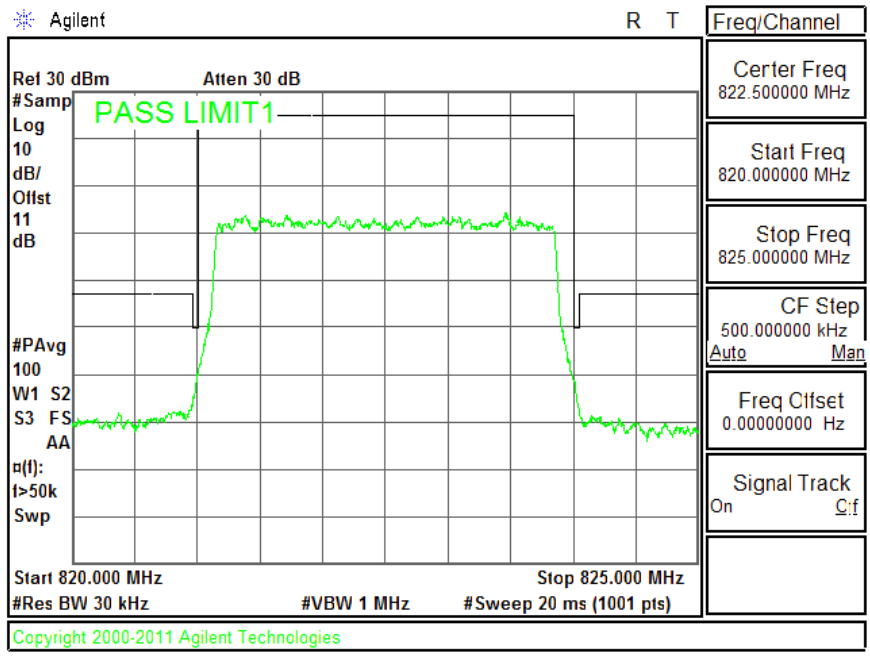


HIGH, RB8-4

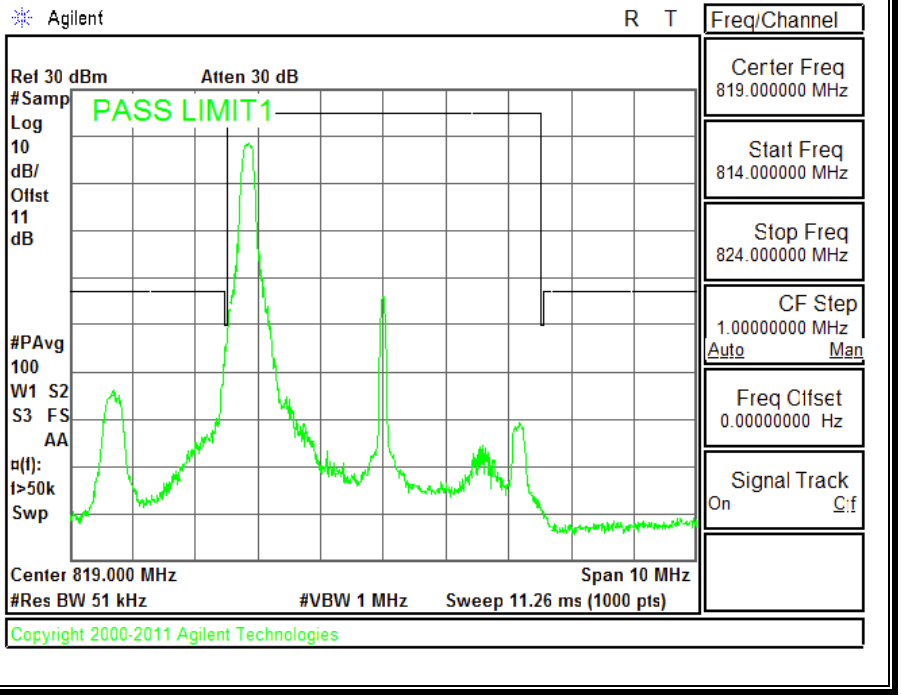



HIGH, RB15-0

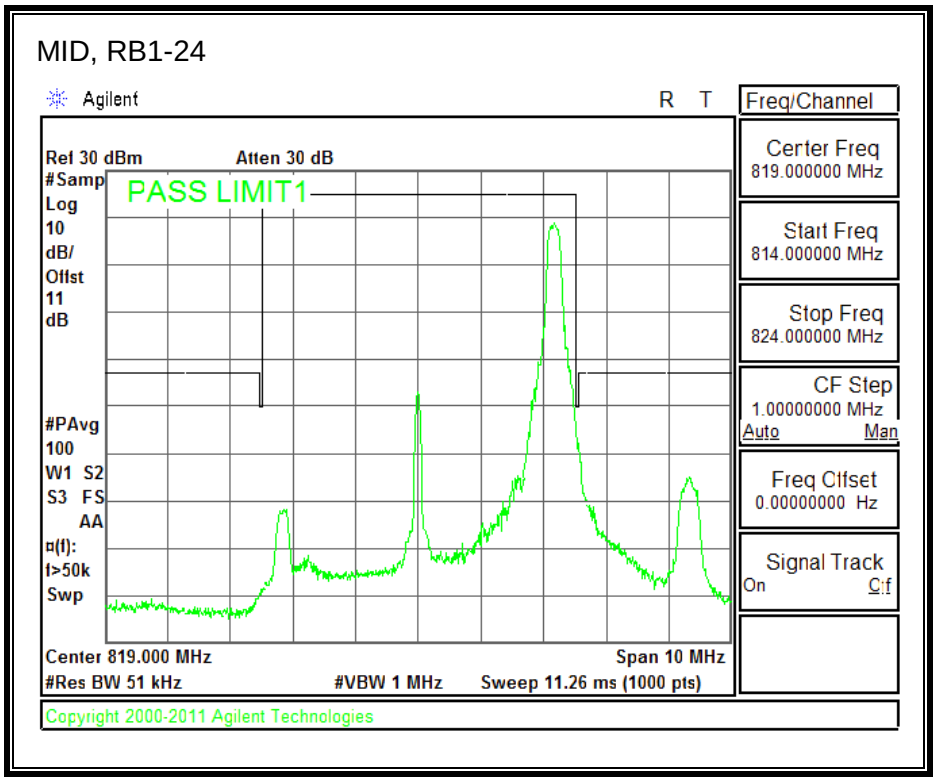


**QPSK, (5.0 MHz BAND WIDTH)**

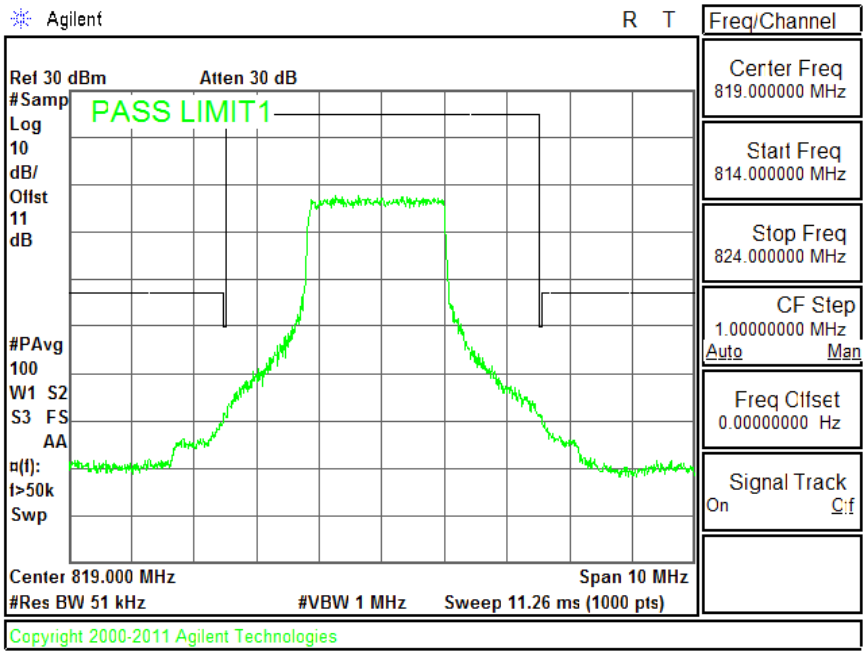
MID, RB1-0



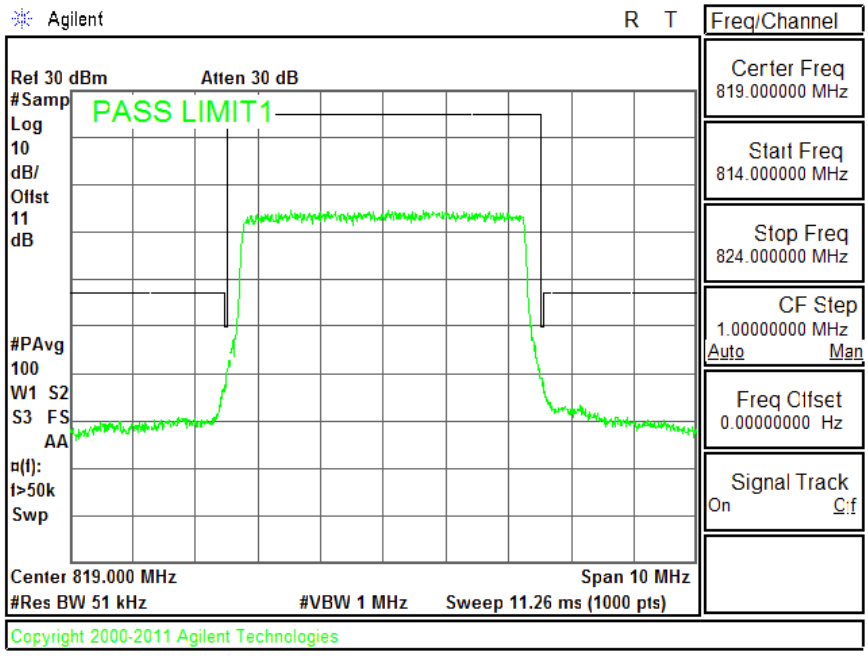

MID, RB1-24



MID, RB12-6

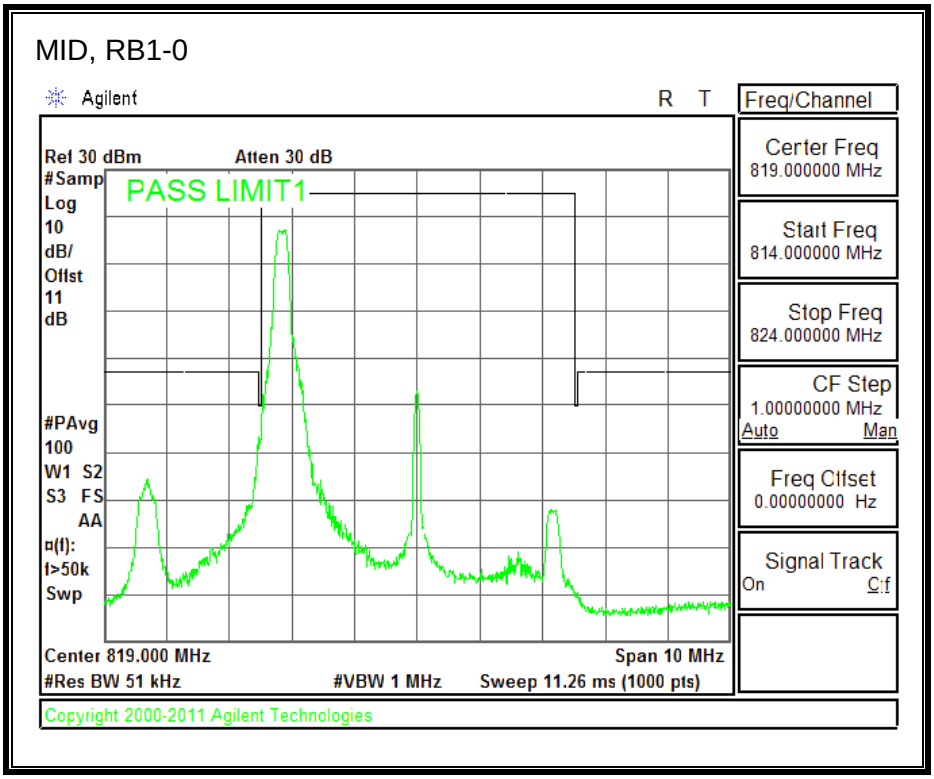



MID, RB25-0

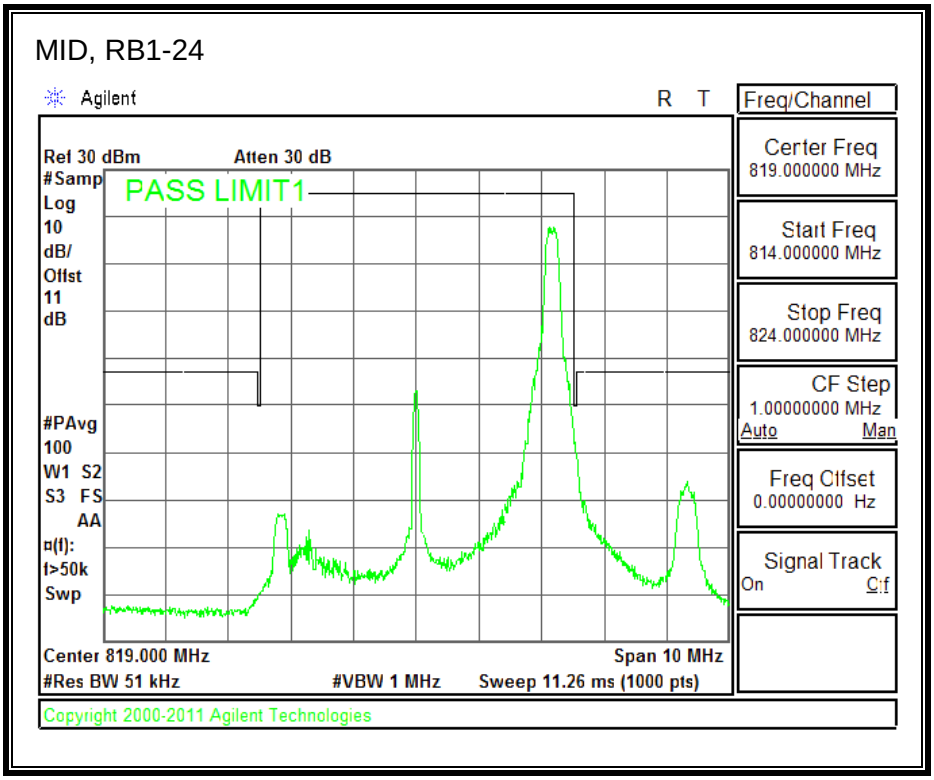


**16QAM, (5.0 MHz BAND WIDTH)**

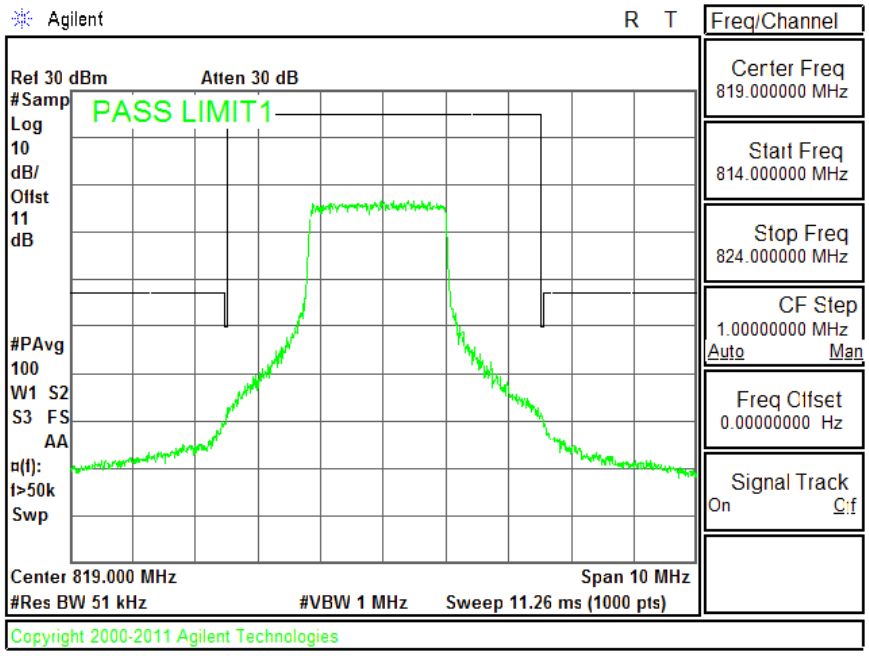
MID, RB1-0



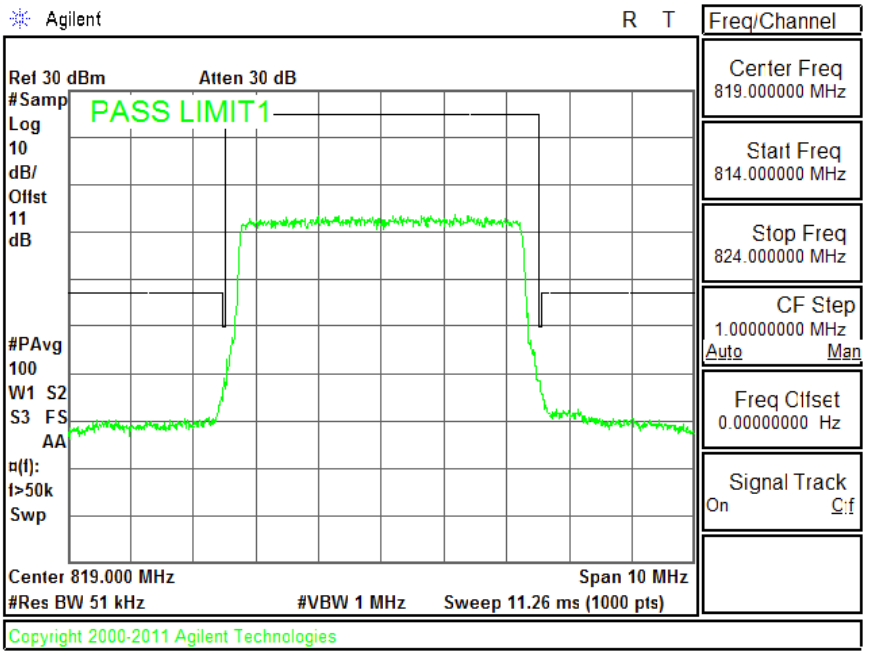

MID, RB1-24



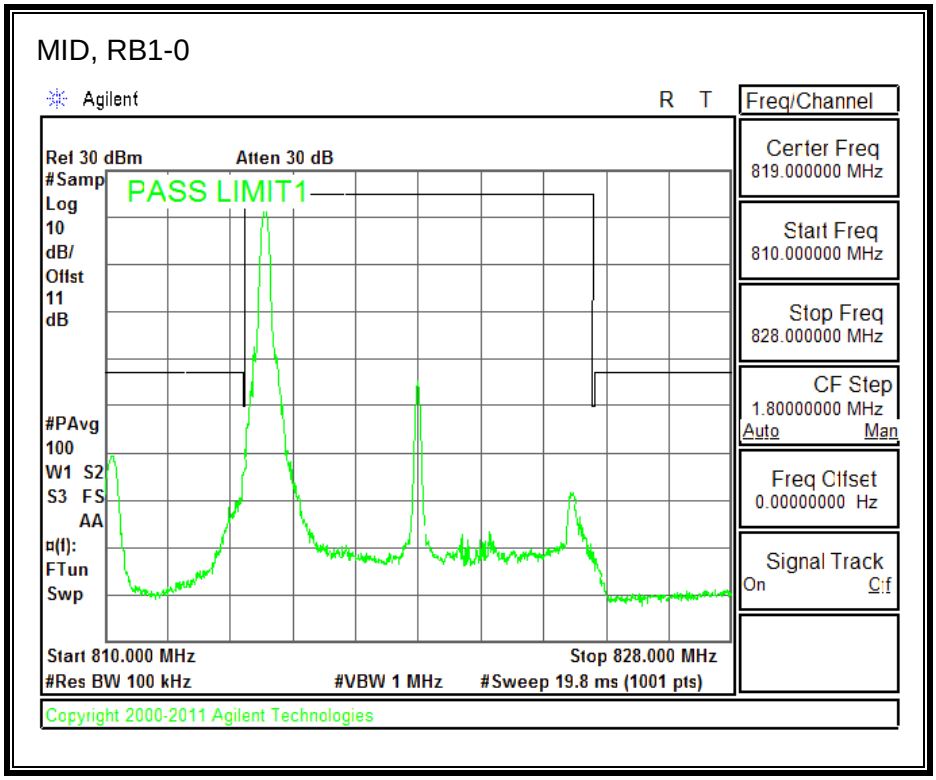
MID, RB12-6

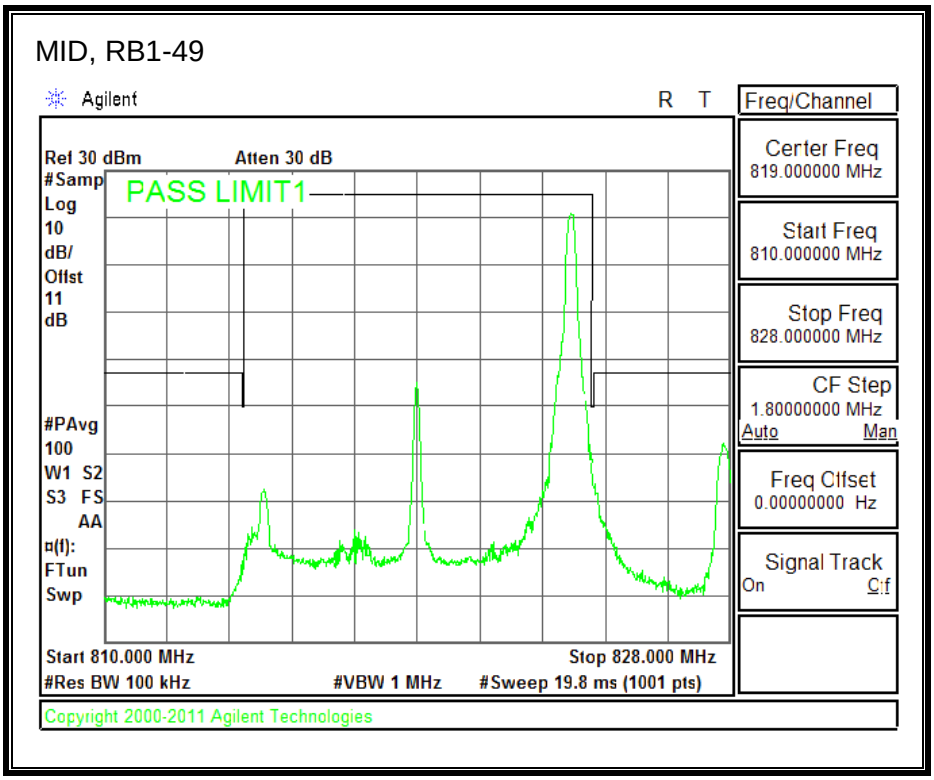



MID, RB25-0

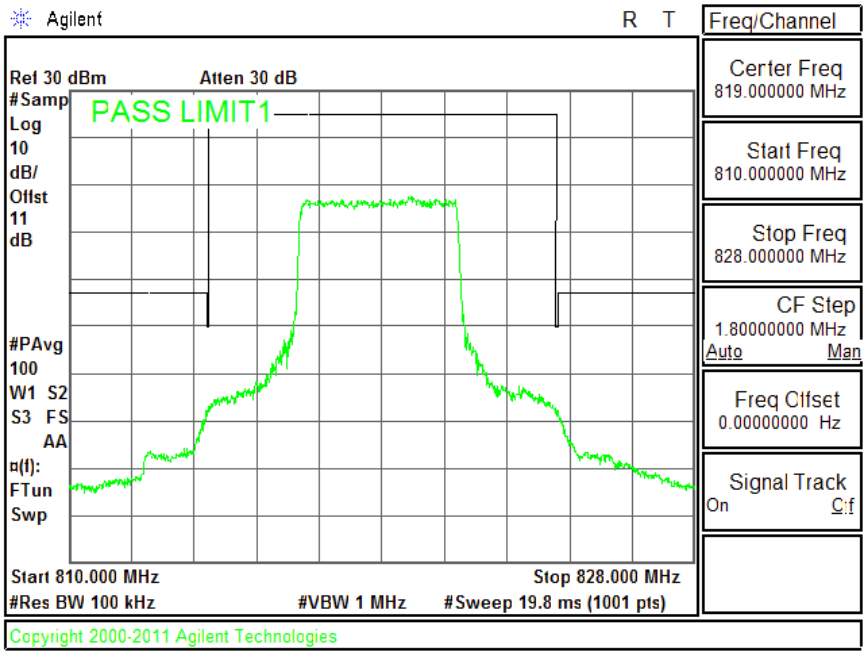


**QPSK, (10.0 MHz BAND WIDTH)**

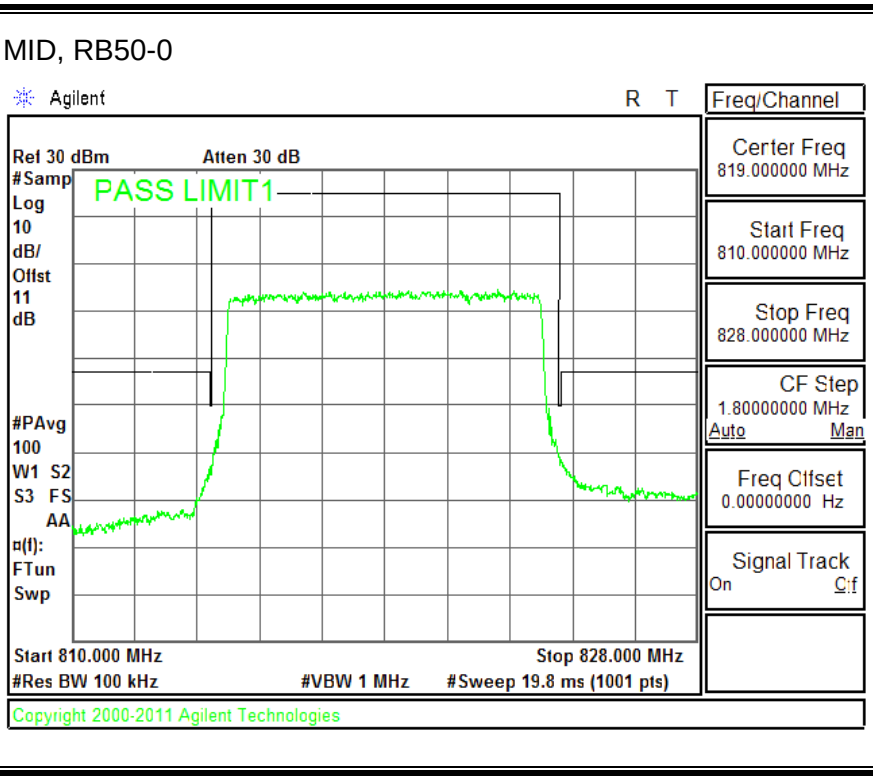


MID, RB25-12

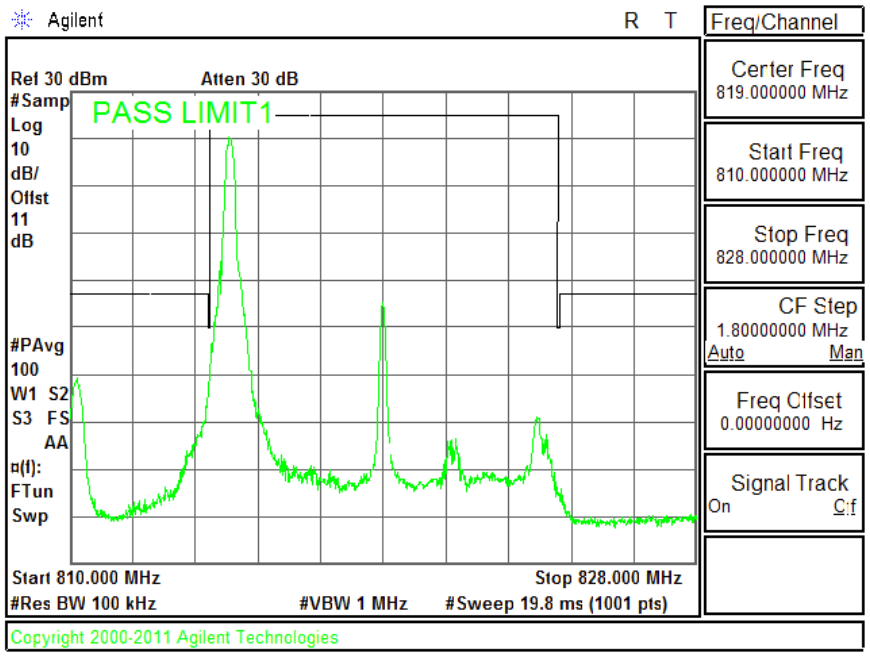



MID, RB50-0

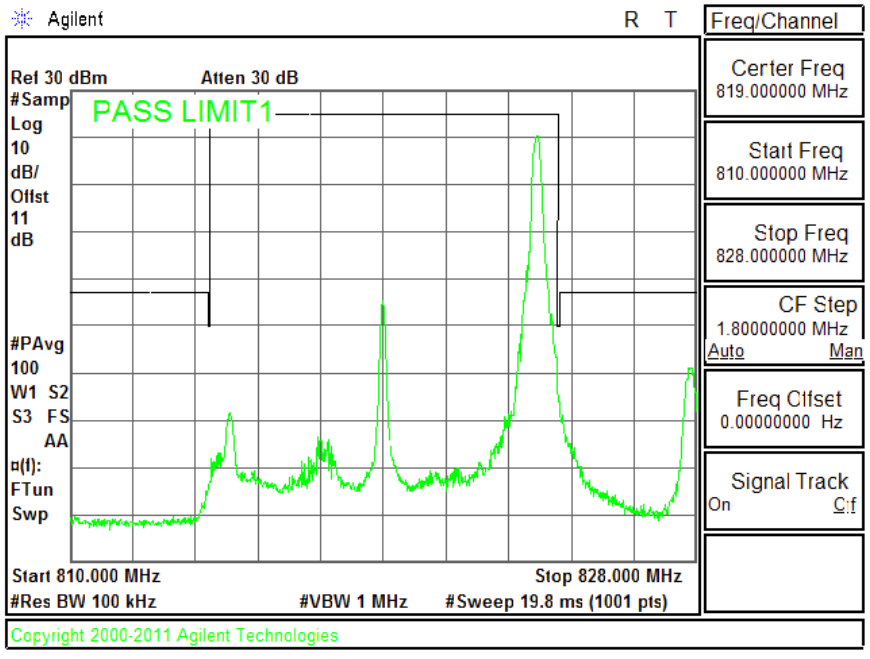


**16QAM, (10.0 MHz BAND WIDTH)**

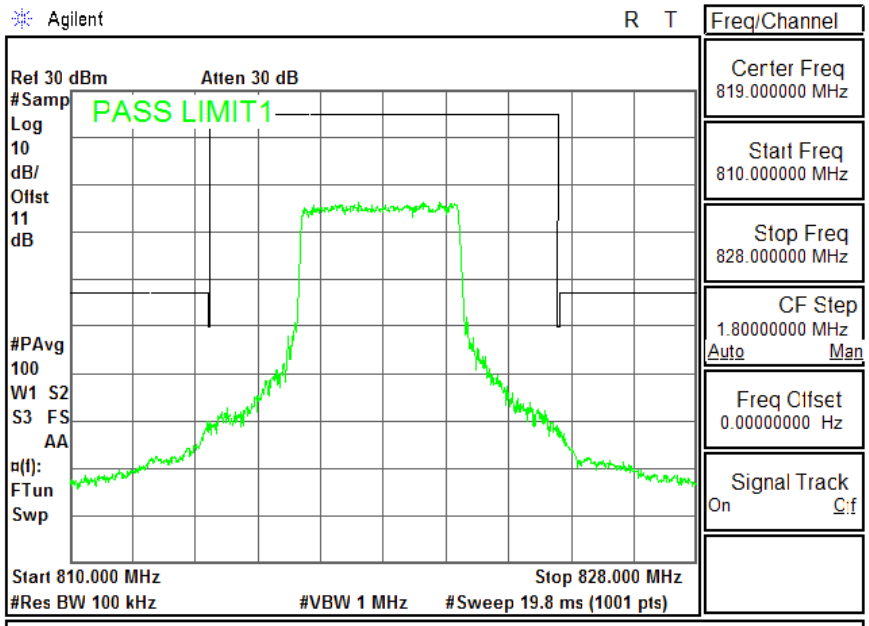
MID, RB1-0



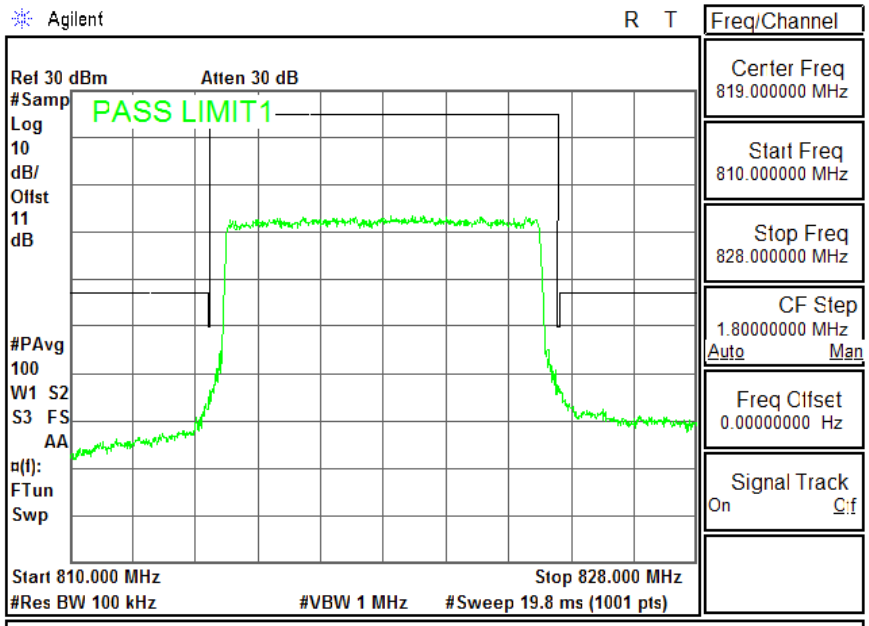

MID, RB1-49



MID, RB25-12




MID, RB50-0



## 8.3. 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.

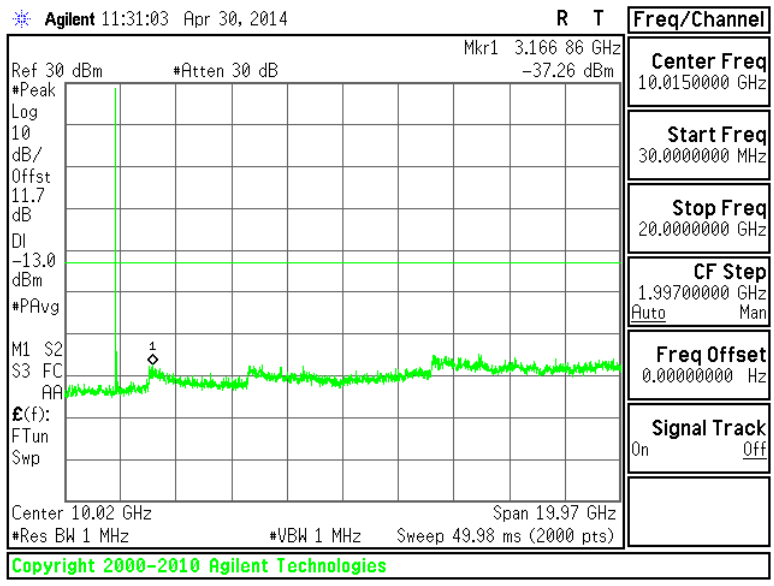
**MODES TESTED**

- Band 2
- Band 4
- Band 5
- Band 13
- Band 17
- Band 25
- Band 26

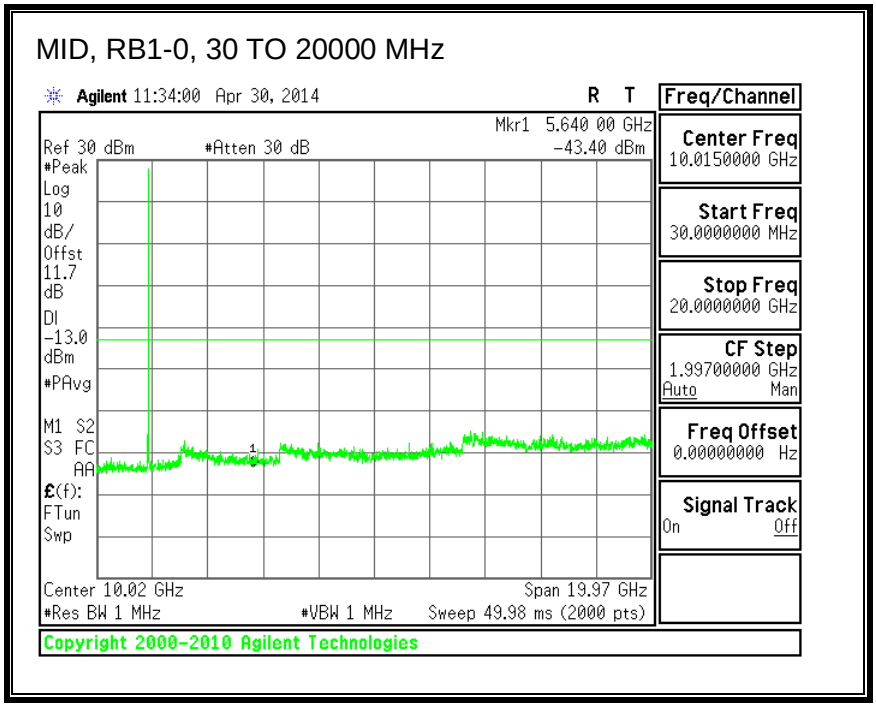
### 8.3.1. LTE BAND 2

**QPSK, (1.4 MHz BAND WIDTH)**

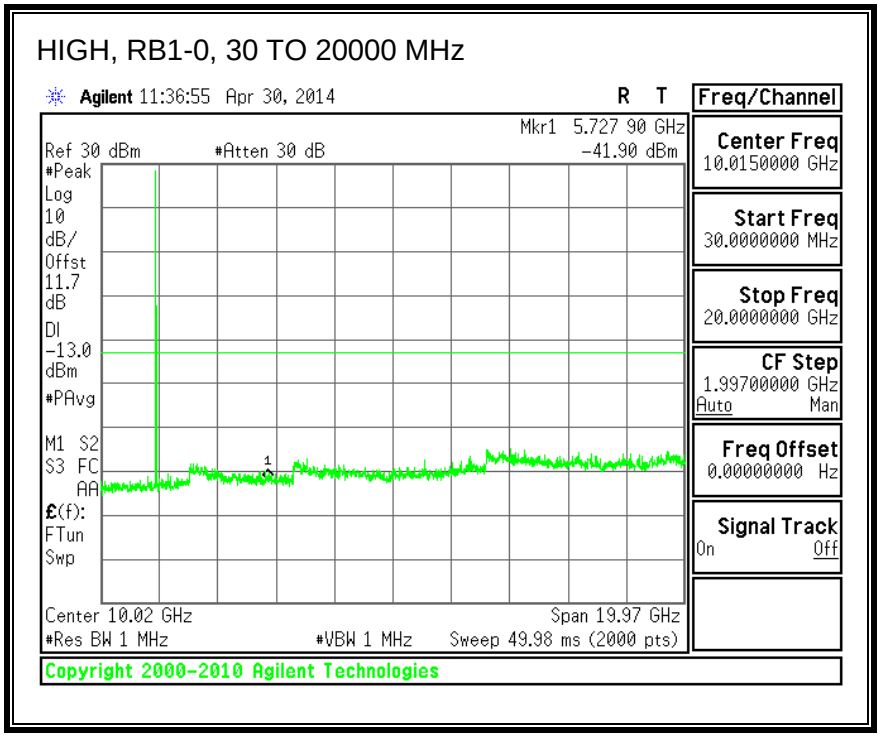
LOW, RB1-0, 30 TO 20000 MHz




MID, RB1-0, 30 TO 20000 MHz

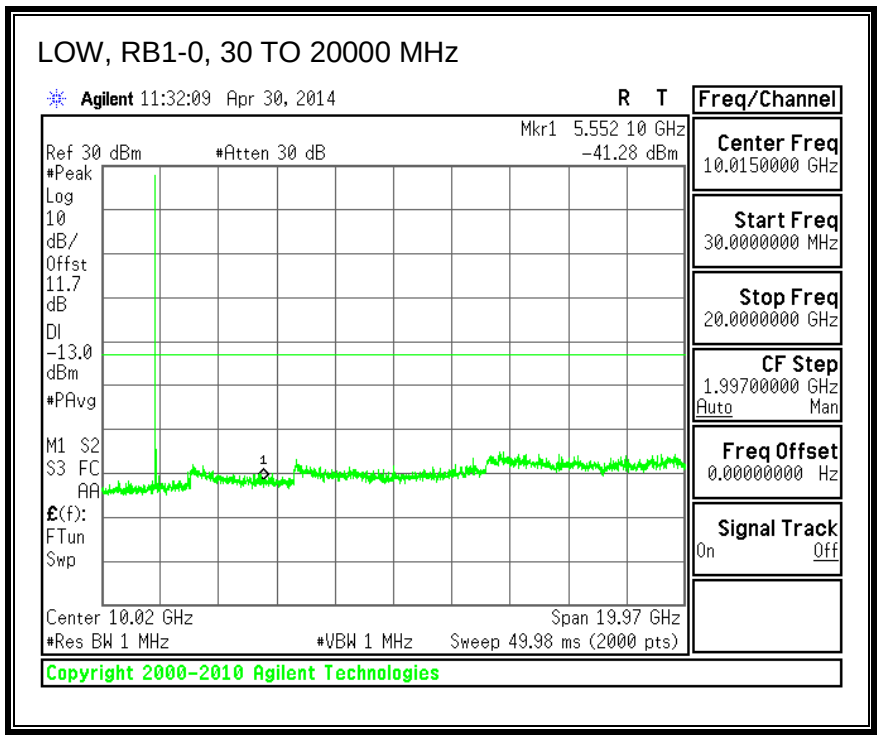


HIGH, RB1-0, 30 TO 20000 MHz

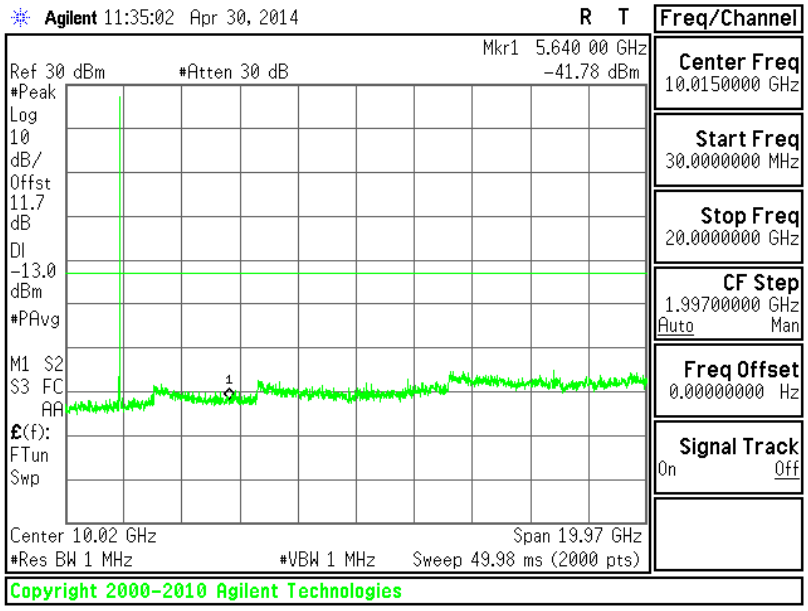



**16QAM, (1.4 MHz BAND WIDTH)**

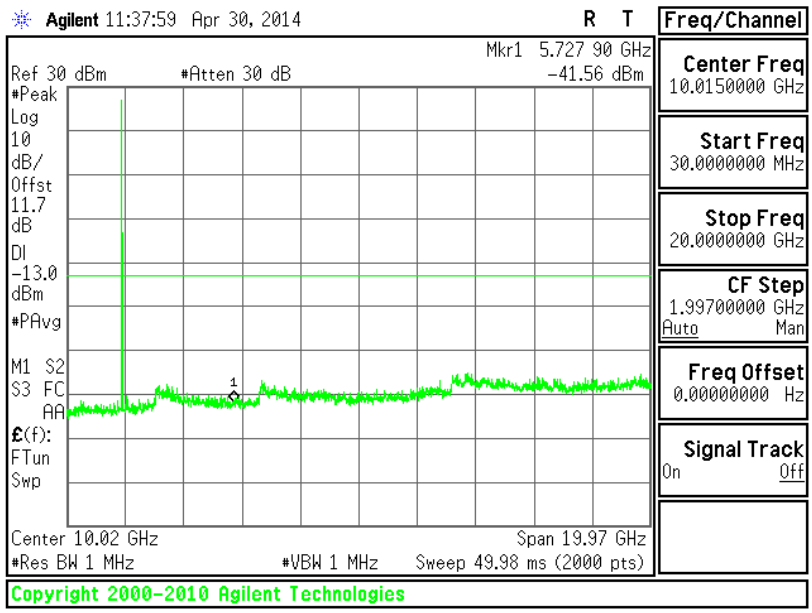
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

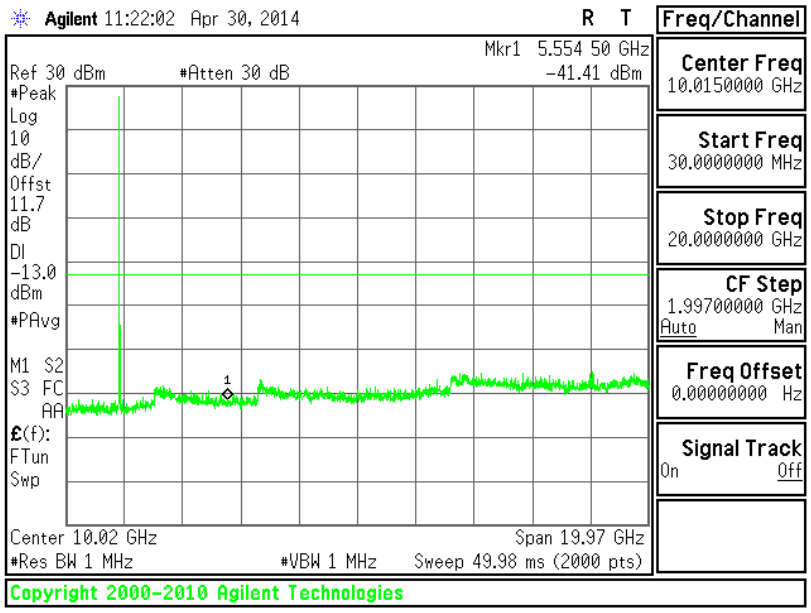



HIGH, RB1-0, 30 TO 20000 MHz

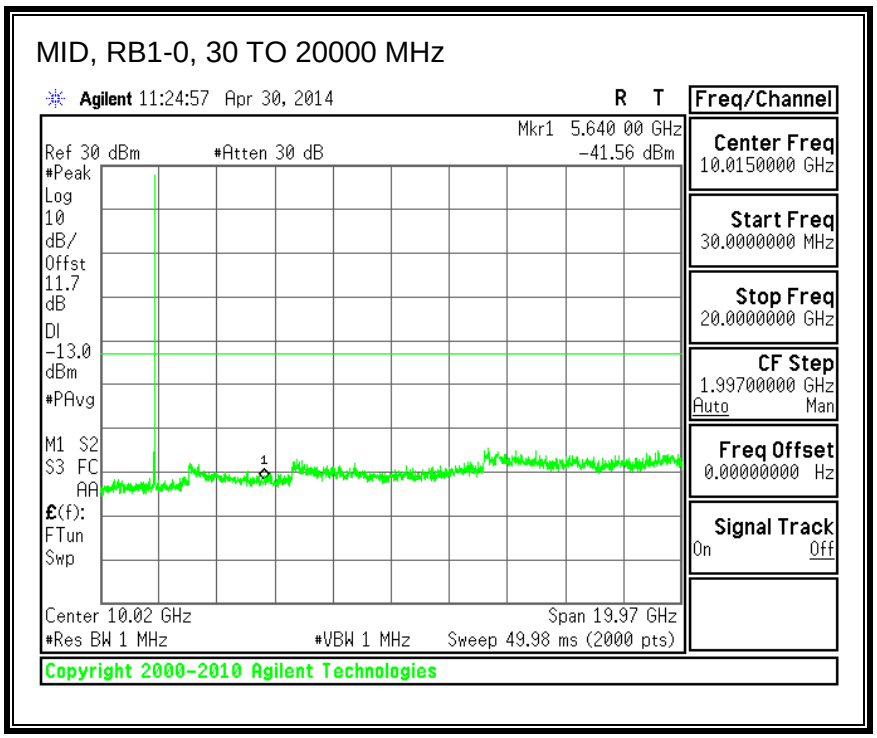


**QPSK, (3.0 MHz BAND WIDTH)**

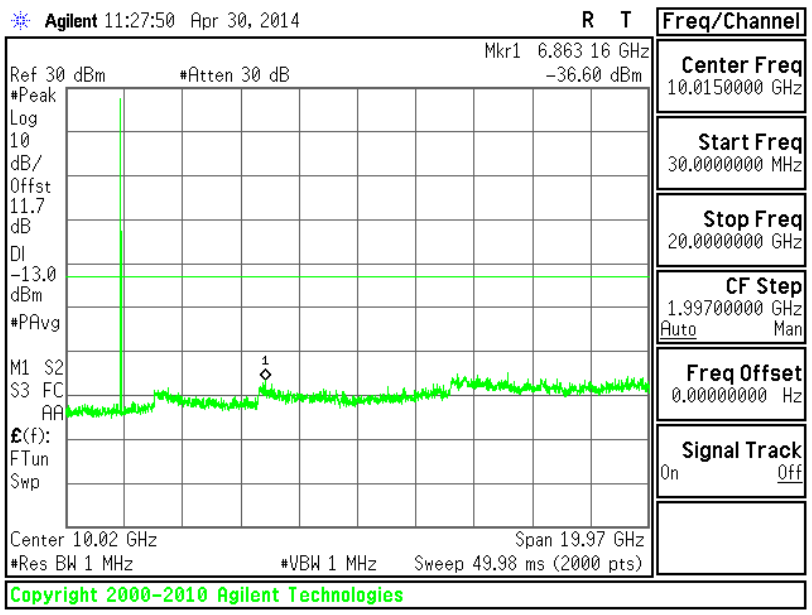
LOW, RB1-0, 30 TO 20000 MHz




MID, RB1-0, 30 TO 20000 MHz

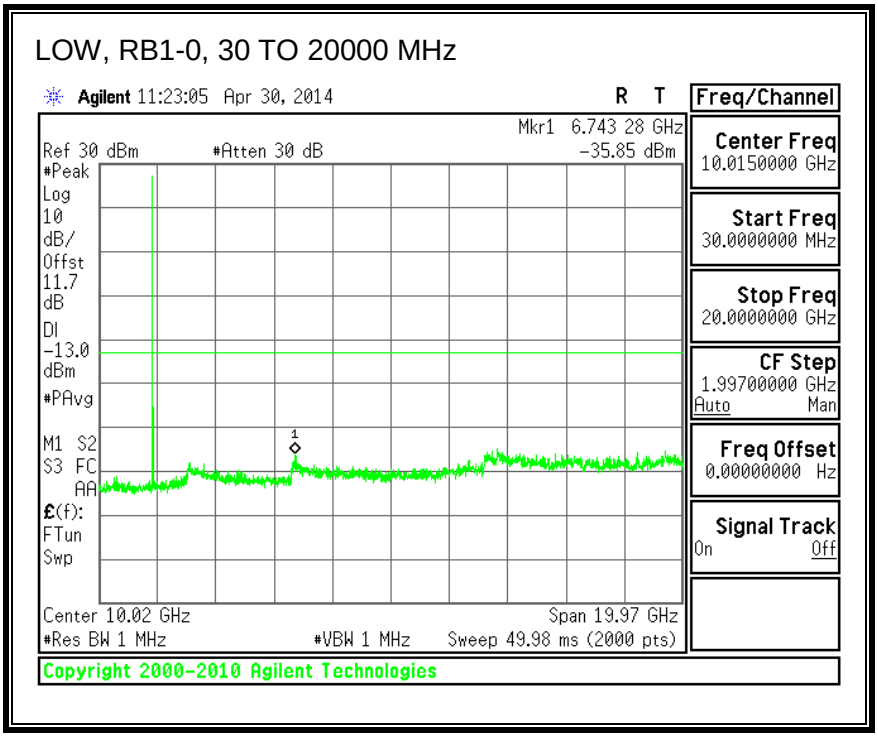


HIGH, RB1-0, 30 TO 20000 MHz

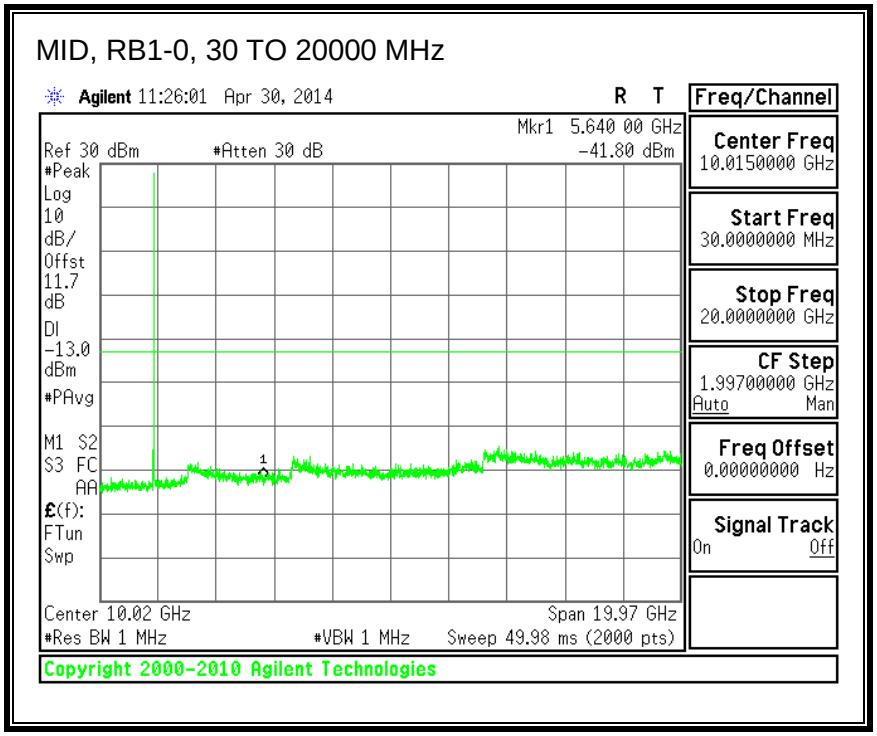



**16QAM, (3.0 MHz BAND WIDTH)**

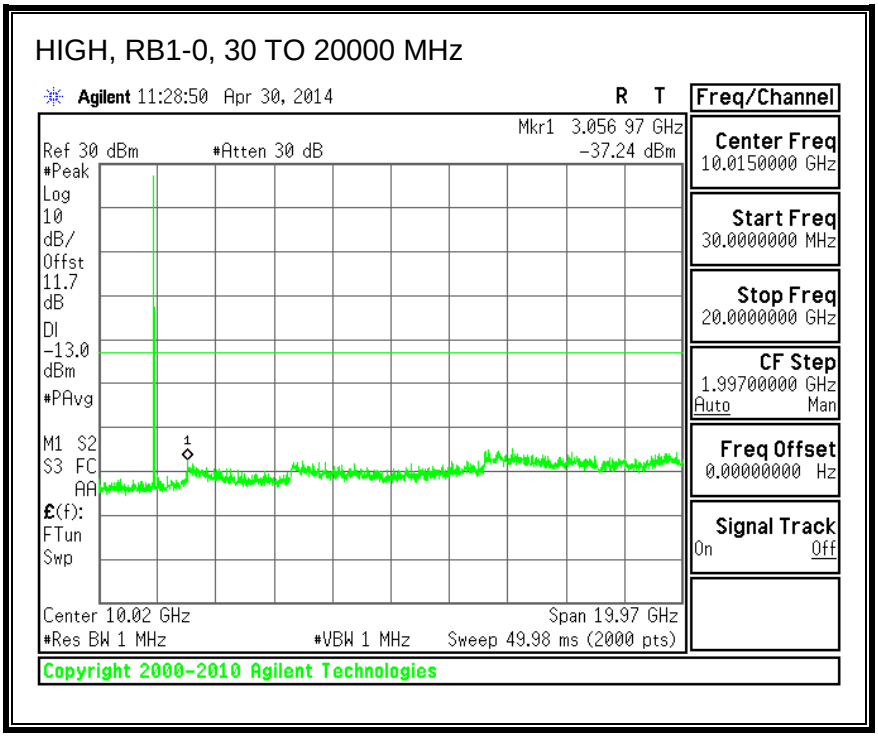
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

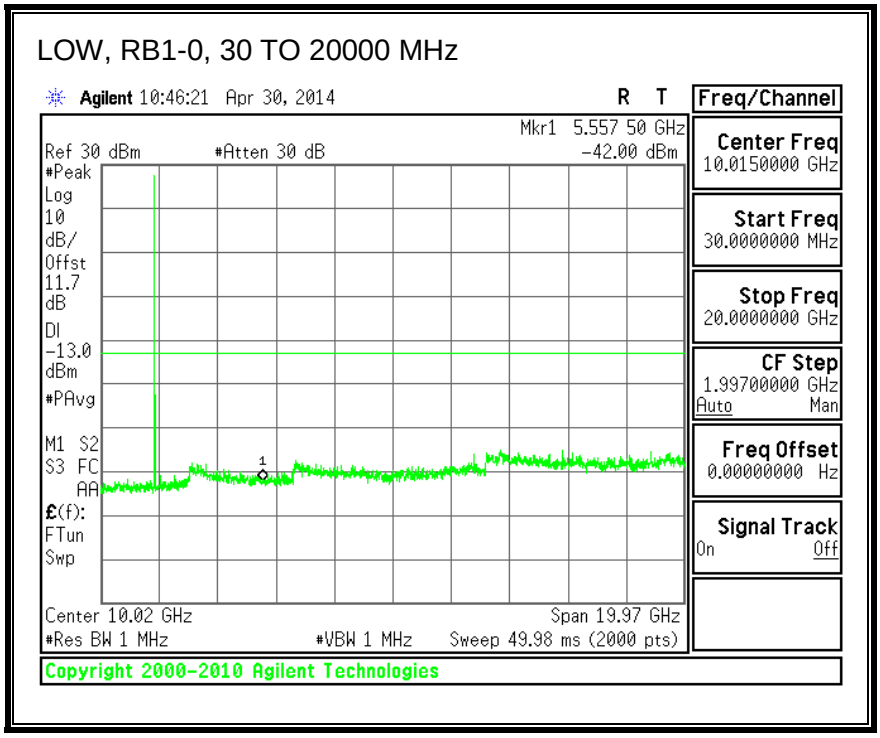



HIGH, RB1-0, 30 TO 20000 MHz

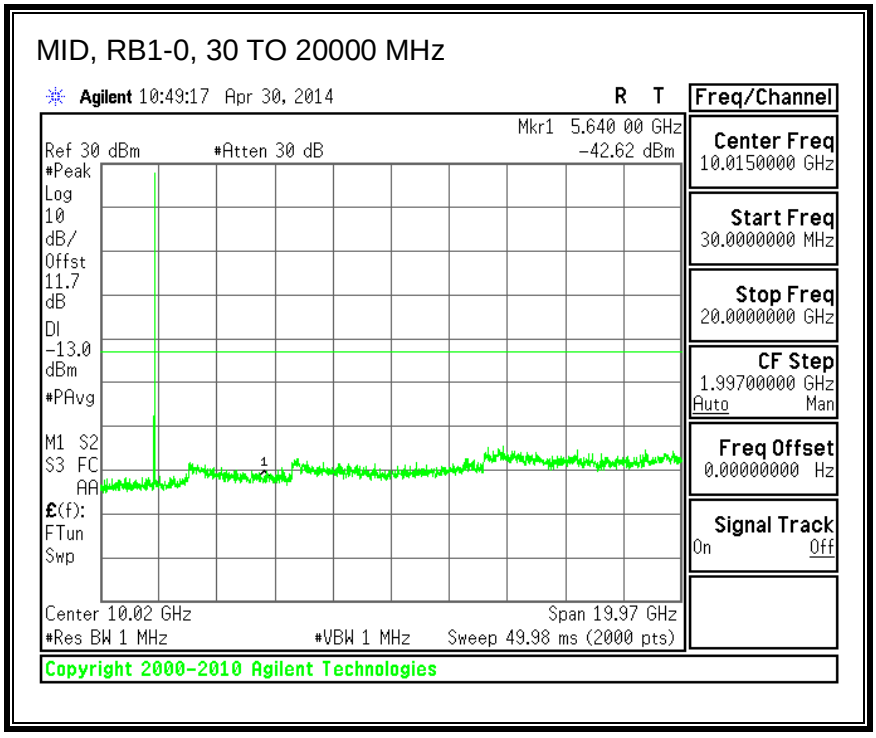


**QPSK, (5.0 MHz BAND WIDTH)**

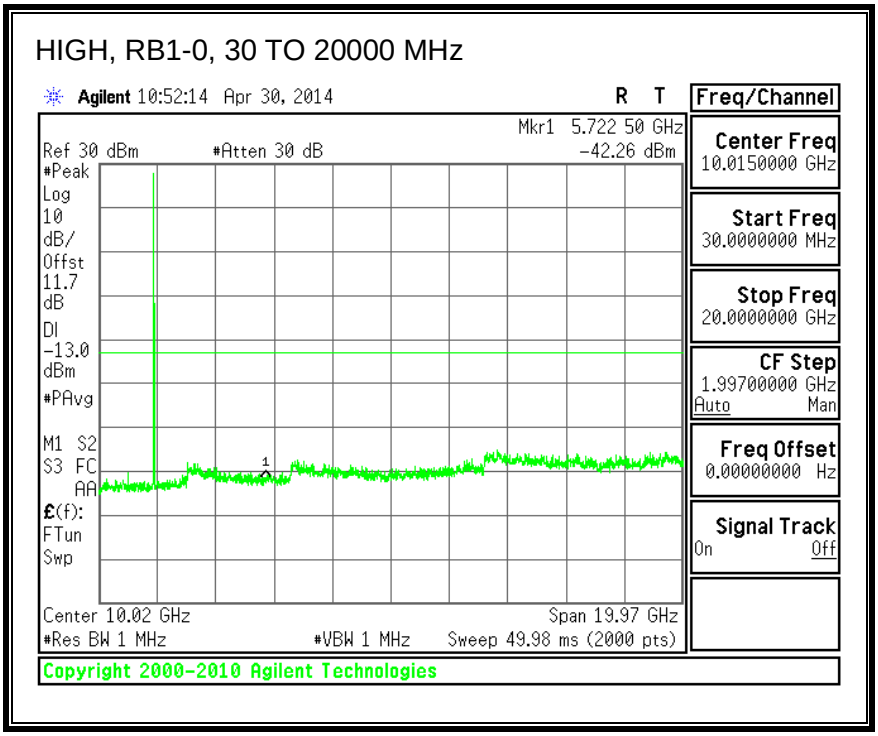
LOW, RB1-0, 30 TO 20000 MHz




MID, RB1-0, 30 TO 20000 MHz

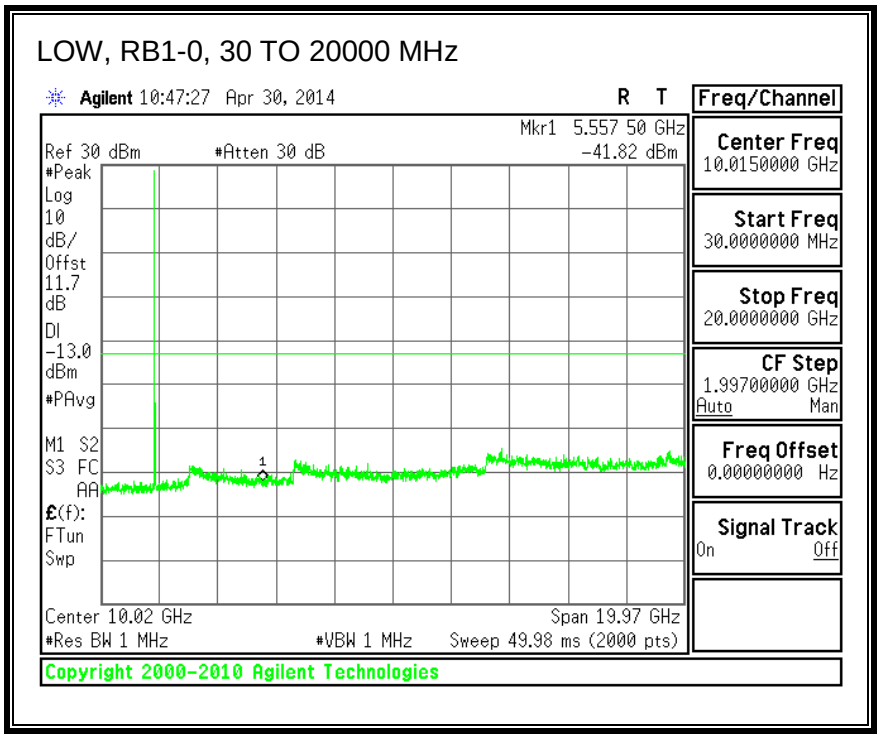


HIGH, RB1-0, 30 TO 20000 MHz

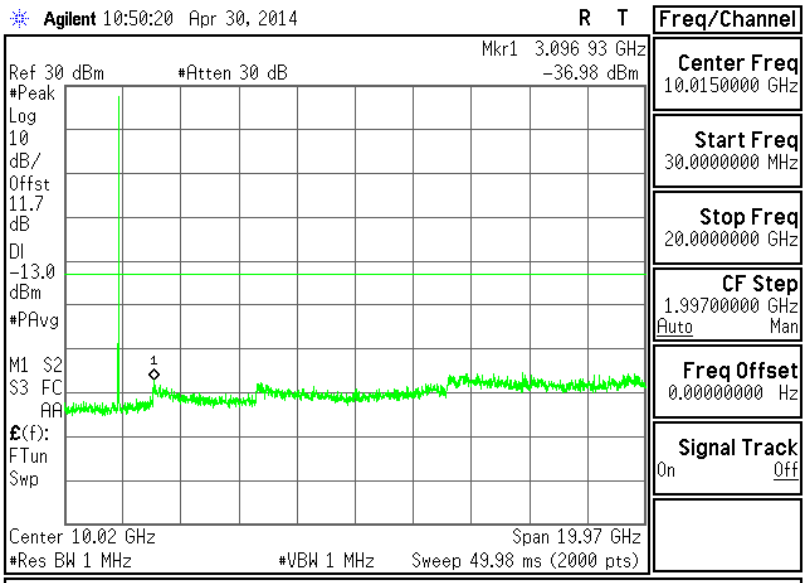



**16QAM, (5.0 MHz BAND WIDTH)**

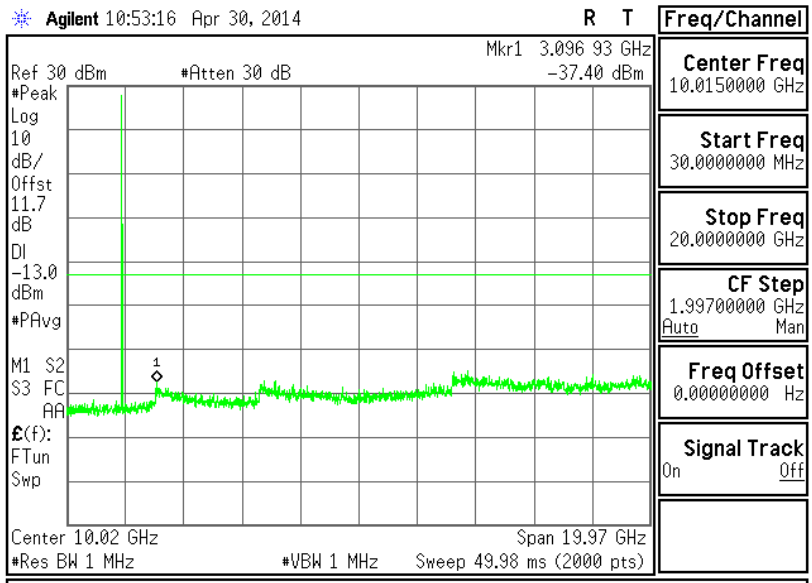
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

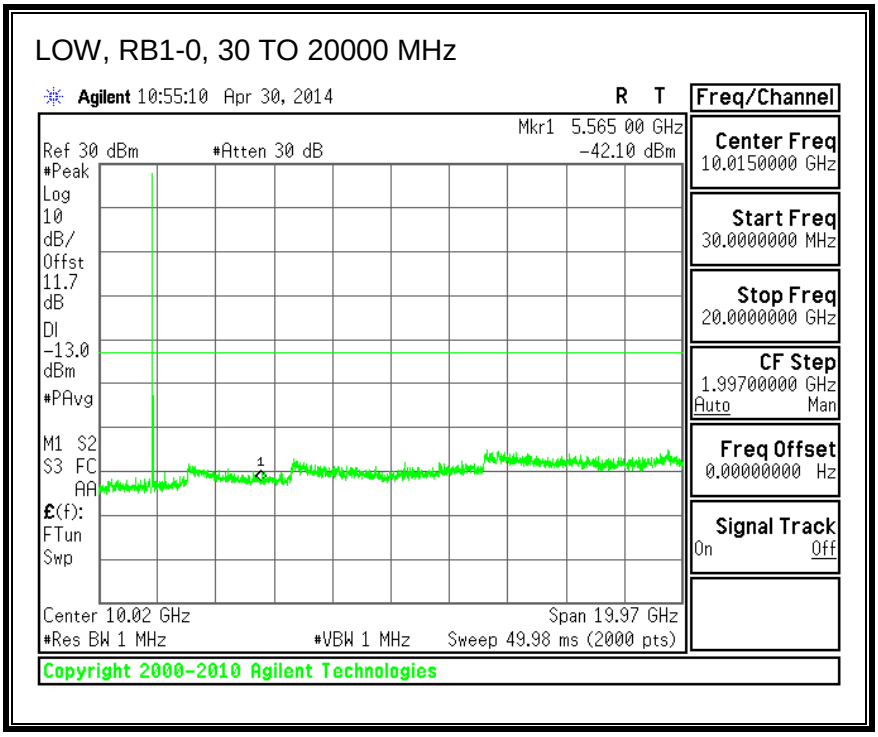



HIGH, RB1-0, 30 TO 20000 MHz

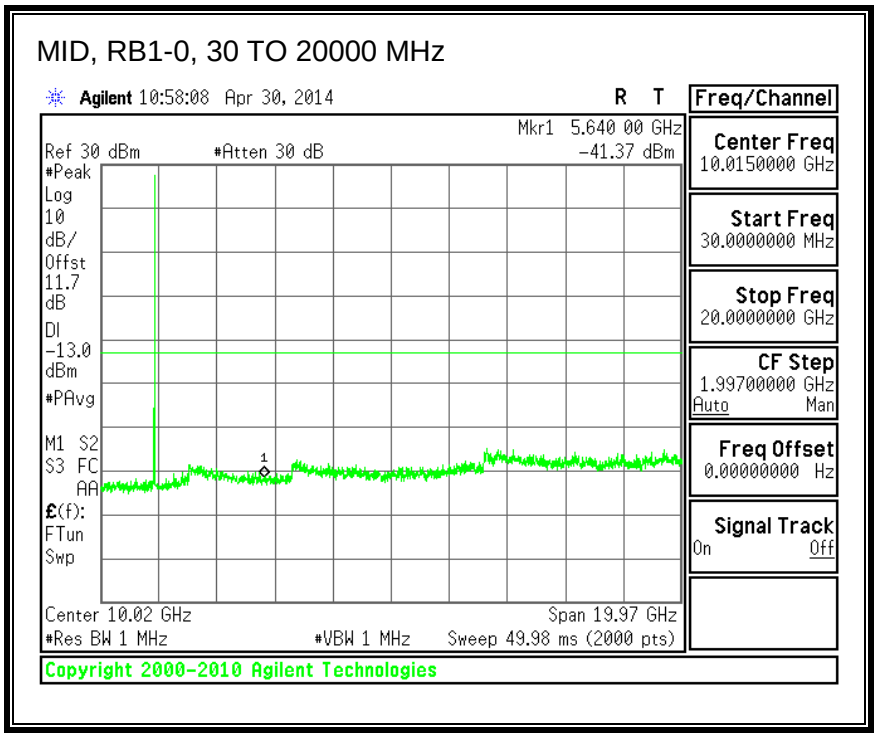


**QPSK, (10.0 MHz BAND WIDTH)**

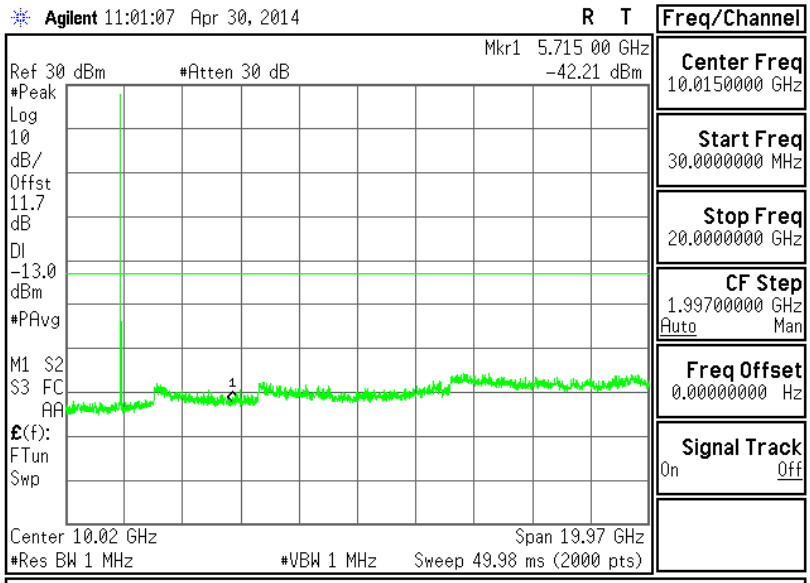
LOW, RB1-0, 30 TO 20000 MHz




MID, RB1-0, 30 TO 20000 MHz

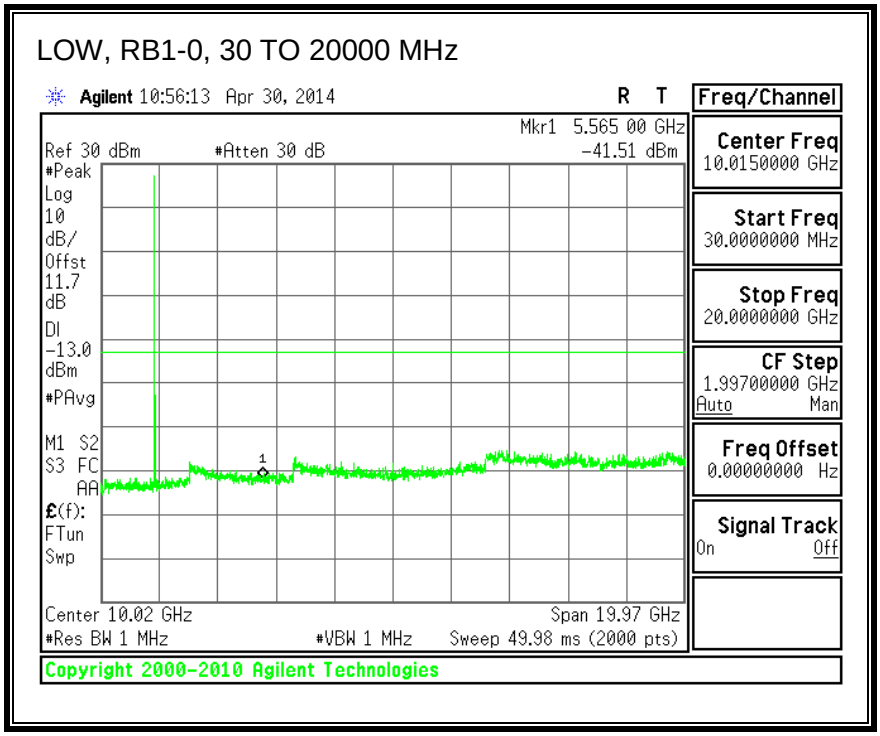


HIGH, RB1-0, 30 TO 20000 MHz

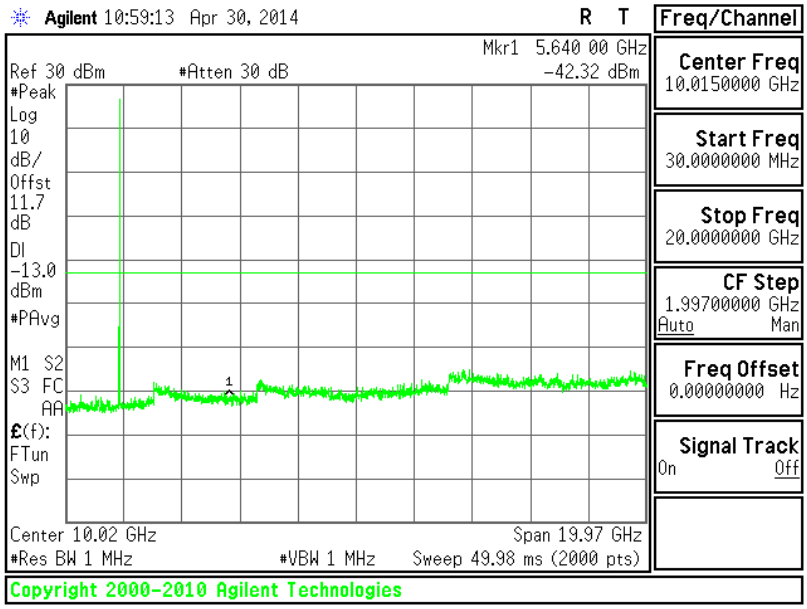



**16QAM, (10.0 MHz BAND WIDTH)**

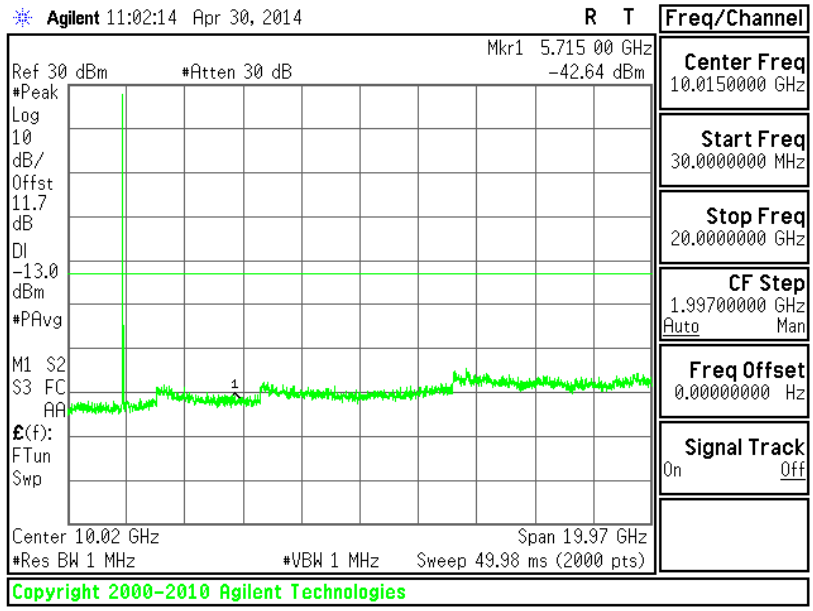
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

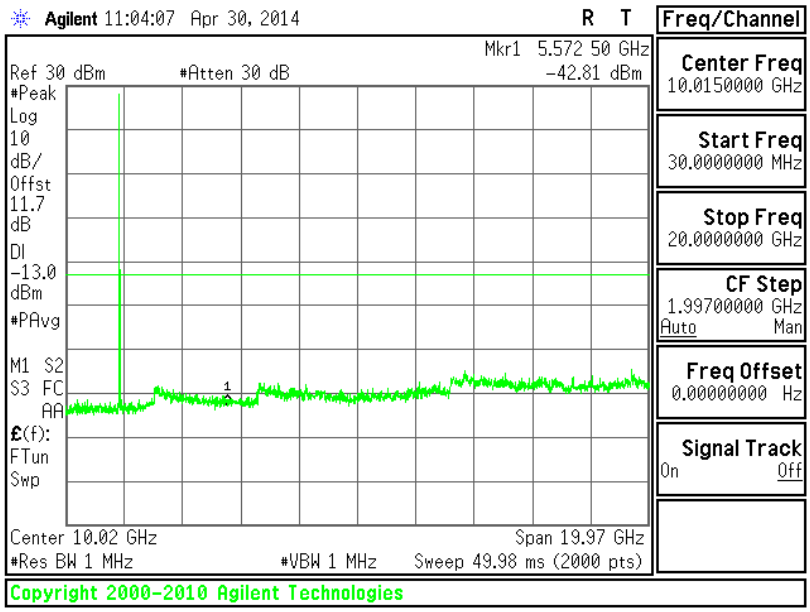



HIGH, RB1-0, 30 TO 20000 MHz



**QPSK, (15.0 MHz BAND WIDTH)**

LOW, RB1-0, 30 TO 20000 MHz




MID, RB1-0, 30 TO 20000 MHz