

## FCC Test Report (Part 96)

**Report No.:** RF191202D01

**FCC ID:** P27-SCE4255W

**Test Model:** SCE4255W

**Received Date:** Dec. 2, 2019

**Test Date:** Feb. 27 to Apr. 8, 2020

**Issued Date:** Apr. 10, 2020

**Applicant:** Sercomm Corp.

**Address:** 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C. (NanKang Software Park)

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**FCC Registration /  
Designation Number:** 198487 / TW2021



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### Release Control Record

| Issue No.   | Description       | Date Issued   |
|-------------|-------------------|---------------|
| RF191202D01 | Original release. | Apr. 10, 2020 |

## 1 Certificate of Conformity

**Product:** Englewood

**Brand:** Sercomm

**Test Model:** SCE4255W

**Sample Status:** Engineering sample

**Applicant:** Sercomm Corp.

**Test Date:** Feb. 27 to Apr. 8, 2020

**Standards:** 47 CFR FCC Part 96

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :**



**Date:** Apr. 10, 2020

Celia Chen / Supervisor

**Approved by :**



**Date:** Apr. 10, 2020

Rex Lai / Associate Technical Manager

## 2 Summary of Test Results

| 47 CFR FCC Part 96    |                                               |        |                                                                                    |
|-----------------------|-----------------------------------------------|--------|------------------------------------------------------------------------------------|
| FCC Clause            | Test Item                                     | Result | Remarks                                                                            |
| 2.1046<br>96.41(b)    | Maximum Average Output Power and Maximum EIRP | Pass   | Meet the requirement of limit.                                                     |
| 2.1046<br>96.41(b)    | Maximum Power Spectral Density                | Pass   | Meet the requirement of limit.                                                     |
| 2.1047<br>96.41(a)    | Modulation Characteristics                    | Pass   | Meet the requirement.                                                              |
| 96.41(g)              | Peak to Average Ratio                         | Pass   | Meet the requirement of limit.                                                     |
| 2.1049                | Emission Bandwidth                            | Pass   | Meet the requirement of limit.                                                     |
| 2.1055                | Frequency Stability                           | Pass   | Meet the requirement of limit.                                                     |
| 2.1051<br>96.41(e)    | Conducted Spurious Emissions                  | Pass   | Meet the requirement of limit.                                                     |
| 2.1053<br>96.41(e)    | Radiated Spurious Emissions                   | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -2.71dB at 7249.87MHz. |
| 2.1046<br>96.41(c)(1) | Transmit Power Control (TPC)                  | Pass   | Meet the requirement.                                                              |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                    | Frequency    | Expanded Uncertainty (k=2) ( $\pm$ ) |
|--------------------------------|--------------|--------------------------------------|
| Radiated Emissions up to 1 GHz | 9kHz ~ 30MHz | 2.61 dB                              |
|                                | 30MHz ~ 1GHz | 5.43 dB                              |
| Radiated Emissions above 1 GHz | Above 1GHz   | 5.14 dB                              |

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

|                             |                                      |                                            |
|-----------------------------|--------------------------------------|--------------------------------------------|
| Product                     | Englewood                            |                                            |
| Brand                       | Sercomm                              |                                            |
| Test Model                  | SCE4255W                             |                                            |
| Status of EUT               | Engineering sample                   |                                            |
| Power Supply Rating         | 12Vdc from adapter or 55Vdc from PoE |                                            |
| Modulation Type             | QPSK, 16QAM, 64QAM                   |                                            |
| Operating Frequency         | Channel Bandwidth 10MHz              | TX: 3555 ~ 3695 MHz<br>RX: 3555 ~ 3695 MHz |
|                             | Channel Bandwidth 20MHz              | TX: 3560 ~ 3690 MHz<br>RX: 3560 ~ 3690 MHz |
|                             | 2-Carriers (10MHz)                   | TX: 3555 ~ 3695 MHz<br>RX: 3555 ~ 3695 MHz |
|                             | 2-Carriers (20MHz)                   | TX: 3560 ~ 3690 MHz<br>RX: 3560 ~ 3690 MHz |
|                             |                                      |                                            |
|                             |                                      |                                            |
|                             |                                      |                                            |
|                             |                                      |                                            |
| Channel Bandwidth           | 10MHz & 20MHz                        |                                            |
| Max. EIRP Power (dBm/10MHz) | Channel Bandwidth 10MHz              | 28.24 dBm/10MHz                            |
|                             | Channel Bandwidth 20MHz              | 25.05 dBm/10MHz                            |
|                             | CA (10MHz+10MHz)                     | 27.56 dBm/10MHz                            |
|                             | CA (20MHz+20MHz)                     | 24.20 dBm/10MHz                            |
| Max. FULL EIRP Power (dBm)  | Channel Bandwidth 10MHz              | 28.24 dBm                                  |
|                             | Channel Bandwidth 20MHz              | 28.15 dBm                                  |
|                             | CA (10MHz+10MHz)                     | 27.56 dBm                                  |
|                             | CA (20MHz+20MHz)                     | 27.38 dBm                                  |
| Emission Designator         | Channel Bandwidth 10MHz              | QPSK: 8M94G7D                              |
|                             |                                      | 16QAM: 8M94D7W                             |
|                             |                                      | 64QAM: 8M96D7W                             |
|                             | Channel Bandwidth 20MHz              | QPSK: 17M8G7D                              |
|                             |                                      | 16QAM: 17M8D7W                             |
|                             |                                      | 64QAM: 17M9D7W                             |
|                             | CA (10MHz+10MHz)                     | QPSK: 18M8G7D                              |
|                             |                                      | 16QAM: 18M8D7W                             |
|                             |                                      | 64QAM: 18M9D7W                             |
|                             | CA (20MHz+20MHz)                     | QPSK: 37M7G7D                              |
|                             |                                      | 16QAM: 37M8D7W                             |
|                             |                                      | 64QAM: 37M6D7W                             |
| Antenna Type                | Refer to note as below               |                                            |
| Antenna Connector           | Refer to note as below               |                                            |
| Accessory Device            | Adapter, GPS Antenna                 |                                            |
| Data Cable Supplied         | Shielded LAN cable (1.5m)            |                                            |

Note:

1. The EUT provides 4 completed transmitters and 4 receivers. The antennas provided to the EUT, please refer to the following table:

| TX Antenna | Antenna Type | Antenna Connector | Antenna Gain (dBi) | Frequency Range |
|------------|--------------|-------------------|--------------------|-----------------|
| Ant 1      | PIFA         | I-PEX             | 5.30               | 3.5~3.7GHz      |
| Ant 2      |              |                   | 5.26               |                 |
| Ant 3      |              |                   | 5.48               |                 |
| Ant 4      |              |                   | 5.68               |                 |

2. The EUT support single carrier and carrier aggregation (CA) in intra-band contiguous spectrum operation, the CA mode is operation in 10MHz+10MHz or 20MHz+20MHz channel bandwidth and MIMO technology.
3. The EUT uses following adapter.

|              |                                    |
|--------------|------------------------------------|
| Brand        | APD                                |
| Model        | WA-30P12FU                         |
| Input Power  | 100-240Vac, 50-60Hz, 0.9A          |
| Output Power | 12Vdc, 2.5A                        |
| Power Line   | AC 2 Pin<br>Non-shielded DC (2.0m) |

4. The EUT was pre-tested with the following modes:

- ✧ EUT powered from Adapter
- ✧ EUT powered from PoE (for support unit only)

The worst emission level was found when the EUT tested under **powered from Adapter** for final test.

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Description of Test Modes

| Channel Bandwidth (MHz) | Channel |
|-------------------------|---------|
| 10                      | Low     |
|                         | Middle  |
|                         | High    |
| 20                      | Low     |
|                         | Middle  |
|                         | High    |
| CA (10MHz+10MHz)        | Low     |
|                         | Middle  |
|                         | High    |
| CA (20MHz+20MHz)        | Low     |
|                         | Middle  |
|                         | High    |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on Z-plane. Following channel(s) was (were) selected for the final test as listed below:

#### SC MODE

| Test Item                    | Available Channel (MHz) | Tested Channel (MHz) | Channel Bandwidth | Modulation         |
|------------------------------|-------------------------|----------------------|-------------------|--------------------|
| EIRP                         | 3555 to 3695            | 3555, 3625, 3695     | 10MHz             | QPSK, 16QAM, 64QAM |
|                              | 3560 to 3690            | 3560, 3625, 3690     | 20MHz             | QPSK, 16QAM, 64QAM |
| Power Spectral Density       | 3555 to 3695            | 3555, 3625, 3695     | 10MHz             | QPSK, 16QAM, 64QAM |
|                              | 3560 to 3690            | 3560, 3625, 3690     | 20MHz             | QPSK, 16QAM, 64QAM |
| Modulation Characteristics   | 3555 to 3695            | 3555                 | 10MHz             | QPSK, 16QAM, 64QAM |
| Frequency Stability          | 3555 to 3695            | 3625                 | 10MHz             | QPSK               |
|                              | 3560 to 3690            | 3625                 | 20MHz             | QPSK               |
| Emission Bandwidth           | 3555 to 3695            | 3555, 3625, 3695     | 10MHz             | QPSK, 16QAM, 64QAM |
|                              | 3560 to 3690            | 3560, 3625, 3690     | 20MHz             | QPSK, 16QAM, 64QAM |
| Peak to Average Ratio        | 3555 to 3695            | 3555, 3625, 3695     | 10MHz             | QPSK               |
|                              | 3560 to 3690            | 3560, 3625, 3690     | 20MHz             | QPSK               |
| Conducted Emission           | 3555 to 3695            | 3555, 3625, 3695     | 10MHz             | QPSK               |
|                              | 3560 to 3690            | 3560, 3625, 3690     | 20MHz             | QPSK               |
| Radiated Emission Above 1GHz | 3555 to 3695            | 3555, 3625, 3695     | 10MHz             | QPSK               |
|                              | 3560 to 3690            | 3560, 3625, 3690     | 20MHz             | QPSK               |
| Radiated Emission Below 1GHz | 3555 to 3695            | 3555                 | 10MHz             | QPSK               |
|                              | 3560 to 3690            | 3560                 | 20MHz             | QPSK               |

## CA MODE

| Test Item              | Available Channel (MHz) | Tested Channel (MHz)                        | Channel Bandwidth | Modulation         |
|------------------------|-------------------------|---------------------------------------------|-------------------|--------------------|
| EIRP                   | 3555 to 3695            | 3555 + 3565,<br>3620 + 3630,<br>3685 + 3695 | 10MHz+10MHz       | QPSK, 16QAM, 64QAM |
|                        | 3560 to 3690            | 3560 + 3580,<br>3615 + 3635,<br>3670 + 3690 | 20MHz+20MHz       | QPSK, 16QAM, 64QAM |
| Power Spectral Density | 3555 to 3695            | 3555 + 3565,<br>3620 + 3630,<br>3685 + 3695 | 10MHz+10MHz       | QPSK, 16QAM, 64QAM |
|                        | 3560 to 3690            | 3560 + 3580,<br>3615 + 3635,<br>3670 + 3690 | 20MHz+20MHz       | QPSK, 16QAM, 64QAM |
| Frequency Stability    | 3555 to 3695            | 3620 + 3630                                 | 10MHz+10MHz       | QPSK               |
|                        | 3560 to 3690            | 3615 + 3635                                 | 20MHz+20MHz       | QPSK               |
| Emission Bandwidth     | 3555 to 3695            | 3555 + 3565,<br>3620 + 3630,<br>3685 + 3695 | 10MHz+10MHz       | QPSK, 16QAM, 64QAM |
|                        | 3560 to 3690            | 3560 + 3580,<br>3615 + 3635,<br>3670 + 3690 | 20MHz+20MHz       | QPSK, 16QAM, 64QAM |
| Peak to Average Ratio  | 3555 to 3695            | 3555 + 3565,<br>3620 + 3630,<br>3685 + 3695 | 10MHz+10MHz       | QPSK               |
|                        | 3560 to 3690            | 3560 + 3580,<br>3615 + 3635,<br>3670 + 3690 | 20MHz+20MHz       | QPSK               |
| Conducted Emission     | 3555 to 3695            | 3555 + 3565,<br>3620 + 3630,<br>3685 + 3695 | 10MHz+10MHz       | QPSK               |
|                        | 3560 to 3690            | 3560 + 3580,<br>3615 + 3635,<br>3670 + 3690 | 20MHz+20MHz       | QPSK               |
| Radiated Emission      | 3555 to 3695            | 3555 + 3565                                 | 10MHz+10MHz       | QPSK               |
|                        | 3560 to 3690            | 3560 + 3580                                 | 20MHz+20MHz       | QPSK               |

### NOTE:

1. All supported modulation types were evaluated. The Worst case of QPSK was selected. Therefore, the Frequency Stability, Peak to Average Ratio, Conducted Emission and Radiated Emission were presented under QPSK mode only.
2. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber. Low channel was found to be the worst case and therefore had been chosen for all final tests.
3. This device was tested under all RB configs/offsets. The worst case was found in full RB config/offset for all final tests.

### Test Condition:

| Test Item                  | Environmental Conditions | Input Power  | Tested By |
|----------------------------|--------------------------|--------------|-----------|
| EIRP                       | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Power Spectral Density     | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Modulation Characteristics | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Frequency Stability        | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Emission Bandwidth         | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Peak to Average Ratio      | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Conducted Emission         | 20deg. C, 76%RH          | 120Vac, 60Hz | Saxon Lee |
| Radiated Emission          | 23deg. C, 76%RH          | 120Vac, 60Hz | Ian Chang |

### 3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| ID | Product     | Brand | Model No.  | Serial No.      | FCC ID | Remarks            |
|----|-------------|-------|------------|-----------------|--------|--------------------|
| A. | Notebook PC | SONY  | SVS151A12P | 275548477000760 | N/A    | Provided by Lab    |
| B. | LAN Load    | N/A   | N/A        | N/A             | N/A    | Provided by Lab    |
| C. | GPS Antenna | N/A   | N/A        | N/A             | N/A    | Supplied by client |

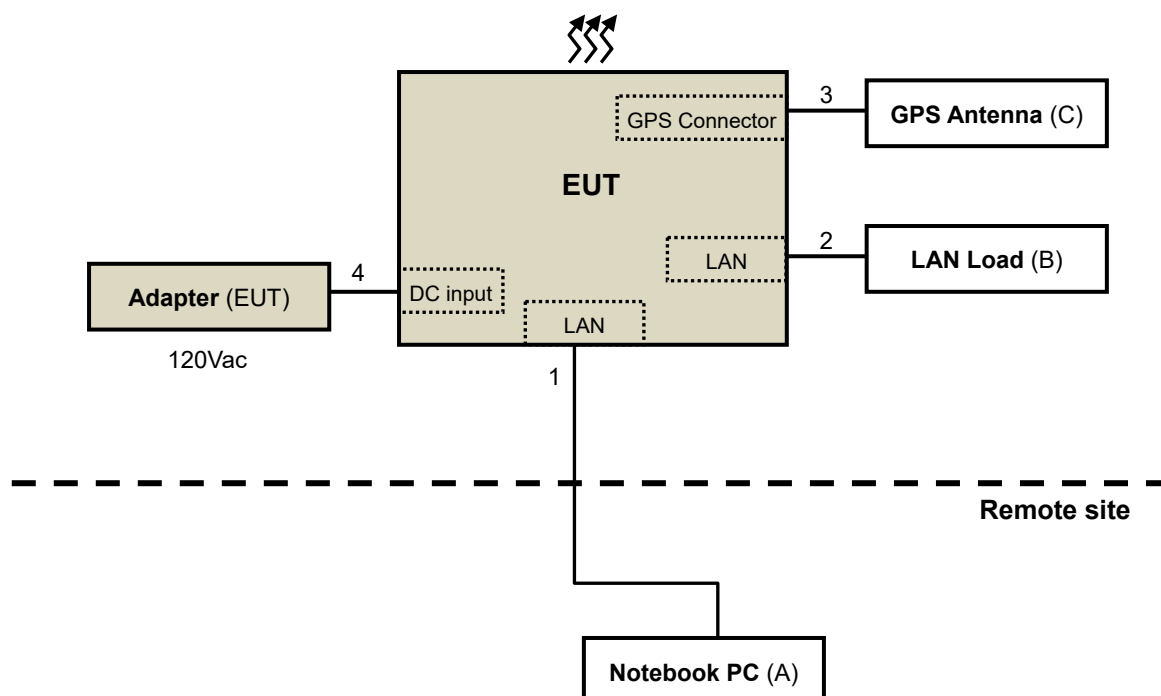
Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as communication partners to transfer data.

| ID | Descriptions      | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks            |
|----|-------------------|------|------------|--------------------|--------------|--------------------|
| 1. | LAN cable         | 1    | 10         | N                  | 0            | Provided by Lab    |
| 2. | LAN cable         | 1    | 1.2        | N                  | 0            | Provided by Lab    |
| 3. | GPS Antenna cable | 1    | 5.0        | N                  | 0            | Supplied by client |
| 4. | DC power cord     | 1    | 2.0        | N                  | 0            | Supplied by client |

Note: The core(s) is(are) originally attached to the cable(s).

#### 3.3.1 Configuration of System under Test



### **3.4 General Description of Applied Standards and References**

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

**47 CFR FCC Part 96**

**ANSI/TIA/EIA-603-E 2016**

**ANSI C63.26-2015**

All test items have been performed and recorded as per the above standards.

#### **References Test Guidance:**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**KDB 662911 D01 Multiple Transmitter Output v02r01**

**KDB 940660 D01 Part 96 CBRS Equipment v02**

All test items have been performed as a reference to the above KDB test guidance.

## 4 Test Types and Results

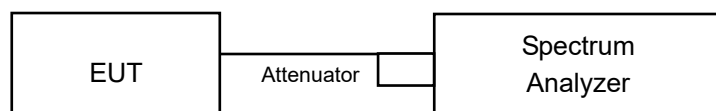
### 4.1 Maximum EIRP Measurement

#### 4.1.1 Limits of Maximum EIRP Measurement

| Device                              |                 | Maximum EIRP<br>(dBm/10 MHz) |
|-------------------------------------|-----------------|------------------------------|
| <input type="checkbox"/>            | End User Device | 23                           |
| <input checked="" type="checkbox"/> | Category A CBSD | 30                           |
| <input type="checkbox"/>            | Category B CBSD | 47                           |

#### 4.1.2 Test Setup

Conducted Measurement Method



#### 4.1.3 Test Instruments

| DESCRIPTION & MANUFACTURER                 | MODEL NO.            | SERIAL NO.     | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------------|----------------------|----------------|-----------------|------------------|
| HP Preamplifier                            | 8447D                | 2432A03504     | Feb. 19, 2020   | Feb. 18, 2021    |
| HP Preamplifier                            | 8449B                | 3008A01201     | Feb. 20, 2020   | Feb. 19, 2021    |
| MITEQ Preamplifier                         | AMF-6F-260400-33-8P  | 892164         | Feb. 19, 2020   | Feb. 18, 2021    |
| Agilent<br>TEST RECEIVER                   | N9038A               | MY51210137     | Jun. 6, 2019    | Jun. 5, 2020     |
| Schwarzbeck Antenna                        | VULB 9168            | 139            | Nov. 7, 2019    | Nov. 6, 2020     |
| Schwarzbeck Antenna                        | VHBA 9123            | 480            | Jun. 3, 2019    | Jun. 2, 2021     |
| Schwarzbeck Horn Antenna                   | BBHA-9170            | 212            | Nov. 24, 2019   | Nov. 23, 2020    |
| Schwarzbeck Horn Antenna                   | BBHA 9120-D1         | D130           | Nov. 24, 2019   | Nov. 23, 2020    |
| ADT. Turn Table                            | TT100                | 0306           | NA              | NA               |
| ADT. Tower                                 | AT100                | 0306           | NA              | NA               |
| Software                                   | Radiated_V7.6.15.9.5 | NA             | NA              | NA               |
| SUHNER RF cable<br>With 4dB PAD            | SF102                | Cable-CH6-01   | Jul. 10, 2019   | Jul. 9, 2020     |
| SUHNER RF cable<br>With 3/4dB PAD          | SF102                | Cable-CH8-3.6m | Jul. 10, 2019   | Jul. 9, 2020     |
| KEYSIGHT MIMO<br>Powermeasurement Test set | U2021XA              | U2021XA-001    | Jun. 11, 2019   | Jun. 10, 2020    |
| KEYSIGHT<br>Spectrum Analyzer              | N9030A               | MY54490260     | Jul. 30, 2019   | Jul. 29, 2020    |
| Loop Antenna EMCI                          | LPA600               | 270            | Aug. 23, 2019   | Aug. 22, 2021    |
| EMCO Horn Antenna                          | 3115                 | 00028257       | Nov. 24, 2019   | Nov. 23, 2020    |
| Highpass filter<br>Wainwright Instruments  | WHK 3.1/18G-10SS     | SN 8           | NA              | NA               |
| ROHDE & SCHWARZ<br>Spectrum Analyzer       | FSV40                | 101042         | Sep. 23, 2019   | Sep. 22, 2020    |
| Anritsu<br>Power Sensor                    | MA2411B              | 0738404        | Apr. 16, 2019   | Apr. 15, 2020    |
| Anritsu<br>Power Meter                     | ML2495A              | 0842014        | Apr. 16, 2019   | Apr. 15, 2020    |
| Temperature & Humidity<br>Chamber          | MHU-225AU            | 920409         | May 24, 2019    | May 23, 2020     |
| DIGITAL POWER METER<br>IDRC                | CP-240               | 240515         | Sep. 11, 2019   | Sep. 10, 2020    |
| AC Power Source<br>ExTech                  | CFW-105              | E000603        | NA              | NA               |
| Programable DC Source<br>IDRC              | DSP-030-025HD        | 500155         | Jul. 12, 2019   | Jul. 11, 2020    |

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
  2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  3. The test was performed in Chamber No. 6.

#### 4.1.4 Test Procedures

##### Conducted Measurement Method

1. Connect the DUT transmitter output to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
2. Set span to at least 1.5 times the OBW.
3. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
4. Set VBW  $\geq 3 \times$  RBW.
5. Set number of points in sweep  $\geq 2 \times$  span / RBW.
6. Sweep time = auto-couple.
7. Detector = RMS (power averaging).
8. If the EUT can be configured to transmit continuously (i.e., burst duty cycle  $\geq 98\%$ ), then set the trigger to free run.
9. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle  $< 98\%$ ), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.
10. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
11. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
12. For per 10MHz method, channel power integrating bandwidth 10MHz is used for bandwidth 5M, 10M, 15M and 20M.
13. For all power method, channel power integrating bandwidth 5MHz is used for bandwidth 5M, integrating bandwidth 10MHz is used for bandwidth 10M, integrating bandwidth 15MHz is used for bandwidth 15M, integrating bandwidth 20MHz is used for bandwidth 20M.

##### Maximum EIRP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively  
(expressed in the same units as  $P_{\text{Meas}}$ , e.g., dBm or dBW)

$P_{\text{Meas}}$  measured transmitter output power or PSD, in dBm or dBW

$G_T$  gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

#### 4.1.5 Deviation from Test Standard

No deviation.

#### 4.1.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.1.7 Test Results

##### SC MODE

##### Conducted Output Power & EIRP Power (dBm/10MHz)

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 10M                |         |         |         |       |                     |
|---------|----------------|------------------------------------|---------|---------|---------|-------|---------------------|
|         |                | QPSK                               |         |         |         |       |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |         |         |       | EIRP<br>(dBm/10MHz) |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
| Low     | 3555           | 10.78                              | 10.48   | 10.70   | 10.07   | 16.54 | <b>28.24</b>        |
| Middle  | 3625           | 10.38                              | 10.52   | 10.44   | 9.96    | 16.35 | 28.05               |
| High    | 3695           | 10.43                              | 10.39   | 10.07   | 9.94    | 16.23 | 27.93               |
| Channel | Freq.<br>(MHz) | 16QAM                              |         |         |         |       |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |         |         |       | EIRP<br>(dBm/10MHz) |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
| Low     | 3555           | 10.70                              | 10.48   | 10.63   | 10.06   | 16.50 | 28.20               |
| Middle  | 3625           | 10.59                              | 10.56   | 10.13   | 9.62    | 16.26 | 27.96               |
| High    | 3695           | 10.69                              | 10.75   | 10.21   | 10.11   | 16.47 | 28.17               |
| Channel | Freq.<br>(MHz) | 64QAM                              |         |         |         |       |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |         |         |       | EIRP<br>(dBm/10MHz) |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
| Low     | 3555           | 10.40                              | 10.25   | 10.52   | 9.62    | 16.23 | 27.93               |
| Middle  | 3625           | 10.29                              | 10.53   | 10.50   | 9.52    | 16.25 | 27.95               |
| High    | 3695           | 10.64                              | 10.58   | 10.33   | 10.13   | 16.45 | 28.15               |

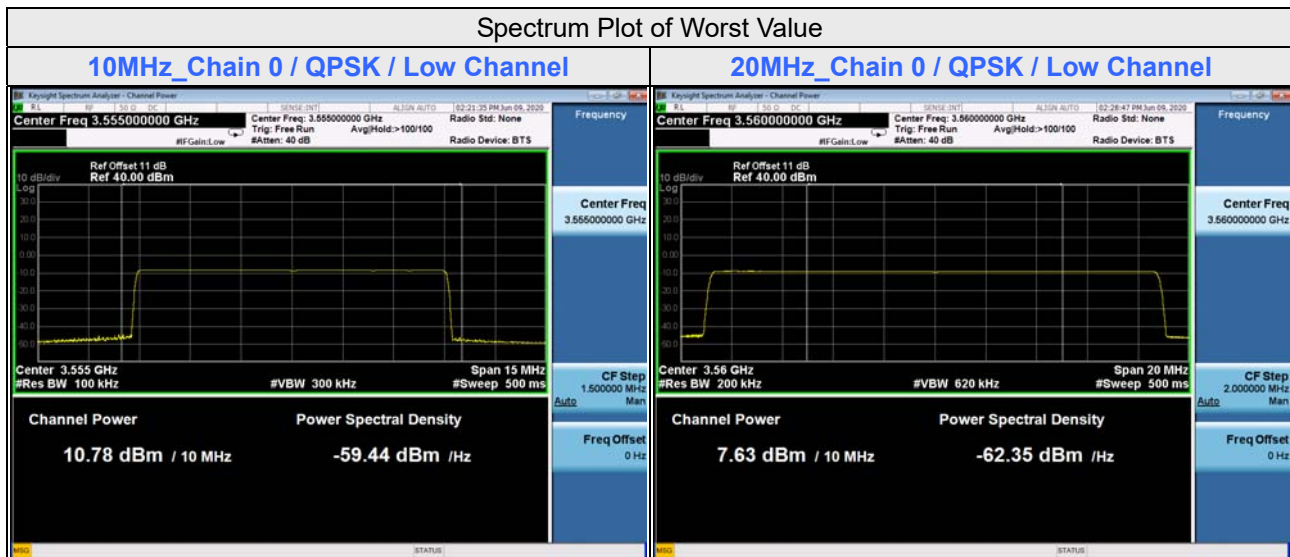
Note:

- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP (dBm / 10MHz) = Total Conducted Output Power (dBm / 10MHz) + Directional Gain

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 20M                |         |         |         |       |                     |
|---------|----------------|------------------------------------|---------|---------|---------|-------|---------------------|
|         |                | QPSK                               |         |         |         |       |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |         |         |       | EIRP<br>(dBm/10MHz) |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
| Low     | 3560           | 7.63                               | 7.45    | 7.53    | 6.64    | 13.35 | <b>25.05</b>        |
| Middle  | 3625           | 6.86                               | 6.99    | 7.12    | 6.64    | 12.93 | 24.63               |
| High    | 3690           | 7.30                               | 7.34    | 6.83    | 6.55    | 13.04 | 24.74               |
| Channel | Freq.<br>(MHz) | 16QAM                              |         |         |         |       |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |         |         |       | EIRP<br>(dBm/10MHz) |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
| Low     | 3560           | 7.17                               | 7.26    | 7.40    | 6.66    | 13.15 | 24.85               |
| Middle  | 3625           | 6.95                               | 7.08    | 7.13    | 6.30    | 12.90 | 24.60               |
| High    | 3690           | 7.32                               | 7.43    | 6.86    | 6.77    | 13.12 | 24.82               |
| Channel | Freq.<br>(MHz) | 64QAM                              |         |         |         |       |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |         |         |       | EIRP<br>(dBm/10MHz) |
|         |                | Chain 0                            | Chain 1 | Chain 2 | Chain 3 | Total |                     |
| Low     | 3560           | 7.07                               | 7.23    | 7.35    | 6.43    | 13.05 | 24.75               |
| Middle  | 3625           | 6.88                               | 6.95    | 6.97    | 7.14    | 13.01 | 24.71               |
| High    | 3690           | 7.16                               | 7.17    | 6.88    | 6.63    | 12.99 | 24.69               |

Note:

- Directional gain = 5.68dBi + 10log(4) = 11.7dBi
- EIRP (dBm / 10MHz) = Total Conducted Output Power (dBm / 10MHz) + Directional Gain



## SC MODE

### For FULL EIRP Power

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 10M          |         |         |         |       |               |             |
|---------|----------------|------------------------------|---------|---------|---------|-------|---------------|-------------|
|         |                | QPSK                         |         |         |         |       |               |             |
|         |                | Conducted Output Power (dBm) |         |         |         |       | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
| Low     | 3555           | 10.78                        | 10.48   | 10.70   | 10.07   | 16.54 | <b>28.24</b>  | 0.67        |
| Middle  | 3625           | 10.38                        | 10.52   | 10.44   | 9.96    | 16.35 | 28.05         | 0.64        |
| High    | 3695           | 10.43                        | 10.39   | 10.07   | 9.94    | 16.23 | 27.93         | 0.62        |
| Channel | Freq.<br>(MHz) | 16QAM                        |         |         |         |       |               |             |
|         |                | Conducted Output Power (dBm) |         |         |         |       | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
| Low     | 3555           | 10.70                        | 10.48   | 10.63   | 10.06   | 16.50 | 28.20         | 0.66        |
| Middle  | 3625           | 10.59                        | 10.56   | 10.13   | 9.62    | 16.26 | 27.96         | 0.63        |
| High    | 3695           | 10.69                        | 10.75   | 10.21   | 10.11   | 16.47 | 28.17         | 0.66        |
| Channel | Freq.<br>(MHz) | 64QAM                        |         |         |         |       |               |             |
|         |                | Conducted Output Power (dBm) |         |         |         |       | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
| Low     | 3555           | 10.40                        | 10.25   | 10.52   | 9.62    | 16.23 | 27.93         | 0.62        |
| Middle  | 3625           | 10.29                        | 10.53   | 10.50   | 9.52    | 16.25 | 27.95         | 0.62        |
| High    | 3695           | 10.64                        | 10.58   | 10.33   | 10.13   | 16.45 | 28.15         | 0.65        |

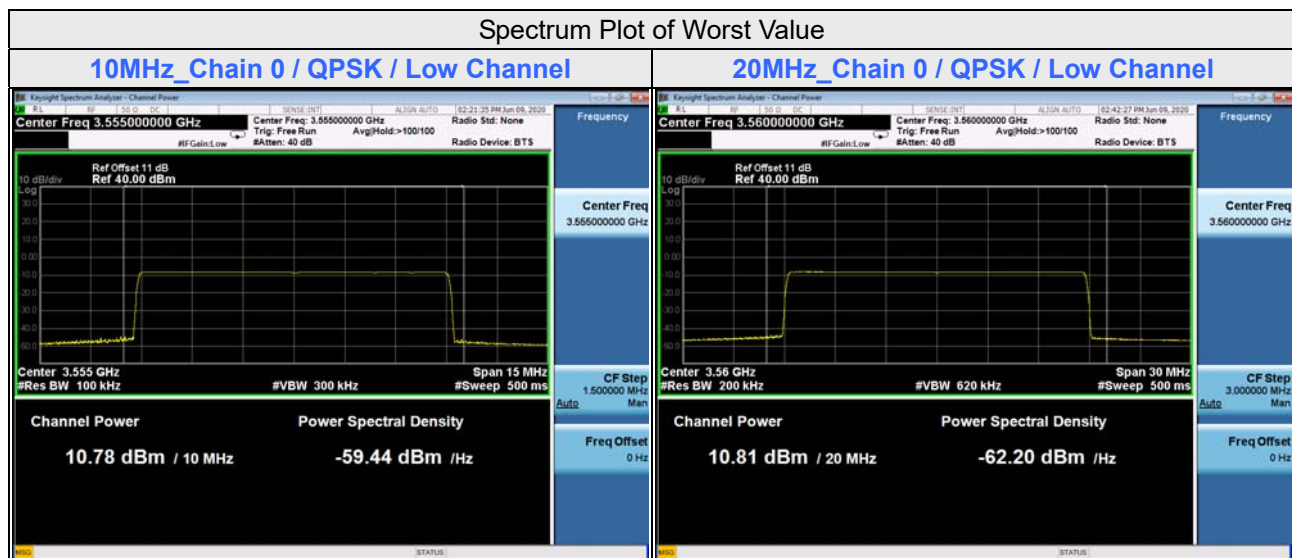
Note:

- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP (dBm) = Total Conducted Output Power (dBm) + Directional Gain

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 20M          |         |         |         |       |               |             |
|---------|----------------|------------------------------|---------|---------|---------|-------|---------------|-------------|
|         |                | QPSK                         |         |         |         |       |               |             |
|         |                | Conducted Output Power (dBm) |         |         |         |       | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
| Low     | 3560           | 10.81                        | 10.60   | 10.43   | 9.80    | 16.45 | <b>28.15</b>  | 0.65        |
| Middle  | 3625           | 10.03                        | 10.15   | 10.27   | 9.29    | 15.97 | 27.67         | 0.59        |
| High    | 3690           | 10.46                        | 10.52   | 10.00   | 9.72    | 16.21 | 27.91         | 0.62        |
| Channel | Freq.<br>(MHz) | 16QAM                        |         |         |         |       |               |             |
|         |                | Conducted Output Power (dBm) |         |         |         |       | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
| Low     | 3560           | 10.36                        | 10.46   | 10.58   | 9.85    | 16.34 | 28.04         | 0.64        |
| Middle  | 3625           | 10.15                        | 10.26   | 10.34   | 9.50    | 16.10 | 27.80         | 0.60        |
| High    | 3690           | 10.52                        | 10.62   | 10.04   | 9.97    | 16.32 | 28.02         | 0.63        |
| Channel | Freq.<br>(MHz) | 64QAM                        |         |         |         |       |               |             |
|         |                | Conducted Output Power (dBm) |         |         |         |       | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
|         |                | Chain 0                      | Chain 1 | Chain 2 | Chain 3 | Total |               |             |
| Low     | 3560           | 10.30                        | 10.47   | 10.58   | 9.65    | 16.29 | 27.99         | 0.63        |
| Middle  | 3625           | 10.11                        | 10.30   | 10.30   | 10.36   | 16.29 | 27.99         | 0.63        |
| High    | 3690           | 10.38                        | 10.40   | 10.11   | 9.85    | 16.21 | 27.91         | 0.62        |

Note:

- Directional gain = 5.68dBi + 10log(4) = 11.7dBi
- EIRP (dBm) = Total Conducted Output Power (dBm) + Directional Gain



## CA MODE

### Conducted Output Power & EIRP Power (dBm/10MHz)

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 10MHz+10MHz        |         |       |         |         |       |                    |                     |
|---------|----------------|------------------------------------|---------|-------|---------|---------|-------|--------------------|---------------------|
|         |                | QPSK                               |         |       |         |         |       |                    |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |       |         |         |       |                    | EIRP<br>(dBm/10MHz) |
|         |                | PCC                                |         |       | SCC     |         |       | PCC + SCC<br>Total |                     |
|         |                | Chain 0                            | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |                     |
| Low     | 3555 + 3565    | 10.73                              | 10.49   | 13.62 | 9.01    | 8.78    | 11.91 |                    |                     |
| Middle  | 3620 + 3630    | 10.60                              | 10.43   | 13.53 | 8.60    | 8.63    | 11.63 | 15.69              | 27.39               |
| High    | 3685 + 3695    | 10.04                              | 9.87    | 12.97 | 8.60    | 8.49    | 11.56 | 15.33              | 27.03               |
| Channel | Freq.<br>(MHz) | 16QAM                              |         |       |         |         |       |                    |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |       |         |         |       |                    | EIRP<br>(dBm/10MHz) |
|         |                | PCC                                |         |       | SCC     |         |       | PCC + SCC<br>Total |                     |
|         |                | Chain 0                            | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |                     |
| Low     | 3555 + 3565    | 10.60                              | 10.33   | 13.48 | 8.83    | 8.63    | 11.74 | 15.71              | 27.41               |
| Middle  | 3620 + 3630    | 10.44                              | 10.31   | 13.39 | 8.49    | 8.51    | 11.51 | 15.56              | 27.26               |
| High    | 3685 + 3695    | 9.87                               | 9.72    | 12.81 | 8.43    | 8.33    | 11.39 | 15.17              | 26.87               |
| Channel | Freq.<br>(MHz) | 64QAM                              |         |       |         |         |       |                    |                     |
|         |                | Conducted Output Power (dBm/10MHz) |         |       |         |         |       |                    | EIRP<br>(dBm/10MHz) |
|         |                | PCC                                |         |       | SCC     |         |       | PCC + SCC<br>Total |                     |
|         |                | Chain 0                            | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |                     |
| Low     | 3555 + 3565    | 10.51                              | 10.30   | 13.42 | 8.78    | 8.59    | 11.70 | 15.65              | 27.35               |
| Middle  | 3620 + 3630    | 10.41                              | 10.19   | 13.31 | 8.36    | 8.42    | 11.40 | 15.47              | 27.17               |
| High    | 3685 + 3695    | 9.86                               | 9.67    | 12.78 | 8.42    | 8.30    | 11.37 | 15.14              | 26.84               |

Note:

- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP (dBm / 10MHz) = Total Conducted Output Power (dBm / 10MHz) + Directional Gain

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 20MHz+20MHz        |             |       |         |         |       |                    |                     |
|---------|----------------|------------------------------------|-------------|-------|---------|---------|-------|--------------------|---------------------|
|         |                | QPSK                               |             |       |         |         |       |                    |                     |
|         |                | Conducted Output Power (dBm/10MHz) |             |       |         |         |       |                    | EIRP<br>(dBm/10MHz) |
|         |                | PCC                                |             |       | SCC     |         |       | PCC + SCC<br>Total |                     |
|         |                | Chain 0                            | Chain 1     | Total | Chain 2 | Chain 3 | Total |                    |                     |
| Low     | 3560 + 3580    | 7.52                               | 7.28        | 10.41 | 5.45    | 5.18    | 8.33  |                    |                     |
| Middle  | 3615 + 3635    | 7.25                               | 7.19        | 10.23 | 5.29    | 5.23    | 8.27  | 12.37              | 24.07               |
| High    | 3670 + 3690    | 6.98                               | 6.94        | 9.97  | 5.28    | 5.27    | 8.29  | 12.22              | 23.92               |
| Channel | Freq.<br>(MHz) | 16QAM                              |             |       |         |         |       |                    |                     |
|         |                | Conducted Output Power (dBm/10MHz) |             |       |         |         |       |                    | EIRP<br>(dBm/10MHz) |
|         |                | PCC                                |             |       | SCC     |         |       | PCC + SCC<br>Total |                     |
|         |                | Chain 0                            | Chain 1     | Total | Chain 2 | Chain 3 | Total |                    |                     |
|         |                | Low                                | 3560 + 3580 | 7.39  | 7.12    | 10.27   | 5.28  |                    |                     |
| Middle  | 3615 + 3635    | 7.12                               | 6.99        | 10.07 | 5.13    | 5.10    | 8.13  | 12.21              | 23.91               |
| High    | 3670 + 3690    | 6.86                               | 6.74        | 9.81  | 5.16    | 5.13    | 8.16  | 12.07              | 23.77               |
| Channel | Freq.<br>(MHz) | 64QAM                              |             |       |         |         |       |                    |                     |
|         |                | Conducted Output Power (dBm/10MHz) |             |       |         |         |       |                    | EIRP<br>(dBm/10MHz) |
|         |                | PCC                                |             |       | SCC     |         |       | PCC + SCC<br>Total |                     |
|         |                | Chain 0                            | Chain 1     | Total | Chain 2 | Chain 3 | Total |                    |                     |
|         |                | Low                                | 3560 + 3580 | 7.26  | 7.08    | 10.18   | 5.25  |                    |                     |
| Middle  | 3615 + 3635    | 7.09                               | 6.93        | 10.02 | 5.05    | 4.99    | 8.03  | 12.15              | 23.85               |
| High    | 3670 + 3690    | 6.82                               | 6.75        | 9.80  | 5.09    | 5.02    | 8.07  | 12.03              | 23.73               |

Note:

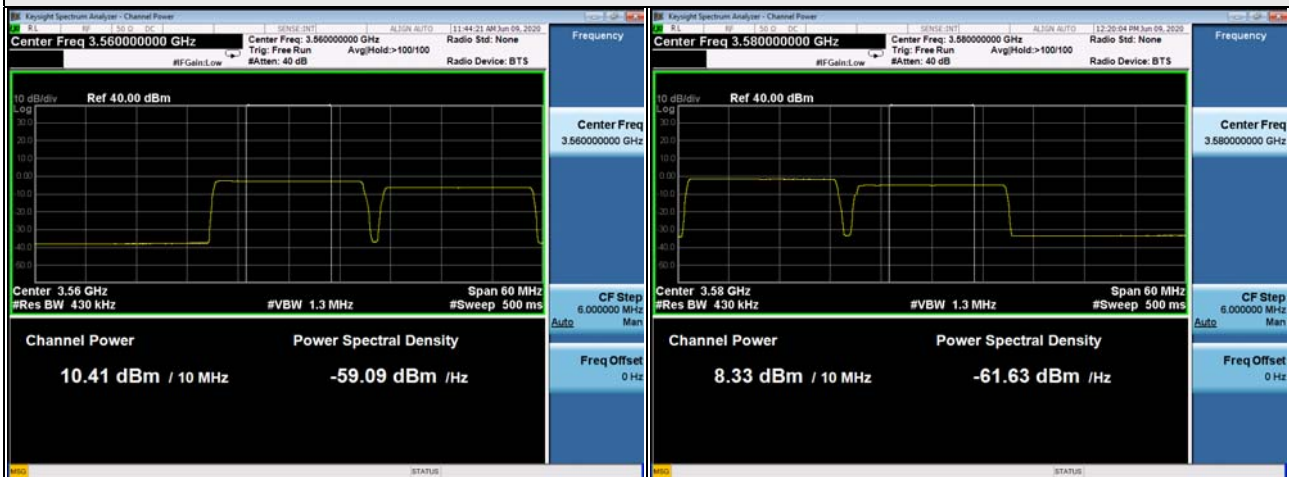
- Directional gain = 5.68dBi + 10log(4) = 11.7dBi
- EIRP (dBm / 10MHz) = Total Conducted Output Power (dBm / 10MHz) + Directional Gain

## Spectrum Plot of Worst Value

### 10MHz+10MHz / QPSK / Low Channel



### 20MHz+20MHz / QPSK / Low Channel



## CA MODE

### For FULL EIRP Power

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 10MHz+10MHz  |         |       |         |         |       |                    |               |             |
|---------|----------------|------------------------------|---------|-------|---------|---------|-------|--------------------|---------------|-------------|
|         |                | QPSK                         |         |       |         |         |       |                    |               |             |
|         |                | Conducted Output Power (dBm) |         |       |         |         |       |                    | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | PCC                          |         |       | SCC     |         |       | PCC + SCC<br>Total |               |             |
|         |                | Chain 0                      | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |               |             |
| Low     | 3555 + 3565    | 10.73                        | 10.49   | 13.62 | 9.01    | 8.78    | 11.91 | 15.86              | 27.56         | 0.57        |
| Middle  | 3620 + 3630    | 10.60                        | 10.43   | 13.53 | 8.60    | 8.63    | 11.63 | 15.69              | 27.39         | 0.55        |
| High    | 3685 + 3695    | 10.04                        | 9.87    | 12.97 | 8.60    | 8.49    | 11.56 | 15.33              | 27.03         | 0.50        |
| Channel | Freq.<br>(MHz) | 16QAM                        |         |       |         |         |       |                    |               |             |
|         |                | Conducted Output Power (dBm) |         |       |         |         |       |                    | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | PCC                          |         |       | SCC     |         |       | PCC + SCC<br>Total |               |             |
|         |                | Chain 0                      | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |               |             |
| Low     | 3555 + 3565    | 10.60                        | 10.33   | 13.48 | 8.83    | 8.63    | 11.74 | 15.71              | 27.41         | 0.55        |
| Middle  | 3620 + 3630    | 10.44                        | 10.31   | 13.39 | 8.49    | 8.51    | 11.51 | 15.56              | 27.26         | 0.53        |
| High    | 3685 + 3695    | 9.87                         | 9.72    | 12.81 | 8.43    | 8.33    | 11.39 | 15.17              | 26.87         | 0.49        |
| Channel | Freq.<br>(MHz) | 64QAM                        |         |       |         |         |       |                    |               |             |
|         |                | Conducted Output Power (dBm) |         |       |         |         |       |                    | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | PCC                          |         |       | SCC     |         |       | PCC + SCC<br>Total |               |             |
|         |                | Chain 0                      | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |               |             |
| Low     | 3555 + 3565    | 10.51                        | 10.30   | 13.42 | 8.78    | 8.59    | 11.70 | 15.65              | 27.35         | 0.54        |
| Middle  | 3620 + 3630    | 10.41                        | 10.19   | 13.31 | 8.36    | 8.42    | 11.40 | 15.47              | 27.17         | 0.52        |
| High    | 3685 + 3695    | 9.86                         | 9.67    | 12.78 | 8.42    | 8.30    | 11.37 | 15.14              | 26.84         | 0.48        |

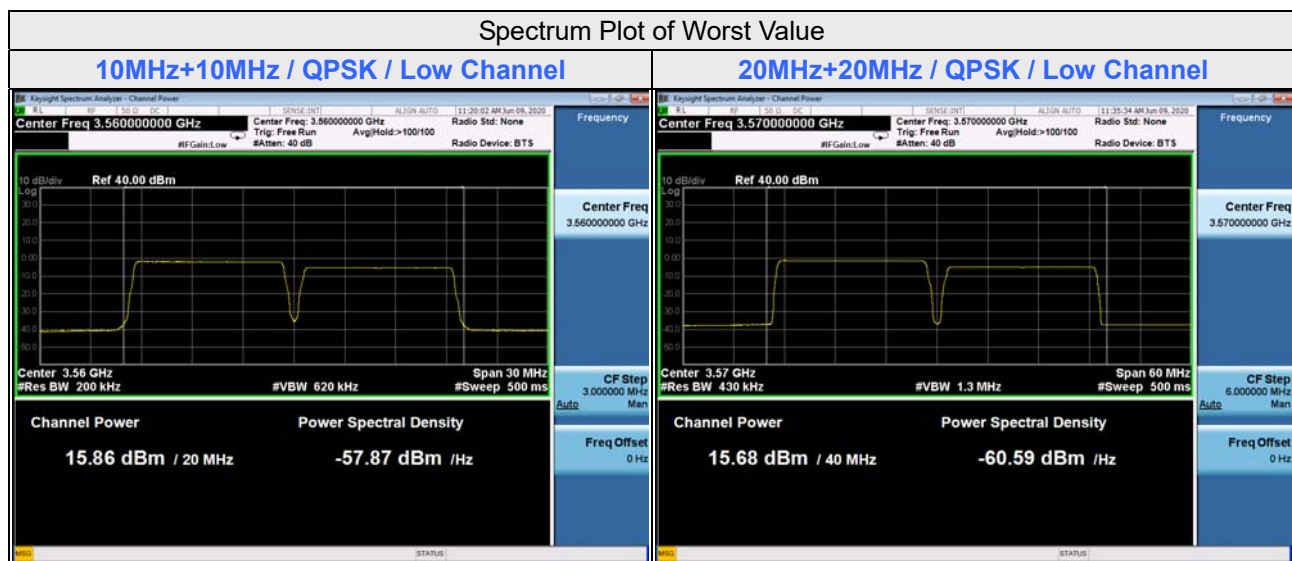
Note:

1. Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
2. EIRP (dBm) = Total Conducted Output Power (dBm) + Directional Gain

| Channel | Freq.<br>(MHz) | Band / BW: 48 / 20MHz+20MHz  |         |       |         |         |       |                    |               |             |
|---------|----------------|------------------------------|---------|-------|---------|---------|-------|--------------------|---------------|-------------|
|         |                | QPSK                         |         |       |         |         |       |                    |               |             |
|         |                | Conducted Output Power (dBm) |         |       |         |         |       |                    | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | PCC                          |         |       | SCC     |         |       | PCC + SCC<br>Total |               |             |
|         |                | Chain 0                      | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |               |             |
| Low     | 3560 + 3580    | 10.70                        | 10.47   | 13.60 | 8.61    | 8.37    | 11.50 | 15.68              | 27.38         | 0.55        |
| Middle  | 3615 + 3635    | 10.43                        | 10.34   | 13.40 | 8.44    | 8.39    | 11.43 | 15.53              | 27.23         | 0.53        |
| High    | 3670 + 3690    | 10.17                        | 10.12   | 13.16 | 8.46    | 8.44    | 11.46 | 15.40              | 27.10         | 0.51        |
| Channel | Freq.<br>(MHz) | 16QAM                        |         |       |         |         |       |                    |               |             |
|         |                | Conducted Output Power (dBm) |         |       |         |         |       |                    |               |             |
|         |                | PCC                          |         |       | SCC     |         |       | PCC + SCC<br>Total | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |               |             |
| Low     | 3560 + 3580    | 10.55                        | 10.30   | 13.44 | 8.48    | 8.25    | 11.38 | 15.54              | 27.24         | 0.53        |
| Middle  | 3615 + 3635    | 10.29                        | 10.17   | 13.24 | 8.32    | 8.26    | 11.30 | 15.39              | 27.09         | 0.51        |
| High    | 3670 + 3690    | 10.05                        | 9.94    | 13.01 | 8.33    | 8.30    | 11.33 | 15.26              | 26.96         | 0.50        |
| Channel | Freq.<br>(MHz) | 64QAM                        |         |       |         |         |       |                    |               |             |
|         |                | Conducted Output Power (dBm) |         |       |         |         |       |                    |               |             |
|         |                | PCC                          |         |       | SCC     |         |       | PCC + SCC<br>Total | EIRP<br>(dBm) | EIRP<br>(W) |
|         |                | Chain 0                      | Chain 1 | Total | Chain 2 | Chain 3 | Total |                    |               |             |
| Low     | 3560 + 3580    | 10.45                        | 10.24   | 13.36 | 8.43    | 8.13    | 11.29 | 15.46              | 27.16         | 0.52        |
| Middle  | 3615 + 3635    | 10.24                        | 10.13   | 13.20 | 8.22    | 8.15    | 11.20 | 15.32              | 27.02         | 0.50        |
| High    | 3670 + 3690    | 9.98                         | 9.92    | 12.96 | 8.26    | 8.21    | 11.25 | 15.20              | 26.90         | 0.49        |

Note:

- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP (dBm) = Total Conducted Output Power (dBm) + Directional Gain

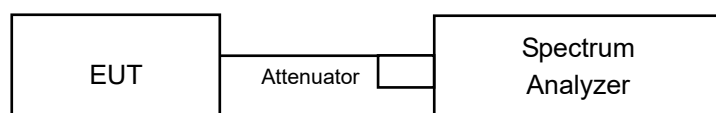


## 4.2 Maximum Power Spectral Density Measurement

### 4.2.1 Limits of Maximum Power Spectral Density Measurement

| Device                              |                 | Maximum PSD (dBm/MHz) |
|-------------------------------------|-----------------|-----------------------|
| <input type="checkbox"/>            | End User Device | n/a                   |
| <input checked="" type="checkbox"/> | Category A CBSD | 20                    |
| <input type="checkbox"/>            | Category B CBSD | 37                    |

### 4.2.2 Test Setup



### 4.2.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.2.4 Test Procedure

1. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
2. Set instrument center frequency to OBW center frequency.
3. Set span to 2 × to 3 × the OBW.
4. Set the RBW to the specified reference bandwidth (often 1 MHz).
5. Set VBW ≥ 3 × RBW.
6. Detector = RMS (power averaging).
7. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
8. Sweep time = auto couple.
9. Employ trace averaging (RMS) mode over a minimum of 100 traces.
10. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).

### 4.2.5 Deviation from Test Standard

No deviation.

### 4.2.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.2.7 Test Results

##### SC MODE

| Channel | Freq.<br>(MHz) | 10MHz                             |         |         |         |       |                       |                             |           |
|---------|----------------|-----------------------------------|---------|---------|---------|-------|-----------------------|-----------------------------|-----------|
|         |                | QPSK                              |         |         |         |       |                       |                             |           |
|         |                | Conducted Power Density (dBm/MHz) |         |         |         |       | EIRP PSD<br>(dBm/MHz) | EIRP PSD Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | Chain 0                           | Chain 1 | Chain 2 | Chain 3 | Total |                       |                             |           |
| Low     | 3555           | 2.60                              | 2.17    | 2.40    | 1.81    | 8.28  | 19.98                 | 20.0                        | Pass      |
| Middle  | 3625           | 2.12                              | 2.27    | 2.15    | 1.65    | 8.07  | 19.77                 | 20.0                        | Pass      |
| High    | 3695           | 2.21                              | 2.13    | 1.81    | 1.71    | 7.99  | 19.69                 | 20.0                        | Pass      |
| Channel | Freq.<br>(MHz) | 16QAM                             |         |         |         |       |                       |                             |           |
|         |                | Conducted Power Density (dBm/MHz) |         |         |         |       | EIRP PSD<br>(dBm/MHz) | EIRP PSD Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | Chain 0                           | Chain 1 | Chain 2 | Chain 3 | Total |                       |                             |           |
| Low     | 3555           | 2.37                              | 2.13    | 2.25    | 1.66    | 8.13  | 19.83                 | 20.0                        | Pass      |
| Middle  | 3625           | 2.26                              | 2.22    | 1.77    | 1.24    | 7.91  | 19.61                 | 20.0                        | Pass      |
| High    | 3695           | 2.37                              | 2.42    | 1.89    | 1.72    | 8.13  | 19.83                 | 20.0                        | Pass      |
| Channel | Freq.<br>(MHz) | 64QAM                             |         |         |         |       |                       |                             |           |
|         |                | Conducted Power Density (dBm/MHz) |         |         |         |       | EIRP PSD<br>(dBm/MHz) | EIRP PSD Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | Chain 0                           | Chain 1 | Chain 2 | Chain 3 | Total |                       |                             |           |
| Low     | 3555           | 1.94                              | 1.83    | 2.10    | 1.12    | 7.78  | 19.48                 | 20.0                        | Pass      |
| Middle  | 3625           | 1.78                              | 2.10    | 2.06    | 1.10    | 7.80  | 19.50                 | 20.0                        | Pass      |
| High    | 3695           | 2.21                              | 2.14    | 1.92    | 1.69    | 8.02  | 19.72                 | 20.0                        | Pass      |

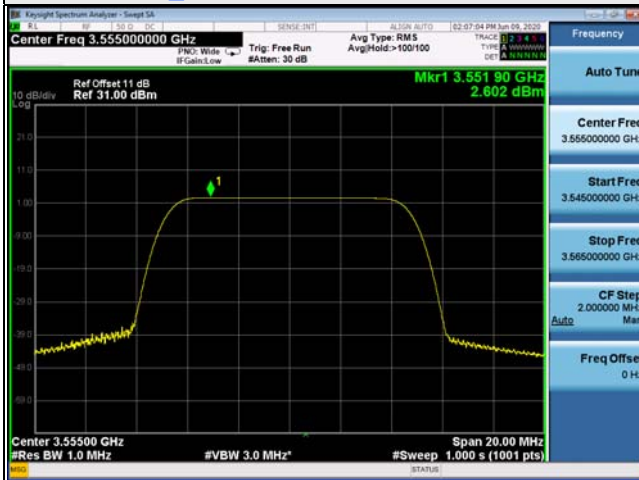
| Channel | Freq.<br>(MHz) | 20MHz                             |         |         |         |       |                       |                             |           |
|---------|----------------|-----------------------------------|---------|---------|---------|-------|-----------------------|-----------------------------|-----------|
|         |                | QPSK                              |         |         |         |       |                       |                             |           |
|         |                | Conducted Power Density (dBm/MHz) |         |         |         |       | EIRP PSD<br>(dBm/MHz) | EIRP PSD Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | Chain 0                           | Chain 1 | Chain 2 | Chain 3 | Total |                       |                             |           |
| Low     | 3560           | -1.22                             | -1.38   | -1.40   | -2.15   | 4.50  | 16.20                 | 20.0                        | Pass      |
| Middle  | 3625           | -1.93                             | -1.83   | -1.73   | -2.66   | 4.00  | 15.70                 | 20.0                        | Pass      |
| High    | 3690           | -1.47                             | -1.44   | -1.94   | -2.27   | 4.25  | 15.95                 | 20.0                        | Pass      |
| Channel | Freq.<br>(MHz) | 16QAM                             |         |         |         |       |                       |                             |           |
|         |                | Conducted Power Density (dBm/MHz) |         |         |         |       | EIRP PSD<br>(dBm/MHz) | EIRP PSD Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | Chain 0                           | Chain 1 | Chain 2 | Chain 3 | Total |                       |                             |           |
| Low     | 3560           | -1.72                             | -1.64   | -1.52   | -2.19   | 4.26  | 15.96                 | 20.0                        | Pass      |
| Middle  | 3625           | -1.95                             | -1.80   | -1.77   | -2.55   | 4.01  | 15.71                 | 20.0                        | Pass      |
| High    | 3690           | -1.56                             | -1.43   | -1.98   | -2.07   | 4.27  | 15.97                 | 20.0                        | Pass      |
| Channel | Freq.<br>(MHz) | 64QAM                             |         |         |         |       |                       |                             |           |
|         |                | Conducted Power Density (dBm/MHz) |         |         |         |       | EIRP PSD<br>(dBm/MHz) | EIRP PSD Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | Chain 0                           | Chain 1 | Chain 2 | Chain 3 | Total |                       |                             |           |
| Low     | 3560           | -1.81                             | -1.67   | -1.57   | -2.54   | 4.14  | 15.84                 | 20.0                        | Pass      |
| Middle  | 3625           | -2.05                             | -1.82   | -1.82   | -1.82   | 4.14  | 15.84                 | 20.0                        | Pass      |
| High    | 3690           | -1.80                             | -1.78   | -2.06   | -2.29   | 4.04  | 15.74                 | 20.0                        | Pass      |

Note:

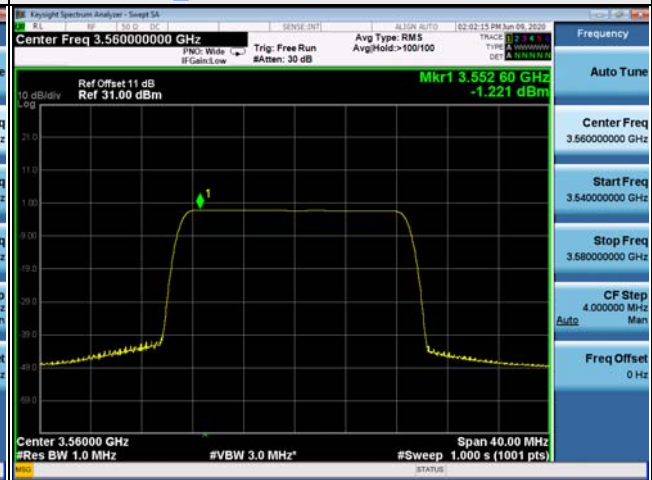
- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP PSD (dBm/MHz) = Total Conducted Power Density (dBm/MHz) + Directional Gain

# Spectrum Plot of Worst Value

## 10MHz\_Chain 0 / QPSK / Low Channel



## 20MHz\_Chain 0 / QPSK / Low Channel



## CA MODE

| Channel | Freq.<br>(MHz) | 10MHz+10MHz                       |         |       |         |         |       |                          |                       |                                |           |
|---------|----------------|-----------------------------------|---------|-------|---------|---------|-------|--------------------------|-----------------------|--------------------------------|-----------|
|         |                | QPSK                              |         |       |         |         |       |                          |                       |                                |           |
|         |                | Conducted Power Density (dBm/MHz) |         |       |         |         |       |                          | EIRP PSD<br>(dBm/MHz) | EIRP PSD<br>Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | PCC                               |         |       | SCC     |         |       | PCC<br>+<br>SCC<br>Total |                       |                                |           |
|         |                | Chain 0                           | Chain 1 | Total | Chain 2 | Chain 3 | Total |                          |                       |                                |           |
| Low     | 3555 + 3565    | 2.22                              | 1.99    | 5.12  | 0.49    | 0.31    | 3.41  |                          |                       |                                |           |
| Middle  | 3620 + 3630    | 2.14                              | 1.88    | 5.02  | 0.06    | 0.12    | 3.10  | 7.18                     | 18.88                 | 20.0                           | Pass      |
| High    | 3685 + 3695    | 1.57                              | 1.42    | 4.51  | 0.14    | -0.05   | 3.06  | 6.85                     | 18.55                 | 20.0                           | Pass      |
| Channel | Freq.<br>(MHz) | 16QAM                             |         |       |         |         |       |                          |                       |                                |           |
|         |                | Conducted Power Density (dBm/MHz) |         |       |         |         |       |                          | EIRP PSD<br>(dBm/MHz) | EIRP PSD<br>Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | PCC                               |         |       | SCC     |         |       | PCC<br>+<br>SCC<br>Total |                       |                                |           |
|         |                | Chain 0                           | Chain 1 | Total | Chain 2 | Chain 3 | Total |                          |                       |                                |           |
| Low     | 3555 + 3565    | 2.11                              | 1.79    | 4.96  | 0.34    | 0.16    | 3.26  | 7.21                     | 18.91                 | 20.0                           | Pass      |
| Middle  | 3620 + 3630    | 1.94                              | 1.78    | 4.87  | 0.01    | -0.03   | 3.00  | 7.05                     | 18.75                 | 20.0                           | Pass      |
| High    | 3685 + 3695    | 1.33                              | 1.20    | 4.28  | -0.10   | -0.19   | 2.87  | 6.64                     | 18.34                 | 20.0                           | Pass      |
| Channel | Freq.<br>(MHz) | 64QAM                             |         |       |         |         |       |                          |                       |                                |           |
|         |                | Conducted Power Density (dBm/MHz) |         |       |         |         |       |                          | EIRP PSD<br>(dBm/MHz) | EIRP PSD<br>Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | PCC                               |         |       | SCC     |         |       | PCC<br>+<br>SCC<br>Total |                       |                                |           |
|         |                | Chain 0                           | Chain 1 | Total | Chain 2 | Chain 3 | Total |                          |                       |                                |           |
| Low     | 3555 + 3565    | 1.97                              | 1.81    | 4.90  | 0.31    | 0.11    | 3.22  | 7.15                     | 18.85                 | 20.0                           | Pass      |
| Middle  | 3620 + 3630    | 1.90                              | 1.71    | 4.82  | -0.13   | -0.12   | 2.89  | 6.97                     | 18.67                 | 20.0                           | Pass      |
| High    | 3685 + 3695    | 1.38                              | 1.17    | 4.29  | -0.08   | -0.18   | 2.88  | 6.65                     | 18.35                 | 20.0                           | Pass      |

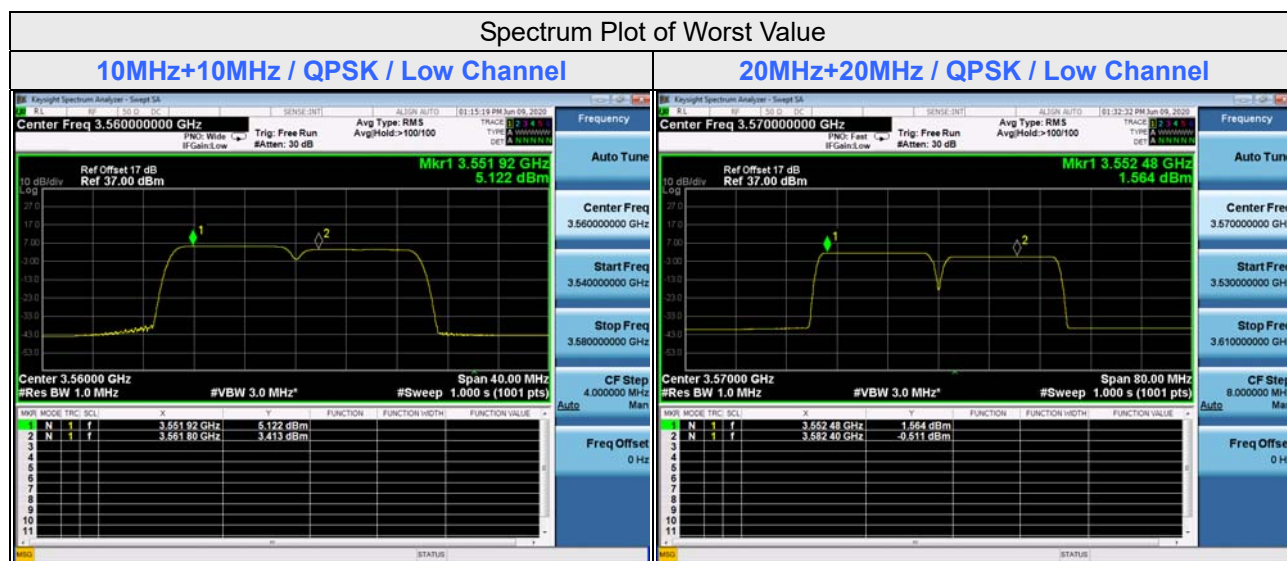
Note:

- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP PSD (dBm/MHz) = Total Conducted Power Density (dBm/MHz) + Directional Gain

| Channel | Freq.<br>(MHz) | 20MHz+20MHz                       |             |       |         |         |       |                          |                       |                                |           |
|---------|----------------|-----------------------------------|-------------|-------|---------|---------|-------|--------------------------|-----------------------|--------------------------------|-----------|
|         |                | QPSK                              |             |       |         |         |       |                          |                       |                                |           |
|         |                | Conducted Power Density (dBm/MHz) |             |       |         |         |       |                          | EIRP PSD<br>(dBm/MHz) | EIRP PSD<br>Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | PCC                               |             |       | SCC     |         |       | PCC<br>+<br>SCC<br>Total |                       |                                |           |
|         |                | Chain 0                           | Chain 1     | Total | Chain 2 | Chain 3 | Total |                          |                       |                                |           |
| Low     | 3560 + 3580    | -1.33                             | -1.57       | 1.56  | -3.43   | -3.59   | -0.50 |                          |                       |                                |           |
| Middle  | 3615 + 3635    | -1.60                             | -1.62       | 1.40  | -3.60   | -3.64   | -0.61 | 3.52                     | 15.22                 | 20.0                           | Pass      |
| High    | 3670 + 3690    | -1.83                             | -1.89       | 1.15  | -3.55   | -3.60   | -0.56 | 3.39                     | 15.09                 | 20.0                           | Pass      |
| Channel | Freq.<br>(MHz) | 16QAM                             |             |       |         |         |       |                          |                       |                                |           |
|         |                | Conducted Power Density (dBm/MHz) |             |       |         |         |       |                          | EIRP PSD<br>(dBm/MHz) | EIRP PSD<br>Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | PCC                               |             |       | SCC     |         |       | PCC<br>+<br>SCC<br>Total |                       |                                |           |
|         |                | Chain 0                           | Chain 1     | Total | Chain 2 | Chain 3 | Total |                          |                       |                                |           |
|         |                | Low                               | 3560 + 3580 | -1.47 | -1.68   | 1.44    | -3.51 |                          |                       |                                |           |
| Middle  | 3615 + 3635    | -1.75                             | -1.79       | 1.24  | -3.67   | -3.76   | -0.70 | 3.39                     | 15.09                 | 20.0                           | Pass      |
| High    | 3670 + 3690    | -1.90                             | -2.01       | 1.06  | -3.63   | -3.65   | -0.63 | 3.30                     | 15.00                 | 20.0                           | Pass      |
| Channel | Freq.<br>(MHz) | 64QAM                             |             |       |         |         |       |                          |                       |                                |           |
|         |                | Conducted Power Density (dBm/MHz) |             |       |         |         |       |                          | EIRP PSD<br>(dBm/MHz) | EIRP PSD<br>Limit<br>(dBm/MHz) | Pass/Fail |
|         |                | PCC                               |             |       | SCC     |         |       | PCC<br>+<br>SCC<br>Total |                       |                                |           |
|         |                | Chain 0                           | Chain 1     | Total | Chain 2 | Chain 3 | Total |                          |                       |                                |           |
|         |                | Low                               | 3560 + 3580 | -1.58 | -1.79   | 1.33    | -3.57 |                          |                       |                                |           |
| Middle  | 3615 + 3635    | -1.71                             | -1.90       | 1.21  | -3.73   | -3.82   | -0.76 | 3.34                     | 15.04                 | 20.0                           | Pass      |
| High    | 3670 + 3690    | -1.98                             | -2.11       | 0.97  | -3.69   | -3.82   | -0.74 | 3.20                     | 14.90                 | 20.0                           | Pass      |

Note:

- Directional gain =  $5.68\text{dBi} + 10\log(4) = 11.7\text{dBi}$
- EIRP PSD (dBm/MHz) = Total Conducted Power Density (dBm/MHz) + Directional Gain



## 4.3 Modulation Characteristics Measurement

### 4.3.1 Limits of Modulation Characteristics

N/A

### 4.3.2 Test Procedure

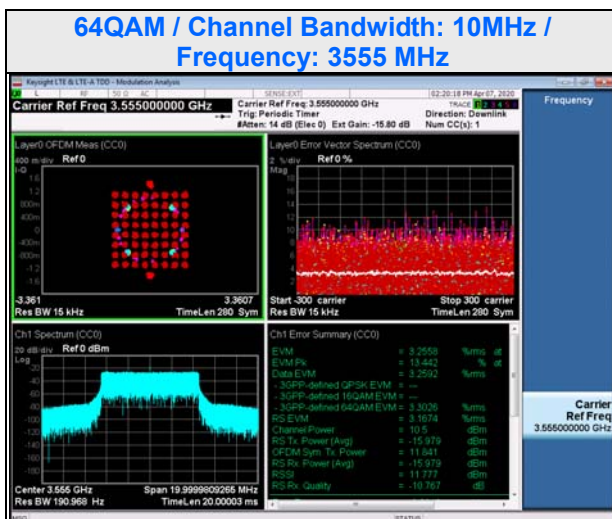
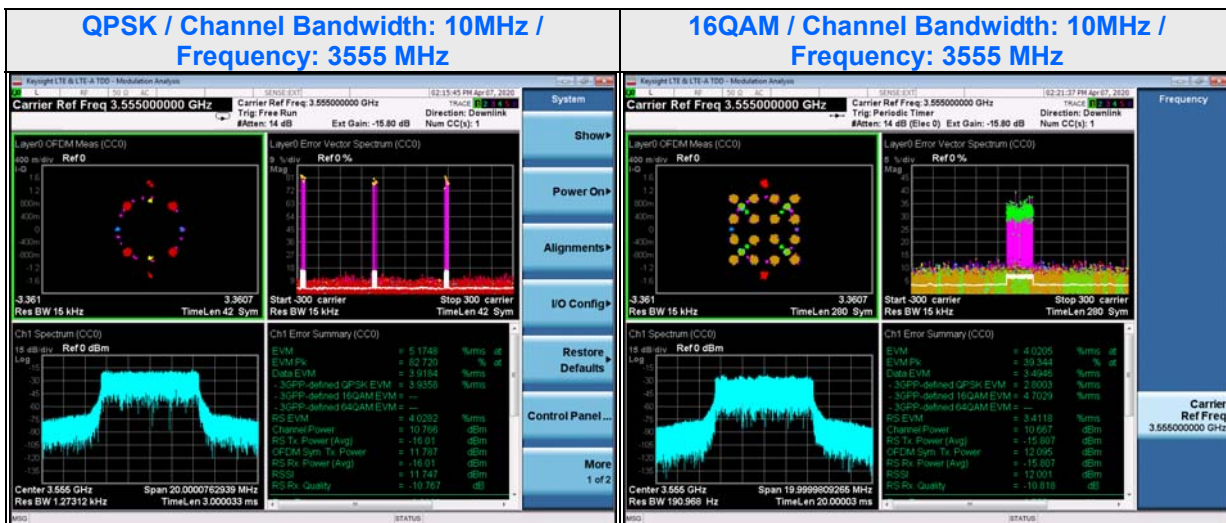
Connect the EUT to Communication Simulator via the antenna connector, the frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.3.3 Test Setup



### 4.3.4 Test Results

#### SC MODE



## 4.4 Frequency Stability Measurement

### 4.4.1 Limits of Frequency Stability Measurement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency band.

### 4.4.2 Test Procedure

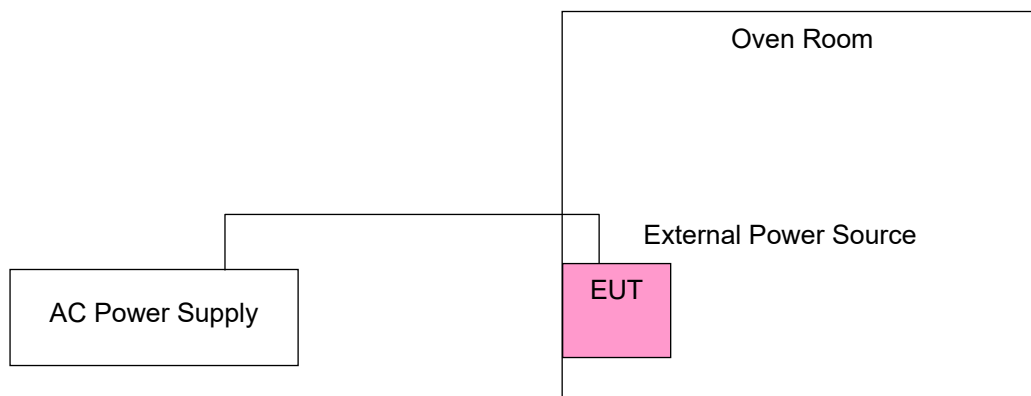
- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the AC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

### 4.4.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.4.4 Test Setup



#### 4.4.5 Test Results

##### SC MODE

Frequency vs. Voltage

| Voltage (Vac) | Frequency (MHz) |              | Pass/Fail |
|---------------|-----------------|--------------|-----------|
|               | 10MHz           | 20MHz        |           |
| 102           | 3625.0000031    | 3625.0000029 | Pass      |
| 120           | 3625.0000033    | 3625.0000031 | Pass      |
| 138           | 3625.0000032    | 3625.0000033 | Pass      |

Frequency vs. Temperature.

| TEMP. (°C) | Frequency (MHz) |              | Pass/Fail |
|------------|-----------------|--------------|-----------|
|            | 10MHz           | 20MHz        |           |
| -30        | 3625.0000029    | 3625.0000027 | Pass      |
| -20        | 3625.0000014    | 3625.0000015 | Pass      |
| -10        | 3625.0000019    | 3625.0000020 | Pass      |
| 0          | 3625.0000015    | 3625.0000017 | Pass      |
| 10         | 3625.0000015    | 3625.0000019 | Pass      |
| 20         | 3624.9999982    | 3624.9999984 | Pass      |
| 30         | 3624.9999969    | 3624.9999970 | Pass      |
| 40         | 3624.9999980    | 3624.9999979 | Pass      |
| 50         | 3624.9999976    | 3624.9999978 | Pass      |
| 60         | 3624.9999972    | 3624.9999976 | Pass      |
| 70         | 3624.9999971    | 3624.9999974 | Pass      |
| 75         | 3624.9999969    | 3624.9999972 | Pass      |

## CA MODE

### Frequency vs. Voltage

| Voltage (Vac) | Frequency (MHz) |              | Pass/Fail |
|---------------|-----------------|--------------|-----------|
|               | 10MHz           | 20MHz        |           |
| 102           | 3625.0000031    | 3625.0000029 | Pass      |
| 120           | 3625.0000033    | 3625.0000031 | Pass      |
| 138           | 3625.0000032    | 3625.0000033 | Pass      |

### Frequency vs. Temperature.

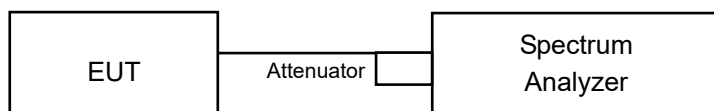
| TEMP. (°C) | Frequency (MHz) |              | Pass/Fail |
|------------|-----------------|--------------|-----------|
|            | 10MHz           | 20MHz        |           |
| -30        | 3625.0000029    | 3625.0000027 | Pass      |
| -20        | 3625.0000014    | 3625.0000015 | Pass      |
| -10        | 3625.0000019    | 3625.0000020 | Pass      |
| 0          | 3625.0000015    | 3625.0000017 | Pass      |
| 10         | 3625.0000015    | 3625.0000019 | Pass      |
| 20         | 3624.9999982    | 3624.9999984 | Pass      |
| 30         | 3624.9999969    | 3624.9999970 | Pass      |
| 40         | 3624.9999980    | 3624.9999979 | Pass      |
| 50         | 3624.9999976    | 3624.9999978 | Pass      |
| 60         | 3624.9999972    | 3624.9999976 | Pass      |
| 70         | 3624.9999971    | 3624.9999974 | Pass      |
| 75         | 3624.9999969    | 3624.9999972 | Pass      |

## 4.5 Emission Bandwidth Measurement

### 4.5.1 Limit of Emission Bandwidth Measurement

Reference only

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.5.4 Test Procedure

#### 26dBc Bandwidth:

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 100 kHz (10 MHz bandwidth), RBW = 200 kHz (20 MHz bandwidth). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### Occupied Bandwidth:

All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Conditions

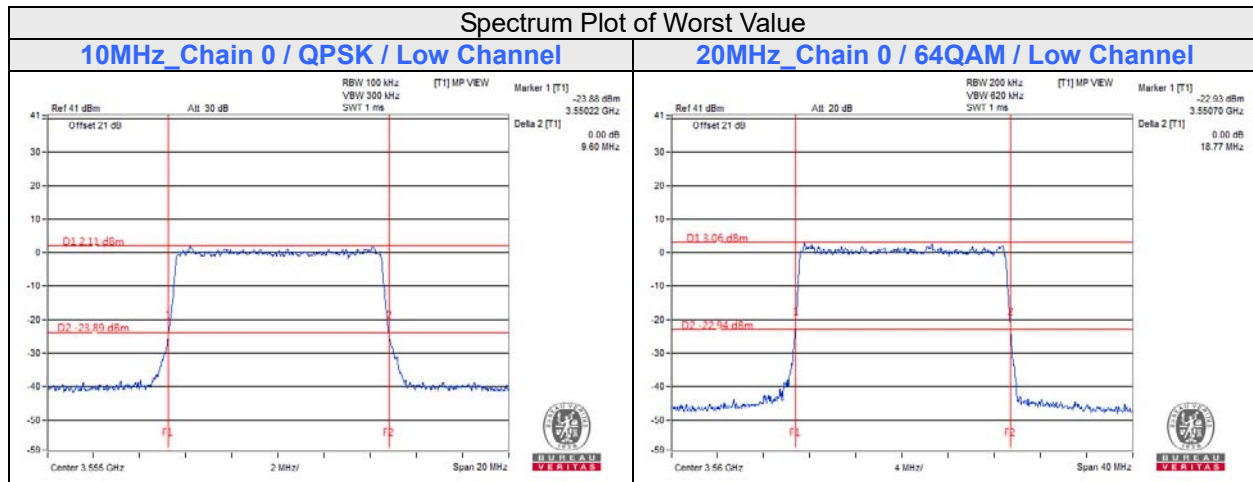
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.5.7 Test Result (-26dB Bandwidth)

##### SC MODE

| Channel | Freq.<br>(MHz) | 26dB Down Bandwidth (MHz) |       |       |         |       |       |         |       |       |         |       |       |
|---------|----------------|---------------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|         |                | 10MHz                     |       |       |         |       |       |         |       |       |         |       |       |
|         |                | Chain 0                   |       |       | Chain 1 |       |       | Chain 2 |       |       | Chain 3 |       |       |
|         |                | QPSK                      | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM |
| Low     | 3555           | 9.60                      | 9.54  | 9.53  | 9.59    | 9.48  | 9.52  | 9.59    | 9.52  | 9.52  | 9.58    | 9.50  | 9.52  |
| Middle  | 3625           | 9.41                      | 9.44  | 9.43  | 9.57    | 9.32  | 9.36  | 9.51    | 9.32  | 9.41  | 9.52    | 9.37  | 9.47  |
| High    | 3695           | 9.45                      | 9.42  | 9.47  | 9.44    | 9.33  | 9.46  | 9.47    | 9.30  | 9.49  | 9.51    | 9.31  | 9.42  |

| Channel | Freq.<br>(MHz) | 26dB Down Bandwidth (MHz) |       |       |         |       |       |         |       |       |         |       |       |
|---------|----------------|---------------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|         |                | 20MHz                     |       |       |         |       |       |         |       |       |         |       |       |
|         |                | Chain 0                   |       |       | Chain 1 |       |       | Chain 2 |       |       | Chain 3 |       |       |
|         |                | QPSK                      | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM |
| Low     | 3560           | 18.73                     | 18.71 | 18.77 | 18.71   | 18.69 | 18.77 | 18.72   | 18.69 | 18.77 | 18.73   | 18.69 | 18.76 |
| Middle  | 3625           | 18.68                     | 18.62 | 18.65 | 18.55   | 18.46 | 18.58 | 18.60   | 18.52 | 18.55 | 18.48   | 18.47 | 18.59 |
| High    | 3690           | 18.63                     | 18.57 | 18.58 | 18.59   | 18.56 | 18.50 | 18.54   | 18.52 | 18.61 | 18.46   | 18.53 | 18.56 |





#### 4.5.8 Test Result (Occupied Bandwidth)

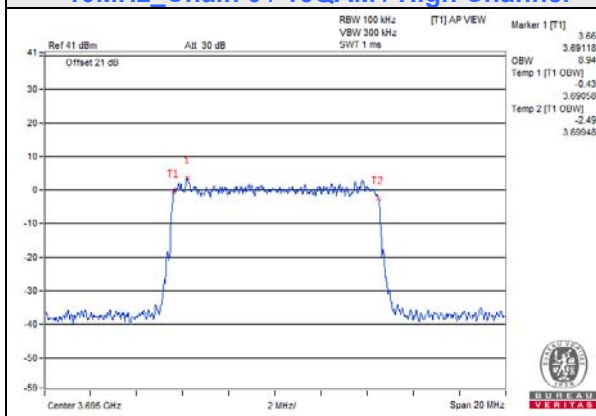
##### SC MODE

| Channel | Freq. (MHz) | OCP 99 Bandwidth (MHz) |       |       |         |       |       |         |       |       |         |       |       |
|---------|-------------|------------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|         |             | 10MHz                  |       |       |         |       |       |         |       |       |         |       |       |
|         |             | Chain 0                |       |       | Chain 1 |       |       | Chain 2 |       |       | Chain 3 |       |       |
|         |             | QPSK                   | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM |
| Low     | 3555        | 8.92                   | 8.92  | 8.90  | 8.92    | 8.90  | 8.92  | 8.92    | 8.92  | 8.90  | 8.92    | 8.92  | 8.92  |
| Middle  | 3625        | 8.92                   | 8.90  | 8.88  | 8.90    | 8.80  | 8.90  | 8.92    | 8.88  | 8.88  | 8.90    | 8.88  | 8.96  |
| High    | 3695        | 8.90                   | 8.94  | 8.92  | 8.94    | 8.90  | 8.88  | 8.90    | 8.84  | 8.92  | 8.88    | 8.90  | 8.94  |

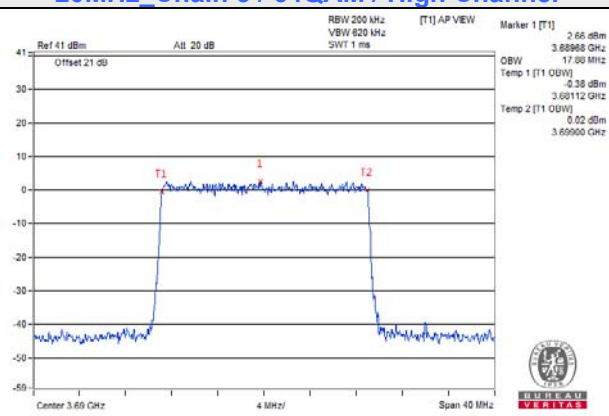
| Channel | Freq. (MHz) | OCP 99 Bandwidth (MHz) |       |       |         |       |       |         |       |       |         |       |       |
|---------|-------------|------------------------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|
|         |             | 20MHz                  |       |       |         |       |       |         |       |       |         |       |       |
|         |             | Chain 0                |       |       | Chain 1 |       |       | Chain 2 |       |       | Chain 3 |       |       |
|         |             | QPSK                   | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM | QPSK    | 16QAM | 64QAM |
| Low     | 3560        | 17.80                  | 17.84 | 17.80 | 17.80   | 17.76 | 17.80 | 17.84   | 17.80 | 17.84 | 17.80   | 17.84 | 17.84 |
| Middle  | 3625        | 17.80                  | 17.72 | 17.84 | 17.80   | 17.72 | 17.80 | 17.80   | 17.64 | 17.80 | 17.80   | 17.60 | 17.76 |
| High    | 3690        | 17.76                  | 17.80 | 17.80 | 17.84   | 17.72 | 17.76 | 17.84   | 17.80 | 17.80 | 17.80   | 17.72 | 17.88 |

#### Spectrum Plot of Worst Value

##### 10MHz\_Chain 0 / 16QAM / High Channel



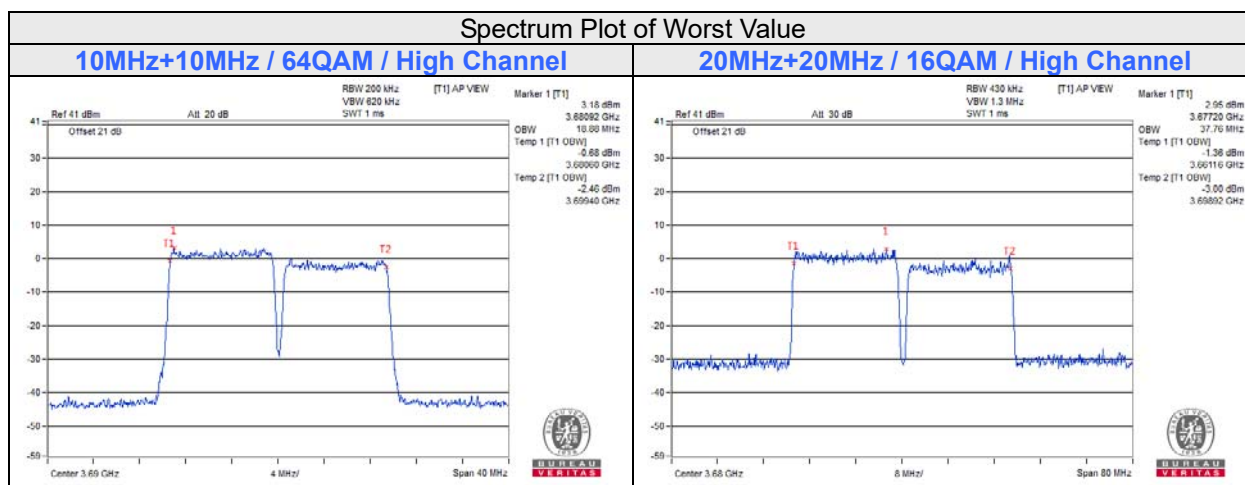
##### 20MHz\_Chain 3 / 64QAM / High Channel



## CA MODE

| Channel | Freq.<br>(MHz) | OCP 99 Bandwidth (MHz) |       |       |
|---------|----------------|------------------------|-------|-------|
|         |                | 10MHz+10MHz            |       |       |
|         |                | PCC + SCC              |       |       |
|         |                | QPSK                   | 16QAM | 64QAM |
| Low     | 3555 + 3565    | 18.80                  | 18.84 | 18.84 |
| Middle  | 3620 + 3630    | 18.80                  | 18.80 | 18.80 |
| High    | 3685 + 3695    | 18.84                  | 18.76 | 18.88 |

| Channel | Freq.<br>(MHz) | OCP 99 Bandwidth (MHz) |       |       |
|---------|----------------|------------------------|-------|-------|
|         |                | 20MHz+20MHz            |       |       |
|         |                | PCC + SCC              |       |       |
|         |                | QPSK                   | 16QAM | 64QAM |
| Low     | 3560 + 3580    | 37.68                  | 37.60 | 37.60 |
| Middle  | 3615 + 3635    | 37.60                  | 37.60 | 37.60 |
| High    | 3670 + 3690    | 37.60                  | 37.76 | 37.60 |

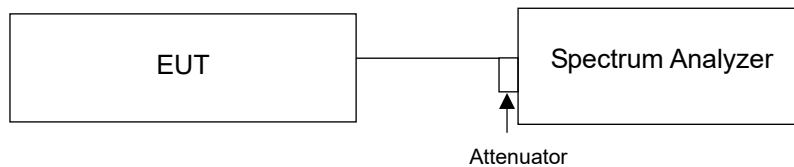


## 4.6 Peak to Average Ratio

### 4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

### 4.6.2 Test Setup



### 4.6.3 Test Procedures

- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

#### 4.6.4 Test Results

##### SC MODE

| Channel | Freq.<br>(MHz) | Peak to Average Ratio (dB) |         |         |         | Limit (dB) | Pass / Fail |
|---------|----------------|----------------------------|---------|---------|---------|------------|-------------|
|         |                | 10MHz                      |         |         |         |            |             |
|         |                | Chain 0                    | Chain 1 | Chain 2 | Chain 3 |            |             |
|         |                | QPSK                       |         |         |         |            |             |
| Low     | 3555           | 8.62                       | 9.11    | 9.19    | 9.37    | 13         | Pass        |
| Middle  | 3625           | 9.91                       | 9.24    | 9.26    | 8.90    | 13         | Pass        |
| High    | 3695           | 8.99                       | 9.44    | 9.47    | 9.39    | 13         | Pass        |

| Channel | Freq.<br>(MHz) | Peak to Average Ratio (dB) |         |         |         | Limit (dB) | Pass / Fail |
|---------|----------------|----------------------------|---------|---------|---------|------------|-------------|
|         |                | 20MHz                      |         |         |         |            |             |
|         |                | Chain 0                    | Chain 1 | Chain 2 | Chain 3 |            |             |
|         |                | QPSK                       |         |         |         |            |             |
| Low     | 3560           | 8.36                       | 9.10    | 9.16    | 9.23    | 13         | Pass        |
| Middle  | 3625           | 9.11                       | 9.40    | 9.24    | 9.19    | 13         | Pass        |
| High    | 3690           | 9.27                       | 9.35    | 9.21    | 9.20    | 13         | Pass        |

10MHz:

## Spectrum Plot of Worst Value

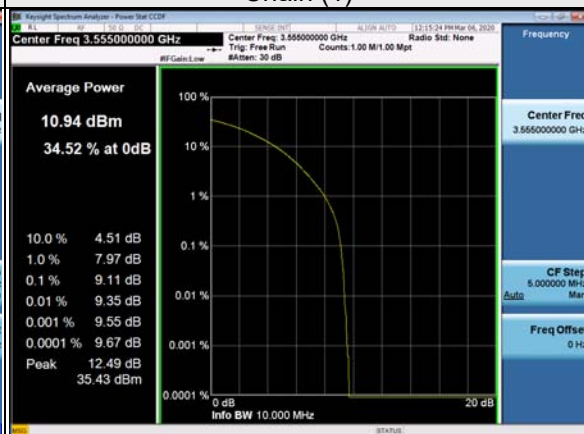
QPSK

Low Channel

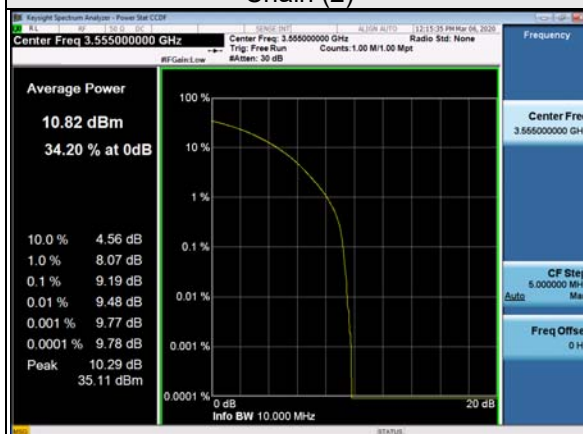
Chain (0)



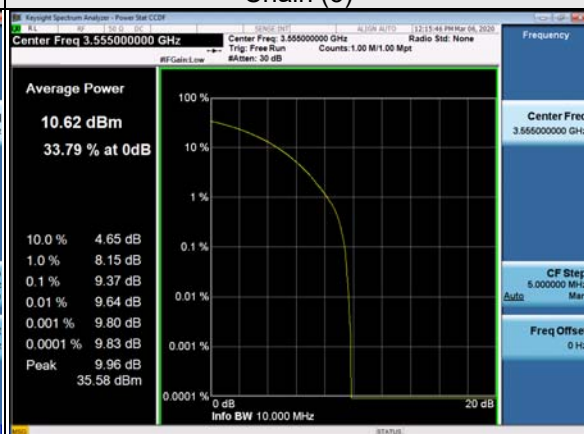
Chain (1)

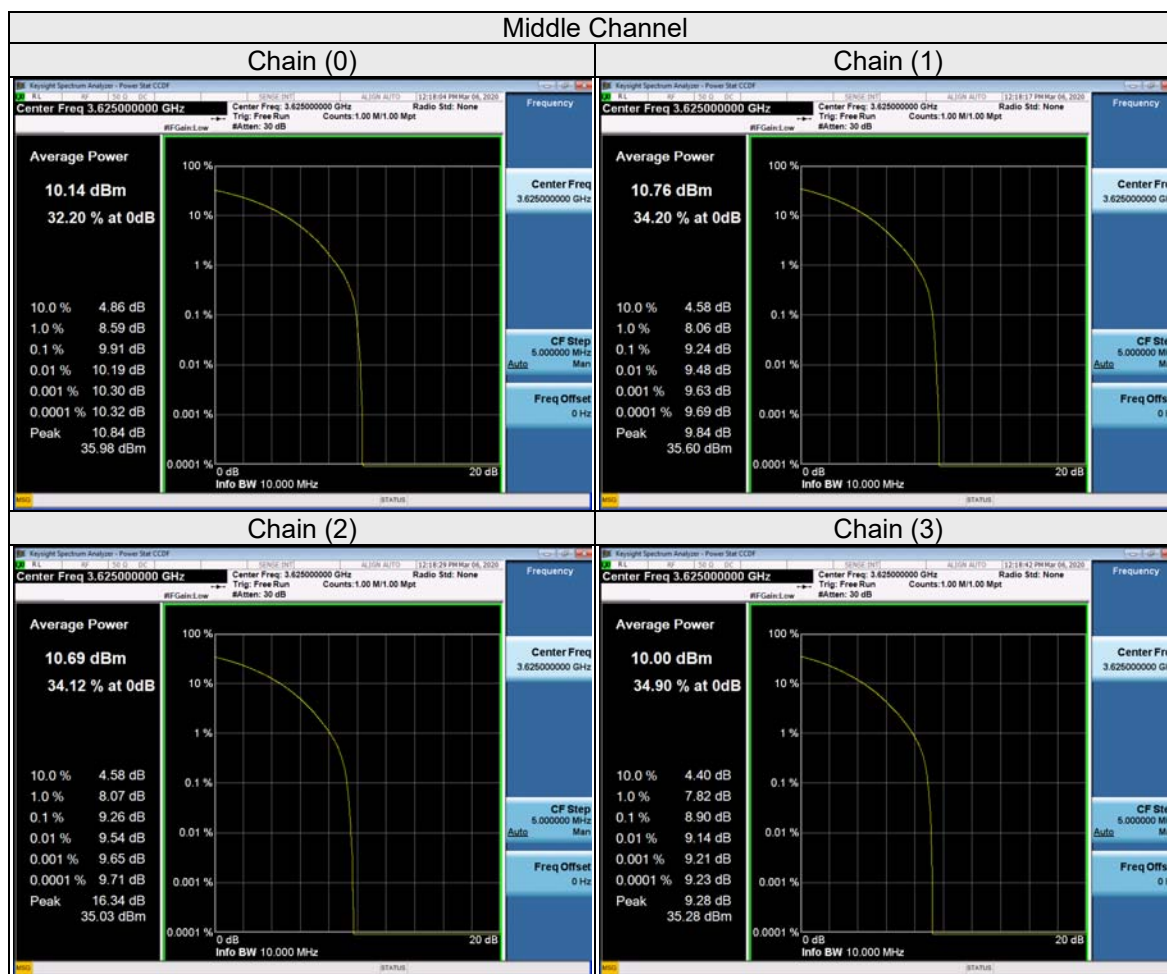


Chain (2)



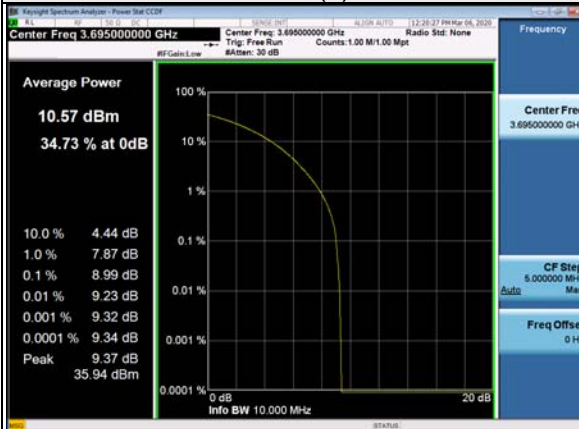
Chain (3)



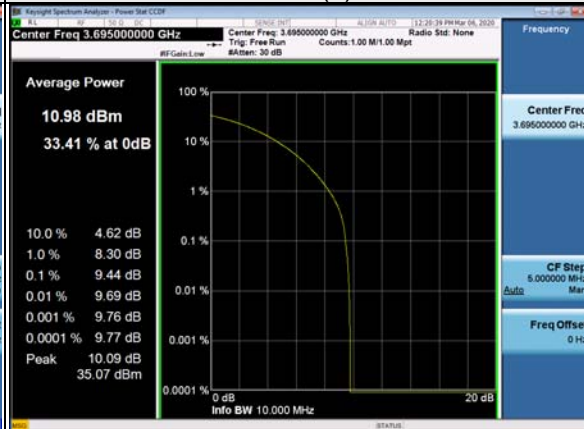


## High Channel

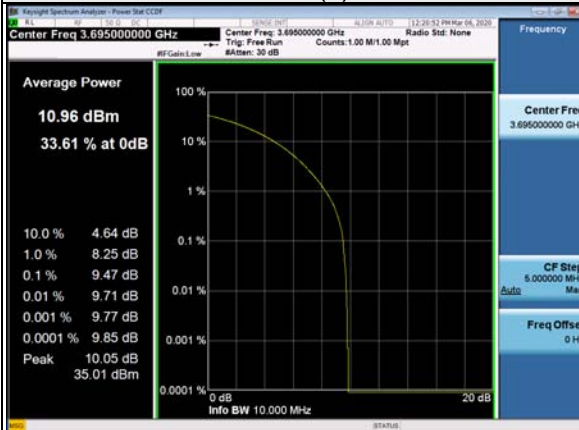
### Chain (0)



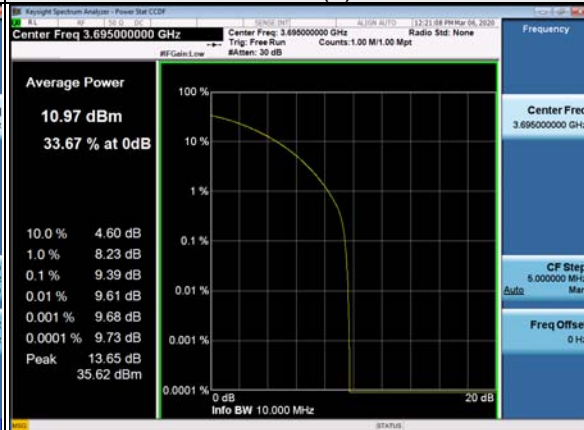
### Chain (1)



### Chain (2)



### Chain (3)



20MHz:

# Spectrum Plot of Worst Value

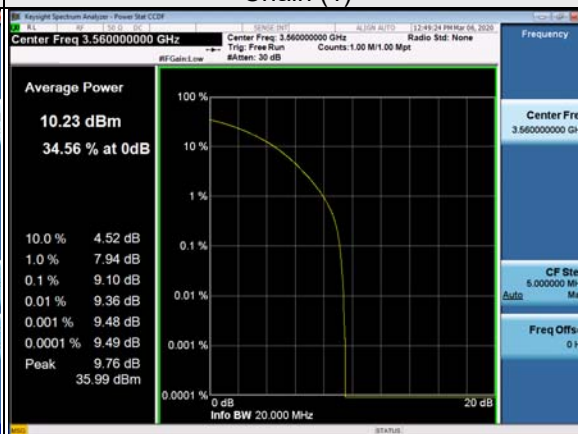
QPSK

Low Channel

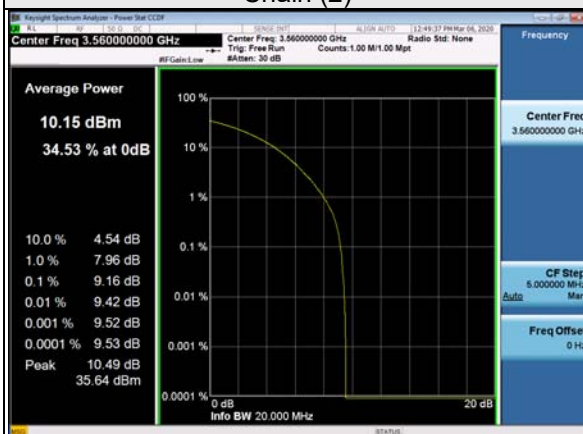
Chain (0)



Chain (1)

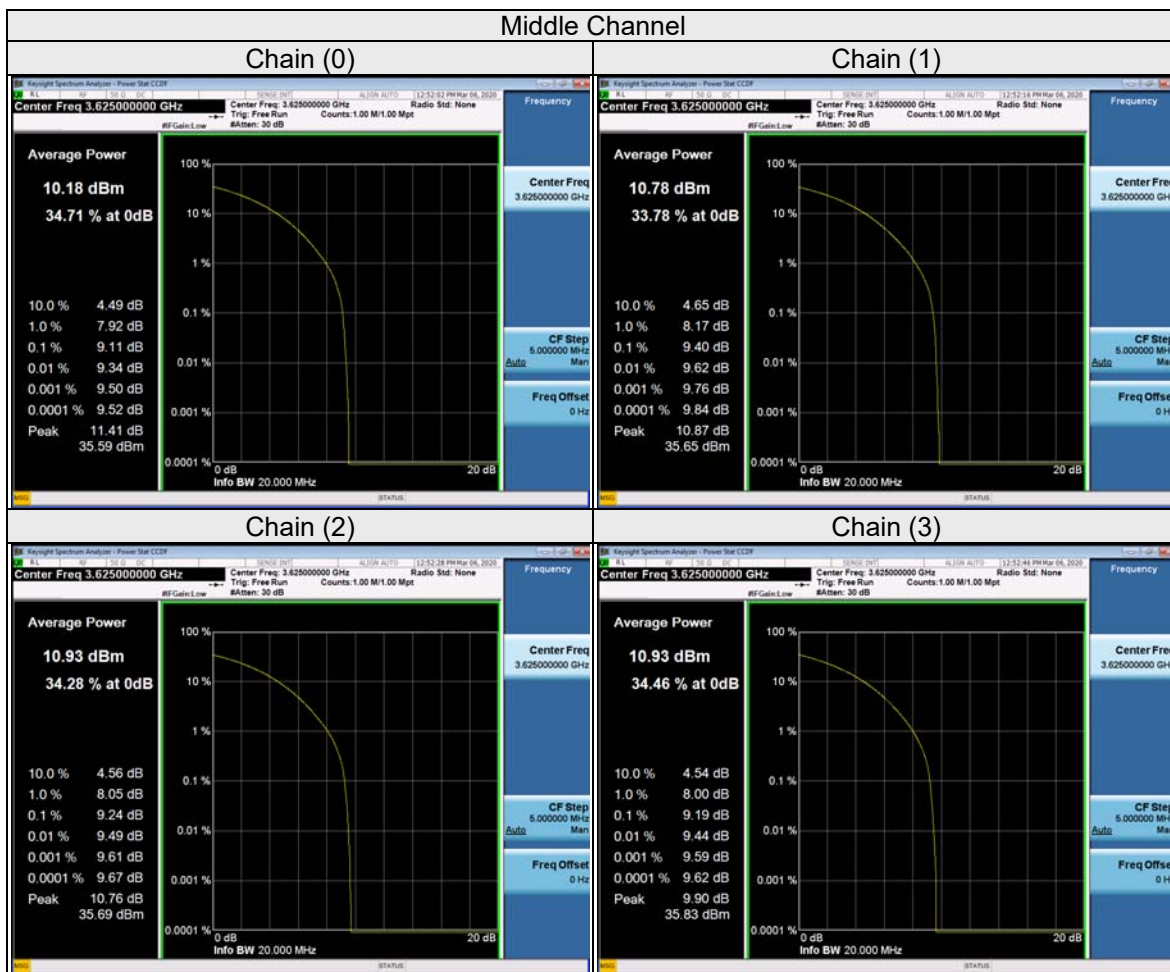


Chain (2)



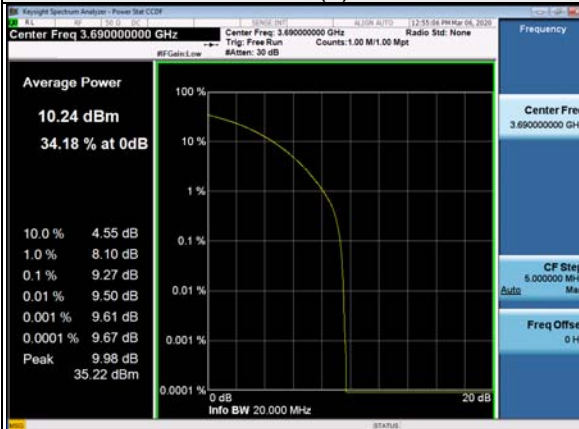
Chain (3)



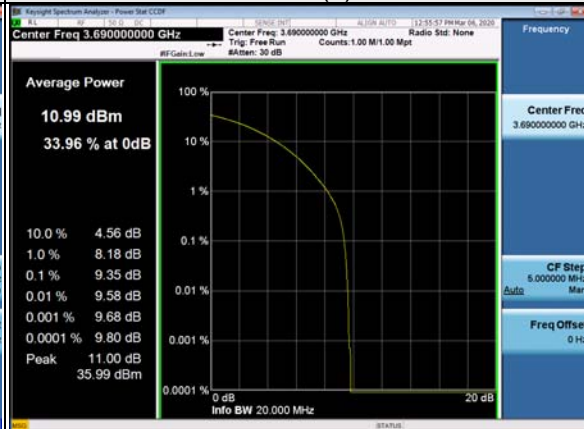


## High Channel

### Chain (0)



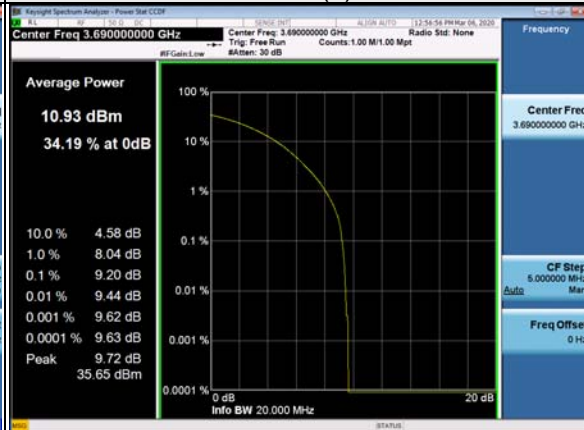
### Chain (1)



### Chain (2)



### Chain (3)



### CA MODE

| Channel | Freq.<br>(MHz) | Peak to Average Ratio (dB) | Limit (dB) | Pass / Fail |
|---------|----------------|----------------------------|------------|-------------|
|         |                | 10MHz+10MHz                |            |             |
|         |                | PCC + SCC                  |            |             |
|         |                | QPSK                       |            |             |
| Low     | 3555           | 9.31                       | 13         | Pass        |
|         | 3565           | 9.45                       | 13         | Pass        |
| Middle  | 3620           | 9.40                       | 13         | Pass        |
|         | 3630           | 9.40                       | 13         | Pass        |
| High    | 3685           | 9.45                       | 13         | Pass        |
|         | 3695           | 9.35                       | 13         | Pass        |

| Channel | Freq.<br>(MHz) | Peak to Average Ratio (dB) | Limit (dB) | Pass / Fail |
|---------|----------------|----------------------------|------------|-------------|
|         |                | 20MHz+20MHz                |            |             |
|         |                | PCC + SCC                  |            |             |
|         |                | QPSK                       |            |             |
| Low     | 3560           | 9.35                       | 13         | Pass        |
|         | 3580           | 9.21                       | 13         | Pass        |
| Middle  | 3615           | 9.45                       | 13         | Pass        |
|         | 3635           | 9.35                       | 13         | Pass        |
| High    | 3670           | 9.31                       | 13         | Pass        |
|         | 3690           | 9.26                       | 13         | Pass        |

10MHz+10MHz:

## Spectrum Plot of Worst Value

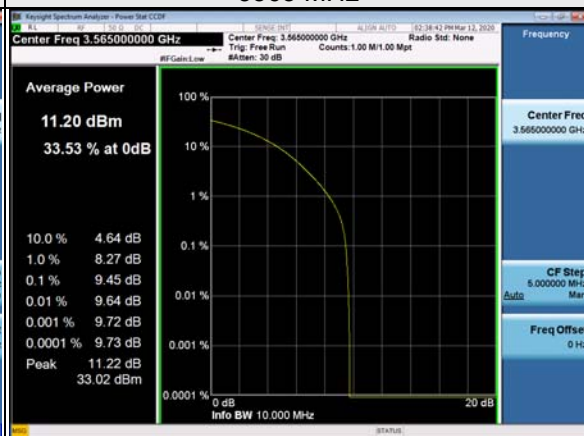
QPSK

Low Channel

3555 MHz



3565 MHz



Middle Channel

3620 MHz

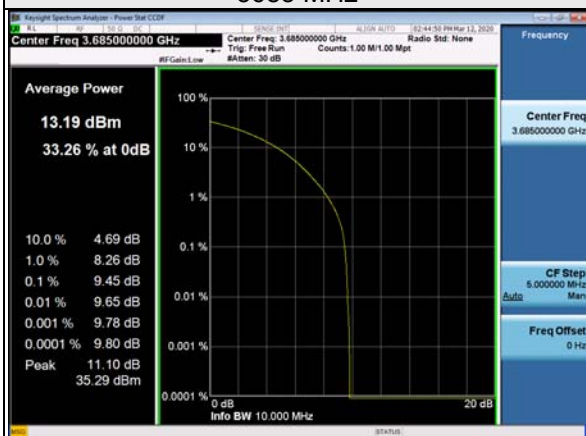


3630 MHz

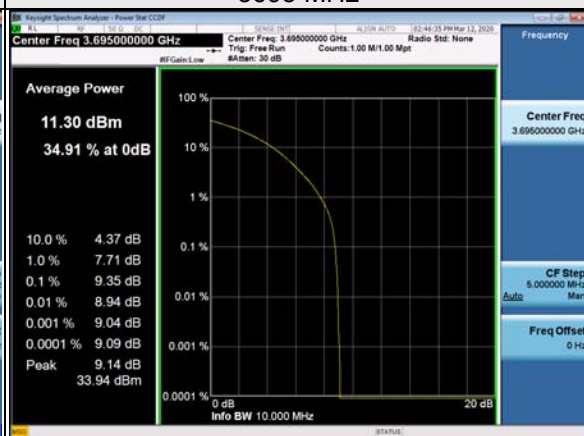


High Channel

3685 MHz



3695 MHz



20MHz+20MHz:

## Spectrum Plot of Worst Value

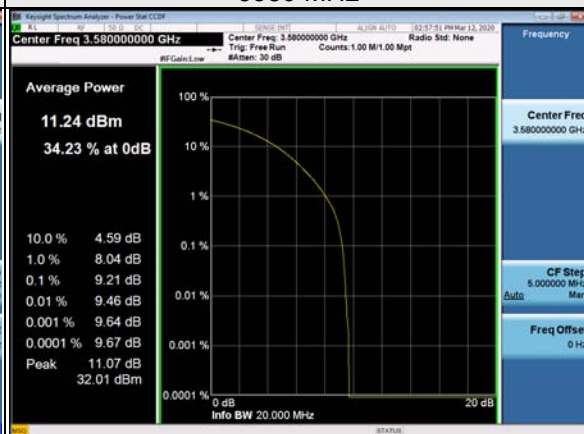
QPSK

Low Channel

3560 MHz



3580 MHz

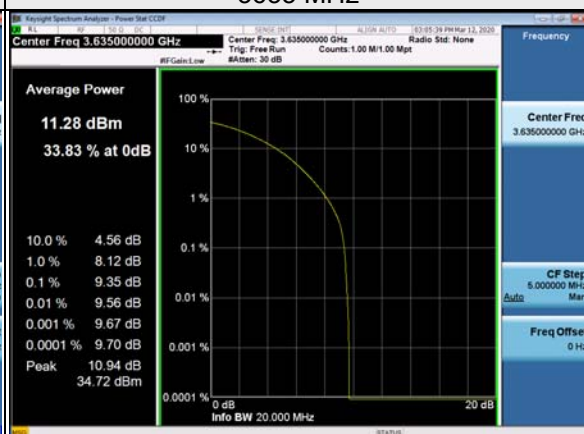


Middle Channel

3615 MHz



3635 MHz

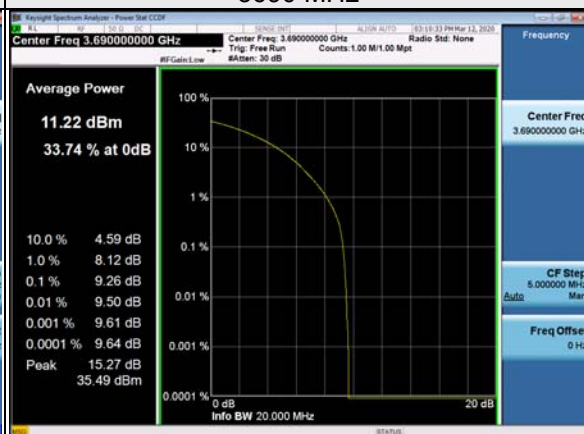


High Channel

3670 MHz



3690 MHz



## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

| Power of any emissions outside the Fundamental  | Limit       |
|-------------------------------------------------|-------------|
| Within 0-10MHz above the Assigned Channel       | -13 dBm/MHz |
| Within 0-10MHz below the Assigned Channel       |             |
| Greater than 0-10MHz above the Assigned Channel | -25 dBm/MHz |
| Greater than 0-10MHz below the Assigned Channel |             |
| Power of any emission below 3530MHz             | -40 dBm/MHz |
| Power of any emission above 3720MHz             |             |

Note:

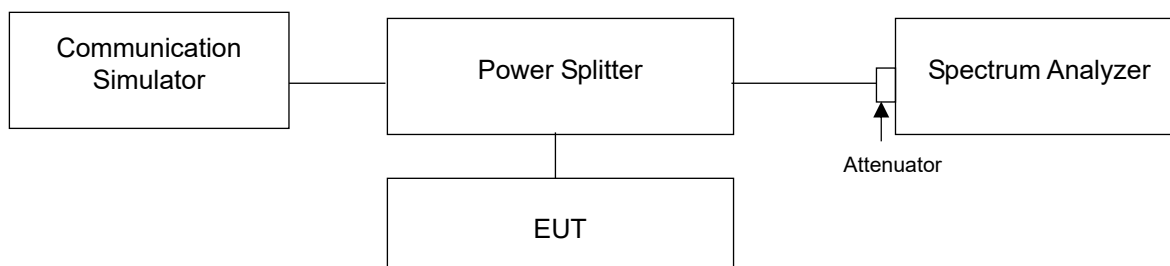
This device can be implement MIMO function, so the limit of spurious emissions needs to be reduced by  $10\log(\text{Numbers}_{\text{Ant}})$ , according to FCC KDB 662911 D01 guidance.

{The limit is adjusted to  $-13\text{dBm} - 10*\log(4) = -19.02\text{dBm}$ .}

{The limit is adjusted to  $-25\text{dBm} - 10*\log(4) = -31.02\text{dBm}$ .}

{The limit is adjusted to  $-40\text{dBm} - 10*\log(4) = -46.02\text{dBm}$ .}

### 4.7.2 Test Setup



### 4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.7.4 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 37 GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.
- Measuring frequency band edge, 20dB attenuation pad is connected with spectrum. 1% of the fundamental emission bandwidth is used for conducted emission measurement.
- For 10 MHz channel BW mode, extend the 1% range from 1M to 2M above and below the channel edge and then reduce the limit further by  $10\log(1000/100)=10\text{dB}$  (i.e. total  $-19 + -10=-29\text{dB}$ ) to compensate for the integration from 100k to 1M.

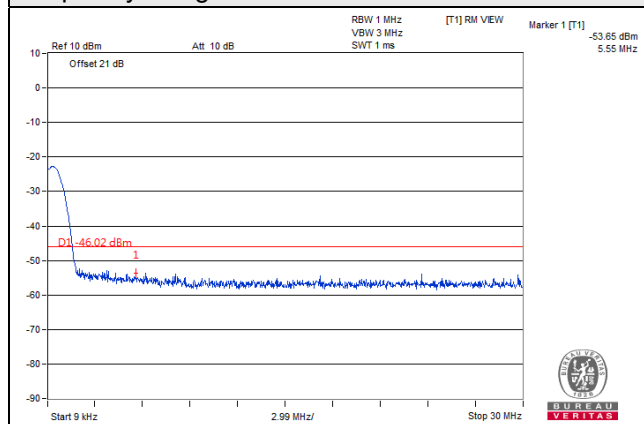
## 4.7.5 Test Results

### SC MODE

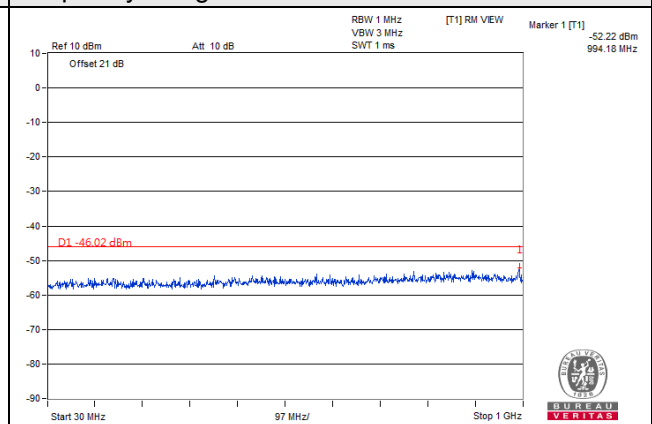
#### 10MHz / QPSK / Chain 0 / Low Channel



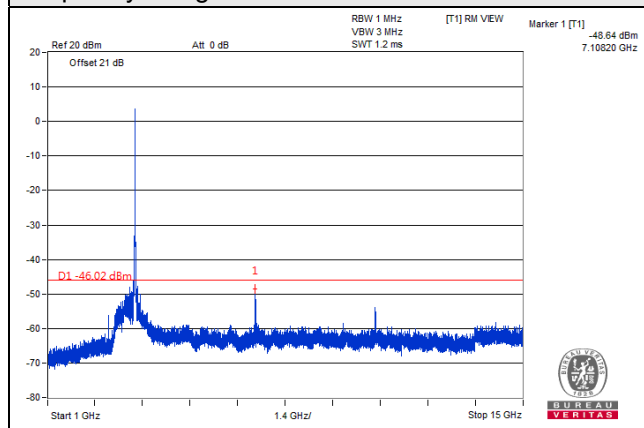
#### Frequency Range : 9kHz~30MHz



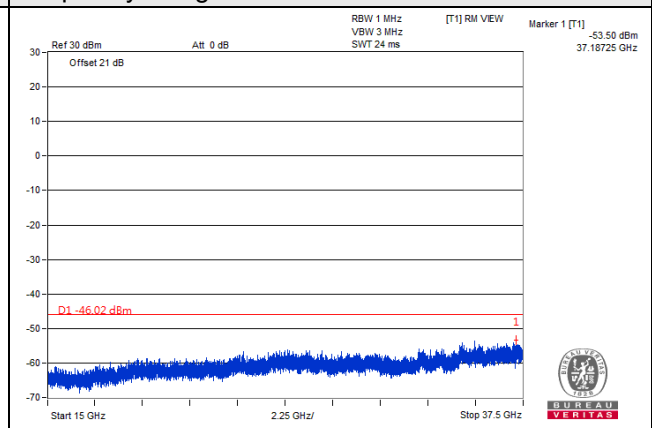
#### Frequency Range : 30MHz~1GHz



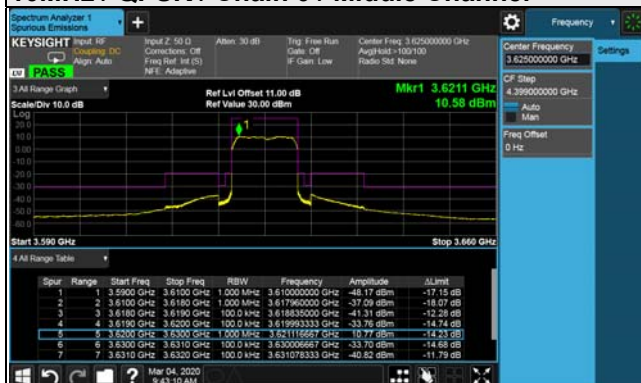
#### Frequency Range : 1GHz~15GHz



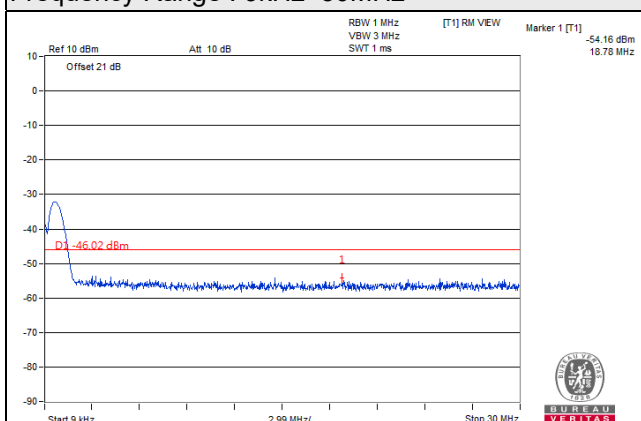
#### Frequency Range : 15GHz~37.5GHz



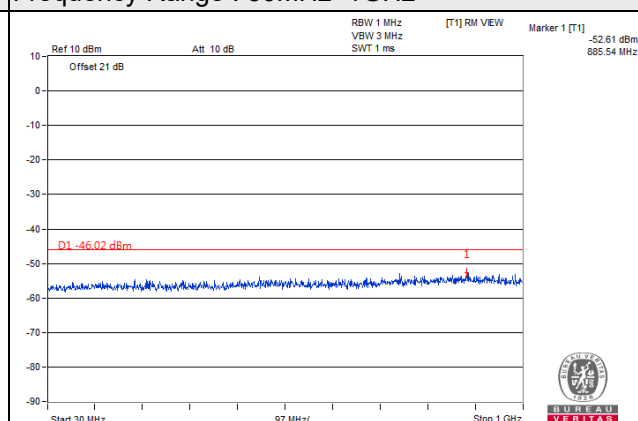
## 10MHz / QPSK / Chain 0 / Middle Channel



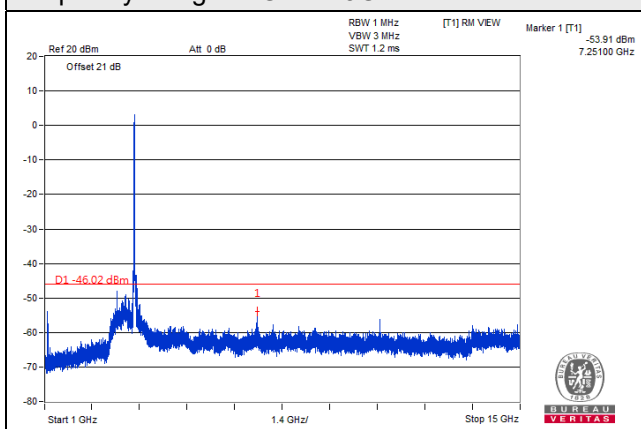
### Frequency Range : 9kHz~30MHz



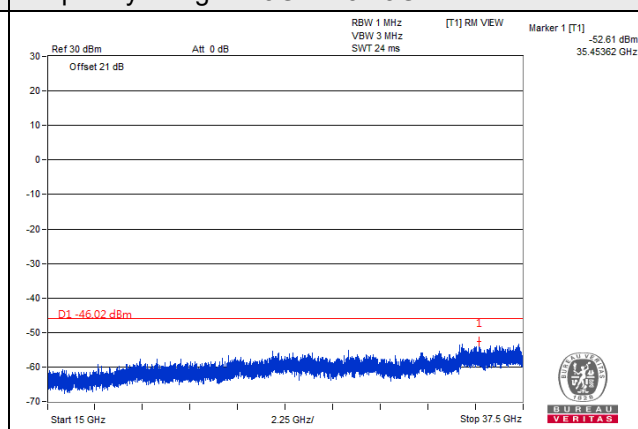
### Frequency Range : 30MHz~1GHz



### Frequency Range : 1GHz~15GHz



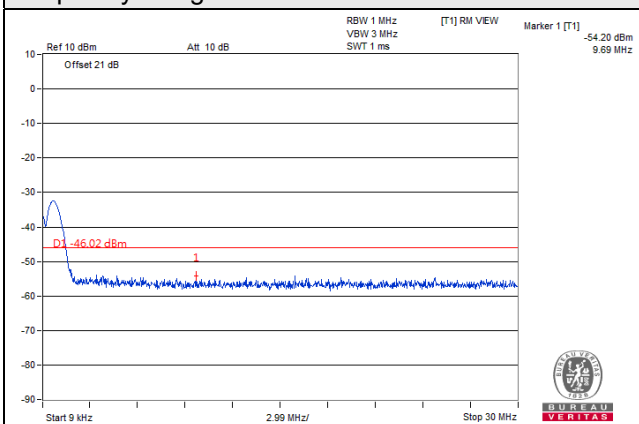
### Frequency Range : 15GHz~37.5GHz



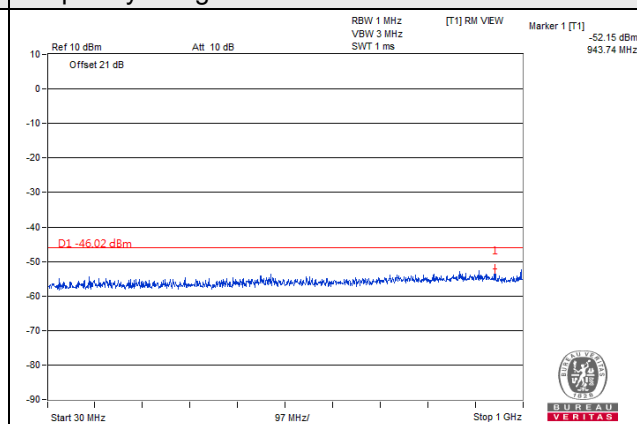
## 10MHz / QPSK / Chain 0 / High Channel



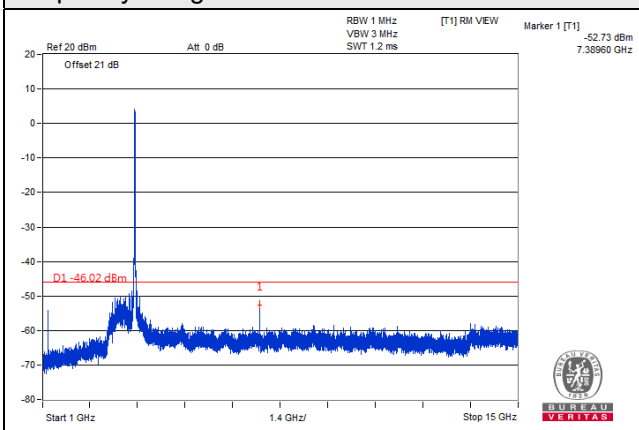
### Frequency Range : 9kHz~30MHz



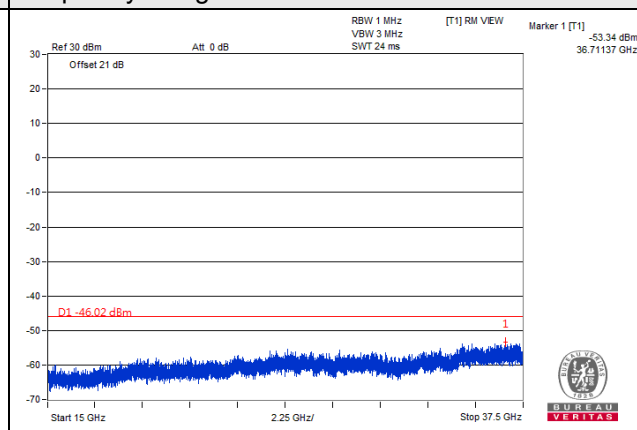
### Frequency Range : 30MHz~1GHz



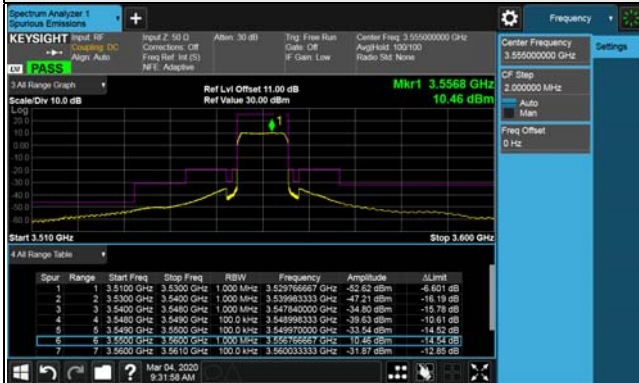
### Frequency Range : 1GHz~15GHz



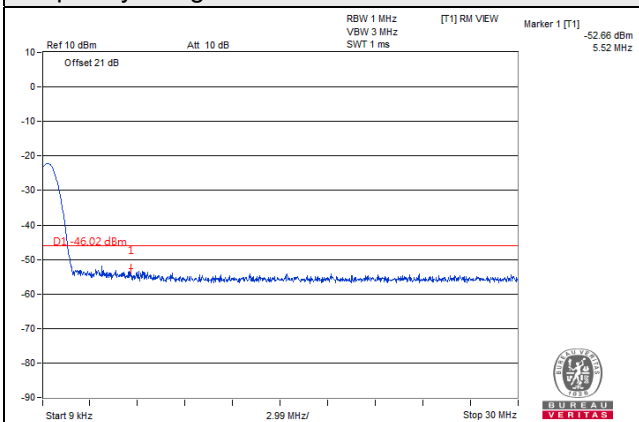
### Frequency Range : 15GHz~37.5GHz



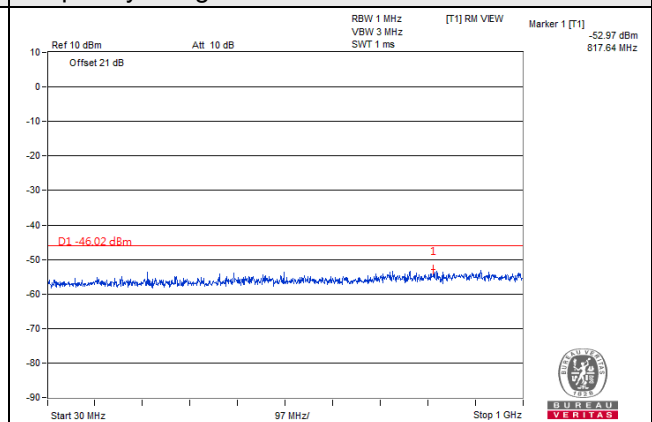
## 10MHz / QPSK / Chain 1 / Low Channel



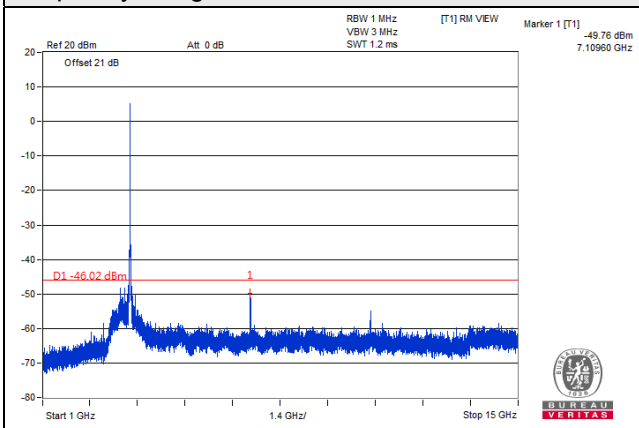
### Frequency Range : 9kHz~30MHz



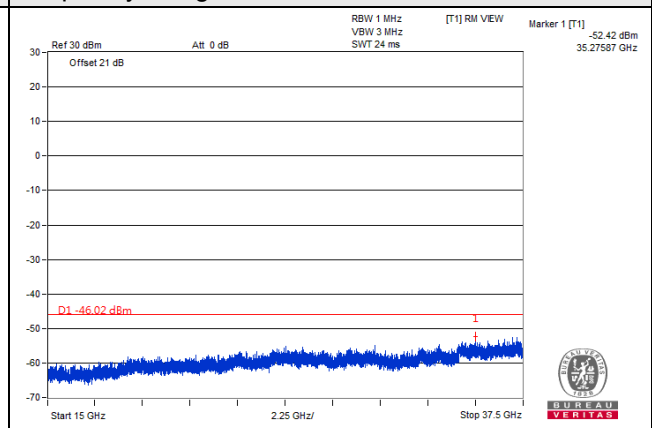
### Frequency Range : 30MHz~1GHz



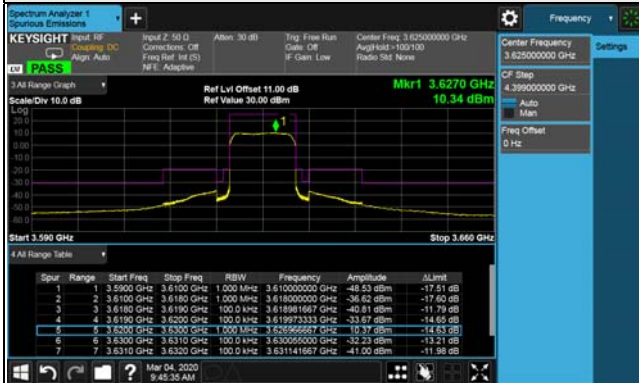
### Frequency Range : 1GHz~15GHz



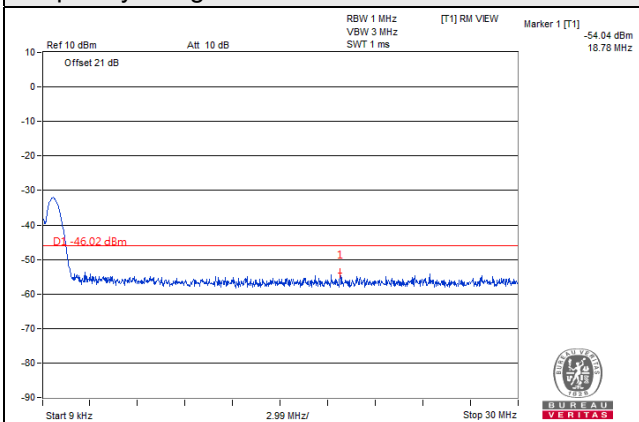
### Frequency Range : 15GHz~37.5GHz



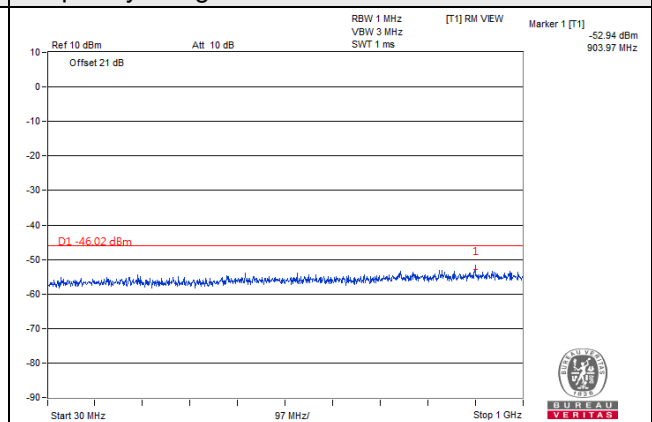
## 10MHz / QPSK / Chain 1 / Middle Channel



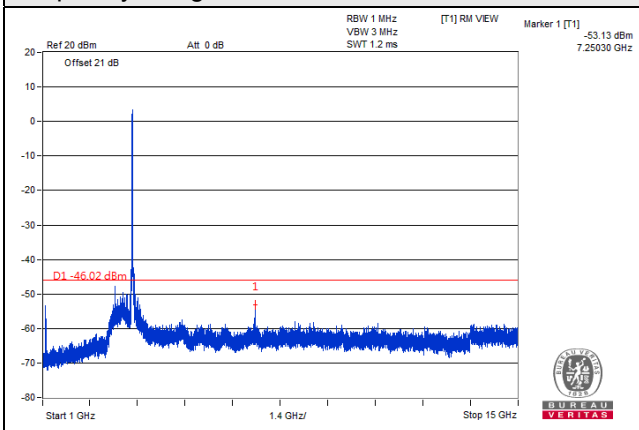
### Frequency Range : 9kHz~30MHz



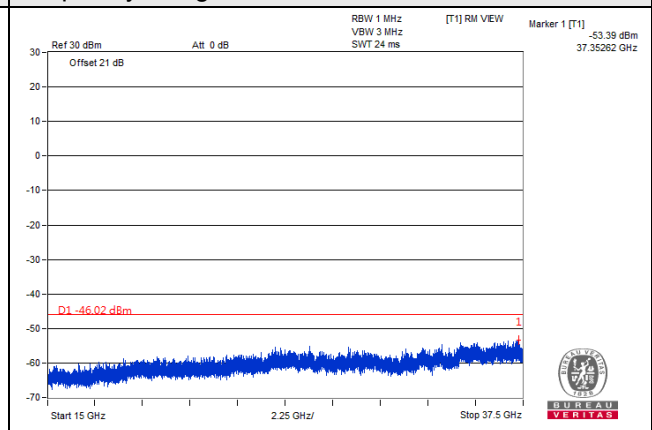
### Frequency Range : 30MHz~1GHz



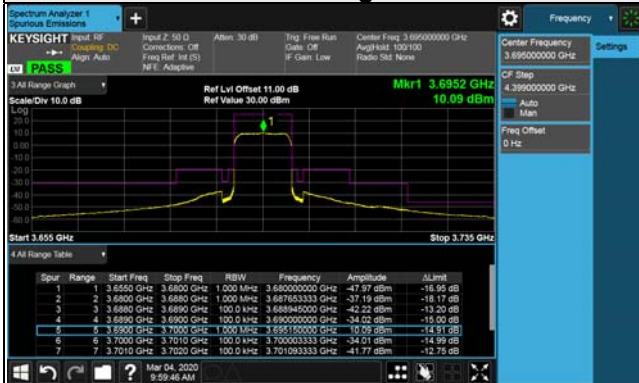
### Frequency Range : 1GHz~15GHz



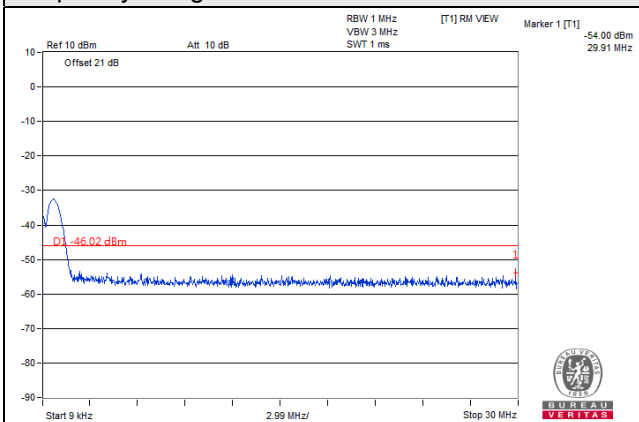
### Frequency Range : 15GHz~37.5GHz



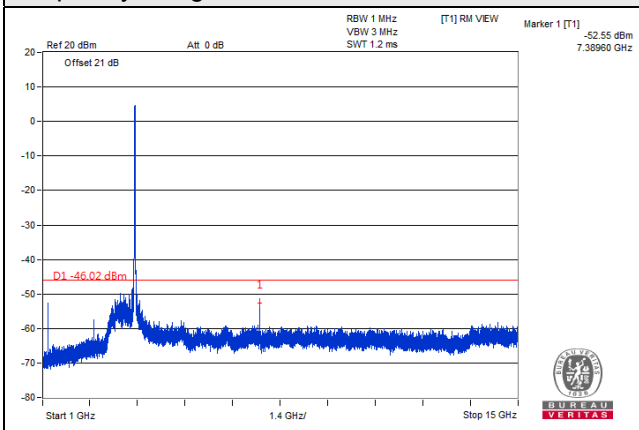
## 10MHz / QPSK / Chain 1 / High Channel



## Frequency Range : 9kHz~30MHz



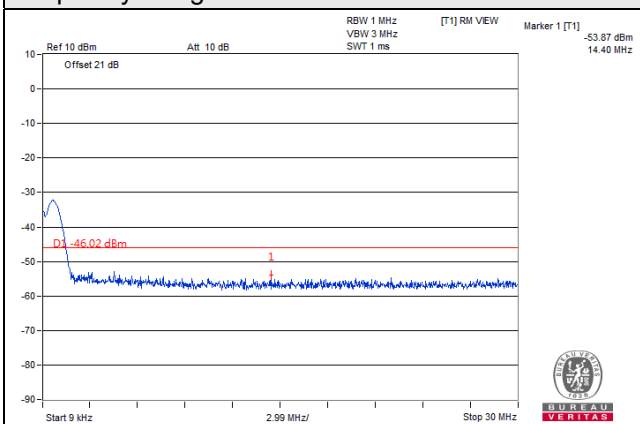
## Frequency Range : 1GHz~15GHz



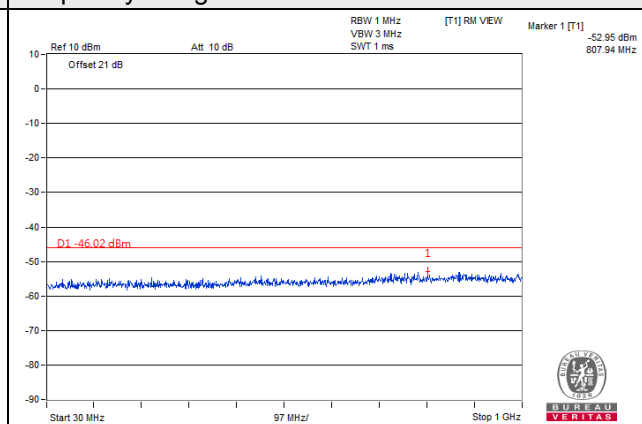
## 10MHz / QPSK / Chain 2 / Low Channel



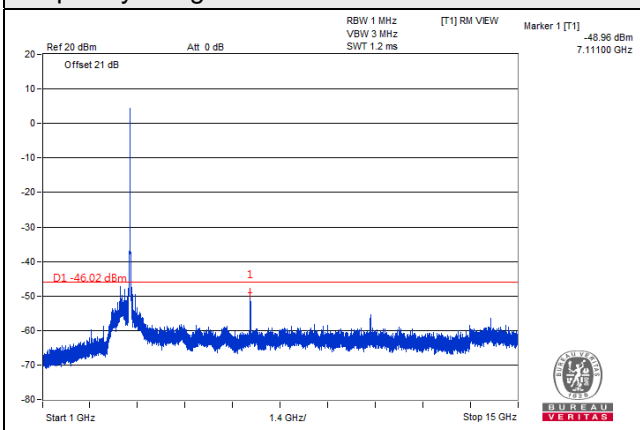
### Frequency Range : 9kHz~30MHz



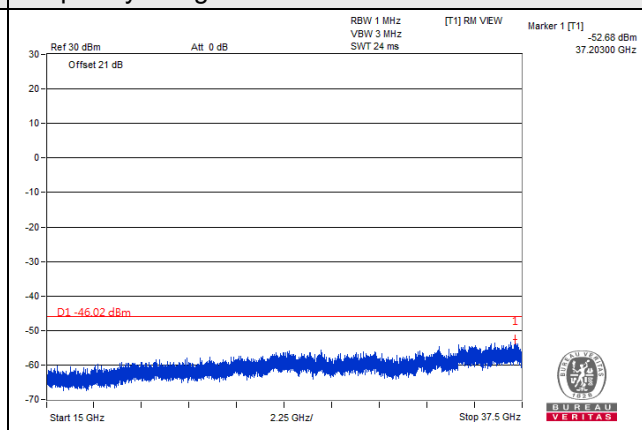
### Frequency Range : 30MHz~1GHz



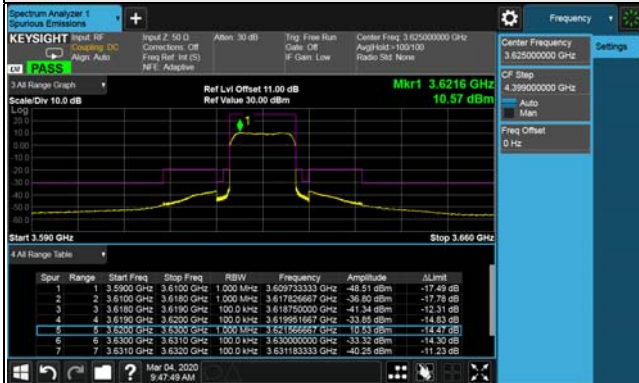
### Frequency Range : 1GHz~15GHz



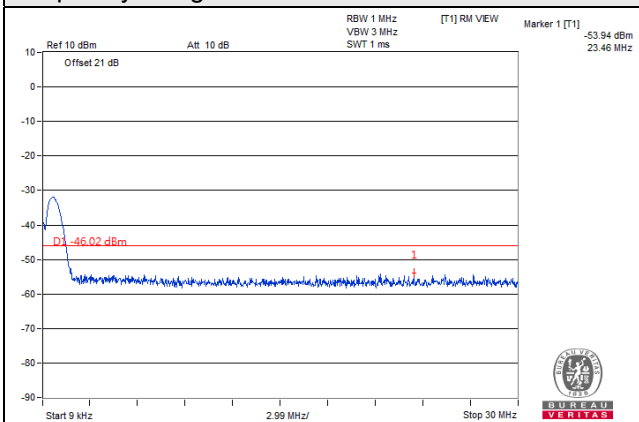
### Frequency Range : 15GHz~37.5GHz



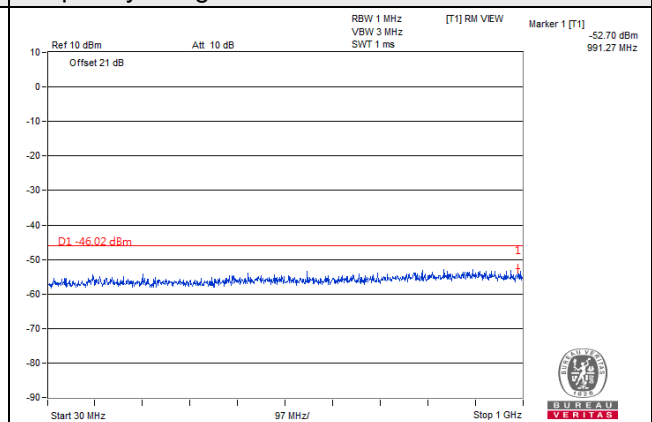
## 10MHz / QPSK / Chain 2 / Middle Channel



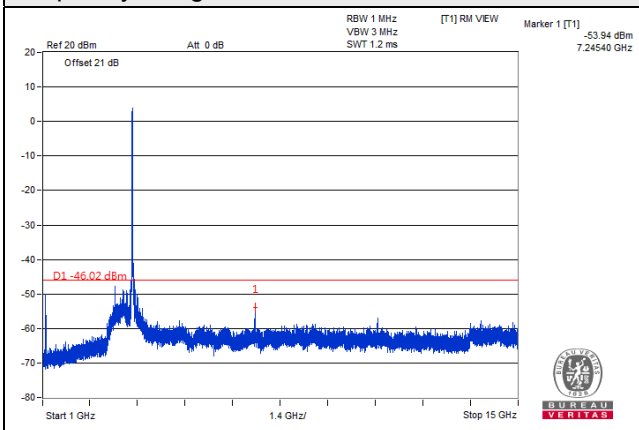
### Frequency Range : 9kHz~30MHz



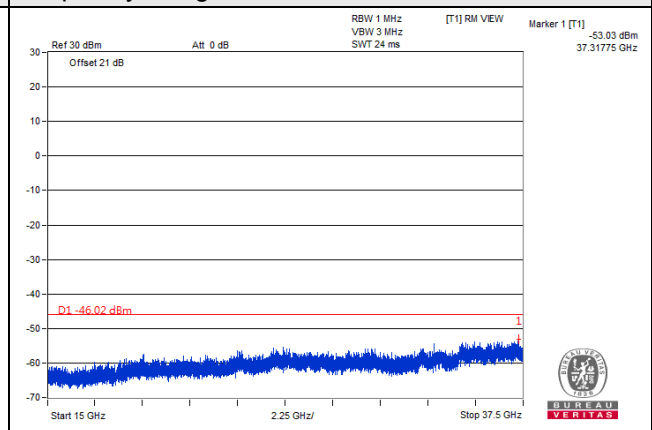
### Frequency Range : 30MHz~1GHz



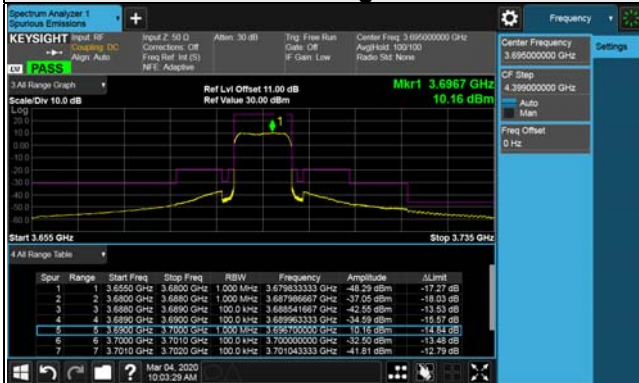
### Frequency Range : 1GHz~15GHz



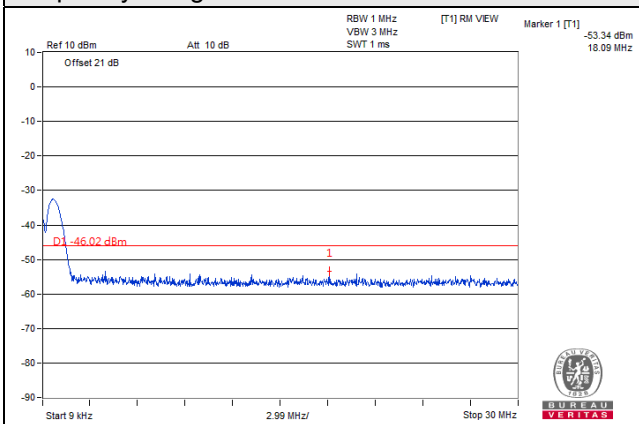
### Frequency Range : 15GHz~37.5GHz



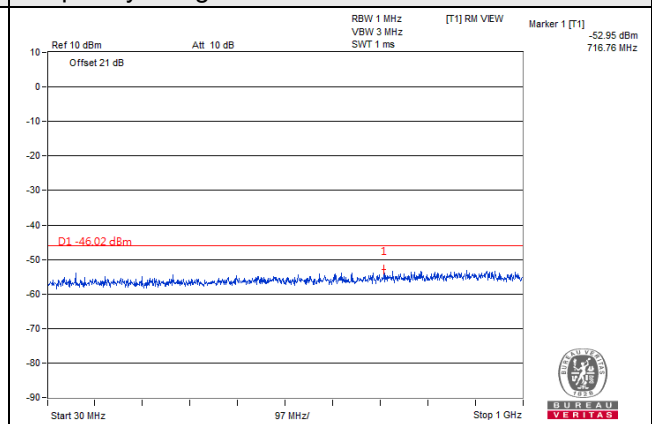
## 10MHz / QPSK / Chain 2 / High Channel



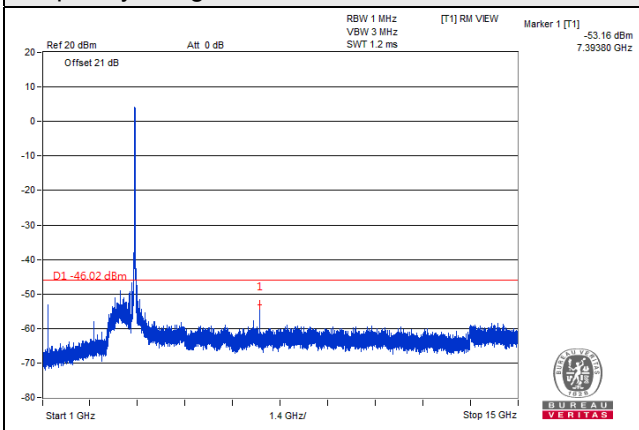
### Frequency Range : 9kHz~30MHz



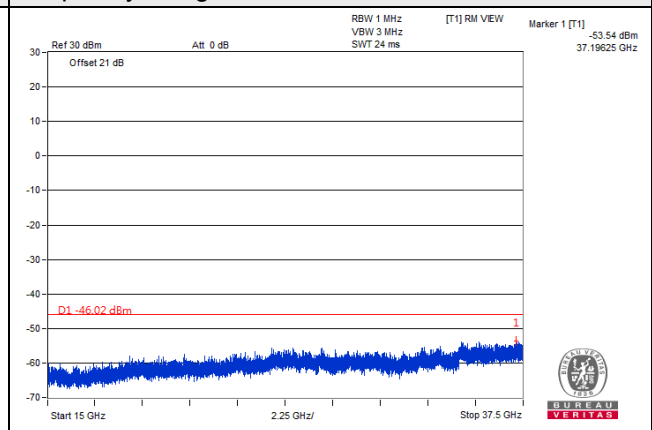
### Frequency Range : 30MHz~1GHz



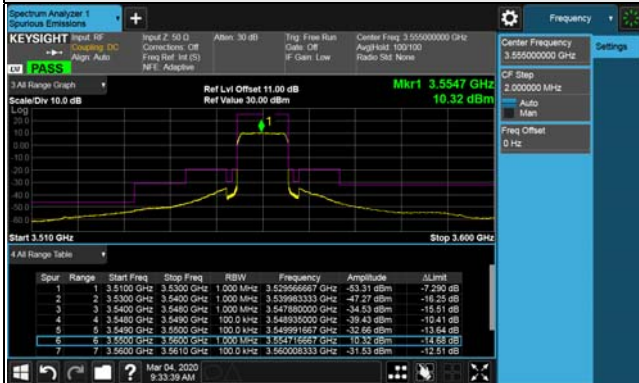
### Frequency Range : 1GHz~15GHz



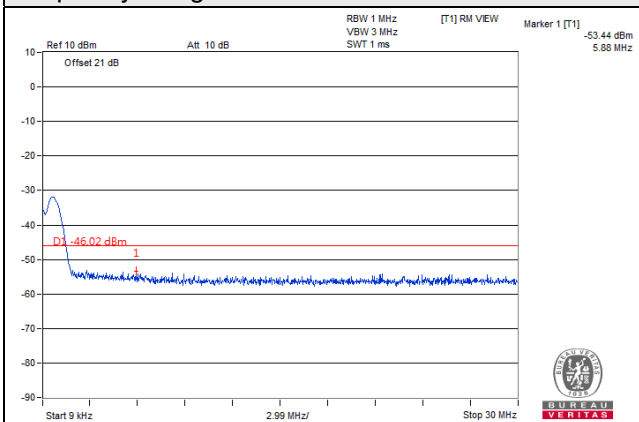
### Frequency Range : 15GHz~37.5GHz



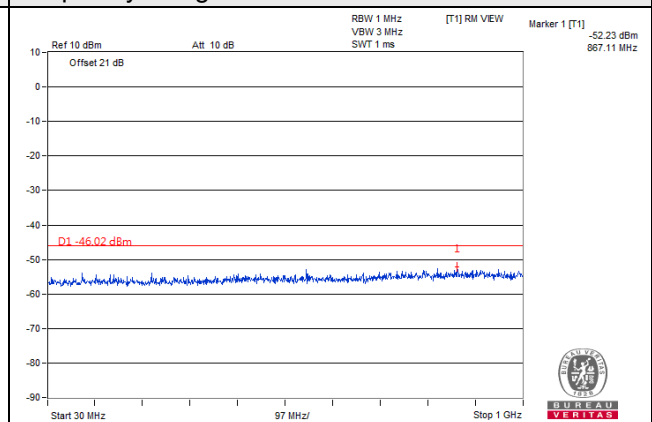
## 10MHz / QPSK / Chain 3 / Low Channel



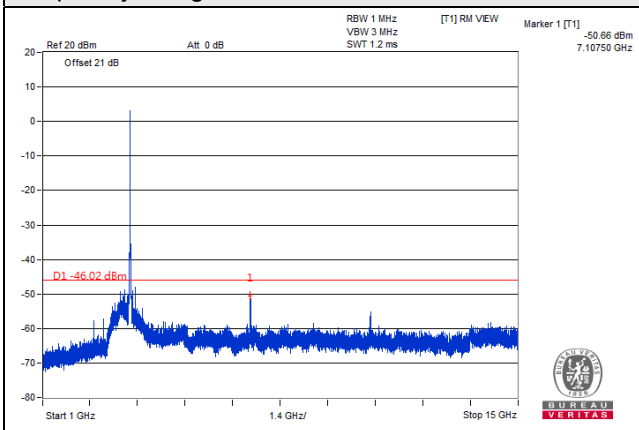
Frequency Range : 9kHz~30MHz



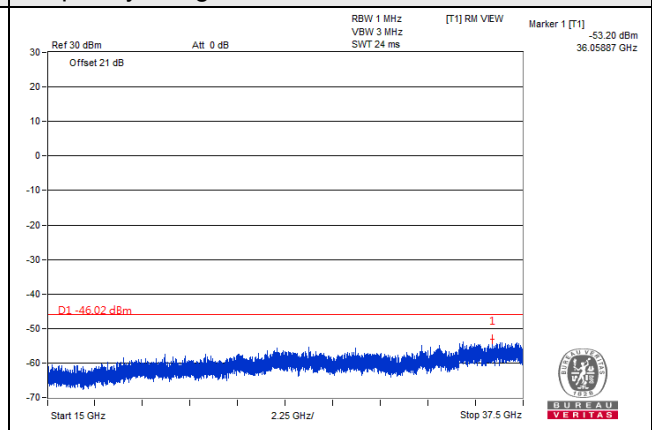
Frequency Range : 30MHz~1GHz



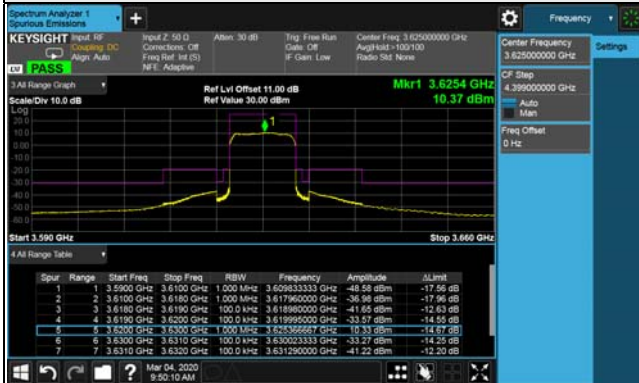
Frequency Range : 1GHz~15GHz



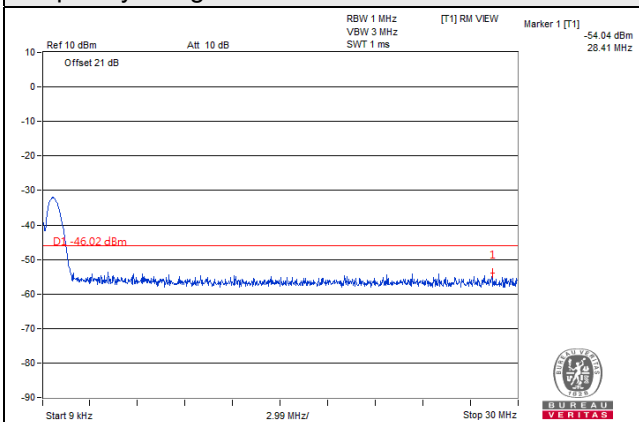
Frequency Range : 15GHz~37.5GHz



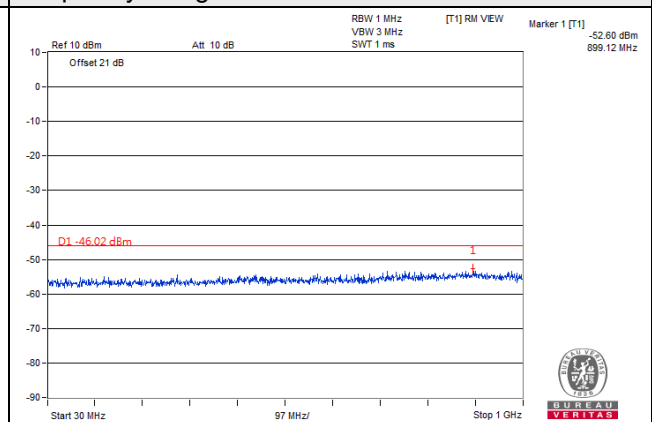
## 10MHz / QPSK / Chain 3 / Middle Channel



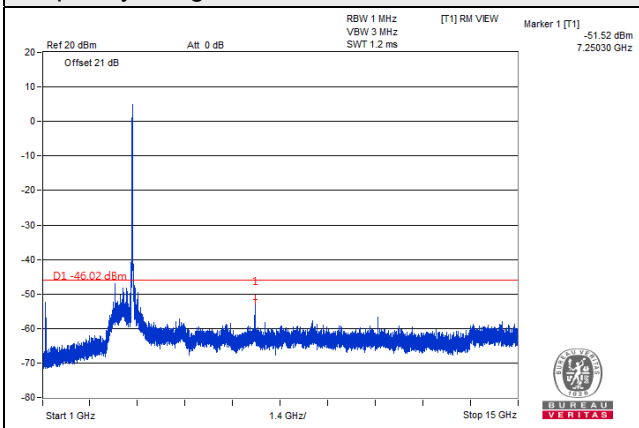
### Frequency Range : 9kHz~30MHz



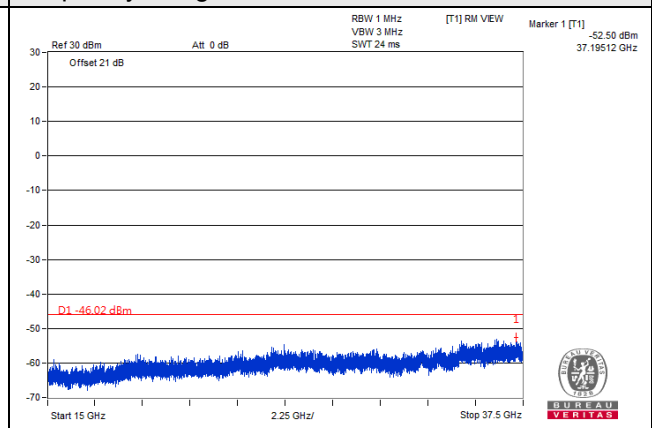
### Frequency Range : 30MHz~1GHz



### Frequency Range : 1GHz~15GHz



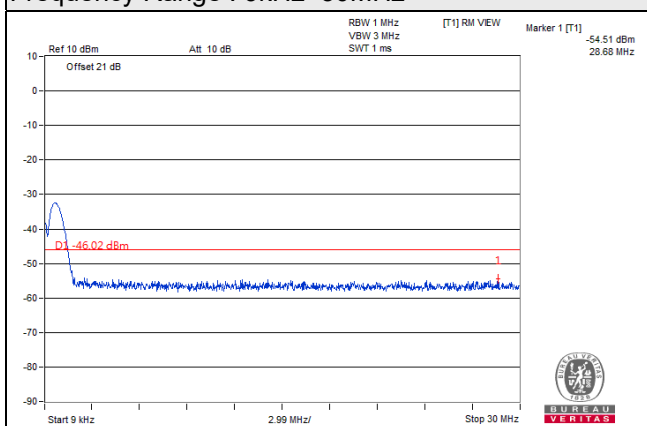
### Frequency Range : 15GHz~37.5GHz



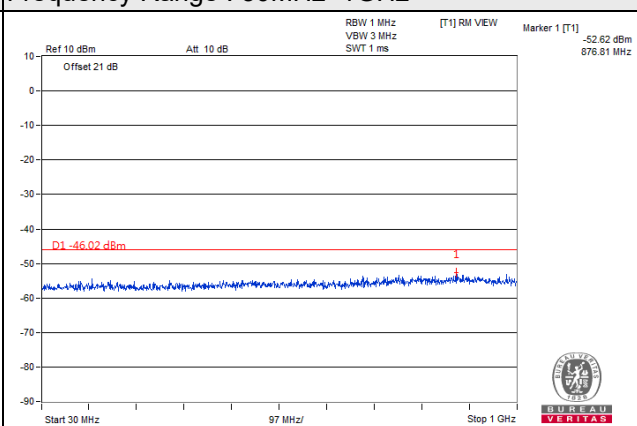
## 10MHz / QPSK / Chain 3 / High Channel



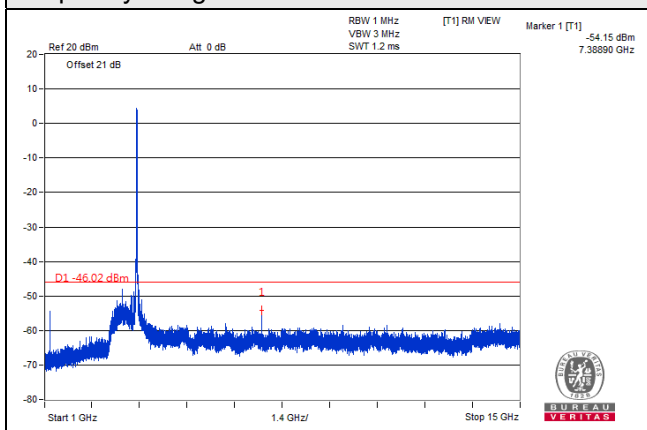
### Frequency Range : 9kHz~30MHz



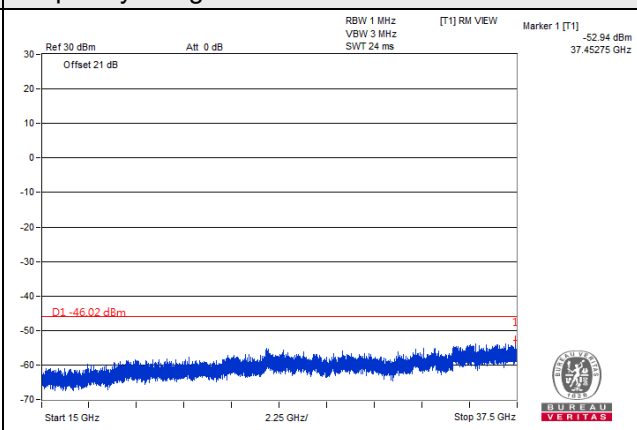
### Frequency Range : 30MHz~1GHz



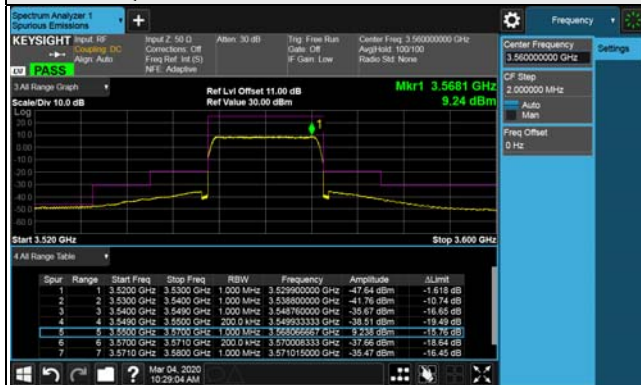
### Frequency Range : 1GHz~15GHz



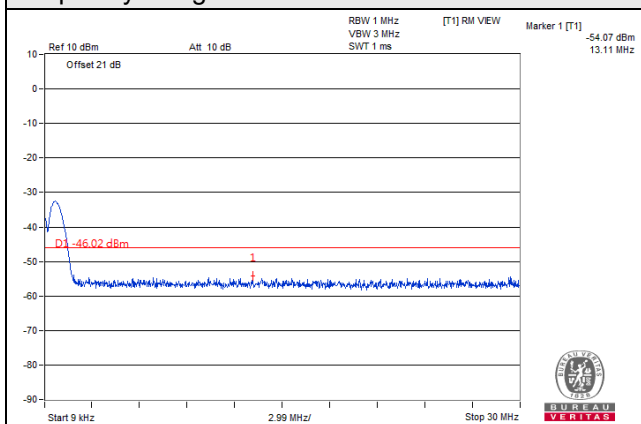
### Frequency Range : 15GHz~37.5GHz



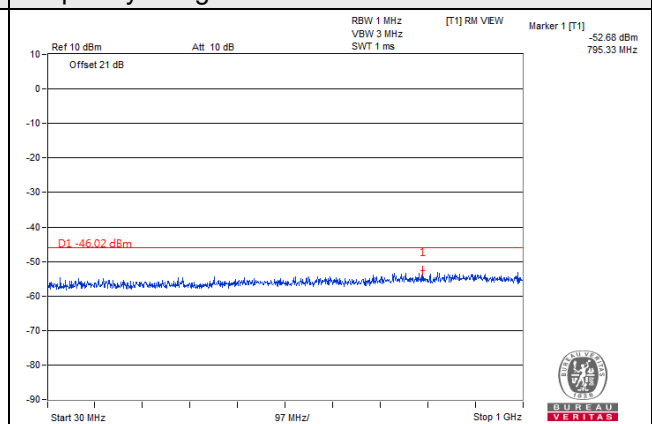
## 20MHz / QPSK / Chain 0 / Low Channel



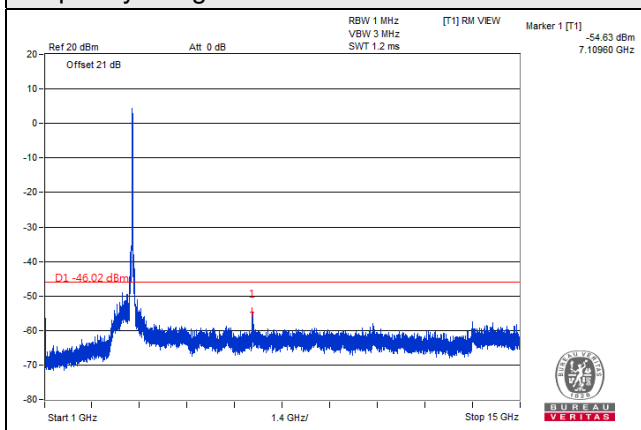
### Frequency Range : 9kHz~30MHz



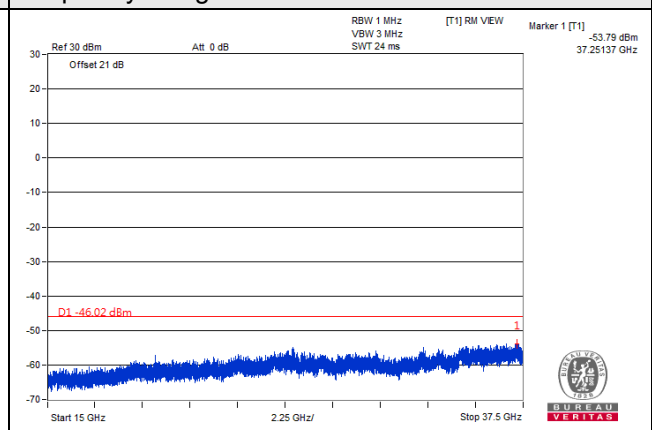
### Frequency Range : 30MHz~1GHz



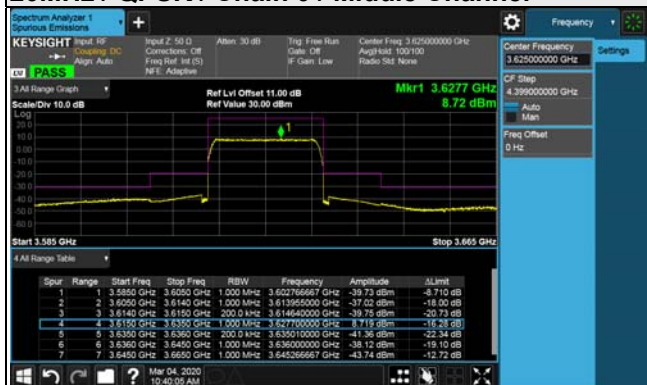
### Frequency Range : 1GHz~15GHz



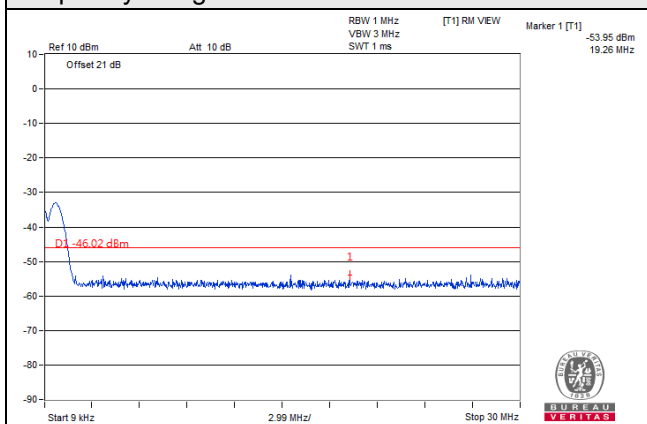
### Frequency Range : 15GHz~37.5GHz



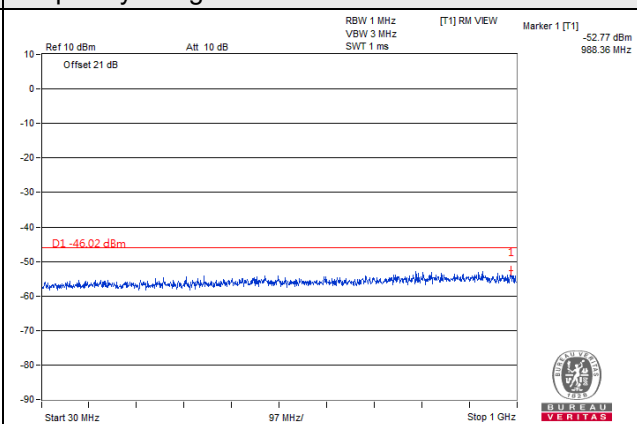
## 20MHz / QPSK / Chain 0 / Middle Channel



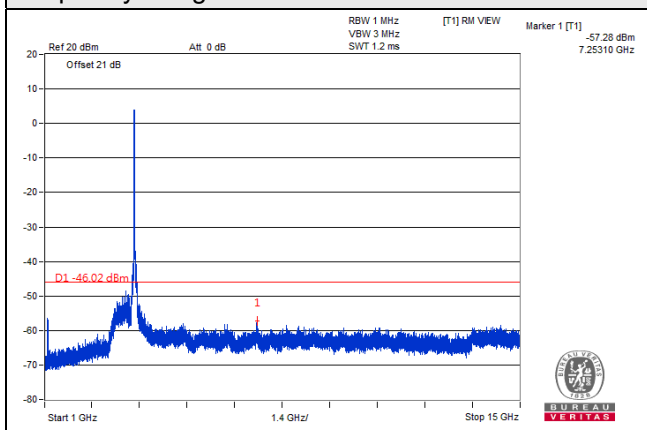
### Frequency Range : 9kHz~30MHz



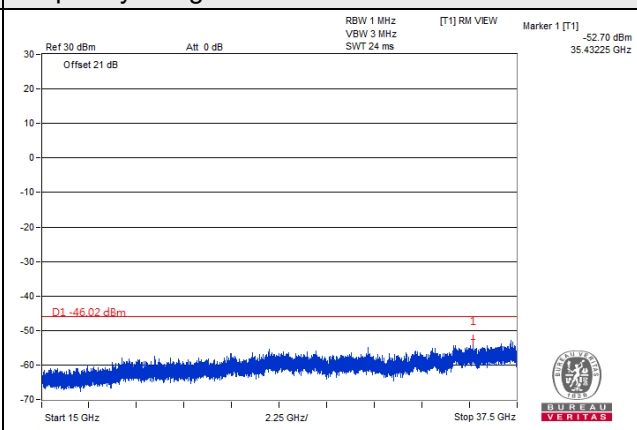
### Frequency Range : 30MHz~1GHz



### Frequency Range : 1GHz~15GHz



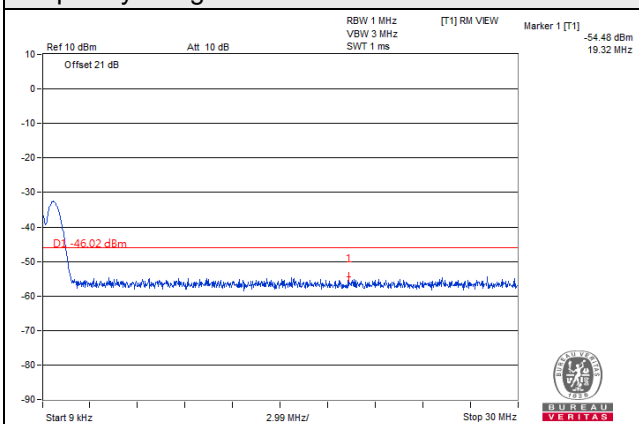
### Frequency Range : 15GHz~37.5GHz



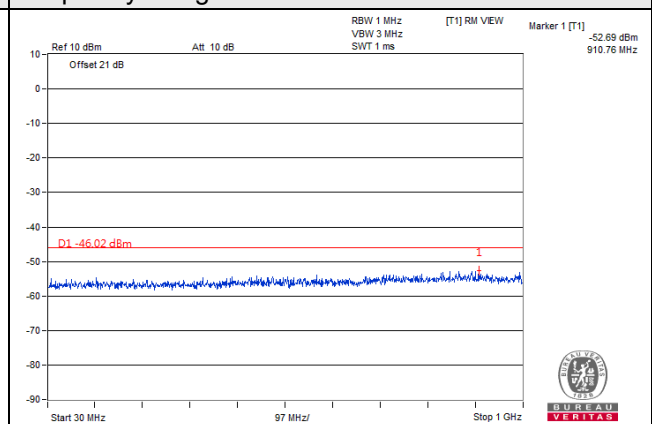
## 20MHz / QPSK / Chain 0 / High Channel



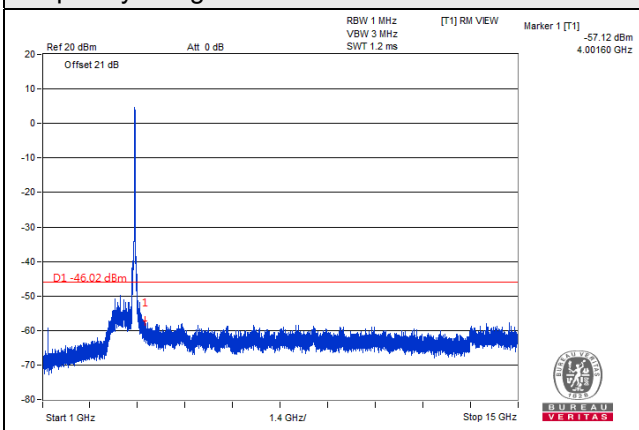
### Frequency Range : 9kHz~30MHz



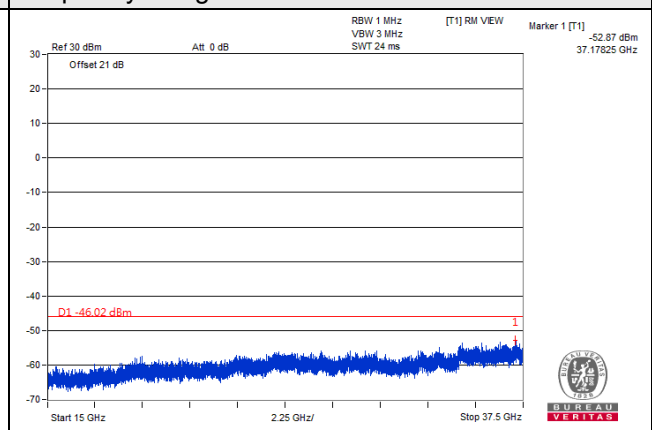
### Frequency Range : 30MHz~1GHz



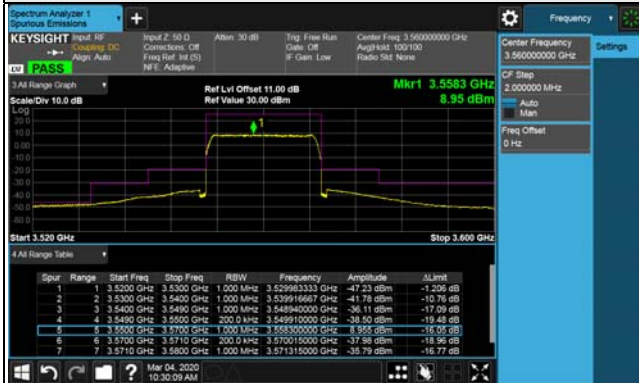
### Frequency Range : 1GHz~15GHz



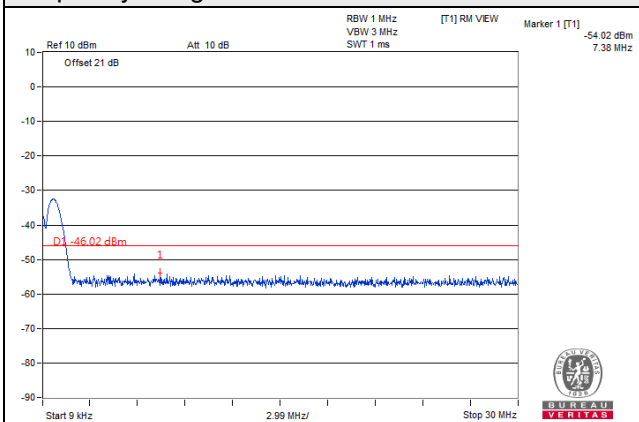
### Frequency Range : 15GHz~37.5GHz



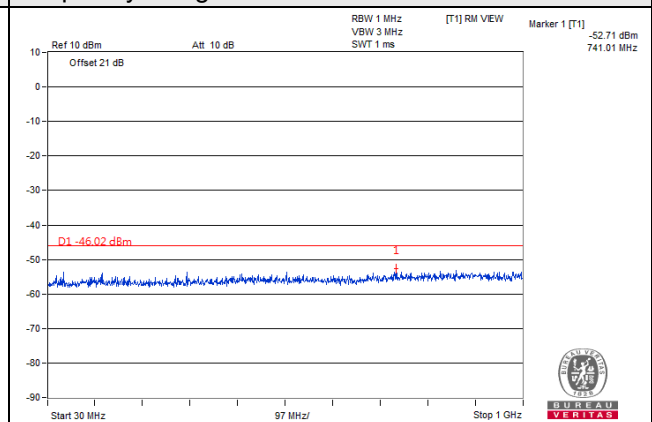
## 20MHz / QPSK / Chain 1 / Low Channel



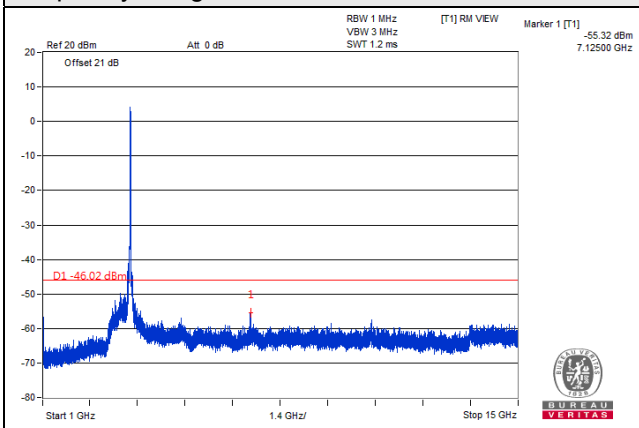
### Frequency Range : 9kHz~30MHz



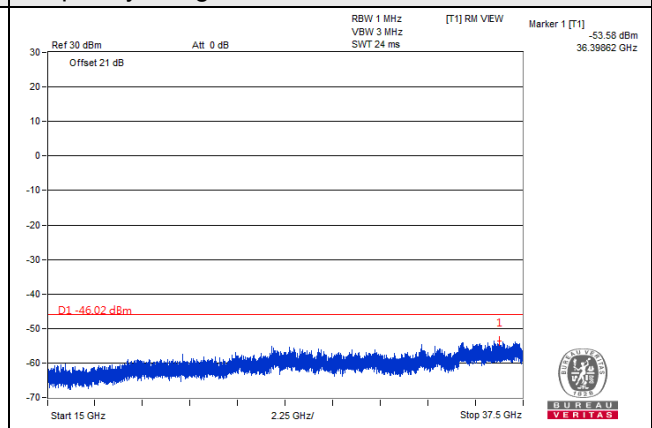
### Frequency Range : 30MHz~1GHz



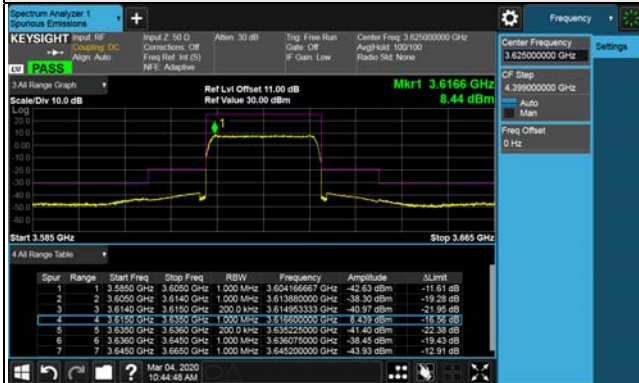
### Frequency Range : 1GHz~15GHz



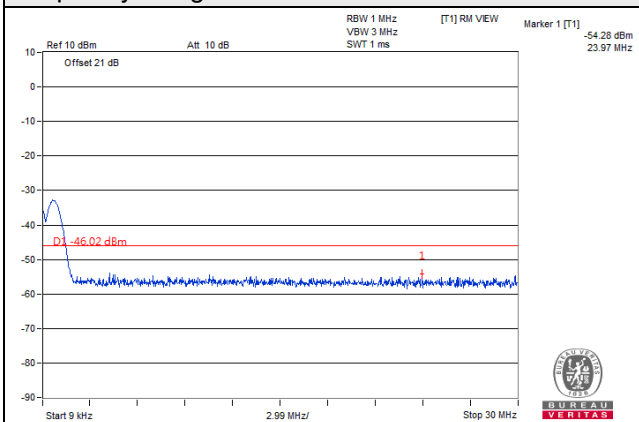
### Frequency Range : 15GHz~37.5GHz



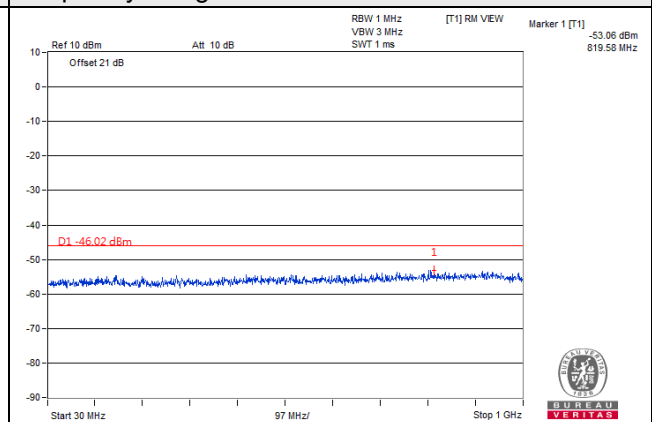
## 20MHz / QPSK / Chain 1 / Middle Channel



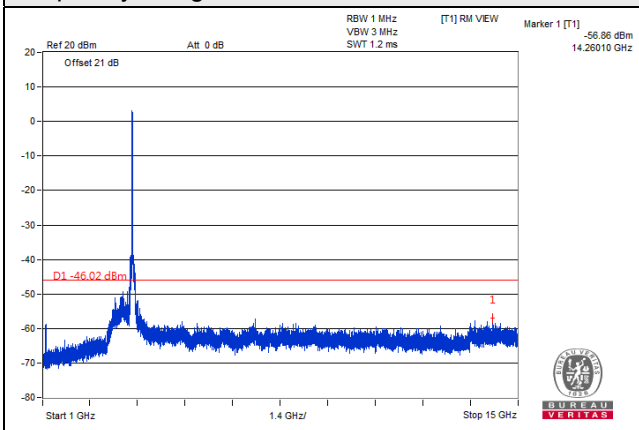
### Frequency Range : 9kHz~30MHz



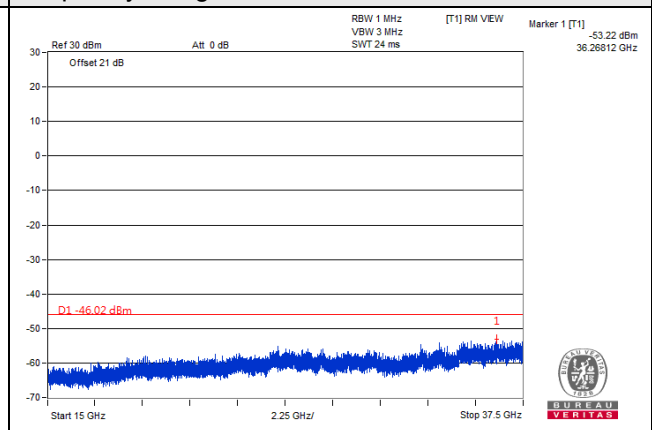
### Frequency Range : 30MHz~1GHz



### Frequency Range : 1GHz~15GHz



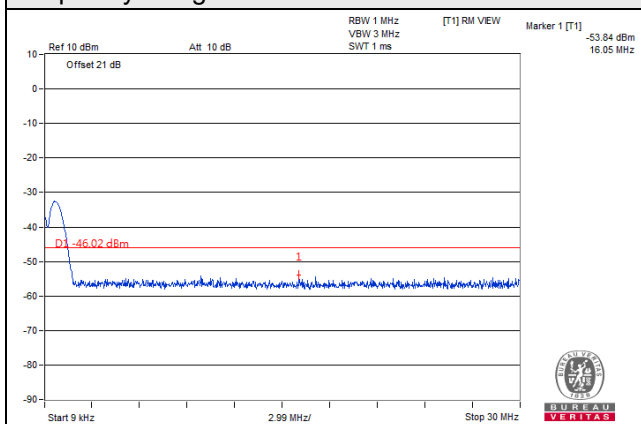
### Frequency Range : 15GHz~37.5GHz



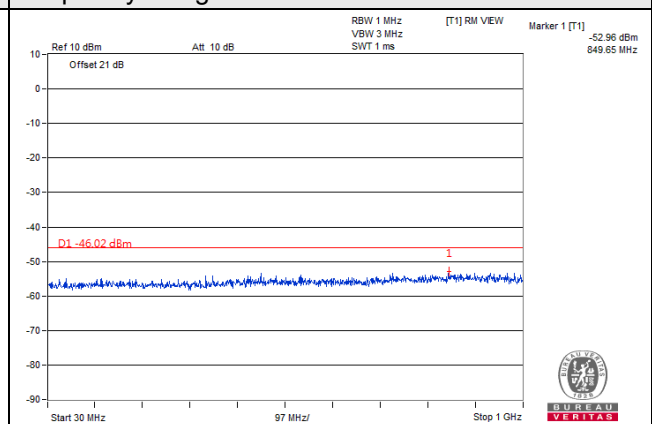
## 20MHz / QPSK / Chain 1 / High Channel



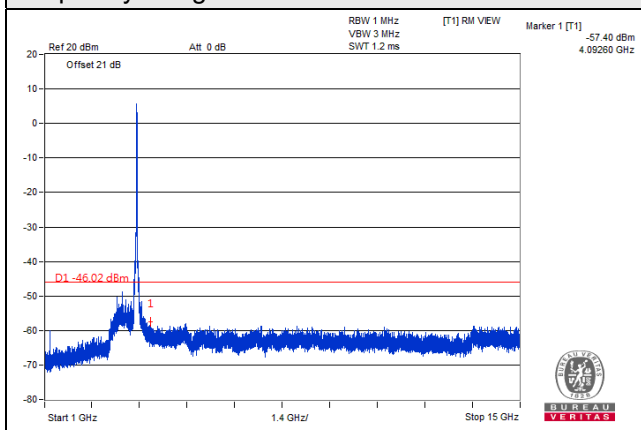
### Frequency Range : 9kHz~30MHz



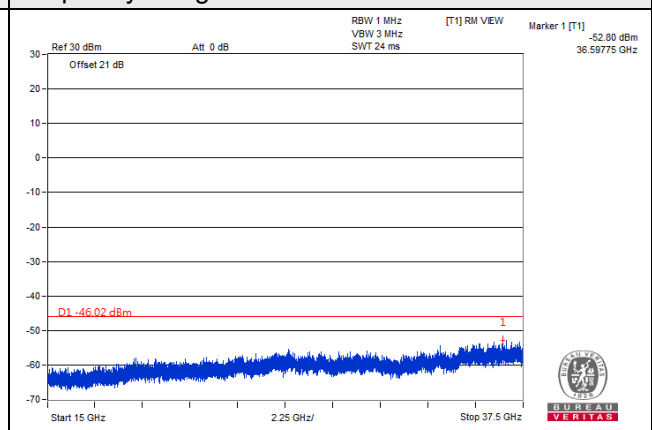
### Frequency Range : 30MHz~1GHz



### Frequency Range : 1GHz~15GHz



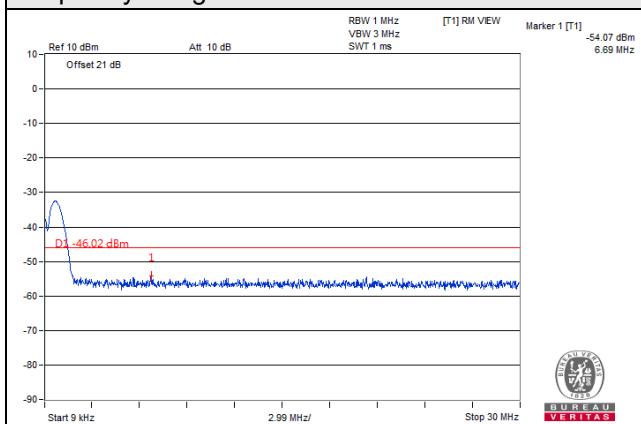
### Frequency Range : 15GHz~37.5GHz



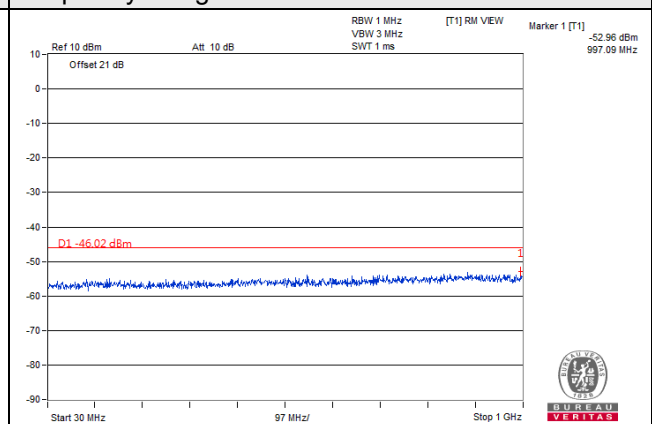
## 20MHz / QPSK / Chain 2 / Low Channel



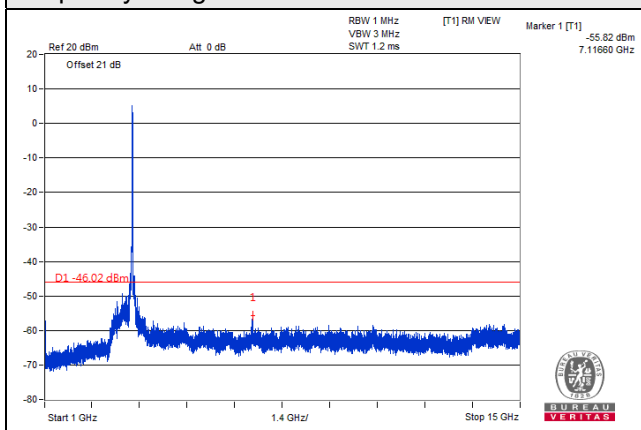
### Frequency Range : 9kHz~30MHz



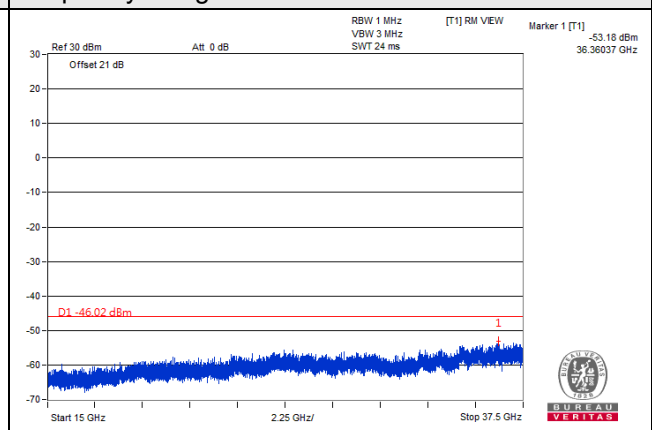
### Frequency Range : 30MHz~1GHz



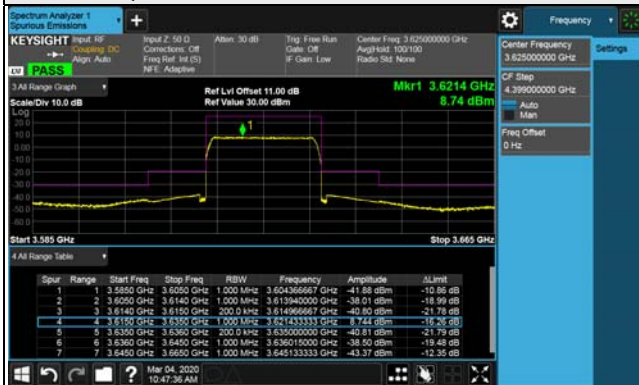
### Frequency Range : 1GHz~15GHz



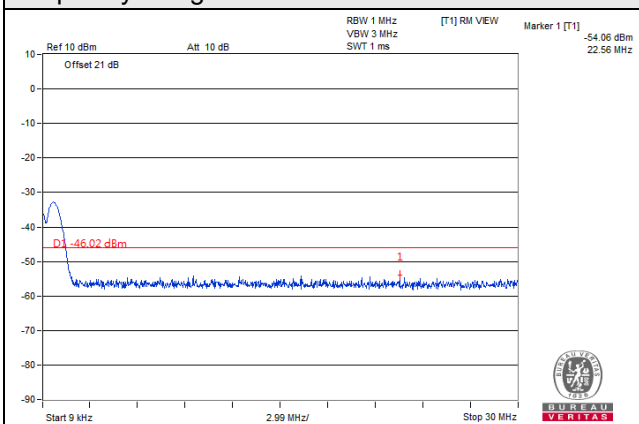
### Frequency Range : 15GHz~37.5GHz



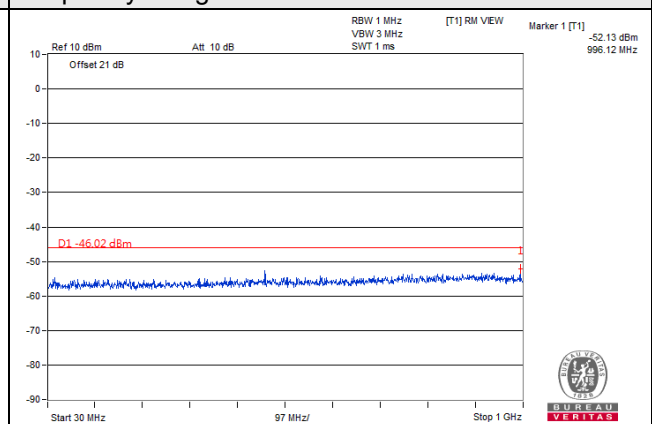
## 20MHz / QPSK / Chain 2 / Middle Channel



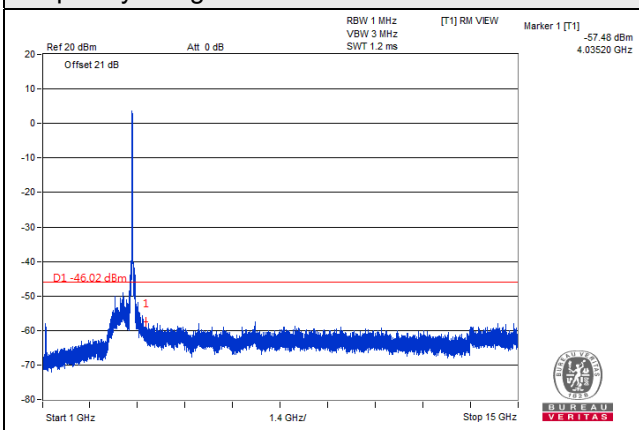
### Frequency Range : 9kHz~30MHz



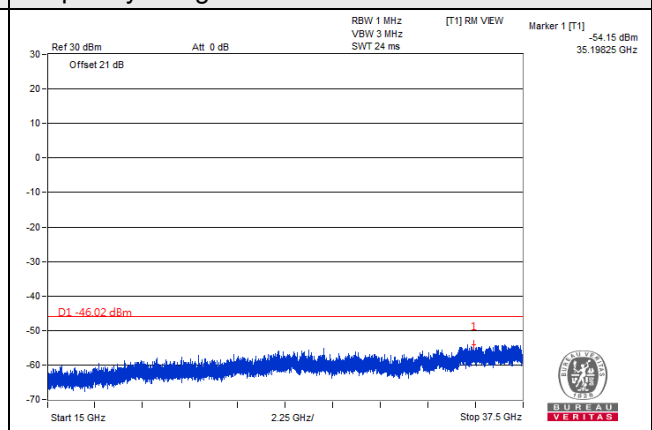
### Frequency Range : 30MHz~1GHz



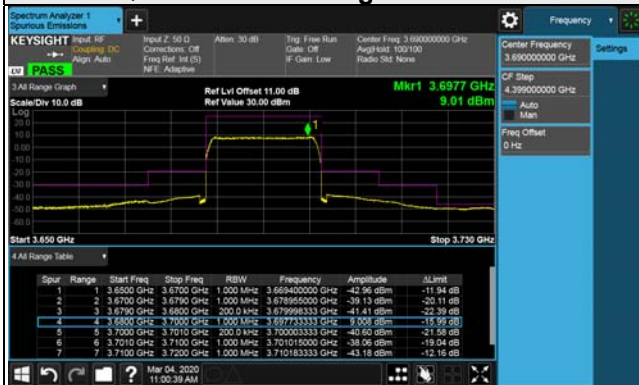
### Frequency Range : 1GHz~15GHz



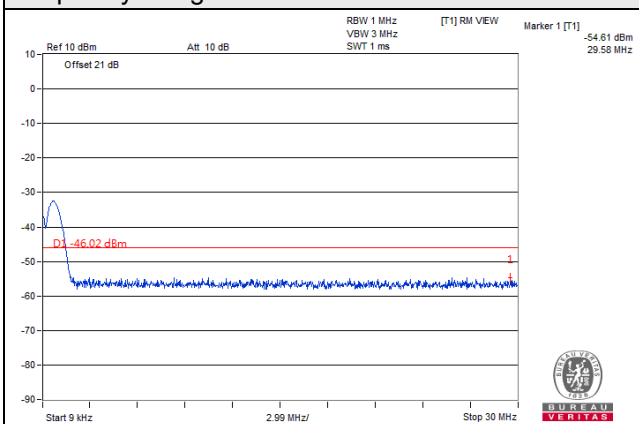
### Frequency Range : 15GHz~37.5GHz



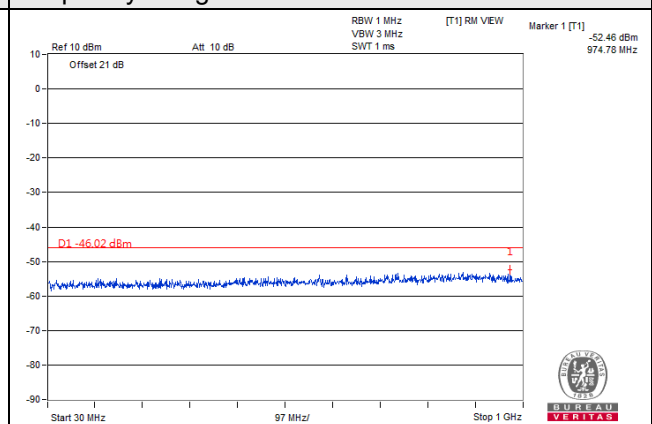
## 20MHz / QPSK / Chain 2 / High Channel



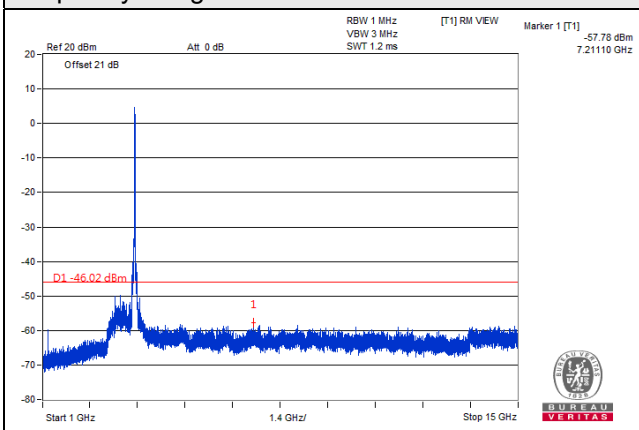
### Frequency Range : 9kHz~30MHz



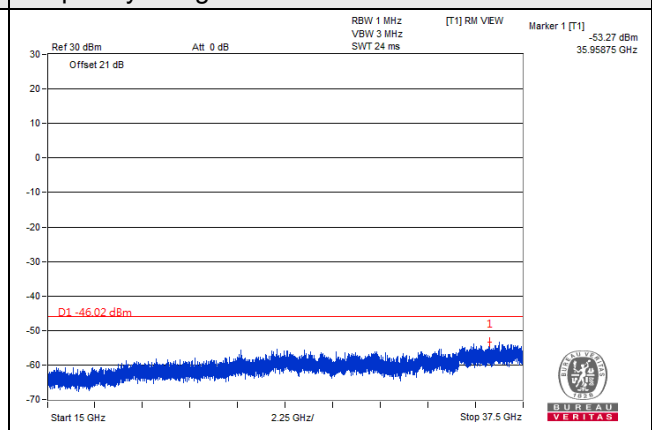
### Frequency Range : 30MHz~1GHz



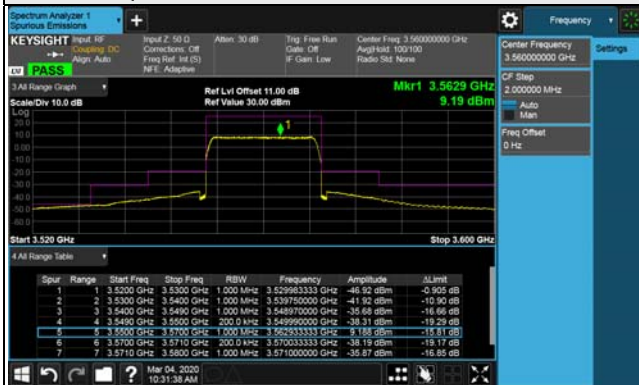
### Frequency Range : 1GHz~15GHz



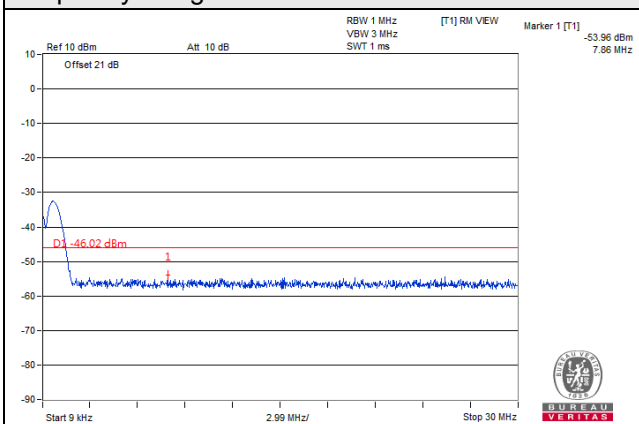
### Frequency Range : 15GHz~37.5GHz



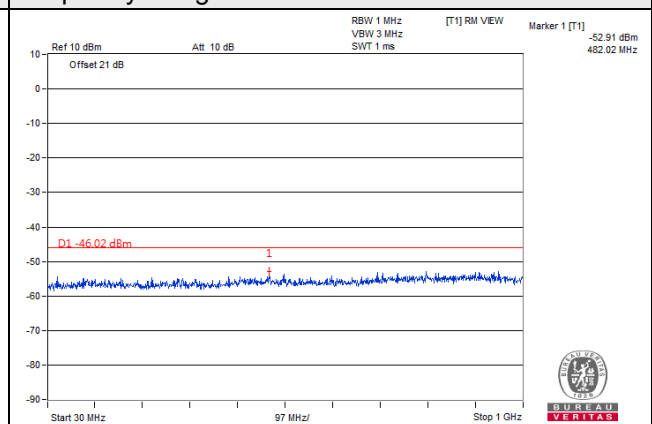
## 20MHz / QPSK / Chain 3 / Low Channel



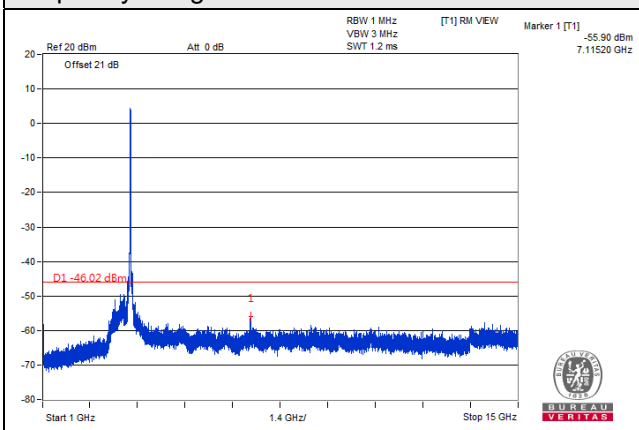
### Frequency Range : 9kHz~30MHz



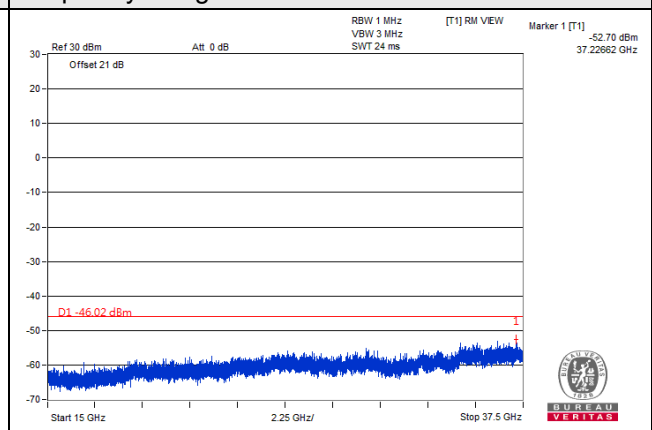
### Frequency Range : 30MHz~1GHz



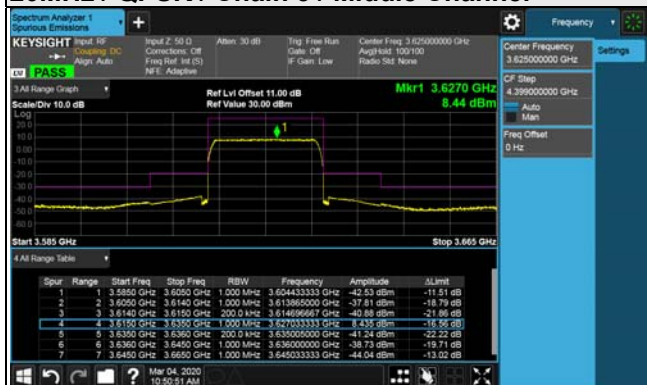
### Frequency Range : 1GHz~15GHz



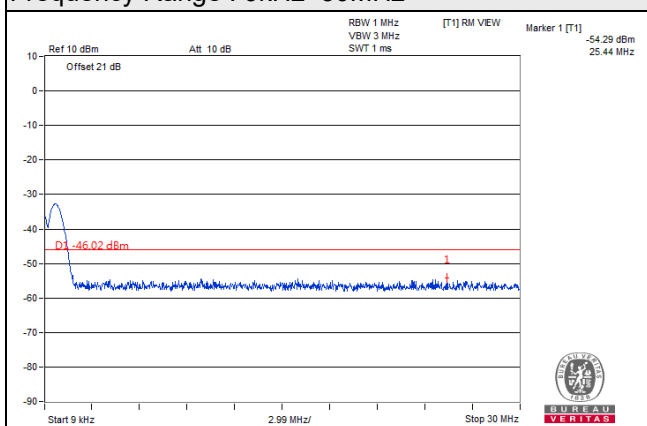
### Frequency Range : 15GHz~37.5GHz



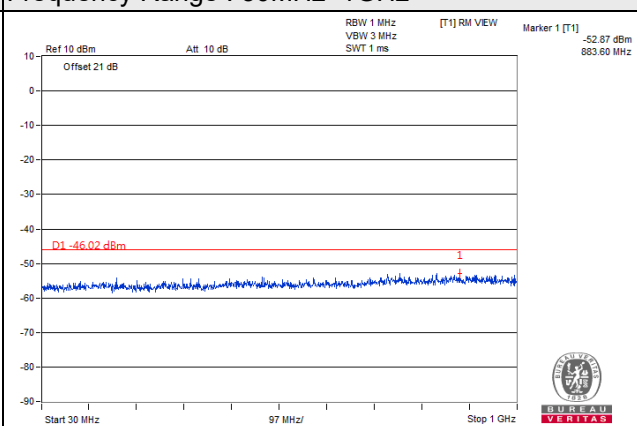
## 20MHz / QPSK / Chain 3 / Middle Channel



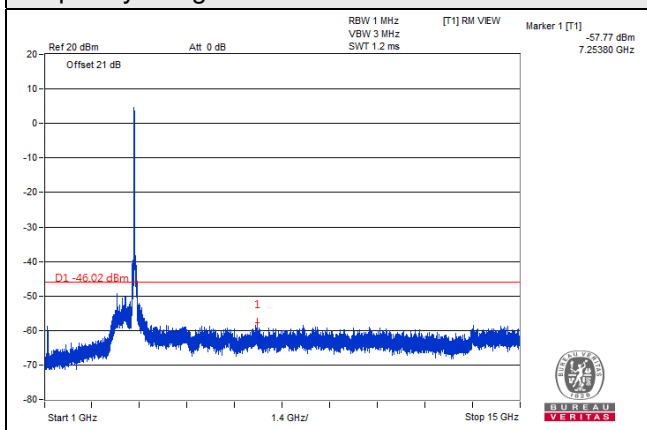
### Frequency Range : 9kHz~30MHz



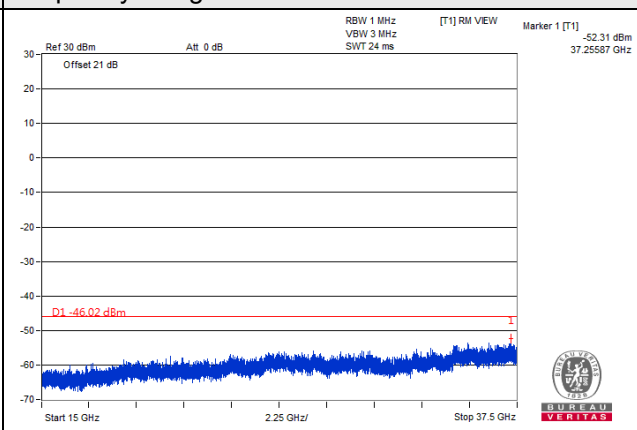
### Frequency Range : 30MHz~1GHz



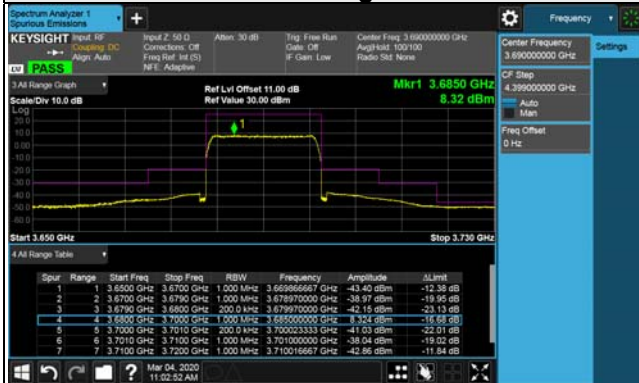
### Frequency Range : 1GHz~15GHz



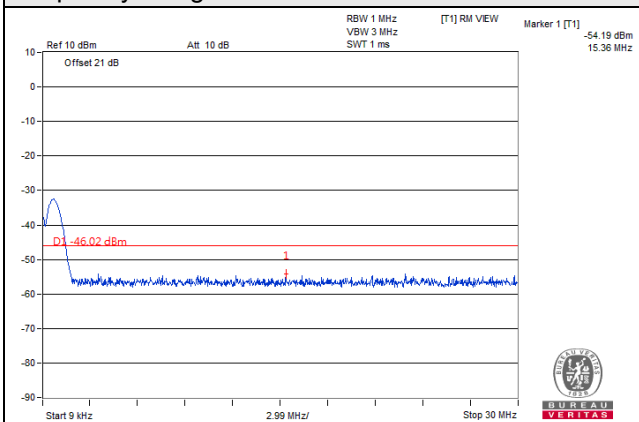
### Frequency Range : 15GHz~37.5GHz



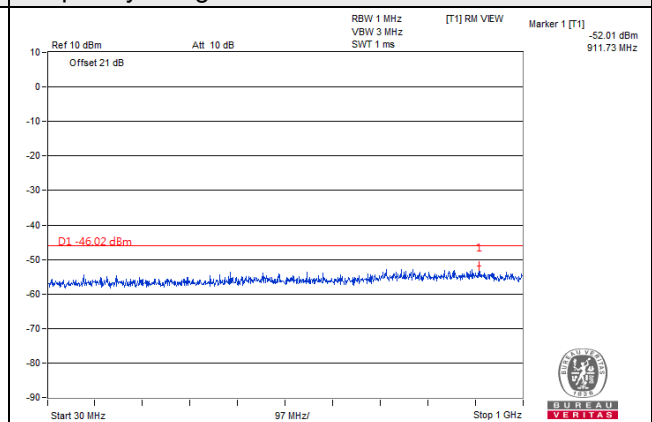
## 20MHz / QPSK / Chain 3 / High Channel



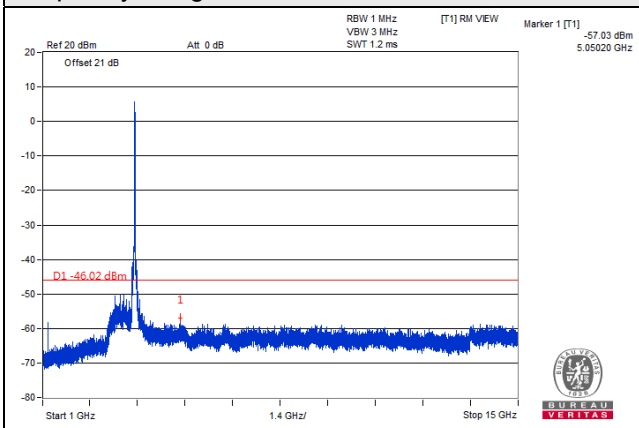
### Frequency Range : 9kHz~30MHz



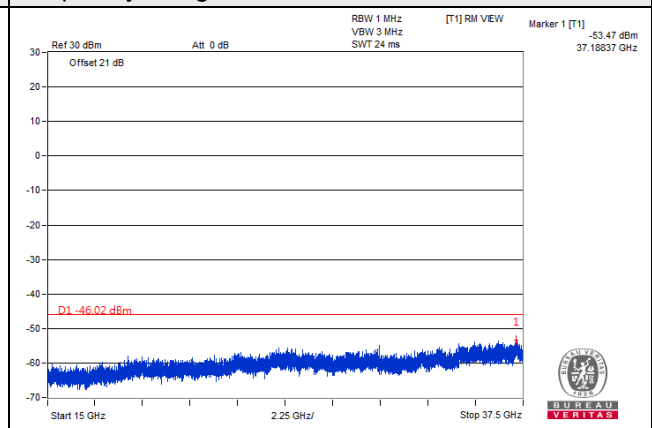
### Frequency Range : 30MHz~1GHz



### Frequency Range : 1GHz~15GHz

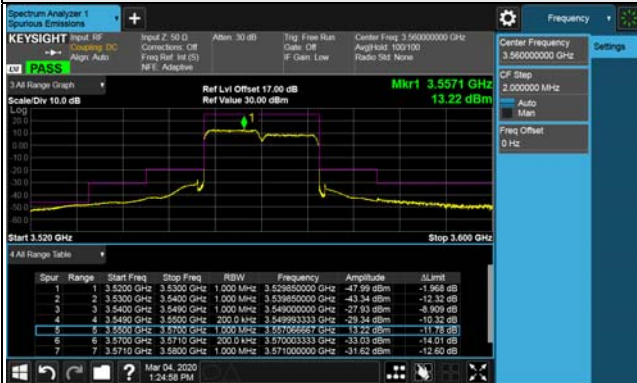


### Frequency Range : 15GHz~37.5GHz

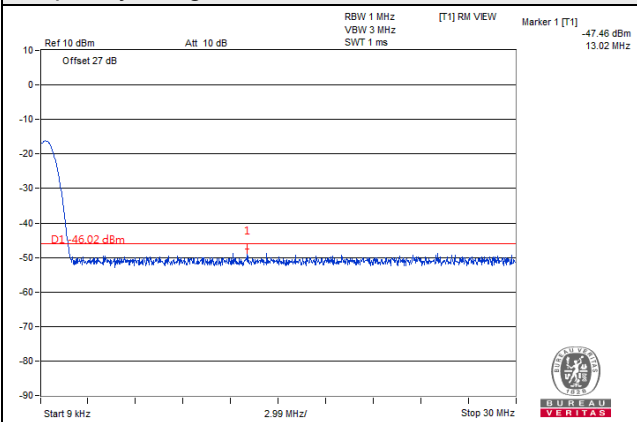


## CA MODE

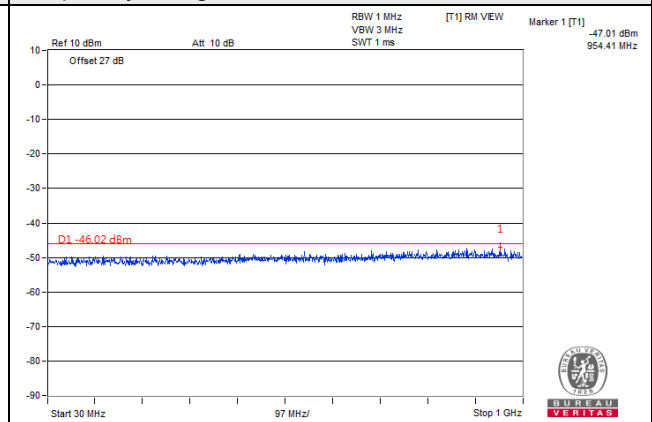
### 10MHz+10MHz / QPSK / Low Channel



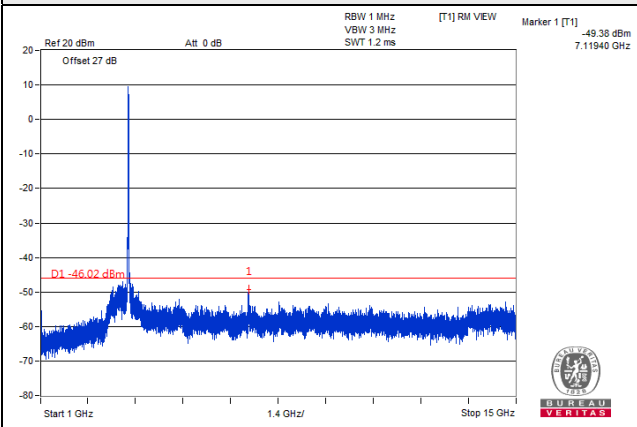
#### Frequency Range : 9kHz~30MHz



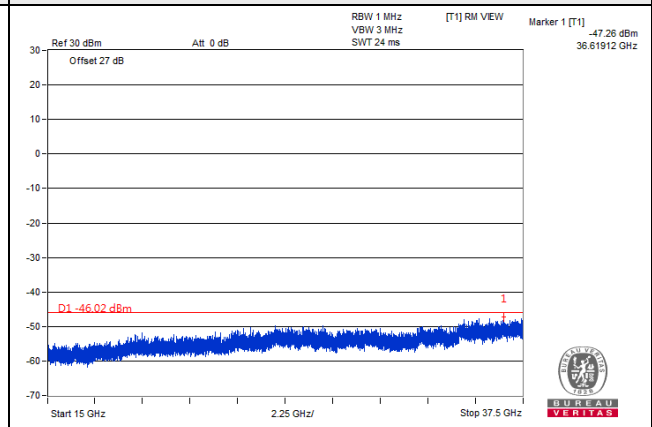
#### Frequency Range : 30MHz~1GHz



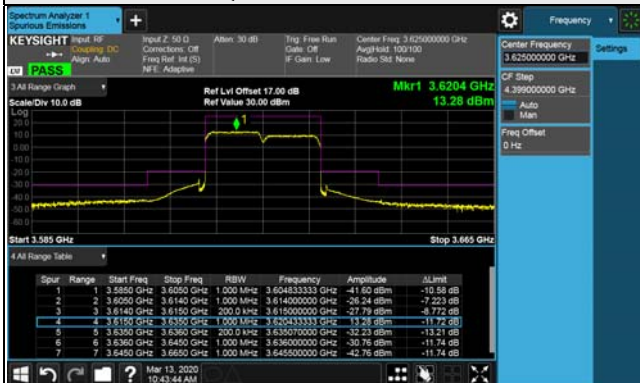
#### Frequency Range : 1GHz~15GHz



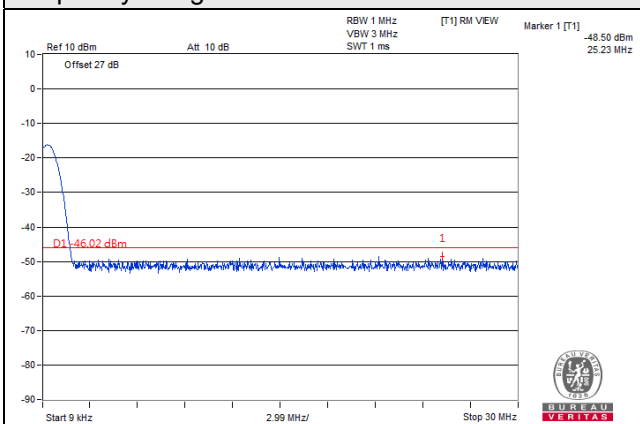
#### Frequency Range : 15GHz~37.5GHz



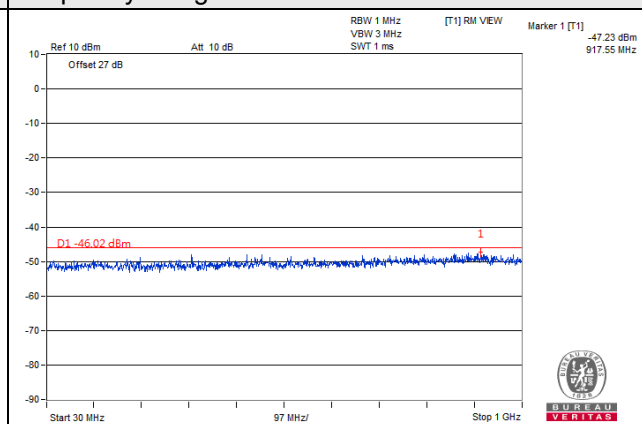
## 10MHz+10MHz / QPSK / Middle Channel



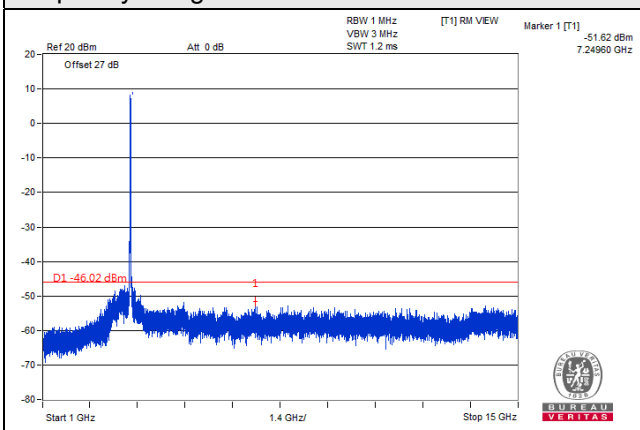
### Frequency Range : 9kHz~30MHz



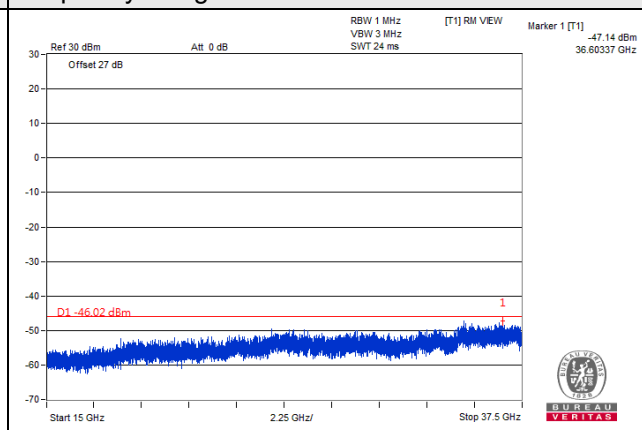
### Frequency Range : 30MHz~1GHz



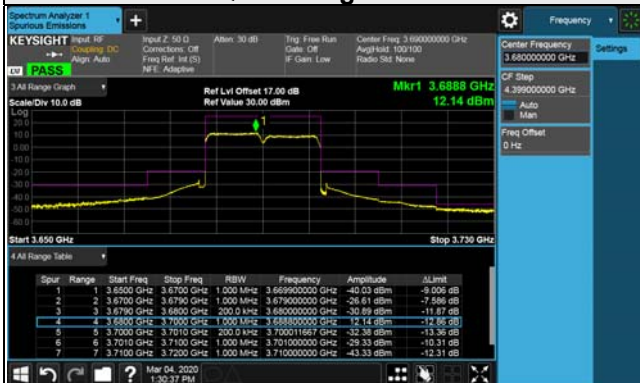
### Frequency Range : 1GHz~15GHz



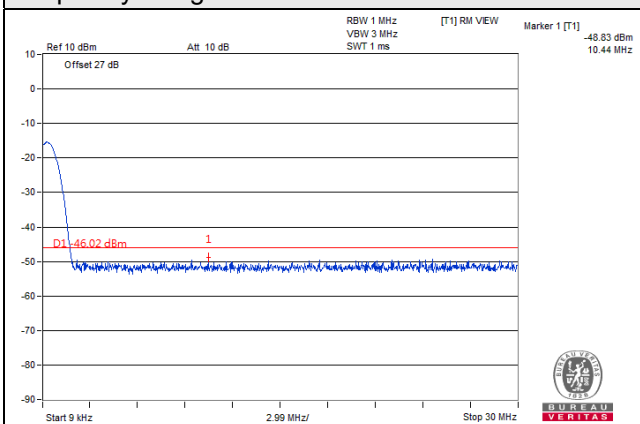
### Frequency Range : 15GHz~37.5GHz



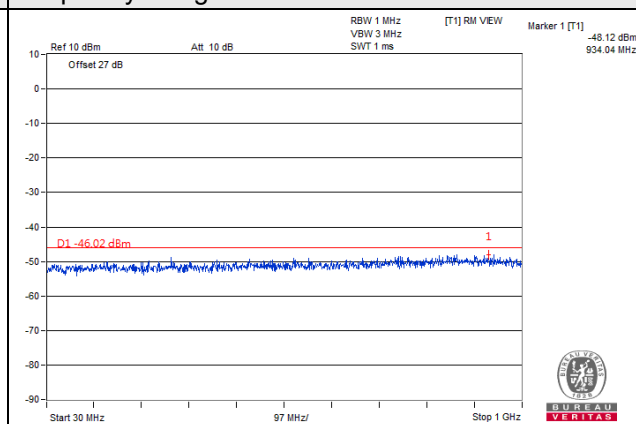
# 10MHz+10MHz / QPSK / High Channel



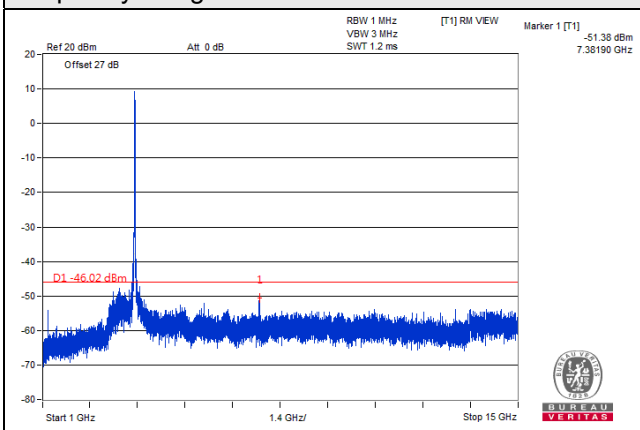
## Frequency Range : 9kHz~30MHz



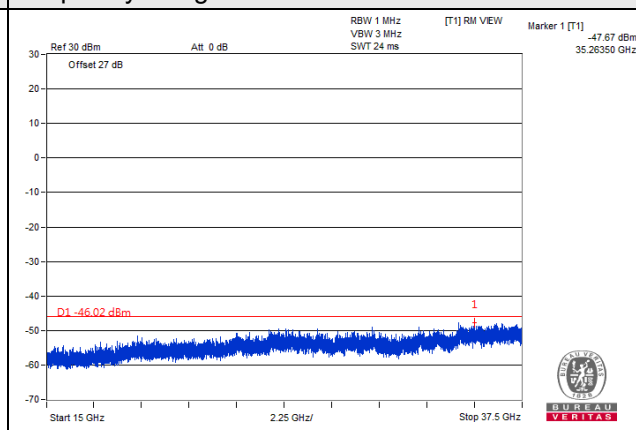
## Frequency Range : 30MHz~1GHz



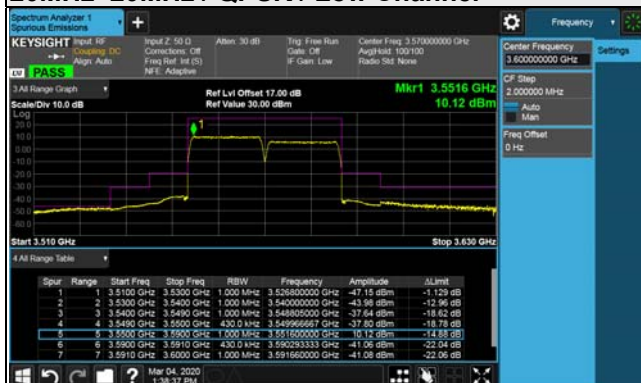
## Frequency Range : 1GHz~15GHz



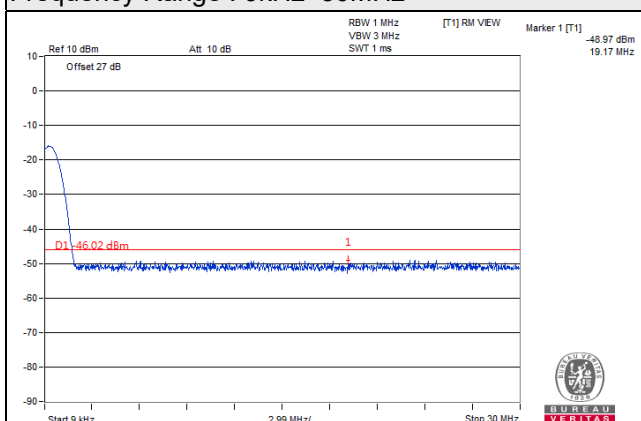
## Frequency Range : 15GHz~37.5GHz



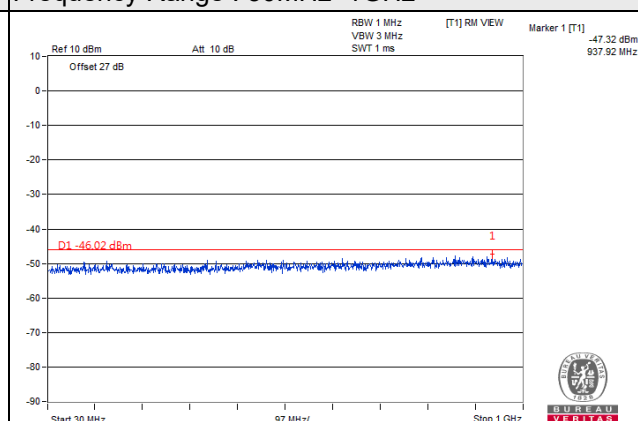
## 20MHz+20MHz / QPSK / Low Channel



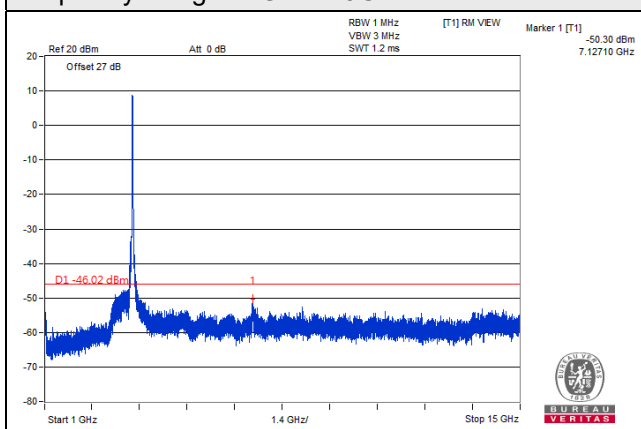
### Frequency Range : 9kHz~30MHz



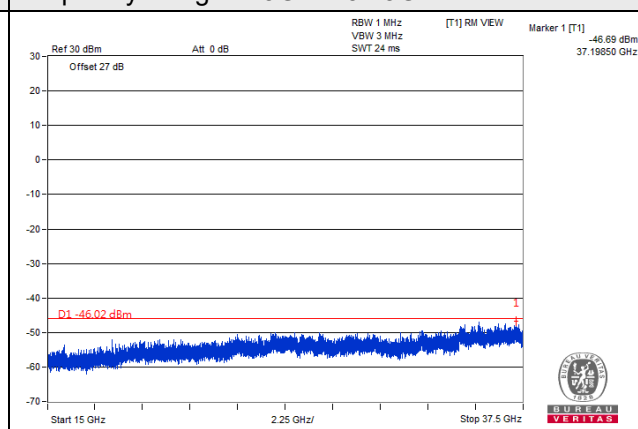
### Frequency Range : 30MHz~1GHz



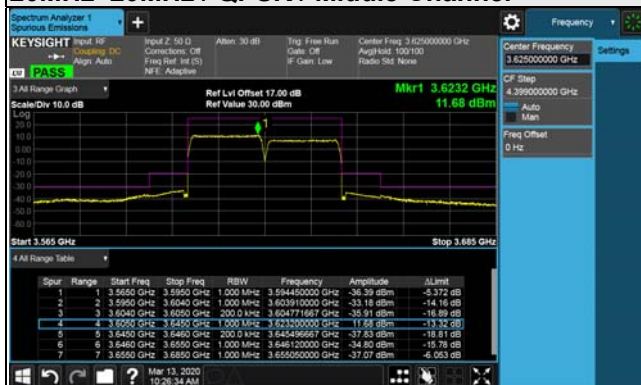
### Frequency Range : 1GHz~15GHz



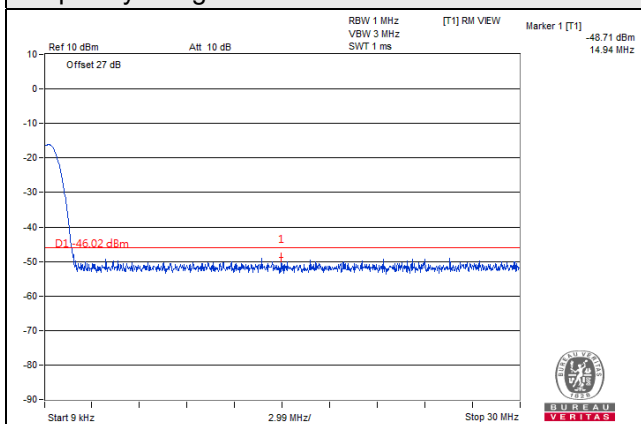
### Frequency Range : 15GHz~37.5GHz



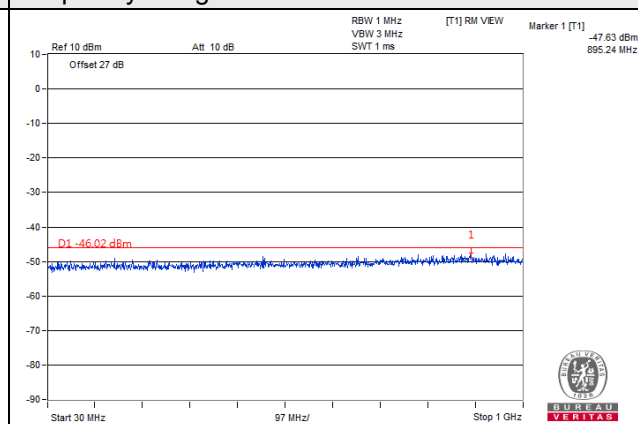
## 20MHz+20MHz / QPSK / Middle Channel



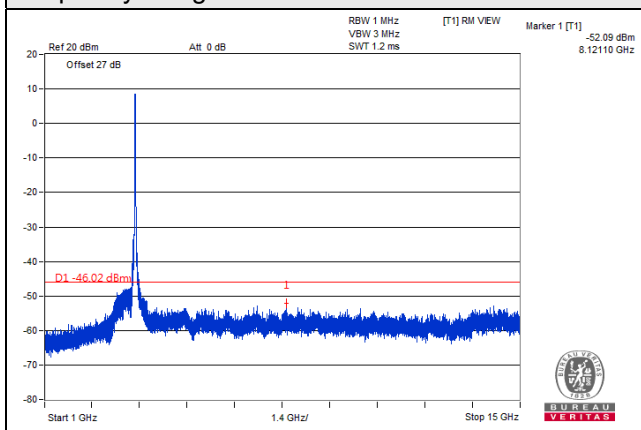
### Frequency Range : 9kHz~30MHz



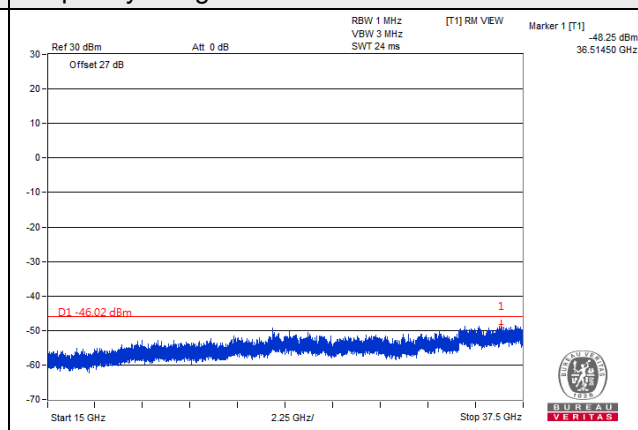
### Frequency Range : 30MHz~1GHz



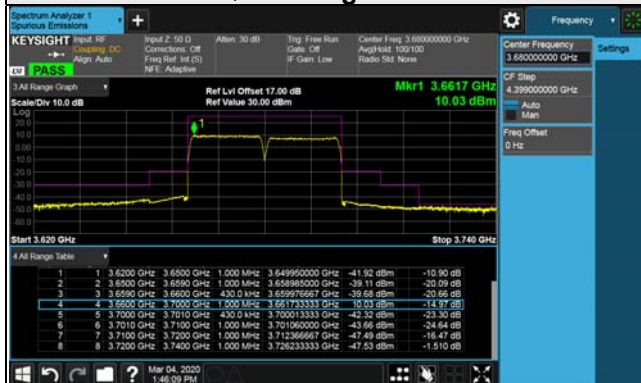
### Frequency Range : 1GHz~15GHz



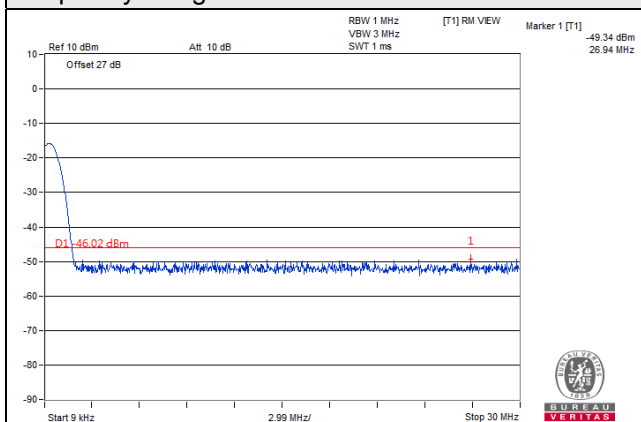
### Frequency Range : 15GHz~37.5GHz



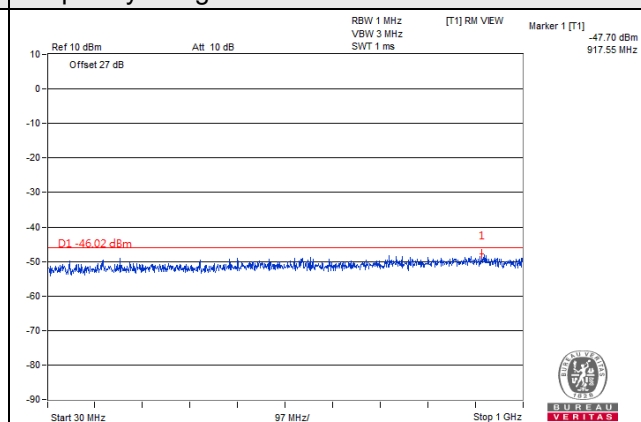
## 20MHz+20MHz / QPSK / High Channel



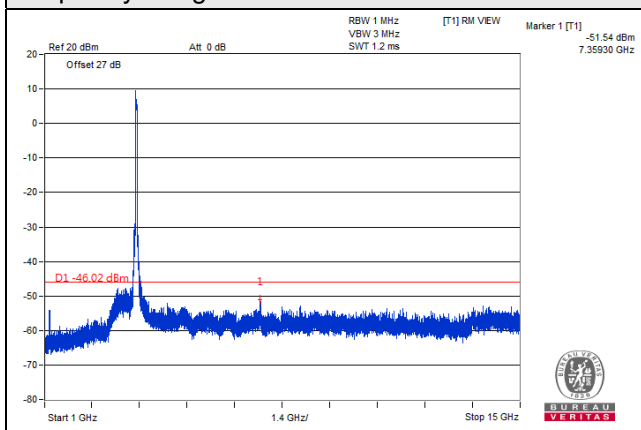
Frequency Range : 9kHz~30MHz



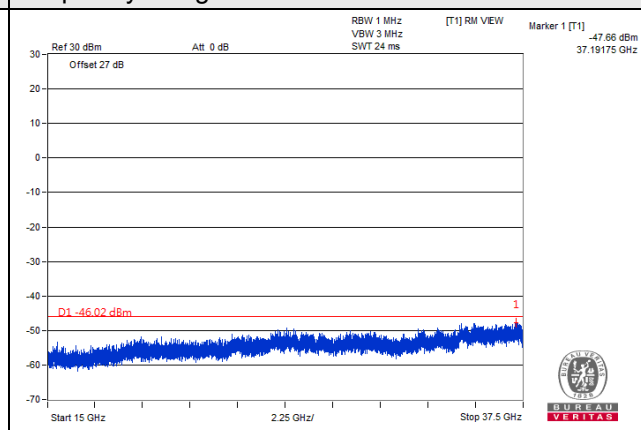
Frequency Range : 30MHz~1GHz



Frequency Range : 1GHz~15GHz



Frequency Range : 15GHz~37.5GHz



## 4.8 Radiated Emission Measurement

### 4.8.1 Limits of Radiated Emission Measurement

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

### 4.8.2 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.8.3 Test Procedures

- a. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m / 1.5m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- c.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

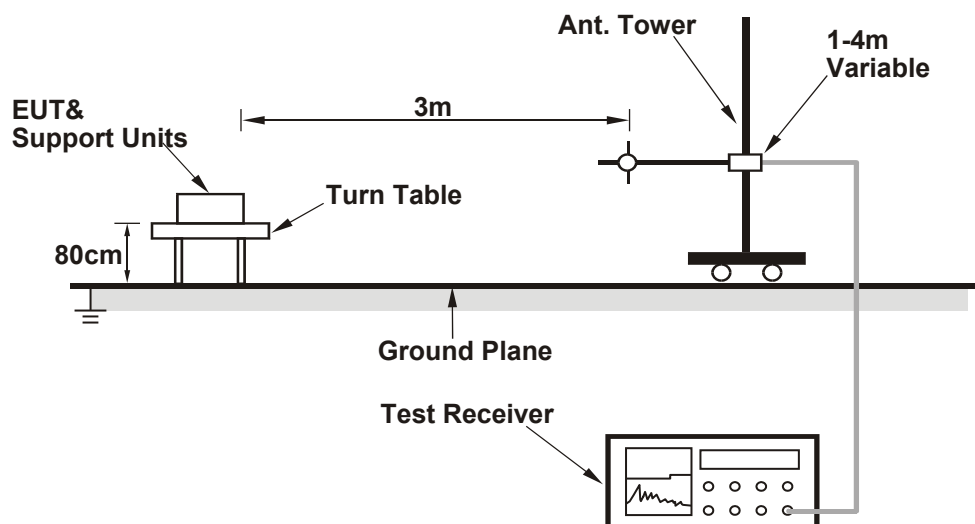
**Note:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

### 4.8.4 Deviation from Test Standard

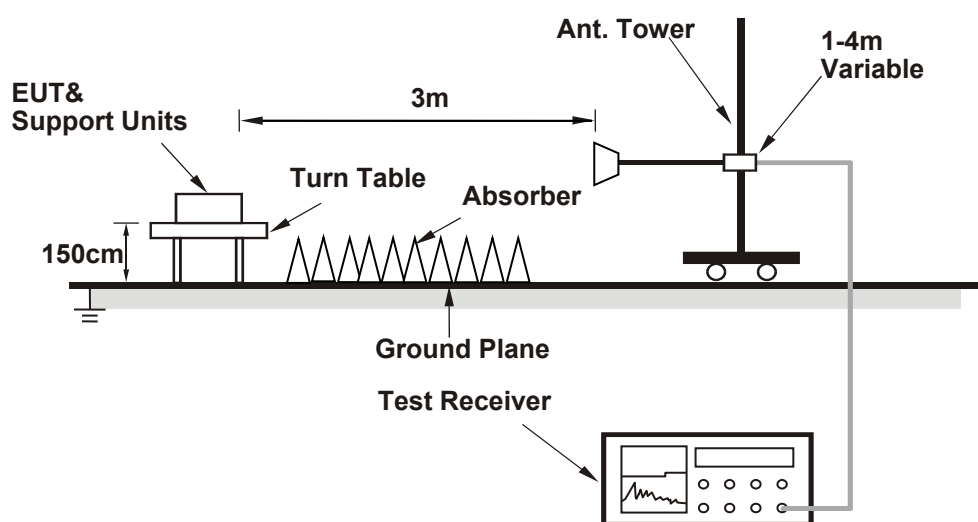
No deviation.

#### 4.8.5 Test Set Up

##### <Frequency Range below 1GHz>



##### <Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.8.6 Test Results

##### SC MODE

Above 1GHz Data :

10MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Above 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7109.84     | -53.07        | -93.23                | 49.37                  | -43.86     | -40.00      | -3.86       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7110.05     | -54.74        | -94.90                | 49.37                  | -45.53     | -40.00      | -5.53       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|         |           |                 |                |
|---------|-----------|-----------------|----------------|
| Channel | TX Middle | Frequency Range | Above 1000 MHz |
|---------|-----------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |                |               |                       |                        |               |               |              |
|-----------------------------------------------------|----------------|---------------|-----------------------|------------------------|---------------|---------------|--------------|
| No.                                                 | Freq. (MHz)    | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm)    | Limit (dBm)   | Margin (dB)  |
| 1                                                   | 7249.95        | -53.59        | -93.77                | 49.42                  | -44.35        | -40.00        | -4.35        |
| Antenna Polarity & Test Distance: Vertical at 3 M   |                |               |                       |                        |               |               |              |
| No.                                                 | Freq. (MHz)    | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm)    | Limit (dBm)   | Margin (dB)  |
| <b>1</b>                                            | <b>7249.87</b> | <b>-51.95</b> | <b>-92.13</b>         | <b>49.42</b>           | <b>-42.71</b> | <b>-40.00</b> | <b>-2.71</b> |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|         |         |                 |                |
|---------|---------|-----------------|----------------|
| Channel | TX High | Frequency Range | Above 1000 MHz |
|---------|---------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7390.24     | -57.02        | -97.41                | 49.66                  | -47.75     | -40.00      | -7.75       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7389.91     | -53.28        | -93.67                | 49.66                  | -44.01     | -40.00      | -4.01       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

## 20MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Above 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7120.01     | -53.62        | -93.79                | 49.38                  | -44.41     | -40.00      | -4.41       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7119.84     | -57.85        | -98.02                | 49.38                  | -48.64     | -40.00      | -8.64       |

### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|         |           |                 |                |
|---------|-----------|-----------------|----------------|
| Channel | TX Middle | Frequency Range | Above 1000 MHz |
|---------|-----------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7249.82     | -57.48        | -97.66                | 49.42                  | -48.24     | -40.00      | -8.24       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7250.05     | -55.83        | -96.02                | 49.43                  | -46.59     | -40.00      | -6.59       |

### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|         |         |                 |                |
|---------|---------|-----------------|----------------|
| Channel | TX High | Frequency Range | Above 1000 MHz |
|---------|---------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7379.98     | -56.91        | -97.30                | 49.65                  | -47.65     | -40.00      | -7.65       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7380.20     | -55.12        | -95.51                | 49.65                  | -45.86     | -40.00      | -5.86       |

### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

## Below 1GHz Data :

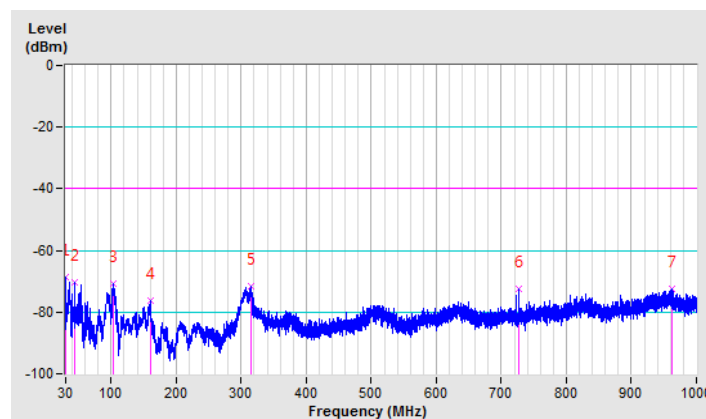
### 10MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.61       | -60.21        | -81.51                | 12.98                  | -68.53     | -40.00      | -28.53      |
| 2                                                   | 44.67       | -68.88        | -84.26                | 14.04                  | -70.22     | -40.00      | -30.22      |
| 3                                                   | 103.23      | -64.61        | -81.73                | 10.84                  | -70.89     | -40.00      | -30.89      |
| 4                                                   | 159.98      | -71.76        | -91.28                | 14.97                  | -76.31     | -40.00      | -36.31      |
| 5                                                   | 315.54      | -70.85        | -88.06                | 16.66                  | -71.40     | -40.00      | -31.40      |
| 6                                                   | 727.43      | -78.97        | -98.22                | 25.63                  | -72.59     | -40.00      | -32.59      |
| 7                                                   | 962.41      | -84.46        | -101.30               | 29.03                  | -72.27     | -40.00      | -32.27      |

#### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

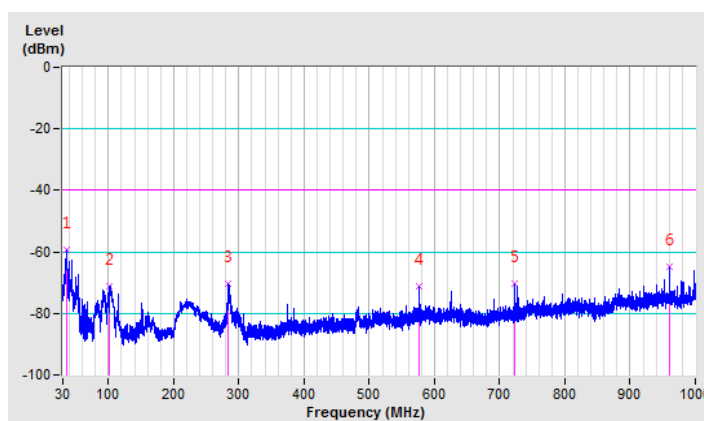


|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |            |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 35.34       | -54.86        | -72.42                | 13.23                  | -59.19     | -40.00      | -19.19      |
| 2                                                 | 101.66      | -65.42        | -81.80                | 10.56                  | -71.24     | -40.00      | -31.24      |
| 3                                                 | 283.78      | -67.15        | -85.98                | 15.67                  | -70.31     | -40.00      | -30.31      |
| 4                                                 | 575.99      | -76.67        | -94.32                | 22.96                  | -71.36     | -40.00      | -31.36      |
| 5                                                 | 723.43      | -76.93        | -95.83                | 25.49                  | -70.34     | -40.00      | -30.34      |
| 6                                                 | 959.99      | -77.48        | -93.97                | 28.99                  | -64.98     | -40.00      | -24.98      |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



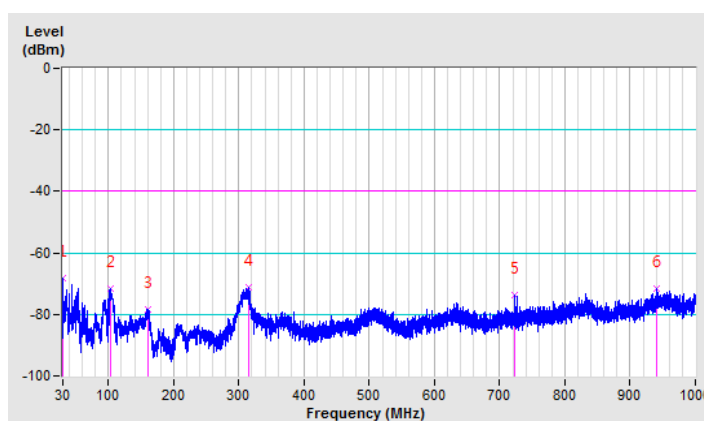
## 20MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.61       | -59.93        | -81.23                | 12.98                  | -68.25     | -40.00      | -28.25      |
| 2                                                   | 102.63      | -65.40        | -82.23                | 10.72                  | -71.51     | -40.00      | -31.51      |
| 3                                                   | 160.10      | -73.78        | -93.31                | 14.95                  | -78.36     | -40.00      | -38.36      |
| 4                                                   | 315.91      | -70.67        | -87.89                | 16.66                  | -71.23     | -40.00      | -31.23      |
| 5                                                   | 723.43      | -79.97        | -99.34                | 25.49                  | -73.85     | -40.00      | -33.85      |
| 6                                                   | 939.74      | -83.40        | -100.26               | 28.79                  | -71.47     | -40.00      | -31.47      |

### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

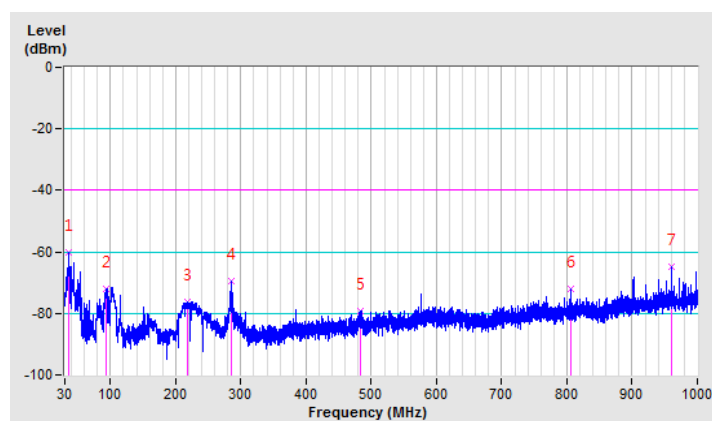


|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |            |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 35.39       | -55.97        | -73.46                | 13.23                  | -60.23     | -40.00      | -20.23      |
| 2                                                 | 93.78       | -64.51        | -81.23                | 9.37                   | -71.86     | -40.00      | -31.86      |
| 3                                                 | 219.03      | -67.77        | -88.29                | 12.13                  | -76.16     | -40.00      | -36.16      |
| 4                                                 | 284.46      | -66.47        | -85.24                | 15.70                  | -69.54     | -40.00      | -29.54      |
| 5                                                 | 483.35      | -81.09        | -100.17               | 20.88                  | -79.29     | -40.00      | -39.29      |
| 6                                                 | 806.36      | -80.69        | -98.99                | 26.92                  | -72.07     | -40.00      | -32.07      |
| 7                                                 | 960.00      | -77.28        | -93.77                | 28.99                  | -64.78     | -40.00      | -24.78      |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



### CA MODE

Above 1GHz Data :

10MHz+10MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Above 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7109.86     | -54.67        | -94.83                | 49.37                  | -45.46     | -40.00      | -5.46       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7109.98     | -56.35        | -96.51                | 49.37                  | -47.14     | -40.00      | -7.14       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

20MHz+20MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Above 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7119.94     | -56.65        | -96.82                | 49.38                  | -47.44     | -40.00      | -7.44       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 7119.86     | -57.73        | -97.90                | 49.38                  | -48.52     | -40.00      | -8.52       |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

# Below 1GHz Data :

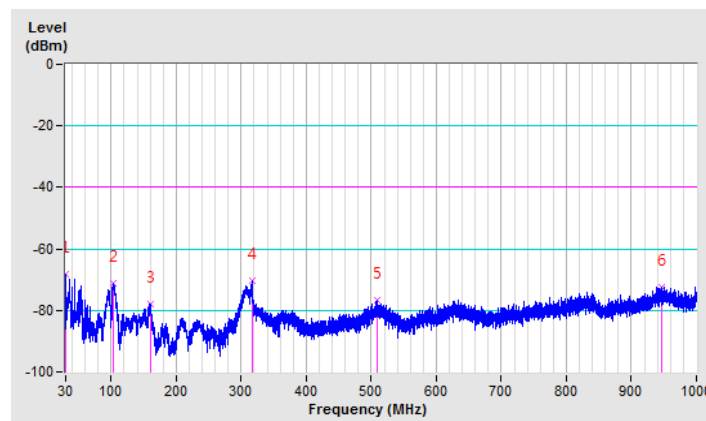
## 10MHz+10MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.61       | -59.70        | -81.00                | 12.98                  | -68.02     | -40.00      | -28.02      |
| 2                                                   | 102.75      | -64.93        | -81.83                | 10.75                  | -71.08     | -40.00      | -31.08      |
| 3                                                   | 159.98      | -73.22        | -92.74                | 14.97                  | -77.77     | -40.00      | -37.77      |
| 4                                                   | 316.39      | -69.69        | -86.93                | 16.67                  | -70.26     | -40.00      | -30.26      |
| 5                                                   | 508.69      | -80.67        | -97.98                | 21.47                  | -76.51     | -40.00      | -36.51      |
| 6                                                   | 946.16      | -84.81        | -101.26               | 28.92                  | -72.34     | -40.00      | -32.34      |

### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

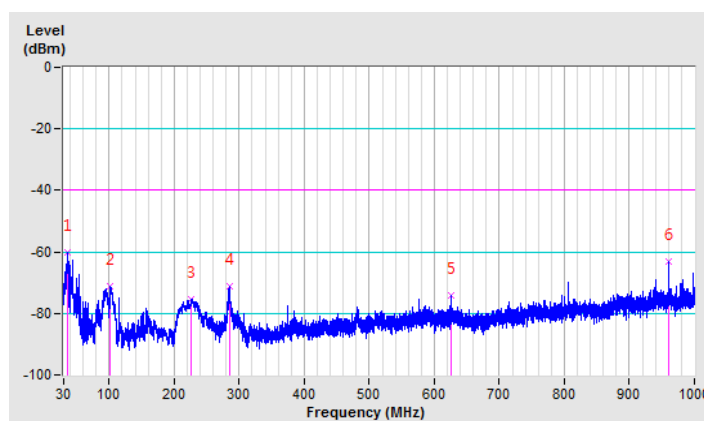


|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |            |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 35.34       | -55.80        | -73.36                | 13.23                  | -60.13     | -40.00      | -20.13      |
| 2                                                 | 102.02      | -65.23        | -81.73                | 10.60                  | -71.13     | -40.00      | -31.13      |
| 3                                                 | 225.94      | -67.87        | -87.37                | 12.04                  | -75.33     | -40.00      | -35.33      |
| 4                                                 | 284.50      | -68.04        | -86.81                | 15.70                  | -71.11     | -40.00      | -31.11      |
| 5                                                 | 624.97      | -80.40        | -98.43                | 24.23                  | -74.20     | -40.00      | -34.20      |
| 6                                                 | 959.99      | -75.63        | -92.12                | 28.99                  | -63.13     | -40.00      | -23.13      |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



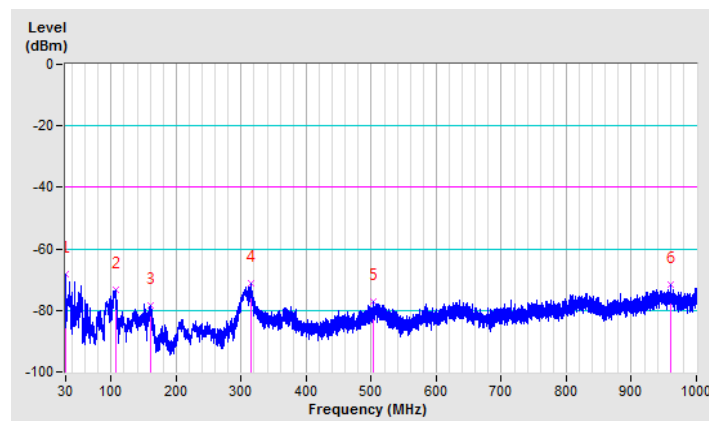
## 20MHz+20MHz

|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.61       | -59.70        | -81.00                | 12.98                  | -68.02     | -40.00      | -28.02      |
| 2                                                   | 106.27      | -66.86        | -84.73                | 11.29                  | -73.44     | -40.00      | -33.44      |
| 3                                                   | 160.34      | -73.72        | -93.29                | 14.90                  | -78.39     | -40.00      | -38.39      |
| 4                                                   | 315.79      | -70.52        | -87.73                | 16.66                  | -71.07     | -40.00      | -31.07      |
| 5                                                   | 502.39      | -81.05        | -98.24                | 21.27                  | -76.97     | -40.00      | -36.97      |
| 6                                                   | 959.99      | -84.29        | -100.75               | 28.99                  | -71.76     | -40.00      | -31.76      |

### Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

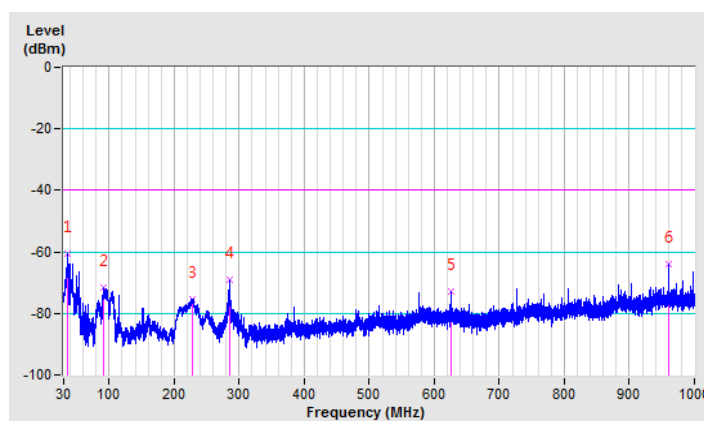


|         |        |                 |                |
|---------|--------|-----------------|----------------|
| Channel | TX Low | Frequency Range | Below 1000 MHz |
|---------|--------|-----------------|----------------|

| Antenna Polarity & Test Distance: Vertical at 3 M |             |               |                       |                        |            |             |             |
|---------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                               | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                 | 35.34       | -56.47        | -74.03                | 13.23                  | -60.80     | -40.00      | -20.80      |
| 2                                                 | 92.08       | -63.80        | -80.89                | 9.24                   | -71.65     | -40.00      | -31.65      |
| 3                                                 | 227.27      | -67.82        | -87.45                | 12.17                  | -75.28     | -40.00      | -35.28      |
| 4                                                 | 284.62      | -66.01        | -84.77                | 15.71                  | -69.06     | -40.00      | -29.06      |
| 5                                                 | 624.97      | -79.04        | -97.07                | 24.23                  | -72.84     | -40.00      | -32.84      |
| 6                                                 | 959.99      | -76.58        | -93.07                | 28.99                  | -64.08     | -40.00      | -24.08      |

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



## **4.9 Transmit Power Control (TPC)**

### **4.9.1 Definition**

CBSDs must support transmit power control capability and the capability to limit their maximum EIRP and the maximum EIRP of associated End User Devices in response to instructions from an SAS.

### **4.9.2 Requirement**

The EUT can adjust a transmitter's output power based on the signal level present at the receiver.  
TPC is auto controlled by software.

Manufacturer provides declaration form to meet this requirement.

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Lin Kou EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety Lab**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

--- END ---