



RF TEST REPORT

Report No.: SET2021-16818

Product Name: Fixed Android UHF Reader

Model No. : URA4

FCC ID: 2AC6AURA4

Applicant: Shenzhen Chainway Information Technology Co., Ltd.

Address: 9F Building 2, Daqian Industrial Park, District 67, XingDong
Community, Xin'an Street, Bao'an District, Shenzhen,
Guangdong, China.

Dates of Testing: 02/04/2021 - 12/14/2021

Issued by: CCIC Southern Testing Co., Ltd.

Lab Location: Electronic Testing Building, No. 43 Shahe Road, Xili Street,
Nanshan District, Shenzhen, Guangdong, China.

Tel: 86 755 26627338 **Fax:** 86 755 26627238

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Test Report

Product: Fixed Android UHF Reader

Brand Name.....: CHAINWAY

Trade Name: CHAINWAY

Applicant: Shenzhen Chainway Information Technology Co., Ltd.

Applicant Address: 9F Building 2, Daqian Industrial Park, District 67, XingDong Community, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China.

Manufacturer: Shenzhen Chainway Information Technology Co., Ltd.

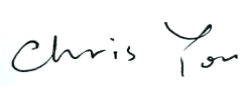
Manufacturer Address: 9F Building 2, Daqian Industrial Park, District 67, XingDong Community, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China.

Test Standards: 47 CFR Part 2/22/24/27

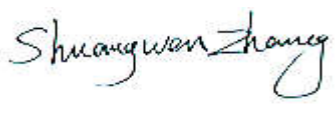
Test Result.....: PASS

Tested by:  2021.12.17

Sun, Test Engineer

Reviewed by.....:  2021.12.17

Chris You, Senior Engineer

Approved by.....:  2021.12.17

Shuangwen Zhang, Manager



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Change History		
Issue	Date	Reason for change
1.0	2021.12.17	First edition



1. GENERAL INFORMATION

1.1 EUT Description

EUT Type	Fixed Android UHF Reader
Model No.	URA4
EUT supports Radios application	LTE Band 2/4/5/7/12/17
Frequency Range(Tx)	LTE Band 2: 1850.7MHz~1909.3MHz LTE Band 4: 1710.7MHz~1754.3MHz LTE Band 5: 824.7MHz~848.3MHz LTE Band 7: 2502.5MHz~2567.5MHz LTE Band 12: 699.7MHz~715.3MHz LTE Band 17: 706.5MHz~713.5MHz
Maximum Output Power to Antenna	LTE Band 2: 22.62dBm LTE Band 4: 23.21dBm LTE Band 5: 22.98dBm LTE Band 7: 21.96dBm LTE Band 12: 22.79dBm LTE Band 17: 22.83dBm
Bandwidth	LTE Band 2: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 4: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 5: 1.4MHz/3MHz/5MHz/10MHz LTE Band 7: 5MHz/10MHz/15MHz/20MHz LTE Band 12: 1.4MHz/3MHz/5MHz/10MHz LTE Band 17: 5MHz/10MHz
Modulation Type	QPSK/16QAM/64QAM(downlink only)
Antenna Type	External Antenna
Antenna gain:	LTE Band 2: 0.87 dBi LTE Band 4: 1.25 dBi LTE Band 5: 0.46 dBi LTE Band 7: 1.23 dBi LTE Band 12: 0.16 dBi LTE Band 17: 0.18 dBi
Power supply	DC 12V from Adapter

1.2 Maximum ERP/EIRP, Frequency Tolerance, and Emission Designator

Band	Type of Modulation	BW (MHz)	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP(W)
LTE Band 2	QPSK	1.4	1M09G7D	—	0.223
LTE Band 2	16QAM	1.4	1M09W7D	—	0.181
LTE Band 2	QPSK	3	2M68G7D	—	0.195
LTE Band 2	16QAM	3	2M68W7D	—	0.185
LTE Band 2	QPSK	5	4M49G7D	—	0.196
LTE Band 2	16QAM	5	4M49W7D	—	0.163
LTE Band 2	QPSK	10	8M91G7D	0.005	0.200
LTE Band 2	16QAM	10	8M90W7D	—	0.190
LTE Band 2	QPSK	15	13M4G7D	—	0.195
LTE Band 2	16QAM	15	13M4W7D	—	0.175
LTE Band 2	QPSK	20	17M8G7D	—	0.206
LTE Band 2	16QAM	20	17M8W7D	—	0.262
LTE Band 4	QPSK	1.4	1M09G7D	—	0.228
LTE Band 4	16QAM	1.4	1M09W7D	—	0.263
LTE Band 4	QPSK	3	2M68G7D	—	0.229
LTE Band 4	16QAM	3	2M68W7D	—	0.264
LTE Band 4	QPSK	5	4M49G7D	—	0.198
LTE Band 4	16QAM	5	4M49W7D	—	0.272
LTE Band 4	QPSK	10	8M91G7D	0.003	0.235
LTE Band 4	16QAM	10	8M90W7D	—	0.279
LTE Band 4	QPSK	15	13M4G7D	—	0.224
LTE Band 4	16QAM	15	13M4W7D	—	0.269
LTE Band 4	QPSK	20	17M8G7D	—	0.236
LTE Band 4	16QAM	20	17M8W7D	—	0.262
LTE Band 5	QPSK	1.4	1M09G7D	—	0.138



LTE Band 5	16QAM	1.4	1M09W7D	—	0.122
LTE Band 5	QPSK	3	2M68G7D	—	0.134
LTE Band 5	16QAM	3	2M68W7D	—	0.130
LTE Band 5	QPSK	5	4M49G7D	—	0.133
LTE Band 5	16QAM	5	4M49W7D	—	0.108
LTE Band 5	QPSK	10	8M92G7D	0.005	0.132
LTE Band 5	16QAM	10	8M92W7D	—	0.122
LTE Band 7	QPSK	5	4M48G7D	—	0.194
LTE Band 7	16QAM	5	4M49W7D	—	0.171
LTE Band 7	QPSK	10	8M92G7D	0.004	0.199
LTE Band 7	16QAM	10	8M91W7D	—	0.184
LTE Band 7	QPSK	15	13M4G7D	—	0.206
LTE Band 7	16QAM	15	13M4W7D	—	0.205
LTE Band 7	QPSK	20	17M8G7D	—	0.208
LTE Band 7	16QAM	20	17M8W7D	—	0.181
LTE Band 12	QPSK	1.4	1M09G7D	—	0.194
LTE Band 12	16QAM	1.4	1M09W7D	—	0.120
LTE Band 12	QPSK	3	2M68G7D	—	0.105
LTE Band 12	16QAM	3	2M68W7D	—	0.116
LTE Band 12	QPSK	5	4M49G7D	—	0.097
LTE Band 12	16QAM	5	4M49W7D	—	0.115
LTE Band 12	QPSK	10	8M92G7D	0.004	0.090
LTE Band 12	16QAM	10	8M92W7D	—	0.116
LTE Band 17	QPSK	5	4M48G7D	—	0.122
LTE Band 17	16QAM	5	4M49W7D	—	0.101
LTE Band 17	QPSK	10	8M91G7D	0.005	0.116
LTE Band 17	16QAM	10	8M9W7D	—	0.107



1.3 Test Standards and Results

The objective of the report is to perform testing according to FCC ID Certification:

1. 47 CFR Part 2/22/24/27/
2. ANSI/TIA/EIA-603-D-2010
3. FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Limit	Result
1	2.1046	Conducted RF Output Power	Reporting Only	PASS
2	24.232 (d) 27.50 (d)(5) 22.913 (d)	Peak to Average Ratio	< 13dB	PASS
3	24.232 (c) 27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 2/7)	EIRP < 2Watt	PASS
	27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4)	EIRP < 1Watt	PASS
	22.913 (a)(5)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS
	27.50 (b)(10) 27.50 (c)(10)	Effective Radiated Power (Band 12/17)	ERP < 3 Watt	PASS
4	2.1049 22.917 (b) 24.238 (b) 27.53 (h)(3) 27.53 (m)(6)	26dB & 99% Occupied Bandwidth	Reporting Only	PASS
5	2.1051 22.917 (a) 24.238 (a) 27.53 (h) 27.53 (g)	Conducted Band Edge Measurement (Band 2/4/5/12/17)	< 43+10log10(P[watt])	PASS
	2.1051 27.53 (m)(4)	Conducted Band Edge Measurement (Band 7)	Refer to 27.53(m)(4)	PASS



6	2.1051 22.917 (a) 24.238 (a) 27.53 (h) 27.53 (g)	Conducted Spurious Emission Measurement (Band 2/4/5/12/17)	$<43+10\log_{10}(P[\text{watt}])$	PASS
	2.1051 27.53(m)(4)	Conducted Spurious Emission (Band 7)	$<55+10\log_{10}(P[\text{watt}])$	PASS
7	2.1053 24.238 (a) 27.53 (h) 27.53 (g)	Radiated Spurious Emission Measurement (Band 2/4/5/12/17)	$<43+10\log_{10}(P[\text{watt}])$	PASS
	2.1053 27.53(m)(4)	Radiated Spurious Emission Measurement (Band 7)	$<55+10\log_{10}(P[\text{watt}])$	PASS
8	2.1055 22.355 24.235 27.54	Frequency Stability (Band 5)	$<2.5\text{ppm}$	PASS
	2.1055 24.235 27.54	Frequency Stability (Band 2/4/7/12/17)	within the authorized frequency block	PASS

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



1.4 Test Configuration of Equipment Under Test

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth(MHz)						Modulation		RB#			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	5	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	7			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	12	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	17			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Peak-to-Average Ratio	2				✓				✓	✓		✓	✓	✓	✓
	4				✓				✓	✓		✓	✓	✓	✓
	5				✓				✓	✓		✓	✓	✓	✓
	7				✓				✓	✓		✓	✓	✓	✓
	12				✓				✓	✓		✓	✓	✓	✓
	17				✓				✓	✓		✓	✓	✓	✓
26dB and 99% Bandwidth	2	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	
	4	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	
	5	✓	✓	✓	✓			✓	✓			✓		✓	
	7			✓	✓	✓	✓	✓	✓			✓		✓	
	12	✓	✓	✓	✓			✓	✓			✓		✓	
	17			✓	✓			✓	✓			✓		✓	
Conducted Band Edge	2	✓					✓	✓	✓	✓		✓	✓		✓
	4	✓					✓	✓	✓	✓		✓	✓		✓
	5	✓			✓			✓	✓	✓		✓	✓		✓
	7			✓			✓	✓	✓	✓		✓	✓		✓
	12	✓			✓			✓	✓	✓		✓	✓		✓
	17			✓	✓			✓	✓	✓		✓	✓		✓
Conducted Spurious Emission	2						✓	✓		✓			✓	✓	✓
	4						✓	✓		✓			✓	✓	✓
	5				✓			✓		✓			✓	✓	✓
	7						✓	✓		✓			✓	✓	✓
	12				✓			✓		✓			✓	✓	✓
	17				✓			✓		✓			✓	✓	✓



Frequency Stability	2				✓			✓				✓		✓	
	4				✓			✓				✓		✓	
	5				✓			✓				✓		✓	
	7				✓			✓				✓		✓	
	12				✓			✓				✓		✓	
	17				✓			✓				✓		✓	
ERP/EIRP	2	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	5	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓
	7			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	12	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓
	17			✓	✓			✓	✓	✓			✓	✓	✓
Radiated Spurious Emission	2	Worst case												✓	
	4	Worst case												✓	
	5	Worst case												✓	
	7	Worst case												✓	
	12	Worst case												✓	
	17	Worst case												✓	
Note:1. The mark “ ✓ ” means that this configuration is chosen for testing.															

1.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + Power Splitter + attenuator factor..

Following shows an offset computation example with cable loss 1dB, 3dB Power Splitter, 10dB attenuator.

Example:

$$\begin{aligned}\text{Offset (dB)} &= \text{RF cable loss(dB)} + \text{Power Splitter(dB)} + \text{attenuator factor(dB)} \\ &= 1 + 3 + 10 = 14 \text{ (dB)}\end{aligned}$$

The cable insertion loss used by “Conducted RF Output Power” and other conduction measurement items is 0.5dB(Fundamental Frequency below 1GHz), 1.0dB(Fundamental Frequency above 1GHz) (provided by the customer).



1.6 Facilities and Accreditations

1.6.1 Test Facilities

CNAS-Lab Code: L1659

CCIC-SET is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CAB identifier: CN0064

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun. 30th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.6.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°C - 35°C
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

2. 47 CFR PART 2 REQUIREMENTS

2.1 Conducted RF Output Power and ERP/EIRP

2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2/7.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12/17.

According to KDB 412172 D01 Determining ERP and EIRP v01r01.

$EIRP = PT + GT - LC$, $ERP = EIRP - 2.15$, where

PT = transmitter output power in dBm

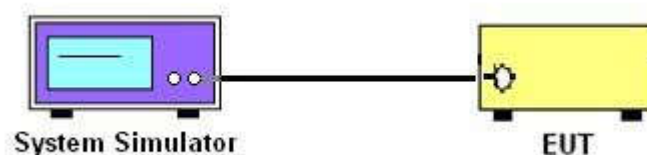
GT = gain of the transmitting antenna in dBi

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

2.1.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.1.3 Test Setup





2.1.4 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

2.1.5 Test Results

Please refer to Appendix A for detail

2.2 Peak to Average Ratio

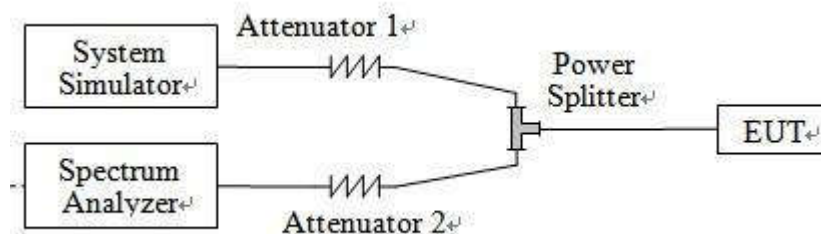
2.2.1 Definition

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

2.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.2.3 Test Description



2.2.4 Test Procedures

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.
5. All bandwidths and all modulations have been tested, but only the worst-case data is shown in this report.



2.2.5 Test Results of Peak-to-Average Ratio

Please refer to Appendix A for detail

2.3 99% Occupied Bandwidth and 26dB Emission Bandwidth

2.3.1 Definition

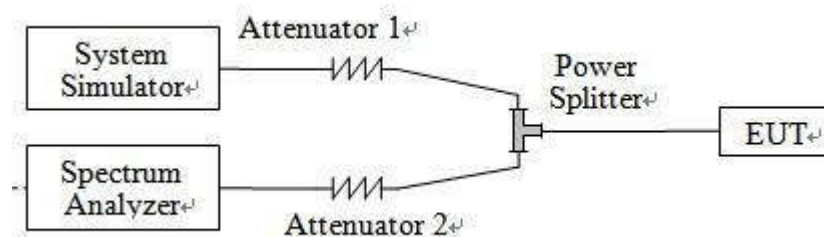
According to FCC section 2.1049, the occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

2.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.3.3 Test Setup



2.3.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The 26dB Emission Bandwidth and 99% occupied bandwidth of the middle channel for the highest RF power with full RB sizes were measured.



2.3.5 Test Result of 99% Occupied Bandwidth and 26dB Emission Bandwidth

Please refer to Appendix A for detail

2.4 Frequency Stability

2.4.1 Requirement

According to FCC requirement, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency. According to FCC section 2.1055, the test conditions are:

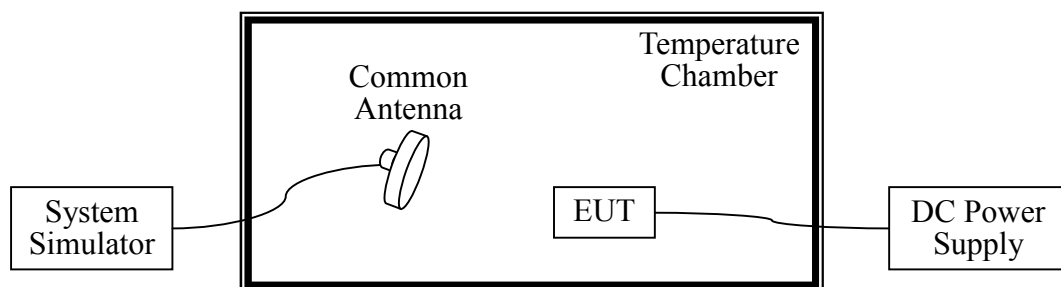
(a) The temperature is varied from -30°C to $+50^{\circ}\text{C}$ at intervals of not more than 10°C .

(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3 Test Setup



2.4.4 Test Procedures

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. The nominal, highest and lowest extreme voltages were tested, which are specified by the applicant; the normal temperature here used is 25°C .
5. All bandwidths and all modulations have been tested, but only the worst-case data is shown in this report.



2.4.5 Test Result of Frequency Stability

Please refer to Appendix A for detail

2.5 Conducted Out of Band Emissions

2.5.1 Requirement

For Band 2 & 4 & 5 & 12 & 17:

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

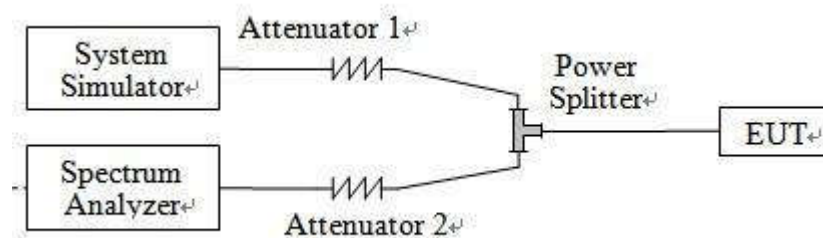
For Band 7:

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

2.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.5.3 Test Setup



2.5.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz,



taking the record of maximum spurious emission.

6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. For 9KHz to 30MHz: the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
8. All bandwidths and all modulations have been tested, but only the worst-case data is shown in this report.



2.5.5 Test Result of Conducted Spurious Emission

Please refer to Appendix A for detail

2.6 Conducted Band Edge

2.6.1 Description of Conducted Band Edge Measurement

22.917(a)

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

24.238(a)

For operations in the 1850 -1910 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(h)

For operations in the 1710 – 1780 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53m(4)

For mobile digital stations, 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 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

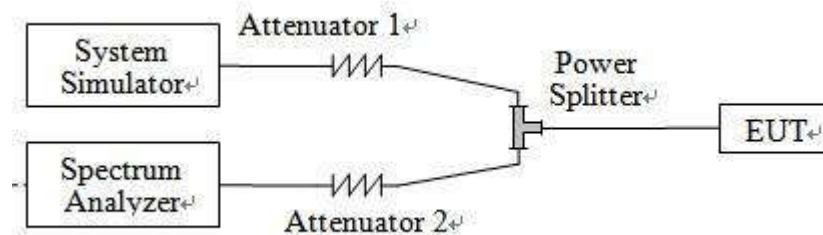
27.53(g)

For operations in the 698 – 746 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100kHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least 30kHz may be employed.

2.6.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.6.3 Test Setup



2.6.4 Test Procedures

1. The testing follows FCC KDB 971168 v03r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.
9. All bandwidths and all modulations have been tested, but only the worst-case data is shown in this report.



2.6.5 Test Result of Conducted Band Edge

Please refer to Appendix A for detail

2.7 Radiated Out of Band Emissions

2.7.1 Requirement

The radiated spurious emission was measured by substitution method according to ANSI / TIA /EIA-603-C-2004.

For Band 2 & 4 & 5 & 12 & 13 & 17:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For Band 7:

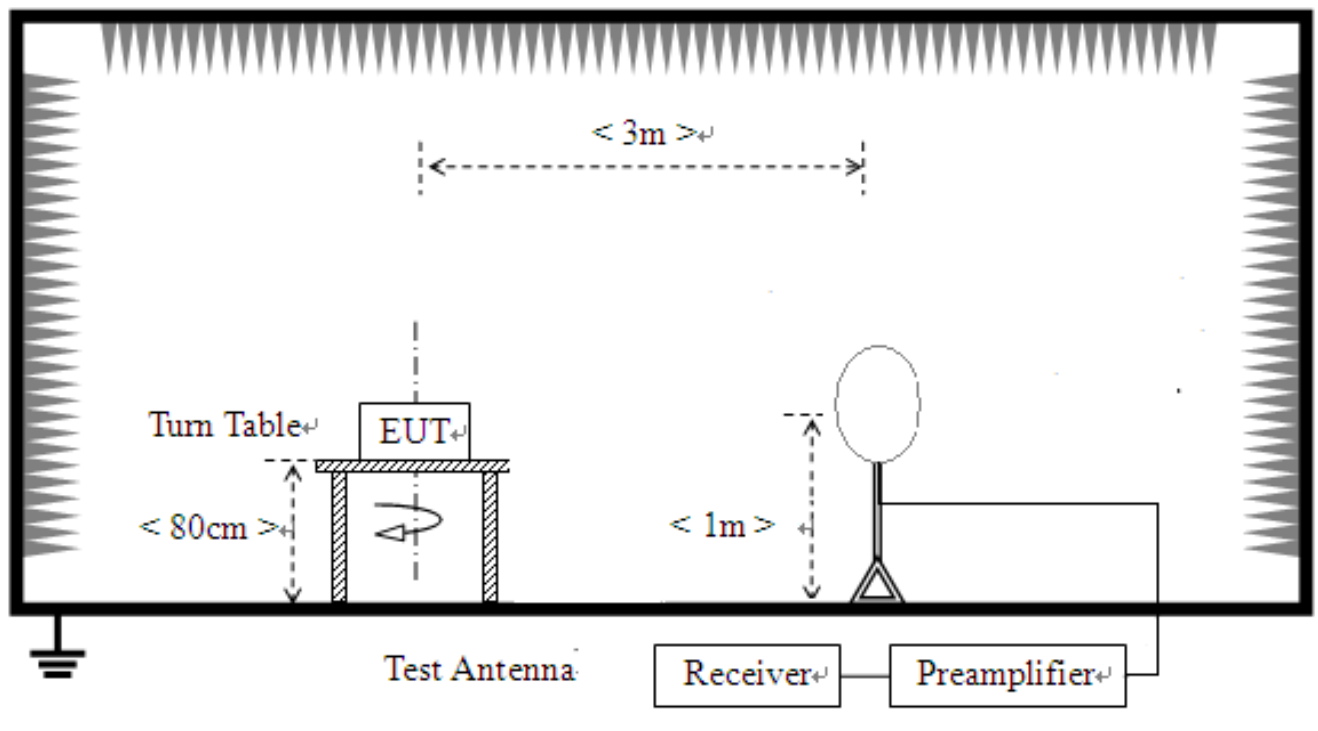
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

2.7.2 Measuring Instruments

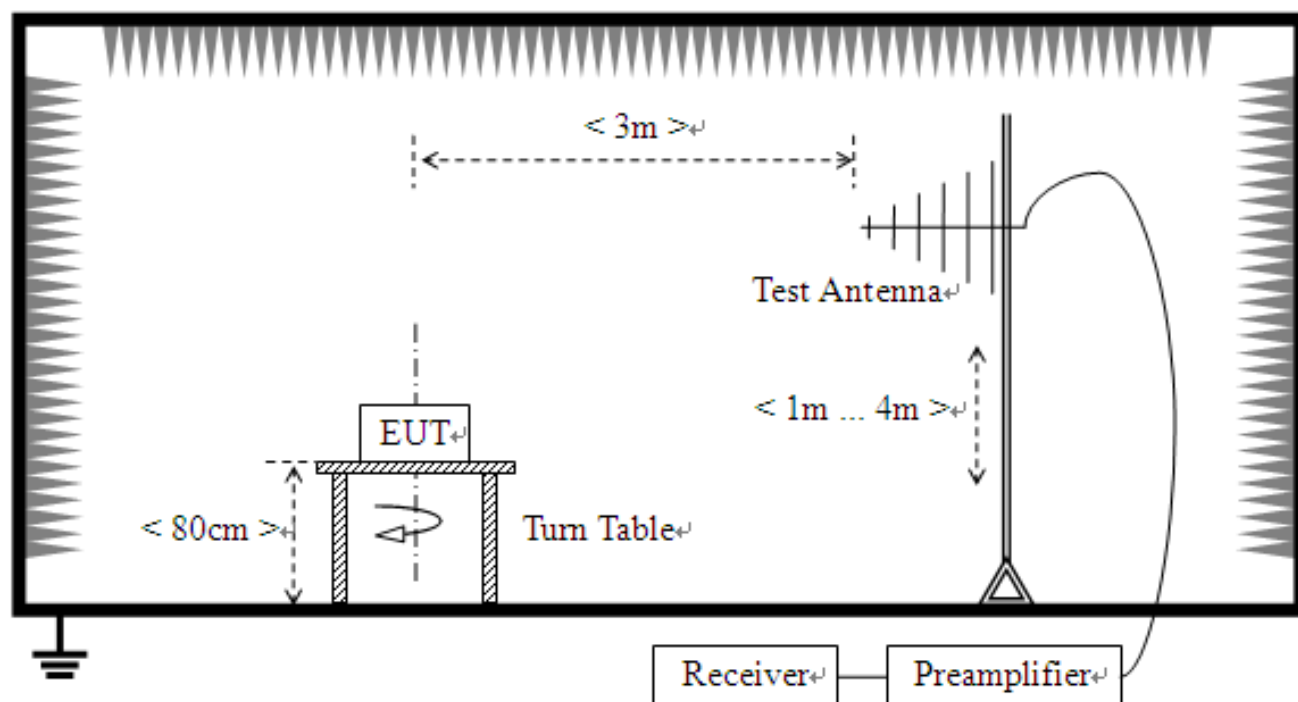
The measuring equipment is listed in the section 3 of this test report.

2.7.3 Test Setup

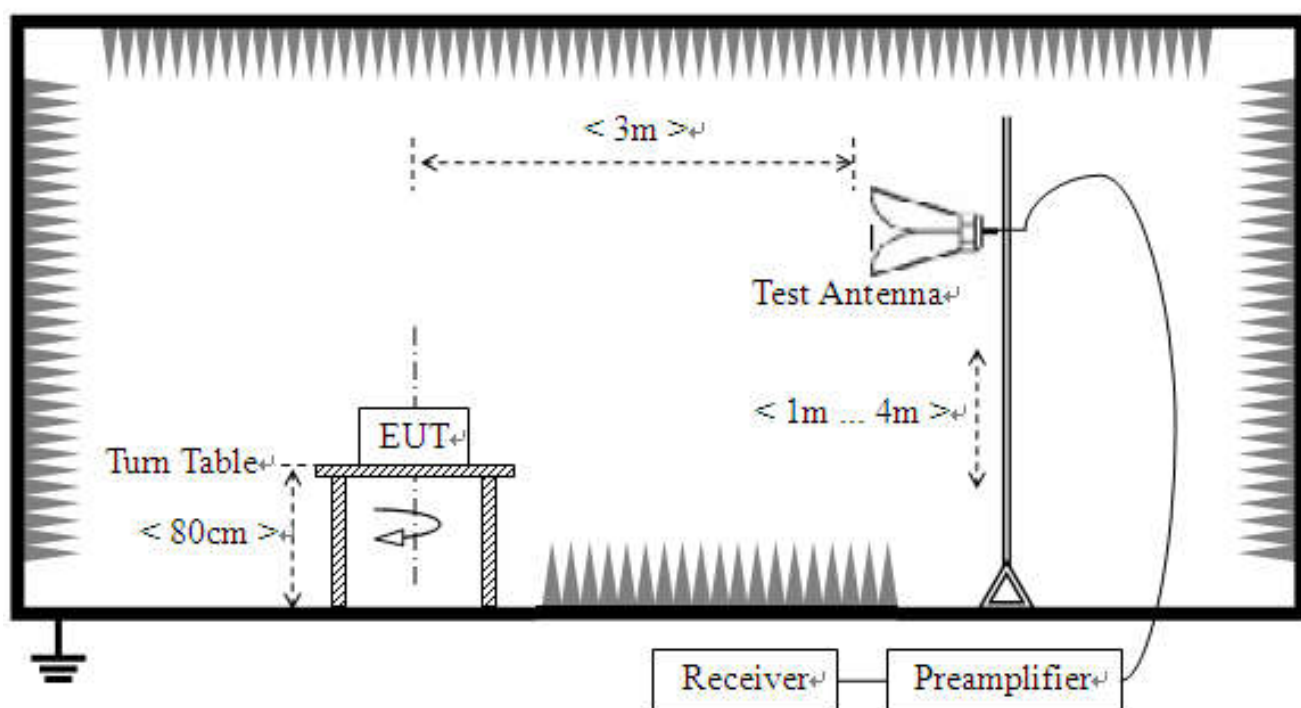
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.7.4 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
<For Band 2/4/5/12/17>
The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)} = [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}.$
<For Band 7>
The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [55 + 10\log(P)] \text{ (dB)} = [30 + 10\log(P)] \text{ (dBm)} - [55 + 10\log(P)] \text{ (dB)} = -25\text{dBm}.$
11. All Spurious Emission tests were performed in X, Y, Z axis direction and low, middle, high channel. And only the worst axis test condition was recorded in this test report.
12. The spectrum is measured from 9 KHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. The worst case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
13. The maximum RB configurations of the Radiated Spurious Emissions as RB Size 1, RB Offset 0

2.7.5 Test Result (Plots) of Radiated Spurious Emission

Note: 1. Within 30MHz-1GHz were found more than 20dB below limit line

Note: 2. Absolute Level = Reading Level + Factor

LTE Band 2 QPSK 20MHz BW Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-85.72	-63.37	-13.00	50.37	22.35	Horizontal
2	51.3614	-83.46	-64.22	-13.00	51.22	19.24	Horizontal
3	62.0420	-88.30	-68.96	-13.00	55.96	19.34	Horizontal
4	1392.19	-51.20	-53.03	-13.00	40.03	-1.83	Horizontal
5	3795.02	-52.42	-41.88	-13.00	28.88	10.54	Horizontal
6	6979.99	-55.00	-35.98	-13.00	22.98	19.02	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-93.55	-72.96	-13.00	59.96	20.59	Vertical
2	51.3614	-87.31	-68.31	-13.00	55.31	19.00	Vertical
3	63.0130	-90.94	-70.54	-13.00	57.54	20.40	Vertical
4	1194.09	-52.59	-54.15	-13.00	41.15	-1.56	Vertical
5	3165.83	-55.24	-46.02	-13.00	33.02	9.22	Vertical
6	7896.94	-55.07	-33.21	-13.00	20.21	21.86	Vertical

LTE Band 4 QPSK 20MHz BW Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	37.7678	-83.17	-61.05	-13.00	48.05	22.12	Horizontal
2	63.0130	-88.96	-69.62	-13.00	56.62	19.34	Horizontal
3	156.226	-97.88	-76.58	-13.00	63.58	21.30	Horizontal
4	1036.01	-57.75	-61.85	-13.00	48.85	-4.10	Horizontal
5	3248.74	-54.69	-45.56	-13.00	32.56	9.13	Horizontal
6	6238.61	-57.62	-40.05	-13.00	27.05	17.57	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	52.3323	-82.02	-62.90	-13.00	49.90	19.12	Vertical
2	156.226	-97.83	-77.96	-13.00	64.96	19.87	Vertical
3	1261.13	-52.90	-55.03	-13.00	42.03	-2.13	Vertical
4	3487.74	-58.88	-50.28	-13.00	37.28	8.60	Vertical
5	5253.37	-53.58	-39.30	-13.00	26.30	14.28	Vertical
6	9496.74	-66.95	-37.91	-13.00	24.91	29.04	Vertical

LTE Band 5 QPSK 10MHz BW Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-88.19	-65.69	-13.00	52.69	22.50	Horizontal
2	62.0420	-86.22	-66.69	-13.00	53.69	19.53	Horizontal
3	156.226	-94.59	-72.93	-13.00	59.93	21.66	Horizontal
4	641.711	-103.76	-68.76	-13.00	55.76	35.00	Horizontal
5	2181.46	-57.29	-54.72	-13.00	41.72	2.57	Horizontal
6	5943.34	-59.84	-45.79	-13.00	32.79	14.05	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	37.7678	-87.70	-67.09	-13.00	54.09	20.61	Vertical
2	49.4194	-86.91	-67.74	-13.00	54.74	19.17	Vertical
3	115.445	-96.36	-73.04	-13.00	60.04	23.32	Vertical
4	157.197	-94.15	-73.91	-13.00	60.91	20.24	Vertical
5	1911.08	-52.04	-51.89	-13.00	38.89	0.15	Vertical
6	3974.23	-55.06	-46.73	-13.00	33.73	8.33	Vertical

LTE Band 7 QPSK 20MHz BW Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	35.8212	-93.12	-70.53	-25.00	45.53	22.59	Horizontal
2	53.2847	-86.97	-67.71	-25.00	42.71	19.26	Horizontal
3	156.901	-93.11	-71.78	-25.00	46.78	21.33	Horizontal
4	491.036	-104.03	-72.06	-25.00	47.06	31.97	Horizontal
5	648.013	-104.97	-70.28	-25.00	45.28	34.69	Horizontal
6	6327.36	-58.59	-40.57	-25.00	15.57	18.02	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.4033	-84.41	-63.76	-25.00	38.76	20.65	Vertical
2	121.974	-88.12	-65.66	-25.00	40.66	22.46	Vertical
3	258.189	-99.45	-74.78	-25.00	49.78	24.67	Vertical
4	2011.80	-57.95	-56.47	-25.00	31.47	1.48	Vertical
5	3031.20	-58.55	-49.76	-25.00	24.76	8.79	Vertical
6	6292.25	-59.38	-41.21	-25.00	16.21	18.17	Vertical

LTE Band 12 QPSK 10MHz BW Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	38.7387	-90.29	-68.41	-13.00	55.41	21.88	Horizontal
2	52.3323	-86.94	-67.69	-13.00	54.69	19.25	Horizontal
3	513.543	-102.91	-70.43	-13.00	57.43	32.48	Horizontal
4	3346.29	-57.50	-49.13	-13.00	36.13	8.37	Horizontal
5	7179.96	-59.82	-39.52	-13.00	26.52	20.30	Horizontal
6	9755.25	-66.83	-36.94	-13.00	23.94	29.89	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	35.8258	-87.65	-66.92	-13.00	53.92	20.73	Vertical
2	54.2743	-81.46	-62.11	-13.00	49.11	19.35	Vertical
3	1275.13	-57.34	-59.63	-13.00	46.63	-2.29	Vertical
4	2590.79	-57.74	-51.89	-13.00	38.89	5.85	Vertical
5	4497.37	-58.75	-48.47	-13.00	35.47	10.28	Vertical
6	6897.07	-60.44	-41.13	-13.00	28.13	19.31	Vertical

LTE Band 17 QPSK 10MHz BW Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-80.32	-57.97	-13.00	44.97	22.35	Horizontal
2	52.3323	-79.06	-59.81	-13.00	46.81	19.25	Horizontal
3	156.226	-93.54	-72.24	-13.00	59.24	21.30	Horizontal
4	3302.40	-57.73	-49.02	-13.00	36.02	8.71	Horizontal
5	3824.28	-58.42	-48.14	-13.00	35.14	10.28	Horizontal
6	5297.27	-59.42	-44.55	-13.00	31.55	14.87	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-80.08	-59.49	-13.00	46.49	20.59	Vertical
2	53.3033	-79.96	-60.73	-13.00	47.73	19.23	Vertical
3	63.9840	-89.32	-68.80	-13.00	55.80	20.52	Vertical
4	2681.84	-57.42	-50.98	-13.00	37.98	6.44	Vertical
5	3692.59	-59.13	-48.85	-13.00	35.85	10.28	Vertical
6	4994.87	-59.85	-45.60	-13.00	32.60	14.25	Vertical



3. LIST OF MEASURING EQUIPMENT

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date	Remark
EMI Test Receiver	R&S	ESR3	A181103297	2021.06.25	2022.06.24	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2019.04.26	2022.04.25	Radiation
Broadband antenna (30MHz~1GHz)	Schwarbeck	BBHA 9120 J	A190503537	2019.01.07	2022.01.06	Radiation
Broadband antenna (30MHz~1GHz)	R&S	VULB9160	A0805560	2019.05.24	2022.05.23	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100150	2019.04.27	2022.04.26	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100149	2019.04.17	2022.04.16	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4510	A0804450	2020.06.19	2023.06.18	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4003A	0329293	2020.09.17	2022.08.16	Radiation
Amplifier 30M~1GHz	MILMEGA	80RF1000-10004	A140101634	2020.09.22	2023.09.21	Radiation
Amplifier 1G~18GHz	MILMEGA	AS0104R-800/40 0	A160302517	2021.01.26	2022.01.25	Radiation
Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2021.04.26	2022.04.25	Conducted
Test Receiver	R&S	ESIB7	A0501375	2021.05.24	2022.05.23	Conducted
Temperature chamber	TABAI	PS-232	A8708054	2021.09.24	2022.09.23	Temperature chamber
Wideband Radio Communication tester	R&S	CMW500	A130101034	2021.01.26	2023.01.25	Conducted
Power Supply	R&S	WYJ-60100	A141102031	2020.01.16	2023.01.15	Conducted
Test software	ECIT	Eagle	V2.0	N/A	N/A	Conducted

APPENDIX A

Conducted Output Power and ERP/EIRP

Test Result and Data

LTE Band 2 - 1.4MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			18607	18900	19193			
			1850.7MHz	1880.0MHz	1909.3MHz			
QPSK	1	0	21.65	21.87	22.01	0.87	23.49	33.00
	1	2	21.42	22.16	22.28			
	1	5	22.62	21.83	22.18			
	3	0	21.74	21.99	22.05			
	3	1	21.82	22.00	22.16			
	3	2	21.76	21.90	22.23			
	6	0	20.86	20.94	21.23			
16QAM	1	0	21.12	21.18	21.52	0.87	22.58	33.00
	1	2	21.26	21.50	21.71			
	1	5	21.27	21.52	21.48			
	3	0	20.86	20.99	21.28			
	3	1	20.85	20.99	21.14			
	3	2	20.95	21.21	21.43			
	6	0	20.23	20.31	20.31			
LTE Band 2 - 3MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			18615	18900	19185			
			1851.5MHz	1880.0MHz	1908.5MHz			
QPSK	1	0	22.01	21.94	22.03	0.87	22.90	33.00
	1	7	21.92	21.94	22.02			
	1	14	21.54	21.79	22.00			
	8	0	20.70	20.94	21.95			
	8	4	20.64	20.95	21.98			
	8	7	20.69	20.92	21.97			
	15	0	20.66	21.03	21.25			
16QAM	1	0	21.36	21.32	21.56	0.87	22.68	33.00
	1	7	21.28	21.72	21.81			
	1	14	21.17	21.13	21.57			
	8	0	19.92	20.20	21.23			
	8	4	19.64	20.12	21.26			



	8	7	19.66	20.24	21.25			
	15	0	19.55	20.17	20.33			

LTE Band 2 - 5MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			18625	18900	19175			
			1852.5MHz	1880.0MHz	1907.5MHz			
QPSK	1	0	21.61	21.78	21.95	0.87	22.92	33.00
	1	12	21.64	21.98	22.05			
	1	24	21.77	21.91	22.05			
	12	0	20.61	21.00	21.09			
	12	6	20.63	20.97	21.10			
	12	11	20.61	21.00	21.24			
	25	0	20.63	21.03	21.19			
16QAM	1	0	20.74	20.50	20.76	0.87	22.11	33.00
	1	12	20.25	20.37	21.14			
	1	24	20.77	20.57	21.24			
	12	0	19.62	20.09	20.09			
	12	6	19.63	20.09	20.17			
	12	11	19.57	20.05	20.29			
	25	0	19.74	20.02	20.35			
LTE Band 2 - 10MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			18650	18900	19150			
			1855.0MHz	1880.0MHz	1905.0MHz			
QPSK	1	0	21.78	21.96	21.87	0.87	23.02	33.00
	1	24	21.69	22.09	22.15			
	1	49	21.71	21.98	22.03			
	25	0	20.67	21.04	21.09			
	25	12	20.70	21.05	21.05			
	25	24	20.74	21.06	21.27			
	50	0	20.75	21.07	21.16			
16QAM	1	0	21.02	21.19	21.23	0.87	22.79	33.00
	1	24	21.35	21.86	21.92			
	1	49	21.05	21.36	21.62			
	25	0	19.63	20.19	20.19			
	25	12	19.77	20.19	20.18			
	25	24	19.91	20.11	20.37			
	50	0	19.75	20.07	20.33			



LTE Band 2 - 15MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			18675	18900	19125			
			1857.5MHz	1880.0MHz	1902.5MHz			
QPSK	1	0	21.78	21.90	21.90	0.87	22.90	33.00
	1	37	21.68	21.94	21.91			
	1	74	21.85	21.93	22.03			
	36	0	21.08	20.79	21.39			
	36	16	21.06	20.79	21.33			
	36	35	20.58	20.78	21.34			
	75	0	20.69	20.98	21.02			
16QAM	1	0	21.12	21.32	21.55	0.87	22.42	33.00
	1	37	21.15	21.31	21.40			
	1	74	21.32	21.13	21.34			
	36	0	21.06	20.79	21.39			
	36	16	21.03	20.79	21.49			
	36	35	21.14	20.67	21.55			
	75	0	19.70	20.08	20.05			
LTE Band 2 - 20MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			18700	18900	19100			
			1860.0MHz	1880.0MHz	1900.0MHz			
QPSK	1	0	21.86	21.71	22.01	0.87	23.14	33.00
	1	49	21.76	22.27	21.74			
	1	99	21.66	22.08	21.94			
	50	0	20.70	21.01	21.11			
	50	24	20.66	20.91	20.94			
	50	49	20.85	21.01	21.00			
	100	0	20.81	21.07	21.02			
16QAM	1	0	21.22	21.21	21.47	0.87	22.68	33.00
	1	49	21.34	21.81	21.31			
	1	99	21.12	21.09	21.49			
	50	0	19.67	20.03	20.01			
	50	24	19.68	20.10	20.03			
	50	49	19.96	20.15	20.14			
	100	0	19.83	20.21	20.13			



LTE Band 4 - 1.4MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			19957	20175	20393			
			1710.7MHz	1732.5MHz	1754.3MHz			
QPSK	1	0	22.73	22.79	22.63	1.25	24.18	30.00
	1	2	22.93	22.63	22.71			
	1	5	22.70	22.83	22.79			
	3	0	22.67	22.70	22.66			
	3	1	22.84	22.68	22.91			
	3	2	22.85	22.85	22.67			
	6	0	21.82	21.66	21.87			
16QAM	1	0	22.28	22.08	22.10	1.25	23.57	30.00
	1	2	22.25	22.11	22.32			
	1	5	22.29	22.00	21.91			
	3	0	21.85	21.91	21.72			
	3	1	22.08	22.15	21.73			
	3	2	22.12	21.73	21.76			
	6	0	20.86	20.79	20.83			
LTE Band 4 - 3MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			19965	20175	20385			
			1711.5MHz	1732.5MHz	1753.5MHz			
QPSK	1	0	22.68	22.85	22.68	1.25	24.20	30.00
	1	7	22.86	22.77	22.69			
	1	14	22.64	22.62	22.95			
	8	0	22.65	21.84	21.67			
	8	4	22.78	21.70	21.75			
	8	7	22.81	21.87	21.68			
	15	0	21.85	21.85	21.63			
16QAM	1	0	22.32	22.14	21.52	1.25	23.60	30.00
	1	7	22.31	22.35	21.42			
	1	14	22.30	21.96	21.53			
	8	0	22.00	21.03	20.74			
	8	4	22.03	20.98	20.52			
	8	7	22.02	20.92	20.77			
	15	0	20.74	20.96	20.72			



LTE Band 4 - 5MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			19975	20175	20375			
			1712.5MHz	1732.5MHz	1752.5MHz			
QPSK	1	0	22.65	22.77	22.76	1.25	24.21	30.00
	1	12	22.83	22.66	22.70			
	1	24	22.66	22.65	22.96			
	12	0	21.88	21.80	21.65			
	12	6	21.87	21.82	21.76			
	12	11	21.84	21.66	21.79			
	25	0	21.82	21.66	21.65			
16QAM	1	0	21.30	21.36	21.47	1.25	22.97	30.00
	1	12	21.48	21.31	21.36			
	1	24	21.72	21.69	21.55			
	12	0	20.79	20.88	20.76			
	12	6	20.79	20.88	20.64			
	12	11	20.84	20.64	20.79			
	25	0	21.08	20.85	20.70			
LTE Band 4 - 10MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20000	20175	20350			
			1715.0MHz	1732.5MHz	1750.0MHz			
QPSK	1	0	22.75	23.11	22.74	1.25	24.36	30.00
	1	24	22.90	22.80	22.85			
	1	49	22.72	22.63	22.81			
	25	0	21.91	21.82	21.83			
	25	12	21.91	21.77	21.83			
	25	24	21.75	21.67	21.69			
	50	0	21.91	21.75	21.85			
16QAM	1	0	22.08	22.14	22.06	1.25	23.71	30.00
	1	24	22.29	22.37	22.46			
	1	49	21.84	22.02	22.30			
	25	0	21.00	20.93	20.98			
	25	12	21.09	20.95	20.79			
	25	24	20.79	20.62	20.85			
	50	0	20.84	20.83	20.83			



LTE Band 4 - 15MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20025	20175	20325			
			1717.5MHz	1732.5MHz	1747.5MHz			
QPSK	1	0	22.75	23.21	22.73	1.25	24.46	30.00
	1	37	22.67	22.60	22.80			
	1	74	22.70	22.63	22.75			
	36	0	21.75	22.70	21.98			
	36	16	21.98	22.10	21.95			
	36	35	21.85	22.08	21.97			
	75	0	21.86	21.71	21.79			
16QAM	1	0	22.24	22.22	22.14	1.25	23.50	30.00
	1	37	22.22	21.88	22.08			
	1	74	22.23	21.96	22.10			
	36	0	21.65	22.25	21.96			
	36	16	21.63	22.03	21.95			
	36	35	21.67	21.89	21.94			
	75	0	20.79	20.76	20.92			
LTE Band 4 - 20MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20050	20175	20300			
			1720.0MHz	1732.5MHz	1745.0MHz			
QPSK	1	0	22.58	22.74	22.81	1.25	24.23	30.00
	1	49	22.98	22.60	22.97			
	1	99	22.74	22.48	22.94			
	50	0	21.97	21.85	21.93			
	50	24	21.88	21.84	21.93			
	50	49	21.88	21.62	21.85			
	100	0	21.79	21.68	21.82			
16QAM	1	0	22.05	22.30	22.36	1.25	23.72	30.00
	1	49	21.97	22.47	22.47			
	1	99	22.14	22.12	22.41			
	50	0	20.94	20.84	21.03			
	50	24	21.04	20.94	21.10			
	50	49	20.91	20.83	20.86			
	100	0	20.79	20.75	20.95			



LTE Band 5 - 1.4MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			20407	20525	20643			
			824.7MHz	836.5MHz	848.3MHz			
QPSK	1	0	22.98	22.89	22.66	0.46	21.37	38.45
	1	2	22.91	22.87	22.96			
	1	5	22.96	23.04	22.69			
	3	0	22.85	23.06	22.77			
	3	1	22.94	22.78	22.91			
	3	2	22.81	22.84	22.66			
	6	0	21.91	21.90	21.75			
16QAM	1	0	22.23	22.53	21.91	0.46	20.86	38.45
	1	2	22.48	22.25	22.35			
	1	5	22.25	22.55	21.84			
	3	0	21.91	21.96	21.74			
	3	1	22.00	21.88	21.92			
	3	2	22.13	22.04	21.78			
	6	0	21.03	21.29	20.89			
LTE Band 5 - 3MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			20415	20525	20635			
			825.5MHz	836.5MHz	847.5MHz			
QPSK	1	0	22.88	22.91	22.95	0.46	21.26	38.45
	1	7	22.85	22.83	22.80			
	1	14	22.87	22.88	22.93			
	8	0	21.86	21.96	22.02			
	8	4	21.83	21.93	22.01			
	8	7	21.84	21.93	21.99			
	15	0	21.91	21.96	21.98			
16QAM	1	0	22.23	22.25	22.03	0.46	21.15	38.45
	1	7	22.05	22.01	22.06			
	1	14	22.75	22.84	22.01			
	8	0	21.11	21.12	21.32			
	8	4	21.16	21.12	21.25			
	8	7	21.13	21.15	22.33			
	15	0	20.81	20.84	20.89			



LTE Band 5 - 5MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			20425	20525	20625			
			826.5MHz	836.5MHz	846.5MHz			
QPSK	1	0	22.91	22.59	22.64	0.46	21.23	38.45
	1	12	22.68	22.92	22.77			
	1	24	22.64	22.85	22.72			
	12	0	21.90	21.86	21.79			
	12	6	21.92	21.92	21.82			
	12	11	21.94	21.85	21.84			
	25	0	21.94	21.89	21.75			
16QAM	1	0	21.28	21.32	21.49	0.46	20.35	38.45
	1	12	21.50	22.04	21.39			
	1	24	21.49	21.55	21.34			
	12	0	20.88	20.78	20.76			
	12	6	20.83	20.97	20.67			
	12	11	20.91	20.81	20.77			
	25	0	21.22	20.95	20.83			
LTE Band 5 - 10MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			20450	20525	20600			
			829.0MHz	836.5MHz	844.0MHz			
QPSK	1	0	22.79	22.79	22.89	0.46	21.20	38.45
	1	24	22.74	22.85	22.78			
	1	49	22.68	22.71	22.69			
	25	0	22.01	21.92	21.90			
	25	12	21.96	21.92	21.87			
	25	24	21.99	21.87	21.89			
	50	0	22.03	21.94	21.86			
16QAM	1	0	22.22	22.24	22.10	0.46	20.85	38.45
	1	24	22.01	22.50	22.54			
	1	49	22.18	21.94	22.10			
	25	0	20.94	20.89	20.97			
	25	12	21.02	20.89	20.94			
	25	24	20.95	20.94	20.89			
	50	0	20.97	20.93	20.75			



LTE Band 7 - 5MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20775	21100	21425			
			2502.5MHz	2535.0MHz	2567.5MHz			
QPSK	1	0	21.65	21.39	21.37	1.23	22.88	33.00
	1	12	21.54	21.56	21.44			
	1	24	21.62	21.63	21.41			
	12	0	20.70	20.77	20.51			
	12	6	20.80	20.71	20.53			
	12	11	20.74	20.70	20.49			
	25	0	20.76	20.72	20.44			
16QAM	1	0	20.28	20.94	20.84	1.23	22.33	33.00
	1	12	20.70	20.97	20.93			
	1	24	20.35	21.10	20.92			
	12	0	19.81	19.62	19.41			
	12	6	19.81	19.63	19.38			
	12	11	19.68	19.62	19.34			
	25	0	19.94	19.66	19.58			
LTE Band 7 - 10MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20800	21100	21400			
			2505.0MHz	2535.0MHz	2565.0MHz			
QPSK	1	0	21.57	21.56	21.40	1.23	22.98	33.00
	1	24	21.75	21.71	21.65			
	1	49	21.64	21.53	21.51			
	25	0	20.80	20.73	20.48			
	25	12	20.81	20.75	20.50			
	25	24	20.80	20.78	20.53			
	50	0	20.82	20.75	20.45			
16QAM	1	0	21.07	21.01	20.78	1.23	22.65	33.00
	1	24	21.29	21.42	20.97			
	1	49	21.04	20.99	20.84			
	25	0	19.96	19.95	19.54			
	25	12	19.77	19.79	19.54			
	25	24	19.90	19.90	19.65			
	50	0	19.75	19.65	19.61			



LTE Band 7 - 15MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20825	21100	21375			
			2507.5MHz	2535.0MHz	2562.5MHz			
QPSK	1	0	21.72	21.68	21.45	1.23	23.13	33.00
	1	37	21.90	21.67	21.29			
	1	74	21.67	21.53	21.43			
	36	0	21.06	20.96	20.77			
	36	16	21.05	21.02	20.80			
	36	35	21.12	21.00	20.83			
	75	0	20.87	20.74	20.43			
16QAM	1	0	21.02	21.17	20.96	1.23	23.12	33.00
	1	37	21.17	21.02	20.77			
	1	74	21.22	21.89	20.92			
	36	0	21.04	20.92	19.80			
	36	16	21.05	20.88	19.81			
	36	35	21.03	20.82	19.92			
	75	0	19.95	19.77	19.45			
LTE Band 7 - 20MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
			20850	21100	21350			
			2510.0MHz	2535.0MHz	2560.0MHz			
QPSK	1	0	21.72	21.48	21.58	1.23	23.19	33.00
	1	49	21.75	21.96	21.42			
	1	99	21.70	21.45	21.26			
	50	0	20.81	20.77	20.58			
	50	24	20.80	20.78	20.56			
	50	49	20.81	20.77	20.44			
	100	0	20.86	20.74	20.57			
16QAM	1	0	21.06	21.14	20.94	1.23	22.58	33.00
	1	49	21.35	21.21	21.19			
	1	99	21.00	21.03	20.86			
	50	0	19.90	19.85	19.59			
	50	24	19.91	19.94	19.60			
	50	49	19.97	19.77	19.42			
	100	0	19.84	19.71	19.60			



LTE Band 12 - 1.4MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			23017	23095	23173			
			699.7MHz	707.5MHz	715.3MHz			
QPSK	1	0	22.26	22.31	22.60	0.16	20.80	33.77
	1	2	22.64	22.79	22.38			
	1	5	22.30	22.43	22.35			
	3	0	22.46	22.57	22.45			
	3	1	22.47	22.39	22.41			
	3	2	22.50	22.56	22.49			
	6	0	21.49	21.64	21.49			
16QAM	1	0	21.26	21.85	21.71	0.16	20.23	33.77
	1	2	22.11	22.22	22.06			
	1	5	22.07	22.05	21.89			
	3	0	21.48	21.56	21.32			
	3	1	21.44	21.56	21.33			
	3	2	21.78	21.91	21.68			
	6	0	20.68	20.61	20.65			
LTE Band 12 - 3MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			23025	23095	23165			
			700.5MHz	707.5MHz	714.5MHz			
QPSK	1	0	22.28	22.38	22.56	0.16	20.66	33.77
	1	7	22.65	22.46	22.58			
	1	14	22.32	22.56	22.51			
	8	0	22.42	21.47	21.54			
	8	4	22.41	21.49	21.51			
	8	7	22.43	21.57	21.49			
	15	0	21.45	21.67	21.69			
16QAM	1	0	21.65	21.67	21.85	0.16	19.86	33.77
	1	7	21.77	21.84	21.82			
	1	14	21.72	21.71	21.79			
	8	0	20.72	20.75	20.86			
	8	4	20.75	20.73	20.81			
	8	7	20.71	20.74	20.82			
	15	0	20.80	20.82	20.84			



LTE Band 12 - 5MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			23035	23095	23155			
			701.5MHz	707.5MHz	713.5MHz			
QPSK	1	0	22.34	22.34	22.26	0.16	20.62	33.77
	1	12	22.55	22.51	22.61			
	1	24	22.44	22.25	22.36			
	12	0	21.38	21.52	21.46			
	12	6	21.50	21.55	21.46			
	12	11	21.48	21.59	21.41			
	25	0	21.46	21.52	21.44			
16QAM	1	0	21.03	20.96	21.11	0.16	19.54	33.77
	1	12	21.53	21.16	21.44			
	1	24	21.44	21.01	21.38			
	12	0	20.41	20.47	20.29			
	12	6	20.56	20.47	20.32			
	12	11	20.50	20.53	20.39			
	25	0	20.56	20.68	20.51			
LTE Band 12 - 10MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			23060	23095	23130			
			704.0MHz	707.5MHz	711.0MHz			
QPSK	1	0	22.40	22.31	22.36	0.16	20.65	33.77
	1	24	22.64	22.42	22.51			
	1	49	22.46	22.33	22.31			
	25	0	21.41	21.42	21.50			
	25	12	21.48	21.36	21.55			
	25	24	21.42	21.53	21.50			
	50	0	21.53	21.50	21.52			
16QAM	1	0	21.72	22.42	21.76	0.16	20.43	33.77
	1	24	22.16	21.42	22.15			
	1	49	21.89	21.75	21.73			
	25	0	20.52	20.39	20.54			
	25	12	20.38	20.39	20.55			
	25	24	20.61	20.55	20.63			
	50	0	20.49	20.59	20.53			



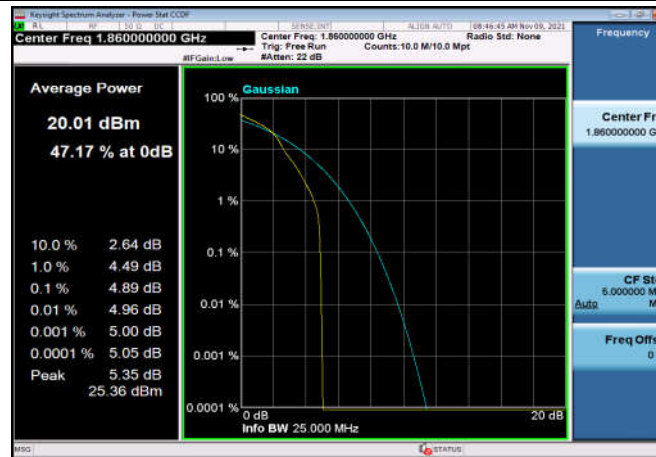
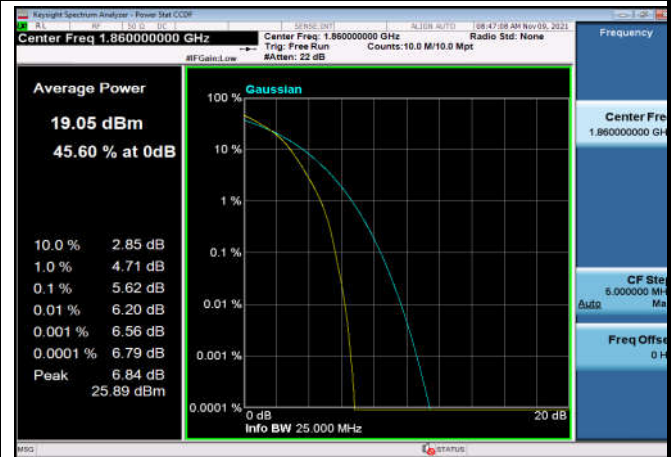
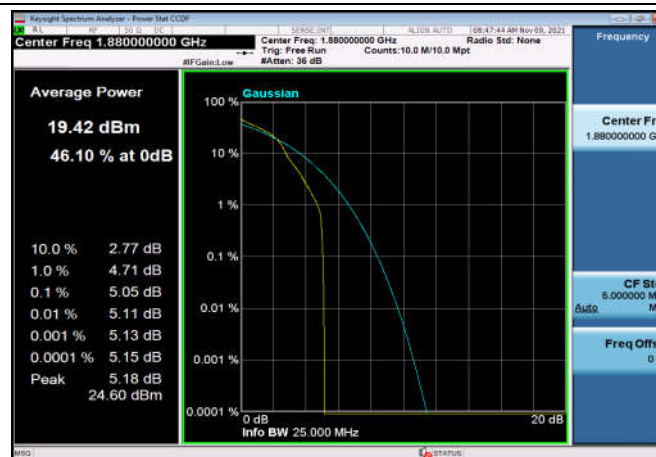
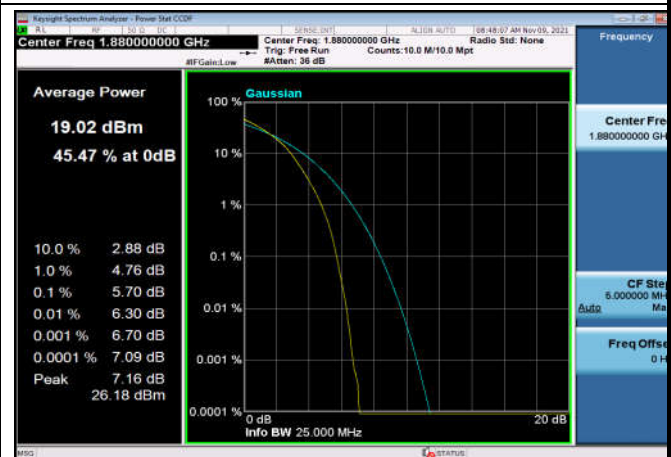
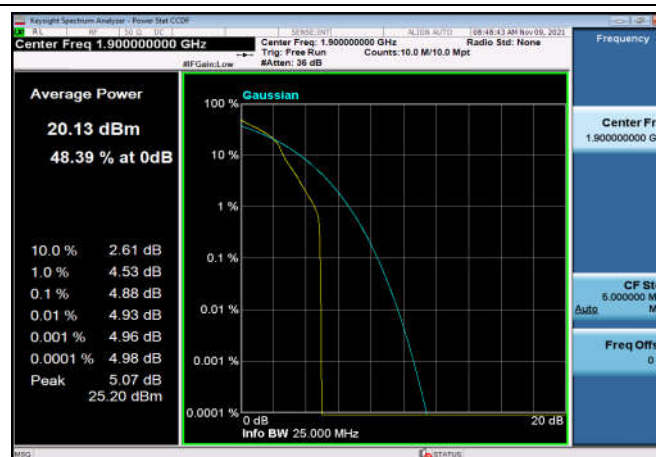
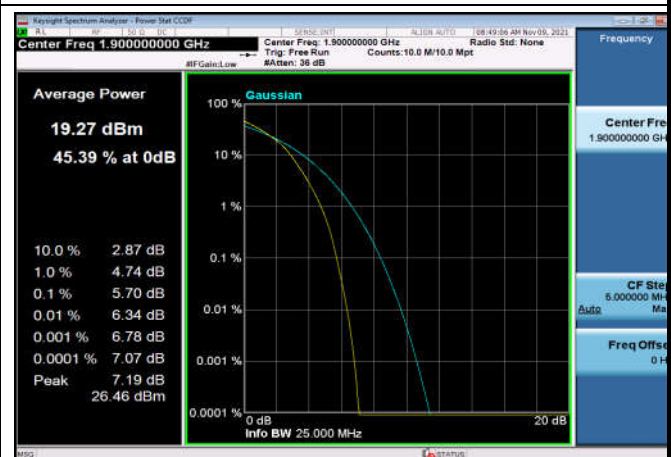
LTE Band 17 - 5MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			23755	23790	23825			
			706.5MHz	710.0MHz	713.5MHz			
QPSK	1	0	22.42	22.33	22.54	0.18	20.86	33.77
	1	12	22.58	22.50	22.83			
	1	24	22.38	22.45	22.30			
	12	0	21.57	21.56	21.62			
	12	6	21.60	21.65	21.52			
	12	11	21.57	21.57	21.52			
	25	0	21.63	21.58	21.53			
16QAM	1	0	21.14	22.02	21.73	0.18	20.05	33.77
	1	12	21.21	21.79	21.91			
	1	24	20.84	21.88	21.73			
	12	0	20.50	20.52	20.70			
	12	6	20.60	20.50	20.70			
	12	11	20.39	20.67	20.52			
	25	0	20.79	20.58	20.55			
LTE Band 17 - 10MHz Bandwidth								
Modulation	RB Size	RB Offset	Average Power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
			23780	23790	23800			
			709.0MHz	710.0MHz	711.0MHz			
QPSK	1	0	22.52	22.42	22.42	0.18	20.65	33.77
	1	24	22.42	22.62	22.60			
	1	49	22.48	22.35	22.22			
	25	0	21.77	21.69	21.61			
	25	12	21.72	21.70	21.55			
	25	24	21.67	21.62	21.61			
	50	0	21.69	21.63	21.63			
16QAM	1	0	21.84	21.91	21.81	0.18	20.29	33.77
	1	24	22.23	22.26	22.05			
	1	49	21.90	21.79	21.72			
	25	0	20.85	20.74	20.75			
	25	12	20.82	20.70	20.70			
	25	24	20.69	20.64	20.67			
	50	0	20.77	20.69	20.68			

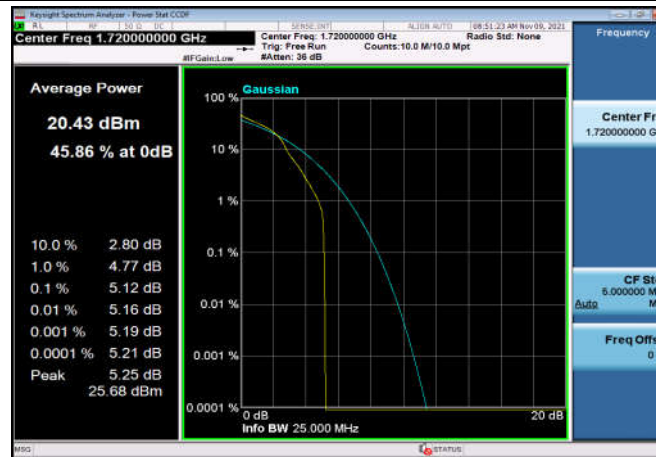
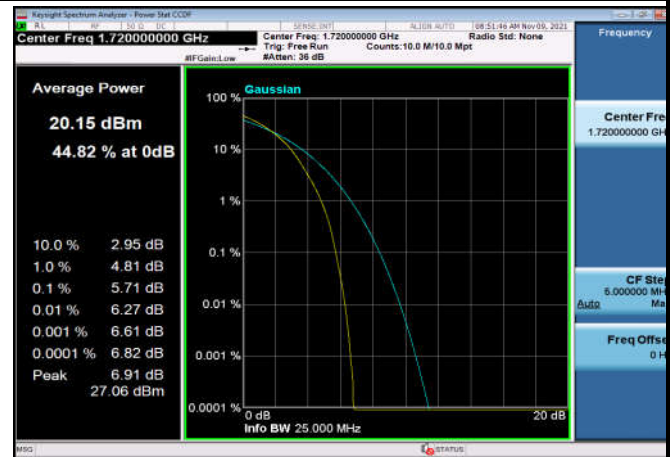
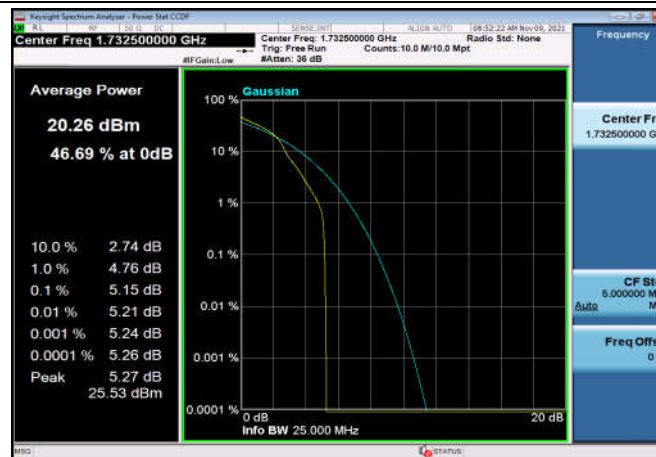
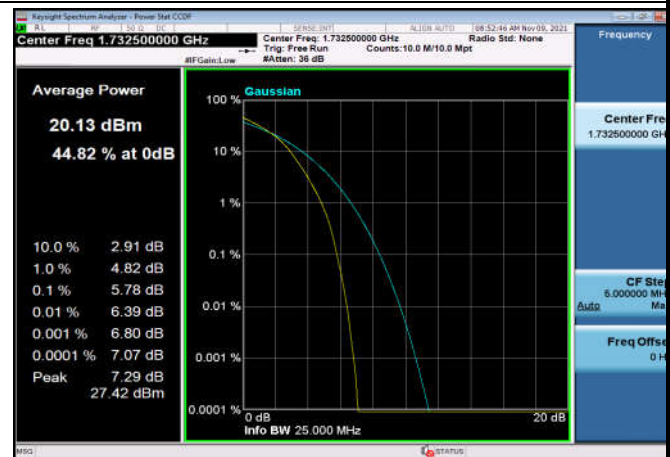
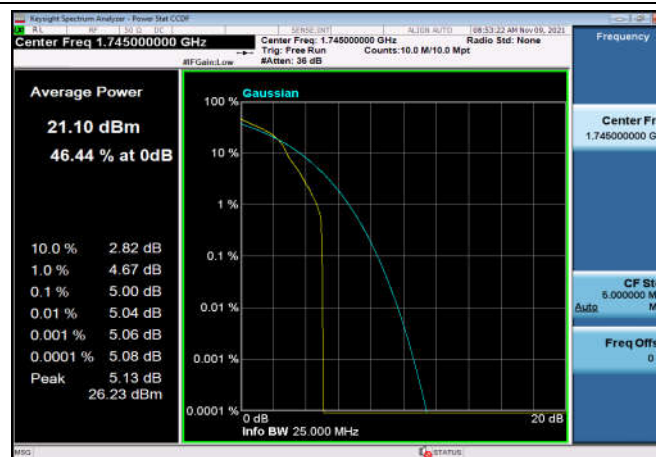
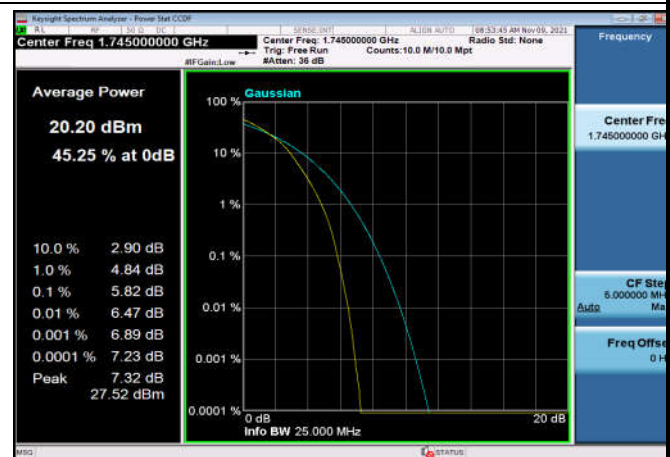
**Peak To Average Ratio****Test Result and Data**

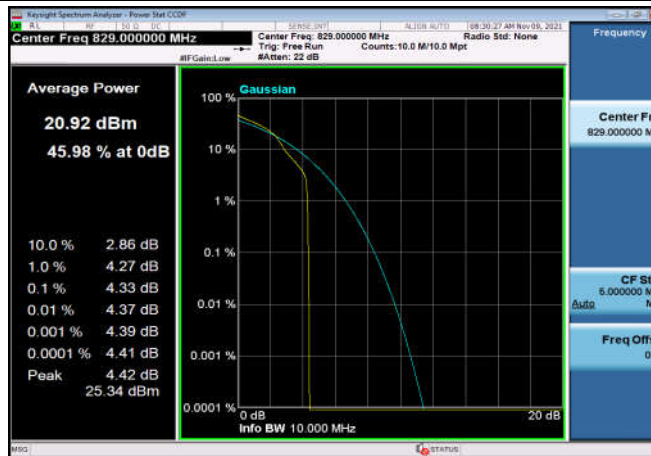
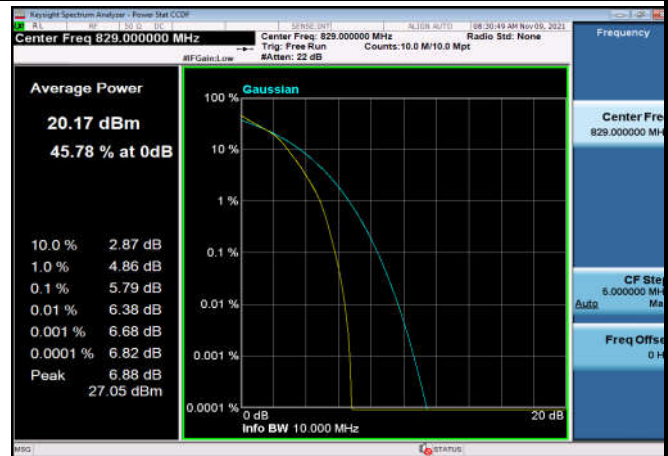
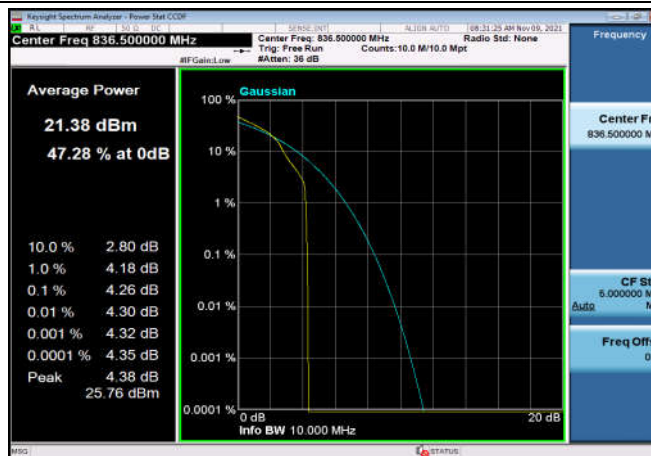
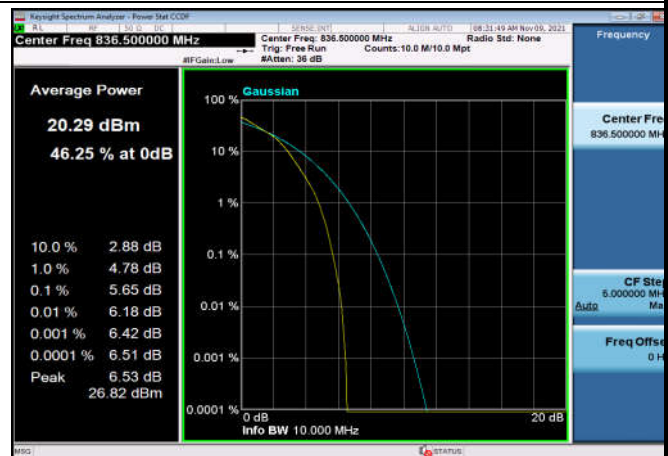
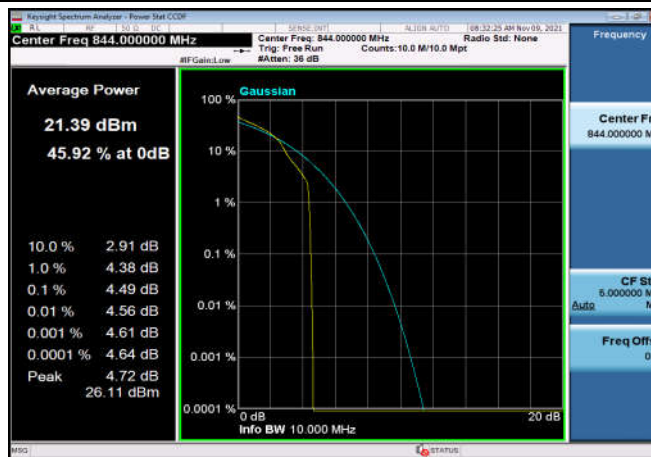
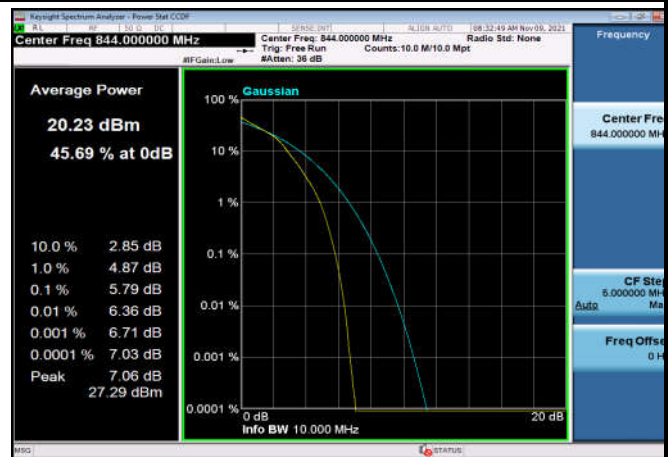
PeakToAveragePowerRatio NormalTC_NormalVol							
Band	Range	BandWidth	RbMode	Modulation	PAPR (dBm)	Limit (dBm)	Result
FDD02	LowRange	20	OneRB_high	Q16	4.89	13.00	Pass
FDD02	LowRange	20	fullRB	Q16	5.62	13.00	Pass
FDD02	MidRange	20	OneRB_high	Q16	5.05	13.00	Pass
FDD02	MidRange	20	fullRB	Q16	5.70	13.00	Pass
FDD02	HighRange	20	OneRB_high	Q16	4.88	13.00	Pass
FDD02	HighRange	20	fullRB	Q16	5.70	13.00	Pass
FDD04	LowRange	20	OneRB_high	Q16	5.12	13.00	Pass
FDD04	LowRange	20	fullRB	Q16	5.71	13.00	Pass
FDD04	MidRange	20	OneRB_high	Q16	5.15	13.00	Pass
FDD04	MidRange	20	fullRB	Q16	5.78	13.00	Pass
FDD04	HighRange	20	OneRB_high	Q16	5.00	13.00	Pass
FDD04	HighRange	20	fullRB	Q16	5.82	13.00	Pass
FDD05	LowRange	10	OneRB_high	Q16	4.33	13.00	Pass
FDD05	LowRange	10	fullRB	Q16	5.79	13.00	Pass
FDD05	MidRange	10	OneRB_high	Q16	4.26	13.00	Pass
FDD05	MidRange	10	fullRB	Q16	5.65	13.00	Pass
FDD05	HighRange	10	OneRB_high	Q16	4.49	13.00	Pass
FDD05	HighRange	10	fullRB	Q16	5.79	13.00	Pass
FDD07	LowRange	20	OneRB_high	Q16	5.71	13.00	Pass
FDD07	LowRange	20	fullRB	Q16	6.05	13.00	Pass
FDD07	MidRange	20	OneRB_high	Q16	5.61	13.00	Pass
FDD07	MidRange	20	fullRB	Q16	6.14	13.00	Pass
FDD07	HighRange	20	OneRB_high	Q16	5.77	13.00	Pass
FDD07	HighRange	20	fullRB	Q16	6.29	13.00	Pass
FDD12	LowRange	10	OneRB_high	Q16	5.32	13.00	Pass
FDD12	LowRange	10	fullRB	Q16	5.93	13.00	Pass
FDD12	MidRange	10	OneRB_high	Q16	5.49	13.00	Pass

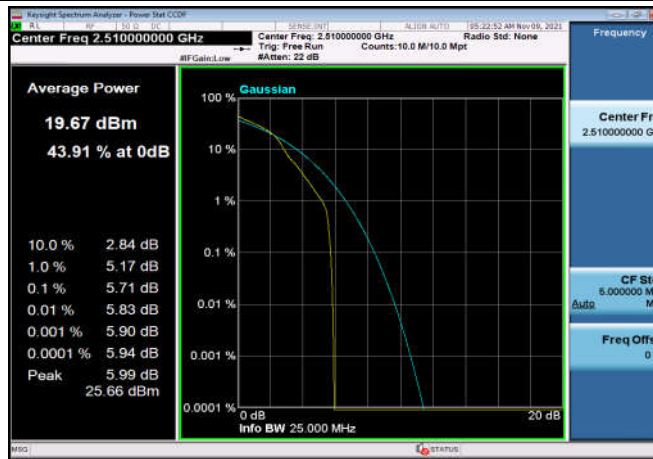
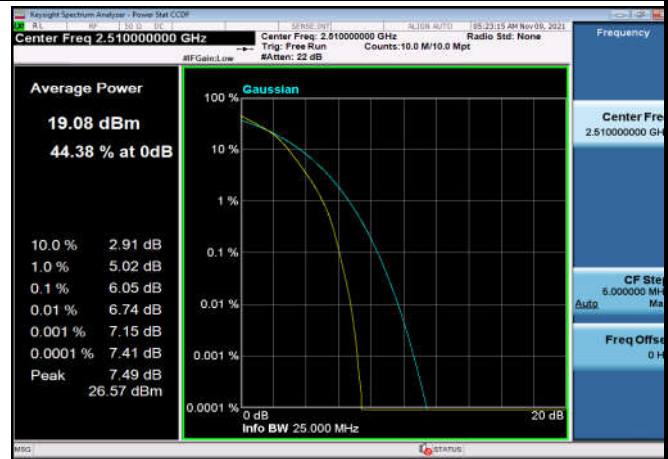
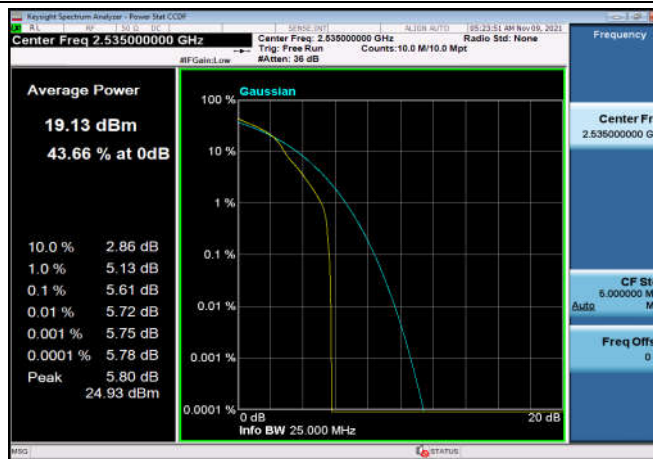
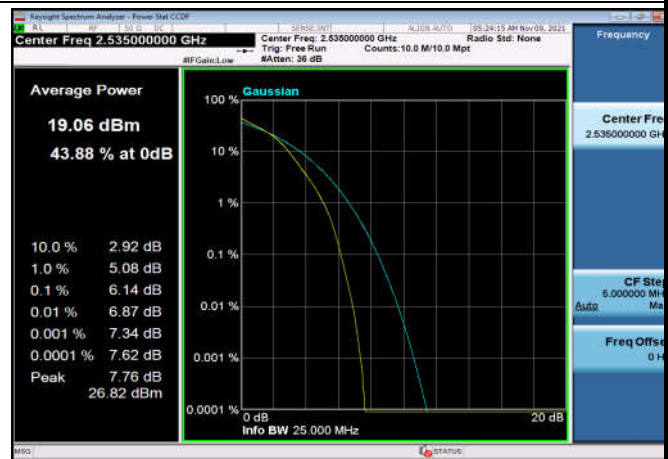
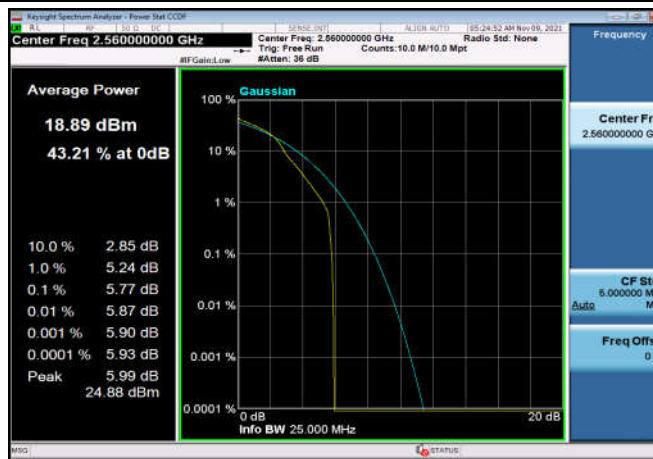
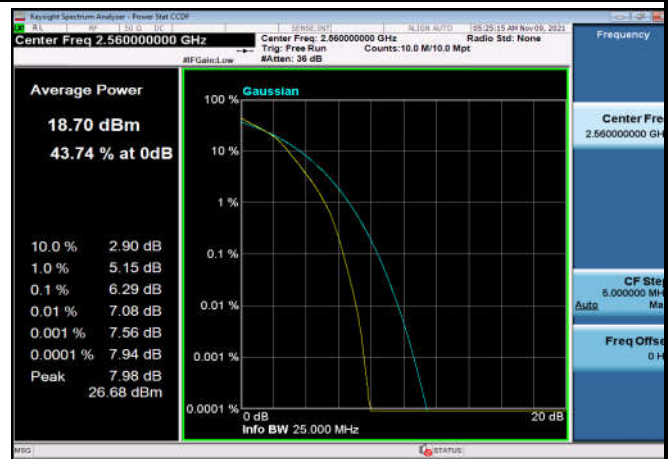


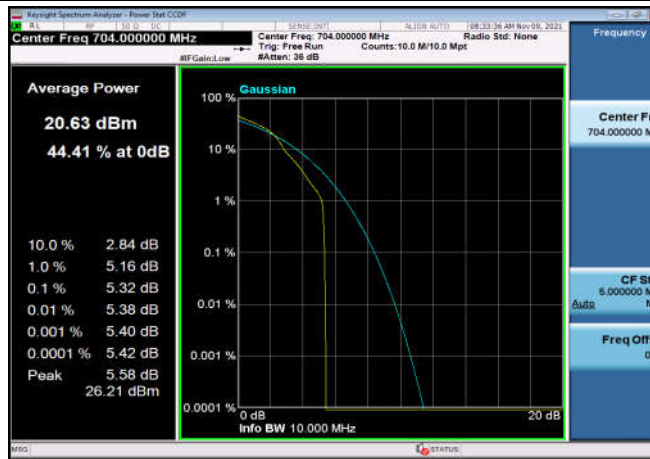
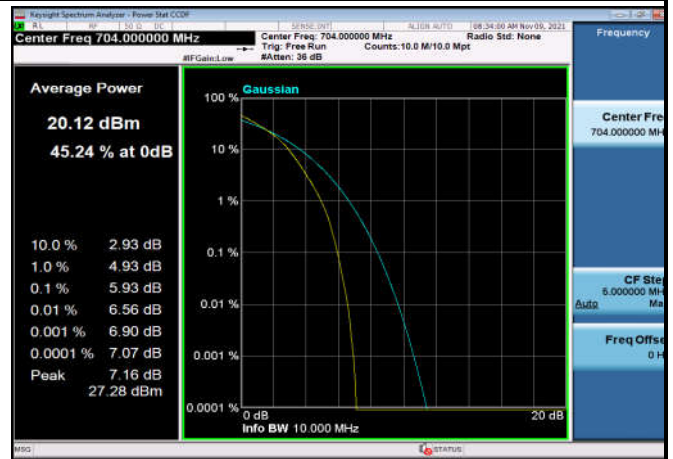
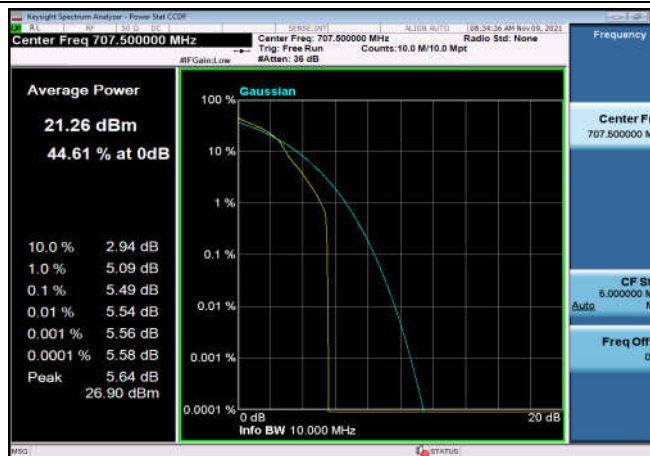
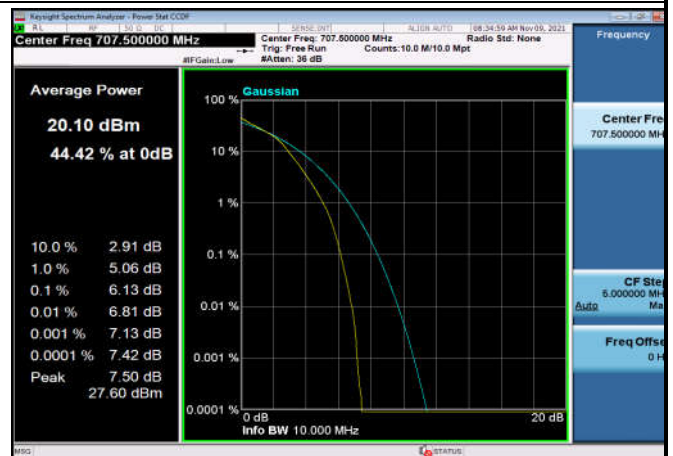
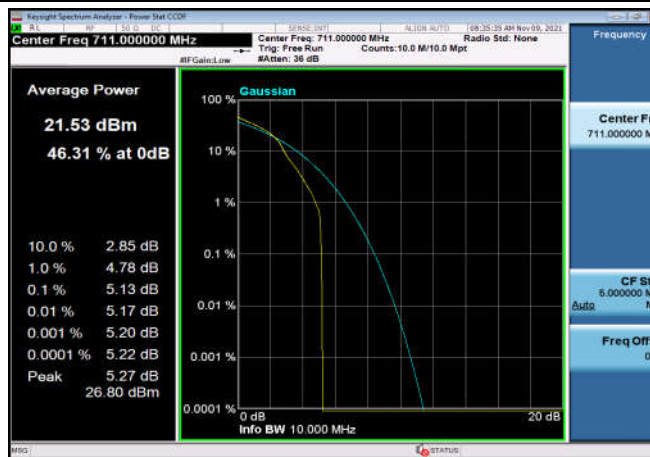
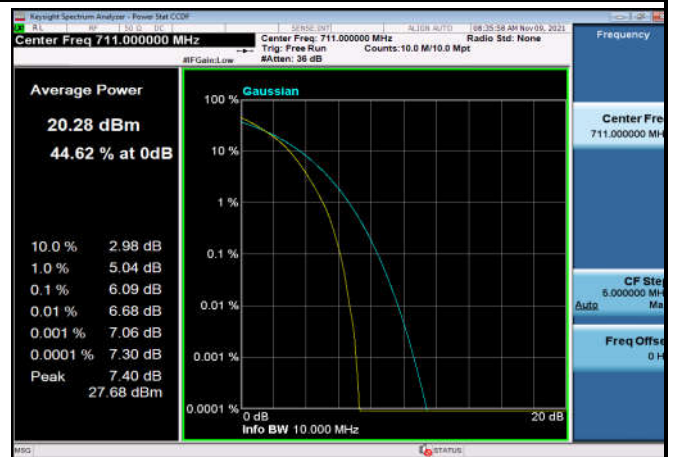
FDD12	MidRange	10	fullRB	Q16	6.13	13.00	Pass
FDD12	HighRange	10	OneRB_high	Q16	5.13	13.00	Pass
FDD12	HighRange	10	fullRB	Q16	6.09	13.00	Pass
FDD17	LowRange	10	OneRB_high	Q16	5.25	13.00	Pass
FDD17	LowRange	10	fullRB	Q16	6.13	13.00	Pass
FDD17	MidRange	10	OneRB_high	Q16	5.07	13.00	Pass
FDD17	MidRange	10	fullRB	Q16	6.15	13.00	Pass
FDD17	HighRange	10	OneRB_high	Q16	5.14	13.00	Pass
FDD17	HighRange	10	fullRB	Q16	6.10	13.00	Pass

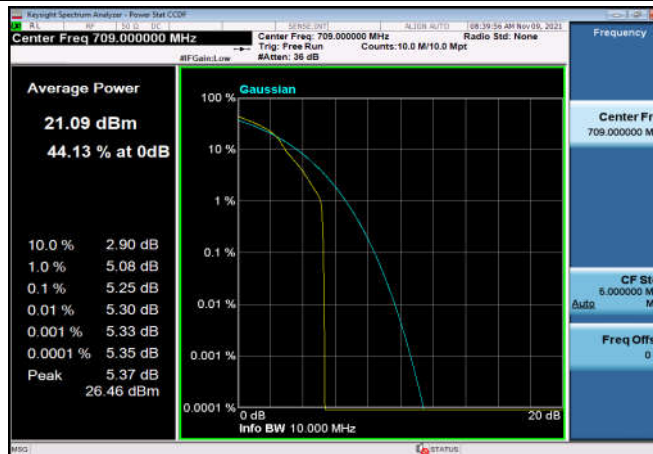
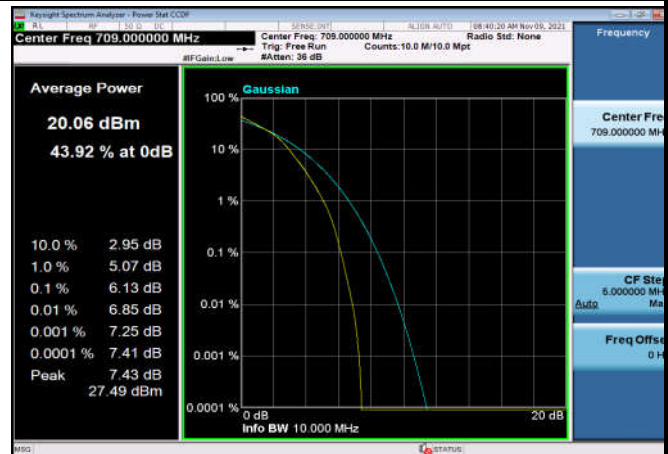
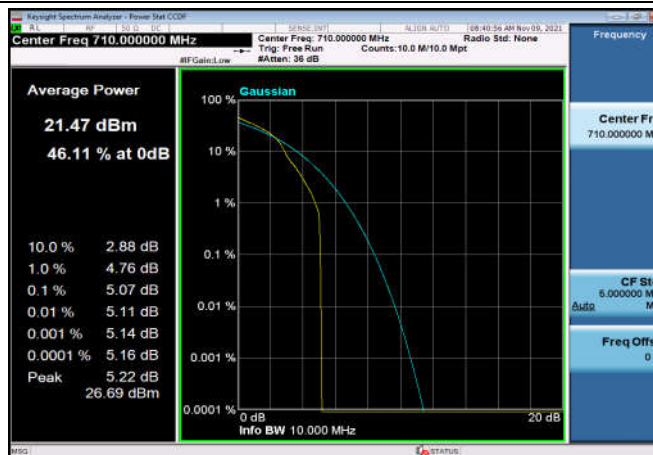
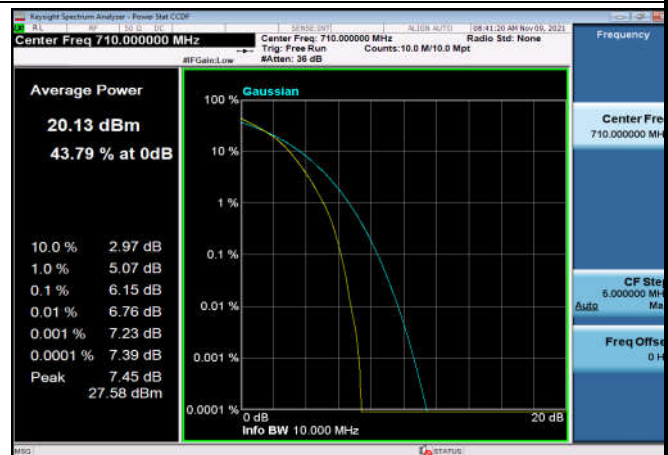
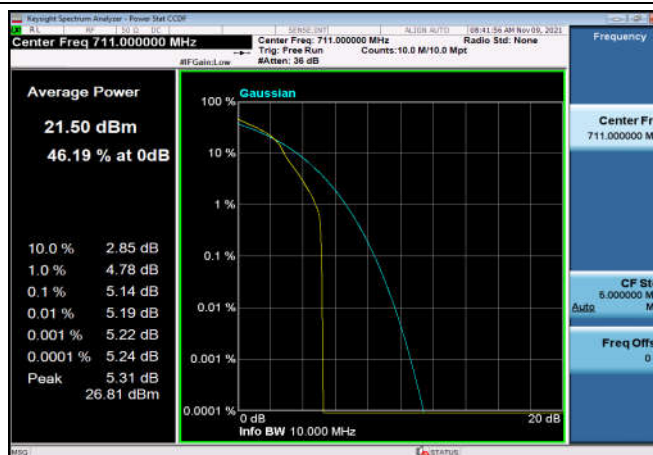
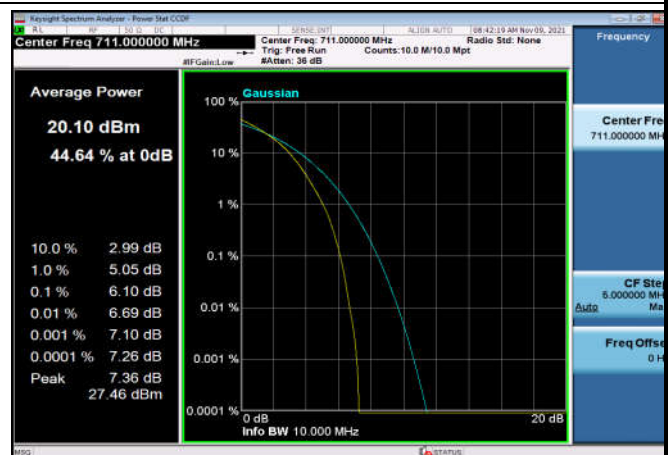
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_high_Q16

FDD02_LowRange_20MHz_1860_fullRB
_Q16

FDD02_MidRange_20MHz_1880_OneRB
_high_Q16

FDD02_MidRange_20MHz_1880_fullRB
_Q16

FDD02_HighRange_20MHz_1900_OneRB
_high_Q16

FDD02_HighRange_20MHz_1900_fullRB
_Q16


FDD04_LowRange_20MHz_1720_OneRB
_high_Q16

FDD04_LowRange_20MHz_1720_fullRB
_Q16

FDD04_MidRange_20MHz_1732.5_OneRB
_high_Q16

FDD04_MidRange_20MHz_1732.5_fullRB
_Q16

FDD04_HighRange_20MHz_1745_OneRB
_high_Q16

FDD04_HighRange_20MHz_1745_fullRB
_Q16


FDD05_LowRange_10MHz_829_OneRB
_high_Q16

FDD05_LowRange_10MHz_829_fullRB
_Q16

FDD05_MidRange_10MHz_836.5_OneRB
_high_Q16

FDD05_MidRange_10MHz_836.5_fullRB
_Q16

FDD05_HighRange_10MHz_844_OneRB
_high_Q16

FDD05_HighRange_10MHz_844_fullRB
_Q16


FDD07_LowRange_20MHz_2510_OneRB
_high_Q16

FDD07_LowRange_20MHz_2510_fullRB
_Q16

FDD07_MidRange_20MHz_2535_OneRB
_high_Q16

FDD07_MidRange_20MHz_2535_fullRB
_Q16

FDD07_HighRange_20MHz_2560_OneRB
_high_Q16

FDD07_HighRange_20MHz_2560_fullRB
_Q16


FDD12_LowRange_10MHz_704_OneRB
_high_Q16

FDD12_LowRange_10MHz_704_fullRB
_Q16

FDD12_MidRange_10MHz_707.5_OneRB
_high_Q16

FDD12_MidRange_10MHz_707.5_fullRB
_Q16

FDD12_HighRange_10MHz_711_OneRB
_high_Q16

FDD12_HighRange_10MHz_711_fullRB
_Q16


FDD17_LowRange_10MHz_709_OneRB
_high_Q16

FDD17_LowRange_10MHz_709_fullRB
_Q16

FDD17_MidRange_10MHz_710_OneRB
_high_Q16

FDD17_MidRange_10MHz_710_fullRB
_Q16

FDD17_HighRange_10MHz_711_OneRB
_high_Q16

FDD17_HighRange_10MHz_711_fullRB
_Q16


99% Occupied Bandwidth and 26dB Emission Bandwidth

Test Result and Data

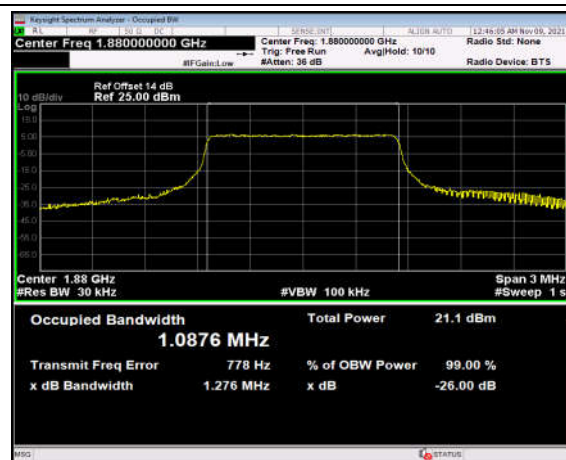
Band	Range	BandWidth	Frequency (MHz)	Modulation	99% OBW (MHz)	26dB EBW (MHz)
FDD02	MidRange	1.4	1880	QPSK	1.0876	1.28
FDD02	MidRange	1.4	1880	Q16	1.0855	1.26
FDD02	MidRange	3	1880	QPSK	2.7177	2.97
FDD02	MidRange	3	1880	Q16	2.7171	2.96
FDD02	MidRange	5	1880	QPSK	4.4846	4.85
FDD02	MidRange	5	1880	Q16	4.4821	4.82
FDD02	MidRange	10	1880	QPSK	8.9132	9.37
FDD02	MidRange	10	1880	Q16	8.9093	9.37
FDD02	MidRange	15	1880	QPSK	13.406	14.23
FDD02	MidRange	15	1880	Q16	13.407	14.22
FDD02	MidRange	20	1880	QPSK	17.835	18.72
FDD02	MidRange	20	1880	Q16	17.836	18.73
FDD04	MidRange	1.4	1732.5	QPSK	1.0856	1.26
FDD04	MidRange	1.4	1732.5	Q16	1.0851	1.27
FDD04	MidRange	3	1732.5	QPSK	2.7183	2.97
FDD04	MidRange	3	1732.5	Q16	2.7177	2.97
FDD04	MidRange	5	1732.5	QPSK	4.4845	4.86
FDD04	MidRange	5	1732.5	Q16	4.4820	4.81
FDD04	MidRange	10	1732.5	QPSK	8.9162	9.41
FDD04	MidRange	10	1732.5	Q16	8.9066	9.37
FDD04	MidRange	15	1732.5	QPSK	13.414	14.23
FDD04	MidRange	15	1732.5	Q16	13.411	14.22
FDD04	MidRange	20	1732.5	QPSK	17.851	18.74
FDD04	MidRange	20	1732.5	Q16	17.844	18.72
FDD05	MidRange	1.4	836.5	QPSK	1.0856	1.25
FDD05	MidRange	1.4	836.5	Q16	1.0853	1.27
FDD05	MidRange	3	836.5	QPSK	2.7146	2.97
FDD05	MidRange	3	836.5	Q16	2.7159	2.96



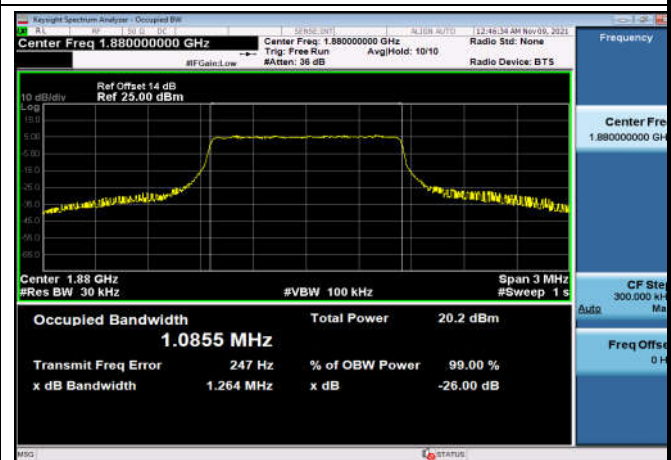
FDD05	MidRange	5	836.5	QPSK	4.4787	4.83
FDD05	MidRange	5	836.5	Q16	4.4781	4.79
FDD05	MidRange	10	836.5	QPSK	8.8971	9.36
FDD05	MidRange	10	836.5	Q16	8.8907	9.34
FDD07	MidRange	5	2535	QPSK	4.4745	4.82
FDD07	MidRange	5	2535	Q16	4.4806	4.84
FDD07	MidRange	10	2535	QPSK	8.9160	9.38
FDD07	MidRange	10	2535	Q16	8.9057	9.37
FDD07	MidRange	15	2535	QPSK	13.405	14.22
FDD07	MidRange	15	2535	Q16	13.409	14.22
FDD07	MidRange	20	2535	QPSK	17.833	18.72
FDD07	MidRange	20	2535	Q16	17.836	18.73
FDD12	MidRange	1.4	707.5	QPSK	1.0859	1.25
FDD12	MidRange	1.4	707.5	Q16	1.0851	1.25
FDD12	MidRange	3	707.5	QPSK	2.7178	2.97
FDD12	MidRange	3	707.5	Q16	2.7185	2.97
FDD12	MidRange	5	707.5	QPSK	4.4876	4.84
FDD12	MidRange	5	707.5	Q16	4.4868	4.81
FDD12	MidRange	10	707.5	QPSK	8.9362	9.44
FDD12	MidRange	10	707.5	Q16	8.9293	9.41
FDD17	MidRange	5	710	QPSK	4.4811	4.82
FDD17	MidRange	5	710	Q16	4.4869	4.84
FDD17	MidRange	10	710	QPSK	8.9239	9.37
FDD17	MidRange	10	710	Q16	8.9189	9.37



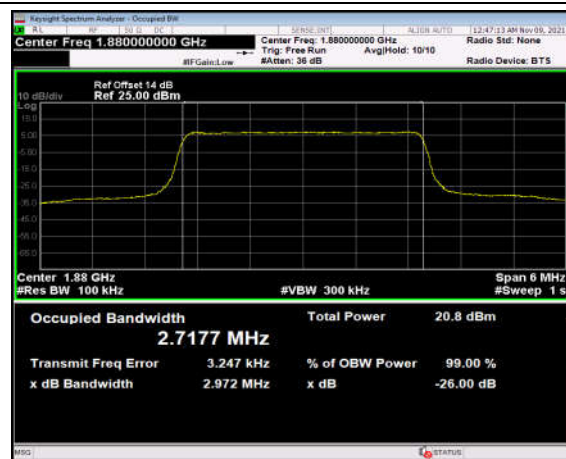
FDD02_MidRange_1.4MHz_1880MHz_QPSK



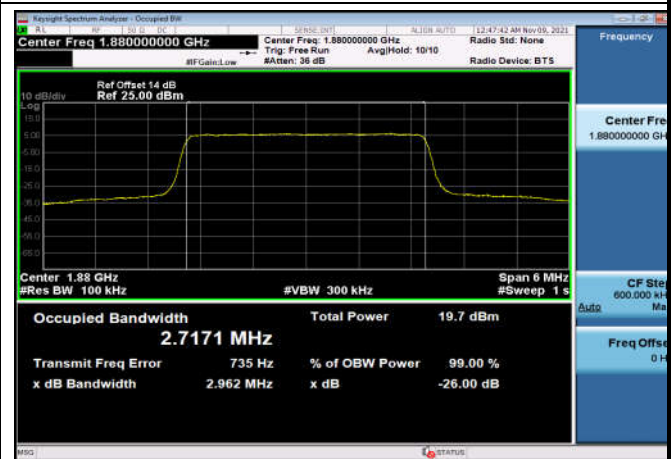
FDD02_MidRange_1.4MHz_1880MHz_Q16



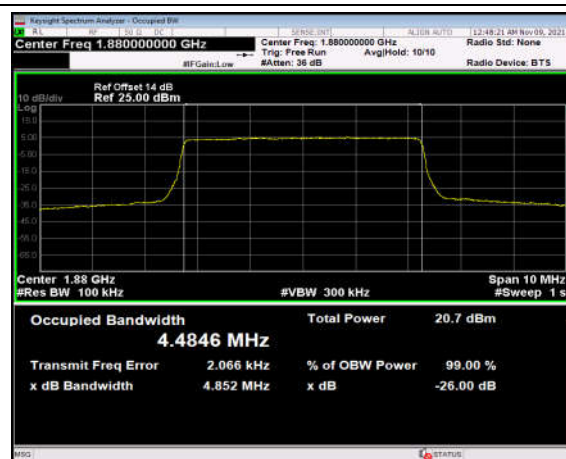
FDD02_MidRange_3MHz_1880MHz_QPSK



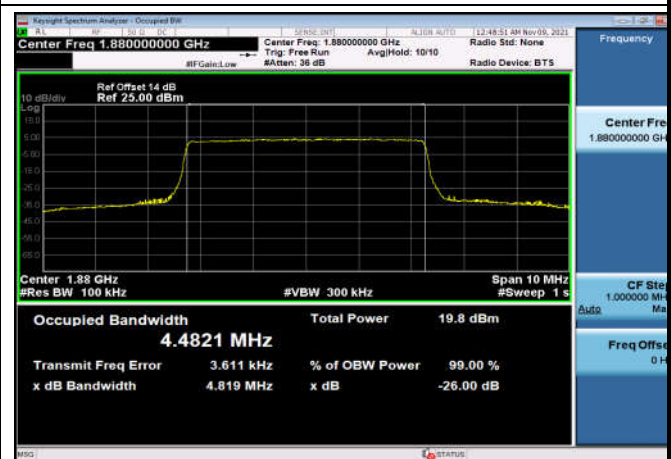
FDD02_MidRange_3MHz_1880MHz_Q16



FDD02_MidRange_5MHz_1880MHz_QPSK

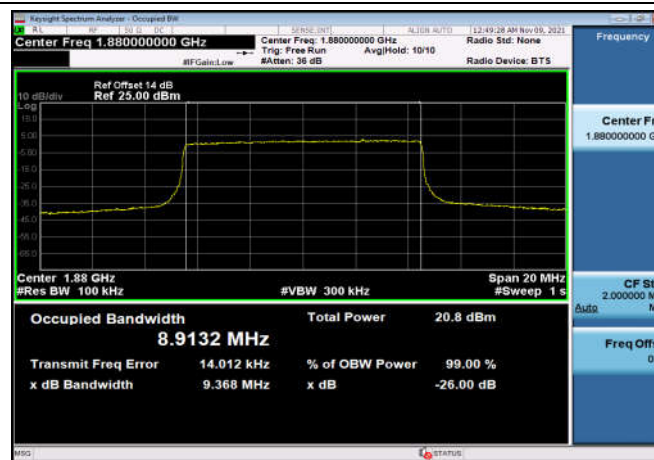


FDD02_MidRange_5MHz_1880MHz_Q16

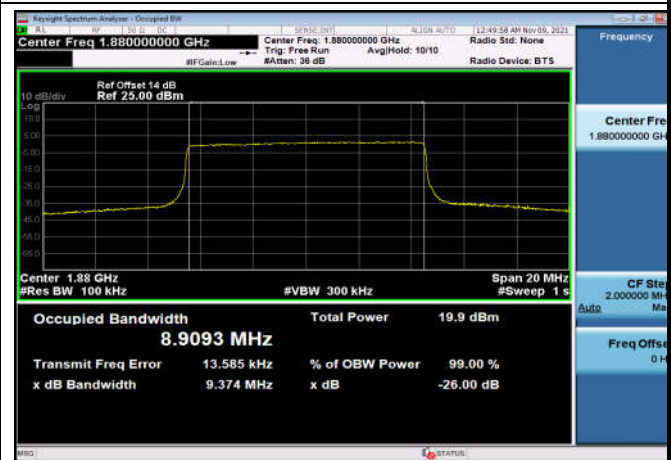




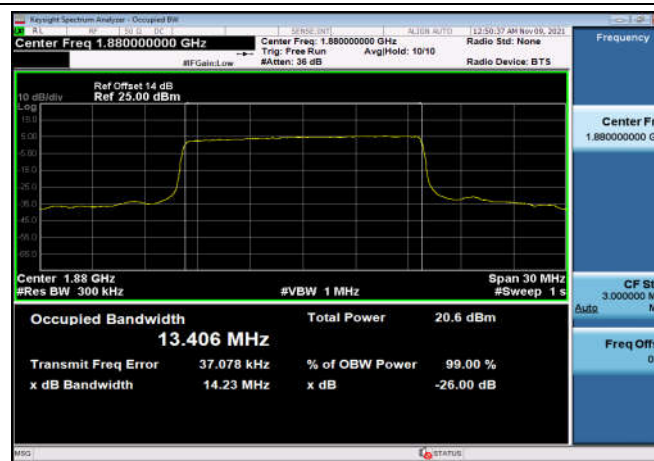
FDD02_MidRange_10MHz_1880MHz_QPSK



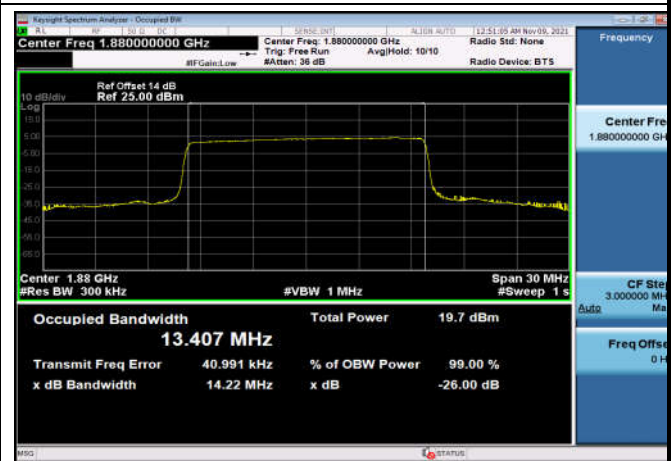
FDD02_MidRange_10MHz_1880MHz_Q16



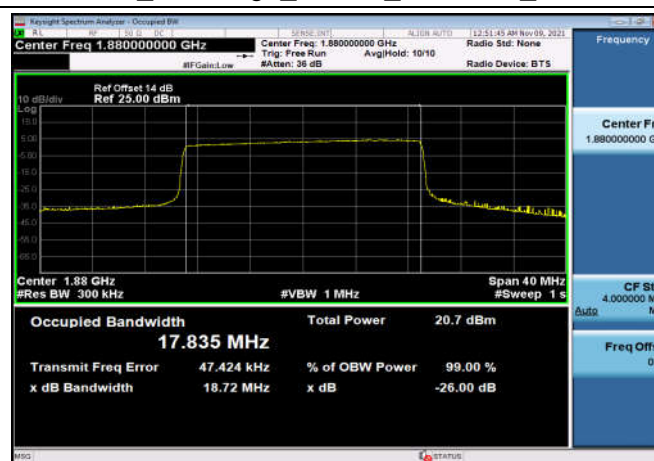
FDD02_MidRange_15MHz_1880MHz_QPSK



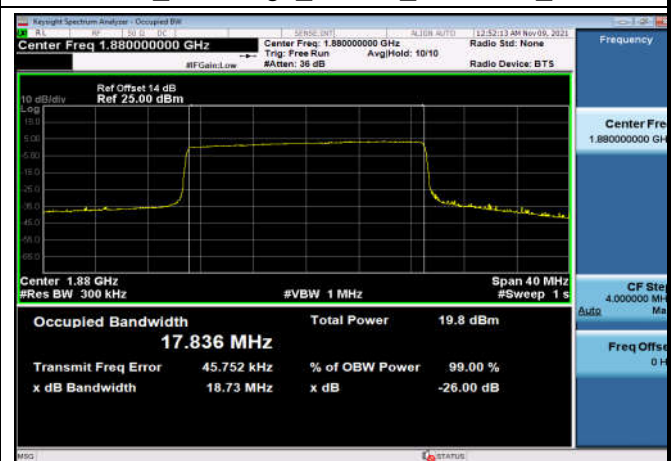
FDD02_MidRange_15MHz_1880MHz_Q16

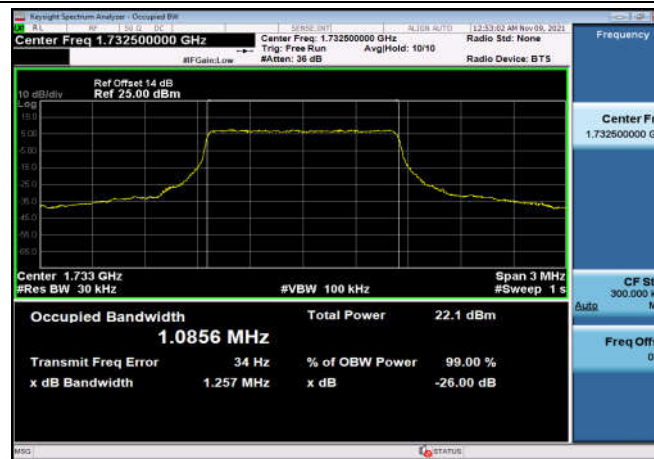
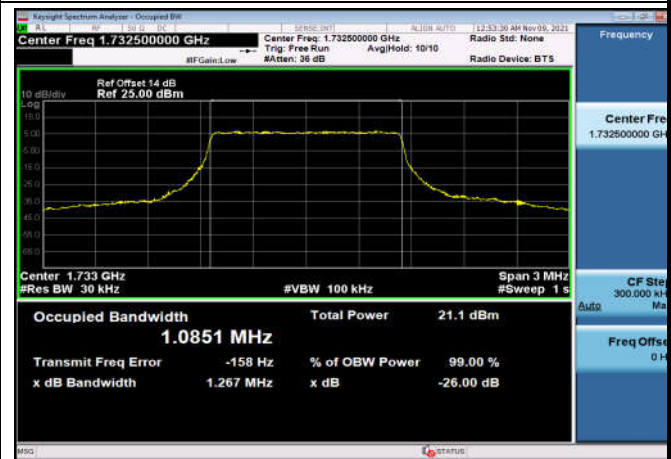


FDD02_MidRange_20MHz_1880MHz_QPSK

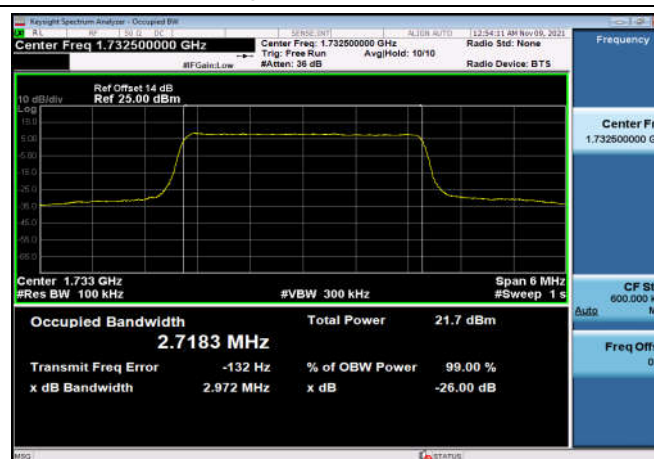


FDD02_MidRange_20MHz_1880MHz_Q16

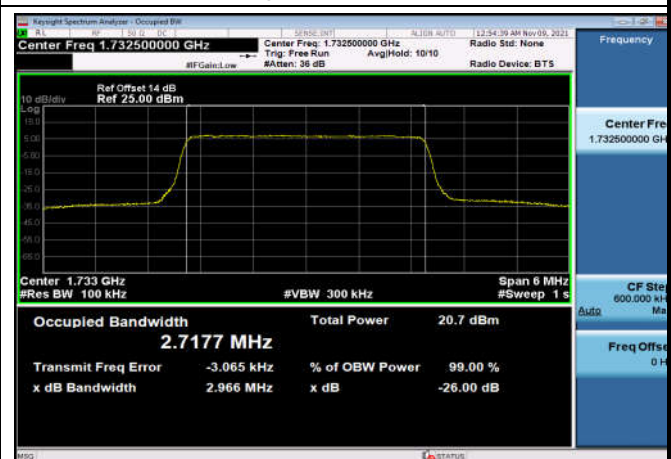


FDD04_MidRange_1.4MHz_1732.5MHz
_QPSKFDD04_MidRange_1.4MHz_1732.5MHz
_Q16

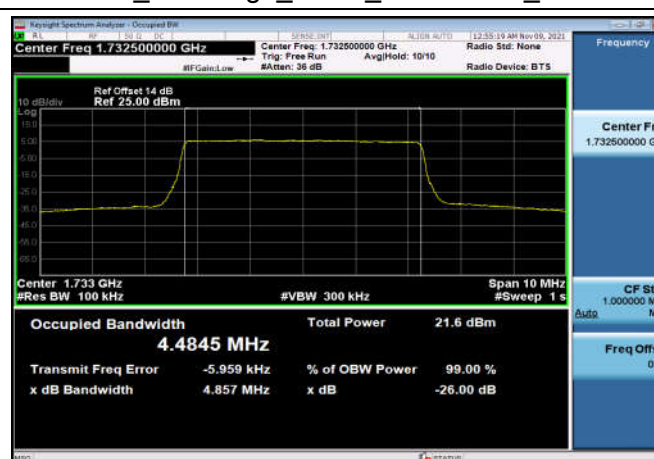
FDD04_MidRange_3MHz_1732.5MHz_QPSK



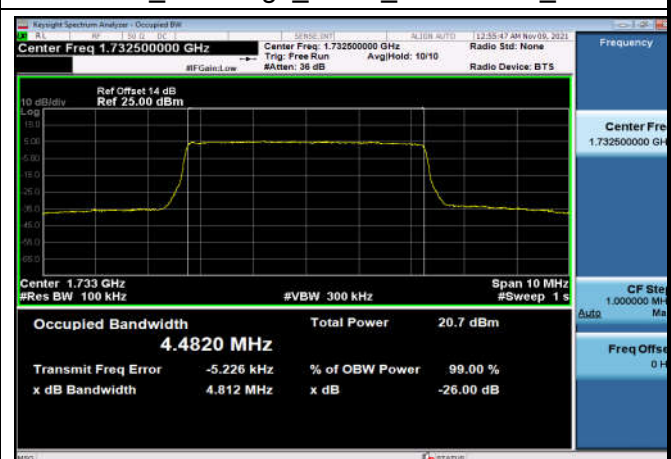
FDD04_MidRange_3MHz_1732.5MHz_Q16

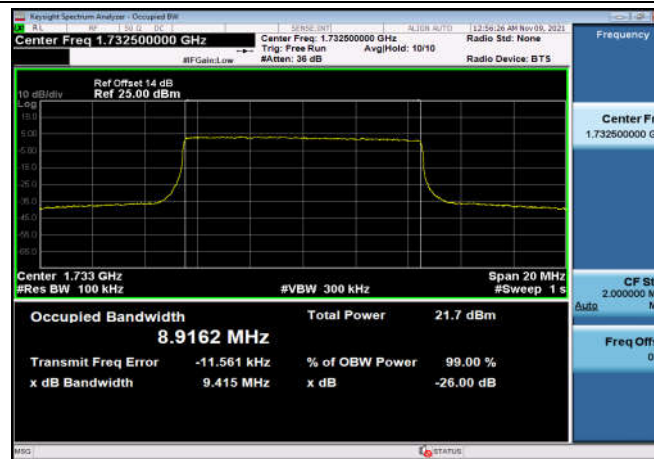
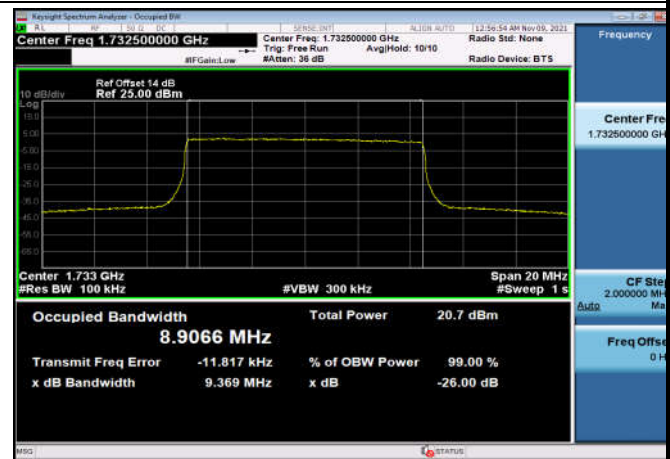
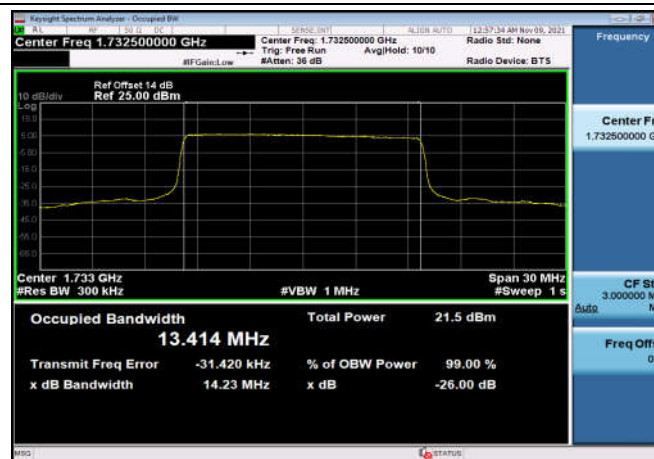
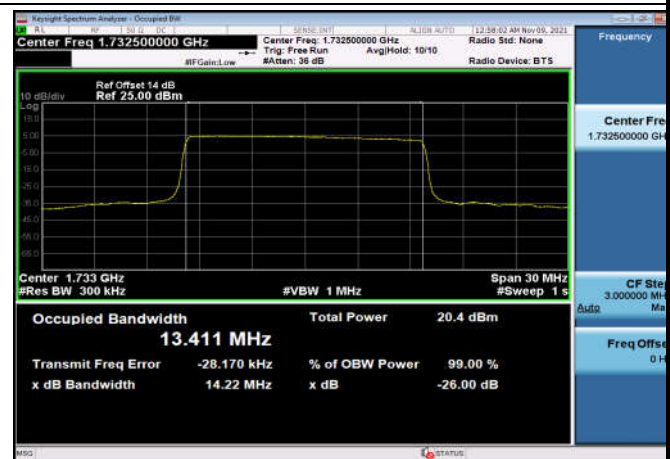
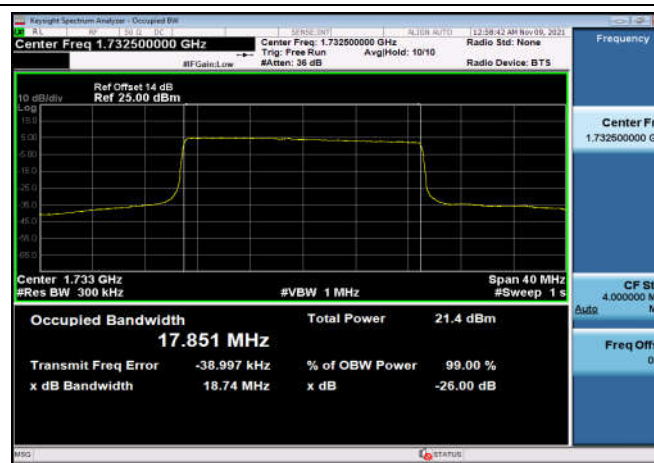
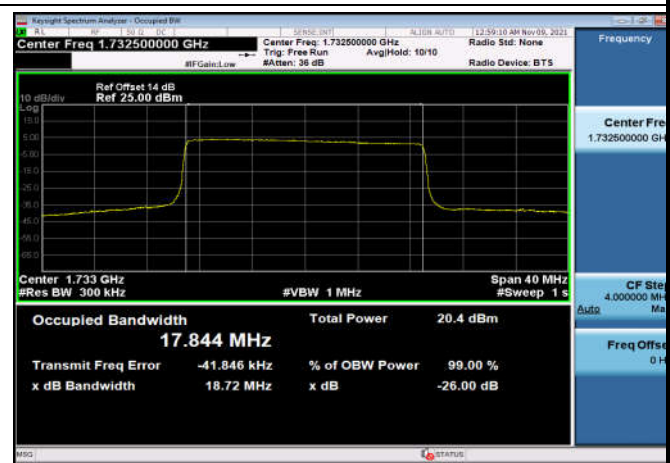


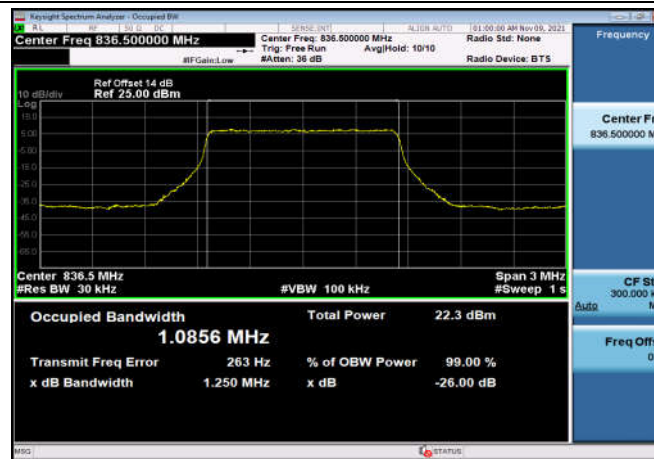
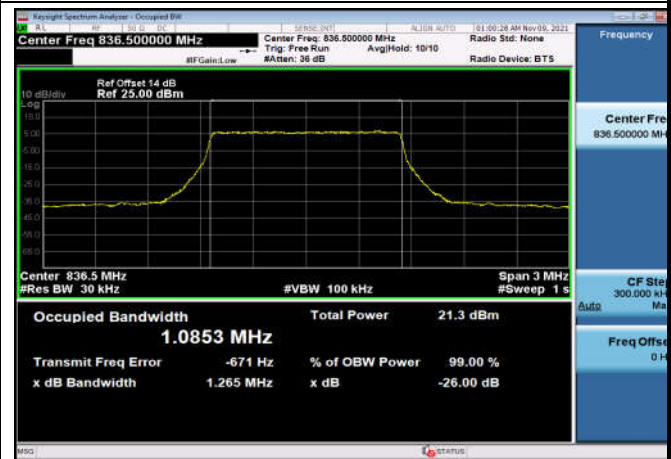
FDD04_MidRange_5MHz_1732.5MHz_QPSK



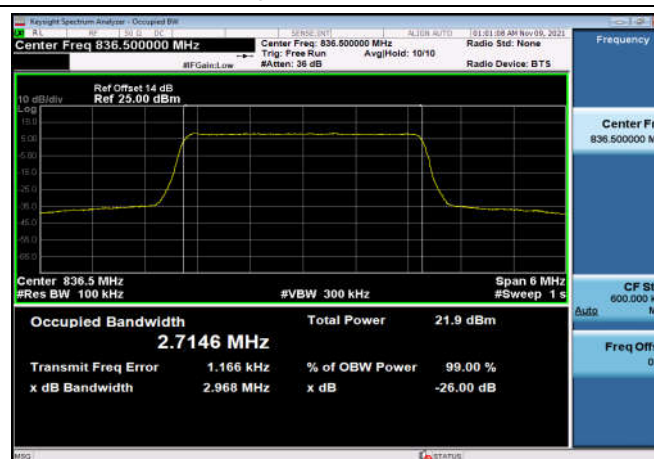
FDD04_MidRange_5MHz_1732.5MHz_Q16



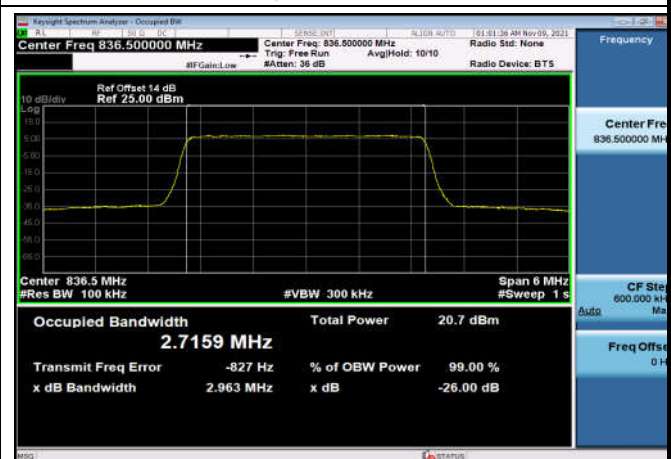
FDD04_MidRange_10MHz_1732.5MHz
_QPSKFDD04_MidRange_10MHz_1732.5MHz
_Q16FDD04_MidRange_15MHz_1732.5MHz
_QPSKFDD04_MidRange_15MHz_1732.5MHz
_Q16FDD04_MidRange_20MHz_1732.5MHz
_QPSKFDD04_MidRange_20MHz_1732.5MHz
_Q16

FDD05_MidRange_1.4MHz_836.5MHz
_QPSKFDD05_MidRange_1.4MHz_836.5MHz
_Q16

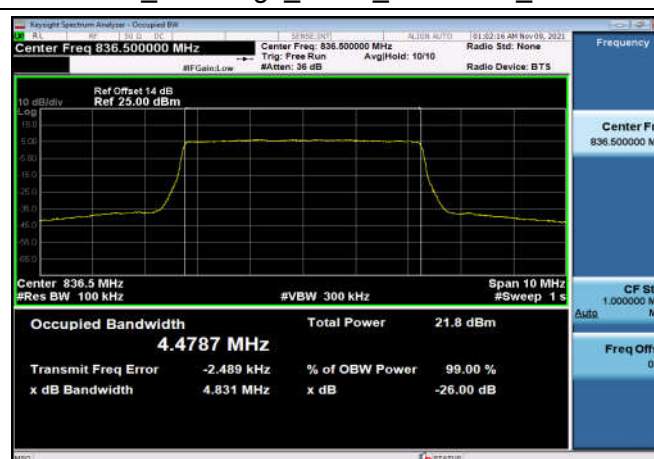
FDD05_MidRange_3MHz_836.5MHz_QPSK



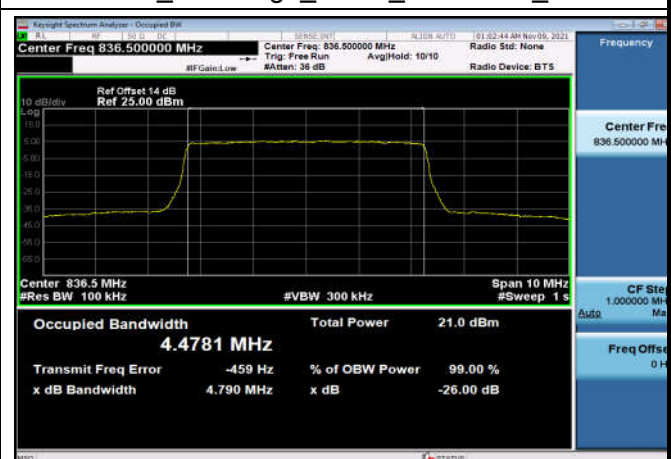
FDD05_MidRange_3MHz_836.5MHz_Q16



FDD05_MidRange_5MHz_836.5MHz_QPSK

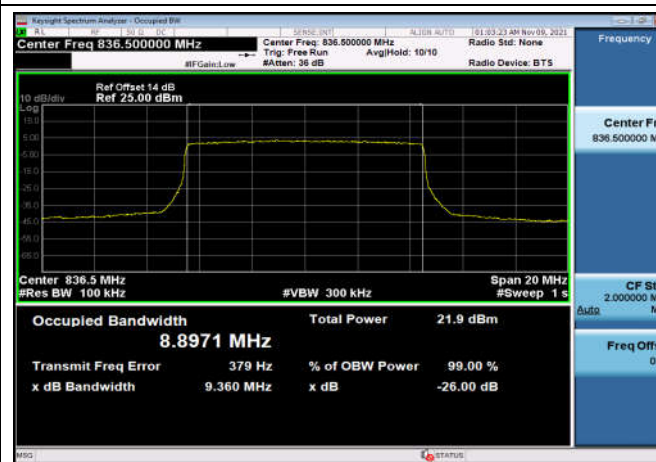


FDD05_MidRange_5MHz_836.5MHz_Q16

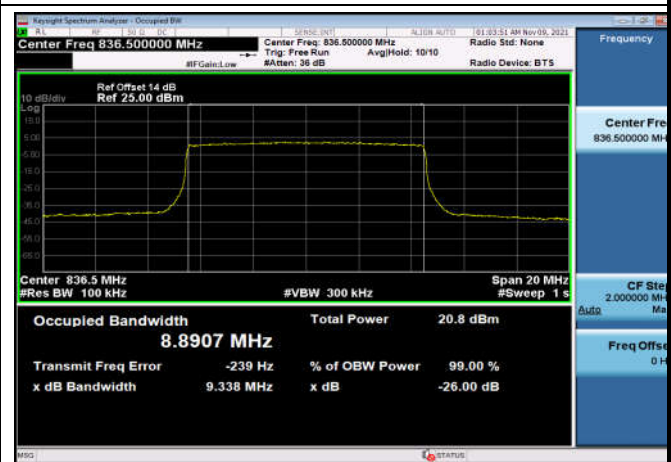




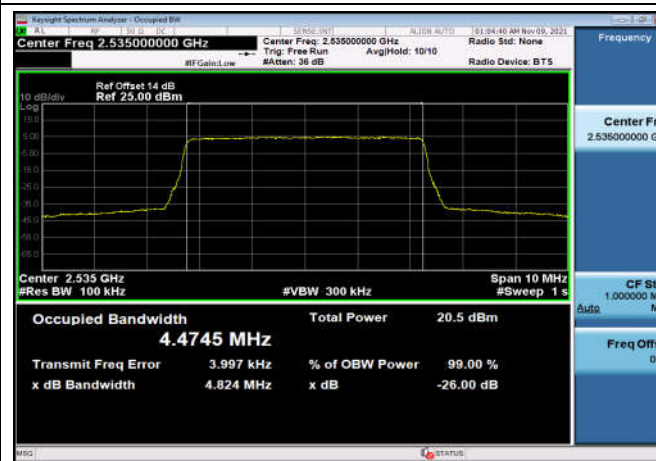
FDD05_MidRange_10MHz_836.5MHz_QPSK



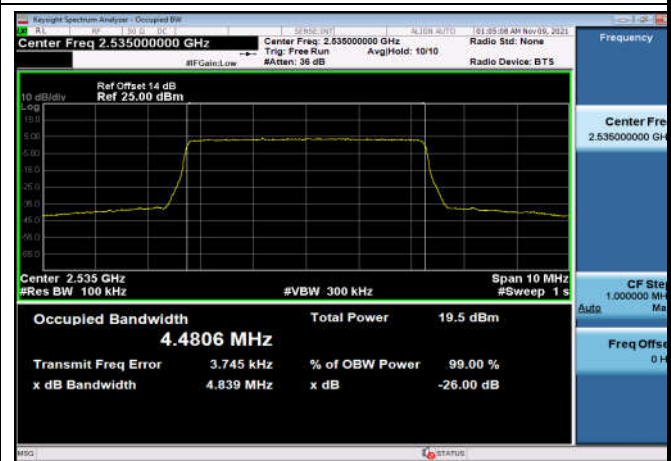
FDD05_MidRange_10MHz_836.5MHz_Q16



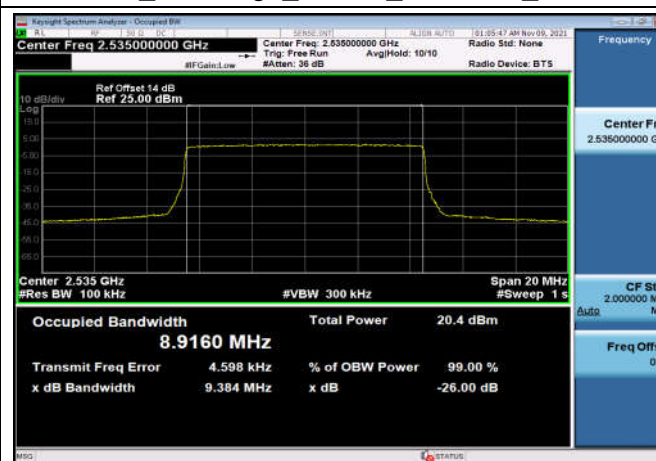
FDD07_MidRange_5MHz_2535MHz_QPSK



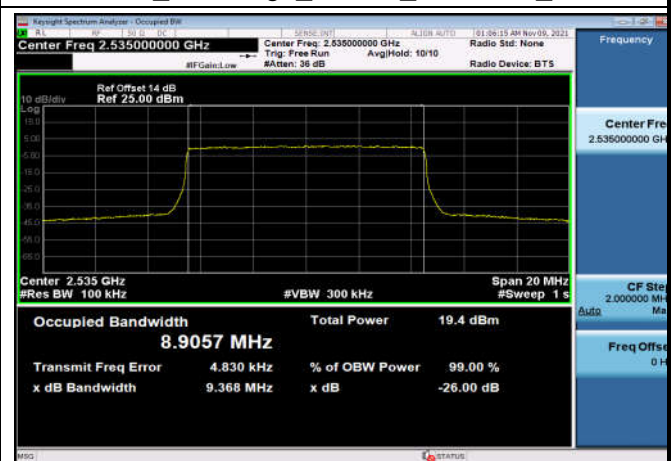
FDD07_MidRange_5MHz_2535MHz_Q16



FDD07_MidRange_10MHz_2535MHz_QPSK

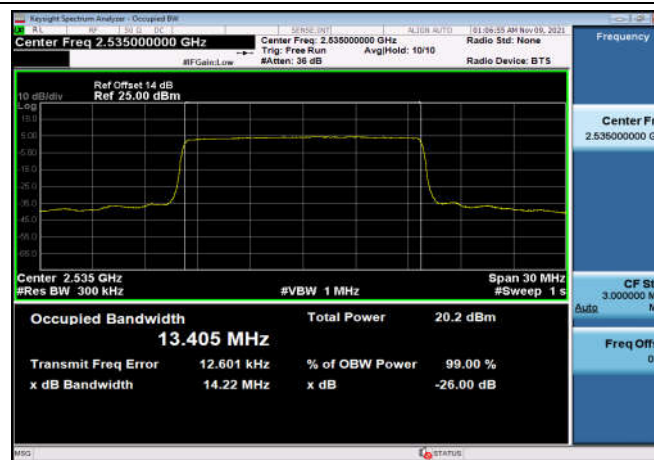


FDD07_MidRange_10MHz_2535MHz_Q16

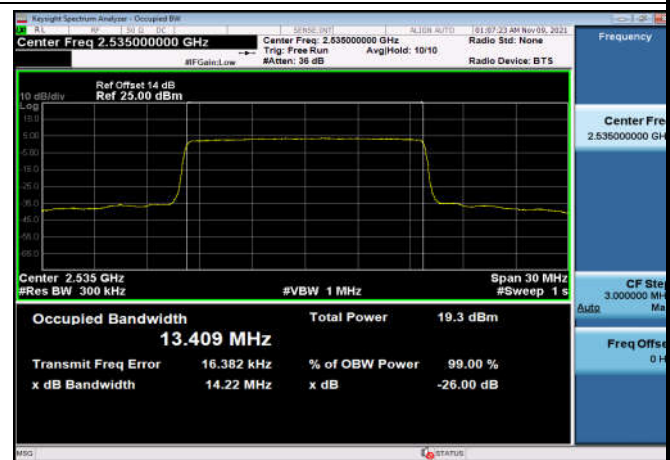




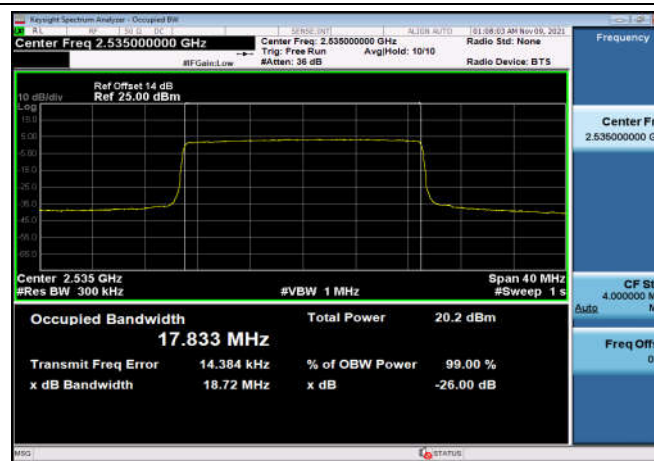
FDD07_MidRange_15MHz_2535MHz_QPSK



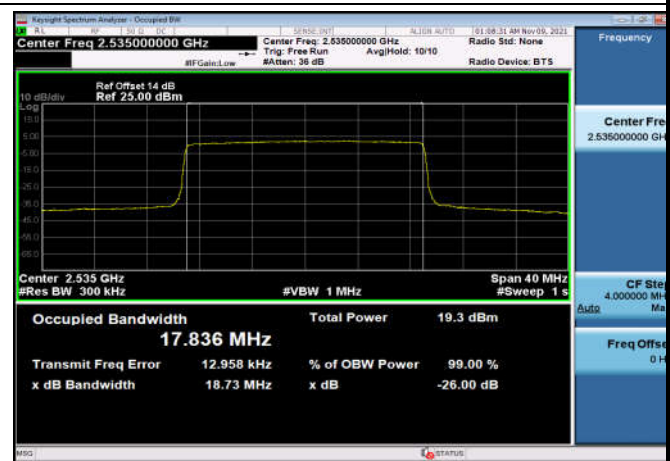
FDD07_MidRange_15MHz_2535MHz_Q16



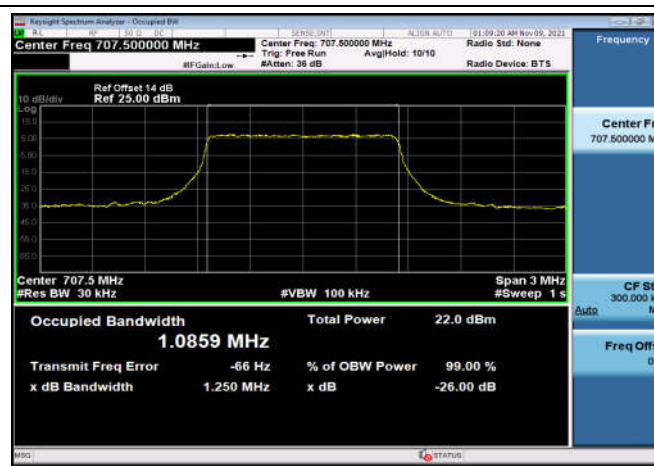
FDD07_MidRange_20MHz_2535MHz_QPSK



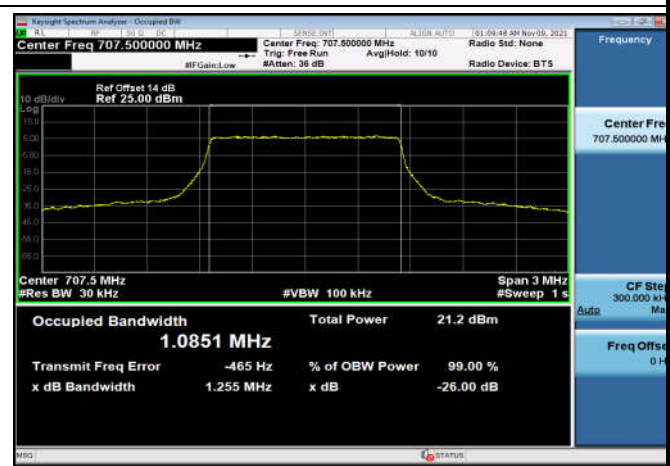
FDD07_MidRange_20MHz_2535MHz_Q16



FDD12_MidRange_1.4MHz_707.5MHz_QPSK

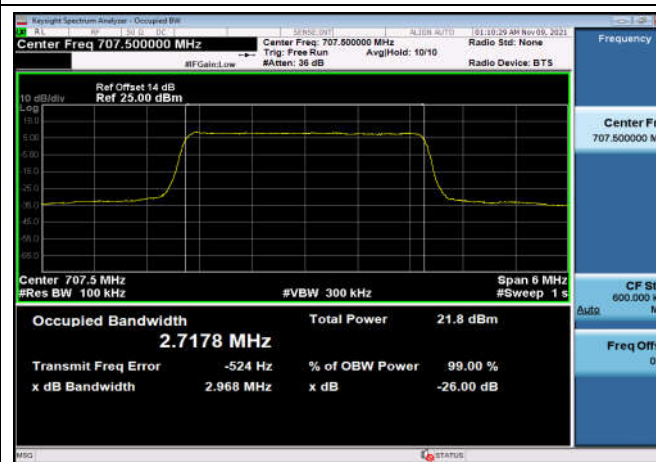


FDD12_MidRange_1.4MHz_707.5MHz_Q16

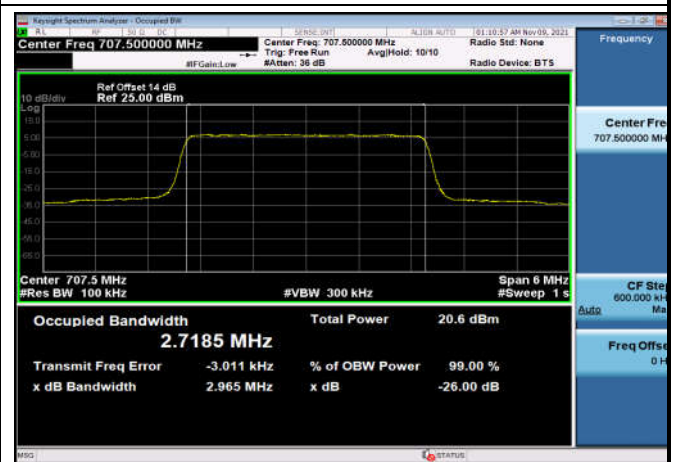




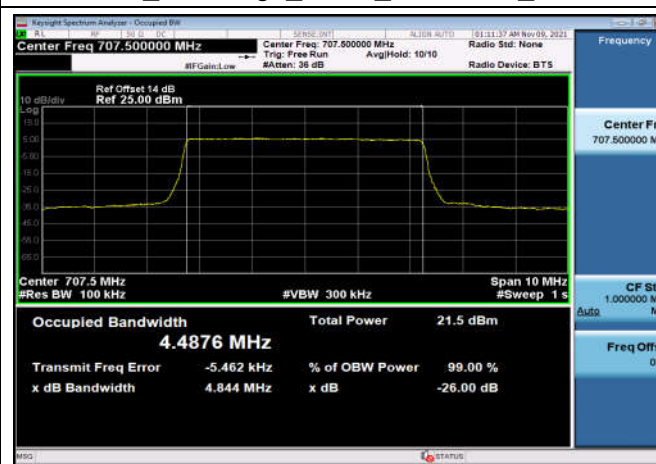
FDD12_MidRange_3MHz_707.5MHz_QPSK



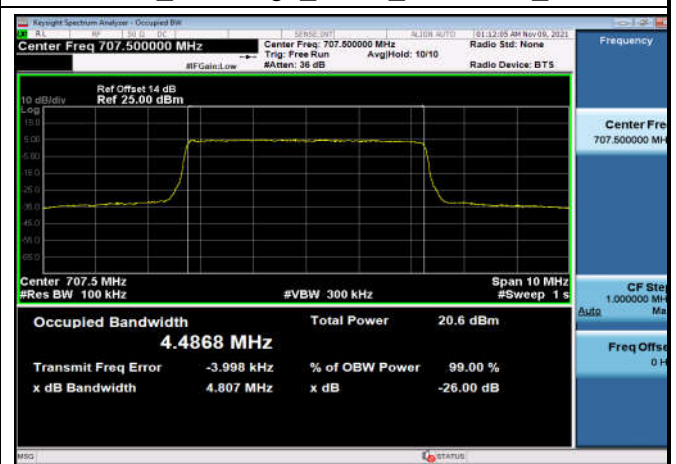
FDD12_MidRange_3MHz_707.5MHz_Q16



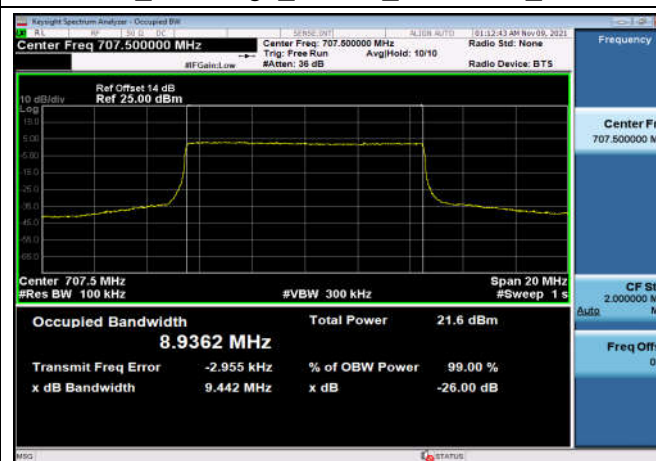
FDD12_MidRange_5MHz_707.5MHz_QPSK



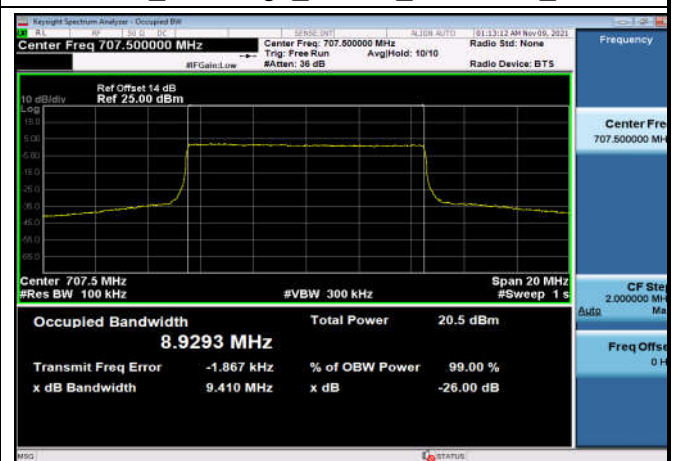
FDD12_MidRange_5MHz_707.5MHz_Q16



FDD12_MidRange_10MHz_707.5MHz_QPSK

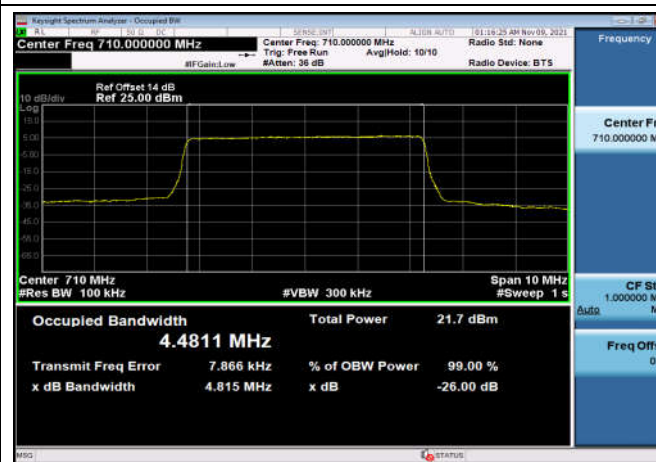


FDD12_MidRange_10MHz_707.5MHz_Q16

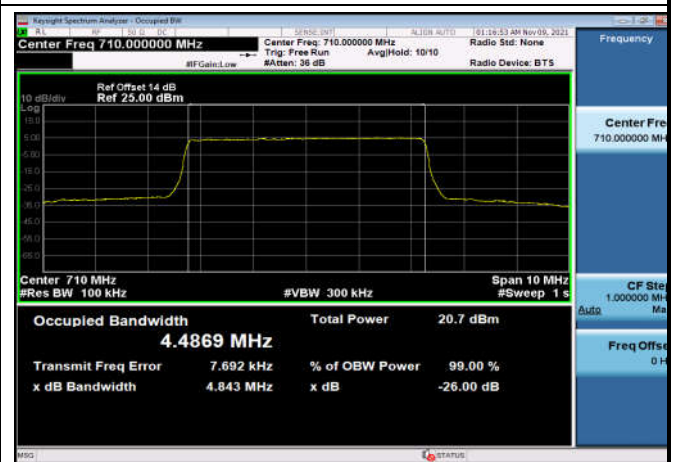




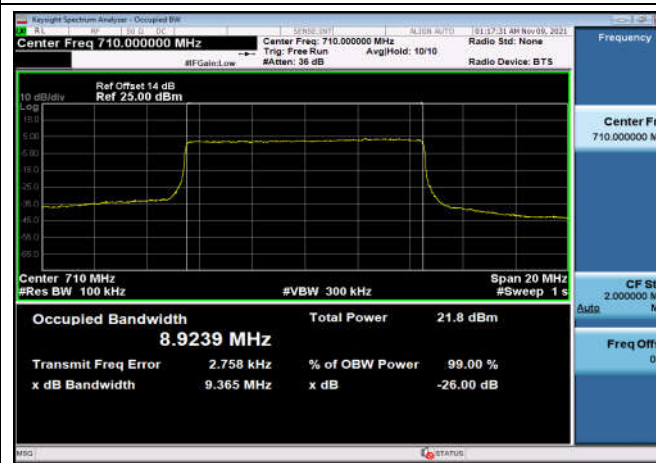
FDD17_MidRange_5MHz_710MHz_QPSK



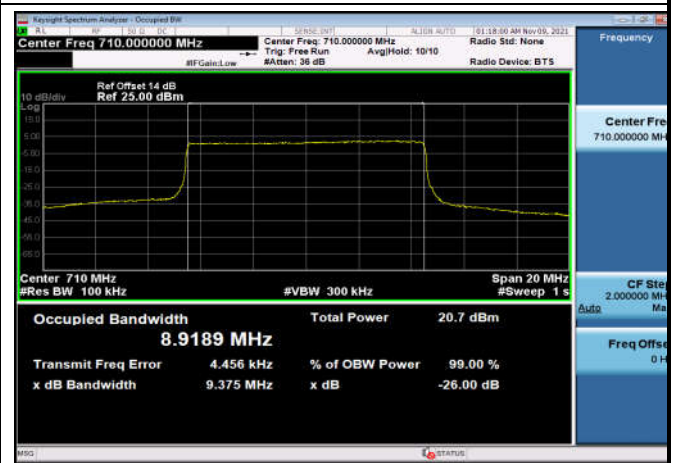
FDD17_MidRange_5MHz_710MHz_Q16



FDD17_MidRange_10MHz_710MHz_QPSK



FDD17_MidRange_10MHz_710MHz_Q16





Frequency Stability

Test Result and Data

Frequency Stability NormalTC_NormalVol									
Temperature	Voltage	Band	BandWidth (MHz)	RbMode	Modulation	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
Normal	Low	FDD02	10	fullRB	QPSK	-7.768	0.004	±2.5	Pass
Normal	Normal	FDD02	10	fullRB	QPSK	-9.127	0.005	±2.5	Pass
Normal	High	FDD02	10	fullRB	QPSK	-7.467	0.004	±2.5	Pass
50	Normal	FDD02	10	fullRB	QPSK	-8.097	0.004	±2.5	Pass
40	Normal	FDD02	10	fullRB	QPSK	-6.208	0.003	±2.5	Pass
30	Normal	FDD02	10	fullRB	QPSK	-5.965	0.003	±2.5	Pass
20	Normal	FDD02	10	fullRB	QPSK	-8.054	0.004	±2.5	Pass
10	Normal	FDD02	10	fullRB	QPSK	-5.250	0.003	±2.5	Pass
0	Normal	FDD02	10	fullRB	QPSK	-7.010	0.004	±2.5	Pass
-10	Normal	FDD02	10	fullRB	QPSK	-6.738	0.004	±2.5	Pass
-20	Normal	FDD02	10	fullRB	QPSK	-7.038	0.004	±2.5	Pass
-30	Normal	FDD02	10	fullRB	QPSK	-5.207	0.003	±2.5	Pass
Normal	Low	FDD04	10	fullRB	QPSK	3.905	0.002	±2.5	Pass
Normal	Normal	FDD04	10	fullRB	QPSK	-3.805	0.002	±2.5	Pass
Normal	High	FDD04	10	fullRB	QPSK	5.050	0.003	±2.5	Pass
50	Normal	FDD04	10	fullRB	QPSK	4.406	0.003	±2.5	Pass
40	Normal	FDD04	10	fullRB	QPSK	4.463	0.003	±2.5	Pass
30	Normal	FDD04	10	fullRB	QPSK	-4.706	0.003	±2.5	Pass
20	Normal	FDD04	10	fullRB	QPSK	-2.904	0.002	±2.5	Pass
10	Normal	FDD04	10	fullRB	QPSK	3.061	0.002	±2.5	Pass
0	Normal	FDD04	10	fullRB	QPSK	-2.761	0.002	±2.5	Pass
-10	Normal	FDD04	10	fullRB	QPSK	-3.834	0.002	±2.5	Pass
-20	Normal	FDD04	10	fullRB	QPSK	3.934	0.002	±2.5	Pass
-30	Normal	FDD04	10	fullRB	QPSK	3.247	0.002	±2.5	Pass
Normal	Low	FDD05	10	fullRB	QPSK	-3.333	0.004	±2.5	Pass
Normal	Normal	FDD05	10	fullRB	QPSK	-3.047	0.004	±2.5	Pass



Normal	High	FDD05	10	fullIRB	QPSK	-3.905	0.005	± 2.5	Pass
50	Normal	FDD05	10	fullIRB	QPSK	-3.018	0.004	± 2.5	Pass
40	Normal	FDD05	10	fullIRB	QPSK	-3.448	0.004	± 2.5	Pass
30	Normal	FDD05	10	fullIRB	QPSK	2.174	0.003	± 2.5	Pass
20	Normal	FDD05	10	fullIRB	QPSK	-2.990	0.004	± 2.5	Pass
10	Normal	FDD05	10	fullIRB	QPSK	-2.904	0.003	± 2.5	Pass
0	Normal	FDD05	10	fullIRB	QPSK	-4.277	0.005	± 2.5	Pass
-10	Normal	FDD05	10	fullIRB	QPSK	-2.661	0.003	± 2.5	Pass
-20	Normal	FDD05	10	fullIRB	QPSK	-3.004	0.004	± 2.5	Pass
-30	Normal	FDD05	10	fullIRB	QPSK	-2.604	0.003	± 2.5	Pass
Normal	Low	FDD07	10	fullIRB	QPSK	-6.967	0.003	± 2.5	Pass
Normal	Normal	FDD07	10	fullIRB	QPSK	-9.871	0.004	± 2.5	Pass
Normal	High	FDD07	10	fullIRB	QPSK	-7.181	0.003	± 2.5	Pass
50	Normal	FDD07	10	fullIRB	QPSK	-9.856	0.004	± 2.5	Pass
40	Normal	FDD07	10	fullIRB	QPSK	-7.010	0.003	± 2.5	Pass
30	Normal	FDD07	10	fullIRB	QPSK	-8.039	0.003	± 2.5	Pass
20	Normal	FDD07	10	fullIRB	QPSK	-6.008	0.002	± 2.5	Pass
10	Normal	FDD07	10	fullIRB	QPSK	-6.766	0.003	± 2.5	Pass
0	Normal	FDD07	10	fullIRB	QPSK	-7.067	0.003	± 2.5	Pass
-10	Normal	FDD07	10	fullIRB	QPSK	-9.027	0.004	± 2.5	Pass
-20	Normal	FDD07	10	fullIRB	QPSK	-8.898	0.004	± 2.5	Pass
-30	Normal	FDD07	10	fullIRB	QPSK	-9.227	0.004	± 2.5	Pass
Normal	Low	FDD12	10	fullIRB	QPSK	-2.460	0.003	± 2.5	Pass
Normal	Normal	FDD12	10	fullIRB	QPSK	-3.533	0.005	± 2.5	Pass
Normal	High	FDD12	10	fullIRB	QPSK	1.788	0.003	± 2.5	Pass
50	Normal	FDD12	10	fullIRB	QPSK	2.489	0.004	± 2.5	Pass
40	Normal	FDD12	10	fullIRB	QPSK	-2.990	0.004	± 2.5	Pass
30	Normal	FDD12	10	fullIRB	QPSK	1.717	0.002	± 2.5	Pass
20	Normal	FDD12	10	fullIRB	QPSK	-2.232	0.003	± 2.5	Pass
10	Normal	FDD12	10	fullIRB	QPSK	2.317	0.003	± 2.5	Pass
0	Normal	FDD12	10	fullIRB	QPSK	-2.232	0.003	± 2.5	Pass
-10	Normal	FDD12	10	fullIRB	QPSK	-2.303	0.003	± 2.5	Pass



-20	Normal	FDD12	10	fullRB	QPSK	-1.888	0.003	± 2.5	Pass
-30	Normal	FDD12	10	fullRB	QPSK	1.960	0.003	± 2.5	Pass
Normal	Low	FDD17	10	fullRB	QPSK	-3.605	0.005	± 2.5	Pass
Normal	Normal	FDD17	10	fullRB	QPSK	-2.704	0.004	± 2.5	Pass
Normal	High	FDD17	10	fullRB	QPSK	-2.475	0.003	± 2.5	Pass
50	Normal	FDD17	10	fullRB	QPSK	-1.602	0.002	± 2.5	Pass
40	Normal	FDD17	10	fullRB	QPSK	-1.960	0.003	± 2.5	Pass
30	Normal	FDD17	10	fullRB	QPSK	-1.688	0.002	± 2.5	Pass
20	Normal	FDD17	10	fullRB	QPSK	-2.160	0.003	± 2.5	Pass
10	Normal	FDD17	10	fullRB	QPSK	-3.090	0.004	± 2.5	Pass
0	Normal	FDD17	10	fullRB	QPSK	-2.732	0.004	± 2.5	Pass
-10	Normal	FDD17	10	fullRB	QPSK	-2.003	0.003	± 2.5	Pass
-20	Normal	FDD17	10	fullRB	QPSK	1.316	0.002	± 2.5	Pass
-30	Normal	FDD17	10	fullRB	QPSK	-1.588	0.002	± 2.5	Pass

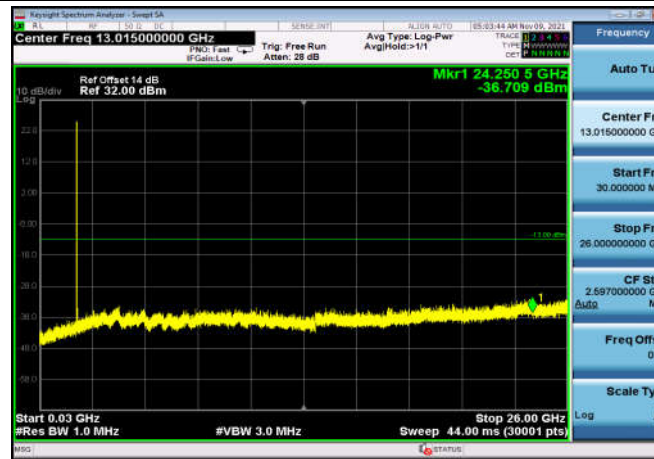
Note:

1. Normal Voltage = 12.0V, Low Voltage = 10.2V, High Voltage = 13.8V,
Normal Temperature = 25 °C.
2. Judge based on the measured frequency error result, the fundamental wave emission of
Band 2/4/7/12/17 is kept within the authorized frequency band.

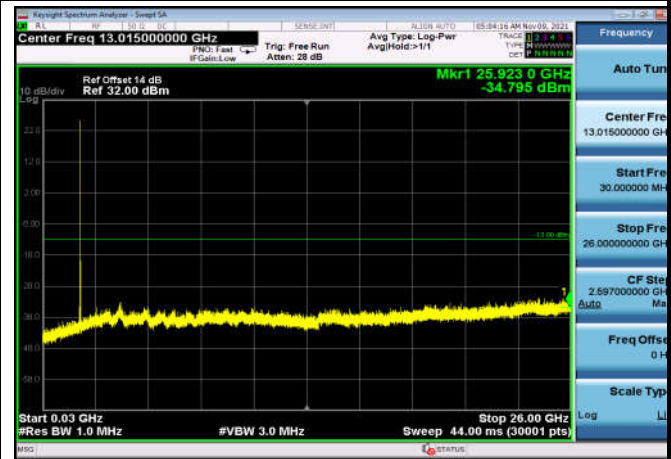


Conducted Out of Band Emissions

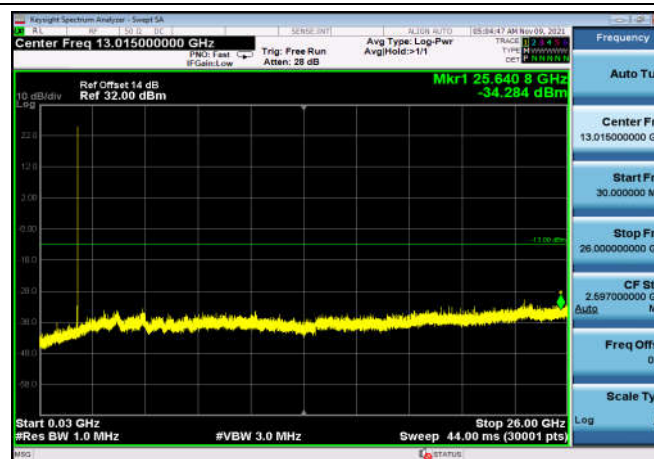
FDD02_LowRange_20MHz_30MHz~26GHz



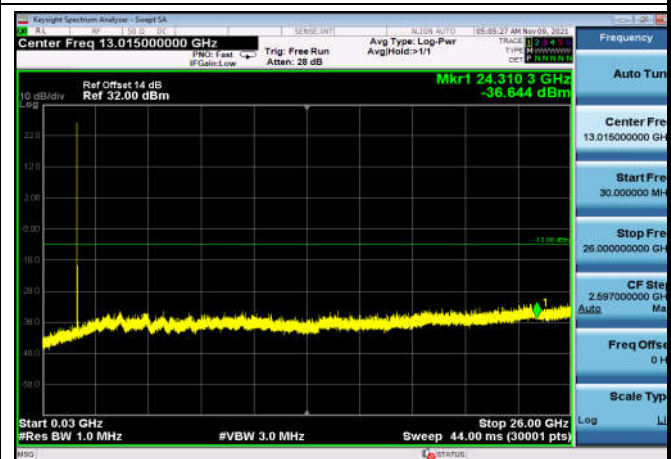
FDD02_MidRange_20MHz_30MHz~26GHz



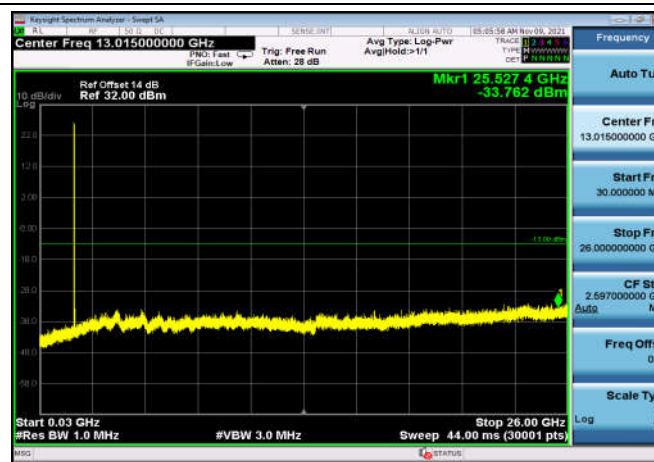
FDD02_HighRange_20MHz_30MHz~26GHz



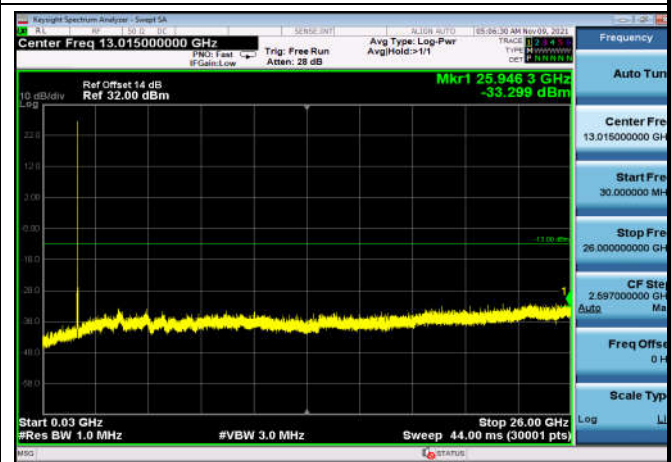
FDD04_LowRange_20MHz_30MHz~26GHz



FDD04_MidRange_20MHz_30MHz~26GHz

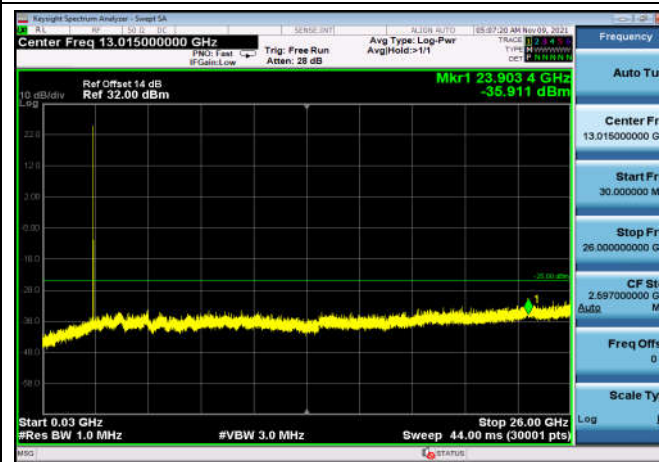


FDD04_HighRange_20MHz_30MHz~26GHz

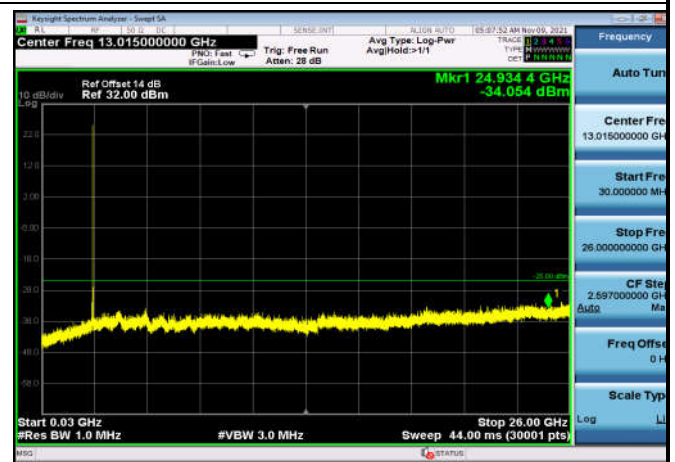




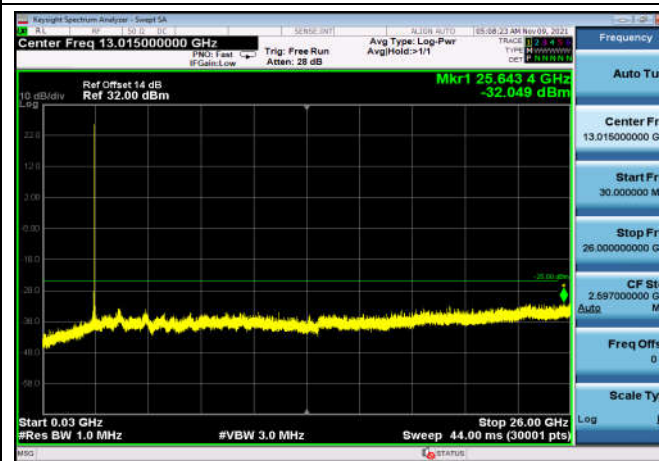
FDD07_LowRange_20MHz_30MHz~26GHz



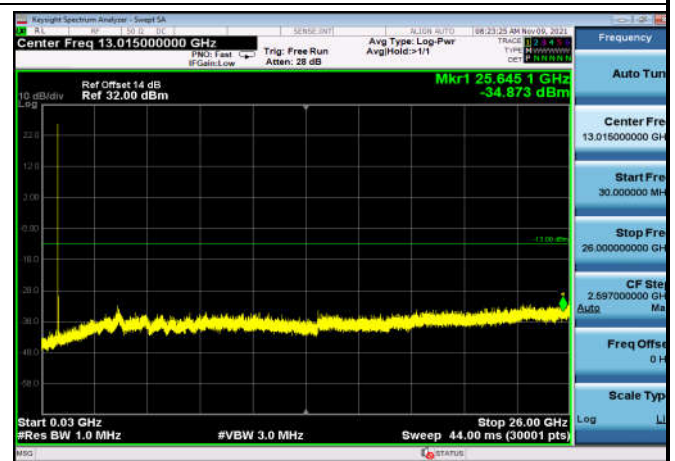
FDD07_MidRange_20MHz_30MHz~26GHz



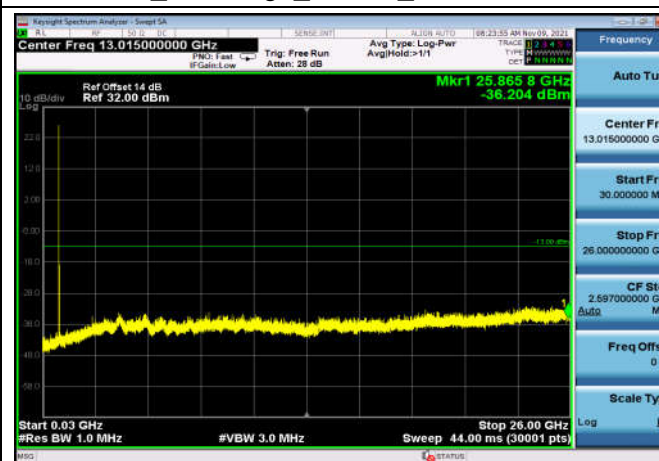
FDD07_HighRange_20MHz_30MHz~26GHz



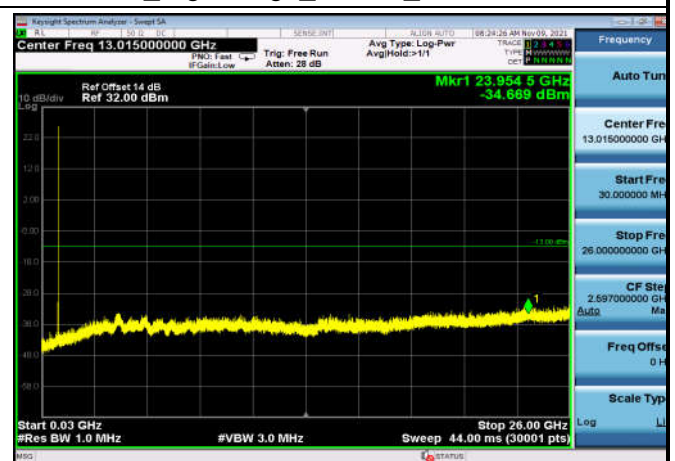
FDD05_LowRange_10MHz_30MHz~26GHz



FDD05_MidRange_10MHz_30MHz~26GHz

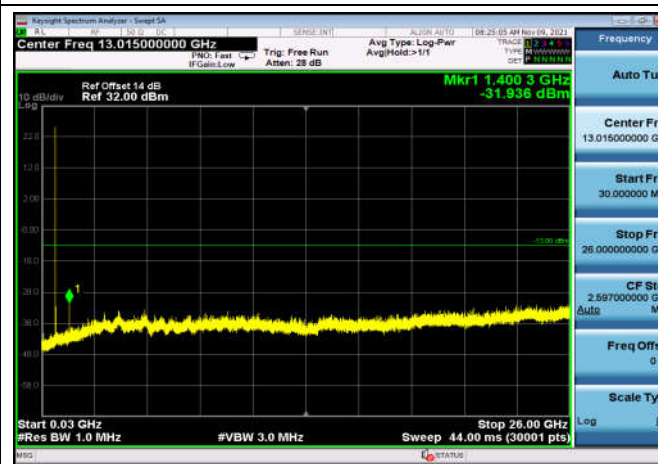


FDD05_HighRange_10MHz_30MHz~26GHz

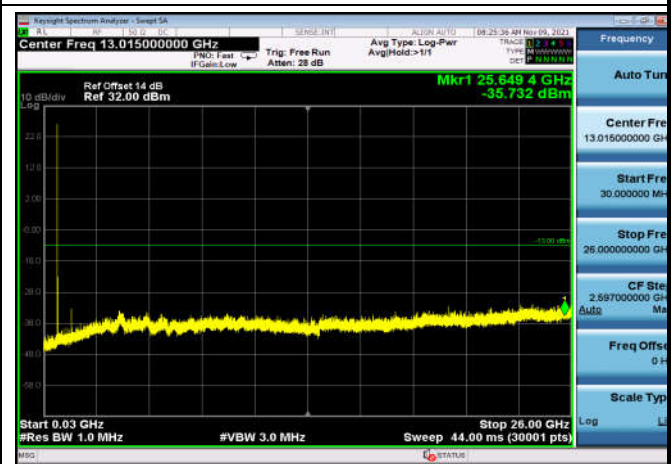




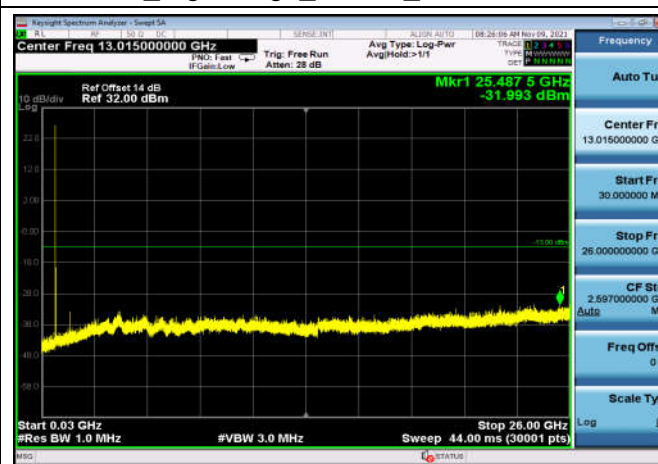
FDD12_LowRange_10MHz_30MHz~26GHz



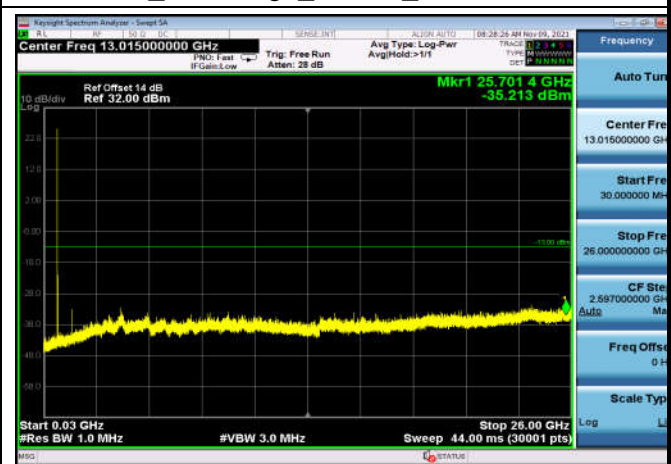
FDD12_MidRange_10MHz_30MHz~26GHz



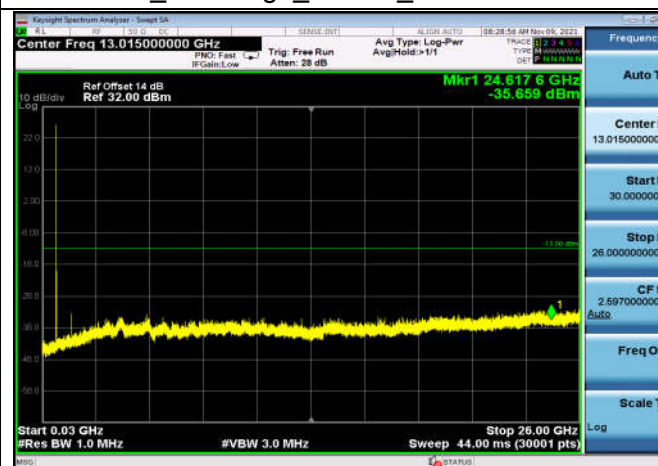
FDD12_HighRange_10MHz_30MHz~26GHz



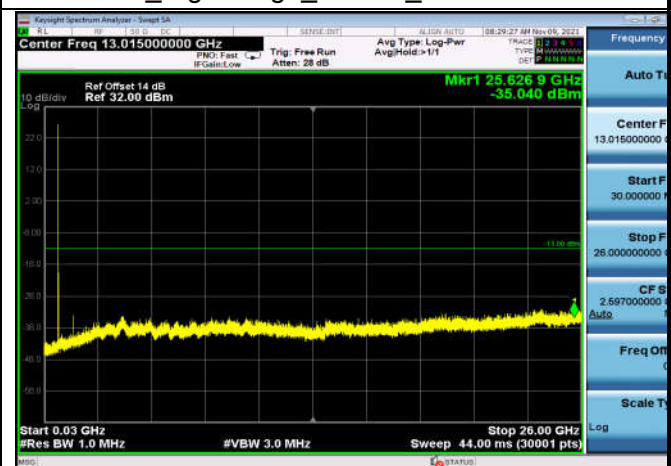
FDD17_LowRange_10MHz_30MHz~26GHz



FDD17_MidRange_10MHz_30MHz~26GHz



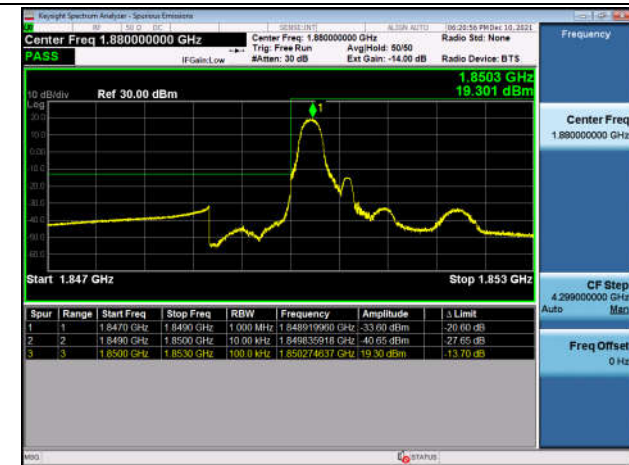
FDD17_HighRange_10MHz_30MHz~26GHz



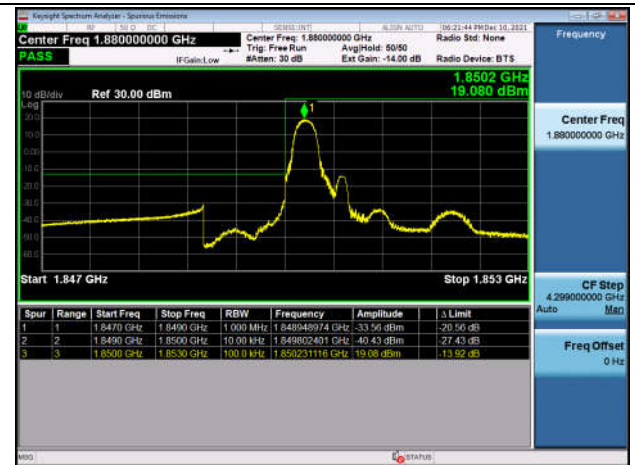


Conducted Band Edge

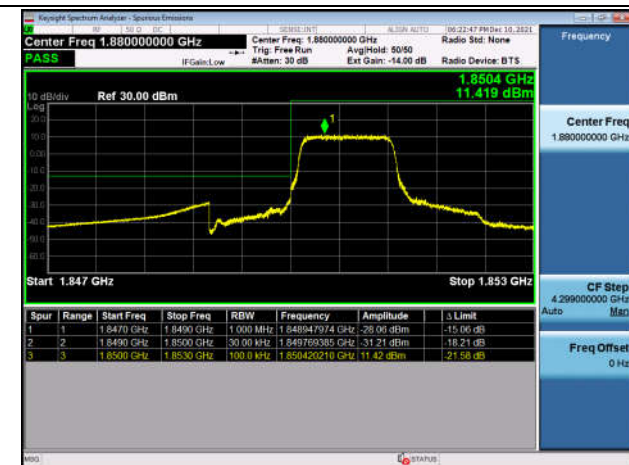
LowRange_FDD02_1.4MHz_1850.7_OneRB
_low_QPSK



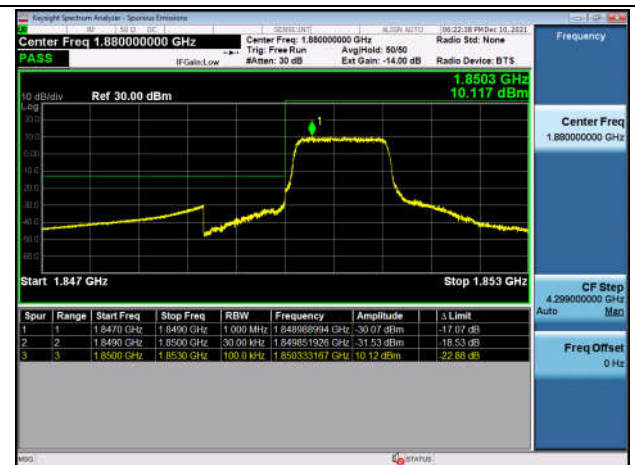
LowRange_FDD02_1.4MHz_1850.7_OneRB
_low_Q16



LowRange_FDD02_1.4MHz_1850.7_fullRB
_Low_QPSK



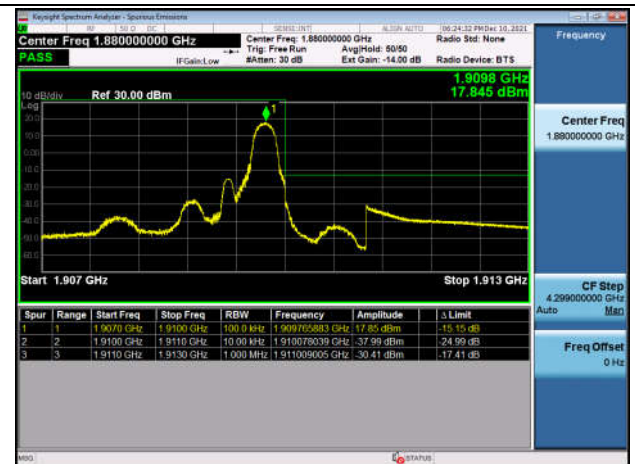
LowRange_FDD02_1.4MHz_1850.7_fullRB
_Low_Q16

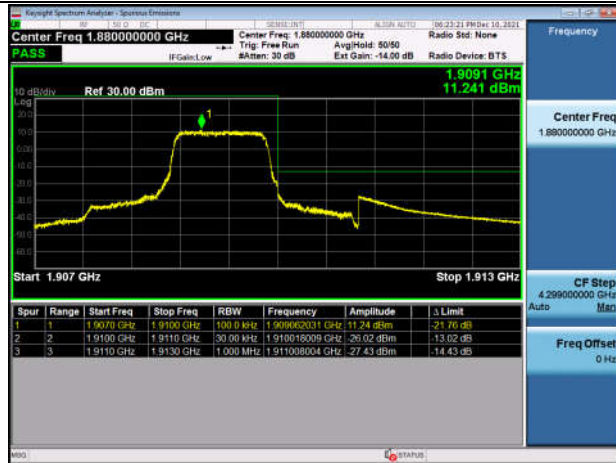
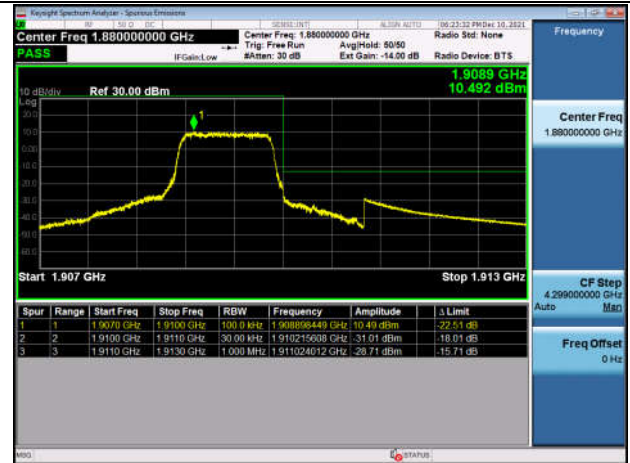
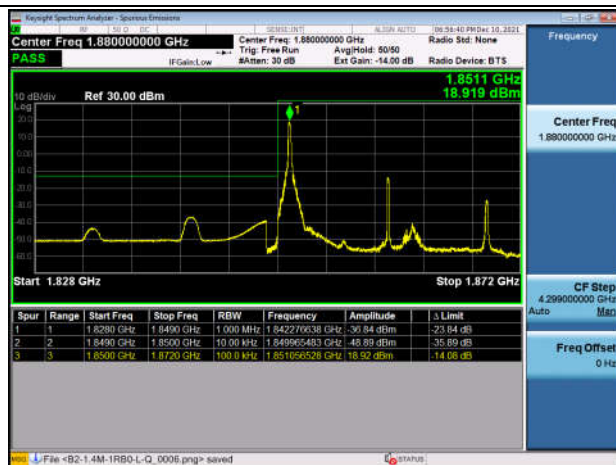
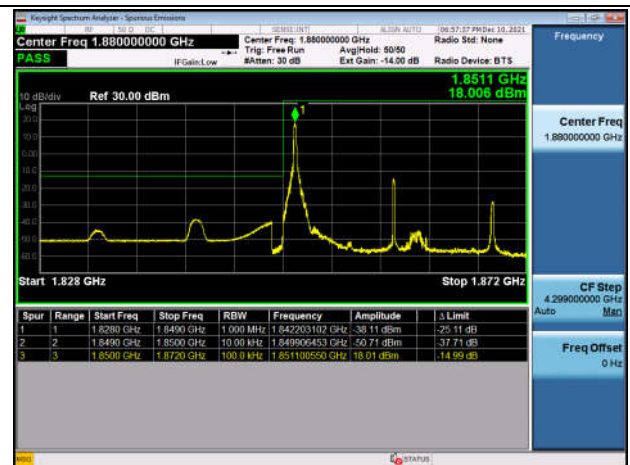
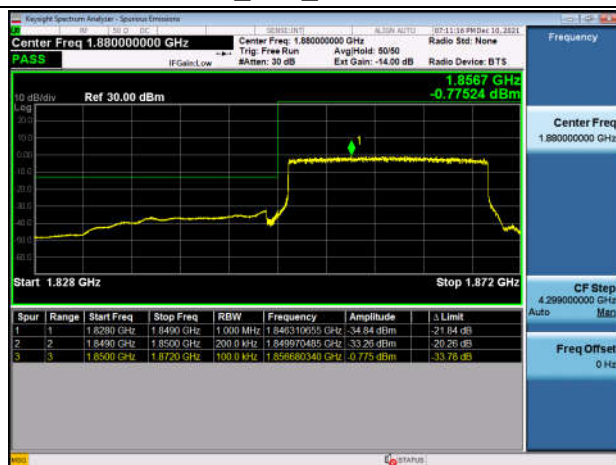


HighRange_FDD02_1.4MHz_1909.3_OneRB
_high_QPSK



HighRange_FDD02_1.4MHz_1909.3_OneRB
_high_Q16



HighRange_FDD02_1.4MHz_1909.3
_fullRB_High_QPSKHighRange_FDD02_1.4MHz_1909.3
_fullRB_High_Q16LowRange_FDD02_20MHz_1860_OneRB
_Low_QPSKLowRange_FDD02_20MHz_1860_OneRB
_Low_Q16LowRange_FDD02_20MHz_1860_fullRB
_Low_QPSKLowRange_FDD02_20MHz_1860_fullRB
_Low_Q16