# RF TEST REPORT

| | |
|---|---|
| **Report No.:** | SET2019-15743 |
| **Product:** | LTE Base Station |
| **FCC ID:** | 2AG32PBS212096 |
| **Model No. :** | pBS2120 |
| **Applicant:** | Baicells Technologies Co., Ltd. |
| **Address:** | 3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, China. |
| **Dates of Testing:** | 11/20/2019 —01/10/2020 |
| **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 |

# Test Report

| | |
|---|---|
| **Product……:** | LTE Base Station |
| **Brand Name……:** | BaiCells |
| **Trade Name……:** | BaiCells |
| **Applicant……:** | Baicells Technologies Co., Ltd. |
| **Applicant Address……:** | 3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, China. |
| **Manufacturer……:** | Baicells Technologies Co., Ltd. |
| **Manufacturer Address…:** | 3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, China. |
| **Test Standards……:** | 47 CFR FCC Part 2/96 |
| **Test Result……:** | PASS |

**Tested by……:** Vincent 2020.03.24

Vincent，Test Engineer

**Reviewed by……:** Chris You 2020.03.24

Chris You, Senior Engineer

**Approved by……:** ShuangwenZhang 2020.03.24

ShuangwenZhang，Manager

# Table of Contents

| Change History | | |
|---|---|---|
| Issue | Date | Reason for change |
| 1.0 | 2020.03.24 | First edition |
| | | |
| | | |

# 1. GENERAL INFORMATION

## 1.1 EUT Description

| | |
|---|---|
| EUT Type | LTE Base Station |
| EUT supports Radios application | LTE Band 48 |
| Frequency Range | LTE Band 48: 3550MHz-3700MHz |
| Support Channel Bandwidth | 10MHz, 20MHz |
| Maximum Output Power to Antenna | 25.68dBm |
| Type of Modulation | QPSK, 16QAM, 64QAM |
| Antenna Type | Internal Antenna |
| Antenna Gain | 13dBi |
| Category of CBSD | Category B |

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

| System | Type of Modulation | Emission Designator | Frequency Tolerance (ppm) | Maximum EIRP(W) |
|---|---|---|---|---|
| LTE Band48 10MHz Bandwidth | QPSK | 9M43G7D | 0.032 | 6.75 |
| | 64QAM | 9M50W7D | 0.032 | 6.70 |
| LTE Band48 20MHz Bandwidth | QPSK | 18M7G7D | 0.032 | 7.38 |
| | 64QAM | 18M8W7D | 0.032 | 7.28 |

## 1.3 Test Standards and Results

1. 47 CFR Part 2, 96
2. ANSI C63.26: 2015
3. KDB 971168 D01 Power Meas License Digital Systems v03r01
4. KDB 662911 D01 Multiple Transmitter Output v02r01
5. KDB 940660 D01 Part 96 CBRS Equipment v01
6. ANSI/TIA/EIA-603-E 2016

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.

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

| No. | Section | Description | Result | Remarks |
|---|---|---|---|---|
| | FCC | | | |
| 1 | 2.1046<br>96.41(b) | Max EIRP and maximum Spectral density | PASS | Meet the requirement of Limit |
| 2 | 96.41(g) | Peak to Average Radio | PASS | Meet the requirement of Limit |
| 3 | 2.1049 | Emission Bandwidth | PASS | Meet the requirement of Limit |
| 4 | 2.1055 | Frequency Stability | PASS | Meet the requirement of Limit |
| 5 | 2.1051<br>96.41(e) | Conducted Spurious Emission | PASS | Meet the requirement of Limit |
| 6 | 96.41(e) | Emission Mask | PASS | Meet the requirement of Limit |
| 7 | 2.1051<br>96.41(e) | Radiated Spurious Emission | PASS | Meet the requirement of Limit |

## 1.4 Test Configuration of Equipment under Test

Antenna port conducted and radiated test items were performed according to ANSI C63.26:2015, with maximum output power.

Radiated measurements were performed with rotating EUT in different three 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 | 64QAM | 1 | Half | Full | L | M | H |
| EIRP | 48 | | | | √ | | √ | √ | √ | | | √ | √ | √ | √ |
| PSD | 48 | | | | √ | | √ | √ | √ | | | √ | √ | √ | √ |
| Peak to Average Ratio | 48 | | | | √ | | | √ | | | | √ | √ | √ | √ |
| Occupied Bandwidth | 48 | | | | √ | | √ | √ | √ | | | √ | √ | √ | √ |
| Frequency Stability | 48 | | | | √ | | √ | √ | | | | √ | | √ | |
| Conducted Emission | 48 | | | | √ | | √ | √ | | | | √ | √ | √ | √ |
| Radiated Emission | 48 | Worst case | | | | | | | | | | | | √ | |
| Note | 1. The mark “√” means that this configuration is chosen for testing.<br>2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.<br>3.All supported modulation types were evaluated. The worst case of QPSK was selected. Therefore, the Frequency Stability, Peak to Average Ration, Conducted Emission and Radiated Emission were presented under QPSK mode only. | | | | | | | | | | | | | | |

## 1.5 Channel list

| 10MHz | | 20MHz | |
|---|---|---|---|
| Channel | Frequency | Channel | Frequency |
| Low | 3555 | Low | 3560 |
| Middle | 3625 | Middle | 3625 |
| High | 3695 | High | 3690 |

## 1.6 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, duty cycle correction and attenuator factor.

The duty cycle correction=10 log(1/duty cycle)=10 log(1/(6.75/10)) =1.7(dB)
Offset factory=ATT loss+Cable loss+Duty cycle correction=10+0.3+1.7=12(dB)

## 1.7 Facilities and Accreditations

### 1.7.1 Test Facilities

**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.

**FCC- Designation Number: 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 December 31, 2020.

**ISED Registration: 11185A-1**

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

### 1.7.2 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, PART 96 REQUIREMENTS

## 2.1 Max EIRP and maximum spectral density

### 2.1.1 Measuring Instruments

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

### 2.1.2 Limit of Max EIRP and maximum spectral density

| Device | EIRP (dBm/10MHz) | PSD (dBm/MHz) |
|---|---|---|
| ☐End User Device | 23 | N/A |
| ☐Category A CBSD | 30 | 20 |
| ☒Category B CBSD | 47 | 37 |

### 2.1.3 Test Procedures

**For Maximum EIRP**

1. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
2. Set span to 2 × to 3 × the OBW.
3. Set RBW = 1% to 5% of the OBW.
4. Set VBW ≥ 3 × RBW.
5. Set number of measurement points in sweep ≥ 2 × span / RBW.
6. Sweep time:
   1) Set = auto-couple, or
   2) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement.
7. Detector = power averaging (rms).
8. Set sweep trigger to “free run.”
9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
10. Compute power by integrating the spectrum across the OBW(10MHz) of the signal using the instrument’s band or channel power measurement function with band/channel limits set equal to the OBW(10MHz) band edges.

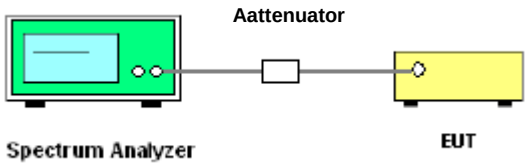
11. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.
12. EIRP = PMeas + GT.

$P_{Meas}$ measured transmitter output power or PSD.
$G_T$ gain of the transmitting antenna.

**For Maximum PSD**

The PSD is measured following the same procedures described for measuring the maximum EIRP but with the RBW set to the reference bandwidth specified(eg.1MHz) by the applicable regulatory requirement, and by using the marker function to identify the maximum PSD instead of summing the power across the OBW.

### 2.1.4 Test Setup




### 2.1.5 Test Results

EIRP:

| Transmit Output power | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Bandwidth** | **Modulation** | **Test Channel** | **Chain 0 Output power (dBm/10MHz)** | **Chain 1 Output power (dBm/10MHz)** | **Total Power (dBm/10MHz)** | **Antenna Gain (dBi)** | **EIRP (dBm/10MHz)** | **EIRP LIMIT (dBm/10MHz)** |
| 10MHz | QPSK | Low | 22.45 | 21.51 | 25.02 | 13 | 38.02 | 47 |
| | | Middle | 22.81 | 21.55 | 25.24 | 13 | 38.24 | |
| | | High | 22.86 | 21.62 | 25.29 | 13 | **38.29** | |
| | 64QAM | Low | 22.43 | 21.59 | 25.04 | 13 | 38.04 | |
| | | Middle | 22.14 | 21.19 | 24.70 | 13 | 37.70 | |
| | | High | 22.41 | 22.08 | 25.26 | 13 | **38.26** | |

| Transmit Output power | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Bandwidth** | **Modulation** | **Test Channel** | **Chain 0 Output power (dBm/10MHz)** | **Chain 1 Output power (dBm/10MHz)** | **Total Power (dBm/10MHz)** | **Antenna Gain (dBi)** | **EIRP (dBm/10MHz)** | **EIRP LIMIT (dBm/10MHz)** |
| 20MHz | QPSK | Low | 19.77 | 18.75 | 22.30 | 13 | 35.30 | 47 |
| | | Middle | 19.96 | 19.21 | 22.61 | 13 | 35.61 | |
| | | High | 20.44 | 19.23 | 22.89 | 13 | 35.89 | |
| | 64QAM | Low | 19.77 | 18.72 | 22.29 | 13 | 35.29 | |
| | | Middle | 19.71 | 19.02 | 22.39 | 13 | 35.39 | |
| | | High | 20.27 | 19.24 | 22.80 | 13 | 35.80 | |

| Transmit Output power | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Bandwidth** | **Modulation** | **Test Channel** | **Chain 0 Output power (dBm/20MHz)** | **Chain 1 Output power (dBm/20MHz)** | **Total Power (dBm/20MHz)** | **Antenna Gain (dBi)** | **EIRP (dBm/20MHz)** | **EIRP LIMIT (dBm/20MHz)** |
| 20MHz | QPSK | Low | 22.89 | 21.59 | 25.30 | 13 | 38.30 | - |
| | | Middle | 22.74 | 22.32 | 25.55 | 13 | 38.55 | |
| | | High | 22.87 | 22.46 | 25.68 | 13 | **38.68** | |
| | 64QAM | Low | 22.74 | 21.64 | 25.24 | 13 | 38.24 | |
| | | Middle | 22.67 | 21.57 | 25.17 | 13 | 38.17 | |
| | | High | 22.83 | 22.37 | 25.62 | 13 | **38.62** | |

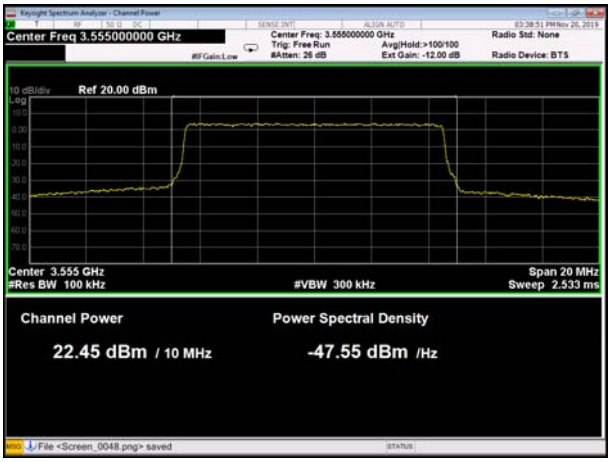
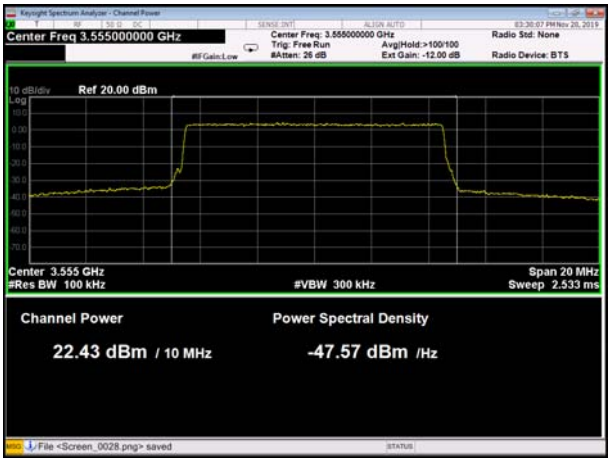
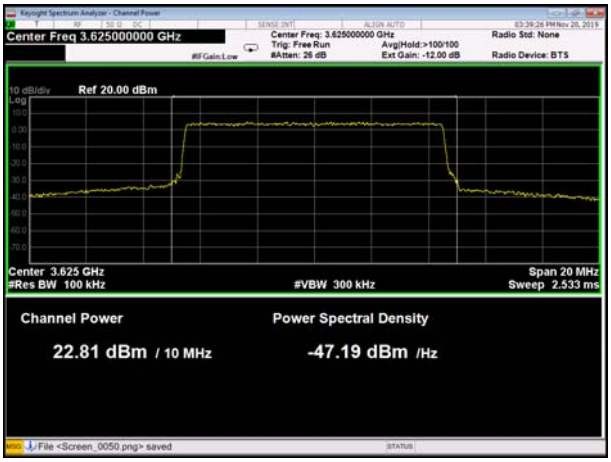
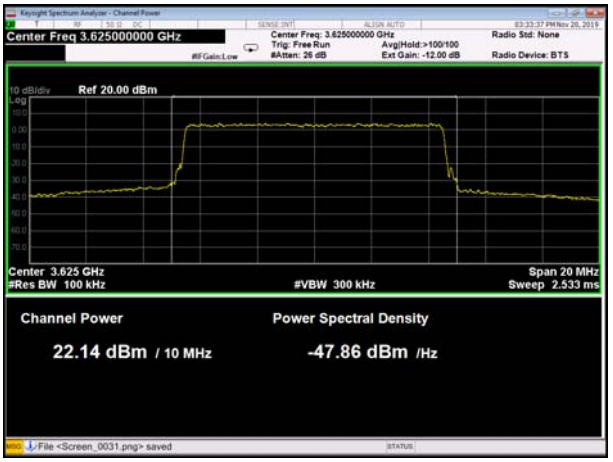
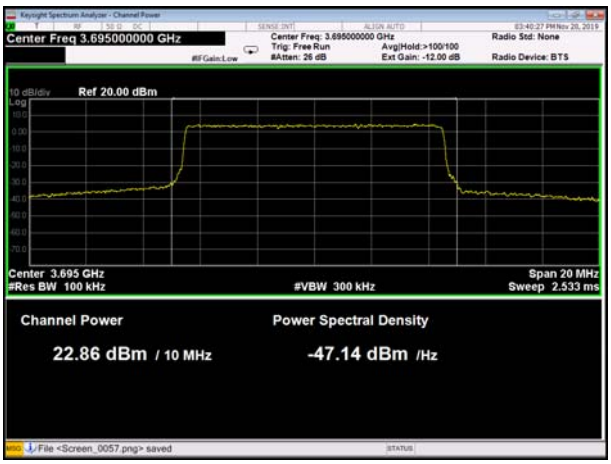
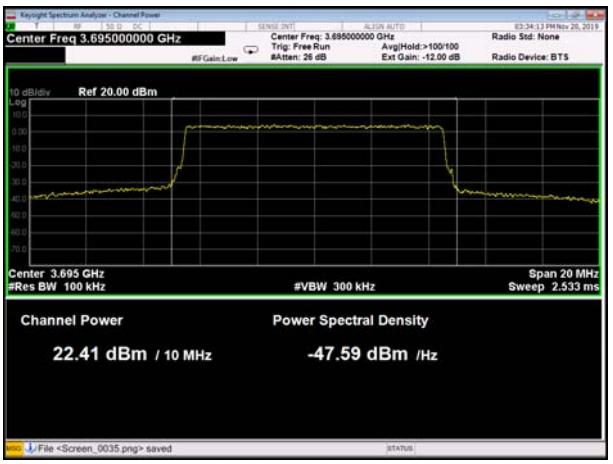
PSD:

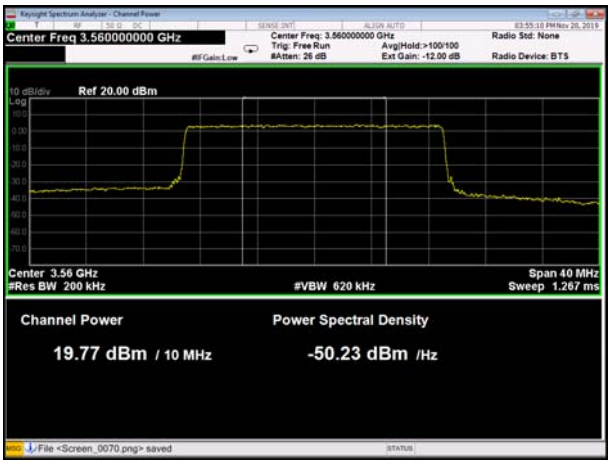
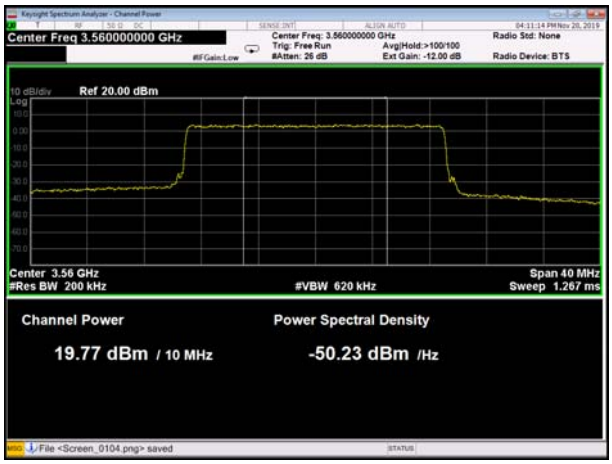
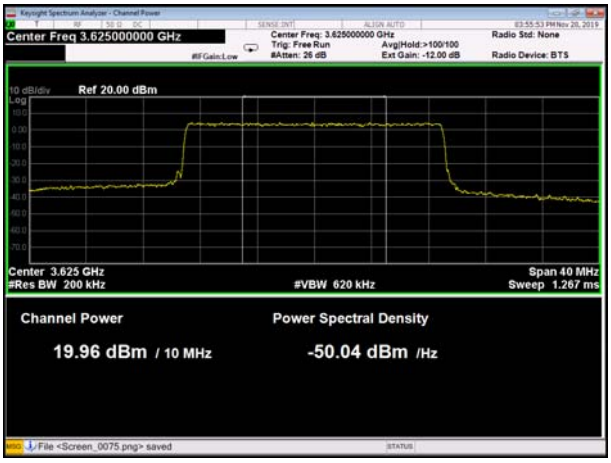
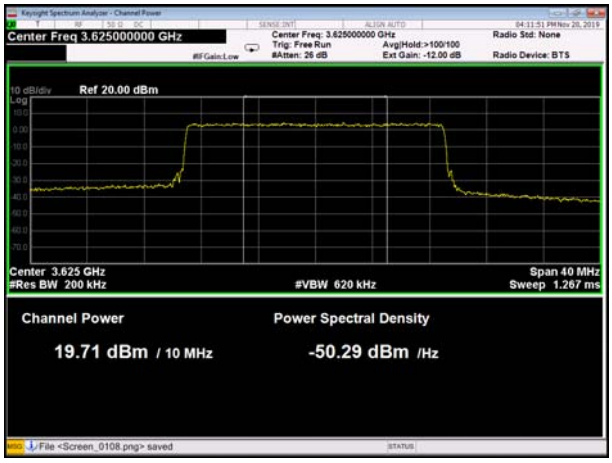
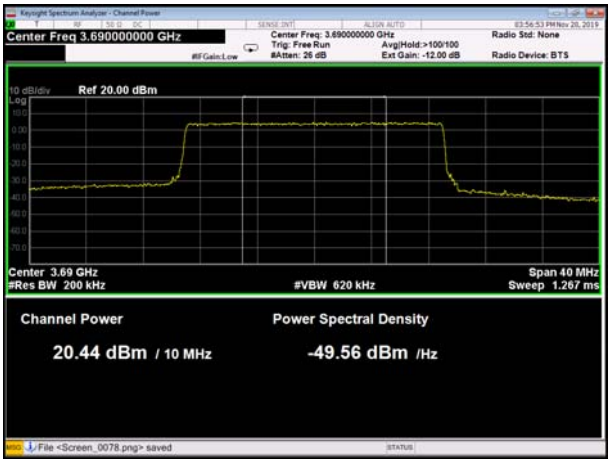
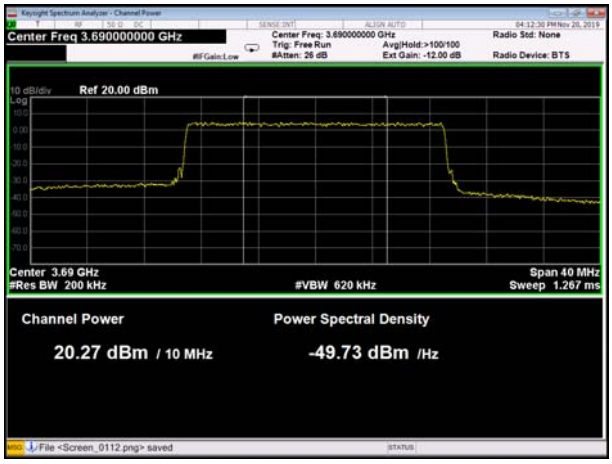
| PSD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Bandwidth** | **Modulation** | **Test Channel** | **Chain 0 PSD (dBm/MHz)** | **Chain 1 PSD (dBm/MHz)** | **Total PSD (dBm/MHz)** | **Antenna Gain (dBi)** | **EIRP Density (dBm/MHz)** | **EIRP Density LIMIT (dBm/MHz)** |
| 10MHz | QPSK | Low | 14.87 | 13.26 | 17.15 | 13 | 30.15 | 37 |
| | | Middle | 14.61 | 12.93 | 16.86 | 13 | 29.86 | |
| | | High | 14.58 | 13.80 | 17.22 | 13 | 30.22 | |
| | 64QAM | Low | 14.16 | 13.27 | 16.75 | 13 | 29.75 | |
| | | Middle | 13.77 | 12.80 | 16.32 | 13 | 29.32 | |
| | | High | 14.32 | 13.26 | 16.83 | 13 | 29.83 | |
| **PSD** | | | | | | | | |
| **Bandwidth** | **Modulation** | **Test Channel** | **Chain 0 PSD (dBm/MHz)** | **Chain 1 PSD (dBm/MHz)** | **Total PSD (dBm/MHz)** | **Antenna Gain (dBi)** | **EIRP Density (dBm/MHz)** | **EIRP Density LIMIT (dBm/MHz)** |
| 20MHz | QPSK | Low | 11.54 | 10.57 | 14.09 | 13 | 27.09 | 37 |
| | | Middle | 11.29 | 10.96 | 14.14 | 13 | 27.14 | |
| | | High | 11.11 | 11.19 | 14.16 | 13 | 27.16 | |
| | 64QAM | Low | 11.38 | 10.30 | 13.88 | 13 | 26.88 | |
| | | Middle | 11.29 | 11.20 | 14.26 | 13 | 27.26 | |
| | | High | 12.29 | 11.65 | 14.99 | 13 | 27.99 | |

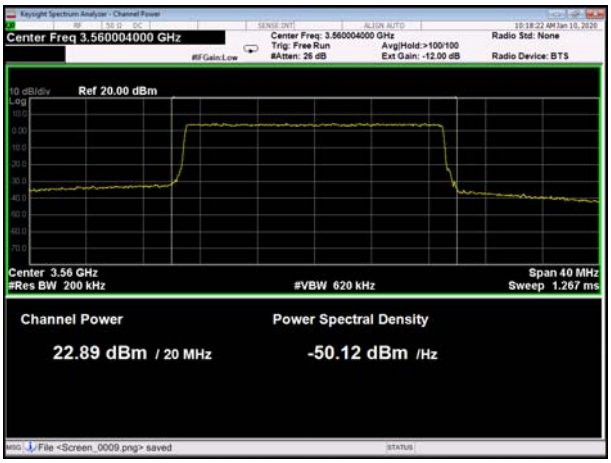
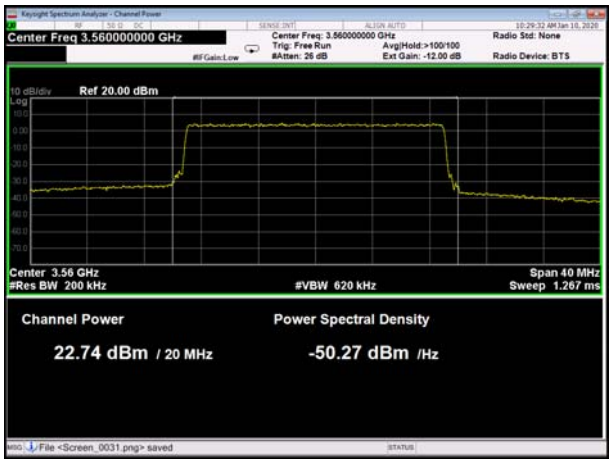
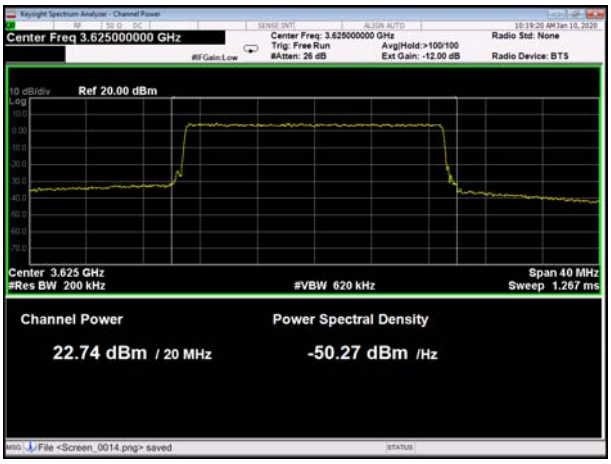
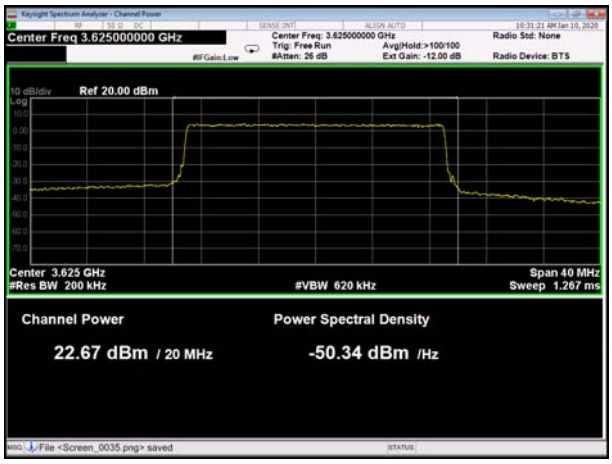
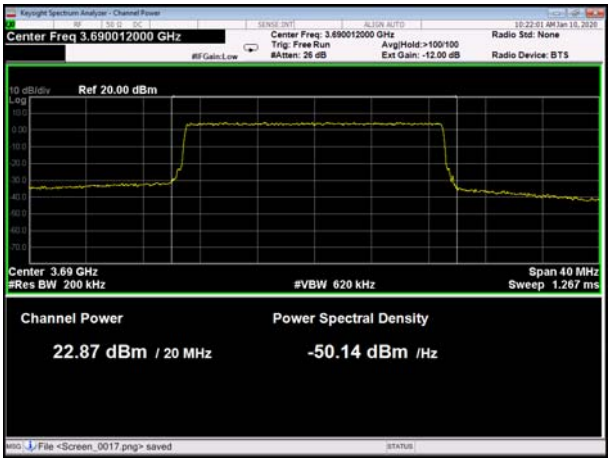
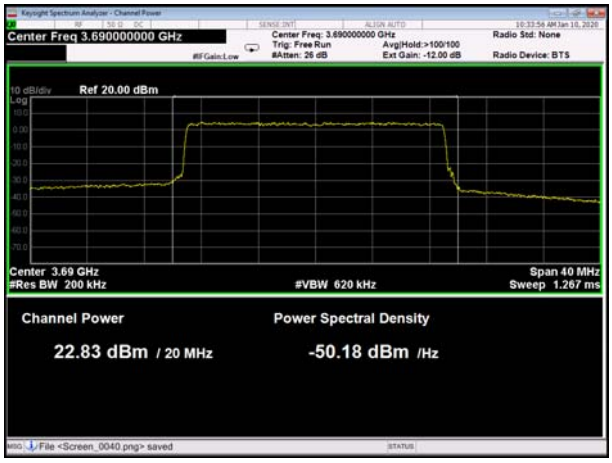
**Note: EIRP/EIRP Density=Total power /PSD+ Directional gain**

## 2.1.6 Test plots

### EIRP Chain0

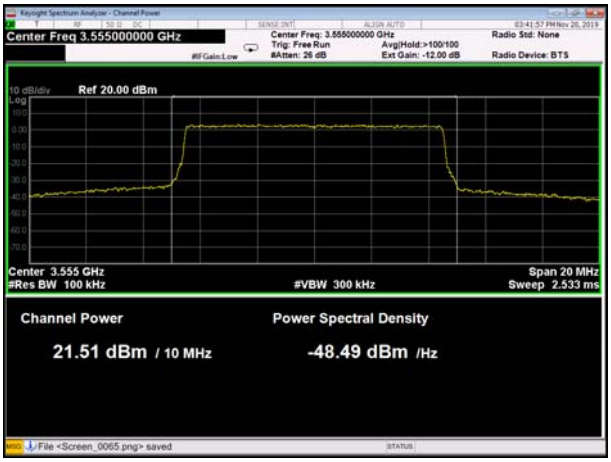
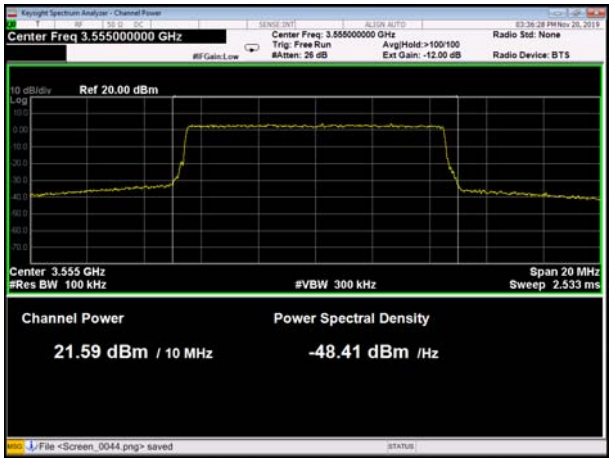
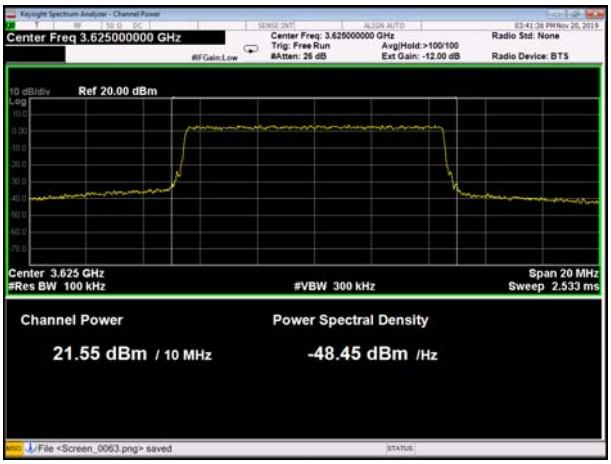
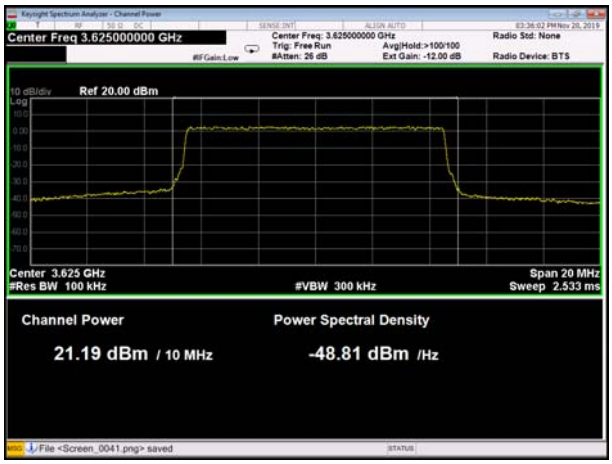
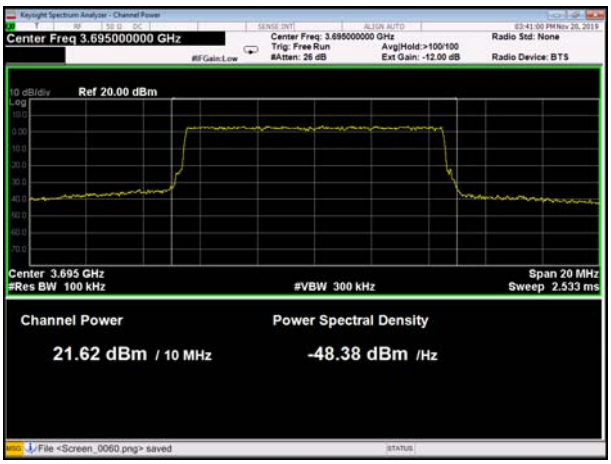
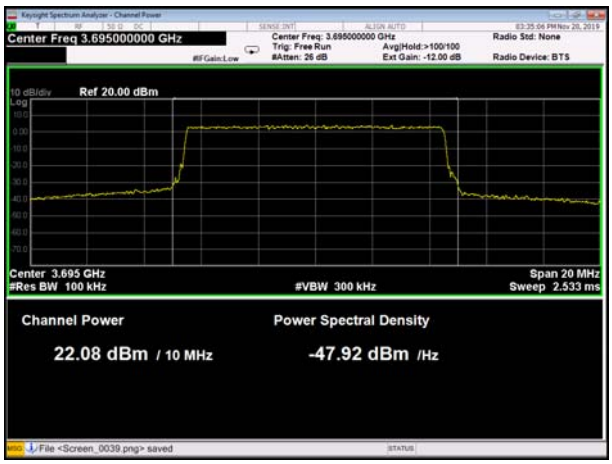
| 10MHz- Low CH QPSK | 10MHz- Low CH 64QAM |
|---|---|
|  |  |
| 10MHz- Middle CH QPSK | 10MHz- Middle CH 64QAM |
|  |  |
| 10MHz- High CH QPSK | 10MHz- High CH 64QAM |
|  |  |

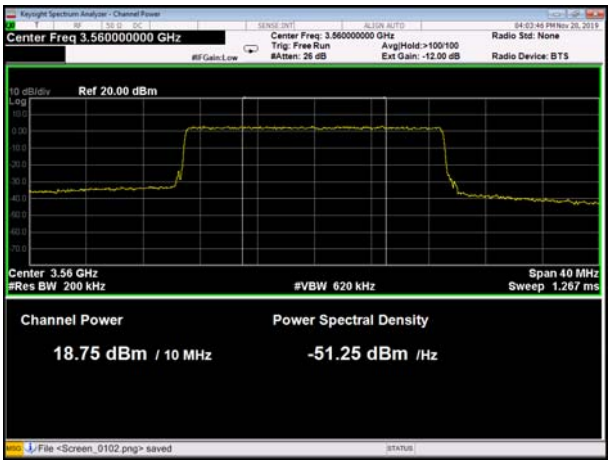
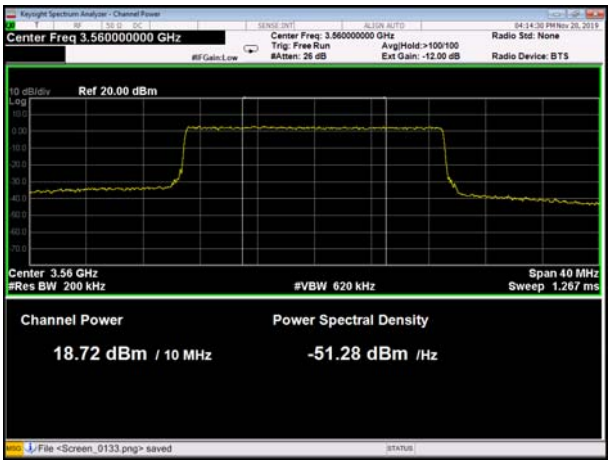
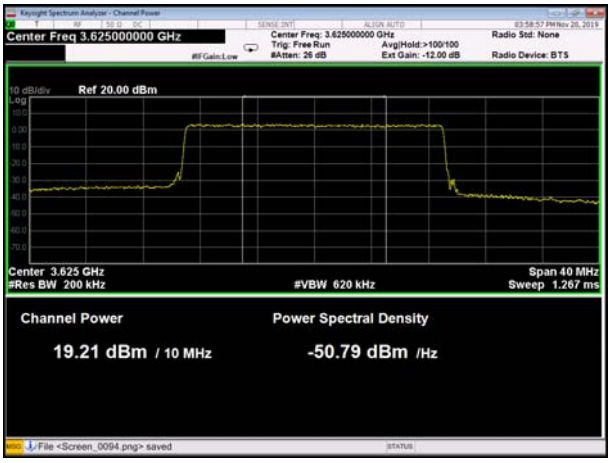
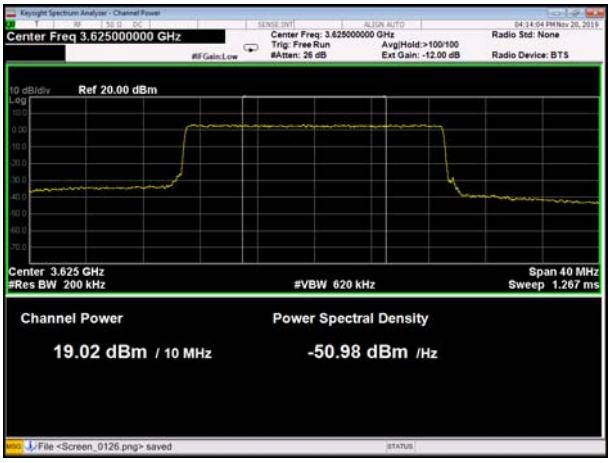
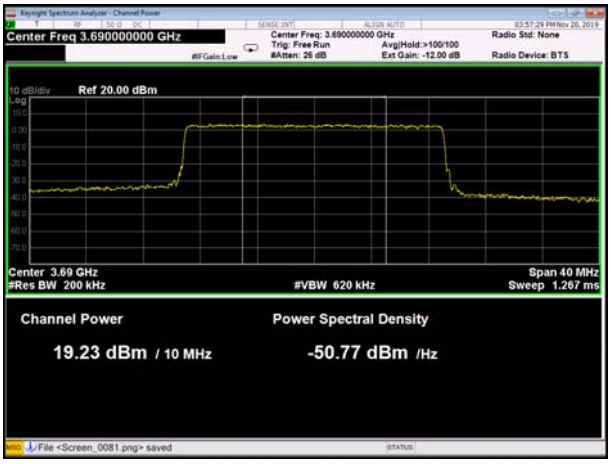
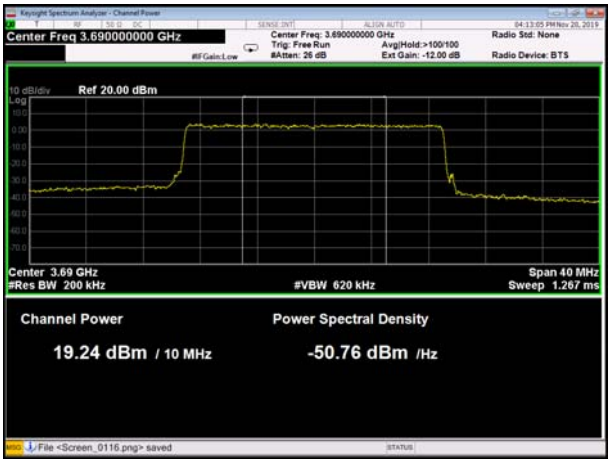
| 20MHz- Low CH QPSK | 20MHz- Low CH 64QAM |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK | 20MHz- Middle CH 64QAM |
|  |  |
| 20MHz- High CH QPSK | 20MHz- High CH 64QAM |
|  |  |

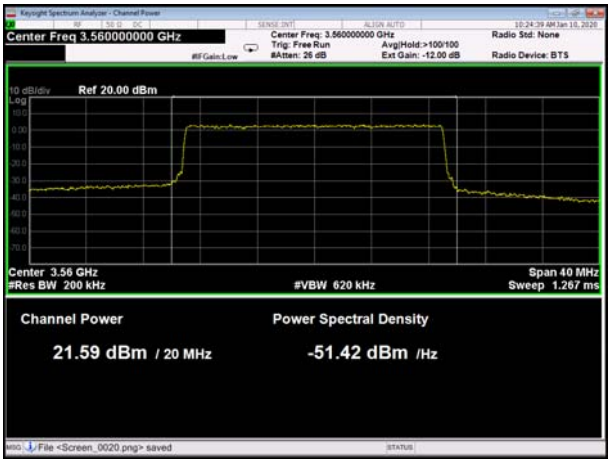
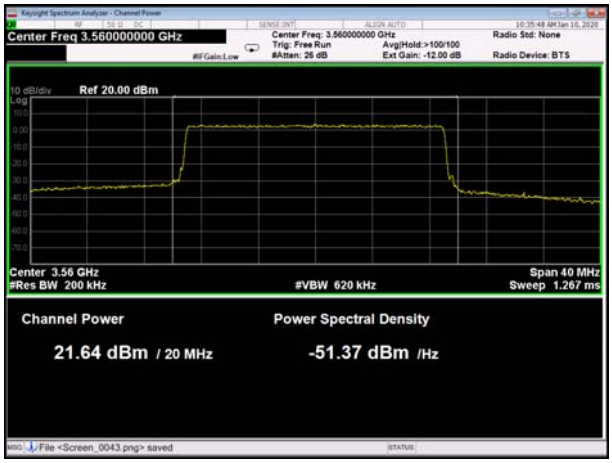
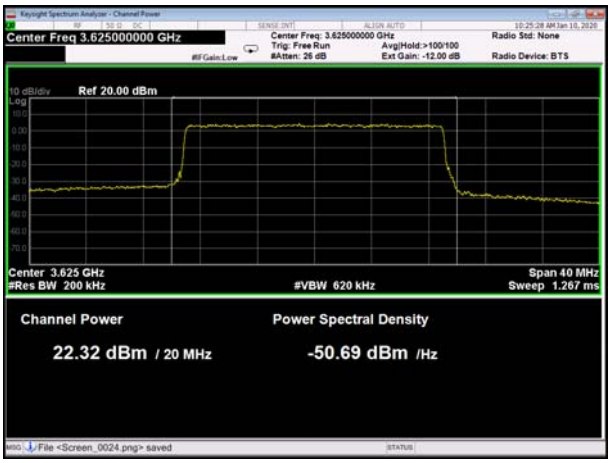
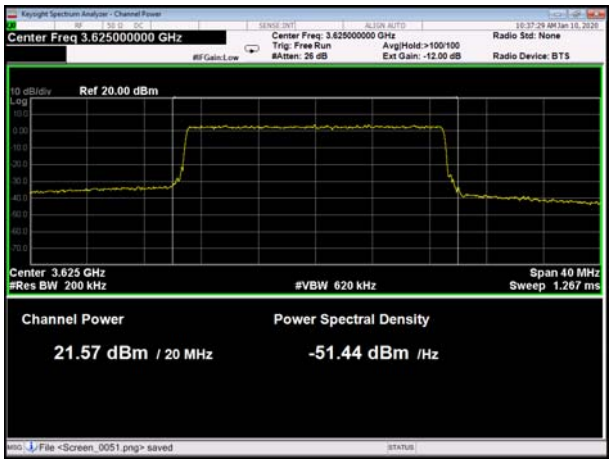
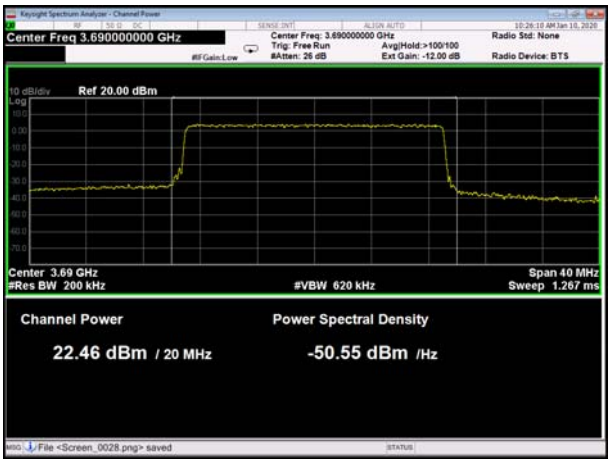
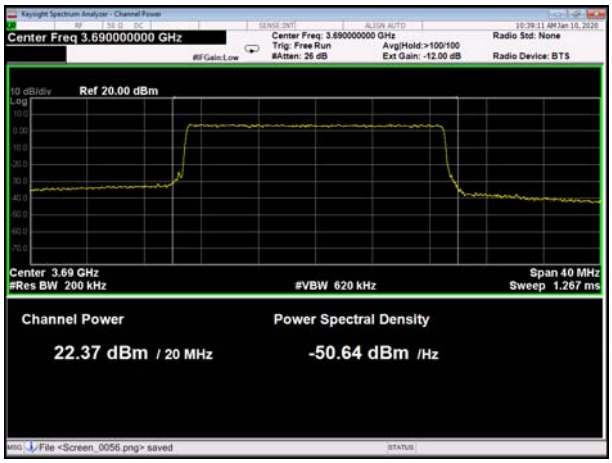
| 20MHz- Low CH QPSK<br>(Channel power BW=20MHz) | 20MHz- Low CH 64QAM<br>(Channel power BW=20MHz) |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK<br>(Channel power BW=20MHz) | 20MHz- Middle CH 64QAM<br>(Channel power BW=20MHz) |
|  |  |
| 20MHz- High CH QPSK<br>(Channel power BW=20MHz) | 20MHz- High CH 64QAM<br>(Channel power BW=20MHz) |
|  |  |

**EIRP**

**Chain1**

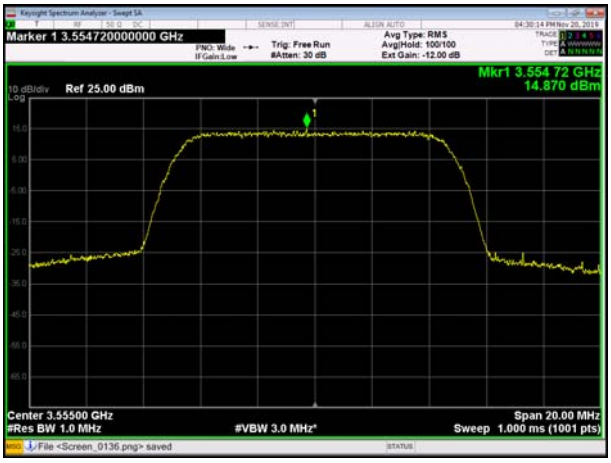
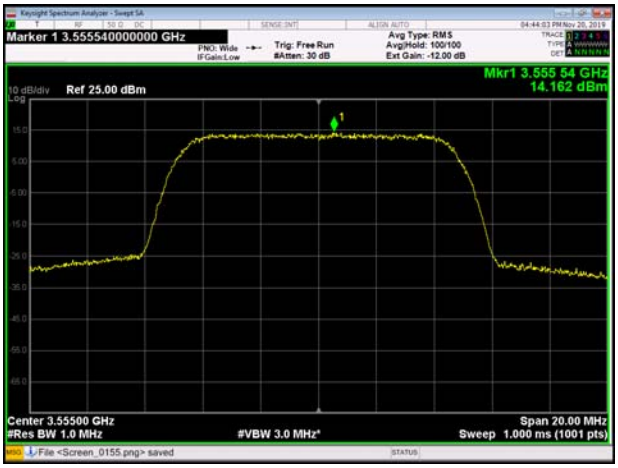
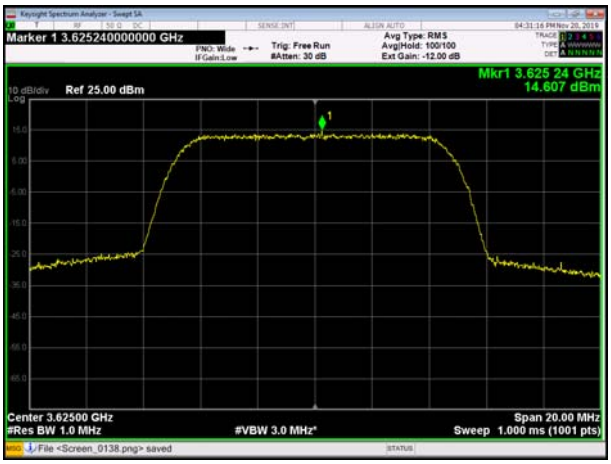
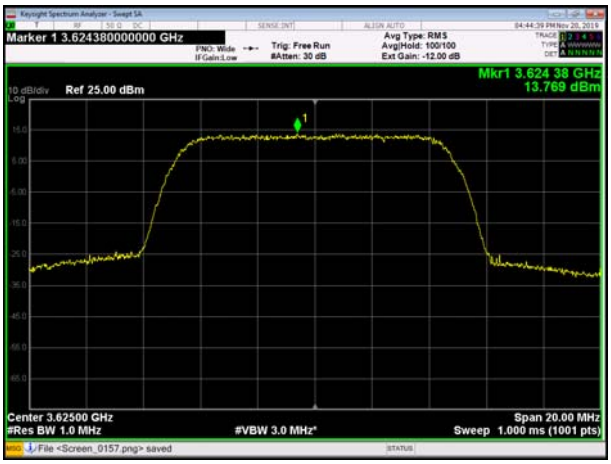
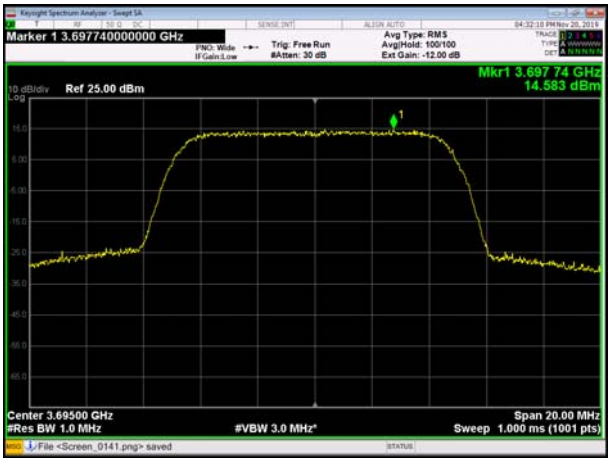
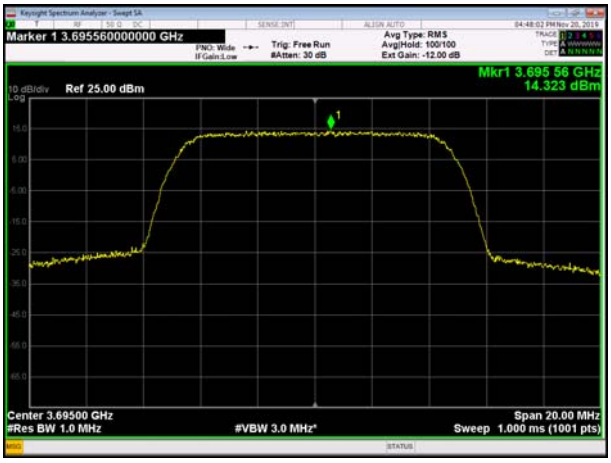
| 10MHz- Low CH QPSK | 10MHz- Low CH 64QAM |
|---|---|
|  |  |
| 10MHz- Middle CH QPSK | 10MHz- Middle CH 64QAM |
|  |  |
| 10MHz- High CH QPSK | 10MHz- High CH 64QAM |
|  |  |

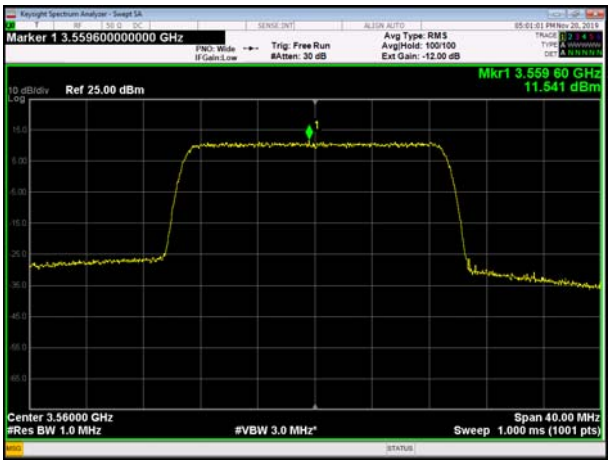
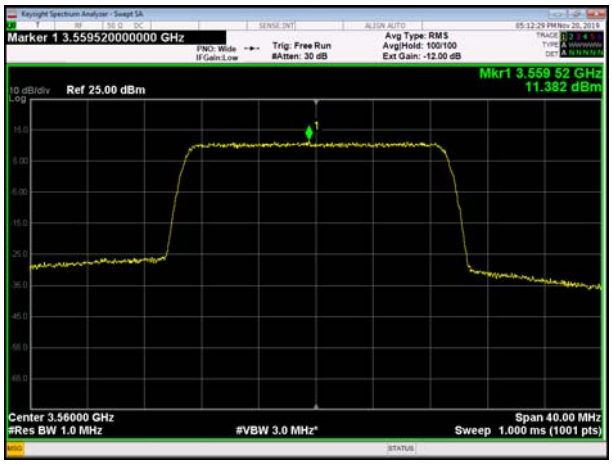
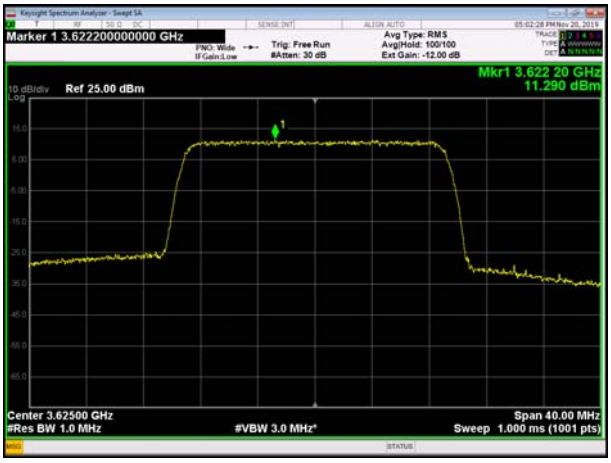
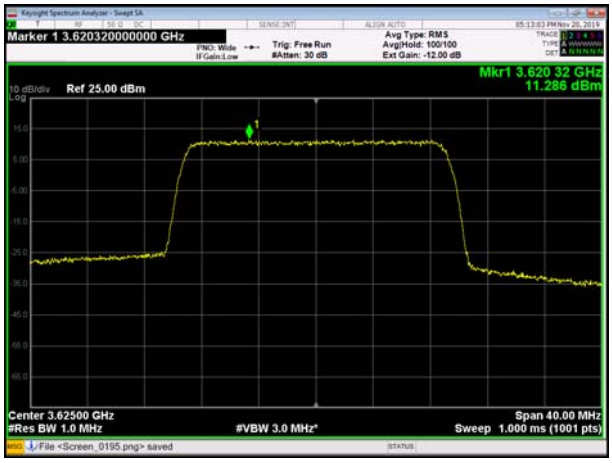
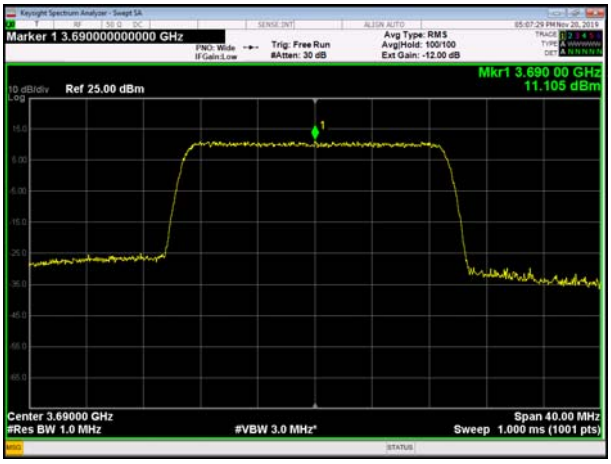
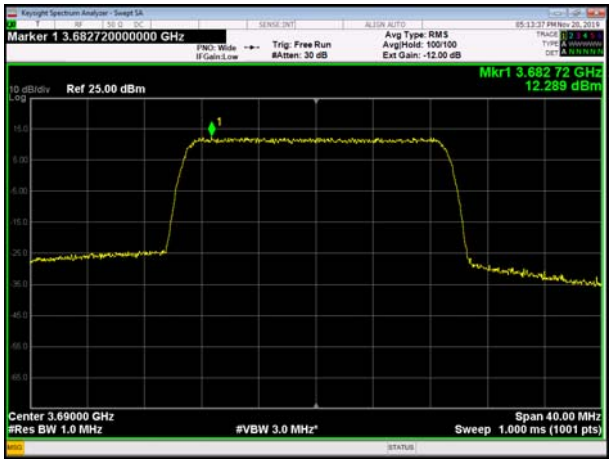
| 20MHz- Low CH QPSK | 20MHz- Low CH 64QAM |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK | 20MHz- Middle CH 64QAM |
|  |  |
| 20MHz- High CH QPSK | 20MHz- High CH 64QAM |
|  |  |

| 20MHz- Low CH QPSK<br>(Channel power BW=20MHz) | 20MHz- Low CH 64QAM<br>(Channel power BW=20MHz) |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK<br>(Channel power BW=20MHz) | 20MHz- Middle CH 64QAM<br>(Channel power BW=20MHz) |
|  |  |
| 20MHz- High CH QPSK<br>(Channel power BW=20MHz) | 20MHz- High CH 64QAM<br>(Channel power BW=20MHz) |
|  |  |

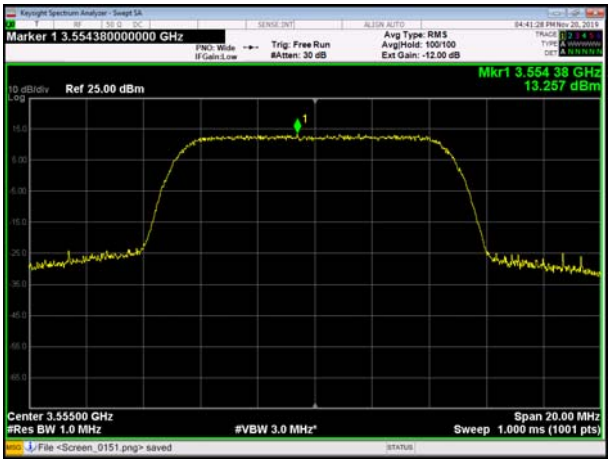
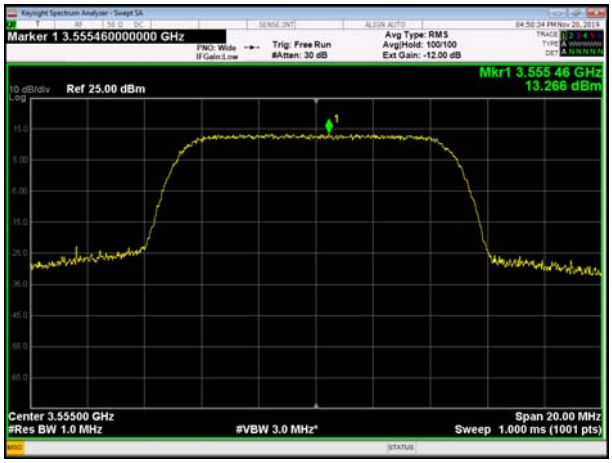
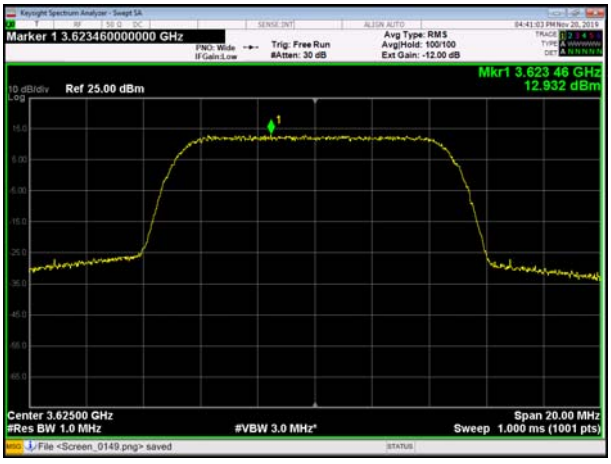
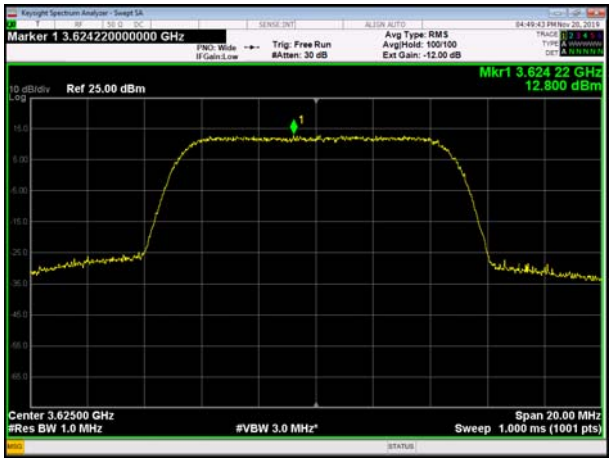
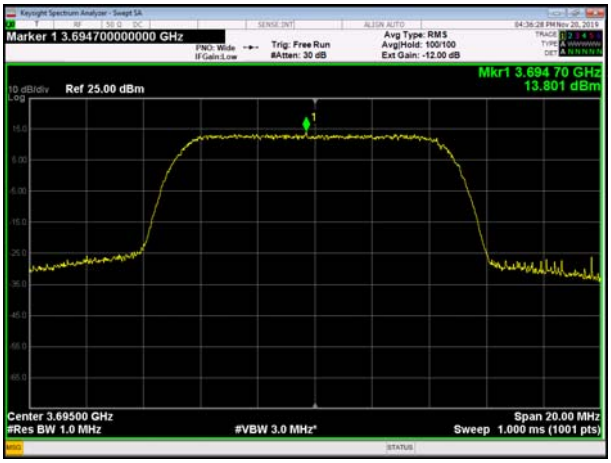
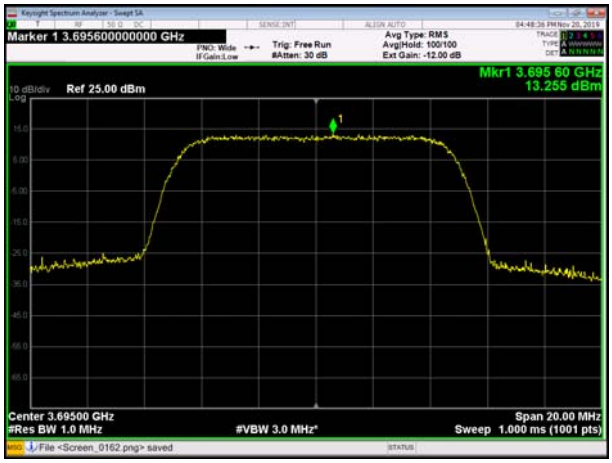
**PSD**

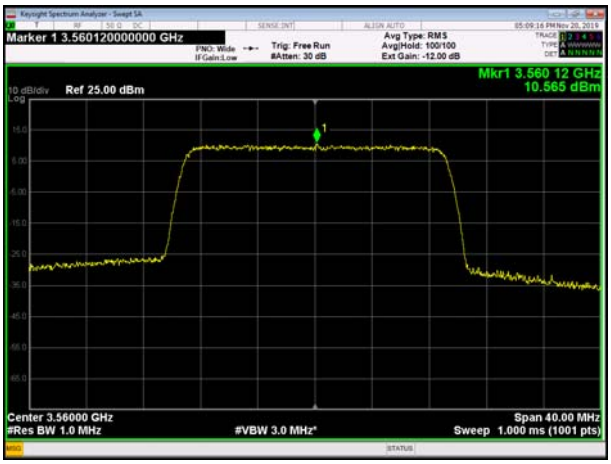
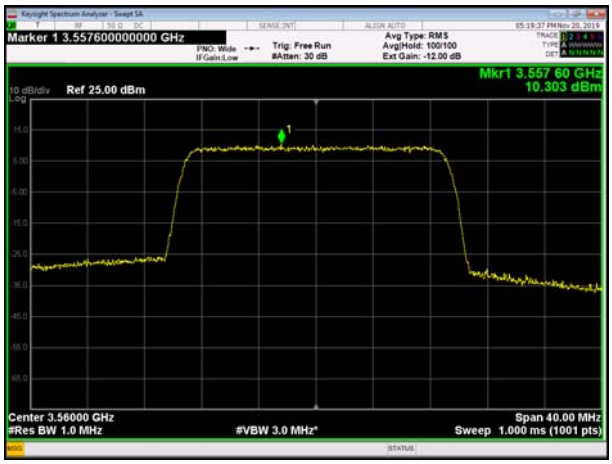
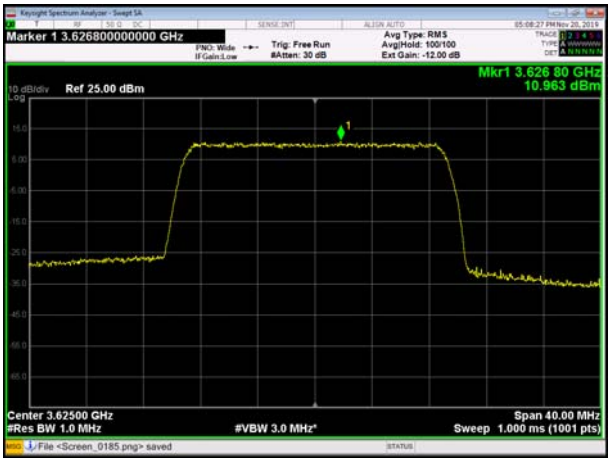
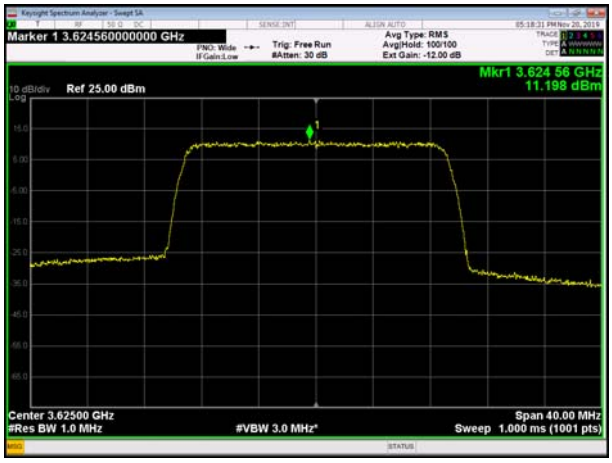
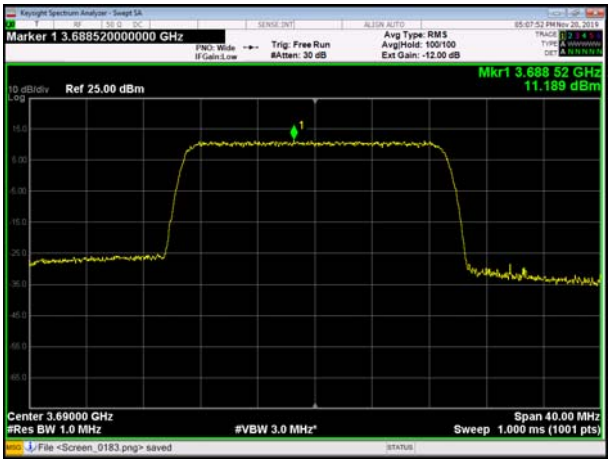
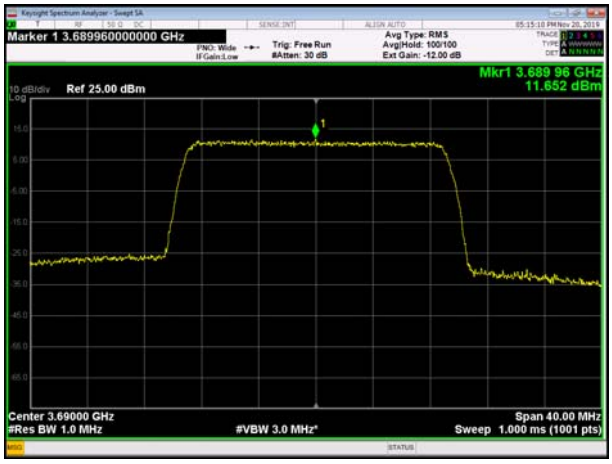
**Chain0**

| 10MHz- Low CH QPSK | 10MHz- Low CH 64QAM |
|---|---|
|  |  |
| 10MHz- Middle CH QPSK | 10MHz- Middle CH 64QAM |
|  |  |
| 10MHz- High CH QPSK | 10MHz- High CH 64QAM |
|  |  |

| 20MHz- Low CH QPSK | 20MHz- Low CH 64QAM |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK | 20MHz- Middle CH 64QAM |
|  |  |
| 20MHz- High CH QPSK | 20MHz- High CH 64QAM |
|  |  |

**Chain1**

| 10MHz- Low CH QPSK | 10MHz- Low CH 64QAM |
|---|---|
|  |  |
| 10MHz- Middle CH QPSK | 10MHz- Middle CH 64QAM |
|  |  |
| 10MHz- High CH QPSK | 10MHz- High CH 64QAM |
|  |  |

| 20MHz- Low CH QPSK | 20MHz- Low CH 64QAM |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK | 20MHz- Middle CH 64QAM |
|  |  |
| 20MHz- High CH QPSK | 20MHz- High CH 64QAM |
|  |  |

## 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 3 of this test report.

### 2.2.3 Test Procedures

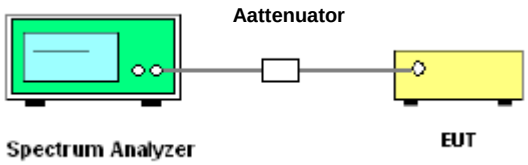
1. The EUT was connected to the spectrum analyzer .

2. Set the CCDF (Complementary Cumulative Distribution Function) option on the 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.

### 2.2.4 Test Setup



### 2.2.5 Test Results of Peak-to-Average Ratio

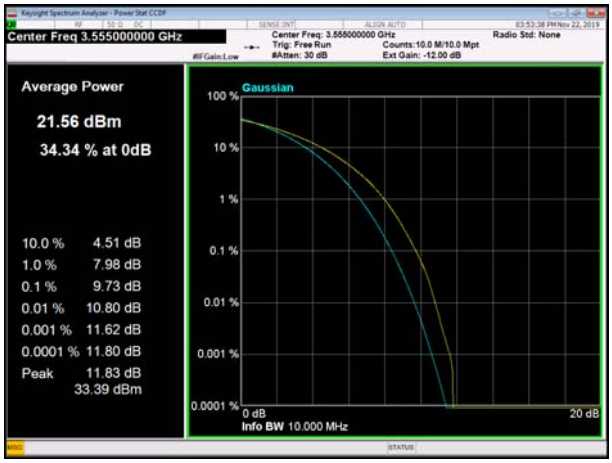
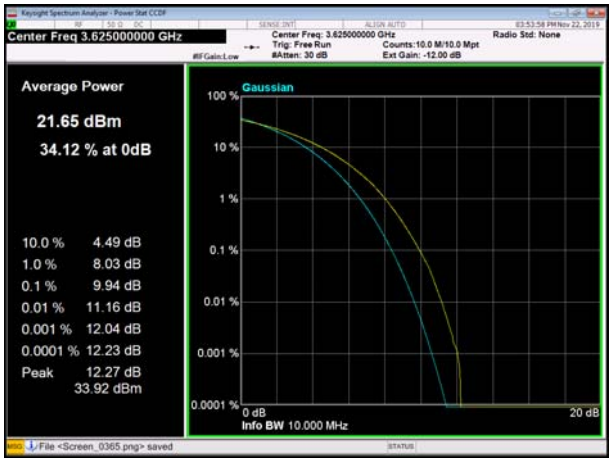
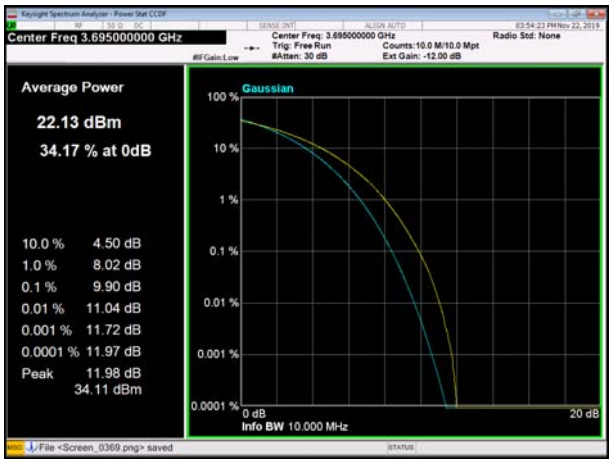
10MHz Bandwidth

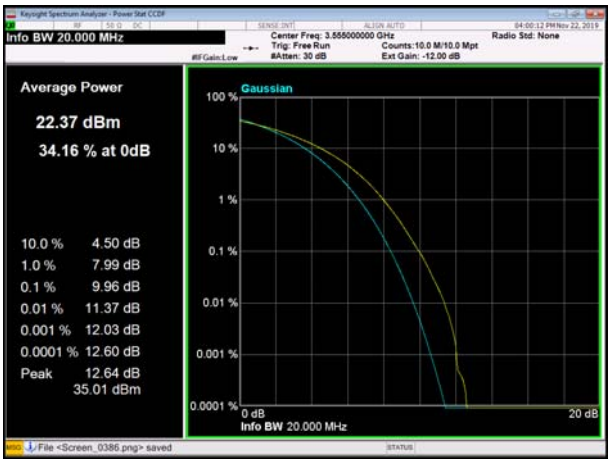
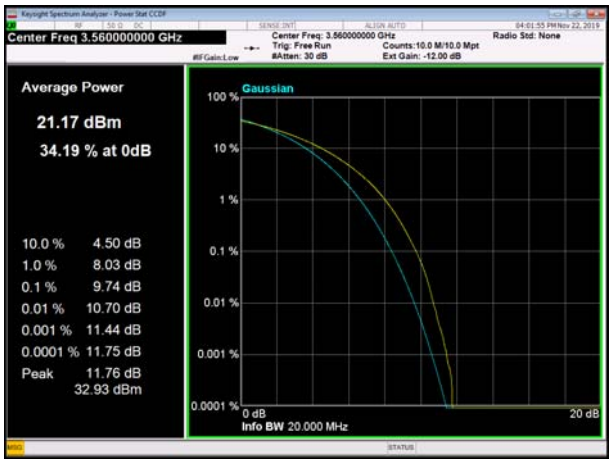
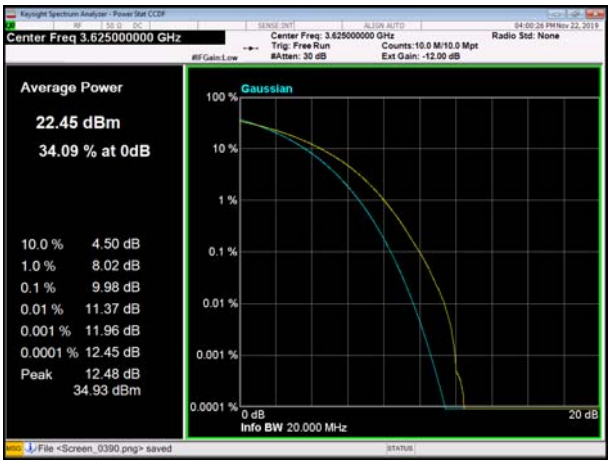
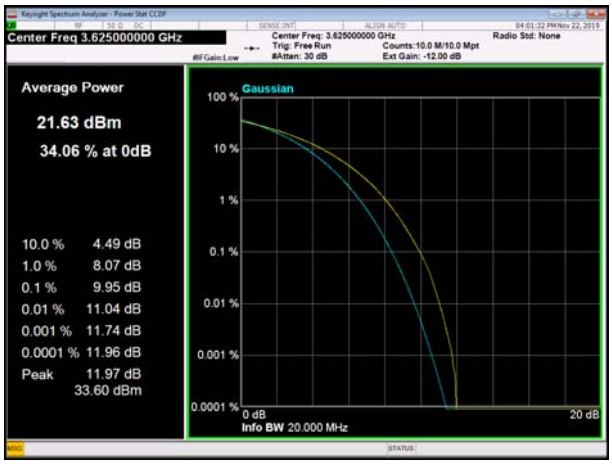
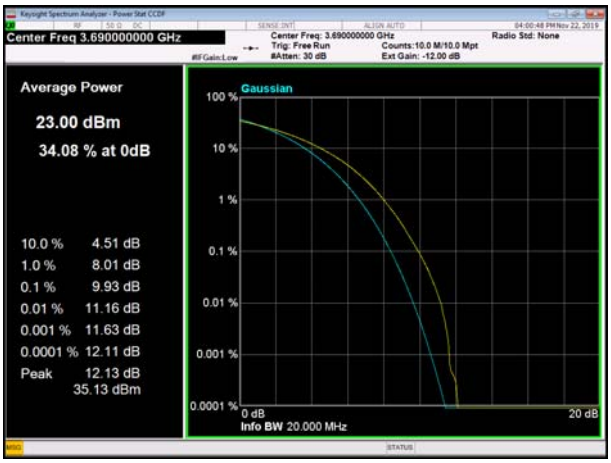
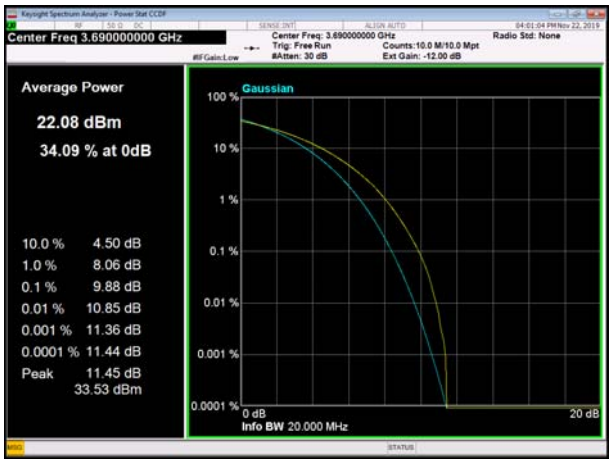
| Mode | Chain 0 | | | Chain 1 | | | Limit (dB) |
|---|---|---|---|---|---|---|---|
| Channel | Low | Middle | High | Low | Middle | High | 13 |
| Peak-to-Average Ratio (dB) | 9.99 | 10.01 | 9.96 | 9.73 | 9.94 | 9.9 | |

20MHz Bandwidth

| Mode | Chain 0 | | | Chain 1 | | | Limit (dB) |
|---|---|---|---|---|---|---|---|
| Channel | Low | Middle | High | Low | Middle | High | 13 |
| Peak-to-Average Ratio (dB) | 9.96 | 9.98 | 9.93 | 9.74 | 9.95 | 9.88 | |

### 2.2.6 Test plot

| Chain0, 10MHz- Low CH QPSK | Chain1, 10MHz- Low CH QPSK |
|---|---|
|  |  |
| Chain0, 10MHz- Middle CH QPSK | Chain1, 10MHz- Middle CH QPSK |
|  |  |
| Chain0, 10MHz- High CH QPSK | Chain1, 10MHz- High CH QPSK |
|  |  |

| Chain0, 20MHz- Low CH QPSK | Chain1, 20MHz- Low CH QPSK |
|---|---|
|  |  |
| Chain0, 20MHz- Middle CH QPSK | Chain1, 20MHz- Middle CH QPSK |
|  |  |
| Chain0, 20MHz- High CH QPSK | Chain1, 20MHz- High CH QPSK |
|  |  |

## 2.3 Occupied Bandwidth

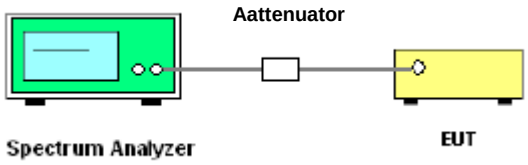
### 2.3.1 Measuring Instruments

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

### 2.3.2 Test Procedures

1. The EUT was connected to the spectrum analyzer
2. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set RBW= 1% to 5% of the occupied bandwidth, VBW= 3*RBW, peak detector, trace maximum hold.

### 2.3.3 Test Setup



### 2.3.4 Test Results of 26dB Down Bandwidth

Chain 0

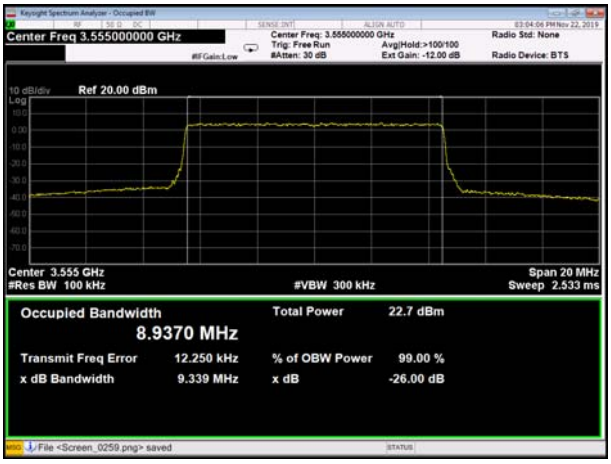
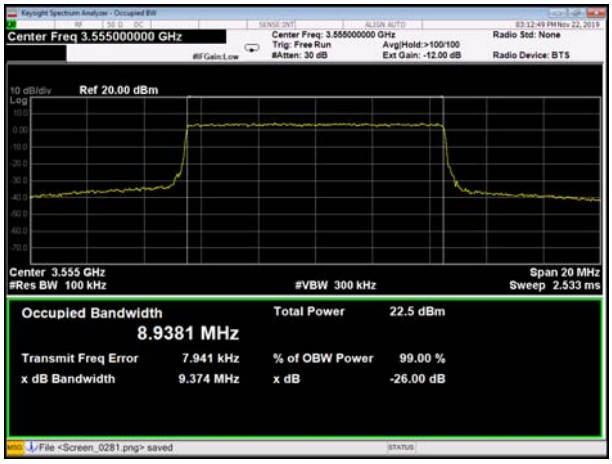
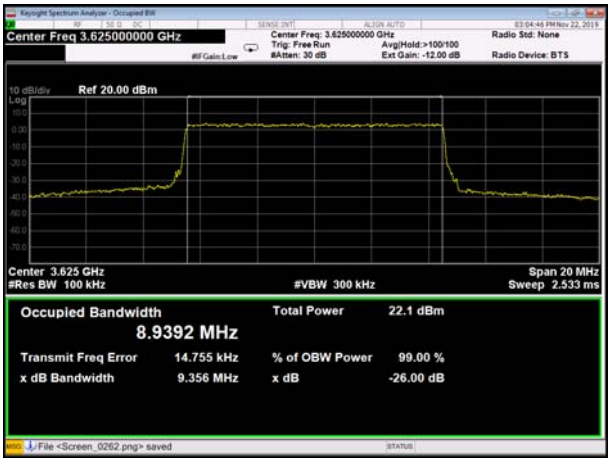
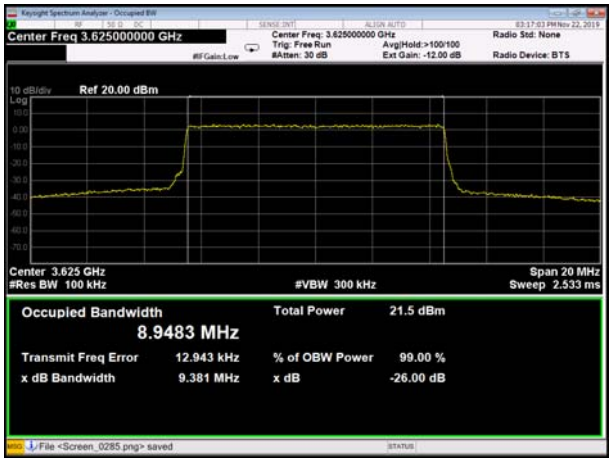
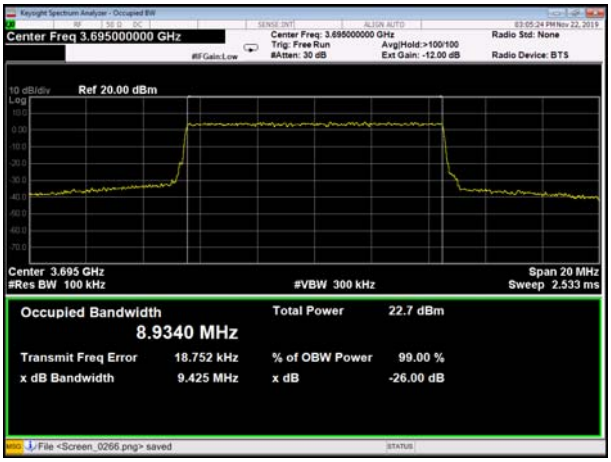
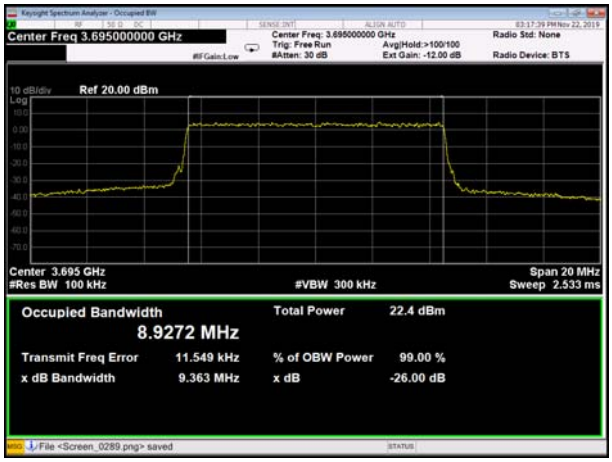
| Band width (MHz) | Modulation | Test channel | 26dB Down Bandwidth (MHz) |
|---|---|---|---|
| 10MHz | QPSK | Low | 9.339 |
| | | Middle | 9.356 |
| | | High | 9.425 |
| | 64QAM | Low | 9.374 |
| | | Middle | 9.381 |
| | | High | 9.363 |
| Band width (MHz) | Modulation | Test channel | 26dB Down Bandwidth (MHz) |
| 20MHz | QPSK | Low | 18.52 |
| | | Middle | 18.52 |
| | | High | 18.68 |
| | 64QAM | Low | 18.75 |
| | | Middle | 18.63 |
| | | High | 18.76 |

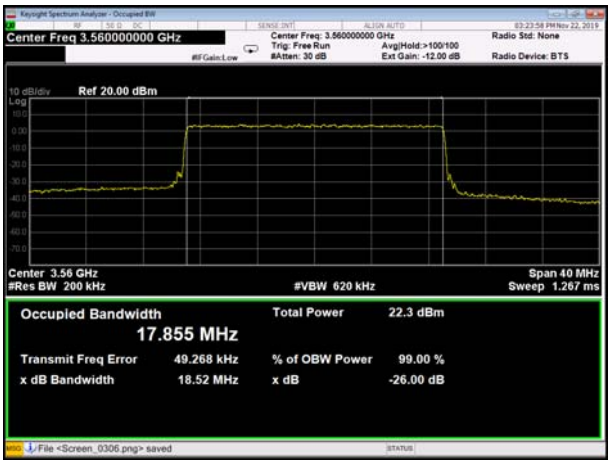
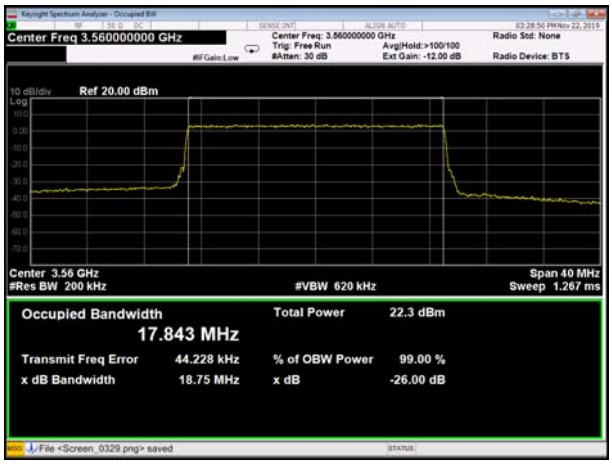
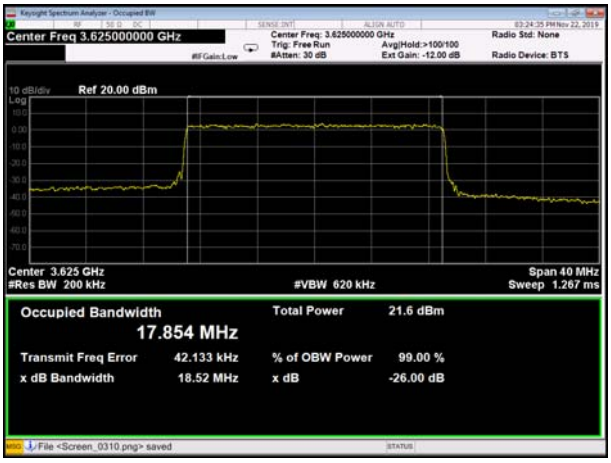
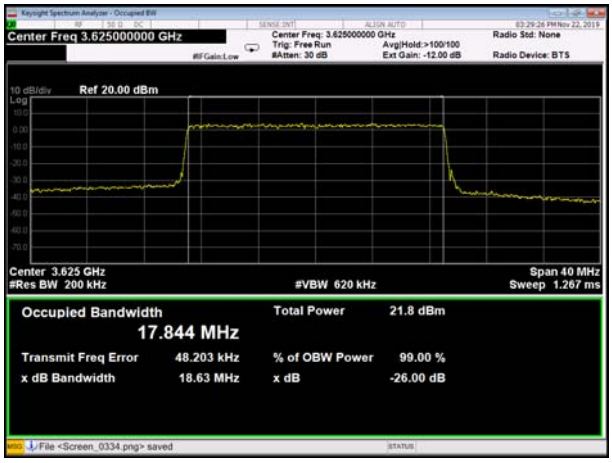
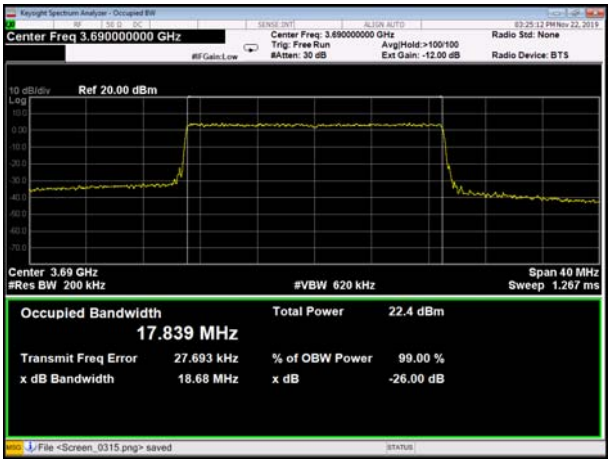
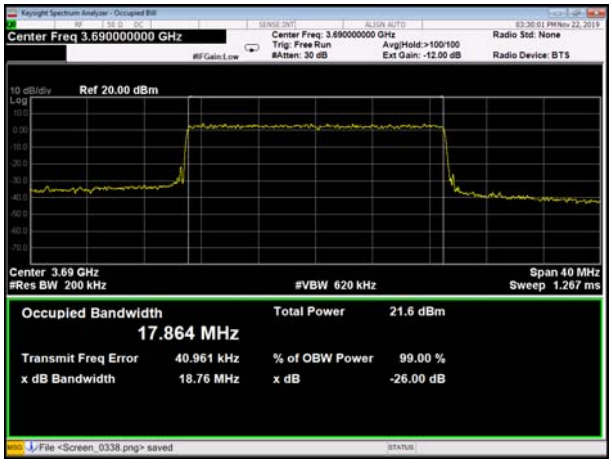
Chain 1

| Band width (MHz) | Modulation | Test channel | 26dB Bandwidth (MHz) |
|---|---|---|---|
| 10MHz | QPSK | Low | 9.373 |
| | | Middle | 9.419 |
| | | High | 9.357 |
| | 64QAM | Low | 9.425 |
| | | Middle | 9.498 |
| | | High | 9.404 |
| Band width (MHz) | Modulation | Test channel | 26dB Bandwidth (MHz) |
| 20MHz | QPSK | Low | 18.59 |
| | | Middle | 18.66 |
| | | High | 18.59 |
| | 64QAM | Low | 18.67 |
| | | Middle | 18.62 |
| | | High | 18.59 |

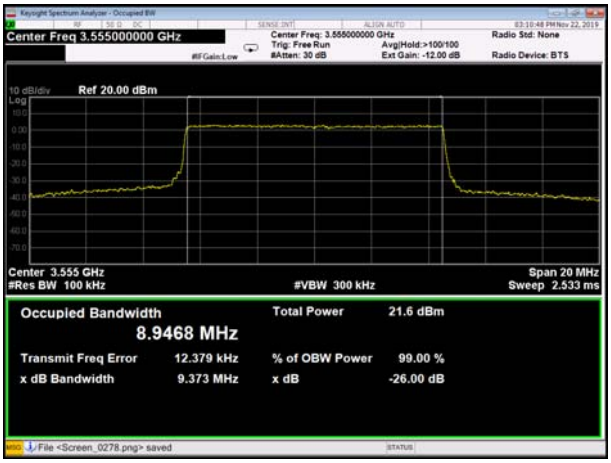
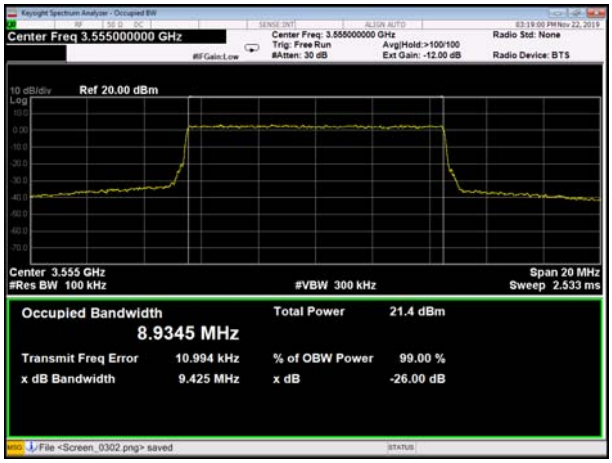
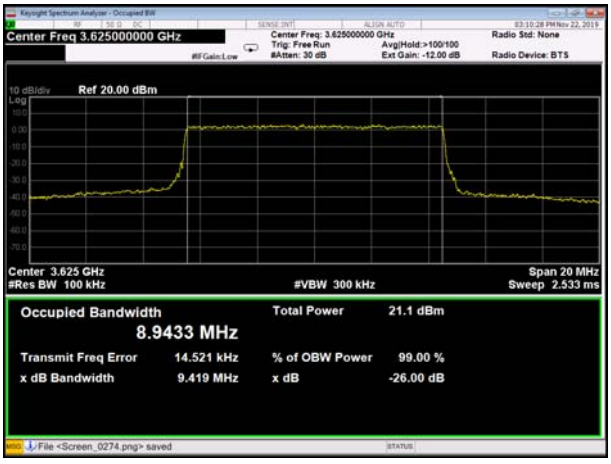
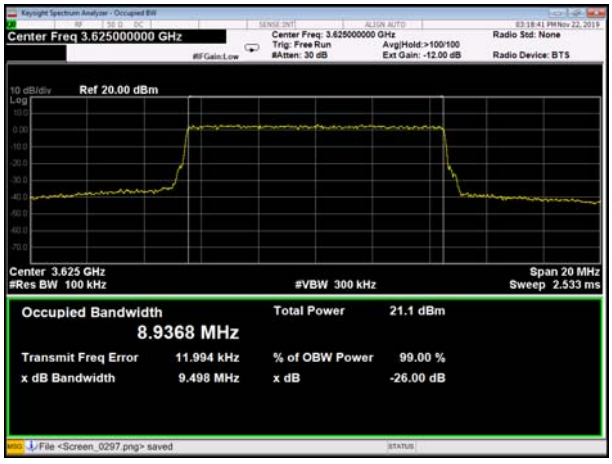
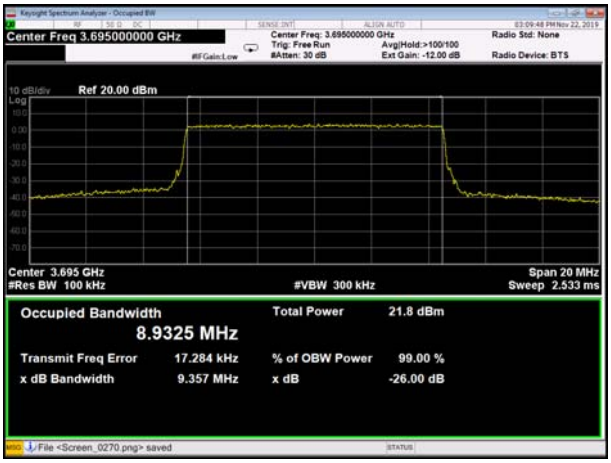
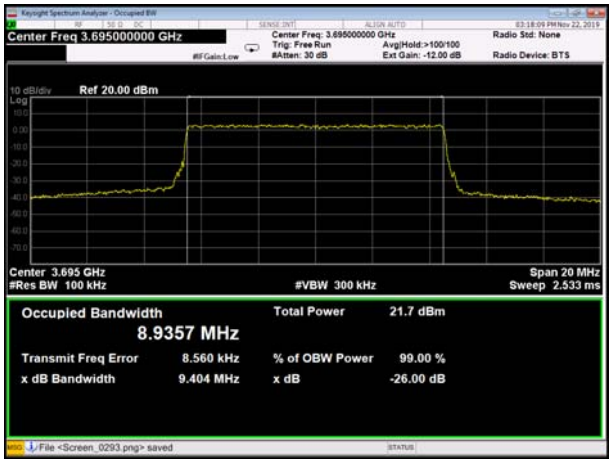
### 2.3.5 Test Results (Plots)

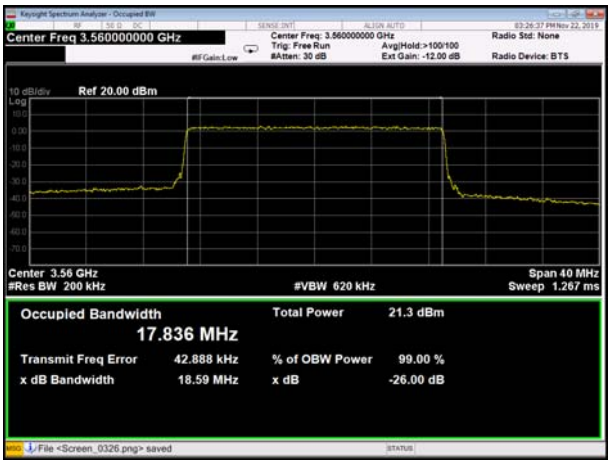
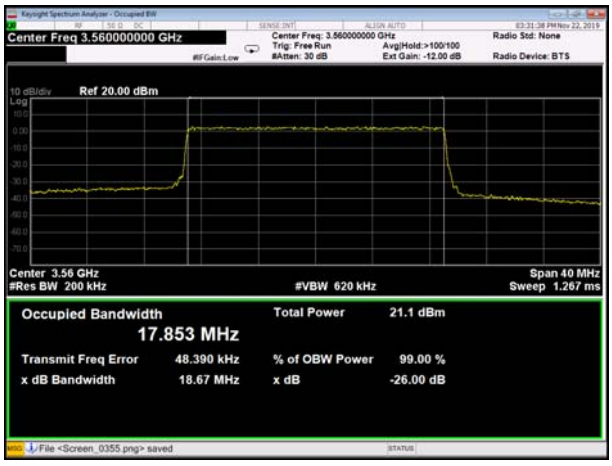
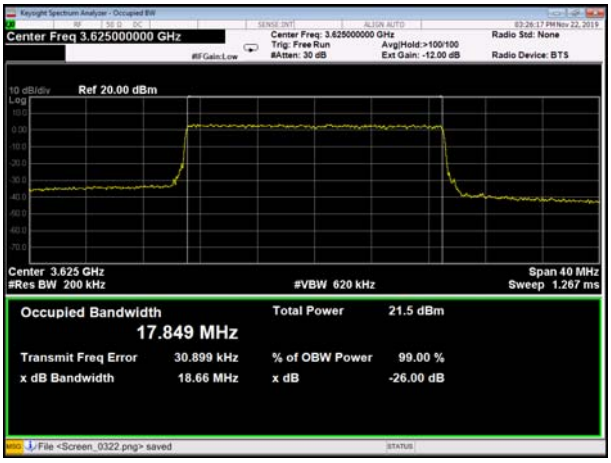
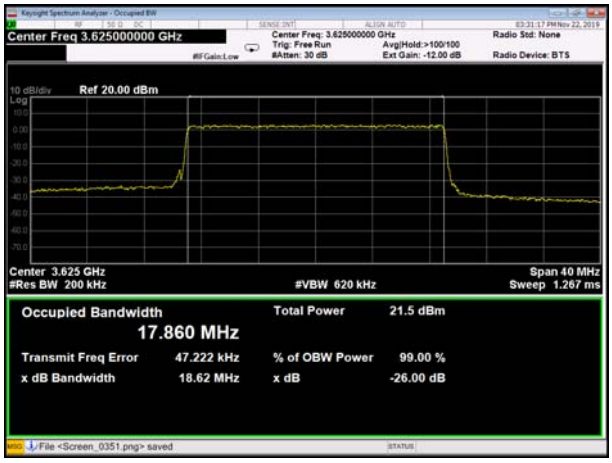
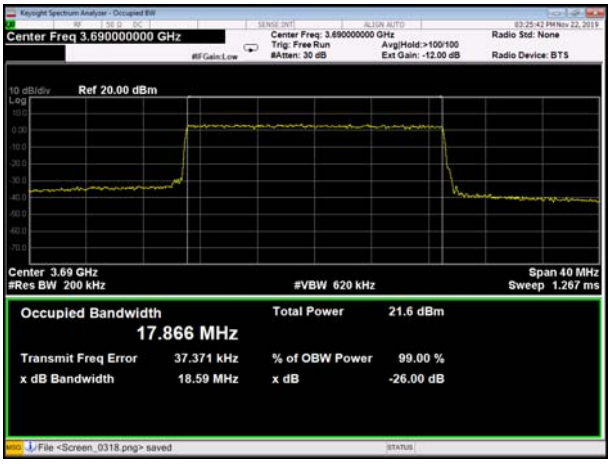
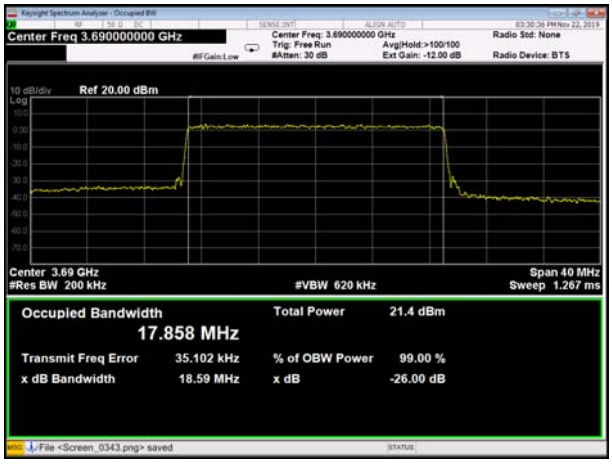
**Chain 0**

| 10MHz- Low CH QPSK | 10MHz- Low CH 64QAM |
|---|---|
|  |  |
| 10MHz- Middle CH QPSK | 10MHz- Middle CH 64QAM |
|  |  |
| 10MHz- High CH QPSK | 10MHz- High CH 64QAM |
|  |  |

| 20MHz- Low CH QPSK | 20MHz- Low CH 64QAM |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK | 20MHz- Middle CH 64QAM |
|  |  |
| 20MHz- High CH QPSK | 20MHz- High CH 64QAM |
|  |  |

**Chain1**

| 10MHz- Low CH QPSK | 10MHz- Low CH 64QAM |
|---|---|
|  |  |
| 10MHz- Middle CH QPSK | 10MHz- Middle CH 64QAM |
|  |  |
| 10MHz- High CH QPSK | 10MHz- High CH 64QAM |
|  |  |

| 20MHz- Low CH QPSK | 20MHz- Low CH 64QAM |
|---|---|
|  |  |
| 20MHz- Middle CH QPSK | 20MHz- Middle CH 64QAM |
|  |  |
| 20MHz- High CH QPSK | 20MHz- High CH 64QAM |
|  |  |

## 2.4 Frequency Stability

### 2.4.1 Requirement

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.

### 2.4.2 Measuring Instruments

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

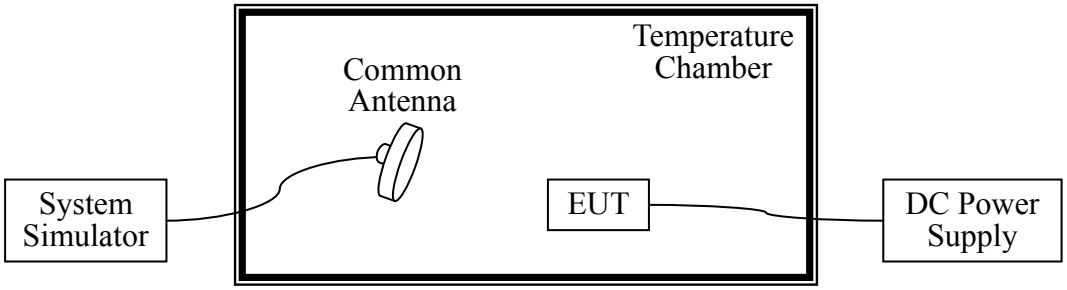
### 2.4.3 Test Procedures for Temperature Variation

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 steps 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.

### 2.4.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

### 2.4.5 Test Setup




### 2.4.6 Test Results of Frequency Stability

Chain 0

| Test Frequency:3555MHz 10MHz | | | | |
|---|---|---|---|---|
| Power ($V_{DC}$) | Temperature (℃) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| 48 | -30 | 85 | 0.024 | PASS |
| | -20 | 96 | 0.027 | |
| | -10 | 101 | 0.028 | |
| | 0 | 102 | 0.029 | |
| | +10 | 98 | 0.028 | |
| | +20 | 99 | 0.028 | |
| | +30 | 108 | 0.030 | |
| | +40 | 110 | 0.031 | |
| | +50 | 97 | 0.027 | |
| 43 | +25 | 100 | 0.028 | |
| 52 | +25 | 113 | 0.032 | |

Chain 1

| Test Frequency:3555MHz 10MHz | | | | |
|---|---|---|---|---|
| Power ($V_{DC}$) | Temperature (℃) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| 48 | -30 | 106 | 0.030 | PASS |
| | -20 | 110 | 0.031 | |
| | -10 | 89 | 0.025 | |
| | 0 | 88 | 0.025 | |
| | +10 | 97 | 0.027 | |
| | +20 | 103 | 0.029 | |
| | +30 | 97 | 0.027 | |
| | +40 | 99 | 0.028 | |
| | +50 | 98 | 0.028 | |
| 43 | +25 | 107 | 0.030 | |
| 52 | +25 | 100 | 0.028 | |

## 2.5 Conducted Out of Band Emissions

### 2.5.1 Requirement

According to FCC Part 96.41(e) requirement

### 2.5.2 Measuring Instruments

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

### 2.5.3 Limit of Conducted Spurious Emission Measurement

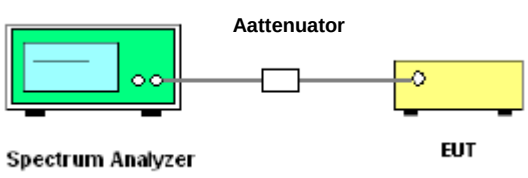
| Power of any emissions outside the fundamental | Limit |
|---|---|
| With 0-10MHz above the Assigned channel | -13dBm/MHz |
| With 0-10MHz below the Assigned channel | |
| Greater than 0-10MHz above the Assigned channel | -25dBm/MHz |
| Greater than 0-10MHz below the Assigned channel | |
| Power of any emissions below 3530MHz | -40dBm/MHz |
| Power of any emissions above 3720MHz | |

Note:
This device can be implement MIMO function, so the limit of spurious emissions need to reduced by 10log(Numbers $_{ANT}$)according to FCC KDB 662911 D01 guidance.
{The limit is adjusted to -13dBm-10log(2)=-16.01dBm}
{The limit is adjusted to -25dBm-10log(2)=-28.01dBm}
{The limit is adjusted to -40dBm-10log(2)=-43.01dBm}

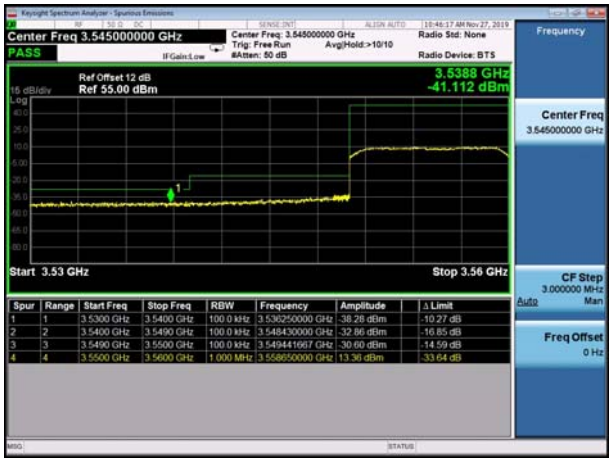
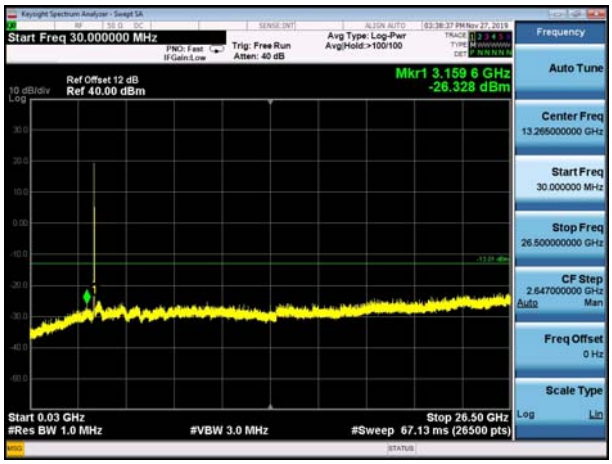
### 2.5.4 Test Procedures

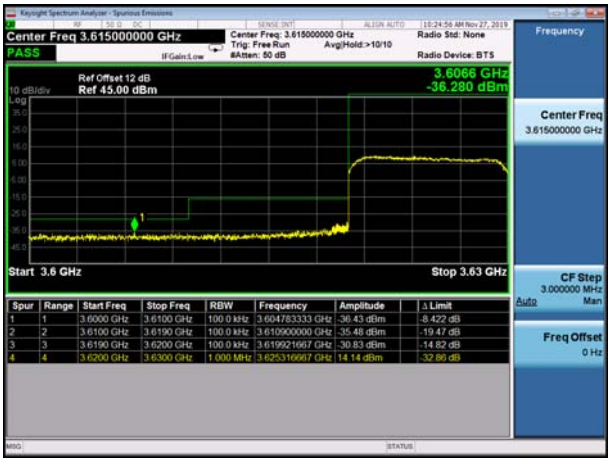
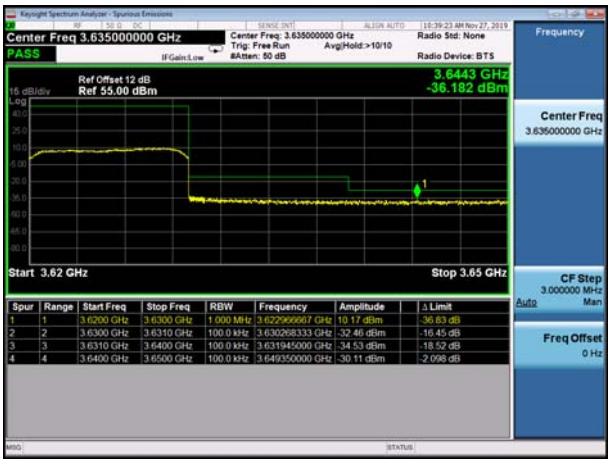
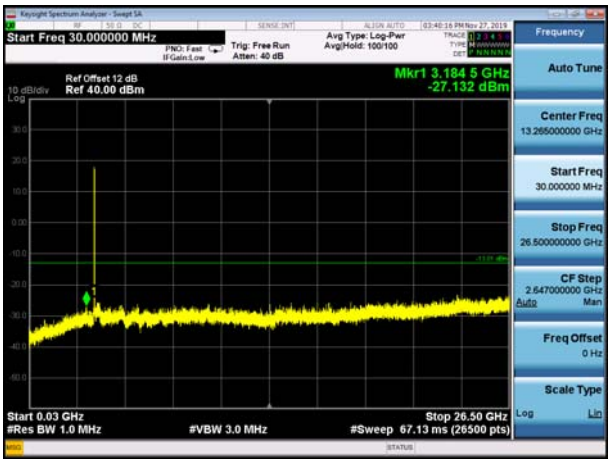
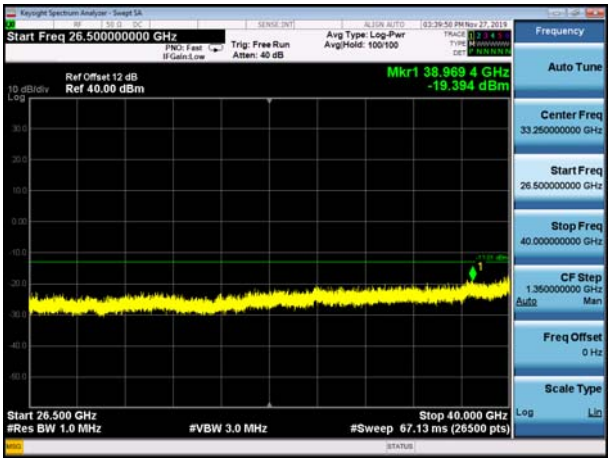
1. The EUT was connected to the spectrum analyzer , all measurements were done at low, middle and high operational frequency range
2. Measuring frequency range is from 30MHz to 37GHz.
3. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.
4. Measuring frequency and bandedge, 1% of the fundamental emission bandwidth is used for conducted emission measurement.

### 2.5.5 Test Setup

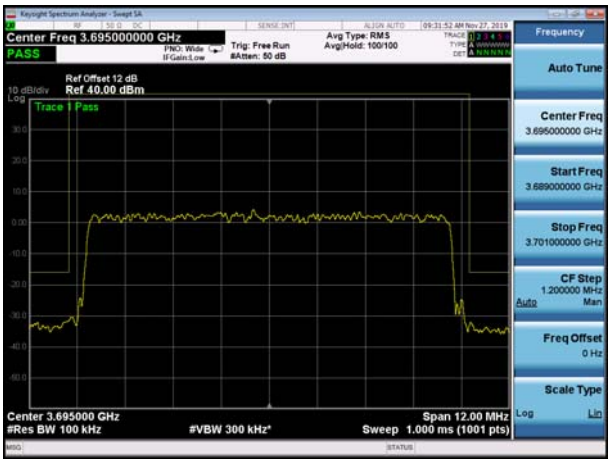


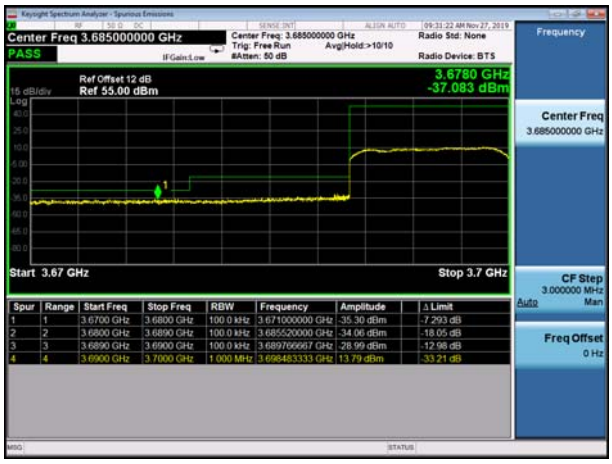
## 2.5.6 Test Result

| 10M-QPSK-Low Chain0 | |
|---|---|
|  |  |
|  |  |
|  | |

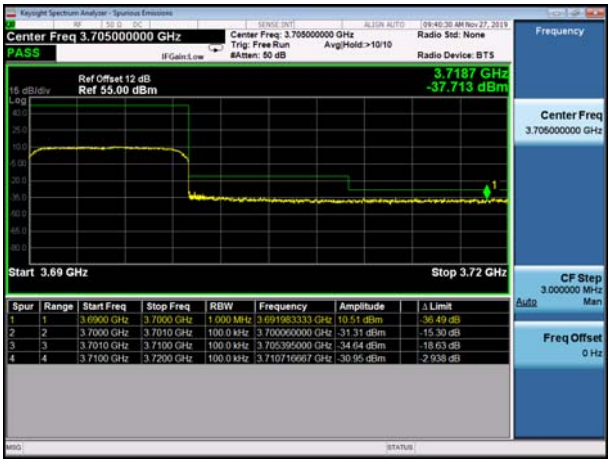
| 10M-QPSK-Middle Chain0 | |
|---|---|
|  |  |
|  |  |
|  | |

10M-QPSK-High Chain0

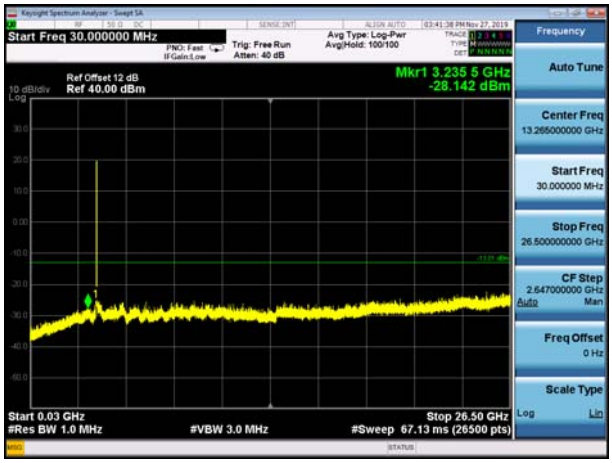


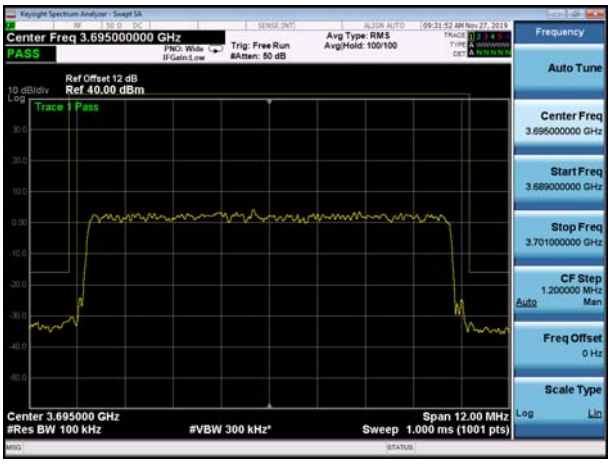

| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 3.6700 GHz | 3.6800 GHz | 100.0 kHz | 3.671000000 GHz | -35.30 dBm | -7.293 dB |
| 2 | 2 | 3.6800 GHz | 3.6890 GHz | 100.0 kHz | 3.685520000 GHz | -34.06 dBm | -18.05 dB |
| 3 | 3 | 3.6890 GHz | 3.6900 GHz | 100.0 kHz | 3.689766667 GHz | -28.99 dBm | -12.98 dB |
| 4 | 4 | 3.6900 GHz | 3.7000 GHz | 1.000 MHz | 3.698483333 GHz | 13.79 dBm | -33.21 dB |

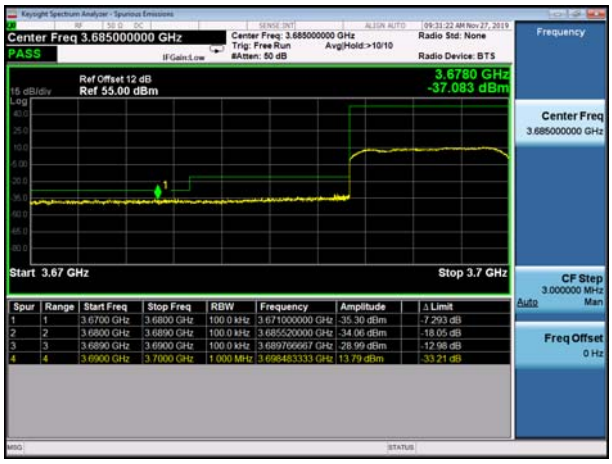



| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 3.6900 GHz | 3.7000 GHz | 1.000 MHz | 3.691983333 GHz | 10.51 dBm | -36.49 dB |
| 2 | 2 | 3.7000 GHz | 3.7010 GHz | 100.0 kHz | 3.700060000 GHz | -31.31 dBm | -15.30 dB |
| 3 | 3 | 3.7010 GHz | 3.7100 GHz | 100.0 kHz | 3.705395000 GHz | -34.64 dBm | -18.63 dB |
| 4 | 4 | 3.7100 GHz | 3.7200 GHz | 100.0 kHz | 3.710716667 GHz | -30.95 dBm | -2.938 dB |



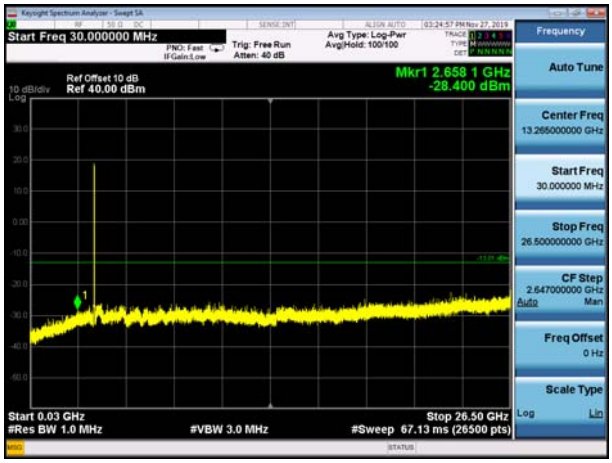

20M-QPSK-Low Chain0

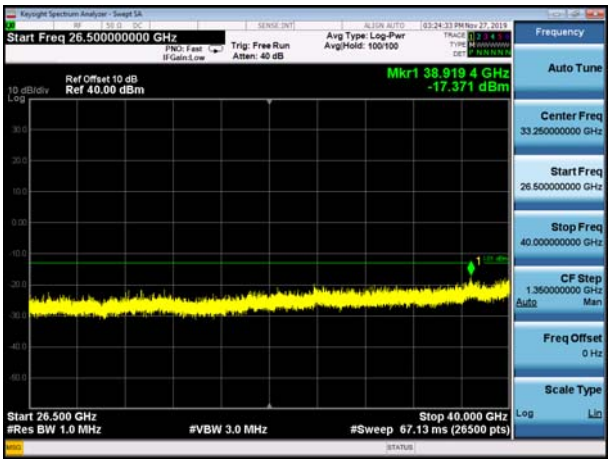


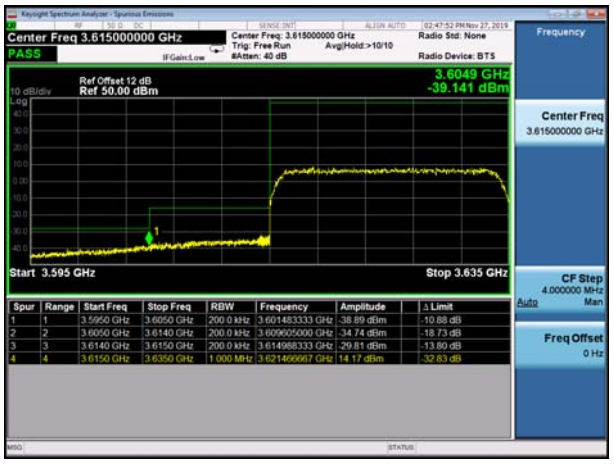

| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 3.6700 GHz | 3.6800 GHz | 100.0 kHz | 3.671000000 GHz | -35.30 dBm | -7.293 dB |
| 2 | 2 | 3.6800 GHz | 3.6890 GHz | 100.0 kHz | 3.685520000 GHz | -34.06 dBm | -18.05 dB |
| 3 | 3 | 3.6890 GHz | 3.6900 GHz | 100.0 kHz | 3.689766667 GHz | -28.99 dBm | -12.98 dB |
| 4 | 4 | 3.6900 GHz | 3.7000 GHz | 1.000 MHz | 3.698483333 GHz | 13.79 dBm | -33.21 dB |


| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 3.5500 GHz | 3.5700 GHz | 1.000 MHz | 3.558566667 GHz | 8.197 dBm | -38.80 dB |
| 2 | 2 | 3.5700 GHz | 3.5710 GHz | 200.0 kHz | 3.570011667 GHz | -33.64 dBm | -17.63 dB |
| 3 | 3 | 3.5710 GHz | 3.5800 GHz | 200.0 kHz | 3.573070000 GHz | -38.98 dBm | -22.97 dB |
| 4 | 4 | 3.5800 GHz | 3.5900 GHz | 1.000 MHz | 3.587266667 GHz | -35.31 dBm | -7.303 dB |

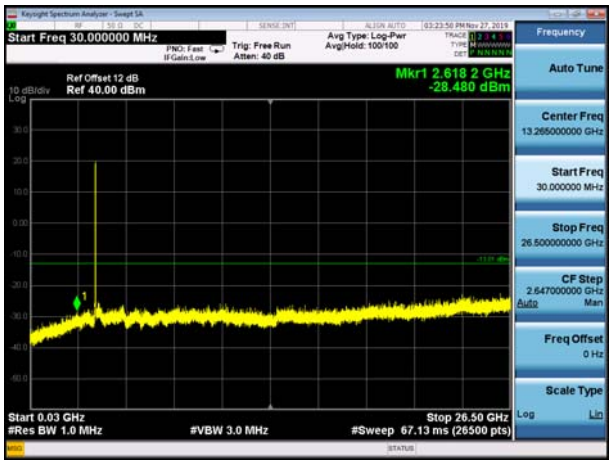


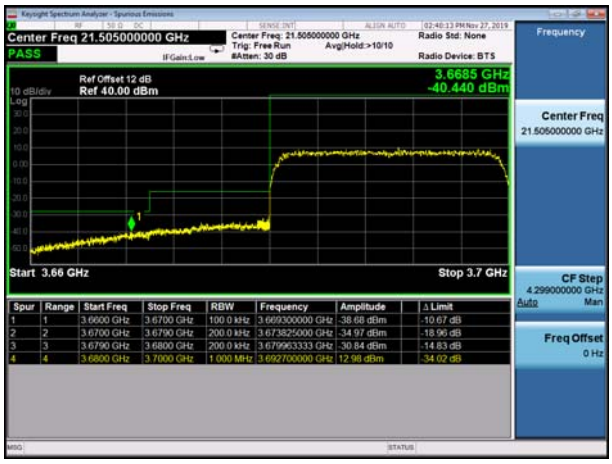
20M-QPSK-Middle Chain0

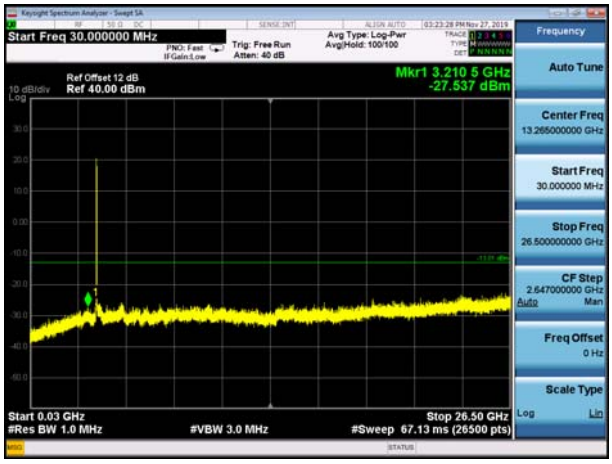


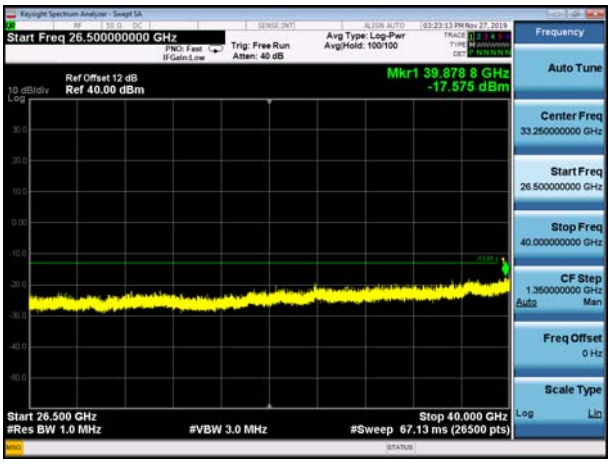


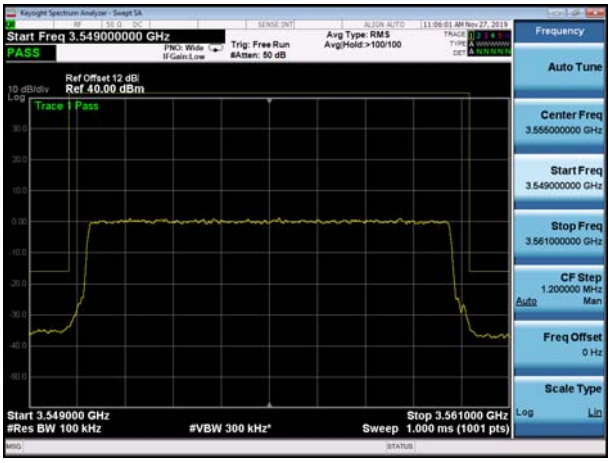
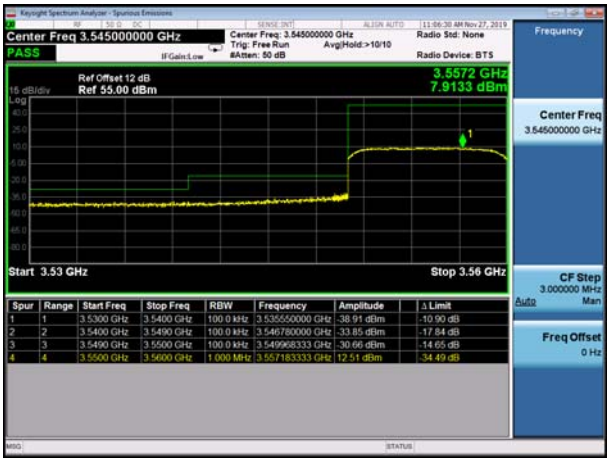
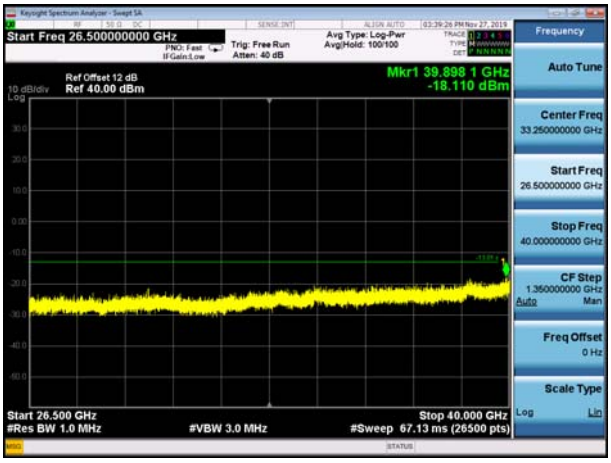

20M-QPSK-High Chain0

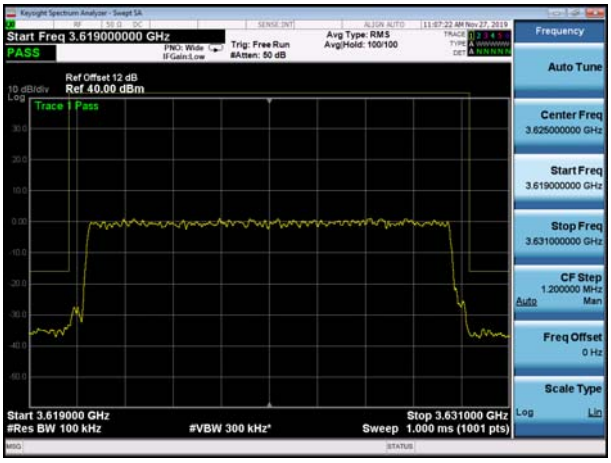


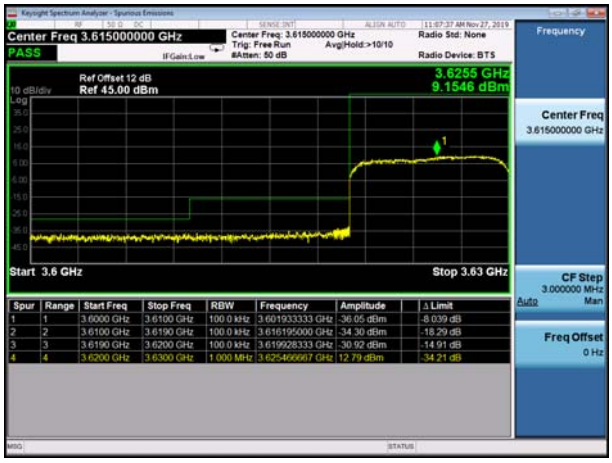


| 10M-QPSK-Low Chain1 | |
|---|---|
|  |  |
|  |  |
|  | |
| | |

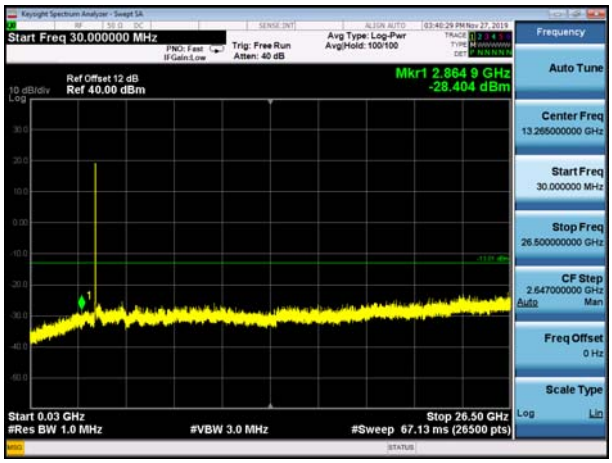
10M-QPSK-Middle Chain1

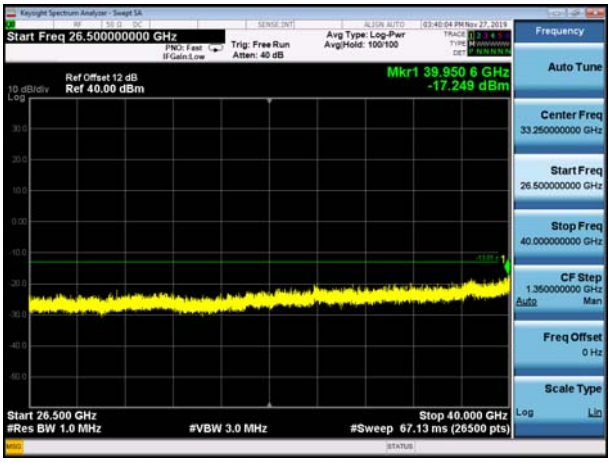


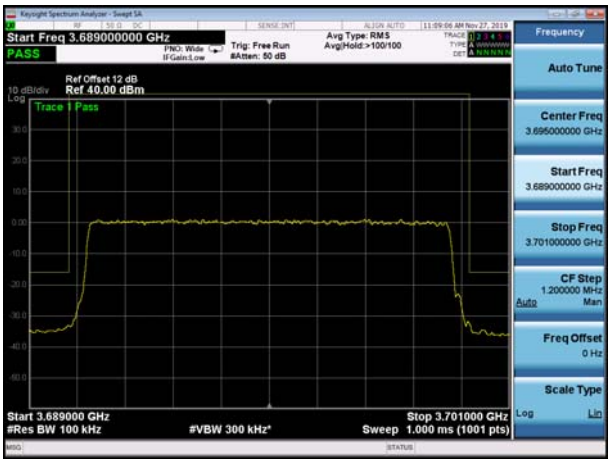

| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 3.6000 GHz | 3.6100 GHz | 100.0 kHz | 3.601933333 GHz | -36.05 dBm | -8.039 dB |
| 2 | 2 | 3.6100 GHz | 3.6190 GHz | 100.0 kHz | 3.616195000 GHz | -34.30 dBm | -18.29 dB |
| 3 | 3 | 3.6190 GHz | 3.6200 GHz | 100.0 kHz | 3.619928333 GHz | -30.92 dBm | -14.91 dB |
| 4 | 4 | 3.6200 GHz | 3.6300 GHz | 1.000 MHz | 3.625466667 GHz | 12.79 dBm | -34.21 dB |

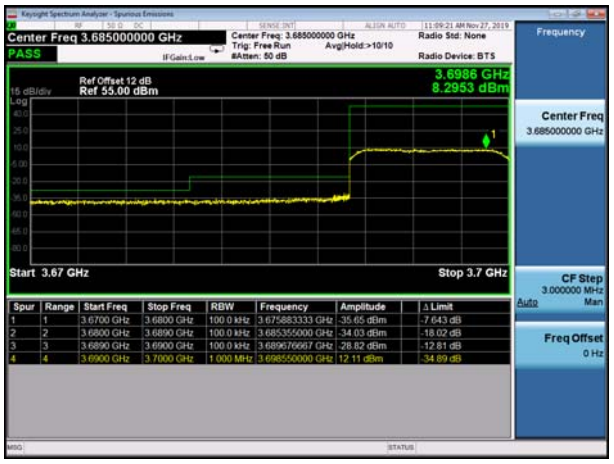

| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 3.6200 GHz | 3.6300 GHz | 1.000 MHz | 3.626433333 GHz | 9.577 dBm | -37.42 dB |
| 2 | 2 | 3.6300 GHz | 3.6310 GHz | 100.0 kHz | 3.630011667 GHz | -29.50 dBm | -13.49 dB |
| 3 | 3 | 3.6310 GHz | 3.6400 GHz | 100.0 kHz | 3.632575000 GHz | -34.69 dBm | -18.68 dB |
| 4 | 4 | 3.6400 GHz | 3.6500 GHz | 100.0 kHz | 3.642416667 GHz | -31.93 dBm | -3.919 dB |

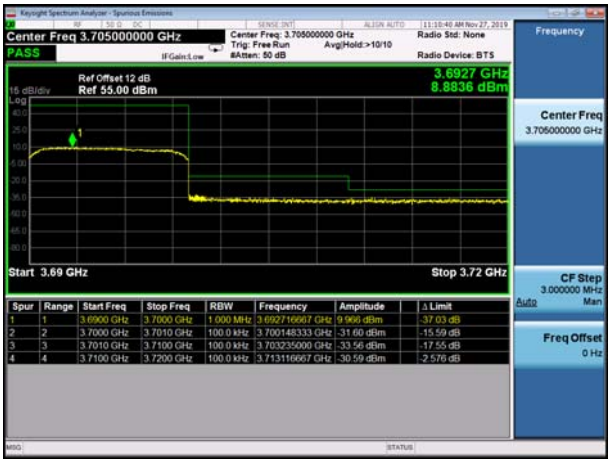


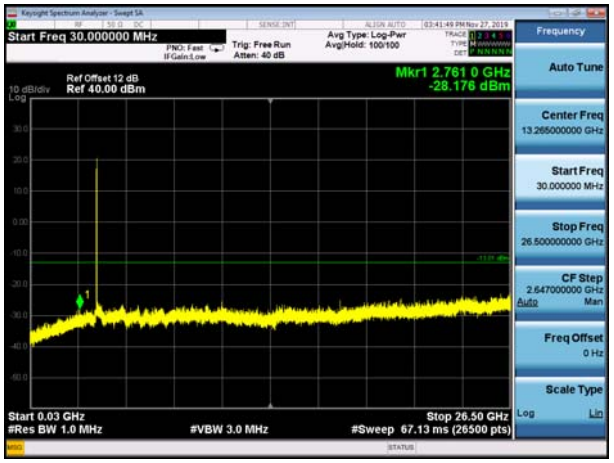



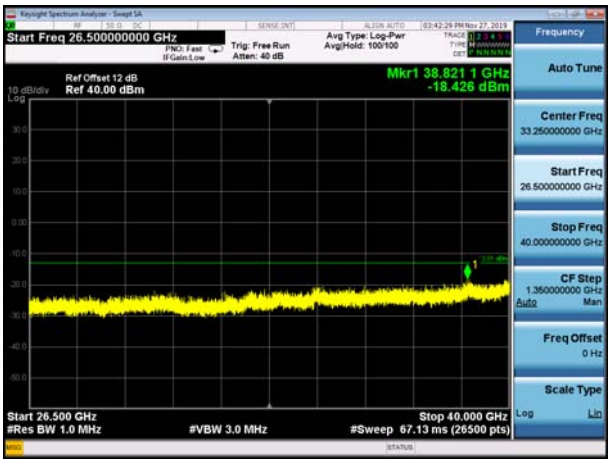
10M-QPSK-High Chain1



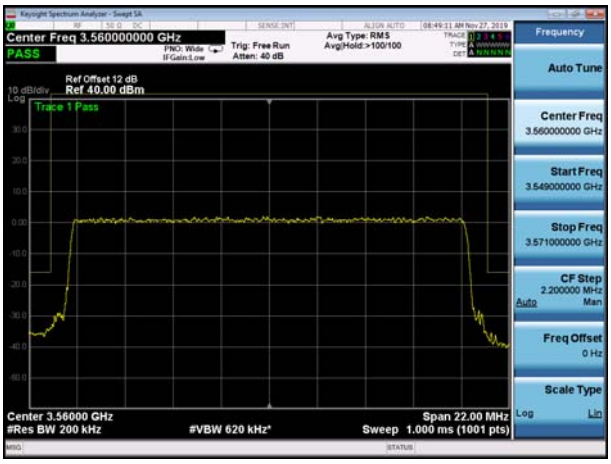



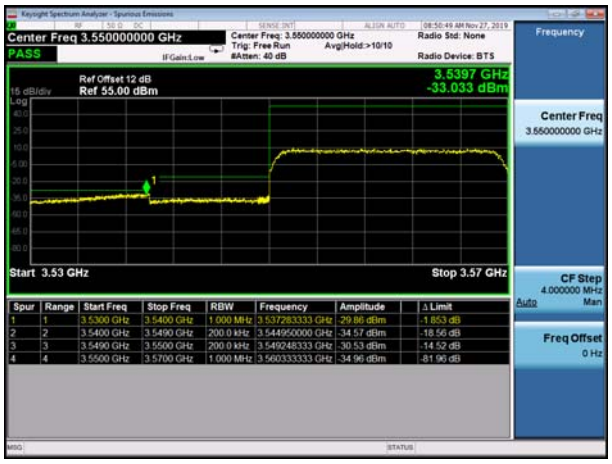



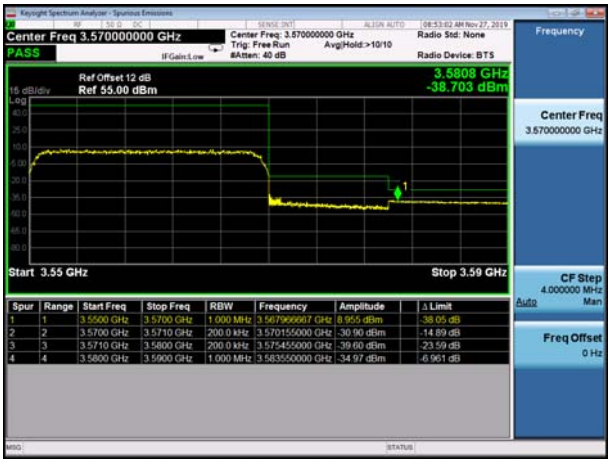



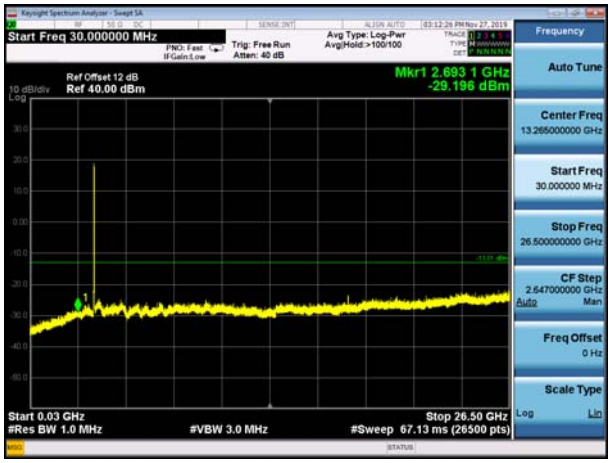



20M-QPSK-Low Chain1

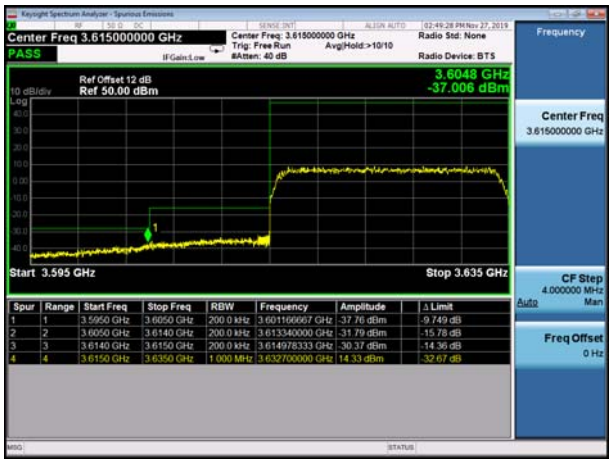


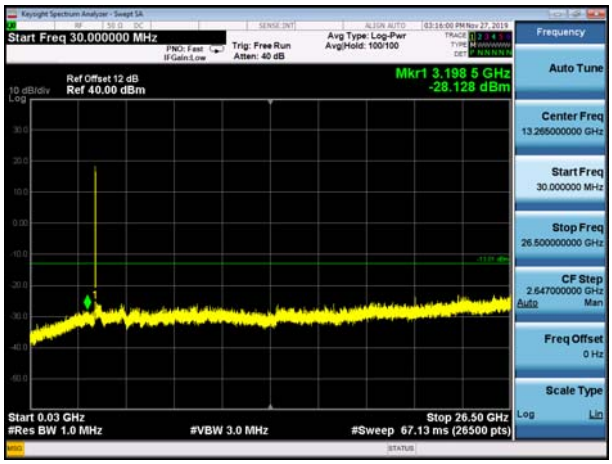



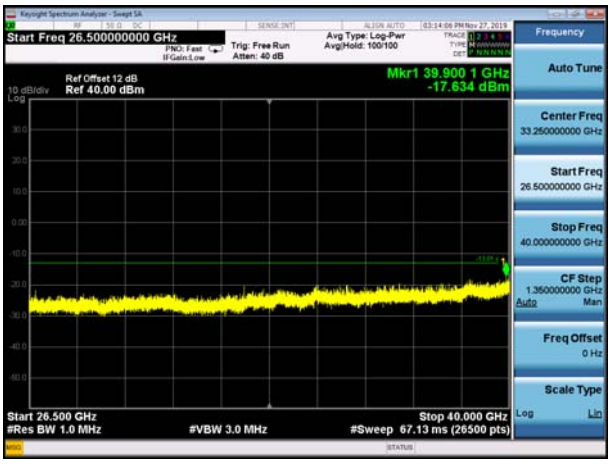




20M-QPSK-Middle Chain1

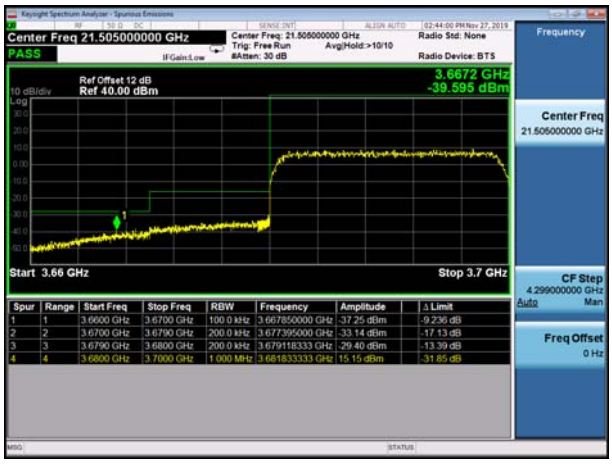



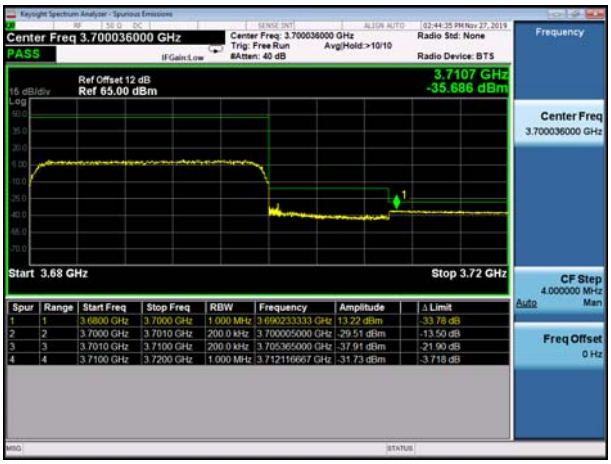


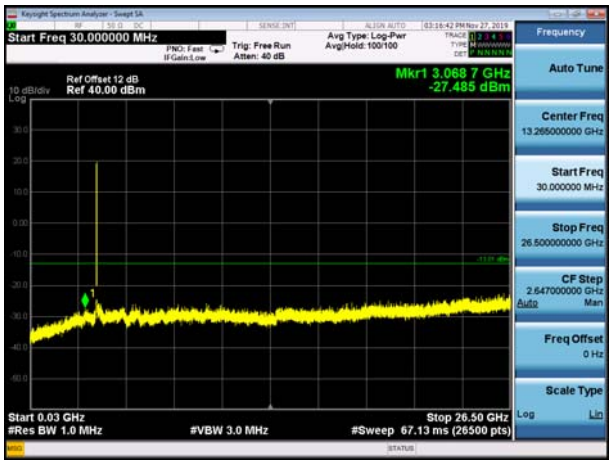


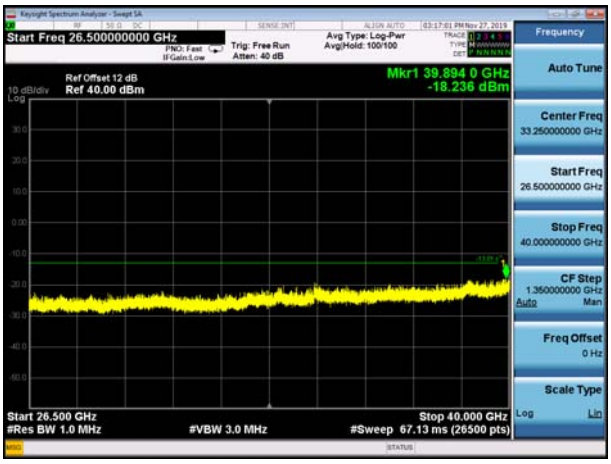



20M-QPSK-High Chain1

## 2.6 Emission Mask

### 2.6.1 Requirement

According to FCC Part 96.41(e)

### 2.6.2 Measuring Instruments

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

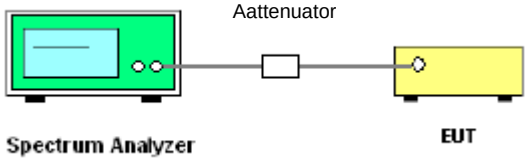
### 2.6.3 Limit of Conducted Spurious Emission Measurement

| Power of any emissions outside the fundamental | Limit |
|---|---|
| With 0-10MHz above the Assigned channel | -13dBm/MHz |
| With 0-10MHz below the Assigned channel | |
| Greater than 0-10MHz above the Assigned channel | -25dBm/MHz |
| Greater than 0-10MHz below the Assigned channel | |
| Power of any emissions below 3530MHz | -40dBm/MHz |
| Power of any emissions above 3720MHz | |

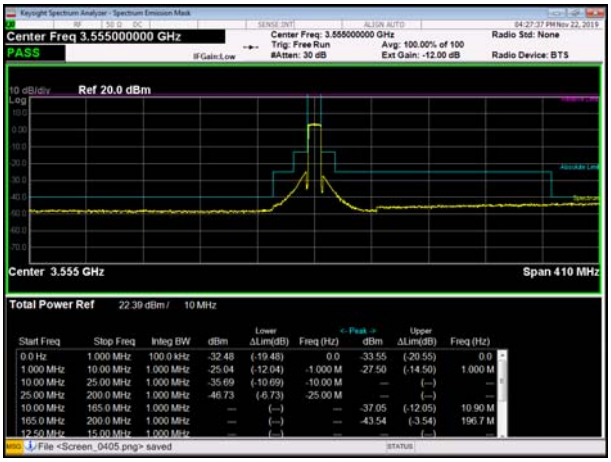
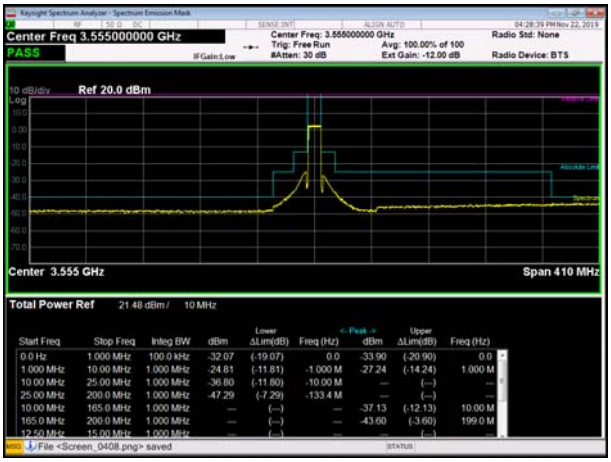
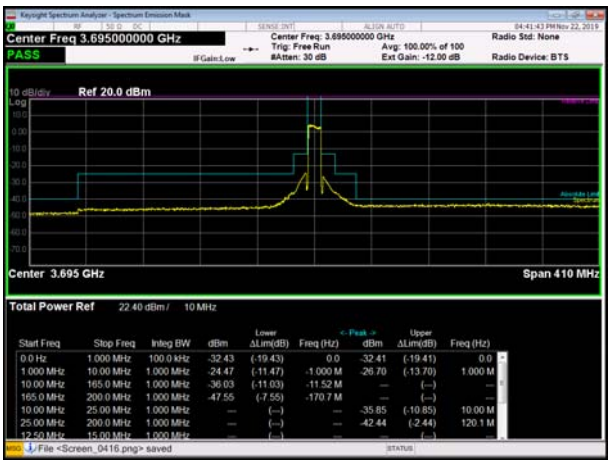
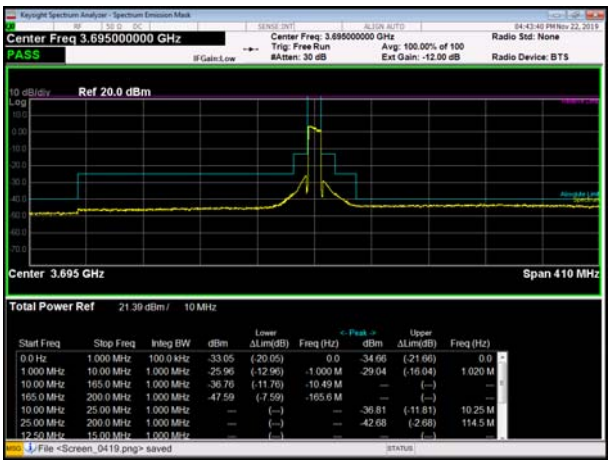
### 2.6.4 Test Procedures

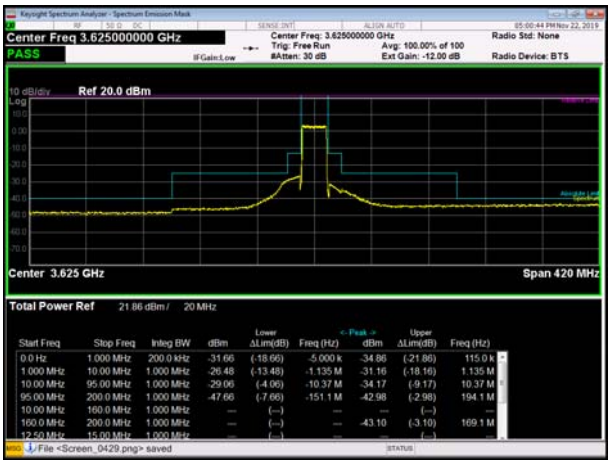
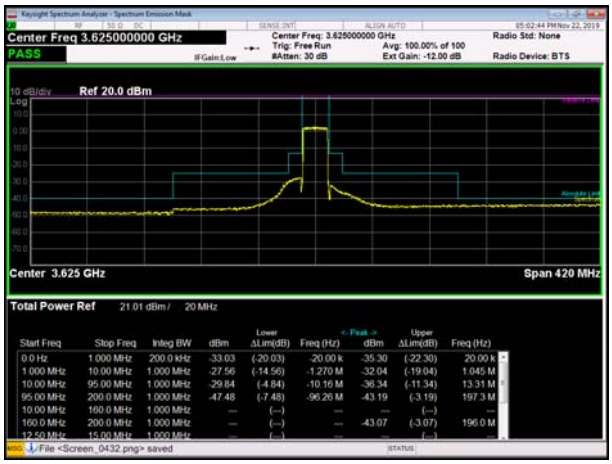
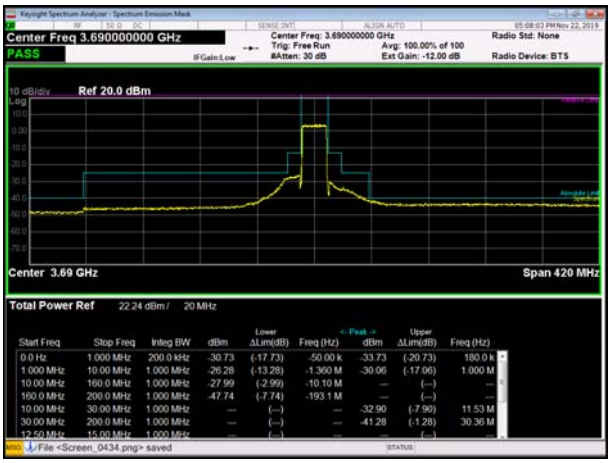
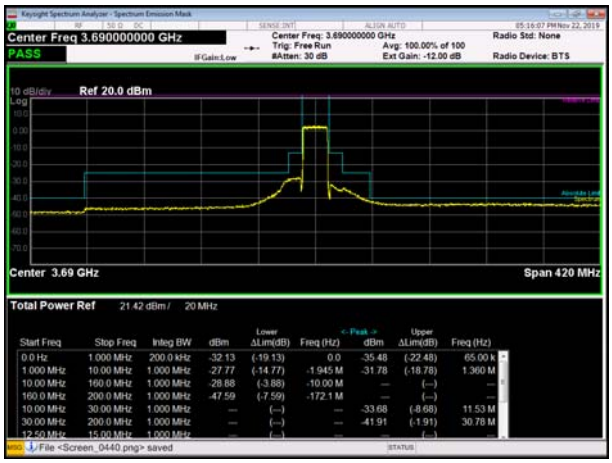
1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. Measurements must be performed for low, mid, and high channels.
3. RBW=1% of fundamental for measurements within 1 MHz immediately outside the authorized channel; and 1 MHz for beyond 1 MHz outside the authorized channel.
4. Trace average at least 100 traces

Test Setup



### 2.6.5 Test Result

| Chain0-10M-QPSK Low CH | Chain1-10M-QPSK Low CH |
|---|---|
|  |  |
| **Chain0-10M-QPSK Middle CH** | **Chain1-10M-QPSK Middle CH** |
|  |  |
| **Chain0-10M-QPSK High CH** | **Chain1-10M-QPSK High CH** |
|  |  |

| Chain0-20M-QPSK Low CH | Chain1-20M-QPSK Low CH |
|---|---|
|  |  |
| Chain0-20M-QPSK Middle CH | Chain1-20M-QPSK Middle CH |
|  |  |
| Chain0-20M-QPSK High CH | Chain1-20M-QPSK High CH |
|  |  |

## 2.7 Radiated Spurious Emissions

### 2.7.1 Requirement

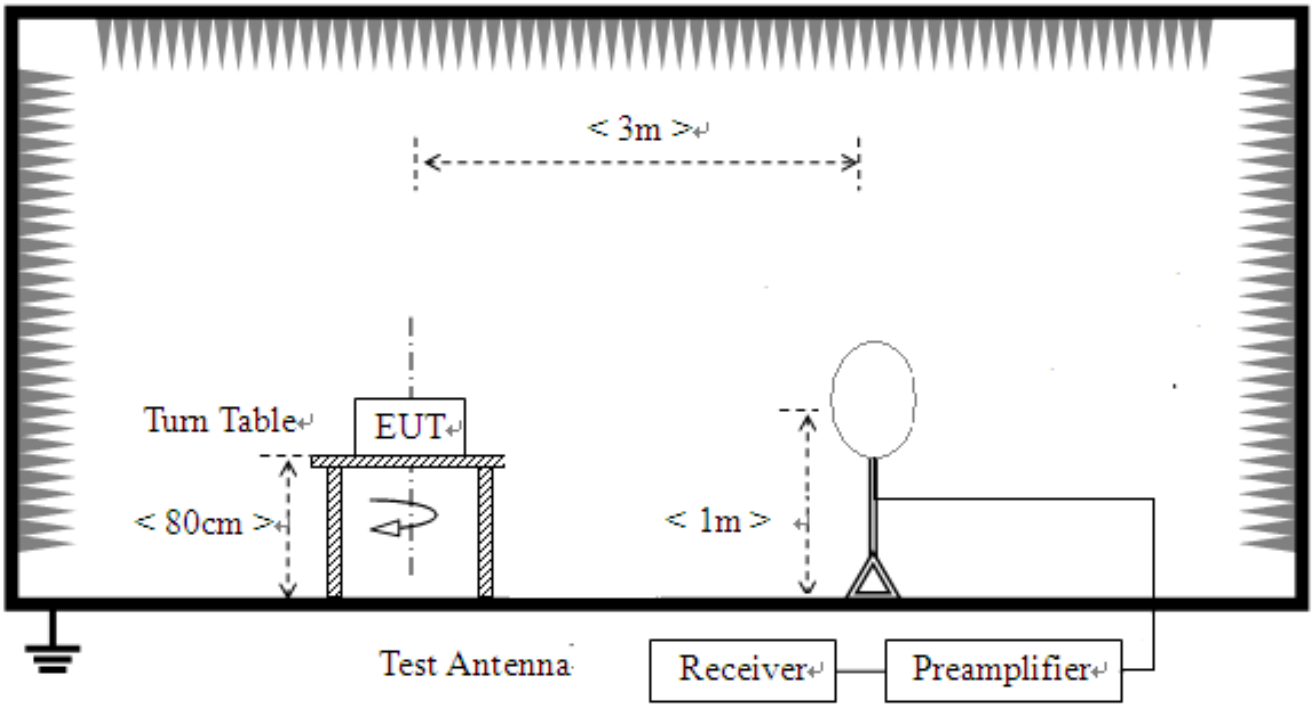
The power of any emission below 3530MHz or above 3720MHz shall not exceed -40dBm/MHz

### 2.7.2 Measuring Instruments

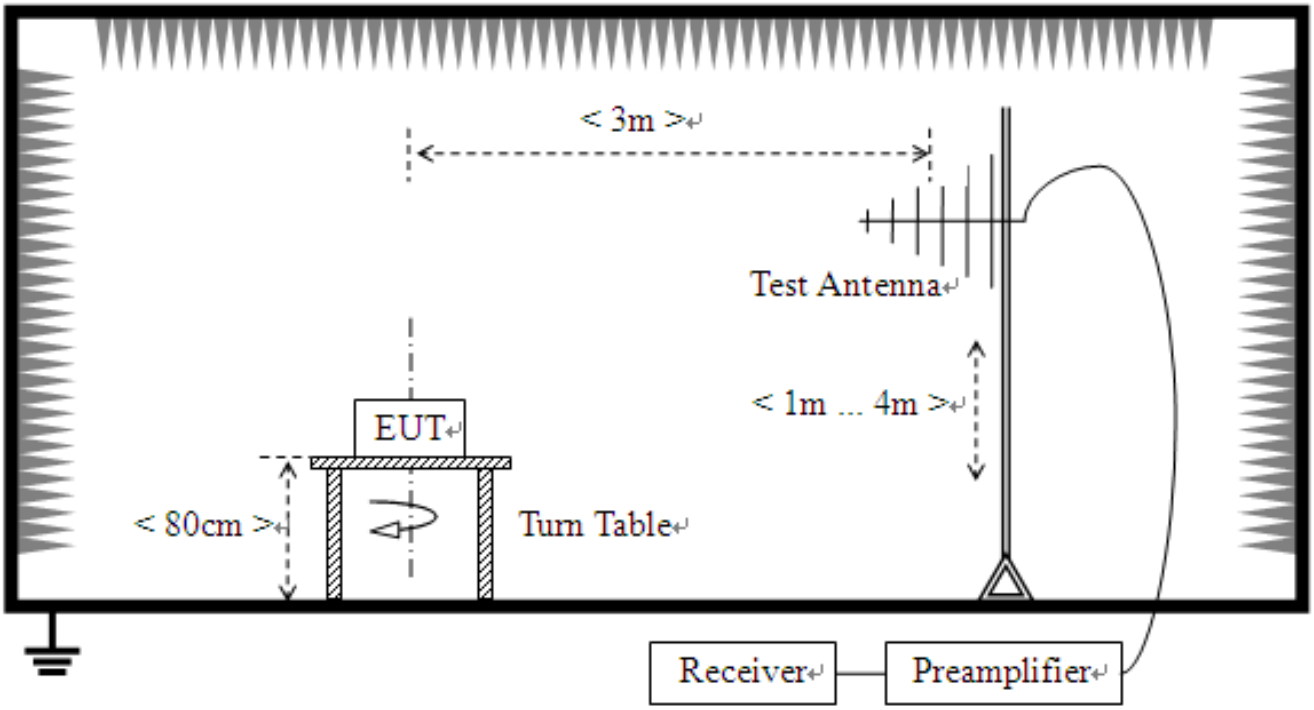
The measuring equipment is listed in the section 3 of this test report.

### 2.7.3 Test Setup

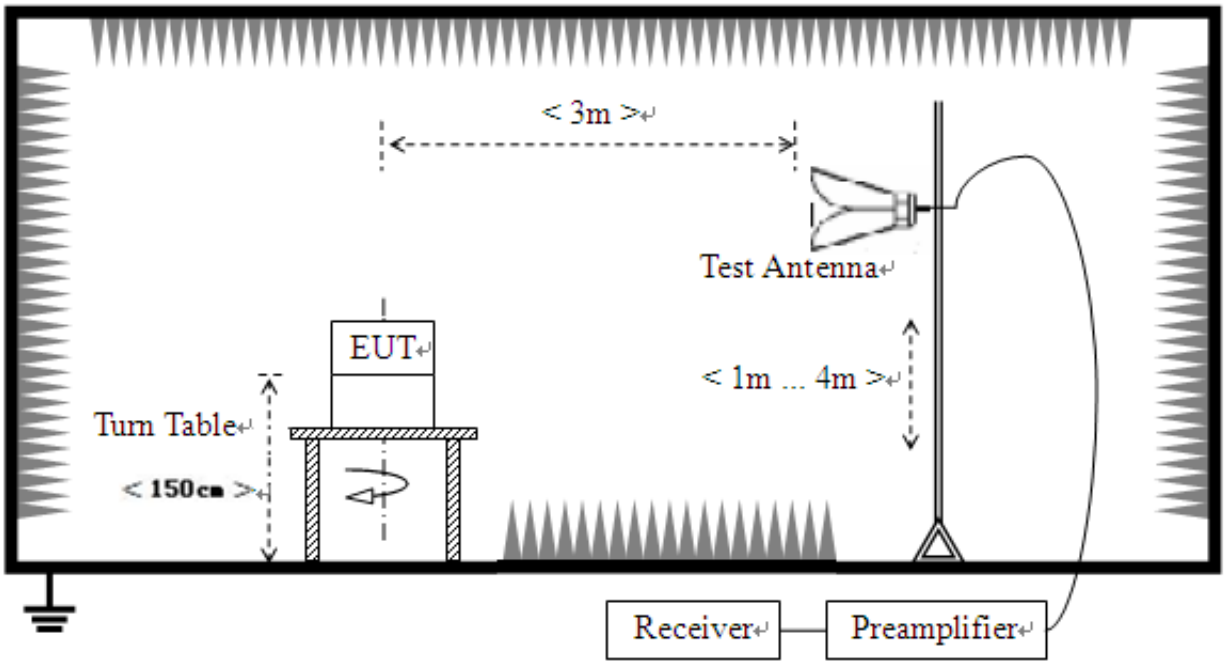
For radiated emissions from 9 kHz to 30MHz



For radiated emissions from 30MHz to 1GHz




For radiated emissions above 1GHz



### 2.7.4 Test Procedures

1. The testing follows ANSI C63.26:2015
2. The EUT was placed on a rotatable wooden table 0.8m(below 1G) or 1.5m(above 1G) above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
13. 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.
14. The spectrum is measured from 9 KHz to the $10^{th}$ 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.
15. For 9KHz to 30MHz: the amplitude of spurious emissions are attenuated by more than 20dB below the permissible value has no need to be reported.

### 2.7.5 Test Results of Radiated Spurious Emissions

Worst-Case test data provide as below:

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

Note: 2. Absolute Level=Reading Level + Factor

30MHz~20GHz:

Band 48 (Low Channel BW:10MHz )

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 59.1146 | -79.99 | -60.94 | -40.00 | 20.94 | 19.05 | Vertical |
| 2 | 91.1406 | -82.38 | -59.84 | -40.00 | 19.84 | 22.54 | Vertical |
| 3 | 236.228 | -82.72 | -61.15 | -40.00 | 21.15 | 21.57 | Vertical |
| 4 | 5063.53 | -65.4 | -51.46 | -40.00 | 11.46 | 13.94 | Vertical |
| 5 | 7112.05 | -65.6 | -49.22 | -40.00 | 9.22 | 16.38 | Vertical |
| 6 | 10038.5 | -70 | -46.55 | -40.00 | 6.55 | 23.45 | Vertical |

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 59.5998 | -80.10 | -61.69 | -40.00 | 21.69 | 18.41 | Horizontal |
| 2 | 187.218 | -82.19 | -60.71 | -40.00 | 20.71 | 21.48 | Horizontal |
| 3 | 491.951 | -87.25 | -57.69 | -40.00 | 17.69 | 29.56 | Horizontal |
| 4 | 2882.94 | -56.68 | -49.27 | -40.00 | 9.27 | 7.41 | Horizontal |
| 5 | 7104.55 | -63.34 | -46.83 | -40.00 | 6.83 | 16.51 | Horizontal |
| 6 | 9700.85 | -71.32 | -46.76 | -40.00 | 6.76 | 24.56 | Horizontal |

Band 48 (Middle Channel BW:10MHz )

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 42.1311 | -81.15 | -60.74 | -40.00 | 20.74 | 20.41 | Horizontal |
| 2 | 76.0980 | -81.12 | -62.75 | -40.00 | 22.75 | 18.37 | Horizontal |
| 3 | 188.189 | -83.47 | -61.93 | -40.00 | 21.93 | 21.54 | Horizontal |
| 4 | 2108.55 | -56.59 | -53.76 | -40.00 | 13.76 | 2.83 | Horizontal |
| 5 | 6234.11 | -60.48 | -46.14 | -40.00 | 6.14 | 14.34 | Horizontal |
| 6 | 10023.5 | -70.73 | -46.99 | -40.00 | 6.99 | 23.74 | Horizontal |

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 42.1311 | -80.82 | -61.62 | -40.00 | 21.62 | 19.20 | Vertical |
| 2 | 1491.24 | -49.97 | -52.66 | -40.00 | 12.66 | -2.69 | Vertical |
| 3 | 2671.83 | -56.02 | -48.57 | -40.00 | 8.57 | 7.45 | Vertical |
| 4 | 5101.05 | -59.47 | -45.22 | -40.00 | 5.22 | 14.25 | Vertical |
| 5 | 7262.13 | -63.64 | -46.99 | -40.00 | 6.99 | 16.65 | Vertical |
| 6 | 10143.5 | -70.29 | -46.89 | -40.00 | 6.89 | 23.40 | Vertical |

Band 48 (High Channel BW:10MHz )

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 90.1701 | -79.74 | -57.30 | -40.00 | 17.3 | 22.44 | Horizontal |
| 2 | 234.287 | -82.06 | -60.64 | -40.00 | 20.64 | 21.42 | Horizontal |
| 3 | 4913.45 | -58.05 | -45.17 | -40.00 | 5.17 | 12.88 | Horizontal |
| 4 | 6519.25 | -60.98 | -46.6 | -40.00 | 6.60 | 14.38 | Horizontal |
| 5 | 7614.80 | -63.12 | -46.5 | -40.00 | 6.50 | 16.62 | Horizontal |
| 6 | 10211.1 | -70.33 | -46.74 | -40.00 | 6.74 | 23.59 | Horizontal |

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 59.1146 | -78.71 | -60.29 | -40.00 | 20.29 | 18.42 | Vertical |
| 2 | 184.792 | -82.81 | -61.46 | -40.00 | 21.46 | 21.35 | Vertical |
| 3 | 5161.08 | -59.11 | -47.25 | -40.00 | 7.25 | 11.86 | Vertical |
| 4 | 6316.65 | -61.46 | -46.79 | -40.00 | 6.79 | 14.67 | Vertical |
| 5 | 7397.19 | -62.88 | -46.25 | -40.00 | 6.25 | 16.63 | Vertical |
| 6 | 10008.5 | -69.94 | -46.19 | -40.00 | 6.19 | 23.75 | Vertical |

Band 48 (Low Channel BW:20MHz )

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 58.1441 | -79.39 | -60.94 | -40.00 | 20.94 | 18.45 | Horizontal |
| 2 | 817.548 | -89.25 | -55.47 | -40.00 | 15.47 | 33.78 | Horizontal |
| 3 | 5108.55 | -58.71 | -46.57 | -40.00 | 6.57 | 12.14 | Horizontal |
| 4 | 7119.55 | -63.66 | -47.07 | -40.00 | 7.07 | 16.59 | Horizontal |
| 5 | 7907.45 | -65.07 | -47.90 | -40.00 | 7.90 | 17.17 | Horizontal |
| 6 | 9903.45 | -70.18 | -46.83 | -40.00 | 6.83 | 23.35 | Horizontal |

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 2226.61 | -56.03 | -53.44 | -40.00 | 13.44 | 2.59 | Vertical |
| 2 | 2963.98 | -54.31 | -47.51 | -40.00 | 7.51 | 6.80 | Vertical |
| 3 | 5093.54 | -60.94 | -46.72 | -40.00 | 6.72 | 14.22 | Vertical |
| 4 | 6354.17 | -61.43 | -46.59 | -40.00 | 6.59 | 14.84 | Vertical |
| 5 | 7412.20 | -63.02 | -46.78 | -40.00 | 6.78 | 16.24 | Vertical |
| 6 | 10166.0 | -70.18 | -46.71 | -40.00 | 6.71 | 23.47 | Vertical |

Band 48 (Middle Channel BW:20MHz )

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 79.9800 | -81.60 | -60.29 | -40.00 | 20.29 | 21.31 | Vertical |
| 2 | 237.198 | -85.35 | -63.71 | -40.00 | 23.71 | 21.64 | Vertical |
| 3 | 2970.98 | -53.79 | -46.94 | -40.00 | 6.94 | 6.85 | Vertical |
| 4 | 5183.59 | -58.57 | -46.28 | -40.00 | 6.28 | 12.29 | Vertical |
| 5 | 7239.61 | -64.28 | -47.63 | -40.00 | 7.63 | 16.65 | Vertical |
| 6 | 10091.0 | -69.74 | -46.45 | -40.00 | 6.45 | 23.29 | Vertical |

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 813.666 | -88.52 | -54.75 | -40.00 | 14.75 | 33.77 | Horizontal |
| 2 | 2089.54 | -56.88 | -54.15 | -40.00 | 14.15 | 2.73 | Horizontal |
| 3 | 2976.98 | -54.49 | -46.95 | -40.00 | 6.95 | 7.54 | Horizontal |
| 4 | 5108.55 | -58.77 | -46.63 | -40.00 | 6.63 | 12.14 | Horizontal |
| 5 | 7262.13 | -63.36 | -46.54 | -40.00 | 6.54 | 16.82 | Horizontal |
| 6 | 9670.83 | -70.76 | -46.66 | -40.00 | 6.66 | 24.10 | Horizontal |

Band 48 (High Channel BW:20MHz )

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 831.135 | -88.81 | -55.03 | -40.00 | 15.03 | 33.78 | Horizontal |
| 2 | 2468.73 | -48.53 | -45.69 | -40.00 | 5.69 | 2.84 | Horizontal |
| 3 | 5408.70 | -58.40 | -46.89 | -40.00 | 6.89 | 11.51 | Horizontal |
| 4 | 7374.68 | -64.50 | -47.85 | -40.00 | 7.85 | 16.65 | Horizontal |
| 5 | 10188.5 | -70.44 | -46.63 | -40.00 | 6.63 | 23.81 | Horizontal |
| 6 | 12042.0 | -72.86 | -47.43 | -40.00 | 7.43 | 25.43 | Horizontal |

| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 75.6128 | -81.56 | -60.71 | -40.00 | 20.71 | 20.85 | Vertical |
| 2 | 2077.53 | -55.15 | -53.38 | -40.00 | 13.38 | 1.77 | Vertical |
| 3 | 2701.85 | -55.09 | -47.07 | -40.00 | 7.07 | 8.02 | Vertical |
| 4 | 5101.05 | -60.41 | -46.16 | -40.00 | 6.16 | 14.25 | Vertical |
| 5 | 6294.14 | -62.47 | -47.39 | -40.00 | 7.39 | 15.08 | Vertical |
| 6 | 10233.6 | -70.02 | -46.40 | -40.00 | 6.40 | 23.62 | Vertical |

# 3. LIST OF MEASURING EQUIPMENT

| Description | Manufacturer | Model | Serial No. | Cal. Date | Due Date | Remark |
|---|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESIB26 | A0304218 | 2019.05.20 | 2020.05.19 | Radiation |
| Loop Antenna | Schwarz beck | HFH2-Z2 | 100047 | 2019.04.26 | 2022.04.25 | Radiation |
| Broadband antenna (30MHz~1GHz) | R&S | HL562 | 101341 | 2017.07.14 | 2020.07.13 | Radiation |
| Broadband antenna (30MHz~1GHz) | R&S | HL562 | 101339 | 2017.07.14 | 2020.07.13 | 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 | 2017.07.12 | 2020.07.11 | 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 | 2019.06.05 | 2020.06.04 | Conducted |
| LISN | ROHDE&SCHWARZ | ESH2-Z5 | A0304221 | 2019.04.30 | 2020.04.29 | Conducted |
| Test Receiver | R&S | ESCS30 | A0304260 | 2019.05.25 | 2020.05.24 | Conducted |
| Temperature chamber | Dongguan gaoda instrument CO.LTD | GD-7005-100 | 130130101 | 2019.04.22 | 2020.04.21 | Conducted |
| Power Supply | R&S | NGMO1 | 101037 | 2019.08.03 | 2020.08.02 | Conducted |

# 4. UNCERTAINTY OF EVALUATION

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 2.6dB |

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

| | |
|---|---|
| Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y)) | 2.4dB |

Uncertainty of Radiated Emission Measurement (1GHz~40GHz)

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

** END OF REPORT **