

FCC Test Report

(Part 27_C2PC (Class II Permissive Change))

Report No.: RF170123E07A

FCC ID: 2AD8UFW2PADPM01

Test Model: FW2PADPM01

Received Date: Jan. 15, 2019

Test Date: Feb. 23 ~ Feb. 25, 2019, Apr. 29 ~ May 02, 2019 and Jul. 30 ~ Jul. 31, 2019

Issued Date: Aug. 01, 2019

Applicant: Nokia Solutions and Networks, OY

Address: 2000 W. Lucent Lane, City: Naperville, Illinois, United States, 60563

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

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

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

FCC Registration / Designation Number: 788550 / TW0003



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Release Control Record

| Issue No. | Description | Date Issued |
|--------------|-------------------|---------------|
| RF170123E07A | Original release. | Aug. 01, 2019 |

1 Certificate of Conformity

Product: Nokia FW2P LTE module

Brand: Nokia

Test Model: FW2PADPM01

Sample Status: MASS-PRODUCTION

Applicant: Nokia Solutions and Networks, OY

Test Date: Feb. 23 ~ Feb. 25, 2019, Apr. 29 ~ May 02, 2019 and Jul. 30 ~ Jul. 31, 2019

Standards: FCC Part 27, Subpart C, F

FCC Part 2, Subpart J

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 : Pettie Chen, **Date:** Aug. 01, 2019

Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** Aug. 01, 2019

Bruce Chen / Project Engineer

2 Summary of Test Results

| Applied Standard: FCC Part 27 & Part 2 | | | |
|--|--|--------|--|
| FCC Clause | Test Item | Result | Remarks |
| 2.1046 27.50(b)(5) | Equivalent Isotropically Radiated Power | Pass | Meet the requirement |
| ---- | Peak To Average Ratio | Pass | Meet the requirement of limit. |
| 2.1055 27.54 | Frequency Stability Stay with the authorized bands of operation | Pass | Meet the requirement of limit. |
| 2.1049 | Emission Bandwidth | Pass | Meet the requirement of limit. |
| 2.1051 27.53(c) | Band Edge Measurements | Pass | Meet the requirement of limit. |
| 2.1051 27.53(c) | Conducted Spurious Emissions | Pass | Meet the requirement of limit. |
| 2.1051 27.53(c) | Radiated Spurious Emissions | Pass | Meet the requirement of limit. Minimum passing margin is -35.3dB at 31.94MHz. |

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) (±) |
|--------------------------------|------------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 9kHz ~ 30MHz | 3.04 dB |
| | 30MHz ~ 200MHz | 3.59 dB |
| | 200MHz ~ 1000MHz | 3.60 dB |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz | 2.29 dB |
| | 18GHz ~ 40GHz | 2.29 dB |

2.2 Test Site and Instruments

| Description & Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|--|---------------------------------|------------------------------|---------------|---------------|
| Test Receiver KEYSIGHT | N9038A | MY55420137 | Apr. 11, 2018 | Apr. 10, 2019 |
| | | | Apr. 15, 2019 | Apr. 14, 2020 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSP40 | 100269 | May 29, 2018 | May 28, 2019 |
| | | | Jun. 04, 2019 | Jun. 03, 2020 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-160 | Nov. 21, 2018 | Nov. 20, 2019 |
| HORN Antenna SCHWARZBECK | BBHA 9120 D | 9120D-1169 | Nov. 25, 2018 | Nov. 24, 2019 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | BBHA9170241 | Nov. 25, 2018 | Nov. 24, 2019 |
| Loop Antenna TESEQ | HLA 6121 | 45745 | Jun. 14, 2018 | Jun. 13, 2019 |
| | | | Jul. 01, 2019 | Jun. 30, 2020 |
| Preamplifier Agilent (Below 1GHz) | 8447D | 2944A10638 | Aug. 08, 2018 | Aug. 07, 2019 |
| Preamplifier Agilent (Above 1GHz) | 8449B | 3008A01924 | Feb. 21, 2019 | Feb. 20, 2020 |
| RF signal cable HUBER+SUHNER&EMCI | SUCOFLEX 104 & EMC104-SM-SM8000 | CABLE-CH9-02 (248780+171006) | Jan. 19, 2019 | Jan. 18, 2020 |
| RF signal cable HUBER+SUHNER | SUCOFLEX 104 | CABLE-CH9-(250795/4) | Aug. 08, 2018 | Aug. 07, 2019 |
| RF signal cable Woken | 8D-FB | Cable-CH9-01 | Jul. 31, 2018 | Jul. 30, 2019 |
| | | | Jul. 30, 2019 | Jul. 29, 2020 |
| Software BV ADT | ADT_Radiated_V7.6.15.9.5 | NA | NA | NA |
| Antenna Tower EMCO | 2070/2080 | 512.835.4684 | NA | NA |
| Turn Table EMCO | 2087-2.03 | NA | NA | NA |
| Antenna Tower & Turn BV ADT | AT100 | AT93021705 | NA | NA |
| Turn Table BV ADT | TT100 | TT93021705 | NA | NA |
| Turn Table Controller BV ADT | SC100 | SC93021705 | NA | NA |
| Boresight Antenna Fixture | FBA-01 | FBA-SIP01 | NA | NA |
| JFW 20dB attenuation | 50HF-020-SMA | NA | NA | NA |
| Radio Communication Analyzer | MT8821C | 6261786083 | Dec. 11, 2018 | Dec. 10, 2019 |
| WIT Standard Temperature And Humidity Chamber | TH-4S-C | W981030 | Jun. 04, 2018 | Jun. 03, 2019 |
| | | | Jun. 03, 2019 | Jun. 02, 2020 |
| True RMS Clamp Meter Fluke | 325 | 31130711WS | May 22, 2018 | May 21, 2019 |
| | | | May 21, 2019 | May 20, 2020 |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 9.

3 General Information

3.1 General Description of EUT

| | | | | |
|-----------------------|--------------------------------|----------------------------|---------------------|--|
| Product | Nokia FW2P LTE module | | | |
| Brand | Nokia | | | |
| Test Model | FW2PADPM01 | | | |
| FCC ID | 2AD8UFW2PADPM01 | | | |
| Test Sample S/N | EB160810030 | | | |
| Hardware Version | A101 | | | |
| Status of EUT | MASS-PRODUCTION | | | |
| Power Supply Rating | 12Vdc | | | |
| Modulation Type | LTE Band | QPSK, 16QAM, 64QAM, 256QAM | | |
| | NB-IoT (In-Band/Guard Band) | QPSK | | |
| Modulation Technology | FDD | | | |
| Bandwidth | LTE Band | 5MHz, 10MHz | | |
| | NB-IoT (In-Band) | 5MHz, 10MHz | | |
| | NB-IoT (Guard Band) | 10MHz | | |
| Operating Frequency | LTE Band | Channel Bandwidth: 5MHz | 748.5MHz ~ 753.5MHz | |
| | | Channel Bandwidth: 10MHz | 751MHz | |
| | NB-IoT (In-Band/Guard Band) | Channel Bandwidth: 5MHz | 748.5MHz ~ 753.5MHz | |
| | | Channel Bandwidth: 10MHz | 751MHz | |
| Max. ERP Power | LTE Band | Channel Bandwidth: 5MHz | QPSK: 2084.5mW | |
| | | | 16QAM: 2089.3mW | |
| | | Channel Bandwidth: 10MHz | 64QAM: 2051.2mW | |
| | | | 256QAM: 1006.932mW | |
| | NB-IoT (Guard Band) | QPSK: 1977.0mW | | |
| | | 16QAM: 1981.5mW | | |
| | | 64QAM: 1954.3mW | | |
| | | 256QAM: 977.237mW | | |
| Emission Designator | LTE Band | Channel Bandwidth: 10MHz | QPSK: 1496.236mW | |
| | | QPSK: 1358.313mW | | |
| | | QPSK: 1367.729mW | | |
| | | Channel Bandwidth: 5MHz | QPSK: 4M51G7D | |
| | NB-IoT (In-Band) | | 16QAM: 4M50D7W | |
| | | | 64QAM: 4M50D7W | |
| | | | 256QAM: 4M49D7W | |
| | NB-IoT (Guard Band) | QPSK: 9M02G7D | | |
| | | 16QAM: 9M02D7W | | |
| | | 64QAM: 9M02D7W | | |
| | | 256QAM: 9M16D7W | | |
| Antenna Type | Refer to note as below | | | |
| Antenna Connector | Refer to user's manual | | | |
| Accessory Device | NA | | | |

| | |
|---------------------|----|
| Data Cable Supplied | NA |
|---------------------|----|

Note:

1. This report is prepared for FCC class II permissive change. This is a supplementary report of Report No.: RF170123E07. The differences between them are as below information:
 - ◆ LTE B13 add NB-IoT Guard Band
 - ◆ LTE B13 add 256QAM
 - ◆ LTE B13 add NB-IoT In-band
2. For above changes, only LTE B13 256QAM, NB-IoT Guard Band and NB-IoT In-band mode test results has to be performed. The other test items were copied from the original test report (Report No.: RF170123E07) and all data was verified to meet the requirements.
3. The EUT incorporates a MIMO function for LTE mode

| | Channel Bandwidth | Modulation | TX & RX configuration | |
|------------|-------------------|----------------------------|-----------------------|-----|
| LTE Band | 5MHz | QPSK, 16QAM, 64QAM, 256QAM | 2TX | 2RX |
| | 10MHz | QPSK, 16QAM, 64QAM, 256QAM | 2TX | 2RX |
| Guard Band | 10MHz | N-TM (QPSK) | | 2TX |
| In-band | 5MHz | N-TM (QPSK) | | 2RX |
| | 10MHz | N-TM (QPSK) | | 2RX |

4. The EUT's spec. as below table:

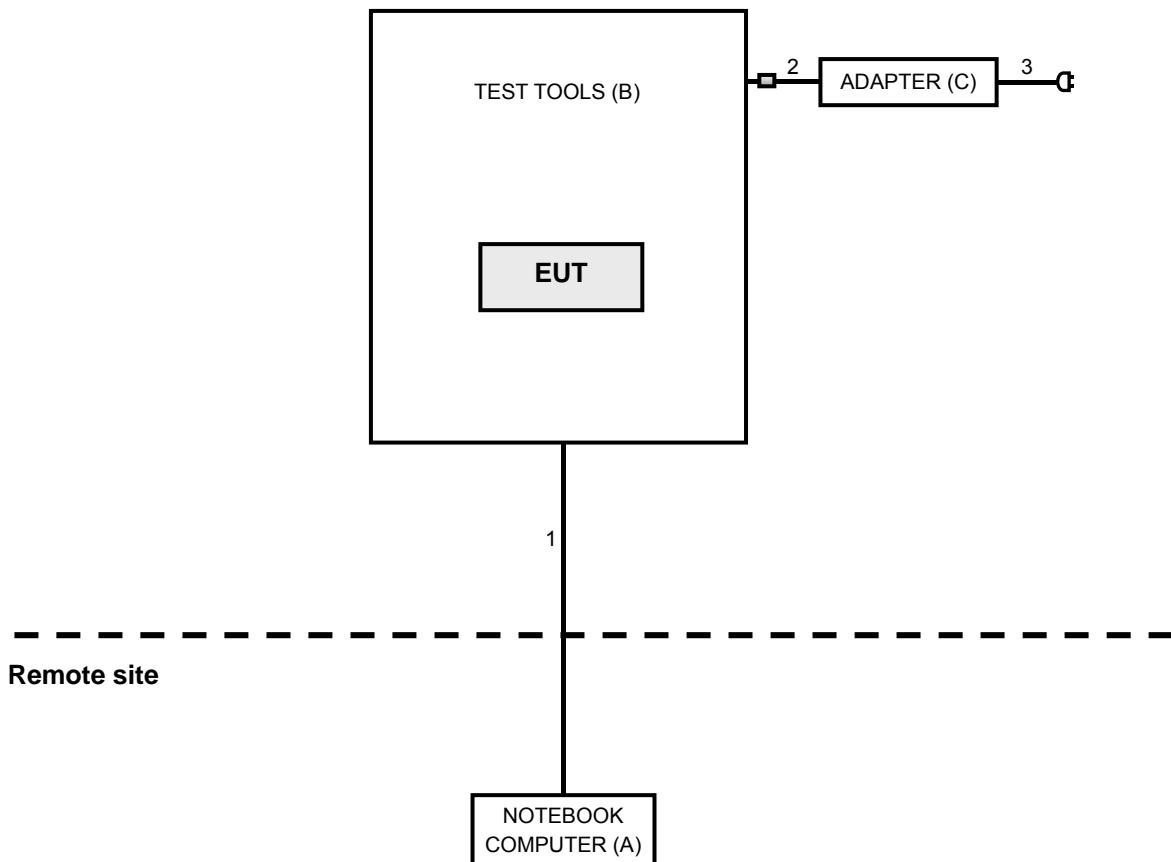
| Model name | LTE | | | | |
|------------|------------|--|------------|-------------------------------|---------------------------|
| | Freq.(MHz) | | Freq.(MHz) | | Band |
| FW2PADPM01 | TX | BW 5MHz: 748.5 ~ 753.5 MHz | RX | BW 5MHz: 779.5 ~ 784.5 MHz | LTE Band 13 |
| | | BW 10MHz: 751 MHz | | BW 10MHz: 782 MHz | |
| | TX | BW 10MHz: Bottom: 746.4025 MHz Top: 755.5975 MHz | RX | BW 10MHz: 782 MHz | LTE Band 13 Guard Band |
| | | BW 5MHz: Bottom: 746.70 MHz Top: 755.30 MHz | | BW 5MHz: 779.5 ~ 784.5 MHz | LTE Band 13 In-band |
| | TX | BW 10MHz: Bottom: 747.22 MHz Top: 754.60 MHz | | BW 10MHz: 782 MHz | |
| | | | | | |

5. The antenna provided to the EUT, please refer to the following table:

| Antenna Spec. | |
|---------------|-----------------|
| Gain(dBi) | Frequency (MHz) |
| 6 | 746~787 |

6. 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 Configuration of System under Test



3.2.1 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.

| No. | Product | Brand | Model No. | Serial No. | FCC ID | Remark |
|-----|----------|-------|--------------|------------|--------|--------|
| A | Notebook | DELL | E5420 | BPQ8MQ1 | NA | - |
| B | ADAPTER | DVE | DSA-60PFE-12 | 120500 | NA | - |

| No. | Cable | Qty. | Length (m) | Shielded (Yes/ No) | Cores (Number) | Remark |
|-----|-------|------|------------|-----------------------|-------------------|--------------------|
| 1 | RJ45 | 2 | 8 | No | 0 | Provided by Lab |
| 2 | DC | 1 | 1.2 | No | 1 | Supplied by Client |
| 3 | AC | 1 | 1.8 | No | 0 | Supplied by Client |

NOTE:

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

3.3 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 X-plane. Following channel(s) was (were) selected for the final test as listed below:

For LTE Band 13

| Test Item | Available Frequency (MHz) | Tested Frequency (MHz) | Channel Bandwidth | Modulation |
|----------------------------|---------------------------|------------------------|-------------------|------------|
| Output Power | 746 to 756 | 748.5, 751, 753.5 | 5MHz | 256QAM |
| | | 751 | 10MHz | 256QAM |
| Modulation Characteristics | 746 to 756 | 751 | 10MHz | 256QAM |
| Emission Bandwidth | 746 to 756 | 748.5, 753.5 | 5MHz | 256QAM |
| | | 751 | 10MHz | 256QAM |
| Channel Edge | 746 to 756 | 748.5, 751, 753.5 | 5MHz | 256QAM |
| | | 751 | 10MHz | 256QAM |
| Peak To Average Ratio | 746 to 756 | 748.5, 751, 753.5 | 5MHz | 256QAM |
| | | 751 | 10MHz | 256QAM |
| Conducted Emission | 746 to 756 | 748.5, 751, 753.5 | 5MHz | 256QAM |
| | | 751 | 10MHz | 256QAM |

For LTE Band 13 Guard Band

| EUT Configure Mode | Test item | Channel | Center Carrier Frequency of E-UTRA channel | Bottom Freq. | Top Freq. | Channel Bandwidth | Modulation | Mode |
|--------------------|------------------------------|---------|--|--------------|-------------|-------------------|------------|------|
| - | ERP | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Modulation Characteristics | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Frequency Stability | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Emission Bandwidth | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Band Edge | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Peak to Average Ratio | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Conducted Emission | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |
| - | Radiated Emission below 1GHz | 5230 | 751.0MHz | 746.4025MHz | - | 10MHz | QPSK | 1RB |
| - | Radiated Emission above 1GHz | 5230 | 751.0MHz | 746.4025MHz | 755.5975MHz | 10MHz | QPSK | 1RB |

*This module is based on FW2XXXX host assembly provide base band data during testing.

For LTE Band 13 In-Band

| EUT Configure Mode | Test item | Channel | Center Carrier Frequency of E-UTRA channel | Bottom Freq. | Top Freq. | Channel Bandwidth | Modulation | Mode |
|--------------------|------------------------------|--------------|--|--------------|-----------|-------------------|------------|------|
| - | ERP | 5205 to 5255 | 748.5MHz | 746.7MHz | 750.3MHz | 5MHz | QPSK | 1RB |
| | | | 751.0MHz | 753.5MHz | 752.8MHz | 755.3MHz | | |
| - | Modulation Characteristics | 5230 | 751.0MHz | 747.22MHz | 754.60MHz | 10MHz | QPSK | 1RB |
| - | Frequency Stability | 5230 | 751.0MHz | 747.22MHz | 754.60MHz | 10MHz | QPSK | 1RB |
| - | Emission Bandwidth | 5205 to 5255 | 748.5MHz | 746.7MHz | 750.3MHz | 5MHz | QPSK | 1RB |
| | | | 751.0MHz | 753.5MHz | 752.8MHz | 755.3MHz | | |
| - | Band Edge | 5205 to 5255 | 748.5MHz | 746.7MHz | 750.3MHz | 5MHz | QPSK | 1RB |
| | | | 753.5MHz | 751.7MHz | 755.3MHz | | | |
| - | Peak to Average Ratio | 5205 to 5255 | 748.5MHz | 746.7MHz | 750.3MHz | 5MHz | QPSK | 1RB |
| | | | 751.0MHz | 753.5MHz | 752.8MHz | 755.3MHz | | |
| - | Conducted Emission | 5205 to 5255 | 748.5MHz | 746.7MHz | 750.3MHz | 5MHz | QPSK | 1RB |
| | | | 751.0MHz | 753.5MHz | 752.8MHz | 755.3MHz | | |
| - | Radiated Emission below 1GHz | 5205 to 5255 | 751.0MHz | 753.5MHz | 752.8MHz | 5MHz | QPSK | 1RB |
| | | | 747.22MHz | - | 10MHz | QPSK | 1RB | |
| - | Radiated Emission above 1GHz | 5205 to 5255 | 748.5MHz | 746.7MHz | 750.3MHz | 5MHz | QPSK | 1RB |
| | | | 751.0MHz | 753.5MHz | 752.8MHz | 755.3MHz | | |
| - | 5230 | 751.0MHz | 747.22MHz | 754.60MHz | 10MHz | QPSK | 1RB | |

*This module is based on FW2XXXX host assembly provide base band data during testing.

Test Condition:

| Test Item | Environmental Conditions | Input Power (System) | Tested By |
|----------------------------|--------------------------|----------------------|------------|
| Output Power | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Modulation Characteristics | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Frequency Stability | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Emission Bandwidth | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Channel Edge | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Peak To Average Ratio | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Conducted Emission | 25deg. C, 63%RH | 120Vac, 60Hz | James Yang |
| Radiated Emission | 23deg. C, 68%RH | 120Vac, 60Hz | Greg Lin |

Note: Above input power with the AC/DC PSU (Brand: MEAN WELL, Model: RSP-500-48, S/N: EB8B336856) used during testing.

3.4 EUT Operating Conditions

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section.

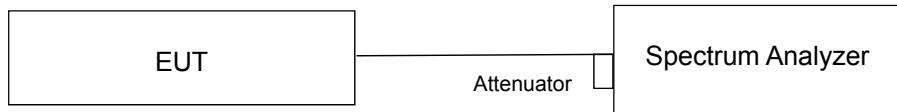
4.1.2 Test Procedures

Conducted Power Measurement:

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

4.1.3 Test Setup

CONDUCTED POWER MEASUREMENT:



4.1.4 Test Results

Conducted Power

For LTE Band 13:

1TX

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|---------|-----------|
| | | Low CH | Mid CH | High CH |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 0 | 23.09 | 23.15 | 23.06 |
| | 1 | 23.11 | 23.08 | 22.99 |

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|---------|-----------|
| | | Mid CH | 751 MHz | 753.5 MHz |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 10M | 0 | 23.03 | | |
| | 1 | | 22.95 | |

2TX

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|---------|-----------|
| | | Low CH | Mid CH | High CH |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 2TX | 26.16 | 26.18 | 26.09 |

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|---------|-----------|
| | | Mid CH | 751 MHz | 753.5 MHz |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 10M | 2TX | | 26.05 | |

For NB-IoT Guard Band:

Channel Bandwidth: 10MHz

1TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | QPSK_NB-IoT Signal at Top |
|-----------|-------|------------------------------|---------|---------------------------|
| | | Mid CH | 751 MHz | Mid CH |
| | | 751 MHz | 751 MHz | 751 MHz |
| 13 / 10M | 0 | 24.93 | | 24.92 |
| | 1 | 24.57 | | 24.85 |

2TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | QPSK_NB-IoT Signal at Top |
|-----------|-------|------------------------------|---------|---------------------------|
| | | Mid CH | 751 MHz | Mid CH |
| | | 751 MHz | 751 MHz | 751 MHz |
| 13 / 10M | 2TX | 27.76 | | 27.90 |

For NB-IoT In-Band

Channel Bandwidth: 5MHz

1TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | | QPSK_NB-IoT Signal at Top | | |
|-----------|-------|------------------------------|---------|-----------|---------------------------|---------|-----------|
| | | 748.5 MHz | 751 MHz | 753.5 MHz | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 0 | 24.31 | 24.28 | 24.41 | 24.25 | 24.32 | 24.33 |
| | 1 | 24.62 | 24.65 | 24.37 | 24.54 | 24.62 | 24.48 |

2TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | | QPSK_NB-IoT Signal at Top | | |
|-----------|-------|------------------------------|---------|-----------|---------------------------|---------|-----------|
| | | 748.5 MHz | 751 MHz | 753.5 MHz | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 0+1 | 27.48 | 27.48 | 27.40 | 27.41 | 27.48 | 27.42 |

Channel Bandwidth: 10MHz

1TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | | QPSK_NB-IoT Signal at Top | | |
|-----------|-------|------------------------------|--|--|---------------------------|--|--|
| | | Mid CH | | | Mid CH | | |
| | | 751 MHz | | | 751 MHz | | |
| 13 / 10M | 0 | 24.52 | | | 24.54 | | |
| | 1 | 24.36 | | | 24.45 | | |

2TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | | QPSK_NB-IoT Signal at Top | | |
|-----------|-------|------------------------------|--|--|---------------------------|--|--|
| | | Mid CH | | | Mid CH | | |
| | | 751 MHz | | | 751 MHz | | |
| 13 / 10M | 2TX | 27.45 | | | 27.51 | | |

ERP power
For LTE Band 13:
1TX

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|---------|-----------|
| | | Low CH | Mid CH | High CH |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 0 | 26.94 | 27.00 | 26.91 |
| | 1 | 26.96 | 26.93 | 26.84 |

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|---------|-----------|
| | | Mid CH | 751 MHz | |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 10M | 0 | | 26.88 | |
| | 1 | | 26.80 | |

2TX

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|--------------|-----------|
| | | Low CH | Mid CH | High CH |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 2TX | 30.01 | 30.03 | 29.94 |

| Band / BW | Chain | 256QAM | | |
|-----------|-------|-----------|--------------|-----------|
| | | Mid CH | 751 MHz | |
| | | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 10M | 2TX | | 29.90 | |

*ERP= Conducted power + Gain -2.15

For NB-IoT Guard Band:
Channel Bandwidth: 10MHz
1TX

| Band / BW | Chain | QPSK_ NB-IoT Signal at Bottom | | QPSK_ NB-IoT Signal at Top |
|-----------|-------|-------------------------------|---------|----------------------------|
| | | Mid CH | 751 MHz | Mid CH |
| | | 751 MHz | | 751 MHz |
| 13 / 10M | 0 | 28.78 | | 28.77 |
| | 1 | 28.42 | | 28.70 |

2TX

| Band / BW | Chain | QPSK_ NB-IoT Signal at Bottom | | QPSK_ NB-IoT Signal at Top |
|-----------|-------|-------------------------------|---------|----------------------------|
| | | Mid CH | 751 MHz | Mid CH |
| | | 751 MHz | | 751 MHz |
| 13 / 10M | 2TX | 31.61 | | 31.75 |

*ERP= Conducted power + Gain -2.15

For NB-IoT In-Band

Channel Bandwidth: 5MHz

1TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | | QPSK_NB-IoT Signal at Top | | |
|-----------|-------|------------------------------|--------------|-----------|---------------------------|---------|-----------|
| | | 748.5 MHz | 751 MHz | 753.5 MHz | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 0 | 28.16 | 28.13 | 28.26 | 28.10 | 28.17 | 28.18 |
| | 1 | 28.47 | 28.50 | 28.22 | 28.39 | 28.47 | 28.33 |

2TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | | QPSK_NB-IoT Signal at Top | | |
|-----------|-------|------------------------------|--------------|-----------|---------------------------|--------------|-----------|
| | | 748.5 MHz | 751 MHz | 753.5 MHz | 748.5 MHz | 751 MHz | 753.5 MHz |
| 13 / 5M | 0+1 | 31.33 | 31.33 | 31.25 | 31.26 | 31.33 | 31.27 |

*ERP= Conducted power + Gain -2.15

Channel Bandwidth: 10MHz

1TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | QPSK_NB-IoT Signal at Top | |
|-----------|-------|------------------------------|---------|---------------------------|---------|
| | | Mid CH | | Mid CH | |
| | | 751 MHz | 751 MHz | 751 MHz | 751 MHz |
| 13 / 10M | 0 | 28.37 | | 28.39 | |
| | 1 | 28.21 | | 28.30 | |

2TX

| Band / BW | Chain | QPSK_NB-IoT Signal at Bottom | | QPSK_NB-IoT Signal at Top | |
|-----------|-------|------------------------------|---------|---------------------------|---------|
| | | Mid CH | | Mid CH | |
| | | 751 MHz | 751 MHz | 751 MHz | 751 MHz |
| 13 / 10M | 2TX | 31.30 | | 31.36 | |

*ERP= Conducted power + Gain -2.15

4.2 Modulation characteristics Measurement

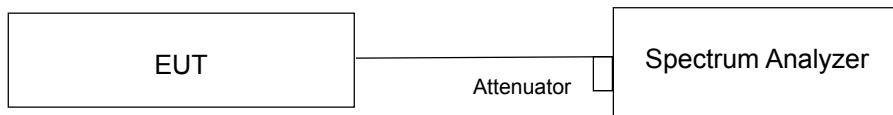
4.2.1 Limits of Modulation characteristics

N/A

4.2.2 Test Procedure

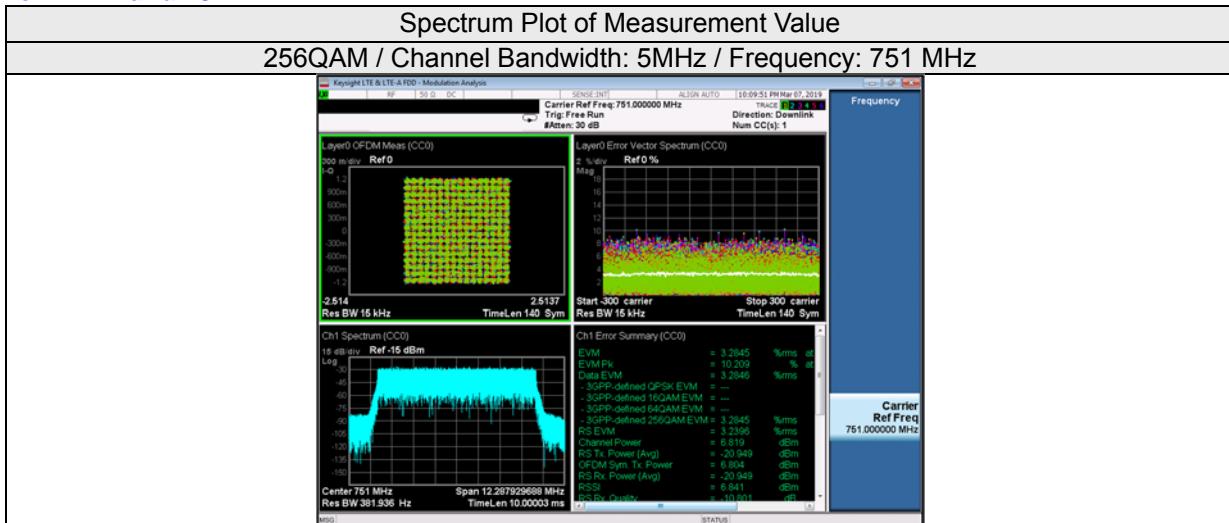
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup

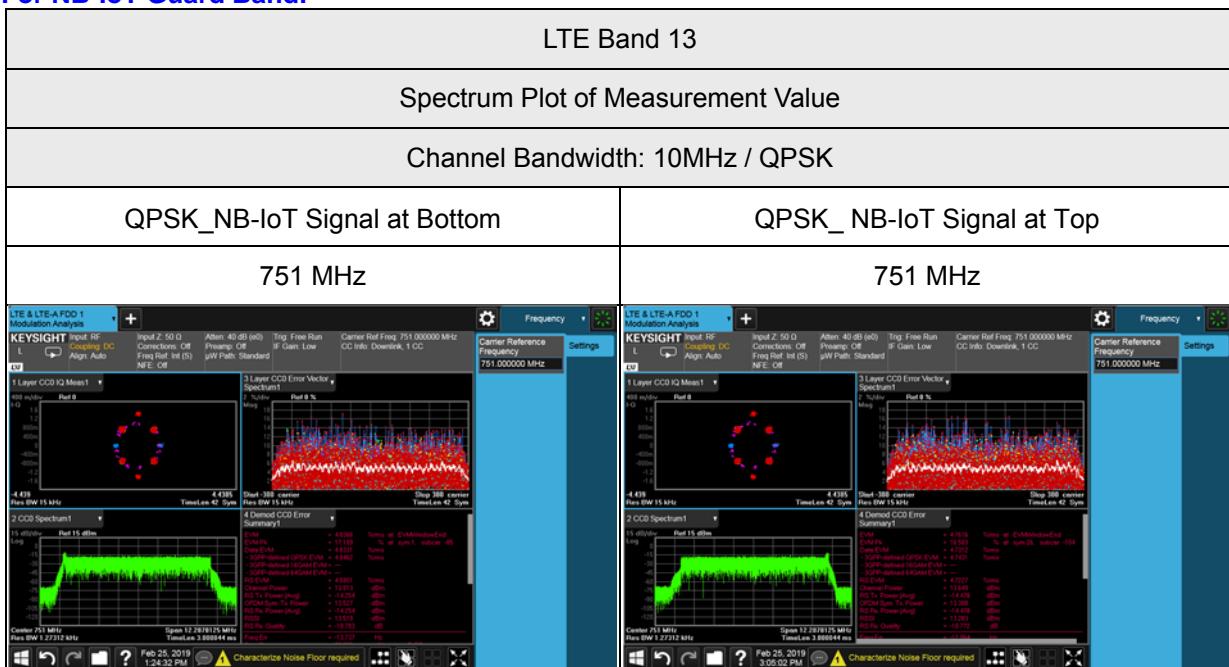


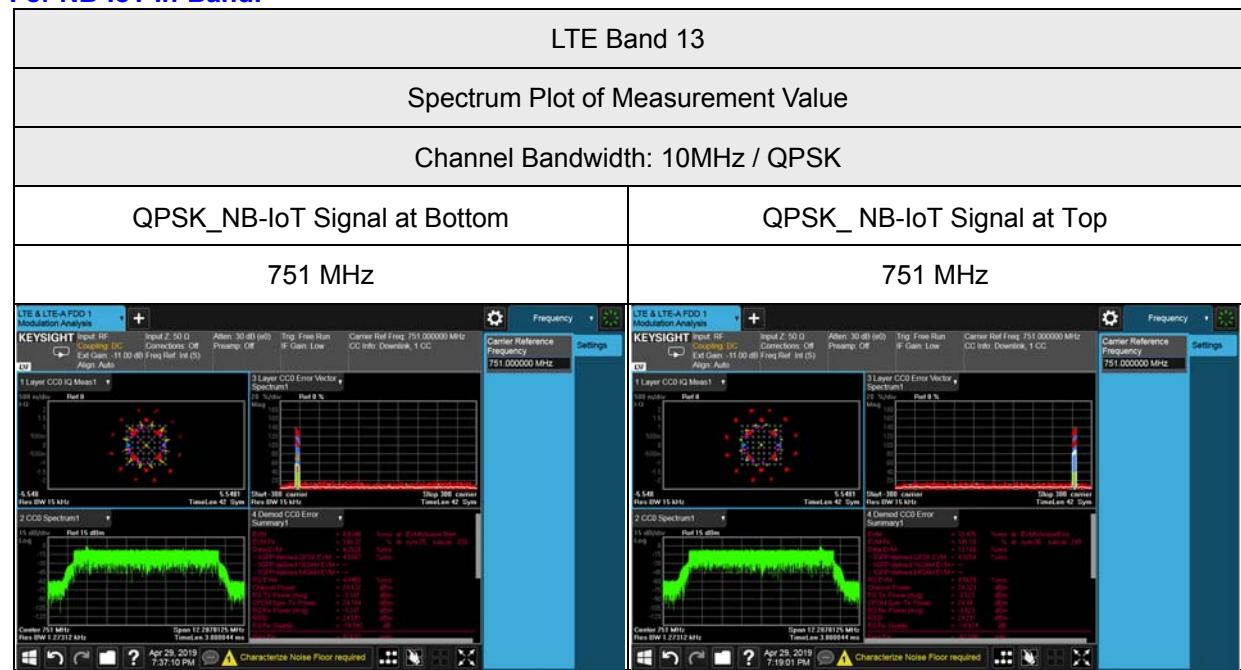
4.2.4 Test Results

For LTE Band 13:



For NB-IoT Guard Band:



For NB-IoT In-Band:


4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

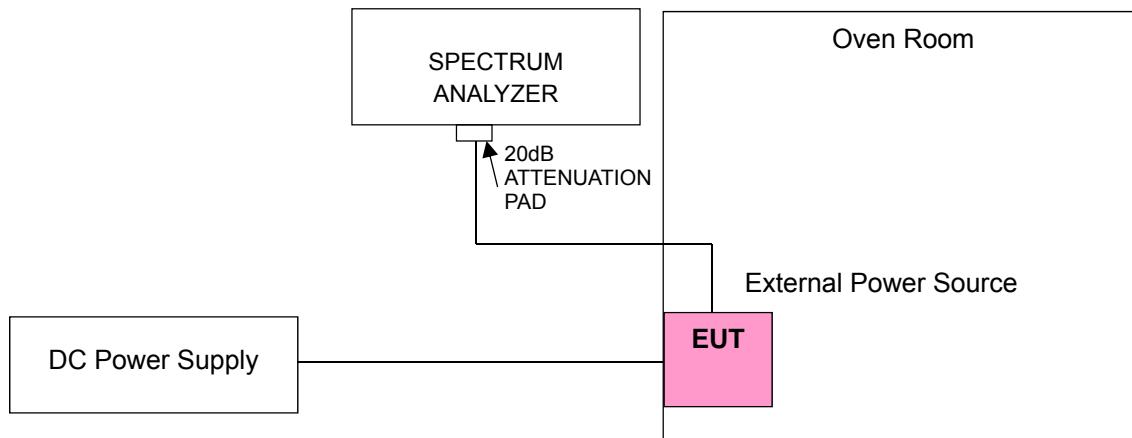
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT -30°C ~ 50°C.

4.3.2 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.
- 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 ±0.5 °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.

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 13 Guard Band |
|-----------------|------------------------|
| | Frequency error (ppm) |
| 13.2 | 0.02670 |
| 12 | 0.03606 |
| 10.8 | 0.03541 |

Note: The applicant defined the normal working voltage is from 10.8Vdc to 13.2Vdc.

| TEMP. (°C) | LTE Band 13 Guard Band |
|------------|------------------------|
| | Frequency error (ppm) |
| 50 | 0.02416 |
| 40 | 0.05660 |
| 30 | 0.06483 |
| 20 | 0.03606 |
| 10 | 0.01695 |
| 0 | 0.06419 |
| -10 | 0.04883 |
| -20 | 0.03887 |
| -30 | 0.02840 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 13 In-Band |
|-----------------|-----------------------|
| | Frequency error (ppm) |
| 13.2 | 0.003 |
| 12 | 0.004 |
| 10.8 | 0.002 |

Note: The applicant defined the normal working voltage is from 10.8Vdc to 13.2Vdc.

| TEMP. (°C) | LTE Band 13 In-Band |
|------------|-----------------------|
| | Frequency error (ppm) |
| 50 | -0.004 |
| 40 | -0.002 |
| 30 | -0.005 |
| 20 | -0.005 |
| 10 | 0.002 |
| 0 | 0.001 |
| -10 | 0.001 |
| -20 | 0.002 |
| -30 | 0.005 |

4.4 Emission Bandwidth Measurement

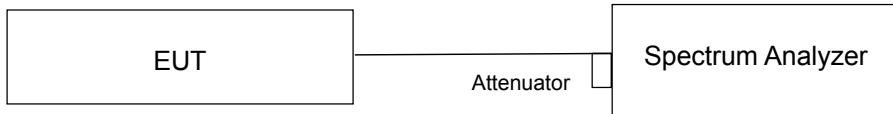
4.4.1 Limits of Emission Bandwidth Measurement

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 26dB below the transmitter power.

4.4.2 Test Procedure

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 = 51kHz and VBW = 150kHz (Channel Bandwidth: 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz). The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

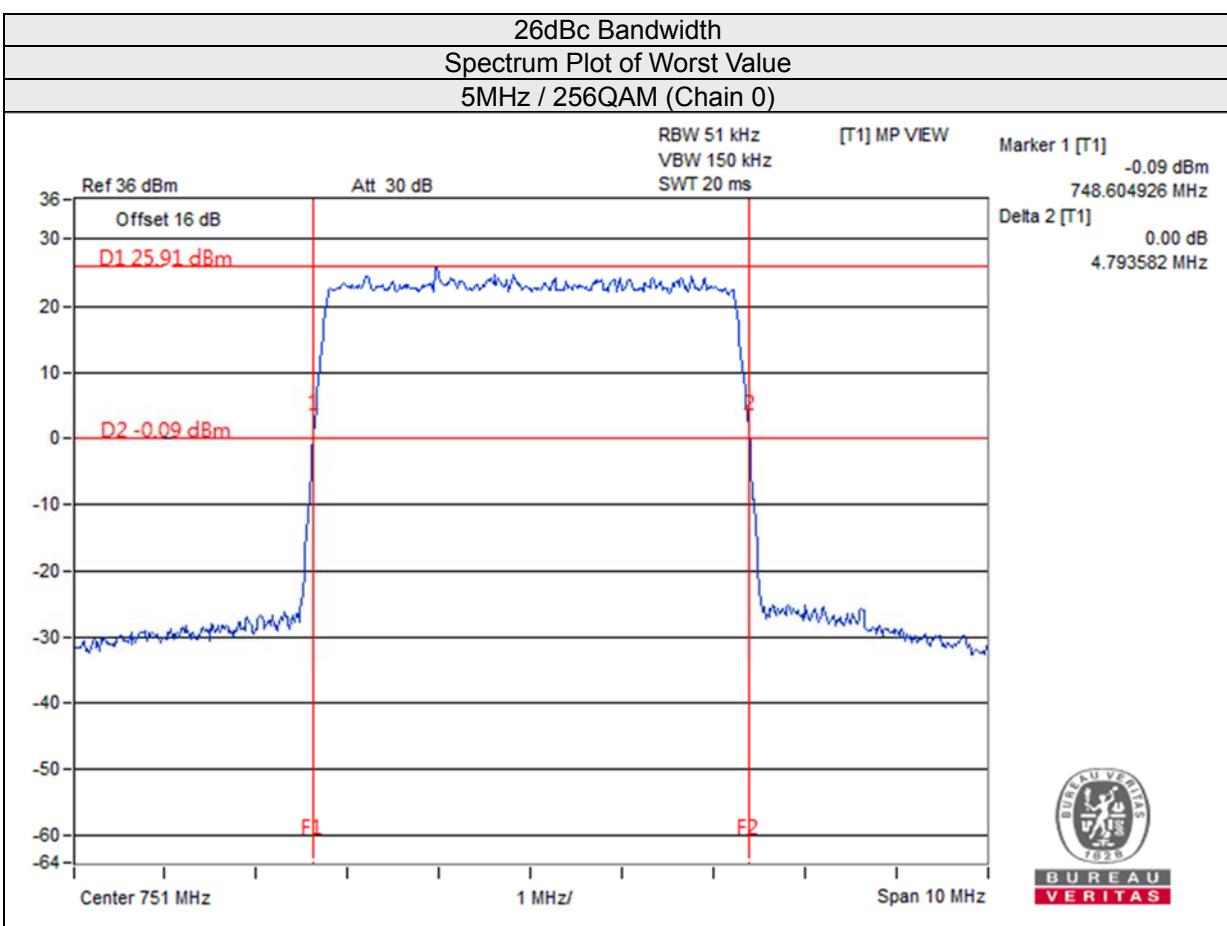
4.4.3 Test Setup



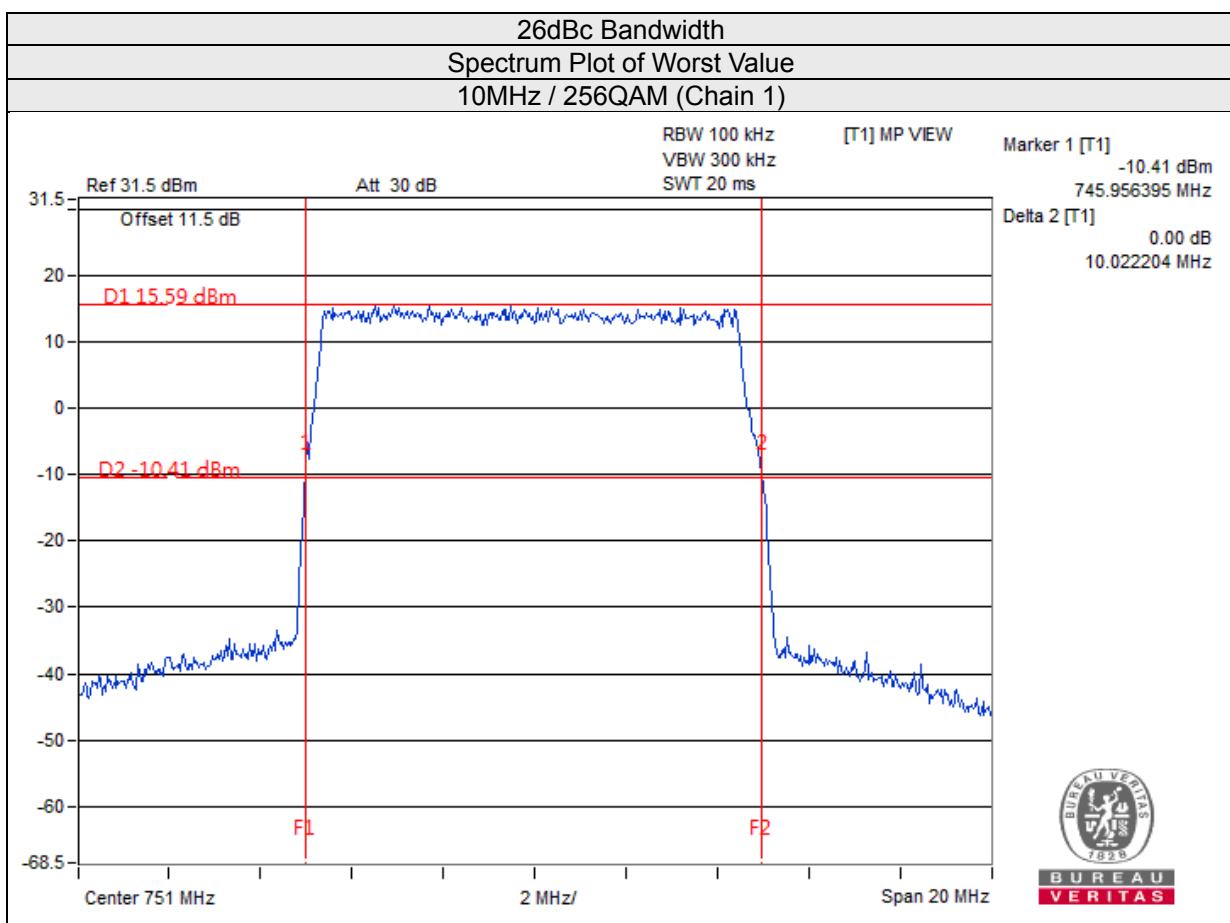
4.4.4 Test Results (-26dBc Bandwidth)

For LTE Band 13:

| Channel Bandwidth: 5MHz | | |
|-------------------------|-----------------------|--------|
| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | 256QAM | 256QAM |
| 748.5 | 4.780 | 4.784 |
| 751 | 4.794 | 4.777 |
| 753.5 | 4.774 | 4.781 |

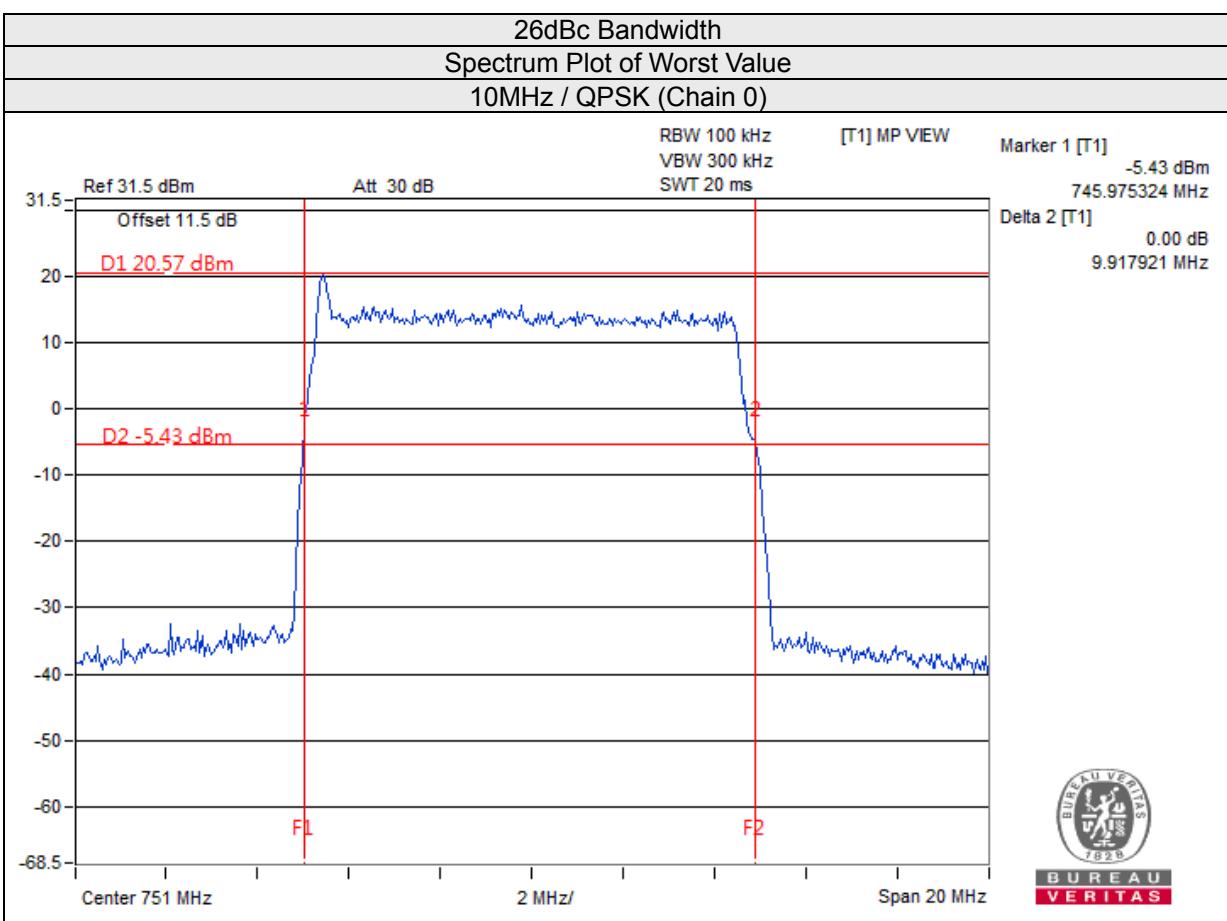


| Channel Bandwidth: 10MHz | | |
|--------------------------|-----------------------|--------|
| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | 256QAM | 256QAM |
| 751 | 10.000 | 10.022 |



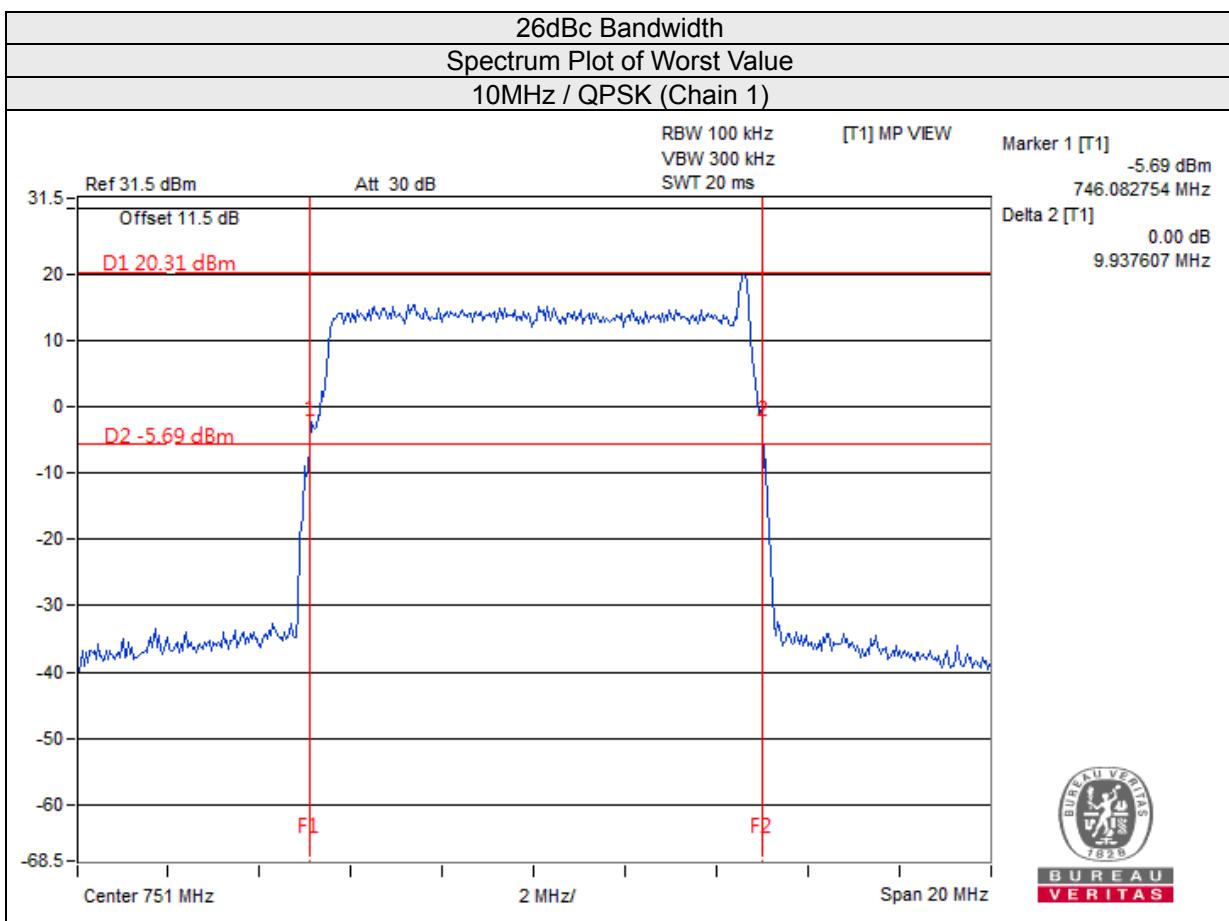
**For LTE Band 13 Guard Band:
QPSK_NB-IoT Signal at Bottom**

| Channel Bandwidth: 10MHz | | |
|--------------------------|-----------------------|--------|
| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 9.918 | 9.852 |



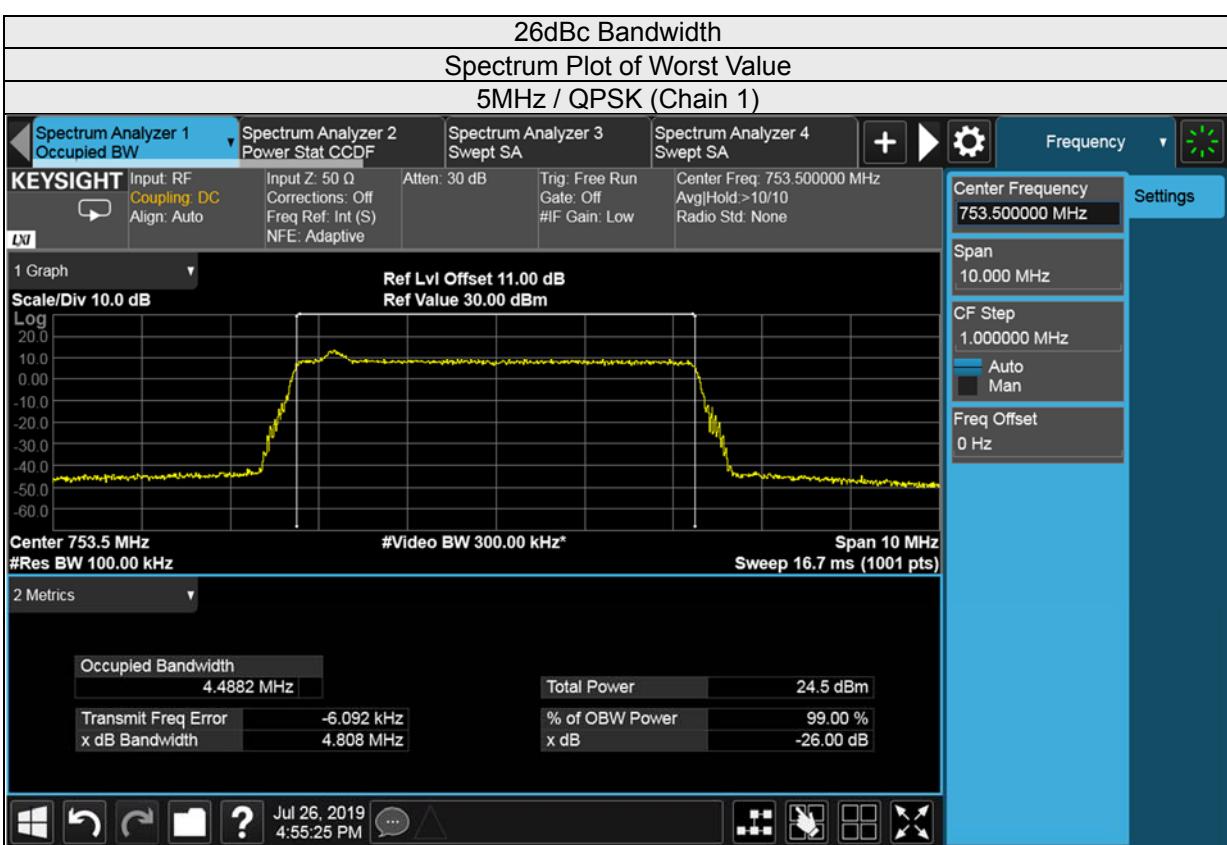
QPSK_NB-IoT Signal at Top

| Channel Bandwidth: 10MHz | | |
|--------------------------|-----------------------|--------|
| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 9.909 | 9.938 |



**For NB-IoT In-Band:
QPSK_NB-IoT Signal at Bottom**

| Channel Bandwidth: 5MHz | | |
|-------------------------|-----------------------|--------|
| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 748.5 | 4.741 | 4.783 |
| 751.0 | 4.768 | 4.743 |
| 753.5 | 4.764 | 4.808 |



QPSK_NB-IoT Signal at Top

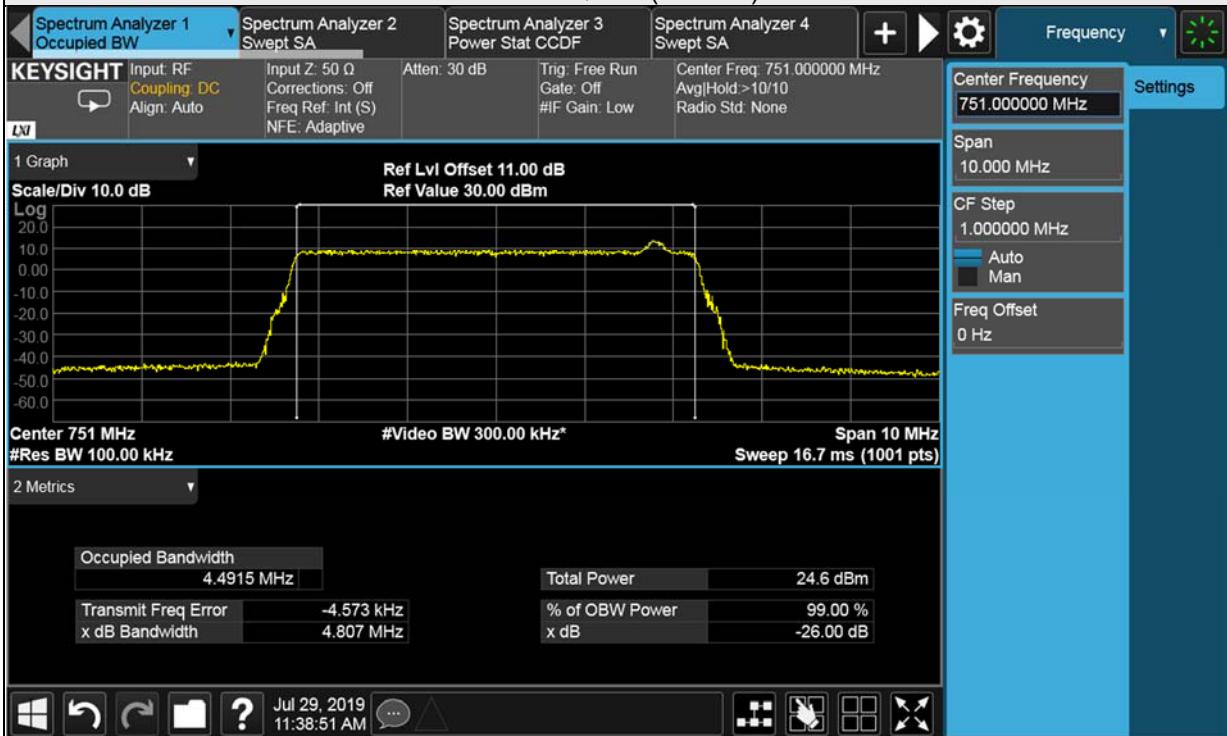
Channel Bandwidth: 5MHz

| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
|-----------------|-----------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 748.5 | 4.774 | 4.727 |
| 751.0 | 4.807 | 4.751 |
| 753.5 | 4.767 | 4.747 |

26dBc Bandwidth

Spectrum Plot of Worst Value

5MHz / QPSK (Chain 0)



QPSK_NB-IoT Signal at Bottom

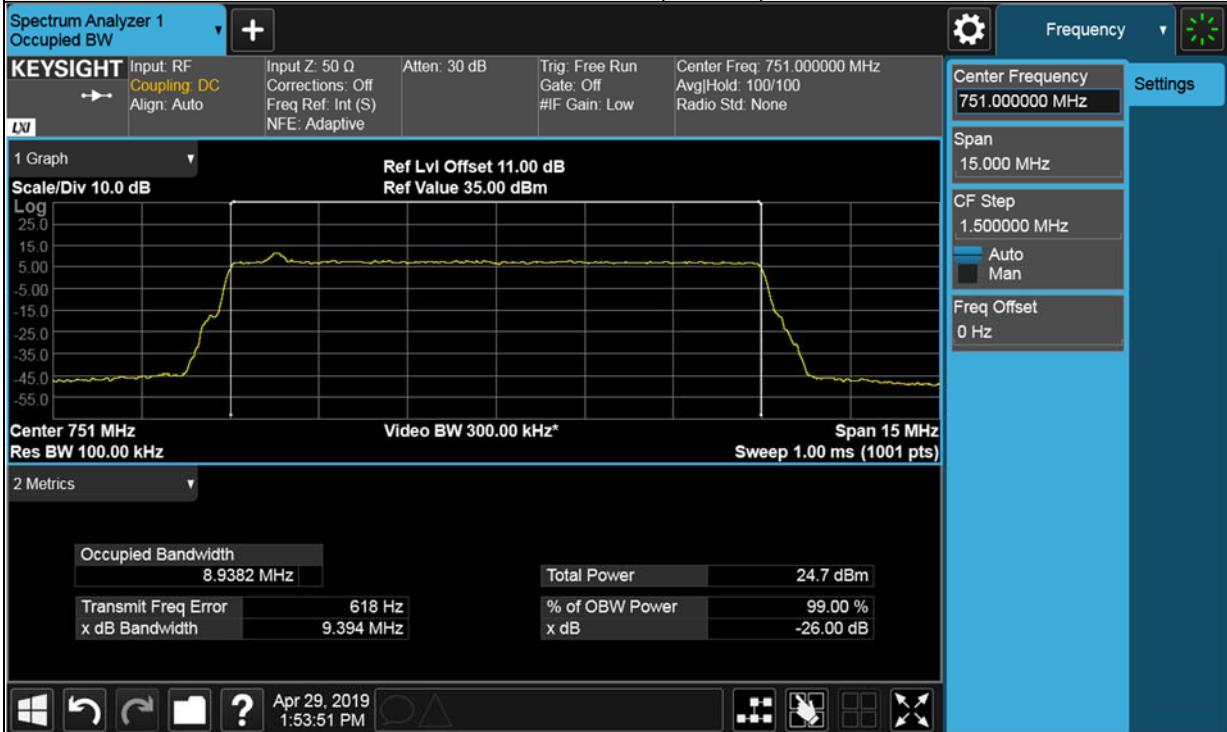
Channel Bandwidth: 10MHz

| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
|-----------------|-----------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 9.394 | 9.383 |

26dBc Bandwidth

Spectrum Plot of Worst Value

10MHz / QPSK (Chain 0)



QPSK_NB-IoT Signal at Top

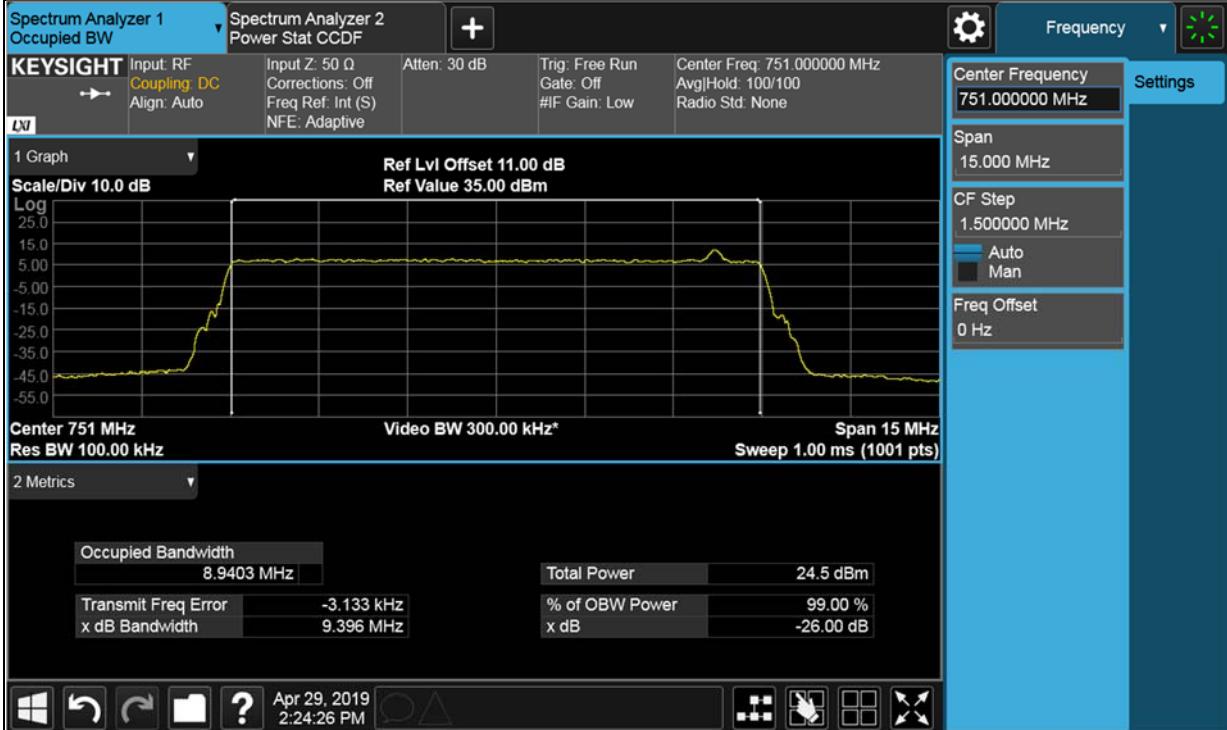
Channel Bandwidth: 10MHz

| Frequency (MHz) | 26dBc Bandwidth (MHz) | |
|-----------------|-----------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 9.370 | 9.396 |

26dBc Bandwidth

Spectrum Plot of Worst Value

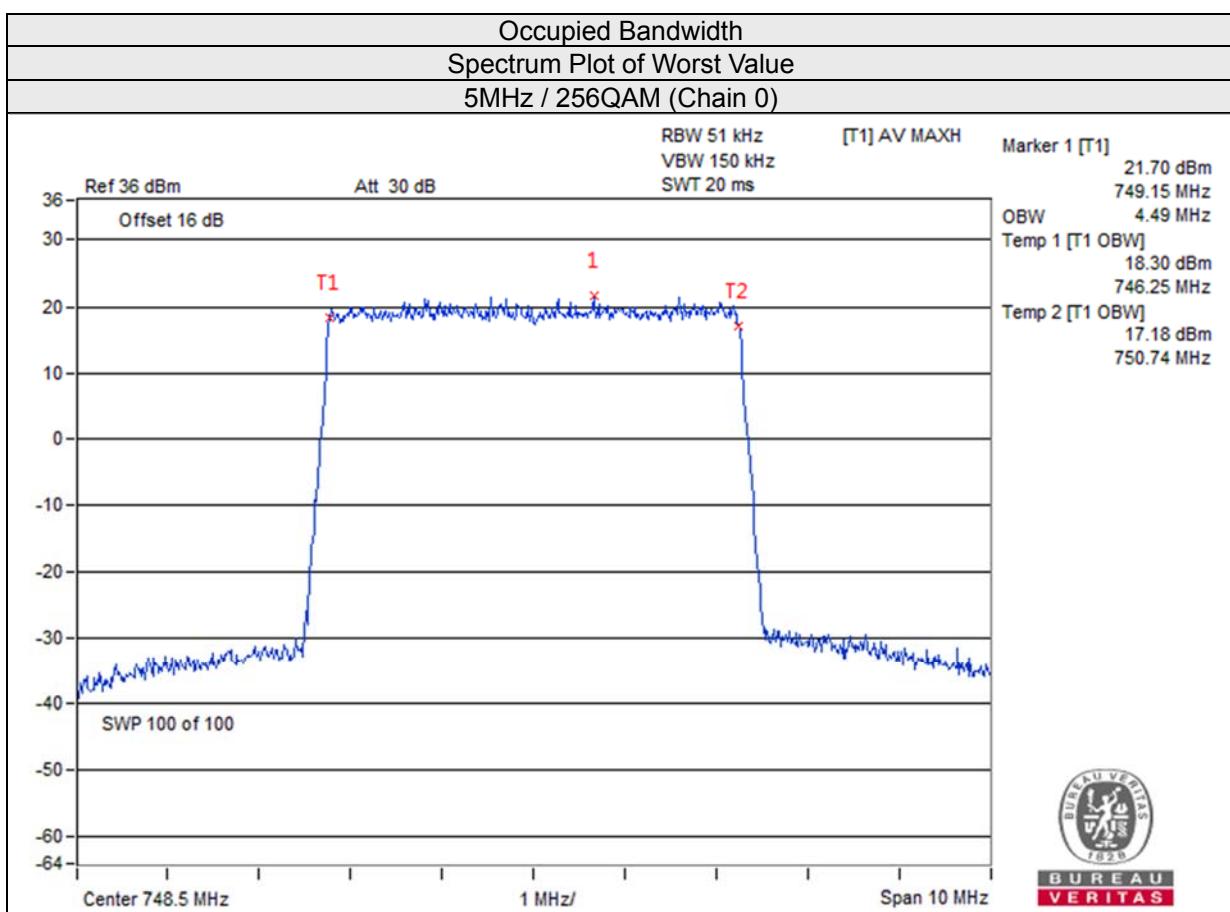
10MHz / QPSK (Chain 1)



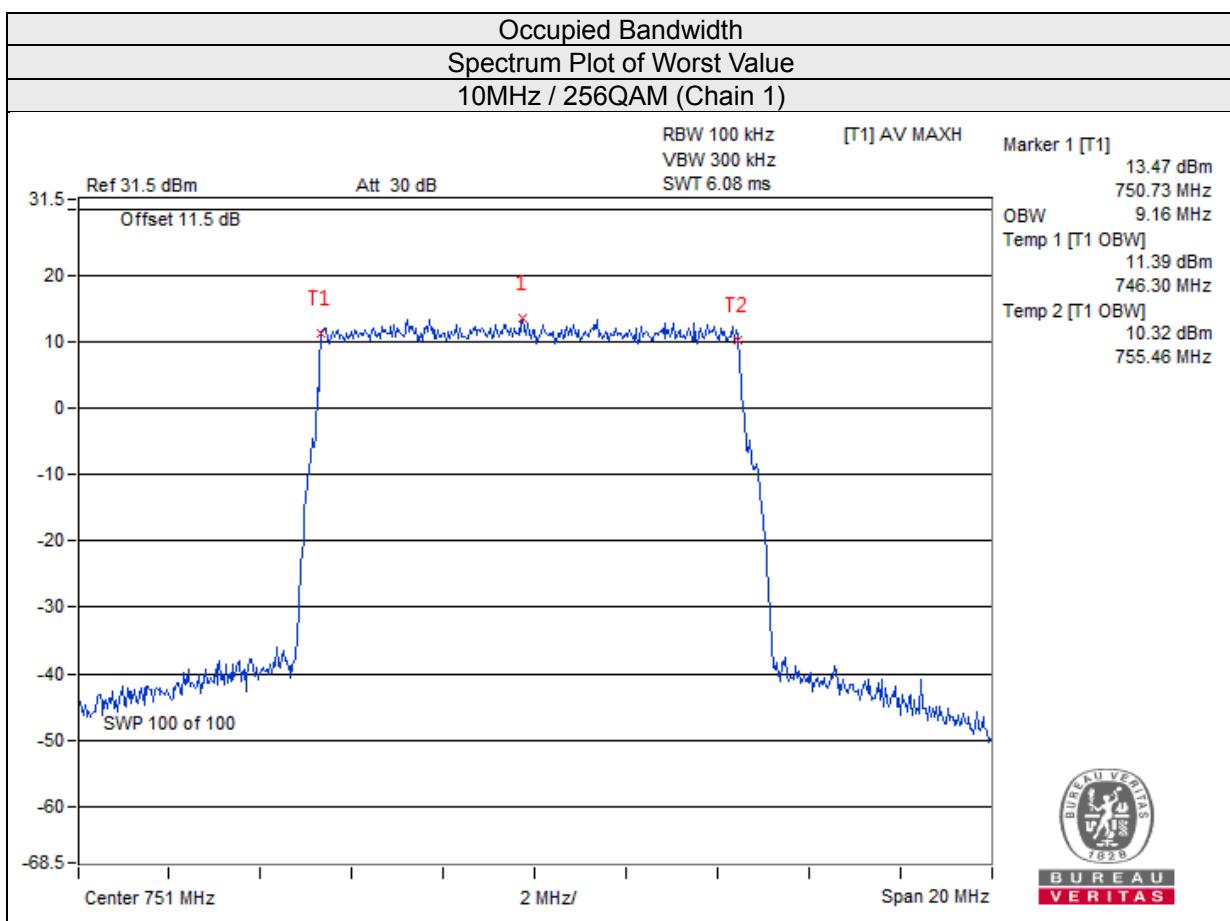
4.4.5 Test Results (Occupied Bandwidth)

For LTE Band 13:

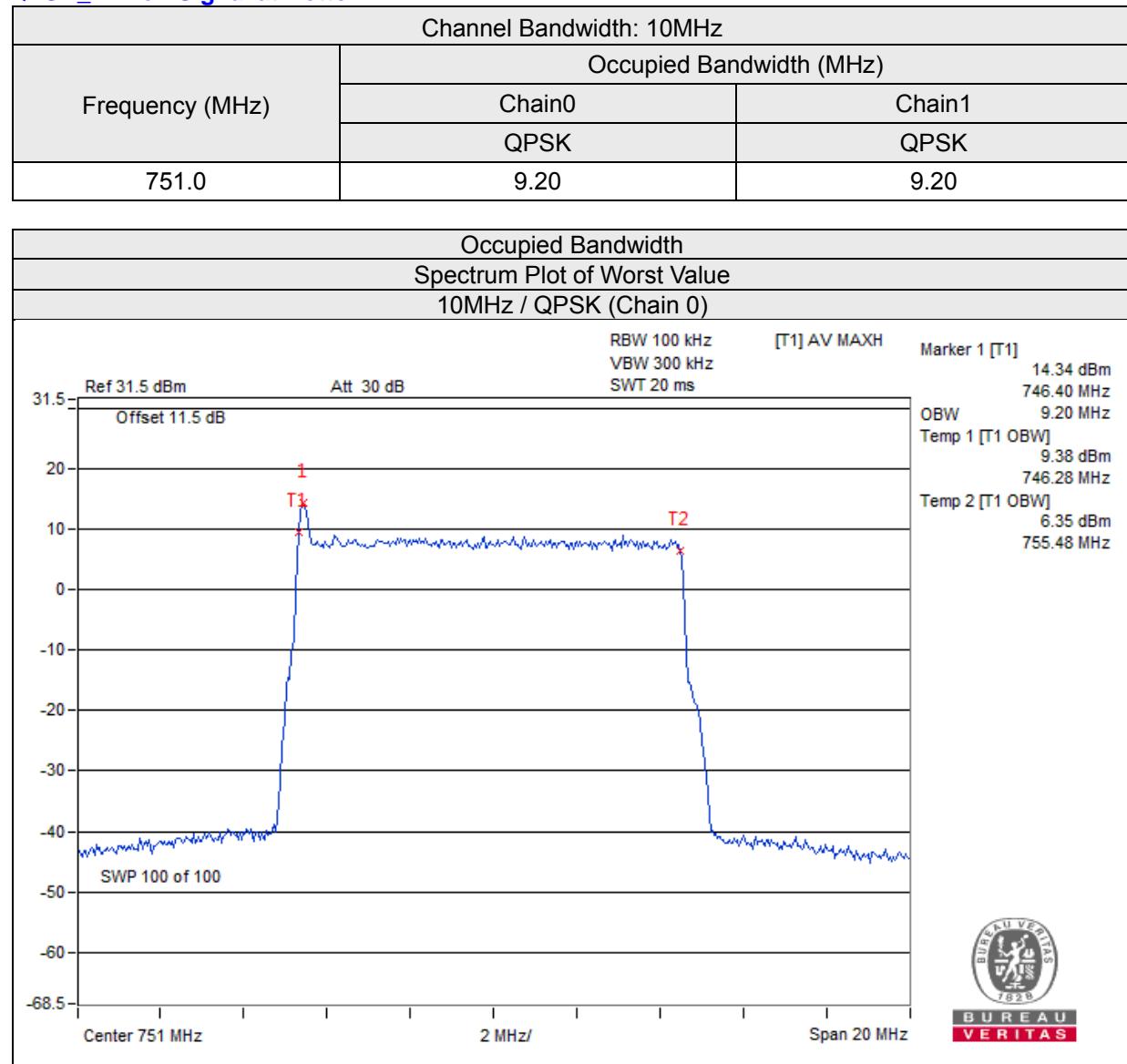
| Channel Bandwidth: 5MHz | | |
|-------------------------|--------------------------|--------|
| Frequency (MHz) | Occupied Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | 256QAM | 256QAM |
| 748.5 | 4.49 | 4.49 |
| 751 | 4.49 | 4.49 |
| 753.5 | 4.47 | 4.47 |



| Channel Bandwidth: 10MHz | | |
|--------------------------|--------------------------|--------|
| Frequency (MHz) | Occupied Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | 256QAM | 256QAM |
| 751.0 | 9.16 | 9.16 |



**For LTE Band 13 Guard Band:
QPSK_NB-IoT Signal at Bottom**



QPSK_NB-IoT Signal at Top

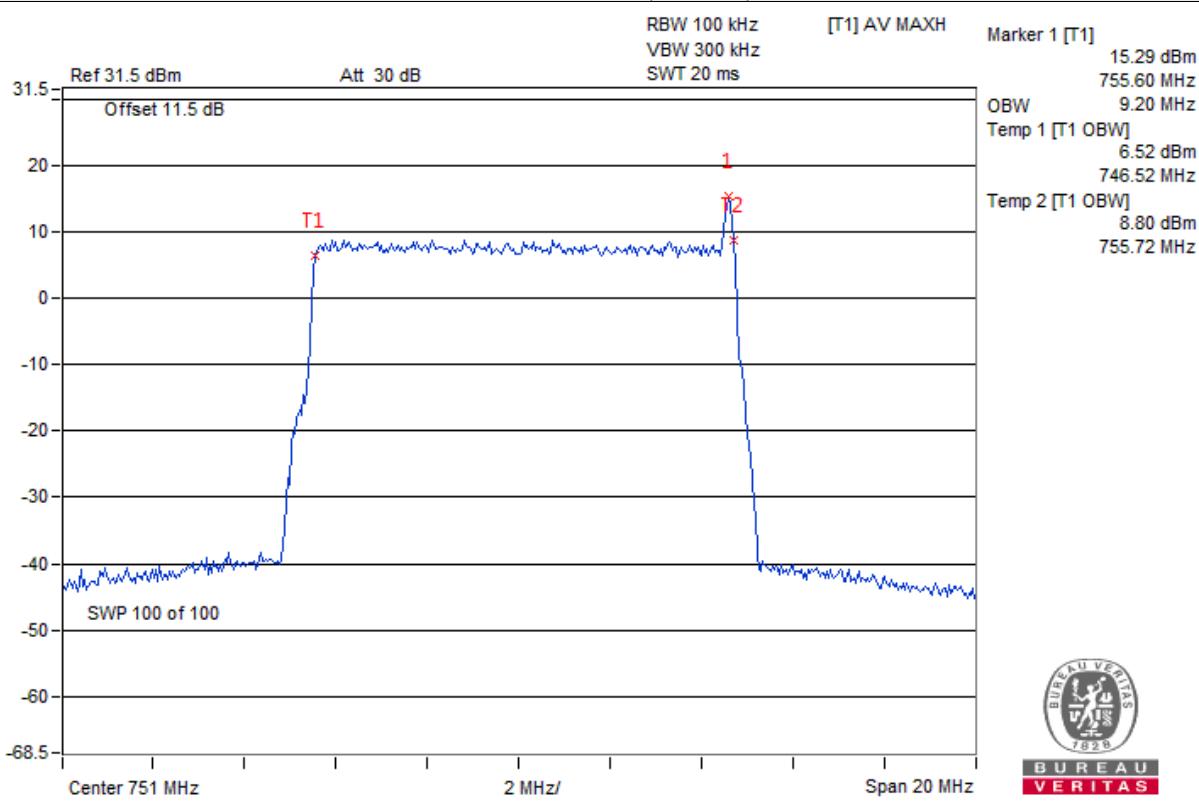
Channel Bandwidth: 10MHz

| Frequency (MHz) | Occupied Bandwidth (MHz) | |
|-----------------|--------------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 9.20 | 9.20 |

Occupied Bandwidth

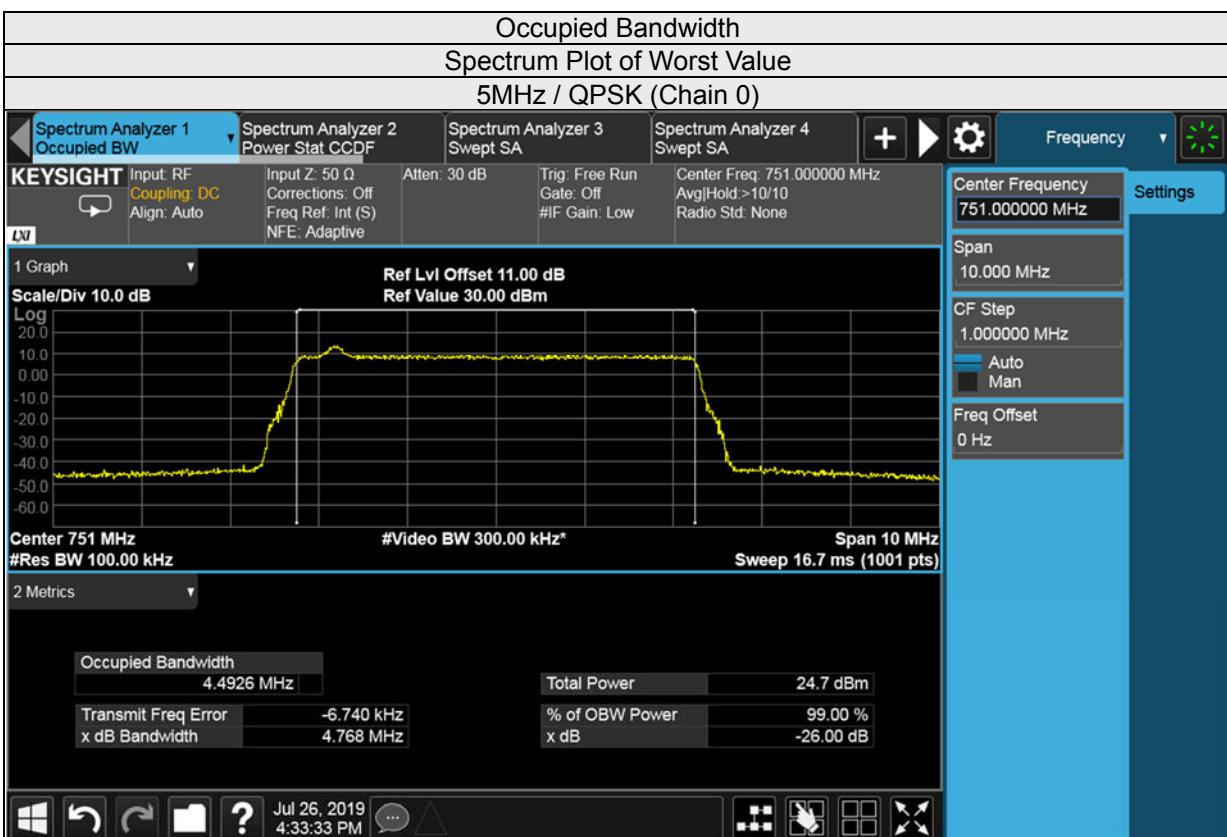
Spectrum Plot of Worst Value

10MHz / QPSK (Chain 0)



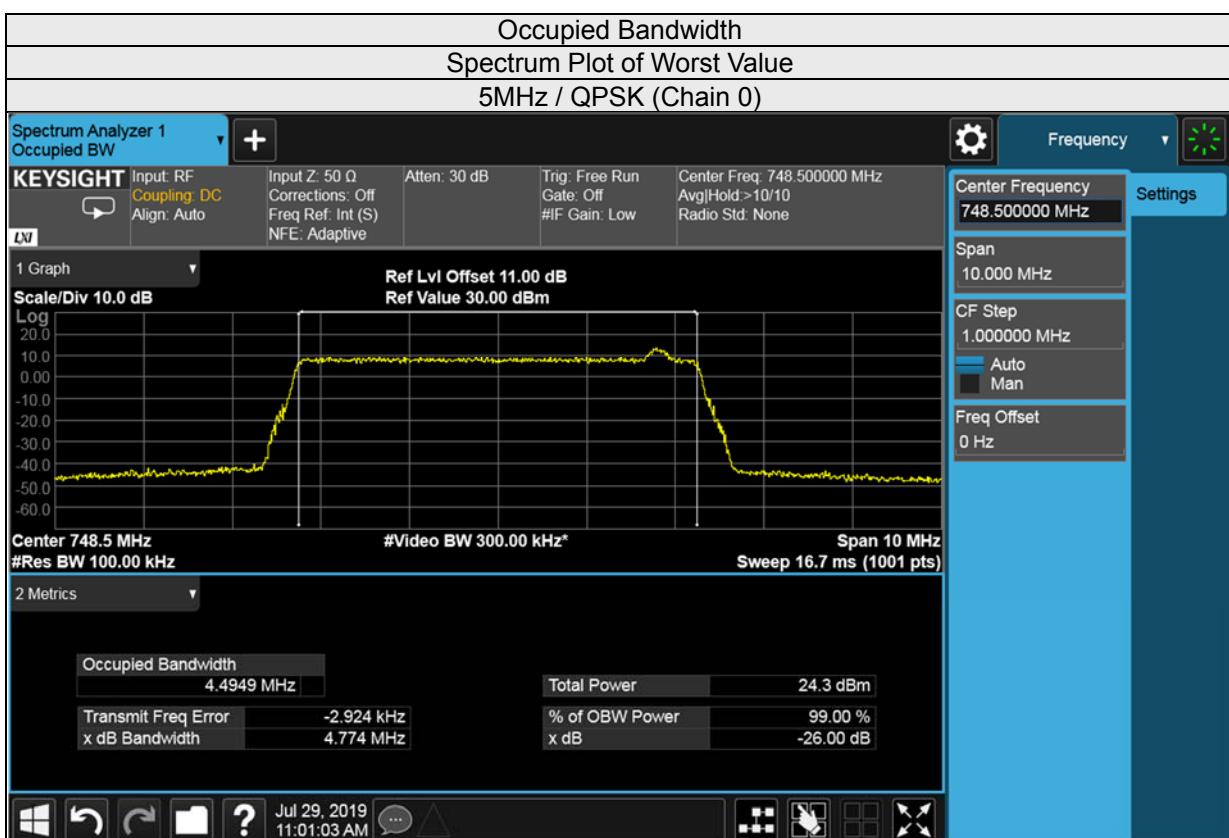
**For NB-IoT In-Band:
QPSK_NB-IoT Signal at Bottom**

| Channel Bandwidth: 5MHz | | |
|-------------------------|--------------------------|--------|
| Frequency (MHz) | Occupied Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 748.5 | 4.4922 | 4.4911 |
| 751.0 | 4.4926 | 4.4906 |
| 753.5 | 4.4894 | 4.4882 |



QPSK_NB-IoT Signal at Top

| Channel Bandwidth: 5MHz | | |
|-------------------------|--------------------------|--------|
| Frequency (MHz) | Occupied Bandwidth (MHz) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 748.5 | 4.4949 | 4.4909 |
| 751.0 | 4.4915 | 4.4886 |
| 753.5 | 4.4918 | 4.4879 |



QPSK_NB-IoT Signal at Bottom

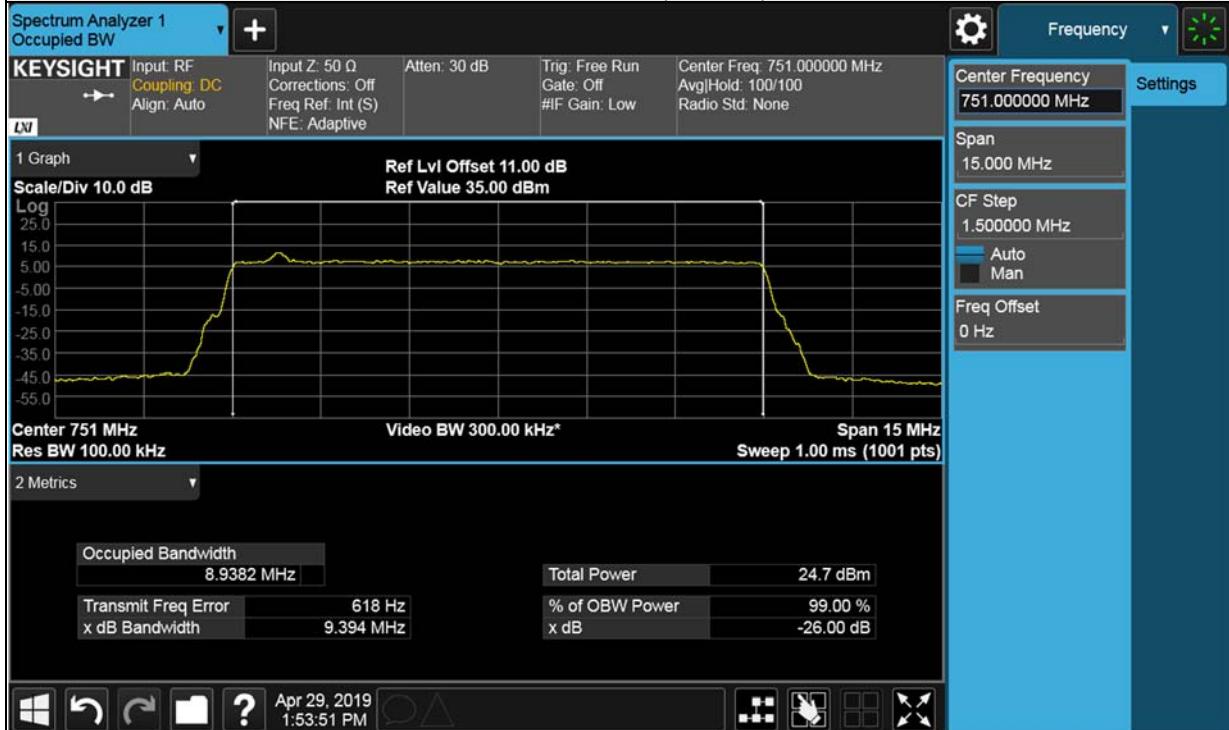
Channel Bandwidth: 10MHz

| Frequency (MHz) | Occupied Bandwidth (MHz) | |
|-----------------|--------------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 8.9382 | 8.9329 |

Occupied Bandwidth

Spectrum Plot of Worst Value

10MHz / QPSK (Chain 0)



QPSK_NB-IoT Signal at Top

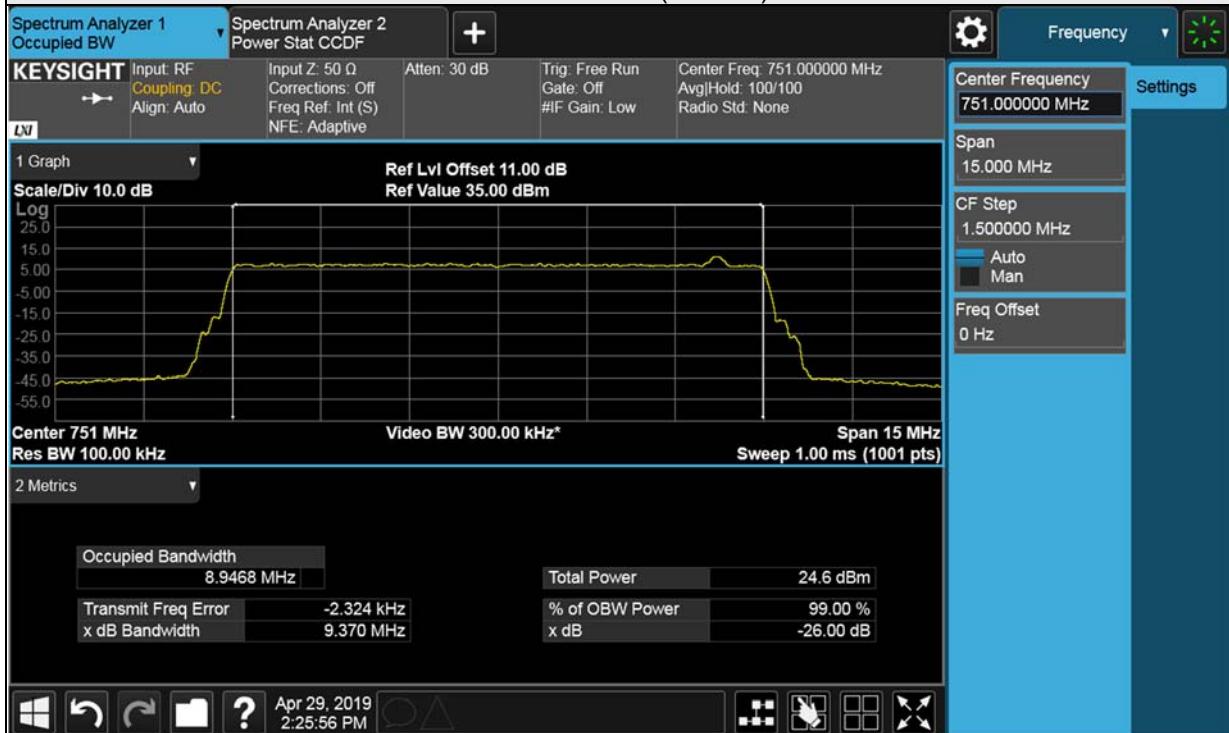
Channel Bandwidth: 10MHz

| Frequency (MHz) | Occupied Bandwidth (MHz) | |
|-----------------|--------------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 8.9468 | 8.9403 |

Occupied Bandwidth

Spectrum Plot of Worst Value

10MHz / QPSK (Chain 0)



4.5 Band Edge Measurement

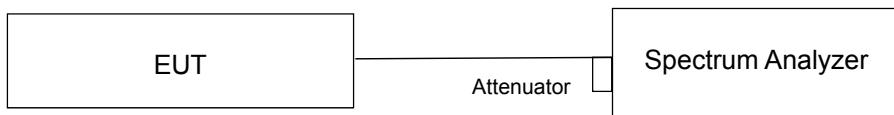
4.5.1 Limits of Band Edge Measurement

According to FCC 27.53(c), for operations in the 747 to 762 MHz band and the 777 to 792 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured watts, in accordance with the following:

- (1) On any frequency outside the 747 to 762 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.

Note: The Device has 2x2 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.

4.5.2 Test Setup

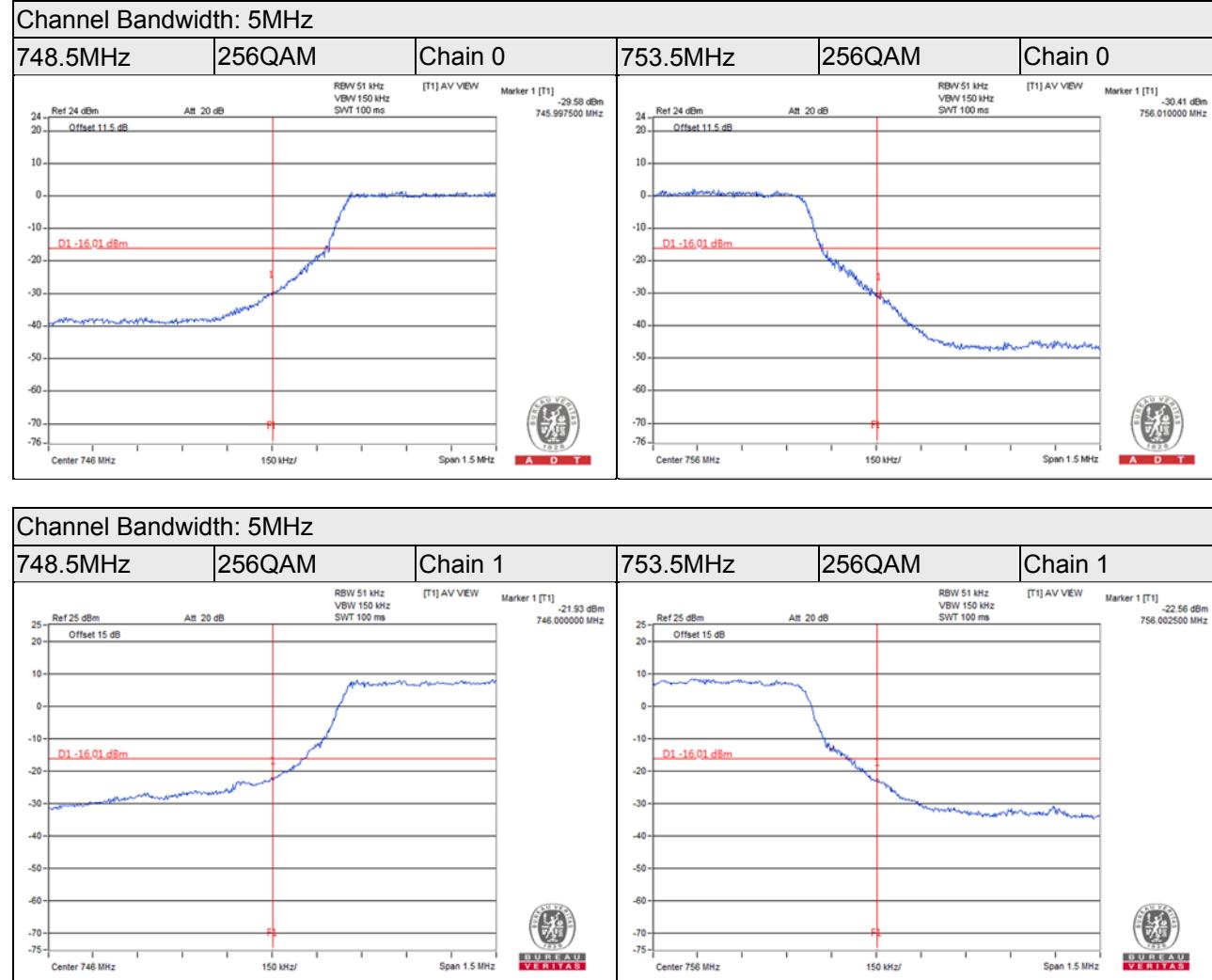


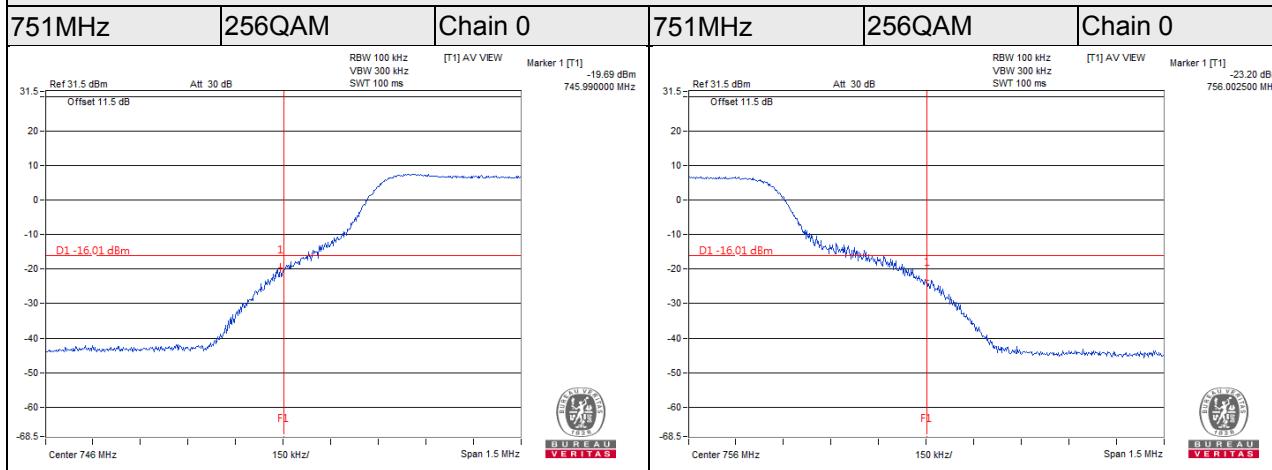
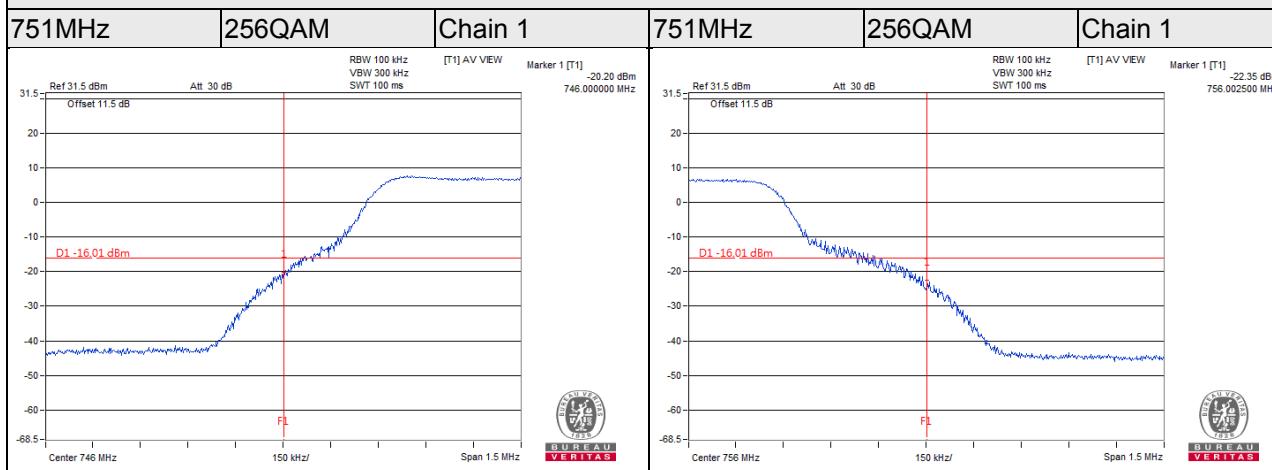
4.5.3 Test Procedures

- a. The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is RBW = 51kHz and VBW = 150kHz (Channel Bandwidth: 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz).
- c. Record the max trace plot into the test report.

4.5.4 Test Results

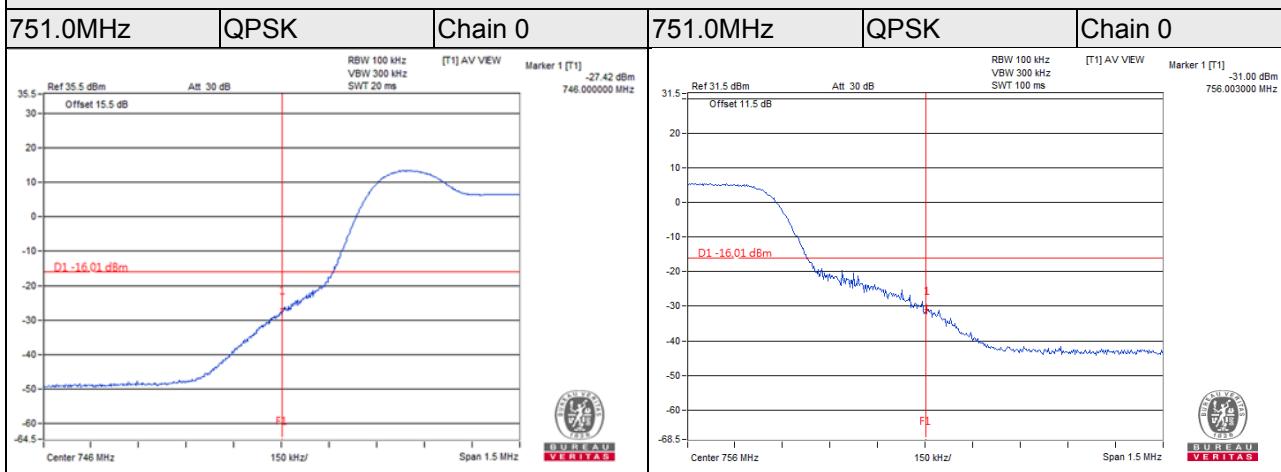
For LTE Band 13:



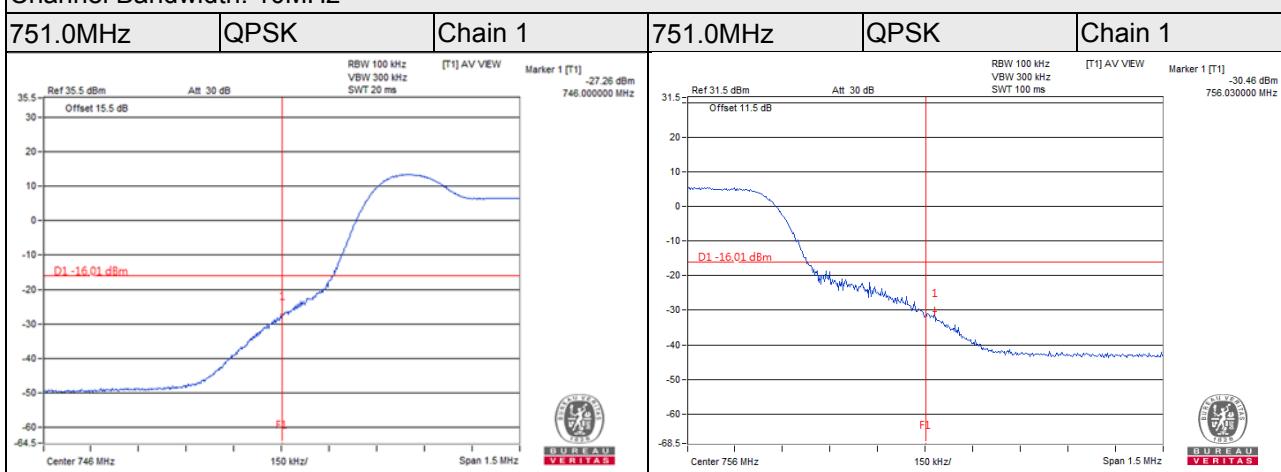
Channel Bandwidth: 10MHz

Channel Bandwidth: 10MHz


**For LTE Band 13 Guard Band:
QPSK_NB-IoT Signal at Bottom**

Channel Bandwidth: 10MHz

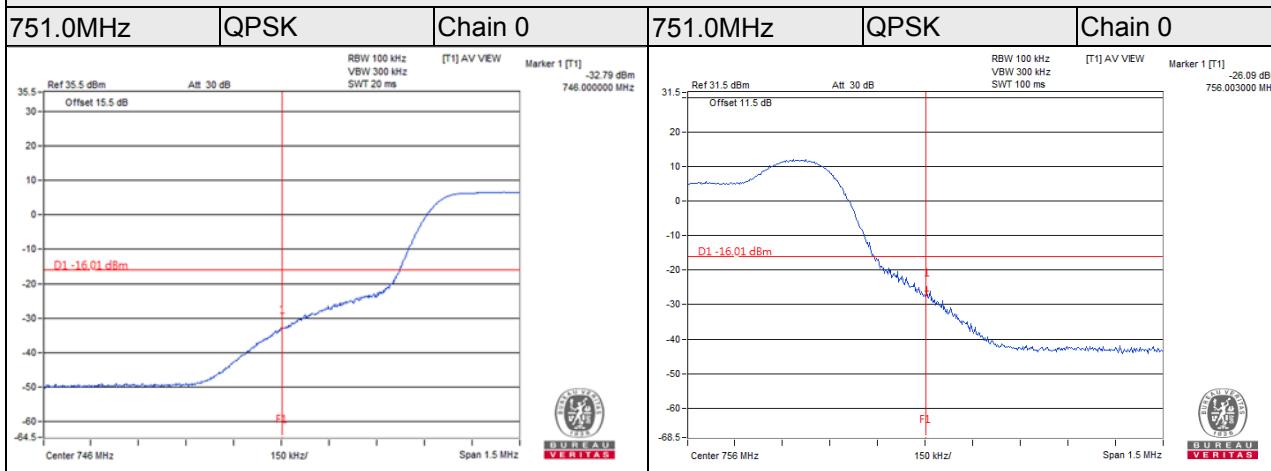


Channel Bandwidth: 10MHz

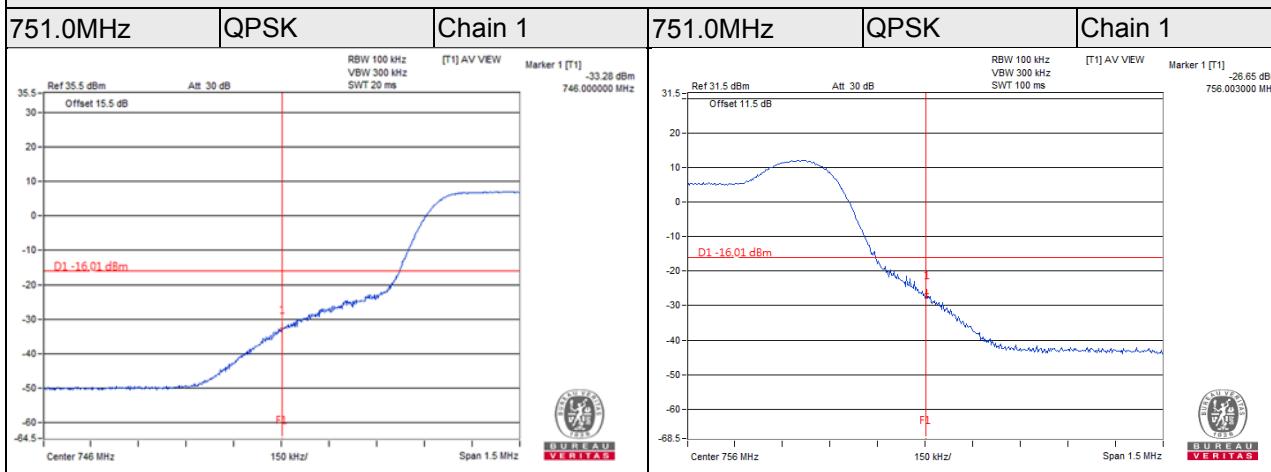


QPSK_NB-IoT Signal at Top

Channel Bandwidth: 10MHz

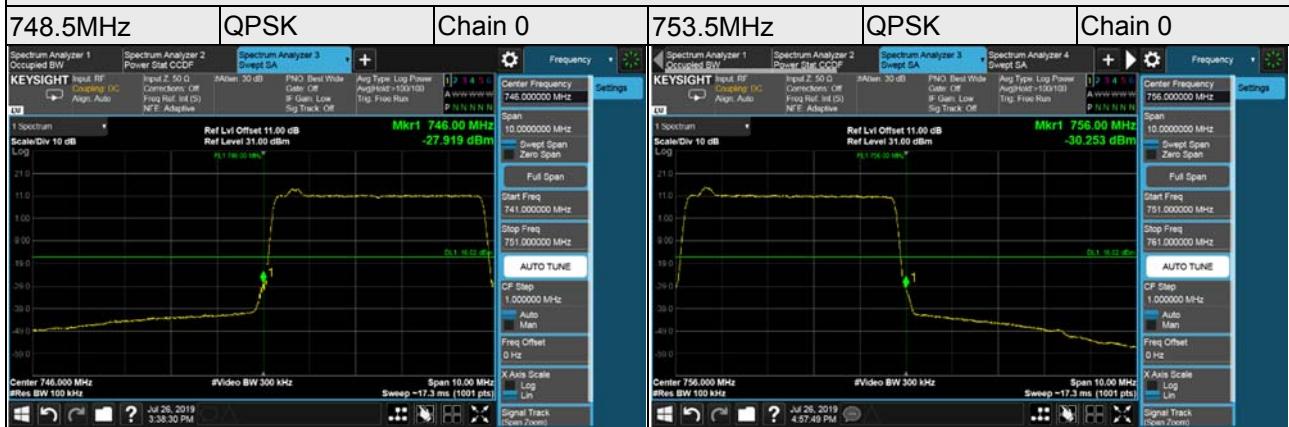


Channel Bandwidth: 10MHz

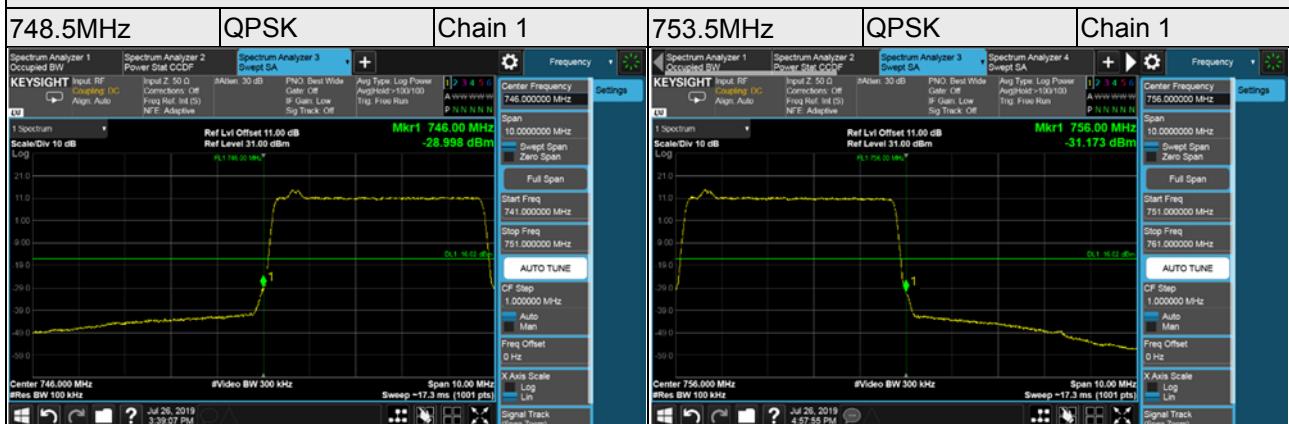


**For NB-IoT In-Band:
QPSK_NB-IoT Signal at Bottom**

Channel Bandwidth: 5MHz



Channel Bandwidth: 5MHz

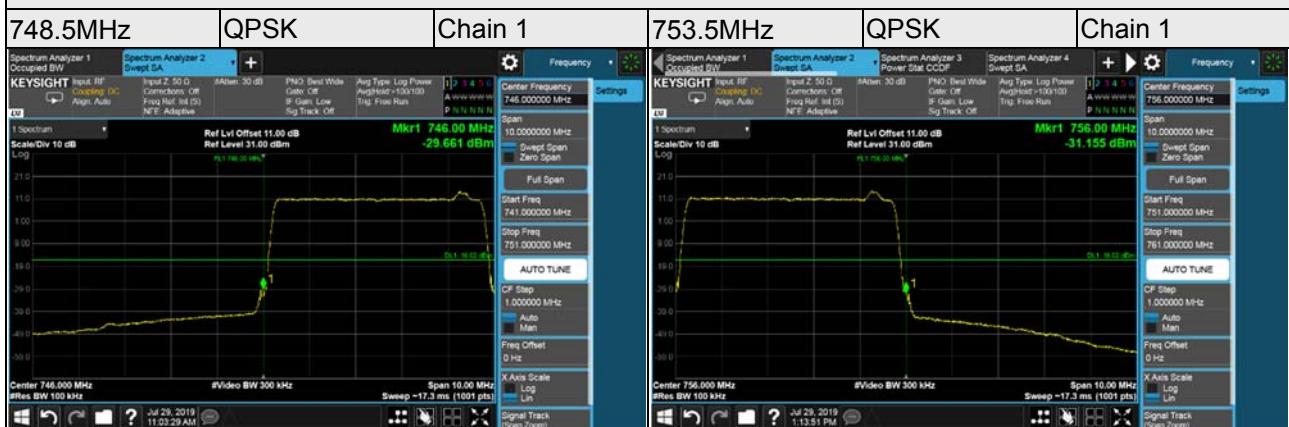


QPSK_NB-IoT Signal at Top

Channel Bandwidth: 5MHz



Channel Bandwidth: 5MHz



QPSK_NB-IoT Signal at Bottom

Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz



QPSK_NB-IoT Signal at Top

Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz

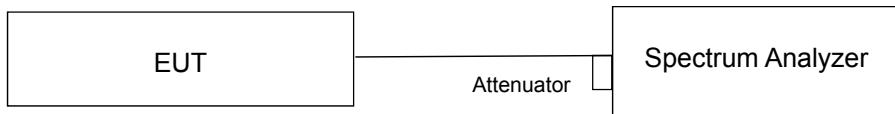


4.6 Peak to Average Ratio

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

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

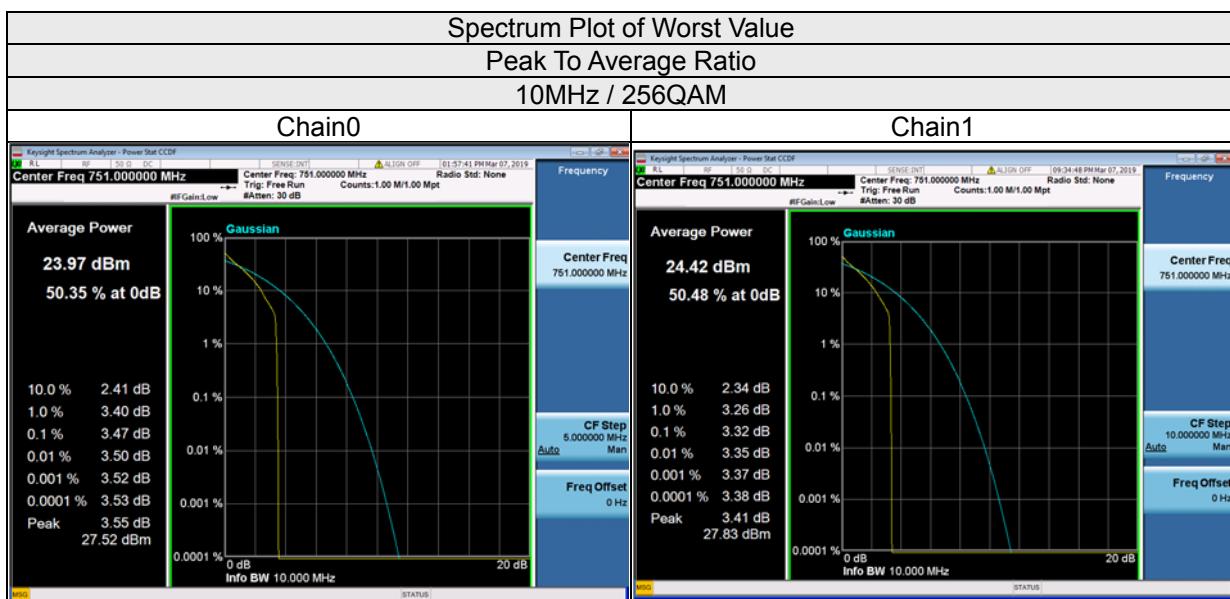
4.6.4 Test Results

For LTE Band 13:

| Channel Bandwidth: 5MHz | | |
|-------------------------|----------------------------|--------|
| Frequency (MHz) | Peak To Average Ratio (dB) | |
| | Chain0 | Chain1 |
| | 256QAM | 256QAM |
| 748.5 | 3.36 | 3.32 |
| 751 | 3.44 | 3.34 |
| 753.5 | 3.43 | 3.30 |

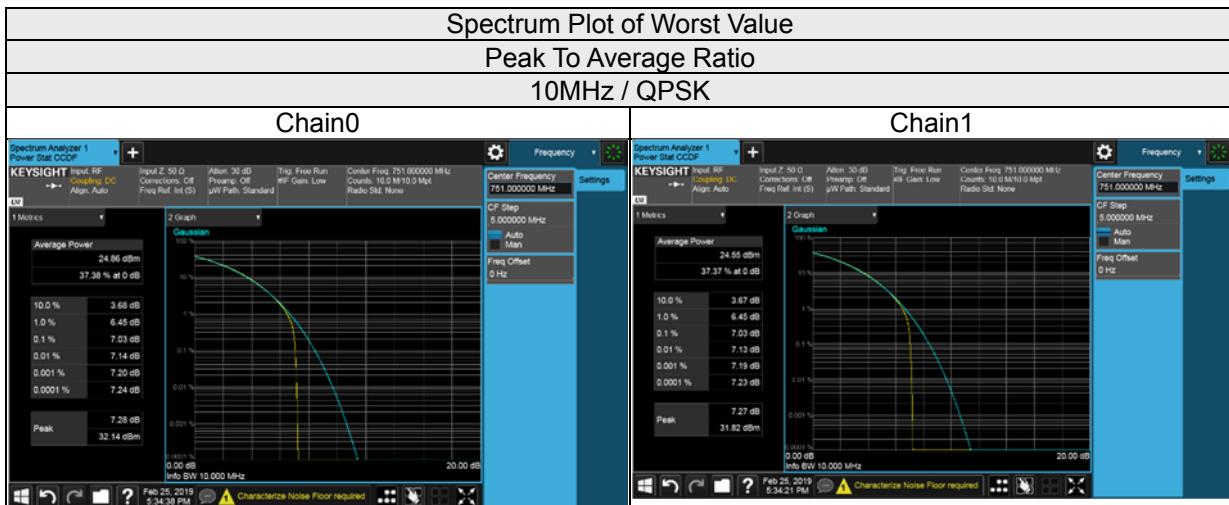


| Channel Bandwidth: 10MHz | | |
|--------------------------|----------------------------|--------|
| Frequency (MHz) | Peak To Average Ratio (dB) | |
| | Chain0 | Chain1 |
| | 256QAM | 256QAM |
| 751 | 3.47 | 3.32 |



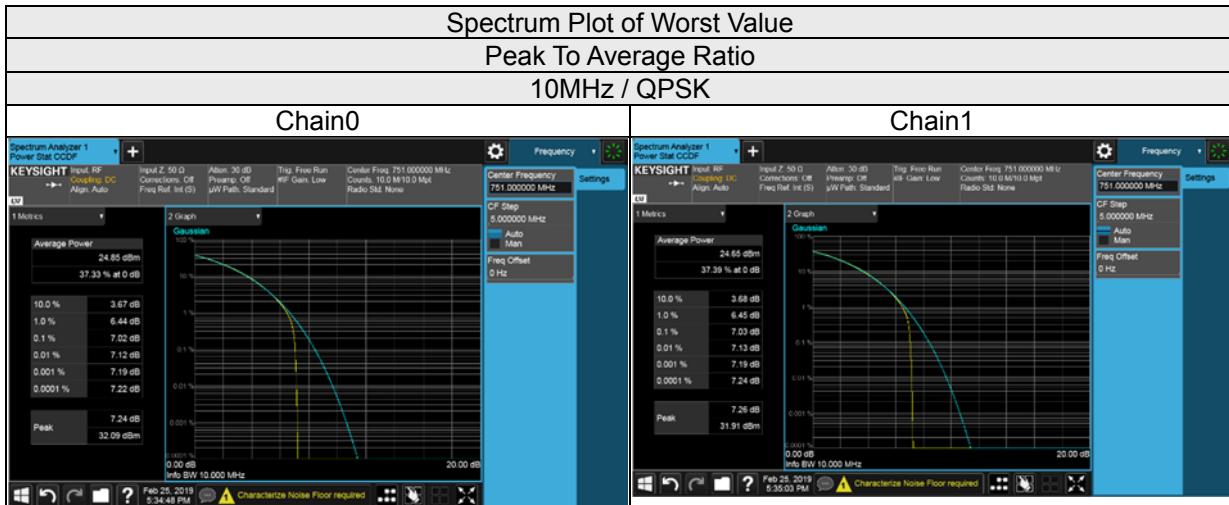
**For LTE Band 13 Guard Band:
QPSK_NB-IoT Signal at Bottom**

| Channel Bandwidth: 10MHz | | |
|--------------------------|----------------------------|--------|
| Frequency (MHz) | Peak To Average Ratio (dB) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 7.03 | 7.03 |



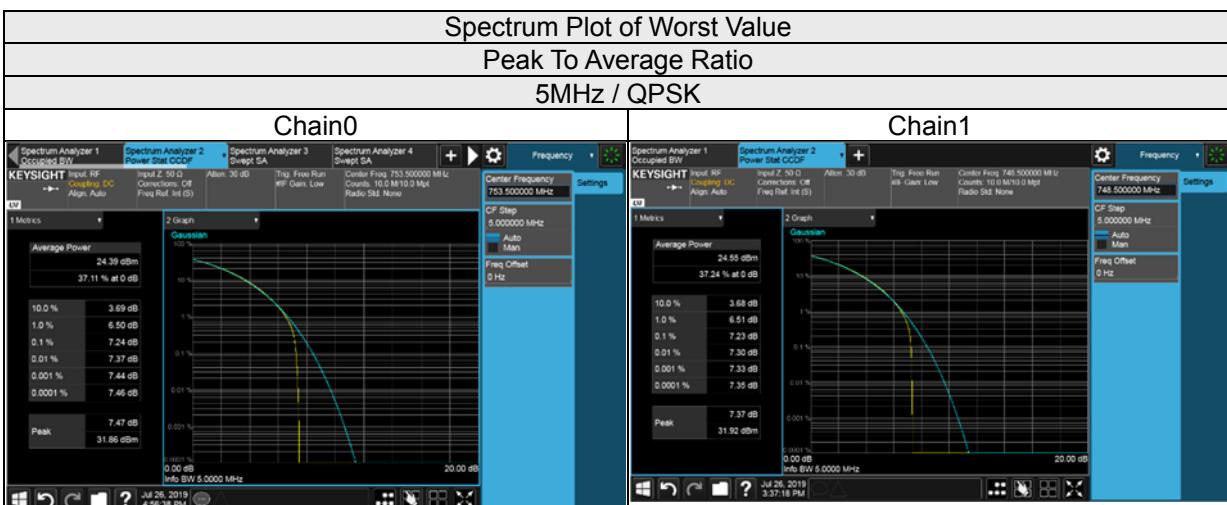
QPSK_NB-IoT Signal at Top

| Channel Bandwidth: 10MHz | | |
|--------------------------|----------------------------|--------|
| Frequency (MHz) | Peak To Average Ratio (dB) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 7.02 | 7.03 |



**For NB-IoT In-Band:
QPSK_NB-IoT Signal at Bottom**

| Channel Bandwidth: 5MHz | | |
|-------------------------|----------------------------|--------|
| Frequency (MHz) | Peak To Average Ratio (dB) | |
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 748.5 | 7.22 | 7.23 |
| 751.0 | 7.23 | 7.21 |
| 753.5 | 7.24 | 7.22 |



QPSK_NB-IoT Signal at Top

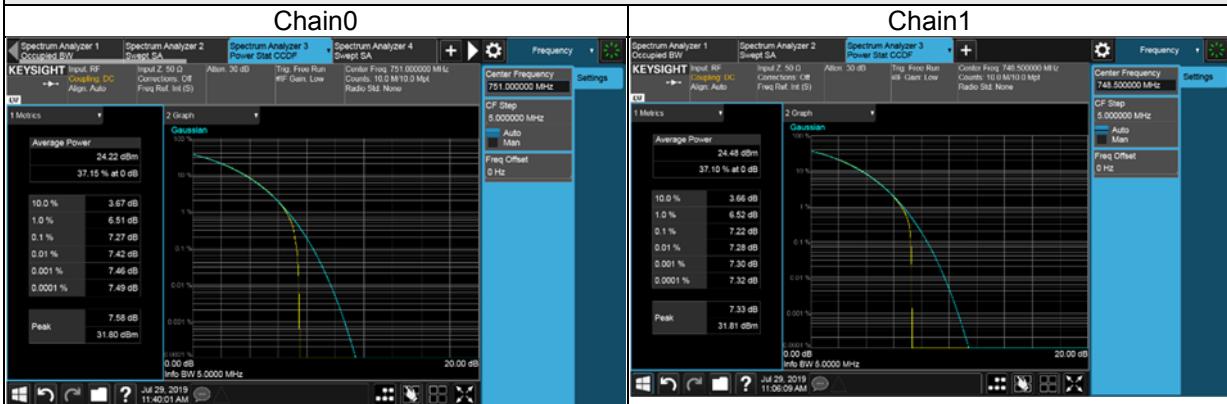
Channel Bandwidth: 5MHz

| Frequency (MHz) | Peak To Average Ratio (dB) | |
|-----------------|----------------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 748.5 | 7.21 | 7.22 |
| 751.0 | 7.27 | 7.22 |
| 753.5 | 7.23 | 7.21 |

Spectrum Plot of Worst Value

Peak To Average Ratio

5MHz / QPSK



QPSK_NB-IoT Signal at Bottom

Channel Bandwidth: 10MHz

| Frequency (MHz) | Peak To Average Ratio (dB) | |
|-----------------|----------------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 7.13 | 7.13 |

Spectrum Plot of Worst Value

Peak To Average Ratio

10MHz / QPSK

Chain0

Chain1



QPSK_NB-IoT Signal at Top

Channel Bandwidth: 10MHz

| Frequency (MHz) | Peak To Average Ratio (dB) | |
|-----------------|----------------------------|--------|
| | Chain0 | Chain1 |
| | QPSK | QPSK |
| 751.0 | 7.13 | 7.14 |

Spectrum Plot of Worst Value

Peak To Average Ratio

10MHz / QPSK

Chain0

Chain1



4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

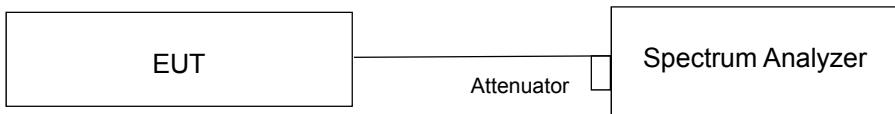
According to FCC 27.53(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

According to FCC 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz.

Note: The Device has 2x2 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.

4.7.2 Test Setup



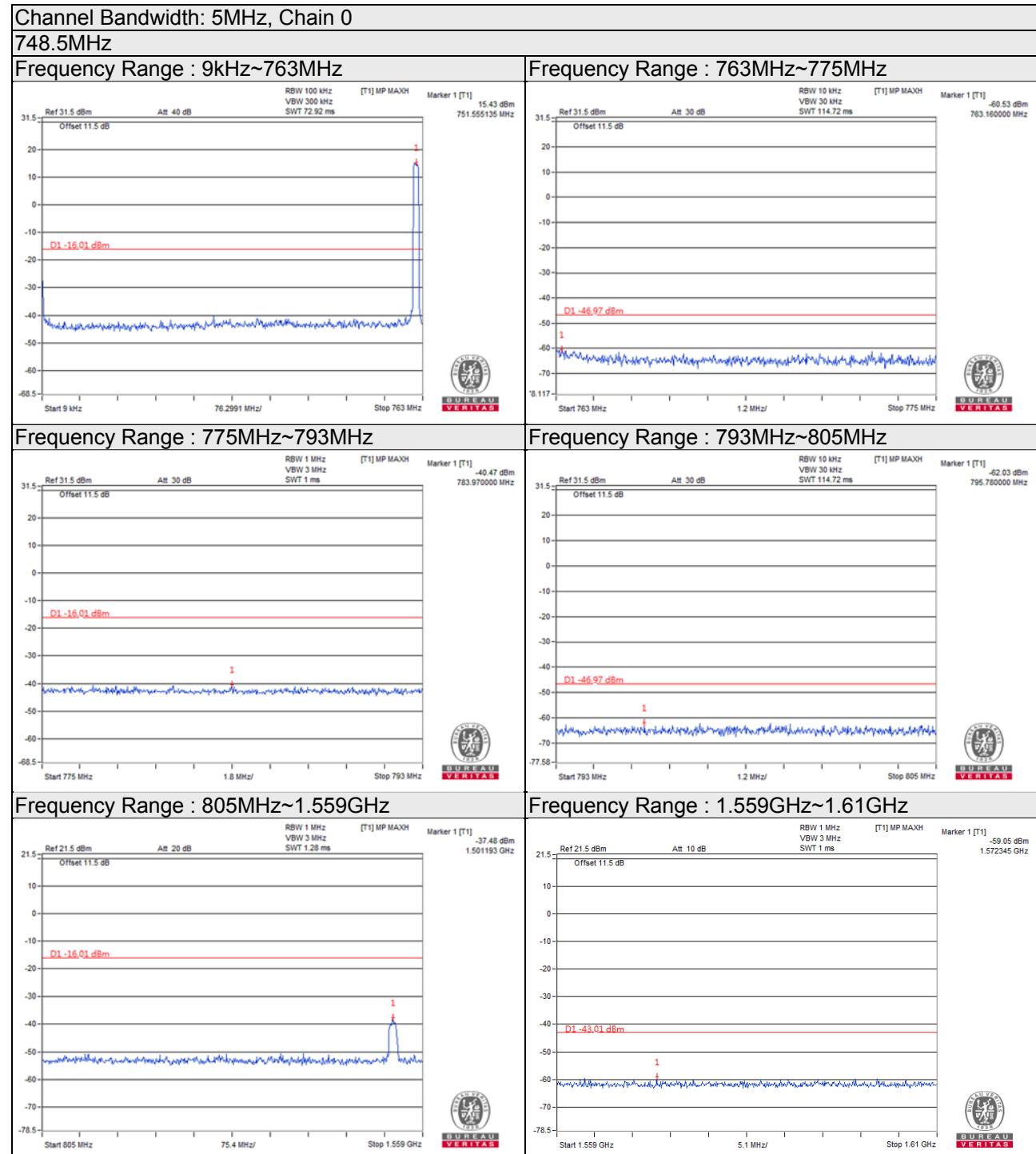
4.7.3 Test Procedure

- a. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. When the spectrum scanned from 9kHz to 9GHz, it shall be connected to the attenuator with the carried frequency.

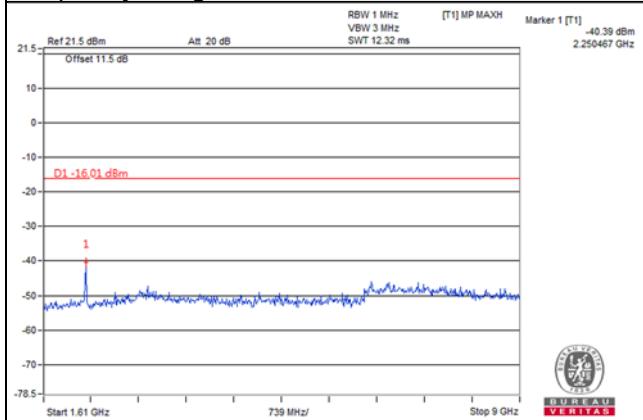
4.7.4 Test Results

4.7.4.1 256QAM data

For LTE Band 13:



Frequency Range : 1.61GHz~9GHz

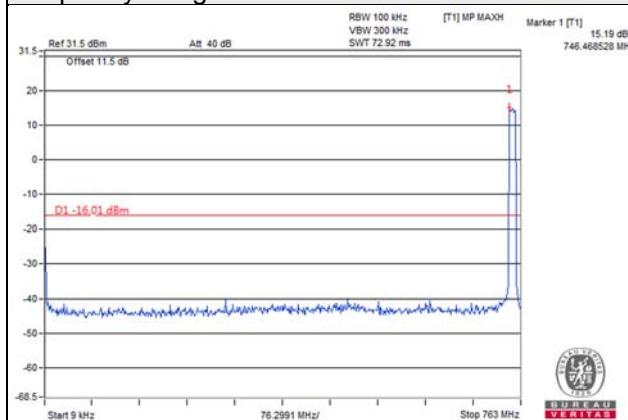
BUREAU
VERITAS

Note: For 9kHz, the signal is from spectrum analyzer.

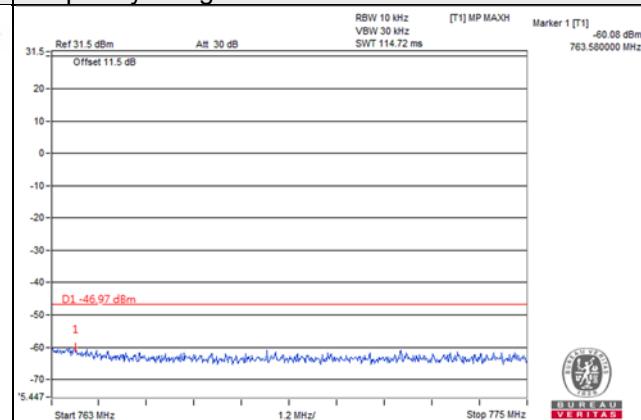
Channel Bandwidth: 5MHz, Chain 0

751MHz

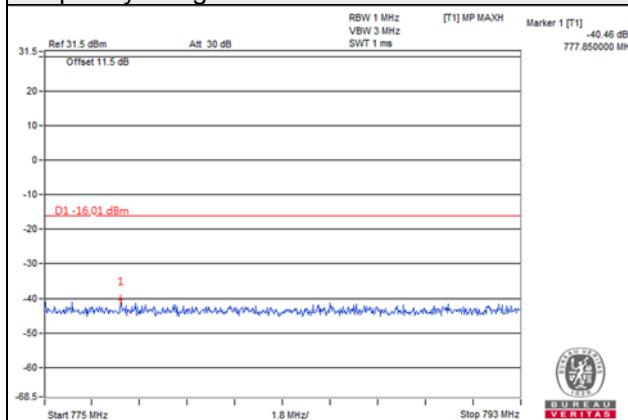
Frequency Range : 9kHz~763MHz



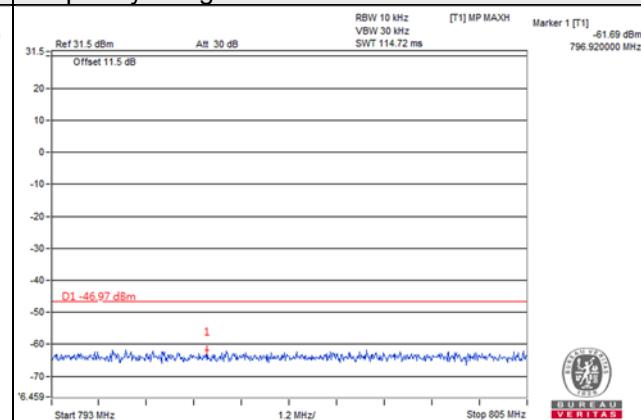
Frequency Range : 763MHz~775MHz



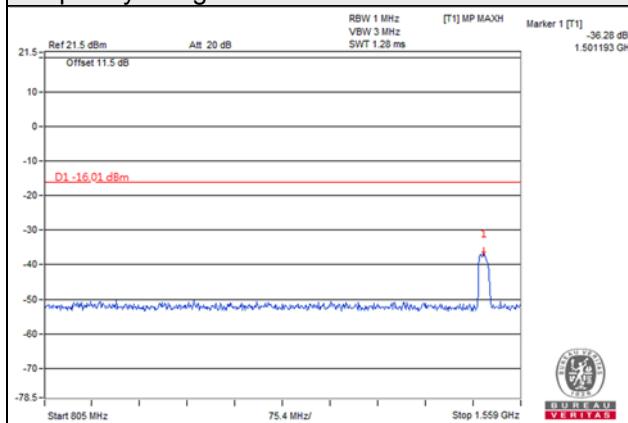
Frequency Range : 775MHz~793MHz



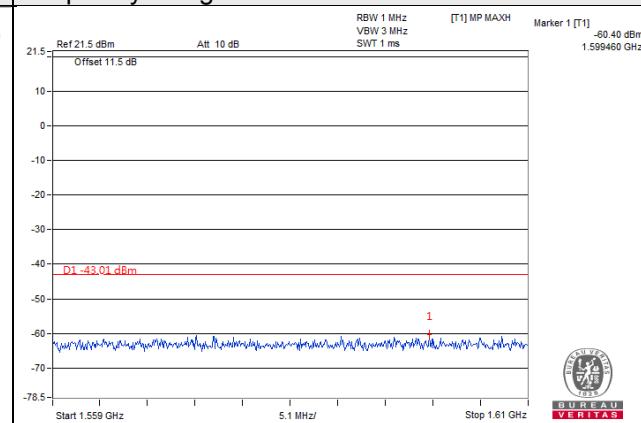
Frequency Range : 793MHz~805MHz



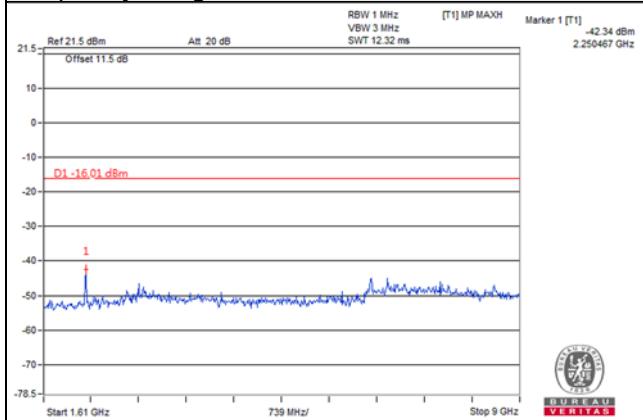
Frequency Range : 805MHz~1.559GHz



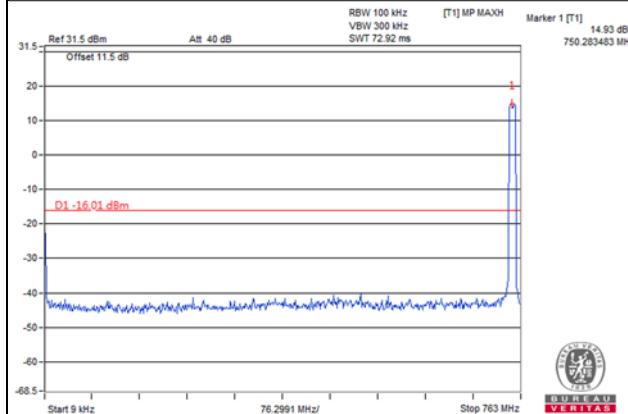
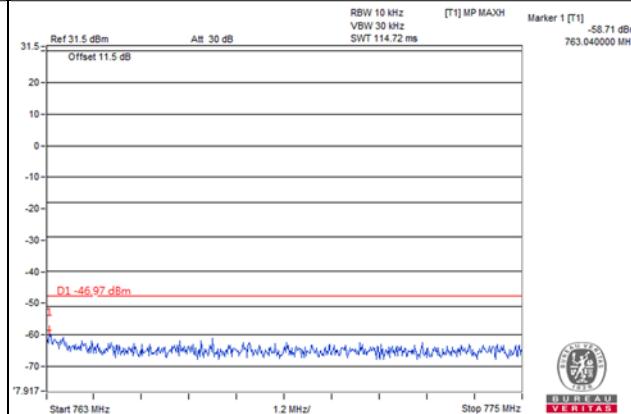
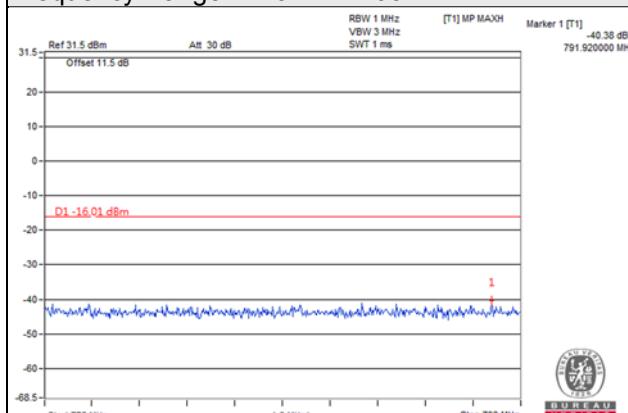
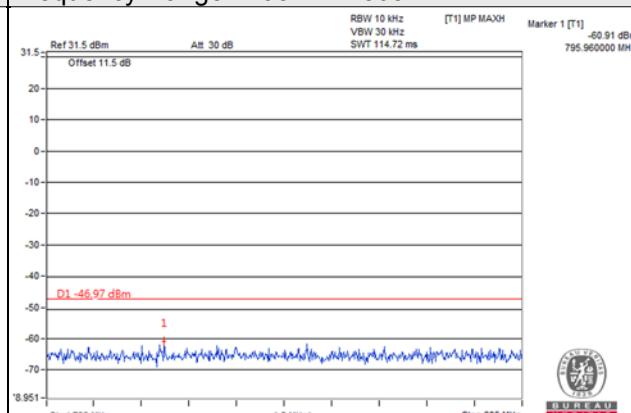
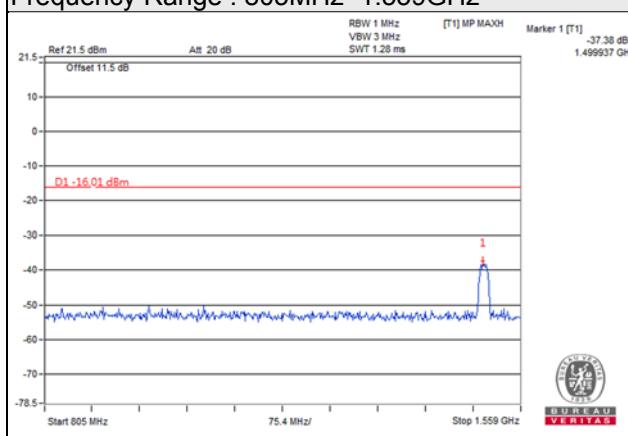
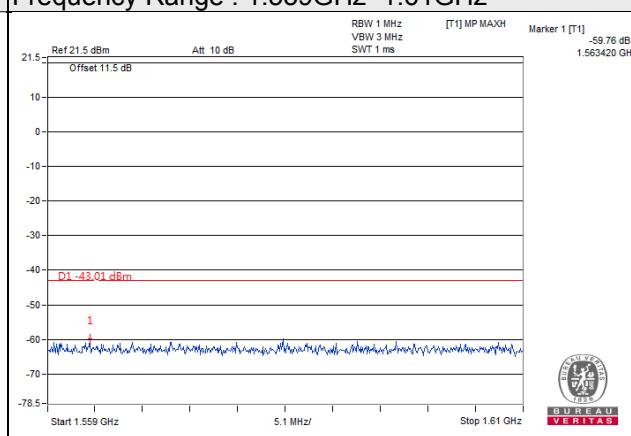
Frequency Range : 1.559GHz~1.61GHz



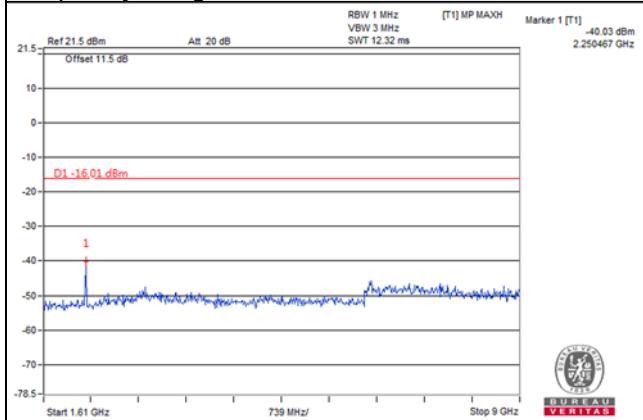
Frequency Range : 1.61GHz~9GHz



Note: For 9kHz, the signal is from spectrum analyzer.

Channel Bandwidth: 5MHz, Chain 0
753.5MHz
Frequency Range : 9kHz~763MHz

Frequency Range : 763MHz~775MHz

Frequency Range : 775MHz~793MHz

Frequency Range : 793MHz~805MHz

Frequency Range : 805MHz~1.559GHz

Frequency Range : 1.559GHz~1.61GHz


Frequency Range : 1.61GHz~9GHz

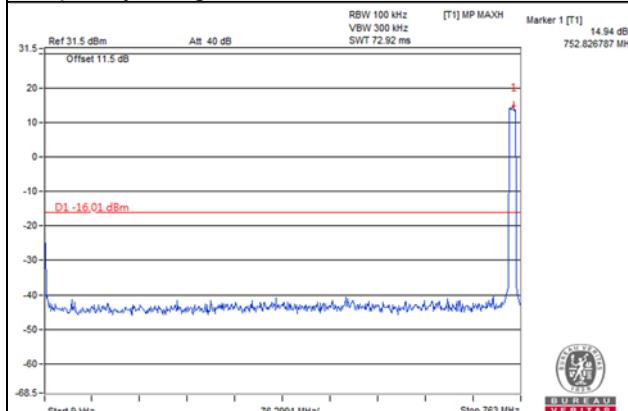


Note: For 9kHz, the signal is from spectrum analyzer.

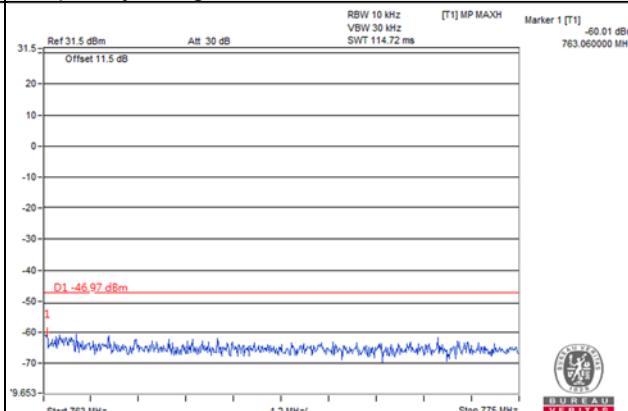
Channel Bandwidth: 5MHz, Chain 1

748.5MHz

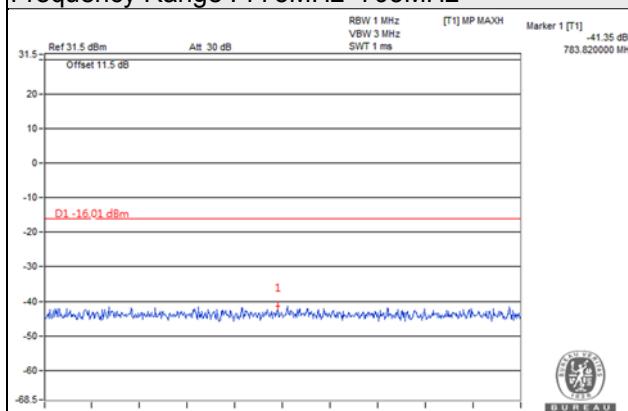
Frequency Range : 9kHz~763MHz



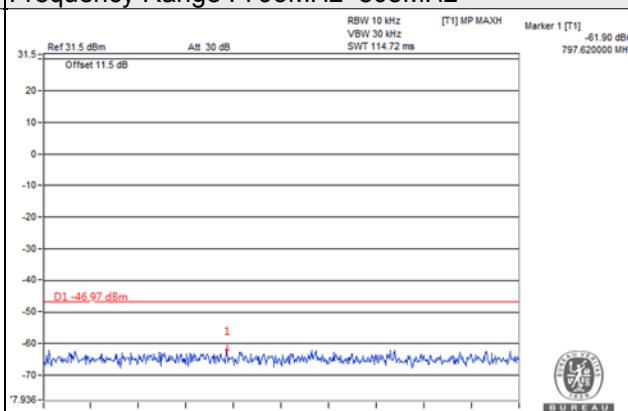
Frequency Range : 763MHz~775MHz



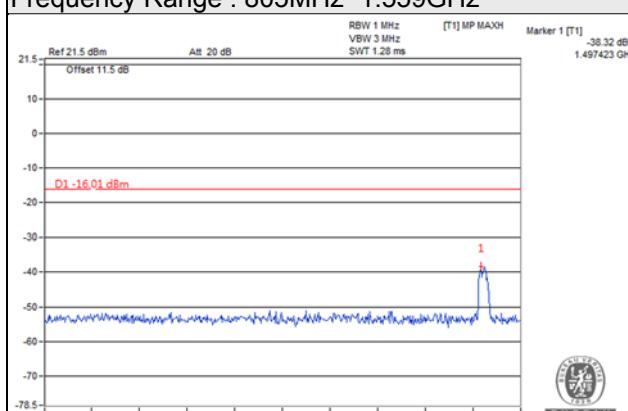
Frequency Range : 775MHz~793MHz



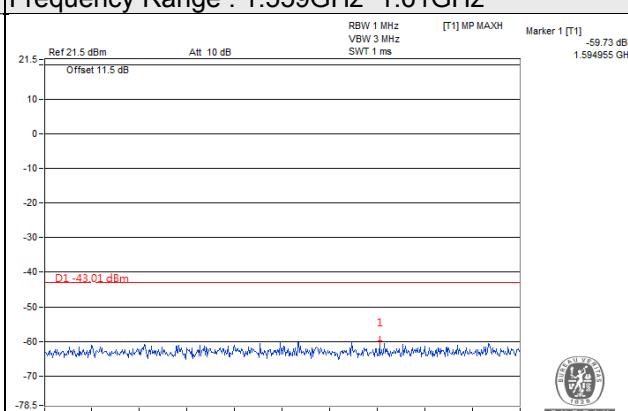
Frequency Range : 793MHz~805MHz



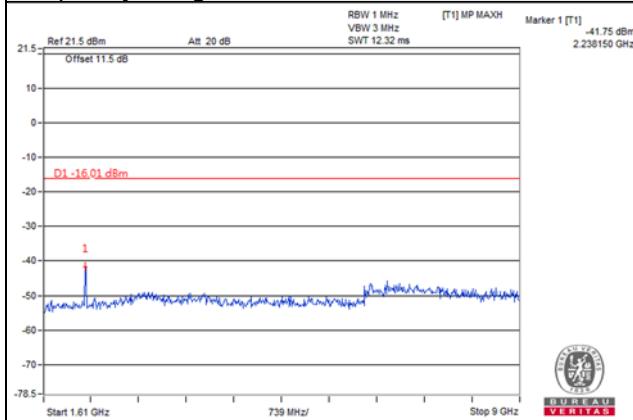
Frequency Range : 805MHz~1.559GHz



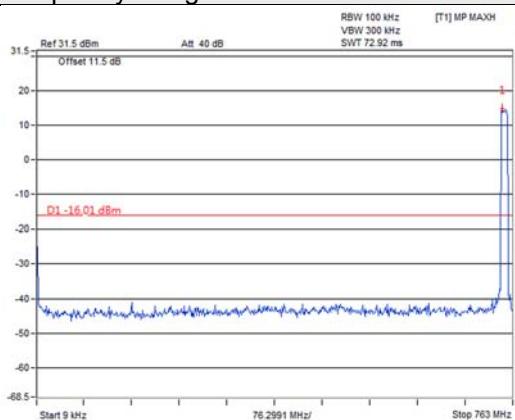
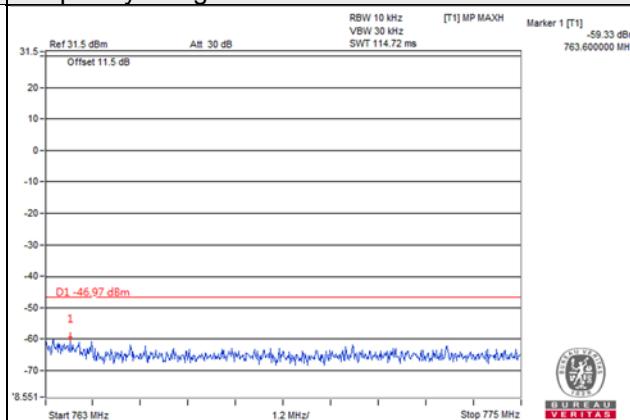
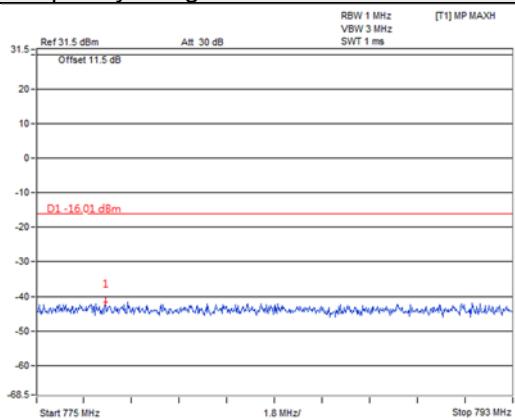
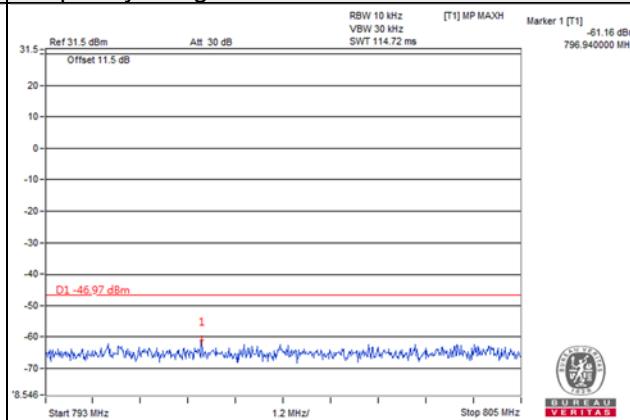
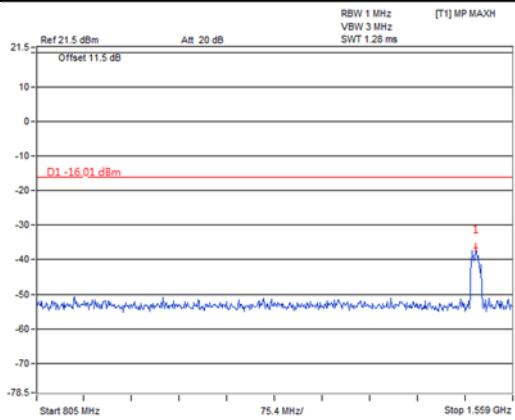
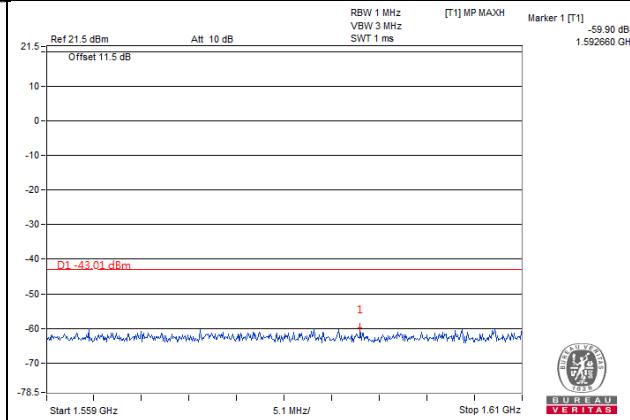
Frequency Range : 1.559GHz~1.61GHz



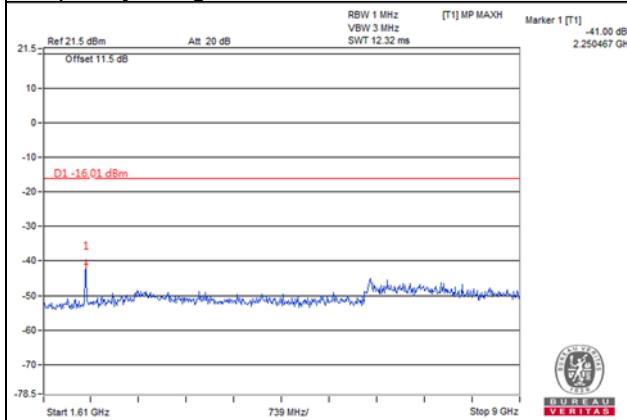
Frequency Range : 1.61GHz~9GHz



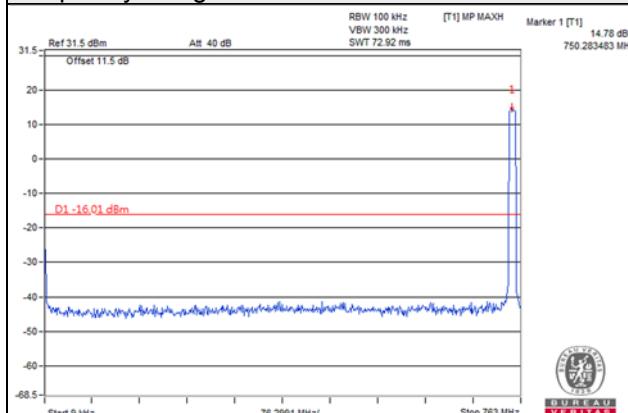
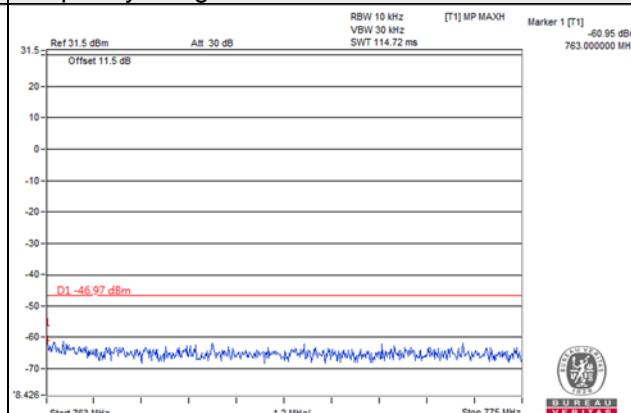
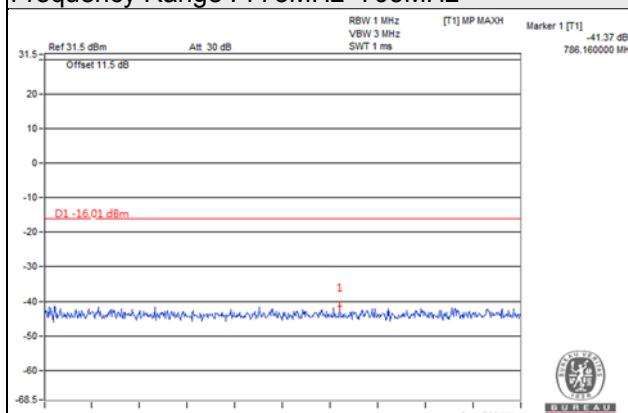
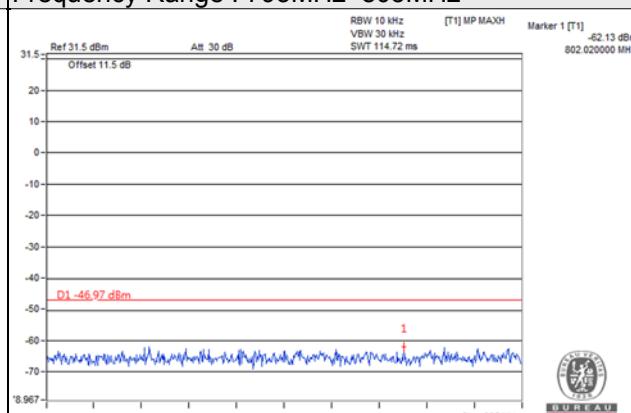
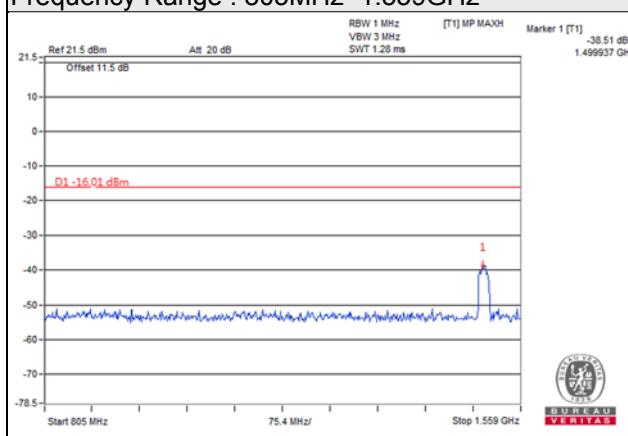
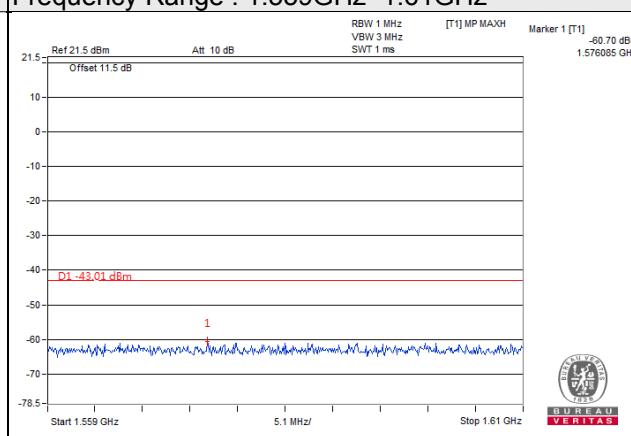
Note: For 9kHz, the signal is from spectrum analyzer.

Channel Bandwidth: 5MHz, Chain 1
751MHz
Frequency Range : 9kHz~763MHz

Frequency Range : 763MHz~775MHz

Frequency Range : 775MHz~793MHz

Frequency Range : 793MHz~805MHz

Frequency Range : 805MHz~1.559GHz

Frequency Range : 1.559GHz~1.61GHz


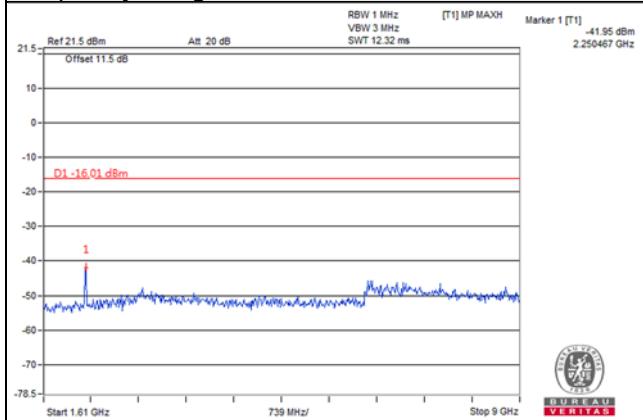
Frequency Range : 1.61GHz~9GHz

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Note: For 9kHz, the signal is from spectrum analyzer.

Channel Bandwidth: 5MHz, Chain 1
753.5MHz
Frequency Range : 9kHz~763MHz

Frequency Range : 763MHz~775MHz

Frequency Range : 775MHz~793MHz

Frequency Range : 793MHz~805MHz

Frequency Range : 805MHz~1.559GHz

Frequency Range : 1.559GHz~1.61GHz


Frequency Range : 1.61GHz~9GHz

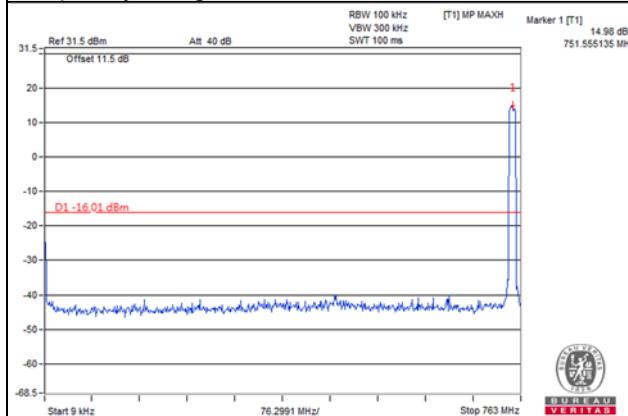


Note: For 9kHz, the signal is from spectrum analyzer.

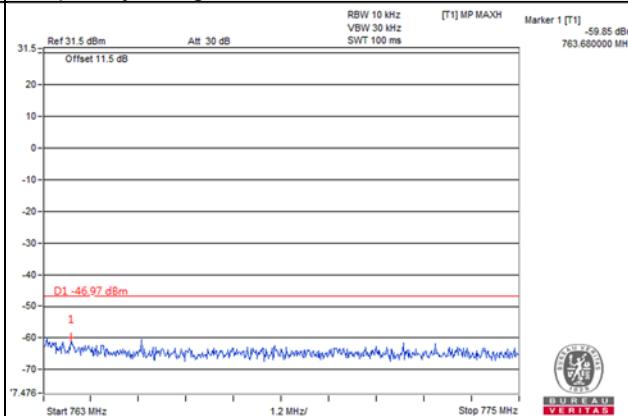
Channel Bandwidth: 10MHz, Chain 0

751.0MHz

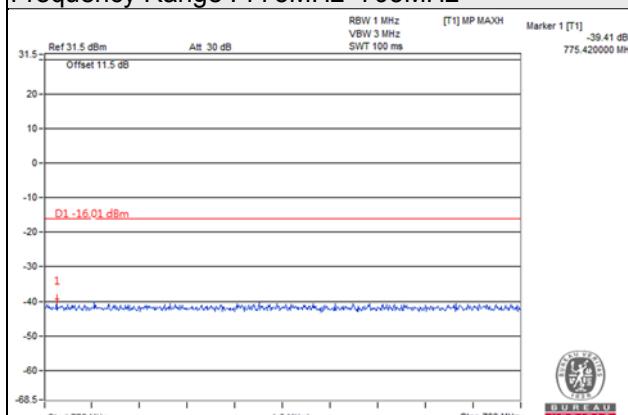
Frequency Range : 9kHz~763MHz



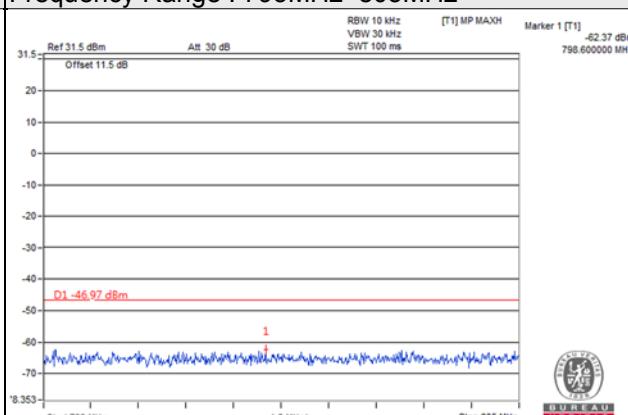
Frequency Range : 763MHz~775MHz



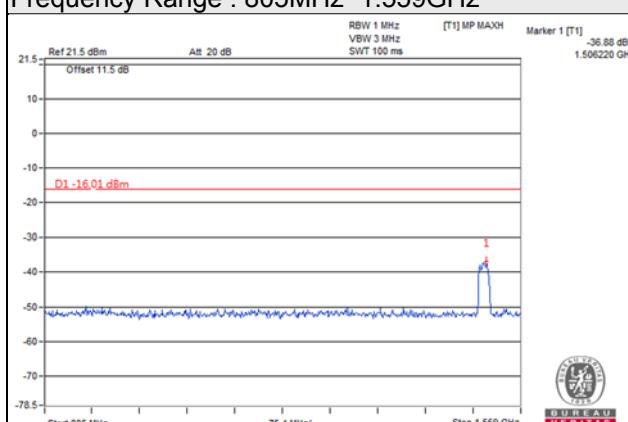
Frequency Range : 775MHz~793MHz



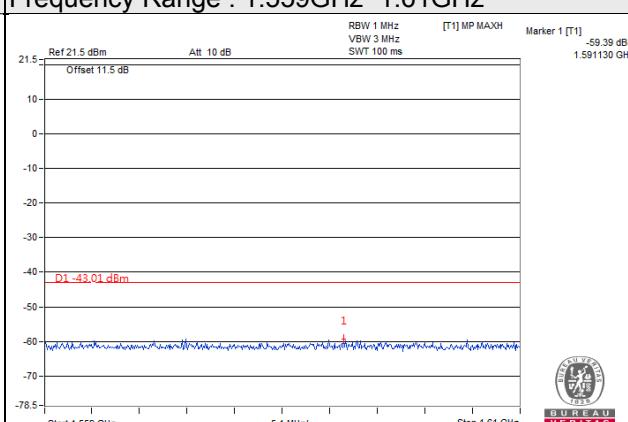
Frequency Range : 793MHz~805MHz



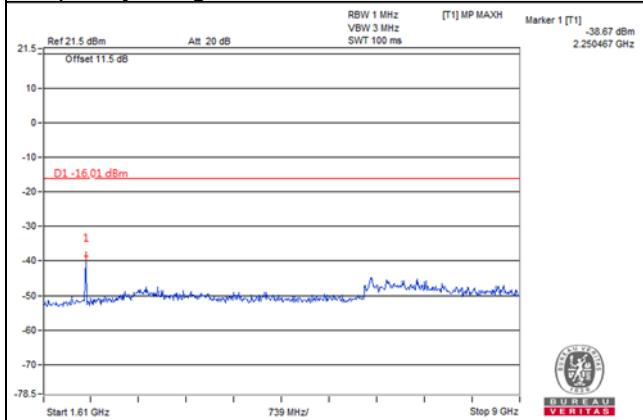
Frequency Range : 805MHz~1.559GHz



Frequency Range : 1.559GHz~1.61GHz



Frequency Range : 1.61GHz~9GHz

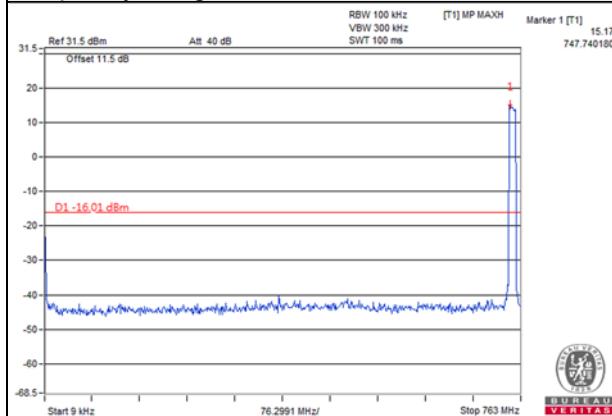


Note: For 9kHz, the signal is from spectrum analyzer.

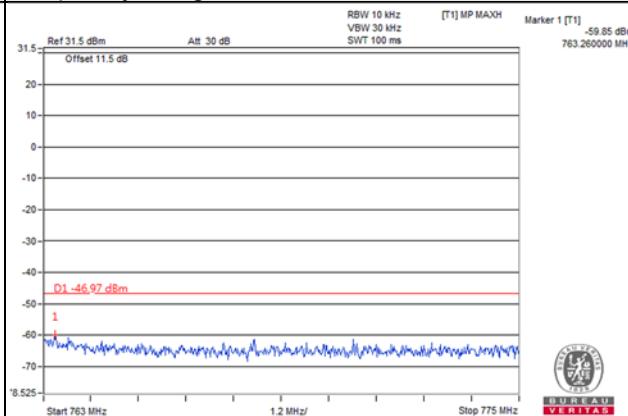
Channel Bandwidth: 10MHz, Chain 1

751.0MHz

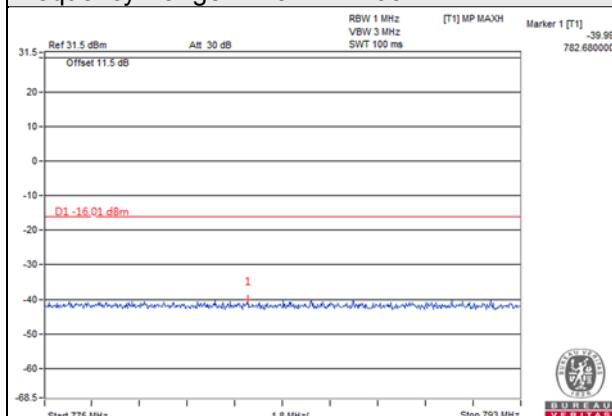
Frequency Range : 9kHz~763MHz



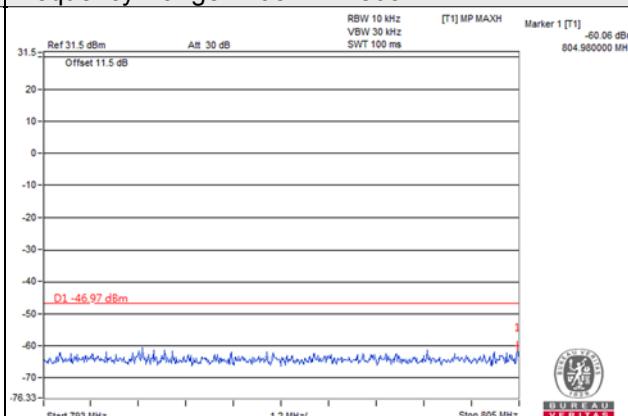
Frequency Range : 763MHz~775MHz



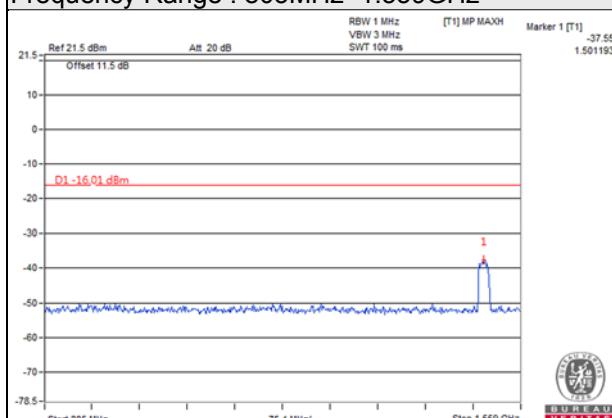
Frequency Range : 775MHz~793MHz



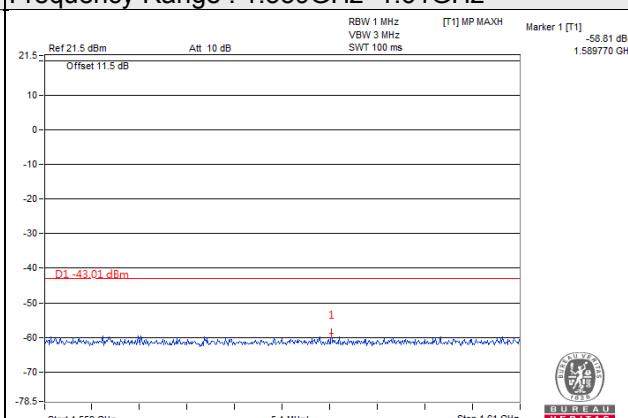
Frequency Range : 793MHz~805MHz



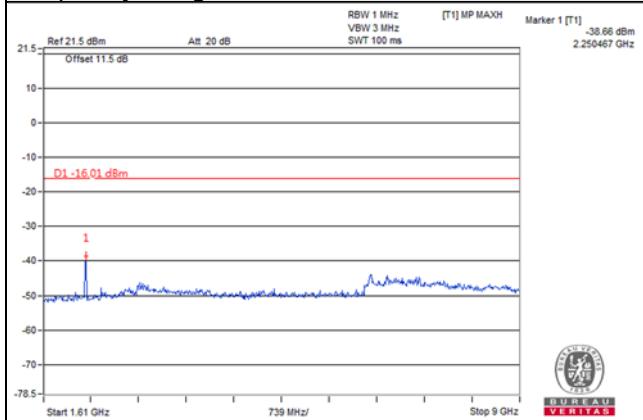
Frequency Range : 805MHz~1.559GHz



Frequency Range : 1.559GHz~1.61GHz



Frequency Range : 1.61GHz~9GHz



Note: For 9kHz, the signal is from spectrum analyzer.