

# TEST REPORT

**Reference No.**..... : WTS17S1298632-1E  
**FCC ID** ..... : 2AG32EG7010C  
**Applicant**..... : Baicells Technologies Co., Ltd.  
**Address**..... : 3F, Hui Yuan Development Building, No.1 Shangdi Information  
Industry Base, Haidian Dist., Beijing, China  
**Manufacturer** ..... : The same as above  
**Address**..... : The same as above  
**Product**..... : LTE Outdoor CPE  
**Model(s)** ..... : EG7010C  
**Brand Name**..... : BaiCells  
**Standards**..... : FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part 90 Subpart Z: 2017  
**Date of Receipt sample** .... : 2017-12-19  
**Date of Test** ..... : 2017-12-20 to 2018-02-01  
**Date of Issue**..... : 2018-02-02  
**Test Result**..... : Pass

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

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## 2 Laboratories Introduction

**Waltek Services (Shenzhen) Co., Ltd** is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation) of USA, Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CEC(California energy efficiency), IC(Industry Canada). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as Intertek(ETL-SEMKO), TÜV Rheinland, TÜV SÜD, etc.



Waltek Services (Shenzhen) Co., Ltd is one of the largest and the most comprehensive third party testing laboratory in China. Our test capability covered four large fields: safety test. Electro Magnetic Compatibility (EMC), and energy performance, wireless radio. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

**Test Facility:****A. Accreditations for Conformity Assessment (International)**

| Country/Region                                                      | Accreditation Body                               | Scope                         | Note |
|---------------------------------------------------------------------|--------------------------------------------------|-------------------------------|------|
| USA                                                                 | <b>A2LA</b><br><b>(Certificate No.: 4243.01)</b> | FCC ID \ DOC \ VOC            | 1    |
| Canada                                                              |                                                  | IC ID \ VOC                   | 2    |
| Japan                                                               |                                                  | MIC-T \ MIC-R                 | -    |
| Europe                                                              |                                                  | EMCD \ RED                    | -    |
| Taiwan                                                              |                                                  | NCC                           | -    |
| Hong Kong                                                           |                                                  | OFCA                          | -    |
| Australia                                                           |                                                  | RCM                           | -    |
| India                                                               |                                                  | <b>International Services</b> | WPC  |
| Thailand                                                            | NTC                                              |                               | -    |
| Singapore                                                           | IDA                                              |                               | -    |
| Note:                                                               |                                                  |                               |      |
| 1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476. |                                                  |                               |      |
| 2. IC Canada Registration No.: 7760A                                |                                                  |                               |      |

**B. TCBs and Notify Bodies Recognized Testing Laboratory.**

| Recognized Testing Laboratory of ...     | Notify body number |
|------------------------------------------|--------------------|
| TUV Rheinland                            | Optional.          |
| Intertek                                 |                    |
| TUV SUD                                  |                    |
| SGS                                      |                    |
| Phoenix Testlab GmbH                     | 0700               |
| Element Materials Technology Warwick Ltd | 0891               |
| Timco Engineering, Inc.                  | 1177               |
| Eurofins Product Service GmbH            | 0681               |

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#### 4 Revision History

| Test report No.      | Date of Receipt sample | Date of Test                | Date of Issue | Purpose  | Comment | Approved |
|----------------------|------------------------|-----------------------------|---------------|----------|---------|----------|
| WTS17S12986<br>32-1E | 2017-12-19             | 2017-12-20 to<br>2018-02-01 | 2018-02-02    | original | -       | Valid    |
|                      |                        |                             |               |          |         |          |

## 5 General Information

### 5.1 General Description of E.U.T.

|                    |                  |
|--------------------|------------------|
| Product:           | LTE Outdoor CPE  |
| Model(s):          | EG7010C          |
| Model Description: | N/A              |
| Storage Location:  | Internal Storage |
| Note:              | N/A              |

### 5.2 Details of E.U.T.

|                               |                                                                      |
|-------------------------------|----------------------------------------------------------------------|
| Operation Frequency:          | LTE Band 43: 3652.5~3697.5MHz<br>WiFi 802.11b/g/n HT20: 2412~2462MHz |
| Type of Modulation:           | LTE: QPSK, 16QAM<br>WiFi: CCK, OFDM                                  |
| Antenna installation:         | LTE: Internal antenna<br>WiFi: Internal antenna                      |
| Antenna Gain:                 | LTE: 10.0dBi<br>WiFi: 0dBi                                           |
| Ratings:                      | DC 24V, 0.5A                                                         |
| Number of transmitter chains: | LTE: 2TX*4RX (MIMO)                                                  |

The device supports MIMO 2TX\*4RX, and the MIMO works with STBC(Space-Time Block Coding).The antenna is omnidirectional, does not support any directional gain in any modes.

MIMO rate, antennas use two different streams, from this side, if RX side need to decode MIMO, data between the two stream should be correlated. The device transmits simultaneously in multiple channels in single frequency bands and uses carrier aggregation techniques.

Directional gain =GANT + 10 log (ANT<sub>N</sub>) dBi

### 5.3 Channel List

Normal

| 5MHz    |                 | 10MHz   |                 |
|---------|-----------------|---------|-----------------|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| Low     | 3652.5          | Low     | 3655            |
| Middle  | 3675            | Middle  | 3675            |
| High    | 3697.5          | High    | 3695            |
| 15MHz   |                 | 20MHz   |                 |
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| Low     | 3657.5          | Low     | 3660            |
| Middle  | 3675            | Middle  | 3675            |
| High    | 3692.5          | High    | 3690            |

### 5.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

| Test Mode         | Description                                                                     |
|-------------------|---------------------------------------------------------------------------------|
| Data Mode (QPSK)  | Keep the EUT in data communicating mode (QPSK).<br>(5MHz, 10MHz, 15MHz, 20MHz)  |
| Data Mode (16QAM) | Keep the EUT in data communicating mode (16QAM).<br>(5MHz, 10MHz, 15MHz, 20MHz) |

### 5.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes      ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A



## 6 Test Summary

| Test Items                             | Test Requirement                       | Result |
|----------------------------------------|----------------------------------------|--------|
|                                        | FCC                                    |        |
| RF Output Power                        | Part 2.1046<br>Part 90.1321            | PASS   |
| Modulation Characteristics             | Part 2.1047                            | PASS   |
| 99% & -26 dB Occupied Bandwidth        | Part 2.1049<br>Part 90.209             | PASS   |
| Emission Mask                          | Part 90.210(b)                         | PASS   |
| Spurious Emissions at Antenna Terminal | Part 2.1051<br>Part 90.1323            | PASS   |
| Field Strength of Spurious Radiation   | Part 2.1053<br>Part 90.1323            | PASS   |
| Frequency stability vs. temperature    | Part 2.1055(a)(1)(b)<br>Part 90.213(a) | PASS   |
| Frequency stability vs. voltage        | Part 2.1055(d)(1)(2)<br>Part 90.213(a) | PASS   |

Pass: The EUT complies with the essential requirements in the standard.

Note 1: According to FCC KDB 662911 D01 Multiple Transmitter Output v02r01 & KDB 971168 D01 Power Means License Digital Systems v03.

Note 2: EUT was on continue transmit mode, the duty cycle was 100%.

## 7 Equipment Used during Test

### 7.1 Equipments List

| Conducted Emissions Test Site 1#                              |                                      |                      |              |                 |                       |                      |
|---------------------------------------------------------------|--------------------------------------|----------------------|--------------|-----------------|-----------------------|----------------------|
| Item                                                          | Equipment                            | Manufacturer         | Model No.    | Serial No.      | Last Calibration Date | Calibration Due Date |
| 1.                                                            | EMI Test Receiver                    | R&S                  | ESCI         | 100947          | 2017-09-12            | 2018-09-11           |
| 2.                                                            | LISN                                 | R&S                  | ENV216       | 101215          | 2017-09-12            | 2018-09-11           |
| 3.                                                            | Cable                                | Top                  | TYPE16(3.5M) | -               | 2017-09-12            | 2018-09-11           |
| Conducted Emissions Test Site 2#                              |                                      |                      |              |                 |                       |                      |
| Item                                                          | Equipment                            | Manufacturer         | Model No.    | Serial No.      | Last Calibration Date | Calibration Due Date |
| 1.                                                            | EMI Test Receiver                    | R&S                  | ESCI         | 101155          | 2017-09-12            | 2018-09-11           |
| 2.                                                            | LISN                                 | SCHWARZBECK          | NSLK 8128    | 8128-289        | 2017-09-12            | 2018-09-11           |
| 3.                                                            | Limiter                              | York                 | MTS-IMP-136  | 261115-001-0024 | 2017-09-12            | 2018-09-11           |
| 4.                                                            | Cable                                | LARGE                | RF300        | -               | 2017-09-12            | 2018-09-11           |
| 3m Semi-anechoic Chamber for Radiation Emissions Test site 1# |                                      |                      |              |                 |                       |                      |
| Item                                                          | Equipment                            | Manufacturer         | Model No.    | Serial No.      | Last Calibration Date | Calibration Due Date |
| 1                                                             | Spectrum Analyzer                    | R&S                  | FSP          | 100091          | 2017-04-29            | 2018-04-28           |
| 2                                                             | Active Loop Antenna                  | Beijing Dazhi        | ZN30900A     | -               | 2017-04-09            | 2018-04-08           |
| 3                                                             | Trilog Broadband Antenna             | SCHWARZBECK          | VULB9163     | 336             | 2017-04-09            | 2018-04-08           |
| 4                                                             | Coaxial Cable (below 1GHz)           | Top                  | TYPE16(13M)  | -               | 2017-09-12            | 2018-09-11           |
| 5                                                             | Broad-band Horn Antenna              | SCHWARZBECK          | BBHA 9120 D  | 667             | 2017-04-09            | 2018-04-08           |
| 6                                                             | Broad-band Horn Antenna              | SCHWARZBECK          | BBHA 9170    | 335             | 2017-04-09            | 2018-04-08           |
| 7                                                             | Broadband Preamplifier               | COMPLIANCE DIRECTION | PAP-1G18     | 2004            | 2017-04-13            | 2018-04-12           |
| 8                                                             | Coaxial Cable (above 1GHz)           | Top                  | 1GHz-25GHz   | EW02014-7       | 2017-04-13            | 2018-04-12           |
| 9                                                             | Universal Radio Communication Tester | R&S                  | CMU 200      | 112461          | 2017-04-13            | 2018-04-12           |
| 10                                                            | Signal Generator                     | R&S                  | SMR20        | 100046          | 2017-09-12            | 2018-09-11           |
| 11                                                            | Smart Antenna                        | SCHWARZBECK          | HA08         | -               | 2017-04-09            | 2018-04-08           |
| 3m Semi-anechoic Chamber for Radiation Emissions Test site 2# |                                      |                      |              |                 |                       |                      |
| Item                                                          | Equipment                            | Manufacturer         | Model No.    | Serial No       | Last Calibration Date | Calibration Due Date |

| 1                           | Test Receiver                              | R&S                                    | ESCI      | 101296     | 2017-04-13            | 2018-04-12           |
|-----------------------------|--------------------------------------------|----------------------------------------|-----------|------------|-----------------------|----------------------|
| 2                           | Trilog Broadband Antenna                   | SCHWARZBECK                            | VULB9160  | 9160-3325  | 2017-04-09            | 2018-04-08           |
| 3                           | Amplifier                                  | Compliance<br>pirection<br>systems inc | PAP-0203  | 22024      | 2017-04-13            | 2018-04-12           |
| 4                           | Cable                                      | HUBER+SUHNER                           | CBL2      | 525178     | 2017-04-13            | 2018-04-12           |
| <b>RF Conducted Testing</b> |                                            |                                        |           |            |                       |                      |
| Item                        | Equipment                                  | Manufacturer                           | Model No. | Serial No. | Last Calibration Date | Calibration Due Date |
| 1.                          | EMC Analyzer<br>(9k~26.5GHz)               | Agilent                                | E7405A    | MY45114943 | 2017-09-12            | 2018-09-11           |
| 2.                          | Spectrum Analyzer<br>(9k-6GHz)             | R&S                                    | FSL6      | 100959     | 2017-09-12            | 2018-09-11           |
| 3.                          | Universal Radio<br>Communication<br>Tester | R&S                                    | CMU 200   | 112461     | 2017-04-13            | 2018-04-12           |
| 4                           | Signal Analyzer<br>(9k~26.5GHz)            | Agilent                                | N9010A    | MY50520207 | 2017-09-12            | 2018-09-11           |

## 7.2 Measurement Uncertainty

| Parameter                                       | Uncertainty                             |
|-------------------------------------------------|-----------------------------------------|
| Conducted Emission                              | ± 3.64 dB(AC mains 150KHz~30MHz)        |
| Radiated Spurious Emissions                     | ± 5.08 dB (Bilog antenna 30M~1000MHz)   |
|                                                 | ± 5.47 dB (Horn antenna 1000M~25000MHz) |
| Radio Frequency                                 | ± 1 x 10 <sup>-7</sup> Hz               |
| RF Power                                        | ± 0.42 dB                               |
| RF Power Density                                | ± 0.7dB                                 |
| Conducted Spurious Emissions                    | ± 2.76 dB (9kHz~26500MHz)               |
| Confidence interval: 95%. Confidence factor:k=2 |                                         |

## 7.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

## 8 Transmit Output Power and PSD

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC part90.1321(a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test Method:      | FCC part2.1046<br>ANSI/TIA-603-E-2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Mode:        | Data communicating mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Limit:            | FCC:<br>(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP powerdensity shall not exceed 1 Watt in any one-megahertz slice of spectrum.<br>(b) In addition to the provisions in paragraph (a) of this section, transmitters operating in the 3650-3700 MHz band that emit multipledirectional beams, simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers provided theemissions comply with the following:<br>(1) Different information must be transmitted to each receiver.<br>(2) If the transmitter employs an antenna system that emits multiple directional beams but does not emit multiple directional beamssimultaneously, the total output power conducted to the array or arrays that comprise the device, <i>i.e.</i> , the sum of the power supplied to allantennas, antenna elements, staves, etc. and summed across all carriers or frequency channels, shall not exceed the limit specified in paragraph(a) of this section, as applicable. The directional antenna gain shall be computed as follows:<br>(i) The directional gain, in dBi, shall be calculated as the sum of 10 log (number of array elements or staves) plus the directional gain, in dBi,of the individual element or stave having the highest gain.<br>(ii) A lower value for the directional gain than that calculated in paragraph (b)(2)(i) of this section will be accepted if sufficient evidence ispresented, <i>e.g.</i> , due to shading of the array or coherence loss in the beam-forming.<br>(3) If a transmitter employs an antenna that operates simultaneously on multiple directional beams using the same or different frequencychannels and if transmitted beams overlap, the power shall be reduced to ensure that the aggregate power from the overlapping beams does notexceed the limit specified in paragraph (b)(2) of this section. In addition, the aggregate power transmitted simultaneously on all beams shall notexceed the limit specified in paragraph (b)(2) of this section by more than 8 dB.<br>(4) Transmitters that emit a single directional beam shall operate under the provisions of paragraph (b)(2) of this section. |

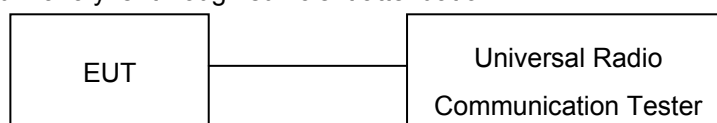
### 8.1 EUT Operation

Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 22.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.2kPa  |

### 8.2 Test Procedure

Conducted method: The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



### 8.3 Test Result

| Transmit Output Power |              |                       |                                          |                                          |                           |                          |                    |                          |
|-----------------------|--------------|-----------------------|------------------------------------------|------------------------------------------|---------------------------|--------------------------|--------------------|--------------------------|
| 5MHz Bandwidth        |              |                       |                                          |                                          |                           |                          |                    |                          |
| Modulation            | Test Channel | RB Size/<br>RB Offset | Chain 0<br>Output<br>Power<br>(dBm/5MHz) | Chain 1<br>Output<br>Power<br>(dBm/5MHz) | Total Power<br>(dBm/5MHz) | Antenna<br>Gain<br>(dBi) | EIRP<br>(dBm/5MHz) | EIRP Limit<br>(dBm/5MHz) |
| QPSK                  | Low          | 1/0                   | 18.48                                    | 18.91                                    | 21.71                     | 13                       | 34.71              | 37.01                    |
|                       |              | 1/12                  | 18.93                                    | 19.22                                    | 22.09                     | 13                       | 35.09              |                          |
|                       |              | 1/24                  | 18.73                                    | 18.79                                    | 21.77                     | 13                       | 34.77              |                          |
|                       |              | 12/0                  | 18.81                                    | 18.96                                    | 21.90                     | 13                       | 34.90              |                          |
|                       |              | 12/6                  | 19.02                                    | 19.11                                    | 22.08                     | 13                       | 35.08              |                          |
|                       |              | 12/11                 | 18.74                                    | 18.93                                    | 21.85                     | 13                       | 34.85              |                          |
|                       |              | 25/0                  | 18.67                                    | 18.92                                    | 21.81                     | 13                       | 34.81              |                          |
|                       | Middle       | 1/0                   | 19.18                                    | 19.16                                    | 22.18                     | 13                       | 35.18              | 37.01                    |
|                       |              | 1/12                  | 19.26                                    | 19.48                                    | 22.38                     | 13                       | 35.38              |                          |
|                       |              | 1/24                  | 19.5                                     | 19.22                                    | 22.37                     | 13                       | 35.37              |                          |
|                       |              | 12/0                  | 19.38                                    | 19.33                                    | 22.37                     | 13                       | 35.37              |                          |
|                       |              | 12/6                  | 19.33                                    | 19.43                                    | 22.39                     | 13                       | 35.39              |                          |
|                       |              | 12/11                 | 19.36                                    | 19.32                                    | 22.35                     | 13                       | 35.35              |                          |
|                       |              | 25/0                  | 19.21                                    | 19.36                                    | 22.30                     | 13                       | 35.30              |                          |
|                       | High         | 1/0                   | 18.69                                    | 19.11                                    | 21.92                     | 13                       | 34.92              | 37.01                    |
|                       |              | 1/12                  | 18.91                                    | 19.36                                    | 22.15                     | 13                       | 35.15              |                          |
|                       |              | 1/24                  | 18.74                                    | 19.03                                    | 21.90                     | 13                       | 34.90              |                          |
|                       |              | 12/0                  | 18.8                                     | 19.22                                    | 22.03                     | 13                       | 35.03              |                          |
|                       |              | 12/6                  | 19.03                                    | 19.29                                    | 22.17                     | 13                       | 35.17              |                          |
|                       |              | 12/11                 | 18.87                                    | 19.18                                    | 22.04                     | 13                       | 35.04              |                          |
|                       |              | 25/0                  | 19                                       | 19.14                                    | 22.08                     | 13                       | 35.08              |                          |
| 16QAM                 | Low          | 1/0                   | 18.77                                    | 19                                       | 21.90                     | 13                       | 34.90              | 37.01                    |
|                       |              | 1/12                  | 18.81                                    | 19.05                                    | 21.94                     | 13                       | 34.94              |                          |
|                       |              | 1/24                  | 18.69                                    | 18.99                                    | 21.85                     | 13                       | 34.85              |                          |
|                       |              | 12/0                  | 18.74                                    | 19.04                                    | 21.90                     | 13                       | 34.90              |                          |
|                       |              | 12/6                  | 18.78                                    | 19.07                                    | 21.94                     | 13                       | 34.94              |                          |
|                       |              | 12/11                 | 18.64                                    | 18.91                                    | 21.79                     | 13                       | 34.79              |                          |
|                       |              | 25/0                  | 18.62                                    | 19.04                                    | 21.85                     | 13                       | 34.85              |                          |
|                       | Middle       | 1/0                   | 19.2                                     | 19.07                                    | 22.15                     | 13                       | 35.15              | 37.01                    |
|                       |              | 1/12                  | 19.34                                    | 19.32                                    | 22.34                     | 13                       | 35.34              |                          |
|                       |              | 1/24                  | 18.89                                    | 19.01                                    | 21.96                     | 13                       | 34.96              |                          |
|                       |              | 12/0                  | 19                                       | 19.13                                    | 22.08                     | 13                       | 35.08              |                          |
|                       |              | 12/6                  | 19.17                                    | 19.22                                    | 22.21                     | 13                       | 35.21              |                          |
|                       |              | 12/11                 | 19.15                                    | 19.15                                    | 22.16                     | 13                       | 35.16              |                          |
|                       |              | 25/0                  | 19.24                                    | 19.15                                    | 22.21                     | 13                       | 35.21              |                          |
|                       | High         | 1/0                   | 19.04                                    | 19.1                                     | 22.08                     | 13                       | 35.08              | 37.01                    |

|                        |                     | 1/12                          | 19.39                                               | 19.2                                                | 22.31                              | 13                                | 35.31                       |                                   |
|------------------------|---------------------|-------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------|-----------------------------------|-----------------------------|-----------------------------------|
|                        |                     | 1/24                          | 19.06                                               | 19.18                                               | 22.13                              | 13                                | 35.13                       |                                   |
|                        |                     | 12/0                          | 18.92                                               | 18.93                                               | 21.94                              | 13                                | 34.94                       |                                   |
|                        |                     | 12/6                          | 19.08                                               | 19.05                                               | 22.08                              | 13                                | 35.08                       |                                   |
|                        |                     | 12/11                         | 18.92                                               | 18.9                                                | 21.92                              | 13                                | 34.92                       |                                   |
|                        |                     | 25/0                          | 18.92                                               | 18.88                                               | 21.91                              | 13                                | 34.91                       |                                   |
| <b>10MHz Bandwidth</b> |                     |                               |                                                     |                                                     |                                    |                                   |                             |                                   |
| <b>Modulation</b>      | <b>Test Channel</b> | <b>RB Size/<br/>RB Offset</b> | <b>Chain 0<br/>Output<br/>Power<br/>(dBm/10MHz)</b> | <b>Chain 1<br/>Output<br/>Power<br/>(dBm/10MHz)</b> | <b>Total Power<br/>(dBm/10MHz)</b> | <b>Antenna<br/>Gain<br/>(dBi)</b> | <b>EIRP<br/>(dBm/10MHz)</b> | <b>EIRP Limit<br/>(dBm/10MHz)</b> |
| QPSK                   | Low                 | 1/0                           | 18.57                                               | 18.81                                               | 21.70                              | 13                                | 34.70                       | 40.02                             |
|                        |                     | 1/24                          | 18.86                                               | 19.03                                               | 21.96                              | 13                                | 34.96                       |                                   |
|                        |                     | 1/49                          | 18.62                                               | 18.6                                                | 21.62                              | 13                                | 34.62                       |                                   |
|                        |                     | 25/0                          | 18.88                                               | 19.11                                               | 22.01                              | 13                                | 35.01                       |                                   |
|                        |                     | 25/12                         | 19.03                                               | 19.24                                               | 22.15                              | 13                                | 35.15                       |                                   |
|                        |                     | 25/24                         | 19.21                                               | 19.16                                               | 22.20                              | 13                                | 35.20                       |                                   |
|                        |                     | 50/0                          | 18.87                                               | 18.98                                               | 21.94                              | 13                                | 34.94                       |                                   |
|                        | Middle              | 1/0                           | 18.59                                               | 18.97                                               | 21.79                              | 13                                | 34.79                       | 40.02                             |
|                        |                     | 1/24                          | 19.36                                               | 19.74                                               | 22.56                              | 13                                | 35.56                       |                                   |
|                        |                     | 1/49                          | 18.7                                                | 18.99                                               | 21.86                              | 13                                | 34.86                       |                                   |
|                        |                     | 25/0                          | 19.09                                               | 19.26                                               | 22.19                              | 13                                | 35.19                       |                                   |
|                        |                     | 25/12                         | 19.38                                               | 19.54                                               | 22.47                              | 13                                | 35.47                       |                                   |
|                        |                     | 25/24                         | 19.21                                               | 19.38                                               | 22.31                              | 13                                | 35.31                       |                                   |
|                        |                     | 50/0                          | 19.16                                               | 19.25                                               | 22.22                              | 13                                | 35.22                       |                                   |
|                        | High                | 1/0                           | 18.57                                               | 18.98                                               | 21.79                              | 13                                | 34.79                       | 40.02                             |
|                        |                     | 1/24                          | 18.8                                                | 19.04                                               | 21.93                              | 13                                | 34.93                       |                                   |
|                        |                     | 1/49                          | 18.57                                               | 18.73                                               | 21.66                              | 13                                | 34.66                       |                                   |
|                        |                     | 25/0                          | 18.76                                               | 18.94                                               | 21.86                              | 13                                | 34.86                       |                                   |
|                        |                     | 25/12                         | 18.79                                               | 18.96                                               | 21.89                              | 13                                | 34.89                       |                                   |
|                        |                     | 25/24                         | 18.84                                               | 18.92                                               | 21.89                              | 13                                | 34.89                       |                                   |
|                        |                     | 50/0                          | 18.81                                               | 18.94                                               | 21.89                              | 13                                | 34.89                       |                                   |
| 16QAM                  | Low                 | 1/0                           | 18.27                                               | 18.67                                               | 21.48                              | 13                                | 34.48                       | 40.02                             |
|                        |                     | 1/24                          | 19.06                                               | 19.51                                               | 22.30                              | 13                                | 35.30                       |                                   |
|                        |                     | 1/49                          | 18.38                                               | 18.82                                               | 21.62                              | 13                                | 34.62                       |                                   |
|                        |                     | 25/0                          | 18.68                                               | 18.92                                               | 21.81                              | 13                                | 34.81                       |                                   |
|                        |                     | 25/12                         | 18.71                                               | 19.21                                               | 21.98                              | 13                                | 34.98                       |                                   |
|                        |                     | 25/24                         | 18.72                                               | 18.98                                               | 21.86                              | 13                                | 34.86                       |                                   |
|                        |                     | 50/0                          | 18.78                                               | 19.01                                               | 21.91                              | 13                                | 34.91                       |                                   |
|                        | Middle              | 1/0                           | 19.3                                                | 19.09                                               | 22.21                              | 13                                | 35.21                       |                                   |
|                        |                     | 1/24                          | 19.52                                               | 19.43                                               | 22.49                              | 13                                | 35.49                       |                                   |
|                        |                     | 1/49                          | 18.95                                               | 18.89                                               | 21.93                              | 13                                | 34.93                       |                                   |
|                        |                     | 25/0                          | 19.22                                               | 19.29                                               | 22.27                              | 13                                | 35.27                       |                                   |
|                        |                     | 25/12                         | 19.39                                               | 19.38                                               | 22.40                              | 13                                | 35.40                       |                                   |

|            |              | 25/24                 | 19.27                                  | 19.19                                  | 22.24                      | 13                       | 35.24               |                           |
|------------|--------------|-----------------------|----------------------------------------|----------------------------------------|----------------------------|--------------------------|---------------------|---------------------------|
|            |              | 50/0                  | 19.21                                  | 19.18                                  | 22.21                      | 13                       | 35.21               |                           |
|            | High         | 1/0                   | 18.5                                   | 18.43                                  | 21.48                      | 13                       | 34.48               | 40.02                     |
|            |              | 1/24                  | 19.28                                  | 19.19                                  | 22.25                      | 13                       | 35.25               |                           |
|            |              | 1/49                  | 18.62                                  | 18.61                                  | 21.63                      | 13                       | 34.63               |                           |
|            |              | 25/0                  | 18.79                                  | 18.82                                  | 21.82                      | 13                       | 34.82               |                           |
|            |              | 25/12                 | 19.02                                  | 19.16                                  | 22.10                      | 13                       | 35.10               |                           |
|            |              | 25/24                 | 18.86                                  | 18.98                                  | 21.93                      | 13                       | 34.93               |                           |
|            |              | 50/0                  | 18.85                                  | 18.96                                  | 21.92                      | 13                       | 34.92               |                           |
|            |              | 15MHz Bandwidth       |                                        |                                        |                            |                          |                     |                           |
| Modulation | Test Channel | RB Size/<br>RB Offset | Chain 0<br>Output Power<br>(dBm/15MHz) | Chain 1<br>Output Power<br>(dBm/15MHz) | Total Power<br>(dBm/15MHz) | Antenna<br>Gain<br>(dBi) | EIRP<br>(dBm/15MHz) | EIRP Limit<br>(dBm/15MHz) |
| QPSK       | Low          | 1/0                   | 19.01                                  | 19.16                                  | 22.10                      | 13                       | 35.10               | 41.78                     |
|            |              | 1/37                  | 19.23                                  | 19.3                                   | 22.28                      | 13                       | 35.28               |                           |
|            |              | 1/74                  | 18.95                                  | 19.2                                   | 22.09                      | 13                       | 35.09               |                           |
|            |              | 36/0                  | 18.78                                  | 19                                     | 21.90                      | 13                       | 34.90               |                           |
|            |              | 36/16                 | 19.12                                  | 19.19                                  | 22.17                      | 13                       | 35.17               |                           |
|            |              | 36/35                 | 18.81                                  | 18.95                                  | 21.89                      | 13                       | 34.89               |                           |
|            |              | 75/0                  | 18.98                                  | 19.06                                  | 22.03                      | 13                       | 35.03               |                           |
|            | Middle       | 1/0                   | 19.03                                  | 19.22                                  | 22.14                      | 13                       | 35.14               | 41.78                     |
|            |              | 1/37                  | 19.35                                  | 19.64                                  | 22.51                      | 13                       | 35.51               |                           |
|            |              | 1/74                  | 18.16                                  | 18.41                                  | 21.30                      | 13                       | 34.30               |                           |
|            |              | 36/0                  | 19.24                                  | 19.2                                   | 22.23                      | 13                       | 35.23               |                           |
|            |              | 36/16                 | 19.09                                  | 19.34                                  | 22.23                      | 13                       | 35.23               |                           |
|            |              | 36/35                 | 19.07                                  | 19.28                                  | 22.19                      | 13                       | 35.19               |                           |
|            |              | 75/0                  | 19.2                                   | 19.26                                  | 22.24                      | 13                       | 35.24               |                           |
|            | High         | 1/0                   | 18.95                                  | 19.1                                   | 22.04                      | 13                       | 35.04               | 41.78                     |
|            |              | 1/37                  | 19.2                                   | 19.2                                   | 22.21                      | 13                       | 35.21               |                           |
|            |              | 1/74                  | 19                                     | 19.08                                  | 22.05                      | 13                       | 35.05               |                           |
|            |              | 36/0                  | 18.97                                  | 18.91                                  | 21.95                      | 13                       | 34.95               |                           |
|            |              | 36/16                 | 19.14                                  | 19.1                                   | 22.13                      | 13                       | 35.13               |                           |
|            |              | 36/35                 | 18.87                                  | 18.98                                  | 21.94                      | 13                       | 34.94               |                           |
|            |              | 75/0                  | 18.94                                  | 18.88                                  | 21.92                      | 13                       | 34.92               |                           |
| 16QAM      | Low          | 1/0                   | 19.11                                  | 18.83                                  | 21.98                      | 13                       | 34.98               | 41.78                     |
|            |              | 1/37                  | 19.4                                   | 19.16                                  | 22.29                      | 13                       | 35.29               |                           |
|            |              | 1/74                  | 18.91                                  | 18.82                                  | 21.88                      | 13                       | 34.88               |                           |
|            |              | 36/0                  | 18.97                                  | 18.86                                  | 21.93                      | 13                       | 34.93               |                           |
|            |              | 36/16                 | 19.18                                  | 18.92                                  | 22.06                      | 13                       | 35.06               |                           |
|            |              | 36/35                 | 19.19                                  | 18.92                                  | 22.07                      | 13                       | 35.07               |                           |
|            |              | 75/0                  | 19.03                                  | 18.97                                  | 22.01                      | 13                       | 35.01               |                           |
|            | Middle       | 1/0                   | 19.03                                  | 19.25                                  | 22.15                      | 13                       | 35.15               | 41.78                     |
|            |              | 1/37                  | 19.3                                   | 19.48                                  | 22.40                      | 13                       | 35.40               |                           |

|                 |              |                       |                                           |                                           |                            |                          |                     |                           |
|-----------------|--------------|-----------------------|-------------------------------------------|-------------------------------------------|----------------------------|--------------------------|---------------------|---------------------------|
|                 |              | 1/74                  | 19.2                                      | 19.25                                     | 22.24                      | 13                       | 35.24               |                           |
|                 |              | 36/0                  | 19.24                                     | 19.35                                     | 22.31                      | 13                       | 35.31               |                           |
|                 |              | 36/16                 | 19.23                                     | 19.23                                     | 22.24                      | 13                       | 35.24               |                           |
|                 |              | 36/35                 | 19.29                                     | 19.34                                     | 22.33                      | 13                       | 35.33               |                           |
|                 |              | 75/0                  | 19.26                                     | 19.18                                     | 22.23                      | 13                       | 35.23               |                           |
|                 | High         | 1/0                   | 18.73                                     | 18.65                                     | 21.70                      | 13                       | 34.70               | 41.78                     |
|                 |              | 1/37                  | 19.46                                     | 18.92                                     | 22.21                      | 13                       | 35.21               |                           |
|                 |              | 1/74                  | 18.92                                     | 18.6                                      | 21.77                      | 13                       | 34.77               |                           |
|                 |              | 36/0                  | 18.95                                     | 18.81                                     | 21.89                      | 13                       | 34.89               |                           |
|                 |              | 36/16                 | 19.3                                      | 18.96                                     | 22.14                      | 13                       | 35.14               |                           |
|                 |              | 36/35                 | 19.11                                     | 18.92                                     | 22.03                      | 13                       | 35.03               |                           |
|                 |              | 75/0                  | 19.05                                     | 18.89                                     | 21.98                      | 13                       | 34.98               |                           |
| 20MHz Bandwidth |              |                       |                                           |                                           |                            |                          |                     |                           |
| Modulation      | Test Channel | RB Size/<br>RB Offset | Chain 0<br>Output<br>Power<br>(dBm/20MHz) | Chain 1<br>Output<br>Power<br>(dBm/20MHz) | Total Power<br>(dBm/20MHz) | Antenna<br>Gain<br>(dBi) | EIRP<br>(dBm/20MHz) | EIRP Limit<br>(dBm/20MHz) |
| QPSK            | Low          | 1/0                   | 19.11                                     | 19.29                                     | 22.21                      | 13                       | 35.21               | 43.03                     |
|                 |              | 1/49                  | 19.17                                     | 19.11                                     | 22.15                      | 13                       | 35.15               |                           |
|                 |              | 1/99                  | 19.1                                      | 19.3                                      | 22.21                      | 13                       | 35.21               |                           |
|                 |              | 50/0                  | 19.14                                     | 19.21                                     | 22.19                      | 13                       | 35.19               |                           |
|                 |              | 50/24                 | 19.13                                     | 19.14                                     | 22.15                      | 13                       | 35.15               |                           |
|                 |              | 50/49                 | 19.19                                     | 19.08                                     | 22.15                      | 13                       | 35.15               |                           |
|                 |              | 100/0                 | 19.21                                     | 19.25                                     | 22.24                      | 13                       | 35.24               |                           |
|                 | Middle       | 1/0                   | 19.22                                     | 19.01                                     | 22.13                      | 13                       | 35.13               | 43.03                     |
|                 |              | 1/49                  | 19.02                                     | 19.07                                     | 22.06                      | 13                       | 35.06               |                           |
|                 |              | 1/99                  | 19.07                                     | 18.97                                     | 22.03                      | 13                       | 35.03               |                           |
|                 |              | 50/0                  | 19.06                                     | 18.99                                     | 22.04                      | 13                       | 35.04               |                           |
|                 |              | 50/24                 | 19.02                                     | 18.9                                      | 21.97                      | 13                       | 34.97               |                           |
|                 |              | 50/49                 | 19.07                                     | 18.83                                     | 21.96                      | 13                       | 34.96               |                           |
|                 |              | 100/0                 | 18.93                                     | 18.89                                     | 21.92                      | 13                       | 34.92               |                           |
|                 | High         | 1/0                   | 19.13                                     | 19.19                                     | 22.17                      | 13                       | 35.17               | 43.03                     |
|                 |              | 1/49                  | 19.19                                     | 19.01                                     | 22.11                      | 13                       | 35.11               |                           |
|                 |              | 1/99                  | 19.12                                     | 19.2                                      | 22.17                      | 13                       | 35.17               |                           |
|                 |              | 50/0                  | 19.16                                     | 19.11                                     | 22.15                      | 13                       | 35.15               |                           |
|                 |              | 50/24                 | 19.15                                     | 19.04                                     | 22.11                      | 13                       | 35.11               |                           |
|                 |              | 50/49                 | 19.21                                     | 18.98                                     | 22.11                      | 13                       | 35.11               |                           |
|                 |              | 100/0                 | 19.23                                     | 19.15                                     | 22.20                      | 13                       | 35.20               |                           |
| 16QAM           | Low          | 1/0                   | 19.52                                     | 19.36                                     | 22.45                      | 13                       | 35.45               | 43.03                     |
|                 |              | 1/49                  | 19.35                                     | 19.26                                     | 22.32                      | 13                       | 35.32               |                           |
|                 |              | 1/99                  | 19.61                                     | 19.37                                     | 22.50                      | 13                       | 35.50               |                           |
|                 |              | 50/0                  | 19.28                                     | 19.23                                     | 22.27                      | 13                       | 35.27               |                           |
|                 |              | 50/24                 | 19.12                                     | 19.07                                     | 22.11                      | 13                       | 35.11               |                           |
|                 |              | 50/49                 | 19.19                                     | 18.97                                     | 22.09                      | 13                       | 35.09               |                           |



|  |        |       |       |       |       |    |       |              |
|--|--------|-------|-------|-------|-------|----|-------|--------------|
|  |        | 100/0 | 19.24 | 19.06 | 22.16 | 13 | 35.16 |              |
|  | Middle | 1/0   | 19.19 | 19.24 | 22.23 | 13 | 35.23 | <b>43.03</b> |
|  |        | 1/49  | 19.25 | 19.11 | 22.19 | 13 | 35.19 |              |
|  |        | 1/99  | 19.11 | 19.18 | 22.16 | 13 | 35.16 |              |
|  |        | 50/0  | 19.05 | 18.89 | 21.98 | 13 | 34.98 |              |
|  |        | 50/24 | 19.28 | 19.09 | 22.20 | 13 | 35.20 |              |
|  |        | 50/49 | 18.94 | 18.9  | 21.93 | 13 | 34.93 |              |
|  |        | 100/0 | 19.01 | 18.92 | 21.98 | 13 | 34.98 |              |
|  | High   | 1/0   | 19.33 | 19.25 | 22.30 | 13 | 35.30 | <b>43.03</b> |
|  |        | 1/49  | 19.15 | 19.19 | 22.18 | 13 | 35.18 |              |
|  |        | 1/99  | 19.08 | 19.14 | 22.12 | 13 | 35.12 |              |
|  |        | 50/0  | 19.26 | 19.13 | 22.21 | 13 | 35.21 |              |
|  |        | 50/24 | 19.21 | 19.06 | 22.15 | 13 | 35.15 |              |
|  |        | 50/49 | 19.26 | 19.1  | 22.19 | 13 | 35.19 |              |
|  |        | 100/0 | 19.28 | 19.12 | 22.21 | 13 | 35.21 |              |

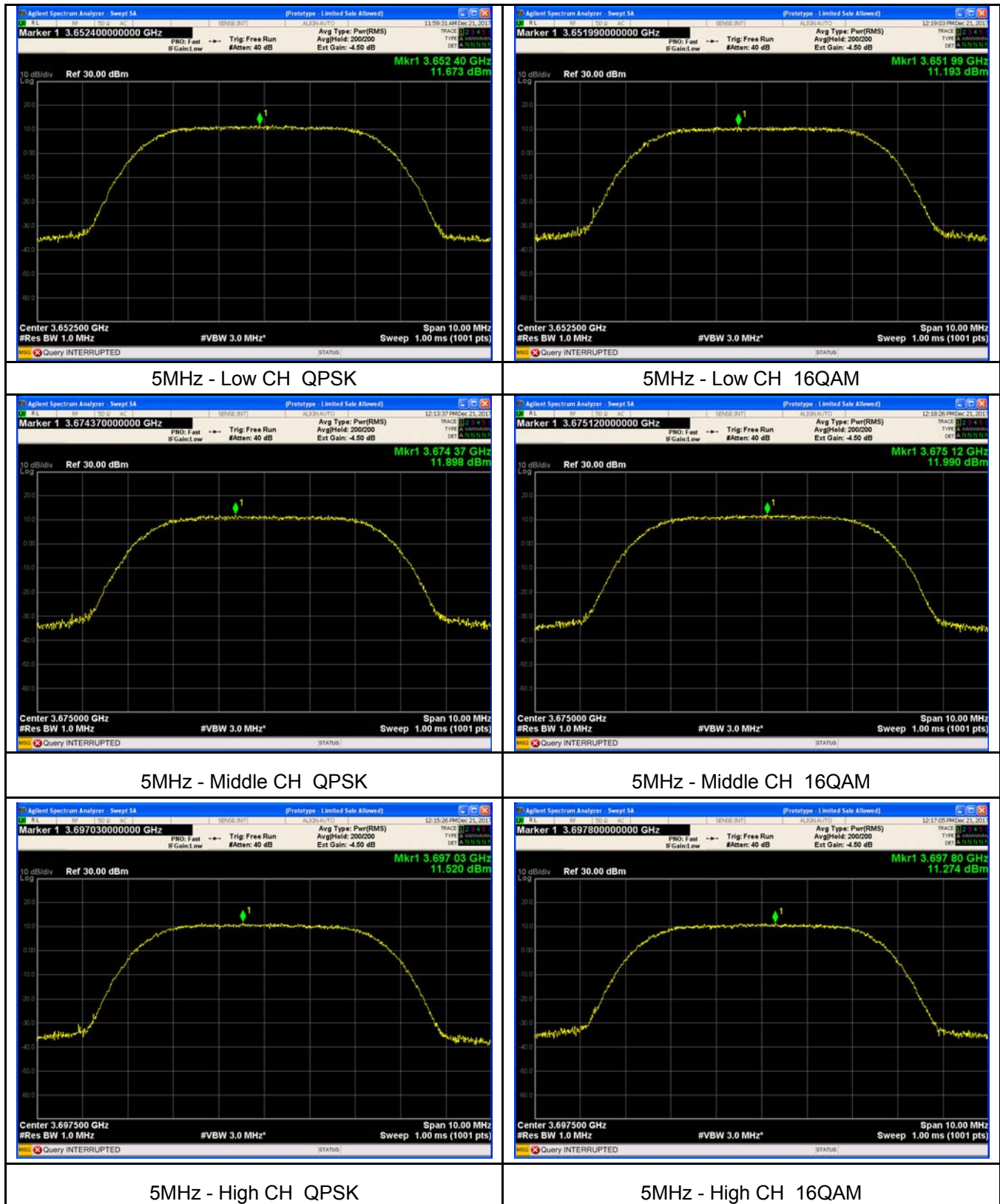
**Note: Limit=30dBm+10log(bandwidth/25MHz)**

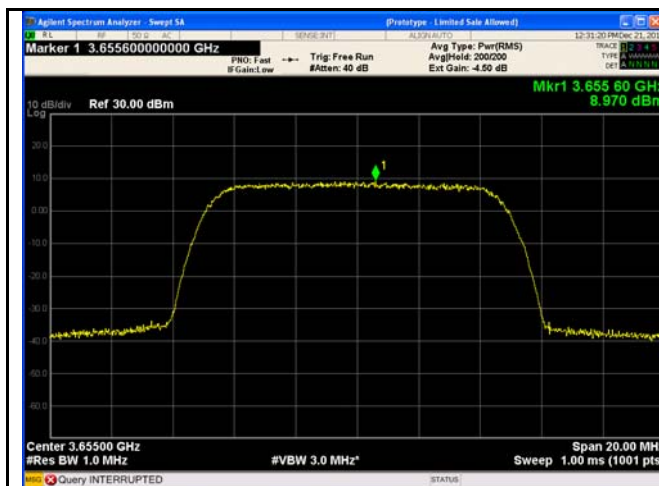
Remark: Directional antenna Gain = Antenna Gain + 10 lg (ANT<sub>N</sub>) = 10.0+10 lg (2)=13.0dBi

| PSD (Full RB Size) |            |              |                       |                       |                     |                    |                        |                              |
|--------------------|------------|--------------|-----------------------|-----------------------|---------------------|--------------------|------------------------|------------------------------|
| Bandwidth (MHz)    | 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) |
| 5                  | QPSK       | Low          | 11.673                | 11.836                | 14.77               | 13.0               | 27.77                  | 30.0                         |
|                    |            | Middle       | 11.898                | 11.797                | 14.86               | 13.0               | 27.86                  |                              |
|                    |            | High         | 11.520                | 11.437                | 14.49               | 13.0               | 27.49                  |                              |
|                    | 16QAM      | Low          | 11.193                | 11.505                | 14.36               | 13.0               | 27.36                  |                              |
|                    |            | Middle       | 11.990                | 12.014                | 15.01               | 13.0               | 28.01                  |                              |
|                    |            | High         | 11.274                | 11.338                | 14.32               | 13.0               | 27.32                  |                              |
| Bandwidth (MHz)    | 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) |
| 10                 | QPSK       | Low          | 8.970                 | 8.512                 | 11.76               | 13.0               | 24.76                  | 30.0                         |
|                    |            | Middle       | 8.751                 | 8.625                 | 11.70               | 13.0               | 24.70                  |                              |
|                    |            | High         | 8.446                 | 8.563                 | 11.52               | 13.0               | 24.52                  |                              |
|                    | 16QAM      | Low          | 8.744                 | 8.893                 | 11.83               | 13.0               | 24.83                  |                              |
|                    |            | Middle       | 8.559                 | 8.611                 | 11.60               | 13.0               | 24.60                  |                              |
|                    |            | High         | 8.373                 | 8.391                 | 11.39               | 13.0               | 24.39                  |                              |
| Bandwidth (MHz)    | 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) |
| 15                 | QPSK       | Low          | 7.116                 | 7.236                 | 10.19               | 13.0               | 23.19                  | 30.0                         |
|                    |            | Middle       | 7.486                 | 7.034                 | 10.28               | 13.0               | 23.28                  |                              |
|                    |            | High         | 7.402                 | 6.967                 | 10.20               | 13.0               | 23.20                  |                              |
|                    | 16QAM      | Low          | 7.344                 | 7.127                 | 10.25               | 13.0               | 23.25                  |                              |
|                    |            | Middle       | 7.274                 | 6.755                 | 10.03               | 13.0               | 23.03                  |                              |
|                    |            | High         | 7.188                 | 6.947                 | 10.08               | 13.0               | 23.08                  |                              |
| Bandwidth (MHz)    | 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) |
| 20                 | QPSK       | Low          | 5.737                 | 5.762                 | 8.76                | 13.0               | 21.76                  | 30.0                         |
|                    |            | Middle       | 5.685                 | 5.780                 | 8.74                | 13.0               | 21.74                  |                              |
|                    |            | High         | 5.517                 | 5.733                 | 8.64                | 13.0               | 21.64                  |                              |
|                    | 16QAM      | Low          | 6.004                 | 5.796                 | 8.91                | 13.0               | 21.91                  |                              |
|                    |            | Middle       | 5.899                 | 6.035                 | 8.98                | 13.0               | 21.98                  |                              |
|                    |            | High         | 6.094                 | 5.907                 | 9.01                | 13.0               | 22.01                  |                              |

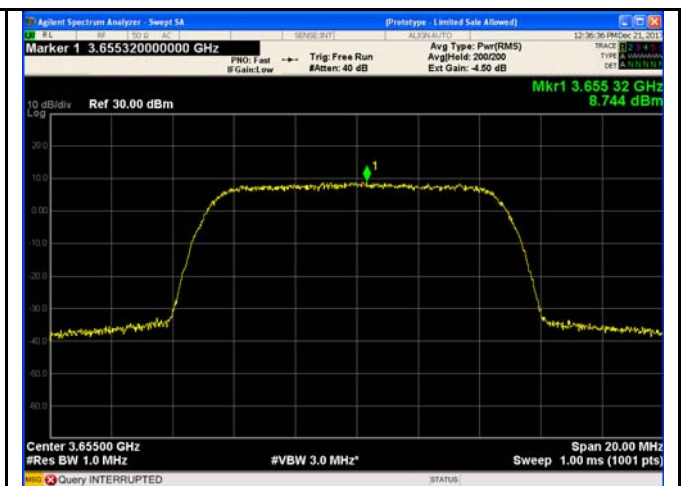
Remark: Directional antenna Gain = Antenna Gain + 10 lg (ANT<sub>N</sub>) = 10.0+10 lg (2)=13.0dBi

### Test Plots for PSD Chain 0

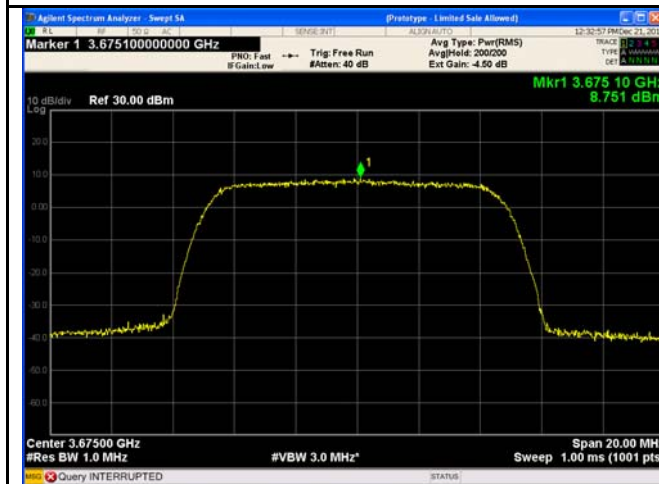




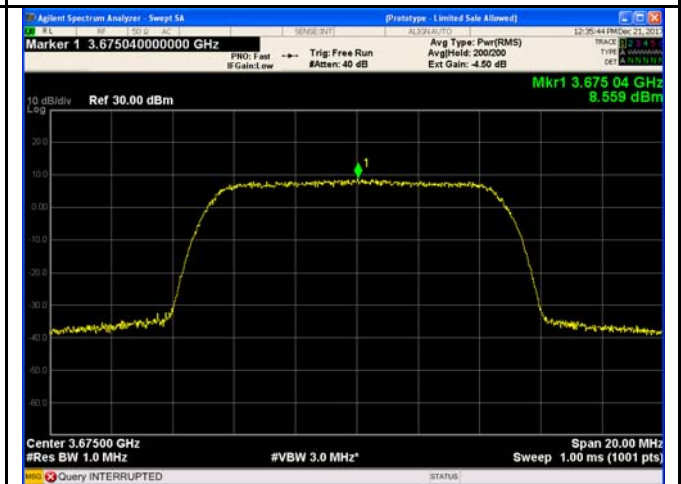
10MHz - Low CH QPSK



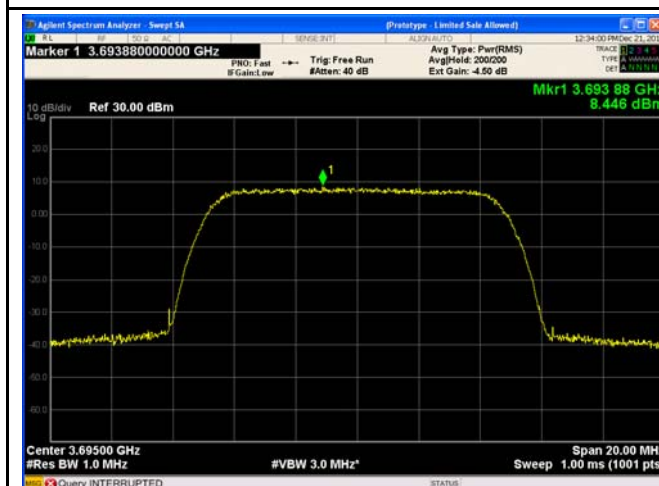
10MHz - Low CH 16QAM



10MHz - Middle CH QPSK



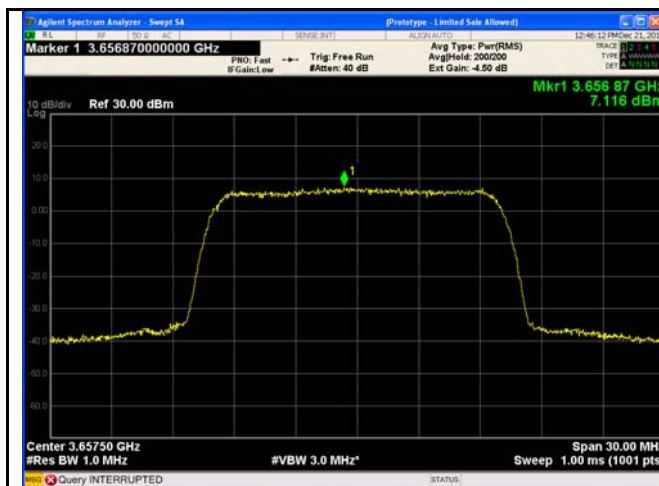
10MHz - Middle CH 16QAM



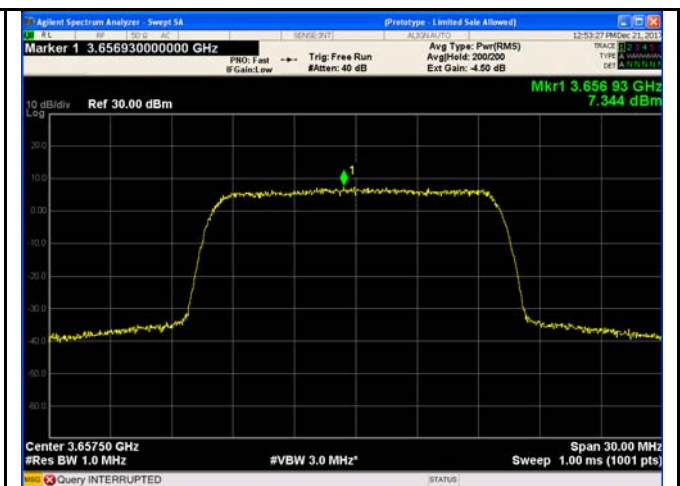
10MHz - High CH QPSK



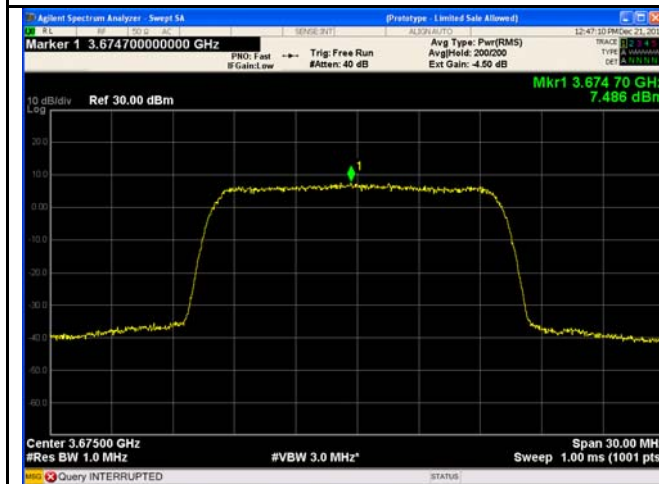
10MHz - High CH 16QAM



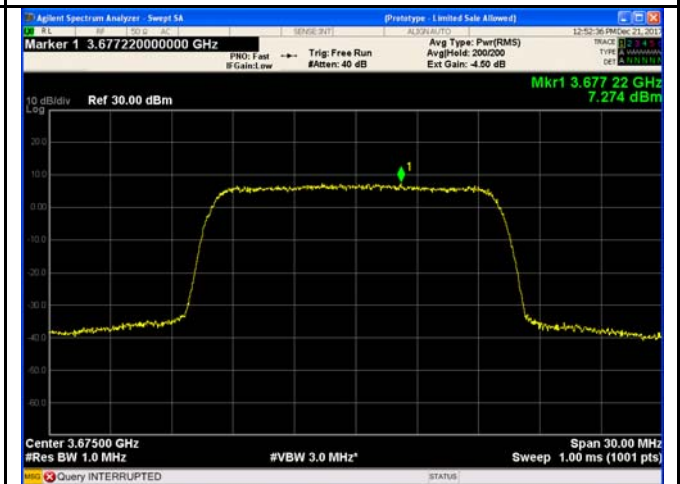
15MHz - Low CH QPSK



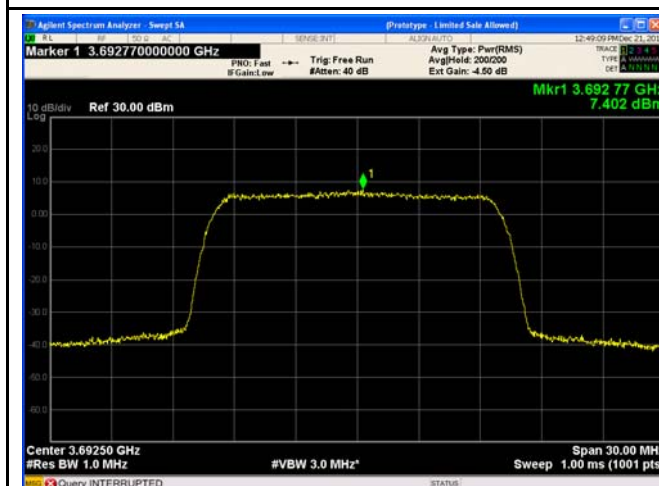
15MHz - Low CH 16QAM



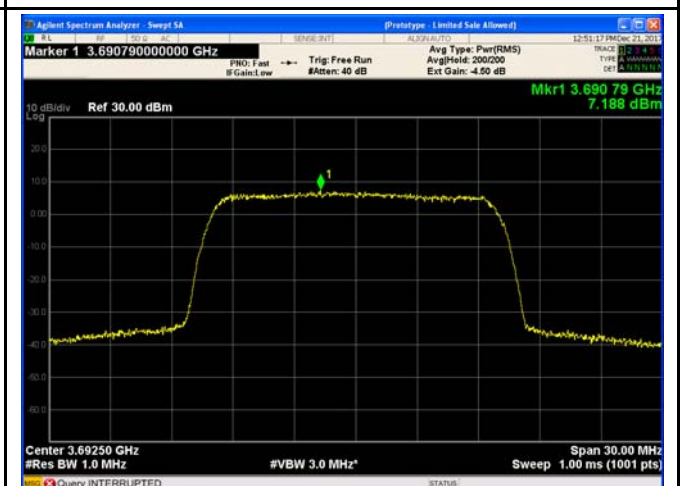
15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM

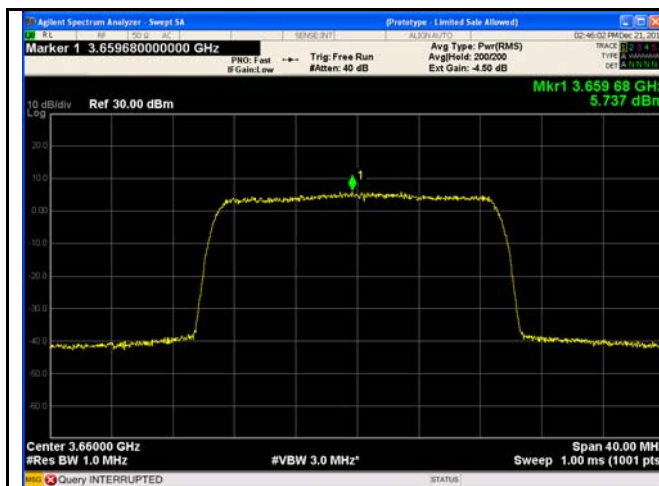


15MHz - High CH QPSK

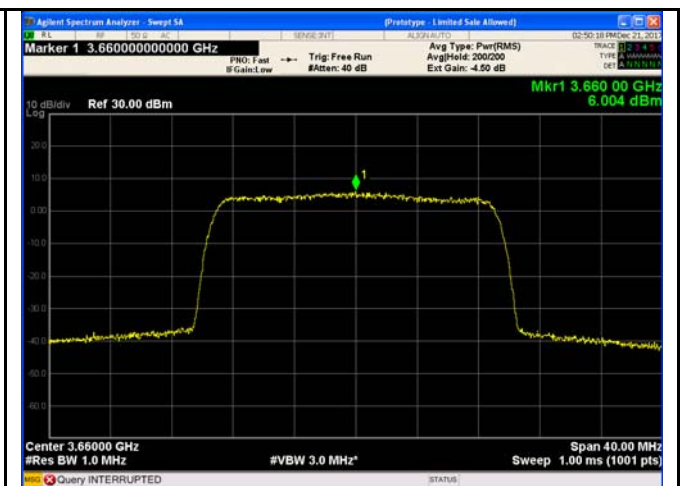


15MHz - High CH 16QAM

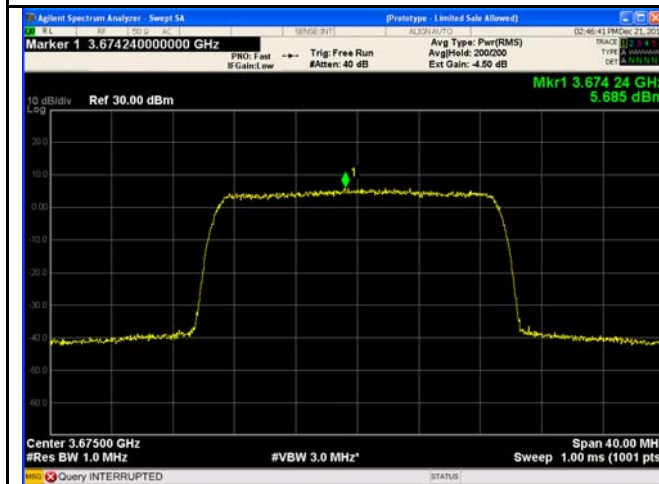




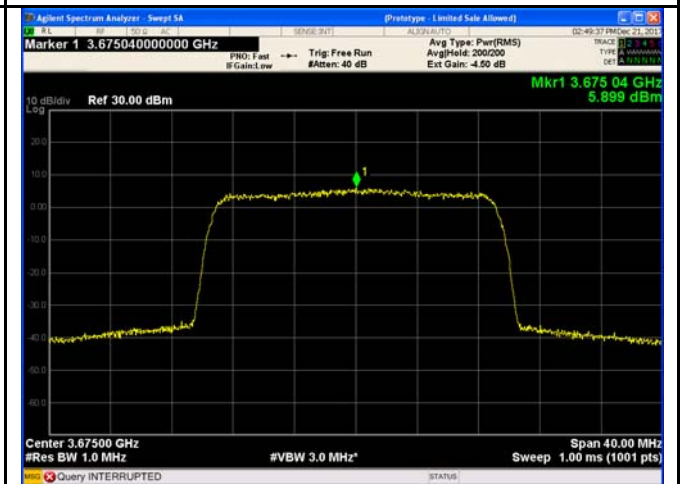
20MHz - Low CH QPSK



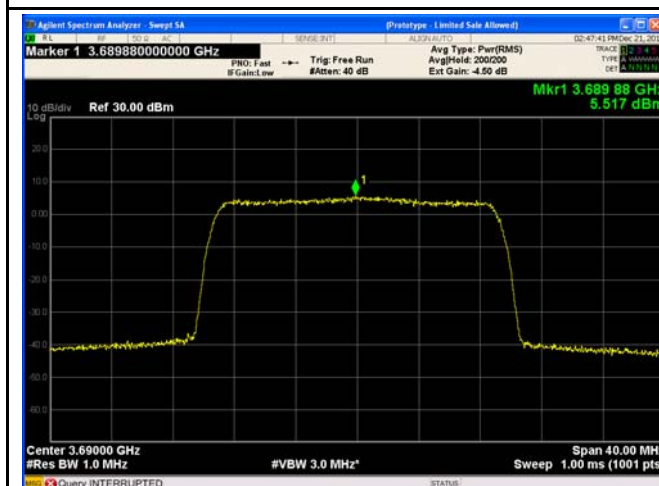
20MHz - Low CH 16QAM



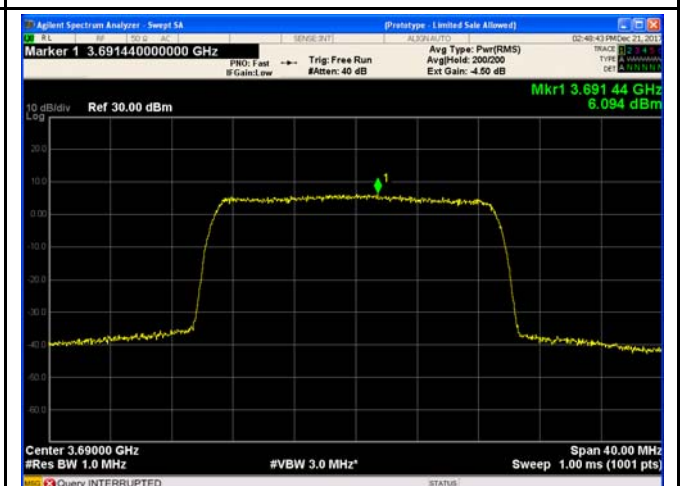
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM

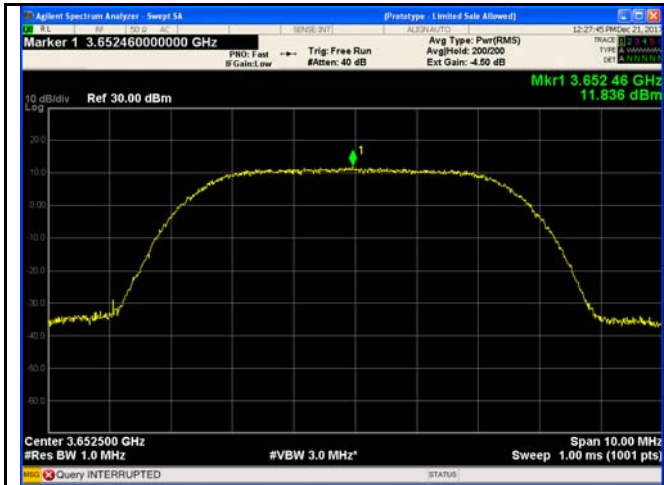


20MHz - High CH QPSK

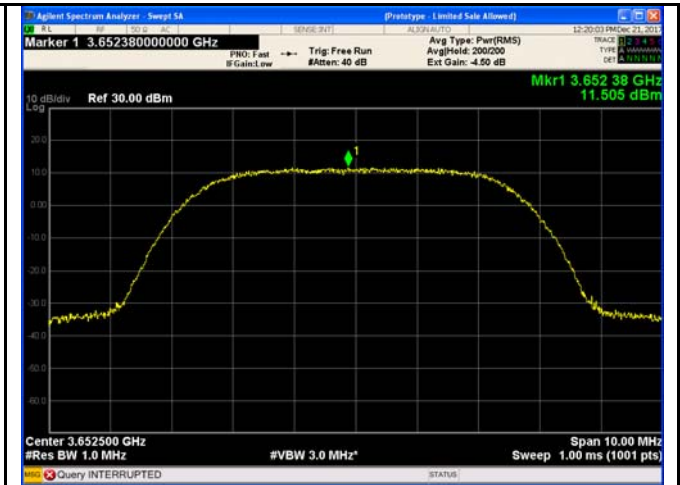


20MHz - High CH 16QAM

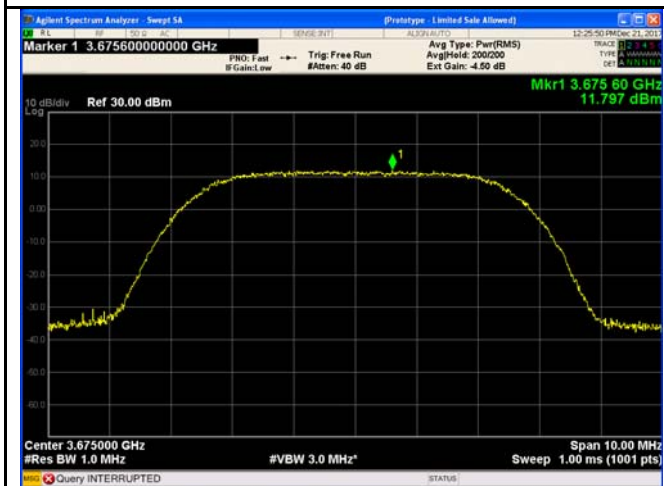
## Chain 1



5MHz - Low CH QPSK



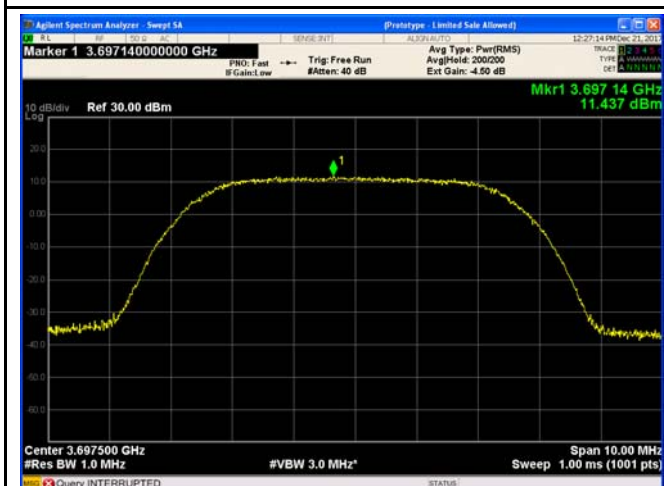
5MHz - Low CH 16QAM



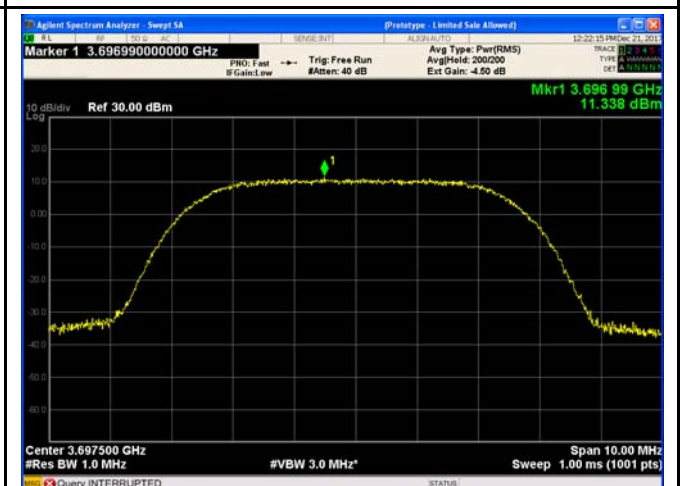
5MHz - Middle CH QPSK



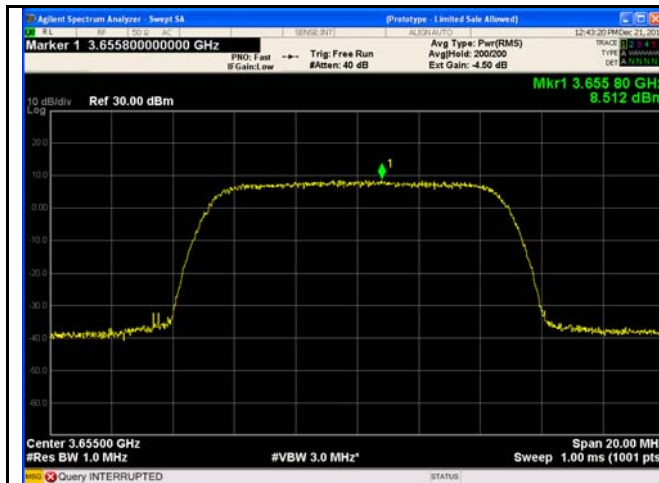
5MHz - Middle CH 16QAM



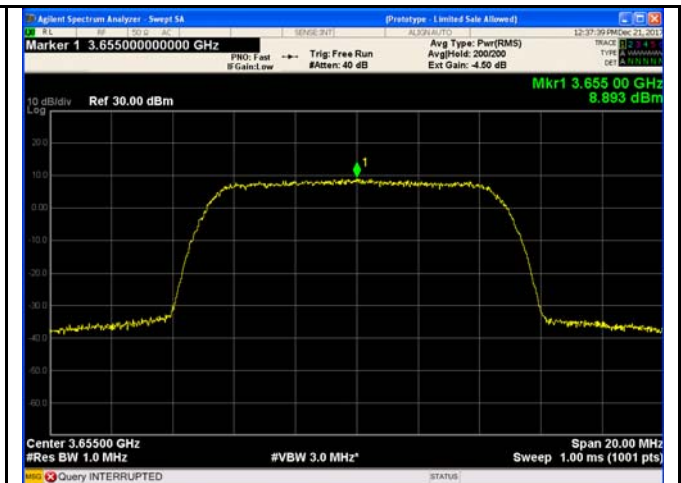
5MHz - High CH QPSK



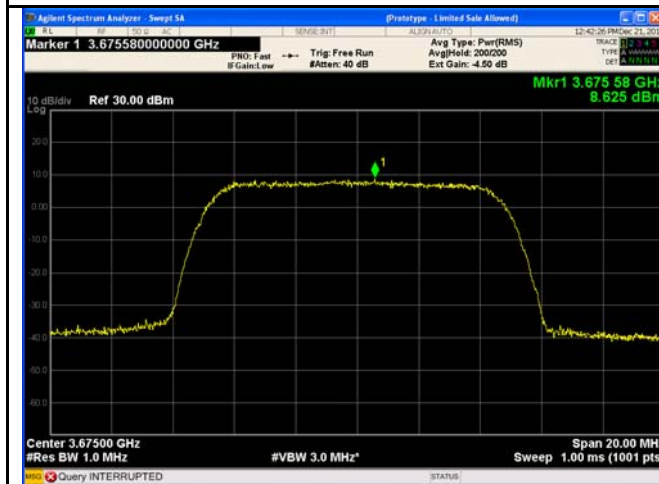
5MHz - High CH 16QAM



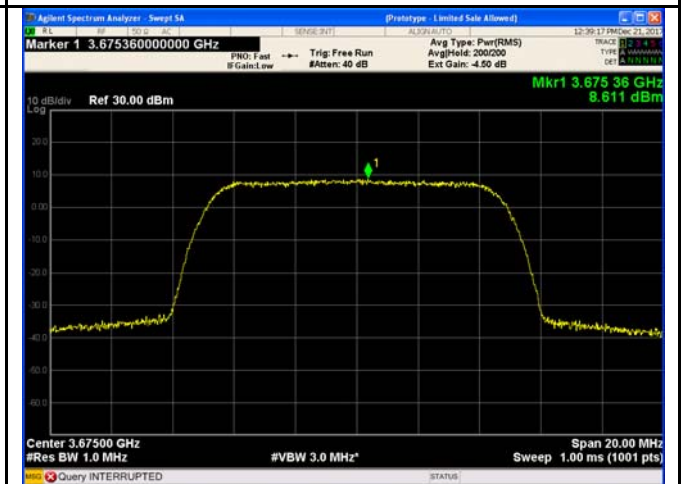
10MHz - Low CH QPSK



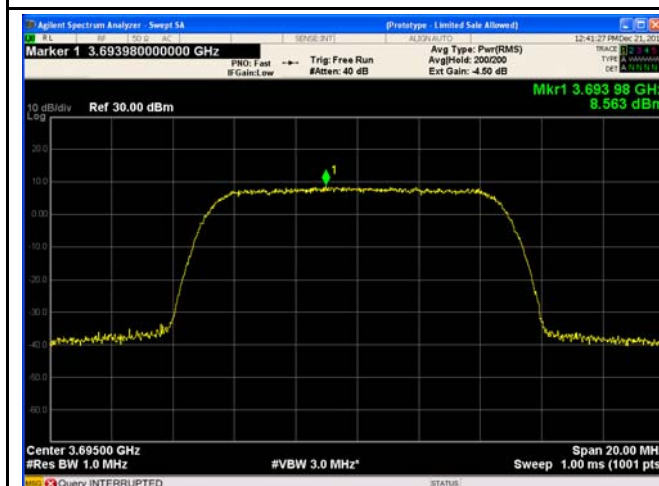
10MHz - Low CH 16QAM



10MHz - Middle CH QPSK



10MHz - Middle CH 16QAM

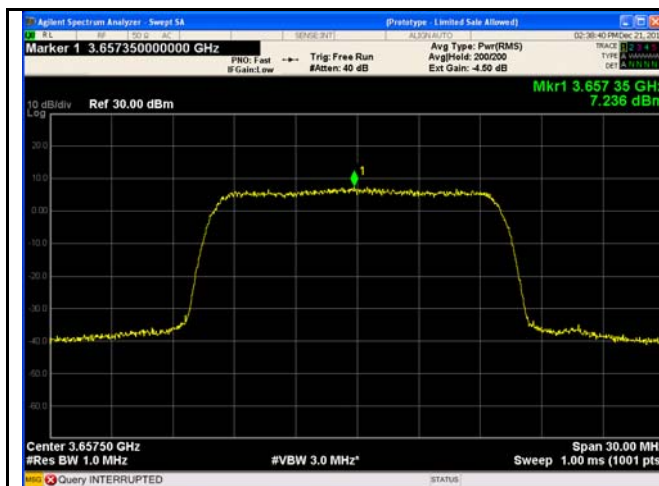


10MHz - High CH QPSK

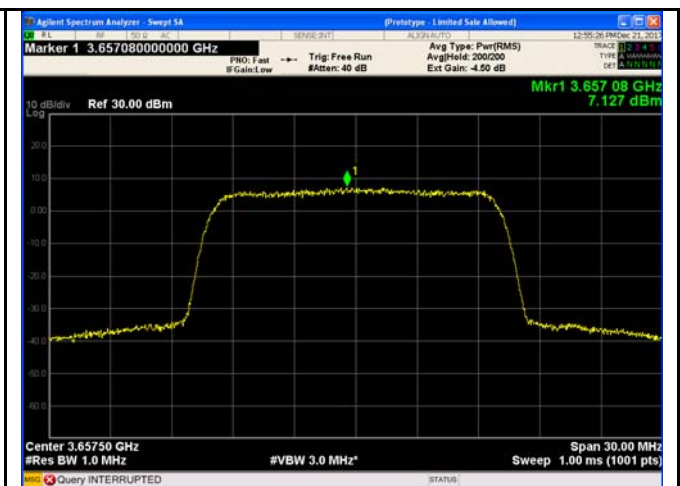


10MHz - High CH 16QAM

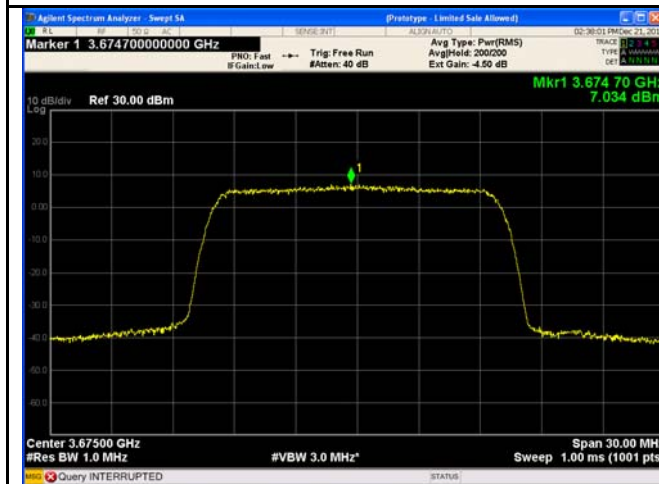




15MHz - Low CH QPSK



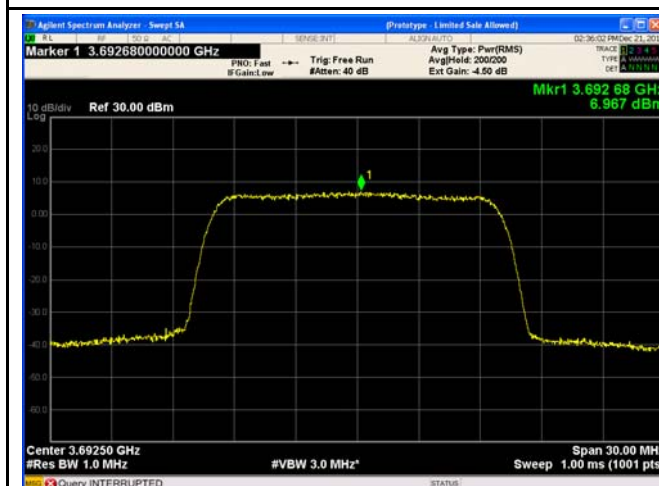
15MHz - Low CH 16QAM



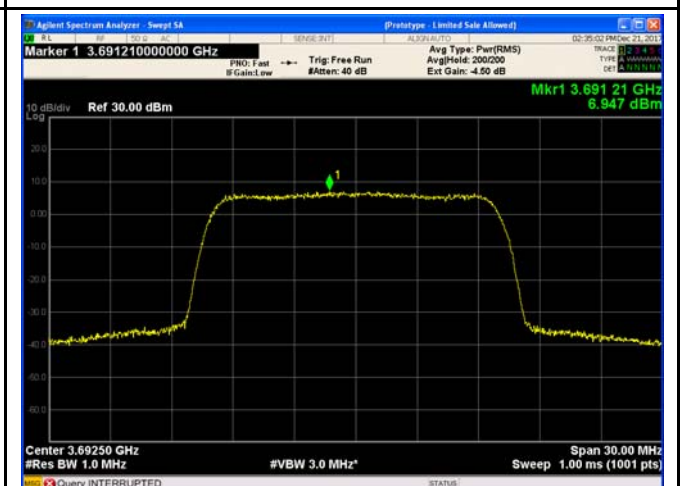
15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM



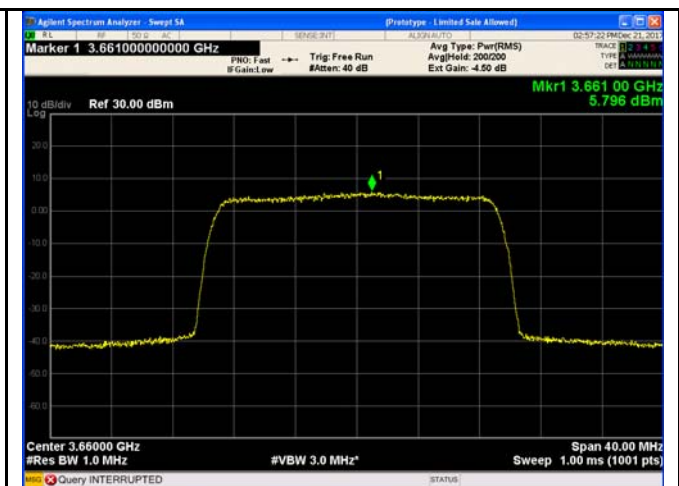
15MHz - High CH QPSK



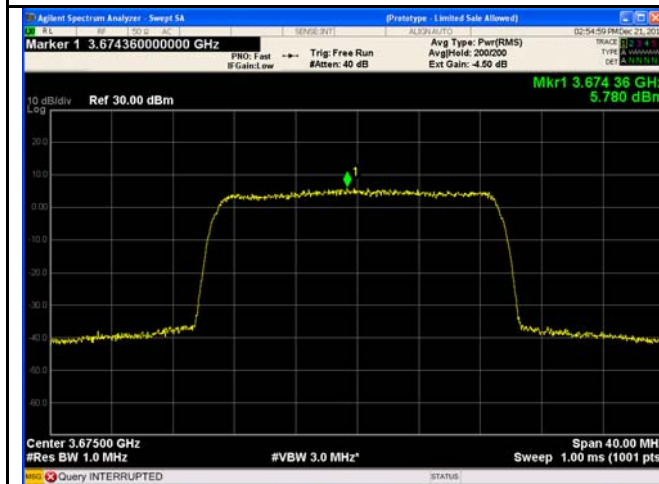
15MHz - High CH 16QAM



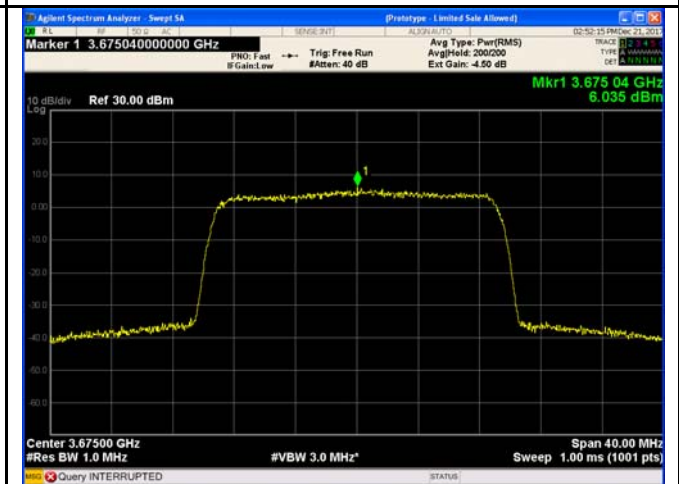
20MHz - Low CH QPSK



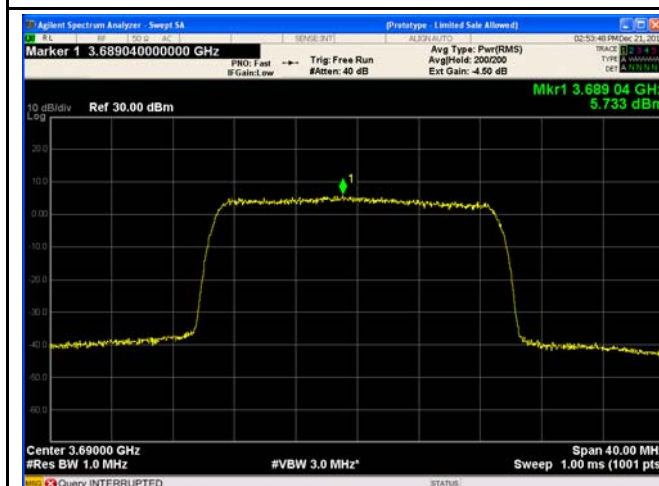
20MHz - Low CH 16QAM



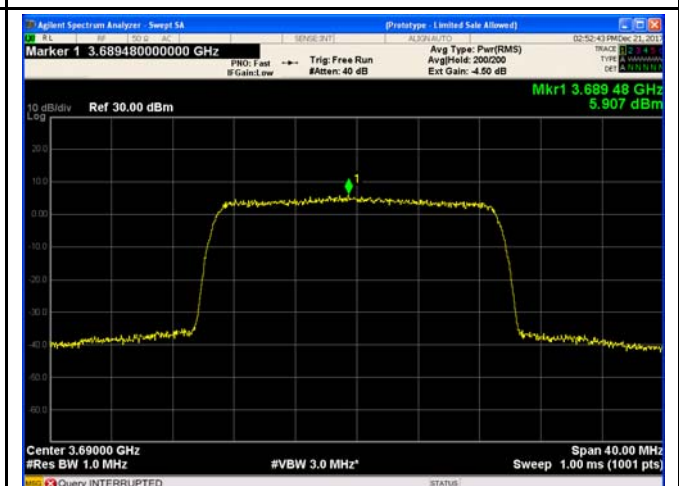
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM



20MHz - High CH QPSK



20MHz - High CH 16QAM

## 9 Occupy Bandwidth

|                   |                                        |
|-------------------|----------------------------------------|
| Test Requirement: | FCC part 90.209                        |
| Test Method:      | FCC part 2.1049<br>ANSI/TIA-603-E-2016 |
| Test Mode:        | Data communicating mode                |

### 9.1 EUT Operation

Operating Environment :

|                       |          |
|-----------------------|----------|
| Temperature:          | 22.5 °C  |
| Humidity:             | 52.3% RH |
| Atmospheric Pressure: | 101.2kPa |

### 9.2 Test Procedure

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer.
2. The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
3. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
4. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

### 9.3 Test Result

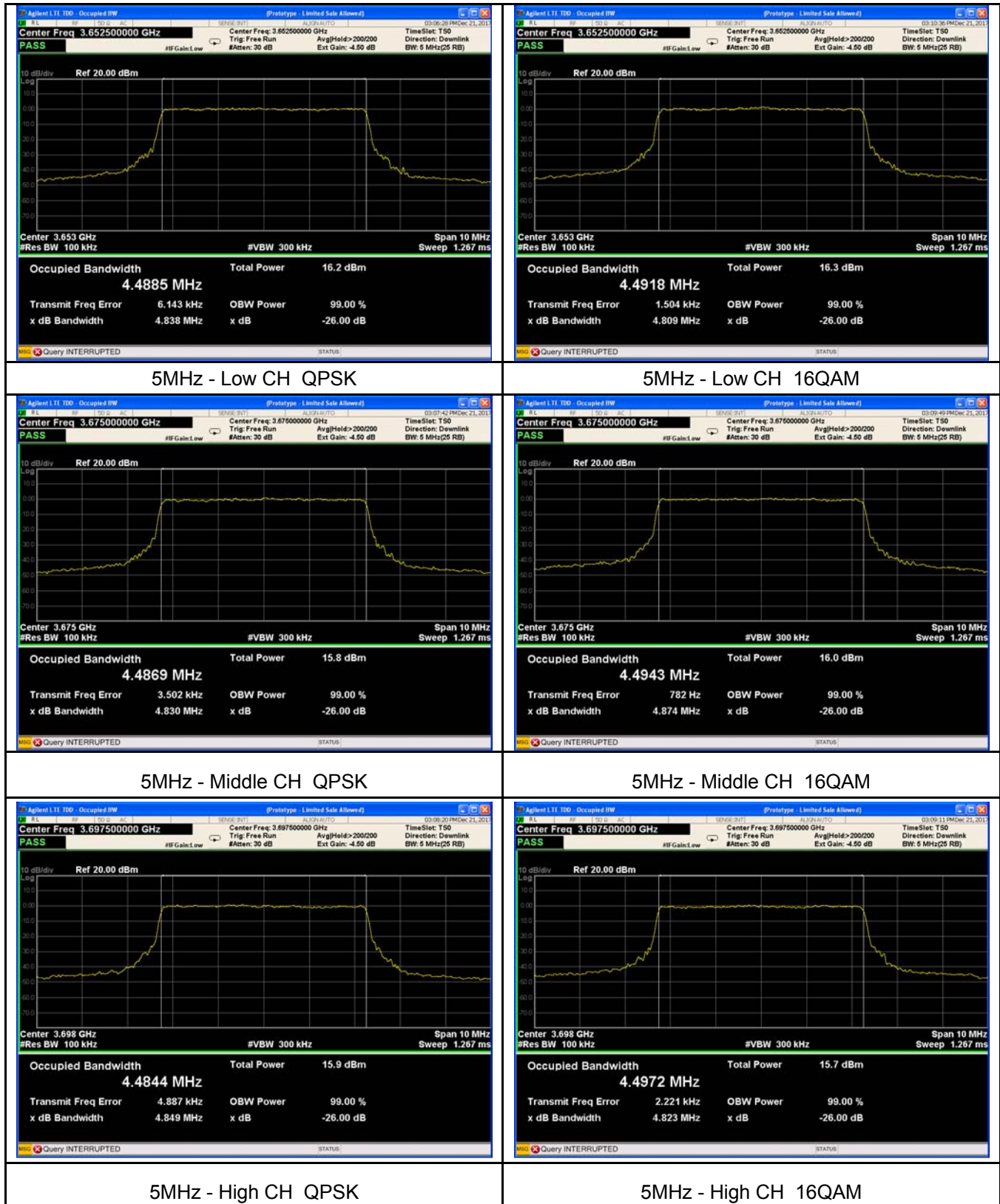
#### Chain 0

| Bandwidth (MHz) | Modulation | Test Channel | 26dB Occupy bandwidth (MHz) | 99% Occupy bandwidth (MHz) |
|-----------------|------------|--------------|-----------------------------|----------------------------|
| 5               | QPSK       | Low          | 4.838                       | 4.489                      |
|                 |            | Middle       | 4.830                       | 4.487                      |
|                 |            | High         | 4.849                       | 4.484                      |
|                 | 16QAM      | Low          | 4.809                       | 4.492                      |
|                 |            | Middle       | 4.874                       | 4.494                      |
|                 |            | High         | 4.823                       | 4.497                      |
| Bandwidth (MHz) | Modulation | Test Channel | 26dB Occupy bandwidth (MHz) | 99% Occupy bandwidth (MHz) |
| 10              | QPSK       | Low          | 9.348                       | 8.913                      |
|                 |            | Middle       | 9.376                       | 8.920                      |
|                 |            | High         | 9.331                       | 8.914                      |
|                 | 16QAM      | Low          | 9.331                       | 8.927                      |
|                 |            | Middle       | 8.349                       | 8.912                      |
|                 |            | High         | 9.328                       | 8.916                      |
| Bandwidth (MHz) | Modulation | Test Channel | 26dB Occupy bandwidth (MHz) | 99% Occupy bandwidth (MHz) |
| 15              | QPSK       | Low          | 14.030                      | 13.403                     |
|                 |            | Middle       | 14.030                      | 13.393                     |
|                 |            | High         | 14.040                      | 13.395                     |
|                 | 16QAM      | Low          | 14.000                      | 13.401                     |
|                 |            | Middle       | 14.030                      | 13.399                     |
|                 |            | High         | 14.030                      | 13.387                     |
| Bandwidth (MHz) | Modulation | Test Channel | 26dB Occupy bandwidth (MHz) | 99% Occupy bandwidth (MHz) |
| 20              | QPSK       | Low          | 18.530                      | 17.833                     |
|                 |            | Middle       | 18.540                      | 17.826                     |
|                 |            | High         | 18.520                      | 17.832                     |
|                 | 16QAM      | Low          | 18.510                      | 17.838                     |
|                 |            | Middle       | 18.510                      | 17.833                     |
|                 |            | High         | 18.540                      | 17.838                     |

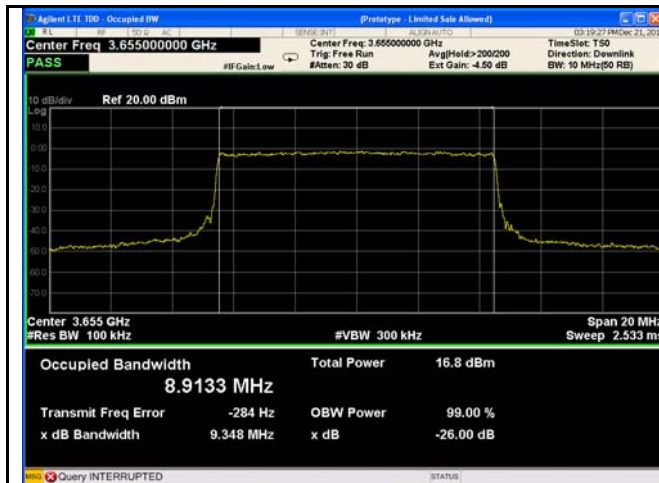
**Chain 1**

| <b>Bandwidth<br/>(MHz)</b> | <b>Modulation</b> | <b>Test Channel</b> | <b>26dB Occupy bandwidth<br/>(MHz)</b> | <b>99% Occupy bandwidth<br/>(MHz)</b> |
|----------------------------|-------------------|---------------------|----------------------------------------|---------------------------------------|
| 5                          | QPSK              | Low                 | 4.864                                  | 4.491                                 |
|                            |                   | Middle              | 4.810                                  | 4.491                                 |
|                            |                   | High                | 4.861                                  | 4.495                                 |
|                            | 16QAM             | Low                 | 4.915                                  | 4.487                                 |
|                            |                   | Middle              | 4.886                                  | 4.495                                 |
|                            |                   | High                | 4.864                                  | 4.491                                 |
| <b>Bandwidth<br/>(MHz)</b> | <b>Modulation</b> | <b>Test Channel</b> | <b>26dB Occupy bandwidth<br/>(MHz)</b> | <b>99% Occupy bandwidth<br/>(MHz)</b> |
| 10                         | QPSK              | Low                 | 9.309                                  | 8.921                                 |
|                            |                   | Middle              | 9.309                                  | 8.914                                 |
|                            |                   | High                | 9.291                                  | 8.914                                 |
|                            | 16QAM             | Low                 | 9.332                                  | 8.919                                 |
|                            |                   | Middle              | 9.313                                  | 8.914                                 |
|                            |                   | High                | 9.325                                  | 8.915                                 |
| <b>Bandwidth<br/>(MHz)</b> | <b>Modulation</b> | <b>Test Channel</b> | <b>26dB Occupy bandwidth<br/>(MHz)</b> | <b>99% Occupy bandwidth<br/>(MHz)</b> |
| 15                         | QPSK              | Low                 | 14.040                                 | 13.400                                |
|                            |                   | Middle              | 14.010                                 | 13.383                                |
|                            |                   | High                | 14.010                                 | 13.397                                |
|                            | 16QAM             | Low                 | 14.020                                 | 13.397                                |
|                            |                   | Middle              | 14.000                                 | 13.401                                |
|                            |                   | High                | 14.040                                 | 13.390                                |
| <b>Bandwidth<br/>(MHz)</b> | <b>Modulation</b> | <b>Test Channel</b> | <b>26dB Occupy bandwidth<br/>(MHz)</b> | <b>99% Occupy bandwidth<br/>(MHz)</b> |
| 20                         | QPSK              | Low                 | 18.530                                 | 17.833                                |
|                            |                   | Middle              | 18.540                                 | 17.826                                |
|                            |                   | High                | 18.520                                 | 17.832                                |
|                            | 16QAM             | Low                 | 18.530                                 | 17.837                                |
|                            |                   | Middle              | 18.520                                 | 17.839                                |
|                            |                   | High                | 18.510                                 | 17.830                                |

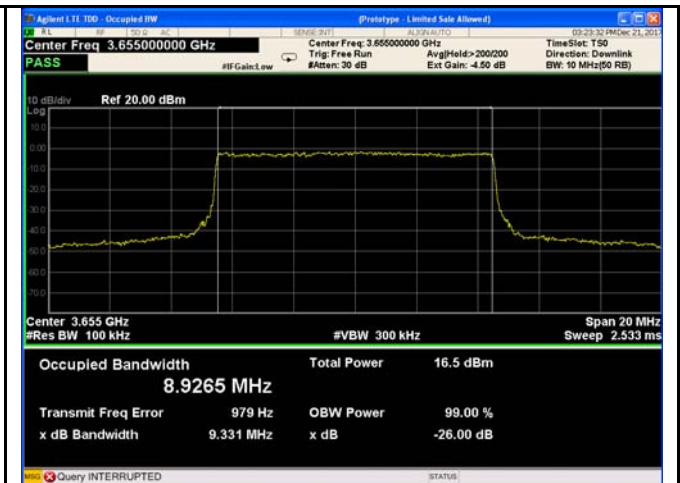
### Test Plots Chain 0



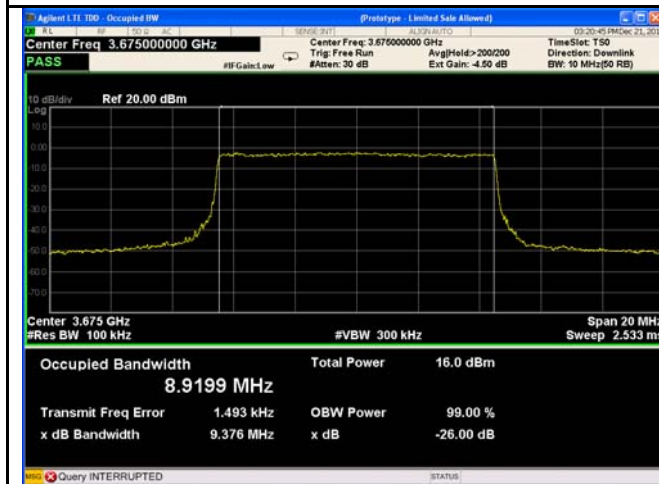




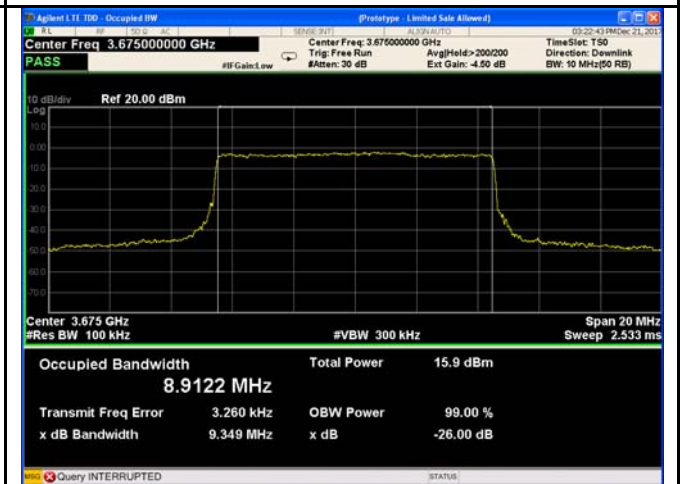
10MHz - Low CH QPSK



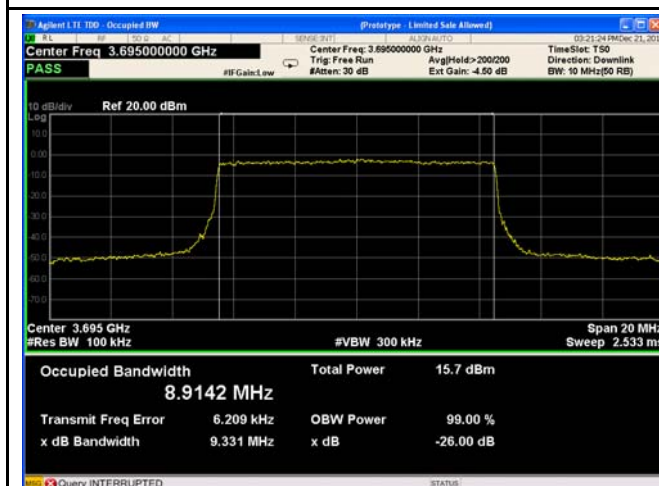
10MHz - Low CH 16QAM



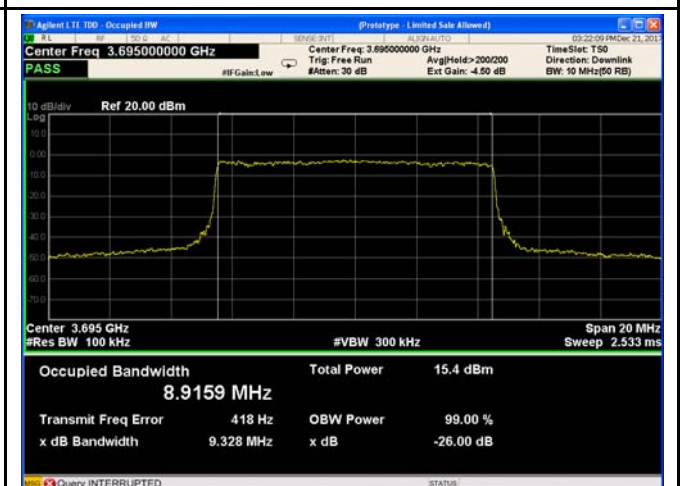
10MHz - Middle CH QPSK



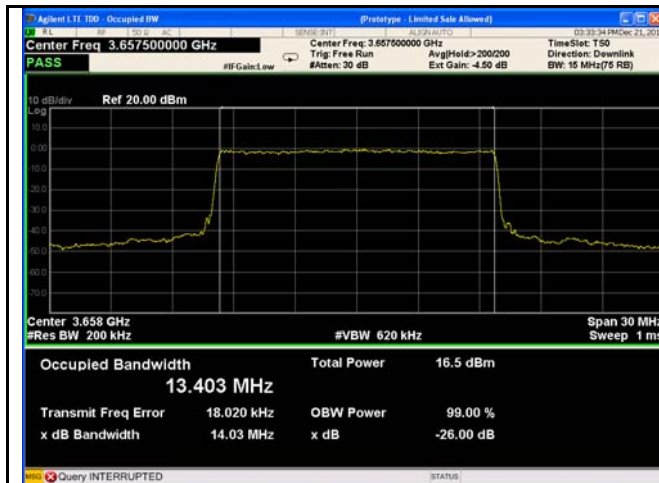
10MHz - Middle CH 16QAM



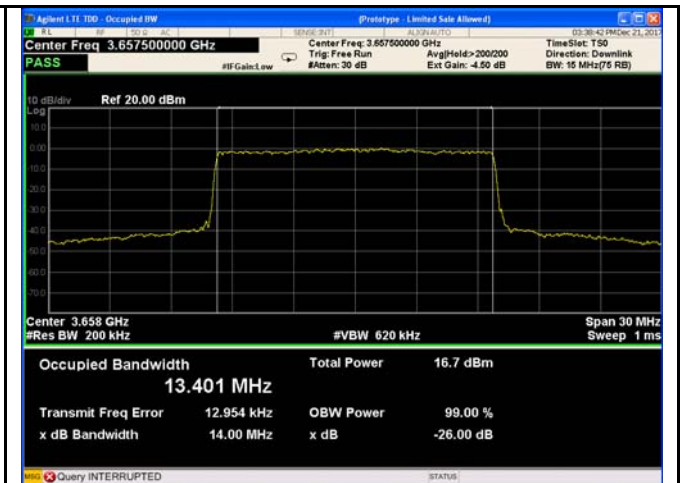
10MHz - High CH QPSK



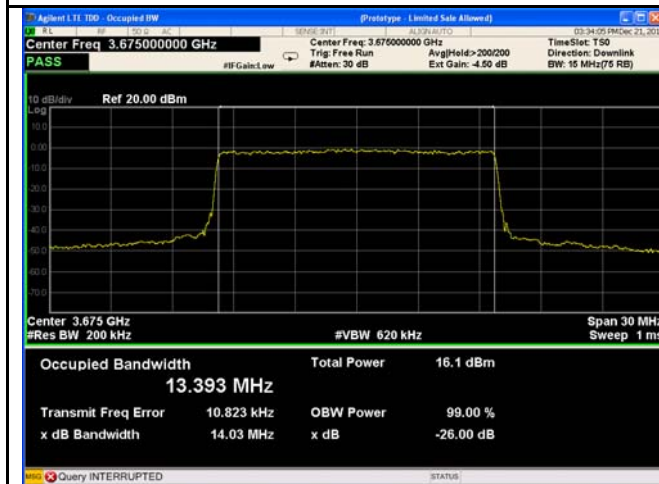
10MHz - High CH 16QAM



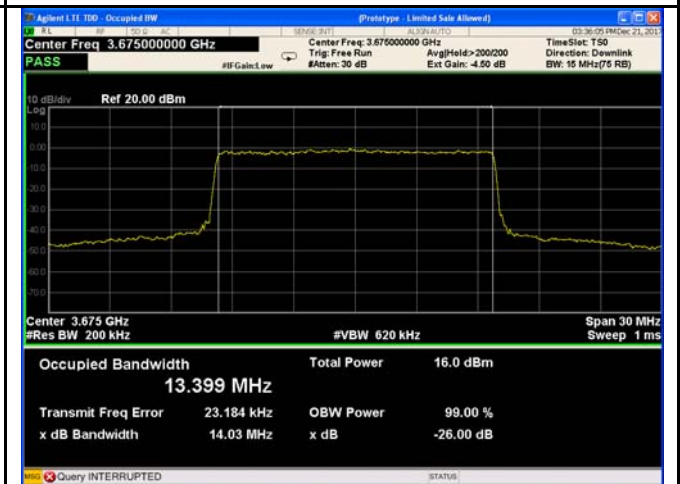
15MHz - Low CH QPSK



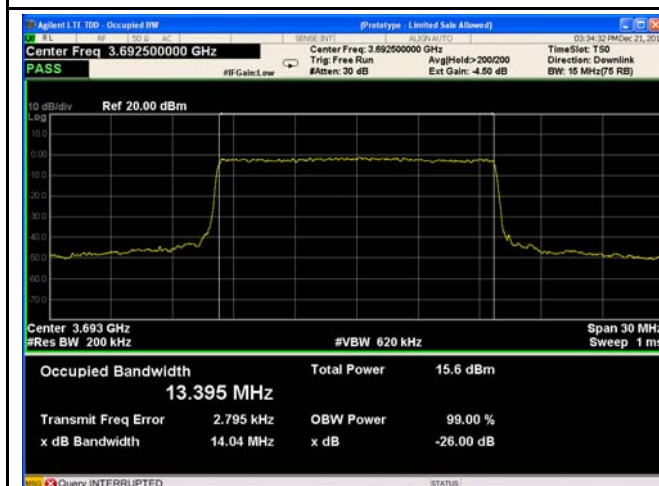
15MHz - Low CH 16QAM



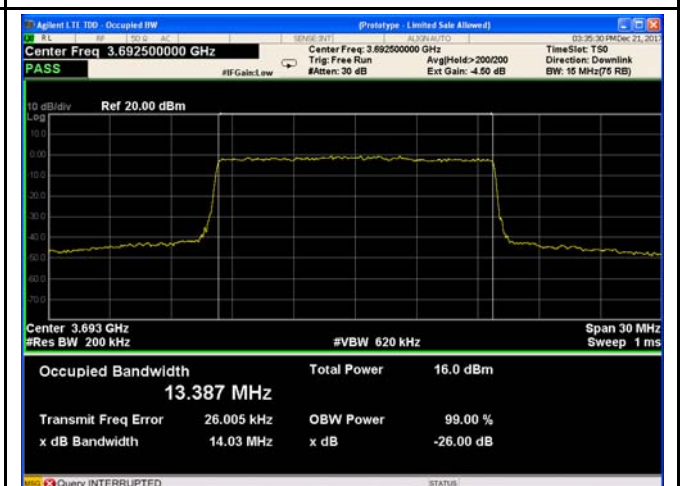
15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM

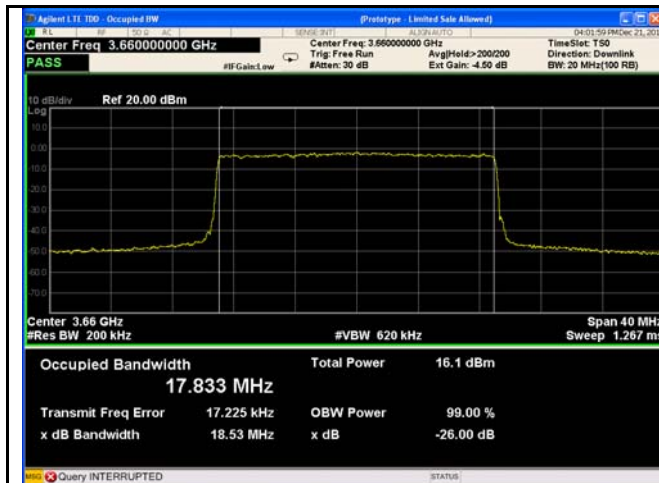


15MHz - High CH QPSK

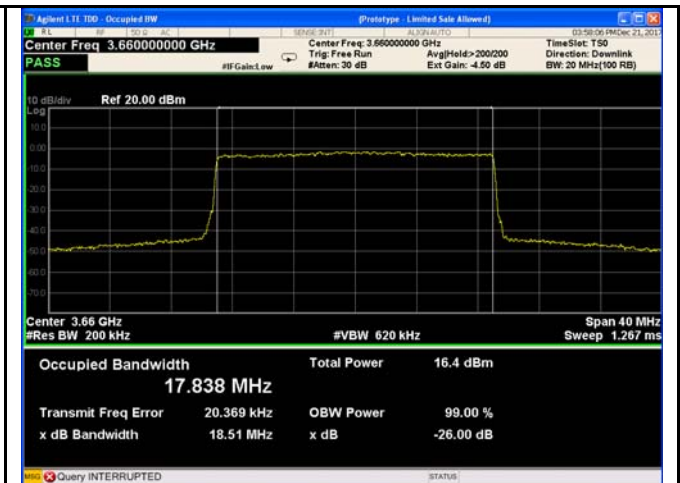


15MHz - High CH 16QAM

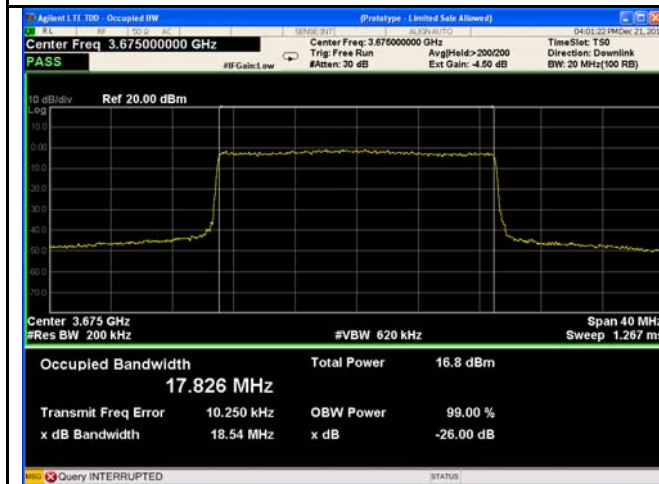




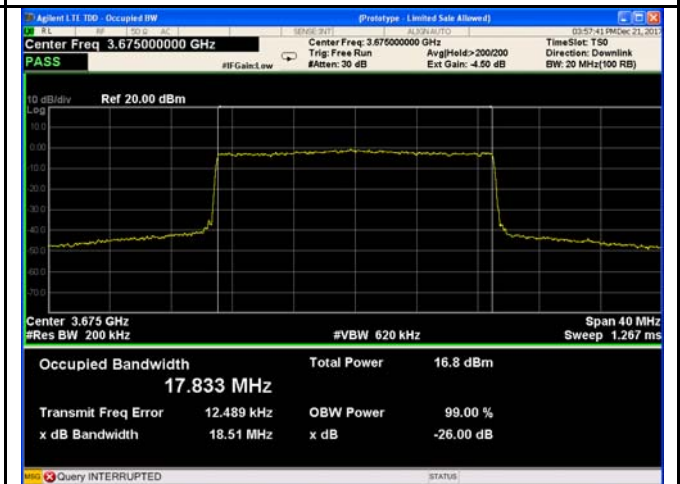
20MHz - Low CH QPSK



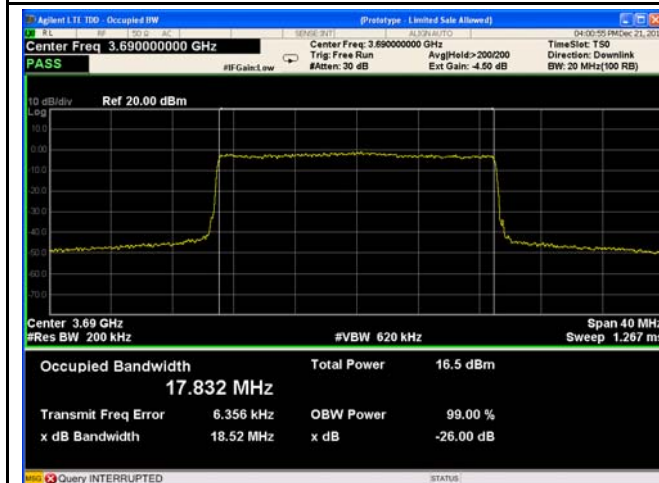
20MHz - Low CH 16QAM



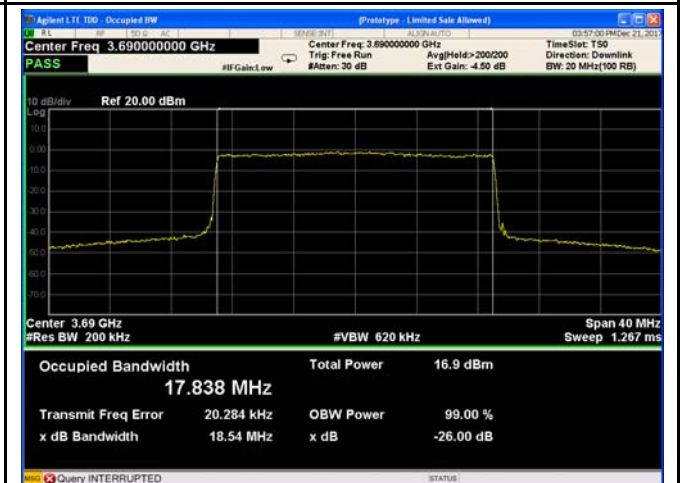
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM

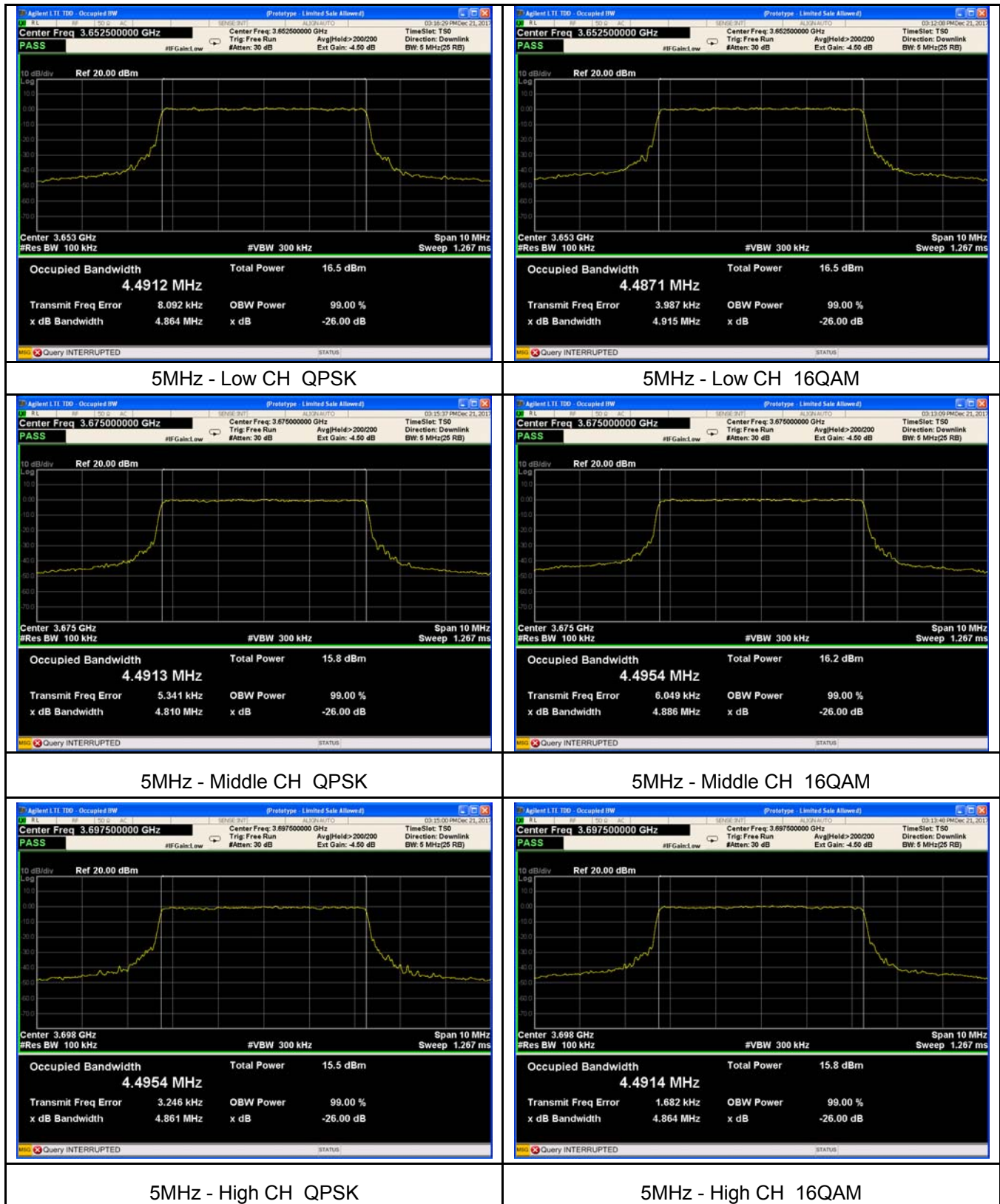


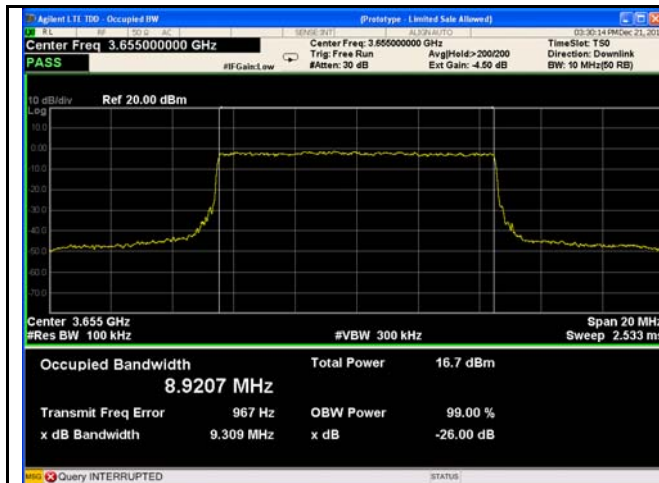
20MHz - High CH QPSK



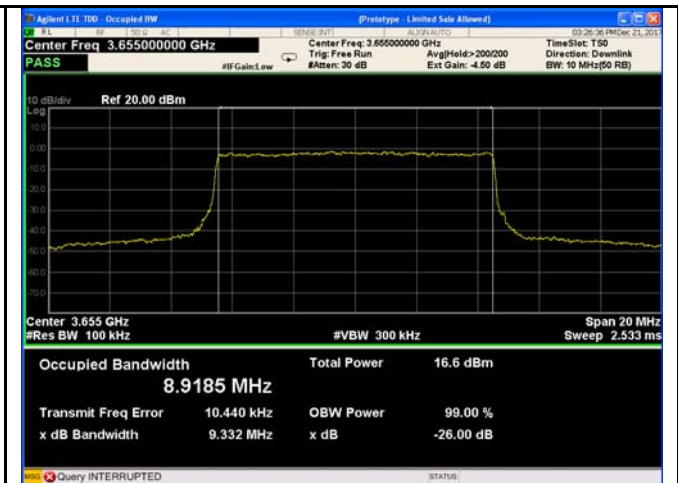
20MHz - High CH 16QAM

## Chain 1

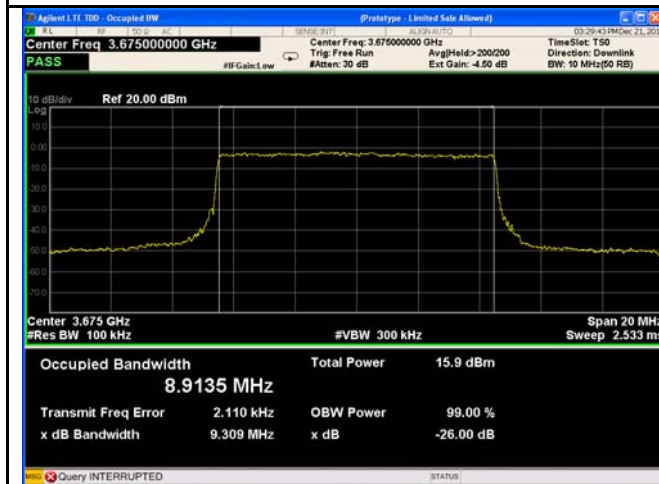




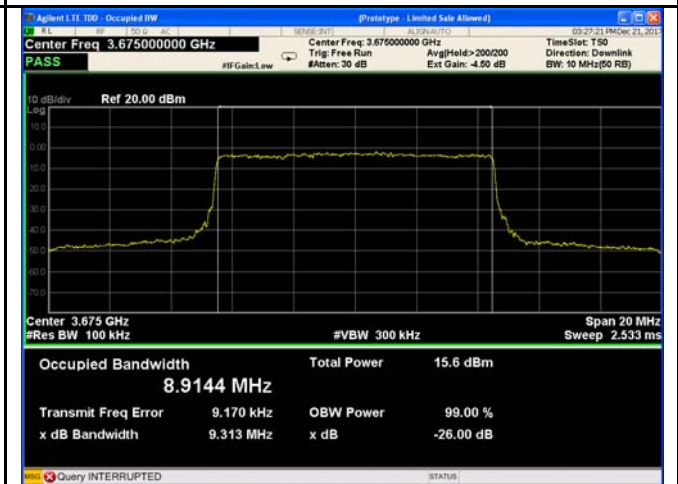
10MHz - Low CH QPSK



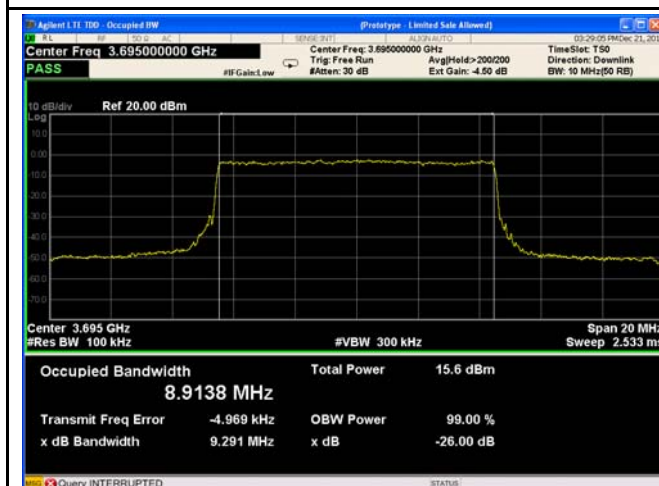
10MHz - Low CH 16QAM



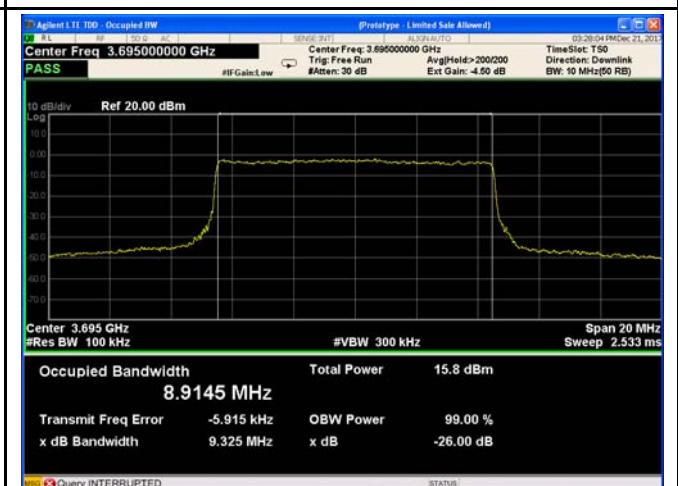
10MHz - Middle CH QPSK



10MHz - Middle CH 16QAM

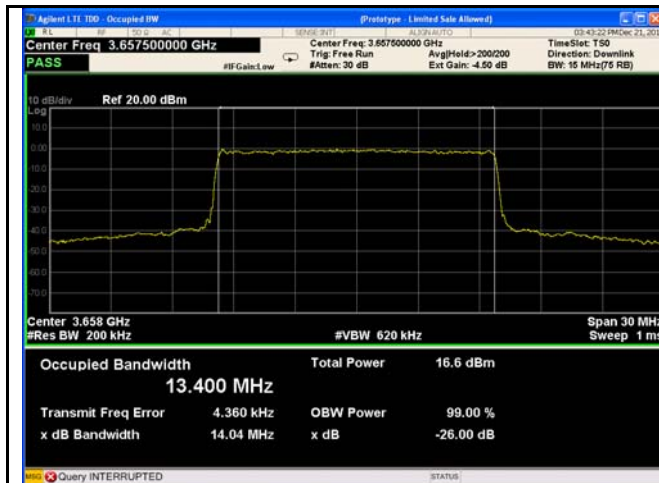


10MHz - High CH QPSK

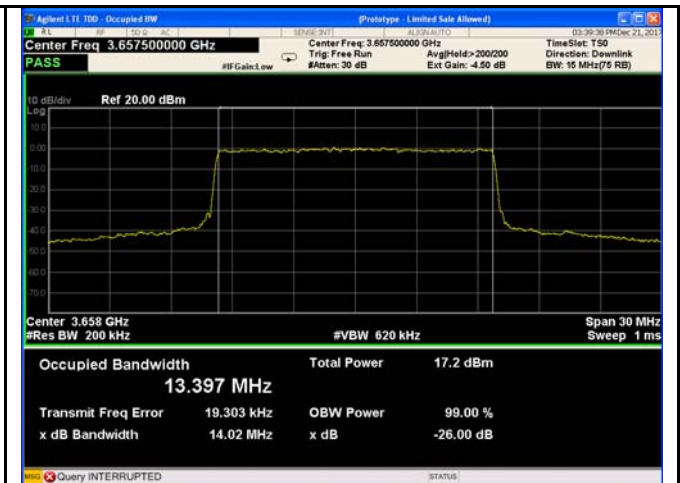


10MHz - High CH 16QAM

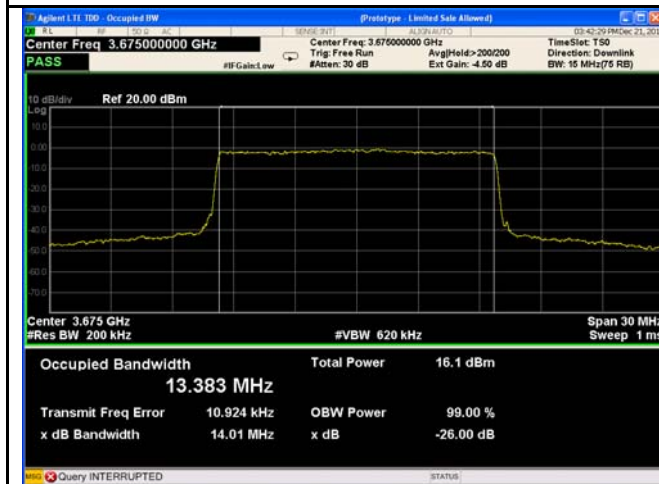




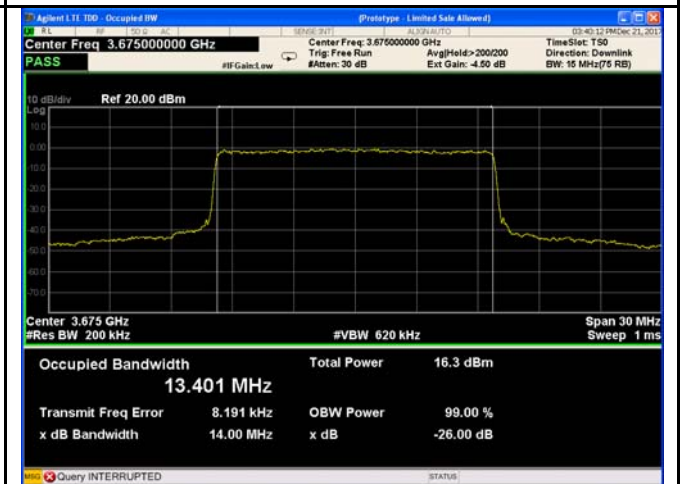
15MHz - Low CH QPSK



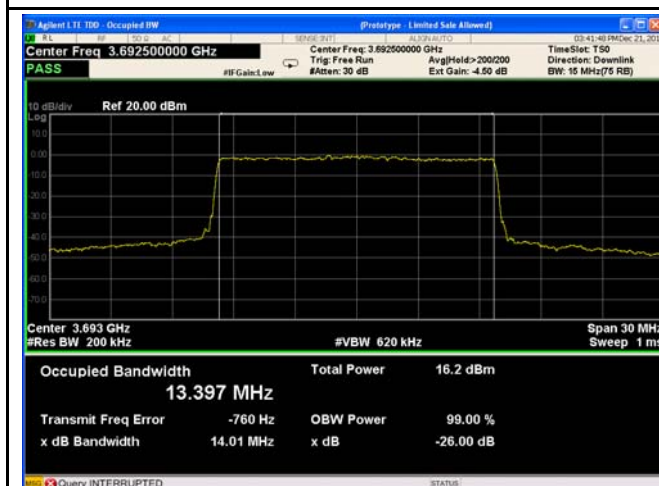
15MHz - Low CH 16QAM



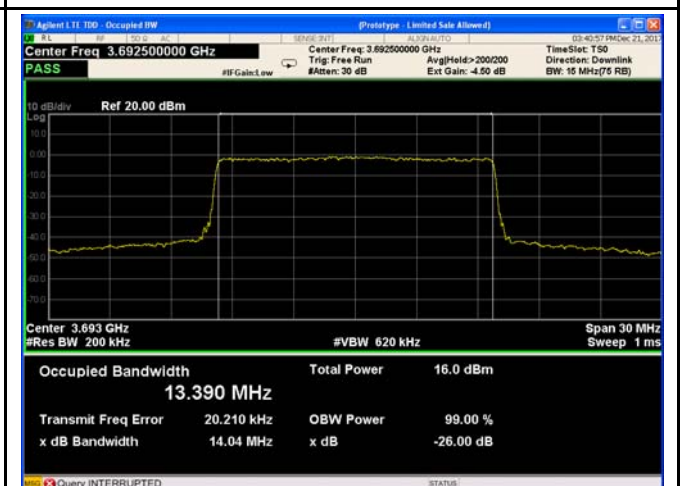
15MHz - Middle CH QPSK



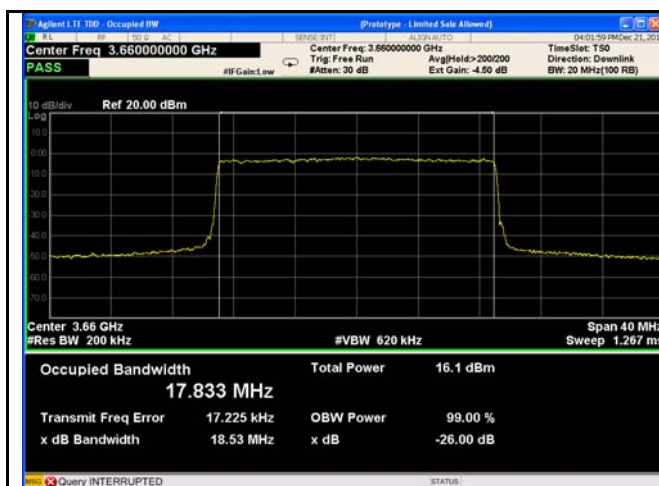
15MHz - Middle CH 16QAM



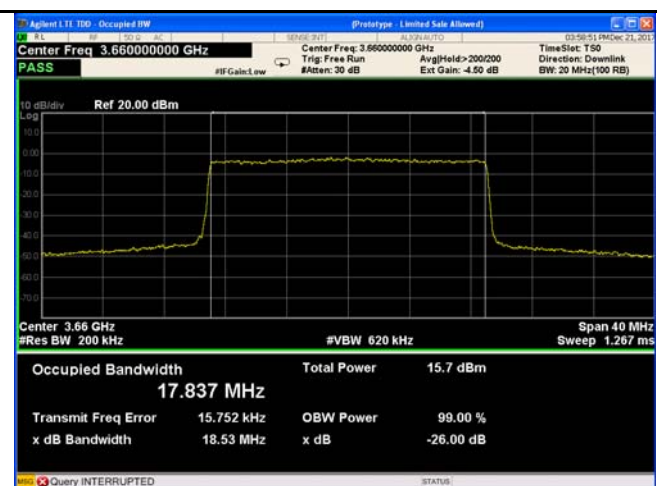
15MHz - High CH QPSK



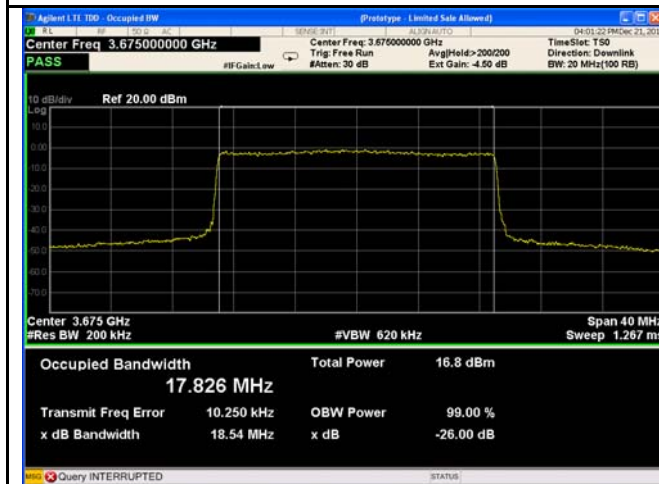
15MHz - High CH 16QAM



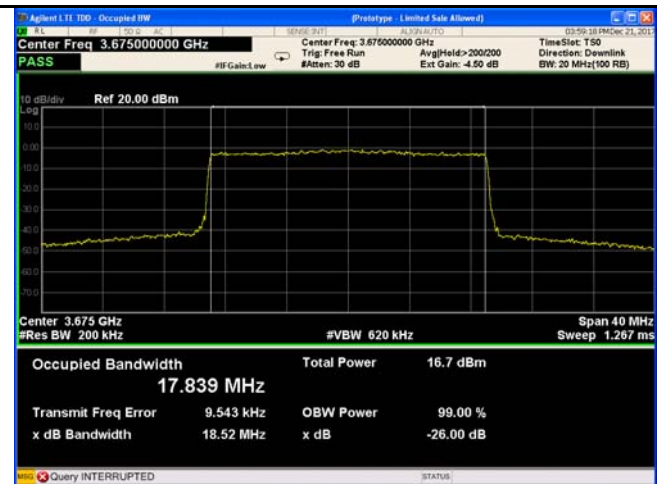
20MHz - Low CH QPSK



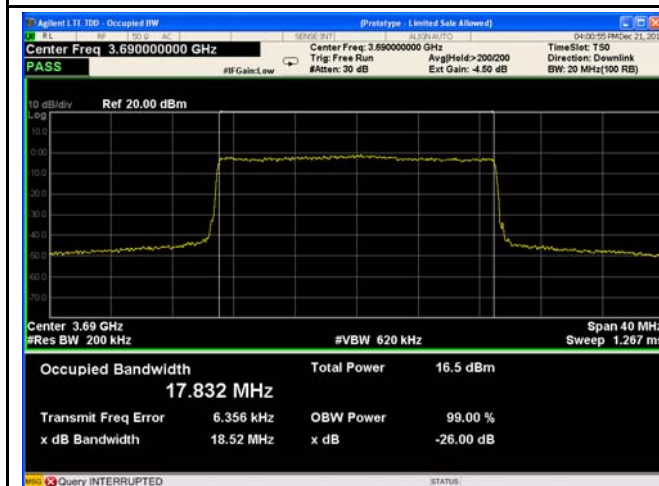
20MHz - Low CH 16QAM



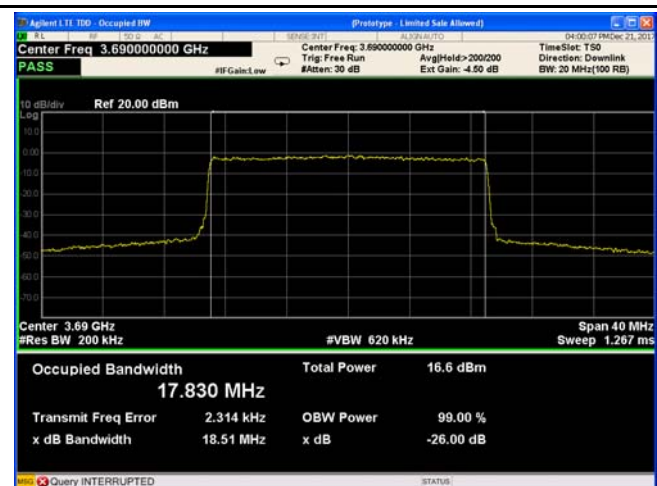
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM



20MHz - High CH QPSK



20MHz - High CH 16QAM

## 10 Emission Mask

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC part 90.210(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Test Method:      | ANSI/TIA-603-E-2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Mode:        | Data communicating mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Limit:            | Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:<br>(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.<br>(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.<br>(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB |

### 10.1 EUT Operation

|                         |          |
|-------------------------|----------|
| Operating Environment : |          |
| Temperature:            | 22.5 °C  |
| Humidity:               | 52.3% RH |
| Atmospheric Pressure:   | 101.2kPa |

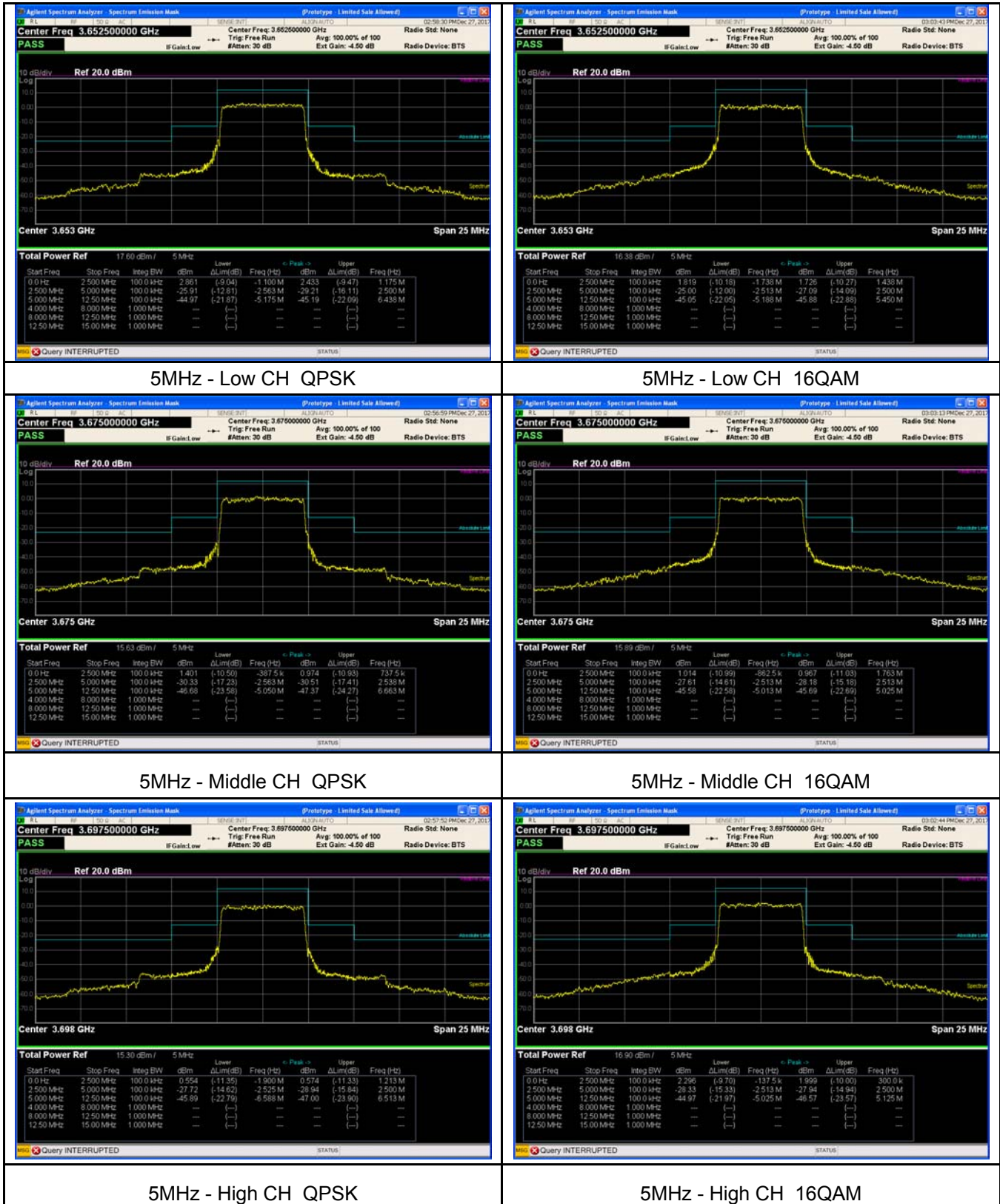
### 10.2 Test Procedure

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. RBW=100kHz, VBW=1MHz, Detector mode= RMS,  
Trace mode: Power averaging over 100 sweeps

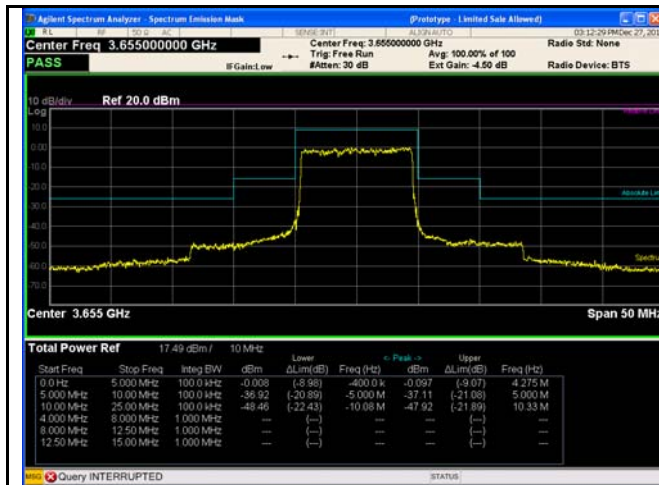
Note: For FCC part 90.210(b) 3, more than 250 percent emission was considered in radiated emission test items.

## 10.3 Test Result

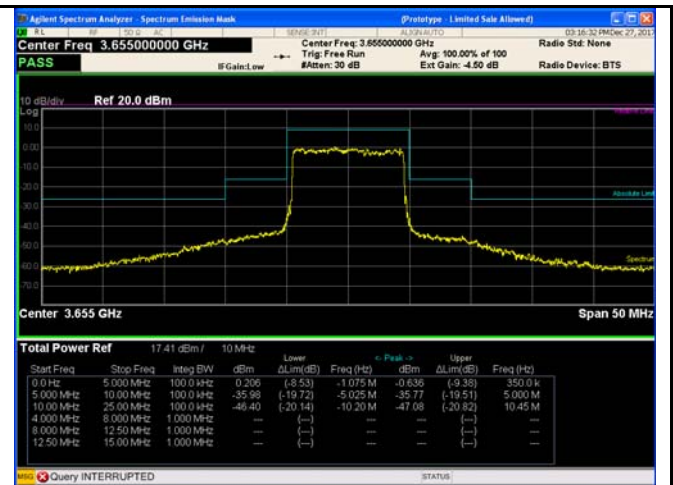
### Test Plots Chain 0



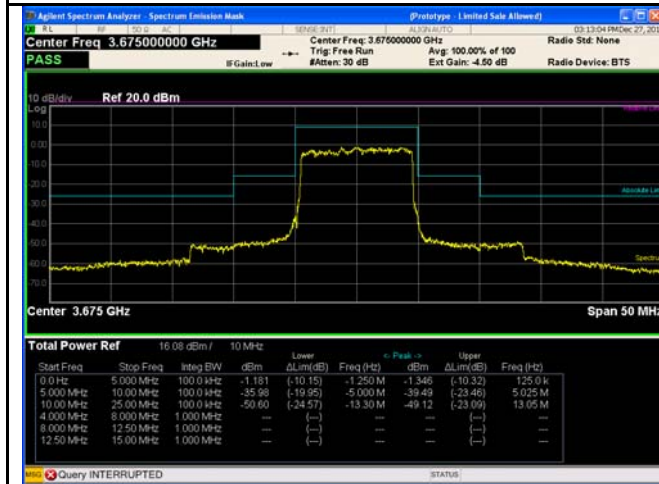




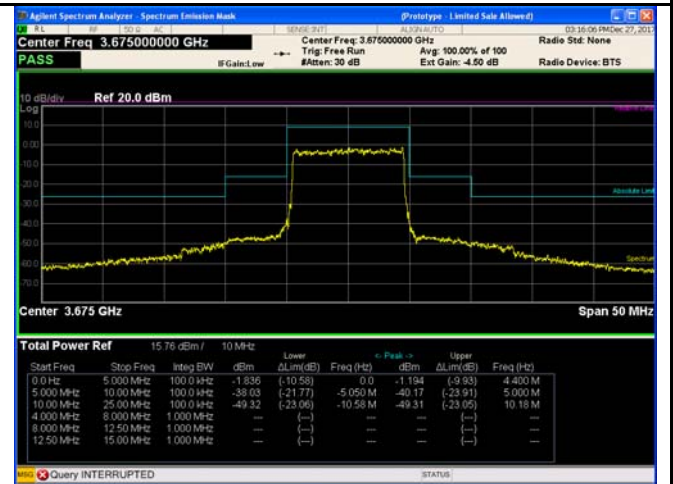
10MHz - Low CH QPSK



10MHz - Low CH 16QAM



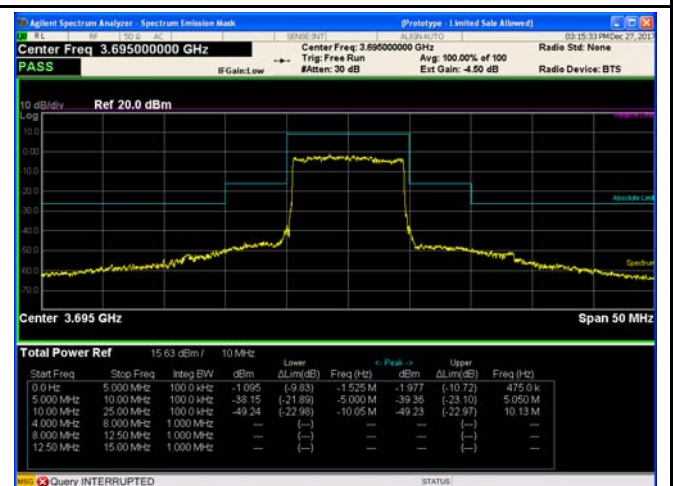
10MHz - Middle CH QPSK



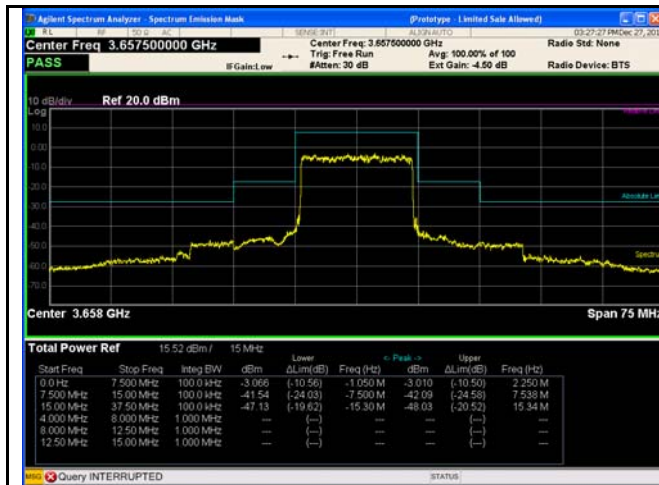
10MHz - Middle CH 16QAM



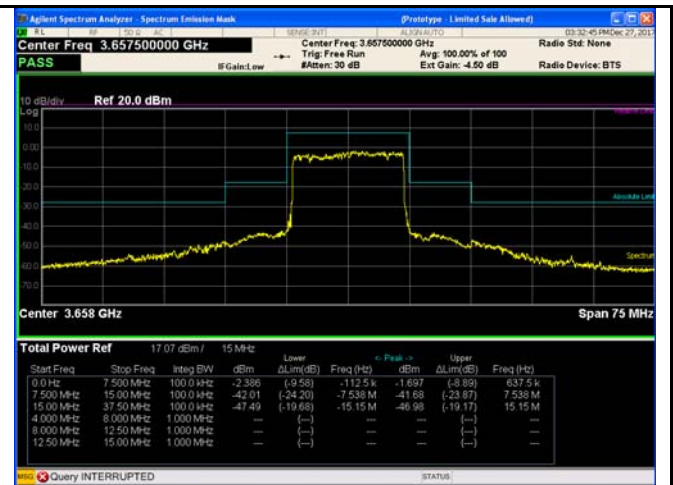
10MHz - High CH QPSK



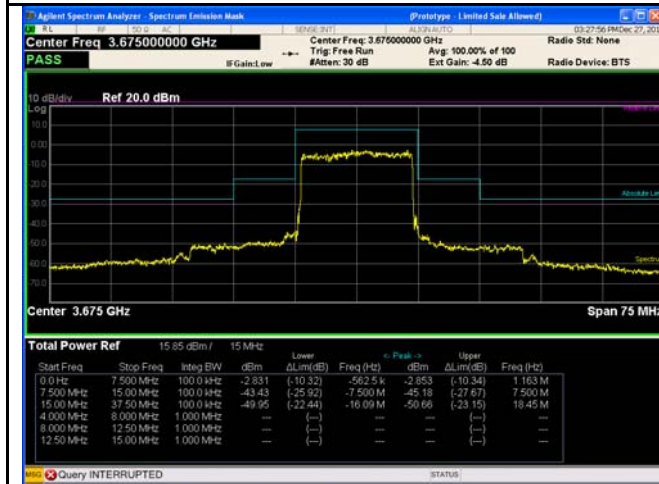
10MHz - High CH 16QAM



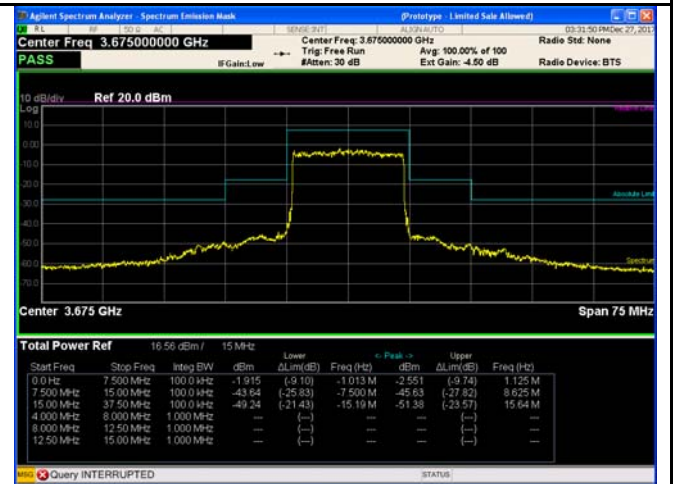
15MHz - Low CH QPSK



15MHz - Low CH 16QAM



15MHz - Middle CH QPSK



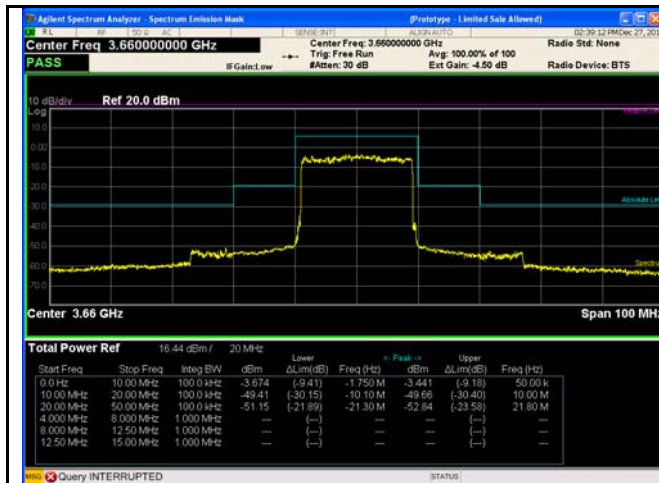
15MHz - Middle CH 16QAM



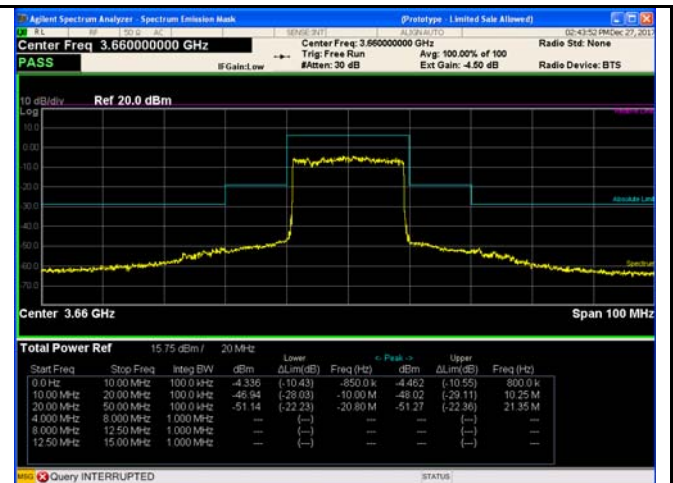
15MHz - High CH QPSK



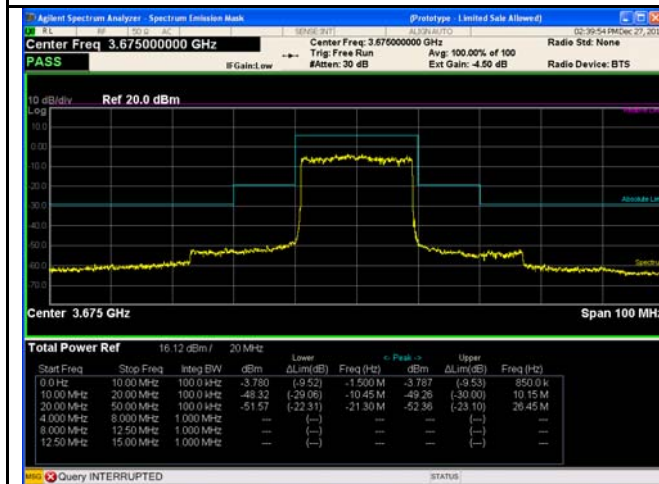
15MHz - High CH 16QAM



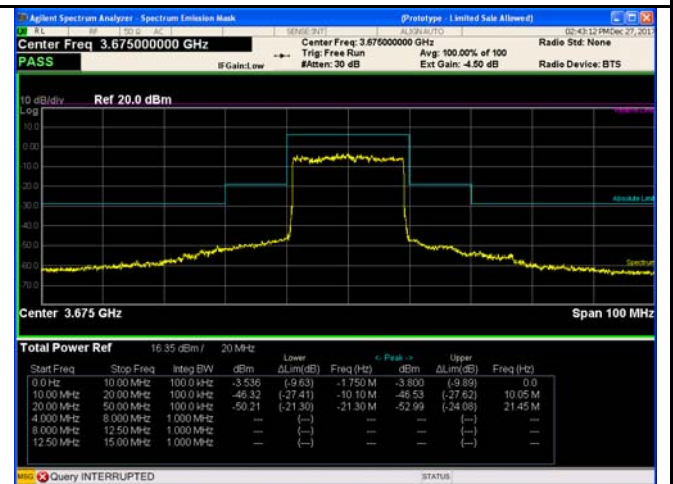
20MHz - Low CH QPSK



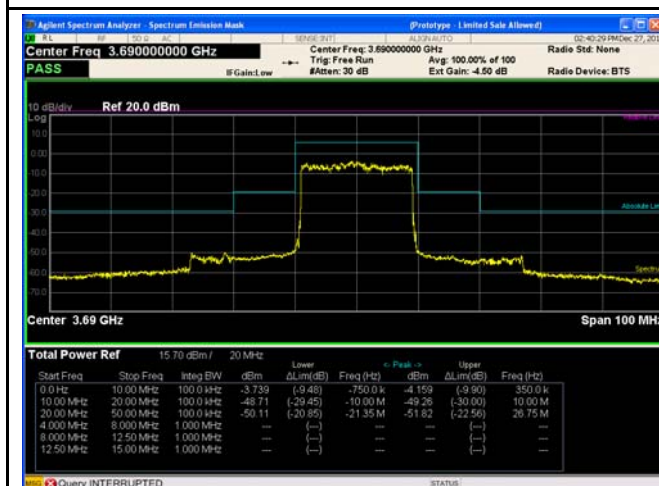
20MHz - Low CH 16QAM



20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM



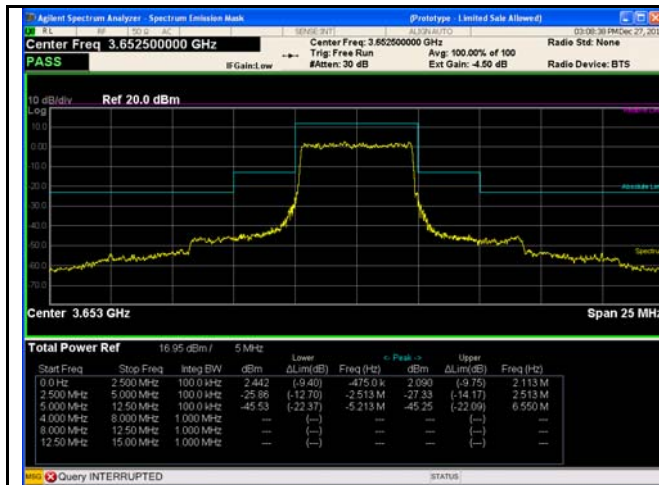
20MHz - High CH QPSK



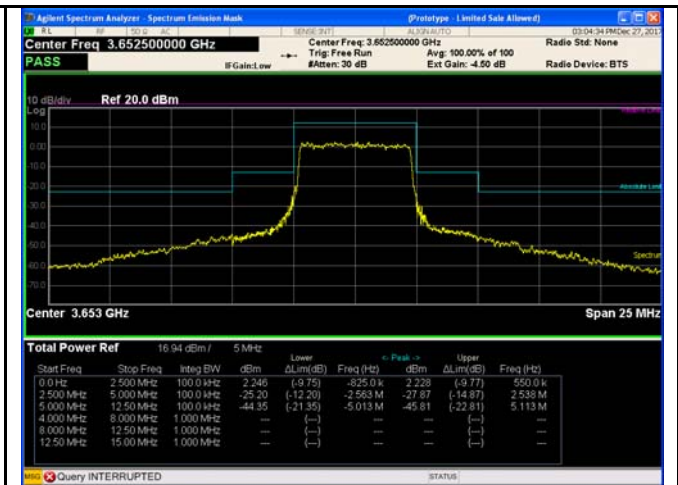
20MHz - High CH 16QAM



## Chain 1



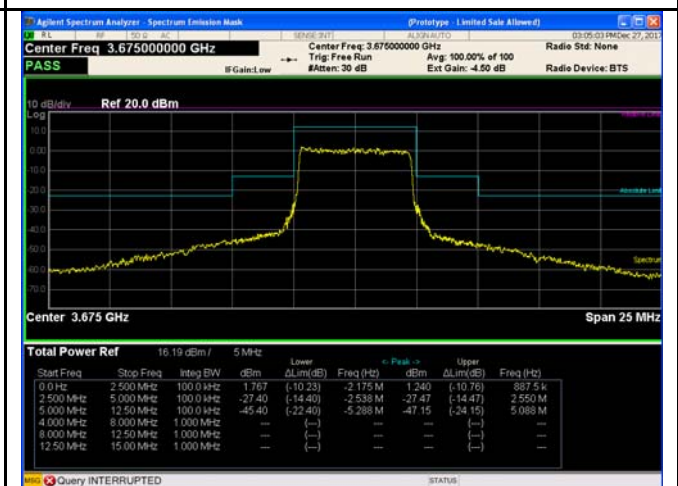
5MHz - Low CH QPSK



5MHz - Low CH 16QAM



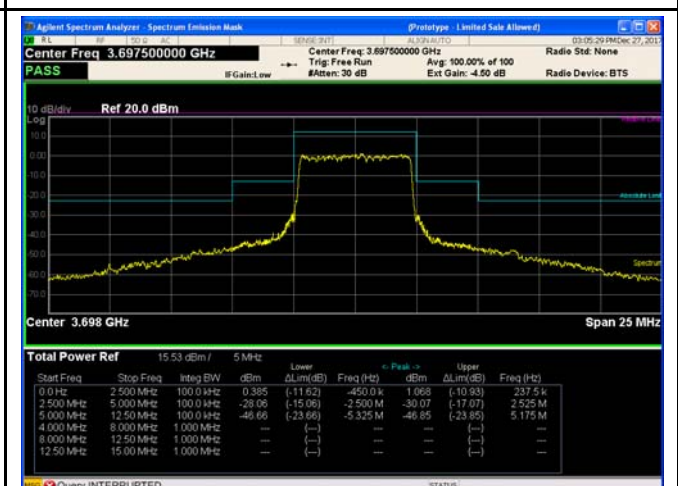
5MHz - Middle CH QPSK



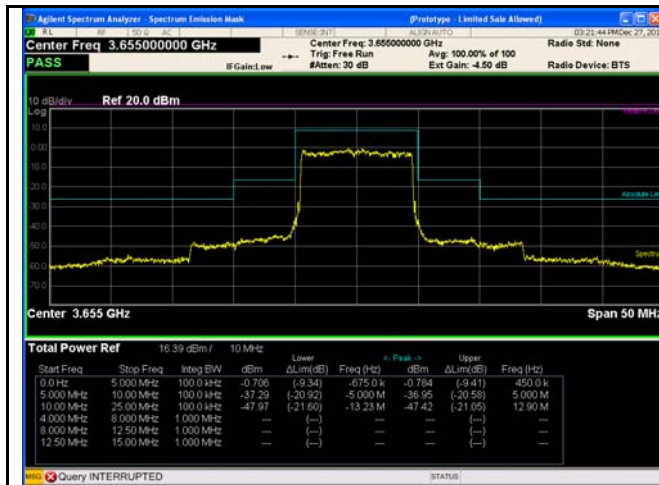
5MHz - Middle CH 16QAM



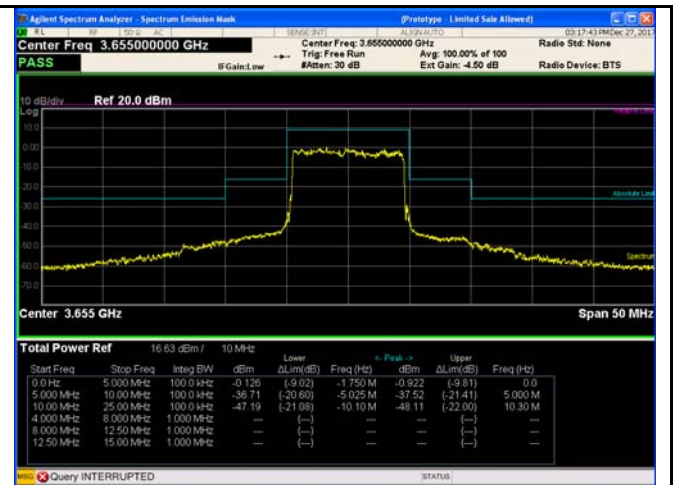
5MHz - High CH QPSK



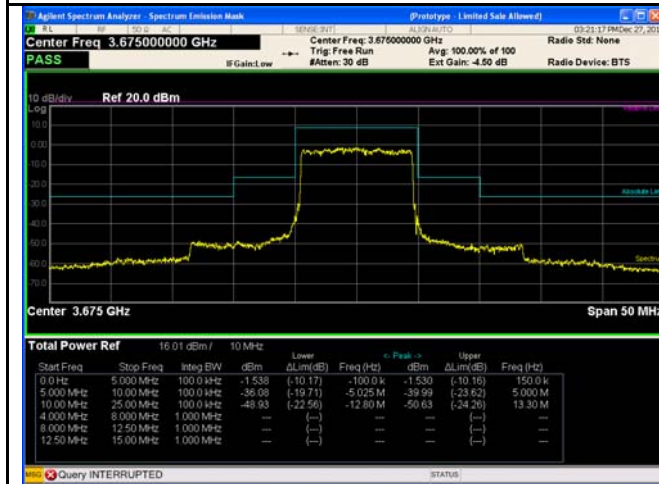
5MHz - High CH 16QAM



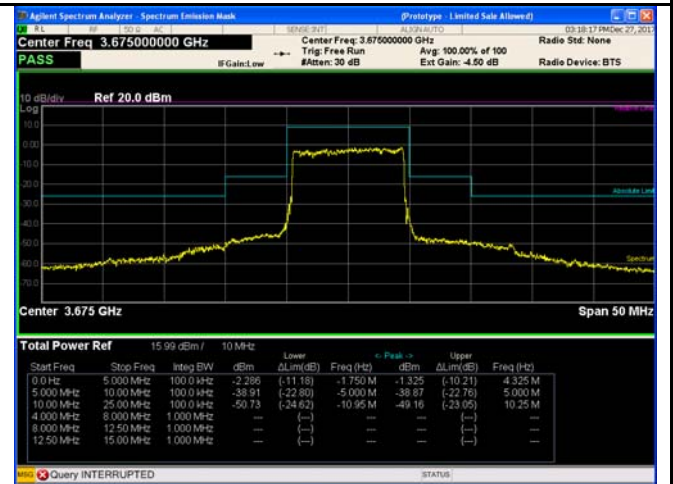
10MHz - Low CH QPSK



10MHz - Low CH 16QAM



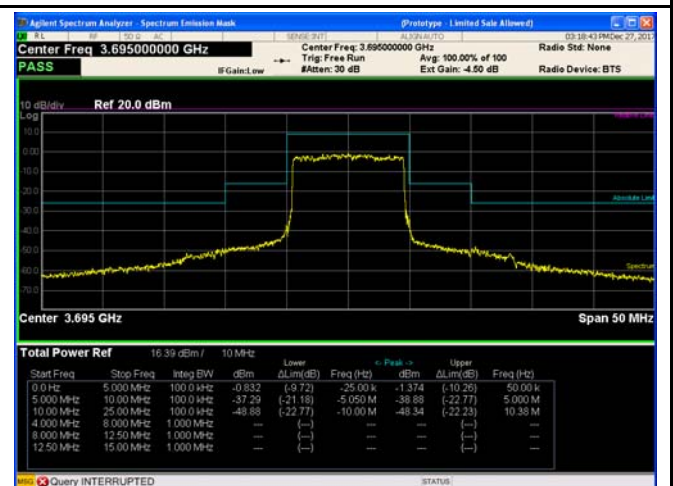
10MHz - Middle CH QPSK



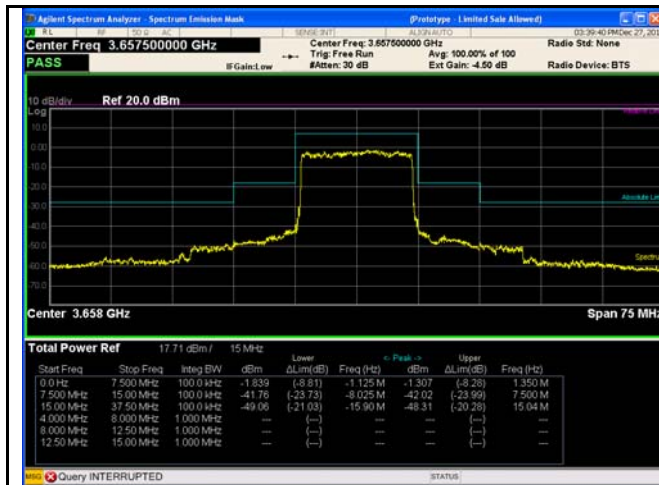
10MHz - Middle CH 16QAM



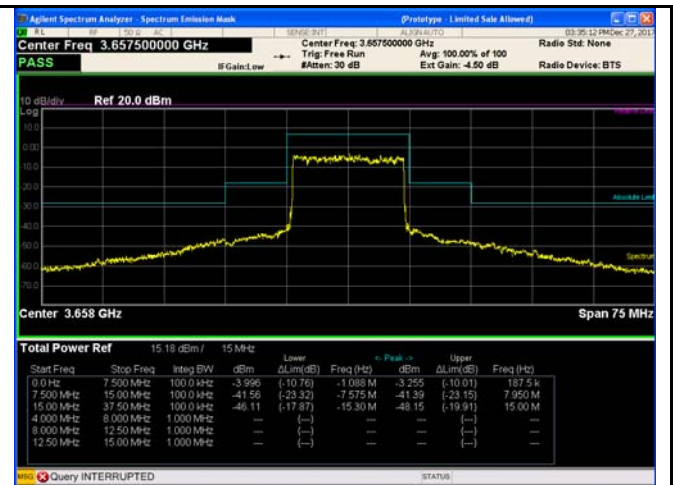
10MHz - High CH QPSK



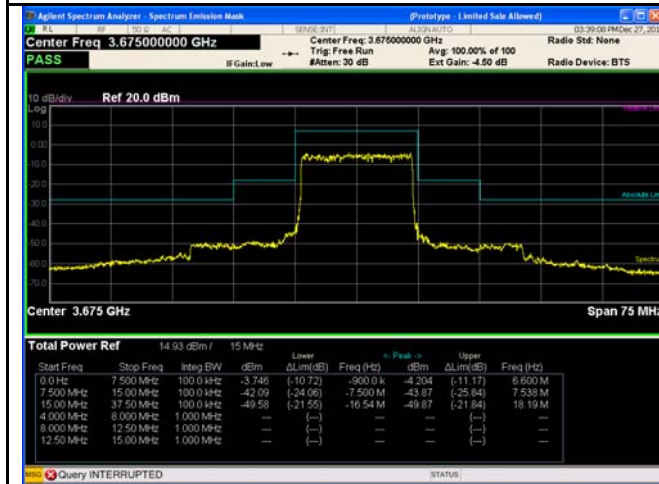
10MHz - High CH 16QAM



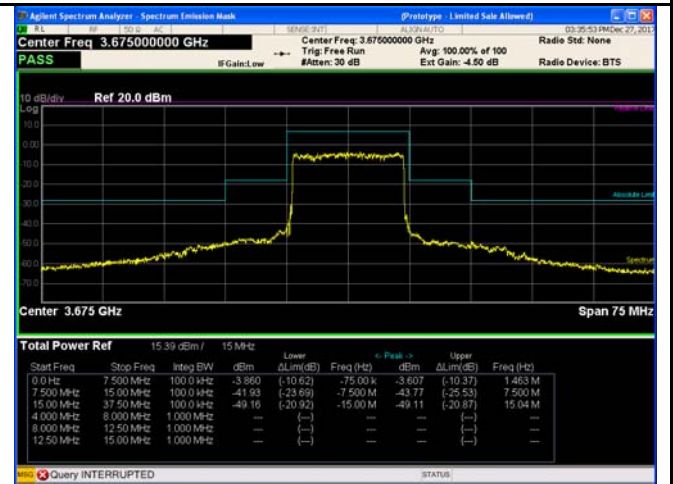
15MHz - Low CH QPSK



15MHz - Low CH 16QAM



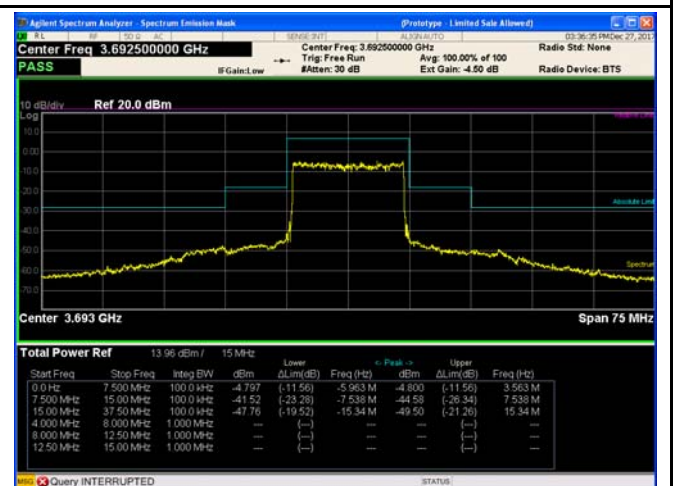
15MHz - Middle CH QPSK



15MHz - Middle CH 16QAM

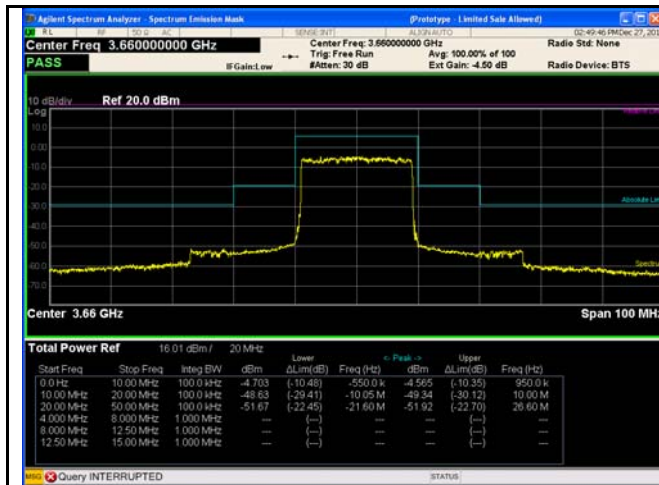


15MHz - High CH QPSK

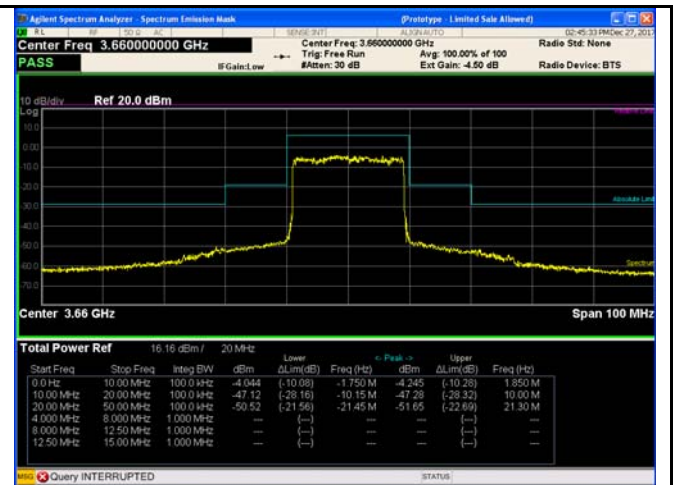


15MHz - High CH 16QAM

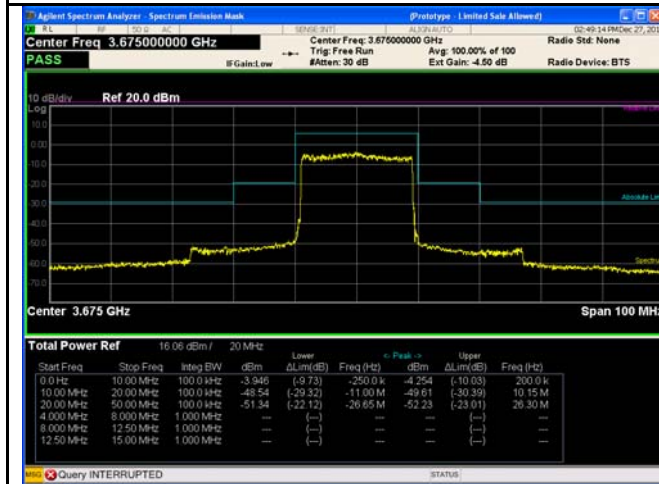




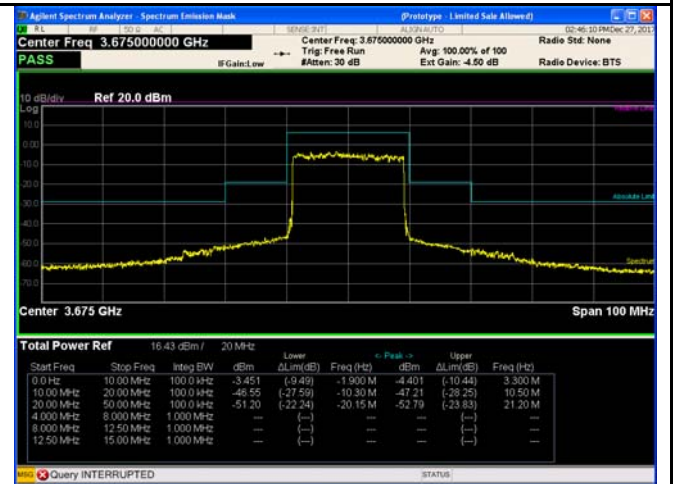
20MHz - Low CH QPSK



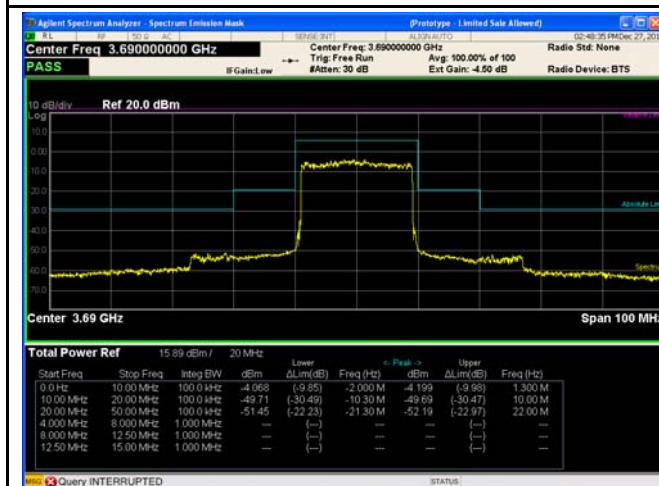
20MHz - Low CH 16QAM



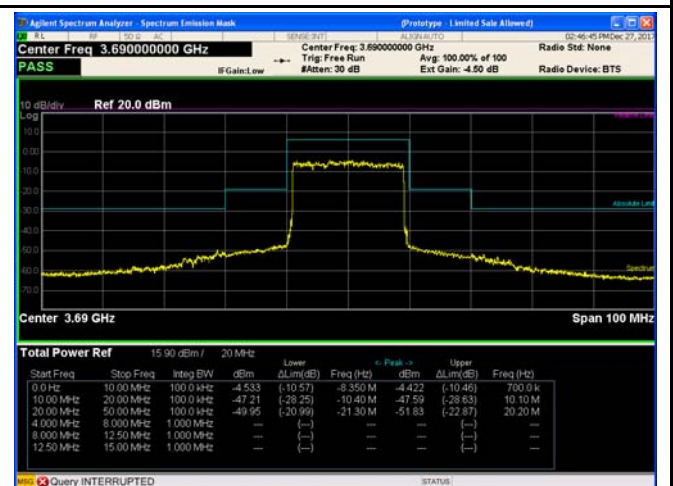
20MHz - Middle CH QPSK



20MHz - Middle CH 16QAM



20MHz - High CH QPSK



20MHz - High CH 16QAM

## 11 Out of band emission at antenna terminals

|                   |                                       |
|-------------------|---------------------------------------|
| Test Requirement: | FCC part90.1323                       |
| Test Method:      | FCC part2.1051<br>ANSI/TIA-603-E-2016 |
| Test Mode:        | Data communicating mode               |
| Limit:            | -13dBm                                |

### 11.1 EUT Operation

Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 23.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.3kPa  |

### 11.2 Test Procedure

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.
3. For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic.
4. Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

### 11.3 Test Result

Remark: During the test, pre-scan the QPSK, 64QAM modulation, and found the QPSK modulation(10MHz/20MHz middle channel) is the worst case.

The permit frequency range of Part 90Z is from 3650-3700MHz. according the frequency table of the device on page 7. Notes as below:

1. The frequency star and stop for band edge test instruction as below:

| bandwidth | Left<br>> 1MHz | Left 1MHz<br>immediately | Low channel | Middle Channel | High channel | Right 1MHz<br>immediately | Right<br>> 1MHz |
|-----------|----------------|--------------------------|-------------|----------------|--------------|---------------------------|-----------------|
| 5MHz      | 3646.5-3649    | 3649-3650                | 3652.5      | 3675           | 3697.5       | 3700-3701                 | 3701-3703.5     |
| 10MHz     | 3644-3649      | 3649-3650                | 3655        | 3675           | 3695         | 3700-3701                 | 3701-3706       |
| 15MHz     | 3641.5-3649    | 3649-3650                | 3657.5      | 3675           | 3692.5       | 3700-3701                 | 3701-3708.5     |
| 20MHz     | 3639-3649      | 3649-3650                | 3660        | 3675           | 3690         | 3700-3701                 | 3701-3711       |

## Note 1:

For **low** channel, we test left 1 MHz immediately and more than 1MHz away (5 MHz for 10 MHz bandwidth & 10MHz for 20MHz bandwidth) from the permit left band 3650 MHz; the emission above right of 3700MHz has no intentional.

For **high** channel, we test right 1 MHz immediately and more than 1MHz away (5 MHz for 10 MHz bandwidth & 10MHz for 20MHz bandwidth) from the permit right band 3700 MHz; the emission below left of 3650MHz has no intentional.

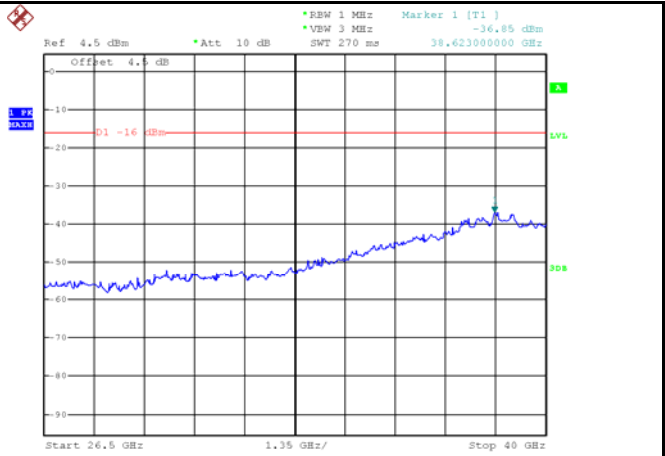
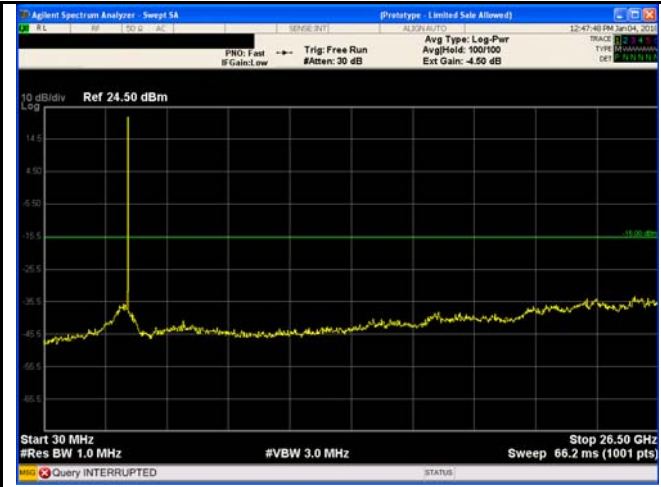
For **middle** channel, we both test left and right 1 MHz immediately and more than 1MHz away (5 MHz for 10 MHz bandwidth & 10MHz for 20MHz bandwidth) from the permit band 3650 MHz to 3700 MHz; see above table.

## 2. The RBW and the limit instruction as below: (The general limit = -13dBm)

1. For 2x4 MIMO, the limit=-13dBm -10 log 2=-16dBm.
2. For RBW=100kHz, the limit = -16dBm – 10log(1MHz/100kHz)= -26dBm
3. For RBW=50kHz, the limit= -16dBm – 10log(1MHz/50kHz)= -29dBm  
(The spectrum of N9020A only display the RBW=51kHz, and RBW=50kHz limit is lower than RBW=51kHz.)
4. For RBW=200kHz, the limit= -16dBm - 10log(1MHz/200kHz)= -23dBm

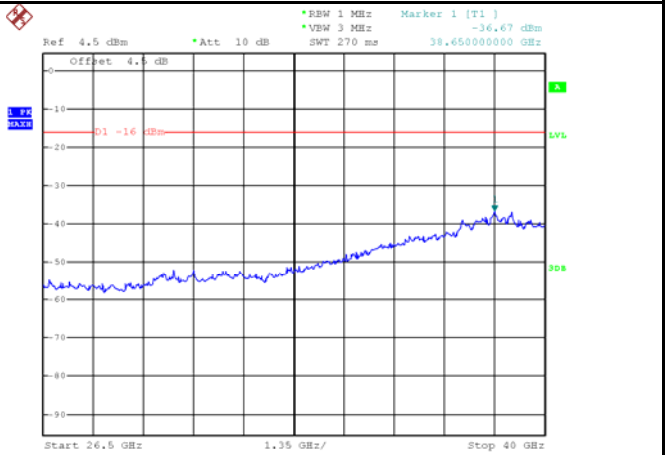
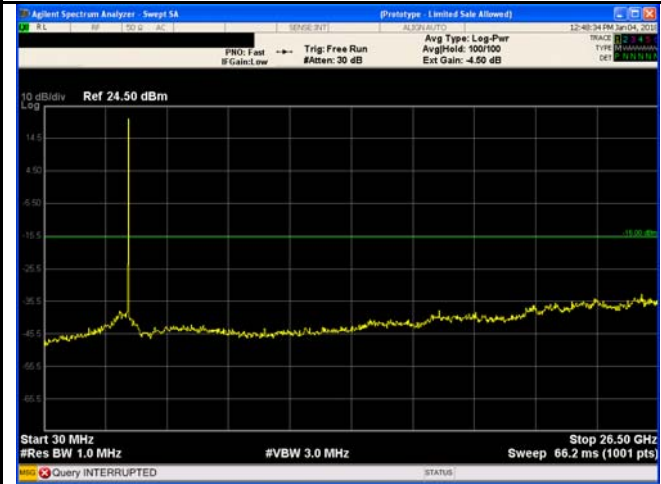
Test Plots

Spurious emission  
Chain 0



Date: 4.JAN.2018 04:41:16

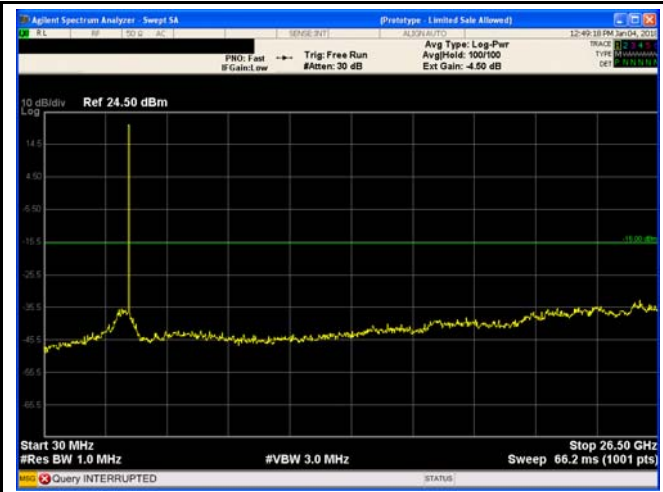
5MHz - Low CH 30MHz~26.5GHz



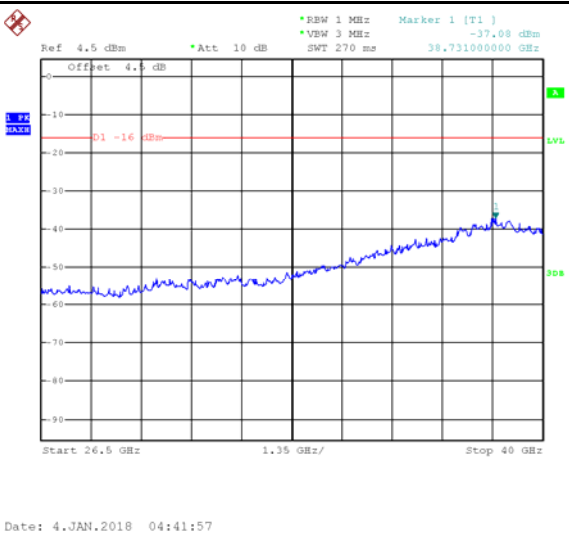
Date: 4.JAN.2018 04:41:44

5MHz - Middle CH 30MHz~26.5GHz

5MHz - Middle CH 26.5GHz~40GHz



5MHz - High CH 30MHz~26.5GHz



5MHz - High CH 26.5GHz~40GHz