TEST REPORT

DT&C Co., Ltd.
42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC1904-0076
2. Customer
   - Name : LG Electronics USA, Inc.
   - Address : 1000 Sylvan Ave. Englewood Cliffs, New Jersey, United States 07632
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Mobile Phone / LM-X525BAW
   FCC ID : ZNFX525HA
5. Test Method Used : KDB971168 D01v03, ANSI/TIA-603-E-2016, ANSI C63.26-2015
   Test Specification : §2, §22, §24(E), §27
6. Date of Test : 2019.03.03 ~ 2019.03.19
7. Testing Environment : Refer to appended test report.
8. Test Result : Refer to the attached test result.

Affirmation	Tested by Name : JaeHyeok Bang (Signature)	Reviewed by Name : Geunki Son (Signature)

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2019 . 04 . 02 .

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description
DRTFCC1904-0076	Apr. 02, 2019	Initial issue

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1. GENERAL INFORMATION

Applicant Name	:	LG Electronics USA, Inc.
Address	:	1000 Sylvan Ave. Englewood Cliffs, New Jersey, United States 07632
FCC ID	:	ZNFX525HA
FCC Classification	:	PCS Licensed Transmitter held to ear (PCE)
EUT Type	:	Mobile Phone
Model Name	:	LM-X525BAW
Add Model Name	:	LMX525BAW, X525BAW, LM-X525HA, LMX525HA, X525HA, LM-X520HM, LMX520HM, X520HM, LM-X520BMW, LMX520BMW, X520BMW
Supplying power	:	DC 4.0 V
Antenna Information	:	PIFA Antenna

Mode	TX Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max power (dBm)	Max power (W)
LTE Band 12, 17	704 ~ 711	8M97G7D	QPSK	21.55	0.143
LTE Band 12, 17	704 ~ 711	8M94W7D	16QAM	21.04	0.127
LTE Band 12, 17	704 ~ 711	8M98W7D	64QAM	19.78	0.095
LTE Band 12, 17	701.5 ~ 713.5	4M50G7D	QPSK	20.77	0.119
LTE Band 12, 17	701.5 ~ 713.5	4M50W7D	16QAM	20.14	0.103
LTE Band 12, 17	701.5 ~ 713.5	4M50W7D	64QAM	19.21	0.083
LTE Band 12	700.5 ~ 714.5	2M68G7D	QPSK	21.41	0.138
LTE Band 12	700.5 ~ 714.5	2M69W7D	16QAM	20.75	0.119
LTE Band 12	700.5 ~ 714.5	2M69W7D	64QAM	19.79	0.095
LTE Band 12	699.7 ~ 715.3	1M09G7D	QPSK	20.75	0.119
LTE Band 12	699.7 ~ 715.3	1M09W7D	16QAM	19.95	0.099
LTE Band 12	699.7 ~ 715.3	1M09W7D	64QAM	19.12	0.082
LTE Band 5	829 ~ 844	8M97G7D	QPSK	21.88	0.154
LTE Band 5	829 ~ 844	8M96W7D	16QAM	20.41	0.110
LTE Band 5	829 ~ 844	8M96W7D	64QAM	19.73	0.094
LTE Band 5	826.5 ~ 846.5	4M49G7D	QPSK	21.84	0.153
LTE Band 5	826.5 ~ 846.5	4M48W7D	16QAM	21.08	0.128
LTE Band 5	826.5 ~ 846.5	4M48W7D	64QAM	20.06	0.101
LTE Band 5	825.5 ~ 847.5	2M69G7D	QPSK	21.89	0.155
LTE Band 5	825.5 ~ 847.5	2M69W7D	16QAM	21.35	0.136
LTE Band 5	825.5 ~ 847.5	2M69W7D	64QAM	20.39	0.109
LTE Band 5	824.7 ~ 848.3	1M09G7D	QPSK	21.36	0.137
LTE Band 5	824.7 ~ 848.3	1M09W7D	16QAM	21.08	0.128
LTE Band 5	824.7 ~ 848.3	1M09W7D	64QAM0	20.25	0.106

Mode	TX Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max power(dBm)	Max power(W)
LTE Band 66, 4	1720 ~ 1770	17M9G7D	QPSK	23.12	0.205
LTE Band 66, 4	1720 ~ 1770	17M9W7D	16QAM	22.24	0.167
LTE Band 66, 4	1720 ~ 1770	18M0W7D	64QAM	21.58	0.144
LTE Band 66, 4	1717.5 ~ 1772.5	13M5G7D	QPSK	22.82	0.191
LTE Band 66, 4	1717.5 ~ 1772.5	13M5W7D	16QAM	22.19	0.166
LTE Band 66, 4	1717.5 ~ 1772.5	13M4W7D	64QAM	21.29	0.135
LTE Band 66, 4	1715 ~ 1775	9M00G7D	QPSK	23.31	0.214
LTE Band 66, 4	1715 ~ 1775	8M97W7D	16QAM	22.42	0.175
LTE Band 66, 4	1715 ~ 1775	8M98W7D	64QAM	21.51	0.142
LTE Band 66, 4	1712.5 ~ 1777.5	4M49G7D	QPSK	23.07	0.203
LTE Band 66, 4	1712.5 ~ 1777.5	4M49W7D	16QAM	22.36	0.172
LTE Band 66, 4	1712.5 ~ 1777.5	4M51W7D	64QAM	21.07	0.128
LTE Band 66, 4	1711.5 ~ 1778.5	2M68G7D	QPSK	22.96	0.198
LTE Band 66, 4	1711.5 ~ 1778.5	2M69W7D	16QAM	22.11	0.163
LTE Band 66, 4	1711.5 ~ 1778.5	2M69W7D	64QAM	21.16	0.131
LTE Band 66, 4	1710.7 ~ 1779.3	1M09G7D	QPSK	22.90	0.195
LTE Band 66, 4	1710.7 ~ 1779.3	1M08W7D	16QAM	21.97	0.157
LTE Band 66, 4	1710.7 ~ 1779.3	1M09W7D	64QAM	20.94	0.124
LTE Band 2	1860 ~ 1900	17M9G7D	QPSK	23.66	0.232
LTE Band 2	1860 ~ 1900	17M9W7D	16QAM	22.36	0.172
LTE Band 2	1860 ~ 1900	17M9W7D	64QAM	21.82	0.152
LTE Band 2	1857.5 ~ 1902.5	13M5G7D	QPSK	23.02	0.200
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	16QAM	22.33	0.171
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	64QAM	21.08	0.128
LTE Band 2	1855 ~ 1905	8M98G7D	QPSK	23.04	0.201
LTE Band 2	1855 ~ 1905	8M95W7D	16QAM	22.35	0.172
LTE Band 2	1855 ~ 1905	8M96W7D	64QAM	21.34	0.136
LTE Band 2	1852.5 ~ 1907.5	4M48G7D	QPSK	22.80	0.191
LTE Band 2	1852.5 ~ 1907.5	4M48W7D	16QAM	22.43	0.175
LTE Band 2	1852.5 ~ 1907.5	4M50W7D	64QAM	21.16	0.131
LTE Band 2	1851.5 ~ 1908.5	2M68G7D	QPSK	22.91	0.195
LTE Band 2	1851.5 ~ 1908.5	2M69W7D	16QAM	22.37	0.173
LTE Band 2	1851.5 ~ 1908.5	2M68W7D	64QAM	21.02	0.126
LTE Band 2	1850.7 ~ 1909.3	1M09G7D	QPSK	22.94	0.197
LTE Band 2	1850.7 ~ 1909.3	1M08W7D	16QAM	22.07	0.161
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	64QAM	21.92	0.156
LTE Band 7	2510 ~ 2560	17M9G7D	QPSK	20.60	0.115
LTE Band 7	2510 ~ 2560	17M9W7D	16QAM	19.88	0.097
LTE Band 7	2510 ~ 2560	17M9W7D	64QAM	18.42	0.070
LTE Band 7	2507.5 ~ 2562.5	13M4G7D	QPSK	20.39	0.109
LTE Band 7	2507.5 ~ 2562.5	13M4W7D	16QAM	19.51	0.089
LTE Band 7	2507.5 ~ 2562.5	13M4W7D	64QAM	17.94	0.062
LTE Band 7	2505 ~ 2565	8M98G7D	QPSK	20.22	0.105
LTE Band 7	2505 ~ 2565	8M96W7D	16QAM	19.41	0.087
LTE Band 7	2505 ~ 2565	8M98W7D	64QAM	18.56	0.072
LTE Band 7	2502.5 ~ 2567.5	4M49G7D	QPSK	20.30	0.107
LTE Band 7	2502.5 ~ 2567.5	4M49W7D	16QAM	19.85	0.097
LTE Band 7	2502.5 ~ 2567.5	4M48W7D	64QAM	18.83	0.076

2. INTRODUCTION

2.1 EUT DESCRIPTION

The Equipment Under Test (EUT) supports GSM/WCDMA/LTE Phone with Bluetooth, WLAN.

2.2. EUT CAPABILITIES

This EUT contains the following capabilities:
850/1900 GSM/EDGE, 850/1700/1900 WCDMA/HSUPA, Multi-band LTE, 802.11b/g/n WLAN(2.4GHz)
802.11a/n/ac WLAN(5GHz), Bluetooth(BDR, EDR, LE).

2.3. TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+21 ℃ ~ +24 ℃
▪ Relative Humidity	40 % ~ 45 %

2.4 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C 63.4-2014. All measurement uncertainty values are shown with a coverage factor of *k* = 2 to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
Radiated Disturbance (Below 1 GHz)	5.1 dB (The confidence level is about 95 %, k = 2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.4 dB (The confidence level is about 95 %, k = 2)
Radiated Disturbance (Above 18 GHz)	5.3 dB (The confidence level is about 95 %, k = 2)

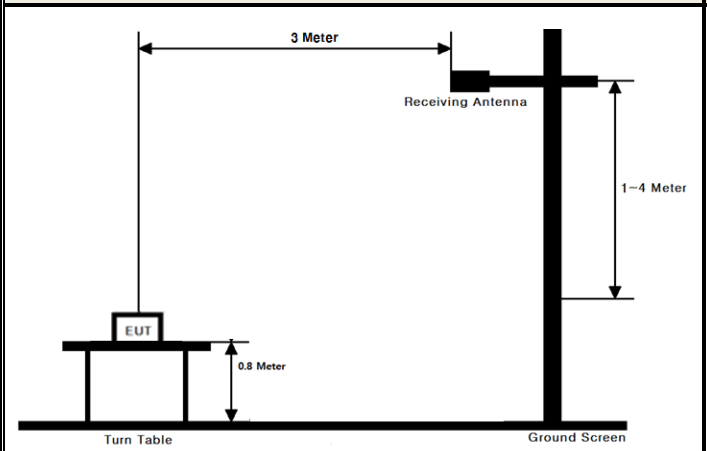
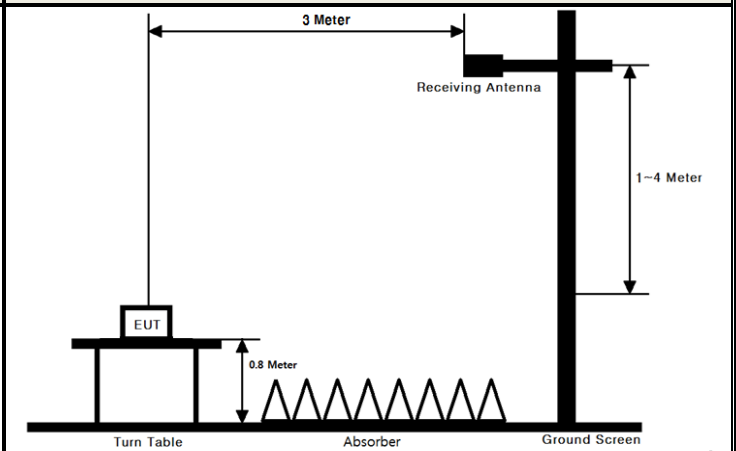
2.6. TEST FACILITY

DT&C Co., Ltd.		
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The test site comply with the requirements of § 2.948 according to ANSI 63.4-2014. **- FCC MRA Accredited Test Firm No. : KR0034**		
www.dtnc.net		
Telephone	:	+ 82-31-321-2664
FAX	:	+ 82-31-321-1664

3. DESCRIPTION OF TESTS

3.1 ERP & EIRP (Effective Radiated Power & Equivalent Isotropic Radiated Power)

Test Set-up

Below 1GHz	Above 1GHz
	

These measurements were performed at 3 m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

Test Procedure

- **ANSI/TIA-603-E-2016 - Section 2.2.17**
- **KDB971168 D01v03 - Section 5.2.2**
- **ANSI C63.26-2015 – Section 5.2.4.4.1**

Test setting

1. Set span to 2 x to 3 x the OBW.
2. Set RBW = 1% to 5% of the OBW.
3. Set VBW ≥ 3 x RBW.
4. Set number of points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   1) Set = auto-couple, or
   2) Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
6. Detector = power averaging (rms).
7. If the EUT can be configured to transmit continuously, then set the trigger to free run.
8. If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full-power transmissions).
9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over multiple symbols, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.

10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

The receiver antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

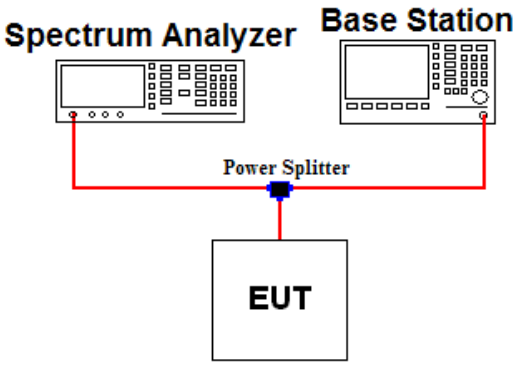
The ERP/EIRP is calculated using the following formula:

ERP/EIRP = The conducted power at the substitute antenna`s terminal [dBm] + Substitute Antenna gain [dBd for ERP , dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference
Between the gain of the horn antenna and an isotropic antenna are taken into consideration.

3.2 PEAK TO AVERAGE RATIO

Test set-up



Test Procedure

- **KDB971168 D01v03 - Section 5.7.2**
- **ANSI C63.26-2015 – Section 5.2.3.4**

A peak to average ratio measurement is performed at the conducted port of the EUT.
The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The present of time the signal spends at or above the level defines the probability for that particular power level.

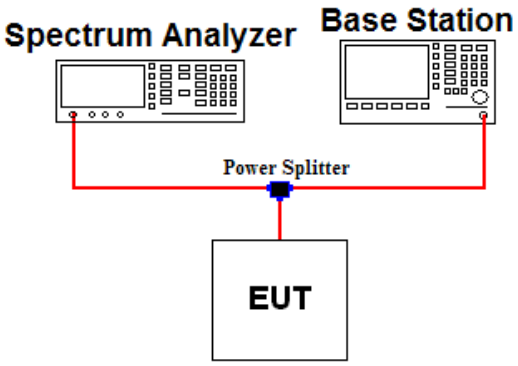
Test setting

The spectrum Analyzer`s CCDF measurement function is enabled.

1. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Set the measurement interval as follows:
   1) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms.
   2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
   3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
4. Record the maximum PAPR level associated with a probability of 0.1%.
5. The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.

3.3 OCCUPIED BANDWIDTH.

Test set-up



Test Procedure

- **KDB971168 D01v03 - Section 4.3**
- **ANSI C63.26-2015 – Section 5.4.4**

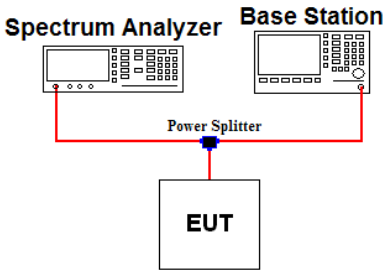
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

Test setting

1. The signal analyzer`s automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 ~ 5 % of the expected OBW & VBW ≥ 3 X RBW
3. Detector = Peak
4. Trance mode = Max hold
5. Sweep = Auto couple
6. The trace was allowed to stabilize
7. If necessary, step 2 ~ 6 were repeated after changing the RBW such that it would be within 1 ~ 5 % of the 99 % occupied bandwidth observed in step 6.

3.4 BAND EDGE EMISSIONS AT ANTENNA TERMINAL

Test set-up



Test Procedure

- **KDB971168 D01v03 - Section 6**
- **ANSI C63.26-2015 – Section 5.7**

All out of band emissions are measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its lowest and highest channel with all bandwidths, modulations and RB configurations.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB.

Test setting

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1 % of the emission bandwidth
4. VBW ≥ 3 X RBW
5. Detector = RMS & Trace mode = Max hold
6. Sweep time = Auto couple or 1 s for band edge
7. Number of sweep point ≥ 2 X span / RBW
8. The trace was allowed to stabilize

Note 1: Per Part 22.917(b)(1) / 24.238(b) / 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

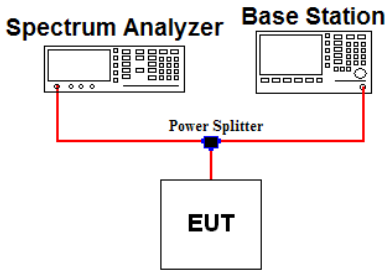
Note 2: Per Part 27(g) for operations in the 600 MHz band and the 698-746 MHz band, compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Note 3: For part 27.53(m)(4) the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 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)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

Note 4: Per part 27.53(m)(6) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 MHz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

Test set-up



Test Procedure

- **KDB971168 D01v03 - Section 6**
- **ANSI C63.26-2015 – Section 5.7**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its low, middle, high channel with all bandwidths, modulations and RB configurations. The spectrum is scanned from 9 kHz up to a frequency including its 10th harmonic.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB.

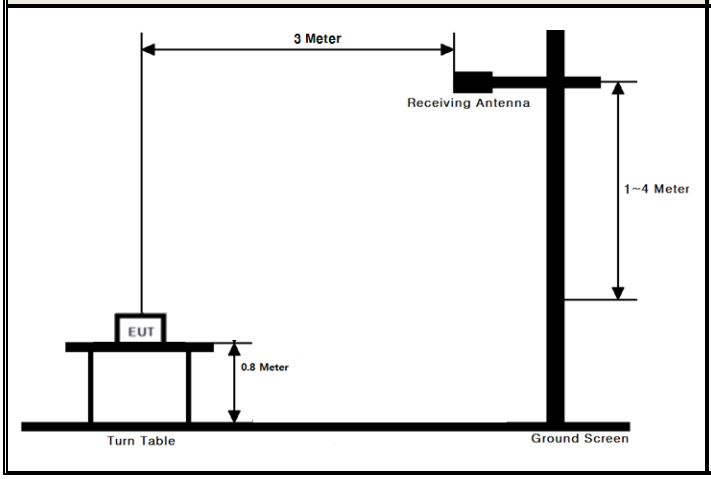
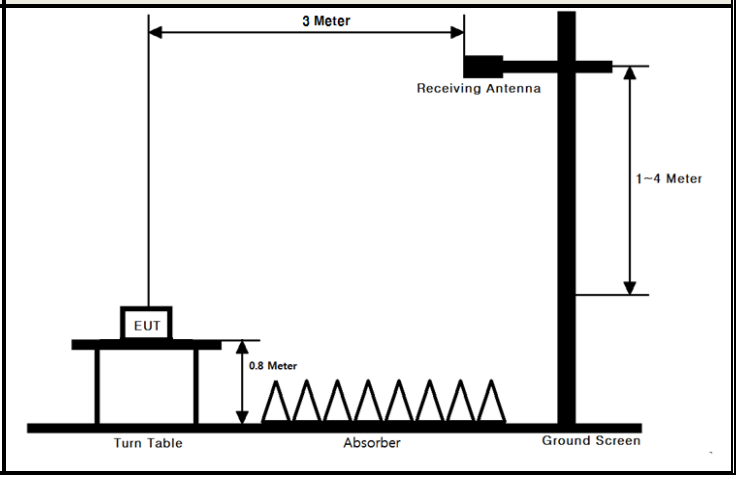
Test setting

1. RBW = 100 kHz(Below 1 GHz) or 1 MHz(Above 1 GHz) & VBW ≥ 3 X RBW (Refer to Note 1)
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

Note 1: Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1GHz and 1MHz or greater for frequencies greater than 1GHz.

3.6 UNDESIRABLE EMISSIONS

Test Set-up

Below 1GHz	Above 1GHz
	

These measurements were performed at 3 test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

Test Procedure

- **ANSI/TIA-603-E-2016 - Section 2.2.12**
- **KDB971168 D01v03 - Section 5.8**
- **ANSI C63.26-2015 – Section 5.5**

Test setting

1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW ≥ 3 X RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

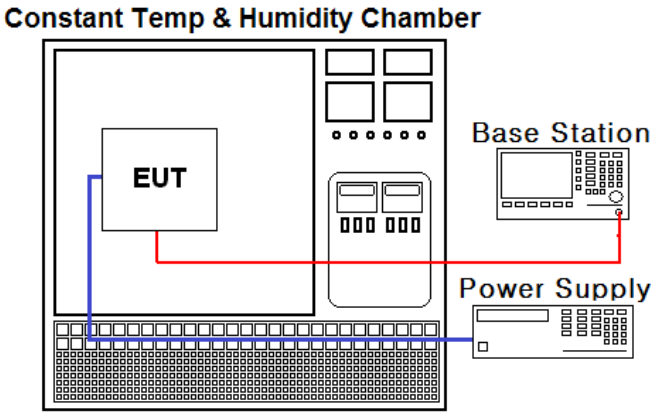
For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.

This measurement was performed with the EUT oriented in 3 orthogonal axis.

3.7 FREQUENCY STABILITY

Test Set-up



Test Procedure

- **ANSI/TIA-603-E-2016**
- **KDB971168 D01v03 - Section 9**

The frequency stability of the transmitter is measured by:

a.) **Temperature:**
The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:**
The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block for Part 24, 27. The frequency stability of the transmitter shall be maintained within ± 0.000 25 % (± 2.5 ppm) of the center frequency for Part 22.

Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature.
(20 °C to provide a reference)

2. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C.
A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

4. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal. Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	18/07/09	19/07/09	MY46471251
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY49060056
DC power supply	Agilent Technologies	66332A	18/07/02	19/07/02	US37473422
DC power supply	Agilent Technologies	66332A	18/07/02	19/07/02	MY43000440
Multimeter	FLUKE	17B	18/12/18	19/12/18	26030065WS
Power Splitter	Anritsu	K241B	18/12/19	19/12/19	016681
Temp & Humi	SJ Science	SJ-TH-S50	18/07/06	19/07/06	U5542113
Radio Communication Analyzer	Anritsu	MT8820C	18/07/03	19/07/03	6200978101
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-2
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-1
Signal Generator	Rohde Schwarz	SMBV100A	18/12/19	19/12/19	255571
Signal Generator	ANRITSU	SMF100A	18/06/07	19/06/07	102341
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
Bilog Antenna	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
Dipole Antenna	Schwarzbeck	VHA9103	17/03/14 19/02/28	19/03/14 21/02/28	2116
Dipole Antenna	Schwarzbeck	VHA9103	18/04/13	20/04/13	2117
Dipole Antenna	Schwarzbeck	UHA9105	17/03/14 19/02/28	19/03/14 21/02/28	2261
Dipole Antenna	Schwarzbeck	UHA9105	18/04/13	20/04/13	2262
HORN ANT	ETS	3117	18/05/10	20/05/10	00140394
HORN ANT	ETS	3117	18/03/26	20/03/26	00152145
HORN ANT	A.H.Systems	SAS-574	17/04/25	19/04/25	154
HORN ANT	A.H.Systems	SAS-574	17/07/31	19/07/31	155
Amplifier	EMPOWER	BBS3Q7ELU	18/07/10	19/07/10	1020
PreAmplifier	H.P	8447D	18/12/18	19/12/18	2944A07774
PreAmplifier	Agilent Technologies	8449B	18/07/05	19/07/05	3008A02108
High-pass filter	Wainwright	WHKX12-935-1000-15000-40SS	18/07/05	19/07/05	7
High-pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	18/07/05	19/07/05	3
High-pass filter	Wainwright	WHNX8.5/26.5G-6SS	18/07/03	19/07/03	1
Cable	DTNC	Cable	18/07/06	19/07/06	M-01
Cable	DTNC	Cable	18/07/06	19/07/06	M-02
Cable	Junkosha	MWX315	18/11/19	19/11/19	M-05
Cable	Junkosha	MWX221	18/11/19	19/11/19	M-06
Cable	DTNC	Cable	18/07/05	19/07/05	RF-73
Cable	DTNC	Cable	18/07/05	19/07/05	RF-84

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.
Note2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Status Note 1
2.1046	Conducted Output Power	N/A	Conducted	C Note2
2.1049	Occupied Bandwidth	N/A		C
24.232(d) 27.50(d.5)	Peak to Average Ratio	< 13 dB		C
2.1051 22.917(a) 24.238(a) 27.53(g) 27.53(h)	Band Edge / Conducted Spurious Emissions	> 43 + 10log$_{10}$(P) dB at Band edge and for all out-of-band emissions		C
27.53(m)	Band Edge / Conducted Spurious Emissions	> 40 + 10log10 (P) dB at channel edge and 5 MHz from the channel edge > 43 + 10log10 (P) dB at 5 MHz and X MHz from the channel edge > 55 + 10log10 (P) dB at all frequencies more than X MHz from the channel edge		C
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) Fundamental emissions must stay within Authorized frequency block (Part 24, 27)		C
27.50(c.10)	Radiated Output Power (B12, 17)	< 3 Watts max. ERP	Radiated	C
22.913(a.5)	Radiated Output Power (B5)	< 7 Watts max. ERP		C
27.50(d.4)	Radiated Output Power (B66, 4)	< 1 Watts max. EIRP		C
24.232(c) 27.50(h.2)	Radiated Output Power(B2, 7)	< 2 Watts max. EIRP		C
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10log$_{10}$(P) dB for all out-of-band emissions		C
27.53(m)	Undesirable Emissions(B7)	> 55 + 10log$_{10}$(P) dB for all out-of-band emissions		C

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable
Note 2: Refer to RF Exposure Report (Test Report SAR)

6. SAMPLE CALCULATION

A. Emission Designator

LTE Band 12, 17(QPSK)

Emission Designator = **8M97G7D**
LTE OBW = 8.973 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 12, 17(16QAM)

Emission Designator = **8M94W7D**
LTE OBW = 8.943 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 12, 17(64QAM)

Emission Designator = **8M98W7D**
LTE OBW = 8.978 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 5(QPSK)

Emission Designator = **8M97G7D**
LTE OBW = 8.972 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 5(16QAM)

Emission Designator = **8M96W7D**
LTE OBW = 8.959 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 5(64QAM)

Emission Designator = **8M96W7D**
LTE OBW = 8.963 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 66, 4(QPSK)

Emission Designator = **17M9G7D**
LTE OBW = 17.882 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 66, 4(16QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.921 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 66, 4(64QAM)

Emission Designator = **18M0W7D**
LTE OBW = 17.954 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(QPSK)

Emission Designator =17**M9G7D**
LTE OBW = 17.877 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(16QAM)

Emission Designator = 17**M9W7D**
LTE OBW = 17.862 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(64QAM)

Emission Designator = 17**M9W7D**
LTE OBW = 17.927 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 7(QPSK)

Emission Designator = **17M9G7D**
LTE OBW = 17.935 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 7(16QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.898 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 7(64QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.929 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

B. For substitution method

EIRP for Band 2

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Spectrum Reading Value(dBm)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1860	QPSK	1/50	-23.30	X	H	18.75	4.91	23.66	0.232

ERP or EIRP = Level @ Ant Terminal LEVEL(dBm) + Tx Ant. Gain

1) The EUT mounted on a non-conductive turntable is 0.8 meter above test site ground level.
2) During the test, the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with substituted antenna gain is the rating of ERP, EIRP or Radiated spurious emission.

7.TEST DATA

7.1 OCCUPIED BANDWIDTH

- Plots of the EUT's Occupied Bandwidth are shown in Clause 8.1

7.2 PEAK TO AVERAGE RATIO

- Plots of the EUT's Peak- to- Average Ratio are shown in Clause 8.2

7.3 BAND EDEG EMISSIONS (Conducted)

- Plots of the EUT's Band Edge Emissions are shown in Clause 8.3

7.4 SPURIOUS AND HARMONICS EMISSIONS (Conducted)

- Plots of the EUT's Spurious Emissions are shown in Clause 8.4

7.5 ERP & EIRP

7.5.1 LTE Band 12, 17

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
10	704	QPSK	1/25	H	19.21	1.28	20.49	0.112
		16QAM	1/25	H	18.75	1.28	20.03	0.101
		64QAM	1/25	H	17.43	1.28	18.71	0.074
	711	QPSK	1/25	H	20.27	1.28	21.55	0.143
		16QAM	1/25	H	19.76	1.28	21.04	0.127
		64QAM	1/25	H	18.50	1.28	19.78	0.095
5	701.5	QPSK	1/12	H	18.82	1.28	20.10	0.102
		16QAM	1/12	H	18.43	1.28	19.71	0.094
		64QAM	1/12	H	17.23	1.28	18.51	0.071
	707.5	QPSK	1/12	H	19.49	1.28	20.77	0.119
		16QAM	1/12	H	18.82	1.28	20.10	0.102
		64QAM	1/12	H	17.37	1.28	18.65	0.073
	713.5	QPSK	1/12	H	19.41	1.28	20.69	0.117
		16QAM	1/12	H	18.86	1.28	20.14	0.103
		64QAM	1/12	H	17.93	1.28	19.21	0.083

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

7.5.2 LTE Band 12

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
3	700.5	QPSK	1/14	H	18.87	1.28	20.15	0.104
		16QAM	1/14	H	17.92	1.28	19.20	0.083
		64QAM	1/14	H	17.03	1.28	18.31	0.068
	707.5	QPSK	1/14	H	19.38	1.28	20.66	0.116
		16QAM	1/14	H	18.71	1.28	19.99	0.100
		64QAM	1/14	H	17.55	1.28	18.83	0.076
	714.5	QPSK	1/14	H	20.13	1.28	21.41	0.138
		16QAM	1/14	H	19.47	1.28	20.75	0.119
		64QAM	1/14	H	18.51	1.28	19.79	0.095
1.4	699.7	QPSK	1/2	H	18.62	1.28	19.90	0.098
		16QAM	1/2	H	17.62	1.28	18.90	0.078
		64QAM	1/2	H	16.89	1.28	18.17	0.066
	707.5	QPSK	1/2	H	19.47	1.28	20.75	0.119
		16QAM	1/2	H	18.67	1.28	19.95	0.099
		64QAM	1/2	H	17.84	1.28	19.12	0.082
	715.3	QPSK	1/2	H	19.45	1.28	20.73	0.118
		16QAM	1/2	H	18.33	1.28	19.61	0.091
		64QAM	1/2	H	17.75	1.28	19.03	0.080

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

7.5.3 LTE Band 5

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
10	829	QPSK	1/25	H	20.65	1.23	21.88	0.154
		16QAM	1/25	H	19.18	1.23	20.41	0.110
		64QAM	1/25	H	18.50	1.23	19.73	0.094
	836.5	QPSK	1/25	H	19.58	1.22	20.80	0.120
		16QAM	1/25	H	18.74	1.22	19.96	0.099
		64QAM	1/25	H	17.85	1.22	19.07	0.081
	844	QPSK	1/0	H	19.83	1.21	21.04	0.127
		16QAM	1/0	H	18.98	1.21	20.19	0.104
		64QAM	1/0	H	18.09	1.21	19.30	0.085
5	826.5	QPSK	1/12	H	20.61	1.23	21.84	0.153
		16QAM	1/12	H	19.85	1.23	21.08	0.128
		64QAM	1/12	H	18.83	1.23	20.06	0.101
	836.5	QPSK	1/12	H	19.80	1.22	21.02	0.126
		16QAM	1/12	H	18.57	1.22	19.79	0.095
		64QAM	1/12	H	17.93	1.22	19.15	0.082
	846.5	QPSK	1/12	H	20.44	1.21	21.65	0.146
		16QAM	1/12	H	19.39	1.21	20.60	0.115
		64QAM	1/12	H	18.33	1.21	19.54	0.090
3	825.5	QPSK	1/7	H	20.66	1.23	21.89	0.155
		16QAM	1/7	H	20.12	1.23	21.35	0.136
		64QAM	1/7	H	19.16	1.23	20.39	0.109
	836.5	QPSK	1/0	H	19.70	1.22	20.92	0.124
		16QAM	1/0	H	18.76	1.22	19.98	0.100
		64QAM	1/0	H	17.64	1.22	18.86	0.077
	847.5	QPSK	1/0	H	19.98	1.21	21.19	0.132
		16QAM	1/0	H	18.89	1.21	20.10	0.102
		64QAM	1/0	H	18.65	1.21	19.86	0.097
1.4	824.7	QPSK	1/2	H	20.05	1.23	21.28	0.134
		16QAM	1/2	H	19.85	1.23	21.08	0.128
		64QAM	1/2	H	19.02	1.23	20.25	0.106
	836.5	QPSK	1/2	H	19.86	1.22	21.08	0.128
		16QAM	1/2	H	19.33	1.22	20.55	0.114
		64QAM	1/2	H	18.59	1.22	19.81	0.096
	848.3	QPSK	1/2	H	20.15	1.21	21.36	0.137
		16QAM	1/2	H	19.18	1.21	20.39	0.109
		64QAM	1/2	H	18.65	1.21	19.86	0.097

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

7.5.4 LTE Band 66, 4

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1720	QPSK	1/50	H	17.13	5.95	23.08	0.203
		16QAM	1/50	H	16.27	5.95	22.22	0.167
		64QAM	1/50	H	15.63	5.95	21.58	0.144
	1745	QPSK	1/50	H	17.39	5.73	23.12	0.205
		16QAM	1/50	H	16.51	5.73	22.24	0.167
		64QAM	1/50	H	15.67	5.73	21.40	0.138
	1770	QPSK	1/50	H	16.37	5.42	21.79	0.151
		16QAM	1/50	H	15.86	5.42	21.28	0.134
		64QAM	1/50	H	15.03	5.42	20.45	0.111
15	1717.5	QPSK	1/0	H	16.85	5.97	22.82	0.191
		16QAM	1/0	H	16.13	5.97	22.10	0.162
		64QAM	1/0	H	15.10	5.97	21.07	0.128
	1745	QPSK	1/36	H	17.05	5.73	22.78	0.190
		16QAM	1/36	H	16.46	5.73	22.19	0.166
		64QAM	1/36	H	15.56	5.73	21.29	0.135
	1772.5	QPSK	1/0	H	16.37	5.39	21.76	0.150
		16QAM	1/0	H	15.38	5.39	20.77	0.119
		64QAM	1/0	H	14.55	5.39	19.94	0.099
10	1715	QPSK	1/25	H	17.31	6.00	23.31	0.214
		16QAM	1/25	H	16.42	6.00	22.42	0.175
		64QAM	1/25	H	15.51	6.00	21.51	0.142
	1745	QPSK	1/25	H	16.72	5.73	22.45	0.176
		16QAM	1/25	H	16.10	5.73	21.83	0.152
		64QAM	1/25	H	15.21	5.73	20.94	0.124
	1775	QPSK	1/25	H	17.02	5.36	22.38	0.173
		16QAM	1/25	H	16.39	5.36	21.75	0.150
		64QAM	1/25	H	15.37	5.36	20.73	0.118

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
5	1712.5	QPSK	1/12	H	16.75	6.02	22.77	0.189
		16QAM	1/12	H	15.51	6.02	21.53	0.142
		64QAM	1/12	H	14.62	6.02	20.64	0.116
	1745	QPSK	1/12	H	17.34	5.73	23.07	0.203
		16QAM	1/12	H	16.63	5.73	22.36	0.172
		64QAM	1/12	H	15.34	5.73	21.07	0.128
	1777.5	QPSK	1/12	H	17.38	5.32	22.70	0.186
		16QAM	1/12	H	16.54	5.32	21.86	0.153
		64QAM	1/12	H	15.54	5.32	20.86	0.122
3	1711.5	QPSK	1/0	H	16.26	6.03	22.29	0.169
		16QAM	1/0	H	15.53	6.03	21.56	0.143
		64QAM	1/0	H	14.48	6.03	20.51	0.112
	1745	QPSK	1/7	H	17.23	5.73	22.96	0.198
		16QAM	1/7	H	16.38	5.73	22.11	0.163
		64QAM	1/7	H	15.43	5.73	21.16	0.131
	1778.5	QPSK	1/14	H	16.75	5.31	22.06	0.161
		16QAM	1/14	H	16.06	5.31	21.37	0.137
		64QAM	1/14	H	14.94	5.31	20.25	0.106
1.4	1710.7	QPSK	1/2	H	16.32	6.03	22.35	0.172
		16QAM	1/2	H	15.54	6.03	21.57	0.144
		64QAM	1/2	H	14.65	6.03	20.68	0.117
	1745	QPSK	1/2	H	17.17	5.73	22.90	0.195
		16QAM	1/2	H	16.24	5.73	21.97	0.157
		64QAM	1/2	H	15.21	5.73	20.94	0.124
	1779.3	QPSK	1/2	H	16.38	5.30	21.68	0.147
		16QAM	1/2	H	15.58	5.30	20.88	0.122
		64QAM	1/2	H	14.81	5.30	20.11	0.103

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

7.5.5 LTE Band 2

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1860	QPSK	1/50	H	18.75	4.91	23.66	0.232
		16QAM	1/50	H	17.45	4.91	22.36	0.172
		64QAM	1/50	H	16.91	4.91	21.82	0.152
	1880	QPSK	1/50	H	17.94	4.80	22.74	0.188
		16QAM	1/50	H	17.25	4.80	22.05	0.160
		64QAM	1/50	H	16.34	4.80	21.14	0.130
	1900	QPSK	1/50	H	17.91	4.69	22.60	0.182
		16QAM	1/50	H	17.06	4.69	21.75	0.150
		64QAM	1/50	H	16.14	4.69	20.83	0.121
15	1857.5	QPSK	1/0	H	18.10	4.92	23.02	0.200
		16QAM	1/0	H	17.41	4.92	22.33	0.171
		64QAM	1/0	H	16.08	4.92	21.00	0.126
	1880	QPSK	1/0	H	18.09	4.80	22.89	0.195
		16QAM	1/0	H	17.45	4.80	22.25	0.168
		64QAM	1/0	H	16.28	4.80	21.08	0.128
	1902.5	QPSK	1/0	H	18.00	4.68	22.68	0.185
		16QAM	1/0	H	17.26	4.68	21.94	0.156
		64QAM	1/0	H	16.13	4.68	20.81	0.121
10	1855	QPSK	1/25	H	18.05	4.94	22.99	0.199
		16QAM	1/25	H	17.27	4.94	22.21	0.166
		64QAM	1/25	H	16.40	4.94	21.34	0.136
	1880	QPSK	1/25	H	18.24	4.80	23.04	0.201
		16QAM	1/25	H	17.55	4.80	22.35	0.172
		64QAM	1/25	H	16.25	4.80	21.05	0.127
	1905	QPSK	1/25	H	17.41	4.67	22.08	0.161
		16QAM	1/25	H	16.57	4.67	21.24	0.133
		64QAM	1/25	H	15.19	4.67	19.86	0.097

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
5	1852.5	QPSK	1/12	H	17.49	4.95	22.44	0.175
		16QAM	1/12	H	17.01	4.95	21.96	0.157
		64QAM	1/12	H	16.21	4.95	21.16	0.131
	1880	QPSK	1/12	H	18.00	4.80	22.80	0.191
		16QAM	1/12	H	17.63	4.80	22.43	0.175
		64QAM	1/12	H	15.91	4.80	20.71	0.118
	1907.5	QPSK	1/12	H	17.35	4.65	22.00	0.158
		16QAM	1/12	H	16.34	4.65	20.99	0.126
		64QAM	1/12	H	15.29	4.65	19.94	0.099
3	1851.5	QPSK	1/14	H	17.93	4.95	22.88	0.194
		16QAM	1/14	H	17.00	4.95	21.95	0.157
		64QAM	1/14	H	15.93	4.95	20.88	0.122
	1880	QPSK	1/0	H	18.11	4.80	22.91	0.195
		16QAM	1/0	H	17.57	4.80	22.37	0.173
		64QAM	1/0	H	16.22	4.80	21.02	0.126
	1908.5	QPSK	1/7	H	17.57	4.65	22.22	0.167
		16QAM	1/7	H	16.73	4.65	21.38	0.137
		64QAM	1/7	H	15.63	4.65	20.28	0.107
1.4	1850.7	QPSK	1/2	H	17.87	4.96	22.83	0.192
		16QAM	1/2	H	17.11	4.96	22.07	0.161
		64QAM	1/2	H	16.94	4.96	21.90	0.155
	1880	QPSK	1/2	H	18.14	4.80	22.94	0.197
		16QAM	1/2	H	17.26	4.80	22.06	0.161
		64QAM	1/2	H	17.12	4.80	21.92	0.156
	1909.3	QPSK	1/2	H	17.61	4.64	22.25	0.168
		16QAM	1/2	H	16.48	4.64	21.12	0.129
		64QAM	1/2	H	16.01	4.64	20.65	0.116

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

7.5.6 LTE Band 7

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	2510	QPSK	1/50	H	14.19	5.95	20.14	0.103
		16QAM	1/50	H	12.94	5.95	18.89	0.077
		64QAM	1/50	H	12.41	5.95	18.36	0.069
	2535	QPSK	1/50	H	14.71	5.89	20.60	0.115
		16QAM	1/50	H	13.86	5.89	19.75	0.094
		64QAM	1/50	H	12.17	5.89	18.06	0.064
	2560	QPSK	1/50	H	14.28	5.86	20.14	0.103
		16QAM	1/50	H	14.02	5.86	19.88	0.097
		64QAM	1/50	H	12.56	5.86	18.42	0.070
15	2507.5	QPSK	1/36	H	13.97	5.96	19.93	0.098
		16QAM	1/36	H	13.36	5.96	19.32	0.086
		64QAM	1/36	H	11.95	5.96	17.91	0.062
	2535	QPSK	1/36	H	14.50	5.89	20.39	0.109
		16QAM	1/36	H	13.62	5.89	19.51	0.089
		64QAM	1/36	H	12.05	5.89	17.94	0.062
	2562.5	QPSK	1/36	H	14.04	5.87	19.91	0.098
		16QAM	1/36	H	12.53	5.87	18.40	0.069
		64QAM	1/36	H	11.34	5.87	17.21	0.053
10	2505	QPSK	1/25	H	14.25	5.97	20.22	0.105
		16QAM	1/25	H	13.42	5.97	19.39	0.087
		64QAM	1/25	H	11.70	5.97	17.67	0.058
	2535	QPSK	1/25	H	14.14	5.89	20.03	0.101
		16QAM	1/25	H	13.52	5.89	19.41	0.087
		64QAM	1/25	H	12.67	5.89	18.56	0.072
	2565	QPSK	1/25	H	13.84	5.87	19.71	0.094
		16QAM	1/25	H	13.07	5.87	18.94	0.078
		64QAM	1/25	H	11.74	5.87	17.61	0.058
5	2502.5	QPSK	1/12	H	13.48	5.97	19.45	0.088
		16QAM	1/12	H	12.60	5.97	18.57	0.072
		64QAM	1/12	H	11.74	5.97	17.71	0.059
	2535	QPSK	1/12	H	14.41	5.89	20.30	0.107
		16QAM	1/12	H	13.96	5.89	19.85	0.097
		64QAM	1/12	H	12.94	5.89	18.83	0.076
	2567.5	QPSK	1/12	H	13.43	5.88	19.31	0.085
		16QAM	1/12	H	11.95	5.88	17.83	0.061
		64QAM	1/12	H	11.25	5.88	17.13	0.052

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

7.6 UNDESIRABLE EMISSIONS (Radiated)

7.6.1 LTE Band 12, 17

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)
								(dBm)	(dBc)	
10	704	1/25	QPSK	1408.10	H	-57.72	2.77	-54.95	75.44	33.49
			16QAM	1408.51	H	-58.35	2.78	-55.57	75.60	33.03
			64QAM	1408.69	H	-58.45	2.78	-55.67	74.38	31.71
	711	1/25	QPSK	1422.05	H	-58.14	2.91	-55.23	76.78	34.55
			16QAM	1422.12	H	-57.61	2.92	-54.69	75.73	34.04
			64QAM	1422.07	H	-58.14	2.92	-55.22	75.00	32.78
5	701.5	1/12	QPSK	1402.94	H	-58.42	2.72	-55.70	75.80	33.10
			16QAM	1403.35	H	-57.82	2.72	-55.10	74.81	32.71
			64QAM	1403.30	H	-57.57	2.72	-54.85	73.36	31.51
	707.5	1/12	QPSK	1414.57	H	-58.09	2.84	-55.25	76.02	33.77
			16QAM	1414.80	H	-59.08	2.84	-56.24	76.34	33.10
			64QAM	1415.09	H	-57.82	2.84	-54.98	73.63	31.65
	713.5	1/12	QPSK	1431.44	H	-57.82	3.01	-54.81	75.50	33.69
			16QAM	1431.17	H	-57.51	3.01	-54.50	74.64	33.14
			64QAM	1431.16	H	-58.05	3.01	-55.04	74.25	32.21

Note 1: Limit Calculation = 43 + $10\log_{10}$ (P[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.

7.6.2 LTE Band 12

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)
								(dBm)	(dBc)	
3	700.5	1/14	QPSK	1403.44	H	-57.88	2.73	-55.15	75.30	33.15
			16QAM	1403.47	H	-58.38	2.73	-55.65	74.85	32.20
			64QAM	1403.34	H	-57.79	2.72	-55.07	73.38	31.31
	707.5	1/14	QPSK	1415.53	H	-58.22	2.85	-55.37	76.03	33.66
			16QAM	1415.55	H	-59.17	2.85	-56.32	76.31	32.99
			64QAM	1414.49	H	-59.45	2.84	-56.61	75.44	31.83
	714.5	1/14	QPSK	1431.33	H	-57.81	3.01	-54.80	76.21	34.41
			16QAM	1430.74	H	-57.37	3.00	-54.37	75.12	33.75
			64QAM	1431.79	H	-58.51	3.01	-55.50	75.29	32.79
1.4	699.7	1/2	QPSK	1399.46	H	-57.79	2.69	-55.10	75.00	32.90
			16QAM	1399.04	H	-58.44	2.69	-55.75	74.65	31.90
			64QAM	1399.12	H	-57.45	2.69	-54.76	72.93	31.17
	707.5	1/2	QPSK	1415.35	H	-57.29	2.85	-54.44	75.19	33.75
			16QAM	1414.92	H	-59.15	2.84	-56.31	76.26	32.95
			64QAM	1415.28	H	-59.00	2.85	-56.15	75.27	32.12
	715.3	1/2	QPSK	1430.44	H	-57.39	3.00	-54.39	75.12	33.73
			16QAM	1430.38	H	-57.61	3.00	-54.61	74.22	32.61
			64QAM	1430.05	H	-57.31	3.00	-54.31	73.34	32.03

Note 1: Limit Calculation = 43 + $10\log_{10}$ (P[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.

7.6.3 LTE Band 5

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)
								(dBm)	(dBc)	
10	829	1/25	QPSK	1658.29	V	-55.62	3.85	-51.77	73.65	34.88
			16QAM	1658.39	V	-56.36	3.85	-52.51	72.92	33.41
			64QAM	1657.98	V	-56.17	3.85	-52.32	72.05	32.73
	836.5	1/25	QPSK	1672.96	V	-57.49	3.89	-53.60	74.40	33.80
			16QAM	1673.14	V	-57.61	3.89	-53.72	73.68	32.96
			64QAM	1673.04	V	-57.01	3.89	-53.12	72.19	32.07
	844	1/0	QPSK	1678.99	V	-56.71	3.91	-52.80	73.84	34.04
			16QAM	1679.20	V	-56.88	3.91	-52.97	73.16	33.19
			64QAM	1679.03	V	-57.69	3.91	-53.78	73.08	32.30
5	826.5	1/12	QPSK	1652.93	V	-55.20	3.83	-51.37	73.21	34.84
			16QAM	1653.00	V	-55.25	3.83	-51.42	72.50	34.08
			64QAM	1653.01	V	-55.75	3.83	-51.92	71.98	33.06
	836.5	1/12	QPSK	1673.01	V	-56.97	3.89	-53.08	74.10	34.02
			16QAM	1672.92	V	-56.54	3.89	-52.65	72.44	32.79
			64QAM	1673.36	V	-56.10	3.89	-52.21	71.36	32.15
	846.5	1/12	QPSK	1693.48	V	-57.80	3.96	-53.84	75.49	34.65
			16QAM	1692.81	V	-57.19	3.96	-53.23	73.83	33.60
			64QAM	1692.74	V	-57.82	3.96	-53.86	73.40	32.54
3	825.5	1/7	QPSK	1650.83	V	-54.74	3.82	-50.92	72.81	34.89
			16QAM	1650.91	V	-55.51	3.82	-51.69	73.04	34.35
			64QAM	1650.94	V	-56.05	3.82	-52.23	72.62	33.39
	836.5	1/0	QPSK	1670.69	V	-56.02	3.89	-52.13	73.05	33.92
			16QAM	1670.04	V	-56.96	3.88	-53.08	73.06	32.98
			64QAM	1670.60	V	-56.97	3.89	-53.08	71.94	31.86
	847.5	1/0	QPSK	1692.23	V	-57.88	3.96	-53.92	75.11	34.19
			16QAM	1690.71	V	-57.42	3.95	-53.47	73.57	33.10
			64QAM	1693.48	V	-57.89	3.96	-53.93	73.79	32.86
1.4	824.7	1/2	QPSK	1649.18	V	-55.67	3.82	-51.85	73.13	34.28
			16QAM	1649.41	V	-55.54	3.82	-51.72	72.80	34.08
			64QAM	1649.07	V	-55.62	3.82	-51.80	72.05	33.25
	836.5	1/2	QPSK	1672.87	V	-56.15	3.89	-52.26	73.34	34.08
			16QAM	1672.94	V	-56.25	3.89	-52.36	72.91	33.55
			64QAM	1672.99	V	-57.30	3.89	-53.41	73.22	32.81
	848.3	1/2	QPSK	1697.08	V	-56.81	3.97	-52.84	74.20	34.36
			16QAM	1698.78	V	-57.02	3.98	-53.04	73.43	33.39
			64QAM	1697.49	V	-57.37	3.97	-53.40	73.26	32.86

Note 1: Limit Calculation = 43 + $10\log_{10}$(P[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.

7.6.4 LTE Band 66, 4

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	1720	1/50	QPSK	3438.55	H	-55.68	8.05	-47.63	70.71	36.08
			16QAM	3439.30	H	-55.62	8.05	-47.57	69.79	35.22
			64QAM	3439.36	H	-56.26	8.05	-48.21	69.79	34.58
	1745	1/50	QPSK	3490.85	H	-56.23	8.18	-48.05	71.17	36.12
			16QAM	3489.55	H	-56.45	8.17	-48.28	70.52	35.24
			64QAM	3489.93	H	-57.02	8.18	-48.84	70.24	34.40
	1770	1/50	QPSK	3539.79	H	-56.84	8.30	-48.54	70.33	34.79
			16QAM	3542.28	H	-56.13	8.30	-47.83	69.11	34.28
			64QAM	3539.23	H	-56.08	8.29	-47.79	68.24	33.45
15	1717.5	1/0	QPSK	3421.59	H	-53.68	8.01	-45.67	68.49	35.82
			16QAM	3419.46	H	-56.02	8.00	-48.02	70.12	35.10
			64QAM	3421.74	H	-55.91	8.01	-47.90	68.97	34.07
	1745	1/36	QPSK	3487.86	H	-55.78	8.17	-47.61	70.39	35.78
			16QAM	3493.04	H	-56.60	8.18	-48.42	70.61	35.19
			64QAM	3491.07	H	-56.57	8.18	-48.39	69.68	34.29
	1772.5	1/0	QPSK	3528.20	H	-56.41	8.27	-48.14	69.90	34.76
			16QAM	3530.17	H	-56.68	8.27	-48.41	69.18	33.77
			64QAM	3528.18	H	-56.01	8.27	-47.74	67.68	32.94
10	1715	1/25	QPSK	3429.18	H	-55.73	8.03	-47.70	71.01	36.31
			16QAM	3431.25	H	-55.46	8.03	-47.43	69.85	35.42
			64QAM	3431.15	H	-55.16	8.03	-47.13	68.64	34.51
	1745	1/25	QPSK	3494.24	H	-55.68	8.19	-47.49	69.94	35.45
			16QAM	3486.16	H	-56.24	8.17	-48.07	69.90	34.83
			64QAM	3490.64	H	-56.27	8.18	-48.09	69.03	33.94
	1775	1/25	QPSK	3546.82	H	-55.46	8.31	-47.15	69.53	35.38
			16QAM	3550.92	H	-56.53	8.32	-48.21	69.96	34.75
			64QAM	3547.91	H	-56.31	8.31	-48.00	68.73	33.73
5	1712.5	1/12	QPSK	3425.73	H	-54.87	8.02	-46.85	69.62	35.77
			16QAM	3427.78	H	-56.35	8.02	-48.33	69.86	34.53
			64QAM	3423.94	H	-56.19	8.01	-48.18	68.82	33.64
	1745	1/12	QPSK	3487.60	H	-56.88	8.17	-48.71	71.78	36.07
			16QAM	3486.11	H	-56.18	8.17	-48.01	70.37	35.36
			64QAM	3490.65	H	-56.50	8.18	-48.32	69.39	34.07
	1777.5	1/12	QPSK	3553.02	H	-56.29	8.32	-47.97	70.67	35.70
			16QAM	3556.56	H	-55.68	8.32	-47.36	69.22	34.86
			64QAM	3555.34	H	-56.30	8.32	-47.98	68.84	33.86

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)	
3	1711.5	1/0	QPSK	3419.61	H	-54.95	8.00	-46.95	69.24	35.29
			16QAM	3419.40	H	-55.67	8.00	-47.67	69.23	34.56
			64QAM	3418.08	H	-55.54	8.00	-47.54	68.05	33.51
	1745	1/7	QPSK	3490.60	H	-56.19	8.18	-48.01	70.97	35.96
			16QAM	3492.74	H	-55.56	8.18	-47.38	69.49	35.11
			64QAM	3492.40	H	-55.91	8.18	-47.73	68.89	34.16
	1778.5	1/14	QPSK	3557.44	H	-55.82	8.32	-47.50	69.56	35.06
			16QAM	3560.61	H	-55.88	8.33	-47.55	68.92	34.37
			64QAM	3557.51	H	-55.98	8.32	-47.66	67.91	33.25
1.4	1710.7	1/2	QPSK	3424.76	H	-55.72	8.01	-47.71	70.06	35.35
			16QAM	3426.18	H	-55.87	8.02	-47.85	69.42	34.57
			64QAM	3422.12	H	-55.90	8.01	-47.89	68.57	33.68
	1745	1/2	QPSK	3491.16	H	-55.41	8.18	-47.23	70.13	35.90
			16QAM	3491.27	H	-55.38	8.18	-47.20	69.17	34.97
			64QAM	3487.16	H	-56.05	8.17	-47.88	68.82	33.94
	1779.3	1/2	QPSK	3560.13	H	-56.30	8.33	-47.97	69.65	34.68
			16QAM	3562.45	H	-56.04	8.33	-47.71	68.59	33.88
			64QAM	3561.02	H	-55.98	8.33	-47.65	67.76	33.11

Note 1: Limit Calculation = 43 + $10\log_{10}$ (P[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.

7.6.5 LTE Band 2

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	1860	1/50	QPSK	3720.36	H	-52.02	8.39	-43.63	67.29	36.66
			16QAM	3720.23	H	-52.05	8.39	-43.66	66.02	35.36
			64QAM	3720.18	H	-52.31	8.39	-43.92	65.74	34.82
	1880	1/50	QPSK	3760.67	H	-53.55	8.36	-45.19	67.93	35.74
			16QAM	3760.26	H	-53.74	8.36	-45.38	67.43	35.05
			64QAM	3760.30	H	-53.83	8.36	-45.47	66.61	34.14
	1900	1/50	QPSK	3800.29	H	-53.88	8.22	-45.66	68.26	35.60
			16QAM	3800.29	H	-55.51	8.22	-47.29	69.04	34.75
			64QAM	3800.22	H	-55.43	8.22	-47.21	68.04	33.83
15	1857.5	1/0	QPSK	3702.08	H	-52.25	8.38	-43.87	66.89	36.02
			16QAM	3701.68	H	-53.27	8.38	-44.89	67.22	35.33
			64QAM	3702.05	H	-52.86	8.38	-44.48	65.48	34.00
	1880	1/0	QPSK	3746.84	H	-52.60	8.40	-44.20	67.09	35.89
			16QAM	3746.51	H	-52.26	8.40	-43.86	66.11	35.25
			64QAM	3746.70	H	-53.46	8.40	-45.06	66.14	34.08
	1902.5	1/0	QPSK	3791.63	H	-54.38	8.25	-46.13	68.81	35.68
			16QAM	3792.09	H	-54.70	8.25	-46.45	68.39	34.94
			64QAM	3792.07	H	-54.11	8.25	-45.86	66.67	33.81
10	1855	1/25	QPSK	3701.04	H	-51.52	8.38	-43.14	66.13	35.99
			16QAM	3709.90	H	-52.69	8.38	-44.31	66.52	35.21
			64QAM	3710.82	H	-53.08	8.38	-44.70	66.04	34.34
	1880	1/25	QPSK	3760.76	H	-52.52	8.36	-44.16	67.20	36.04
			16QAM	3760.76	H	-53.69	8.36	-45.33	67.68	35.35
			64QAM	3760.08	H	-53.51	8.36	-45.15	66.20	34.05
	1905	1/25	QPSK	3809.83	H	-54.67	8.22	-46.45	68.53	35.08
			16QAM	3809.87	H	-54.50	8.22	-46.28	67.52	34.24
			64QAM	3809.72	H	-54.96	8.22	-46.74	66.60	32.86
5	1852.5	1/12	QPSK	3705.27	H	-51.91	8.38	-43.53	65.97	35.44
			16QAM	3704.88	H	-52.15	8.38	-43.77	65.73	34.96
			64QAM	3705.15	H	-52.90	8.38	-44.52	65.68	34.16
	1880	1/12	QPSK	3760.16	H	-52.56	8.36	-44.20	67.00	35.80
			16QAM	3760.34	H	-53.47	8.36	-45.11	67.54	35.43
			64QAM	3760.19	H	-53.49	8.36	-45.13	65.84	33.71
	1907.5	1/12	QPSK	3814.83	H	-54.96	8.22	-46.74	68.74	35.00
			16QAM	3814.85	H	-54.63	8.22	-46.41	67.40	33.99
			64QAM	3815.21	H	-54.33	8.22	-46.11	66.05	32.94

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)	
3	1851.5	1/14	QPSK	3705.35	H	-52.31	8.38	-43.93	66.81	35.88
			16QAM	3705.69	H	-52.09	8.38	-43.71	65.66	34.95
			64QAM	3705.29	H	-52.07	8.38	-43.69	64.57	33.88
	1880	1/0	QPSK	3757.60	H	-52.79	8.37	-44.42	67.33	35.91
			16QAM	3757.17	H	-52.19	8.37	-43.82	66.19	35.37
			64QAM	3757.53	H	-54.06	8.37	-45.69	66.71	34.02
	1908.5	1/7	QPSK	3817.37	H	-55.07	8.22	-46.85	69.07	35.22
			16QAM	3817.36	H	-54.99	8.22	-46.77	68.15	34.38
			64QAM	3816.75	H	-55.01	8.22	-46.79	67.07	33.28
1.4	1850.7	1/2	QPSK	3700.92	H	-52.85	8.38	-44.47	67.30	35.83
			16QAM	3701.79	H	-52.90	8.38	-44.52	66.59	35.07
			64QAM	3701.30	H	-52.75	8.38	-44.37	66.27	34.90
	1880	1/2	QPSK	3759.46	H	-52.70	8.37	-44.33	67.27	35.94
			16QAM	3759.68	H	-53.45	8.37	-45.08	67.14	35.06
			64QAM	3759.86	H	-53.02	8.36	-44.66	66.58	34.92
	1909.3	1/2	QPSK	3818.85	H	-55.01	8.22	-46.79	69.04	35.25
			16QAM	3820.49	H	-54.84	8.22	-46.62	67.74	34.12
			64QAM	3818.34	H	-54.84	8.22	-46.62	67.27	33.65

Note 1: Limit Calculation = 43 + $10\log_{10}$ (P[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.

7.6.6 LTE Band 7

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	1/50	QPSK	5020.12	V	-54.14	10.04	-44.10	64.24	45.14
			16QAM	5020.81	V	-53.01	10.04	-42.97	61.86	43.89
			64QAM	5021.99	V	-53.48	10.04	-43.44	61.80	43.36
	2535	1/50	QPSK	5068.71	V	-53.51	10.16	-43.35	63.95	45.60
			16QAM	5072.69	V	-52.69	10.17	-42.52	62.27	44.75
			64QAM	5072.17	V	-53.53	10.17	-43.36	61.42	43.06
	2560	1/50	QPSK	5119.72	V	-53.86	10.27	-43.59	63.73	45.14
			16QAM	5121.97	V	-54.29	10.27	-44.02	63.90	44.88
			64QAM	5122.10	V	-54.29	10.27	-44.02	62.44	43.42
15	2507.5	1/36	QPSK	5011.99	V	-51.79	10.02	-41.77	61.70	44.93
			16QAM	5014.84	V	-54.15	10.03	-44.12	63.44	44.32
			64QAM	5013.07	V	-53.75	10.02	-43.73	61.64	42.91
	2535	1/36	QPSK	5070.09	V	-53.34	10.16	-43.18	63.57	45.39
			16QAM	5069.23	V	-53.20	10.16	-43.04	62.55	44.51
			64QAM	5069.50	V	-53.08	10.16	-42.92	60.86	42.94
	2562.5	1/36	QPSK	5127.76	V	-53.45	10.26	-43.19	63.10	44.91
			16QAM	5124.72	V	-53.91	10.27	-43.64	62.04	43.40
			64QAM	5124.91	V	-53.88	10.27	-43.61	60.82	42.21
10	2505	1/25	QPSK	5006.21	V	-53.80	10.01	-43.79	64.01	45.22
			16QAM	5007.42	V	-53.21	10.01	-43.20	62.59	44.39
			64QAM	5009.24	V	-53.75	10.02	-43.73	61.40	42.67
	2535	1/25	QPSK	5070.51	V	-52.76	10.16	-42.60	62.63	45.03
			16QAM	5067.60	V	-53.08	10.15	-42.93	62.34	44.41
			64QAM	5071.20	V	-53.07	10.17	-42.90	61.46	43.56
	2565	1/25	QPSK	5128.79	V	-53.81	10.26	-43.55	63.26	44.71
			16QAM	5129.92	V	-53.94	10.26	-43.68	62.62	43.94
			64QAM	5128.84	V	-54.74	10.26	-44.48	62.09	42.61
5	2502.5	1/12	QPSK	5006.23	Z	-53.90	10.01	-43.89	63.34	44.45
			16QAM	5006.76	Z	-52.40	10.01	-42.39	60.96	43.57
			64QAM	5004.84	Z	-53.76	10.01	-43.75	61.46	42.71
	2535	1/12	QPSK	5067.20	Z	-52.84	10.15	-42.69	62.99	45.30
			16QAM	5068.06	Z	-53.27	10.16	-43.11	62.96	44.85
			64QAM	5066.80	Z	-53.45	10.15	-43.30	62.13	73.83
	2567.5	1/12	QPSK	5132.36	Z	-53.87	10.26	-43.61	62.92	44.31
			16QAM	5134.66	Z	-54.18	10.26	-43.92	61.75	42.83
			64QAM	5135.31	Z	-54.34	10.26	-44.08	61.21	42.13

Note 1: Limit Calculation = 55 + 10log$_{10}$ (P[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

7.7 FREQUENCY STABILITY

7.7.1 LTE Band 12, 17

OPERATING FREQUENCY : 707.5 MHz
REFERENCE VOLTAGE : 4.0 VDC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays wthin the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	4.0	+20(Ref)	707,500,003	3	0.0042	0.000000424
100%		-30	707,499,994	-6	-0.0085	-0.000000848
100%		-20	707,499,992	-8	-0.0113	-0.000001131
100%		-10	707,500,002	2	0.0028	0.000000283
100%		0	707,499,997	-3	-0.0042	-0.000000424
100%		+10	707,500,005	5	0.0071	0.000000707
100%		+20	707,500,003	3	0.0042	0.000000424
100%		+30	707,499,997	-3	-0.0042	-0.000000424
100%		+40	707,500,002	2	0.0028	0.000000283
100%		+50	707,500,004	4	0.0057	0.000000565
110%	4.4	+20	707,499,995	-5	-0.0071	-0.000000707
BATT.ENDPOINT	3.0	+20	707,499,997	-3	-0.0042	-0.000000424

Note 1: 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.
Note 2: At the request of the applicant, the voltage of highest level is tested at 110%.

7.7.2 LTE Band 5

OPERATING FREQUENCY : 836.5 MHz
REFERENCE VOLTAGE : 4.0 VDC
DEVIATION LIMIT : ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	4.0	+20(Ref)	836,500,005	5	0.0060	0.000000598
100%		-30	836,499,999	-1	-0.0012	-0.000000120
100%		-20	836,500,003	3	0.0036	0.000000359
100%		-10	836,500,005	5	0.0060	0.000000598
100%		0	836,500,009	9	0.0108	0.000001076
100%		+10	836,500,002	2	0.0024	0.000000239
100%		+20	836,500,005	5	0.0060	0.000000598
100%		+30	836,500,005	5	0.0060	0.000000598
100%		+40	836,499,997	-3	-0.0036	-0.000000359
100%		+50	836,499,995	-5	-0.0060	-0.000000598
110%	4.4	+20	836,499,999	-1	-0.0012	-0.000000120
BATT.ENDPOINT	3.0	+20	836,500,003	3	0.0036	0.000000359

Note : At the request of the applicant, the voltage of highest level is tested at 110%.

7.7.3 LTE Band 66, 4

OPERATING FREQUENCY : 1745.0 MHz
REFERENCE VOLTAGE 4.0 VDC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays wthin the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	4.0	+20(Ref)	1,745,000,003	3	0.0017	0.000000172
100%		-30	1,745,000,008	8	0.0046	0.000000458
100%		-20	1,744,999,999	-1	-0.0006	-0.000000057
100%		-10	1,745,000,004	4	0.0023	0.000000229
100%		0	1,745,000,003	3	0.0017	0.000000172
100%		+10	1,744,999,995	-5	-0.0029	-0.000000287
100%		+20	1,745,000,003	3	0.0017	0.000000172
100%		+30	1,745,000,004	4	0.0023	0.000000229
100%		+40	1,744,999,999	-1	-0.0006	-0.000000057
100%		+50	1,745,000,003	3	0.0017	0.000000172
110%	4.4	+20	1,745,000,008	8	0.0046	0.000000458
BATT.ENDPOINT	3.0	+20	1,745,000,005	5	0.0029	0.000000287

Note 1: 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.
Note 2: At the request of the applicant, the voltage of highest level is tested at 110%.

7.7.4 LTE Band 2

OPERATING FREQUENCY : 1880 MHz
REFERENCE VOLTAGE 4.0 VDC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays wthin the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	4.0	+20(Ref)	1,880,000,003	3	0.0016	0.000000160
100%		-30	1,879,999,996	-4	-0.0021	-0.000000213
100%		-20	1,879,999,999	-1	-0.0005	-0.000000053
100%		-10	1,880,000,005	5	0.0027	0.000000266
100%		0	1,879,999,998	-2	-0.0011	-0.000000106
100%		+10	1,880,000,008	8	0.0043	0.000000426
100%		+20	1,880,000,003	3	0.0016	0.000000160
100%		+30	1,880,000,002	2	0.0011	0.000000106
100%		+40	1,880,000,005	5	0.0027	0.000000266
100%		+50	1,879,999,997	-3	-0.0016	-0.000000160
110%	4.4	+20	1,880,000,005	5	0.0027	0.000000266
BATT.ENDPOINT	3.0	+20	1,879,999,997	-3	-0.0016	-0.000000160

Note 1: 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.
Note 2: At the request of the applicant, the voltage of highest level is tested at 110%.

7.7.5 LTE Band 7

OPERATING FREQUENCY : 2535 MHz
REFERENCE VOLTAGE : 4.0 VDC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays wthin the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	4.0	+20(Ref)	2,535,000,008	8	0.0032	0.000000316
100%		-30	2,535,000,003	3	0.0012	0.000000118
100%		-20	2,534,999,998	-2	-0.0008	-0.000000079
100%		-10	2,535,000,004	4	0.0016	0.000000158
100%		0	2,535,000,002	2	0.0008	0.000000079
100%		+10	2,534,999,994	-6	-0.0024	-0.000000237
100%		+20	2,535,000,008	8	0.0032	0.000000316
100%		+30	2,534,999,998	-2	-0.0008	-0.000000079
100%		+40	2,535,000,004	4	0.0016	0.000000158
100%		+50	2,534,999,994	-6	-0.0024	-0.000000237
110%	4.4	+20	2,534,999,998	-2	-0.0008	-0.000000079
BATT.ENDPOINT	3.0	+20	2,534,999,995	-5	-0.0020	-0.000000197

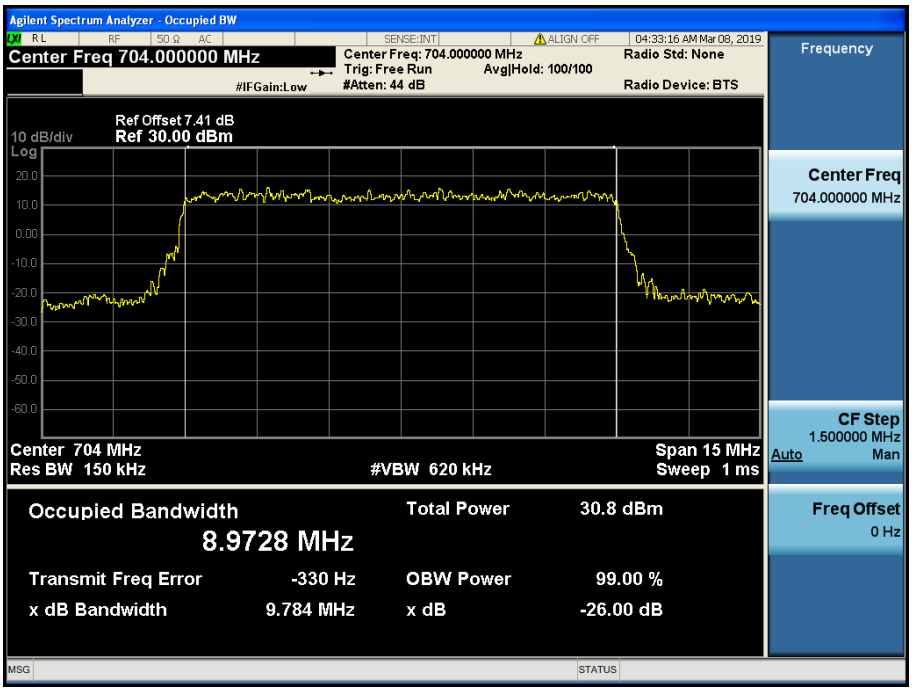
Note 1: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.
Note 2: At the request of the applicant, the voltage of highest level is tested at 110%.

8. TEST PLOTS

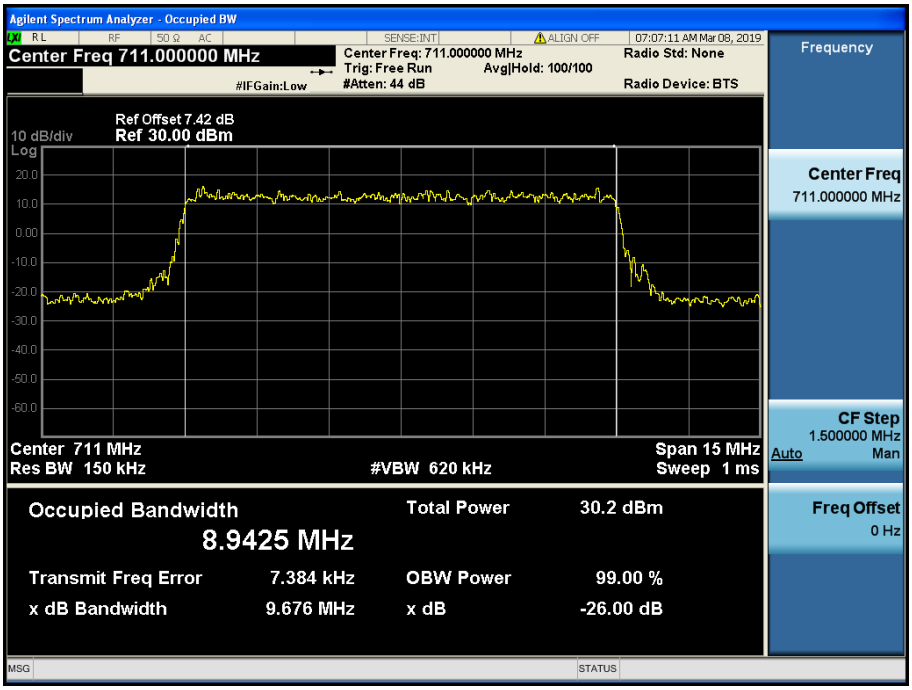
Note: All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported.

8.1 OCCUPIED BANDWIDTH

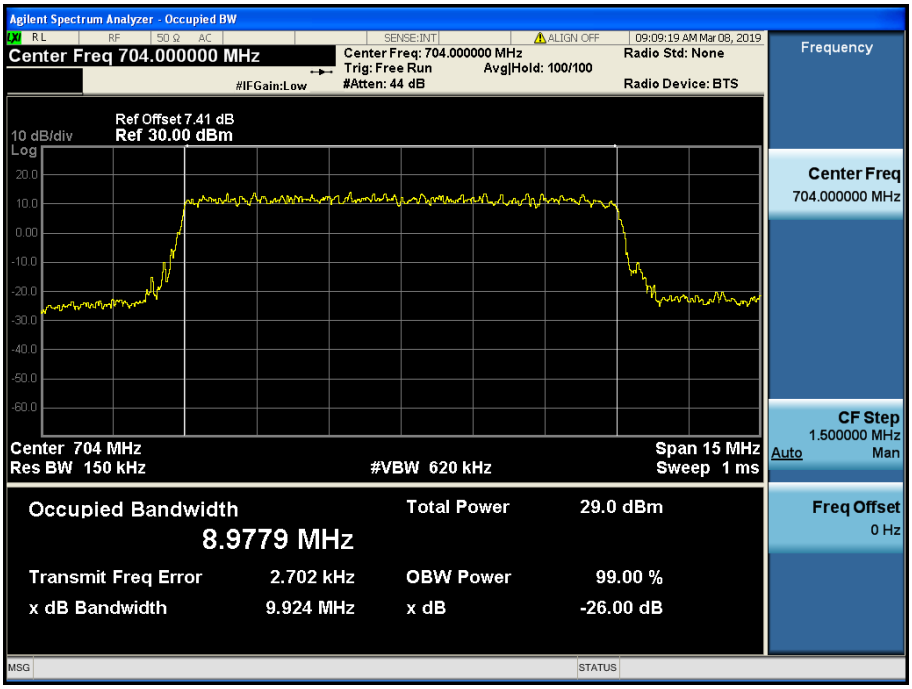
8.1.1 LTE Band 12, 17



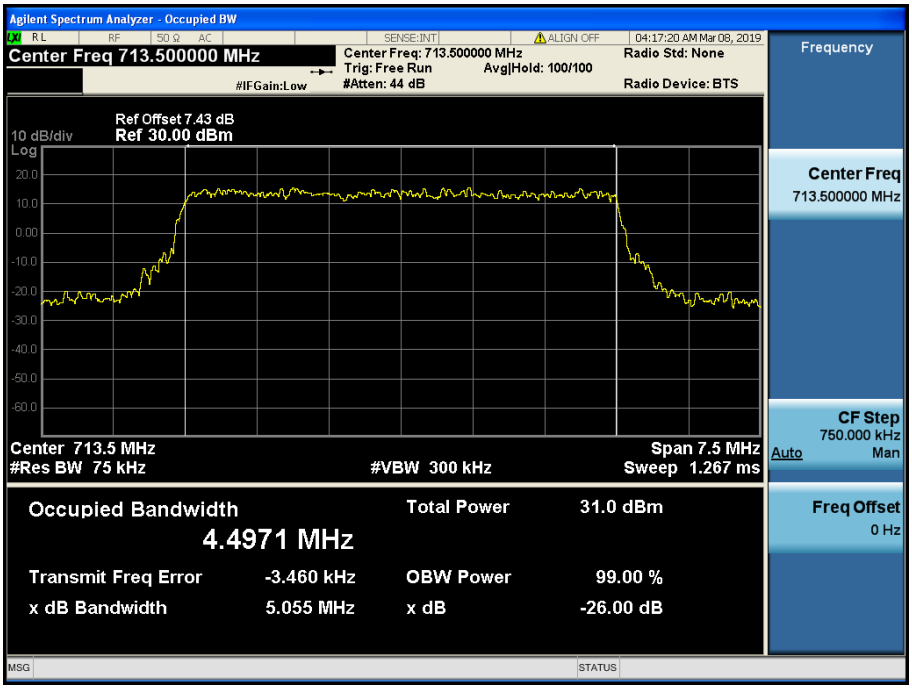
LTE Band 12, 17 / 10 MHz / QPSK - RB Size 50



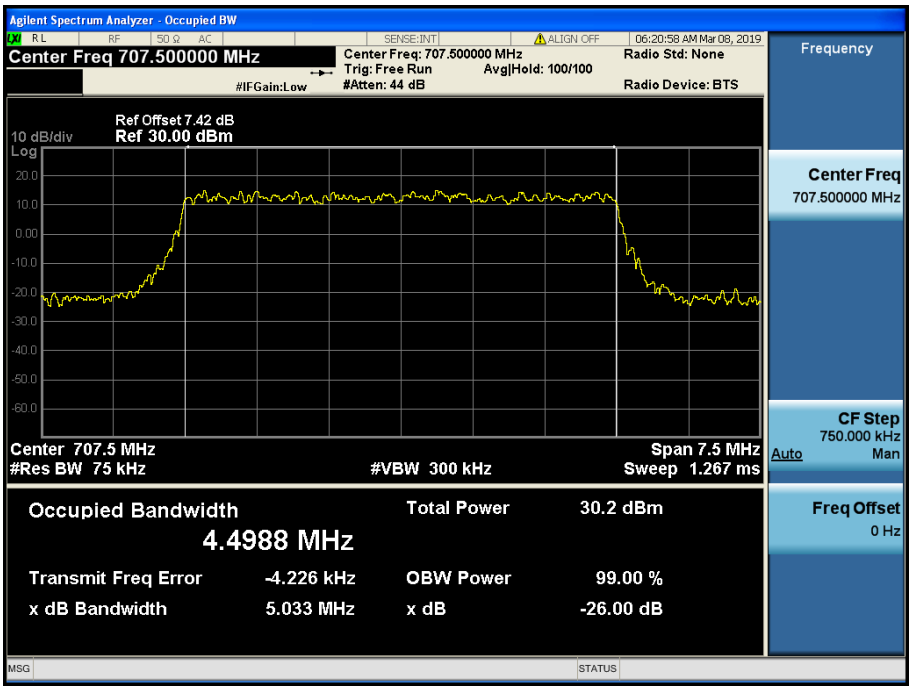
LTE Band 12, 17 / 10 MHz / 16QAM - RB Size 50



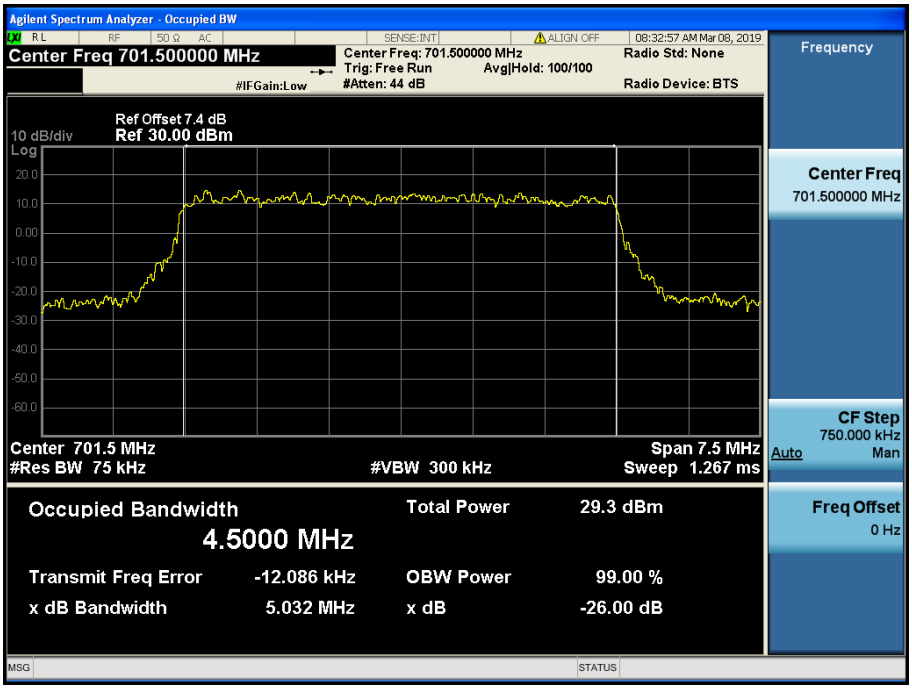
LTE Band 12, 17 / 10 MHz / 64QAM- RB Size 50



LTE Band 12, 17 / 5 MHz / QPSK - RB Size 25

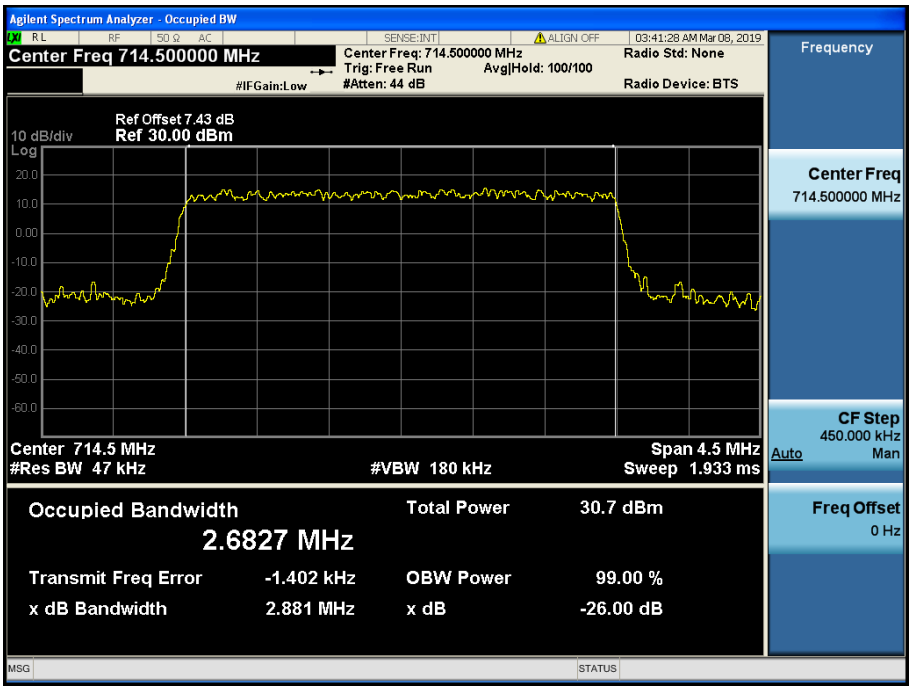


LTE Band 12, 17 / 5 MHz / 16QAM - RB Size 25

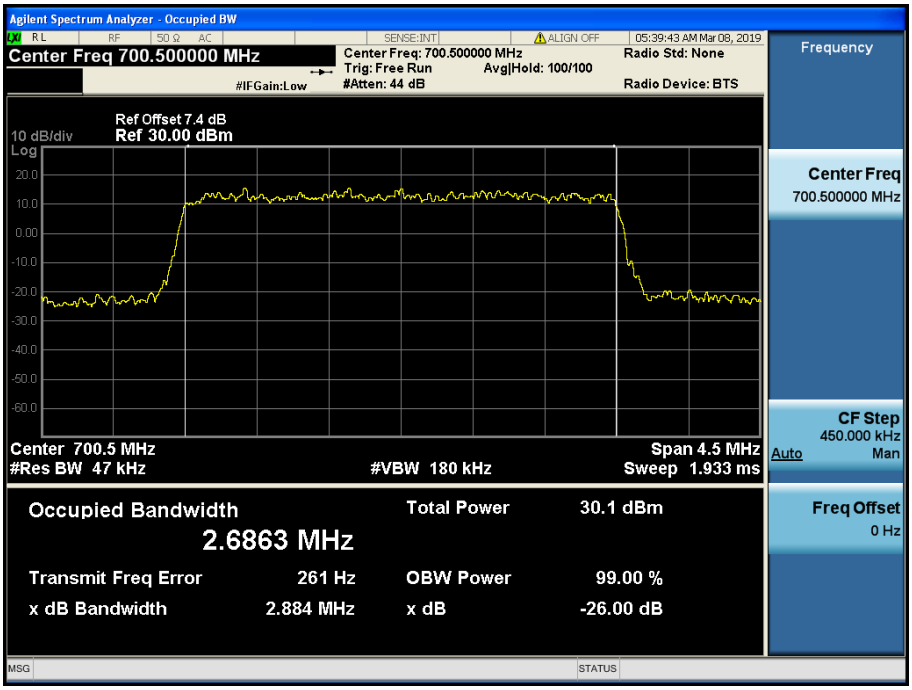


LTE Band 12, 17 / 5 MHz / 64QAM - RB Size 25

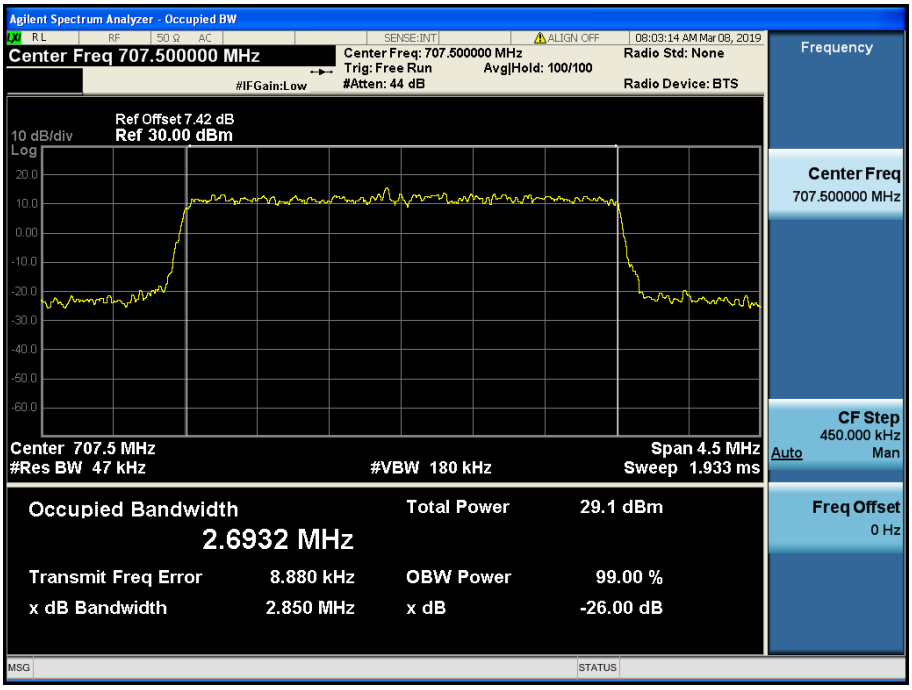
8.1.2 LTE Band 12



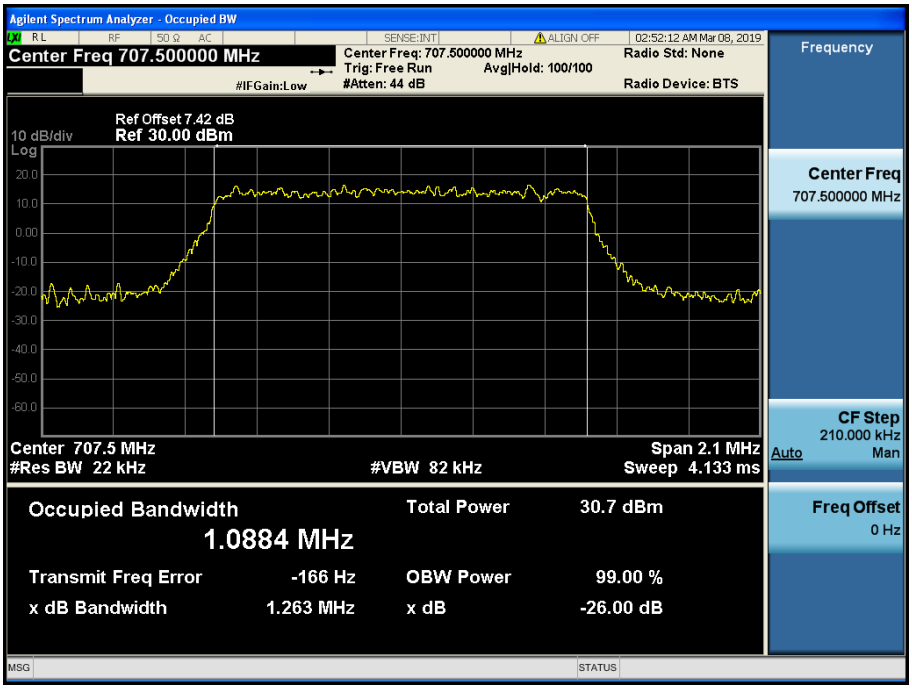
LTE Band 12 / 3 MHz / QPSK - RB Size 15



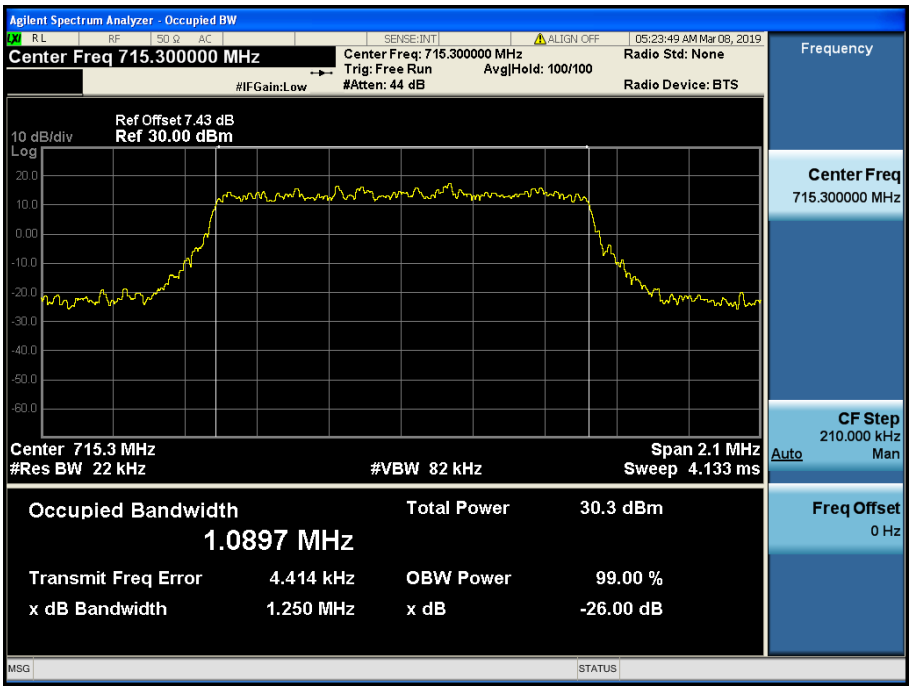
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



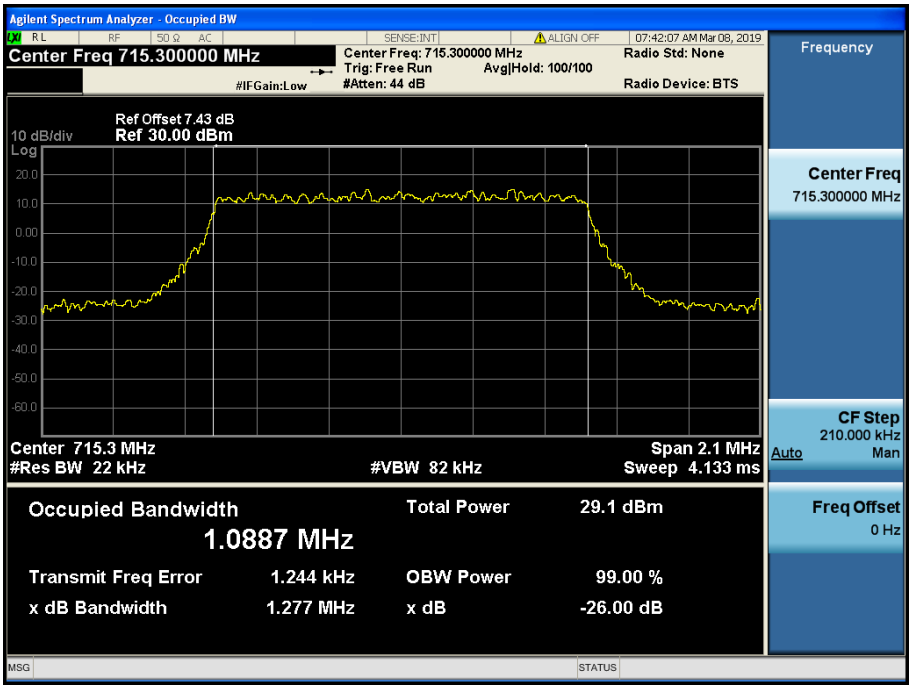
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



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

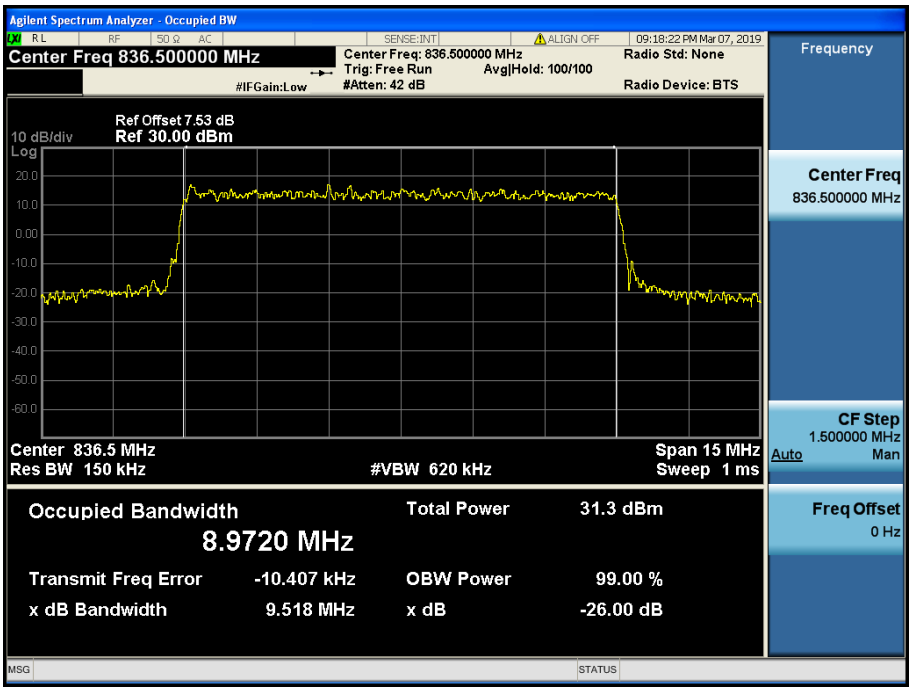


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

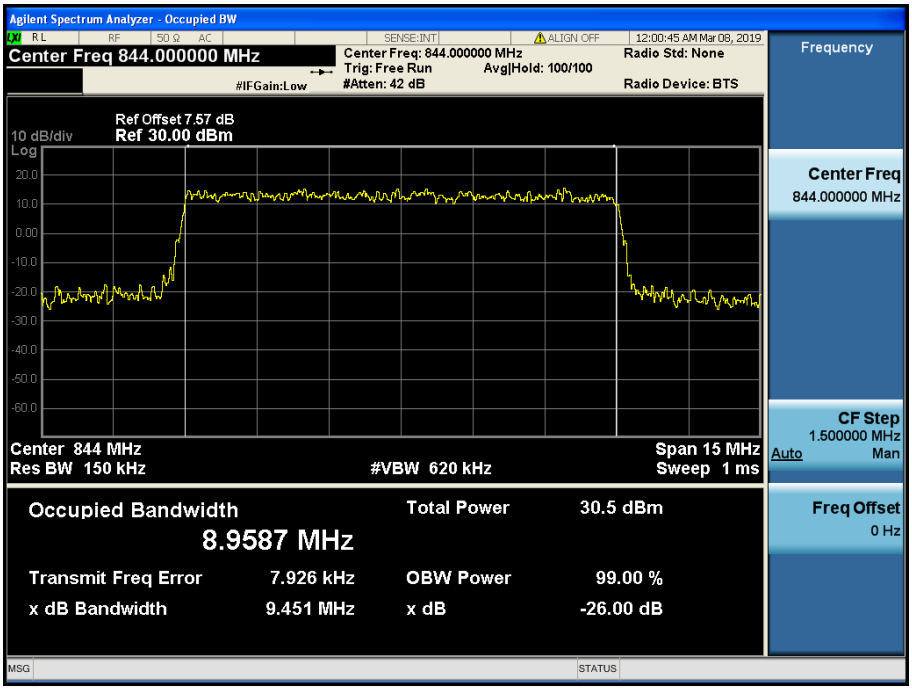


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

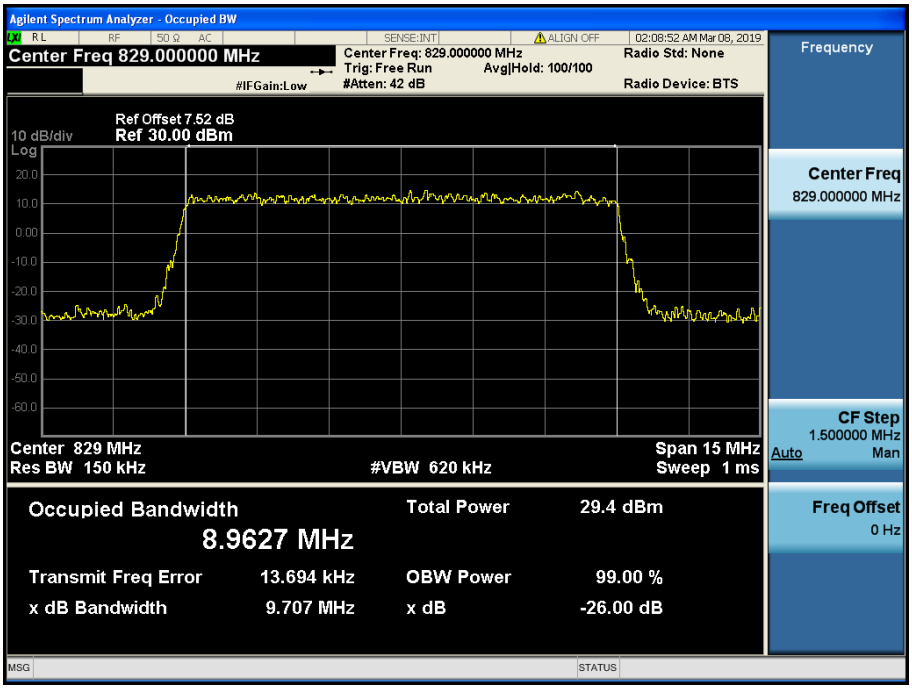
8.1.3 LTE Band 5



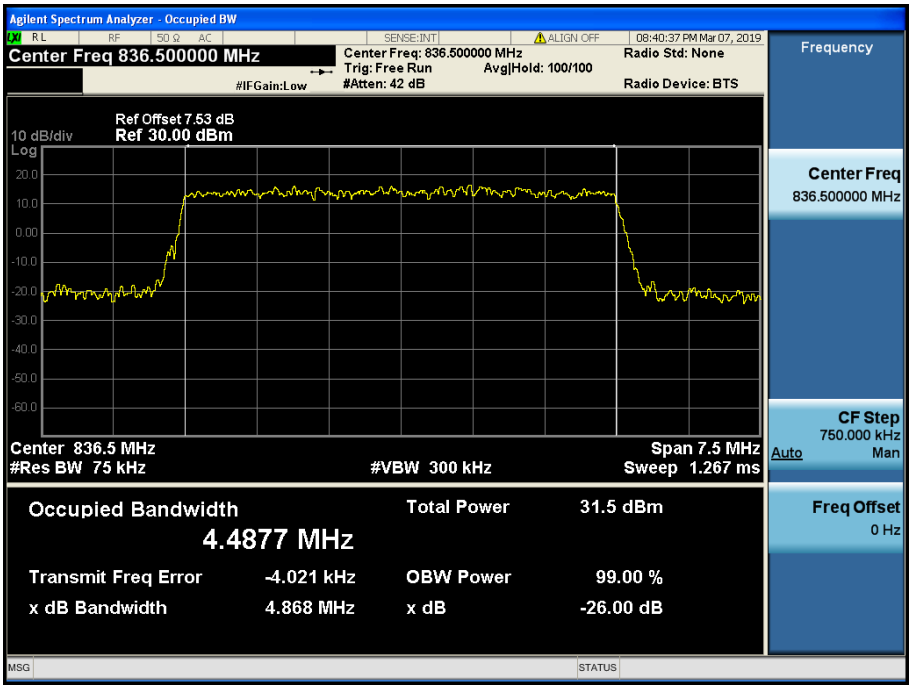
LTE Band 5 / 10 MHz / QPSK - RB Size 50



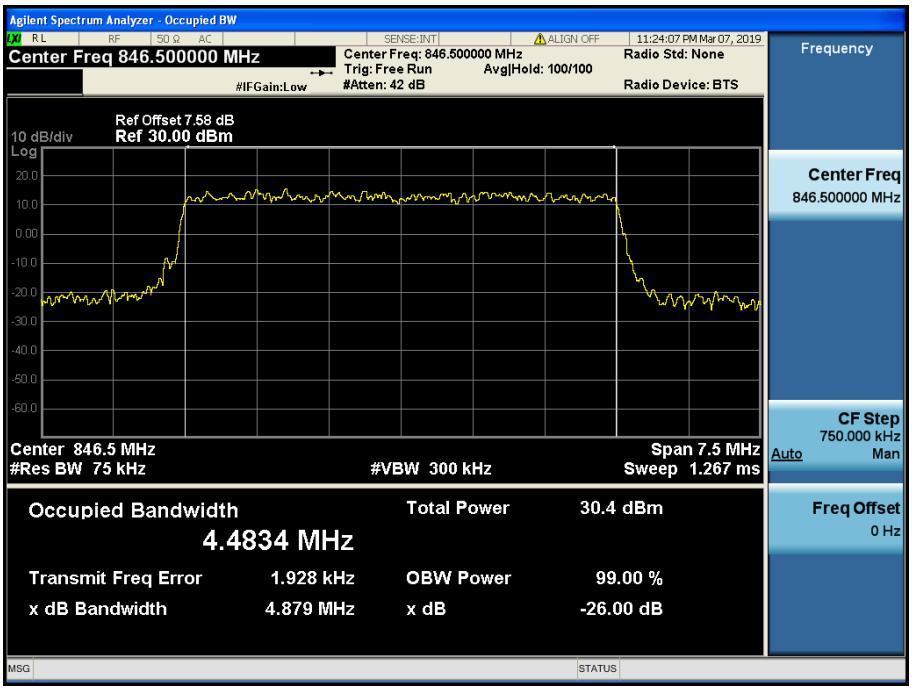
LTE Band 5 / 10 MHz / 16QAM - RB Size 50



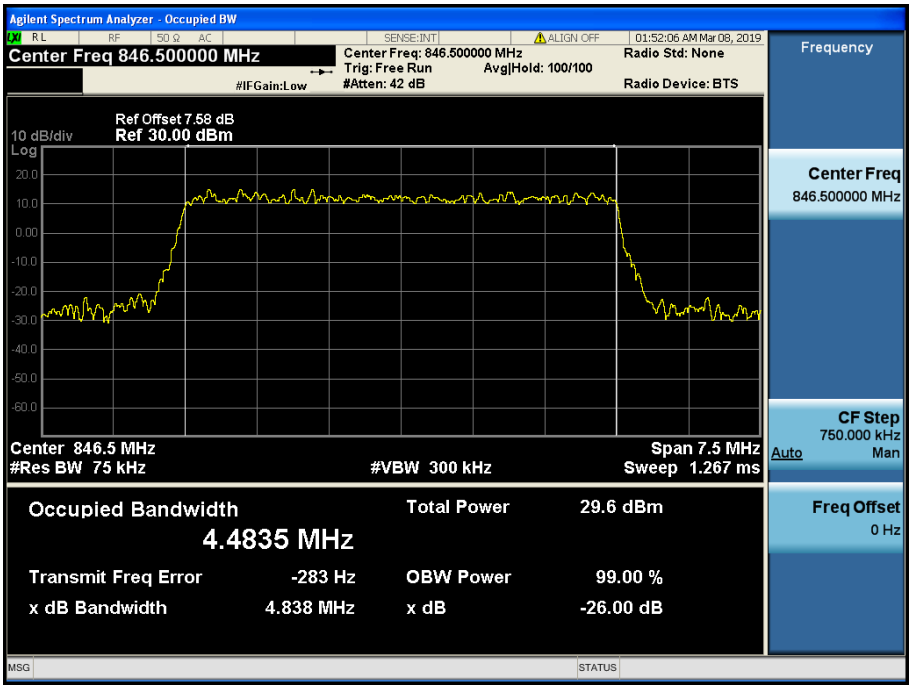
LTE Band 5 / 10 MHz / 64QAM - RB Size 50



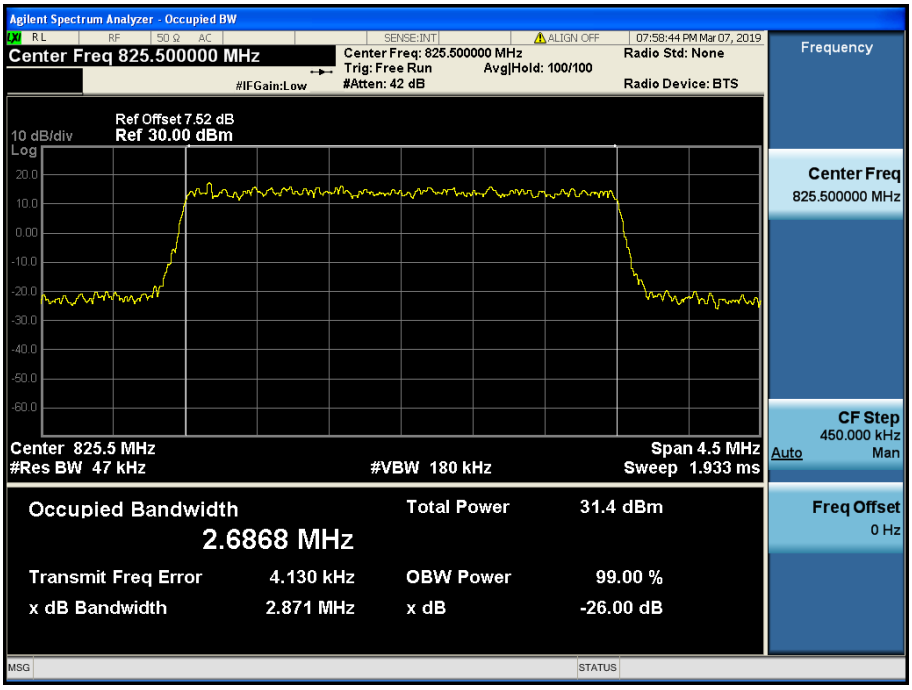
LTE Band 5 / 5 MHz / QPSK - RB Size 25



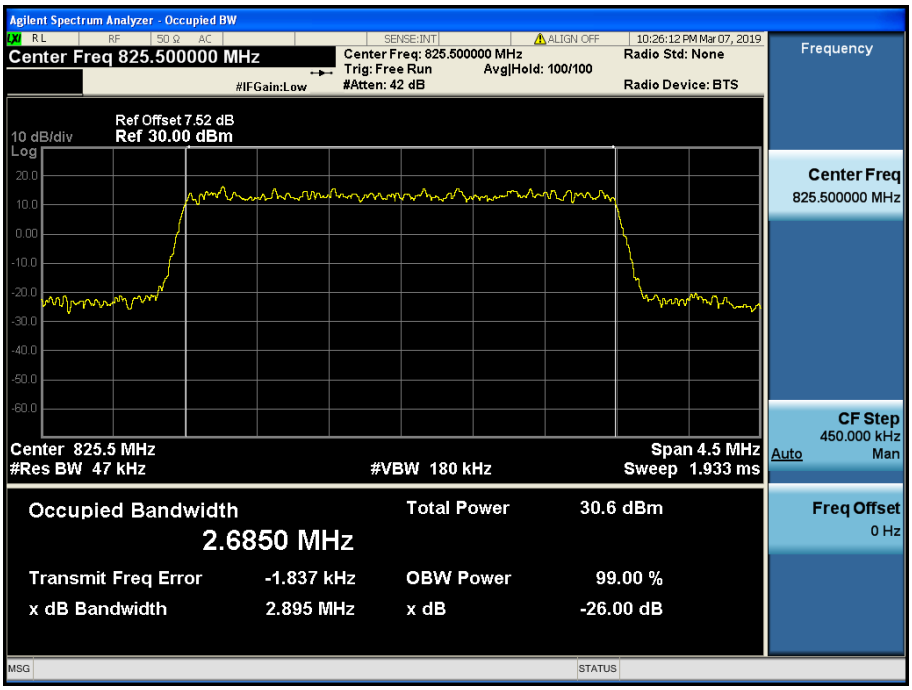
LTE Band 5 / 5 MHz / 16QAM - RB Size 25



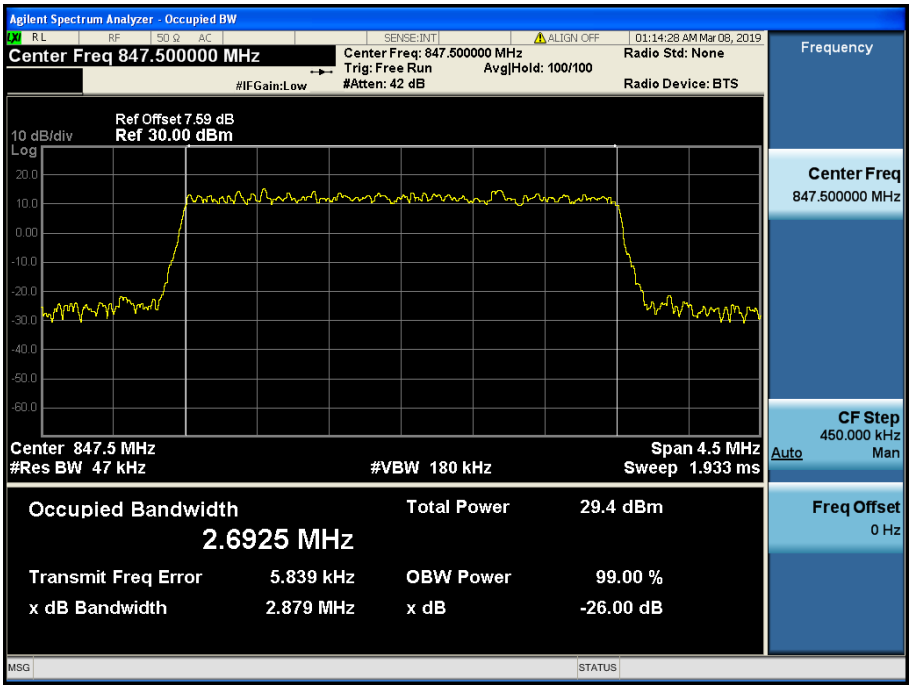
LTE Band 5 / 5 MHz / 64QAM - RB Size 25



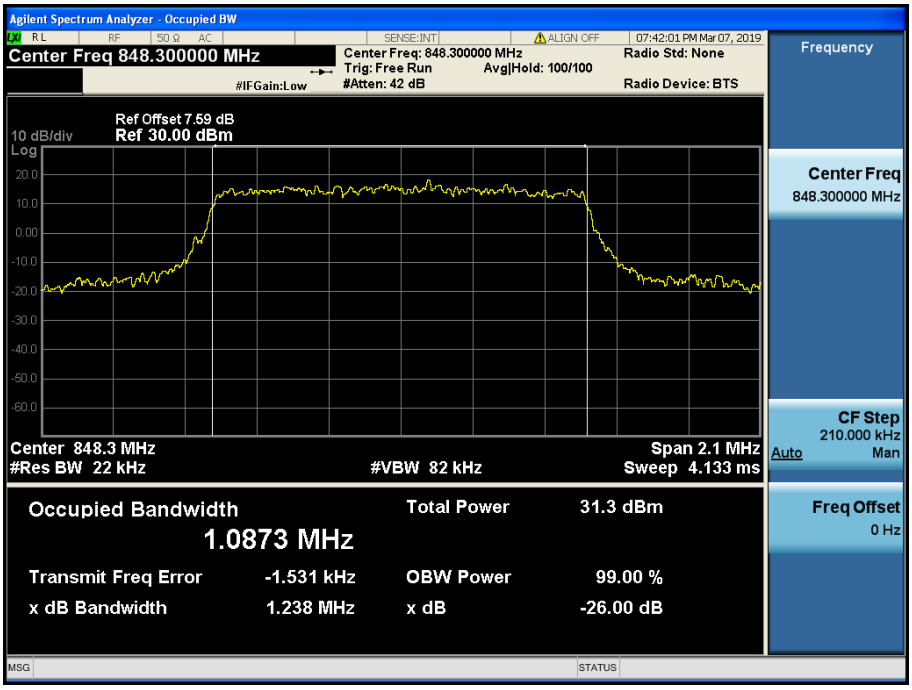
LTE Band 5 / 3 MHz / QPSK - RB Size 15



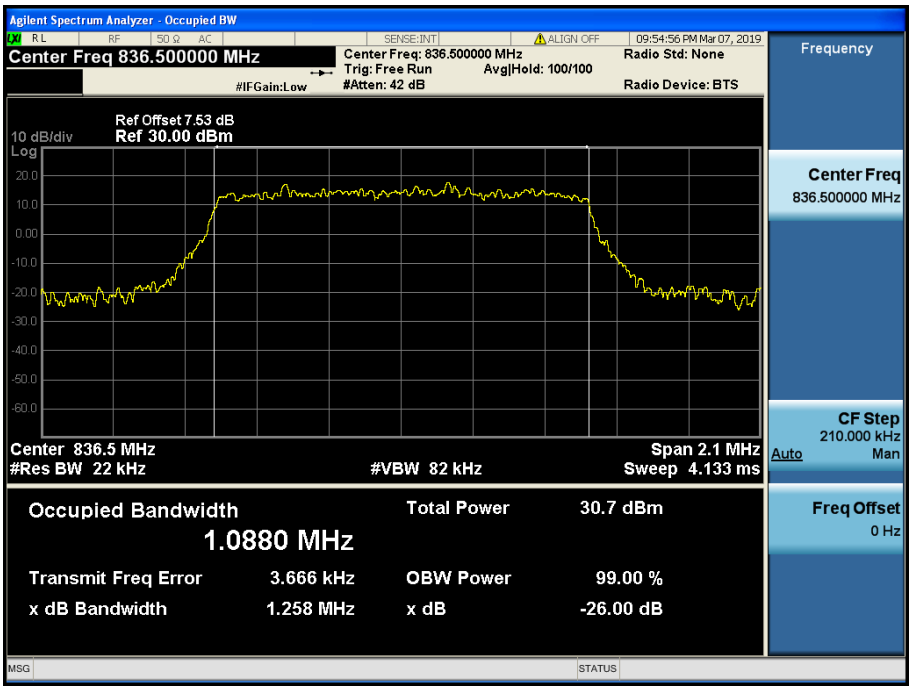
LTE Band 5 / 3 MHz / 16QAM - RB Size 15



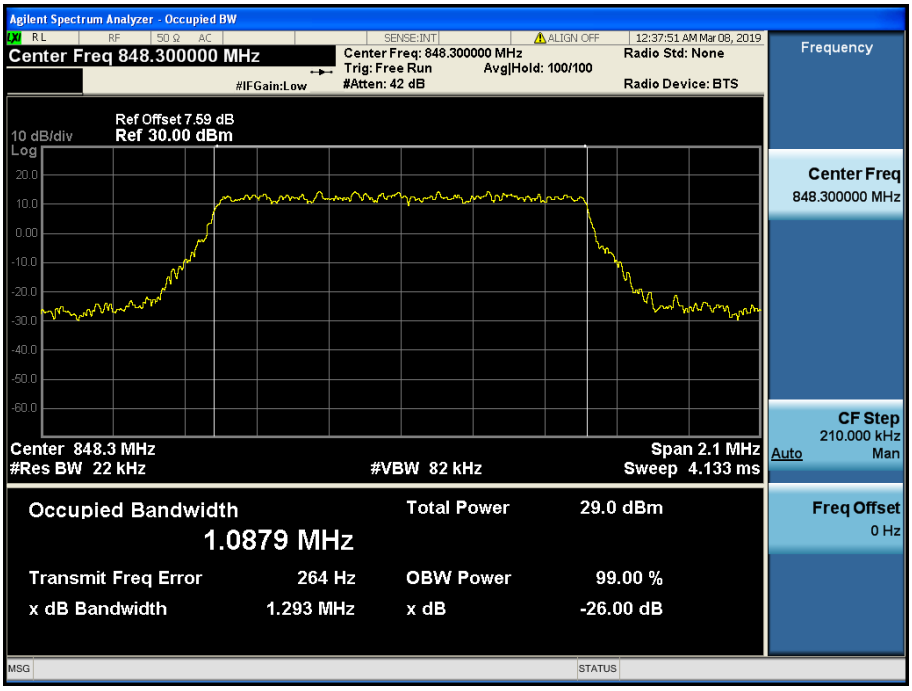
LTE Band 5 / 3 MHz / 64QAM - RB Size 15



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

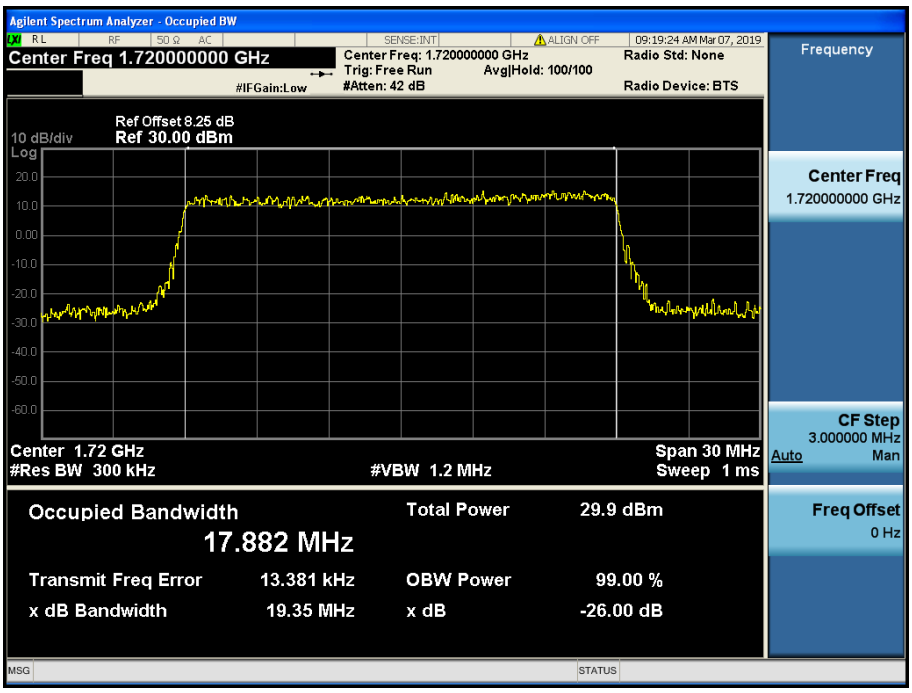


LTE Band 5 / 1.4 MHz / 16QAM - RB Size 6

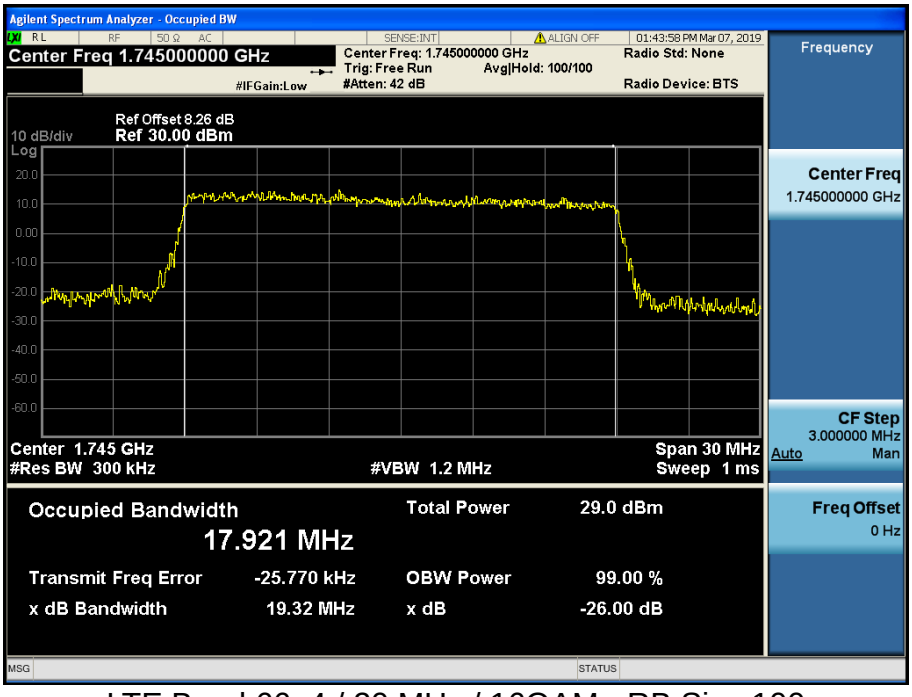


LTE Band 5 / 1.4 MHz / 64QAM - RB Size 6

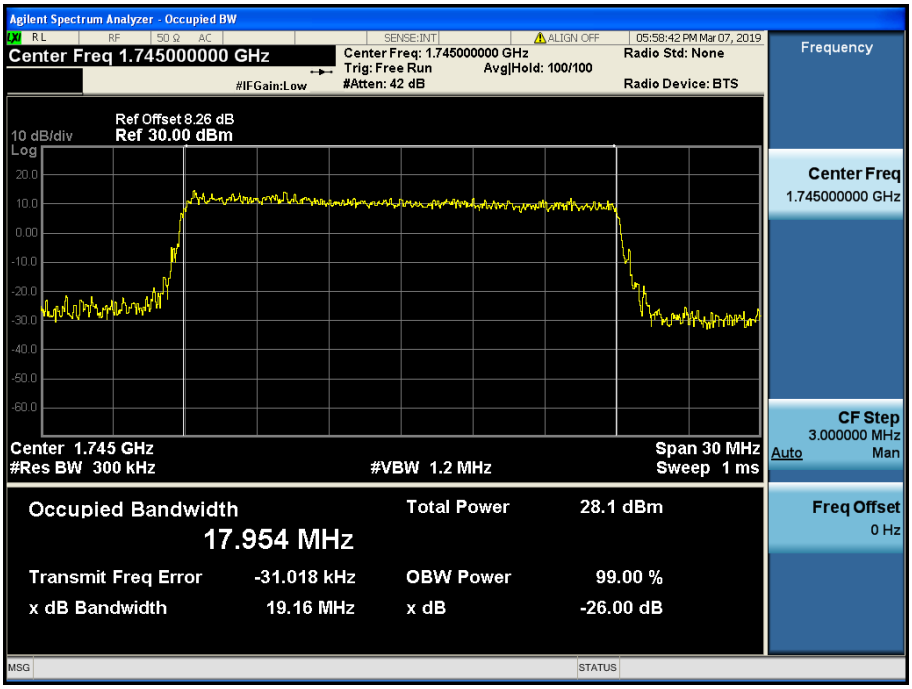
8.1.4 LTE Band 66, 4



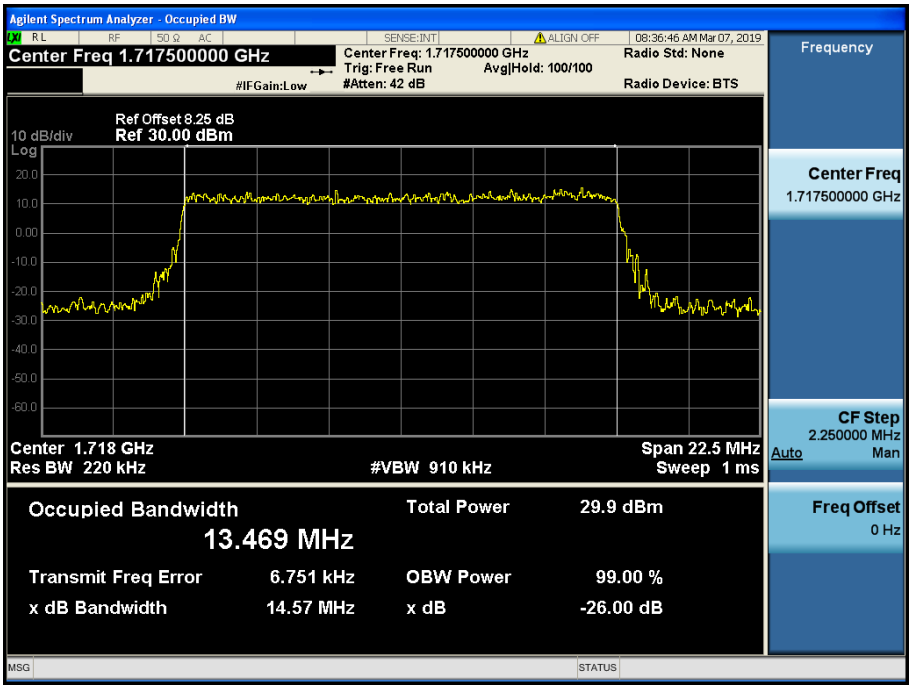
LTE Band 66, 4 / 20 MHz / QPSK - RB Size 100



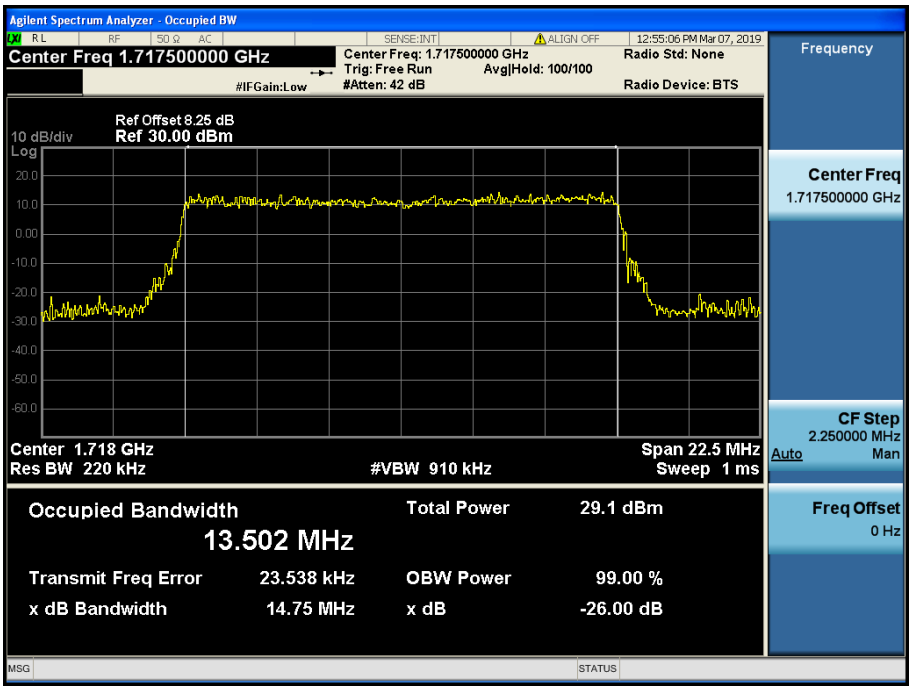
LTE Band 66, 4 / 20 MHz / 16QAM - RB Size 100



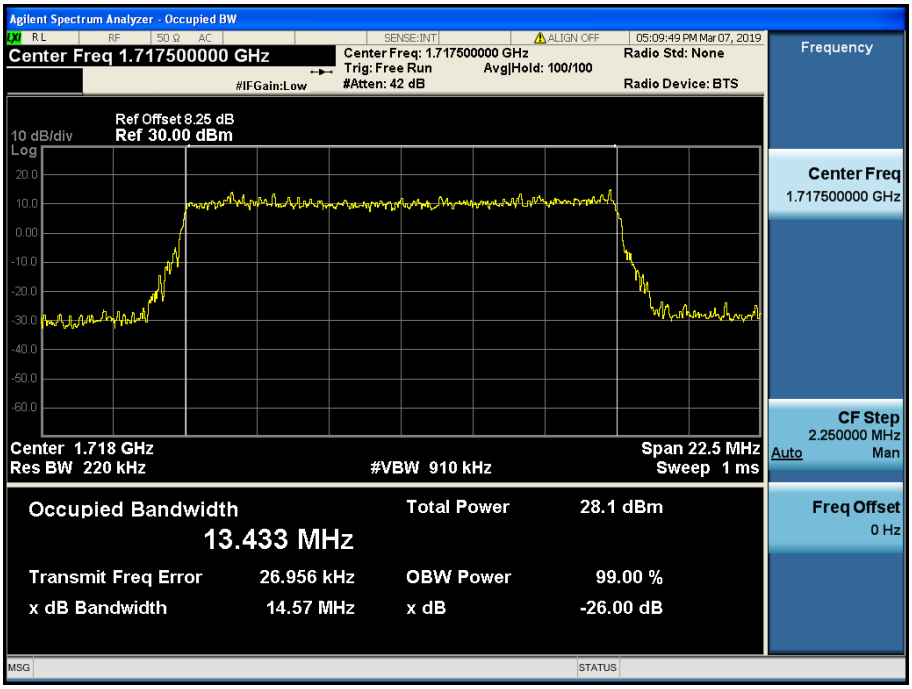
LTE Band 66, 4 / 20 MHz / 64QAM - RB Size 100



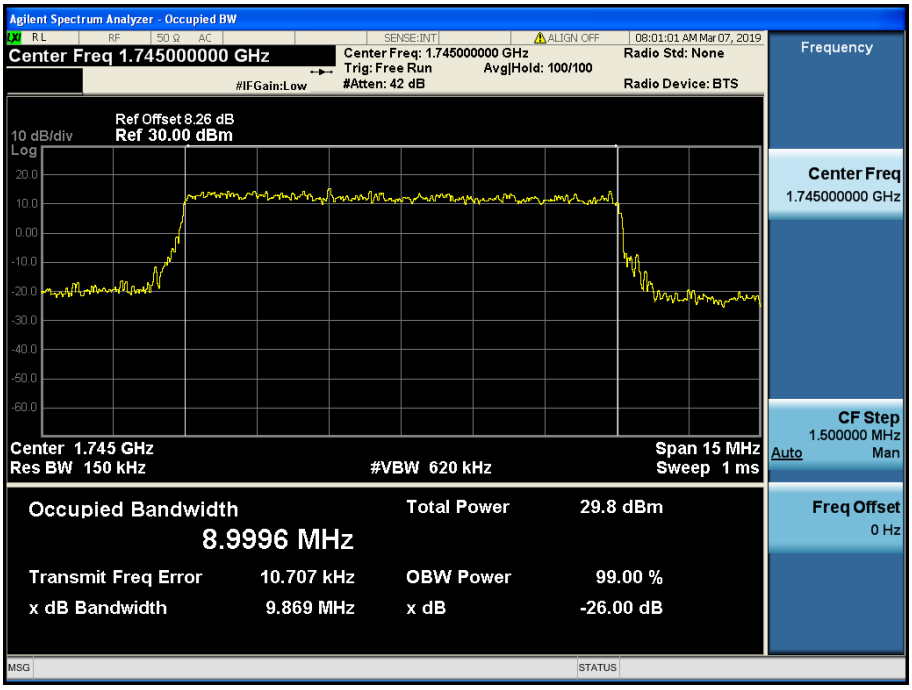
LTE Band 66, 4 / 15 MHz / QPSK - RB Size 75



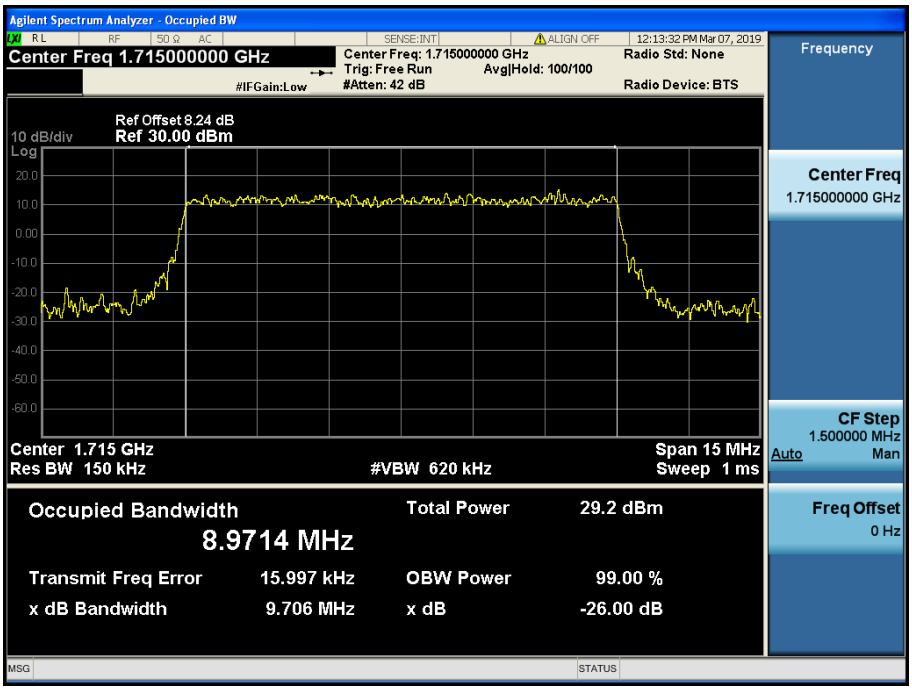
LTE Band 66, 4 / 15 MHz / 16QAM - RB Size 75



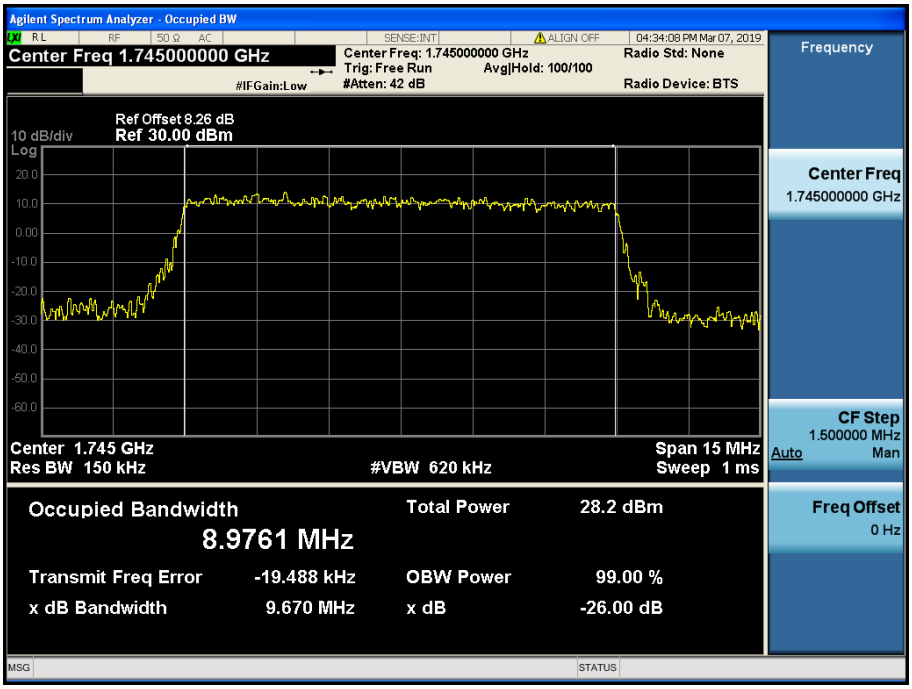
LTE Band 66, 4 / 15 MHz / 64QAM - RB Size 75



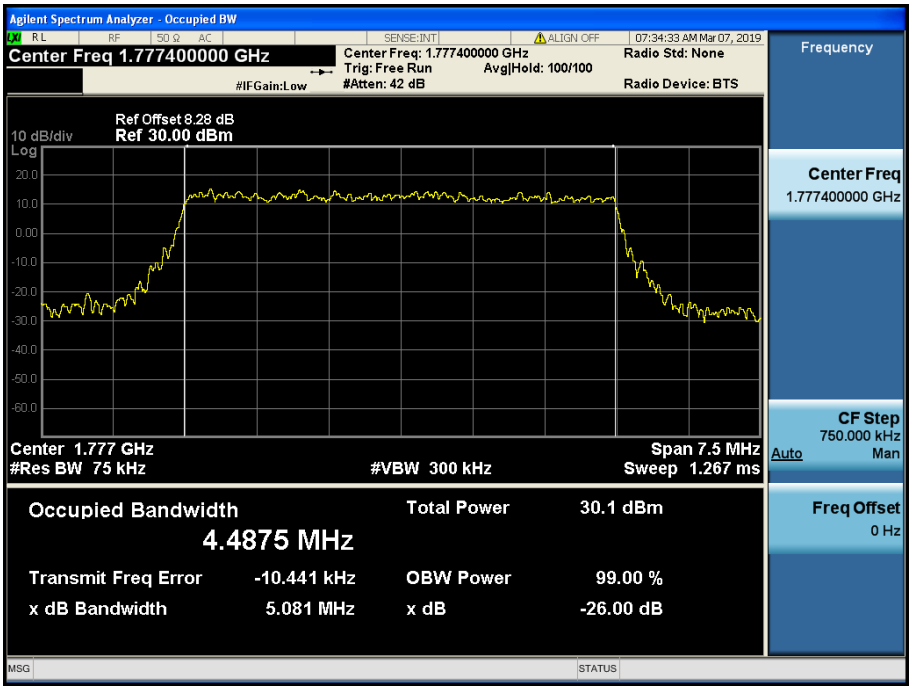
LTE Band 66, 4 / 10 MHz / QPSK - RB Size 50



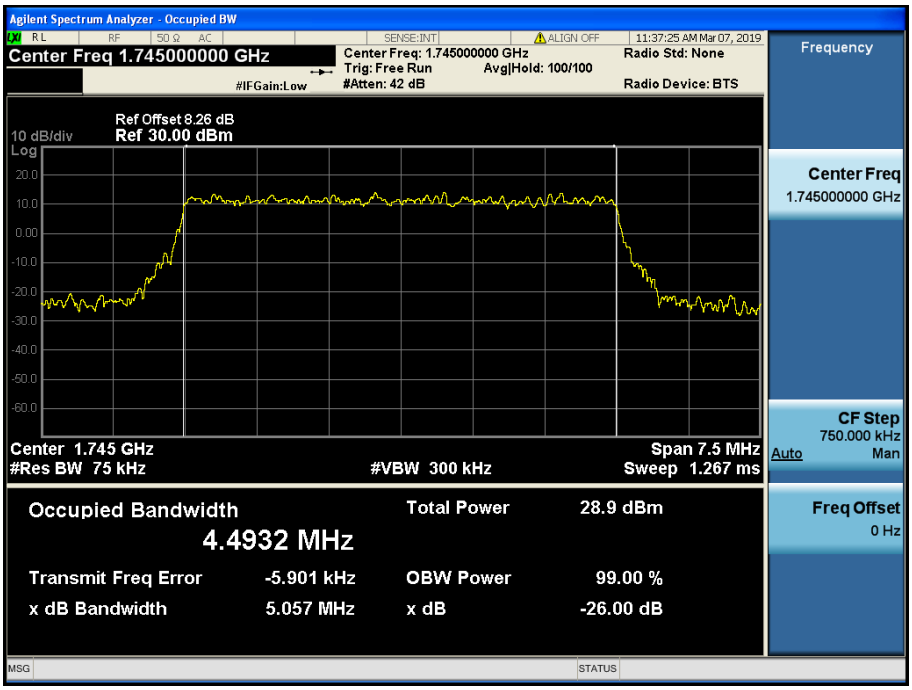
LTE Band 66, 4 / 10 MHz / 16QAM - RB Size 50



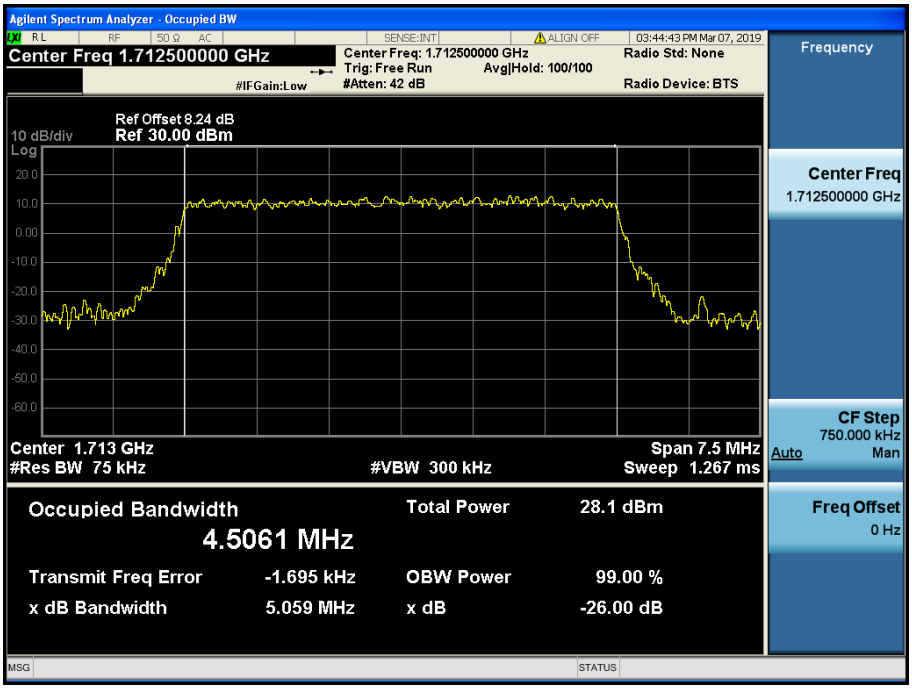
LTE Band 66, 4 / 10 MHz / 64QAM - RB Size 50



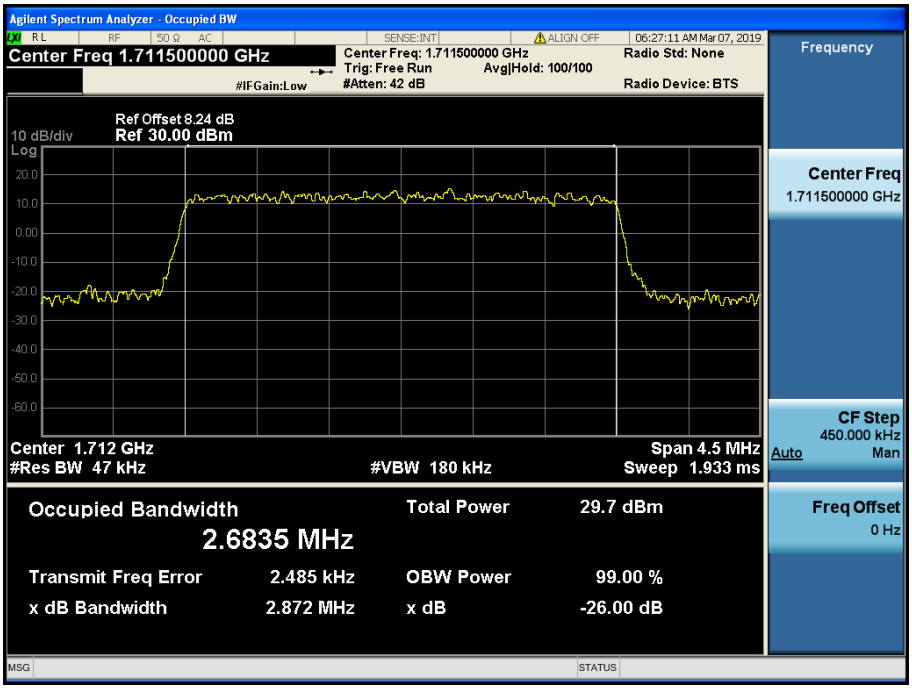
LTE Band 66, 4 / 5 MHz / QPSK - RB Size 25



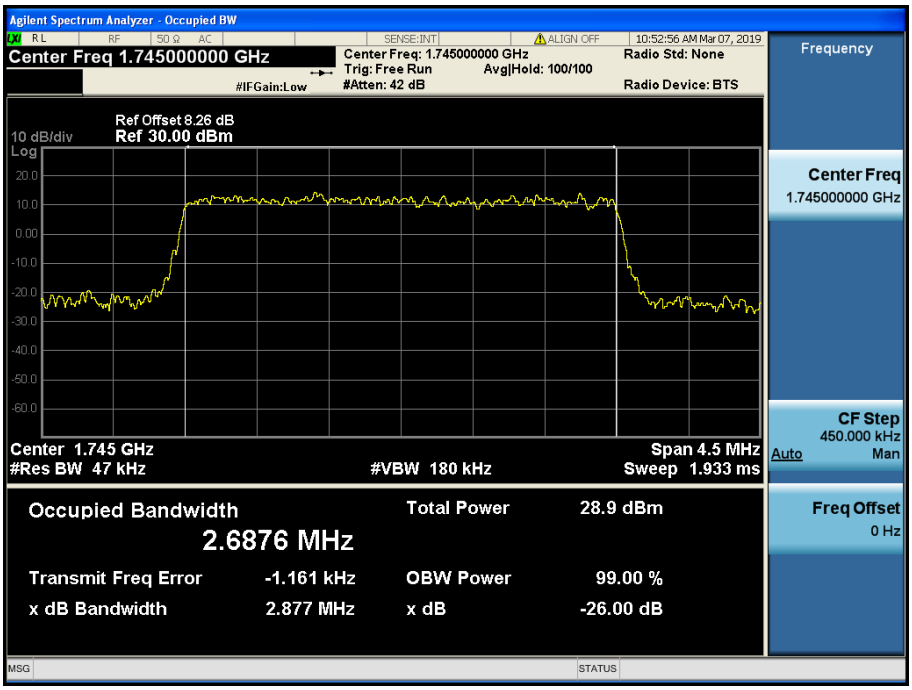
LTE Band 66, 4 / 5 MHz / 16QAM - RB Size 25



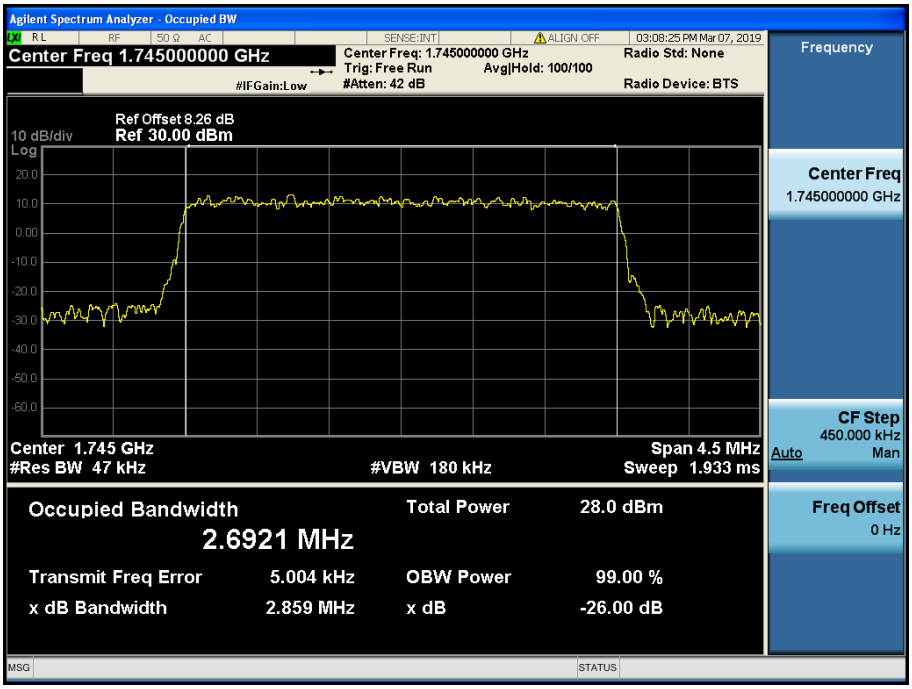
LTE Band 66, 4 / 5 MHz / 64QAM - RB Size 25



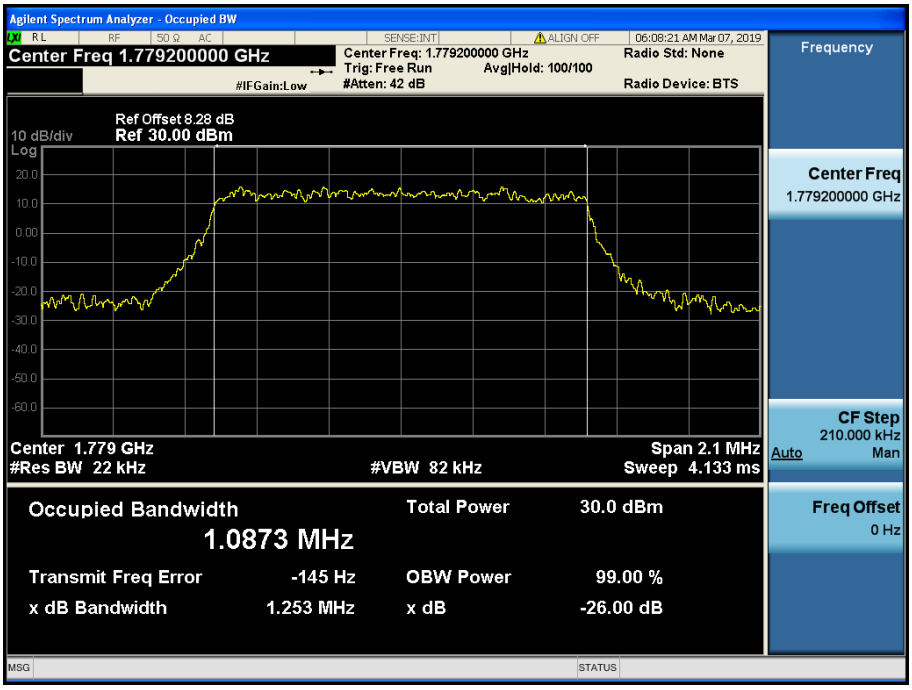
LTE Band 66, 4 / 3 MHz / QPSK - RB Size 15



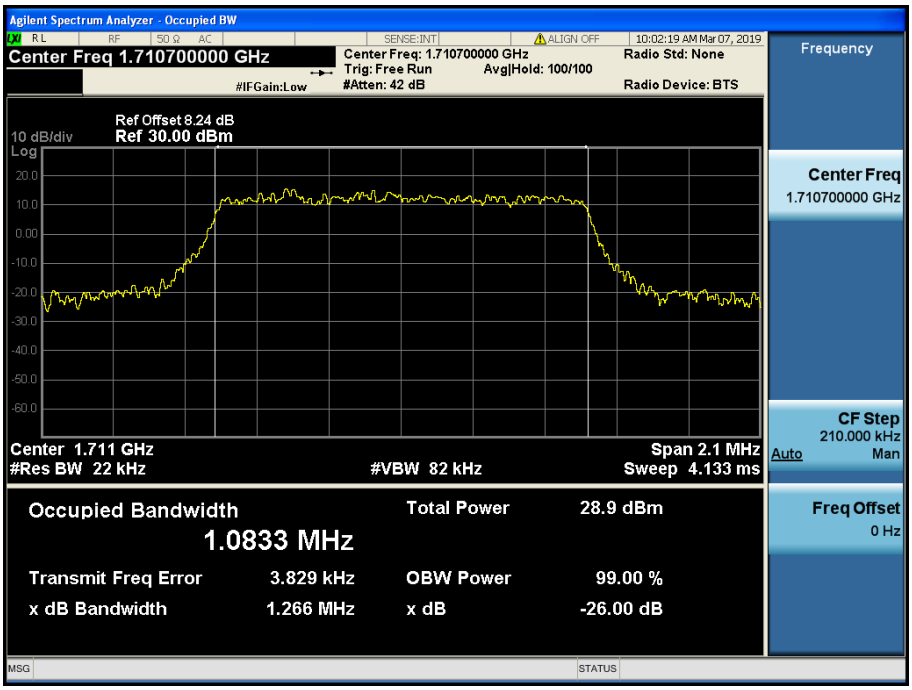
LTE Band 66, 4 / 3 MHz / 16QAM - RB Size 15



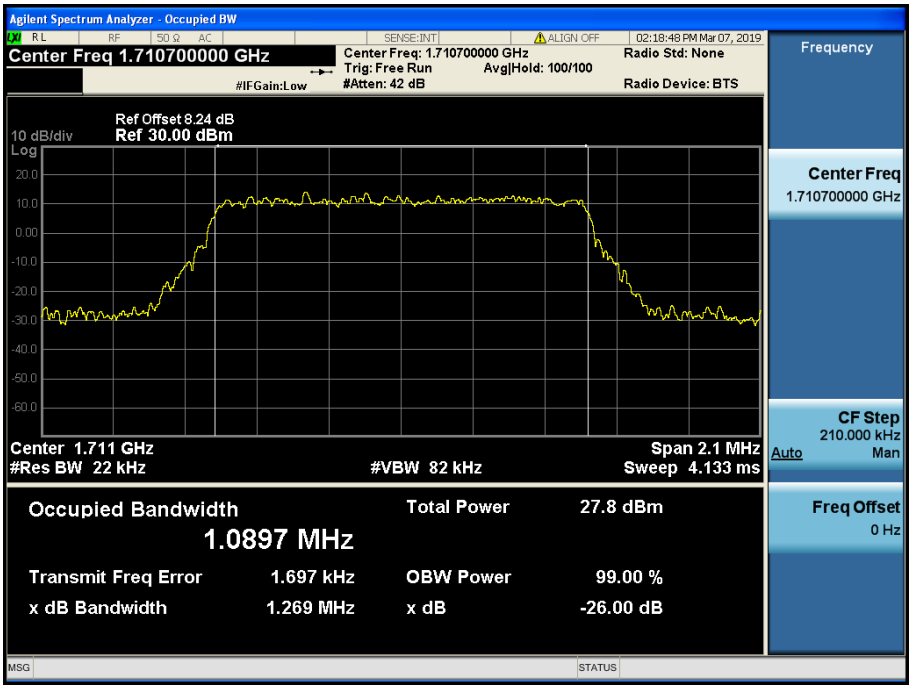
LTE Band 66, 4 / 3 MHz / 64QAM - RB Size 15



LTE Band 66, 4 / 1.4 MHz / QPSK - RB Size 6

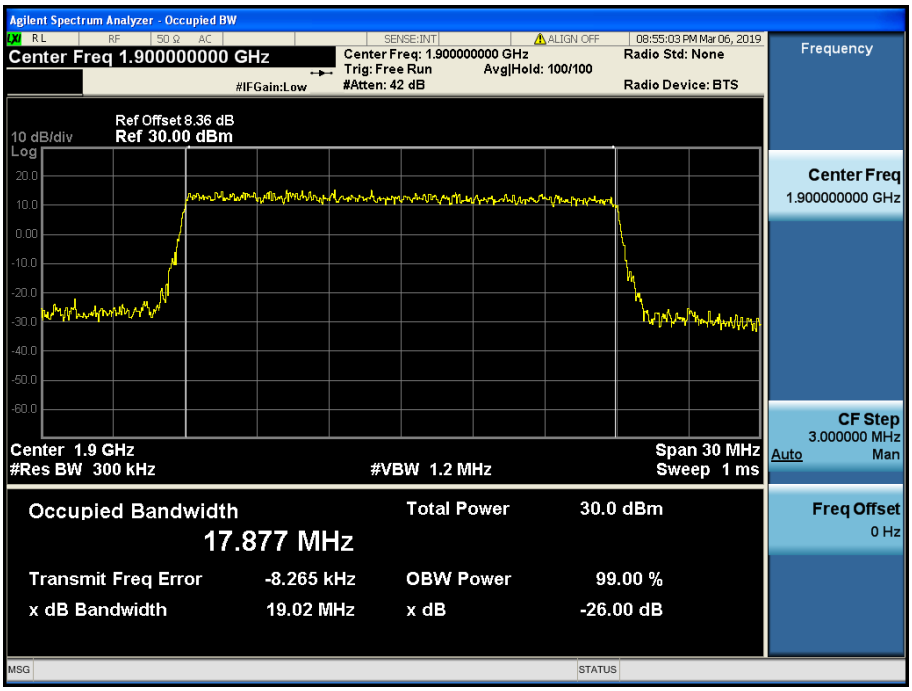


LTE Band 66, 4 / 1.4 MHz / 16QAM - RB Size 6

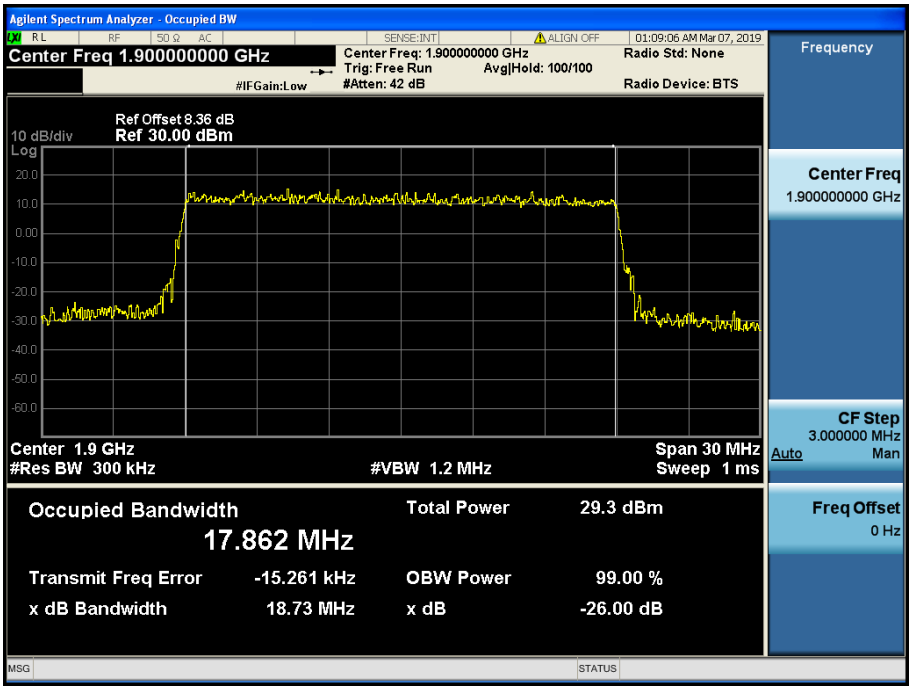


LTE Band 66, 4 / 1.4 MHz / 64QAM - RB Size 6

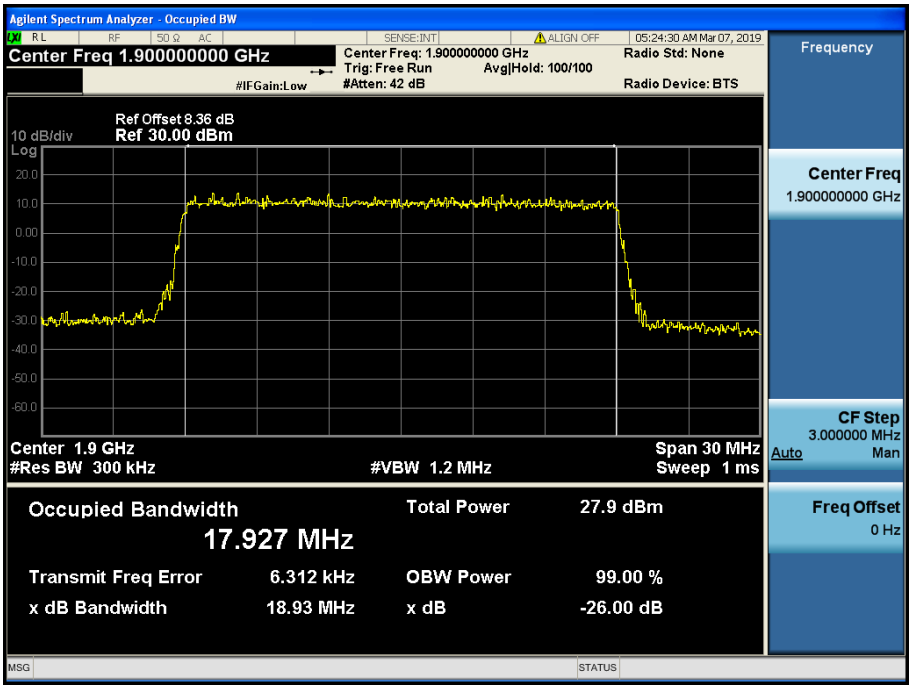
8.1.5 LTE Band 2



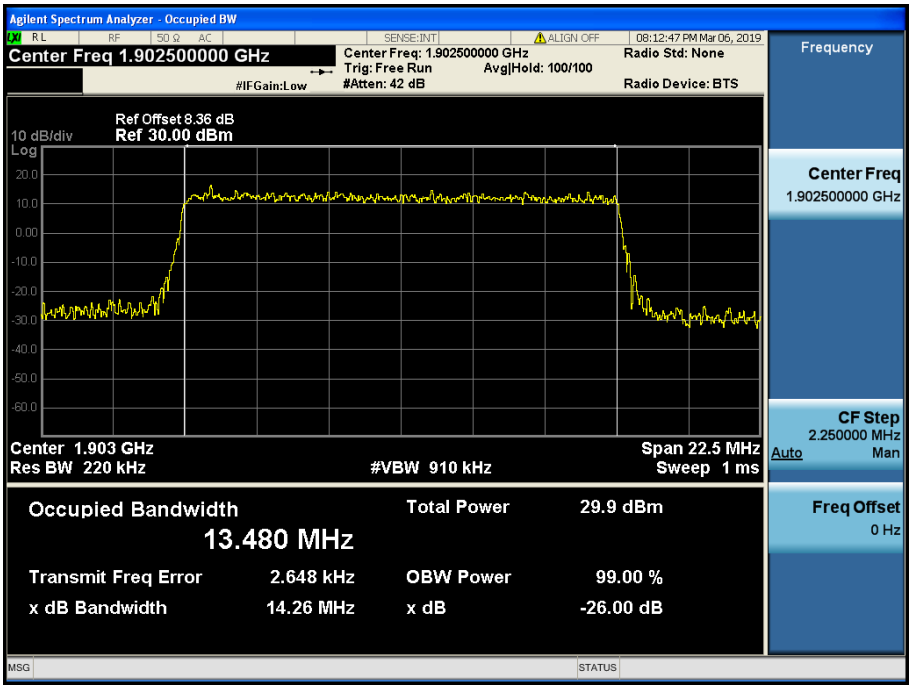
LTE Band 2 / 20 MHz / QPSK - RB Size 100



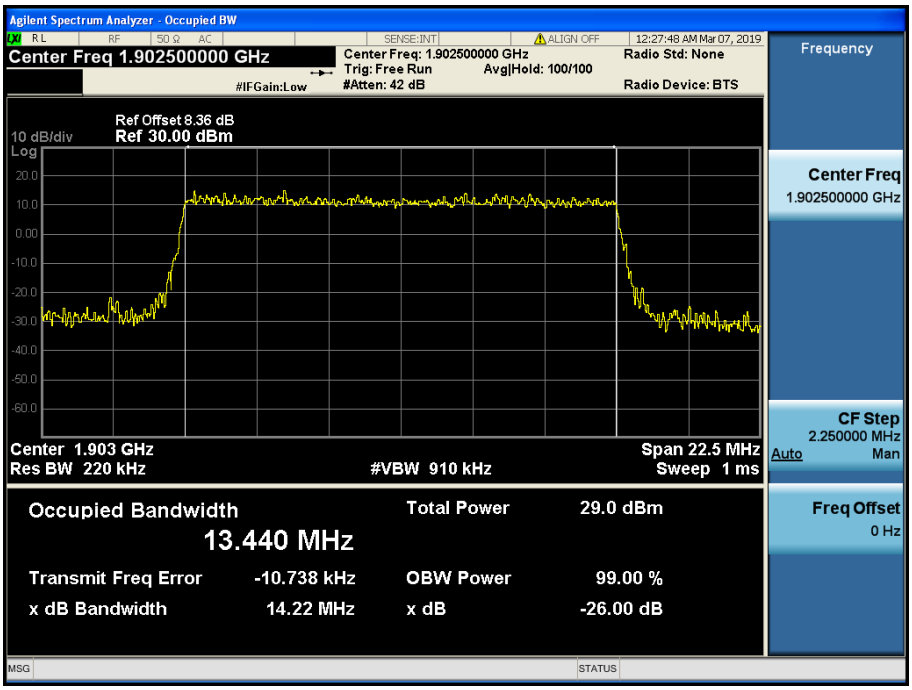
LTE Band 2 / 20 MHz / 16QAM - RB Size 100



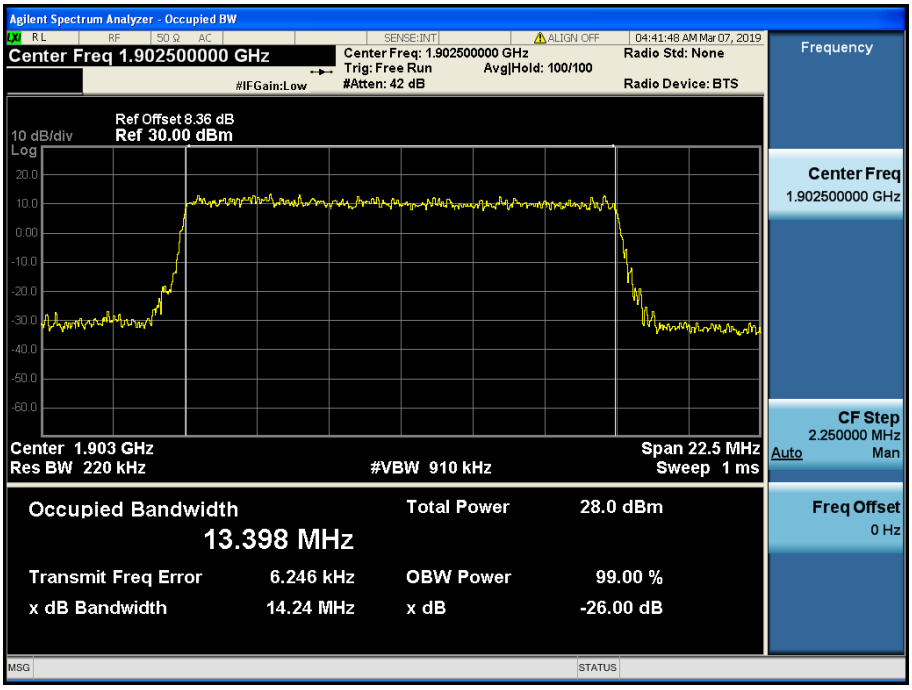
LTE Band 2 / 20 MHz / 64QAM - RB Size 100



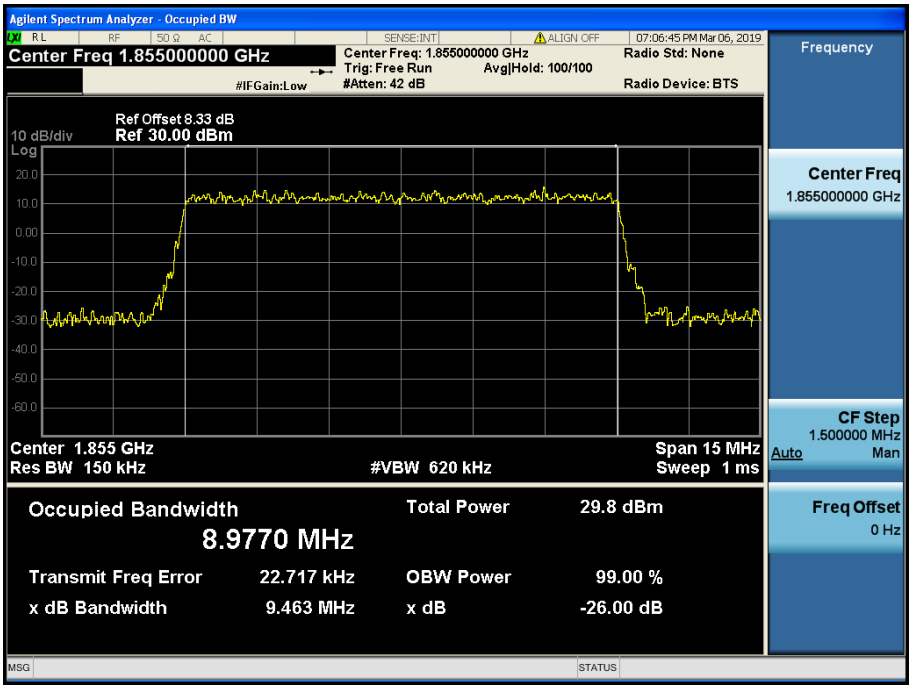
LTE Band 2 / 15 MHz / QPSK - RB Size 75



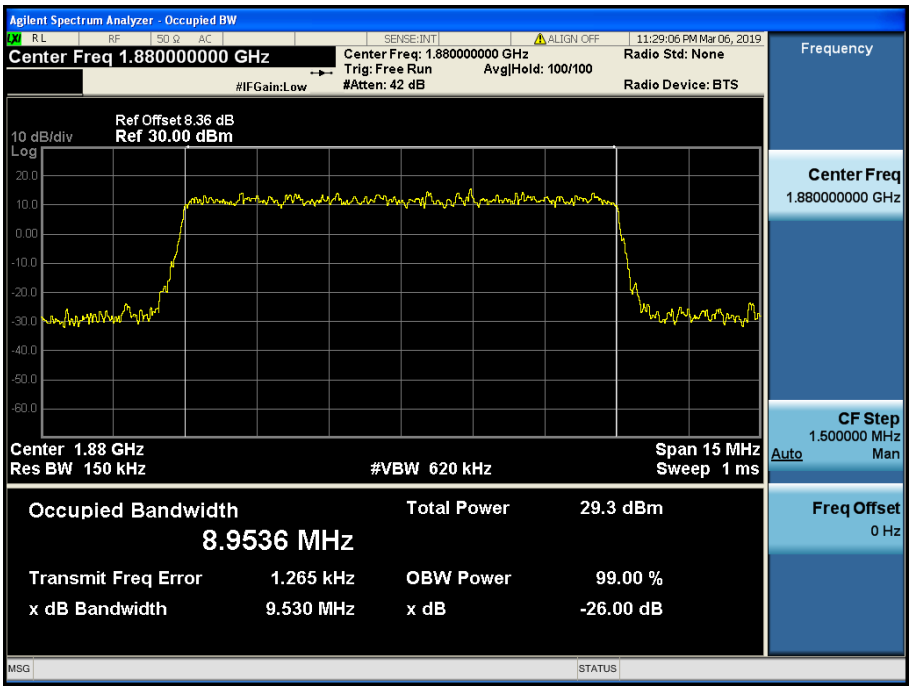
LTE Band 2 / 15 MHz / 16QAM - RB Size 75



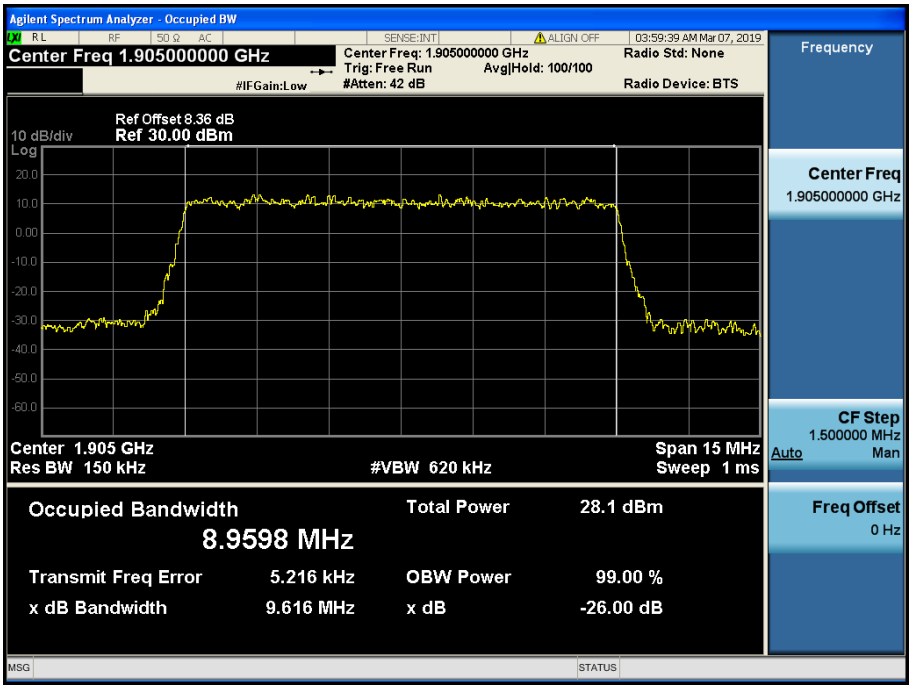
LTE Band 2 / 15 MHz / 64QAM - RB Size 75



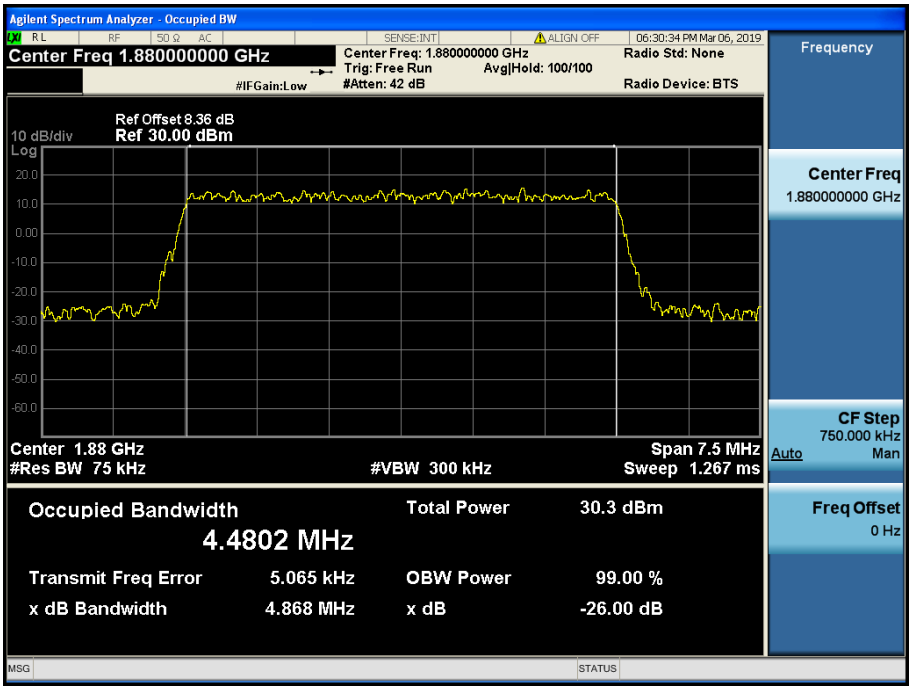
LTE Band 2 / 10 MHz / QPSK - RB Size 50



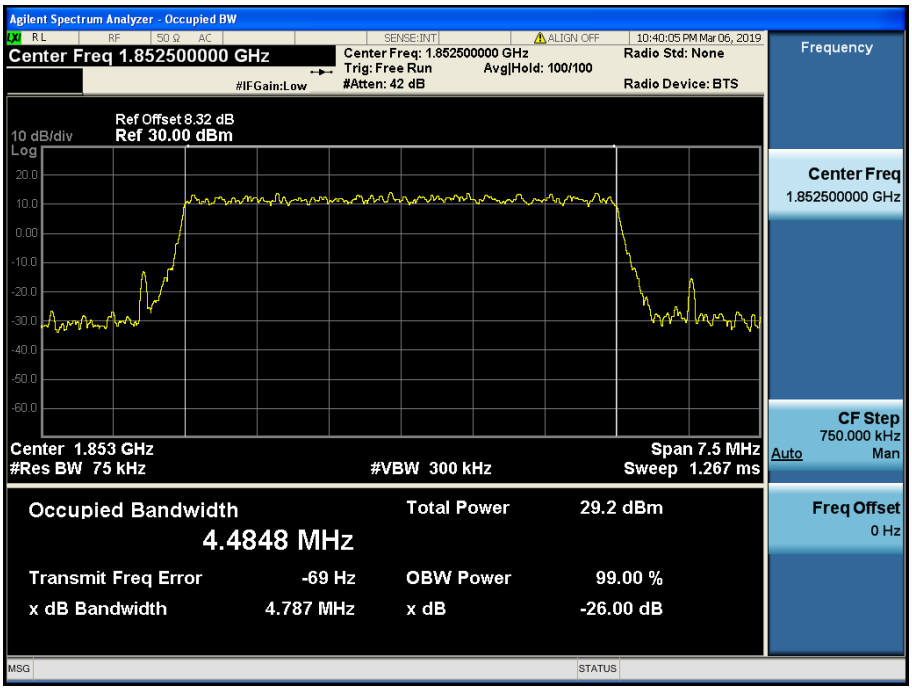
LTE Band 2 / 10 MHz / 16QAM - RB Size 50



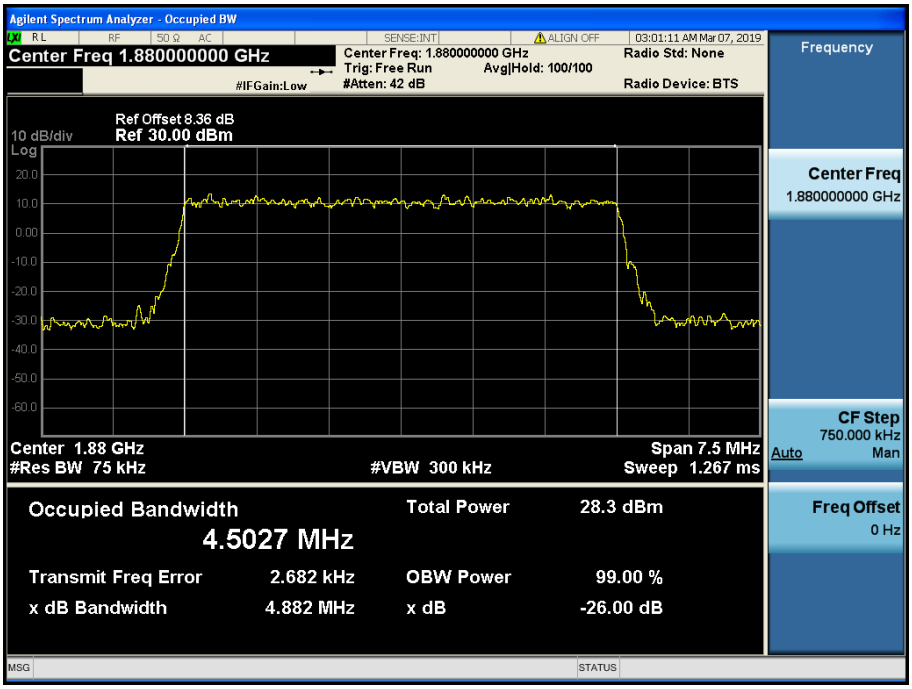
LTE Band 2 / 10 MHz / 64QAM - RB Size 50



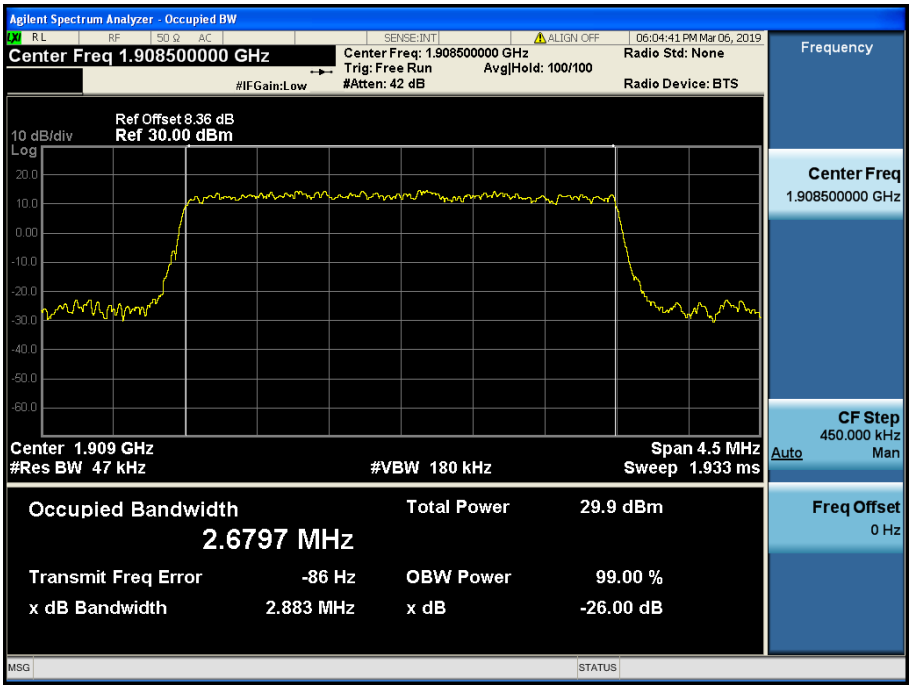
LTE Band 2 / 5 MHz / QPSK - RB Size 25



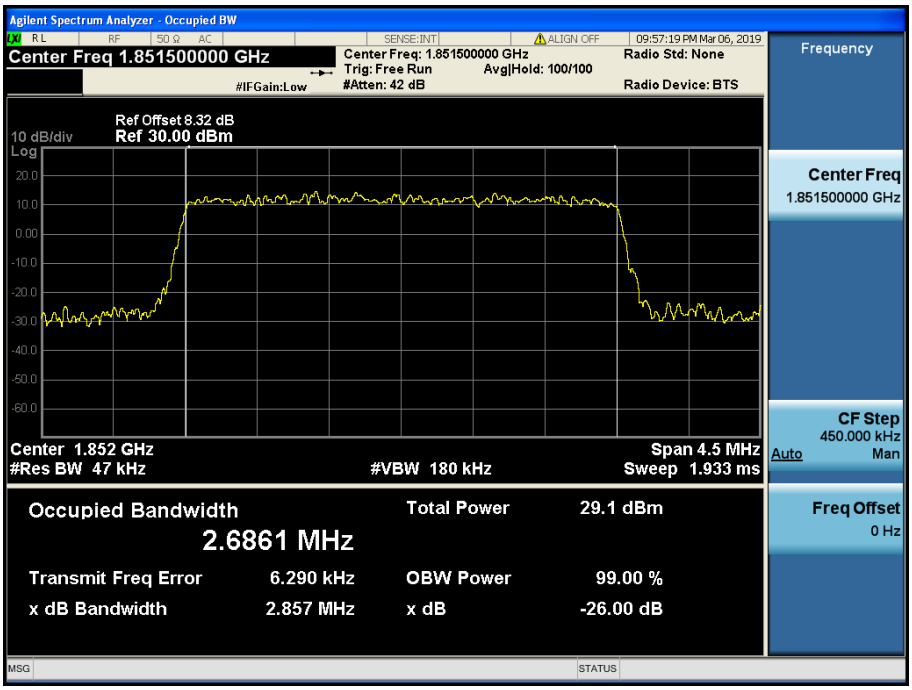
LTE Band 2 / 5 MHz / 16QAM - RB Size 25



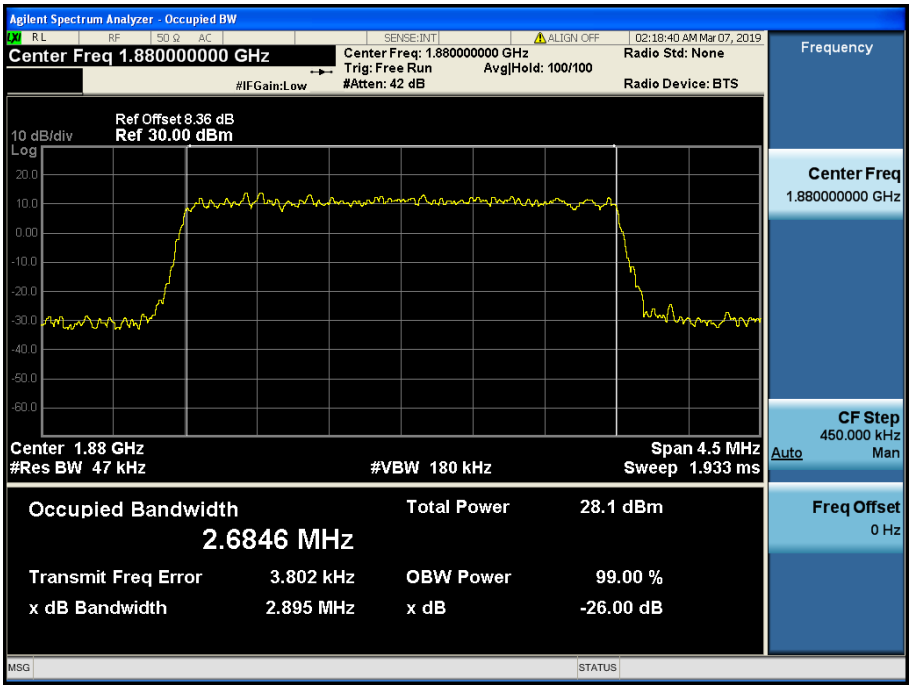
LTE Band 2 / 5 MHz / 64QAM - RB Size 25



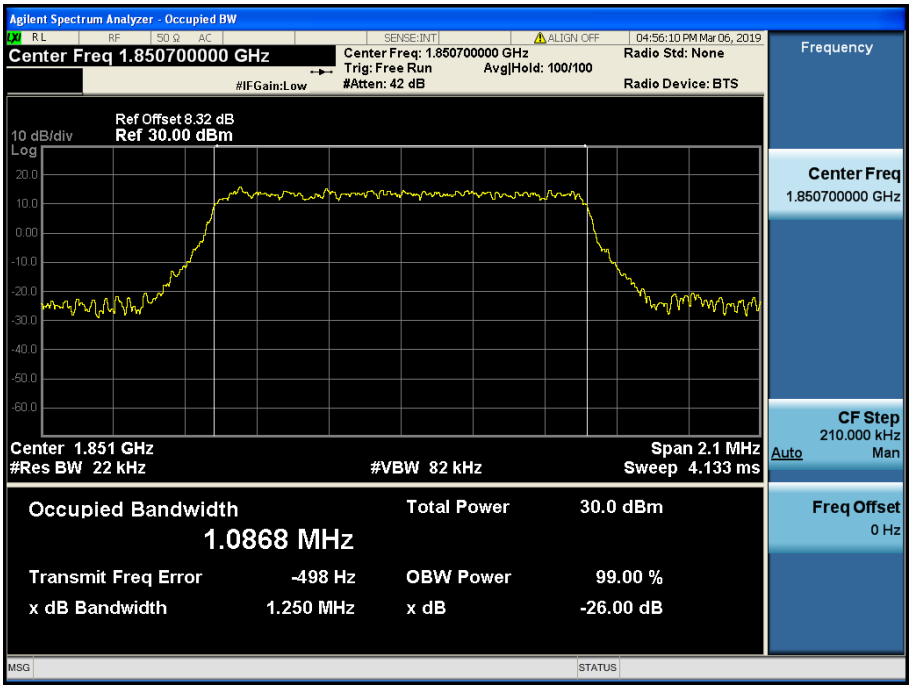
LTE Band 2 / 3 MHz / QPSK - RB Size 15



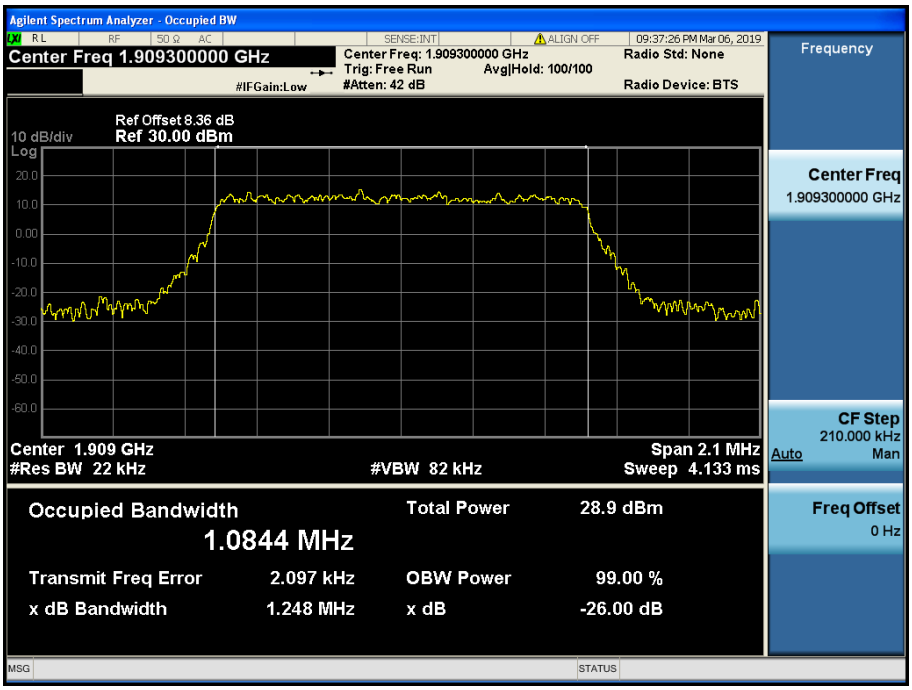
LTE Band 2 / 3 MHz / 16QAM - RB Size 15



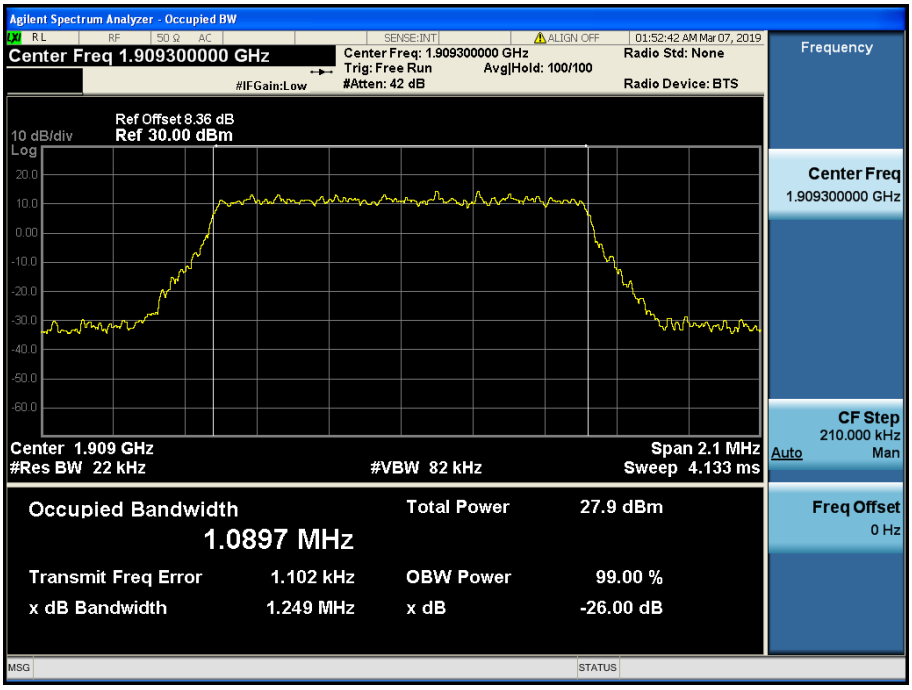
LTE Band 2 / 3 MHz / 64QAM - RB Size 15



LTE Band 2 / 1.4 MHz / QPSK - RB Size 6

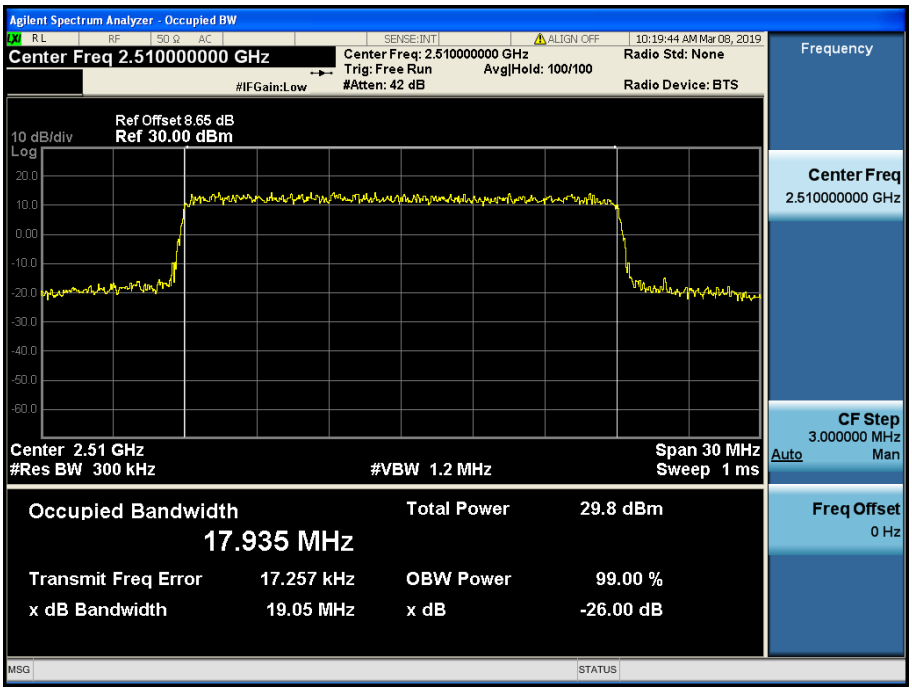


LTE Band 2 / 1.4 MHz / 16QAM - RB Size 6

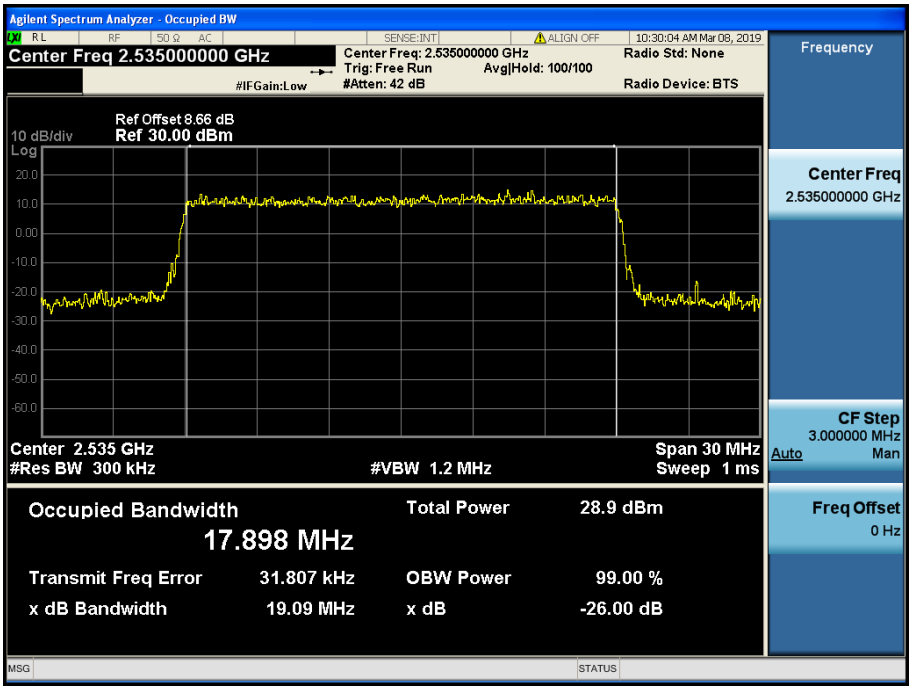


LTE Band 2 / 1.4 MHz / 64QAM - RB Size 6

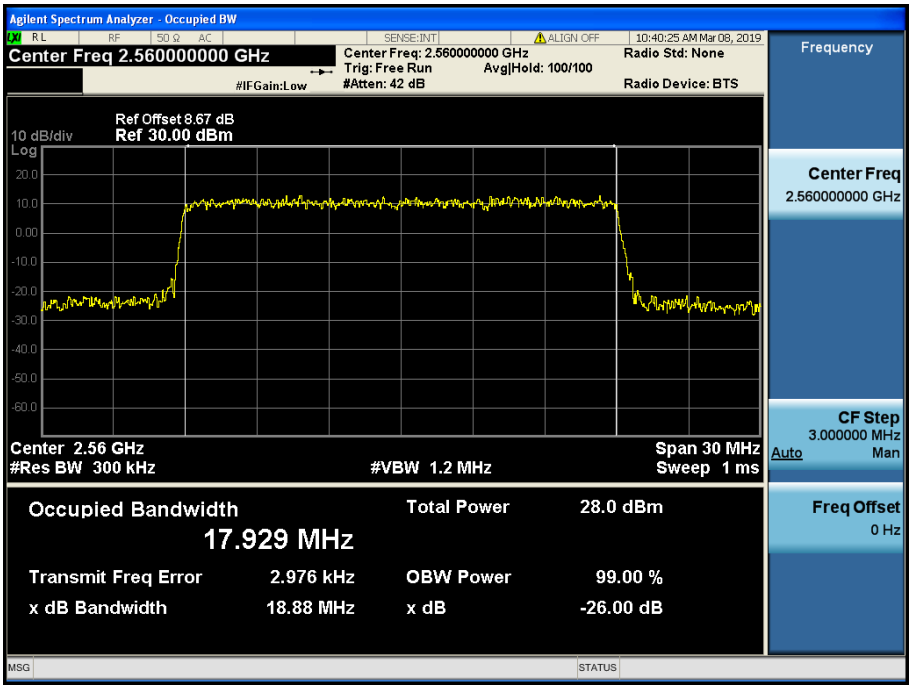
8.1.6 LTE Band 7



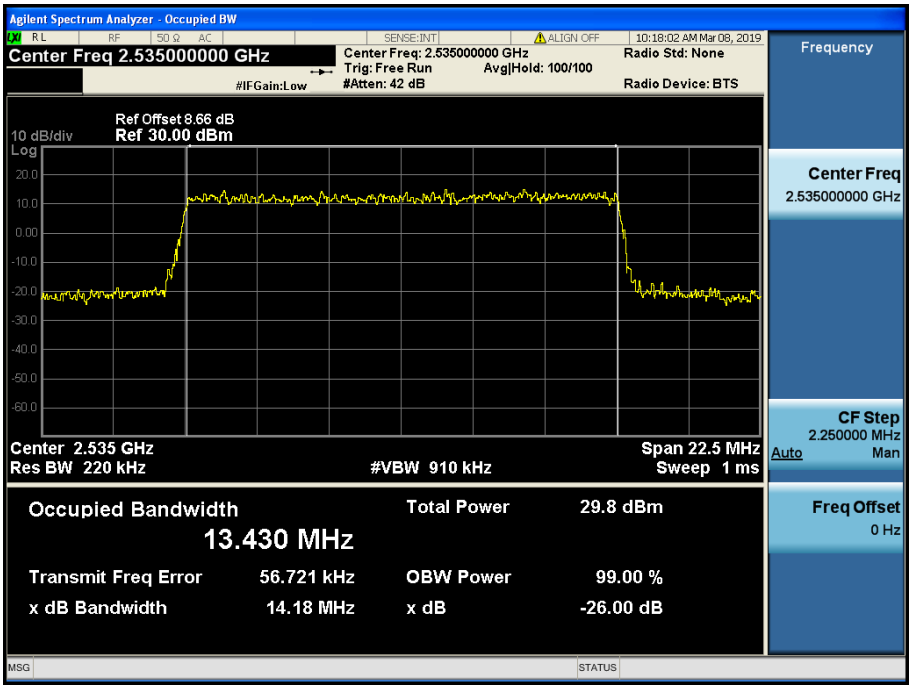
LTE Band 7 / 20 MHz / QPSK - RB Size 100



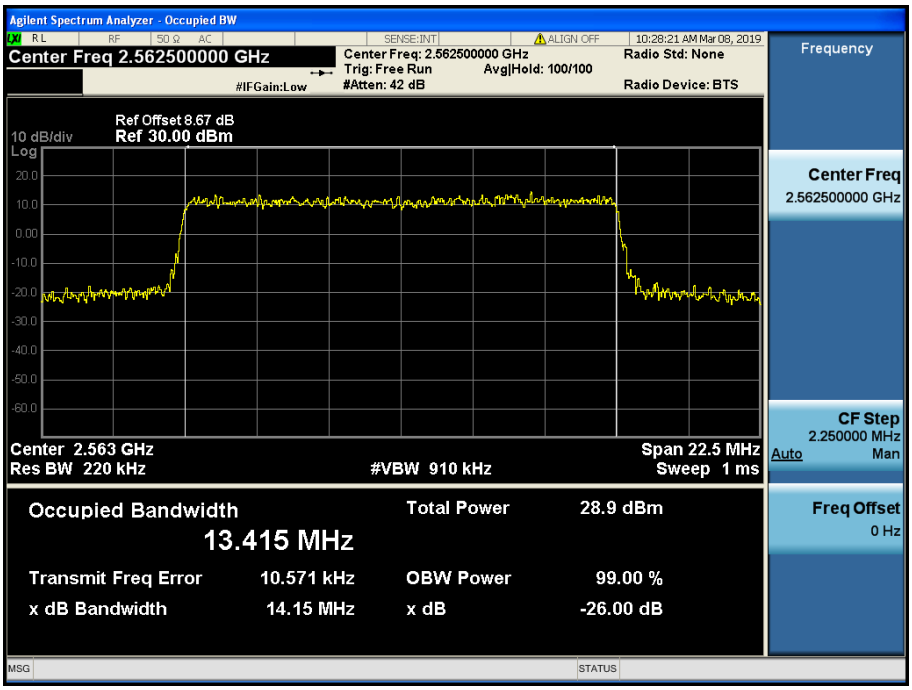
LTE Band 7 / 20 MHz / 16QAM - RB Size 100



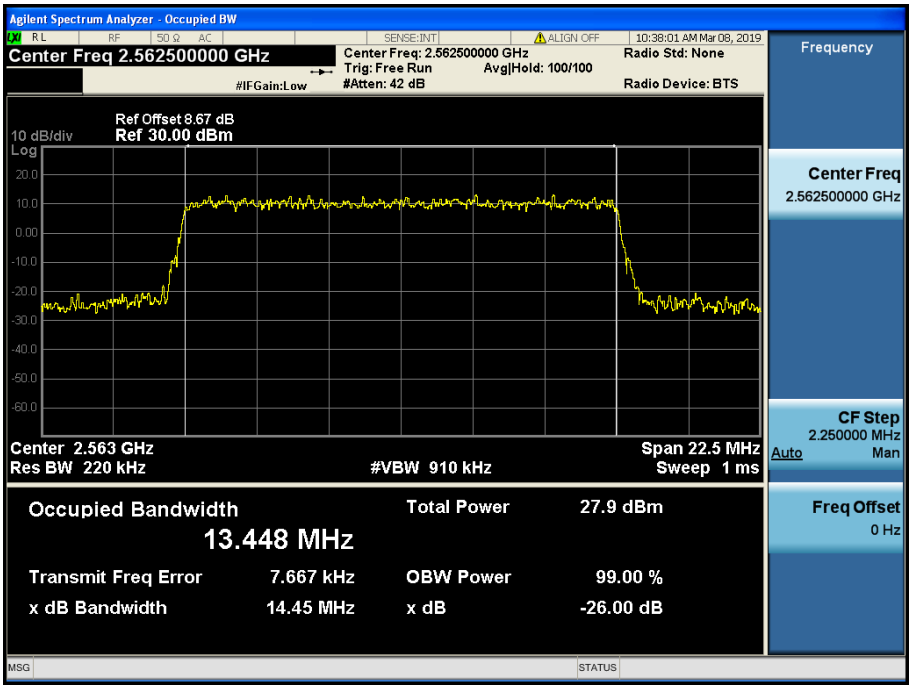
LTE Band 7 / 20 MHz / 64QAM - RB Size 100



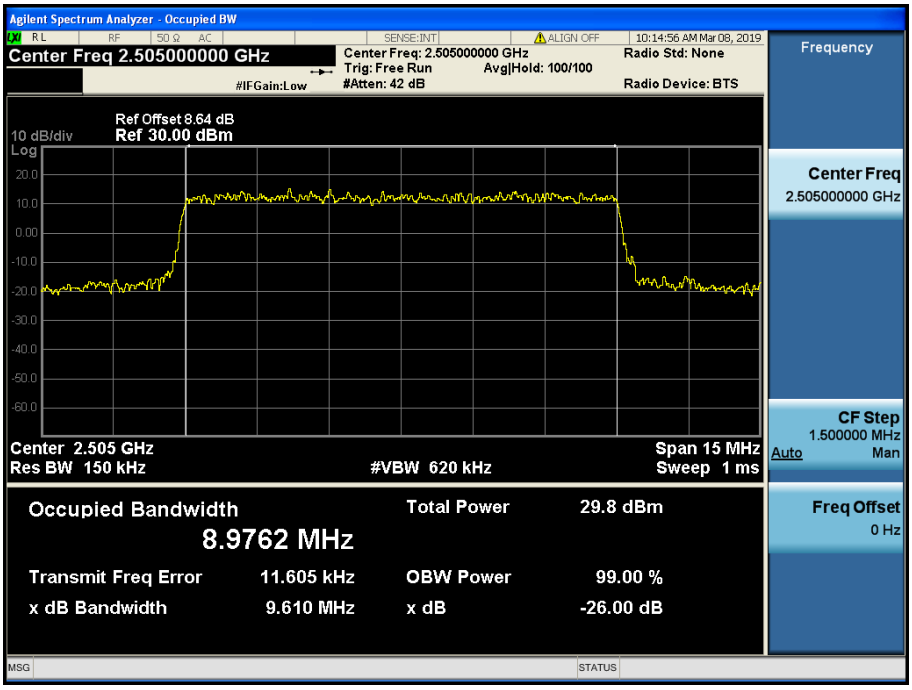
LTE Band 7 / 15 MHz / QPSK - RB Size 75



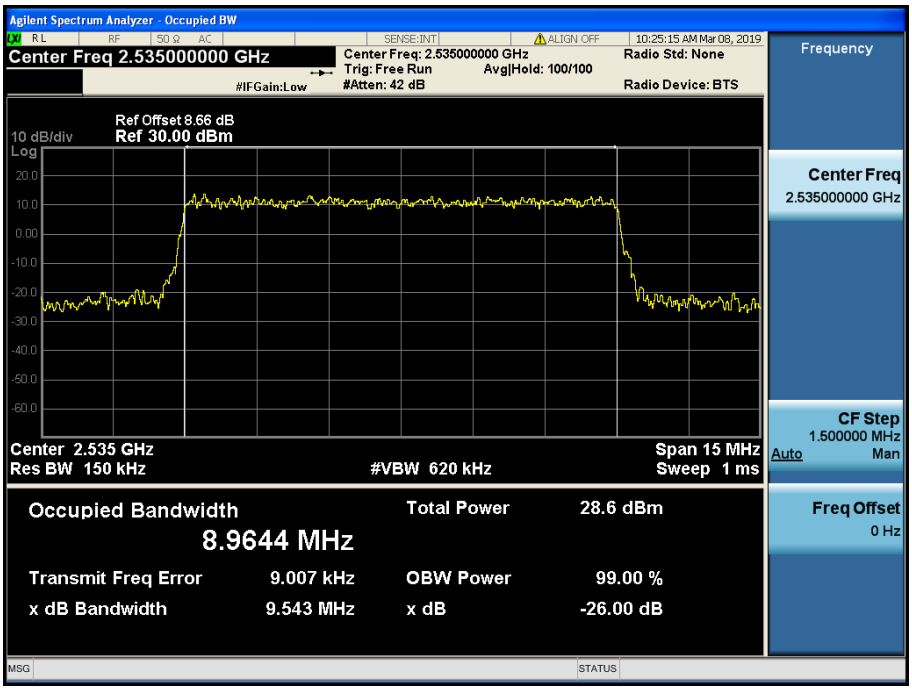
LTE Band 7 / 15 MHz / 16QAM - RB Size 75



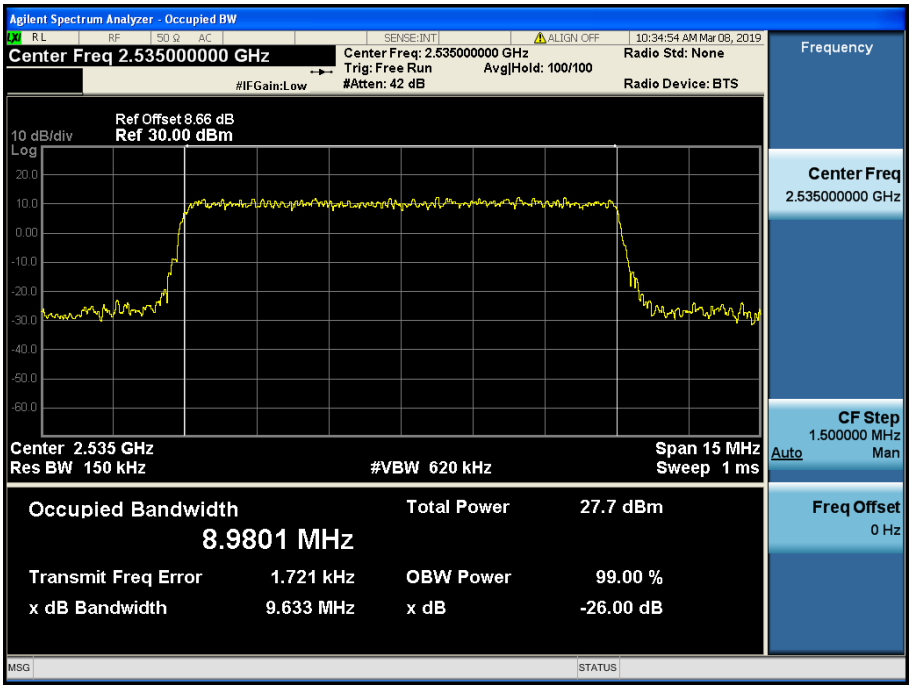
LTE Band 7 / 15 MHz / 64QAM - RB Size 75



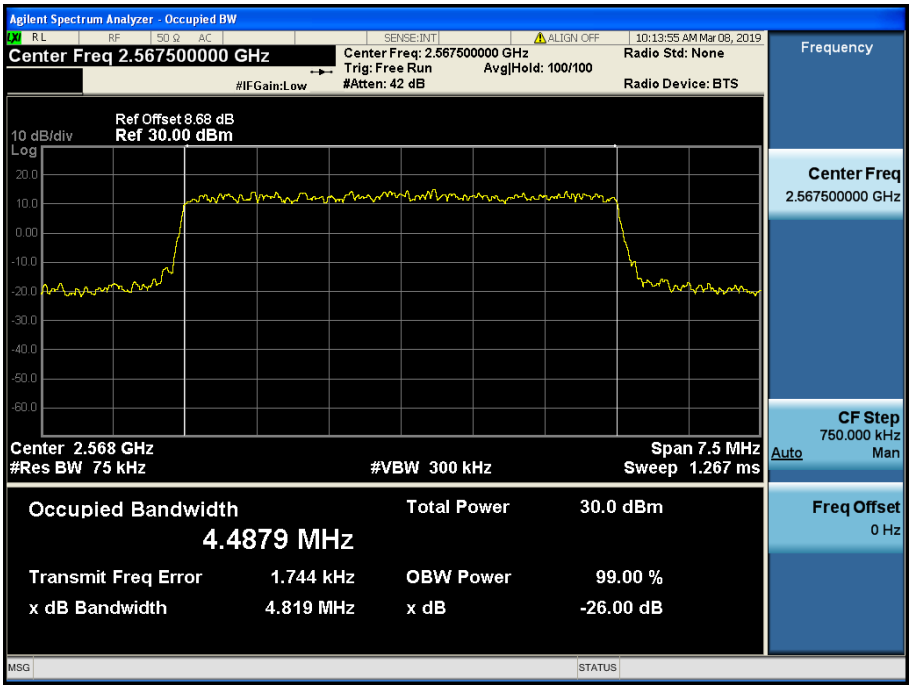
LTE Band 7 / 10 MHz / QPSK - RB Size 50



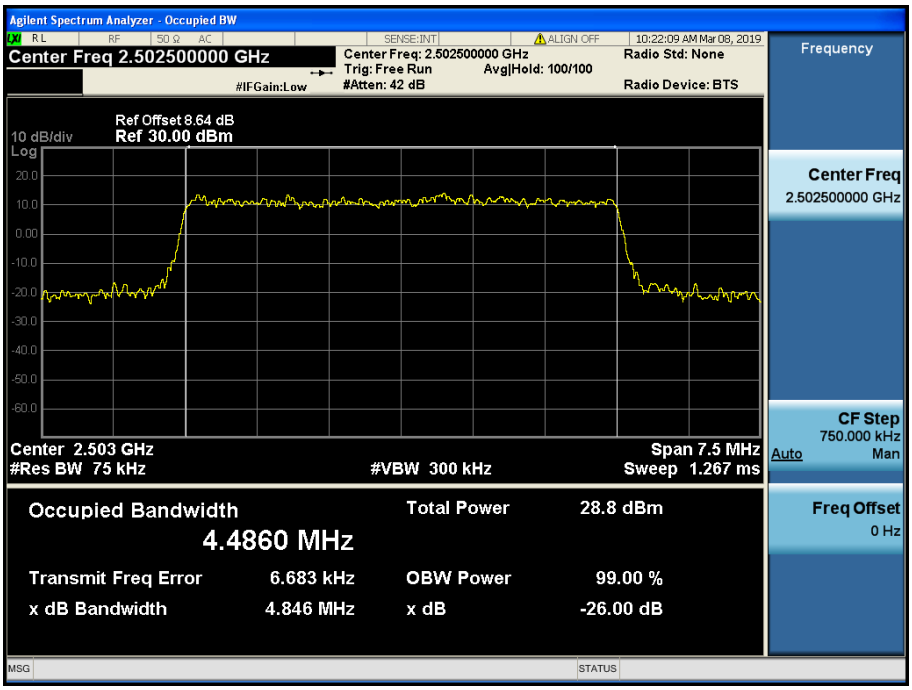
LTE Band 7 / 10 MHz / 16QAM - RB Size 50



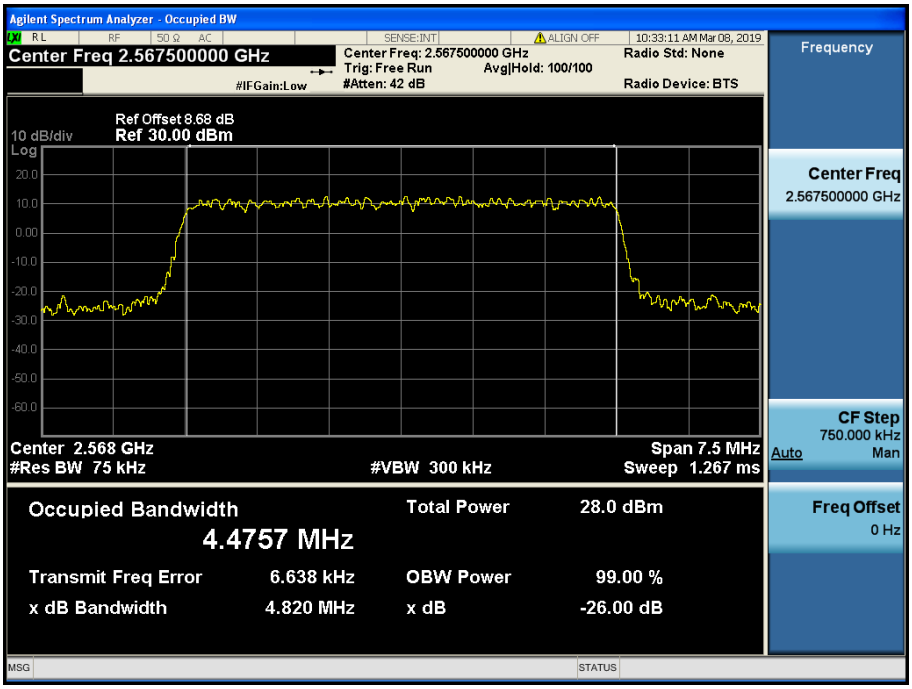
LTE Band 7 / 10 MHz / 64QAM - RB Size 50



LTE Band 7 / 5 MHz / QPSK - RB Size 25



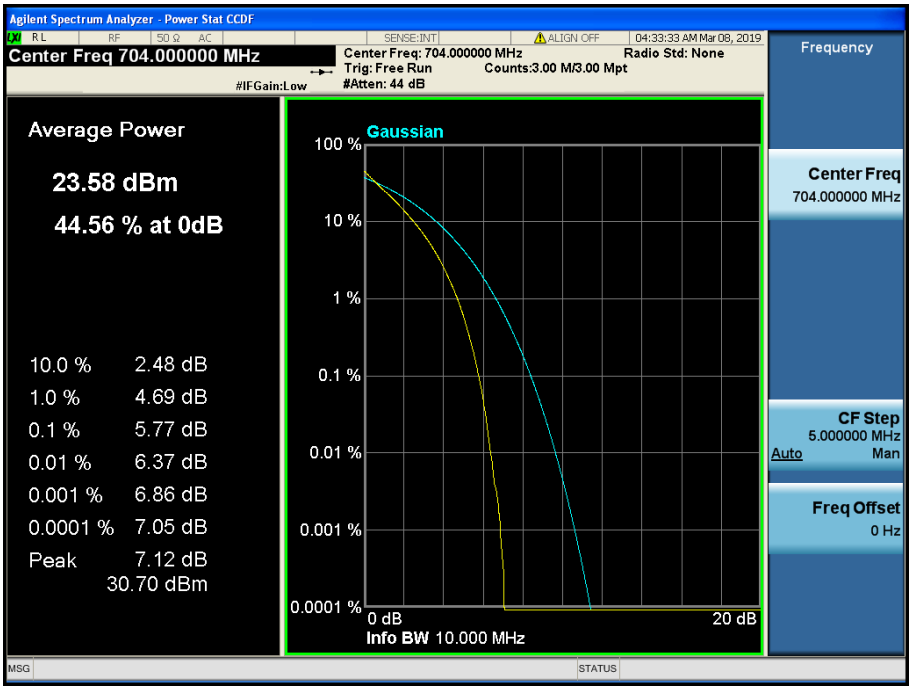
LTE Band 7 / 5 MHz / 16QAM - RB Size 25



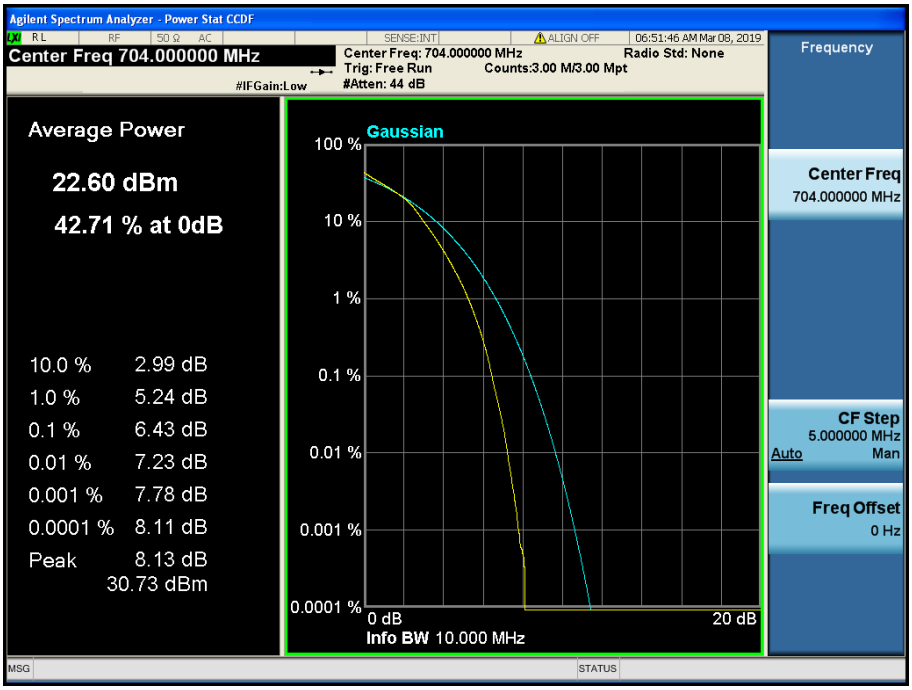
LTE Band 7 / 5 MHz / 64QAM - RB Size 25

8.2 PEAK TO AVERAGE RATIO

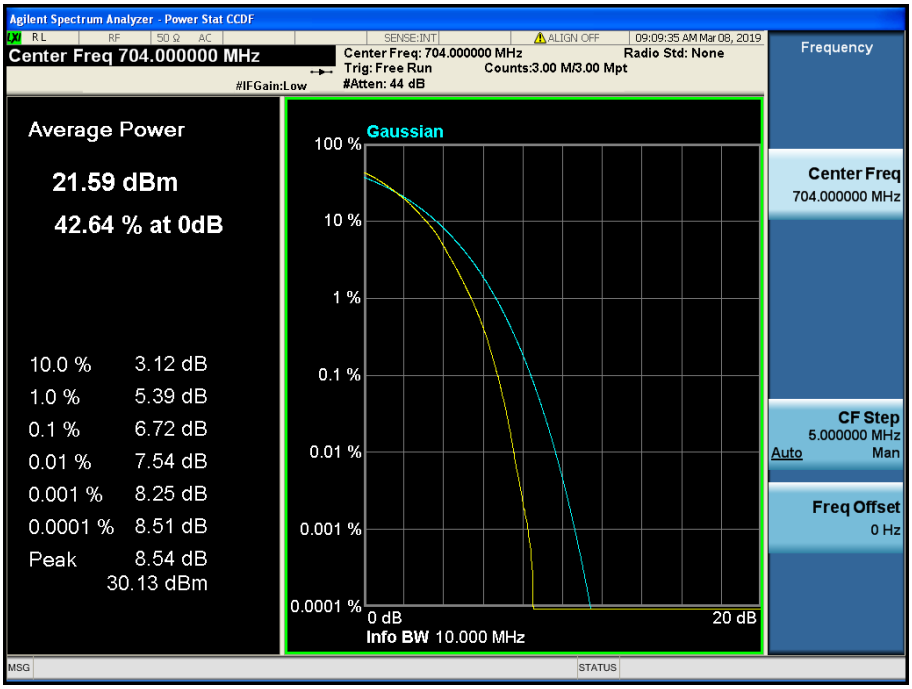
8.2.1 LTE Band 12, 17



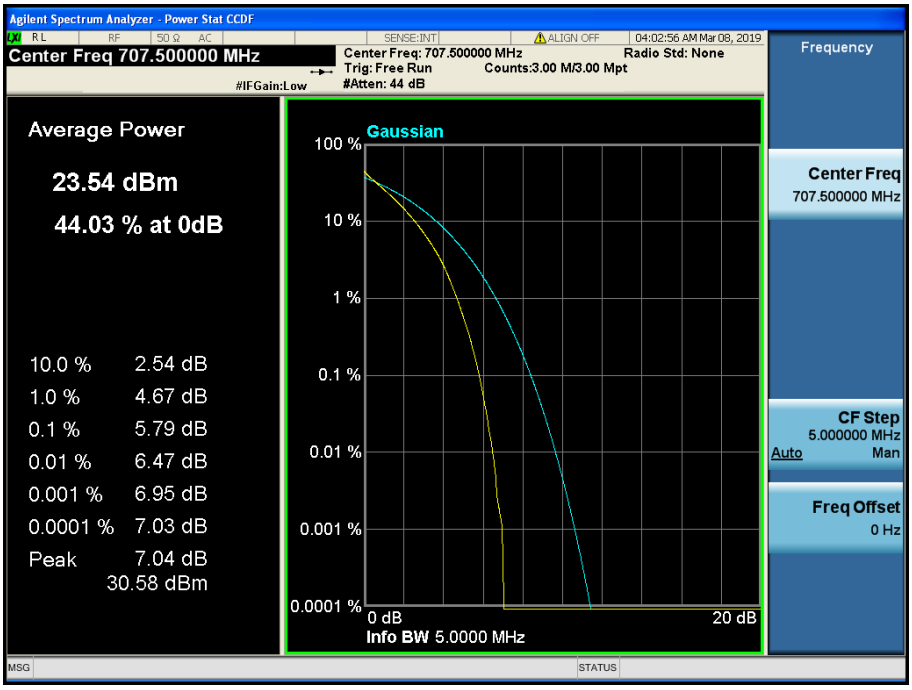
LTE Band 12, 17 / 10 MHz / QPSK - RB Size 50



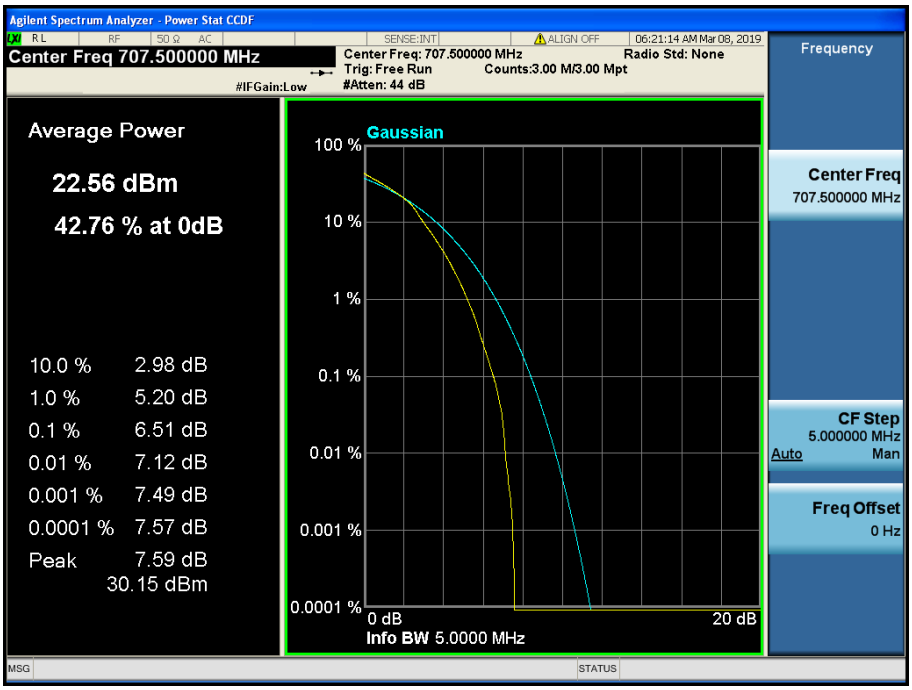
LTE Band 12, 17 / 10 MHz / 16QAM - RB Size 50



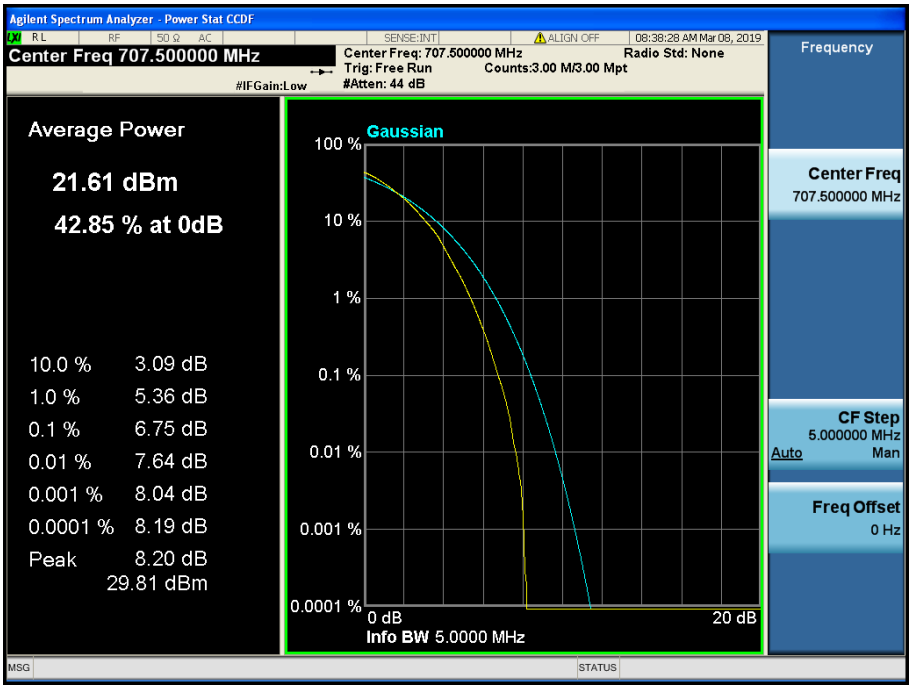
LTE Band 12, 17 / 10 MHz / 64QAM - RB Size 50



LTE Band 12, 17 / 5 MHz / QPSK - RB Size 25

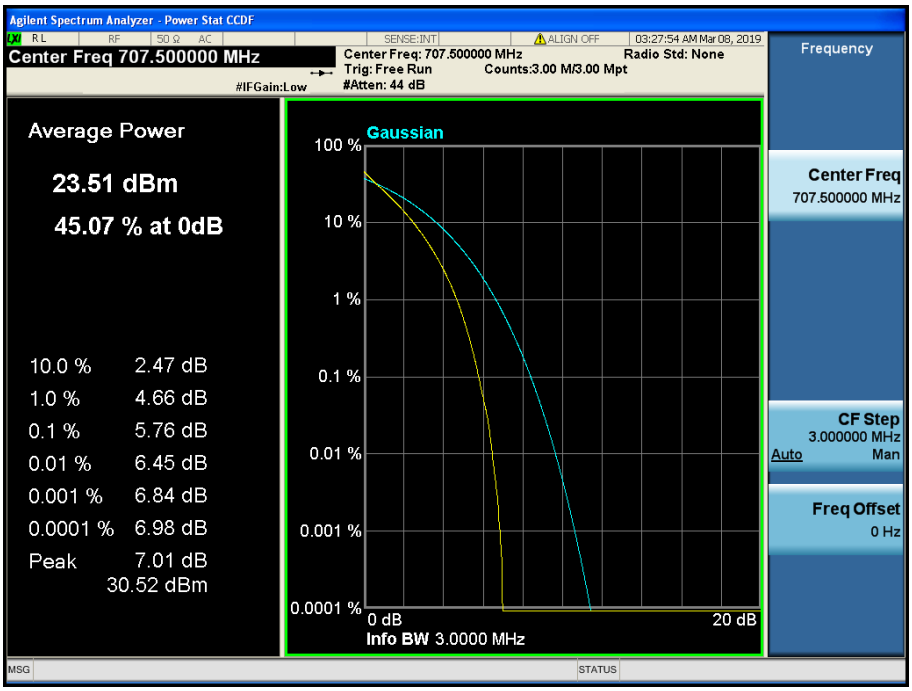


LTE Band 12, 17 / 5 MHz / 16QAM - RB Size 25

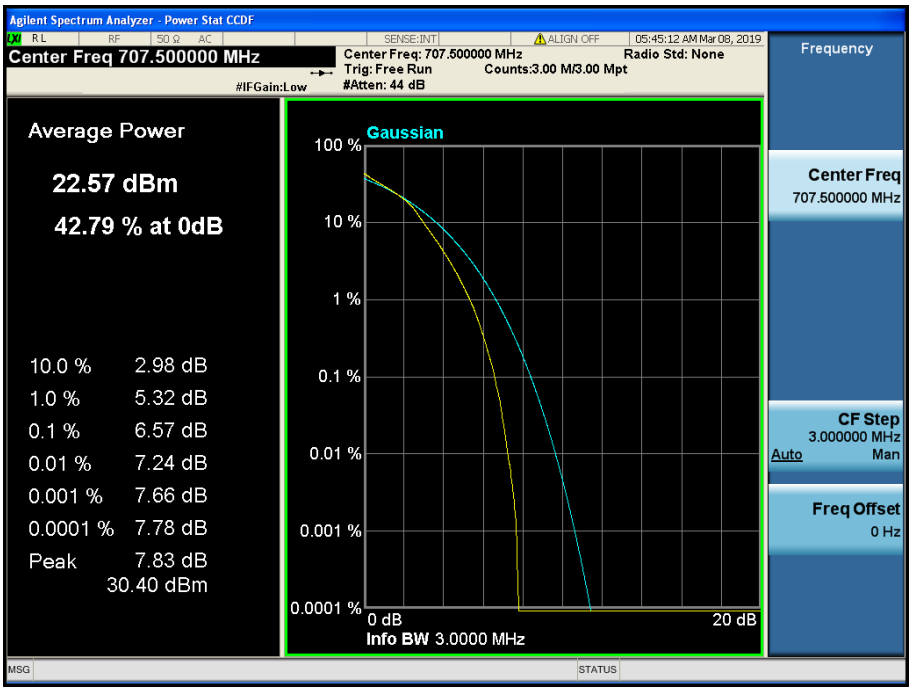


LTE Band 12, 17 / 5 MHz / 64QAM - RB Size 25

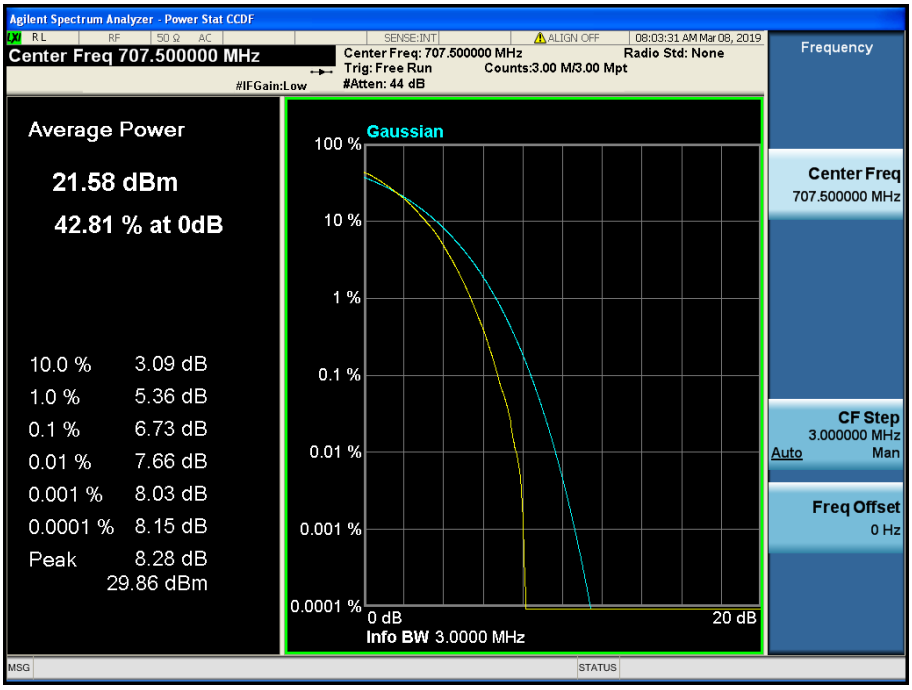
8.2.2 LTE Band 12



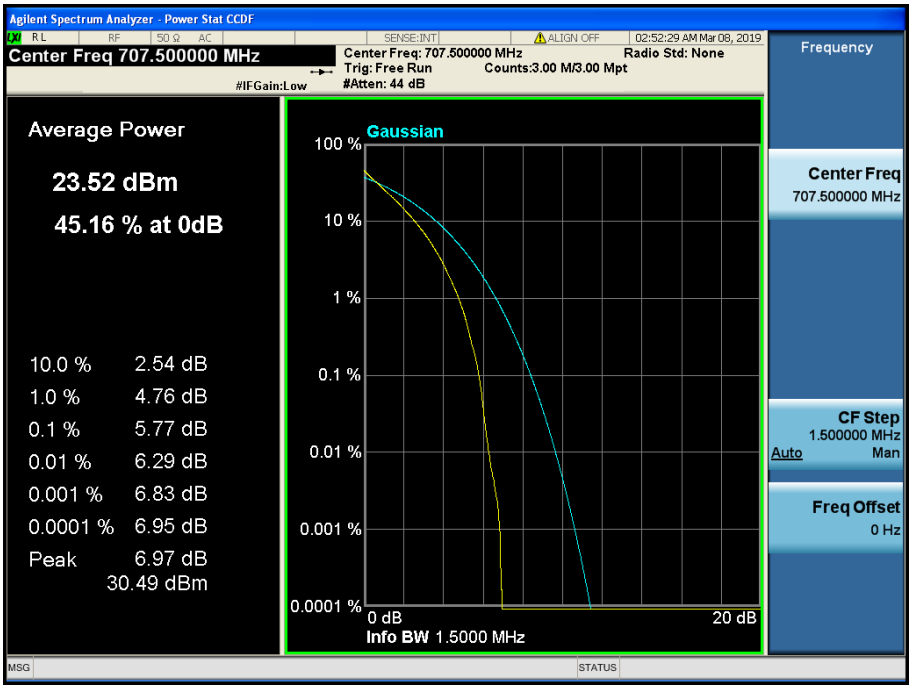
LTE Band 12 / 3 MHz / QPSK - RB Size 15



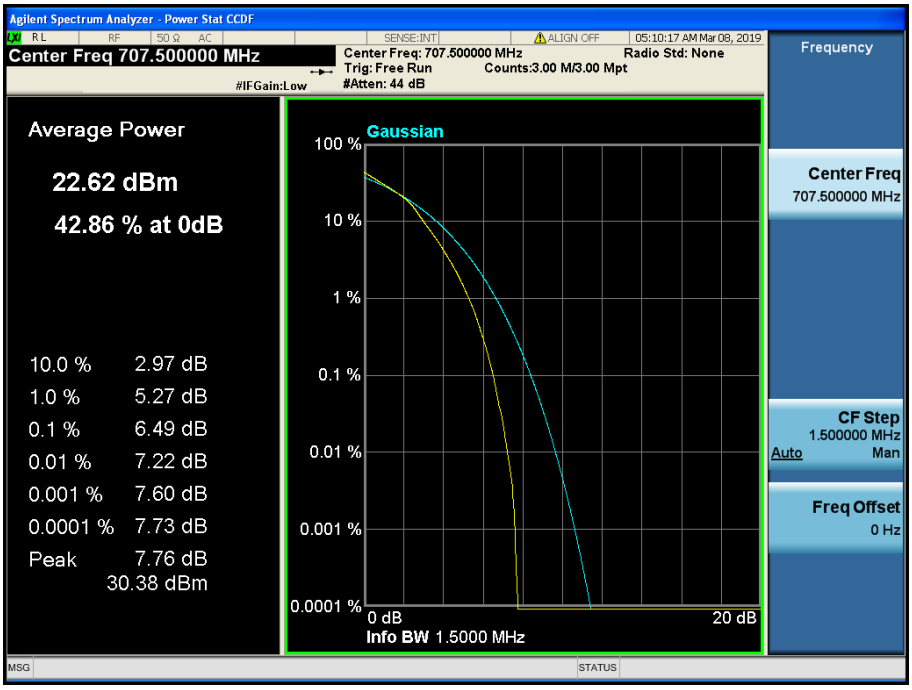
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



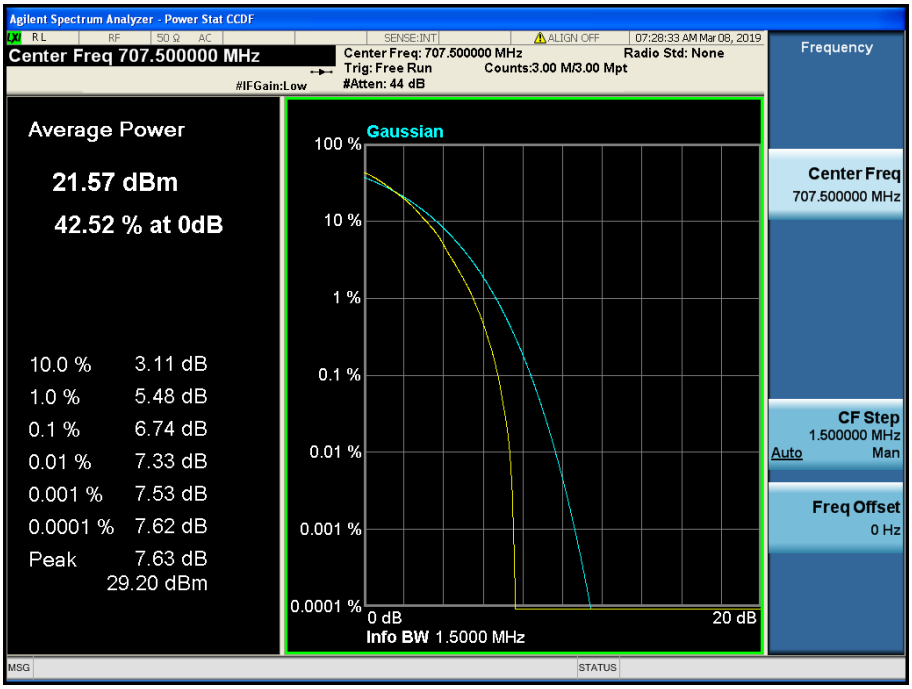
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



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

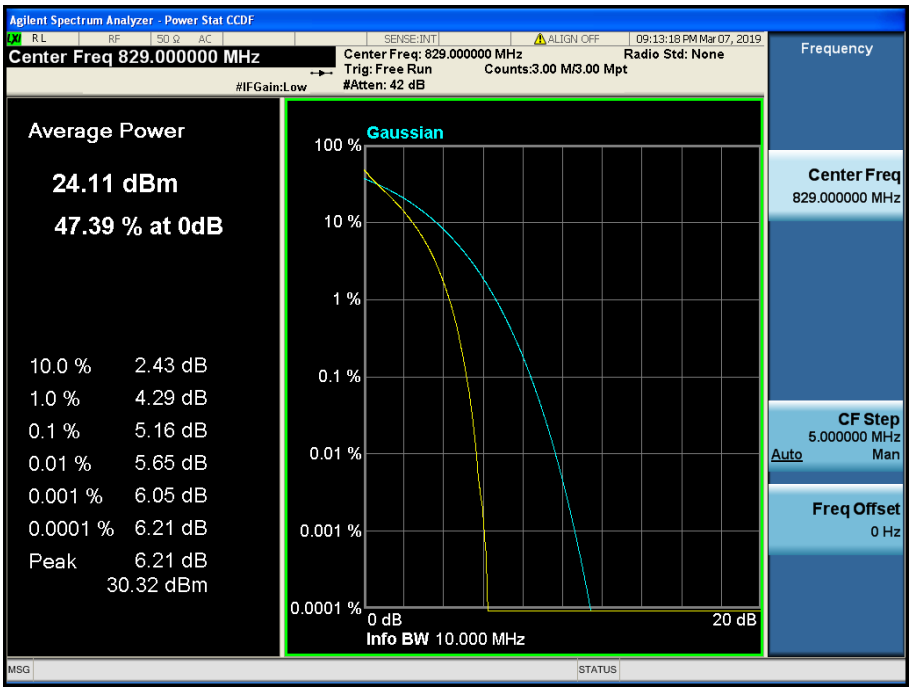


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

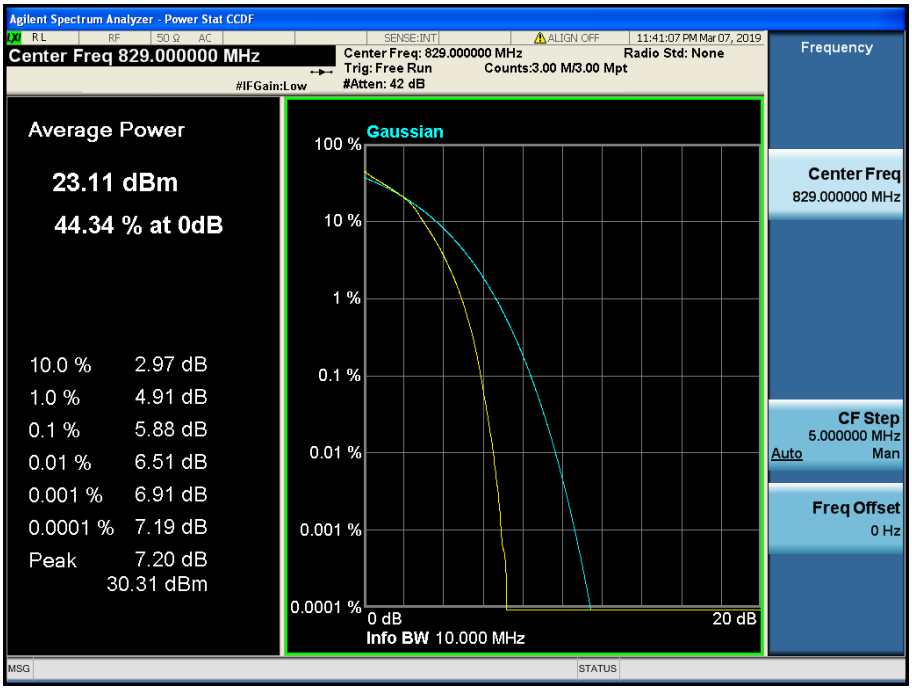


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

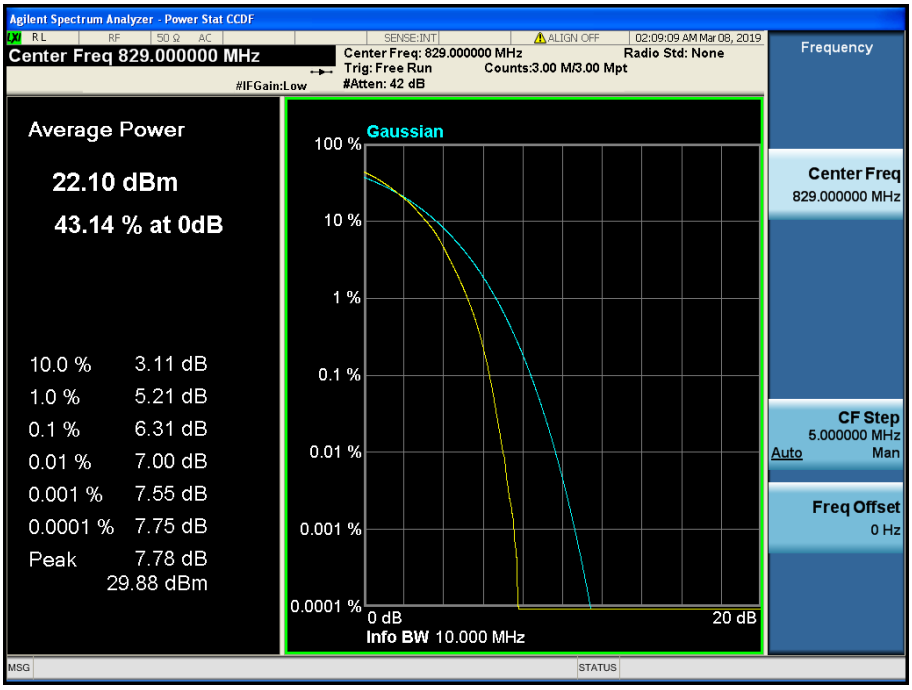
8.2.3 LTE Band 5



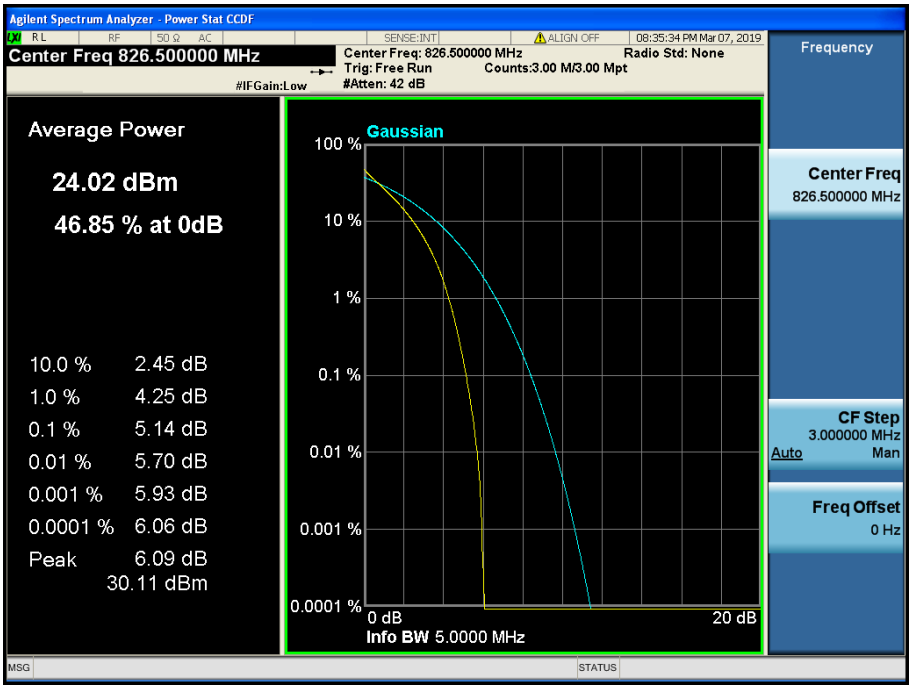
LTE Band 5 / 10 MHz / QPSK - RB Size 50



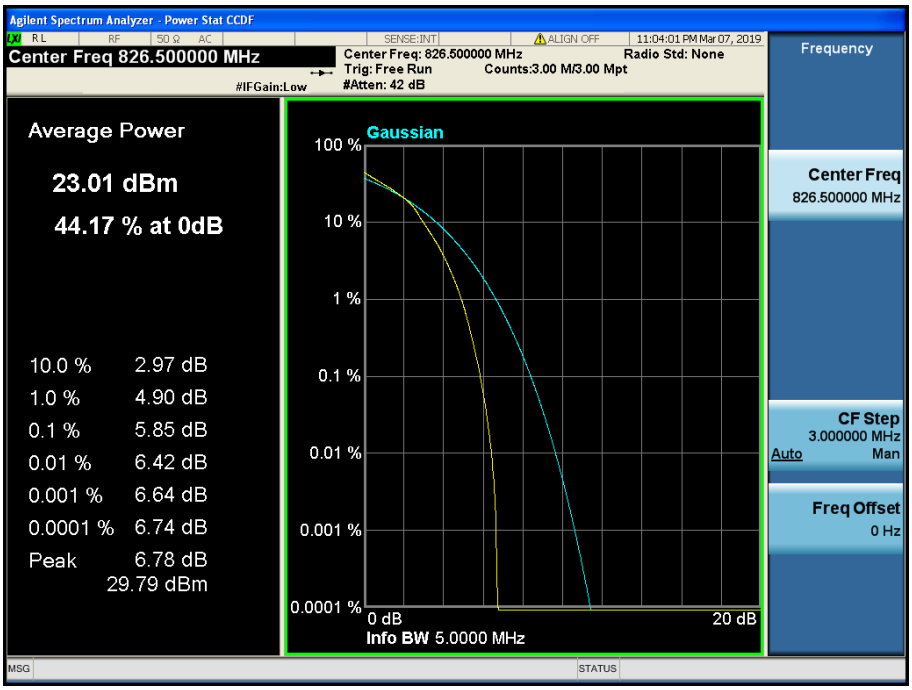
LTE Band 5 / 10 MHz / 16QAM - RB Size 50



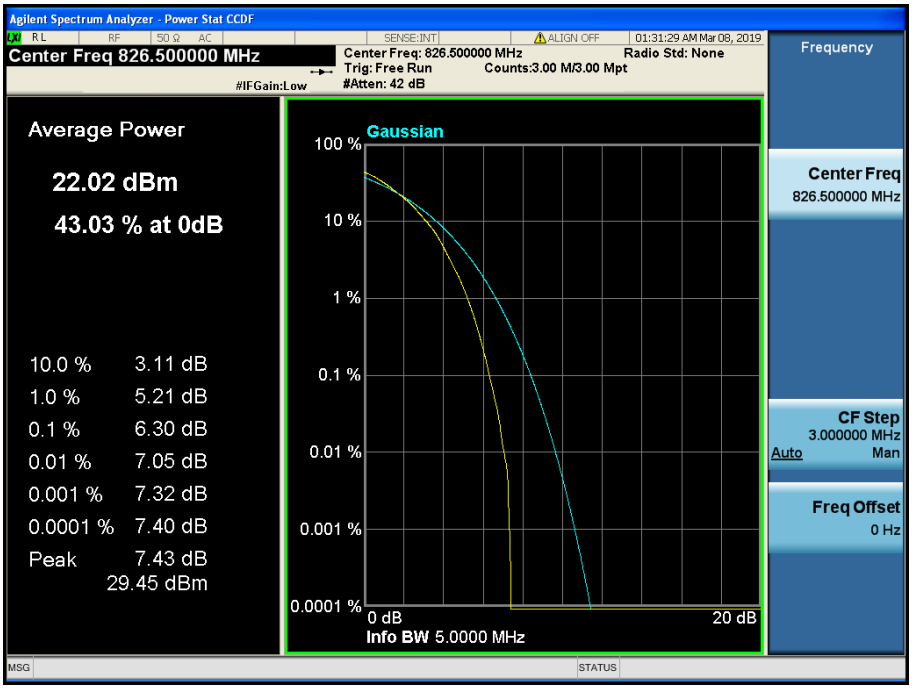
LTE Band 5 / 10 MHz / 64QAM - RB Size 50



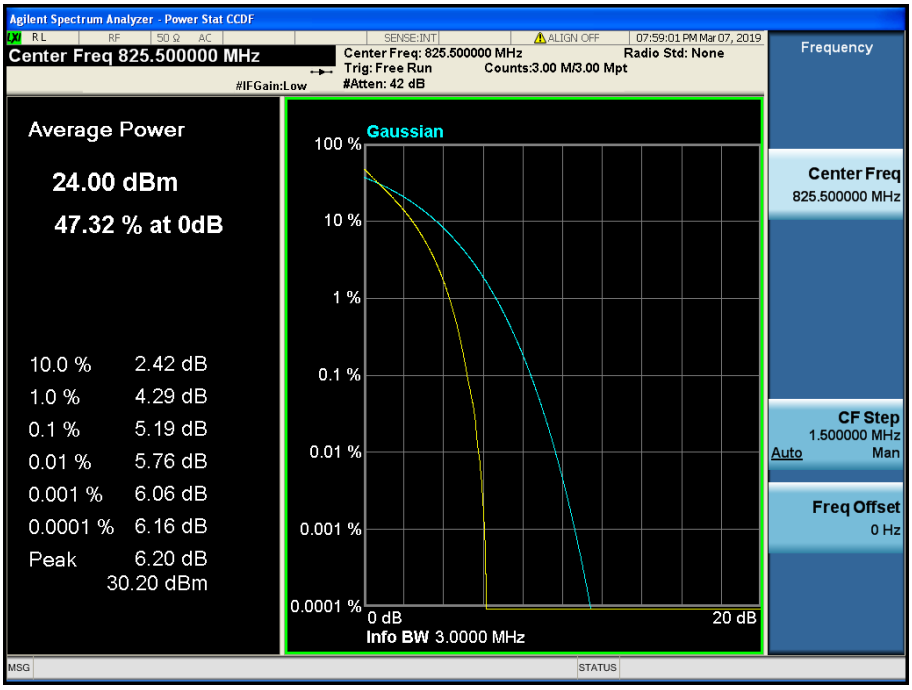
LTE Band 5 / 5 MHz / QPSK - RB Size 25



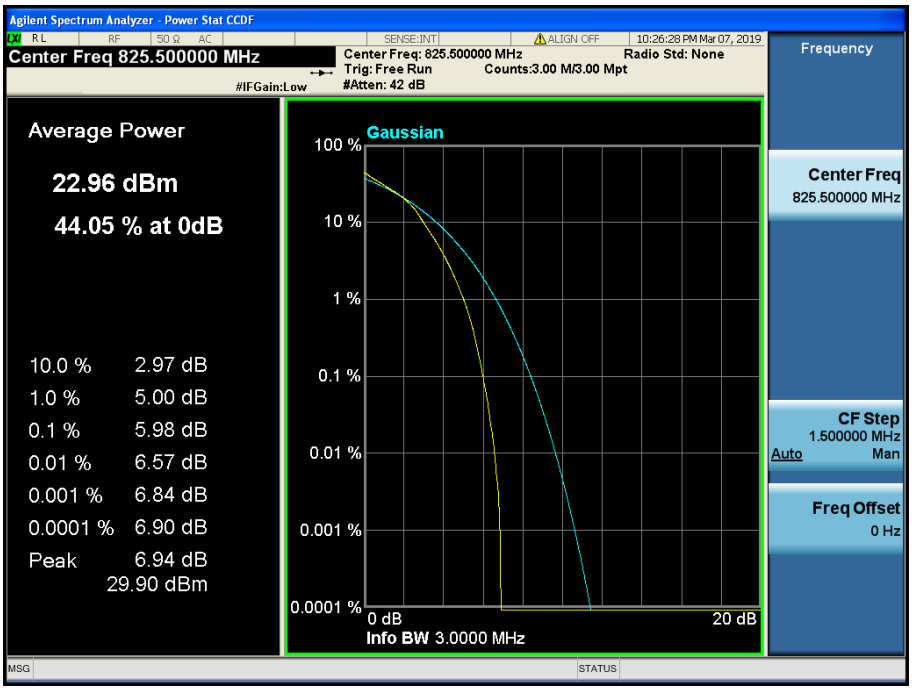
LTE Band 5 / 5 MHz / 16QAM - RB Size 25



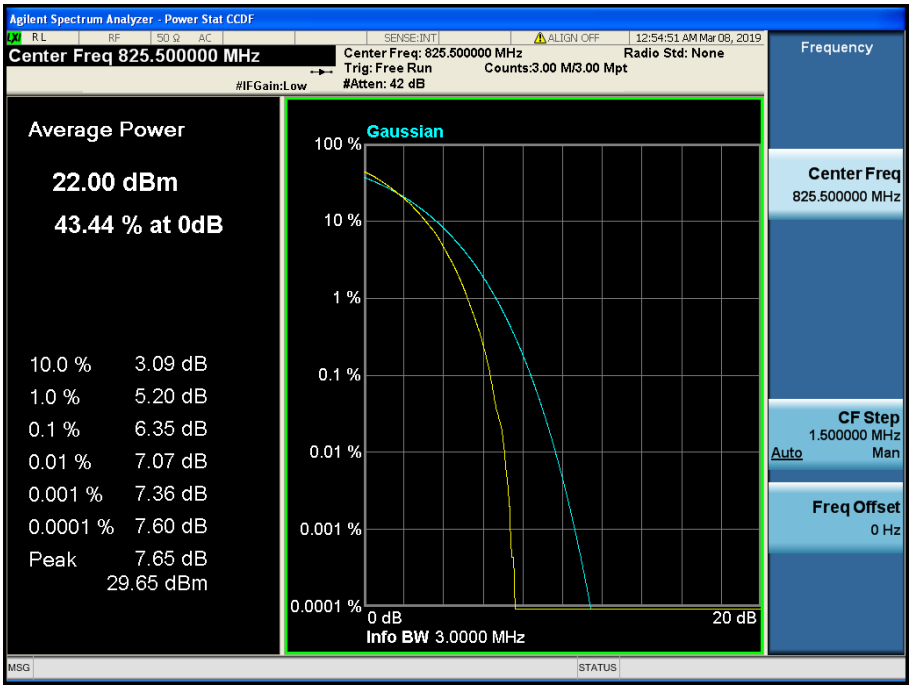
LTE Band 5 / 5 MHz / 64QAM - RB Size 25



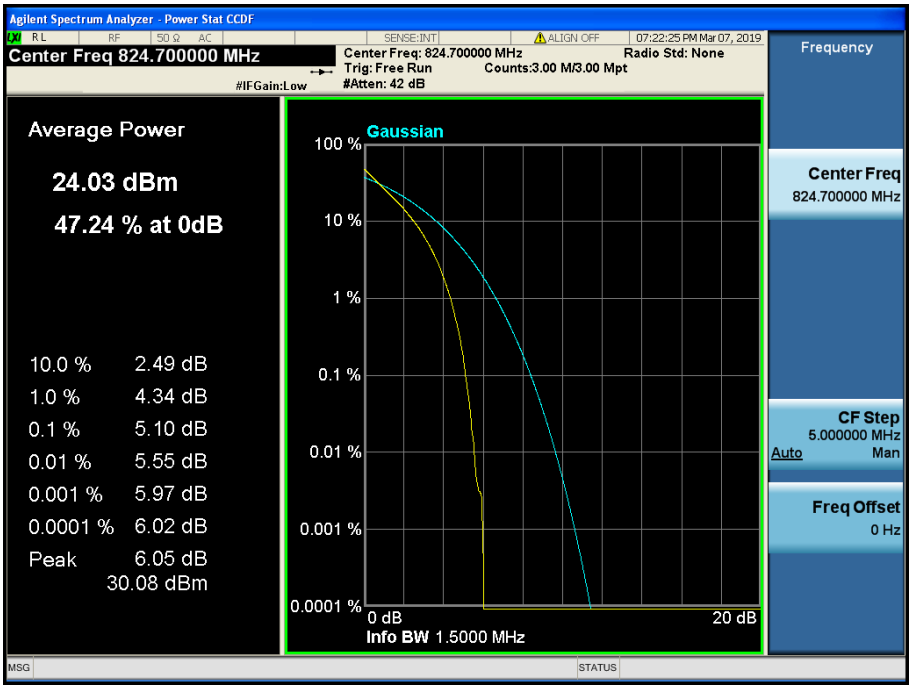
LTE Band 5 / 3 MHz / QPSK - RB Size 15



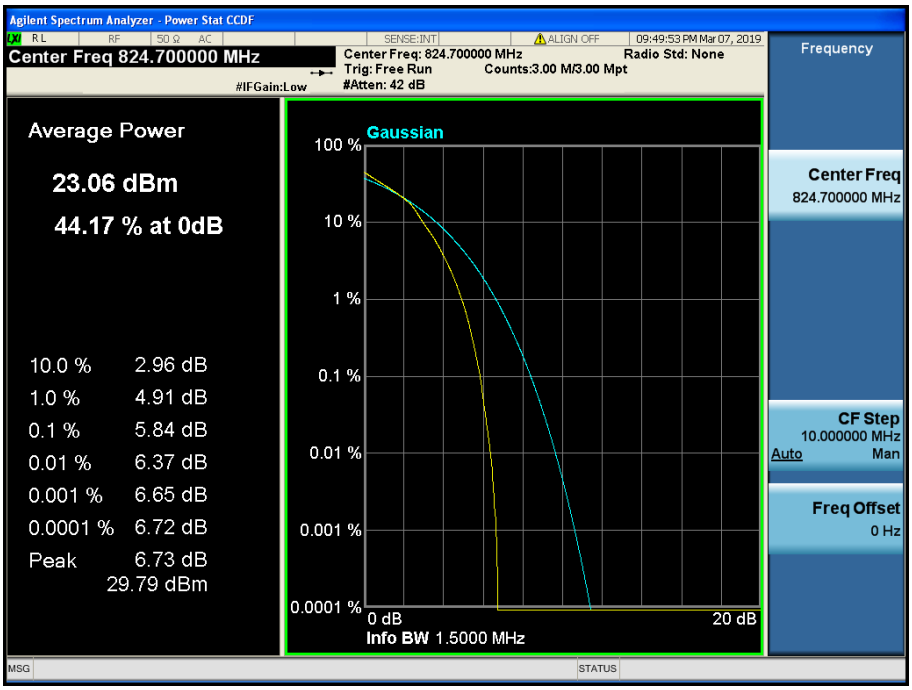
LTE Band 5 / 3 MHz / 16QAM - RB Size 15



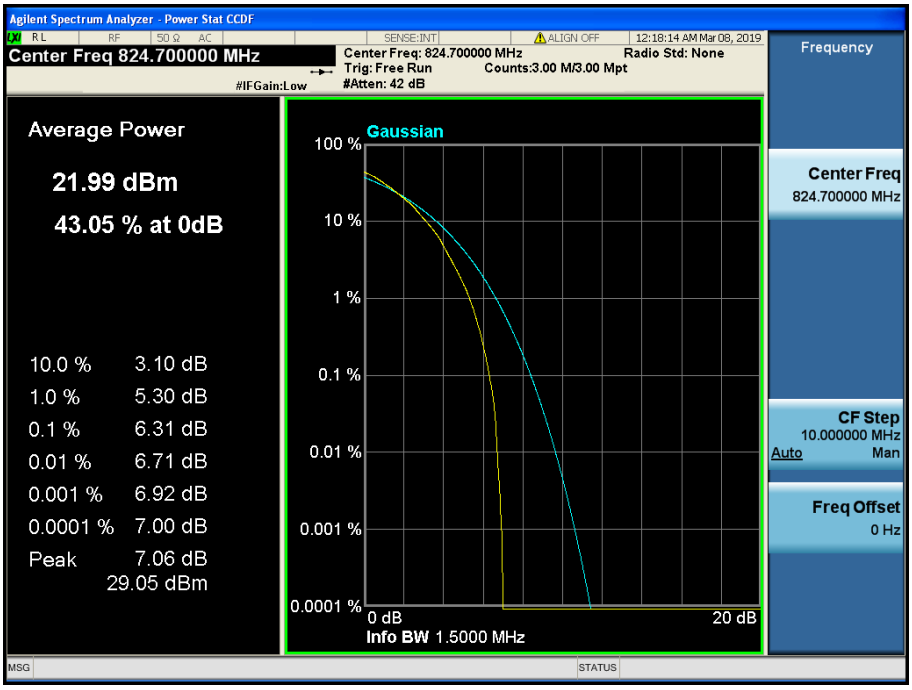
LTE Band 5 / 3 MHz / 64QAM - RB Size 15



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

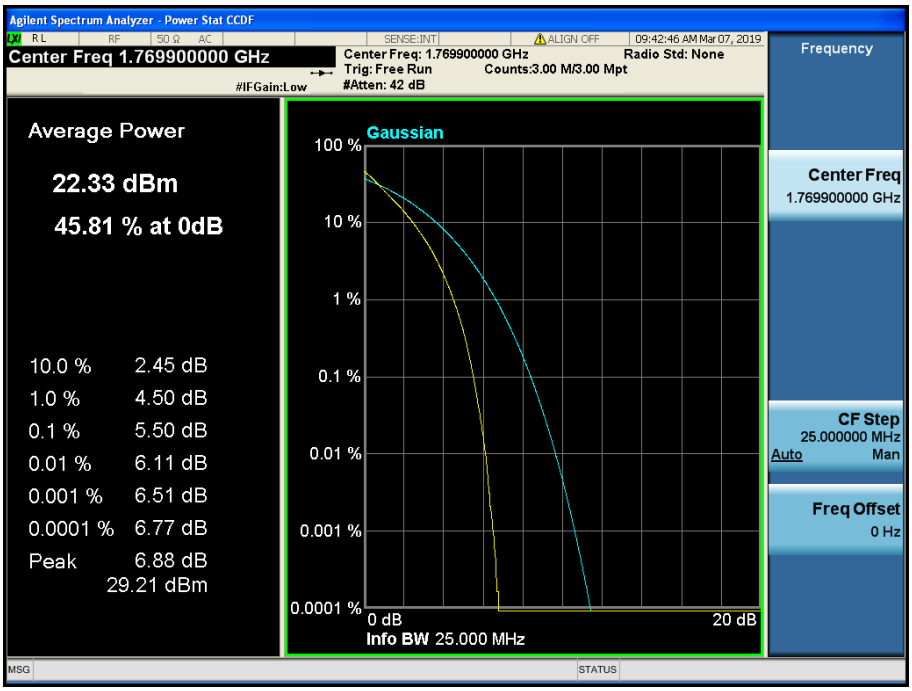


LTE Band 5 / 1.4 MHz / 16QAM - RB Size 6

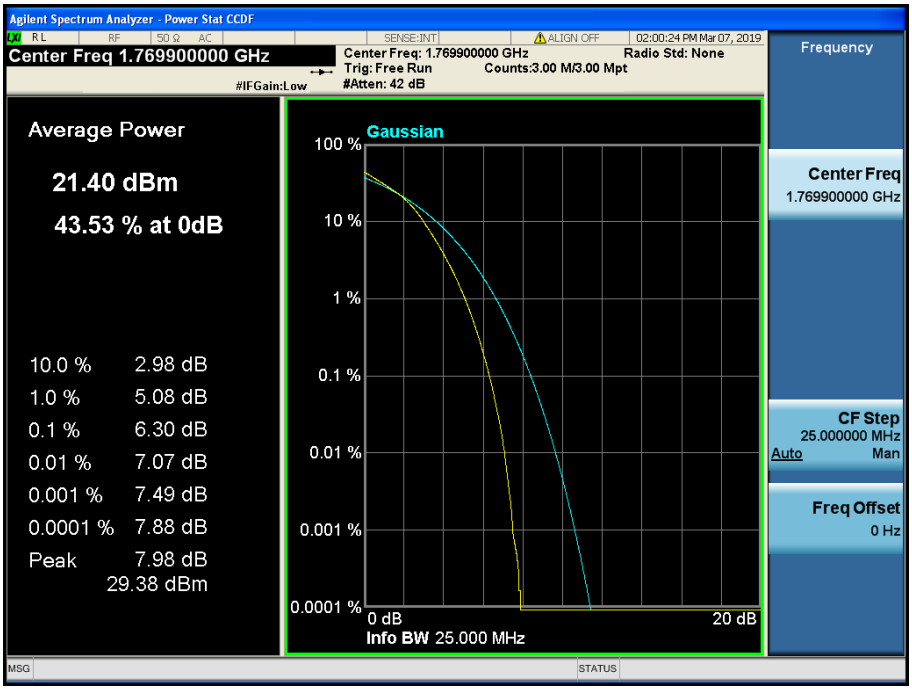


LTE Band 5 / 1.4 MHz / 64QAM - RB Size 6

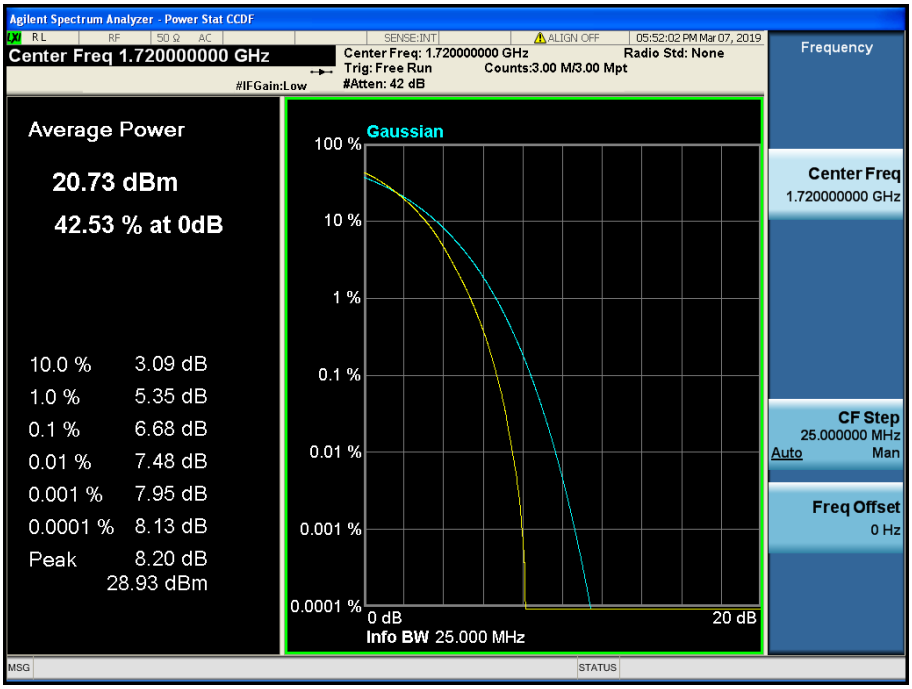
8.2.4 LTE Band 66, 4



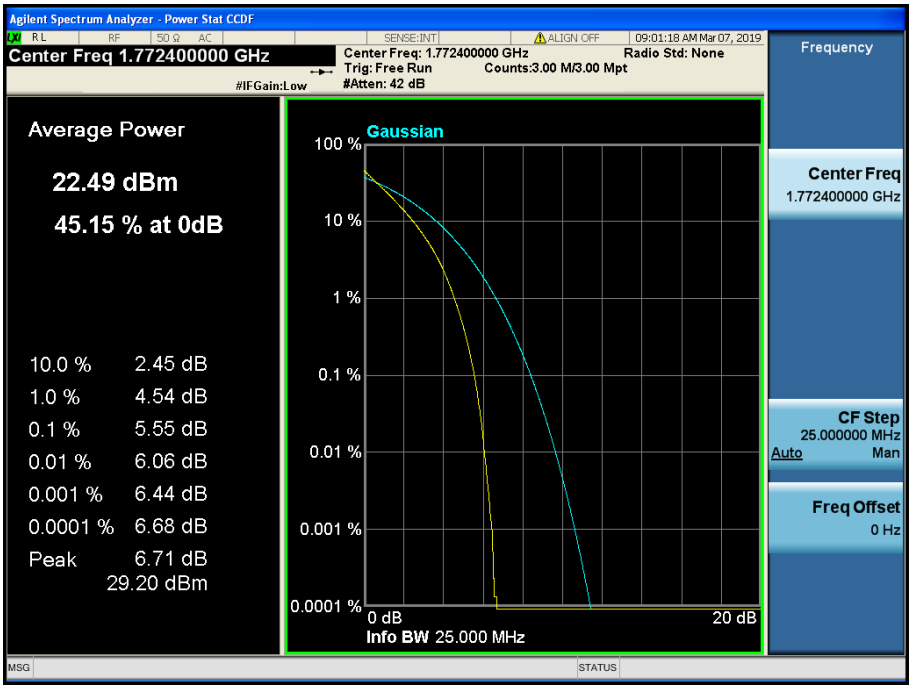
LTE Band 66, 4 / 20 MHz / QPSK - RB Size 100



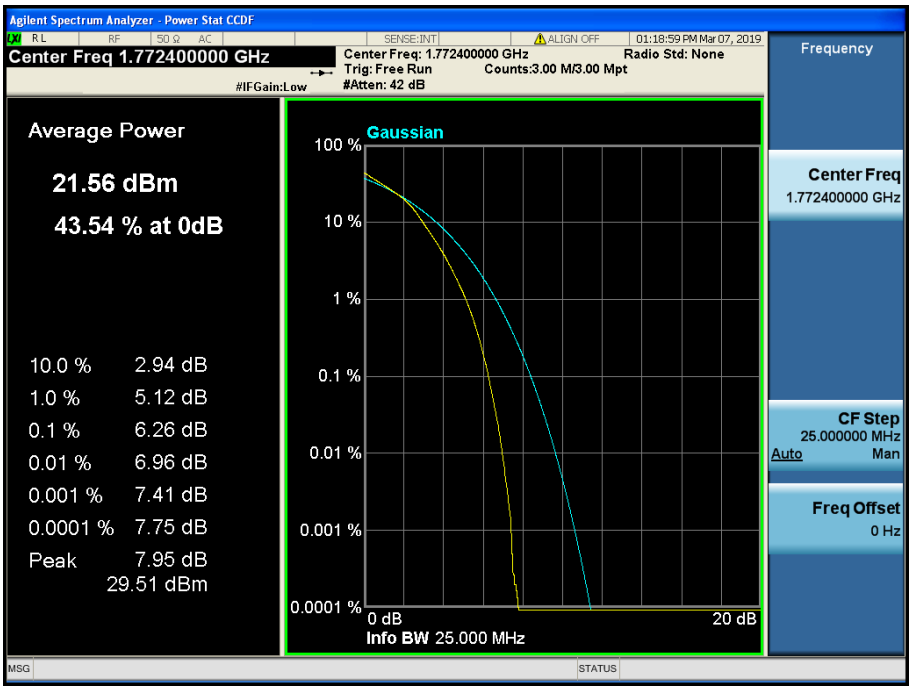
LTE Band 66, 4 / 20 MHz / 16QAM - RB Size 100



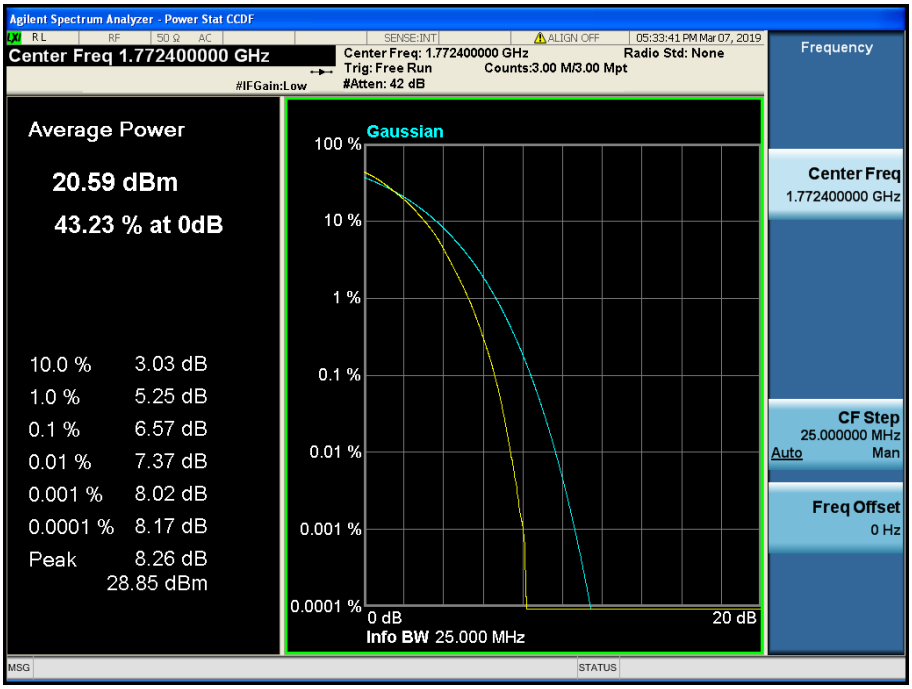
LTE Band 66, 4 / 20 MHz / 64QAM - RB Size 100



LTE Band 66, 4 / 15 MHz / QPSK - RB Size 75



LTE Band 66, 4 / 15 MHz / 16QAM - RB Size 75



LTE Band 66, 4 / 15 MHz / 64QAM - RB Size 75