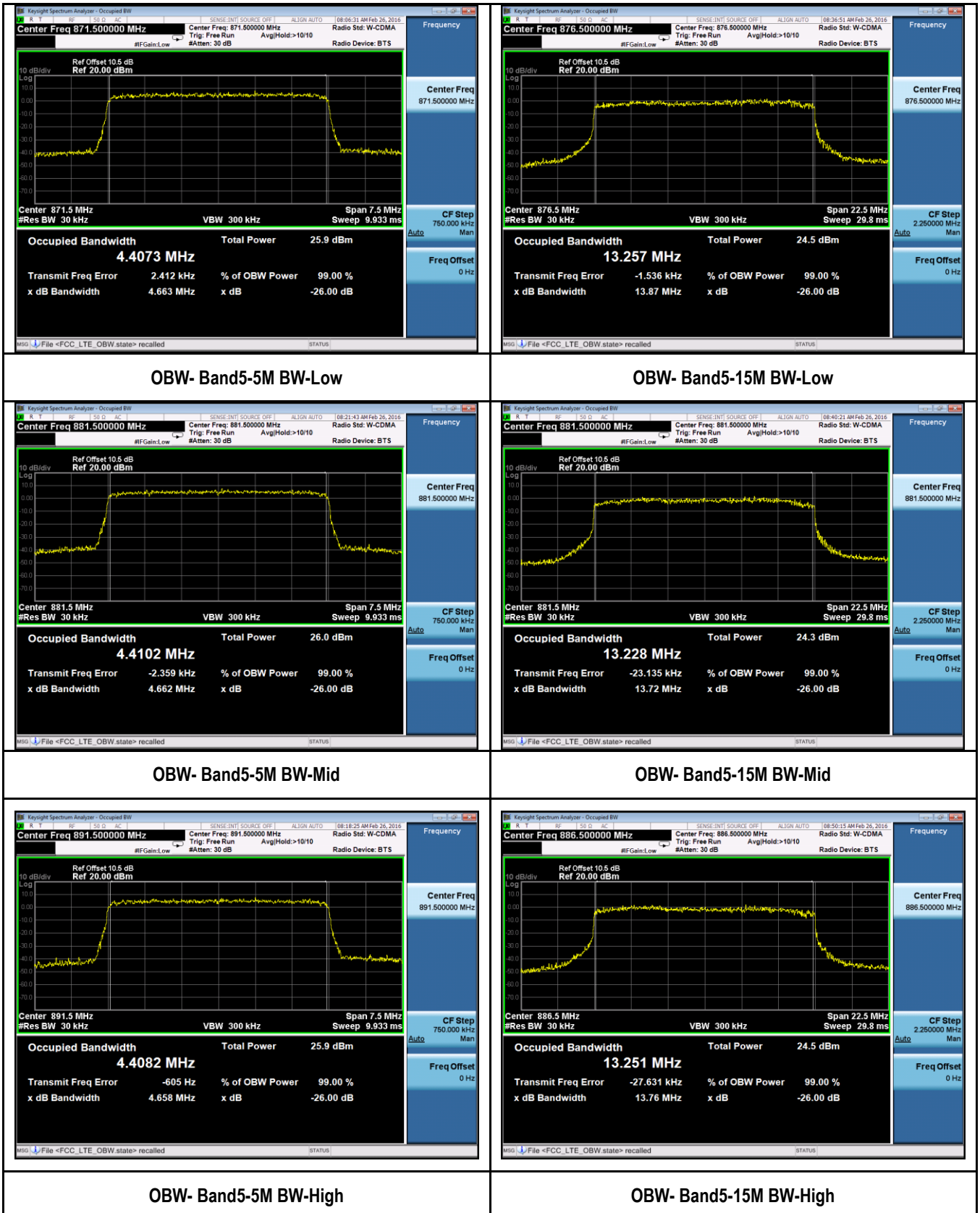
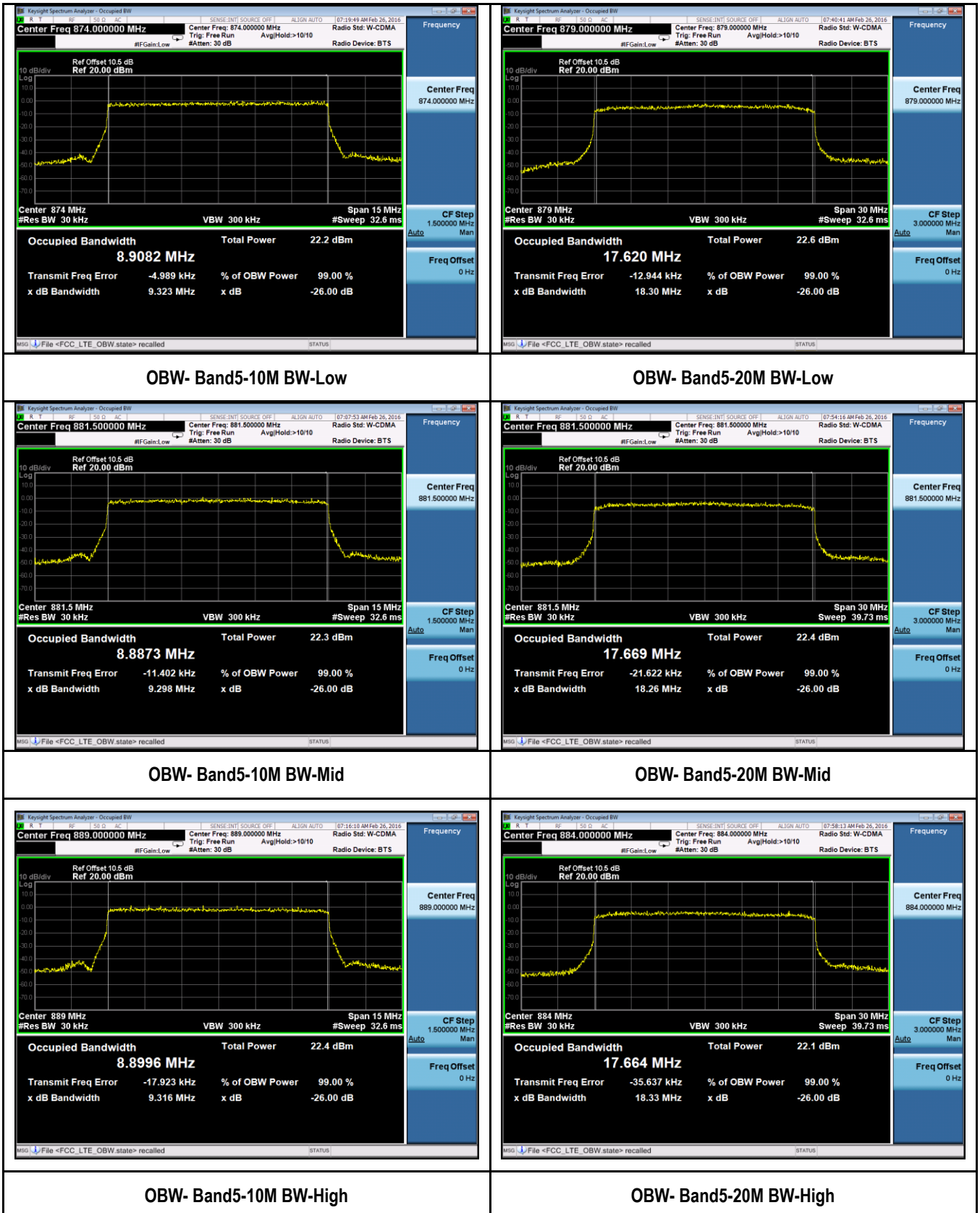


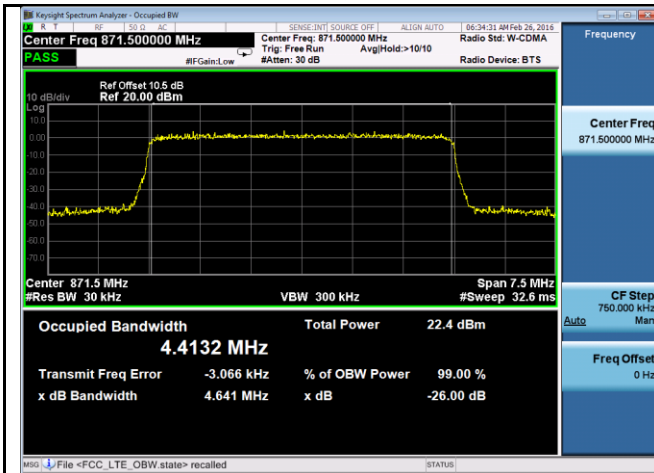
Test Plots for LTE Band 5 QPSK



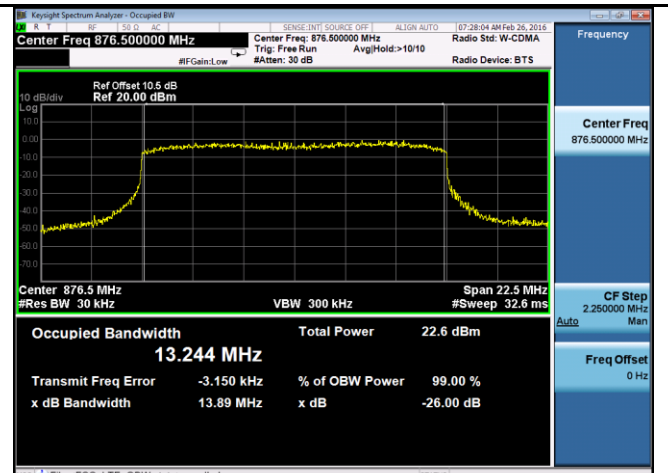
Test Plots for LTE Band 5 64QAM



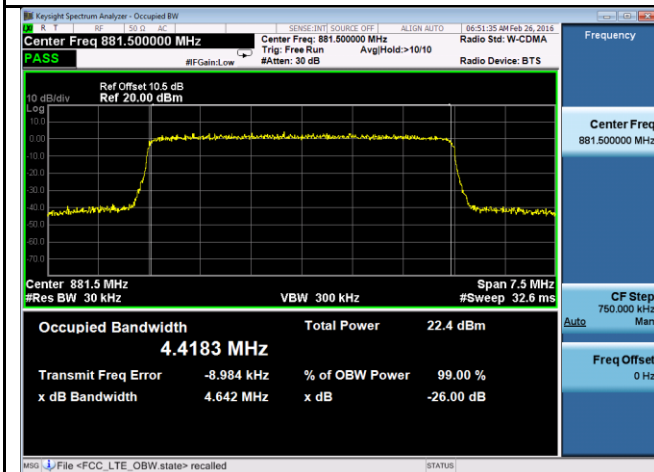
Test Plots for LTE Band 5 64QAM



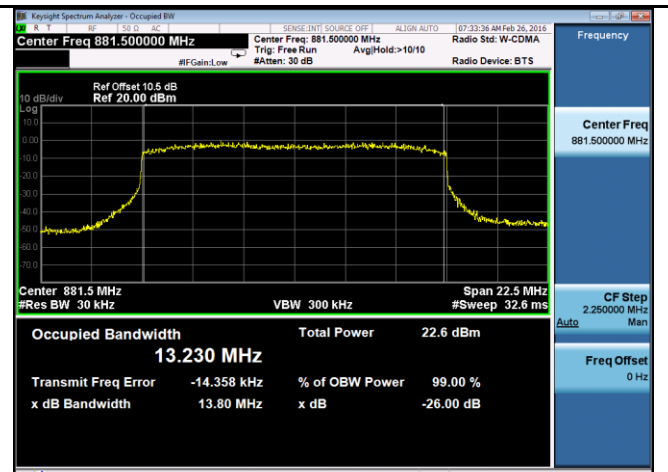
OBW- Band5-5M BW-Low



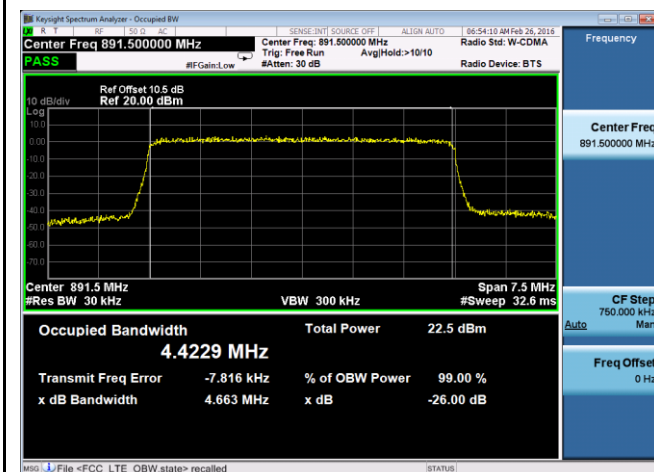
OBW- Band5-15M BW-Low



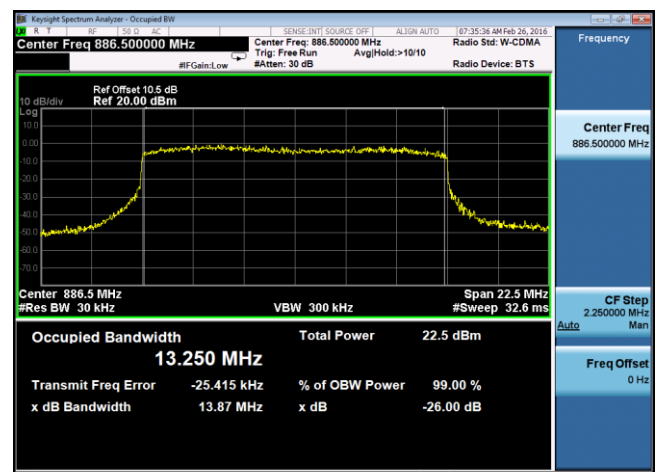
OBW- Band5-5M BW-Mid



OBW- Band5-15M BW-Mid

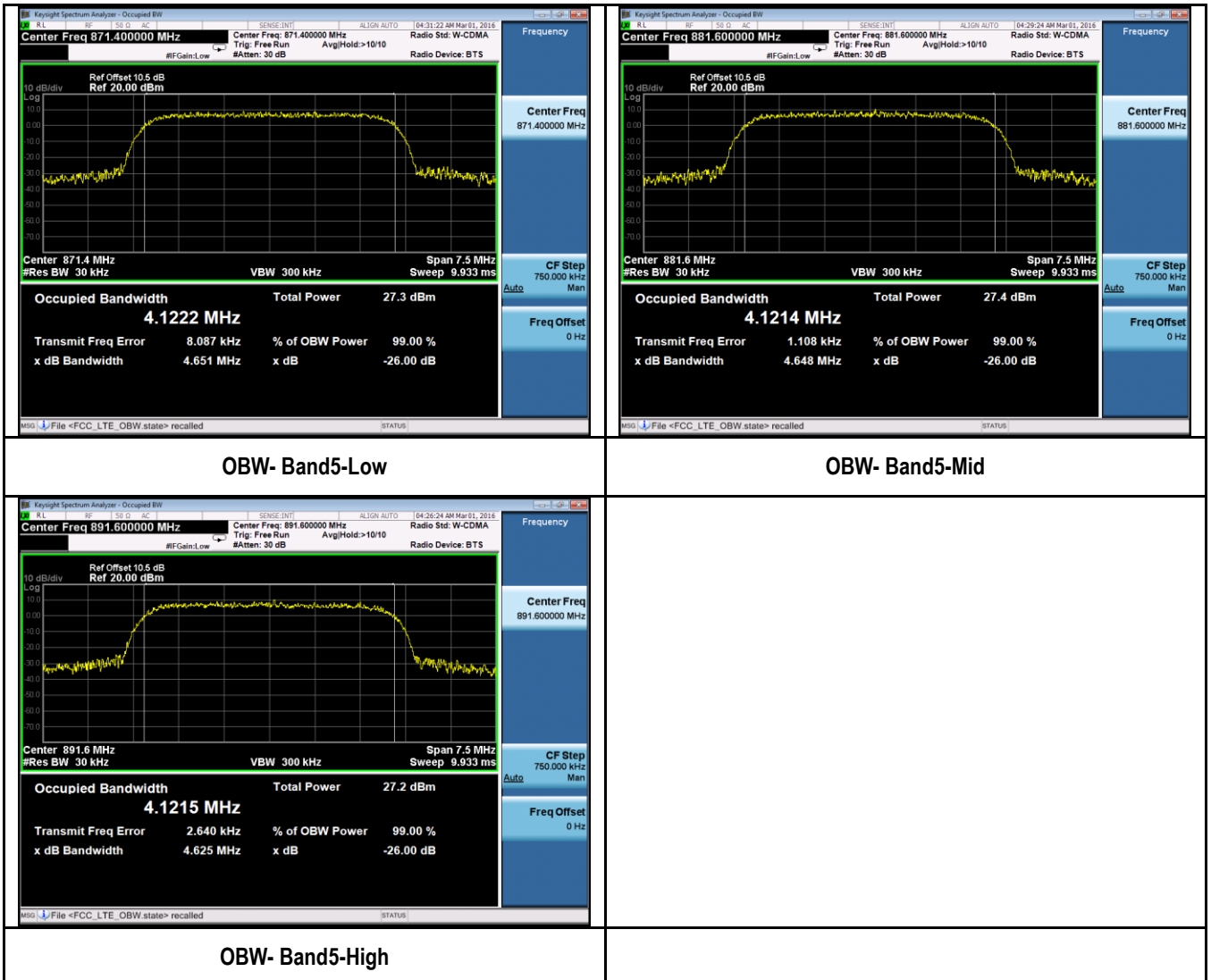


OBW- Band5-5M BW-High



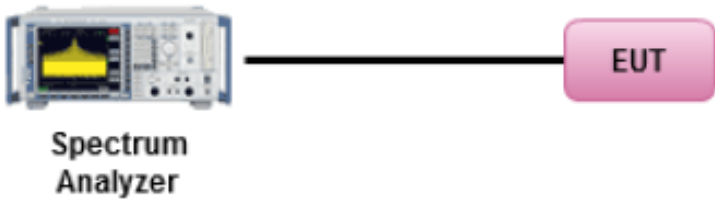
OBW- Band5-15M BW-High

Test Plots for WCDMA Band 5



10.4 Band Edge

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR27.53	-	Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.	☒
47CFR24.238	-	Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.	☒
Test Setup	 The diagram illustrates the test setup. On the left is a Spectrum Analyzer with a yellow trace on its screen. A black line connects the Spectrum Analyzer to a pink rounded rectangle on the right labeled 'EUT'.		
Test Procedure	1. EUT was set for low , mid, high channel with modulated mode and highest RF output power. 2. The spectrum analyzer was connected to the antenna terminal. 3. A RBW of 1% greater than the 26 dB emission bandwidth should be used for band edge measurement or if narrower RBW is used, a correct factor calculated with formula $10 \cdot \log(EBW/BW_{meas})$ will be added to the result.		
Test Date	10/26/2015 – 11/02/2015 02/15/2016 - 02/29/2016	Environmental condition	Temperature 22°C Relative Humidity 48% Atmospheric Pressure 1008mbar
Remark	The EUT was scanned up to 25GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. Limit calculation: Emission limit = PdBm – [43+ 10 log (PW)] = 10log(1000 x PW) - 43 - 10log(PW) = 30 dBm - 43 = -13 dBm		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by *Chen Ge* **at** *RF test site*.

Band Edge Measurement Data for LTE band 2

Type	Channel	Channel Frequency (MHz)	Measurement Band Edge (dBm)	Limit (dBm)
5MHz BW, QPSK	Low	1932.5	-38.28	-13
	High	1987.5	-51.94	-13
5MHz BW, 64QAM	Low	1932.5	-38.28	-13
	High	1987.5	-52.28	-13
10MHz BW, QPSK	Low	1935	-38.26	-13
	High	1985	-48.27	-13
10MHz BW, 64QAM	Low	1935	-37.53	-13
	High	1985	-47.39	-13
15MHz BW, QPSK	Low	1937.5	-39.98	-13
	High	1982.5	-47.55	-13
15MHz BW, 64QAM	Low	1937.5	-36.06	-13
	High	1982.5	-47.72	-13
20MHz BW, QPSK	Low	1940	-46.08	-13
	High	1980	-48.38	-13
20MHz BW, 64QAM	Low	1940	-45.63	-13
	High	1980	-47.90	-13

Band Edge Measurement Data for WCDMA band 2

Type	Channel	Channel Frequency (MHz)	Measurement Band Edge (dBm)	Limit (dBm)
3.84MHz BW, QPSK	Low	1932.5	-25.56	-13
	High	1992.5	-23.17	-13

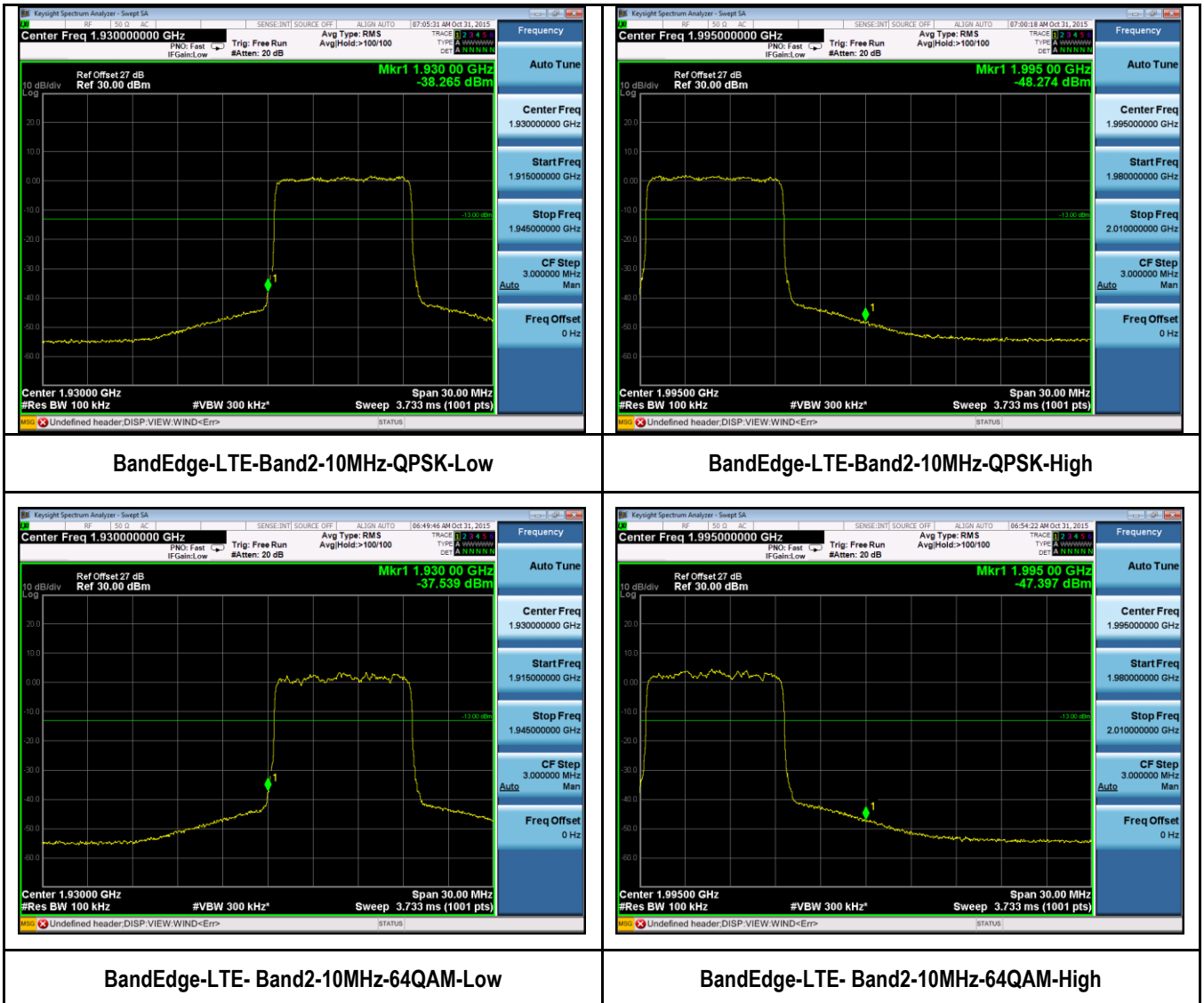
Band Edge Measurement Data for LTE band 5

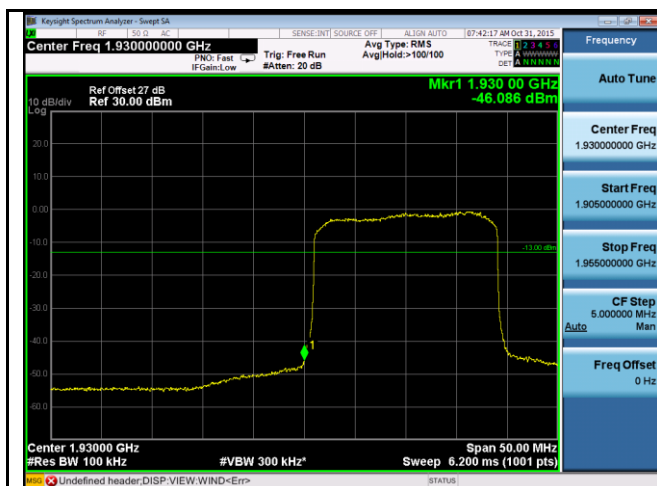
Type	Channel	Channel Frequency (MHz)	Measurement Band Edge (dBm)	Limit (dBm)
5MHz BW, QPSK	Low	871.5	-36.92	-13
	High	891.5	-35.61	-13
5MHz BW, 64QAM	Low	871.5	-36.72	-13
	High	891.5	-35.68	-13
10MHz BW, QPSK	Low	874.0	-37.36	-13
	High	889.0	-36.15	-13
10MHz BW, 64QAM	Low	874.0	-39.02	-13
	High	889.0	-38.21	-13
15MHz BW, QPSK	Low	876.5	-36.39	-13
	High	886.5	-35.16	-13
15MHz BW, 64QAM	Low	876.5	-35.31	-13
	High	886.5	-37.16	-13
20MHz BW, QPSK	Low	879.0	-42.87	-13
	High	884.0	-41.47	-13
20MHz BW, 64QAM	Low	879.0	-40.92	-13
	High	884.0	-40.18	-13

Band Edge Measurement Data for WCDMA band 5

Type	Channel	Channel Frequency (MHz)	Measurement Band Edge (dBm)	Limit (dBm)
3.84MHz BW, QPSK	Low	871.4	-21.71	-13
	High	891.6	-20.96	-13

Test Plots for LTE Band 2:

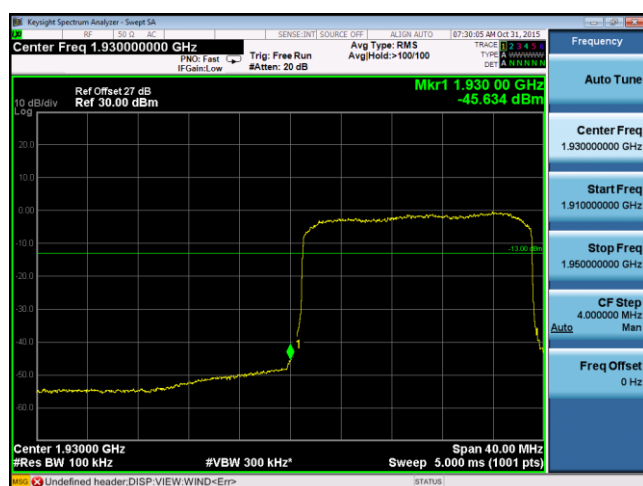




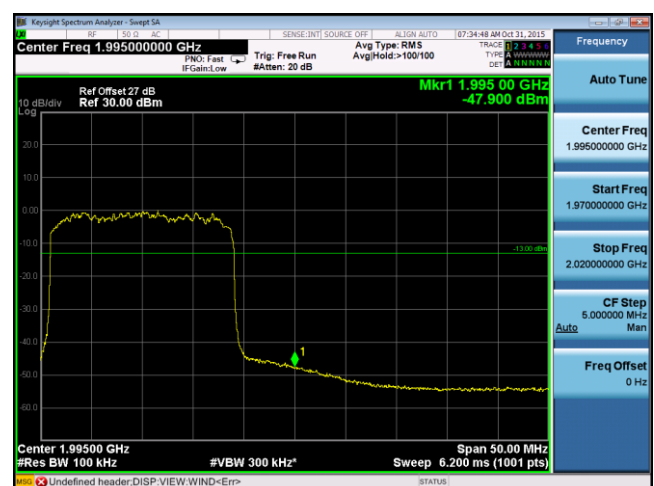
BandEdge-LTE- Band2-20MHz-QPSK-Low



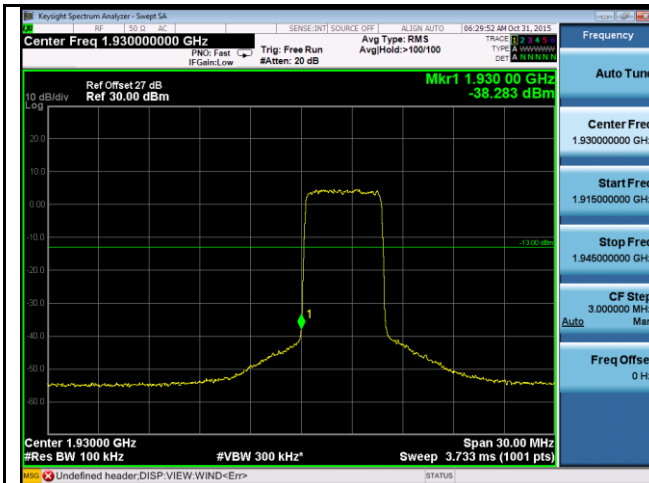
BandEdge-LTE- Band2-20MHz-QPSK-High



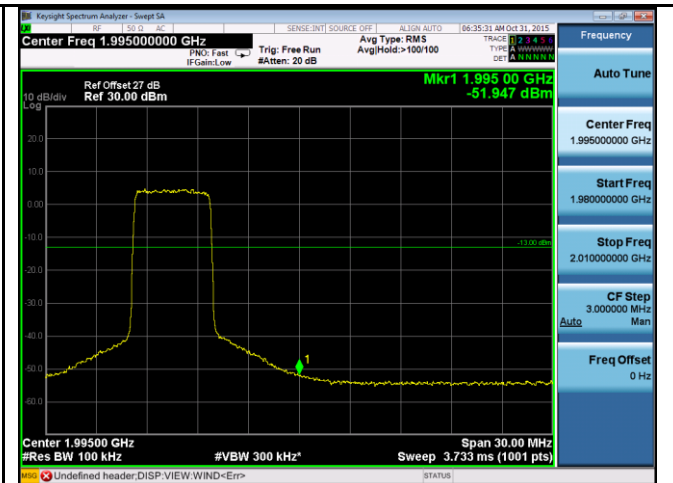
BandEdge-LTE- Band2-20MHz-64QAM-Low



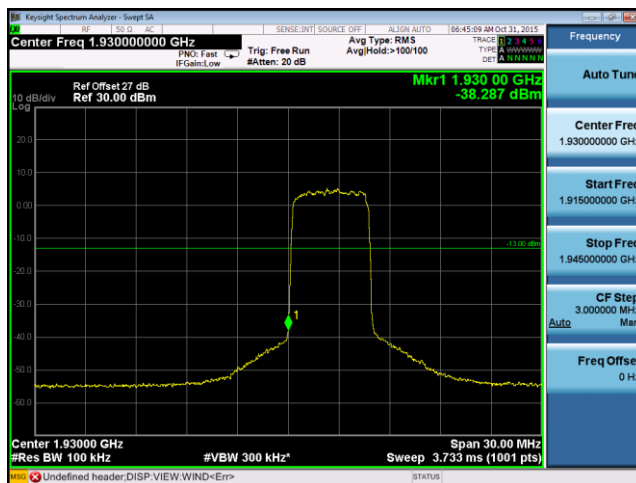
BandEdge-LTE- Band2-20MHz-64QAM-High



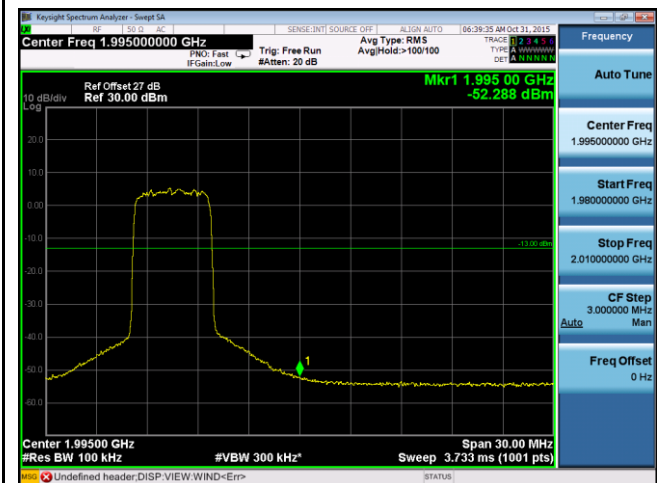
BandEdge-LTE- Band2-5MHz-QPSK-Low



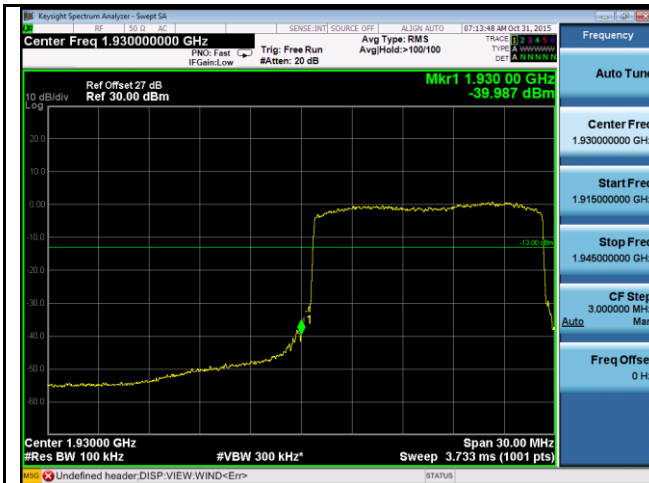
BandEdge-LTE- Band2-5MHz-QPSK-High



BandEdge-LTE- Band2-5MHz-64QAM-Low



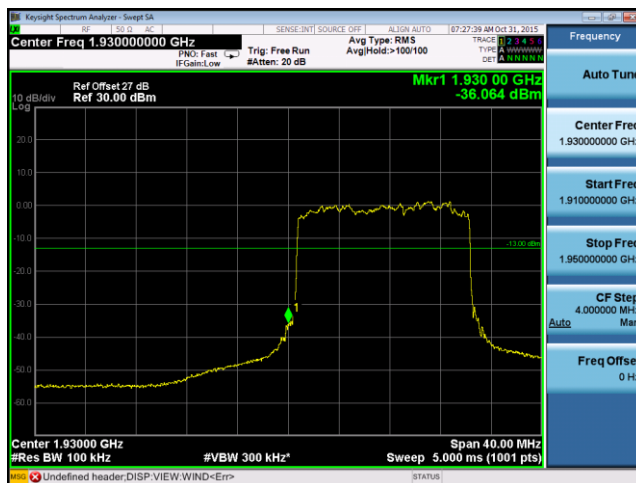
BandEdge-LTE- Band2-5MHz-64QAM-High



BandEdge-LTE- Band2-15MHz-QPSK-Low



BandEdge-LTE- Band2-15MHz-QPSK-High

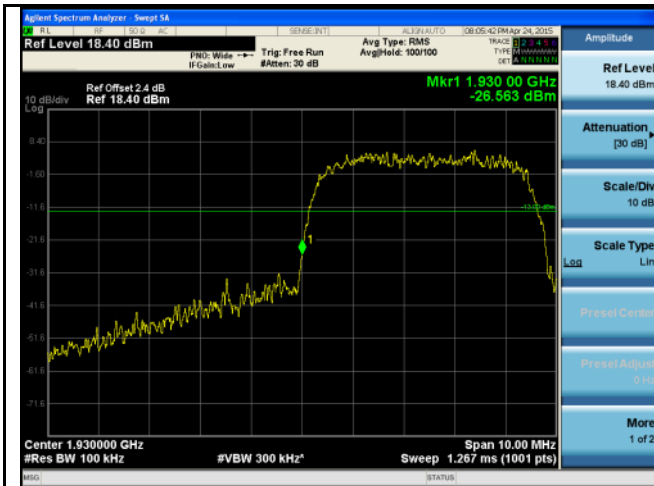


BandEdge-LTE- Band2-15MHz-64QAM-Low

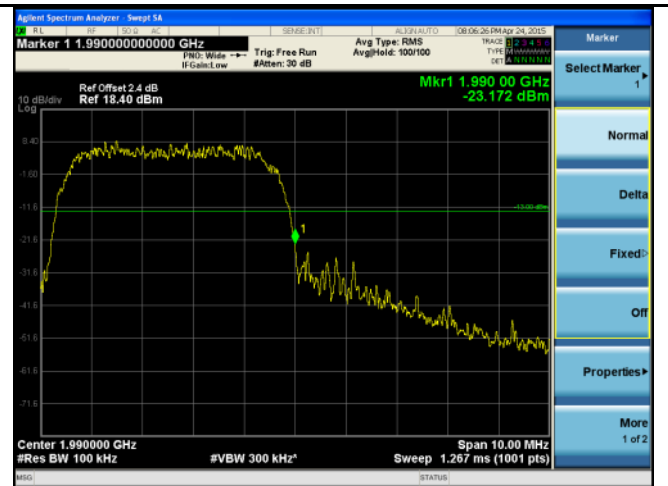


BandEdge-LTE- Band2-15MHz-64QAM-High

Test Plots for WCDMA Band 2:

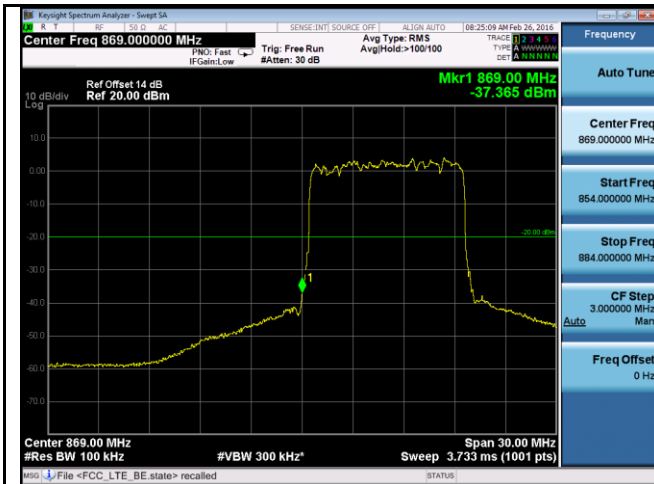


BandEdge-WCDMA-Band2-5MHz-QPSK-Low

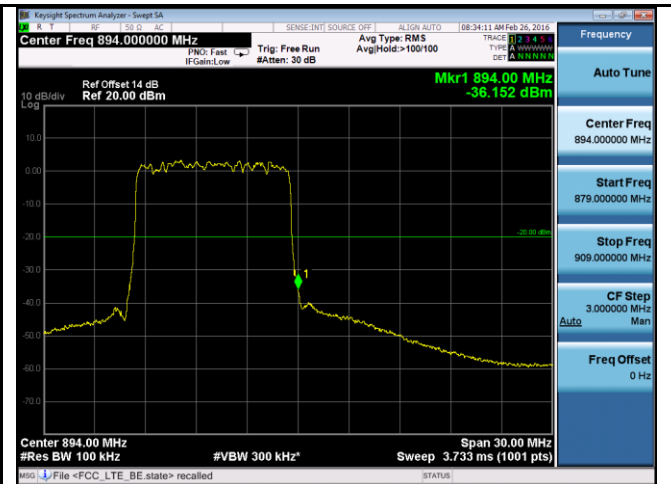


BandEdge-WCDMA-Band2-5MHz-QPSK-High

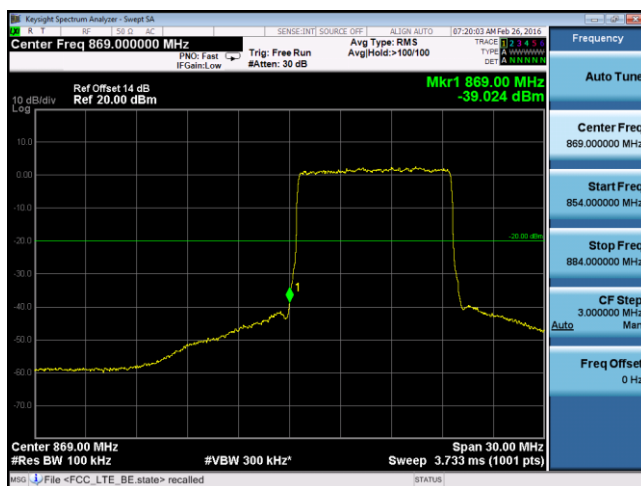
Test Plots for LTE Band 5:



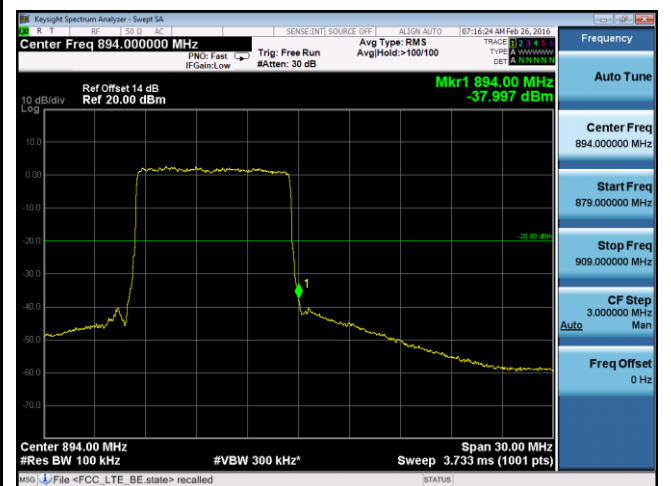
BandEdge-LTE-Band5-10MHz-QPSK-Low



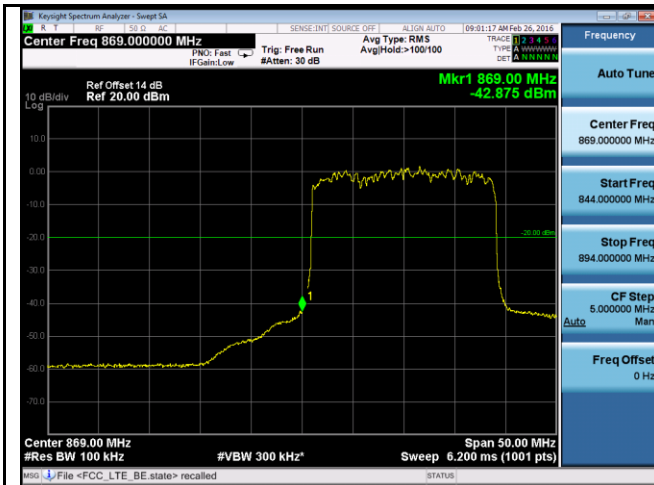
BandEdge-LTE- Band5-10MHz-QPSK-High



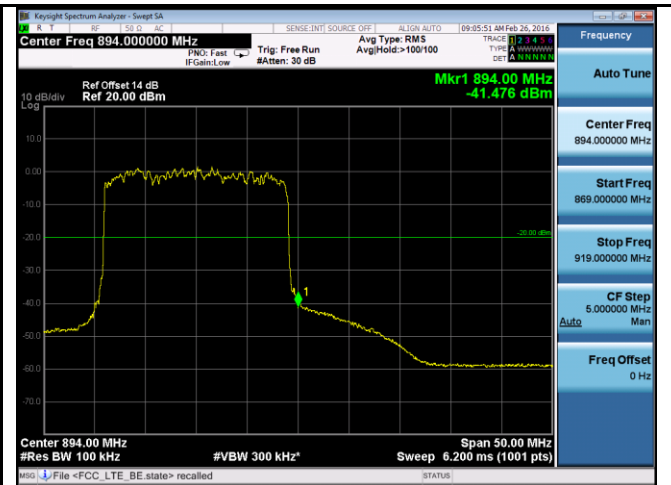
BandEdge-LTE- Band5-10MHz-64QAM-Low



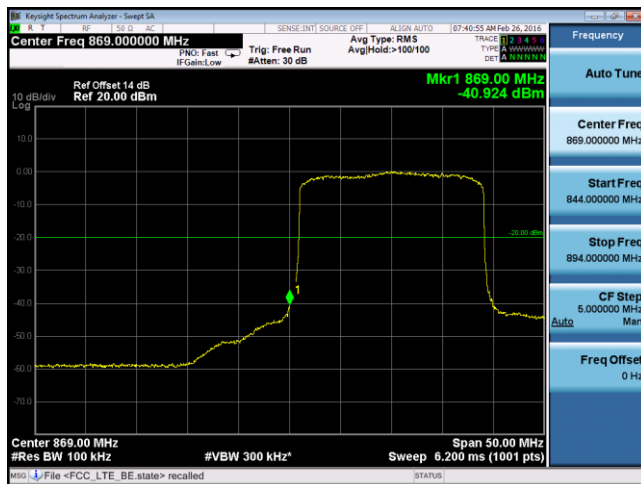
BandEdge-LTE- Band5-10MHz-64QAM-High



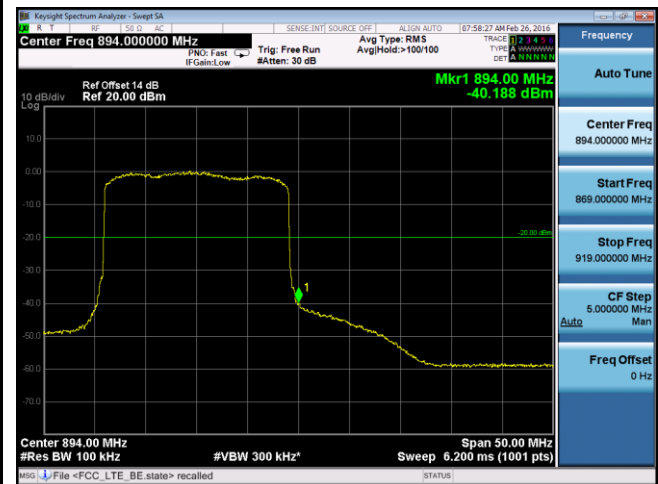
BandEdge-LTE- Band5-20MHz-QPSK-Low



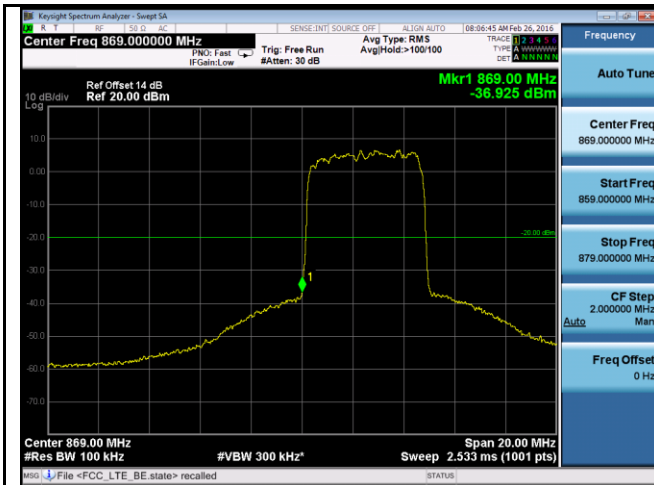
BandEdge-LTE- Band5-20MHz-QPSK-High



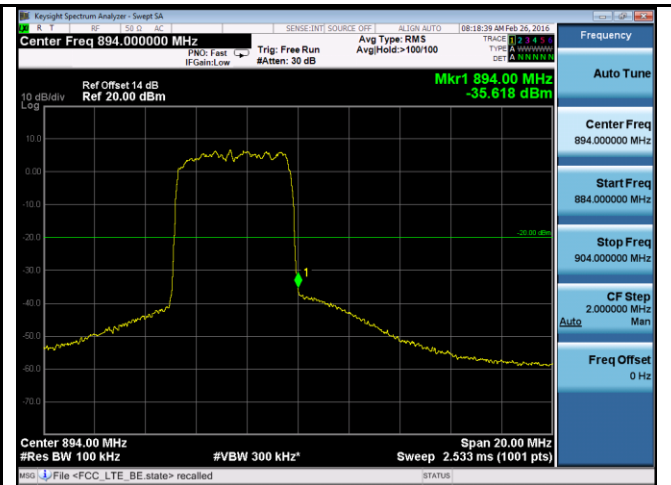
BandEdge-LTE- Band5-20MHz-64QAM-Low



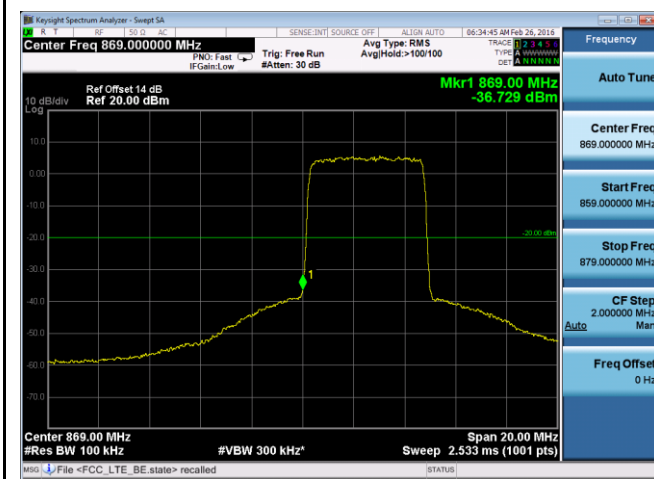
BandEdge-LTE- Band5-20MHz-64QAM-High



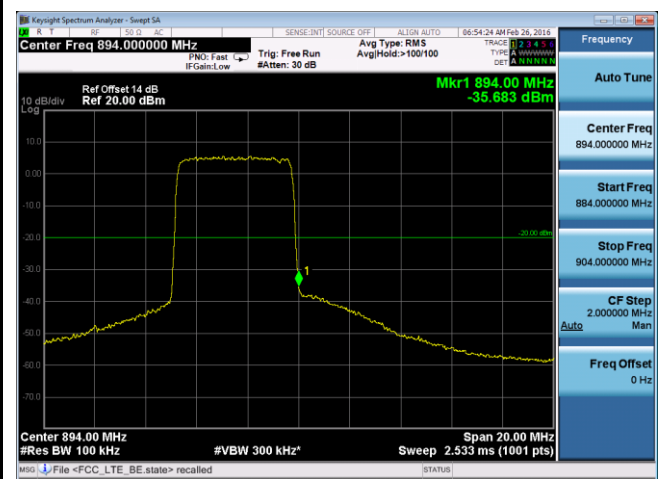
BandEdge-LTE- Band5-5MHz-QPSK-Low



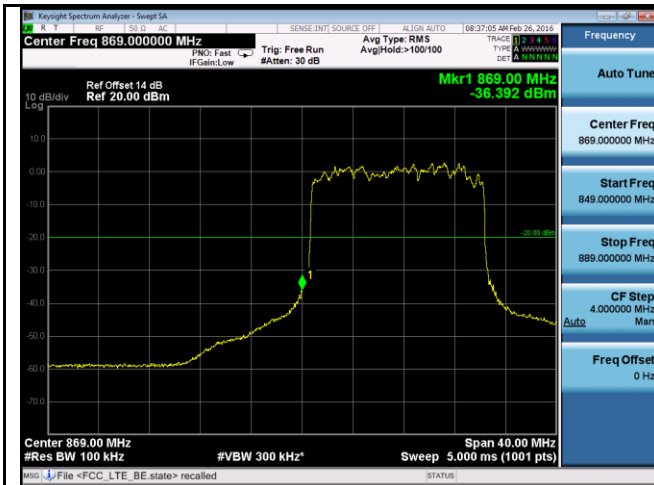
BandEdge-LTE- Band5-5MHz -QPSK-High



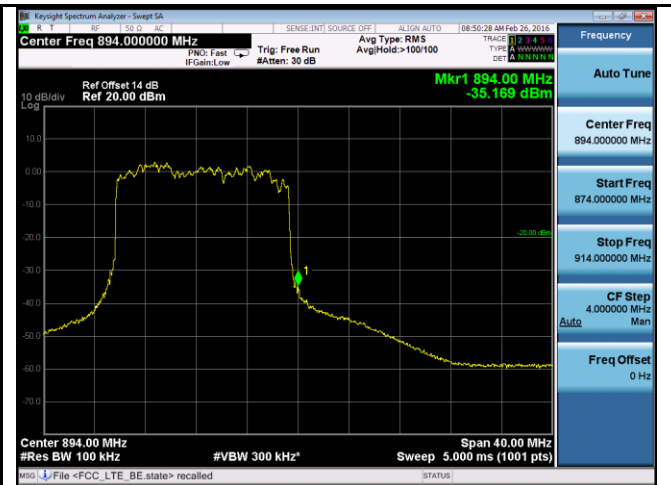
BandEdge-LTE- Band5-5MHz -64QAM-Low



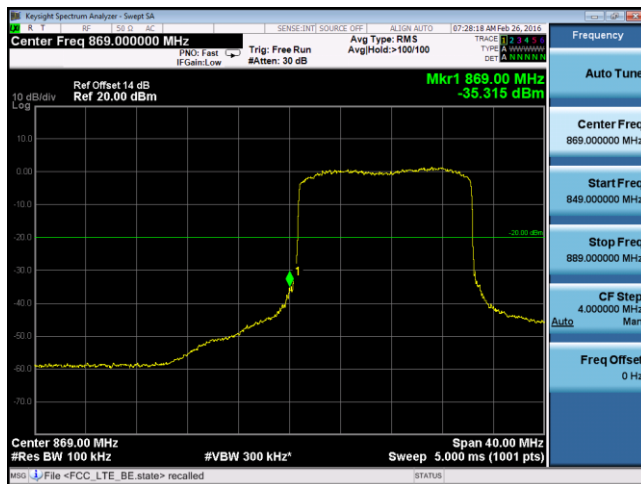
BandEdge-LTE- Band5-5MHz -64QAM-High



BandEdge-LTE- Band5-15MHz-QPSK-Low



BandEdge-LTE- Band5-15MHz -QPSK-High

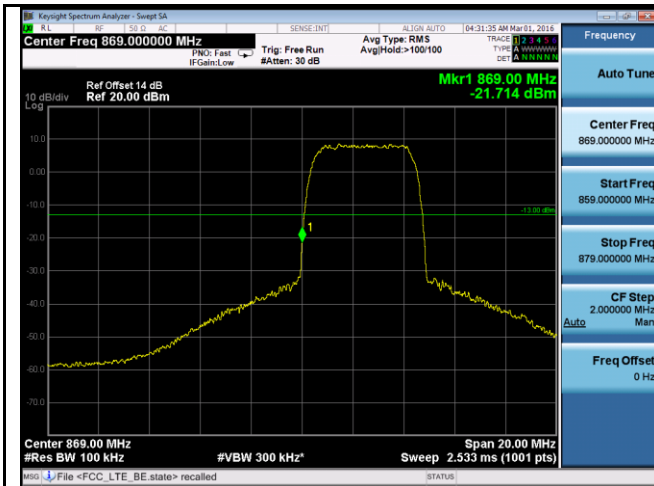


BandEdge-LTE- Band5-15MHz -64QAM-Low

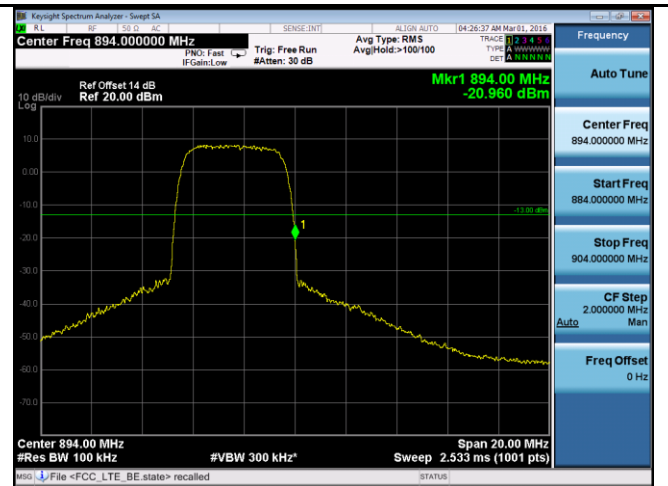


BandEdge-LTE- Band5-15MHz -64QAM-High

Test Plots for WCDMA Band 5:



BandEdge-WCDMA- Band5-5MHz-QPSK-Low

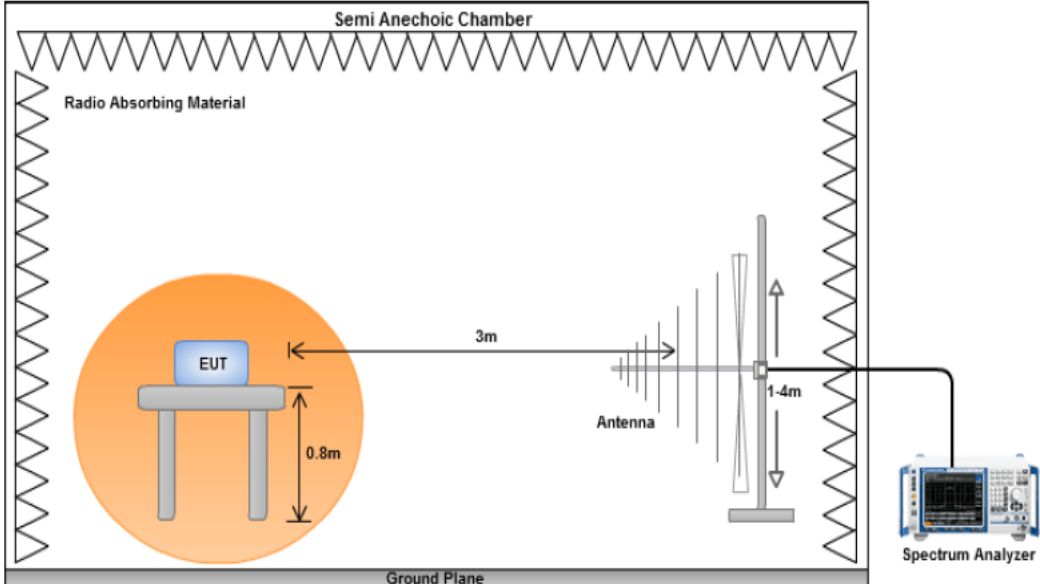


BandEdge-WCDMA- Band5-5MHz-QPSK-High

10.5 Radiated Spurious Emission below 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR27.53	-	Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.	☒
47CFR24.238	-	Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.	☒

Test Setup			
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Test Procedure	Substitution method: - The EUT was switched on and allowed to warm up to its normal operating condition. - The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: - Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. - The EUT was then rotated to the direction that gave the maximum emission. - Finally, the antenna height was adjusted to the height that gave the maximum emission. - Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. - Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. - Steps 4 were repeated for the next frequency point, until all selected frequency points were measured.		
Test Date	10/26/2015 – 11/02/2015 02/15/2016 – 02/29/2016	Environmental condition	Temperature 23°C Relative Humidity 48% Atmospheric Pressure 1008mbar
Remark	The EUT was scanned up to 25GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. Limit calculation: $\text{Emission limit} = \text{PdBm} - [43 + 10 \log(\text{PW})] = 10 \log(1000 \times \text{PW}) - 43 - 10 \log(\text{PW}) = 30 \text{ dBm} - 43 = -13 \text{ dBm}$ All different modulation and bandwidth configuration has been verified and only the test data of worst case with QPSK modulation and greatest bandwidth was presented in this report.		