

TEST REPORT



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1. Report No : DRTFCC2402-0012

2. Customer

- Name (FCC) : Point Mobile Co., LTD.
- Address (FCC) : B-9F Kabul Great Valley, 32, Digital-ro 9-gil, Geumcheon-gu, Seoul, South Korea, 08512

3. Use of Report : FCC Certification

4. Product Name / Model Name : Mobile Computer / PM84
FCC ID : V2X-PM84

5. FCC Regulation(s): Part 2, 22, 24, 27
Test Method Used : KDB971168 D01v03, ANSI/TIA-603-E-2016, ANSI C63.26-2015

6. Date of Test : 2023.11.13 ~ 2024.02.05

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 (Signature)	Name : JaeJin Lee (Signature)

2024 . 02 . 05 .

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
DRTFCC2402-0012	Feb. 05, 2024	Initial issue	SeokHo Han	JaeJin Lee

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1. GENERAL INFORMATION

Equipment Class	PCS Licensed Transmitter held to ear (PCE)
Product Name	Mobile Computer
Model Name	PM84
Add Model Name	-
FVIN(Firmware Version Identification Number)	84.01
EUT Serial Number	Conducted(23287A0055), Radiated(23287A0071)
Supplying power	DC 3.87 V
Antenna Information	Antenna Type: FPC Antenna Gain: -0.4 dBi (Band 12,17), -0.4 dBi (Band 13), -1.1 dBi (Band 26, 5), 2.3 dBi (Band 66, 4), 2.6dBi (Band 25, 2), 2.5 dBi (Band 7, 41, 38)

Mode	TX Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max power (dBm)	Max power (W)
LTE Band 12(17)	704 ~ 711	8M96G7D	QPSK	21.72	0.149
LTE Band 12(17)	704 ~ 711	8M92W7D	16QAM	20.71	0.118
LTE Band 12(17)	704 ~ 711	8M95W7D	64QAM	19.60	0.091
LTE Band 12(17)	701.5 ~ 713.5	4M47G7D	QPSK	21.69	0.148
LTE Band 12(17)	701.5 ~ 713.5	4M48W7D	16QAM	20.59	0.115
LTE Band 12(17)	701.5 ~ 713.5	4M47W7D	64QAM	19.93	0.098
LTE Band 12	700.5 ~ 714.5	2M68G7D	QPSK	21.68	0.147
LTE Band 12	700.5 ~ 714.5	2M68W7D	16QAM	20.80	0.120
LTE Band 12	700.5 ~ 714.5	2M67W7D	64QAM	19.78	0.095
LTE Band 12	699.7 ~ 715.3	1M08G7D	QPSK	21.89	0.155
LTE Band 12	699.7 ~ 715.3	1M08W7D	16QAM	20.84	0.121
LTE Band 12	699.7 ~ 715.3	1M08W7D	64QAM	20.02	0.100
LTE Band 13	782 ~ 782	8M98G7D	QPSK	21.69	0.148
LTE Band 13	782 ~ 782	8M94W7D	16QAM	20.76	0.119
LTE Band 13	782 ~ 782	8M96W7D	64QAM	19.67	0.093
LTE Band 13	779.5 ~ 784.5	4M48G7D	QPSK	21.50	0.141
LTE Band 13	779.5 ~ 784.5	4M47W7D	16QAM	20.66	0.116
LTE Band 13	779.5 ~ 784.5	4M49W7D	64QAM	19.56	0.090
LTE Band 26	831.5 ~ 841.5	13M4G7D	QPSK	20.50	0.112
LTE Band 26	831.5 ~ 841.5	13M4W7D	16QAM	19.70	0.093
LTE Band 26	831.5 ~ 841.5	13M4W7D	64QAM	18.65	0.073
LTE Band 26(5)	829 ~ 844	8M93G7D	QPSK	20.29	0.107
LTE Band 26(5)	829 ~ 844	8M94W7D	16QAM	19.67	0.093
LTE Band 26(5)	829 ~ 844	8M93W7D	64QAM	18.58	0.072
LTE Band 26(5)	826.5 ~ 846.5	4M47G7D	QPSK	20.34	0.108
LTE Band 26(5)	826.5 ~ 846.5	4M47W7D	16QAM	19.36	0.086
LTE Band 26(5)	826.5 ~ 846.5	4M49W7D	64QAM	18.37	0.069
LTE Band 26(5)	825.5 ~ 847.5	2M68G7D	QPSK	20.34	0.108
LTE Band 26(5)	825.5 ~ 847.5	2M68W7D	16QAM	19.52	0.090
LTE Band 26(5)	825.5 ~ 847.5	2M68W7D	64QAM	18.41	0.069
LTE Band 26(5)	824.7 ~ 848.3	1M08G7D	QPSK	20.19	0.104
LTE Band 26(5)	824.7 ~ 848.3	1M08W7D	16QAM	19.54	0.090
LTE Band 26(5)	824.7 ~ 848.3	1M08W7D	64QAM	18.59	0.072

Mode	TX Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max power (dBm)	Max power (W)
LTE Band 66(4)	1 720 ~ 1 770	17M9G7D	QPSK	28.14	0.652
LTE Band 66(4)	1 720 ~ 1 770	17M9W7D	16QAM	27.37	0.546
LTE Band 66(4)	1 720 ~ 1 770	17M9W7D	64QAM	26.23	0.420
LTE Band 66(4)	1 717.5 ~ 1 772.5	13M4G7D	QPSK	27.49	0.561
LTE Band 66(4)	1 717.5 ~ 1 772.5	13M4W7D	16QAM	26.97	0.498
LTE Band 66(4)	1 717.5 ~ 1 772.5	13M4W7D	64QAM	25.86	0.385
LTE Band 66(4)	1 715 ~ 1 775	8M94G7D	QPSK	28.04	0.637
LTE Band 66(4)	1 715 ~ 1 775	8M96W7D	16QAM	27.23	0.528
LTE Band 66(4)	1 715 ~ 1 775	8M95W7D	64QAM	26.11	0.408
LTE Band 66(4)	1 712.5 ~ 1 777.5	4M48G7D	QPSK	27.71	0.590
LTE Band 66(4)	1 712.5 ~ 1 777.5	4M48W7D	16QAM	27.07	0.509
LTE Band 66(4)	1 712.5 ~ 1 777.5	4M48W7D	64QAM	25.84	0.384
LTE Band 66(4)	1 711.5 ~ 1 778.5	2M68G7D	QPSK	27.86	0.611
LTE Band 66(4)	1 711.5 ~ 1 778.5	2M68W7D	16QAM	27.34	0.542
LTE Band 66(4)	1 711.5 ~ 1 778.5	2M67W7D	64QAM	26.38	0.435
LTE Band 66(4)	1 710.7 ~ 1 779.3	1M08G7D	QPSK	28.04	0.637
LTE Band 66(4)	1 710.7 ~ 1 779.3	1M08W7D	16QAM	27.28	0.535
LTE Band 66(4)	1 710.7 ~ 1 779.3	1M08W7D	64QAM	26.27	0.424
LTE Band 25(2)	1 860 ~ 1 905	17M9G7D	QPSK	27.68	0.586
LTE Band 25(2)	1 860 ~ 1 905	17M9W7D	16QAM	26.73	0.471
LTE Band 25(2)	1 860 ~ 1 905	17M9W7D	64QAM	25.56	0.360
LTE Band 25(2)	1 857.5 ~ 1 907.5	13M4G7D	QPSK	27.62	0.578
LTE Band 25(2)	1 857.5 ~ 1 907.5	13M4W7D	16QAM	26.91	0.491
LTE Band 25(2)	1 857.5 ~ 1 907.5	13M4W7D	64QAM	25.98	0.396
LTE Band 25(2)	1 855 ~ 1 910	8M96G7D	QPSK	27.63	0.579
LTE Band 25(2)	1 855 ~ 1 910	8M95W7D	16QAM	26.64	0.461
LTE Band 25(2)	1 855 ~ 1 910	8M96W7D	64QAM	25.82	0.382
LTE Band 25(2)	1 852.5 ~ 1 912.5	4M47G7D	QPSK	27.59	0.574
LTE Band 25(2)	1 852.5 ~ 1 912.5	4M48W7D	16QAM	26.96	0.497
LTE Band 25(2)	1 852.5 ~ 1 912.5	4M48W7D	64QAM	25.82	0.382
LTE Band 25(2)	1 851.5 ~ 1 913.5	2M69G7D	QPSK	27.44	0.555
LTE Band 25(2)	1 851.5 ~ 1 913.5	2M67W7D	16QAM	26.67	0.465
LTE Band 25(2)	1 851.5 ~ 1 913.5	2M67W7D	64QAM	25.75	0.376
LTE Band 25(2)	1 850.7 ~ 1 914.3	1M08G7D	QPSK	27.14	0.518
LTE Band 25(2)	1 850.7 ~ 1 914.3	1M08W7D	16QAM	26.26	0.423
LTE Band 25(2)	1 850.7 ~ 1 914.3	1M08W7D	64QAM	25.54	0.358

Mode	TX Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max power (dBm)	Max power (W)
LTE Band 41(38)	2 506 ~ 2 680	17M9G7D	QPSK	25.54	0.358
LTE Band 41(38)	2 506 ~ 2 680	17M8W7D	16QAM	24.64	0.291
LTE Band 41(38)	2 506 ~ 2 680	17M9W7D	64QAM	23.82	0.241
LTE Band 41(38)	2 503.5 ~ 2 682.5	13M4G7D	QPSK	25.42	0.348
LTE Band 41(38)	2 503.5 ~ 2 682.5	13M4W7D	16QAM	24.67	0.293
LTE Band 41(38)	2 503.5 ~ 2 682.5	13M4W7D	64QAM	23.85	0.243
LTE Band 41(38)	2 501 ~ 2 685	8M92G7D	QPSK	25.49	0.354
LTE Band 41(38)	2 501 ~ 2 685	8M90W7D	16QAM	24.73	0.297
LTE Band 41(38)	2 501 ~ 2 685	8M88W7D	64QAM	23.56	0.227
LTE Band 41(38)	2 498.5 ~ 2 687.5	4M46G7D	QPSK	25.47	0.352
LTE Band 41(38)	2 498.5 ~ 2 687.5	4M44W7D	16QAM	24.35	0.272
LTE Band 41(38)	2 498.5 ~ 2 687.5	4M45W7D	64QAM	23.70	0.234
LTE Band 7	2 510 ~ 2 560	17M9G7D	QPSK	25.48	0.353
LTE Band 7	2 510 ~ 2 560	17M9W7D	16QAM	24.63	0.290
LTE Band 7	2 510 ~ 2 560	17M9W7D	64QAM	23.68	0.233
LTE Band 7	2 507.5 ~ 2 562.5	13M4G7D	QPSK	25.09	0.323
LTE Band 7	2 507.5 ~ 2 562.5	13M4W7D	16QAM	24.35	0.272
LTE Band 7	2 507.5 ~ 2 562.5	13M4W7D	64QAM	23.39	0.218
LTE Band 7	2 505 ~ 2 565	8M94G7D	QPSK	25.46	0.352
LTE Band 7	2 505 ~ 2 565	8M94W7D	16QAM	24.55	0.285
LTE Band 7	2 505 ~ 2 565	8M96W7D	64QAM	23.80	0.240
LTE Band 7	2 502.5 ~ 2 567.5	4M48G7D	QPSK	25.02	0.318
LTE Band 7	2 502.5 ~ 2 567.5	4M47W7D	16QAM	24.26	0.267
LTE Band 7	2 502.5 ~ 2 567.5	4M48W7D	64QAM	23.33	0.215

2. INTRODUCTION

2.1. EUT DESCRIPTION

The Equipment Under Test (EUT) supports 850/1900 GSM, 850/1700/1900 WCDMA, Multi-band LTE, 802.11b/g/n/ac WLAN(2.4GHz), 802.11a/n/ac WLAN(5GHz), Bluetooth(BDR, EDR, LE) and NFC.

2.2. TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+20 °C ~ +22 °C
▪ Relative Humidity	39 % ~ 43 %

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
Radiated Disturbance (Below 1 GHz)	4.8 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.0 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (Above 18 GHz)	5.2 dB (The confidence level is about 95 %, $k = 2$)

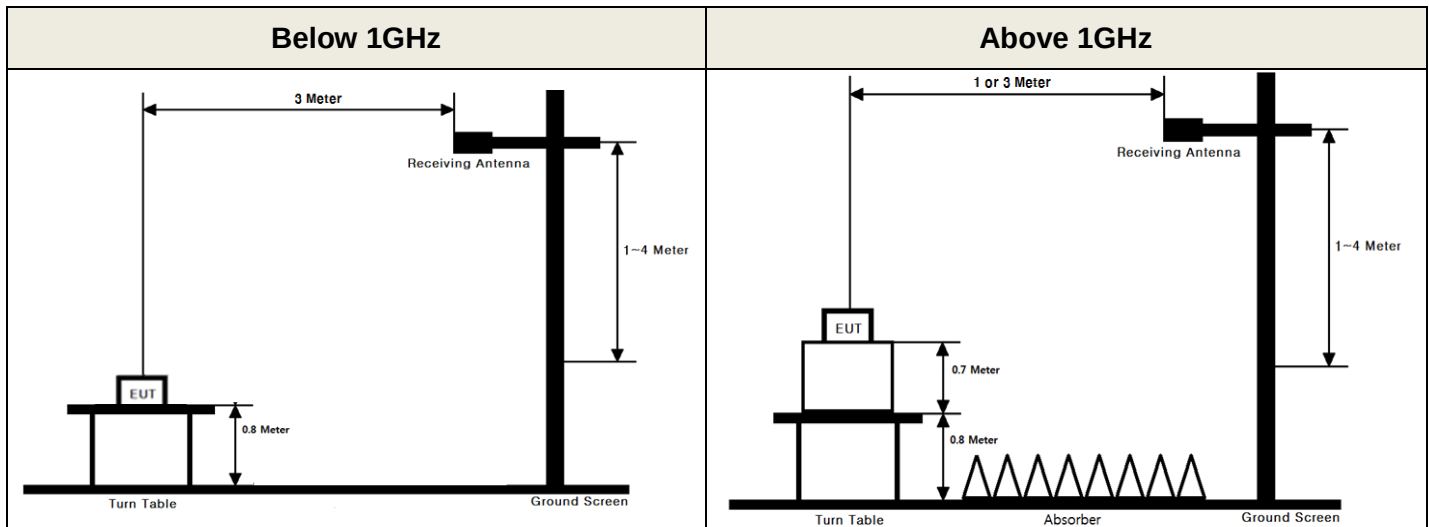
2.5. TEST FACILITY

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 & IC MRA Designation No. : KR0034		
- ISED#: 5740A		
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3. DESCRIPTION OF TESTS

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

Test Set-up



These measurements were performed at 3 m 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 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

For the FDD band, the following test procedure was used.

- 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, 5.2.4.4.2

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 $\geq$ 3 x RBW.
4. Set number of points in sweep $\geq$ 2 x span / RBW.
5. Sweep time:
 - 1) Set = auto-couple, or
 - 2) Set $\geq$ $[10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$ 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.

Note: If duty cycle < 98%, add $10 \log (1/\text{duty cycle})$ to the measured power level to compute the average power during continuous transmission.

11. Add $10 \log (1/\text{duty cycle})$ to the measured power level to compute the average power during continuous transmission. For example, add $[10 \log (1/0.25)] = 6 \text{ dB}$ if the duty cycle is a constant 25 %.

EUT duty cycle

Band	$T_{\text{on}}(\text{ms})$	$T_{\text{on+off}}(\text{ms})$	Duty cycle = $T_{\text{on}} / (T_{\text{on+off}})$	$10 \log (1/\text{duty cycle})$
Band41	2	5	0.40	3.98 dB

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.

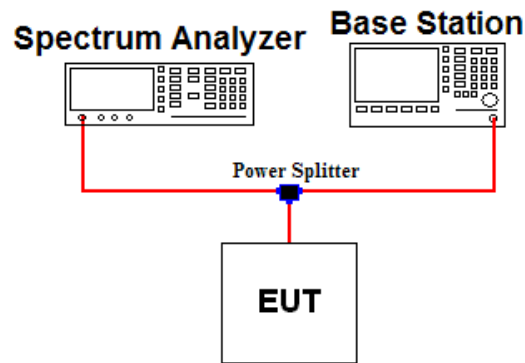
The ERP/EIRP is calculated using the following formula:

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.

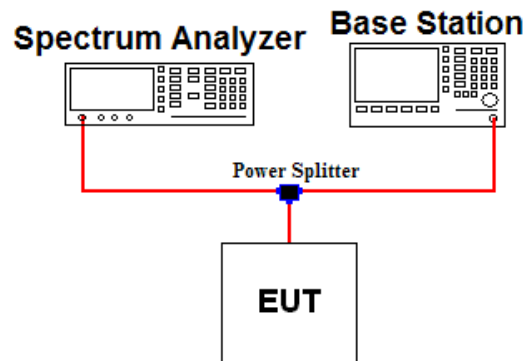
Test setting

The spectrum Analyzer's CCDF measurement function is enabled.

1. Set resolution/measurement bandwidth $\geq$ 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

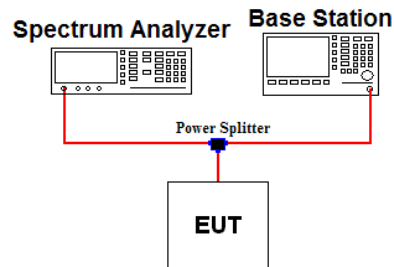
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

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 $\geq 1\%$ 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.

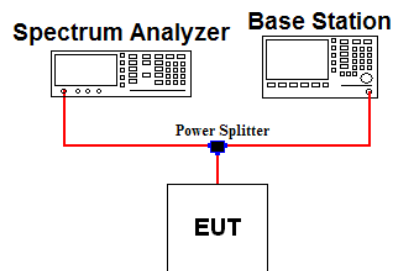
Note 3: Per Part 27.53(c.4) for all frequencies between 763 MHz - 775 MHz and 793 MHz - 805 MHz, the FCC limit is $65 + 10 \log_{10}(P[\text{Watts}]) = -35$ dBm in a 6.25 kHz bandwidth.

Note 4: For part 27.53(m)(4) the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2 490.5 MHz and 2 496 MHz and $55 + 10 \log(P)$ dB at or below 2 490.5 MHz.

Note 5: Per part 27.53(m)(6) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 MHz band is 2 495 MHz - 2 496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

3.5. SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

Test set-up



Test Procedure

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

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

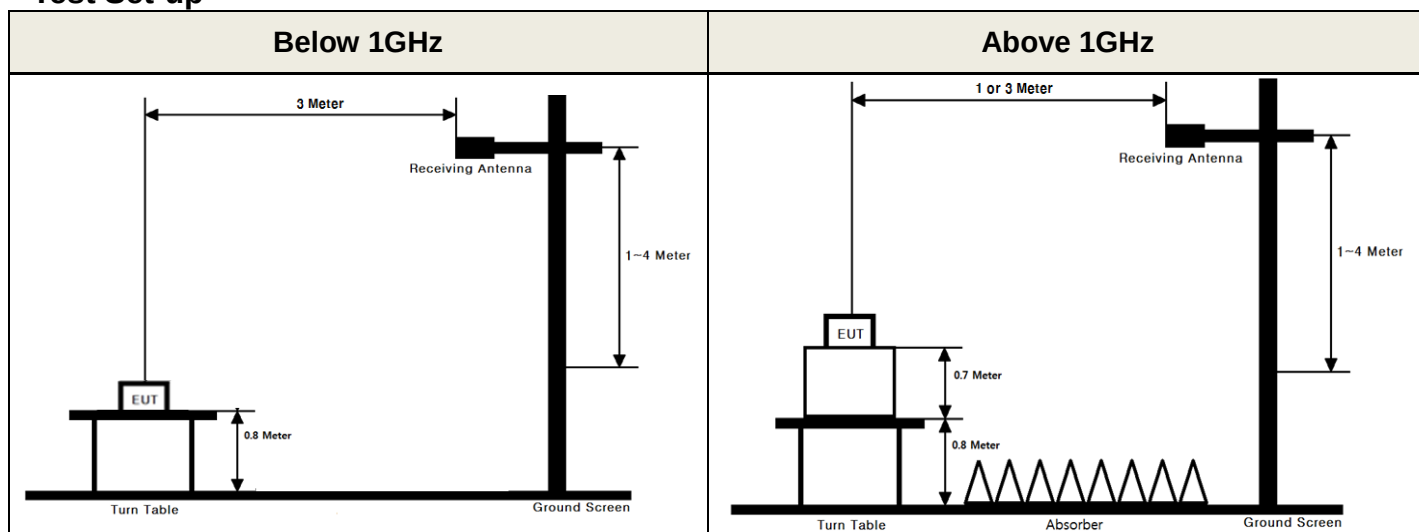
Test setting

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

- 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 = power averaging (rms)
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

Note: If duty cycle < 98%, add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

Band	T _{on} (ms)	T _{on+off} (ms)	Duty cycle = T _{on} / (T _{on+off})	10 log (1/duty cycle)
Band41	2	5	0.40	3.98 dB

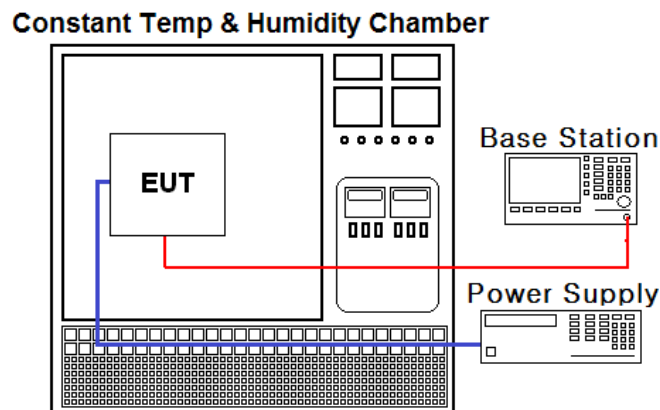
The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal 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 $\pm 0.00025\%$ (± 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	23/12/15	24/12/15	MY50110097
Spectrum Analyzer	Agilent Technologies	N9020A	23/12/15	24/12/15	MY48011700
Spectrum Analyzer	Agilent Technologies	N9020A	23/12/15	24/12/15	MY50410163
Spectrum Analyzer	KEYSIGHT	N9030B	23/12/15	24/12/15	MY55480168
DC power supply	Agilent Technologies	66332A	23/06/23	24/06/23	US37474125
Multimeter	FLUKE	17B+	23/12/15	24/12/15	36390701WS
Power Splitter	Anritsu	K241B	23/06/23	24/06/23	020611
Temp & Humi	ESPEC	SU-261	23/06/23	24/06/23	92006578
Radio Communication Analyzer	Anritsu	MT8820C	23/06/23	24/06/23	6200951873
Thermohygrometer	BODYCOM	BJ5478	23/12/15	24/12/15	120612-1
Thermohygrometer	BODYCOM	BJ5478	23/12/15	24/12/15	120612-2
Signal Generator	Rohde Schwarz	SMBV100A	23/12/15	24/12/15	255571
Signal Generator	ANRITSU	MG3695C	23/12/15	24/12/15	173501
Loop Antenna	ETS-Lindgren	6502	22/04/22	24/04/22	203480
Bilog Antenna	Schwarzbeck	VULB 9160	23/12/15	24/12/15	3362
Dipole Antenna	Schwarzbeck	UHA 9105	22/12/16	24/12/16	2262
HORN ANT	ETS	3117	23/12/15	24/12/15	00140394
HORN ANT	A.H.Systems	SAS-574	23/06/23	24/06/23	155
PreAmplifier	H.P	8447D	23/12/15	24/12/15	2944A07774
PreAmplifier	Agilent	8449B	23/12/15	24/12/15	3008A02108
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	23/06/23	24/06/23	163
High-pass filter	Wainwright	WHKX12-935-1000-15000-40SS	23/12/15	24/12/15	7
High-pass filter	Wainwright	WHKX10-2838-3300-18000-60SS	23/12/15	24/12/15	2
High-pass filter	Wainwright	WHKX6-6320-8000-26500-40CC	23/12/15	24/12/15	2
Cable	HUBER+SUHNER	SUCOFLEX100	24/01/03	25/01/03	M-1
Cable	HUBER+SUHNER	SUCOFLEX100	24/01/03	25/01/03	M-2
Cable	Junkosah	MWX241/B	24/01/03	25/01/03	M-3
Cable	Junkosah	MWX221	24/01/03	25/01/03	M-4
Cable	Junkosah	MWX221	24/01/03	25/01/03	M-5
Cable	DTNC	Cable	24/01/03	25/01/03	M-6
Cable	JUNFLON	J12J101757-00	24/01/03	25/01/03	M-7
Cable	HUBER+SUHNER	SUCOFLEX104	24/01/03	25/01/03	M-8
Cable	HUBER+SUHNER	SUCOFLEX106	24/01/03	25/01/03	M-9
Cable	Junkosha	MWX342	24/01/03	25/01/03	RFC-72

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.

Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself.

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Status Note 1
2.1046	Conducted Output Power	N/A	Conducted	C ^{Note2}
2.1049	Occupied Bandwidth	N/A		C
24.232(d) 27.50(d.5)	Peak to Average Ratio	< 13 dB		C
2.1051 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Band Edge / Conducted Spurious Emissions	> 43 + 10log ₁₀ (P) dB at Band edge and for all out-of-band emissions		C
27.53(c.4)	Undesirable emissions in 763 ~ 775MHz & 793 ~ 806MHz	>65 + 10 log (P) dB in a 6.25 kHz band segment frequencies between 763-775 MHz and 793-805 MHz		C
27.53(m)	Band Edge / Conducted Spurious Emissions	> 40 + 10log10 (P) dB at channel edge and 5 MHz from the channel edge > 43 + 10log10 (P) dB at 5 MHz and X MHz from the channel edge > 55 + 10log10 (P) dB at all frequencies more than X MHz from the channel edge		C
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) or Fundamental emissions must stay within Authorized frequency block (Part 24, 27)		C
27.50(b.10) 27.50(c.10)	Radiated Output Power (B12, 13, 17)	< 3 Watts max. ERP	Radiated	C
22.913(a.5)	Radiated Output Power (B26, 5)	< 7 Watts max. ERP		C
27.50(d.4)	Radiated Output Power (B66, 4)	< 1 Watts max. EIRP		C
24.232(c) 27.50(h.2)	Radiated Output Power (B25, 2, 7, 41, 38)	< 2 Watts max. EIRP		C
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10log ₁₀ (P) dB for all out-of-band emissions		C
27.53(m)	Undesirable Emissions (B7, 41, 38)	> 55 + 10log ₁₀ (P) dB for all out-of-band emissions		C
27.53(f)	Undesirable Emissions in 1559 ~ 1610 MHz (B13)	< -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: Refer to RF Exposure Report (Test Report SAR) Note 3: This radiated test items were performed in three orthogonal EUT positions 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

- 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) During the test, the turn table is rotated until the maximum signal is found.
- 4) Record the field strength meter's level. (ex. Spectrum reading level is -8.5 dBm)
- 5) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 6) Increase the signal generator output till the field strength meter's level is equal to the item (4).
(ex. Signal generator level is -18.04 dBm)
- 7) The gain of the cable and amplifier between the signal generator and terminals of substituted antenna is 46.92 dB at test frequency.
- 8) Record the level at substituted antenna terminal. (ex. 28.88dBm)
- 9) The result is calculated as below;

$$\text{EIRP(dBm)} = \text{LEVLE@ANTENNA TERMINAL} + \text{TX Antenna Gain (dBi)}$$

$$\text{ERP(dBm)} = \text{LEVLE@ANTENNA TERMINAL} + \text{TX Antenna Gain (dBd)}$$

$$\text{Where, TX Antenna Gain (dBd)} = \text{TX Antenna Gain (dBi)} - 2.15 \text{ dB}$$

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

- Test Notes

- 1) This is device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the below table.

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	1/49	H	21.50	-1.28	20.22	0.105
		16QAM	1/49	H	20.55	-1.28	19.27	0.085
		64QAM	1/49	H	19.63	-1.28	18.35	0.068
	711	QPSK	1/49	H	23.08	-1.36	21.72	0.149
		16QAM	1/49	H	22.07	-1.36	20.71	0.118
		64QAM	1/49	H	20.96	-1.36	19.60	0.091
5	701.5	QPSK	1/24	H	21.01	-1.26	19.75	0.094
		16QAM	1/24	H	19.77	-1.26	18.51	0.071
		64QAM	1/24	H	18.92	-1.26	17.66	0.058
	707.5	QPSK	1/24	H	22.27	-1.32	20.95	0.124
		16QAM	1/24	H	21.35	-1.32	20.03	0.101
		64QAM	1/24	H	20.41	-1.32	19.09	0.081
	713.5	QPSK	1/12	H	23.08	-1.39	21.69	0.148
		16QAM	1/12	H	21.98	-1.39	20.59	0.115
		64QAM	1/12	H	21.32	-1.39	19.93	0.098

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	20.79	-1.25	19.54	0.090
		16QAM	1/7	H	19.81	-1.25	18.56	0.072
		64QAM	1/7	H	18.79	-1.25	17.54	0.057
	707.5	QPSK	1/14	H	21.96	-1.32	20.64	0.116
		16QAM	1/14	H	21.17	-1.32	19.85	0.097
		64QAM	1/14	H	20.10	-1.32	18.78	0.076
	714.5	QPSK	1/7	H	23.08	-1.40	21.68	0.147
		16QAM	1/7	H	22.20	-1.40	20.80	0.120
		64QAM	1/7	H	21.18	-1.40	19.78	0.095
1.4	699.7	QPSK	1/2	H	20.40	-1.24	19.16	0.082
		16QAM	1/2	H	19.59	-1.24	18.35	0.068
		64QAM	1/2	H	18.50	-1.24	17.26	0.053
	707.5	QPSK	1/2	H	22.05	-1.32	20.73	0.118
		16QAM	1/2	H	20.91	-1.32	19.59	0.091
		64QAM	1/2	H	20.03	-1.32	18.71	0.074
	715.3	QPSK	1/2	H	23.30	-1.41	21.89	0.155
		16QAM	1/2	H	22.25	-1.41	20.84	0.121
		64QAM	1/2	H	21.43	-1.41	20.02	0.100

7.5.3. LTE Band 13

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	ERP (dBm)	ERP (W)
10	782	QPSK	1/0	H	20.95	0.74	21.69	0.148
		16QAM	1/0	H	20.02	0.74	20.76	0.119
		64QAM	1/0	H	18.93	0.74	19.67	0.093
5	779.5	QPSK	1/0	H	20.76	0.74	21.50	0.141
		16QAM	1/0	H	19.92	0.74	20.66	0.116
		64QAM	1/0	H	18.82	0.74	19.56	0.090
	784.5	QPSK	1/12	H	20.49	0.74	21.23	0.133
		16QAM	1/12	H	19.58	0.74	20.32	0.108
		64QAM	1/12	H	18.53	0.74	19.27	0.085

7.5.4. LTE Band 26

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	ERP (dBm)	ERP (W)
15	831.5	QPSK	1/0	H	21.94	-1.44	20.50	0.112
		16QAM	1/0	H	21.14	-1.44	19.70	0.093
		64QAM	1/0	H	20.09	-1.44	18.65	0.073
	841.5	QPSK	1/0	H	21.58	-1.45	20.13	0.103
		16QAM	1/0	H	20.78	-1.45	19.33	0.086
		64QAM	1/0	H	19.93	-1.45	18.48	0.070

7.5.5. LTE Band 26(5)

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	ERP (dBm)	ERP (W)
10	829	QPSK	1/0	H	21.72	-1.43	20.29	0.107
		16QAM	1/0	H	21.10	-1.43	19.67	0.093
		64QAM	1/0	H	20.00	-1.43	18.57	0.072
	836.5	QPSK	1/25	H	21.61	-1.44	20.17	0.104
		16QAM	1/25	H	20.92	-1.44	19.48	0.089
		64QAM	1/25	H	19.64	-1.44	18.20	0.066
	844	QPSK	1/0	H	21.65	-1.45	20.20	0.105
		16QAM	1/0	H	20.84	-1.45	19.39	0.087
		64QAM	1/0	H	20.03	-1.45	18.58	0.072
5	826.5	QPSK	1/0	H	21.77	-1.43	20.34	0.108
		16QAM	1/0	H	20.66	-1.43	19.23	0.084
		64QAM	1/0	H	19.72	-1.43	18.29	0.067
	836.5	QPSK	1/12	H	21.71	-1.44	20.27	0.106
		16QAM	1/12	H	20.80	-1.44	19.36	0.086
		64QAM	1/12	H	19.81	-1.44	18.37	0.069
	846.5	QPSK	1/0	H	20.98	-1.46	19.52	0.090
		16QAM	1/0	H	20.18	-1.46	18.72	0.074
		64QAM	1/0	H	19.19	-1.46	17.73	0.059
3	825.5	QPSK	1/0	H	21.77	-1.43	20.34	0.108
		16QAM	1/0	H	20.95	-1.43	19.52	0.090
		64QAM	1/0	H	19.71	-1.43	18.28	0.067
	836.5	QPSK	1/7	H	21.65	-1.44	20.21	0.105
		16QAM	1/7	H	20.87	-1.44	19.43	0.088
		64QAM	1/7	H	19.85	-1.44	18.41	0.069
	847.5	QPSK	1/0	H	20.83	-1.46	19.37	0.086
		16QAM	1/0	H	20.16	-1.46	18.70	0.074
		64QAM	1/0	H	19.10	-1.46	17.64	0.058
1.4	824.7	QPSK	1/2	H	21.62	-1.43	20.19	0.104
		16QAM	1/2	H	20.92	-1.43	19.49	0.089
		64QAM	1/2	H	20.02	-1.43	18.59	0.072
	836.5	QPSK	1/2	H	21.63	-1.44	20.19	0.104
		16QAM	1/2	H	20.98	-1.44	19.54	0.090
		64QAM	1/2	H	19.90	-1.44	18.46	0.070
	848.3	QPSK	1/2	H	20.54	-1.46	19.08	0.081
		16QAM	1/2	H	19.39	-1.46	17.93	0.062
		64QAM	1/2	H	18.53	-1.46	17.07	0.051

7.5.6. LTE Band 66(4)

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
20	1 720	QPSK	1/50	H	21.73	5.86	27.59	0.574
		16QAM	1/50	H	21.03	5.86	26.89	0.489
		64QAM	1/50	H	20.10	5.86	25.96	0.394
	1 745	QPSK	1/0	H	21.40	5.60	27.00	0.501
		16QAM	1/0	H	20.79	5.60	26.39	0.436
		64QAM	1/0	H	19.81	5.60	25.41	0.348
	1 770	QPSK	1/50	H	22.85	5.29	28.14	0.652
		16QAM	1/50	H	22.08	5.29	27.37	0.546
		64QAM	1/50	H	20.94	5.29	26.23	0.420
15	1 717.5	QPSK	1/0	H	21.54	5.89	27.43	0.553
		16QAM	1/0	H	20.74	5.89	26.63	0.460
		64QAM	1/0	H	19.80	5.89	25.69	0.371
	1 745	QPSK	1/0	H	21.56	5.60	27.16	0.520
		16QAM	1/0	H	20.81	5.60	26.41	0.438
		64QAM	1/0	H	19.80	5.60	25.40	0.347
	1 772.5	QPSK	1/0	H	22.23	5.26	27.49	0.561
		16QAM	1/0	H	21.71	5.26	26.97	0.498
		64QAM	1/0	H	20.60	5.26	25.86	0.385
10	1 715	QPSK	1/0	H	21.86	5.91	27.77	0.598
		16QAM	1/0	H	21.11	5.91	27.02	0.504
		64QAM	1/0	H	19.89	5.91	25.80	0.380
	1 745	QPSK	1/0	H	21.14	5.60	26.74	0.472
		16QAM	1/0	H	20.50	5.60	26.10	0.407
		64QAM	1/0	H	19.14	5.60	24.74	0.298
	1 775	QPSK	1/0	H	22.81	5.23	28.04	0.637
		16QAM	1/0	H	22.00	5.23	27.23	0.528
		64QAM	1/0	H	20.88	5.23	26.11	0.408
5	1 712.5	QPSK	1/12	H	21.77	5.94	27.71	0.590
		16QAM	1/12	H	21.13	5.94	27.07	0.509
		64QAM	1/12	H	19.90	5.94	25.84	0.384
	1 745	QPSK	1/12	H	20.46	5.60	26.06	0.404
		16QAM	1/12	H	19.70	5.60	25.30	0.339
		64QAM	1/12	H	18.65	5.60	24.25	0.266
	1 777.5	QPSK	1/0	H	22.21	5.20	27.41	0.551
		16QAM	1/0	H	21.28	5.20	26.48	0.445
		64QAM	1/0	H	20.26	5.20	25.46	0.352

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
3	1 711.5	QPSK	1/7	H	21.78	5.95	27.73	0.593
		16QAM	1/7	H	21.01	5.95	26.96	0.497
		64QAM	1/7	H	20.00	5.95	25.95	0.394
	1 745	QPSK	1/0	H	21.30	5.60	26.90	0.490
		16QAM	1/0	H	20.45	5.60	26.05	0.403
		64QAM	1/0	H	19.39	5.60	24.99	0.316
	1 778.5	QPSK	1/7	H	22.67	5.19	27.86	0.611
		16QAM	1/7	H	22.15	5.19	27.34	0.542
		64QAM	1/7	H	21.19	5.19	26.38	0.435
1.4	1 710.7	QPSK	1/2	H	21.97	5.95	27.92	0.619
		16QAM	1/2	H	21.19	5.95	27.14	0.518
		64QAM	1/2	H	20.14	5.95	26.09	0.406
	1 745	QPSK	1/0	H	21.14	5.60	26.74	0.472
		16QAM	1/0	H	20.48	5.60	26.08	0.406
		64QAM	1/0	H	19.31	5.60	24.91	0.310
	1 779.3	QPSK	1/2	H	22.86	5.18	28.04	0.637
		16QAM	1/2	H	22.10	5.18	27.28	0.535
		64QAM	1/2	H	21.09	5.18	26.27	0.424

7.5.7. LTE Band 25(2)

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
20	1 860	QPSK	1/50	H	23.37	4.31	27.68	0.586
		16QAM	1/50	H	22.42	4.31	26.73	0.471
		64QAM	1/50	H	21.25	4.31	25.56	0.360
	1 882.5	QPSK	1/0	H	22.64	4.25	26.89	0.489
		16QAM	1/0	H	21.99	4.25	26.24	0.421
		64QAM	1/0	H	20.76	4.25	25.01	0.317
	1 905	QPSK	1/50	H	22.49	4.22	26.71	0.469
		16QAM	1/50	H	21.79	4.22	26.01	0.399
		64QAM	1/50	H	20.69	4.22	24.91	0.310
15	1 857.5	QPSK	1/74	H	23.30	4.32	27.62	0.578
		16QAM	1/74	H	22.59	4.32	26.91	0.491
		64QAM	1/74	H	21.66	4.32	25.98	0.396
	1 882.5	QPSK	1/0	H	22.42	4.25	26.67	0.465
		16QAM	1/0	H	21.64	4.25	25.89	0.388
		64QAM	1/0	H	20.49	4.25	24.74	0.298
	1 907.5	QPSK	1/0	H	22.76	4.23	26.99	0.500
		16QAM	1/0	H	22.00	4.23	26.23	0.420
		64QAM	1/0	H	20.93	4.23	25.16	0.328
10	1 885	QPSK	1/0	H	23.30	4.33	27.63	0.579
		16QAM	1/0	H	22.31	4.33	26.64	0.461
		64QAM	1/0	H	21.49	4.33	25.82	0.382
	1 882.5	QPSK	1/0	H	22.28	4.25	26.53	0.450
		16QAM	1/0	H	21.47	4.25	25.72	0.373
		64QAM	1/0	H	20.43	4.25	24.68	0.294
	1 910	QPSK	1/0	H	22.56	4.24	26.80	0.479
		16QAM	1/0	H	21.77	4.24	26.01	0.399
		64QAM	1/0	H	20.74	4.24	24.98	0.315
5	1 852.5	QPSK	1/12	H	23.26	4.33	27.59	0.574
		16QAM	1/12	H	22.63	4.33	26.96	0.497
		64QAM	1/12	H	21.49	4.33	25.82	0.382
	1 882.5	QPSK	1/12	H	22.00	4.25	26.25	0.422
		16QAM	1/12	H	21.01	4.25	25.26	0.336
		64QAM	1/12	H	20.22	4.25	24.47	0.280
	1 912.5	QPSK	1/12	H	22.83	4.25	27.08	0.511
		16QAM	1/12	H	22.24	4.25	26.49	0.446
		64QAM	1/12	H	21.08	4.25	25.33	0.341

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
3	1 851.5	QPSK	1/7	H	23.10	4.34	27.44	0.555
		16QAM	1/7	H	22.33	4.34	26.67	0.465
		64QAM	1/7	H	21.41	4.34	25.75	0.376
	1 882.5	QPSK	1/0	H	22.24	4.25	26.49	0.446
		16QAM	1/0	H	21.27	4.25	25.52	0.356
		64QAM	1/0	H	20.39	4.25	24.64	0.291
	1 913.5	QPSK	1/7	H	22.91	4.25	27.16	0.520
		16QAM	1/7	H	21.93	4.25	26.18	0.415
		64QAM	1/7	H	21.14	4.25	25.39	0.346
1.4	1 850.7	QPSK	1/5	H	22.80	4.34	27.14	0.518
		16QAM	1/5	H	21.92	4.34	26.26	0.423
		64QAM	1/5	H	21.20	4.34	25.54	0.358
	1 882.5	QPSK	1/2	H	22.07	4.25	26.32	0.429
		16QAM	1/2	H	21.18	4.25	25.43	0.349
		64QAM	1/2	H	20.26	4.25	24.51	0.282
	1 914.3	QPSK	1/2	H	22.20	4.26	26.46	0.443
		16QAM	1/2	H	21.50	4.26	25.76	0.377
		64QAM	1/2	H	20.49	4.26	24.75	0.299

7.5.8. LTE Band 41(38)

Channel Bandwidth (MHz)	Tx Freq. (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	EIRP (dBm)	EIRP (W)
20	2 506	QPSK	1/50	H	19.24	5.76	25.00	0.316
		16QAM	1/50	H	18.41	5.76	24.17	0.261
		64QAM	1/50	H	17.06	5.76	22.82	0.191
	2 593	QPSK	1/50	H	19.40	6.14	25.54	0.358
		16QAM	1/50	H	18.50	6.14	24.64	0.291
		64QAM	1/50	H	17.68	6.14	23.82	0.241
	2 680	QPSK	1/50	H	18.11	6.29	24.40	0.275
		16QAM	1/50	H	17.35	6.29	23.64	0.231
		64QAM	1/50	H	16.16	6.29	22.45	0.176
15	2 503.5	QPSK	1/0	H	19.00	5.74	24.74	0.298
		16QAM	1/0	H	17.99	5.74	23.73	0.236
		64QAM	1/0	H	16.78	5.74	22.52	0.179
	2 593	QPSK	1/37	H	19.28	6.14	25.42	0.348
		16QAM	1/37	H	18.53	6.14	24.67	0.293
		64QAM	1/37	H	17.71	6.14	23.85	0.243
	2 682.5	QPSK	1/74	H	18.33	6.30	24.63	0.290
		16QAM	1/74	H	17.37	6.30	23.67	0.233
		64QAM	1/74	H	16.47	6.30	22.77	0.189
10	2 501	QPSK	1/25	H	18.78	5.72	24.50	0.282
		16QAM	1/25	H	17.86	5.72	23.58	0.228
		64QAM	1/25	H	16.95	5.72	22.67	0.185
	2 593	QPSK	1/49	H	19.35	6.14	25.49	0.354
		16QAM	1/49	H	18.59	6.14	24.73	0.297
		64QAM	1/49	H	17.42	6.14	23.56	0.227
	2 685	QPSK	1/25	H	18.69	6.32	25.01	0.317
		16QAM	1/25	H	17.70	6.32	24.02	0.252
		64QAM	1/25	H	16.66	6.32	22.98	0.199
5	2 498.5	QPSK	1/12	H	18.63	5.71	24.34	0.272
		16QAM	1/12	H	18.00	5.71	23.71	0.235
		64QAM	1/12	H	16.80	5.71	22.51	0.178
	2 593	QPSK	1/12	H	19.33	6.14	25.47	0.352
		16QAM	1/12	H	18.21	6.14	24.35	0.272
		64QAM	1/12	H	17.56	6.14	23.70	0.234
	2 687.5	QPSK	1/12	H	18.46	6.33	24.79	0.301
		16QAM	1/12	H	17.19	6.33	23.52	0.225
		64QAM	1/12	H	16.72	6.33	23.05	0.202

7.5.9. LTE Band 7

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	2 510	QPSK	1/0	H	19.01	5.79	24.80	0.302
		16QAM	1/0	H	18.08	5.79	23.87	0.244
		64QAM	1/0	H	16.91	5.79	22.70	0.186
	2 535	QPSK	1/0	H	19.49	5.99	25.48	0.353
		16QAM	1/0	H	18.64	5.99	24.63	0.290
		64QAM	1/0	H	17.69	5.99	23.68	0.233
	2 560	QPSK	1/0	H	19.26	6.12	25.38	0.345
		16QAM	1/0	H	18.40	6.12	24.52	0.283
		64QAM	1/0	H	17.36	6.12	23.48	0.223
15	2 507.5	QPSK	1/0	H	19.00	5.77	24.77	0.300
		16QAM	1/0	H	17.93	5.77	23.70	0.234
		64QAM	1/0	H	17.29	5.77	23.06	0.202
	2 535	QPSK	1/0	H	19.10	5.99	25.09	0.323
		16QAM	1/0	H	18.36	5.99	24.35	0.272
		64QAM	1/0	H	17.40	5.99	23.39	0.218
	2 562.5	QPSK	1/0	H	18.97	6.12	25.09	0.323
		16QAM	1/0	H	18.04	6.12	24.16	0.261
		64QAM	1/0	H	16.90	6.12	23.02	0.200
10	2 505	QPSK	1/0	H	19.71	5.75	25.46	0.352
		16QAM	1/0	H	18.80	5.75	24.55	0.285
		64QAM	1/0	H	18.05	5.75	23.80	0.240
	2 535	QPSK	1/0	H	19.23	5.99	25.22	0.333
		16QAM	1/0	H	18.39	5.99	24.38	0.274
		64QAM	1/0	H	17.47	5.99	23.46	0.222
	2 565	QPSK	1/0	H	18.33	6.13	24.46	0.279
		16QAM	1/0	H	17.72	6.13	23.85	0.243
		64QAM	1/0	H	16.56	6.13	22.69	0.186
5	2 502.5	QPSK	1/0	H	19.29	5.73	25.02	0.318
		16QAM	1/0	H	18.53	5.73	24.26	0.267
		64QAM	1/0	H	17.60	5.73	23.33	0.215
	2 535	QPSK	1/0	H	18.68	5.99	24.67	0.293
		16QAM	1/0	H	17.86	5.99	23.85	0.243
		64QAM	1/0	H	16.67	5.99	22.66	0.185
	2 567.5	QPSK	1/0	H	18.07	6.13	24.20	0.263
		16QAM	1/0	H	17.47	6.13	23.60	0.229
		64QAM	1/0	H	16.44	6.13	22.57	0.181

7.6. UNDESIRABLE EMISSIONS (Radiated)

- Test Notes

- 1) This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported.
- 2) 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.
- 3) Limit for Band 25(2)/66(4)/12(17)/13/26(5) = -13dBm
Limit for Band 7/41(38) = -25dBm
Limit for 1 559 MHz ~ 1 610 MHz in Band 13 = -40dBm/MHz
(equivalent isotropically radiated power for wideband signals)

7.6.1. LTE Band 12(17)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	704	1/49	QPSK	1 416.84	H	-58.81	3.18	-55.63	-13.00	42.63
				2 125.30	H	-64.17	3.19	-60.98	-13.00	47.98
				2 834.34	H	-67.84	4.65	-63.19	-13.00	50.19
				3 541.77	H	-68.27	6.30	-61.97	-13.00	48.97
	711	1/49	QPSK	1 430.77	H	-63.51	3.29	-60.22	-13.00	47.22
				2 146.34	H	-64.80	3.15	-61.65	-13.00	48.65
				2 861.79	H	-68.02	4.77	-63.25	-13.00	50.25
				3 576.99	H	-68.30	6.25	-62.05	-13.00	49.05

7.6.2. LTE Band 13

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	782	1/0	QPSK	1 555.13	H	-69.02	5.89	-63.13	-13.00	50.13
				2 332.68	H	-59.19	5.91	-53.28	-13.00	40.28
				3 110.73	H	-68.09	7.36	-60.73	-13.00	47.73
				3 886.96	H	-67.08	8.98	-58.10	-13.00	45.10

UNDESIRABLE EMISSIONS IN 1 559 MHz ~ 1 610 MHz (LTE Band 13)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
10	782	1/25	QPSK	1 564.14	H	-69.37	5.95	-63.42	-40.00	23.42
		1/49		1 572.92	H	-70.10	6.02	-64.08	-40.00	24.08

7.6.3. LTE Band 26

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
15	831.5	1/0	QPSK	1 649.66	V	-60.94	4.09	-56.85	-13.00	43.85
				2 474.47	V	-61.24	3.73	-57.51	-13.00	44.51
				3 299.59	V	-67.73	5.62	-62.11	-13.00	49.11
				4 123.73	V	-69.70	7.12	-62.58	-13.00	49.58
	841.5			1 669.71	V	-56.79	4.02	-52.77	-13.00	39.77
				2 504.48	V	-60.84	3.60	-57.24	-13.00	44.24
				3 339.04	V	-67.81	5.78	-62.03	-13.00	49.03
				4 174.87	V	-69.46	7.18	-62.28	-13.00	49.28

7.6.4. LTE Band 66(4)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	1 720	1/50	QPSK	3 439.91	H	-68.44	8.23	-60.21	-13.00	47.21
				5 160.12	H	-68.82	10.15	-58.67	-13.00	45.67
				6 880.26	H	-67.07	11.41	-55.66	-13.00	42.66
				8 599.84	H	-68.09	12.93	-55.16	-13.00	42.16
	1 745	1/0		3 471.94	H	-68.54	8.36	-60.18	-13.00	47.18
				5 208.28	H	-68.41	10.21	-58.20	-13.00	45.20
				6 943.59	H	-67.50	11.54	-55.96	-13.00	42.96
				8 679.73	H	-67.69	12.96	-54.73	-13.00	41.73
	1 770	1/50		3 539.70	H	-68.12	8.46	-59.66	-13.00	46.66
				5 309.25	H	-68.30	10.22	-58.08	-13.00	45.08
				7 080.44	H	-68.05	11.69	-56.36	-13.00	43.36
				8 849.66	H	-67.61	12.96	-54.65	-13.00	41.65

7.6.5. LTE Band 25(2)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	1 860	1/50	QPSK	3 720.23	H	-68.45	8.32	-60.13	-13.00	47.13
				5 580.29	H	-66.32	10.35	-55.97	-13.00	42.97
				7 440.31	H	-67.45	12.08	-55.37	-13.00	42.37
				9 298.53	H	-66.31	13.01	-53.30	-13.00	40.30
	1 882.5	1/0		3 747.17	H	-67.22	8.28	-58.94	-13.00	45.94
				5 620.64	H	-67.09	10.41	-56.68	-13.00	43.68
				7 493.69	H	-67.70	12.15	-55.55	-13.00	42.55
				9 366.08	H	-65.99	12.99	-53.00	-13.00	40.00
	1 905	1/50		3 810.15	H	-67.70	8.52	-59.18	-13.00	46.18
				5 715.34	H	-65.49	10.55	-54.94	-13.00	41.94
				7 620.54	H	-68.08	12.19	-55.89	-13.00	42.89
				9 526.12	H	-66.23	12.99	-53.24	-13.00	40.24

7.6.6. LTE Band 41(38)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	2 560	1/50	QPSK	5 012.15	H	-60.84	9.99	-50.85	-25.00	25.85
				7 519.12	H	-63.29	12.18	-51.11	-25.00	26.11
				10 024.27	H	-60.47	12.95	-47.52	-25.00	22.52
				12 530.25	H	-58.16	13.32	-44.84	-25.00	19.84
	2 593	1/50		5 186.16	H	-60.73	10.19	-50.54	-25.00	25.54
				7 778.01	H	-62.59	12.30	-50.29	-25.00	25.29
				10 372.44	H	-58.72	12.97	-45.75	-25.00	20.75
				12 965.85	H	-56.65	13.55	-43.10	-25.00	18.10
	2 680	1/50		5 360.20	H	-57.42	10.30	-47.12	-25.00	22.12
				8 039.86	H	-62.62	12.56	-50.06	-25.00	25.06
				10 720.19	H	-58.79	13.03	-45.76	-25.00	20.76
				13 400.29	H	-57.02	14.10	-42.92	-25.00	17.92

7.6.7. LTE Band 7

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	2 510	1/0	QPSK	5 002.16	H	-61.18	9.99	-51.19	-25.00	26.19
				7 503.79	H	-66.94	12.16	-54.78	-25.00	29.78
				10 004.65	H	-64.52	12.99	-51.53	-25.00	26.53
				12 504.59	H	-62.12	13.32	-48.80	-25.00	23.80
	2 535	1/0		5 052.18	H	-60.70	10.01	-50.69	-25.00	25.69
				7 578.22	H	-67.36	12.18	-55.18	-25.00	30.18
				10 103.97	H	-64.05	12.89	-51.16	-25.00	26.16
				12 630.39	H	-62.43	13.30	-49.13	-25.00	24.13
	2 560	1/0		5 102.19	H	-61.55	10.07	-51.48	-25.00	26.48
				7 653.29	H	-67.29	12.22	-55.07	-25.00	30.07
				10 204.79	H	-63.71	12.87	-50.84	-25.00	25.84
				12 756.34	H	-61.56	13.35	-48.21	-25.00	23.21

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(17)

OPERATING FREQUENCY : 707.5 MHz

REFERENCE VOLTAGE : 3.87 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 %	3.87	+20	707,499,990	-0.0000014	-0.014
100 %		-30	707,499,992	-0.0000011	-0.011
100 %		-20	707,499,986	-0.0000020	-0.020
100 %		-10	707,499,989	-0.0000016	-0.016
100 %		0	707,499,995	-0.0000007	-0.007
100 %		+10	707,499,993	-0.0000010	-0.010
100 %		+20	707,499,990	-0.0000014	-0.014
100 %		+30	707,499,994	-0.0000008	-0.008
100 %		+40	707,499,992	-0.0000011	-0.011
100 %		+50	707,499,989	-0.0000016	-0.016
115 %	4.45	+20	707,499,988	-0.0000017	-0.017
BATT.ENDPOINT	3.55	+20	707,499,991	-0.0000013	-0.013

7.7.2. LTE Band 13

OPERATING FREQUENCY : 782.00 MHz

REFERENCE VOLTAGE : 3.87 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 %	3.87	+20	781,999,993	-0.0000009	-0.009
100 %		-30	781,999,989	-0.0000014	-0.014
100 %		-20	781,999,990	-0.0000013	-0.013
100 %		-10	781,999,995	-0.0000006	-0.006
100 %		0	781,999,992	-0.0000010	-0.010
100 %		+10	781,999,987	-0.0000017	-0.017
100 %		+20	781,999,993	-0.0000009	-0.009
100 %		+30	781,999,996	-0.0000005	-0.005
100 %		+40	781,999,990	-0.0000013	-0.013
100 %		+50	781,999,992	-0.0000010	-0.010
115 %	4.45	+20	781,999,995	-0.0000006	-0.006
BATT.ENDPOINT	3.55	+20	781,999,994	-0.0000008	-0.008

7.7.3. LTE Band 26(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 %	3.87	+20	836,499,990	-0.0000012	-0.012
100 %		-30	836,499,995	-0.0000006	-0.006
100 %		-20	836,499,991	-0.0000011	-0.011
100 %		-10	836,499,987	-0.0000016	-0.016
100 %		0	836,499,992	-0.0000010	-0.010
100 %		+10	836,499,989	-0.0000013	-0.013
100 %		+20	836,499,990	-0.0000012	-0.012
100 %		+30	836,499,996	-0.0000005	-0.005
100 %		+40	836,499,993	-0.0000008	-0.008
100 %		+50	836,499,986	-0.0000017	-0.017
115 %	4.45	+20	836,499,991	-0.0000011	-0.011
BATT.ENDPOINT	3.55	+20	836,499,990	-0.0000012	-0.012

7.7.4. LTE Band 66(4)

OPERATING FREQUENCY : 1 745.00 MHz
 REFERENCE VOLTAGE : 3.87 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 %	3.87	+20	1,744,999,994	-0.0000003	-0.003
100 %		-30	1,744,999,988	-0.0000007	-0.007
100 %		-20	1,744,999,992	-0.0000005	-0.005
100 %		-10	1,744,999,991	-0.0000005	-0.005
100 %		0	1,744,999,995	-0.0000003	-0.003
100 %		+10	1,744,999,993	-0.0000004	-0.004
100 %		+20	1,744,999,994	-0.0000003	-0.003
100 %		+30	1,744,999,990	-0.0000006	-0.006
100 %		+40	1,744,999,989	-0.0000006	-0.006
100 %		+50	1,744,999,991	-0.0000005	-0.005
115 %	4.45	+20	1,744,999,995	-0.0000003	-0.003
BATT.ENDPOINT	3.55	+20	1,744,999,993	-0.0000004	-0.004

7.7.5. LTE Band 25(2)

OPERATING FREQUENCY : 1 882.50 MHz

REFERENCE VOLTAGE : 3.87 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 %	3.87	+20	1,882,499,987	-0.0000007	-0.007
100 %		-30	1,882,499,989	-0.0000006	-0.006
100 %		-20	1,882,499,991	-0.0000005	-0.005
100 %		-10	1,882,499,992	-0.0000004	-0.004
100 %		0	1,882,499,990	-0.0000005	-0.005
100 %		+10	1,882,499,994	-0.0000003	-0.003
100 %		+20	1,882,499,987	-0.0000007	-0.007
100 %		+30	1,882,499,996	-0.0000002	-0.002
100 %		+40	1,882,499,993	-0.0000004	-0.004
100 %		+50	1,882,499,985	-0.0000008	-0.008
115 %	4.45	+20	1,882,499,988	-0.0000006	-0.006
BATT.ENDPOINT	3.55	+20	1,882,499,991	-0.0000005	-0.005

7.7.6. LTE Band 41(38)

OPERATING FREQUENCY : 2 593.00 MHz
 REFERENCE VOLTAGE : 3.87 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 %	3.87	+20	2,592,999,997	-0.0000001	-0.001
100 %		-30	2,592,999,993	-0.0000003	-0.003
100 %		-20	2,592,999,991	-0.0000003	-0.003
100 %		-10	2,592,999,995	-0.0000002	-0.002
100 %		0	2,592,999,990	-0.0000004	-0.004
100 %		+10	2,592,999,995	-0.0000002	-0.002
100 %		+20	2,592,999,997	-0.0000001	-0.001
100 %		+30	2,592,999,992	-0.0000003	-0.003
100 %		+40	2,592,999,989	-0.0000004	-0.004
100 %		+50	2,592,999,996	-0.0000002	-0.002
115 %	4.45	+20	2,592,999,997	-0.0000001	-0.001
BATT.ENDPOINT	3.55	+20	2,592,999,994	-0.0000002	-0.002

7.7.7. LTE Band 7

OPERATING FREQUENCY : 2 535.00 MHz

REFERENCE VOLTAGE : 3.87 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%	3.87	+20	2,534,999,986	-0.0000006	-0.006
100%		-30	2,534,999,995	-0.0000002	-0.002
100%		-20	2,534,999,993	-0.0000003	-0.003
100%		-10	2,534,999,990	-0.0000004	-0.004
100%		0	2,534,999,989	-0.0000004	-0.004
100%		+10	2,534,999,997	-0.0000001	-0.001
100%		+20	2,534,999,986	-0.0000006	-0.006
100%		+30	2,534,999,991	-0.0000004	-0.004
100%		+40	2,534,999,990	-0.0000004	-0.004
100%		+50	2,534,999,996	-0.0000002	-0.002
115%	4.45	+20	2,534,999,995	-0.0000002	-0.002
BATT.ENDPOINT	3.55	+20	2,534,999,992	-0.0000003	-0.003

8. TEST PLOTS

- Test Notes:

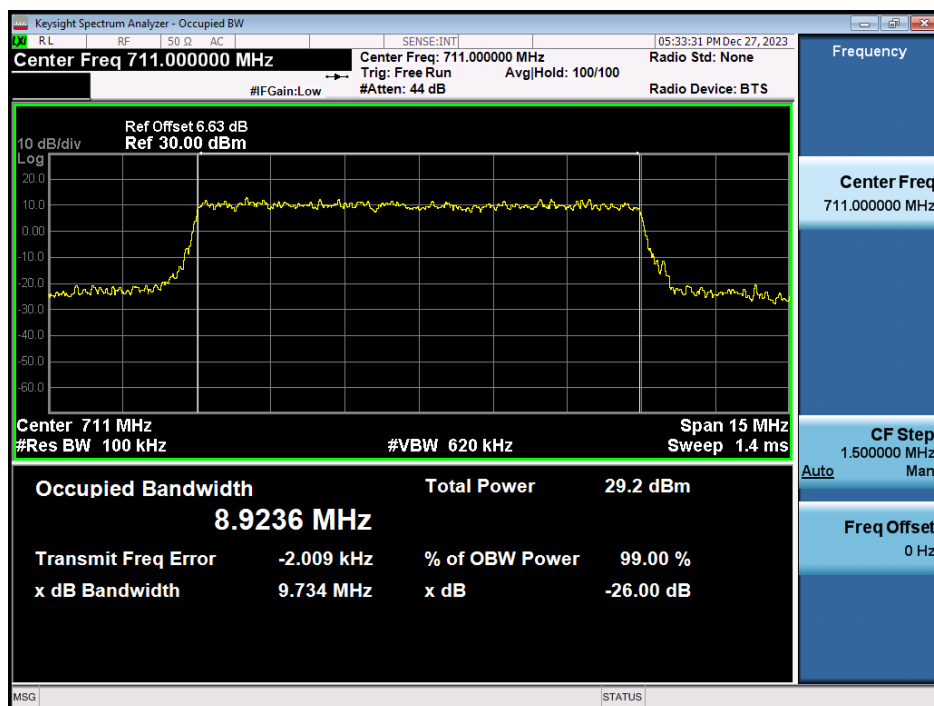
All bandwidths, RB configurations, and modulations were investigated.
The worst case test results are reported.

8.1. OCCUPIED BANDWIDTH

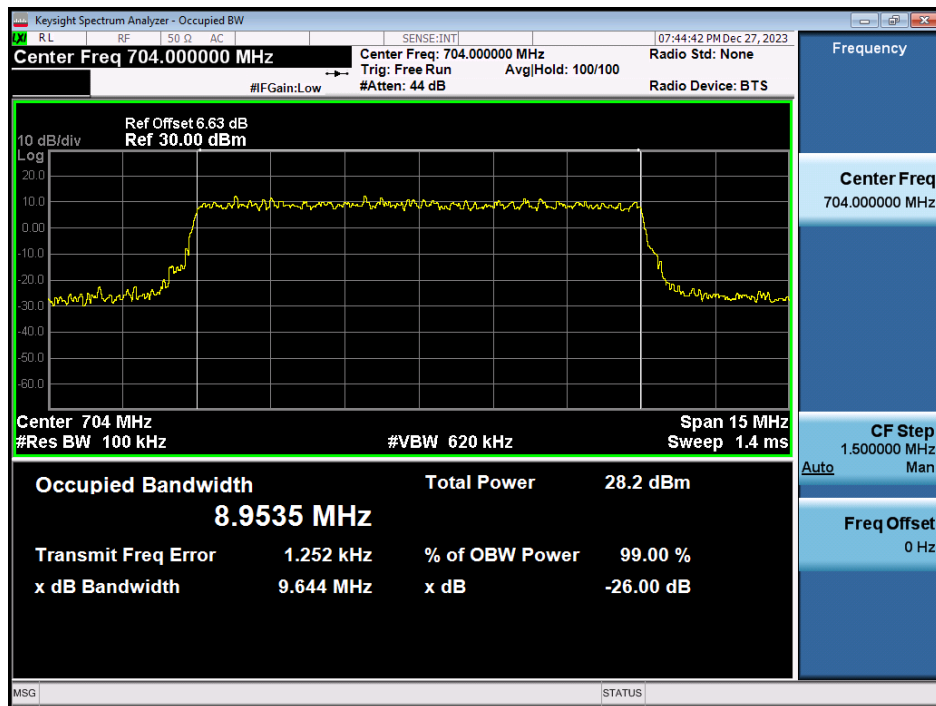
8.1.1. LTE Band 12(17)



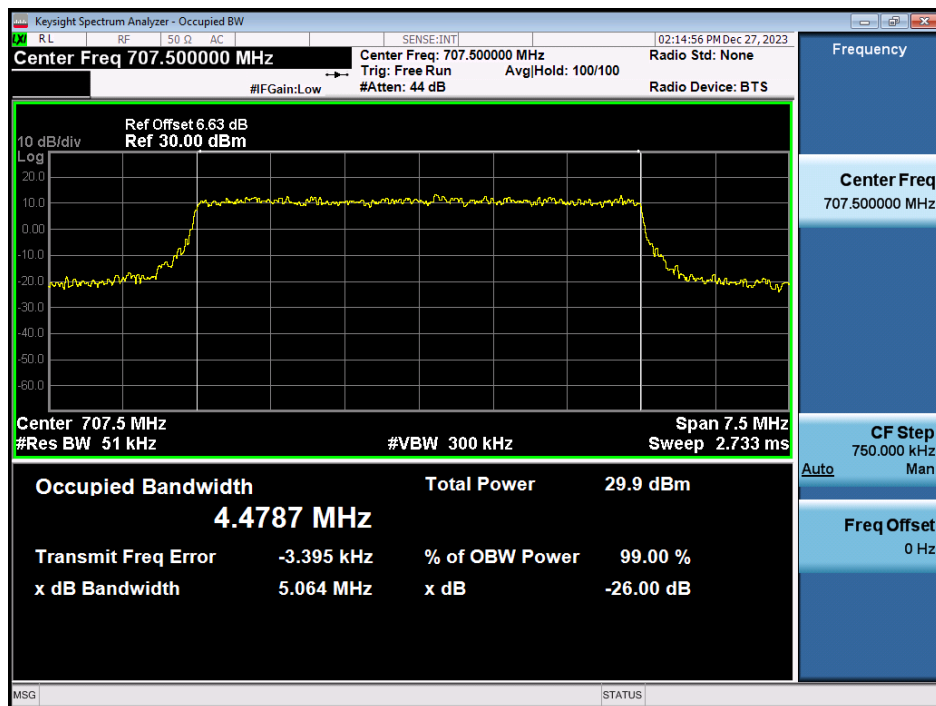
LTE Band 12 / 10MHz / QPSK - RB Size 50



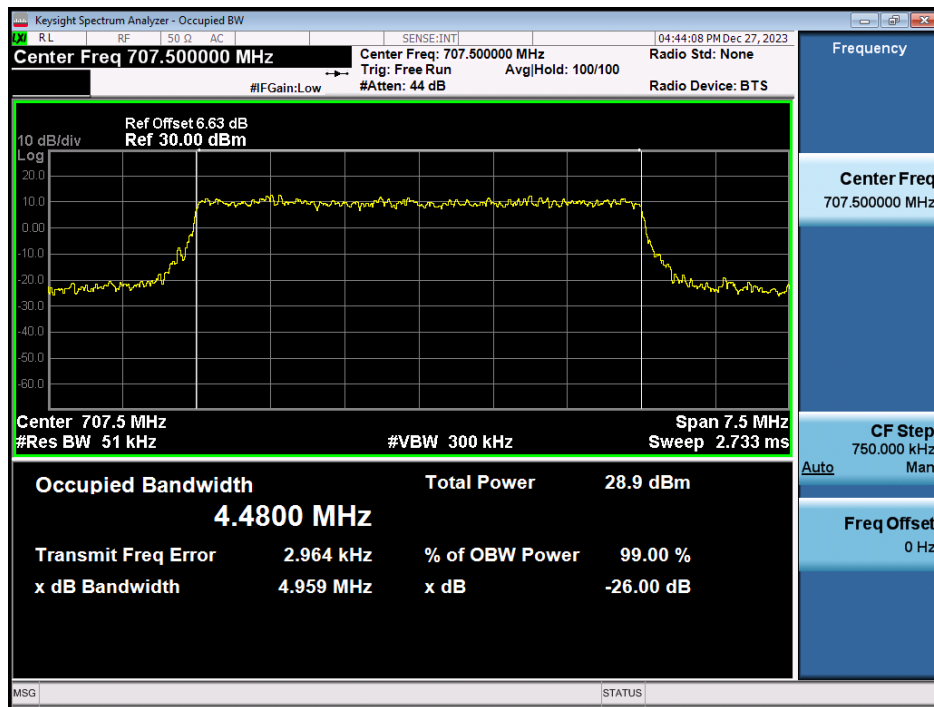
LTE Band 12 / 10MHz / 16QAM - RB Size 50



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



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

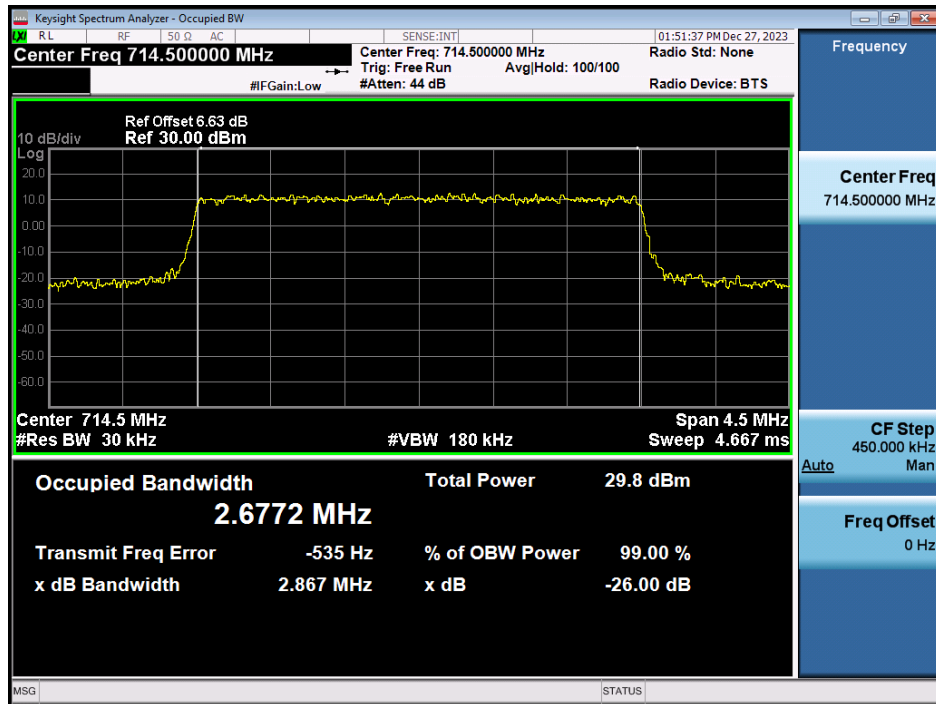


LTE Band 12 / 5MHz / 16QAM - RB Size 25

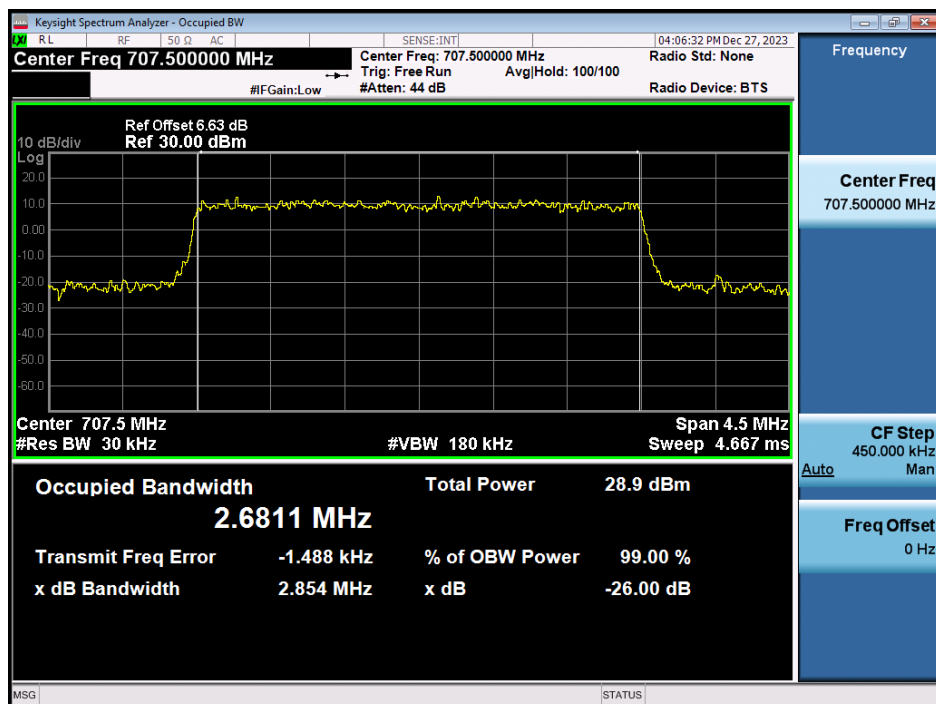


LTE Band 12 / 5MHz / 64QAM - RB Size 25

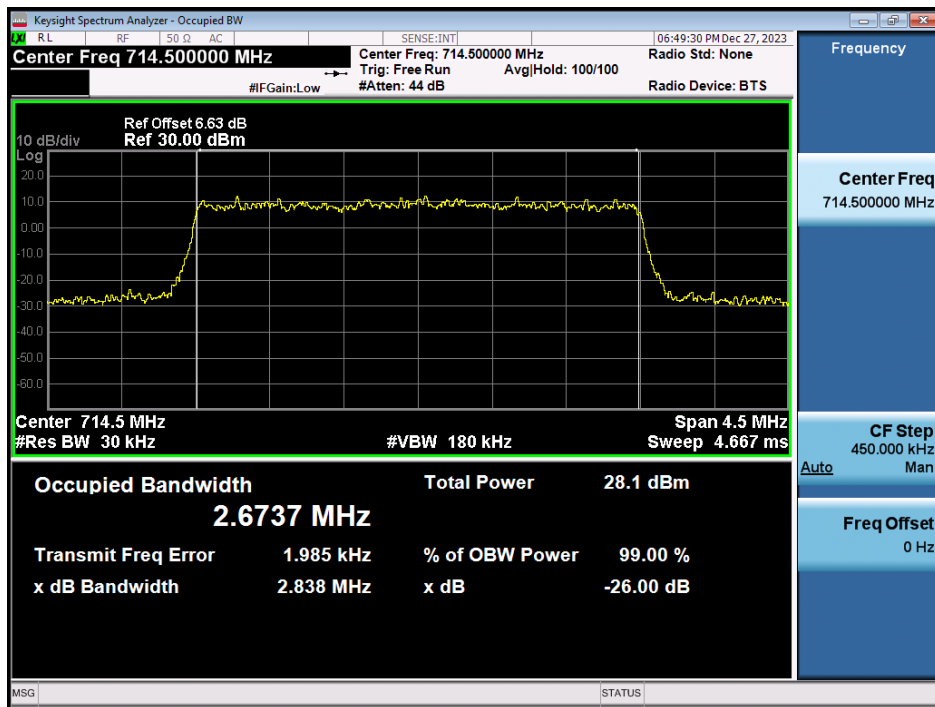
8.1.2. LTE Band 12



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



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



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



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



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

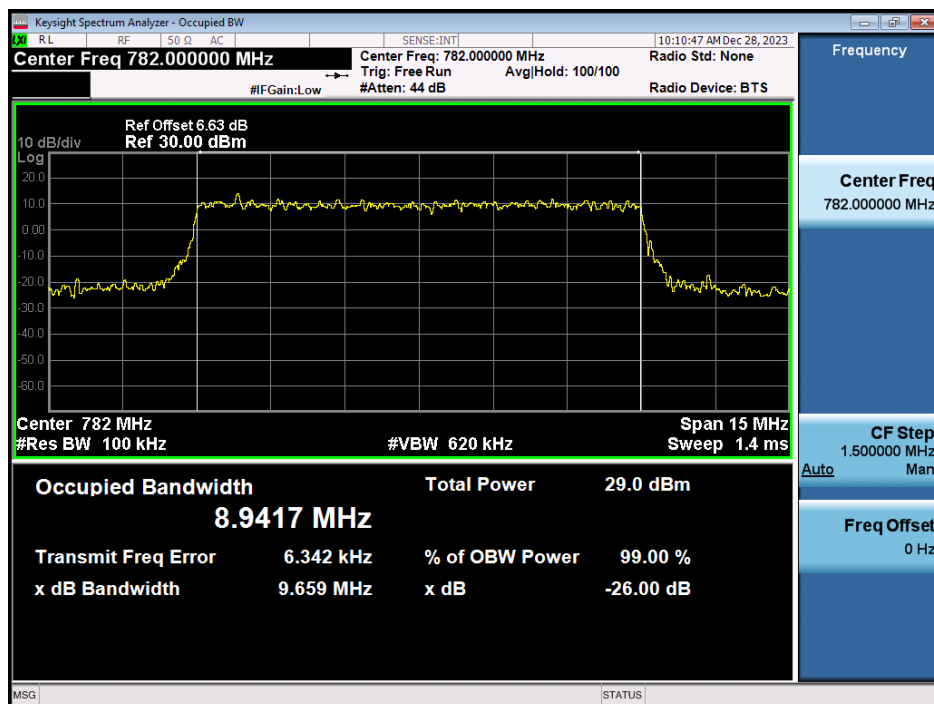


LTE Band 12 / 1.4MHz / 64QAM - RB Size 6

8.1.3. LTE Band 13



LTE Band 13 / 10MHz / QPSK - RB Size 50



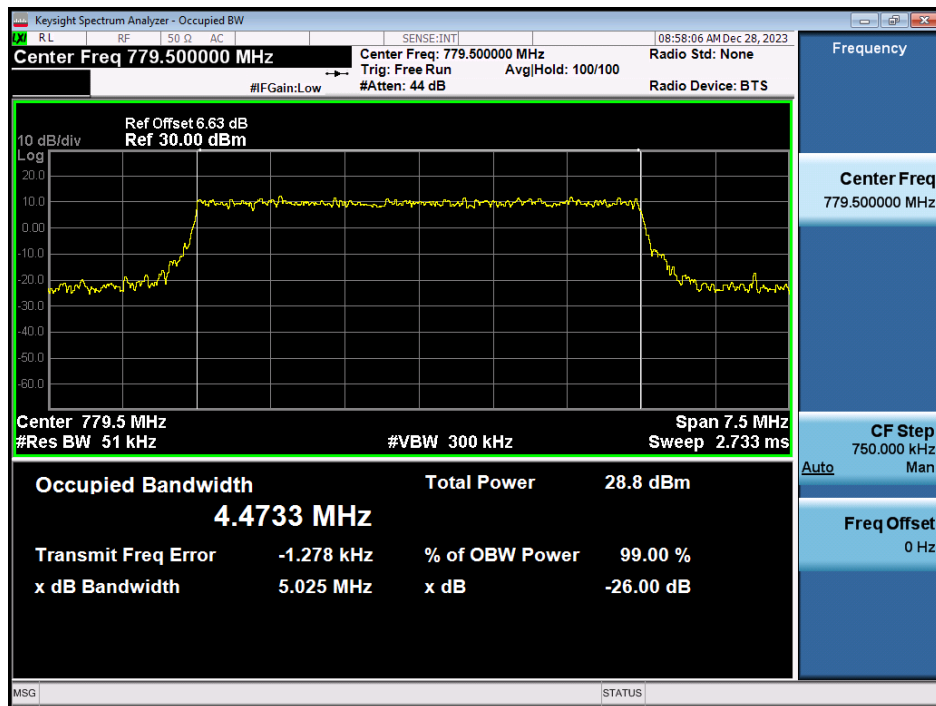
LTE Band 13 / 10MHz / 16QAM - RB Size 50



LTE Band 13 / 10MHz / 64QAM - RB Size 50



LTE Band 13 / 5MHz / QPSK - RB Size 25

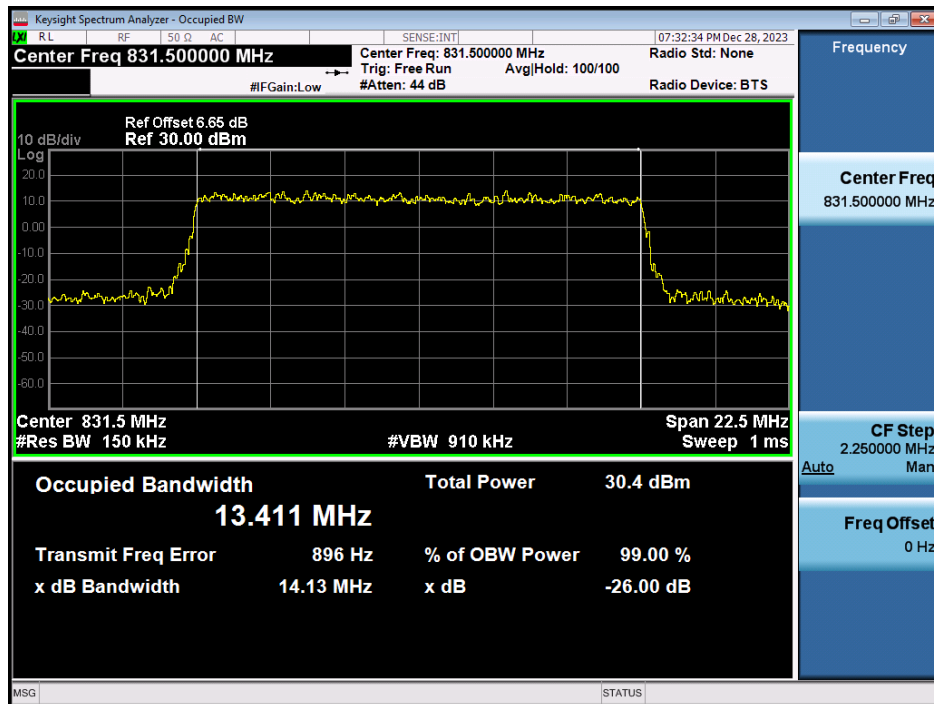


LTE Band 13 / 5MHz / 16QAM - RB Size 25

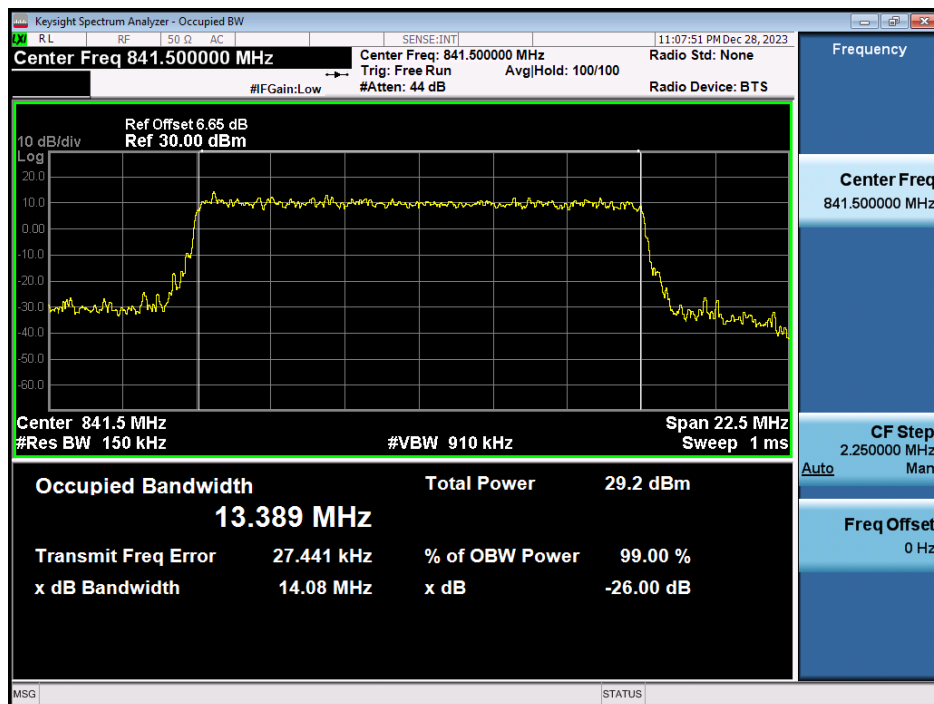


LTE Band 13 / 5MHz / 64QAM - RB Size 25

8.1.4. LTE Band 26



LTE Band 26 / 15MHz / QPSK - RB Size 75



LTE Band 26 / 15MHz / 16QAM - RB Size 75