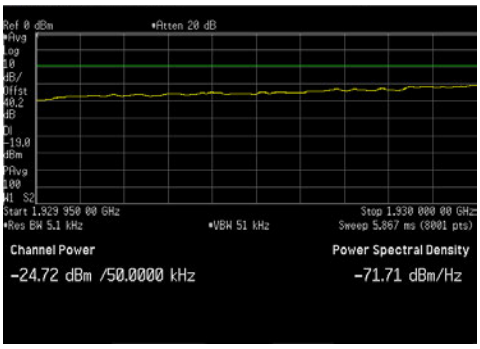
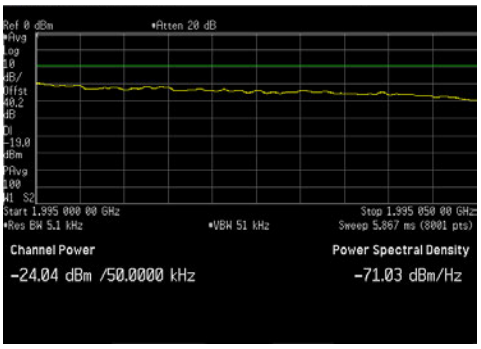
Dual LTE5_Band Edge Plots for Antenna Port 4 and QPSK Modulation:

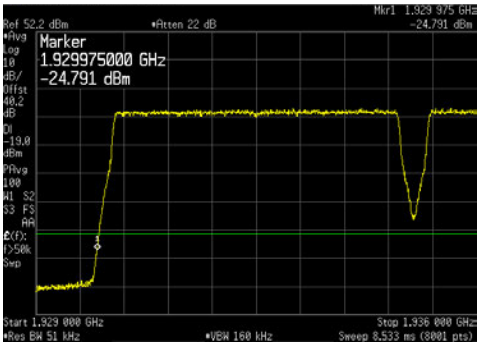
Dual LTE5_Bot Ch_LBE_1929.95 to 1930.00MHz



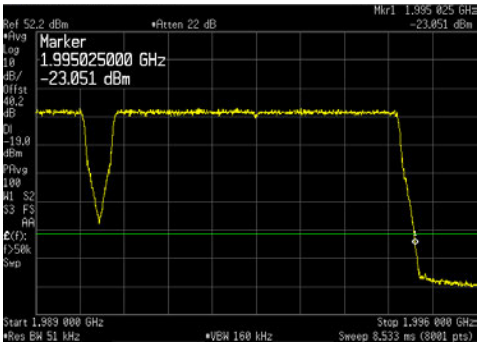
Dual LTE5_Top Ch_UBE_1995.00 to 1995.05MHz



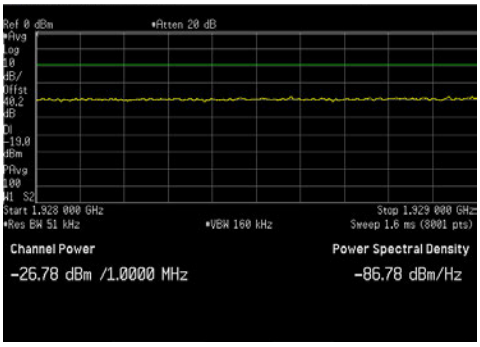
Dual LTE5_Bot Ch_LBE_1929 to 1936MHz



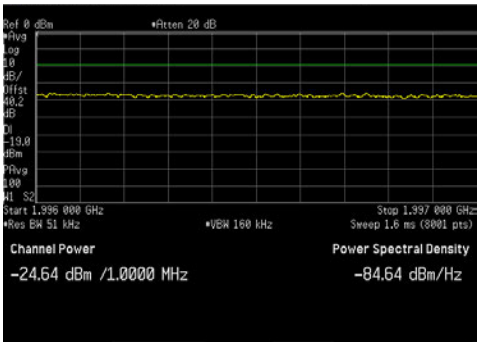
Dual LTE5_Top Ch_UBE_1989 to 1996MHz



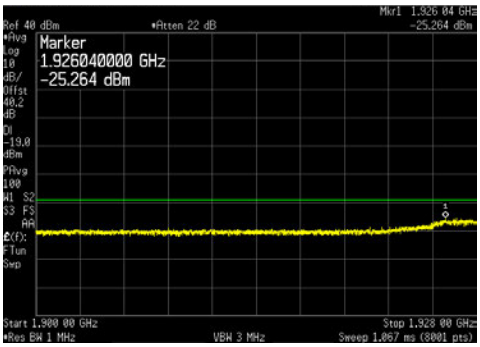
Dual LTE5_Bot Ch_LBE_1928 to 1929MHz



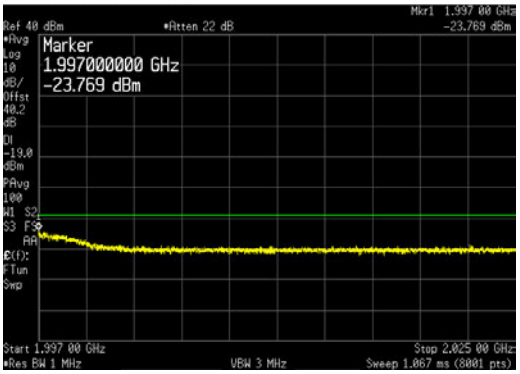
Dual LTE5_Top Ch_UBE_1996 to 1997MHz



Dual LTE5_Bot Ch_LBE_1900 to 1928MHz

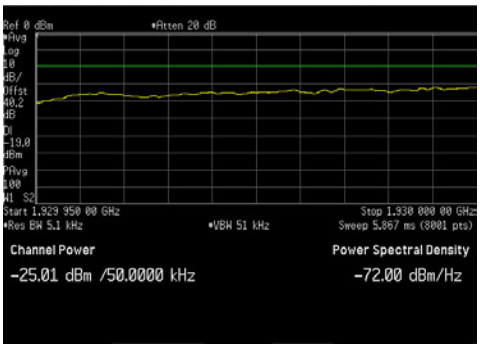


Dual LTE5_Top Ch_UBE_1997 to 2025MHz

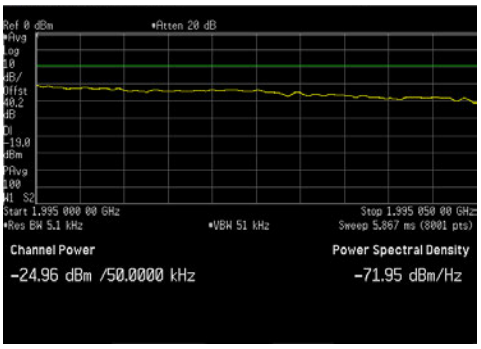


Dual LTE5_Band Edge Plots for Antenna Port 4 and 16QAM Modulation:

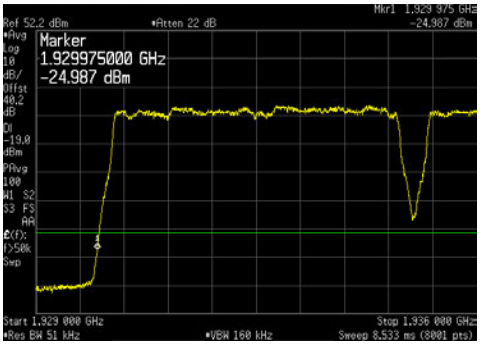
Dual LTE5_Bot Ch_LBE_1929.95 to 1930.00MHz



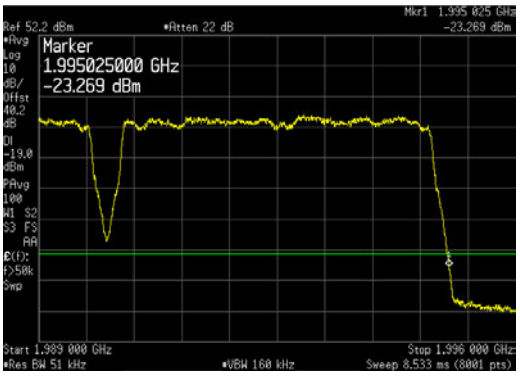
Dual LTE5_Top Ch_UBE_1995.00 to 1995.05MHz



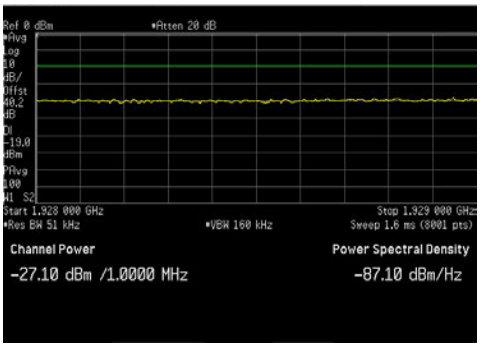
Dual LTE5_Bot Ch_LBE_1929 to 1936MHz



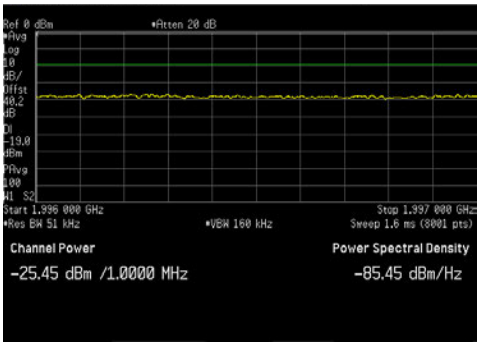
Dual LTE5_Top Ch_UBE_1989 to 1996MHz



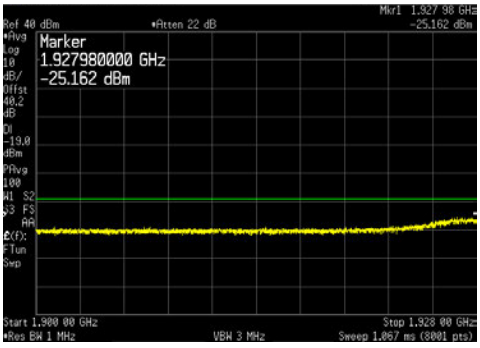
Dual LTE5_Bot Ch_LBE_1928 to 1929MHz



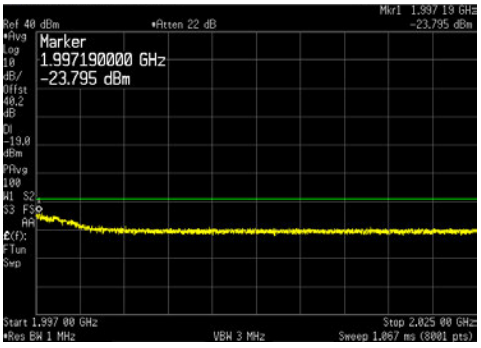
Dual LTE5_Top Ch_UBE_1996 to 1997MHz



Dual LTE5_Bot Ch_LBE_1900 to 1928MHz

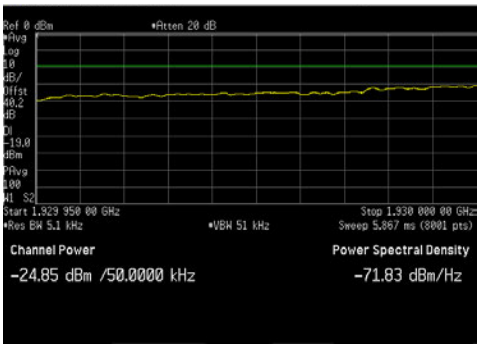


Dual LTE5_Top Ch_UBE_1997 to 2025MHz

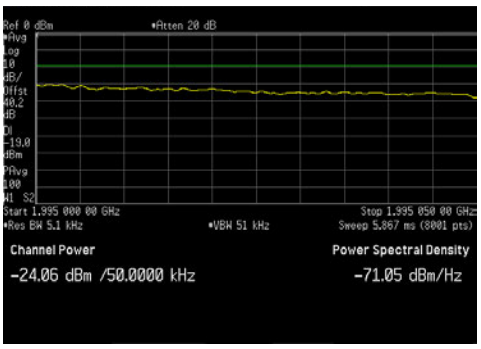


Dual LTE5_Band Edge Plots for Antenna Port 4 and 64QAM Modulation:

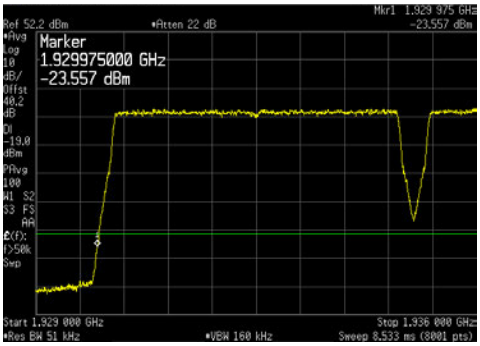
Dual LTE5_Bot Ch_LBE_1929.95 to 1930.00MHz



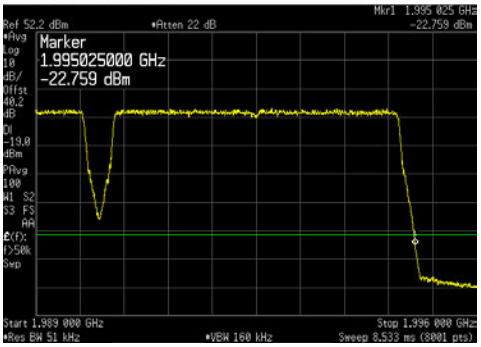
Dual LTE5_Top Ch_UBE_1995.00 to 1995.05MHz



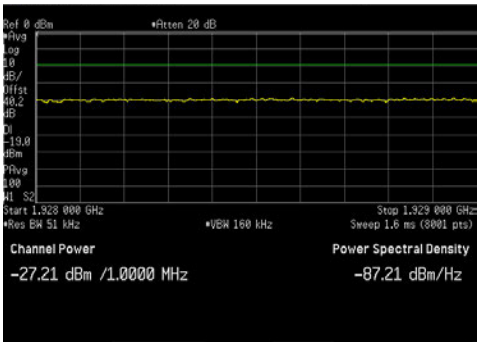
Dual LTE5_Bot Ch_LBE_1929 to 1936MHz



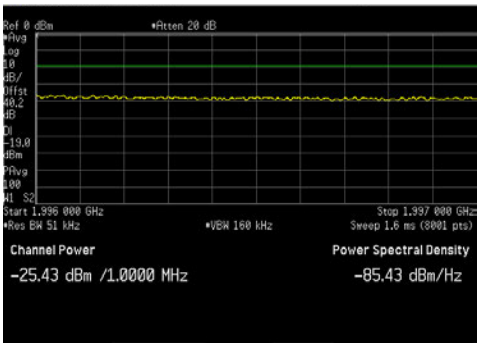
Dual LTE5_Top Ch_UBE_1989 to 1996MHz



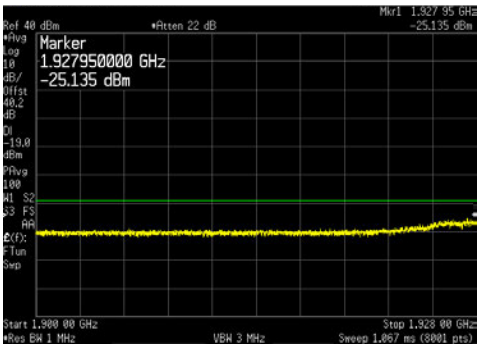
Dual LTE5_Bot Ch_LBE_1928 to 1929MHz



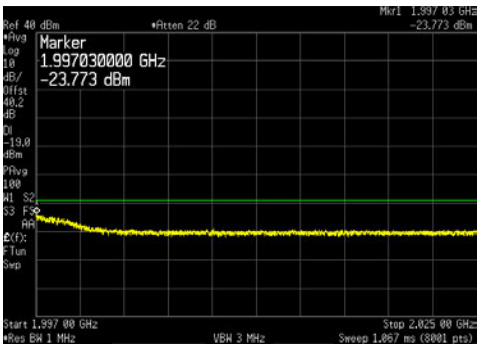
Dual LTE5_Top Ch_UBE_1996 to 1997MHz



Dual LTE5_Bot Ch_LBE_1900 to 1928MHz

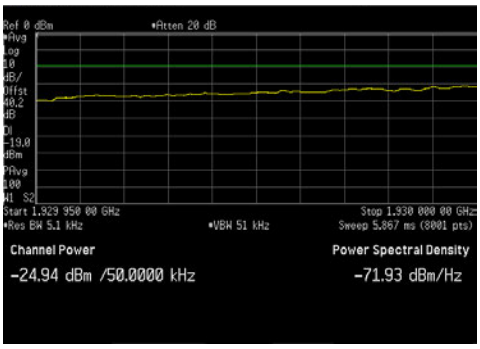


Dual LTE5_Top Ch_UBE_1997 to 2025MHz

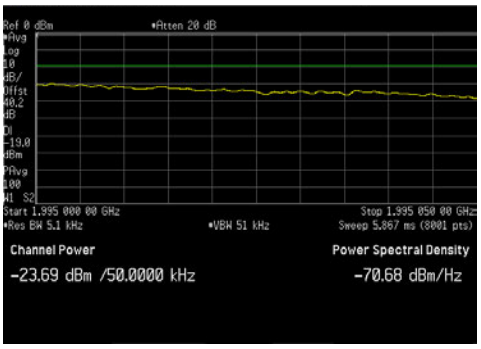


Dual LTE5_Band Edge Plots for Antenna Port 4 and 256QAM Modulation:

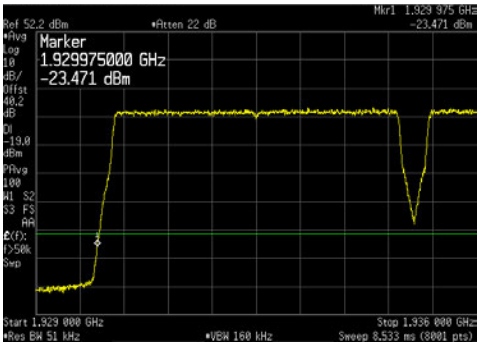
Dual LTE5_Bot Ch_LBE_1929.95 to 1930.00MHz



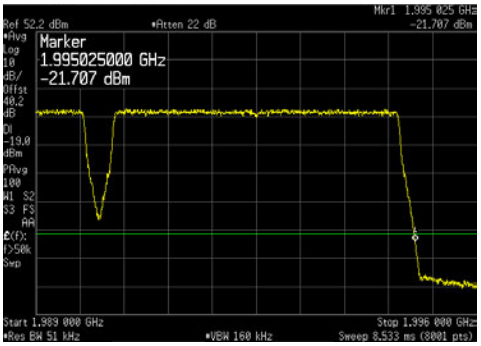
Dual LTE5_Top Ch_UBE_1995.00 to 1995.05MHz



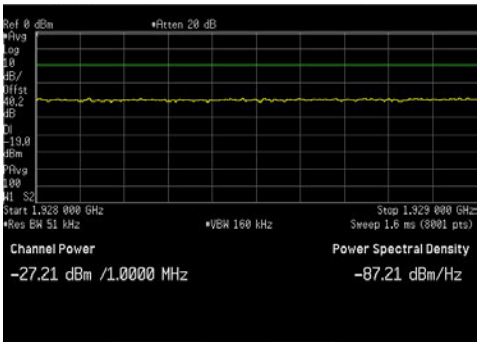
Dual LTE5_ Bot Ch_LBE_1929 to 1936MHz



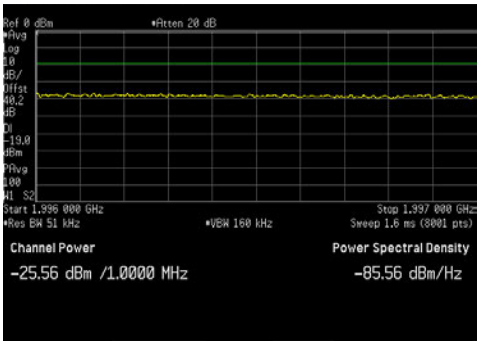
Dual LTE5_Top Ch_UBE_1989 to 1996MHz



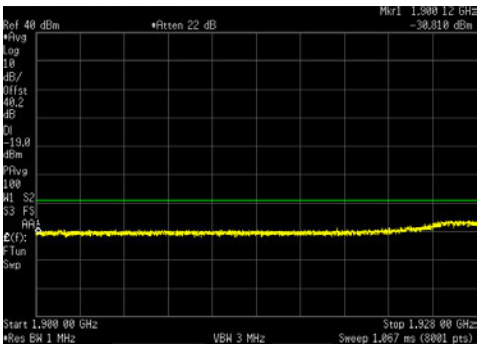
Dual LTE5_ Bot Ch_LBE_1928 to 1929MHz



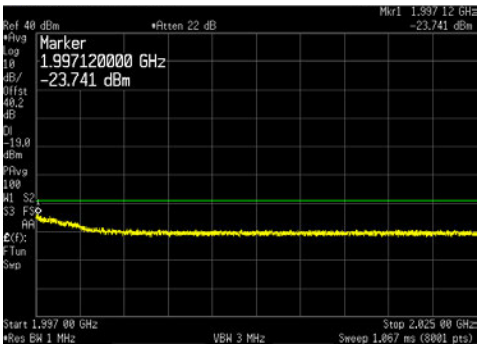
Dual LTE5_Top Ch_UBE_1996 to 1997MHz



Dual LTE5_ Bot Ch_LBE_1900 to 1928MHz



Dual LTE5_Top Ch_UBE_1997 to 2025MHz



Transmitter Antenna Port Conducted Emissions

Transmitter conducted emission measurements were made at RRH antenna port 4. Measurements were performed over the 9kHz to 22GHz frequency range. Two test configurations are needed for conducted spurious emission measurements. The first test will be with the 3GPP Band 25 transmitters enabled at 40 watts per carrier (the 3GPP Band 66 transmitters will not be enabled). The second test will be with the 3GPP Band 25 and the 3GPP Band 66 transmitters enabled simultaneously at 20 watts per carrier (or 40 watts/antenna port). The RRH was operated on the PCS middle channel (1962.5MHz) and AWS middle channel (2145.0MHz) with all LTE modulation types (QPSK, 16QAM, 64QAM, 256QAM) for LTE bandwidths of 5MHz, 10MHz, 15MHz and 20MHz.

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 1MHz 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 20MHz to 3GHz frequency range). Measurements for the 20MHz to 3GHz frequency range 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 –49dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 1MHz [i.e.: -49dBm = -19dBm -10log(1MHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to –29dBm to correct for a spectrum analyzer RBW of 100kHz versus required RBW of 1MHz [i.e.: -29dBm = -19dBm -10log(1MHz/100kHz)]. The required limit of -19dBm with a RBW of 1MHz was used for all other frequency ranges. The spectrum analyzer settings that were used for this test are summarized in the following table.

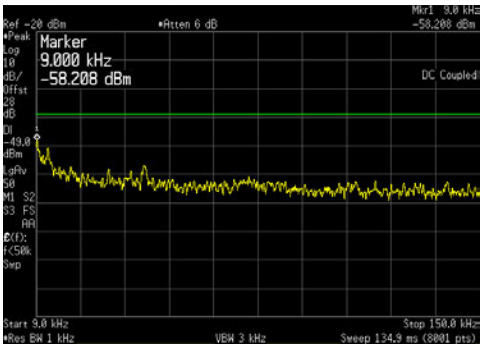
Frequency Range	RBW	VBW	Number of Data Points	Detector	Sweep Time	Max Hold over	Offset Note (1)
9kHz to 150kHz	1kHz	3kHz	8001	Peak	Auto	50 Sweeps	28.0dB
150kHz to 20MHz	100kHz	300kHz	8001	Peak	Auto	50 Sweeps	28.0dB
20MHz to 3GHz	1MHz	3MHz	8001	Average	Auto	Note (2)	40.2dB
3GHz to 6GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	40.0dB
6GHz to 10GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	30.1dB
10GHz to 14GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	33.0dB
14GHz to 18GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	34.2dB
18GHz to 22GHz	1MHz	3MHz	8001	Peak	Auto	50 Sweeps	40.0dB

Note 1: The total measurement RF path loss of the test setup (attenuators, test cables and filters) 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.

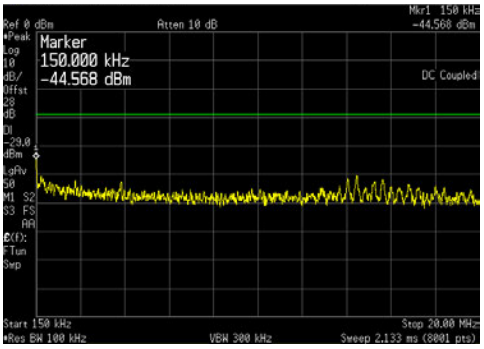
A low pass filter was used to reduce measurement instrumentation noise floor for the frequency ranges less than 20MHz. A high pass filter was used to reduce measurement instrumentation noise floor for the frequency ranges above 6GHz. The total measurement RF path loss of the test setup (attenuators, low pass filter, 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.

LTE5 Channel Bandwidth _ QPSK _ Middle Channel (1962.5MHz) at 40 watts/carrier:

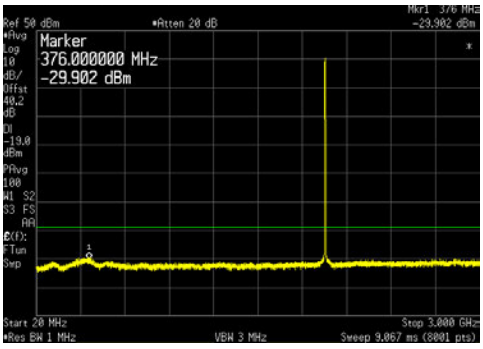
9kHz to 150kHz



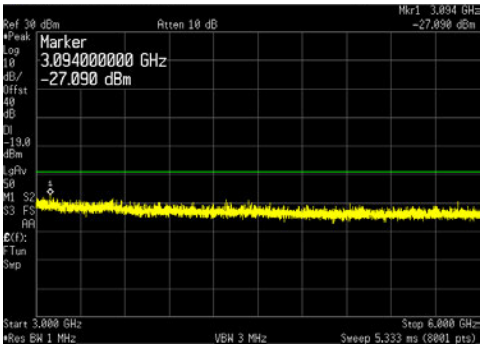
150kHz to 20MHz



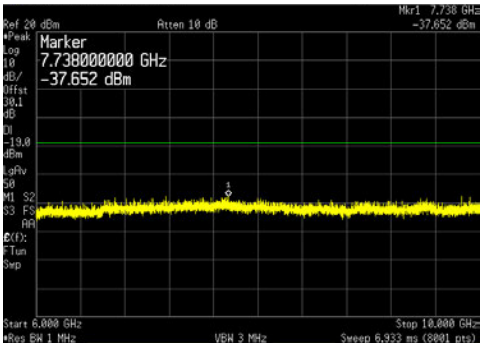
20MHz to 3GHz



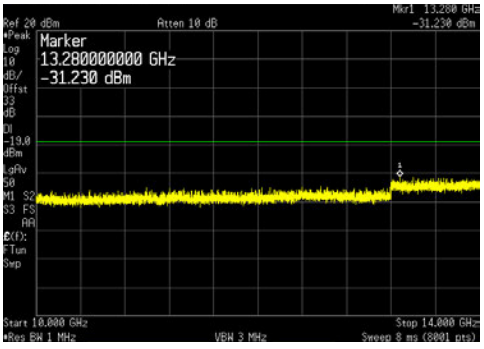
3GHz to 6GHz



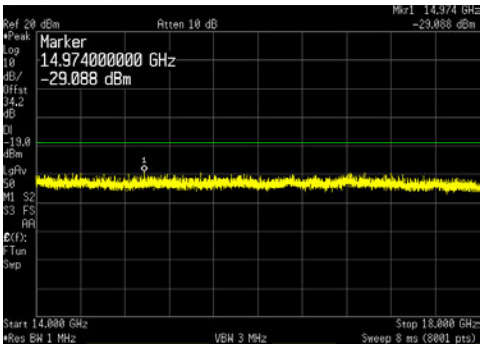
6GHz to 10GHz



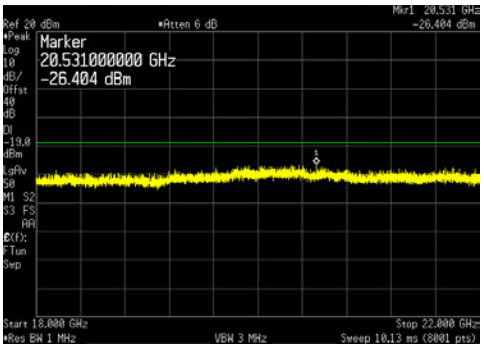
10GHz to 14GHz



14GHz to 18GHz

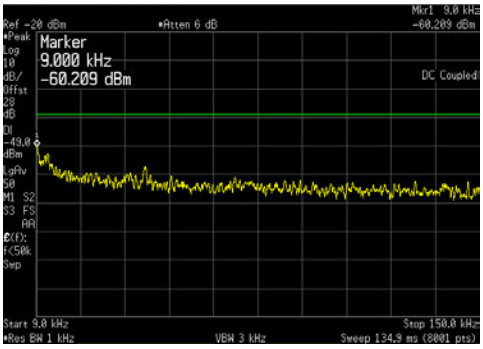


18GHz to 22GHz

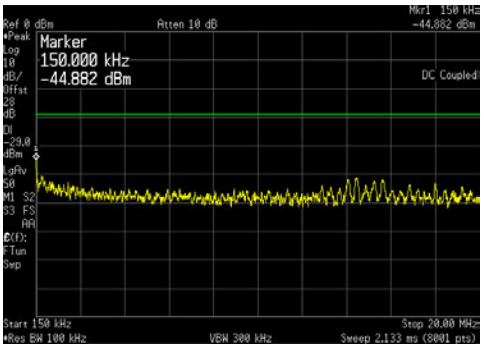


LTE5 Channel Bandwidth _ 16QAM _ Middle Channel (1962.5MHz) at 40 watts/carrier:

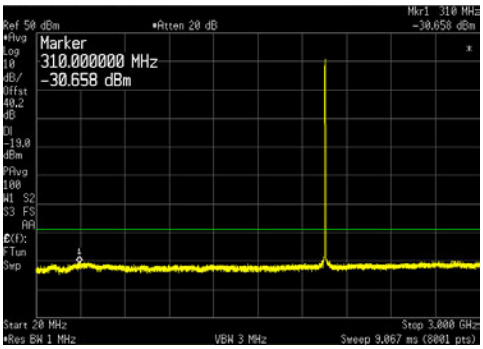
9kHz to 150kHz



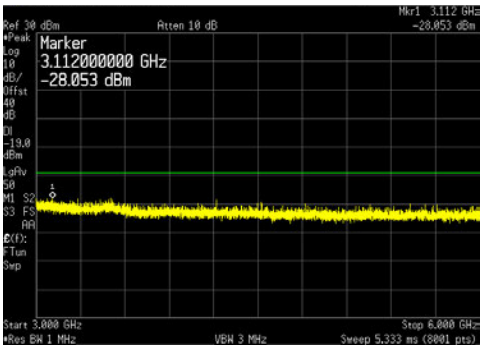
150kHz to 20MHz



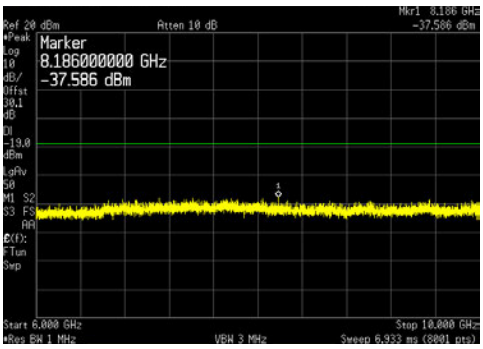
20MHz to 3GHz



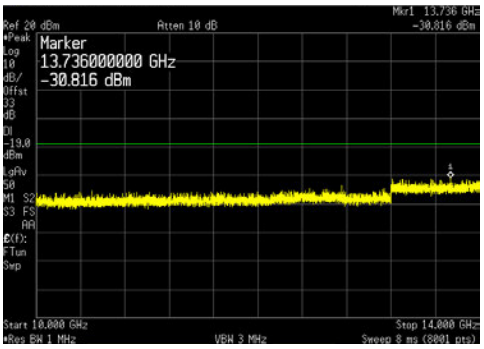
3GHz to 6GHz



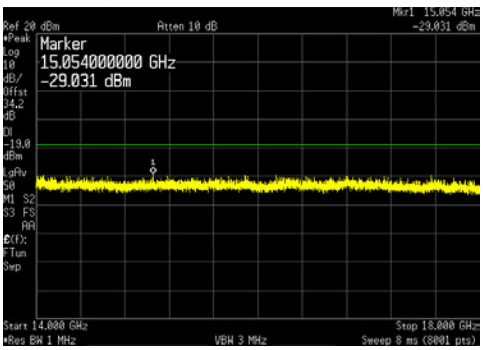
6GHz to 10GHz



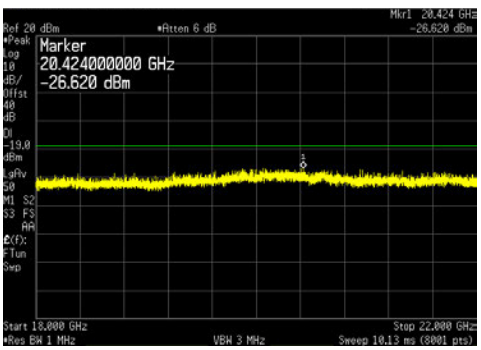
10GHz to 14GHz



14GHz to 18GHz

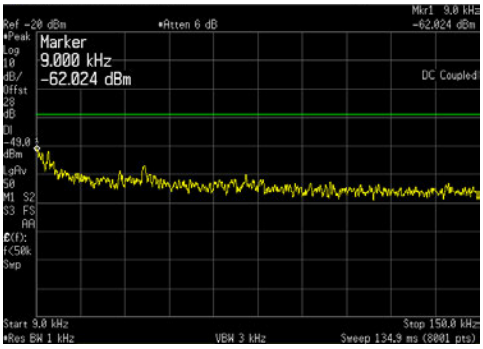


18GHz to 22GHz

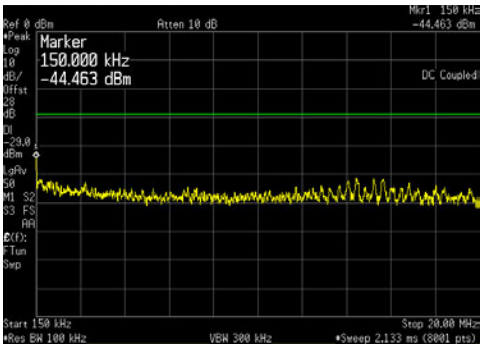


LTE5 Channel Bandwidth _ 64QAM _ Middle Channel (1962.5MHz) at 40 watts/carrier:

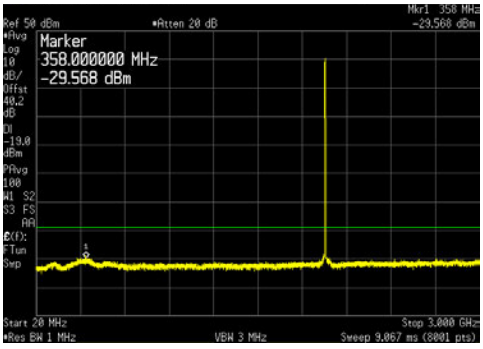
9kHz to 150kHz



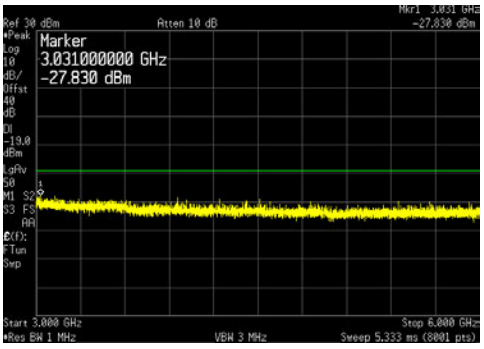
150kHz to 20MHz



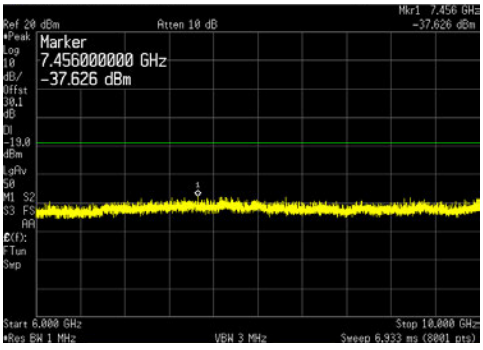
20MHz to 3GHz



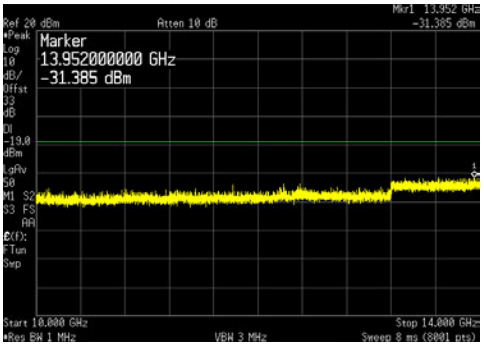
3GHz to 6GHz



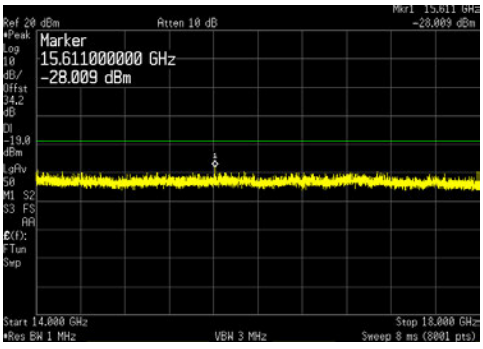
6GHz to 10GHz



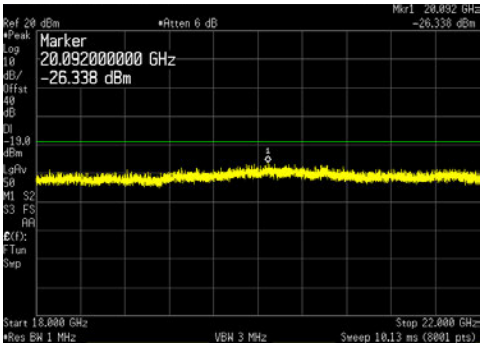
10GHz to 14GHz



14GHz to 18GHz

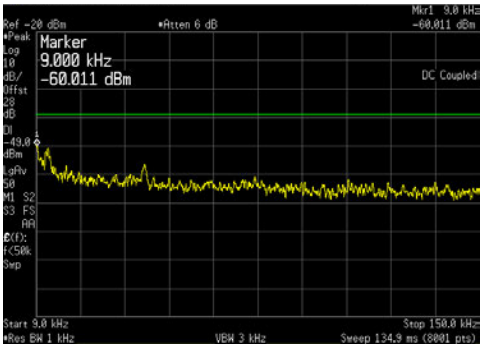


18GHz to 22GHz

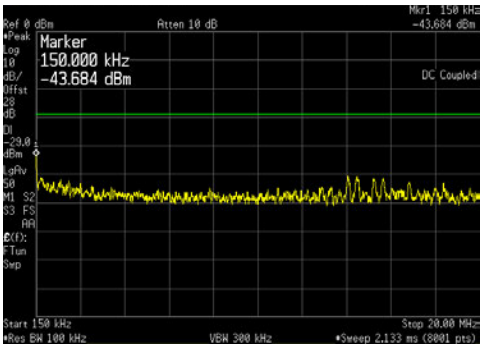


LTE5 Channel Bandwidth _ 256QAM _ Middle Channel (1962.5MHz) at 40 watts/carrier:

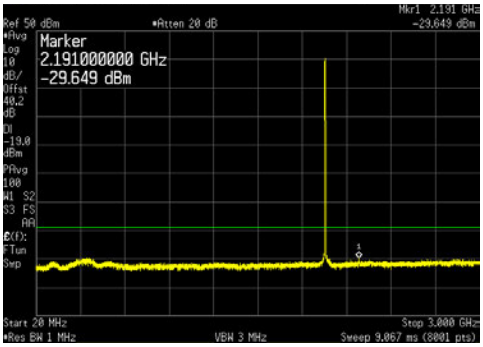
9kHz to 150kHz



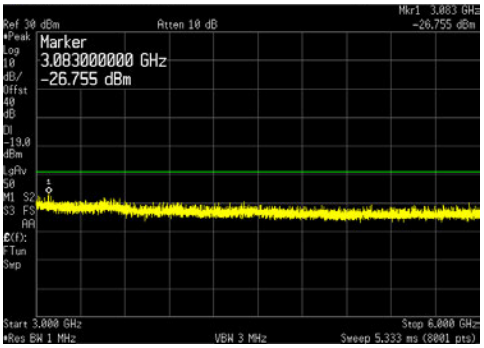
150kHz to 20MHz



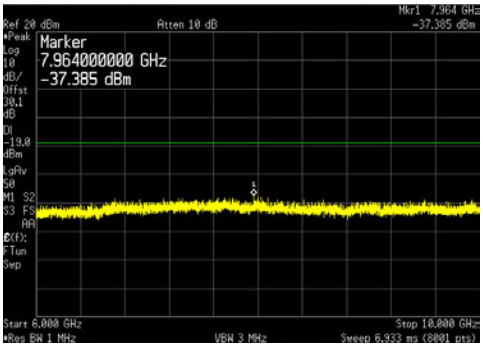
20MHz to 3GHz



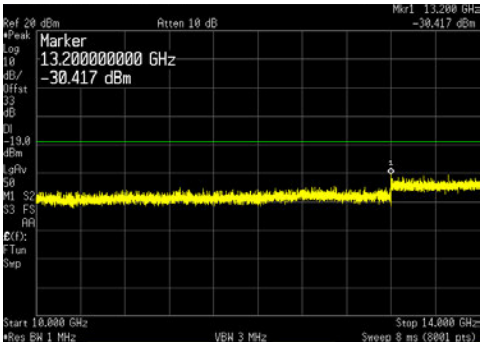
3GHz to 6GHz



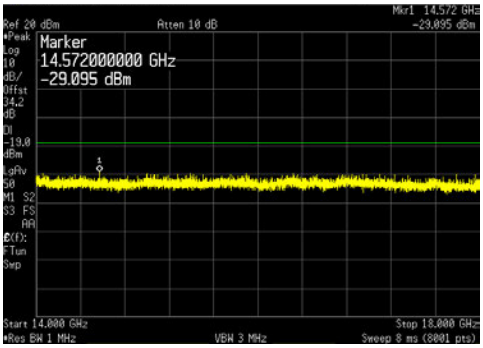
6GHz to 10GHz



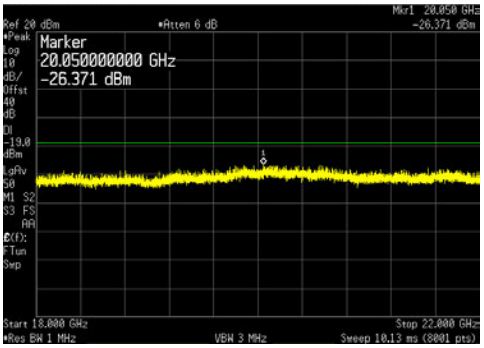
10GHz to 14GHz



14GHz to 18GHz

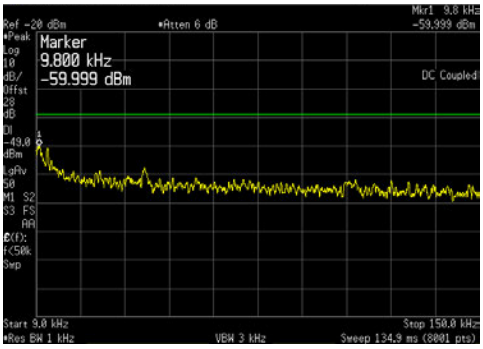


18GHz to 22GHz

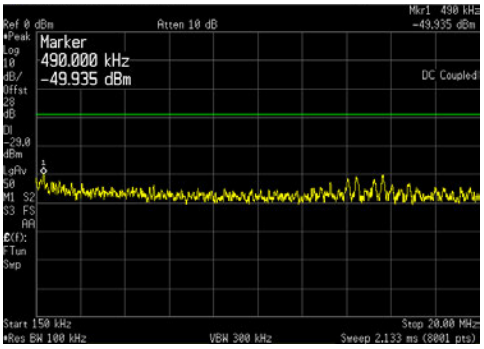


LTE10 Channel Bandwidth _ QPSK _ Middle Channel (1962.5MHz) at 40 watts/carrier:

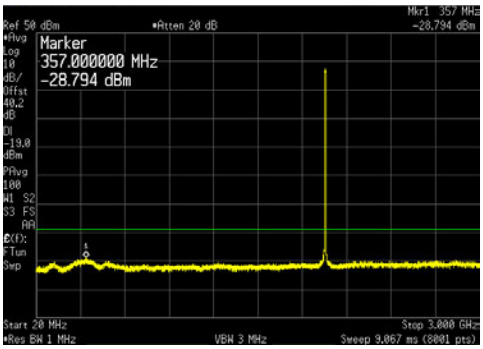
9kHz to 150kHz



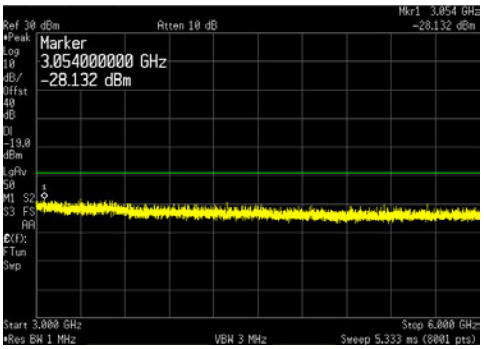
150kHz to 20MHz



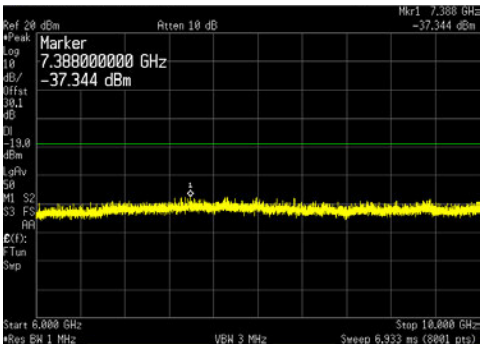
20MHz to 3GHz



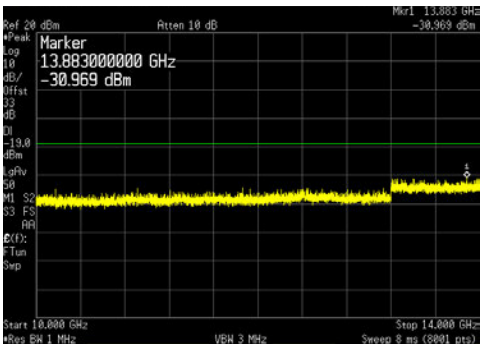
3GHz to 6GHz



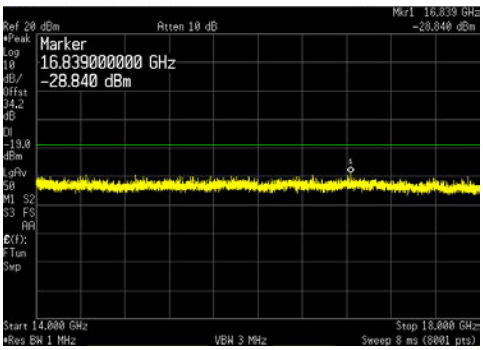
6GHz to 10GHz



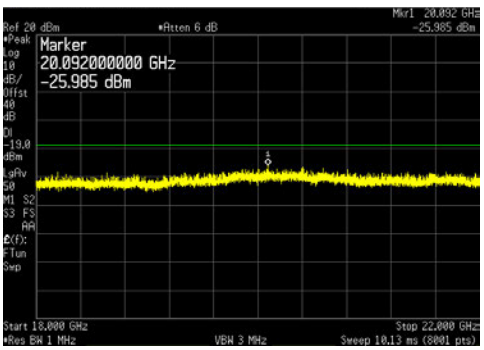
10GHz to 14GHz



14GHz to 18GHz

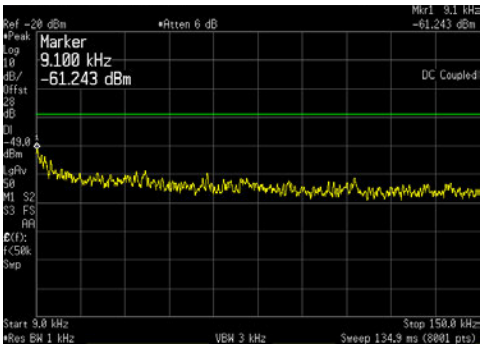


18GHz to 22GHz

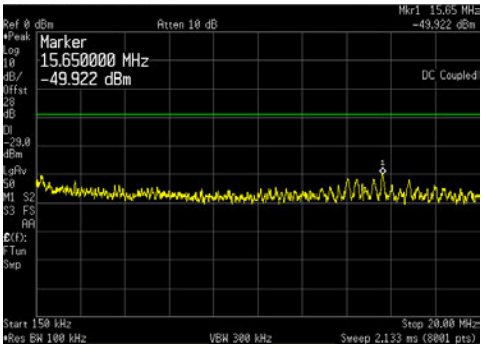


LTE10 Channel Bandwidth _ 16QAM _ Middle Channel (1962.5MHz) at 40 watts/carrier:

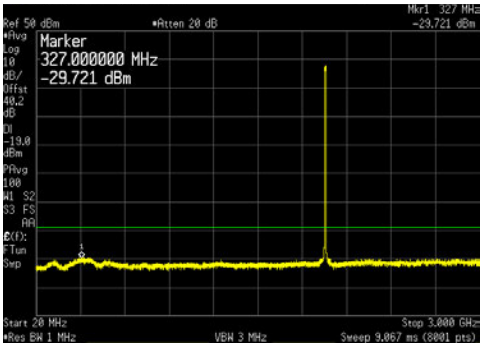
9kHz to 150kHz



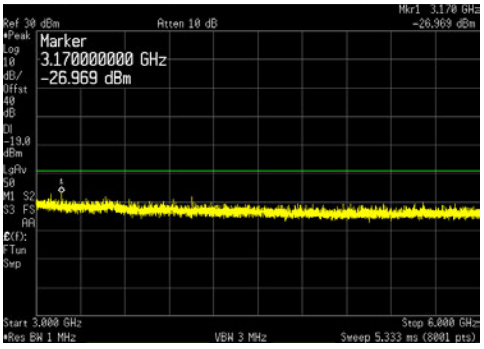
150kHz to 20MHz



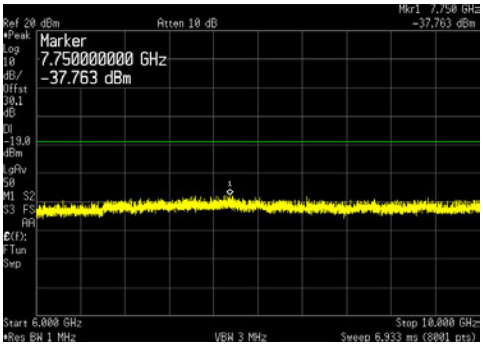
20MHz to 3GHz



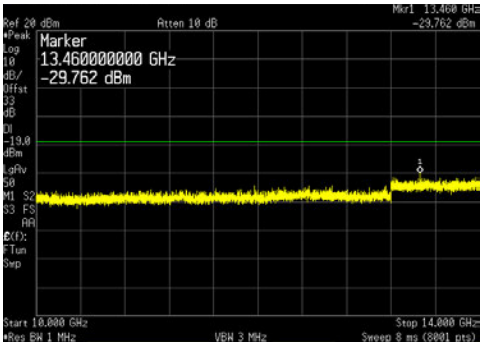
3GHz to 6GHz



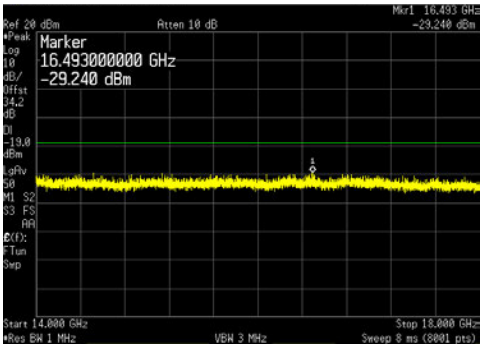
6GHz to 10GHz



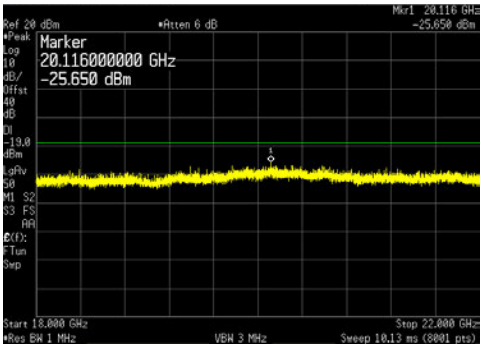
10GHz to 14GHz



14GHz to 18GHz

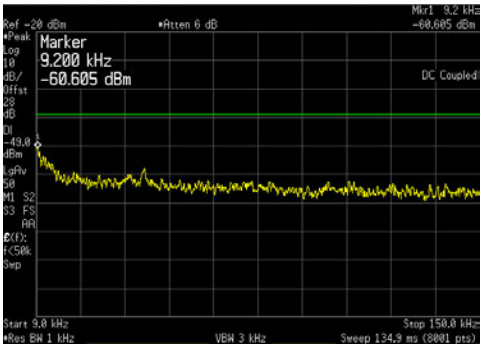


18GHz to 22GHz

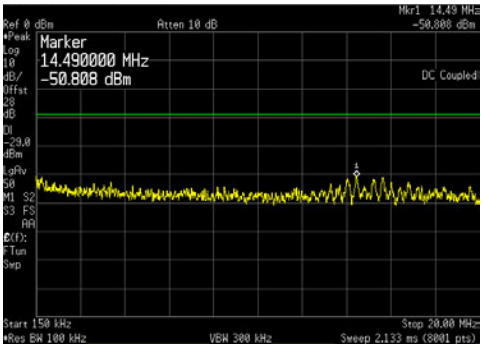


LTE10 Channel Bandwidth _ 64QAM _ Middle Channel (1962.5MHz) at 40 watts/carrier:

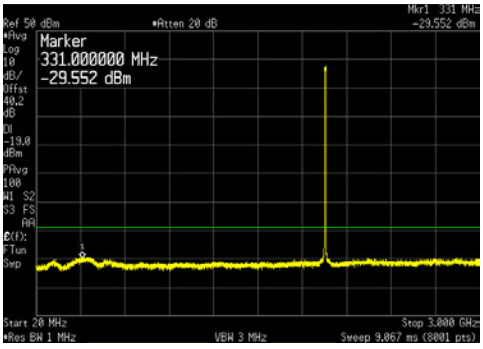
9kHz to 150kHz



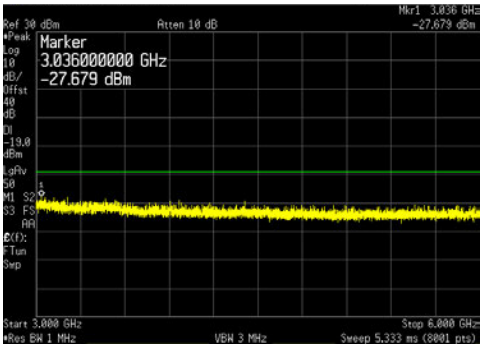
150kHz to 20MHz



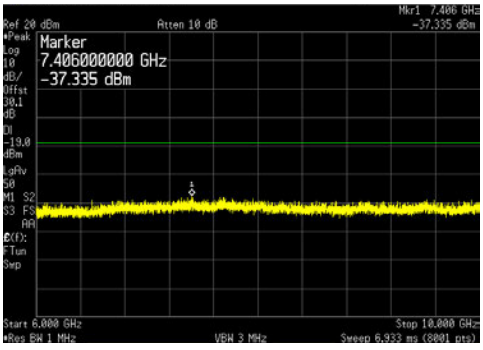
20MHz to 3GHz



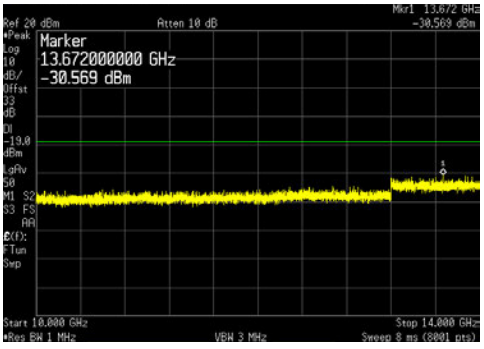
3GHz to 6GHz



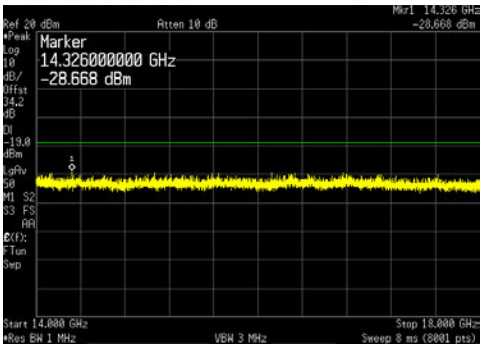
6GHz to 10GHz



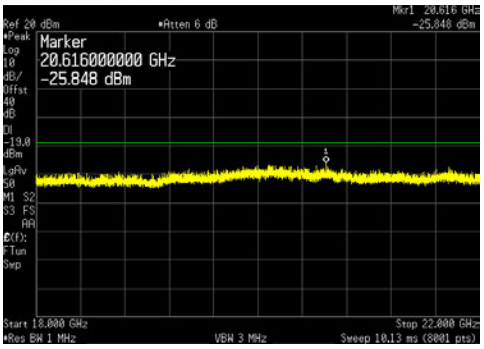
10GHz to 14GHz



14GHz to 18GHz

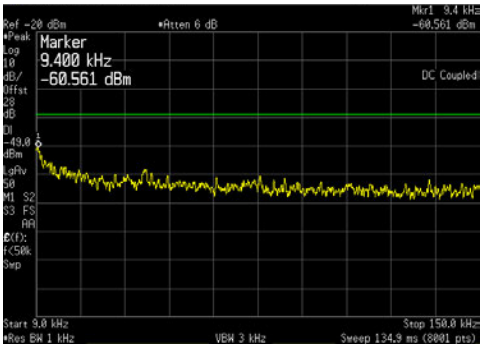


18GHz to 22GHz

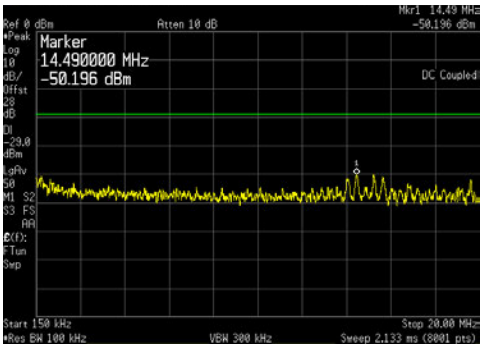


LTE10 Channel Bandwidth _ 256QAM _ Middle Channel (1962.5MHz) at 40 watts/carrier:

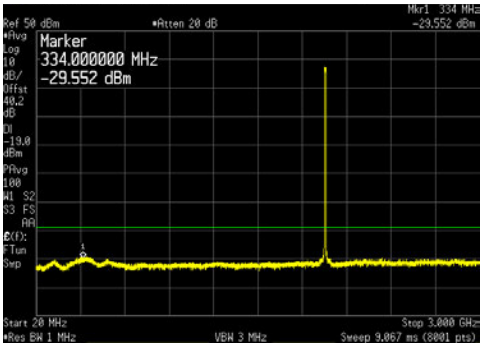
9kHz to 150kHz



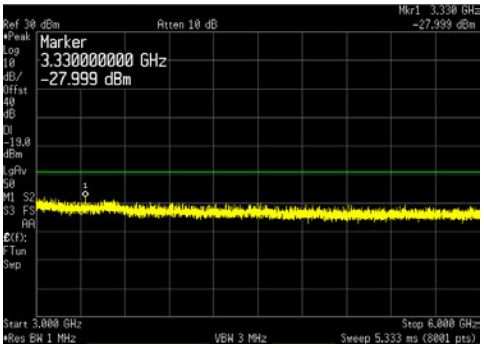
150kHz to 20MHz



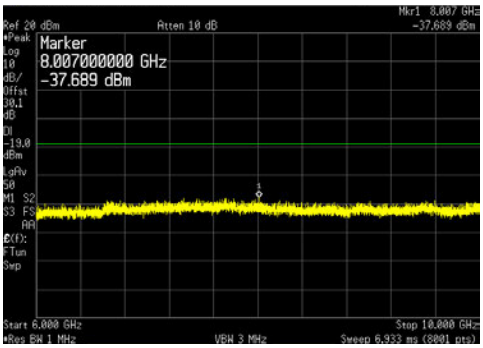
20MHz to 3GHz



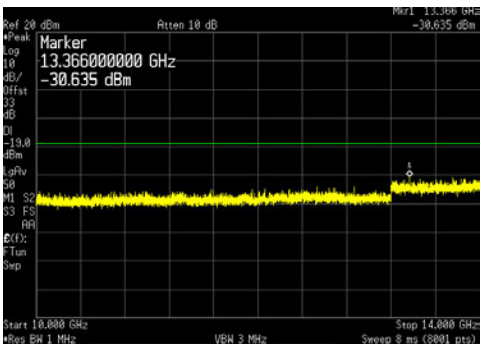
3GHz to 6GHz



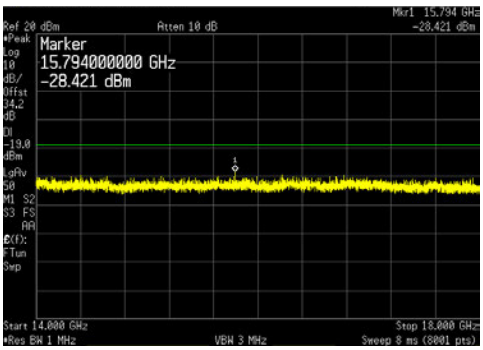
6GHz to 10GHz



10GHz to 14GHz



14GHz to 18GHz



18GHz to 22GHz