RF TEST REPORT

Report No.: SET2020-10139

Product: Harman SmartAuto TAG2.0

FCC ID: 2AHPN-HSA-20UT-AA

Model No.: HSA-20UT-AA

Applicant: Harman International Industries Incorporated

Address: 30001, Cabot Drive, Novi, MI 48377, USA.

Dates of Testing: 08/11/2020 —09/02/2020

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 .....: Harman SmartAuto TAG2.0

Brand Name.....: Harman

Trade Name .....: Harman

Applicant .....: Harman International Industries Incorporated

Applicant Address .....: 30001, Cabot Drive, Novi, MI 48377, USA.

Manufacturer .....: Harman International Industries Incorporated

Manufacturer Address.....: 30001, Cabot Drive, Novi, MI 48377, USA.

Test Standards .....: 47 CFR Part 2/22/24/27/90

Test Result……: PASS

Tested by ……: Vincent 2020.09.02

Vincent, Test Engineer

Reviewed by……: Chris You 2020.09.02

Chris You, Senior Engineer

Approved by……: Shuangwen Zhang 2020.09.02

Shuangwen Zhang，Manager

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Change History		
Issue	Date	Reason for change
1.0	2020.09.02	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type	OBD II Telematics Device
EUT supports Radios application	LTE Band 2/4/5/12/25/26/66
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 12: 699.7MHz~715.3MHz LTE Band 25: 1850.7MHz~1914.3MHz LTE Band 26: 814.7MHz~848.3MHz LTE Band 66: 1710.7MHz~1779.3MHz
Maximum Output Power to Antenna	LTE Band 2: 23..49dBm LTE Band 4: 24.38dBm LTE Band 5: 23.66dBm LTE Band 12: 23.86dBm LTE Band 25: 23.77dBm LTE Band 26: 23.88dBm LTE Band 66: 23.40dBm
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 12: 1.4MHz/3MHz/5MHz/10MHz LTE Band 25: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 26: 1.4MHz/3MHz/5MHz/10MHz/15MHz LTE Band 66: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
Modulation Type	QPSK/16QAM/64QAM(downlink only)
Antenna Type	Internal Antenna
Power supply	DC 12V/24V

1.2 Maximum ERP/EIRP Power, 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	—	0.225
LTE Band 2	16QAM	1.4	1M09W7D	—	0.185
LTE Band 2	QPSK	3	2M68G7D	—	0.217
LTE Band 2	16QAM	3	2M68W7D	—	0.173
LTE Band 2	QPSK	5	4M49G7D	—	0.173
LTE Band 2	16QAM	5	4M49W7D	—	0.141
LTE Band 2	QPSK	10	8M91G7D	0.005	0.174
LTE Band 2	16QAM	10	8M91W7D	—	0.137
LTE Band 2	QPSK	15	13M4G7D	—	0.173
LTE Band 2	16QAM	15	13M4W7D	—	0.141
LTE Band 2	QPSK	20	17M8G7D	—	0.222
LTE Band 2	16QAM	20	17M8W7D	—	0.178
LTE Band 4	QPSK	1.4	1M09G7D	—	0.262
LTE Band 4	16QAM	1.4	1M09W7D	—	0.214
LTE Band 4	QPSK	3	2M68G7D	—	0.266
LTE Band 4	16QAM	3	2M68W7D	—	0.213
LTE Band 4	QPSK	5	4M49G7D	—	0.263
LTE Band 4	16QAM	5	4M49W7D	—	0.169
LTE Band 4	QPSK	10	8M92G7D	0.005	0.213
LTE Band 4	16QAM	10	8M91W7D	—	0.177
LTE Band 4	QPSK	15	13M4G7D	—	0.169
LTE Band 4	16QAM	15	13M4W7D	—	0.132
LTE Band 4	QPSK	20	17M8G7D	—	0.259
LTE Band 4	16QAM	20	17M8W7D	—	0.217

LTE Band 5	QPSK	1.4	1M09G7D	—	0.215
LTE Band 5	16QAM	1.4	1M09W7D	—	0.170
LTE Band 5	QPSK	3	2M68G7D	—	0.207
LTE Band 5	16QAM	3	2M68W7D	—	0.196
LTE Band 5	QPSK	5	4M49G7D	—	0.210
LTE Band 5	16QAM	5	4M49W7D	—	0.169
LTE Band 5	QPSK	10	8M90G7D	0.005	0.213
LTE Band 5	16QAM	10	8M91W7D	—	0.177
LTE Band 12	QPSK	1.4	1M09G7D	—	0.234
LTE Band 12	16QAM	1.4	1M09W7D	—	0.184
LTE Band 12	QPSK	3	2M68G7D	—	0.233
LTE Band 12	16QAM	3	2M68W7D	—	0.185
LTE Band 12	QPSK	5	4M49G7D	—	0.232
LTE Band 12	16QAM	5	4M49W7D	—	0.172
LTE Band 12	QPSK	10	8M93G7D	0.004	0.174
LTE Band 12	16QAM	10	8M93W7D	—	0.143
LTE Band 25	QPSK	1.4	1M09G7D	—	0.228
LTE Band 25	16QAM	1.4	1M09W7D	—	0.194
LTE Band 25	QPSK	3	2M68G7D	—	0.233
LTE Band 25	16QAM	3	2M68W7D	—	0.184
LTE Band 25	QPSK	5	4M49G7D	—	0.196
LTE Band 25	16QAM	5	4M49W7D	—	0.193
LTE Band 25	QPSK	10	8M92G7D	0.005	0.186
LTE Band 25	16QAM	10	8M91W7D	—	0.148
LTE Band 25	QPSK	15	13M4G7D	—	0.185
LTE Band 25	16QAM	15	13M4W7D	—	0.143
LTE Band 25	QPSK	20	17M8G7D	—	0.225
LTE Band 25	16QAM	20	17M8W7D	—	0.180
LTE Band 26	QPSK	1.4	1M09G7D	—	0.222

LTE Band 26	16QAM	1.4	1M09W7D	—	0.186
LTE Band 26	QPSK	3	2M68G7D	—	0.226
LTE Band 26	16QAM	3	2M68W7D	—	0.199
LTE Band 26	QPSK	5	4M49G7D	—	0.242
LTE Band 26	16QAM	5	4M49W7D	—	0.194
LTE Band 26	QPSK	10	8M92G7D	0.005	0.219
LTE Band 26	16QAM	10	8M92W7D	—	0.175
LTE Band 26	QPSK	15	13M4G7D	—	0.223
LTE Band 26	16QAM	15	13M5W7D	—	0.177
LTE Band 66	QPSK	1.4	1M09G7D	—	0.222
LTE Band 66	16QAM	1.4	1M09W7D	—	0.167
LTE Band 66	QPSK	3	2M68G7D	—	0.214
LTE Band 66	16QAM	3	2M68W7D	—	0.185
LTE Band 66	QPSK	5	4M49G7D	—	0.245
LTE Band 66	16QAM	5	4M49W7D	—	0.190
LTE Band 66	QPSK	10	8M91G7D	0.005	0.237
LTE Band 66	16QAM	10	8M91W7D	—	0.189
LTE Band 66	QPSK	15	13M4G7D	—	0.238
LTE Band 66	16QAM	15	13M4W7D	—	0.190
LTE Band 66	QPSK	20	17M8G7D	—	0.231
LTE Band 66	16QAM	20	17M8W7D	—	0.162

1.3 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR for the EUT FCC ID Certification:

1. 47 CFR Part 2/22/24/27/90
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)	Peak to Average Radio	＜13dB	PASS
3	§22.913(a)(2)	Effective Radiated Power (Band 5/26)	ERP < 7 Watt	PASS
	§24.232(c) §27.50(h)(2) §27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 2/25)	EIRP < 2Watt	PASS
	§27.50(c)(10)	Effective Radiated Power (Band 12)	ERP < 3 Watt	PASS
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1Watt	PASS
4	2.1049	Occupied Bandwidth	Reporting Only	PASS
5	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §90.691 2.1051	Conducted Band Edge Measurement (Band 2/4/5/12/25/26/66)	＜43+10log10(P[watt])	PASS

6	2.1051 §22.917(a) 24.238(a) 27.53(g) 27.53(h) §90.691	Conducted Spurious Emission Measurement (Band 2/4/5/12/25/26/66)	＜43+10log10(P[watt])	PASS
7	2.1053 §22.917(a) 24.238(a) 27.53(g) 27.53(h) §90.691	Radiated Spurious Emission (Band 2/4/5/12/25/26/66)	＜43+10log10(P[watt])	PASS
8	2.1055 22.335 24.235 27.54 90.539	Frequency Stability	＜2.5ppm	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	√	√	√	√			√	√	√	√	√	√	√	√
	12	√	√	√	√			√	√	√	√	√	√	√	√
	25	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	26	√	√	√	√	√		√	√	√	√	√	√	√	√
	66	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Peak-to-Average Ratio	2				√				√	√		√	√	√	√
	4				√				√	√		√	√	√	√
	5								√	√		√	√	√	√
	12								√	√		√	√	√	√
	25				√				√	√		√	√	√	√
	26								√	√		√	√	√	√
	66				√				√	√		√	√	√	√
26dB and 99% Bandwidth	2	√	√	√	√	√	√	√	√			√		√	
	4	√	√	√	√	√	√	√	√			√		√	
	5	√	√	√	√			√	√			√		√	
	12	√	√	√	√			√	√			√		√	
	25	√	√	√	√	√	√	√	√			√		√	
	26	√	√	√	√	√		√	√			√		√	
	66	√	√	√	√	√	√	√	√			√		√	
Conducted Band Edge	2	√	√	√	√	√	√	√	√	√		√	√		√
	4	√	√	√	√	√	√	√	√	√		√	√		√
	5	√	√	√	√			√	√	√		√	√		√
	12	√	√	√	√			√	√	√		√	√		√
	25	√	√	√	√	√	√	√	√	√		√	√		√
	26	√	√	√	√	√		√	√	√		√	√		√
	66	√	√	√	√	√	√	√	√	√		√	√		√
Conducted Spurious Emission	2	√	√	√	√	√	√	√	√	√			√	√	√
	4	√	√	√	√	√	√	√	√	√			√	√	√

	5	√	√	√	√			√	√	√			√	√	√
	12	√	√	√	√			√	√	√			√	√	√
	25	√	√	√	√	√	√	√	√	√			√	√	√
	26	√	√	√	√	√		√	√	√			√	√	√
	66	√	√	√	√	√	√	√	√	√			√	√	√
Frequency Stability	2				√			√				√		√	
	4				√			√				√		√	
	5				√			√				√		√	
	12				√			√				√		√	
	25				√			√				√		√	
	26				√			√				√		√	
	66				√			√				√		√	
ERP/EIRP	2	√	√	√	√	√	√	√	√	√			√	√	√
	4	√	√	√	√	√	√	√	√	√			√	√	√
	5	√	√	√	√			√	√	√			√	√	√
	12	√	√	√	√			√	√	√			√	√	√
	25	√	√	√	√	√	√	√	√	√			√	√	√
	26	√	√	√	√	√		√	√	√			√	√	√
	66	√	√	√	√	√	√	√	√	√			√	√	√
Radiated Spurious Emission	2	Worst case												√	
	4	Worst case												√	
	5	Worst case												√	
	12	Worst case												√	
	25	Worst case												√	
	26	Worst case												√	
	66	Worst case												√	

Note:1. The mark " √ " means that this configuration is chosen for testing.

2.The EUT has two WWAN antennas , upper antenna and primary antenna. The antenna which has the maximum power were used for all the tests.

3.For ERP/EIRP, all the antennas (upper antenna and primary antenna) have been tested, the worst data reported only.

4. LTE Band26 transmit frequency for part22 rule is 824MHz-849MHz, for part90 rule is 814MHz-824MHz, ERP over 15MHz bandwidth complies the ERP limit line of part 22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also conplied

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 + attenuator factor.
Following shows an offset computation example with cable loss 7dB and 10dB attenuator.

Example:

Offset (dB) = RF cable loss(dB) + attenuator factor(dB).
= 7 + 10 = 17 (dB)

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.: CN5031

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: CN5031, valid time is until Dec. 31, 2020.

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 Dec. 31, 2020.

NVLAP Lab Code: 201008-0

CCIC-SET is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.

1.6.2 Test Environment Conditions

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

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

2. 47 CFR PART 2 REQUIREMENTS

2.1 Conducted RF Output Power

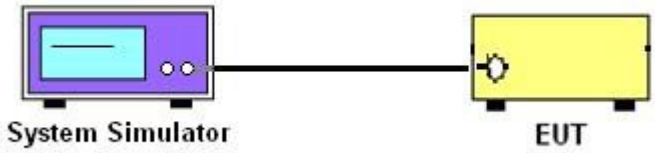
2.1.1 Requirement

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).

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 Radio

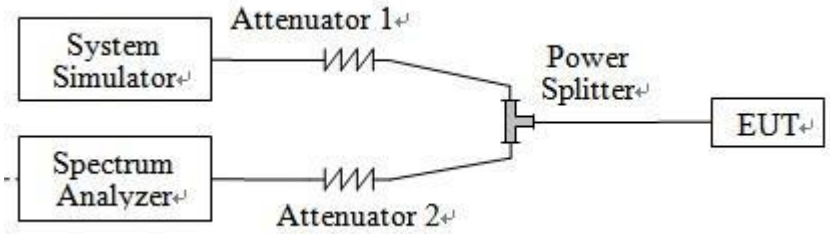
2.2.1 Definition

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.

2.2.5 Test Results of Peak-to-Average Ratio

Please refer to Appendix A for detail

2.3 99% Occupied Bandwidth and 26dB Bandwidth

2.3.1 Definition

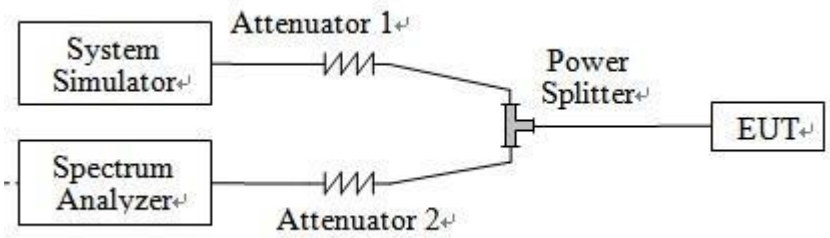
According to FCC section 2.1049, the occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

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 and 99% occupied bandwidth (BW) 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 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 ±0.00025% (±2.5ppm) of the center frequency. According to FCC section 2.1055, the test conditions are:

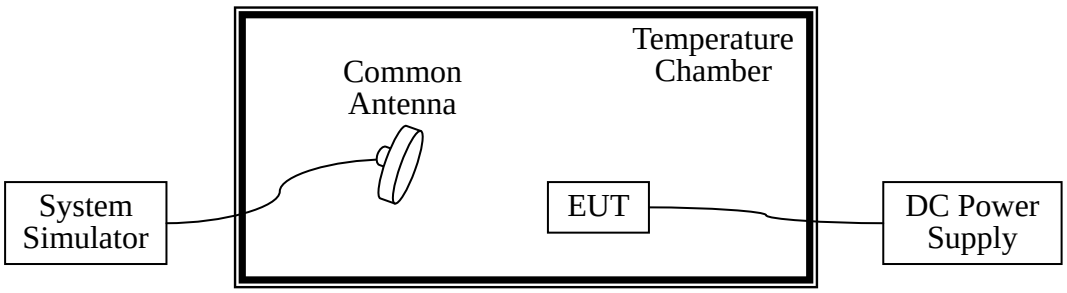
(a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.

(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. The variation in frequency was measured for the worst case.

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

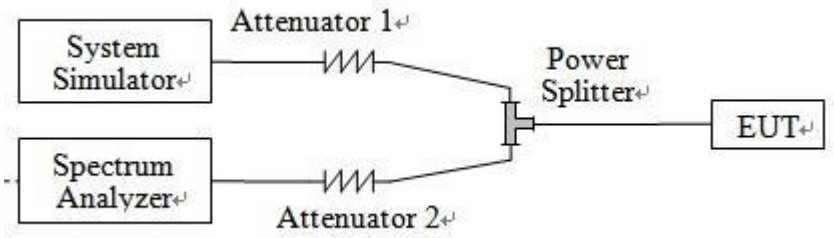
The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

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. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

   = -13dBm.

8. 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.

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 + 10log10 (P [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 – 1755 MHz band, the FCC limit is 43 + 10log10(P[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.

27.53(g)

For operations in the 698 – 746 MHz band, the FCC limit is 43 + 10log10(P[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.

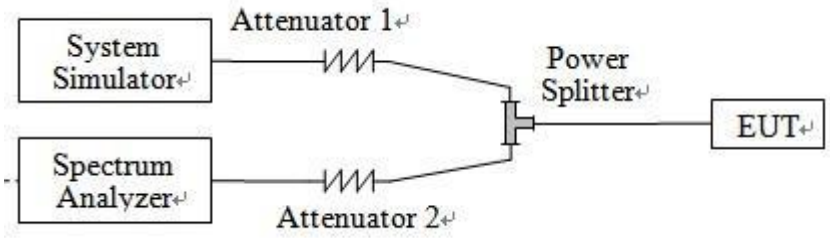
90.691(a)(2)

For any frequency removed from assigned frequency by out of the authorized bandwidth by at least 43 + 10Log(P)dB, it is measured by means of a calibrated spectrum analyzer and scaned from 30MHz up to a frequency including its 10th harmonic.

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 >= 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.
   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
9. For LTE Band 7 the other 40 dB, and 55 dB have additionally applied same calculation above.

2.6.5 Test Result of Conducted Band Edge

Please refer to Appendix A for detail

2.7 Transmitter Radiated Power (EIRP/ERP)

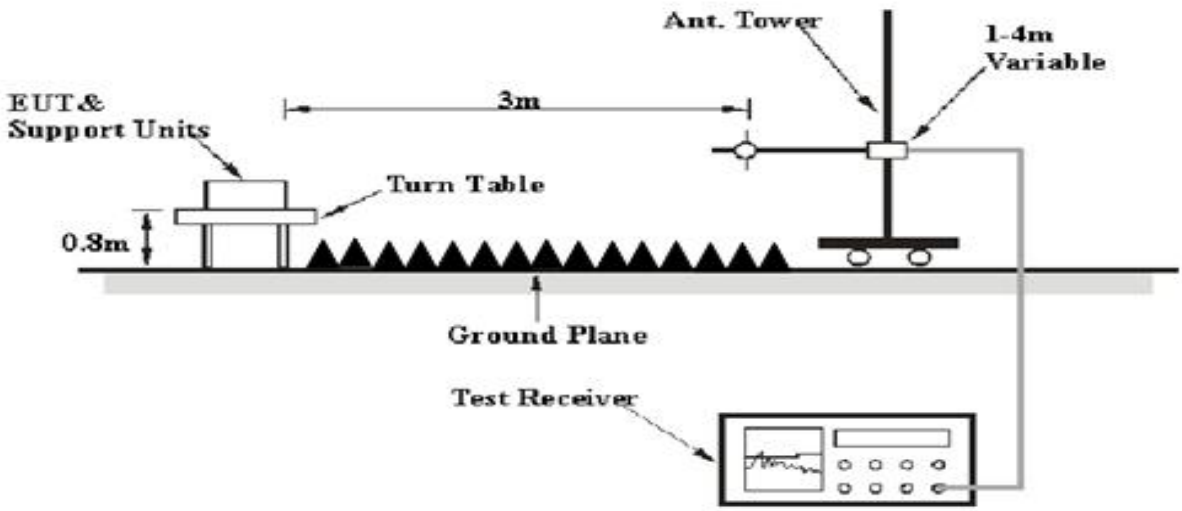
2.7.1 Requirement

Effective radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-D-2010, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v03r01. Mobile and portable (hand-held) stations operating are limited to average ERP of 7 watts with LTE band 5/26 and 3 watts with LTE band 12.
Equivalent isotropic radiated power output measurements by substitution method according to ANSI / TIA / EIA-603-D-2010, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v03r01. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 2/25 and 1 watt with LTE band 4 and 66.

2.7.2 Measuring Instruments

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

2.7.3 Test Setup



2.7.4 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer which used a channel power option across EUT's signal bandwidth per section 4.0 of KDB 971168 D01v03r01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs

    Ps (dBm)：Input power to substitution antenna.

    Gs (dBi or dBd)：Substitution antenna Gain.

    Et = Rt + AF

    Es = Rs + AF

    AF (dB/m)：Receive antenna factor

    Rt：The highest received signal in spectrum analyzer for EUT.

    Rs：The highest received signal in spectrum analyzer for substitution antenna.

2.7.5 Test Result of ERP/EIRP

1. LTE Band 2 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
2	1.4	QPSK	1	3	1850.7	23.52	PASS
2	1.4	QPSK	1	3	1880	23.47	PASS
2	1.4	QPSK	1	3	1909.3	23.49	PASS
2	1.4	16QAM	1	0	1850.7	22.57	PASS
2	1.4	16QAM	1	0	1880	22.67	PASS
2	1.4	16QAM	1	0	1909.3	22.56	PASS
2	3	QPSK	1	8	1851.5	23.35	PASS
2	3	QPSK	1	8	1880	23.36	PASS
2	3	QPSK	1	8	1908.5	23.24	PASS
2	3	16QAM	1	0	1851.5	22.36	PASS
2	3	16QAM	1	0	1880	22.31	PASS
2	3	16QAM	1	0	1908.5	22.37	PASS
2	5	QPSK	1	0	1852.5	22.37	PASS
2	5	QPSK	1	0	1880	22.31	PASS
2	5	QPSK	1	0	1907.5	22.34	PASS
2	5	16QAM	1	24	1852.5	21.45	PASS
2	5	16QAM	1	24	1880	21.36	PASS
2	5	16QAM	1	24	1907.5	21.48	PASS
2	10	QPSK	1	49	1855	22.36	PASS
2	10	QPSK	1	49	1880	22.33	PASS
2	10	QPSK	1	49	1905	22.41	PASS
2	10	16QAM	1	0	1855	21.32	PASS
2	10	16QAM	1	0	1880	21.37	PASS
2	10	16QAM	1	0	1905	21.27	PASS
2	15	QPSK	1	74	1857.5	22.39	PASS
2	15	QPSK	1	74	1880	22.31	PASS
2	15	QPSK	1	74	1902.5	22.29	PASS
2	15	16QAM	1	0	1857.5	21.18	PASS
2	15	16QAM	1	0	1880	21.28	PASS
2	15	16QAM	1	0	1902.5	21.48	PASS
2	20	QPSK	1	0	1860	23.27	PASS
2	20	QPSK	1	0	1880	23.47	PASS
2	20	QPSK	1	0	1900	23.38	PASS
2	20	16QAM	1	0	1860	22.51	PASS
2	20	16QAM	1	0	1880	22.48	PASS
2	20	16QAM	1	0	1900	21.49	PASS

2. LTE Band 4 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
4	1.4	QPSK	1	0	1710.7	24.13	PASS
4	1.4	QPSK	1	0	1732.5	24.19	PASS
4	1.4	QPSK	1	0	1754.3	24.15	PASS
4	1.4	16QAM	1	3	1710.7	23.31	PASS
4	1.4	16QAM	1	3	1732.5	23.22	PASS
4	1.4	16QAM	1	3	1754.3	23.31	PASS
4	3	QPSK	1	0	1711.5	24.25	PASS
4	3	QPSK	1	0	1732.5	24.20	PASS
4	3	QPSK	1	0	1753.5	24.23	PASS
4	3	16QAM	1	14	1711.5	23.20	PASS
4	3	16QAM	1	14	1732.5	23.24	PASS
4	3	16QAM	1	14	1753.5	23.29	PASS
4	5	QPSK	1	0	1712.5	23.30	PASS
4	5	QPSK	1	0	1732.5	23.24	PASS
4	5	QPSK	1	0	1752.5	24.20	PASS
4	5	16QAM	1	0	1712.5	22.21	PASS
4	5	16QAM	1	0	1732.5	22.27	PASS
4	5	16QAM	1	0	1752.5	22.24	PASS
4	10	QPSK	1	0	1715	23.29	PASS
4	10	QPSK	1	0	1732.5	23.15	PASS
4	10	QPSK	1	0	1750	23.10	PASS
4	10	16QAM	1	24	1715	22.34	PASS
4	10	16QAM	1	24	1732.5	22.22	PASS
4	10	16QAM	1	24	1750	22.49	PASS
4	15	QPSK	1	74	1717.5	22.28	PASS
4	15	QPSK	1	74	1732.5	22.28	PASS
4	15	QPSK	1	74	1747.5	22.20	PASS
4	15	16QAM	1	74	1717.5	21.21	PASS
4	15	16QAM	1	74	1732.5	21.02	PASS
4	15	16QAM	1	74	1747.5	21.08	PASS
4	20	QPSK	1	0	1720	24.01	PASS
4	20	QPSK	1	0	1732.5	24.13	PASS
4	20	QPSK	1	0	1745	24.10	PASS
4	20	16QAM	1	0	1720	23.37	PASS
4	20	16QAM	1	0	1732.5	23.12	PASS
4	20	16QAM	1	0	1745	23.06	PASS

3. LTE Band 5 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
5	1.4	QPSK	1	3	824.7	23.28	PASS
5	1.4	QPSK	1	3	836.5	23.33	PASS
5	1.4	QPSK	1	3	848.3	23.20	PASS
5	1.4	16QAM	1	3	824.7	22.27	PASS
5	1.4	16QAM	1	3	836.5	22.27	PASS
5	1.4	16QAM	1	3	848.3	22.31	PASS
5	3	QPSK	1	0	825.5	23.15	PASS
5	3	QPSK	1	0	836.5	23.14	PASS
5	3	QPSK	1	0	847.5	23.16	PASS
5	3	16QAM	1	0	825.5	22.93	PASS
5	3	16QAM	1	0	836.5	22.35	PASS
5	3	16QAM	1	0	847.5	22.24	PASS
5	5	QPSK	1	0	826.5	23.22	PASS
5	5	QPSK	1	0	836.5	23.16	PASS
5	5	QPSK	1	0	846.5	23.20	PASS
5	5	16QAM	1	0	826.5	22.21	PASS
5	5	16QAM	1	0	836.5	22.27	PASS
5	5	16QAM	1	0	846.5	22.24	PASS
5	10	QPSK	1	49	829.0	23.29	PASS
5	10	QPSK	1	49	836.5	23.15	PASS
5	10	QPSK	1	49	844.0	23.10	PASS
5	10	16QAM	1	0	829.0	22.34	PASS
5	10	16QAM	1	0	836.5	22.22	PASS
5	10	16QAM	1	0	844.0	22.49	PASS

4.LTE Band12 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
12	1.4	QPSK	1	0	699.7	23.64	PASS
12	1.4	QPSK	1	0	707.5	23.68	PASS
12	1.4	QPSK	1	0	715.3	23.70	PASS
12	1.4	16QAM	1	0	699.7	22.56	PASS
12	1.4	16QAM	1	0	707.5	22.65	PASS
12	1.4	16QAM	1	0	715.3	22.62	PASS
12	3	QPSK	1	0	700.5	23.65	PASS
12	3	QPSK	1	0	707.5	23.54	PASS
12	3	QPSK	1	0	714.5	23.67	PASS
12	3	16QAM	1	8	700.5	22.57	PASS
12	3	16QAM	1	8	707.5	22.66	PASS
12	3	16QAM	1	8	714.5	22.63	PASS
12	5	QPSK	1	24	701.5	23.66	PASS
12	5	QPSK	1	24	707.5	23.63	PASS
12	5	QPSK	1	24	713.5	23.52	PASS
12	5	16QAM	1	0	701.5	22.26	PASS
12	5	16QAM	1	0	707.5	22.36	PASS
12	5	16QAM	1	0	713.5	22.34	PASS
12	10	QPSK	1	49	704	22.33	PASS
12	10	QPSK	1	49	707.5	22.37	PASS
12	10	QPSK	1	49	711	22.40	PASS
12	10	16QAM	1	0	704	21.25	PASS
12	10	16QAM	1	0	707.5	21.36	PASS
12	10	16QAM	1	0	711	21.56	PASS

5.LTE Band 25 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
25	1.4	QPSK	1	0	1850.7	23.53	PASS
25	1.4	QPSK	1	0	1882.5	23.55	PASS
25	1.4	QPSK	1	0	1914.3	23.57	PASS
25	1.4	16QAM	1	3	1850.7	22.38	PASS
25	1.4	16QAM	1	3	1882.5	22.58	PASS
25	1.4	16QAM	1	3	1914.3	22.88	PASS
25	3	QPSK	1	0	1851.5	23.67	PASS
25	3	QPSK	1	0	1882.5	23.52	PASS
25	3	QPSK	1	0	1913.5	23.63	PASS
25	3	16QAM	1	0	1851.5	22.54	PASS
25	3	16QAM	1	0	1882.5	22.60	PASS
25	3	16QAM	1	0	1913.5	22.64	PASS
25	5	QPSK	1	0	1852.5	22.56	PASS
25	5	QPSK	1	0	1882.5	22.64	PASS
25	5	QPSK	1	0	1912.5	22.93	PASS
25	5	16QAM	1	24	1852.5	22.60	PASS
25	5	16QAM	1	24	1882.5	22.85	PASS
25	5	16QAM	1	24	1912.5	22.71	PASS
25	10	QPSK	1	0	1855.0	22.68	PASS
25	10	QPSK	1	0	1882.5	22.70	PASS
25	10	QPSK	1	0	1910.0	22.68	PASS
25	10	16QAM	1	0	1855.0	21.69	PASS
25	10	16QAM	1	0	1882.5	21.68	PASS
25	10	16QAM	1	0	1910.0	21.70	PASS
25	15	QPSK	1	74	1857.5	22.58	PASS
25	15	QPSK	1	74	1882.5	22.67	PASS
25	15	QPSK	1	74	1907.5	22.53	PASS
25	15	16QAM	1	0	1857.5	21.55	PASS
25	15	16QAM	1	0	1882.5	21.32	PASS
25	15	16QAM	1	0	1907.5	21.45	PASS
25	20	QPSK	1	0	1860.0	23.36	PASS
25	20	QPSK	1	0	1882.5	23.53	PASS
25	20	QPSK	1	0	1905.0	23.43	PASS
25	20	16QAM	1	0	1860.0	22.56	PASS
25	20	16QAM	1	0	1882.5	22.45	PASS
25	20	16QAM	1	0	1905.0	22.39	PASS

6.LTE Band 26 Test Verdict:

LTE Band (For part 90)	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
26	1.4	QPSK	1	0	814.7	23.43	PASS
26	1.4	QPSK	1	0	819.0	23.46	PASS
26	1.4	QPSK	1	0	823.3	23.45	PASS
26	1.4	16QAM	1	0	814.7	22.70	PASS
26	1.4	16QAM	1	0	819.0	22.68	PASS
26	1.4	16QAM	1	0	823.3	22.67	PASS
26	3	QPSK	1	8	815.5	23.50	PASS
26	3	QPSK	1	8	819.0	23.54	PASS
26	3	QPSK	1	8	822.5	23.52	PASS
26	3	16QAM	1	0	815.5	22.00	PASS
26	3	16QAM	1	0	819.0	22.97	PASS
26	3	16QAM	1	0	822.5	22.98	PASS
26	5	QPSK	1	24	816.5	23.84	PASS
26	5	QPSK	1	24	819.0	23.81	PASS
26	5	QPSK	1	24	821.5	23.83	PASS
26	5	16QAM	1	0	816.5	22.87	PASS
26	5	16QAM	1	0	819.0	22.86	PASS
26	5	16QAM	1	0	821.5	22.84	PASS
26	10	QPSK	1	0	819.0	23.37	PASS
26	10	16QAM	1	49	819.0	22.39	PASS
26	15	QPSK	1	74	821.5	23.36	PASS
26	15	16QAM	1	0	821.5	22.40	PASS
LTE Band (For part 22)	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
26	10	QPSK	1	0	831.5	23.38	PASS
26	10	QPSK	1	0	844.0	23.41	PASS
26	10	16QAM	1	49	831.5	22.44	PASS
26	10	16QAM	1	49	844.0	22.41	PASS
26	15	QPSK	1	74	831.5	23.46	PASS
26	15	QPSK	1	74	841.5	23.48	PASS
26	15	16QAM	1	0	831.5	22.46	PASS
26	15	16QAM	1	0	841.5	22.49	PASS

7. LTE Band 66 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
66	1.4	QPSK	1	0	1710.7	23.35	PASS
66	1.4	QPSK	1	0	1745	23.37	PASS
66	1.4	QPSK	1	0	1779.3	23.46	PASS
66	1.4	16QAM	1	3	1710.7	22.18	PASS
66	1.4	16QAM	1	3	1745	22.18	PASS
66	1.4	16QAM	1	3	1779.3	22.24	PASS
66	3	QPSK	1	0	1711.5	23.24	PASS
66	3	QPSK	1	0	1745	23.22	PASS
66	3	QPSK	1	0	1778.5	23.31	PASS
66	3	16QAM	1	14	1711.5	22.21	PASS
66	3	16QAM	1	14	1745	22.34	PASS
66	3	16QAM	1	14	1778.5	22.66	PASS
66	5	QPSK	1	0	1712.5	23.89	PASS
66	5	QPSK	1	0	1732.5	23.72	PASS
66	5	QPSK	1	0	1777.5	23.84	PASS
66	5	16QAM	1	0	1712.5	22.78	PASS
66	5	16QAM	1	0	1732.5	22.77	PASS
66	5	16QAM	1	0	1777.5	22.74	PASS
66	10	QPSK	1	0	1715	23.71	PASS
66	10	QPSK	1	0	1745	23.73	PASS
66	10	QPSK	1	0	1775	23.74	PASS
66	10	16QAM	1	24	1715	22.71	PASS
66	10	16QAM	1	24	1745	22.76	PASS
66	10	16QAM	1	24	1775	22.75	PASS
66	15	QPSK	1	74	1717.5	23.70	PASS
66	15	QPSK	1	74	1745	23.59	PASS
66	15	QPSK	1	74	1772.5	23.76	PASS
66	15	16QAM	1	74	1717.5	22.64	PASS
66	15	16QAM	1	74	1745	22.79	PASS
66	15	16QAM	1	74	1772.5	22.78	PASS
66	20	QPSK	1	0	1720	23.60	PASS
66	20	QPSK	1	0	1745	23.64	PASS
66	20	QPSK	1	0	1770	23.20	PASS
66	20	16QAM	1	0	1720	22.10	PASS
66	20	16QAM	1	0	1745	22.00	PASS
66	20	16QAM	1	0	1770	22.01	PASS

2.8 Radiated Out of Band Emissions

2.8.1 Requirement

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

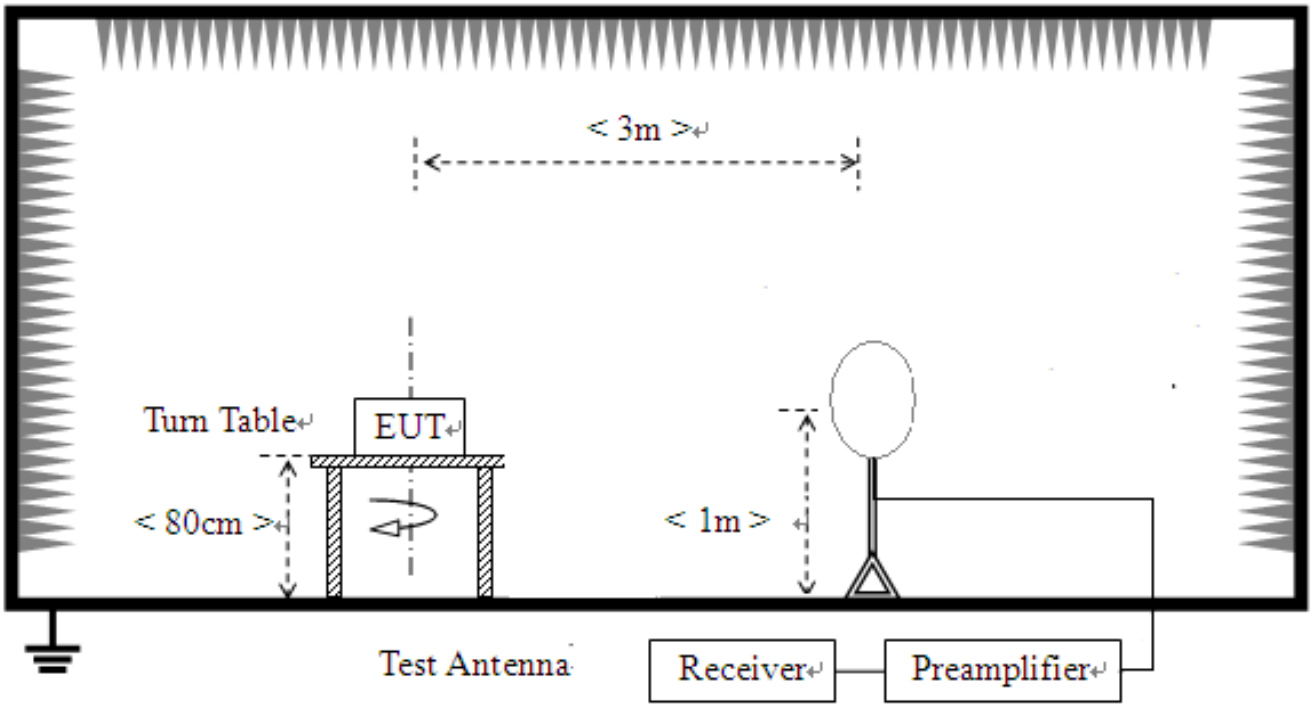
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

2.8.2 Measuring Instruments

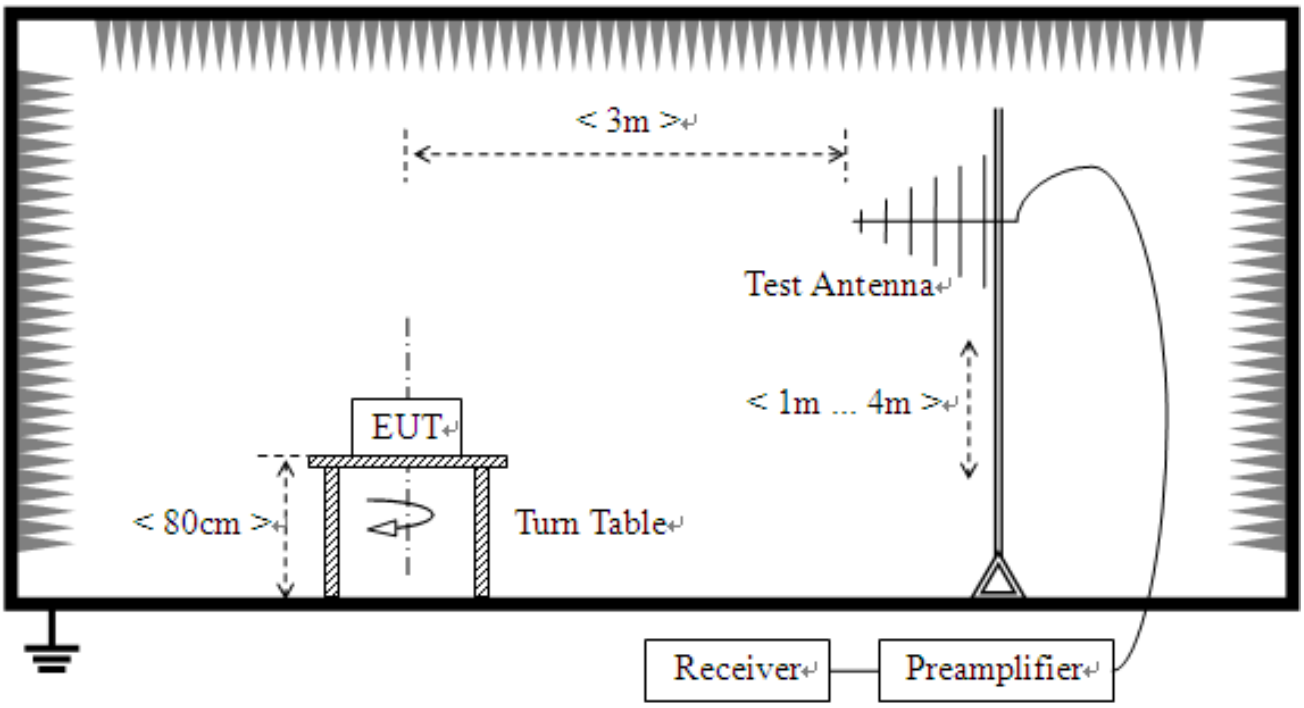
The measuring equipment is listed in the section 3 of this test report.

2.8.3 Test Setup

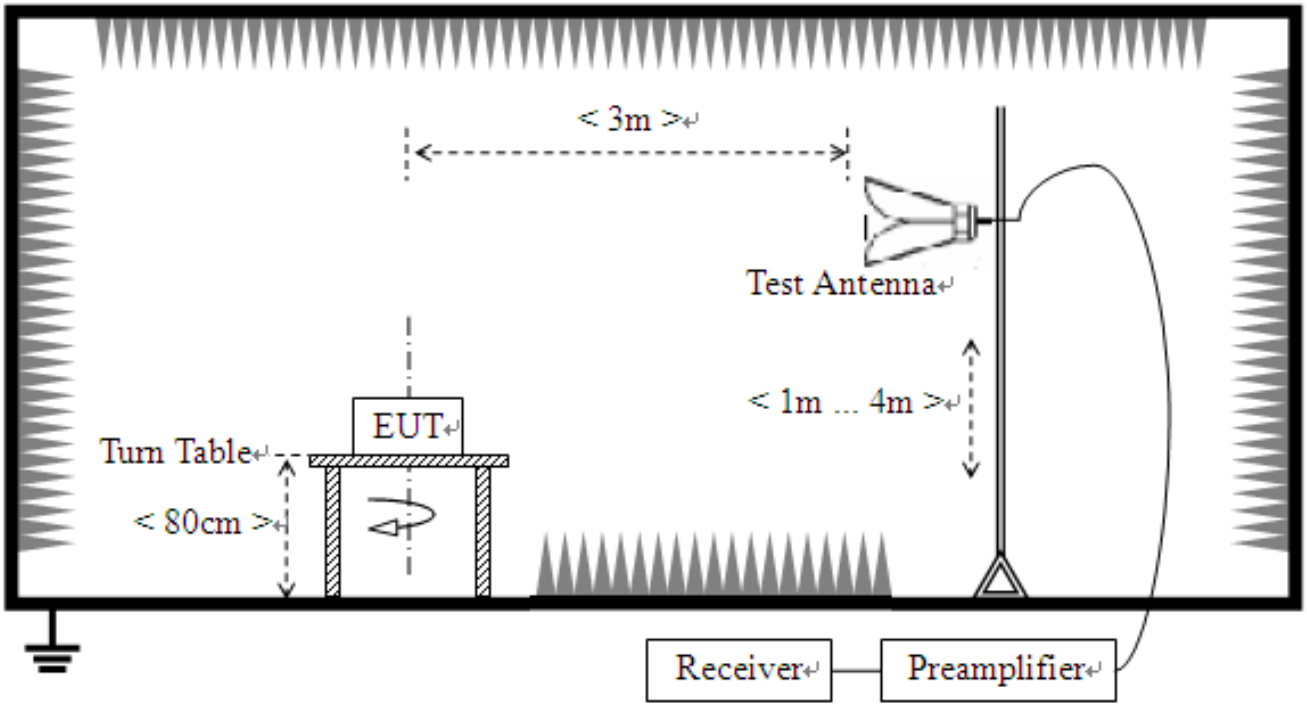
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.8.4 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.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.
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

2.8.5 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

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-88.11	-67.52	-13.00	54.52	20.59	Vertical
2	61.5408	-82.33	-62.10	-13.00	49.10	20.23	Vertical
3	1198.09	-58.79	-60.28	-13.00	47.28	-1.49	Vertical
4	2443.72	-47.10	-42.39	-13.00	29.39	4.71	Vertical
5	7389.69	-60.59	-39.73	-13.00	26.73	20.86	Vertical
6	9670.83	-63.01	-32.60	-13.00	19.60	30.41	Vertical

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	37.2786	-87.27	-65.04	-13.00	52.04	22.23	Horizontal
2	62.5113	-82.31	-62.97	-13.00	49.97	19.34	Horizontal
3	504.567	-104.16	-71.54	-13.00	58.54	32.62	Horizontal
4	3705.35	-58.97	-48.62	-13.00	35.62	10.35	Horizontal
5	7397.19	-60.47	-39.22	-13.00	26.22	21.25	Horizontal
6	9700.85	-63.78	-32.17	-13.00	19.17	31.61	Horizontal

LTE Band 4 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-86.89	-64.54	-13.00	51.54	22.35	Horizontal
2	62.5113	-83.59	-64.25	-13.00	51.25	19.34	Horizontal
3	497.288	-104.77	-72.32	-13.00	59.32	32.45	Horizontal
4	3712.85	-59.36	-48.99	-13.00	35.99	10.37	Horizontal
5	6309.15	-60.18	-42.32	-13.00	29.32	17.86	Horizontal
6	9723.36	-63.48	-32.58	-13.00	19.58	30.90	Horizontal
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-88.23	-67.64	-13.00	54.64	20.59	Vertical
2	62.5113	-83.64	-63.29	-13.00	50.29	20.35	Vertical
3	1194.09	-56.53	-58.13	-13.00	45.13	-1.60	Vertical
4	3765.38	-59.76	-49.41	-13.00	36.41	10.35	Vertical
5	6234.11	-59.79	-42.04	-13.00	29.04	17.75	Vertical
6	9700.85	-63.17	-32.29	-13.00	19.29	30.88	Vertical

LTE Band 5 QPSK 10MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	35.3377	-86.54	-63.71	-13.00	50.71	22.83	Horizontal
2	62.0260	-82.57	-63.04	-13.00	50.04	19.53	Horizontal
3	508.449	-104.45	-71.36	-13.00	58.36	33.09	Horizontal
4	1713.35	-50.69	-51.38	-13.00	38.38	-0.69	Horizontal
5	3802.90	-60.27	-49.75	-13.00	36.75	10.52	Horizontal
6	9693.34	-63.32	-31.84	-13.00	18.84	31.48	Horizontal
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-88.04	-67.30	-13.00	54.30	20.74	Vertical
2	61.5408	-82.65	-62.22	-13.00	49.22	20.43	Vertical
3	107.153	-96.79	-72.75	-13.00	59.75	24.04	Vertical
4	1711.35	-54.72	-55.80	-13.00	42.80	-1.08	Vertical
5	3667.83	-58.95	-48.98	-13.00	35.98	9.97	Vertical
6	9678.33	-62.86	-32.32	-13.00	19.32	30.54	Vertical

` LTE Band 12 QPSK 10MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	34.8524	-87.69	-66.68	-13.00	53.68	21.01	Vertical
2	62.0260	-82.87	-62.36	-13.00	49.36	20.51	Vertical
3	107.638	-97.40	-73.30	-13.00	60.30	24.10	Vertical
4	1711.35	-52.86	-53.94	-13.00	40.94	-1.08	Vertical
5	3705.35	-59.31	-48.94	-13.00	35.94	10.37	Vertical
6	9685.84	-62.99	-32.33	-13.00	19.33	30.66	Vertical
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-86.22	-63.71	-13.00	50.71	22.51	Horizontal
2	62.0260	-82.84	-63.29	-13.00	50.29	19.55	Horizontal
3	1728.36	-55.19	-55.79	-13.00	42.79	-0.60	Horizontal
4	3720.36	-59.67	-49.29	-13.00	36.29	10.38	Horizontal
5	6309.15	-60.19	-42.33	-13.00	29.33	17.86	Horizontal
6	9670.83	-63.23	-32.30	-13.00	19.30	30.93	Horizontal

LTE Band 25 QPSK 20MHz BW Middle Channel `

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-86.84	-64.49	-13.00	51.49	22.35	Horizontal
2	62.0260	-83.52	-64.18	-13.00	51.18	19.34	Horizontal
3	1169.08	-57.65	-60.46	-13.00	47.46	-2.81	Horizontal
4	3045.02	-59.11	-50.03	-13.00	37.03	9.08	Horizontal
5	5828.91	-55.82	-39.60	-13.00	26.60	16.22	Horizontal
6	9693.34	-63.95	-32.47	-13.00	19.47	31.48	Horizontal
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-86.13	-65.54	-13.00	52.54	20.59	Vertical
2	62.5113	-82.84	-62.49	-13.00	49.49	20.35	Vertical
3	2452.72	-44.60	-39.87	-13.00	26.87	4.73	Vertical
4	4958.47	-58.85	-44.88	-13.00	31.88	13.97	Vertical
5	7314.65	-60.93	-40.34	-13.00	27.34	20.59	Vertical
6	9685.84	-63.42	-32.76	-13.00	19.76	30.66	Vertical

LTE Band 26 QPSK 15MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-86.89	-66.15	-13.00	53.15	20.74	Vertical
2	61.5408	-83.47	-63.04	-13.00	50.04	20.43	Vertical
3	1725.36	-50.46	-51.52	-13.00	38.52	-1.06	Vertical
4	3712.85	-58.87	-48.50	-13.00	35.50	10.37	Vertical
5	6699.34	-59.57	-41.86	-13.00	28.86	17.71	Vertical
6	9715.85	-62.89	-32.38	-13.00	19.38	30.51	Vertical
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	34.8524	-88.61	-65.66	-13.00	52.66	22.95	Horizontal
2	62.0260	-82.82	-63.29	-13.00	50.29	19.53	Horizontal
3	107.638	-96.15	-76.41	-13.00	63.41	19.74	Horizontal
4	2084.54	-57.50	-54.24	-13.00	41.24	3.26	Horizontal
5	3705.35	-59.17	-48.82	-13.00	35.82	10.35	Horizontal
6	9663.33	-63.01	-32.27	-13.00	19.27	30.74	Horizontal

`

LTE Band 66 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	35.3377	-88.42	-65.59	-13.00	52.59	22.83	Horizontal
2	62.5113	-81.53	-62.00	-13.00	49.00	19.53	Horizontal
3	1293.14	-55.78	-57.94	-13.00	44.94	-2.16	Horizontal
4	3735.36	-59.37	-48.96	-13.00	35.96	10.41	Horizontal
5	7284.64	-60.71	-40.17	-13.00	27.17	20.54	Horizontal
6	9708.35	-62.73	-31.35	-13.00	18.35	31.38	Horizontal
Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-86.72	-65.98	-13.00	52.98	20.74	Vertical
2	61.5408	-81.40	-60.97	-13.00	47.97	20.43	Vertical
3	83.8619	-92.33	-69.50	-13.00	56.50	22.83	Vertical
4	3765.38	-59.84	-49.49	-13.00	36.49	10.35	Vertical
5	7817.40	-61.12	-39.91	-13.00	26.91	21.21	Vertical
6	9693.34	-64.09	-33.30	-13.00	20.30	30.79	Vertical

3. LIST OF MEASURING EQUIPMENT

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date	Remark
EMI Test Receiver	R&S	ESU8	A0805559	2020.04.03	2021.04.02	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	2021.01.06	Radiation
Broadband antenna (30MHz~1GHz)	R&S	HK116	A130701424	2018.01.19	2021.01.18	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	AT4002A	305753	2017.11.10	2020.11.09	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4003A	0329293	2018.09.17	2020.09.16	Radiation
Amplifier 1GHz-18GHz	AR	25S1G4AM1	22018	2018.09.17	2020.09.16	Radiation
Ampilier 20M~3GHz	MILMEGA	80RF1000-250	1064573	2017.10.09	2020.10.08	Radiation
Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2020.05.18	2021.05.17	Conducted
Test Receiver	R&S	ESIB26	A0304218	2020.04.29	2021.04.28	Conducted
Temperature chamber	Tomilo	TOD-B165FXS-4K	A181003256	2019.11.21	2020.11.20	Conducted
Wideband Radio Communication tester	R&S	CMW500	A130101034	2019.07.30	2021.07.29	Conducted
Power Supply	R&S	WYJ-60100	A141102031	2020.01.16	2023.01.15	Conducted

4. UNCERTAINTY OF EVALUATION

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence . The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Emission Measurement (150KHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	2.8dB

Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	5.0dB

Uncertainty of Radiated Emission Measurement (1GHz~18GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	5.1dB

Uncertainty of Radiated Emission Measurement (18GHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	5.1dB

APPENDIX A

Conducted RF (Average) Output Power

Test Result and Data

1. LTE Band 2 Conducted Power Test Verdict:

LTE FDD Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				18607/1850.7	18900/1880	19193/1909.3	
1.4MHz	QPSK	1	0	23.36	23.04	23.39	22.5±1.0
		1	3	23.39	23.14	23.37	
		1	5	23.36	23.33	23.22	
		3	0	22.54	22.71	22.82	22.0±1.0
		3	2	22.55	22.59	22.89	
		3	3	22.58	22.81	22.56	
		6	0	22.35	22.22	22.38	21.5±1.0
	16QAM	1	0	21.88	21.71	21.94	21.5±1.0
		1	3	21.86	21.93	22.04	
		1	5	21.81	21.87	21.84	
		3	0	21.54	21.4	21.59	21.0±1.0
		3	2	21.51	21.58	21.41	
		3	3	21.26	21.43	21.36	
		6	0	20.96	21	21.1	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				18615/1851.5	18900/1880	19185/1908.5	
3MHz	QPSK	1	0	23.3	23.23	23.06	22.5±1.0
		1	7	23.24	23.06	23.03	
		1	14	23.23	23.26	23.07	
		8	0	22.6	22.79	22.84	22.0±1.0
		8	4	22.79	22.81	22.56	
		8	7	22.61	22.86	22.75	
		15	0	22.29	22.38	22.27	21.5±1.0
	16QAM	1	0	21.74	22.06	22.06	21.5±1.0
		1	7	22.02	22.08	21.77	
		1	14	21.75	21.7	21.99	
		8	0	21.41	21.32	21.31	21.0±1.0
		8	4	21.32	21.36	21.53	
		8	7	21.53	21.45	21.43	
		15	0	20.96	20.9	21.02	20.5±1.0

LTE FDD Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				18625/1852.5	18900/1880	19175/1907.5	
5MHz	QPSK	1	0	23.07	23.12	23.37	22.5±1.0
		1	13	23.27	23.4	23.22	
		1	24	23.14	23.34	23.33	
		12	0	22.9	22.56	22.72	22.0±1.0
		12	6	22.74	22.59	22.57	
		12	13	22.67	22.66	22.72	
		25	0	22.27	22.34	22.3	21.5±1.0
	16QAM	1	0	21.88	22.05	21.76	21.5±1.0
		1	13	21.88	21.8	21.88	
		1	24	21.91	22.07	22.01	
		12	0	21.3	21.44	21.42	21.0±1.0
		12	6	21.43	21.24	21.43	
		12	13	21.38	21.52	21.21	
		25	0	21.08	21.01	20.9	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				18650/1855	18900/1880	19150/1905	
10MHz	QPSK	1	0	23.39	23.29	23.35	22.5±1.0
		1	25	23.23	23.39	23.2	
		1	49	23.09	23.16	23.39	
		25	0	22.85	22.74	22.71	22.0±1.0
		25	13	22.7	22.59	22.52	
		25	25	22.79	22.63	22.58	
		50	0	22.38	22.21	22.22	21.5±1.0
	16QAM	1	0	21.79	21.78	21.84	21.5±1.0
		1	25	22.08	21.73	22.07	
		1	49	21.85	21.82	21.89	
		25	0	21.46	21.26	21.44	21.0±1.0
		25	13	21.35	21.21	21.32	
		25	25	21.46	21.34	21.56	
		50	0	21.05	21.04	21.04	20.5±1.0

LTE FDD Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				18675/1857.5	18900/1880	19125/1902.5	
15MHz	QPSK	1	0	23.39	23.05	23.34	22.5±1.0
		1	38	23.22	23.24	23.12	
		1	74	23.02	23.17	23.1	
		36	0	22.51	22.6	22.6	22.0±1.0
		36	18	22.6	22.8	22.59	
		36	39	22.86	22.73	22.78	
		75	0	22.31	22.33	22.22	21.5±1.0
	16QAM	1	0	21.76	21.72	21.72	21.5±1.0
		1	38	21.87	21.76	21.99	
		1	74	22.1	22.04	21.79	
		36	0	21.37	21.56	21.29	21.0±1.0
		36	18	21.59	21.54	21.34	
		36	39	21.51	21.21	21.21	
		75	0	21.02	21.05	20.96	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				18700/1860	18900/1880	19100/1900	
20MHz	QPSK	1	0	23.29	23.49	23.39	22.5±1.0
		1	50	23.1	23.1	23.11	
		1	99	23.07	23.17	23.1	
		50	0	22.69	22.87	22.7	22.0±1.0
		50	25	22.65	22.76	22.73	
		50	50	22.73	22.82	22.74	
		100	0	22.2	22.22	22.33	21.5±1.0
	16QAM	1	0	21.75	22.1	21.78	21.5±1.0
		1	50	21.91	21.85	21.8	
		1	99	22.01	22.04	22.08	
		50	0	21.29	21.31	21.55	21.0±1.0
		50	25	21.22	21.34	21.26	
		50	50	21.39	21.32	21.51	
		100	0	21.04	20.95	21.09	20.5±1.0

2. LTE Band 4 Conducted Power Test Verdict:

LTE FDD Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				19957/1710.7	20175/1732.5	20393/1754.3	
1.4MHz	QPSK	1	0	24.28	24.1	24.07	23.5±1.0
		1	3	24.2	24.26	24.06	
		1	5	24.22	24.02	23.99	
		3	0	23.74	23.46	23.8	23.0±1.0
		3	2	23.73	23.41	23.77	
		3	3	23.75	23.4	23.42	
		6	0	23.13	23.19	23.25	22.5±1.0
	16QAM	1	0	22.71	22.72	22.81	22.0±1.0
		1	3	22.82	22.74	22.91	
		1	5	22.67	22.87	22.62	
		3	0	22.31	22.31	22.5	21.5±1.0
		3	2	22.23	22.11	22.45	
		3	3	22.42	22.48	22.14	
		6	0	21.96	21.86	21.9	21.0±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				19965/1711.5	20175/1732.5	20385/1753.5	
3MHz	QPSK	1	0	24.12	23.98	23.9	23.5±1.0
		1	7	24.23	24.07	24.02	
		1	14	24.25	24.2	23.92	
		8	0	23.59	23.52	23.68	23.0±1.0
		8	4	23.65	23.55	23.58	
		8	7	23.41	23.67	23.56	
		15	0	23.1	23.11	23.11	22.5±1.0
	16QAM	1	0	22.81	22.64	22.82	22.0±1.0
		1	7	22.86	22.91	22.9	
		1	14	22.81	22.78	22.76	
		8	0	22.17	22.22	22.12	21.5±1.0
		8	4	22.46	22.29	22.44	
		8	7	22.43	22.37	22.25	
		15	0	21.83	21.8	21.89	21.0±1.0

LTE FDD Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				19975/1712.5	20175/1732.5	20375/1752.5	
5MHz	QPSK	1	0	24.04	24.06	23.92	23.5±1.0
		1	13	24.07	23.96	23.98	
		1	24	24.2	24.13	24.07	
		12	0	23.47	23.41	23.41	23.0±1.0
		12	6	23.56	23.43	23.77	
		12	13	23.77	23.66	23.72	
		25	0	23.13	23.27	23.13	22.5±1.0
	16QAM	1	0	22.91	22.76	22.9	22.0±1.0
		1	13	22.95	22.74	22.78	
		1	24	22.98	22.99	22.71	
		12	0	22.38	22.3	22.12	21.5±1.0
		12	6	22.44	22.34	22.39	
		12	13	22.15	22.22	22.49	
		25	0	21.86	21.83	21.95	21.0±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20000/1715	20175/1732.5	20350/1750	
10MHz	QPSK	1	0	24.25	24.18	23.92	23.5±1.0
		1	25	24.17	24.07	24.01	
		1	49	24.27	24.06	23.92	
		25	0	23.45	23.59	23.45	23.0±1.0
		25	13	23.79	23.78	23.61	
		25	25	23.5	23.56	23.58	
		50	0	23.2	23.29	23.22	22.5±1.0
	16QAM	1	0	22.64	22.97	22.76	22.0±1.0
		1	25	22.63	22.6	22.7	
		1	49	22.99	22.72	22.61	
		25	0	22.13	22.14	22.11	21.5±1.0
		25	13	22.36	22.33	22.5	
		25	25	22.34	22.35	22.12	
		50	0	21.86	21.86	22	21.0±1.0

LTE FDD Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20025/1717.5	20175/1732.5	20325/1747.5	
15MHz	QPSK	1	0	24.05	23.95	24.17	23.5±1.0
		1	38	24.3	24.12	23.9	
		1	74	24.12	24.23	23.98	
		36	0	23.47	23.41	23.49	23.0±1.0
		36	18	23.68	23.54	23.67	
		36	39	23.44	23.77	23.49	
		75	0	23.29	23.13	23.15	22.5±1.0
	16QAM	1	0	22.64	22.72	22.83	22.0±1.0
		1	38	22.81	22.81	22.98	
		1	74	22.78	22.67	22.76	
		36	0	22.17	22.34	22.21	21.5±1.0
		36	18	22.19	22.11	22.33	
		36	39	22.45	22.26	22.34	
		75	0	21.9	21.81	21.87	21.0±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20050/1720	20175/1732.5	20300/1745	
20MHz	QPSK	1	0	24.25	24.24	24.38	23.5±1.0
		1	50	23.93	24.27	24.06	
		1	99	24.23	24.03	23.92	
		50	0	23.75	23.8	23.46	23.0±1.0
		50	25	23.53	23.45	23.54	
		50	50	23.55	23.57	23.78	
		100	0	23.27	23.28	23.18	22.5±1.0
	16QAM	1	0	22.66	22.84	22.7	22.0±1.0
		1	50	22.69	22.71	22.69	
		1	99	22.93	22.97	22.93	
		50	0	22.13	22.22	22.36	21.5±1.0
		50	25	22.32	22.38	22.38	
		50	50	22.15	22.22	22.43	
		100	0	21.98	21.96	21.8	21.0±1.0

3. LTE Band 5 Conducted Power Test Verdict:

LTE FDD Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20407/824.7	20525/836.5	20643/848.3	
1.4MHz	QPSK	1	0	23.58	23.56	23.43	23.0±1.0
		1	3	23.31	23.6	23.25	
		1	5	23.21	23.58	23.53	
		3	0	23.02	22.9	22.93	22.5±1.0
		3	2	22.95	23.06	22.92	
		3	3	22.77	22.88	22.73	
		6	0	22.55	22.43	22.59	22.0±1.0
	16QAM	1	0	22.25	22.13	22.19	21.5±1.0
		1	3	22.07	22.16	21.93	
		1	5	22.27	22.22	22.15	
		3	0	21.76	21.74	21.69	21.0±1.0
		3	2	21.56	21.45	21.67	
		3	3	21.74	21.69	21.66	
		6	0	21.2	21.1	21.3	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20415/825.5	20525/836.5	20635/847.5	
3MHz	QPSK	1	0	23.46	23.22	23.28	23.0±1.0
		1	7	23.37	23.25	23.48	
		1	14	23.57	23.57	23.32	
		8	0	22.84	22.84	22.7	22.5±1.0
		8	4	22.77	23.06	22.86	
		8	7	22.99	23.04	22.89	
		15	0	22.57	22.55	22.59	22.0±1.0
	16QAM	1	0	22	22.26	21.91	21.5±1.0
		1	7	22.21	21.95	22.19	
		1	14	22.06	22.03	22.15	
		8	0	21.53	21.68	21.61	21.0±1.0
		8	4	21.4	21.69	21.46	
		8	7	21.7	21.68	21.59	
		15	0	21.17	21.11	21.25	20.5±1.0

LTE FDD Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20425/826.5	20525/836.5	20625/846.5	
5MHz	QPSK	1	0	23.33	23.6	23.37	23.0±1.0
		1	13	23.35	23.29	23.26	
		1	24	23.26	23.53	23.55	
		12	0	22.8	22.97	23.07	22.5±1.0
		12	6	22.97	22.94	22.88	
		12	13	23.09	22.92	23.01	
		25	0	22.49	22.47	22.55	22.0±1.0
	16QAM	1	0	22.23	21.97	22.09	21.5±1.0
		1	13	22.24	22.21	22.22	
		1	24	22.22	21.94	22.09	
		12	0	21.4	21.75	21.62	21.0±1.0
		12	6	21.64	21.66	21.65	
		12	13	21.65	21.75	21.62	
		25	0	21.21	21.28	21.21	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				20450/829	20525/836.5	20600/844	
10MHz	QPSK	1	0	23.66	23.57	23.62	23.0±1.0
		1	25	23.44	23.32	23.38	
		1	49	23.57	23.23	23.6	
		25	0	22.88	23.08	22.86	22.5±1.0
		25	13	22.72	23.06	22.99	
		25	25	22.88	22.82	22.9	
		50	0	22.59	22.46	22.52	22.0±1.0
	16QAM	1	0	22.27	22.05	22.22	21.5±1.0
		1	25	21.97	22.13	21.93	
		1	49	21.93	22.16	21.96	
		25	0	21.56	21.57	21.65	21.0±1.0
		25	13	21.45	21.73	21.62	
		25	25	21.58	21.62	21.74	
		50	0	21.24	21.17	21.3	20.5±1.0

4. LTE Band 12 Conducted Power Test Verdict:

LTE FDD Band 12				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				23017/699.7	23095/707.5	23173/715.3	
1.4MHz	QPSK	1	0	23.57	23.46	23.46	23.0±1.0
		1	3	23.73	23.77	23.5	
		1	5	23.57	23.66	23.62	
		3	0	23.22	23.24	23.26	22.5±1.0
		3	2	22.93	22.95	23.03	
		3	3	23.1	23.23	23.19	
		6	0	22.74	22.63	22.74	22.0±1.0
	16QAM	1	0	22.14	22.17	22.26	21.5±1.0
		1	3	22.14	22.12	22.33	
		1	5	22.24	22.21	22.18	
		3	0	21.66	21.6	21.98	21.0±1.0
		3	2	21.98	21.75	21.86	
		3	3	21.79	21.69	21.85	
		6	0	21.38	21.42	21.4	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				23025/700.5	23095/707.5	23165/714.5	
3MHz	QPSK	1	0	23.46	23.52	23.68	23.0±1.0
		1	7	23.51	23.48	23.43	
		1	14	23.7	23.54	23.51	
		8	0	23.22	23.27	22.99	22.5±1.0
		8	4	23.12	23.2	23.15	
		8	7	22.99	22.96	22.97	
		15	0	22.67	22.69	22.79	22.0±1.0
	16QAM	1	0	22.13	22.31	22.18	21.5±1.0
		1	7	22.37	22.49	22.17	
		1	14	22.47	22.5	22.23	
		8	0	21.77	21.96	21.85	21.0±1.0
		8	4	21.83	21.63	21.98	
		8	7	21.7	21.61	21.94	
		15	0	21.38	21.49	21.42	20.5±1.0

LTE FDD Band 12				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				23035/701.5	23095/707.5	23155/713.5	
5MHz	QPSK	1	0	23.59	23.65	23.79	23.0±1.0
		1	13	23.73	23.55	23.66	
		1	24	23.42	23.71	23.57	
		12	0	22.97	22.98	23.12	22.5±1.0
		12	6	23.25	23.28	23.08	
		12	13	23.14	23.18	22.91	
		25	0	22.78	22.68	22.62	22.0±1.0
	16QAM	1	0	22.35	22.17	22.11	21.5±1.0
		1	13	22.39	22.29	22.11	
		1	24	22.18	22.42	22.45	
		12	0	21.95	21.79	21.77	21.0±1.0
		12	6	21.87	21.84	21.73	
		12	13	21.92	21.9	21.82	
		25	0	21.5	21.49	21.46	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				23060/704	23095/707.5	23130/711	
10MHz	QPSK	1	0	23.86	23.81	23.85	23.0±1.0
		1	25	23.8	23.74	23.42	
		1	49	23.65	23.57	23.47	
		25	0	23.09	23.29	22.97	22.5±1.0
		25	13	22.99	23.2	23.28	
		25	25	22.92	23.17	23.14	
		50	0	22.64	22.7	22.8	22.0±1.0
	16QAM	1	0	22.19	22.19	22.43	21.5±1.0
		1	25	22.18	22.26	22.28	
		1	49	22.48	22.41	22.47	
		25	0	21.68	21.71	21.64	21.0±1.0
		25	13	21.89	21.61	21.93	
		25	25	21.79	21.75	21.75	
		50	0	21.33	21.4	21.42	20.5±1.0

5. LTE Band 25 Conducted Power Test Verdict:

LTE FDD Band 25				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26047/1850.7	26365/1882.5	26683/1914.3	
1.4MHz	QPSK	1	0	23.57	23.48	23.39	23.0±1.0
		1	3	23.59	23.41	23.5	
		1	5	23.61	23.68	23.35	
		3	0	22.85	22.93	23.07	22.5±1.0
		3	2	22.88	22.93	22.8	
		3	3	22.92	23.13	23.15	
		6	0	22.66	22.54	22.54	22.0±1.0
	16QAM	1	0	22.06	22.33	22.36	21.5±1.0
		1	3	22.2	22.24	22.12	
		1	5	22.38	22.29	22.08	
		3	0	21.71	21.82	21.8	21.0±1.0
		3	2	21.56	21.52	21.6	
		3	3	21.82	21.67	21.71	
		6	0	21.35	21.37	21.21	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26055/1851.5	26365/1882.5	26675/1913.5	
3MHz	QPSK	1	0	23.64	23.43	23.54	23.0±1.0
		1	7	23.4	23.6	23.63	
		1	14	23.63	23.61	23.52	
		8	0	22.99	23.07	23.06	22.5±1.0
		8	4	23.01	23	23.04	
		8	7	23.09	22.92	22.94	
		15	0	22.63	22.61	22.69	22.0±1.0
	16QAM	1	0	22.12	22.09	22.29	21.5±1.0
		1	7	22.01	22.16	22.07	
		1	14	22.28	22.21	22.37	
		8	0	21.81	21.51	21.57	21.0±1.0
		8	4	21.66	21.54	21.87	
		8	7	21.6	21.53	21.68	
		15	0	21.26	21.2	21.29	20.5±1.0

LTE FDD Band 25				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26065/1852.5	26365/1882.5	26665/1912.5	
5MHz	QPSK	1	0	23.35	23.54	23.43	23.0±1.0
		1	13	23.51	23.45	23.65	
		1	24	23.62	23.44	23.33	
		12	0	23.2	22.9	22.83	22.5±1.0
		12	6	23.18	23.06	23.11	
		12	13	22.81	23.05	22.83	
		25	0	22.68	22.68	22.52	22.0±1.0
	16QAM	1	0	22.33	22.27	22.38	21.5±1.0
		1	13	22.01	22.4	22.06	
		1	24	22.07	22.1	22.27	
		12	0	21.66	21.75	21.7	21.0±1.0
		12	6	21.68	21.52	21.88	
		12	13	21.61	21.57	21.62	
		25	0	21.24	21.31	21.29	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26090/1855	26365/1882.5	26640/1910	
10MHz	QPSK	1	0	23.54	23.6	23.48	23.0±1.0
		1	25	23.45	23.31	23.4	
		1	49	23.6	23.68	23.32	
		25	0	22.86	23.15	22.83	22.5±1.0
		25	13	23.05	22.82	23.05	
		25	25	22.91	22.94	23.12	
		50	0	22.69	22.63	22.59	22.0±1.0
	16QAM	1	0	22.18	22	22.03	21.5±1.0
		1	25	22.4	22.08	22.03	
		1	49	22.07	22.3	22.22	
		25	0	21.55	21.73	21.7	21.0±1.0
		25	13	21.58	21.5	21.6	
		25	25	21.71	21.59	21.7	
		50	0	21.25	21.22	21.2	20.5±1.0

LTE FDD Band 25				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26115/1857.5	26365/1882.5	26615/1907.5	
15MHz	QPSK	1	0	23.44	23.57	23.38	23.0±1.0
		1	38	23.44	23.69	23.47	
		1	74	23.42	23.56	23.54	
		36	0	23.16	23.02	22.95	22.5±1.0
		36	18	22.89	23.07	23.07	
		36	39	23.19	22.93	22.94	
		75	0	22.63	22.6	22.59	22.0±1.0
	16QAM	1	0	22.11	22.24	22.2	21.5±1.0
		1	38	22.09	22.31	22.36	
		1	74	22.3	22.25	22.04	
		36	0	21.63	21.56	21.88	21.0±1.0
		36	18	21.79	21.67	21.51	
		36	39	21.7	21.6	21.63	
		75	0	21.32	21.21	21.27	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26140/1860	26365/1882.5	26590/1905	
20MHz	QPSK	1	0	23.61	23.7	23.77	23.0±1.0
		1	50	23.38	23.42	23.41	
		1	99	23.61	23.66	23.48	
		50	0	23.12	22.82	22.98	22.5±1.0
		50	25	22.92	23.09	22.92	
		50	50	22.98	22.84	23.1	
		100	0	22.68	22.66	22.56	22.0±1.0
	16QAM	1	0	22.39	22.38	22.06	21.5±1.0
		1	50	22.11	22.3	22.2	
		1	99	22.17	22.07	22.05	
		50	0	21.83	21.52	21.57	21.0±1.0
		50	25	21.85	21.5	21.53	
		50	50	21.87	21.53	21.71	
		100	0	21.4	21.33	21.3	20.5±1.0

6. LTE Band 26 Conducted Power Test Verdict:

LTE FDD Band 26				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26697/814.7	26865/831.5	27033/848.3	
1.4MHz	QPSK	1	0	23.62	23.46	23.8	23.0±1.0
		1	3	23.56	23.8	23.55	
		1	5	23.77	23.52	23.6	
		3	0	23.26	23.27	23.21	22.5±1.0
		3	2	23.07	23.19	22.92	
		3	3	22.93	23.19	23.08	
		6	0	22.73	22.7	22.78	22.0±1.0
	16QAM	1	0	22.28	22.28	22.32	21.5±1.0
		1	3	22.13	22.41	22.46	
		1	5	22.46	22.5	22.44	
		3	0	21.73	21.98	21.97	21.0±1.0
		3	2	21.64	21.68	21.77	
		3	3	21.85	21.77	21.96	
		6	0	21.47	21.47	21.38	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26705/815.5	26865/831.5	27025/847.5	
3MHz	QPSK	1	0	23.42	23.69	23.45	23.0±1.0
		1	7	23.58	23.43	23.74	
		1	14	23.43	23.71	23.49	
		8	0	23.21	22.95	23.2	22.5±1.0
		8	4	23.28	23.12	23.1	
		8	7	23.05	22.98	23.26	
		15	0	22.78	22.65	22.7	22.0±1.0
	16QAM	1	0	22.31	22.47	22.42	21.5±1.0
		1	7	22.43	22.5	22.37	
		1	14	22.15	22.4	22.23	
		8	0	21.93	21.92	21.81	21.0±1.0
		8	4	21.83	21.84	21.64	
		8	7	21.89	22	21.86	
		15	0	21.49	21.34	21.43	20.5±1.0

LTE FDD Band 26				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26715/816.5	26865/831.5	27015/846.5	
5MHz	QPSK	1	0	23.69	23.64	23.48	23.0±1.0
		1	13	23.67	23.55	23.62	
		1	24	23.59	23.53	23.48	
		12	0	23.06	22.99	23.02	22.5±1.0
		12	6	23.06	23.27	22.99	
		12	13	23.13	23.27	22.92	
		25	0	22.6	22.65	22.76	22.0±1.0
	16QAM	1	0	22.27	22.36	22.3	21.5±1.0
		1	13	22.22	22.41	22.18	
		1	24	22.35	22.44	22.31	
		12	0	21.8	21.84	21.73	21.0±1.0
		12	6	21.63	21.75	21.74	
		12	13	21.88	21.94	21.88	
		25	0	21.39	21.5	21.5	20.5±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26740/819	26865/831.5	26990/844	
10MHz	QPSK	1	0	23.58	23.44	23.49	23.0±1.0
		1	25	23.46	23.79	23.43	
		1	49	23.55	23.46	23.66	
		25	0	23.04	23.01	22.99	22.5±1.0
		25	13	23.01	23.13	23.05	
		25	25	22.98	23.3	22.98	
		50	0	22.76	22.77	22.64	22.0±1.0
	16QAM	1	0	22.25	22.37	22.23	21.5±1.0
		1	25	22.39	22.45	22.42	
		1	49	22.4	22.23	22.4	
		25	0	21.84	21.82	21.85	21.0±1.0
		25	13	21.85	21.6	21.69	
		25	25	21.81	21.62	21.78	
		50	0	21.3	21.5	21.34	20.5±1.0

LTE FDD Band 26				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				26765/821.5	26865/831.52	26965/841.5	
15MHz	QPSK	1	0	23.81	23.88	23.76	23.0±1.0
		1	38	23.79	23.7	23.44	
		1	74	23.58	23.69	23.74	
		36	0	23.21	23.1	22.92	22.5±1.0
		36	18	23.08	23.27	23.11	
		36	39	23.13	23.15	23.07	
		75	0	22.76	22.65	22.7	22.0±1.0
	16QAM	1	0	22.41	22.3	22.34	21.5±1.0
		1	38	22.27	22.26	22.37	
		1	74	22.18	22.45	22.41	
		36	0	21.65	21.67	21.88	21.0±1.0
		36	18	21.76	21.86	21.81	
		36	39	21.99	21.84	21.93	
		75	0	21.49	21.36	21.3	20.5±1.0

7. LTE Band 66 Conducted Power Test Verdict:

LTE FDD Band 66				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				131979/1710.7	132322/1745	132665/1779.3	
1.4MHz	QPSK	1	0	23.15	23.17	23.2	22.5±1.0
		1	3	23.3	22.93	23.23	
		1	5	23.05	23.22	22.99	
		3	0	22.63	22.51	22.57	22.0±1.0
		3	2	22.65	22.63	22.8	
		3	3	22.67	22.55	22.48	
		6	0	22.21	22.21	22.2	21.5±1.0
	16QAM	1	0	21.65	21.84	21.86	21.0±1.0
		1	3	21.92	21.76	21.65	
		1	5	21.79	21.82	21.64	
		3	0	21.29	21.36	21.18	20.5±1.0
		3	2	21.15	21.31	21.12	
		3	3	21.33	21.35	21.4	
		6	0	20.86	20.98	20.83	20.0±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				131987/1711.5	12322/1745	132657/1778.5	
3MHz	QPSK	1	0	23.24	23.2	22.95	22.5±1.0
		1	7	23.13	23.13	23.21	
		1	14	23.15	23.27	23.09	
		8	0	22.41	22.76	22.54	22.0±1.0
		8	4	22.76	22.46	22.67	
		8	7	22.58	22.54	22.73	
		15	0	22.19	22.19	22.17	21.5±1.0
	16QAM	1	0	21.95	21.67	21.68	21.0±1.0
		1	7	21.77	21.79	21.74	
		1	14	21.71	21.69	21.82	
		8	0	21.24	21.42	21.4	20.5±1.0
		8	4	21.4	21.48	21.33	
		8	7	21.31	21.19	21.29	
		15	0	20.89	20.94	20.81	20.0±1.0

LTE FDD Band 66				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				131997/1712.5	132322/1745	132647/1777.5	
5MHz	QPSK	1	0	23.1	22.96	22.9	22.5±1.0
		1	13	23.04	22.92	23.02	
		1	24	23.2	23.3	23.26	
		12	0	22.42	22.4	22.57	22.0±1.0
		12	6	22.55	22.76	22.5	
		12	13	22.54	22.42	22.54	
		25	0	22.15	22.13	22.2	21.5±1.0
	16QAM	1	0	21.67	21.67	21.88	21.0±1.0
		1	13	21.62	21.96	21.9	
		1	24	21.88	21.85	21.98	
		12	0	21.38	21.19	21.39	20.5±1.0
		12	6	21.27	21.18	21.36	
		12	13	21.1	21.23	21.28	
		25	0	20.86	20.91	20.89	20.0±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				132022/1715	132322/1745	132622/1775	
10MHz	QPSK	1	0	22.97	22.92	23.13	22.5±1.0
		1	25	23.16	23.04	23.27	
		1	49	22.98	23.29	23.13	
		25	0	22.64	22.72	22.44	22.0±1.0
		25	13	22.48	22.52	22.49	
		25	25	22.75	22.77	22.52	
		50	0	22.14	22.11	22.29	21.5±1.0
	16QAM	1	0	21.88	21.61	21.96	21.0±1.0
		1	25	21.83	21.95	21.82	
		1	49	21.88	21.7	21.97	
		25	0	21.45	21.37	21.34	20.5±1.0
		25	13	21.32	21.22	21.24	
		25	25	21.16	21.47	21.11	
		50	0	20.86	20.92	20.91	20.0±1.0

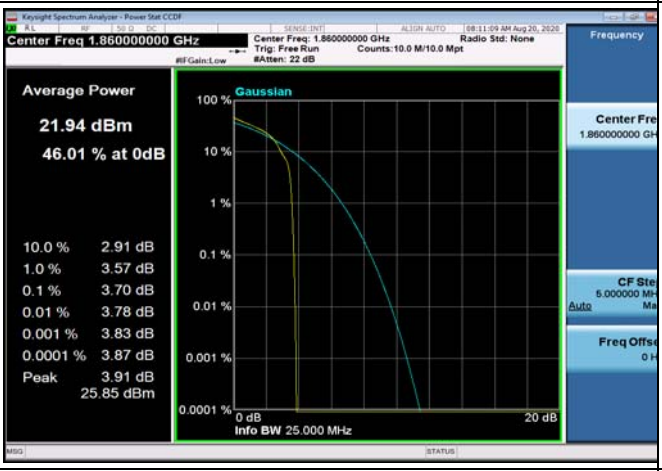
LTE FDD Band 66				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				132047/1717.5	132322/1745	132597/1772.5	
15MHz	QPSK	1	0	23.06	22.98	22.99	22.5±1.0
		1	38	23.3	22.95	22.95	
		1	74	23.03	23.04	22.9	
		36	0	22.57	22.58	22.54	22.0±1.0
		36	18	22.6	22.59	22.44	
		36	39	22.77	22.77	22.68	
		75	0	22.21	22.15	22.18	21.5±1.0
	16QAM	1	0	21.94	21.93	21.87	21.0±1.0
		1	38	21.95	21.93	21.61	
		1	74	21.67	21.61	21.62	
		36	0	21.5	21.47	21.16	20.5±1.0
		36	18	21.12	21.16	21.23	
		36	39	21.34	21.26	21.29	
		75	0	20.92	20.81	20.83	20.0±1.0
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency			Tune up
				132072/1720	132322/1745	132572/1770	
20MHz	QPSK	1	0	23	23.4	23.14	22.5±1.0
		1	50	23.3	23.22	22.95	
		1	99	23.18	23.26	23.06	
		50	0	22.66	22.78	22.4	22.0±1.0
		50	25	22.5	22.65	22.54	
		50	50	22.49	22.63	22.49	
		100	0	22.2	22.21	22.2	21.5±1.0
	16QAM	1	0	21.79	21.68	21.92	21.0±1.0
		1	50	21.78	21.93	21.99	
		1	99	21.97	21.82	21.77	
		50	0	21.17	21.23	21.49	20.5±1.0
		50	25	21.2	21.28	21.44	
		50	50	21.1	21.5	21.26	
		100	0	21	20.96	20.91	20.0±1.0

Peak To Average Ratio

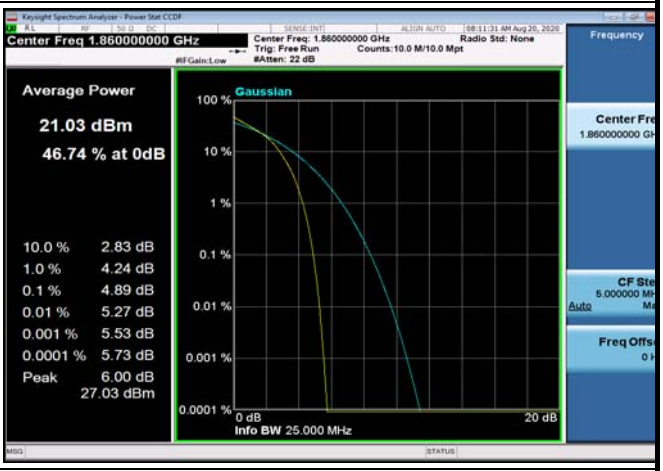
Test Result and Data

PeakToAveragePowerRatio NormalTC_NormalVol							
Band	Range	BandWidth	RbMode	Modulation	PAPR (dBm)	Limit (dBm)	Result
FDD02	LowRange	20	OneRB_high	Q16	3.70	13.00	Pass
FDD02	LowRange	20	fullRB	Q16	4.89	13.00	Pass
FDD02	MidRange	20	OneRB_high	Q16	3.77	13.00	Pass
FDD02	MidRange	20	fullRB	Q16	5.04	13.00	Pass
FDD02	HighRange	20	OneRB_high	Q16	3.74	13.00	Pass
FDD02	HighRange	20	fullRB	Q16	5.00	13.00	Pass
FDD25	LowRange	20	OneRB_high	Q16	4.93	13.00	Pass
FDD25	LowRange	20	fullRB	Q16	5.68	13.00	Pass
FDD25	MidRange	20	OneRB_high	Q16	5.13	13.00	Pass
FDD25	MidRange	20	fullRB	Q16	5.85	13.00	Pass
FDD25	HighRange	20	OneRB_high	Q16	4.51	13.00	Pass
FDD25	HighRange	20	fullRB	Q16	5.71	13.00	Pass
FDD04	LowRange	20	OneRB_high	Q16	5.51	13.00	Pass
FDD04	LowRange	20	fullRB	Q16	5.97	13.00	Pass
FDD04	MidRange	20	OneRB_high	Q16	5.50	13.00	Pass
FDD04	MidRange	20	fullRB	Q16	5.50	13.00	Pass
FDD04	HighRange	20	OneRB_high	Q16	5.33	13.00	Pass
FDD04	HighRange	20	fullRB	Q16	5.95	13.00	Pass
FDD66	LowRange	20	OneRB_high	Q16	5.43	13.00	Pass
FDD66	LowRange	20	fullRB	Q16	5.99	13.00	Pass
FDD66	MidRange	20	OneRB_high	Q16	5.45	13.00	Pass
FDD66	MidRange	20	fullRB	Q16	5.42	13.00	Pass
FDD66	HighRange	20	OneRB_high	Q16	4.72	13.00	Pass
FDD66	HighRange	20	fullRB	Q16	-1.00	13.00	Pass

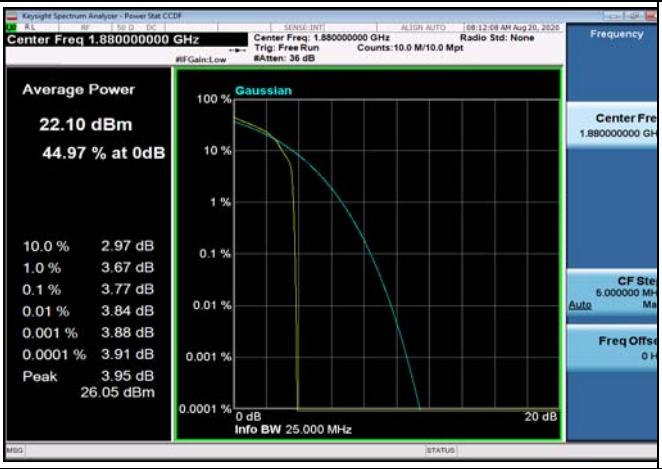
FDD02_LowRange_20MHz_1860_OneRB_high_Q16



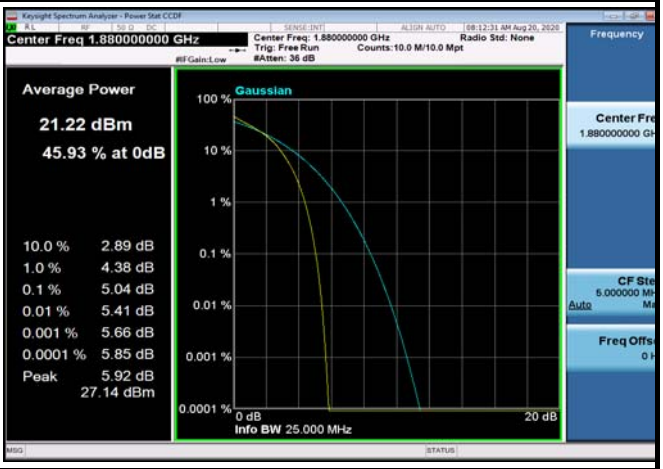
FDD02_LowRange_20MHz_1860_fullRB_Q16



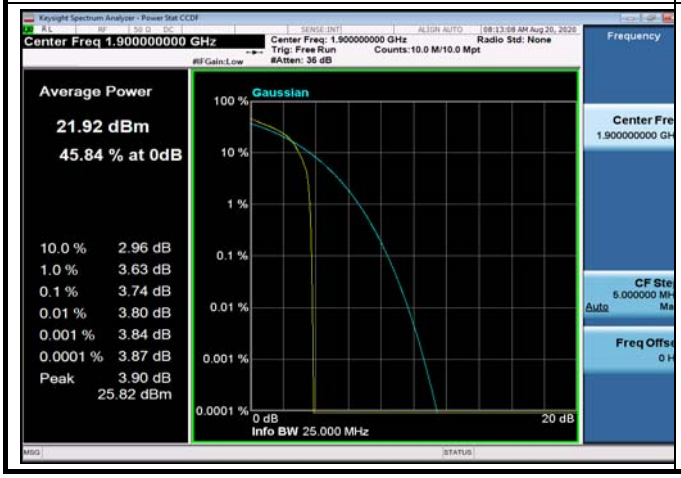
FDD02_MidRange_20MHz_1880_OneRB_high_Q16



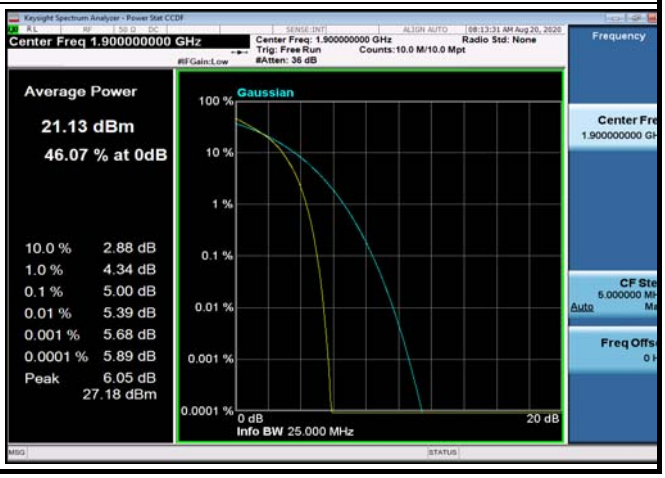
FDD02_MidRange_20MHz_1880_fullRB_Q16



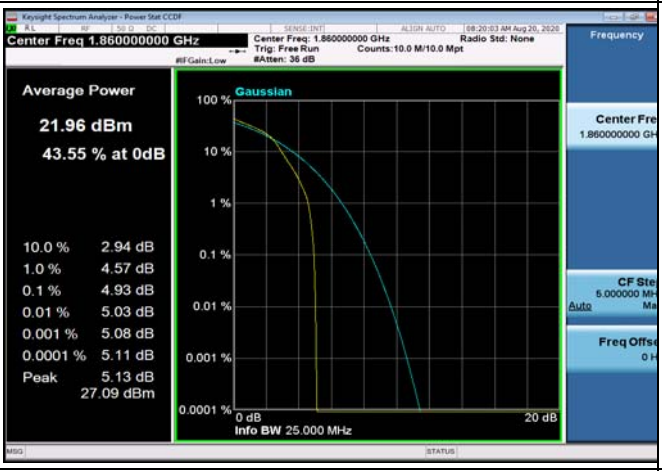
FDD02_HighRange_20MHz_1900_OneRB_high_Q16



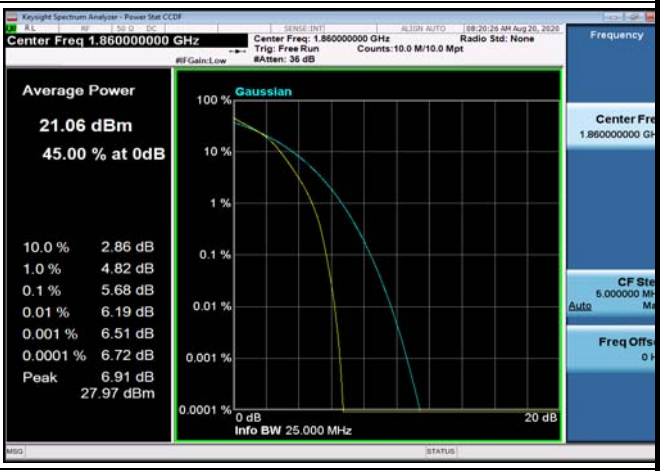
FDD02_HighRange_20MHz_1900_fullRB_Q16



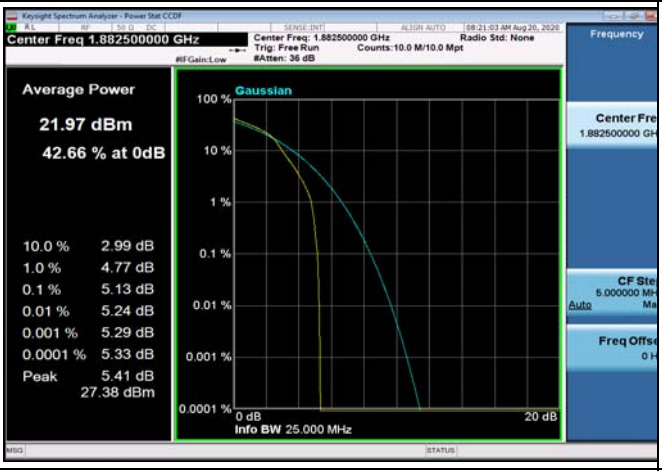
FDD25_LowRange_20MHz_1860_OneRB_high_Q16



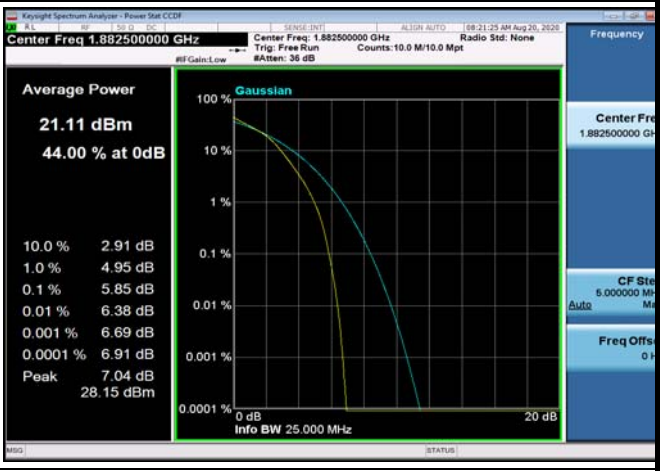
FDD25_LowRange_20MHz_1860_fullRB_Q16



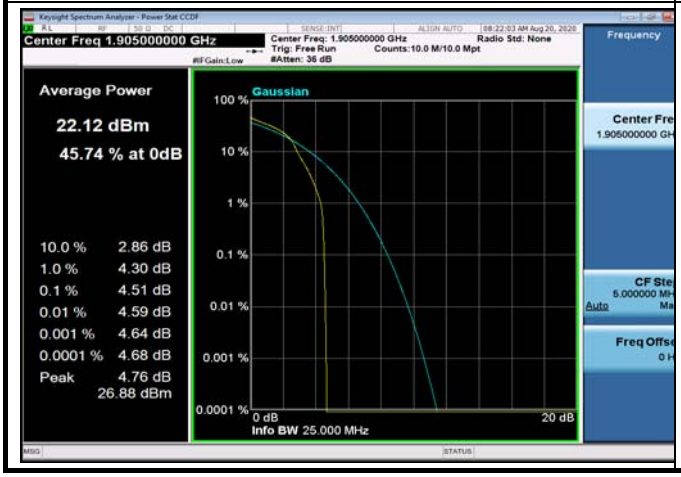
FDD25_MidRange_20MHz_1882.5_OneRB_high_Q16



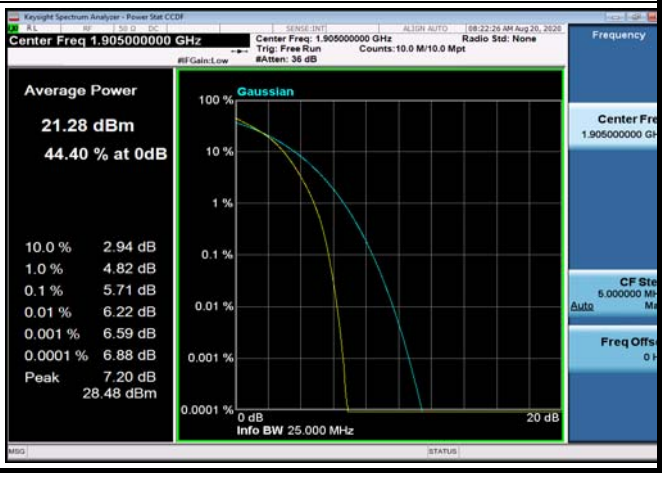
FDD25_MidRange_20MHz_1882.5_fullRB_Q16



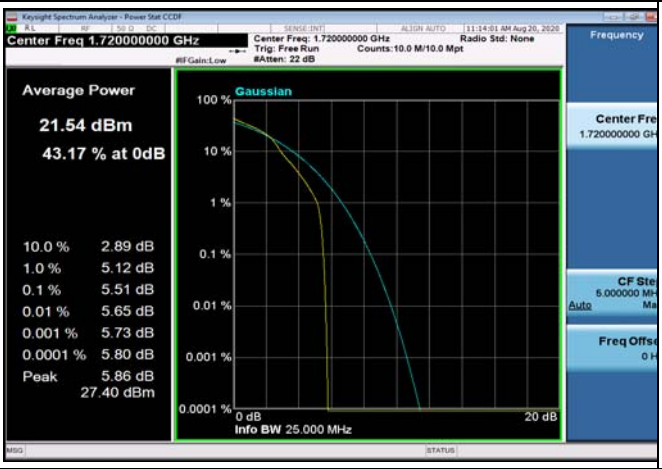
FDD25_HighRange_20MHz_1905_OneRB_high_Q16



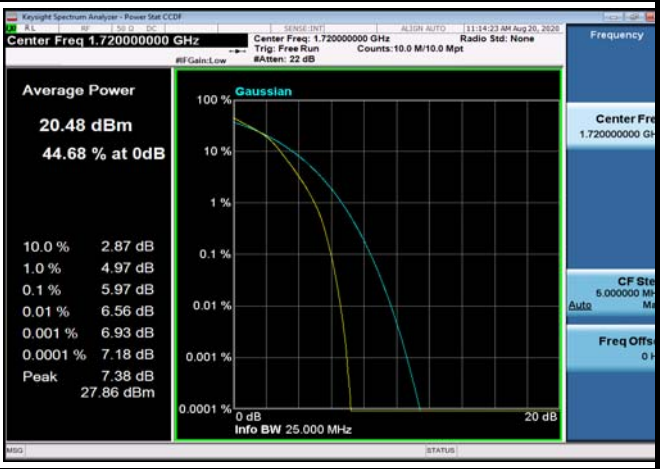
FDD25_HighRange_20MHz_1905_fullRB_Q16



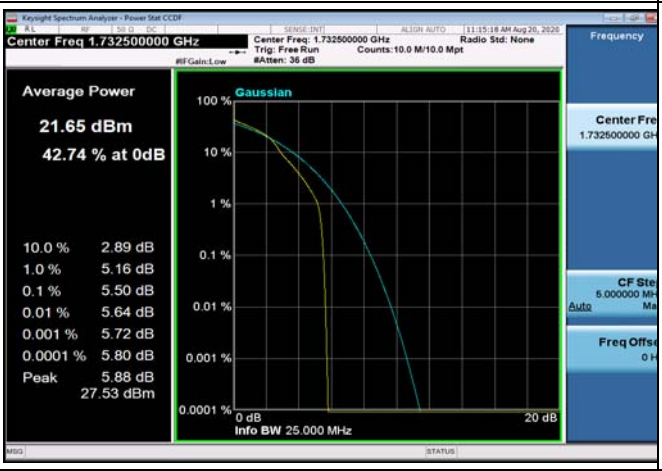
FDD04_LowRange_20MHz_1720_OneRB_high_Q16



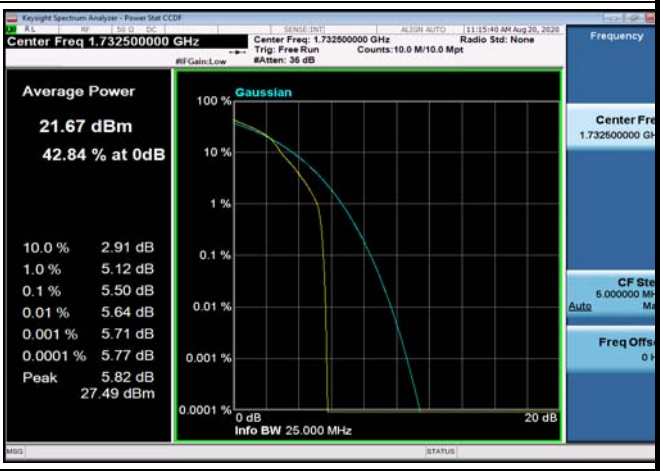
FDD04_LowRange_20MHz_1720_fullRB_Q16



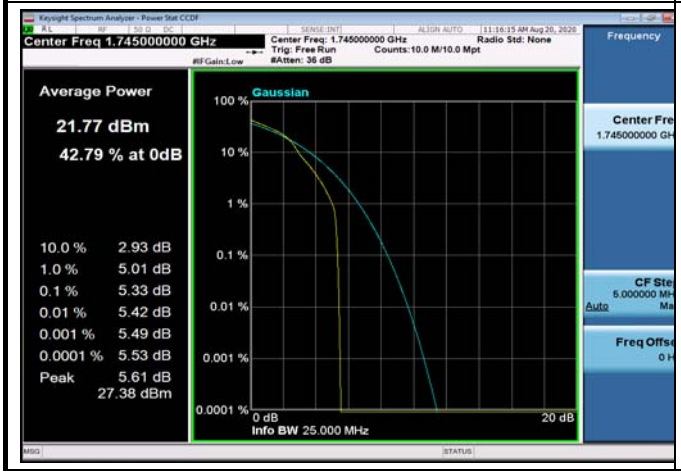
FDD04_MidRange_20MHz_1732.5_OneRB_high_Q16



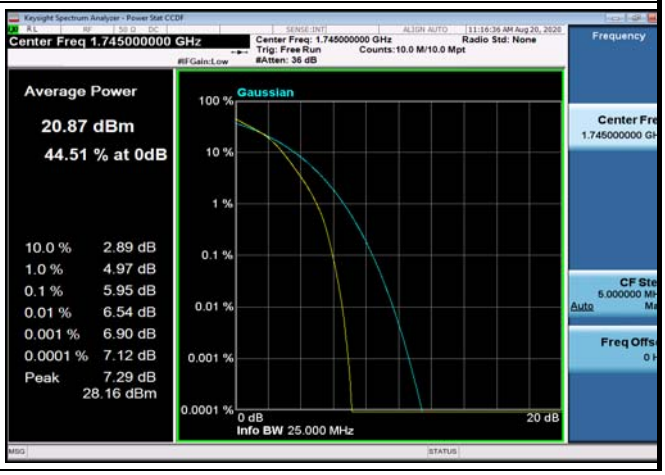
FDD04_MidRange_20MHz_1732.5_fullRB_Q16



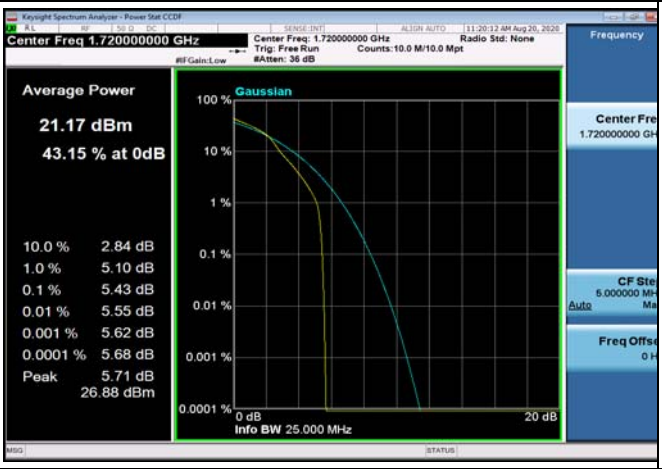
FDD04_HighRange_20MHz_1745_OneRB_high_Q16



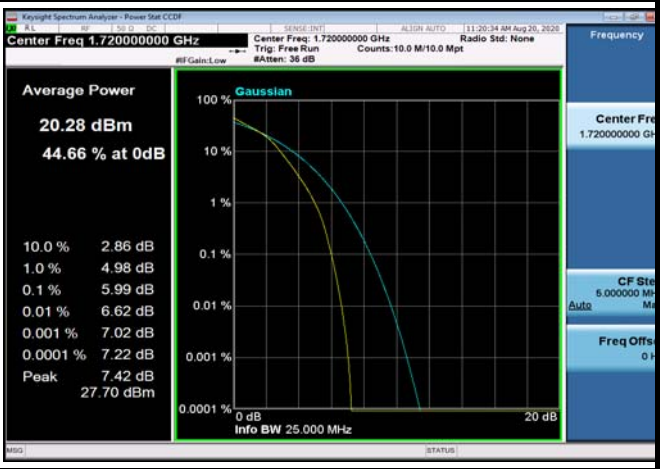
FDD04_HighRange_20MHz_1745_fullRB_Q16



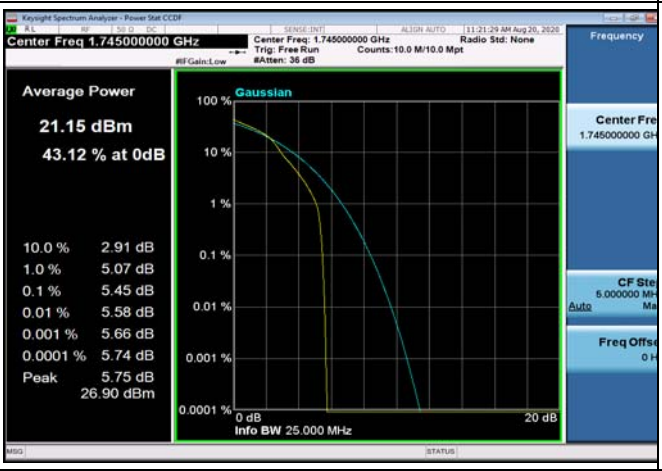
FDD66_LowRange_20MHz_1720_OneRB_high_Q16



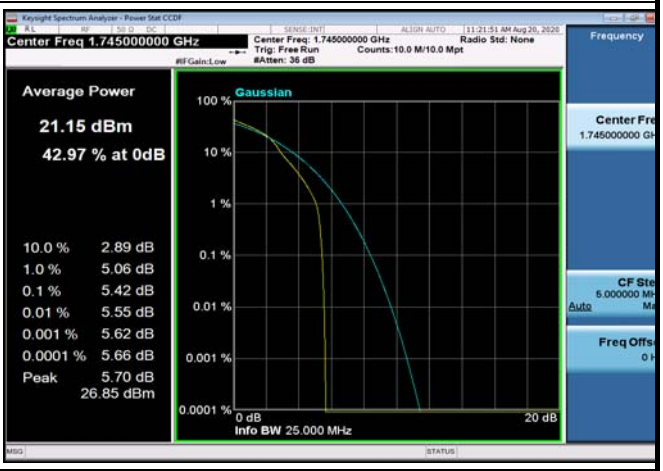
FDD66_LowRange_20MHz_1720_fullRB_Q16



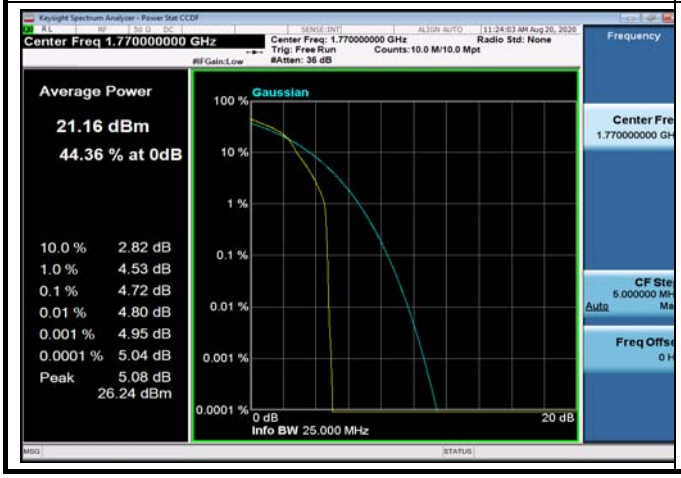
FDD66_MidRange_20MHz_1745_OneRB_high_Q16



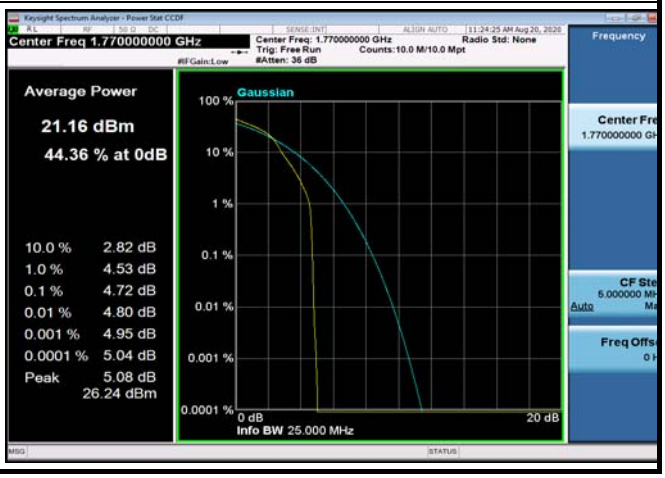
FDD66_MidRange_20MHz_1745_fullRB_Q16



FDD66_HighRange_20MHz_1770_OneRB_high_Q16



FDD66_HighRange_20MHz_1770_fullRB_Q16



99% Occupied Bandwidth

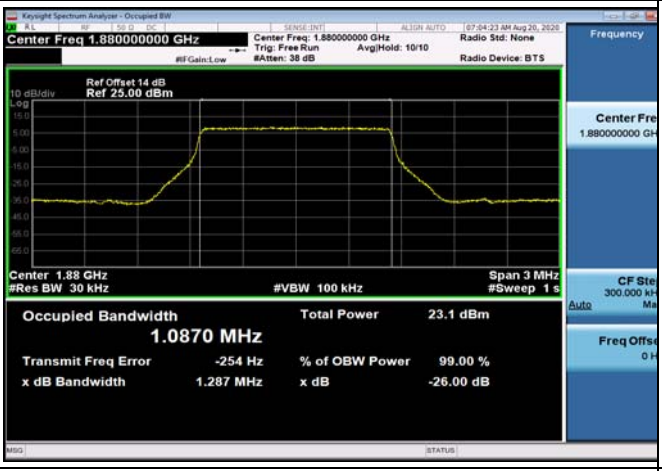
Test Result and Data

Occupied Bandwidth NormalTC_NormalVol					
Band	Range	BandWidth	Frequency (MHz)	Modulation	Occupied Bandwidth(99%) (MHz)
FDD02	MidRange	1.4	1880	QPSK	1.087
FDD02	MidRange	1.4	1880	Q16	1.088
FDD02	MidRange	3	1880	QPSK	2.68
FDD02	MidRange	3	1880	Q16	2.681
FDD02	MidRange	5	1880	QPSK	4.486
FDD02	MidRange	5	1880	Q16	4.49
FDD02	MidRange	10	1880	QPSK	8.909
FDD02	MidRange	10	1880	Q16	8.911
FDD02	MidRange	15	1880	QPSK	13.415
FDD02	MidRange	15	1880	Q16	13.425
FDD02	MidRange	20	1880	QPSK	17.832
FDD02	MidRange	20	1880	Q16	17.835
FDD04	MidRange	1.4	1732.5	QPSK	1.087
FDD04	MidRange	1.4	1732.5	Q16	1.087
FDD04	MidRange	3	1732.5	QPSK	2.681
FDD04	MidRange	3	1732.5	Q16	2.683
FDD04	MidRange	5	1732.5	QPSK	4.49
FDD04	MidRange	5	1732.5	Q16	4.488
FDD04	MidRange	10	1732.5	QPSK	8.915
FDD04	MidRange	10	1732.5	Q16	8.908
FDD04	MidRange	15	1732.5	QPSK	13.42
FDD04	MidRange	15	1732.5	Q16	13.417
FDD04	MidRange	20	1732.5	QPSK	17.829
FDD04	MidRange	20	1732.5	Q16	17.828
FDD05	MidRange	1.4	836.5	QPSK	1.086
FDD05	MidRange	1.4	836.5	Q16	1.088

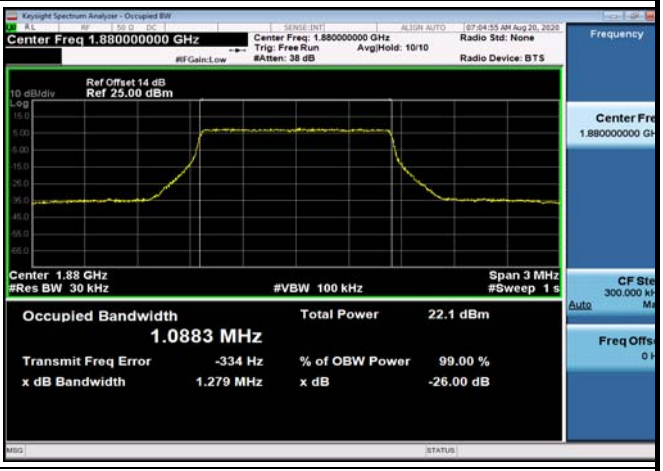
FDD05	MidRange	3	836.5	QPSK	2.681
FDD05	MidRange	3	836.5	Q16	2.682
FDD05	MidRange	5	836.5	QPSK	4.485
FDD05	MidRange	5	836.5	Q16	4.486
FDD05	MidRange	10	836.5	QPSK	8.902
FDD05	MidRange	10	836.5	Q16	8.905
FDD12	MidRange	1.4	707.5	QPSK	1.088
FDD12	MidRange	1.4	707.5	Q16	1.086
FDD12	MidRange	3	707.5	QPSK	2.682
FDD12	MidRange	3	707.5	Q16	2.682
FDD12	MidRange	5	707.5	QPSK	4.492
FDD12	MidRange	5	707.5	Q16	4.492
FDD12	MidRange	10	707.5	QPSK	8.926
FDD12	MidRange	10	707.5	Q16	8.929
FDD25	MidRange	1.4	1882.5	QPSK	1.087
FDD25	MidRange	1.4	1882.5	Q16	1.086
FDD25	MidRange	3	1882.5	QPSK	2.682
FDD25	MidRange	3	1882.5	Q16	2.68
FDD25	MidRange	5	1882.5	QPSK	4.491
FDD25	MidRange	5	1882.5	Q16	4.488
FDD25	MidRange	10	1882.5	QPSK	8.917
FDD25	MidRange	10	1882.5	Q16	8.914
FDD25	MidRange	15	1882.5	QPSK	13.429
FDD25	MidRange	15	1882.5	Q16	13.419
FDD25	MidRange	20	1882.5	QPSK	17.834
FDD25	MidRange	20	1882.5	Q16	17.832
FDD26	MidRange	1.4	831.5	QPSK	1.088
FDD26	MidRange	1.4	831.5	Q16	1.089
FDD26	MidRange	3	831.5	QPSK	2.683
FDD26	MidRange	3	831.5	Q16	2.682
FDD26	MidRange	5	831.5	QPSK	4.491
FDD26	MidRange	5	831.5	Q16	4.49

FDD26	MidRange	10	831.5	QPSK	8.919
FDD26	MidRange	10	831.5	Q16	8.919
FDD26	MidRange	15	831.5	QPSK	13.447
FDD26	MidRange	15	831.5	Q16	13.451
FDD66	MidRange	1.4	1745	QPSK	1.087
FDD66	MidRange	1.4	1745	Q16	1.086
FDD66	MidRange	3	1745	QPSK	2.68
FDD66	MidRange	3	1745	Q16	2.682
FDD66	MidRange	5	1745	QPSK	4.489
FDD66	MidRange	5	1745	Q16	4.487
FDD66	MidRange	10	1745	QPSK	8.911
FDD66	MidRange	10	1745	Q16	8.906
FDD66	MidRange	15	1745	QPSK	13.416
FDD66	MidRange	15	1745	Q16	13.414
FDD66	MidRange	20	1745	QPSK	17.825
FDD66	MidRange	20	1745	Q16	17.824

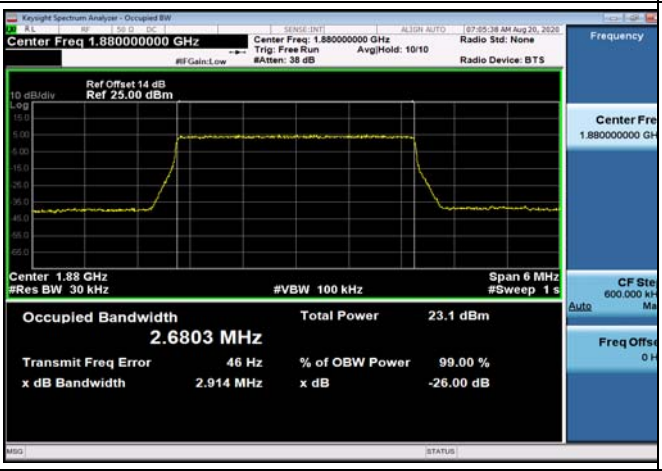
FDD02_MidRange_1.4_1880_QPSK



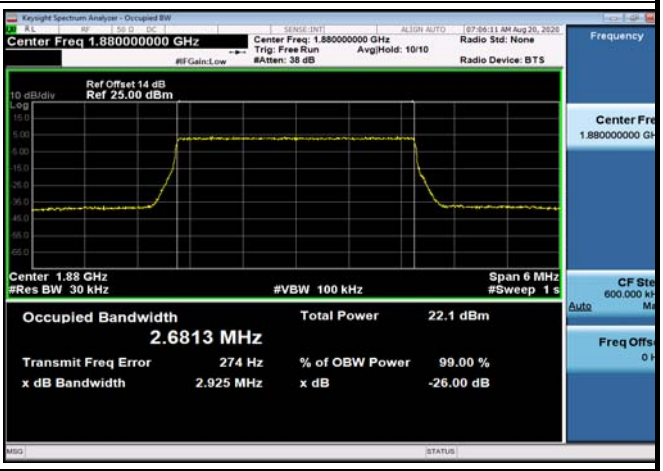
FDD02_MidRange_1.4_1880_Q16



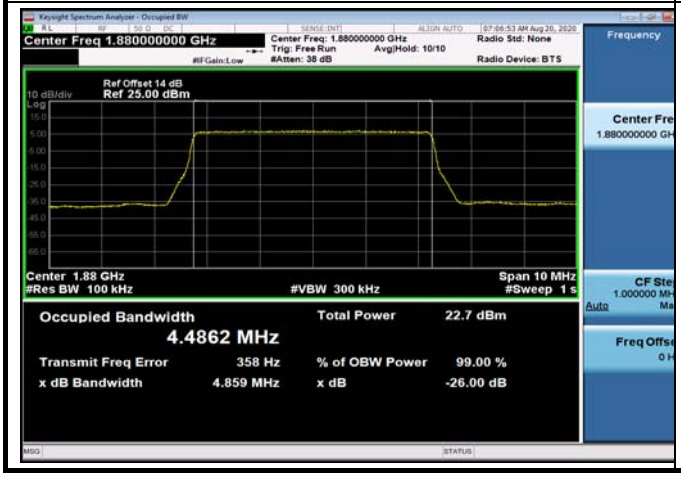
FDD02_MidRange_3_1880_QPSK



FDD02_MidRange_3_1880_Q16



FDD02_MidRange_5_1880_QPSK



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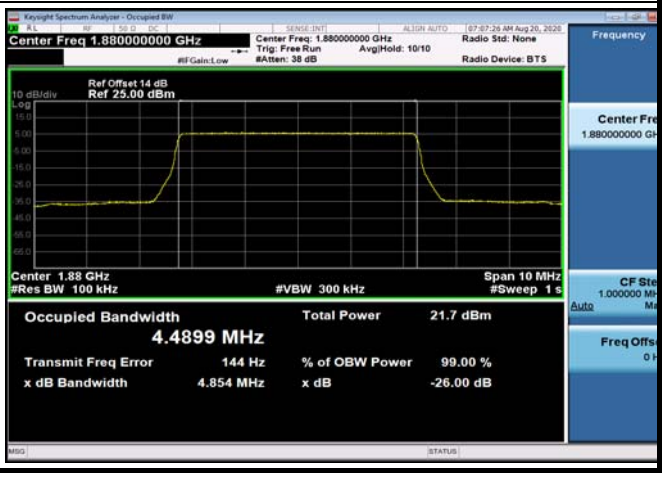
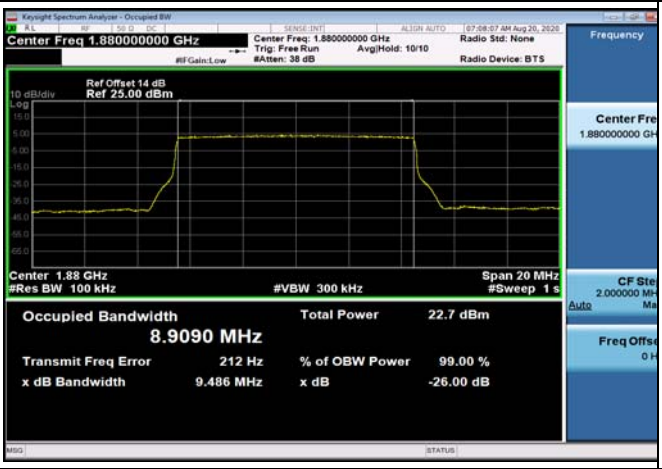
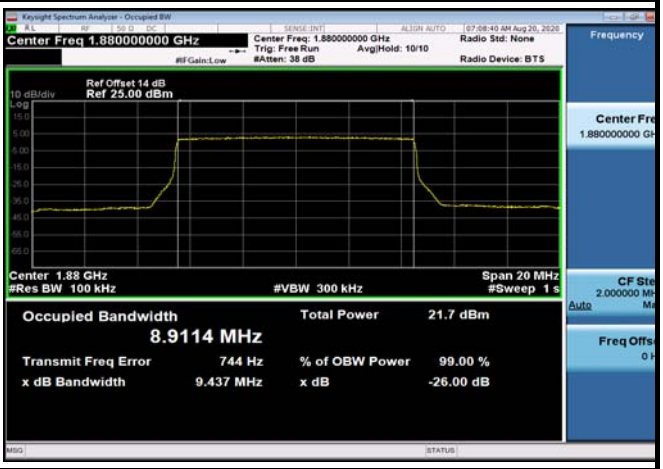


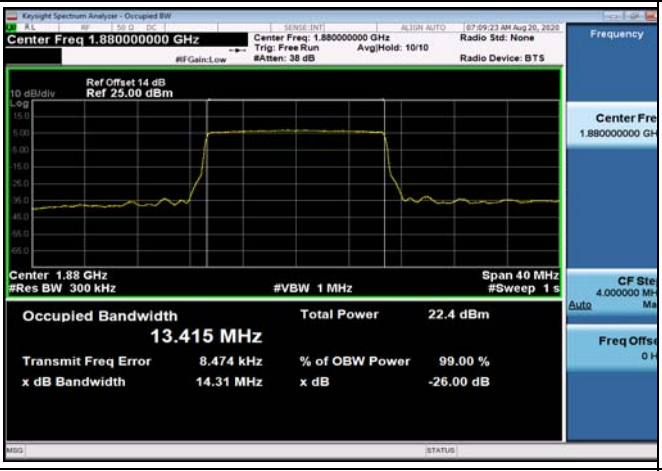
FDD02_MidRange_10_1880_QPSK



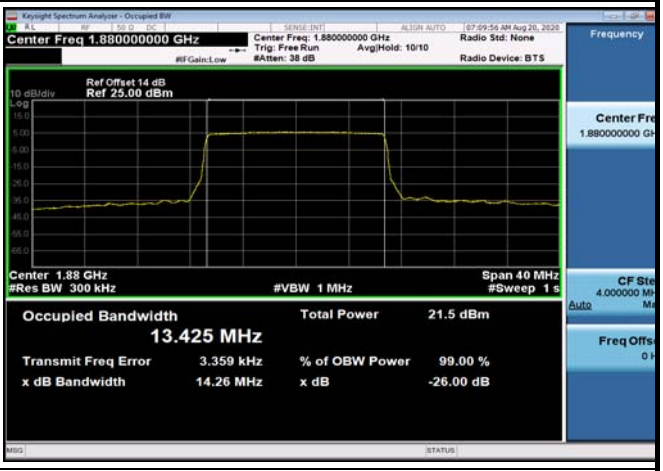
FDD02_MidRange_10_1880_Q16



FDD02_MidRange_15_1880_QPSK



FDD02_MidRange_15_1880_Q16



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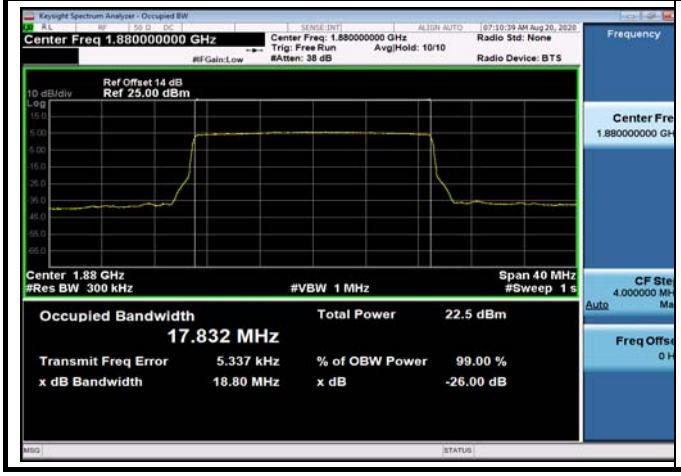
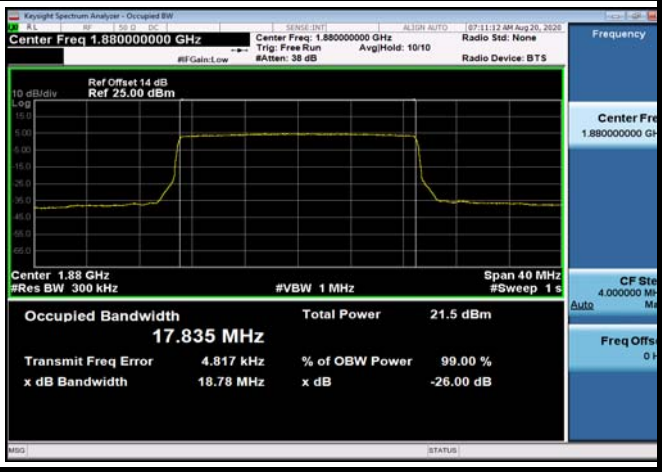
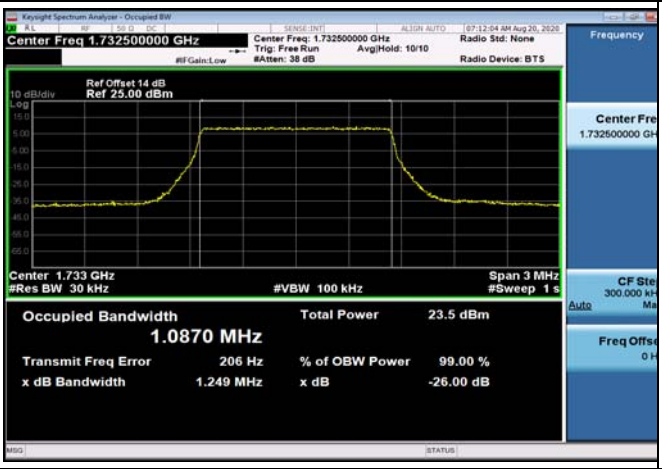


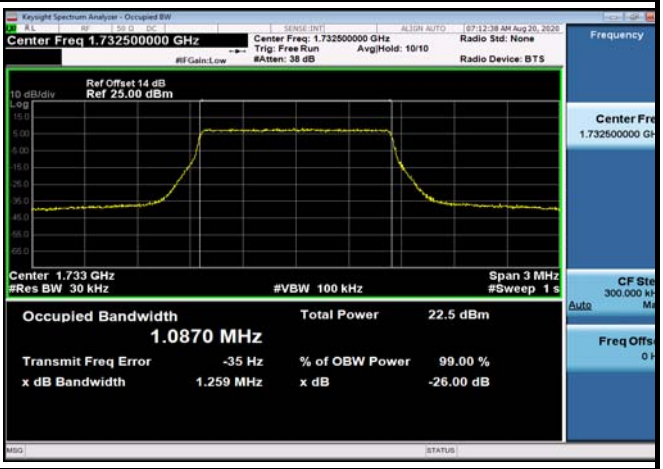
FDD02_MidRange_20_1880_Q16



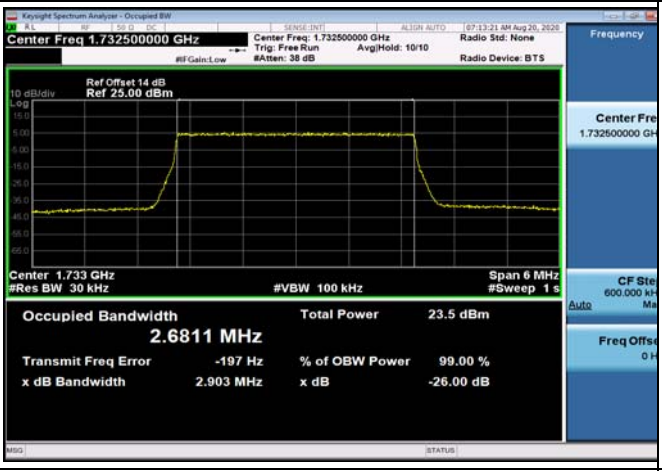
FDD04_MidRange_1.4_1732.5_QPSK



FDD04_MidRange_1.4_1732.5_Q16



FDD04_MidRange_3_1732.5_QPSK



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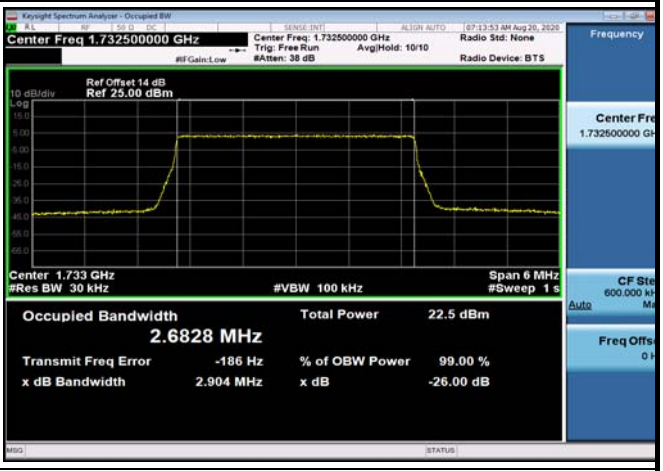

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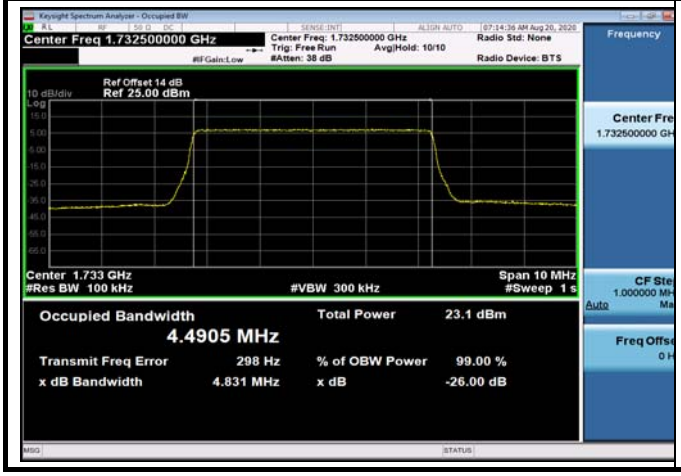
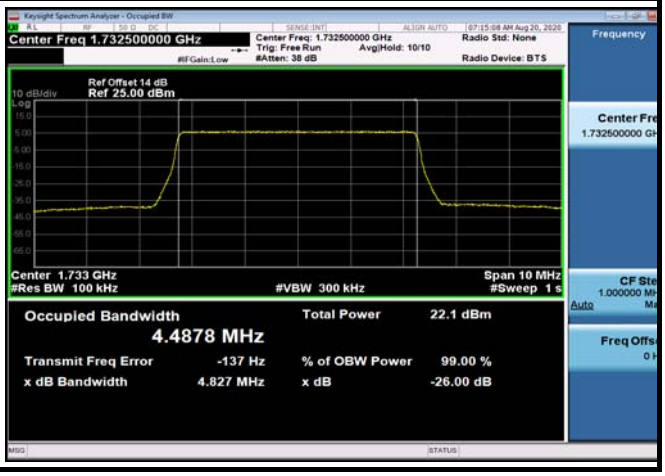
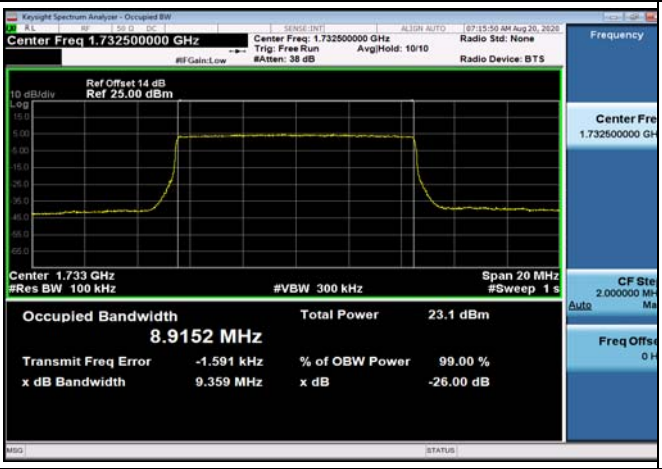


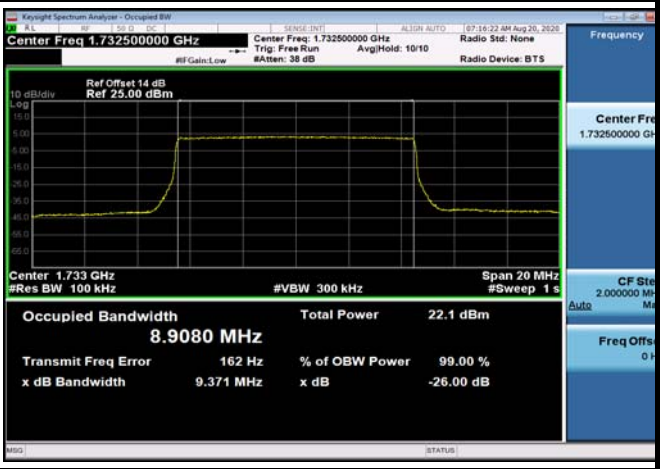
FDD04_MidRange_5_1732.5_Q16



FDD04_MidRange_10_1732.5_QPSK



FDD04_MidRange_10_1732.5_Q16



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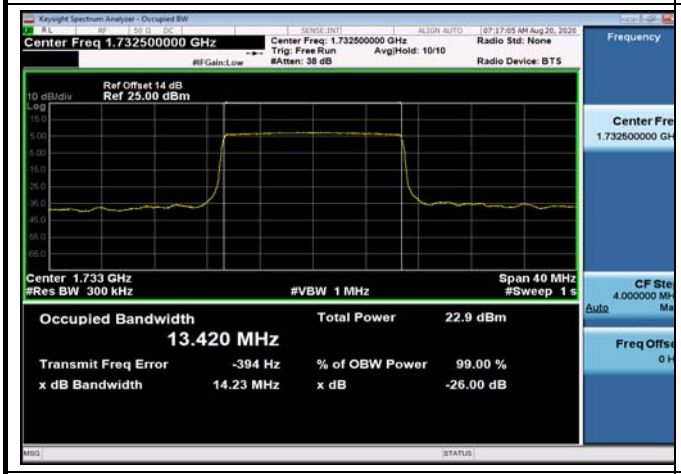
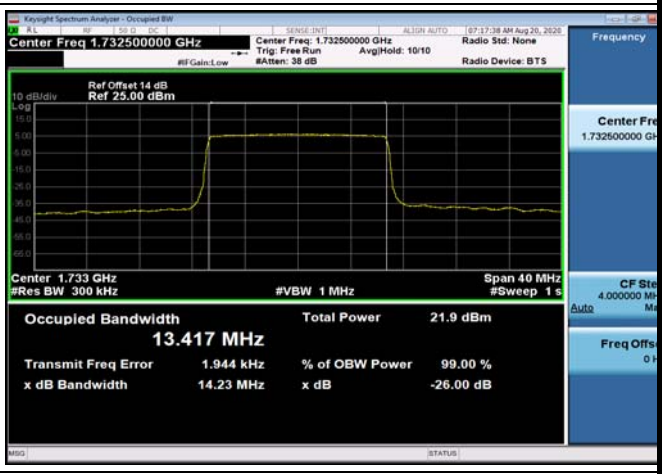
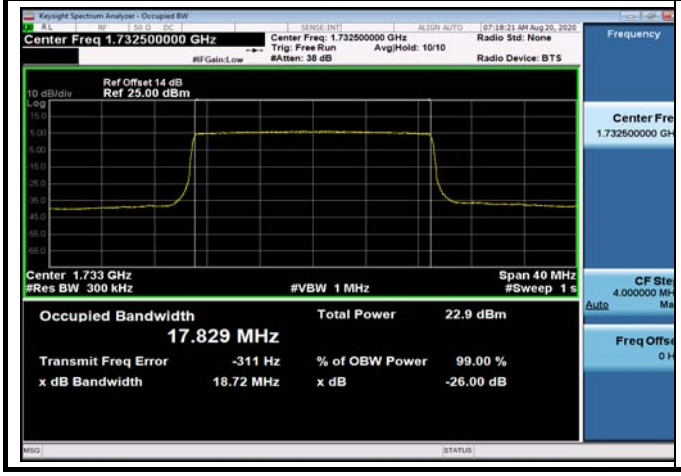


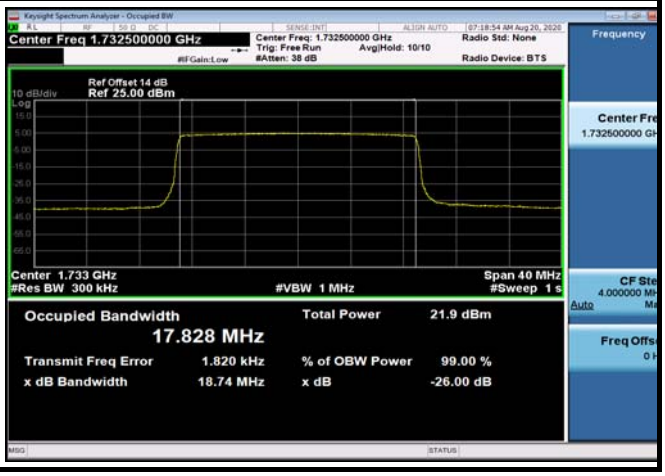
FDD04_MidRange_15_1732.5_Q16



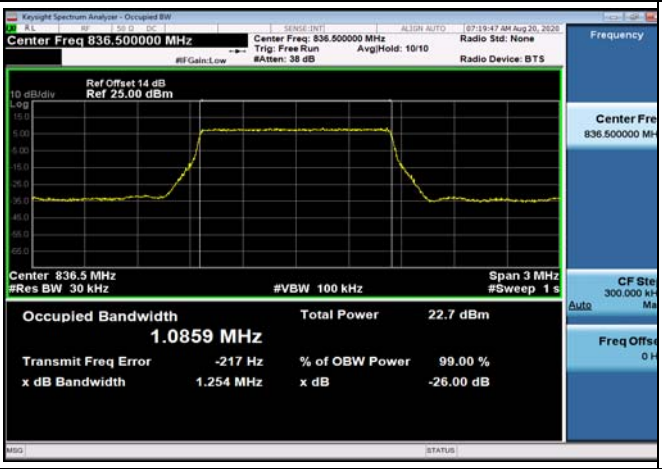
FDD04_MidRange_20_1732.5_QPSK



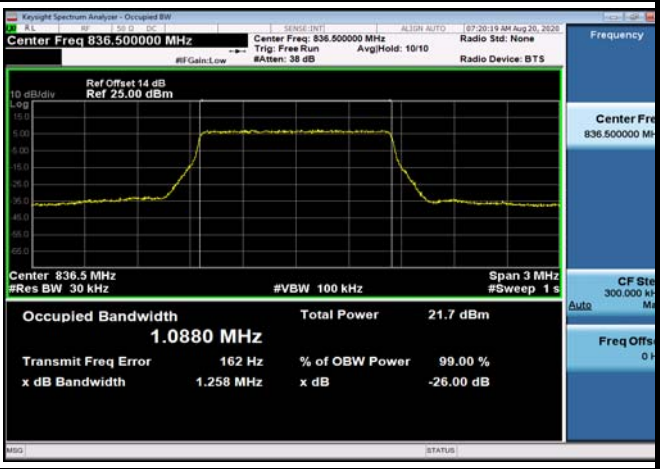
FDD04_MidRange_20_1732.5_Q16



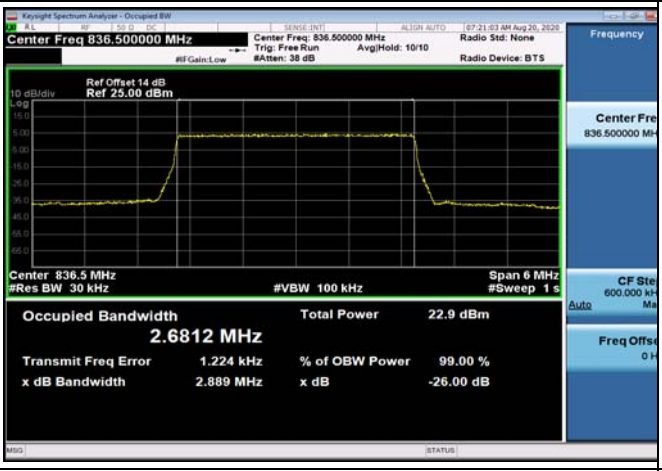
FDD05_MidRange_1.4_836.5_QPSK



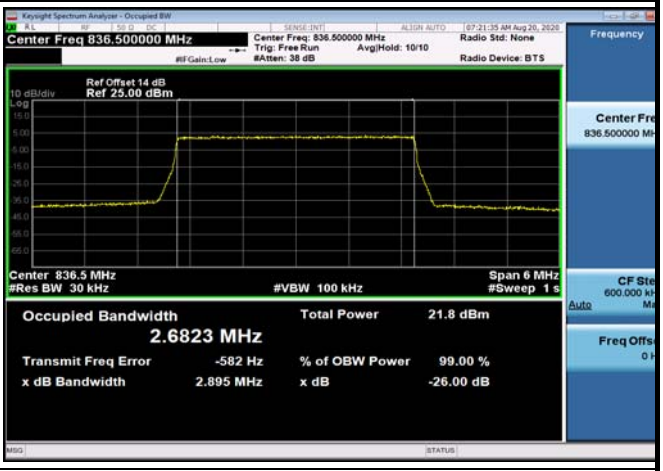
FDD05_MidRange_1.4_836.5_Q16



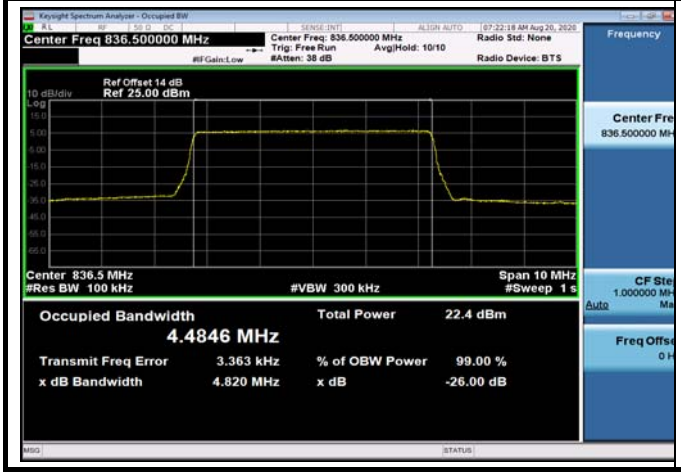
FDD05_MidRange_3_836.5_QPSK



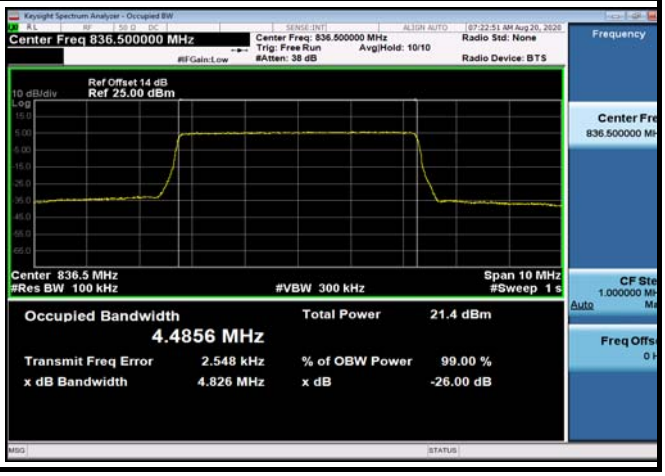
FDD05_MidRange_3_836.5_Q16



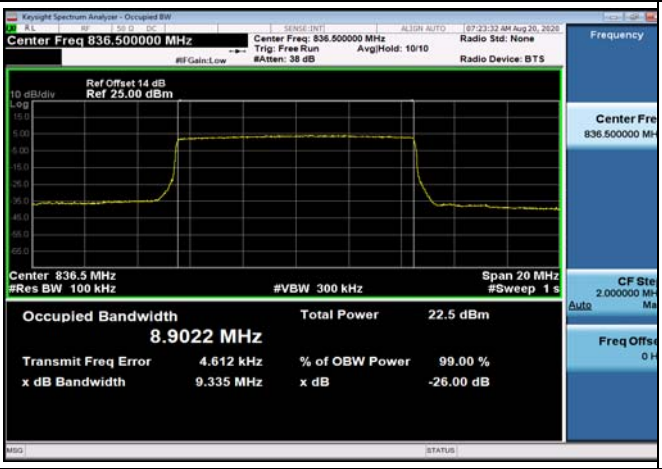
FDD05_MidRange_5_836.5_QPSK



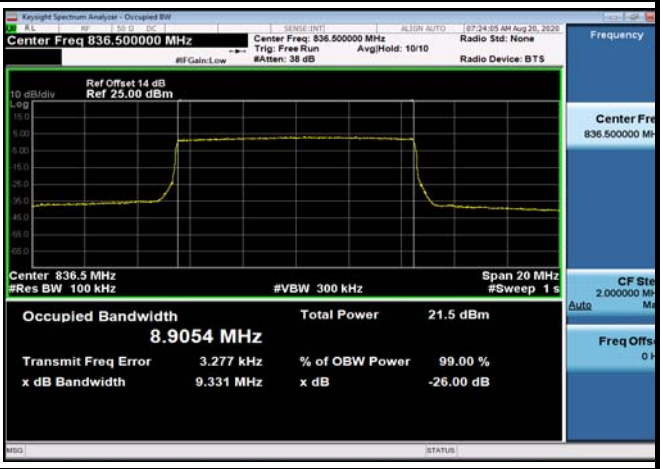
FDD05_MidRange_5_836.5_Q16



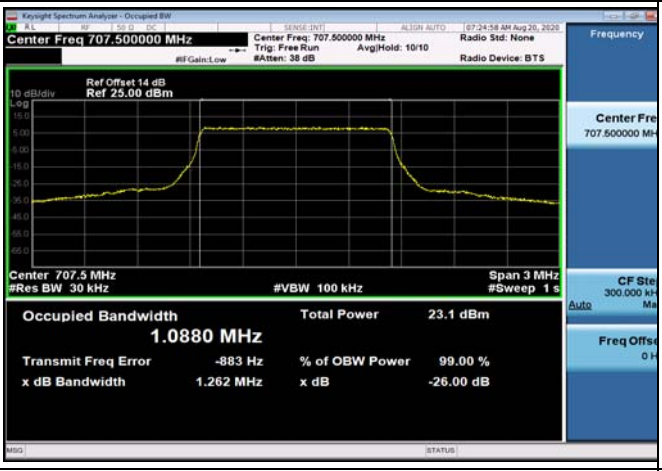
FDD05_MidRange_10_836.5_QPSK



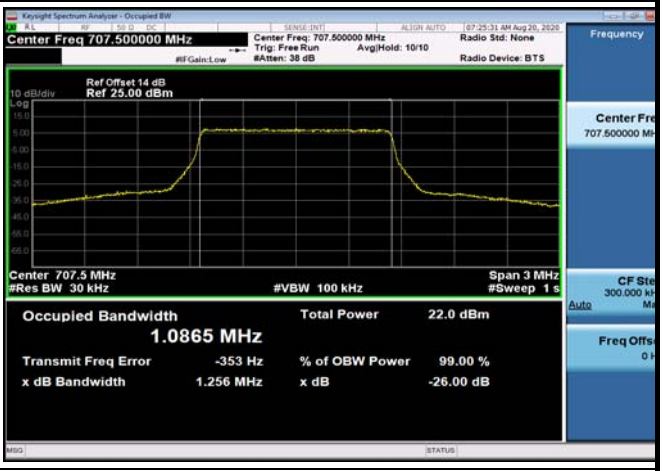
FDD05_MidRange_10_836.5_Q16



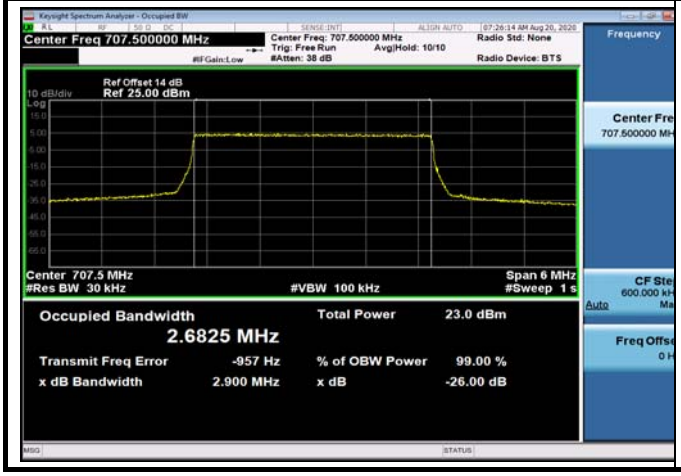
FDD12_MidRange_1.4_707.5_QPSK



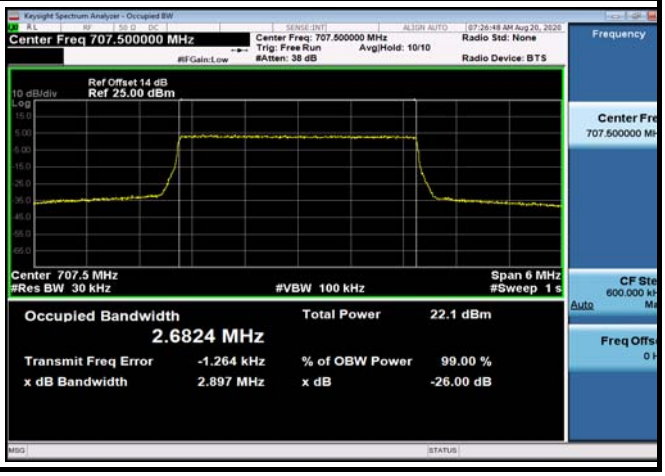
FDD12_MidRange_1.4_707.5_Q16



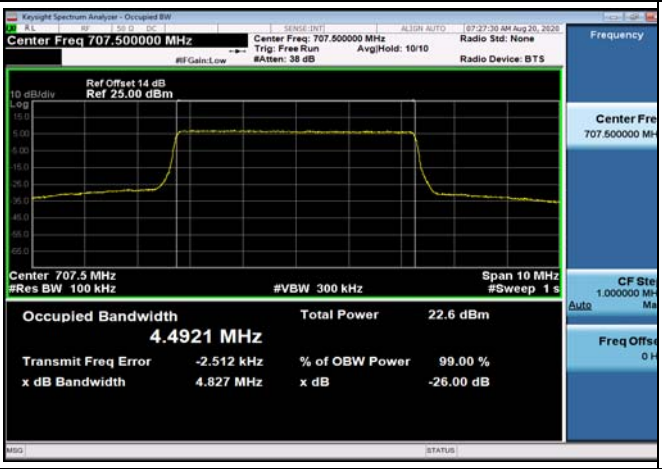
FDD12_MidRange_3_707.5_QPSK



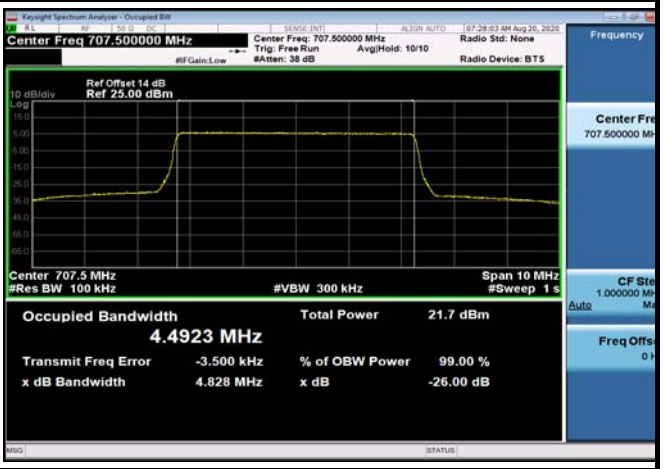
FDD12_MidRange_3_707.5_Q16



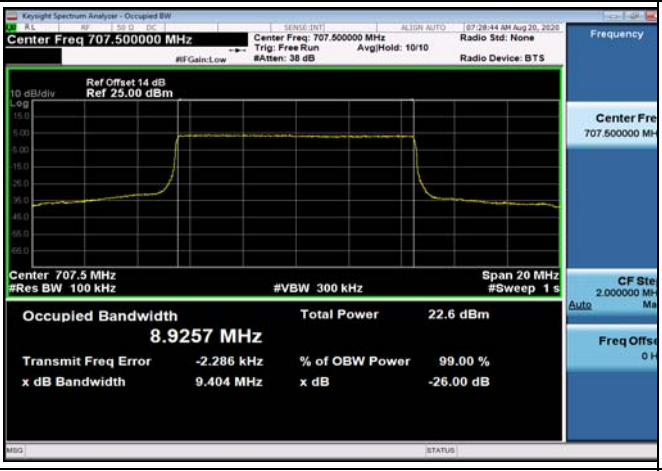
FDD12_MidRange_5_707.5_QPSK



FDD12_MidRange_5_707.5_Q16



FDD12_MidRange_10_707.5_QPSK



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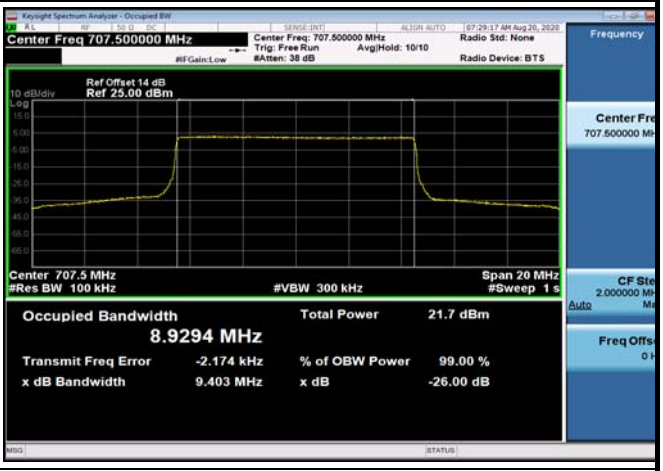
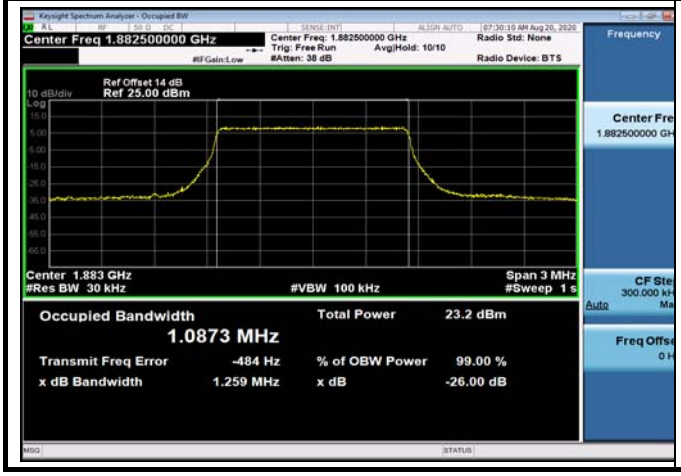
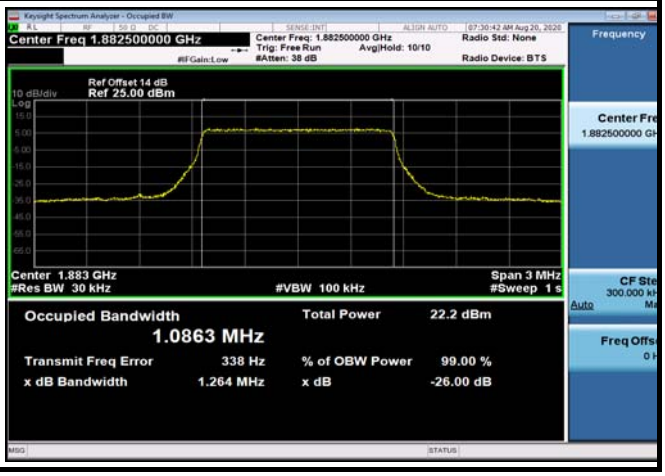


FDD25_MidRange_1.4_1882.5_QPSK



FDD25_MidRange_1.4_1882.5_Q16



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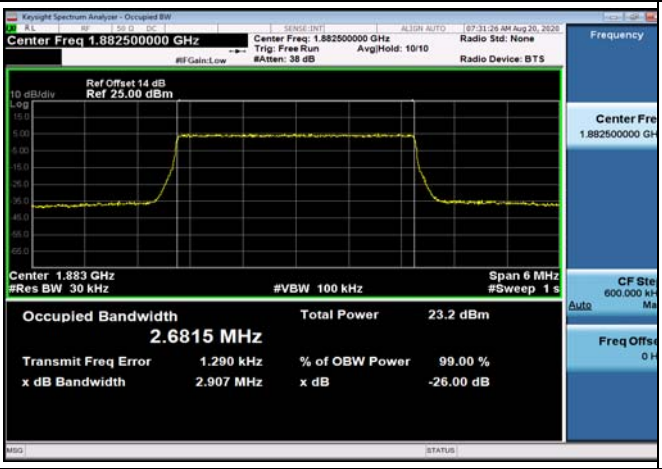
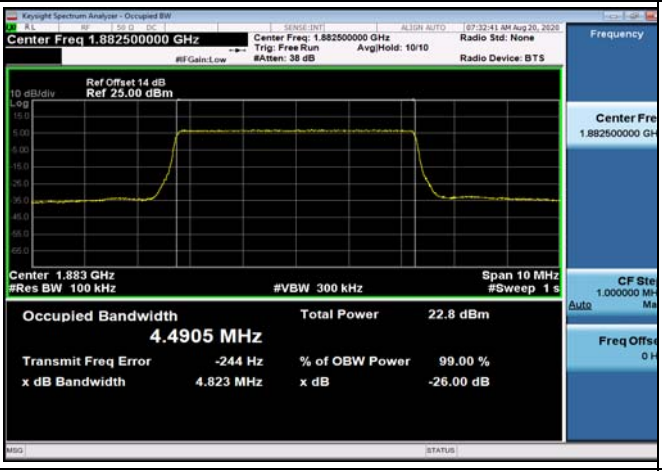


FDD25_MidRange_3_1882.5_Q16

FDD25_MidRange_5_1882.5_QPSK



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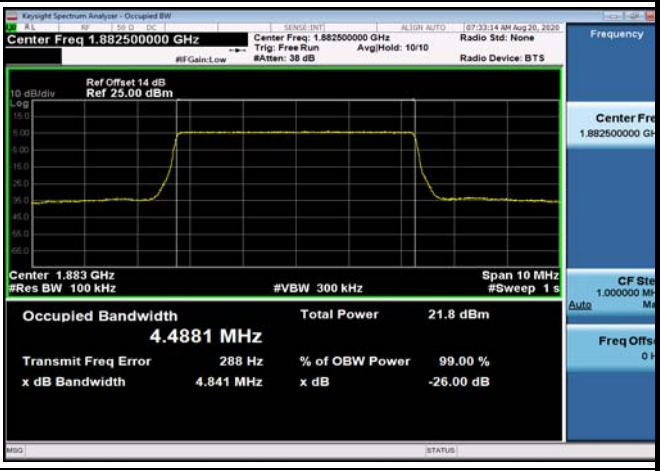
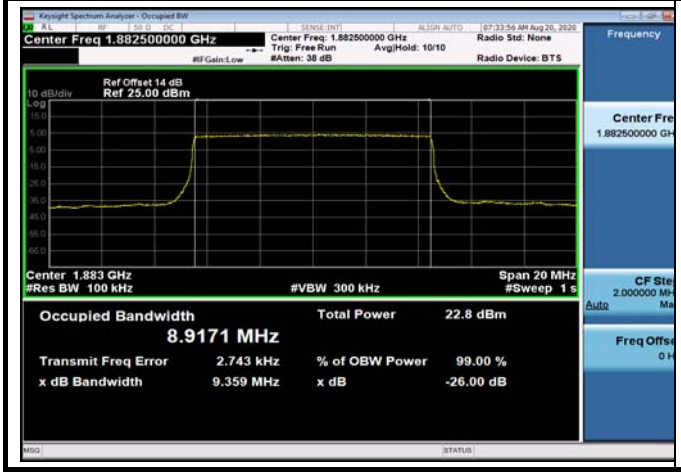
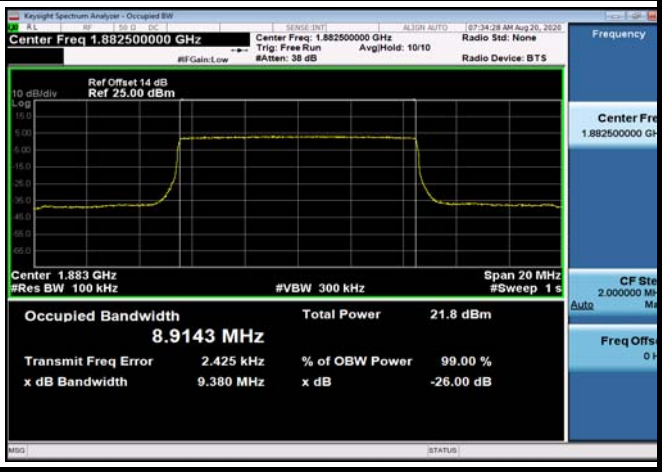


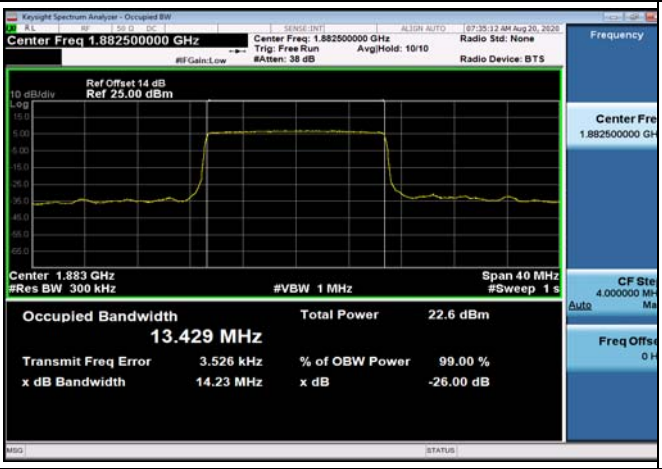
FDD25_MidRange_10_1882.5_QPSK



FDD25_MidRange_10_1882.5_Q16



FDD25_MidRange_15_1882.5_QPSK



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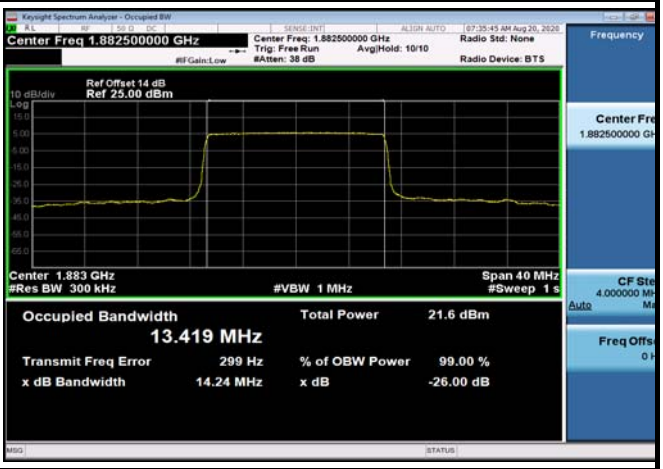
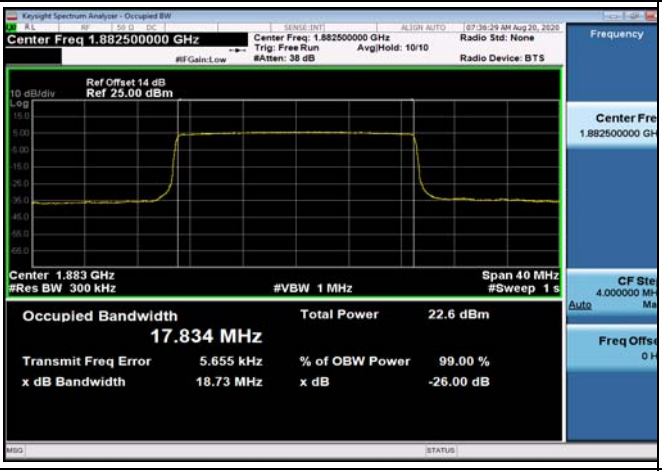
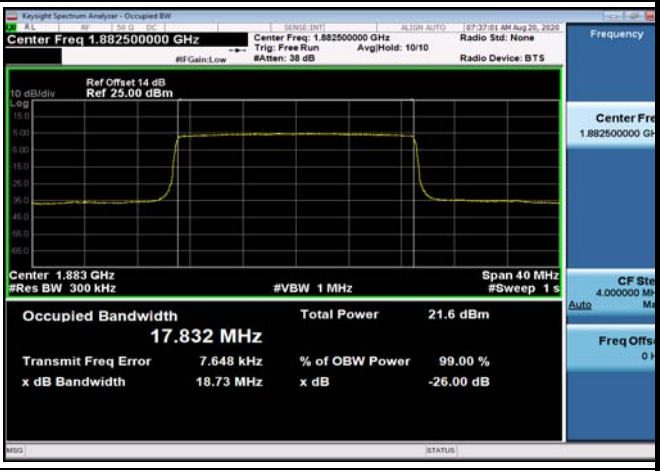


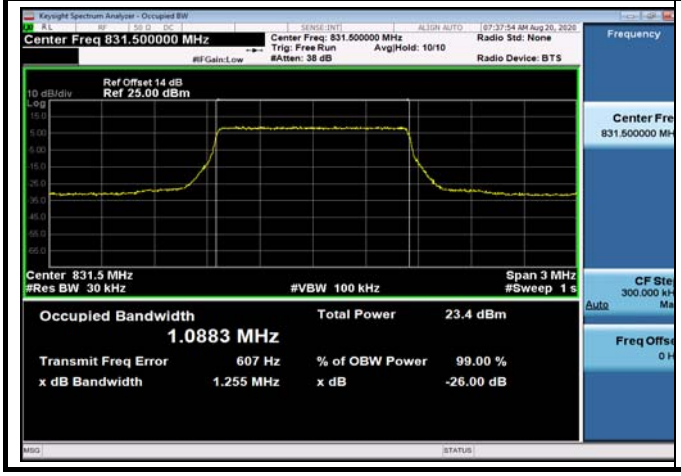
FDD25_MidRange_20_1882.5_QPSK



FDD25_MidRange_20_1882.5_Q16



FDD26_MidRange_1.4_831.5_QPSK



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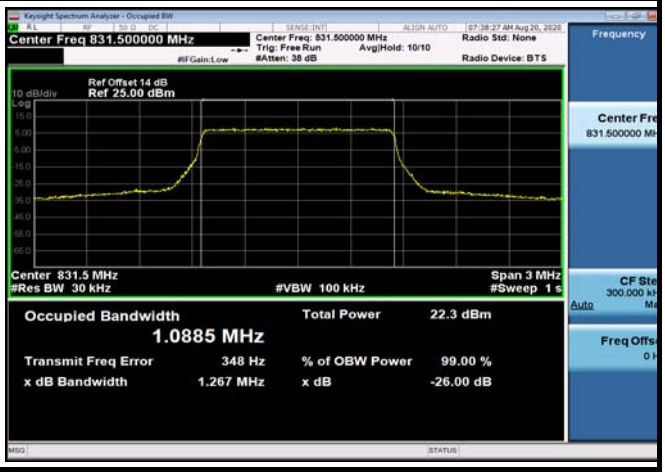
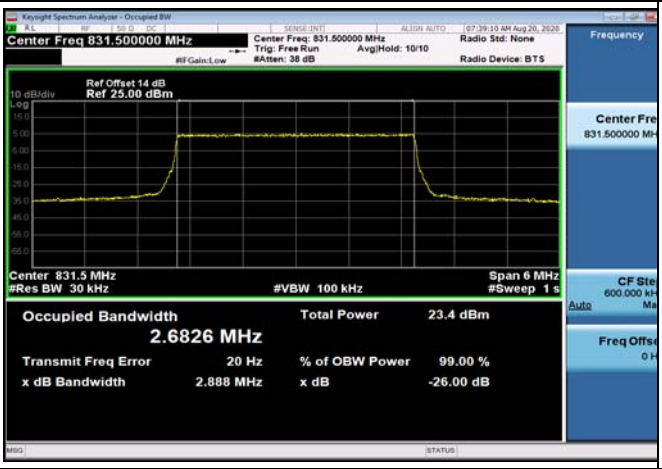
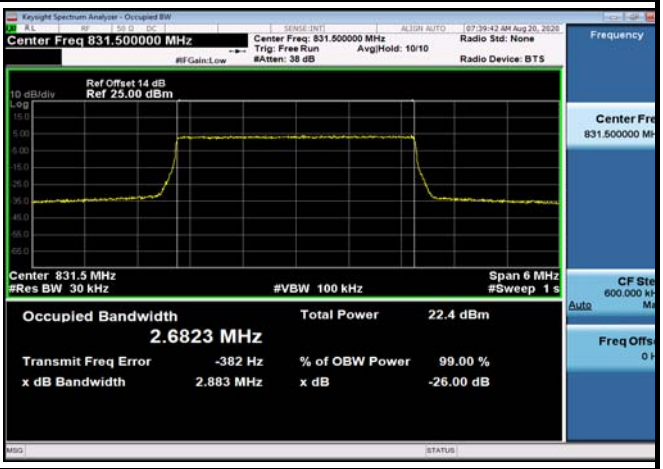


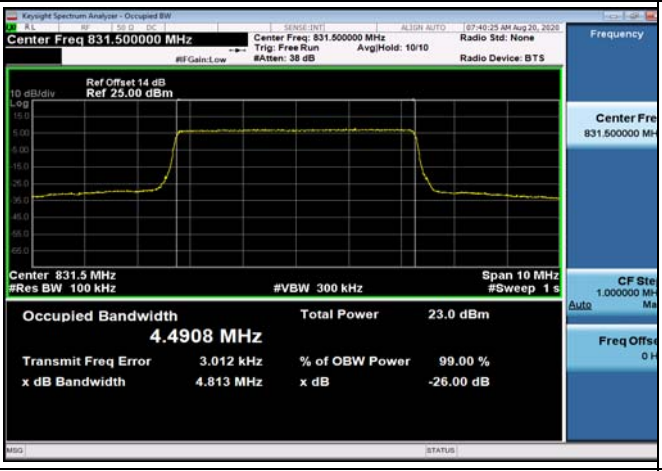
FDD26_MidRange_3_831.5_QPSK



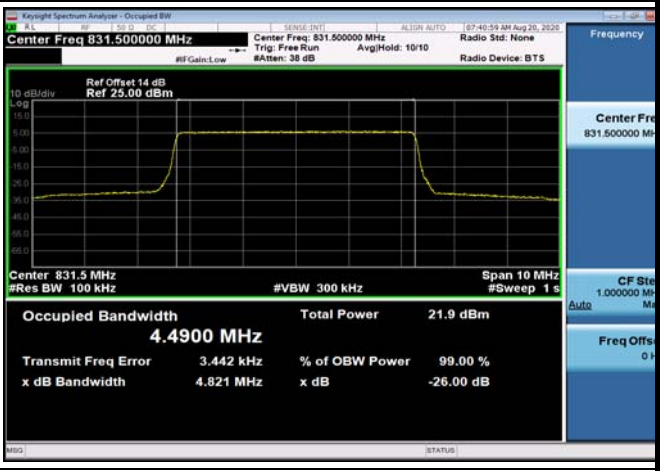
FDD26_MidRange_3_831.5_Q16



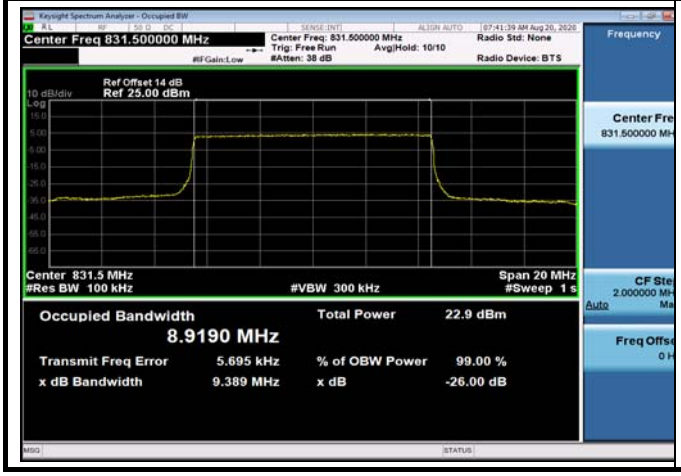
FDD26_MidRange_5_831.5_QPSK



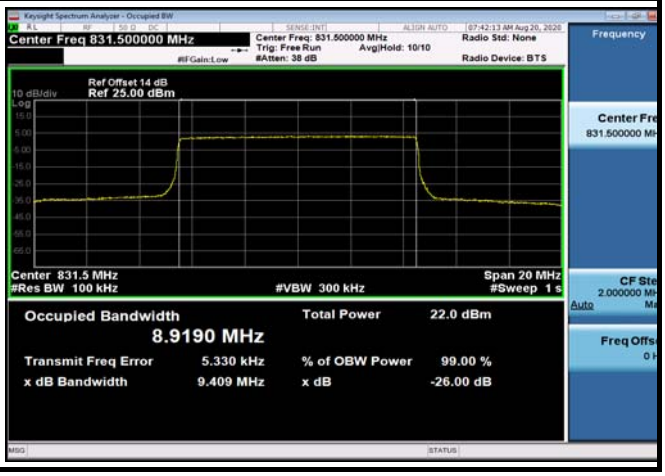
FDD26_MidRange_5_831.5_Q16



FDD26_MidRange_10_831.5_QPSK



FDD26_MidRange_10_831.5_Q16



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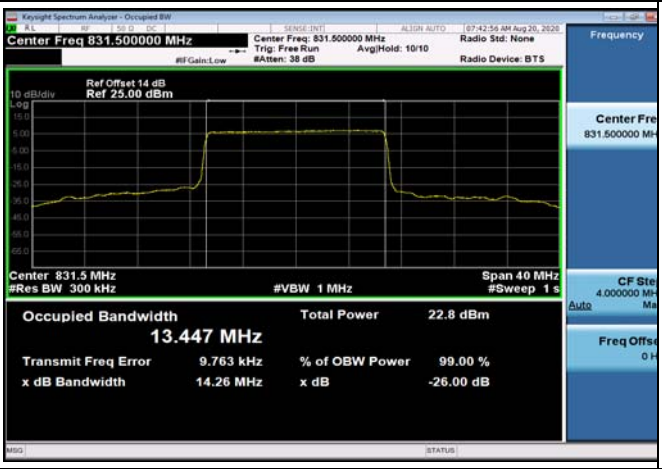
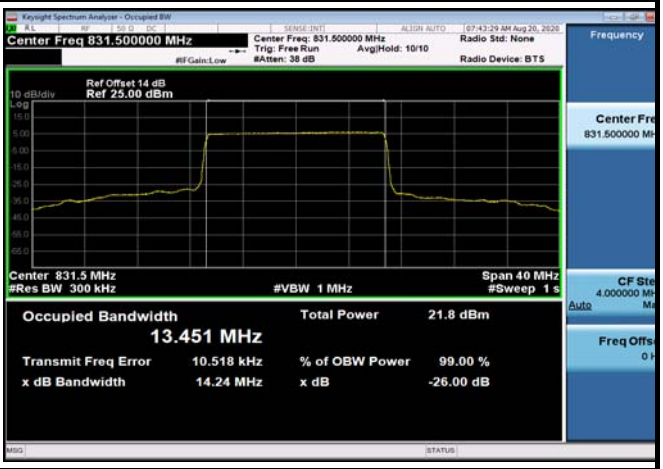
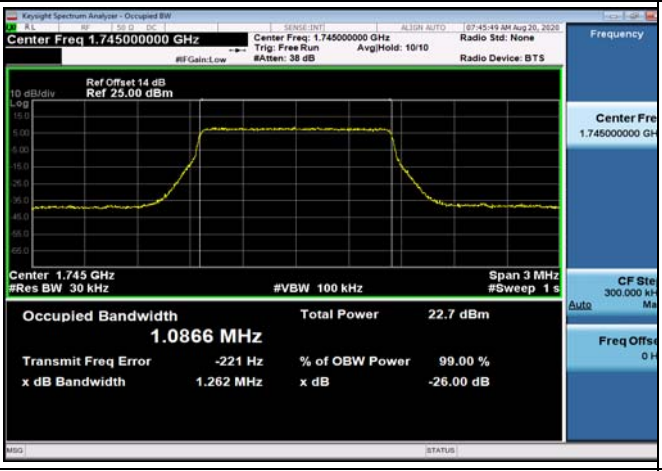


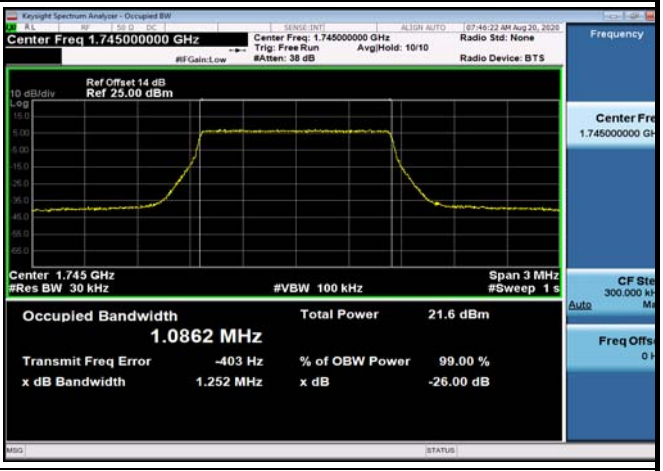
FDD26_MidRange_15_831.5_Q16



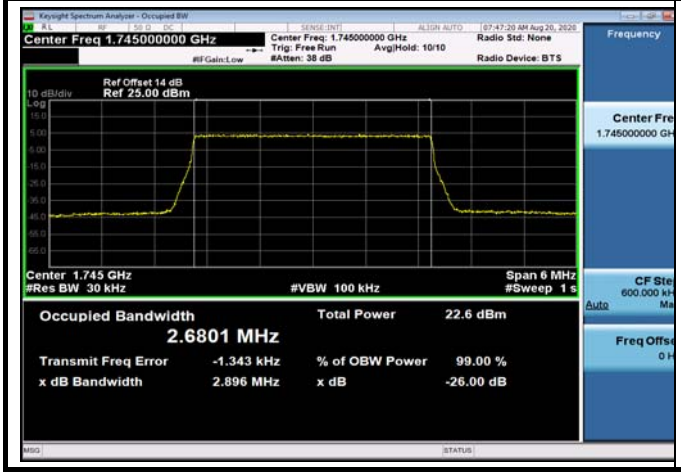
FDD66_MidRange_1.4_1745_QPSK



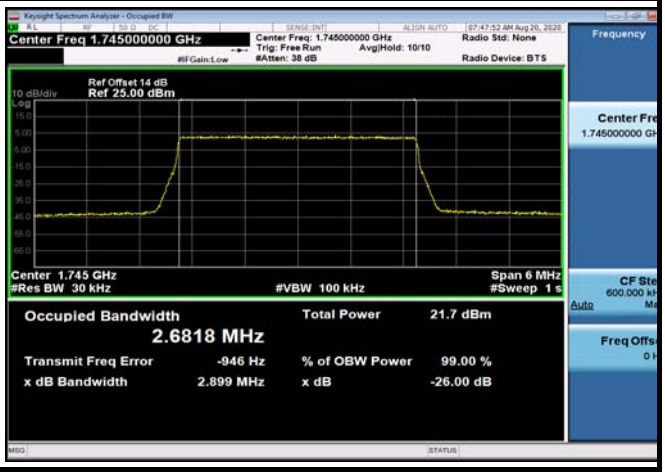
FDD66_MidRange_1.4_1745_Q16



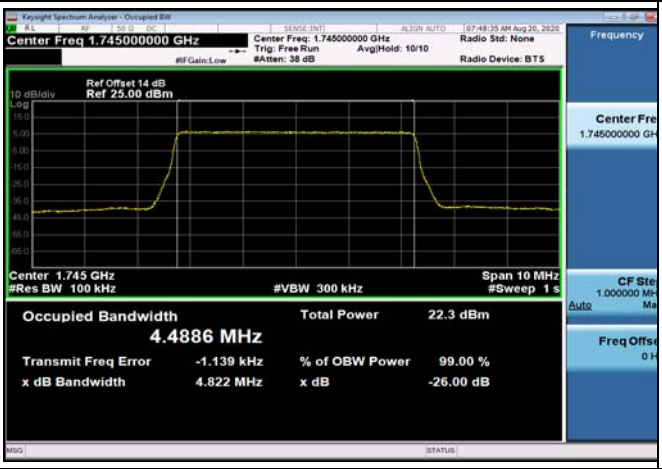
FDD66_MidRange_3_1745_QPSK



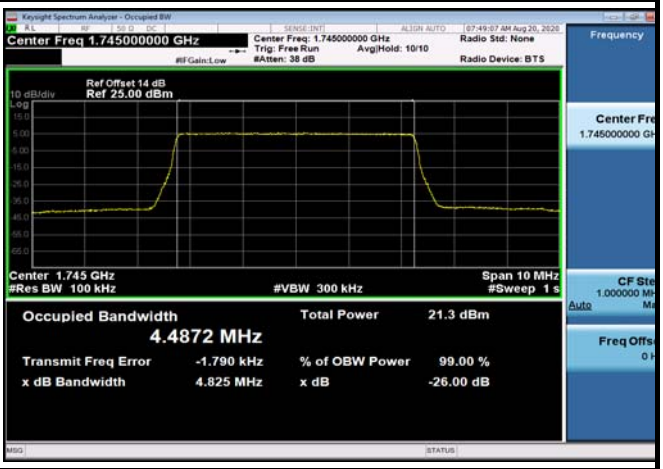
FDD66_MidRange_3_1745_Q16



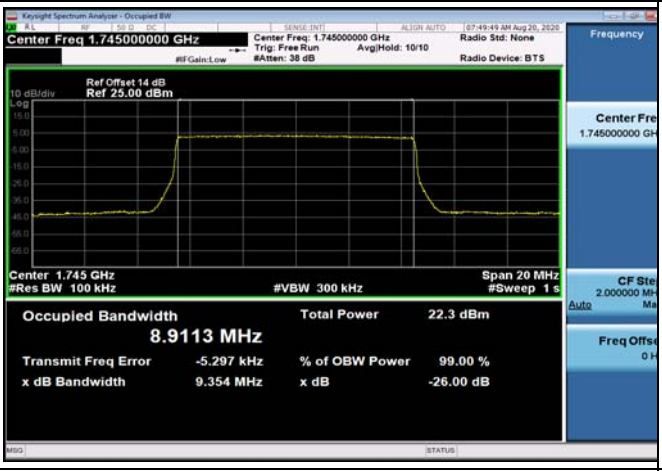
FDD66_MidRange_5_1745_QPSK



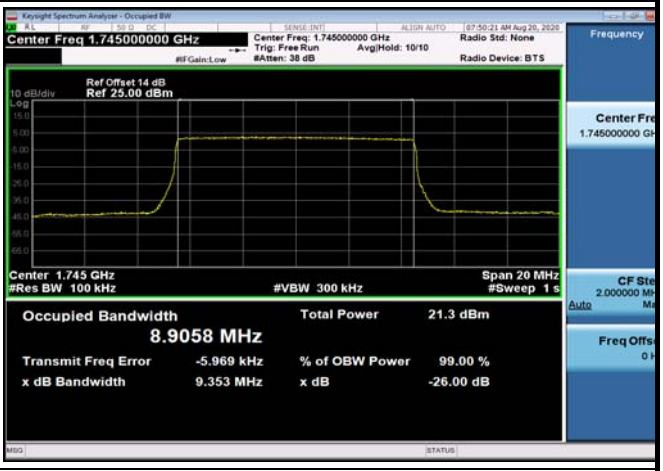
FDD66_MidRange_5_1745_Q16



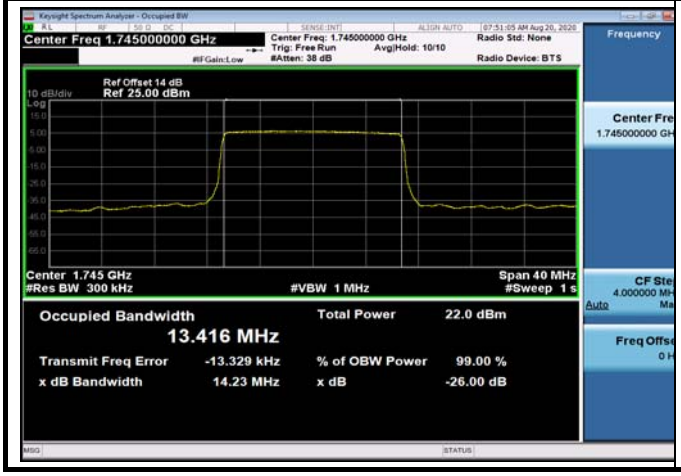
FDD66_MidRange_10_1745_QPSK



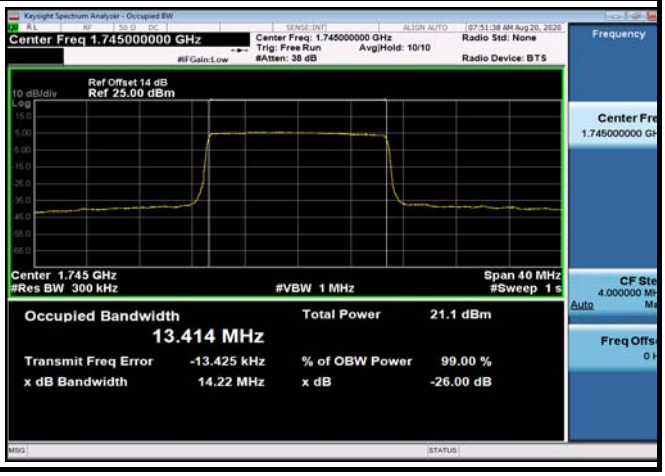
FDD66_MidRange_10_1745_Q16

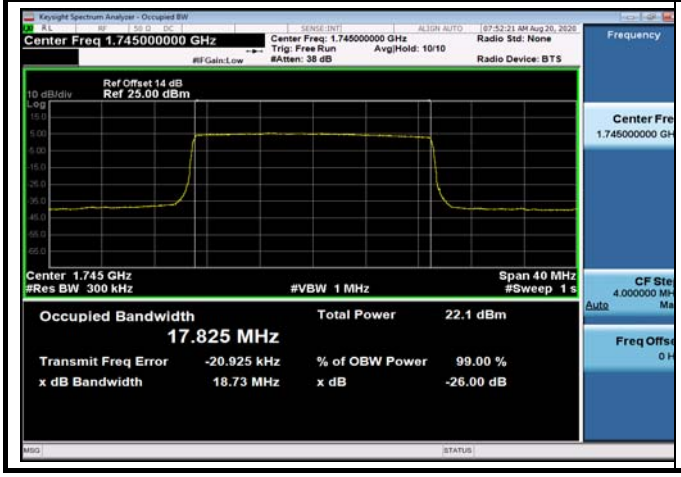
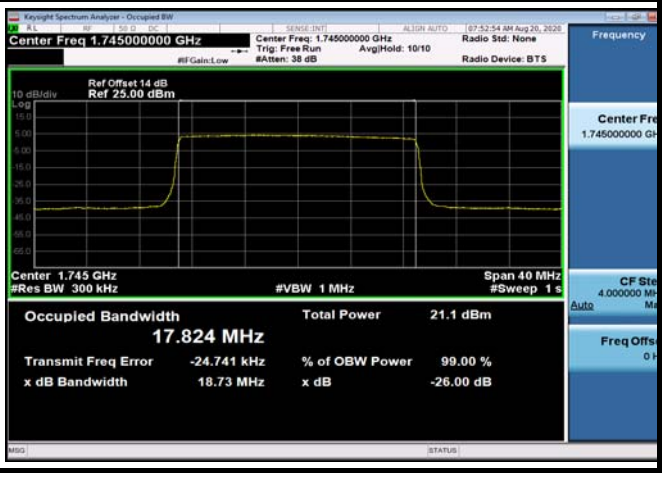


FDD66_MidRange_15_1745_QPSK



FDD66_MidRange_15_1745_Q16



FDD66_MidRange_20_1745_QPSK	FDD66_MidRange_20_1745_Q16
	

26dB Bandwidth

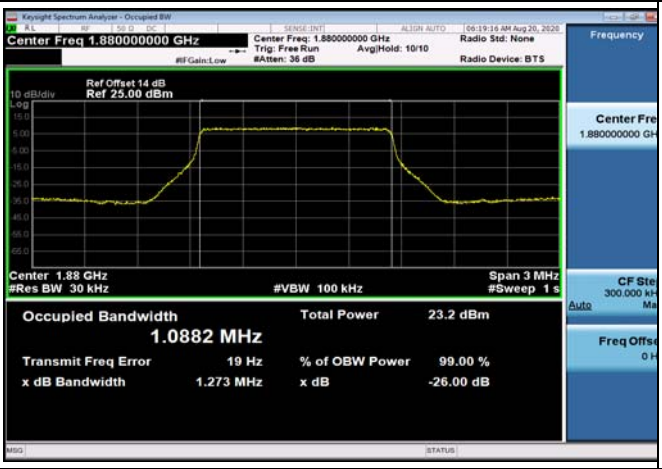
Test Result and Data

Emission Bandwidth NormalTC_NormalVol					
Band	Range	BandWidth	Frequency (MHz)	Modulation	EmissionBandwidth (MHz)
FDD02	MidRange	1.4	1880	QPSK	1.27
FDD02	MidRange	1.4	1880	Q16	1.28
FDD02	MidRange	3	1880	QPSK	2.98
FDD02	MidRange	3	1880	Q16	2.98
FDD02	MidRange	5	1880	QPSK	4.87
FDD02	MidRange	5	1880	Q16	4.85
FDD02	MidRange	10	1880	QPSK	9.48
FDD02	MidRange	10	1880	Q16	9.46
FDD02	MidRange	15	1880	QPSK	14.3
FDD02	MidRange	15	1880	Q16	14.27
FDD02	MidRange	20	1880	QPSK	18.8
FDD02	MidRange	20	1880	Q16	18.79
FDD04	MidRange	1.4	1732.5	QPSK	1.26
FDD04	MidRange	1.4	1732.5	Q16	1.26
FDD04	MidRange	3	1732.5	QPSK	2.96
FDD04	MidRange	3	1732.5	Q16	2.97
FDD04	MidRange	5	1732.5	QPSK	4.82
FDD04	MidRange	5	1732.5	Q16	4.84
FDD04	MidRange	10	1732.5	QPSK	9.36
FDD04	MidRange	10	1732.5	Q16	9.36
FDD04	MidRange	15	1732.5	QPSK	14.22
FDD04	MidRange	15	1732.5	Q16	14.22
FDD04	MidRange	20	1732.5	QPSK	18.74
FDD04	MidRange	20	1732.5	Q16	18.73
FDD05	MidRange	1.4	836.5	QPSK	1.26
FDD05	MidRange	1.4	836.5	Q16	1.26
FDD05	MidRange	3	836.5	QPSK	2.97

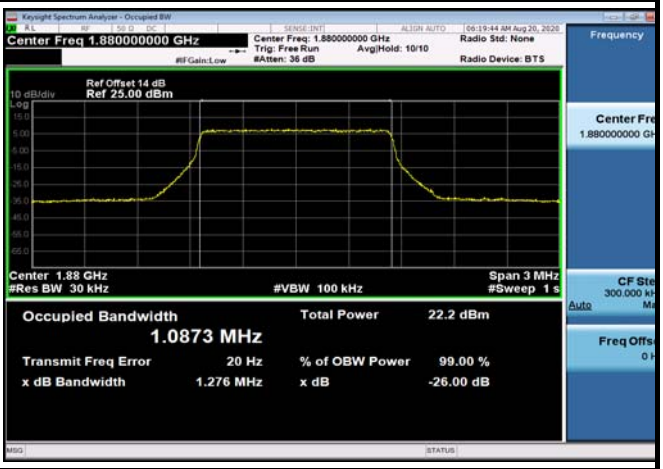
FDD05	MidRange	3	836.5	Q16	2.96
FDD05	MidRange	5	836.5	QPSK	4.83
FDD05	MidRange	5	836.5	Q16	4.83
FDD05	MidRange	10	836.5	QPSK	9.32
FDD05	MidRange	10	836.5	Q16	9.34
FDD12	MidRange	1.4	707.5	QPSK	1.25
FDD12	MidRange	1.4	707.5	Q16	1.26
FDD12	MidRange	3	707.5	QPSK	2.97
FDD12	MidRange	3	707.5	Q16	2.97
FDD12	MidRange	5	707.5	QPSK	4.84
FDD12	MidRange	5	707.5	Q16	4.82
FDD12	MidRange	10	707.5	QPSK	9.39
FDD12	MidRange	10	707.5	Q16	9.38
FDD25	MidRange	1.4	1882.5	QPSK	1.26
FDD25	MidRange	1.4	1882.5	Q16	1.25
FDD25	MidRange	3	1882.5	QPSK	2.97
FDD25	MidRange	3	1882.5	Q16	2.97
FDD25	MidRange	5	1882.5	QPSK	4.83
FDD25	MidRange	5	1882.5	Q16	4.84
FDD25	MidRange	10	1882.5	QPSK	9.35
FDD25	MidRange	10	1882.5	Q16	9.39
FDD25	MidRange	15	1882.5	QPSK	14.23
FDD25	MidRange	15	1882.5	Q16	14.24
FDD25	MidRange	20	1882.5	QPSK	18.72
FDD25	MidRange	20	1882.5	Q16	18.74
FDD26	MidRange	1.4	831.5	QPSK	1.27
FDD26	MidRange	1.4	831.5	Q16	1.26
FDD26	MidRange	3	831.5	QPSK	2.97
FDD26	MidRange	3	831.5	Q16	2.98
FDD26	MidRange	5	831.5	QPSK	4.83
FDD26	MidRange	5	831.5	Q16	4.84
FDD26	MidRange	10	831.5	QPSK	9.37

FDD26	MidRange	10	831.5	Q16	9.38
FDD26	MidRange	15	831.5	QPSK	14.25
FDD26	MidRange	15	831.5	Q16	14.24
FDD66	MidRange	1.4	1745	QPSK	1.25
FDD66	MidRange	1.4	1745	Q16	1.26
FDD66	MidRange	3	1745	QPSK	2.97
FDD66	MidRange	3	1745	Q16	2.97
FDD66	MidRange	5	1745	QPSK	4.82
FDD66	MidRange	5	1745	Q16	4.84
FDD66	MidRange	10	1745	QPSK	9.38
FDD66	MidRange	10	1745	Q16	9.35
FDD66	MidRange	15	1745	QPSK	14.21
FDD66	MidRange	15	1745	Q16	14.22
FDD66	MidRange	20	1745	QPSK	18.71
FDD66	MidRange	20	1745	Q16	18.72

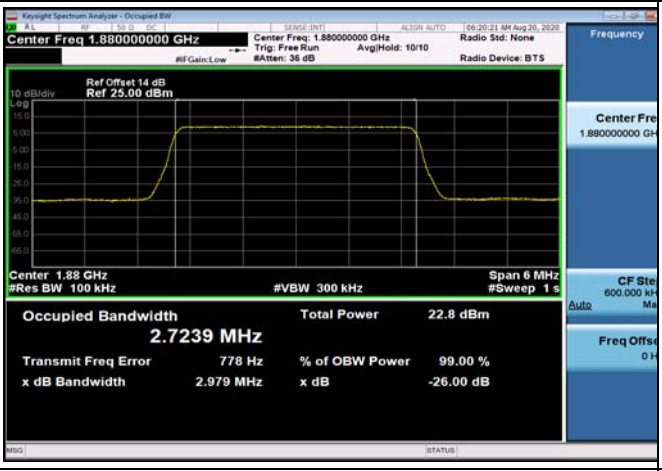
FDD02_MidRange_1.4MHz_1880MHz_QPSK



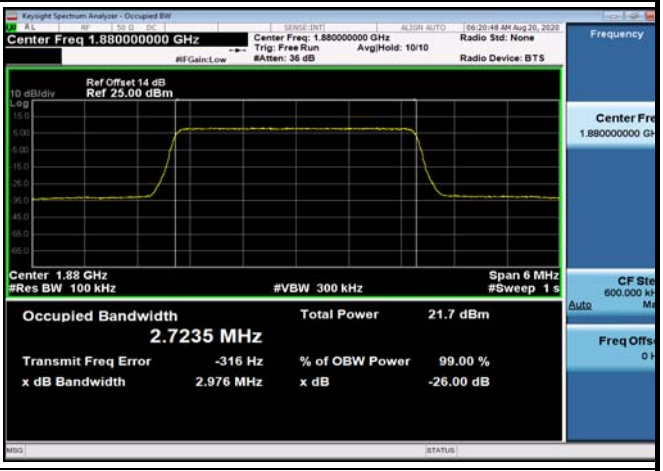
FDD02_MidRange_1.4MHz_1880MHz_Q16



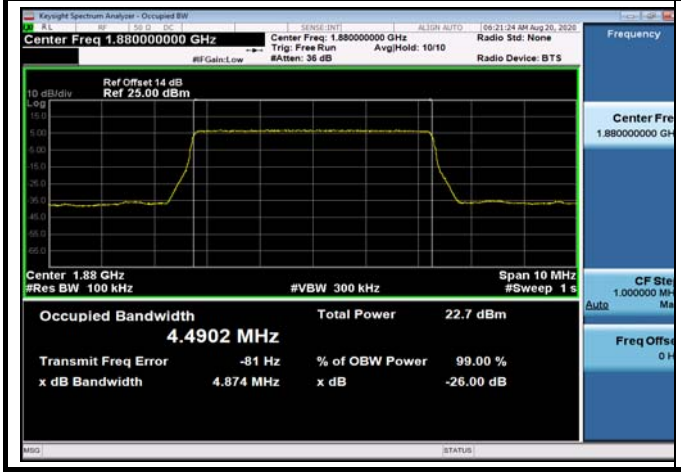
FDD02_MidRange_3MHz_1880MHz_QPSK



FDD02_MidRange_3MHz_1880MHz_Q16



FDD02_MidRange_5MHz_1880MHz_QPSK



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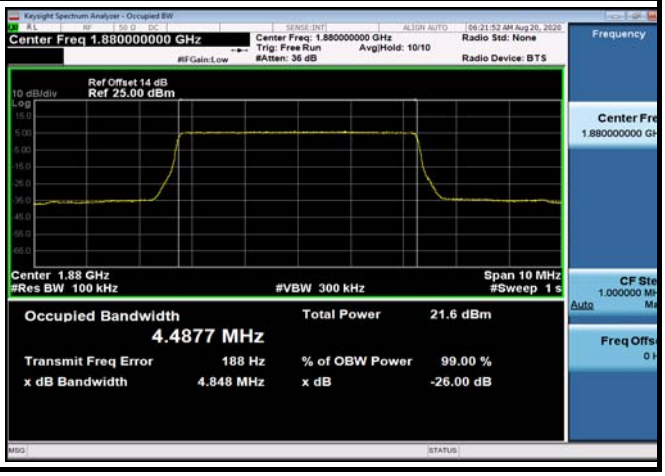
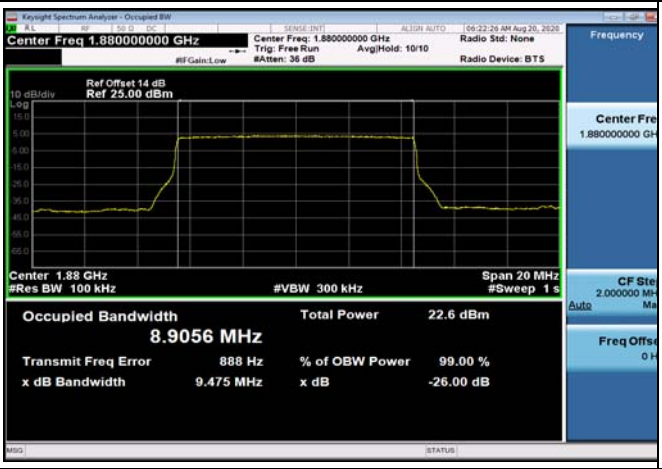


FDD02_MidRange_10MHz_1880MHz_QPSK



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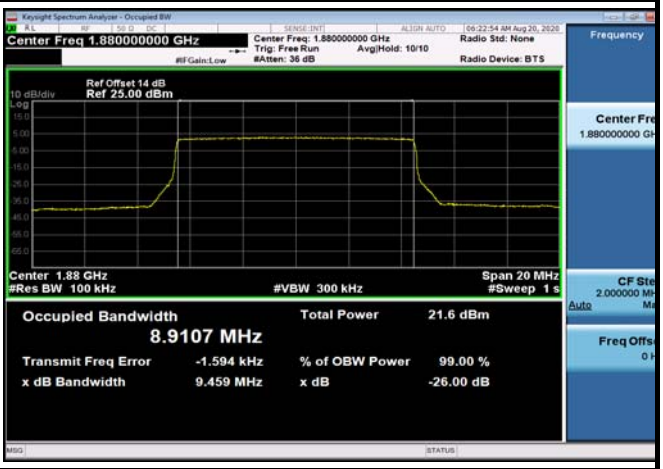

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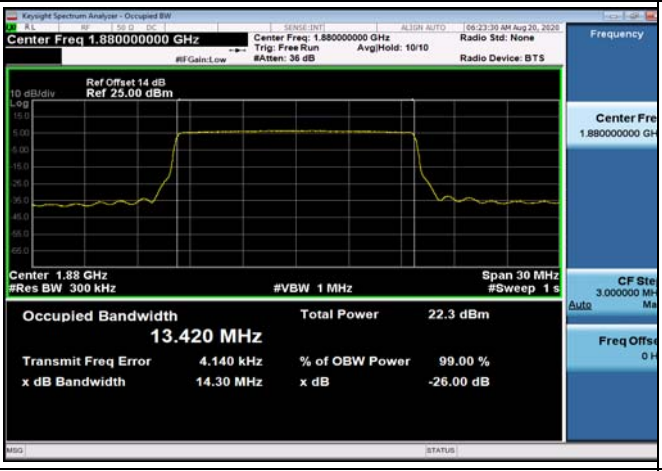
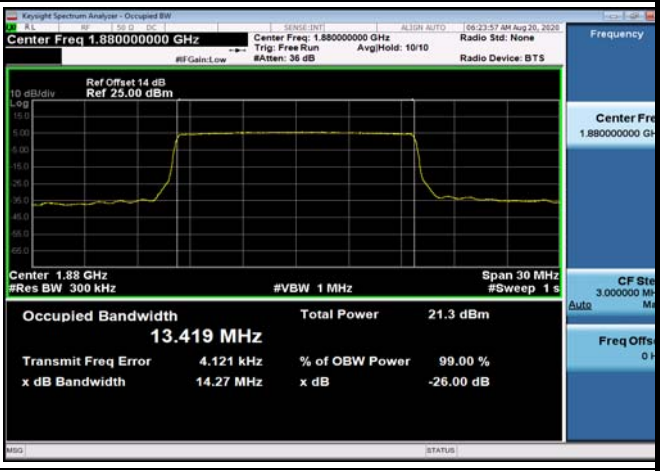


FDD02_MidRange_15MHz_1880MHz_Q16



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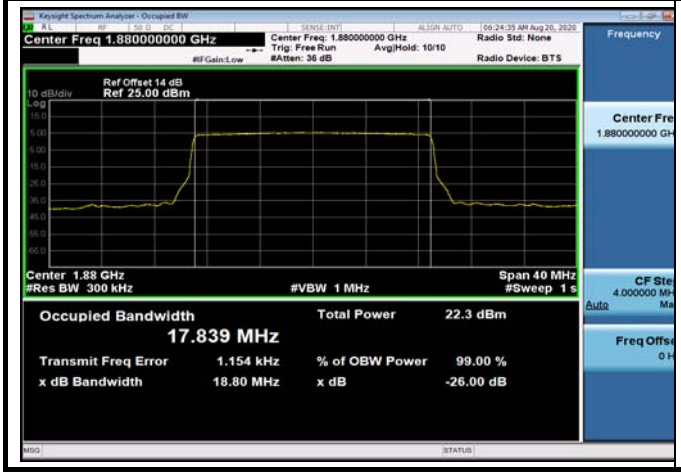

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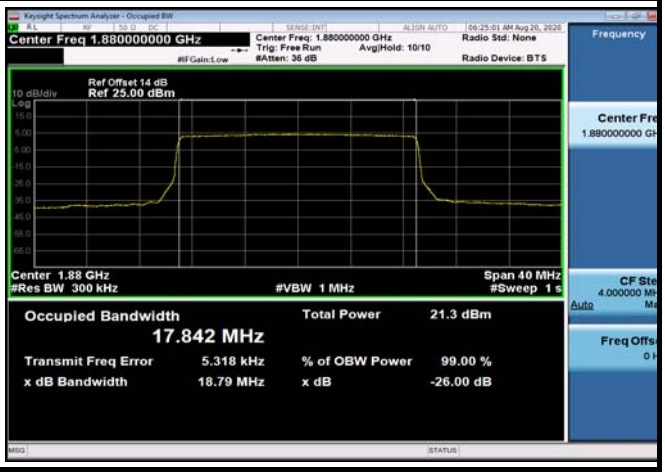
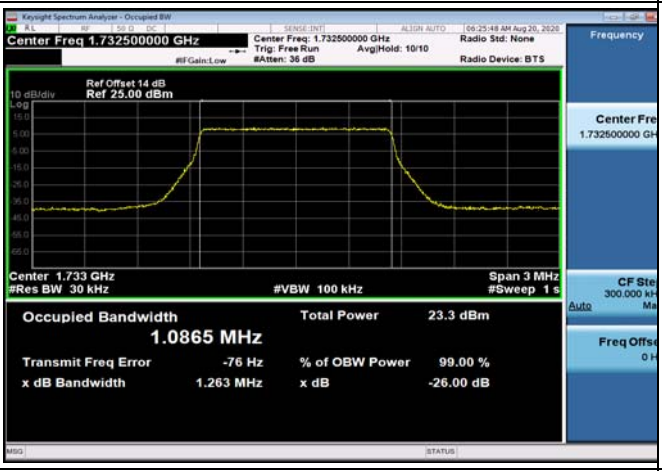
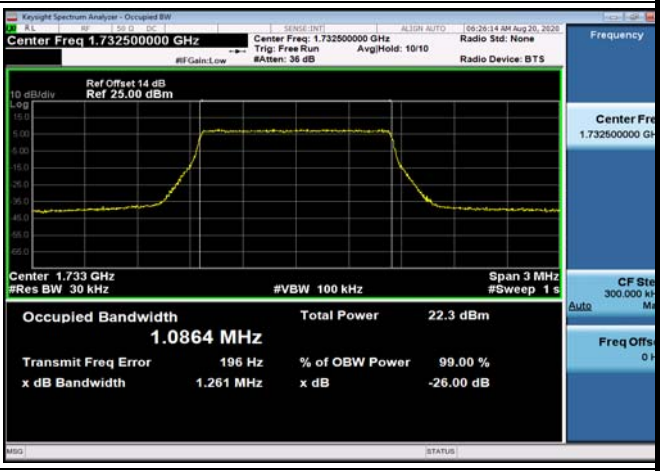


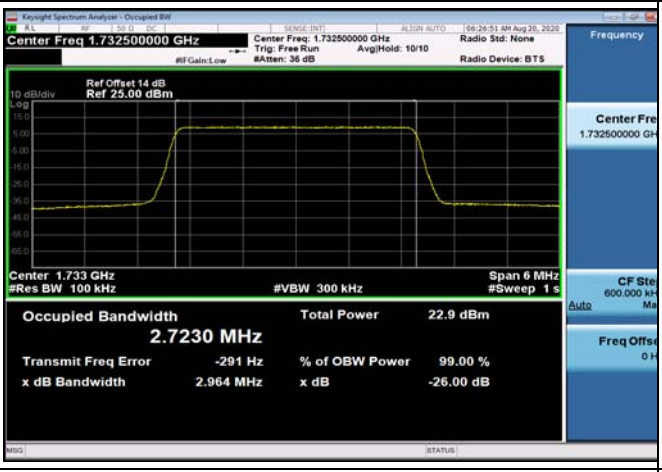
FDD04_MidRange_1.4MHz_1732.5MHz _QPSK



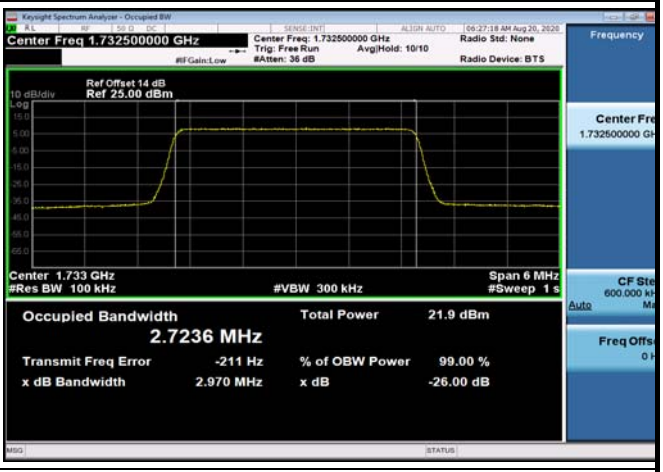
FDD04_MidRange_1.4MHz_1732.5MHz _Q16



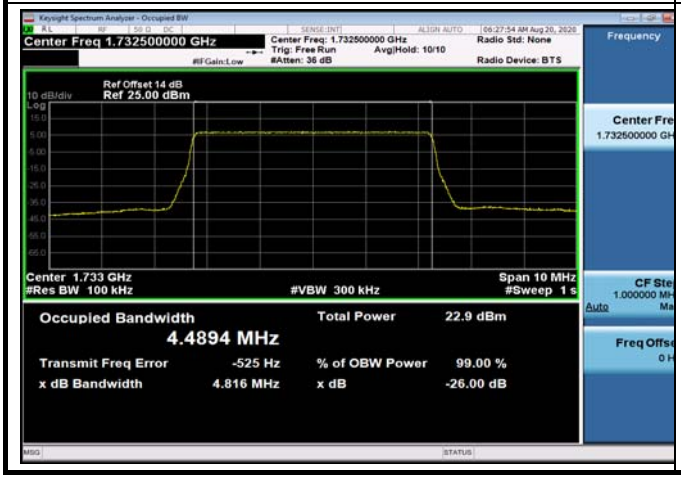
FDD04_MidRange_3MHz_1732.5MHz_QPSK



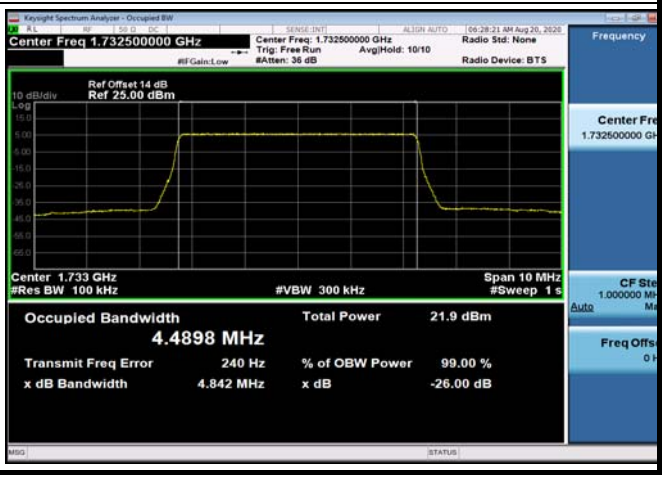
FDD04_MidRange_3MHz_1732.5MHz_Q16



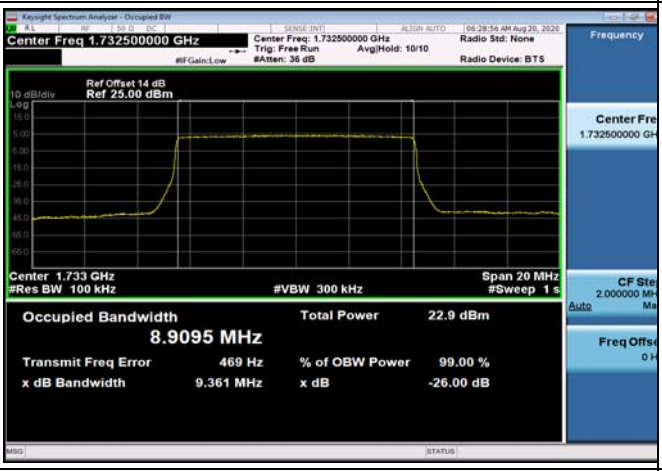
FDD04_MidRange_5MHz_1732.5MHz_QPSK



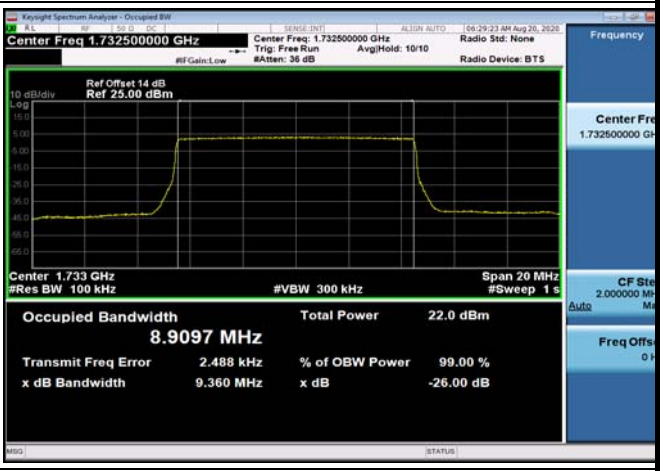
FDD04_MidRange_5MHz_1732.5MHz_Q16



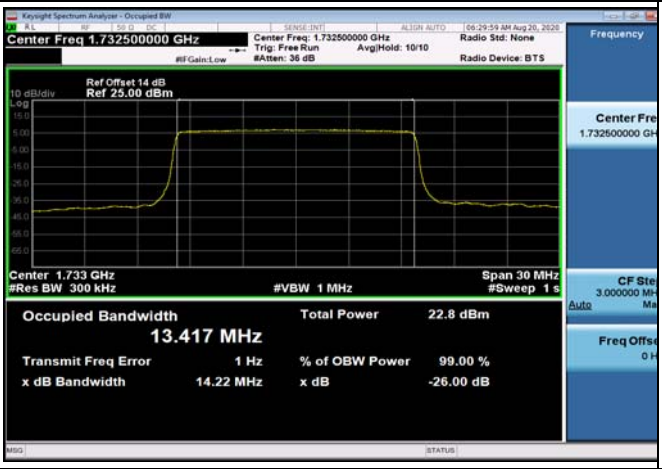
FDD04_MidRange_10MHz_1732.5MHz _QPSK



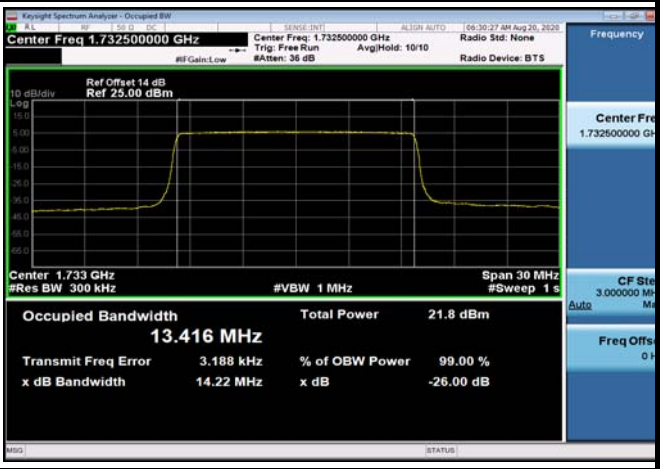
FDD04_MidRange_10MHz_1732.5MHz _Q16



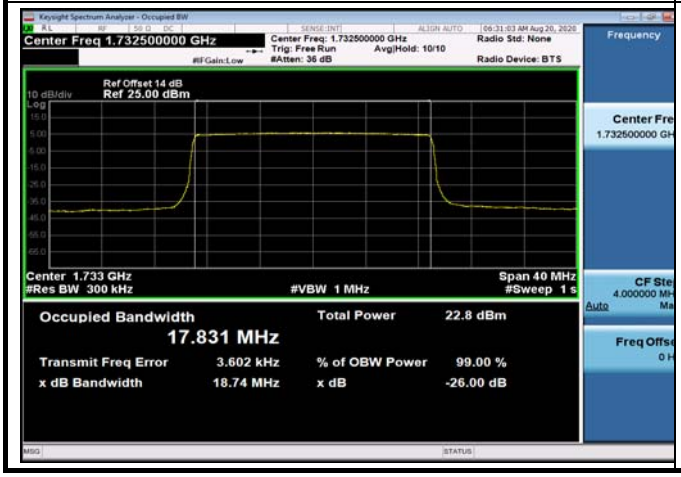
FDD04_MidRange_15MHz_1732.5MHz _QPSK



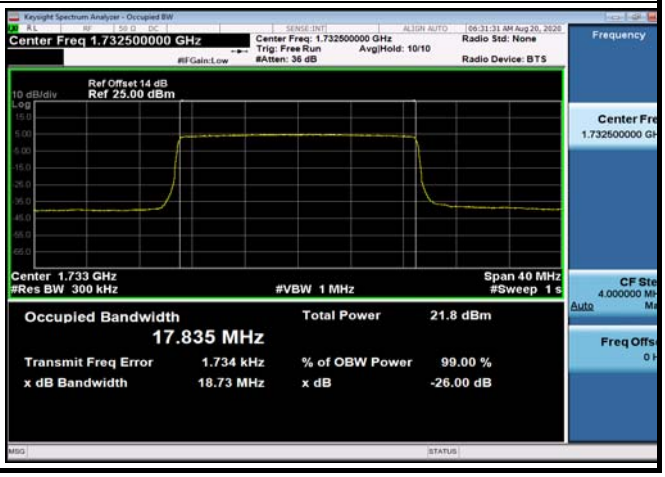
FDD04_MidRange_15MHz_1732.5MHz _Q16



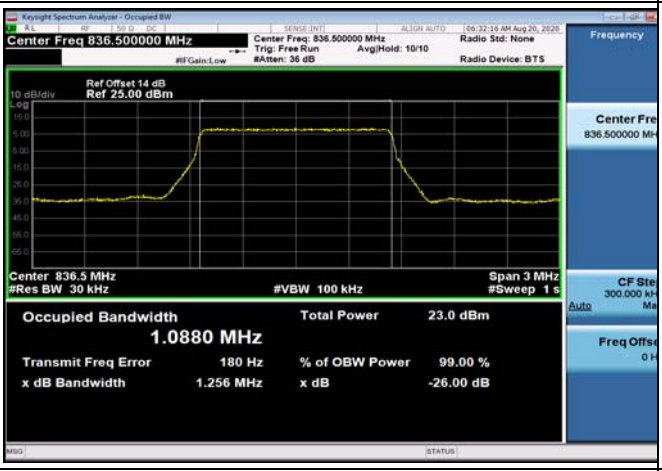
FDD04_MidRange_20MHz_1732.5MHz _QPSK



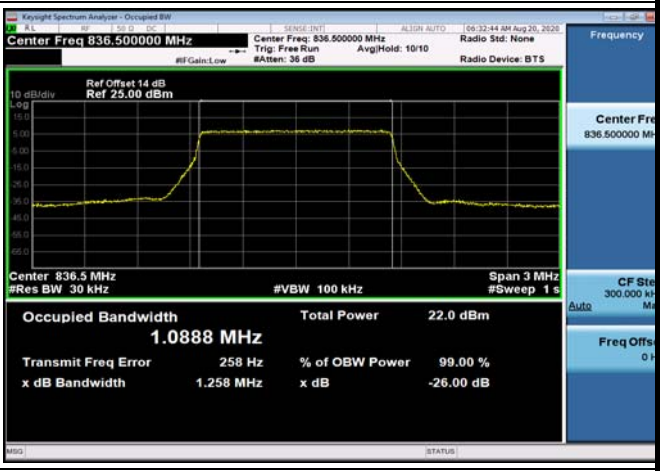
FDD04_MidRange_20MHz_1732.5MHz _Q16



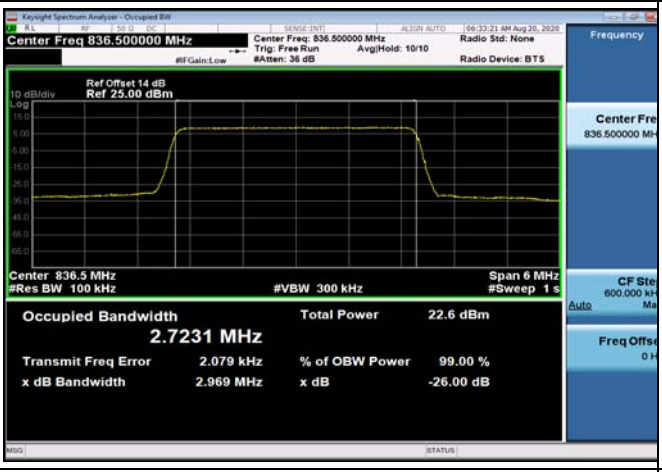
FDD05_MidRange_1.4MHz_836.5MHz _QPSK



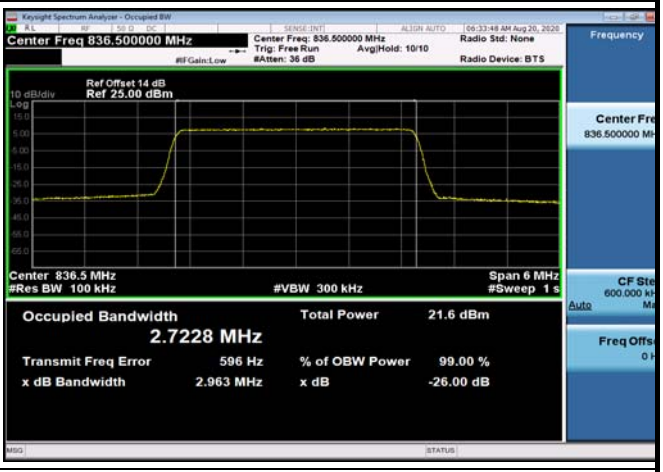
FDD05_MidRange_1.4MHz_836.5MHz _Q16



FDD05_MidRange_3MHz_836.5MHz_QPSK



FDD05_MidRange_3MHz_836.5MHz_Q16



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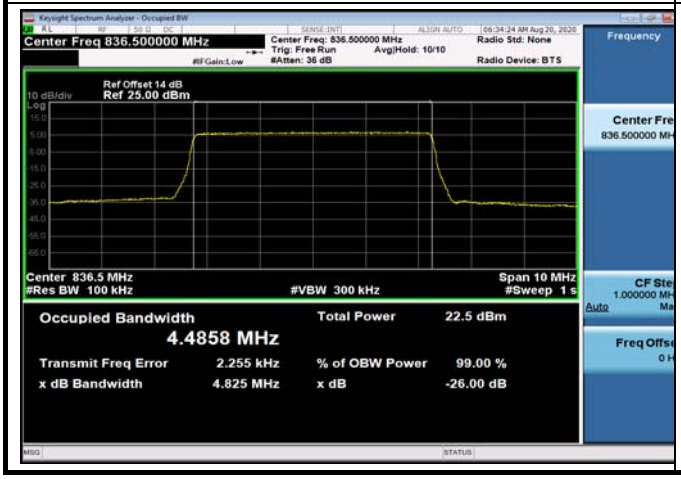
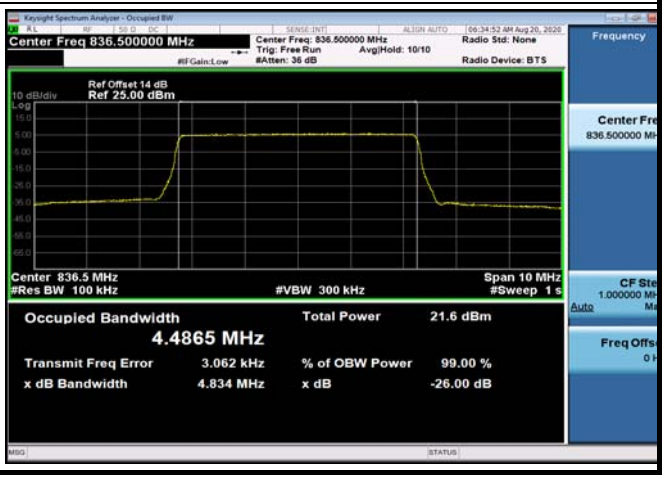
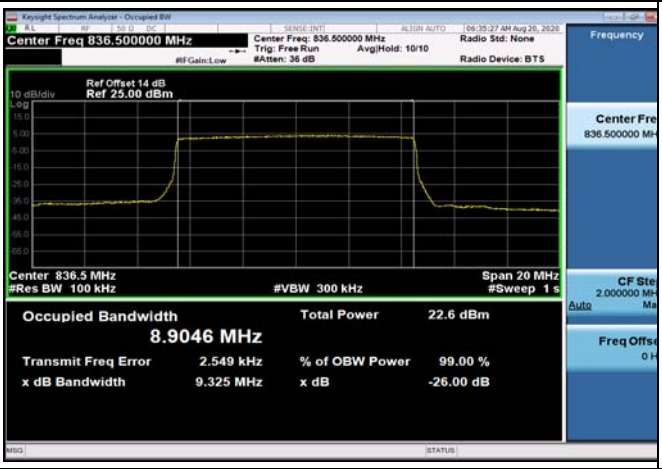


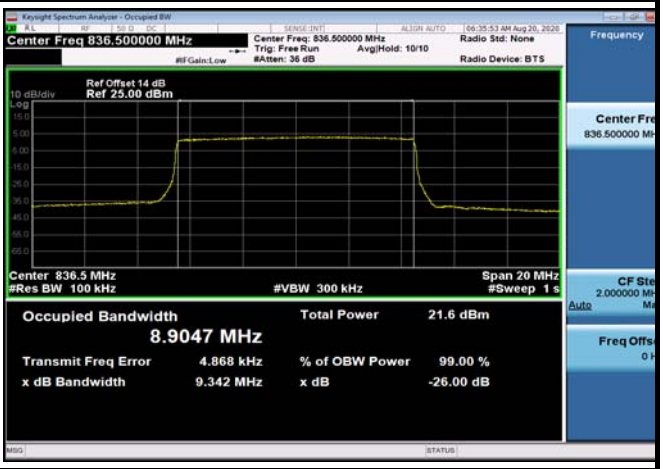
FDD05_MidRange_5MHz_836.5MHz_Q16



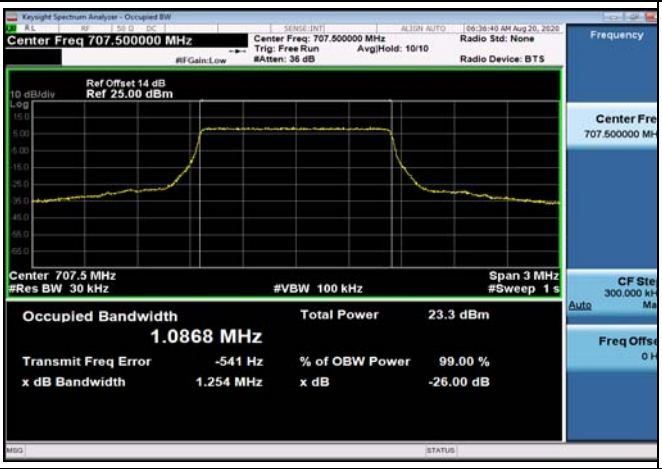
FDD05_MidRange_10MHz_836.5MHz_QPSK



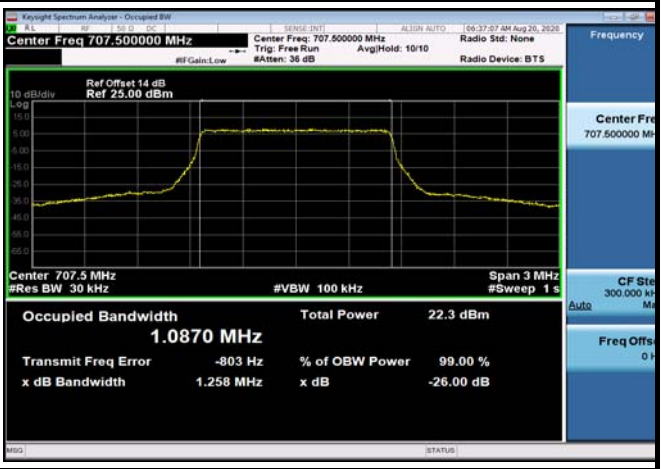
FDD05_MidRange_10MHz_836.5MHz_Q16



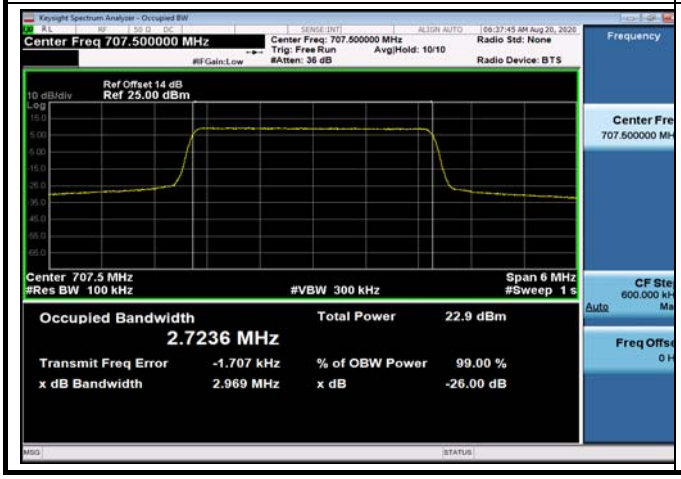
FDD12_MidRange_1.4MHz_707.5MHz _QPSK



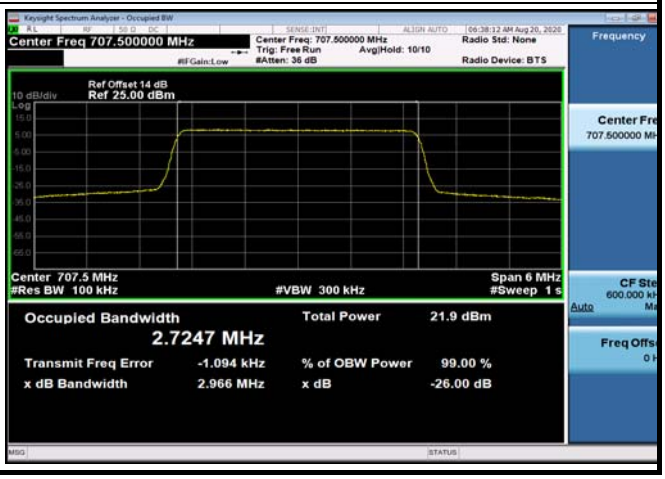
FDD12_MidRange_1.4MHz_707.5MHz _Q16



FDD12_MidRange_3MHz_707.5MHz_QPSK

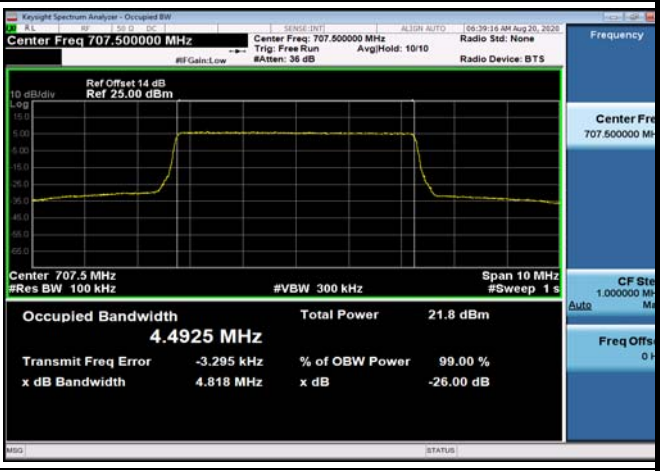


FDD12_MidRange_3MHz_707.5MHz_Q16

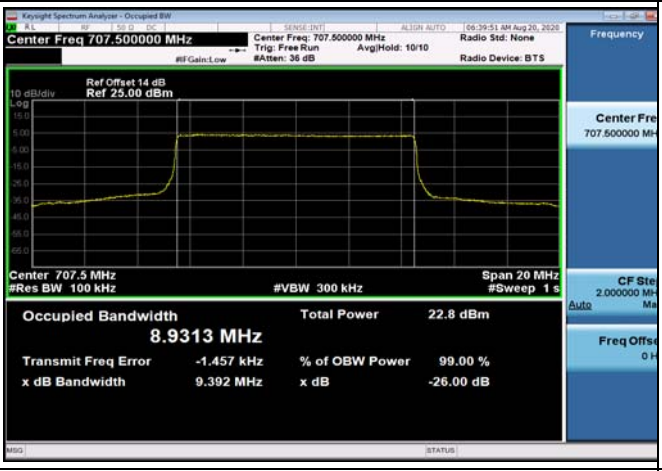


FDD12_MidRange_5MHz_707.5MHz_QPSK

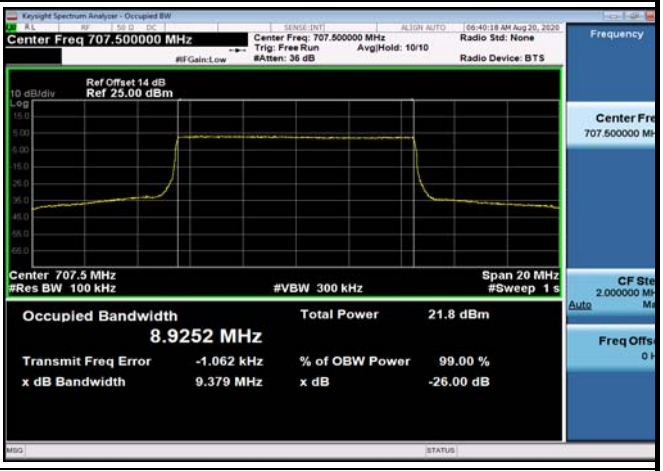
FDD12_MidRange_5MHz_707.5MHz_Q16



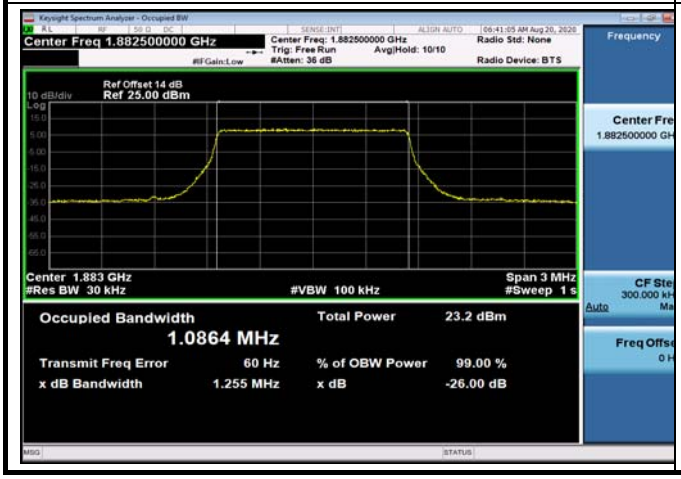
FDD12_MidRange_10MHz_707.5MHz_QPSK



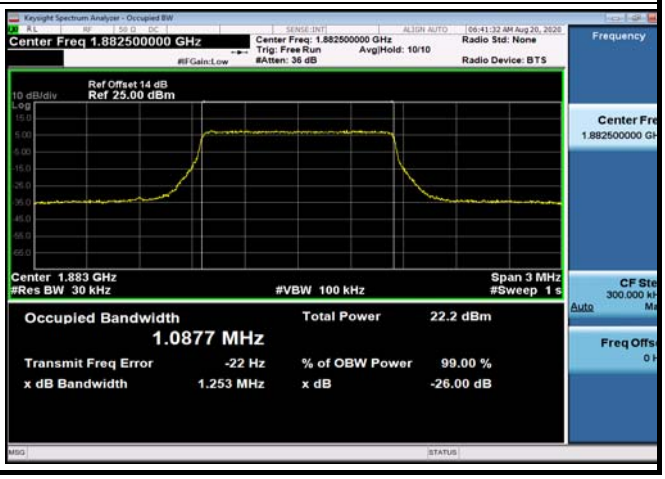
FDD12_MidRange_10MHz_707.5MHz_Q16



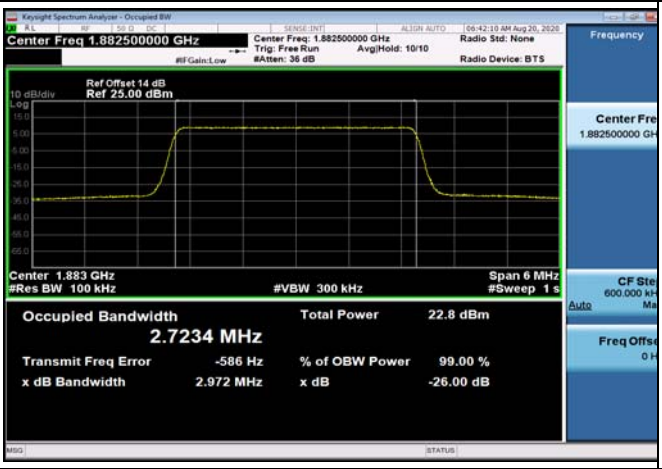
FDD25_MidRange_1.4MHz_1882.5MHz _QPSK



FDD25_MidRange_1.4MHz_1882.5MHz _Q16

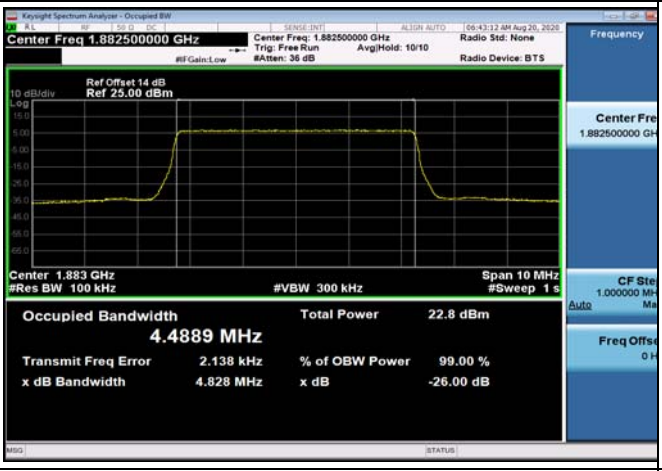


FDD25_MidRange_3MHz_1882.5MHz_QPSK

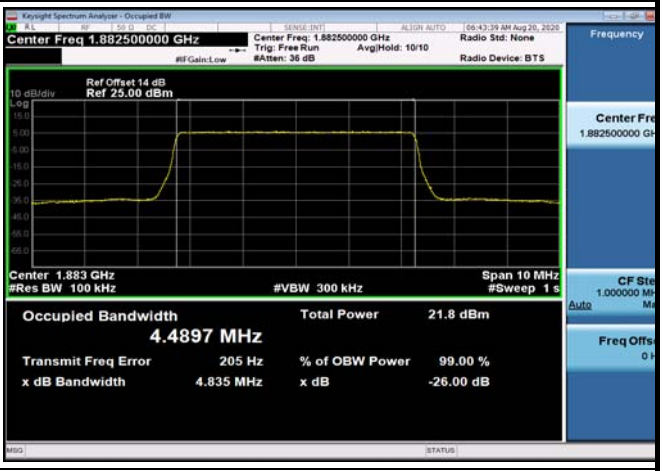


FDD25_MidRange_3MHz_1882.5MHz_Q16

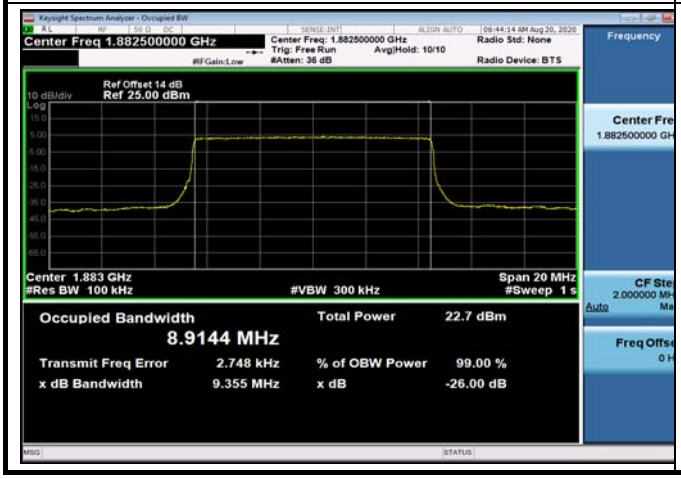
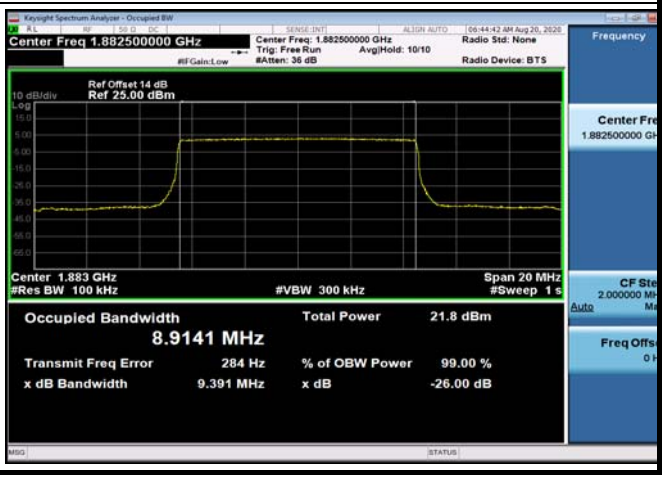
FDD25_MidRange_5MHz_1882.5MHz_QPSK



FDD25_MidRange_5MHz_1882.5MHz_Q16



FDD25_MidRange_10MHz_1882.5MHz _QPSK



FDD25_MidRange_10MHz_1882.5MHz _Q16