TEST REPORT

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

1. Report No : DRTFCC1810-0245
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 / KX1801
   FCC ID : ZNFKX1801
5. Test Method Used : KDB971168 D01v03, ANSI/TIA-603-E-2016, ANSI C63.26-2015
   Test Specification : §2, §24(E), §27
6. Date of Test : 2018.08.22 ~ 2018.09.12
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)

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

2018 . 10 . 01 .

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
DRTFCC1810-0245	Oct. 01, 2018	Initial issue

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1. GENERAL INFORMATION

Applicant Name : LG Electronics USA, Inc.

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

FCC ID : ZNFKX1801

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

EUT Type : Mobile Phone

Model Name : KX1801

Add Model Name : NA

Supplying power : DC 3.85 V

Antenna Information : PIFA Antenna

Mode	TX Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max power (dBm)	Max power (W)
LTE Band 12,17	704 ~ 711	8M96G7D	QPSK	20.39	0.109
LTE Band 12,17	704 ~ 711	8M96W7D	16QAM	19.32	0.086
LTE Band 12,17	704 ~ 711	8M98W7D	64QAM	18.38	0.069
LTE Band 12,17	701.5 ~ 713.5	4M49G7D	QPSK	20.26	0.106
LTE Band 12,17	701.5 ~ 713.5	4M48W7D	16QAM	19.14	0.082
LTE Band 12,17	701.5 ~ 713.5	4M49W7D	64QAM	18.15	0.065
LTE Band 12	700.5 ~ 714.5	2M70G7D	QPSK	20.34	0.108
LTE Band 12	700.5 ~ 714.5	2M69W7D	16QAM	19.27	0.085
LTE Band 12	700.5 ~ 714.5	2M69W7D	64QAM	18.39	0.069
LTE Band 12	699.7 ~ 715.3	1M08G7D	QPSK	20.37	0.109
LTE Band 12	699.7 ~ 715.3	1M08W7D	16QAM	19.33	0.086
LTE Band 12	699.7 ~ 715.3	1M09W7D	64QAM	18.43	0.070

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Mode	TX Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max power(dBm)	Max power(W)
LTE Band 4	1720 ~ 1745	17M9G7D	QPSK	20.14	0.103
LTE Band 4	1720 ~ 1745	17M9W7D	16QAM	19.20	0.083
LTE Band 4	1720 ~ 1745	17M9W7D	64QAM	18.08	0.064
LTE Band 4	1717.5 ~ 1747.5	13M4G7D	QPSK	19.71	0.094
LTE Band 4	1717.5 ~ 1747.5	13M4W7D	16QAM	18.77	0.075
LTE Band 4	1717.5 ~ 1747.5	13M4W7D	64QAM	17.69	0.059
LTE Band 4	1715 ~ 1750	8M97G7D	QPSK	19.78	0.095
LTE Band 4	1715 ~ 1750	8M95W7D	16QAM	18.90	0.078
LTE Band 4	1715 ~ 1750	8M95W7D	64QAM	17.94	0.062
LTE Band 4	1712.5 ~ 1752.5	4M48G7D	QPSK	19.77	0.095
LTE Band 4	1712.5 ~ 1752.5	4M49W7D	16QAM	18.84	0.077
LTE Band 4	1712.5 ~ 1752.5	4M50W7D	64QAM	17.76	0.060
LTE Band 4	1711.5 ~ 1753.5	2M70G7D	QPSK	19.63	0.092
LTE Band 4	1711.5 ~ 1753.5	2M69W7D	16QAM	18.56	0.072
LTE Band 4	1711.5 ~ 1753.5	2M69W7D	64QAM	17.67	0.058
LTE Band 4	1710.7 ~ 1754.3	1M09G7D	QPSK	19.17	0.083
LTE Band 4	1710.7 ~ 1754.3	1M09W7D	16QAM	18.23	0.067
LTE Band 4	1710.7 ~ 1754.3	1M09W7D	64QAM	17.29	0.054
LTE Band 2	1860 ~ 1900	17M9G7D	QPSK	20.99	0.126
LTE Band 2	1860 ~ 1900	17M9W7D	16QAM	19.91	0.098
LTE Band 2	1860 ~ 1900	17M9W7D	64QAM	18.98	0.079
LTE Band 2	1857.5 ~ 1902.5	13M4G7D	QPSK	20.76	0.119
LTE Band 2	1857.5 ~ 1902.5	13M5W7D	16QAM	19.66	0.092
LTE Band 2	1857.5 ~ 1902.5	13M4W7D	64QAM	18.78	0.076
LTE Band 2	1855 ~ 1905	8M96G7D	QPSK	20.96	0.125
LTE Band 2	1855 ~ 1905	8M94W7D	16QAM	20.02	0.100
LTE Band 2	1855 ~ 1905	8M94W7D	64QAM	19.08	0.081
LTE Band 2	1852.5 ~ 1907.5	4M49G7D	QPSK	20.12	0.103
LTE Band 2	1852.5 ~ 1907.5	4M48W7D	16QAM	19.21	0.083
LTE Band 2	1852.5 ~ 1907.5	4M48W7D	64QAM	18.16	0.065
LTE Band 2	1851.5 ~ 1908.5	2M70G7D	QPSK	20.68	0.117
LTE Band 2	1851.5 ~ 1908.5	2M69W7D	16QAM	19.60	0.091
LTE Band 2	1851.5 ~ 1908.5	2M70W7D	64QAM	18.76	0.075
LTE Band 2	1850.7 ~ 1909.3	1M08G7D	QPSK	20.78	0.120
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	16QAM	19.71	0.094
LTE Band 2	1850.7 ~ 1909.3	1M09W7D	64QAM	18.80	0.076

2. INTRODUCTION

2.1 EUT DESCRIPTION

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

2.2 EUT CAPABILITIES

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

2.3 TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+22 ℃ ~ +26 ℃
▪ Relative Humidity	43 % ~ 49 %

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 C63.4-2014. 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)

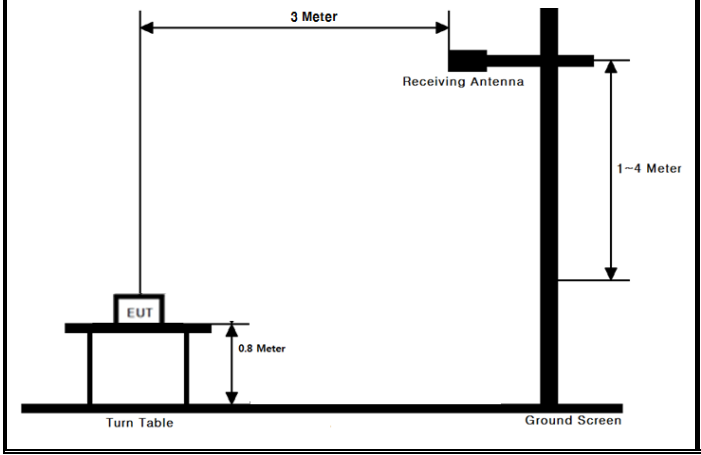
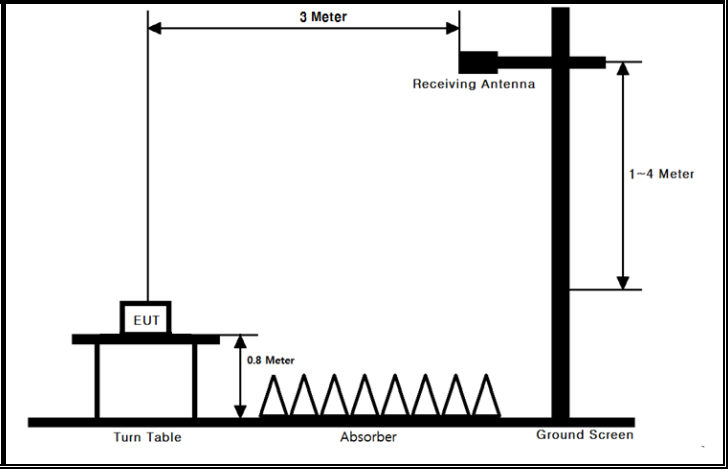
2.6 TEST FACILITY

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 C63.4-2014. **- 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.

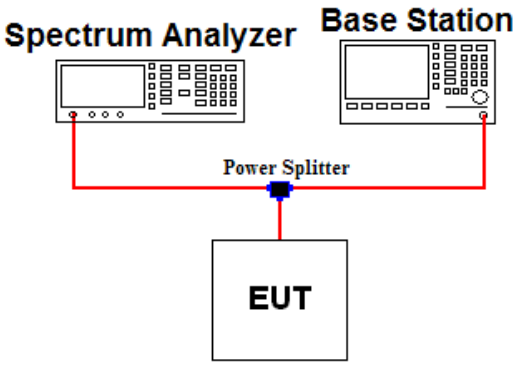
The ERP/EIRP is calculated using the following formula:

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.

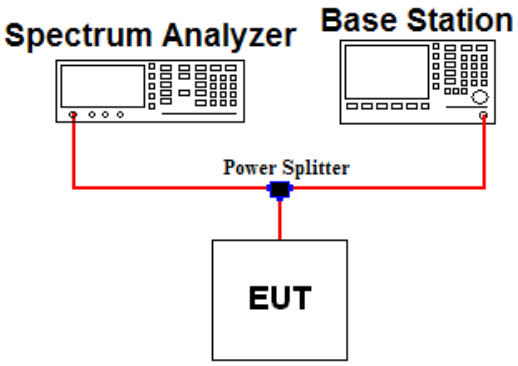
Test setting

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**

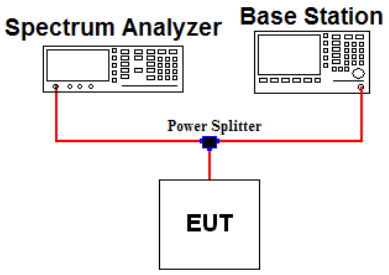
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

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

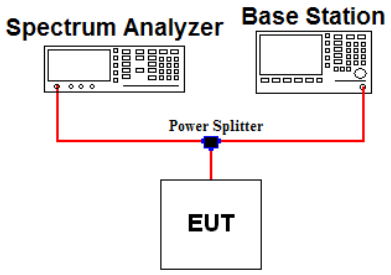
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1 % of the emission bandwidth
4. VBW ≥ 3 X RBW
5. Detector = RMS & Trace mode = Max hold
6. Sweep 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 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.

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 10^{th} harmonic.

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

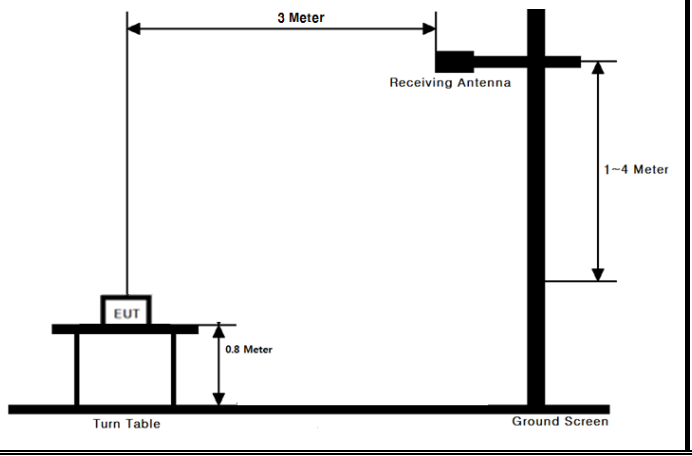
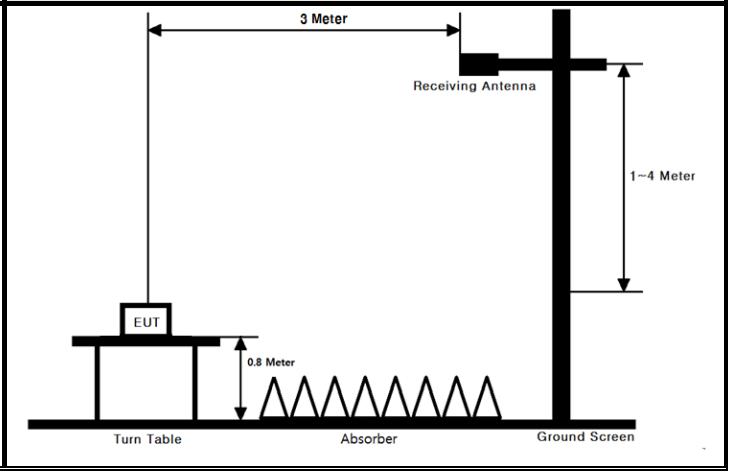
Test setting

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.

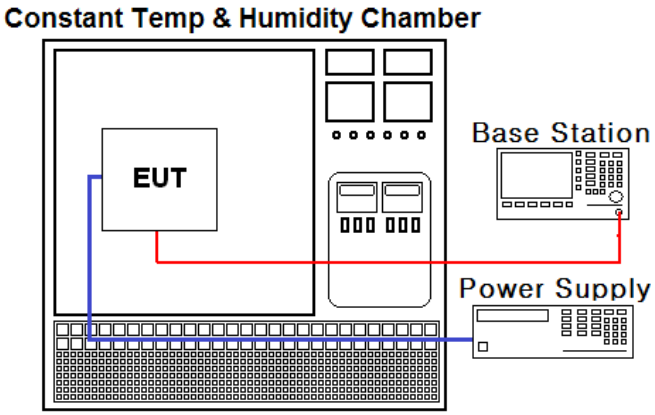
For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

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	MY50410163
Spectrum Analyzer	Agilent Technologies	N9020A	18/07/09	19/07/09	MY46471251
DC power supply	Agilent Technologies	66332A	18/07/02	19/07/02	MY43000394
Multimeter	FLUKE	17B	17/12/26	18/12/26	26030065WS
Power Splitter	Anritsu	K241B	18/07/04	19/07/04	1701099
Radio Communication Analyzer	Anritsu	MT8820C	18/07/03	19/07/03	6200978101
Temp & Humi	SJ Science	SJ-TH-S50	18/07/06	19/07/06	U5542113
Thermohygrometer	BODYCOM	BJ5478	18/01/03	19/01/03	120612-2
Thermohygrometer	BODYCOM	BJ5478	18/01/03	19/01/03	120612-1
Signal Generator	Rohde Schwarz	SMBV100A	17/12/27	18/12/27	255571
Signal Generator	ANRITSU	MG3695C	18/02/12	19/02/12	173501
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
Bilog Antenna	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
Dipole Antenna	Schwarzbeck	VHA9103	17/03/14	19/03/14	2116
Dipole Antenna	Schwarzbeck	VHA9103	18/04/13	20/04/13	2117
Dipole Antenna	Schwarzbeck	UHA9105	17/03/14	19/03/14	2261
Dipole Antenna	Schwarzbeck	UHA9105	18/04/13	20/04/13	2262
HORN ANT	ETS	3117	18/05/10	20/05/10	00140394
HORN ANT	ETS	3117	18/03/26	20/03/26	00152145
HORN ANT	A.H.Systems	SAS-574	17/04/25	19/04/25	154
HORN ANT	A.H.Systems	SAS-574	17/07/31	19/07/31	155
Amplifier	EMPOWER	BBS3Q7ELU	18/07/10	19/07/10	1020
PreAmplifier	TSJ	MLA-010K01-B01-27	18/03/05	19/03/05	1844539
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	Radiall	TESTPRO3	18/07/06	19/07/06	M-01
Cable	DTNC	Cable	18/07/06	19/07/06	M-02
Cable	DTNC	Cable	18/07/06	19/07/06	M-04
Cable	HUBER+SUHNER	SUCOFLEX 104	18/07/06	19/07/06	RF-54
Cable	DTNC	Cable	18/07/10	19/07/10	RF-32
Cable	DTNC	Cable	18/07/04	19/07/04	RF-61

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 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 24.235 27.54	Frequency Stability	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
27.50(d.4)	Radiated Output Power (B4)	< 1 Watts max. EIRP		C
24.232(c)	Radiated Output Power(B2)	< 2 Watts max. EIRP		C
2.1053 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)

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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 = 8.980 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 4(QPSK)

Emission Designator = **17M9G7D**
LTE OBW = 17.907 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 4(16QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.889 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 4(64QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.881 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(QPSK)

Emission Designator = **17M9G7D**
LTE OBW = 17.869 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(16QAM)

Emission Designator = **17M9W7D**
LTE OBW = 17.879 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 2(64QAM)

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

B. For substitution method

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Spectrum Reading Value(dBm)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1720	QPSK	1/0	-25.80	Y	H	-22.43	14.19	5.95	20.14

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

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

7.TEST DATA

7.1 OCCUPIED BANDWIDTH

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

7.2 PEAK TO AVERAGE RATIO

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

7.3 BAND EDEG EMISSIONS (Conducted)

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

7.4 SPURIOUS AND HARMONICS EMISSIONS (Conducted)

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

7.5 ERP & EIRP

7.5.1 LTE Band 12,17

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
10	704	QPSK	1/25	H	18.68	1.28	19.96	0.099
		16QAM	1/25	H	17.60	1.28	18.88	0.077
		64QAM	1/25	H	16.69	1.28	17.97	0.063
	711	QPSK	1/25	H	19.11	1.28	20.39	0.109
		16QAM	1/25	H	18.04	1.28	19.32	0.086
		64QAM	1/25	H	17.10	1.28	18.38	0.069
5	701.5	QPSK	1/12	H	18.44	1.28	19.72	0.094
		16QAM	1/12	H	17.43	1.28	18.71	0.074
		64QAM	1/12	H	16.37	1.28	17.65	0.058
	707.5	QPSK	1/12	H	18.95	1.28	20.23	0.105
		16QAM	1/12	H	17.80	1.28	19.08	0.081
		64QAM	1/12	H	16.87	1.28	18.15	0.065
	713.5	QPSK	1/12	H	18.98	1.28	20.26	0.106
		16QAM	1/12	H	17.86	1.28	19.14	0.082
		64QAM	1/12	H	16.78	1.28	18.06	0.064

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

7.5.2 LTE Band 12

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
3	700.5	QPSK	1/7	H	18.43	1.28	19.71	0.094
		16QAM	1/7	H	17.55	1.28	18.83	0.076
		64QAM	1/7	H	16.47	1.28	17.75	0.060
	707.5	QPSK	1/7	H	19.06	1.28	20.34	0.108
		16QAM	1/7	H	17.99	1.28	19.27	0.085
		64QAM	1/7	H	17.11	1.28	18.39	0.069
	714.5	QPSK	1/7	H	19.03	1.28	20.31	0.107
		16QAM	1/7	H	17.96	1.28	19.24	0.084
		64QAM	1/7	H	16.92	1.28	18.20	0.066
1.4	699.7	QPSK	1/3	H	18.31	1.28	19.59	0.091
		16QAM	1/3	H	17.52	1.28	18.80	0.076
		64QAM	1/3	H	16.49	1.28	17.77	0.060
	707.5	QPSK	1/3	H	19.09	1.28	20.37	0.109
		16QAM	1/3	H	18.05	1.28	19.33	0.086
		64QAM	1/3	H	17.15	1.28	18.43	0.070
	715.3	QPSK	1/3	H	18.84	1.28	20.12	0.103
		16QAM	1/3	H	17.78	1.28	19.06	0.081
		64QAM	1/3	H	16.90	1.28	18.18	0.066

7.5.3 LTE Band 4

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1720	QPSK	1/0	H	14.19	5.95	20.14	0.103
		16QAM	1/0	H	13.25	5.95	19.20	0.083
		64QAM	1/0	H	12.13	5.95	18.08	0.064
	1745	QPSK	1/0	H	13.98	5.84	19.82	0.096
		16QAM	1/0	H	13.05	5.84	18.89	0.077
		64QAM	1/0	H	12.12	5.84	17.96	0.063
	1770	QPSK	1/0	H	13.77	5.73	19.50	0.089
		16QAM	1/0	H	12.72	5.73	18.45	0.070
		64QAM	1/0	H	11.89	5.73	17.62	0.058
15	1717.5	QPSK	1/0	H	13.74	5.97	19.71	0.094
		16QAM	1/0	H	12.80	5.97	18.77	0.075
		64QAM	1/0	H	11.72	5.97	17.69	0.059
	1745	QPSK	1/0	H	13.72	5.84	19.56	0.090
		16QAM	1/0	H	12.80	5.84	18.64	0.073
		64QAM	1/0	H	11.83	5.84	17.67	0.058
	1772.5	QPSK	1/0	H	12.47	5.70	18.17	0.066
		16QAM	1/0	H	11.58	5.70	17.28	0.053
		64QAM	1/0	H	10.63	5.70	16.33	0.043
10	1715	QPSK	1/0	H	13.33	6.00	19.33	0.086
		16QAM	1/0	H	12.47	6.00	18.47	0.070
		64QAM	1/0	H	11.41	6.00	17.41	0.055
	1745	QPSK	1/0	H	13.94	5.84	19.78	0.095
		16QAM	1/0	H	13.06	5.84	18.90	0.078
		64QAM	1/0	H	12.10	5.84	17.94	0.062
	1775	QPSK	1/0	H	12.67	5.68	18.35	0.068
		16QAM	1/0	H	11.58	5.68	17.26	0.053
		64QAM	1/0	H	10.75	5.68	16.43	0.044

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
5	1712.5	QPSK	1/0	H	13.40	6.02	19.42	0.087
		16QAM	1/0	H	12.34	6.02	18.36	0.069
		64QAM	1/0	H	11.44	6.02	17.46	0.056
	1745	QPSK	1/0	H	13.93	5.84	19.77	0.095
		16QAM	1/0	H	13.00	5.84	18.84	0.077
		64QAM	1/0	H	11.92	5.84	17.76	0.060
	1777.5	QPSK	1/0	H	13.36	5.65	19.01	0.080
		16QAM	1/0	H	12.45	5.65	18.10	0.065
		64QAM	1/0	H	11.51	5.65	17.16	0.052
3	1711.5	QPSK	1/0	H	13.09	6.03	19.12	0.082
		16QAM	1/0	H	11.99	6.03	18.02	0.063
		64QAM	1/0	H	11.02	6.03	17.05	0.051
	1745	QPSK	1/0	H	13.79	5.84	19.63	0.092
		16QAM	1/0	H	12.72	5.84	18.56	0.072
		64QAM	1/0	H	11.83	5.84	17.67	0.058
	1778.5	QPSK	1/0	H	12.97	5.63	18.60	0.072
		16QAM	1/0	H	12.12	5.63	17.75	0.060
		64QAM	1/0	H	11.06	5.63	16.69	0.047
1.4	1710.7	QPSK	1/0	H	13.00	6.03	19.03	0.080
		16QAM	1/0	H	11.93	6.03	17.96	0.063
		64QAM	1/0	H	10.99	6.03	17.02	0.050
	1745	QPSK	1/0	H	13.33	5.84	19.17	0.083
		16QAM	1/0	H	12.39	5.84	18.23	0.067
		64QAM	1/0	H	11.45	5.84	17.29	0.054
	1779.3	QPSK	1/0	H	12.46	5.62	18.08	0.064
		16QAM	1/0	H	11.60	5.62	17.22	0.053
		64QAM	1/0	H	10.58	5.62	16.20	0.042

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

7.5.4 LTE Band 2

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1860	QPSK	1/0	V	15.76	4.91	20.67	0.117
		16QAM	1/0	V	14.80	4.91	19.71	0.094
		64QAM	1/0	V	13.92	4.91	18.83	0.076
	1880	QPSK	1/0	V	16.19	4.80	20.99	0.126
		16QAM	1/0	V	15.11	4.80	19.91	0.098
		64QAM	1/0	V	14.18	4.80	18.98	0.079
	1900	QPSK	1/0	V	16.08	4.69	20.77	0.119
		16QAM	1/0	V	15.02	4.69	19.71	0.094
		64QAM	1/0	V	14.10	4.69	18.79	0.076
15	1857.5	QPSK	1/0	V	15.35	4.92	20.27	0.106
		16QAM	1/0	V	14.48	4.92	19.40	0.087
		64QAM	1/0	V	13.57	4.92	18.49	0.071
	1880	QPSK	1/0	V	15.96	4.80	20.76	0.119
		16QAM	1/0	V	14.86	4.80	19.66	0.092
		64QAM	1/0	V	13.98	4.80	18.78	0.076
	1902.5	QPSK	1/0	V	15.83	4.68	20.51	0.112
		16QAM	1/0	V	14.88	4.68	19.56	0.090
		64QAM	1/0	V	13.79	4.68	18.47	0.070
10	1855	QPSK	1/0	V	15.69	4.94	20.63	0.116
		16QAM	1/0	V	14.76	4.94	19.70	0.093
		64QAM	1/0	V	13.83	4.94	18.77	0.075
	1880	QPSK	1/0	V	16.16	4.80	20.96	0.125
		16QAM	1/0	V	15.22	4.80	20.02	0.100
		64QAM	1/0	V	14.28	4.80	19.08	0.081
	1905	QPSK	1/0	V	15.39	4.67	20.06	0.101
		16QAM	1/0	V	14.47	4.67	19.14	0.082
		64QAM	1/0	V	13.58	4.67	18.25	0.067

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
5	1852.5	QPSK	1/0	V	14.87	4.95	19.82	0.096
		16QAM	1/0	V	13.95	4.95	18.90	0.078
		64QAM	1/0	V	13.04	4.95	17.99	0.063
	1880	QPSK	1/0	V	15.32	4.80	20.12	0.103
		16QAM	1/0	V	14.41	4.80	19.21	0.083
		64QAM	1/0	V	13.36	4.80	18.16	0.065
	1907.5	QPSK	1/0	V	15.11	4.65	19.76	0.095
		16QAM	1/0	V	14.09	4.65	18.74	0.075
		64QAM	1/0	V	13.28	4.65	17.93	0.062
3	1851.5	QPSK	1/0	V	14.90	4.95	19.85	0.097
		16QAM	1/0	V	13.99	4.95	18.94	0.078
		64QAM	1/0	V	13.00	4.95	17.95	0.062
	1880	QPSK	1/0	V	15.88	4.80	20.68	0.117
		16QAM	1/0	V	14.80	4.80	19.60	0.091
		64QAM	1/0	V	13.96	4.80	18.76	0.075
	1908.5	QPSK	1/0	V	15.14	4.65	19.79	0.095
		16QAM	1/0	V	14.25	4.65	18.90	0.078
		64QAM	1/0	V	13.37	4.65	18.02	0.063
1.4	1850.7	QPSK	1/0	V	14.54	4.96	19.50	0.089
		16QAM	1/0	V	13.68	4.96	18.64	0.073
		64QAM	1/0	V	12.66	4.96	17.62	0.058
	1880	QPSK	1/0	V	15.25	4.80	20.05	0.101
		16QAM	1/0	V	14.19	4.80	18.99	0.079
		64QAM	1/0	V	13.32	4.80	18.12	0.065
	1909.3	QPSK	1/0	V	16.14	4.64	20.78	0.120
		16QAM	1/0	V	15.07	4.64	19.71	0.094
		64QAM	1/0	V	14.16	4.64	18.80	0.076

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

7.6 UNDESIRABLE EMISSIONS (Radiated)

7.6.1 LTE Band 12,17

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)
								(dBm)	(dBc)	
10	704	1/25	QPSK	2112.37	V	-47.32	3.06	-44.26	64.22	32.96
				-	-	-	-	-	-	
			16QAM	2112.51	V	-49.14	3.06	-46.08	64.96	31.88
				-	-	-	-	-	-	
			64QAM	2112.08	V	-49.60	3.06	-46.54	65.42	30.97
				-	-	-	-	-	-	
	711	1/25	QPSK	2133.17	V	-47.46	3.15	-44.31	64.70	33.39
				-	-	-	-	-	-	
			16QAM	2133.68	V	-48.31	3.15	-45.16	64.48	32.32
				-	-	-	-	-	-	
			64QAM	2133.09	V	-48.67	3.15	-45.52	64.84	31.38
				-	-	-	-	-	-	
5	701.5	1/12	QPSK	2104.77	V	-49.26	3.03	-46.23	65.95	32.72
				-	-	-	-	-	-	
			16QAM	2104.52	V	-49.60	3.03	-46.57	65.28	31.71
				-	-	-	-	-	-	
			64QAM	2104.74	V	-49.30	3.03	-46.27	64.98	30.65
				-	-	-	-	-	-	
	707.5	1/12	QPSK	2122.50	V	-49.37	3.10	-46.27	66.50	33.23
				-	-	-	-	-	-	
			16QAM	2122.36	V	-50.28	3.10	-47.18	66.26	32.08
				-	-	-	-	-	-	
			64QAM	2122.71	V	-49.21	3.11	-46.10	65.18	31.15
				-	-	-	-	-	-	
	713.5	1/12	QPSK	2140.33	V	-48.69	3.18	-45.51	65.77	33.26
				-	-	-	-	-	-	
			16QAM	2140.55	V	-49.93	3.18	-46.75	65.89	32.14
				-	-	-	-	-	-	
			64QAM	2140.53	V	-49.27	3.18	-46.09	65.23	31.06
				-	-	-	-	-	-	

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

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

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

7.6.2 LTE Band 12

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBd)	Result		Limit (dBc)
								(dBm)	(dBc)	
3	700.5	1/7	QPSK	2101.54	V	-49.97	3.02	-46.95	66.66	32.71
				-	-	-	-	-	-	
			16QAM	2101.16	V	-50.38	3.01	-47.37	66.20	31.83
				-	-	-	-	-	-	
			64QAM	2101.69	V	-49.98	3.02	-46.96	65.79	30.75
				-	-	-	-	-	-	
	707.5	1/7	QPSK	2122.92	V	-49.49	3.11	-46.38	66.72	33.34
				-	-	-	-	-	-	
			16QAM	2122.41	V	-48.84	3.10	-45.74	65.01	32.27
				-	-	-	-	-	-	
			64QAM	2122.51	V	-49.19	3.10	-46.09	65.36	31.39
				-	-	-	-	-	-	
	714.5	1/7	QPSK	2143.35	V	-49.22	3.19	-46.03	66.34	33.31
				-	-	-	-	-	-	
			16QAM	2143.57	V	-49.79	3.19	-46.60	65.84	32.24
				-	-	-	-	-	-	
			64QAM	2143.54	V	-49.39	3.19	-46.20	65.44	31.20
				-	-	-	-	-	-	
1.4	699.7	1/3	QPSK	2099.11	V	-49.19	3.01	-46.18	65.77	32.59
				-	-	-	-	-	-	
			16QAM	2099.16	V	-50.37	3.01	-47.36	66.16	31.80
				-	-	-	-	-	-	
			64QAM	2099.39	V	-50.64	3.01	-47.63	66.43	30.77
				-	-	-	-	-	-	
	707.5	1/3	QPSK	2122.82	V	-48.07	3.11	-44.96	65.33	33.37
				-	-	-	-	-	-	
			16QAM	2122.88	V	-47.28	3.11	-44.17	63.50	32.33
				-	-	-	-	-	-	
			64QAM	2122.90	V	-49.47	3.11	-46.36	65.69	31.43
				-	-	-	-	-	-	
	715.3	1/3	QPSK	2146.18	V	-47.87	3.20	-44.67	64.79	33.12
				-	-	-	-	-	-	
			16QAM	2145.86	V	-48.29	3.20	-45.09	64.15	32.06
				-	-	-	-	-	-	
			64QAM	2146.11	V	-48.03	3.20	-44.83	63.89	31.18
				-	-	-	-	-	-	

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

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

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

7.6.3 LTE Band 4

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
								(dBm)	(dBc)	
20	1720	1/0	QPSK	3421.86	V	-53.68	8.01	-45.67	65.81	33.14
			16QAM	3419.41	V	-53.67	8.00	-45.67	64.87	32.20
			64QAM	3421.94	V	-53.45	8.01	-45.44	64.64	31.08
	1745	1/0	QPSK	3444.52	V	-53.26	8.07	-45.19	65.01	32.82
			16QAM	3445.23	V	-53.35	8.07	-45.28	64.17	31.89
			64QAM	3445.52	V	-52.91	8.07	-44.84	63.73	30.96
	1770	1/0	QPSK	3469.09	V	-53.35	8.13	-45.22	64.72	32.50
			16QAM	3471.45	V	-53.14	8.13	-45.01	63.46	31.45
			64QAM	3469.40	V	-53.31	8.13	-45.18	63.63	30.62
15	1717.5	1/0	QPSK	3421.75	V	-53.18	8.01	-45.17	64.88	32.71
			16QAM	3420.21	V	-52.99	8.00	-44.99	63.76	31.77
			64QAM	3419.47	V	-53.30	8.00	-45.30	64.07	30.69
	1745	1/0	QPSK	3451.97	V	-53.33	8.08	-45.25	64.81	32.56
			16QAM	3451.23	V	-53.42	8.08	-45.34	63.98	31.64
			64QAM	3449.51	V	-52.95	8.08	-44.87	63.51	30.67
	1772.5	1/0	QPSK	3481.65	V	-53.82	8.16	-45.66	63.83	31.17
			16QAM	3478.85	V	-53.47	8.15	-45.32	62.60	30.28
			64QAM	3482.48	V	-53.43	8.16	-45.27	62.55	29.33
10	1715	1/0	QPSK	3419.35	V	-52.96	8.00	-44.96	64.29	32.33
			16QAM	3418.19	V	-53.12	8.00	-45.12	63.59	31.47
			64QAM	3418.58	V	-53.25	8.00	-45.25	63.72	30.41
	1745	1/0	QPSK	3454.51	V	-53.72	8.09	-45.63	65.41	32.78
			16QAM	3453.94	V	-53.09	8.09	-45.00	63.90	31.90
			64QAM	3456.44	V	-53.02	8.10	-44.92	63.82	30.94
	1775	1/0	QPSK	3490.62	V	-53.27	8.18	-45.09	63.44	31.35
			16QAM	3488.66	V	-53.57	8.17	-45.40	62.66	30.26
			64QAM	3489.35	V	-53.45	8.17	-45.28	62.54	29.43
5	1712.5	1/0	QPSK	3417.96	V	-52.93	8.00	-44.93	64.35	32.42
			16QAM	3420.48	V	-53.37	8.00	-45.37	63.73	31.36
			64QAM	3419.40	V	-53.33	8.00	-45.33	63.69	30.46
	1745	1/0	QPSK	3459.15	V	-52.92	8.10	-44.82	64.59	32.77
			16QAM	3459.18	V	-53.39	8.10	-45.29	64.13	31.84
			64QAM	3462.32	V	-53.53	8.11	-45.42	64.26	30.76
	1777.5	1/0	QPSK	3502.39	V	-53.51	8.21	-45.30	64.31	32.01
			16QAM	3501.96	V	-53.30	8.20	-45.10	63.20	31.10
			64QAM	3497.85	V	-53.34	8.19	-45.15	63.25	30.16

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
								(dBm)	(dBc)	
3	1711.5	1/0	QPSK	3419.71	V	-53.40	8.00	-45.40	64.52	32.12
			16QAM	3421.66	V	-53.01	8.01	-45.00	63.02	31.02
			64QAM	3419.06	V	-52.89	8.00	-44.89	62.91	30.05
	1745	1/7	QPSK	3460.03	V	-53.74	8.10	-45.64	65.27	32.63
			16QAM	3461.39	V	-53.61	8.11	-45.50	64.06	31.56
			64QAM	3460.48	V	-53.39	8.11	-45.28	63.84	30.67
	1778.5	1/0	QPSK	3501.54	V	-53.74	8.20	-45.54	64.14	31.60
			16QAM	3502.24	V	-53.07	8.21	-44.86	62.61	30.75
			64QAM	3502.07	V	-53.15	8.20	-44.95	62.70	29.69
1.4	1710.7	1/0	QPSK	3418.19	V	-53.60	8.00	-45.60	64.63	32.03
			16QAM	3420.38	V	-53.24	8.00	-45.24	63.20	30.96
			64QAM	3421.74	V	-52.97	8.01	-44.96	62.92	30.02
	1745	1/0	QPSK	3463.99	V	-53.53	8.11	-45.42	64.59	32.17
			16QAM	3464.05	V	-52.96	8.11	-44.85	63.08	31.23
			64QAM	3462.90	V	-53.22	8.11	-45.11	63.34	30.29
	1779.3	1/0	QPSK	3505.30	V	-53.23	8.21	-45.02	63.10	31.08
			16QAM	3506.11	V	-53.54	8.21	-45.33	62.55	30.22
			64QAM	3508.36	V	-53.18	8.22	-44.96	62.18	29.20

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

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

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

7.6.4 LTE Band 2

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
								(dBm)	(dBc)	
20	1860	1/0	QPSK	3698.18	V	-54.23	8.38	-45.85	66.52	33.67
			16QAM	3701.38	V	-53.77	8.38	-45.39	65.10	32.71
			64QAM	3702.47	V	-53.91	8.38	-45.53	65.24	31.83
	1880	1/0	QPSK	3740.19	V	-53.83	8.40	-45.43	66.42	33.99
			16QAM	3740.89	V	-53.58	8.40	-45.18	65.09	32.91
			64QAM	3739.56	V	-53.64	8.40	-45.24	65.15	31.98
	1900	1/0	QPSK	3781.78	V	-54.09	8.29	-45.80	66.57	33.77
			16QAM	3779.73	V	-53.85	8.29	-45.56	65.27	32.71
			64QAM	3777.89	V	-53.64	8.30	-45.34	65.05	31.79
15	1857.5	1/0	QPSK	3697.79	V	-54.03	8.38	-45.65	65.92	33.27
			16QAM	3701.84	V	-54.37	8.38	-45.99	65.39	32.40
			64QAM	3701.51	V	-53.75	8.38	-45.37	64.77	31.49
	1880	1/0	QPSK	3742.51	V	-53.96	8.40	-45.56	66.32	33.76
			16QAM	3743.45	V	-54.00	8.40	-45.60	65.26	32.66
			64QAM	3743.04	V	-53.60	8.40	-45.20	64.86	31.78
	1902.5	1/0	QPSK	3788.86	V	-54.11	8.26	-45.85	66.36	33.51
			16QAM	3790.31	V	-54.04	8.25	-45.79	65.35	32.56
			64QAM	3791.32	V	-53.97	8.25	-45.72	65.28	31.47
10	1855	1/0	QPSK	3699.56	V	-54.02	8.38	-45.64	66.27	33.63
			16QAM	3698.23	V	-54.28	8.38	-45.90	65.60	32.70
			64QAM	3698.16	V	-53.84	8.38	-45.46	65.16	31.77
	1880	1/0	QPSK	3749.57	V	-54.07	8.40	-45.67	66.63	33.96
			16QAM	3750.08	V	-53.45	8.40	-45.05	65.07	33.02
			64QAM	3748.79	V	-54.07	8.40	-45.67	65.69	32.08
	1905	1/0	QPSK	3800.48	V	-53.99	8.22	-45.77	65.83	33.06
			16QAM	3800.87	V	-53.84	8.22	-45.62	64.76	32.14
			64QAM	3798.84	V	-53.46	8.22	-45.24	64.38	31.25
5	1852.5	1/0	QPSK	3699.34	V	-53.77	8.38	-45.39	65.21	32.82
			16QAM	3700.43	V	-53.71	8.38	-45.33	64.23	31.90
			64QAM	3700.28	V	-53.77	8.38	-45.39	64.29	30.99
	1880	1/0	QPSK	3756.26	V	-53.97	8.38	-45.59	65.71	33.12
			16QAM	3756.53	V	-54.10	8.38	-45.72	64.93	32.21
			64QAM	3755.06	V	-53.53	8.38	-45.15	64.36	31.16
	1907.5	1/0	QPSK	3808.81	V	-53.67	8.22	-45.45	65.21	32.76
			16QAM	3808.33	V	-53.95	8.22	-45.73	64.47	31.74
			64QAM	3808.55	V	-53.84	8.22	-45.62	64.36	30.93

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
								(dBm)	(dBc)	
3	1851.5	1/0	QPSK	3700.22	V	-53.81	8.38	-45.43	65.28	32.85
			16QAM	3701.57	V	-54.07	8.38	-45.69	64.63	31.94
			64QAM	3700.78	V	-53.75	8.38	-45.37	64.31	30.95
	1880	1/0	QPSK	3757.82	V	-53.54	8.37	-45.17	65.85	33.68
			16QAM	3756.16	V	-53.41	8.38	-45.03	64.63	32.60
			64QAM	3758.01	V	-53.91	8.37	-45.54	65.14	31.76
	1908.5	1/0	QPSK	3814.80	V	-53.89	8.22	-45.67	65.46	32.79
			16QAM	3816.08	V	-53.32	8.22	-45.10	64.00	31.90
			64QAM	3814.30	V	-53.54	8.22	-45.32	64.22	31.02
1.4	1850.7	1/0	QPSK	3700.40	V	-53.94	8.38	-45.56	65.06	32.50
			16QAM	3698.36	V	-53.95	8.38	-45.57	64.21	31.64
			64QAM	3701.02	V	-53.84	8.38	-45.46	64.10	30.62
	1880	1/0	QPSK	3760.44	V	-53.65	8.36	-45.29	65.34	33.05
			16QAM	3760.76	V	-53.42	8.36	-45.06	64.05	31.99
			64QAM	3756.14	V	-53.91	8.38	-45.53	64.52	31.12
	1909.3	1/0	QPSK	3819.03	V	-53.91	8.22	-45.69	66.47	33.78
			16QAM	3817.16	V	-53.73	8.22	-45.51	65.22	32.71
			64QAM	3818.90	V	-53.74	8.22	-45.52	65.23	31.80

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

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

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

7.7 FREQUENCY STABILITY

7.7.1 LTE Band 12, 17

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

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	707,500,007	7	0.0099	0.000000989
100%		-30	707,500,010	10	0.0141	0.000001413
100%		-20	707,499,992	-8	-0.0113	-0.000001131
100%		-10	707,499,991	-9	-0.0127	-0.000001272
100%		0	707,500,010	10	0.0141	0.000001413
100%		+10	707,500,008	8	0.0113	0.000001131
100%		+20	707,500,007	7	0.0099	0.000000989
100%		+30	707,500,005	5	0.0071	0.000000707
100%		+40	707,500,007	7	0.0099	0.000000989
100%		+50	707,500,005	5	0.0071	0.000000707
115%	4.43	+20	707,500,008	8	0.0113	0.000001131
BATT.ENDPOINT	3.60	+20	707,500,010	10	0.0141	0.000001413

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

7.7.2 LTE Band 4

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

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	1,732,500,008	8	0.0046	0.000000462
100%		-30	1,732,499,989	-11	-0.0063	-0.000000635
100%		-20	1,732,500,008	8	0.0046	0.000000462
100%		-10	1,732,500,010	10	0.0058	0.000000577
100%		0	1,732,500,009	9	0.0052	0.000000519
100%		+10	1,732,500,006	6	0.0035	0.000000346
100%		+20	1,732,500,008	8	0.0046	0.000000462
100%		+30	1,732,499,992	-8	-0.0046	-0.000000462
100%		+40	1,732,500,009	9	0.0052	0.000000519
100%		+50	1,732,500,007	7	0.0040	0.000000404
115%	4.43	+20	1,732,500,007	7	0.0040	0.000000404
BATT.ENDPOINT	3.60	+20	1,732,500,010	10	0.0058	0.000000577

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

7.7.3 LTE Band 2

OPERATING FREQUENCY : 1880 MHz
REFERENCE VOLTAGE 3.85 VDC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	3.85	+20(Ref)	1,880,000,010	10	0.0053	0.000000532
100%		-30	1,879,999,992	-8	-0.0043	-0.000000426
100%		-20	1,879,999,993	-7	-0.0037	-0.000000372
100%		-10	1,880,000,008	8	0.0043	0.000000426
100%		0	1,880,000,011	11	0.0059	0.000000585
100%		+10	1,880,000,008	8	0.0043	0.000000426
100%		+20	1,880,000,010	10	0.0053	0.000000532
100%		+30	1,880,000,008	8	0.0043	0.000000426
100%		+40	1,880,000,011	11	0.0059	0.000000585
100%		+50	1,880,000,007	7	0.0037	0.000000372
115%	4.43	+20	1,880,000,008	8	0.0043	0.000000426
BATT.ENDPOINT	3.60	+20	1,880,000,011	11	0.0059	0.000000585

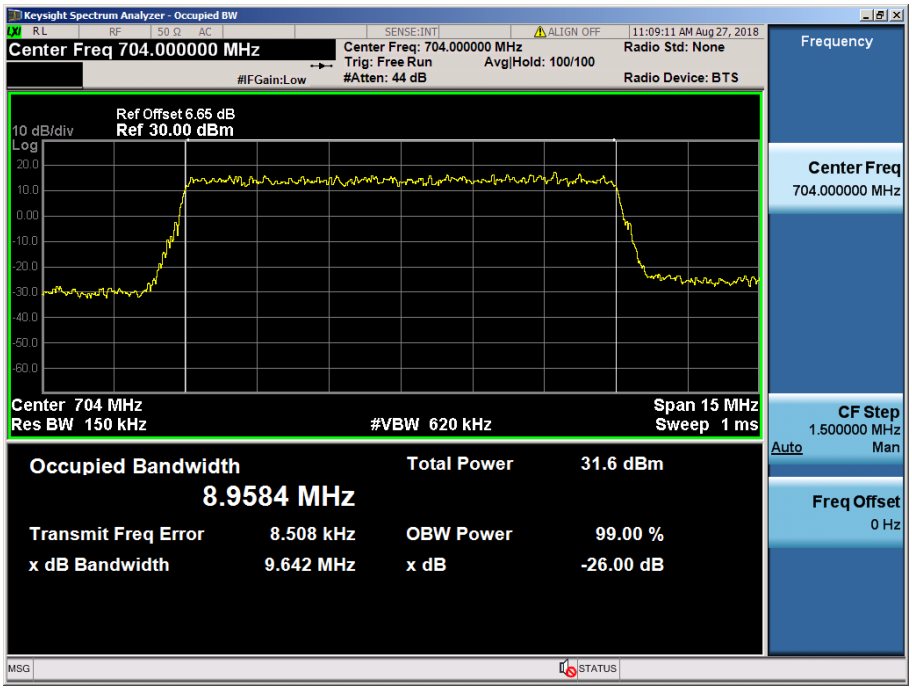
Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability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

8. TEST PLOTS

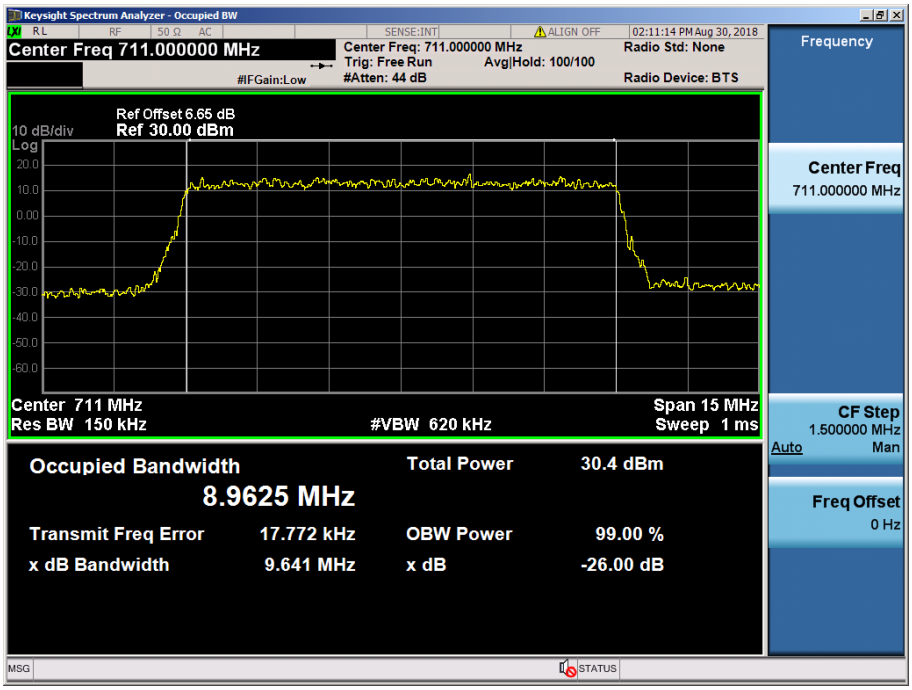
Note: All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported.

8.1 OCCUPIED BANDWIDTH

8.1.1 LTE Band 12,17



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



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

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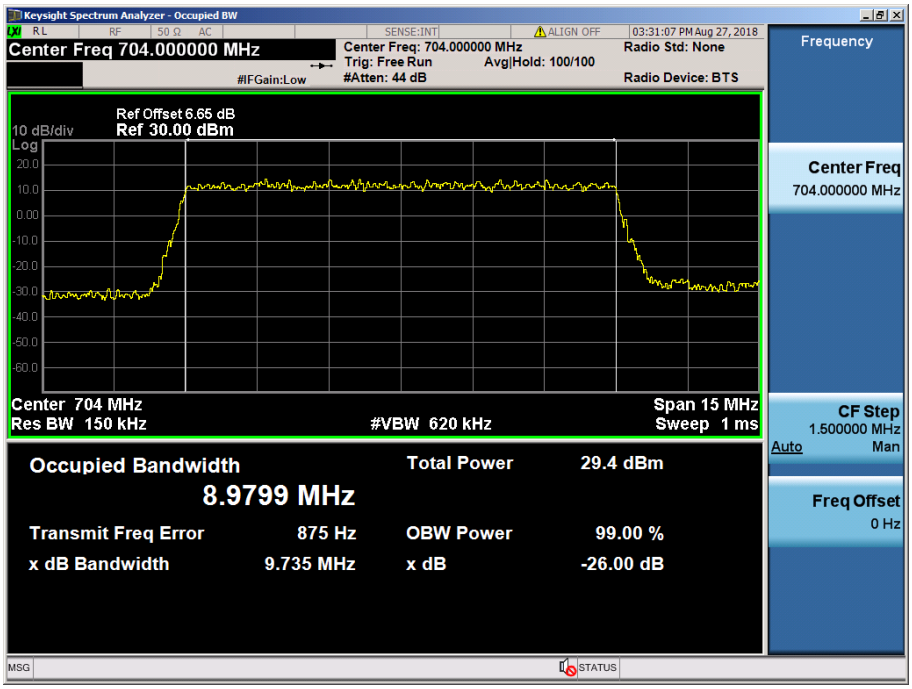
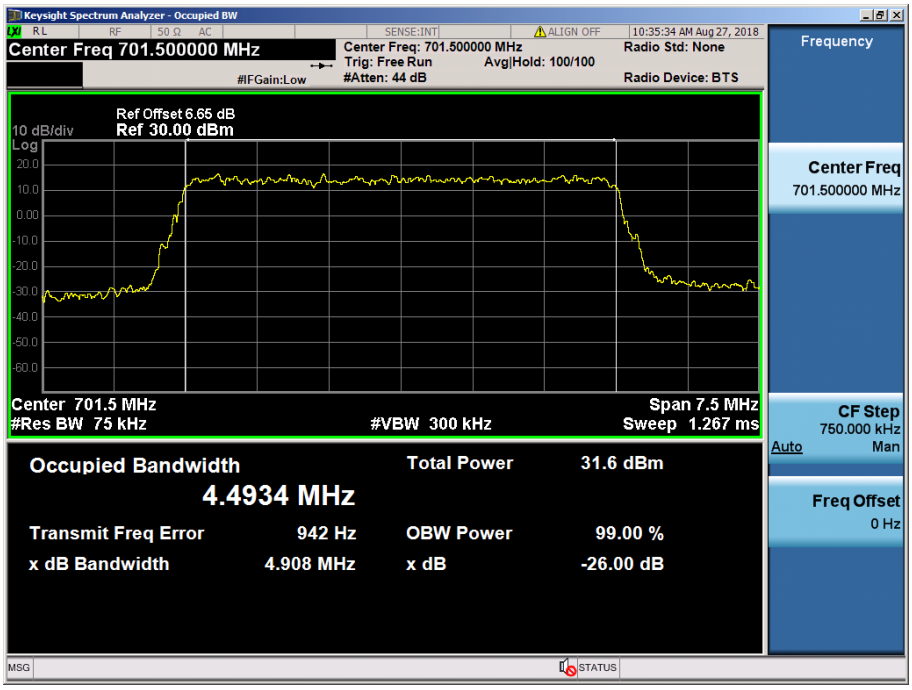
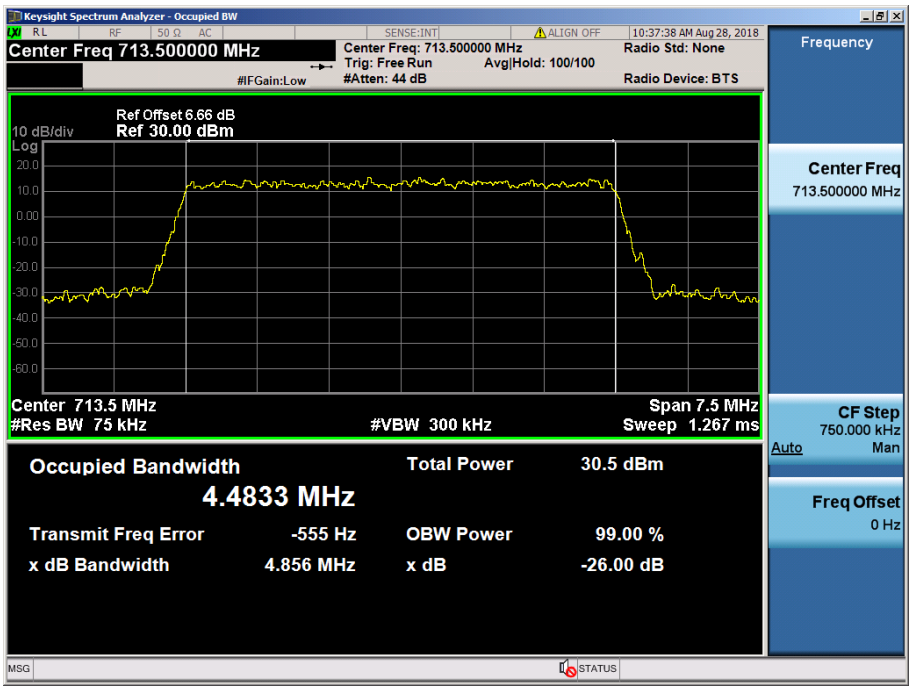


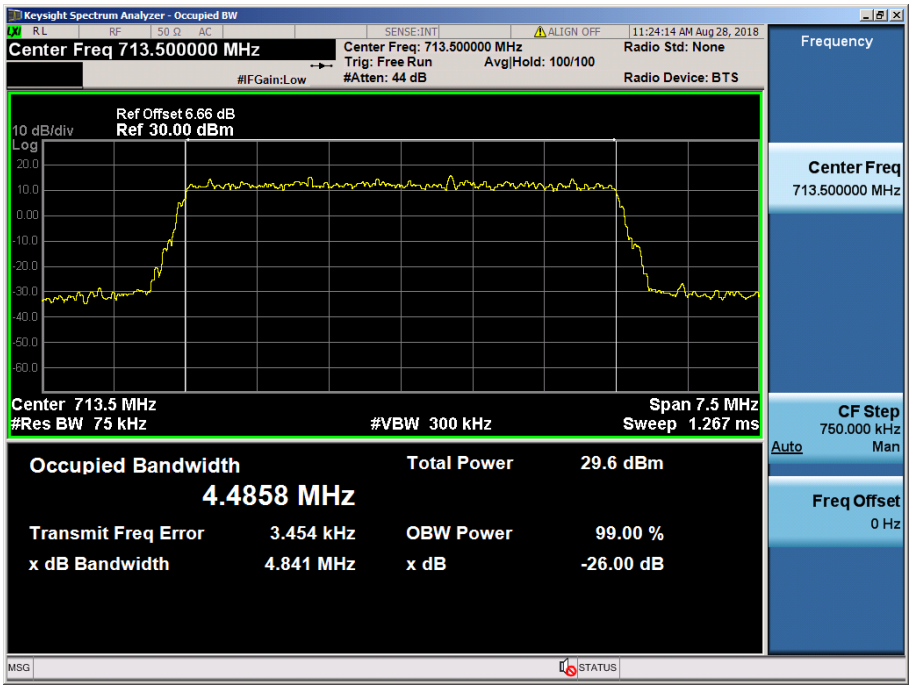
LTE Band 12,17 / 10 MHz / 64QAM- RB Size 50



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

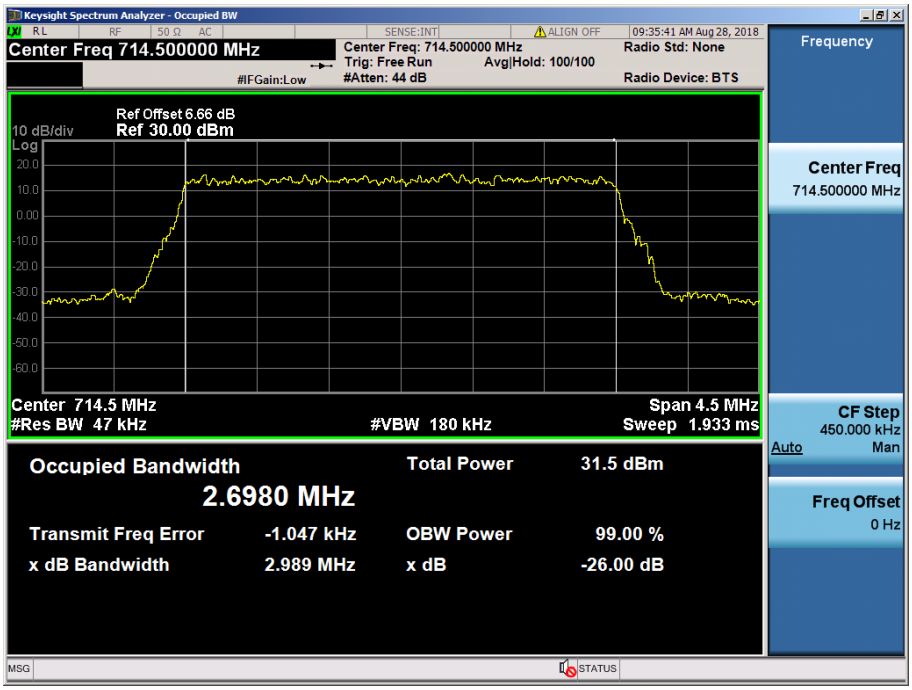


LTE Band 12,17 / 5 MHz / 16QAM - RB Size 25

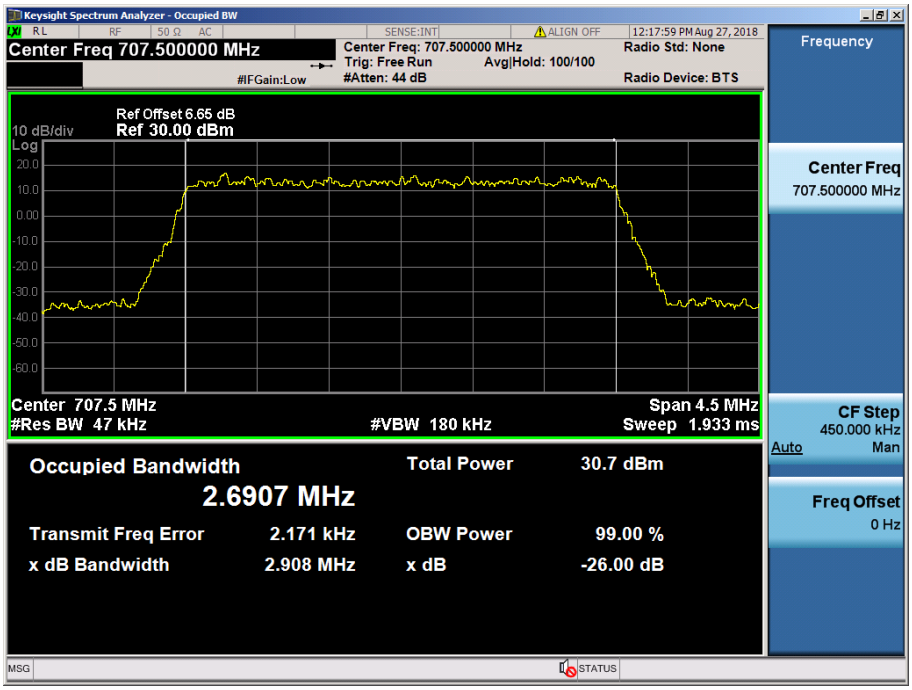


LTE Band 12,17 / 5 MHz / 64QAM - RB Size 25

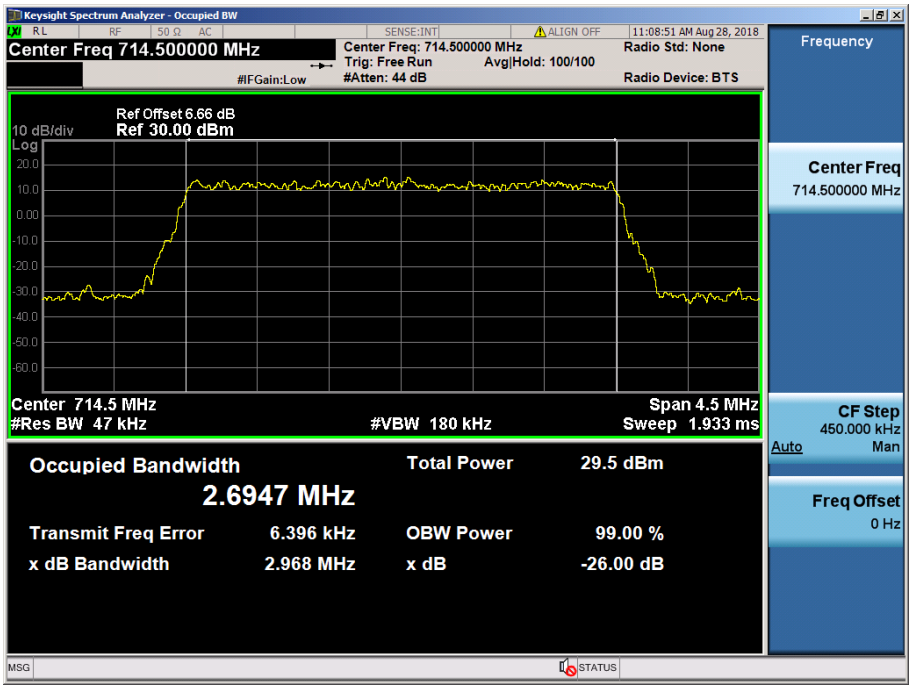
8.1.2 LTE Band 12



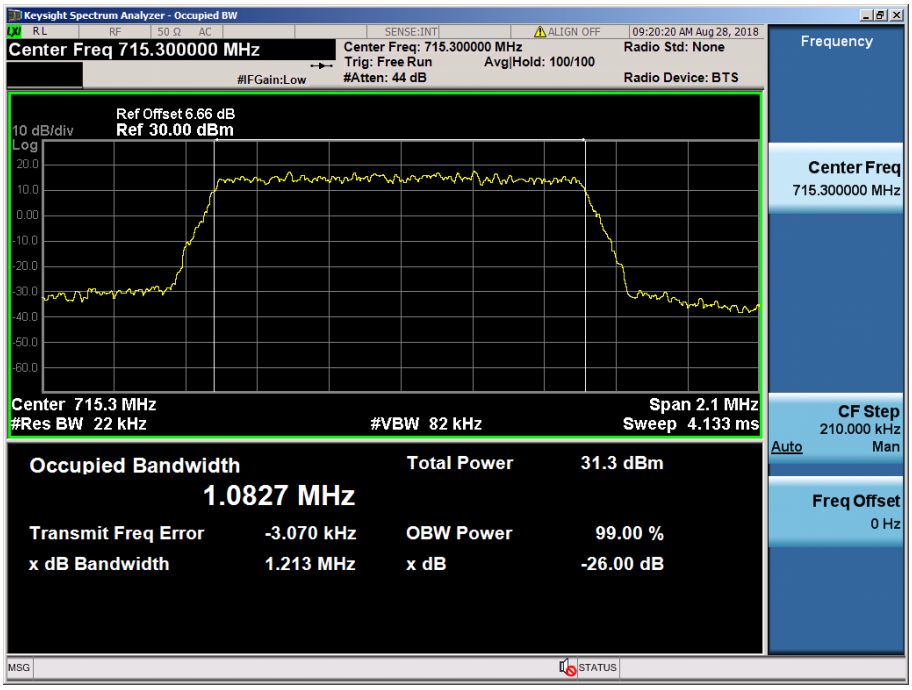
LTE Band 12 / 3 MHz / QPSK - RB Size 15



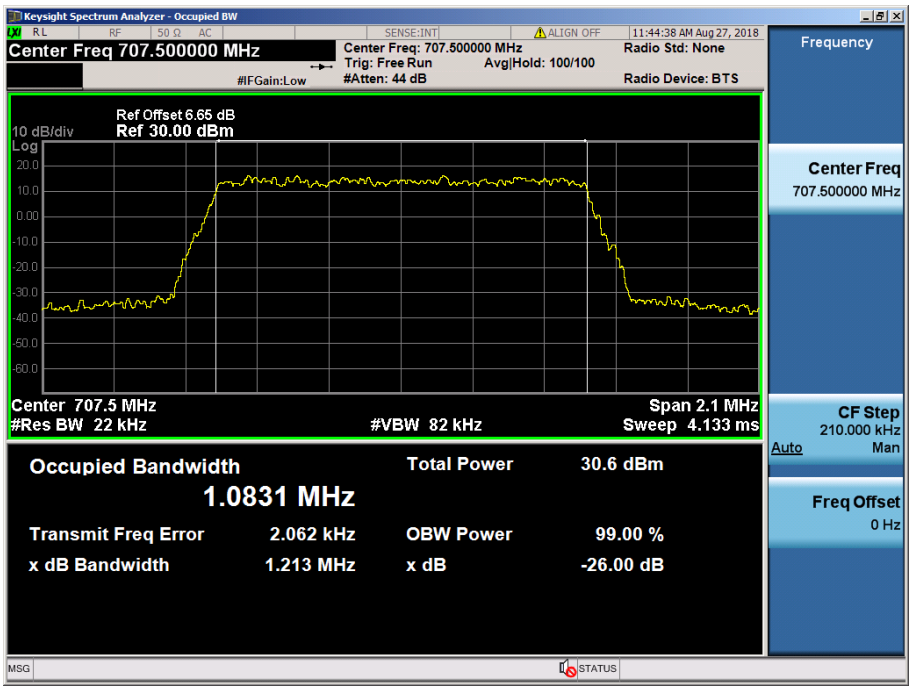
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



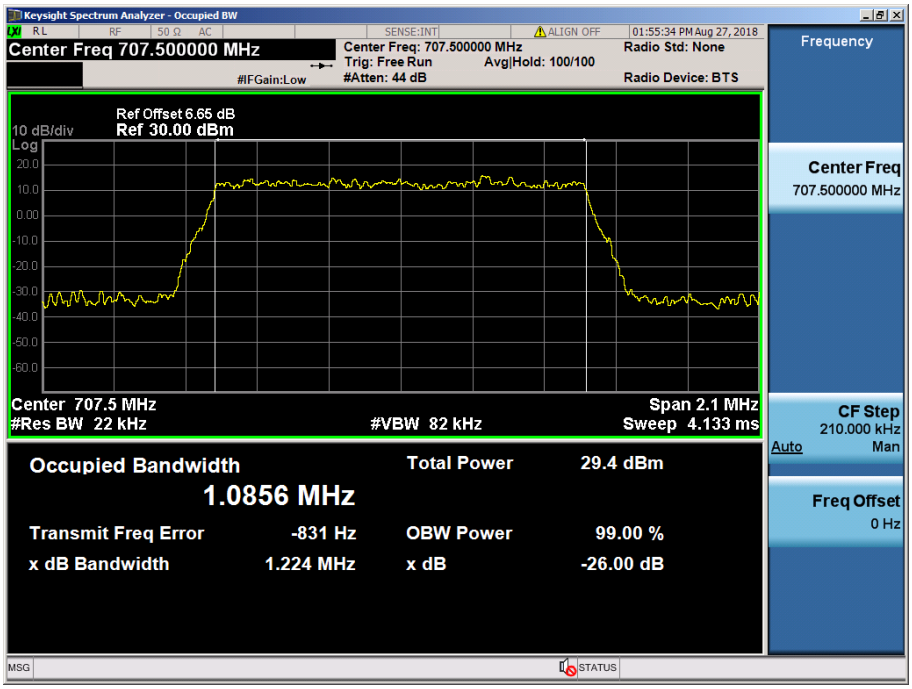
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



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

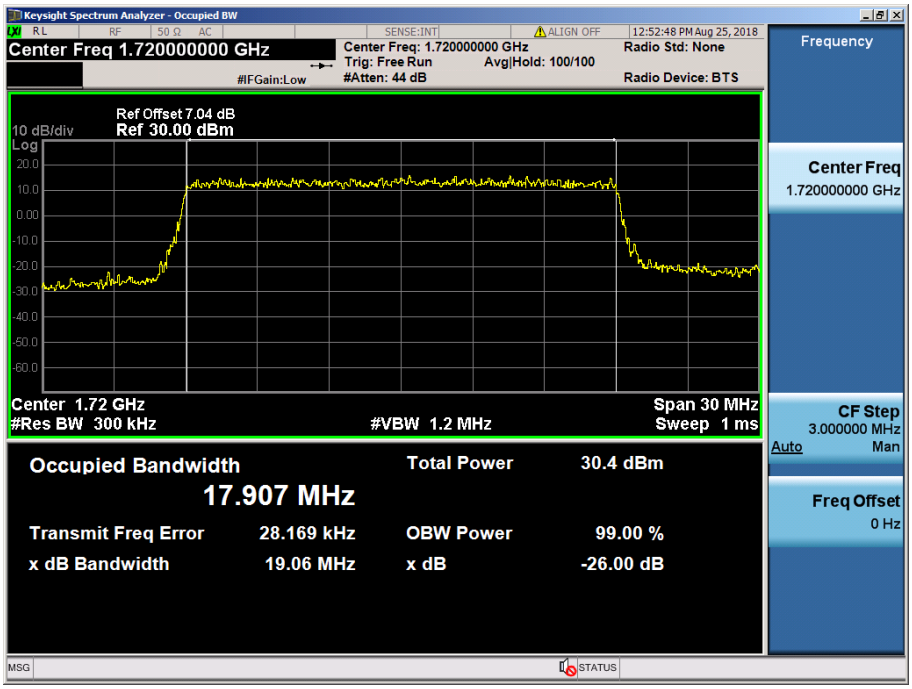


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

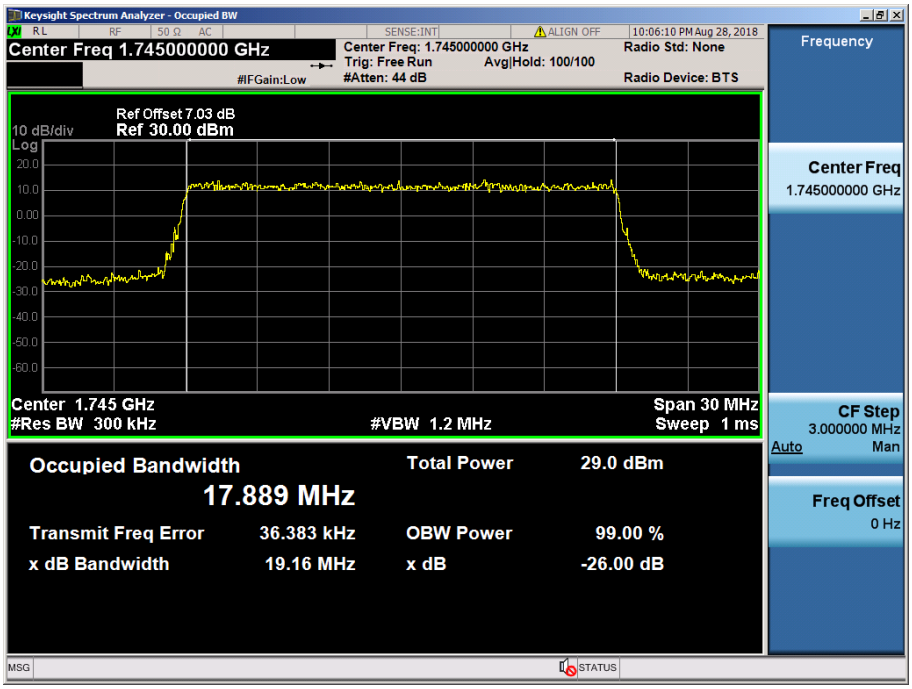


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

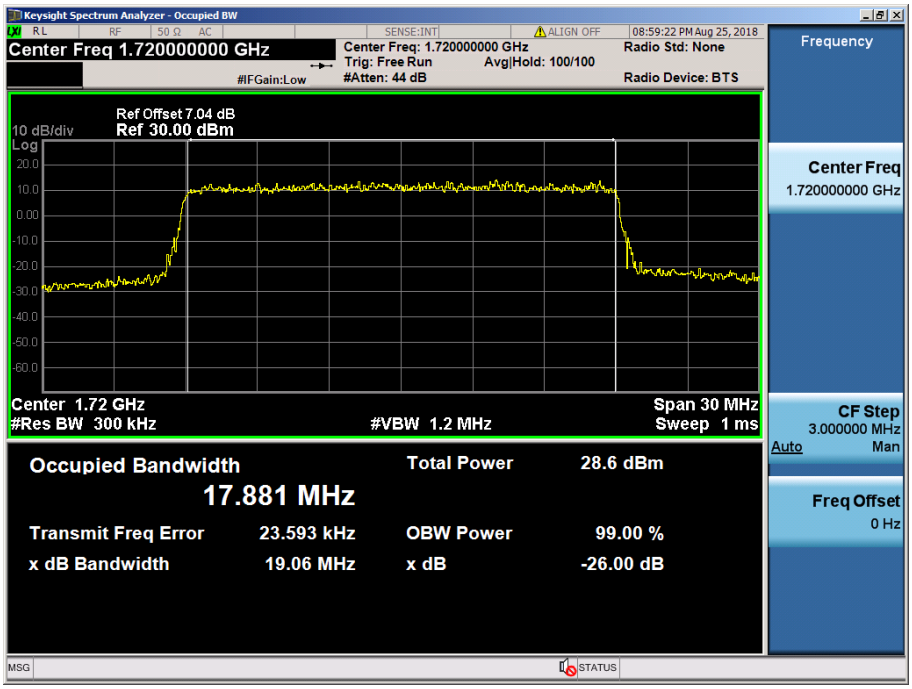
8.1.3 LTE Band 4



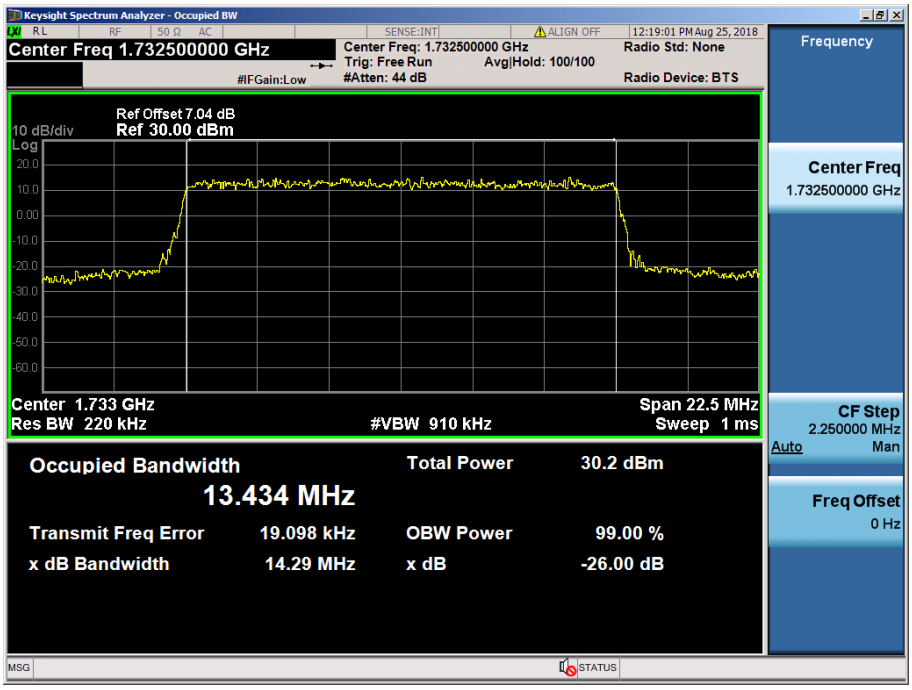
LTE Band 4 / 20 MHz / QPSK - RB Size 100



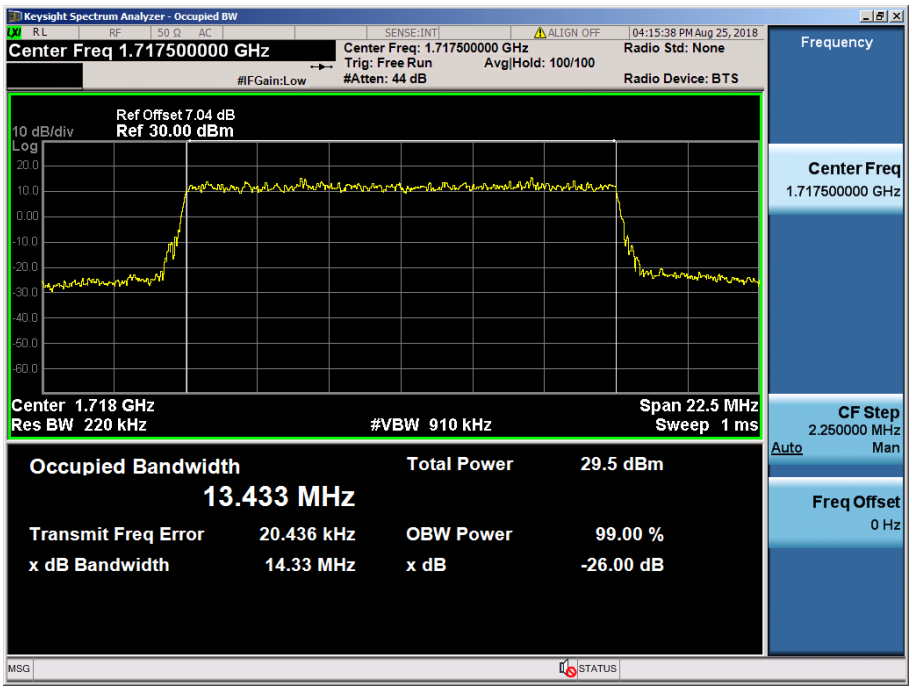
LTE Band 4 / 20 MHz / 16QAM - RB Size 100



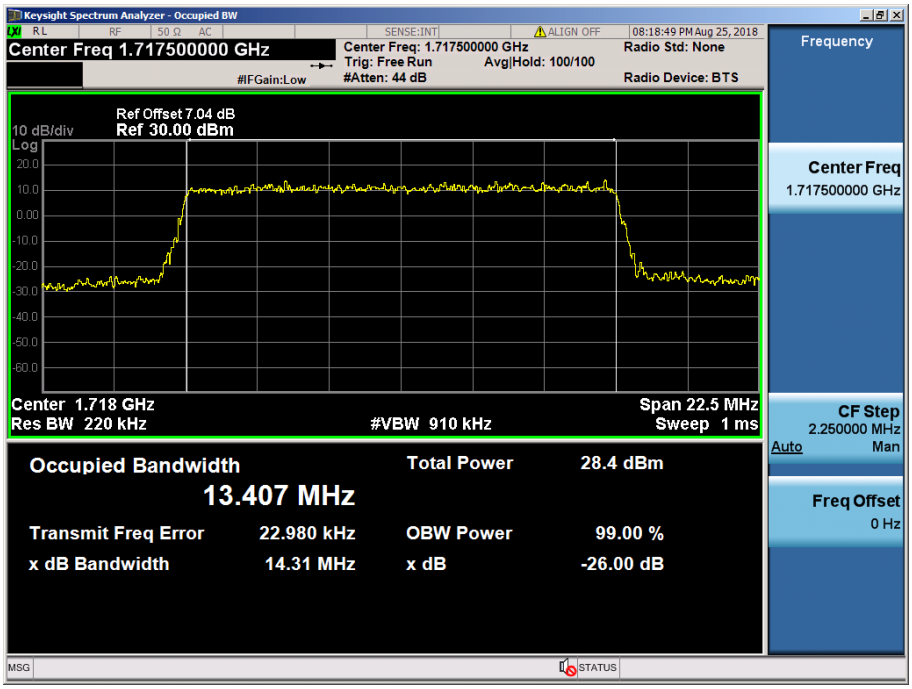
LTE Band 4 / 20 MHz / 64QAM - RB Size 100



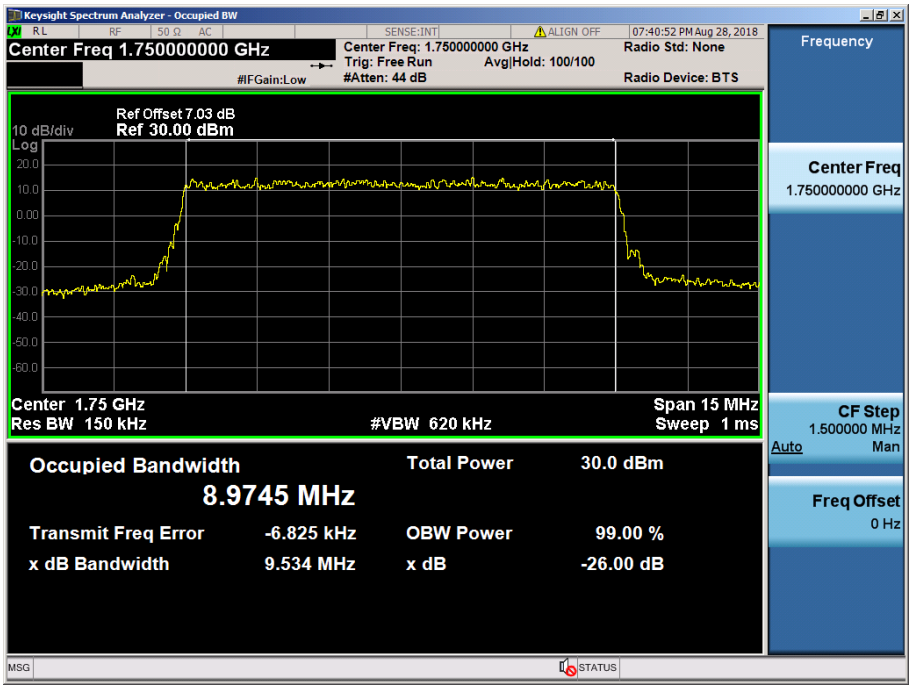
LTE Band 4 / 15 MHz / QPSK - RB Size 75



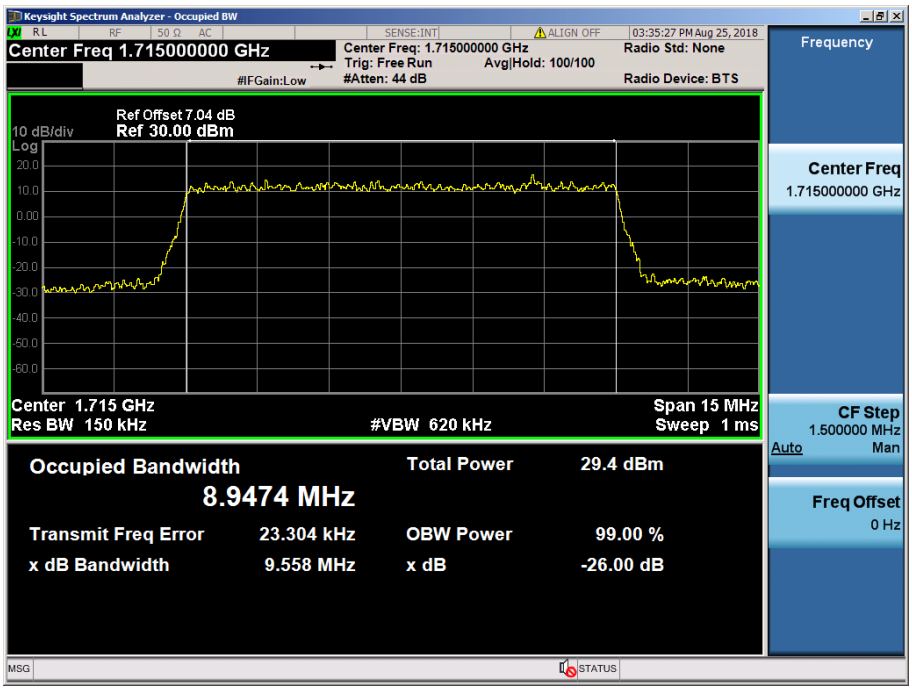
LTE Band 4 / 15 MHz / 16QAM - RB Size 75



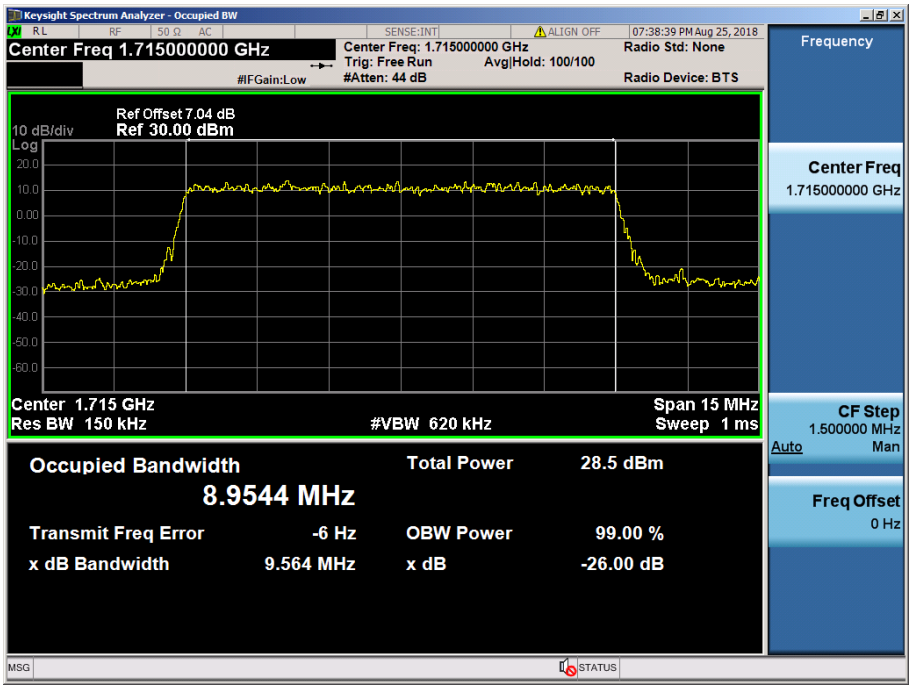
LTE Band 4 / 15 MHz / 64QAM - RB Size 75



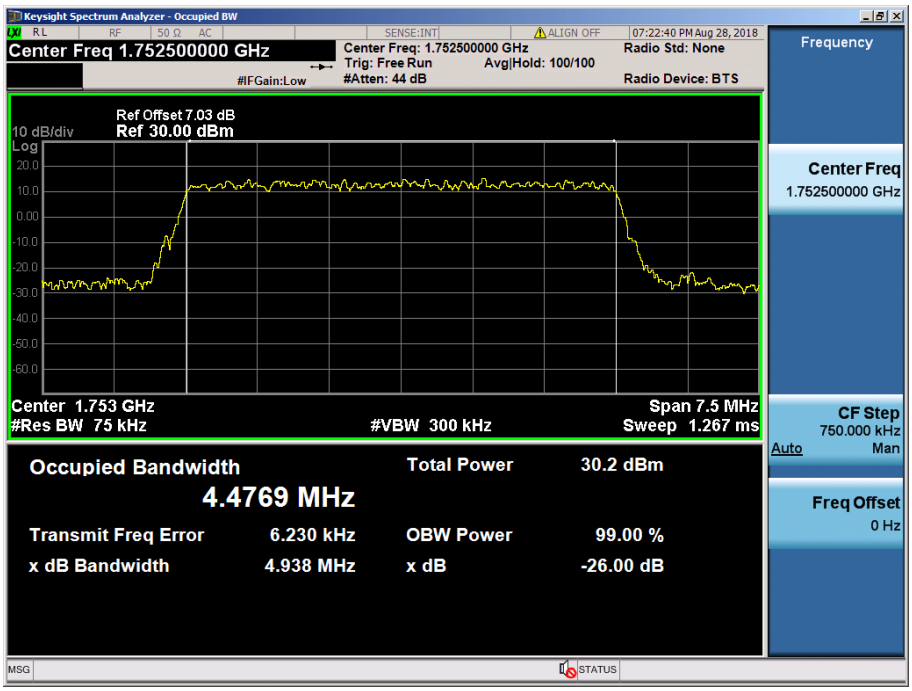
LTE Band 4 / 10 MHz / QPSK - RB Size 50



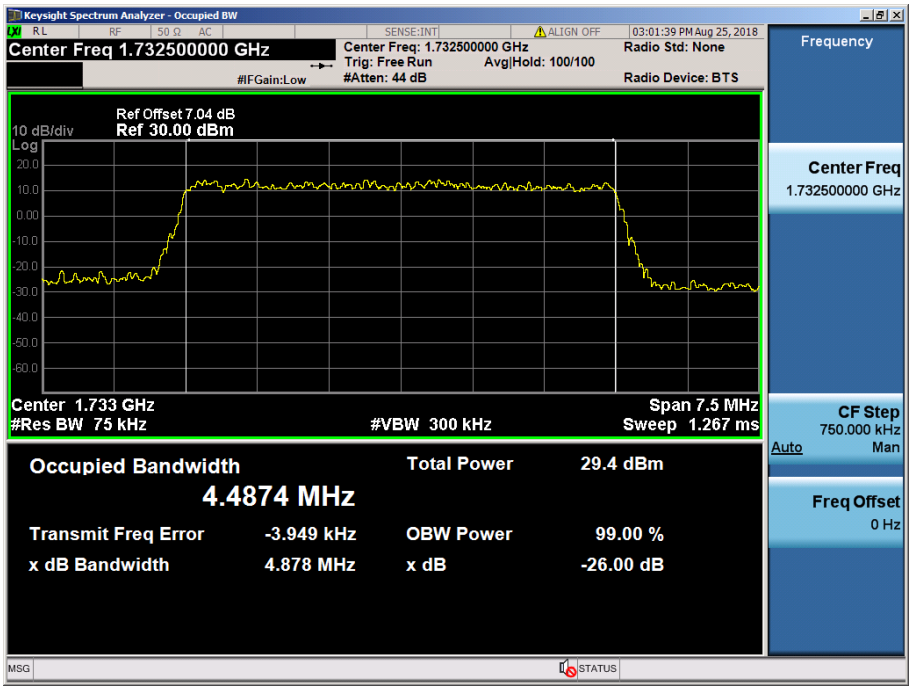
LTE Band 4 / 10 MHz / 16QAM - RB Size 50



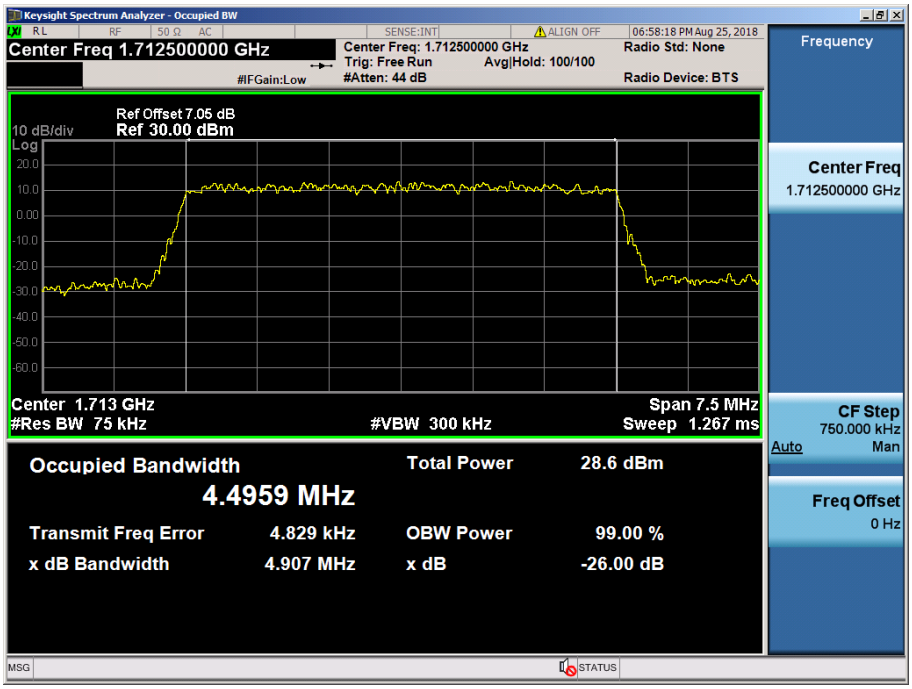
LTE Band 4 / 10 MHz / 64QAM - RB Size 50



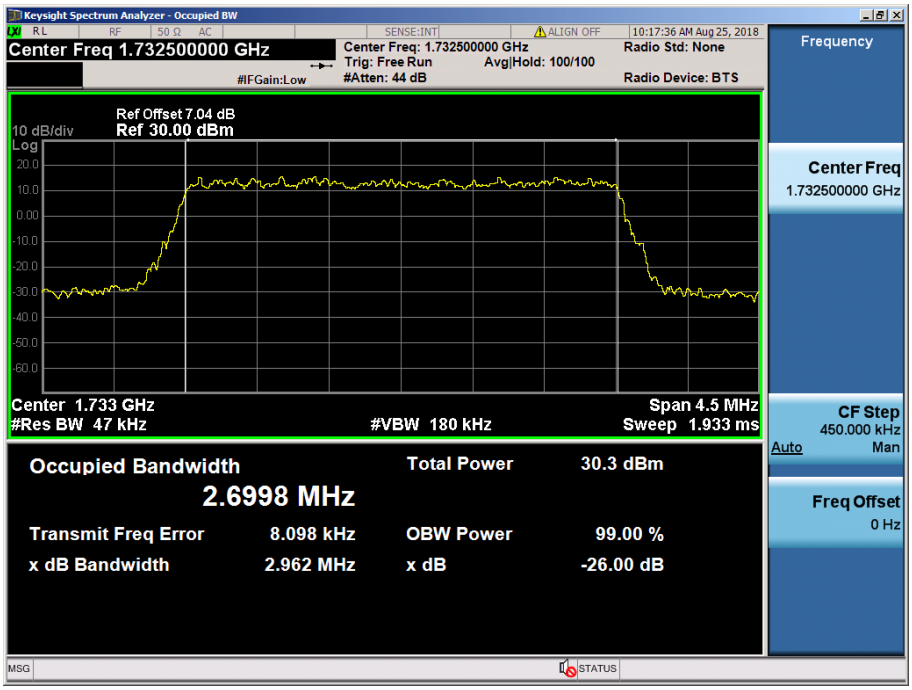
LTE Band 4 / 5 MHz / QPSK - RB Size 25



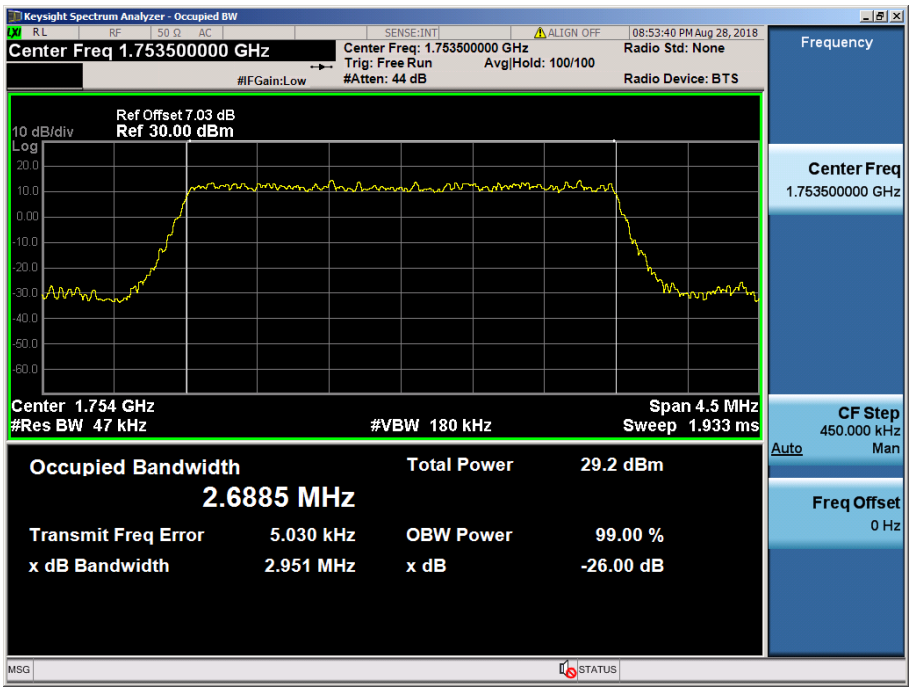
LTE Band 4 / 5 MHz / 16QAM - RB Size 25



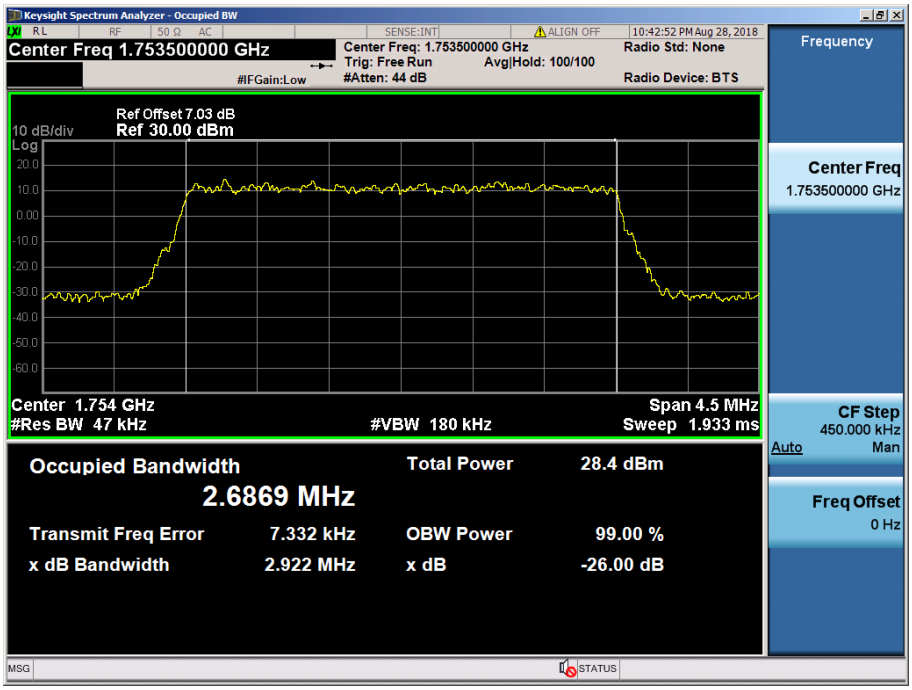
LTE Band 4 / 5 MHz / 64QAM - RB Size 25



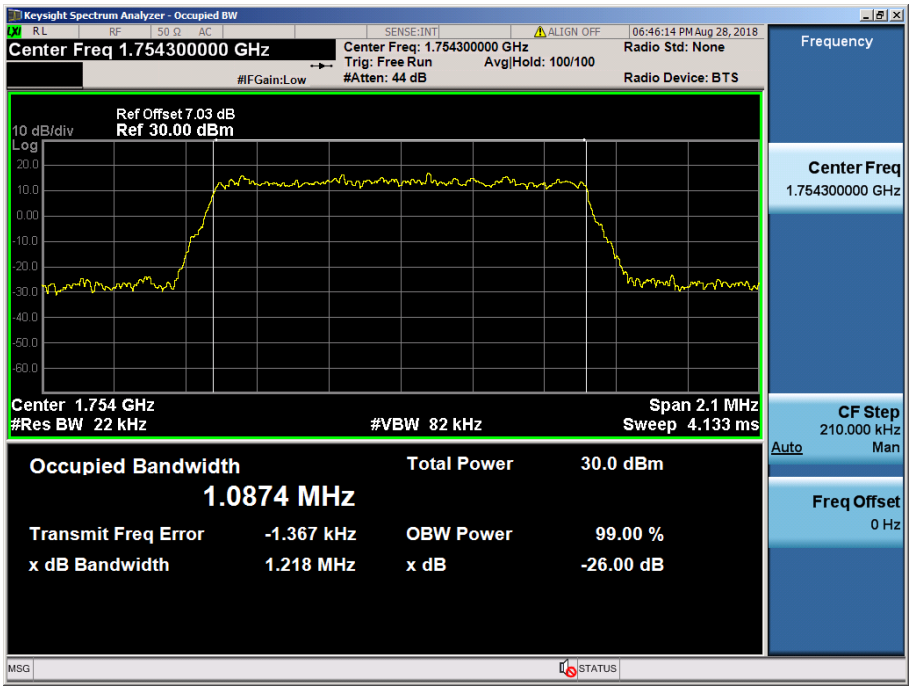
LTE Band 4 / 3 MHz / QPSK - RB Size 15



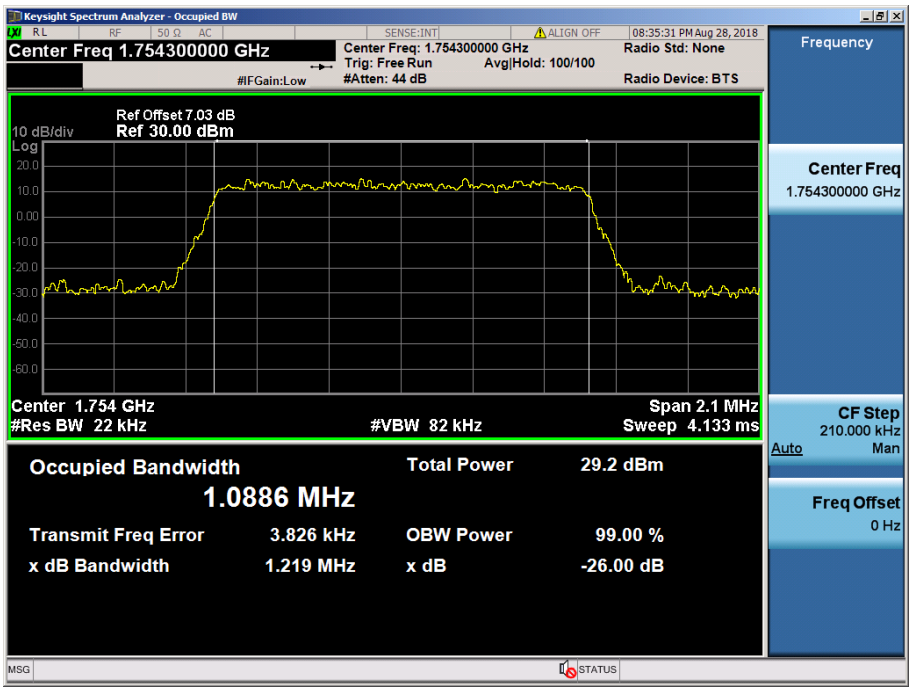
LTE Band 4 / 3 MHz / 16QAM - RB Size 15



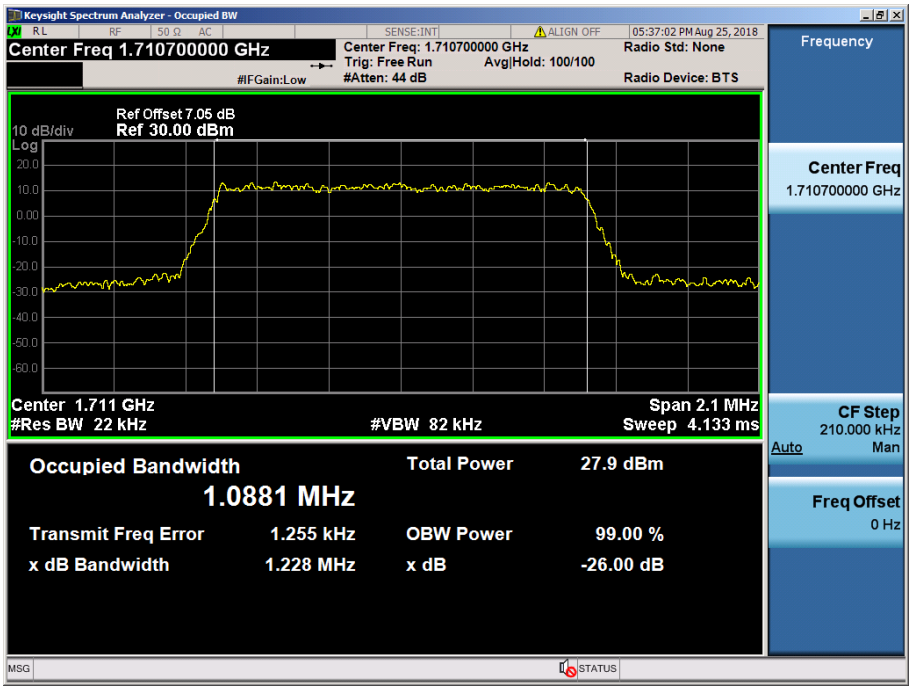
LTE Band 4 / 3 MHz / 64QAM - RB Size 15



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

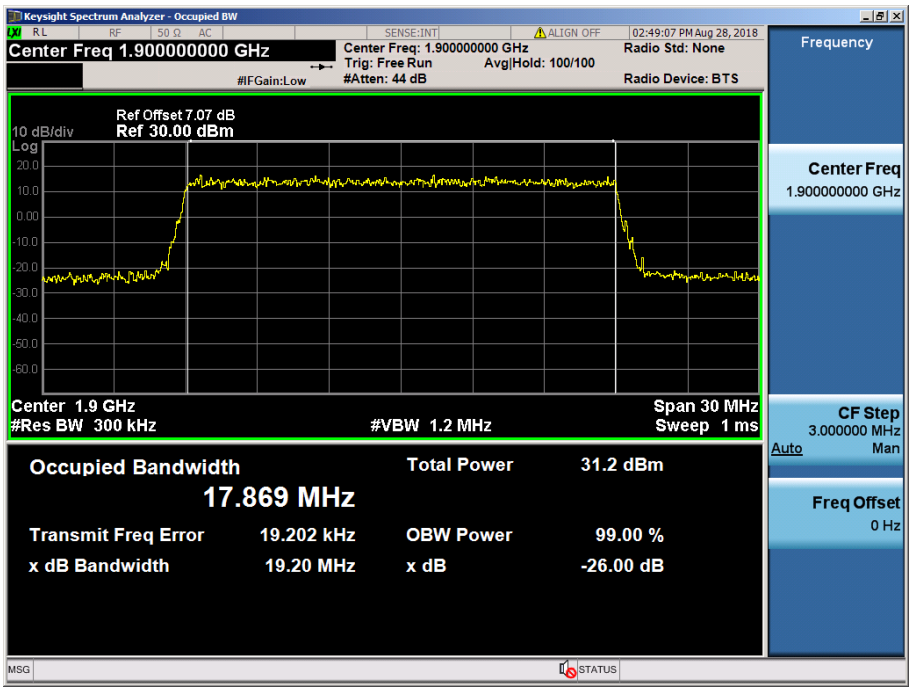


LTE Band 4 / 1.4 MHz / 16QAM - RB Size 6

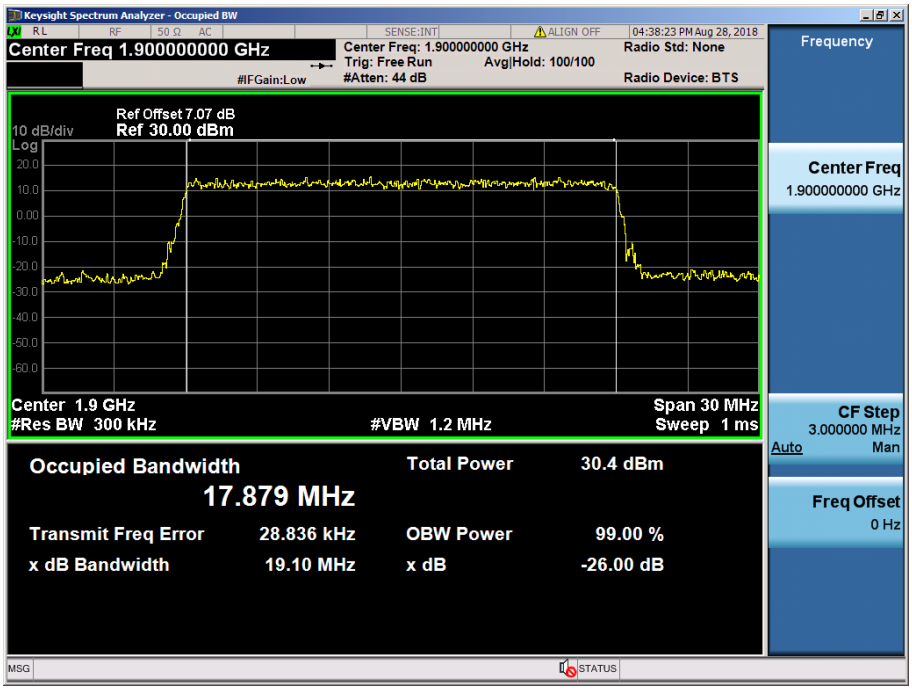


LTE Band 4 / 1.4 MHz / 64QAM - RB Size 6

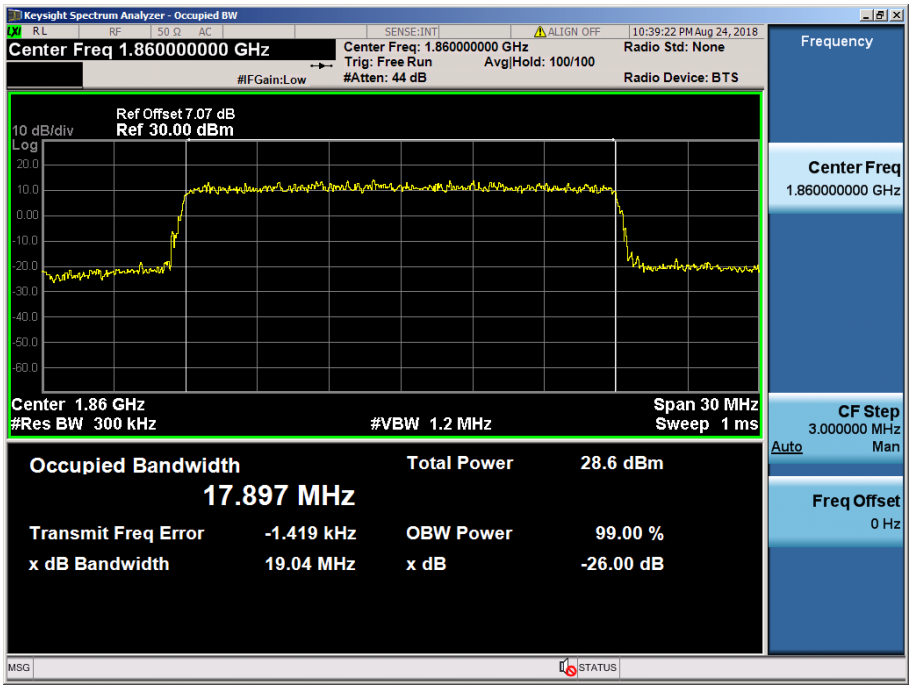
8.1.4 LTE Band 2



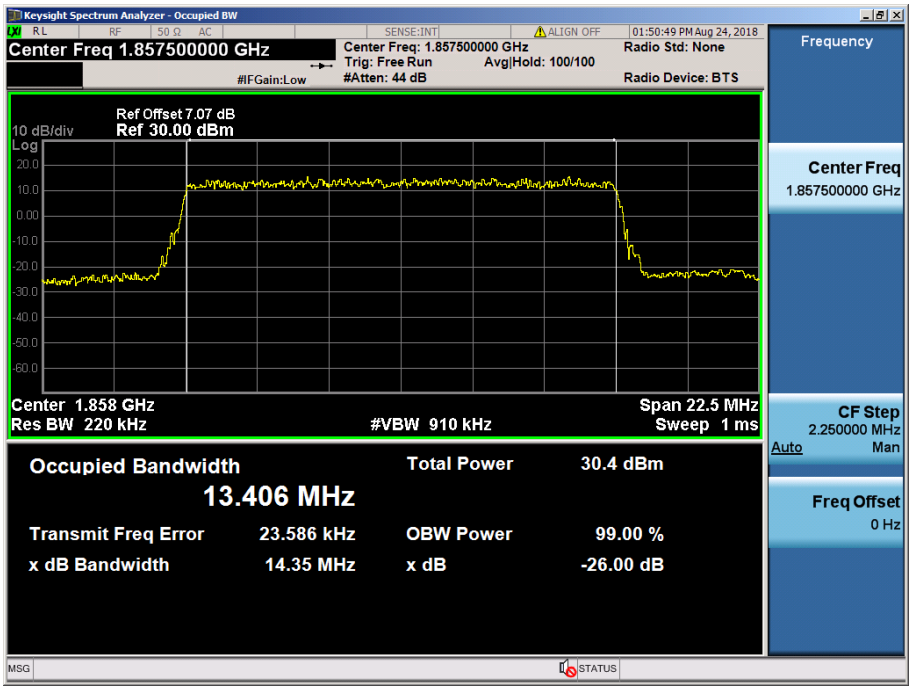
LTE Band 2 / 20 MHz / QPSK - RB Size 100



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

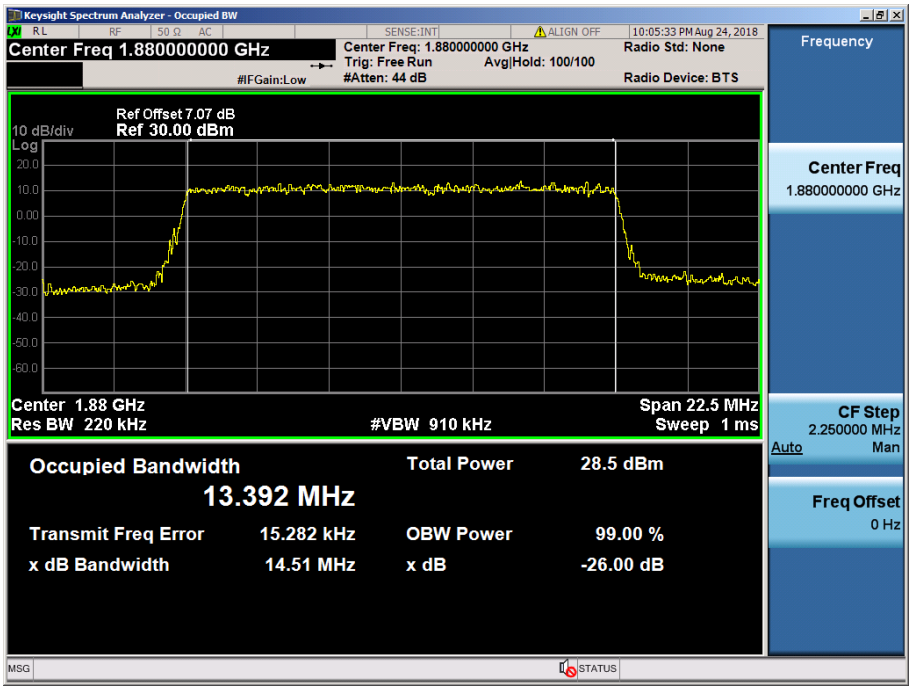


LTE Band 2 / 20 MHz / 64QAM - RB Size 100

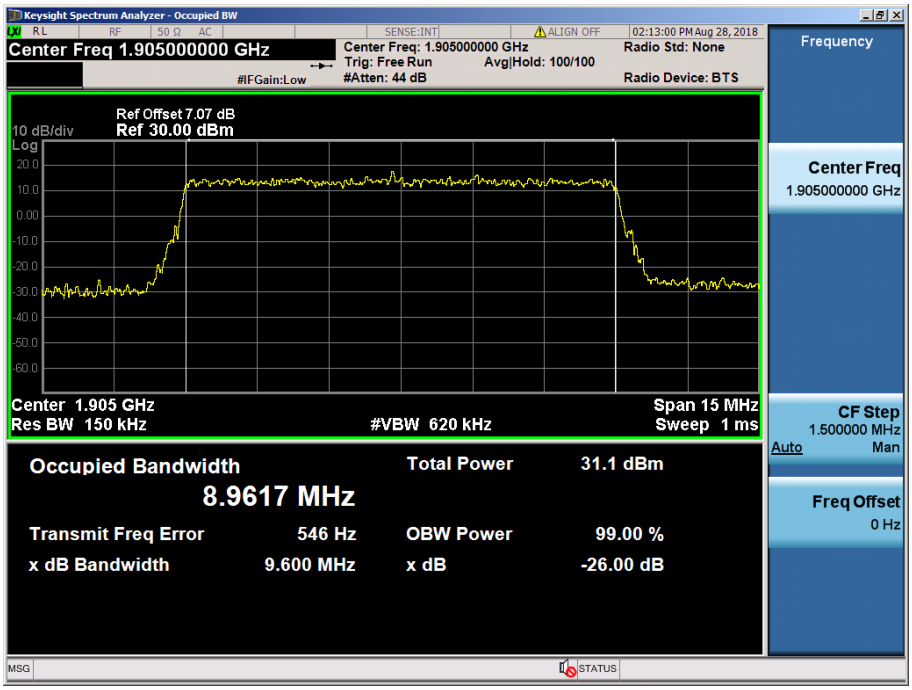


LTE Band 2 / 15 MHz / QPSK - RB Size 75

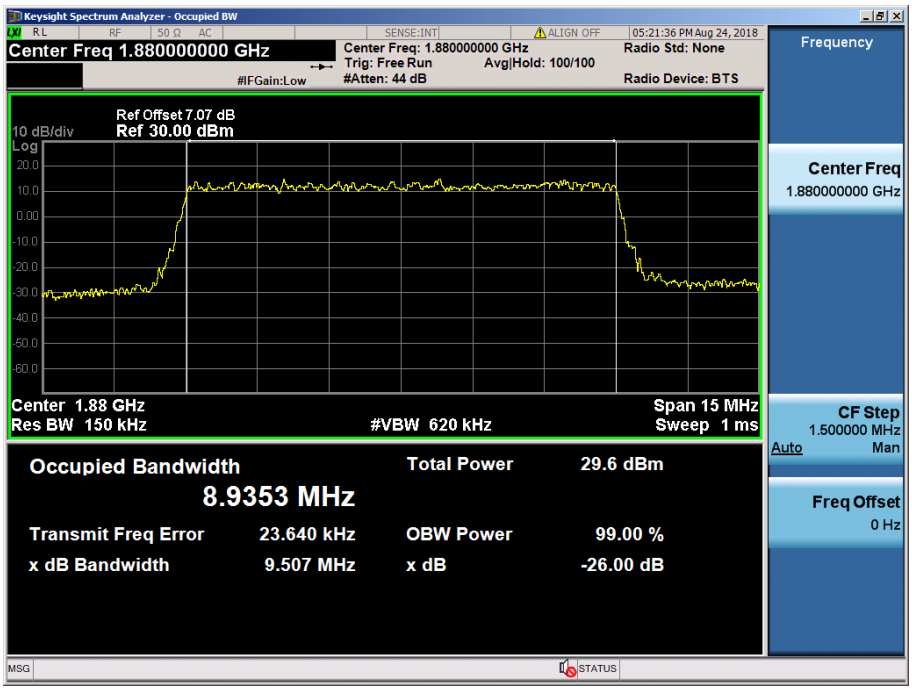
LTE Band 2 / 15 MHz / 16QAM - RB Size 75



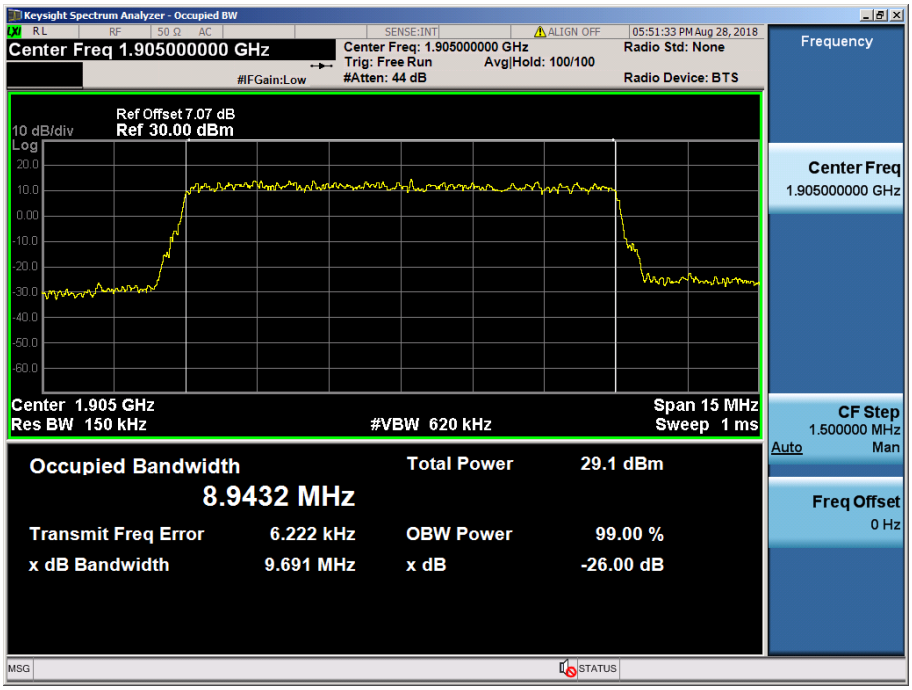
LTE Band 2 / 15 MHz / 64QAM - RB Size 75



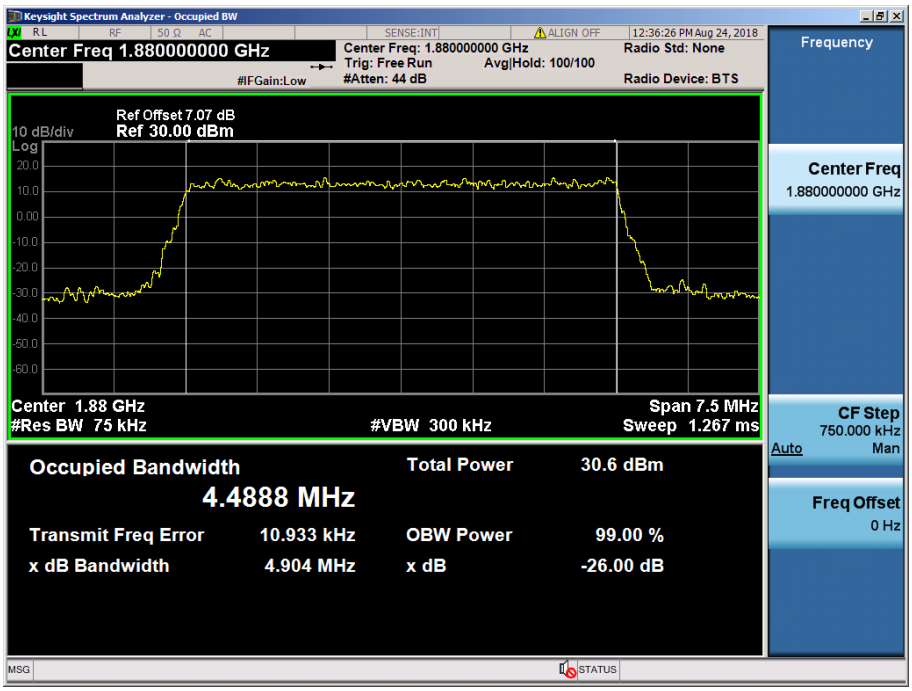
LTE Band 2 / 10 MHz / QPSK - RB Size 50



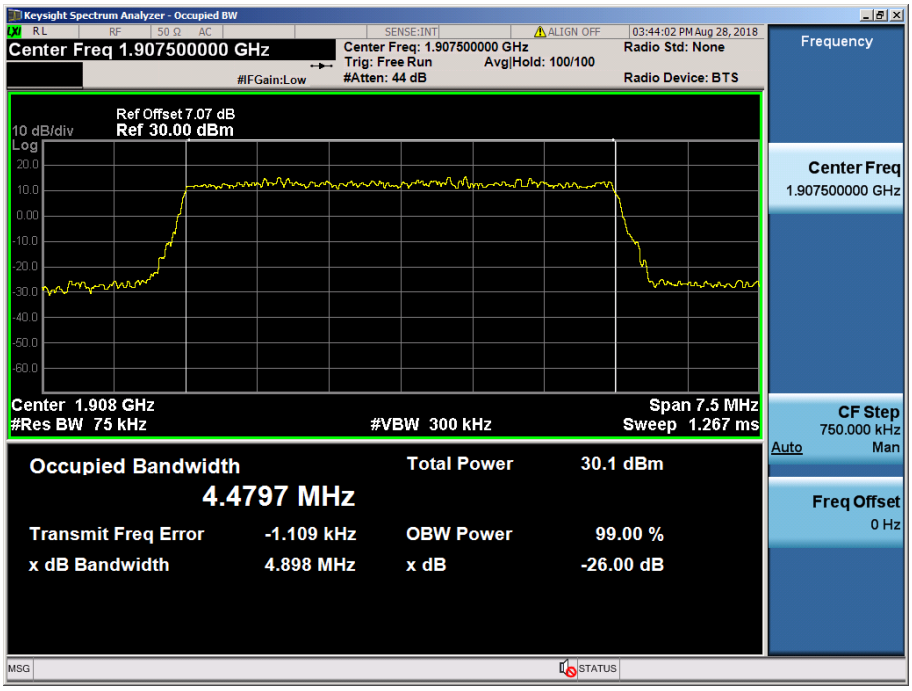
LTE Band 2 / 10 MHz / 16QAM - RB Size 50



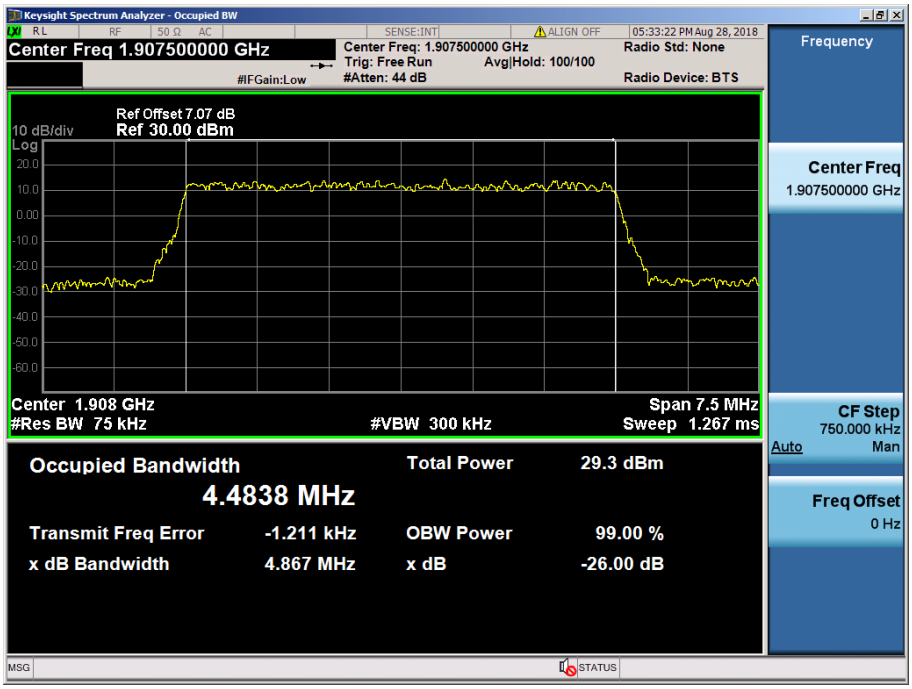
LTE Band 2 / 10 MHz / 64QAM - RB Size 50



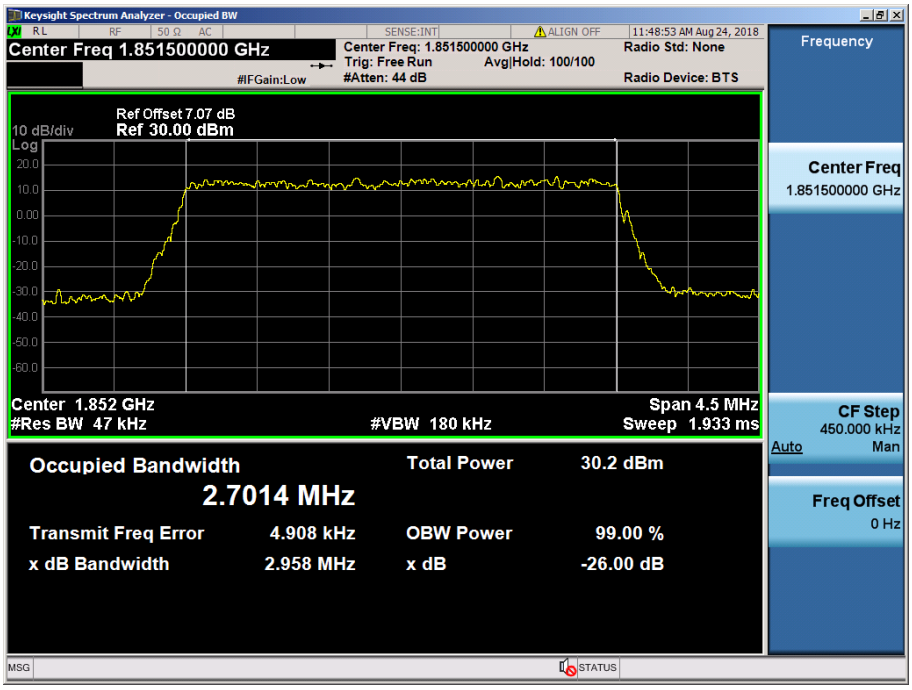
LTE Band 2 / 5 MHz / QPSK - RB Size 25



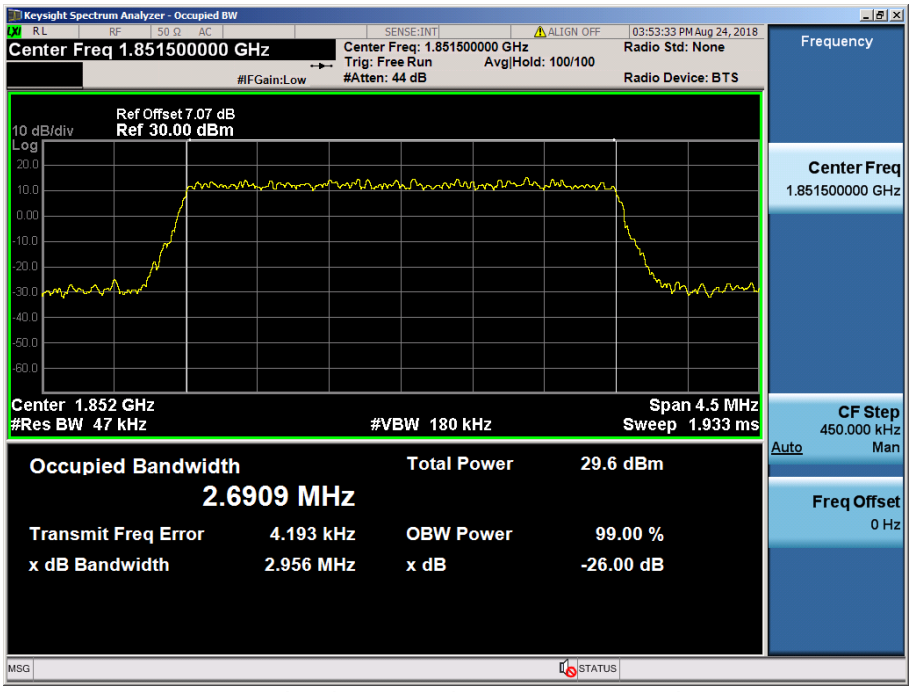
LTE Band 2 / 5 MHz / 16QAM - RB Size 25



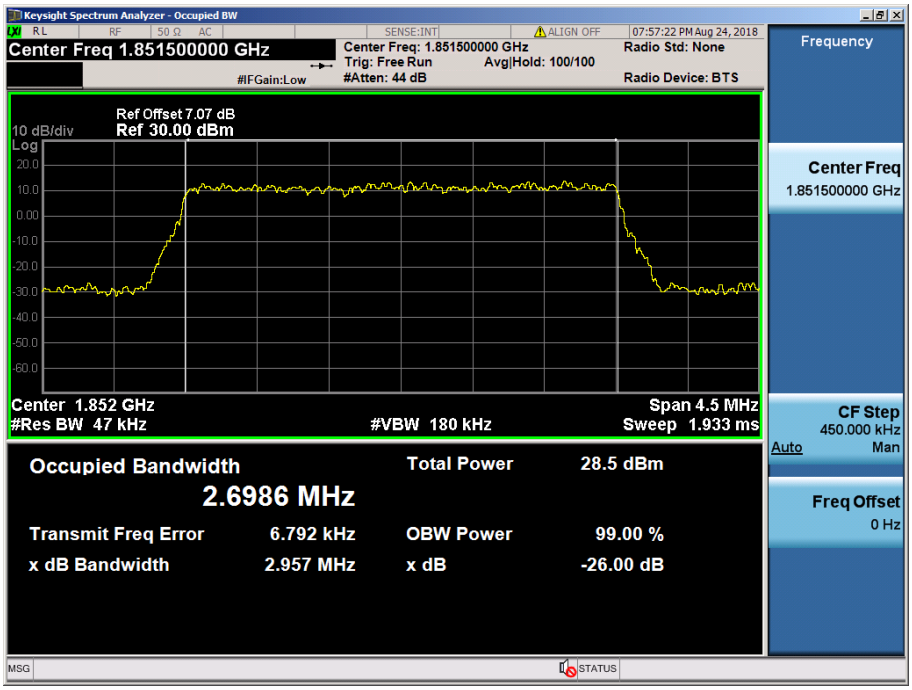
LTE Band 2 / 5 MHz / 64QAM - RB Size 25



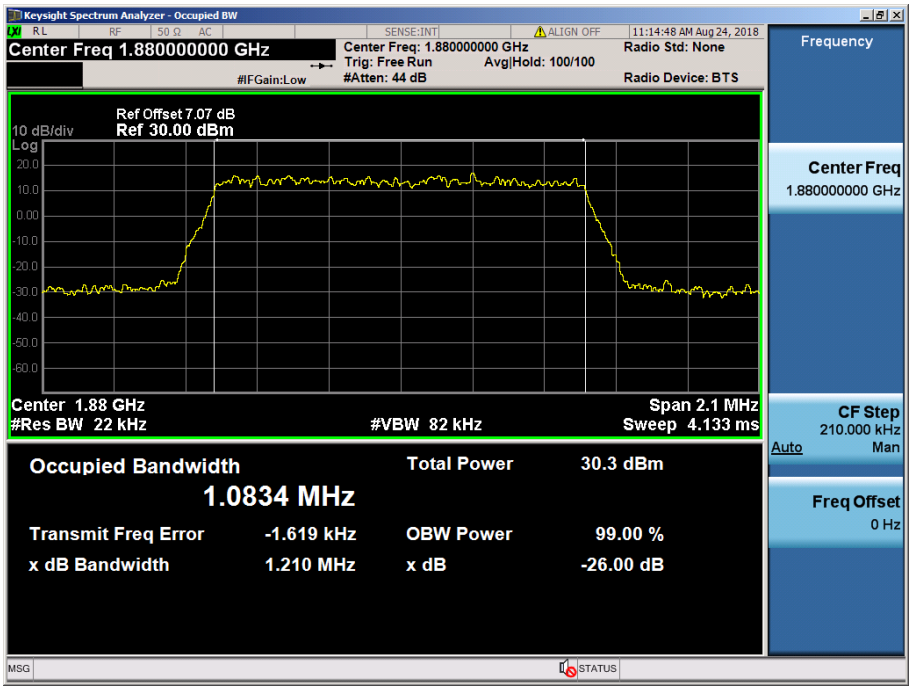
LTE Band 2 / 3 MHz / QPSK - RB Size 15



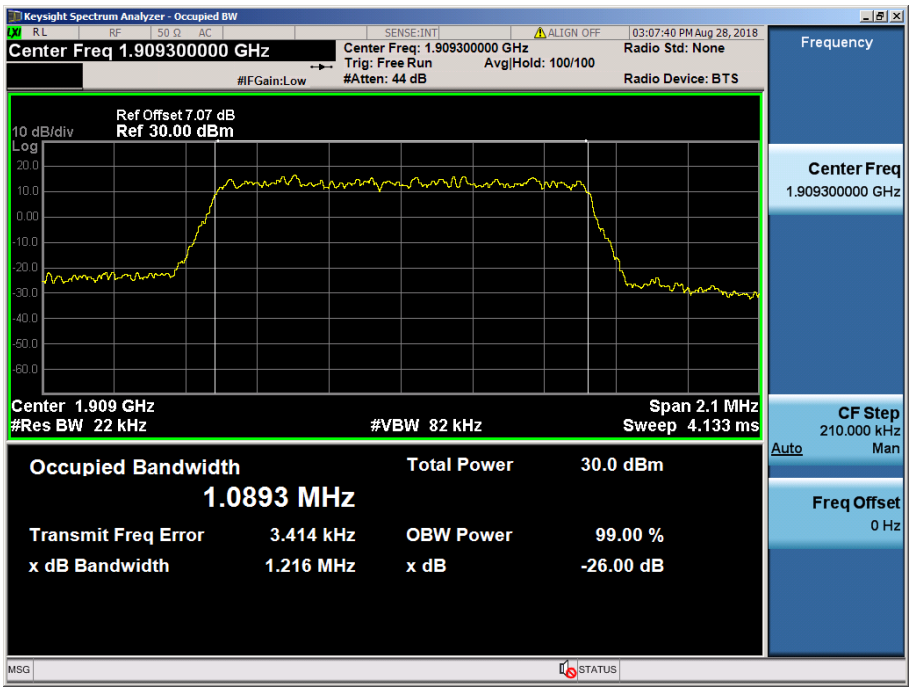
LTE Band 2 / 3 MHz / 16QAM - RB Size 15



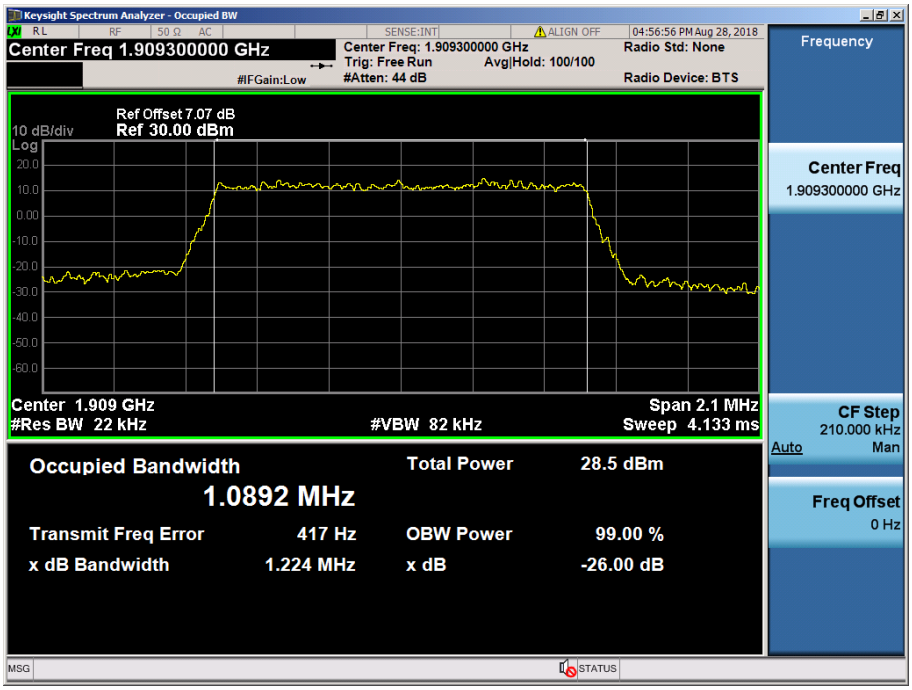
LTE Band 2 / 3 MHz / 64QAM - RB Size 15



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



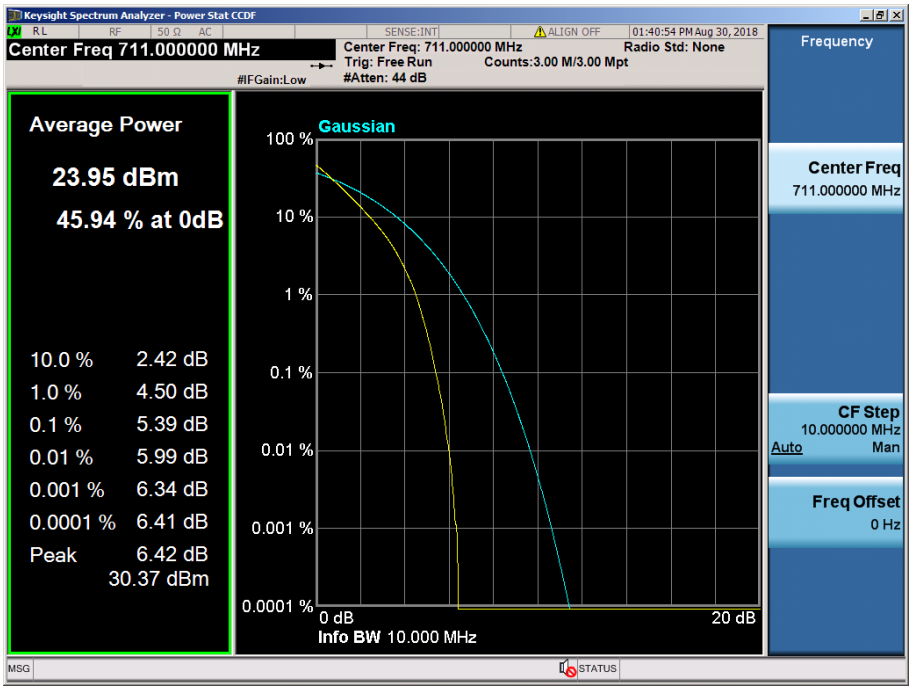
LTE Band 2 / 1.4 MHz / 16QAM - RB Size 6



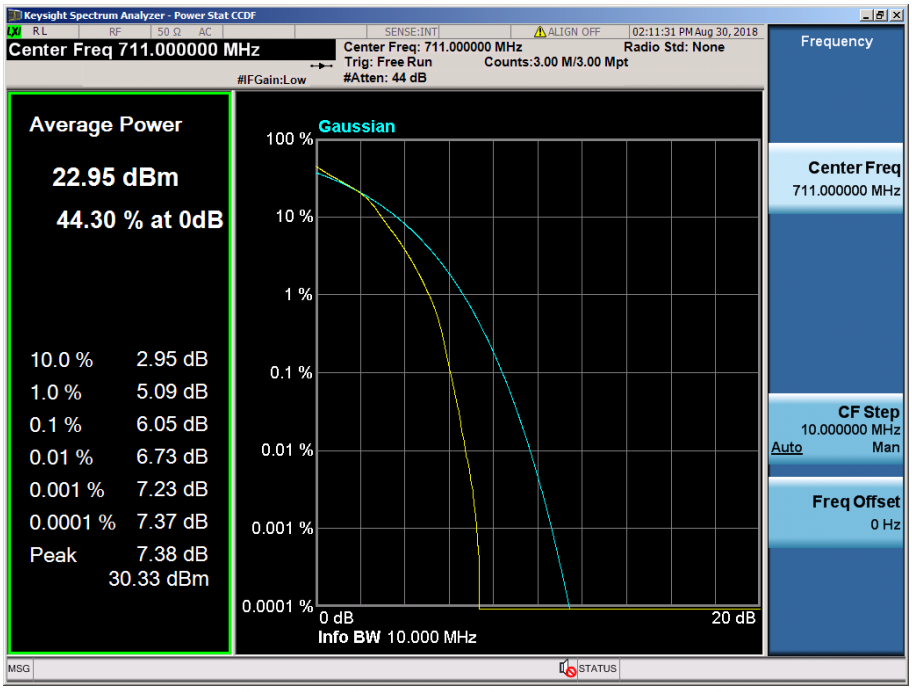
LTE Band 2 / 1.4 MHz / 64QAM - RB Size 6

8.2 PEAK TO AVERAGE RATIO

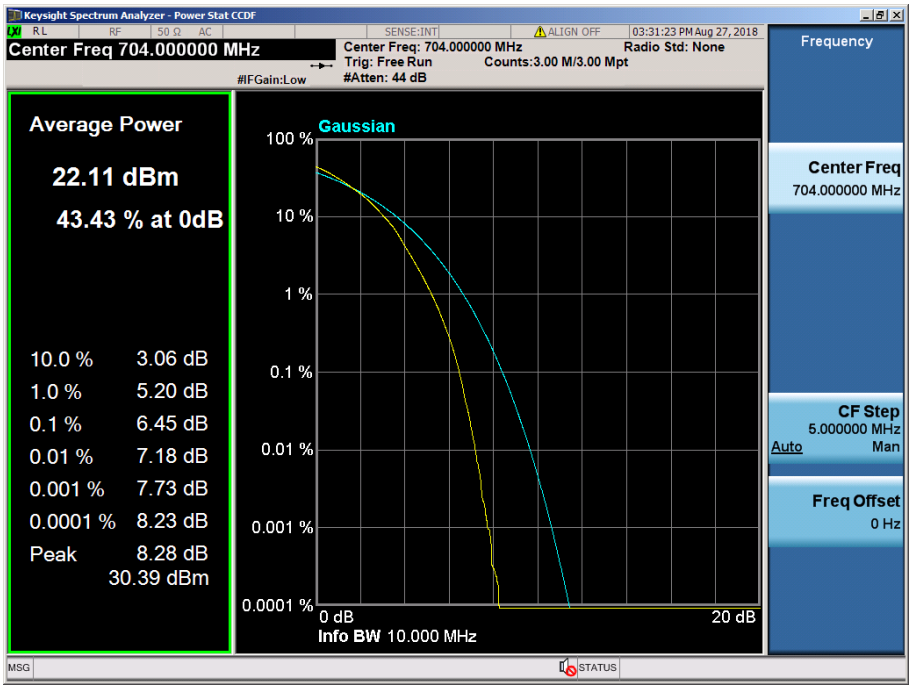
8.2.1 LTE Band 12,17



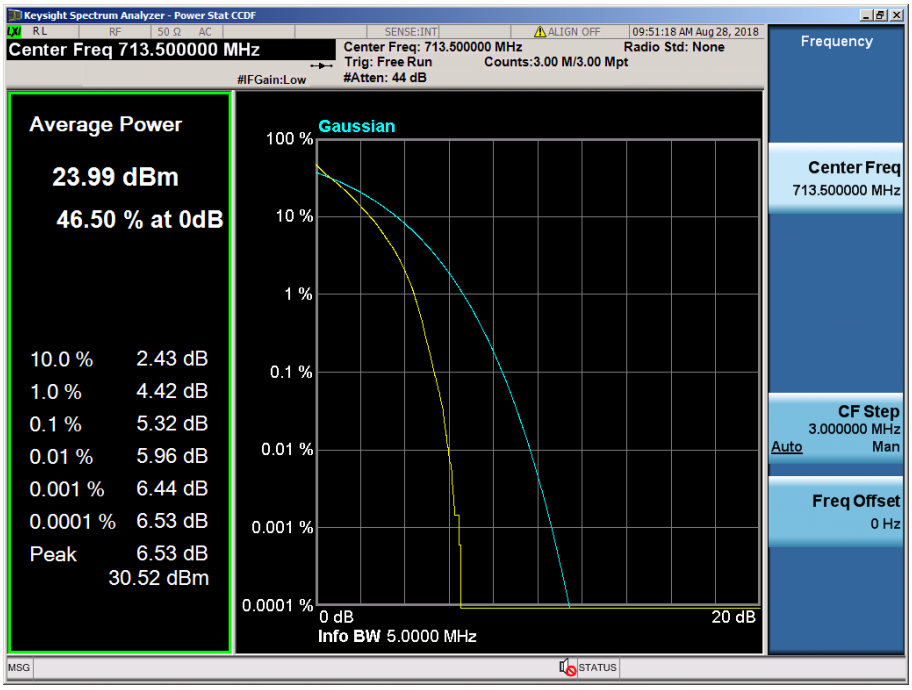
LTE Band 12,17 / 10 MHz / QPSK - RB Size 50



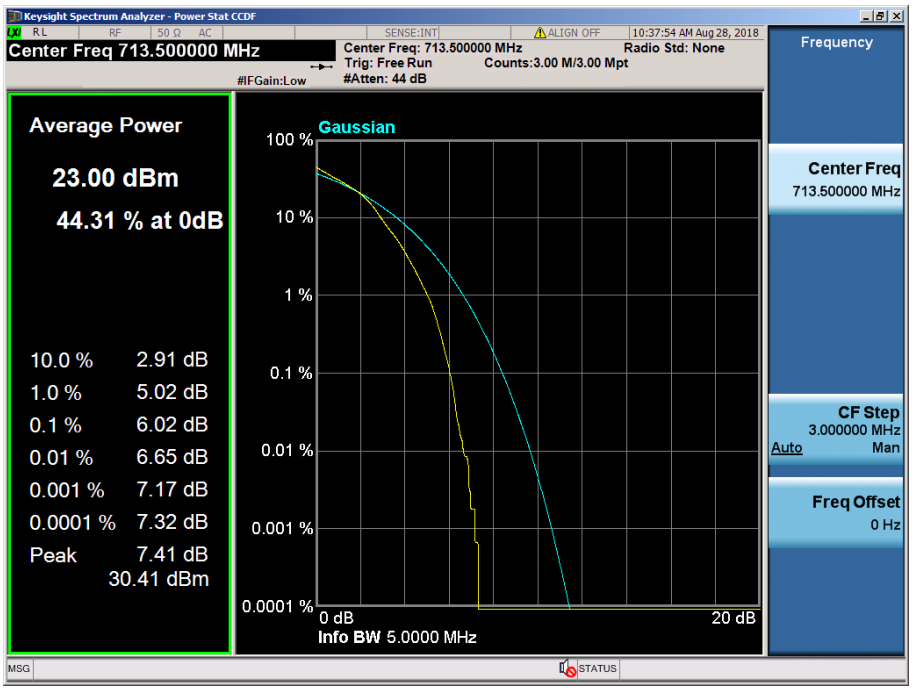
LTE Band 12,17 / 10 MHz / 16QAM - RB Size 50



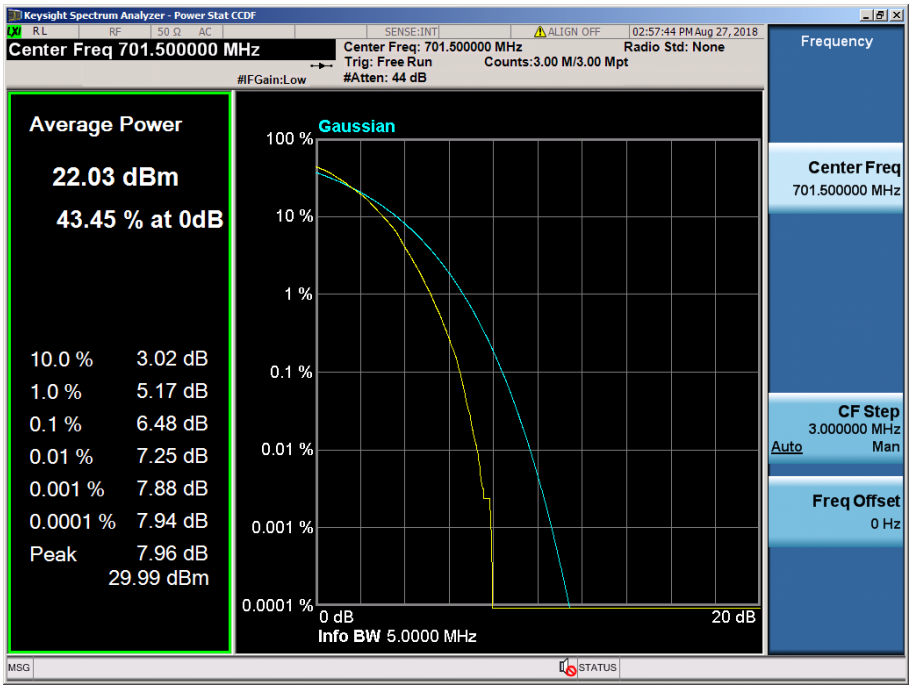
LTE Band 12,17 / 10 MHz / 64QAM - RB Size 50



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

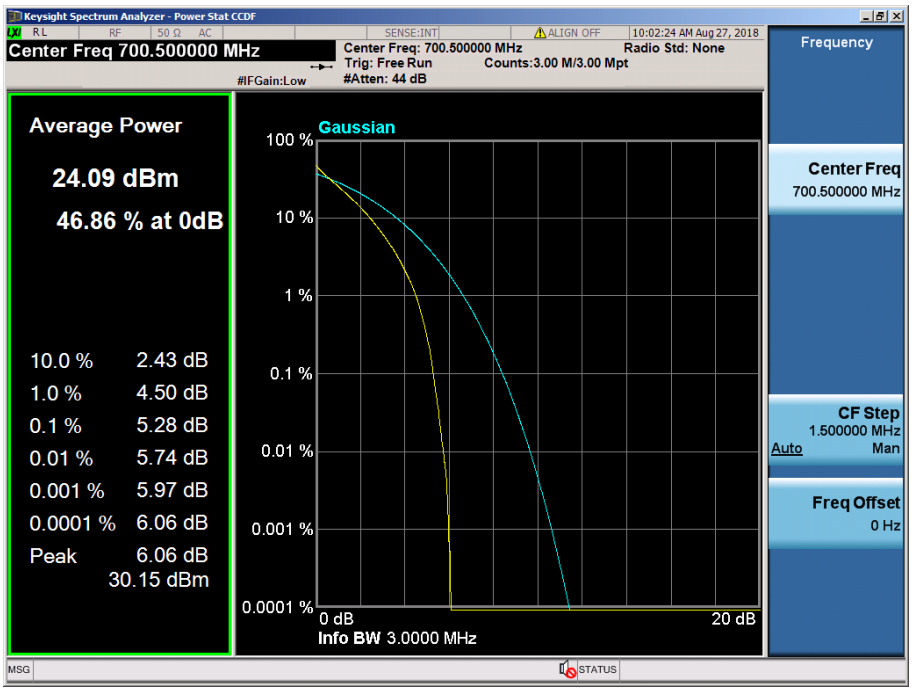


LTE Band 12,17 / 5 MHz / 16QAM - RB Size 25

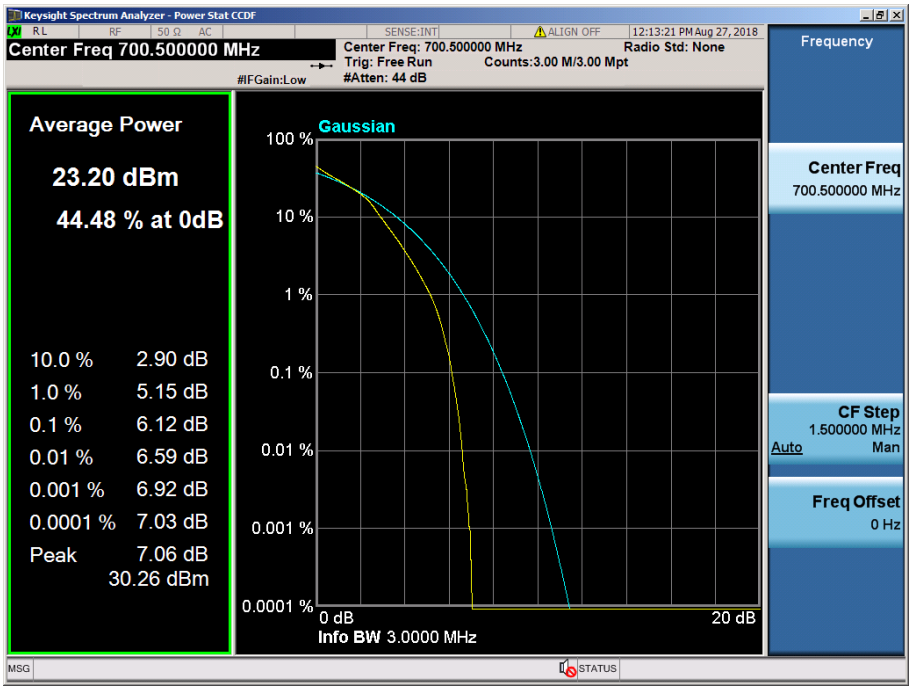


LTE Band 12,17 / 5 MHz / 64QAM - RB Size 25

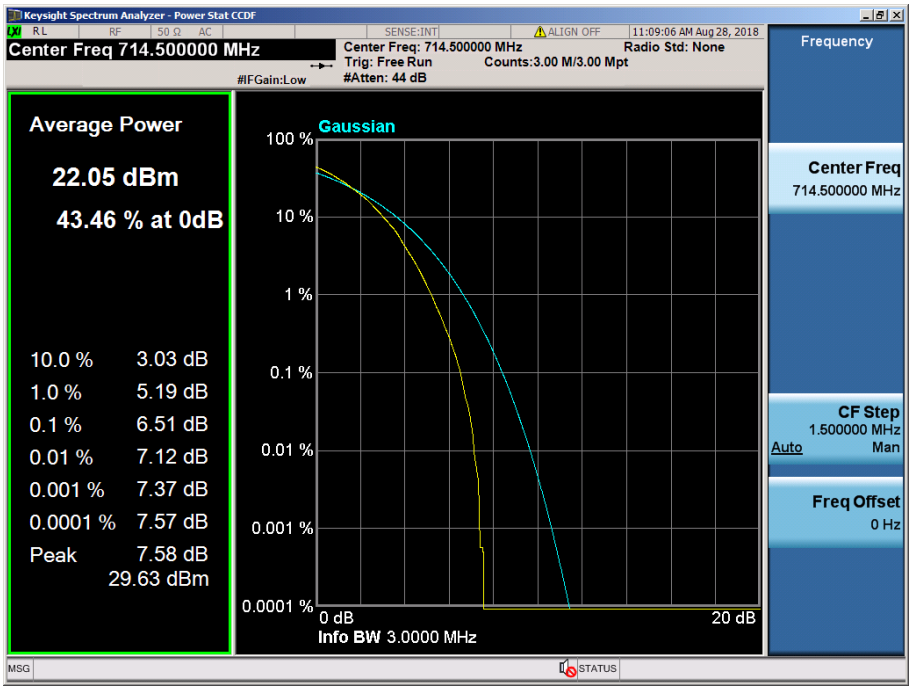
8.2.2 LTE Band 12



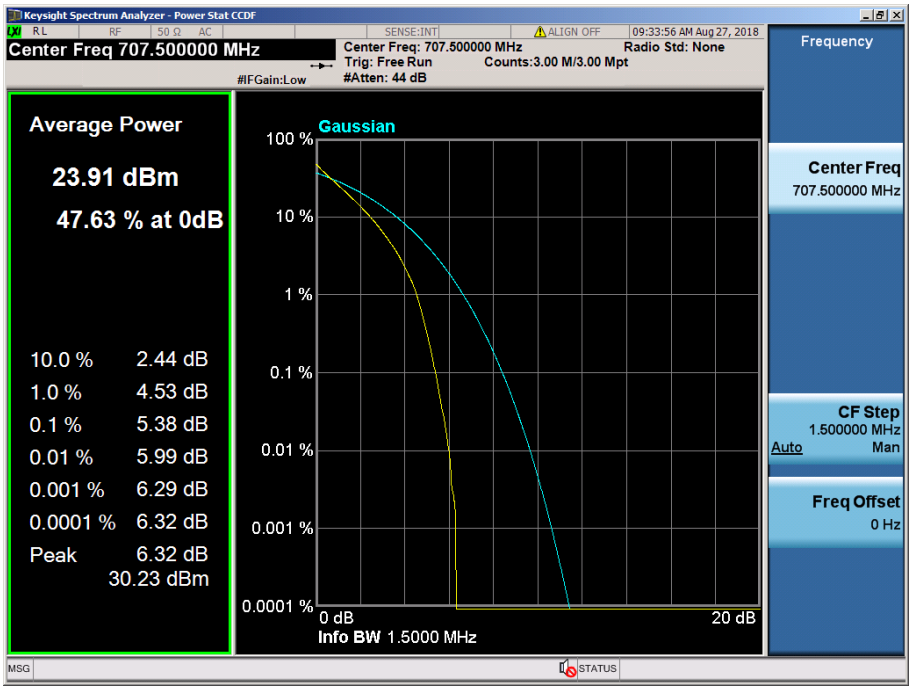
LTE Band 12 / 3 MHz / QPSK - RB Size 15



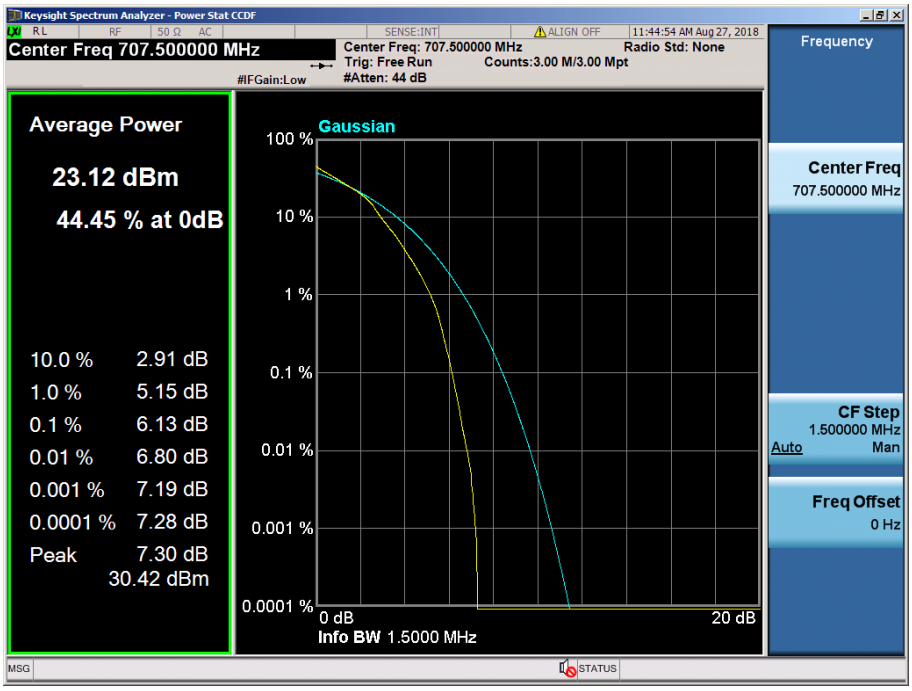
LTE Band 12 / 3 MHz / 16QAM - RB Size 15



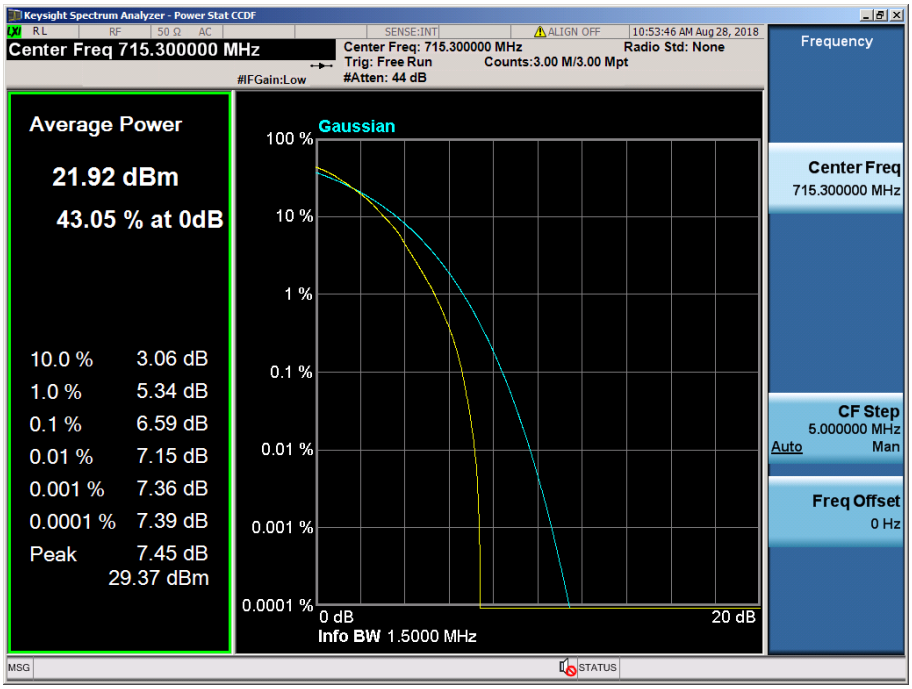
LTE Band 12 / 3 MHz / 64QAM - RB Size 15



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

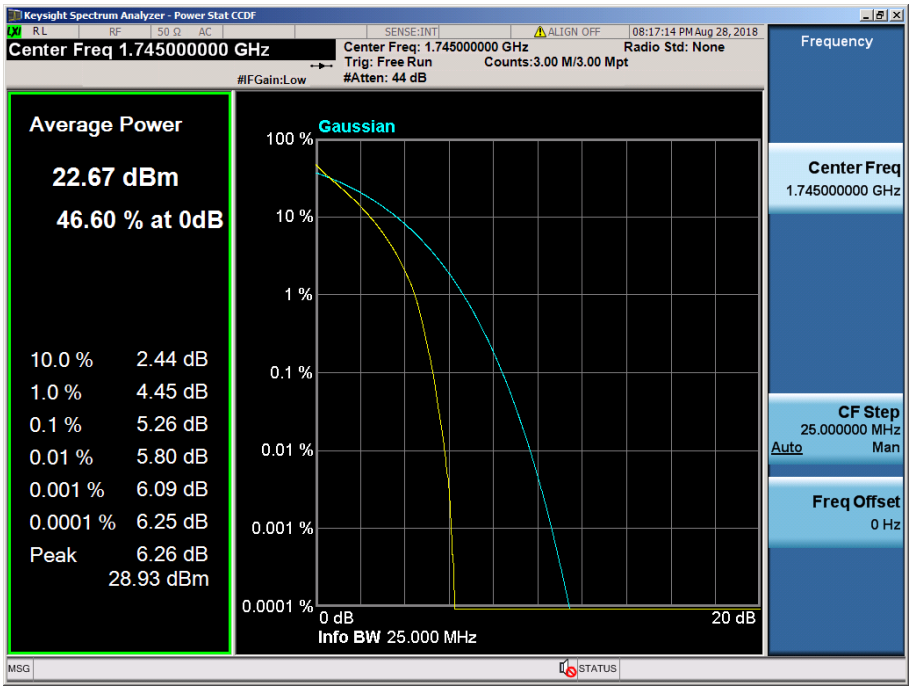


LTE Band 12 / 1.4 MHz / 16QAM - RB Size 6

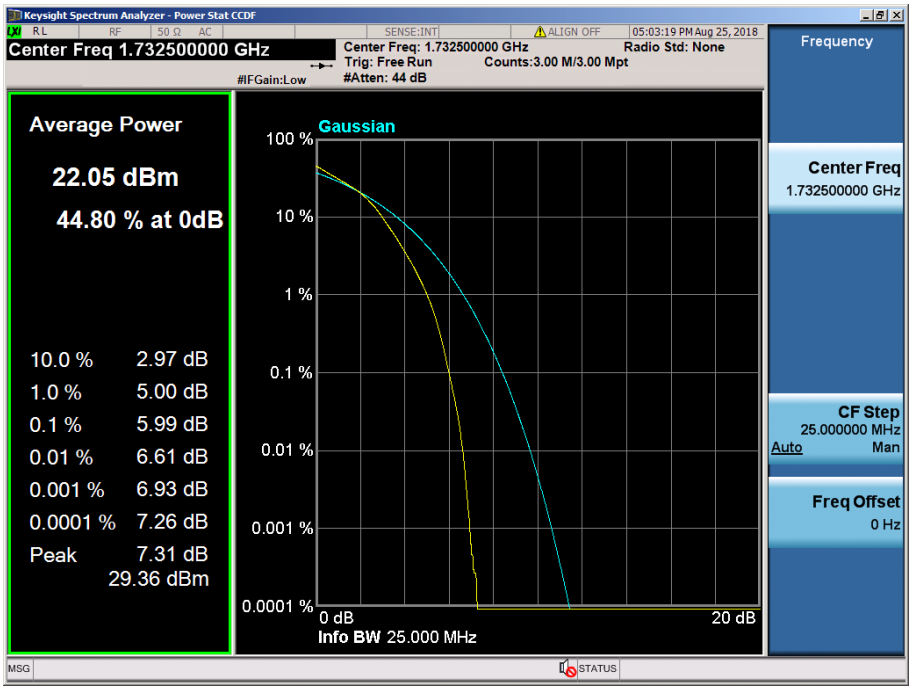


LTE Band 12 / 1.4 MHz / 64QAM - RB Size 6

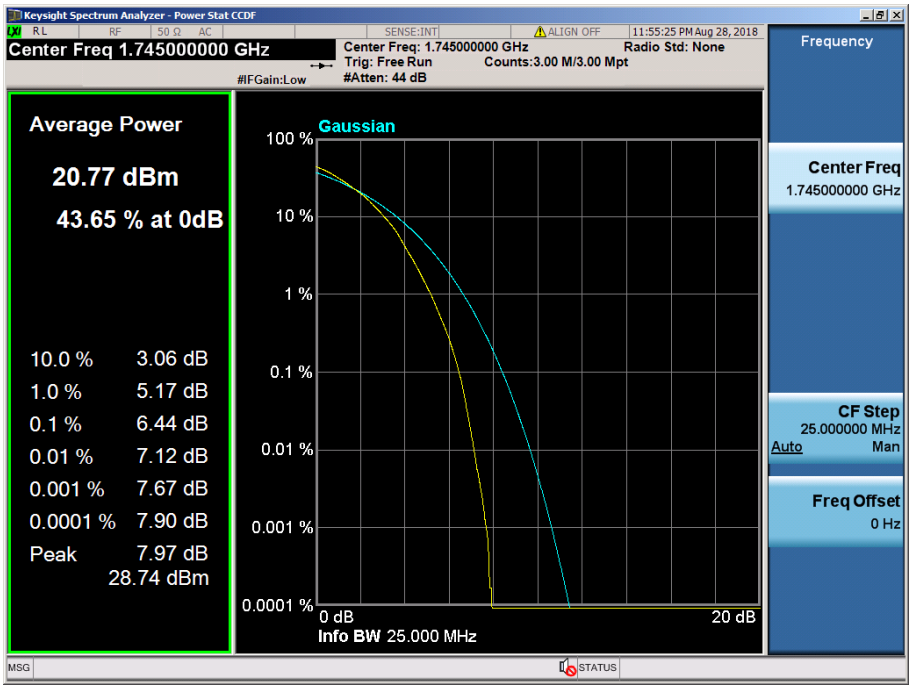
8.2.3 LTE Band 4



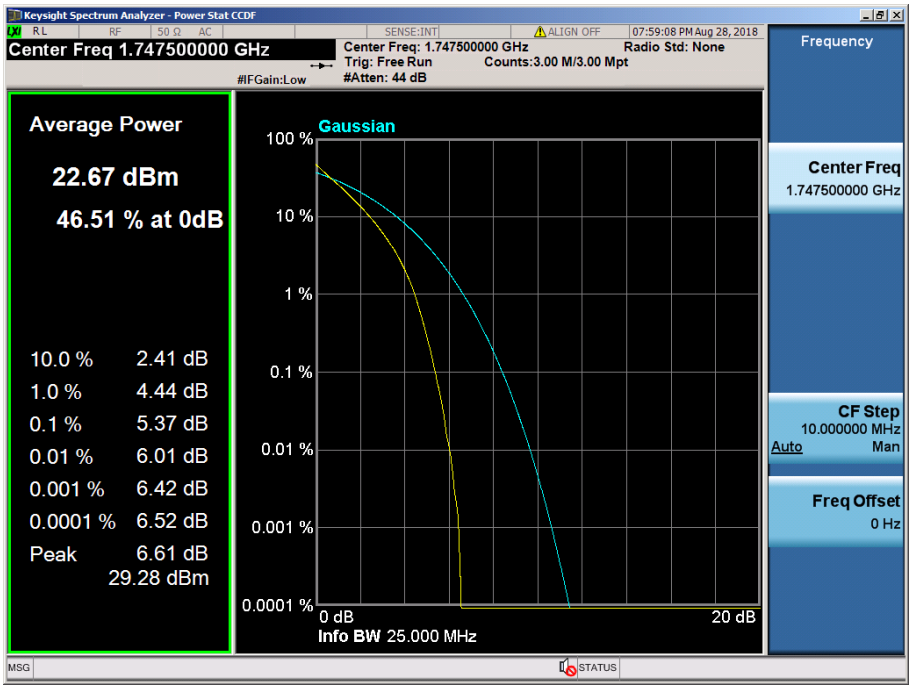
LTE Band 4 / 20 MHz / QPSK - RB Size 100



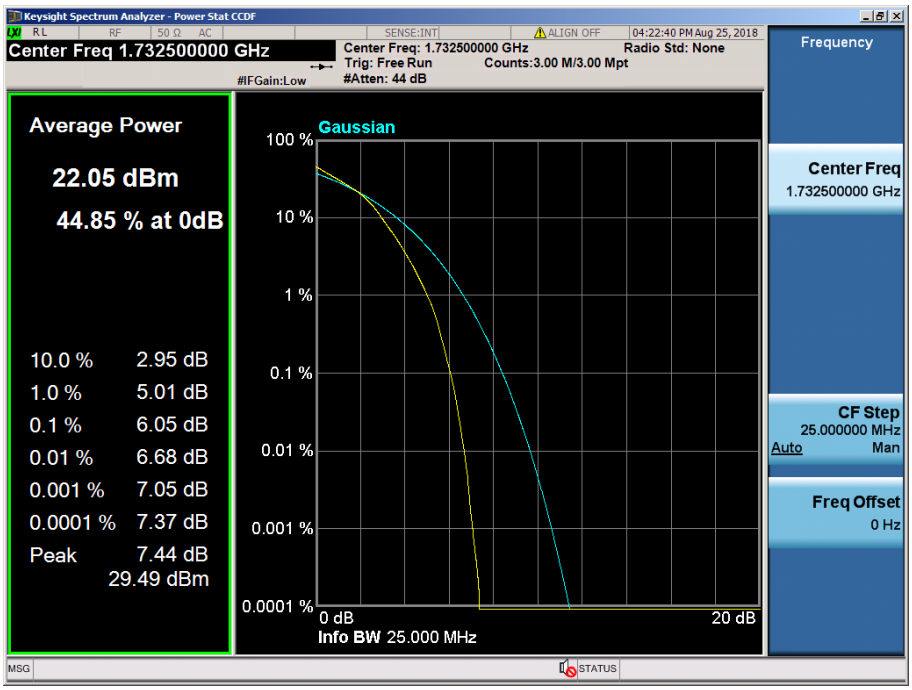
LTE Band 4 / 20 MHz / 16QAM - RB Size 100



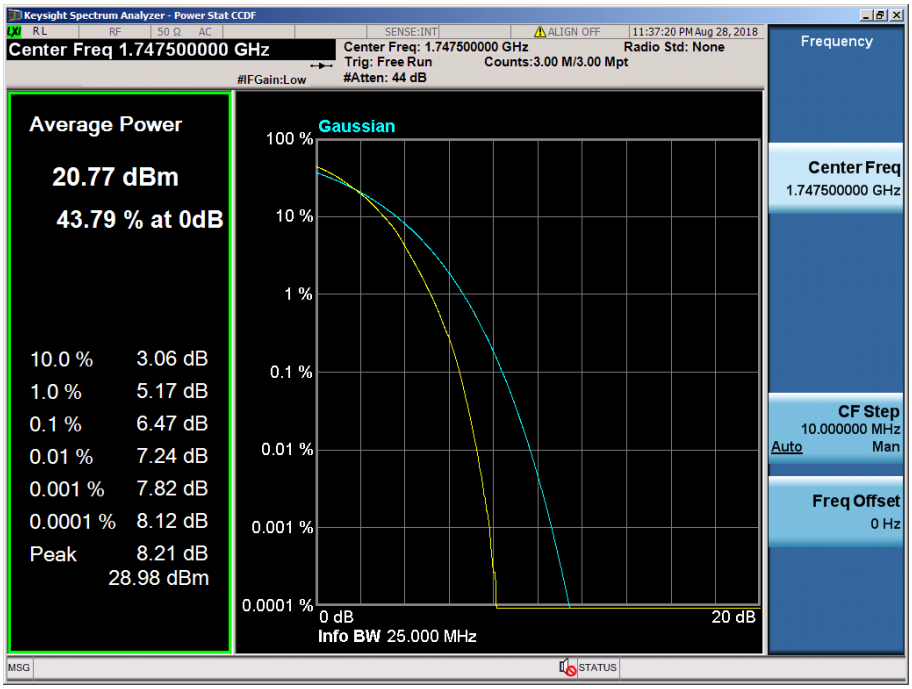
LTE Band 4 / 20 MHz / 64QAM - RB Size 100



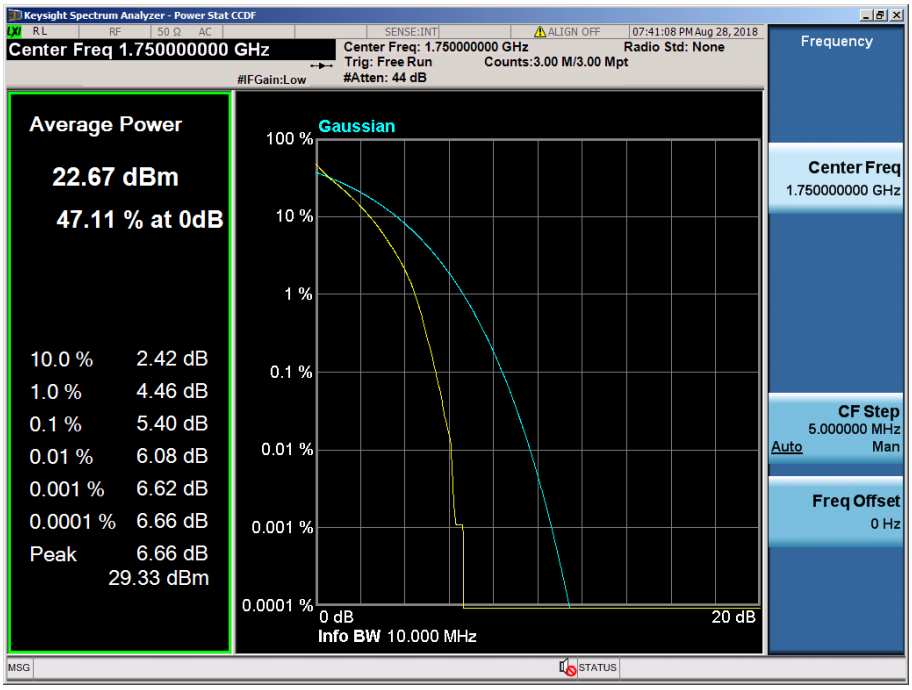
LTE Band 4 / 15 MHz / QPSK - RB Size 75



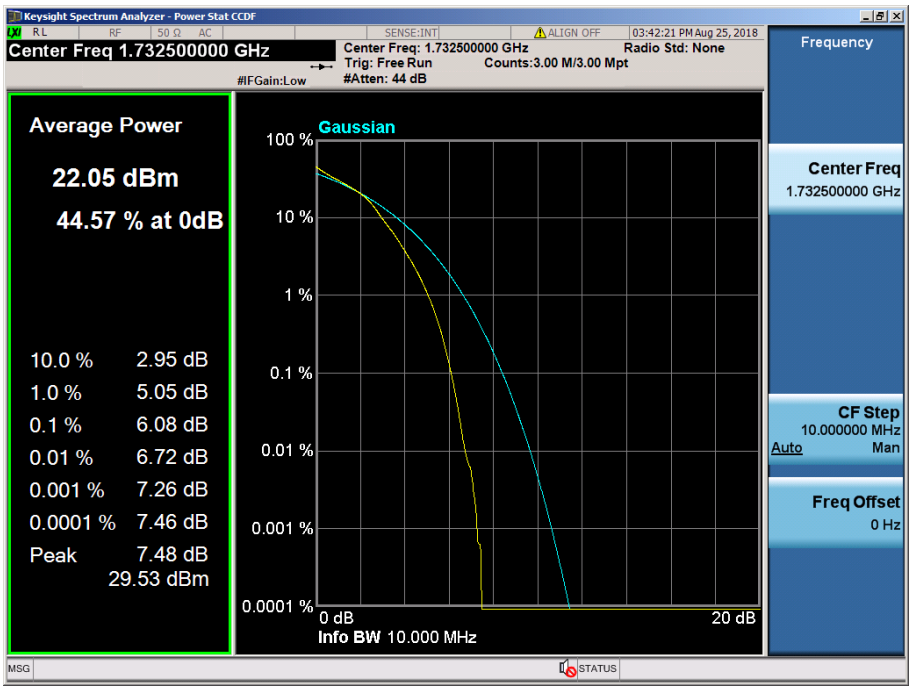
LTE Band 4 / 15 MHz / 16QAM - RB Size 75



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