

- Measurement data: With wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
								(dBm)	(dBc)	
20	2510	1/99	QPSK	5038.61	H	-53.25	10.18	-43.07	63.51	45.44
				7557.09	H	-50.13	12.35	-37.78	58.22	
15	2507.5	1/74	QPSK	5028.92	H	-53.56	10.16	-43.40	63.78	45.38
				7542.47	H	-50.61	12.35	-38.26	58.64	
10	2535	1/25	QPSK	5070.08	H	-53.08	10.23	-42.85	64.23	46.38
				7604.70	H	-50.07	12.46	-37.61	58.99	
5	2535	1/12	QPSK	5069.89	H	-53.48	10.23	-43.25	64.66	46.41
				7604.60	V	-50.15	12.46	-37.69	59.10	

Note 1: Limit Calculation = $55 + 10\log_{10}(P[\text{Watts}])$

Note 2: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

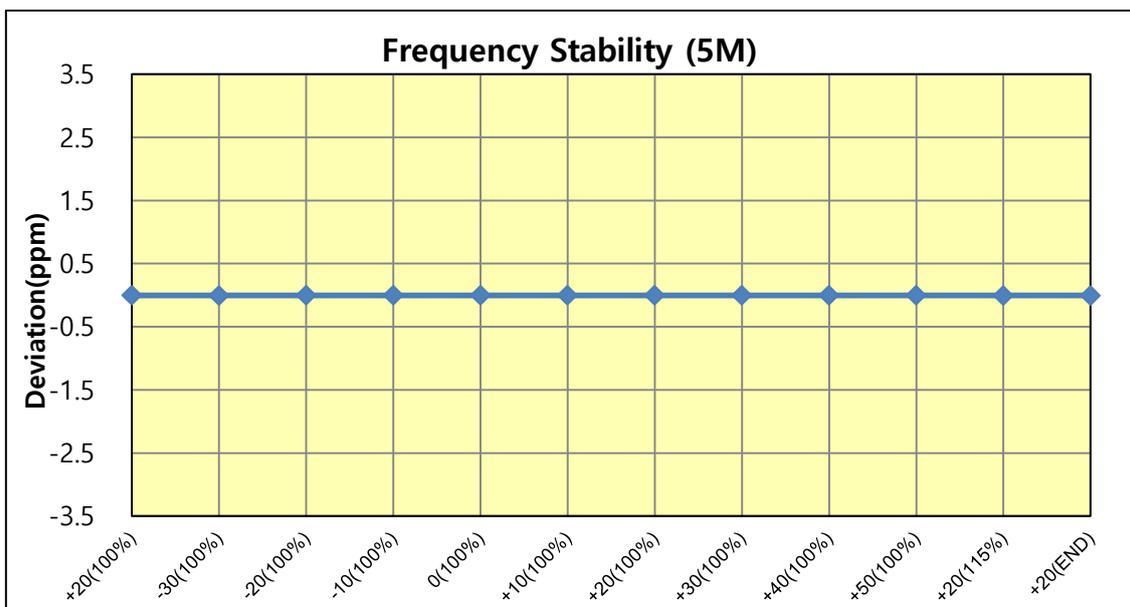
Note 3: The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter. No other spurious and harmonic emissions were reported greater than listed emissions above table.

7.7 FREQUENCY STABILITY

7.7.1 LTE Band 12

OPERATING FREQUENCY : 707.5 MHz
 REFERENCE VOLTAGE : 3.85 VDC
 LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	707,499,997	-3	-0.0042	-0.000000424
100%		-30	707,499,993	-7	-0.0099	-0.000000989
100%		-20	707,499,992	-8	-0.0113	-0.000001131
100%		-10	707,499,996	-4	-0.0057	-0.000000565
100%		0	707,499,995	-5	-0.0071	-0.000000707
100%		+10	707,499,998	-2	-0.0028	-0.000000283
100%		+20	707,499,997	-3	-0.0042	-0.000000424
100%		+30	707,500,003	3	0.0042	0.000000424
100%		+40	707,499,996	-4	-0.0057	-0.000000565
100%		+50	707,500,005	5	0.0071	0.000000707
115%	4.43	+20	707,499,996	3	-0.0057	-0.000000565
BATT.ENDPOINT	3.20	+20	707,499,996	-4	-0.0057	-0.000000565

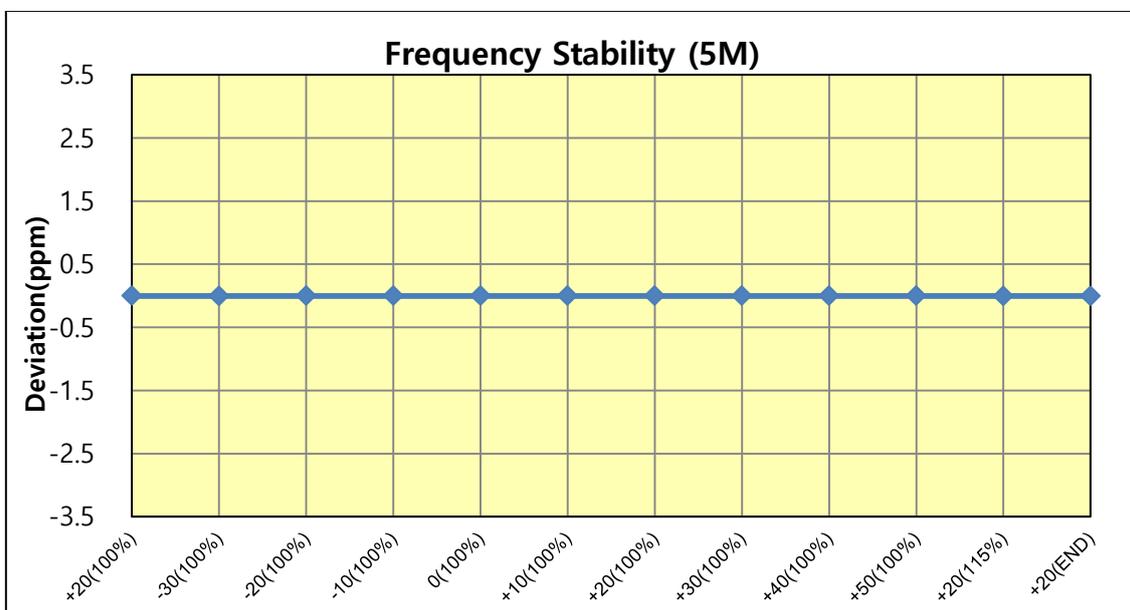


Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small, as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.7.2 LTE Band 17

OPERATING FREQUENCY : 710 MHz
 REFERENCE VOLTAGE : 3.85 VDC
 LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	709,999,997	-3	-0.0042	-0.000000423
100%		-30	710,000,006	6	0.0085	0.000000845
100%		-20	710,000,002	2	0.0028	0.000000282
100%		-10	709,999,999	-1	-0.0014	-0.000000141
100%		0	709,999,995	-5	-0.0070	-0.000000704
100%		+10	710,000,004	4	0.0056	0.000000563
100%		+20	709,999,997	-3	-0.0042	-0.000000423
100%		+30	710,000,004	4	0.0056	0.000000563
100%		+40	710,000,003	3	0.0042	0.000000423
100%		+50	710,000,008	8	0.0113	0.000001127
115%		4.43	+20	710,000,009	9	0.0127
BATT.ENDPOINT	3.20	+20	710,000,008	8	0.0113	0.000001127

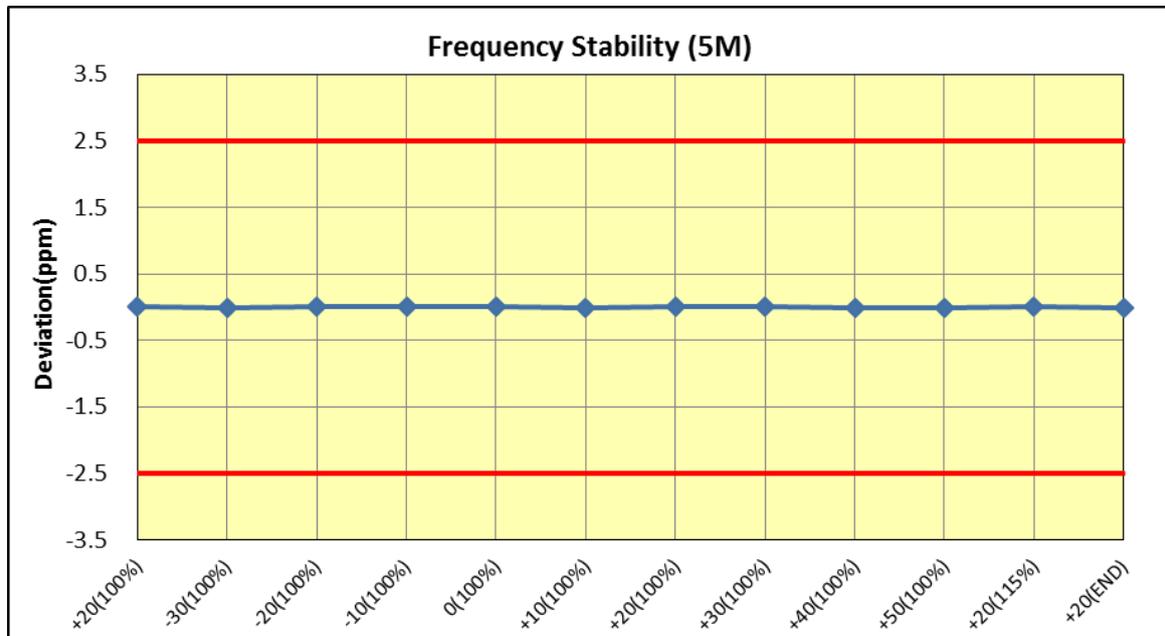


Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.7.3 LTE Band 5

OPERATING FREQUENCY : 836.5 MHz
 REFERENCE VOLTAGE : 3.85 VDC
 DEVIATION LIMIT : $\pm 0.00025\%$ or ± 2.5 ppm

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	836,499,996	-4	-0.0048	-0.000000478
100%		-30	836,500,003	3	0.0036	0.000000359
100%		-20	836,500,002	2	0.0024	0.000000239
100%		-10	836,499,995	-5	-0.0060	-0.000000598
100%		0	836,499,993	-7	-0.0084	-0.000000837
100%		+10	836,499,997	-3	-0.0036	-0.000000359
100%		+20	836,499,996	-4	-0.0048	-0.000000478
100%		+30	836,499,992	-8	-0.0096	-0.000000956
100%		+40	836,499,996	-4	-0.0048	-0.000000478
100%		+50	836,499,994	-6	-0.0072	-0.000000717
115%	4.43	+20	836,500,004	4	0.0048	0.000000478
BATT.ENDPOINT	3.20	+20	836,500,003	3	0.0036	0.000000359

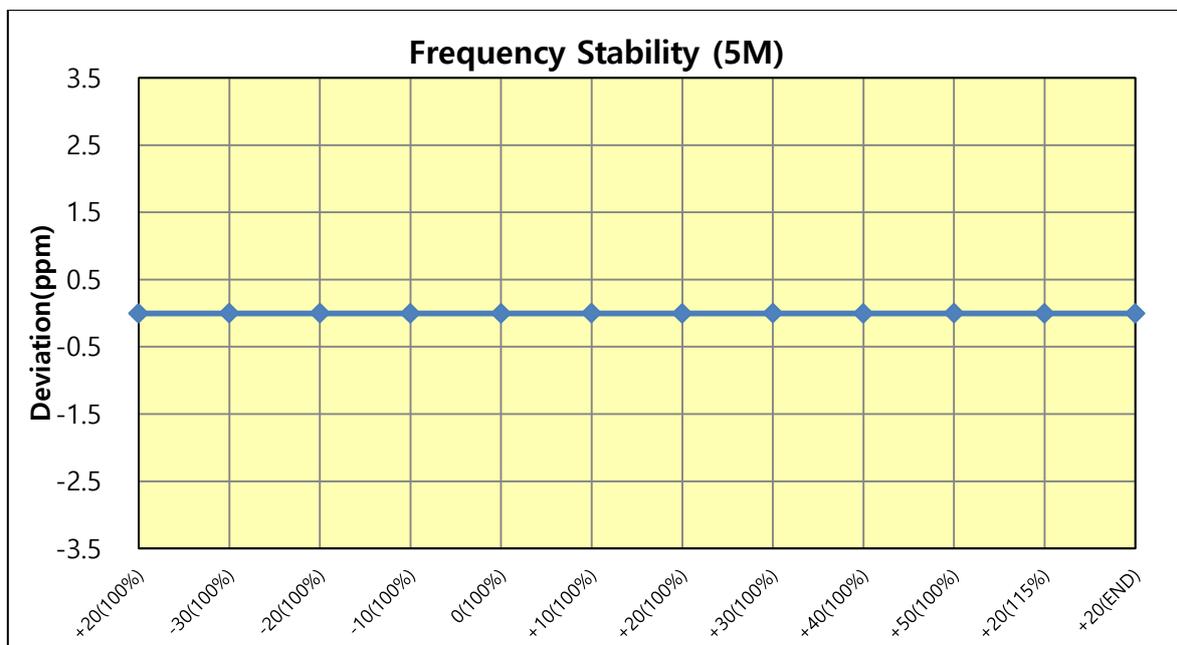


Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.7.4 LTE Band 4

OPERATING FREQUENCY : 1732.5 MHz
 REFERENCE VOLTAGE : 3.85 VDC
 LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	1,732,500,009	9	0.0052	0.000000519
100%		-30	1,732,499,997	-3	-0.0017	-0.000000173
100%		-20	1,732,500,006	6	0.0035	0.000000346
100%		-10	1,732,500,013	13	0.0075	0.000000750
100%		0	1,732,500,008	8	0.0046	0.000000462
100%		+10	1,732,500,014	14	0.0081	0.000000808
100%		+20	1,732,500,009	9	0.0052	0.000000519
100%		+30	1,732,499,997	-3	-0.0017	-0.000000173
100%		+40	1,732,500,009	9	0.0052	0.000000519
100%		+50	1,732,500,008	8	0.0046	0.000000462
115%		4.43	+20	1,732,500,010	10	0.0058
BATT.ENDPOINT	3.20	+20	1,732,500,011	11	0.0063	0.000000635

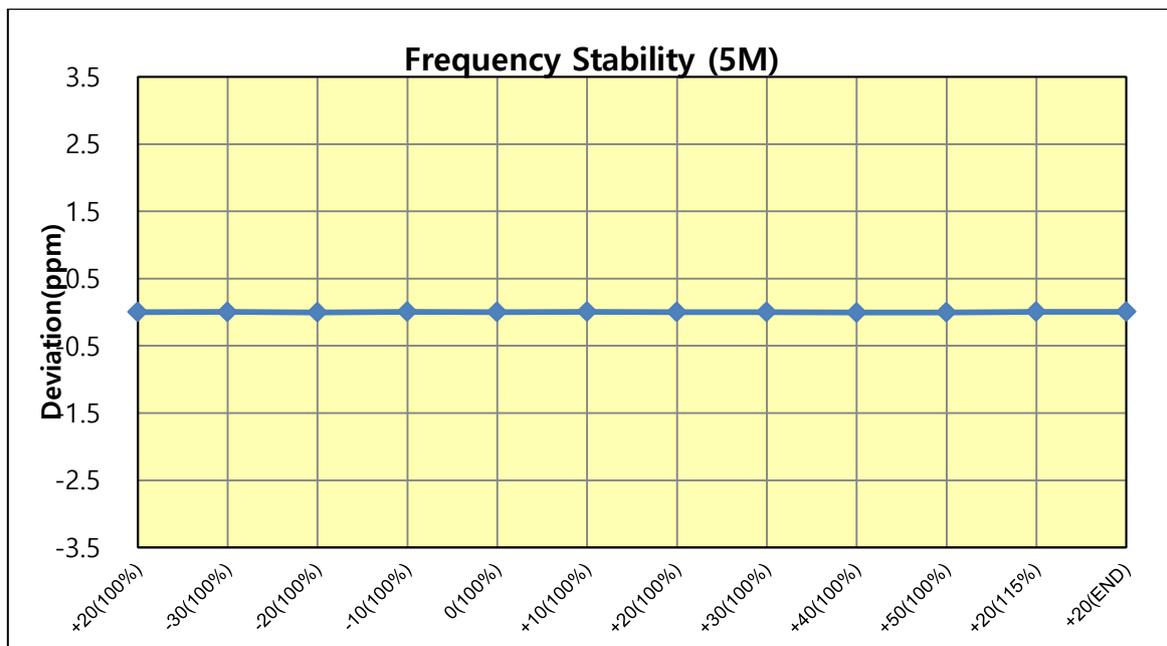


Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.7.5 LTE Band 41

OPERATING FREQUENCY : 2593 MHz
 REFERENCE VOLTAGE : 3.85 VDC
 LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	2,593,000,008	8	0.0031	0.000000309
100%		-30	2,593,000,009	9	0.0035	0.000000347
100%		-20	2,592,999,995	-5	-0.0019	-0.000000193
100%		-10	2,593,000,015	15	0.0058	0.000000578
100%		0	2,593,000,004	4	0.0015	0.000000154
100%		+10	2,593,000,018	18	0.0069	0.000000694
100%		+20	2,593,000,008	8	0.0031	0.000000309
100%		+30	2,593,000,005	5	0.0019	0.000000193
100%		+40	2,592,999,985	-15	-0.0058	-0.000000578
100%		+50	2,592,999,995	-5	-0.0019	-0.000000193
115%	4.43	+20	2,593,000,015	15	0.0058	0.000000578
BATT.ENDPOINT	3.20	+20	2,593,000,015	15	0.0058	0.000000578

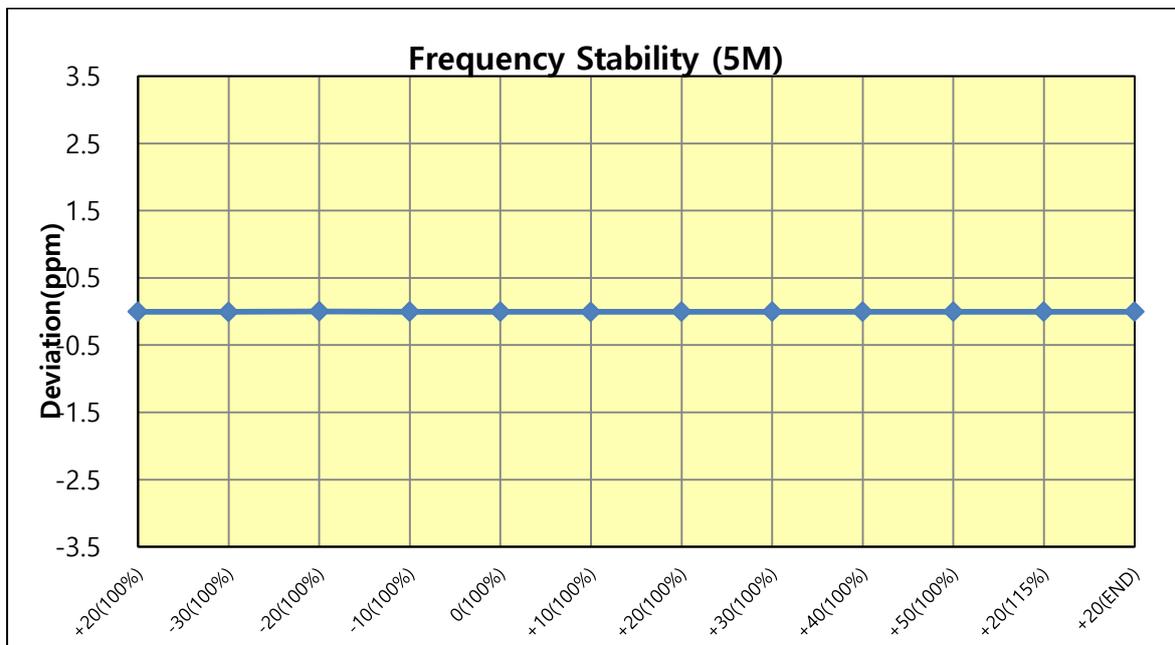


Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.7.6 LTE Band 7

OPERATING FREQUENCY : 2535 MHz
 REFERENCE VOLTAGE : 3.85 VDC
 LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	2,534,999,996	-4	-0.0016	-0.000000158
100%		-30	2,534,999,990	-10	-0.0039	-0.000000394
100%		-20	2,534,999,993	-7	-0.0028	-0.000000276
100%		-10	2,534,999,993	-7	-0.0028	-0.000000276
100%		0	2,535,000,004	4	0.0016	0.000000158
100%		+10	2,534,999,989	-11	-0.0043	-0.000000434
100%		+20	2,534,999,996	-4	-0.0016	-0.000000158
100%		+30	2,534,999,994	-6	-0.0024	-0.000000237
100%		+40	2,534,999,996	-4	-0.0016	-0.000000158
100%		+50	2,535,000,007	7	0.0028	0.000000276
115%		4.43	+20	2,534,999,989	-11	-0.0043
BATT.ENDPOINT	3.20	+20	2,535,000,008	8	0.0032	0.000000316



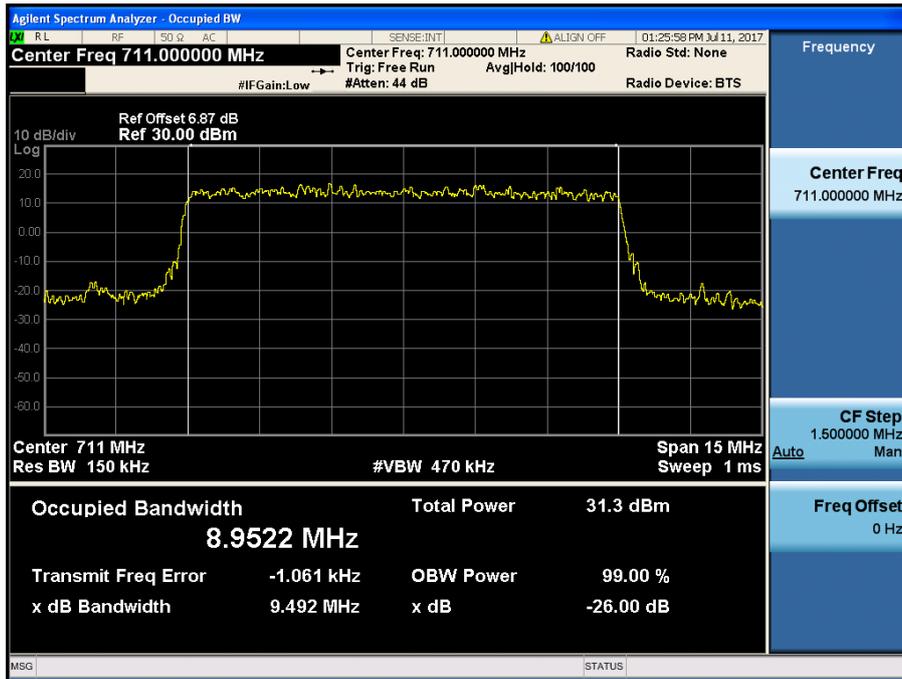
Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

8. TEST PLOTS

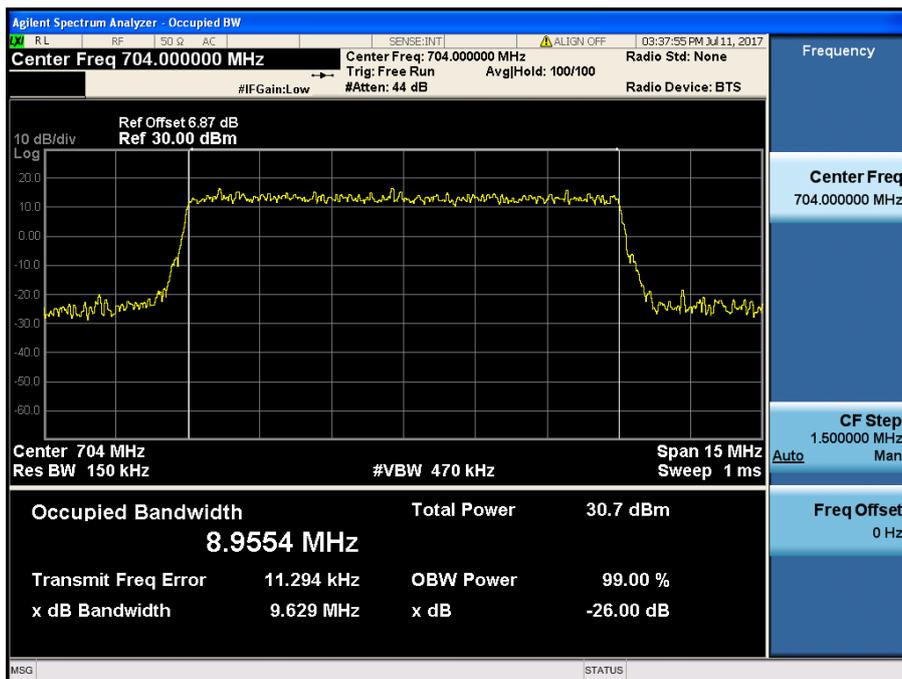
Note: All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported.

8.1 OCCUPIED BANDWIDTH

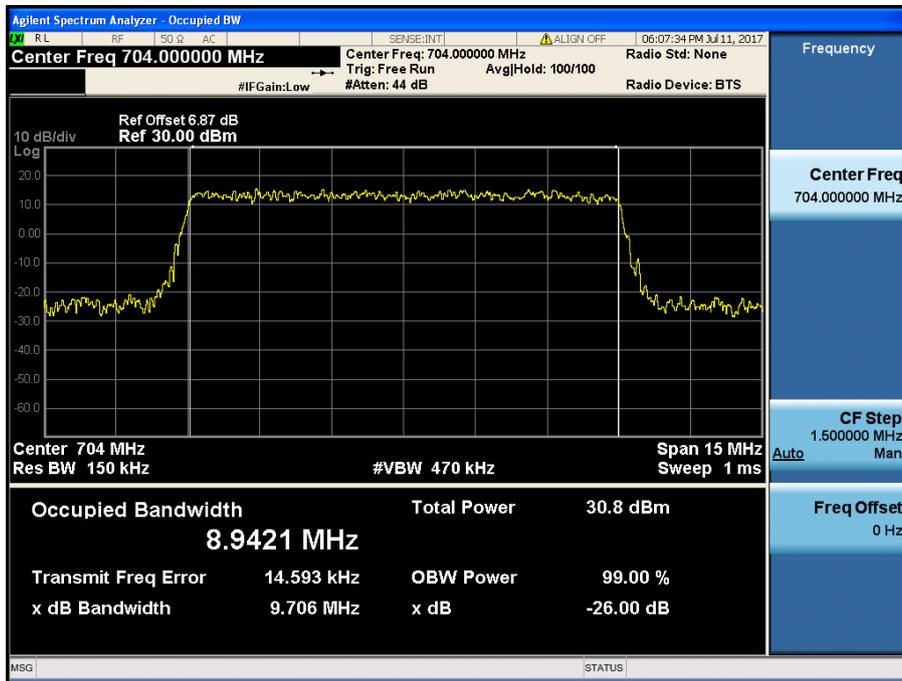
8.1.1 LTE Band 12



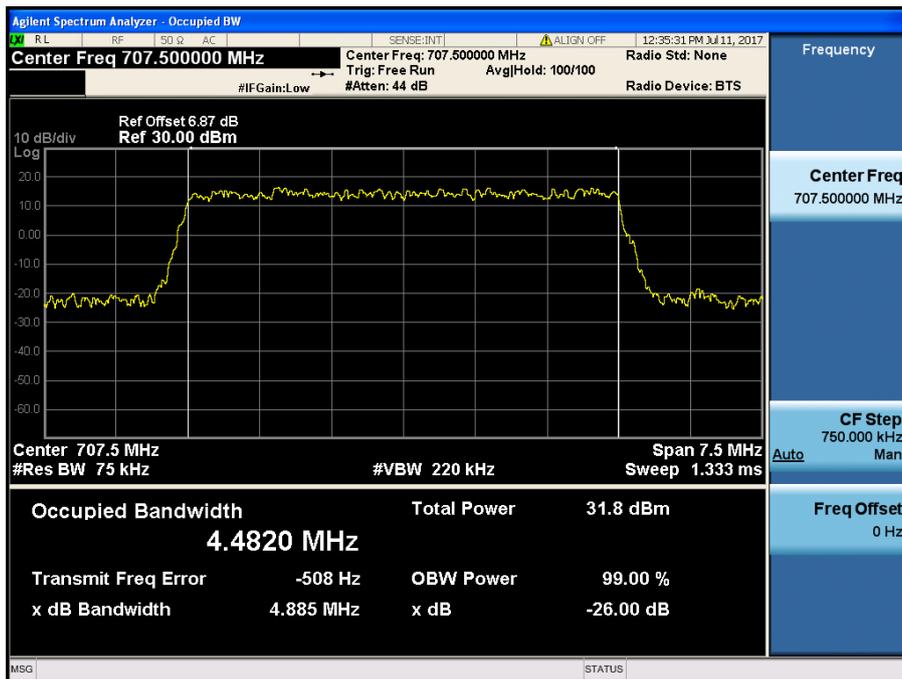
LTE Band 12 / 10 MHz / QPSK - RB Size 50



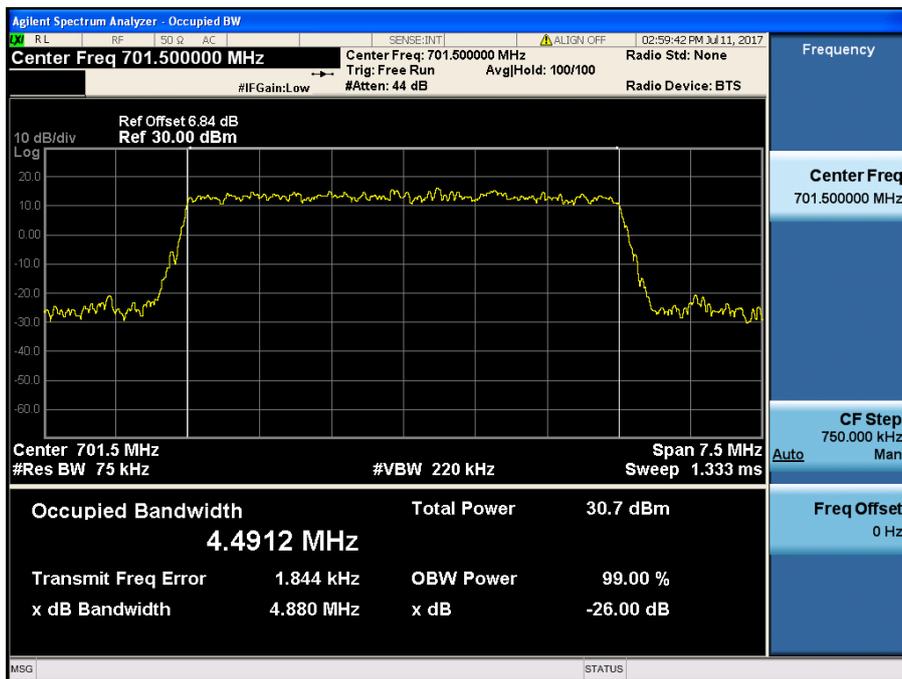
LTE Band 12 / 10 MHz / 16QAM - RB Size 50



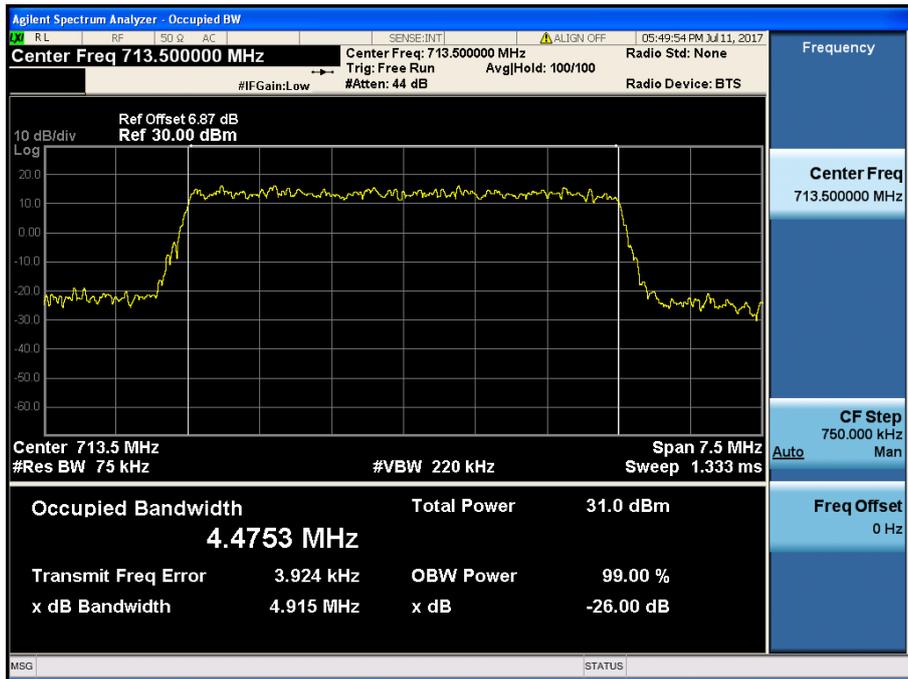
LTE Band 12 / 10 MHz / 64QAM - RB Size 50



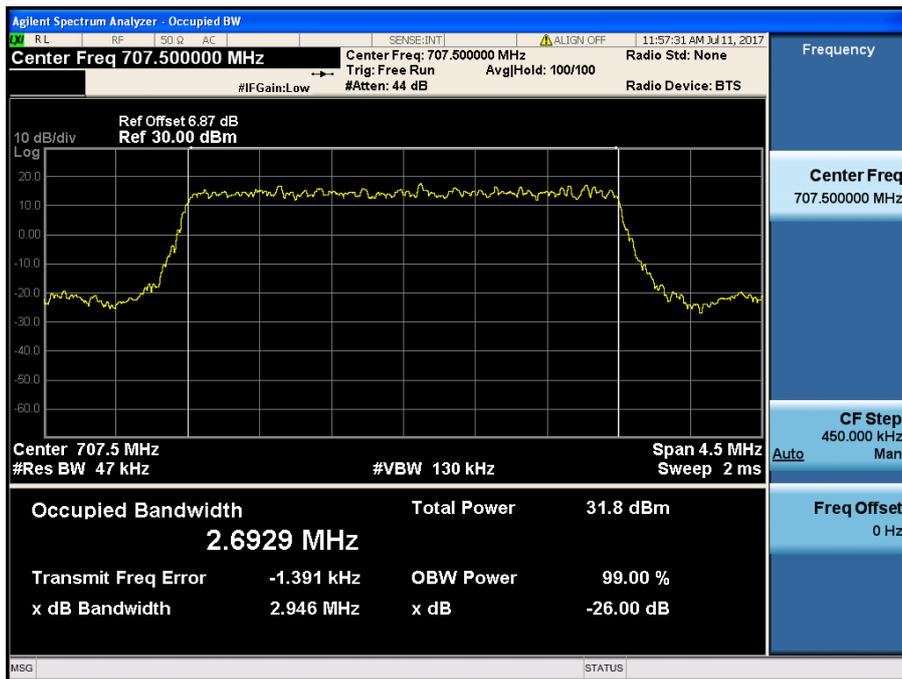
LTE Band 12 / 5 MHz / QPSK - RB Size 25



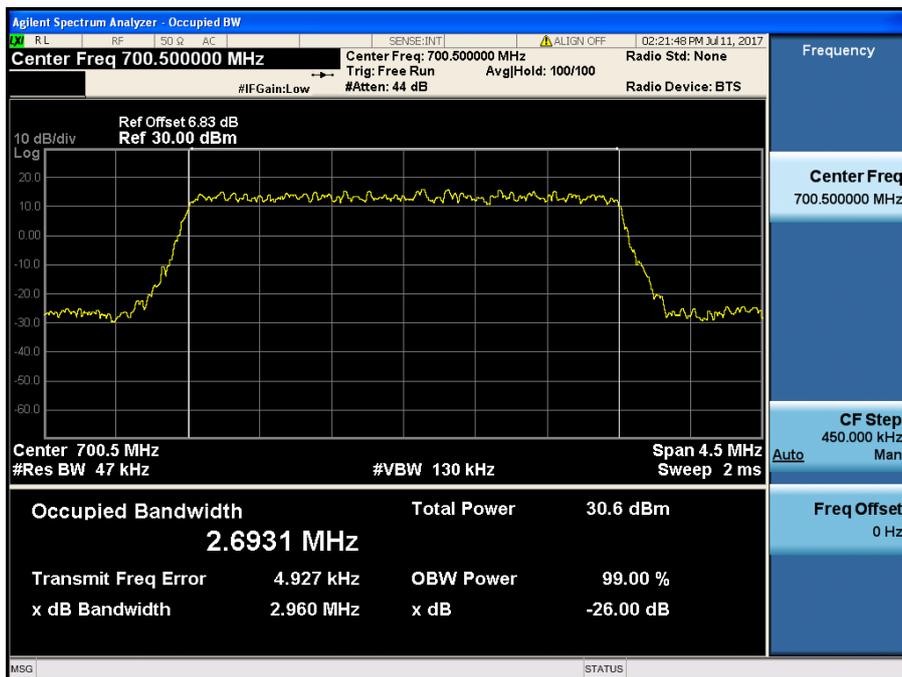
LTE Band 12 / 5 MHz / 16QAM - RB Size 25



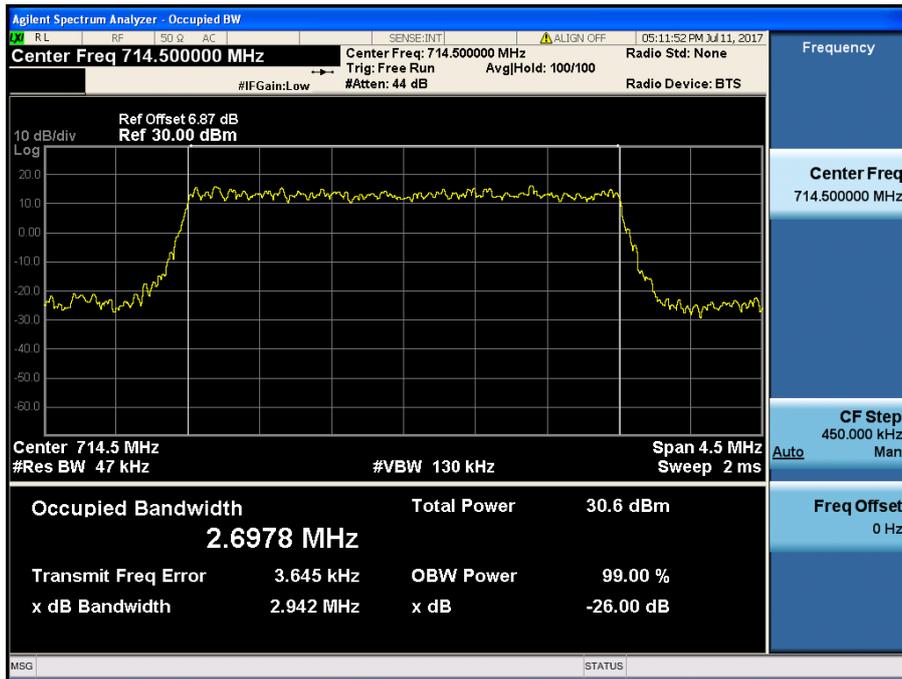
LTE Band 12 / 5 MHz / 64QAM - RB Size 25



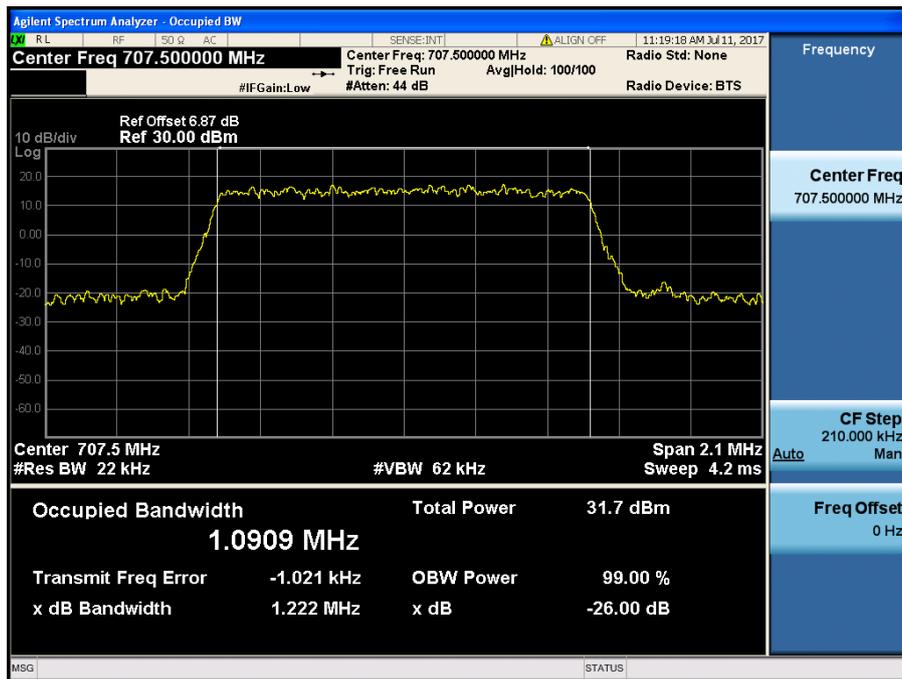
LTE Band 12 / 3 MHz / QPSK - RB Size 15



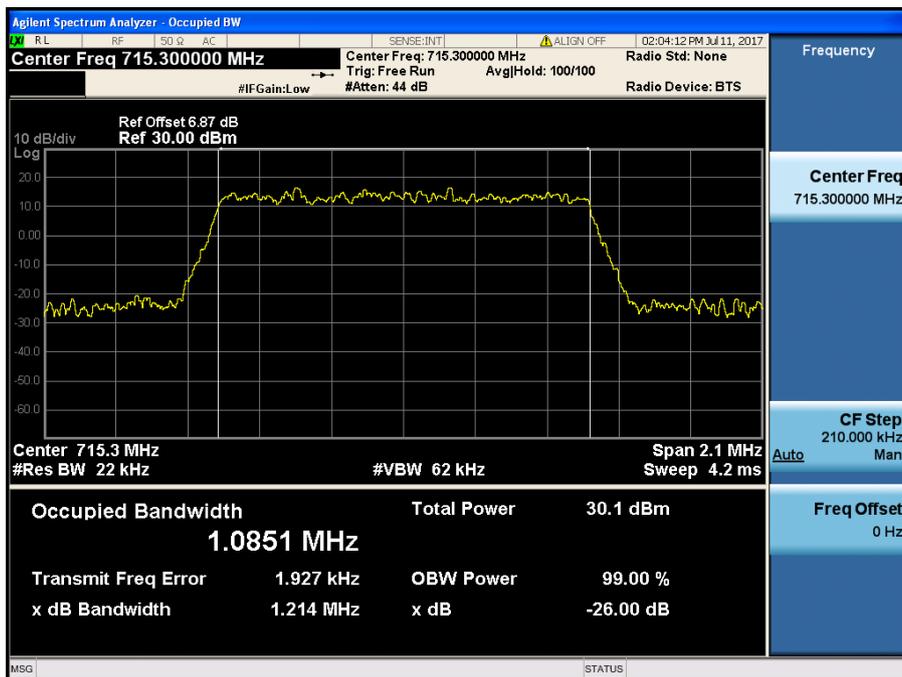
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



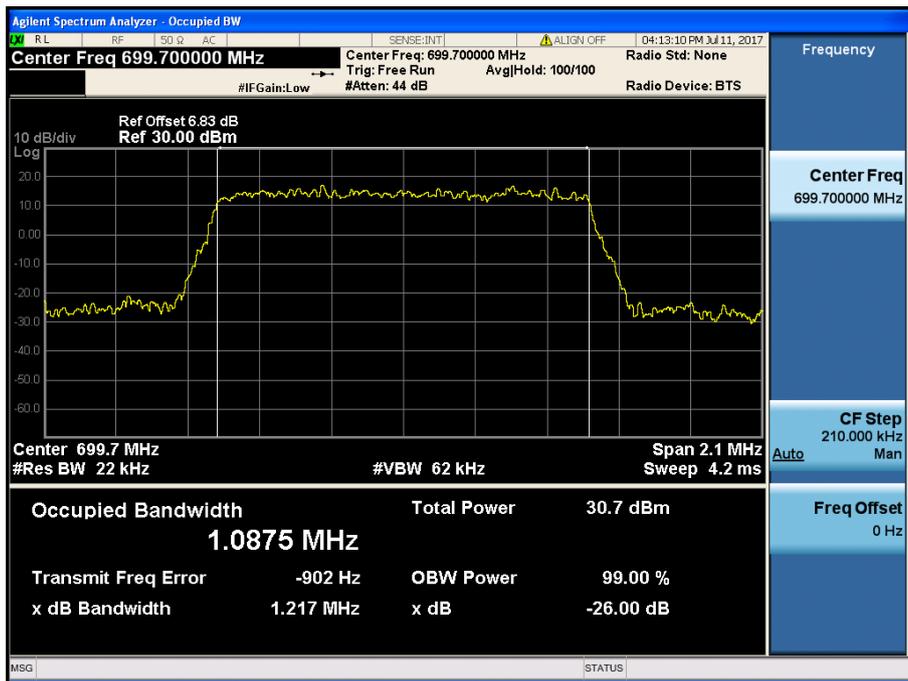
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



LTE Band 12 / 1.4 MHz / QPSK - RB Size 6

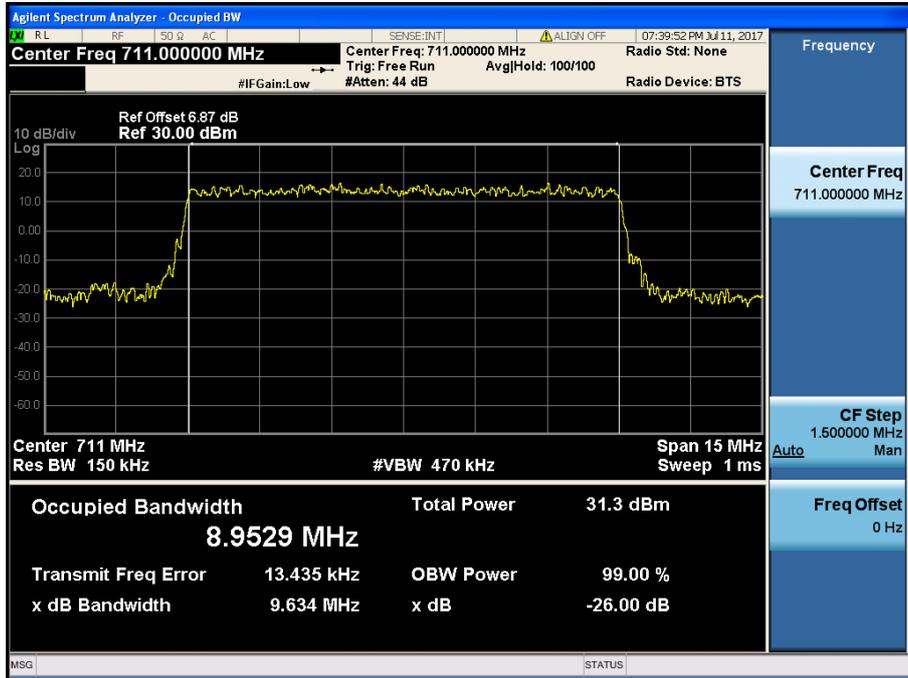


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

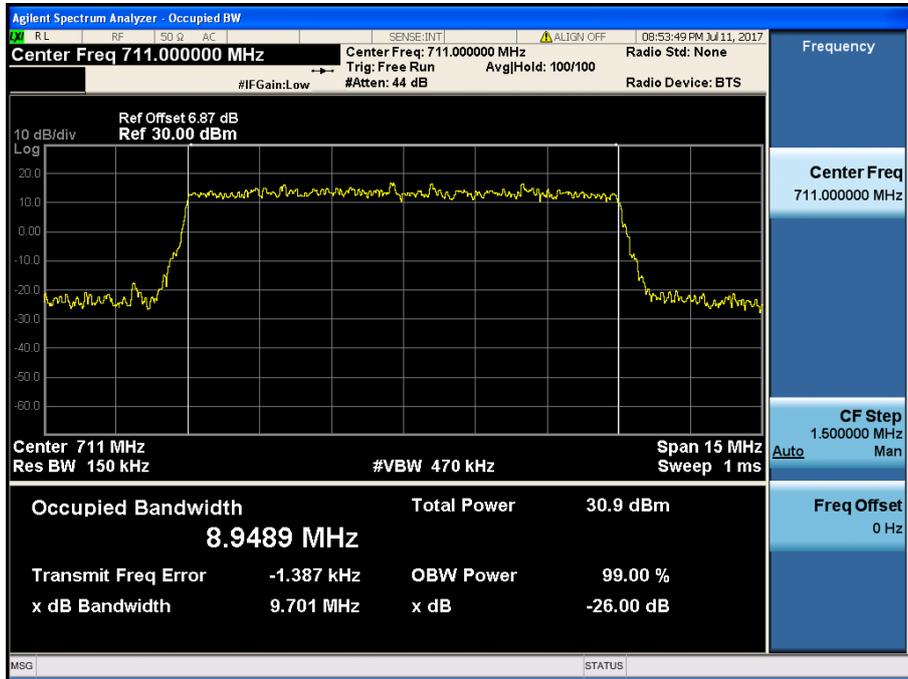


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

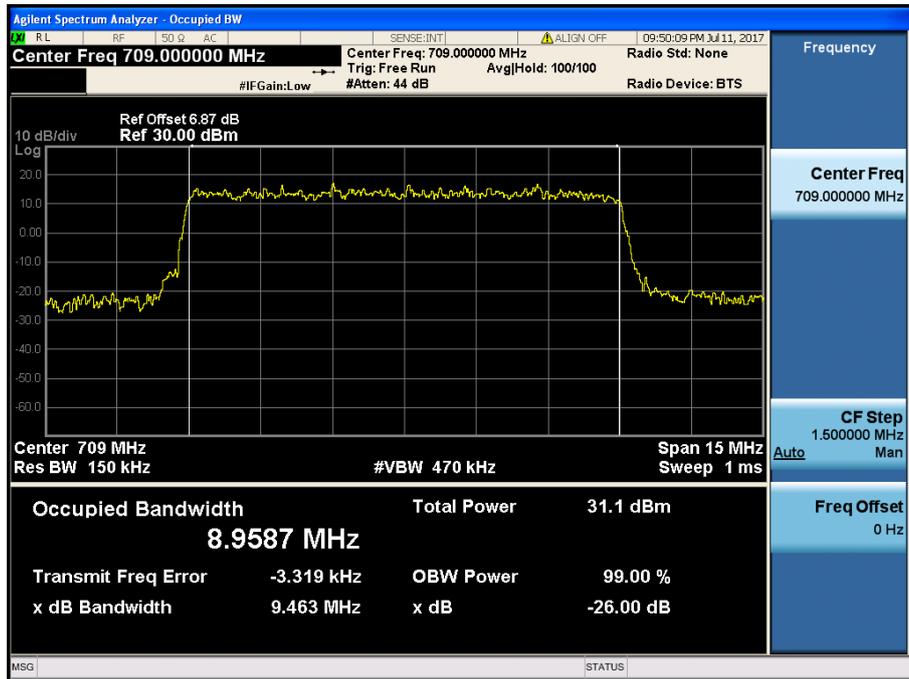
8.1.2 LTE Band 17



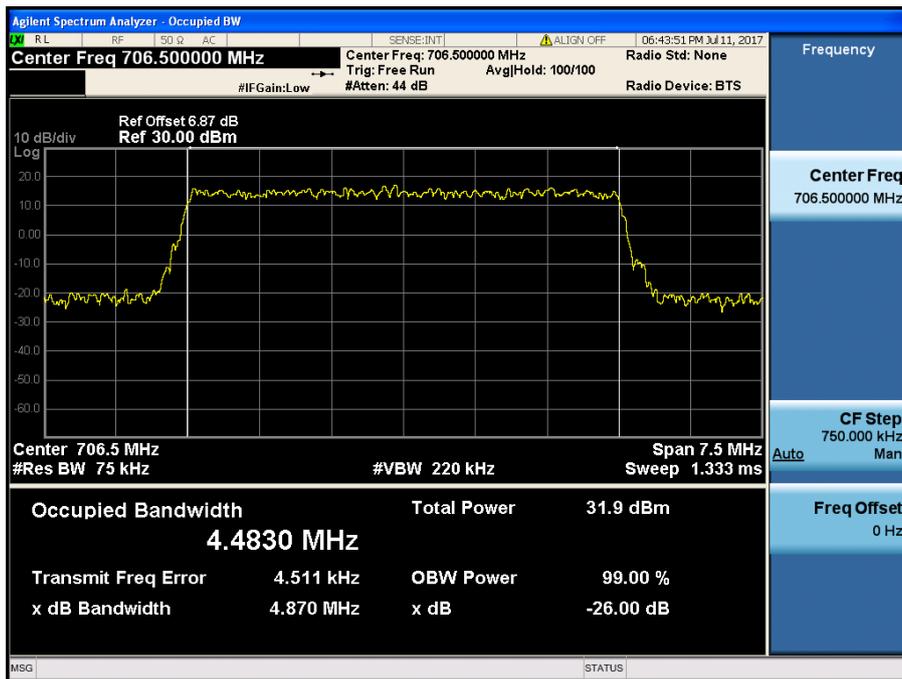
LTE Band 17 / 10 MHz / QPSK - RB Size 50



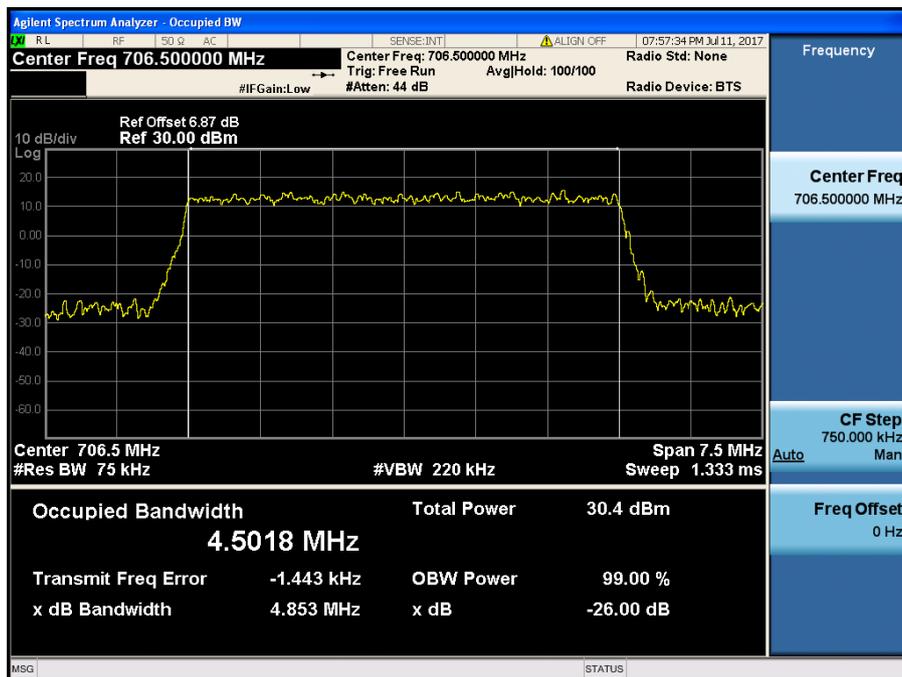
LTE Band 17 / 10 MHz / 16QAM - RB Size 50



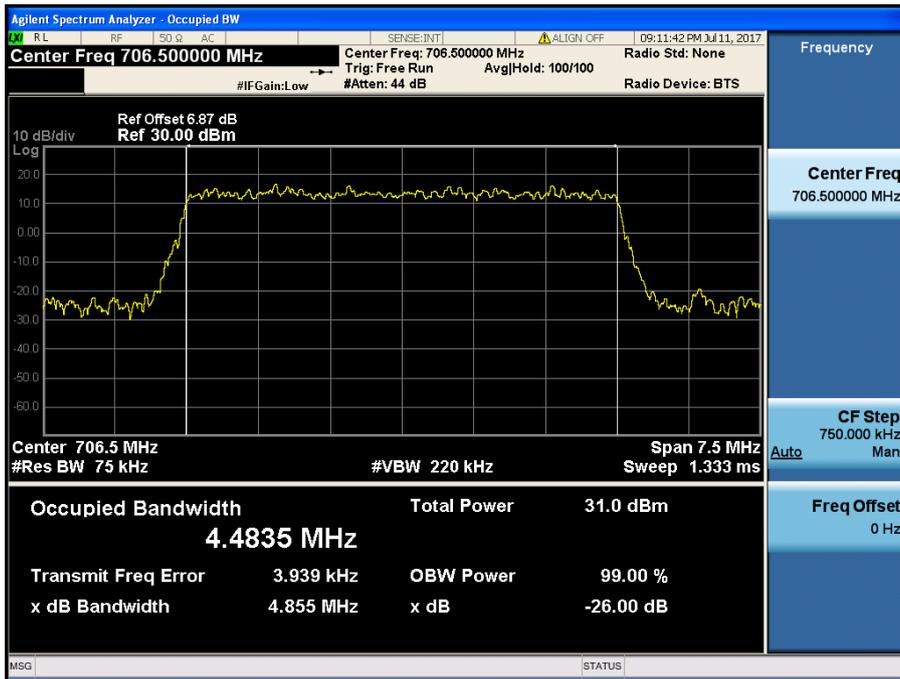
LTE Band 17 / 10 MHz / 64QAM - RB Size 50



LTE Band 17 / 5 MHz / QPSK - RB Size 25

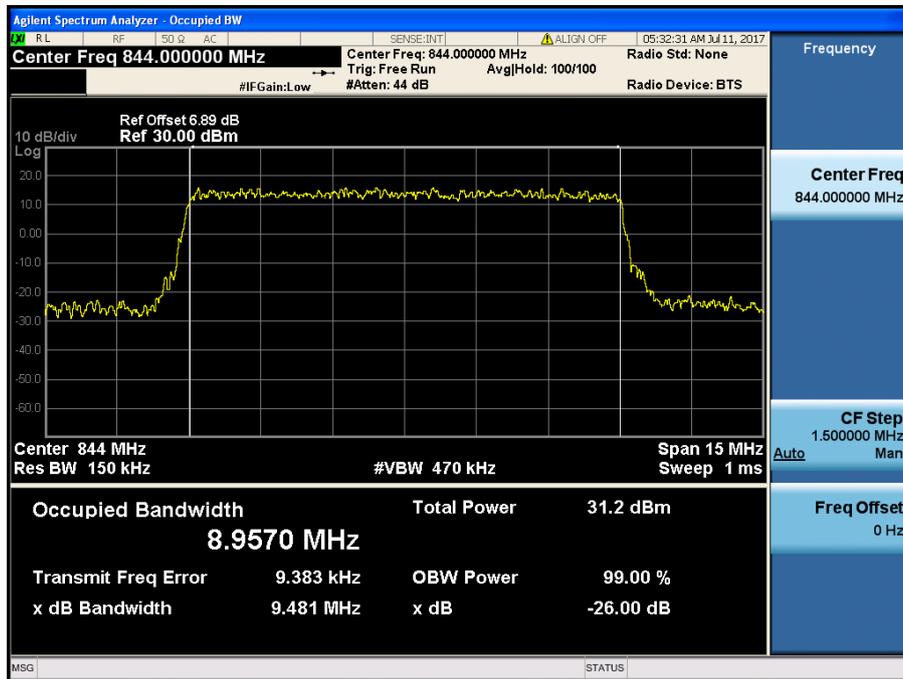


LTE Band 17 / 5 MHz / 16QAM - RB Size 25

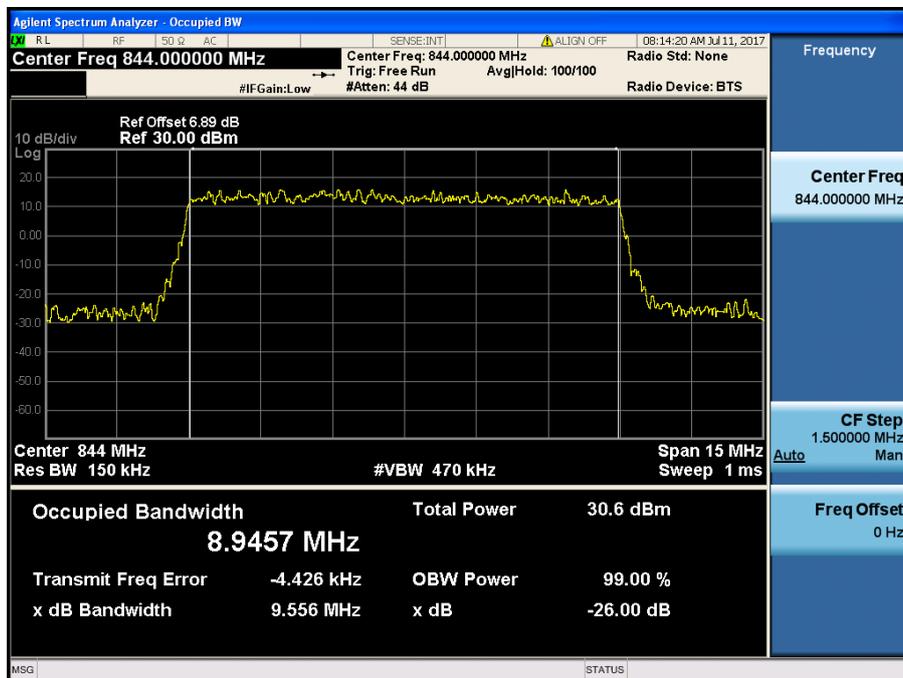


LTE Band 17 / 5 MHz / 64QAM - RB Size 25

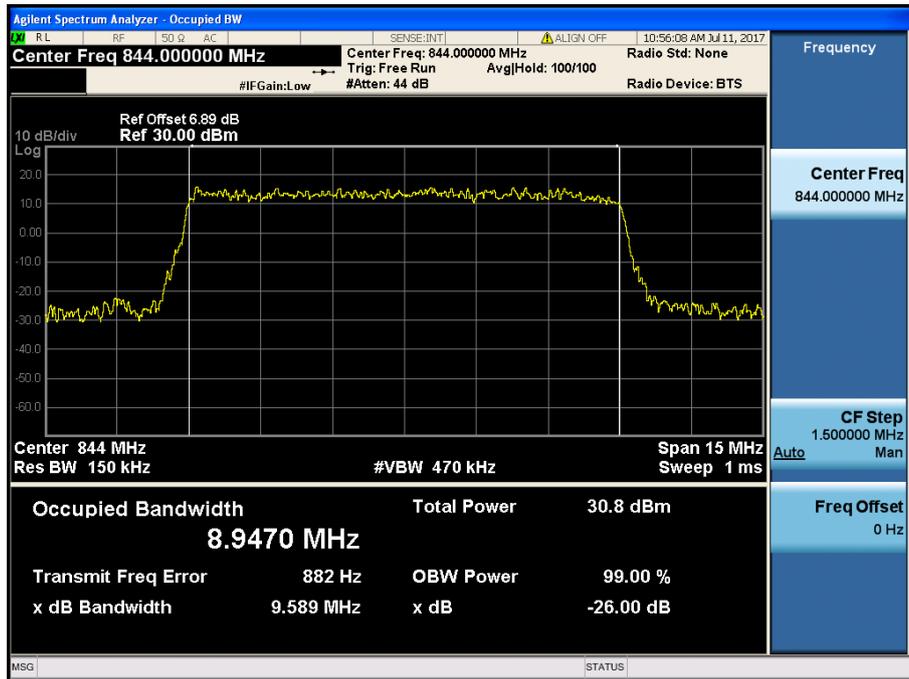
8.1.3 LTE Band 5



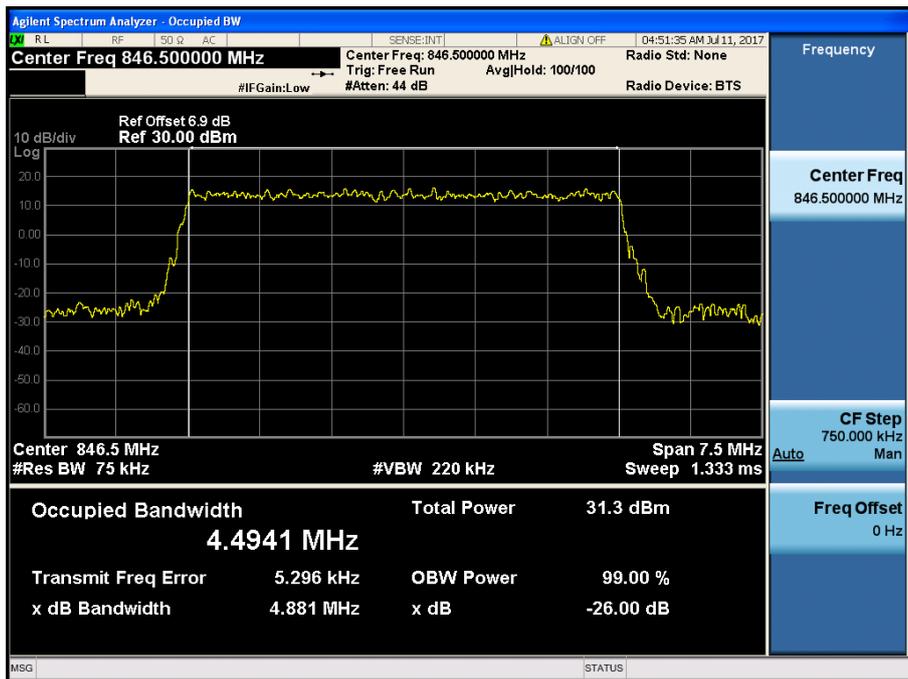
LTE Band 5 / 10 MHz / QPSK - RB Size 50



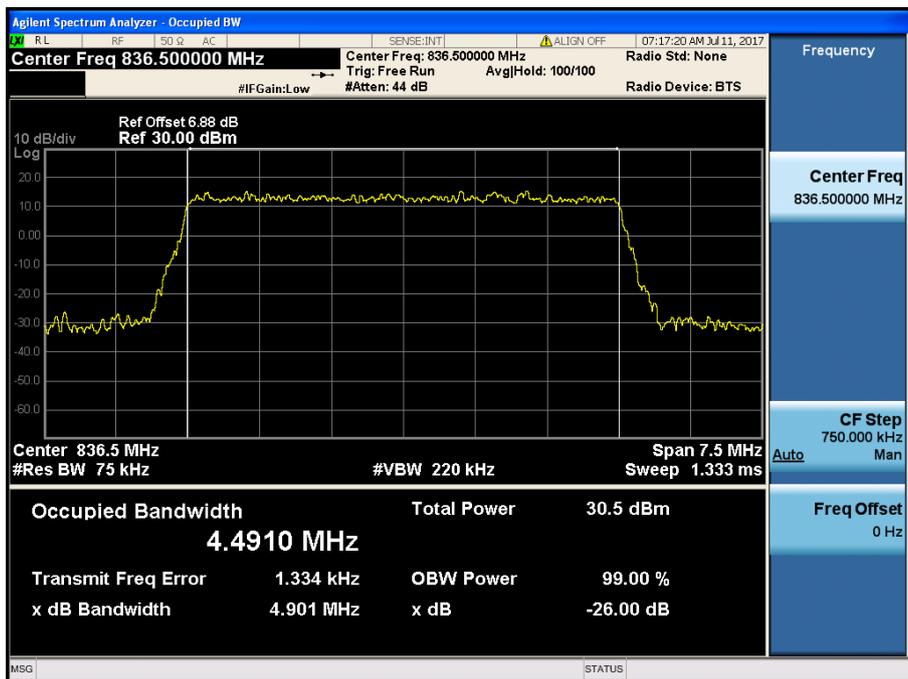
LTE Band 5 / 10 MHz / 16QAM - RB Size 50



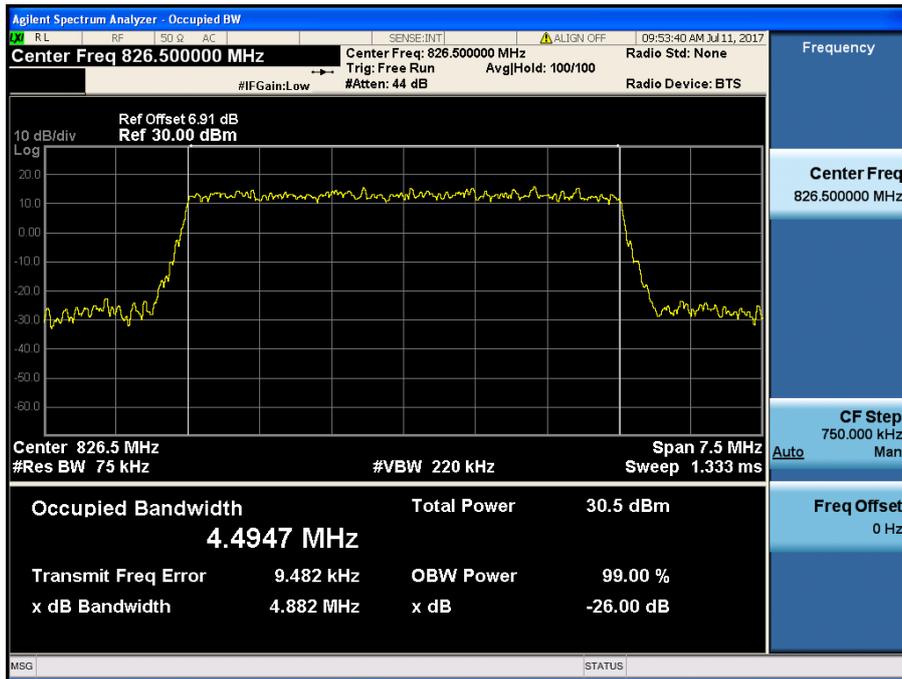
LTE Band 5 / 10 MHz / 64QAM - RB Size 50



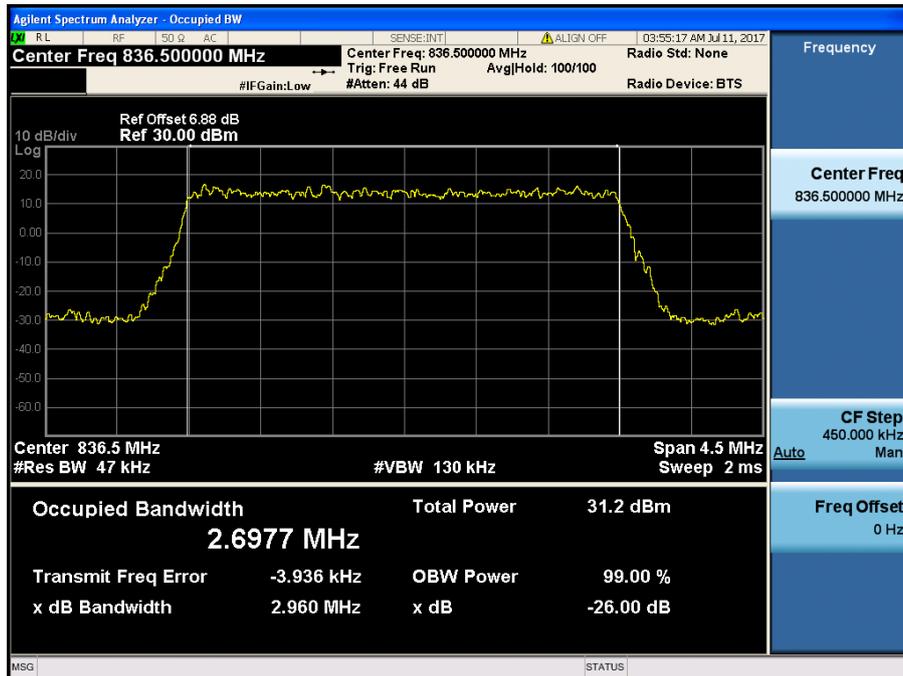
LTE Band 5 / 5 MHz / QPSK - RB Size 25



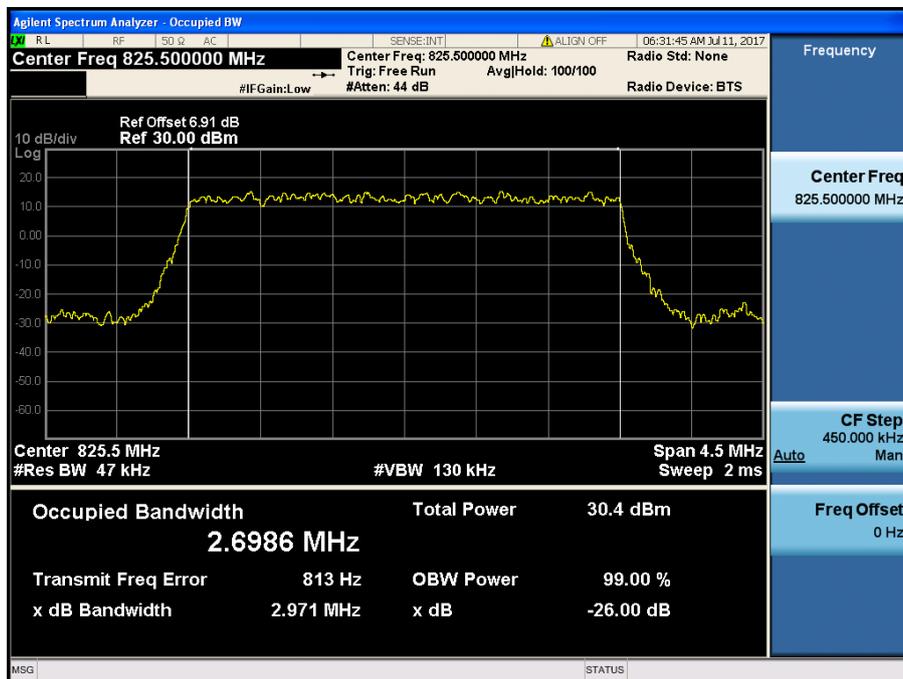
LTE Band 5 / 5 MHz / 16QAM - RB Size 25



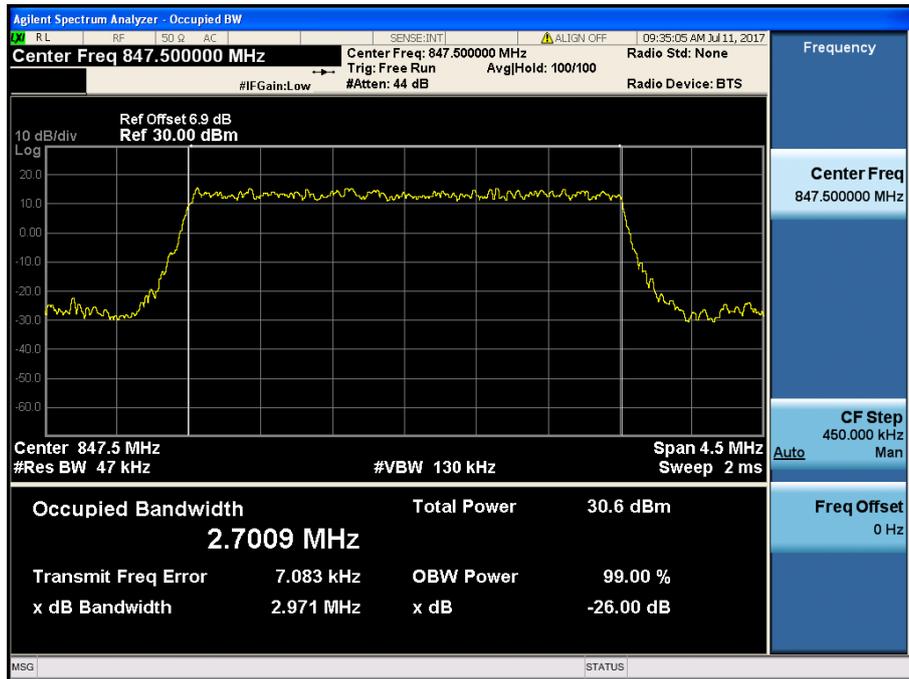
LTE Band 5 / 5 MHz / 64QAM - RB Size 25



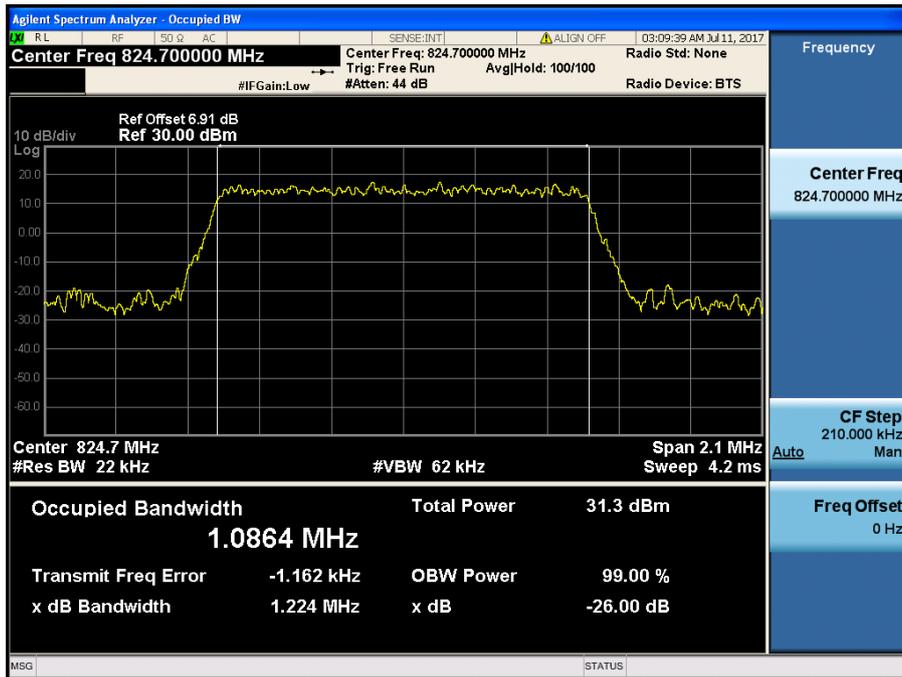
LTE Band 5 / 3 MHz / QPSK - RB Size 15



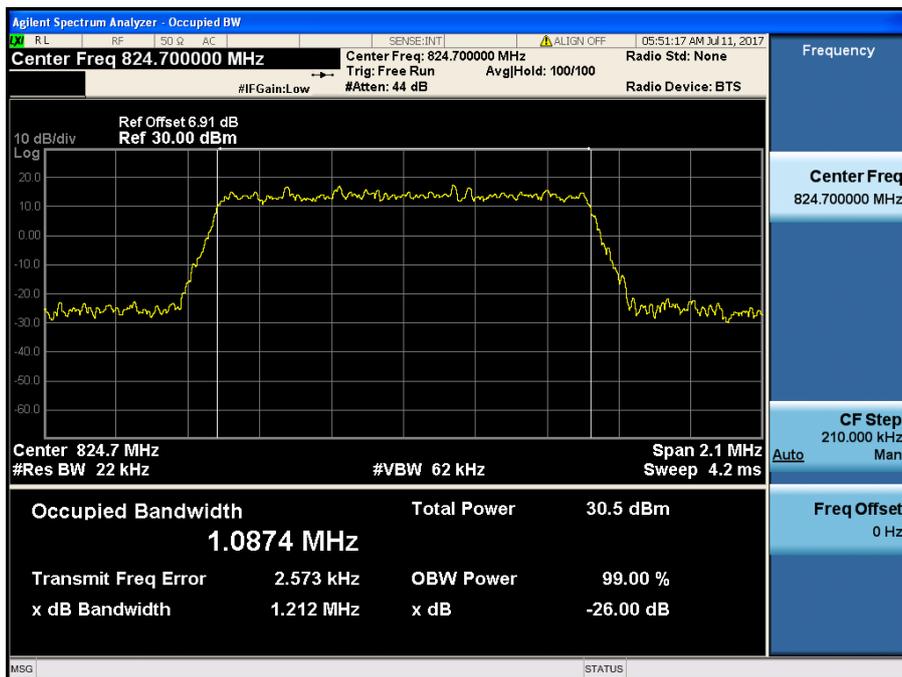
LTE Band 5 / 3 MHz / 16QAM - RB Size 15



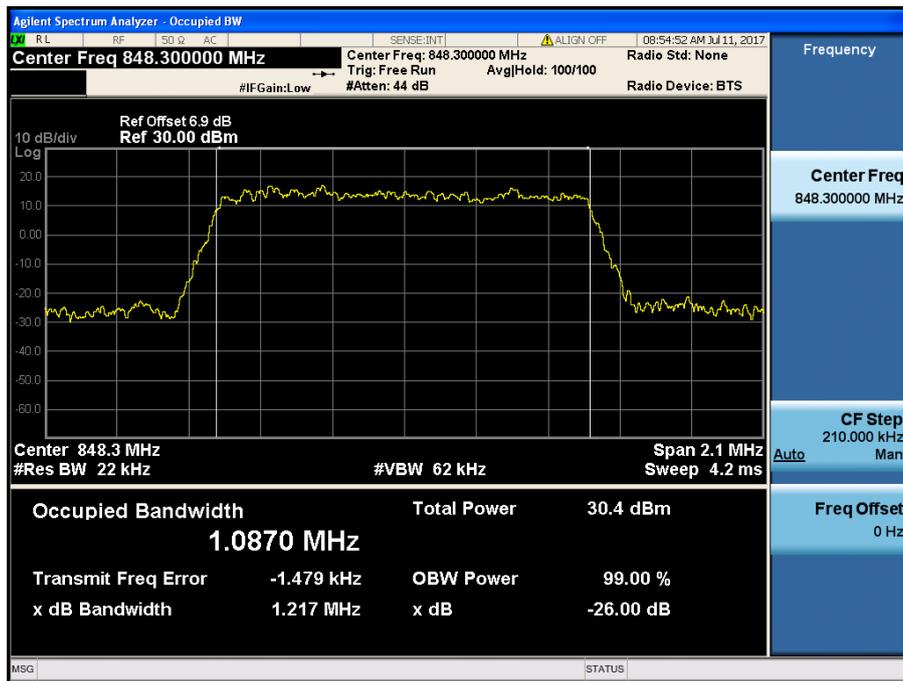
LTE Band 5 / 3 MHz / 64QAM - RB Size 15



LTE Band 5 / 1.4 MHz / QPSK - RB Size 6

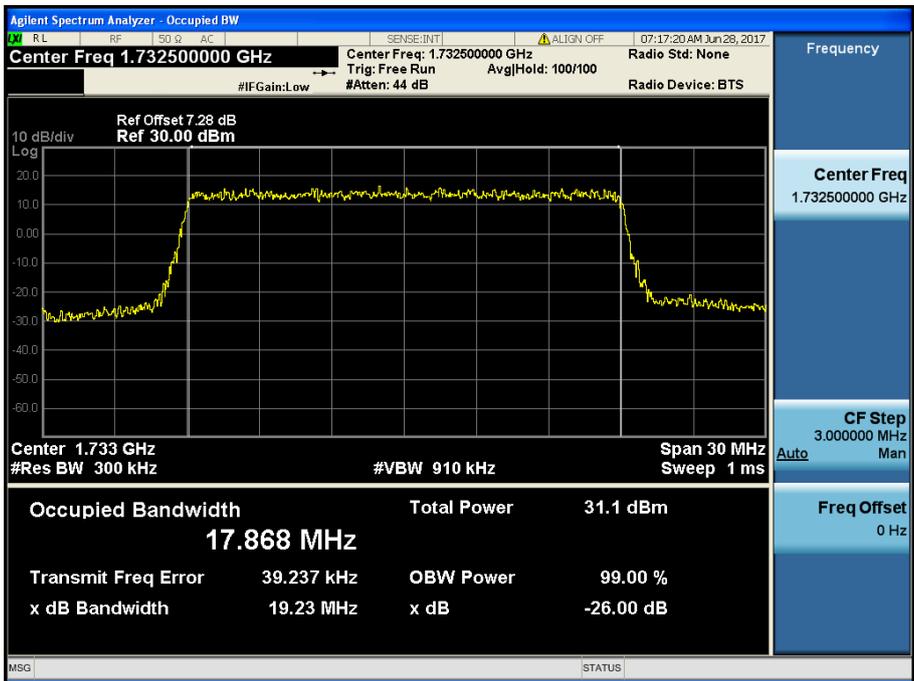


LTE Band 5 / 1.4 MHz / 16QAM - RB Size 6

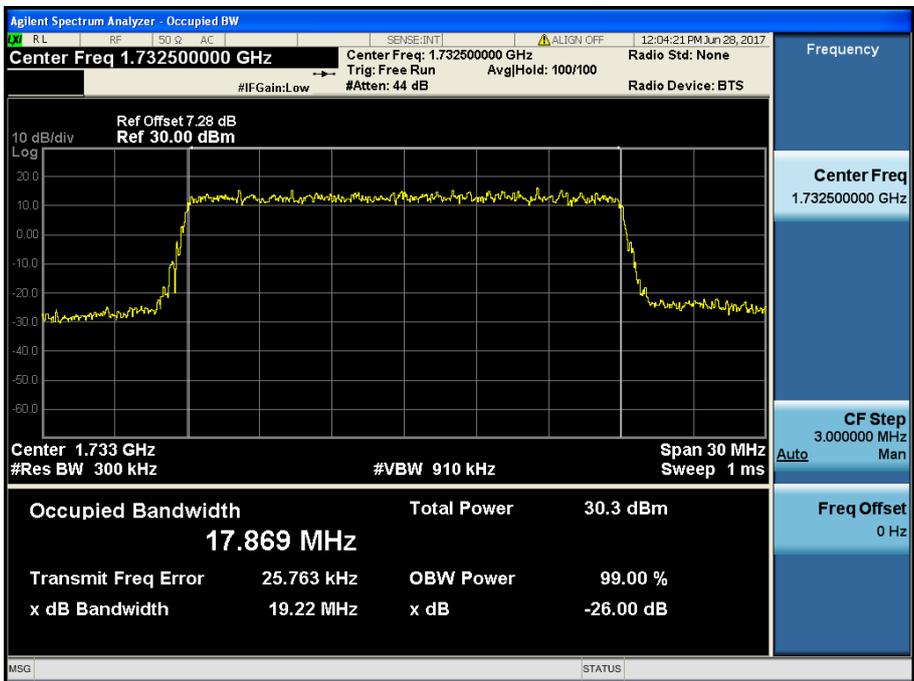


LTE Band 5 / 1.4 MHz / 64QAM - RB Size 6

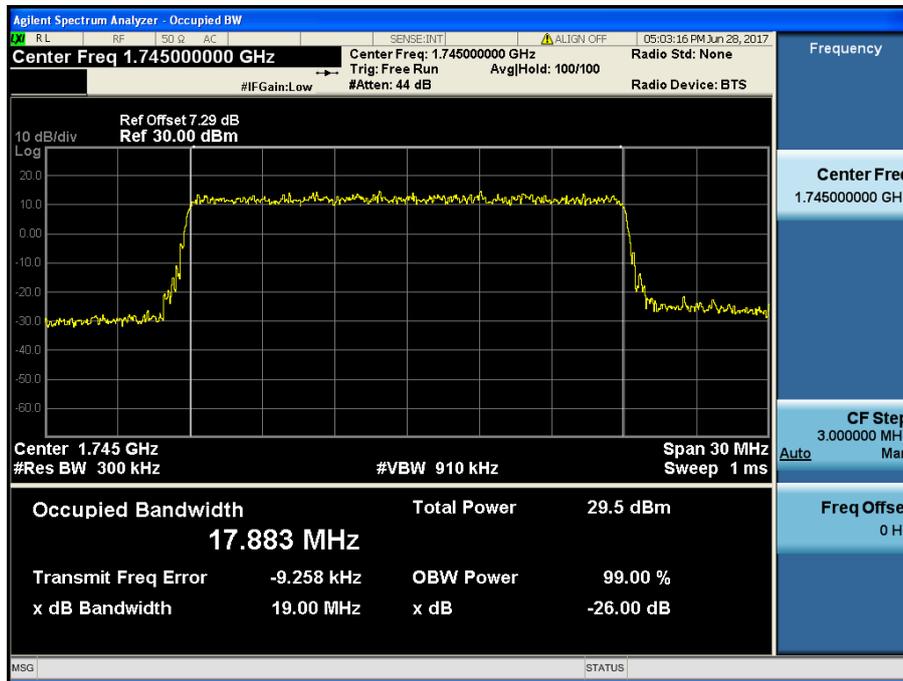
8.1.4 LTE Band 4



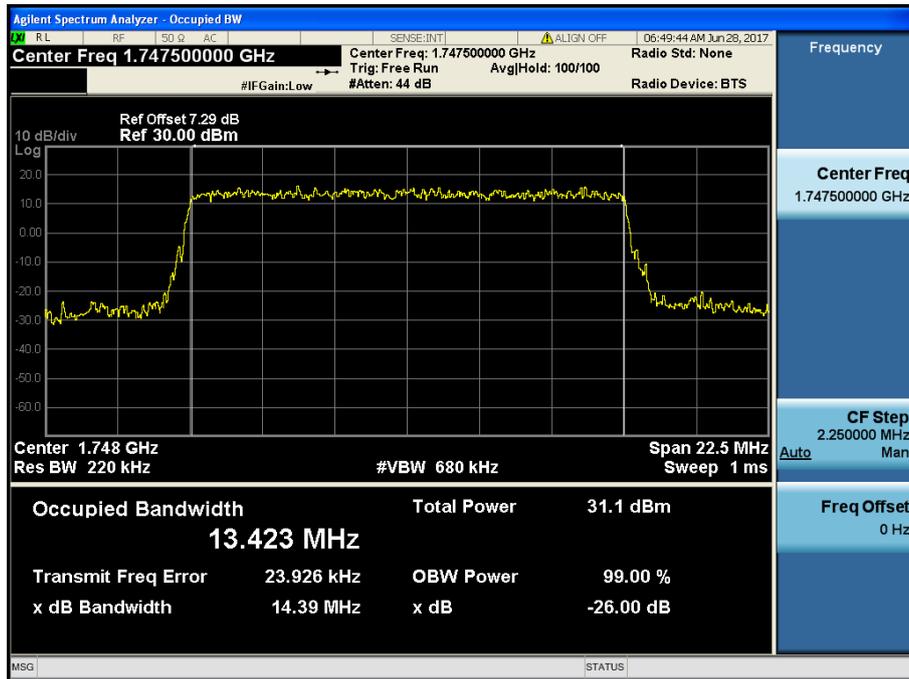
LTE Band 4 / 20 MHz / QPSK - RB Size 100



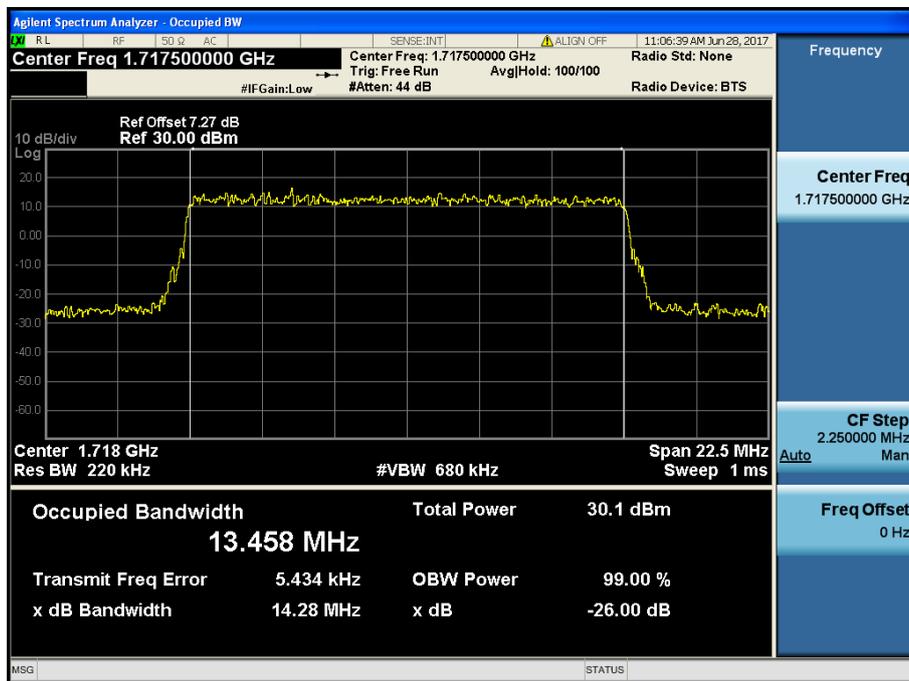
LTE Band 4 / 20 MHz / 16QAM - RB Size 100



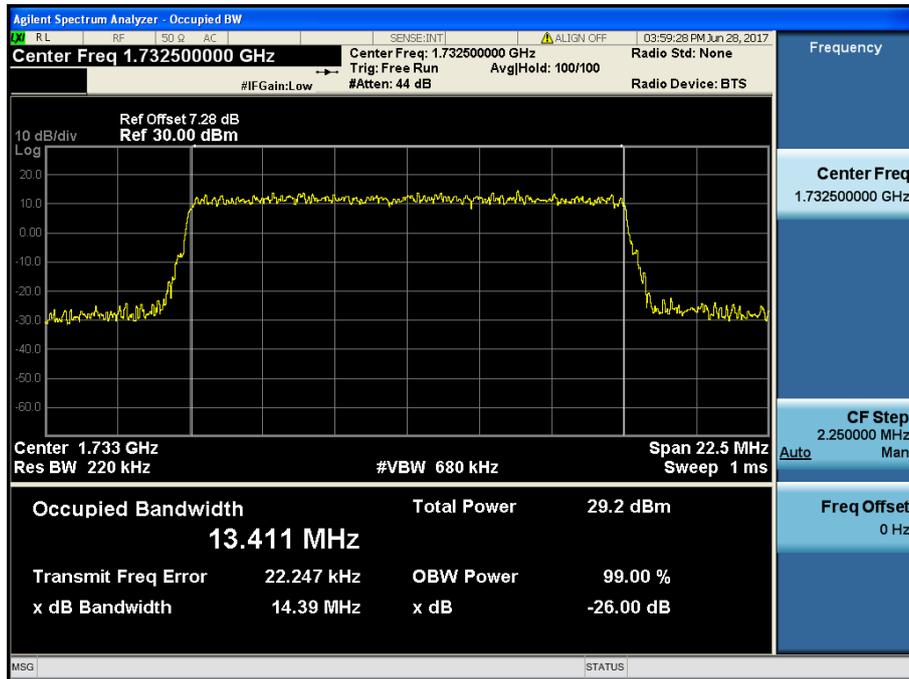
LTE Band 4 / 20 MHz / 64QAM - RB Size 100



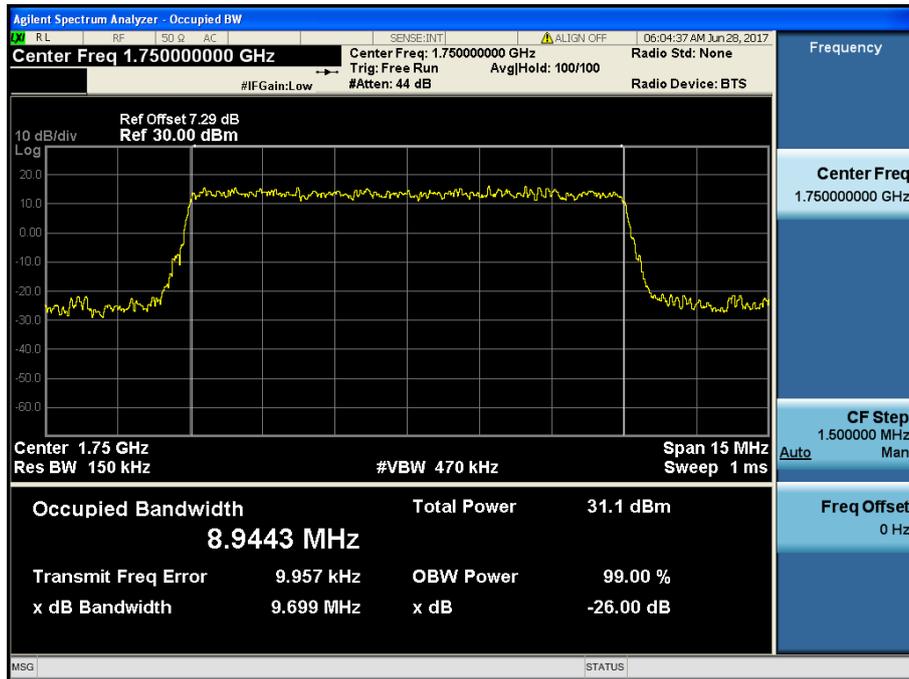
LTE Band 4 / 15 MHz / QPSK - RB Size 75



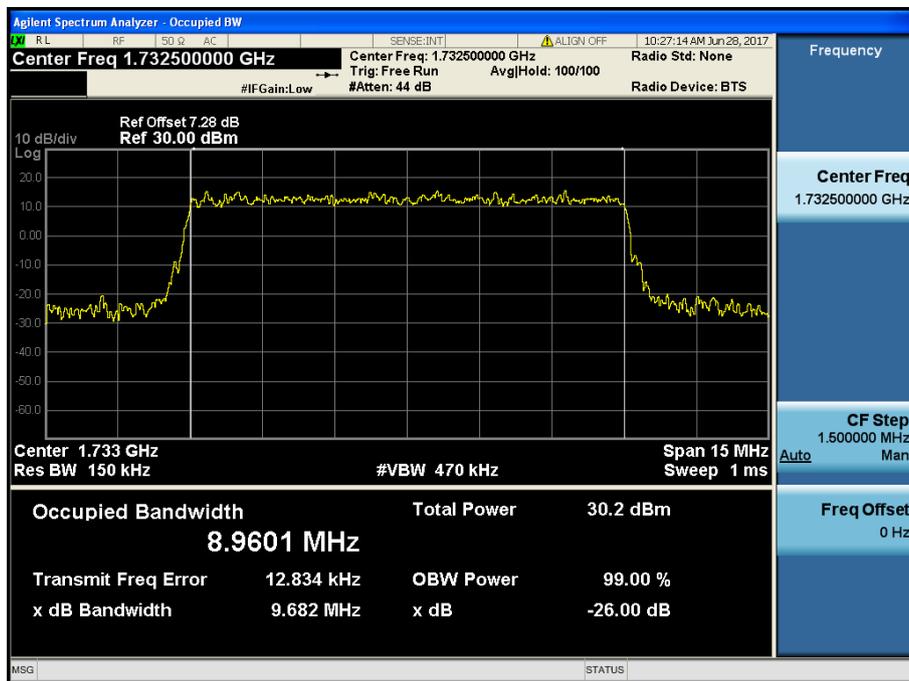
LTE Band 4 / 15 MHz / 16QAM - RB Size 75



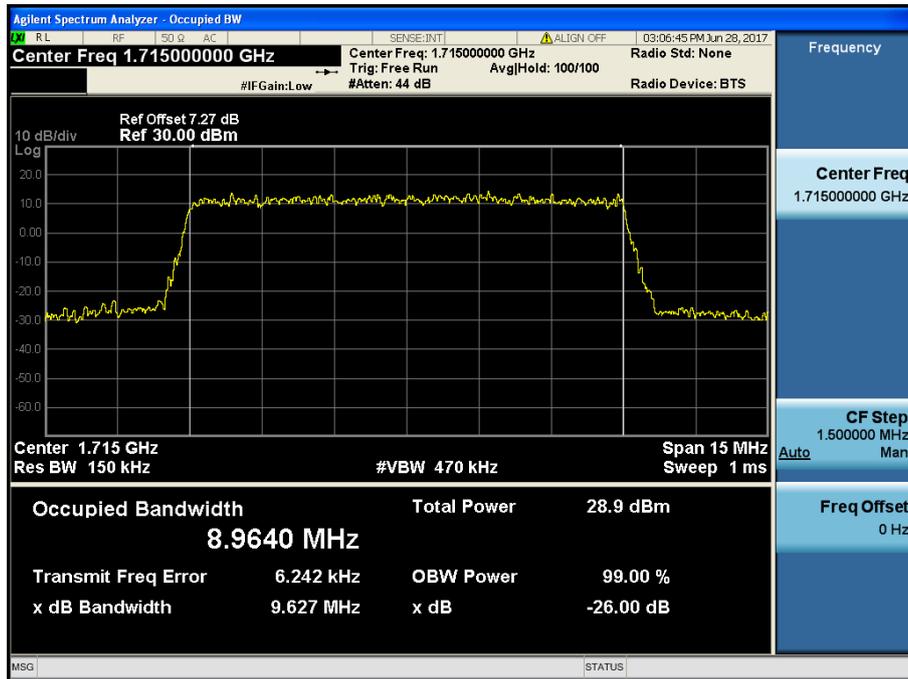
LTE Band 4 / 15 MHz / 64QAM - RB Size 75



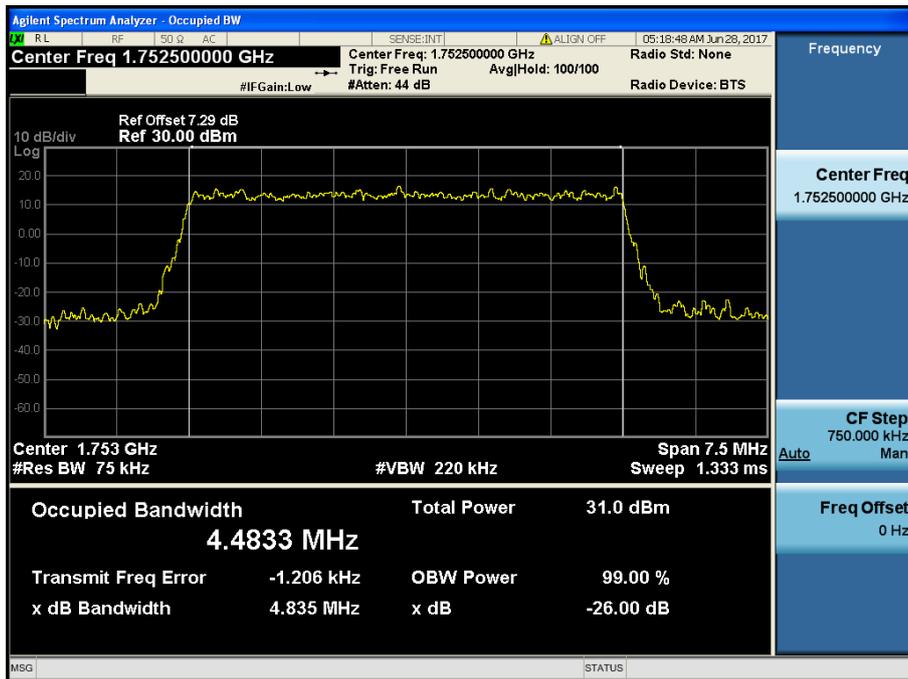
LTE Band 4 / 10 MHz / QPSK - RB Size 50



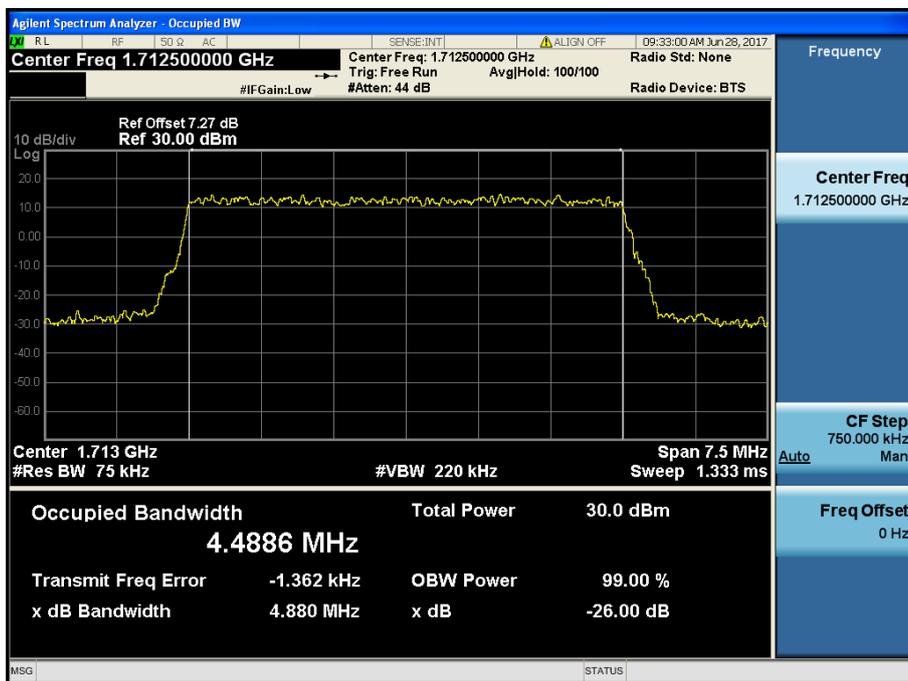
LTE Band 4 / 10 MHz / 16QAM - RB Size 50



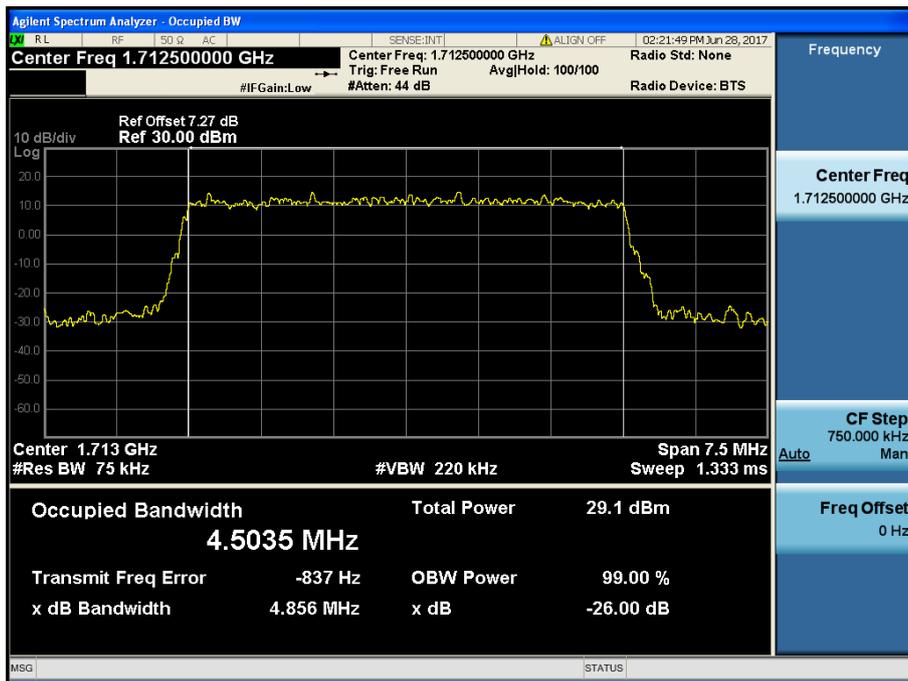
LTE Band 4 / 10 MHz / 64QAM - RB Size 50



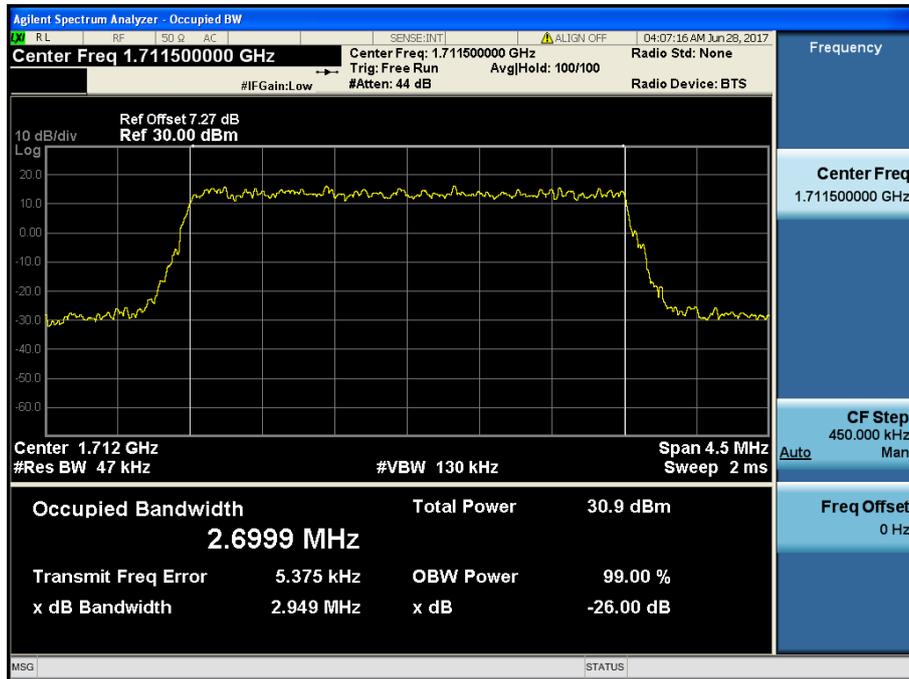
LTE Band 4 / 5 MHz / QPSK - RB Size 25



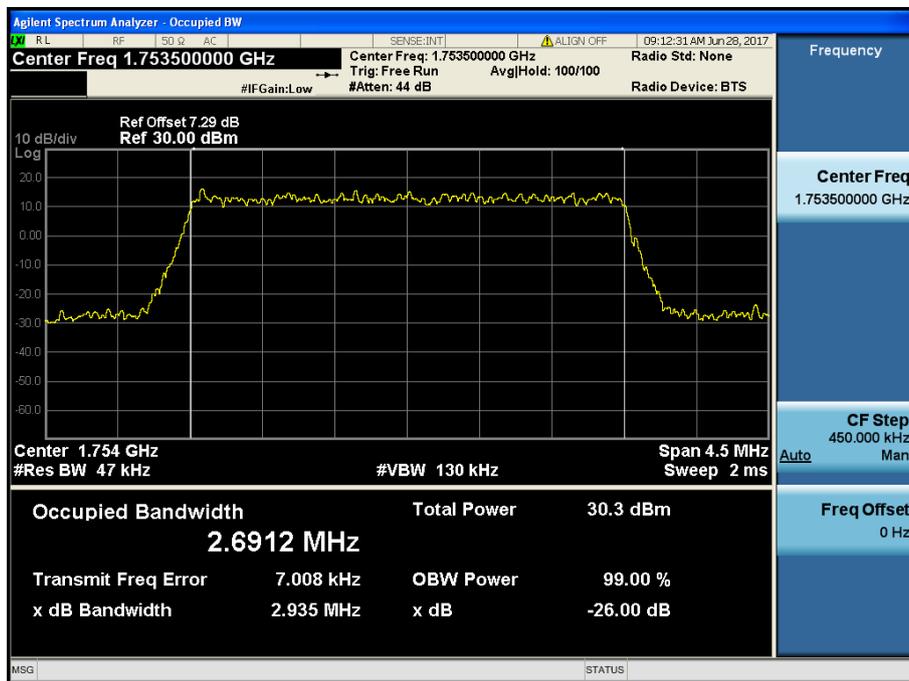
LTE Band 4 / 5 MHz / 16QAM - RB Size 25



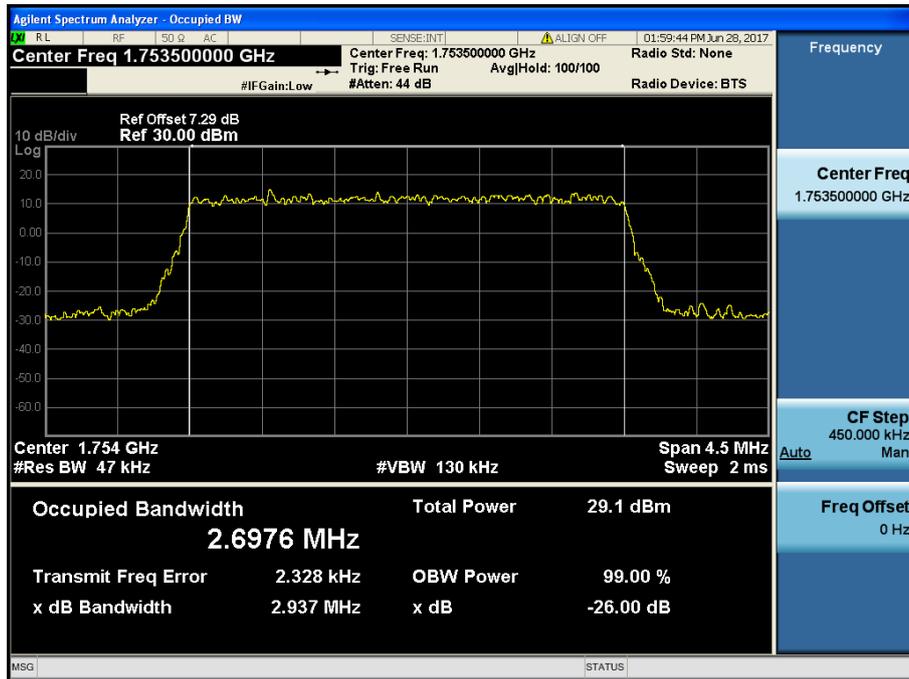
LTE Band 4 / 5 MHz / 64QAM - RB Size 25



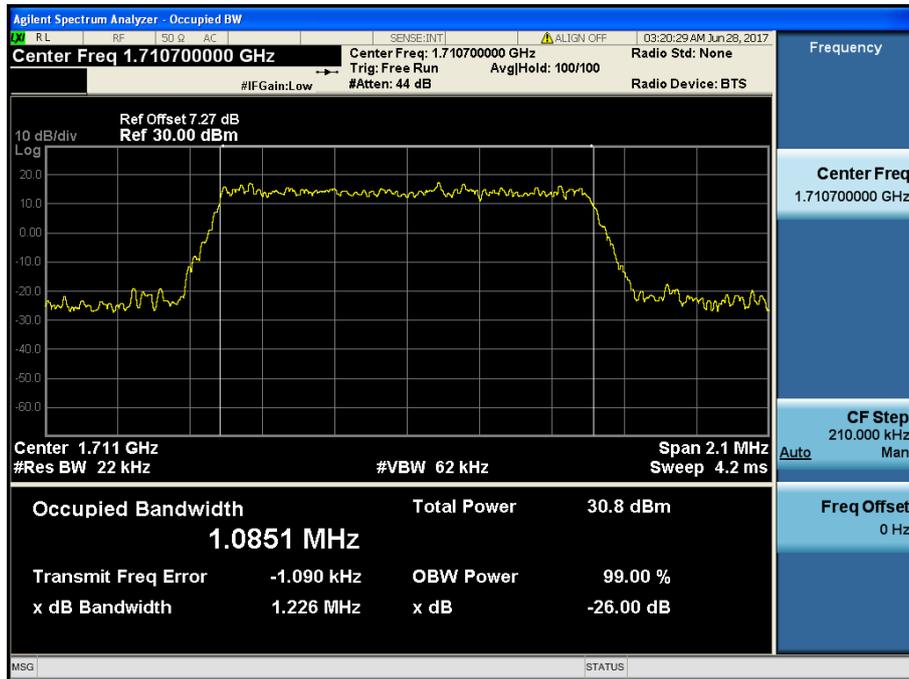
LTE Band 4 / 3 MHz / QPSK - RB Size 15



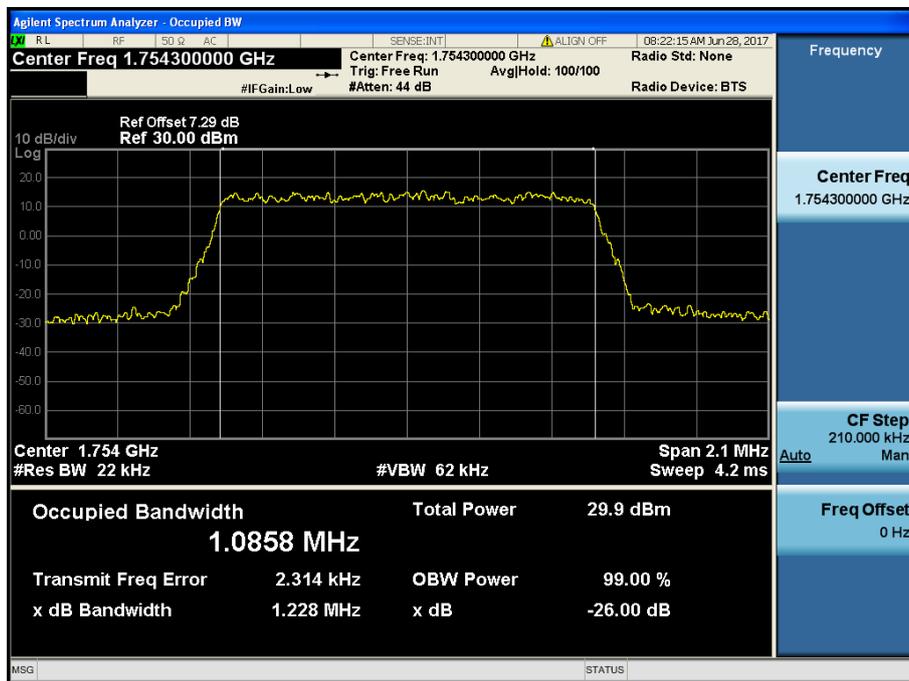
LTE Band 4 / 3 MHz / 16QAM - RB Size 15



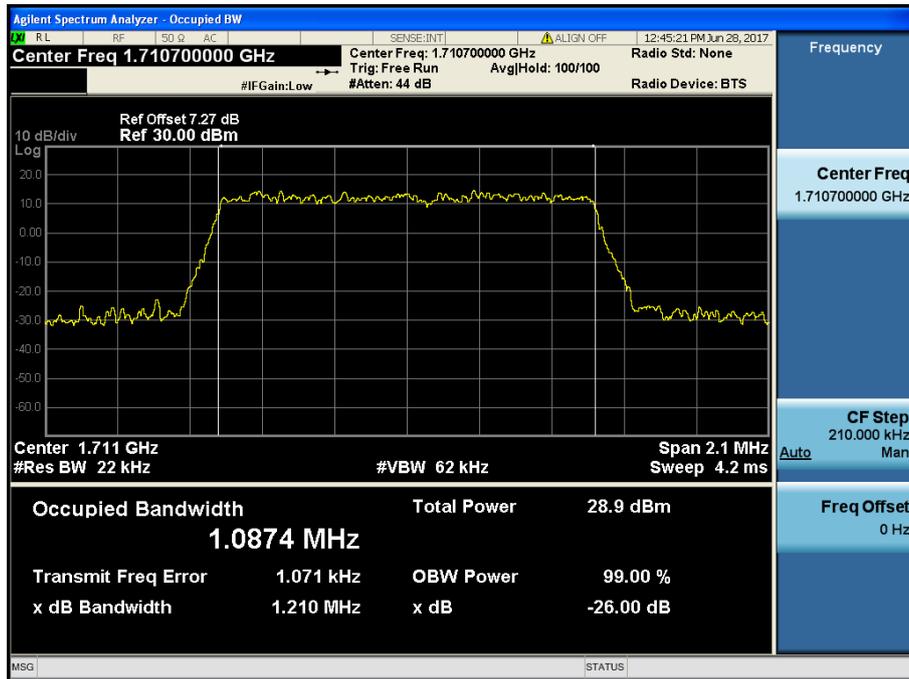
LTE Band 4 / 3 MHz / 64QAM - RB Size 15



LTE Band 4 / 1.4 MHz / QPSK - RB Size 6

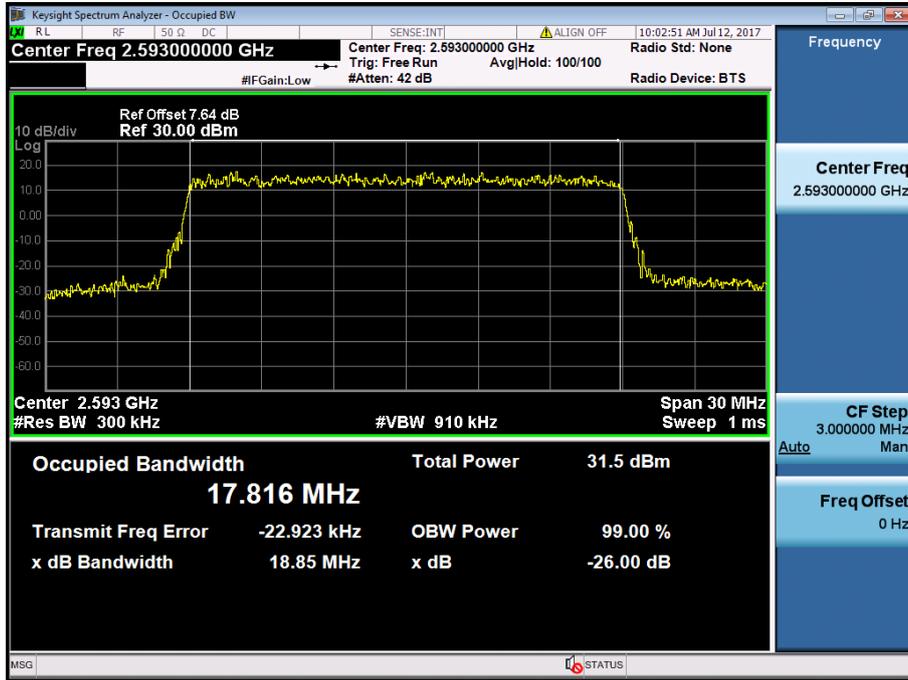


LTE Band 4 / 1.4 MHz / 16QAM - RB Size 6

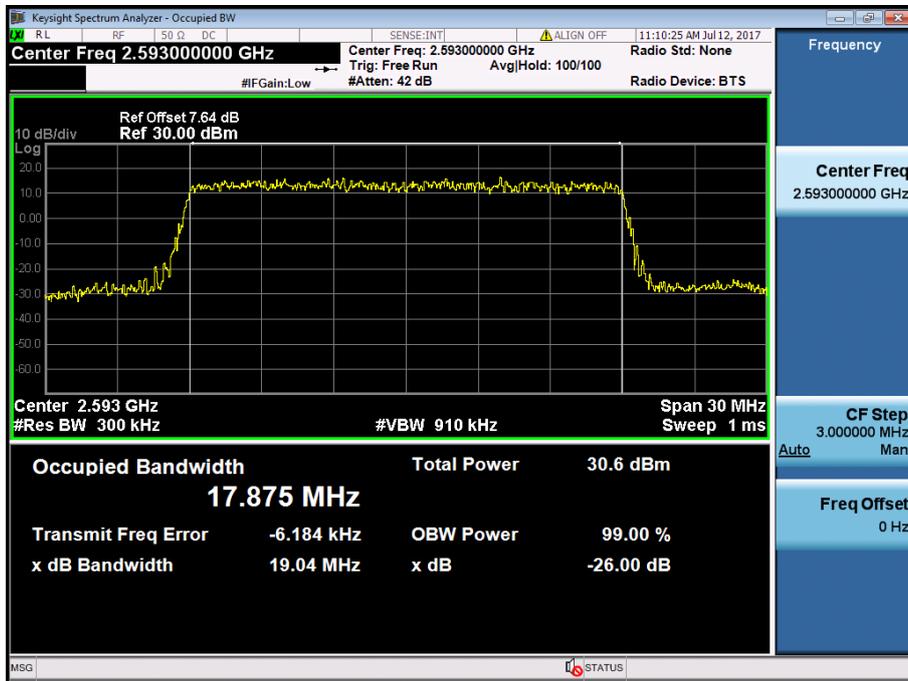


LTE Band 4 / 1.4 MHz / 64QAM - RB Size 6

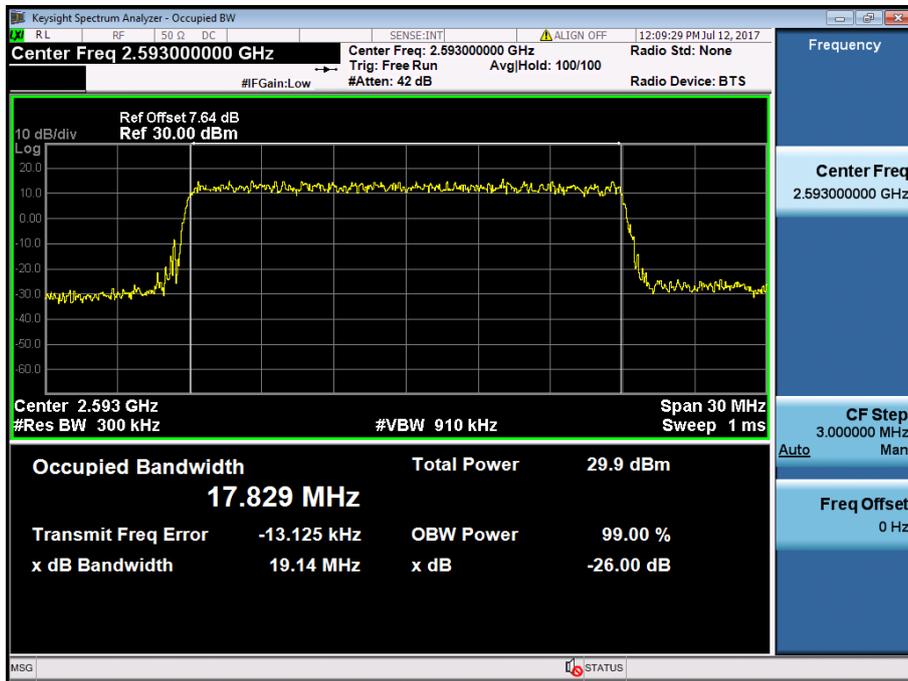
8.1.5 LTE Band 41



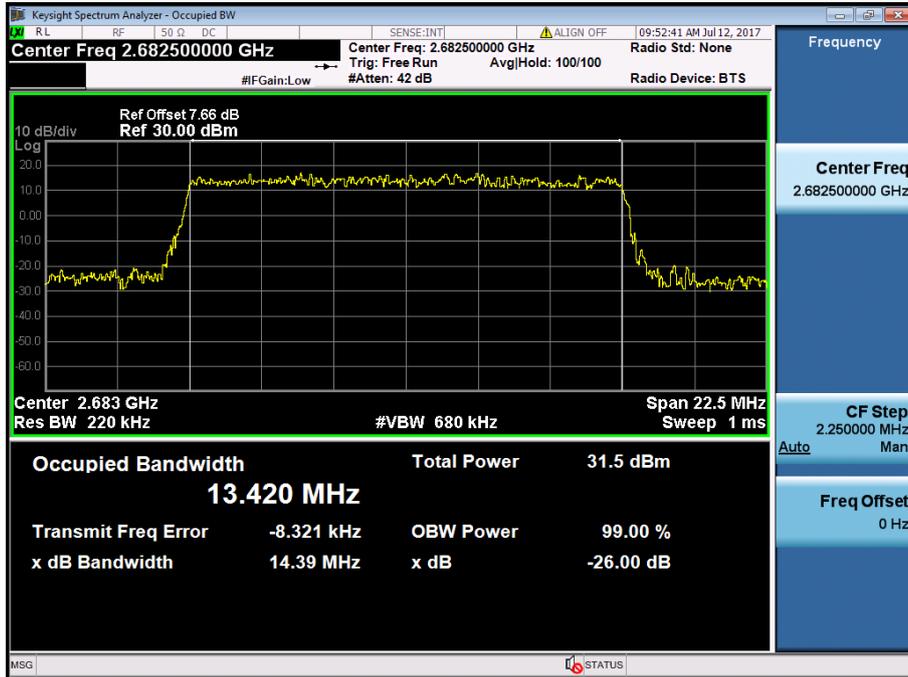
LTE Band 41 / 20 MHz / QPSK - RB Size 100



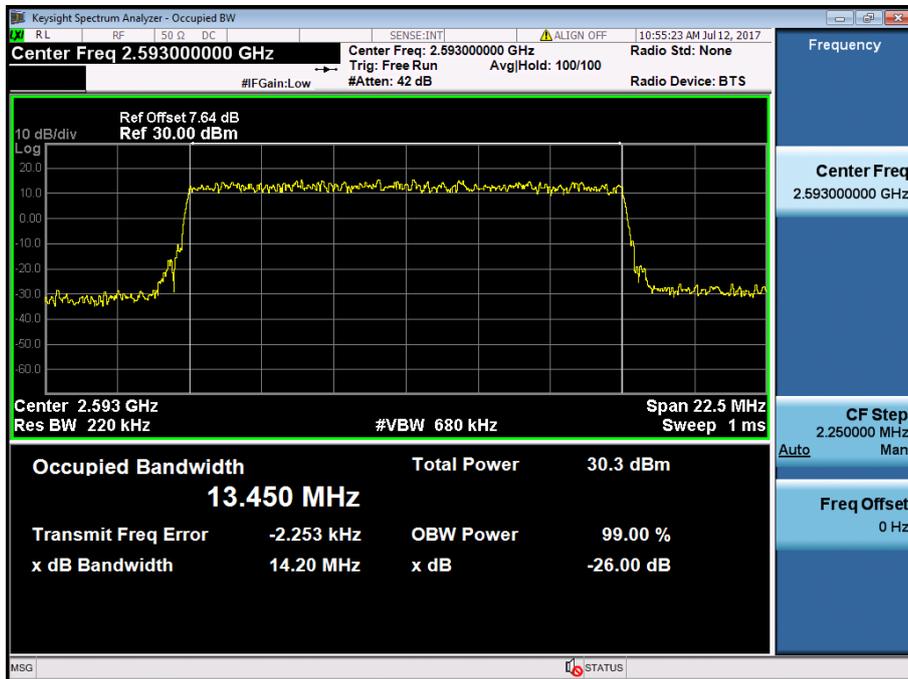
LTE Band 41 / 20 MHz / 16QAM - RB Size 100



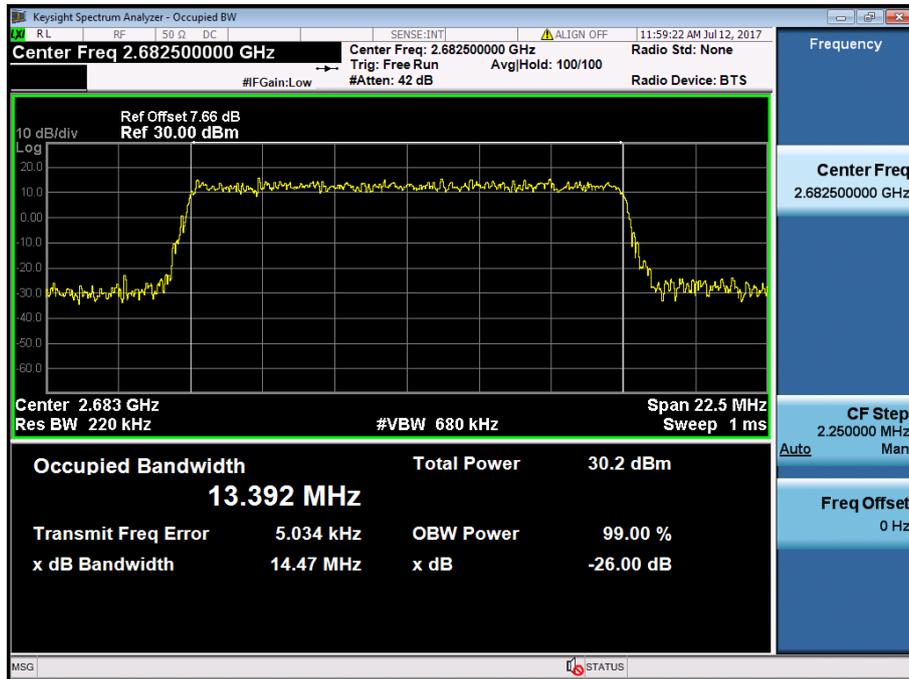
LTE Band 41 / 20 MHz / 64QAM - RB Size 100



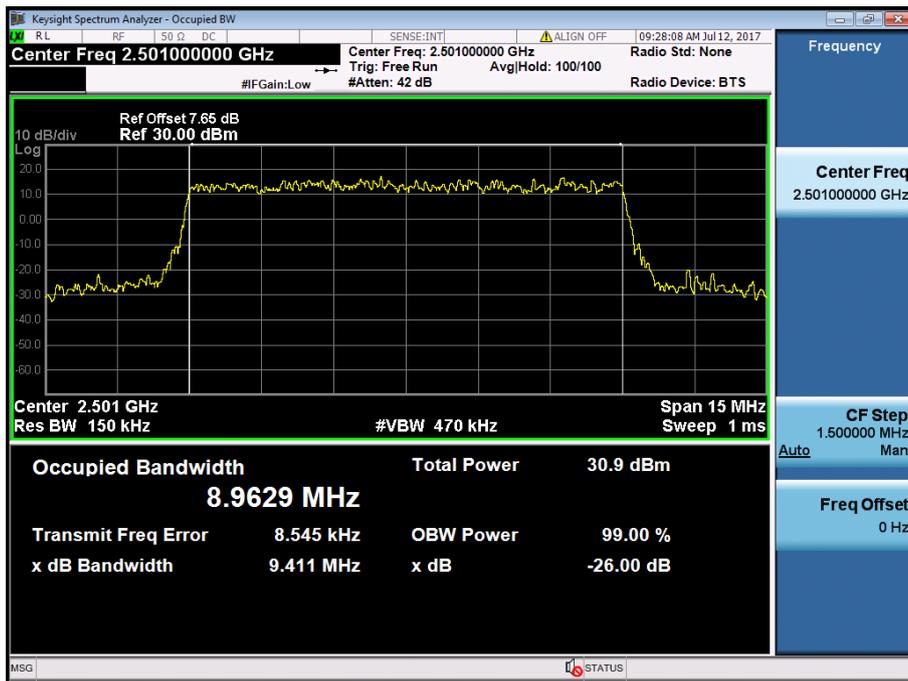
LTE Band 41 / 15 MHz / QPSK - RB Size 75



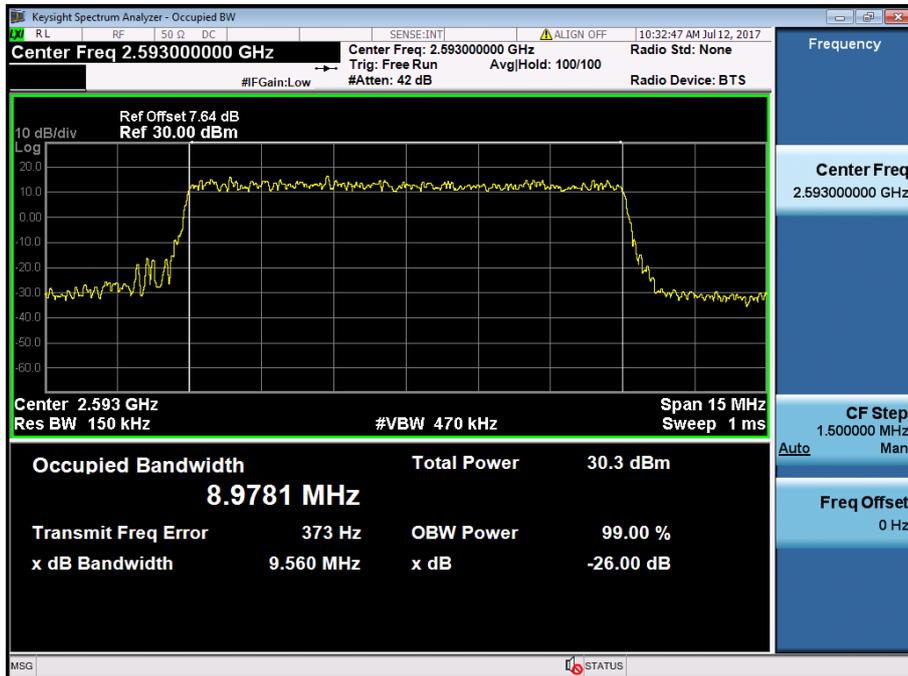
LTE Band 41 / 15 MHz / 16QAM - RB Size 75



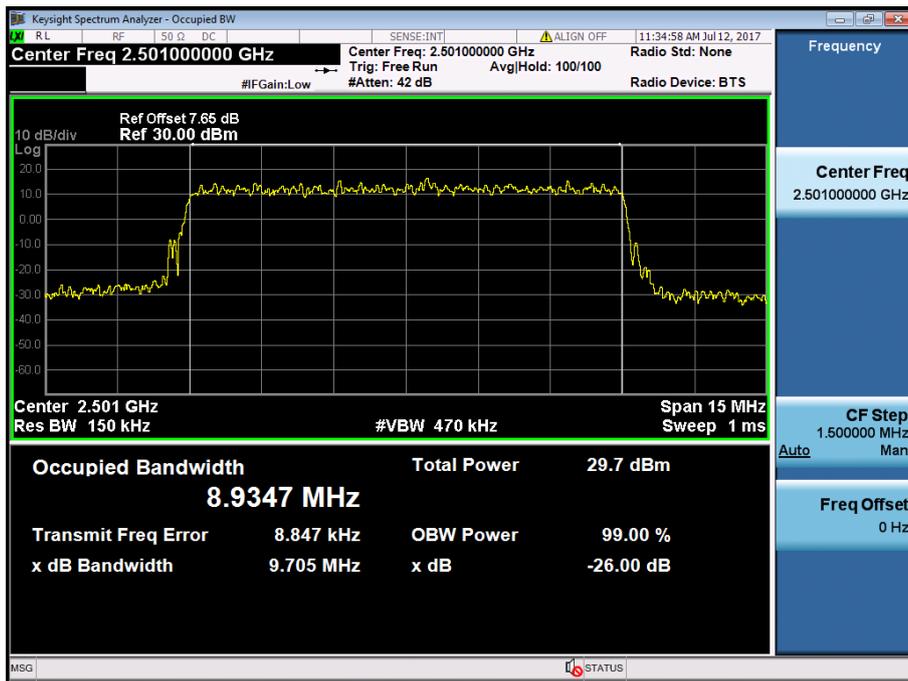
LTE Band 41 / 15 MHz / 64QAM - RB Size 75



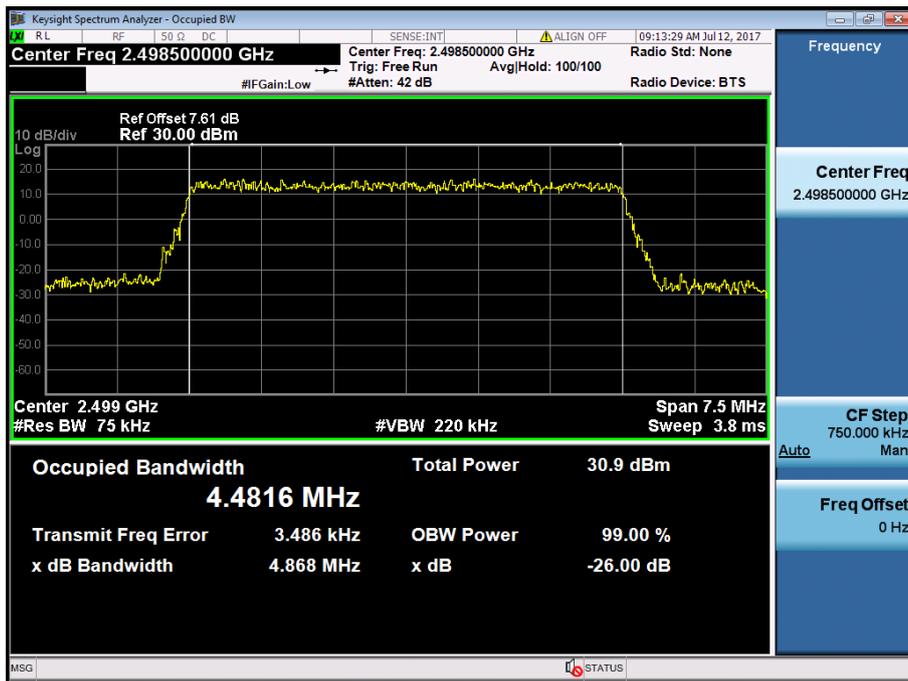
LTE Band 41 / 10 MHz / QPSK - RB Size 50



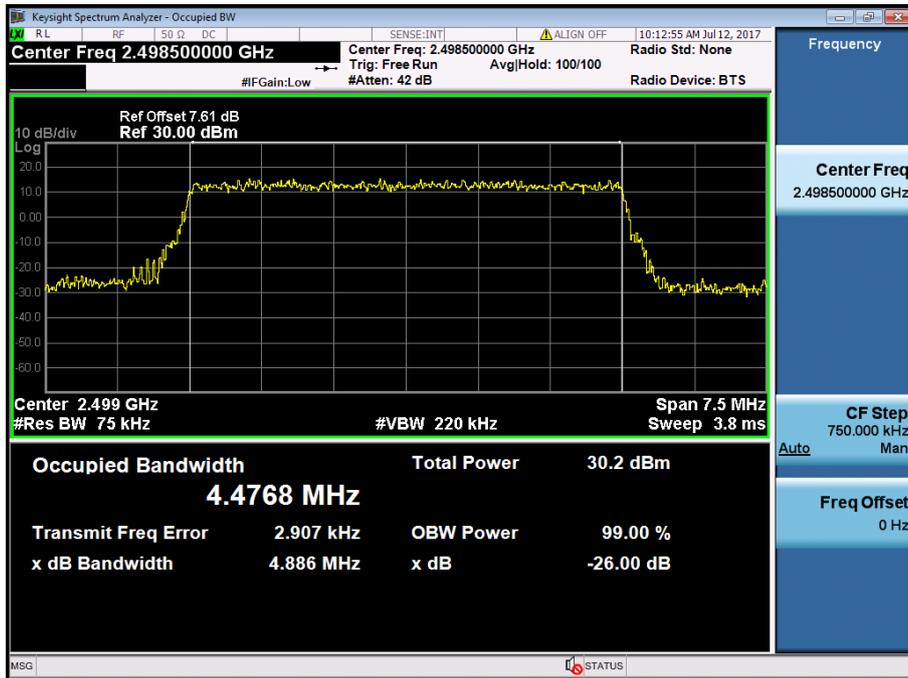
LTE Band 41 / 10 MHz / 16QAM - RB Size 50



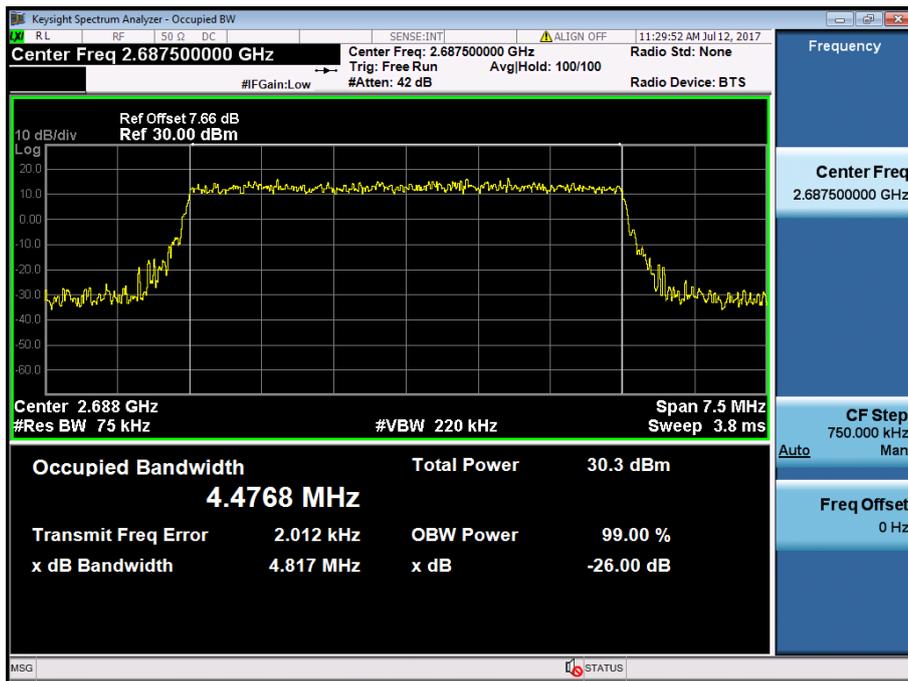
LTE Band 41 / 10 MHz / 64QAM - RB Size 50



LTE Band 41 / 5 MHz / QPSK - RB Size 25

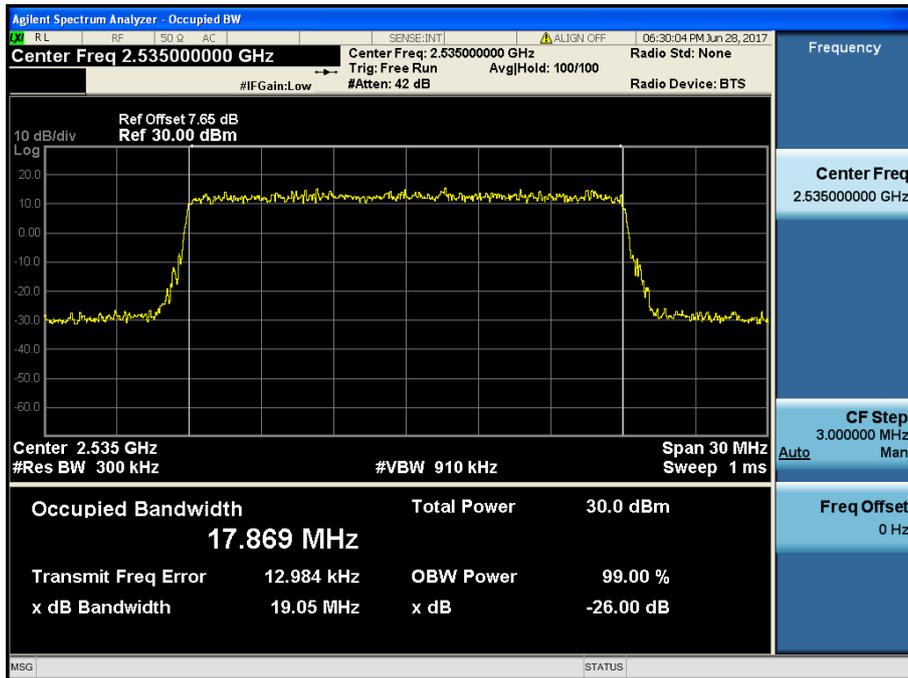


LTE Band 41 / 5 MHz / 16QAM - RB Size 25

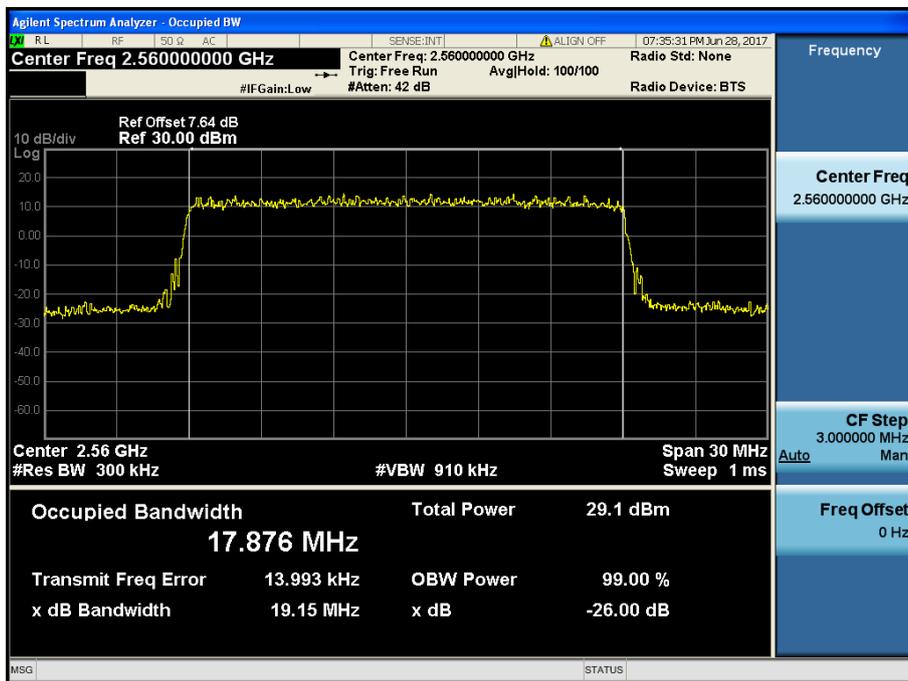


LTE Band 41 / 5 MHz / 64QAM - RB Size 25

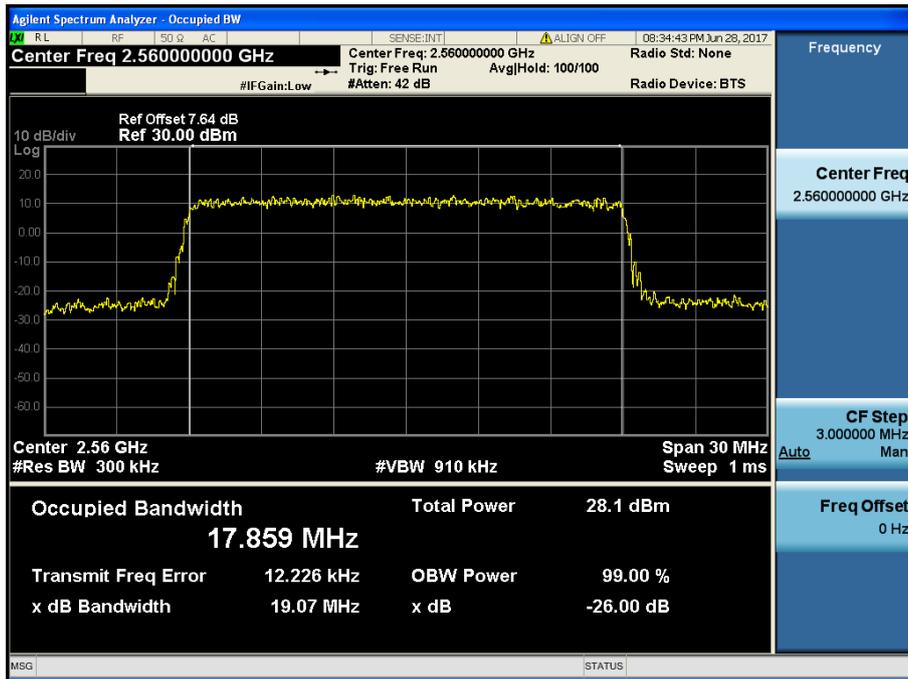
8.1.6 LTE Band 7



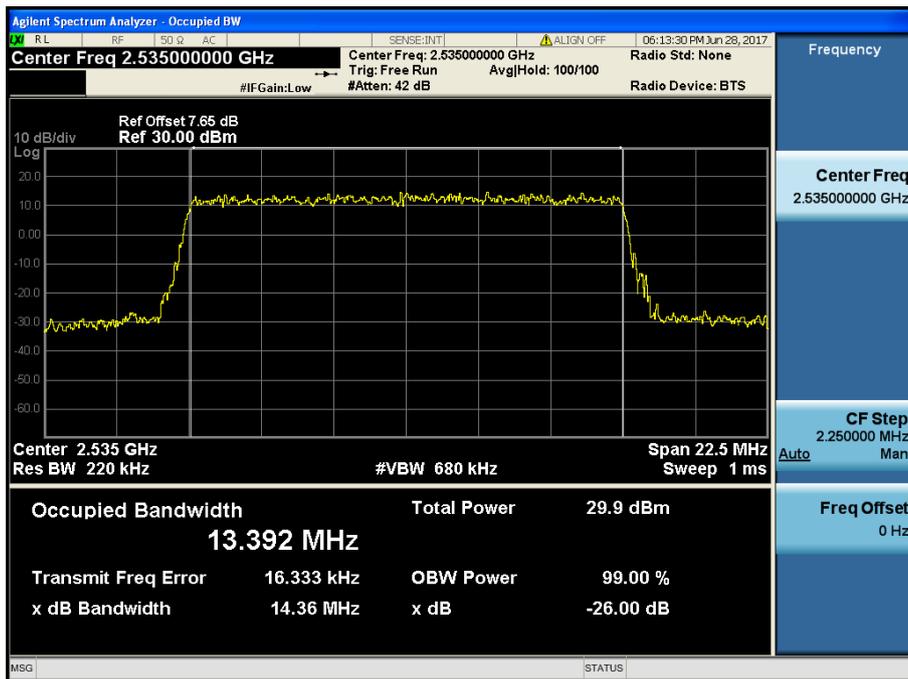
LTE Band 7 / 20 MHz / QPSK - RB Size 100



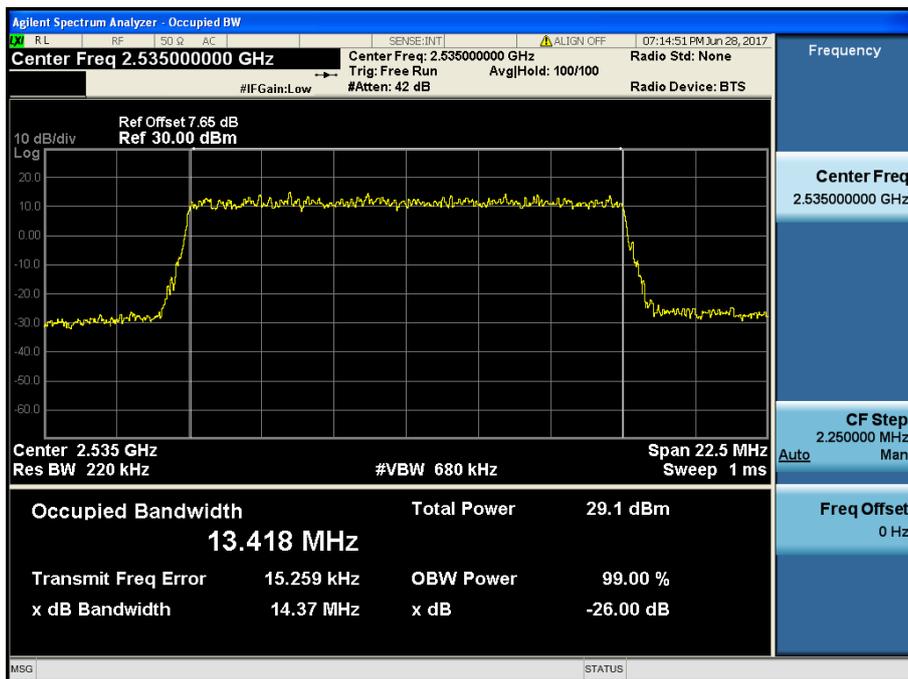
LTE Band 7 / 20 MHz / 16QAM - RB Size 100



LTE Band 7 / 20 MHz / 64QAM - RB Size 100



LTE Band 7 / 15 MHz / QPSK - RB Size 75



LTE Band 7 / 15 MHz / 16QAM - RB Size 75