

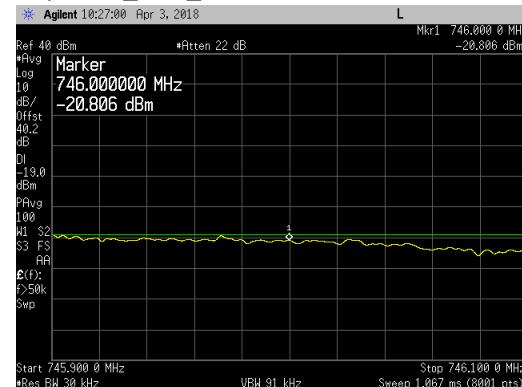
LTE1.4_QPSK_Upper Band Edge Plots for Antenna Port 4:

745.3MHz Carrier at 40 Watts

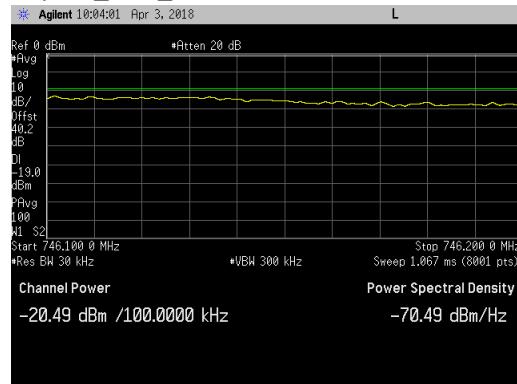
Top Ch_UBE_745.9MHz to 746.1MHz at 40W

745.2MHz Carrier at 60 Watts

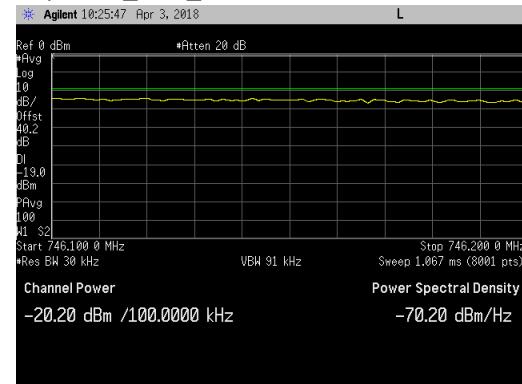
Top Ch-1_UBE_745.9MHz to 746.1MHz at 60W



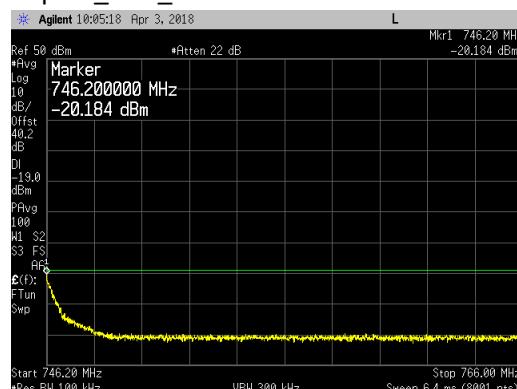
Top Ch_UBE_746.1MHz to 746.2MHz at 40W



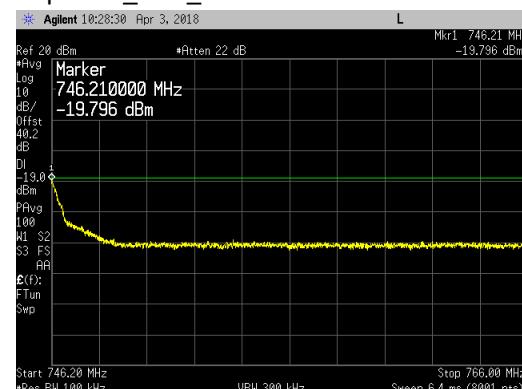
Top Ch-1_UBE_746.1MHz to 746.2MHz at 60W



Top Ch_UBE_746.2MHz to 766MHz at 40W



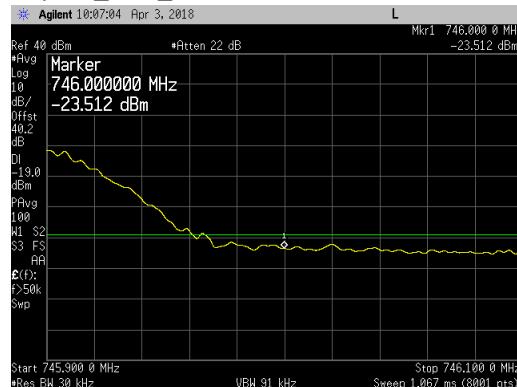
Top Ch-1_UBE_746.2MHz to 766MHz at 60W



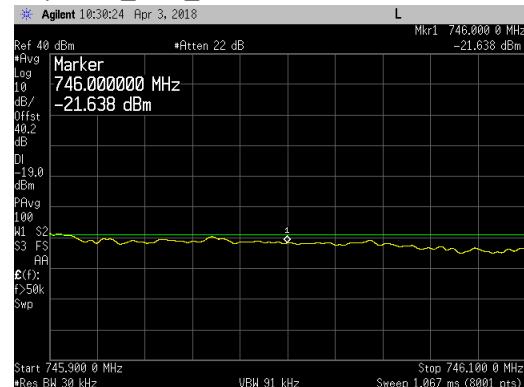
LTE1.4 _16QAM_Upper Band Edge Plots for Antenna Port 4:

745.3MHz Carrier at 40 Watts

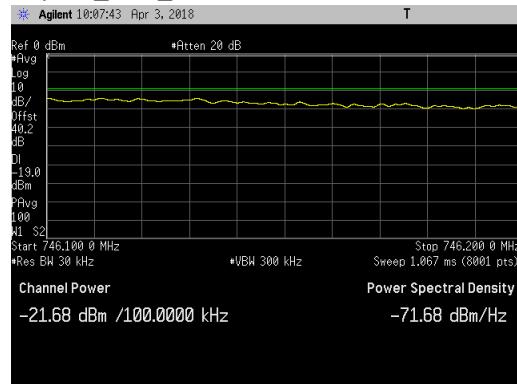
Top Ch_UBE_745.9MHz to 746.1MHz at 40W

745.2MHz Carrier at 60 Watts

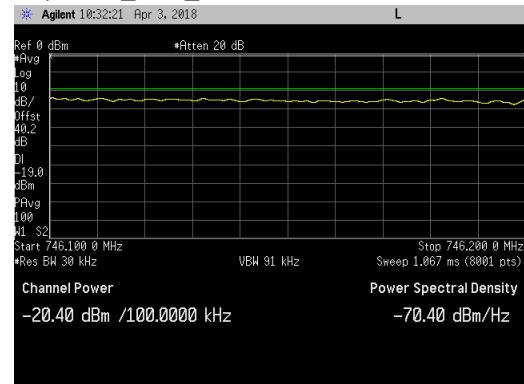
Top Ch-1_UBE_745.9MHz to 746.1MHz at 60W



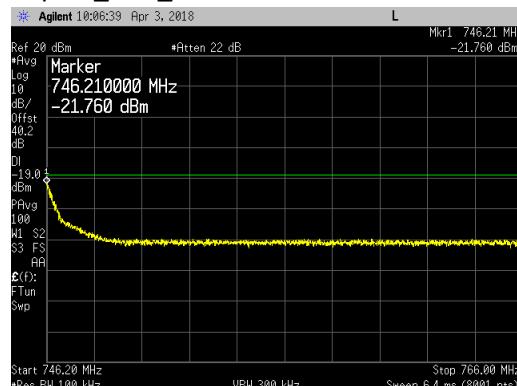
Top Ch_UBE_746.1MHz to 746.2MHz at 40W



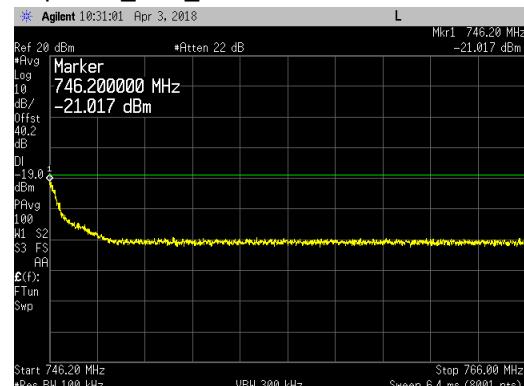
Top Ch-1_UBE_746.1MHz to 746.2MHz at 60W



Top Ch_UBE_746.2MHz to 766MHz at 40W



Top Ch-1_UBE_746.2MHz to 766MHz at 60W



LTE1.4 _64QAM_Upper Band Edge Plots for Antenna Port 4:

745.3MHz Carrier at 40 Watts

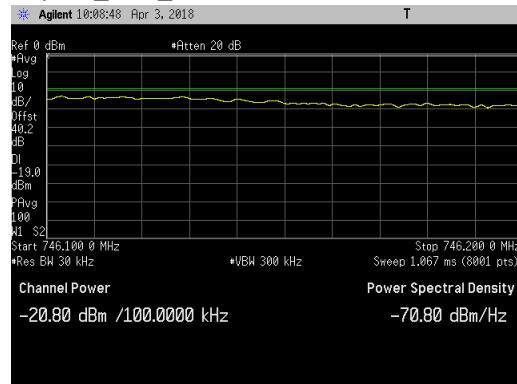
Top Ch_UBE_745.9MHz to 746.1MHz at 40W

745.2MHz Carrier at 60 Watts

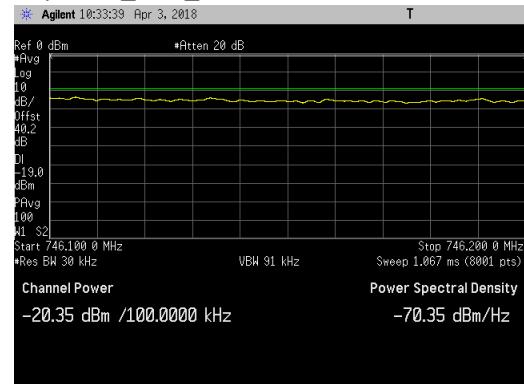
Top Ch-1_UBE_745.9MHz to 746.1MHz at 60W



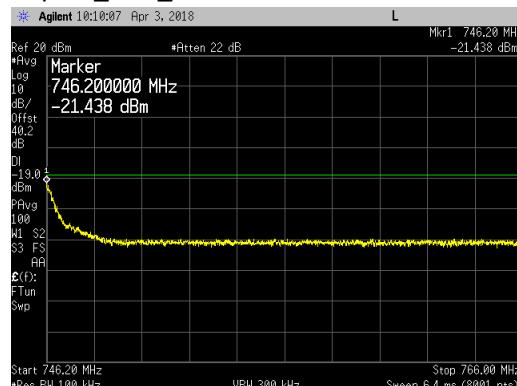
Top Ch_UBE_746.1MHz to 746.2MHz at 40W



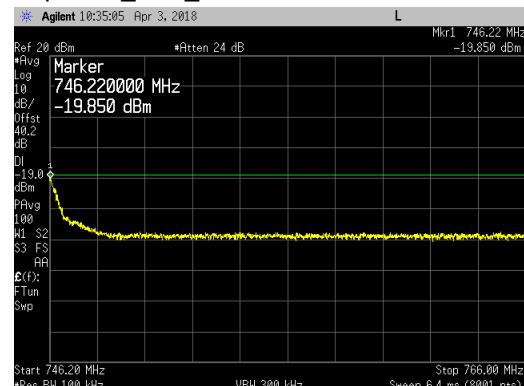
Top Ch-1_UBE_746.1MHz to 746.2MHz at 60W



Top Ch_UBE_746.2MHz to 766MHz at 40W



Top Ch-1_UBE_746.2MHz to 766MHz at 60W



LTE1.4 _256QAM_Upper Band Edge Plots for Antenna Port 4:

745.3MHz Carrier at 40 Watts

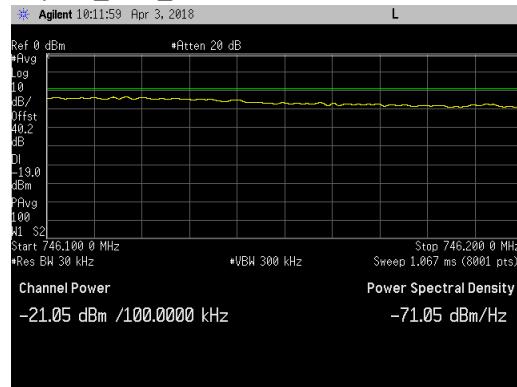
Top Ch_UBE_745.9MHz to 746.1MHz at 40W

745.2MHz Carrier at 60 Watts

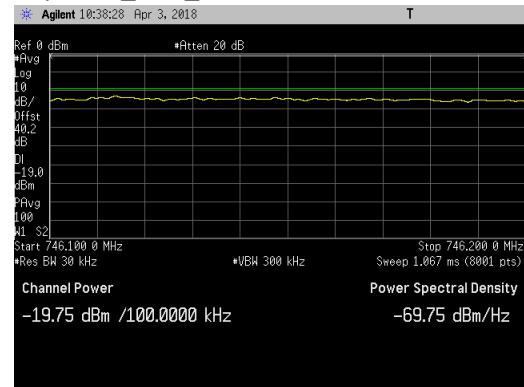
Top Ch-1_UBE_745.9MHz to 746.1MHz at 60W



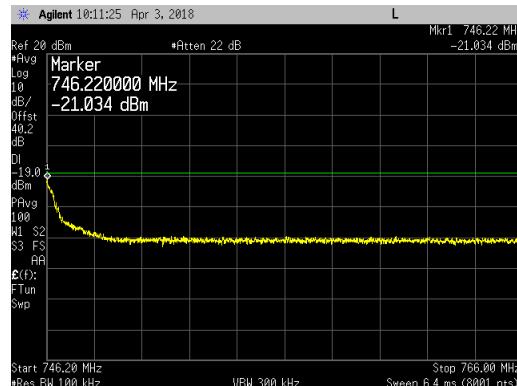
Top Ch_UBE_746.1MHz to 746.2MHz at 40W



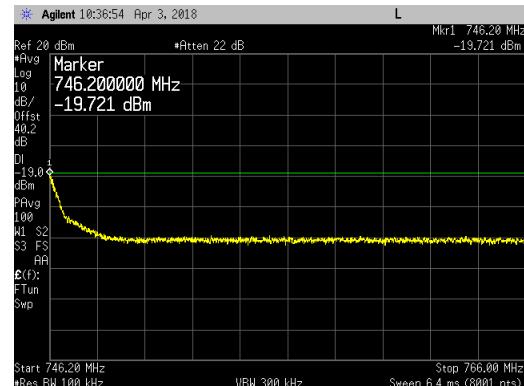
Top Ch-1_UBE_746.1MHz to 746.2MHz at 60W



Top Ch_UBE_746.2MHz to 766MHz at 40W

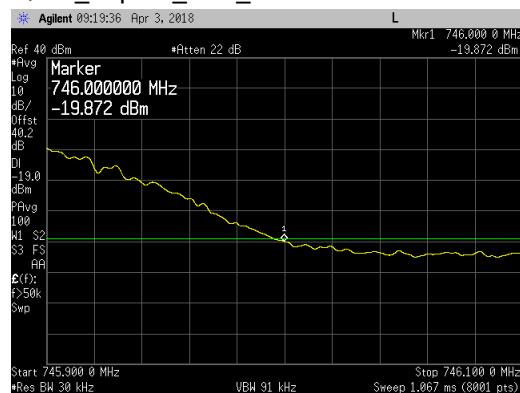


Top Ch-1_UBE_746.2MHz to 766MHz at 60W

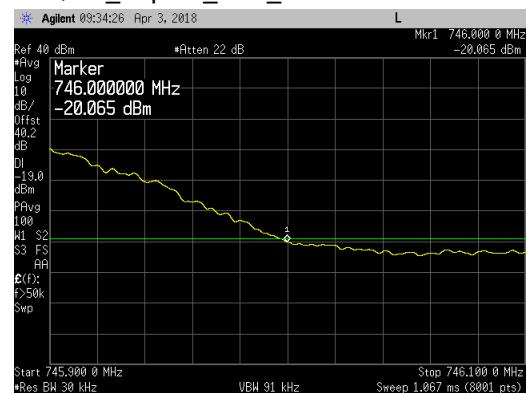


LTE3_Upper Band Edge Plots for Antenna Port 4:

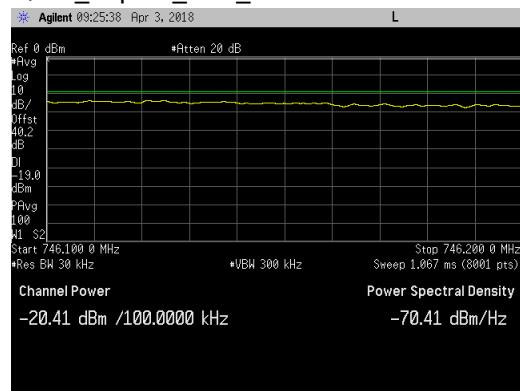
QPSK_Top Ch_UBE_745.9MHz to 746.1MHz



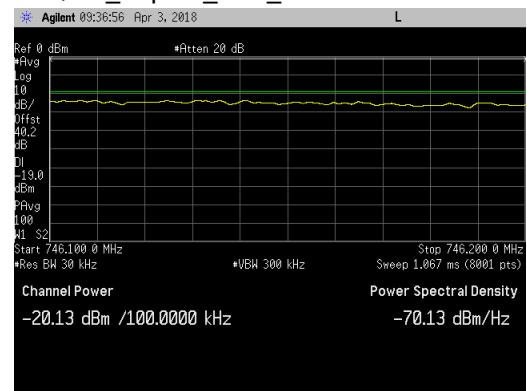
16QAM_Top Ch_UBE_745.9MHz to 746.1MHz



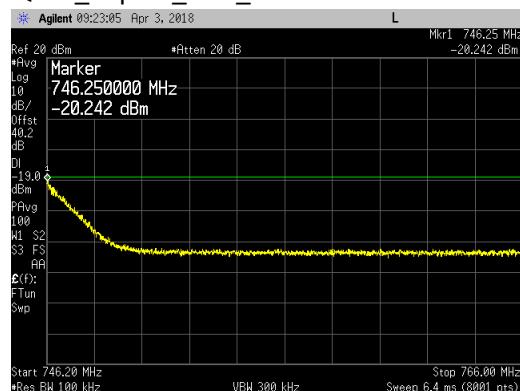
QPSK_Top Ch_UBE_746.1MHz to 746.2MHz



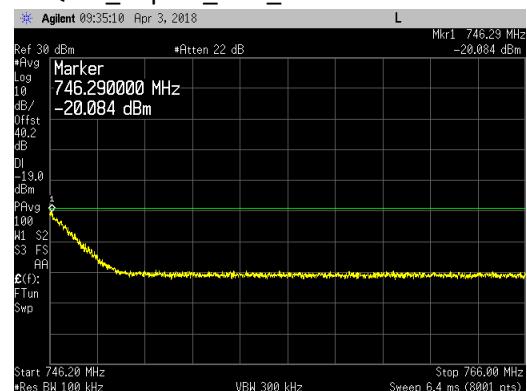
16QAM_Top Ch_UBE_746.1MHz to 746.2MHz



QPSK_Top Ch_UBE_746.2MHz to 766MHz

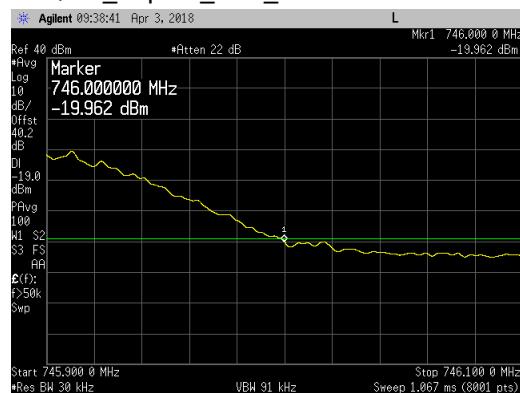


16QAM_Top Ch_UBE_746.2MHz to 766MHz

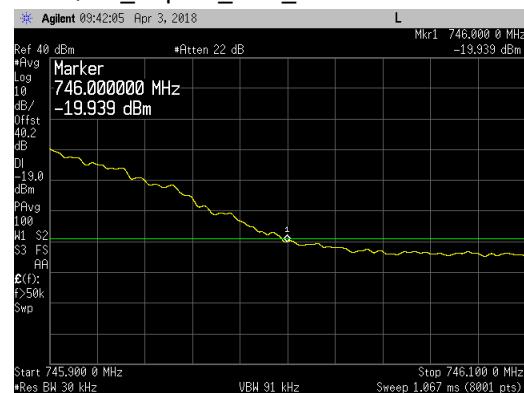


LTE3_Upper Band Edge Plots for Antenna Port 4:

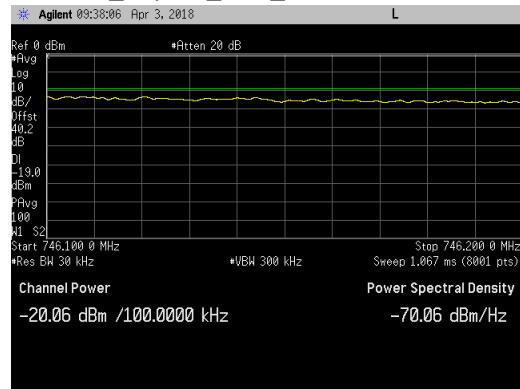
64QAM_Top Ch_UBE_745.9MHz to 746.1MHz



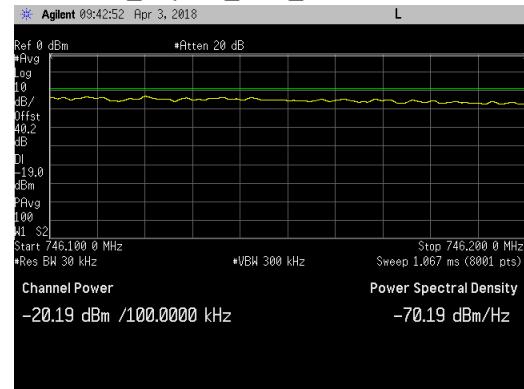
256QAM_Top Ch_UBE_745.9MHz to 746.1MHz



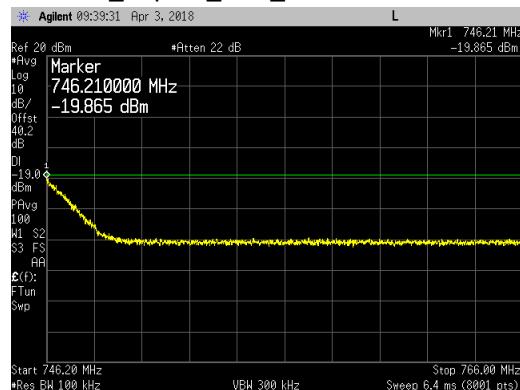
64QAM_Top Ch_UBE_746.1MHz to 746.2MHz



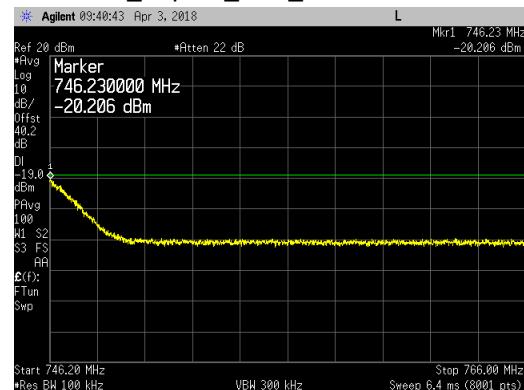
256QAM_Top Ch_UBE_746.1MHz to 746.2MHz



64QAM_Top Ch_UBE_746.2MHz to 766MHz



256QAM_Top Ch_UBE_746.2MHz to 766MHz

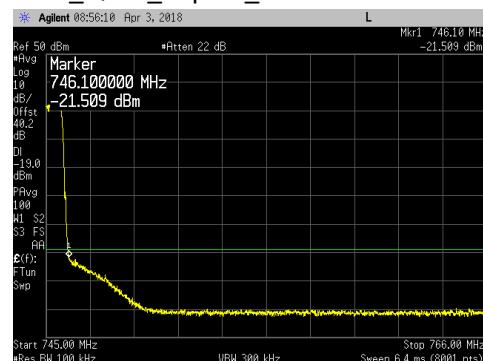


LTE5 Upper Band Edge Plots for Antenna Port 4:

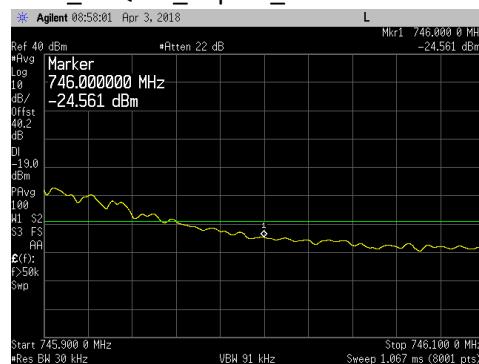
LTE5_QPSK_Top Ch_745.9MHz to 746.1MHz



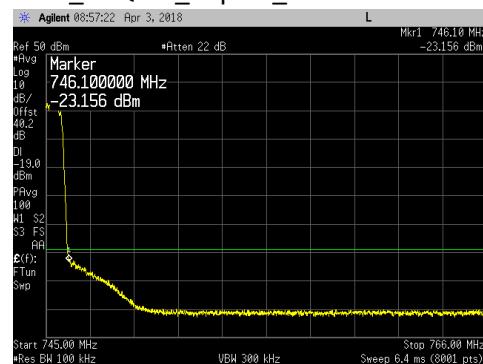
LTE5_QPSK_Top Ch_745MHz to 766MHz



LTE5_16QAM_Top Ch_745.9MHz to 746.1MHz



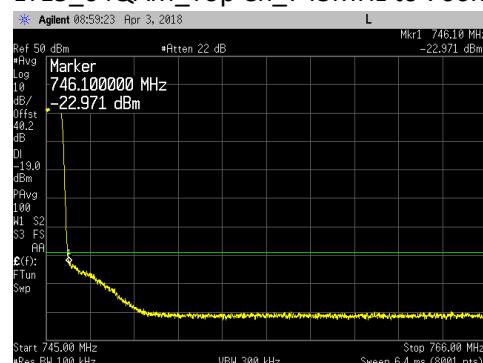
LTE5_16QAM_Top Ch_745MHz to 766MHz



LTE5_64QAM_Top Ch_745.9MHz to 746.1MHz



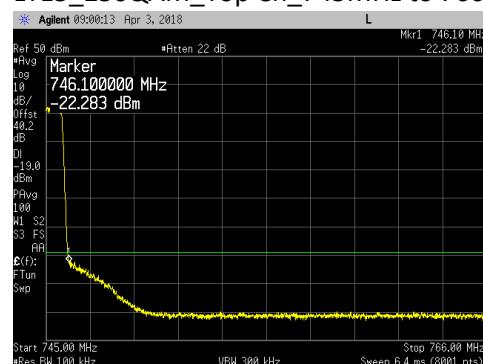
LTE5_64QAM_Top Ch_745MHz to 766MHz



LTE5_256QAM_Top Ch_745.9MHz to 746.1MHz

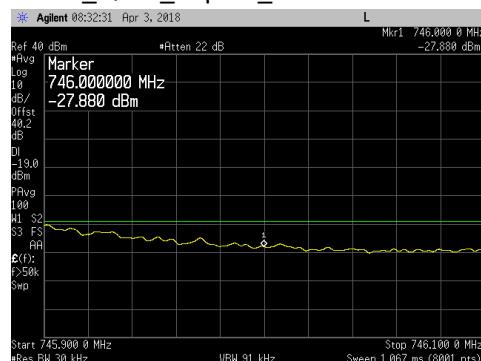


LTE5_256QAM_Top Ch_745MHz to 766MHz

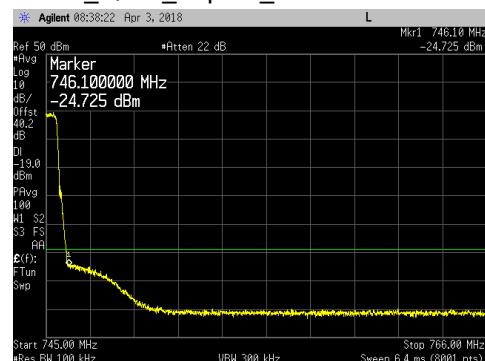


LTE10 Upper Band Edge Plots for Antenna Port 4:

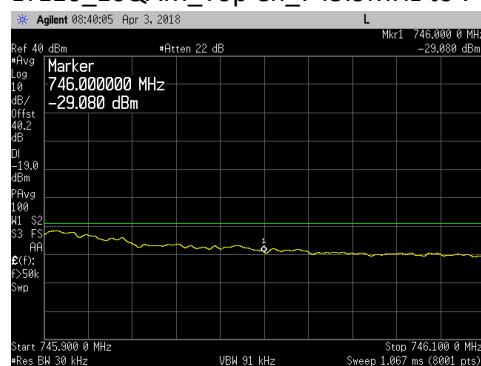
LTE10_QPSK_Top Ch_745.9MHz to 746.1MHz



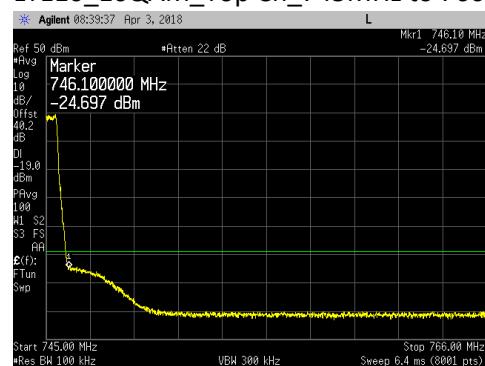
LTE10_QPSK_Top Ch_745MHz to 766MHz



LTE10_16QAM_Top Ch_745.9MHz to 746.1MHz



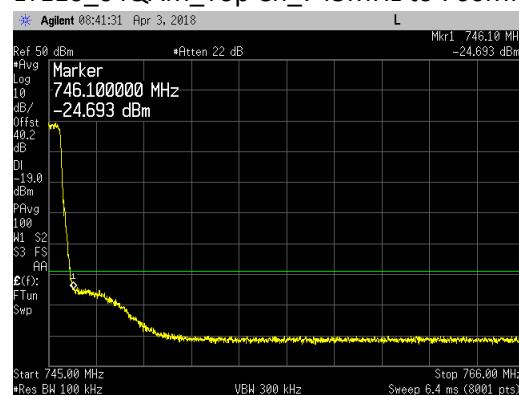
LTE10_16QAM_Top Ch_745MHz to 766MHz



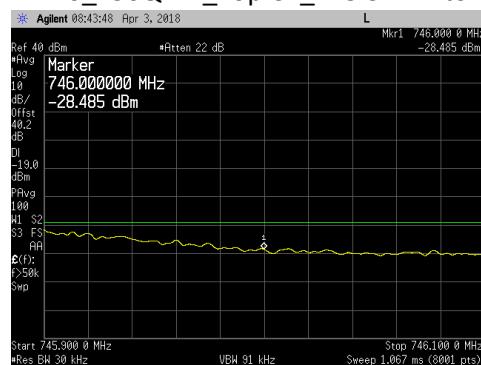
LTE10_64QAM_Top Ch_745.9MHz to 746.1MHz



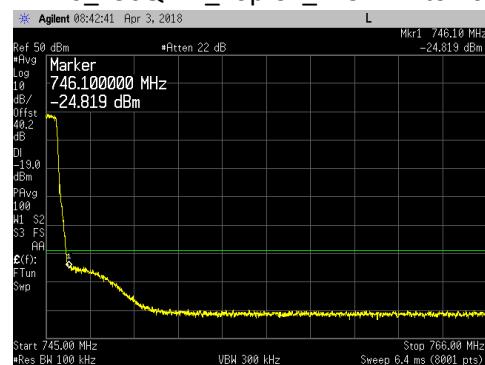
LTE10_64QAM_Top Ch_745MHz to 766MHz



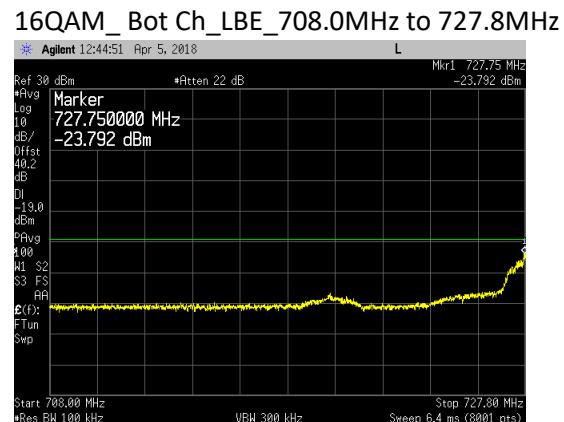
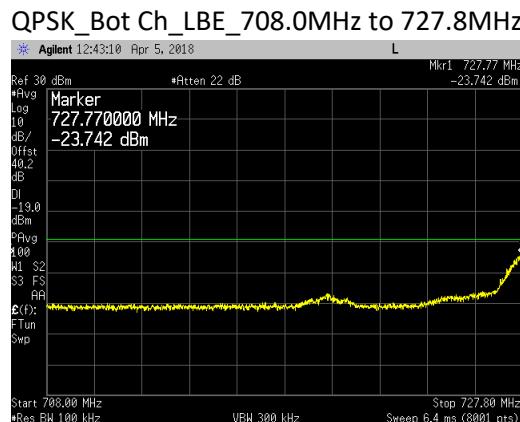
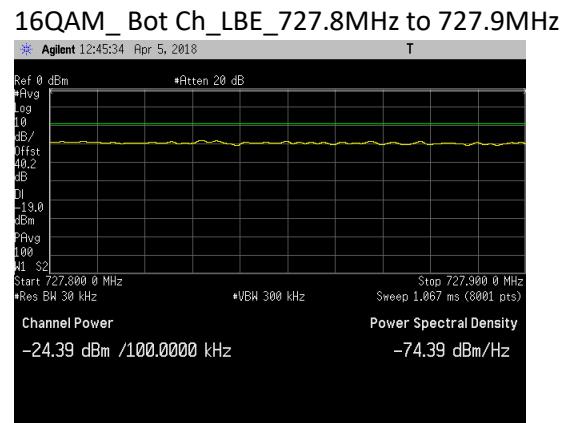
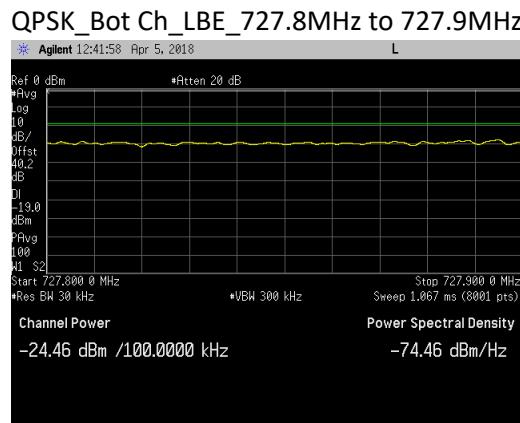
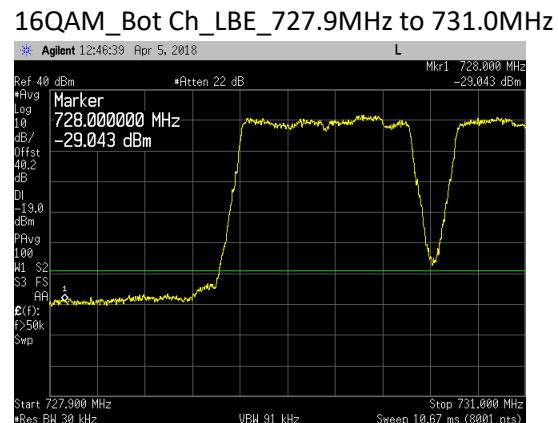
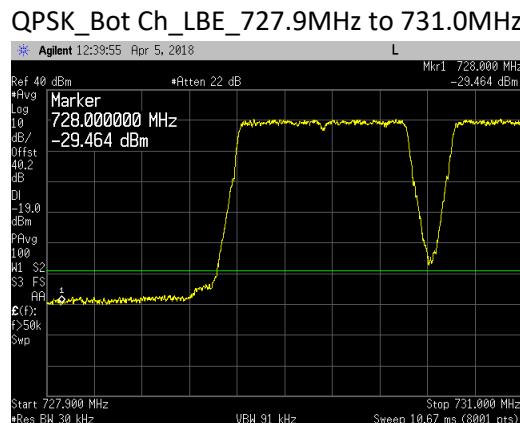
LTE10_256QAM_Top Ch_745.9MHz to 746.1MHz



LTE10_256QAM_Top Ch_745MHz to 766MHz



Dual LTE1.4_Lower Band Edge Plots for Antenna Port 4:



Dual LTE1.4_Lower Band Edge Plots for Antenna Port 4:

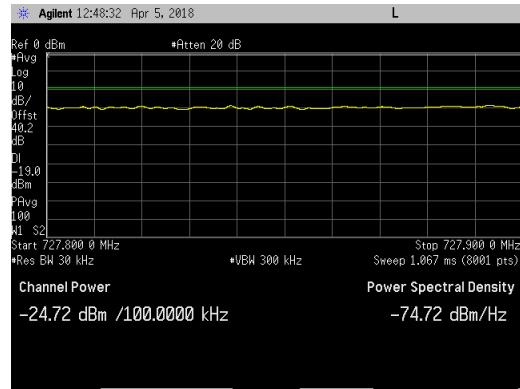
64QAM_Bot Ch_LBE_727.9MHz to 731.0MHz



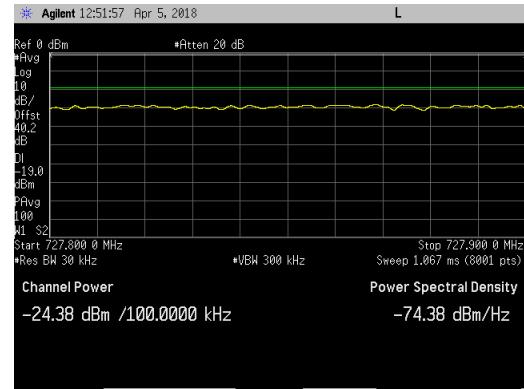
256QAM_Bot Ch_LBE_727.9MHz to 731.0MHz



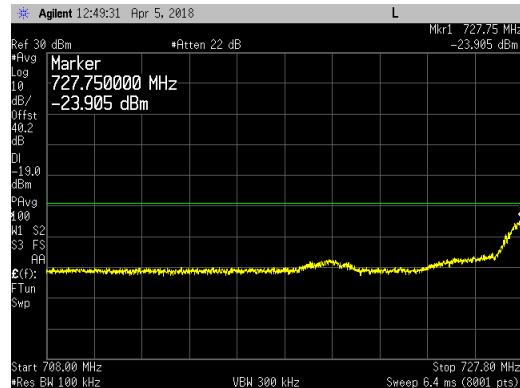
64QAM_Bot Ch_LBE_727.8MHz to 727.9MHz



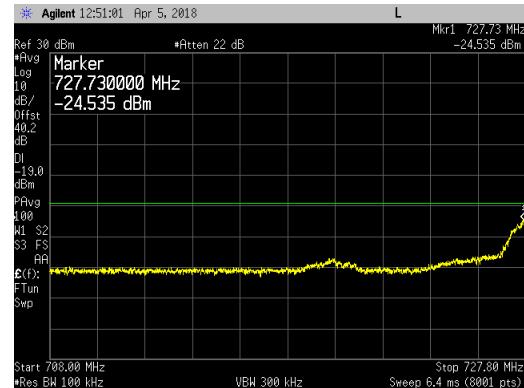
256QAM_Bot Ch_LBE_727.8MHz to 727.9MHz



64QAM_Bot Ch_LBE_708.0MHz to 727.8MHz

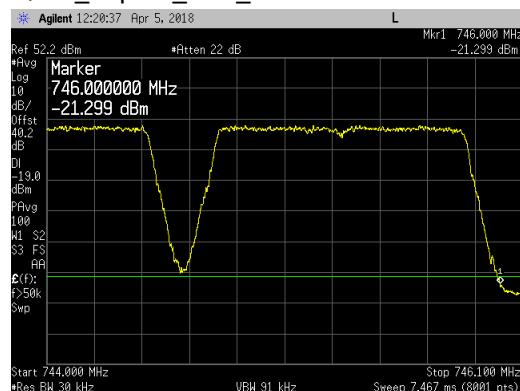


256QAM_Bot Ch_LBE_708.0MHz to 727.8MHz

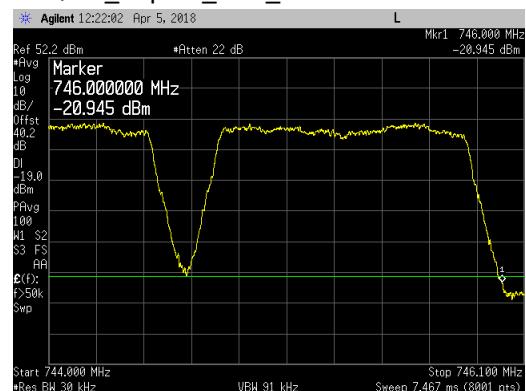


Dual LTE1.4_Upper Band Edge Plots for Antenna Port 4:

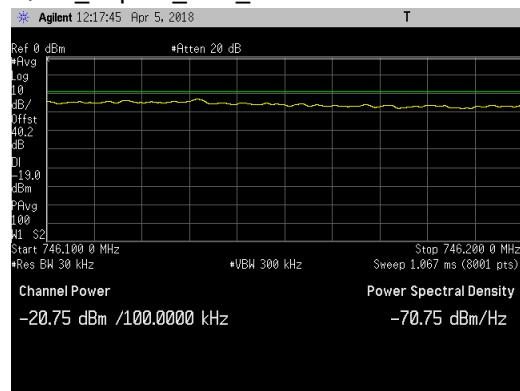
QPSK_Top Ch_UBE_744.0MHz to 746.1MHz



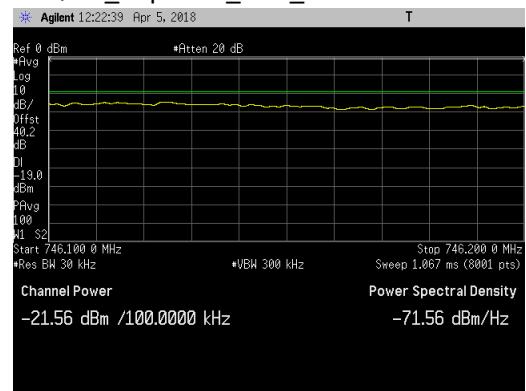
16QAM_Top Ch_UBE_744.0Mz to 746.1MHz



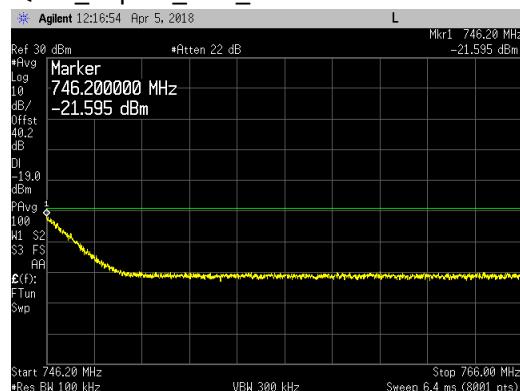
QPSK_Top Ch_UBE_746.1MHz to 746.2MHz



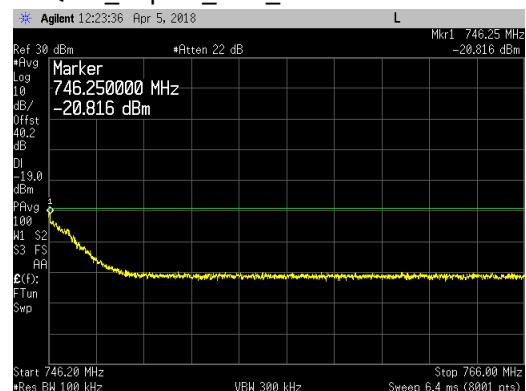
16QAM_Top Ch-1_UBE_746.1MHz to 746.2MHz



QPSK_Top Ch_UBE_746.2MHz to 766MHz

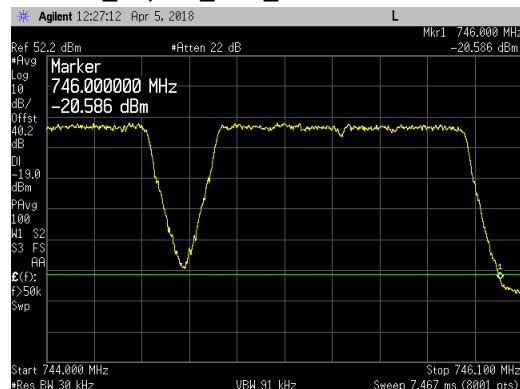


16QAM_Top Ch_UBE_746.2MHz to 766MHz

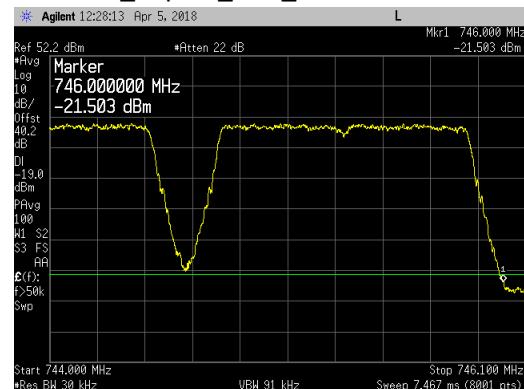


Dual LTE1.4_Upper Band Edge Plots for Antenna Port 4:

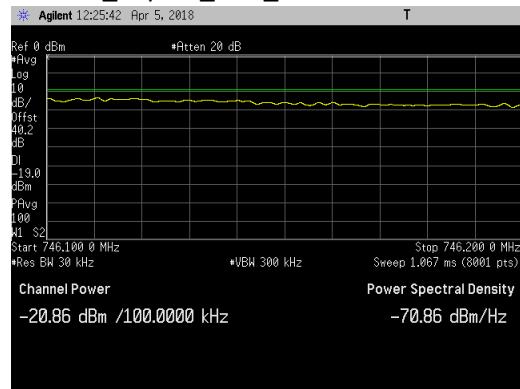
64QAM_Top Ch_UBE_744.0MHz to 746.1MHz



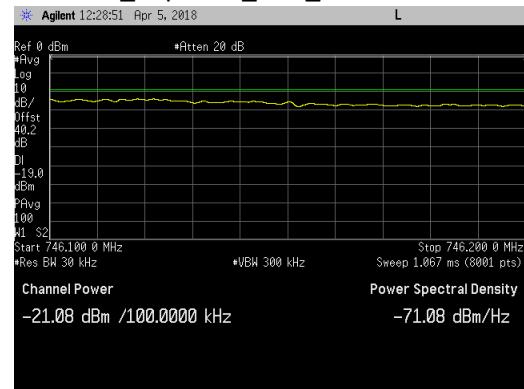
256QAM_Top Ch_UBE_744.0MHz to 746.1MHz



64QAM_Top Ch_UBE_746.1MHz to 746.2MHz



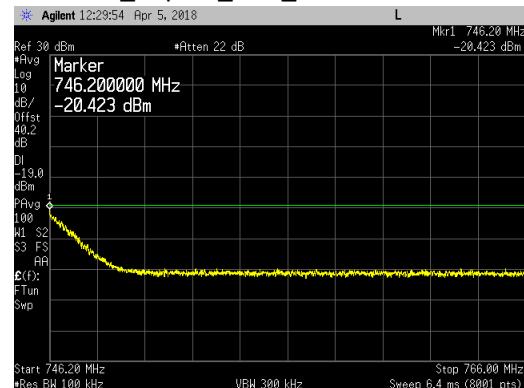
256QAM_Top Ch-1_UBE_746.1MHz to 746.2MHz



64QAM_Top Ch_UBE_746.2MHz to 766MHz



256QAM_Top Ch_UBE_746.2MHz to 766MHz



Transmitter Antenna Port Conducted Emissions

Transmitter conducted emission measurements were made at RRH antenna port 4. Measurements were performed over the 9kHz to 8GHz frequency range. Two test configurations are needed for conducted spurious emission measurements to prove compliance for the 3GPP Band 12 transmitters. The first test will be with the 3GPP Band 12 transmitters enabled at 60 watts per carrier (the 3GPP Band 71 transmitters will not be enabled). The second test will be with the 3GPP Band 71 and the 3GPP Band 12 transmitters enabled simultaneously at 30 watts per carrier (or 60 watts/antenna port).

The RRH was operated on the Band 71 middle channel (634.5MHz) and Band 12 middle channel (737.0MHz) simultaneously with all LTE modulation types (QPSK, 16QAM, 64QAM and 256QAM) for all available LTE bandwidths (Band 71: 5MHz, 10MHz, 15MHz and 20MHz; Band 12: 1.4MHz, 3MHz, 5MHz and 10MHz). The same LTE bandwidth was used for both frequency bands when available. If the same LTE bandwidth for both bands was not available then the smallest LTE bandwidth was used.

The parameters of the first test configuration are provided below:

3GPP Band 71 Transmission Parameters			3GPP Band 12 Transmission Parameters		
Carrier Frequency	Channel Bandwidth	Carrier Power	Carrier Frequency	Channel Bandwidth	Carrier Power
Carrier Idle/Off	N/A	0 Watts	737.0MHz (Mid Ch)	LTE1.4	60 Watts
Carrier Idle/Off	N/A	0 Watts	737.0MHz (Mid Ch)	LTE3	60 Watts
Carrier Idle/Off	N/A	0 Watts	737.0MHz (Mid Ch)	LTE5	60 Watts
Carrier Idle/Off	N/A	0 Watts	737.0MHz (Mid Ch)	LTE10	60 Watts

The parameters of the second test configuration are provided below:

3GPP Band 71 Transmission Parameters			3GPP Band 12 Transmission Parameters		
Carrier Frequency	Channel Bandwidth	Carrier Power	Carrier Frequency	Channel Bandwidth	Carrier Power
634.5MHz (Mid Ch)	LTE5	30 Watts	737.0MHz (Mid Ch)	LTE1.4	30 Watts
634.5MHz (Mid Ch)	LTE5	30 Watts	737.0MHz (Mid Ch)	LTE3	30 Watts
634.5MHz (Mid Ch)	LTE5	30 Watts	737.0MHz (Mid Ch)	LTE5	30 Watts
634.5MHz (Mid Ch)	LTE10	30 Watts	737.0MHz (Mid Ch)	LTE10	30 Watts
634.5MHz (Mid Ch)	LTE15	30 Watts	737.0MHz (Mid Ch)	LTE1.4	30 Watts
634.5MHz (Mid Ch)	LTE20	30 Watts	737.0MHz (Mid Ch)	LTE1.4	30 Watts

Note that the conducted spurious emission plots/measurement results for the second test with the 3GPP Band 71 and the 3GPP Band 12 transmitters enabled simultaneously at 30 watts per carrier (or 60 watts/antenna port) are in Appendix A.

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 transmitter. The required measurement parameters include a 100kHz bandwidth with power measured in average value (since transmitter power was measured in average value).

Measurements were performed with a spectrum analyzer using a peak detector with max hold over 50 sweeps (except for the 9kHz to 150kHz, 150kHz to 20MHz and 400MHz to 800MHz frequency ranges). Measurements for the 9kHz to 150kHz, 150kHz to 20MHz and 400MHz to 800MHz frequency ranges were performed with the spectrum analyzer in the RMS average mode over 100 traces.

The limit for the 9kHz to 150kHz frequency range was adjusted to -39dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 100kHz [i.e.: -39dBm = -19dBm -10log(100kHz/1kHz)]. The required limit of -19dBm with a RBW of \geq 100kHz was used for all other frequency ranges. The spectrum analyzer settings that were used for this test are summarized in the following table.

Frequency Range	RBW	VBW	Number of Data Points	Detector	Sweep Time	Max Hold over	Offset Note 1
9kHz to 150kHz	1kHz	3kHz	8001	Average	Auto	Note 2	40.1dB
150kHz to 20MHz	100kHz	300kHz	8001	Average	Auto	Note 2	39.9dB
20MHz to 400MHz	100kHz	300kHz	8001	Peak	Auto	50 Sweeps	40.1dB
400MHz to 800MHz	100kHz	300kHz	8001	Average	Auto	Note 2	40.2dB
800MHz to 1.1GHz	100kHz	300kHz	8001	Peak	Auto	50 Sweeps	40.2dB
1.1GHz to 5GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	32.0dB
5GHz to 8GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	30.1dB

Note 1: The total measurement RF path loss of the test setup (attenuators, filters and test cables) is accounted for by the spectrum analyzer reference level offset.

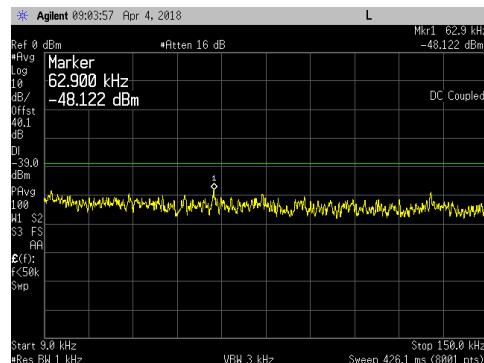
Note 2: Max Hold not used and instead measurements were performed with the spectrum analyzer in the RMS average mode over 100 traces.

A high pass filter was used to reduce measurement instrumentation noise floor for the frequency ranges above 1100MHz. The total measurement RF path loss of the test setup (attenuators, high pass filter and test cables) as shown in the table is accounted for by the spectrum analyzer reference level offset. The display line on the plots reflects the required limit.

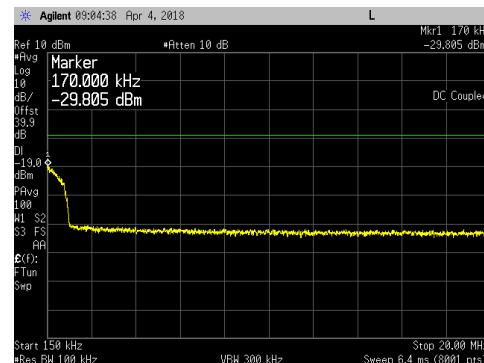
Conducted spurious emission plots/measurements are provided in the following pages.

LTE1.4 Ch BW _ QPSK _ Middle Channel (737.0MHz) at 60 watts/carrier:

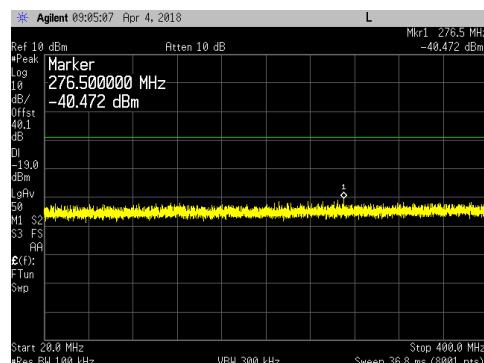
9kHz to 150kHz



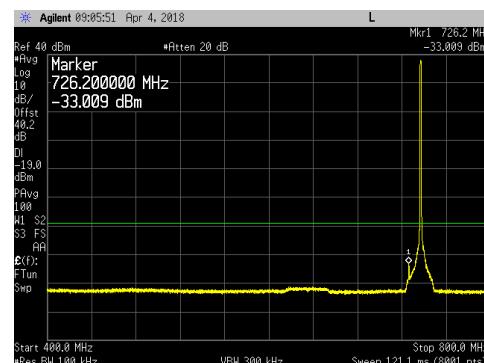
150kHz to 20MHz



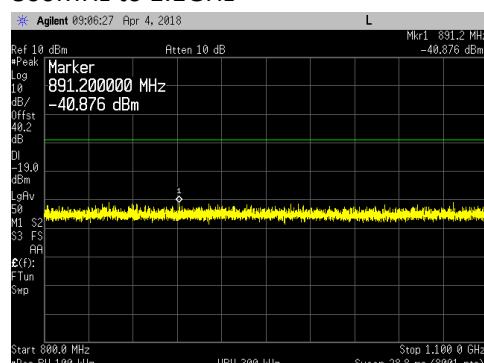
20MHz to 400MHz



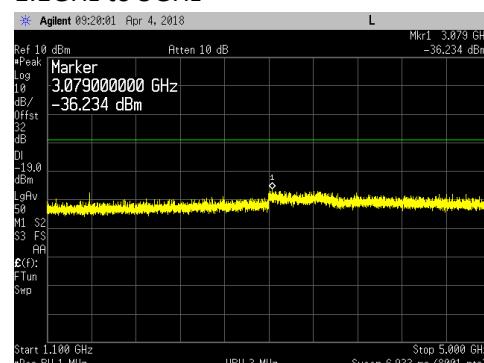
400MHz to 800MHz



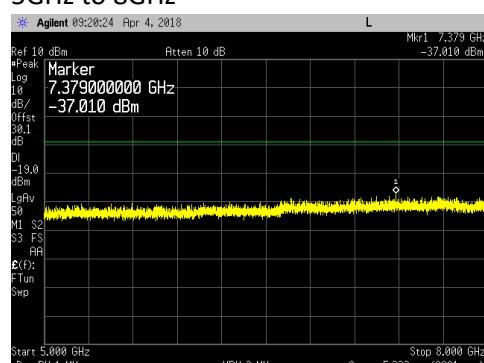
800MHz to 1.1GHz



1.1GHz to 5GHz

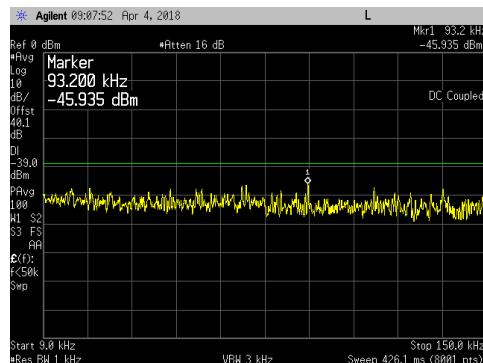


5GHz to 8GHz

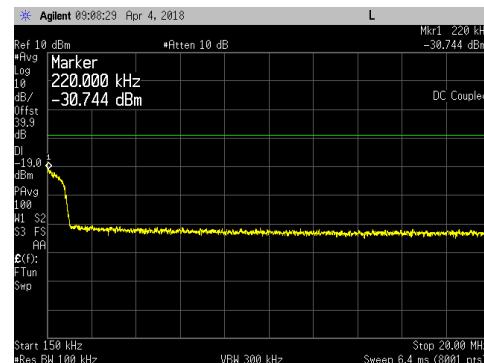


LTE1.4 Ch BW _ 16QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

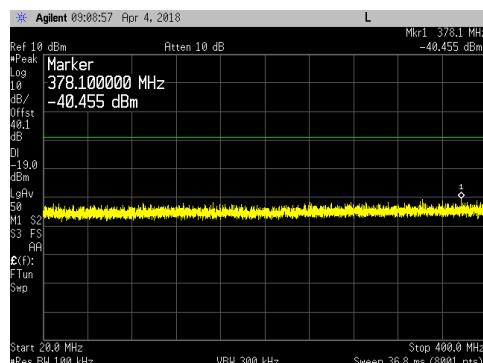
9kHz to 150kHz



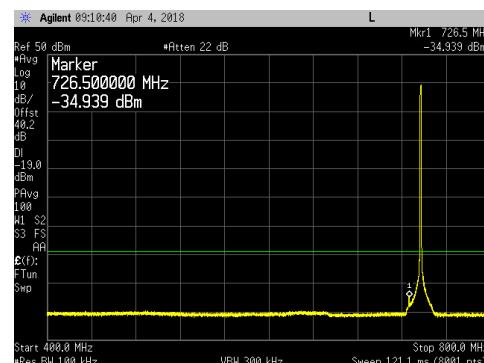
150kHz to 20MHz



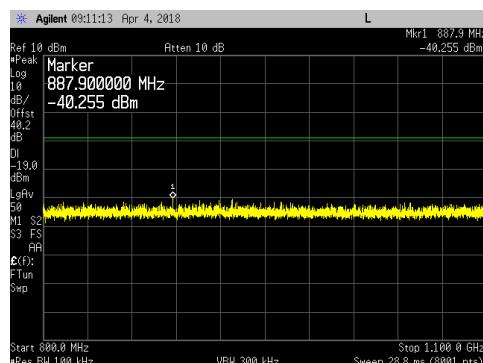
20MHz to 400MHz



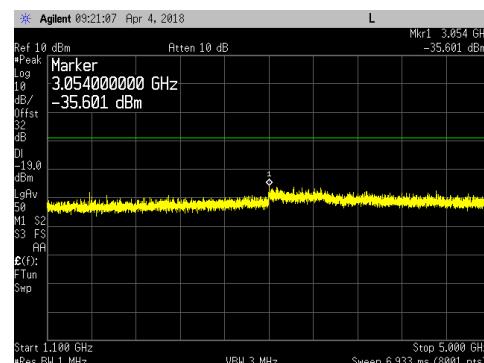
400MHz to 800MHz



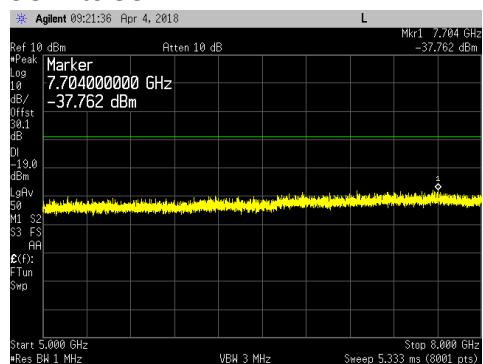
800MHz to 1.1GHz



1.1GHz to 5GHz

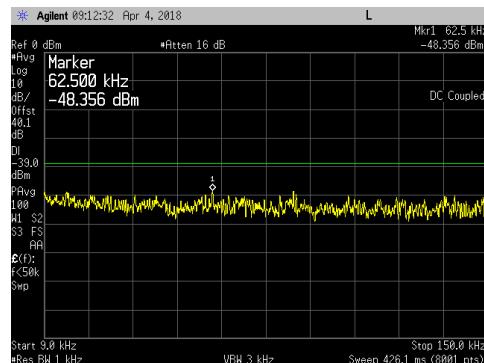


5GHz to 8GHz

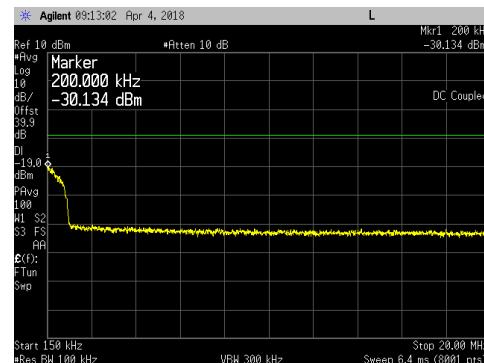


LTE1.4 Ch BW _ 64QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

9kHz to 150kHz



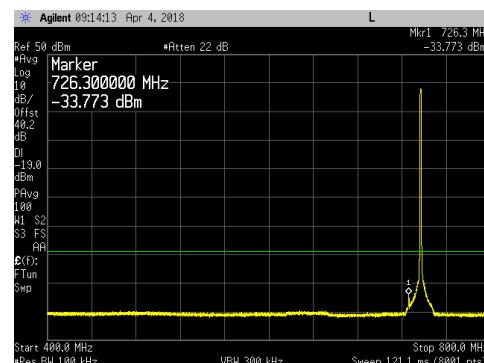
150kHz to 20MHz



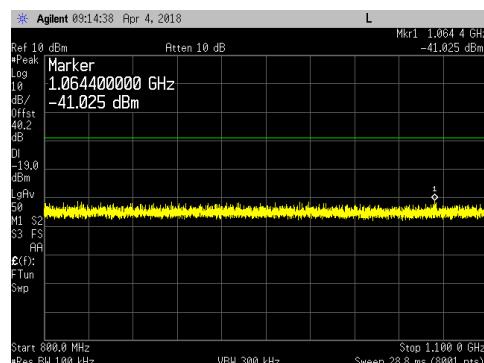
20MHz to 400MHz



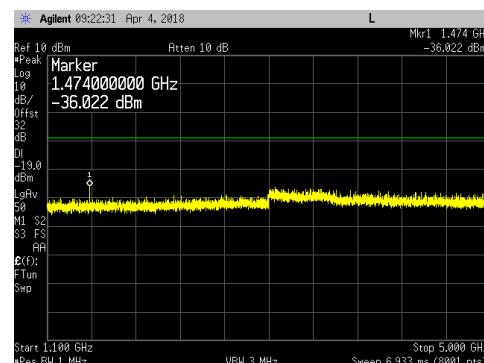
400MHz to 800MHz



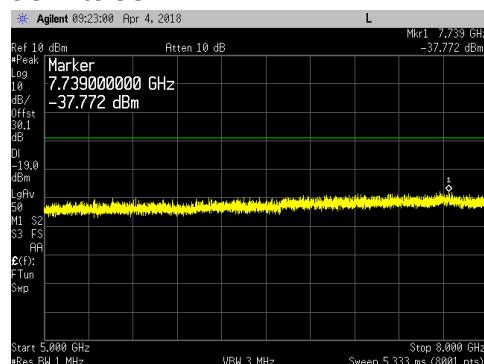
800MHz to 1.1GHz



1.1GHz to 5GHz

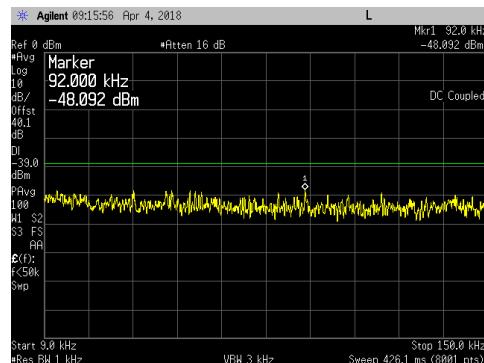


5GHz to 8GHz

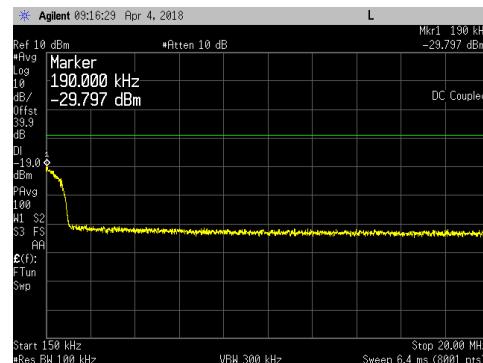


LTE1.4 Ch BW _ 256QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

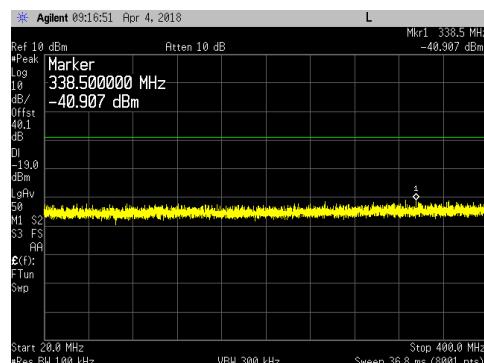
9kHz to 150kHz



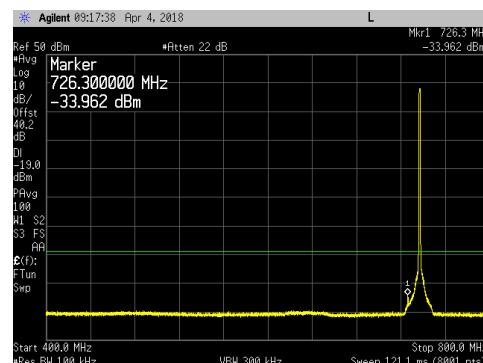
150kHz to 20MHz



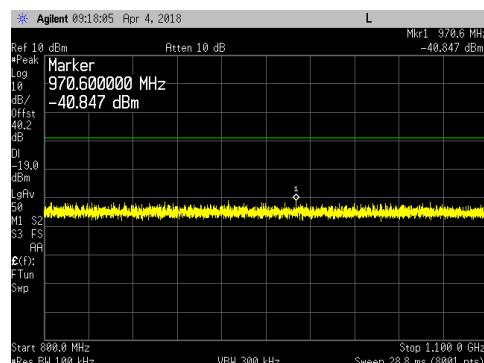
20MHz to 400MHz



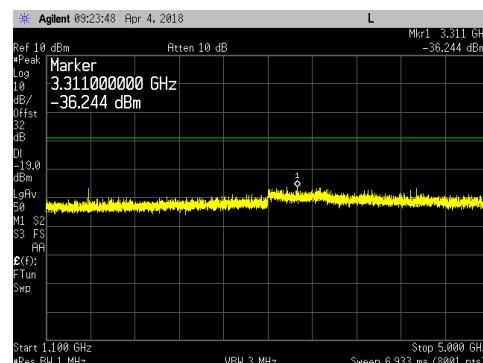
400MHz to 800MHz



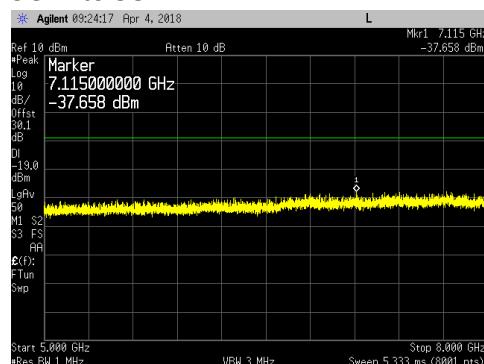
800MHz to 1.1GHz



1.1GHz to 5GHz

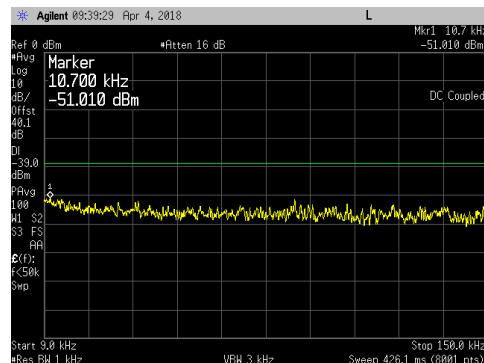


5GHz to 8GHz

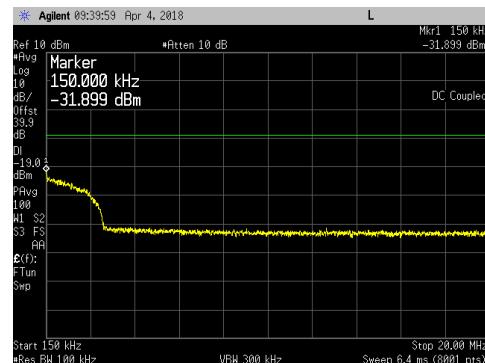


LTE3 Ch BW _ QPSK _ Middle Channel (737.0MHz) at 60 watts/carrier:

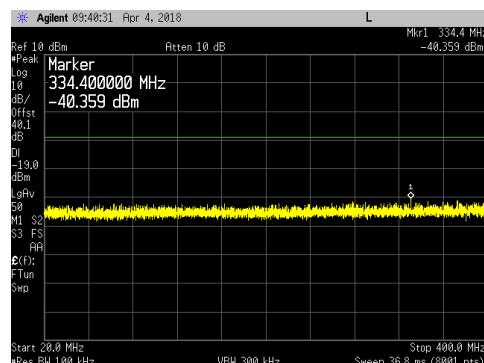
9kHz to 150kHz



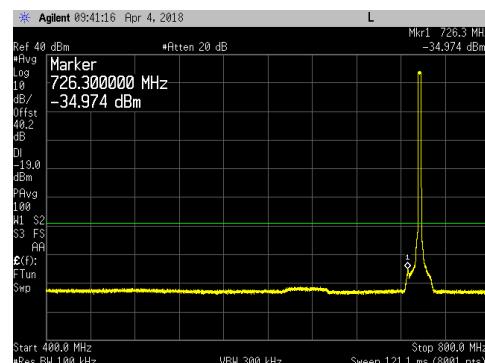
150kHz to 20MHz



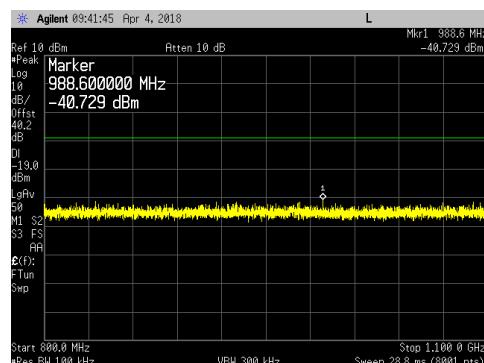
20MHz to 400MHz



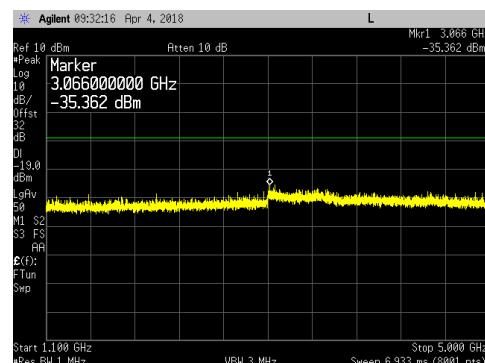
400MHz to 800MHz



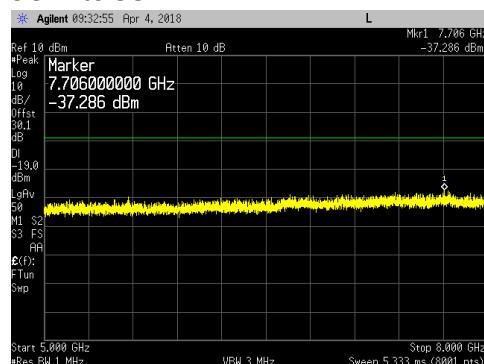
800MHz to 1.1GHz



1.1GHz to 5GHz

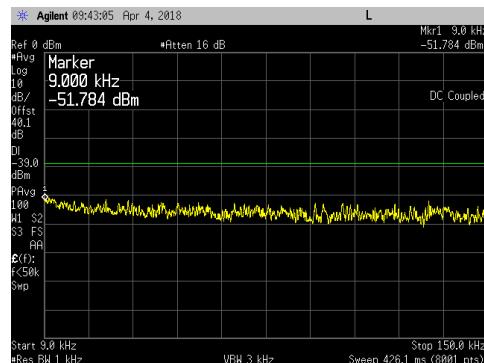


5GHz to 8GHz

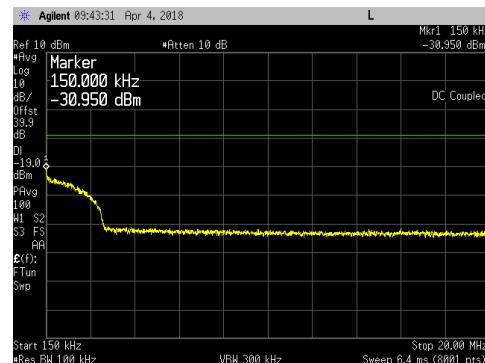


LTE3 Ch BW _ 16QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

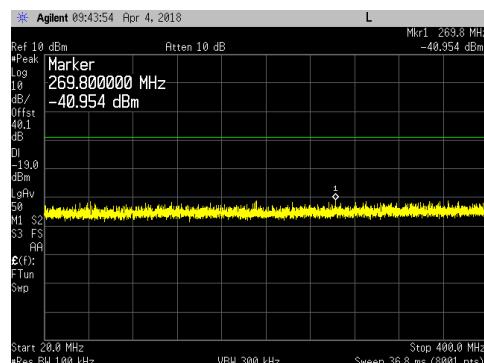
9kHz to 150kHz



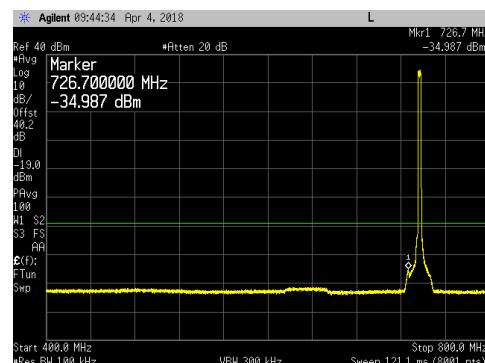
150kHz to 20MHz



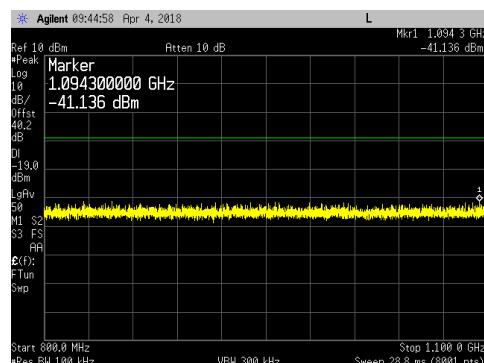
20MHz to 400MHz



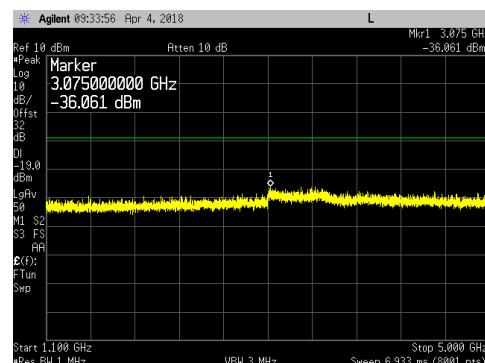
400MHz to 800MHz



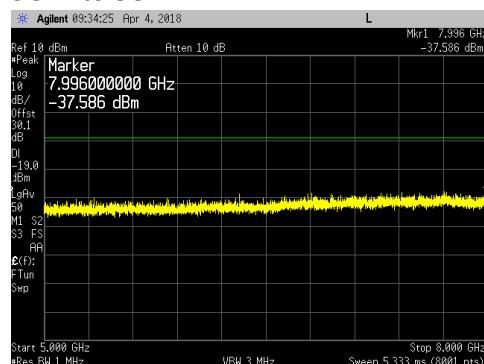
800MHz to 1.1GHz



1.1GHz to 5GHz

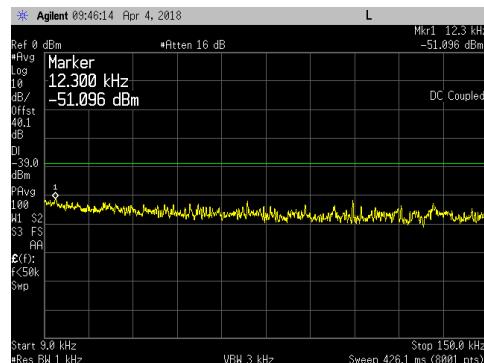


5GHz to 8GHz

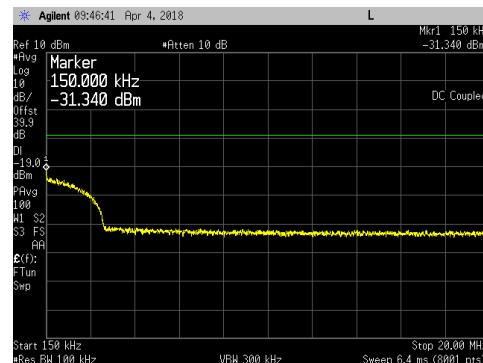


LTE3 Ch BW _ 64QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

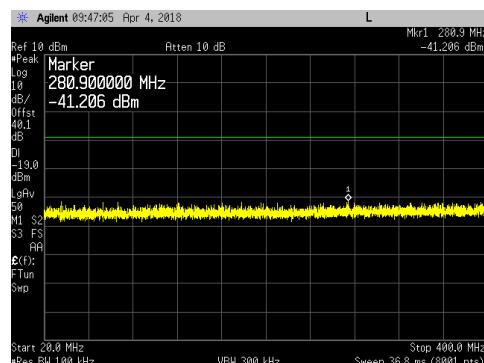
9kHz to 150kHz



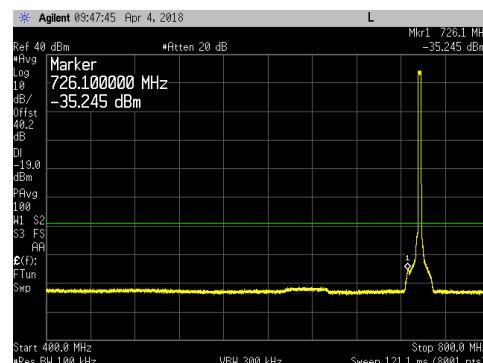
150kHz to 20MHz



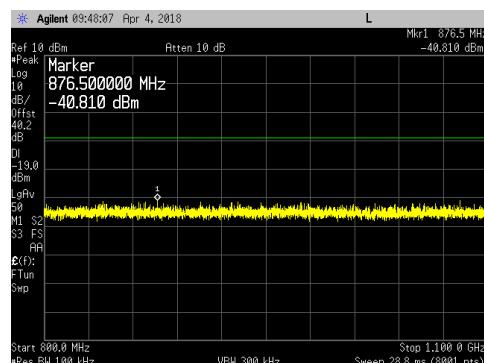
20MHz to 400MHz



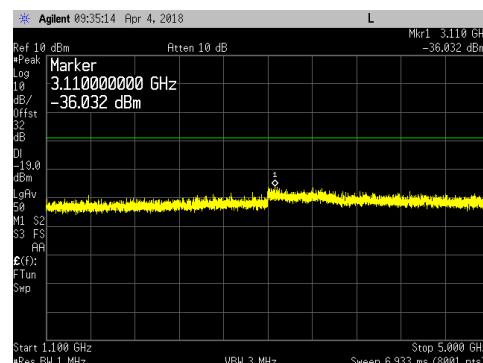
400MHz to 800MHz



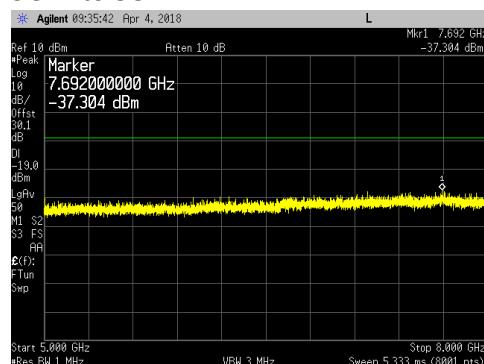
800MHz to 1.1GHz



1.1GHz to 5GHz

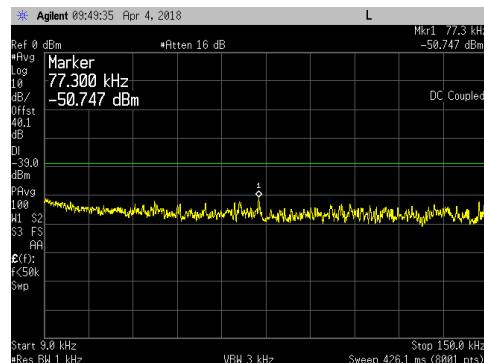


5GHz to 8GHz

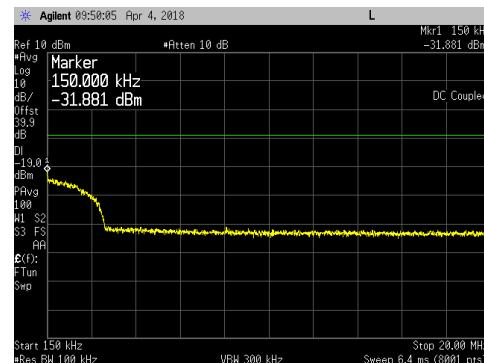


LTE3 Ch BW _ 256QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

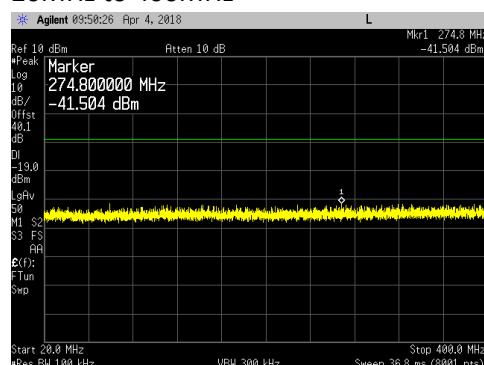
9kHz to 150kHz



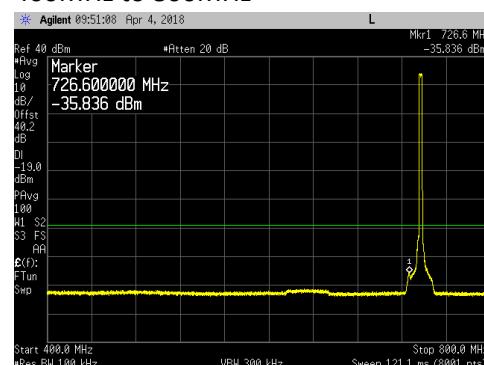
150kHz to 20MHz



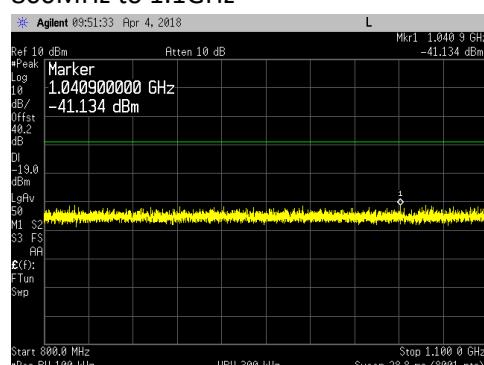
20MHz to 400MHz



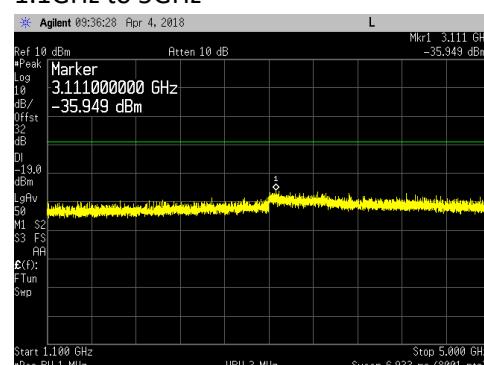
400MHz to 800MHz



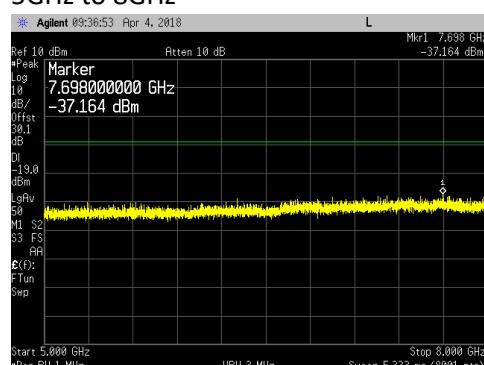
800MHz to 1.1GHz



1.1GHz to 5GHz

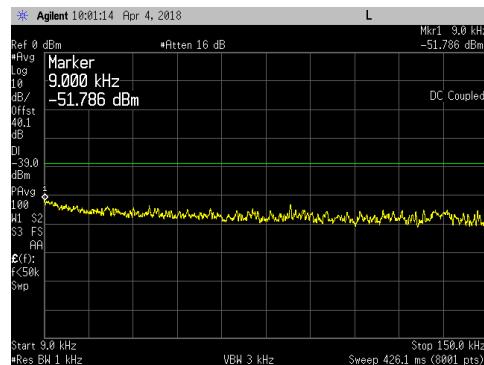


5GHz to 8GHz

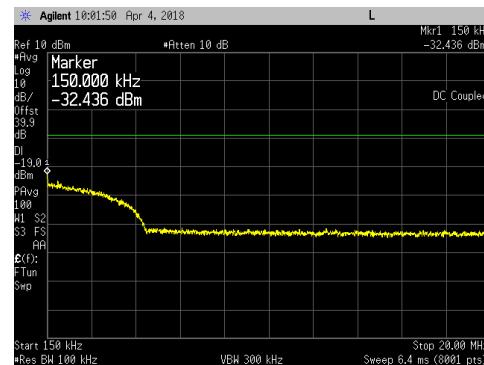


LTE5 Ch BW _ QPSK _ Middle Channel (737.0MHz) at 60 watts/carrier:

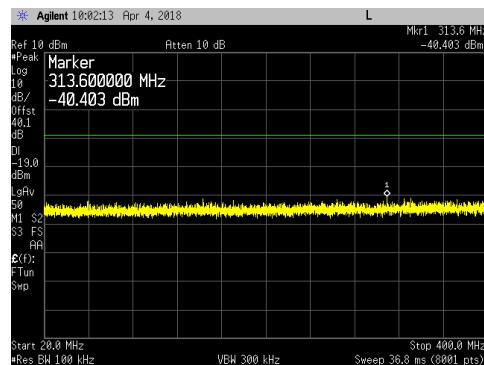
9kHz to 150kHz



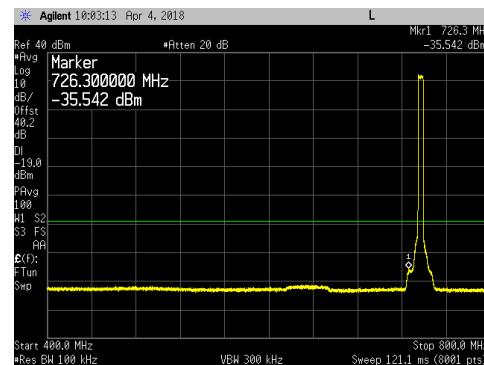
150kHz to 20MHz



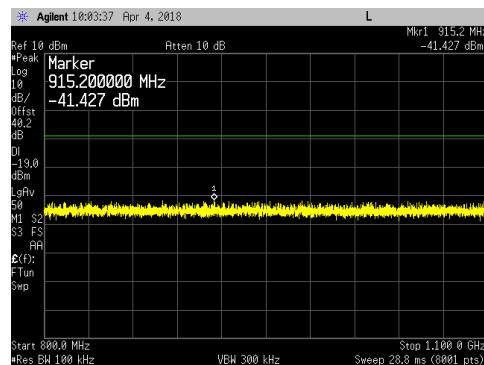
20MHz to 400MHz



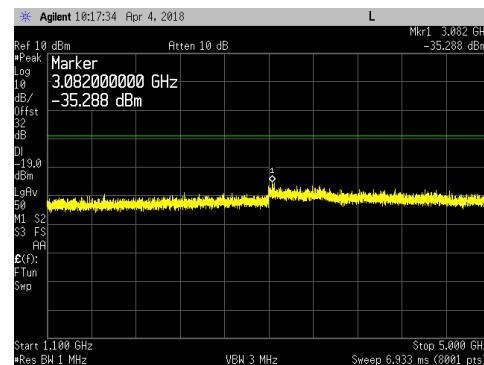
400MHz to 800MHz



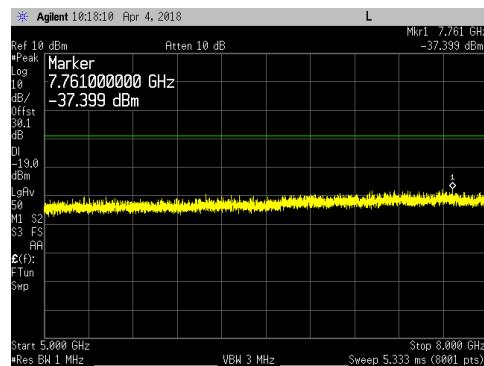
800MHz to 1.1GHz



1.1GHz to 5GHz

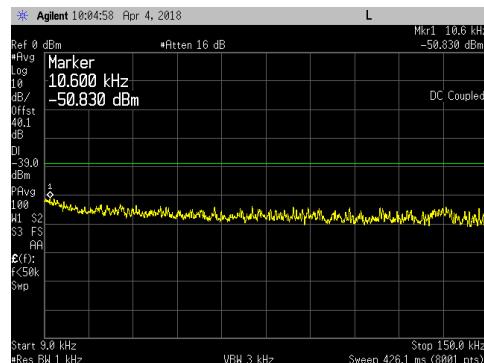


5GHz to 8GHz

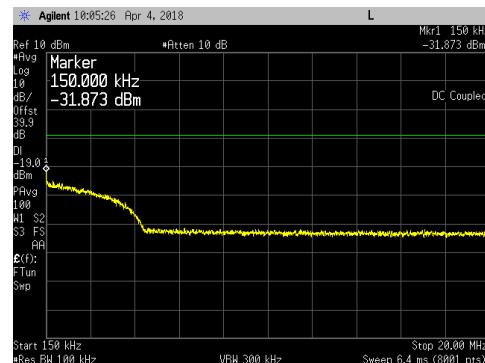


LTE5 Ch BW _ 16QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

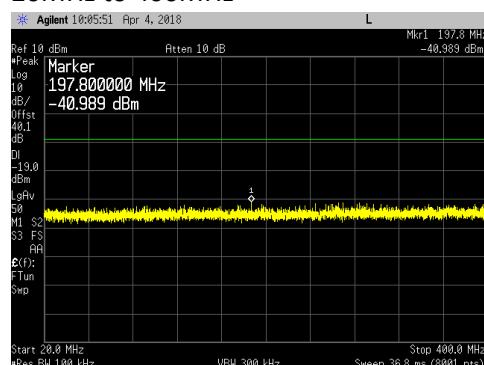
9kHz to 150kHz



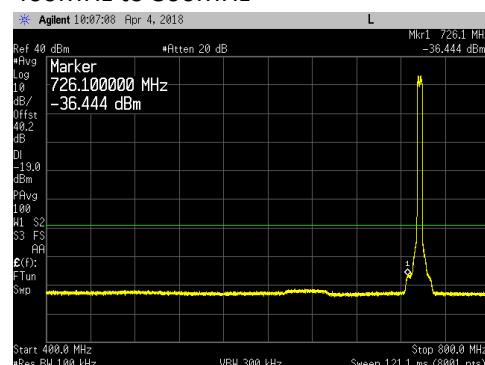
150kHz to 20MHz



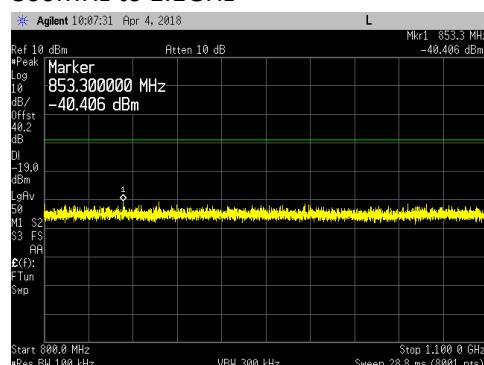
20MHz to 400MHz



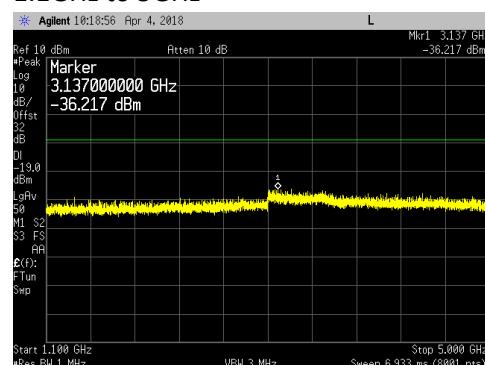
400MHz to 800MHz



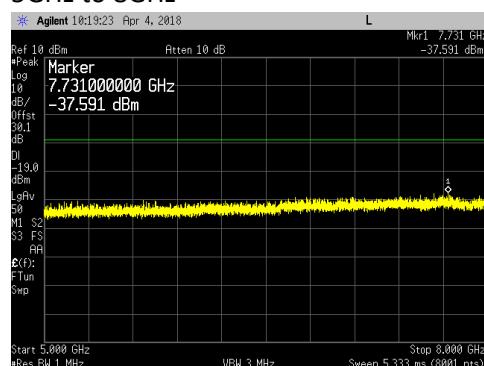
800MHz to 1.1GHz



1.1GHz to 5GHz

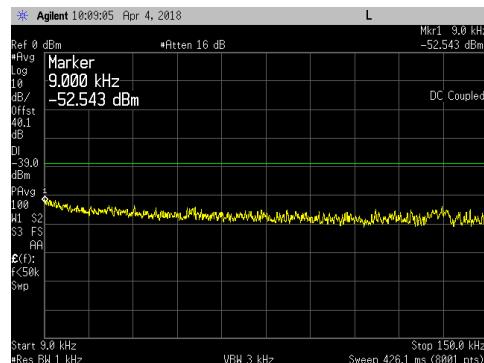


5GHz to 8GHz

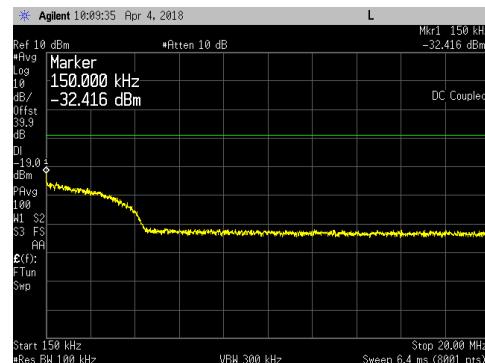


LTE5 Ch BW _ 64QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

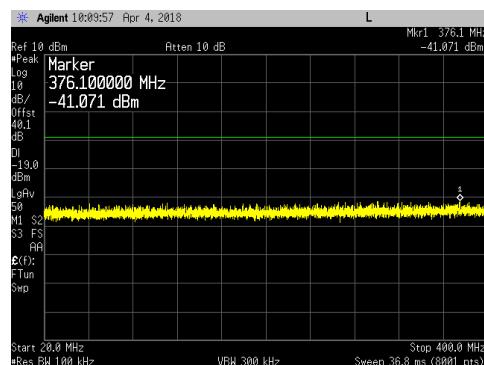
9kHz to 150kHz



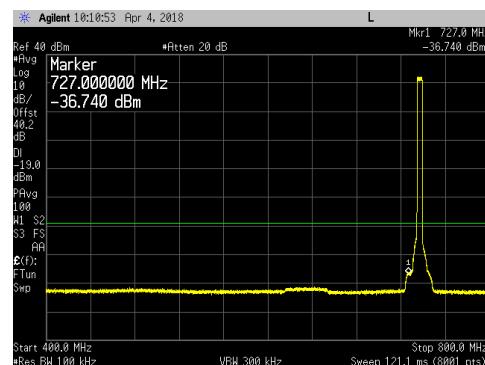
150kHz to 20MHz



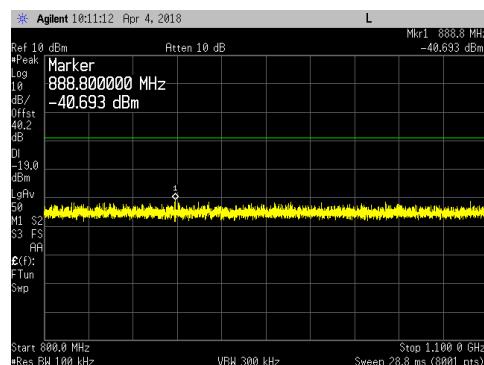
20MHz to 400MHz



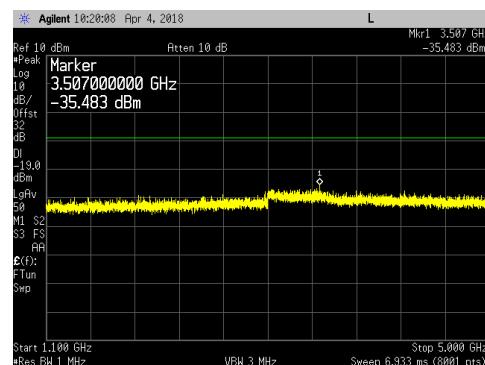
400MHz to 800MHz



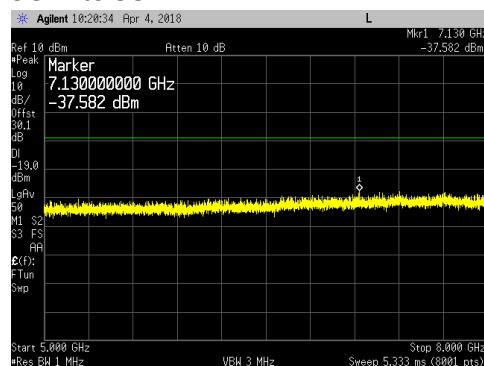
800MHz to 1.1GHz



1.1GHz to 5GHz

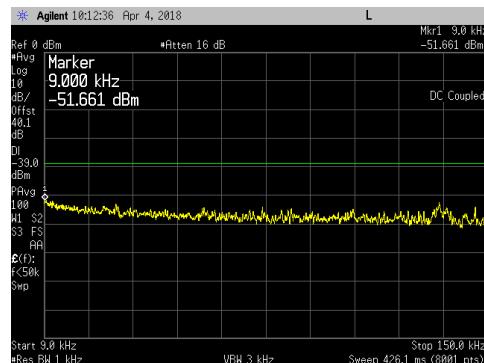


5GHz to 8GHz



LTE5 Ch BW _ 256QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

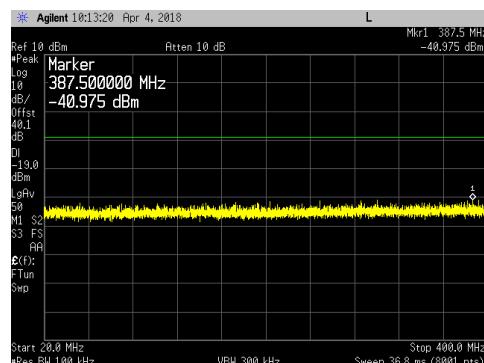
9kHz to 150kHz



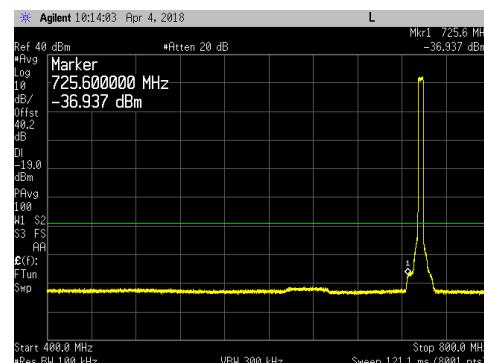
150kHz to 20MHz



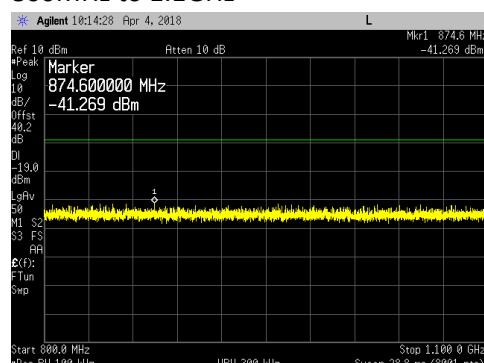
20MHz to 400MHz



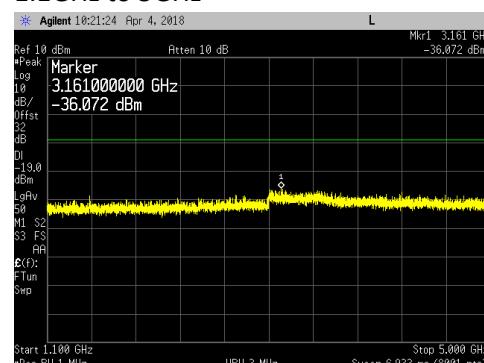
400MHz to 800MHz



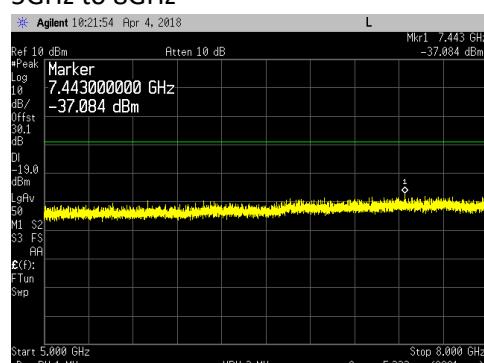
800MHz to 1.1GHz



1.1GHz to 5GHz

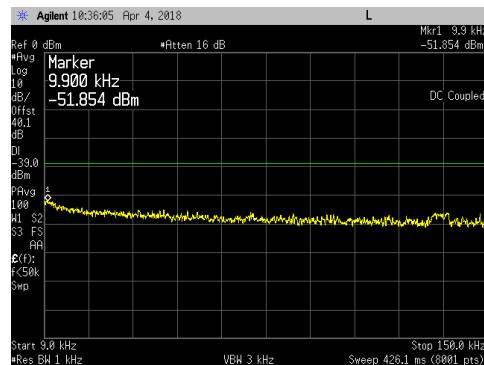


5GHz to 8GHz

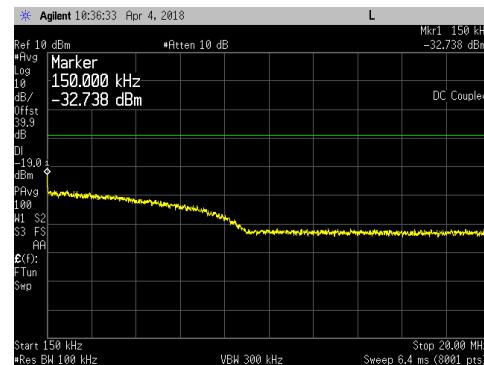


LTE10 Ch BW _ QPSK _ Middle Channel (737.0MHz) at 60 watts/carrier:

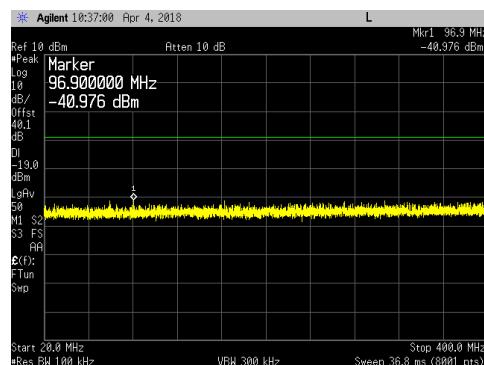
9kHz to 150kHz



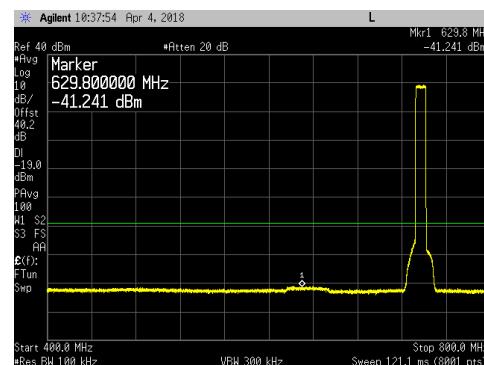
150kHz to 20MHz



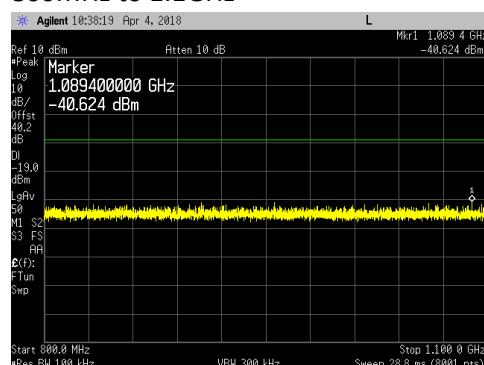
20MHz to 400MHz



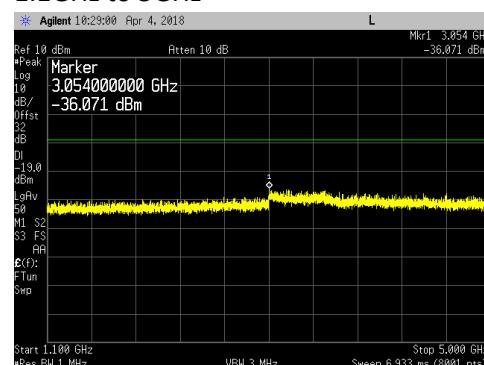
400MHz to 800MHz



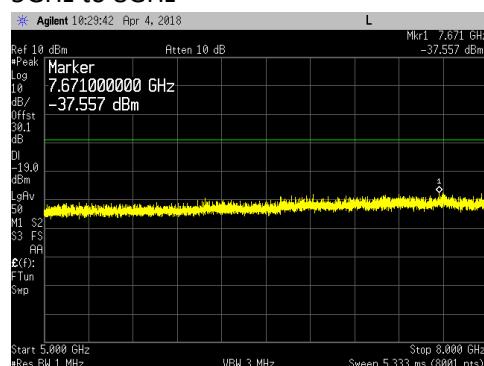
800MHz to 1.1GHz



1.1GHz to 5GHz

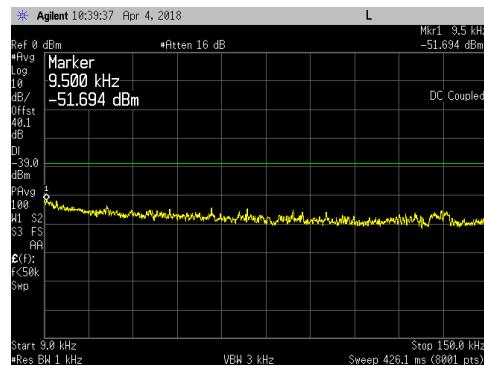


5GHz to 8GHz

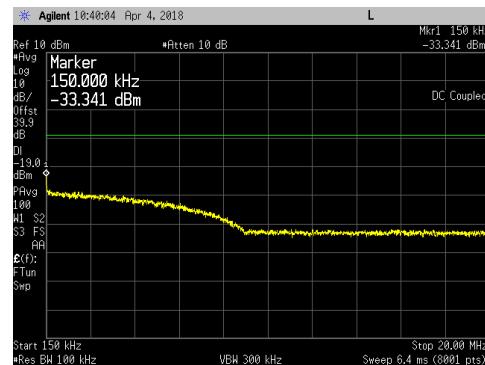


LTE10 Ch BW _ 16QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

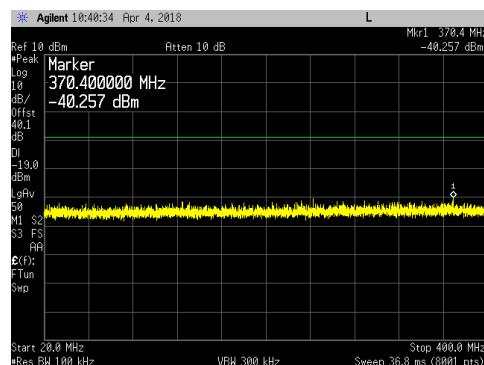
9kHz to 150kHz



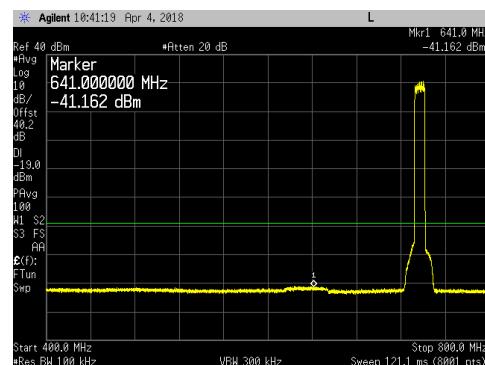
150kHz to 20MHz



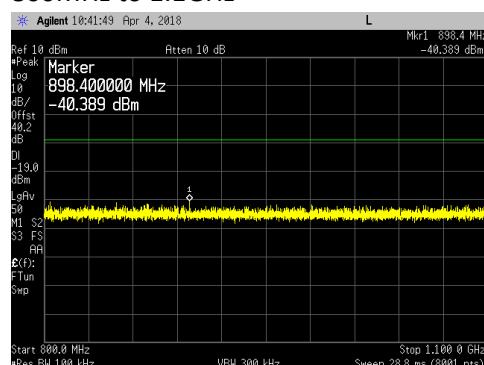
20MHz to 400MHz



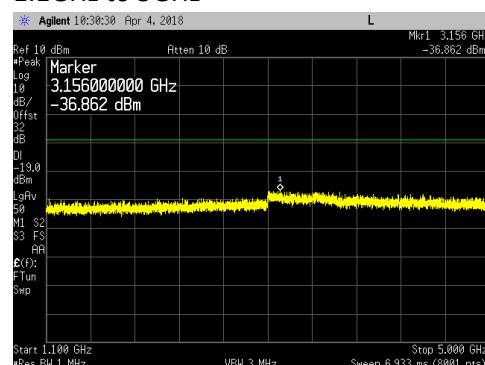
400MHz to 800MHz



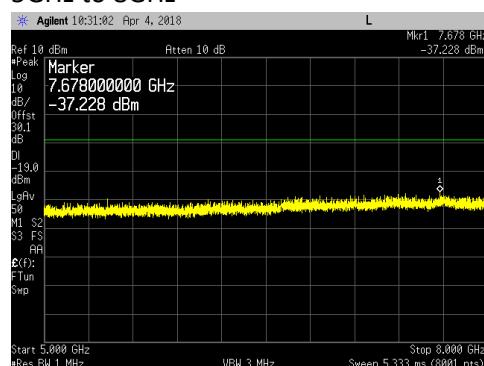
800MHz to 1.1GHz



1.1GHz to 5GHz

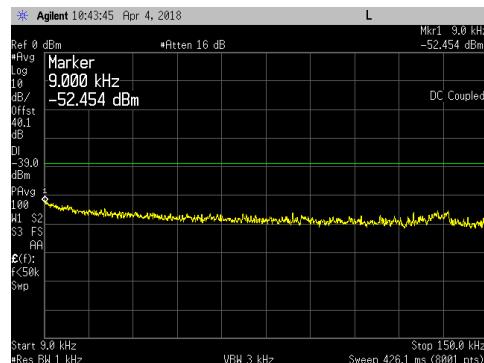


5GHz to 8GHz

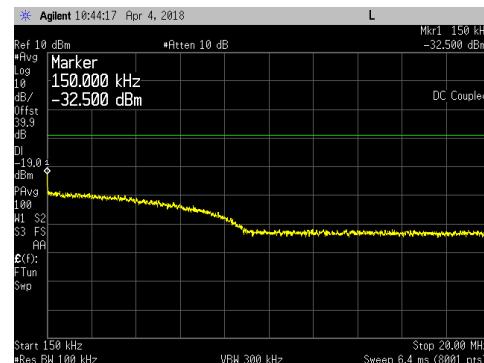


LTE10 Ch BW _ 64QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

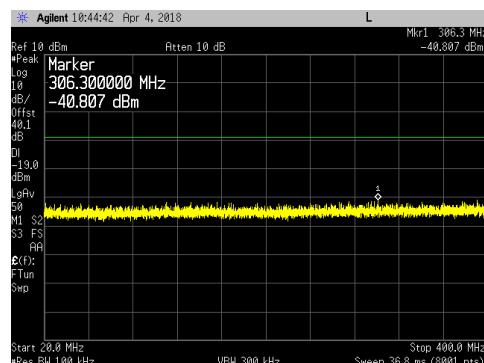
9kHz to 150kHz



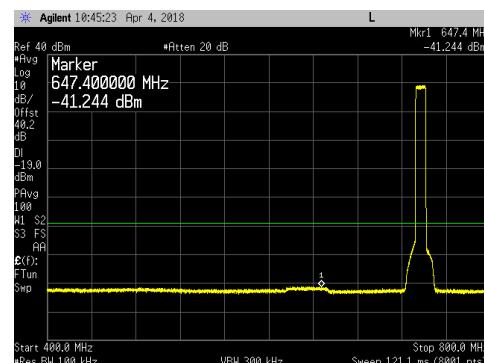
150kHz to 20MHz



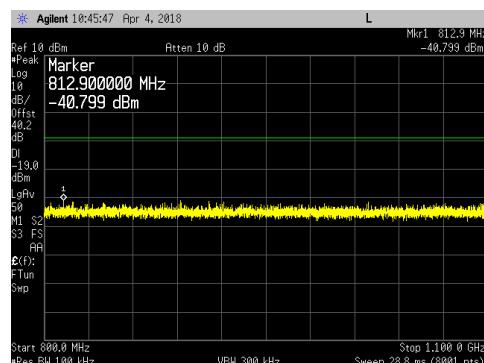
20MHz to 400MHz



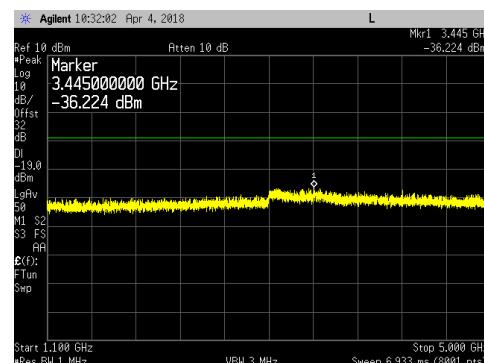
400MHz to 800MHz



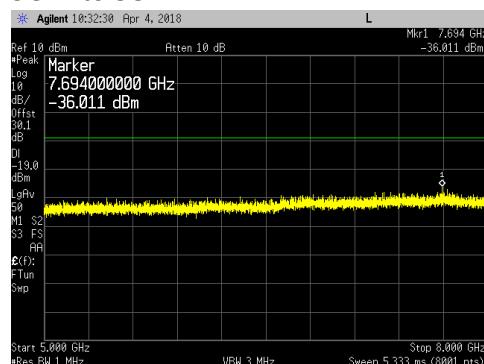
800MHz to 1.1GHz



1.1GHz to 5GHz

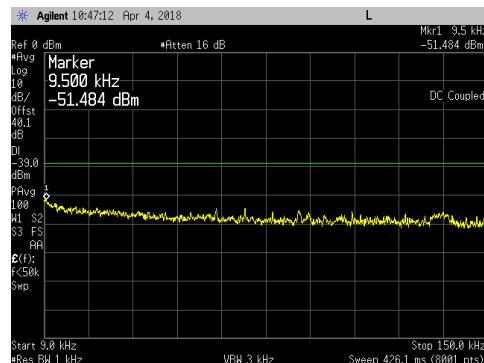


5GHz to 8GHz

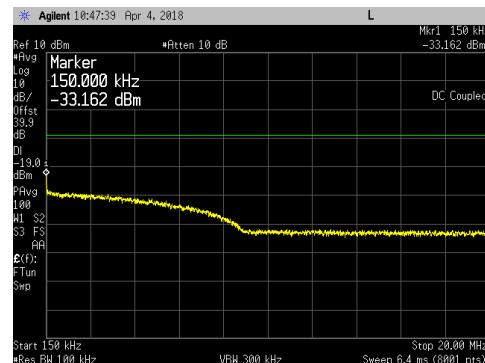


LTE10 Ch BW _ 256QAM _ Middle Channel (737.0MHz) at 60 watts/carrier:

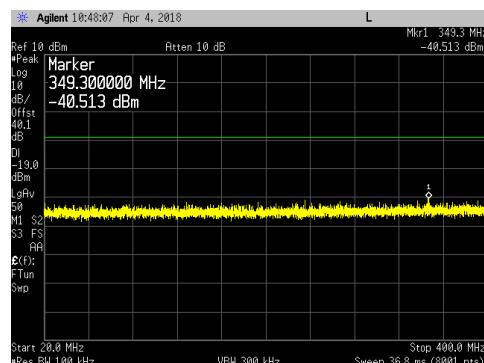
9kHz to 150kHz



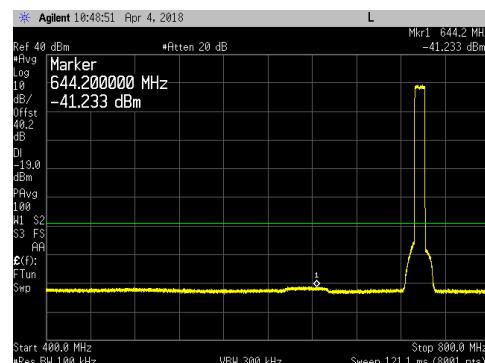
150kHz to 20MHz



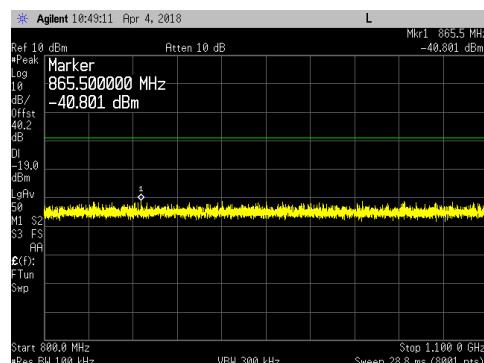
20MHz to 400MHz



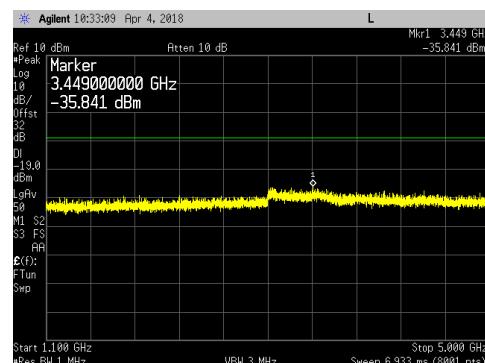
400MHz to 800MHz



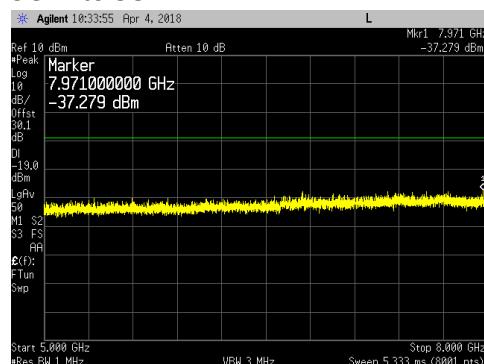
800MHz to 1.1GHz



1.1GHz to 5GHz



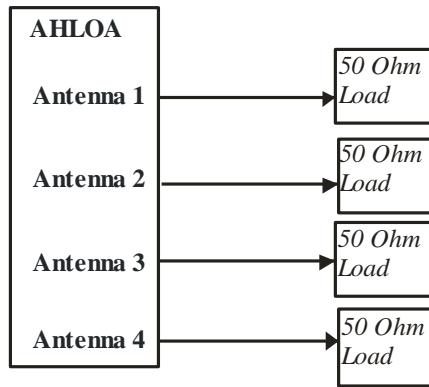
5GHz to 8GHz



Conducted spurious emission plots/measurement results for the second test with the 3GPP Band 71 and the 3GPP Band 12 transmitters enabled simultaneously at 30 watts per carrier (or 60 watts/antenna port) are in Appendix A.

Transmitter Radiated Spurious Emissions

During radiated emission testing all antenna ports of the base station were terminated with 50ohm termination blocks as shown in the diagram below.



Based on antenna port conducted spurious emissions tests results, preliminary scans for radiated spurious emissions were performed in 30MHz – 8GHz frequency range.

Two test configurations (with the RRH fan assembly) are needed for radiated spurious emission measurements to prove compliance in the 3GPP Band 12 frequency range. The first test is with 3GPP Band 12 carriers operating at 60W/carrier (3GPP Band 71 carriers are not enabled). The second test is with the 3GPP Band 71 carriers and 3GPP Band 12 carriers operating simultaneously (at 30 watts per carrier and total carrier power of 60 watts per antenna port).

The tests include channel bandwidth with the highest spectral density for both frequency bands. The bottom, middle and top frequency channels for each band are enabled. The carrier configurations for the radiated emission testing are provided below. Final maximized radiated emissions are measured in these modes.

Frequency Band	Antenna Port	RF Bandwidth	EARFCN	Transmit Frequency	Carrier Power
Band 71	1	5 MHz	68611 (Bottom Channel)	619.5 MHz	0 Watts
Band 71	2	5 MHz	68761 (Middle Channel)	634.5 MHz	0 Watts
Band 71	3	5 MHz	68761 (Middle Channel)	634.5 MHz	0 Watts
Band 71	4	5 MHz	68911 (Top Channel)	649.5 MHz	0 Watts
Band 12	1	1.4 MHz	5007 (Bottom Channel)	728.7 MHz	60 Watts
Band 12	2	1.4 MHz	5090 (Middle Channel)	737.0 MHz	60 Watts
Band 12	3	1.4 MHz	5090 (Middle Channel)	737.0 MHz	60 Watts
Band 12	4	1.4 MHz	5173 (Top Channel)	745.3 MHz	60 Watts

Band 12 Carriers at Maximum (60W/carrier) and Band 71 Carriers not Enabled

Frequency Band	Antenna Port	RF Bandwidth	EARFCN	Transmit Frequency	Carrier Power
Band 71	1	5 MHz	68611 (Bottom Channel)	619.5 MHz	30 Watts
Band 71	2	5 MHz	68761 (Middle Channel)	634.5 MHz	30 Watts
Band 71	3	5 MHz	68761 (Middle Channel)	634.5 MHz	30 Watts
Band 71	4	5 MHz	68911 (Top Channel)	649.5 MHz	30 Watts
Band 12	1	1.4 MHz	5007 (Bottom Channel)	728.7 MHz	30 Watts
Band 12	2	1.4 MHz	5090 (Middle Channel)	737.0 MHz	30 Watts
Band 12	3	1.4 MHz	5090 (Middle Channel)	737.0 MHz	30 Watts
Band 12	4	1.4 MHz	5173 (Top Channel)	745.3 MHz	30 Watts

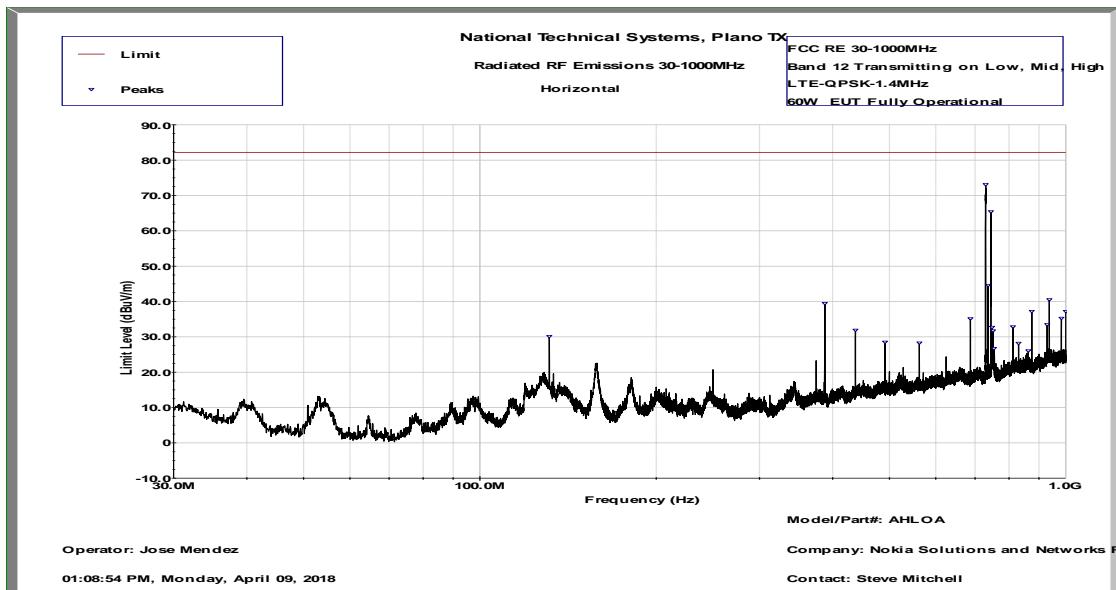
Band 71 and Band 12 Carriers Enabled Simultaneously (30W/carrier)

Note that the radiated spurious emission plots/measurement results for the second test with the 3GPP Band 71 and the 3GPP Band 12 transmitters enabled simultaneously at 30 watts per carrier (or 60 watts/antenna port) are in Appendix A.

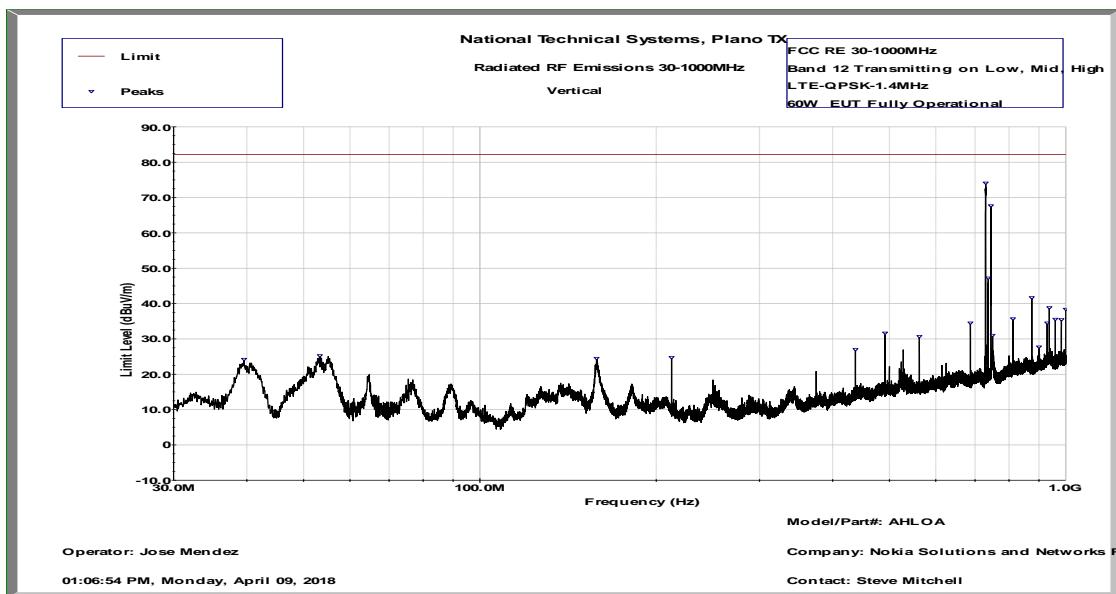
Band 12 Data

Frequency	Polarity	Peaks Raw	QP Raw	Antenna	Pre Amp	Cableloss	Peaks	QP	Limit	Margin	Tower	Turntable
MHz	V/H	dBuV/m	dBuV/m	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dB	cm	Degrees
874.986	V	50.895	50.579	24.2	-36.781	3.207	41.523	41.207	82.2	-40.993	100	359
937.495	H	48.031	48.679	25.7	-37.002	3.712	40.446	41.093	82.2	-41.107	100	173
874.99	H	46.543	49.628	24.2	-36.781	3.207	37.172	40.256	82.2	-41.944	100	239
937.491	V	46.389	46.31	25.7	-37.002	3.712	38.804	38.724	82.2	-43.476	100	347
687.495	V	47.521	50.48	21.3	-36.485	2.102	34.437	37.396	82.2	-44.804	100	94
687.493	H	48.135	50.459	21.3	-36.485	2.102	35.051	37.375	82.2	-44.825	107	61
812.489	V	45.091	45.608	24.6	-36.698	2.668	35.661	36.178	82.2	-46.022	100	327
5898.49	V	25.407	32.463	34.08	-37.16	6.465	28.792	35.848	82.2	-46.352	100.1	-0.2
8539.28	V	19.596	29.059	37.35	-38.227	6.949	25.667	35.131	82.2	-47.069	200	-0.1
437.501	H	48.515	50.861	18.55	-36.704	1.519	31.88	34.226	82.2	-47.974	100	26
9460.74	H	28.762	27.848	37.744	-38.8	6.826	34.531	33.618	82.2	-48.582	200	0.1
3932.32	V	25.274	32.704	32.676	-36.953	4.967	25.963	33.394	82.2	-48.806	148	-0.1
7874.27	V	27.446	26.994	36.548	-38.151	6.282	32.125	31.674	82.2	-50.526	99.7	-0.1
7858.86	H	28.563	26.965	36.503	-38.095	6.238	33.209	31.612	82.2	-50.588	200	0
2948.91	V	24.361	34.765	29.715	-37.32	4.173	20.93	31.334	82.2	-50.866	200	0.9
5896.56	H	31.036	27.37	34.076	-37.163	6.463	34.412	30.746	82.2	-51.454	200	0.1
491.516	V	47.643	46.506	19.1	-36.775	1.644	31.613	30.476	82.2	-51.724	100	304
3932.53	H	24.591	29.365	32.677	-36.953	4.967	25.281	30.056	82.2	-52.144	200	0
3681.73	V	28.151	27.646	31.855	-37.233	4.36	27.131	26.627	82.2	-55.573	200.1	-0.1
3681.07	H	27.456	27.633	31.849	-37.234	4.363	26.432	26.609	82.2	-55.591	200	0
2940	H	31.888	29.316	29.654	-37.323	4.168	28.386	25.815	82.2	-56.385	200.1	-0.1
131.385	H	59.624	41.157	7.4	-37.695	0.777	30.105	11.638	82.2	-70.562	135	228
387.949	H	55.895	29.556	17	-36.961	1.422	37.354	11.015	82.2	-71.185	100	359
212.722	V	36.035	30.362	11.4	-37.527	0.992	10.901	5.227	82.2	-76.973	100	359

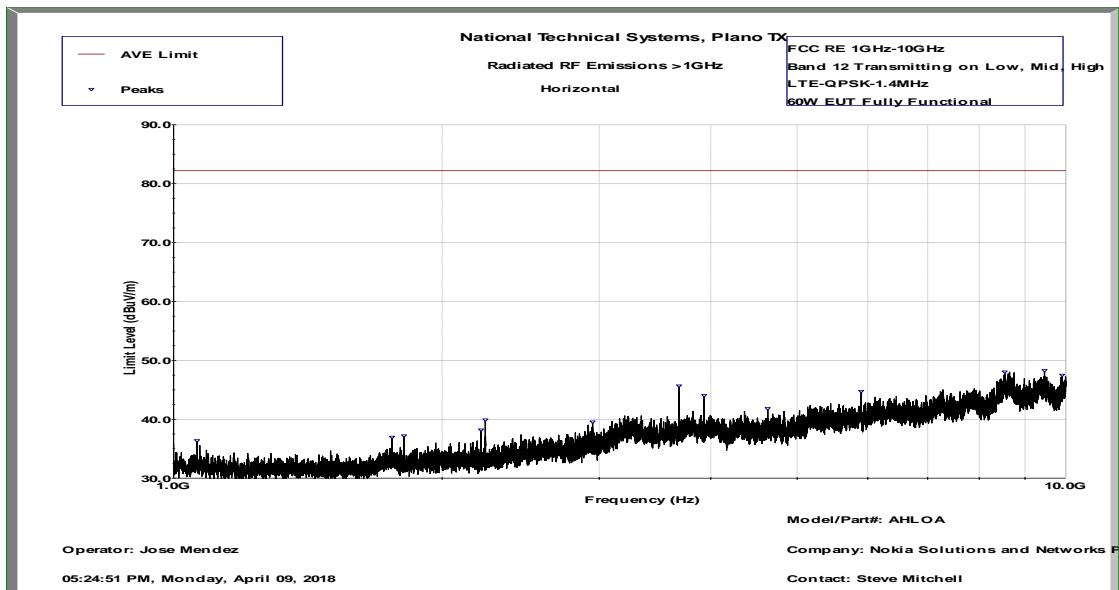
A three meter measurement distance was used for radiated emission measurements. The highest radiated emissions detected were more than 20dB below the three meter limit of 82.2dBuV/m (equivalent to -13dBm EIRP). Since all maximized measurements were more than 20dB below these levels, substitution measurements were not performed. TILE software was used for all preliminary scans and plots that are included on the following pages.



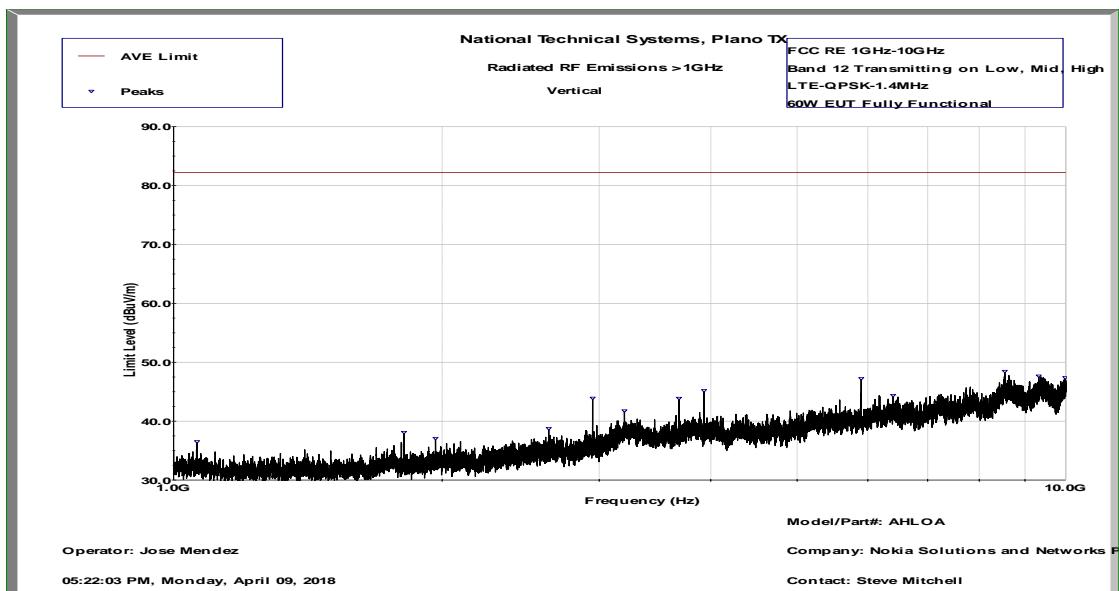
Radiated Spurious Emissions – 30-1000MHz – Horizontal Band 12



Radiated Spurious Emissions – 30-1000MHz – Vertical Band 12



Radiated Spurious Emissions – 1-8GHz – Horizontal Band 12



Radiated Spurious Emissions – 1-8GHz – Vertical Band 12

Frequency Stability/Accuracy

Carrier frequency stability of the EUT at extreme temperatures and voltages was measured. The frequency error was measured as follows:

- (1) EUT transmitting in 5MHz-QPSK-LTE mode at center channel (737.0MHz) on port 4.
- (2) The EUT temperature was stabilized at each temperature step (for a minimum of 30 minutes) prior to frequency accuracy measurement.

Nominal operating voltage of the product is declared as 48VDC.

Frequency error results are listed below for extreme voltages and temperatures.

Extreme Voltages:

Percentage of Rated Supply	DC Voltage (VDC)	Frequency Error (Hz) at 20°C
85%	40.8	0.69
100%	48.0	0.58
115%	55.2	0.59

Extreme Temperatures:

Temperature	Frequency Error (Hz) at 48VDC
-30 °C	0.62
-20 °C	0.71
-10 °C	0.93
0 °C	0.65
10 °C	0.77
20 °C	0.58
30 °C	0.59
40 °C	0.66
50 °C	0.88

Based on the results above, the highest recorded frequency error (0.93Hz or ~0.0013 ppm) ensures that the transmitted signal remains in its authorized frequency block at extreme voltages and temperatures.

The results above are deemed sufficient to demonstrate carrier frequency stability for all other channel bandwidth modes and modulations since all carriers are controlled by the same frequency stabilization circuitry that was subjected to the extreme conditions under this test.