REPORT No.: SZ25020287W07

# TEST REPORT

| | | |
|---|---|---|
| **MANUFACTURER** | : | Realme Chongqing Mobile Telecommunications Corp., Ltd. |
| **PRODUCT NAME** | : | Mobile Phone |
| **MODEL NAME** | : | RMX5303 |
| **BRAND NAME** | : | realme |
| **STANDARD(S)** | : | ETSI EN 300 328 V2.2.2 (2019-07) |
| **RECEIPT DATE** | : | 2025-03-03 |
| **TEST DATE** | : | 2025-03-06 to 2025-03-20 |
| **ISSUE DATE** | : | 2025-04-02 |

Edited by: Zeng Xiaoying (Rapporteur)

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# DIRECTORY

| Change History | | |
|---|---|---|
| **Version** | **Date** | **Reason for change** |
| 1.0 | 2025-04-02 | First edition |
| | | |

# 1. Summary of Test Results

| No. | Test Items | Test Engineer | Result | Method determination /Remark |
|---|---|---|---|---|
| 1 | RF output power | Lin Haoyang | PASS Note1 | No deviation |
| 2 | Power Spectral Density | Lin Haoyang | PASS Note1 | No deviation |
| 3 | Duty cycle, Tx-sequence, Tx-gap | N/A | N/A Note1 | N/A |
| 4 | Medium Utilization (MU) factor | N/A | N/A Note1 | N/A |
| 5 | Occupied Channel Bandwidth | Lin Haoyang | PASS Note1 | No deviation |
| 6 | Transmitter unwanted emissions in the out-of-band domain | Lin Haoyang | PASS Note1 | No deviation |
| 7 | Transmitter unwanted emissions in the spurious domain | Lin Haoyang Tianxin | PASS Note1 | No deviation |
| 8 | Receiver spurious emissions | Lin Haoyang Tianxin | PASS Note1 | No deviation |
| 9 | Receiver Blocking | Li Zikai | PASS Note1 | No deviation |
| 10 | Geo-location capability | N/A | N/A | N/A |

**Note 1:** The test results of these test items in this report refer to the test report (Report No.: SZ25020288W07).

**Note 2:** Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

**Note 3:** When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

## 1.1. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ETSI EN 300 328 V2.2.2 (2019-07)

## 1.2. Applicable Test Methods

•ETSI EN 300 328 V2.2.2 (2019-07)

# 1.3. Test Equipment List

### 1.3.1.Conducted

| Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Due Date |
|---|---|---|---|---|---|
| Radio Communication Tester | R&S | CMW500 | 108950 | 2025.01.06 | 2026.01.05 |
| Temperature Chamber | YOMA | DTL-003S/01 | 12108015 | 2024.09.11 | 2025.09.10 |
| MXG Vector Signal Generator | Agilent | N5182B | MY53050961 | 2025.01.15 | 2026.01.14 |
| EXG Analog Signal Generator | Agilent | N5171B | MY53050558 | 2025.01.15 | 2026.01.14 |
| EXA Signal Analyzer | Agilent | N9010A | MY53470836 | 2025.01.15 | 2026.01.14 |
| USB Power Sensor | Agilent | U2021XA | MY54180008 | 2024.09.11 | 2025.09.10 |

### 1.3.2.Radiated

| Equipment | Serial No. | Model No. | Manufacturer | Cal. Date | Due Date |
|---|---|---|---|---|---|
| Signal Analyzer | MY56060145 | N9020A | Agilent | 2024.05.30 | 2025.05.29 |
| Test Antenna - Bi-Log | 9163-519 | VULB 9163 | Schwarzbeck | 2024.06.22 | 2025.06.21 |
| Test Antenna - Horn | 01774 | BBHA 9120D | Schwarzbeck | 2024.06.22 | 2025.06.21 |
| Test Antenna -Horn | 9120D-963 | BBHA 9120D | Schwarzbeck | 2024.06.03 | 2025.06.02 |
| Test Antenna - Bi-Log | 9163-274 | VULB 9163 | Schwarzbeck | 2024.06.29 | 2025.06.28 |
| Signal Generator | 203403 | MG3692C | anritsu | 2024.09.11 | 2025.09.10 |
| Anechoic Chamber | N/A | 9m*6m*6m | CRT | 2022.05.10 | 2025.05.09 |
| Preamplifier (10MHz-6GHz) | 46732 | S10M100L3802 | LUCIX CORP. | 2024.05.30 | 2025.05.29 |
| Preamplifier (2GHz-18GHz) | 61171/61172 | S020180L3203 | LUCIX CORP. | 2024.05.30 | 2025.05.29 |
| Preamplifier (18GHz-40GHz) | DS77209 | DCLNA0118-40C-S | Decentest | 2024.05.30 | 2025.05.29 |
| RF Coaxial Cable (DC-18GHz) | MRE001 | PE330 | Pasternack | 2024.05.30 | 2025.05.29 |
| RF Coaxial Cable (DC-18GHz) | MRE002 | CLU18 | Pasternack | 2024.05.30 | 2025.05.29 |
| RF Coaxial Cable (DC-18GHz) | MRE003 | CLU18 | Pasternack | 2024.05.30 | 2025.05.29 |
| RF Coaxial Cable (DC-40GHz) | 22290045 | QA360-40-KK-0.5 | Qualwave | N/A | N/A |
| RF Coaxial Cable (DC-40GHz) | 22290046 | QA360-40-KKF-2 | Qualwave | N/A | N/A |
| RF Coaxial Cable (DC-18GHz) | 22120181 | QA500-18-NN-5 | Qualwave | N/A | N/A |

# 1.4. Test Software List

### 1.4.1.Conducted

| Description | Manufacturer | Software Version |
|---|---|---|
| Test System | MaiWei | 2.0.0.0 |

### 1.4.2.Radiated

| Description | Manufacturer | Software Version |
|---|---|---|
| JS36-RSE | Tonscend | 5.0.0 |

## 1.5. Test Uncertainty

| No. | Parameter | Uncertainty |
|---|---|---|
| 1 | Occupied Channel Bandwidth | ±5% |
| 2 | RF Output Power, Conducted | ±1,5% |
| 3 | Power Spectral Density, Conducted | ±3dB |
| 4 | Unwanted Emissions, Conducted | ±3dB |
| 5 | All Emissions, Radiated | ±6dB |
| 6 | Temperature | ±3°C |
| 7 | Supply Voltages | ±3% |
| 8 | Time | ±5% |

## 1.6. Testing Laboratory Information

| | |
|---|---|
| **Laboratory Name:** | Shenzhen Morlab Communications Technology Co., Ltd. |
| **Laboratory Address:** | FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| **Accredited Testing Laboratory:** | CNAS No. L3572<br>(Shenzhen Morlab Communications Technology Co., Ltd.) |
| **Telephone:** | +86 755 36698555 |
| **Facsimile:** | +86 755 36698525 |

# 2. General Description

## 2.1. Manufacturer and Factory Information

| | |
|---|---|
| **Manufacturer:** | Realme Chongqing Mobile Telecommunications Corp., Ltd. |
| **Manufacturer Address:** | No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China |
| **Factory:** | Realme Chongqing Mobile Telecommunications Corp., Ltd. |
| **Factory Address:** | No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China |

## 2.2. Equipment Under Test (EUT) Description

| | | |
|---|---|---|
| **Product Name:** | Mobile Phone | |
| **Sample No.:** | 3#, 4#, 49# | |
| **Hardware Version:** | 11 | |
| **Software Version:** | Android 15 | |
| **Equipment Type:** | Bluetooth LE | |
| **Bluetooth Version:** | 5.2 | |
| **Modulation Type:** | GFSK | |
| **Data Rate:** | 1Mbps, 2Mbps | |
| **Operating Frequency Range:** | 2402MHz-2480MHz | |
| **Channel Number:** | Refer 2.3 | |
| **Maximum E.I.R.P.:** | 3.84dBm | |
| **Adaptive Mode:** | Adaptive/Non-adaptive Equipment: | Non-adaptive Equipment |
| | Number of Transmit Chain: | 1 |
| | Number of Receive Chain: | 1 |
| **Antenna Type:** | Inverted F Antenna | |
| **Antenna Gain:** | 0.2dBi | |
| **Power Supply:** | Battery/Adaptor | |
| **Operating Voltage:** | Rated | 3.88V |
| **Operating Temperature:** | Normal | 25°C |
| | Low | 0°C |
| | High | 35°C |

**Note 1:** This is a variant report of original report (Report No.: SZ25020288W07, Model: RMX5303), based on the similarity between before, only the battery was changed. No other changes. The changes do not affect the test results in this report.

**Note 2:** For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 2.3. The Channel Number and Frequency

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| **0** | **2402** | 10 | 2422 | 20 | 2442 | 30 | 2462 |
| 1 | 2404 | 11 | 2424 | 21 | 2444 | 31 | 2464 |
| 2 | 2406 | 12 | 2426 | 22 | 2446 | 32 | 2466 |
| 3 | 2408 | 13 | 2428 | 23 | 2448 | 33 | 2468 |
| 4 | 2410 | 14 | 2430 | 24 | 2450 | 34 | 2470 |
| 5 | 2412 | 15 | 2432 | 25 | 2452 | 35 | 2472 |
| 6 | 2414 | 16 | 2434 | 26 | 2454 | 36 | 2474 |
| 7 | 2416 | 17 | 2436 | 27 | 2456 | 37 | 2476 |
| 8 | 2418 | 18 | 2438 | 28 | 2458 | 38 | 2478 |
| 9 | 2420 | **19** | **2440** | 29 | 2460 | **39** | **2480** |

**Note 1:** The black bold channels were selected for test.

# 2.4. Test Configuration of EUT

### 2.4.1.Evaluation of The Worst Case

Investigation has been done on all the possible configurations for searching the worst cases.

# 2.5. Test Conditions

### 2.5.1.Environment Condition

| | |
|---|---|
| **Temperature (°C):** | 5-35 |
| **Relative Humidity (%):** | 45-85 |
| **Atmospheric Pressure (kPa):** | 86-106 |

### 2.5.2.EUT Setup and Operating Conditions

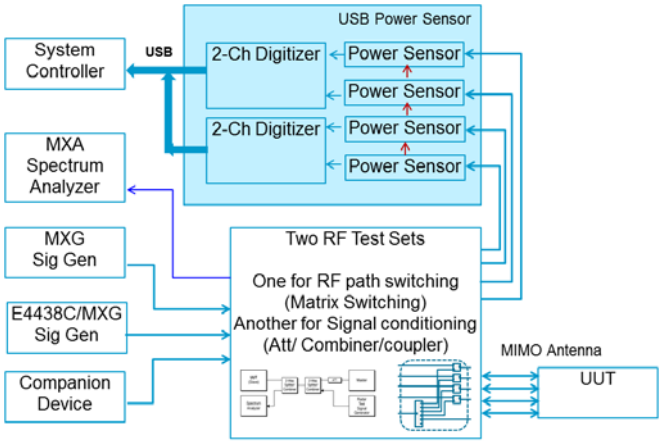
The EUT is activated and controlled by the System Simulator and software. The EUT is powered by battery.

| | | | |
|---|---|---|---|
| **Supply Voltage:** | Conducted | Normal(NV) | 3.88V |
| | Radiated | Normal(NV) | 3.88V |
| **Test Temperature:** | Conducted | Normal(NT) | 25°C |
| | | Lowest(LT) | 0°C |
| | | Highest(HT) | 35°C |
| | Radiated | Normal(NT) | 25°C |

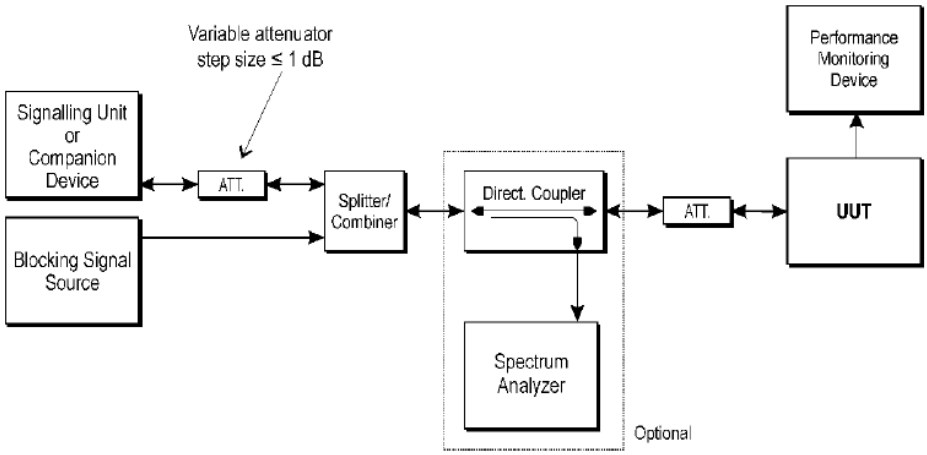
# 2.6. Test Setup Layout Diagram

## 2.6.1.Conducted

1) System Block Diagram




2) Receiver Blocking

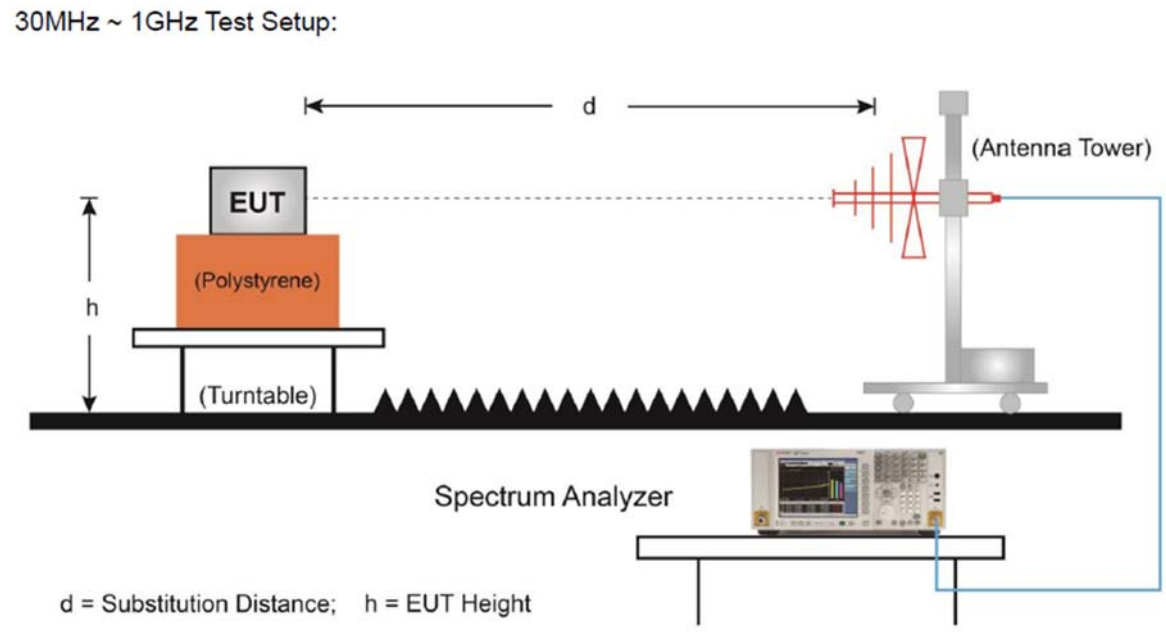


### 2.6.2.Radiation

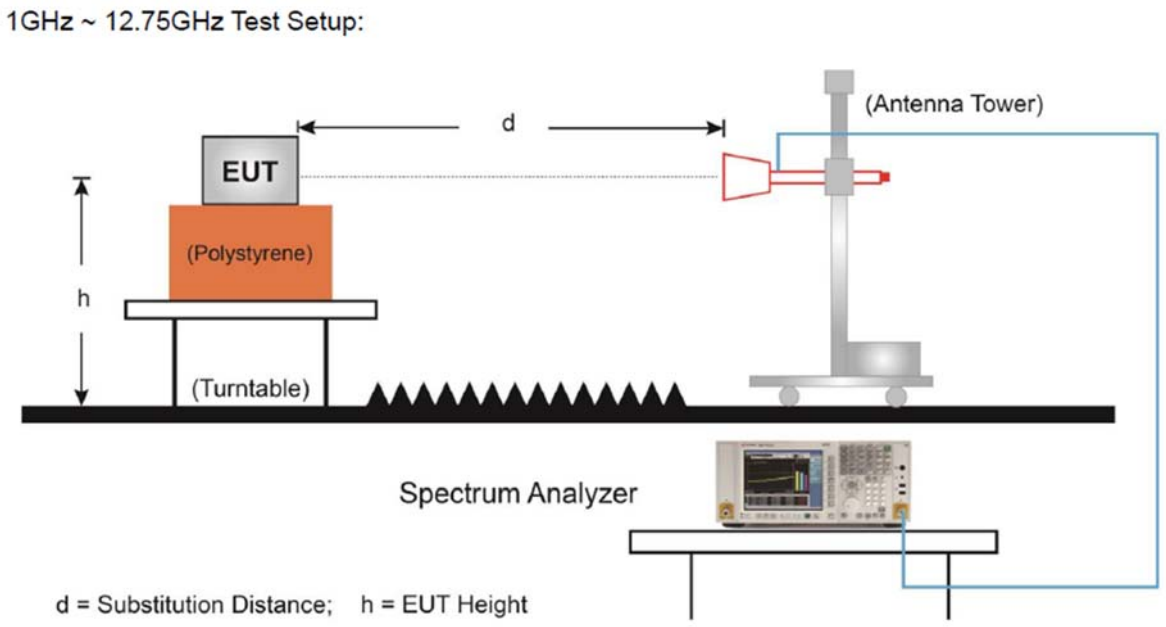
Block diagram of radiated test setup:

h=1.5m, d=3m

1) For radiated emissions from 30MHz to1GHz




2) For radiated emissions above 1GHz



# 3. Description of Test Items and Results

## 3.1. RF output power

### 3.1.1.Limit

| Equipment Type | Limit |
|---|---|
| Non-Adaptivity | <=20 dBm |
| Adaptivity | <=20 dBm |

### 3.1.2.Result

Refer to Annex A.1 in this report.

**Note:** The RF output power test conditions are considered and evaluated by performing a full test and only the worst data (normal conditions) are recorded and reported.

## 3.2. Power Spectral Density

### 3.2.1.Limit

| Equipment Type | Limit |
|---|---|
| Non-FHSS | <=10 dBm/MHz |

### 3.2.2.Result

Refer to Annex A.2 in this report.

# 3.3. Duty Cycle, Tx-sequence, Tx-gap

### 3.3.1.Limit

| Item | Equipment Type | Limit |
|---|---|---|
| Tx-sequence | FHSS | <= 5 ms |
| | Non-FHSS | <= 10 ms |
| Tx-gap | FHSS | >= 5 ms |
| | Non-FHSS | >= 3.5 ms |
| Duty Cycle | FHSS | <= Maximum value declared by the manufacturer |
| | Non-FHSS | |

### 3.3.2.Result

This test case does not apply this kind of EUT.

# 3.4. Medium Utilization (MU) factor

### 3.4.1.Limit

| Equipment Type | Limit |
|---|---|
| Non-Adaptivity | <=10 % |

### 3.4.2.Result

This test case does not apply this kind of EUT.

# 3.5. Occupied Channel Bandwidth

### 3.5.1.Limit

Within 2400 MHz to 2483.5 MHz.

### 3.5.2.Result

Refer to Annex A.3 in this report.

# 3.6. Transmitter unwanted emissions in the out-of-band domain

### 3.6.1.Limit

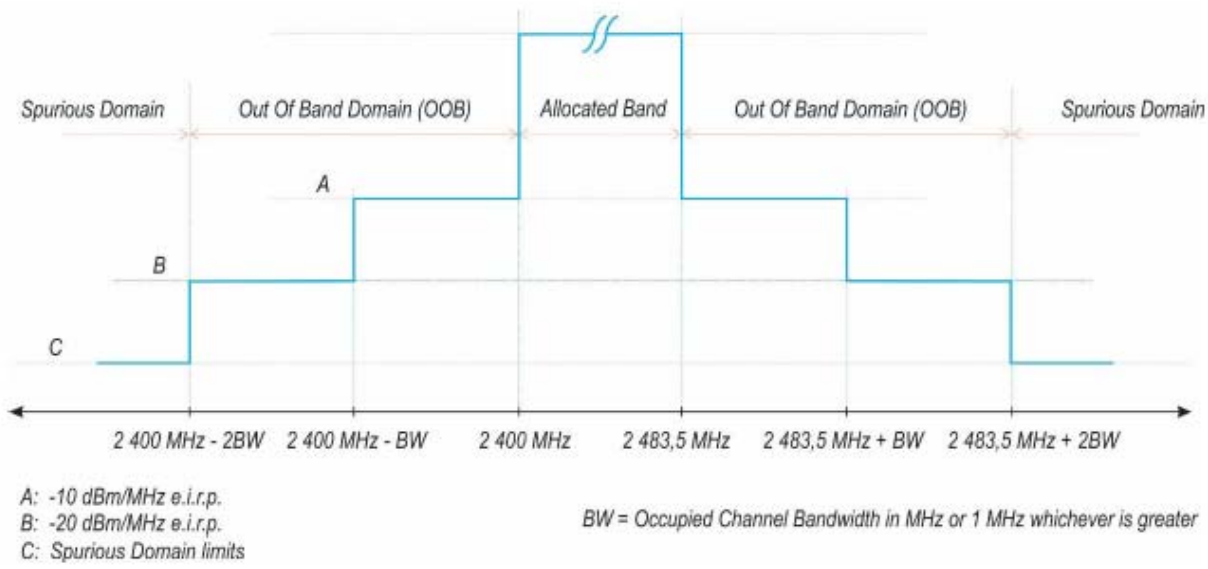



**Figure 3: Transmit mask**

### 3.6.2.Result

Refer to Annex A.4 in this report.

# 3.7. Transmitter unwanted emissions in the spurious domain

### 3.7.1.Limit

| Frequency Range | Maximum Power | Bandwidth |
|---|---|---|
| 30 MHz to 47 MHz | -36 dBm | 100kHz |
| 47 MHz to 74 MHz | -54 dBm | 100kHz |
| 74 MHz to 87,5 MHz | -36 dBm | 100kHz |
| 87,5 MHz to 118 MHz | -54 dBm | 100kHz |
| 118 MHz to 174 MHz | -36 dBm | 100kHz |
| 174 MHz to 230 MHz | -54 dBm | 100kHz |
| 230 MHz to 470 MHz | -36 dBm | 100kHz |
| 470 MHz to 694 MHz | -54 dBm | 100kHz |
| 694 MHz to 1 GHz | -36 dBm | 100kHz |
| 1 GHz to 12,75 GHz | -30 dBm | 1MHz |

### 3.7.2.Result

Refer to Annex A.5 in this report.

# 3.8. Receiver spurious emissions

### 3.8.1.Limit

| Frequency range | Maximum power | Measurement bandwidth |
|---|---|---|
| 30 MHz to 1 GHz | -57 dBm | 100 kHz |
| 1 GHz to 12,75 GHz | -47 dBm | 1 MHz |

### 3.8.2.Result

Refer to Annex A.6 in this report.

# 3.9. Receiver Blocking

### 3.9.1.Limit

| Receiver Category | Wanted signal mean power from companion device (dBm) (see notes 1 and 4) | Blocking signal frequency (MHz) | Blocking signal power (dBm) (see note 4) | Type of blocking signal |
|---|---|---|---|---|
| 1 | (-133 dBm + 10 × $\log_{10}$(OCBW)) or -68 dBm whichever is less; For radiated $P_{min}$ + 26 dB | 2380<br>2504 | -34 | CW |
| | (-139 dBm + 10 × $\log_{10}$(OCBW)) or -74 dBm whichever is less; For radiated $P_{min}$ + 20 dB | 2 300<br>2 330<br>2 360<br>2 524<br>2 584<br>2 674 | | |
| 2 | (-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less; For radiated $P_{min}$ + 26 dB | 2380<br>2504<br>2300<br>2584 | -34 | CW |
| 3 | (-139 dBm + 10 × $\log_{10}$(OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less; For radiated $P_{min}$ + 30 dB | 2380<br>2504<br>2300<br>2584 | -34 | CW |
| Note: OCBW is in Hz. | | | | |

### 3.9.2.Result

Refer to Annex A.7 in this report.

# 3.10. Geo-location capability

### 3.10.1.Definition

Geo-location capability is a feature of the equipment to determine its geographical location with the purpose to configure itself according to the regulatory requirements applicable at the geographical location where it operates.
The geo-location capability may be present in the equipment or in an external device (temporary) associated with the equipment operating at the same geographical location during the initial power up of the equipment. The geographical location may also be available in equipment already installed and operating at the same geographical location.

### 3.10.2.Requirement

The geographical location determined by the equipment as defined in clause 3.3.1 shall not be accessible to the user.

### 3.10.3.Result

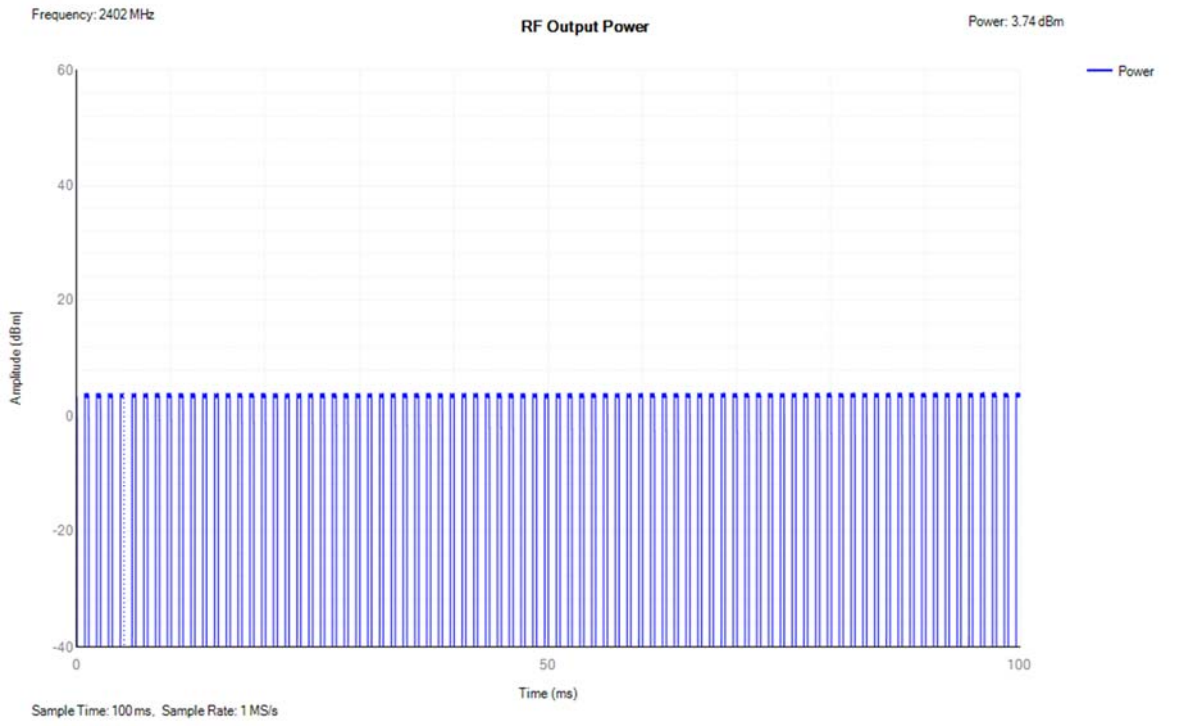
| Geo-location capability | Check method | Verdict |
|---|---|---|
| ☒Not support | ☐Visual inspection | Pass |
| ☐Not be accessible to the user | ☒Declared by manufacturer | |

# Annex A Test Data and Result

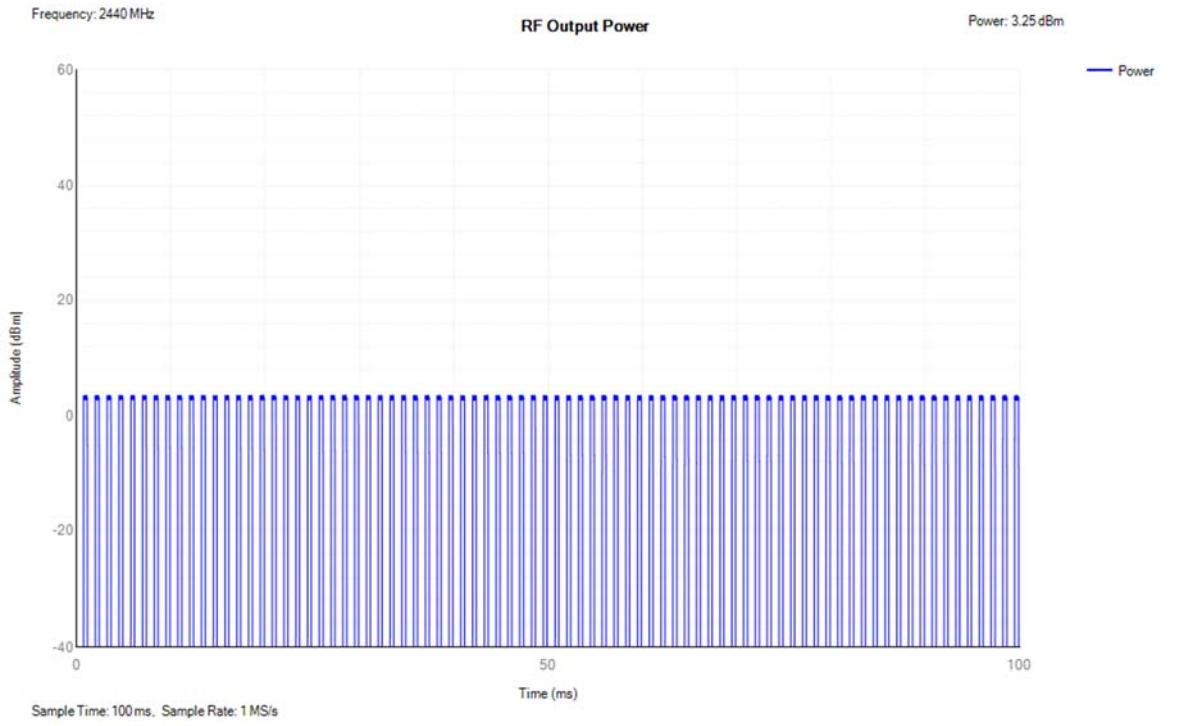
## A.1. RF Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Max Burst RMS Power (dBm) | Burst Number | Max EIRP (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 3.54 | 81 | 3.74 | 20 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 3.05 | 80 | 3.25 | 20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 3 | 81 | 3.2 | 20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 3.64 | 161 | 3.84 | 20 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 3.02 | 161 | 3.22 | 20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2.96 | 161 | 3.16 | 20 | Pass |

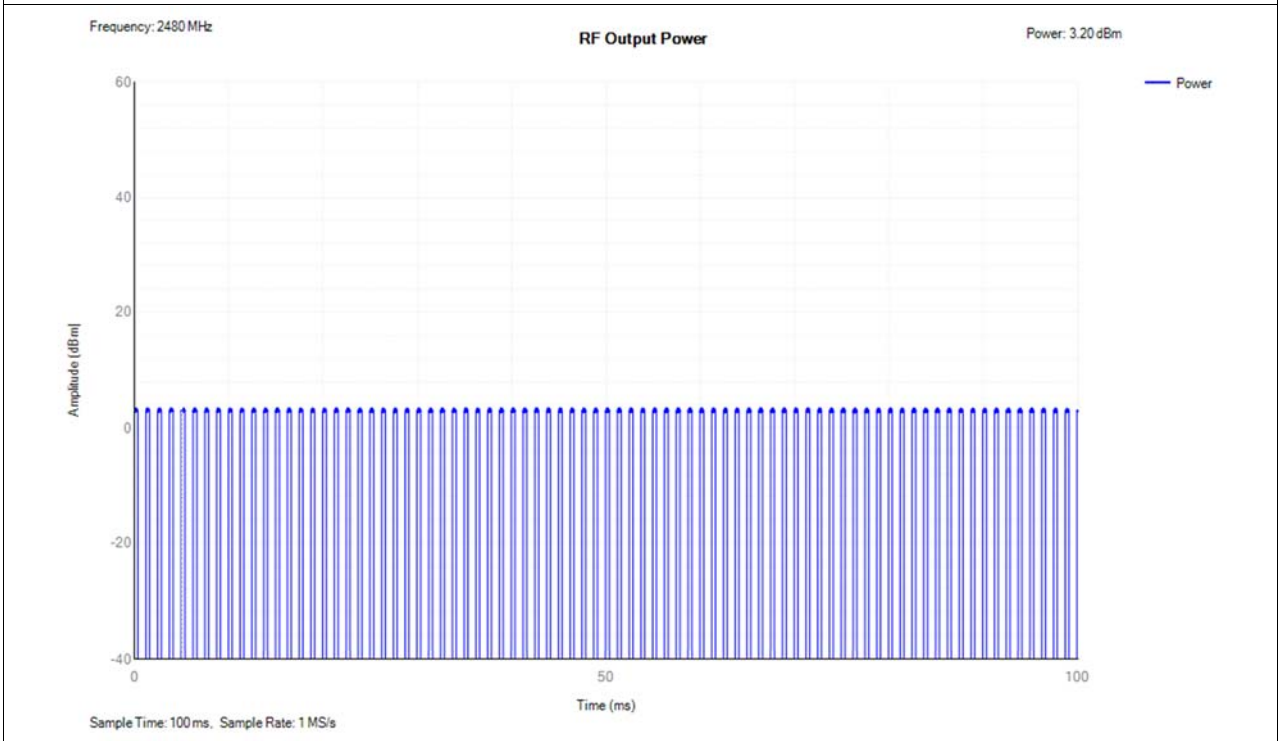
| Test Graphs |
| --- |
| Power NVNT BLE 1M 2402MHz Ant1 |



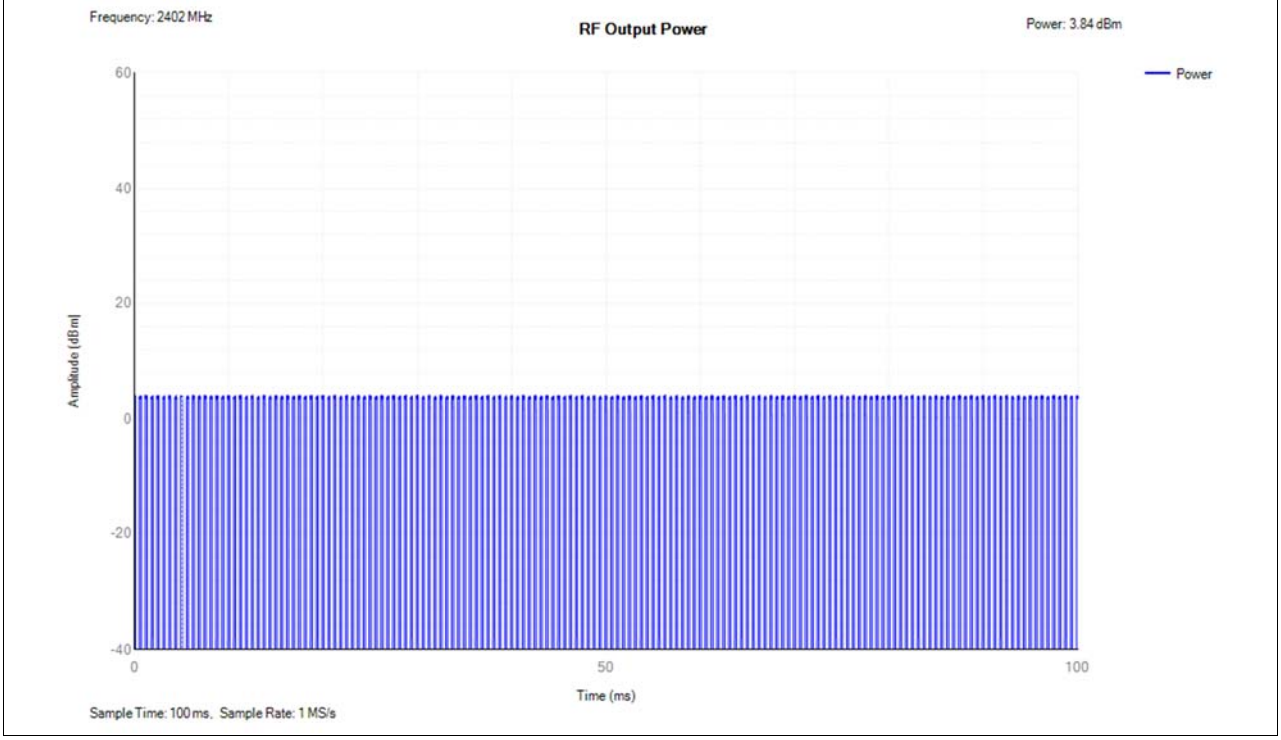

| Power NVNT BLE 1M 2440MHz Ant1 |
| --- |



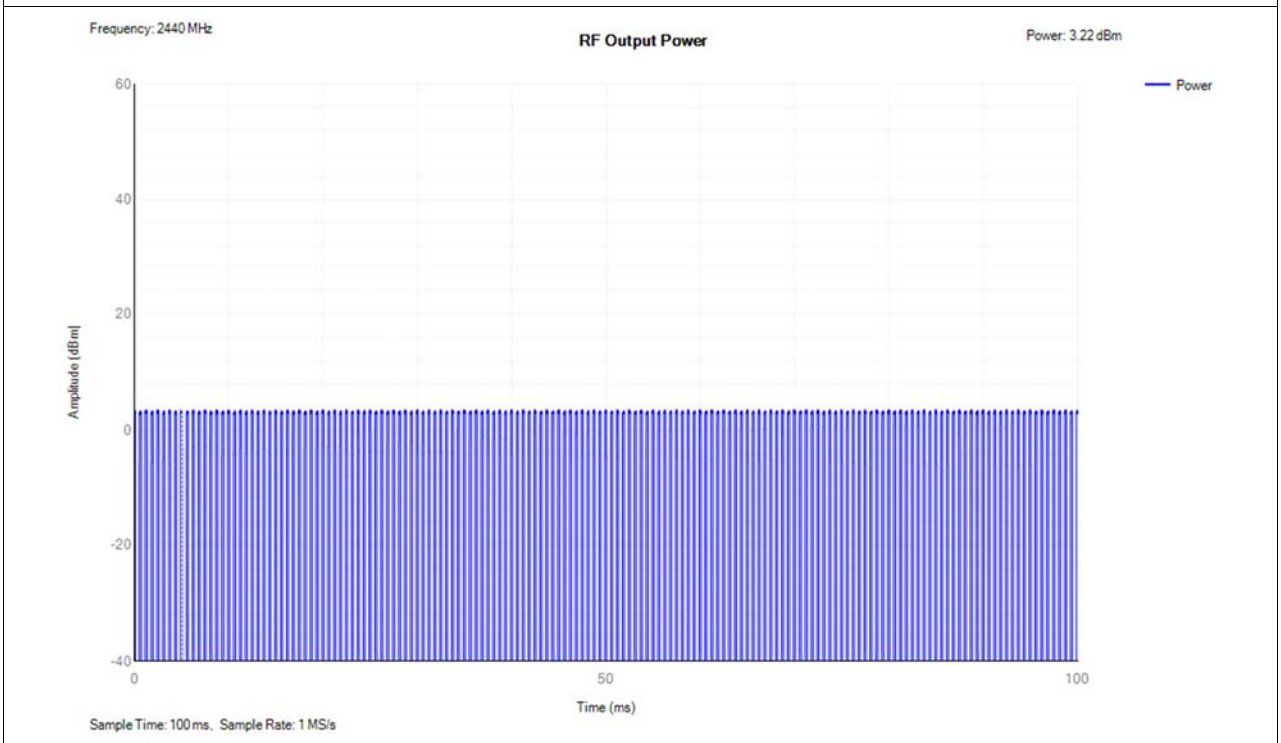
Power NVNT BLE 1M 2480MHz Ant1



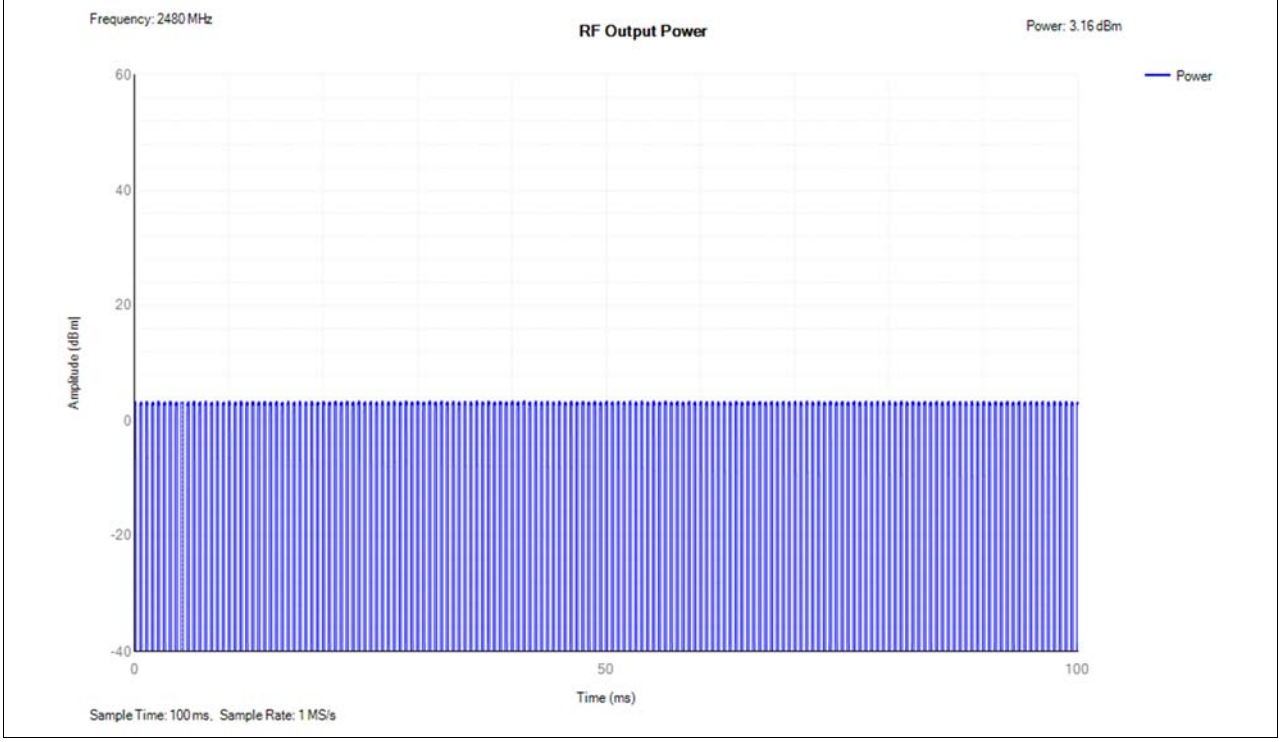

Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2440MHz Ant1



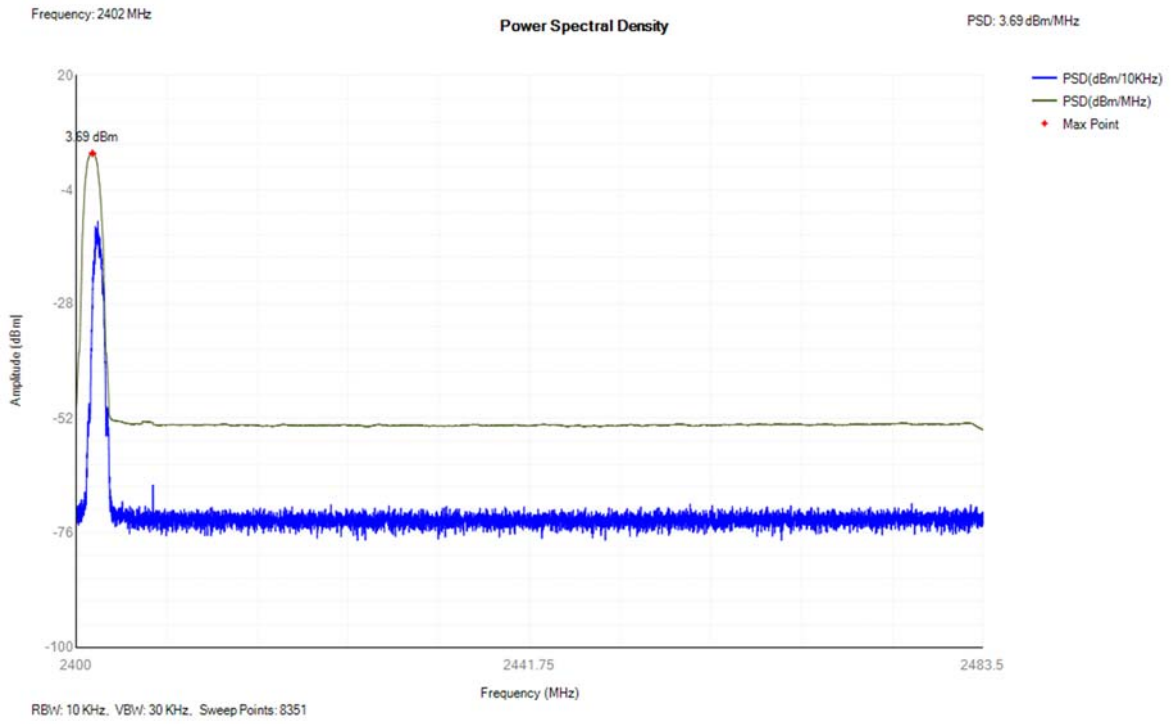

Power NVNT BLE 2M 2480MHz Ant1



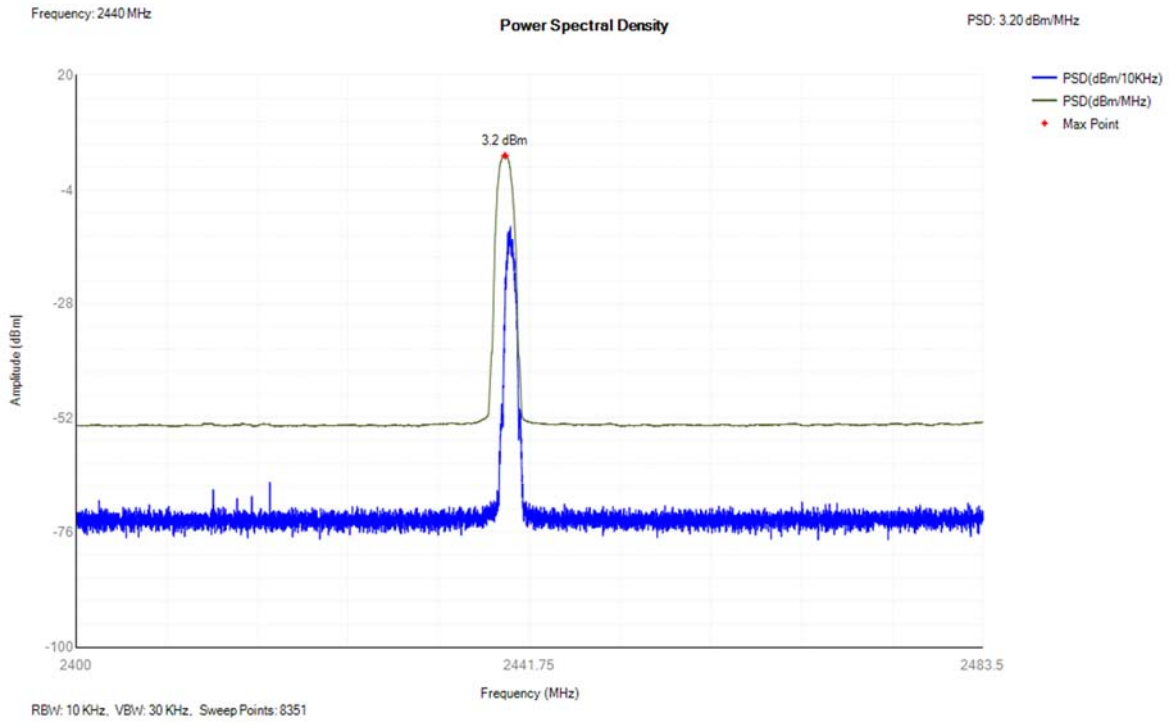
## A.2. Power Spectral Density

| Condition | Mode | Frequency (MHz) | Antenna | Max PSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 3.69 | 10 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 3.2 | 10 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 3.15 | 10 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2.81 | 10 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 2.19 | 10 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2.13 | 10 | Pass |

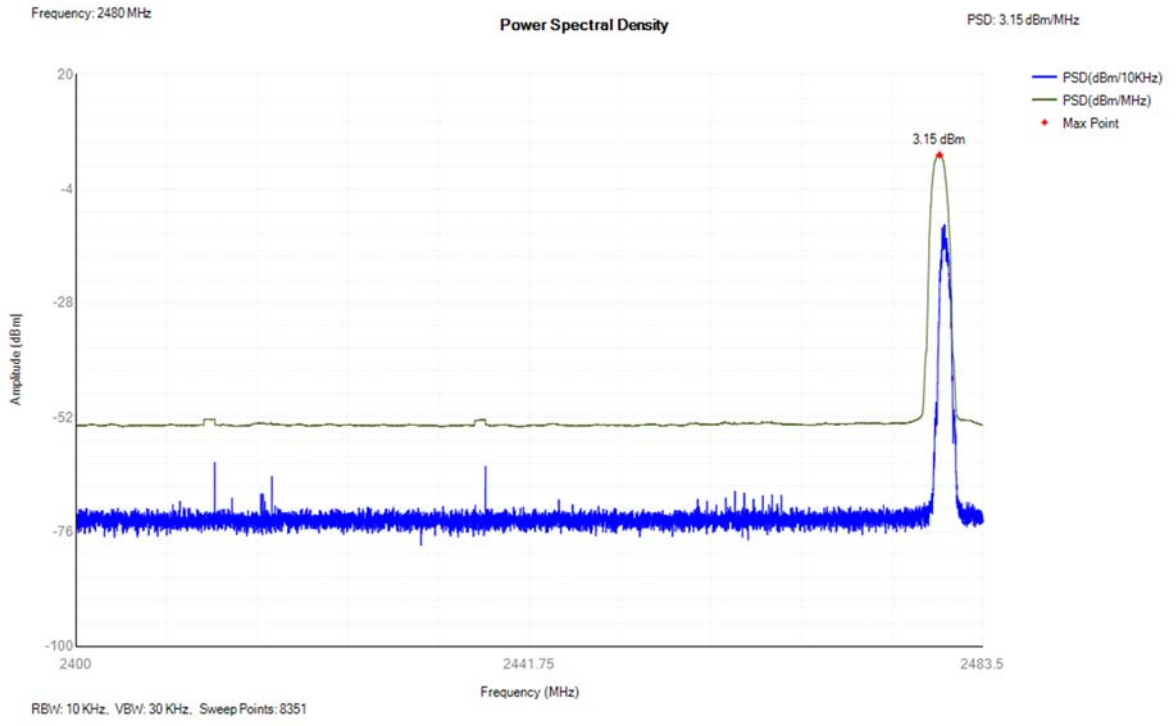
| Test Graphs |
| --- |
| PSD NVNT BLE 1M 2402MHz Ant1 |



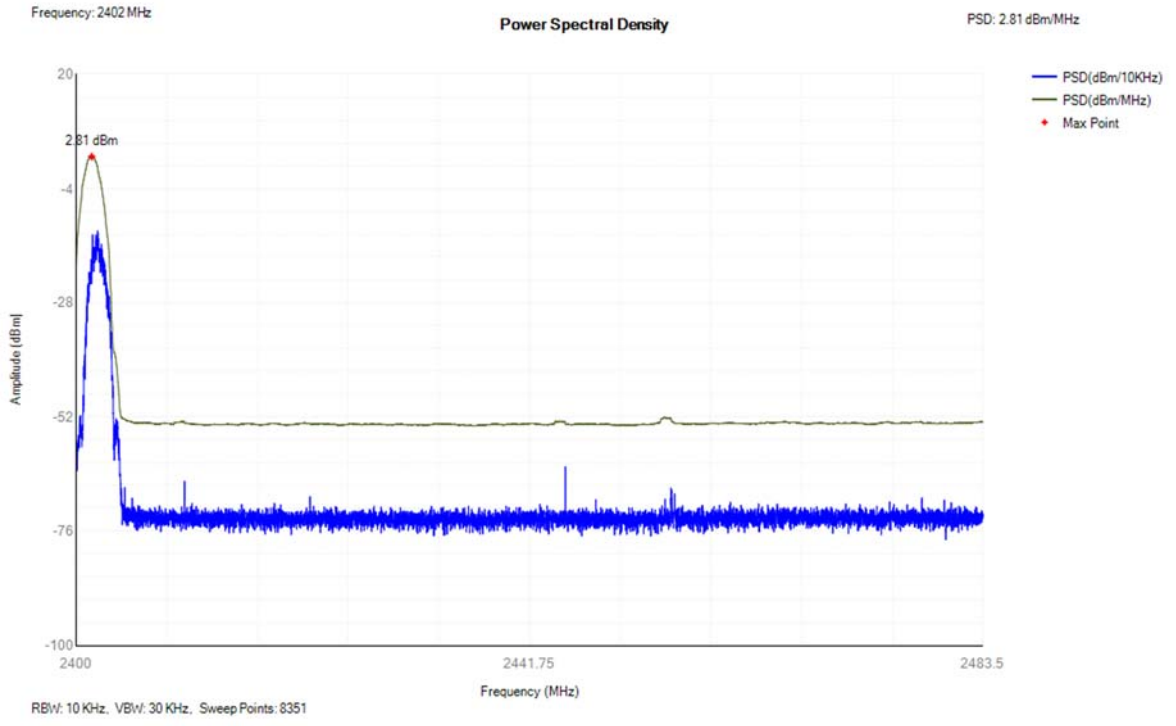

| PSD NVNT BLE 1M 2440MHz Ant1 |
| --- |



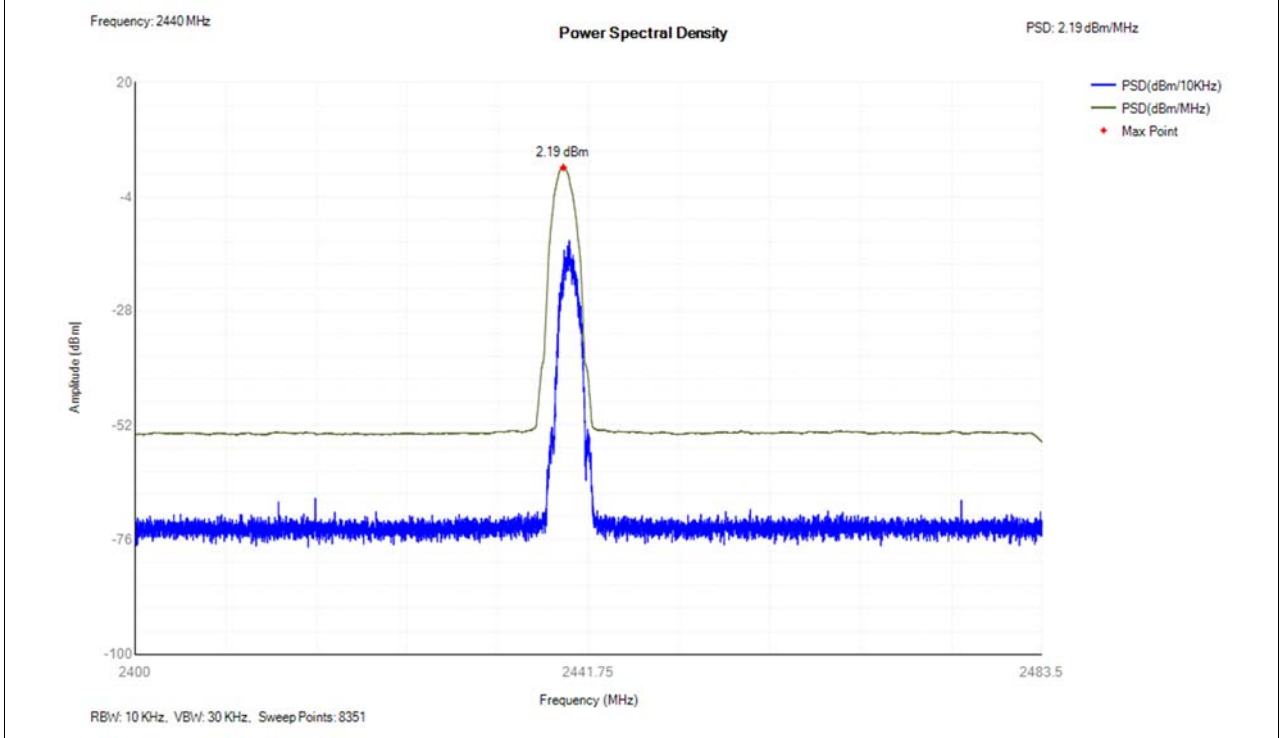
PSD NVNT BLE 1M 2480MHz Ant1



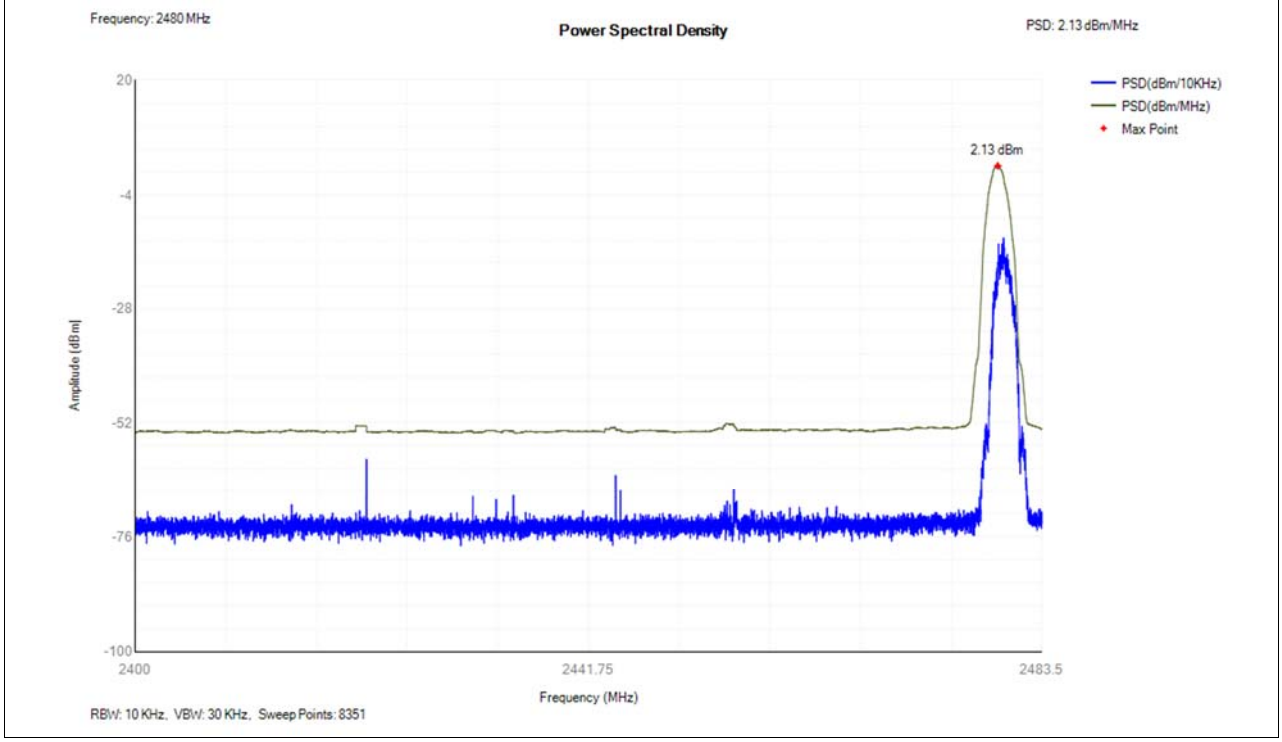

PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2440MHz Ant1



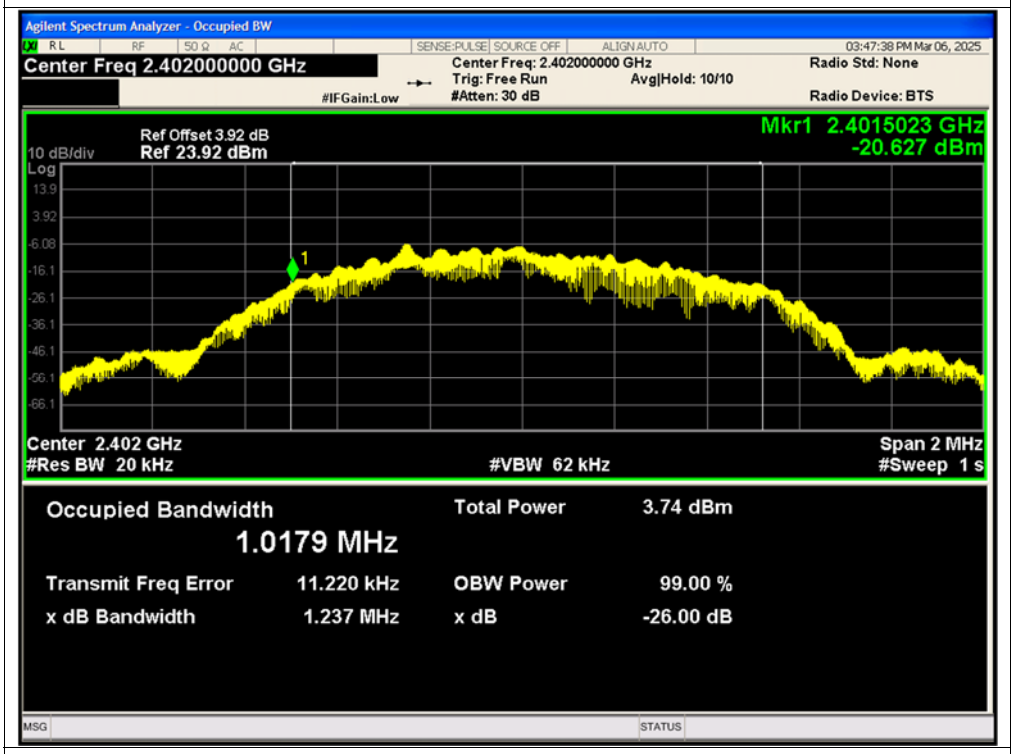

PSD NVNT BLE 2M 2480MHz Ant1



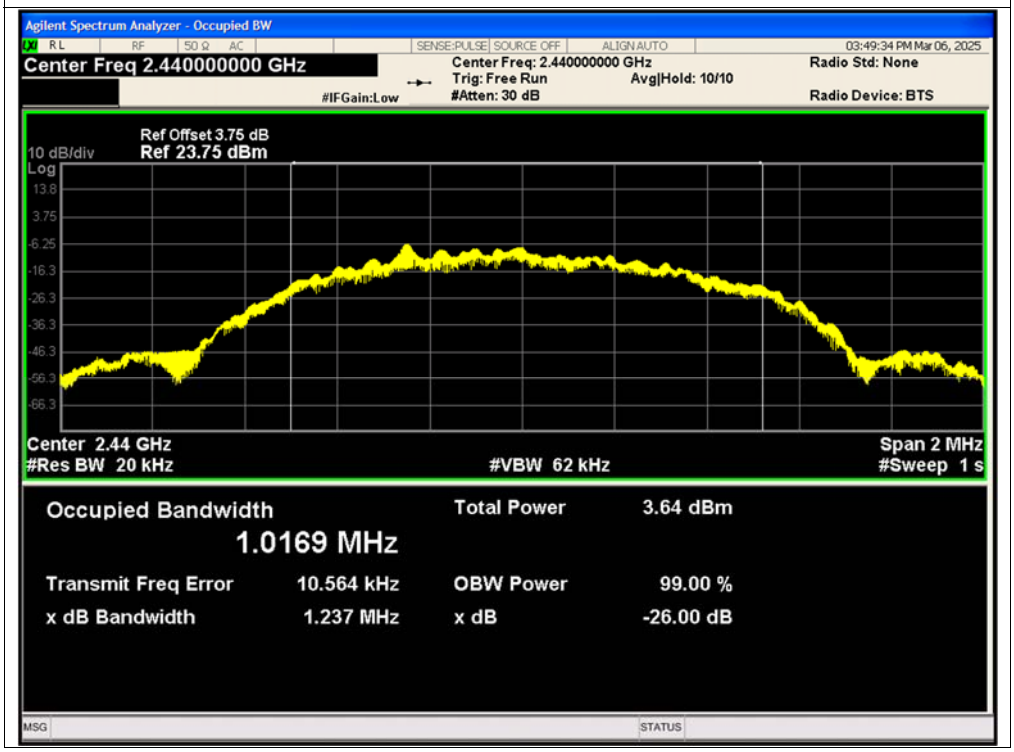
## A.3. Occupied Channel Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | Center Frequency (MHz) | OBW (MHz) | Lower Edge (MHz) | Upper Edge (MHz) | Limit OBW (MHz) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 2402.0112 | 1.0179 | 2401.50225 | 2402.52015 | 20 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 2440.0106 | 1.0169 | 2439.50215 | 2440.51905 | 20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2480.01 | 1.019 | 2479.5005 | 2480.5195 | 20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2402.0208 | 2.0309 | 2401.00535 | 2403.03625 | 20 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 2440.0193 | 2.0315 | 2439.00355 | 2441.03505 | 20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2480.0179 | 2.0349 | 2479.00045 | 2481.03535 | 20 | Pass |

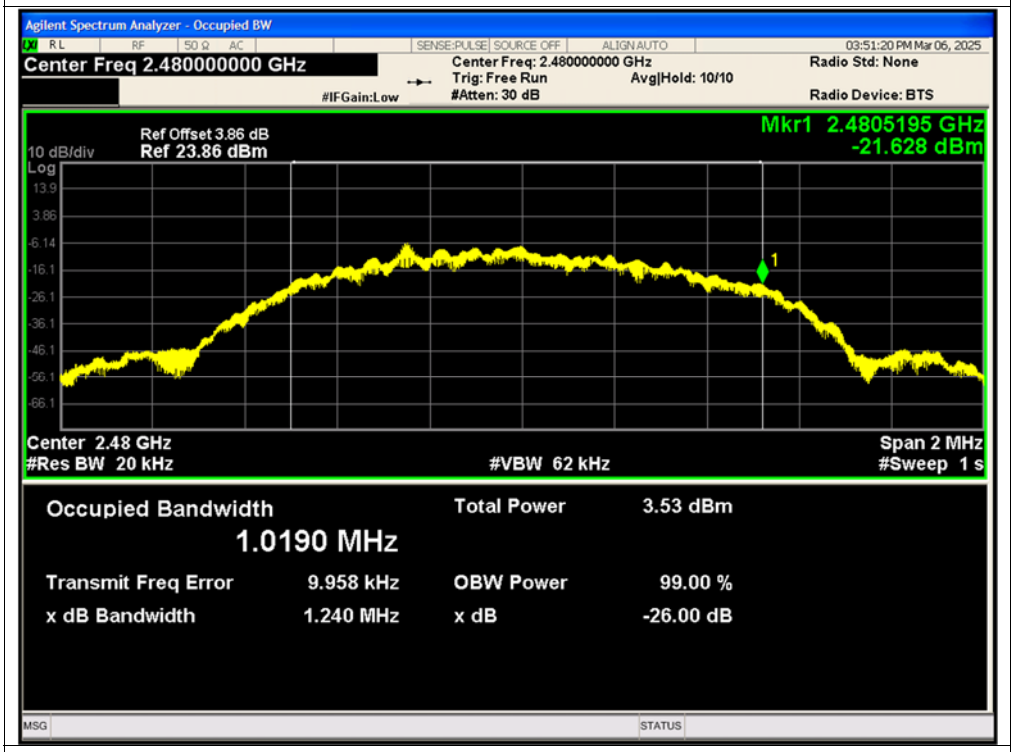
| Test Graphs |
| --- |
| OBW NVNT BLE 1M 2402MHz Ant1 |



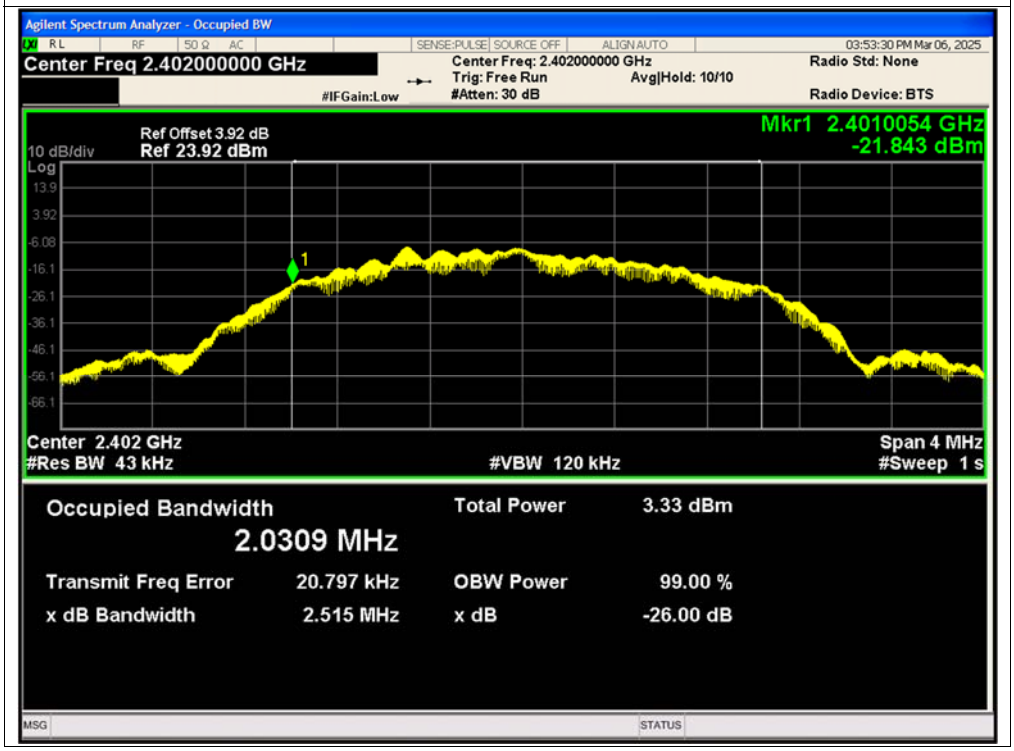

| OBW NVNT BLE 1M 2440MHz Ant1 |
| --- |



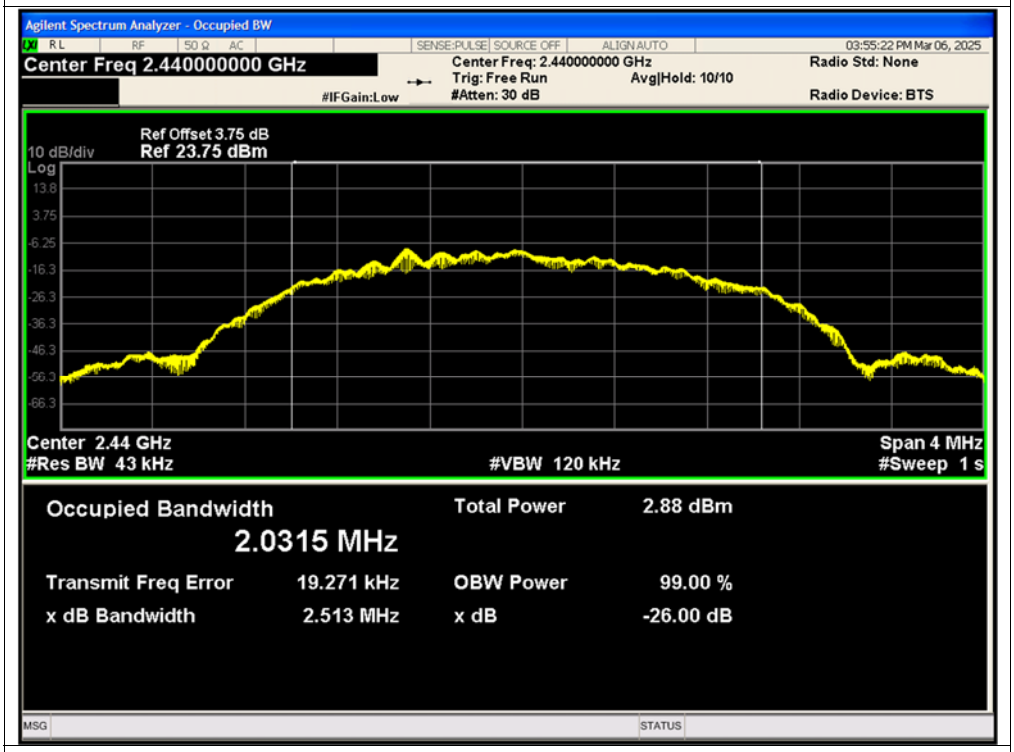
OBW NVNT BLE 1M 2480MHz Ant1



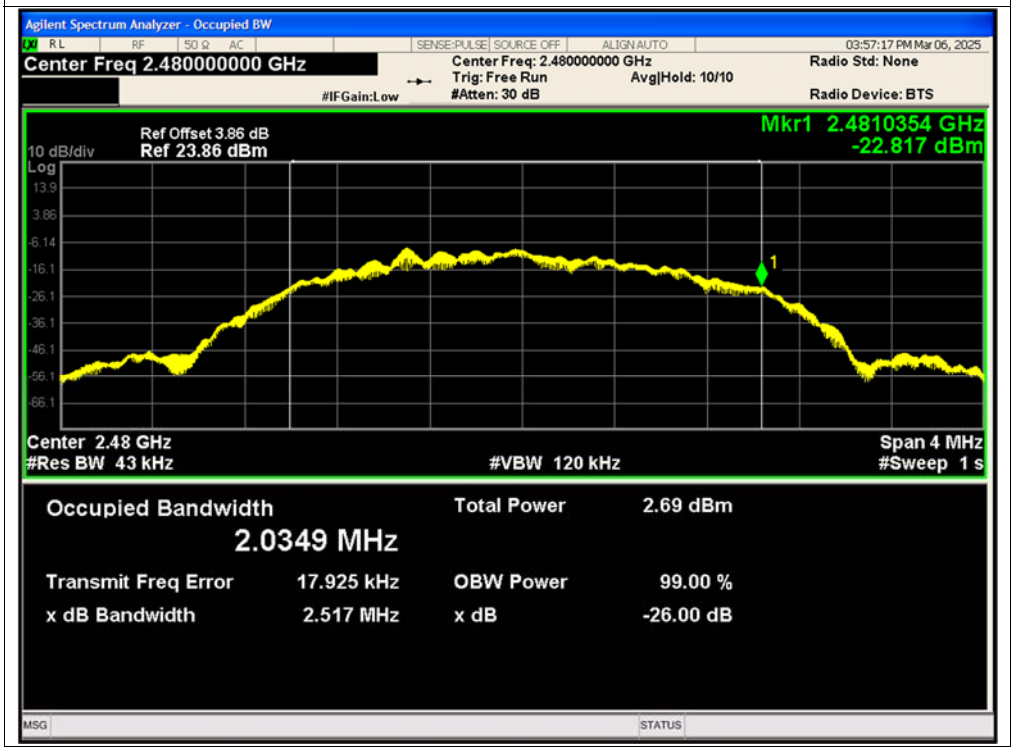

OBW NVNT BLE 2M 2402MHz Ant1



OBW NVNT BLE 2M 2440MHz Ant1



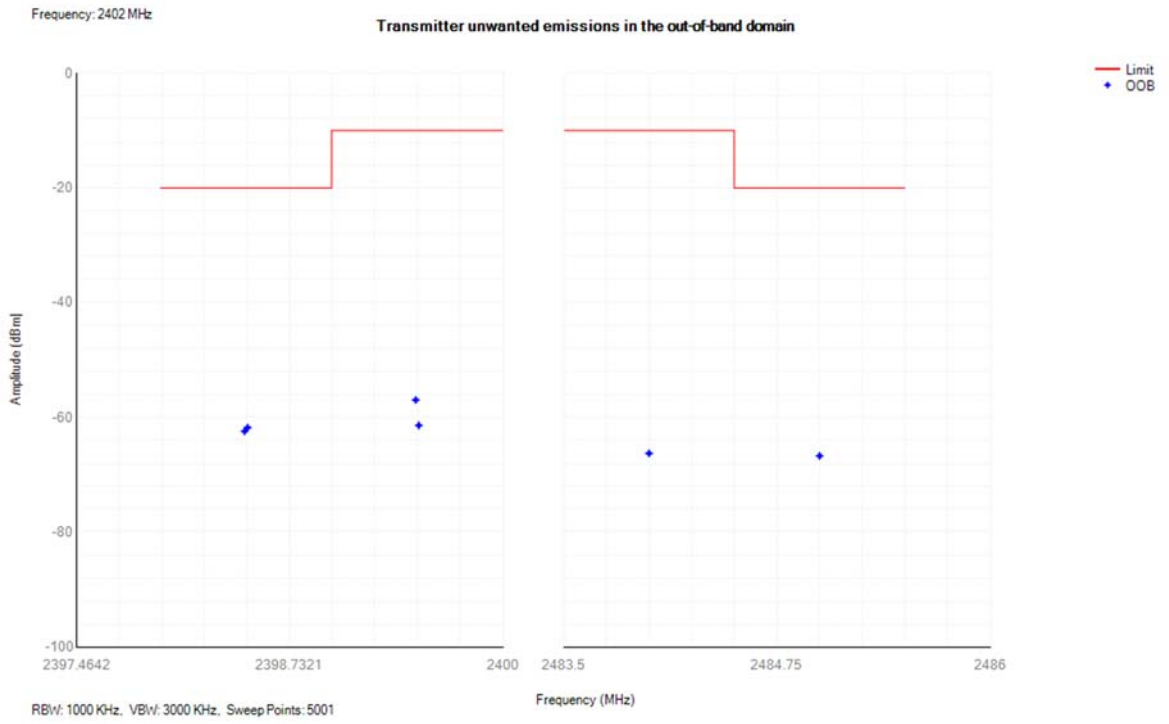

OBW NVNT BLE 2M 2480MHz Ant1



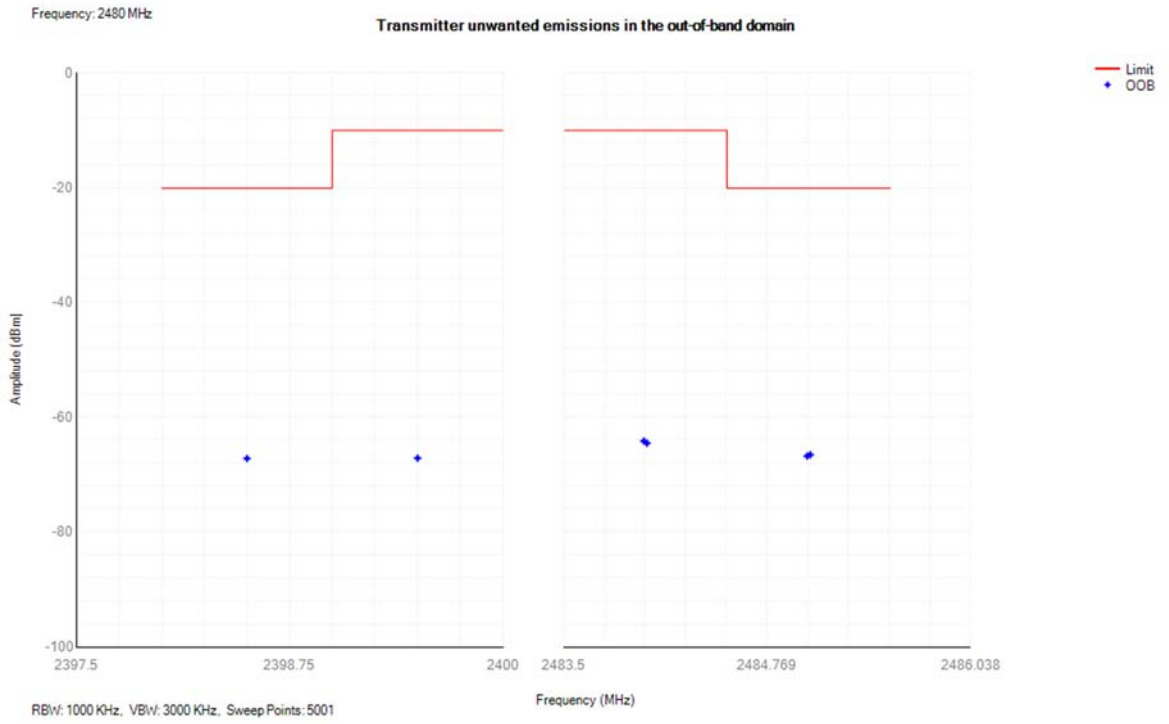
## A.4. Transmitter unwanted emissions in the Out-Of-Band Domain

| Condition | Mode | Frequency (MHz) | Antenna | OOB Frequency (MHz) | Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 2399.5 | -61.36 | -10 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 2399.4821 | -56.95 | -10 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 2398.4821 | -61.74 | -20 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 2398.4642 | -62.38 | -20 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 2484 | -66.21 | -10 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 2485 | -66.65 | -20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2399.5 | -67.13 | -10 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2398.5 | -67.19 | -20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2484 | -64.16 | -10 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2484.019 | -64.53 | -10 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2485.019 | -66.76 | -20 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2485.038 | -66.55 | -20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2399.5 | -39.22 | -10 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2398.5 | -67.39 | -10 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2398.4691 | -63.03 | -10 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2397.4691 | -64.42 | -20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2396.4691 | -63.93 | -20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2396.4382 | -65.37 | -20 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2484 | -67.21 | -10 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2485 | -67.03 | -20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2399.5 | -67.11 | -10 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2398.5 | -67.01 | -20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2484 | -60.32 | -10 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2485 | -62.45 | -10 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2485.0349 | -66.8 | -10 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2486.0349 | -63.98 | -20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2487.0349 | -65.58 | -20 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2487.0698 | -66.84 | -20 | Pass |

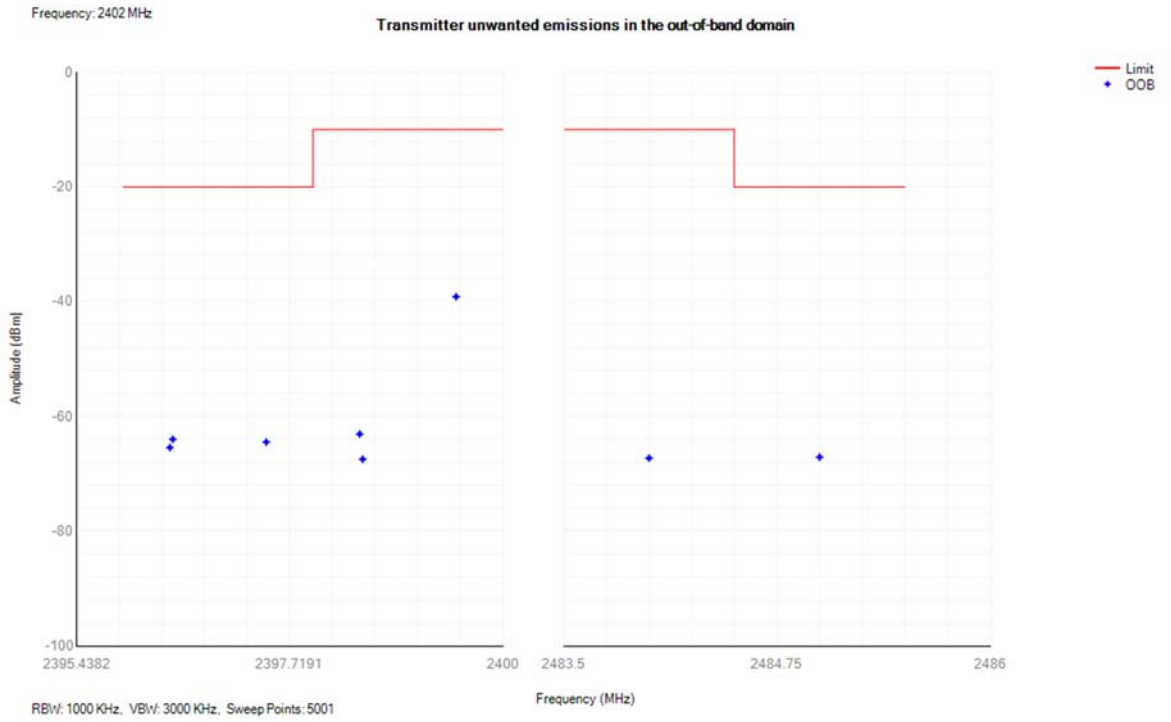
| Test Graphs |
| --- |
| Tx. Emissions OOB NVNT BLE 1M 2402MHz Ant1 |



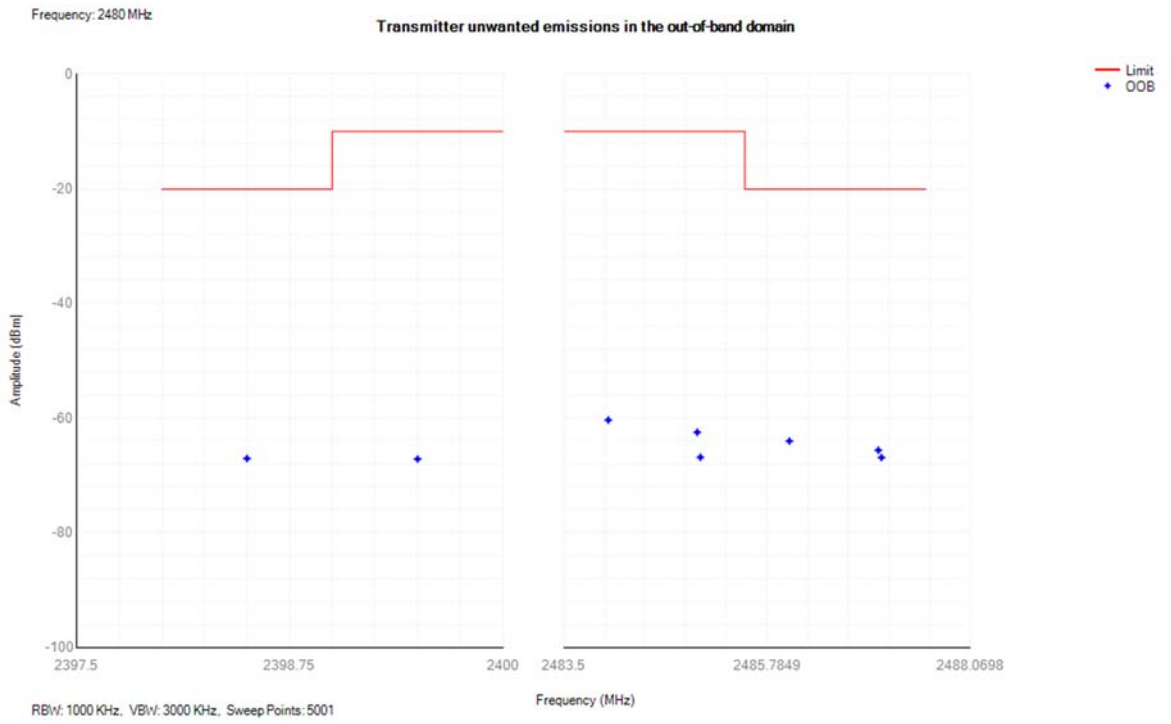

| Tx. Emissions OOB NVNT BLE 1M 2480MHz Ant1 |
| --- |



Tx. Emissions OOB NVNT BLE 2M 2402MHz Ant1




Tx. Emissions OOB NVNT BLE 2M 2480MHz Ant1



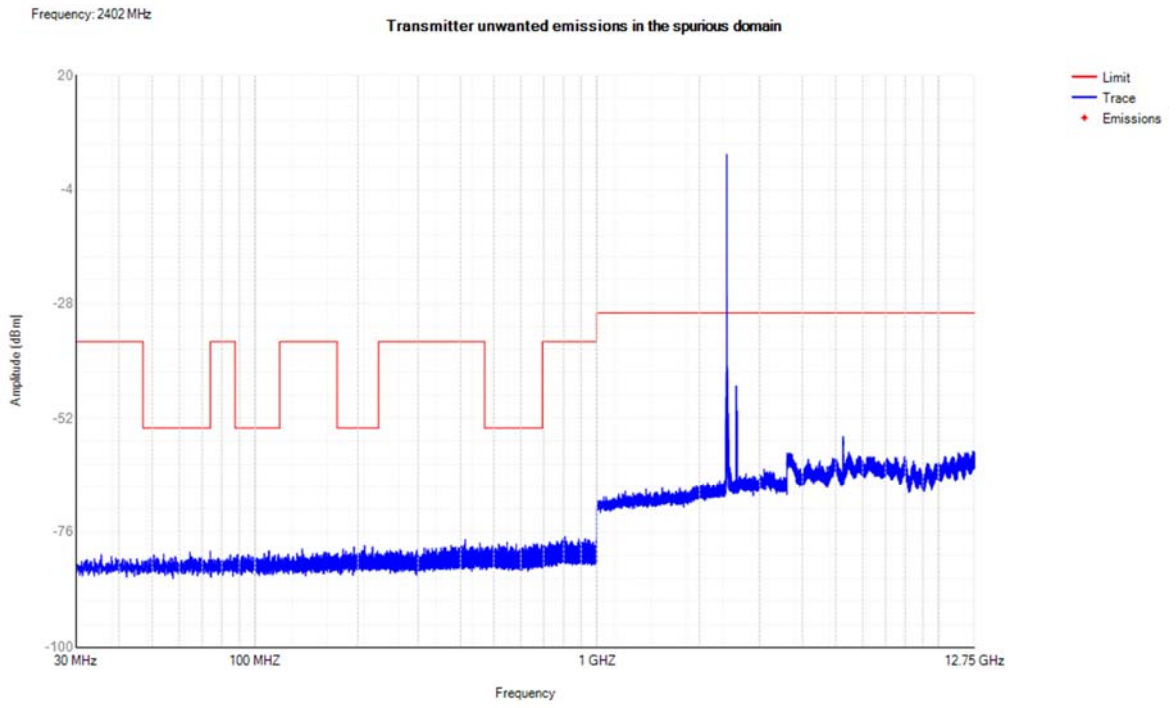
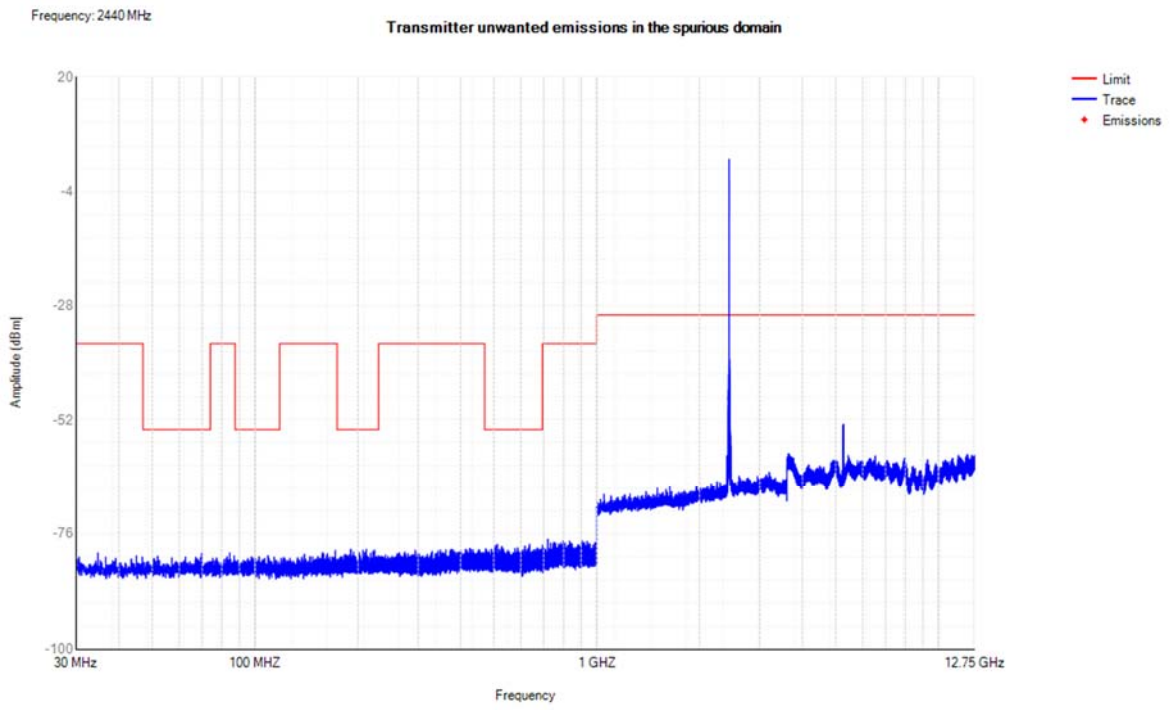
## A.5. Transmitter unwanted emissions in the spurious domain

### a) Conducted measurement

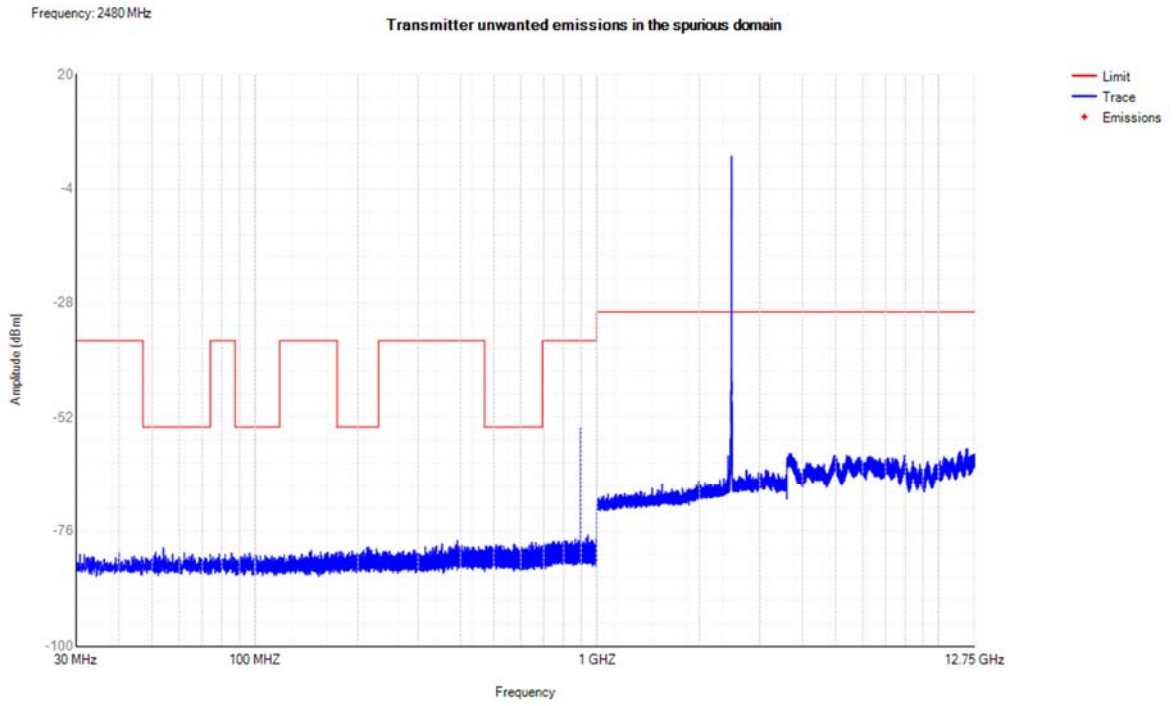
| Condition | Mode | Frequency (MHz) | Antenna | Range (MHz) | Spur Freq (MHz) | Peak (dBm) | RMS (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2402 | Ant1 | 30 -47 | 35.50 | -80.58 | NA | -36 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 47 -74 | 64.50 | -80.08 | NA | -54 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 74 -87.5 | 84.70 | -80.61 | NA | -36 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 87.5 -118 | 109.90 | -79.76 | NA | -54 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 118 -174 | 137.50 | -79.50 | NA | -36 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 174 -230 | 209.40 | -78.81 | NA | -54 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 230 -470 | 412.40 | -77.56 | NA | -36 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 470 -694 | 547.20 | -78.10 | NA | -54 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 694 -1000 | 807.35 | -76.93 | NA | -36 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 1000 - 2398 | 2397.50 | -42.30 | NA | -30 | Pass |
| NVNT | BLE 1M | 2402 | Ant1 | 2485.5 - 12750 | 2560.00 | -45.23 | NA | -30 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 30 -47 | 34.70 | -79.89 | NA | -36 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 47 -74 | 69.85 | -79.98 | NA | -54 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 74 -87.5 | 84.35 | -79.87 | NA | -36 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 87.5 -118 | 109.15 | -80.42 | NA | -54 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 118 -174 | 171.80 | -79.43 | NA | -36 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 174 -230 | 190.75 | -79.22 | NA | -54 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 230 -470 | 424.20 | -79.09 | NA | -36 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 470 -694 | 635.70 | -78.22 | NA | -54 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 694 -1000 | 719.25 | -77.13 | NA | -36 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 1000 - 2398 | 2251.00 | -64.99 | NA | -30 | Pass |
| NVNT | BLE 1M | 2440 | Ant1 | 2485.5 - 12750 | 5276.00 | -52.88 | NA | -30 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 30 -47 | 40.05 | -80.23 | NA | -36 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 47 -74 | 53.95 | -79.45 | NA | -54 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 74 -87.5 | 85.40 | -80.42 | NA | -36 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 87.5 -118 | 96.35 | -80.45 | NA | -54 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 118 -174 | 146.10 | -79.90 | NA | -36 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 174 -230 | 212.60 | -79.36 | NA | -54 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 230 -470 | 391.00 | -77.94 | NA | -36 | Pass |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2480 | Ant1 | 470 -694 | 645.35 | -78.31 | NA | -54 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 694 -1000 | 898.25 | -54.20 | NA | -36 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 1000 - 2398 | 2355.50 | -64.81 | NA | -30 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 2485.5 - 12750 | 2486.00 | -49.96 | NA | -30 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 30 -47 | 34.85 | -80.10 | NA | -36 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 47 -74 | 70.75 | -80.33 | NA | -54 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 74 -87.5 | 78.35 | -79.75 | NA | -36 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 87.5 -118 | 115.95 | -80.46 | NA | -54 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 118 -174 | 133.30 | -79.58 | NA | -36 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 174 -230 | 213.70 | -78.99 | NA | -54 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 230 -470 | 448.85 | -78.64 | NA | -36 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 470 -694 | 676.75 | -77.67 | NA | -54 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 694 -1000 | 774.00 | -76.80 | NA | -36 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 1000 - 2396 | 2395.50 | -45.94 | NA | -30 | Pass |
| NVNT | BLE 2M | 2402 | Ant1 | 2487.5 - 12750 | 5254.50 | -50.53 | NA | -30 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 30 -47 | 33.10 | -78.99 | NA | -36 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 47 -74 | 54.00 | -80.80 | NA | -54 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 74 -87.5 | 75.00 | -80.44 | NA | -36 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 87.5 -118 | 95.35 | -79.80 | NA | -54 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 118 -174 | 154.55 | -79.93 | NA | -36 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 174 -230 | 191.60 | -79.69 | NA | -54 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 230 -470 | 384.20 | -78.83 | NA | -36 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 470 -694 | 523.35 | -78.19 | NA | -54 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 694 -1000 | 763.05 | -77.02 | NA | -36 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 1000 - 2396 | 2394.50 | -65.32 | NA | -30 | Pass |
| NVNT | BLE 2M | 2440 | Ant1 | 2487.5 - 12750 | 3681.00 | -59.16 | NA | -30 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 30 -47 | 44.35 | -80.40 | NA | -36 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 47 -74 | 72.25 | -80.20 | NA | -54 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 74 -87.5 | 77.40 | -80.50 | NA | -36 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 87.5 -118 | 109.30 | -79.88 | NA | -54 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 118 -174 | 162.55 | -79.37 | NA | -36 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 174 -230 | 204.55 | -78.76 | NA | -54 | Pass |

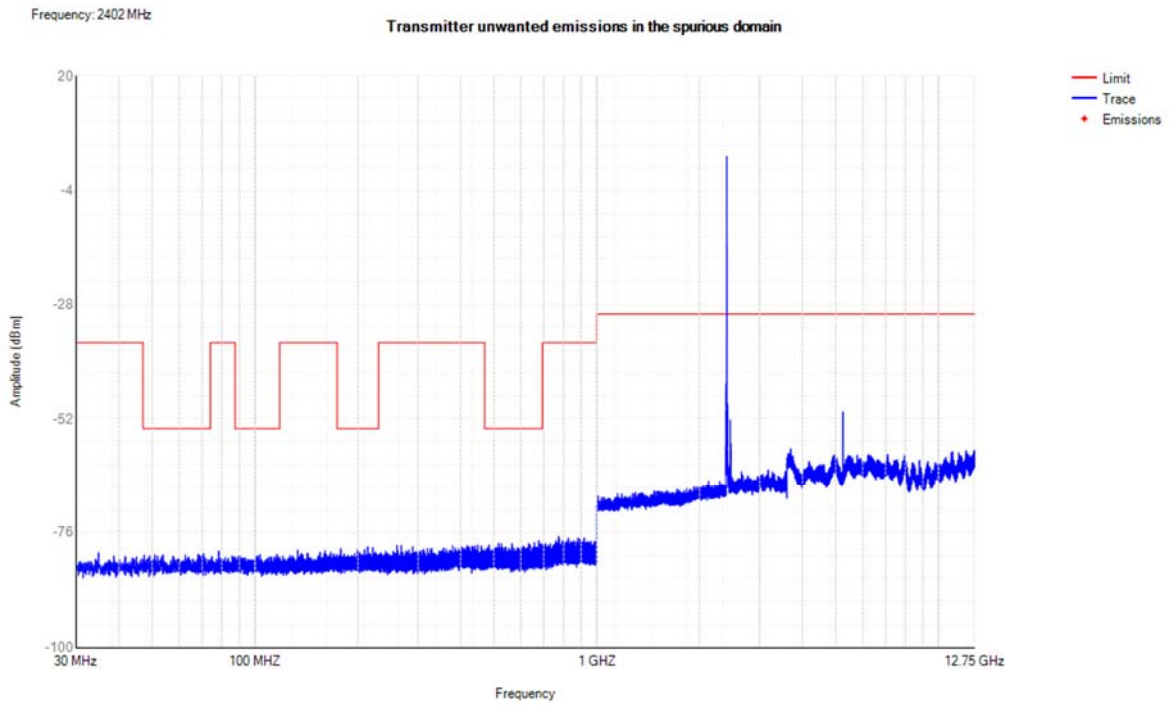
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 2M | 2480 | Ant1 | 230 -470 | 460.20 | -78.01 | NA | -36 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 470 -694 | 635.55 | -77.86 | NA | -54 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 694 -1000 | 973.10 | -76.76 | NA | -36 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 1000 - 2396 | 2381.00 | -65.40 | NA | -30 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 2487.5 - 12750 | 2488.50 | -46.56 | NA | -30 | Pass |

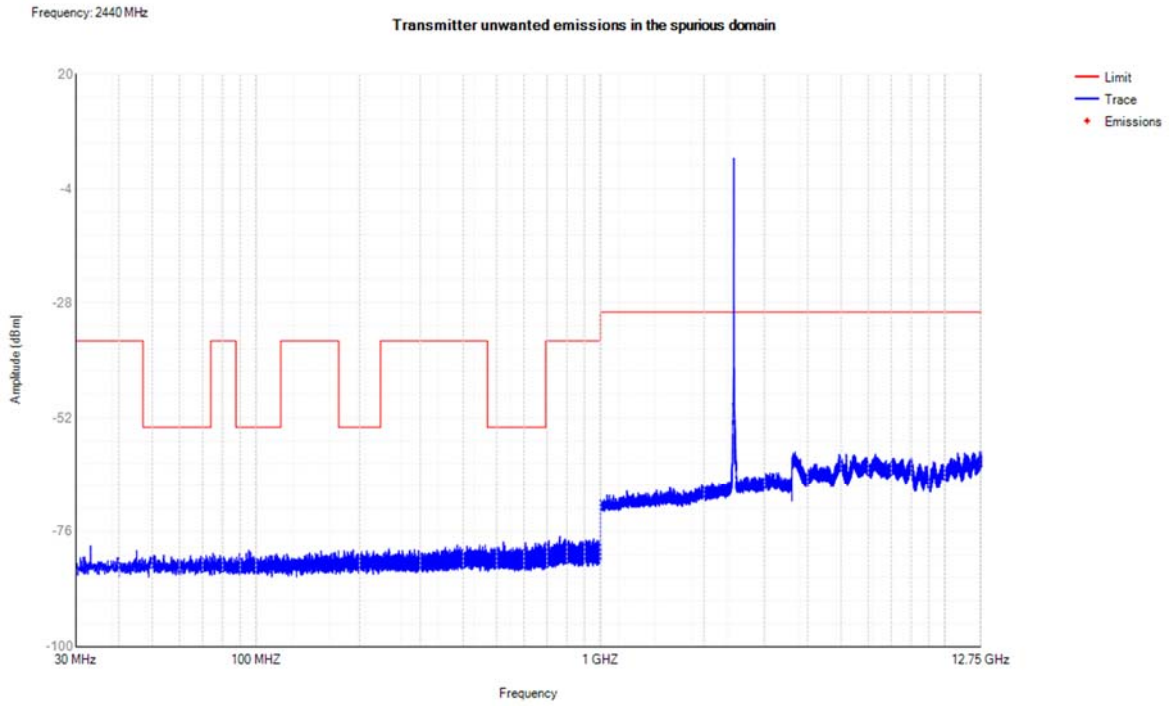
| Test Graphs |
| --- |
| Tx. Spurious NVNT BLE 1M 2402MHz Ant1 |
|  |
| Tx. Spurious NVNT BLE 1M 2440MHz Ant1 |
|  |

Tx. Spurious NVNT BLE 1M 2480MHz Ant1

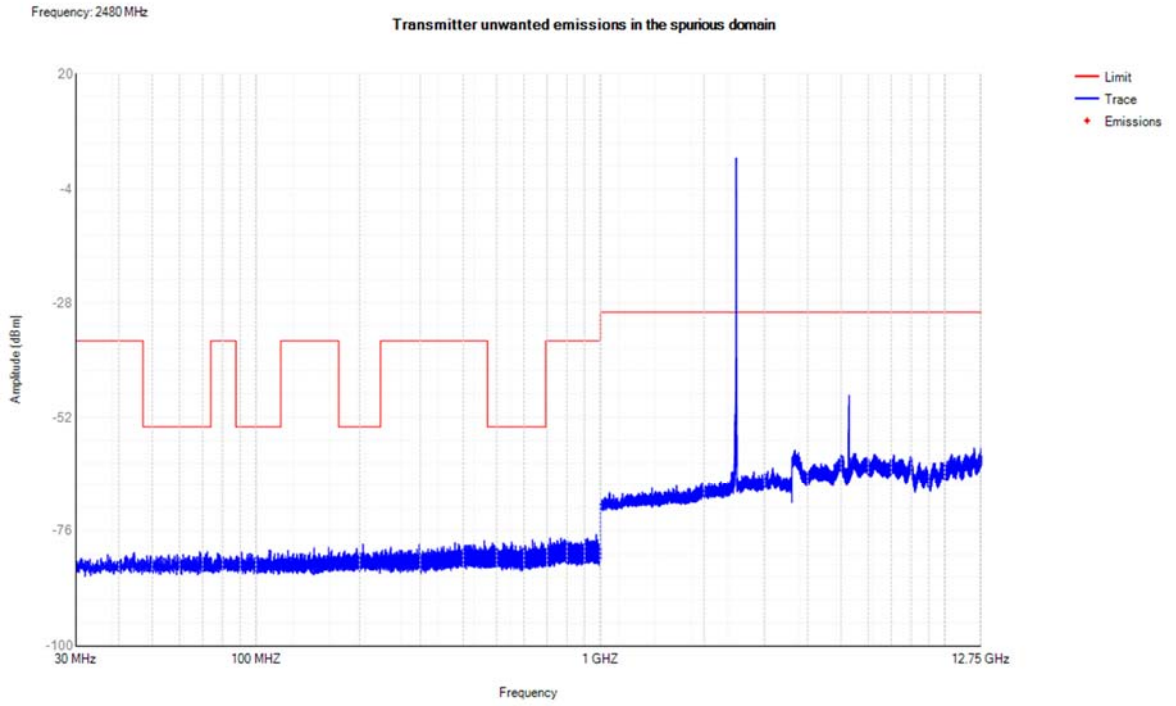



Tx. Spurious NVNT BLE 2M 2402MHz Ant1



| Tx. Spurious NVNT BLE 2M 2440MHz Ant1 |
| --- |
|  |



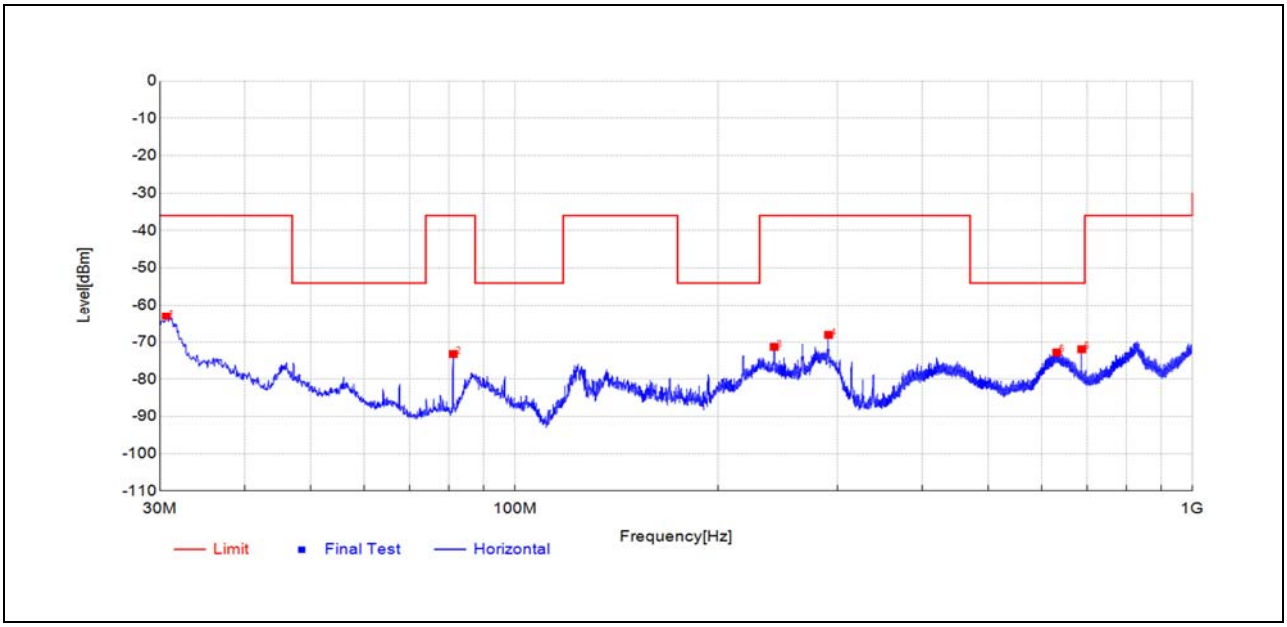
| Tx. Spurious NVNT BLE 2M 2480MHz Ant1 |
| --- |
|  |

**b) Radiated measurement**

Below is the worst case situation test data:

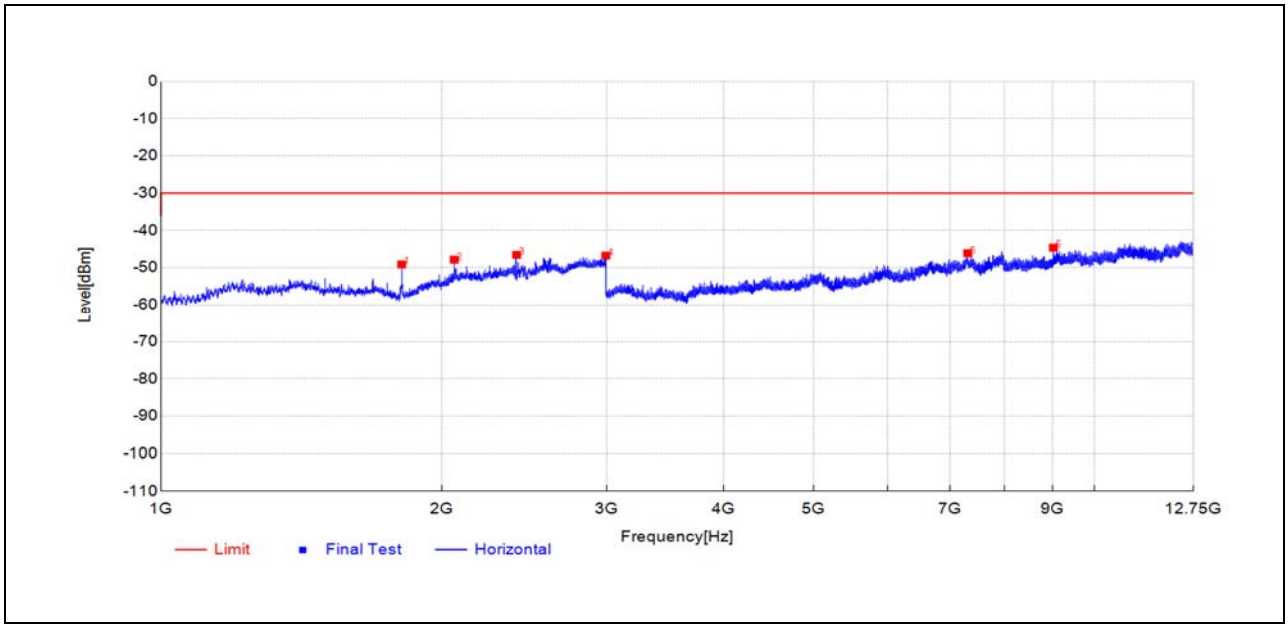
**1Mbps**

**Plot for Channel 0**



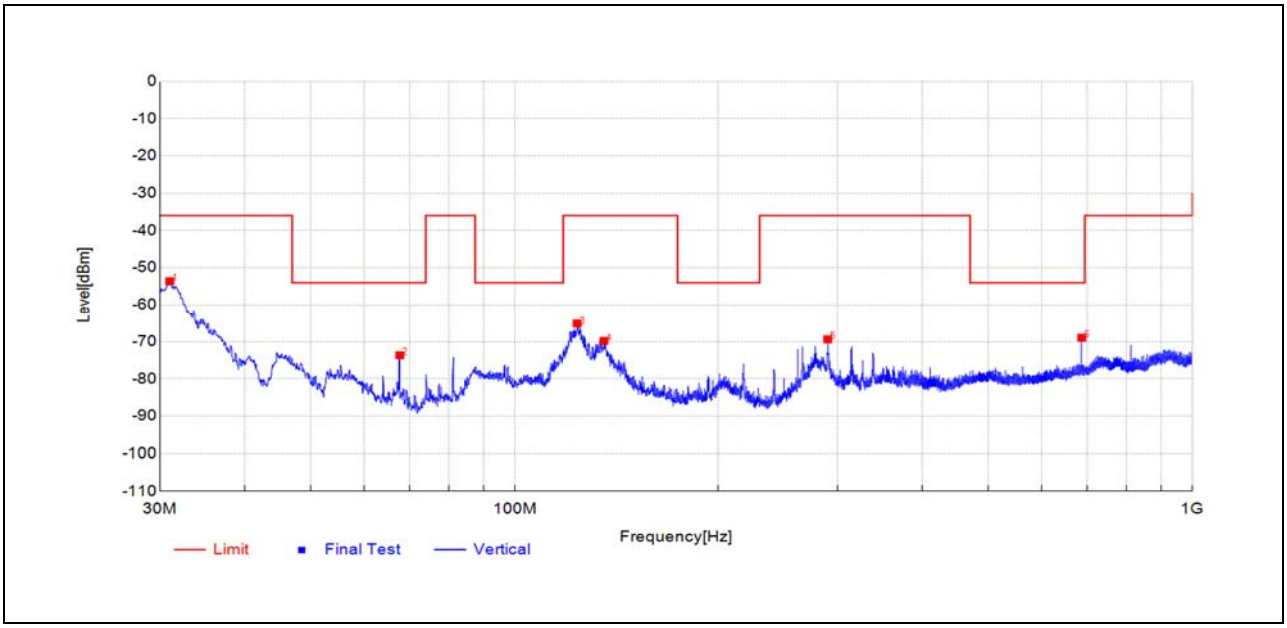

(Antenna Horizontal, 30MHz to 1GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 30.679 | -49.25 | -63.10 | -13.9 | -36.0 | 27.1 | Horizontal | PK | PASS |
| 81.3641 | -51.82 | -73.37 | -21.6 | -36.0 | 37.4 | Horizontal | PK | PASS |
| 242.0526 | -61.79 | -71.47 | -9.7 | -36.0 | 35.5 | Horizontal | PK | PASS |
| 290.555 | -52.05 | -68.24 | -16.2 | -36.0 | 32.2 | Horizontal | PK | PASS |
| 631.3331 | -67.81 | -72.82 | -5.0 | -54.0 | 18.8 | Horizontal | PK | PASS |
| 687.5474 | -62.06 | -72.03 | -10.0 | -54.0 | 18.0 | Horizontal | PK | PASS |



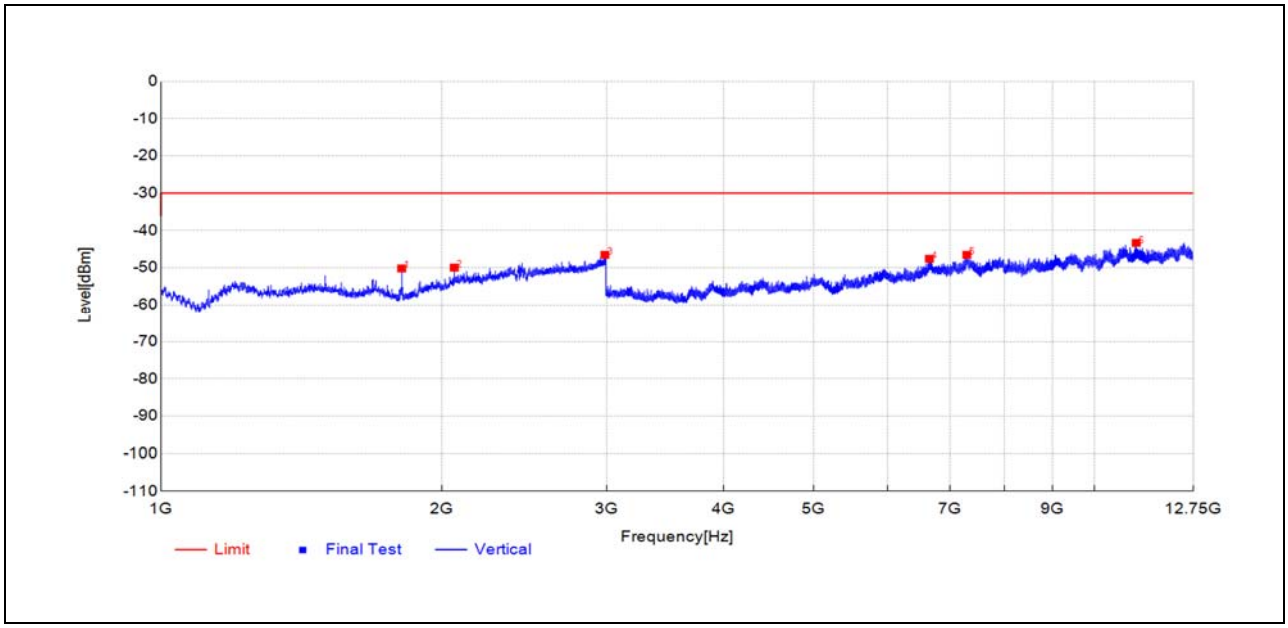

(Antenna Horizontal, 1GHz to 12.75GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1812.5625 | -56.23 | -49.11 | 7.1 | -30.0 | 19.1 | Horizontal | PK | PASS |
| 2062.6125 | -58.47 | -47.93 | 10.5 | -30.0 | 17.9 | Horizontal | PK | PASS |
| 2402.2805 | -58.37 | -46.48 | 11.9 | -30.0 | 16.5 | Horizontal | PK | PASS |
| 2998.3997 | -60.92 | -46.68 | 14.2 | -30.0 | 16.7 | Horizontal | PK | PASS |
| 7318.4909 | -54.08 | -46.21 | 7.9 | -30.0 | 16.2 | Horizontal | PK | PASS |
| 9034.5767 | -52.86 | -44.66 | 8.2 | -30.0 | 14.7 | Horizontal | PK | PASS |




(Antenna Vertical, 30MHz to 1GHz)

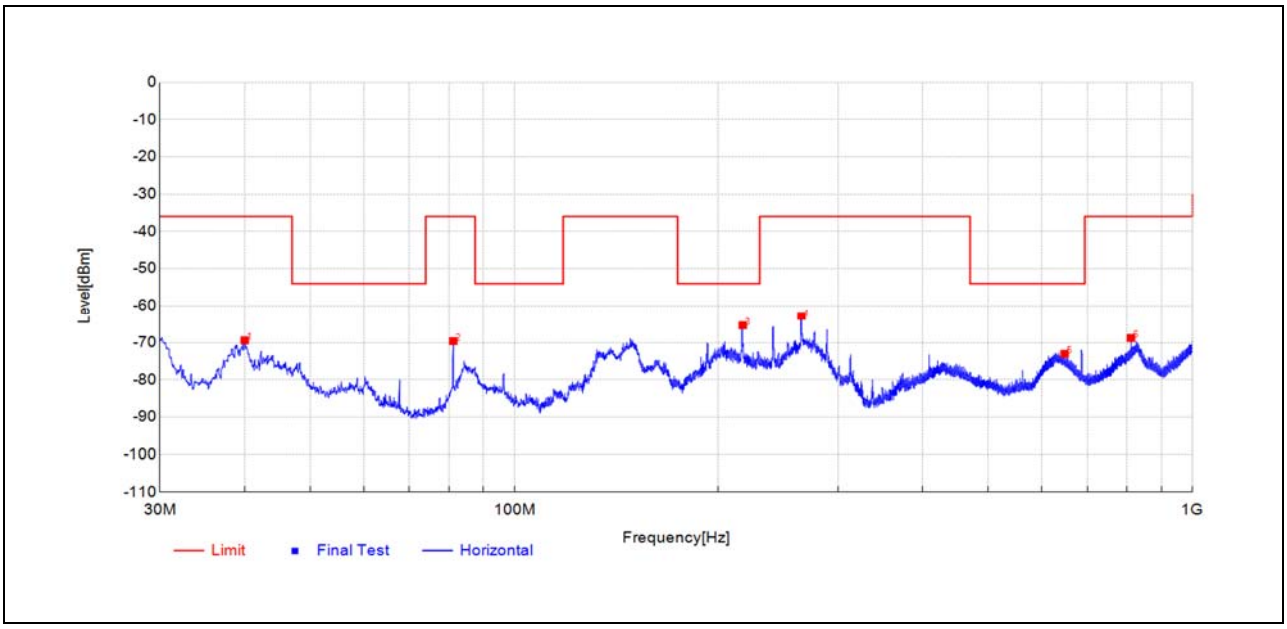
| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 31.0671 | -33.60 | -53.65 | -20.1 | -36.0 | 17.7 | Vertical | PK | PASS |
| 67.7834 | -52.39 | -73.79 | -21.4 | -54.0 | 19.8 | Vertical | PK | PASS |
| 123.9492 | -47.03 | -65.26 | -18.2 | -36.0 | 29.3 | Vertical | PK | PASS |
| 135.6383 | -51.81 | -69.86 | -18.1 | -36.0 | 33.9 | Vertical | PK | PASS |
| 290.264 | -52.26 | -69.43 | -17.2 | -36.0 | 33.4 | Vertical | PK | PASS |
| 687.5474 | -60.80 | -69.09 | -8.3 | -54.0 | 15.1 | Vertical | PK | PASS |




(Antenna Vertical, 1GHz to 12.75GHz)

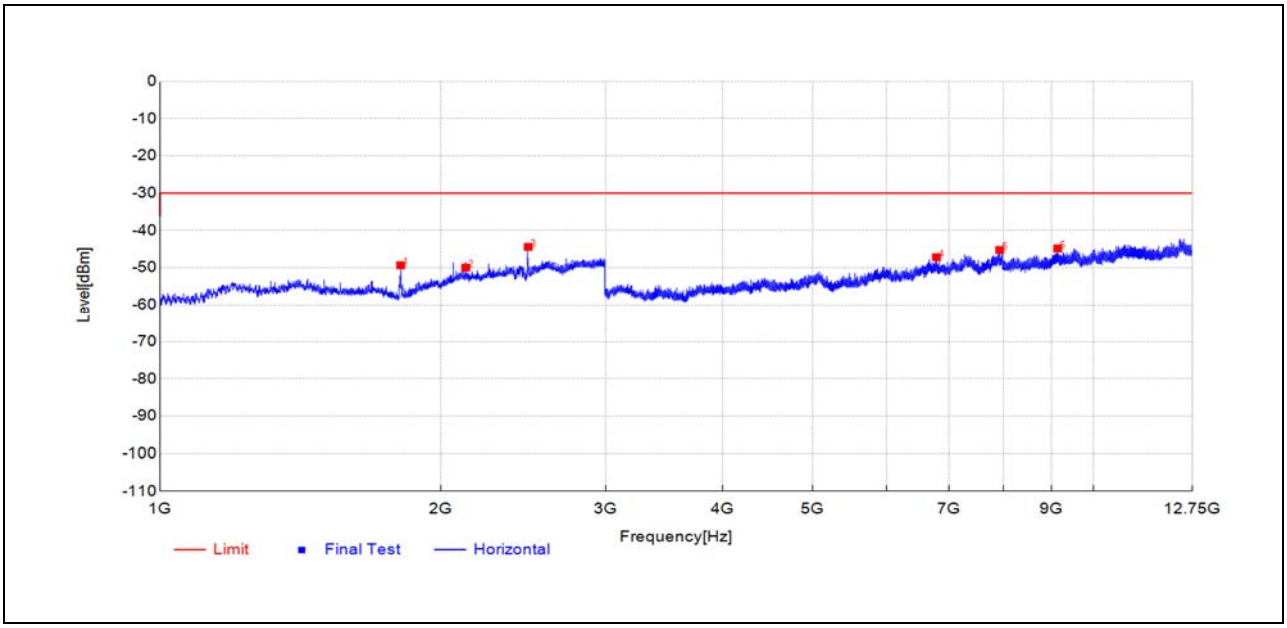
| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1812.5625 | -56.97 | -50.23 | 6.7 | -30.0 | 20.2 | Vertical | PK | PASS |
| 2062.6125 | -59.71 | -49.96 | 9.8 | -30.0 | 20.0 | Vertical | PK | PASS |
| 2985.9972 | -61.19 | -46.59 | 14.6 | -30.0 | 16.6 | Vertical | PK | PASS |
| 6657.8954 | -54.12 | -47.67 | 6.5 | -30.0 | 17.7 | Vertical | PK | PASS |
| 7297.0399 | -54.51 | -46.51 | 8.0 | -30.0 | 16.5 | Vertical | PK | PASS |
| 11069.991 | -55.15 | -43.43 | 11.7 | -30.0 | 13.4 | Vertical | PK | PASS |

**Plot for Channel 39**



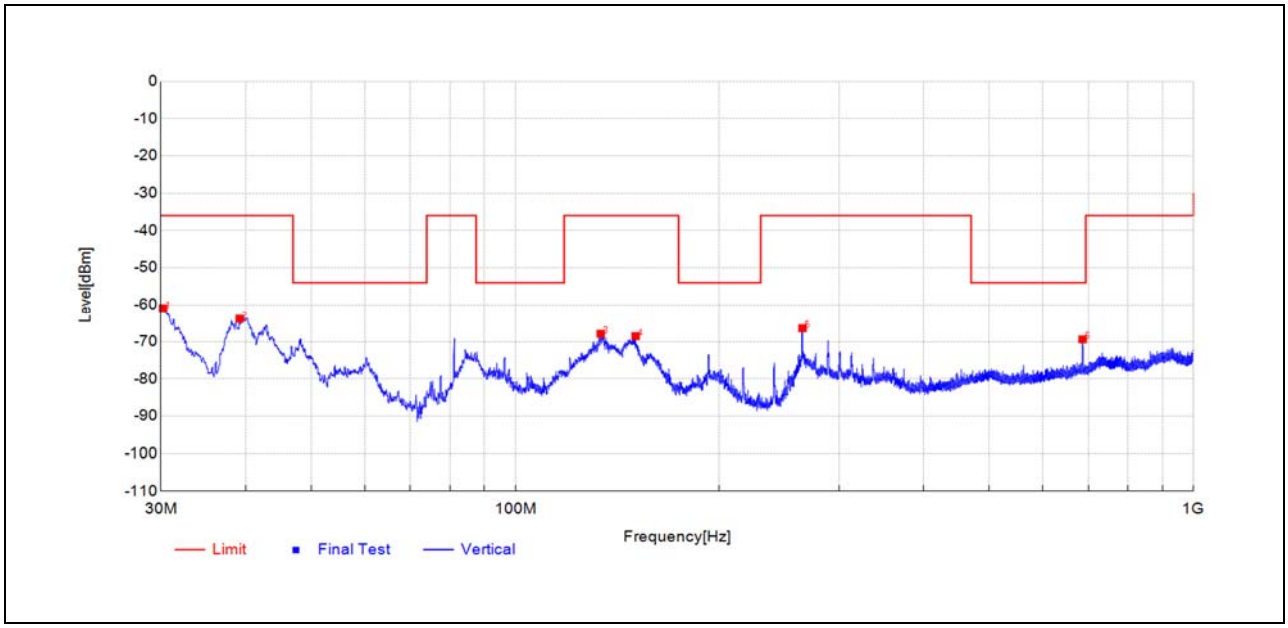

(Antenna Horizontal, 30MHz to 1GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 40.04 | -57.55 | -69.44 | -11.9 | -36.0 | 33.4 | Horizontal | PK | PASS |
| 81.3641 | -48.04 | -69.59 | -21.6 | -36.0 | 33.6 | Horizontal | PK | PASS |
| 216.9283 | -52.26 | -65.34 | -13.1 | -54.0 | 11.3 | Horizontal | PK | PASS |
| 265.3823 | -50.21 | -62.91 | -12.7 | -36.0 | 26.9 | Horizontal | PK | PASS |
| 647.4359 | -67.31 | -73.16 | -5.9 | -54.0 | 19.2 | Horizontal | PK | PASS |
| 812.5381 | -65.12 | -68.73 | -3.6 | -36.0 | 32.7 | Horizontal | PK | PASS |



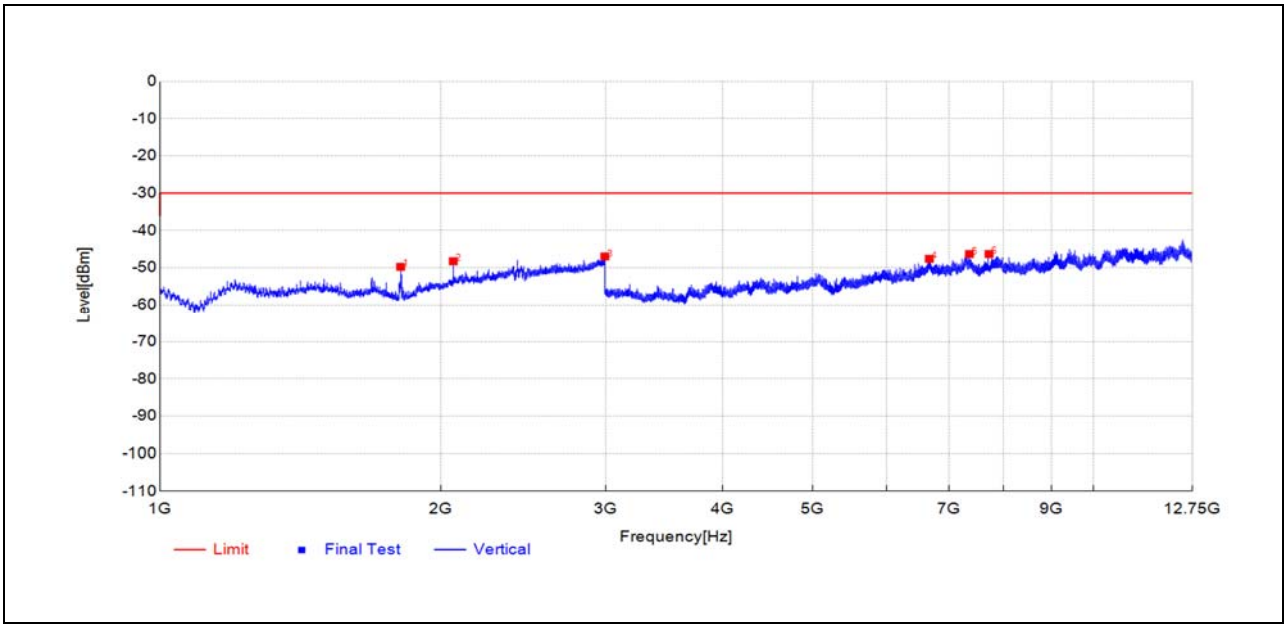

(Antenna Horizontal, 1GHz to 12.75GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1812.5625 | -56.42 | -49.30 | 7.1 | -30.0 | 19.3 | Horizontal | PK | PASS |
| 2124.6249 | -61.16 | -50.04 | 11.1 | -30.0 | 20.0 | Horizontal | PK | PASS |
| 2480.2961 | -56.16 | -44.38 | 11.8 | -30.0 | 14.4 | Horizontal | PK | NA |
| 6781.7266 | -53.59 | -47.16 | 6.4 | -30.0 | 17.2 | Horizontal | PK | PASS |
| 7937.6469 | -52.66 | -45.33 | 7.3 | -30.0 | 15.3 | Horizontal | PK | PASS |
| 9149.6325 | -54.29 | -44.78 | 9.5 | -30.0 | 14.8 | Horizontal | PK | PASS |




(Antenna Vertical, 30MHz to 1GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 30.2425 | -40.89 | -60.99 | -20.1 | -36.0 | 25.0 | Vertical | PK | PASS |
| 39.264 | -47.23 | -63.89 | -16.7 | -36.0 | 27.9 | Vertical | PK | PASS |
| 133.4557 | -49.96 | -67.93 | -18.0 | -36.0 | 31.9 | Vertical | PK | PASS |
| 150.4315 | -50.76 | -68.66 | -17.9 | -36.0 | 32.7 | Vertical | PK | PASS |
| 265.1883 | -47.84 | -66.49 | -18.7 | -36.0 | 30.5 | Vertical | PK | PASS |
| 687.5474 | -61.20 | -69.49 | -8.3 | -54.0 | 15.5 | Vertical | PK | PASS |




(Antenna Vertical, 1GHz to 12.75GHz)

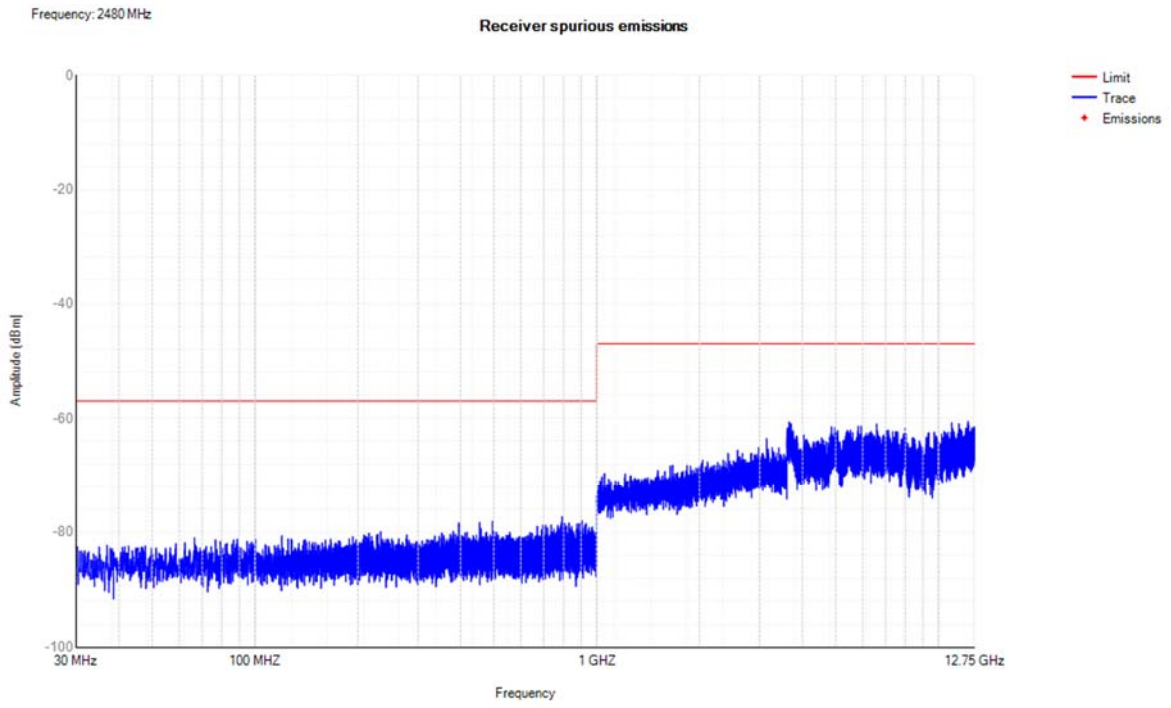
| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1812.5625 | -56.47 | -49.73 | 6.7 | -30.0 | 19.7 | Vertical | PK | PASS |
| 2062.6125 | -57.99 | -48.24 | 9.8 | -30.0 | 18.2 | Vertical | PK | PASS |
| 2993.5987 | -61.72 | -47.05 | 14.7 | -30.0 | 17.1 | Vertical | PK | PASS |
| 6662.7706 | -54.11 | -47.65 | 6.5 | -30.0 | 17.7 | Vertical | PK | PASS |
| 7367.2434 | -53.64 | -46.43 | 7.2 | -30.0 | 16.4 | Vertical | PK | PASS |
| 7716.3108 | -52.32 | -46.40 | 5.9 | -30.0 | 16.4 | Vertical | PK | PASS |

## A.6. Receiver spurious emissions

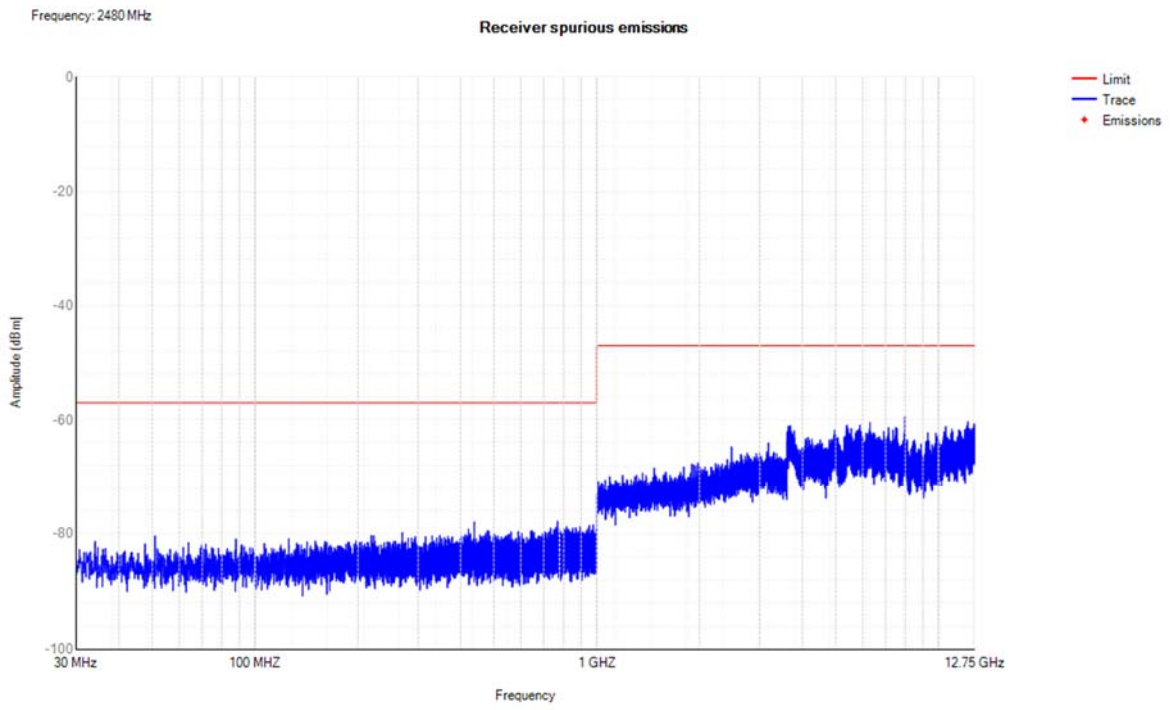
### a) Conducted measurement

| Condition | Mode | Frequency (MHz) | Antenna | Range (MHz) | Spur Freq (MHz) | Peak (dBm) | RMS (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | BLE 1M | 2480 | Ant1 | 30 -1000 | 792.45 | -77.29 | NA | -57 | Pass |
| NVNT | BLE 1M | 2480 | Ant1 | 1000 - 12750 | 12204 | -60.54 | NA | -47 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 30 -1000 | 767.7 | -77.86 | NA | -57 | Pass |
| NVNT | BLE 2M | 2480 | Ant1 | 1000 - 12750 | 7979.5 | -59.47 | NA | -47 | Pass |

| Test Graphs |
| --- |
| Rx. Spurious NVNT BLE 1M 2480MHz Ant1 |




| Rx. Spurious NVNT BLE 2M 2480MHz Ant1 |
| --- |

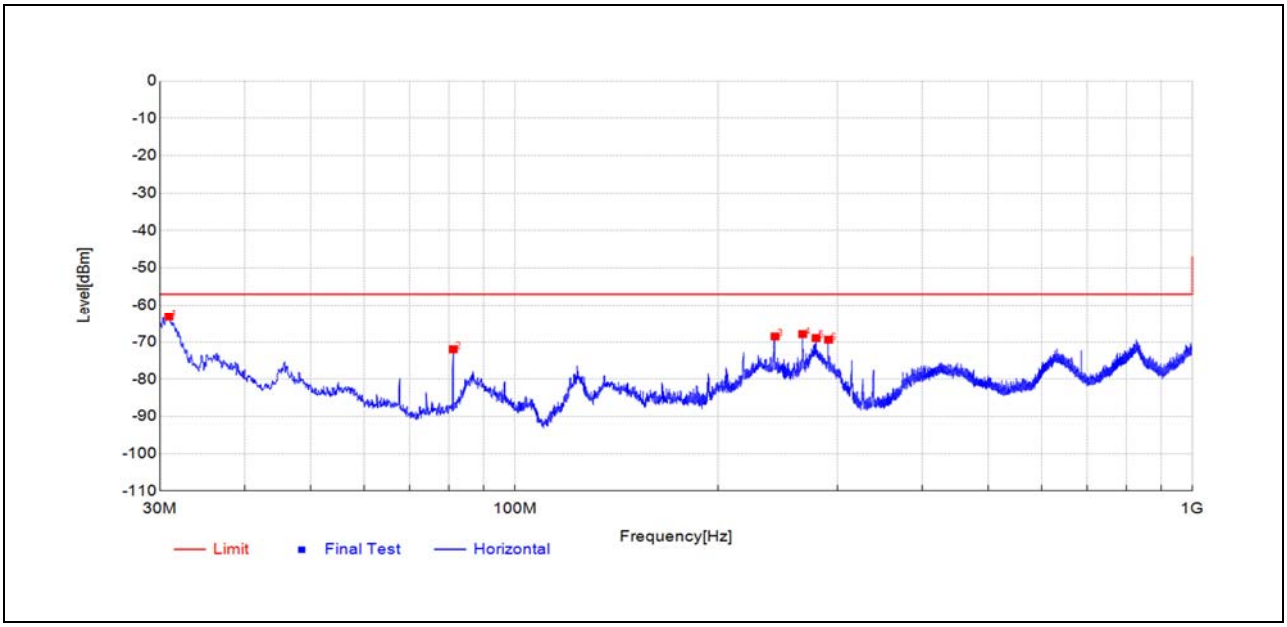


**b) Radiated measurement**

Below is the worst case situation test data:

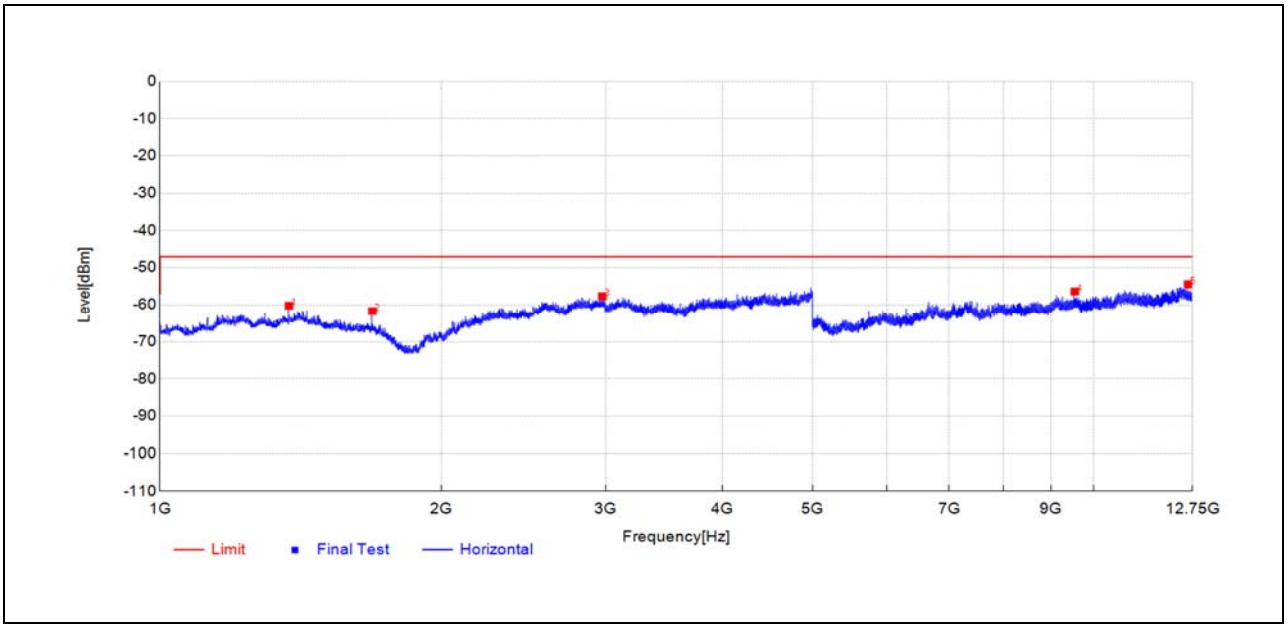
**1Mbps**

**Plot for Channel 0**



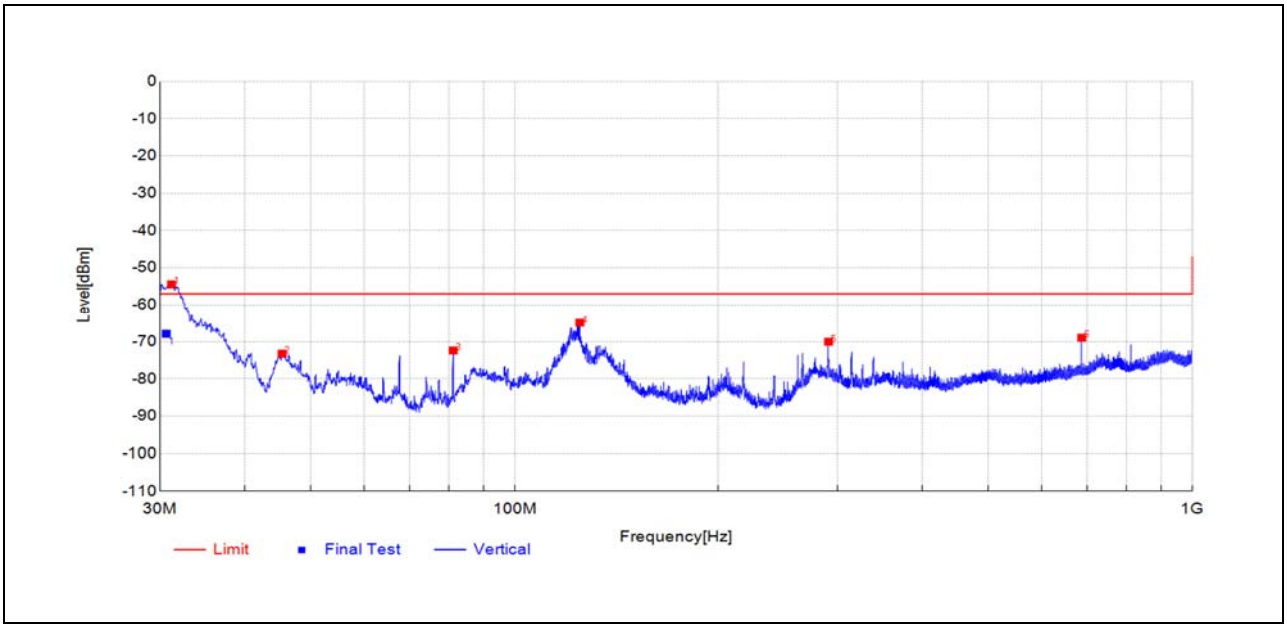

(Antenna Horizontal, 30MHz to 1GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 30.97 | -49.31 | -63.16 | -13.9 | -57.0 | 6.2 | Horizontal | PK | PASS |
| 81.3641 | -50.38 | -71.93 | -21.6 | -57.0 | 14.9 | Horizontal | PK | PASS |
| 242.1496 | -58.81 | -68.51 | -9.7 | -57.0 | 11.5 | Horizontal | PK | PASS |
| 266.4008 | -55.22 | -68.03 | -12.8 | -57.0 | 11.0 | Horizontal | PK | PASS |
| 278.8174 | -54.90 | -69.03 | -14.1 | -57.0 | 12.0 | Horizontal | PK | PASS |
| 290.458 | -53.35 | -69.53 | -16.2 | -57.0 | 12.5 | Horizontal | PK | PASS |



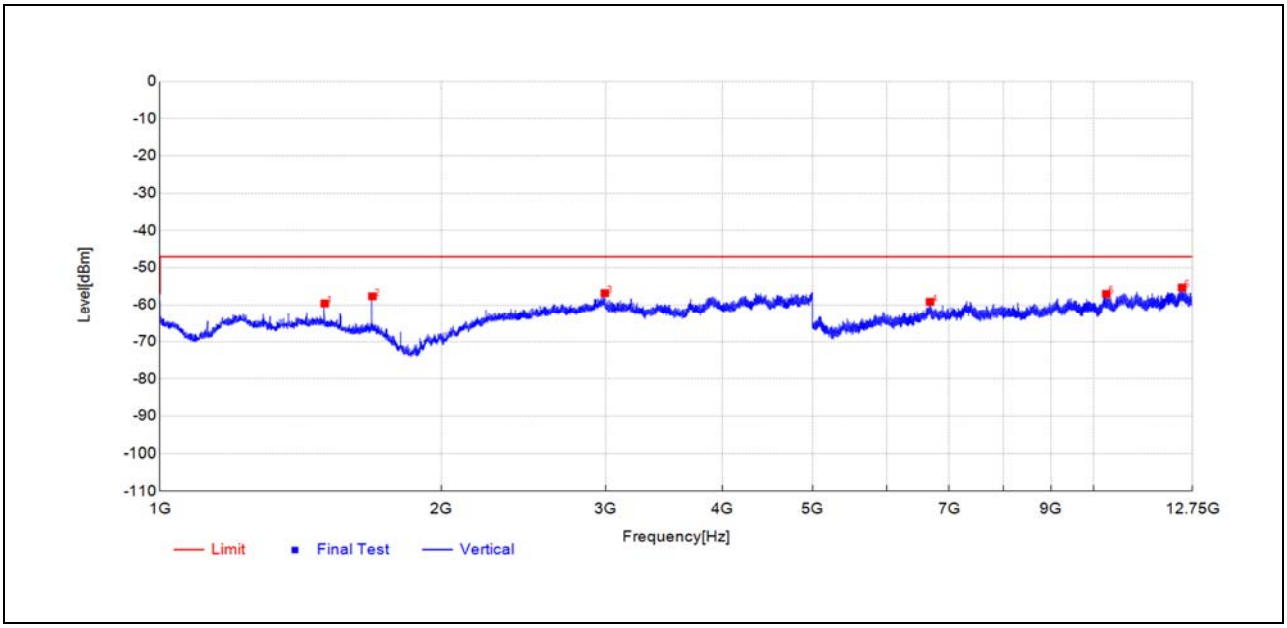

(Antenna Horizontal, 1GHz to 12.75GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1375.2751 | -49.80 | -60.31 | -10.5 | -47.0 | 13.3 | Horizontal | RMS | PASS |
| 1687.7375 | -50.60 | -61.77 | -11.2 | -47.0 | 14.8 | Horizontal | RMS | PASS |
| 2978.7958 | -52.63 | -57.70 | -5.1 | -47.0 | 10.7 | Horizontal | RMS | PASS |
| 9536.7268 | -66.15 | -56.38 | 9.8 | -47.0 | 9.4 | Horizontal | RMS | PASS |
| 12606.667 | -68.78 | -54.38 | 14.4 | -47.0 | 7.4 | Horizontal | RMS | PASS |




(Antenna Vertical, 30MHz to 1GHz)

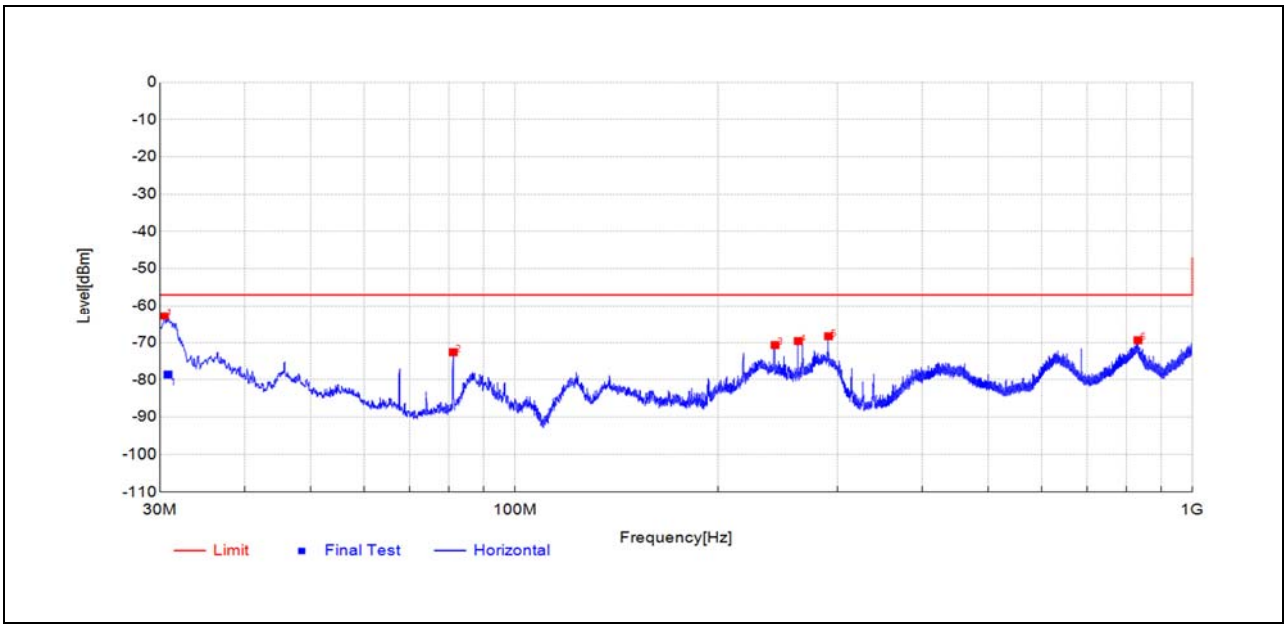
| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 31.2126 | -34.54 | -54.53 | -20.0 | -57.0 | -2.5 | Vertical | PK | / |
| 30.6575 | -47.90 | -67.89 | -20.0 | -57.00 | 10.89 | Vertical | RMS | PASS |
| 45.4723 | -57.64 | -73.23 | -15.6 | -57.0 | 16.2 | Vertical | PK | PASS |
| 81.3641 | -48.99 | -72.39 | -23.4 | -57.0 | 15.4 | Vertical | PK | PASS |
| 124.9677 | -46.85 | -65.03 | -18.2 | -57.0 | 8.0 | Vertical | PK | PASS |
| 290.5065 | -53.03 | -70.19 | -17.2 | -57.0 | 13.2 | Vertical | PK | PASS |
| 687.5474 | -60.69 | -68.98 | -8.3 | -57.0 | 12.0 | Vertical | PK | PASS |




(Antenna Vertical, 1GHz to 12.75GHz)

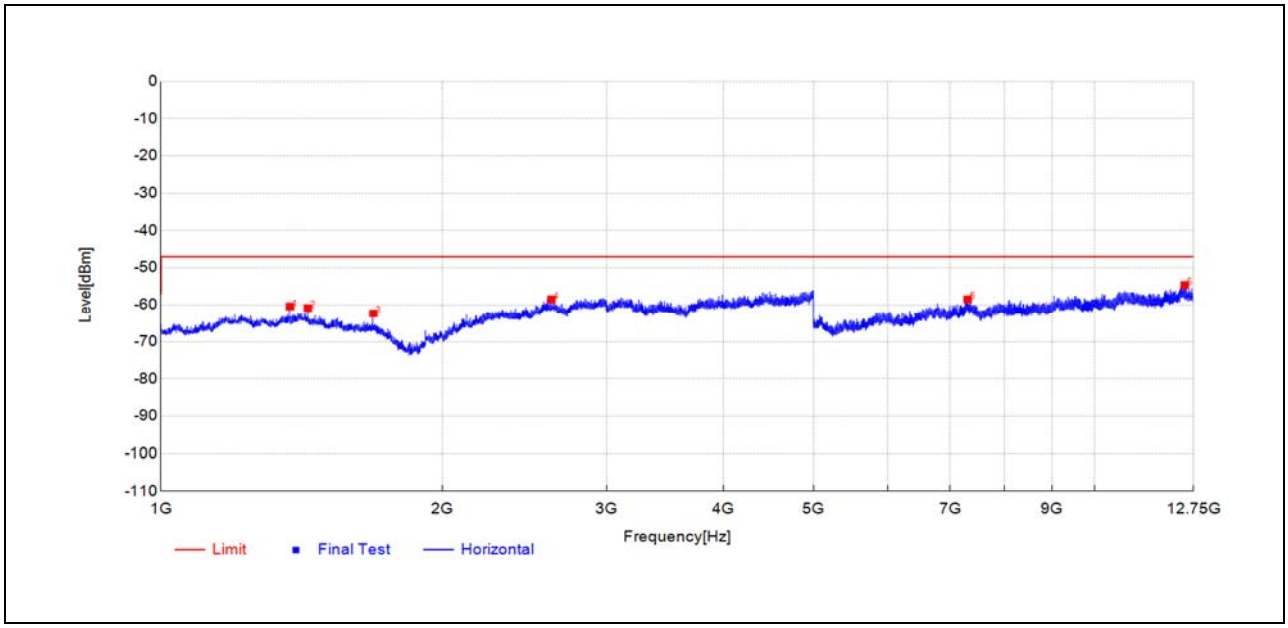
| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1500.1 | -48.62 | -59.63 | -11.0 | -47.0 | 12.6 | Vertical | RMS | PASS |
| 1687.7375 | -46.42 | -57.68 | -11.3 | -47.0 | 10.7 | Vertical | RMS | PASS |
| 2996.3993 | -52.35 | -56.87 | -4.5 | -47.0 | 9.9 | Vertical | RMS | PASS |
| 6685.1968 | -65.65 | -59.12 | 6.5 | -47.0 | 12.1 | Vertical | RMS | PASS |
| 10309.940 | -66.99 | -57.07 | 9.9 | -47.0 | 10.1 | Vertical | RMS | PASS |
| 12440.909 | -69.33 | -55.32 | 14.0 | -47.0 | 8.3 | Vertical | RMS | PASS |

**Plot for Channel 39**



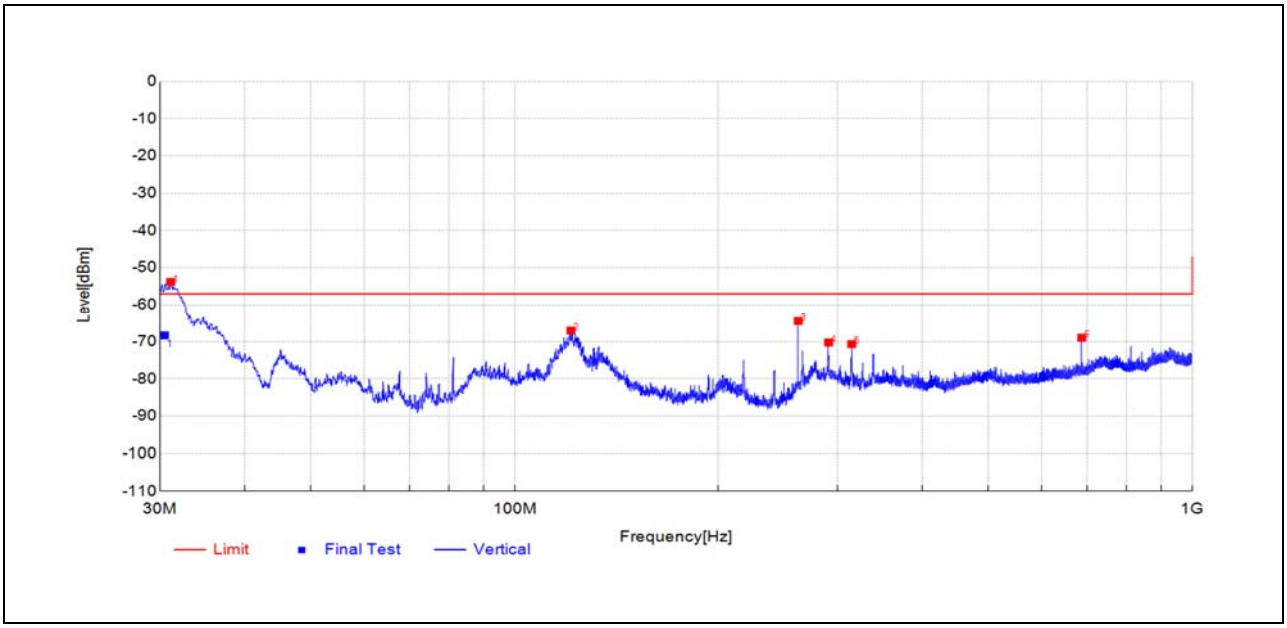

(Antenna Horizontal, 30MHz to 1GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 30.485 | -48.96 | -62.80 | -13.8 | -57.0 | 5.8 | Horizontal | PK | PASS |
| 30.8675 | -64.78 | -78.62 | -13.8 | -57.00 | 21.62 | Horizontal | RMS | PASS |
| 81.3641 | -51.11 | -72.66 | -21.6 | -57.0 | 15.7 | Horizontal | PK | PASS |
| 242.1011 | -61.02 | -70.71 | -9.7 | -57.0 | 13.7 | Horizontal | PK | PASS |
| 262.1326 | -57.40 | -69.74 | -12.3 | -57.0 | 12.7 | Horizontal | PK | PASS |
| 290.555 | -52.28 | -68.47 | -16.2 | -57.0 | 11.5 | Horizontal | PK | PASS |
| 830.581 | -67.64 | -69.47 | -1.8 | -57.0 | 12.5 | Horizontal | PK | PASS |



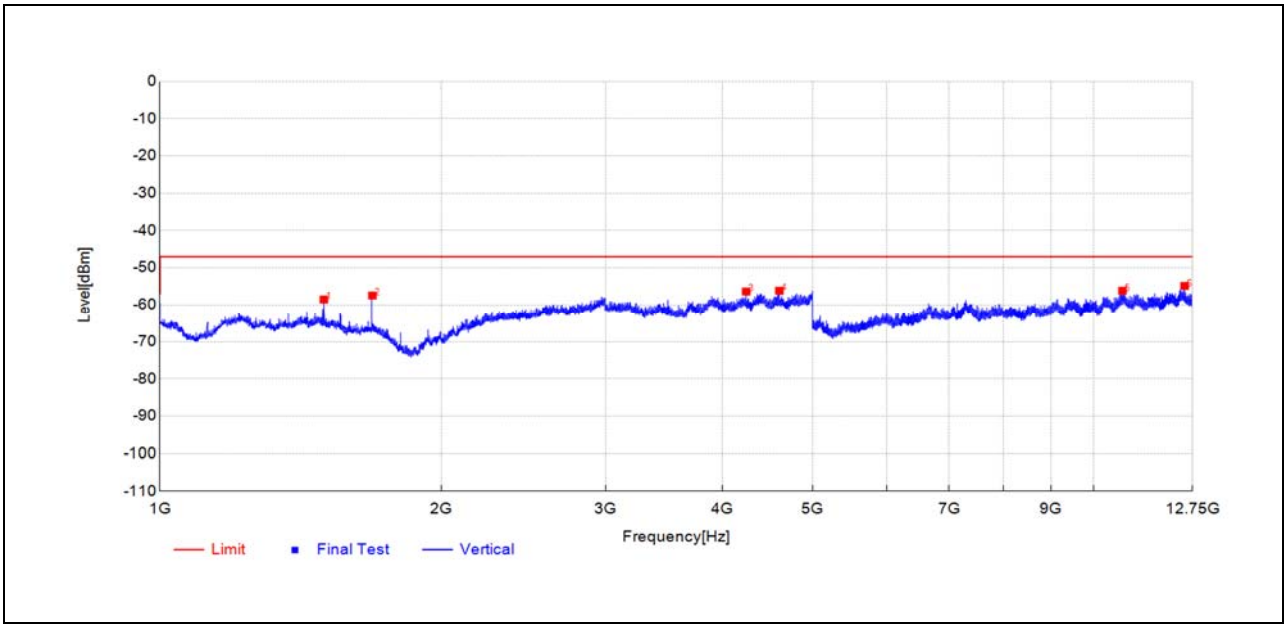

(Antenna Horizontal, 1GHz to 12.75GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1374.875 | -50.05 | -60.57 | -10.5 | -47.0 | 13.6 | Horizontal | RMS | PASS |
| 1437.6875 | -50.56 | -60.88 | -10.3 | -47.0 | 13.9 | Horizontal | RMS | PASS |
| 1687.7375 | -51.15 | -62.32 | -11.2 | -47.0 | 15.3 | Horizontal | RMS | PASS |
| 2619.1238 | -52.75 | -58.56 | -5.8 | -47.0 | 11.6 | Horizontal | RMS | PASS |
| 7309.228 | -66.43 | -58.45 | 8.0 | -47.0 | 11.5 | Horizontal | RMS | PASS |
| 12486.736 | -69.20 | -54.66 | 14.5 | -47.0 | 7.7 | Horizontal | RMS | PASS |




(Antenna Vertical, 30MHz to 1GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 31.1641 | -33.89 | -53.90 | -20.0 | -57.0 | -3.1 | Vertical | PK | / |
| 30.4725 | -48.47 | -68.48 | -20.0 | -57.00 | 11.48 | Vertical | RMS | PASS |
| 121.0876 | -48.80 | -67.14 | -18.3 | -57.0 | 10.1 | Vertical | PK | PASS |
| 262.1326 | -45.76 | -64.56 | -18.8 | -57.0 | 7.6 | Vertical | PK | PASS |
| 290.555 | -53.22 | -70.37 | -17.2 | -57.0 | 13.4 | Vertical | PK | PASS |
| 314.8062 | -55.72 | -70.75 | -15.0 | -57.0 | 13.8 | Vertical | PK | PASS |
| 687.5474 | -60.66 | -68.95 | -8.3 | -57.0 | 12.0 | Vertical | PK | PASS |




(Antenna Vertical, 1GHz to 12.75GHz)

| Frequency [MHz] | Reading [dBm] | Level [dBm] | Factor [dB] | Limit [dBm] | Margin [dB] | Polarity | Detector | Verdict |
|---|---|---|---|---|---|---|---|---|
| 1498.8998 | -47.45 | -58.46 | -11.0 | -47.0 | 11.5 | Vertical | RMS | PASS |
| 1687.7375 | -46.25 | -57.51 | -11.3 | -47.0 | 10.5 | Vertical | RMS | PASS |
| 4244.6497 | -55.07 | -56.36 | -1.3 | -47.0 | 9.4 | Vertical | RMS | PASS |
| 4610.293 | -55.68 | -56.18 | -0.5 | -47.0 | 9.2 | Vertical | RMS | PASS |
| 10731.161 | -67.67 | -56.28 | 11.4 | -47.0 | 9.3 | Vertical | RMS | PASS |
| 12506.237 | -68.86 | -55.01 | 13.9 | -47.0 | 8.0 | Vertical | RMS | PASS |

## A.7. Receiver Blocking

**Test Result**

**Note:** The EUT operate in normal link mode.

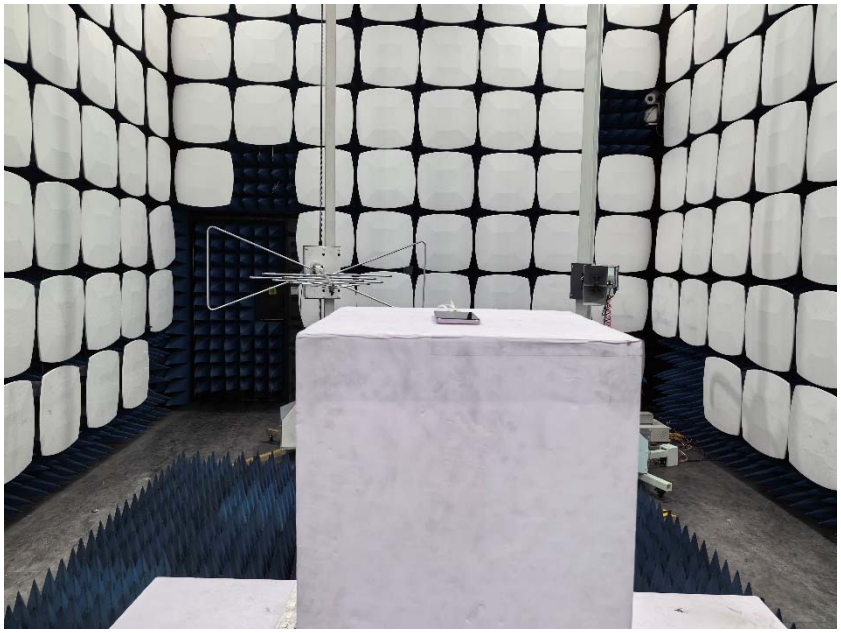
| Channel 1, 2402MHz | | | | | | |
|---|---|---|---|---|---|---|
| Receiver Blocking parameters for Receiver Category 2 equipment | | | | | | |
| Wanted Signal Mean Power from Companion Device (dBm) (see Note 1) | Blocking signal frequency (MHz) | Type of blocking signal | Performance Criteria | Blocking signal power(dBm) (see note 2) | | Verdict |
| | | | | Test Value | Limit | |
| -68.92 | 2380 | CW | PER≤10% | 1 | ≥-34 | PASS |
| | 2504 | | | 2 | | PASS |
| | 2300 | | | 0 | | PASS |
| | 2584 | | | 1 | | PASS |
| Note 1: The wanted signal mean power from companion device is equal to "-139dBm+10log$_{10}$(OCBW)+10dB" or "-74dBm+10dB", whichever is less, OCBW is in Hz.<br>Note 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain. | | | | | | |

| Channel 39, 2480MHz | | | | | | |
|---|---|---|---|---|---|---|
| Receiver Blocking parameters for Receiver Category 2 equipment | | | | | | |
| Wanted Signal Mean Power from Companion Device (dBm) (see Note 1) | Blocking signal frequency (MHz) | Type of blocking signal | Performance Criteria | Blocking signal power(dBm) (see note 2) | | Verdict |
| | | | | Test Value | Limit | |
| -68.93 | 2380 | CW | PER≤10% | 1 | ≥-34 | PASS |
| | 2504 | | | -2 | | PASS |
| | 2300 | | | 0 | | PASS |
| | 2584 | | | 0 | | PASS |
| Note 1: The wanted signal mean power from companion device is equal to "-139dBm+10log$_{10}$(OCBW)+10dB" or "-74dBm+10dB", whichever is less, OCBW is in Hz.<br>Note 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain. | | | | | | |

# Annex B Photographs of Test Setup

## B.1. Conducted

## B.2. Radiated



# Annex C Application Form for Testing

## C.1. Introduction

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the application form pro forma in this annex so that it can be used for its intended purposes and may further publish the completed application form.
The form contained in this annex may be used by the manufacturer to comply with the requirement contained in clause 5.4.1 to provide the necessary information about the equipment to the test laboratory prior to the testing. It contains product information as well as other information which might be required to define which configurations are to be tested, which tests are to be performed as well the test conditions.
This application form should form an integral part of the test report.

## C.2. Information as required by ETSI EN 300 328 V2.2.2, clause 5.4.1

In accordance with ETSI EN 300 328, clause 5.4.1, the following information is provided by the manufacturer.

**a) The type of modulation used by the equipment:**

☐FHSS

☒Other forms of modulation

**b) In case of FHSS modulation:**

• In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies: ……..

• In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies: ……..

The minimum number of Hopping Frequencies: ……..

• The (average) Dwell Time: ……..

**c) Adaptive / non-adaptive equipment:**

☒non-adaptive Equipment

☐adaptive Equipment without the possibility to switch to a non-adaptive mode

☐adaptive Equipment which can also operate in a non-adaptive mode

**d) In case of adaptive equipment:**

The maximum Channel Occupancy Time implemented by the equipment: N/A ms

☐The equipment has implemented an LBT based DAA mechanism

• In case of equipment using modulation different from FHSS:

☐The equipment is Frame Based equipment

☐The equipment is Load Based equipment

☐The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: N/A μs

☐The equipment has implemented a non-LBT based DAA mechanism

☐The equipment can operate in more than one adaptive mode

**e) In case of non-adaptive Equipment:**

The maximum RF Output Power (e.i.r.p.): 3.84dBm

The maximum (corresponding) Duty Cycle: N/A %

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):N/A

**f) The worst case operational mode for each of the following tests:**

• RF Output Power: GFSK

• Power Spectral Density: GFSK

• Duty cycle, Tx-Sequence, Tx-gap: N/A

• Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment):N/A

•Hopping Frequency Separation (only for FHSS equipment) : N/A

• Medium Utilisation: N/A

• Adaptivity & Receiver Blocking: N/A

• Occupied Channel Bandwidth: GFSK

• Transmitter unwanted emissions in the OOB domain: GFSK

• Transmitter unwanted emissions in the spurious domain: GFSK

• Receiver spurious emissions: GFSK

**g) The different transmit operating modes (tick all that apply):**

☒Operating mode 1: Single Antenna Equipment

☒Equipment with only one antenna

☐Equipment with two diversity antennas but only one antenna active at any moment in time

☐Smart Antenna Systems with two or more antennas, but operating in a (legacy) mode where only one antenna is used (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)

☐Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming

☐Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)

☐High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1

☐High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE 1: Add more lines if more channel bandwidths are supported.

☐Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming

☐Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)

☐High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1

☐High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE 2: Add more lines if more channel bandwidths are supported.

**h) In case of Smart Antenna Systems:**

• The number of Receive chains: .....

• The number of Transmit chains: .....

☐symmetrical power distribution

☐asymmetrical power distribution

In case of beam forming, the maximum (additional) beam forming gain: ..... dB

NOTE: The additional beam forming gain does not include the basic gain of a single antenna.

**i) Operating Frequency Range(s) of the equipment:**

• Operating Frequency Range 1: 2402 MHz to 2480 MHz

NOTE: Add more lines if more Frequency Ranges are supported.

**j) Nominal Channel Bandwidth(s):**

☒• Occupied Channel Bandwidth 1: 1MHz

☒• Occupied Channel Bandwidth 2: 2MHz

NOTE: Add more lines if more channel bandwidths are supported.

**k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):**

☐Stand-alone

☐Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☐Plug-in radio device (Equipment intended for a variety of host systems)

☐Other

**l) The normal and the extreme operating conditions that apply to the equipment:**

**Normal operating conditions (if applicable):**

Operating temperature: 25°C

**Extreme operating conditions:**

Operating temperature range: Minimum: 0°C Maximum 35°C

Details provided are for the:

☒stand-alone equipment

☐combined (or host) equipment

☐test jig

**m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p. levels:**

• Antenna Type:

☒Integral Antenna (information to be provided in case of conducted measurements)

Antenna Gain: 0.2dBi

If applicable, additional beamforming gain (excluding basic antenna gain): ..... dB

☐Temporary RF connector provided

☐No temporary RF connector provided

☐Dedicated Antennas (equipment with antenna connector)

☐Single power level with corresponding antenna(s)

☐Multiple power settings and corresponding antenna(s)

Number of different Power Levels: .....

Power Level 1: ..... dBm
Power Level 2: ..... dBm
Power Level 3: ..... dBm
NOTE 1: Add more lines in case the equipment has more power levels.
NOTE 2: These power levels are conducted power levels (at antenna connector).
• For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

**Power Level 1:** ..... dBm
Number of antenna assemblies provided for this power level: N/A

| Assembly # | Gain (dBi) | e.i.r.p. (dBm) | Part number or model name |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

NOTE3: Add more rows in case more antenna assemblies are supported for this power level.

**Power Level 2:** ..... dBm
Number of antenna assemblies provided for this power level: .....

| Assembly # | Gain (dBi) | e.i.r.p. (dBm) | Part number or model name |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

NOTE4: Add more rows in case more antenna assemblies are supported for this power level.

**Power Level 3:** ..... dBm
Number of antenna assemblies provided for this power level: .....

| Assembly # | Gain (dBi) | e.i.r.p. (dBm) | Part number or model name |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

NOTE5: Add more rows in case more antenna assemblies are supported for this power level.

**n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:**

Details provided are for the:
☒stand-alone equipment
☐combined (or host) equipment
☐test jig
Supply Voltage:

☐AC mains State AC voltage N/A V
☒DC State DC voltage 3.88V
In case of DC, indicate the type of power source:
☐Internal Power Supply
☐External Power Supply or AC/DC adapter
☒Battery
☐Other: .....

**o) Describe the test modes available which can facilitate testing:**
Use special software to control the EUT transmit or receiver.

**p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], IEEE 802.15.4™ [i.4], proprietary, etc.):** Bluetooth

**q) If applicable, the statistical analysis referred to in clause 5.4.1 q)**
(to be provided as separate attachment)

**r) If applicable, the statistical analysis referred to in clause 5.4.1 r)**
(to be provided as separate attachment)

**s) Geo-location capability supported by the equipment:**
☐Yes
☐The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user
☒No

**C.3: Configuration for testing (see clause 5.3.2.3 of ETSI EN 300 328 V2.2.2)**
From all combinations of conducted power settings and intended antenna assembly(ies) specified in clause 5.4.1 m), specify the combination resulting in the highest e.i.r.p. for the radio equipment. Unless otherwise specified in ETSI EN 300 328, this power setting is to be used for testing against the requirements of ETSI EN 300 328. In case there is more than one such conducted power setting resulting in the same (highest) e.i.r.p. level, the highest power setting is to be used for testing. See also ETSI EN 300 328, clause 5.3.2.3.

| | |
|---|---|
| Highest overall e.i.r.p. value: 3.84dBm | |
| Corresponding Antenna assembly gain: 0.2dBi | Antenna Assembly #: N/A |
| Corresponding conducted power setting: N/A dBm (also the power level to be used for testing) | Listed as Power Setting #: Max Power Setting |

**C.4 Additional information provided by the applicant**

**C.4.1 Modulation**
ITU Class(es) of emission: .....
Can the transmitter operate unmodulated? ☐yes ☑no

**C.4.2 Duty Cycle**
The transmitter is intended for:
☒ Continuous duty
☐Intermittent duty

☐Continuous operation possible for testing purposes

**C.4.3 About the UUT**

☒The equipment submitted are representative production models

☐If not, the equipment submitted are pre-production models?

☐If pre-production equipment are submitted, the final production equipment will be identical in all respects with the equipment tested

☐If not, supply full details

**C.4.4 Additional items and/or supporting equipment provided**

☐Spare batteries (e.g. for portable equipment)

☒Battery charging device

☐External Power Supply or AC/DC adapter

☐Test jig or interface box

☐RF test fixture (for equipment with integrated antennas)

☒Host System Manufacturer: Realme Chongqing Mobile Telecommunications Corp., Ltd.
Model #: N/A
Model name: RMX5303

☐Combined equipment Manufacturer: .....
Model #: .....
Model name: .....

☒User Manual

☒Technical documentation (Handbook and circuit diagrams)

END OF REPORT