TEST REPORT

DT&C Co., Ltd.
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Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC1904-0102(1)
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-V500EM
   FCC ID : ZNFV500EM
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 : 2019.03.07 ~ 2019.03.26, 2019.04.23
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)

2019 . 04 . 23 .

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
DRTFCC1904-0102	Apr. 15, 2019	Initial issue
DRTFCC1904-0102(1)	Apr. 23, 2019	LTE Band 12 Low Band edge retest

Table of Contents

1. GENERAL INFORMATION

Applicant Name : LG Electronics USA, Inc.

Address : 1000 Sylvan Ave. Englewood Cliffs, New Jersey, United States 07632

FCC ID : ZNFV500EM

FCC Classification : PCS Licensed Transmitter held to ear (PCE)

EUT Type : Mobile Phone

Model Name : LM-V500EM

Add Model Name : LMV500EM, V500EM

Supplying power : DC 4.00 V

Antenna Information : PIFA Antenna

<Single Standalone>

Mode	TX Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max power (dBm)	Max power (W)
LTE Band 12,17	704 ~ 711	8M96G7D	QPSK	19.27	0.085
LTE Band 12,17	704 ~ 711	8M96W7D	16QAM	18.37	0.069
LTE Band 12,17	704 ~ 711	8M98W7D	64QAM	17.46	0.056
LTE Band 12,17	701.5 ~ 713.5	4M50G7D	QPSK	18.57	0.072
LTE Band 12,17	701.5 ~ 713.5	4M49W7D	16QAM	17.82	0.061
LTE Band 12,17	701.5 ~ 713.5	4M48W7D	64QAM	16.95	0.050
LTE Band 12	700.5 ~ 714.5	2M69G7D	QPSK	18.51	0.071
LTE Band 12	700.5 ~ 714.5	2M70W7D	16QAM	17.62	0.058
LTE Band 12	700.5 ~ 714.5	2M70W7D	64QAM	16.75	0.047
LTE Band 12	699.7 ~ 715.3	1M09G7D	QPSK	18.49	0.071
LTE Band 12	699.7 ~ 715.3	1M09W7D	16QAM	17.75	0.060
LTE Band 12	699.7 ~ 715.3	1M09W7D	64QAM	16.68	0.047
LTE Band 5	829 ~ 844	8M96G7D	QPSK	18.20	0.066
LTE Band 5	829 ~ 844	8M94W7D	16QAM	16.81	0.048
LTE Band 5	829 ~ 844	8M96W7D	64QAM	16.29	0.043
LTE Band 5	826.5 ~ 846.5	4M51G7D	QPSK	18.00	0.063
LTE Band 5	826.5 ~ 846.5	4M48W7D	16QAM	17.48	0.056
LTE Band 5	826.5 ~ 846.5	4M50W7D	64QAM	16.26	0.042
LTE Band 5	825.5 ~ 847.5	2M70G7D	QPSK	18.32	0.068
LTE Band 5	825.5 ~ 847.5	2M69W7D	16QAM	16.79	0.048
LTE Band 5	825.5 ~ 847.5	2M70W7D	64QAM	16.20	0.042
LTE Band 5	824.7 ~ 848.3	1M09G7D	QPSK	18.02	0.063
LTE Band 5	824.7 ~ 848.3	1M09W7D	16QAM	16.53	0.045
LTE Band 5	824.7 ~ 848.3	1M09W7D	64QAM	16.01	0.040

Mode	TX Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max power(dBm)	Max power(W)
LTE Band 4	1720 ~ 1745	17M9G7D	QPSK	23.32	0.215
LTE Band 4	1720 ~ 1745	17M9W7D	16QAM	22.24	0.167
LTE Band 4	1720 ~ 1745	17M9W7D	64QAM	21.19	0.132
LTE Band 4	1717.5 ~ 1747.5	13M4G7D	QPSK	23.34	0.216
LTE Band 4	1717.5 ~ 1747.5	13M4W7D	16QAM	22.28	0.169
LTE Band 4	1717.5 ~ 1747.5	13M4W7D	64QAM	21.23	0.133
LTE Band 4	1715 ~ 1750	8M99G7D	QPSK	22.76	0.189
LTE Band 4	1715 ~ 1750	8M96W7D	16QAM	21.64	0.146
LTE Band 4	1715 ~ 1750	8M99W7D	64QAM	20.78	0.120
LTE Band 4	1712.5 ~ 1752.5	4M48G7D	QPSK	22.45	0.176
LTE Band 4	1712.5 ~ 1752.5	4M49W7D	16QAM	21.38	0.137
LTE Band 4	1712.5 ~ 1752.5	4M49W7D	64QAM	20.53	0.113
LTE Band 4	1711.5 ~ 1753.5	2M69G7D	QPSK	22.28	0.169
LTE Band 4	1711.5 ~ 1753.5	2M69W7D	16QAM	21.21	0.132
LTE Band 4	1711.5 ~ 1753.5	2M69W7D	64QAM	20.26	0.106
LTE Band 4	1710.7 ~ 1754.3	1M09G7D	QPSK	22.38	0.173
LTE Band 4	1710.7 ~ 1754.3	1M09W7D	16QAM	21.54	0.143
LTE Band 4	1710.7 ~ 1754.3	1M09W7D	64QAM	20.47	0.111
LTE Band 2	1860 ~ 1900	17M9G7D	QPSK	21.35	0.136
LTE Band 2	1860 ~ 1900	17M9W7D	16QAM	20.52	0.113
LTE Band 2	1860 ~ 1900	17M9W7D	64QAM	19.55	0.090
LTE Band 2	1857.5 ~ 1902.5	13M4G7D	QPSK	21.73	0.149
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	16QAM	20.79	0.120
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	64QAM	19.68	0.093
LTE Band 2	1855 ~ 1905	8M95G7D	QPSK	22.39	0.173
LTE Band 2	1855 ~ 1905	8M94W7D	16QAM	21.44	0.139
LTE Band 2	1855 ~ 1905	8M97W7D	64QAM	20.51	0.112
LTE Band 2	1852.5 ~ 1907.5	4M49G7D	QPSK	21.45	0.140
LTE Band 2	1852.5 ~ 1907.5	4M49W7D	16QAM	20.60	0.115
LTE Band 2	1852.5 ~ 1907.5	4M49W7D	64QAM	19.61	0.091
LTE Band 2	1851.5 ~ 1908.5	2M70G7D	QPSK	21.83	0.152
LTE Band 2	1851.5 ~ 1908.5	2M69W7D	16QAM	20.89	0.123
LTE Band 2	1851.5 ~ 1908.5	2M69W7D	64QAM	19.96	0.099
LTE Band 2	1850.7 ~ 1909.3	1M08G7D	QPSK	21.73	0.149
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	16QAM	20.85	0.122
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	64QAM	19.92	0.098

<Worst of all Cases>

Mode	TX Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max power (dBm)	Max power (W)
LTE Band 12,17	704 ~ 711	8M96G7D	QPSK	19.27	0.085
LTE Band 12,17	704 ~ 711	8M96W7D	16QAM	18.37	0.069
LTE Band 12,17	704 ~ 711	8M98W7D	64QAM	17.46	0.056
LTE Band 12,17	701.5 ~ 713.5	4M50G7D	QPSK	18.81	0.076
LTE Band 12,17	701.5 ~ 713.5	4M49W7D	16QAM	18.01	0.063
LTE Band 12,17	701.5 ~ 713.5	4M48W7D	64QAM	17.10	0.051
LTE Band 12	700.5 ~ 714.5	2M69G7D	QPSK	18.76	0.075
LTE Band 12	700.5 ~ 714.5	2M70W7D	16QAM	18.15	0.065
LTE Band 12	700.5 ~ 714.5	2M70W7D	64QAM	17.09	0.051
LTE Band 12	699.7 ~ 715.3	1M09G7D	QPSK	18.44	0.071
LTE Band 12	699.7 ~ 715.3	1M09W7D	16QAM	17.64	0.060
LTE Band 12	699.7 ~ 715.3	1M09W7D	64QAM	16.68	0.047
LTE Band 5	829 ~ 844	8M96G7D	QPSK	18.39	0.069
LTE Band 5	829 ~ 844	8M94W7D	16QAM	17.10	0.051
LTE Band 5	829 ~ 844	8M96W7D	64QAM	16.63	0.046
LTE Band 5	826.5 ~ 846.5	4M51G7D	QPSK	18.00	0.071
LTE Band 5	826.5 ~ 846.5	4M48W7D	16QAM	17.48	0.056
LTE Band 5	826.5 ~ 846.5	4M50W7D	64QAM	16.64	0.046
LTE Band 5	825.5 ~ 847.5	2M70G7D	QPSK	19.43	0.088
LTE Band 5	825.5 ~ 847.5	2M69W7D	16QAM	17.27	0.053
LTE Band 5	825.5 ~ 847.5	2M70W7D	64QAM	16.68	0.047
LTE Band 5	824.7 ~ 848.3	1M09G7D	QPSK	18.38	0.069
LTE Band 5	824.7 ~ 848.3	1M09W7D	16QAM	17.11	0.051
LTE Band 5	824.7 ~ 848.3	1M09W7D	64QAM	16.53	0.045

Mode	TX Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max power(dBm)	Max power(W)
LTE Band 4	1720 ~ 1745	17M9G7D	QPSK	22.70	0.186
LTE Band 4	1720 ~ 1745	17M9W7D	16QAM	22.24	0.167
LTE Band 4	1720 ~ 1745	17M9W7D	64QAM	21.19	0.132
LTE Band 4	1717.5 ~ 1747.5	13M4G7D	QPSK	23.34	0.216
LTE Band 4	1717.5 ~ 1747.5	13M4W7D	16QAM	22.28	0.169
LTE Band 4	1717.5 ~ 1747.5	13M4W7D	64QAM	21.23	0.133
LTE Band 4	1715 ~ 1750	8M99G7D	QPSK	22.76	0.189
LTE Band 4	1715 ~ 1750	8M96W7D	16QAM	21.64	0.146
LTE Band 4	1715 ~ 1750	8M99W7D	64QAM	20.78	0.120
LTE Band 4	1712.5 ~ 1752.5	4M48G7D	QPSK	22.90	0.195
LTE Band 4	1712.5 ~ 1752.5	4M49W7D	16QAM	21.84	0.153
LTE Band 4	1712.5 ~ 1752.5	4M49W7D	64QAM	20.95	0.124
LTE Band 4	1711.5 ~ 1753.5	2M69G7D	QPSK	22.71	0.187
LTE Band 4	1711.5 ~ 1753.5	2M69W7D	16QAM	21.66	0.147
LTE Band 4	1711.5 ~ 1753.5	2M69W7D	64QAM	20.74	0.119
LTE Band 4	1710.7 ~ 1754.3	1M09G7D	QPSK	22.67	0.185
LTE Band 4	1710.7 ~ 1754.3	1M09W7D	16QAM	21.80	0.151
LTE Band 4	1710.7 ~ 1754.3	1M09W7D	64QAM	20.88	0.122
LTE Band 2	1860 ~ 1900	17M9G7D	QPSK	21.21	0.136
LTE Band 2	1860 ~ 1900	17M9W7D	16QAM	20.52	0.113
LTE Band 2	1860 ~ 1900	17M9W7D	64QAM	19.55	0.090
LTE Band 2	1857.5 ~ 1902.5	13M4G7D	QPSK	21.73	0.149
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	16QAM	20.79	0.120
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	64QAM	19.78	0.095
LTE Band 2	1855 ~ 1905	8M95G7D	QPSK	22.39	0.173
LTE Band 2	1855 ~ 1905	8M94W7D	16QAM	21.44	0.139
LTE Band 2	1855 ~ 1905	8M97W7D	64QAM	20.51	0.112
LTE Band 2	1852.5 ~ 1907.5	4M49G7D	QPSK	21.45	0.140
LTE Band 2	1852.5 ~ 1907.5	4M49W7D	16QAM	20.60	0.115
LTE Band 2	1852.5 ~ 1907.5	4M49W7D	64QAM	19.61	0.091
LTE Band 2	1851.5 ~ 1908.5	2M70G7D	QPSK	21.83	0.152
LTE Band 2	1851.5 ~ 1908.5	2M69W7D	16QAM	20.89	0.123
LTE Band 2	1851.5 ~ 1908.5	2M69W7D	64QAM	19.96	0.099
LTE Band 2	1850.7 ~ 1909.3	1M08G7D	QPSK	21.73	0.149
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	16QAM	20.85	0.122
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	64QAM	19.92	0.098

2. INTRODUCTION

2.1 EUT DESCRIPTION

The Equipment Under Test (EUT) supports GSM/WCDMA/LTE Phone with Bluetooth, WLAN, WPC and 60G Wireless transmission.

2.2. EUT CAPABILITIES

This EUT contains the following capabilities:
850/1900 GSM/EDGE, 850/1900 WCDMA/HSUPA, Multi-band LTE, 802.11b/g/n/ac WLAN(2.4GHz)
802.11a/n/ac WLAN(5GHz), Bluetooth(BDR, EDR, LE), WPC, 60G Wireless transmission.

2.3. TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+19 ℃ ~ +24 ℃
▪ Relative Humidity	38 % ~ 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)

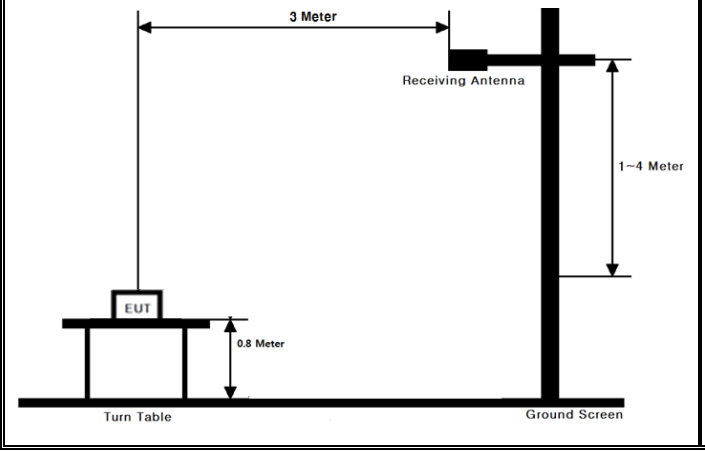
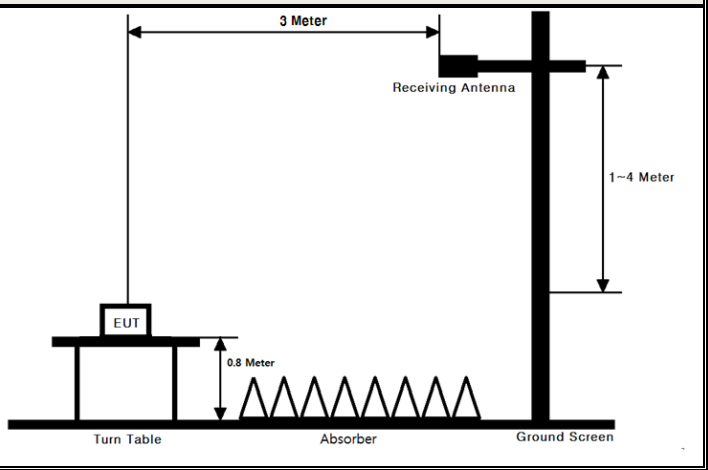
2.6. TEST FACILITY

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 complies 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.

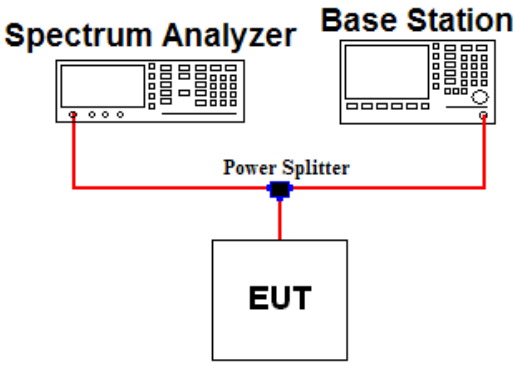
The ERP/EIRP is calculated using the following formula:

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.

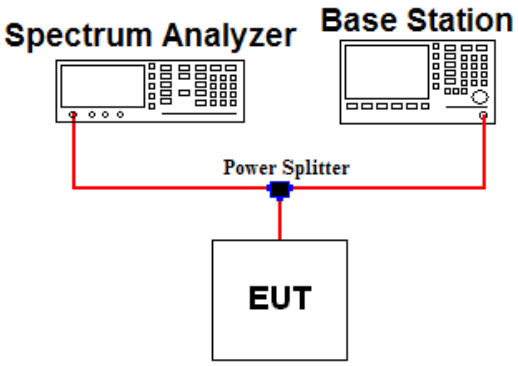
Test setting

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**

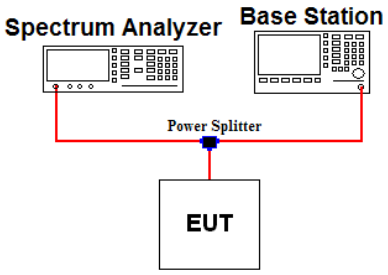
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

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.

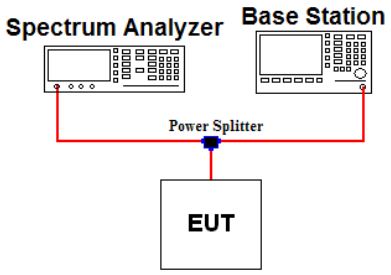
Note 2: Per Part 27(g) for operations in the 600 MHz band and the 698-746 MHz band, compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a 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.

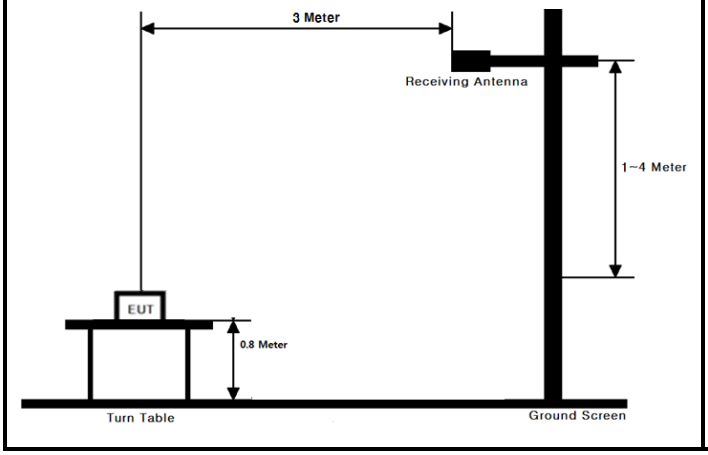
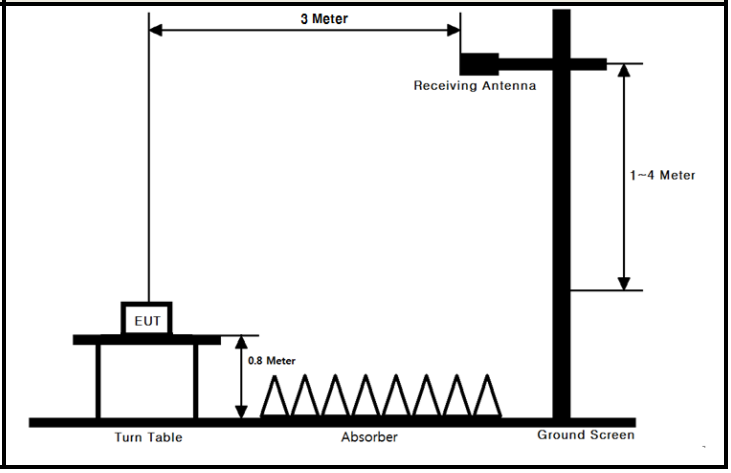
Test setting

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.

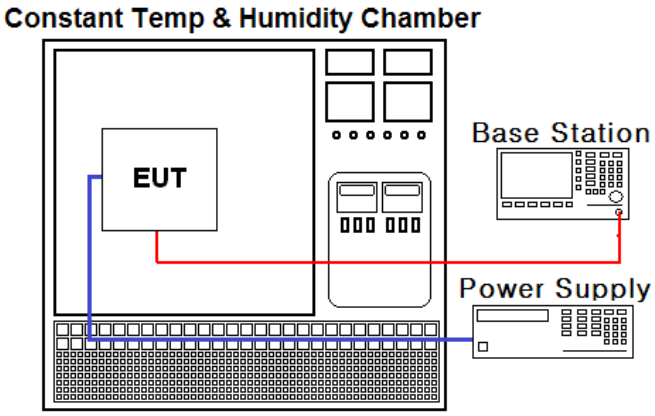
For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

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	18/07/09	19/07/09	MY50200834
Spectrum Analyzer	Agilent Technologies	N9030A	19/03/15	20/03/15	MY53310140
DC power supply	Agilent Technologies	66332A	18/07/02	19/07/02	MY43000394
Multimeter	FLUKE	17B	18/12/18	19/12/18	26030065WS
Power Splitter	Anritsu	K241B	18/07/06	19/07/06	020611
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	19/02/28	21/02/28	2116
Dipole Antenna	Schwarzbeck	VHA9103	18/04/13	20/04/13	2117
Dipole Antenna	Schwarzbeck	UHA9105	19/02/28	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	RF Bay Inc	MPA-40-40	18/12/20	19/12/20	21151801
Amplifier	EMPOWER	BBS3Q7ELU	18/07/10	19/07/10	1020
PreAmplifier	H.P	8447D	18/12/18	19/12/18	2944A07774
PreAmplifier	Agilent	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-55
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
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 (B4)	< 1 Watts max. EIRP		C
24.232(c) 27.50(h.2)	Radiated Output Power(B2)	< 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

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable
Note 2: Refer to RF Exposure Report (Test Report SAR)
Note 3: This device supports wireless charging & 60G wireless transmission capability.
So per KDB648474 D03v01r04, the radiated test items were performed all not charging, charging and 60G wireless transmission conditions. For wireless charging condition, the handset is placed on the representative charging pad under normal conditions and in a simulated call configuration.
And the worst case data was reported.

6. SAMPLE CALCULATION

A. Emission Designator

LTE Band 12, 17(QPSK)

Emission Designator = **8M96G7D**
LTE OBW = 8.958 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 12, 17(16QAM)

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

LTE Band 12, 17(64QAM)

Emission Designator = **8M98W7D**
LTE OBW = 8.983 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 5(QPSK)

Emission Designator = **8M97G7D**
LTE OBW = 8.965 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 5(16QAM)

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

LTE Band 5(64QAM)

Emission Designator = **8M96W7D**
LTE OBW = 8.957 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 4(QPSK)

Emission Designator = **17M9G7D**
LTE OBW = 17.905 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 4(16QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.897 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 4(64QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.904 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(QPSK)

Emission Designator = **17M9G7D**
LTE OBW = 17.904 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(16QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.901 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(64QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.878 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

B. For substitution method

EIRP for Band 4

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)
15	1747.5	QPSK	1/36	-24.32	Z	V	17.64	5.70	23.34	0.216

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

- Measurement data: Without wireless charging pad

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)	Note
10	704	QPSK	1/25	H	17.22	1.28	18.50	0.071	
		16QAM	1/25	H	16.39	1.28	17.67	0.058	
		64QAM	1/25	H	15.34	1.28	16.62	0.046	
	711	**QPSK**	**1/49**	**H**	**17.99**	**1.28**	**19.27**	**0.085**	
		16QAM	1/49	H	17.09	1.28	18.37	0.069	
		64QAM	1/49	H	16.18	1.28	17.46	0.056	
		QPSK	1/49	H	17.97	1.28	19.25	0.084	With Dual Display (180°)
5	701.5	QPSK	1/12	H	17.19	1.28	18.47	0.070	
		16QAM	1/12	H	16.43	1.28	17.71	0.059	
		64QAM	1/12	H	15.56	1.28	16.84	0.048	
	707.5	QPSK	1/12	H	17.29	1.28	18.57	0.072	
		16QAM	1/12	H	16.54	1.28	17.82	0.061	
		64QAM	1/12	H	15.67	1.28	16.95	0.050	
	713.5	QPSK	1/12	H	16.84	1.28	18.12	0.065	
		16QAM	1/12	H	16.06	1.28	17.34	0.054	
		64QAM	1/12	H	14.99	1.28	16.27	0.042	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

7.5.2 LTE Band 12

- Measurement data: Without wireless charging pad

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)	Note
3	700.5	QPSK	1/7	H	16.84	1.28	18.12	0.065	
		16QAM	1/7	H	16.07	1.28	17.35	0.054	
		64QAM	1/7	H	15.16	1.28	16.44	0.044	
	707.5	QPSK	1/7	H	17.23	1.28	18.51	0.071	
		16QAM	1/7	H	16.34	1.28	17.62	0.058	
		64QAM	1/7	H	15.47	1.28	16.75	0.047	
	714.5	QPSK	1/7	H	16.96	1.28	18.24	0.067	
		16QAM	1/7	H	16.19	1.28	17.47	0.056	
		64QAM	1/7	H	15.12	1.28	16.40	0.044	
1.4	699.7	QPSK	1/2	H	17.13	1.28	18.41	0.069	
		16QAM	1/2	H	16.21	1.28	17.49	0.056	
		64QAM	1/2	H	15.17	1.28	16.45	0.044	
	707.5	QPSK	1/2	H	17.16	1.28	18.44	0.070	
		16QAM	1/2	H	16.37	1.28	17.65	0.058	
		64QAM	1/2	H	15.40	1.28	16.68	0.047	
	715.3	QPSK	1/2	H	17.21	1.28	18.49	0.071	
		16QAM	1/2	H	16.47	1.28	17.75	0.060	
		64QAM	1/2	H	15.36	1.28	16.64	0.046	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

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)	Note
10	**711**	**QPSK**	**1/49**	**H**	**17.72**	**1.28**	**19.00**	**0.079**	
		16QAM	1/49	H	16.85	1.28	18.13	0.065	
		64QAM	1/49	H	15.98	1.28	17.26	0.053	
		QPSK	1/49	H	15.03	1.28	16.31	0.043	With Dual Display (130°)
5	707.5	QPSK	1/12	H	17.53	1.28	18.81	0.076	
		16QAM	1/12	H	16.73	1.28	18.01	0.063	
		64QAM	1/12	H	15.82	1.28	17.10	0.051	
3	707.5	QPSK	1/7	H	17.48	1.28	18.76	0.075	
		16QAM	1/7	H	16.87	1.28	18.15	0.065	
		64QAM	1/7	H	15.81	1.28	17.09	0.051	
1.4	715.3	QPSK	1/2	H	17.03	1.28	18.31	0.068	
		16QAM	1/2	H	16.36	1.28	17.64	0.058	
		64QAM	1/2	H	15.34	1.28	16.62	0.046	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

7.5.3 LTE Band 5

- Measurement data: Without wireless charging pad

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)	Note
10	829	QPSK	1/0	H	16.02	1.23	17.25	0.053	
		16QAM	1/0	H	14.54	1.23	15.77	0.038	
		64QAM	1/0	H	13.91	1.23	15.14	0.033	
	836.5	QPSK	1/0	H	16.98	1.22	18.20	0.066	
		16QAM	1/0	H	15.59	1.22	16.81	0.048	
		64QAM	1/0	H	15.07	1.22	16.29	0.043	
	844	QPSK	1/0	H	16.90	1.21	18.11	0.065	
		16QAM	1/0	H	15.47	1.21	16.68	0.047	
		64QAM	1/0	H	14.78	1.21	15.99	0.040	
5	826.5	QPSK	1/24	H	15.23	1.23	16.46	0.044	
		16QAM	1/24	H	13.82	1.23	15.05	0.032	
		64QAM	1/24	H	13.04	1.23	14.27	0.027	
	836.5	QPSK	1/24	H	16.78	1.22	18.00	0.063	
		16QAM	1/24	H	16.26	1.22	17.48	0.056	
		64QAM	1/24	H	15.04	1.22	16.26	0.042	
	846.5	QPSK	1/24	H	16.23	1.21	17.44	0.055	
		16QAM	1/24	H	14.96	1.21	16.17	0.041	
		64QAM	1/24	H	14.42	1.21	15.63	0.037	
3	825.5	QPSK	1/0	H	15.38	1.23	16.61	0.046	
		16QAM	1/0	H	14.00	1.23	15.23	0.033	
		64QAM	1/0	H	13.32	1.23	14.55	0.029	
	836.5	QPSK	1/0	H	17.10	1.22	18.32	0.068	
		16QAM	1/0	H	15.57	1.22	16.79	0.048	
		64QAM	1/0	H	14.98	1.22	16.20	0.042	
		QPSK	**1/0**	**H**	**18.21**	**1.22**	**19.43**	**0.088**	**With Dual Display (180°)**
	847.5	QPSK	1/0	H	16.66	1.21	17.87	0.061	
		16QAM	1/0	H	15.28	1.21	16.49	0.045	
		64QAM	1/0	H	14.51	1.21	15.72	0.037	
1.4	824.7	QPSK	1/0	H	15.35	1.23	16.58	0.045	
		16QAM	1/0	H	13.87	1.23	15.10	0.032	
		64QAM	1/0	H	13.13	1.23	14.36	0.027	
	836.5	QPSK	1/0	H	16.80	1.22	18.02	0.063	
		16QAM	1/0	H	15.31	1.22	16.53	0.045	
		64QAM	1/0	H	14.47	1.22	15.69	0.037	
	848.3	QPSK	1/0	H	16.67	1.21	17.88	0.061	
		16QAM	1/0	H	15.16	1.21	16.37	0.043	
		64QAM	1/0	H	14.80	1.21	16.01	0.040	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

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)	Note
10	836.5	QPSK	1/0	H	17.17	1.22	18.39	0.069	
		16QAM	1/0	H	15.88	1.22	17.10	0.051	
		64QAM	1/0	H	15.41	1.22	16.63	0.046	
5	836.5	QPSK	1/24	H	17.27	1.22	18.49	0.071	
		16QAM	1/24	H	16.00	1.22	17.22	0.053	
		64QAM	1/24	H	15.42	1.22	16.64	0.046	
3	**836.5**	**QPSK**	**1/0**	**H**	**17.27**	**1.22**	**18.49**	**0.071**	
		16QAM	1/0	H	16.05	1.22	17.27	0.053	
		64QAM	1/0	H	15.46	1.22	16.68	0.047	
		QPSK	1/0	H	16.16	1.22	17.38	0.055	With Dual Display (130˚)
1.4	836.5	QPSK	1/0	H	17.16	1.22	18.38	0.069	
		16QAM	1/0	H	15.89	1.22	17.11	0.051	
		64QAM	1/0	H	15.31	1.22	16.53	0.045	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

7.5.4 LTE Band 4

- Measurement data: Without wireless charging pad

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)	Note
20	1720	QPSK	1/50	V	15.38	5.95	21.33	0.136	
		16QAM	1/50	V	14.57	5.95	20.52	0.113	
		64QAM	1/50	V	13.40	5.95	19.35	0.086	
	1732.5	QPSK	1/50	V	16.47	5.84	22.31	0.170	
		16QAM	1/50	V	15.52	5.84	21.36	0.137	
		64QAM	1/50	V	14.43	5.84	20.27	0.106	
	1745	QPSK	1/50	V	17.59	5.73	23.32	0.215	
		16QAM	1/50	V	16.51	5.73	22.24	0.167	
		64QAM	1/50	V	15.46	5.73	21.19	0.132	
15	1717.5	QPSK	1/36	V	15.33	5.97	21.30	0.135	
		16QAM	1/36	V	14.41	5.97	20.38	0.109	
		64QAM	1/36	V	13.29	5.97	19.26	0.084	
	1732.5	QPSK	1/36	V	15.93	5.84	21.77	0.150	
		16QAM	1/36	V	15.06	5.84	20.90	0.123	
		64QAM	1/36	V	14.09	5.84	19.93	0.098	
	1747.5	**QPSK**	**1/36**	**V**	**17.64**	**5.70**	**23.34**	**0.216**	
		16QAM	1/36	V	16.58	5.70	22.28	0.169	
		64QAM	1/36	V	15.53	5.70	21.23	0.133	
		QPSK	1/36	V	17.19	5.70	22.89	0.195	With Dual Display (180°)
10	1715	QPSK	1/25	V	15.23	6.00	21.23	0.133	
		16QAM	1/25	V	14.44	6.00	20.44	0.111	
		64QAM	1/25	V	13.36	6.00	19.36	0.086	
	1732.5	QPSK	1/25	V	16.66	5.84	22.50	0.178	
		16QAM	1/25	V	15.57	5.84	21.41	0.138	
		64QAM	1/25	V	14.50	5.84	20.34	0.108	
	1750	QPSK	1/25	V	17.08	5.68	22.76	0.189	
		16QAM	1/25	V	15.96	5.68	21.64	0.146	
		64QAM	1/25	V	15.10	5.68	20.78	0.120	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

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)	Note
5	1712.5	QPSK	1/12	V	14.63	6.02	20.65	0.116	
		16QAM	1/12	V	13.78	6.02	19.80	0.095	
		64QAM	1/12	V	12.76	6.02	18.78	0.076	
	1732.5	QPSK	1/12	V	16.61	5.84	22.45	0.176	
		16QAM	1/12	V	15.54	5.84	21.38	0.137	
		64QAM	1/12	V	14.69	5.84	20.53	0.113	
	1752.5	QPSK	1/12	V	16.36	5.65	22.01	0.159	
		16QAM	1/12	V	15.55	5.65	21.20	0.132	
		64QAM	1/12	V	14.49	5.65	20.14	0.103	
3	1711.5	QPSK	1/7	V	14.51	6.03	20.54	0.113	
		16QAM	1/7	V	13.57	6.03	19.60	0.091	
		64QAM	1/7	V	12.55	6.03	18.58	0.072	
	1732.5	QPSK	1/7	V	16.44	5.84	22.28	0.169	
		16QAM	1/7	V	15.37	5.84	21.21	0.132	
		64QAM	1/7	V	14.42	5.84	20.26	0.106	
	1753.5	QPSK	1/7	V	16.30	5.63	21.93	0.156	
		16QAM	1/7	V	15.34	5.63	20.97	0.125	
		64QAM	1/7	V	14.33	5.63	19.96	0.099	
1.4	1710.7	QPSK	1/2	V	14.25	6.03	20.28	0.107	
		16QAM	1/2	V	13.38	6.03	19.41	0.087	
		64QAM	1/2	V	12.44	6.03	18.47	0.070	
	1732.5	QPSK	1/2	V	16.39	5.84	22.23	0.167	
		16QAM	1/2	V	15.64	5.84	21.48	0.141	
		64QAM	1/2	V	14.56	5.84	20.40	0.110	
	1754.3	QPSK	1/2	V	16.76	5.62	22.38	0.173	
		16QAM	1/2	V	15.92	5.62	21.54	0.143	
		64QAM	1/2	V	14.85	5.62	20.47	0.111	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

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)	Note
20	1732.5	QPSK	1/50	H	16.86	5.84	22.70	0.186	
		16QAM	1/50	H	15.91	5.84	21.75	0.150	
		64QAM	1/50	H	14.97	5.84	20.81	0.121	
15	**1747.5**	**QPSK**	**1/36**	**H**	**17.35**	**5.70**	**23.05**	**0.202**	
		16QAM	1/36	H	16.39	5.70	22.09	0.162	
		64QAM	1/36	H	15.24	5.70	20.94	0.124	
		QPSK	1/36	H	15.32	5.70	21.02	0.126	With Dual Display (130°)
10	1750	QPSK	1/25	H	16.82	5.68	22.50	0.178	
		16QAM	1/25	H	15.68	5.68	21.36	0.137	
		64QAM	1/25	H	14.75	5.68	20.43	0.110	
5	1732.5	QPSK	1/12	H	17.06	5.84	22.90	0.195	
		16QAM	1/12	H	16.00	5.84	21.84	0.153	
		64QAM	1/12	H	15.11	5.84	20.95	0.124	
3	1732.5	QPSK	1/7	H	16.87	5.84	22.71	0.187	
		16QAM	1/7	H	15.82	5.84	21.66	0.147	
		64QAM	1/7	H	14.90	5.84	20.74	0.119	
1.4	1754.3	QPSK	1/2	H	17.05	5.62	22.67	0.185	
		16QAM	1/2	H	16.18	5.62	21.80	0.151	
		64QAM	1/2	H	15.26	5.62	20.88	0.122	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

7.5.5 LTE Band 2

- Measurement data: Without wireless charging pad

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)	Note
20	1860	QPSK	1/50	H	16.42	4.91	21.33	0.136	
		16QAM	1/50	H	15.47	4.91	20.38	0.109	
		64QAM	1/50	H	14.64	4.91	19.55	0.090	
	1880	QPSK	1/50	H	16.55	4.80	21.35	0.136	
		16QAM	1/50	H	15.72	4.80	20.52	0.113	
		64QAM	1/50	H	14.67	4.80	19.47	0.089	
	1900	QPSK	1/50	H	15.80	4.69	20.49	0.112	
		16QAM	1/50	H	15.04	4.69	19.73	0.094	
		64QAM	1/50	H	14.21	4.69	18.90	0.078	
15	1857.5	QPSK	1/36	H	16.81	4.92	21.73	0.149	
		16QAM	1/36	H	15.87	4.92	20.79	0.120	
		64QAM	1/36	H	14.76	4.92	19.68	0.093	
	1880	QPSK	1/36	H	16.49	4.80	21.29	0.135	
		16QAM	1/36	H	15.56	4.80	20.36	0.109	
		64QAM	1/36	H	14.70	4.80	19.50	0.089	
	1902.5	QPSK	1/36	H	15.80	4.68	20.48	0.112	
		16QAM	1/36	H	14.97	4.68	19.65	0.092	
		64QAM	1/36	H	14.01	4.68	18.69	0.074	
10	**1855**	**QPSK**	**1/25**	**H**	**17.45**	**4.94**	**22.39**	**0.173**	
		16QAM	1/25	H	16.50	4.94	21.44	0.139	
		64QAM	1/25	H	15.57	4.94	20.51	0.112	
		QPSK	1/25	H	16.93	4.94	21.87	0.154	With Dual Display (180˚)
	1880	QPSK	1/25	H	16.60	4.80	21.40	0.138	
		16QAM	1/25	H	15.96	4.80	20.76	0.119	
		64QAM	1/25	H	15.10	4.80	19.90	0.098	
	1905	QPSK	1/25	H	16.22	4.67	20.89	0.123	
		16QAM	1/25	H	15.35	4.67	20.02	0.100	
		64QAM	1/25	H	14.43	4.67	19.10	0.081	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

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)	Note
5	1852.5	QPSK	1/12	H	16.50	4.95	21.45	0.140	
		16QAM	1/12	H	15.62	4.95	20.57	0.114	
		64QAM	1/12	H	14.66	4.95	19.61	0.091	
	1880	QPSK	1/12	H	16.55	4.80	21.35	0.136	
		16QAM	1/12	H	15.80	4.80	20.60	0.115	
		64QAM	1/12	H	14.64	4.80	19.44	0.088	
	1907.5	QPSK	1/12	H	16.18	4.65	20.83	0.121	
		16QAM	1/12	H	15.29	4.65	19.94	0.099	
		64QAM	1/12	H	14.37	4.65	19.02	0.080	
3	1851.5	QPSK	1/7	H	16.88	4.95	21.83	0.152	
		16QAM	1/7	H	15.94	4.95	20.89	0.123	
		64QAM	1/7	H	15.01	4.95	19.96	0.099	
	1880	QPSK	1/7	H	16.44	4.80	21.24	0.133	
		16QAM	1/7	H	15.77	4.80	20.57	0.114	
		64QAM	1/7	H	14.72	4.80	19.52	0.090	
	1908.5	QPSK	1/7	H	16.16	4.65	20.81	0.121	
		16QAM	1/7	H	15.28	4.65	19.93	0.098	
		64QAM	1/7	H	14.33	4.65	18.98	0.079	
1.4	1850.7	QPSK	1/2	H	16.77	4.96	21.73	0.149	
		16QAM	1/2	H	15.89	4.96	20.85	0.122	
		64QAM	1/2	H	14.96	4.96	19.92	0.098	
	1880	QPSK	1/2	H	16.39	4.80	21.19	0.132	
		16QAM	1/2	H	15.61	4.80	20.41	0.110	
		64QAM	1/2	H	14.55	4.80	19.35	0.086	
	1909.3	QPSK	1/2	H	15.91	4.64	20.55	0.114	
		16QAM	1/2	H	15.03	4.64	19.67	0.093	
		64QAM	1/2	H	14.17	4.64	18.81	0.076	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

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)	Note
20	1880	QPSK	1/50	H	16.41	4.80	21.21	0.132	
		16QAM	1/50	H	15.62	4.80	20.42	0.110	
		64QAM	1/50	H	14.75	4.80	19.55	0.090	
15	1857.5	QPSK	1/36	H	16.74	4.92	21.66	0.147	
		16QAM	1/36	H	15.77	4.92	20.69	0.117	
		64QAM	1/36	H	14.86	4.92	19.78	0.095	
10	**1855**	**QPSK**	**1/25**	**H**	**17.00**	**4.94**	**21.94**	**0.156**	
		16QAM	1/25	H	16.05	4.94	20.99	0.126	
		64QAM	1/25	H	15.10	4.94	20.04	0.101	
		QPSK	1/25	H	16.19	4.94	21.13	0.130	With Dual Display (130°)
5	1852.5	QPSK	1/12	H	16.44	4.95	21.39	0.138	
		16QAM	1/12	H	15.53	4.95	20.48	0.112	
		64QAM	1/12	H	14.58	4.95	19.53	0.090	
3	1851.5	QPSK	1/7	H	16.41	4.95	21.36	0.137	
		16QAM	1/7	H	15.48	4.95	20.43	0.110	
		64QAM	1/7	H	14.55	4.95	19.50	0.089	
1.4	1850.7	QPSK	1/2	H	16.13	4.96	21.09	0.129	
		16QAM	1/2	H	15.31	4.96	20.27	0.106	
		64QAM	1/2	H	14.50	4.96	19.46	0.088	

Note1: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note2: Dual display mode was tested in the worst case.

7.6 UNDESIRABLE EMISSIONS (Radiated)

7.6.1 LTE Band 12,17

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
10	**704**	**1/25**	QPSK	1408.63	V	-57.65	2.78	-54.87	73.37	31.50	
				2111.72	V	-50.37	3.06	-47.31	65.81		
			16QAM	1407.69	V	-57.23	2.77	-54.46	72.13	30.67	
				2112.25	V	-50.88	3.06	-47.82	65.49		
			64QAM	1407.97	V	-57.60	2.77	-54.83	72.50	29.62	
				2112.19	V	-51.04	3.06	-47.98	65.65		
			QPSK	2108.70	V	-52.73	3.05	-49.68	68.18	31.50	With Dual Display (130°)
				5400.16	V	-51.59	8.12	-43.47	61.97		With Dual Display (180°)
	711	1/49	QPSK	1431.74	V	-57.86	3.01	-54.85	74.12	32.27	
				2148.39	V	-50.67	3.21	-47.46	66.73		
			16QAM	1432.08	V	-57.58	3.02	-54.56	72.93	31.37	
				2147.86	V	-50.92	3.21	-47.71	66.08		
			64QAM	1432.50	V	-58.06	3.02	-55.04	73.41	30.46	
				2147.66	V	-51.12	3.21	-47.91	66.28		
5	701.5	1/12	QPSK	1403.17	V	-57.91	2.72	-55.19	73.66	31.47	
				2104.47	V	-50.75	3.03	-47.72	66.19		
			16QAM	1402.72	V	-57.82	2.72	-55.10	72.81	30.71	
				2104.80	V	-50.88	3.03	-47.85	65.56		
			64QAM	1403.45	V	-57.78	2.73	-55.05	72.76	29.84	
				2104.85	V	-51.11	3.03	-48.08	65.79		
	707.5	1/12	QPSK	1414.88	V	-57.97	2.84	-55.13	73.70	31.57	
				2122.67	V	-51.00	3.11	-47.89	66.46		
			16QAM	1414.96	V	-58.29	2.84	-55.45	73.27	30.82	
				2122.88	V	-51.45	3.11	-48.34	66.16		
			64QAM	1415.70	V	-58.09	2.85	-55.24	73.06	29.95	
				2122.53	V	-51.02	3.10	-47.92	65.74		
	713.5	1/12	QPSK	1427.49	V	-58.01	2.97	-55.04	73.16	31.12	
				2140.11	V	-50.68	3.18	-47.50	65.62		
			16QAM	1427.03	V	-58.17	2.97	-55.20	72.54	30.34	
				2140.50	V	-51.27	3.18	-48.09	65.43		
			64QAM	1426.78	V	-57.93	2.96	-54.97	72.31	29.27	
				2140.85	V	-50.89	3.18	-47.71	65.05		

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

7.6.2 LTE Band 12

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
3	700.5	1/7	QPSK	1400.49	V	-57.67	2.69	-54.98	73.10	31.12	
				2101.77	V	-51.82	3.02	-48.80	66.92		
			16QAM	1401.24	V	-57.59	2.70	-54.89	72.24	30.35	
				2101.18	V	-51.71	3.01	-48.70	66.05		
			64QAM	1401.16	V	-57.66	2.70	-54.96	72.31	29.44	
				2101.32	V	-51.55	3.02	-48.53	65.88		
	707.5	1/7	QPSK	1415.43	V	-57.57	2.85	-54.72	73.23	31.51	
				2122.91	V	-51.46	3.11	-48.35	66.86		
			16QAM	1415.84	V	-57.85	2.85	-55.00	72.62	30.62	
				2123.02	V	-51.15	3.11	-48.04	65.66		
			64QAM	1415.47	V	-58.05	2.85	-55.20	72.82	29.75	
				2122.08	V	-51.58	3.10	-48.48	66.10		
	714.5	1/7	QPSK	1428.86	V	-58.09	2.98	-55.11	73.35	31.24	
				2143.38	V	-51.52	3.19	-48.33	66.57		
			16QAM	1428.76	V	-57.73	2.98	-54.75	72.22	30.47	
				2143.90	V	-51.78	3.19	-48.59	66.06		
			64QAM	1429.85	V	-57.53	2.99	-54.54	72.01	29.40	
				2142.79	V	-51.76	3.19	-48.57	66.04		
1.4	699.7	1/2	QPSK	1398.84	V	-57.23	2.69	-54.54	72.95	31.41	
				2098.69	V	-51.59	3.00	-48.59	67.00		
			16QAM	1399.27	V	-57.06	2.69	-54.37	71.86	30.49	
				2098.65	V	-51.38	3.00	-48.38	65.87		
			64QAM	1398.72	V	-57.80	2.68	-55.12	72.61	29.45	
				2098.54	V	-51.75	3.00	-48.75	66.24		
	707.5	1/2	QPSK	1414.36	V	-57.66	2.84	-54.82	73.26	31.44	
				2122.18	V	-51.72	3.10	-48.62	67.06		
			16QAM	1414.78	V	-57.07	2.84	-54.23	71.88	30.65	
				2122.40	V	-52.20	3.10	-49.10	66.75		
			64QAM	1414.38	V	-57.68	2.84	-54.84	72.49	29.68	
				2121.98	V	-51.01	3.10	-47.91	65.56		
	715.3	1/2	QPSK	1430.12	V	-57.66	3.00	-54.66	73.15	31.49	
				2145.75	V	-51.35	3.20	-48.15	66.64		
			16QAM	1430.39	V	-58.11	3.00	-55.11	72.86	30.75	
				2145.81	V	-51.77	3.20	-48.57	66.32		
			64QAM	1430.20	V	-57.61	3.00	-54.61	72.36	29.64	
				2145.73	V	-51.37	3.20	-48.17	65.92		

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.

Note 4: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
10	**711**	**1/49**	**QPSK**	1430.70	H	-51.73	3.00	-48.73	67.73	32.00	
				1432.22	H	-57.48	3.02	-54.46	73.46	32.00	With Dual Display (130°)
				5399.45	H	-53.09	8.12	-44.97	63.97		With Dual Display (130°)
5	707.5	1/12	QPSK	1415.06	H	-52.57	2.84	-49.73	68.54	31.81	
3	707.5	1/7	QPSK	1414.99	H	-52.81	2.84	-49.97	68.73	31.76	
1.4	715.3	1/2	QPSK	1430.81	H	-53.08	3.00	-50.08	68.39	31.31	

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

7.6.3 LTE Band 5

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
10	829	1/0	QPSK	1649.70	H	-57.23	3.82	-53.41	70.66	30.25	
				2474.17	V	-47.87	3.79	-44.08	61.33		
			16QAM	1650.15	H	-57.56	3.82	-53.74	69.51	28.77	
				2474.42	V	-48.09	3.79	-44.30	60.07		
			64QAM	1649.45	H	-57.08	3.82	-53.26	69.03	28.14	
				2474.33	V	-48.35	3.79	-44.56	60.33		
	836.5	1/0	QPSK	1664.78	H	-57.42	3.87	-53.55	71.75	31.20	
				2496.43	V	-47.90	3.82	-44.08	62.28		
			16QAM	1664.57	H	-57.79	3.87	-53.92	70.73	29.81	
				2496.03	V	-48.35	3.82	-44.53	61.34		
			64QAM	1664.34	H	-57.69	3.87	-53.82	70.63	29.29	
				2496.64	V	-48.28	3.82	-44.46	61.27		
	844	1/0	QPSK	1679.65	H	-57.09	3.91	-53.18	71.29	31.11	
				2518.96	V	-47.99	3.78	-44.21	62.32		
			16QAM	1680.07	H	-57.26	3.92	-53.34	70.02	29.68	
				2518.64	V	-48.26	3.78	-44.48	61.16		
			64QAM	1679.75	H	-56.79	3.92	-52.87	69.55	28.99	
				2518.50	V	-48.54	3.78	-44.76	61.44		
5	826.5	1/24	QPSK	1657.43	H	-57.37	3.84	-53.53	69.99	29.46	
				2486.13	V	-45.19	3.81	-41.38	57.84		
			16QAM	1657.04	H	-57.35	3.84	-53.51	68.56	28.05	
				2385.72	V	-45.43	3.78	-41.65	56.70		
			64QAM	1657.28	H	-57.46	3.84	-53.62	68.67	27.27	
				2386.58	V	-45.63	3.78	-41.85	56.90		
	836.5	1/24	QPSK	1677.69	H	-57.08	3.91	-53.17	71.17	31.00	
				2516.53	V	-45.20	3.79	-41.41	59.41		
			16QAM	1677.37	H	-57.35	3.91	-53.44	70.92	30.48	
				2516.70	V	-45.82	3.79	-42.03	59.51		
			64QAM	1678.19	H	-57.07	3.91	-53.16	70.64	29.26	
				2516.96	V	-46.35	3.79	-42.56	60.04		
	846.5	1/24	QPSK	1687.55	H	-57.29	3.94	-53.35	70.79	30.44	
				2545.97	V	-44.98	3.71	-41.27	58.71		
			16QAM	1687.06	H	-57.15	3.94	-53.21	69.38	29.17	
				2545.94	V	-46.08	3.71	-42.37	58.54		
			64QAM	1687.08	H	-57.35	3.94	-53.41	69.58	28.63	
				2545.90	V	-45.48	3.71	-41.77	57.94		

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
3	825.5	1/0	QPSK	1648.76	H	-57.74	3.82	-53.92	70.53	29.61	
				2473.57	V	-44.45	3.79	-40.66	57.27		
			16QAM	1649.09	H	-57.71	3.82	-53.89	69.12	28.23	
				2472.91	V	-44.40	3.79	-40.61	55.84		
			64QAM	1648.67	H	-57.56	3.82	-53.74	68.97	27.55	
				2472.56	V	-44.93	3.79	-41.14	56.37		
	836.5	1/0	QPSK	1670.64	H	-57.35	3.89	-53.46	71.78	31.32	
				2504.61	V	-45.76	3.82	-41.94	60.26		
			16QAM	1670.22	H	-56.92	3.88	-53.04	69.83	29.79	
				2504.82	V	-44.49	3.82	-40.67	57.46		
			64QAM	1670.62	H	-57.10	3.89	-53.21	70.00	29.20	
				2505.67	V	-45.44	3.82	-41.62	58.41		
	847.5	1/0	QPSK	1692.59	H	-57.10	3.96	-53.14	71.01	30.87	
				2539.02	V	-44.58	3.73	-40.85	58.72		
			16QAM	1692.68	H	-56.86	3.96	-52.90	69.39	29.49	
				2538.83	V	-45.49	3.73	-41.76	58.25		
			64QAM	1692.18	H	-56.77	3.95	-52.82	69.31	28.72	
				2538.71	V	-44.49	3.73	-40.76	57.25		
1.4	824.7	1/0	QPSK	1648.57	H	-57.49	3.82	-53.67	70.25	29.58	
				2472.63	V	-47.20	3.79	-43.41	59.99		
			16QAM	1648.73	H	-57.63	3.82	-53.81	68.91	28.10	
				2472.28	V	-47.85	3.79	-44.06	59.16		
			64QAM	1648.97	H	-57.48	3.82	-53.66	68.76	27.36	
				2472.61	V	-47.17	3.79	-43.38	58.48		
	836.5	1/0	QPSK	1672.34	H	-57.35	3.89	-53.46	71.48	31.02	
				2508.08	V	-46.61	3.81	-42.80	60.82		
			16QAM	1671.90	H	-57.46	3.89	-53.57	70.10	29.53	
				2508.42	V	-47.81	3.81	-44.00	60.53		
			64QAM	1672.59	H	-57.29	3.89	-53.40	69.93	28.69	
				2507.84	V	-46.95	3.81	-43.14	59.67		
	848.3	**1/0**	QPSK	1695.74	H	-57.28	3.97	-53.31	71.19	30.88	
				2543.51	V	-43.78	3.72	-40.06	57.94		
			16QAM	1695.66	H	-56.81	3.97	-52.84	69.21	29.37	
				2543.53	V	-45.23	3.72	-41.51	57.88		
			64QAM	1696.03	H	-56.85	3.97	-52.88	69.25	29.01	
				2543.73	V	-44.15	3.72	-40.43	56.80		
			QPSK	2542.96	V	-52.80	3.72	-49.08	66.96	30.88	With Dual Display (130°)
				5400.01	V	-50.88	8.12	-42.76	60.64		With Dual Display (180°)

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
10	836.5	1/0	QPSK	1672.78	V	-56.78	3.89	-52.89	73.43	33.54	
5	**836.5**	**1/24**	QPSK	1672.99	V	-56.27	3.89	-52.38	73.02	33.64	
				1671.52	V	-57.28	3.89	-53.39	71.88	31.49	With Dual Display (130°)
				5400.09	V	-53.73	8.12	-45.61	64.10		With Dual Display (180°)
3	836.5	1/0	QPSK	1672.06	V	-56.46	3.89	-52.57	73.21	33.64	
1.4	836.5	1/0	QPSK	1672.63	V	-56.50	3.89	-52.61	73.14	33.53	

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

7.6.4 LTE Band 4

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
20	1720	1/50	QPSK	3440.73	V	-54.13	8.06	-46.07	67.40	34.33	
			16QAM	3440.63	V	-54.21	8.06	-46.15	66.67	33.52	
			64QAM	3440.31	V	-54.39	8.05	-46.34	66.86	32.35	
	1732.5	1/50	QPSK	3465.62	V	-54.14	8.12	-46.02	68.33	35.31	
			16QAM	3464.86	V	-54.61	8.12	-46.49	67.85	34.36	
			64QAM	3465.42	V	-54.50	8.12	-46.38	67.74	33.27	
	1745	1/50	QPSK	3490.12	V	-54.80	8.18	-46.62	69.94	36.32	
			16QAM	3488.52	V	-55.03	8.17	-46.86	69.10	35.24	
			64QAM	3489.57	V	-54.56	8.17	-46.39	68.63	34.19	
15	1717.5	1/36	QPSK	3433.53	V	-54.94	8.04	-46.90	68.20	34.30	
			16QAM	3434.23	V	-54.04	8.04	-46.00	66.38	33.38	
			64QAM	3435.85	V	-54.83	8.04	-46.79	67.17	32.26	
	1732.5	1/36	QPSK	3464.76	V	-54.88	8.12	-46.76	68.53	34.77	
			16QAM	3463.72	V	-54.65	8.11	-46.54	67.44	33.90	
			64QAM	3466.11	V	-54.90	8.12	-46.78	67.68	32.93	
	1747.5	**1/36**	QPSK	3494.15	V	-54.72	8.19	-46.53	69.87	36.34	
			16QAM	3496.27	V	-54.64	8.19	-46.45	68.73	35.28	
			64QAM	3495.82	V	-54.62	8.19	-46.43	68.71	34.23	
			16QAM	3500.12	V	-48.57	8.20	-40.37	61.67	34.30	With Dual Display (130°)
				5399.95	V	-51.85	10.27	-41.58	62.88		With Dual Display (180°)
				10800.13	V	-43.21	13.09	-30.12	51.42		With Dual Display (180°)
				16200.74	H	-40.34	13.51	-26.83	48.13		With Dual Display (180°)
10	1715	1/25	QPSK	3430.63	V	-54.47	8.03	-46.44	67.67	34.23	
			16QAM	3429.36	V	-54.81	8.03	-46.78	67.22	33.44	
			64QAM	3429.44	V	-54.75	8.03	-46.72	67.16	32.36	
	1732.5	1/25	QPSK	3465.43	V	-54.33	8.12	-46.21	68.71	35.50	
			16QAM	3466.49	V	-54.33	8.12	-46.21	67.62	34.41	
			64QAM	3463.69	V	-54.19	8.11	-46.08	67.49	33.34	
	1750	1/25	QPSK	3499.60	V	-54.76	8.20	-46.56	69.32	35.76	
			16QAM	3499.86	V	-55.00	8.20	-46.80	68.44	34.64	
			64QAM	3501.08	V	-54.39	8.20	-46.19	67.83	33.78	
5	1712.5	1/12	QPSK	3424.23	V	-54.60	8.01	-46.59	67.24	33.65	
			16QAM	3425.50	V	-54.47	8.02	-46.45	66.25	32.80	
			64QAM	3424.03	V	-54.13	8.01	-46.12	65.92	31.78	
	1732.5	1/12	QPSK	3464.80	V	-54.79	8.12	-46.67	69.12	35.45	
			16QAM	3465.41	V	-54.49	8.12	-46.37	67.75	34.38	
			64QAM	3465.73	V	-54.75	8.12	-46.63	68.01	33.53	
	1752.5	1/12	QPSK	3505.72	V	-55.08	8.21	-46.87	68.88	35.01	
			16QAM	3505.95	V	-54.27	8.21	-46.06	67.26	34.20	
			64QAM	3505.27	V	-54.87	8.21	-46.66	67.86	33.14	

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.

Note 4: Dual display mode was tested in the worst case.

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
3	1711.5	1/7	QPSK	3422.66	V	-54.77	8.01	-46.76	67.30	33.54	
			16QAM	3421.86	V	-54.89	8.01	-46.88	66.48	32.60	
			64QAM	3423.67	V	-54.77	8.01	-46.76	66.36	31.58	
	1732.5	1/7	QPSK	3465.75	V	-54.27	8.12	-46.15	68.43	35.28	
			16QAM	3463.83	V	-54.66	8.11	-46.55	67.76	34.21	
			64QAM	3465.49	V	-54.35	8.12	-46.23	67.44	33.26	
	1753.5	1/7	QPSK	3508.34	V	-54.50	8.22	-46.28	68.21	34.93	
			16QAM	3505.74	V	-54.32	8.21	-46.11	67.08	33.97	
			64QAM	3507.98	V	-54.93	8.22	-46.71	67.68	32.96	
1.4	1710.7	1/2	QPSK	3420.77	V	-54.87	8.00	-46.87	67.15	33.28	
			16QAM	3422.32	V	-54.03	8.01	-46.02	65.43	32.41	
			64QAM	3421.25	V	-54.37	8.01	-46.36	65.77	31.47	
	1732.5	1/2	QPSK	3463.65	V	-55.01	8.11	-46.90	69.13	35.23	
			16QAM	3464.95	V	-54.71	8.12	-46.59	68.07	34.48	
			64QAM	3465.32	V	-54.74	8.12	-46.62	68.10	33.40	
	1754.3	1/2	QPSK	3508.69	V	-54.91	8.22	-46.69	69.07	35.38	
			16QAM	3509.68	V	-54.18	8.22	-45.96	67.50	34.54	
			64QAM	3509.17	V	-54.78	8.22	-46.56	68.10	33.47	

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
20	1732.5	1/50	QPSK	3465.94	V	-54.80	8.12	-46.68	69.38	35.70	
15	1747.5	1/36	QPSK	3495.65	V	-54.62	8.19	-46.43	69.48	36.05	
10	**1750**	**1/25**	QPSK	3499.15	V	-54.36	8.20	-46.16	68.66	35.50	
				3500.35	V	-47.97	8.20	-39.77	62.27	35.50	With Dual Display (130°)
				5399.09	H	-53.36	10.27	-43.09	65.59		With Dual Display (130°)
				10799.54	V	-44.37	13.09	-31.28	53.78		With Dual Display (130°)
				16199.43	H	-39.91	13.51	-26.40	48.90		With Dual Display (130°)
5	1732.5	1/12	QPSK	3463.51	V	-54.85	8.11	-46.74	69.64	35.90	
3	1732.5	1/7	QPSK	3463.94	V	-55.06	8.11	-46.95	69.66	35.71	
1.4	1754.3	1/2	QPSK	3507.68	V	-54.55	8.22	-46.33	69.00	35.67	

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

7.6.5 LTE Band 2

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
20	1860	1/50	QPSK	3720.97	V	-53.91	8.39	-45.52	66.85	34.33	
			16QAM	3718.79	V	-53.83	8.39	-45.44	65.82	33.38	
			64QAM	3720.07	V	-54.33	8.39	-45.94	66.32	32.55	
	1880	1/50	QPSK	3759.05	V	-53.91	8.37	-45.54	66.89	34.35	
			16QAM	3761.33	V	-53.61	8.36	-45.25	65.77	33.52	
			64QAM	3760.71	V	-53.61	8.36	-45.25	65.77	32.47	
	1900	1/50	QPSK	3800.05	V	-53.42	8.22	-45.20	65.69	33.49	
			16QAM	3800.35	V	-53.31	8.22	-45.09	64.82	32.73	
			64QAM	3799.88	V	-53.86	8.22	-45.64	65.37	31.90	
15	1857.5	1/36	QPSK	3714.29	V	-53.66	8.39	-45.27	67.00	34.73	
			16QAM	3716.08	V	-54.29	8.39	-45.90	66.69	33.79	
			64QAM	3714.64	V	-53.75	8.39	-45.36	66.15	32.68	
	1880	1/36	QPSK	3760.93	V	-54.16	8.36	-45.80	67.09	34.29	
			16QAM	3760.54	V	-53.69	8.36	-45.33	65.69	33.36	
			64QAM	3761.12	V	-53.38	8.36	-45.02	65.38	32.50	
	1902.5	1/36	QPSK	3805.32	V	-54.19	8.22	-45.97	66.45	33.48	
			16QAM	3804.32	V	-53.30	8.22	-45.08	64.73	32.65	
			64QAM	3805.46	V	-53.95	8.22	-45.73	65.38	31.69	
10	1855	1/25	QPSK	3710.32	V	-53.65	8.38	-45.27	67.66	35.39	
			16QAM	3709.07	V	-53.93	8.38	-45.55	66.99	34.44	
			64QAM	3709.33	V	-54.23	8.38	-45.85	67.29	33.51	
	1880	**1/25**	QPSK	3761.34	V	-53.34	8.36	-44.98	66.38	34.40	
			16QAM	3759.23	V	-53.53	8.37	-45.16	65.92	33.76	
			64QAM	3760.98	V	-53.75	8.36	-45.39	66.15	32.90	
			QPSK	3760.26	V	-51.75	8.36	-43.39	64.79	34.40	With Dual Display (130°)
				5399.82	V	-52.04	10.27	-41.77	63.17		With Dual Display (180°)
				10799.98	V	-43.10	13.09	-30.01	51.41		With Dual Display (180°)
				16200.26	H	-40.43	13.51	-26.92	48.32		With Dual Display (180°)
	1905	1/25	QPSK	3810.63	V	-53.74	8.22	-45.52	66.41	33.89	
			16QAM	3810.30	V	-53.57	8.22	-45.35	65.37	33.02	
			64QAM	3810.43	V	-53.87	8.22	-45.65	65.67	32.10	
5	1852.5	1/12	QPSK	3704.19	V	-54.33	8.38	-45.95	67.40	34.45	
			16QAM	3704.24	V	-53.48	8.38	-45.10	65.67	33.57	
			64QAM	3703.53	V	-53.98	8.38	-45.60	66.17	32.61	
	1880	1/12	QPSK	3759.25	V	-53.79	8.37	-45.42	66.77	34.35	
			16QAM	3760.22	V	-54.06	8.36	-45.70	66.30	33.60	
			64QAM	3759.78	V	-53.57	8.36	-45.21	65.81	32.44	
	1907.5	1/12	QPSK	3815.29	V	-53.59	8.22	-45.37	66.20	33.83	
			16QAM	3816.08	V	-53.36	8.22	-45.14	65.08	32.94	
			64QAM	3815.86	V	-53.43	8.22	-45.21	65.15	32.02	

- Measurement data: Without wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
3	1851.5	1/7	QPSK	3702.00	V	-53.58	8.38	-45.20	67.03	34.83	
			16QAM	3704.48	V	-54.28	8.38	-45.90	66.79	33.89	
			64QAM	3702.81	V	-53.61	8.38	-45.23	66.12	32.96	
	1880	1/7	QPSK	3760.82	V	-53.86	8.36	-45.50	66.74	34.24	
			16QAM	3761.17	V	-53.99	8.36	-45.63	66.20	33.57	
			64QAM	3760.39	V	-53.46	8.36	-45.10	65.67	32.52	
	1908.5	1/7	QPSK	3816.29	V	-54.04	8.22	-45.82	66.63	33.81	
			16QAM	3816.04	V	-54.06	8.22	-45.84	65.77	32.93	
			64QAM	3817.95	V	-53.39	8.22	-45.17	65.10	31.98	
1.4	1850.7	1/2	QPSK	3702.48	V	-54.00	8.38	-45.62	67.35	34.73	
			16QAM	3702.32	V	-54.23	8.38	-45.85	66.70	33.85	
			64QAM	3701.98	V	-54.15	8.38	-45.77	66.62	32.92	
	1880	1/2	QPSK	3760.91	V	-53.55	8.36	-45.19	66.38	34.19	
			16QAM	3758.71	V	-53.89	8.37	-45.52	65.93	33.41	
			64QAM	3758.77	V	-54.12	8.37	-45.75	66.16	32.35	
	1909.3	1/2	QPSK	3818.07	V	-53.81	8.22	-45.59	66.14	33.55	
			16QAM	3818.56	V	-53.44	8.22	-45.22	64.89	32.67	
			64QAM	3817.70	V	-53.38	8.22	-45.16	64.83	31.81	

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

- Measurement data: With wireless charging pad

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)	Note
								(dBm)	(dBc)		
20	1880	1/50	QPSK	3759.08	V	-53.81	8.37	-45.44	66.65	34.21	
15	1857.5	1/36	QPSK	3714.58	V	-54.22	8.39	-45.83	67.49	34.66	
10	1855	1/25	QPSK	3708.86	V	-53.96	8.38	-45.58	67.52	34.94	
5	1852.5	1/12	QPSK	3705.66	V	-54.30	8.38	-45.92	67.31	34.39	
3	1851.5	1/7	QPSK	3702.34	V	-53.90	8.38	-45.52	66.88	34.36	
1.4	**1850.7**	**1/2**	QPSK	3700.01	V	-53.52	8.38	-45.14	66.23	34.09	
			QPSK	3701.03	V	-50.08	8.38	-41.70	62.79	34.09	With Dual Display (130˚)
				5401.39	H	-53.67	10.27	-43.40	64.49		With Dual Display (130˚)
				10800.13	V	-44.50	13.09	-31.41	52.50		With Dual Display (130˚)
				16199.00	H	-39.31	13.51	-25.80	46.89		With Dual Display (130˚)

Note 1: Limit Calculation = 43 + 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 emissions above table.

Note 4: Dual display mode was tested in the worst case.

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)	707,499,996	-4	-0.0057	-0.000000565
100%		-30	707,500,007	7	0.0099	0.000000989
100%		-20	707,499,990	-10	-0.0141	-0.000001413
100%		-10	707,500,003	3	0.0042	0.000000424
100%		0	707,499,994	-6	-0.0085	-0.000000848
100%		+10	707,500,007	7	0.0099	0.000000989
100%		+20	707,499,996	-4	-0.0057	-0.000000565
100%		+30	707,499,991	-9	-0.0127	-0.000001272
100%		+40	707,500,013	13	0.0184	0.000001837
100%		+50	707,499,996	-4	-0.0057	-0.000000565
110%	4.4	+20	707,500,005	5	0.0071	0.000000707
BATT.ENDPOINT	3.0	+20	707,500,001	1	0.0014	0.000000141

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)	836,499,996	-4	-0.0048	-0.000000478
100%		-30	836,500,007	7	0.0084	0.000000837
100%		-20	836,499,997	-3	-0.0036	-0.000000359
100%		-10	836,500,002	2	0.0024	0.000000239
100%		0	836,499,987	-13	-0.0155	-0.000001554
100%		+10	836,500,004	4	0.0048	0.000000478
100%		+20	836,499,996	-4	-0.0048	-0.000000478
100%		+30	836,500,011	11	0.0132	0.000001315
100%		+40	836,499,996	-4	-0.0048	-0.000000478
100%		+50	836,499,997	-3	-0.0036	-0.000000359
110%	4.4	+20	836,500,001	1	0.0012	0.000000120
BATT.ENDPOINT	3.0	+20	836,500,006	6	0.0072	0.000000717

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

7.7.3 LTE Band 4

OPERATING FREQUENCY : 1732.5 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)	1,732,500,008	8	0.0046	0.000000462
100%		-30	1,732,499,989	-11	-0.0063	-0.000000635
100%		-20	1,732,499,996	-4	-0.0023	-0.000000231
100%		-10	1,732,500,013	13	0.0075	0.000000750
100%		0	1,732,500,002	2	0.0012	0.000000115
100%		+10	1,732,499,998	-2	-0.0012	-0.000000115
100%		+20	1,732,500,008	8	0.0046	0.000000462
100%		+30	1,732,499,993	-7	-0.0040	-0.000000404
100%		+40	1,732,500,006	6	0.0035	0.000000346
100%		+50	1,732,500,009	9	0.0052	0.000000519
110%	4.4	+20	1,732,499,999	-1	-0.0006	-0.000000058
BATT.ENDPOINT	3.0	+20	1,732,500,002	2	0.0012	0.000000115

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)	1,879,999,996	-4	-0.0021	-0.000000213
100%		-30	1,880,000,012	12	0.0064	0.000000638
100%		-20	1,880,000,004	4	0.0021	0.000000213
100%		-10	1,880,000,003	3	0.0016	0.000000160
100%		0	1,879,999,993	-7	-0.0037	-0.000000372
100%		+10	1,880,000,001	1	0.0005	0.000000053
100%		+20	1,879,999,996	-4	-0.0021	-0.000000213
100%		+30	1,880,000,003	3	0.0016	0.000000160
100%		+40	1,880,000,007	7	0.0037	0.000000372
100%		+50	1,879,999,999	-1	-0.0005	-0.000000053
110%	4.4	+20	1,880,000,008	8	0.0043	0.000000426
BATT.ENDPOINT	3.0	+20	1,879,999,990	-10	-0.0053	-0.000000532

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.

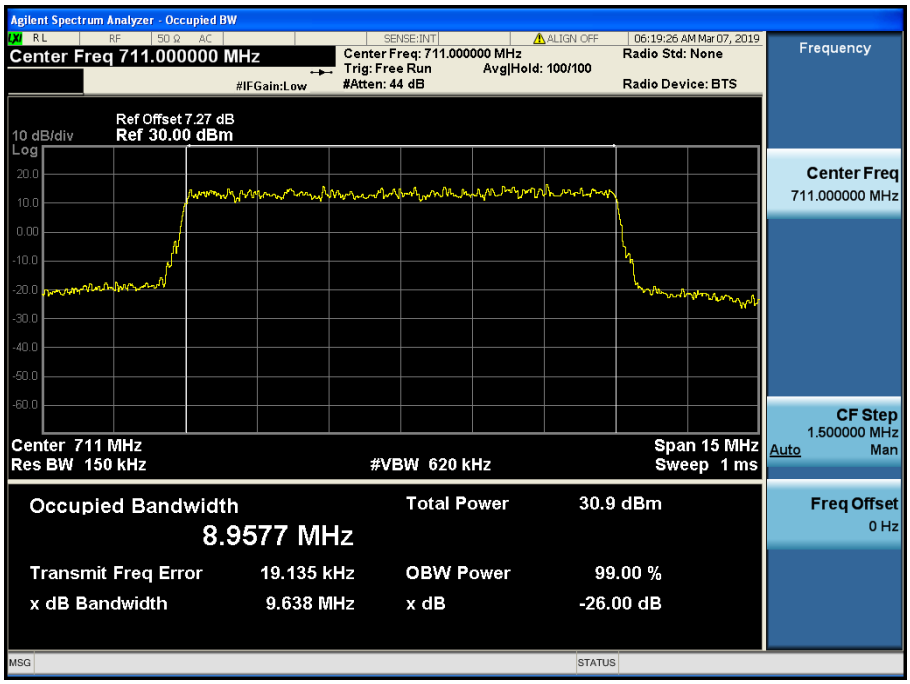
Note 2: At the request of the applicant, the voltage of highest level is tested at 110%.

8. TEST PLOTS

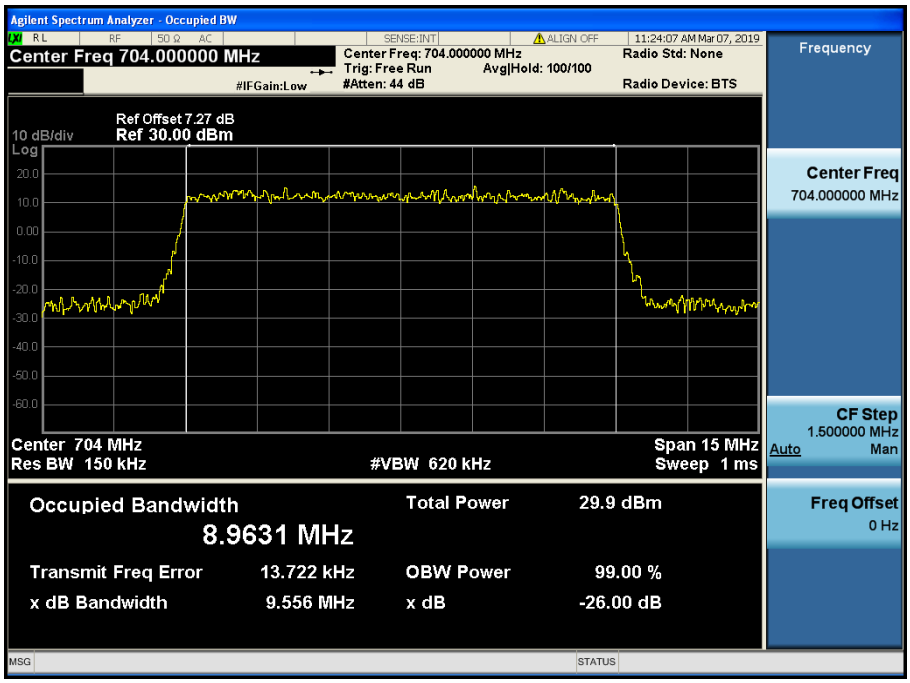
**Note: All bandwidths, RB configurations, and modulations were investigated.
The worst case test results are reported.**

8.1 OCCUPIED BANDWIDTH

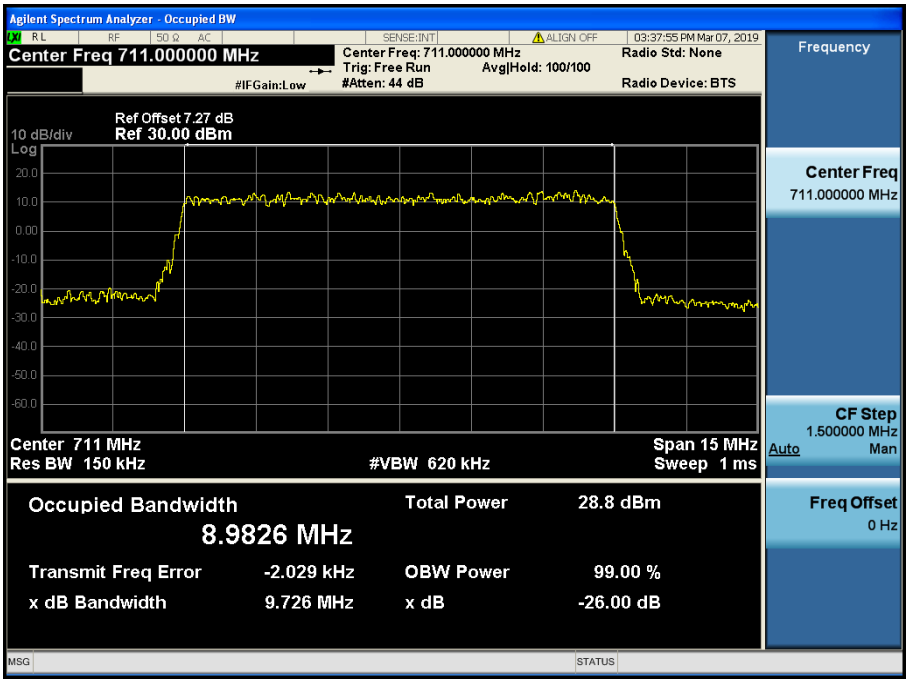
8.1.1 LTE Band 12,17



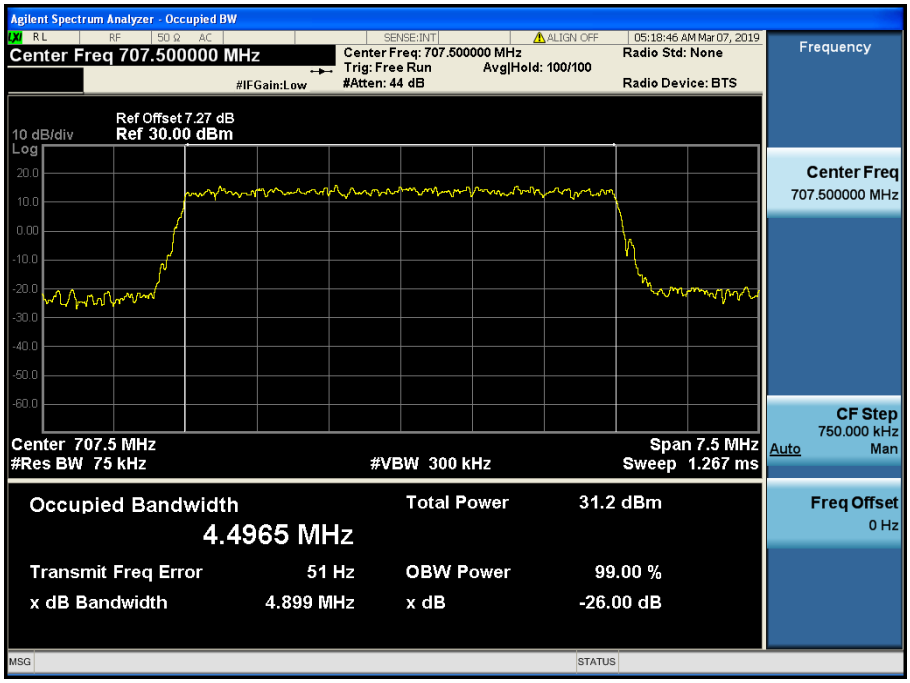
LTE Band 12 / 10 MHz / QPSK - RB Size 50



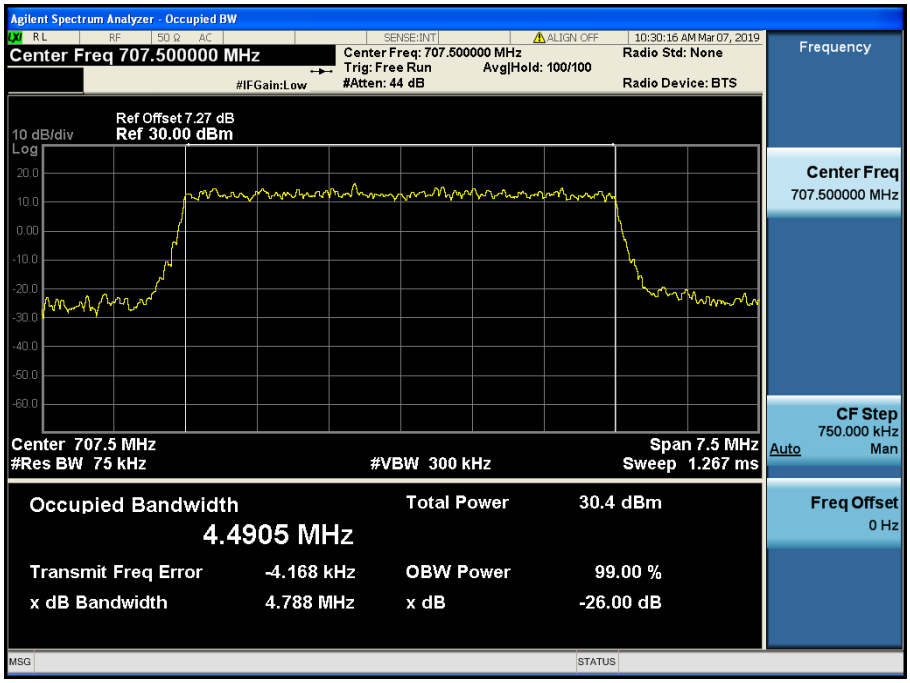
LTE Band 12 / 10 MHz / 16QAM - RB Size 50



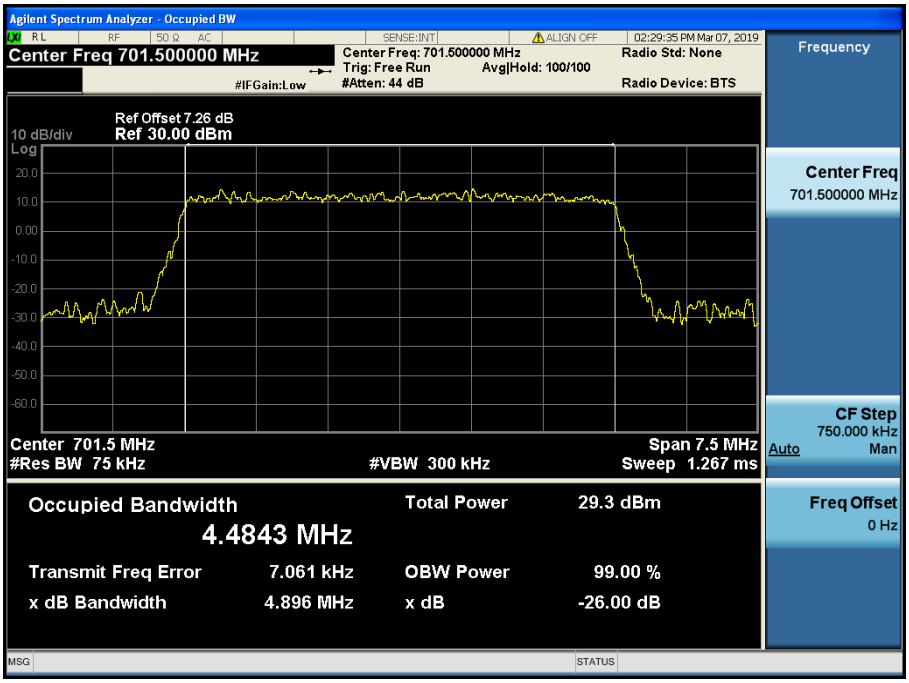
LTE Band 12 / 10 MHz / 64QAM- RB Size 50



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

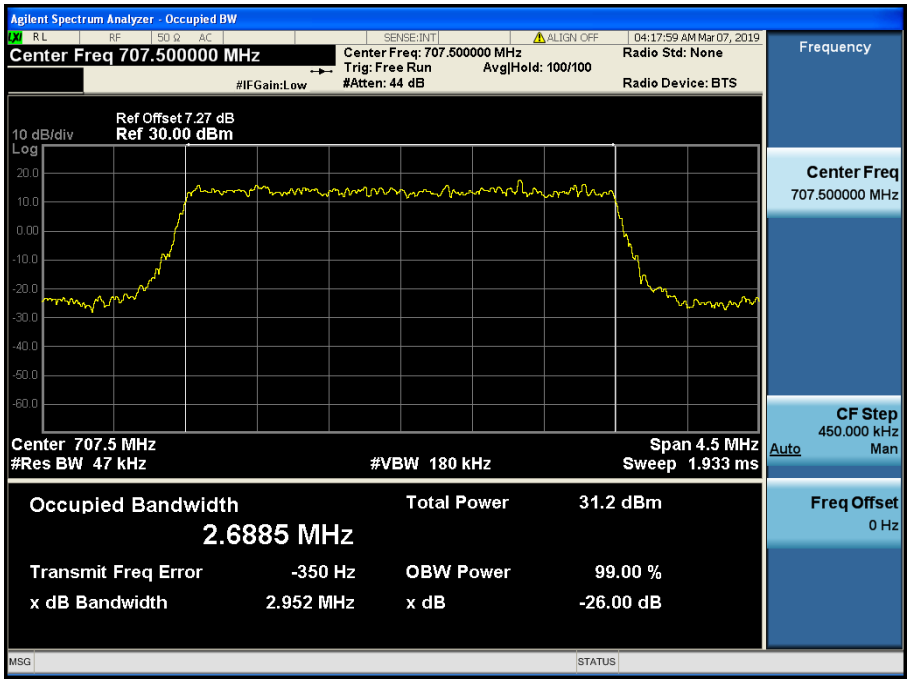


LTE Band 12 / 5 MHz / 16QAM - RB Size 25

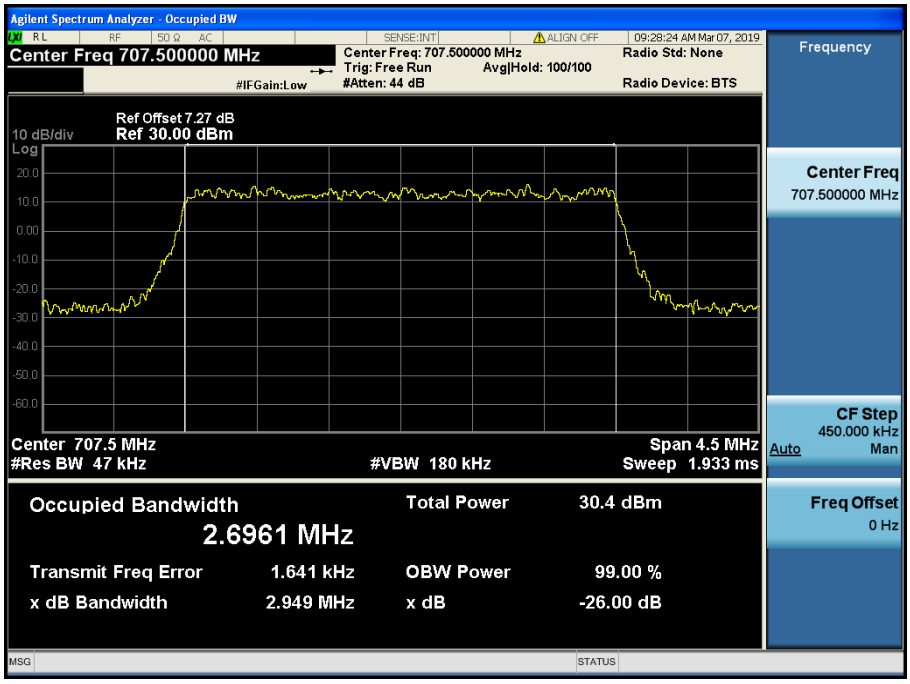


LTE Band 12 / 5 MHz / 64QAM - RB Size 25

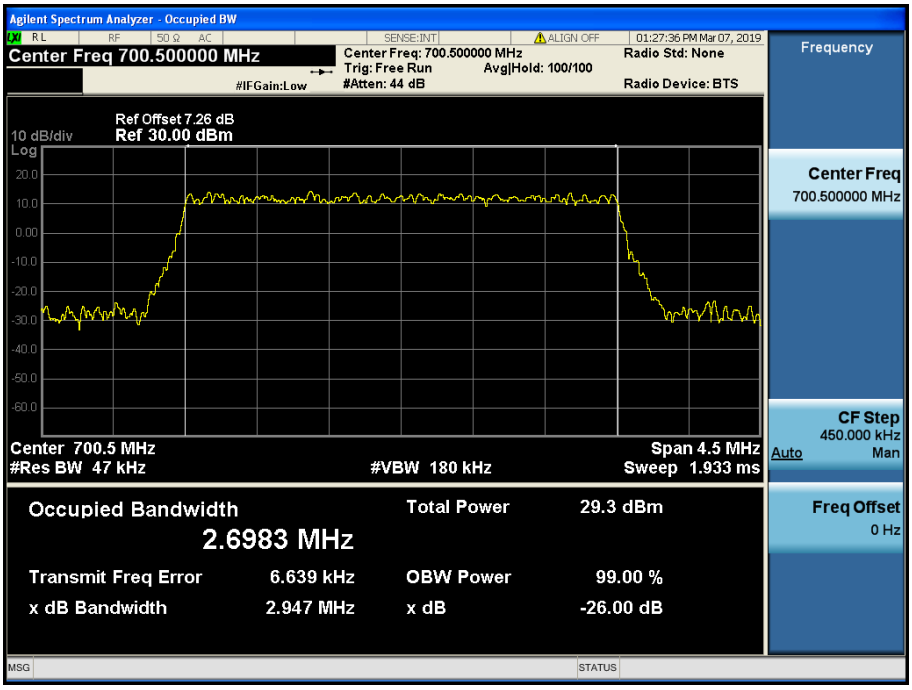
8.1.2 LTE Band 12



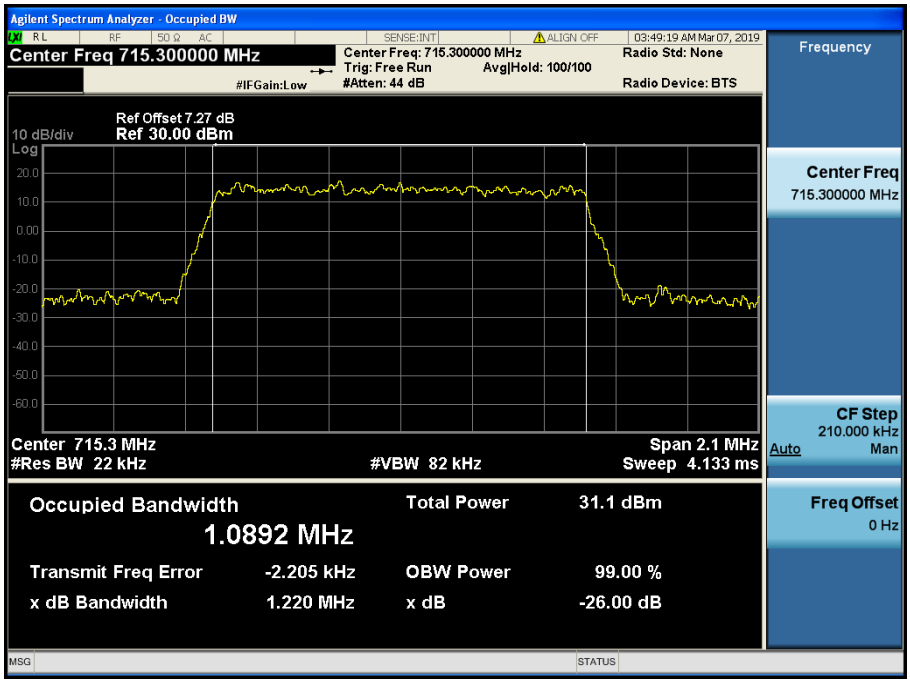
LTE Band 12 / 3 MHz / QPSK - RB Size 15



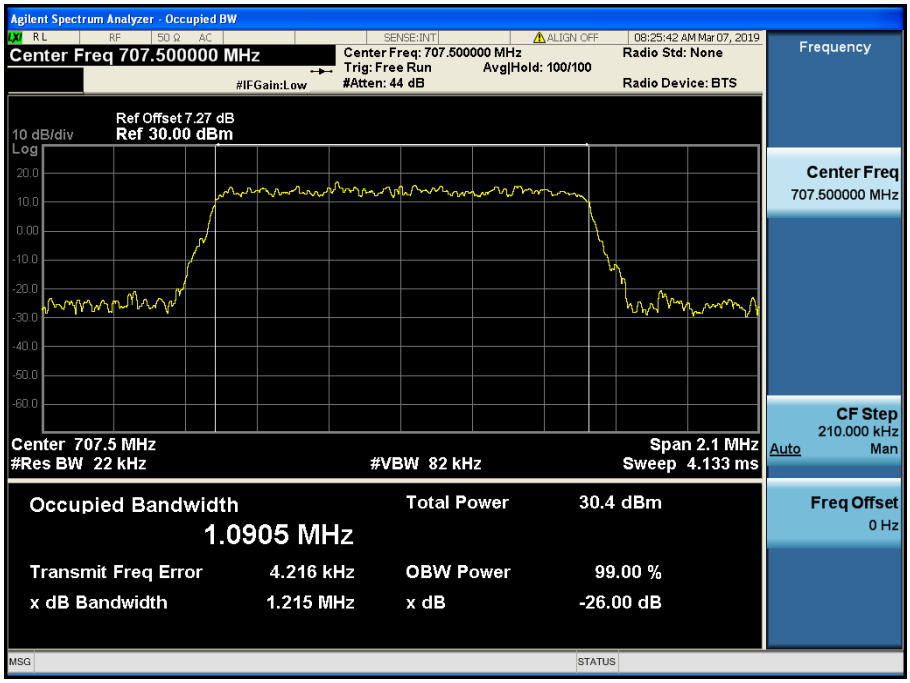
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



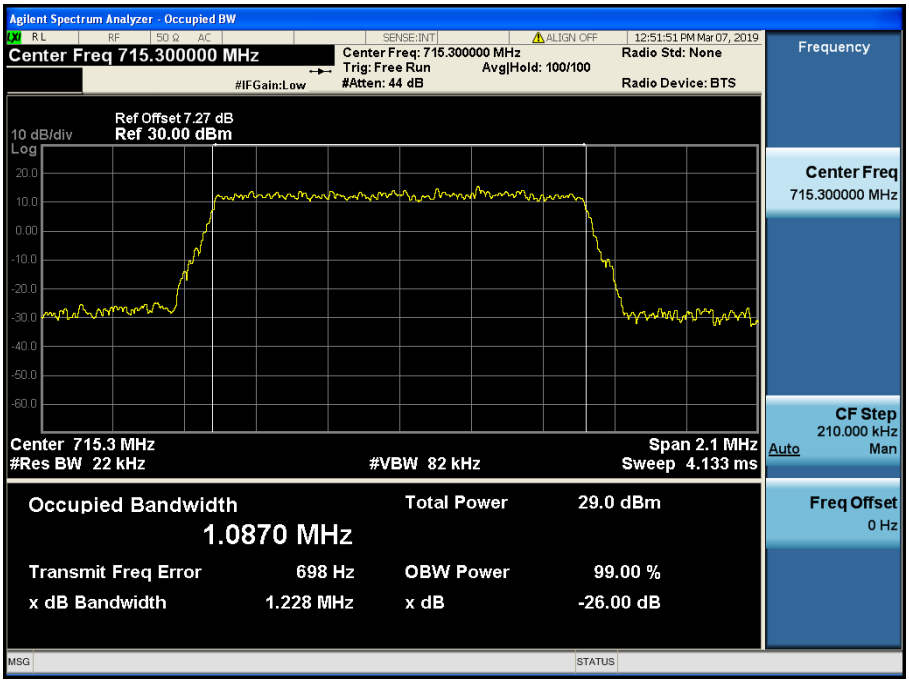
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



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

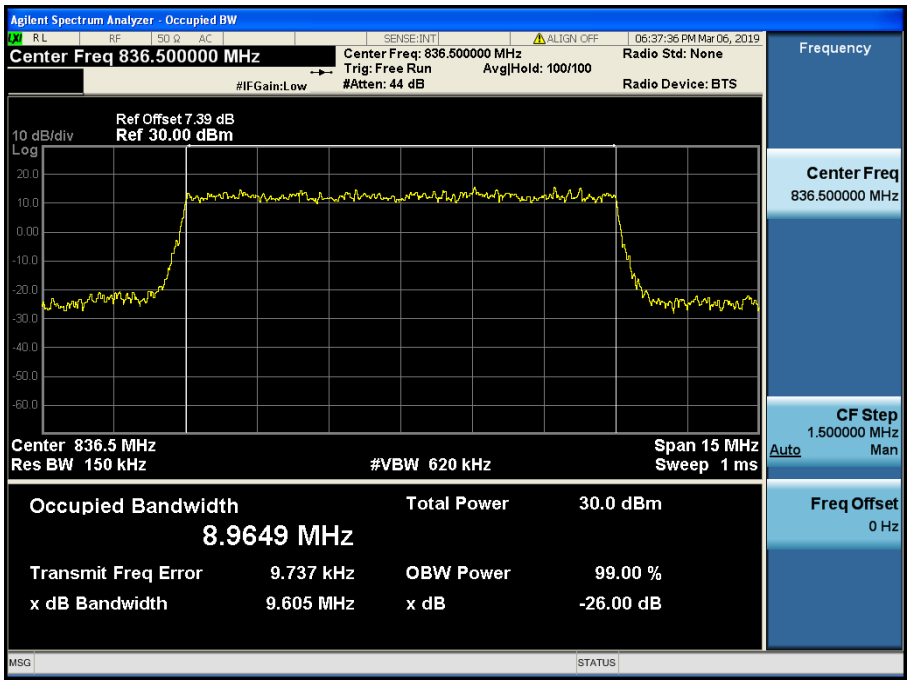


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

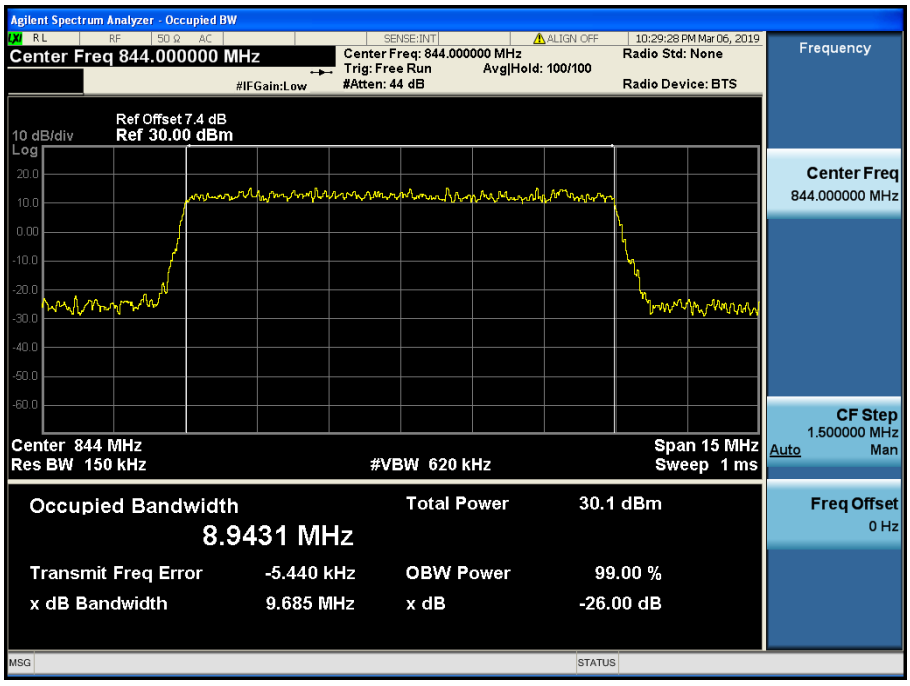


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

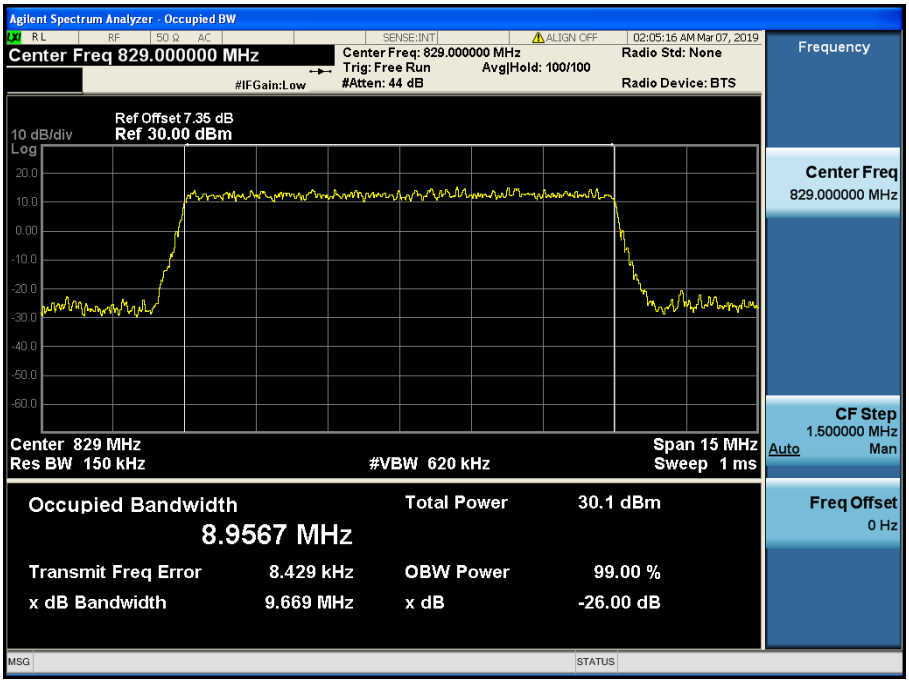
8.1.3 LTE Band 5



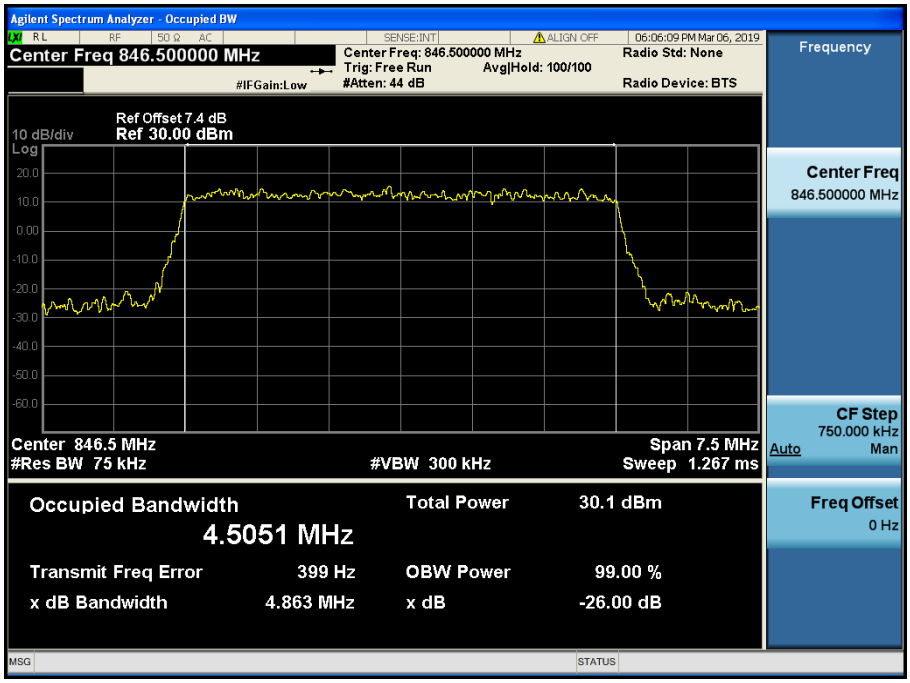
LTE Band 5 / 10 MHz / QPSK - RB Size 50



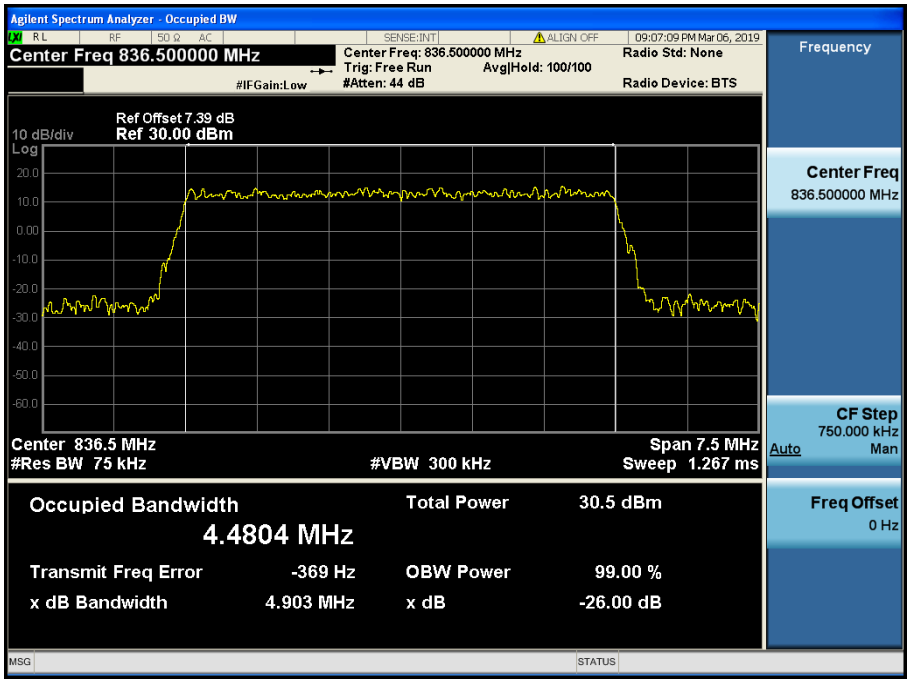
LTE Band 5 / 10 MHz / 16QAM - RB Size 50



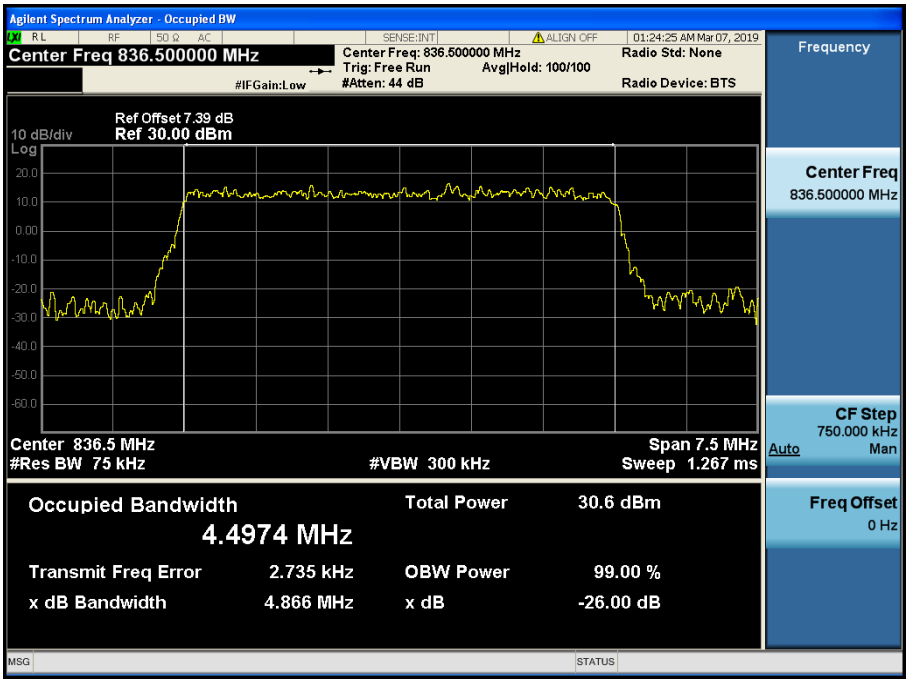
LTE Band 5 / 10 MHz / 64QAM - RB Size 50



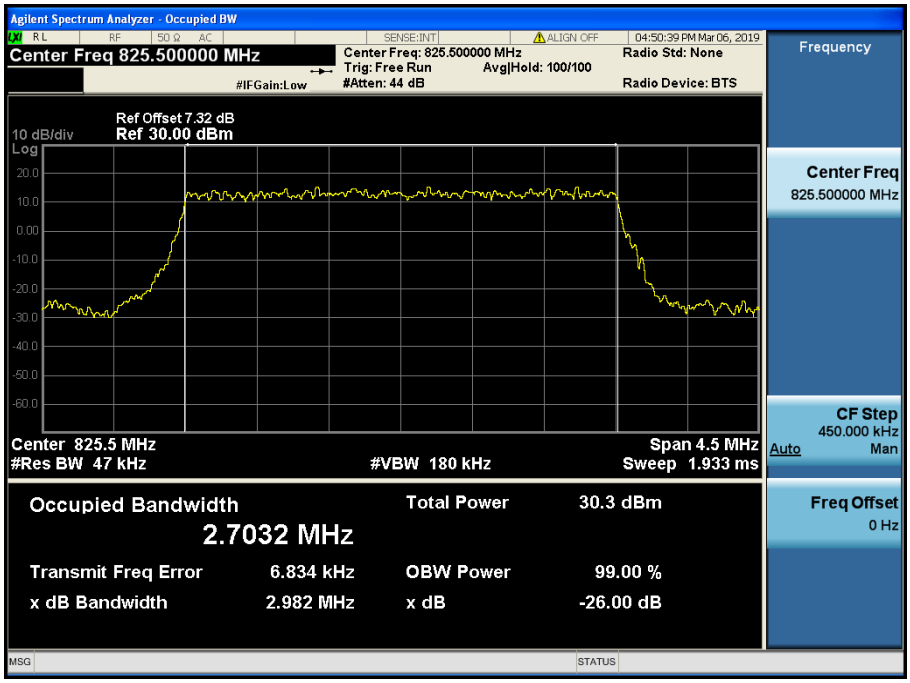
LTE Band 5 / 5 MHz / QPSK - RB Size 25



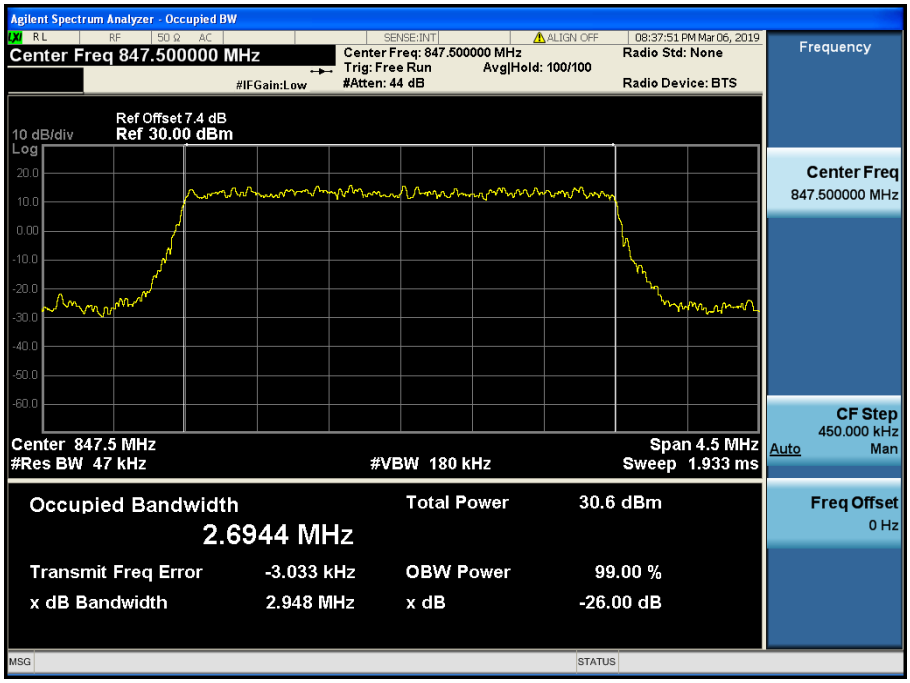
LTE Band 5 / 5 MHz / 16QAM - RB Size 25



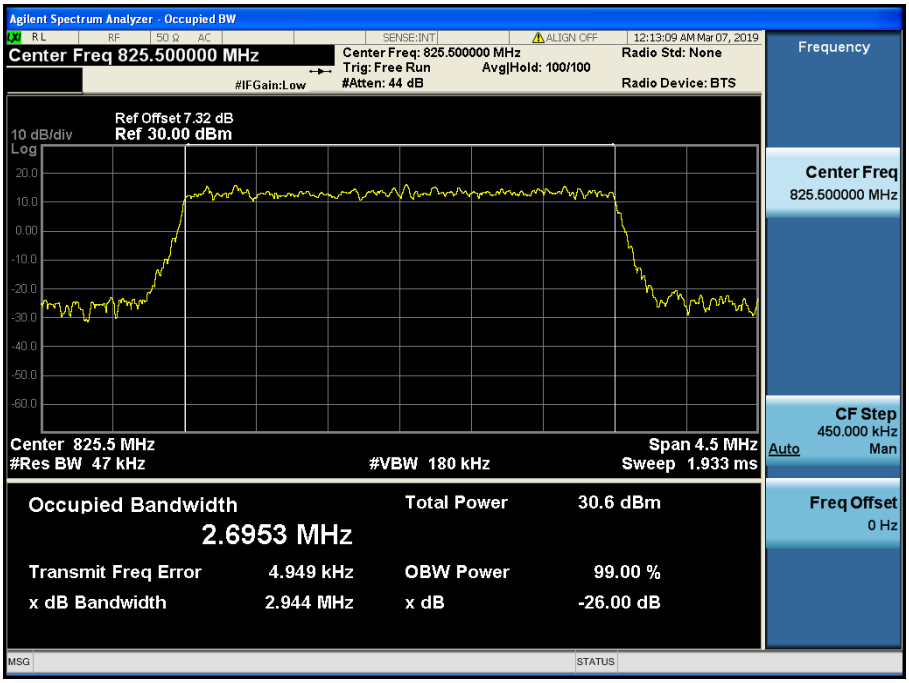
LTE Band 5 / 5 MHz / 64QAM - RB Size 25



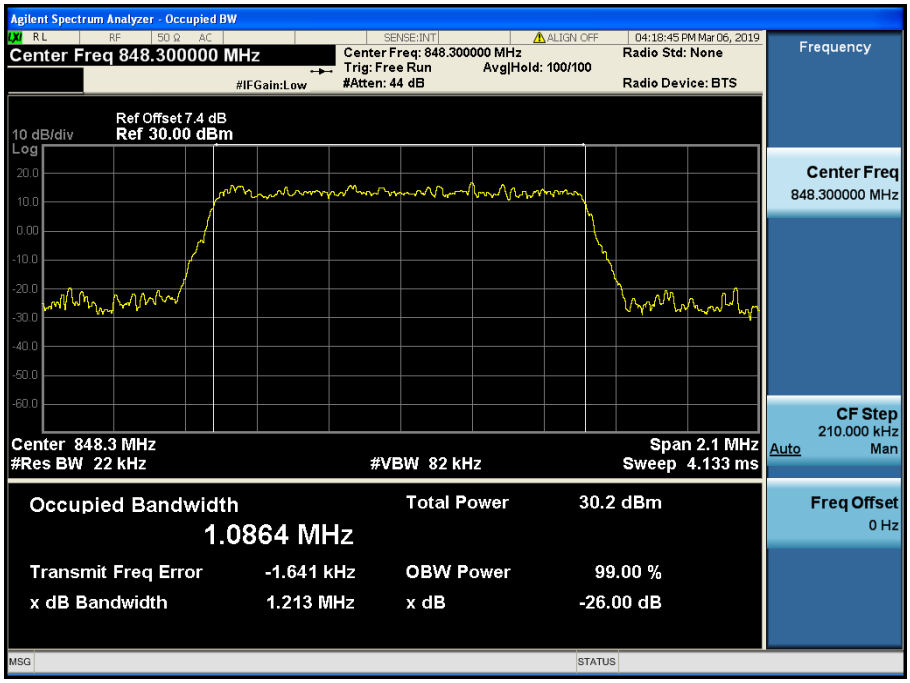
LTE Band 5 / 3 MHz / QPSK - RB Size 15



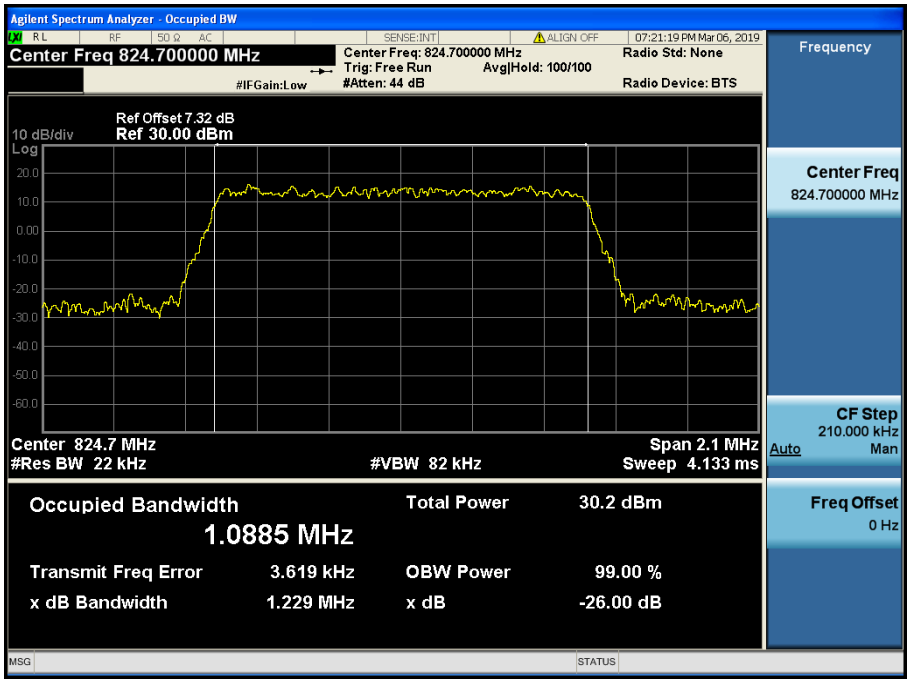
LTE Band 5 / 3 MHz / 16QAM - RB Size 15



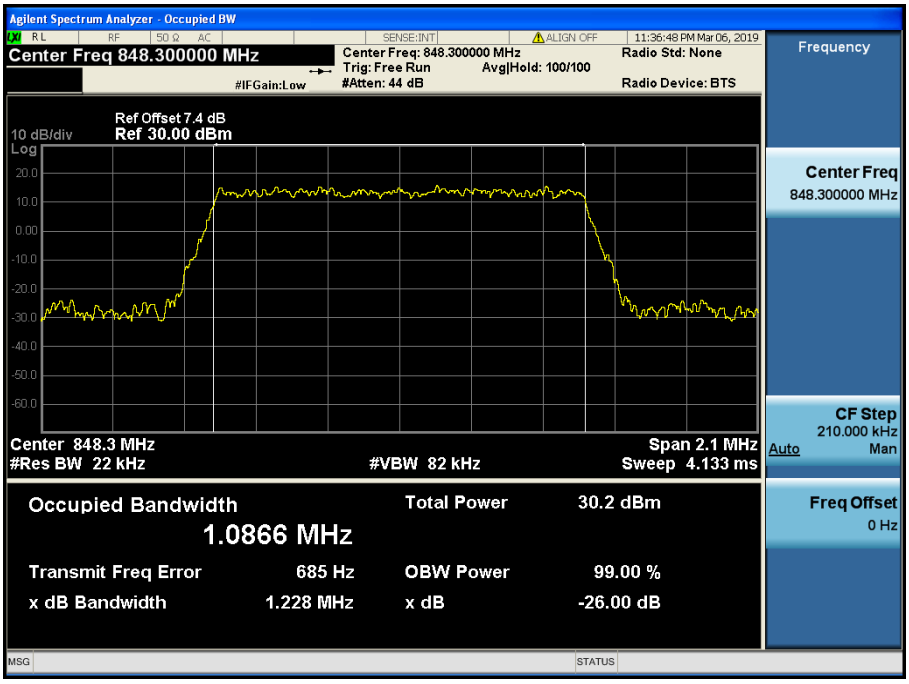
LTE Band 5 / 3 MHz / 64QAM - RB Size 15



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

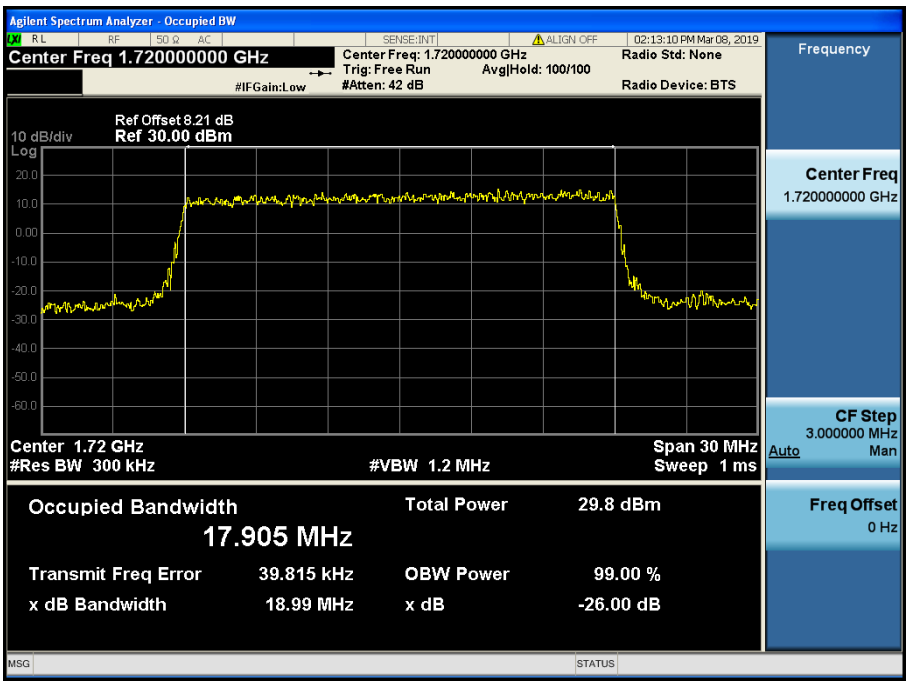


LTE Band 5 / 1.4 MHz / 16QAM - RB Size 6

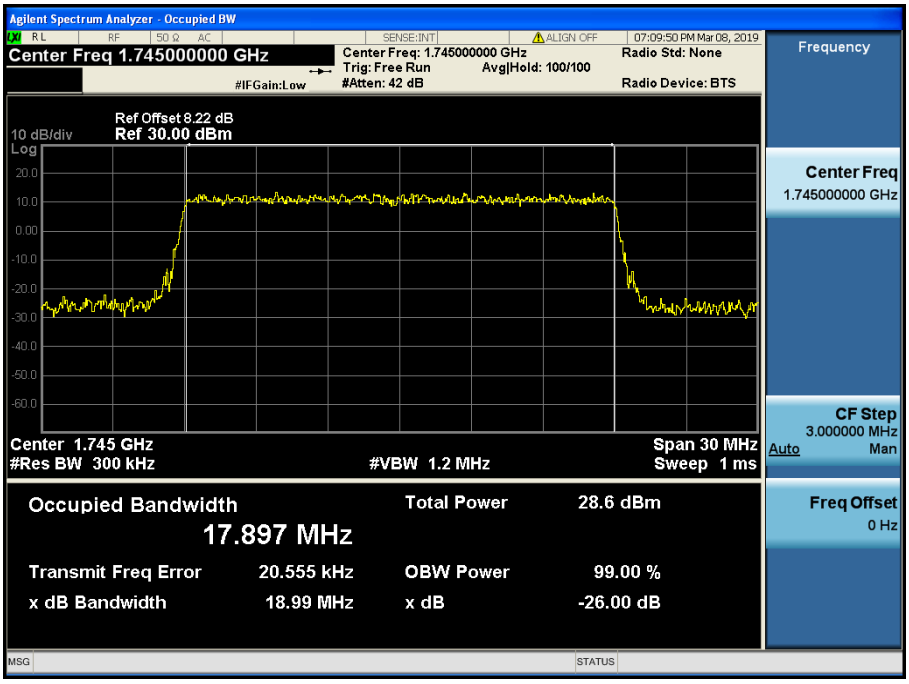


LTE Band 5 / 1.4 MHz / 64QAM - RB Size 6

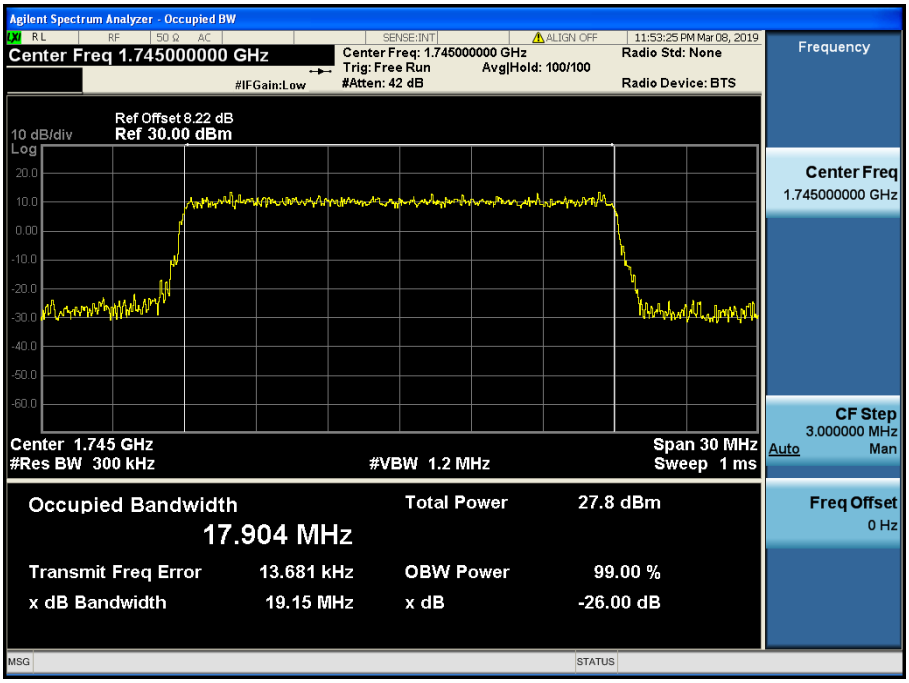
8.1.4 LTE Band 4



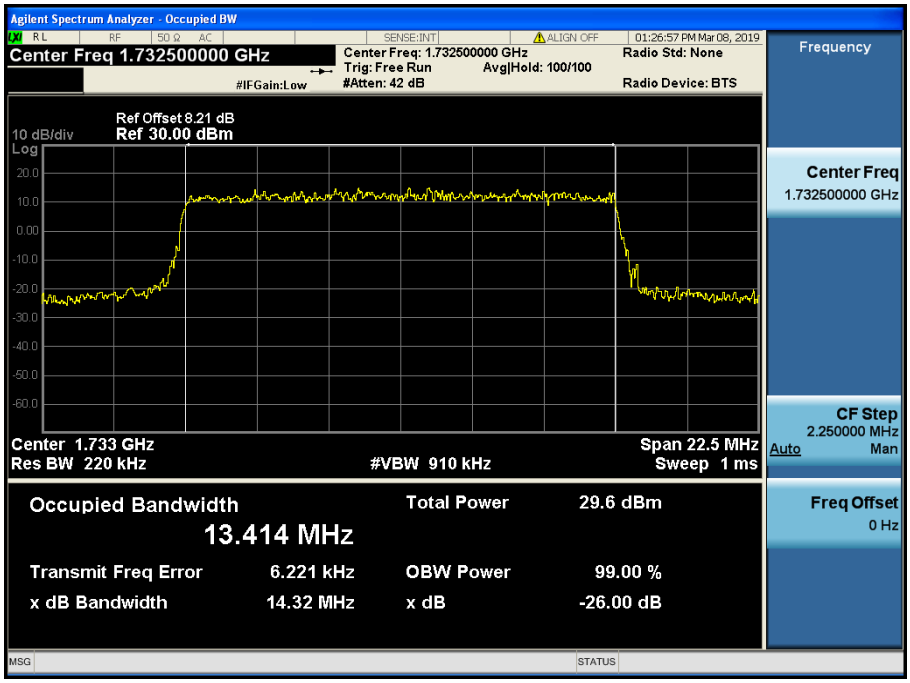
LTE Band 4 / 20 MHz / QPSK - RB Size 100



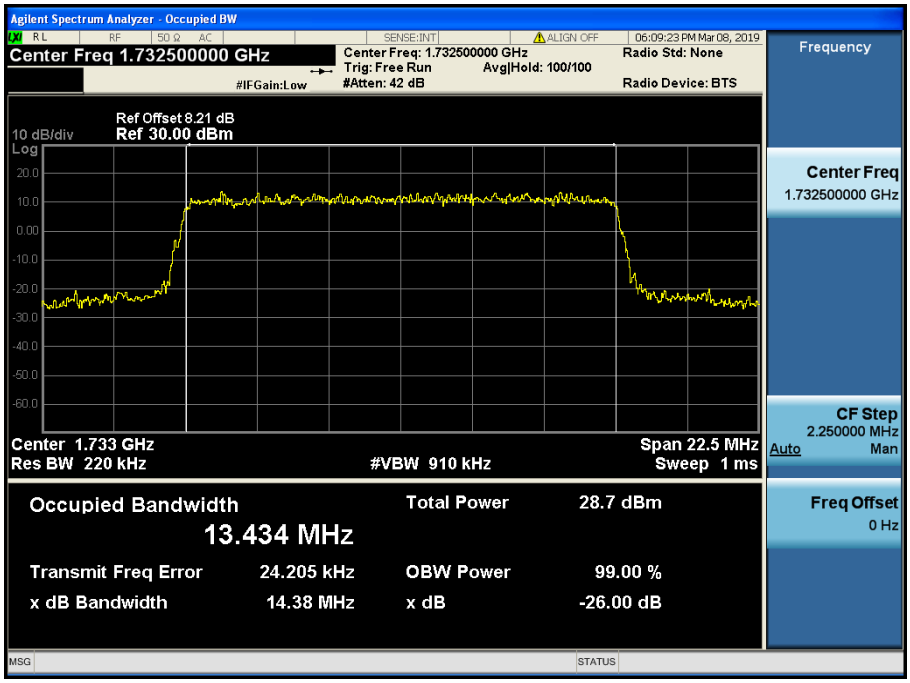
LTE Band 4 / 20 MHz / 16QAM - RB Size 100



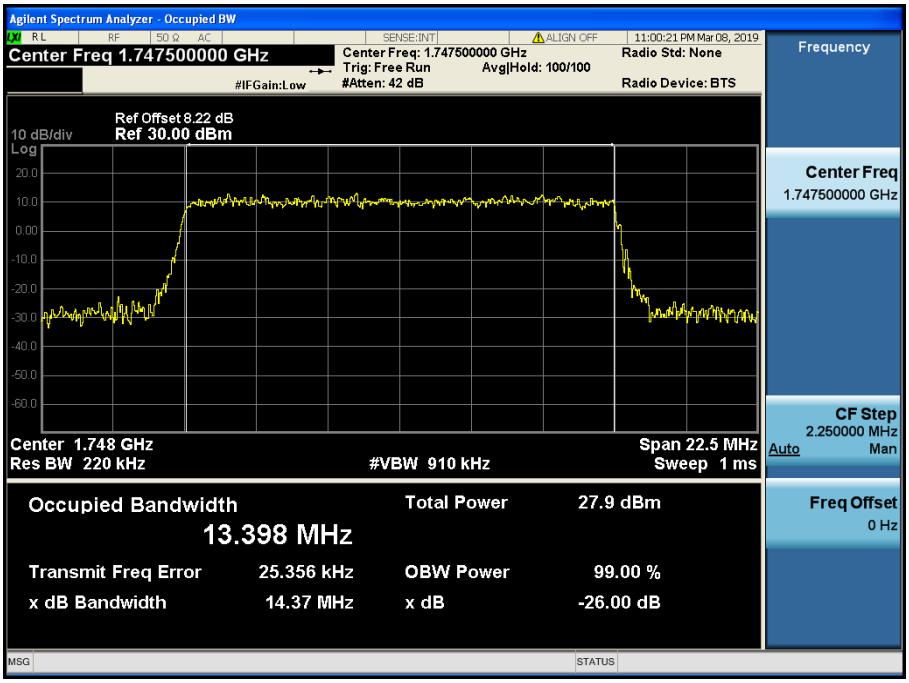
LTE Band 4 / 20 MHz / 64QAM - RB Size 100



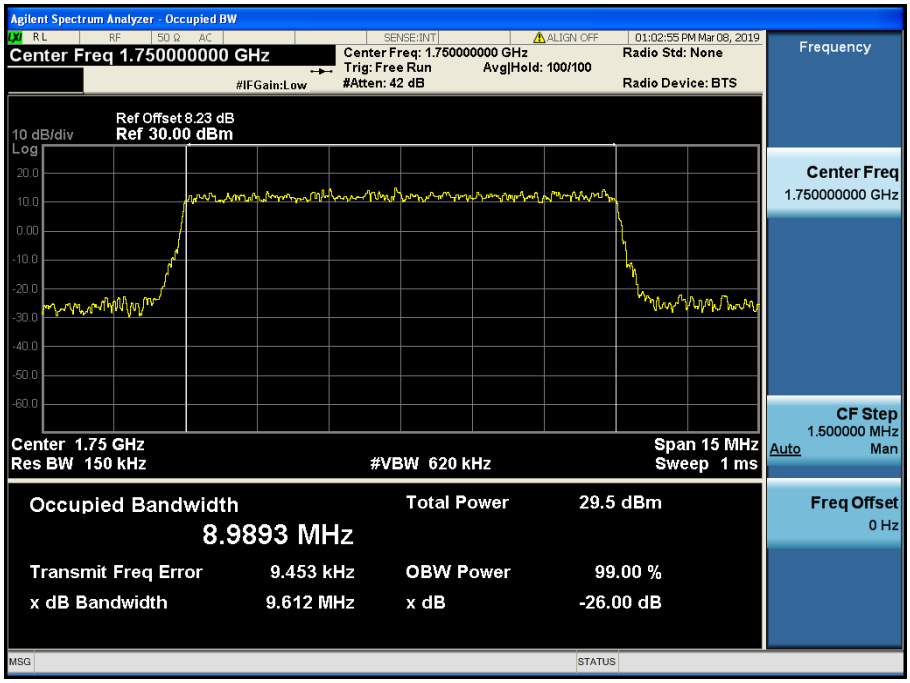
LTE Band 4 / 15 MHz / QPSK - RB Size 75



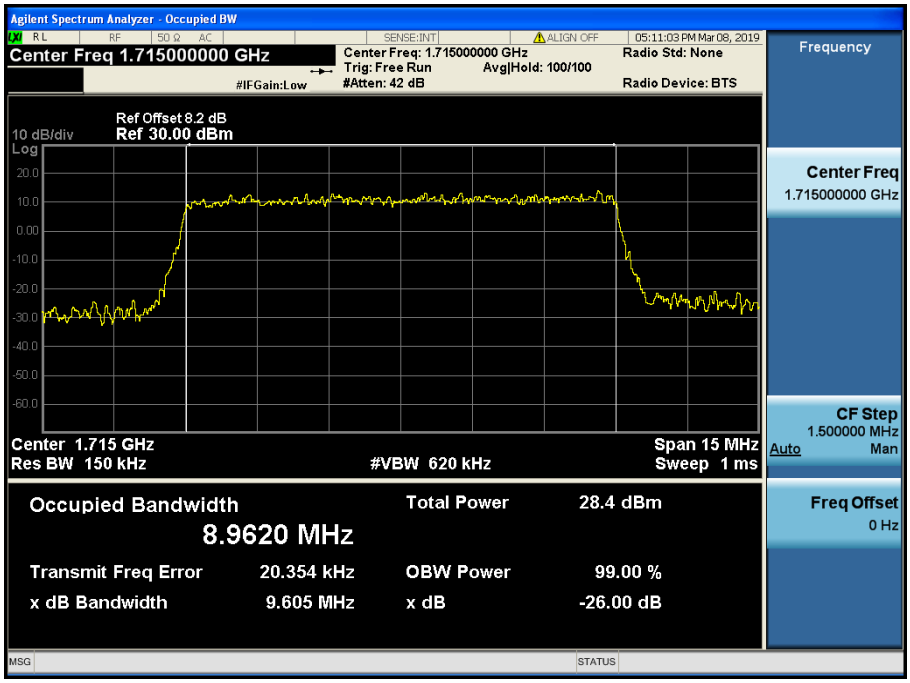
LTE Band 4 / 15 MHz / 16QAM - RB Size 75



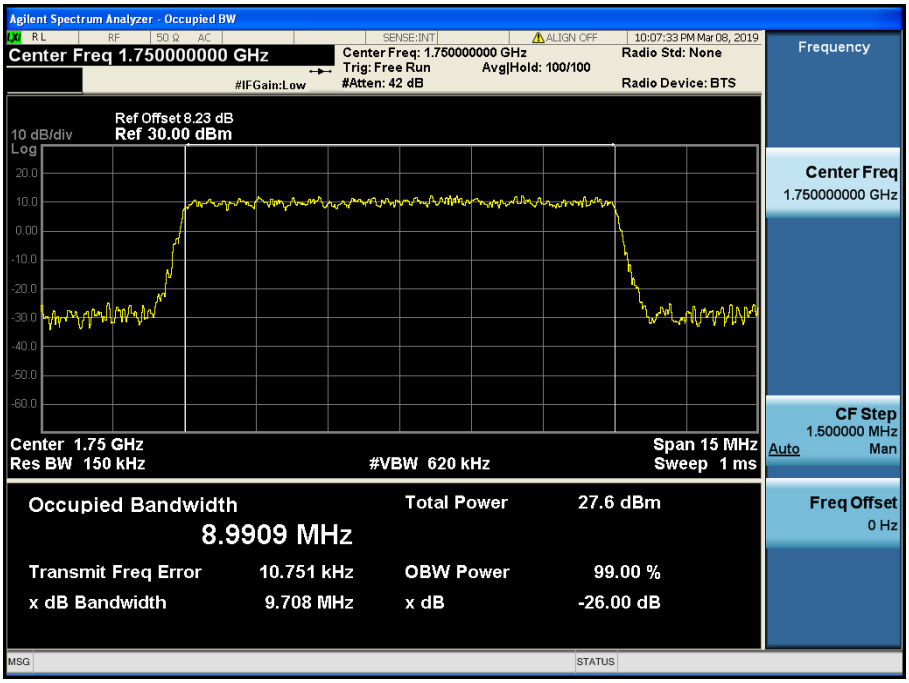
LTE Band 4 / 15 MHz / 64QAM - RB Size 75



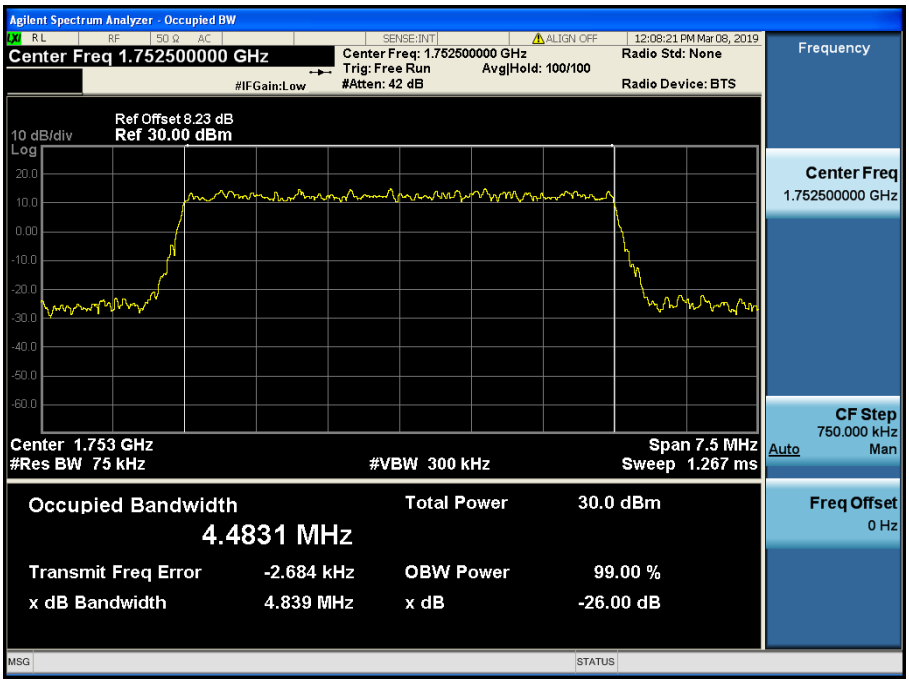
LTE Band 4 / 10 MHz / QPSK - RB Size 50



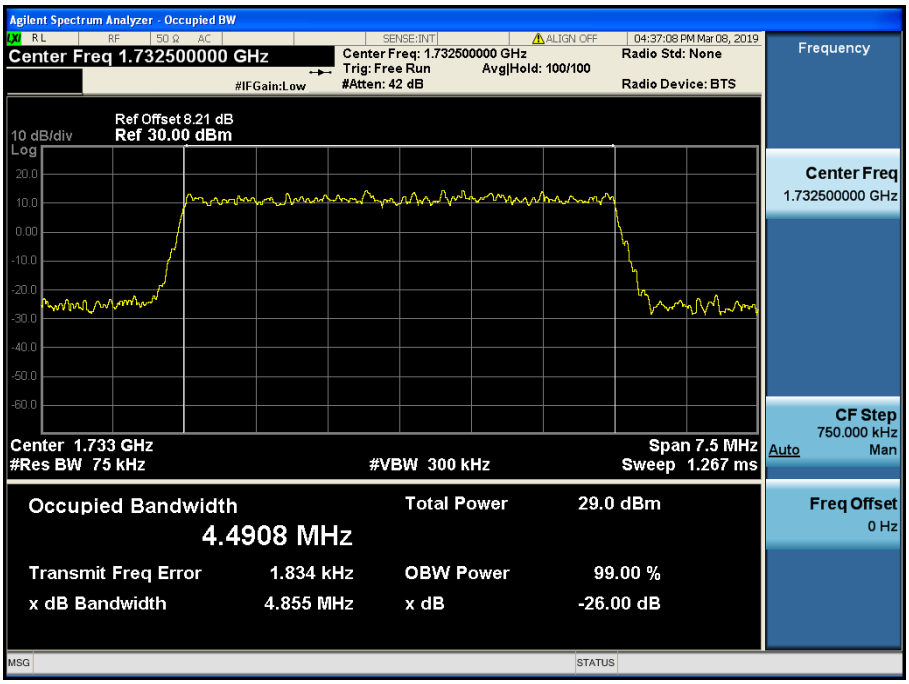
LTE Band 4 / 10 MHz / 16QAM - RB Size 50



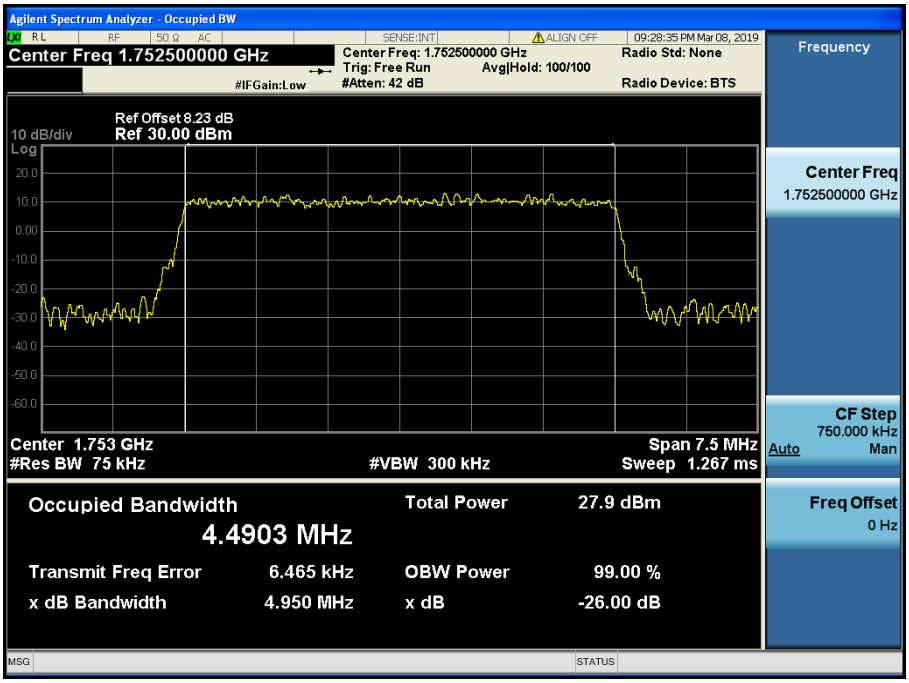
LTE Band 4 / 10 MHz / 64QAM - RB Size 50



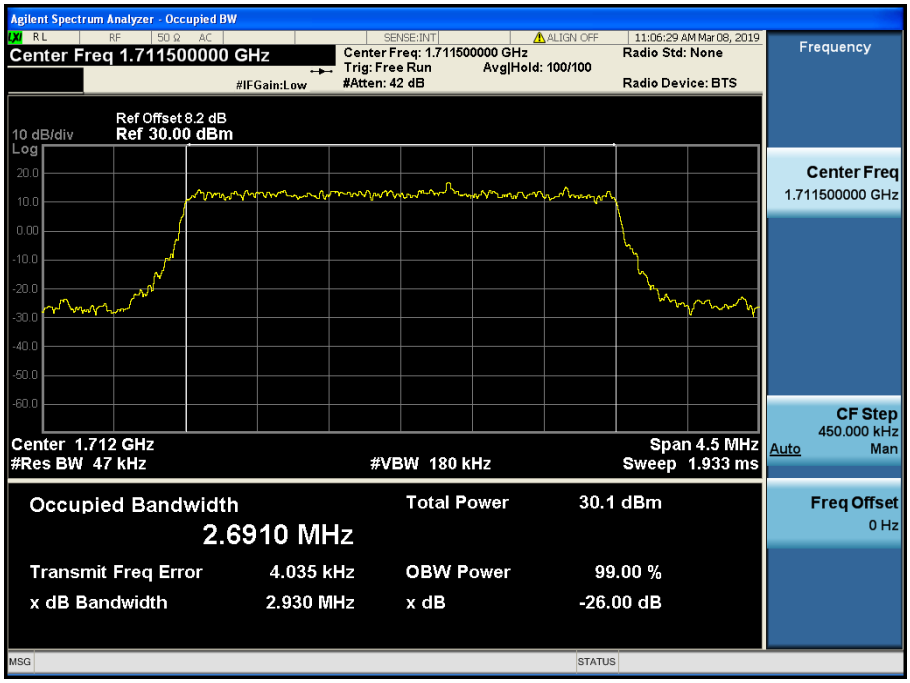
LTE Band 4 / 5 MHz / QPSK - RB Size 25



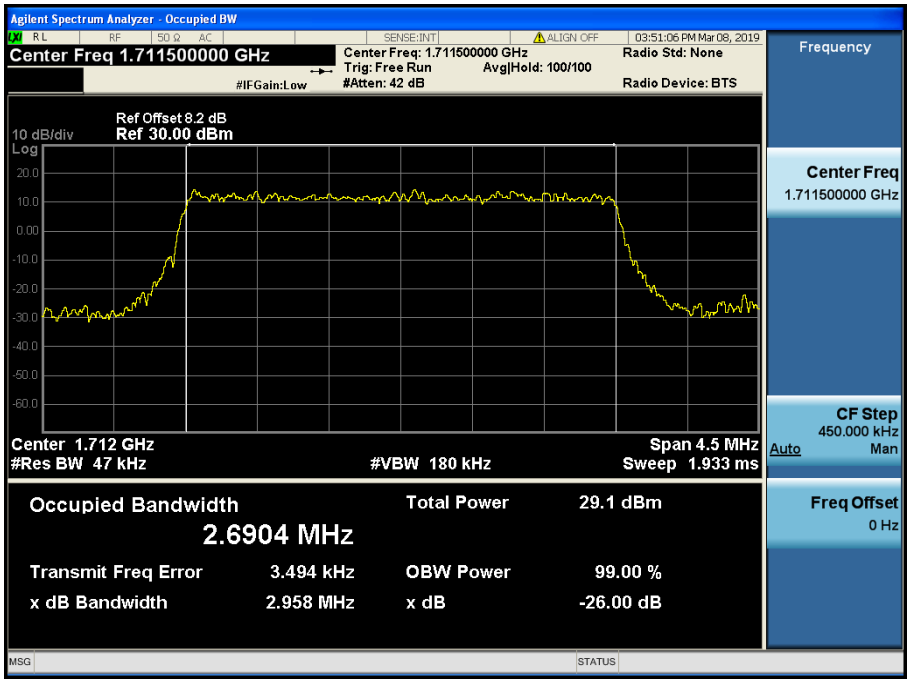
LTE Band 4 / 5 MHz / 16QAM - RB Size 25



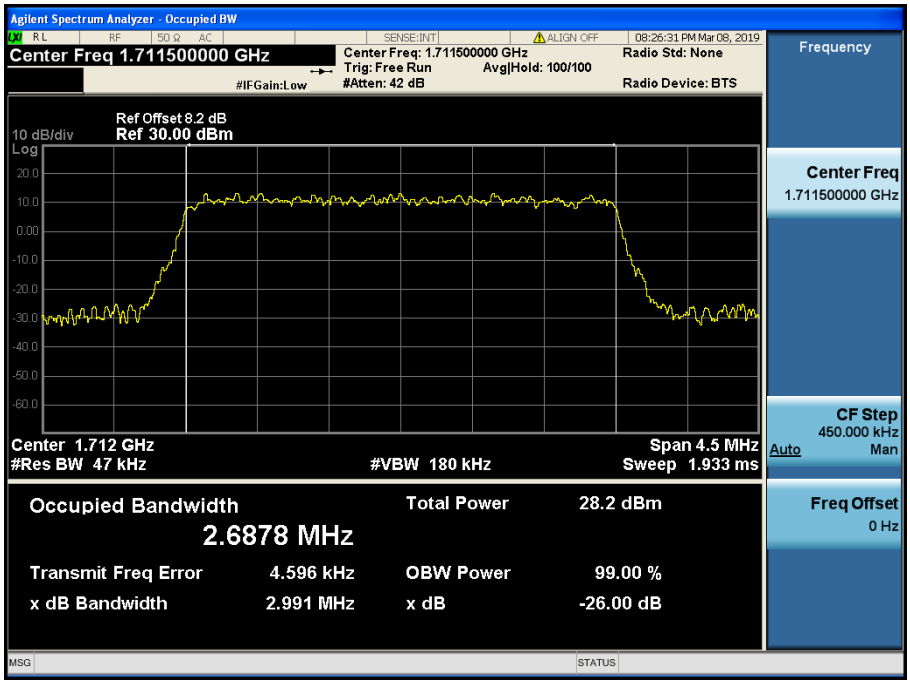
LTE Band 4 / 5 MHz / 64QAM - RB Size 25



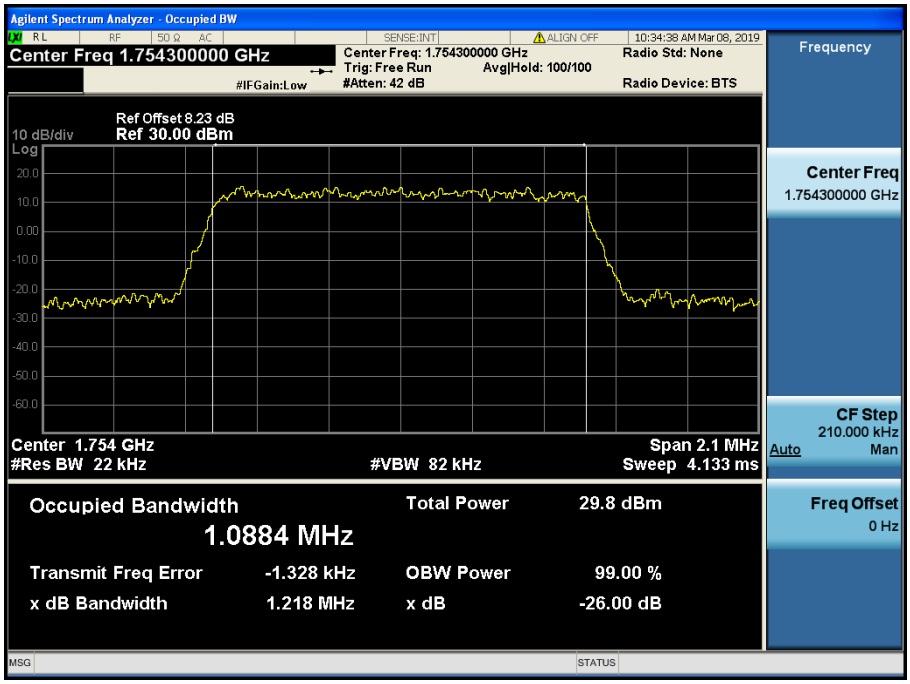
LTE Band 4 / 3 MHz / QPSK - RB Size 15



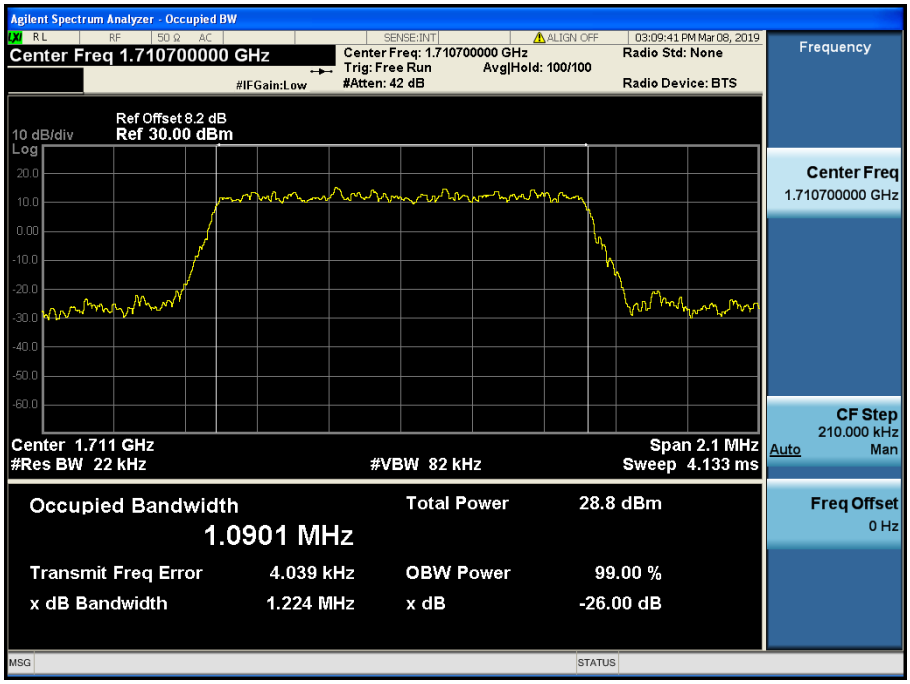
LTE Band 4 / 3 MHz / 16QAM - RB Size 15



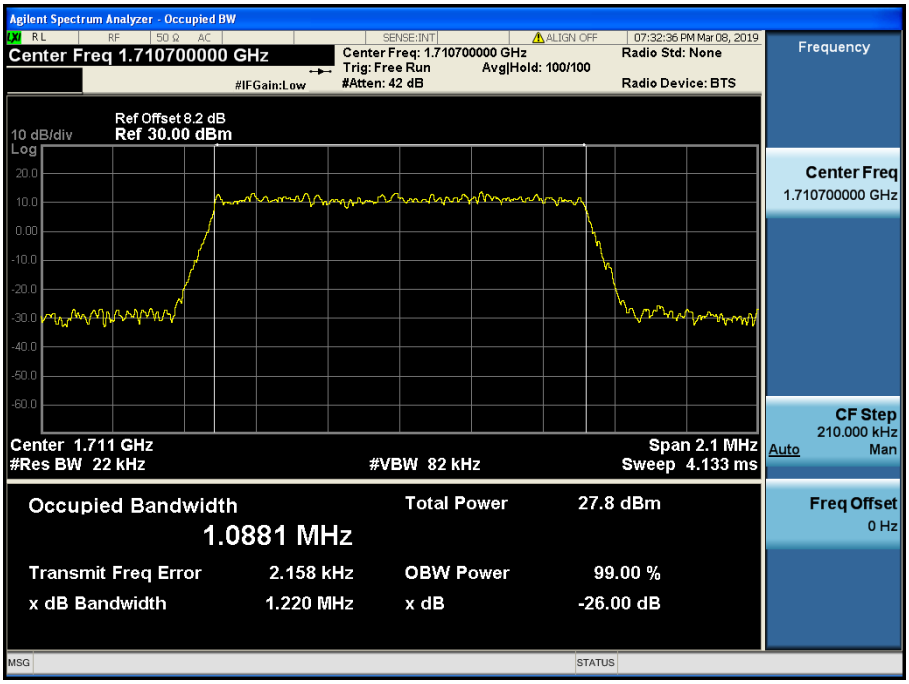
LTE Band 4 / 3 MHz / 64QAM - RB Size 15



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

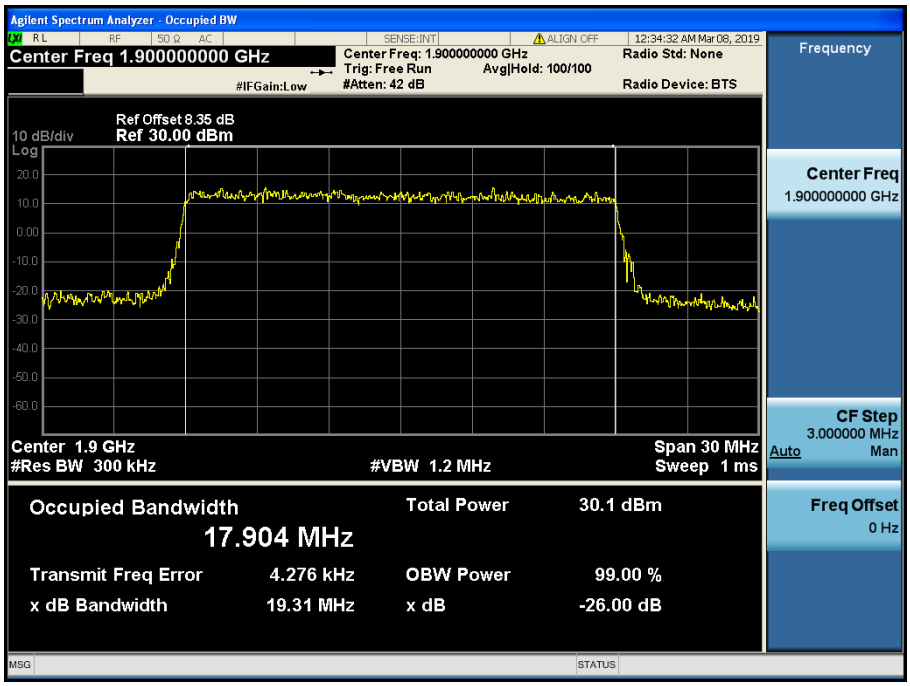


LTE Band 4 / 1.4 MHz / 16QAM - RB Size 6

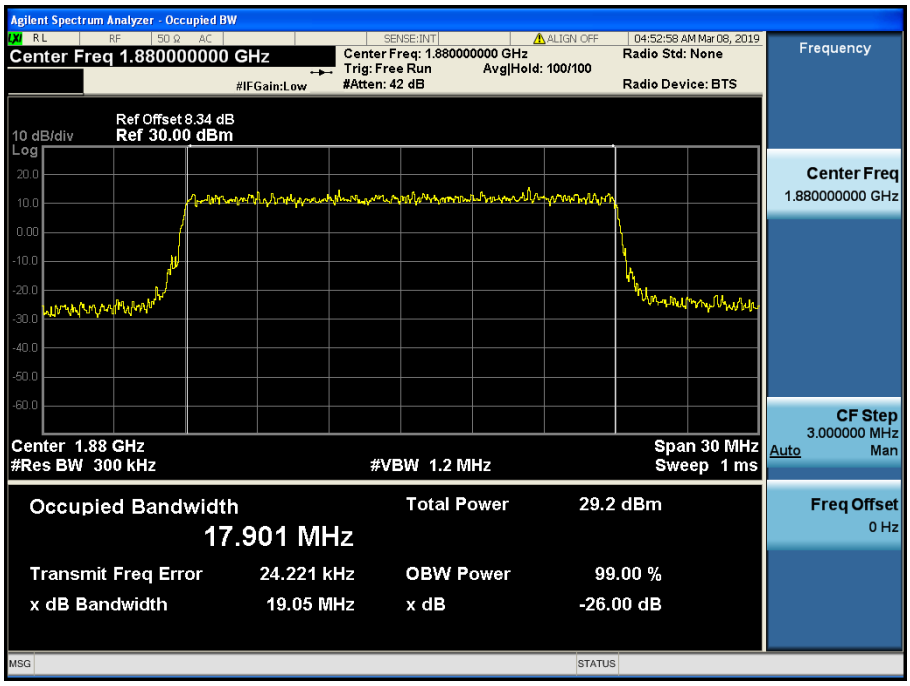


LTE Band 4 / 1.4 MHz / 64QAM - RB Size 6

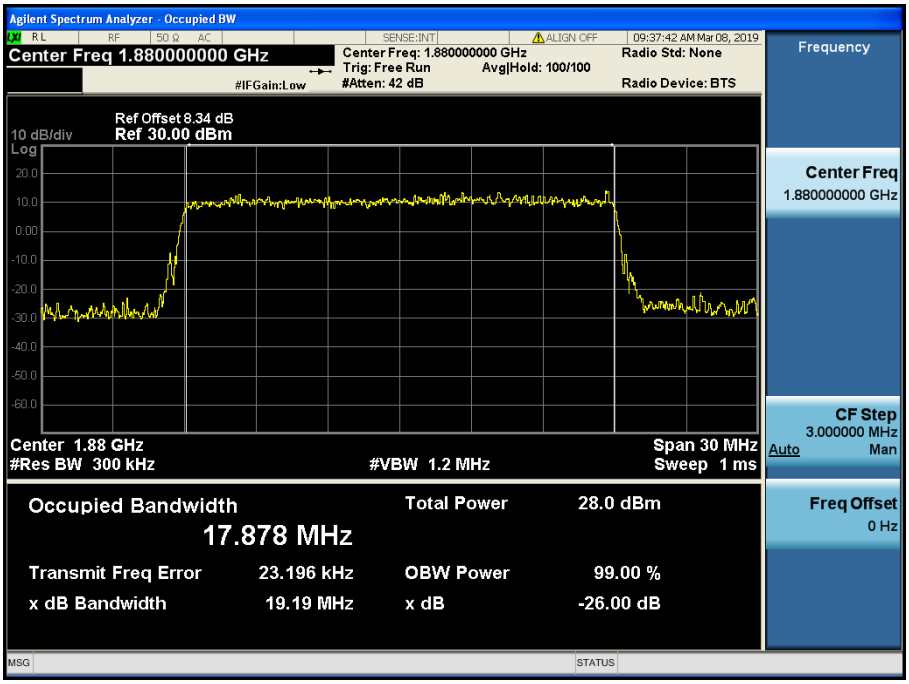
8.1.5 LTE Band 2



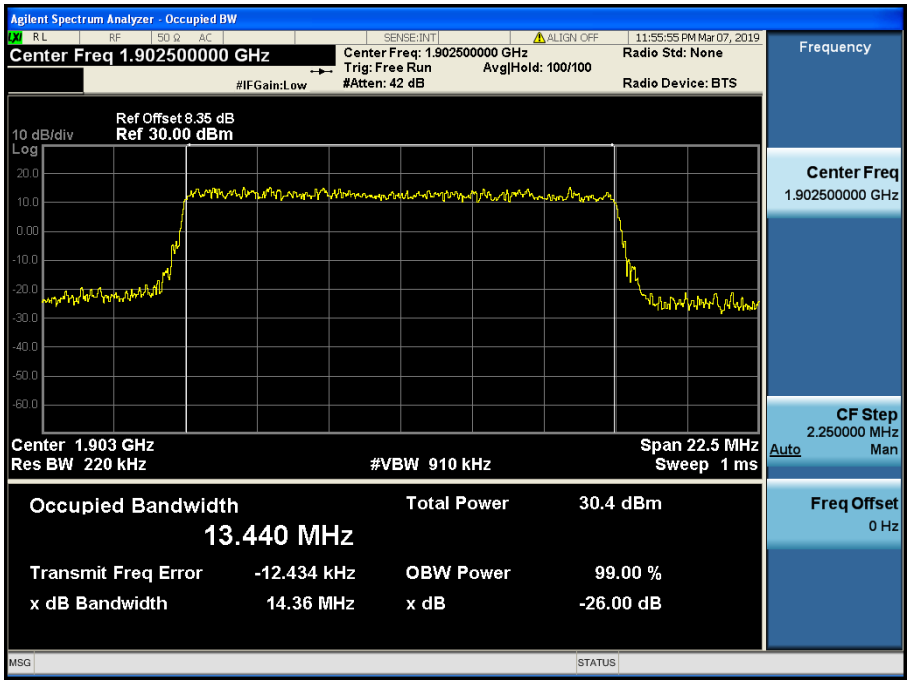
LTE Band 2 / 20 MHz / QPSK - RB Size 100



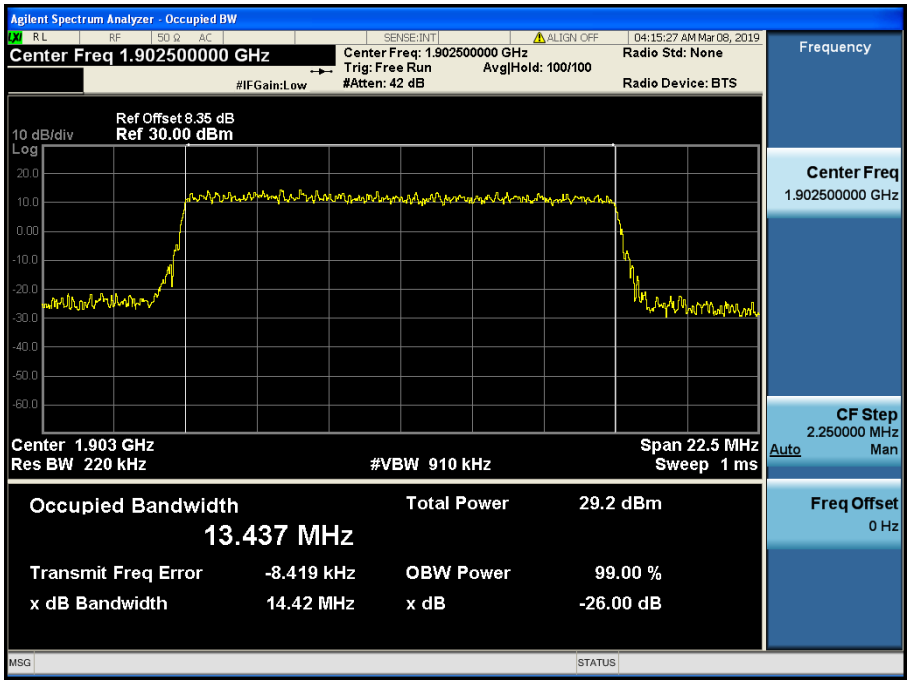
LTE Band 2 / 20 MHz / 16QAM - RB Size 100



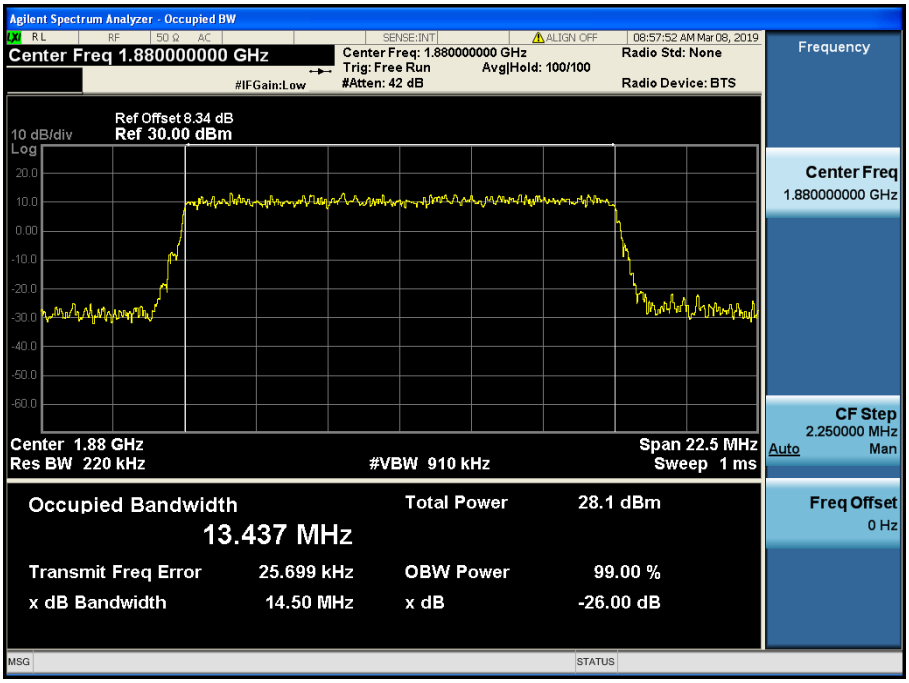
LTE Band 2 / 20 MHz / 64QAM - RB Size 100



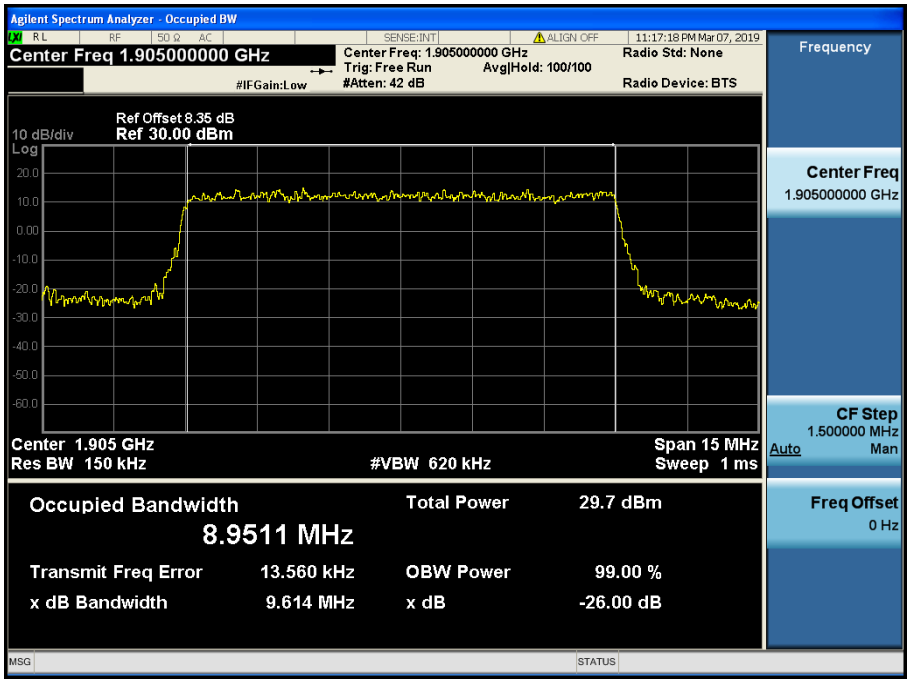
LTE Band 2 / 15 MHz / QPSK - RB Size 75



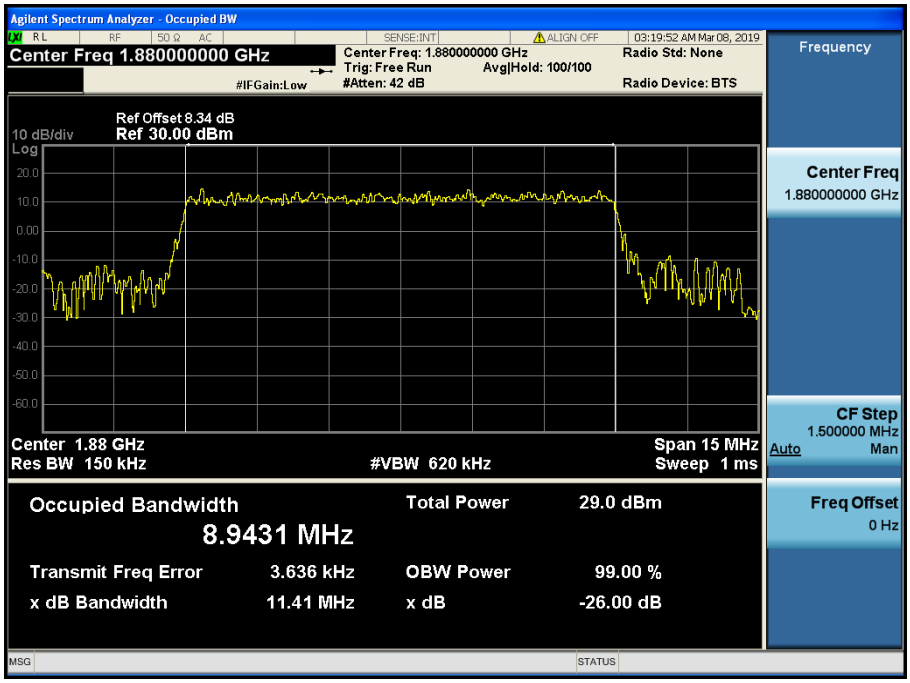
LTE Band 2 / 15 MHz / 16QAM - RB Size 75



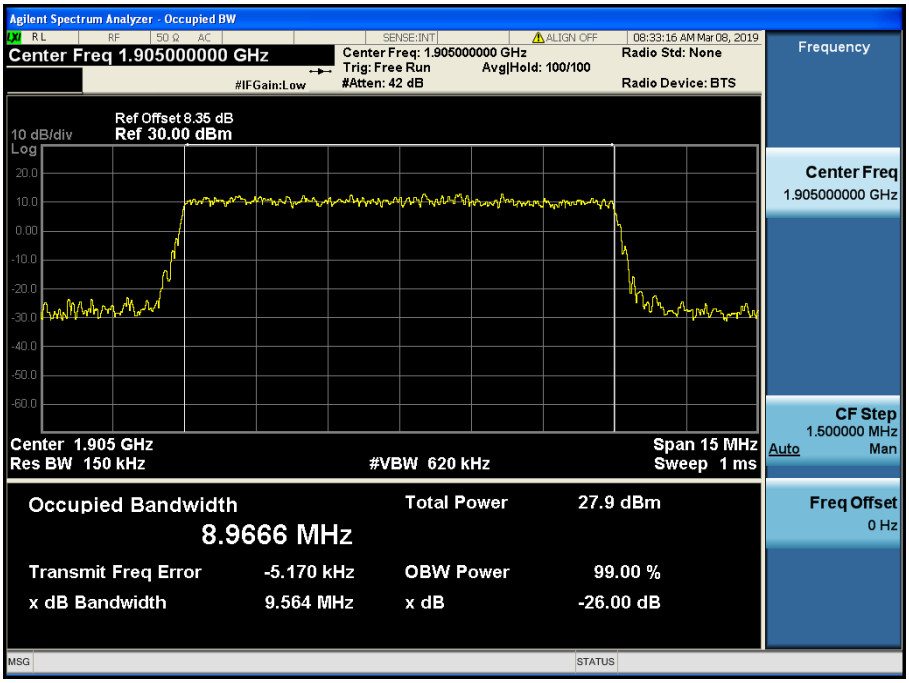
LTE Band 2 / 15 MHz / 64QAM - RB Size 75



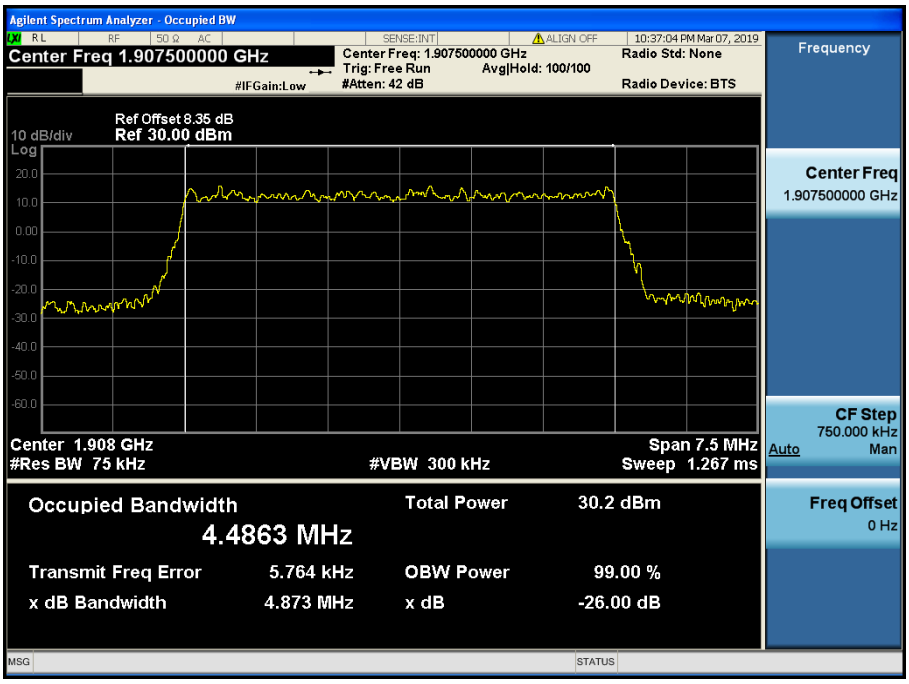
LTE Band 2 / 10 MHz / QPSK - RB Size 50



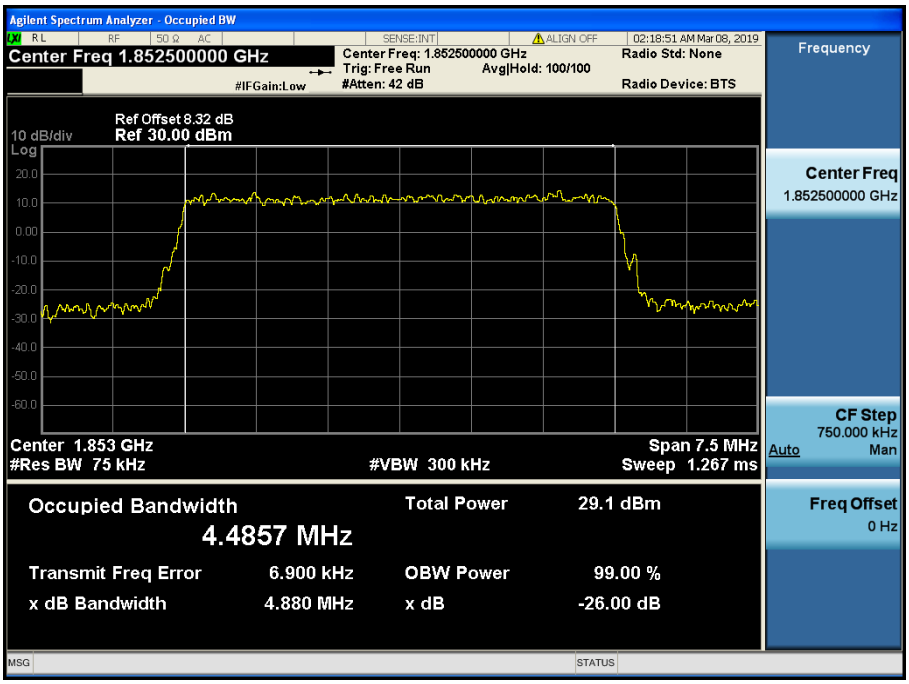
LTE Band 2 / 10 MHz / 16QAM - RB Size 50



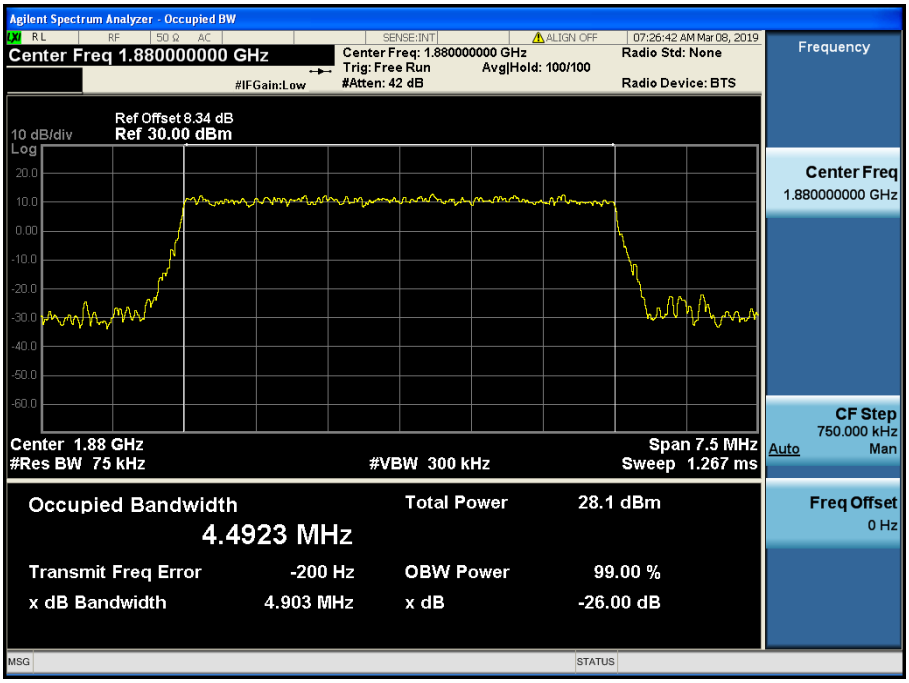
LTE Band 2 / 10 MHz / 64QAM - RB Size 50



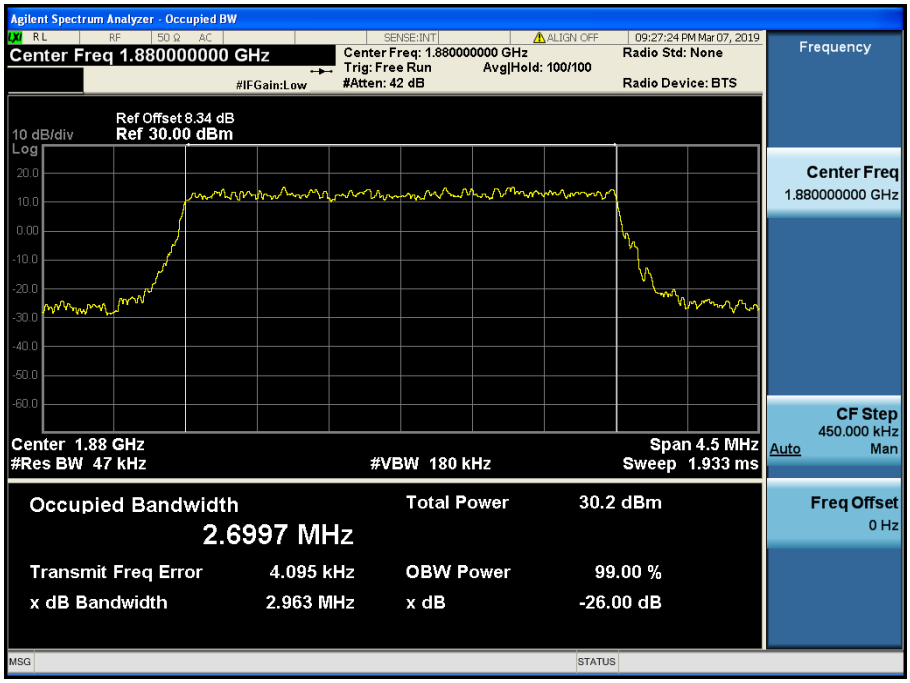
LTE Band 2 / 5 MHz / QPSK - RB Size 25



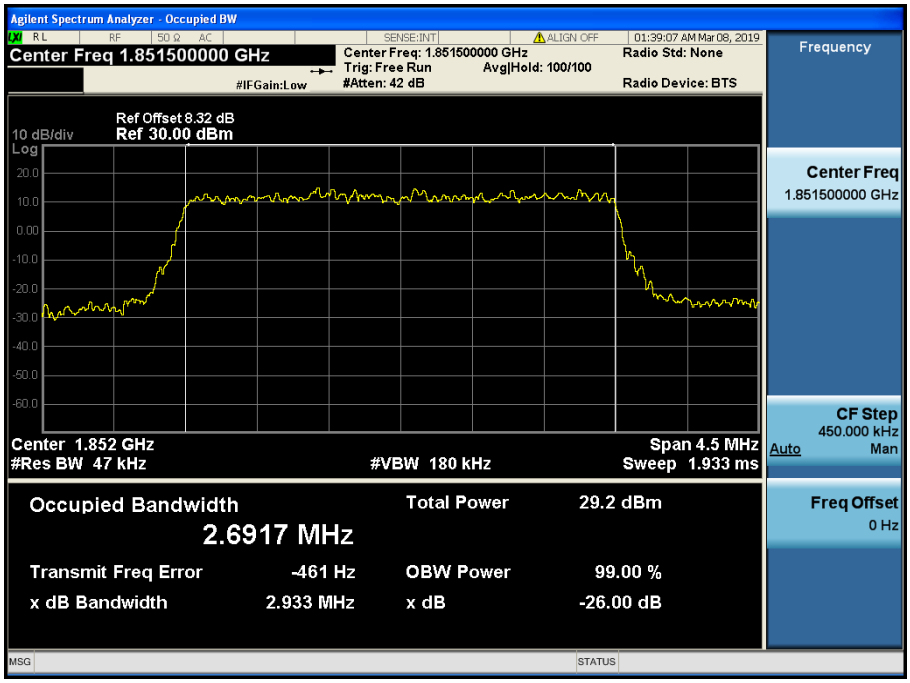
LTE Band 2 / 5 MHz / 16QAM - RB Size 25



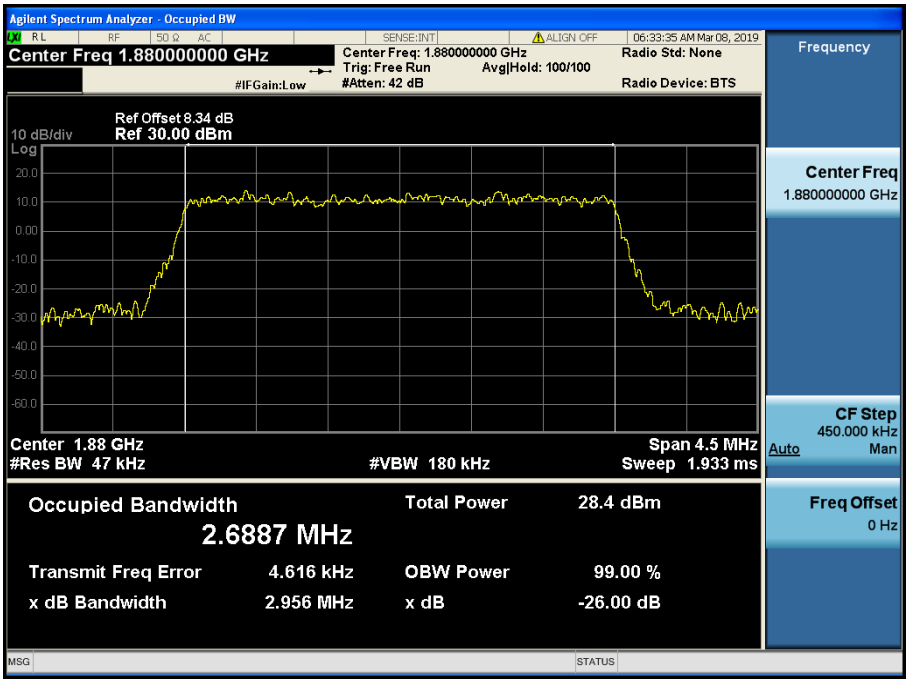
LTE Band 2 / 5 MHz / 64QAM - RB Size 25



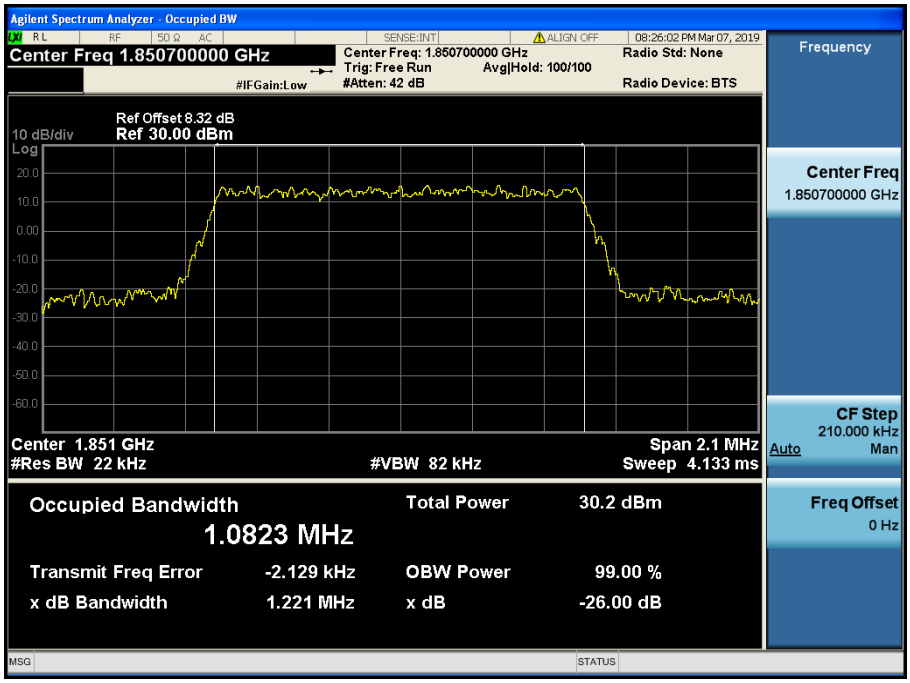
LTE Band 2 / 3 MHz / QPSK - RB Size 15



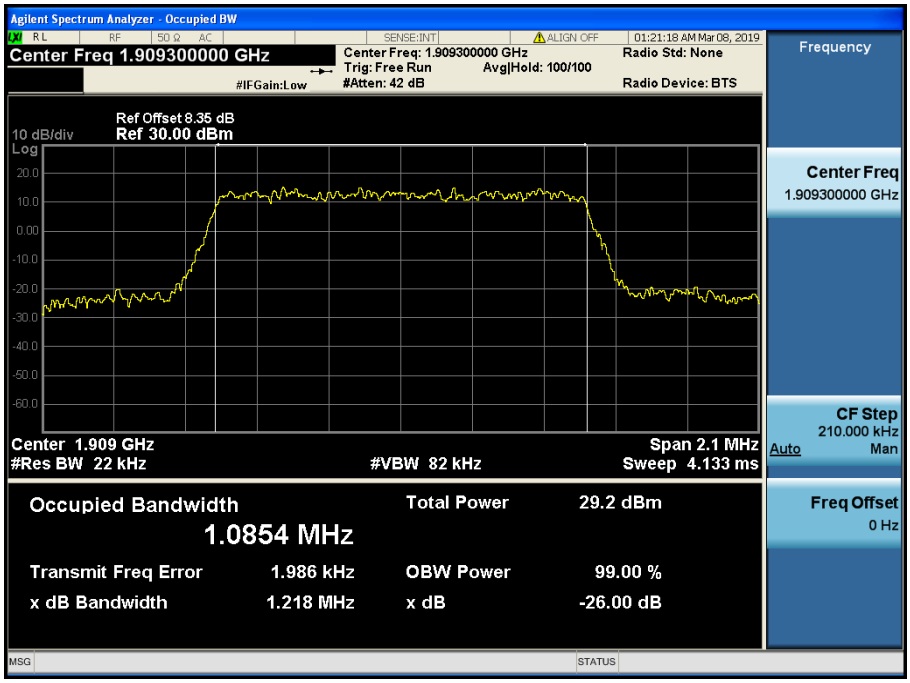
LTE Band 2 / 3 MHz / 16QAM - RB Size 15



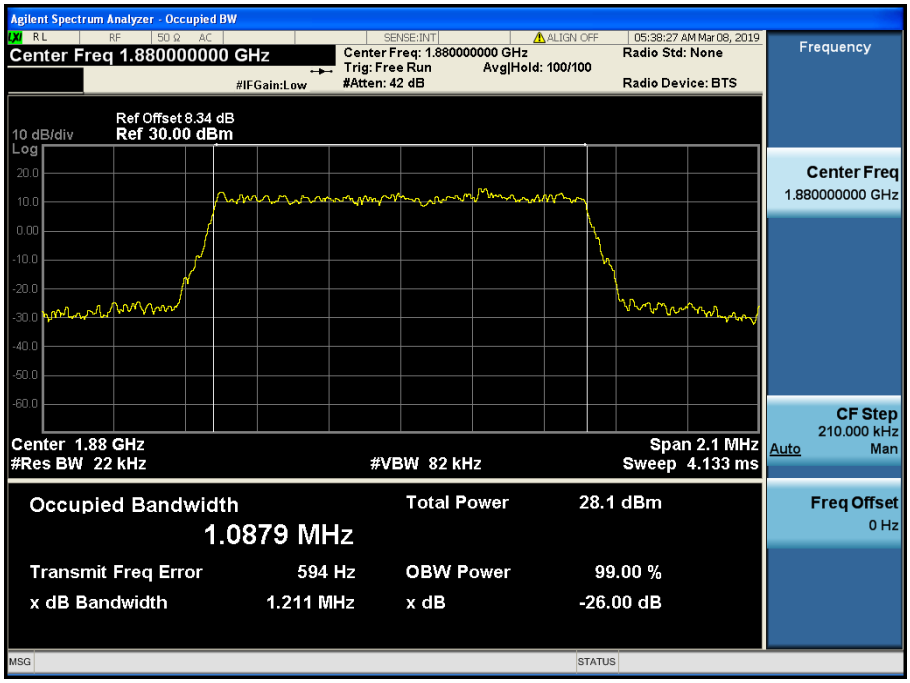
LTE Band 2 / 3 MHz / 64QAM - RB Size 15



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



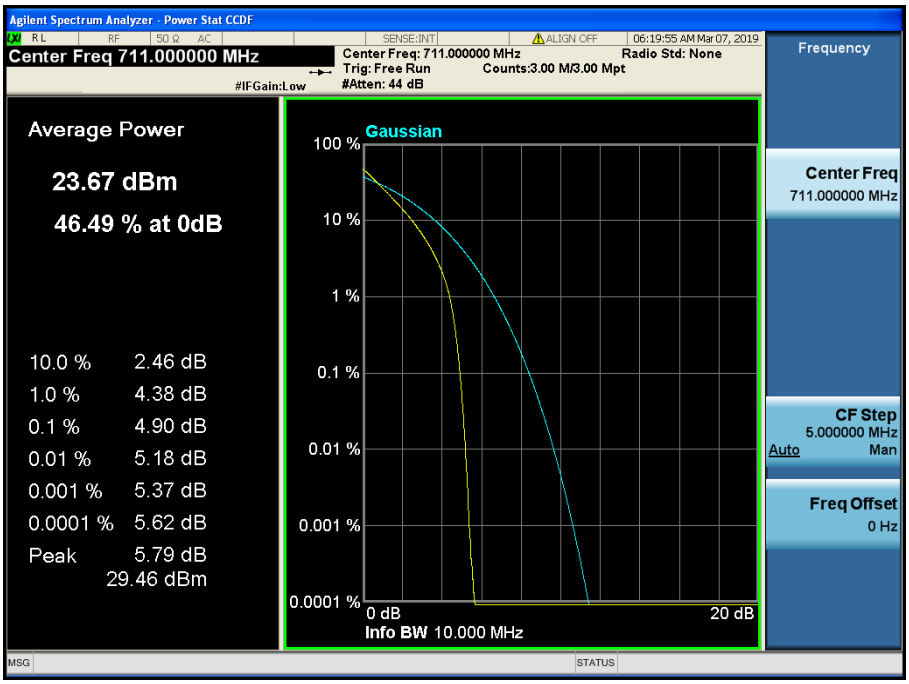
LTE Band 2 / 1.4 MHz / 16QAM - RB Size 6



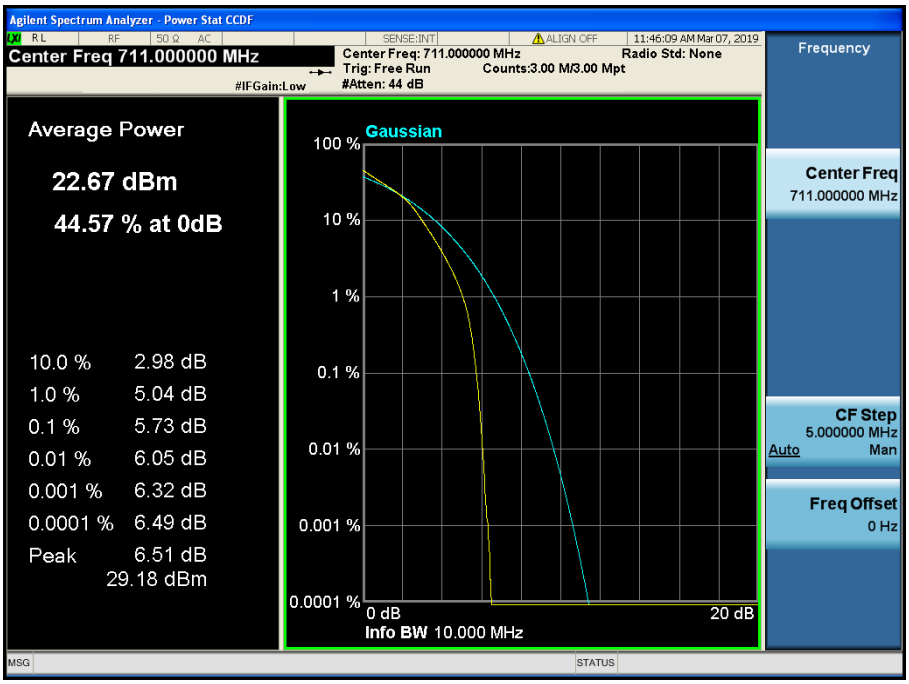
LTE Band 2 / 1.4 MHz / 64QAM - RB Size 6

8.2 PEAK TO AVERAGE RATIO

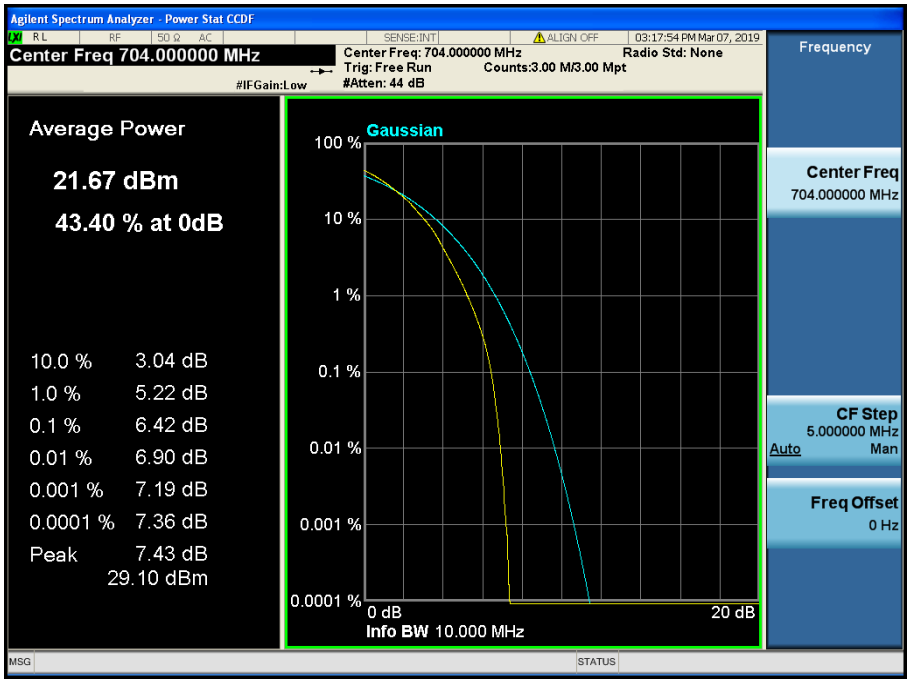
8.2.1 LTE Band 12,17



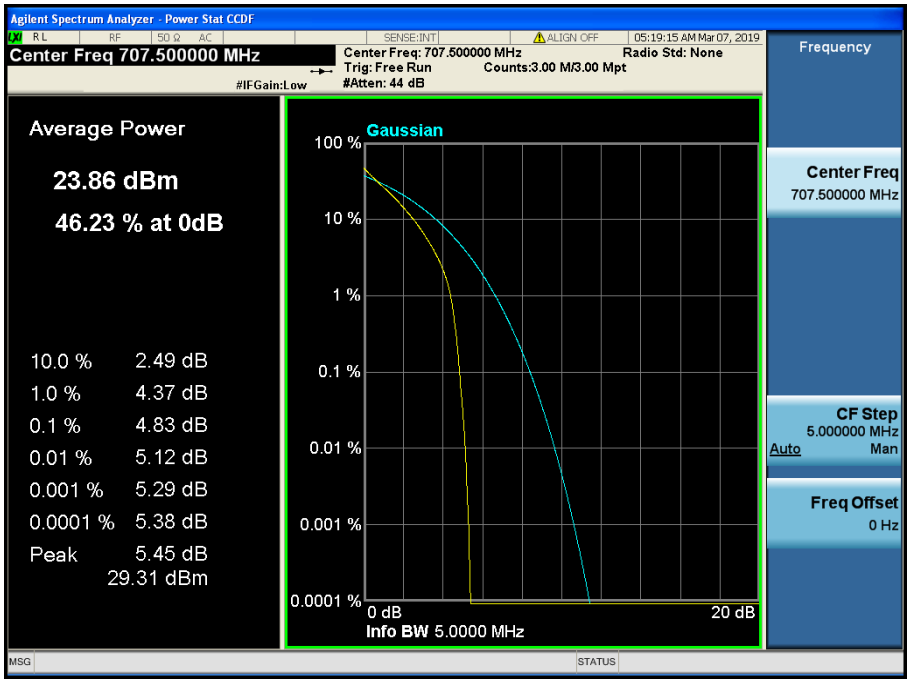
LTE Band 12,17 / 10 MHz / QPSK - RB Size 50



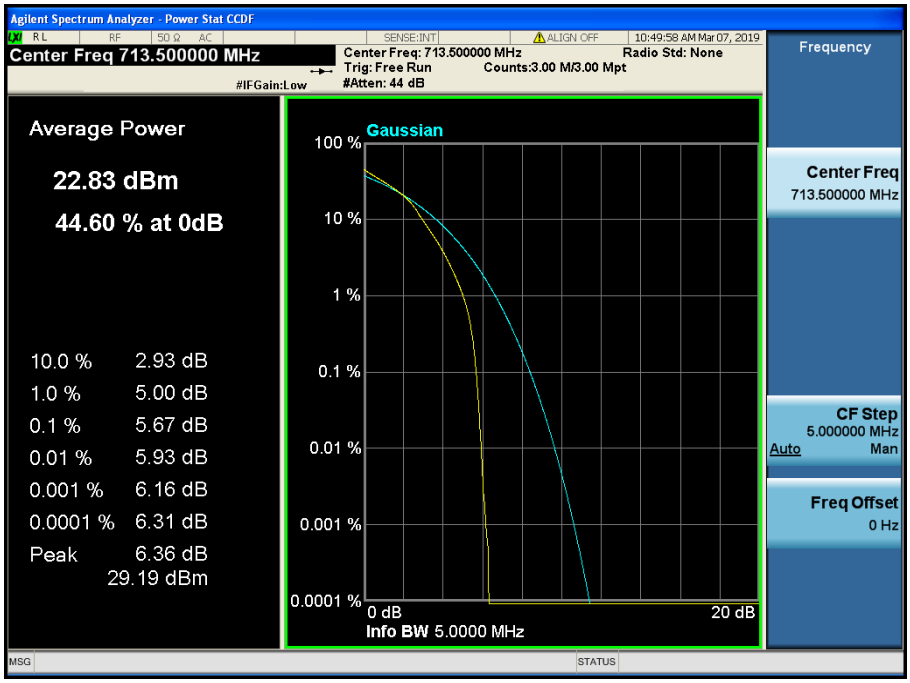
LTE Band 12,17 / 10 MHz / 16QAM - RB Size 50



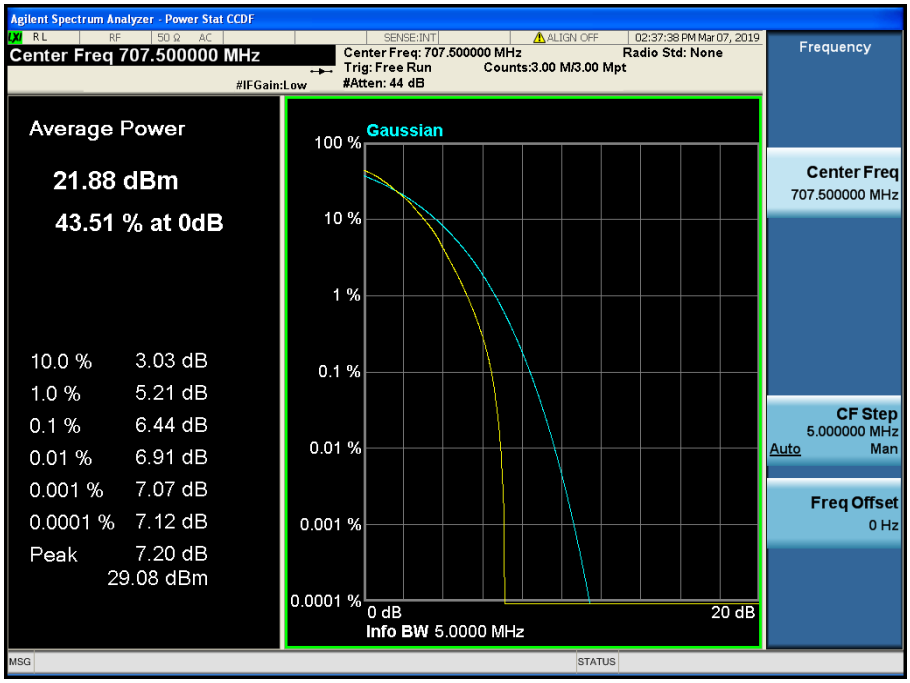
LTE Band 12,17 / 10 MHz / 64QAM - RB Size 50



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

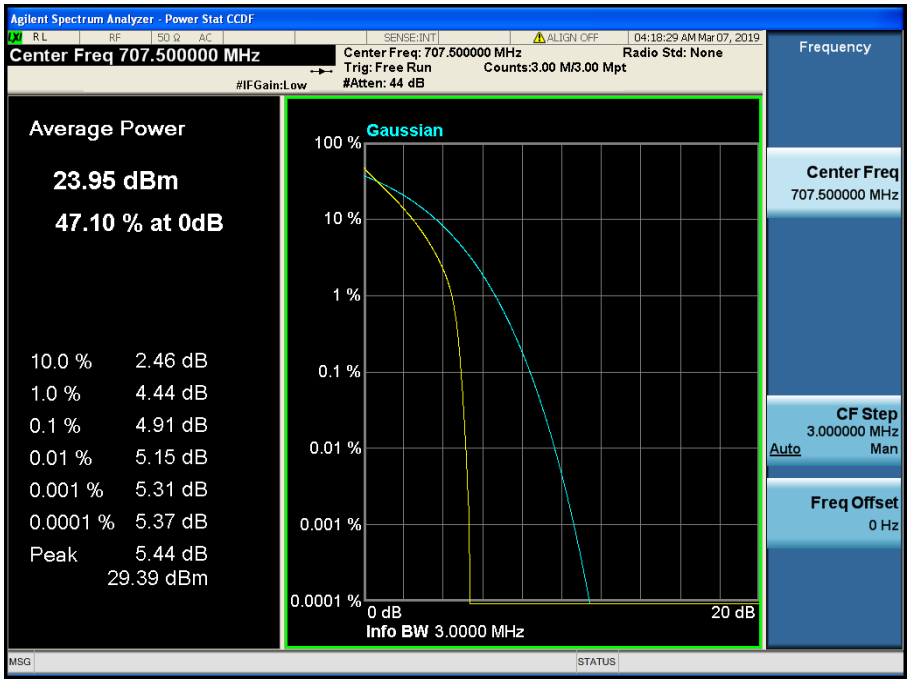


LTE Band 12,17 / 5 MHz / 16QAM - RB Size 25

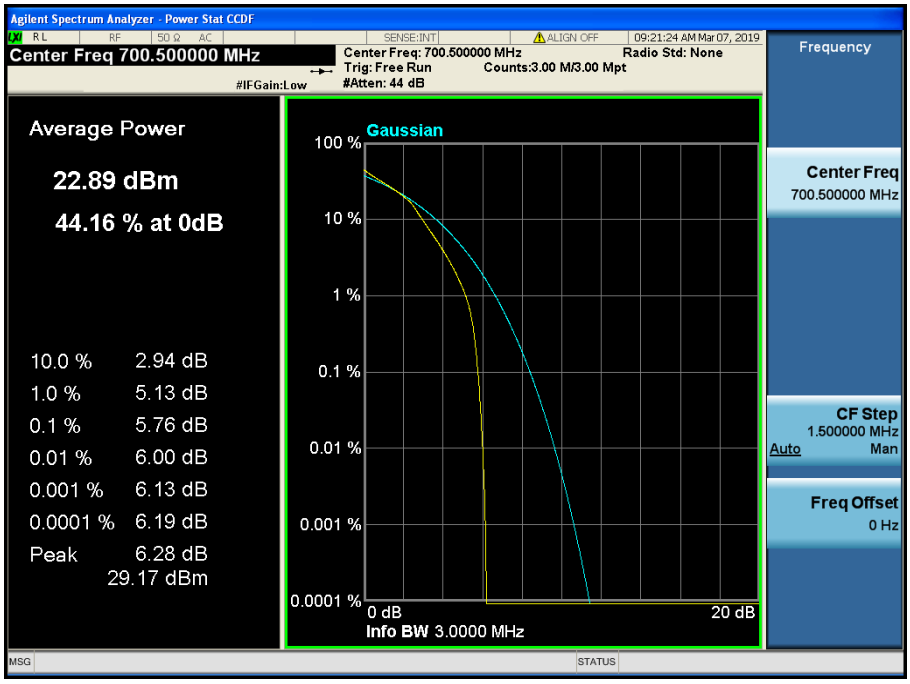


LTE Band 12,17 / 5 MHz / 64QAM - RB Size 25

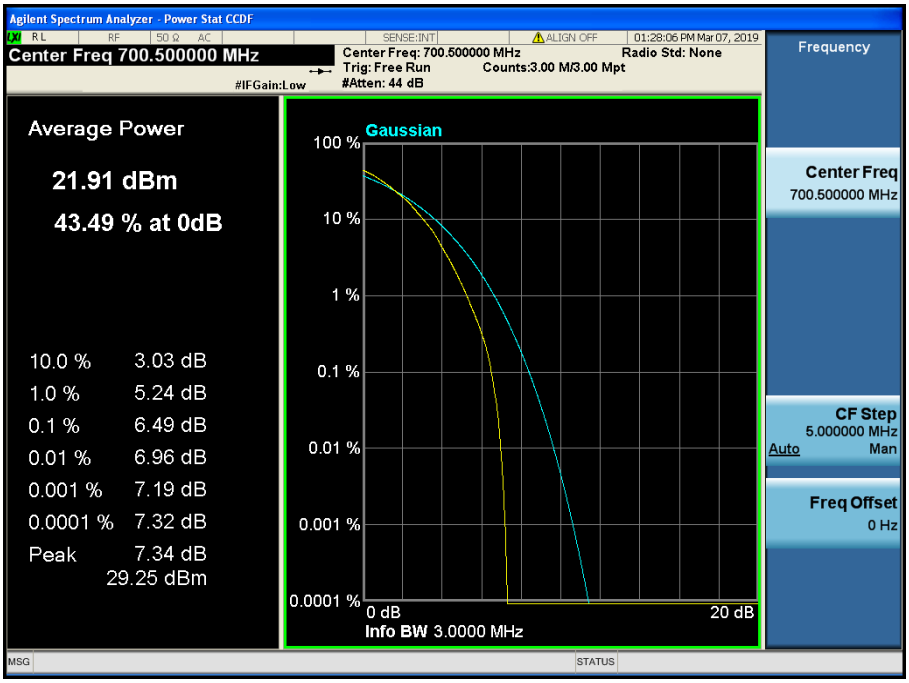
8.2.2 LTE Band 12



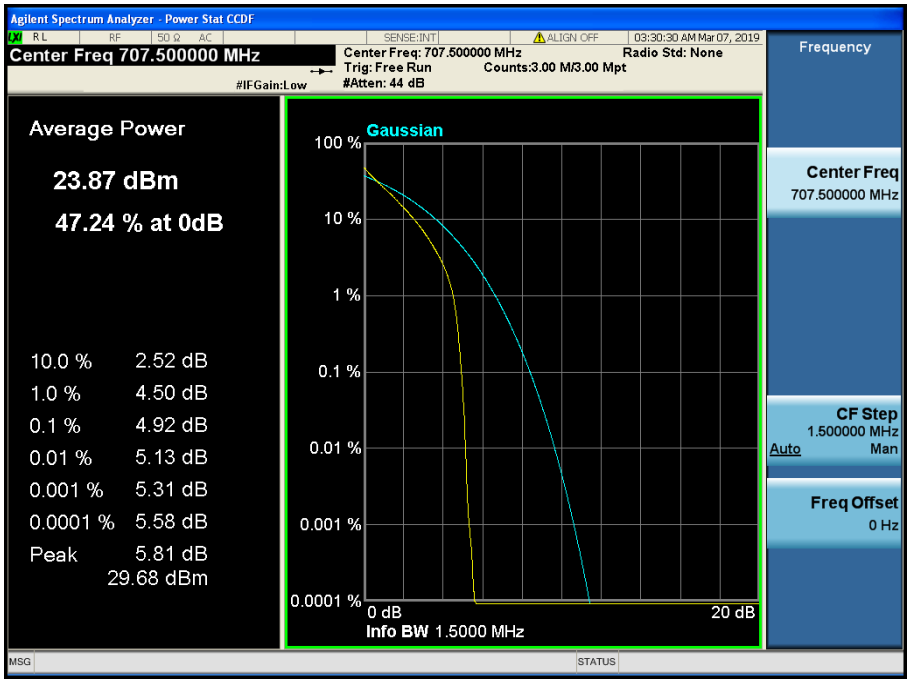
LTE Band 12 / 3 MHz / QPSK - RB Size 15



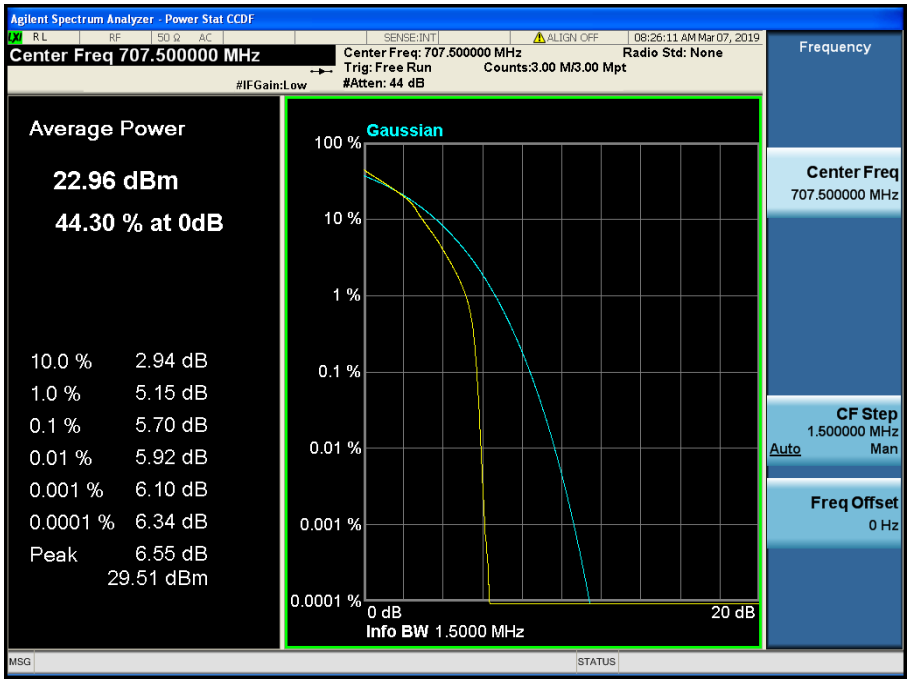
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



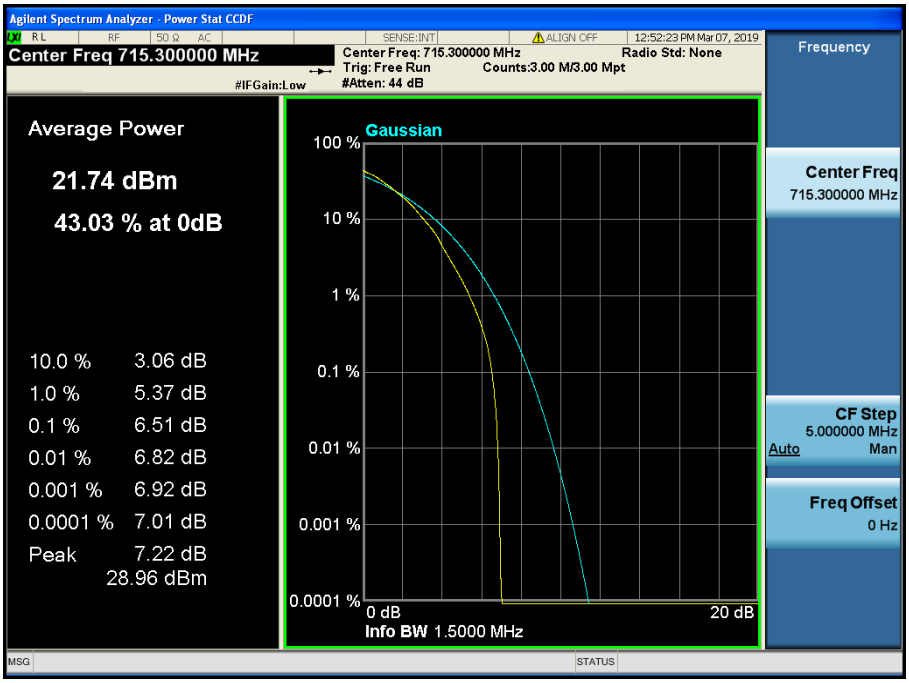
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



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

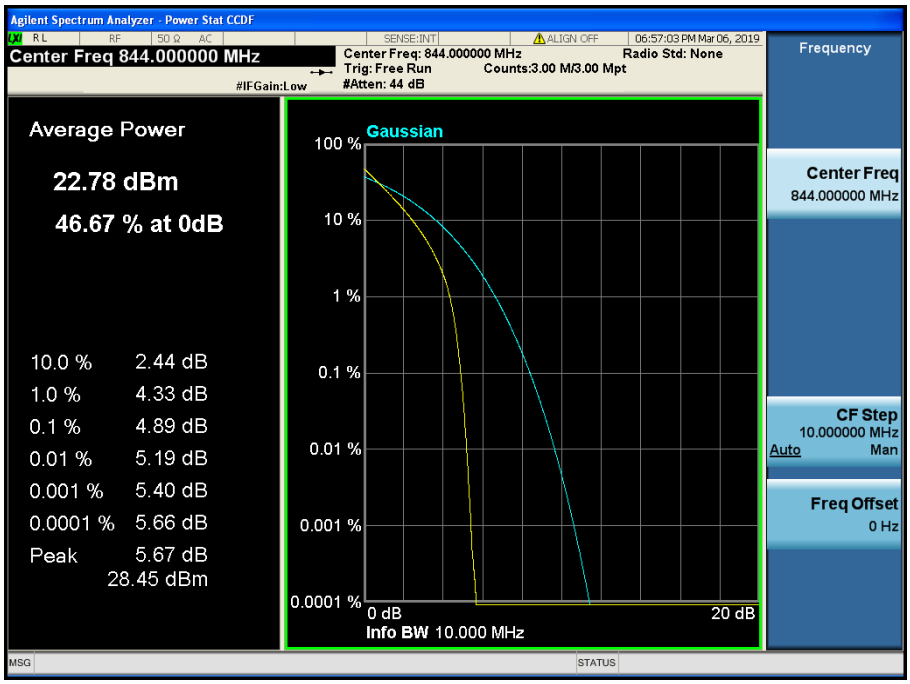


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

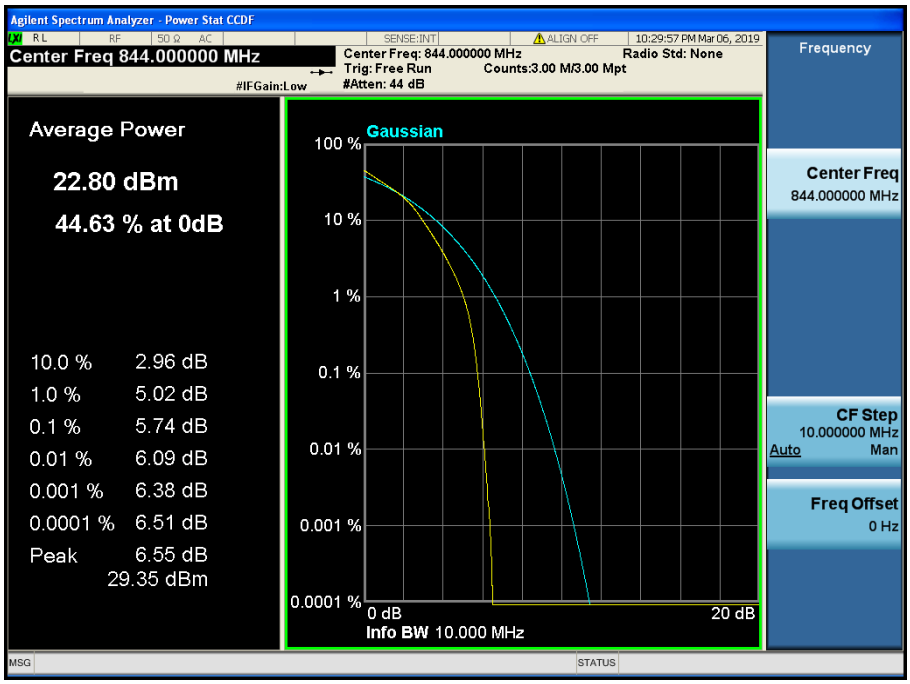


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

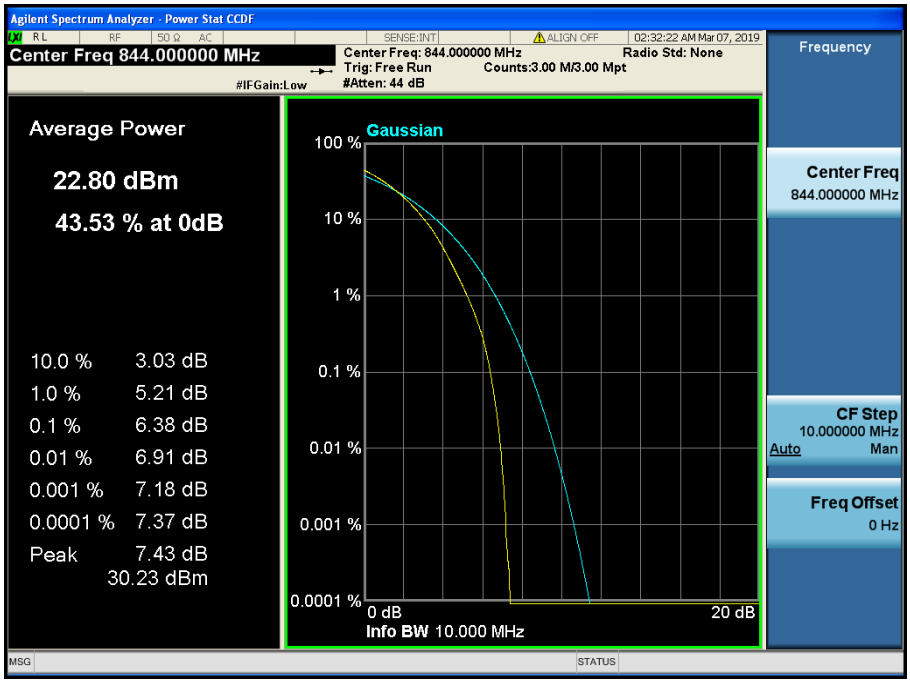
8.2.3 LTE Band 5



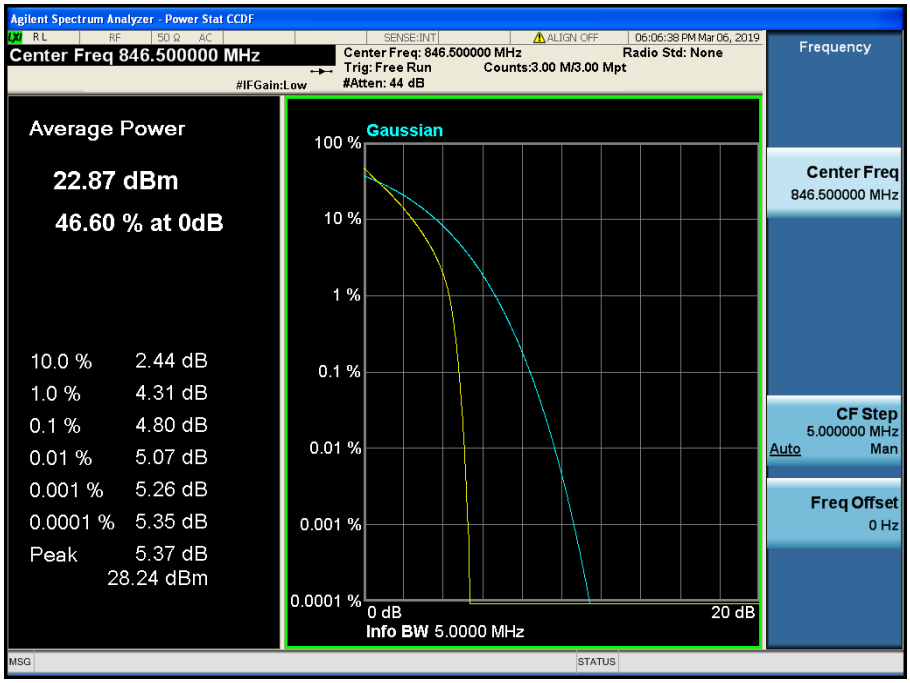
LTE Band 5 / 10 MHz / QPSK - RB Size 50



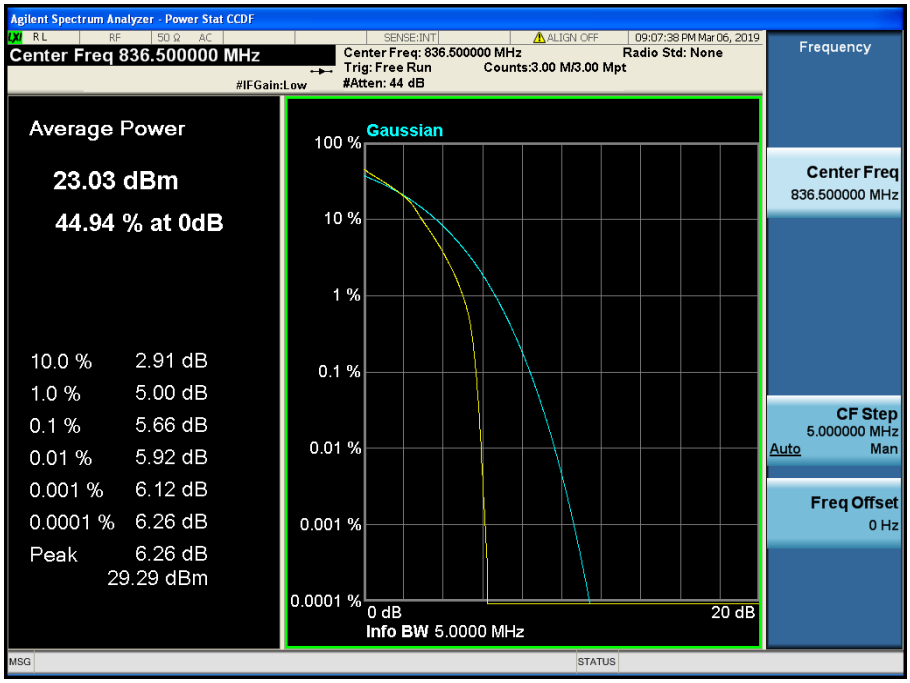
LTE Band 5 / 10 MHz / 16QAM - RB Size 50



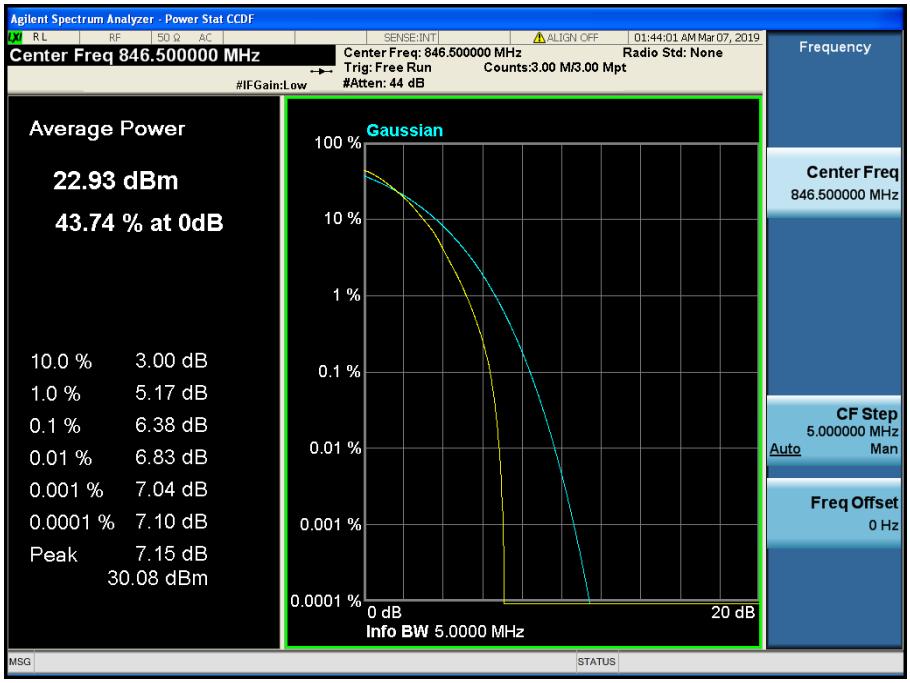
LTE Band 5 / 10 MHz / 64QAM - RB Size 50



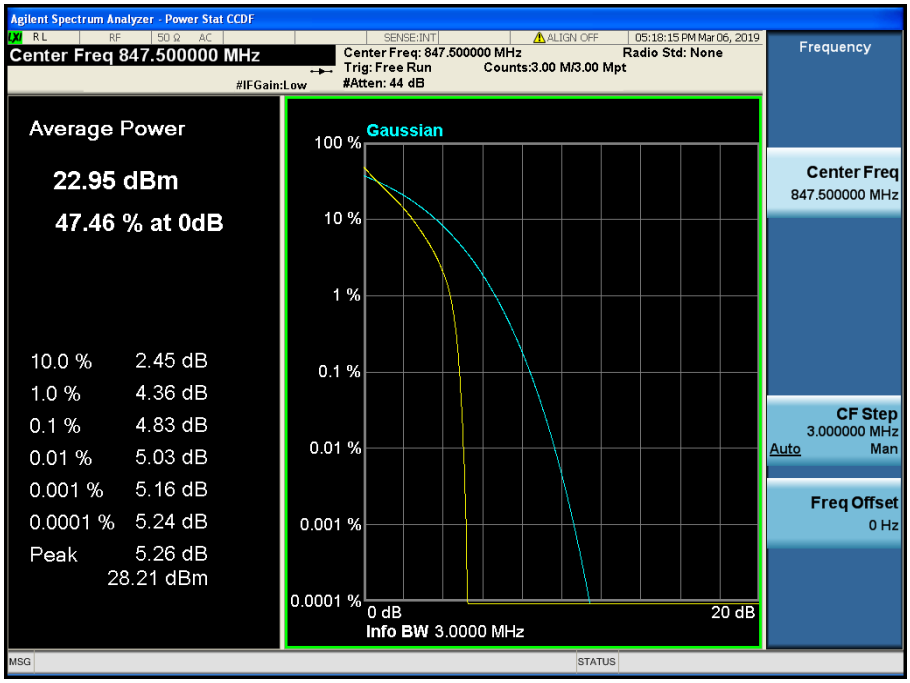
LTE Band 5 / 5 MHz / QPSK - RB Size 25



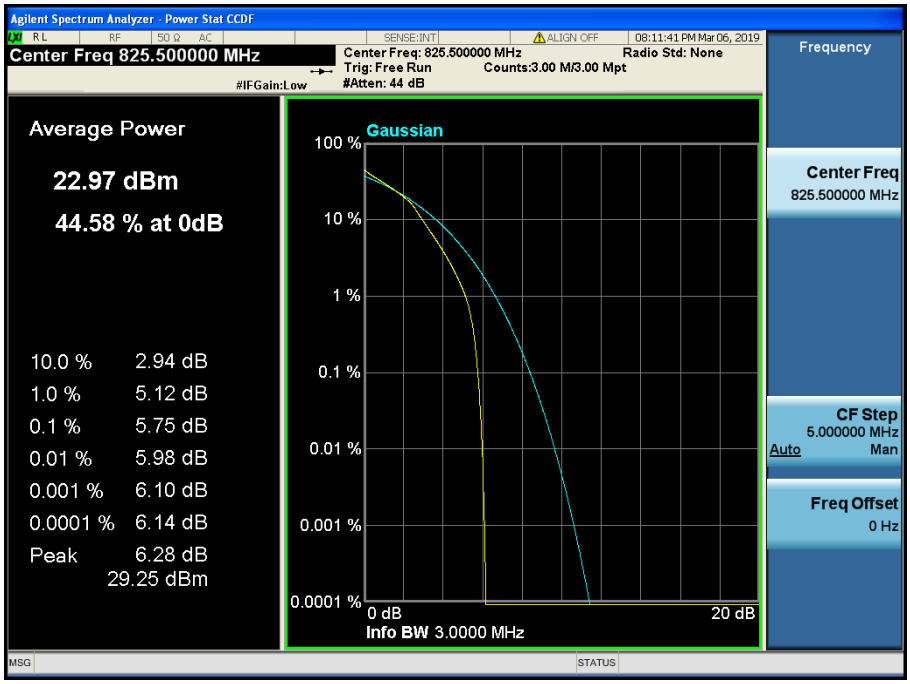
LTE Band 5 / 5 MHz / 16QAM - RB Size 25



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