



LTE Band 5, QPSK, Channel 20525, Frequency 836.5MHz Limit=±2.5ppm					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	-30	43	0.051	PASS
100		-20	-76	-0.091	
100		-10	-43	-0.051	
100		0	-25	-0.030	
100		+10	-36	-0.043	
100		+20	42	0.050	
100		+30	73	0.087	
100		+40	35	0.042	
100		+50	44	0.053	
115	4.37	+20	51	0.061	
85	3.23	+20	-64	-0.077	

LTE Band 7, QPSK, Channel 21100, Frequency 2535MHz Limit= Within Authorized Band					
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	3.8	-30	26	0.010	PASS
100		-20	35	0.014	
100		-10	23	0.009	
100		0	77	0.030	
100		+10	53	0.021	
100		+20	67	0.026	
100		+30	84	0.033	
100		+40	51	0.020	
100		+50	42	0.017	
115	4.37	+20	41	0.016	
85	3.23	+20	57	0.022	

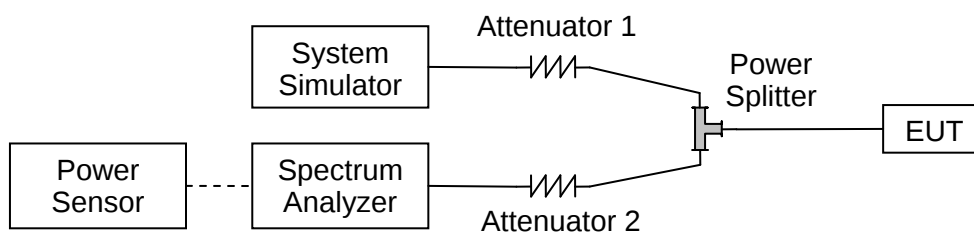
2.4. Peak to Average Ratio

2.4.1. Requirement

According to FCC section 24.232(d), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

2.4.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.4.3. Test procedure

KDB 971168 D01v03 Section 5.7 and ANSI/TIA-603-E-2016.

2.4.4. Test Result

Record the maximum PAPR level associated with a probability of 0.1%.



LTE Band 2, BW: 1.4MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18607	1850.7	5.23	5.24
18900	1880.0	5.45	5.65
19192	1909.2	5.50	5.50
LTE Band 2, BW: 3MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18615	1851.5	5.32	5.32
18900	1880.0	5.46	5.46
19184	1908.4	5.51	5.52
LTE Band 2, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18625	1852.5	5.33	5.31
18900	1880.0	5.31	5.32
19175	1907.5	5.42	5.41
LTE Band 2, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18650	1855.0	4.76	4.76
18900	1880.0	4.77	4.77
19150	1905.0	4.80	4.80
LTE Band 2, BW: 15MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18675	1857.5	5.84	5.84
18900	1880.0	5.82	5.63
19125	1902.5	5.85	5.85
LTE Band 2, BW: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18700	1860.0	6.46	6.43
18900	1880.0	6.44	6.45
19100	1900.0	6.45	6.45



LTE Band 2 Peak to Average Ratio

1.4MHz/QPSK/Low CH



1.4MHz/16QAM/Low CH

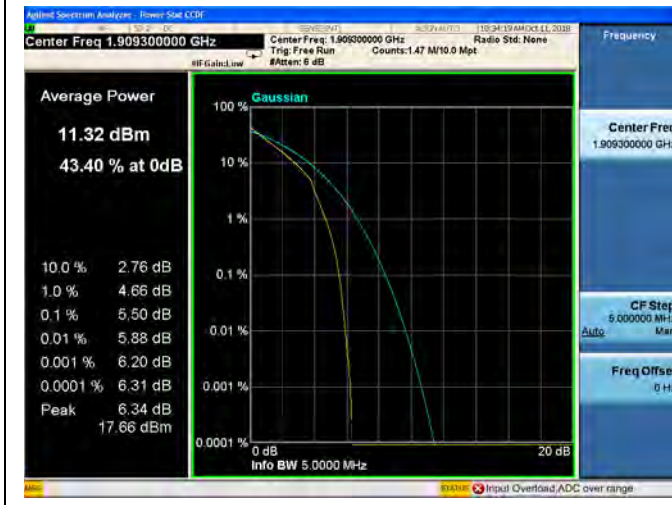
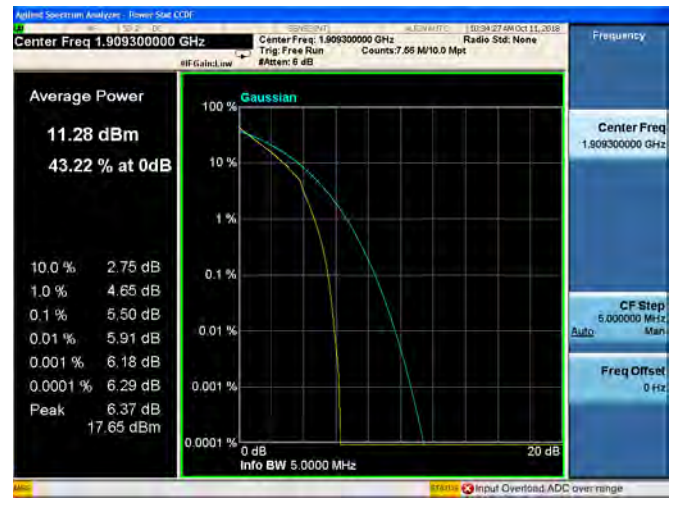


1.4MHz/QPSK/Mid CH



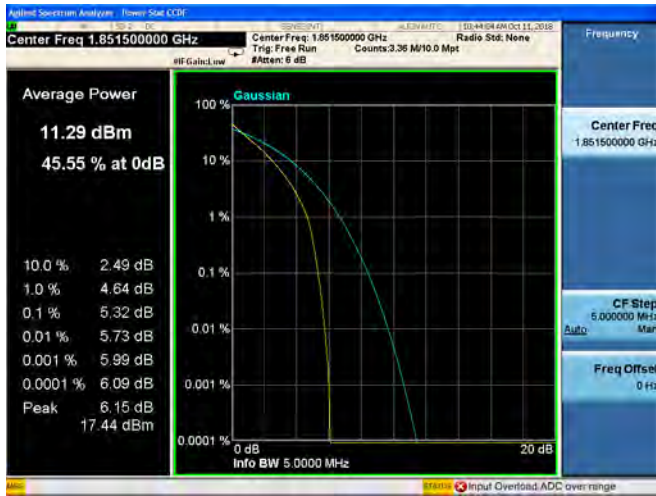
1.4MHz/16QAM/Mid CH



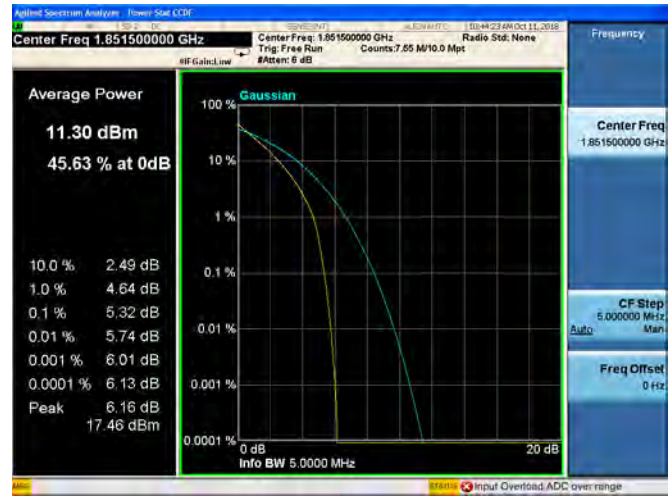
**1.4MHz/QPSK/High CH****1.4MHz/16QAM/High CH**



3MHz/QPSK/Low CH



3MHz/16QAM/Low CH



3MHz/QPSK/Mid CH



3MHz/16QAM/Mid CH



3MHz/QPSK/High CH



3MHz/16QAM/High CH





5MHz/QPSK/Low CH



5MHz/16QAM/Low CH



5MHz/QPSK/Mid CH



5MHz/16QAM/Mid CH



5MHz/QPSK/High CH



5MHz/16QAM/High CH





10MHz/QPSK/Low CH



10MHz/16QAM/Low CH



10MHz/QPSK/Mid CH



10MHz/16QAM/Mid CH



10MHz/QPSK/High CH



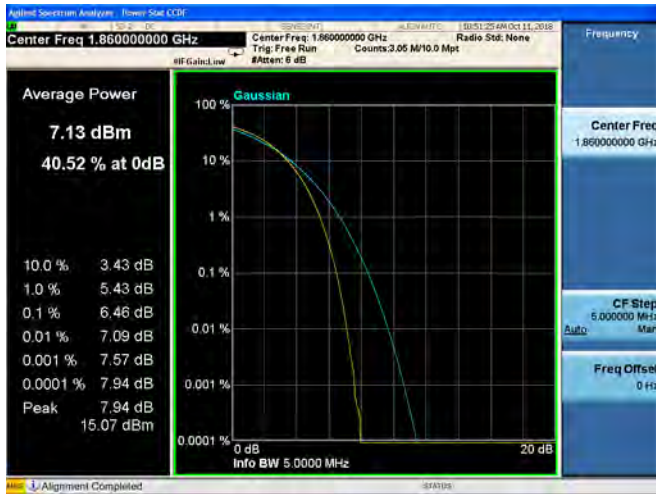
10MHz/16QAM/High CH



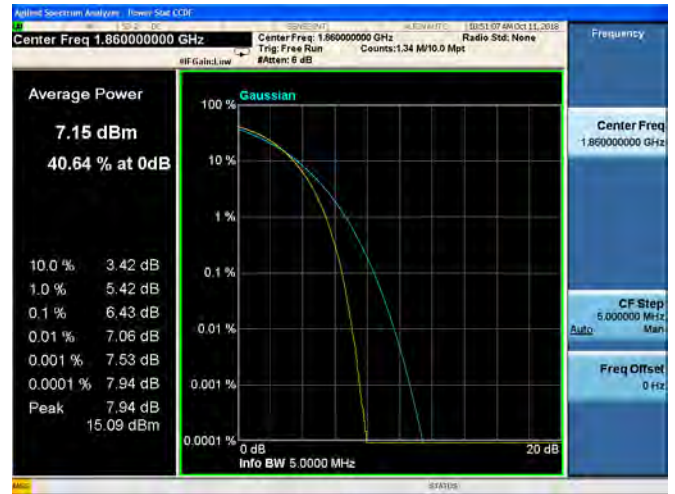
**15MHz/QPSK/Low CH****15MHz/16QAM/Low CH****15MHz/QPSK/Mid CH****15MHz/16QAM/Mid CH****15MHz/QPSK/High CH****15MHz/16QAM/High CH**



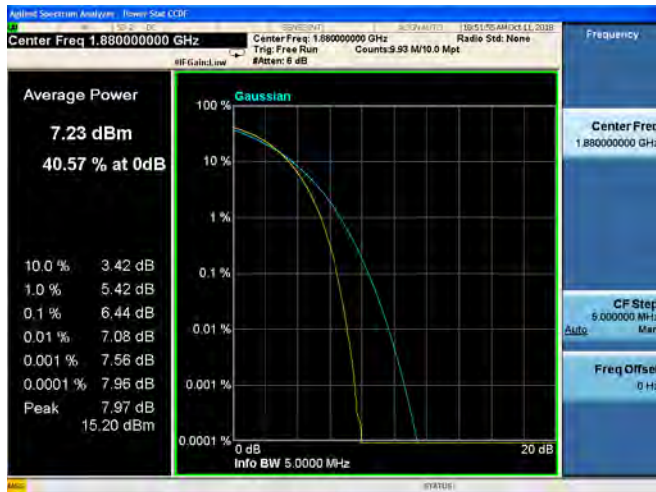
20MHz/QPSK/Low CH



20MHz/16QAM/Low CH



20MHz/QPSK/Mid CH



20MHz/16QAM/Mid CH



20MHz/QPSK/High CH



20MHz/16QAM/High CH



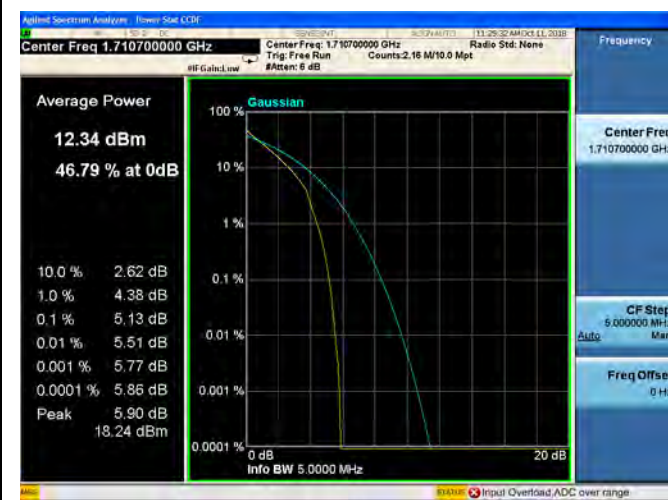


LTE Band 4, BW: 1.4MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18607	1850.7	5.13	5.12
18900	1880.0	5.39	5.36
19192	1909.2	4.69	4.70
LTE Band 4, BW: 3MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18615	1851.5	5.15	5.15
18900	1880.0	5.40	5.40
19184	1908.4	4.81	4.81
LTE Band 4, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18625	1852.5	5.09	5.08
18900	1880.0	5.33	5.31
19175	1907.5	4.92	4.92
LTE Band 4, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18650	1855.0	4.73	4.72
18900	1880.0	4.75	4.74
19150	1905.0	4.67	4.68
LTE Band 4, BW: 15MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18675	1857.5	5.81	5.81
18900	1880.0	6.46	6.45
19125	1902.5	5.82	5.82
LTE Band 4, BW: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
18700	1860.0	6.45	6.46
18900	1880.0	6.41	6.47
19100	1900.0	6.47	6.46



LTE Band 4 Peak to Average Radio

1.4MHz/QPSK/Low CH



1.4MHz/16QAM/Low CH



1.4MHz/QPSK/Mid CH



1.4MHz/16QAM/Mid CH





1.4MHz/QPSK/High CH



1.4MHz/16QAM/High CH





3MHz/QPSK/Low CH



3MHz/16QAM/Low CH



3MHz/QPSK/Mid CH



3MHz/16QAM/Mid CH



3MHz/QPSK/High CH



3MHz/16QAM/High CH





5MHz/QPSK/Low CH



5MHz/16QAM/Low CH



5MHz/QPSK/Mid CH



5MHz/16QAM/Mid CH



5MHz/QPSK/High CH



5MHz/16QAM/High CH





10MHz/QPSK/Low CH



10MHz/16QAM/Low CH



10MHz/QPSK/Mid CH



10MHz/16QAM/Mid CH



10MHz/QPSK/High CH

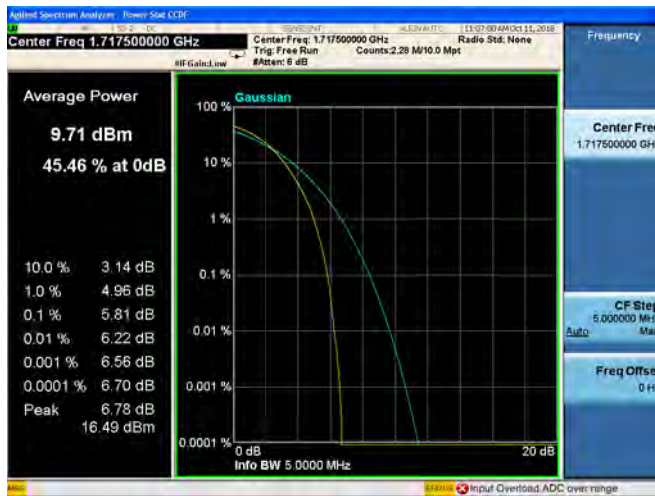


10MHz/16QAM/High CH





15MHz/QPSK/Low CH



15MHz/16QAM/Low CH



15MHz/QPSK/Mid CH



15MHz/16QAM/Mid CH



15MHz/QPSK/High CH



15MHz/16QAM/High CH





20MHz/QPSK/Low CH



20MHz/16QAM/Low CH



20MHz/QPSK/Mid CH



20MHz/16QAM/Mid CH



20MHz/QPSK/High CH



20MHz/16QAM/High CH





LTE Band 5, BW: 1.4MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20407	824.7	4.70	4.71
20525	836.5	5.22	5.20
20643	848.3	4.98	5.00
LTE Band 5, BW: 3MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20415	825.5	4.75	4.75
20525	836.5	4.83	4.80
20635	847.5	5.02	5.02
LTE Band 5, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20425	826.5	4.92	4.91
20525	836.5	4.92	4.91
20625	846.5	5.03	5.03
LTE Band 5, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20450	829.0	4.77	4.80
20525	836.5	5.42	4.78
20600	844.0	4.75	4.75



LTE Band 5 Peak to Average Radio

1.4MHz/QPSK/Low CH



1.4MHz/16QAM/Low CH



1.4MHz/QPSK/Mid CH



1.4MHz/16QAM/Mid CH





1.4MHz/QPSK/High CH



1.4MHz/16QAM/High CH



**3MHz/QPSK/Low CH****3MHz/16QAM/Low CH****3MHz/QPSK/Mid CH****3MHz/16QAM/Mid CH****3MHz/QPSK/High CH****3MHz/16QAM/High CH**



5MHz/QPSK/Low CH



5MHz/16QAM/Low CH



5MHz/QPSK/Mid CH



5MHz/16QAM/Mid CH



5MHz/QPSK/High CH



5MHz/16QAM/High CH





10MHz/QPSK/Low CH



10MHz/16QAM/Low CH



10MHz/QPSK/Mid CH



10MHz/16QAM/Mid CH



10MHz/QPSK/High CH



10MHz/16QAM/High CH





LTE Band 7, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20775	2502.5	4.79	4.79
21100	2535.0	4.67	4.65
21425	2567.5	4.72	4.72
LTE Band 7, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20800	2505.0	4.74	4.75
21100	2535.0	4.68	4.68
21400	2565.0	4.70	4.69
LTE Band 7, BW: 15MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20825	2507.5	4.63	4.65
21100	2535.0	4.48	4.50
21375	2562.5	4.52	4.51
LTE Band 7, BW: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
20850	2510.0	4.68	4.69
21100	2535.0	4.54	4.53
21350	2560.0	4.60	4.60



LTE Band 7 Peak to Average Ratio

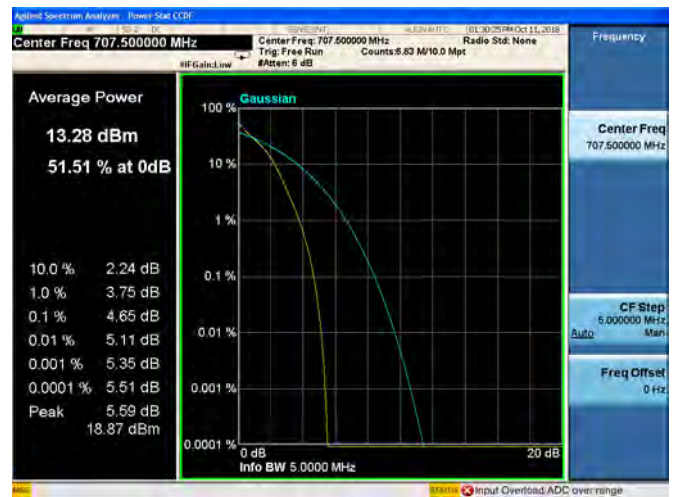
5MHz/QPSK/Low CH

5MHz/16QAM/Low CH



5MHz/QPSK/Mid CH

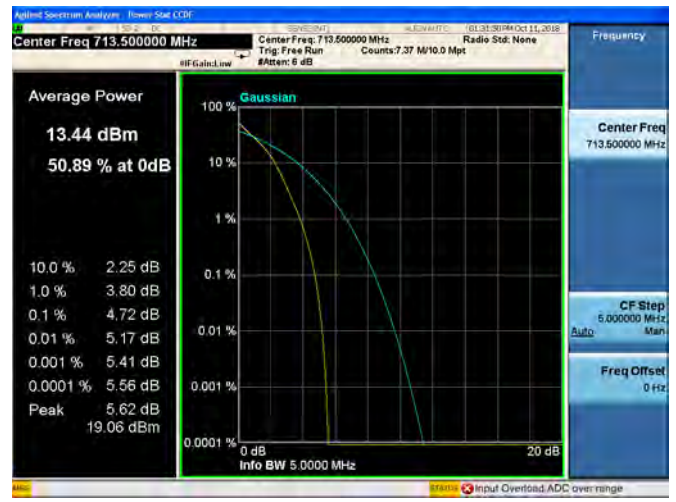
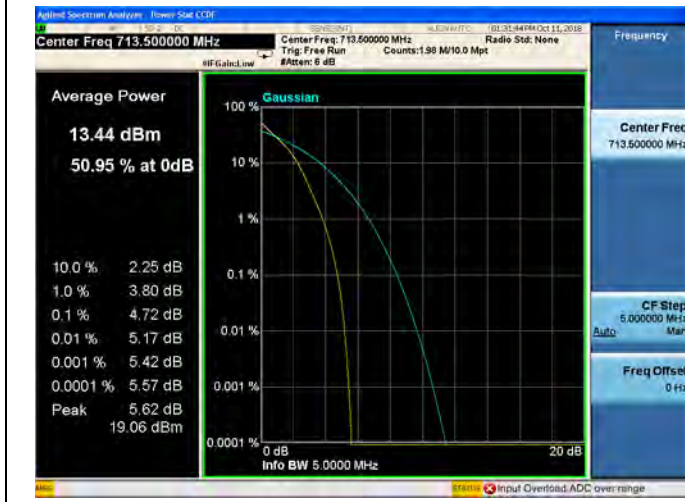
5MHz/16QAM/Mid CH





5MHz/QPSK/High CH

5MHz/16QAM/High CH





10MHz/QPSK/Low CH



10MHz/16QAM/Low CH



10MHz/QPSK/Mid CH



10MHz/16QAM/Mid CH



10MHz/QPSK/High CH



10MHz/16QAM/High CH





15MHz/QPSK/Low CH



15MHz/16QAM/Low CH



15MHz/QPSK/Mid CH



15MHz/16QAM/Mid CH



15MHz/QPSK/High CH



15MHz/16QAM/High CH





20MHz/QPSK/Low CH



20MHz/16QAM/Low CH



20MHz/QPSK/Mid CH



20MHz/16QAM/Mid CH



20MHz/QPSK/High CH



20MHz/16QAM/High CH



2.5. Conducted Spurious Emissions

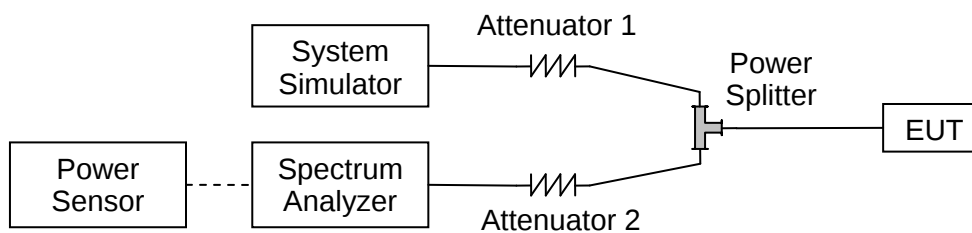
2.5.1. Requirement

According to FCC section 2.1051, 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. This calculated to be -13dBm.

Additional requirement for LTE Band 7:

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 $55 + 10 \log(P)$ dB. This calculated to be -25dBm.

2.5.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.5.3. Test procedure

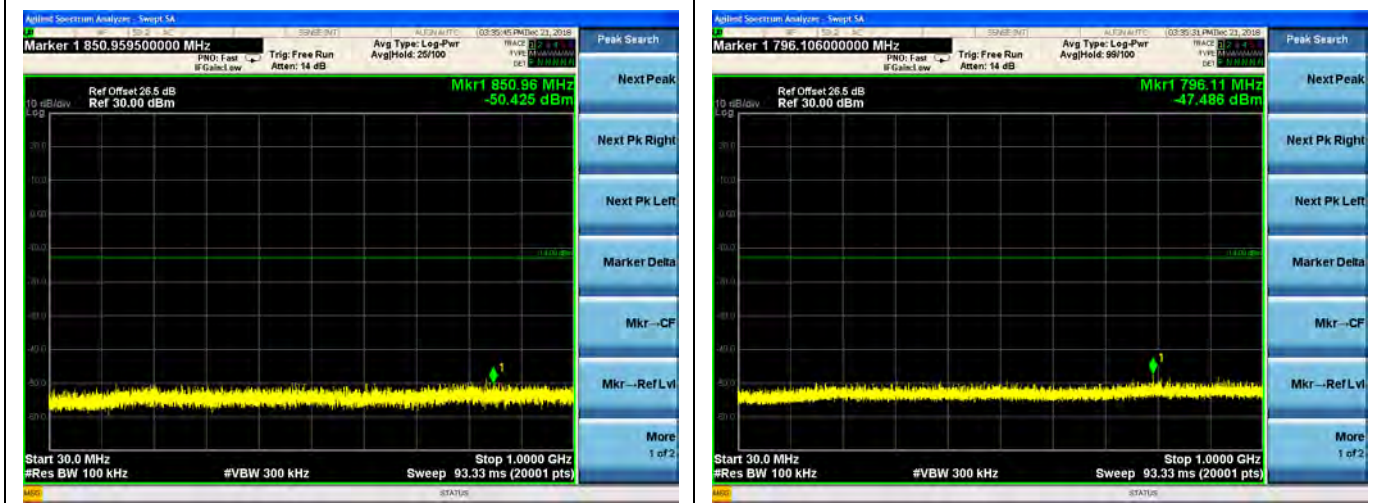
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

2.5.4. Test Result



LTE Band 2 1.4MHz BW Low Channel

QPSK



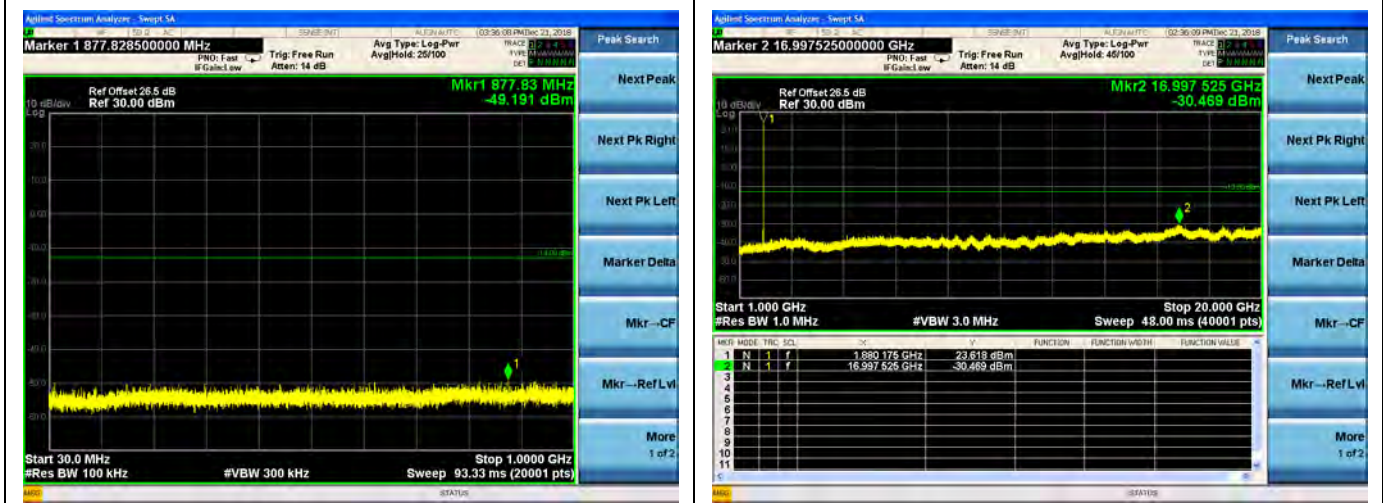
16QAM



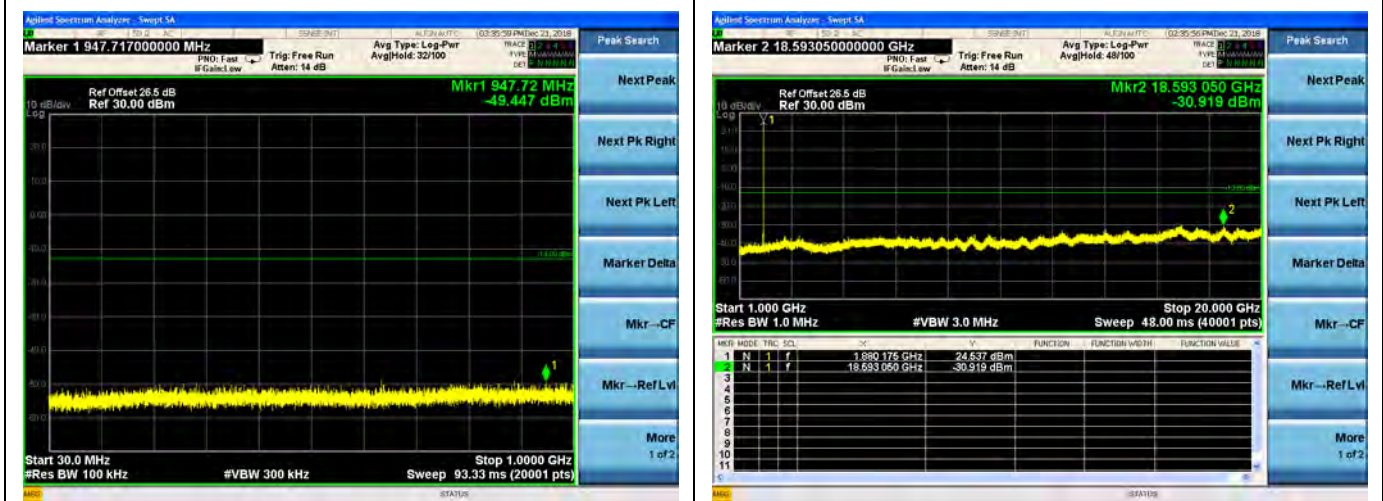


LTE Band 2 1.4MHz BW Mid Channel

QPSK



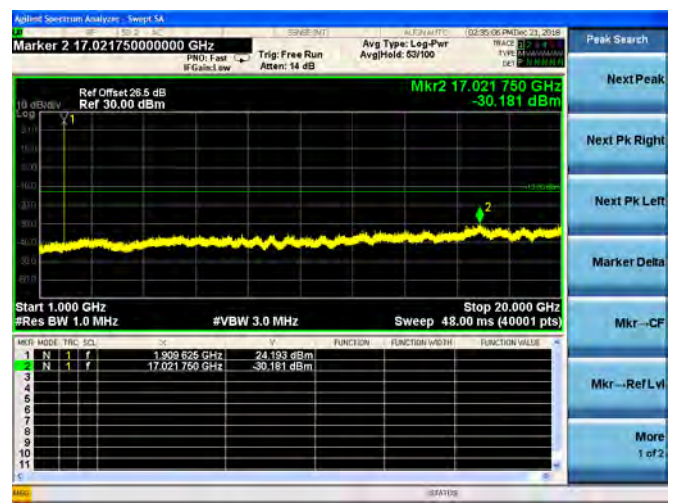
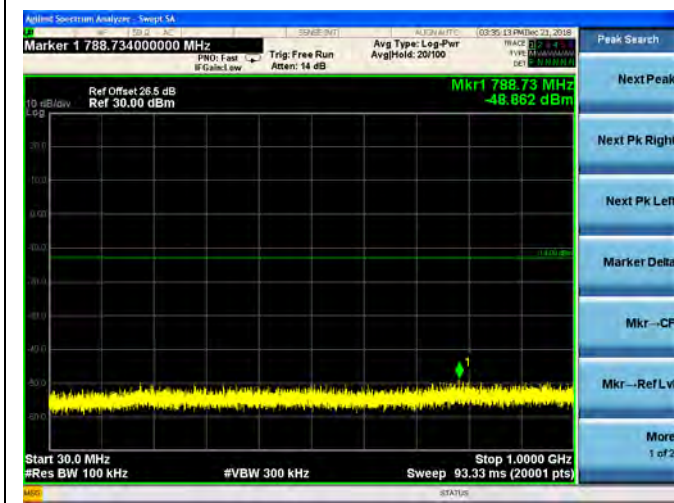
16QAM



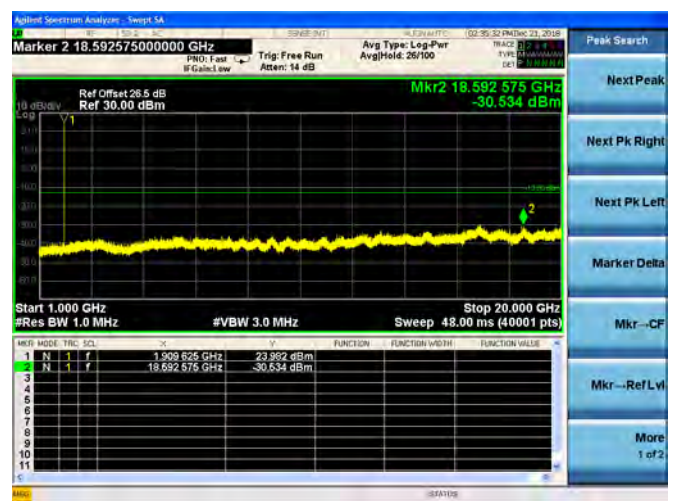
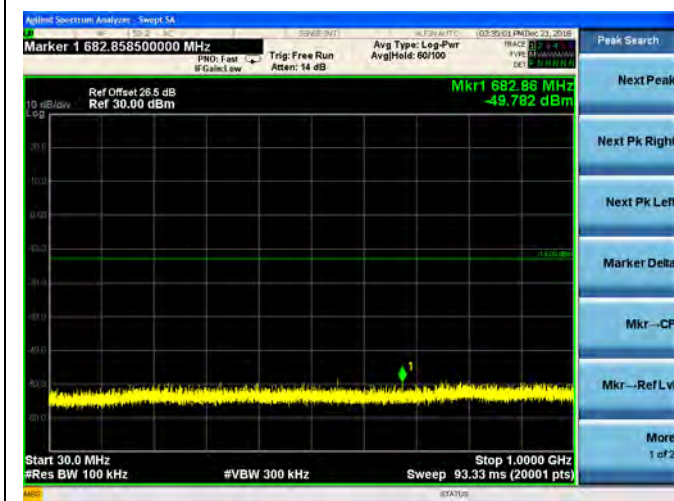


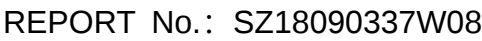
LTE Band 2 1.4MHz BW High Channel

QPSK

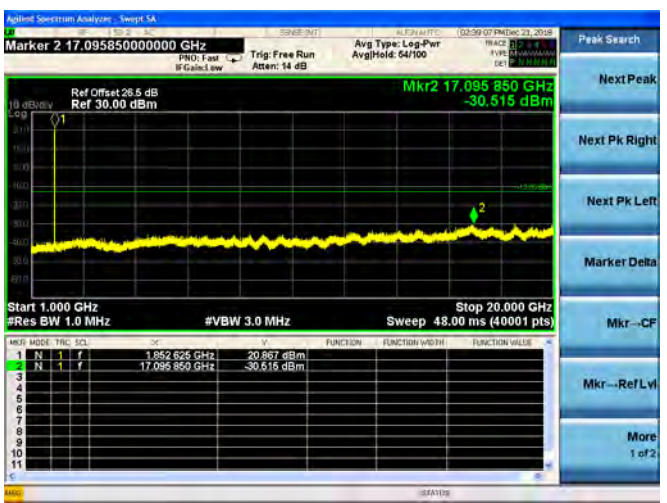


16QAM

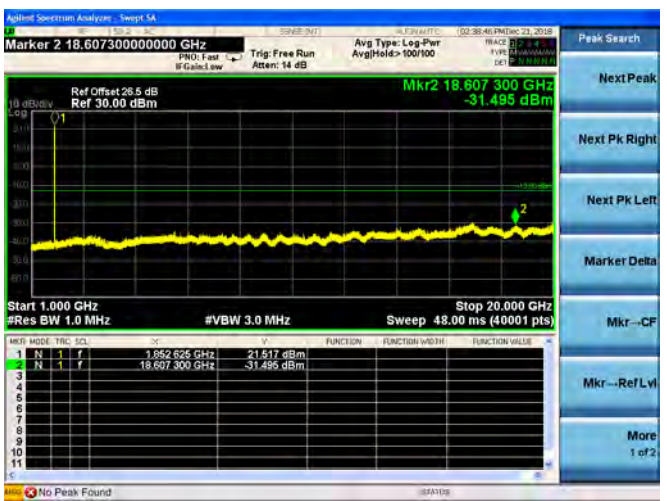




QPSK



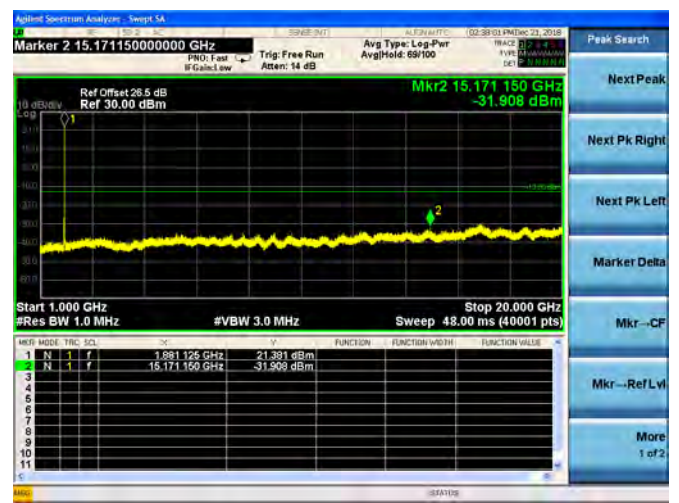
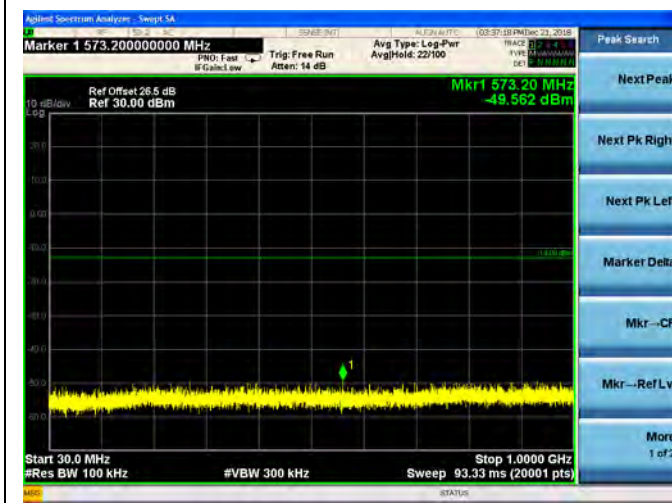
16QAM



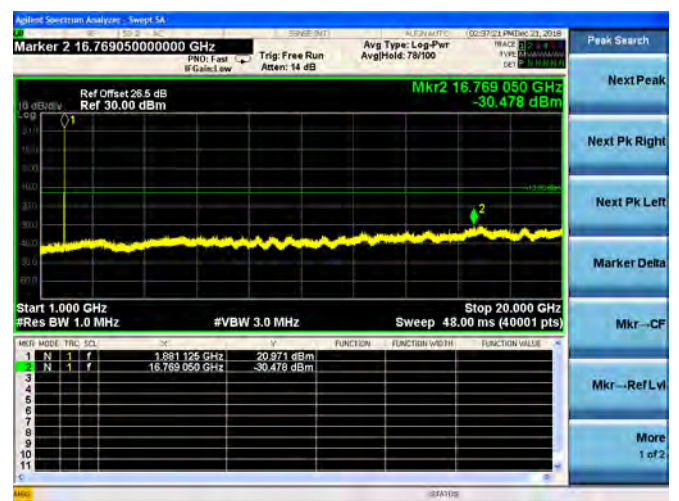
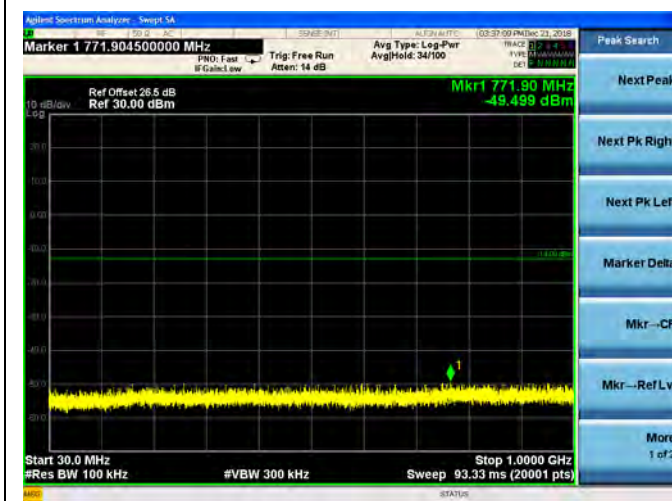


LTE Band 2 3MHz BW Mid Channel

QPSK

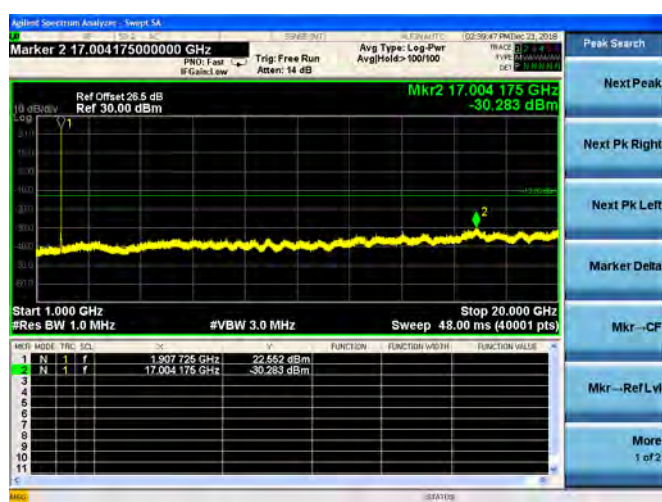


16QAM

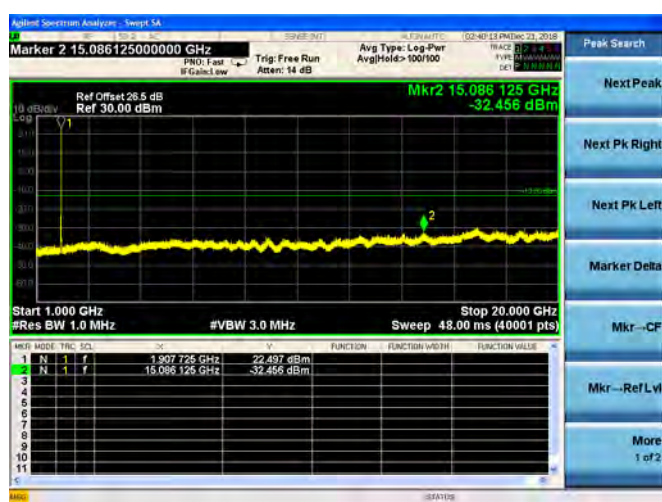




QPSK



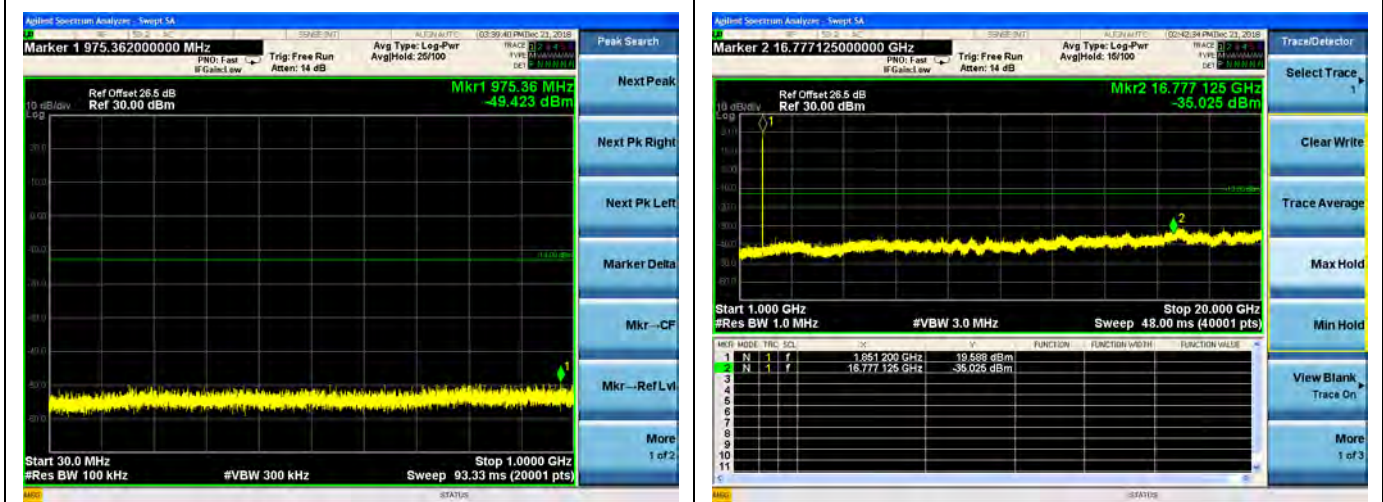
16QAM



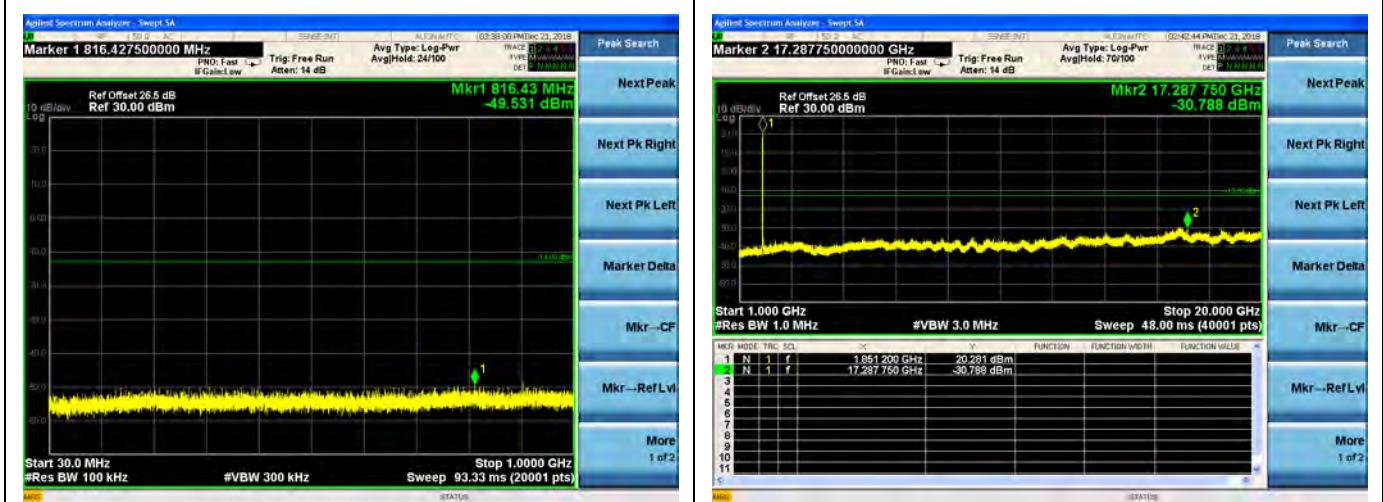


LTE Band 2 5MHz BW Low Channel

QPSK



16QAM





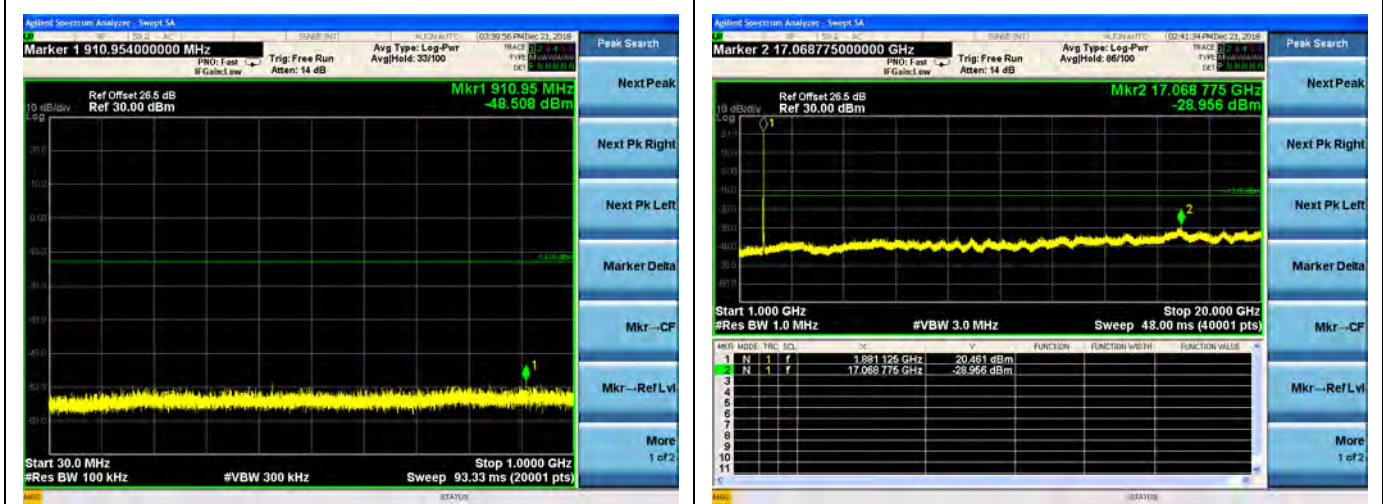
REPORT No.: SZ18090337W08

LTE Band 2 5MHz BW Mid Channel

QPSK

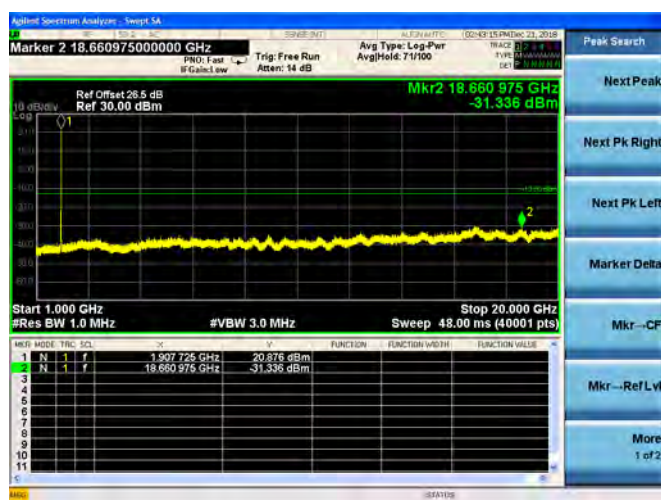


16QAM





QPSK



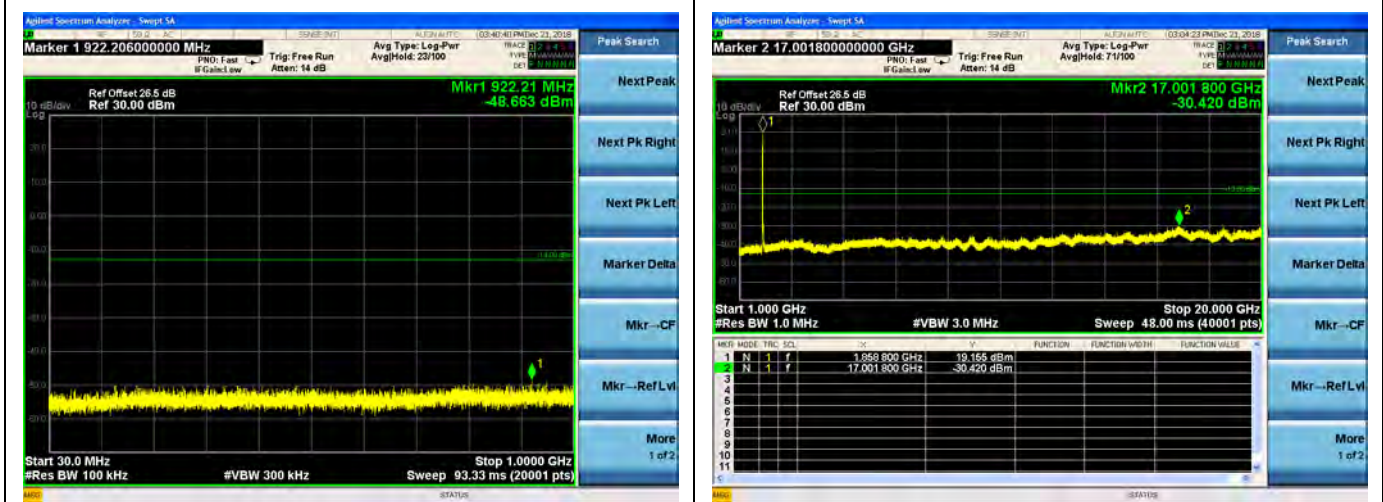
16QAM



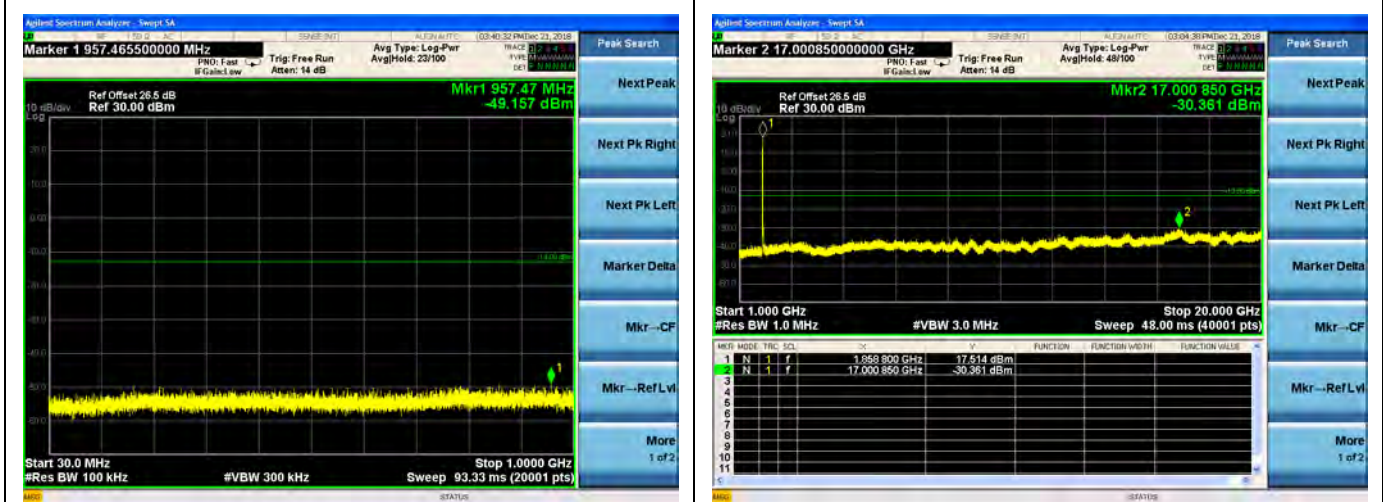


LTE Band 2 10MHz BW Low Channel

QPSK

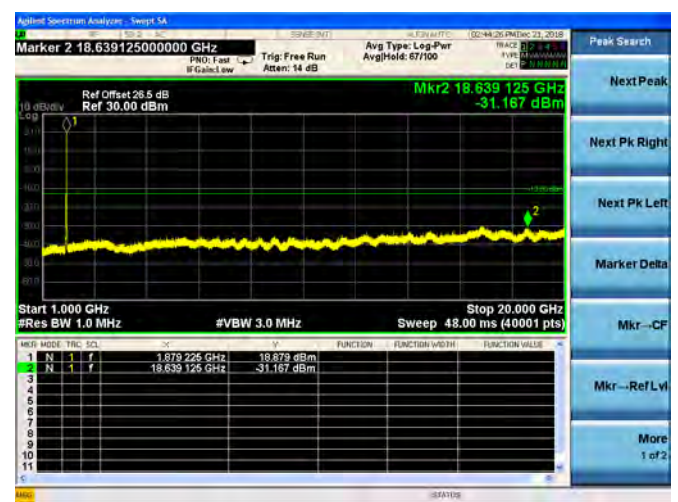


16QAM

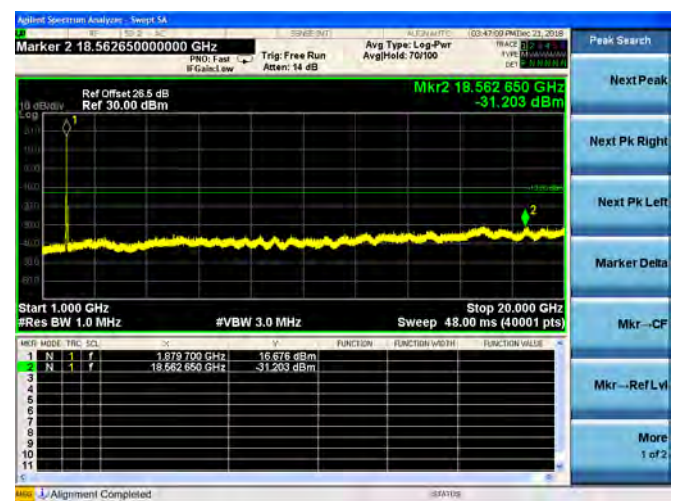




QPSK



16QAM

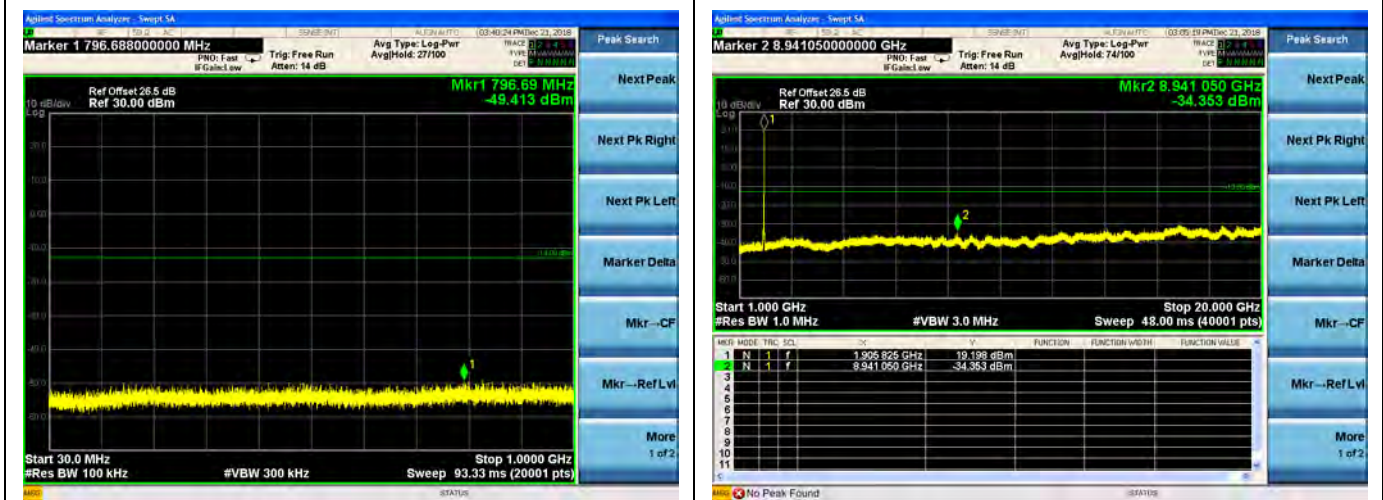




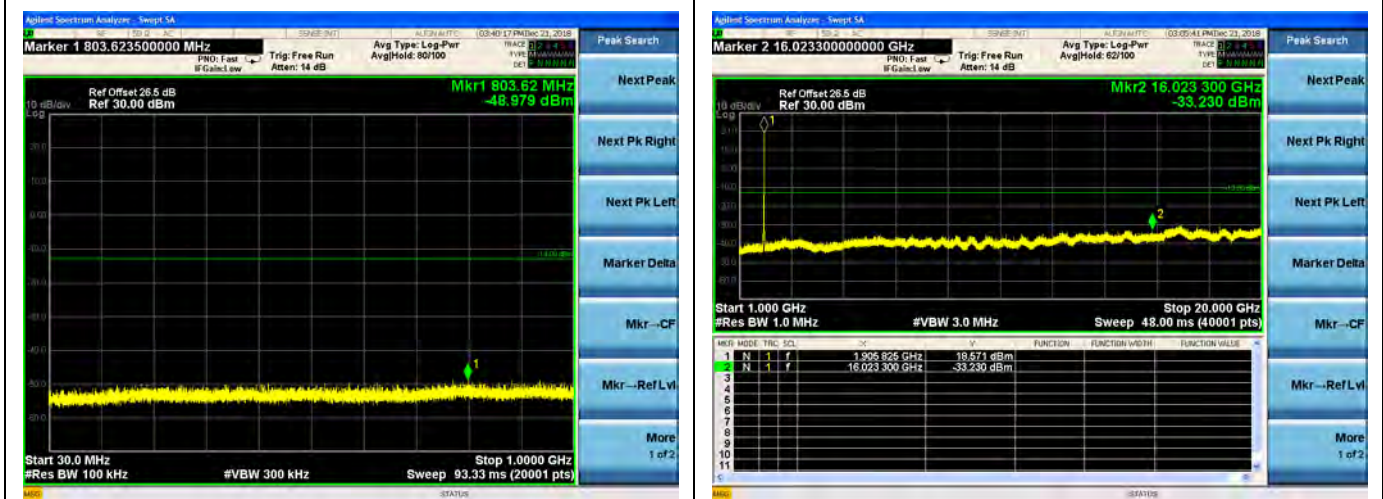
REPORT No.: SZ18090337W08

LTE Band 2 10MHz BW High Channel

QPSK



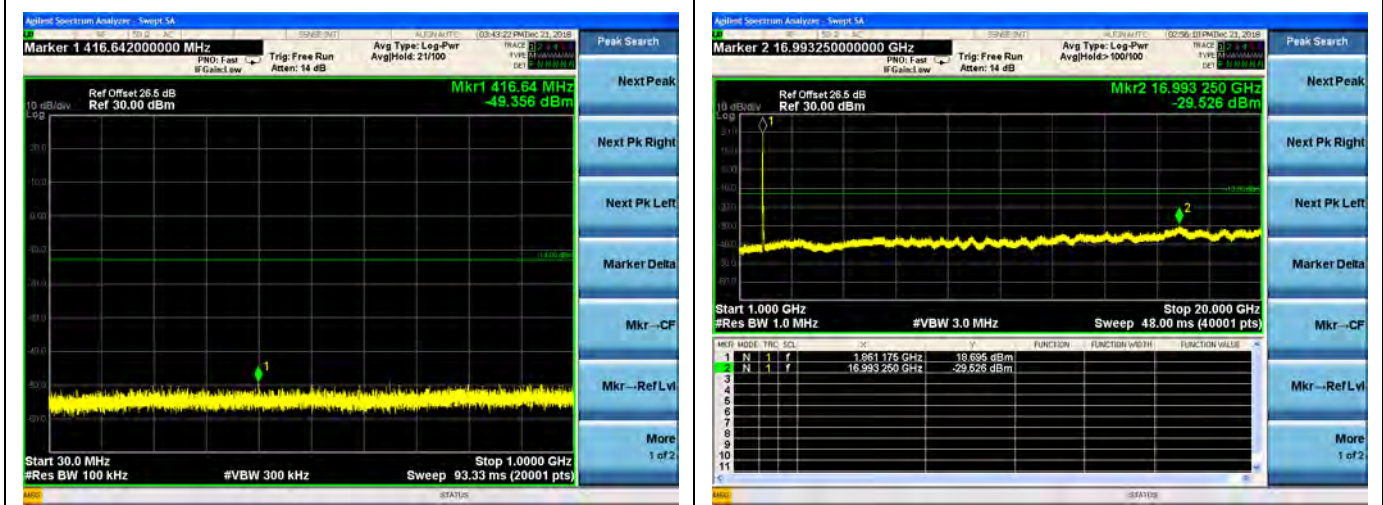
16QAM



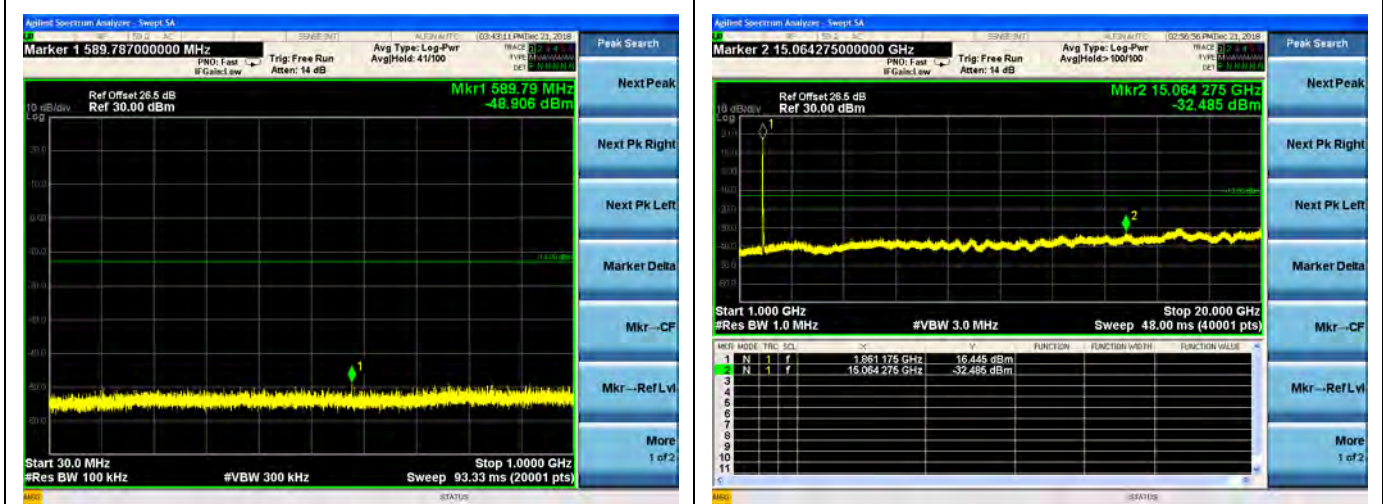


LTE Band 2 15MHz BW Low Channel

QPSK

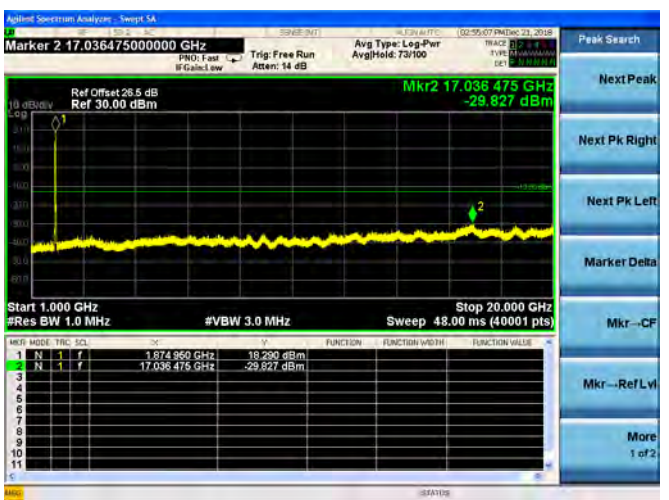


16QAM

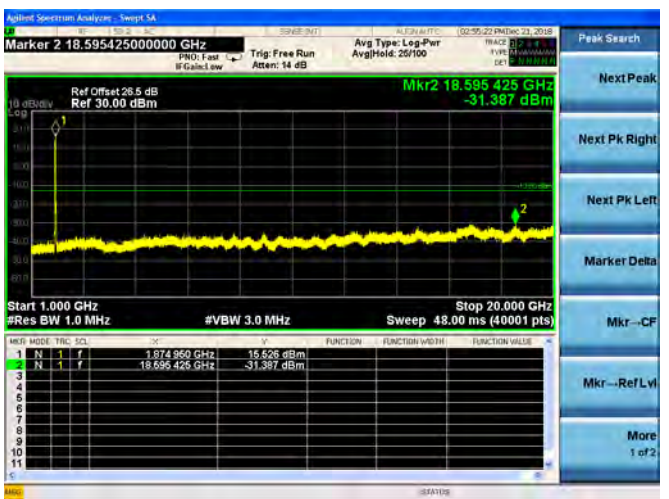




QPSK



16QAM



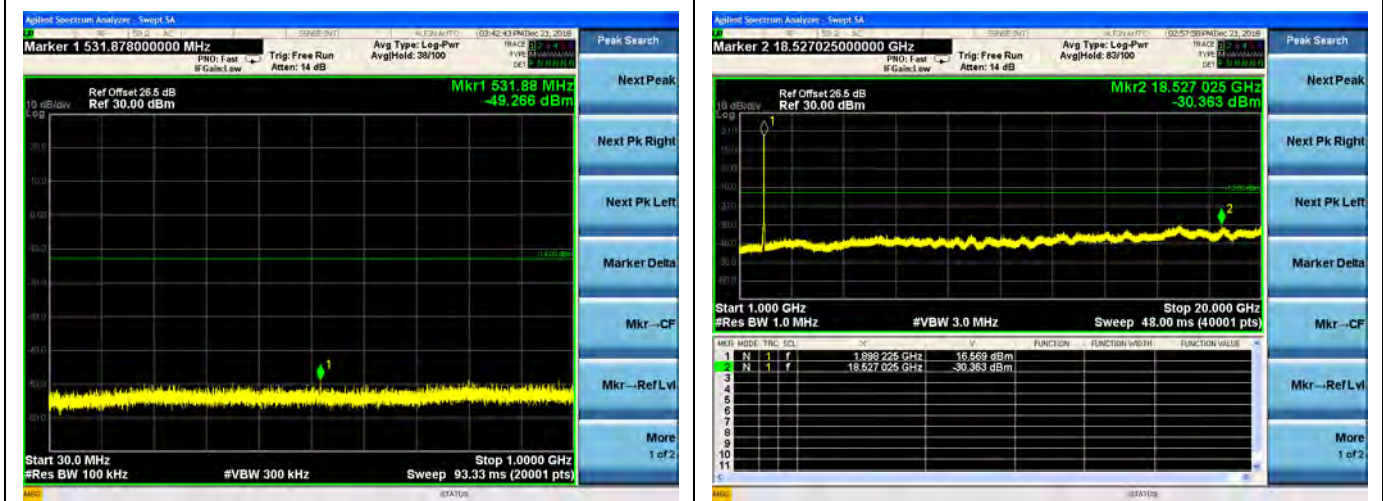


LTE Band 2 15MHz BW High Channel

QPSK



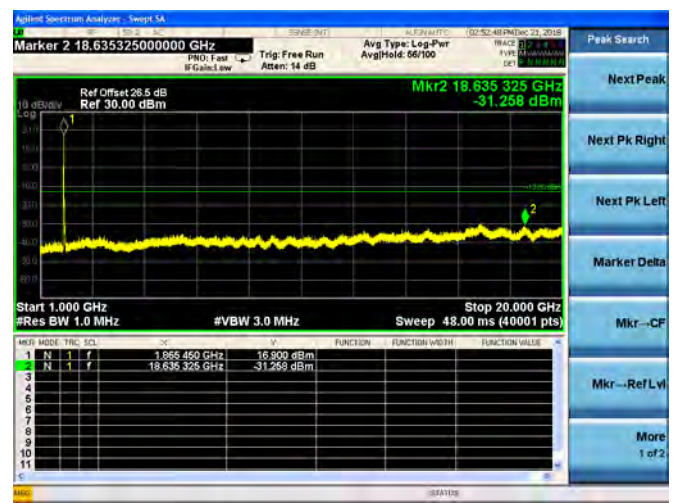
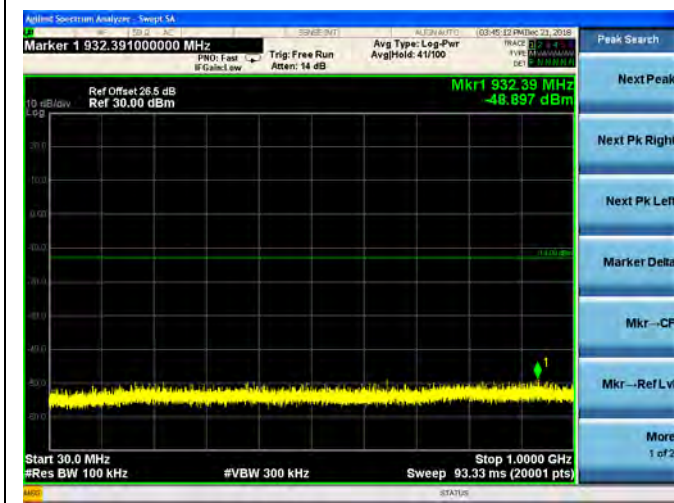
16QAM



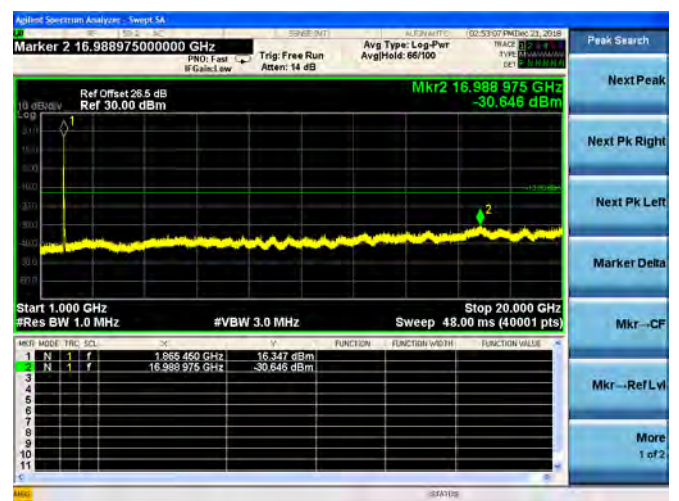
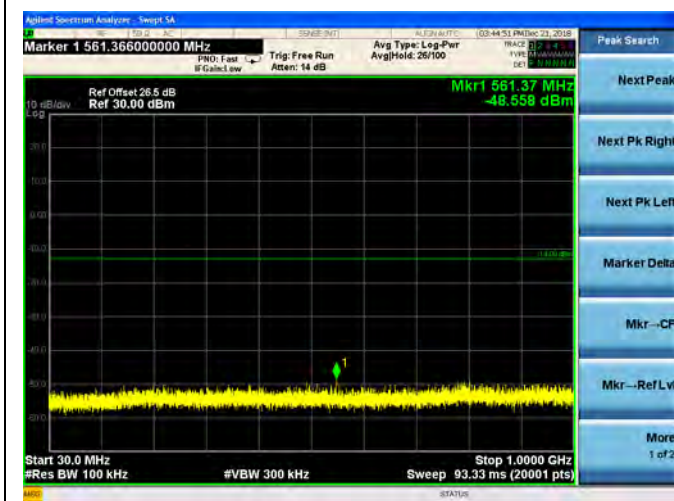


LTE Band 2 20MHz BW Low Channel

QPSK



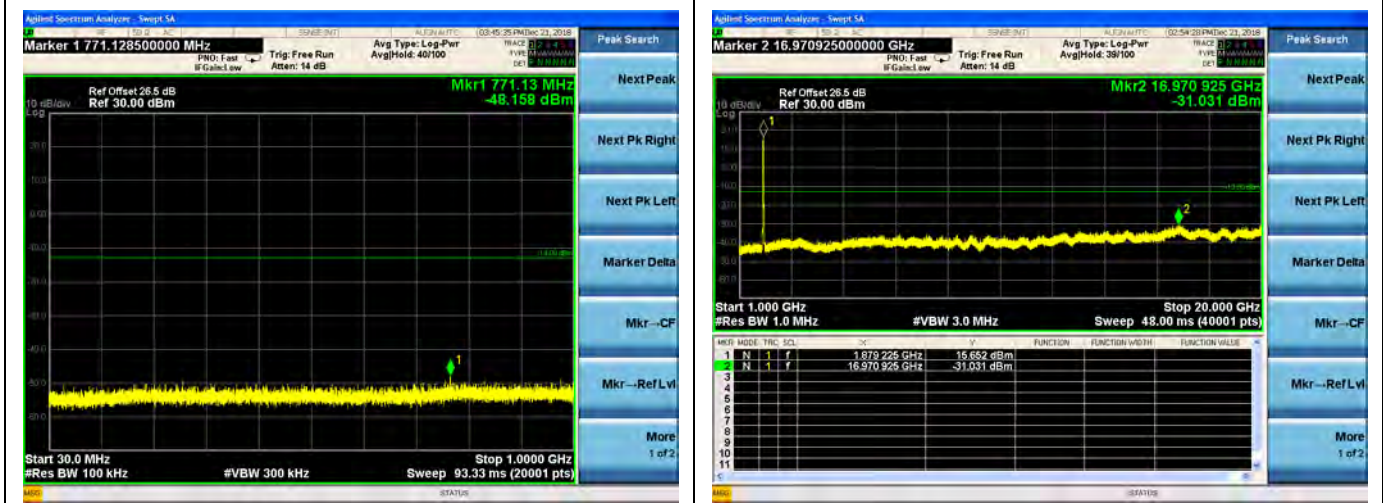
16QAM



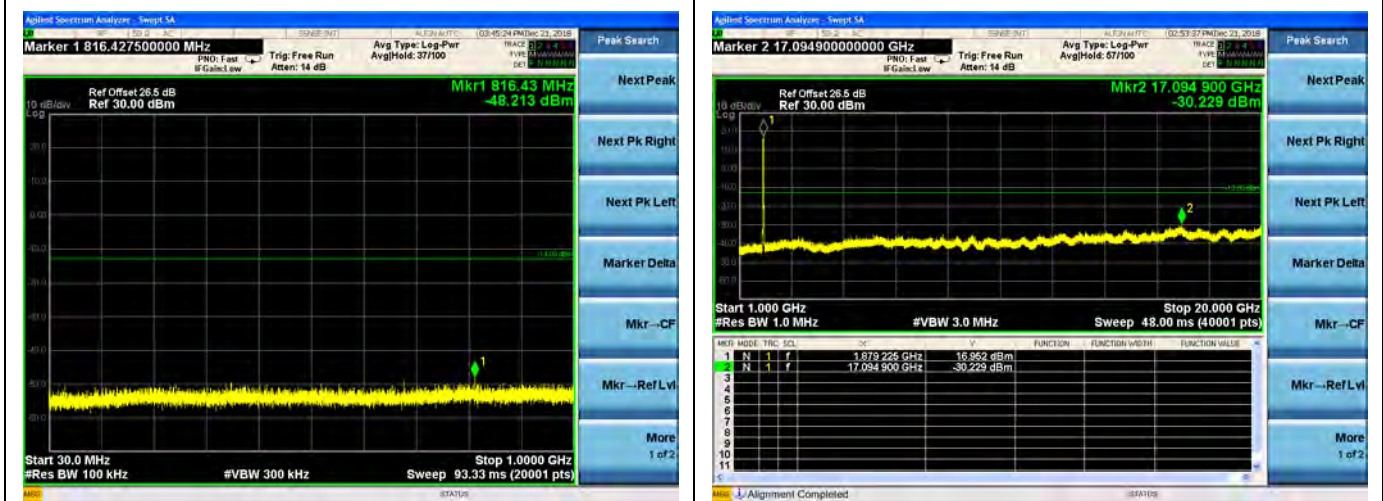


LTE Band 2 20MHz BW Mid Channel

QPSK



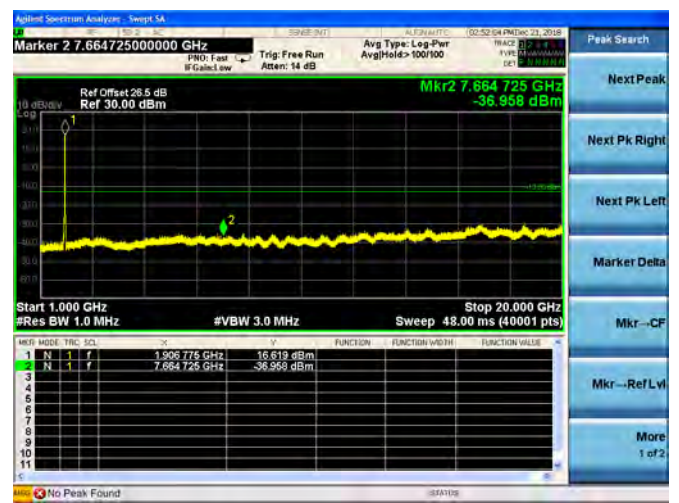
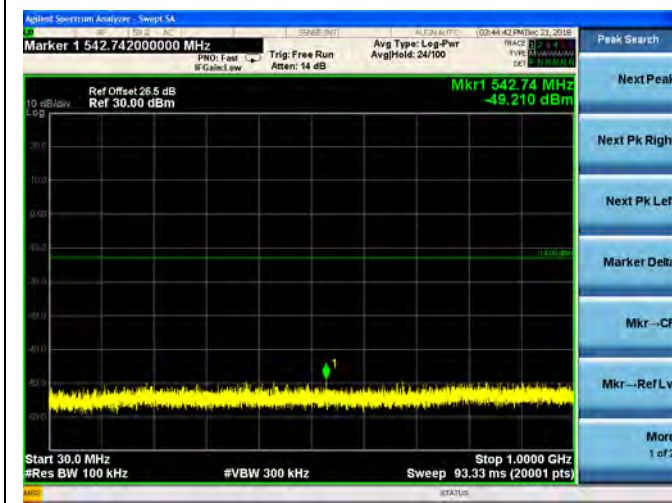
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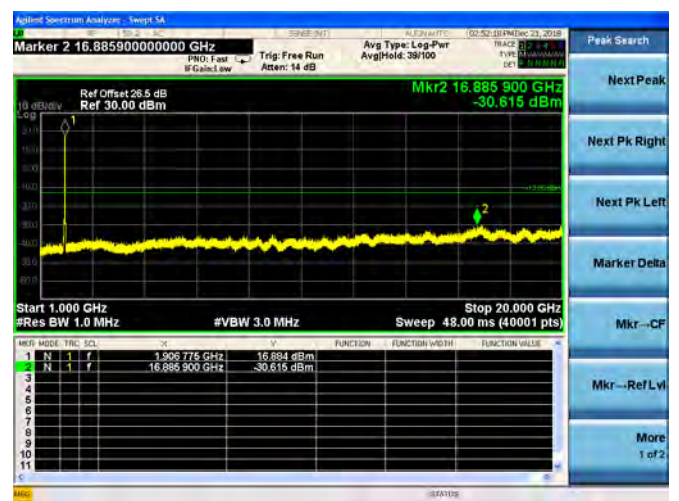
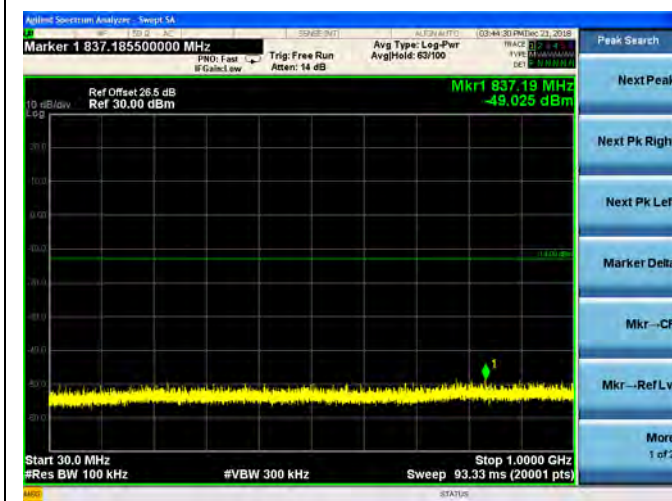


LTE Band 2 20MHz BW High Channel

QPSK



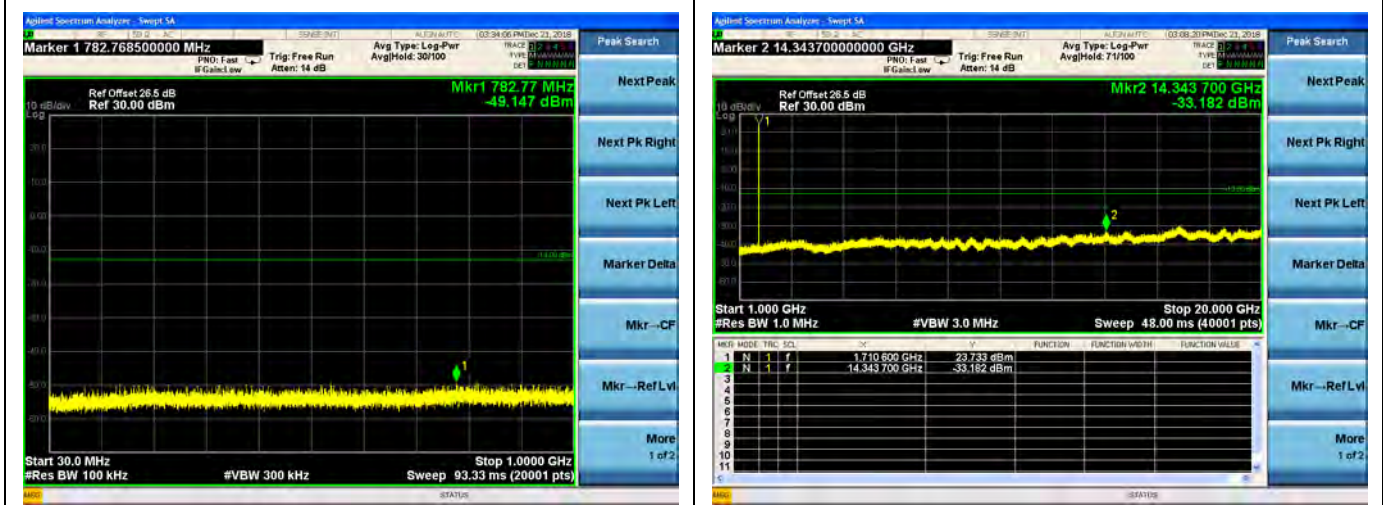
16QAM



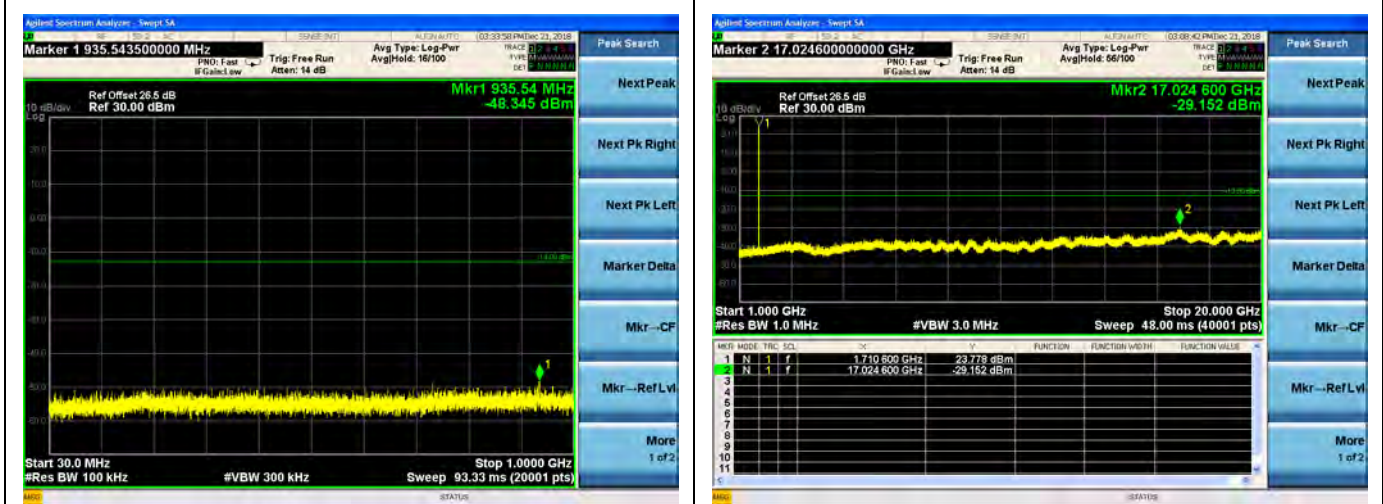


LTE Band 4 1.4MHz BW Low Channel

QPSK



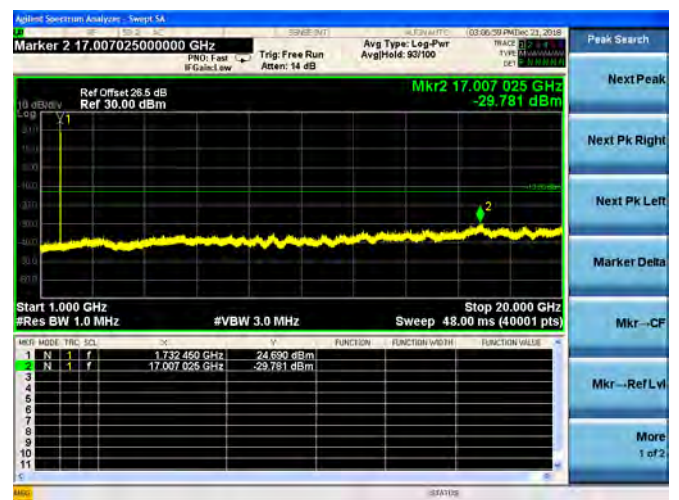
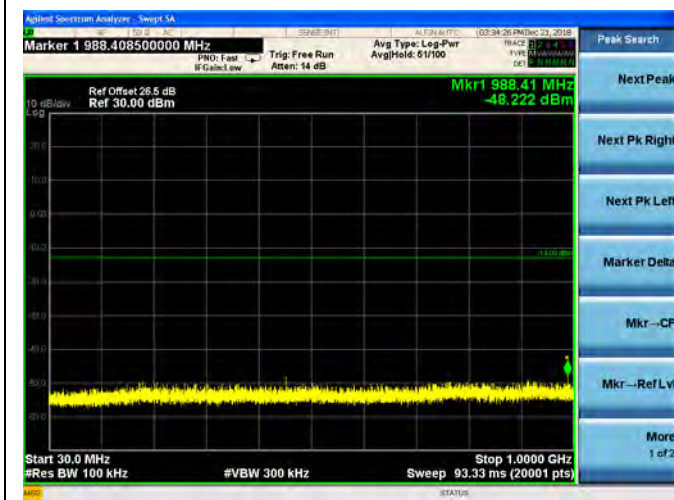
16QAM



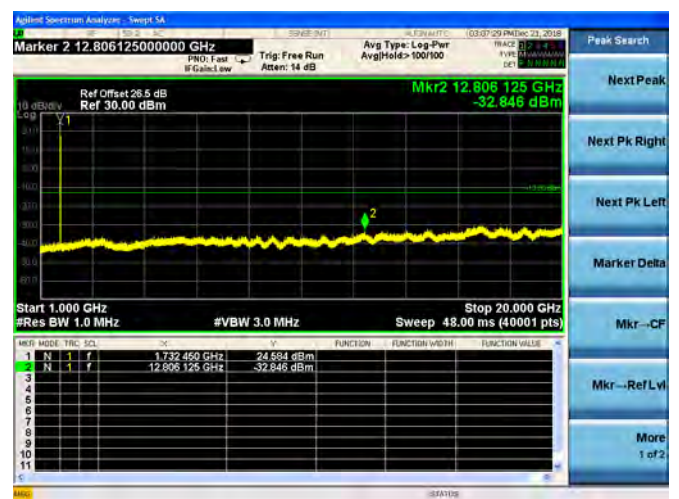
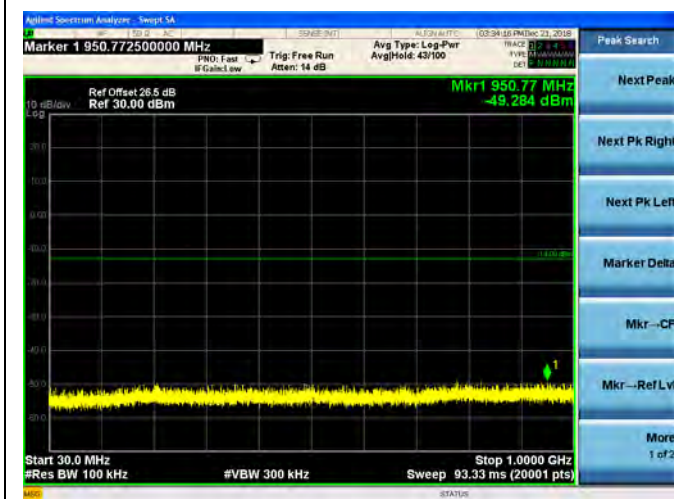


LTE Band 4 1.4MHz BW Mid Channel

QPSK



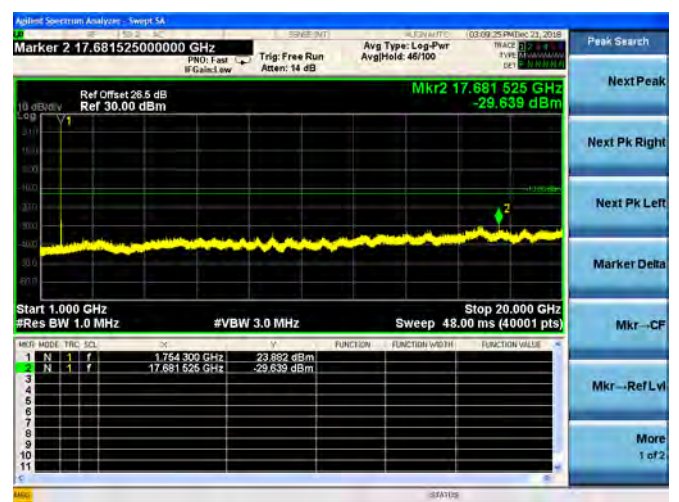
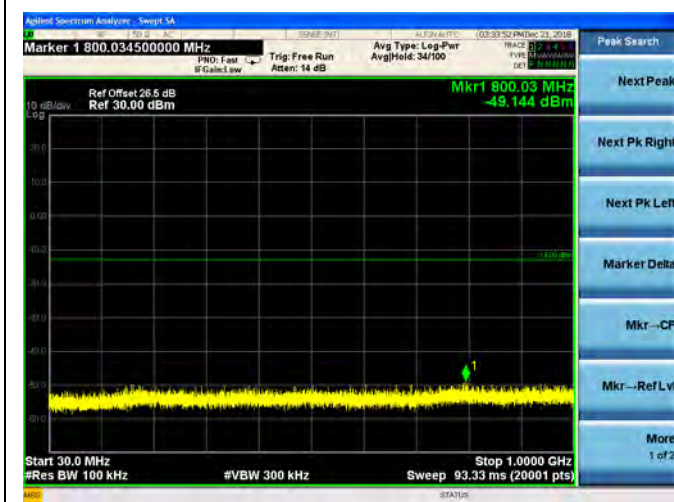
16QAM



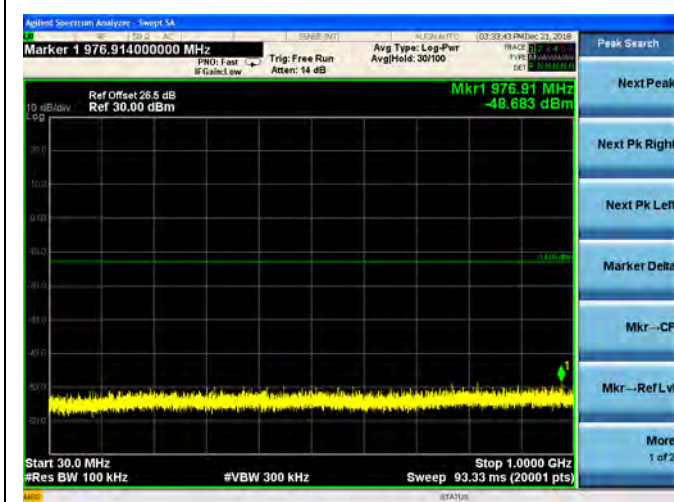


LTE Band 4 1.4MHz BW High Channel

QPSK



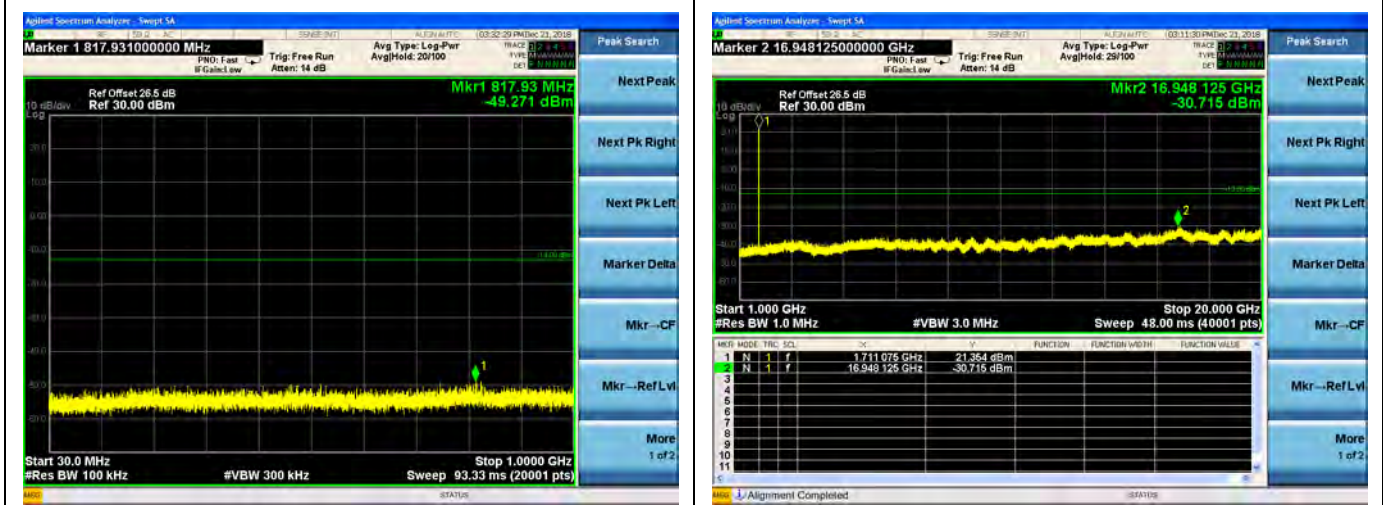
16QAM



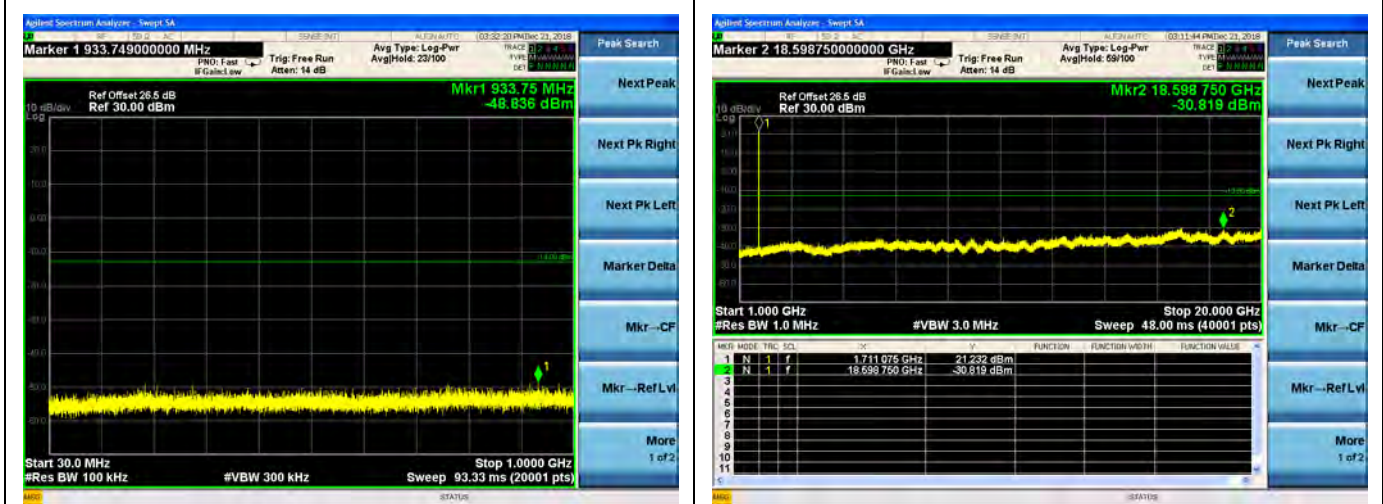


LTE Band 4 3MHz BW Low Channel

QPSK



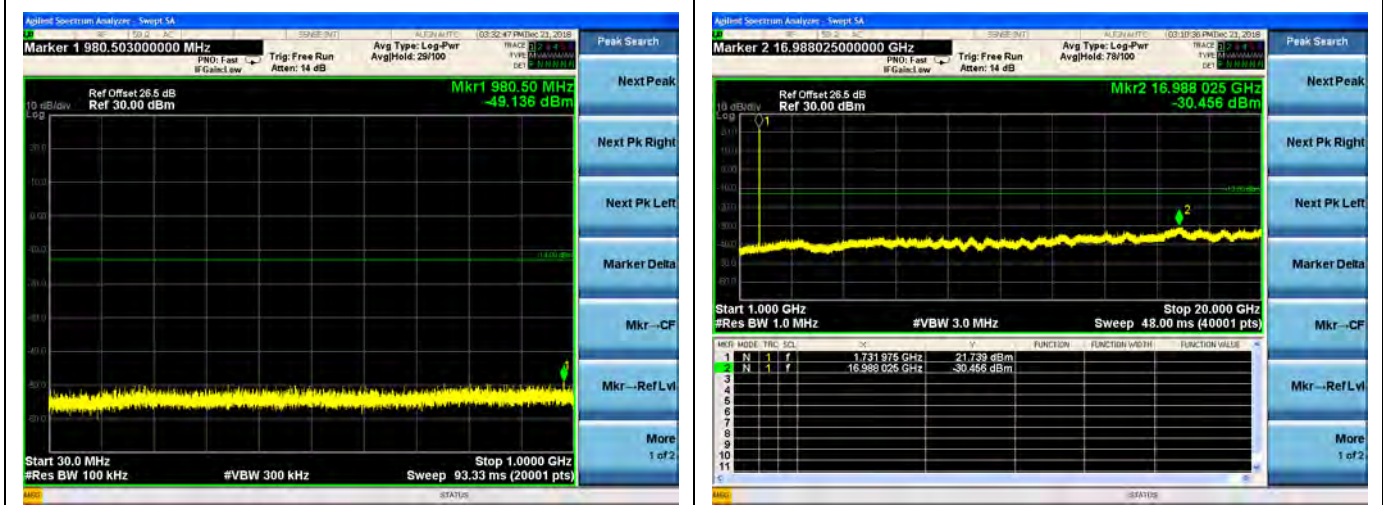
16QAM



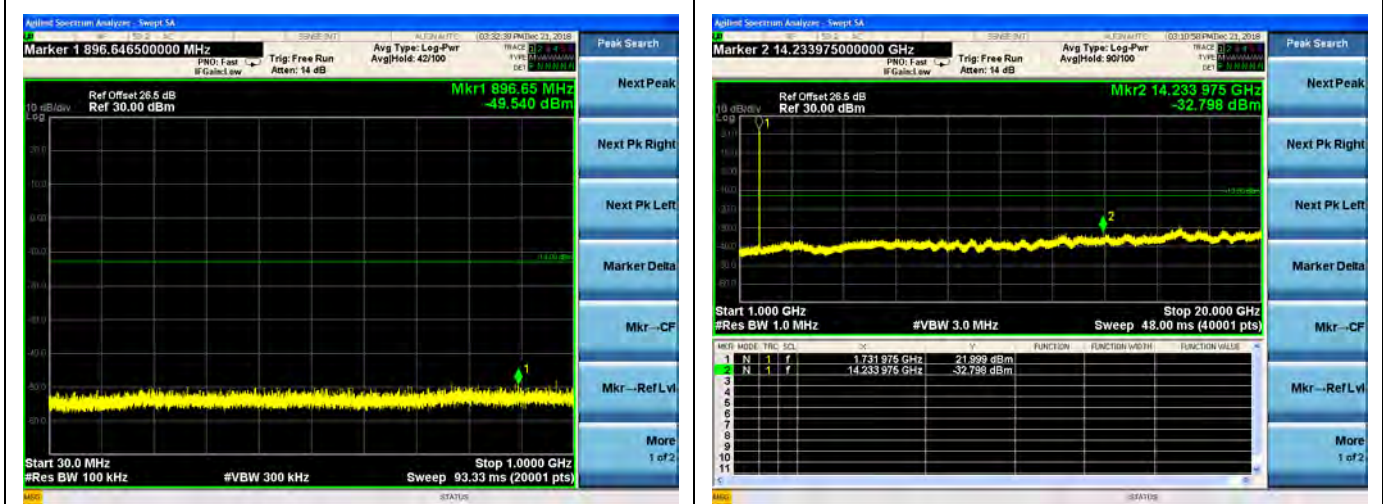


LTE Band 4 3MHz BW Mid Channel

QPSK



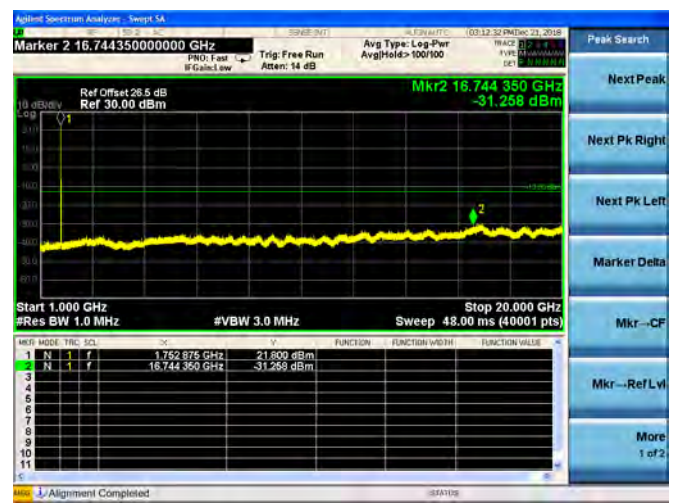
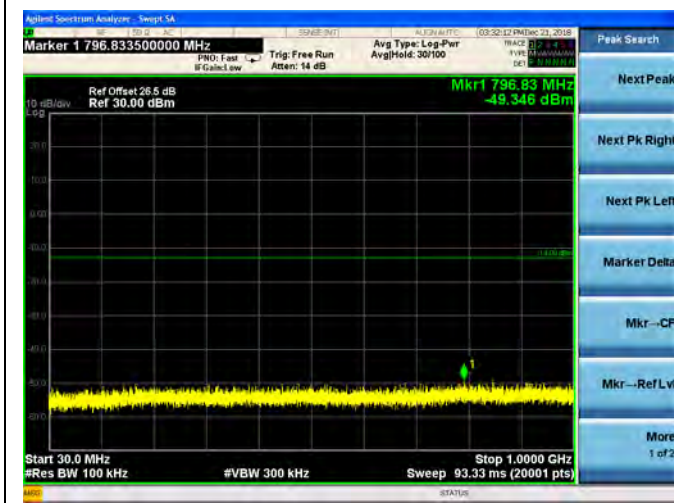
16QAM



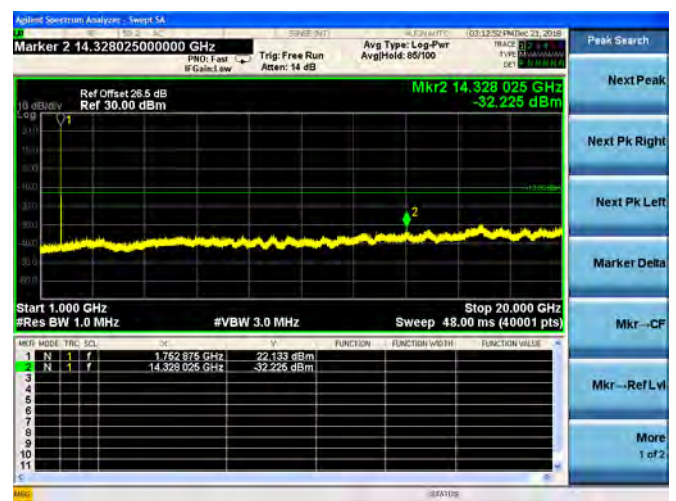
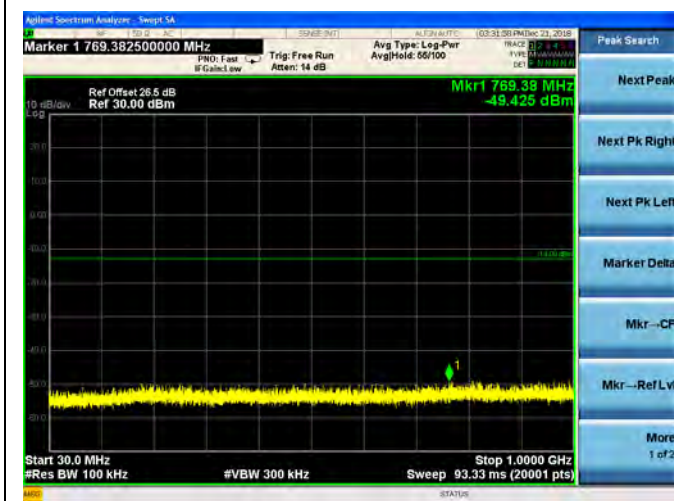


LTE Band 4 3MHz BW High Channel

QPSK

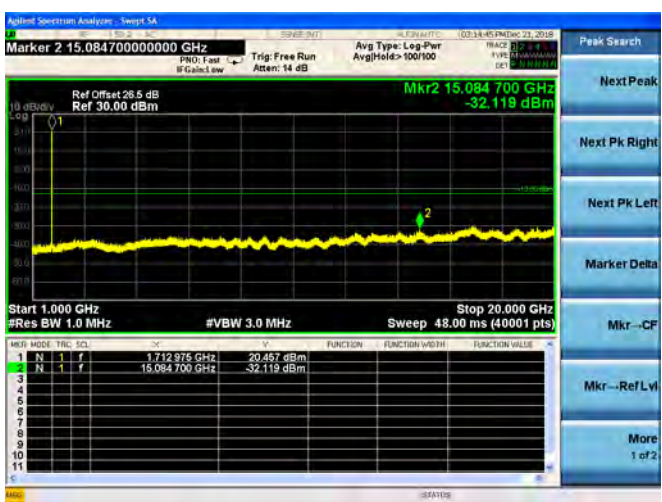


16QAM

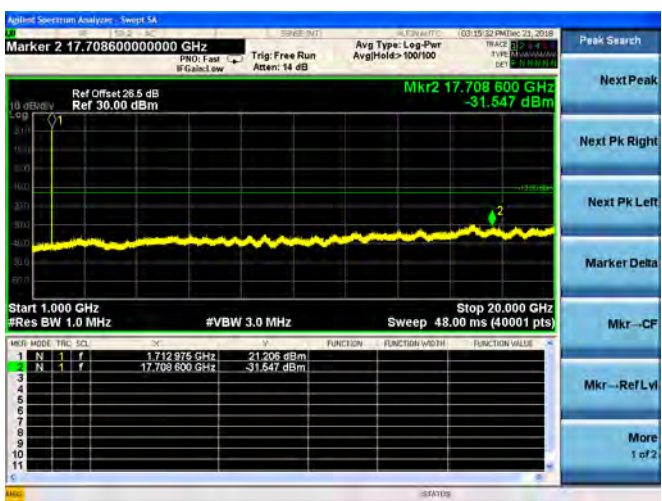




QPSK

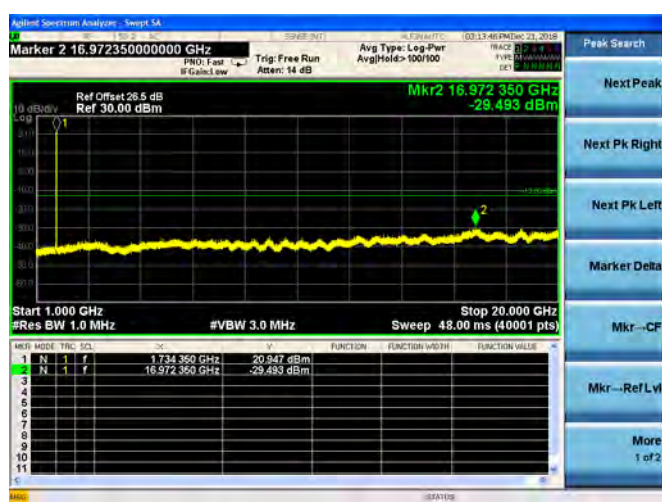


16QAM

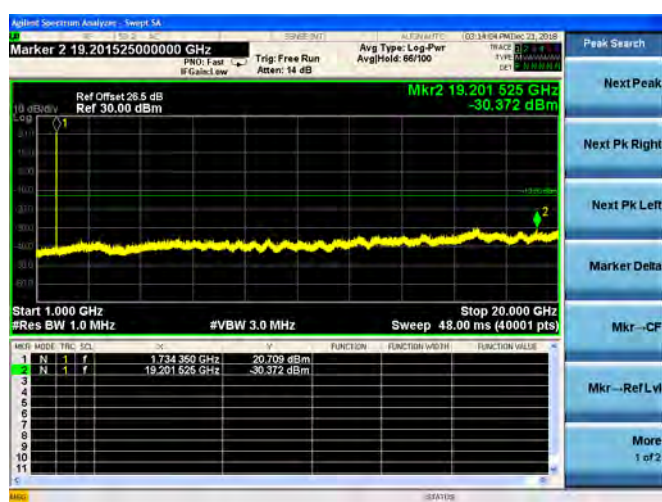




QPSK



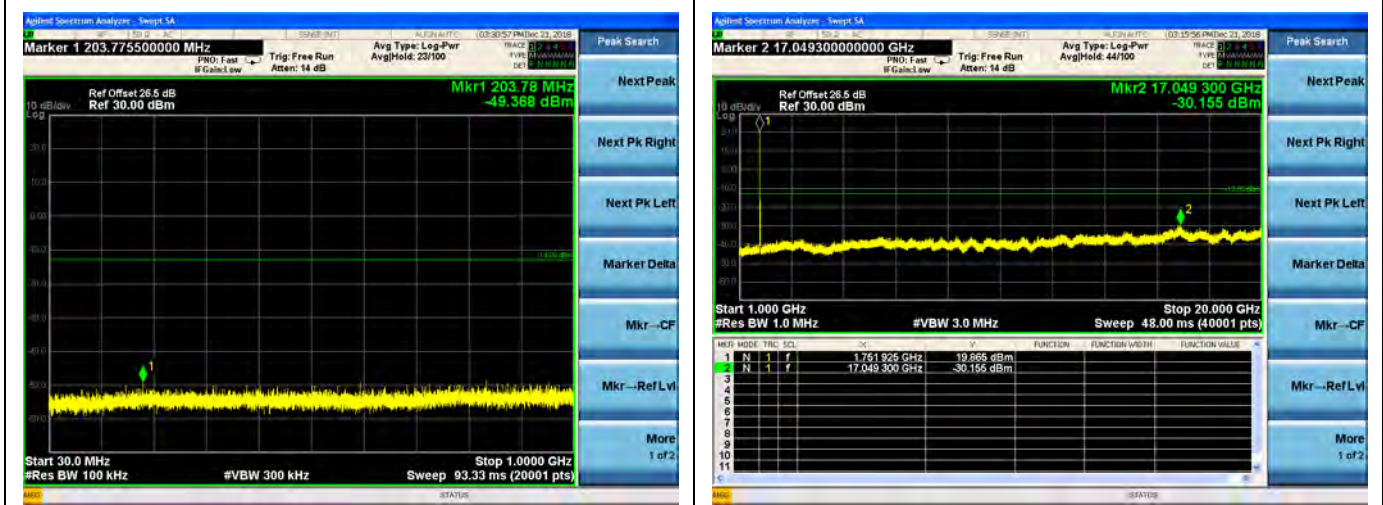
16QAM



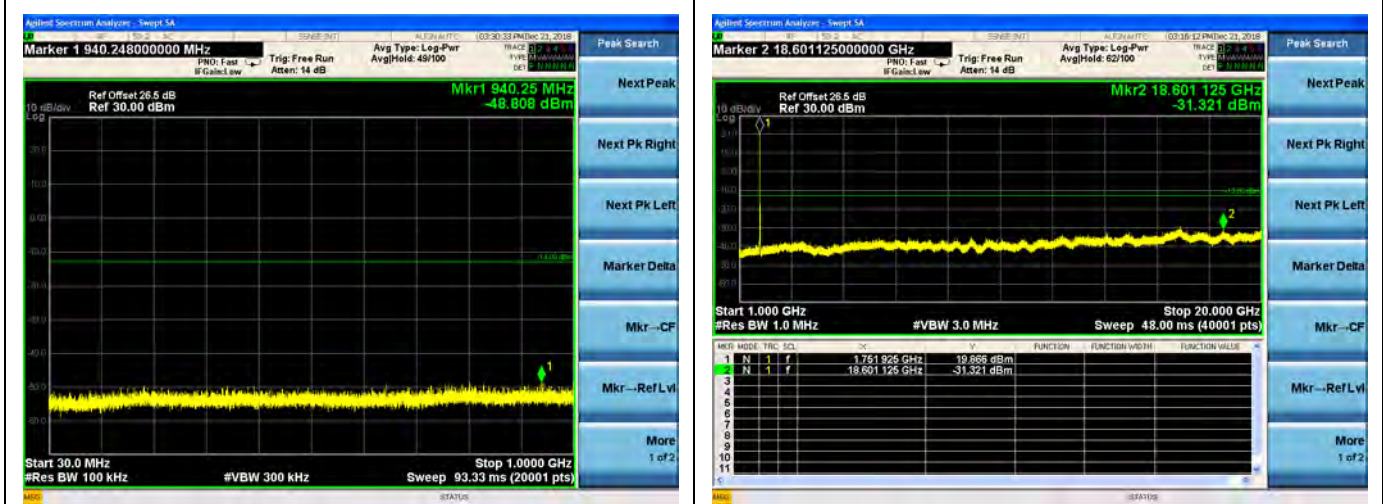


LTE Band 4 5MHz BW High Channel

QPSK



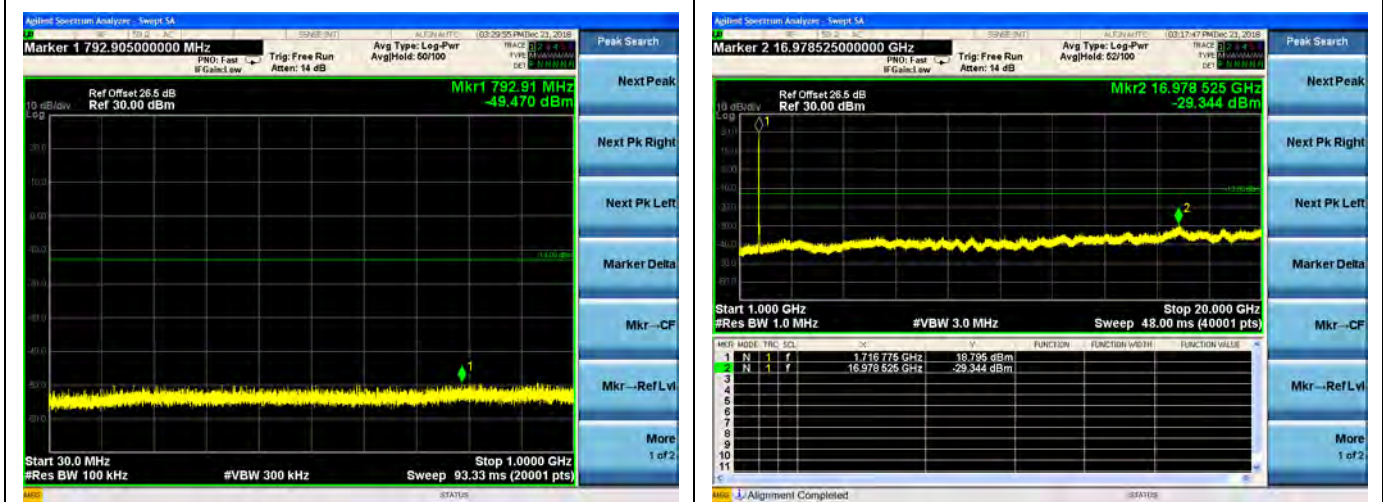
16QAM



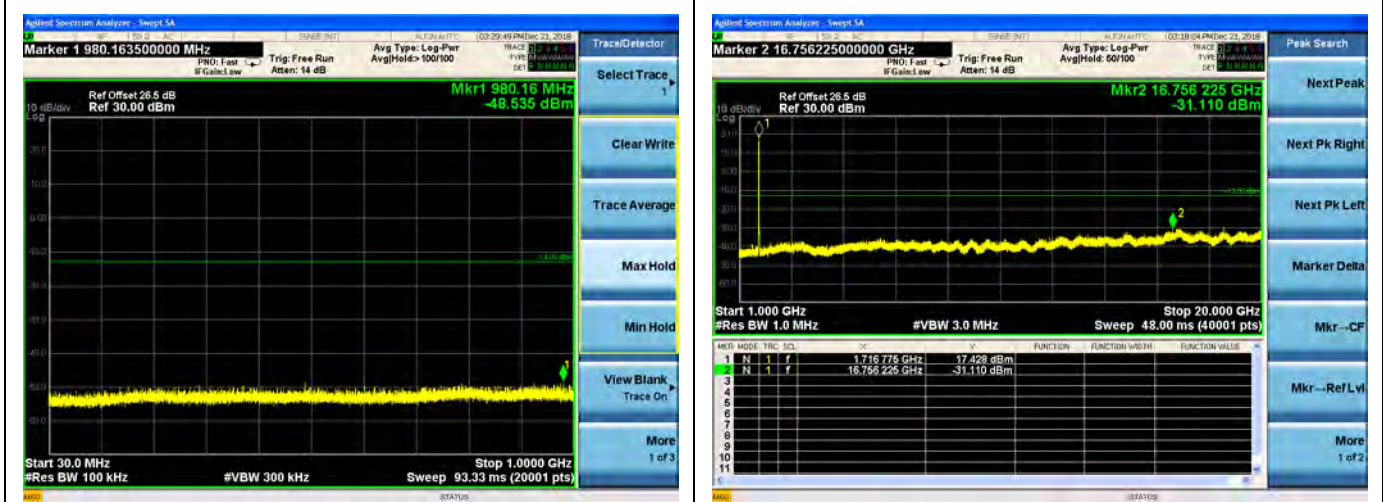


LTE Band 4 10MHz BW Low Channel

QPSK



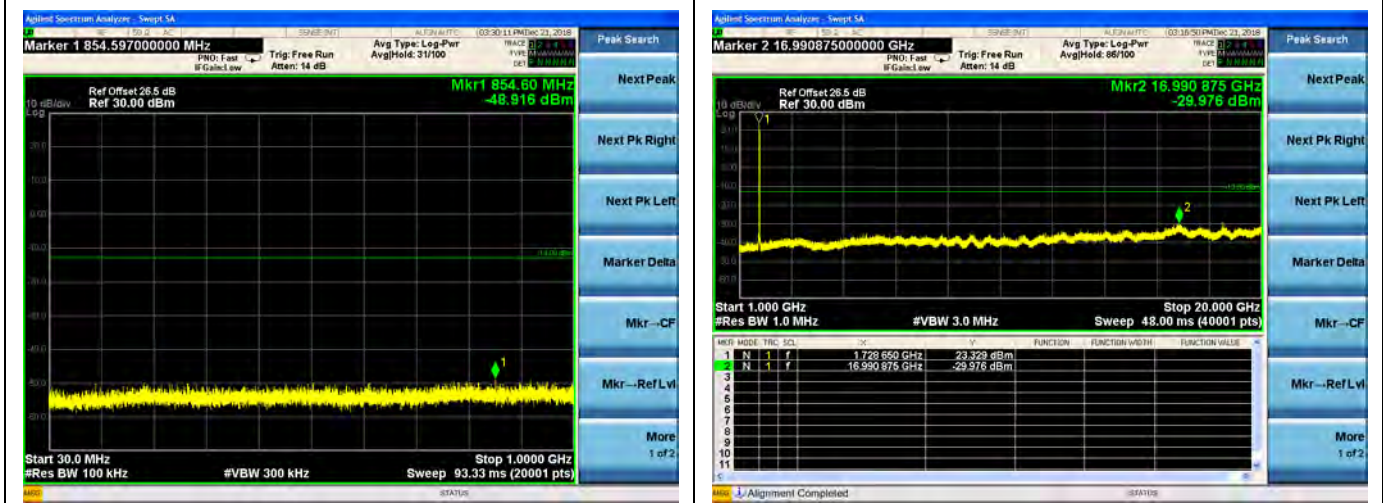
16QAM





LTE Band 4 10MHz BW Mid Channel

QPSK



16QAM

