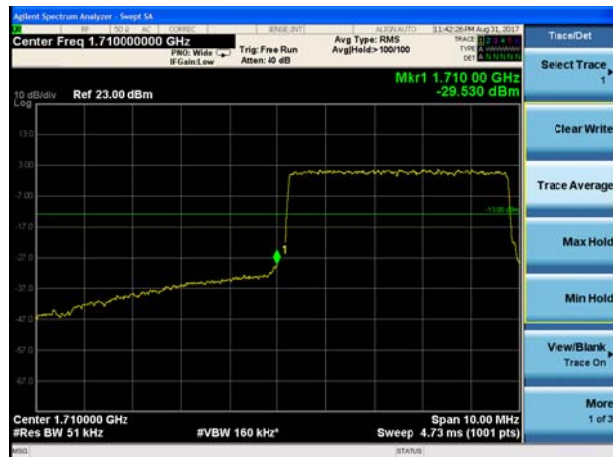




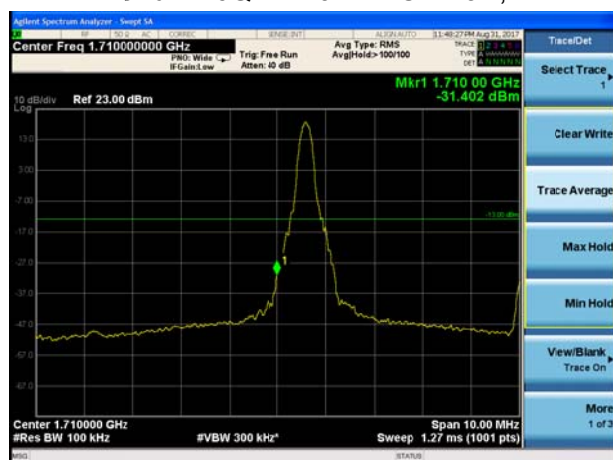
LTE Band 4 16QAM 5MHz CH-Low, 100%RB



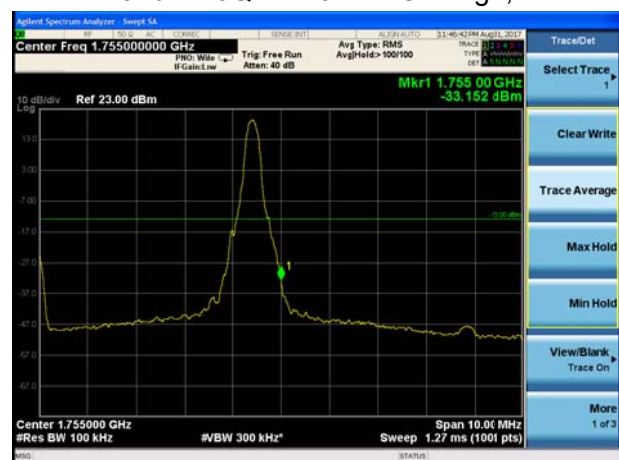
LTE Band 4 16QAM 5MHz CH-High, 100%RB



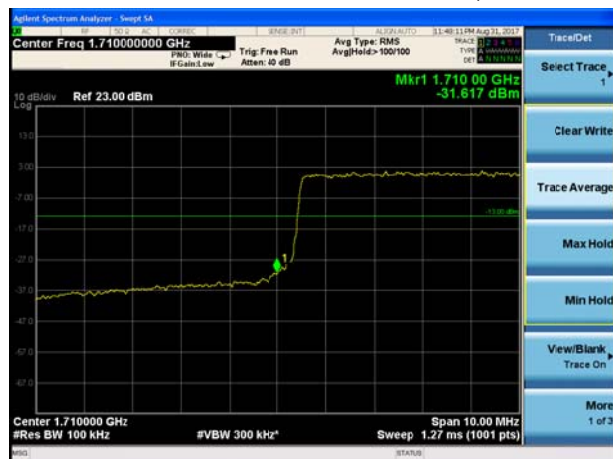
LTE Band 4 16QAM 10MHz CH-Low, 1 RB



LTE Band 4 16QAM 10MHz CH-High, 1 RB



LTE Band 4 16QAM 10MHz CH-Low, 100%RB

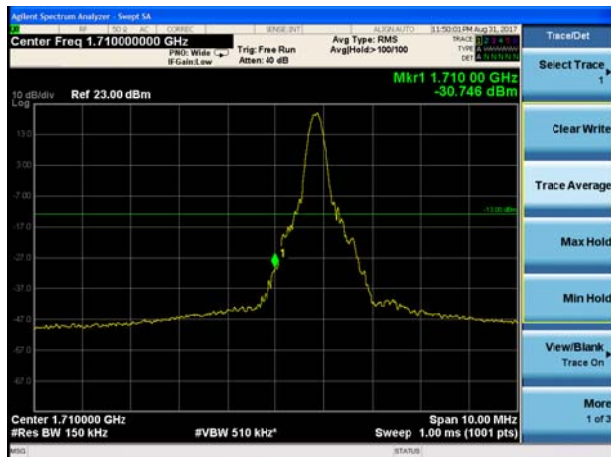


LTE Band 4 16QAM 10MHz CH-High, 100%RB

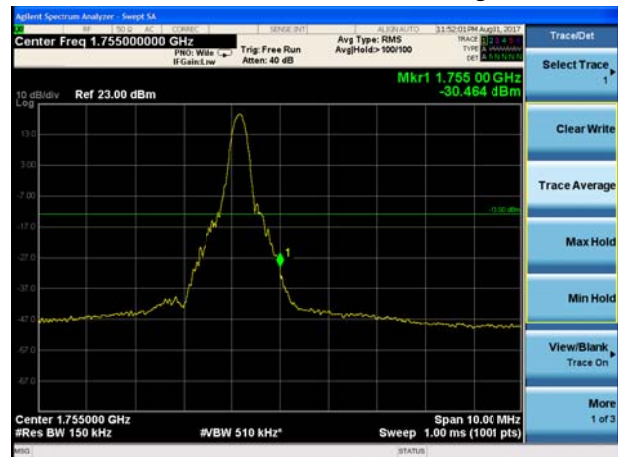




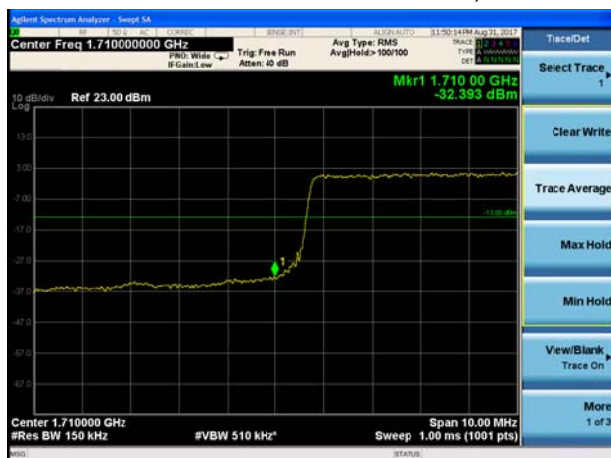
LTE Band 4 16QAM 15MHz CH-Low, 1 RB



LTE Band 4 16QAM 15MHz CH-High, 1 RB



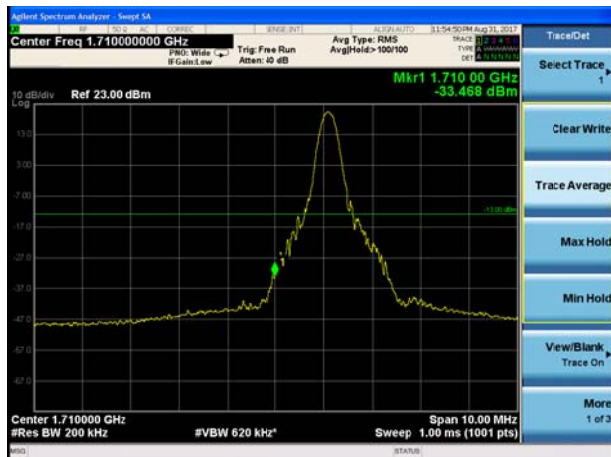
LTE Band 4 16QAM 15MHz CH-Low, 100%RB



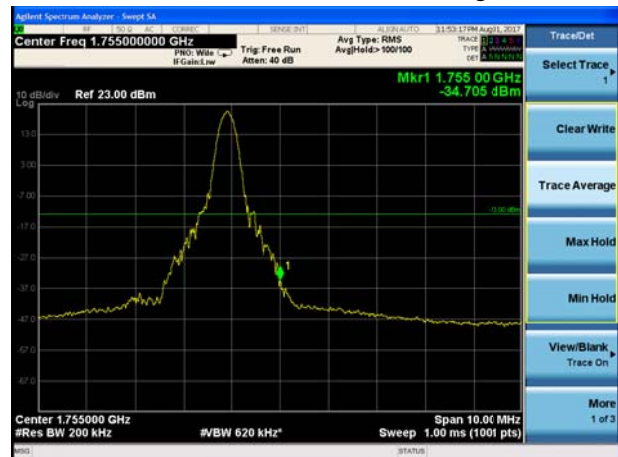
LTE Band 4 16QAM 15MHz CH-High, 100%RB



LTE Band 4 16QAM 20MHz CH-Low, 1 RB

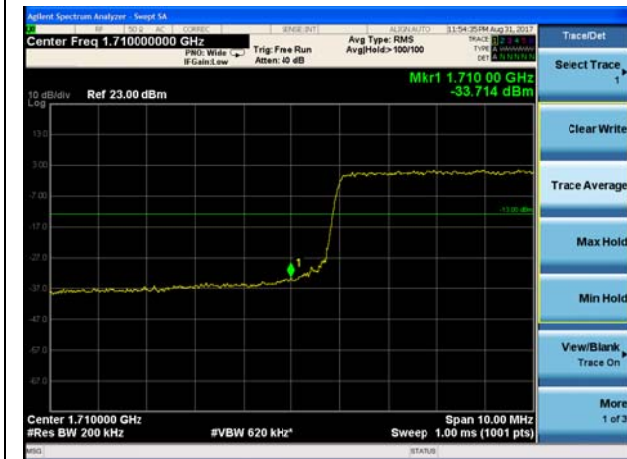


LTE Band 4 16QAM 20MHz CH-High, 1 RB





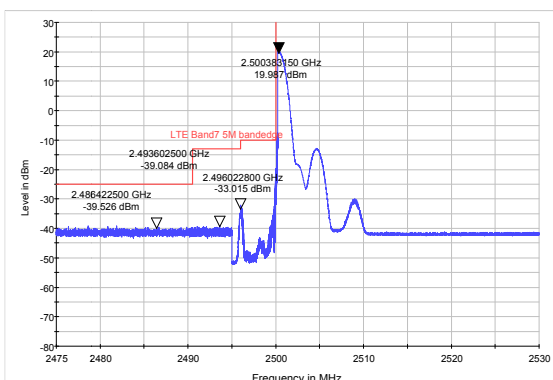
LTE Band 4 16QAM 20MHz CH-Low, 100%RB



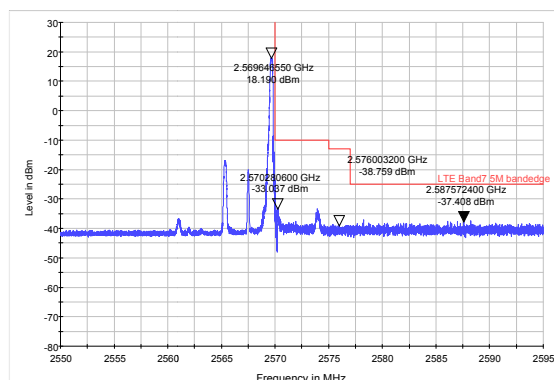
LTE Band 4 16QAM 20MHz CH-High, 100%RB



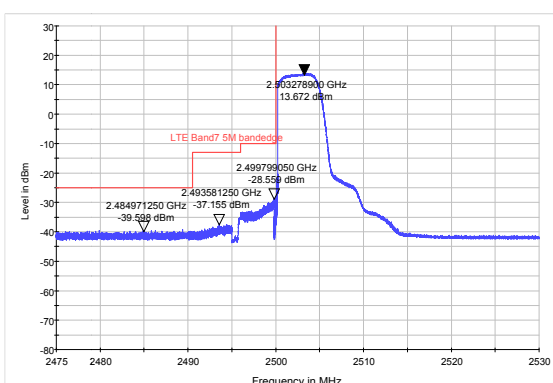
LTE Band 7 QPSK 5MHz CH-Low, 1 RB



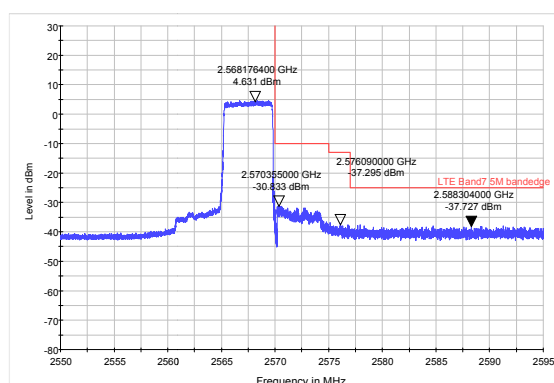
LTE Band 7 QPSK 5MHz CH-High, 1 RB



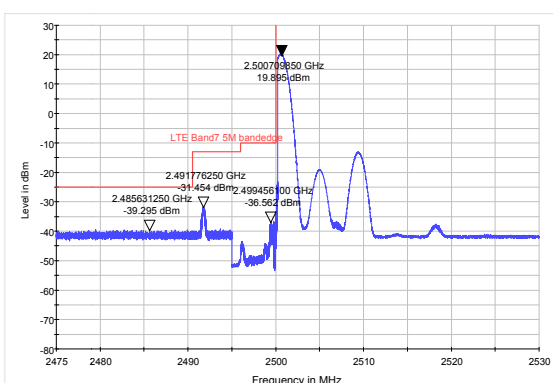
LTE Band 7 QPSK 5MHz CH-Low, 100%RB



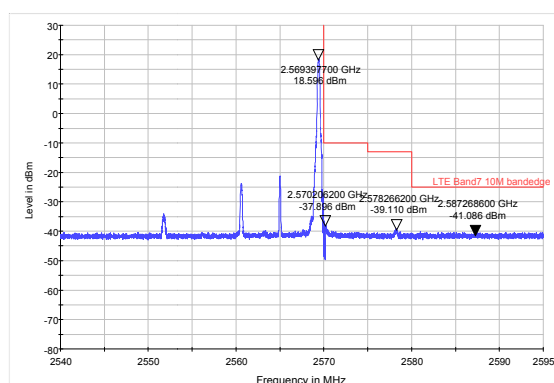
LTE Band 7 QPSK 5MHz CH-High, 100%RB



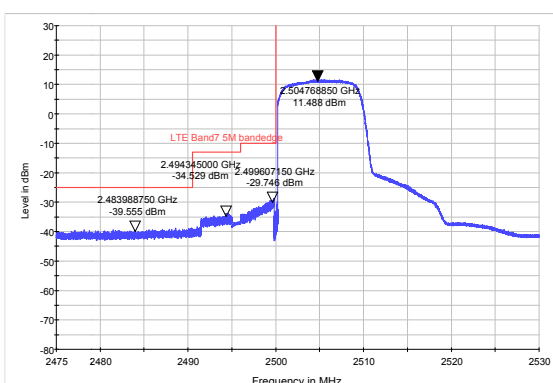
LTE Band 7 QPSK 10MHz CH-Low, 1 RB



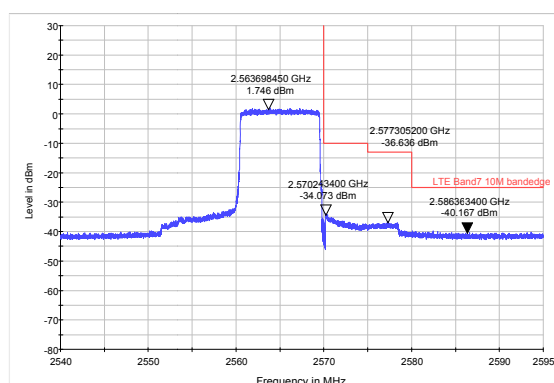
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LTE Band 7 QPSK 10MHz CH-Low, 100%RB

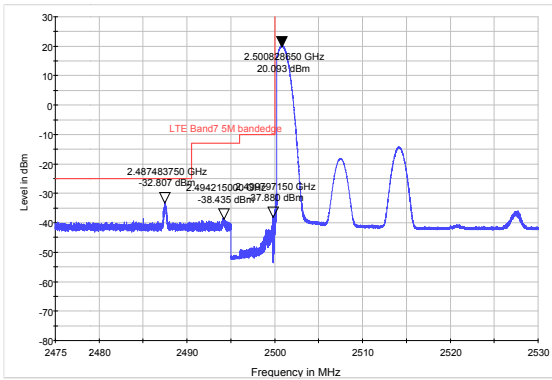


LTE Band 7 QPSK 10MHz CH-High, 100%RB

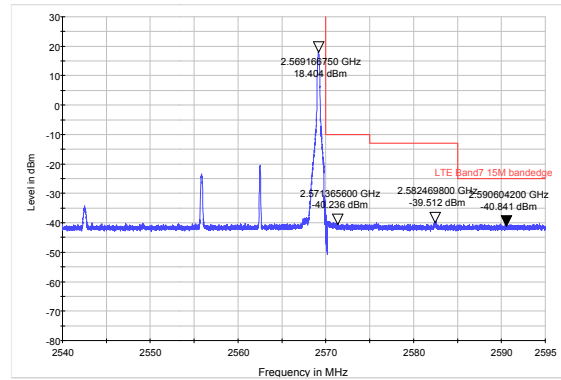




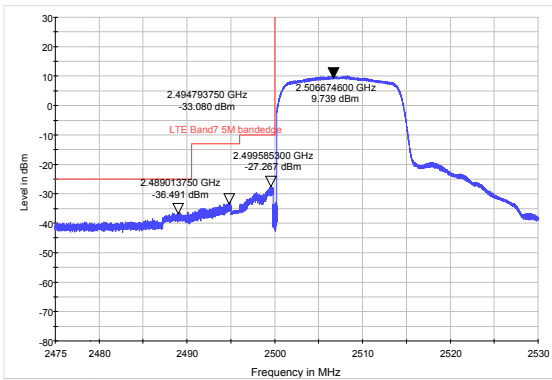
LTE Band 7 QPSK 15MHz CH-Low, 1 RB



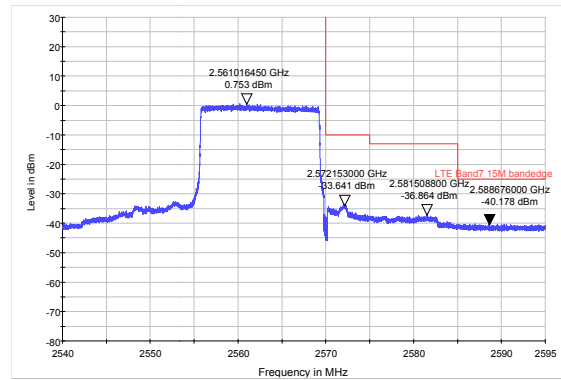
LTE Band 7 QPSK 15MHz CH-High, 1 RB



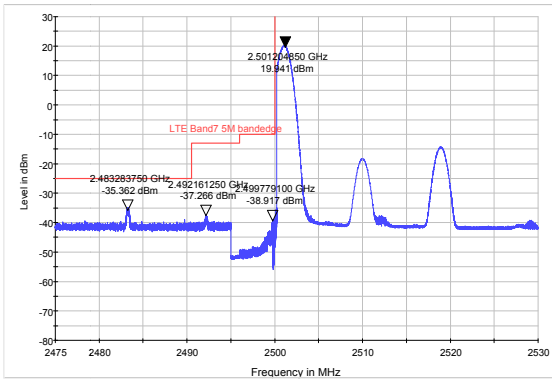
LTE Band 7 QPSK 15MHz CH-Low, 100%RB



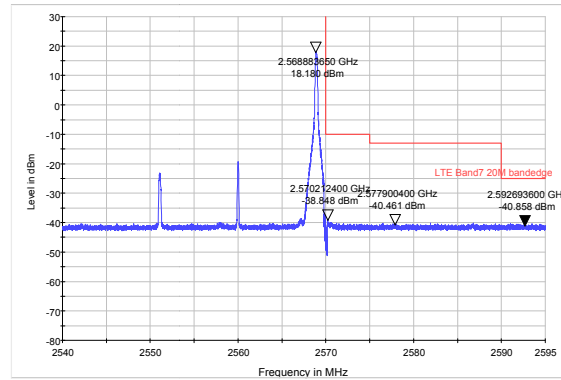
LTE Band 7 QPSK 15MHz CH-High, 100%RB



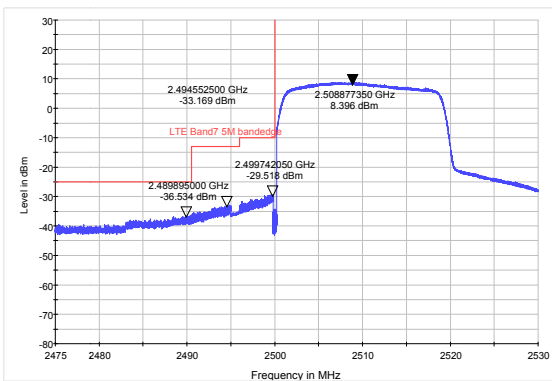
LTE Band 7 QPSK 20MHz CH-Low, 1 RB



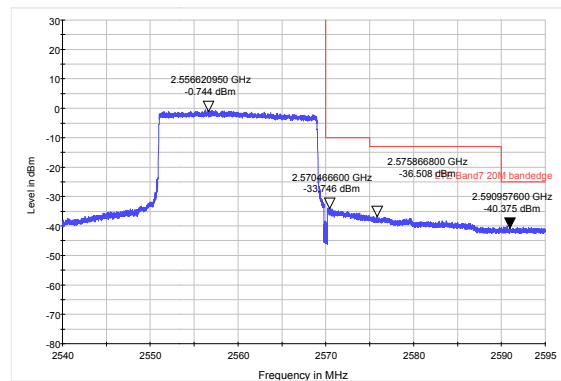
LTE Band 7 QPSK 20MHz CH-High, 1 RB



LTE Band 7 QPSK 20MHz CH-Low, 100%RB

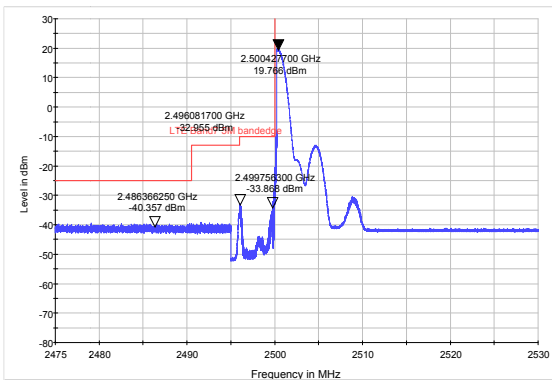


LTE Band 7 QPSK 20MHz CH-High, 100%RB

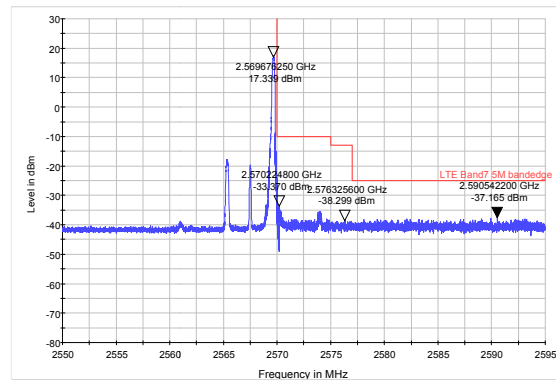




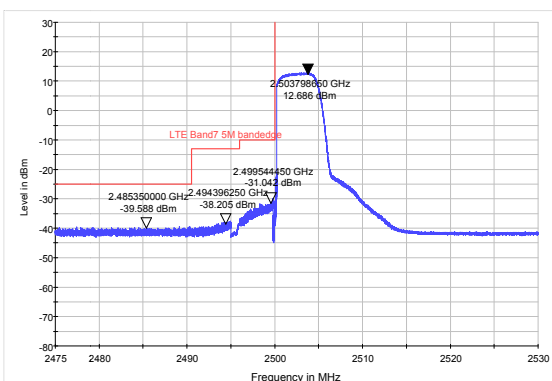
LTE Band 7 16QAM 5MHz CH-Low, 1 RB



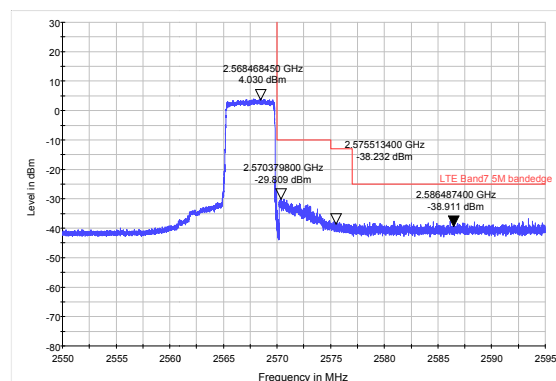
LTE Band 7 16QAM 5MHz CH-High, 1 RB



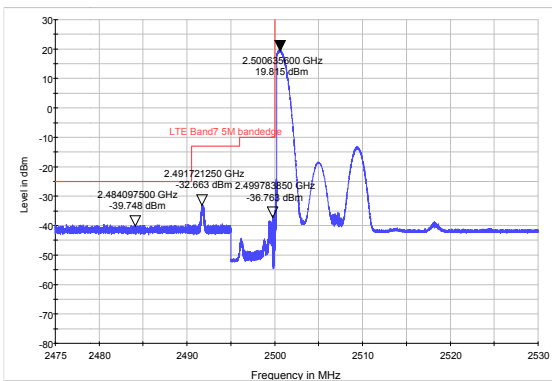
LTE Band 7 16QAM 5MHz CH-Low, 100%RB



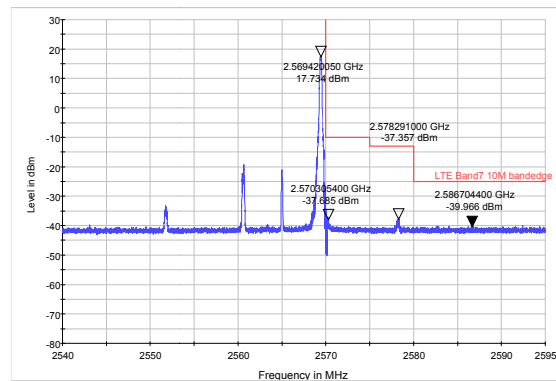
LTE Band 7 16QAM 5MHz CH-High, 100%RB



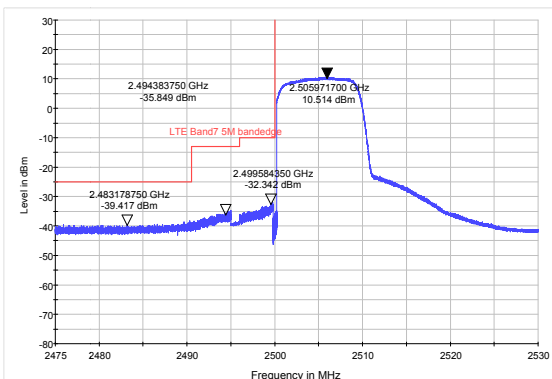
LTE Band 7 16QAM 10MHz CH-Low, 1 RB



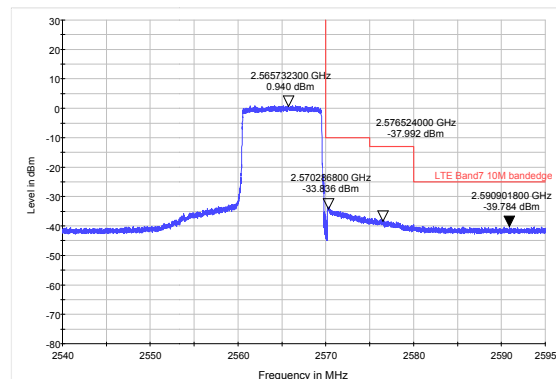
LTE Band 7 16QAM 10MHz CH-High, 1 RB



LTE Band 7 16QAM 10MHz CH-Low, 100%RB

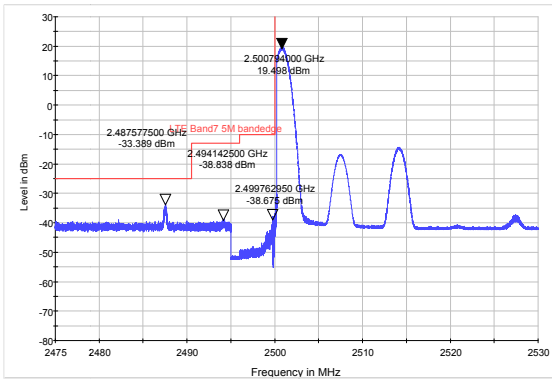


LTE Band 7 16QAM 10MHz CH-High, 100%RB

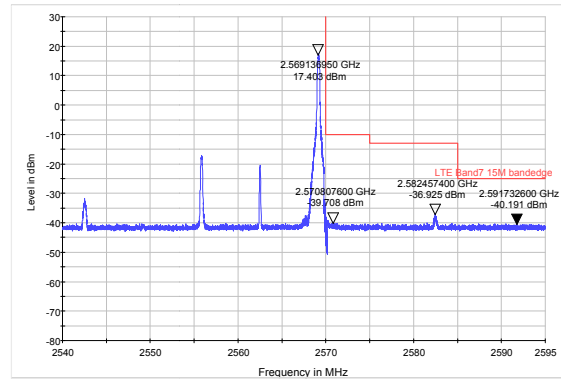




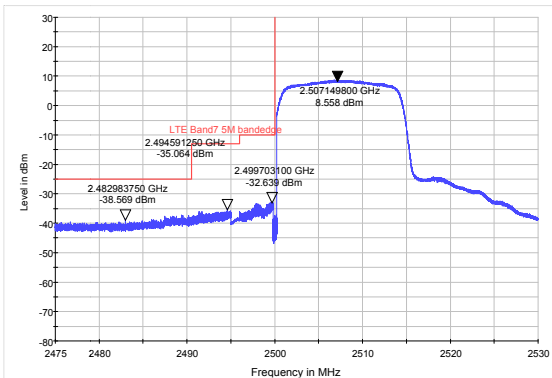
LTE Band 7 16QAM 15MHz CH-Low, 1 RB



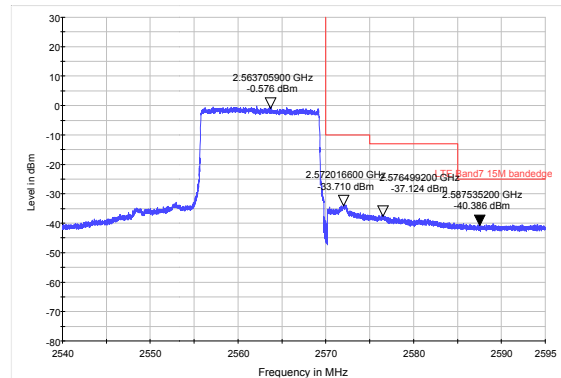
LTE Band 7 16QAM 15MHz CH-High, 1 RB



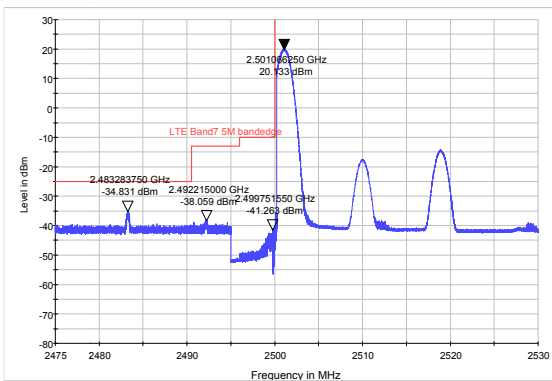
LTE Band 7 16QAM 15MHz CH-Low, 100%RB



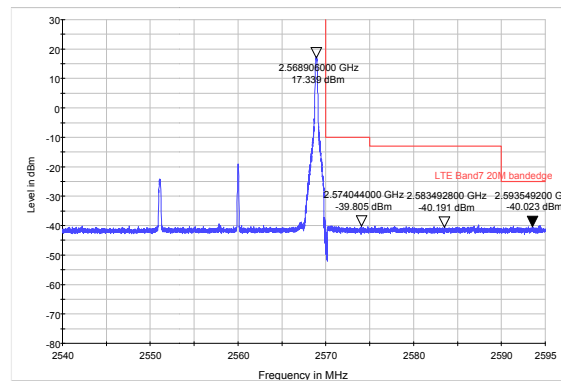
LTE Band 7 16QAM 15MHz CH-High, 100%RB



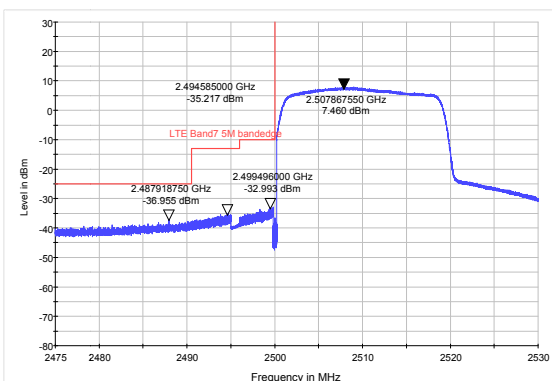
LTE Band 7 16QAM 20MHz CH-Low, 1 RB



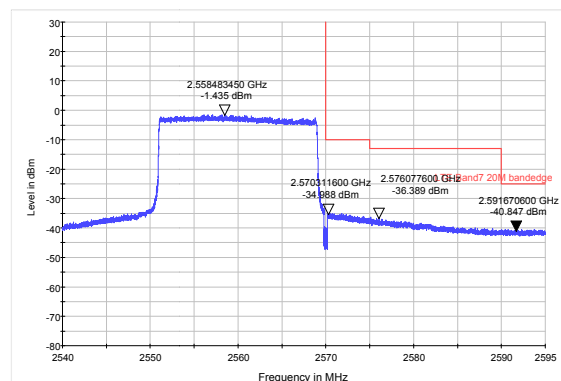
LTE Band 7 16QAM 20MHz CH-High, 1 RB



LTE Band 7 16QAM 20MHz CH-Low, 100%RB

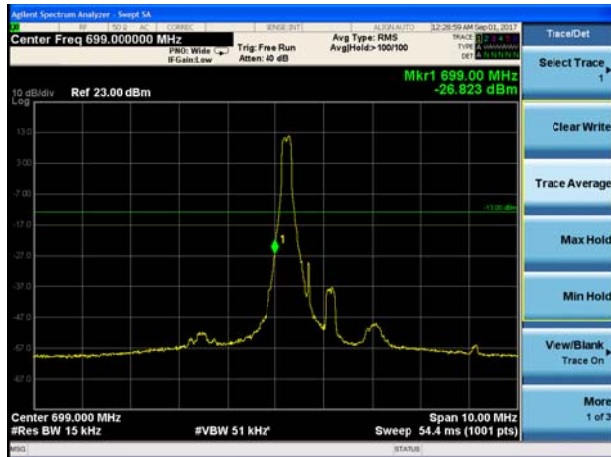


LTE Band 7 16QAM 20MHz CH-High, 100%RB

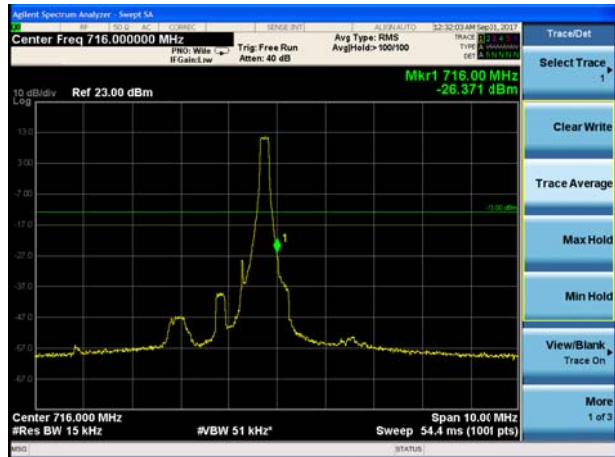




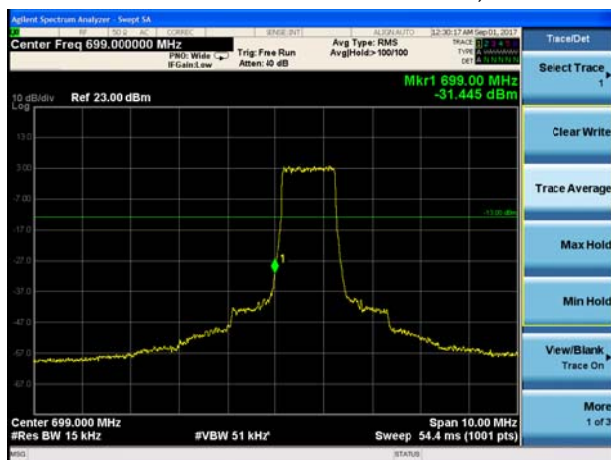
LTE Band 12 QPSK 1.4MHz CH-Low, 1 RB



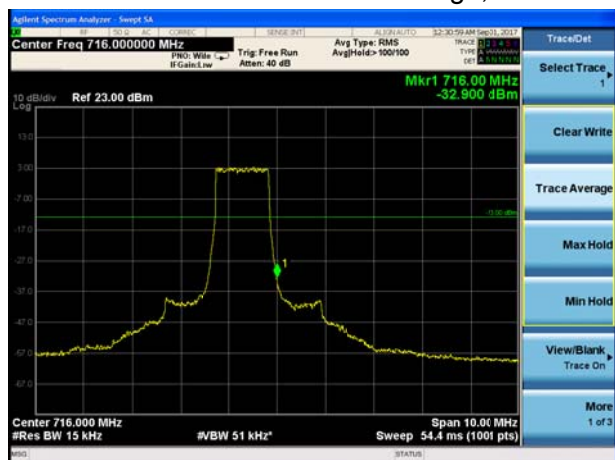
LTE Band 12 QPSK 1.4MHz CH-High, 1 RB



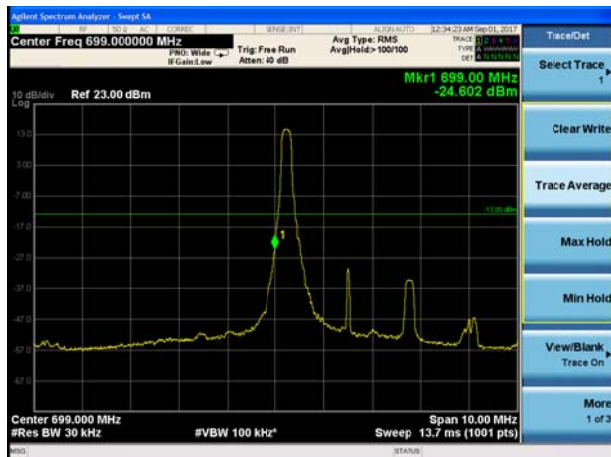
LTE Band 12 QPSK 1.4MHz CH-Low, 100%RB



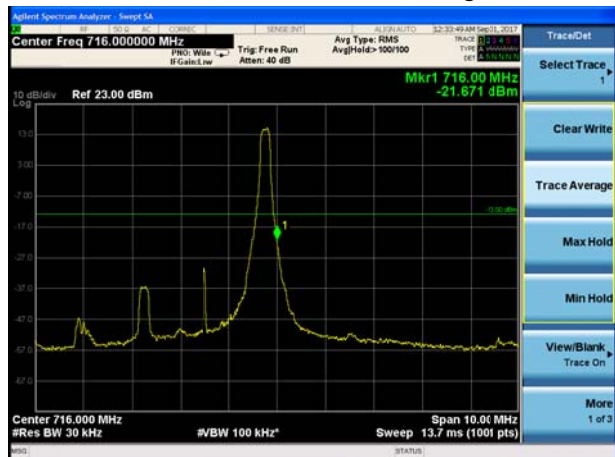
LTE Band 12 QPSK 1.4MHz CH-High, 100%RB



LTE Band 12 QPSK 3MHz CH-Low, 1 RB



LTE Band 12 QPSK 3MHz CH-High, 1 RB





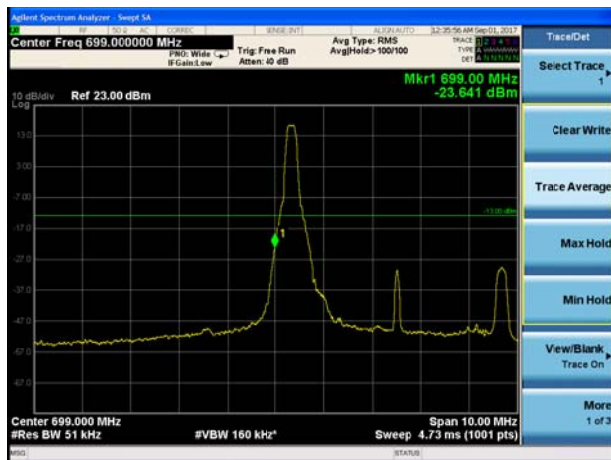
LTE Band 12 QPSK 3MHz CH-Low, 100%RB



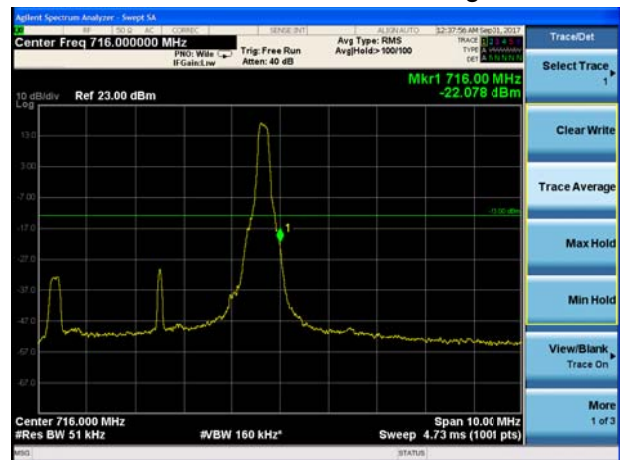
LTE Band 12 QPSK 3MHz CH-High, 100%RB



LTE Band 12 QPSK 5MHz CH-Low, 1 RB



LTE Band 12 QPSK 5MHz CH-High, 1 RB



LTE Band 12 QPSK 5MHz CH-Low, 100%RB

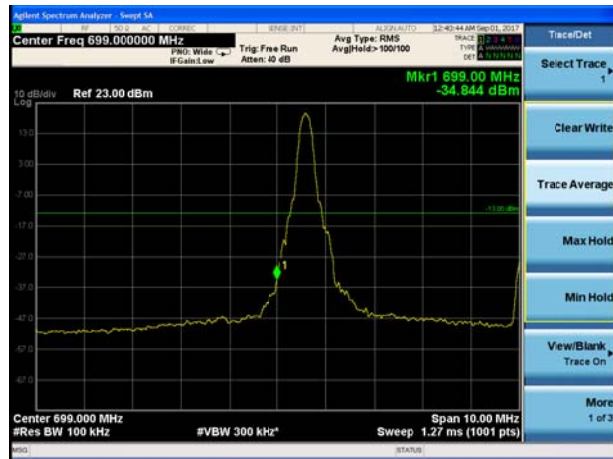


LTE Band 12 QPSK 5MHz CH-High, 100%RB

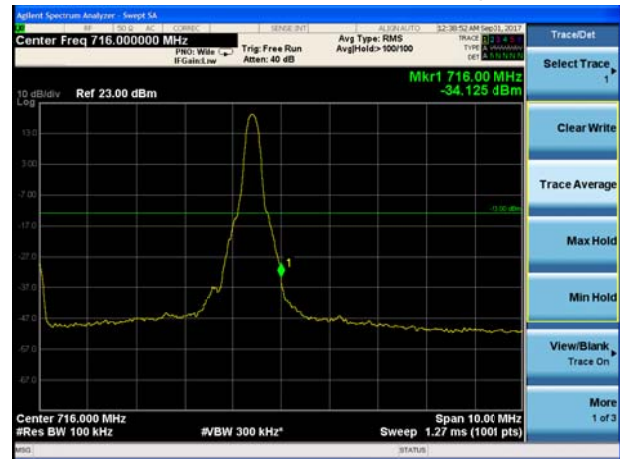




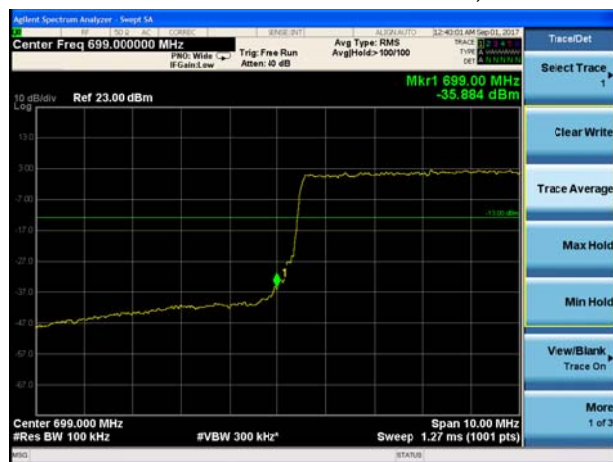
LTE Band 12 QPSK 10MHz CH-Low, 1 RB



LTE Band 12 QPSK 10MHz CH-High, 1 RB



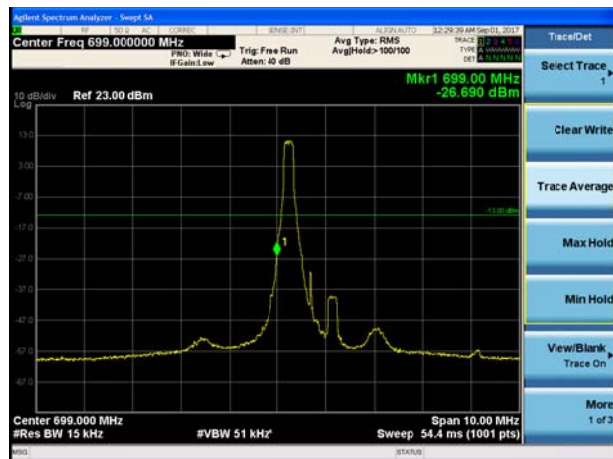
LTE Band 12 QPSK 10MHz CH-Low, 100%RB



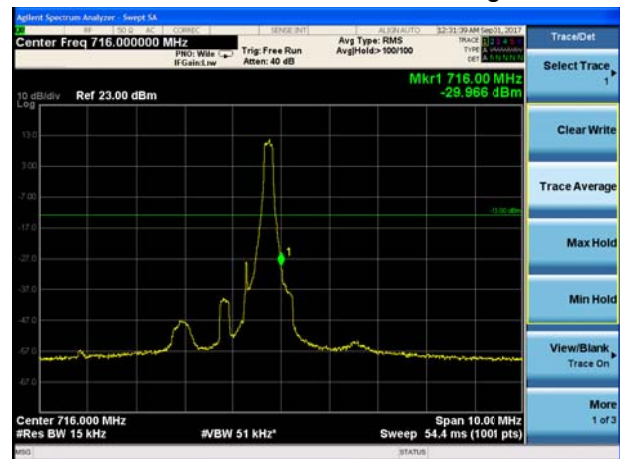
LTE Band 12 QPSK 10MHz CH-High, 100%RB



LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB

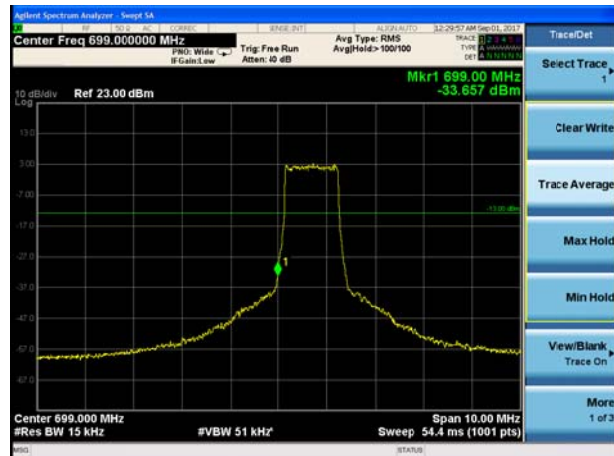


LTE Band 12 16QAM 1.4MHz CH-High, 1 RB

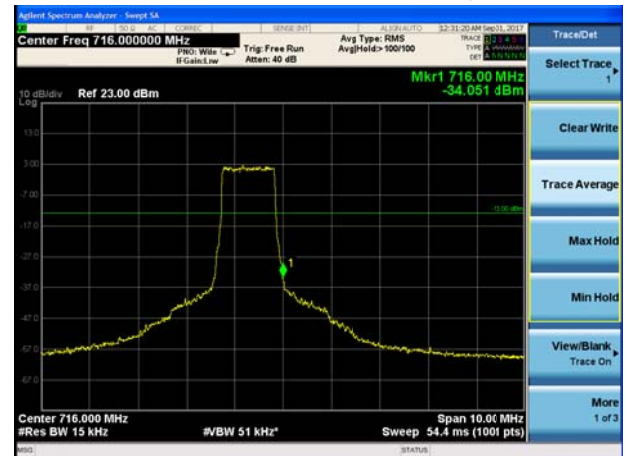




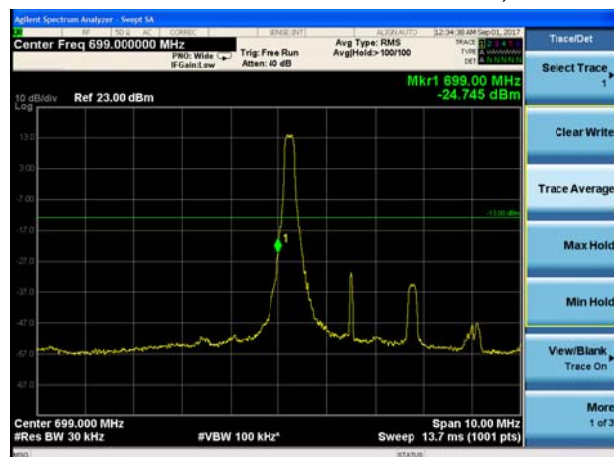
LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB



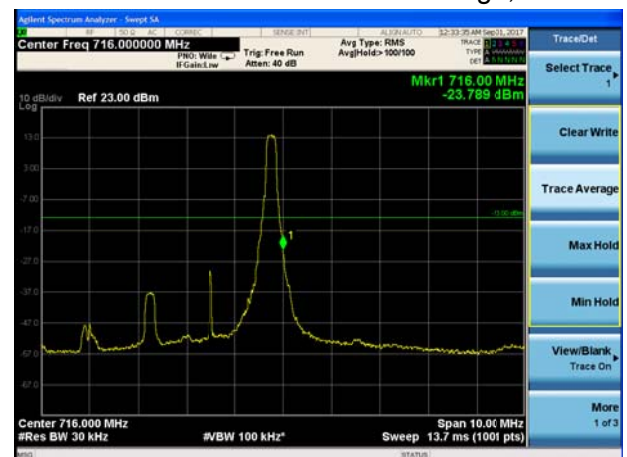
LTE Band 12 16QAM 1.4MHz CH-High, 100%RB



LTE Band 12 16QAM 3MHz CH-Low, 1 RB



LTE Band 12 16QAM 3MHz CH-High, 1 RB



LTE Band 12 16QAM 3MHz CH-Low, 100%RB

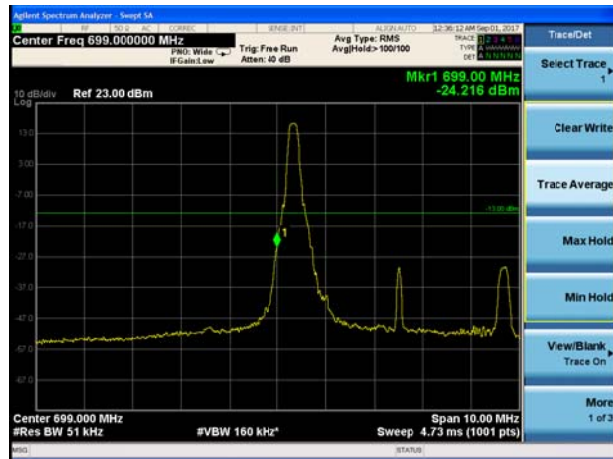


LTE Band 12 16QAM 3MHz CH-High, 100%RB

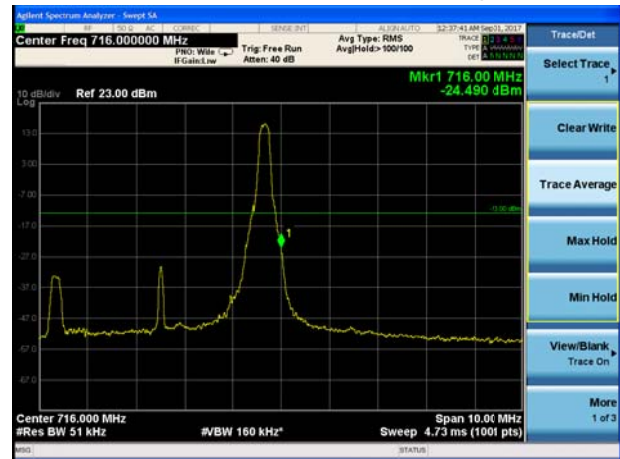




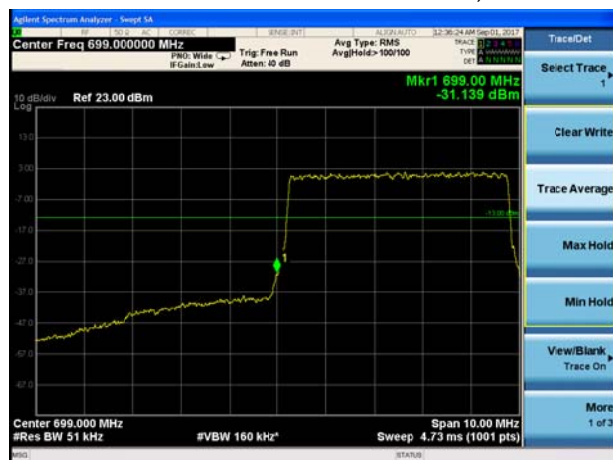
LTE Band 12 16QAM 5MHz CH-Low, 1 RB



LTE Band 12 16QAM 5MHz CH-High, 1 RB



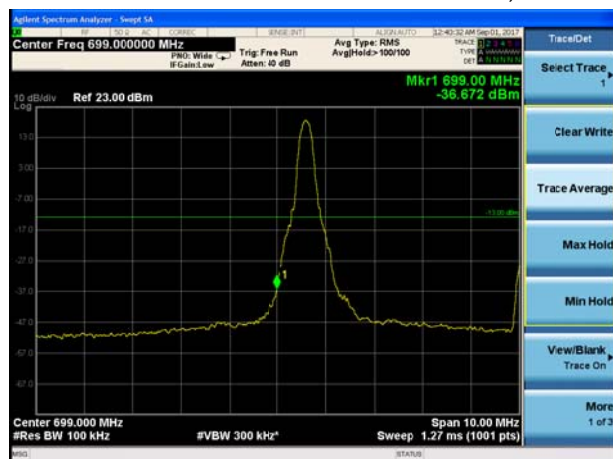
LTE Band 12 16QAM 5MHz CH-Low, 100%RB



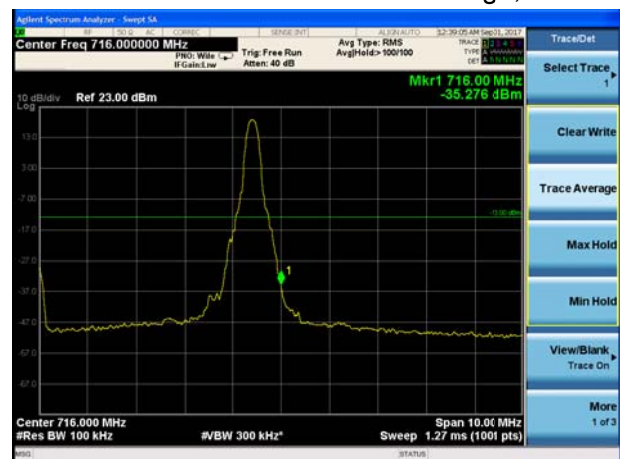
LTE Band 12 16QAM 5MHz CH-High, 100%RB



LTE Band 12 16QAM 10MHz CH-Low, 1 RB



LTE Band 12 16QAM 10MHz CH-High, 1 RB





LTE Band 12 16QAM 10MHz CH-Low, 100%RB

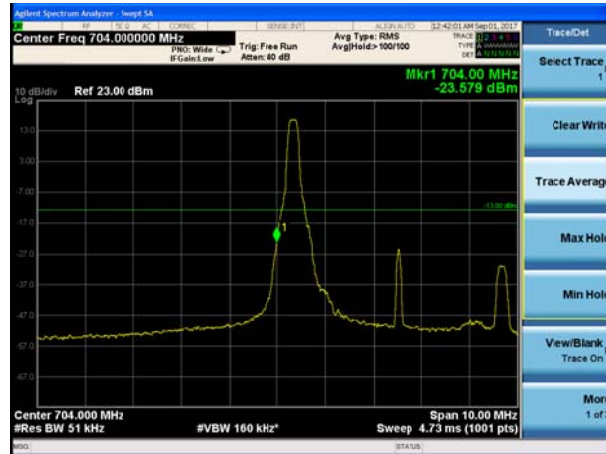


LTE Band 12 16QAM 10MHz CH-High, 100%RB

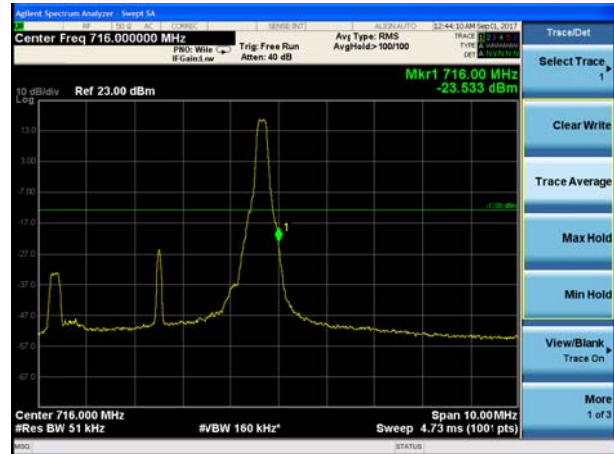




LTE Band 17 QPSK 5MHz CH-Low, 1 RB



LTE Band 17 QPSK 5MHz CH-High, 1 RB



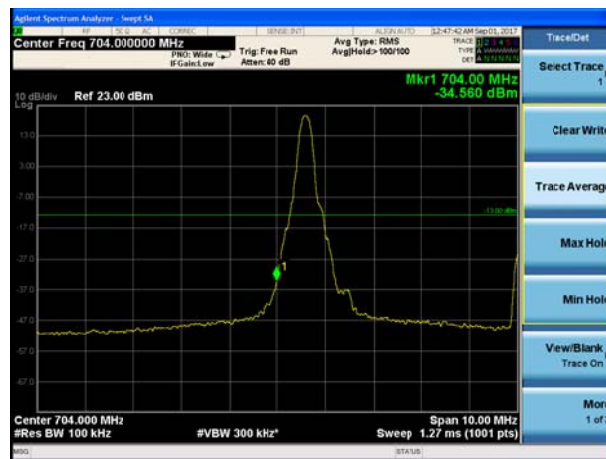
LTE Band 17 QPSK 5MHz CH-Low, 100%RB



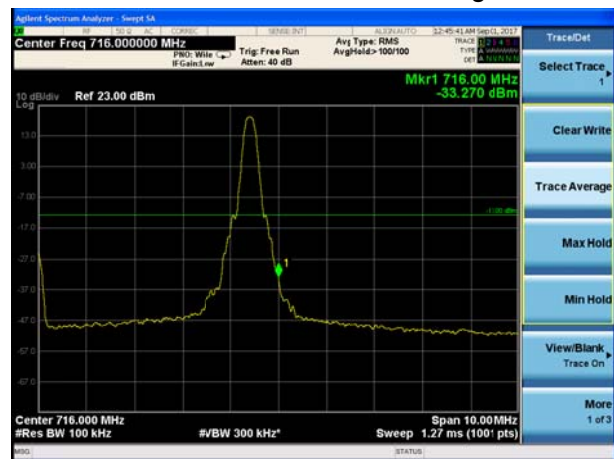
LTE Band 17 QPSK 5MHz CH-High, 100%RB



LTE Band 17 QPSK 10MHz CH-Low, 1 RB

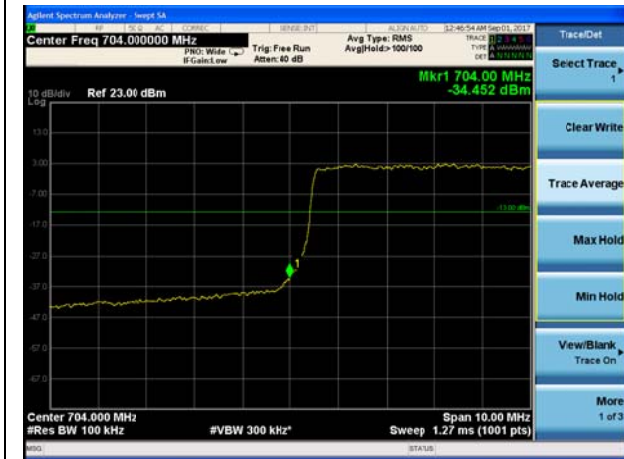


LTE Band 17 QPSK 10MHz CH-High, 1 RB





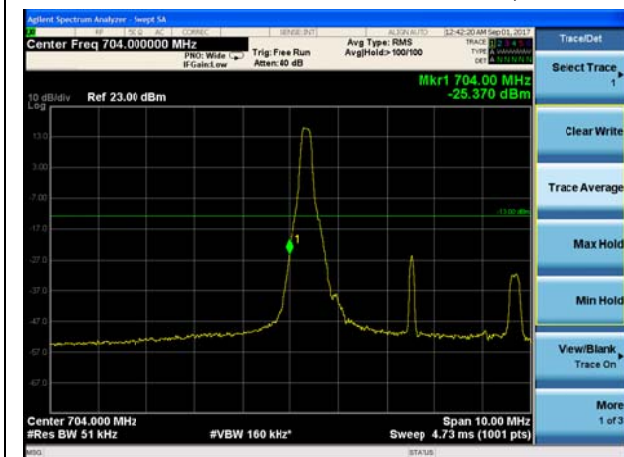
LTE Band 17 QPSK 10MHz CH-Low, 100%RB



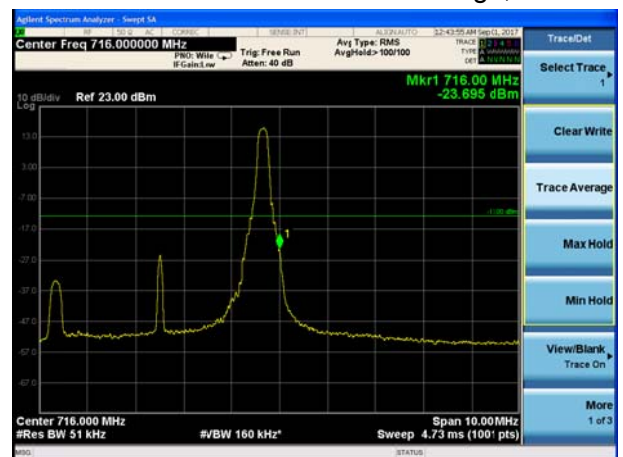
LTE Band 17 QPSK 10MHz CH-High, 100%RB



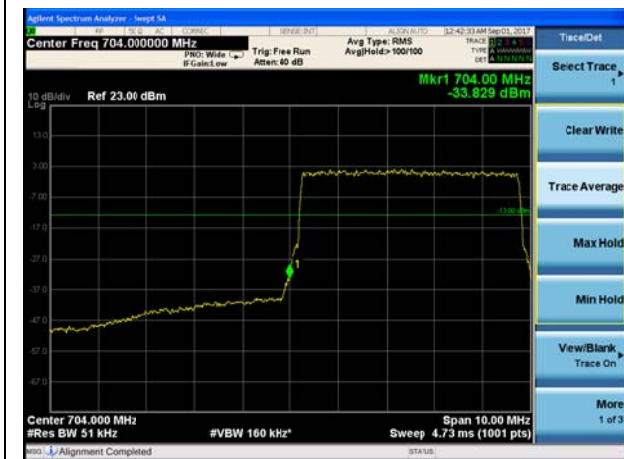
LTE Band 17 16QAM 5MHz CH-Low, 1 RB



LTE Band 17 16QAM 5MHz CH-High, 1 RB



LTE Band 17 16QAM 5MHz CH-Low, 100%RB

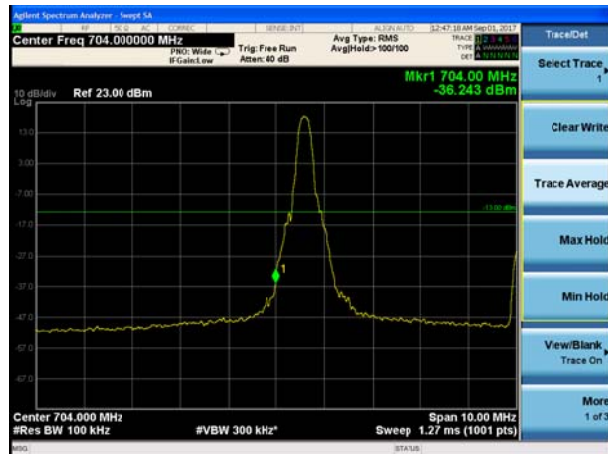


LTE Band 17 16QAM 5MHz CH-High, 100%RB

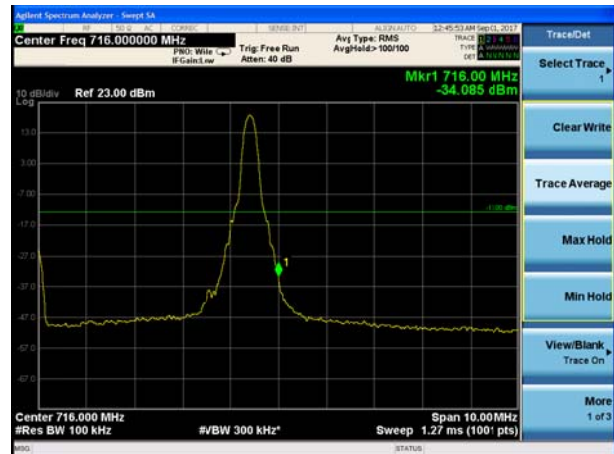




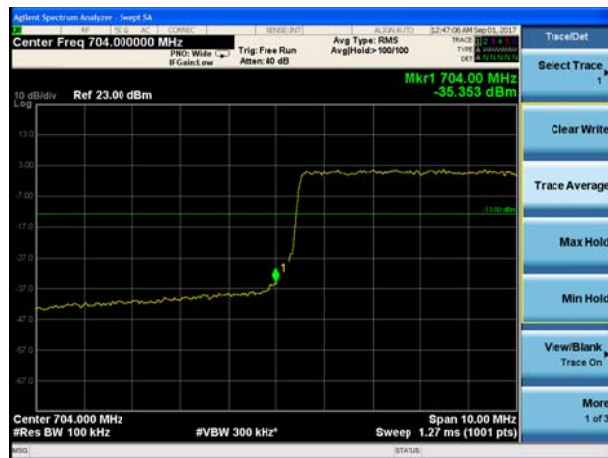
LTE Band 17 16QAM 10MHz CH-Low, 1 RB



LTE Band 17 16QAM 10MHz CH-High, 1 RB



LTE Band 17 16QAM 10MHz CH-Low, 100%RB



LTE Band 17 16QAM 10MHz CH-High, 100%RB



5.5 Peak-to-Average Power Ratio (PAPR)

Ambient condition

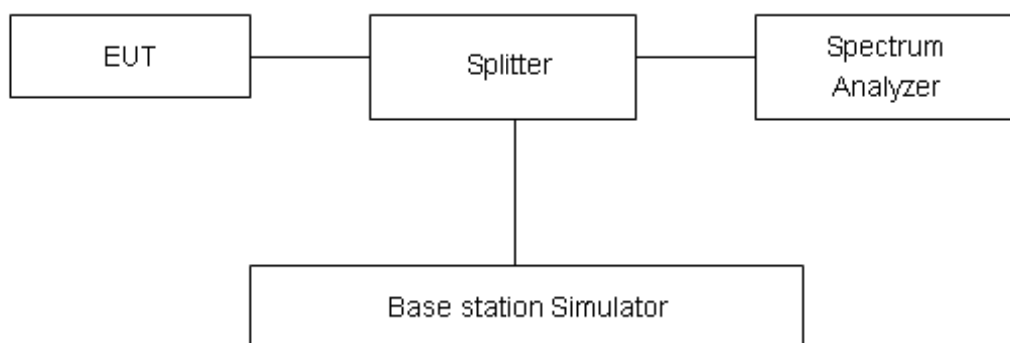
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

Test Setup



Limits

Rule Part 27.50(d)(5) Equipment employed must be authorized in accordance with the provisions of 24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.

Test Results

WCDMA Band IV	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
RMC	1312	1712.4	25.56	23.06	2.50	≤13	PASS
	1413	1732.6	26.11	23.11	3.00	≤13	PASS
	1513	1752.6	25.96	23.20	2.76	≤13	PASS

LTE Band 4								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	19957	1710.7	26.51	22.19	4.32	≤13	PASS
		20175	1732.5	26.82	21.94	4.88	≤13	PASS
		20393	1754.3	26.78	22.04	4.74	≤13	PASS
	3	19965	1711.5	26.71	22.28	4.43	≤13	PASS
		20175	1732.5	27.21	22.20	5.01	≤13	PASS
		20385	1753.5	27.16	22.30	4.86	≤13	PASS
	5	19975	1712.5	26.76	22.26	4.50	≤13	PASS
		20175	1732.5	27.26	22.19	5.07	≤13	PASS
		20375	1752.5	27.07	22.28	4.79	≤13	PASS
	10	20000	1715	26.91	22.34	4.57	≤13	PASS
		20175	1732.5	27.18	22.21	4.97	≤13	PASS
		20350	1750	26.99	22.32	4.67	≤13	PASS
	15	20025	1717.5	27.04	22.32	4.72	≤13	PASS
		20175	1732.5	27.18	22.17	5.01	≤13	PASS
		20325	1747.5	26.90	22.27	4.63	≤13	PASS
	20	20050	1720	27.07	22.29	4.78	≤13	PASS
		20175	1732.5	26.95	22.12	4.83	≤13	PASS
		20300	1745	26.85	22.23	4.62	≤13	PASS
16QAM	1.4	19957	1710.7	26.11	21.07	5.04	≤13	PASS
		20175	1732.5	26.68	21.01	5.67	≤13	PASS
		20393	1754.3	26.66	21.10	5.56	≤13	PASS
	3	19965	1711.5	26.59	21.36	5.23	≤13	PASS
		20175	1732.5	26.98	21.17	5.81	≤13	PASS
		20385	1753.5	26.90	21.27	5.63	≤13	PASS
	5	19975	1712.5	26.59	21.34	5.25	≤13	PASS
		20175	1732.5	26.98	21.13	5.85	≤13	PASS
		20375	1752.5	26.75	21.22	5.53	≤13	PASS
	10	20000	1715	26.71	21.37	5.34	≤13	PASS
		20175	1732.5	26.98	21.18	5.80	≤13	PASS
		20350	1750	26.70	21.26	5.44	≤13	PASS



	15	20025	1717.5	26.78	21.34	5.44	≤13	PASS
		20175	1732.5	26.91	21.13	5.78	≤13	PASS
		20325	1747.5	26.56	21.22	5.34	≤13	PASS
	20	20050	1720	26.89	21.32	5.57	≤13	PASS
		20175	1732.5	26.81	21.09	5.72	≤13	PASS
		20300	1745	26.59	21.19	5.40	≤13	PASS

LTE Band 7								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	20775	2502.5	26.35	21.82	4.53	≤13	PASS
		21100	2535	26.85	21.98	4.87	≤13	PASS
		21425	2567.5	26.65	21.92	4.73	≤13	PASS
	10	20800	2505	26.40	21.90	4.50	≤13	PASS
		21100	2535	26.85	22.00	4.85	≤13	PASS
		21400	2565	26.67	21.96	4.71	≤13	PASS
	15	20825	2507.5	26.38	21.88	4.50	≤13	PASS
		21100	2535	26.87	21.96	4.91	≤13	PASS
		21375	2562.5	26.68	21.91	4.77	≤13	PASS
	20	20850	2510	26.34	21.85	4.49	≤13	PASS
		21100	2535	26.67	21.91	4.76	≤13	PASS
		21350	2560	26.60	21.87	4.73	≤13	PASS
16QAM	5	20775	2502.5	26.07	20.78	5.29	≤13	PASS
		21100	2535	26.51	20.88	5.63	≤13	PASS
		21425	2567.5	26.59	20.94	5.65	≤13	PASS
	10	20800	2505	26.08	20.81	5.27	≤13	PASS
		21100	2535	26.56	20.93	5.63	≤13	PASS
		21400	2565	26.55	20.98	5.57	≤13	PASS
	15	20825	2507.5	26.02	20.78	5.24	≤13	PASS
		21100	2535	26.50	20.88	5.62	≤13	PASS
		21375	2562.5	26.44	20.94	5.50	≤13	PASS
	20	20850	2510	26.04	20.76	5.28	≤13	PASS
		21100	2535	26.42	20.84	5.58	≤13	PASS
		21350	2560	26.44	20.91	5.53	≤13	PASS



LTE Band 12								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	23017	699.7	27.51	22.34	5.17	≤13	PASS
		23095	707.5	27.32	22.27	5.05	≤13	PASS
		23173	715.3	27.32	22.36	4.96	≤13	PASS
	3	23025	700.5	26.64	21.39	5.25	≤13	PASS
		23095	707.5	26.63	21.47	5.16	≤13	PASS
		23165	714.5	26.69	21.49	5.20	≤13	PASS
	5	23035	701.5	26.61	21.37	5.24	≤13	PASS
		23095	707.5	26.60	21.43	5.17	≤13	PASS
		23155	713.5	26.65	21.44	5.21	≤13	PASS
	10	23060	704	26.45	21.34	5.11	≤13	PASS
		23095	707.5	26.58	21.38	5.20	≤13	PASS
		23130	711	26.57	21.40	5.17	≤13	PASS
16QAM	1.4	23017	699.7	26.50	20.49	6.01	≤13	PASS
		23095	707.5	26.49	20.57	5.92	≤13	PASS
		23173	715.3	26.27	20.40	5.87	≤13	PASS
	3	23025	700.5	26.48	20.36	6.12	≤13	PASS
		23095	707.5	26.34	20.32	6.02	≤13	PASS
		23165	714.5	26.23	20.16	6.07	≤13	PASS
	5	23035	701.5	26.38	20.33	6.05	≤13	PASS
		23095	707.5	26.23	20.27	5.96	≤13	PASS
		23155	713.5	26.15	20.12	6.03	≤13	PASS
	10	23060	704	26.28	20.31	5.97	≤13	PASS
		23095	707.5	26.22	20.23	5.99	≤13	PASS
		23130	711	26.15	20.09	6.06	≤13	PASS

LTE Band 17								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23755	706.5	26.60	21.36	5.24	≤13	PASS
		23790	710	26.72	21.35	5.37	≤13	PASS
		23825	713.5	26.73	21.44	5.29	≤13	PASS
	10	23780	709	26.64	21.33	5.31	≤13	PASS
		23790	710	26.63	21.30	5.33	≤13	PASS
		23800	711	26.68	21.40	5.28	≤13	PASS
16QAM	5	23755	706.5	26.51	20.46	6.05	≤13	PASS
		23790	710	26.67	20.51	6.16	≤13	PASS
		23825	713.5	26.65	20.53	6.12	≤13	PASS
	10	23780	709	26.58	20.44	6.14	≤13	PASS



		23790	710	26.20	20.47	5.73	≤13	PASS
		23800	711	26.63	20.50	6.13	≤13	PASS

5.6 Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +55°C in 10°C step size.

(1)With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.

(2)Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +55°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

2. Frequency Stability (Voltage Variation)

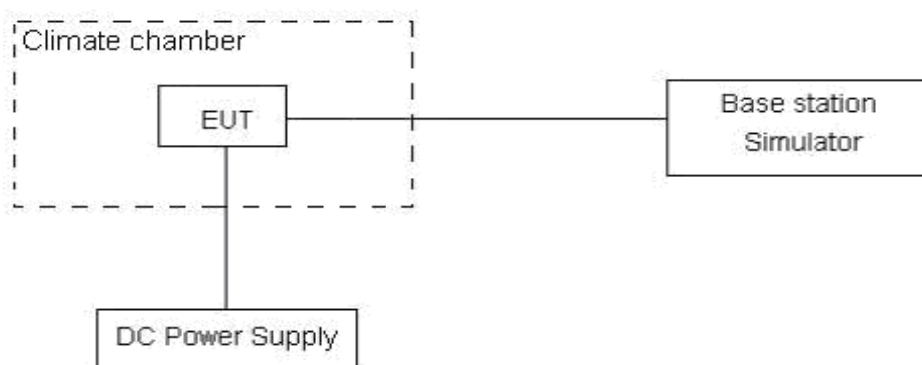
The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.4 V, with a nominal voltage of 3.85V.

Test setup



Limits

No specific frequency stability requirements in part 27.54

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3, U=0.01\text{ppm}$.

Test Result
WCDMA Band IV

Test status	WCDMA Band IV Channel 1413 RMC
	Test Results (ppm)
-30°C/Normal Voltage	0.000089
-20°C/Normal Voltage	0.000052
-10°C/Normal Voltage	-0.000159
0°C/Normal Voltage	0.000155
10°C/Normal Voltage	-0.000133
20°C/Normal Voltage	-0.000129
30°C/Normal Voltage	0.000296
40°C/Normal Voltage	-0.000074
50°C/Normal Voltage	-0.000007
55°C/Normal Voltage	-0.000550
20°C/Min Voltage	0.000427
20°C/Max Voltage	0.000234

Bandwidth	Test status	LTE Band 4 Channel 20175 Test Results (ppm)	
		QPSK	16QAM
1.4MHz	-30°C/Normal Voltage	-0.00123	-0.00217
	-20°C/Normal Voltage	-0.00212	-0.00029
	-10°C/Normal Voltage	-0.00140	-0.00436
	0°C/Normal Voltage	-0.00009	-0.00259
	10°C/Normal Voltage	-0.00259	-0.00059
	20°C/Normal Voltage	-0.00244	-0.00262
	30°C/Normal Voltage	-0.00121	-0.00065
	40°C/Normal Voltage	-0.00023	-0.00188
	50°C/Normal Voltage	-0.00124	-0.00091
	55°C/Normal Voltage	-0.00185	-0.00362
	20°C/Min Voltage	-0.00180	-0.00069
	20°C/Max Voltage	-0.00029	-0.00005
3MHz	-30°C/Normal Voltage	0.00021	-0.00244
	-20°C/Normal Voltage	0.00037	-0.00024
	-10°C/Normal Voltage	0.00082	-0.00115
	0°C/Normal Voltage	-0.00158	-0.00153
	10°C/Normal Voltage	-0.00238	-0.00199
	20°C/Normal Voltage	-0.00042	-0.00010
	30°C/Normal Voltage	-0.00192	-0.00032



	40°C/Normal Voltage	0.00182	-0.00029
	50°C/Normal Voltage	-0.00089	0.00032
	55°C/Normal Voltage	-0.00351	-0.00171
	20°C/Min Voltage	0.00186	0.00214
	20°C/Max Voltage	-0.00090	-0.00241
5MHz	-30°C/Normal Voltage	-0.00305	-0.00071
	-20°C/Normal Voltage	-0.00147	-0.00015
	-10°C/Normal Voltage	-0.00139	0.00040
	0°C/Normal Voltage	-0.00075	-0.00078
	10°C/Normal Voltage	0.00006	-0.00072
	20°C/Normal Voltage	0.00027	-0.00075
	30°C/Normal Voltage	0.00008	0.00027
	40°C/Normal Voltage	-0.00065	0.00002
	50°C/Normal Voltage	-0.00116	-0.00058
	55°C/Normal Voltage	0.00188	0.00247
	20°C/Min Voltage	-0.00210	-0.00006
	20°C/Max Voltage	-0.00121	-0.00141
10MHz	-30°C/Normal Voltage	0.00089	0.00020
	-20°C/Normal Voltage	-0.00059	0.00017
	-10°C/Normal Voltage	0.00042	0.00036
	0°C/Normal Voltage	0.00131	-0.00111
	10°C/Normal Voltage	0.00240	-0.00133
	20°C/Normal Voltage	0.00190	-0.00203
	30°C/Normal Voltage	-0.00197	0.00030
	40°C/Normal Voltage	0.00069	0.00084
	50°C/Normal Voltage	0.00181	-0.00169
	55°C/Normal Voltage	0.00010	0.00061
	20°C/Min Voltage	0.00133	0.00003
	20°C/Max Voltage	-0.00030	0.00063
15MHz	-30°C/Normal Voltage	-0.00055	0.00040
	-20°C/Normal Voltage	-0.00091	0.00038
	-10°C/Normal Voltage	-0.00230	-0.00071
	0°C/Normal Voltage	-0.00011	-0.00106
	10°C/Normal Voltage	-0.00071	-0.00220
	20°C/Normal Voltage	0.00014	-0.00024
	30°C/Normal Voltage	0.00102	-0.00083
	40°C/Normal Voltage	-0.00169	0.00051
	50°C/Normal Voltage	-0.00089	-0.00115
	55°C/Normal Voltage	-0.00197	-0.00169
	20°C/Min Voltage	-0.00278	-0.00234



	20°C/Max Voltage	-0.00042	-0.00133
20MHz	-30°C/Normal Voltage	-0.00124	-0.00069
	-20°C/Normal Voltage	-0.00094	-0.00017
	-10°C/Normal Voltage	0.00025	-0.00144
	0°C/Normal Voltage	0.00065	-0.00065
	10°C/Normal Voltage	-0.00087	0.00051
	20°C/Normal Voltage	-0.00036	0.00020
	30°C/Normal Voltage	0.00008	-0.00036
	40°C/Normal Voltage	0.00113	-0.00042
	50°C/Normal Voltage	-0.00107	-0.00192
	55°C/Normal Voltage	0.00106	-0.00015
	20°C/Min Voltage	-0.00003	0.00006
	20°C/Max Voltage	-0.00065	-0.00040

Bandwidth	Test status	LTE Band 7 Channel 21100 Test Results (ppm)	
		QPSK	16QAM
5MHz	-30°C/Normal Voltage	-0.00144	-0.00185
	-20°C/Normal Voltage	-0.00061	-0.00264
	-10°C/Normal Voltage	-0.00202	-0.00281
	0°C/Normal Voltage	-0.00179	-0.00320
	10°C/Normal Voltage	-0.00127	-0.00297
	20°C/Normal Voltage	-0.00336	-0.00237
	30°C/Normal Voltage	-0.00300	-0.00109
	40°C/Normal Voltage	-0.00056	-0.00049
	50°C/Normal Voltage	-0.00303	-0.00180
	55°C/Normal Voltage	-0.00091	-0.00209
	20°C/Min Voltage	-0.00400	-0.00187
	20°C/Max Voltage	-0.00250	-0.00141
10MHz	-30°C/Normal Voltage	-0.00191	-0.00166
	-20°C/Normal Voltage	-0.00277	-0.00227
	-10°C/Normal Voltage	-0.00118	-0.00144
	0°C/Normal Voltage	-0.00033	-0.00421
	10°C/Normal Voltage	-0.00153	-0.00223
	20°C/Normal Voltage	-0.00211	-0.00241
	30°C/Normal Voltage	-0.00055	-0.00147
	40°C/Normal Voltage	-0.00087	-0.00269
	50°C/Normal Voltage	-0.00034	-0.00185
	55°C/Normal Voltage	-0.00251	-0.00141
	20°C/Min Voltage	-0.00280	-0.00178
	20°C/Max Voltage	-0.00177	-0.00194



15MHz	-30°C/Normal Voltage	-0.00206	-0.00163
	-20°C/Normal Voltage	-0.00088	-0.00122
	-10°C/Normal Voltage	-0.00249	-0.00171
	0°C/Normal Voltage	-0.00058	-0.00072
	10°C/Normal Voltage	-0.00211	-0.00133
	20°C/Normal Voltage	-0.00088	-0.00219
	30°C/Normal Voltage	-0.00277	-0.00182
	40°C/Normal Voltage	-0.00398	-0.00300
	50°C/Normal Voltage	-0.00032	-0.00124
	55°C/Normal Voltage	-0.00106	-0.00050
	20°C/Min Voltage	-0.00114	-0.00105
	20°C/Max Voltage	-0.00253	-0.00210
20MHz	-30°C/Normal Voltage	-0.00267	-0.00211
	-20°C/Normal Voltage	-0.00367	-0.00417
	-10°C/Normal Voltage	-0.00253	-0.00371
	0°C/Normal Voltage	-0.00114	-0.00041
	10°C/Normal Voltage	-0.00277	-0.00338
	20°C/Normal Voltage	-0.00254	-0.00250
	30°C/Normal Voltage	-0.00201	-0.00305
	40°C/Normal Voltage	-0.00337	-0.00321
	50°C/Normal Voltage	-0.00219	-0.00273
	55°C/Normal Voltage	-0.00194	-0.00211
	20°C/Min Voltage	-0.00395	-0.00160
	20°C/Max Voltage	-0.00089	-0.00200

Bandwidth	Test status	LTE Band 12 Channel 23095 Test Results (ppm)	
		QPSK	16QAM
1.4M	-30°C/Normal Voltage	-0.00222	-0.00356
	-20°C/Normal Voltage	-0.00188	-0.00016
	-10°C/Normal Voltage	-0.00459	-0.00321
	0°C/Normal Voltage	-0.00177	-0.00403
	10°C/Normal Voltage	-0.00236	-0.00105
	20°C/Normal Voltage	-0.00304	-0.00281
	30°C/Normal Voltage	-0.00085	-0.00345
	40°C/Normal Voltage	-0.00006	-0.00253
	50°C/Normal Voltage	-0.00066	-0.00633
	55°C/Normal Voltage	-0.00184	-0.00083
	20°C/Min Voltage	-0.00257	-0.00131
	20°C/Max Voltage	-0.00098	-0.00033



3M	-30°C/Normal Voltage	-0.00301	-0.00537
	-20°C/Normal Voltage	-0.00117	-0.00376
	-10°C/Normal Voltage	-0.00359	-0.00155
	0°C/Normal Voltage	-0.00294	-0.00027
	10°C/Normal Voltage	-0.00155	-0.00765
	20°C/Normal Voltage	-0.00259	-0.00362
	30°C/Normal Voltage	-0.00180	-0.00129
	40°C/Normal Voltage	-0.00160	-0.00220
	50°C/Normal Voltage	-0.00441	-0.00165
	55°C/Normal Voltage	-0.00096	-0.00505
	20°C/Min Voltage	-0.00346	-0.00083
	20°C/Max Voltage	-0.00083	-0.00160
5MHz	-30°C/Normal Voltage	-0.00089	-0.00421
	-20°C/Normal Voltage	-0.00327	-0.00284
	-10°C/Normal Voltage	-0.00390	-0.00332
	0°C/Normal Voltage	-0.00083	-0.00236
	10°C/Normal Voltage	-0.00212	-0.00342
	20°C/Normal Voltage	-0.00608	-0.00267
	30°C/Normal Voltage	-0.00199	-0.00198
	40°C/Normal Voltage	-0.00358	-0.00192
	50°C/Normal Voltage	-0.00259	-0.00105
	55°C/Normal Voltage	-0.00182	-0.00334
	20°C/Min Voltage	-0.00264	-0.00394
	20°C/Max Voltage	-0.00305	-0.00318
10MHz	-30°C/Normal Voltage	-0.00218	-0.00052
	-20°C/Normal Voltage	-0.00222	-0.00136
	-10°C/Normal Voltage	-0.00260	-0.00058
	0°C/Normal Voltage	-0.00030	-0.00174
	10°C/Normal Voltage	-0.00445	-0.00230
	20°C/Normal Voltage	-0.00252	-0.00403
	30°C/Normal Voltage	-0.00154	-0.00230
	40°C/Normal Voltage	-0.00332	-0.00240
	50°C/Normal Voltage	-0.00300	-0.00119
	55°C/Normal Voltage	-0.00098	-0.00123
	20°C/Min Voltage	-0.00206	-0.00264
	20°C/Max Voltage	-0.00076	0.00348

Bandwidth	Test status	LTE Band 17 Channel 23790 Test Results (ppm)	
		QPSK	16QAM
5MHz	-30°C/Normal Voltage	-0.00246	-0.00037
	-20°C/Normal Voltage	-0.00166	-0.00159
	-10°C/Normal Voltage	-0.00439	-0.00300
	0°C/Normal Voltage	-0.00300	-0.00345
	10°C/Normal Voltage	-0.00169	-0.00468
	20°C/Normal Voltage	-0.00276	-0.00472
	30°C/Normal Voltage	-0.00090	-0.00166
	40°C/Normal Voltage	-0.00142	-0.00217
	50°C/Normal Voltage	0.00010	-0.00108
	55°C/Normal Voltage	0.00134	-0.00194
	20°C/Min Voltage	0.00007	-0.00211
	20°C/Max Voltage	-0.00089	-0.00261
10MHz	-30°C/Normal Voltage	-0.00072	-0.00221
	-20°C/Normal Voltage	0.00034	-0.00154
	-10°C/Normal Voltage	-0.00220	-0.00113
	0°C/Normal Voltage	-0.00308	-0.00355
	10°C/Normal Voltage	-0.00203	-0.00168
	20°C/Normal Voltage	-0.00235	-0.00148
	30°C/Normal Voltage	-0.00008	-0.00065
	40°C/Normal Voltage	-0.00054	-0.00375
	50°C/Normal Voltage	-0.00249	-0.00139
	55°C/Normal Voltage	-0.00134	-0.00189
	20°C/Min Voltage	-0.00373	-0.00165
	20°C/Max Voltage	-0.00161	-0.00187

5.7 Spurious Emissions at Antenna Terminals

Ambient condition

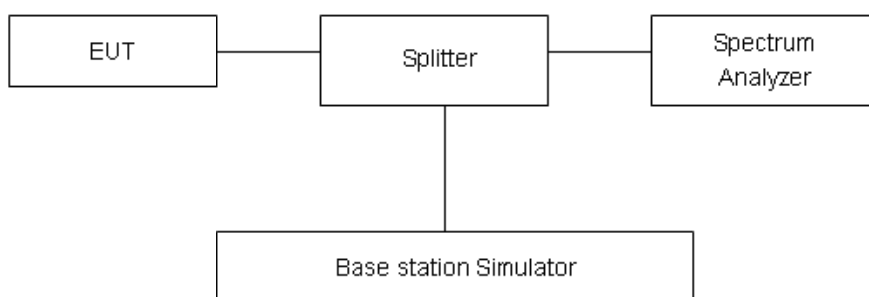
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW 1MHz and VBW3 MHz, Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

Test setup



Limits

Rule Part 27.53(h) specifies that “for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB..”

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to –70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and –80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an

antenna that is representative of the type that will be used with the equipment in normal operation.

Rule Part 27.53(m) $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

Rule Part 27.53(h)/ Part 27.53 (g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 dBm
Part 27.53(m) Limit		-25 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-12.75GHz	1.407 dB

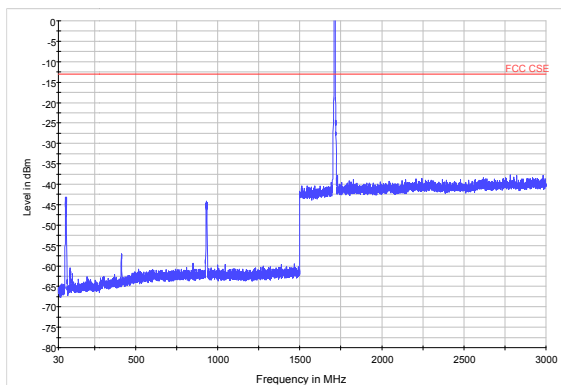
Test Result: PASS

If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.
The signal beyond the limit is carrier in the following plots.

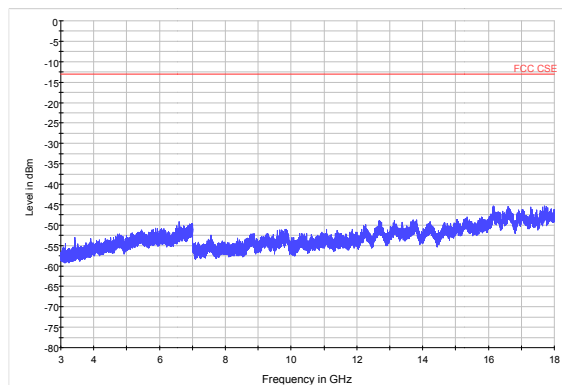
Test Data File Name	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
B12_CHLOW_1.4M_RB1_1-3GHz	1398.5	-31.50	-13.00	18.50
B12_CHMID_1.4M_RB1_1-3GHz	1414.3	-32.23	-13.00	19.23
B12_CHHIGH_1.4M_RB1_1-3GHz	1429.5	-29.65	-13.00	16.65
B12_CHLOW_3M_RB1_1-3GHz	1398.3	-31.64	-13.00	18.64
B12_CHMID_3M_RB1_1-3GHz	1412.5	-31.95	-13.00	18.95
B12_CHHIGH_3M_RB1_1-3GHz	1426.5	-30.77	-13.00	17.77
B12_CHLOW_5M_RB1_1-3GHz	1398.5	-31.85	-13.00	18.85
B12_CHMID_5M_RB1_1-3GHz	1410.5	-31.80	-13.00	18.80
B12_CHHIGH_5M_RB1_1-3GHz	1422.5	-31.25	-13.00	18.25
B12_CHLOW_10M_RB1_1-3GHz	1399.0	-31.51	-13.00	18.51
B12_CHMID_10M_RB1_1-3GHz	1406.3	-30.48	-13.00	17.48
B12_CHHIGH_10M_RB1_1-3GHz	1413.0	-32.26	-13.00	19.26
B17_CHMID_5M_RB1_1-3GHz	1415.8	-32.47	-13.00	19.47
B17_CHHIGH_5M_RB1_1-3GHz	1422.5	-30.52	-13.00	17.52
B17_CHLOW_10M_RB1_1-3GHz	1409.0	-30.35	-13.00	17.35
B17_CHMID_10M_RB1_1-3GHz	1411.0	-31.10	-13.00	18.10
B17_CHHIGH_10M_RB1_1-3GHz	1413.3	-31.41	-13.00	18.41



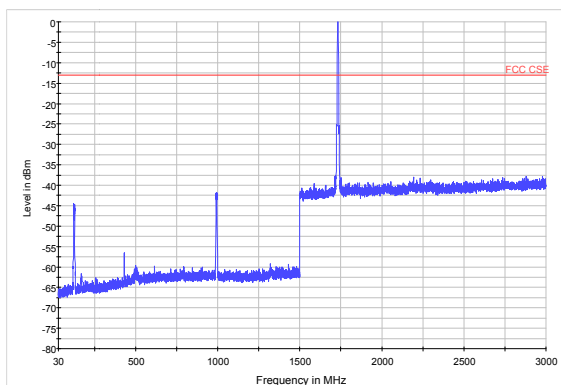
WCDMA Band IV CH-Low 30MHz~3GHz



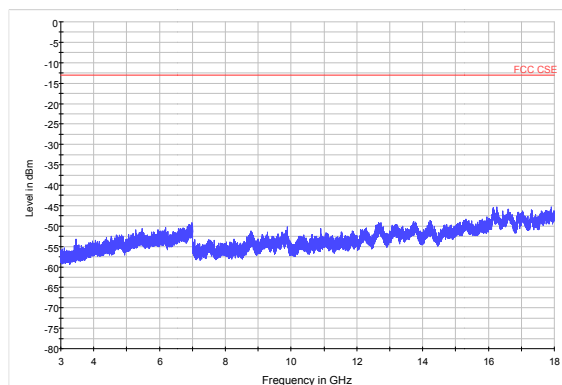
WCDMA Band IV CH-Low 3GHz ~18GHz



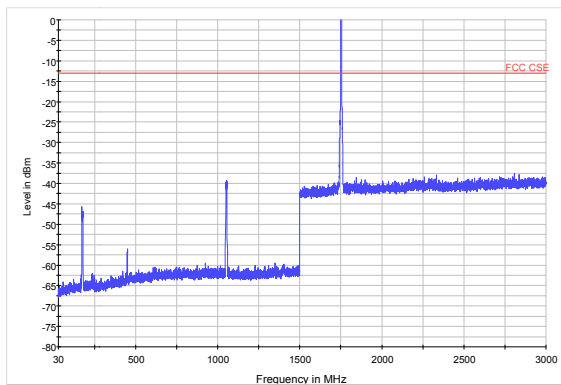
WCDMA Band IV CH-Middle 30MHz~3GHz



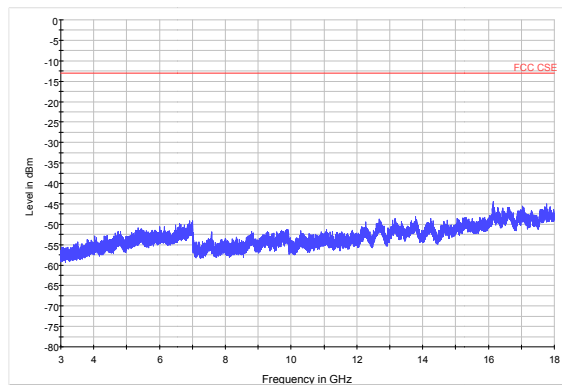
WCDMA Band IV CH-Middle 3GHz ~18GHz



WCDMA Band IV CH-High 30MHz~3GHz

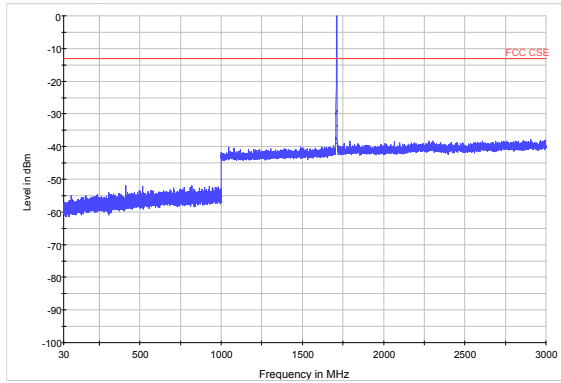


WCDMA Band IV CH-High 3GHz ~18GHz

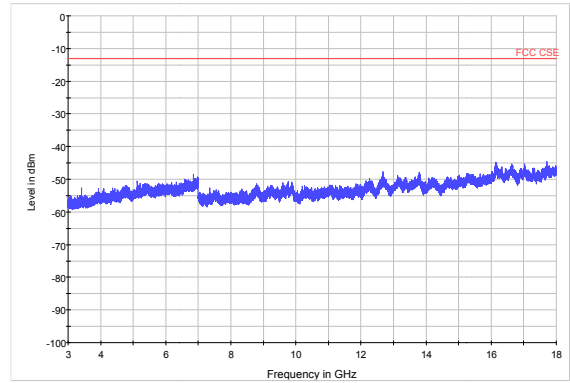




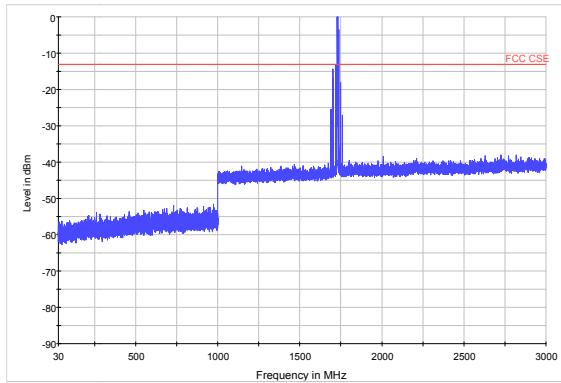
LTE Band 4 1.4MHz CH-Low 30MHz~3GHz



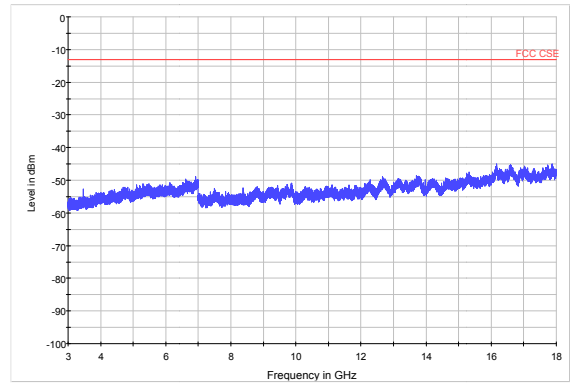
LTE Band 4 1.4MHz CH-Low 3GHz~18GHz



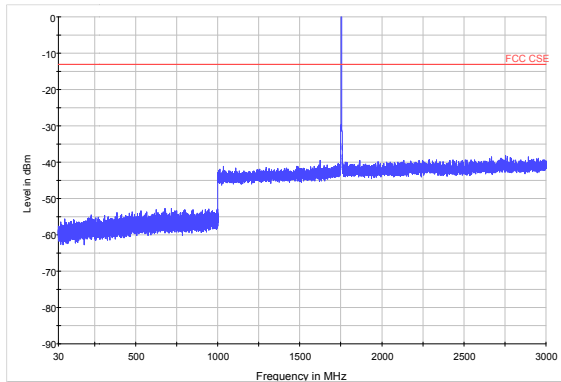
LTE Band 4 1.4MHz CH-Middle 30MHz~3GHz



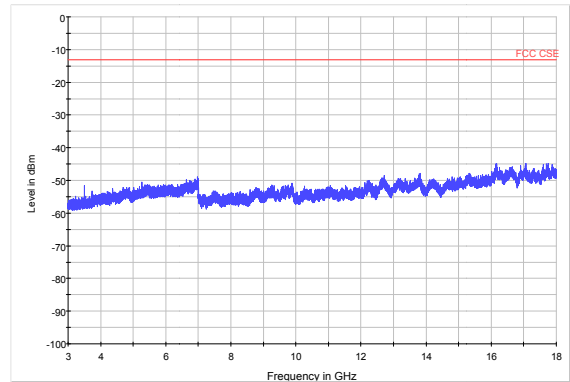
LTE Band 4 1.4MHz CH-Middle 3GHz~18GHz



LTE Band 4 1.4MHz CH-High 30MHz~3GHz

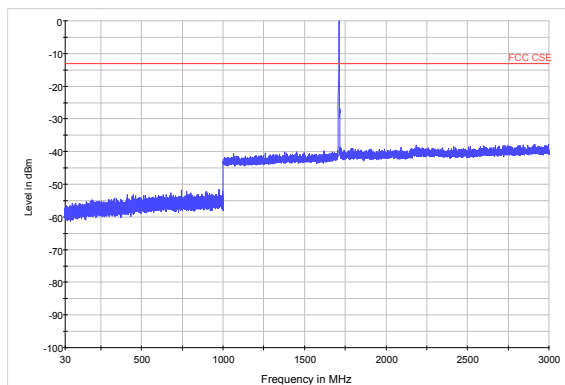


LTE Band 4 1.4MHz CH-High 3GHz~18GHz

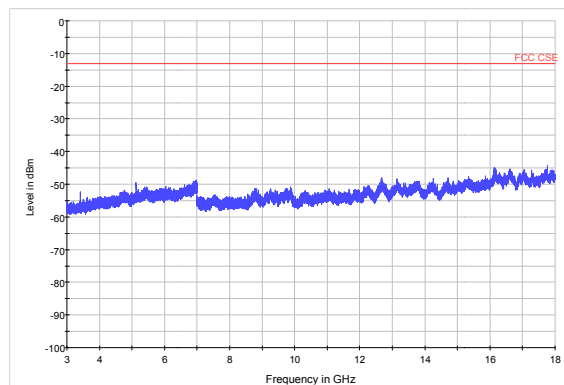




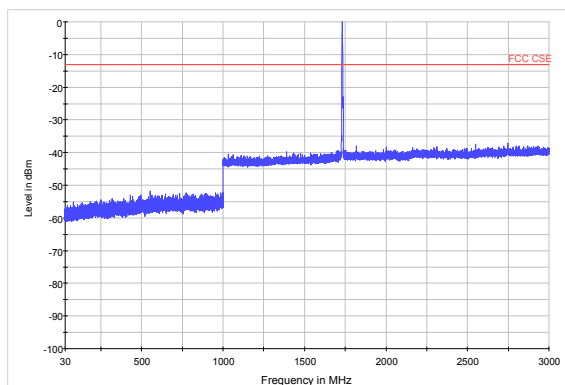
LTE Band 4 3MHz CH-Low 30MHz~3GHz



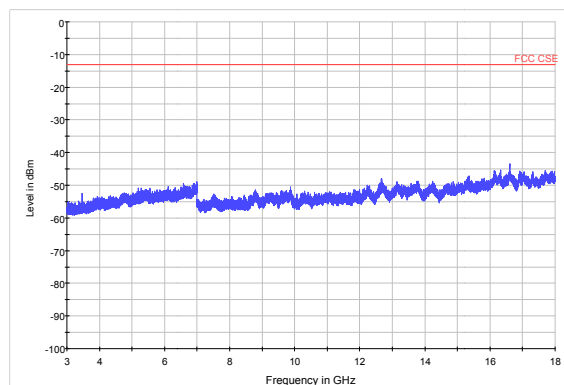
LTE Band 4 3MHz CH-Low 3GHz~18GHz



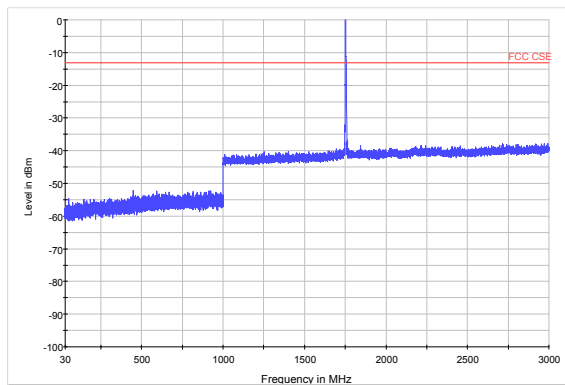
LTE Band 4 3MHz CH-Middle 30MHz~3GHz



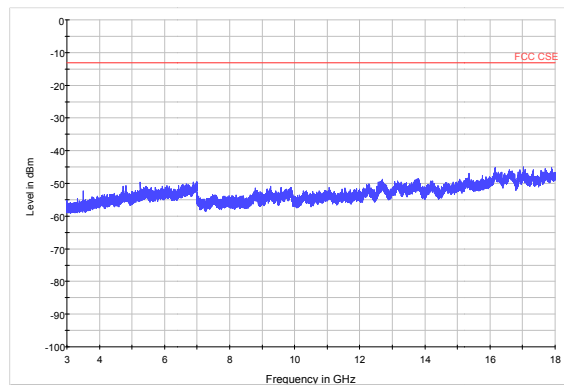
LTE Band 4 3MHz CH-Middle 3GHz~18GHz



LTE Band 4 3MHz CH-High 30MHz~3GHz

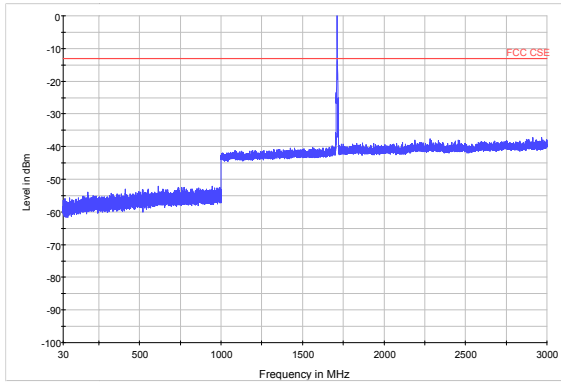


LTE Band 4 3MHz CH-High 3GHz~18GHz

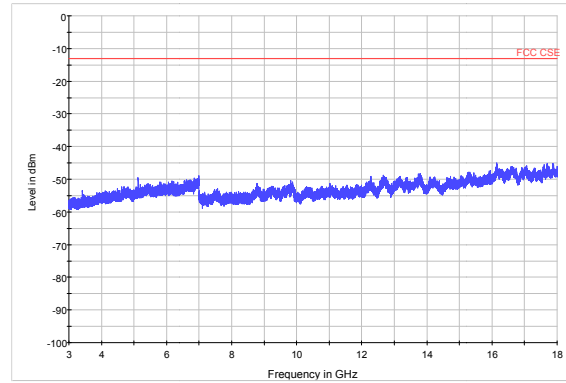




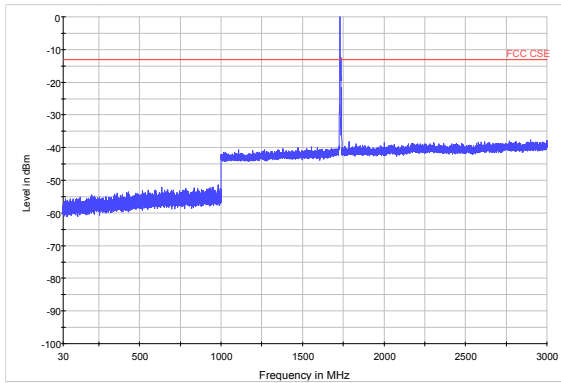
LTE Band 4 5MHz CH-Low 30MHz~3GHz



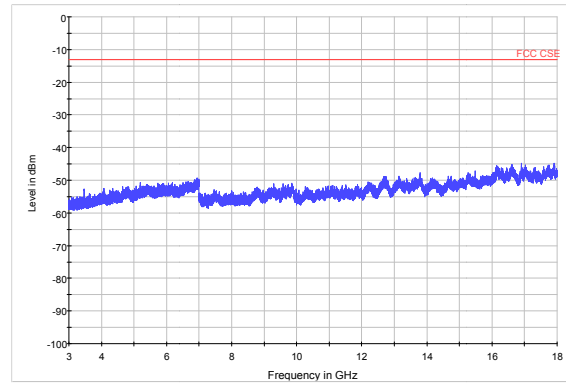
LTE Band 4 5MHz CH-Low 3GHz~18GHz



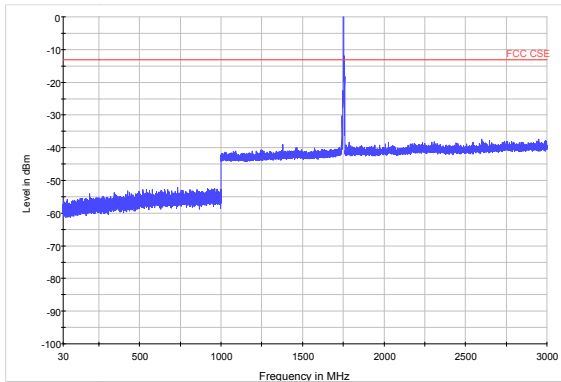
LTE Band 4 5MHz CH-Middle 30MHz~3GHz



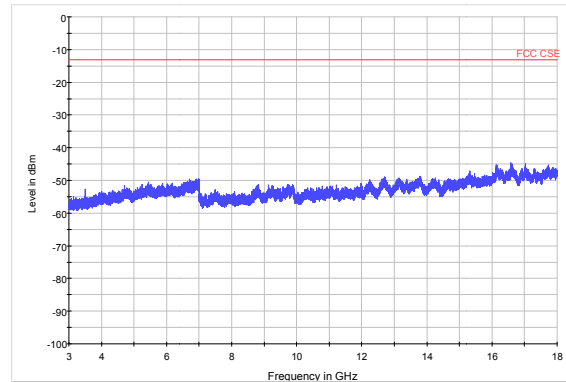
LTE Band 4 5MHz CH-Middle 3GHz~18GHz



LTE Band 4 5MHz CH-High 30MHz~3GHz

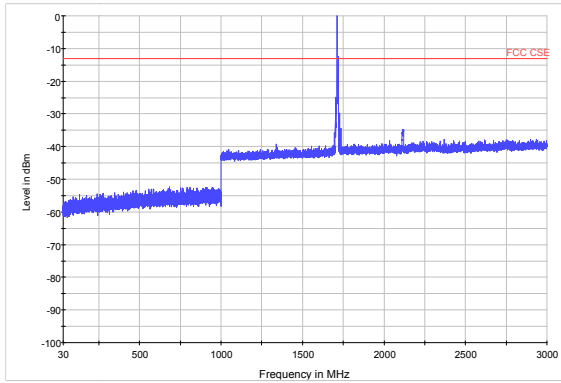


LTE Band 4 5MHz CH-High 3GHz~18GHz

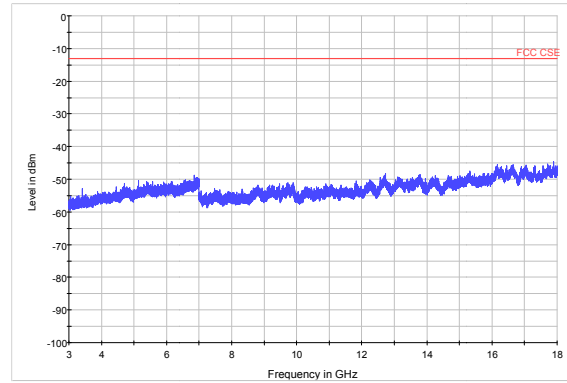




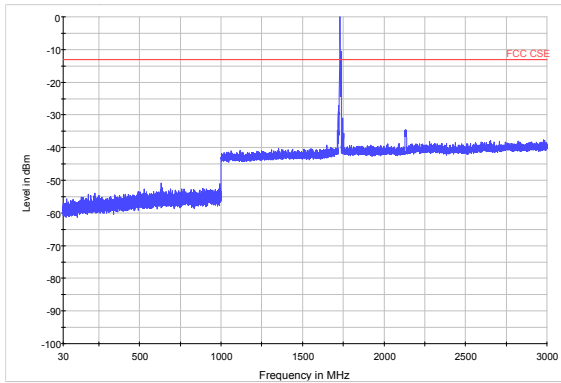
LTE Band 4 10MHz CH-Low 30MHz~3GHz



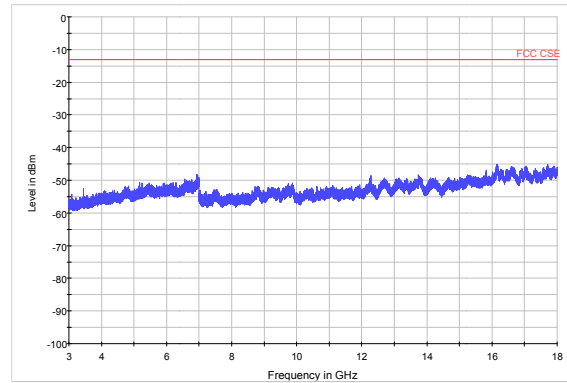
LTE Band 4 10MHz CH-Low 3GHz~18GHz



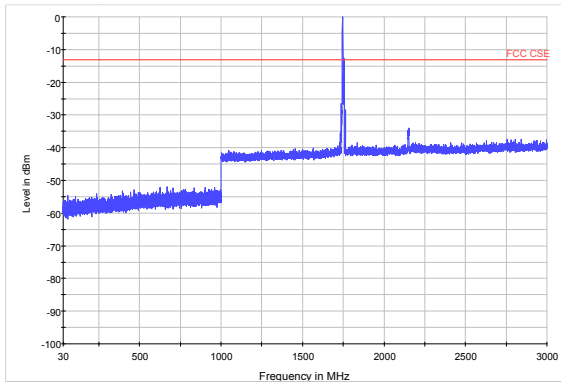
LTE Band 4 10MHz CH-Middle 30MHz~3GHz



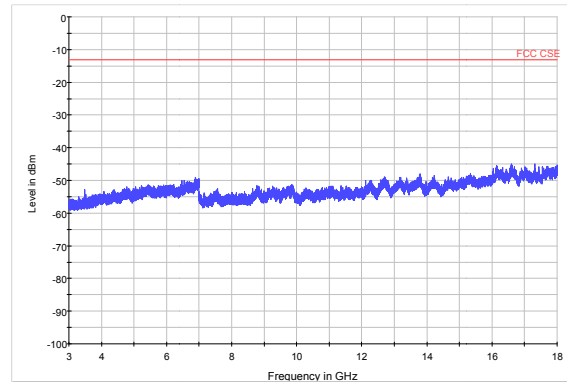
LTE Band 4 10MHz CH-Middle 3GHz~18GHz



LTE Band 4 10MHz CH-High 30MHz~3GHz

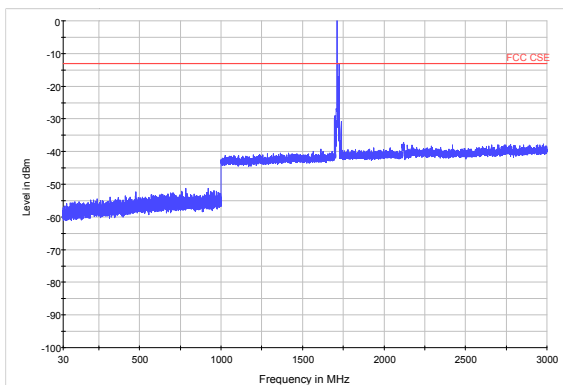


LTE Band 4 10MHz CH-High 3GHz~18GHz

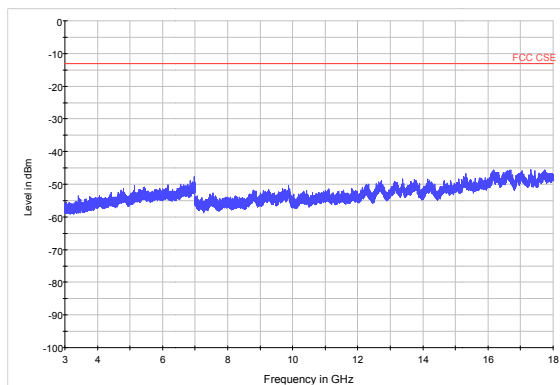




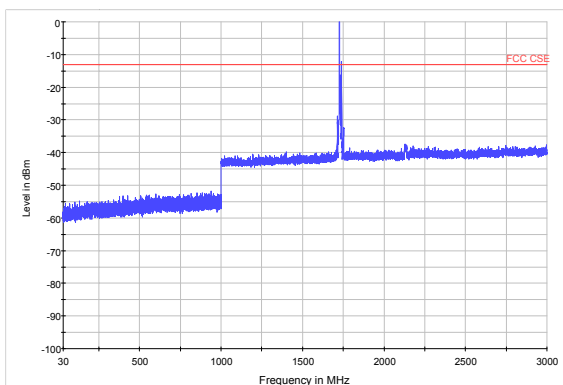
LTE Band 4 15MHz CH-Low 30MHz~3GHz



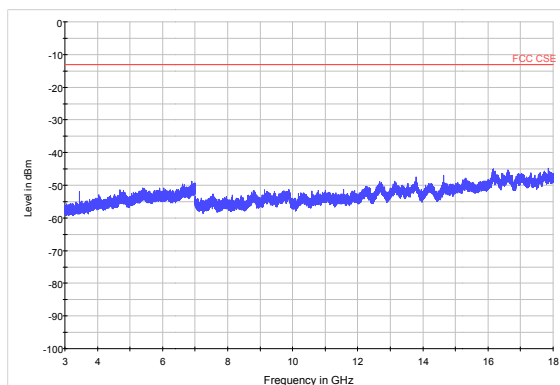
LTE Band 4 15MHz CH-Low 3GHz~18GHz



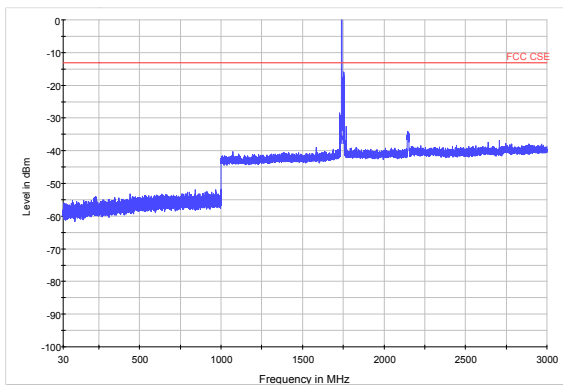
LTE Band 4 15MHz CH-Middle 30MHz~3GHz



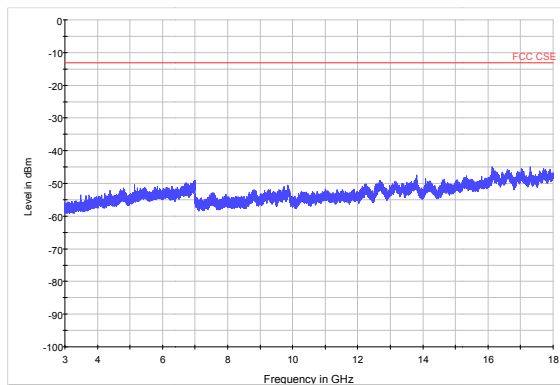
LTE Band 4 15MHz CH-Middle 3GHz~18GHz



LTE Band 4 15MHz CH-High 30MHz~3GHz

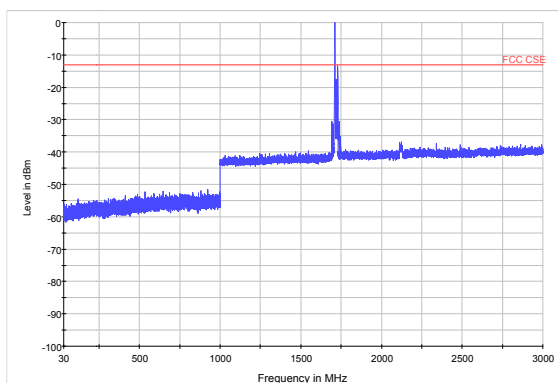


LTE Band 4 15MHz CH-High 3GHz~18GHz

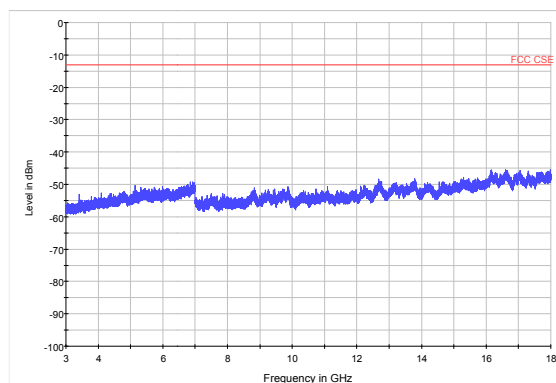




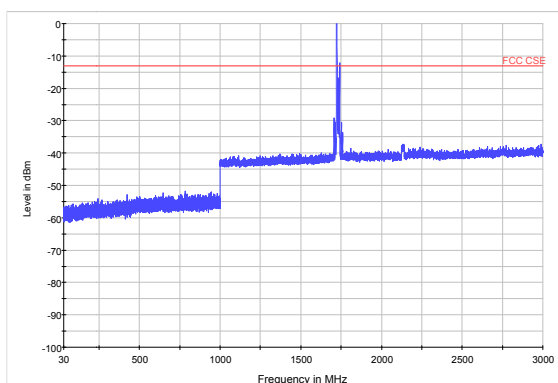
LTE Band 4 20MHz CH-Low 30MHz~3GHz



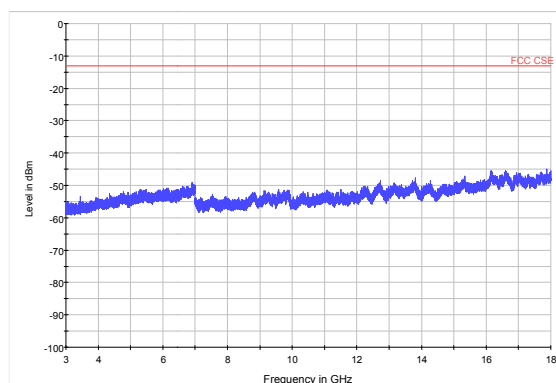
LTE Band 4 20MHz CH-Low 3GHz~18GHz



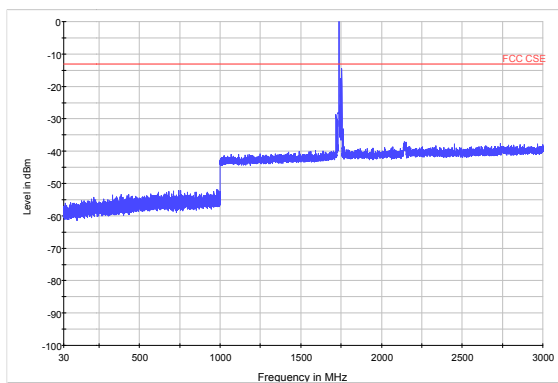
LTE Band 4 20MHz CH-Middle 30MHz~3GHz



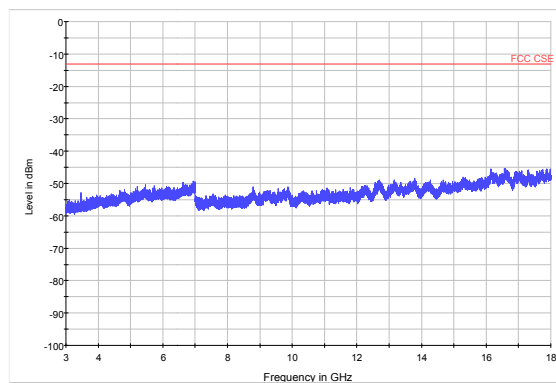
LTE Band 4 20MHz CH-Middle 3GHz~18GHz



LTE Band 4 20MHz CH-High 30MHz~3GHz

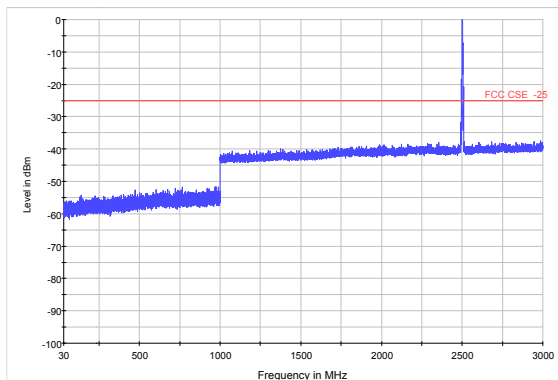


LTE Band 4 20MHz CH-High 3GHz~18GHz

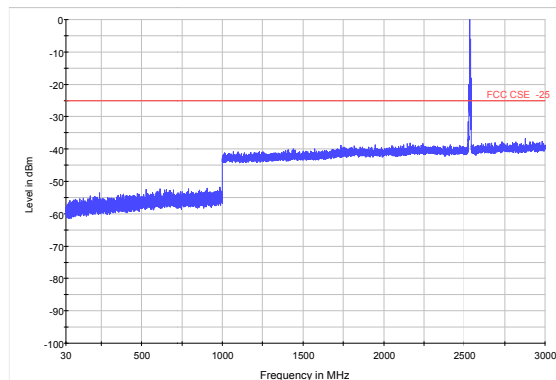




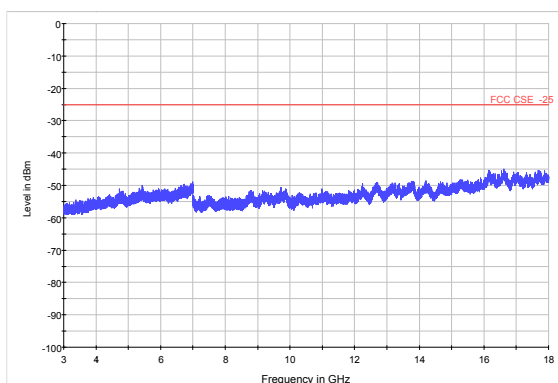
LTE Band 7 5MHz CH-Low 30MHz~3GHz



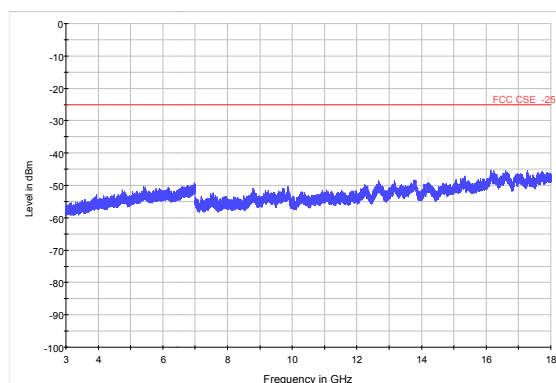
LTE Band 7 5MHz CH-Middle 30MHz~3GHz



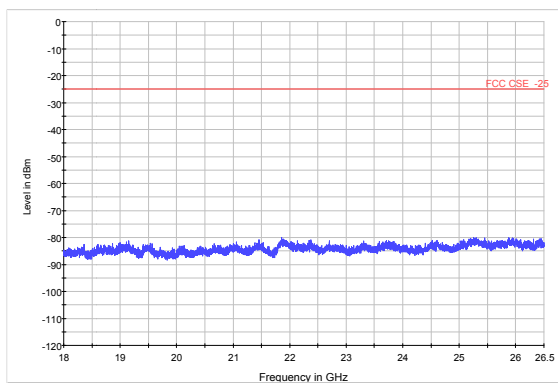
LTE Band 7 5MHz CH-Low 3GHz~18GHz



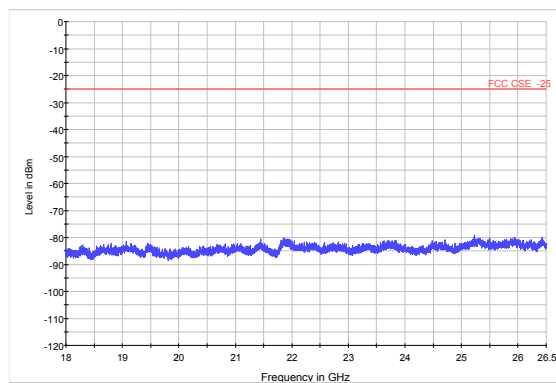
LTE Band 7 5MHz CH-Middle 3GHz~18GHz



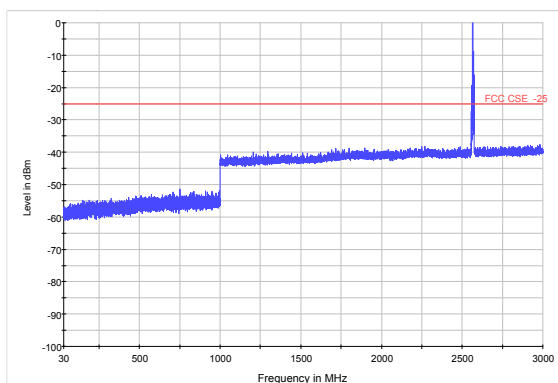
LTE Band 7 5MHz CH-Low 18GHz~26.5GHz



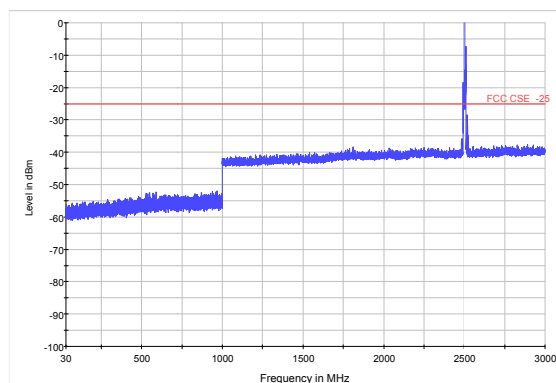
LTE Band 7 5MHz CH-Middle 18GHz~26.5GHz



LTE Band 7 5MHz CH-High 30MHz~3GHz

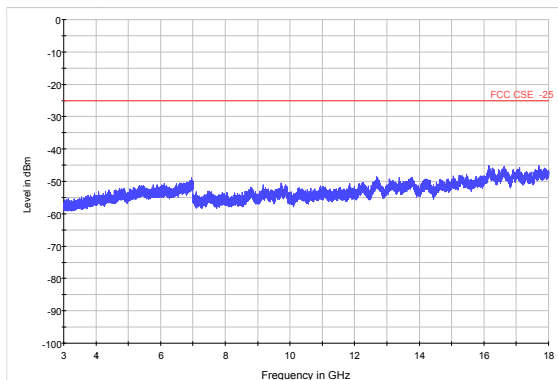


LTE Band 7 10MHz CH-Low 30MHz~3GHz

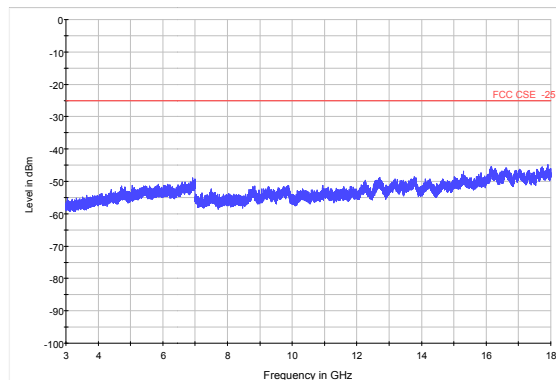




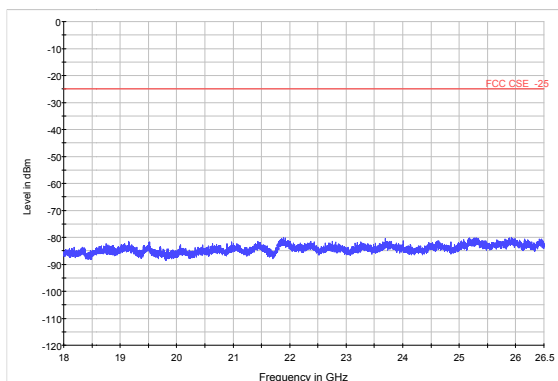
LTE Band 7 5MHz CH-High 3GHz~18GHz



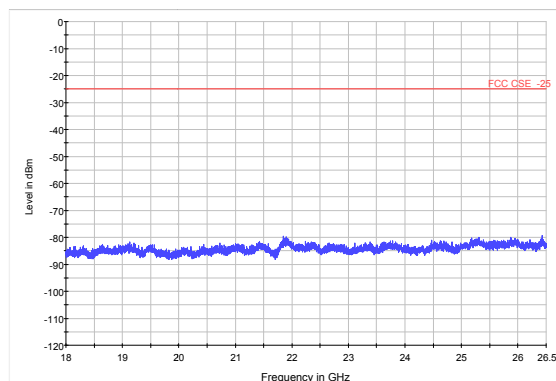
LTE Band 7 10MHz CH-Low 3GHz~18GHz



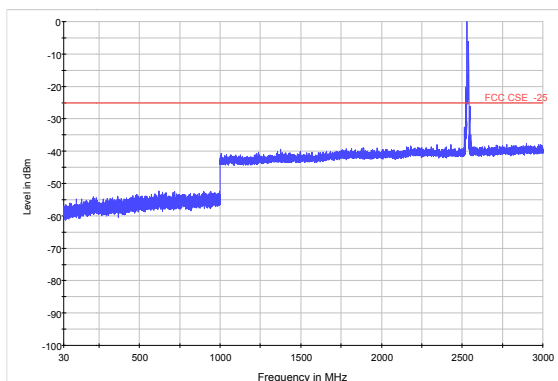
LTE Band 7 5MHz CH-High 18GHz~26.5GHz



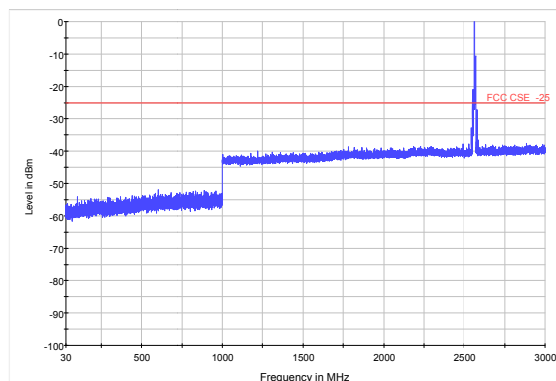
LTE Band 7 10MHz C CH-Low 18GHz~26.5GHz



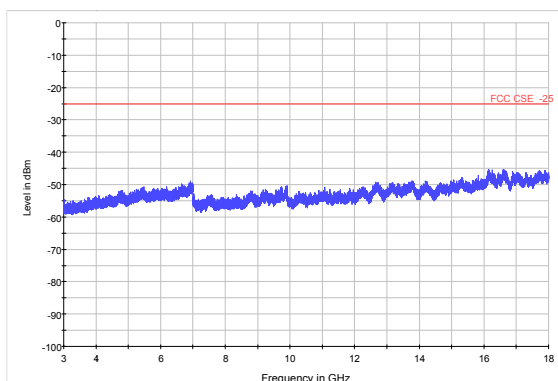
LTE Band 7 10MHz CH-Middle 30MHz~3GHz



LTE Band 7 10MHz CH-High 30MHz~3GHz



LTE Band 7 10MHz CH-Middle 3GHz~18GHz



LTE Band 7 10MHz CH-High 3GHz~18GHz

