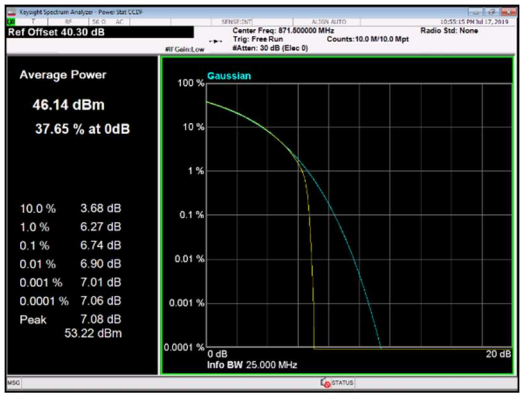
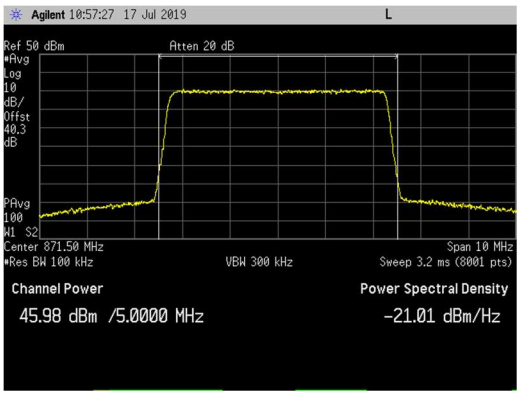
LTE5 Channel Power Plots for Antenna Port 2 and 256QAM Modulation:

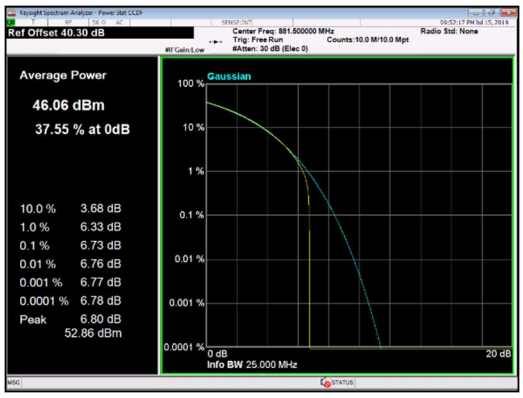
Bottom Channel_ CCDF



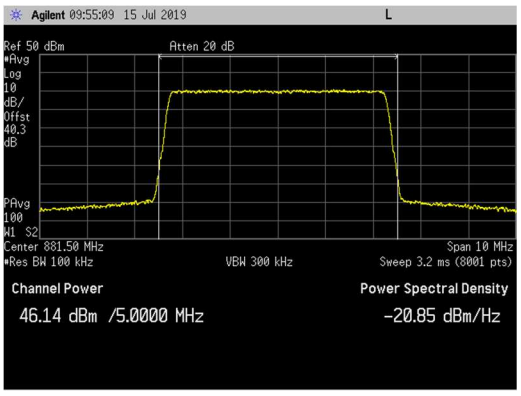
Bottom Channel_ Average



Middle Channel_ CCDF

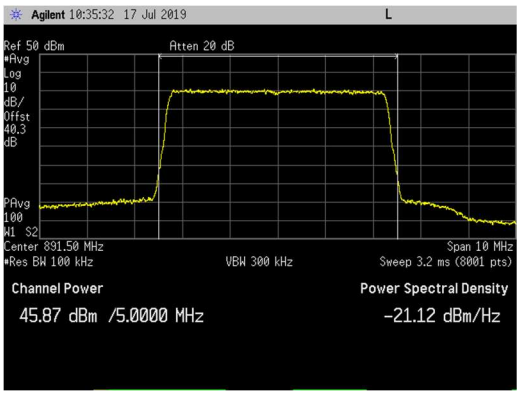


Middle Channel_ Average



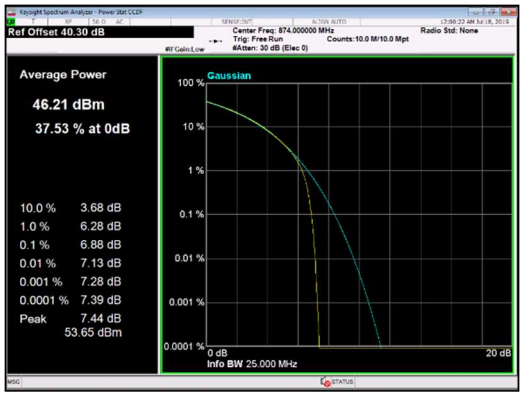
Top Channel_ CCDF

Top Channel_ Average

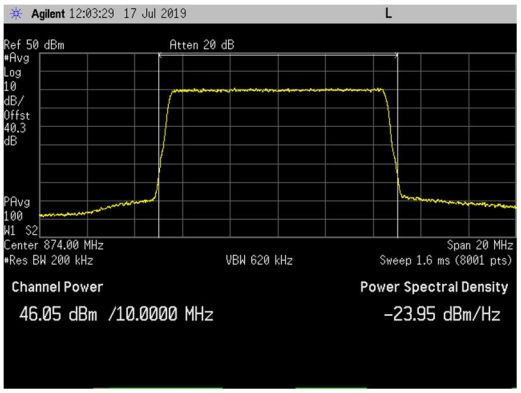


LTE10 Channel Power Plots for Antenna Port 2 and 256QAM Modulation:

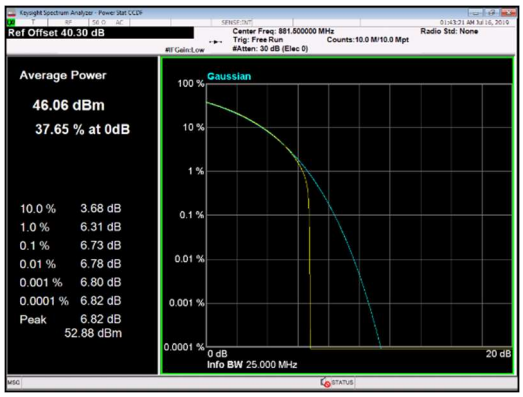
Bottom Channel_ CCDF



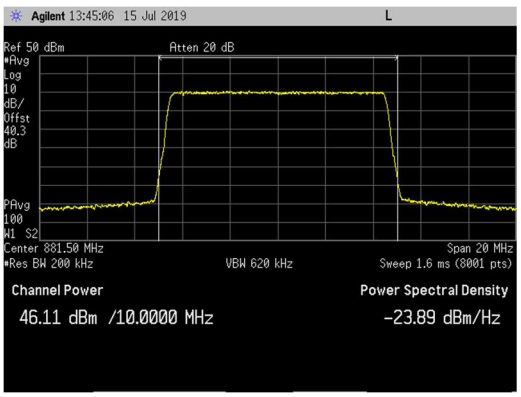
Bottom Channel_ Average



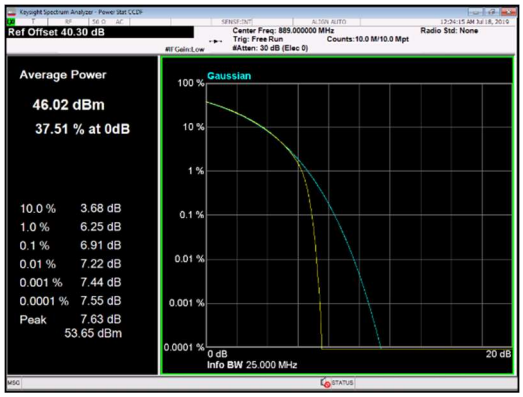
Middle Channel_ CCDF



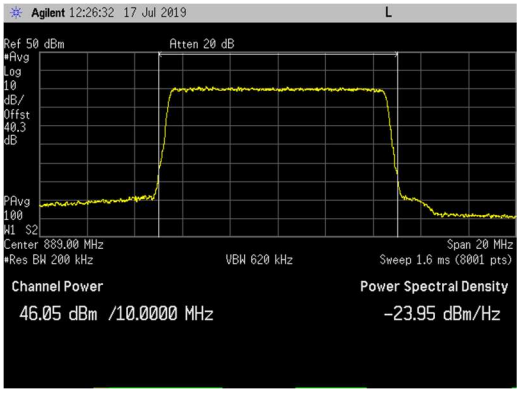
Middle Channel_ Average



Top Channel_ CCDF

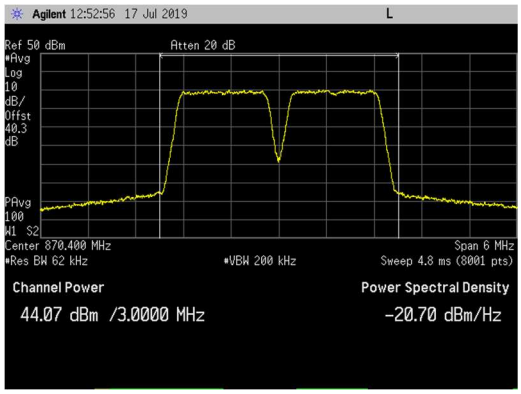


Top Channel_ Average

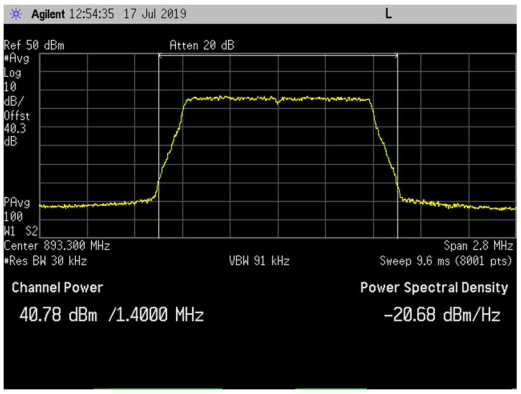


Band 5 Multicarrier LTE1.4 (Carriers at 869.7, 871.1 & 893.3MHz) Channel Power Plots for Antenna Port 2:

256QAM_ 869.7 & 871.1MHz_ Average Power

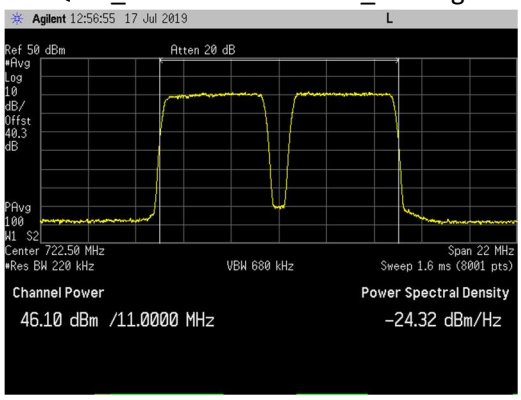


256QAM_ 893.3MHz_ Average Power



Band 29 Multicarrier LTE5 (Carriers at 719.5 & 725.5MHz) Ch Power Plots for Antenna Port 2:

256QAM_ 719.5 & 725.5MHz _ Average Power



Emission Bandwidth (26 dB down and 99%)

Emission bandwidth measurements were made at antenna port 2 on the middle channel (881.5MHz) with maximum RF output power. All available LTE modulations (QPSK, 16QAM, 64QAM and 256QAM) were used. All available LTE channel bandwidths (1.4 MHz, 3MHz, 5MHz and 10MHz) were used.

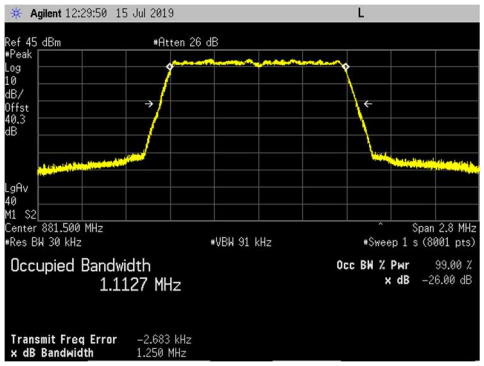
The 26dB emission bandwidth was measured in accordance with section 4 of FCC KDB 971168 D01v03r01 and ANSI C63.26 section 5.4. The 99% occupied bandwidth was measured in accordance with section 6.7 of RSS-Gen Issue 5. For both measurements, an occupied bandwidth built-in function in the spectrum analyzer was used. The results are provided in the following table. The largest emission bandwidths in each channel type are highlighted.

LTE Channel Bandwidth	Modulation Type							
	QPSK		16QAM		64QAM		256QAM	
	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)	26dB (MHz)	99% (MHz)
1.4M	**1.250**	**1.1127**	1.236	1.1083	1.246	**1.1127**	1.246	1.1120
3M	**2.941**	2.7060	2.927	**2.7115**	2.922	2.7081	2.922	2.7076
5M	4.830	4.4888	4.804	4.4848	**4.839**	4.4950	4.832	**4.4971**
10M	9.642	8.9690	9.613	**8.9804**	9.665	8.9772	**9.666**	8.9758

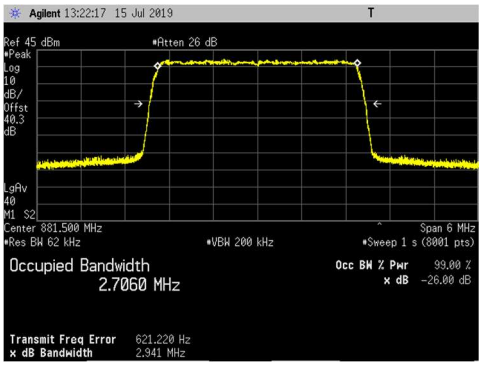
Emission bandwidth measurement data are provided in the following pages.

LTE1.4 and LTE3 Emission Bandwidth Plots on the Middle Channel (881.5MHz) for Antenna Port 2:

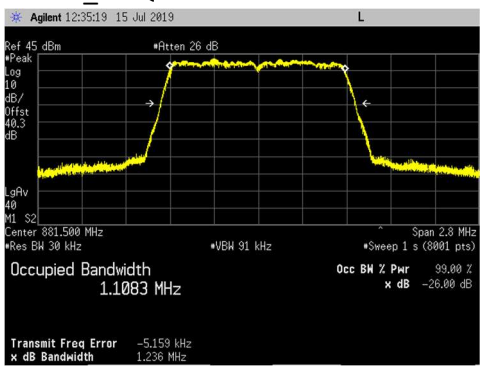
LTE1.4_ QPSK



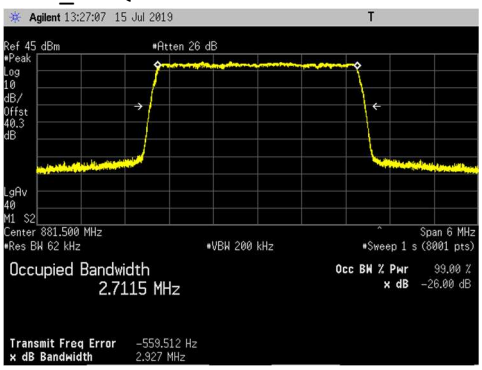
LTE3_ QPSK



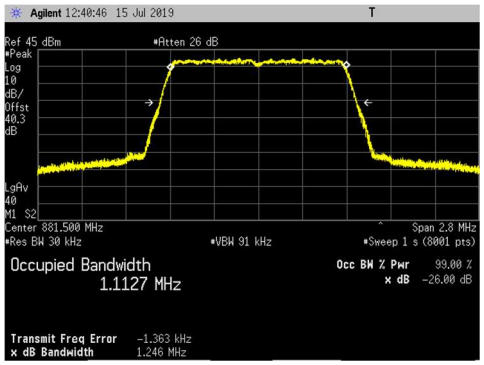
LTE1.4_ 16QAM



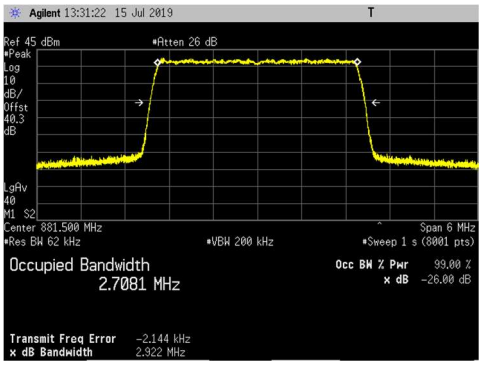
LTE3_ 16QAM



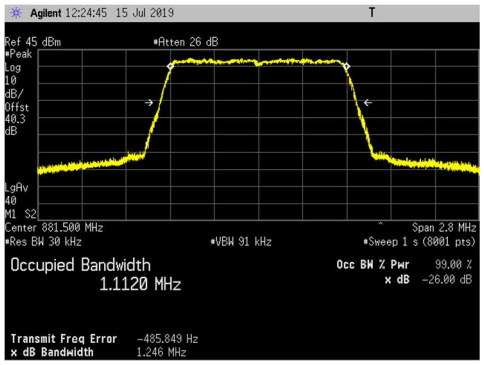
LTE1.4_ 64QAM



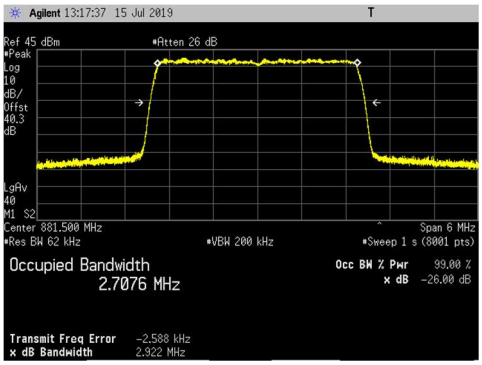
LTE3_ 64QAM



LTE1.4_ 256QAM

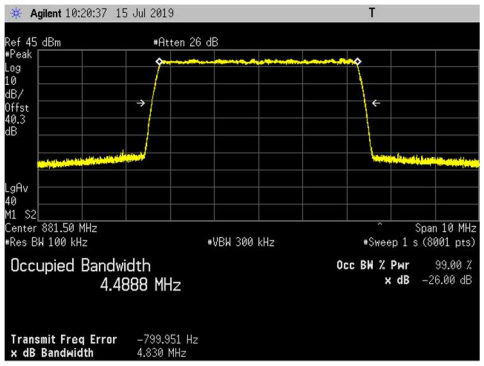


LTE3_ 256QAM

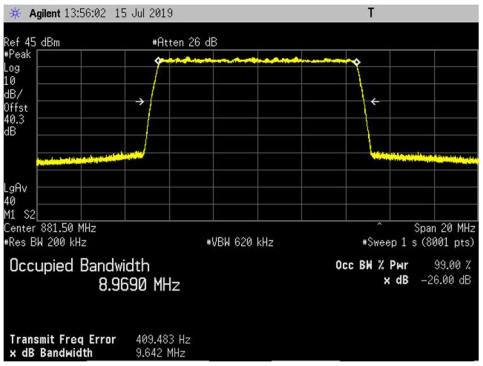


LTE5 and LTE10 Emission Bandwidth Plots on the Middle Channel (881.5MHz) for Antenna Port 2:

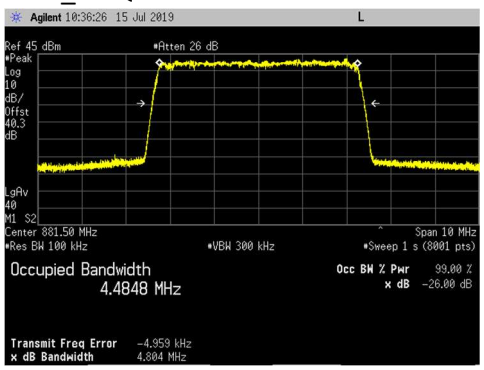
LTE5_ QPSK



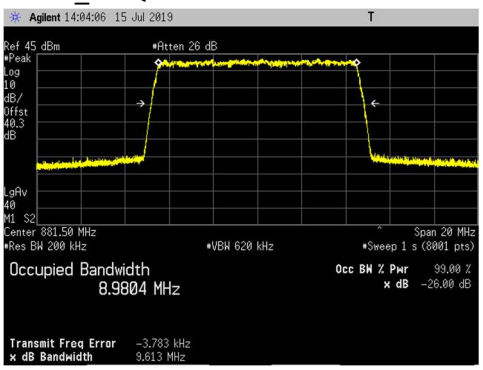
LTE10_ QPSK



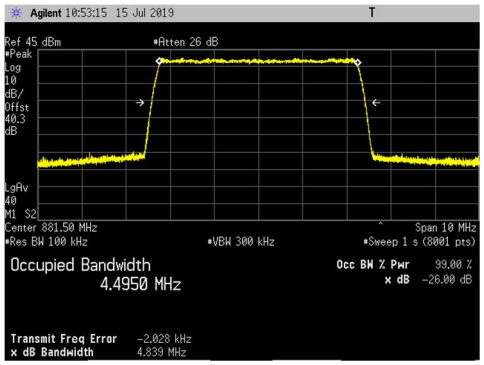
LTE5_ 16QAM



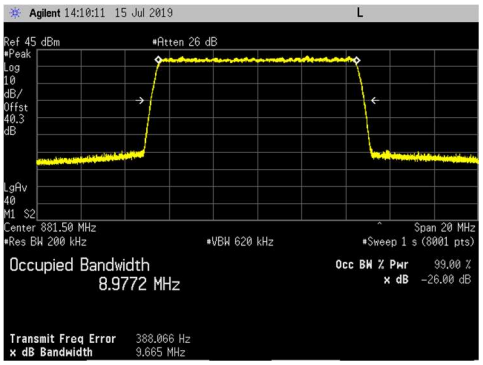
LTE10_ 16QAM



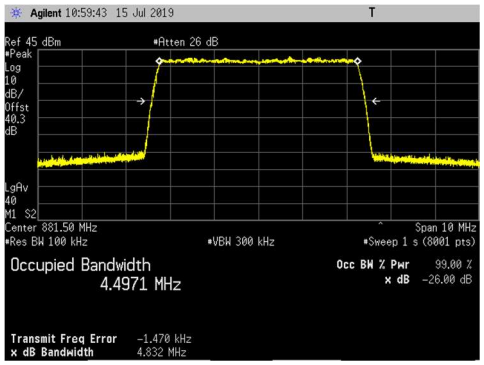
LTE5_ 64QAM



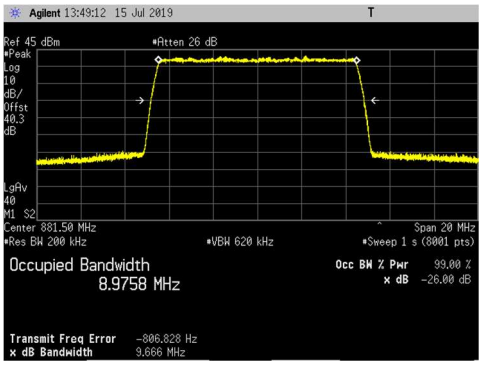
LTE10_ 64QAM



LTE5_ 256QAM



LTE10_ 256QAM



Antenna Port Conducted Band Edge

Conducted band edge measurements were made at RRH antenna port 2.

Single Carrier Test Cases
The RRH was operated at the Band 5 and Band 29 band edge channels simultaneously with all modulation types (QPSK, 16QAM, 64QAM, 256QAM) for all available LTE bandwidths (Band 5: 1.4MHz, 3MHz, 5MHz and 10MHz; Band 29: 5MHz and 10MHz). The Band 5 and Band 29 carriers were enabled at maximum power (80 watts/port and 40 watts/carrier). The same modulation type was used for both carriers. The Band 29 band edge results are detailed in Appendix B.

Multicarrier Multiband Test Case
In Band 5_Three LTE1.4 carriers (based upon KDB 971168 D03v01) using two carriers (with minimum spacing between carrier frequencies) at the lower band edge (EARFCN 2407: 869.7 MHz and EARFCN 2421: 871.1 MHz) and a third carrier with maximum spacing between the other two carrier frequencies (EARFCN 2643: 893.3 MHz) at the upper band edge. In Band 29_ Two LTE5 carriers with maximum spacing at the lower and upper band edges (EARFCN 9685: 719.5 & EARFCN 9745: 725.5MHz. Three carrier operation is not available because it exceeds the Band 29 downlink bandwidth. The smallest channel bandwidth was selected to maximize carrier power spectral density. The carriers were operated at maximum power (~13W/Band 5 carrier and ~20W/Band 29 carrier) with at total port power of 80 watts (40W for Band 5 carriers + 40W for Band 29 carriers). The same modulation type was used for both Band 5 and Band 29 carriers.

The limit of -19dBm was used in the certification testing. The limit is adjusted to -19dBm [-13dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO Band 5 transmitter.

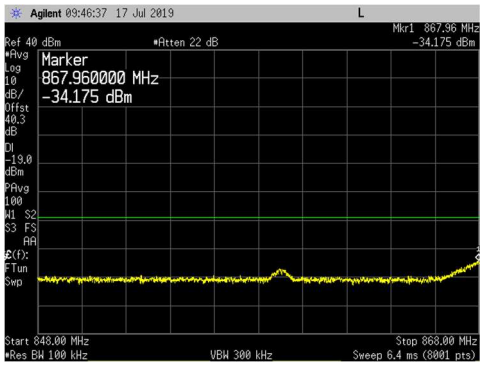
Measurements were performed with the spectrum analyzer in the RMS average mode over 100 traces. In the 1MHz bands outside and adjacent to the frequency block, a resolution bandwidth of 1% of the emission bandwidth was used. In the 1 to 21MHz frequency range outside the band edge (i.e.: 848 to 868MHz and 895 to 915MHz bands) a 100kHz RBW and 300kHz VBW was used. The results are summarized in the following table. The highest (worst case) emissions from the measurement data are provided.

Ch BW, Car Freq, Car Pwr		QPSK (dBm)		16QAM (dBm)		64QAM (dBm)		256QAM (dBm)	
Band 5	**Band 29**	**LBE**	**UBE**	**LBE**	**UBE**	**LBE**	**UBE**	**LBE**	**UBE**
LTE1.4, BC, 40W	LTE5, BC, 40W	-24.168	N/A	-25.806	N/A	-24.974	N/A	-26.444	N/A
LTE3, BC, 40W	LTE5, BC, 40W	**-19.967**	N/A	-21.018	N/A	-20.324	N/A	-22.041	N/A
LTE5, BC, 40W	LTE5, BC, 40W	-24.127	N/A	-23.205	N/A	-23.252	N/A	-24.560	N/A
LTE10, BC, 40W	LTE10, BC, 40W	-24.209	N/A	-24.624	N/A	-24.636	N/A	-25.452	N/A
LTE1.4, TC, 40W	LTE5, TC, 40W	N/A	-25.626	N/A	-25.874	N/A	-25.835	N/A	-24.585
LTE3, TC, 40W	LTE5, TC, 40W	N/A	-20.808	N/A	-20.051	N/A	-20.204	N/A	-20.579
LTE5, TC, 40W	LTE5, TC, 40W	N/A	-23.178	N/A	-23.858	N/A	-24.017	N/A	-24.840
LTE10, TC, 40W	LTE10, TC, 40W	N/A	-24.052	N/A	-25.402	N/A	-24.611	N/A	-24.689
Multicar LTE1.4 BC, BC+1, & TC 13W + 13W+13W	Multicar LTE5 BC & TC 20W + 20W	-23.735	-25.685	-25.123	-25.541	-25.941	-25.805	-25.462	-25.430

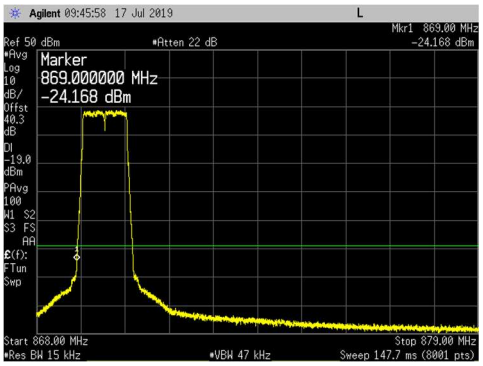
The total measurement RF path loss of the test setup (attenuator and test cables) was 40.3 dB and is accounted for by the spectrum analyzer reference level offset. The display line on the plots reflects the required limit. Conducted band edge measurements are provided in the following pages.

LTE1.4 Lower Band Edge Plots for Antenna Port 2:

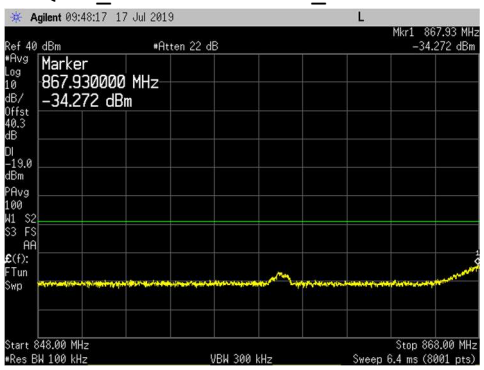
QPSK_ Bottom Channel_ 848 to 868MHz



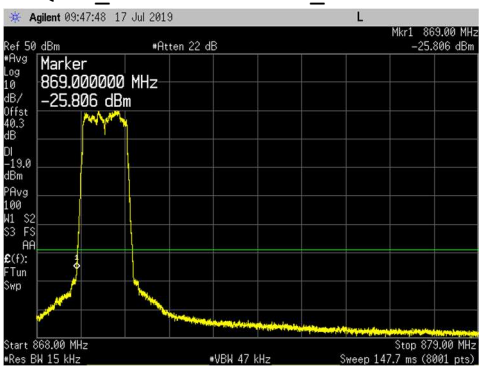
QPSK_ Bottom Channel_ 868 to 879MHz



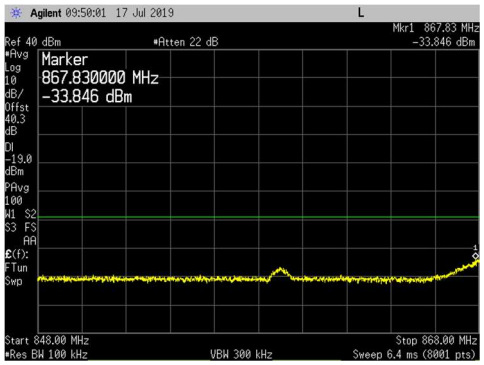
16QAM_ Bottom Channel_ 848 to 868MHz



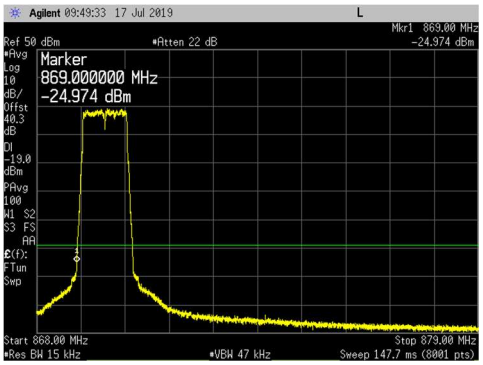
16QAM_ Bottom Channel_ 868 to 879MHz



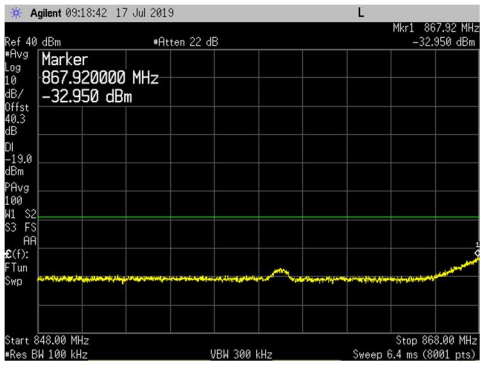
64QAM_ Bottom Channel_ 848 to 868MHz



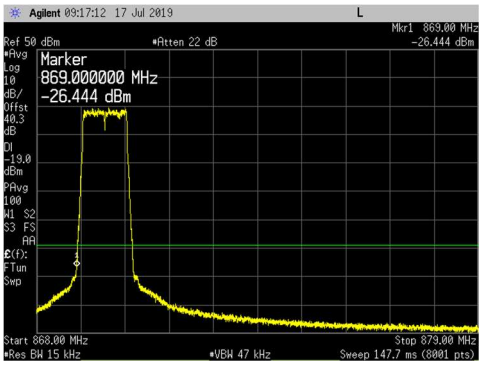
64QAM_ Bottom Channel_ 868 to 879MHz



256QAM_ Bottom Channel_ 848 to 868MHz

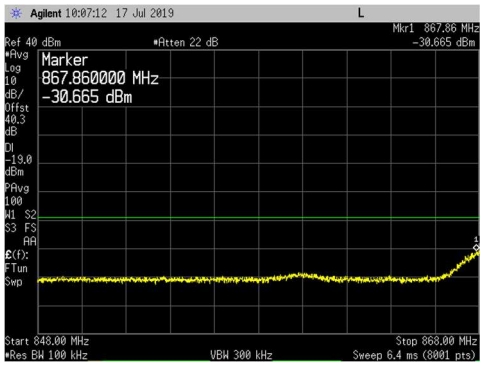


256QAM_ Bottom Channel_ 868 to 879MHz

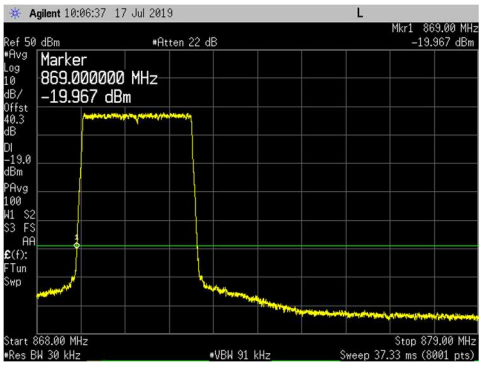


LTE3 Lower Band Edge Plots for Antenna Port 2:

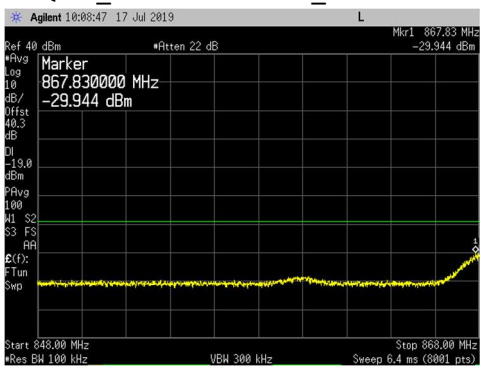
QPSK_ Bottom Channel_ 848 to 868MHz



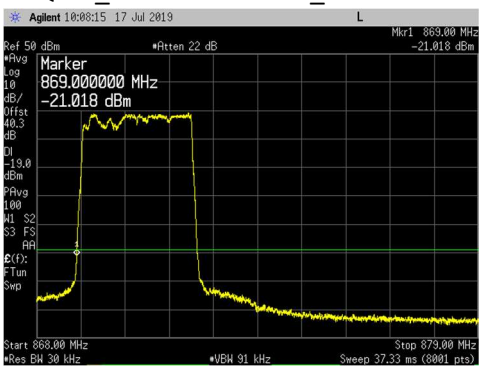
QPSK_ Bottom Channel_ 868 to 879MHz



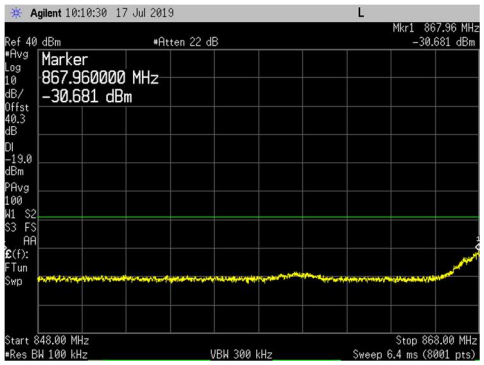
16QAM_ Bottom Channel_ 848 to 868MHz



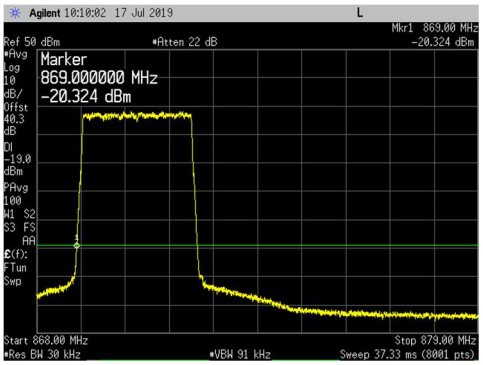
16QAM_ Bottom Channel_ 868 to 879MHz



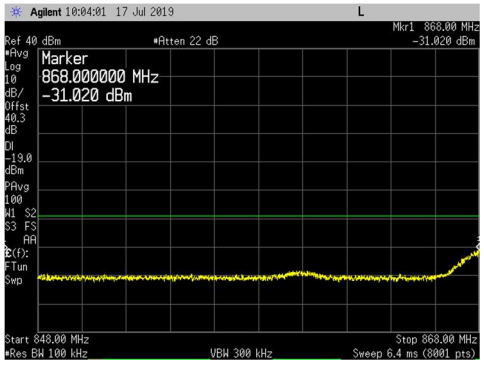
64QAM_ Bottom Channel_ 848 to 868MHz



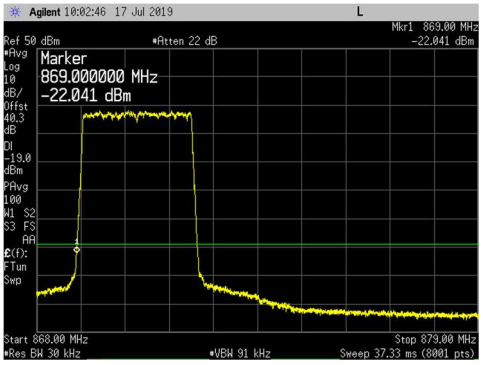
64QAM_ Bottom Channel_ 868 to 879MHz



256QAM_ Bottom Channel_ 848 to 868MHz

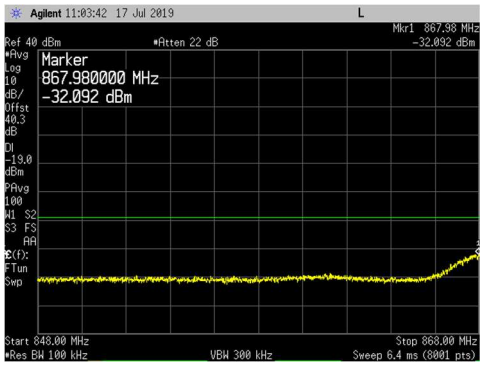


256QAM_ Bottom Channel_ 868 to 879MHz

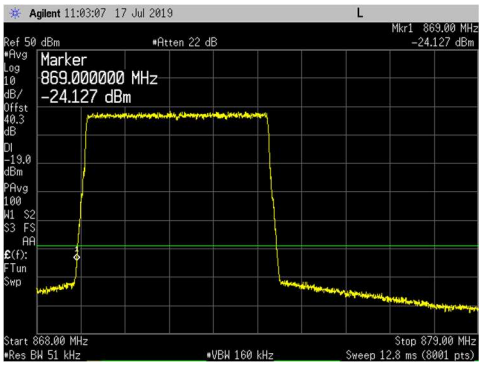


LTE5 Lower Band Edge Plots for Antenna Port 2:

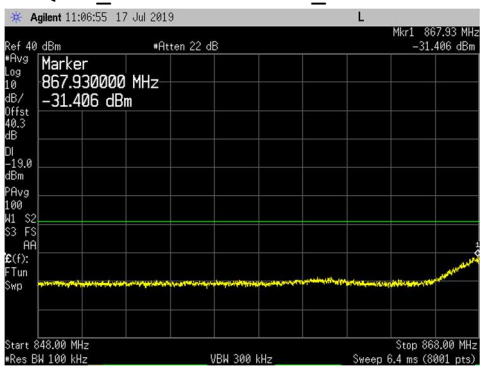
QPSK_ Bottom Channel_ 848 to 868MHz



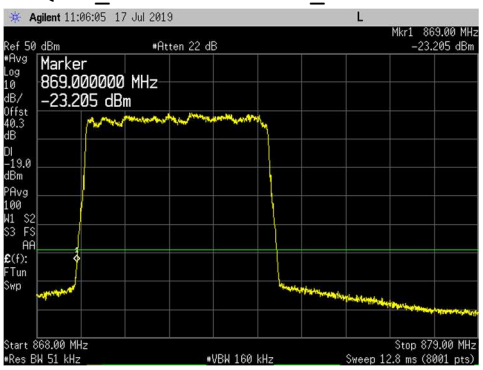
QPSK_ Bottom Channel_ 868 to 879MHz



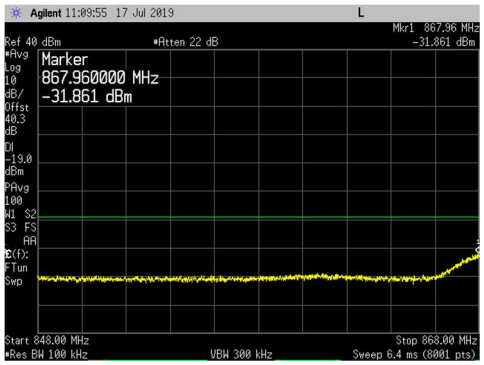
16QAM_ Bottom Channel_ 848 to 868MHz



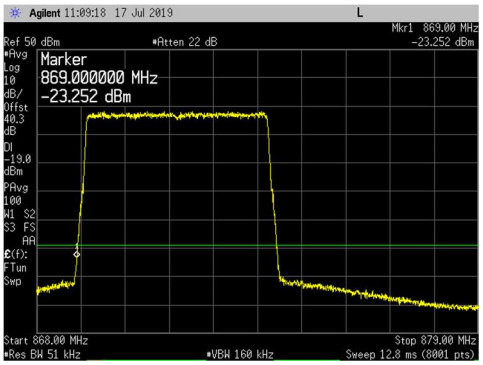
16QAM_ Bottom Channel_ 868 to 879MHz



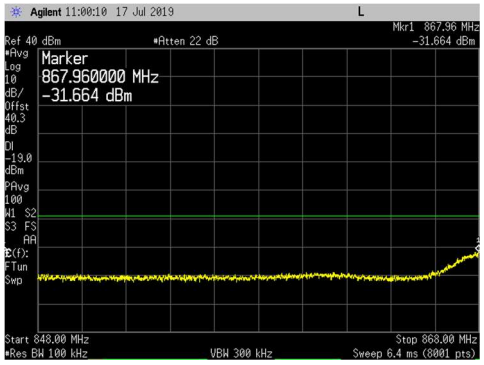
64QAM_ Bottom Channel_ 848 to 868MHz



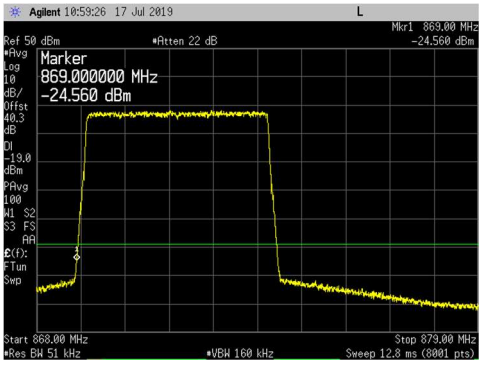
64QAM_ Bottom Channel_ 868 to 879MHz



256QAM_ Bottom Channel_ 848 to 868MHz

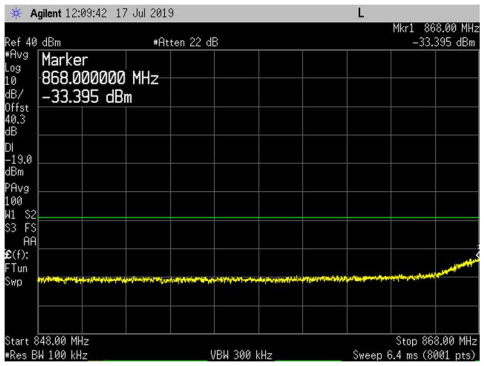


256QAM_ Bottom Channel_ 868 to 879MHz

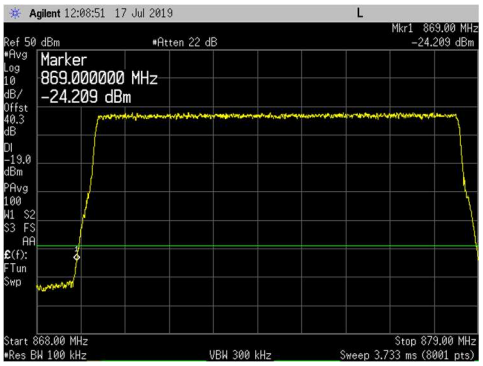


LTE10 Lower Band Edge Plots for Antenna Port 2:

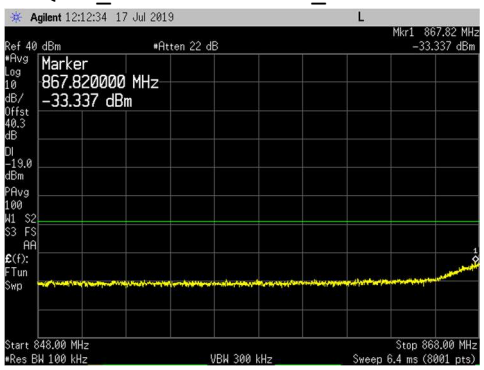
QPSK_ Bottom Channel_ 848 to 868MHz



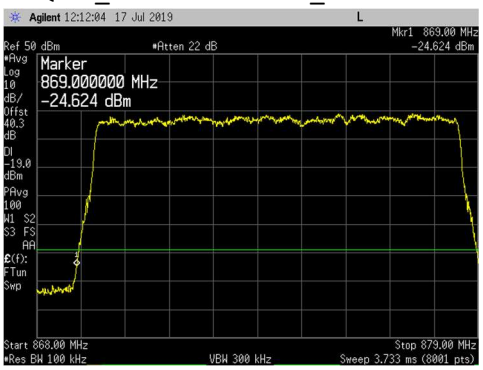
QPSK_ Bottom Channel_ 868 to 879MHz



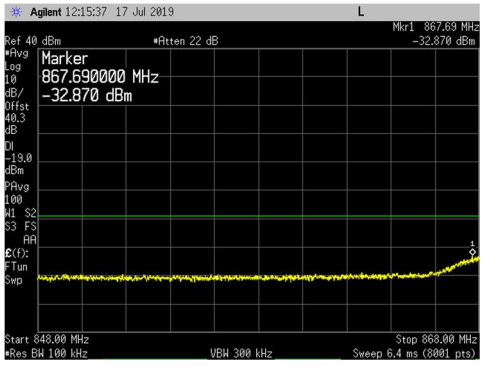
16QAM_ Bottom Channel_ 848 to 868MHz



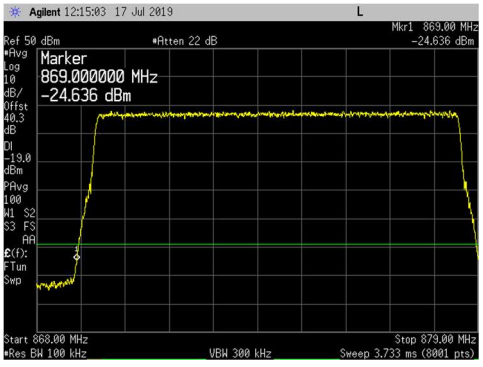
16QAM_ Bottom Channel_ 868 to 879MHz



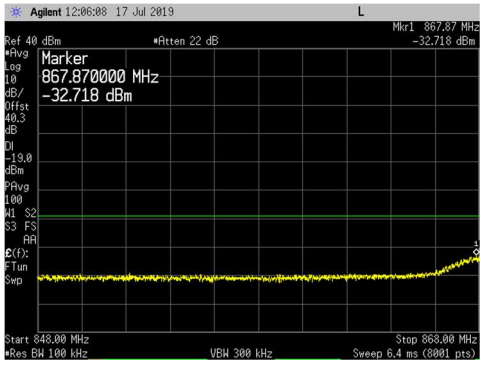
64QAM_ Bottom Channel_ 848 to 868MHz



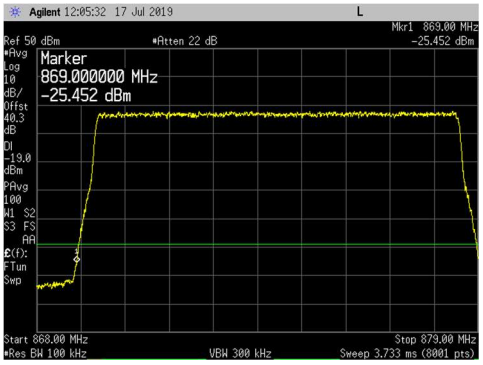
64QAM_ Bottom Channel_ 868 to 879MHz



256QAM_ Bottom Channel_ 848 to 868MHz

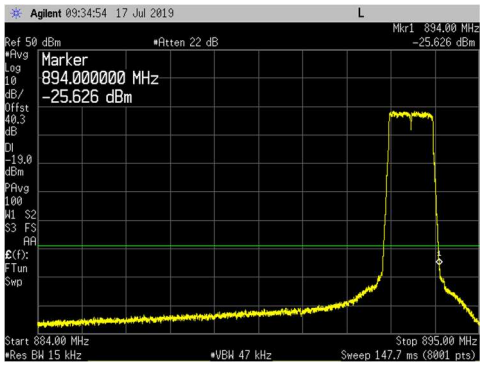


256QAM_ Bottom Channel_ 868 to 879MHz

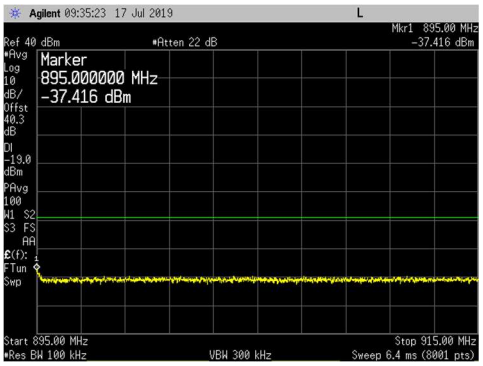


LTE1.4 Upper Band Edge Plots for Antenna Port 2:

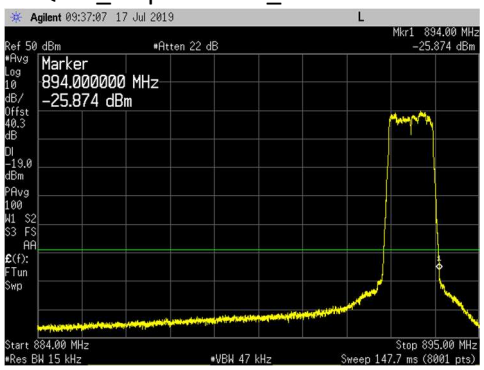
QPSK_ Top Channel_ 884 to 895MHz



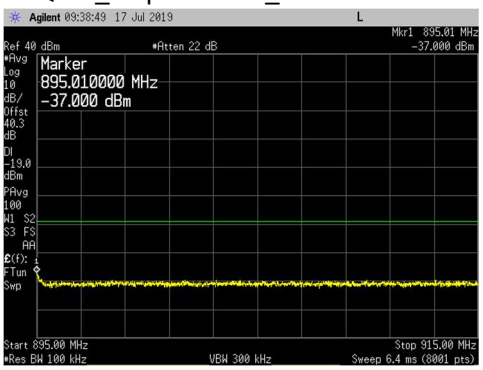
QPSK_ Top Channel_ 895 to 915MHz



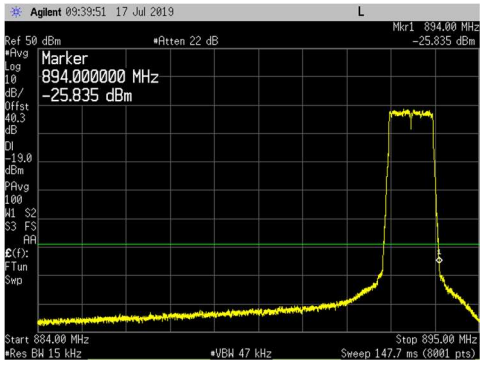
16QAM_ Top Channel_ 884 to 895MHz



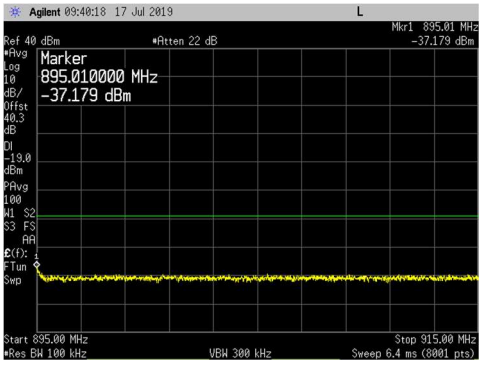
16QAM_ Top Channel_ 895 to 915MHz



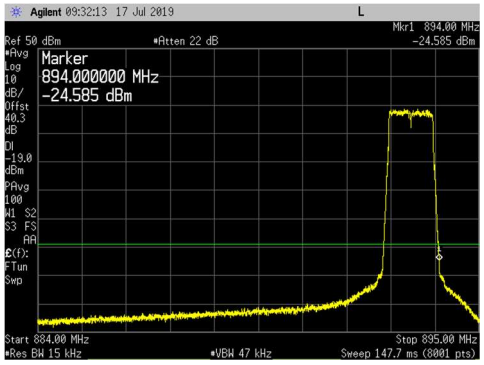
64QAM_ Top Channel_ 884 to 895MHz



64QAM_ Top Channel_ 895 to 915MHz



256QAM_ Top Channel_ 884 to 895MHz



256QAM_ Top Channel_ 895 to 915MHz