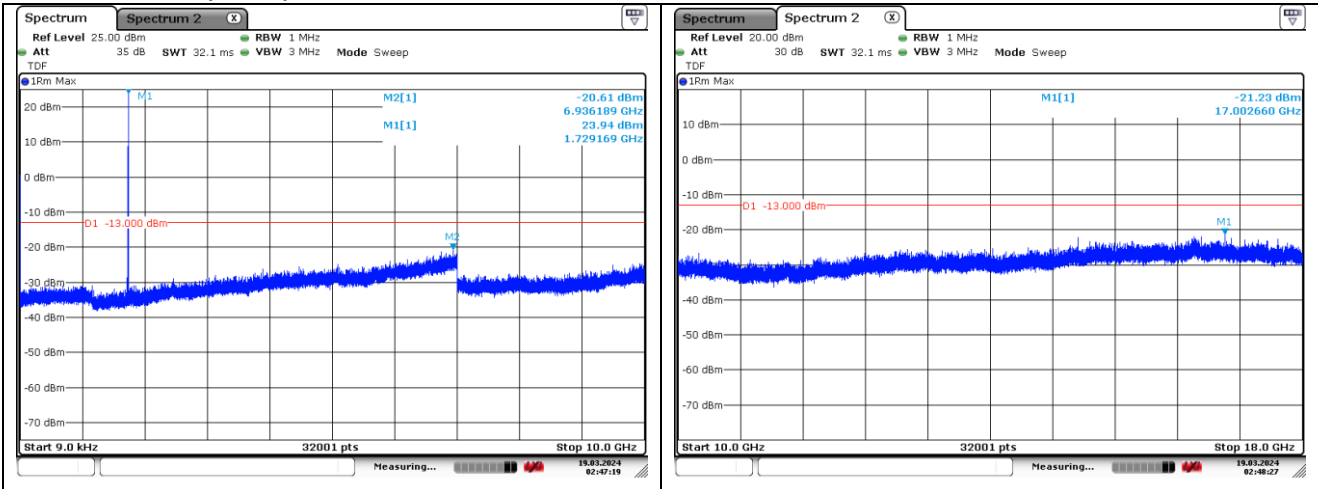
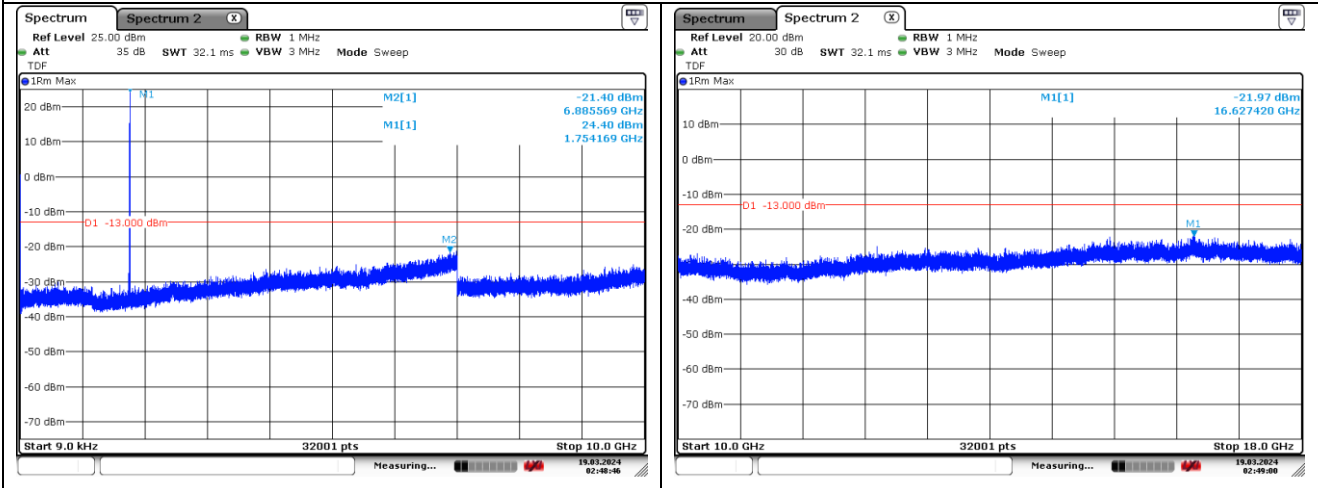


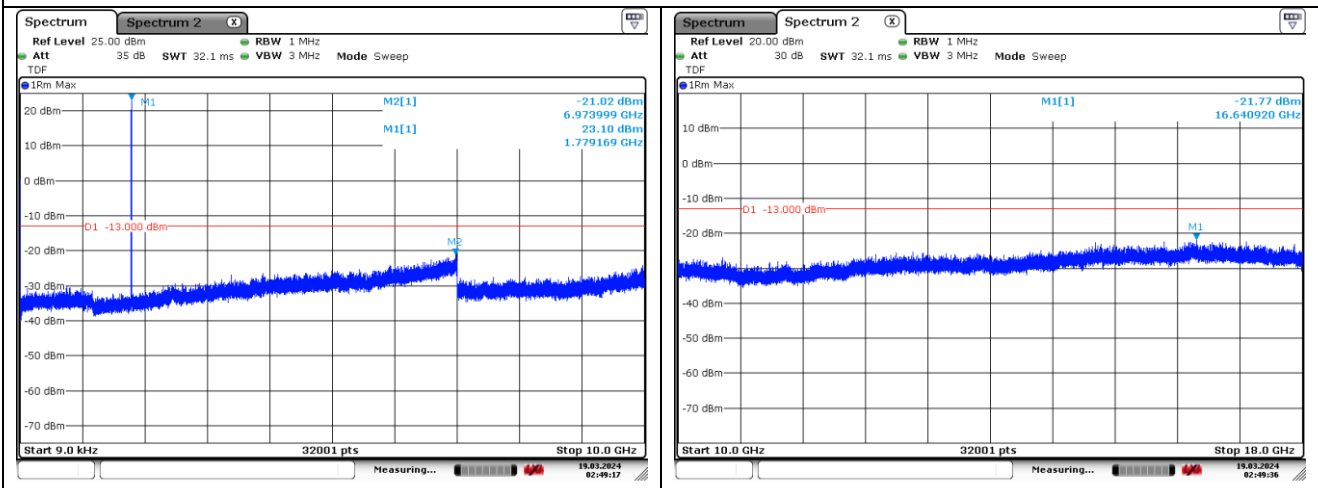
LTE band 66/4 (20 MHz)



QPSK Low Channel - 1 RB

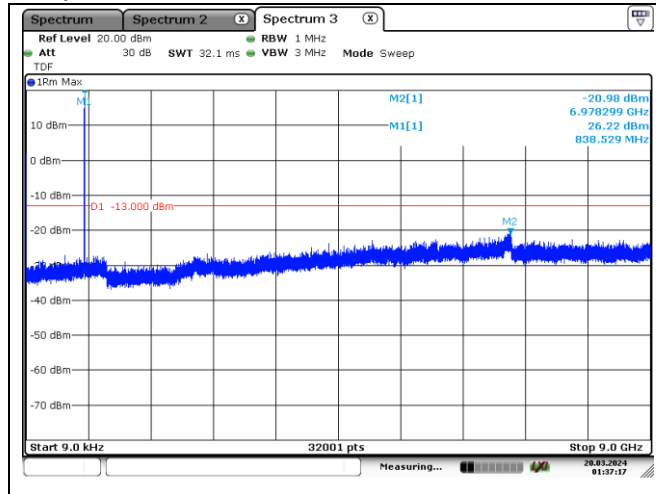


QPSK Middle Channel - 1 RB

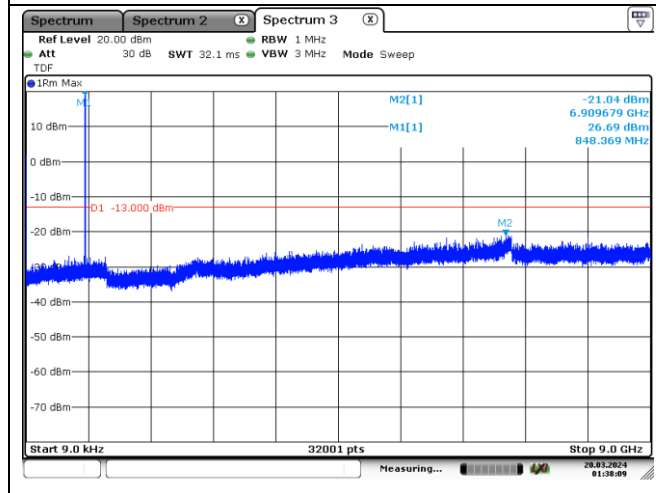


QPSK High Channel - 1 RB

LTE band 26/5_Part 22 (15 MHz)

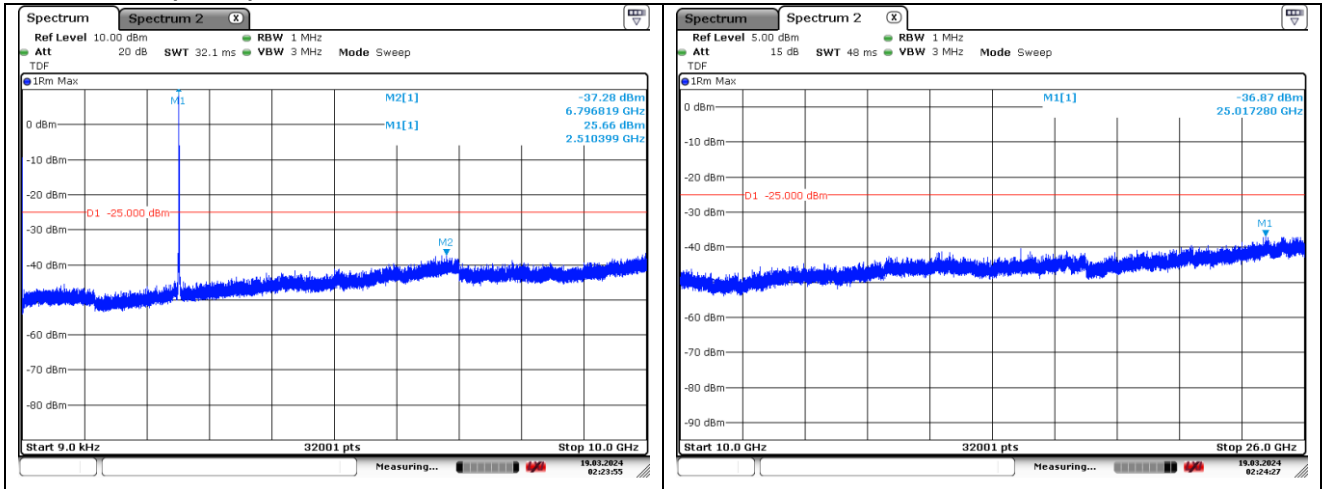


QPSK Low Channel - 1 RB

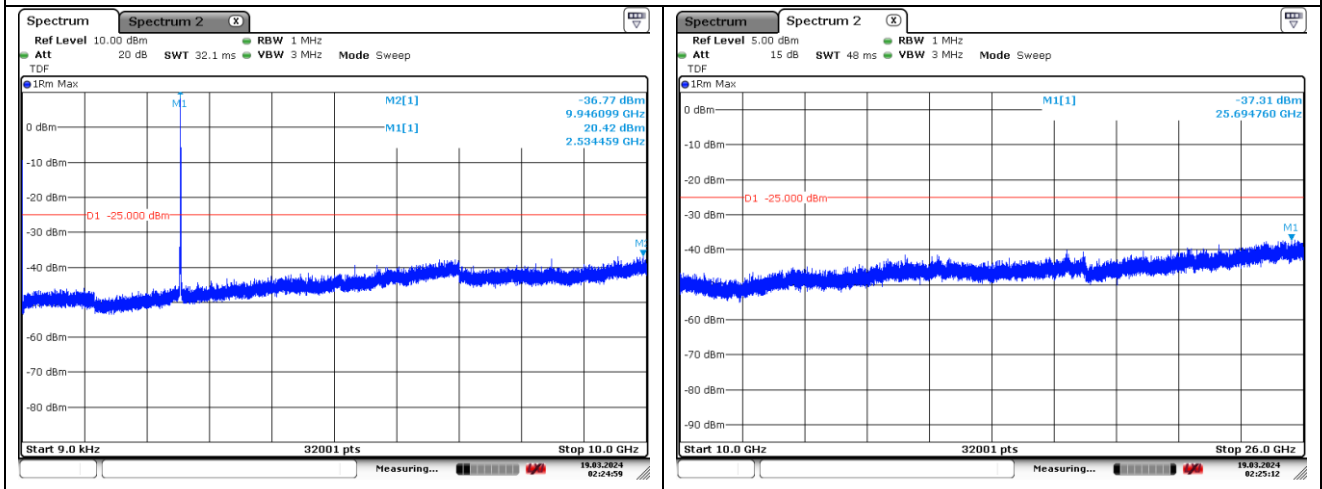


QPSK High Channel - 1 RB

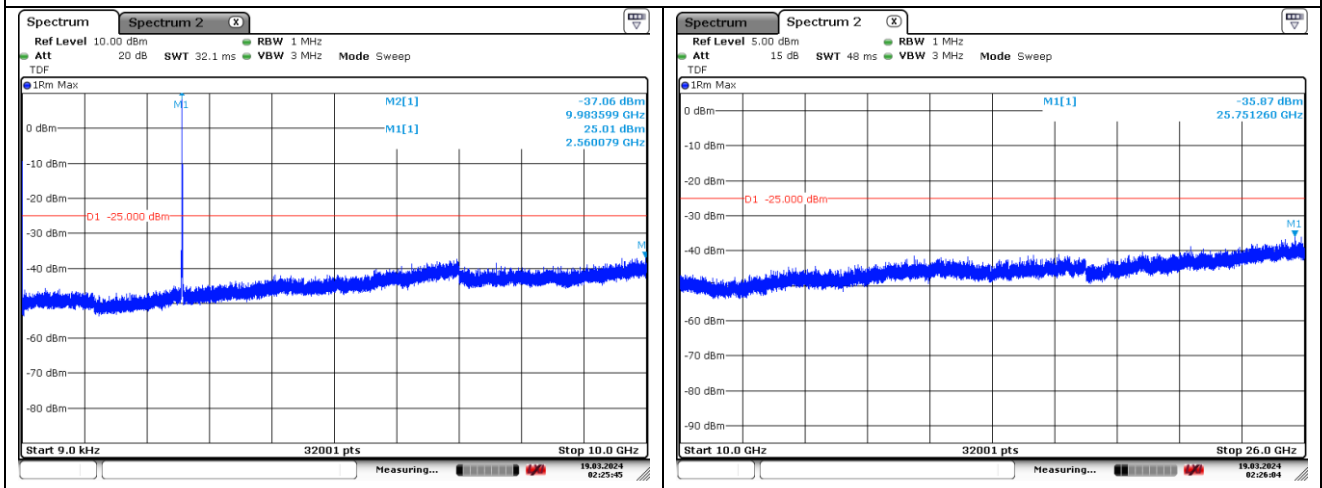
LTE band 7 (20 MHz)



QPSK Low Channel - 1 RB

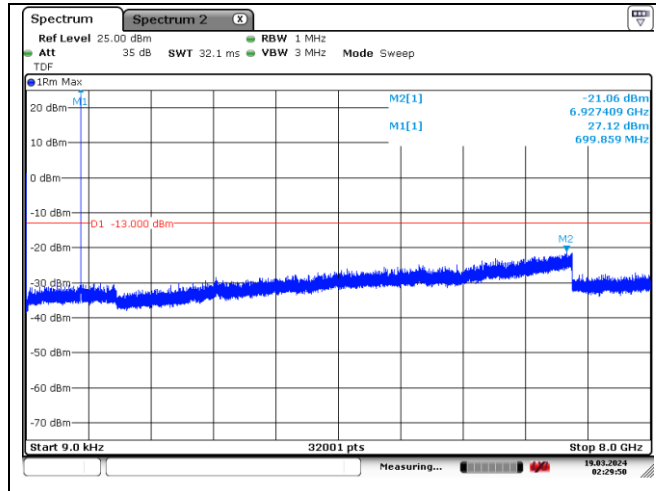


QPSK Middle Channel - 1 RB

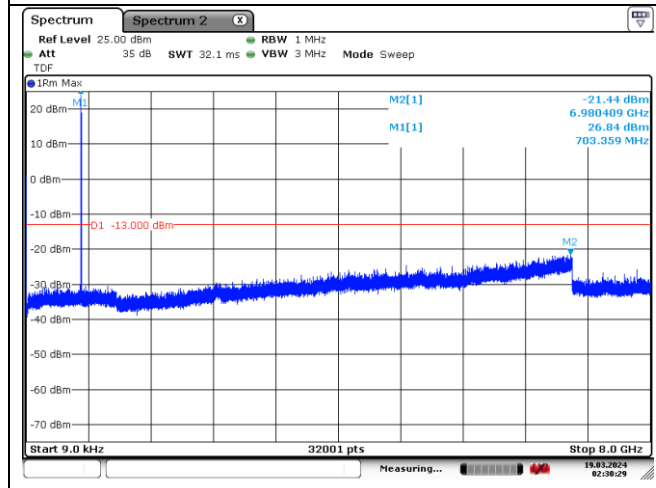


QPSK High Channel - 1 RB

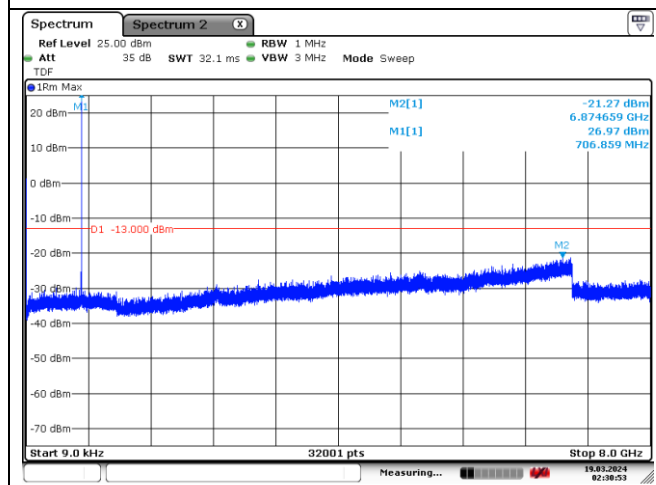
LTE band 12/17 (10 MHz)



QPSK Low Channel - 1 RB

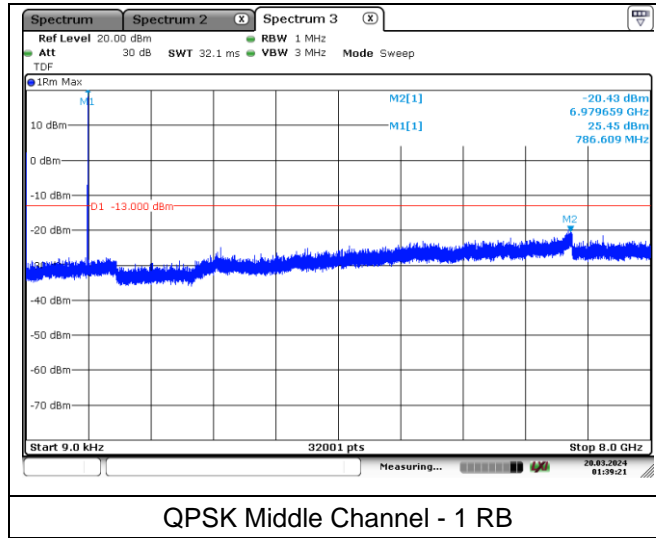


QPSK Middle Channel - 1 RB

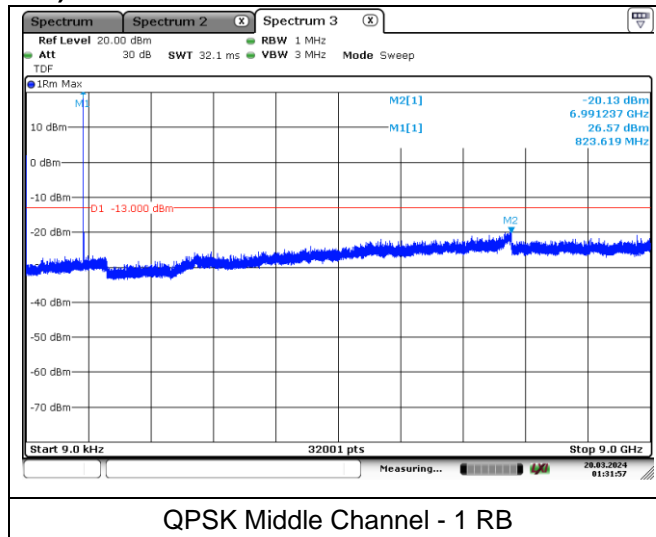


QPSK High Channel - 1 RB

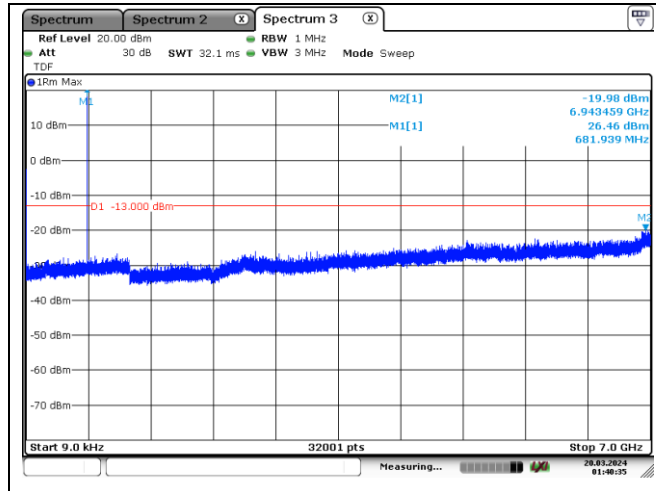
LTE band 13 (10 MHz)



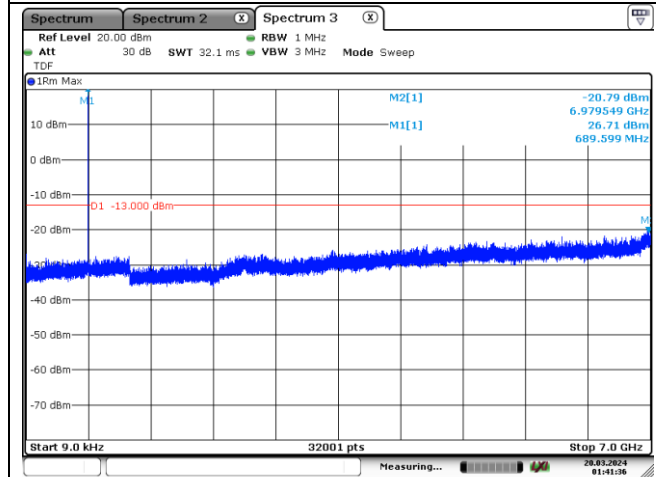
LTE band 26_Part 90 (10 MHz)



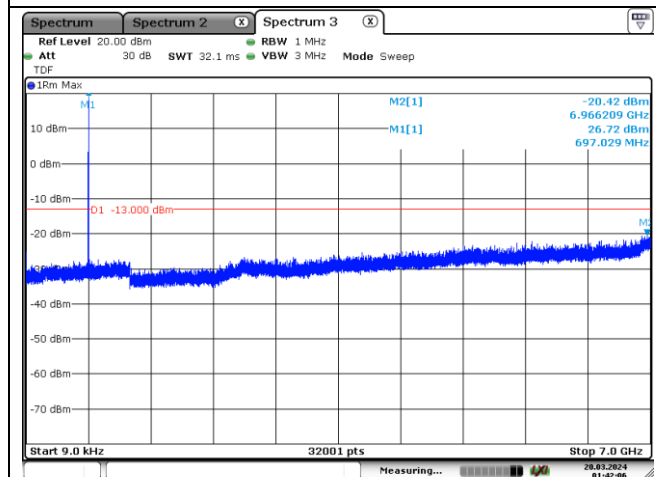
LTE band 71 (10 MHz)



QPSK Low Channel - 1 RB



QPSK Middle Channel - 1 RB



QPSK High Channel - 1 RB

7. Band Edge and Emission Mask

7.1. Limit

FCC

- §22.917(a), 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.
- §24.238(a), 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.
- §27.53(c)(2), on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.
- §27.53(c)(4), on all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB.
- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.
- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log_{10} (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log_{10} (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log_{10} (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log_{10} (P)$ dB on all frequencies between 2 490.5 MHz and 2 496 MHz and $55 + 10 \log_{10} (P)$ dB at or below 2 490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2 495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
- §90.691(a), out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
 - (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{Log}_{10} (f / 6.1)$ decibels or $50 + 10 \text{Log}_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
 - (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \text{Log}_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

IC

- RSS-130 Issue 2

4.7.1, the unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dB W), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2, In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dB W), by at least:

(i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and

(ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

b) The e.i.r.p. in the band 1 559-1 610 MHz shall not exceed -70 dB W/MHz for wideband signal and -80 dB W for discrete emission with bandwidth less than 700 Hz.

- RSS-132 Issue 4

5.5, Equipment shall meet the unwanted emission limits specified below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated below the transmitter output power P (dB W) by at least $43 + 10 \log(p)$ dB.

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated below the transmitter output power P (dB W) by at least $43 + 10 \log(p)$ dB. If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

- RSS-139 Issue 4

5.6, Unwanted emissions shall be measured in terms of average values.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table 6.

Table 6: Unwanted emission limits

Offset from the edge of the frequency block or frequency block group	Unwanted emission limit
≤ 1 MHz	-13 dB m/(1% of OB)*
> 1 MHz	-13 dB m

* OB is the occupied bandwidth

- RSS-199 Issue 4

5.6, unwanted emissions shall be measured in terms of average values when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

For the unwanted emission limits, in the 1 MHz band immediately outside and adjacent to the frequency block group, the power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for fixed stations, base stations, and fixed subscriber equipment, and 2 % for subscriber equipment other than fixed subscriber equipment. Beyond this 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1 % or 2 % of the occupied bandwidth, as applicable.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the tables below.

Table 4: Unwanted emission limits for fixed station, base station and fixed subscriber equipment

Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limit
≤1	-13 dB m/(1% of OB*)
>1	-13 dB m/MHz

* OB is the occupied bandwidth

Table 5: Unwanted emission limits for subscriber equipment other than fixed subscriber equipment

Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limit
0-1	-10 dB m/(2% of OB*)
1-5	-10 dB m/MHz
5-X**	-13 dB m/MHz
≥X	-25 dB m/MHz

* OB is the occupied bandwidth

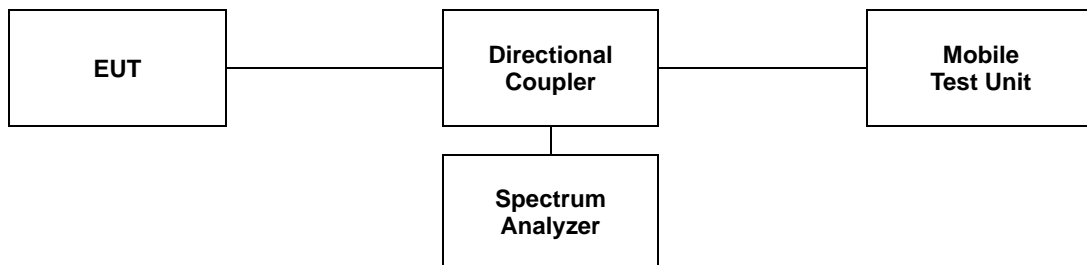
** X is 6 MHz or the equipment occupied bandwidth, whichever is greater

In addition to complying with the limits in table 5, subscriber equipment other than fixed subscriber equipment shall not exceed -13 dB m/MHz on all frequencies between 2 490.5 MHz and 2 496 MHz, and -25 dB m/MHz at or below 2 490.5 MHz.

7.2. Test Procedure

The test follows section 5.7 of ANSI C63.26-2015.

- a. Span was set large enough so as to capture all out of band emissions near the band edge.
- b. $RBW \geq 1\%$ of OBW
- c. $VBW \geq 3 \times RBW$.
- d. Detector = RMS.
- e. Trace mode = Average.
- f. Sweep time = Auto.
- g. The trace was allowed to stabilize.
- h. All path loss of frequency range was investigated and compensated to spectrum analyzer as TDF function.

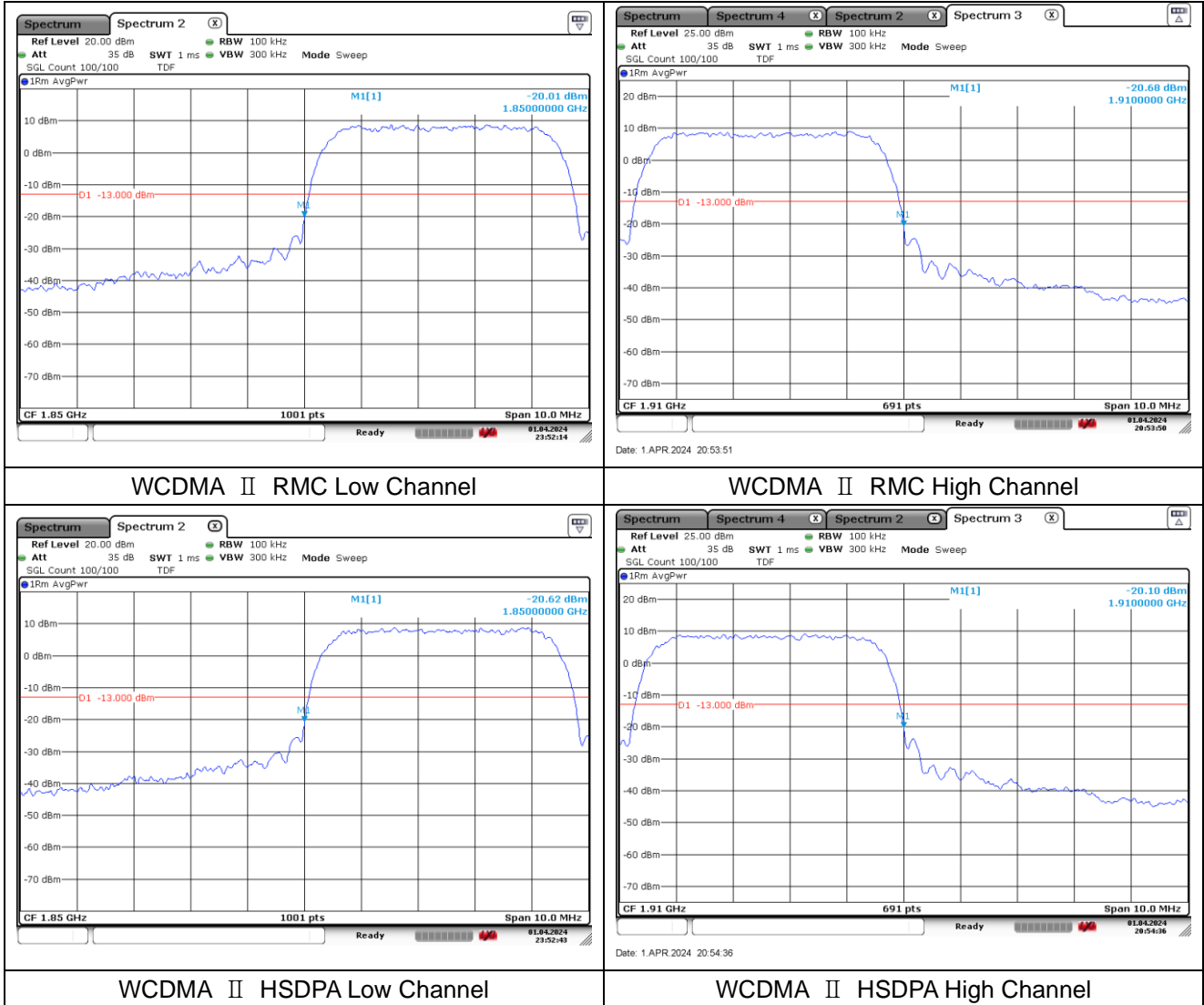


7.3. Test Results

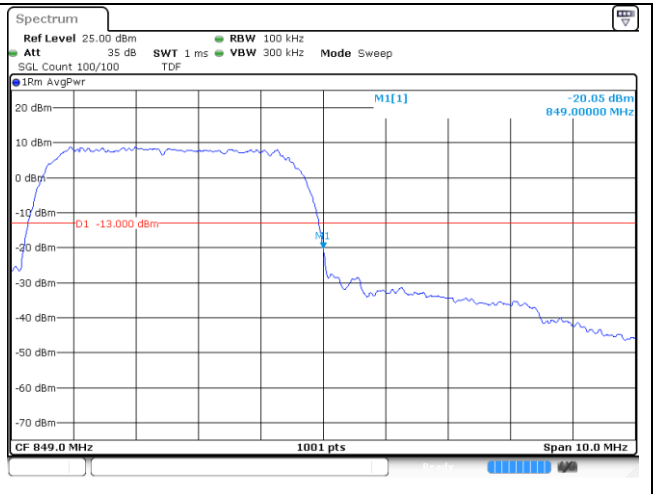
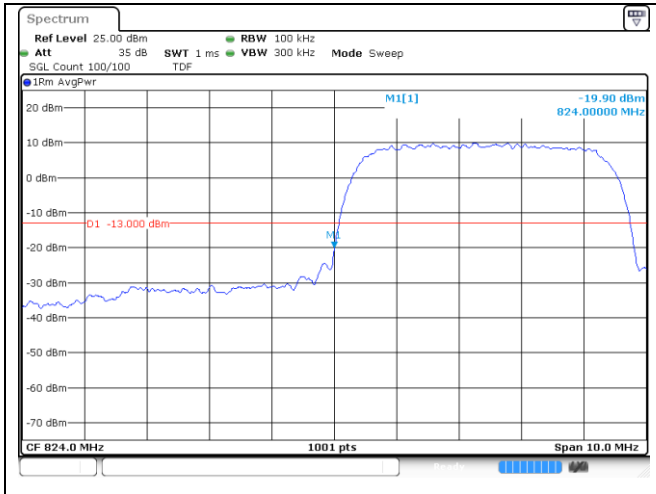
Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

- Test plots

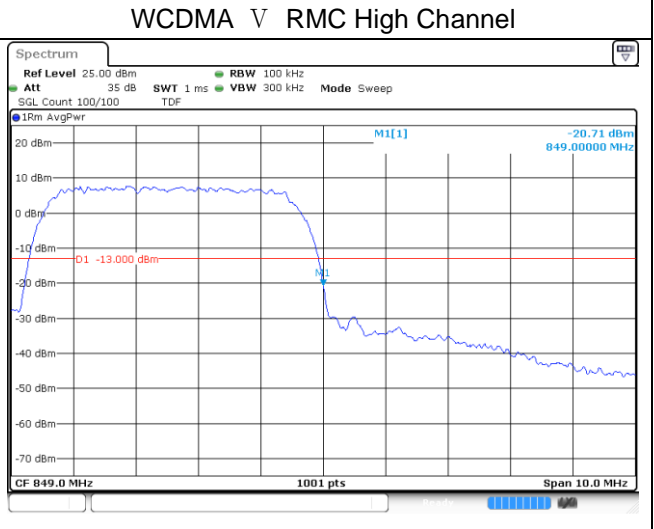
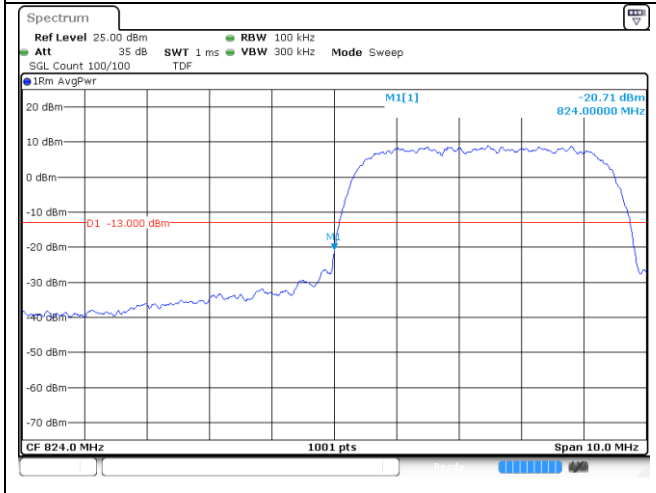
WCDMA II



WCDMA ▾



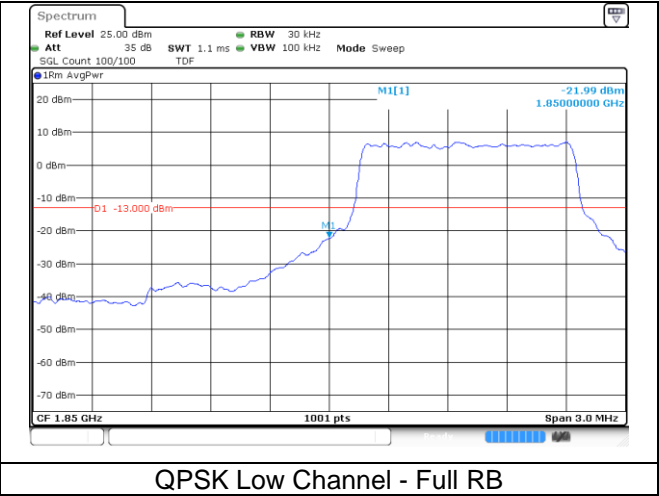
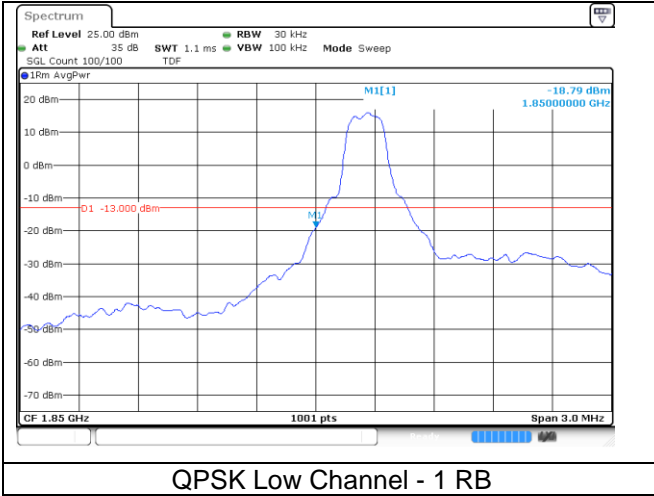
WCDMA ▾ RMC Low Channel



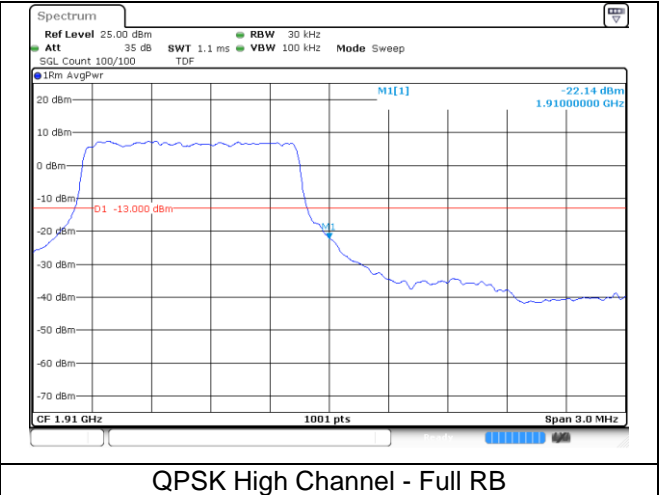
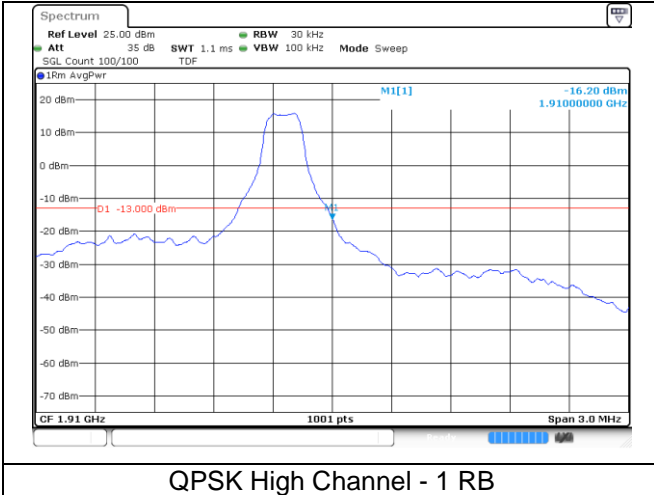
WCDMA ▾ HSDPA Low Channel

WCDMA ▾ HSDPA High Channel

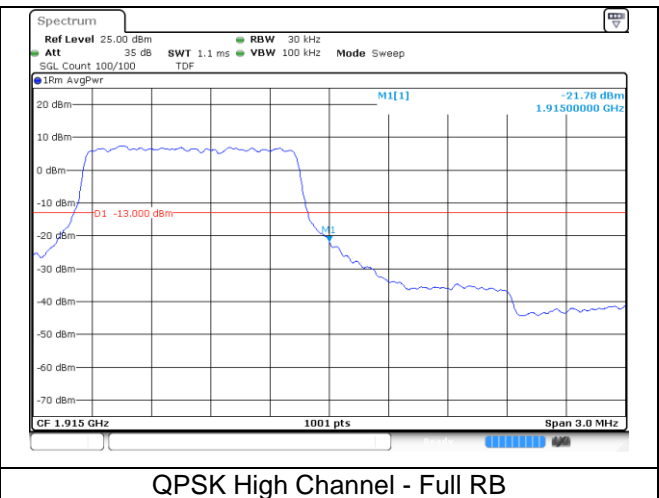
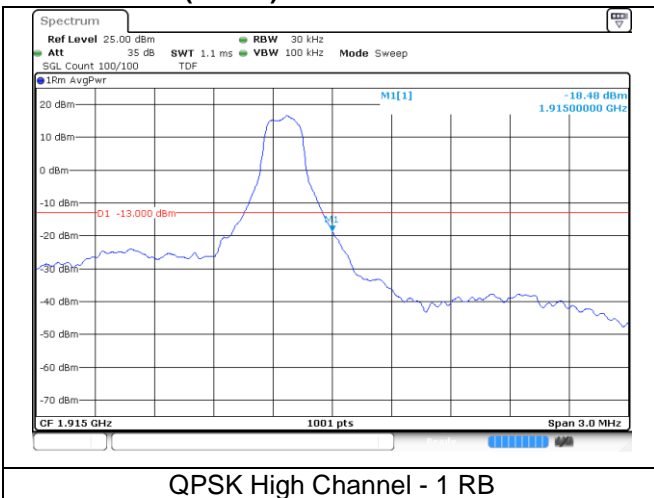
LTE band 25/2 (1.4 MHz)



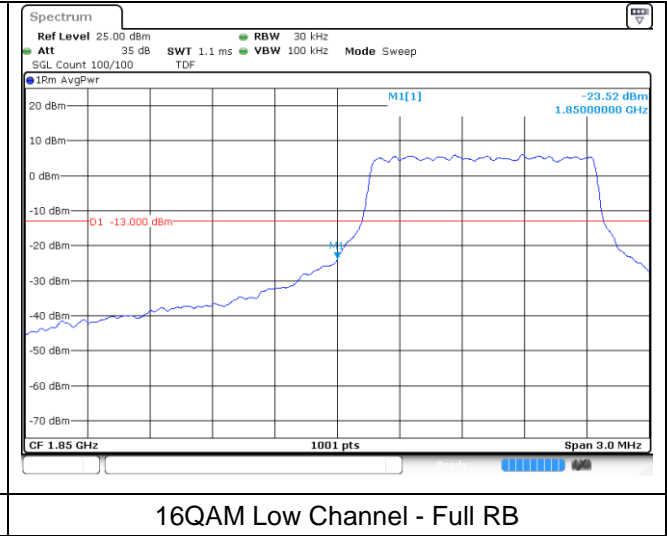
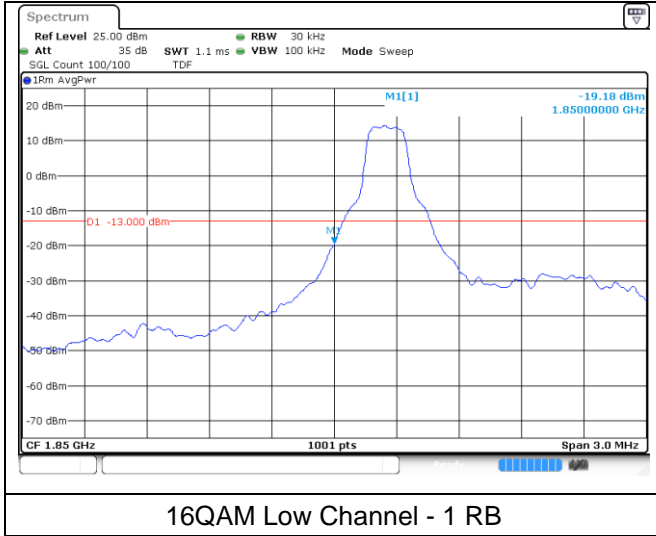
LTE band 2 (1.4 MHz)



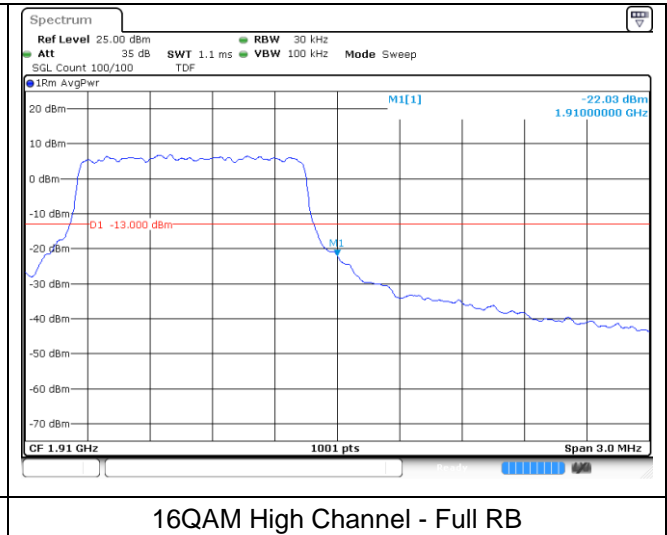
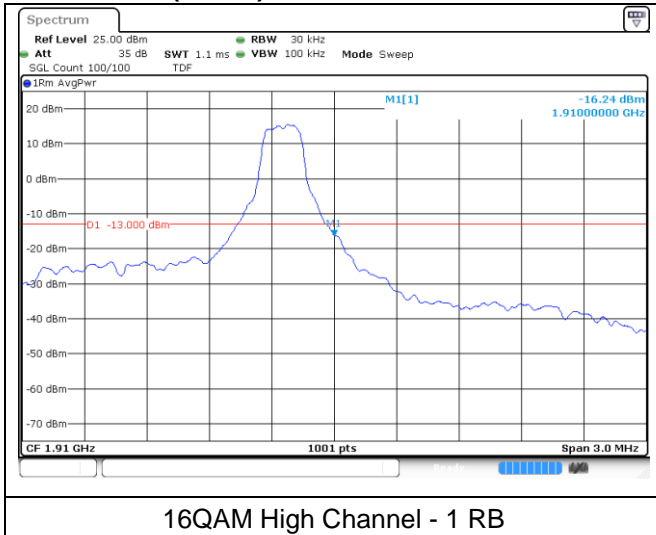
LTE band 25 (1.4 MHz)



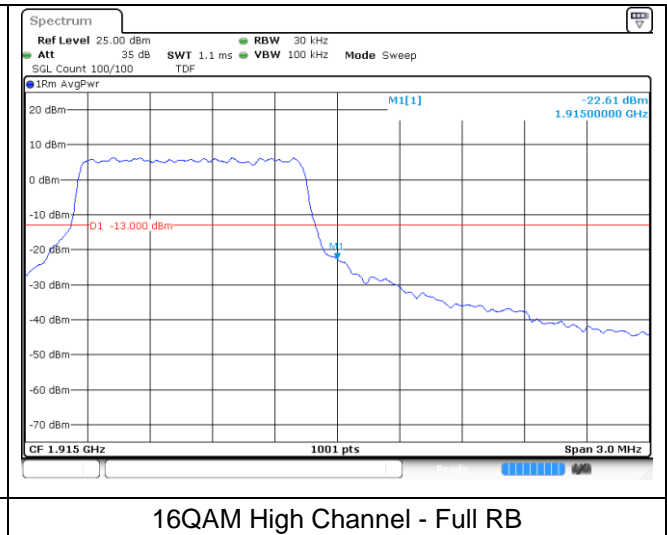
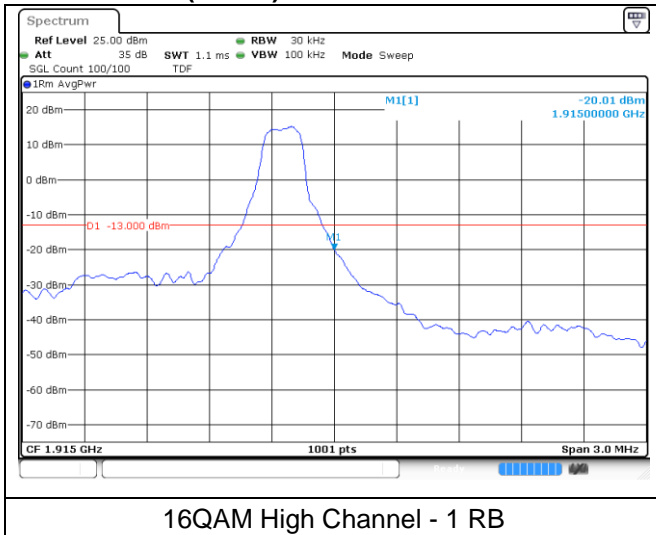
LTE band 25/2 (1.4 MHz)



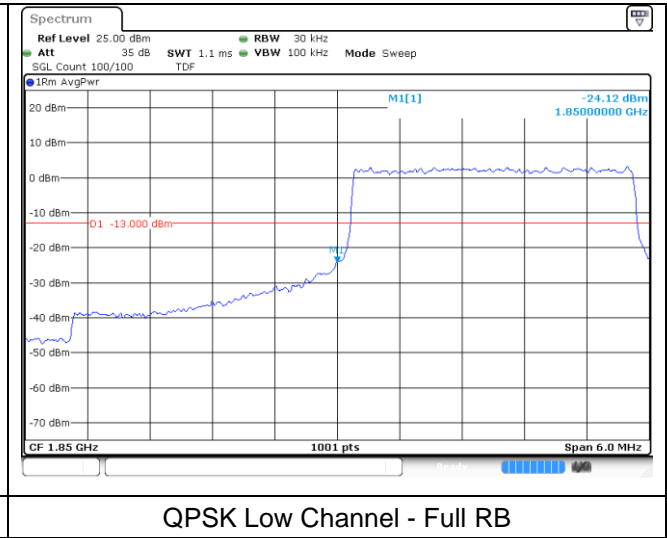
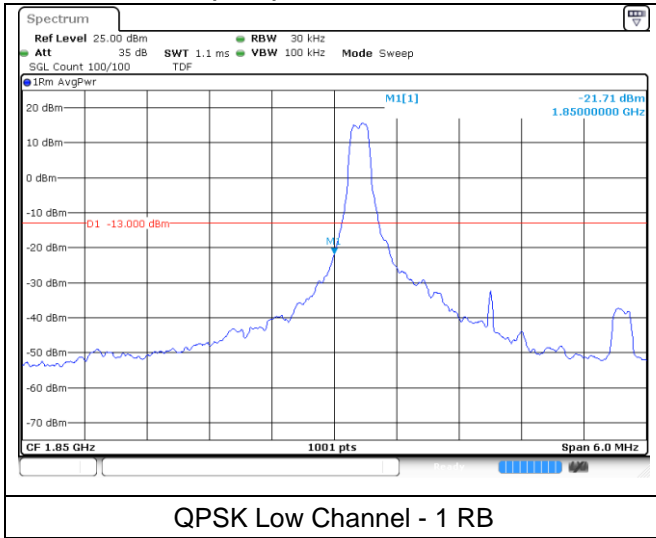
LTE band 2 (1.4 MHz)



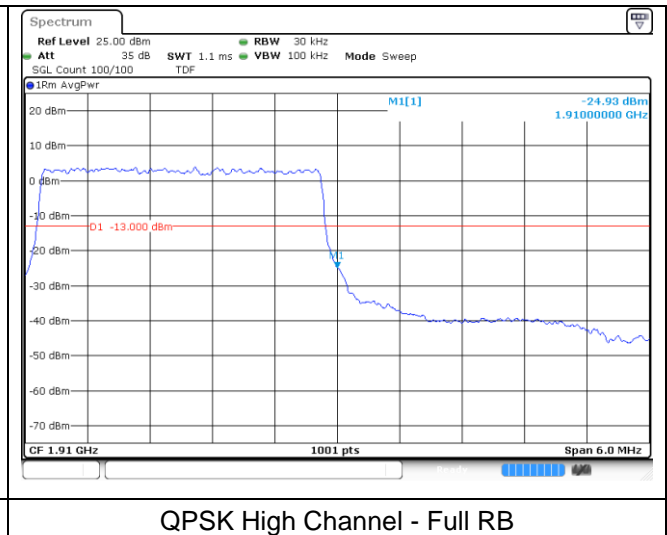
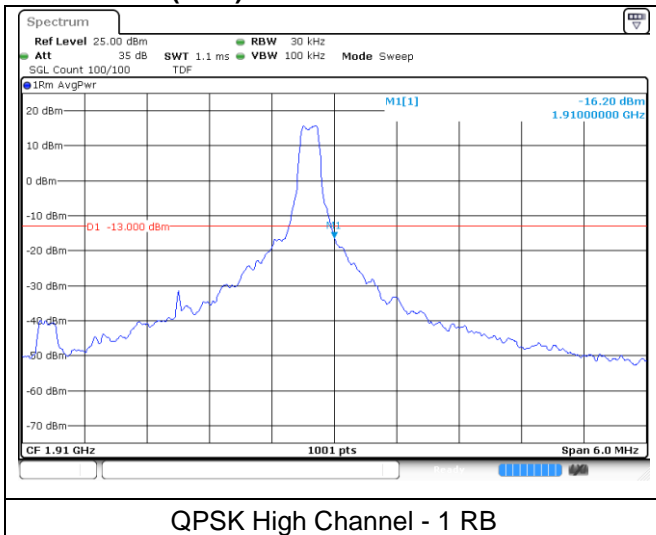
LTE band 25 (1.4 MHz)



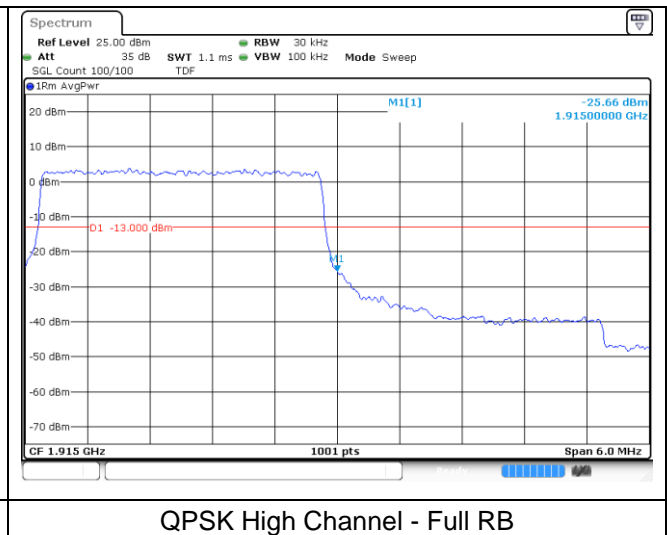
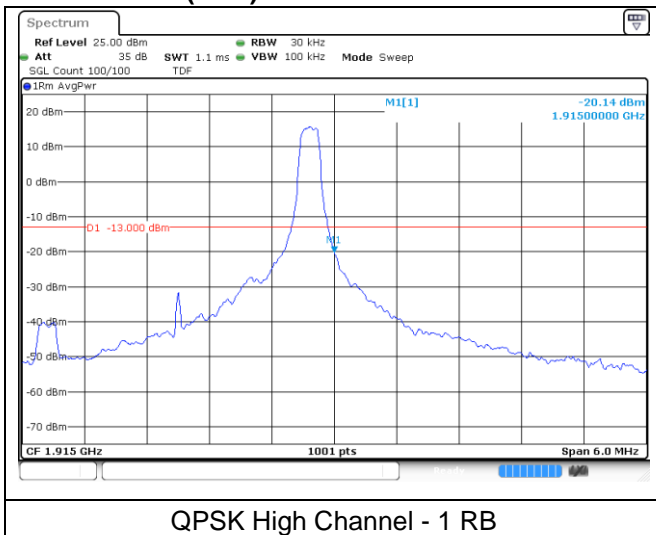
LTE band 25/2 (3 MHz)



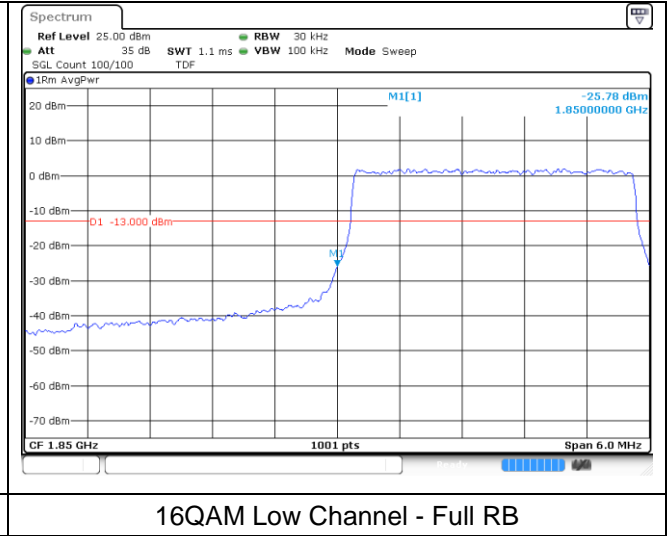
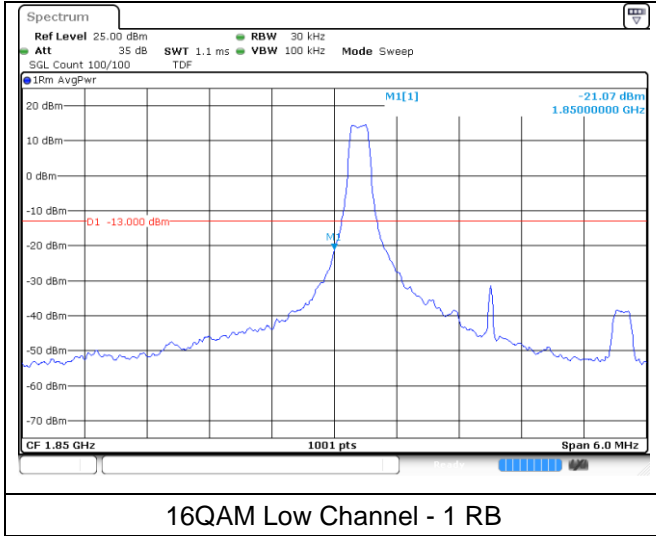
LTE band 2 (3 MHz)



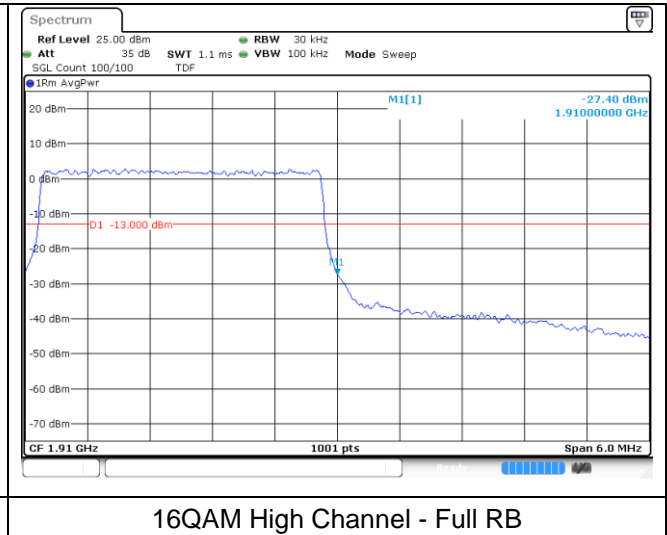
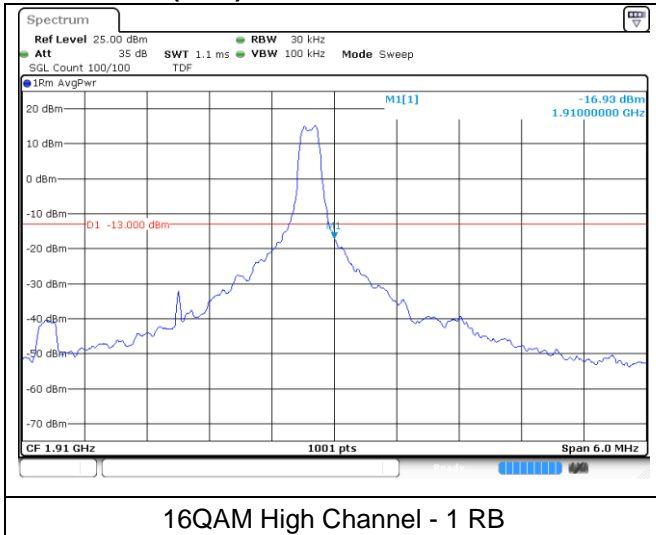
LTE band 25 (3 MHz)



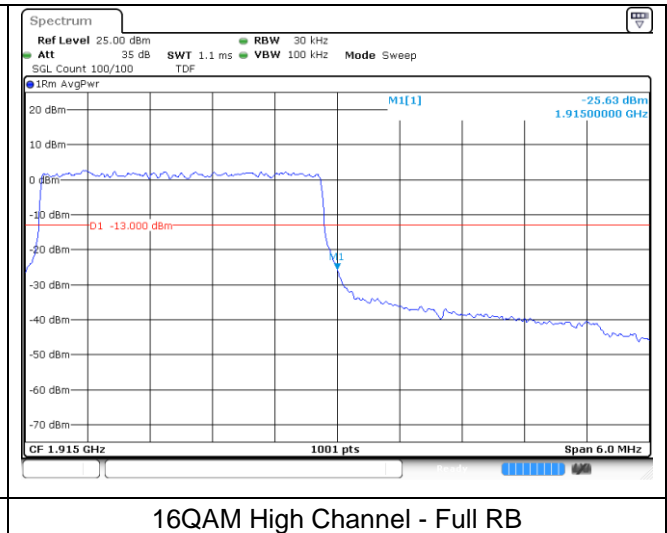
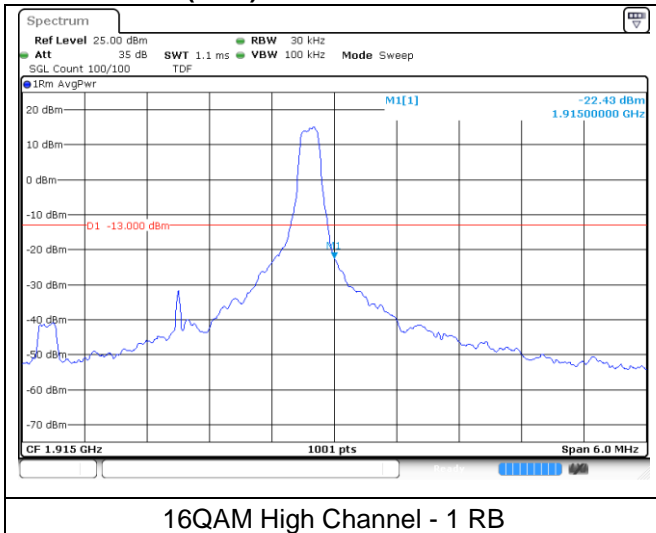
LTE band 25/2 (3 MHz)



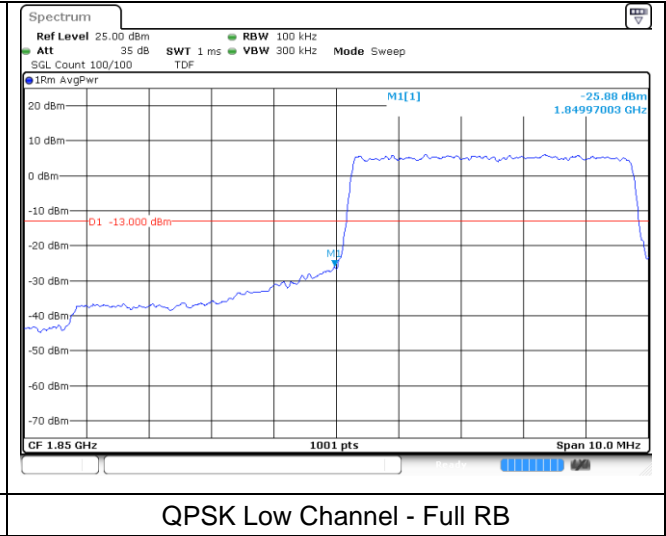
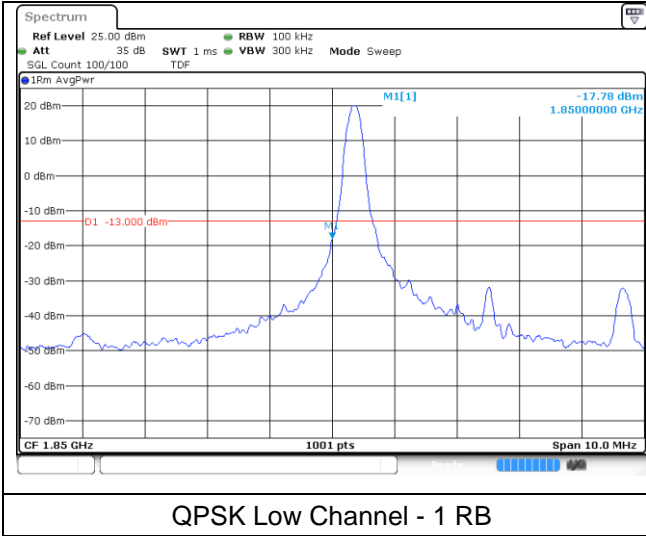
LTE band 2 (3 MHz)



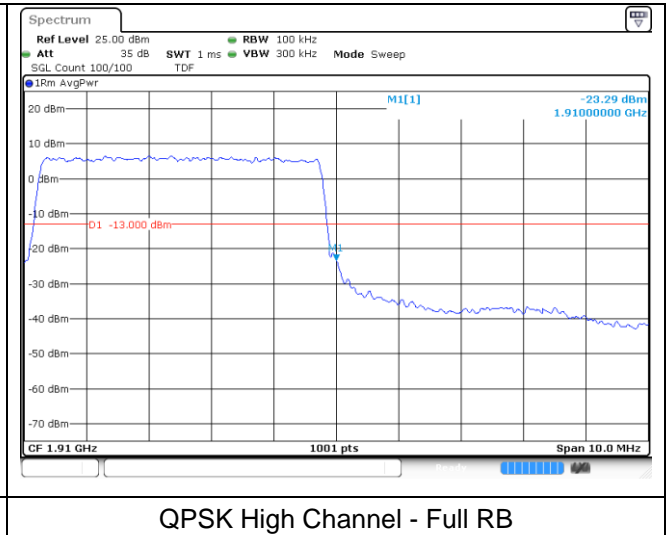
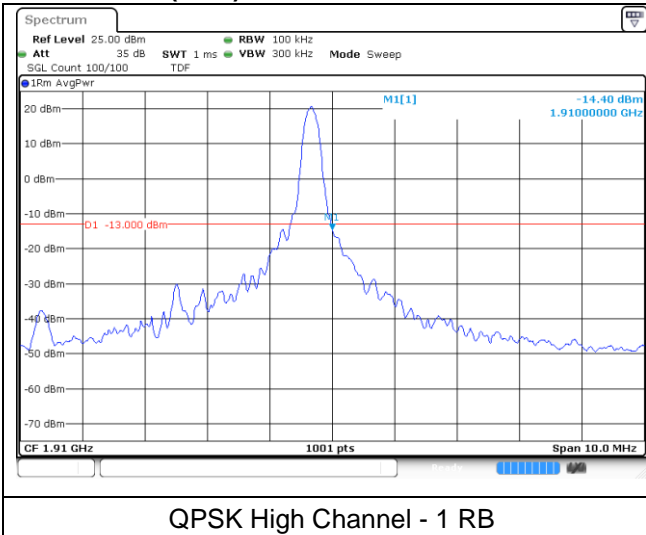
LTE band 25 (3 MHz)



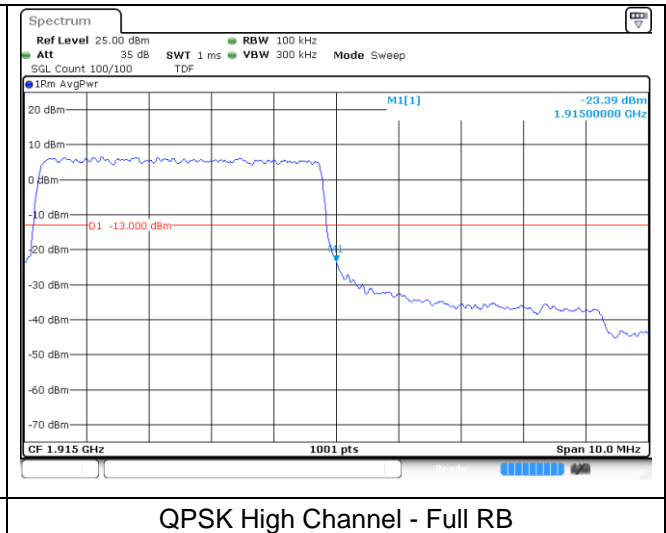
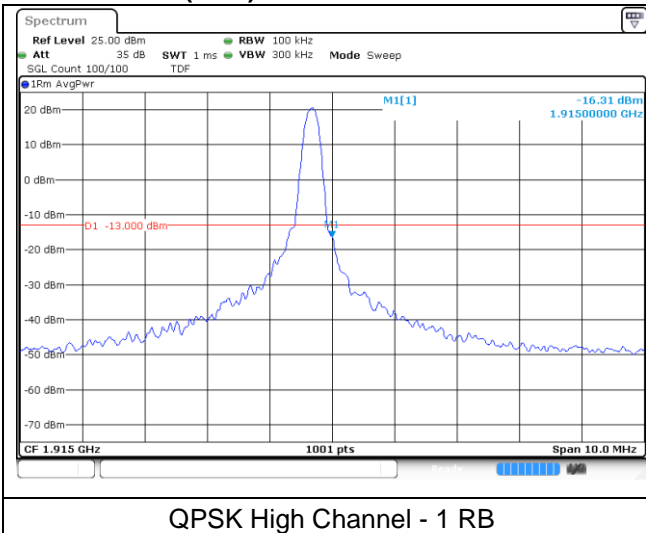
LTE band 25/2 (5 MHz)



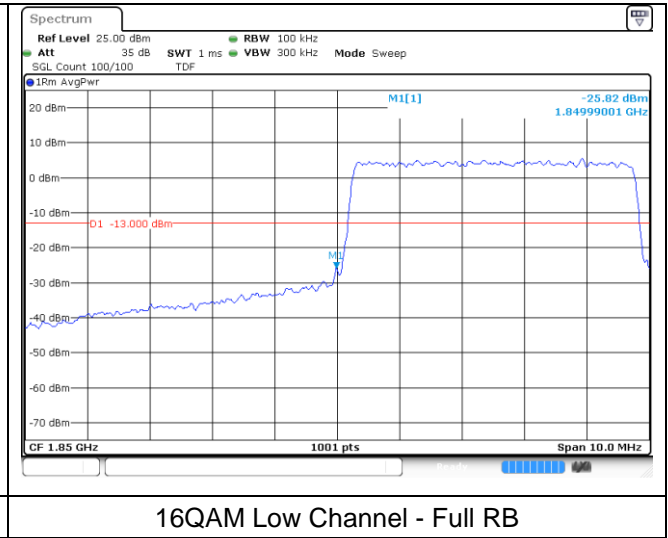
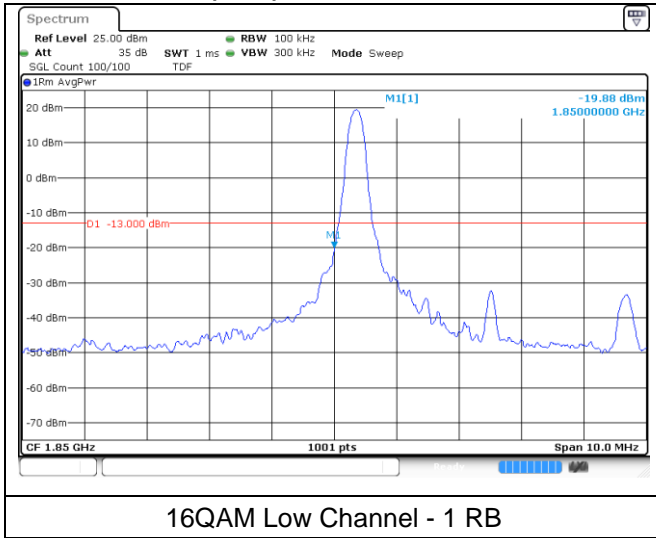
LTE band 2 (5 MHz)



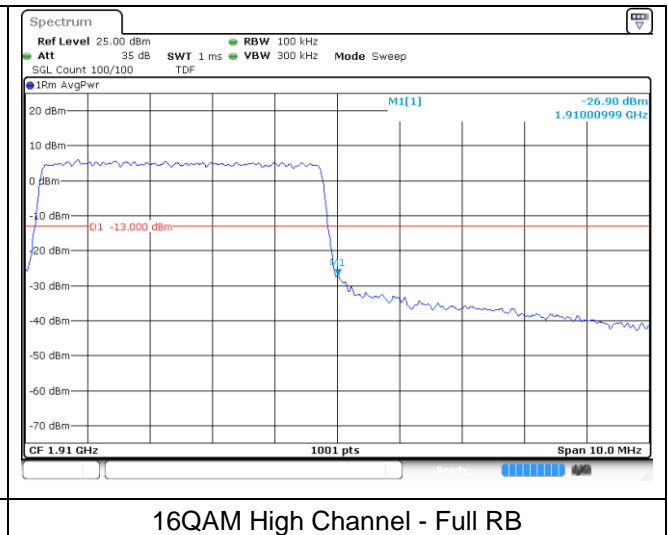
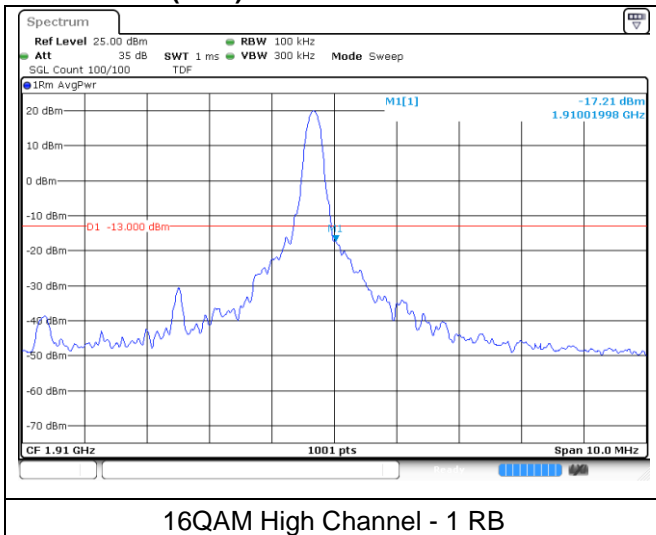
LTE band 25 (5 MHz)



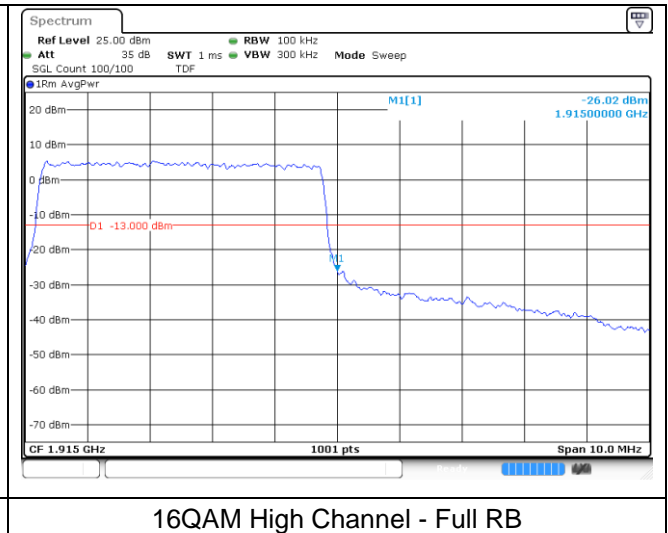
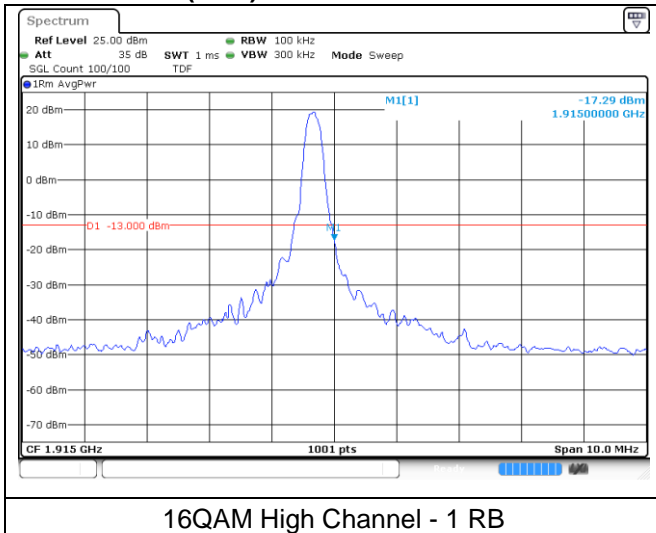
LTE band 25/2 (5 MHz)



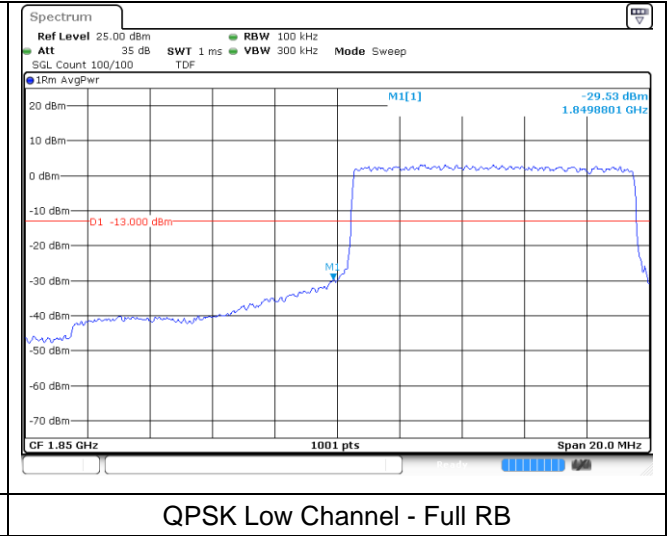
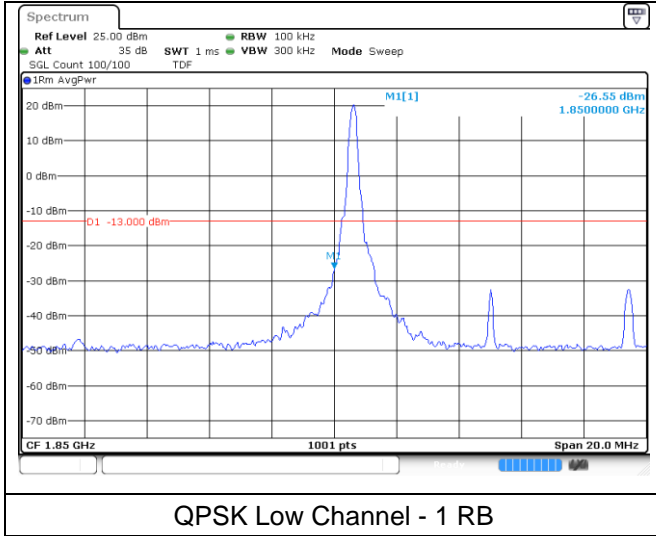
LTE band 2 (5 MHz)



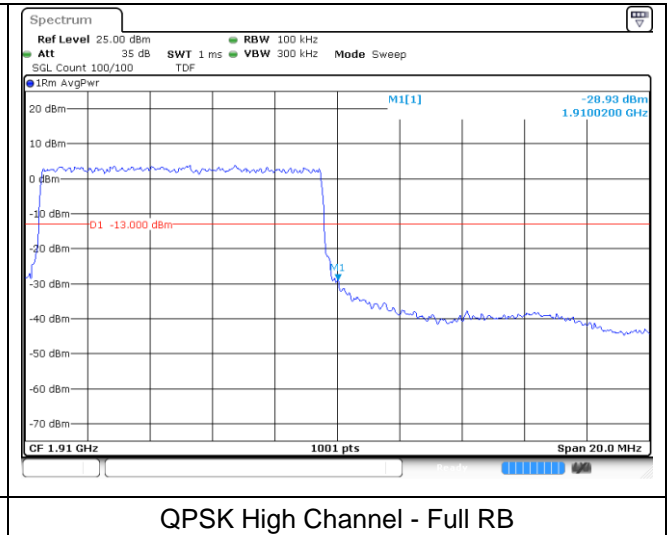
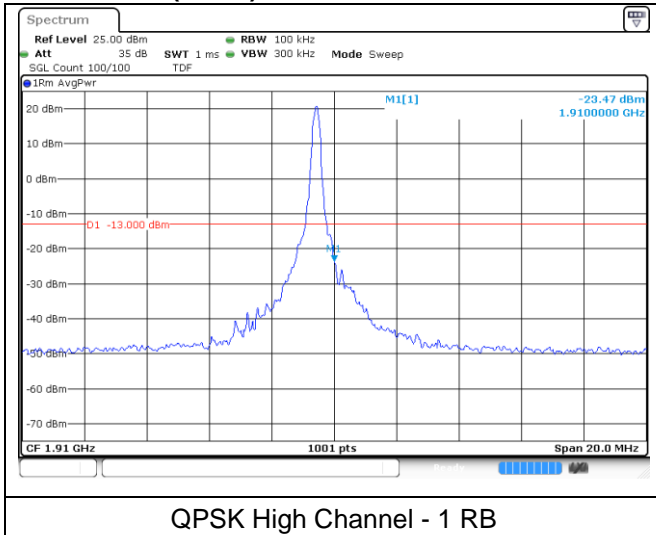
LTE band 25 (5 MHz)



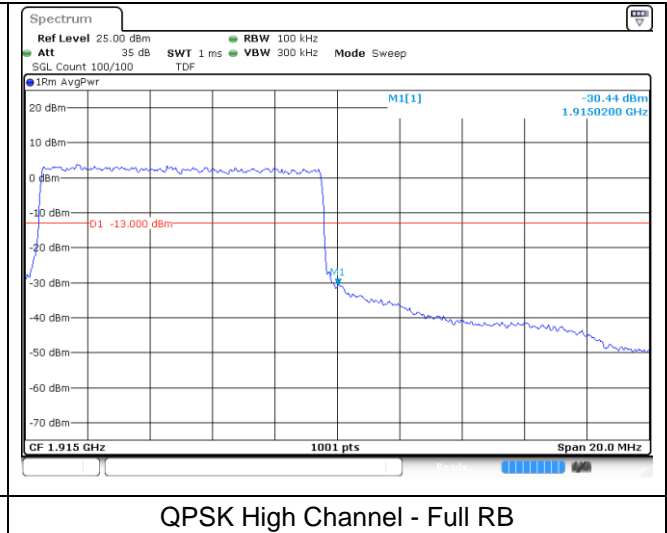
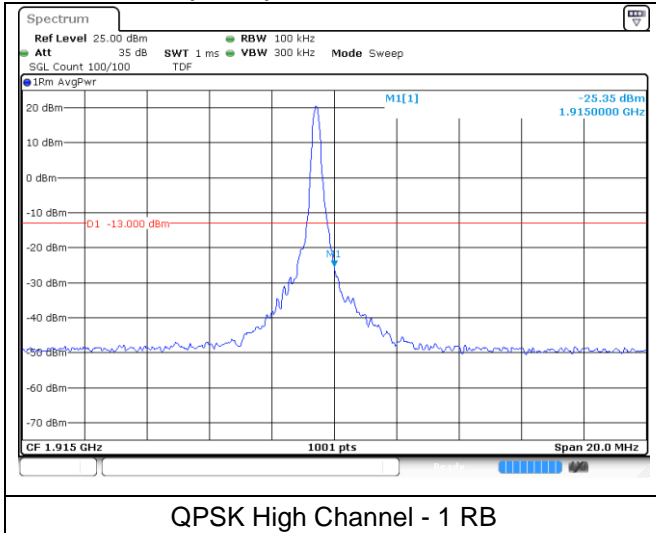
LTE band 25/2 (10 MHz)



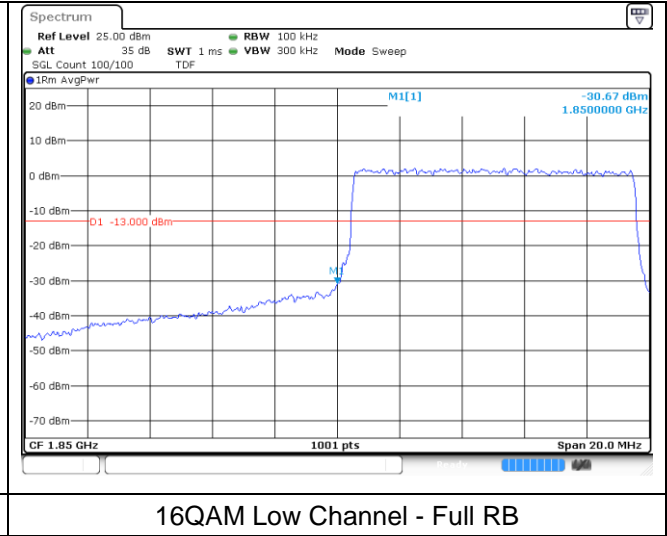
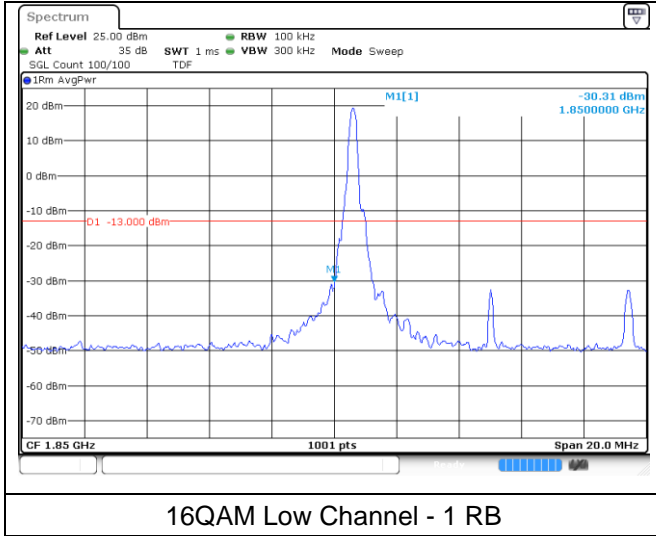
LTE band 2 (10 MHz)



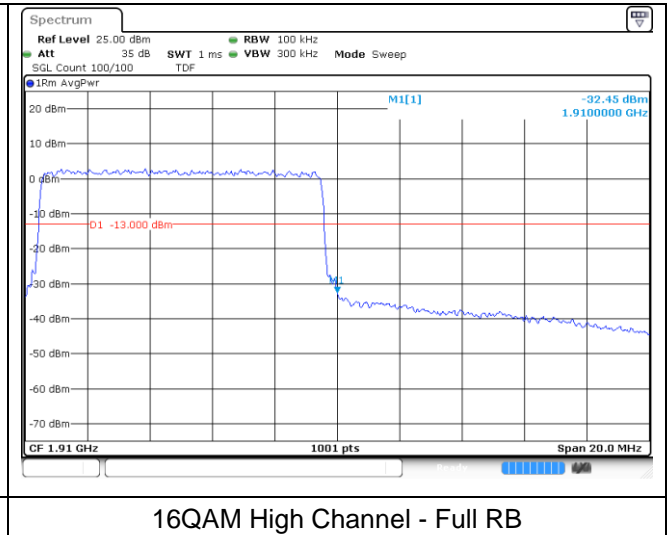
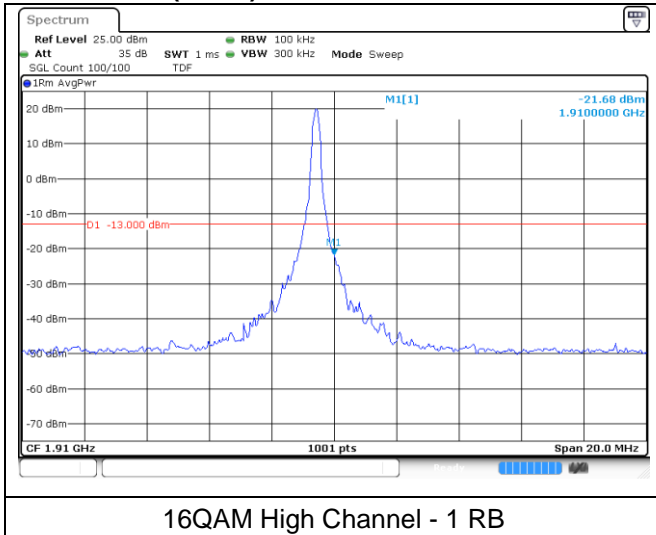
LTE band 25 (10 MHz)



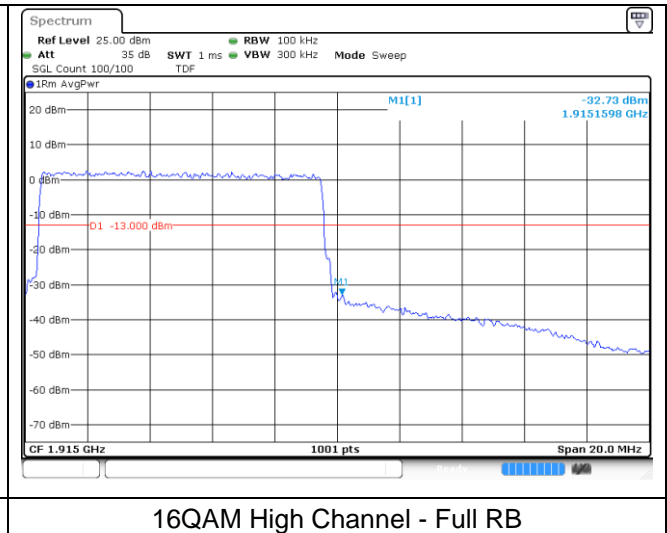
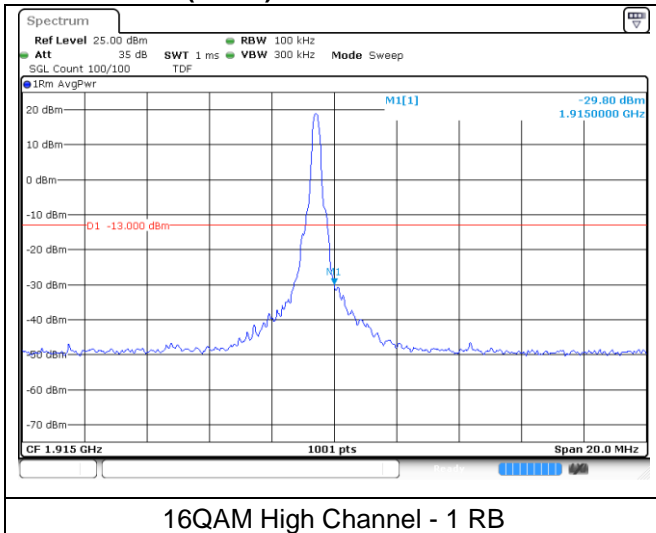
LTE band 25/2 (10 MHz)



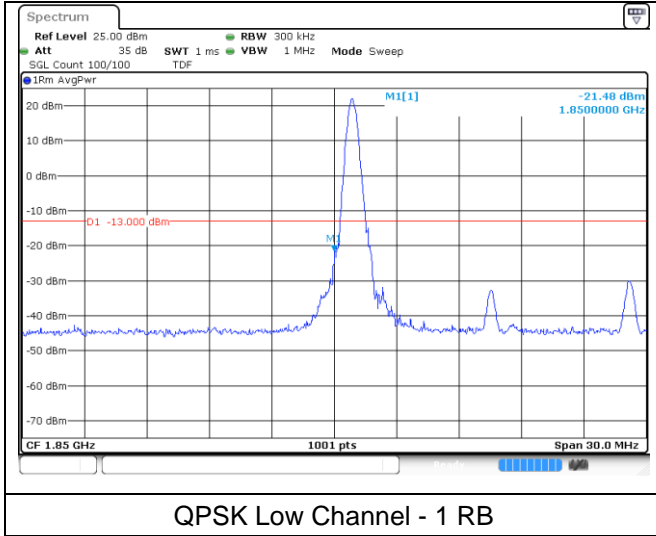
LTE band 2 (10 MHz)



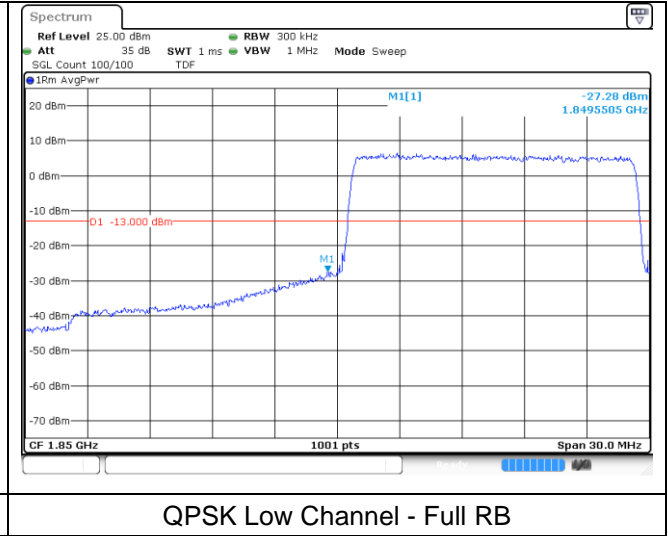
LTE band 25 (10 MHz)



LTE band 25/2 (15 MHz)

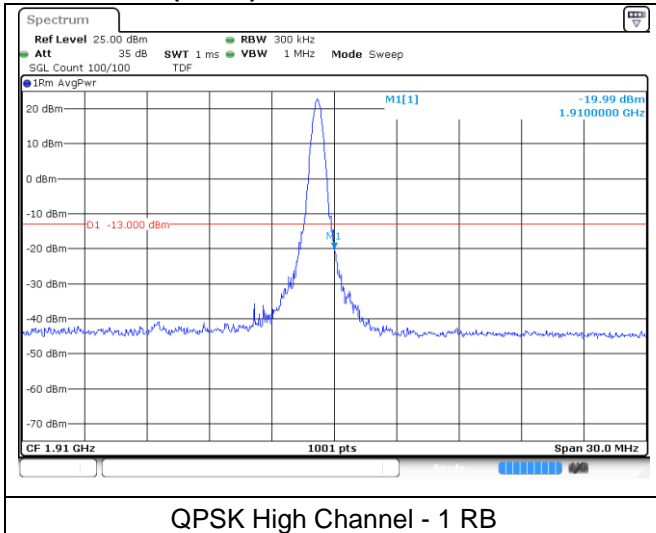


QPSK Low Channel - 1 RB

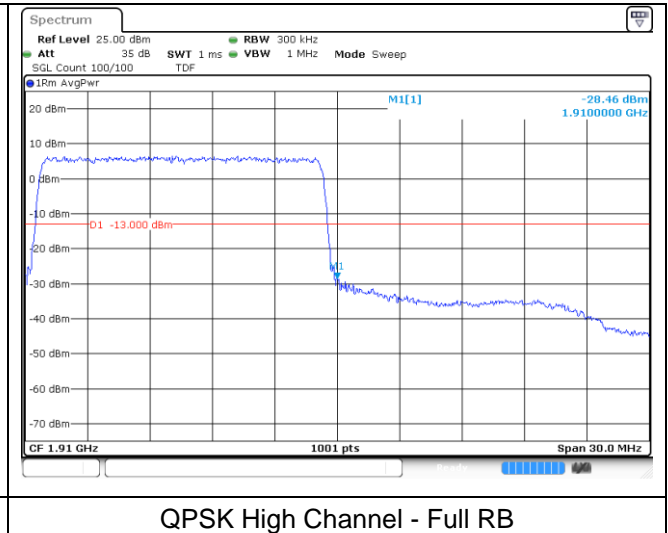


QPSK Low Channel - Full RB

LTE band 2 (15 MHz)

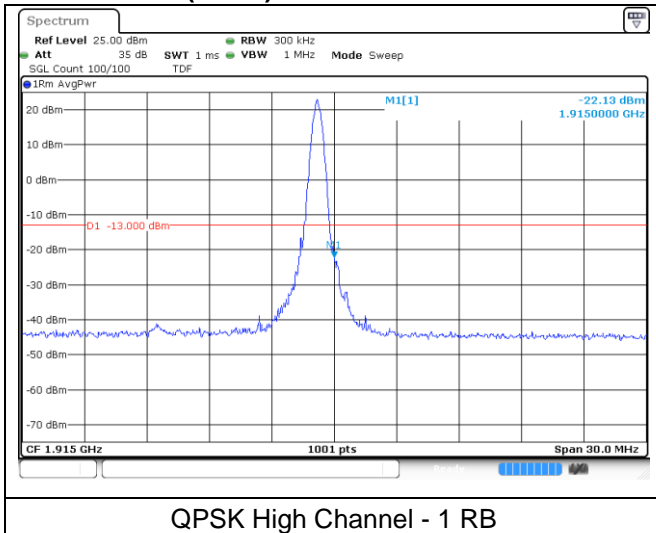


QPSK High Channel - 1 RB

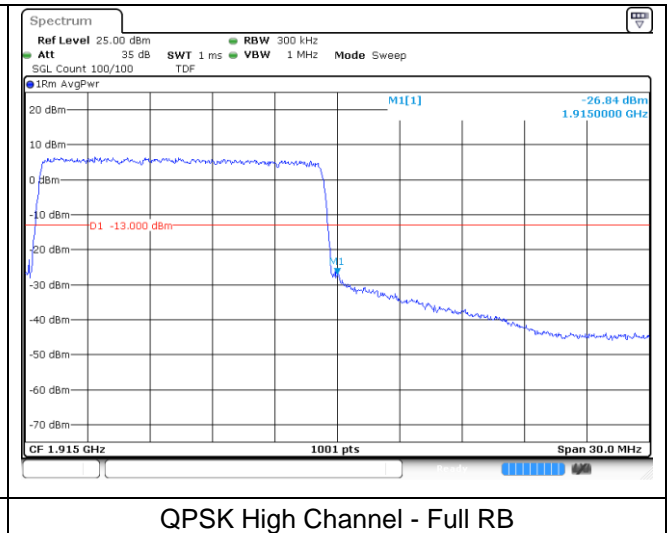


QPSK High Channel - Full RB

LTE band 25 (15 MHz)

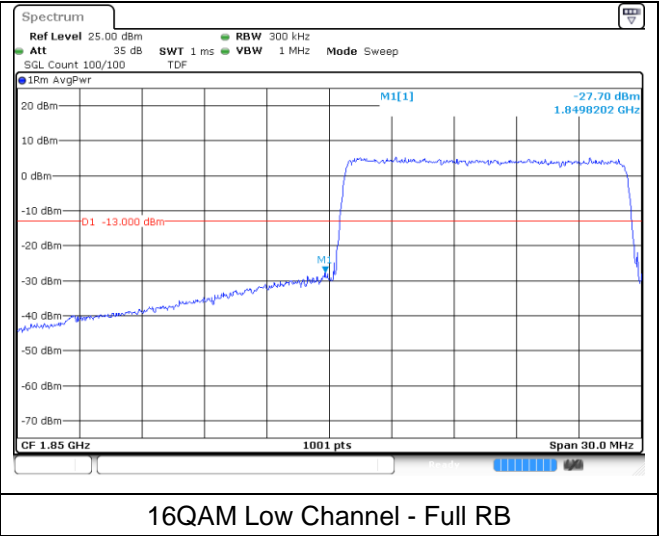
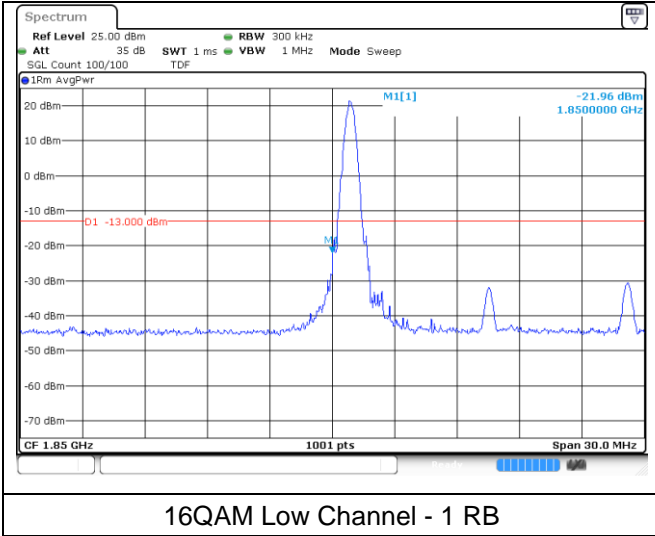


QPSK High Channel - 1 RB

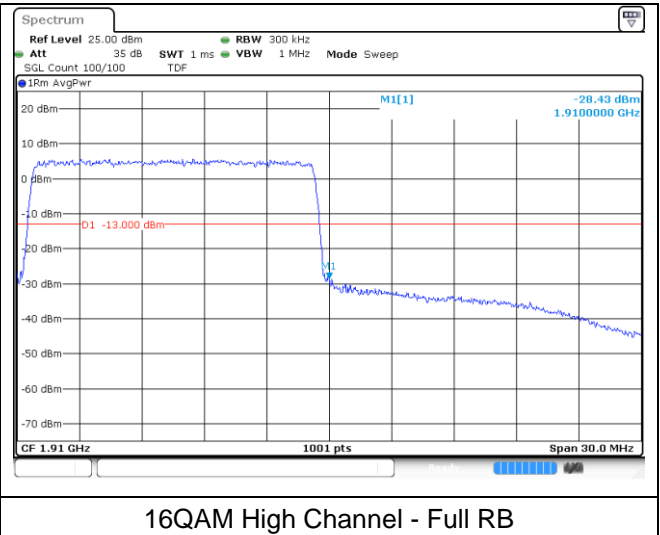
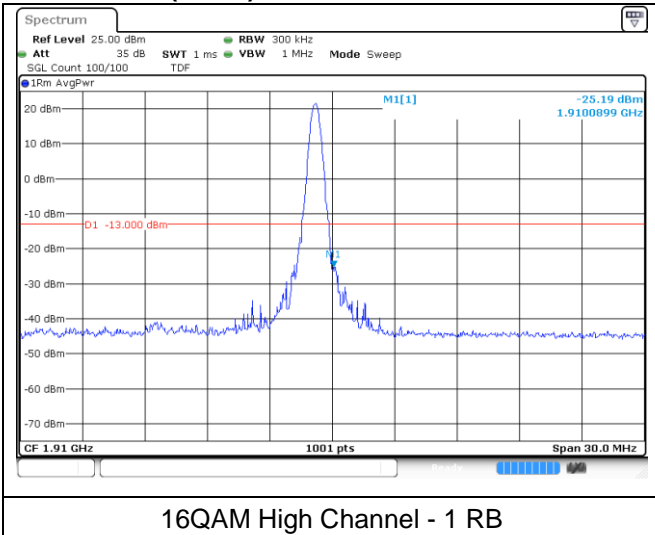


QPSK High Channel - Full RB

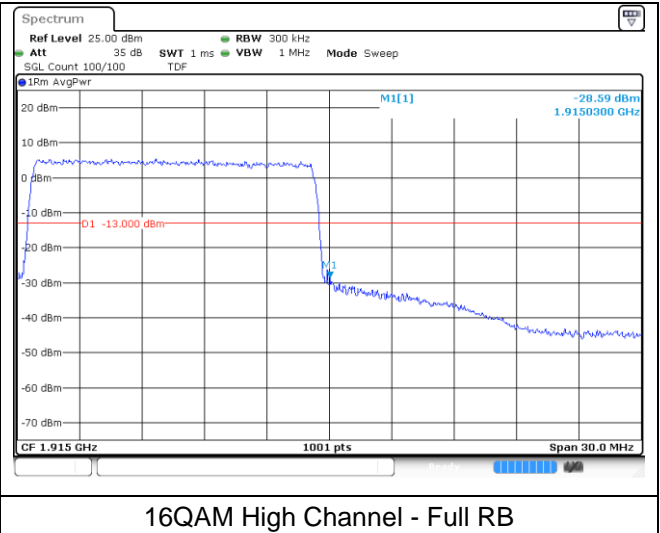
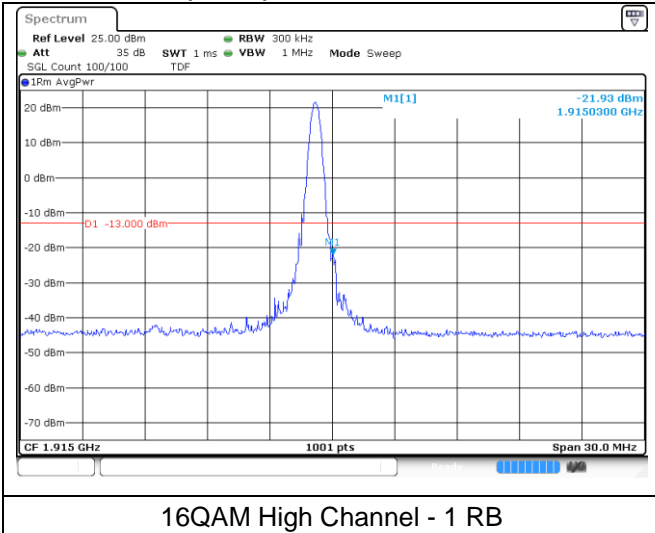
LTE band 25/2 (15 MHz)



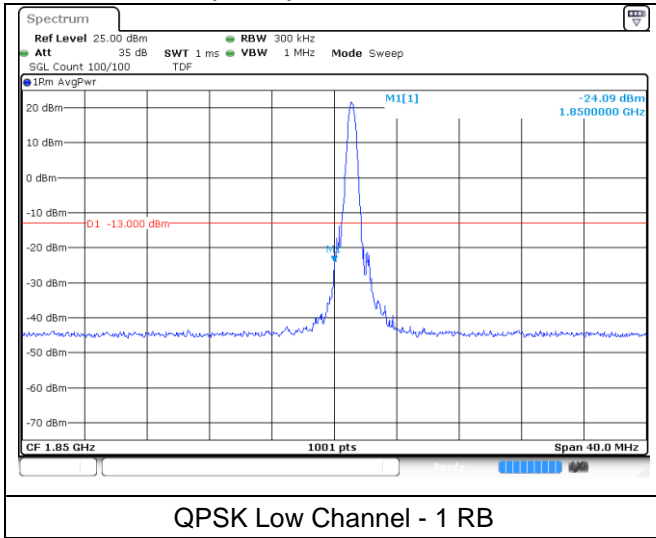
LTE band 2 (15 MHz)



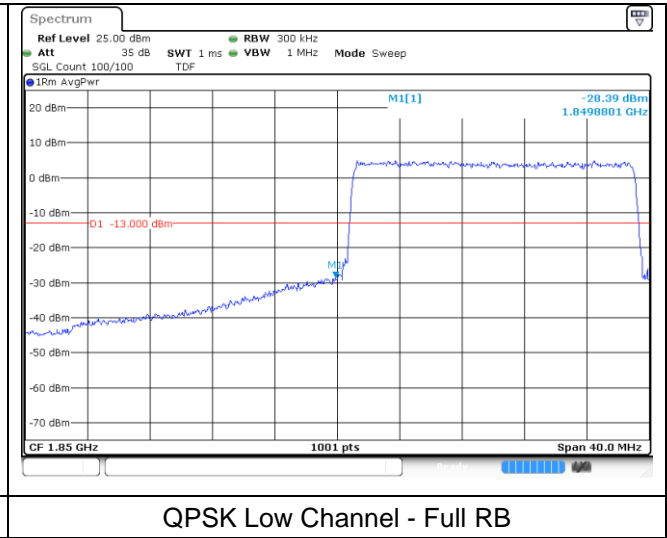
LTE band 25 (15 MHz)



LTE band 25/2 (20 MHz)

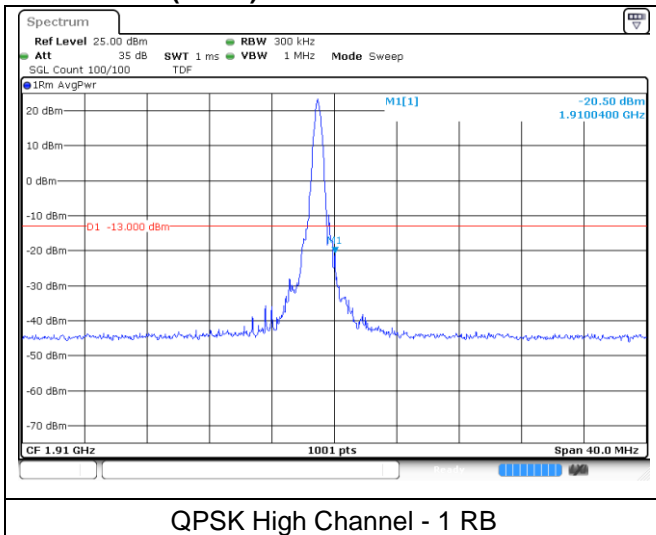


QPSK Low Channel - 1 RB

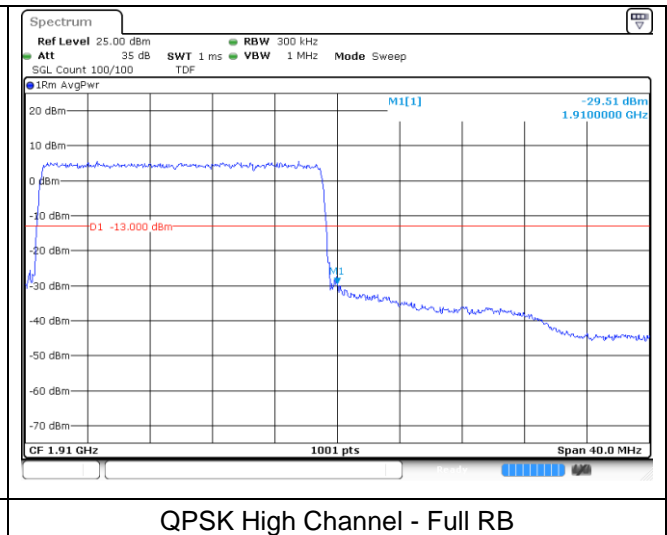


QPSK Low Channel - Full RB

LTE band 2 (20 MHz)

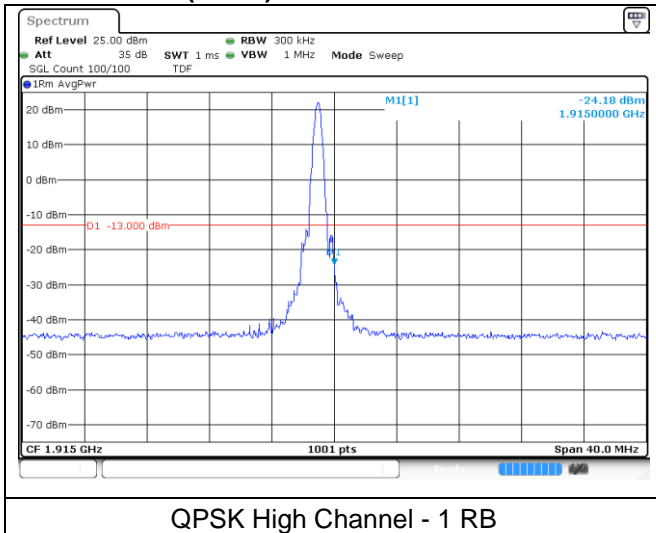


QPSK High Channel - 1 RB

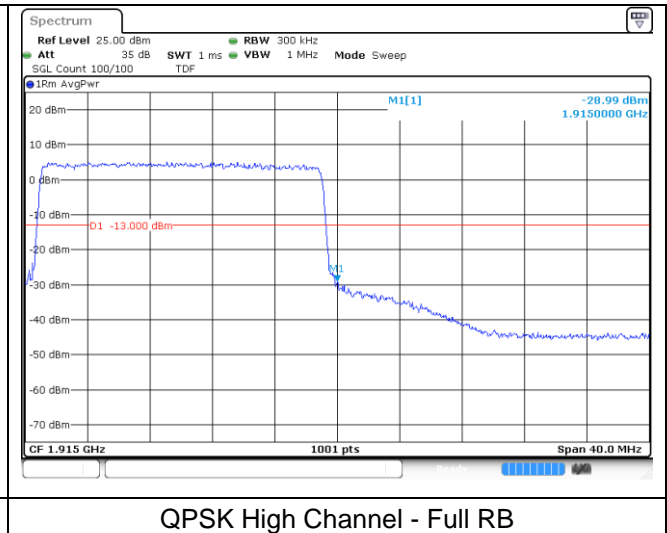


QPSK High Channel - Full RB

LTE band 25 (20 MHz)

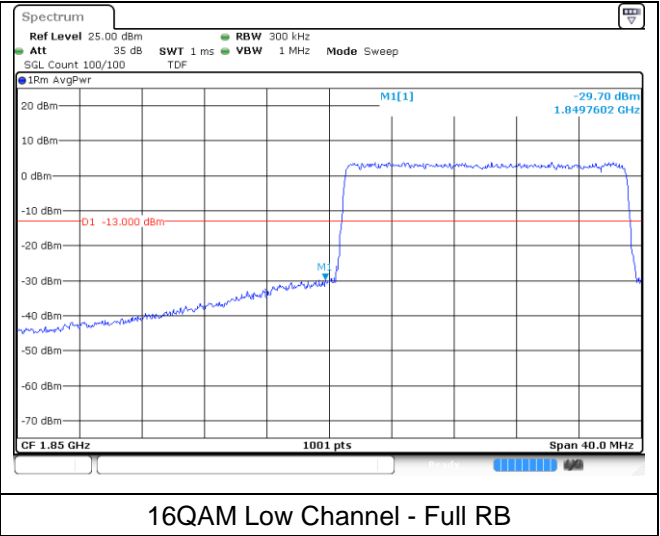
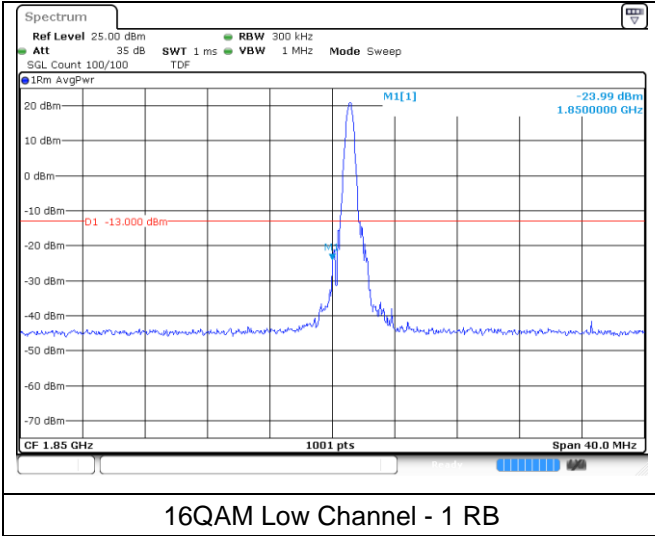


QPSK High Channel - 1 RB

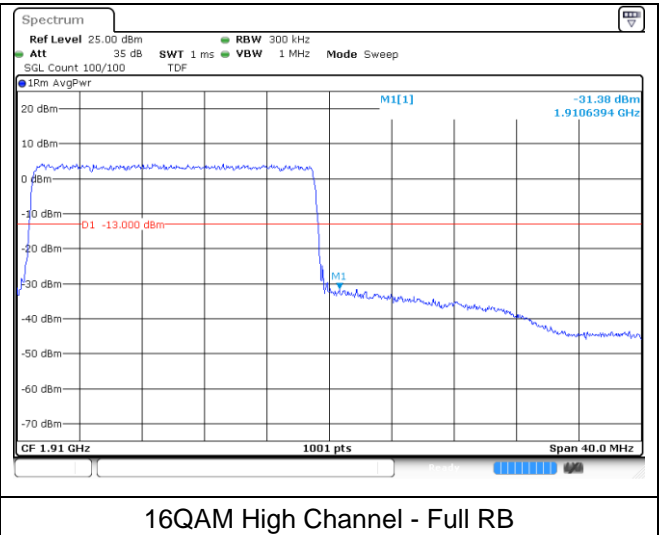
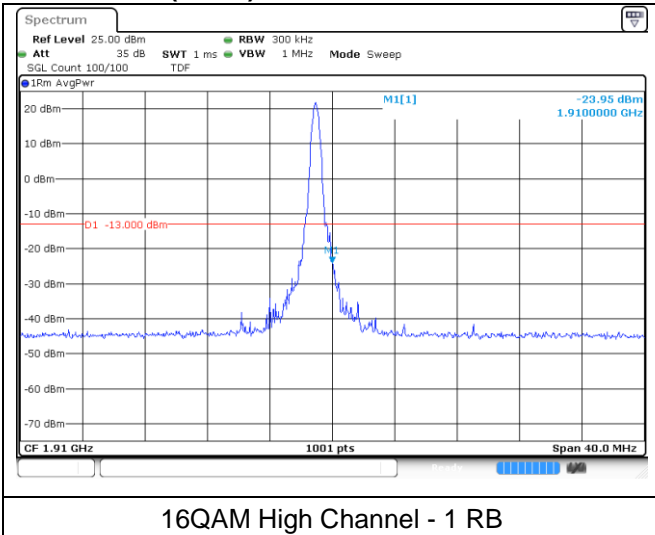


QPSK High Channel - Full RB

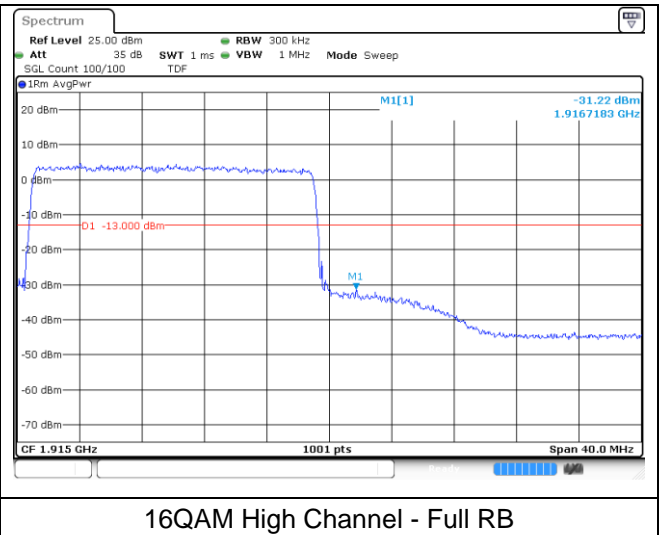
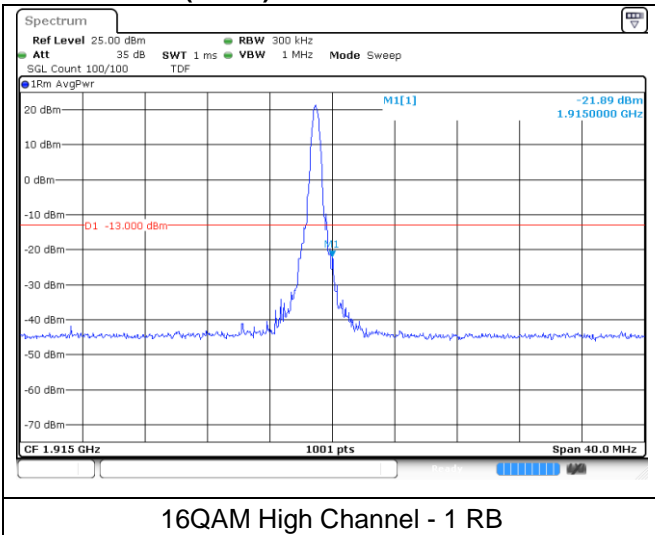
LTE band 25/2 (20 MHz)



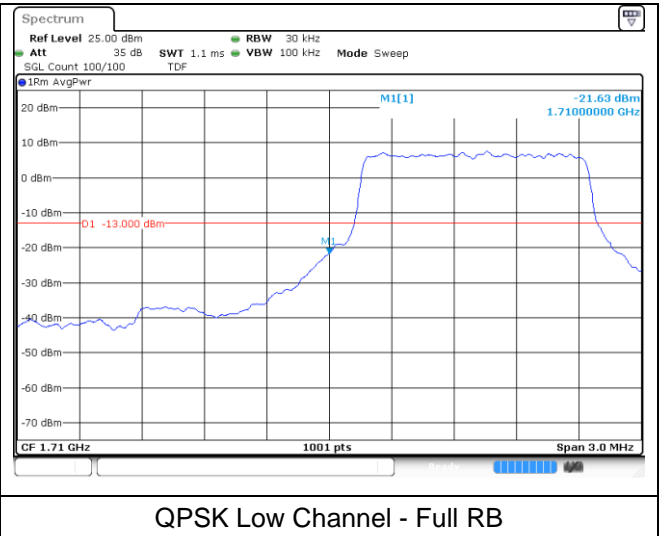
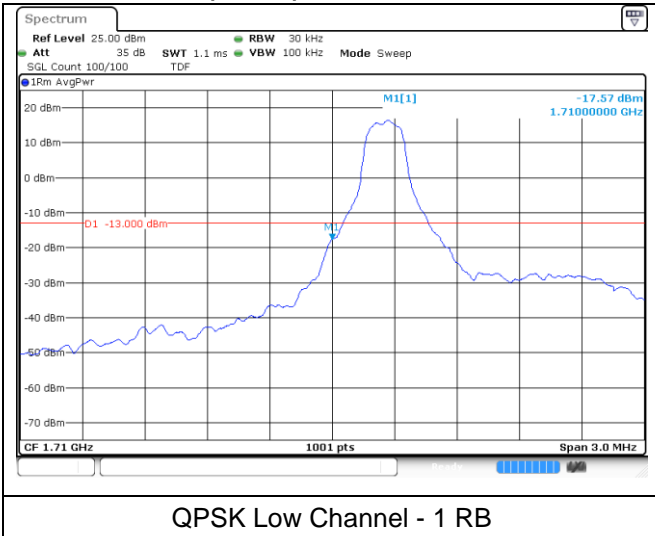
LTE band 2 (20 MHz)



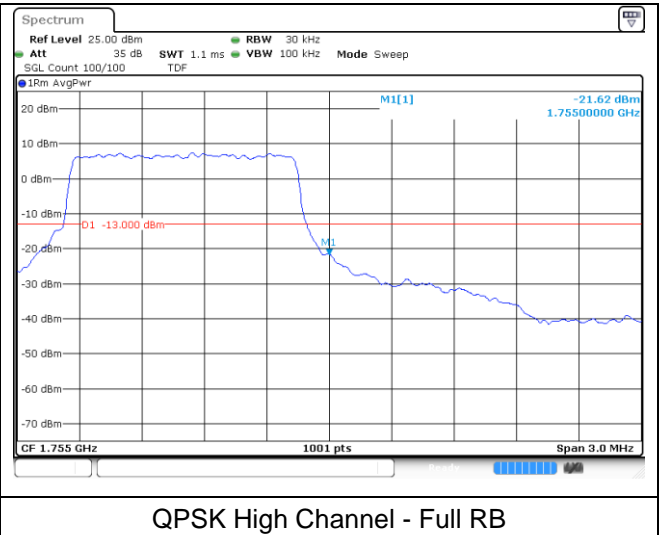
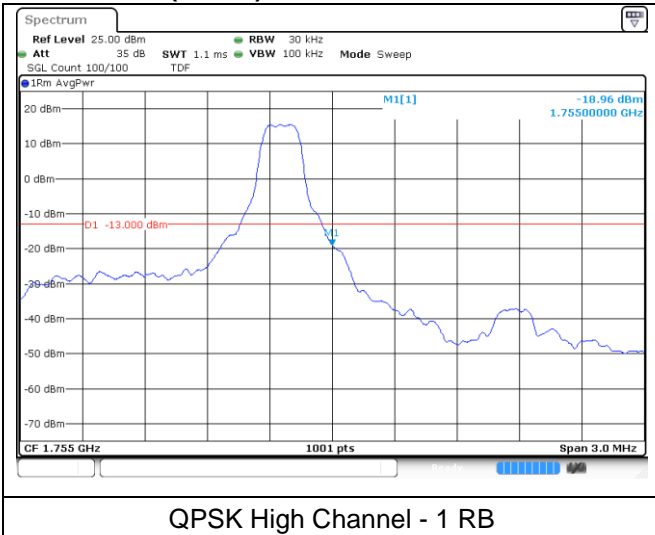
LTE band 25 (20 MHz)



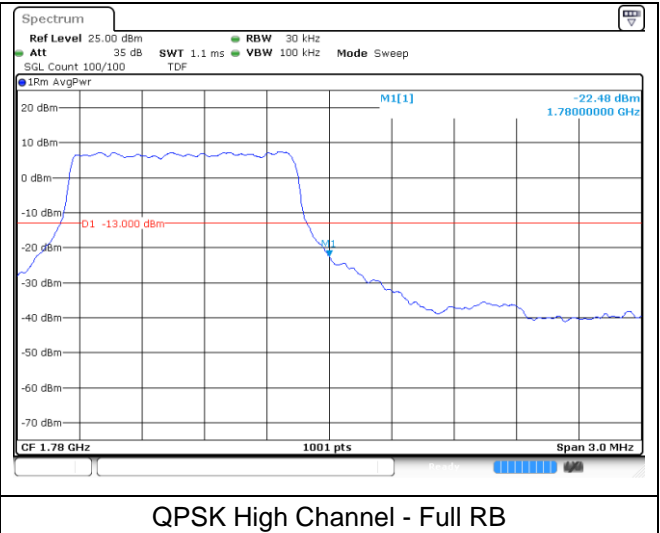
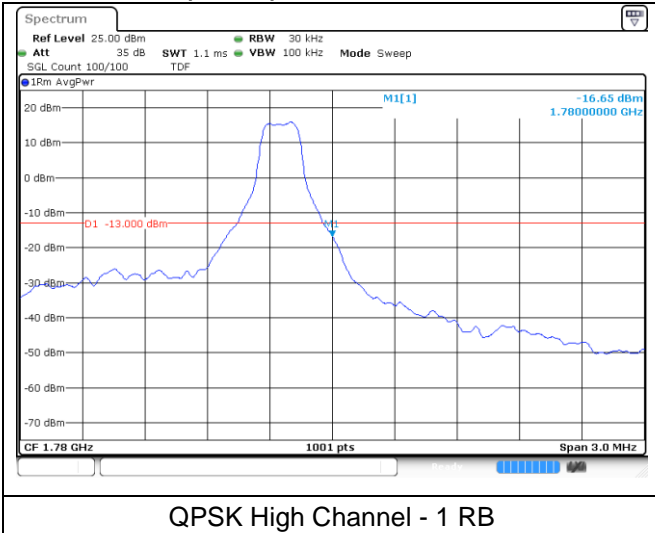
LTE band 66/4 (1.4 MHz)



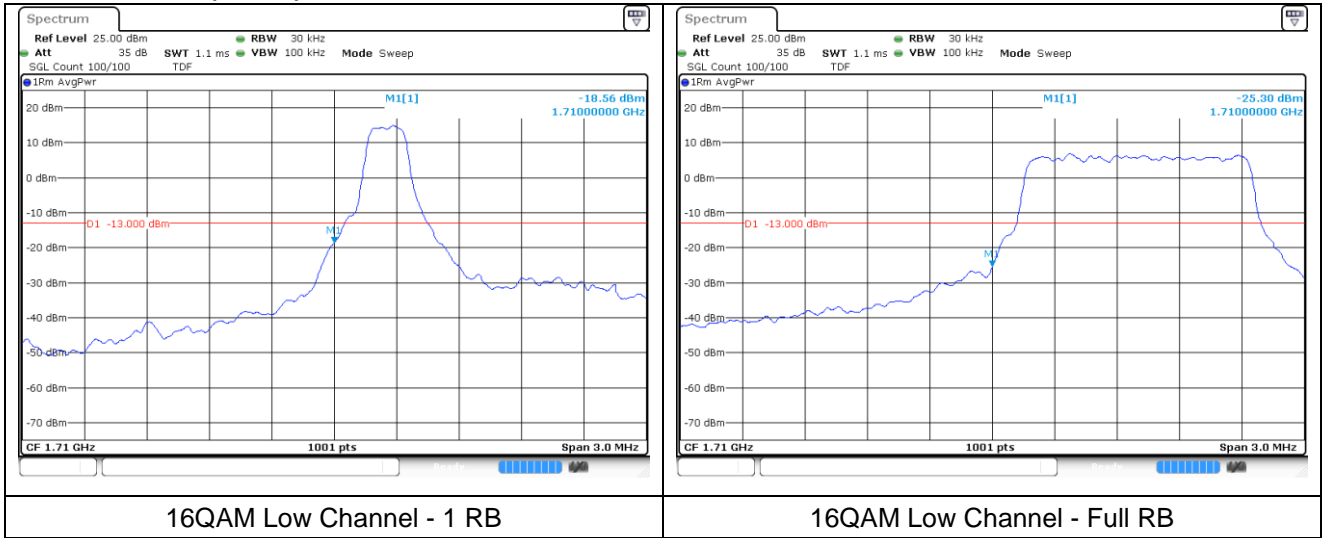
LTE band 4 (1.4 MHz)



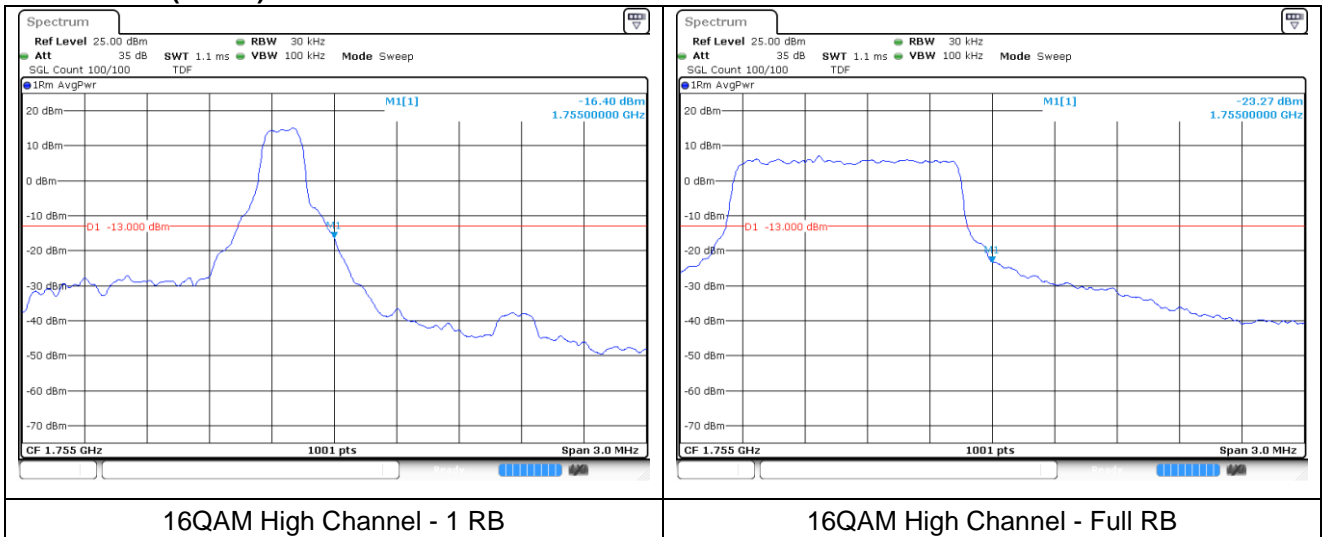
LTE band 66 (1.4 MHz)



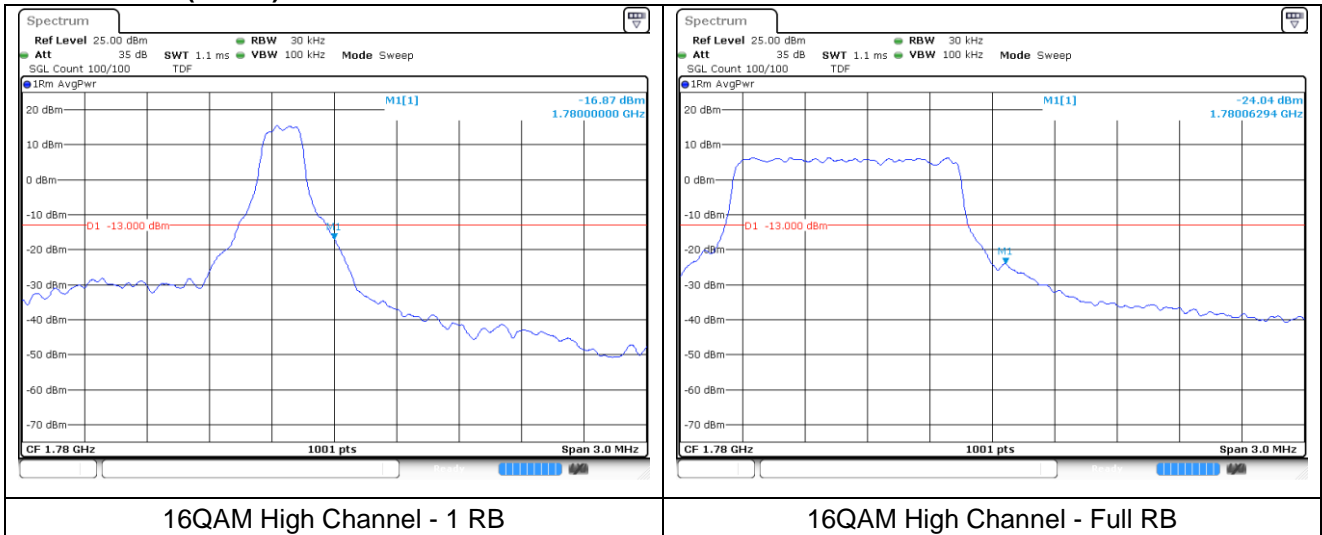
LTE band 66/4 (1.4 MHz)



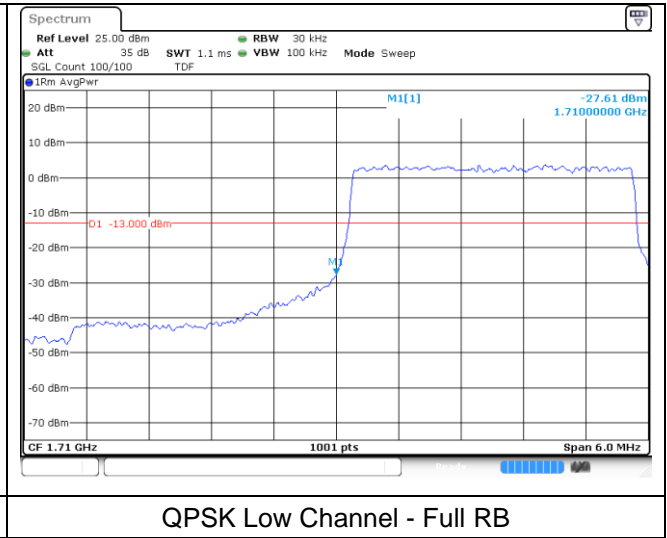
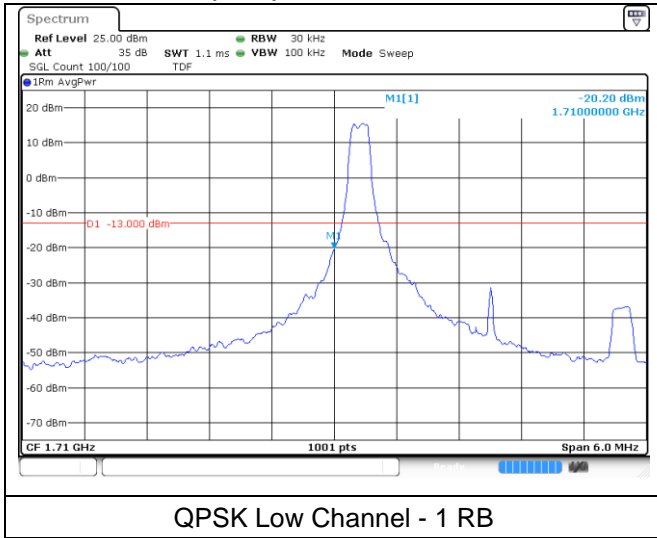
LTE band 4 (1.4 MHz)



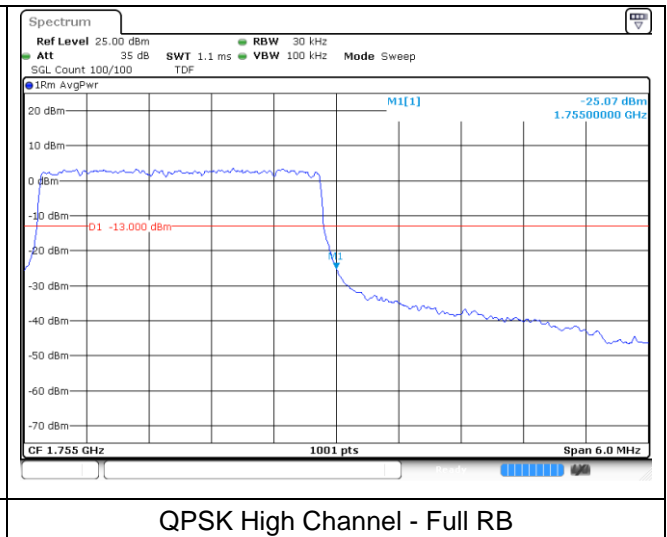
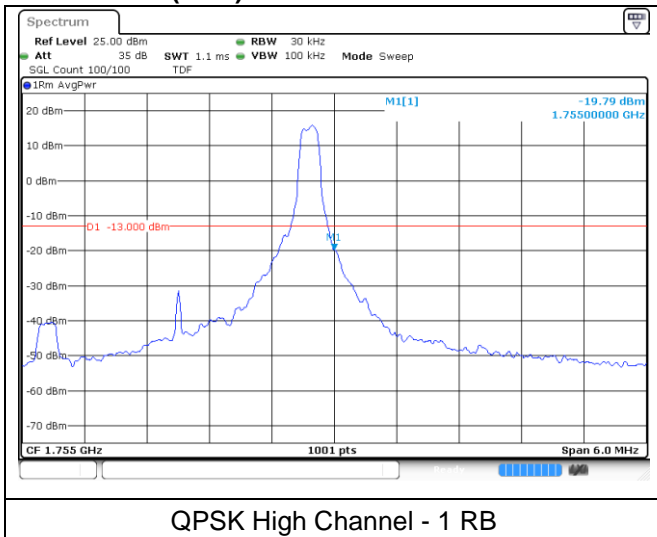
LTE band 66 (1.4 MHz)



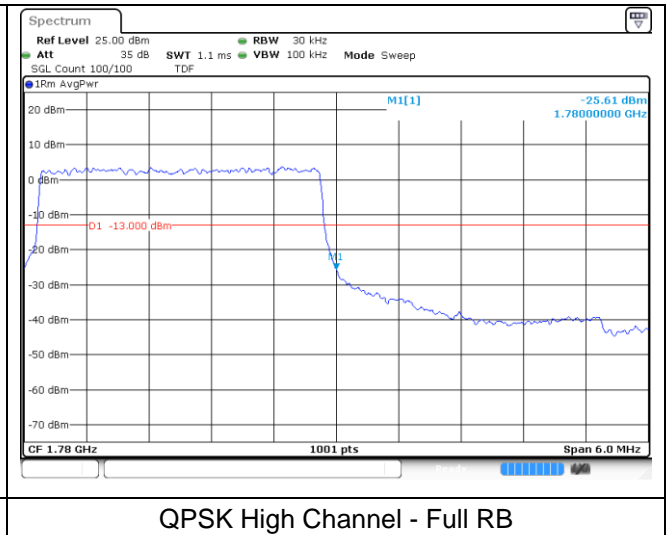
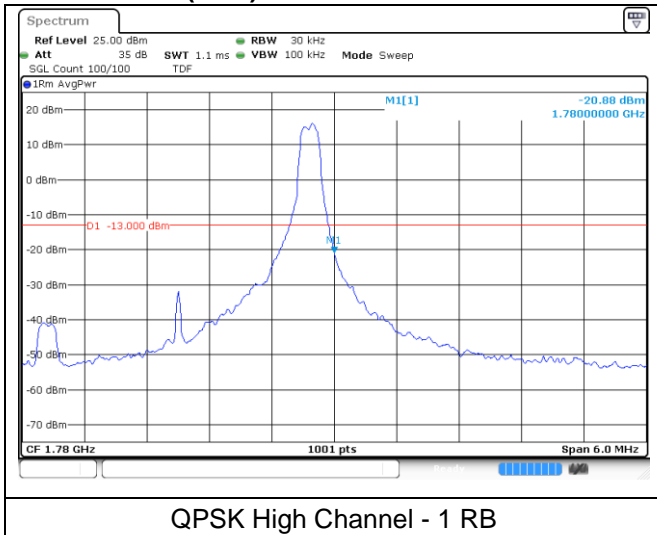
LTE band 66/4 (3 MHz)



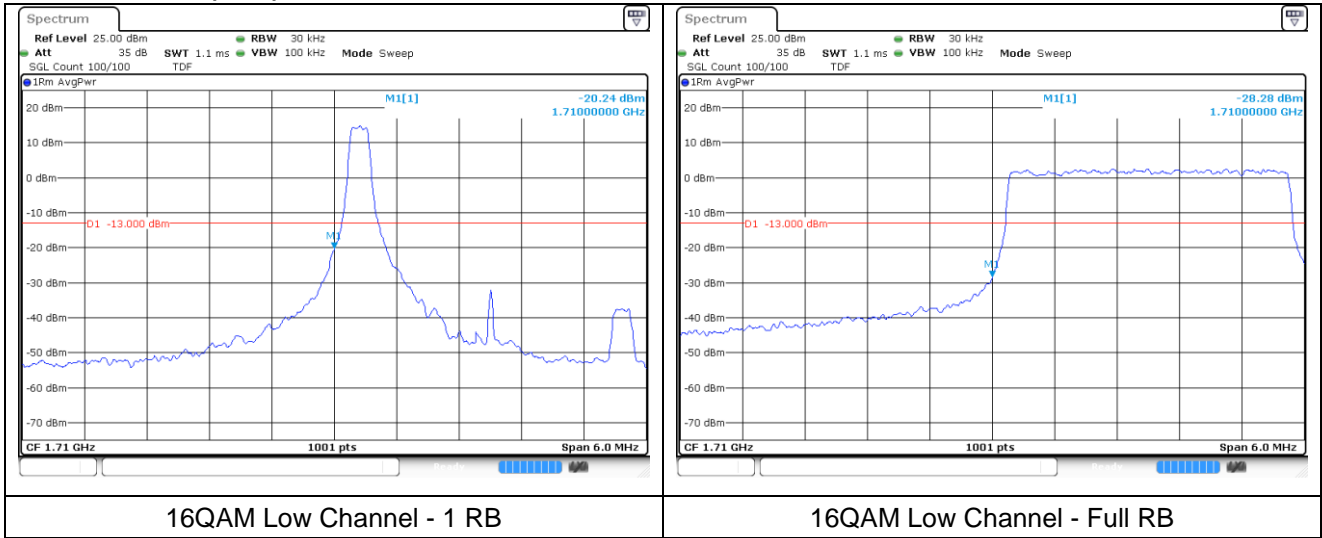
LTE band 4 (3 MHz)



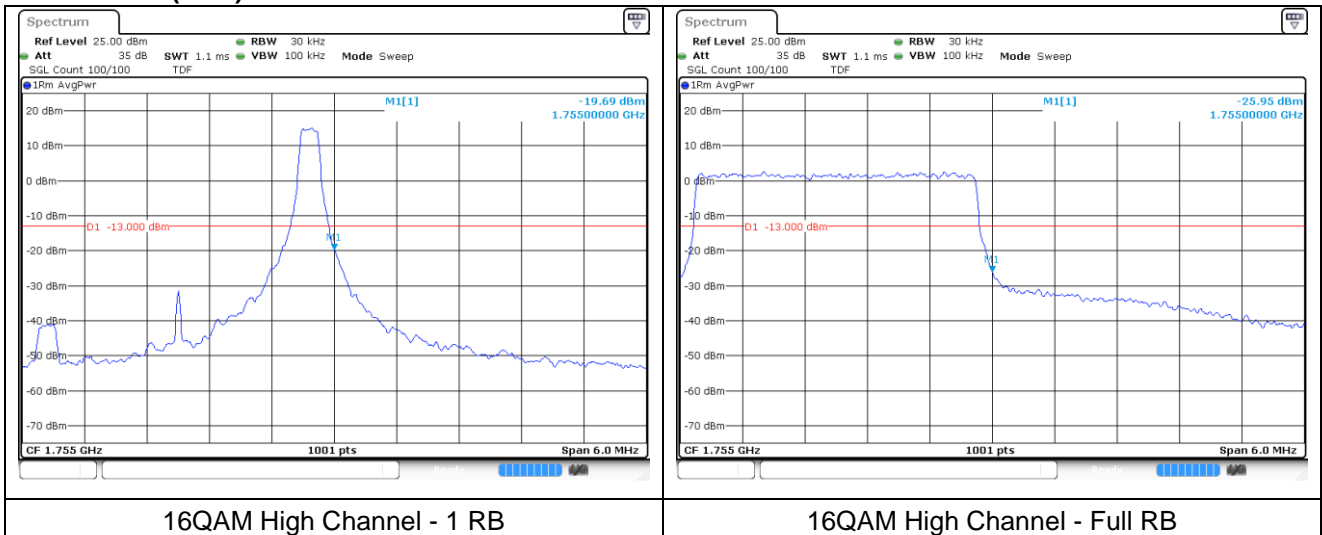
LTE band 66 (3 MHz)



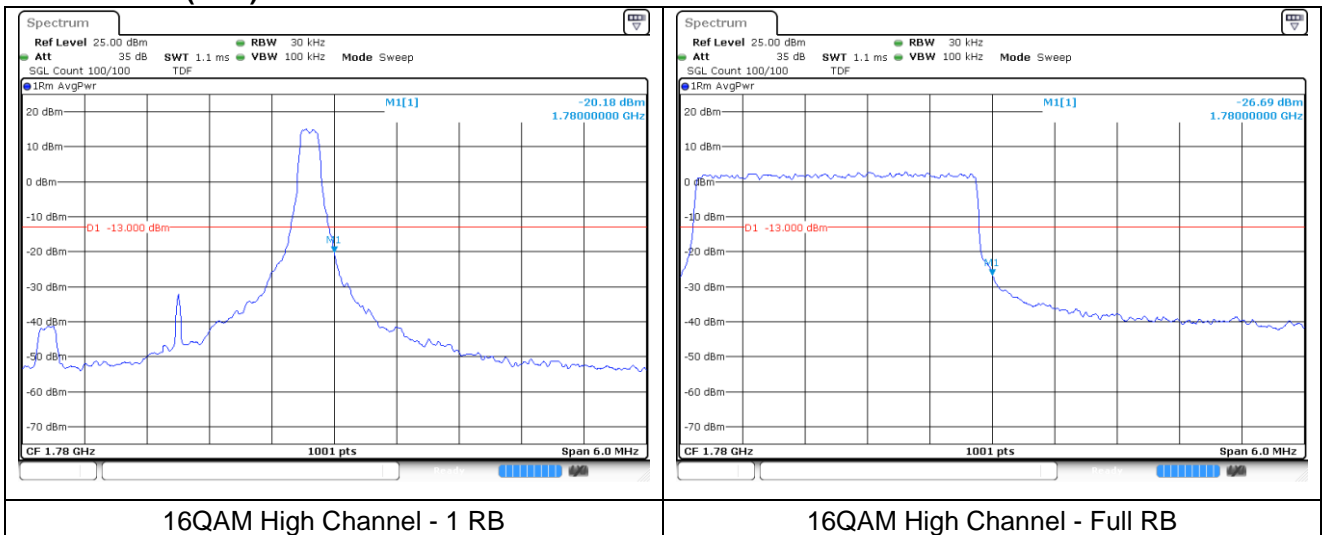
LTE band 66/4 (3 MHz)



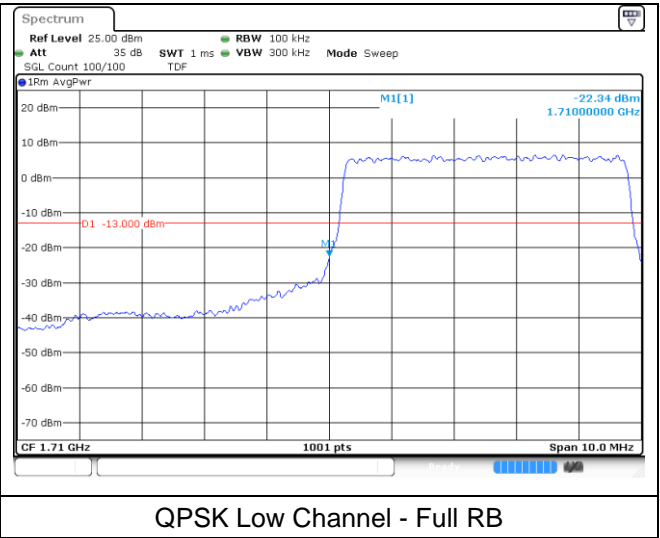
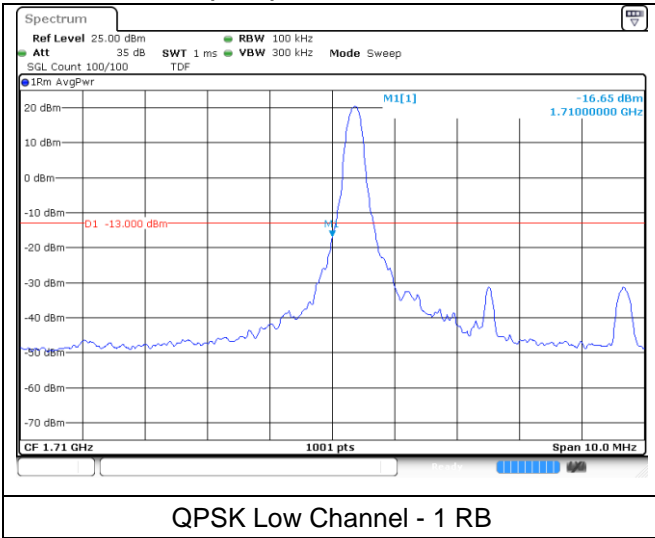
LTE band 4 (3 MHz)



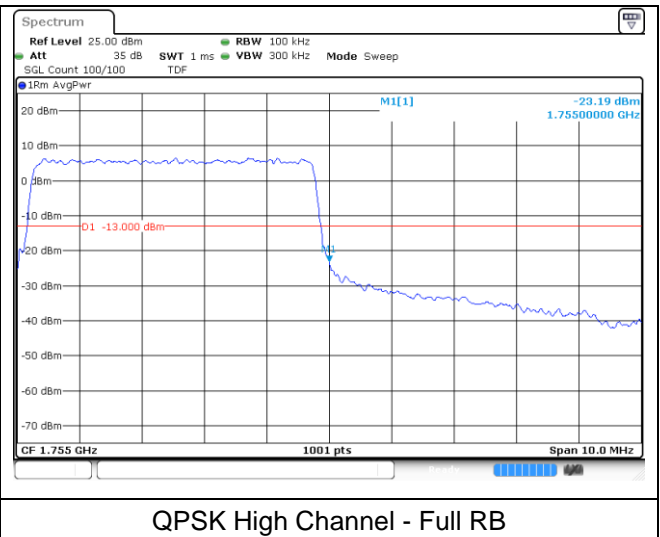
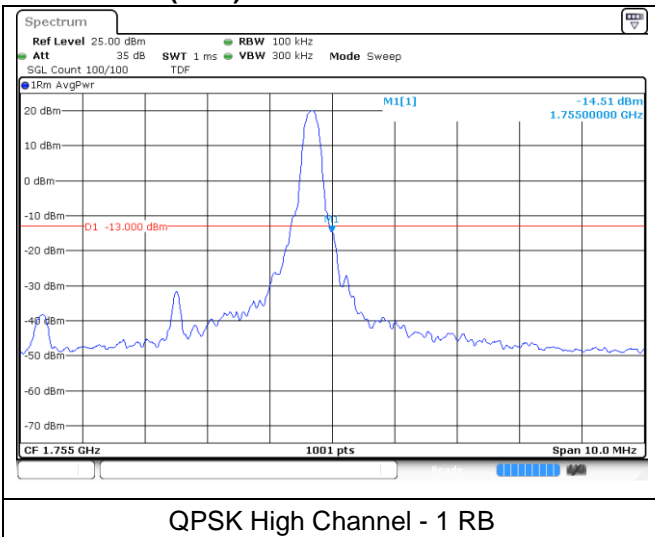
LTE band 66 (3 MHz)



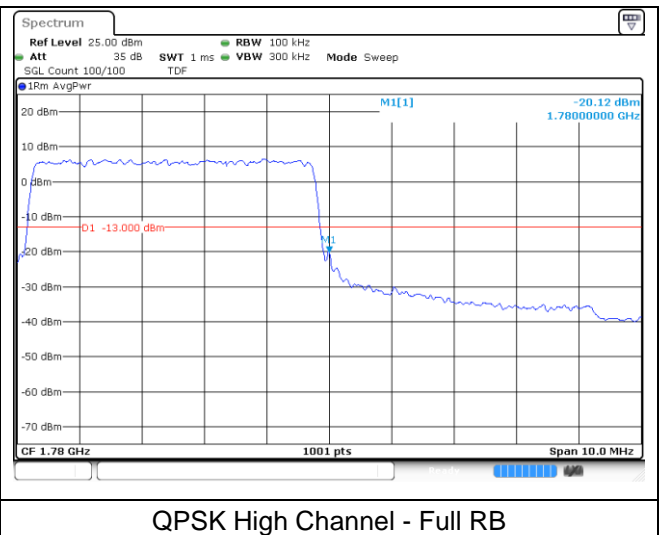
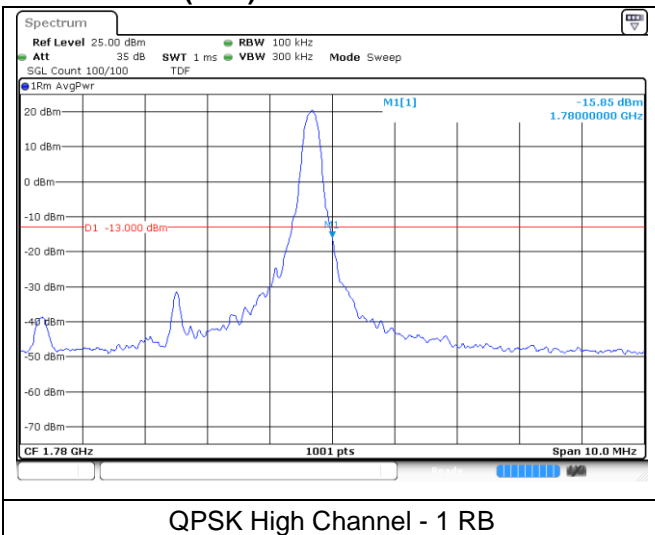
LTE band 66/4 (5 MHz)



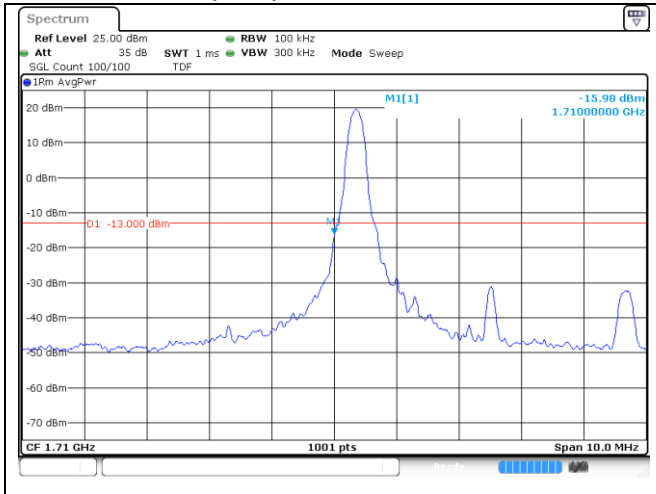
LTE band 4 (5 MHz)



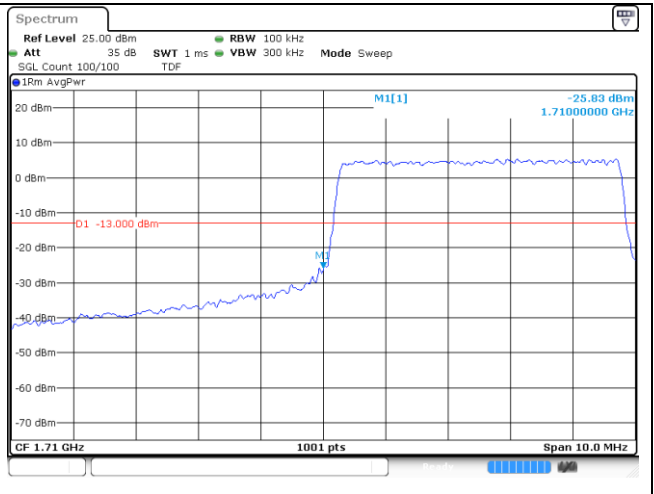
LTE band 66 (5 MHz)



LTE band 66/4 (5 MHz)

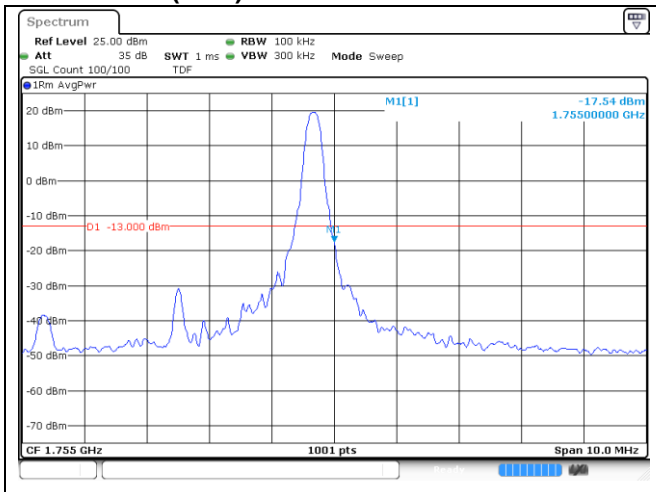


16QAM Low Channel - 1 RB

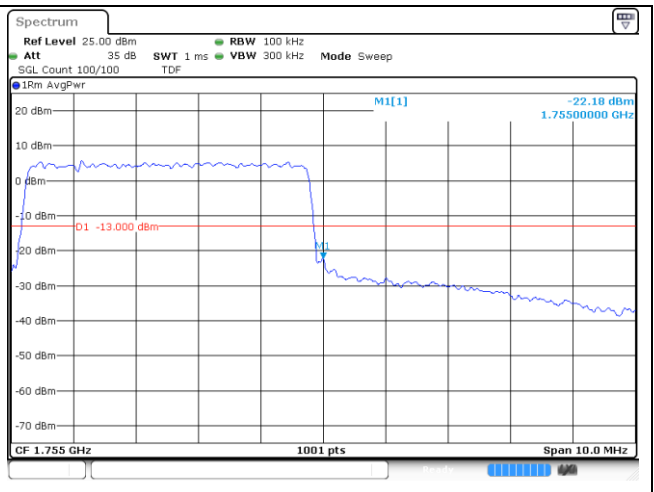


16QAM Low Channel - Full RB

LTE band 4 (5 MHz)

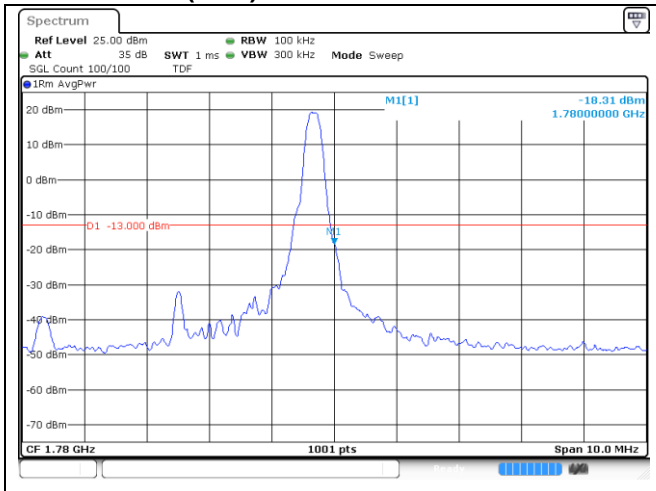


16QAM High Channel - 1 RB

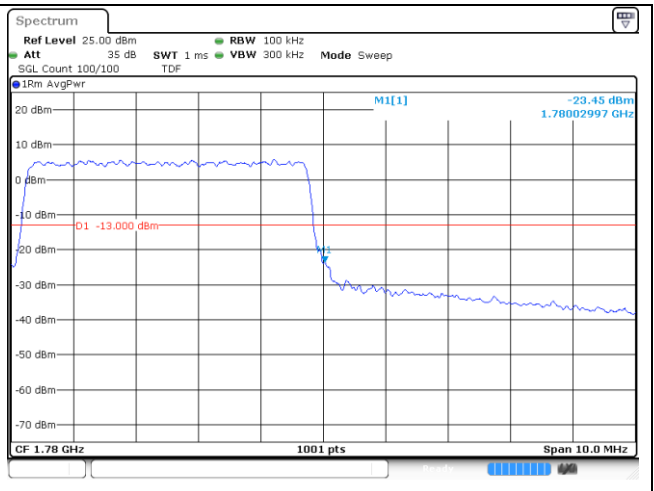


16QAM High Channel - Full RB

LTE band 66 (5 MHz)



16QAM High Channel - 1 RB



16QAM High Channel - Full RB