

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 : DRTFCC2505-0018

2. Customer

• Name (FCC) : LG Electronics Inc.

• Address (FCC) : 222 LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, South Korea, 17709

3. Use of Report : FCC Original Certification

4. Product Name / Model Name : NAD Module / TM16FNNATY0

FCC ID : 2BO3LTM16FNNATY0

5. FCC Regulation(s): Part 22, 24, 27, 90

Test Method Used : KDB971168 D01v03r01, ANSI C63.26-2015

6. Date of Test : 2025.04.02 ~ 2025.05.08

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : See appended test report.

9. Test Result : Refer to the attached test result.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test report is not related to KOLAS accreditation.

Affirmation	Tested by		Technical Manager	
	Name : SeokHo Han		Name : JaeJin Lee	

2025 . 05 . 12 .

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	Revised by	Reviewed by
DRTFCC2505-0018	May. 12, 2025	Initial issue	SeokHo Han	JaeJin Lee

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1. GENERAL INFORMATION

Equipment Class	PCS Licensed Transmitter(PCB)
Product Name	NAD Module
Model Name(s)	TM16FNNATY0
PMN(Product Marketing Name)	TM16FNNATY0
FVIN(Firmware Version Identification Number)	NA
EUT Serial Number	No Specified
Power Supply	DC 3.9 V
Modulation Type	QPSK, 16QAM, 64QAM
Channel Bandwidth(MHz)	LTE Band 12: 10, 5, 3, 1.4 LTE Band 14: 10, 5 LTE Band 5: 10, 5, 3, 1.4 LTE Band 4: 20, 15, 10, 5, 3, 1.4 LTE Band 66: 20, 15, 10, 5, 3, 1.4 LTE Band 2: 20, 15, 10, 5, 3, 1.4
Antenna Type	PIFA Antenna

Antenna Information (LTE)

Band	Antenna Gain (dBi)
12	-0.2
14	1.0
5	1.1
66(4)	0.6
2	1.7

Note: The antenna gain was corrected for path loss from the conducted feed point to the antenna terminal.

Mode	Channel Bandwidth (MHz)	Modulation	TX Frequency (MHz)	Emission Designator	Conducted Output Power		ERP	
					(dBm)	(W)	(dBm)	(W)
LTE Band 12	10	QPSK	704 ~ 711	8M97G7D	23.50	0.224	21.15	0.130
LTE Band 12	10	16QAM	704 ~ 711	8M95W7D	22.83	0.192	20.48	0.112
LTE Band 12	10	64QAM	704 ~ 711	8M97W7D	21.79	0.151	19.44	0.088
LTE Band 12	5	QPSK	701.5 ~ 713.5	4M49G7D	23.51	0.224	21.16	0.131
LTE Band 12	5	16QAM	701.5 ~ 713.5	4M48W7D	22.98	0.199	20.63	0.116
LTE Band 12	5	64QAM	701.5 ~ 713.5	4M47W7D	21.82	0.152	19.47	0.089
LTE Band 12	3	QPSK	700.5 ~ 714.5	2M69G7D	23.56	0.227	21.21	0.132
LTE Band 12	3	16QAM	700.5 ~ 714.5	2M69W7D	22.90	0.195	20.55	0.114
LTE Band 12	3	64QAM	700.5 ~ 714.5	2M69W7D	21.79	0.151	19.44	0.088
LTE Band 12	1.4	QPSK	699.7 ~ 715.3	1M08G7D	23.45	0.221	21.10	0.129
LTE Band 12	1.4	16QAM	699.7 ~ 715.3	1M08W7D	22.78	0.190	20.43	0.110
LTE Band 12	1.4	64QAM	699.7 ~ 715.3	1M08W7D	21.71	0.148	19.36	0.086
LTE Band 14	10	QPSK	793 ~ 793	8M97G7D	23.54	0.226	22.39	0.173
LTE Band 14	10	16QAM	793 ~ 793	8M96W7D	22.84	0.192	21.69	0.148
LTE Band 14	10	64QAM	793 ~ 793	8M92W7D	21.78	0.151	20.63	0.116
LTE Band 14	5	QPSK	790.5 ~ 795.5	4M48G7D	23.52	0.225	22.37	0.173
LTE Band 14	5	16QAM	790.5 ~ 795.5	4M48W7D	22.96	0.198	21.81	0.152
LTE Band 14	5	64QAM	790.5 ~ 795.5	4M48W7D	21.80	0.151	20.65	0.116
LTE Band 5	10	QPSK	829 ~ 844	8M96G7D	23.25	0.211	22.20	0.166
LTE Band 5	10	16QAM	829 ~ 844	8M96W7D	22.57	0.181	21.52	0.142
LTE Band 5	10	64QAM	829 ~ 844	8M96W7D	21.53	0.142	20.48	0.112
LTE Band 5	5	QPSK	826.5 ~ 846.5	4M48G7D	23.25	0.211	22.20	0.166
LTE Band 5	5	16QAM	826.5 ~ 846.5	4M48W7D	22.65	0.184	21.60	0.145
LTE Band 5	5	64QAM	826.5 ~ 846.5	4M49W7D	21.48	0.141	20.43	0.110
LTE Band 5	3	QPSK	825.5 ~ 847.5	2M69G7D	23.19	0.208	22.14	0.164
LTE Band 5	3	16QAM	825.5 ~ 847.5	2M69W7D	22.67	0.185	21.62	0.145
LTE Band 5	3	64QAM	825.5 ~ 847.5	2M69W7D	21.44	0.139	20.39	0.109
LTE Band 5	1.4	QPSK	824.7 ~ 848.3	1M08G7D	23.17	0.207	22.12	0.163
LTE Band 5	1.4	16QAM	824.7 ~ 848.3	1M09W7D	22.57	0.181	21.52	0.142
LTE Band 5	1.4	64QAM	824.7 ~ 848.3	1M08W7D	21.48	0.141	20.43	0.110

Mode	Channel Bandwidth (MHz)	Modulation	TX Frequency (MHz)	Emission Designator	Conducted Output Power		EIRP	
					(dBm)	(W)	(dBm)	(W)
LTE Band 66(4)	20	QPSK	1720 ~ 1770	17M9G7D	23.13	0.206	23.73	0.236
LTE Band 66(4)	20	16QAM	1720 ~ 1770	17M9W7D	22.46	0.176	23.06	0.202
LTE Band 66(4)	20	64QAM	1720 ~ 1770	18M0W7D	22.18	0.165	22.78	0.190
LTE Band 66(4)	15	QPSK	1717.5 ~ 1772.5	13M4G7D	23.12	0.205	23.72	0.236
LTE Band 66(4)	15	16QAM	1717.5 ~ 1772.5	13M4W7D	22.48	0.177	23.08	0.203
LTE Band 66(4)	15	64QAM	1717.5 ~ 1772.5	13M5W7D	21.42	0.139	22.02	0.159
LTE Band 66(4)	10	QPSK	1715 ~ 1775	8M95G7D	23.02	0.200	23.62	0.230
LTE Band 66(4)	10	16QAM	1715 ~ 1775	8M95W7D	22.44	0.175	23.04	0.201
LTE Band 66(4)	10	64QAM	1715 ~ 1775	8M96W7D	21.41	0.138	22.01	0.159
LTE Band 66(4)	5	QPSK	1712.5 ~ 1777.5	4M49G7D	23.10	0.204	23.70	0.234
LTE Band 66(4)	5	16QAM	1712.5 ~ 1777.5	4M48W7D	22.54	0.179	23.14	0.206
LTE Band 66(4)	5	64QAM	1712.5 ~ 1777.5	4M49W7D	21.41	0.138	22.01	0.159
LTE Band 66(4)	3	QPSK	1711.5 ~ 1778.5	2M70G7D	23.07	0.203	23.67	0.233
LTE Band 66(4)	3	16QAM	1711.5 ~ 1778.5	2M69W7D	22.62	0.183	23.22	0.210
LTE Band 66(4)	3	64QAM	1711.5 ~ 1778.5	2M69W7D	21.52	0.142	22.12	0.163
LTE Band 66(4)	1.4	QPSK	1710.7 ~ 1779.3	1M08G7D	23.02	0.200	23.62	0.230
LTE Band 66(4)	1.4	16QAM	1710.7 ~ 1779.3	1M09W7D	22.41	0.174	23.01	0.200
LTE Band 66(4)	1.4	64QAM	1710.7 ~ 1779.3	1M08W7D	21.41	0.138	22.01	0.159
LTE Band 2	20	QPSK	1860 ~ 1900	17M9G7D	23.01	0.200	24.71	0.296
LTE Band 2	20	16QAM	1860 ~ 1900	17M9W7D	22.25	0.168	23.95	0.248
LTE Band 2	20	64QAM	1860 ~ 1900	17M9W7D	21.14	0.130	22.84	0.192
LTE Band 2	15	QPSK	1857.5 ~ 1902.5	13M4G7D	23.11	0.205	24.81	0.303
LTE Band 2	15	16QAM	1857.5 ~ 1902.5	13M4W7D	22.23	0.167	23.93	0.247
LTE Band 2	15	64QAM	1857.5 ~ 1902.5	13M4W7D	21.16	0.131	22.86	0.193
LTE Band 2	10	QPSK	1855 ~ 1905	8M96G7D	22.87	0.194	24.57	0.286
LTE Band 2	10	16QAM	1855 ~ 1905	8M95W7D	22.18	0.165	23.88	0.244
LTE Band 2	10	64QAM	1855 ~ 1905	8M96W7D	21.20	0.132	22.90	0.195
LTE Band 2	5	QPSK	1852.5 ~ 1907.5	4M49G7D	22.95	0.197	24.65	0.292
LTE Band 2	5	16QAM	1852.5 ~ 1907.5	4M48W7D	22.33	0.171	24.03	0.253
LTE Band 2	5	64QAM	1852.5 ~ 1907.5	4M49W7D	21.22	0.132	22.92	0.196
LTE Band 2	3	QPSK	1851.5 ~ 1908.5	2M70G7D	22.88	0.194	24.58	0.287
LTE Band 2	3	16QAM	1851.5 ~ 1908.5	2M69W7D	22.22	0.167	23.92	0.247
LTE Band 2	3	64QAM	1851.5 ~ 1908.5	2M69W7D	21.13	0.130	22.83	0.192
LTE Band 2	1.4	QPSK	1850.7 ~ 1909.3	1M08G7D	22.87	0.194	24.57	0.286
LTE Band 2	1.4	16QAM	1850.7 ~ 1909.3	1M09W7D	22.16	0.164	23.86	0.243
LTE Band 2	1.4	64QAM	1850.7 ~ 1909.3	1M08W7D	21.19	0.132	22.89	0.195

2. INTRODUCTION

2.1. EUT DESCRIPTION

This device supports the following capabilities:

LTE/LTE inter-band uplink carrier aggregation, 5G NR(FR1)/5G NR inter-band uplink carrier aggregation and ENDC
5G NR supports SCS 15 kHz for FDD Band and SCS 30 kHz for TDD Band.

2.2. TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+20 °C ~ +23 °C
▪ Relative Humidity	40 % ~ 44 %

2.3. 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.

2.4. 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
Antenna-port conducted emission	1.0 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (Below 1 GHz)	5.0 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	4.8 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (Above 18 GHz)	4.0 dB (The confidence level is about 95 %, $k = 2$)

2.5. TEST FACILITY

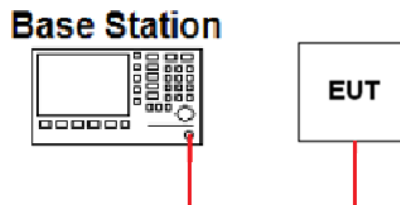
Dt&C Co., Ltd.		
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042.		
The test site complies with the requirements of Part 2.948 according to ANSI C63.4-2014.		
- FCC & ISSED MRA Designation No. : KR0034		
- ISSED#: 5740A		
www.dtnc.net		
Telephone	:	+ 82-31-321-2664
FAX	:	+ 82-31-321-1664

3. DESCRIPTION OF TESTS

3.1. MAXIMUM OUTPUT POWER

Conducted Output Power

Test Set-up



Test Procedure

- KDB971168 D01v03 - Section 5.2.4
- ANSI C63.26-2015 – Section 5.2.4.2

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies. Thus, an average power meter can always be used to perform the measurement when the EUT can be configured to transmit continuously.

If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter:

- A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels.
- A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to $\pm 2\%$) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to $[10 \log (1/\text{duty cycle})]$.

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

Test Procedure

- KDB971168 D01v03 - Section 5.6
- ANSI C63.26-2015 – Section 5.2.5.5

Determining ERP and EIRP from conducted RF output power measurement results

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T$$

where:

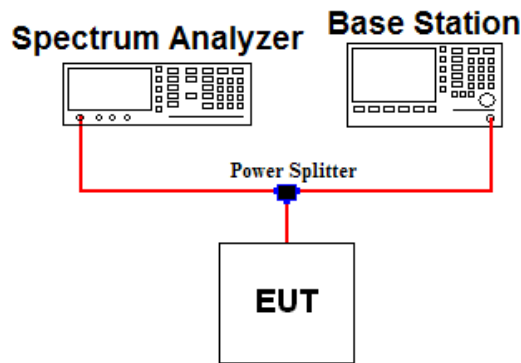
ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

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.

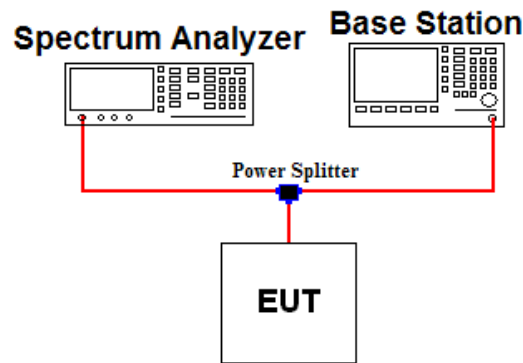
Test setting

The spectrum Analyzer's CCDF measurement function is enabled.

1. Set resolution/measurement bandwidth $\geq$ 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 $[10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ 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 from 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

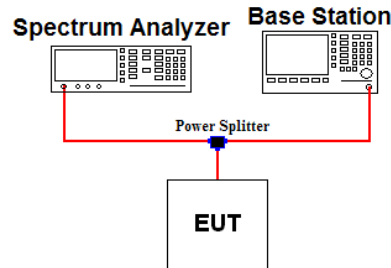
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

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. $RBW = 1 \% \sim 5 \%$ of the expected OBW & $VBW \geq 3 \times RBW$
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.

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 $\geq 3 \times$ RBW
5. Detector = RMS & Trace mode = Max hold
6. Sweep time = Auto couple or 1 s for band edge
7. Number of sweep point $\geq 2 \times$ 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.

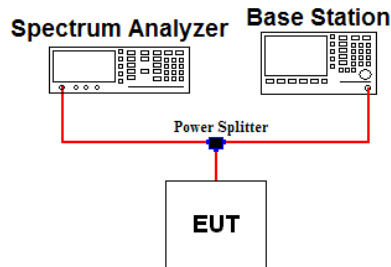
Note 2: Per Part 27(g) for operations in the 600 MHz band and the 698-746 MHz band, compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a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

Note 3: Per Part 90.543(e) for operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 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 10th harmonic.

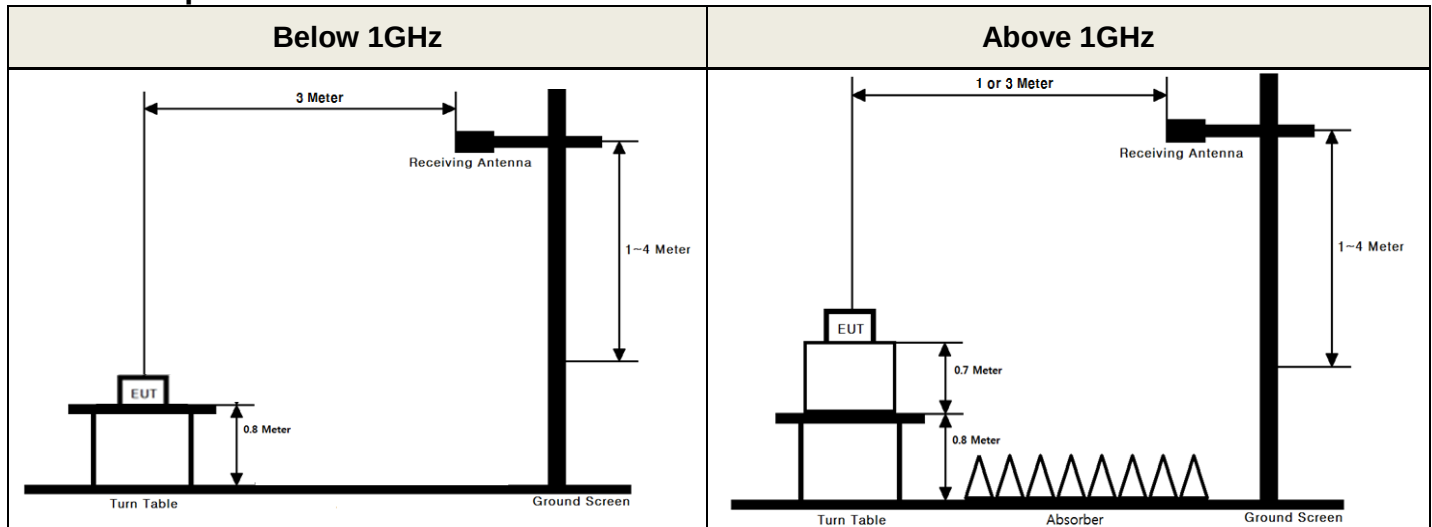
Test setting

1. RBW = 100 kHz or 1 MHz & VBW $\geq 3 \times$ RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point $\geq 2 \times$ 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 1 GHz and 1 MHz or greater for frequencies greater than 1GHz.

3.6. UNDESIRABLE EMISSIONS

Test Set-up



These measurements were performed at 3 test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5 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

- KDB971168 D01v03 - Section 5.8
- ANSI C63.26-2015 – Section 5.5

Test setting

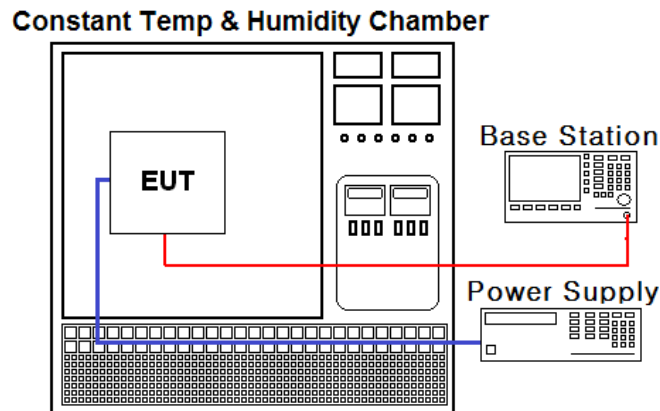
1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW $\geq$ 3 X RBW
2. Detector = RMS & Trace mode = power averaging (rms)
3. Sweep time = Auto couple
4. Number of sweep point $\geq$ 2 X span / RBW
5. The trace was allowed to stabilize

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

- KDB971168 D01v03 - Section 9
- ANSI C63.26-2015 – Section 5.6

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:

Part 24.235, Part 27.54: The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Part 22.355: The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

Part 90.539(e): The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked.

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	24/11/27	25/11/27	MY50410163
Spectrum Analyzer	Agilent Technologies	N9020A	24/11/26	25/11/26	MY50410399
Spectrum Analyzer	Agilent Technologies	N9020A	24/11/27	25/11/27	MY46471601
DC power supply	Agilent Technologies	66332A	24/06/05	25/06/05	US37474125
DC power supply	DIGITAL	DPR-303D	24/06/05	25/06/05	2090097
Multimeter	FLUKE	17B+	24/11/27	25/11/27	36390701WS
Power Splitter	Anritsu	K241B	24/06/04	25/06/04	020611
Temp & Humi	ESPEC	LHU-124	24/06/11	25/06/11	1013001578
Radio Communication Analyzer	Anritsu	MT8820C	24/06/04	25/06/04	6200951873
Radio Communication Analyzer	KEYSIGHT	E7515B	24/06/05	25/06/05	MY60192461
Radio Communication Analyzer	KEYSIGHT	E7515B	24/12/11	25/12/11	MY58300723
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2490A	24/12/12	25/12/12	1338004 1249303
Attenuator	Aeroflex/Weinschel	86-20-11	24/06/03	25/06/03	432
Thermohygrometer	BODYCOM	BJ5478	25/01/13	26/01/13	120612-1
Thermohygrometer	BODYCOM	BJ5478	24/12/05	25/12/05	120612-2
Signal Generator	Rohde Schwarz	SMBV100A	24/12/10	25/12/10	255571
Signal Generator	KEYSIGHT	M9383A	24/12/10	25/12/10	E76F804A28
Loop Antenna	ETS-Lindgren	6502	24/11/08	25/11/08	00060496
Bilog Antenna	Schwarzbeck	VULB 9160	24/12/13	25/12/13	3362
Dipole Antenna	Schwarzbeck	UHA9105	24/12/13	26/12/13	2262
HORN ANT	ETS	3117	24/12/11	25/12/11	00140394
HORN ANT	A.H.Systems	SAS-574	24/06/11	25/06/11	155
PreAmplifier	H.P	8447D	24/12/11	25/12/11	2944A07774
PreAmplifier	Agilent	8449B	24/12/11	25/12/11	3008A02108
PreAmplifier	tsj	MLA-1840-J02-45	24/06/03	25/06/03	16966-10728
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	24/12/11	25/12/11	7
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	24/12/11	25/12/11	2
High Pass Filter	Wainwright Instruments	WHKX6-6320-8000-26500-40CC	24/12/11	25/12/11	2
Cable	HUBER+SUHNER	SUCOFLEX100	25/01/02	26/01/02	M-1
Cable	HUBER+SUHNER	SUCOFLEX100	25/01/02	26/01/02	M-2
Cable	Junkosah	MWX241/B	25/01/02	26/01/02	M-3
Cable	Junkosah	MWX221	25/01/02	26/01/02	M-4
Cable	Junkosah	MWX221	25/01/02	26/01/02	M-5
Cable	JUNFLON	J12J101757-00	25/01/02	26/01/02	M-7
Cable	HUBER+SUHNER	SUCOFLEX104	25/01/02	26/01/02	M-8
Cable	HUBER+SUHNER	SUCOFLEX106	25/01/02	26/01/02	M-9
Cable	Junkosha	MWX315	25/01/02	26/01/02	M-10
Cable	JUNKOSHA	MWX241	25/01/02	26/01/02	mmW-1
Cable	JUNKOSHA	MWX241	25/01/02	26/01/02	mmW-4
Cable	Junkosah	MWX342	25/01/02	26/01/02	RFC-03
Cable	A.H.System Inc	SAC-40G-1.5	25/01/02	26/01/02	RFC-70
3m Semi Anechoic Chamber	SYC	3m-SAC	24/06/14(NSA) 24/06/19(VSWR)	25/06/14(NSA) 25/06/19(VSWR)	3m-SAC-1

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.

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5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Status Note 1
2.1046	Conducted Output Power	N/A	C
2.1049	Occupied Bandwidth	N/A	C
22.913(d) 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
90.543(e)	Band Edge / Conducted Spurious Emissions	>65 + 10 log (P) dB in a 6.25 kHz band segment frequencies between 769-775MHz and 799-805MHz >43 + 10 log (P) dB at frequency between 775-788 MHz, above 805 MHz, and below 758 MHz	C
2.1055 22.355 24.235 27.54 90.539(e)	Frequency Stability	Refer to section 3.7 of this report.	C
27.50(c)(9) 90.542(a)(6)	Radiated Output Power (B12, 14)	< 30 Watts max. ERP (Mobile station)	C
22.913(a)(5)	Radiated Output Power (B5)	< 7 Watts max. ERP	C
27.50(d)(4)	Radiated Output Power (B66, 4)	< 1 Watts max. EIRP	C
24.232(c)	Radiated Output Power (B2)	< 2 Watts max. EIRP	C
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h) 90.539(e)	Undesirable Emissions (B5, 12, 14, 2, 66, 4)	> 43 + 10log ₁₀ (P) dB for all out-of-band emissions	C
90.543(f)	Undesirable Emissions in 1559 ~ 1610 MHz (B14)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions of less than 700 Hz bandwidth)	C
Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable Note 2: Radiated test items were performed in three orthogonal EUT positions and the worst case data was reported. Note 3: LTE Band 66 (1710 ~ 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 ~ 1750 MHz). Therefore, test data provided in this test report covers Band 4 as well as Band 66. Note 4: The radiated spurious emissions were performed on the LTE Inter-band UL CA, and the worst case data was reported.			

6. SAMPLE CALCULATION

A. Emission Designator

LTE Band 12(QPSK)

Emission Designator = **8M93G7D**

LTE OBW = 8.927 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data Transmission

LTE Band 12(16QAM)

Emission Designator = **8M91W7D**

LTE OBW = 8.914 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data Transmission

LTE Band 12(64QAM)

Emission Designator = **8M92W7D**

LTE OBW = 8.924 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data Transmission

B. For substitution method

Unwanted emissions

- 1) The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1 GHz respectively above ground.
- 2) The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
- 3) Vary the measurement antenna height through 1 m to 4 m and the rotate EUT through 360° in order to determine the maximum emission level.
- 4) Record the measured emission level and frequency using the available test method.
If required by the test method, add $10 \log(1/\text{duty cycle})$ to measured emission level.
- 5) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 6) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude. And adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the previously measured emission level.
- 7) The conducted power at the terminal of the substitute antenna is measured.
- 8) Record the level at substituted antenna terminal.
- 9) The result is calculated as below;

Result: EIRP(dBm) = Level at Substitute antenna terminal + Substitute Antenna Gain (dBi)

Result: ERP(dBm) = Level at Substitute antenna terminal + Substitute Antenna Gain (dBd)

Where, TX Antenna Gain (dBd) = TX Antenna Gain (dBi) - 2.15 dB

7. TEST DATA

7.1. OCCUPIED BANDWIDTH

- All bandwidths and modulations were investigated and the worst case plots are attached.
- Plots of the EUT's Occupied Bandwidth are shown in Clause 8.1

7.2. PEAK TO AVERAGE RATIO

- All bandwidths and modulations were investigated and the worst case plots are attached.
- Plots of the EUT's Peak- to- Average Ratio are shown in Clause 8.2

7.2.1. LTE Band 12

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	PAR (dB)
10	704	QPSK	4.86
		16QAM	5.87
		64QAM	6.48
	711	QPSK	4.92
		16QAM	5.92
		64QAM	6.52
5	701.5	QPSK	4.78
		16QAM	5.79
		64QAM	6.48
	707.5	QPSK	4.86
		16QAM	5.89
		64QAM	6.57
	713.5	QPSK	4.84
		16QAM	5.85
		64QAM	6.56
3	700.5	QPSK	4.70
		16QAM	6.03
		64QAM	6.55
	707.5	QPSK	4.74
		16QAM	6.12
		64QAM	6.63
	714.5	QPSK	4.70
		16QAM	6.05
		64QAM	6.56
1.4	699.7	QPSK	4.74
		16QAM	6.00
		64QAM	6.53
	707.5	QPSK	4.79
		16QAM	6.14
		64QAM	6.66
	715.5	QPSK	4.69
		16QAM	5.94
		64QAM	6.52

7.2.2. LTE Band 14

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	PAR (dB)
10	793	QPSK	4.90
		16QAM	5.90
		64QAM	6.47
5	790.5	QPSK	4.75
		16QAM	5.76
		64QAM	6.47
	795.5	QPSK	4.85
		16QAM	5.85
		64QAM	6.53

7.2.3. LTE Band 5

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	PAR (dB)
10	829	QPSK	4.77
		16QAM	5.78
		64QAM	6.41
	836.5	QPSK	4.76
		16QAM	5.77
		64QAM	5.77
	844	QPSK	4.80
		16QAM	5.80
		64QAM	6.39
5	826.5	QPSK	4.72
		16QAM	5.74
		64QAM	6.42
	836.5	QPSK	4.69
		16QAM	5.74
		64QAM	5.72
	846.5	QPSK	4.69
		16QAM	5.70
		64QAM	6.40
3	825.5	QPSK	4.62
		16QAM	5.97
		64QAM	6.50
	836.5	QPSK	4.59
		16QAM	5.95
		64QAM	6.47
	847.5	QPSK	4.58
		16QAM	5.89
		64QAM	6.43
1.4	824.7	QPSK	4.65
		16QAM	5.91
		64QAM	6.51
	836.5	QPSK	4.63
		16QAM	5.90
		64QAM	6.45
	848.3	QPSK	4.57
		16QAM	5.81
		64QAM	6.38

7.2.4. LTE Band 66(4)

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	PAR (dB)
20	1720	QPSK	4.49
		16QAM	5.56
		64QAM	6.38
	1750	QPSK	4.45
		16QAM	5.53
		64QAM	6.31
	1770	QPSK	4.55
		16QAM	5.56
		64QAM	6.29
15	1717.5	QPSK	4.41
		16QAM	5.40
		64QAM	6.36
	1750	QPSK	4.33
		16QAM	5.30
		64QAM	6.27
	1772.5	QPSK	4.42
		16QAM	5.38
		64QAM	6.19
10	1715	QPSK	4.56
		16QAM	5.64
		64QAM	6.42
	1750	QPSK	4.53
		16QAM	5.58
		64QAM	6.41
	1775	QPSK	4.52
		16QAM	5.54
		64QAM	6.35
5	1712.5	QPSK	4.52
		16QAM	5.56
		64QAM	6.47
	1750	QPSK	4.50
		16QAM	5.54
		64QAM	6.44
	1777.5	QPSK	4.45
		16QAM	5.51
		64QAM	6.37
3	1711.5	QPSK	4.48
		16QAM	5.43
		64QAM	6.47
	1750	QPSK	4.50
		16QAM	5.42
		64QAM	6.43
	1778.5	QPSK	4.46
		16QAM	5.39
		64QAM	6.41
1.4	1710.7	QPSK	4.52
		16QAM	5.55
		64QAM	6.49
	1750	QPSK	4.52
		16QAM	5.52
		64QAM	6.45
	1779.3	QPSK	4.49
		16QAM	5.50
		64QAM	6.42

7.2.5. LTE Band 2

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	PAR (dB)
20	1860	QPSK	4.53
		16QAM	5.59
		64QAM	6.41
	1880	QPSK	4.52
		16QAM	5.56
		64QAM	6.41
	1900	QPSK	4.59
		16QAM	5.61
		64QAM	6.40
15	1857.5	QPSK	4.45
		16QAM	5.42
		64QAM	6.34
	1880	QPSK	4.39
		16QAM	5.38
		64QAM	6.32
	1902.5	QPSK	4.46
		16QAM	5.44
		64QAM	6.34
10	1855	QPSK	4.59
		16QAM	5.62
		64QAM	6.44
	1880	QPSK	4.57
		16QAM	5.62
		64QAM	6.43
	1905	QPSK	4.60
		16QAM	5.64
		64QAM	6.45
5	1852.5	QPSK	4.52
		16QAM	5.56
		64QAM	6.44
	1880	QPSK	4.53
		16QAM	5.56
		64QAM	6.44
	1907.5	QPSK	4.54
		16QAM	5.62
		64QAM	6.49
3	1851.5	QPSK	4.49
		16QAM	5.44
		64QAM	6.43
	1880	QPSK	4.50
		16QAM	5.43
		64QAM	6.44
	1908.5	QPSK	4.53
		16QAM	5.49
		64QAM	6.49
1.4	1850.7	QPSK	4.51
		16QAM	5.56
		64QAM	6.47
	1880	QPSK	4.52
		16QAM	5.56
		64QAM	6.46
	1909.3	QPSK	4.57
		16QAM	5.63
		64QAM	6.55

7.3. BAND EDEG EMISSIONS (Conducted)

- All bandwidths, RB configurations and modulations were investigated and the worst case plots are attached.
- Plots of the EUT's Band Edge Emissions are shown in Clause 8.3

7.4. SPURIOUS AND HARMONICS EMISSIONS (Conducted)

- All bandwidths, RB configurations and modulations were investigated and the worst case plots are attached.
- Plots of the EUT's Spurious Emissions are shown in Clause 8.4

7.5. MAXIMUM OUTPUT POWER

- Test Notes

1) The EUT was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the below table.

2) EIRP = Conducted Output Power(dBm) + EUT Antenna gain(dBi)

ERP = EIRP – 2.15(dB)

7.5.1. LTE Band 12

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Conducted Output Power (dBm)	EUT Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)
10	704	QPSK	1/49	23.49	-0.2	23.29	21.14
		16QAM	1/25	22.82	-0.2	22.62	20.47
		64QAM	1/25	21.71	-0.2	21.51	19.36
	711	QPSK	1/49	23.50	-0.2	23.30	21.15
		16QAM	1/25	22.83	-0.2	22.63	20.48
		64QAM	1/25	21.79	-0.2	21.59	19.44
5	701.5	QPSK	1/12	23.51	-0.2	23.31	21.16
		16QAM	1/12	22.98	-0.2	22.78	20.63
		64QAM	1/12	21.68	-0.2	21.48	19.33
	707.5	QPSK	1/12	23.50	-0.2	23.30	21.15
		16QAM	1/12	22.89	-0.2	22.69	20.54
		64QAM	1/12	21.82	-0.2	21.62	19.47
	713.5	QPSK	1/12	23.48	-0.2	23.28	21.13
		16QAM	1/12	22.91	-0.2	22.71	20.56
		64QAM	1/12	21.75	-0.2	21.55	19.40
3	700.5	QPSK	1/7	23.52	-0.2	23.32	21.17
		16QAM	1/7	22.87	-0.2	22.67	20.52
		64QAM	1/7	21.72	-0.2	21.52	19.37
	707.5	QPSK	1/7	23.56	-0.2	23.36	21.21
		16QAM	1/7	22.90	-0.2	22.70	20.55
		64QAM	1/7	21.79	-0.2	21.59	19.44
	714.5	QPSK	1/7	23.48	-0.2	23.28	21.13
		16QAM	1/7	22.86	-0.2	22.66	20.51
		64QAM	1/7	21.76	-0.2	21.56	19.41
1.4	699.7	QPSK	1/5	23.45	-0.2	23.25	21.10
		16QAM	1/5	22.78	-0.2	22.58	20.43
		64QAM	1/2	21.71	-0.2	21.51	19.36
	707.5	QPSK	1/2	23.44	-0.2	23.24	21.09
		16QAM	1/5	22.72	-0.2	22.52	20.37
		64QAM	1/2	21.63	-0.2	21.43	19.28
	715.3	QPSK	1/0	23.44	-0.2	23.24	21.09
		16QAM	1/5	22.78	-0.2	22.58	20.43
		64QAM	1/5	21.68	-0.2	21.48	19.33

7.5.2. LTE Band 14

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Conducted Output Power (dBm)	EUT Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)
10	793	QPSK	1/25	23.54	1.0	24.54	22.39
		16QAM	1/25	22.84	1.0	23.84	21.69
		64QAM	1/25	21.78	1.0	22.78	20.63
5	790.5	QPSK	1/12	23.52	1.0	24.52	22.37
		16QAM	1/12	22.89	1.0	23.89	21.74
		64QAM	1/12	21.80	1.0	22.80	20.65
	795.5	QPSK	1/0	23.47	1.0	24.47	22.32
		16QAM	1/12	22.96	1.0	23.96	21.81
		64QAM	1/12	21.72	1.0	22.72	20.57

7.5.3. LTE Band 5

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Conducted Output Power (dBm)	EUT Antenna Gain(dBi)	EIRP (dBm)	ERP (dBm)
10	829	QPSK	1/25	23.22	1.1	24.32	22.17
		16QAM	1/25	22.48	1.1	23.58	21.43
		64QAM	1/25	21.53	1.1	22.63	20.48
	836.5	QPSK	1/25	23.25	1.1	24.35	22.20
		16QAM	1/25	22.57	1.1	23.67	21.52
		64QAM	1/0	21.53	1.1	22.63	20.48
	844	QPSK	1/0	23.24	1.1	24.34	22.19
		16QAM	1/0	22.57	1.1	23.67	21.52
		64QAM	1/0	21.46	1.1	22.56	20.41
5	826.5	QPSK	1/0	23.15	1.1	24.25	22.10
		16QAM	1/24	22.61	1.1	23.71	21.56
		64QAM	1/24	21.43	1.1	22.53	20.38
	836.5	QPSK	1/12	23.25	1.1	24.35	22.20
		16QAM	1/24	22.65	1.1	23.75	21.60
		64QAM	1/12	21.45	1.1	22.55	20.40
	846.5	QPSK	1/12	23.13	1.1	24.23	22.08
		16QAM	1/12	22.59	1.1	23.69	21.54
		64QAM	1/12	21.48	1.1	22.58	20.43
3	825.5	QPSK	1/7	23.13	1.1	24.23	22.08
		16QAM	1/7	22.67	1.1	23.77	21.62
		64QAM	1/0	21.44	1.1	22.54	20.39
	836.5	QPSK	1/14	23.19	1.1	24.29	22.14
		16QAM	1/14	22.63	1.1	23.73	21.58
		64QAM	1/7	21.44	1.1	22.54	20.39
	847.5	QPSK	1/7	23.12	1.1	24.22	22.07
		16QAM	1/0	22.50	1.1	23.60	21.45
		64QAM	1/7	21.40	1.1	22.50	20.35
1.4	824.7	QPSK	1/2	23.12	1.1	24.22	22.07
		16QAM	1/5	22.42	1.1	23.52	21.37
		64QAM	1/0	21.39	1.1	22.49	20.34
	836.5	QPSK	1/2	23.17	1.1	24.27	22.12
		16QAM	1/0	22.57	1.1	23.67	21.52
		64QAM	1/0	21.48	1.1	22.58	20.43
	848.3	QPSK	1/0	23.08	1.1	24.18	22.03
		16QAM	1/0	22.56	1.1	23.66	21.51
		64QAM	1/0	21.43	1.1	22.53	20.38

7.5.4. LTE Band 66(4)

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Conducted Output Power (dBm)	EUT Antenna Gain(dBi)	EIRP (dBm)
20	1720	QPSK	1/0	23.00	0.6	23.60
		16QAM	1/0	22.41	0.6	23.01
		64QAM	1/0	22.18	0.6	22.78
	1745	QPSK	1/50	23.13	0.6	23.73
		16QAM	1/50	22.46	0.6	23.06
		64QAM	1/0	21.50	0.6	22.10
	1770	QPSK	1/0	23.08	0.6	23.68
		16QAM	1/50	22.38	0.6	22.98
		64QAM	1/0	21.42	0.6	22.02
15	1717.5	QPSK	1/0	23.01	0.6	23.61
		16QAM	1/0	22.46	0.6	23.06
		64QAM	1/0	21.42	0.6	22.02
	1745	QPSK	1/36	23.12	0.6	23.72
		16QAM	1/0	22.48	0.6	23.08
		64QAM	1/0	21.42	0.6	22.02
	1772.5	QPSK	1/0	23.10	0.6	23.70
		16QAM	1/36	22.47	0.6	23.07
		64QAM	1/0	21.39	0.6	21.99
10	1715	QPSK	1/25	22.91	0.6	23.51
		16QAM	1/0	22.36	0.6	22.96
		64QAM	1/0	21.20	0.6	21.80
	1745	QPSK	1/0	23.01	0.6	23.61
		16QAM	1/25	22.44	0.6	23.04
		64QAM	1/0	21.41	0.6	22.01
	1775	QPSK	1/0	23.02	0.6	23.62
		16QAM	1/0	22.43	0.6	23.03
		64QAM	1/0	21.35	0.6	21.95
5	1712.5	QPSK	1/12	23.00	0.6	23.60
		16QAM	1/0	22.41	0.6	23.01
		64QAM	1/12	21.34	0.6	21.94
	1745	QPSK	1/12	23.10	0.6	23.70
		16QAM	1/0	22.52	0.6	23.12
		64QAM	1/12	21.41	0.6	22.01
	1777.5	QPSK	1/12	23.07	0.6	23.67
		16QAM	1/0	22.54	0.6	23.14
		64QAM	1/12	21.30	0.6	21.90
3	1711.5	QPSK	1/7	22.98	0.6	23.58
		16QAM	1/7	22.62	0.6	23.22
		64QAM	1/14	21.21	0.6	21.81
	1745	QPSK	1/7	23.07	0.6	23.67
		16QAM	1/7	22.53	0.6	23.13
		64QAM	1/7	21.52	0.6	22.12
	1778.5	QPSK	1/7	23.04	0.6	23.64
		16QAM	1/7	22.56	0.6	23.16
		64QAM	1/7	21.41	0.6	22.01
1.4	1710.7	QPSK	1/0	22.95	0.6	23.55
		16QAM	1/0	22.27	0.6	22.87
		64QAM	1/0	21.41	0.6	22.01
	1745	QPSK	1/2	23.02	0.6	23.62
		16QAM	1/0	22.41	0.6	23.01
		64QAM	1/2	21.27	0.6	21.87
	1779.3	QPSK	1/2	23.01	0.6	23.61
		16QAM	1/0	22.39	0.6	22.99
		64QAM	1/2	21.30	0.6	21.90

7.5.5. LTE Band 2

Channel Bandwidth (MHz)	Frequency (MHz)	Modulation	RB Size/ Offset	Conducted Output Power (dBm)	EUT Antenna Gain(dBi)	EIRP (dBm)
20	1860	QPSK	1/0	22.93	1.7	24.63
		16QAM	1/0	22.14	1.7	23.84
		64QAM	1/0	21.07	1.7	22.77
	1880	QPSK	1/0	23.01	1.7	24.71
		16QAM	1/0	22.21	1.7	23.91
		64QAM	1/50	21.14	1.7	22.84
	1900	QPSK	1/0	23.01	1.7	24.71
		16QAM	1/0	22.25	1.7	23.95
		64QAM	1/0	21.06	1.7	22.76
15	1857.5	QPSK	1/0	22.94	1.7	24.64
		16QAM	1/0	22.19	1.7	23.89
		64QAM	1/0	21.01	1.7	22.71
	1880	QPSK	1/0	23.11	1.7	24.81
		16QAM	1/0	22.23	1.7	23.93
		64QAM	1/36	21.16	1.7	22.86
	1902.5	QPSK	1/0	22.99	1.7	24.69
		16QAM	1/0	22.03	1.7	23.73
		64QAM	1/36	21.00	1.7	22.70
10	1855	QPSK	1/0	22.83	1.7	24.53
		16QAM	1/0	22.05	1.7	23.75
		64QAM	1/0	21.01	1.7	22.71
	1880	QPSK	1/25	22.87	1.7	24.57
		16QAM	1/25	22.18	1.7	23.88
		64QAM	1/25	21.20	1.7	22.90
	1905	QPSK	1/49	22.77	1.7	24.47
		16QAM	1/49	22.05	1.7	23.75
		64QAM	1/49	21.04	1.7	22.74
5	1852.5	QPSK	1/0	22.79	1.7	24.49
		16QAM	1/0	22.22	1.7	23.92
		64QAM	1/0	21.03	1.7	22.73
	1880	QPSK	1/0	22.95	1.7	24.65
		16QAM	1/0	22.33	1.7	24.03
		64QAM	1/0	21.22	1.7	22.92
	1907.5	QPSK	1/0	22.75	1.7	24.45
		16QAM	1/0	22.13	1.7	23.83
		64QAM	1/12	21.04	1.7	22.74
3	1851.5	QPSK	1/0	22.71	1.7	24.41
		16QAM	1/7	22.05	1.7	23.75
		64QAM	1/7	20.98	1.7	22.68
	1880	QPSK	1/7	22.88	1.7	24.58
		16QAM	1/7	22.22	1.7	23.92
		64QAM	1/14	21.13	1.7	22.83
	1908.5	QPSK	1/7	22.73	1.7	24.43
		16QAM	1/7	22.02	1.7	23.72
		64QAM	1/7	21.08	1.7	22.78
1.4	1850.7	QPSK	1/0	22.69	1.7	24.39
		16QAM	1/0	22.01	1.7	23.71
		64QAM	1/0	20.98	1.7	22.68
	1880	QPSK	1/5	22.87	1.7	24.57
		16QAM	1/0	22.16	1.7	23.86
		64QAM	1/0	21.19	1.7	22.89
	1909.3	QPSK	1/5	22.73	1.7	24.43
		16QAM	1/2	22.04	1.7	23.74
		64QAM	1/0	20.95	1.7	22.65

7.6. UNDESIRABLE EMISSIONS (Radiated)

- Test Notes

- 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.
- For Band below 1GHz:
Result(dBm) = Level at Substitute antenna terminal(dBm) + Substitute Antenna Gain (dBd)
For Band above 1GHz:
Result(dBm) = Level at Substitute antenna terminal(dBm) + Substitute Antenna Gain (dBi)
- Limit
Bands 12/14/5/66(4)/2 = -13dBm
Limit for 1559 MHz ~ 1610 MHz in Band 14 = -40dBm/MHz (equivalent isotropically radiated power for wideband signals)

7.6.1. LTE Band 12

Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/ Offset	Modulation	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	704	1/25	QPSK	1408.10	V	-64.77	2.71	-62.06	-13.00	49.06
				2112.17	V	-66.76	2.98	-63.78	-13.00	50.78
				2815.19	V	-66.31	4.72	-61.59	-13.00	48.59
				3519.76	V	-67.34	6.18	-61.16	-13.00	48.16
	711	1/49	QPSK	1413.24	V	-64.96	2.77	-62.19	-13.00	49.19
				2119.91	V	-66.79	3.04	-63.75	-13.00	50.75
				2825.91	V	-66.76	4.76	-62.00	-13.00	49.00
				3532.92	V	-67.75	6.20	-61.55	-13.00	48.55

7.6.2. LTE Band 14

Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/ Offset	Modulation	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	793	1/0	QPSK	2365.50	V	-65.84	3.99	-61.85	-13.00	48.85
				3154.44	V	-66.77	5.10	-61.67	-13.00	48.67
				3943.97	V	-68.84	6.70	-62.14	-13.00	49.14
				4731.61	V	-68.21	7.38	-60.83	-13.00	47.83

UNDESIRABLE EMISSIONS IN 1559 MHz ~ 1610 MHz (LTE Band 14)

Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/ Offset	Modulation	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
10	793	1/0	QPSK	1577.17	V	-63.94	5.76	-58.18	-40.00	18.18

7.6.3. LTE Band 5

Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	829	1/49	QPSK	1666.85	H	-54.64	3.57	-51.07	-13.00	38.07
				2499.85	H	-66.76	3.74	-63.02	-13.00	50.02
				3334.37	H	-67.46	5.65	-61.81	-13.00	48.81
				4167.69	H	-68.82	7.02	-61.80	-13.00	48.80
	836.5	1/25	QPSK	1673.21	H	-54.79	3.59	-51.20	-13.00	38.20
				2510.27	H	-66.76	3.75	-63.01	-13.00	50.01
				3346.52	H	-67.62	5.70	-61.92	-13.00	48.92
				4183.44	H	-68.36	7.01	-61.35	-13.00	48.35
	844	1/0	QPSK	1679.12	H	-53.41	3.61	-49.80	-13.00	36.80
				2520.19	H	-67.06	3.75	-63.31	-13.00	50.31
				3358.37	H	-68.22	5.75	-62.47	-13.00	49.47
				4198.10	H	-68.63	7.01	-61.62	-13.00	48.62

7.6.4. LTE Band 66(4)

Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	1720	1/50	QPSK	3440.30	H	-67.38	8.20	-59.18	-13.00	46.18
				5160.89	H	-67.72	10.09	-57.63	-13.00	44.63
				6879.83	H	-66.46	11.19	-55.27	-13.00	42.27
				8599.70	H	-67.55	13.17	-54.38	-13.00	41.38
	1745	1/50	QPSK	3489.87	H	-67.52	8.29	-59.23	-13.00	46.23
				5234.69	H	-68.41	10.14	-58.27	-13.00	45.27
				6979.90	H	-67.42	11.22	-56.20	-13.00	43.20
				8724.71	H	-67.66	13.16	-54.50	-13.00	41.50
	1770	1/50	QPSK	3539.33	H	-67.22	8.36	-58.86	-13.00	45.86
				5310.60	H	-67.32	10.18	-57.14	-13.00	44.14
				7080.23	H	-67.74	11.35	-56.39	-13.00	43.39
				8849.55	H	-67.12	13.06	-54.06	-13.00	41.06

7.6.5. LTE Band 2

Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	1860	1/50	QPSK	3720.92	H	-68.27	8.29	-59.98	-13.00	46.98
				5580.06	H	-67.08	10.63	-56.45	-13.00	43.45
				7440.97	H	-67.55	12.06	-55.49	-13.00	42.49
				9300.39	H	-66.14	13.29	-52.85	-13.00	39.85
	1880	1/50	QPSK	3760.39	H	-68.90	8.28	-60.62	-13.00	47.62
				5639.81	H	-66.89	10.72	-56.17	-13.00	43.17
				7519.74	H	-67.89	12.10	-55.79	-13.00	42.79
				9400.55	H	-65.73	13.21	-52.52	-13.00	39.52
	1900	1/50	QPSK	3800.29	H	-68.55	8.33	-60.22	-13.00	47.22
				5700.04	H	-66.31	10.73	-55.58	-13.00	42.58
				7600.65	H	-67.81	12.11	-55.70	-13.00	42.70
				9500.64	H	-65.77	13.15	-52.62	-13.00	39.62

7.6.6. LTE Inter-band ULCA

- Test Notes

- 1) 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.
- 2) For emissions related to Band below 1GHz:
Result(dBm) = Level at Substitute antenna terminal(dBm) + Substitute Antenna Gain (dBd)
For emissions related to Band above 1GHz:
Result(dBm) = Level at Substitute antenna terminal(dBm) + Substitute Antenna Gain (dBi)

Inter-band ULCA(2A-12A)

Band	Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/ Offset	Modulation
12	10	711	1/25	QPSK
2	20	1880	1/50	QPSK

Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal (dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
1420.97	V	-68.89	2.86	-	-66.03	-13.00	53.03
2133.56	V	-65.05	3.14	-	-61.91	-13.00	48.91
2842.83	V	-66.93	4.82	-	-62.11	-13.00	49.11
3554.14	V	-67.77	6.22	-	-61.55	-13.00	48.55
3760.29	V	-69.20	-	8.28	-60.92	-13.00	47.92
5640.66	V	-68.45	-	10.72	-57.73	-13.00	44.73
7519.27	V	-68.31	-	12.10	-56.21	-13.00	43.21
9399.14	V	-63.58	-	13.21	-50.37	-13.00	37.37

Inter-band ULCA(2A-5A)

Band	Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/ Offset	Modulation
5	10	836.5	1/25	QPSK
2	20	1880	1/50	QPSK

Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal (dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
1672.55	H	-70.01	3.59	-	-66.42	-13.00	53.42
2509.29	H	-66.82	3.75	-	-63.07	-13.00	50.07
3346.23	H	-67.93	5.69	-	-62.24	-13.00	49.24
3760.36	H	-68.91	-	8.28	-60.63	-13.00	47.63
4182.61	H	-68.97	7.01	-	-61.96	-13.00	48.96
5639.72	H	-66.85	-	10.72	-56.13	-13.00	43.13
7520.17	H	-67.85	-	12.10	-55.75	-13.00	42.75
9399.47	H	-66.89	-	13.21	-53.68	-13.00	40.68

Inter-band ULCA(4A-12A)

Band	Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation
12	10	711	1/25	QPSK
4	10	1715	1/0	QPSK

Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal (dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
1421.05	V	-68.36	2.86	-	-65.50	-13.00	52.50
2132.54	V	-65.51	3.13	-	-62.38	-13.00	49.38
2843.70	V	-66.70	4.83	-	-61.87	-13.00	48.87
3419.22	V	-67.27	-	8.15	-59.12	-13.00	46.12
3555.24	V	-67.74	6.22	-	-61.52	-13.00	48.52
5129.19	V	-68.48	-	10.06	-58.42	-13.00	45.42
6839.13	V	-67.97	-	11.18	-56.79	-13.00	43.79
8552.52	V	-67.48	-	13.14	-54.34	-13.00	41.34

Inter-band ULCA(5A-66A)

Band	Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation
5	10	836.5	1/25	QPSK
66	20	1745	1/50	QPSK

Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal (dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
1673.24	H	-62.33	3.59	-	-58.74	-13.00	45.74
2509.15	H	-66.73	3.75	-	-62.98	-13.00	49.98
3346.08	H	-67.85	5.69	-	-62.16	-13.00	49.16
3489.73	H	-67.77	-	8.29	-59.48	-13.00	46.48
4182.59	H	-68.96	7.01	-	-61.95	-13.00	48.95
5235.25	H	-68.66	-	10.14	-58.52	-13.00	45.52
6979.84	H	-67.34	-	11.22	-56.12	-13.00	43.12
8725.27	H	-67.42	-	13.16	-54.26	-13.00	41.26

Inter-band ULCA(12A-66A)

Band	Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation
12	10	711	1/25	QPSK
66	20	1745	1/50	QPSK

Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal (dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
1422.28	V	-66.78	2.87	-	-63.91	-13.00	50.91
2133.21	V	-66.00	3.14	-	-62.86	-13.00	49.86
2844.64	V	-67.06	4.83	-	-62.23	-13.00	49.23
3490.48	V	-67.69	-	8.29	-59.40	-13.00	46.40
3554.10	V	-67.75	6.22	-	-61.53	-13.00	48.53
5234.10	V	-68.72	-	10.14	-58.58	-13.00	45.58
6979.20	V	-68.10	-	11.22	-56.88	-13.00	43.88
8724.12	V	-67.16	-	13.16	-54.00	-13.00	41.00

Inter-band ULCA(2A-14A)

Band	Channel Bandwidth (MHz)	Frequency (MHz)	RB Size/Offset	Modulation
14	10	793	1/25	QPSK
2	20	1880	1/50	QPSK

Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal (dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
1586.06	V	-68.42	-	5.76	-62.66	-40.00	22.66
2379.89	V	-65.27	3.96	-	-61.31	-13.00	48.31
3171.40	V	-66.71	5.12	-	-61.59	-13.00	48.59
3759.73	V	-68.86	-	8.28	-60.58	-13.00	47.58
3965.73	V	-68.98	6.78	-	-62.20	-13.00	49.20
5640.69	V	-68.53	-	10.72	-57.81	-13.00	44.81
7519.67	V	-68.11	-	12.10	-56.01	-13.00	43.01
9399.27	V	-62.99	-	13.21	-49.78	-13.00	36.78

7.7. FREQUENCY STABILITY

- Test Notes

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 in-band 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.

7.7.1. LTE Band 12

OPERATING FREQUENCY : 707.5 MHz

REFERENCE VOLTAGE : 3.90 V DC

LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.90	+20	707,500,001	0.0000001	0.001
100 %		-30	707,500,002	0.0000003	0.003
100 %		-20	707,500,001	0.0000001	0.001
100 %		-10	707,500,001	0.0000001	0.001
100 %		0	707,500,001	0.0000001	0.001
100 %		+10	707,500,001	0.0000001	0.001
100 %		+20	707,500,001	0.0000001	0.001
100 %		+30	707,500,002	0.0000003	0.003
100 %		+40	707,500,001	0.0000001	0.001
100 %		+50	707,500,001	0.0000001	0.001
115 %	4.49	+20	707,500,001	0.0000001	0.001
BATT.ENDPOINT	3.32	+20	707,500,001	0.0000001	0.001

7.7.2. LTE Band 14

OPERATING FREQUENCY : 793.00 MHz
 REFERENCE VOLTAGE : 3.90 V DC
 LIMIT : 1.25 ppm

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.90	+20	793,000,006	0.0000008	0.008
100 %		-30	793,000,006	0.0000008	0.008
100 %		-20	793,000,006	0.0000008	0.008
100 %		-10	793,000,005	0.0000006	0.006
100 %		0	793,000,007	0.0000009	0.009
100 %		+10	793,000,006	0.0000008	0.008
100 %		+20	793,000,006	0.0000008	0.008
100 %		+30	793,000,006	0.0000008	0.008
100 %		+40	793,000,005	0.0000006	0.006
100 %		+50	793,000,006	0.0000008	0.008
115 %	4.49	+20	793,000,007	0.0000009	0.009
BATT.ENDPOINT	3.32	+20	793,000,007	0.0000009	0.009

7.7.3. LTE Band 5

OPERATING FREQUENCY : 836.50 MHz
 REFERENCE VOLTAGE : 3.87 V DC
 LIMIT : 2.5 ppm

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.90	+20	836,499,999	-0.0000001	-0.001
100 %		-30	836,499,999	-0.0000001	-0.001
100 %		-20	836,499,998	-0.0000002	-0.002
100 %		-10	836,499,999	-0.0000001	-0.001
100 %		0	836,499,999	-0.0000001	-0.001
100 %		+10	836,499,998	-0.0000002	-0.002
100 %		+20	836,499,999	-0.0000001	-0.001
100 %		+30	836,499,998	-0.0000002	-0.002
100 %		+40	836,499,999	-0.0000001	-0.001
100 %		+50	836,499,999	-0.0000001	-0.001
115 %	4.49	+20	836,499,999	-0.0000001	-0.001
BATT.ENDPOINT	3.32	+20	836,499,999	-0.0000001	-0.001

7.7.4. LTE Band 66(4)

OPERATING FREQUENCY : 1 750.00 MHz
 REFERENCE VOLTAGE : 3.90 DC
 LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.90	+20	1,749,999,999	-0.0000001	-0.001
100 %		-30	1,749,999,999	-0.0000001	-0.001
100 %		-20	1,749,999,999	-0.0000001	-0.001
100 %		-10	1,749,999,999	-0.0000001	-0.001
100 %		0	1,749,999,998	-0.0000001	-0.001
100 %		+10	1,749,999,998	-0.0000001	-0.001
100 %		+20	1,749,999,999	-0.0000001	-0.001
100 %		+30	1,749,999,997	-0.0000002	-0.002
100 %		+40	1,749,999,999	-0.0000001	-0.001
100 %		+50	1,749,999,999	-0.0000001	-0.001
115 %	4.49	+20	1,749,999,998	-0.0000001	-0.001
BATT.ENDPOINT	3.32	+20	1,749,999,999	-0.0000001	-0.001

7.7.5. LTE Band 2

OPERATING FREQUENCY : 1 880.00 MHz

REFERENCE VOLTAGE : 3.90 V DC

LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE (%)	POWER (V DC)	TEMP (°C)	FREQ (Hz)	Deviation	
				(%)	(ppm)
100 %	3.9	+20	1,880,000,004	0.0000002	0.002
100 %		-30	1,880,000,003	0.0000002	0.002
100 %		-20	1,880,000,003	0.0000002	0.002
100 %		-10	1,880,000,004	0.0000002	0.002
100 %		0	1,879,999,996	-0.0000002	-0.002
100 %		+10	1,880,000,003	0.0000002	0.002
100 %		+20	1,880,000,004	0.0000002	0.002
100 %		+30	1,880,000,004	0.0000002	0.002
100 %		+40	1,880,000,002	0.0000001	0.001
100 %		+50	1,879,999,998	-0.0000001	-0.001
115 %	4.49	+20	1,880,000,003	0.0000002	0.002
BATT.ENDPOINT	3.32	+20	1,880,000,004	0.0000002	0.002

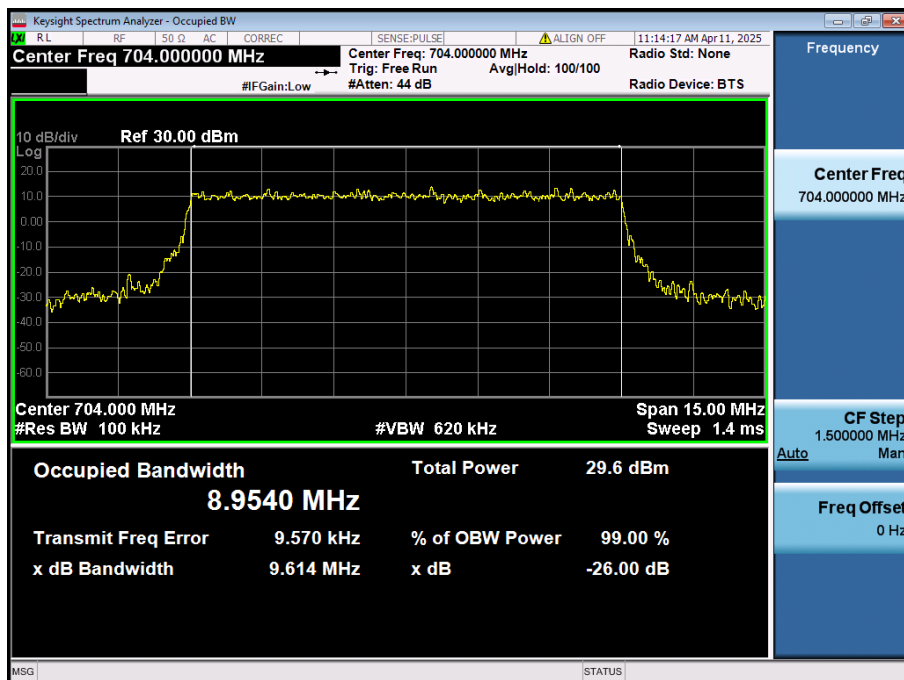
8. TEST PLOTS

8.1. OCCUPIED BANDWIDTH

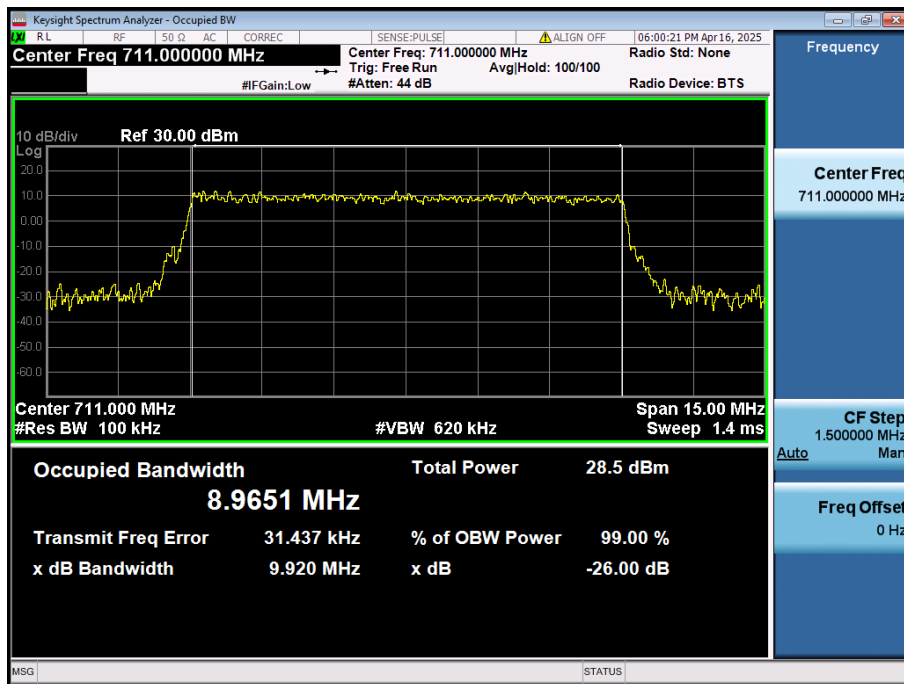
8.1.1. LTE Band 12



LTE Band 12 / 10MHz / QPSK - RB Size 50/0



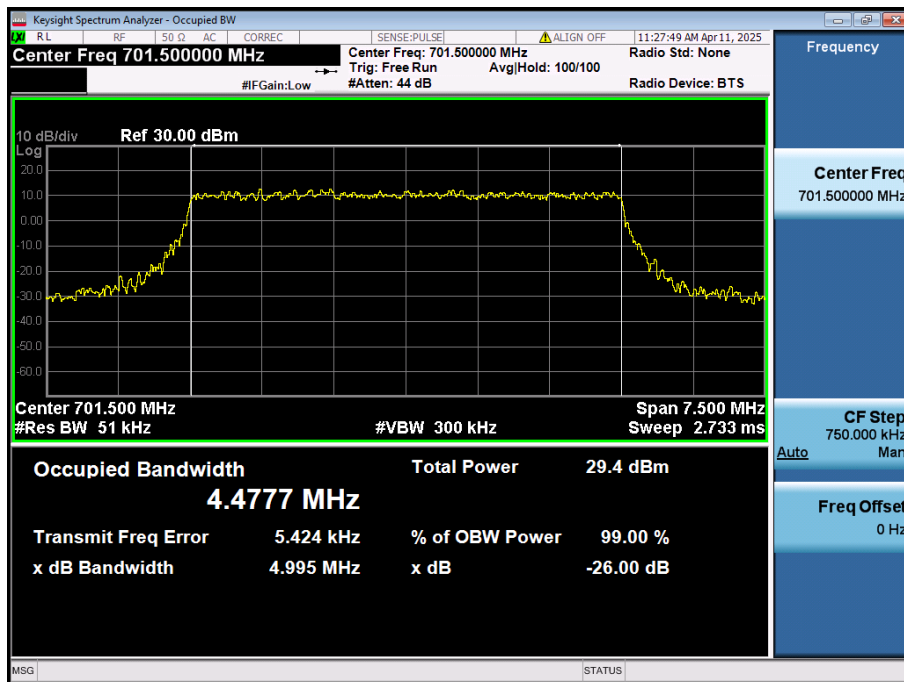
LTE Band 12 / 10MHz / 16QAM - RB Size 50/0



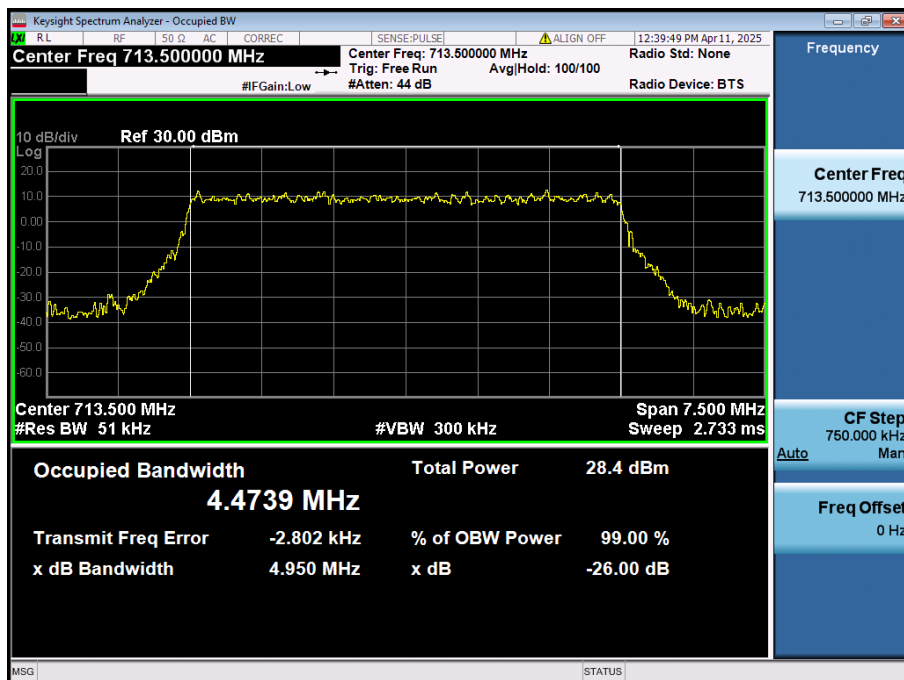
LTE Band 12 / 10MHz / 64QAM - RB Size 50/0



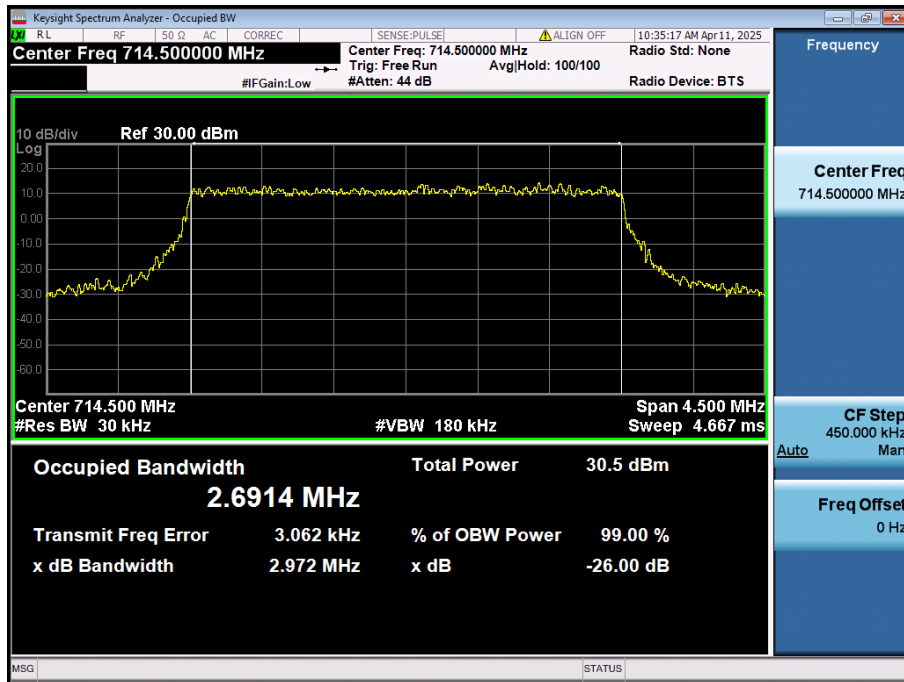
LTE Band 12 / 5MHz / QPSK - RB Size 25/0



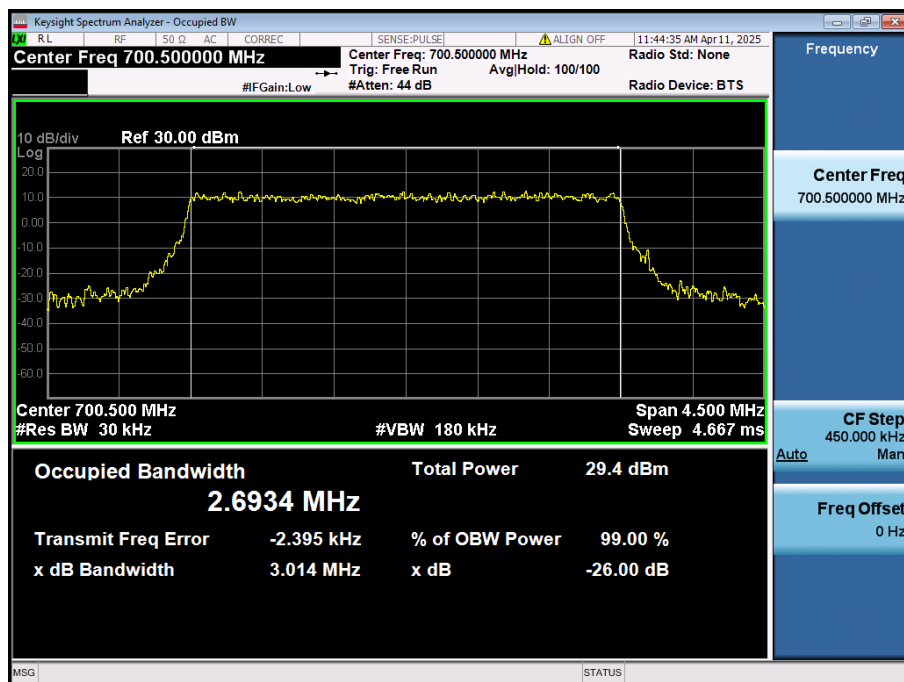
LTE Band 12 / 5MHz / 16QAM - RB Size 25/0



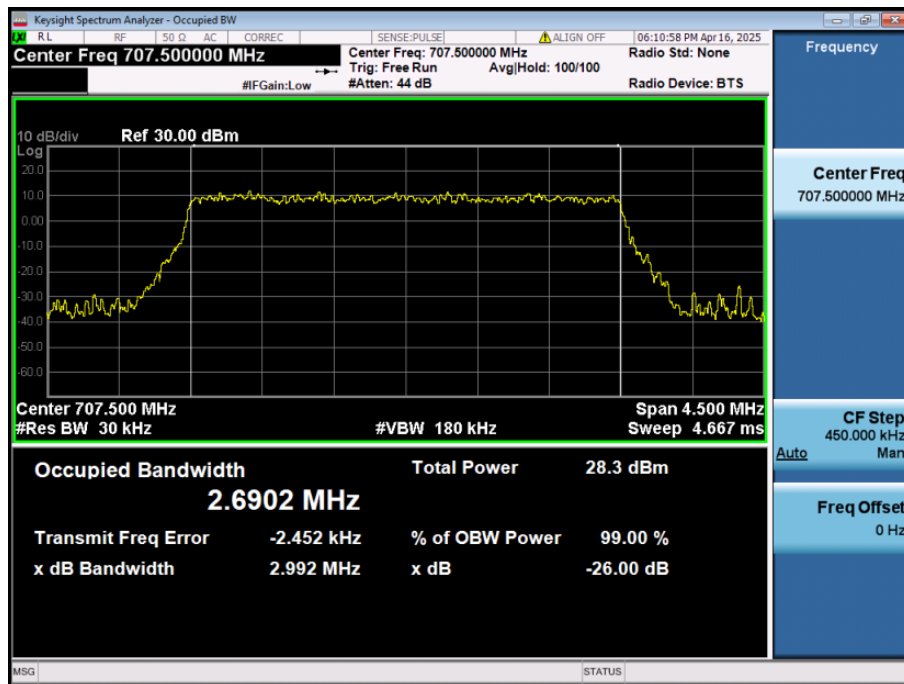
LTE Band 12 / 5MHz / 64QAM - RB Size 25/0



LTE Band 12 / 3MHz / QPSK - RB Size 15/0



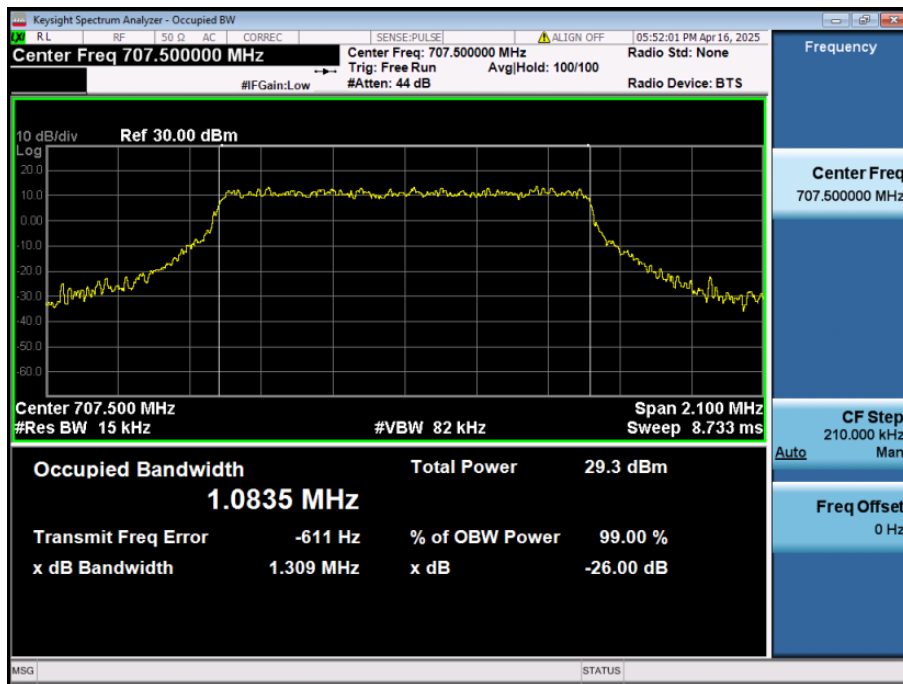
LTE Band 12 / 3MHz / 16QAM - RB Size 15/0



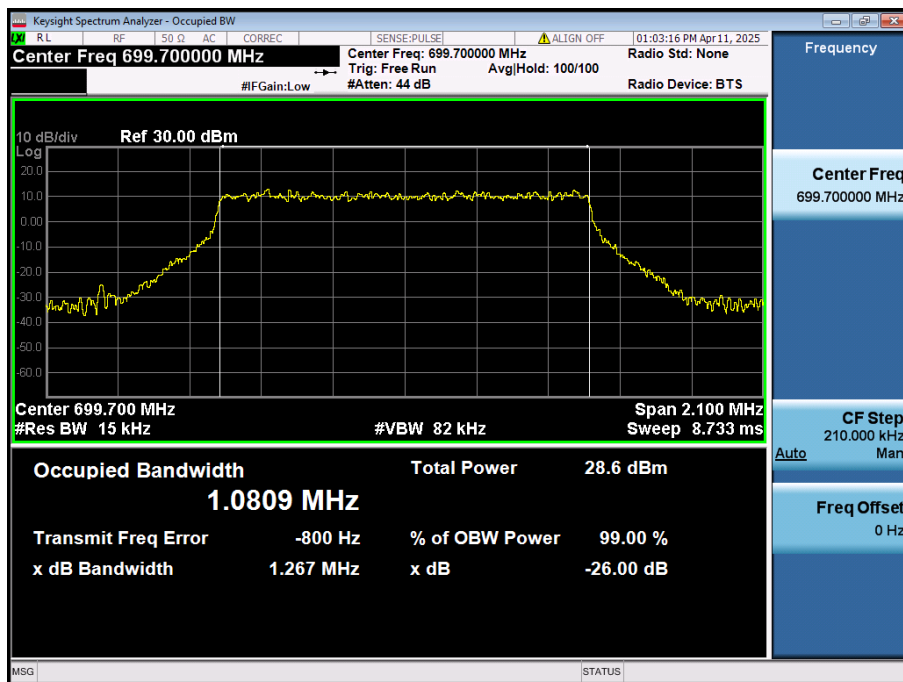
LTE Band 12 / 3MHz / 64QAM - RB Size 15/0



LTE Band 12 / 1.4MHz / QPSK - RB Size 6/0

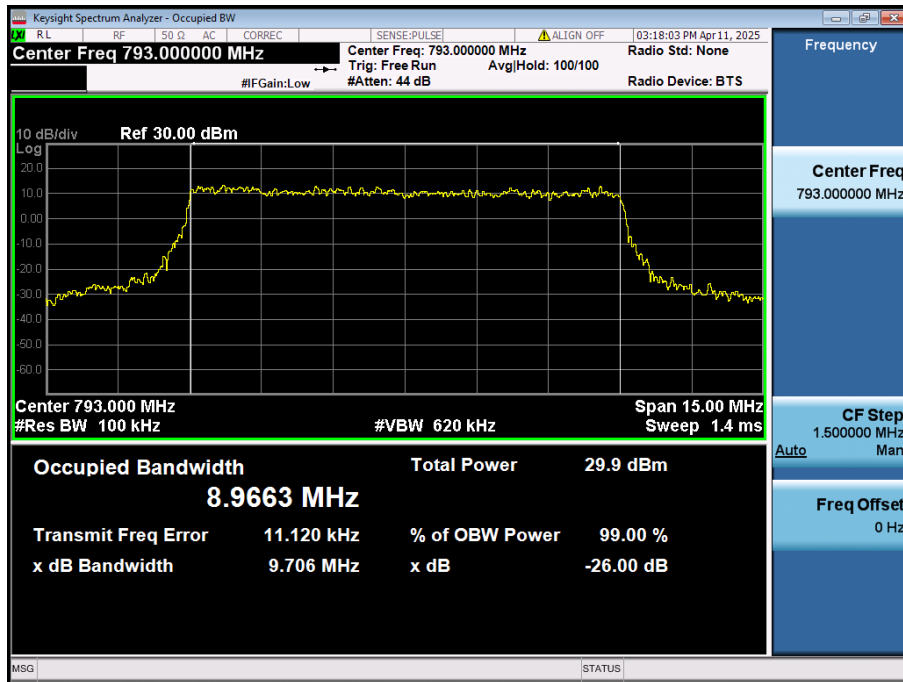


LTE Band 12 / 1.4MHz / 16QAM - RB Size 6/0

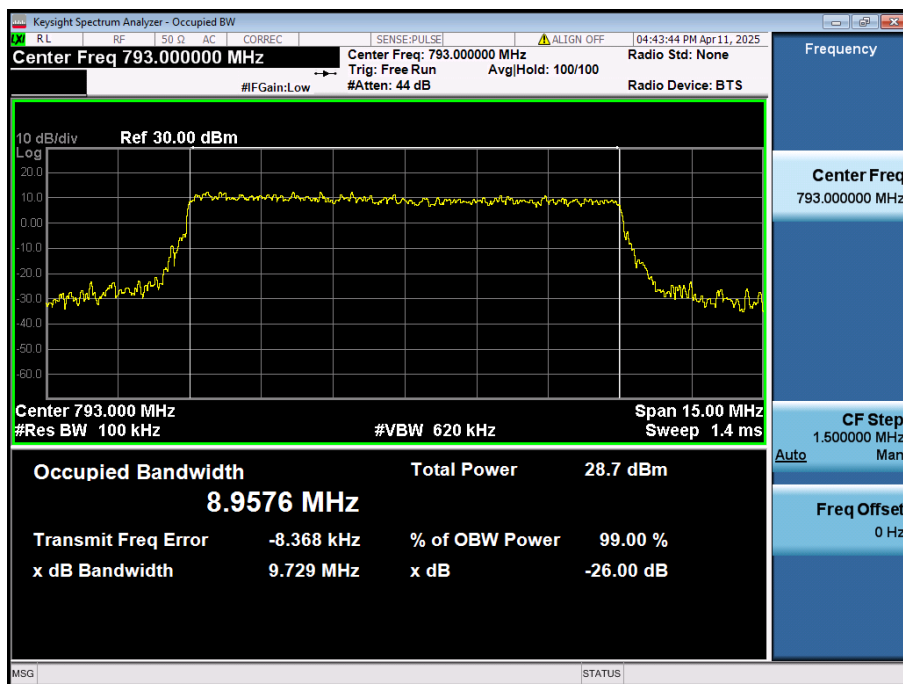


LTE Band 12 / 1.4MHz / 64QAM - RB Size 6/0

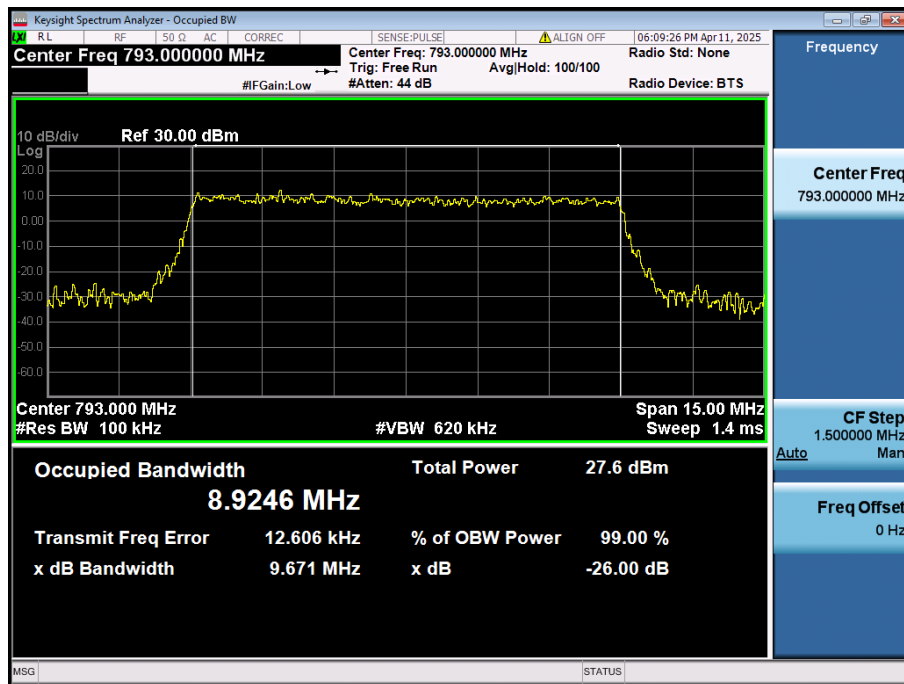
8.1.2. LTE Band 14



LTE Band 14 / 10MHz / QPSK - RB Size 50/0



LTE Band 14 / 10MHz / 16QAM - RB Size 50/0



LTE Band 14 / 10MHz / 64QAM - RB Size 50/0



LTE Band 14 / 5MHz / QPSK - RB Size 25/0



LTE Band 14 / 5MHz / 16QAM - RB Size 25/0

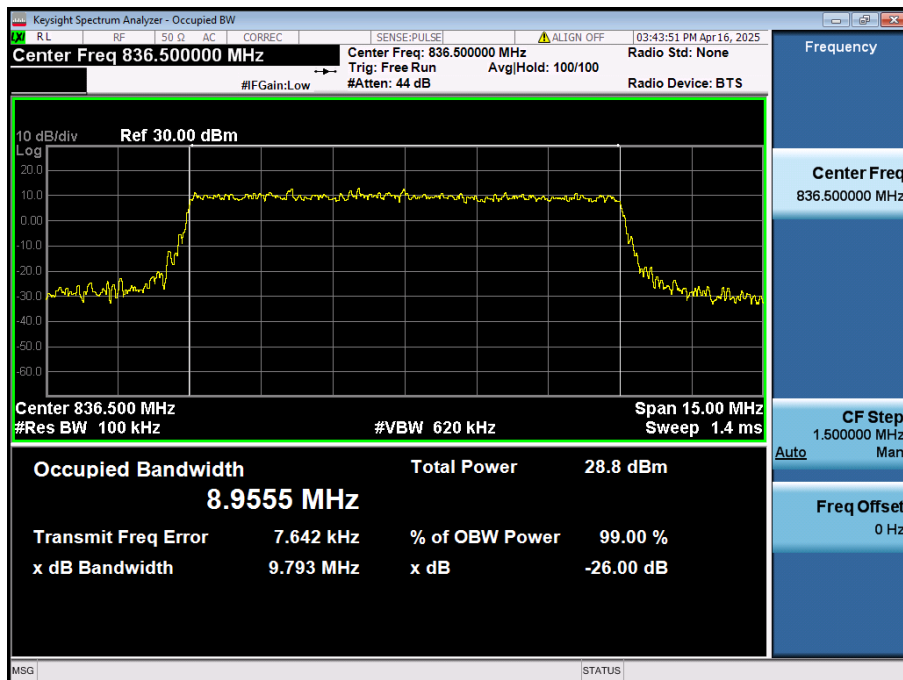


LTE Band 14 / 5MHz / 64QAM - RB Size 25/0

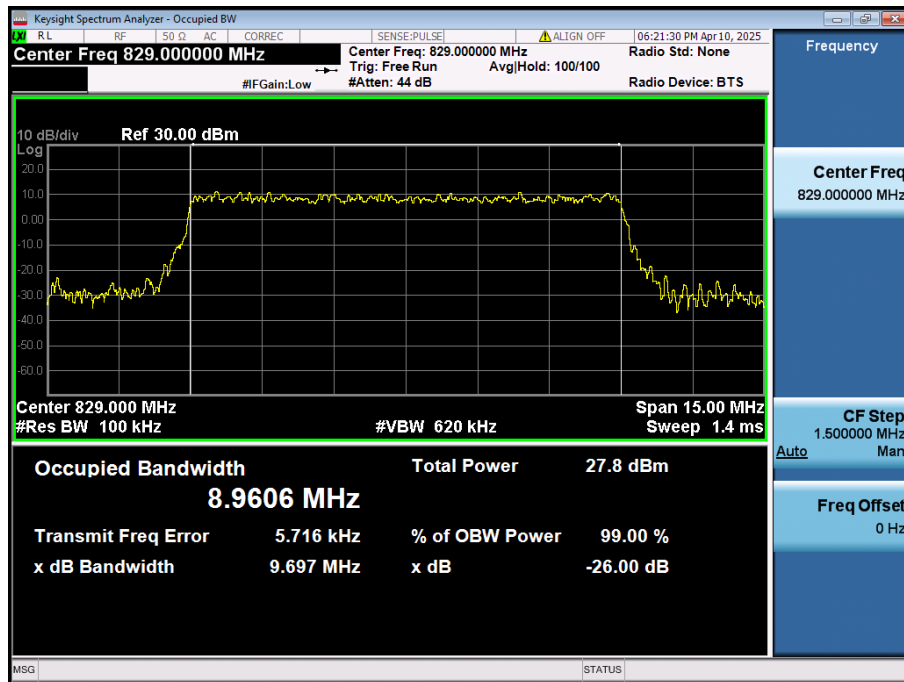
8.1.3. LTE Band 5



LTE Band 5 / 10MHz / QPSK - RB Size 50/0



LTE Band 5 / 10MHz / 16QAM - RB Size 50/0



LTE Band 5 / 10MHz / 64QAM - RB Size 50/0



LTE Band 5 / 5MHz / QPSK - RB Size 25/0



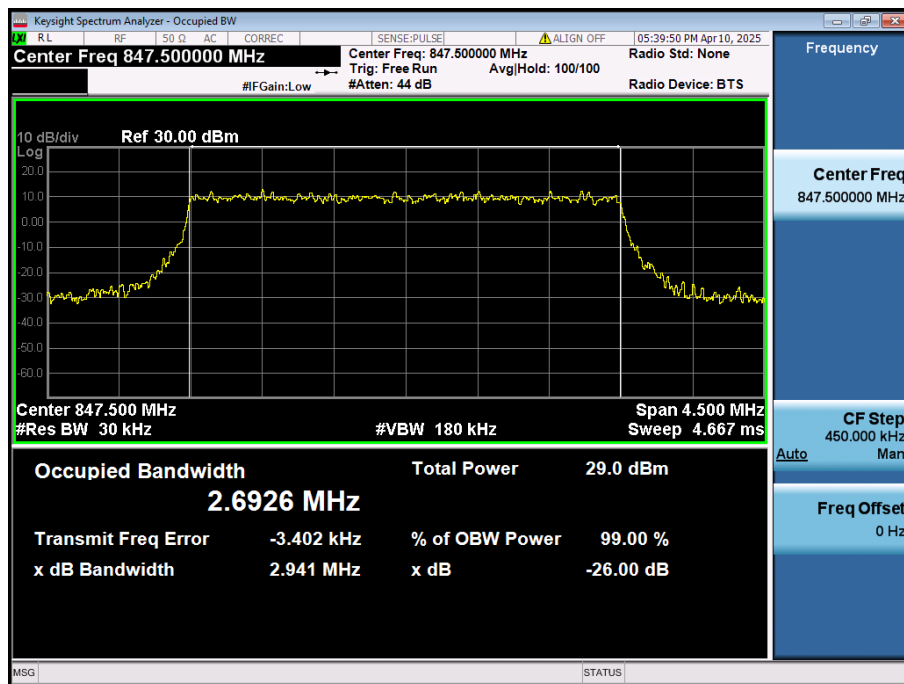
LTE Band 5 / 5MHz / 16QAM - RB Size 25/0



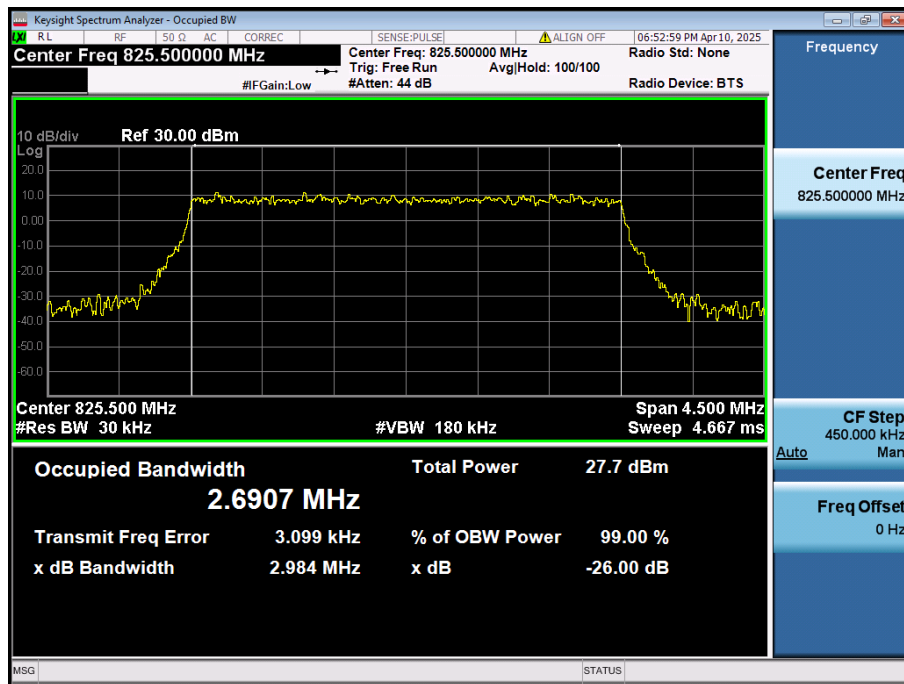
LTE Band 5 / 5MHz / 64QAM - RB Size 25/0



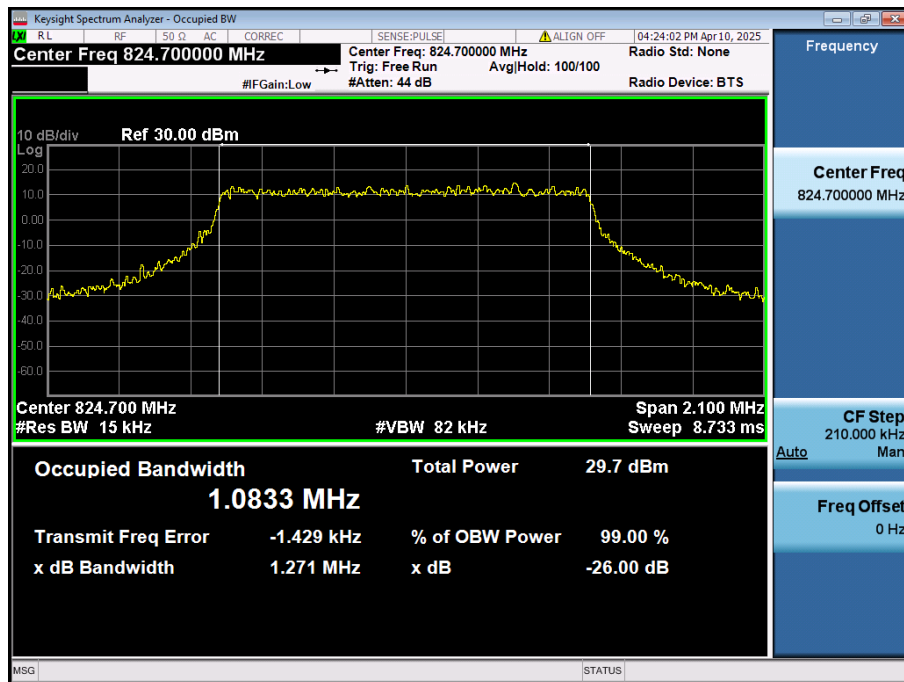
LTE Band 5 / 3MHz / QPSK - RB Size 15/0



LTE Band 5 / 3MHz / 16QAM - RB Size 15/0



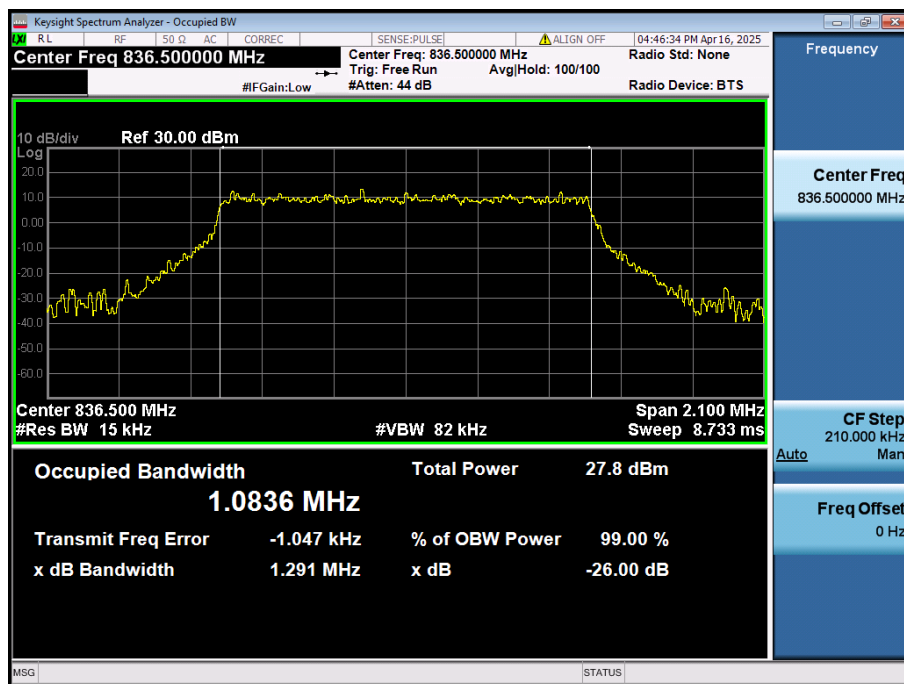
LTE Band 5 / 3MHz / 64QAM - RB Size 15/0



LTE Band 5 / 1.4MHz / QPSK - RB Size 6/0

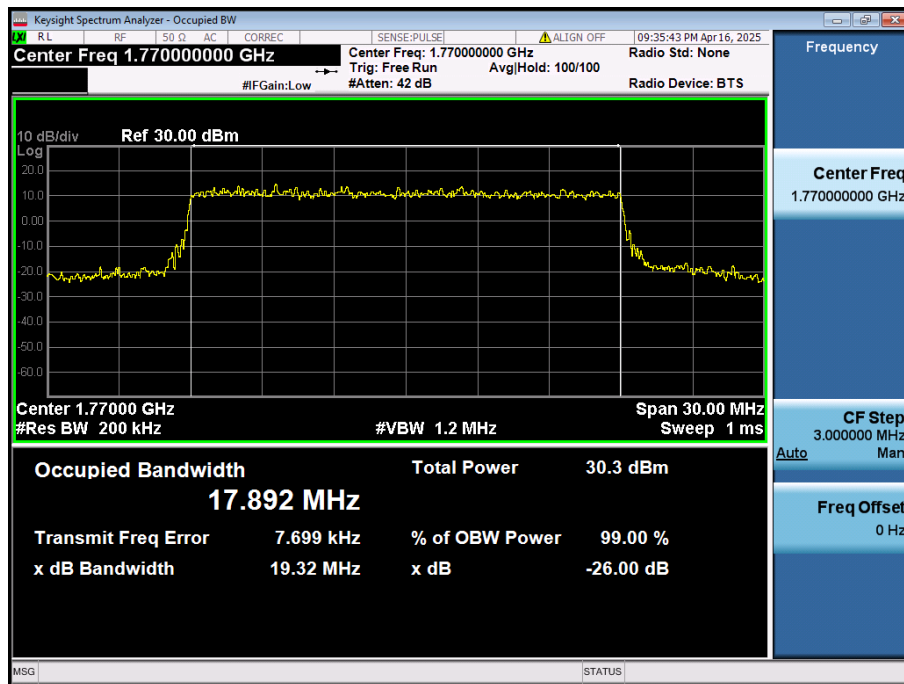


LTE Band 5 / 1.4MHz / 16QAM - RB Size 6/0

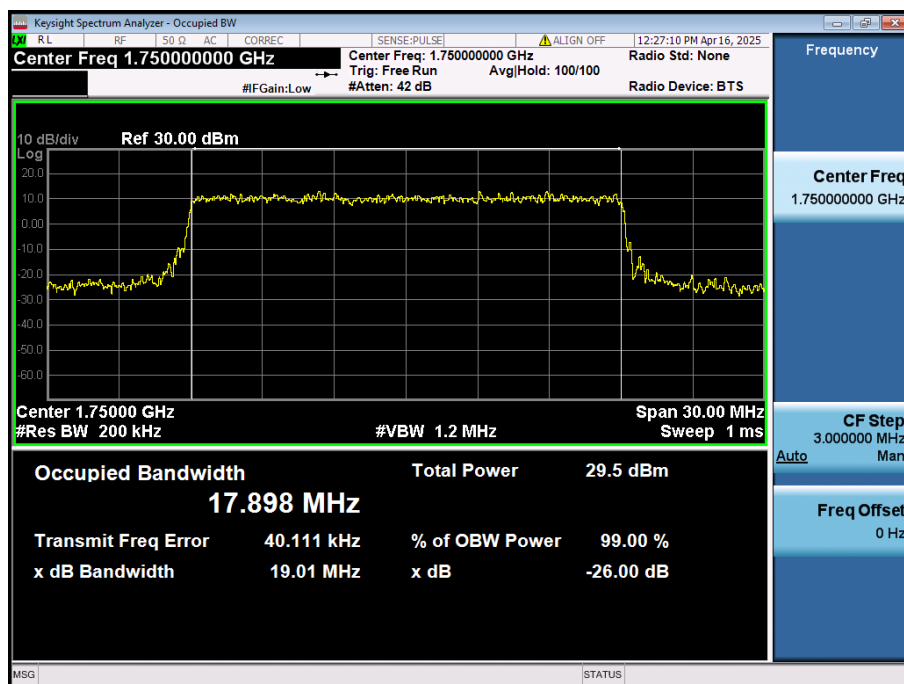


LTE Band 5 / 1.4MHz / 64QAM - RB Size 6/0

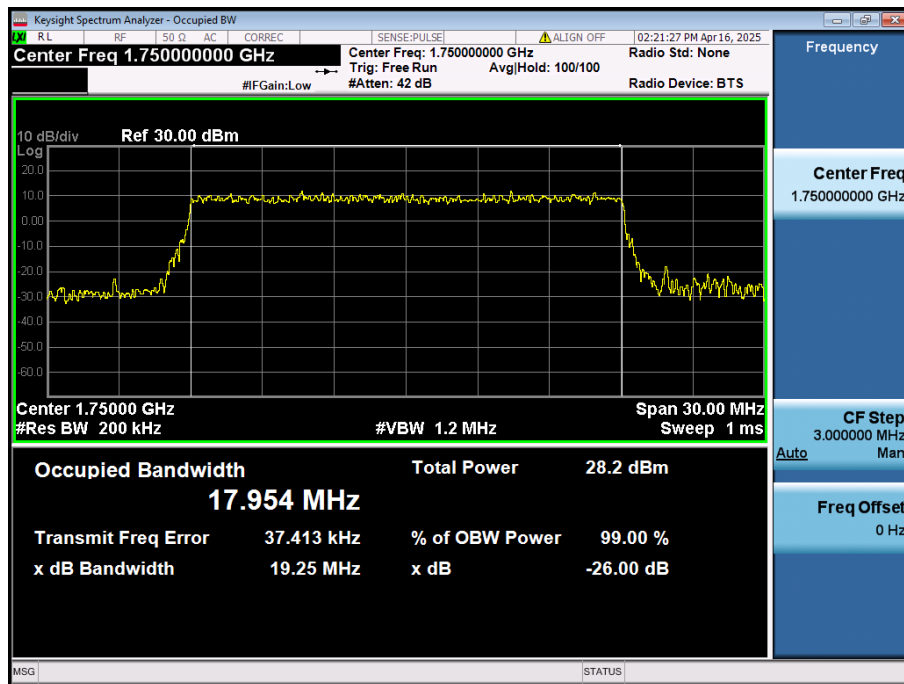
8.1.4. LTE Band 66(4)



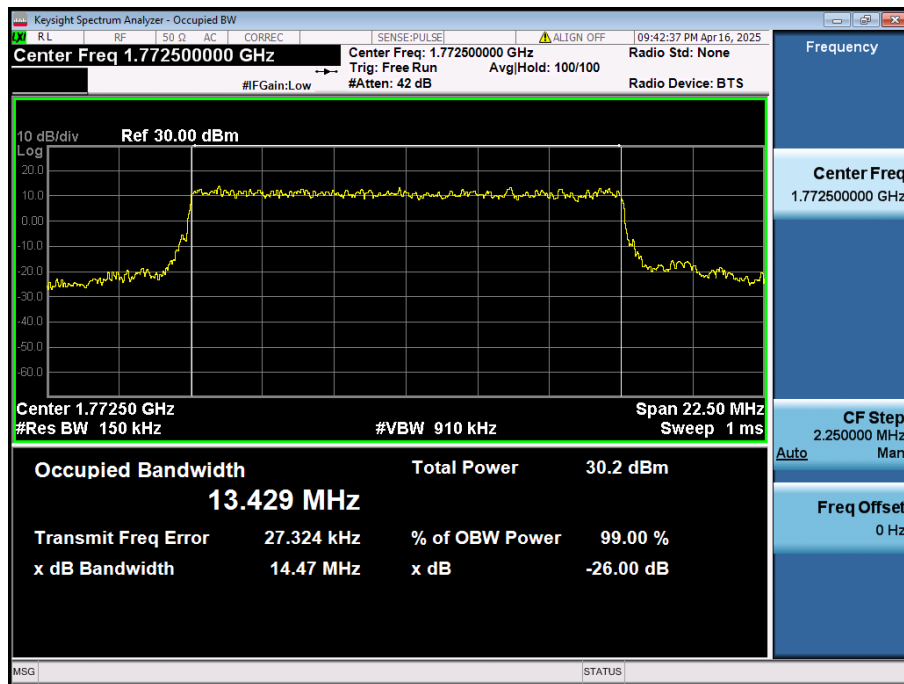
LTE Band 66 / 20MHz / QPSK - RB Size 100/0



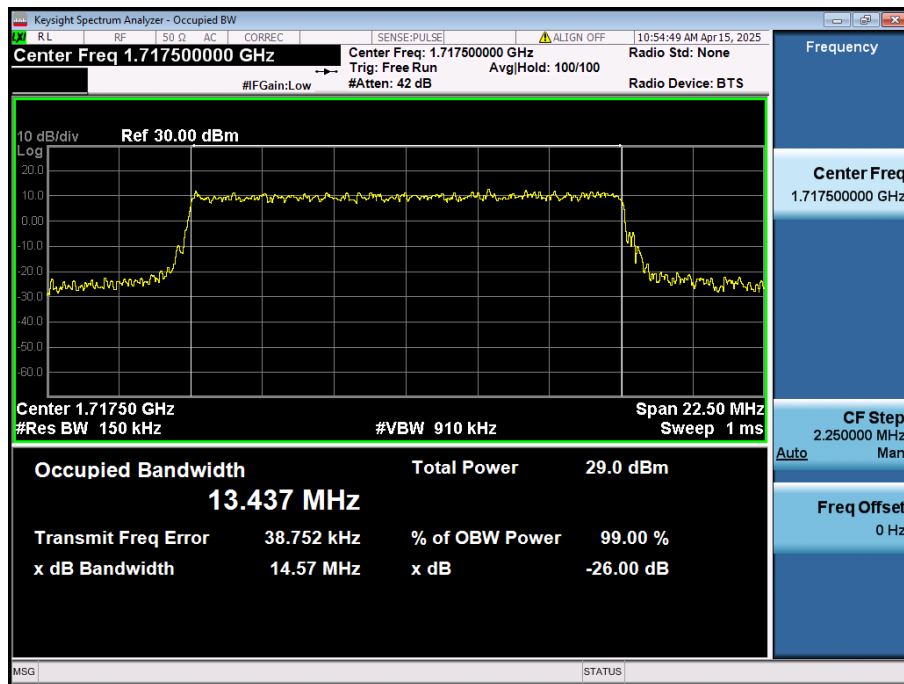
LTE Band 66 / 20MHz / 16QAM - RB Size 100/0



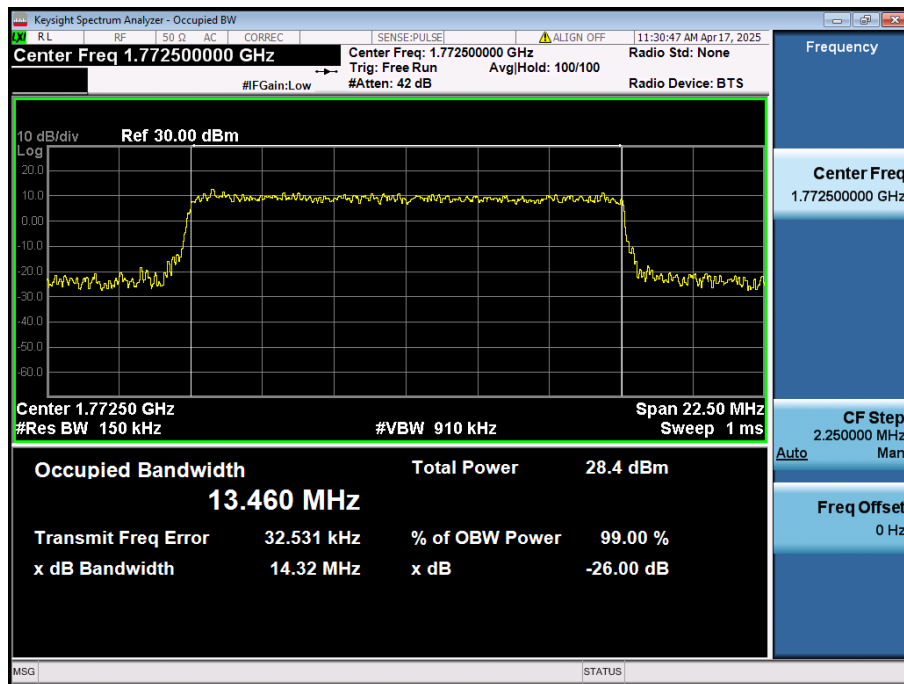
LTE Band 66 / 20MHz / 64QAM - RB Size 100/0



LTE Band 66 / 15MHz / QPSK - RB Size 75/0



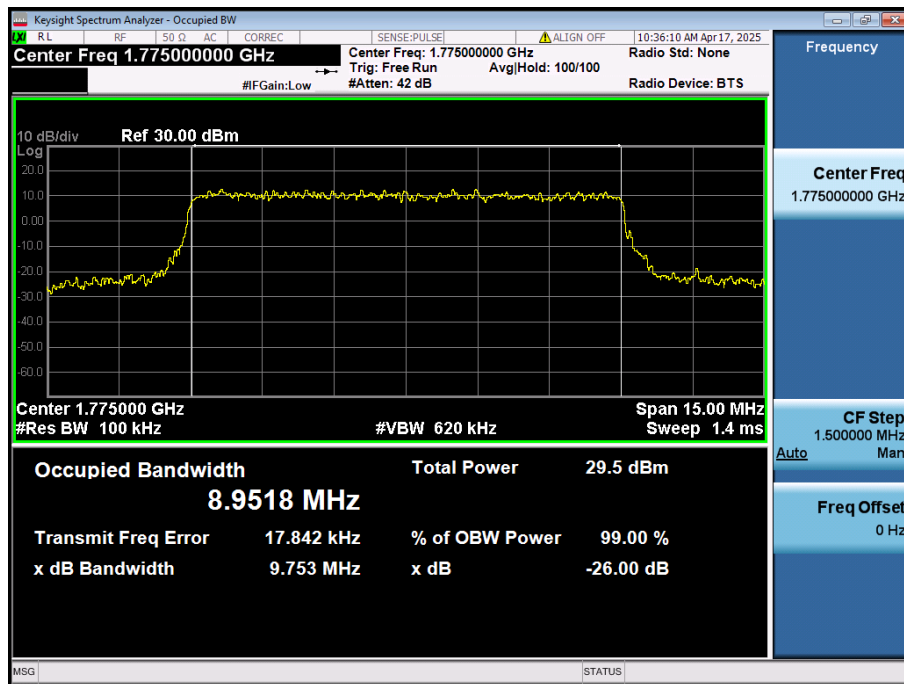
LTE Band 66 / 15MHz / 16QAM - RB Size 75/0



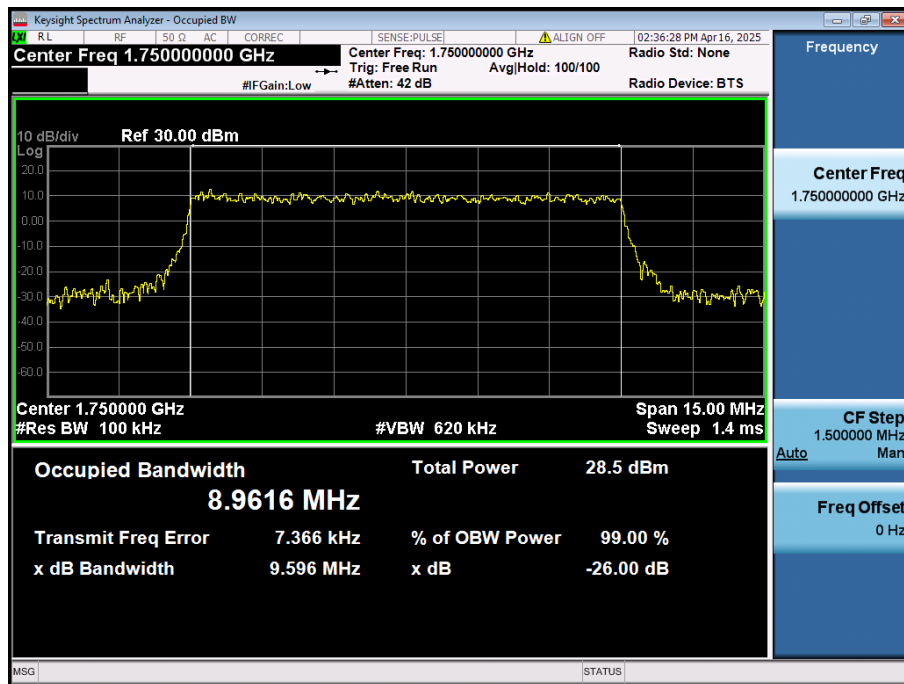
LTE Band 66 / 15MHz / 64QAM - RB Size 75/0



LTE Band 66 / 10MHz / QPSK - RB Size 50/0



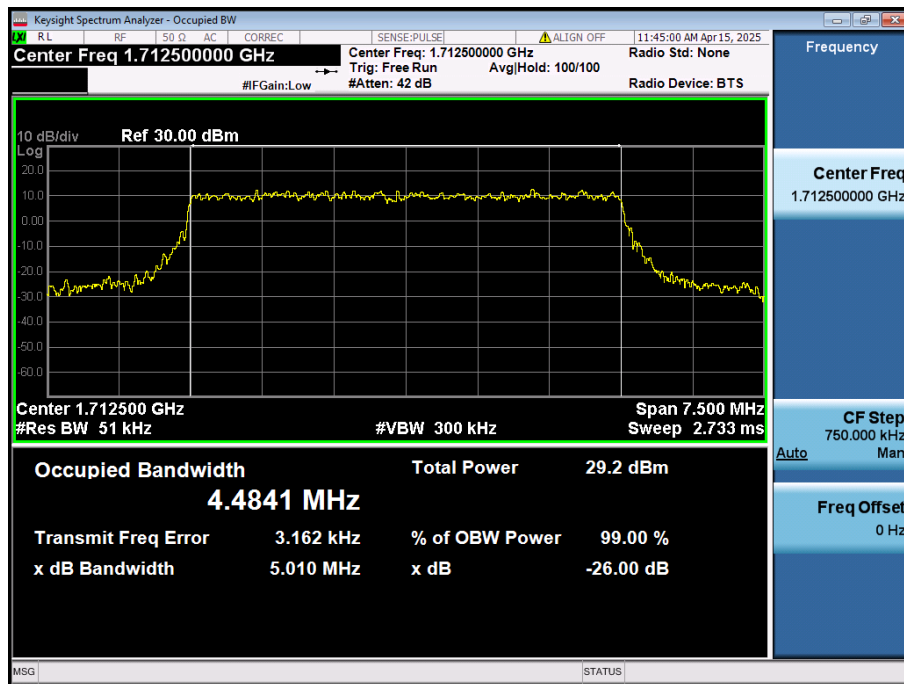
LTE Band 66 / 10MHz / 16QAM - RB Size 50/0



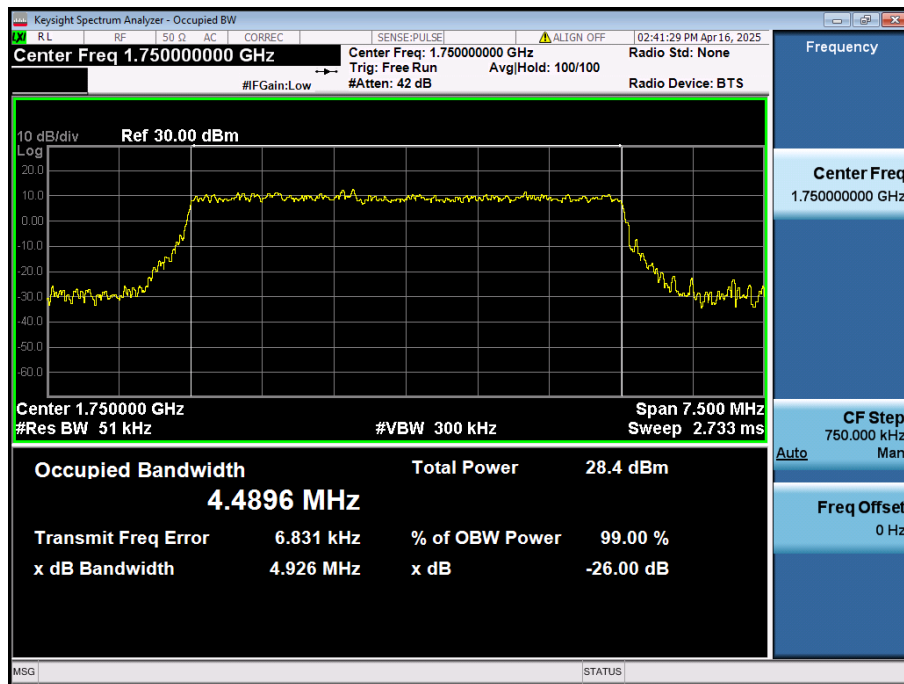
LTE Band 66 / 10MHz / 64QAM - RB Size 50/0



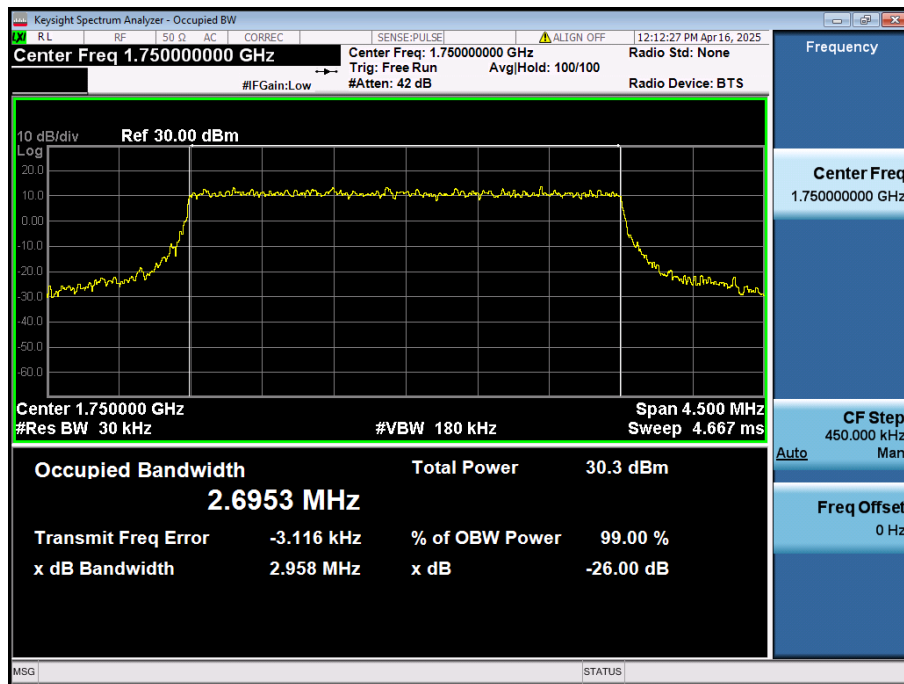
LTE Band 66 / 5MHz / QPSK - RB Size 25/0



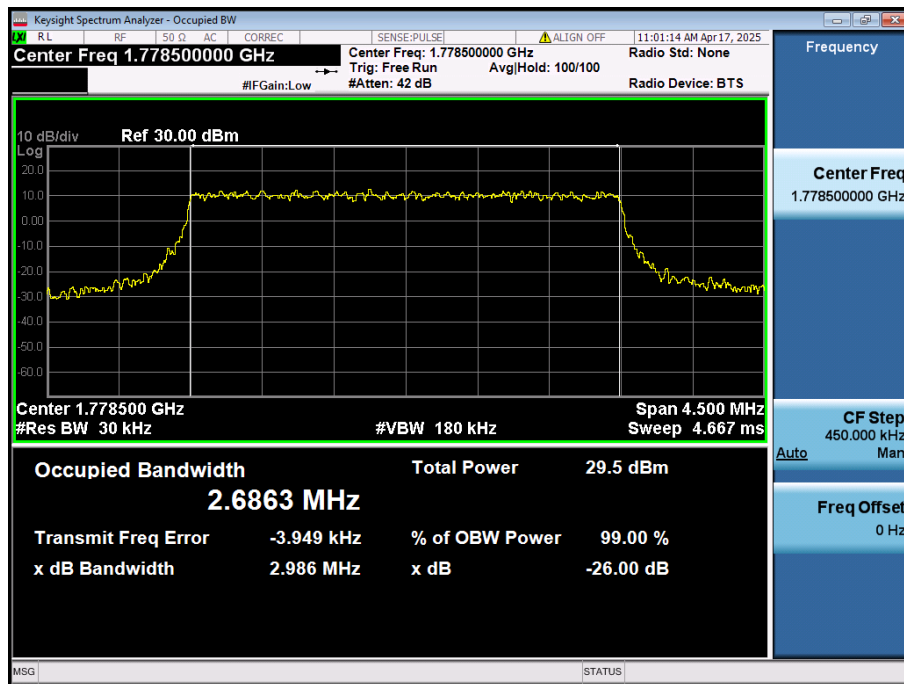
LTE Band 66 / 5MHz / 16QAM - RB Size 25/0



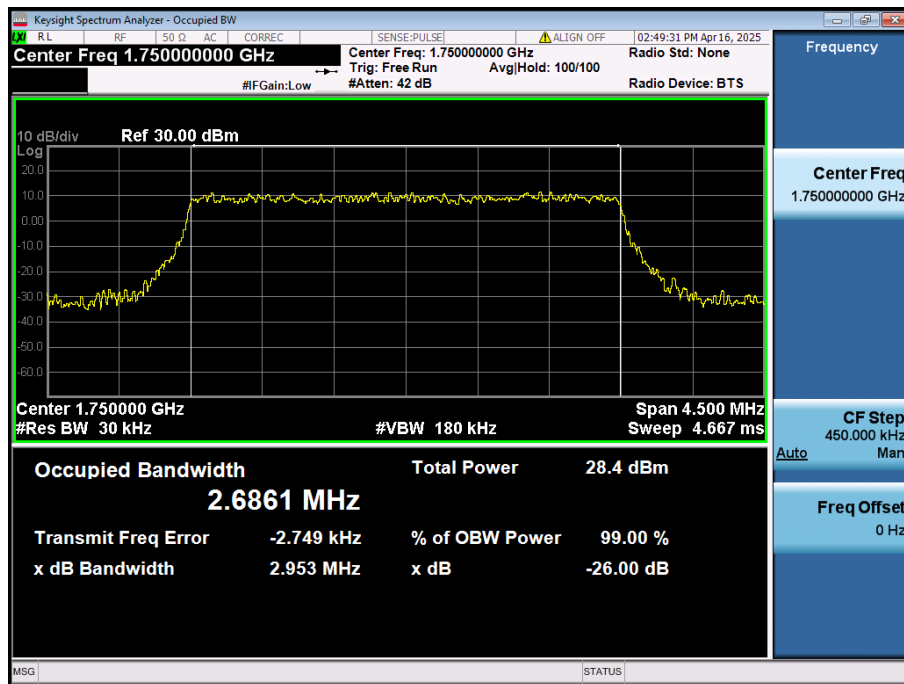
LTE Band 66 / 5MHz / 64QAM - RB Size 25/0



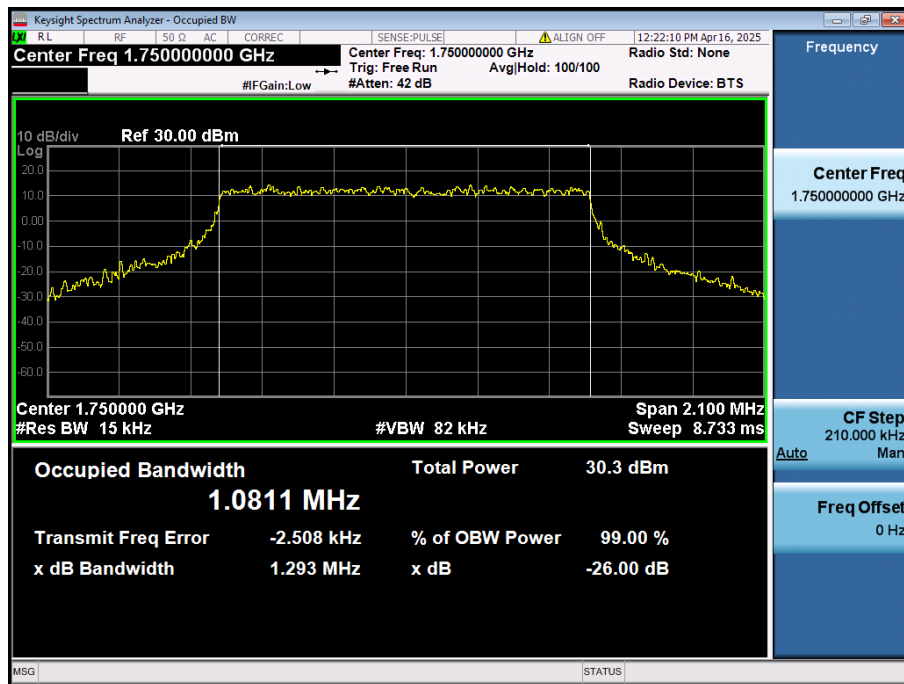
LTE Band 66 / 3MHz / QPSK - RB Size 15/0



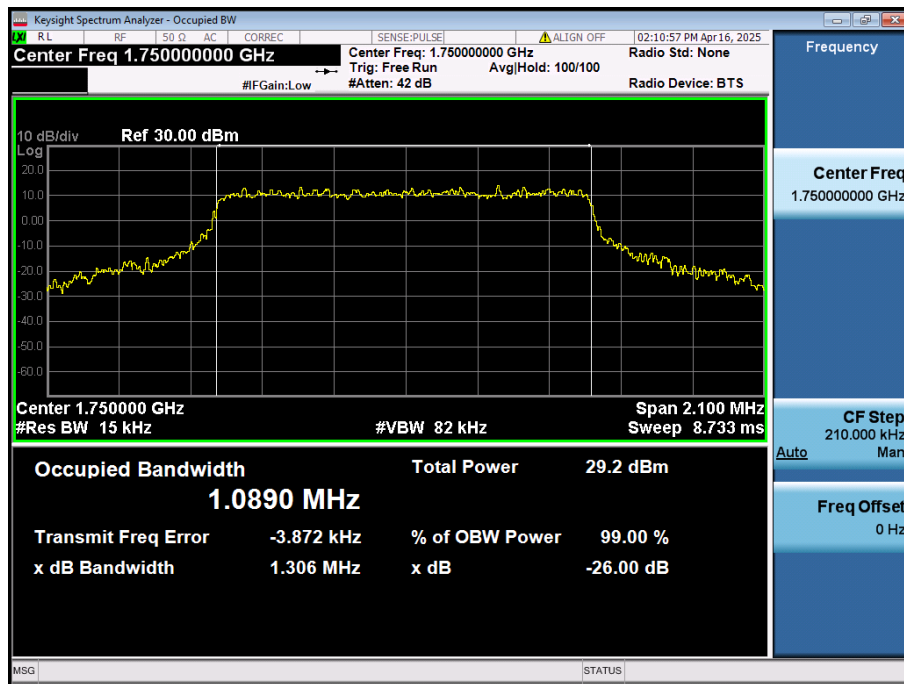
LTE Band 66 / 3MHz / 16QAM - RB Size 15/0



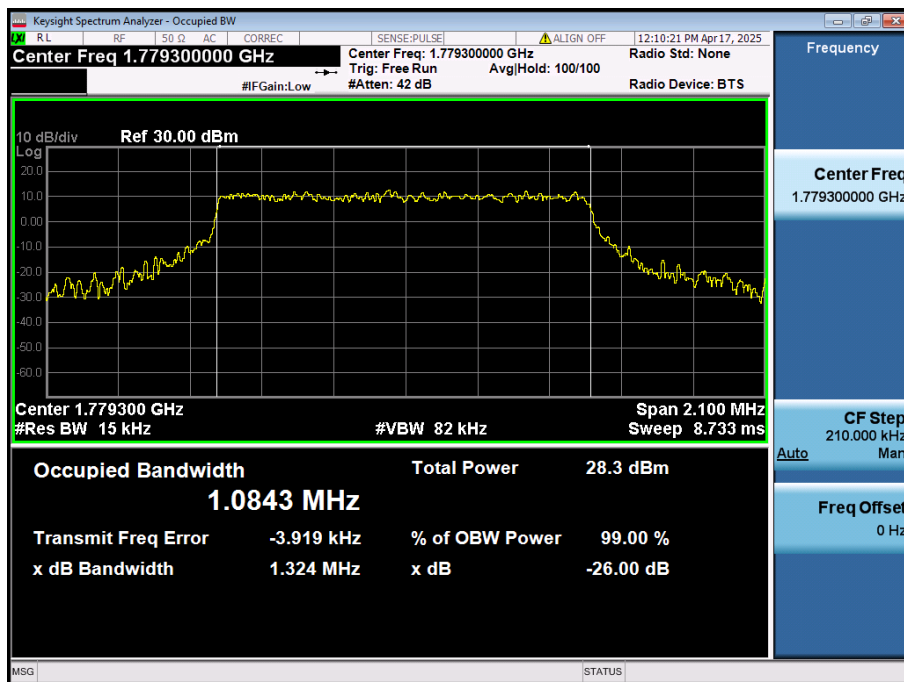
LTE Band 66 / 3MHz / 64QAM - RB Size 15/0



LTE Band 66 / 1.4MHz / QPSK - RB Size 6/0

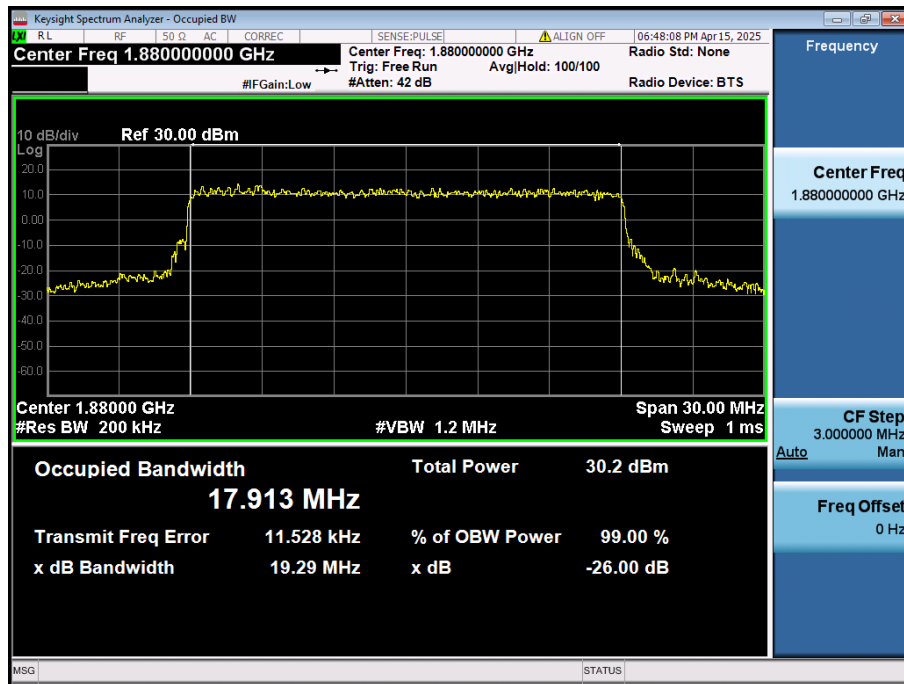


LTE Band 66 / 1.4MHz / 16QAM - RB Size 6/0

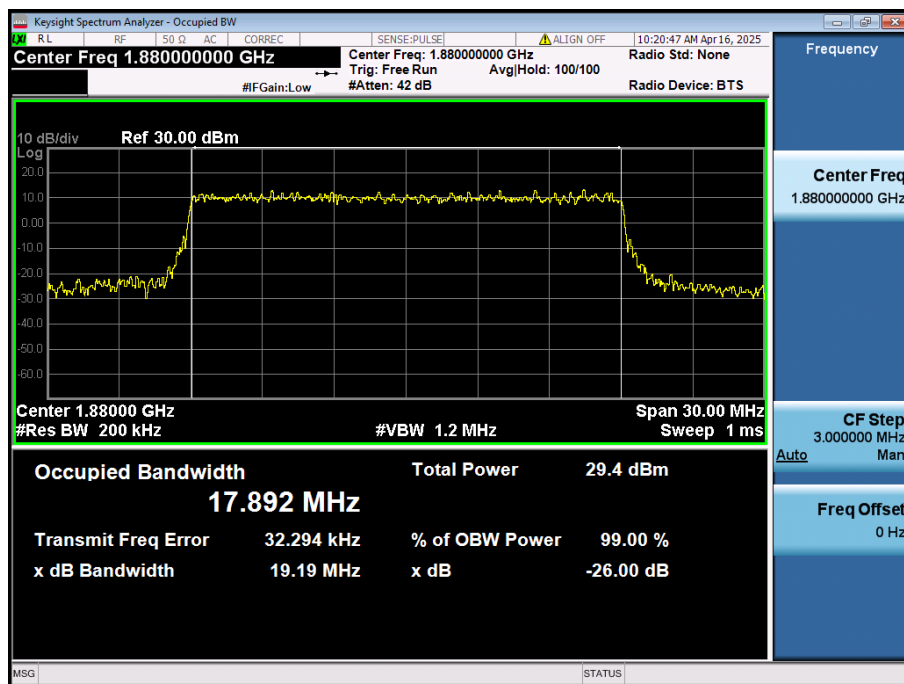


LTE Band 66 / 1.4MHz / 64QAM - RB Size 6/0

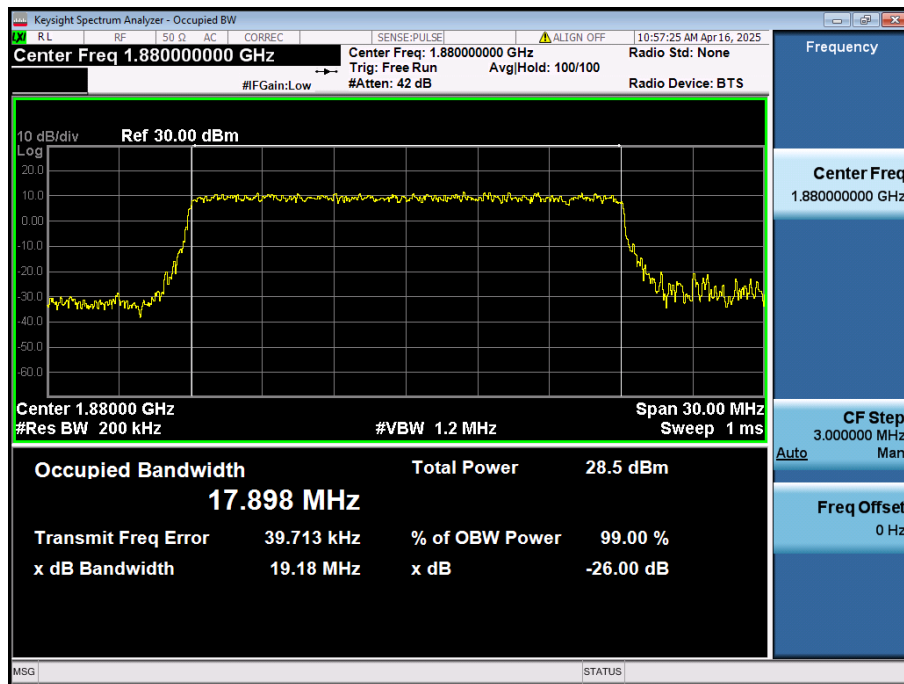
8.1.5. LTE Band 2



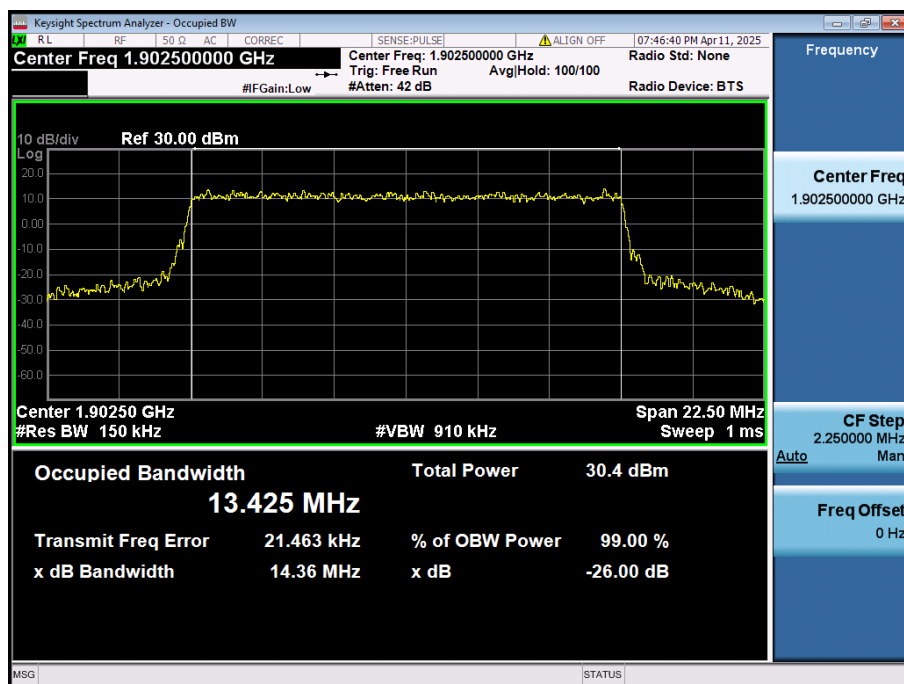
LTE Band 2 / 20MHz / QPSK - RB Size 100/0



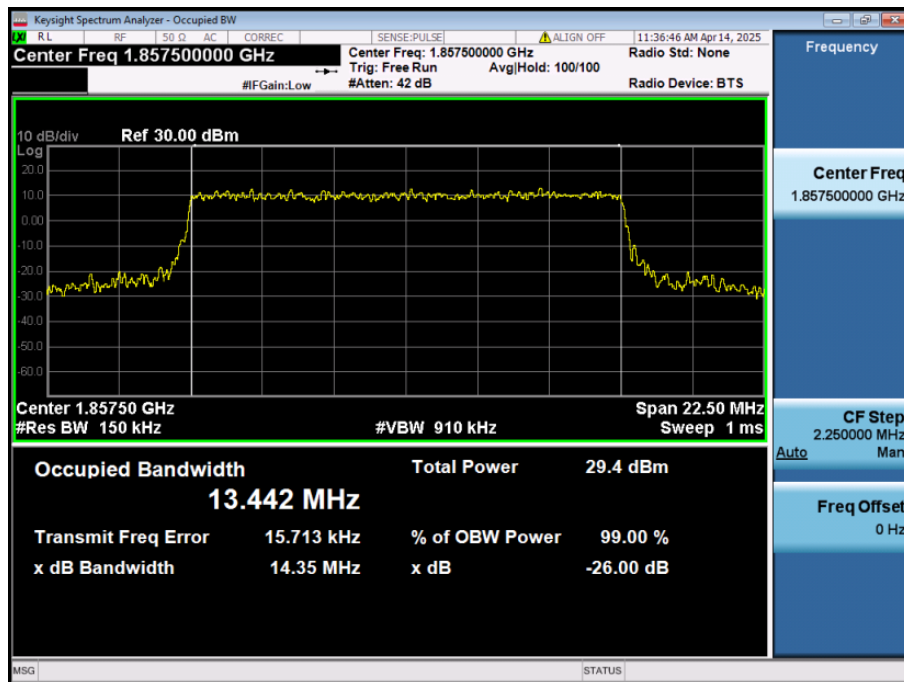
LTE Band 2 / 20MHz / 16QAM - RB Size 100/0



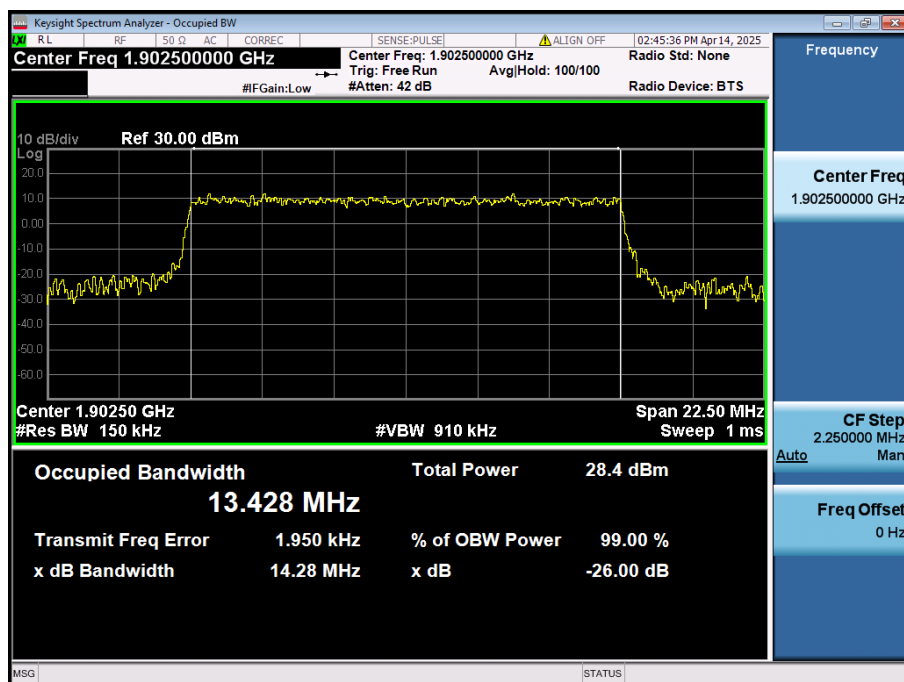
LTE Band 2 / 20MHz / 64QAM - RB Size 100/0



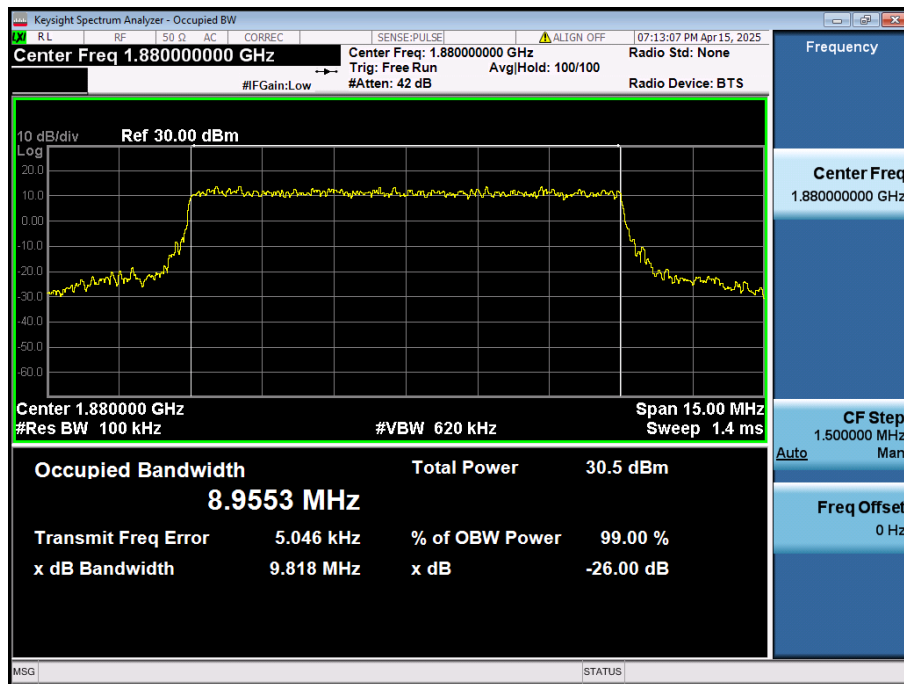
LTE Band 2 / 15MHz / QPSK - RB Size 75/0



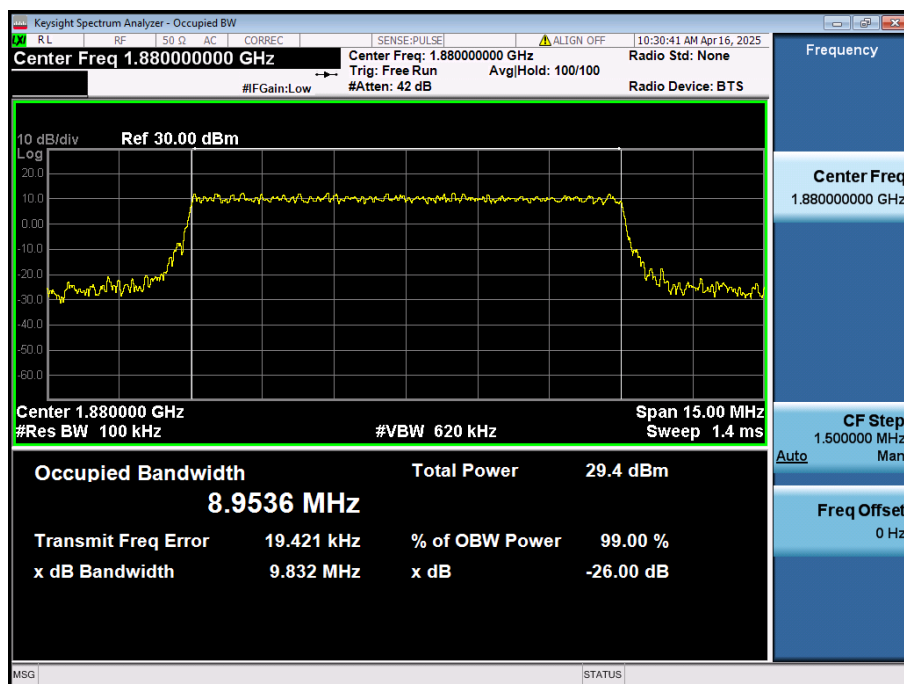
LTE Band 2 / 15MHz / 16QAM - RB Size 75/0



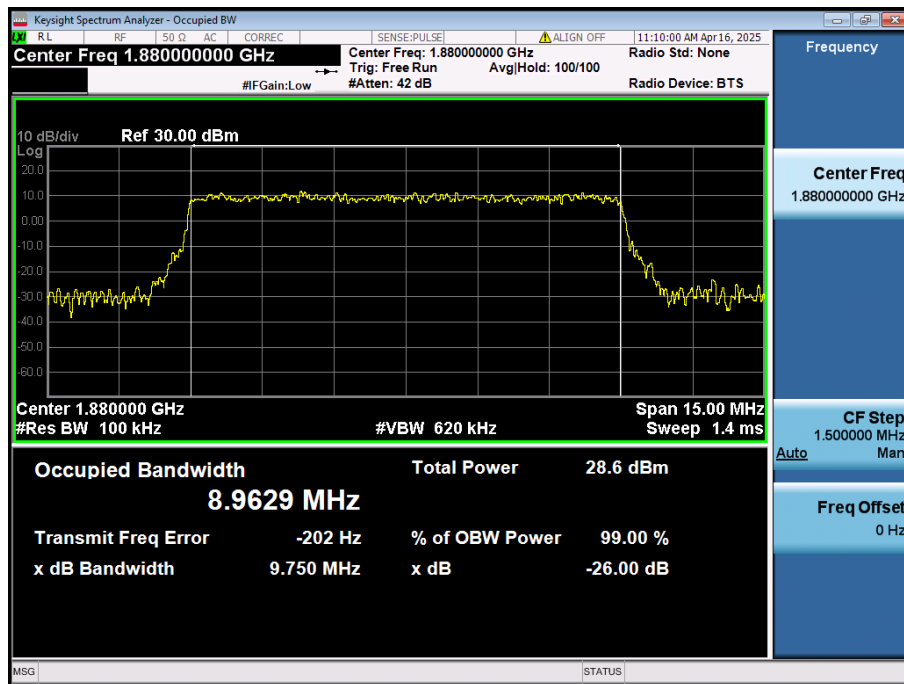
LTE Band 2 / 15MHz / 64QAM - RB Size 75/0



LTE Band 2 / 10MHz / QPSK - RB Size 50/0



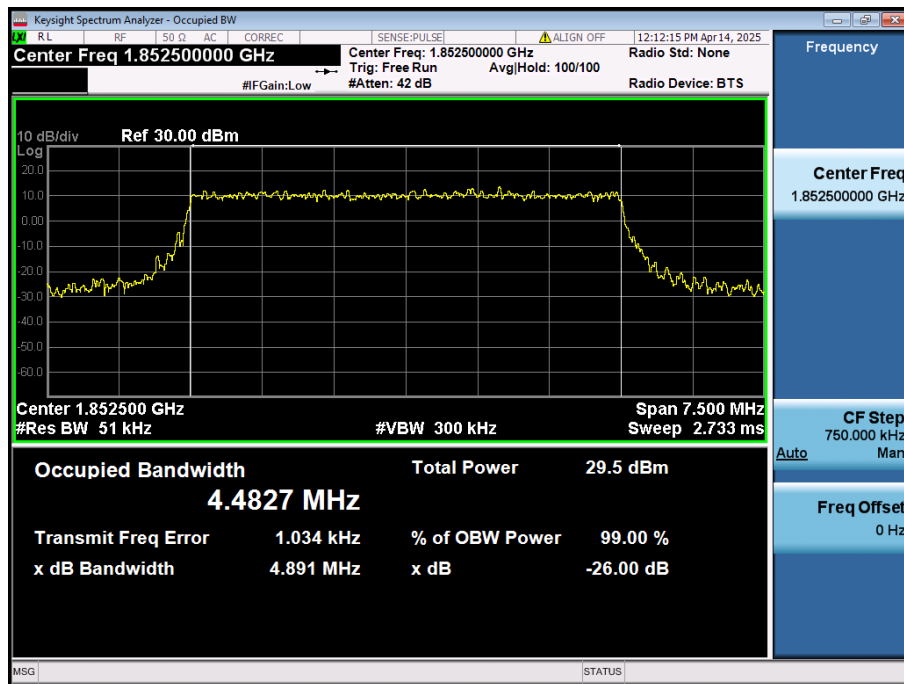
LTE Band 2 / 10MHz / 16QAM - RB Size 50/0



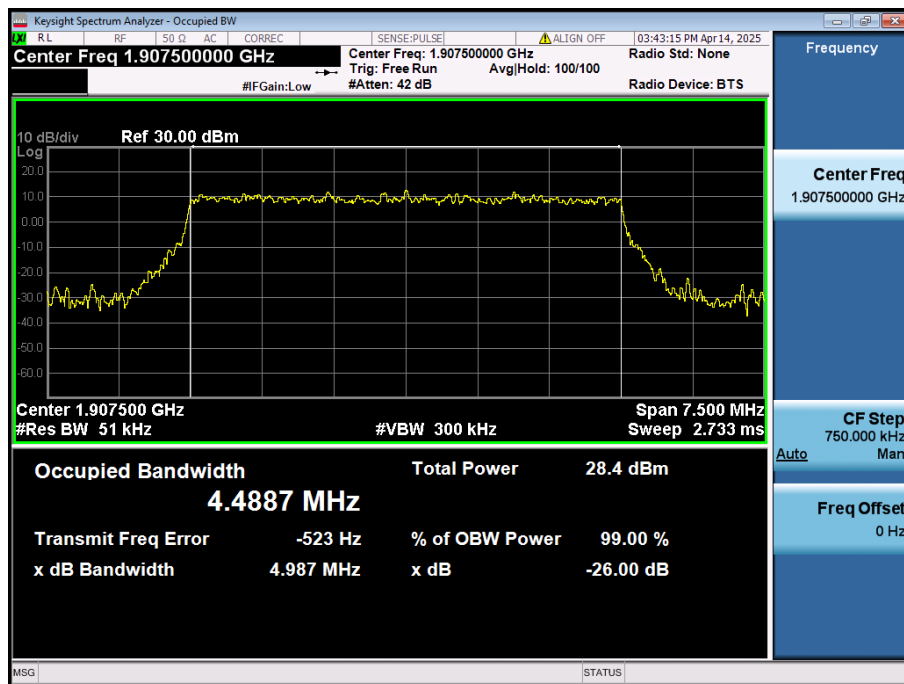
LTE Band 2 / 10MHz / 64QAM - RB Size 50/0



LTE Band 2 / 5MHz / QPSK - RB Size 25/0



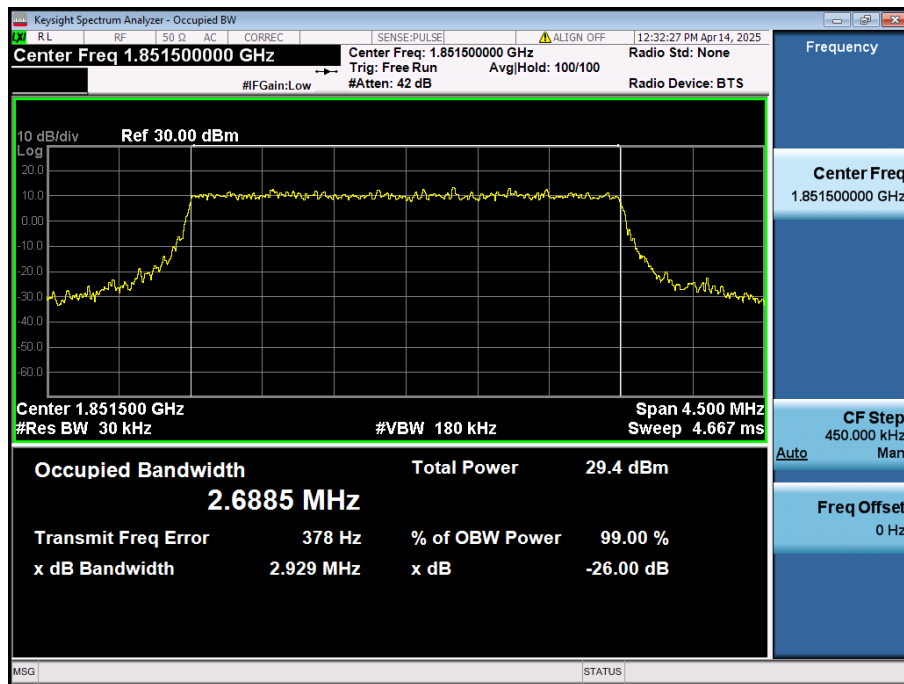
LTE Band 2 / 5MHz / 16QAM - RB Size 25/0



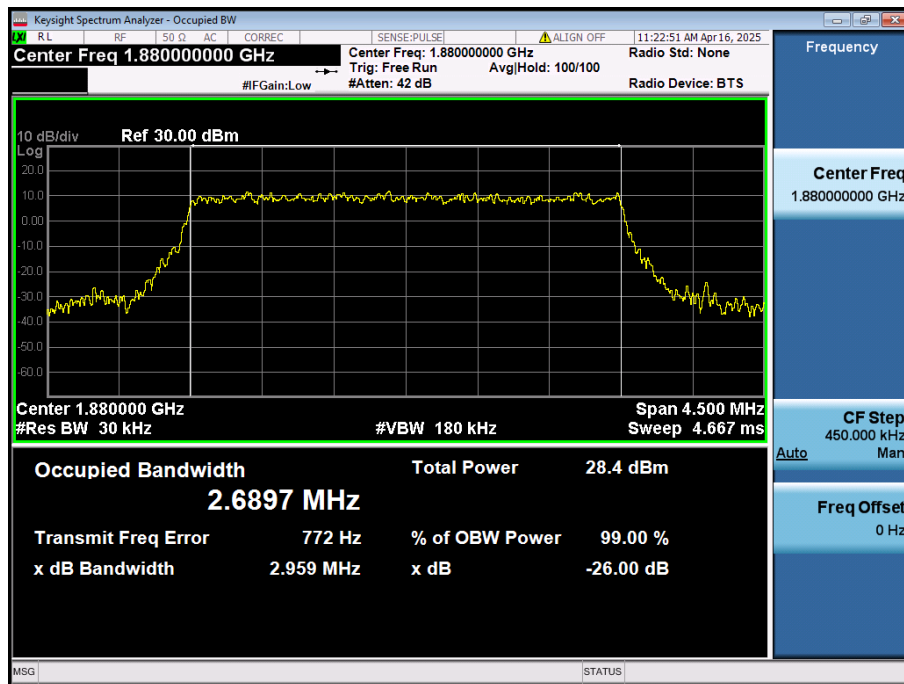
LTE Band 2 / 5MHz / 64QAM - RB Size 25/0



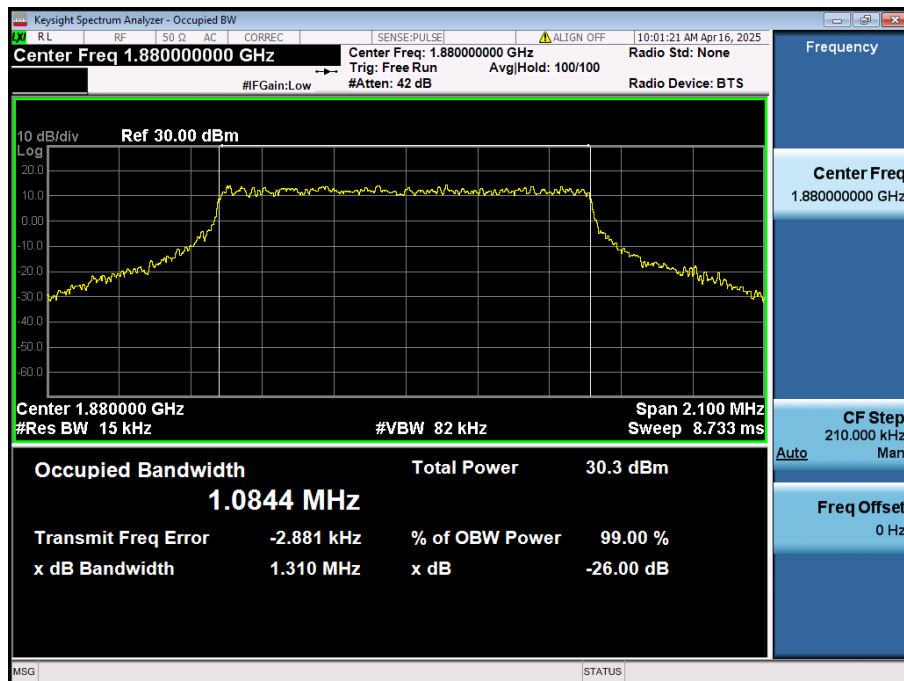
LTE Band 2 / 3MHz / QPSK - RB Size 15/0



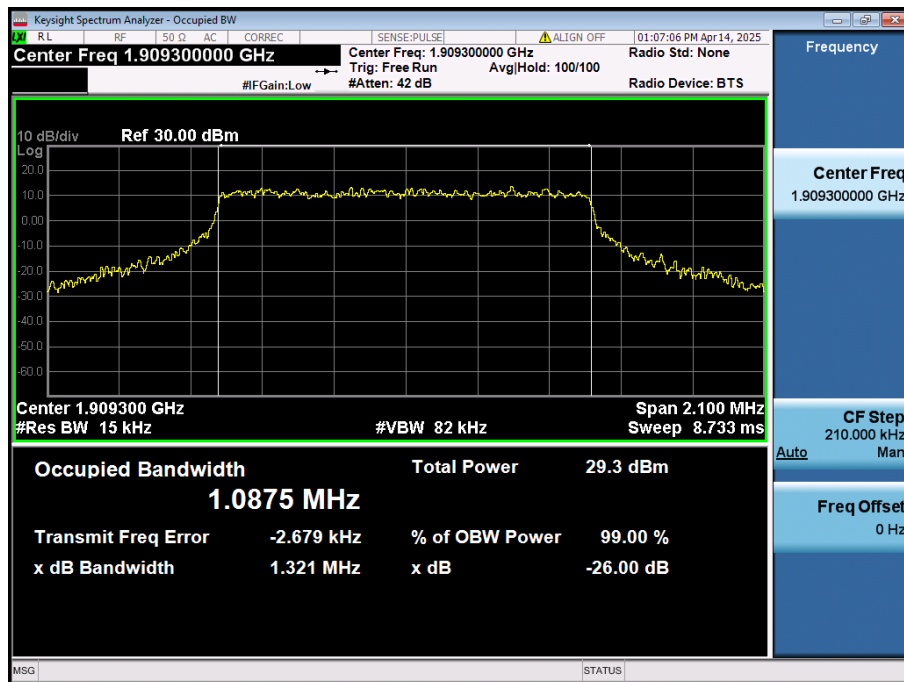
LTE Band 2 / 3MHz / 16QAM - RB Size 15/0



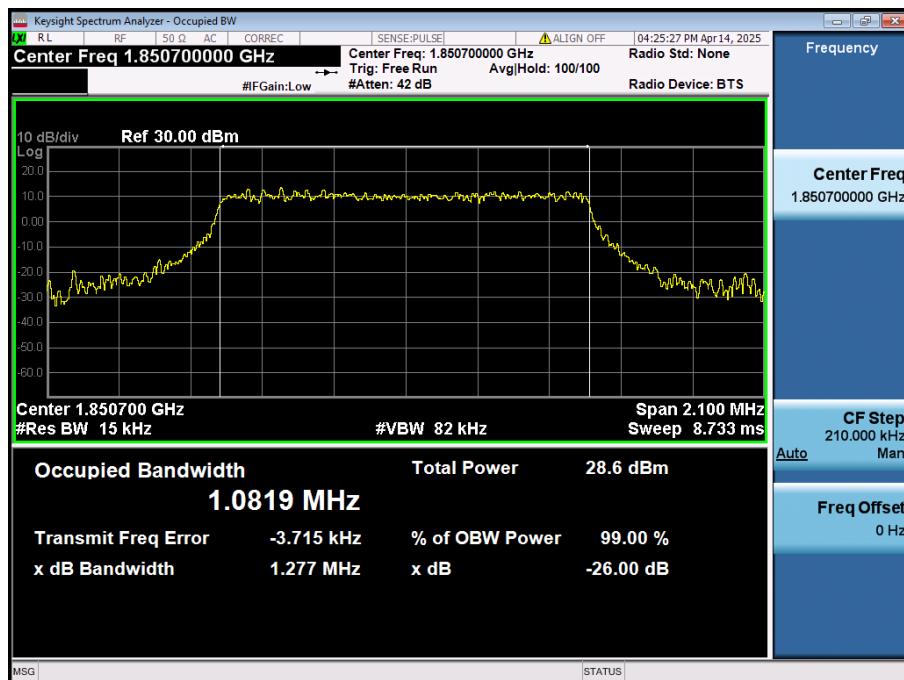
LTE Band 2 / 3MHz / 64QAM - RB Size 15/0



LTE Band 2 / 1.4MHz / QPSK - RB Size 6/0



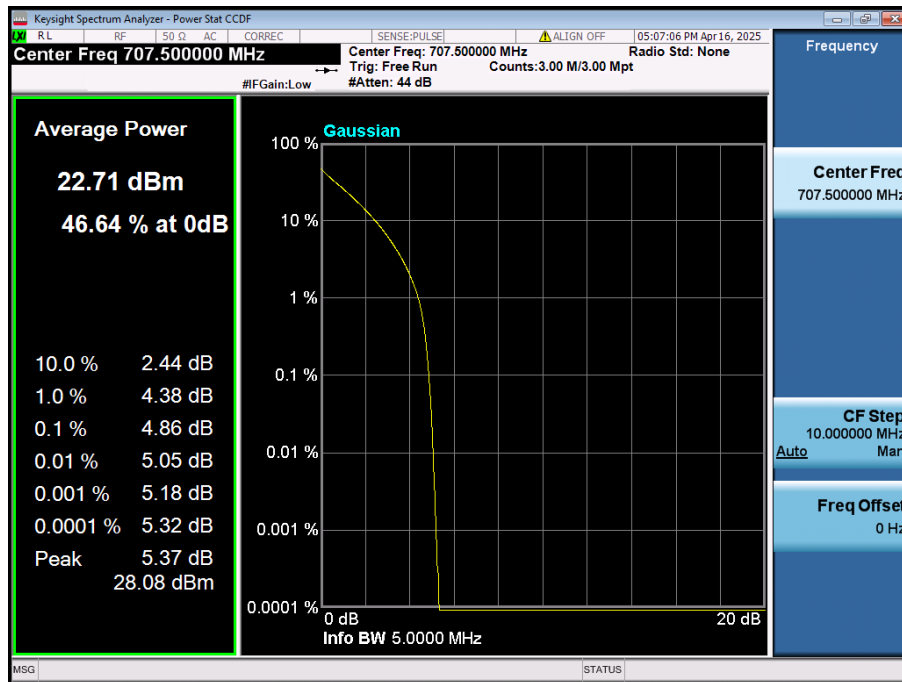
LTE Band 2 / 1.4MHz / 16QAM - RB Size 6/0



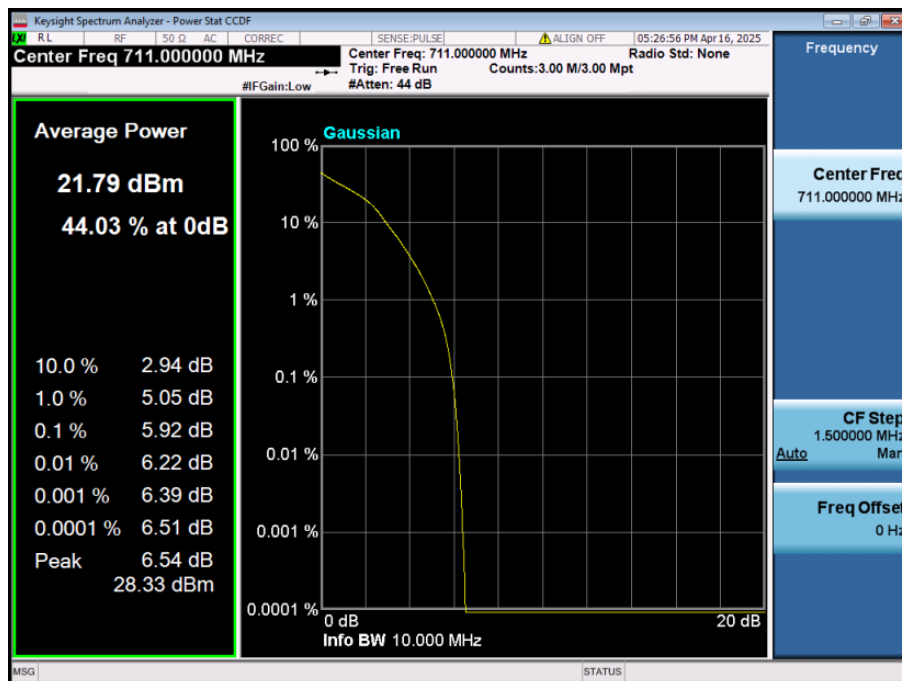
LTE Band 2 / 1.4MHz / 64QAM - RB Size 6/0

8.2. PEAK TO AVERAGE RATIO

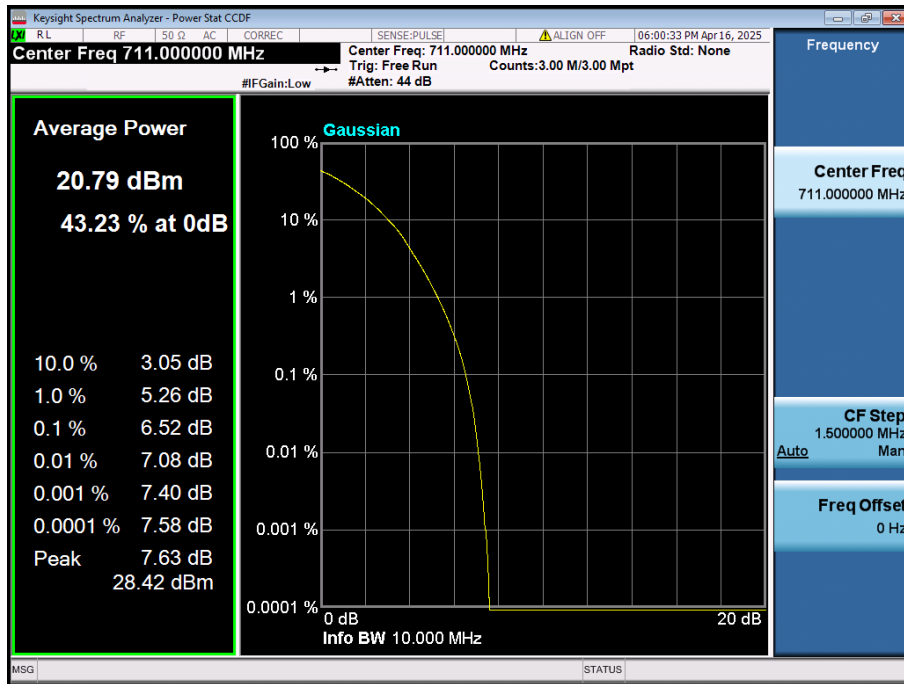
8.2.1. LTE Band 12



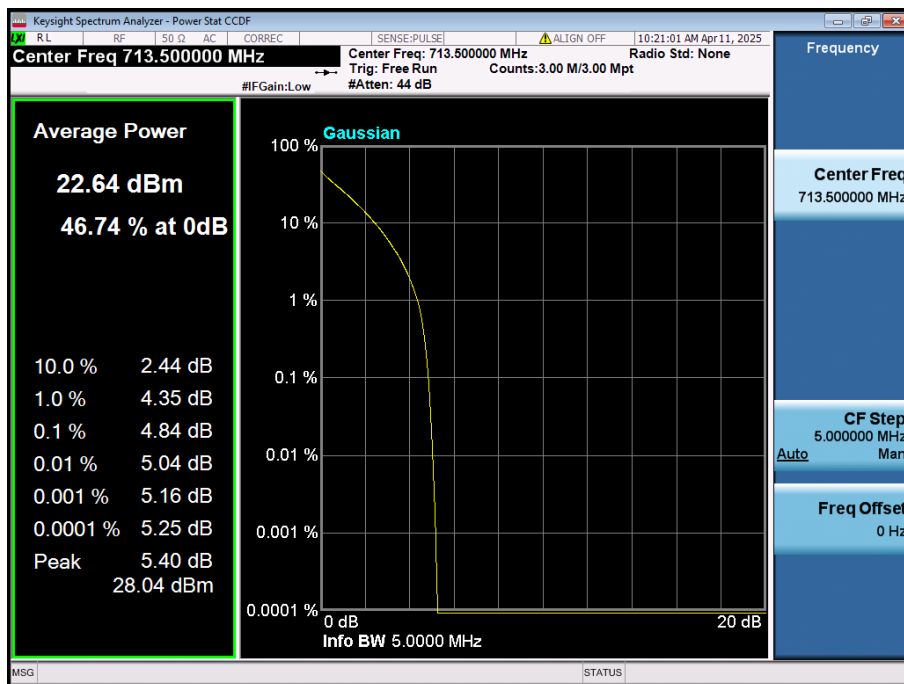
LTE Band 12 / 10MHz / QPSK - RB Size 50/0



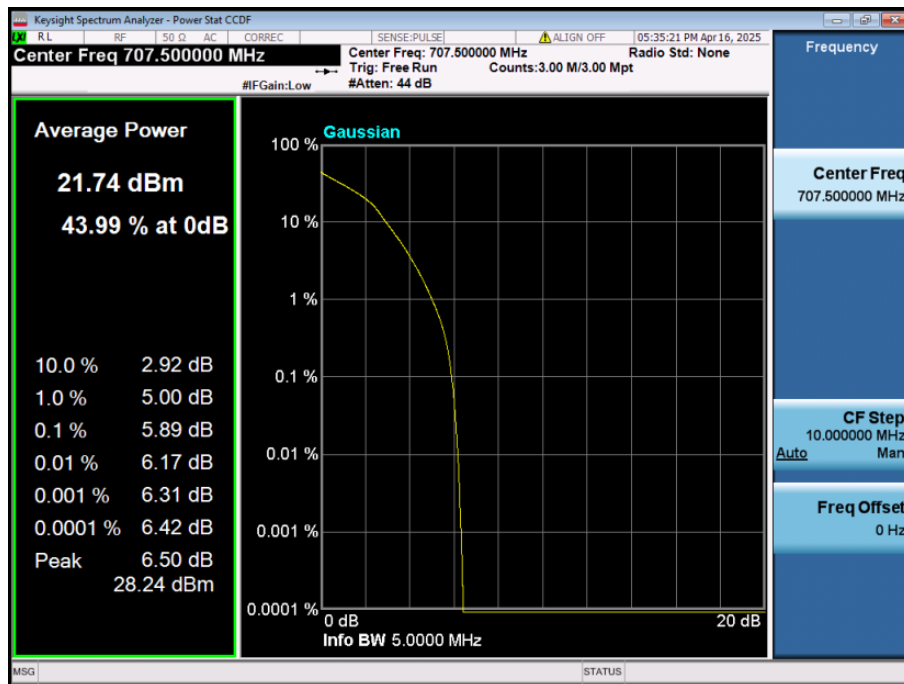
LTE Band 12 / 10MHz / 16QAM - RB Size 50/0



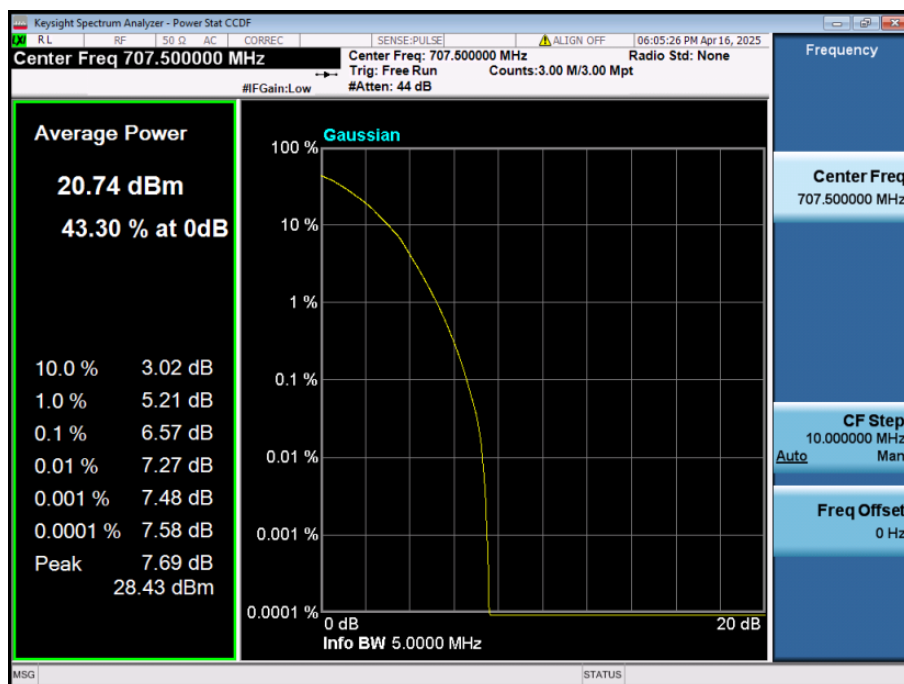
LTE Band 12 / 10MHz / 64QAM - RB Size 50/0



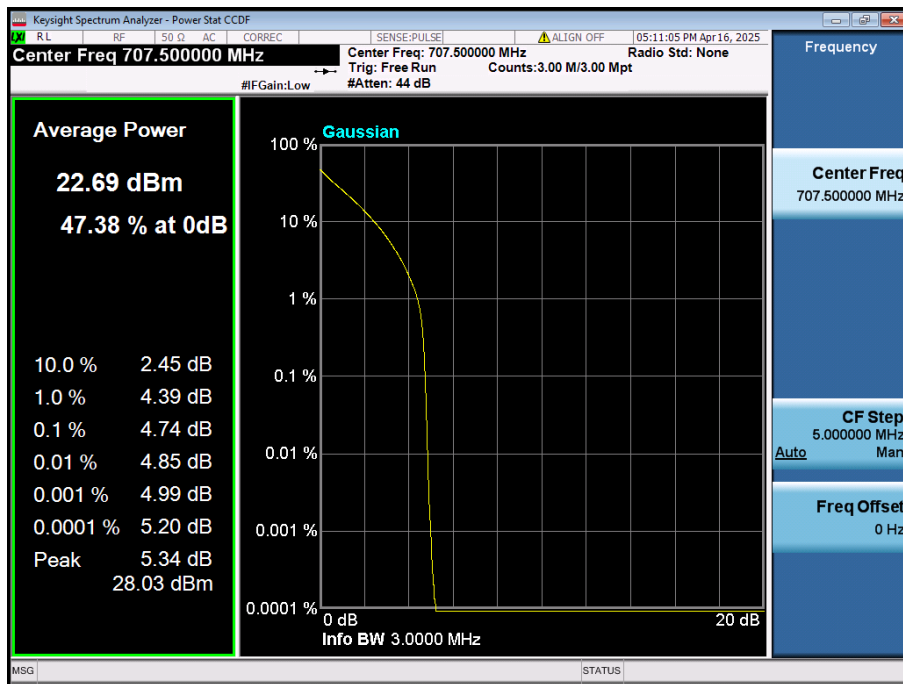
LTE Band 12 / 5MHz / QPSK - RB Size 25/0



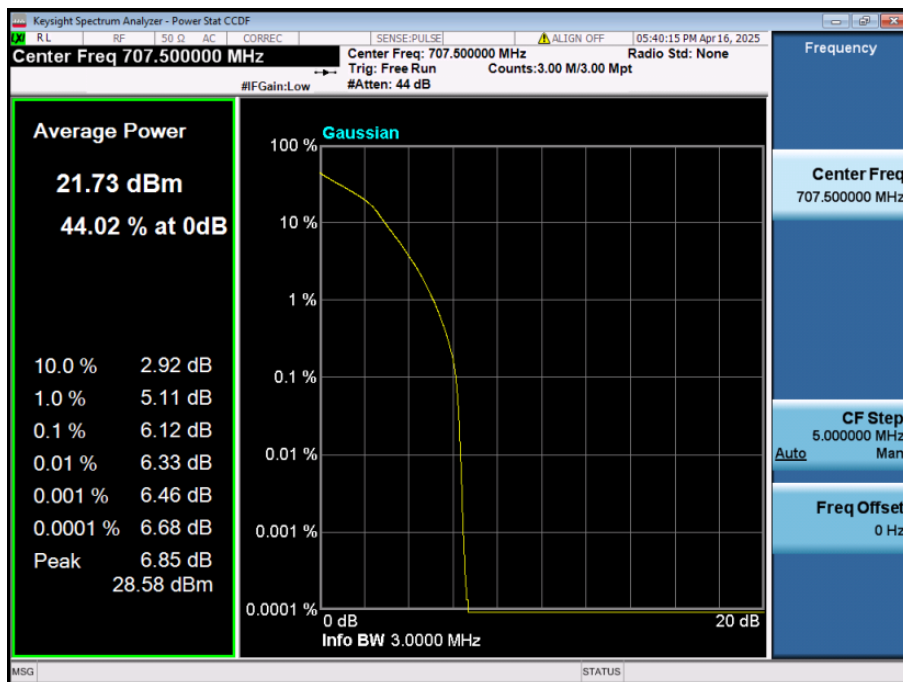
LTE Band 12 / 5MHz / 16QAM - RB Size 25/0



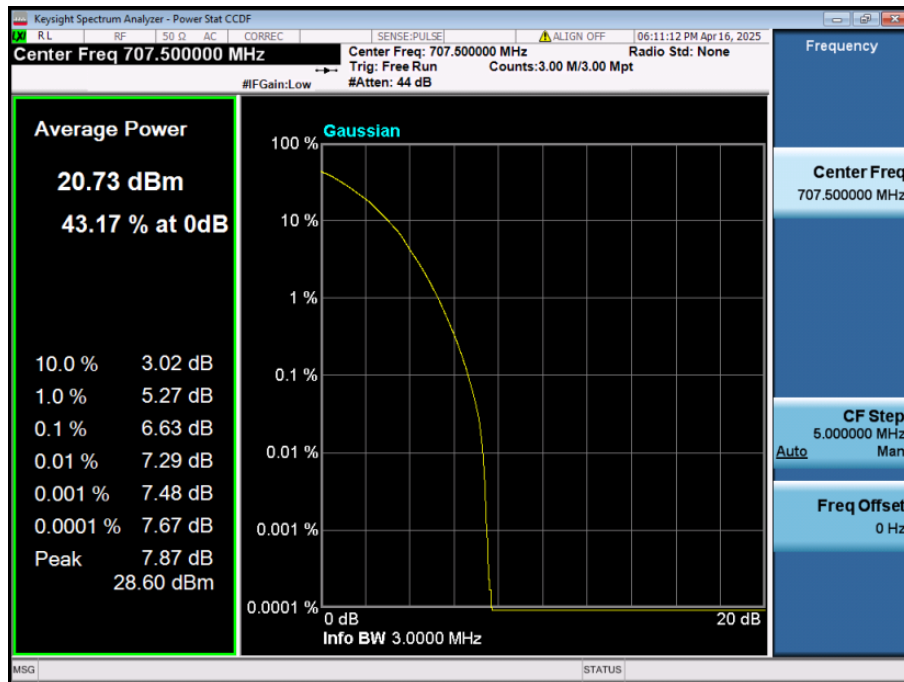
LTE Band 12 / 5MHz / 64QAM - RB Size 25/0



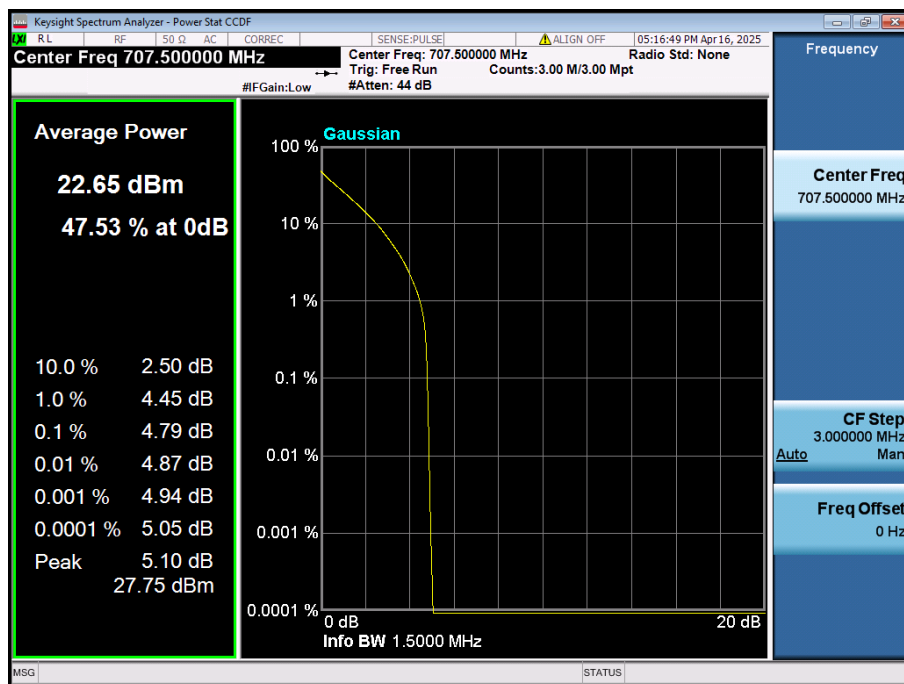
LTE Band 12 / 3MHz / QPSK - RB Size 15/0



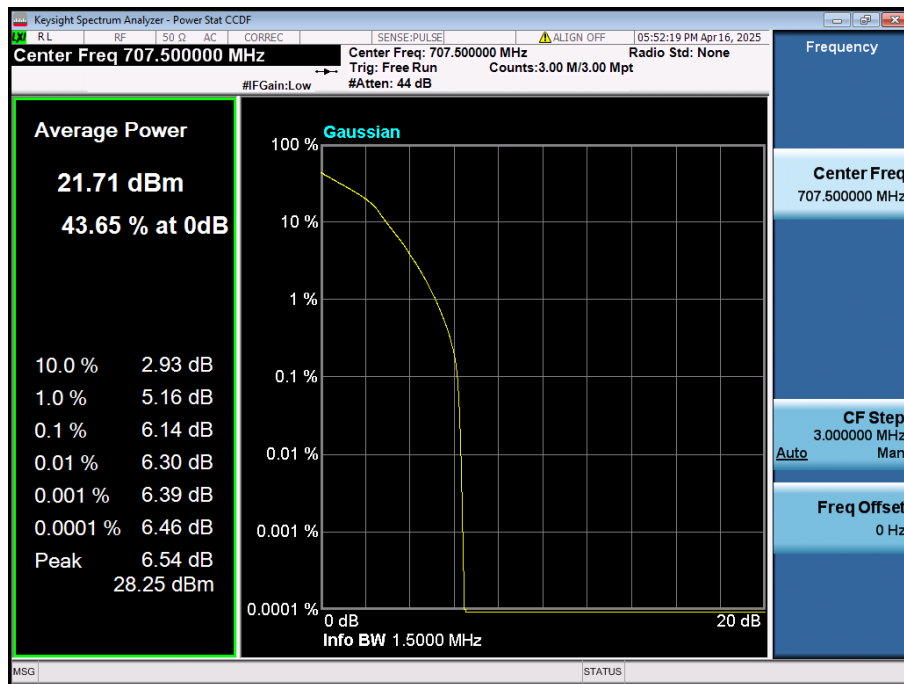
LTE Band 12 / 3MHz / 16QAM - RB Size 15/0



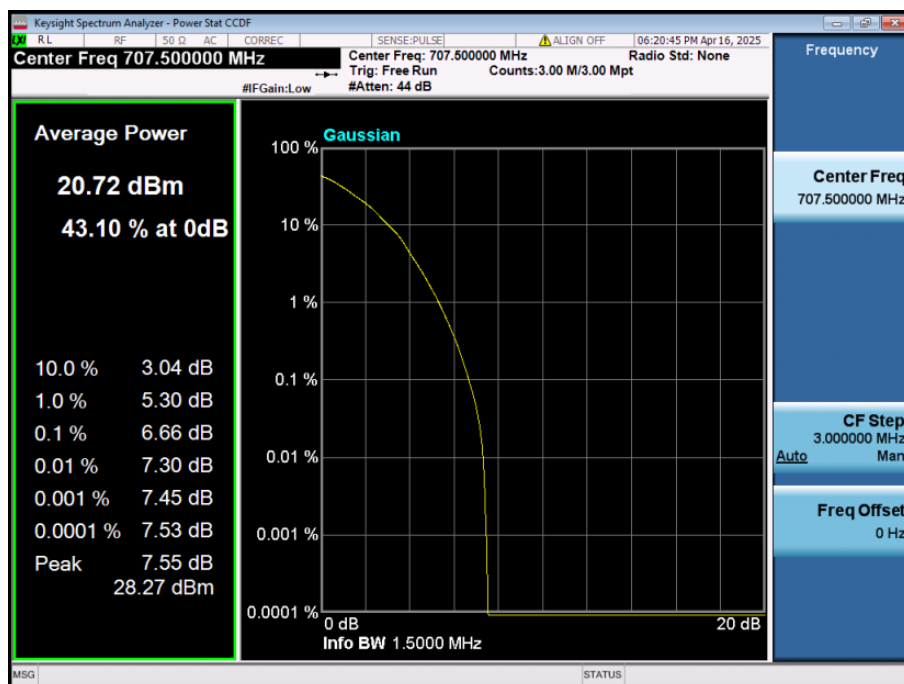
LTE Band 12 / 3MHz / 64QAM - RB Size 15/0



LTE Band 12 / 1.4MHz / QPSK - RB Size 6/0

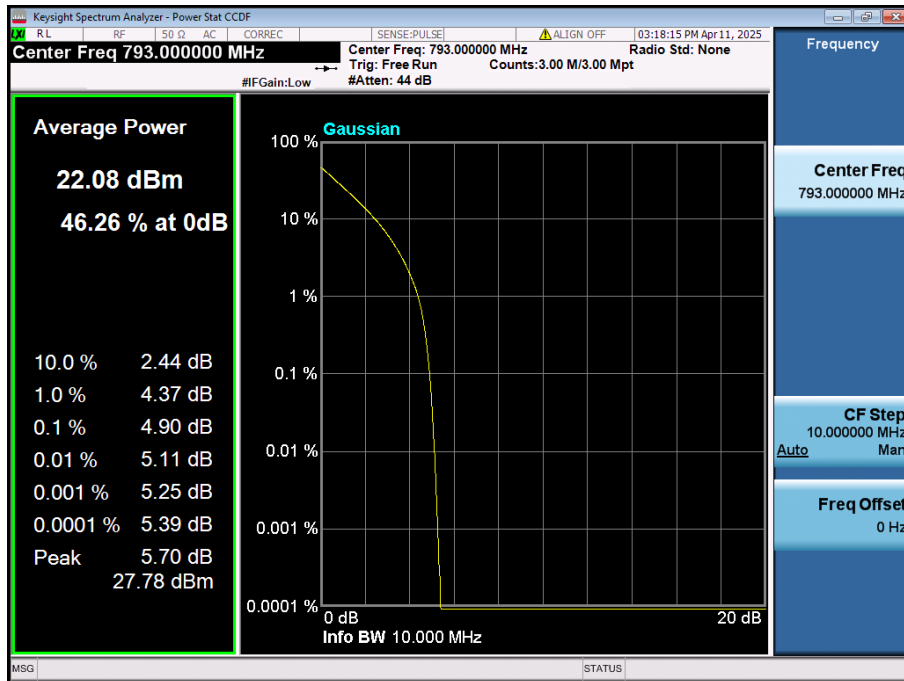


LTE Band 12 / 1.4MHz / 16QAM - RB Size 6/0

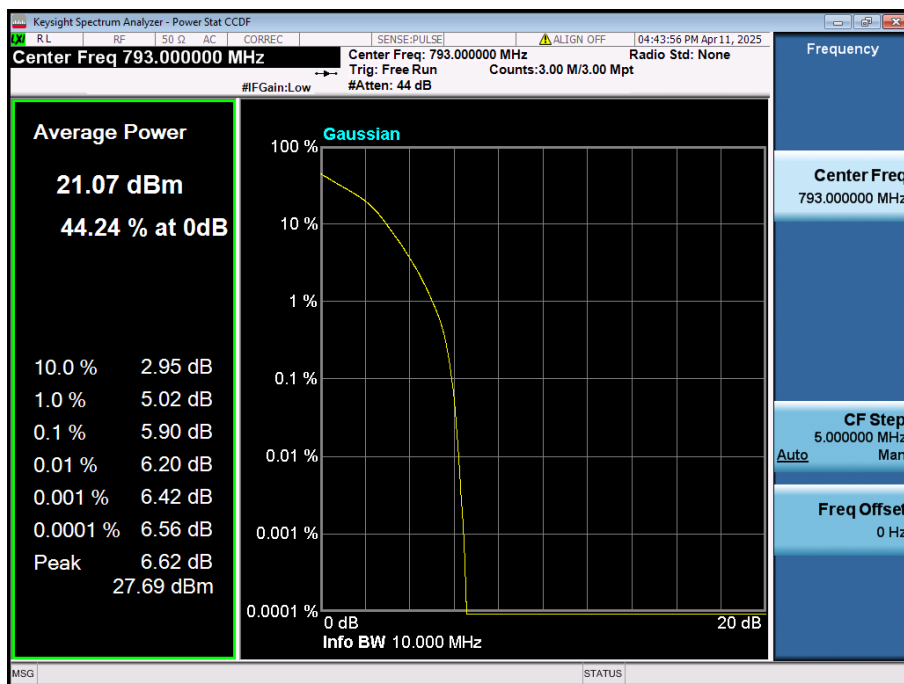


LTE Band 12 / 1.4MHz / 64QAM - RB Size 6/0

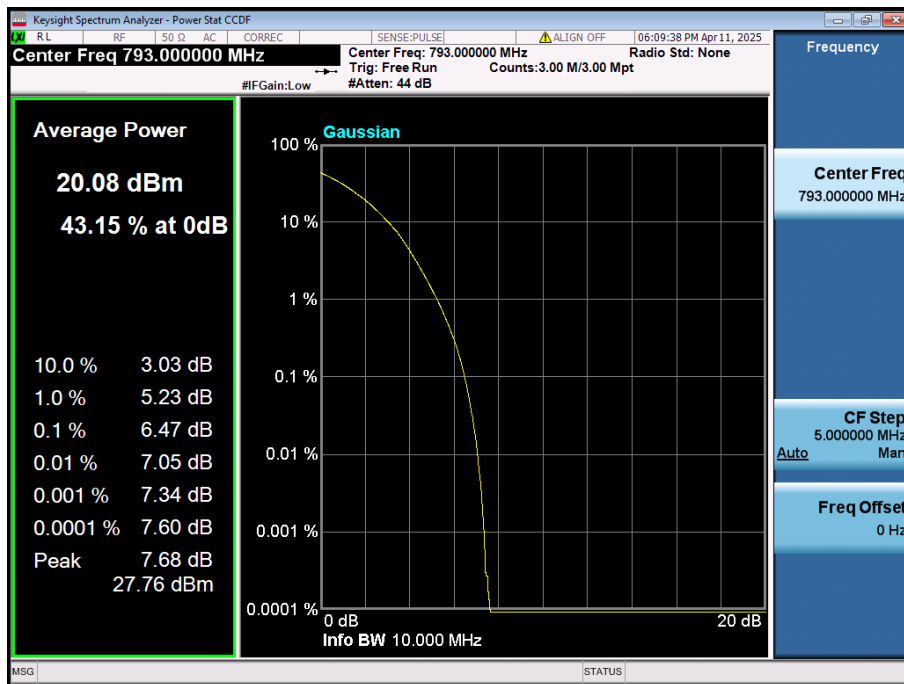
8.2.2. LTE Band 14



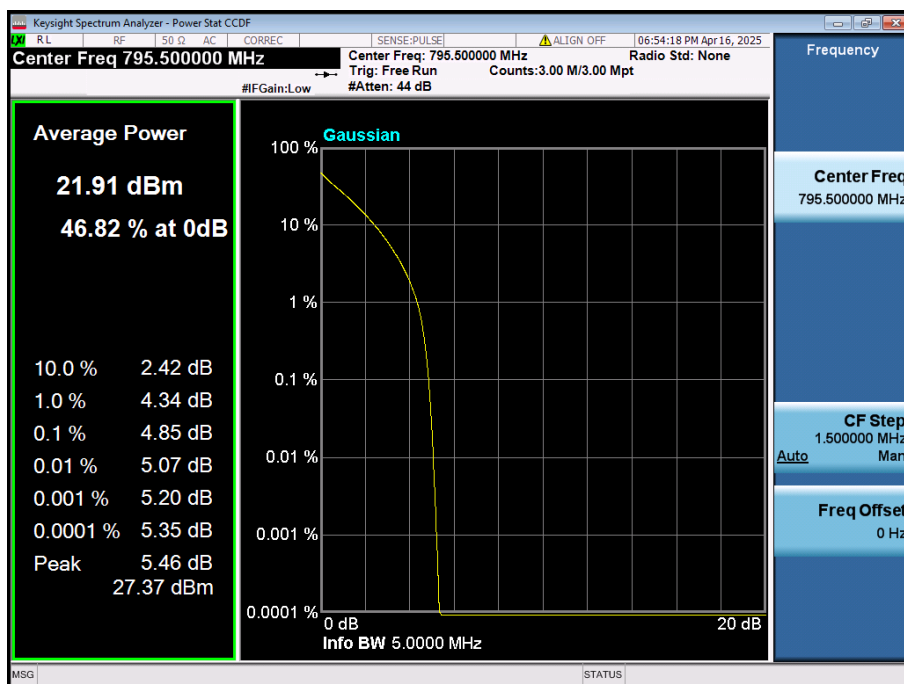
LTE Band 14 / 10MHz / QPSK - RB Size 50/0



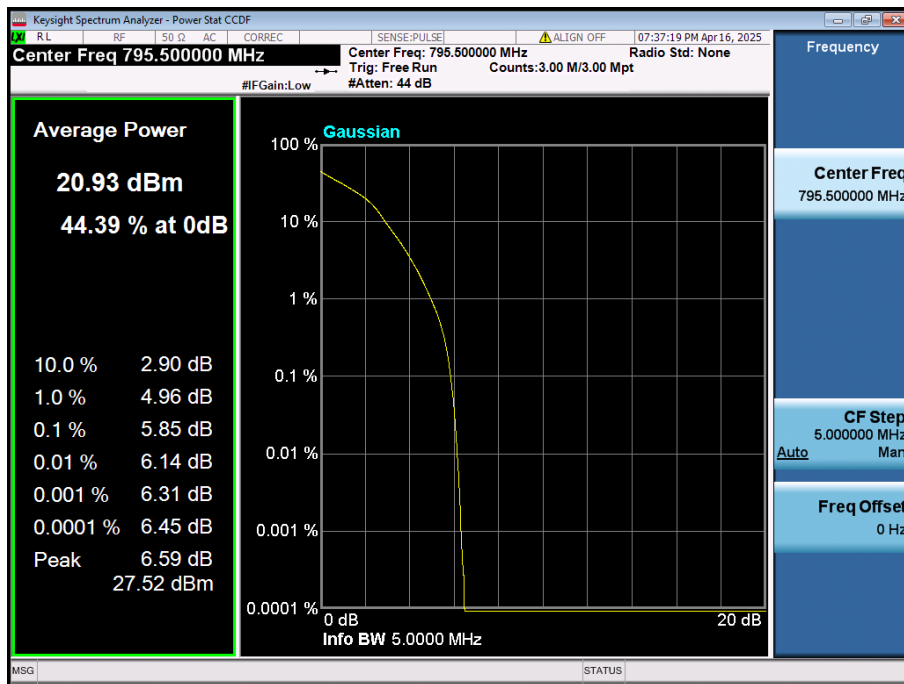
LTE Band 14 / 10MHz / 16QAM - RB Size 50/0



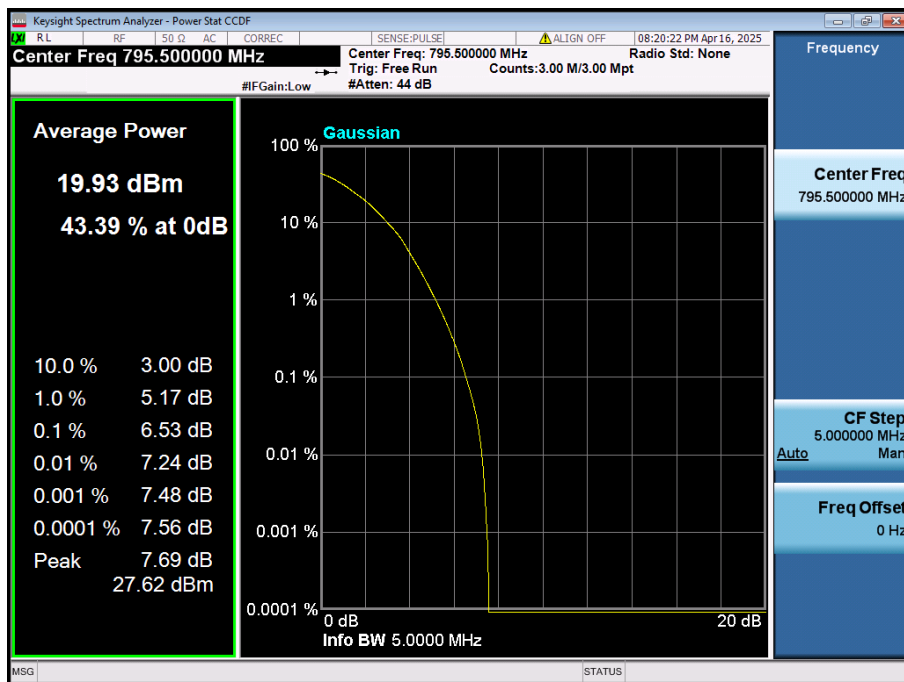
LTE Band 14 / 10MHz / 64QAM - RB Size 50/0



LTE Band 14 / 5MHz / QPSK - RB Size 25/0



LTE Band 14 / 5MHz / 16QAM - RB Size 25/0



LTE Band 14 / 5MHz / 64QAM - RB Size 25/0