# FCC TEST REPORT

# FCC ID:2ALS7CN2

| | | |
|---|---|---|
| Product Name | : | Disco-Ball Speaker |
| Model Name | : | CN2, W1, W2, KBT100, KBT-100-ASST, KBT-100-FR |
| Brand Name | : | iDance, EARISE, iSing |
| Report No. | : | PTC-DQ-01170610302-FC01 |

## Prepared for

Dongguan City MeiZhiZun Electronics Technology Co.,Ltd

No. 33, Hehe Road,XiangxiVillage,LiaobuTown,Dongguan ,Guangdong.China

## Prepared by

DongGuan Precise Testing Service Co.,Ltd.

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# 1TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant's name | : | Dongguan City MeiZhiZun Electronics Technology Co.,Ltd |
| Address | : | No. 33, Hehe Road,Xiangxi Village, Liaobu Town, Dongguan, Guangdong, China |
| Manufacture's name | : | Dongguan City MeiZhiZun Electronics Technology Co.,Ltd |
| Address | : | No. 33, Hehe Road,Xiangxi Village, Liaobu Town, Dongguan, Guangdong, China |
| Product name | : | Disco-Ball Speaker |
| Model name | : | CN2, W1, W2, KBT100, KBT-100-ASST, KBT-100-FR |
| Brand Name | : | iDance, EARISE, iSing |
| Standards | : | FCC CFR47 Part 15 Section 15.247 |
| Test procedure | : | ANSI C63.10:2013 |
| Test Date | : | June 16, 2017 to June 26. 2017 |
| Date of Issue | : | July 07, 2017 |
| Test Result | : | Pass |

This device described above has been tested by PTS, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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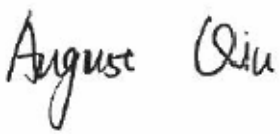
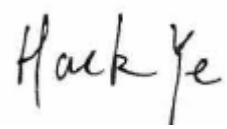
Testing Engineer

August Qiu



Technical Manager

Hack Ye



Authorized Signatory

Chris Du

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## 2 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Radiated Spurious Emissions | 15.205(a)<br>15.209<br>15.247(d) | PASS |
| Band edge | 15.247(d)<br>15.205(a) | PASS |
| Conduct Emission | 15.207 | PASS |
| 20dB Bandwidth | 15.247(a)(1) | PASS |
| Maximum Peak Output Power | 15.247(b)(1) | PASS |
| Frequency Separation | 15.247(a)(1) | PASS |
| Number of Hopping Frequency | 15.247(a)(1)(iii) | PASS |
| Dwell time | 15.247(a)(1)(iii) | PASS |
| Antenna Requirement | 15.203 | PASS |

Remark:

N/A: Not Applicable

# 3 General Information

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

| | | |
|---|---|---|
| Product Name | : | Disco-Ball Speaker |
| Model Name | : | CN2, W1, W2, KBT100, KBT-100-ASST, KBT-100-FR |
| Model Description | | Except for decorative parts in front panels, color of enclosure, are the trade mark and model no. for trading purpose. |
| Bluetooth Version | : | BT4.1+EDR |
| Operating frequency | : | 2402-2480MHz |
| Numbers of Channel | : | 79 channels |
| Antenna Type | : | PCB Print Antenna |
| Antenna Gain | : | 0dBi |
| Type of Modulation | : | GFSK, Pi/4DQPSK, 8DPSK |
| Power supply for Test | : | Battery charging DC 5V, Li-ion Battery cell 3.7V/1200mAh |

## 3.2 Channel List

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| 0 | 2402 | 1 | 2403 | 2 | 2404 | 3 | 2405 |
| 4 | 2406 | 5 | 2407 | 6 | 2408 | 7 | 2409 |
| 8 | 2410 | 9 | 2411 | 10 | 2412 | 11 | 2413 |
| 12 | 2414 | 13 | 2415 | 14 | 2416 | 15 | 2417 |
| 16 | 2418 | 17 | 2419 | 18 | 2420 | 19 | 2421 |
| 20 | 2422 | 21 | 2423 | 22 | 2424 | 23 | 2425 |
| 24 | 2426 | 25 | 2427 | 26 | 2428 | 27 | 2429 |
| 28 | 2430 | 29 | 2431 | 30 | 2432 | 31 | 2433 |
| 32 | 2434 | 33 | 2435 | 34 | 2436 | 35 | 2437 |
| 36 | 2438 | 37 | 2439 | 38 | 2440 | 39 | 2441 |
| 40 | 2442 | 41 | 2443 | 42 | 2444 | 43 | 2445 |
| 44 | 2446 | 45 | 2447 | 46 | 2448 | 47 | 2449 |
| 48 | 2450 | 49 | 2451 | 50 | 2452 | 51 | 2453 |
| 52 | 2454 | 53 | 2455 | 54 | 2456 | 55 | 2457 |
| 56 | 2458 | 57 | 2459 | 58 | 2460 | 59 | 2461 |
| 60 | 2462 | 61 | 2463 | 62 | 2464 | 63 | 2465 |
| 64 | 2466 | 65 | 2467 | 66 | 2468 | 67 | 2469 |
| 68 | 2470 | 69 | 2471 | 70 | 2472 | 71 | 2473 |
| 72 | 2474 | 73 | 2475 | 74 | 2476 | 75 | 2477 |
| 76 | 2478 | 77 | 2479 | 78 | 2480 | - | - |

## 3.3 Test Mode

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

| **Test mode** | **Low channel** | **Middle channel** | **High channel** |
|---|---|---|---|
| Transmitting | 2402MHz | 2441MHz | 2480MHz |
| Hopping | 2402-2480MHz | | |
| Tests Carried Out Under FCC part 15.207 | | | |
| Test Item | Test Mode | | |
| Conduction Emission, 0.15MHz to 30MHz | BT Communication | | |

## 3.4 Supported Equipment

| Supported Equipment | Model | FCC ID |
|---|---|---|
| Adapter | Model: PS65B150Y3000S<br>Input: AC100-240V, 50/60Hz, 1.5A<br>Output: DC 5V, 3000mA | N/A |

# 4 Equipment During Test

## 4.1 Equipments List

| RF Conducted Test | | | | | | | |
|---|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until | Calibration period |
| 1 | EMC Analyzer (9k~26.5GHz) | Agilent | E4407B | MY45109572 | Aug.04, 2016 | Aug.03, 2017 | 1 year |
| 2 | EXA Signal Analyzer | Keysight | N9010A | MY50520207 526B25MPB W7X | Aug.04, 2016 | Aug.03, 2017 | 1 year |
| 3 | EMI Test Receiver | R&S | ESCI | 101155 | July 15, 2016 | July 14, 2017 | 1 year |
| 4 | Humidity Chamber | GF | GTH-225-40-1P | IAA061225 | July 15, 2016 | July 14, 2017 | 1 year |
| 5 | USB RF power sensor | DARE | RPR3006W | 15I00041SN O01 | July 15, 2016 | July 14, 2017 | 1 year |
| Radiated Emissions | | | | | | | |
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until | Calibration period |
| 1 | EMI Test Receiver | Rohde&Schwarz | ESCI | 101417 | July 15, 2016 | July 14, 2017 | 1 year |
| 2 | Trilog Broadband Antenna | SCHWARZBECK | VULB9160 | 9160-3355 | July 15, 2016 | July 14, 2017 | 1 year |
| 3 | Amplifier | EM | EM-30180 | 060538 | July 15, 2016 | July 14, 2017 | 1 year |
| 4 | Horn Antenna | SCHWARZBECK | BBHA9120D | 1246 | July 15, 2016 | July 14, 2017 | 1 year |
| 5 | Horn Antenna | SCHWARZBECK | BBHA9170D | 1412 | July 15, 2016 | July 14, 2017 | 1 year |
| 6 | Coaxial Cable(below 1GHz) | LARGE | CALB1 | - | July 15, 2016 | July 14, 2017 | 1 year |
| 7 | Coaxial Cable(above 1GHz) | LARGE | CALB2 | - | July 15, 2016 | July 14, 2017 | 1 year |
| Conducted Emissions | | | | | | | |
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until | Calibration period |
| 1 | EMI Test Receiver | R&S | ESCI | 101155 | July 15, 2016 | July 14, 2017 | 1 year |
| 2 | LISN | SCHWARZBECK | NSLK 8128 | 8128-289 | July 15, 2016 | July 14, 2017 | 1 year |
| 3 | Cable | LARGE | RF300 | - | July 15, 2016 | July 14, 2017 | 1 year |

## 4.2 Measurement Uncertainty

| Parameter | Uncertainty |
|---|---|
| RF output power, conducted | ±1.0dB |
| Power Spectral Density, conducted | ±2.2dB |
| Radio Frequency | ± 1 x $10^{-6}$ |
| Bandwidth | ± 1.5 x $10^{-6}$ |
| Time | ±2% |
| Duty Cycle | ±2% |
| Temperature | ±1°C |
| Humidity | ±5% |
| DC and low frequency voltages | ±3% |
| Conducted Emissions (150kHz~30MHz) | ±3.64dB |
| Radiated Emission(30MHz~1GHz) | ±5.03dB |
| Radiated Emission(1GHz~25GHz) | ±4.74dB |

# 5 Conducted Emission

| | | |
|---|---|---|
| Test Requirement: | : | FCC CFR 47 Part 15 Section 15.207 |
| Test Method: | : | ANSI C63.10:2013 |
| Test Result: | : | PASS |
| Frequency Range: | : | 150kHz to 30MHz |
| Class/Severity: | : | Class B |
| Detector: | : | Peak for pre-scan (9kHz Resolution Bandwidth) |

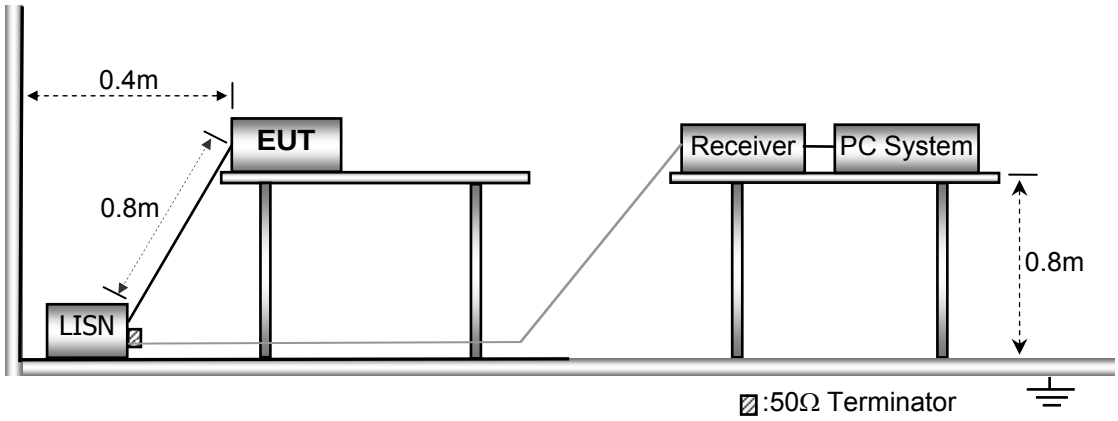
## 5.1 E.U.T. Operation

Operating Environment **:**

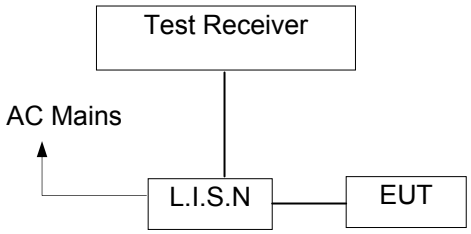
| | | |
|---|---|---|
| Temperature: | : | 25.5 °C |
| Humidity: | : | 51 % RH |
| Atmospheric Pressure: | : | 101.2kPa |
| EUT Operation **:** | : | Refer to section 3.3 |

## 5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013..




## 5.3 Test SET-UP (Block Diagram of Configuration)



## 5.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.

2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

3. Repeat above procedures until all frequency measured was complete.

## 5.5 Conducted Emission Limit

**Conducted Emission**

| Frequency(MHz) | Quasi-peak | Average |
|---|---|---|
| 0.15-0.5 | 66-56 | 56-46 |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

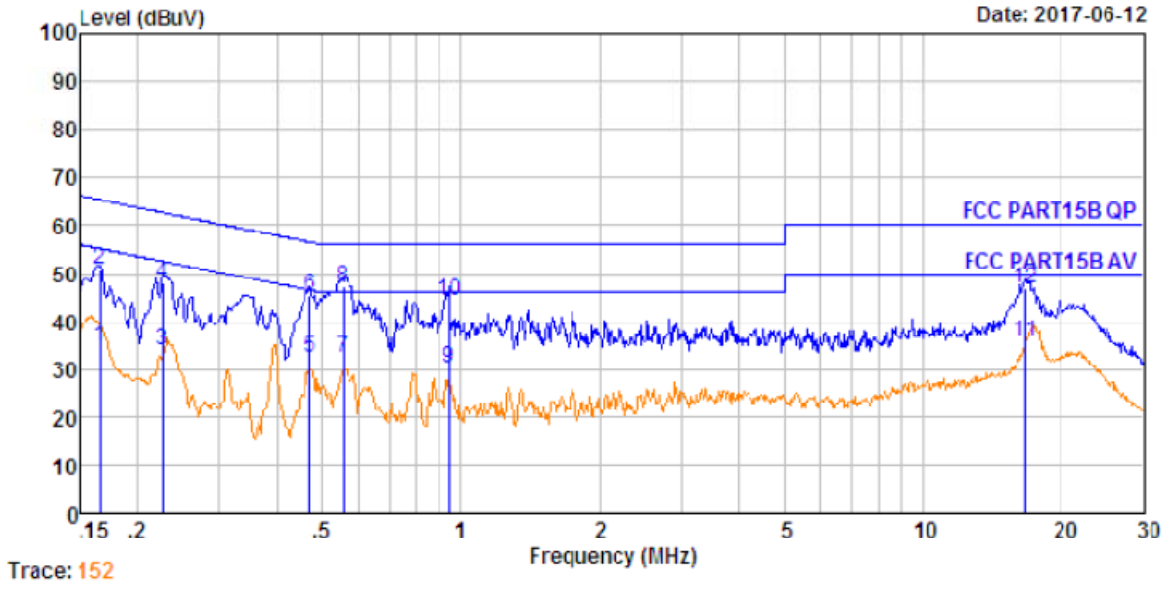
**Note:**
1. The lower limit shall apply at the transition frequencies
2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

## 5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

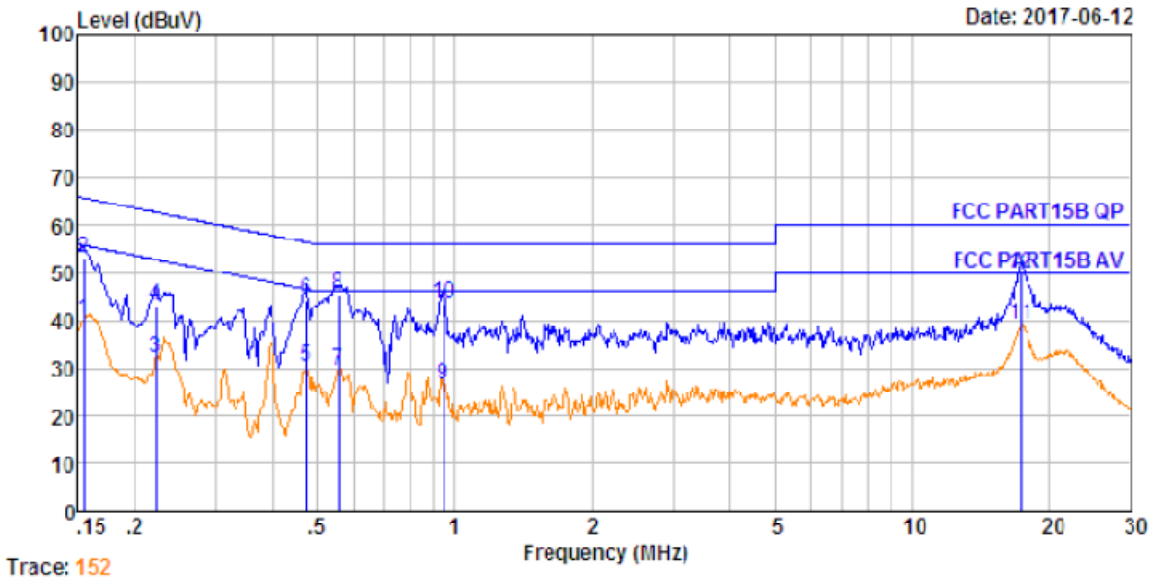
## 5.7 Conducted Emission Test Result

Line-120V:



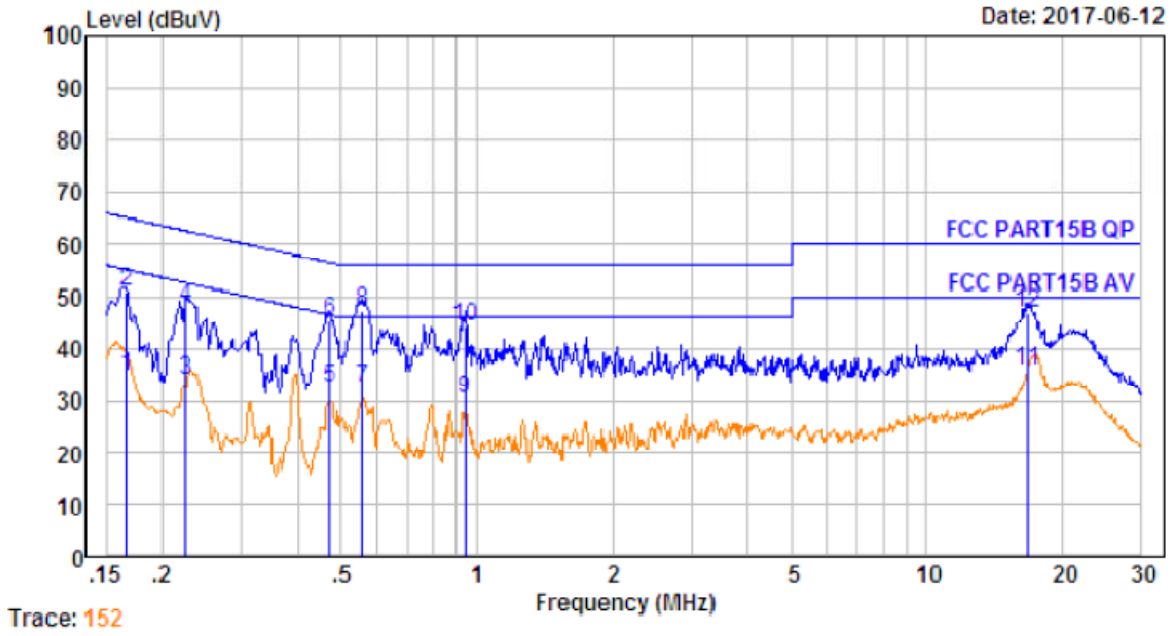

| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBuV | Emission Level dBuV | Limit dBuV | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.166 | 10.60 | 0.60 | 23.56 | 34.76 | 55.16 | -20.40 | Average |
| 2. | 0.166 | 10.60 | 0.60 | 39.56 | 50.76 | 65.16 | -14.40 | QP |
| 3. | 0.226 | 10.62 | 0.60 | 22.84 | 34.06 | 52.61 | -18.55 | Average |
| 4. | 0.226 | 10.62 | 0.60 | 36.84 | 48.06 | 62.61 | -14.55 | QP |
| 5. | 0.471 | 10.64 | 0.60 | 21.09 | 32.33 | 46.49 | -14.16 | Average |
| 6. | 0.471 | 10.64 | 0.60 | 34.09 | 45.33 | 56.49 | -11.16 | QP |
| 7. | 0.555 | 10.65 | 0.60 | 21.07 | 32.32 | 46.00 | -13.68 | Average |
| 8. | 0.555 | 10.65 | 0.60 | 36.07 | 47.32 | 56.00 | -8.68 | QP |
| 9. | 0.943 | 10.67 | 0.60 | 18.89 | 30.16 | 46.00 | -15.84 | Average |
| 10. | 0.943 | 10.67 | 0.60 | 32.89 | 44.16 | 56.00 | -11.84 | QP |
| 11. | 16.750 | 10.78 | 0.60 | 24.36 | 35.74 | 50.00 | -14.26 | Average |
| 12. | 16.750 | 10.78 | 0.60 | 35.36 | 46.74 | 60.00 | -13.26 | QP |

Neutral-120V:



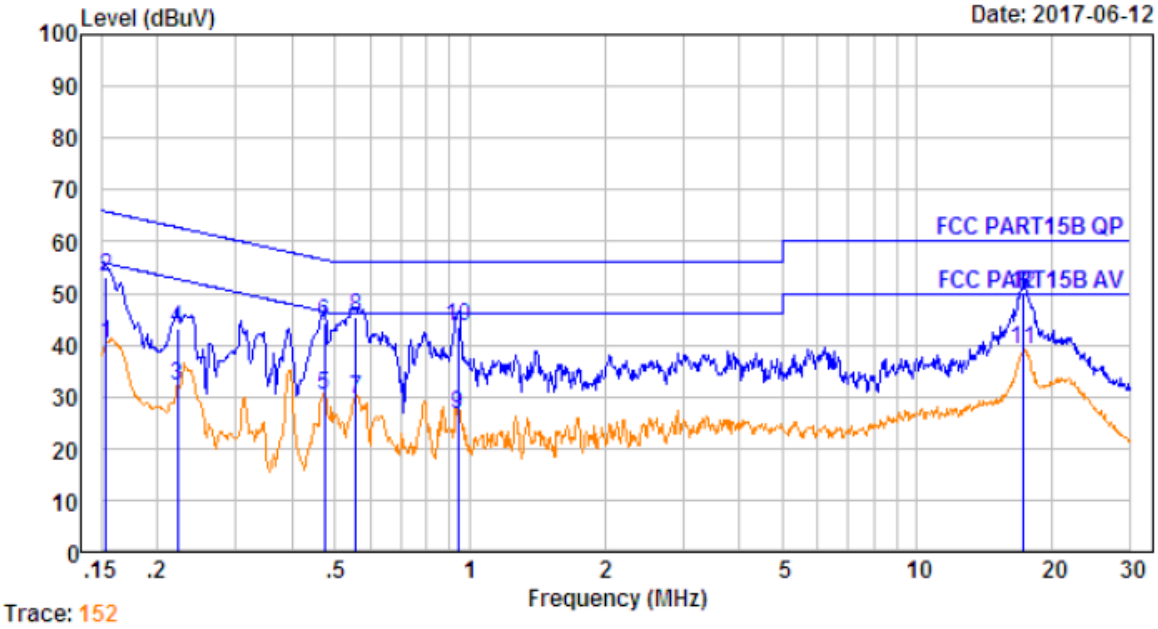

| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBuV | Emission Level dBuV | Limit dBuV | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.154 | 10.60 | 0.60 | 29.02 | 40.22 | 55.78 | -15.56 | Average |
| 2. | 0.154 | 10.60 | 0.60 | 42.02 | 53.22 | 65.78 | -12.56 | QP |
| 3. | 0.222 | 10.61 | 0.60 | 21.03 | 32.24 | 52.74 | -20.50 | Average |
| 4. | 0.222 | 10.61 | 0.60 | 32.03 | 43.24 | 62.74 | -19.50 | QP |
| 5. | 0.474 | 10.64 | 0.60 | 18.99 | 30.23 | 46.45 | -16.22 | Average |
| 6. | 0.474 | 10.64 | 0.60 | 32.99 | 44.23 | 56.45 | -12.22 | QP |
| 7. | 0.555 | 10.65 | 0.60 | 18.10 | 29.35 | 46.00 | -16.65 | Average |
| 8. | 0.555 | 10.65 | 0.60 | 34.10 | 45.35 | 56.00 | -10.65 | QP |
| 9. | 0.943 | 10.67 | 0.60 | 15.23 | 26.50 | 46.00 | -19.50 | Average |
| 10. | 0.943 | 10.67 | 0.60 | 32.23 | 43.50 | 56.00 | -12.50 | QP |
| 11. | 17.291 | 10.78 | 0.60 | 27.61 | 38.99 | 50.00 | -11.01 | Average |
| 12. | 17.291 | 10.78 | 0.60 | 38.61 | 49.99 | 60.00 | -10.01 | QP |

Line -240V:




| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBuV | Emission Level dBuV | Limit dBuV | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.166 | 10.60 | 0.60 | 23.56 | 34.76 | 55.16 | -20.40 | Average |
| 2. | 0.166 | 10.60 | 0.60 | 39.56 | 50.76 | 65.16 | -14.40 | QP |
| 3. | 0.226 | 10.62 | 0.60 | 22.84 | 34.06 | 52.61 | -18.55 | Average |
| 4. | 0.226 | 10.62 | 0.60 | 36.84 | 48.06 | 62.61 | -14.55 | QP |
| 5. | 0.471 | 10.64 | 0.60 | 21.09 | 32.33 | 46.49 | -14.16 | Average |
| 6. | 0.471 | 10.64 | 0.60 | 34.09 | 45.33 | 56.49 | -11.16 | QP |
| 7. | 0.555 | 10.65 | 0.60 | 21.07 | 32.32 | 46.00 | -13.68 | Average |
| 8. | 0.555 | 10.65 | 0.60 | 36.07 | 47.32 | 56.00 | -8.68 | QP |
| 9. | 0.943 | 10.67 | 0.60 | 18.89 | 30.16 | 46.00 | -15.84 | Average |
| 10. | 0.943 | 10.67 | 0.60 | 32.89 | 44.16 | 56.00 | -11.84 | QP |
| 11. | 16.750 | 10.78 | 0.60 | 24.36 | 35.74 | 50.00 | -14.26 | Average |
| 12. | 16.750 | 10.78 | 0.60 | 35.36 | 46.74 | 60.00 | -13.26 | QP |

Neutral -240V:




| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBuV | Emission Level dBuV | Limit dBuV | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.154 | 10.60 | 0.60 | 29.02 | 40.22 | 55.78 | -15.56 | Average |
| 2. | 0.154 | 10.60 | 0.60 | 42.02 | 53.22 | 65.78 | -12.56 | QP |
| 3. | 0.222 | 10.61 | 0.60 | 21.03 | 32.24 | 52.74 | -20.50 | Average |
| 4. | 0.222 | 10.61 | 0.60 | 32.03 | 43.24 | 62.74 | -19.50 | QP |
| 5. | 0.474 | 10.64 | 0.60 | 18.99 | 30.23 | 46.45 | -16.22 | Average |
| 6. | 0.474 | 10.64 | 0.60 | 32.99 | 44.23 | 56.45 | -12.22 | QP |
| 7. | 0.555 | 10.65 | 0.60 | 18.10 | 29.35 | 46.00 | -16.65 | Average |
| 8. | 0.555 | 10.65 | 0.60 | 34.10 | 45.35 | 56.00 | -10.65 | QP |
| 9. | 0.943 | 10.67 | 0.60 | 15.23 | 26.50 | 46.00 | -19.50 | Average |
| 10. | 0.943 | 10.67 | 0.60 | 32.23 | 43.50 | 56.00 | -12.50 | QP |
| 11. | 17.291 | 10.78 | 0.60 | 27.61 | 38.99 | 50.00 | -11.01 | Average |
| 12. | 17.291 | 10.78 | 0.60 | 38.61 | 49.99 | 60.00 | -10.01 | QP |

# 6 Radiated Spurious Emissions

Test Requirement: : FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: : ANSI C63.10:2013

Test Result: : PASS

Measurement Distance: : 3m

Limit: : See the follow table

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))} + 80$ |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

## 6.1 EUT Operation

Operating Environment :

Temperature: : 23.5 °C

Humidity: : 51.1 % RH

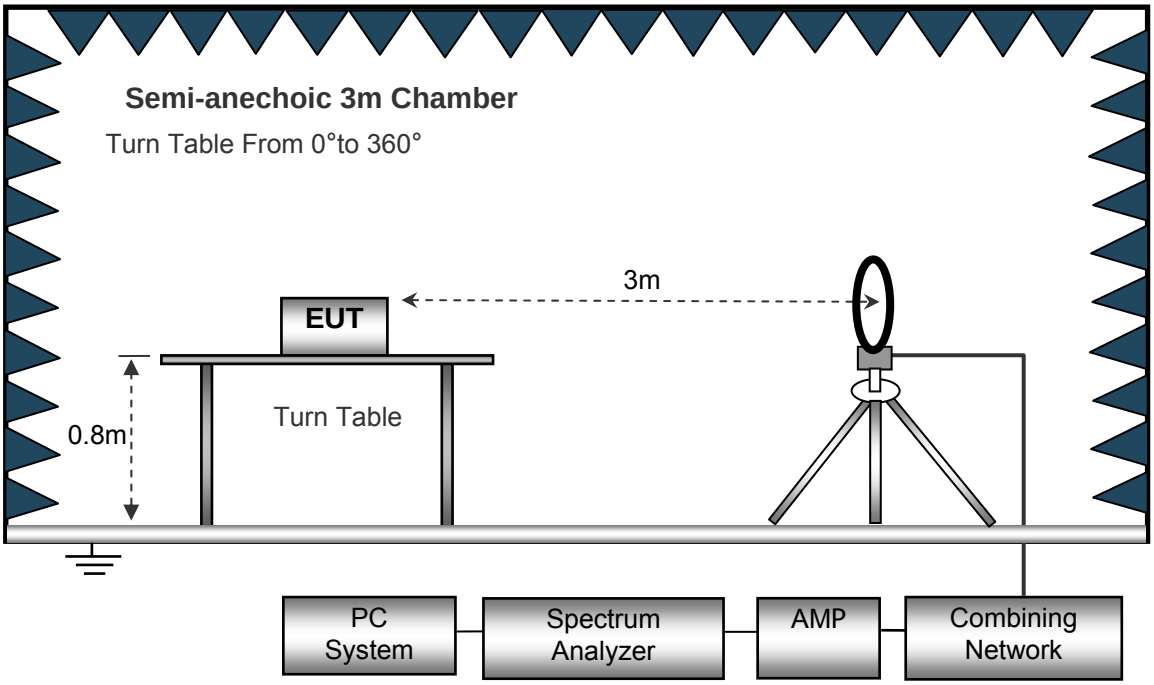
Atmospheric Pressure: : 101.2kPa

EUT Operation : : Refer to section 3.3

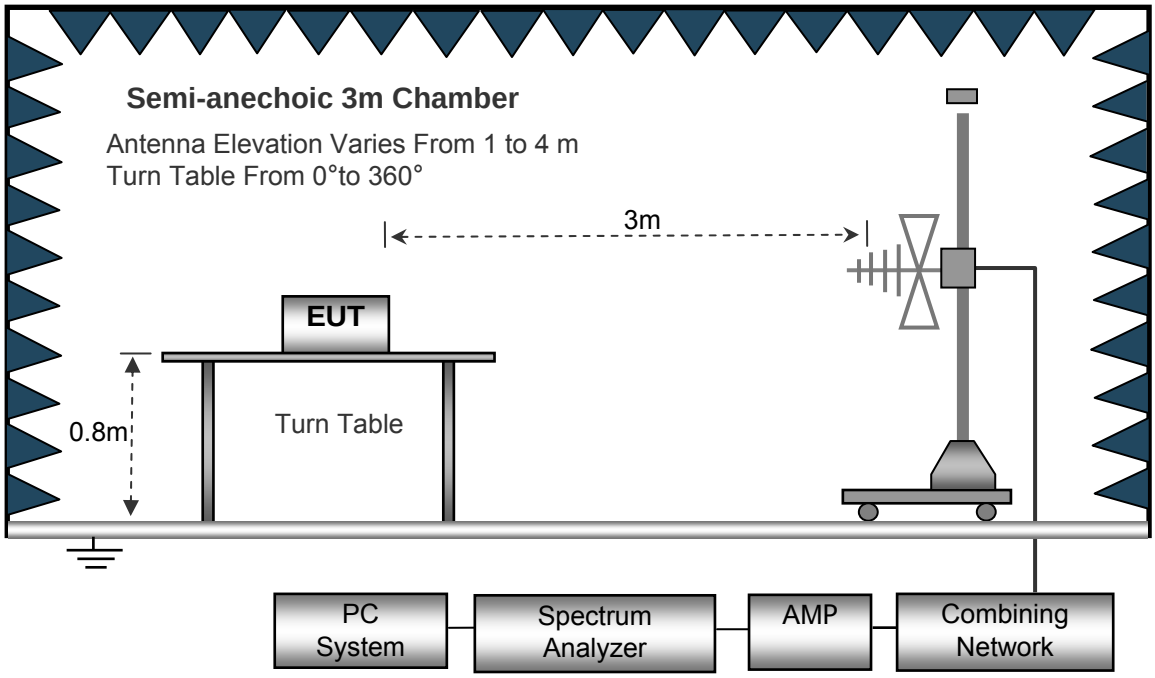
## 6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

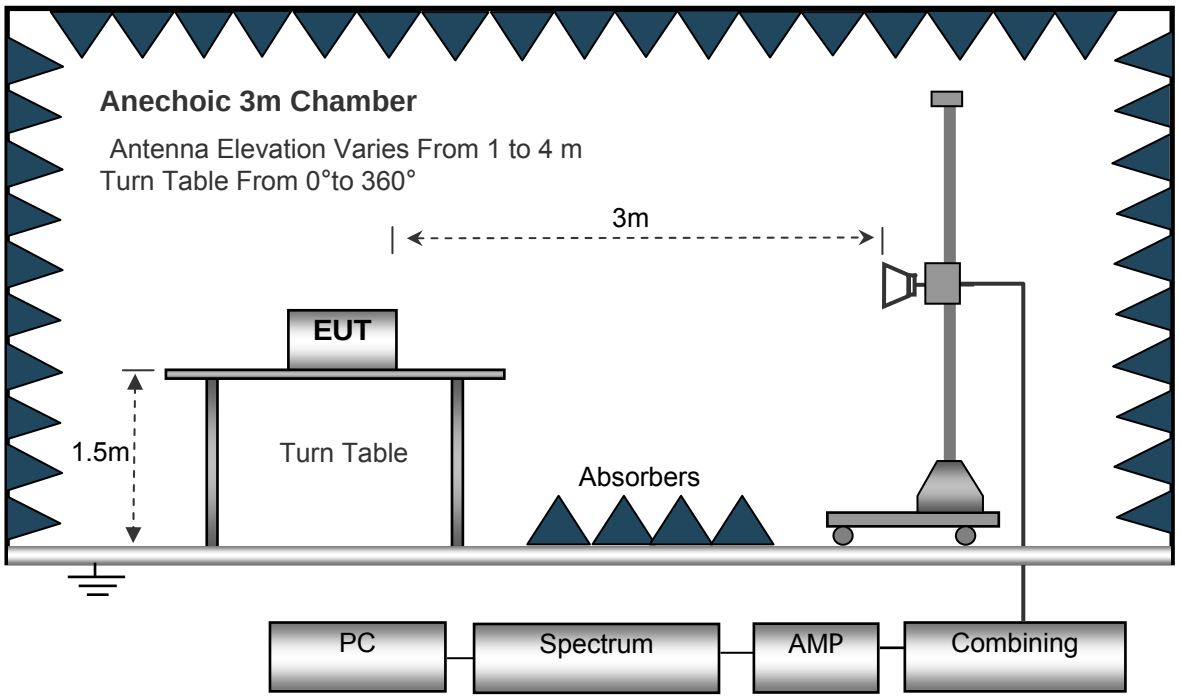
The test setup for emission measurement below 30MHz.




The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.




## 6.3 Spectrum Analyzer Setup

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

## 6.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. In the frequency above 1GHz, Place the measurement antenna 3m away from the EUT for each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

## 6.5 Summary of Test Results

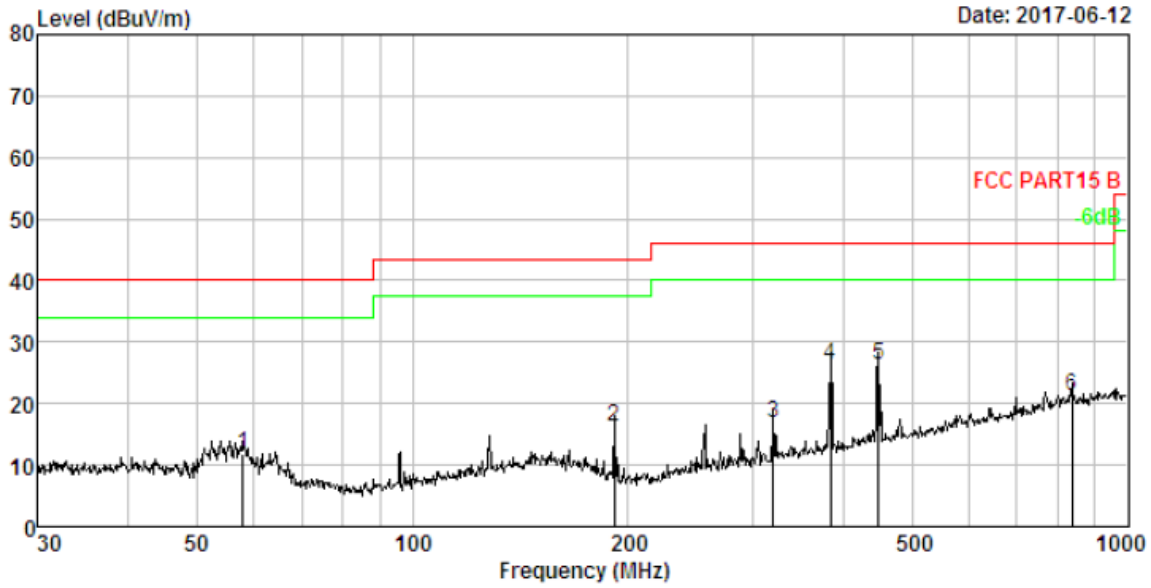
**Test Frequency: Below 30MHz**

The measurements were more than 20 dB below the limit and not reported.

**Test Frequency: 30MHz ~ 1GHz**

Remark: only the worst data(GFSK modulation mode) were reported.

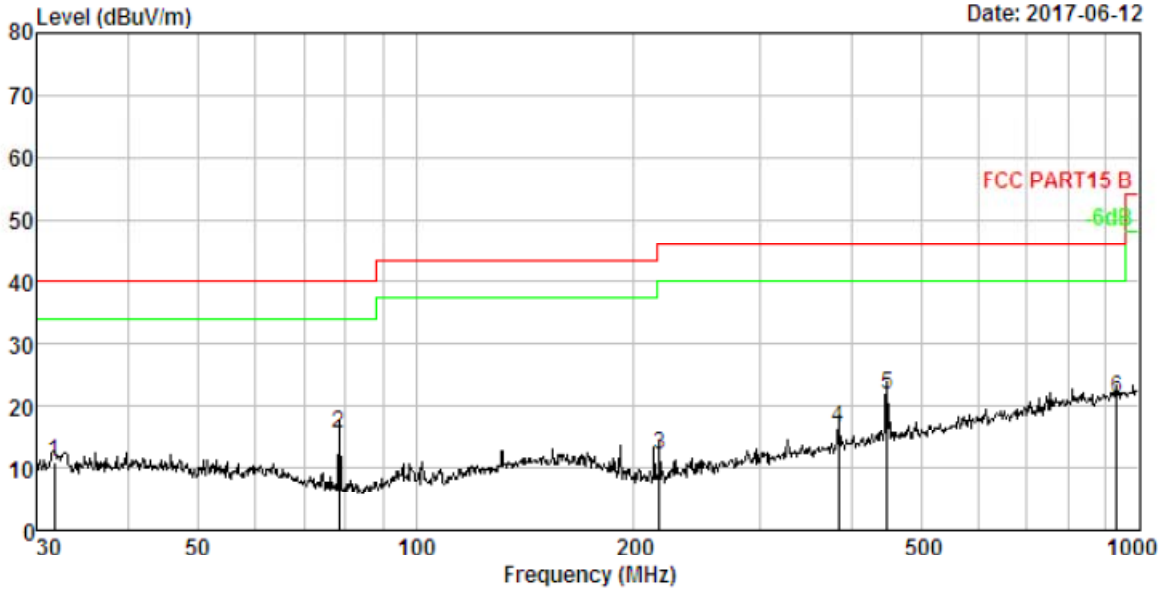
*Test plot for Horizontal:*




| No. | Freq MHz | Cable Loss dB | ANT Factor dB/m | Receiver Reading dBuV | Preamp Factor dB | Emission Level dBuV/m | Limit dBuV/m | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 57.999 | 1.65 | 12.06 | 28.36 | 30.20 | 11.87 | 40.00 | -28.13 | QP |
| 2. | 191.745 | 2.73 | 10.97 | 33.07 | 30.62 | 16.15 | 43.50 | -27.35 | QP |
| 3. | 319.937 | 3.20 | 13.65 | 30.86 | 30.79 | 16.92 | 46.00 | -29.08 | QP |
| 4. | 383.932 | 3.36 | 14.97 | 38.83 | 30.86 | 26.30 | 46.00 | -19.70 | QP |
| 5. | 447.982 | 3.50 | 16.33 | 37.48 | 30.91 | 26.40 | 46.00 | -19.60 | QP |
| 6. | 836.244 | 4.07 | 21.99 | 26.30 | 31.13 | 21.23 | 46.00 | -24.77 | QP |

**Remark:** Absolute Level= Reading Level+ Factor, Margin= Limit- Absolute Level

*Test plot for Vertical:*




| No. | Freq MHz | Cable Loss dB | ANT Factor dB/m | Receiver Reading dBuV | Preamp Factor dB | Emission Level dBuV/m | Limit dBuV/m | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 31.620 | 1.10 | 13.23 | 26.49 | 29.99 | 10.83 | 40.00 | -29.17 | QP |
| 2. | 78.413 | 1.93 | 9.11 | 34.86 | 30.30 | 15.60 | 40.00 | -24.40 | QP |
| 3. | 217.544 | 2.85 | 10.72 | 29.25 | 30.66 | 12.16 | 46.00 | -33.84 | QP |
| 4. | 383.932 | 3.36 | 14.97 | 29.13 | 30.86 | 16.60 | 46.00 | -29.40 | QP |
| 5. | 447.982 | 3.50 | 16.33 | 33.02 | 30.91 | 21.94 | 46.00 | -24.06 | QP |
| 6. | 932.272 | 4.17 | 23.09 | 25.11 | 31.17 | 21.20 | 46.00 | -24.80 | QP |

**Remark:**

Absolute Level= Reading Level+ Factor, Margin= Limit- Absolute Level

## Test Frequency: Above 1000MHz~10th Harmonics:

### GFSK Low Channel (2402MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4804 | 37.96 | AV | V | 33.86 | 6.66 | 31.06 | 47.42 | 54 | -6.58 |
| 4804 | 38.04 | AV | H | 33.86 | 6.66 | 31.06 | 47.5 | 54 | -6.5 |
| 4804 | 46.26 | PK | V | 33.86 | 6.66 | 31.06 | 55.72 | 74 | -18.28 |
| 4804 | 47.15 | PK | H | 33.86 | 6.66 | 31.06 | 56.61 | 74 | -17.39 |
| 17803 | 24.16 | AV | V | 44.15 | 11.06 | 30.26 | 49.11 | 54 | -4.89 |
| 17803 | 24.08 | AV | H | 44.15 | 11.06 | 30.26 | 49.03 | 54 | -4.97 |
| 17803 | 41.16 | PK | V | 44.15 | 11.06 | 30.26 | 66.11 | 74 | -7.89 |
| 17803 | 40.35 | PK | H | 44.15 | 11.06 | 30.26 | 65.3 | 74 | -8.7 |

### GFSK Low Channel (2441MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4882 | 38.76 | AV | V | 32.66 | 6.83 | 32.74 | 45.51 | 54 | -8.49 |
| 4882 | 38.04 | AV | H | 32.66 | 6.83 | 32.74 | 44.79 | 54 | -9.21 |
| 4882 | 48.05 | PK | V | 32.66 | 6.83 | 32.74 | 54.8 | 74 | -19.2 |
| 4882 | 47.16 | PK | H | 32.66 | 6.83 | 32.74 | 53.91 | 74 | -20.09 |
| 17820 | 24.16 | AV | V | 44.12 | 10.56 | 32.41 | 46.43 | 54 | -7.57 |
| 17820 | 23.05 | AV | H | 44.12 | 10.56 | 32.41 | 45.32 | 54 | -8.68 |
| 17820 | 40.18 | PK | V | 44.12 | 10.56 | 32.41 | 62.45 | 74 | -11.55 |
| 17820 | 40.69 | PK | H | 44.12 | 10.56 | 32.41 | 62.96 | 74 | -11.04 |

### GFSK High Channel (2480MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4960 | 36.66 | AV | V | 33.26 | 6.53 | 31.42 | 45.03 | 54 | -8.97 |
| 4960 | 37.04 | AV | H | 33.26 | 6.53 | 31.42 | 45.41 | 54 | -8.59 |
| 4960 | 48.19 | PK | V | 33.26 | 6.53 | 31.42 | 56.56 | 74 | -17.44 |
| 4960 | 47.05 | PK | H | 33.26 | 6.53 | 31.42 | 55.42 | 74 | -18.58 |
| 17826 | 25.46 | AV | V | 44.72 | 10.49 | 32.66 | 48.01 | 54 | -5.99 |
| 17826 | 24.35 | AV | H | 44.72 | 10.49 | 32.66 | 46.9 | 54 | -7.1 |
| 17826 | 41.05 | PK | V | 44.72 | 10.49 | 32.66 | 63.6 | 74 | -10.4 |
| 17826 | 40.69 | PK | H | 44.72 | 10.49 | 32.66 | 63.24 | 74 | -10.76 |

## π/4-DQPSK Low Channel (2402MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4804 | 36.25 | AV | V | 32.76 | 6.53 | 30.26 | 45.28 | 54 | -8.72 |
| 4804 | 37.49 | AV | H | 32.76 | 6.53 | 30.26 | 46.52 | 54 | -7.48 |
| 4804 | 45.16 | PK | V | 32.76 | 6.53 | 30.26 | 54.19 | 74 | -19.81 |
| 4804 | 44.05 | PK | H | 32.76 | 6.53 | 30.26 | 53.08 | 74 | -20.92 |
| 17809 | 26.35 | AV | V | 43.07 | 10.43 | 31.46 | 48.39 | 54 | -5.61 |
| 17809 | 25.14 | AV | H | 43.07 | 10.43 | 31.46 | 47.18 | 54 | -6.82 |
| 17809 | 40.66 | PK | V | 43.07 | 10.43 | 31.46 | 62.7 | 74 | -11.3 |
| 17809 | 39.86 | PK | H | 43.07 | 10.43 | 31.46 | 61.9 | 74 | -12.1 |

## π/4-DQPSK Low Channel (2441MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4882 | 37.43 | AV | V | 31.52 | 6.72 | 31.36 | 44.31 | 54 | -9.69 |
| 4882 | 37.29 | AV | H | 31.52 | 6.72 | 31.36 | 44.17 | 54 | -9.83 |
| 4882 | 47.15 | PK | V | 31.52 | 6.72 | 31.36 | 54.03 | 74 | -19.97 |
| 4882 | 46.05 | PK | H | 31.52 | 6.72 | 31.36 | 52.93 | 74 | -21.07 |
| 17817 | 25.17 | AV | V | 43.66 | 11.33 | 30.24 | 49.92 | 54 | -4.08 |
| 17817 | 24.06 | AV | H | 43.66 | 11.33 | 30.24 | 48.81 | 54 | -5.19 |
| 17817 | 41.33 | PK | V | 43.66 | 11.33 | 30.24 | 66.08 | 74 | -7.92 |
| 17817 | 39.68 | PK | H | 43.66 | 11.33 | 30.24 | 64.43 | 74 | -9.57 |

## π/4-DQPSK High Channel (2480MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4960 | 35.33 | AV | V | 32.59 | 6.24 | 30.35 | 43.81 | 54 | -10.19 |
| 4960 | 36.15 | AV | H | 32.59 | 6.24 | 30.35 | 44.63 | 54 | -9.37 |
| 4960 | 47.06 | PK | V | 32.59 | 6.24 | 30.35 | 55.54 | 74 | -18.46 |
| 4960 | 46.35 | PK | H | 32.59 | 6.24 | 30.35 | 54.83 | 74 | -19.17 |
| 17822 | 24.17 | AV | V | 43.16 | 9.39 | 31.05 | 45.67 | 54 | -8.33 |
| 17822 | 23.05 | AV | H | 43.16 | 9.39 | 31.05 | 44.55 | 54 | -9.45 |
| 17822 | 40.36 | PK | V | 43.16 | 9.39 | 31.05 | 61.86 | 74 | -12.14 |
| 17822 | 41.72 | PK | H | 43.16 | 9.39 | 31.05 | 63.22 | 74 | -10.78 |

## 8DPSK Low Channel (2402MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4804 | 35.33 | AV | V | 31.25 | 6.48 | 30.26 | 42.8 | 54 | -11.2 |
| 4804 | 36.15 | AV | H | 31.25 | 6.48 | 30.26 | 43.62 | 54 | -10.38 |
| 4804 | 42.05 | PK | V | 31.25 | 6.48 | 30.26 | 49.52 | 74 | -24.48 |
| 4804 | 43.37 | PK | H | 31.25 | 6.48 | 30.26 | 50.84 | 74 | -23.16 |
| 17803 | 25.74 | AV | V | 42.05 | 9.86 | 31.46 | 46.19 | 54 | -7.81 |
| 17803 | 24.16 | AV | H | 42.05 | 9.86 | 31.46 | 44.61 | 54 | -9.39 |
| 17803 | 39.86 | PK | V | 42.05 | 9.86 | 31.46 | 60.31 | 74 | -13.69 |
| 17803 | 38.46 | PK | H | 42.05 | 9.86 | 31.46 | 58.91 | 74 | -15.09 |

## 8DPSK Low Channel (2441MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4882 | 36.35 | AV | V | 30.33 | 6.63 | 29.68 | 43.63 | 54 | -10.37 |
| 4882 | 35.28 | AV | H | 30.33 | 6.63 | 29.68 | 42.56 | 54 | -11.44 |
| 4882 | 45.15 | PK | V | 30.33 | 6.63 | 29.68 | 52.43 | 74 | -21.57 |
| 4882 | 44.69 | PK | H | 30.33 | 6.63 | 29.68 | 51.97 | 74 | -22.03 |
| 17820 | 24.05 | AV | V | 41.35 | 10.35 | 31.36 | 44.39 | 54 | -9.61 |
| 17820 | 23.17 | AV | H | 41.35 | 10.35 | 31.36 | 43.51 | 54 | -10.49 |
| 17820 | 40.35 | PK | V | 41.35 | 10.35 | 31.36 | 60.69 | 74 | -13.31 |
| 17820 | 38.66 | PK | H | 41.35 | 10.35 | 31.36 | 59 | 74 | -15 |

## 8DPSK High Channel (2480MHz)

| Frequency (MHz) | S.A Reading (dBuV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 4960 | 34.26 | AV | V | 31.42 | 5.49 | 29.63 | 41.54 | 54 | -12.46 |
| 4960 | 35.02 | AV | H | 31.42 | 5.49 | 29.63 | 42.3 | 54 | -11.7 |
| 4960 | 46.16 | PK | V | 31.42 | 5.49 | 29.63 | 53.44 | 74 | -20.56 |
| 4960 | 45.25 | PK | H | 31.42 | 5.49 | 29.63 | 52.53 | 74 | -21.47 |
| 17815 | 25.48 | AV | V | 40.69 | 8.66 | 32.43 | 42.4 | 54 | -11.6 |
| 17815 | 26.69 | AV | H | 40.69 | 8.66 | 32.43 | 43.61 | 54 | -10.39 |
| 17815 | 38.45 | PK | V | 40.69 | 8.66 | 32.43 | 55.37 | 74 | -18.63 |
| 17815 | 37.16 | PK | H | 40.69 | 8.66 | 32.43 | 54.08 | 74 | -19.92 |

Note: 1. The testing has been conformed to 10*2480MHz=24800MHz.

2. All other emissions more than 30dB below the limit.

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit

# 7 CONDUCTED SPURIOUS & BAND EDGE EMISSION

## 7.1 REQUIREMENT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

## 7.2 TEST PROCEDURE

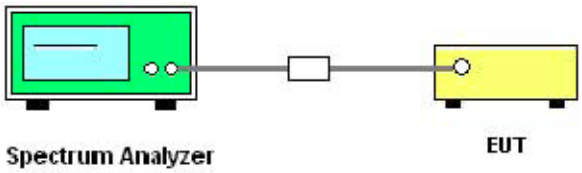
| Spectrum Parameter | Setting |
|---|---|
| Detector | Peak |
| Start/Stop Frequency | 30 MHz to 10th carrier harmonic |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz |
| Trace-Mode: | Max hold |

. For Band edge

| Spectrum Parameter | Setting |
|---|---|
| Detector | Peak |
| Start/Stop Frequency | Lower Band Edge: 2300 – 2403 MHz<br>Upper Band Edge: 2479 – 2500 MHz |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz |
| Trace-Mode: | Max hold |

Remark : Hopping on and Hopping off mode all have been tested,only worst case hopping off is reported.

## 7.3 TEST SETUP




The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

## 7.4 EUT OPERATION CONDITIONS

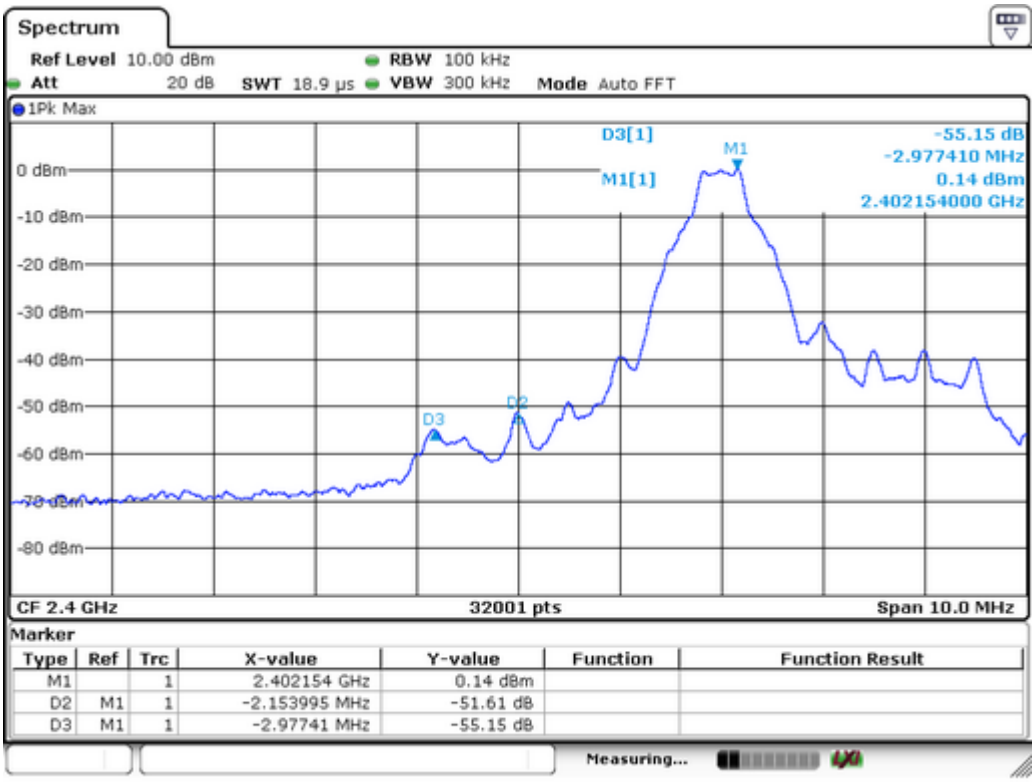
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

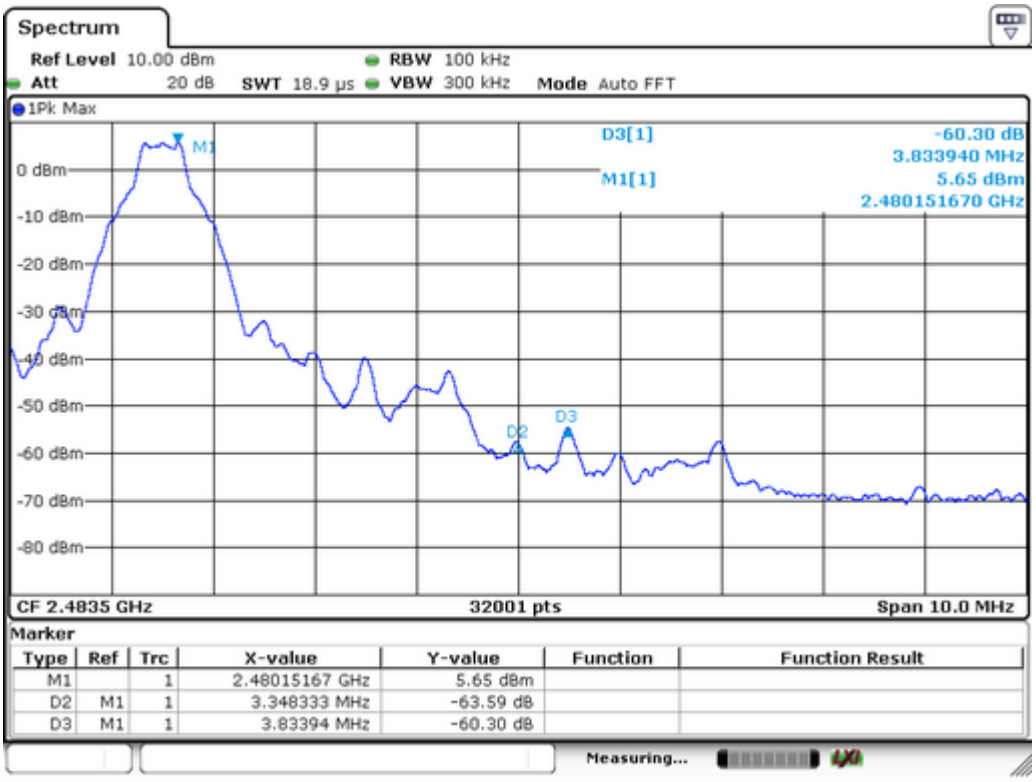
## 7.5 TEST RESULTS

For Non-Hopping Mode:

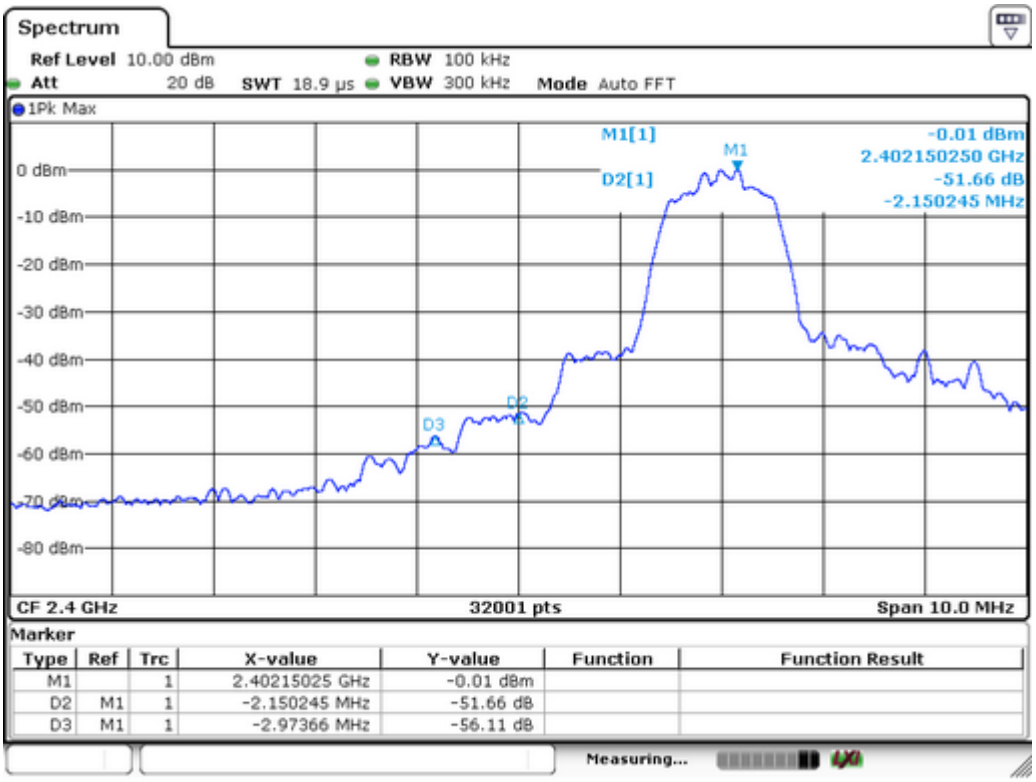
| Frequency(MHz) | Modulation | Peak Power Output (dBm) | Emission Read Value (dBm) | Result of Band edge (dBc) | Band Edge Limit (dBc) |
|---|---|---|---|---|---|
| 2402.15 | GFSK | 0.14 | -55.15 | 55.29 | >20dBc |
| 2402.15 | π/4-DQPSK | -0.01 | -51.66 | 51.65 | >20dBc |
| 2402.15 | 8DPSK | 0.11 | -51.47 | 51.58 | >20dBc |
| 2480.15 | GFSK | 5.65 | -60.30 | 65.95 | >20dBc |
| 2479.98 | π/4-DQPSK | 3.93 | -64.41 | 68.34 | >20dBc |
| 2479.82 | 8DPSK | 4.03 | -62.23 | 66.26 | >20dBc |

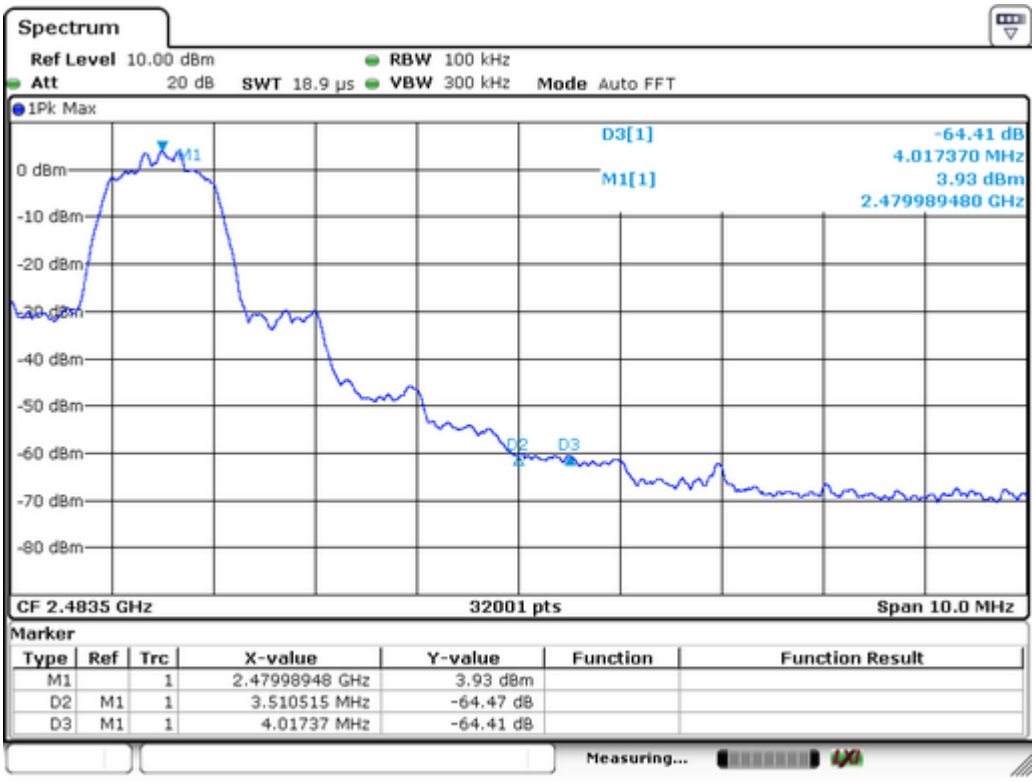
GFSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-55.15 dB
-2.977410 MHz
M1[1]
0.14 dBm
2.402154000 GHz
M1
D2
D3
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.402154 GHz 0.14 dBm
D2 M1 1 -2.153995 MHz -51.61 dB
D3 M1 1 -2.97741 MHz -55.15 dB
Measuring...

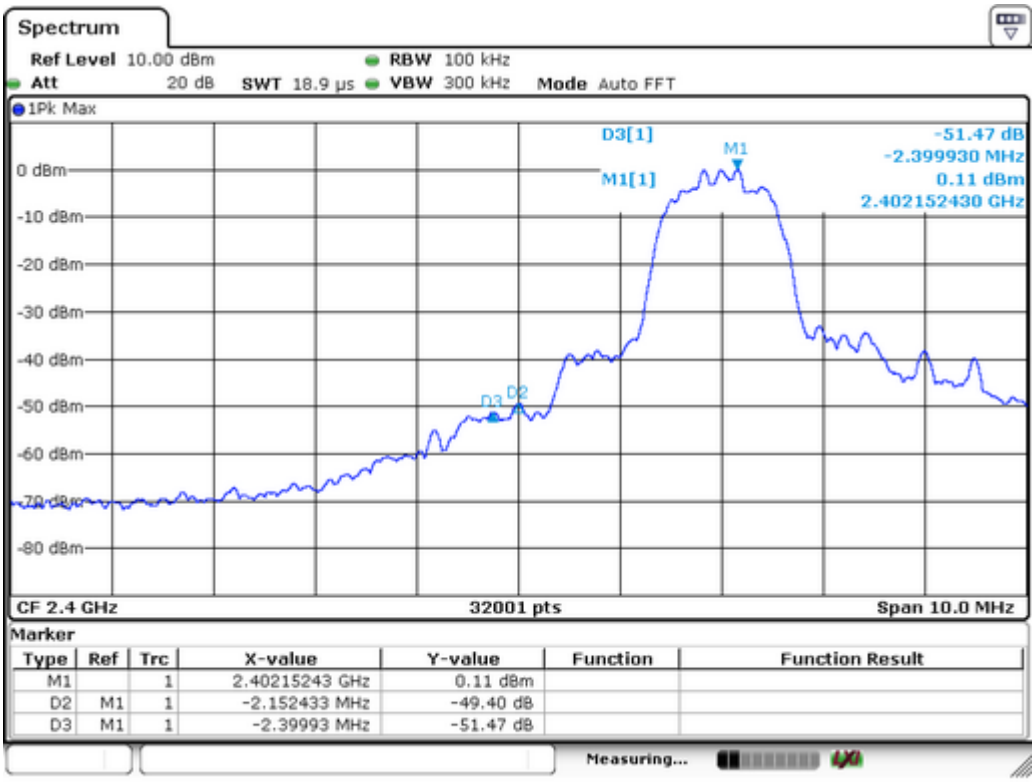

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-60.30 dB
3.833940 MHz
M1[1]
5.65 dBm
2.480151670 GHz
M1
D2
D3
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.48015167 GHz 5.65 dBm
D2 M1 1 3.348333 MHz -63.59 dB
D3 M1 1 3.83394 MHz -60.30 dB
Measuring...

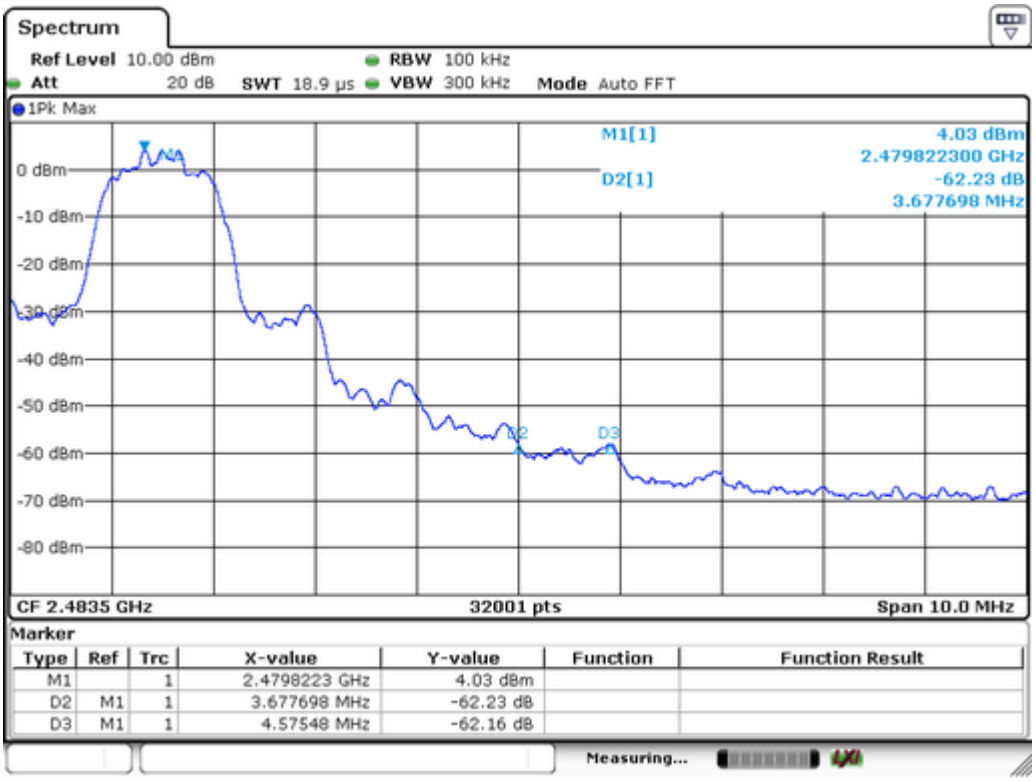
π/4-DQPSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
-0.01 dBm
2.402150250 GHz
D2[1]
-51.66 dB
-2.150245 MHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40215025 GHz -0.01 dBm
D2 M1 1 -2.150245 MHz -51.66 dB
D3 M1 1 -2.97366 MHz -56.11 dB
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-64.41 dB
4.017370 MHz
M1[1]
3.93 dBm
2.479989480 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.47998948 GHz 3.93 dBm
D2 M1 1 3.510515 MHz -64.47 dB
D3 M1 1 4.01737 MHz -64.41 dB
Measuring...

8DPSK

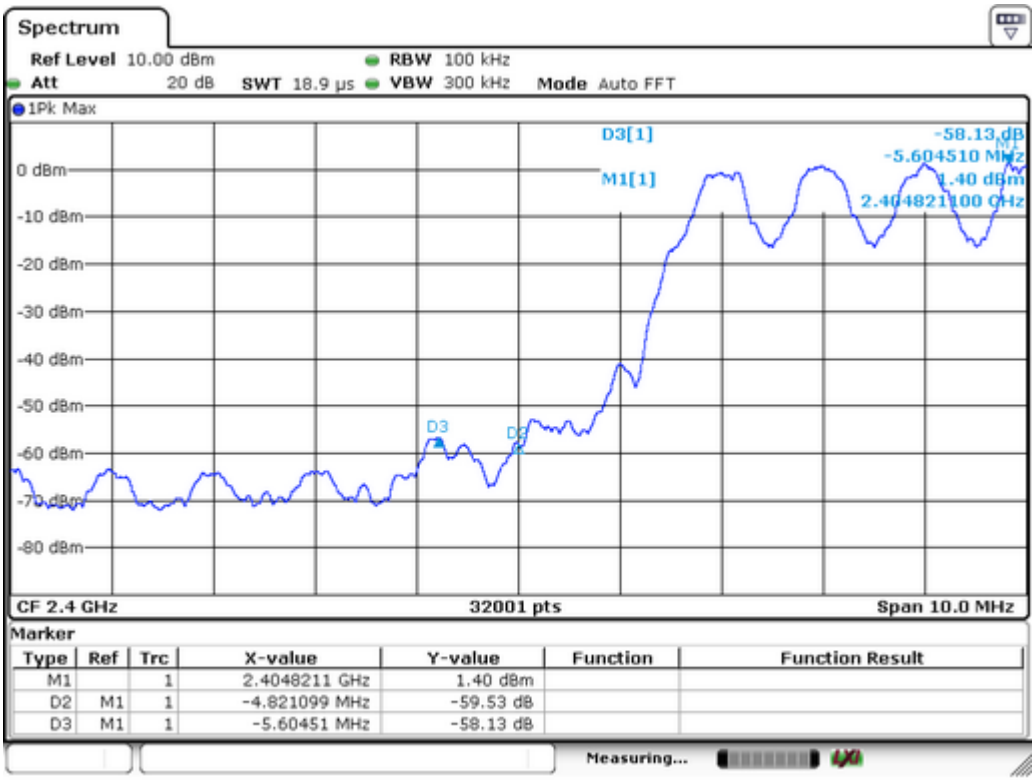

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-51.47 dB
-2.399930 MHz
M1[1]
0.11 dBm
2.402152430 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40215243 GHz 0.11 dBm
D2 M1 1 -2.152433 MHz -49.40 dB
D3 M1 1 -2.39993 MHz -51.47 dB
Measuring...

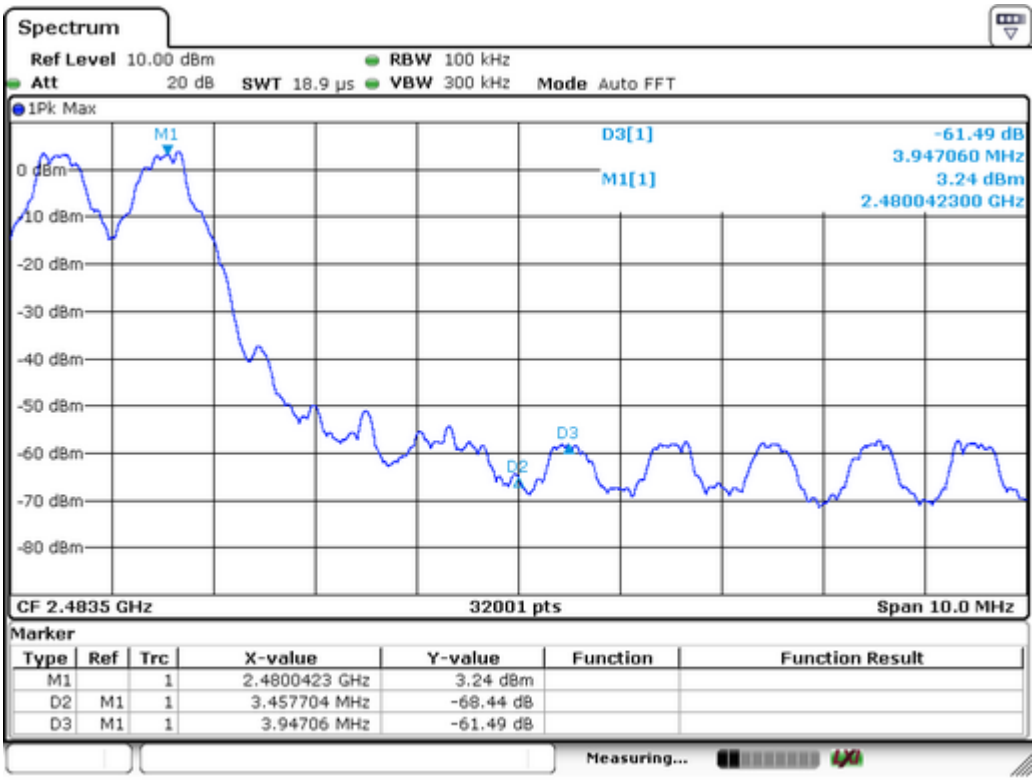

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
4.03 dBm
2.479822300 GHz
D2[1]
-62.23 dB
3.677698 MHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4798223 GHz 4.03 dBm
D2 M1 1 3.677698 MHz -62.23 dB
D3 M1 1 4.57548 MHz -62.16 dB
Measuring...

For Hopping Mode:

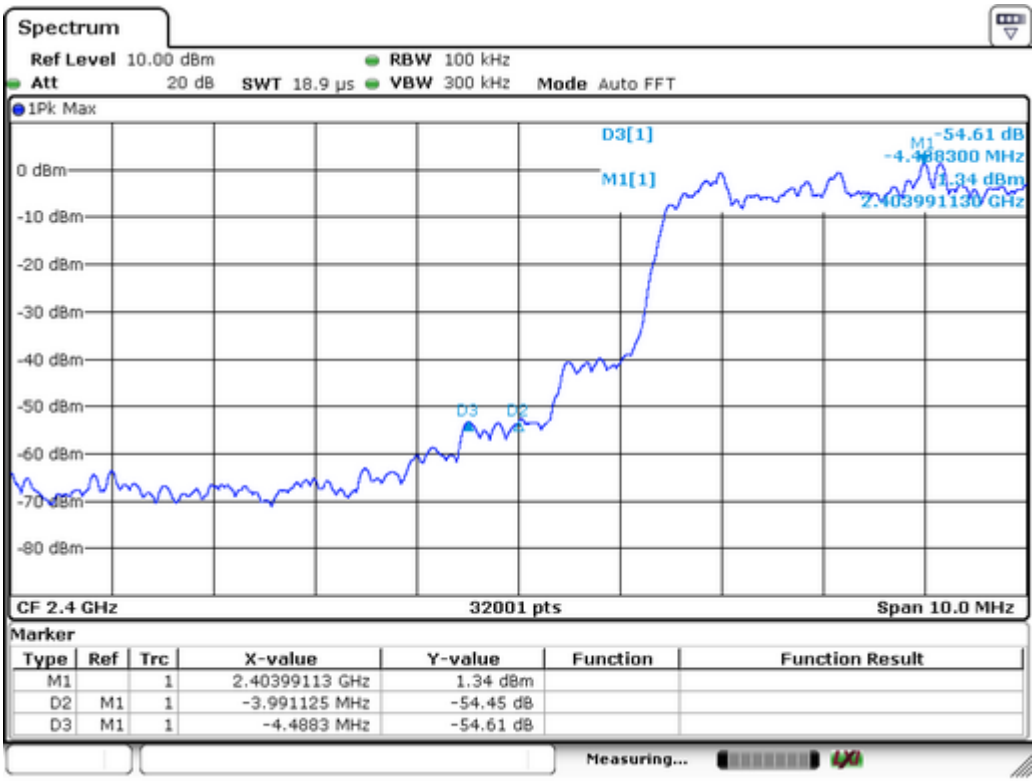
| Frequency(MHz) | Modulation | Peak Power Output (dBm) | Emission Read Value (dBm) | Result of Band edge (dBc) | Band Edge Limit (dBc) |
|---|---|---|---|---|---|
| 2404.82 | GFSK | 1.40 | -58.13 | 59.53 | >20dBc |
| 2403.99 | π/4-DQPSK | 1.34 | -54.61 | 55.95 | >20dBc |
| 2404.15 | 8DPSK | 1.53 | -55.41 | 56.94 | >20dBc |
| 2480.04 | GFSK | 3.24 | -61.49 | 64.73 | >20dBc |
| 2478.98 | π/4-DQPSK | 3.84 | -61.35 | 65.19 | >20dBc |
| 2478.98 | 8DPSK | 2.77 | -60.61 | 63.38 | >20dBc |

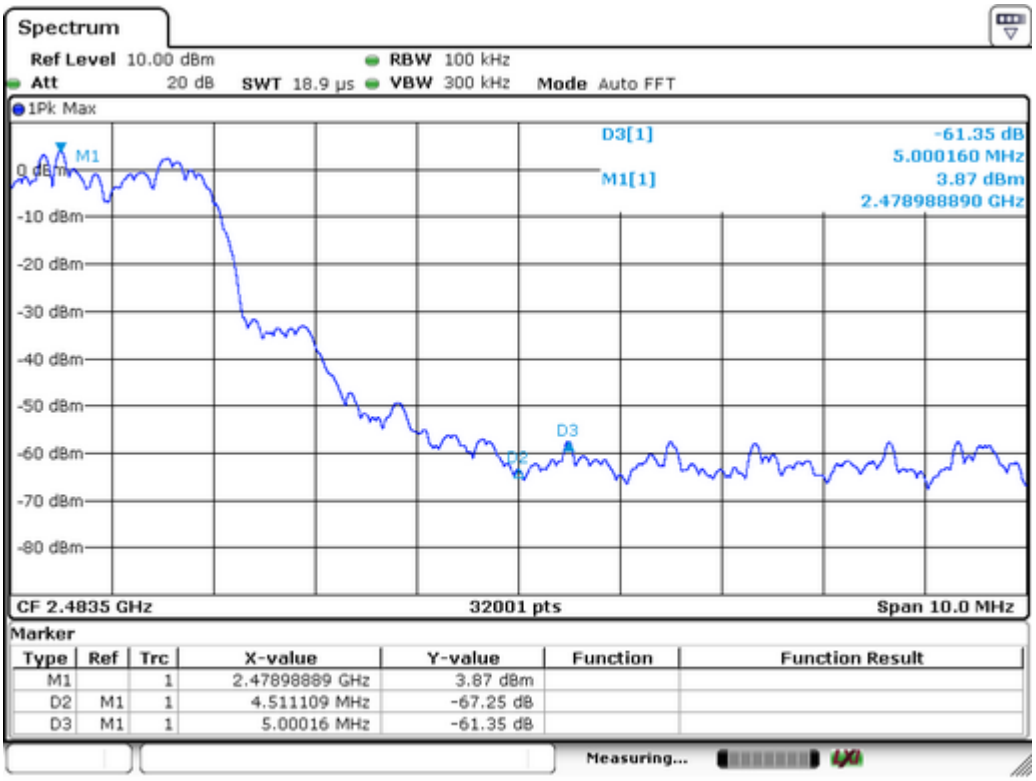
GFSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-58.13 dB
-5.604510 MHz
M1[1]
1.40 dBm
2.404821100 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
D3
D2
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4048211 GHz 1.40 dBm
D2 M1 1 -4.821099 MHz -59.53 dB
D3 M1 1 -5.60451 MHz -58.13 dB
Measuring...

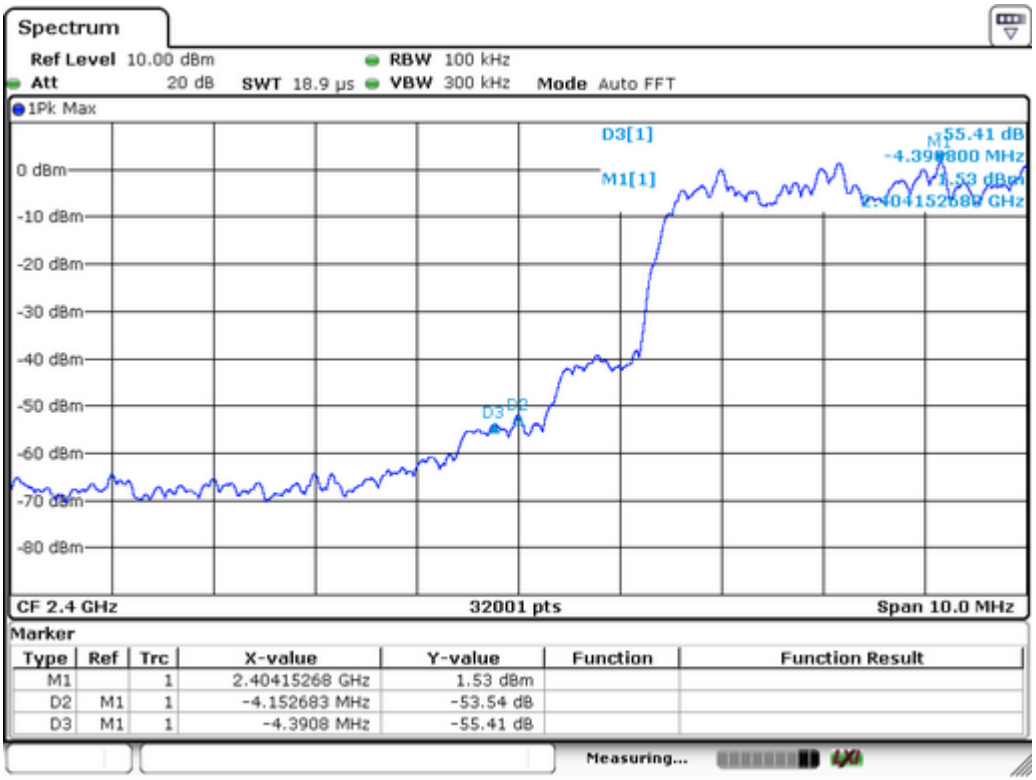

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1
D3[1]
-61.49 dB
3.947060 MHz
M1[1]
3.24 dBm
2.480042300 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
D3
D2
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4800423 GHz 3.24 dBm
D2 M1 1 3.457704 MHz -68.44 dB
D3 M1 1 3.94706 MHz -61.49 dB
Measuring...

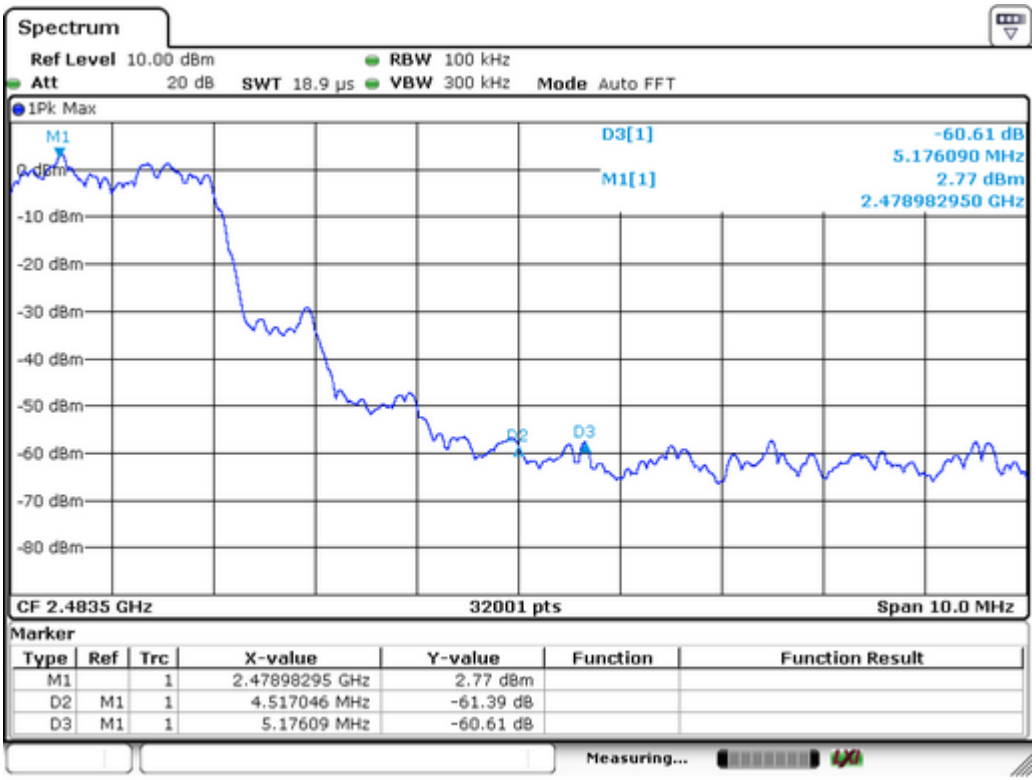
π/4-DQPSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-54.61 dB
M1[1]
1.34 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
D3
D2
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40399113 GHz 1.34 dBm
D2 M1 1 -3.991125 MHz -54.45 dB
D3 M1 1 -4.4883 MHz -54.61 dB
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-61.35 dB
5.000160 MHz
M1[1]
3.87 dBm
2.478988890 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
D3
D2
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.47898889 GHz 3.87 dBm
D2 M1 1 4.511109 MHz -67.25 dB
D3 M1 1 5.00016 MHz -61.35 dB
Measuring...

8DPSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-55.41 dB
-4.390800 MHz
M1[1]
1.53 dBm
2.404152680 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40415268 GHz 1.53 dBm
D2 M1 1 -4.152683 MHz -53.54 dB
D3 M1 1 -4.3908 MHz -55.41 dB
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1
D3[1]
-60.61 dB
5.176090 MHz
M1[1]
2.77 dBm
2.478982950 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.47898295 GHz 2.77 dBm
D2 M1 1 4.517046 MHz -61.39 dB
D3 M1 1 5.17609 MHz -60.61 dB
Measuring...

# 8 20 dB Bandwidth Measurement

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| Test Mode | : | Refer to section 3.3 |

## 8.1 Test Procedure

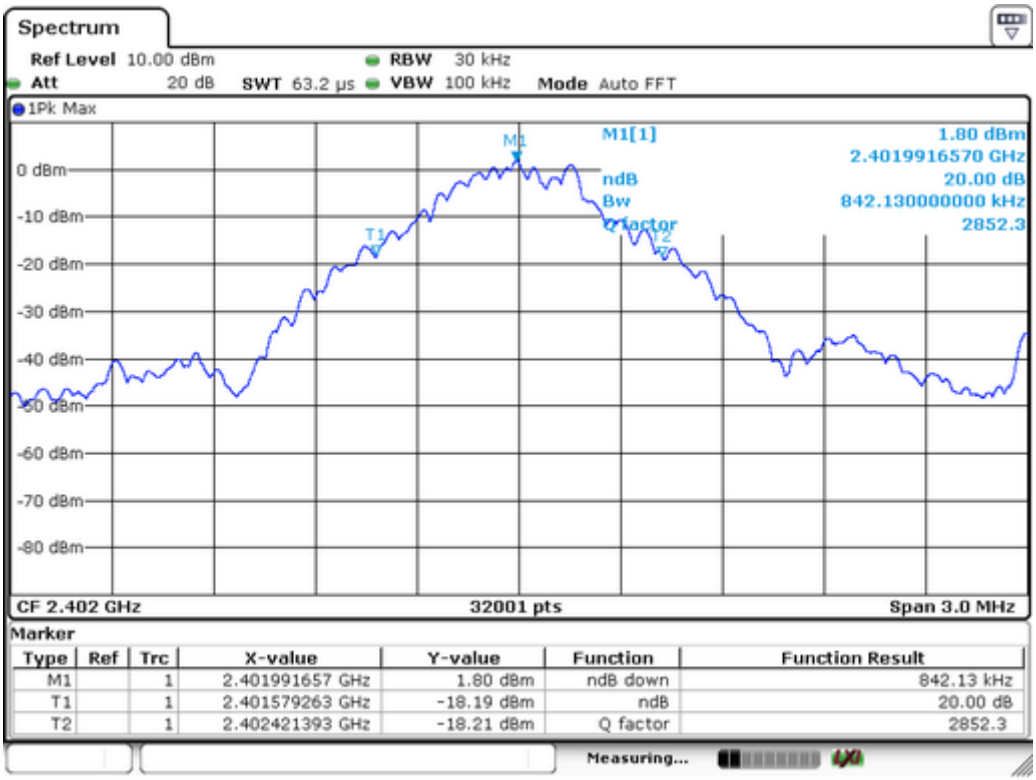
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

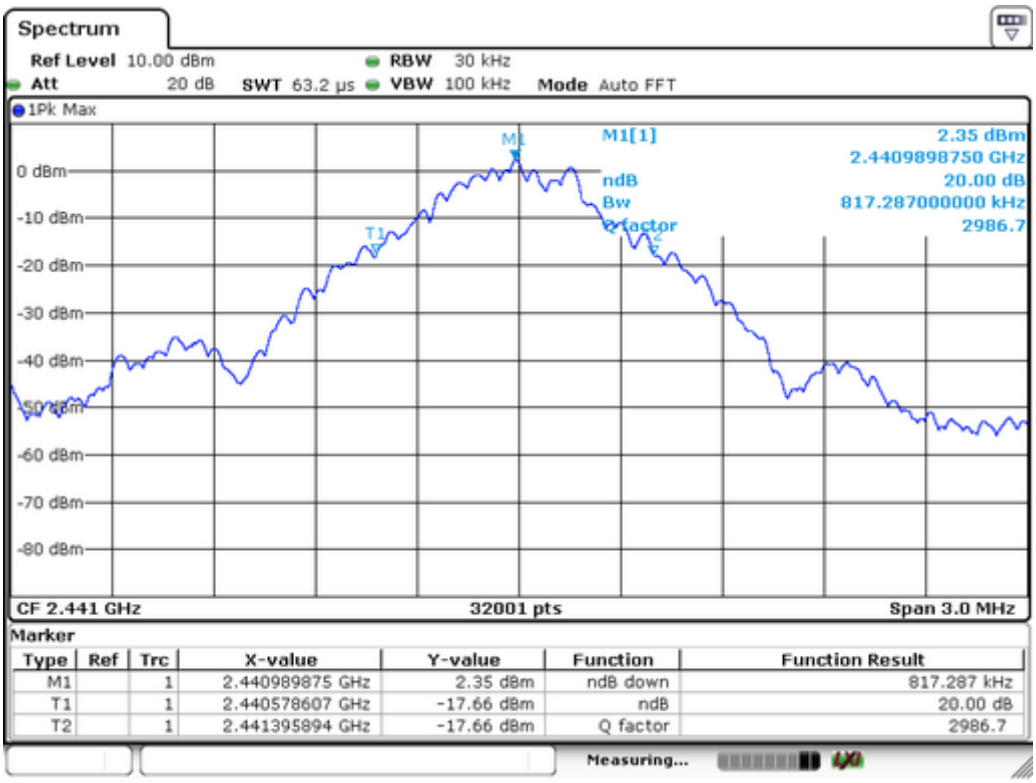
2. Set the spectrum analyzer: RBW = 30kHz, VBW = 100kHz

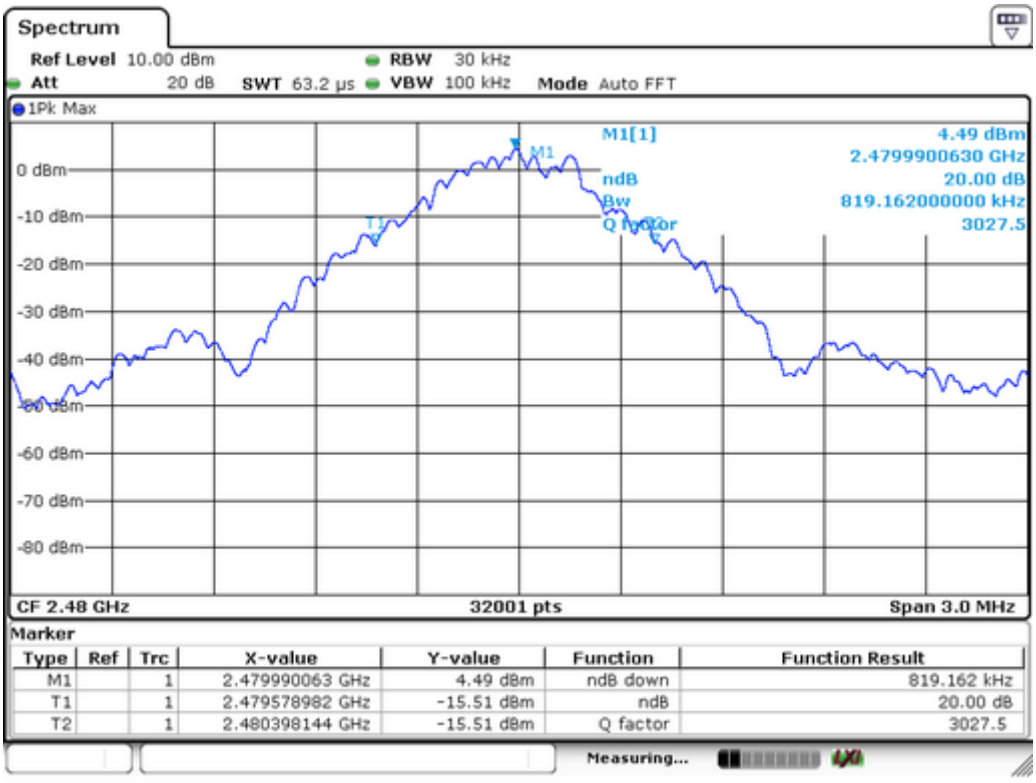
## 8.2 Test Result

Test Mode: CH00 / CH39 / CH78 (GFSK/(1Mbps)Mode)

| Channel number | Channel frequency (MHz) | 20dB Down BW(kHz) |
|---|---|---|
| 00 | 2402 | 842 |
| 39 | 2441 | 817 |
| 78 | 2480 | 819 |

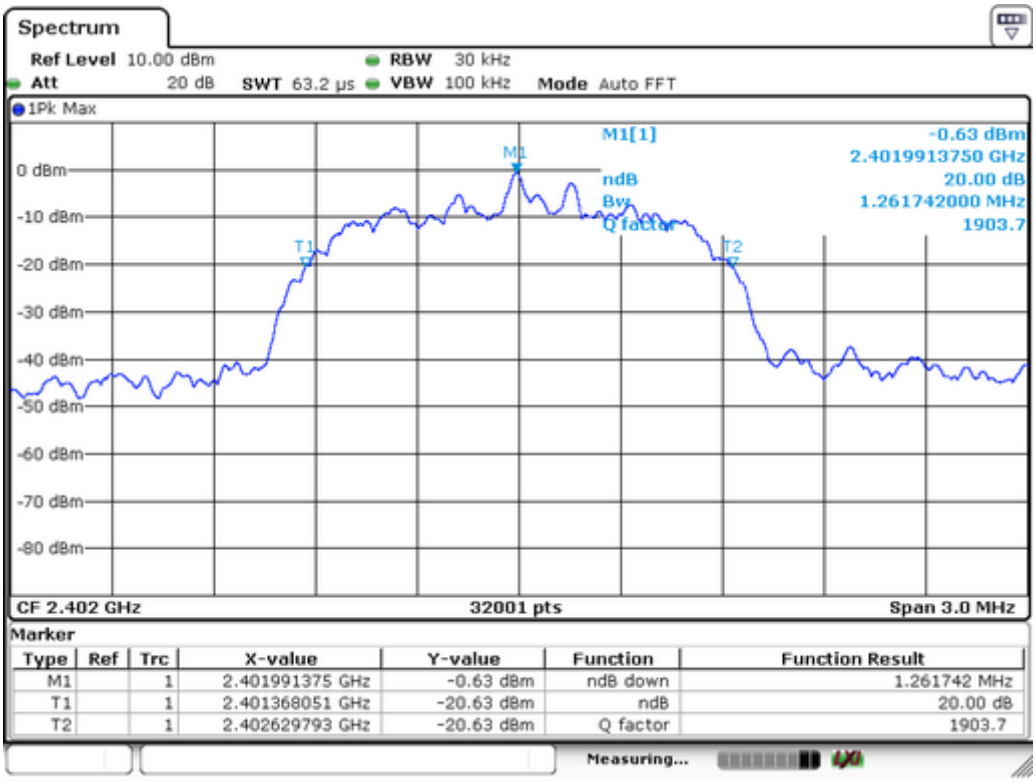


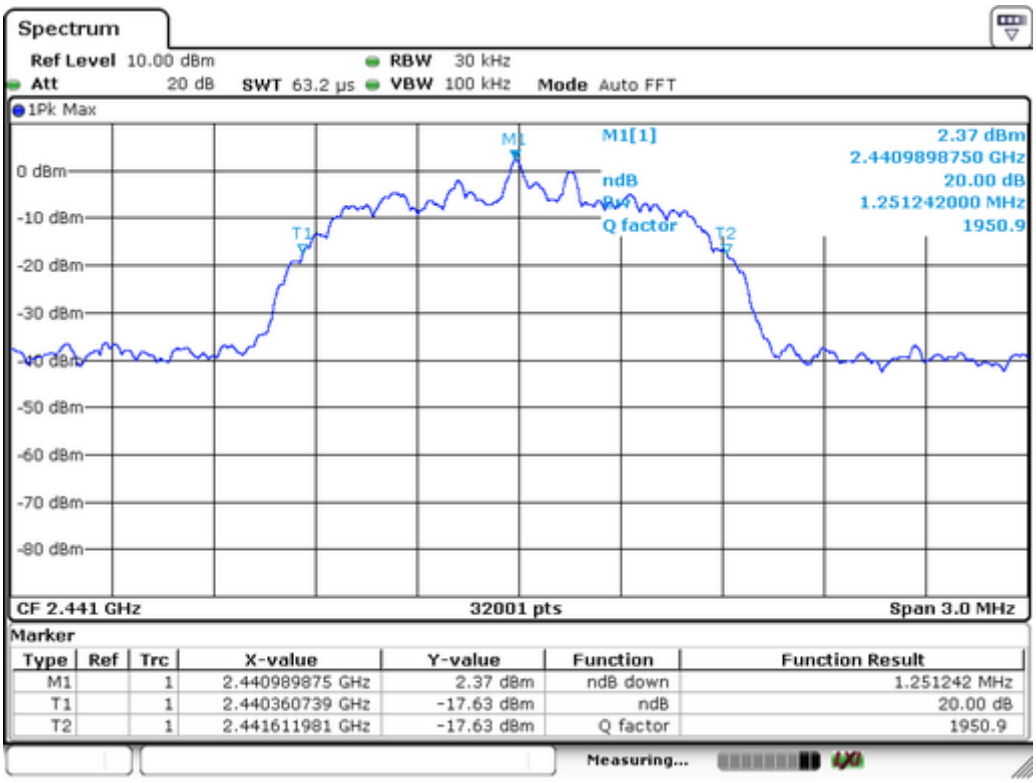

Spectrum
Ref Level 10.00 dBm
RBW 30 kHz
Att 20 dB
SWT 63.2 µs
VBW 100 kHz
Mode Auto FFT
1Pk Max
M1[1]
2.35 dBm
2.4409898750 GHz
ndB 20.00 dB
Bw 817.287000000 kHz
Q factor 2986.7
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.440989875 GHz 2.35 dBm ndB down 817.287 kHz
T1 1 2.440578607 GHz -17.66 dBm ndB 20.00 dB
T2 1 2.441395894 GHz -17.66 dBm Q factor 2986.7
Measuring...

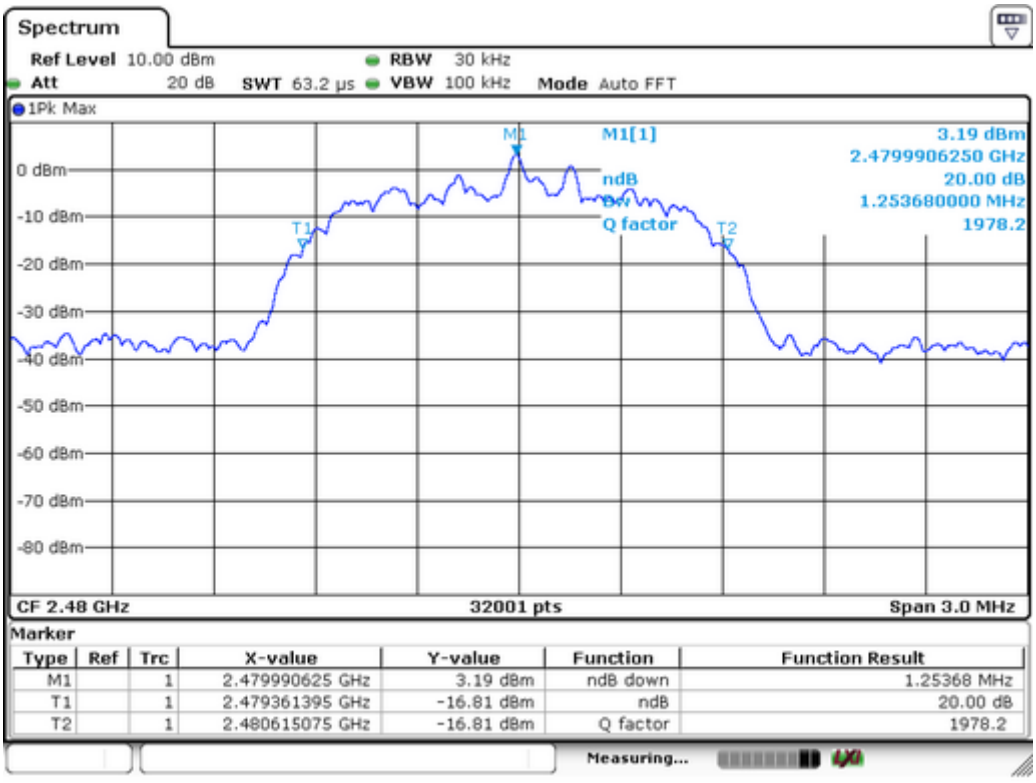

Spectrum
Ref Level 10.00 dBm
RBW 30 kHz
Att 20 dB
SWT 63.2 µs
VBW 100 kHz
Mode Auto FFT
1Pk Max
M1[1]
4.49 dBm
2.4799900630 GHz
ndB 20.00 dB
Bw 819.162000000 kHz
Q factor 3027.5
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479990063 GHz 4.49 dBm ndB down 819.162 kHz
T1 1 2.479578982 GHz -15.51 dBm ndB 20.00 dB
T2 1 2.480398144 GHz -15.51 dBm Q factor 3027.5
Measuring...

Test Mode: CH00 / CH39 / CH78 (Π/4-DQPSK /(2Mbps)Mode)

| Channel number | Channel frequency (MHz) | 20dB Down BW(kHz) |
|---|---|---|
| 00 | 2402 | 1262 |
| 39 | 2441 | 1251 |
| 78 | 2480 | 1254 |

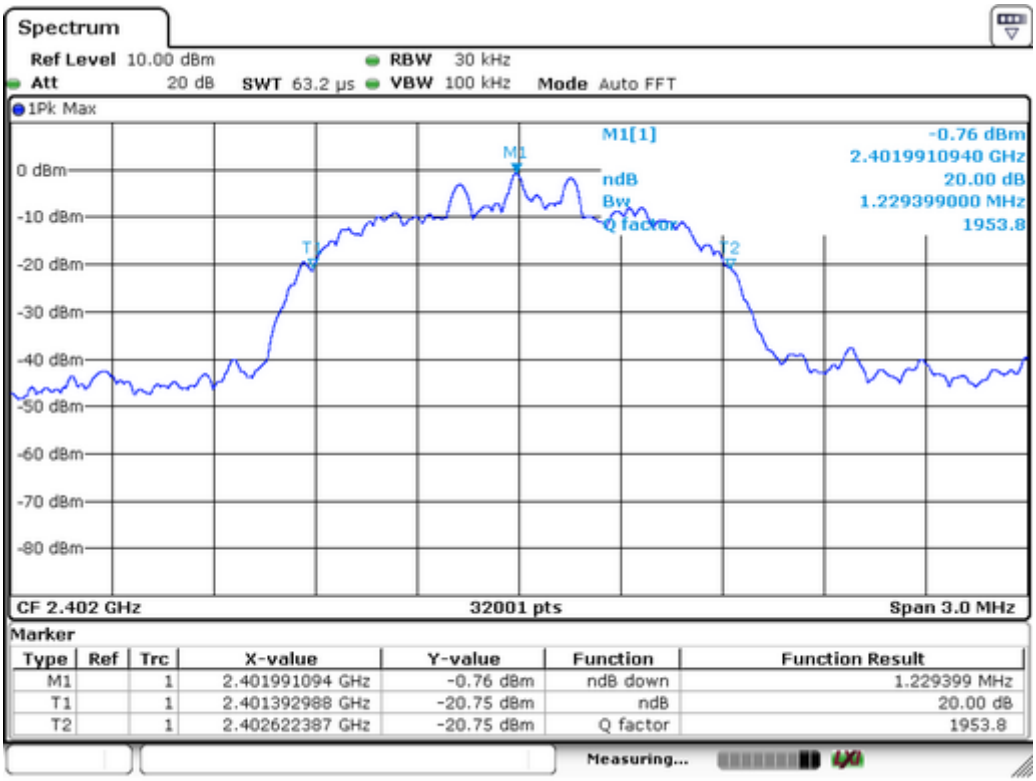


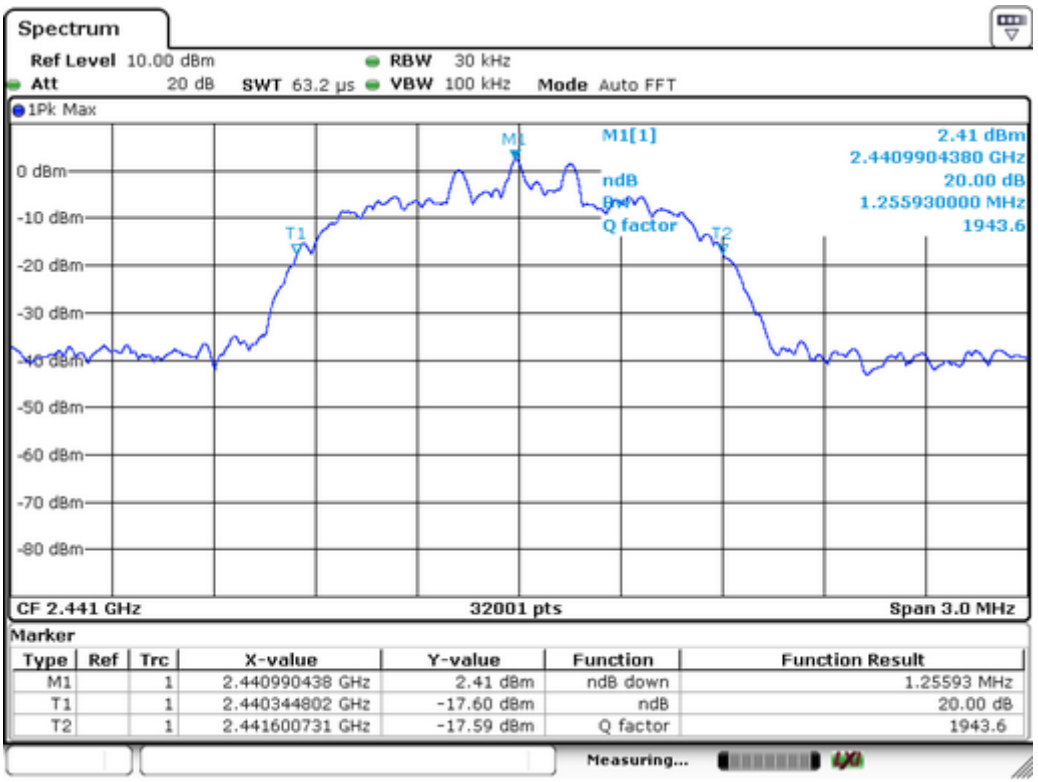

Spectrum
Ref Level 10.00 dBm
RBW 30 kHz
Att 20 dB
SWT 63.2 µs
VBW 100 kHz
Mode Auto FFT
1Pk Max
M1[1]
2.37 dBm
2.4409898750 GHz
ndB
20.00 dB
1.251242000 MHz
Q factor
1950.9
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.440989875 GHz 2.37 dBm ndB down 1.251242 MHz
T1 1 2.440360739 GHz -17.63 dBm ndB 20.00 dB
T2 1 2.441611981 GHz -17.63 dBm Q factor 1950.9
Measuring...

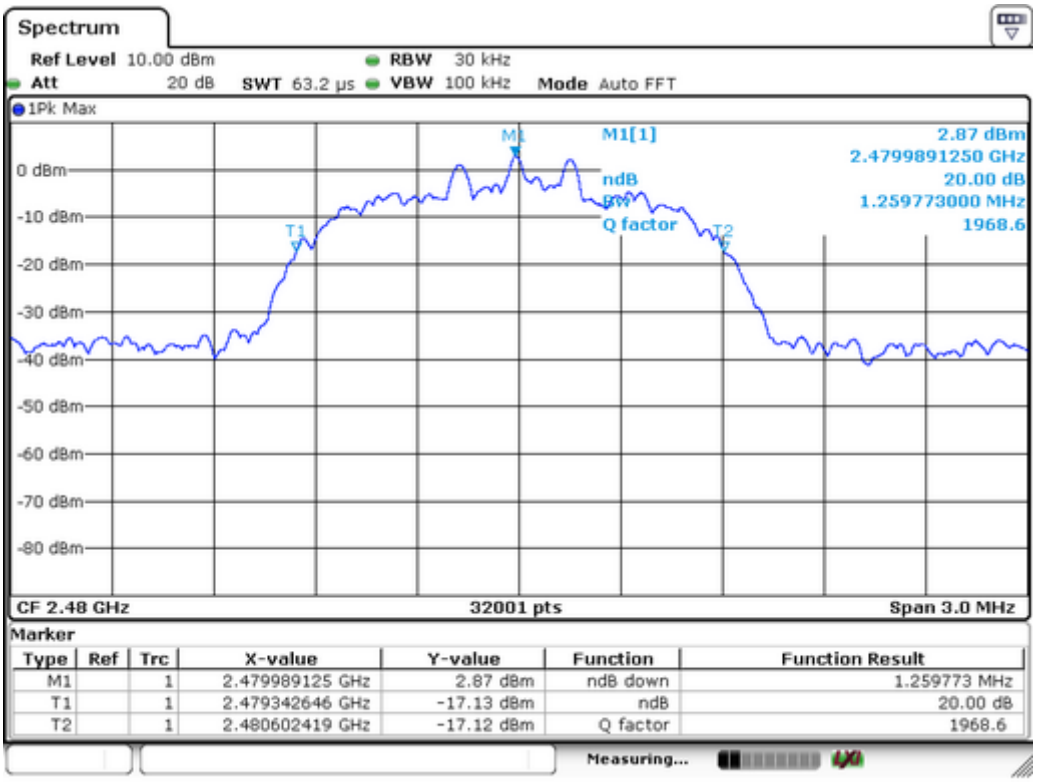

Spectrum
Ref Level 10.00 dBm
RBW 30 kHz
Att 20 dB
SWT 63.2 µs
VBW 100 kHz
Mode Auto FFT
1Pk Max
M1[1]
3.19 dBm
2.4799906250 GHz
ndB
20.00 dB
1.253680000 MHz
Q factor
1978.2
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479990625 GHz 3.19 dBm ndB down 1.25368 MHz
T1 1 2.479361395 GHz -16.81 dBm ndB 20.00 dB
T2 1 2.480615075 GHz -16.81 dBm Q factor 1978.2
Measuring...

Test Mode: CH00 / CH39 / CH78 (8DPSK(3Mbps)Mode)

| Channel number | Channel frequency (MHz) | 20dB Down BW(kHz) |
|---|---|---|
| 00 | 2402 | 1229 |
| 39 | 2441 | 1256 |
| 78 | 2480 | 1260 |




Spectrum
Ref Level 10.00 dBm
RBW 30 kHz
Att 20 dB
SWT 63.2 µs
VBW 100 kHz
Mode Auto FFT
1Pk Max
M1[1]
2.41 dBm
2.4409904380 GHz
ndB 20.00 dB
Bw 1.255930000 MHz
Q factor 1943.6
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.440990438 GHz 2.41 dBm ndB down 1.25593 MHz
T1 1 2.440344802 GHz -17.60 dBm ndB 20.00 dB
T2 1 2.441600731 GHz -17.59 dBm Q factor 1943.6
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 30 kHz
Att 20 dB
SWT 63.2 µs
VBW 100 kHz
Mode Auto FFT
1Pk Max
M1[1]
2.87 dBm
2.4799891250 GHz
ndB 20.00 dB
Bw 1.259773000 MHz
Q factor 1968.6
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479989125 GHz 2.87 dBm ndB down 1.259773 MHz
T1 1 2.479342646 GHz -17.13 dBm ndB 20.00 dB
T2 1 2.480602419 GHz -17.12 dBm Q factor 1968.6
Measuring...

# 9 Maximum Peak Output Power

Test Requirement : FCC CFR47 Part 15 Section 15.247

Test Method : ANSI C63.10:2013

Test Limit : Regulation 15.247 (b)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt (30dBm). For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Refer to the result “Number of Hopping Frequency” of this document. The 0.125watts (20.97 dBm) limit applies.

Test Mode : Refer to section 3.3

## 9.1 Test Procedure

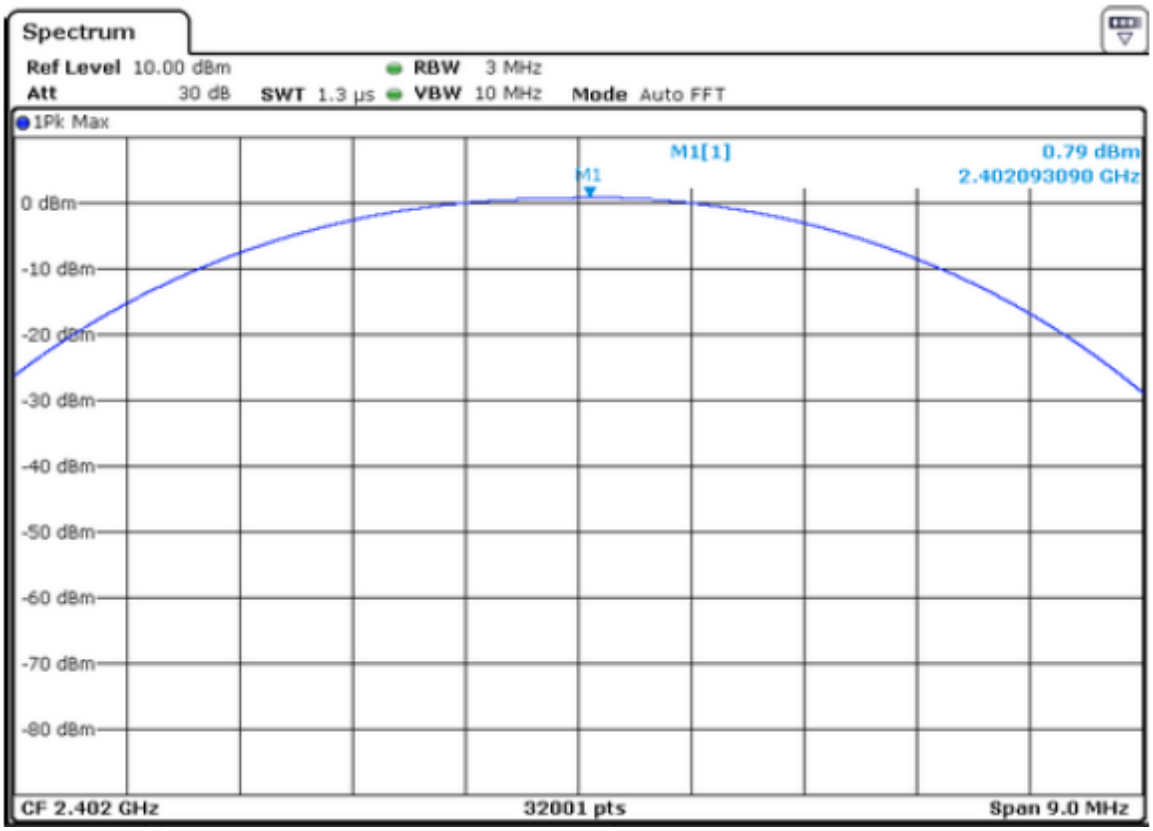
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

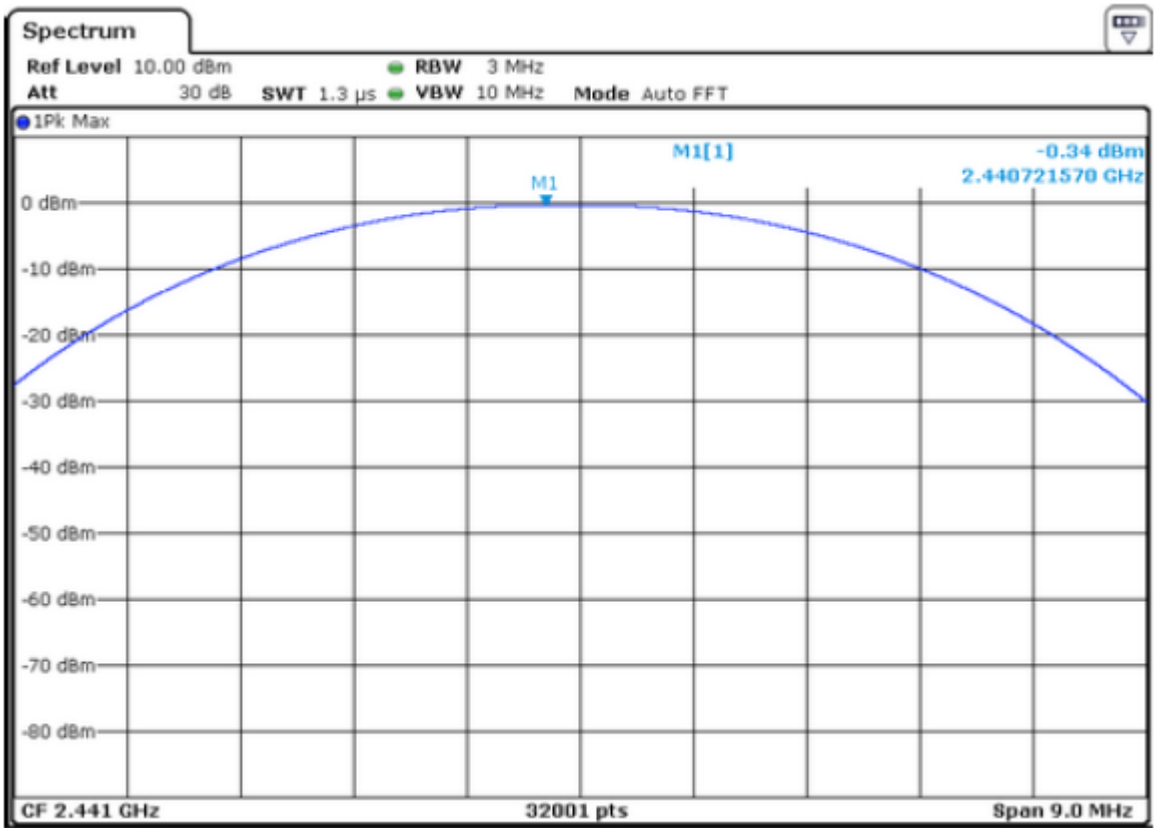
2. Set the spectrum analyser: RBW = 3 MHz. VBW =10 MHz. Sweep = auto; Detector Function = Peak.

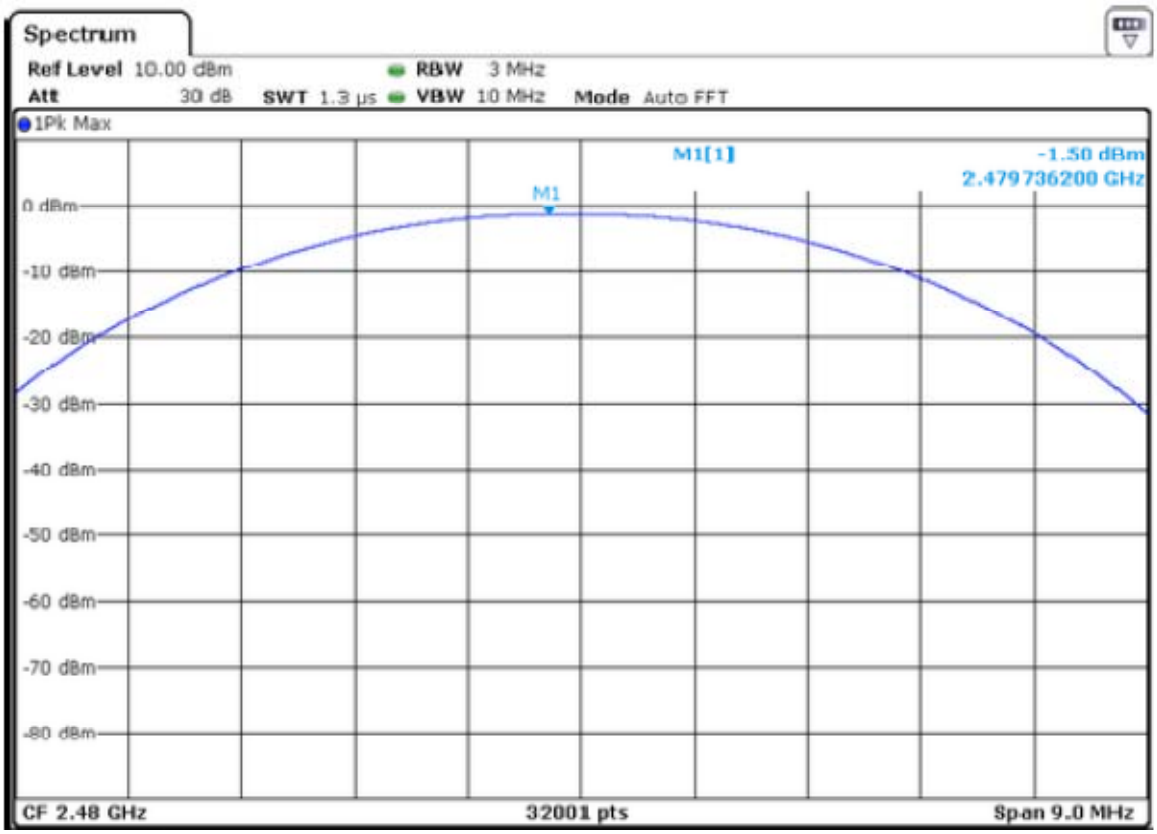
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

## 9.2 Test Result

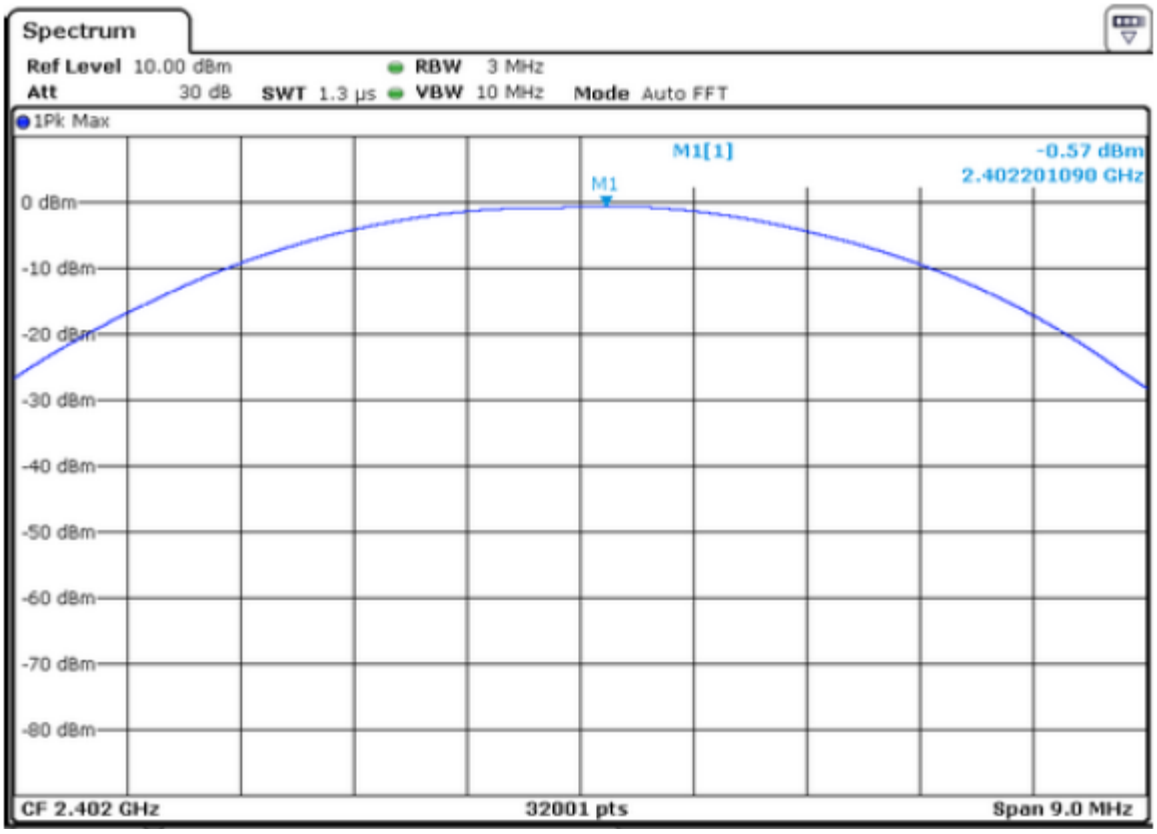
| GFSK(1Mbps) | | | | | |
|---|---|---|---|---|---|
| Test Channel | Frequency | Conducted Output Peak Power | Conducted Output Peak Power | LIMIT | Pass/Fail |
| | (MHz) | (dBm) | (mW) | (mW) | |
| CH00 | 2402 | **0.79** | **1.199** | 1000 | Pass |
| CH39 | 2441 | -0.34 | 0.925 | 1000 | Pass |
| CH78 | 2480 | -1.5 | 0.708 | 1000 | Pass |

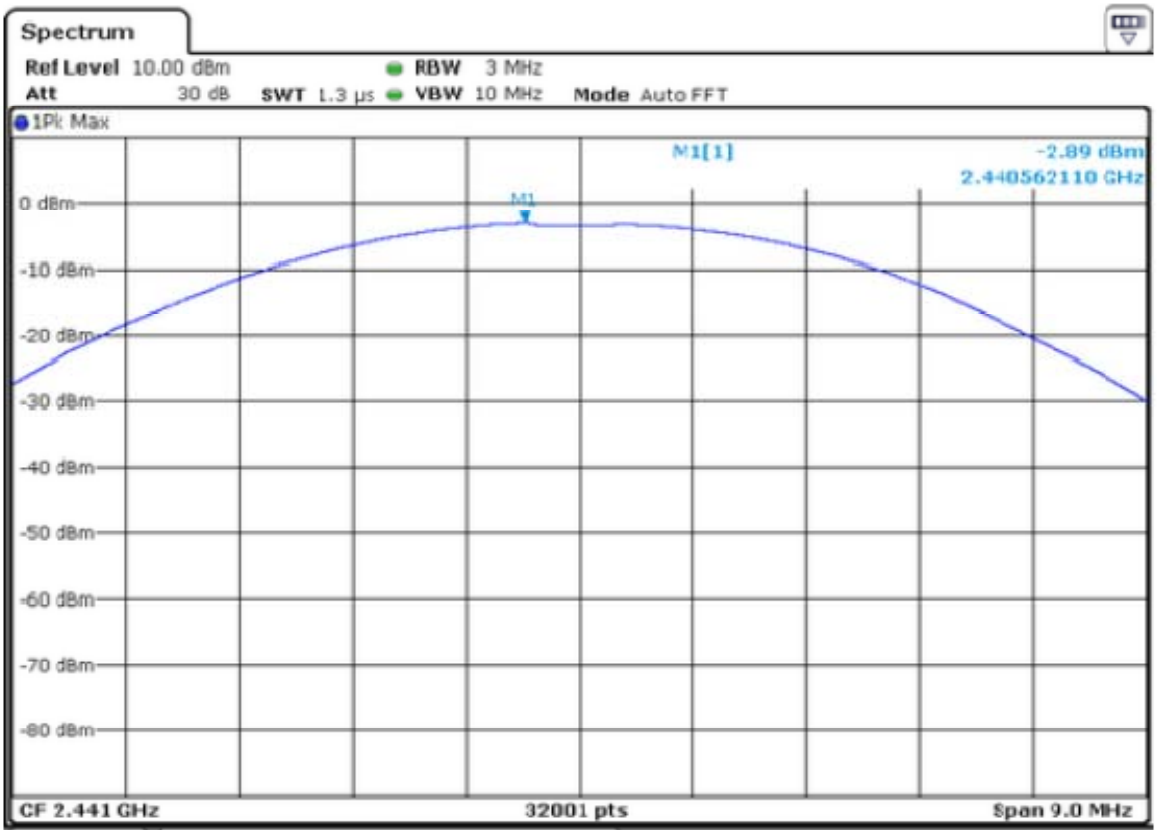

Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
0.79 dBm
2.402093090 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.402 GHz
32001 pts
Span 9.0 MHz

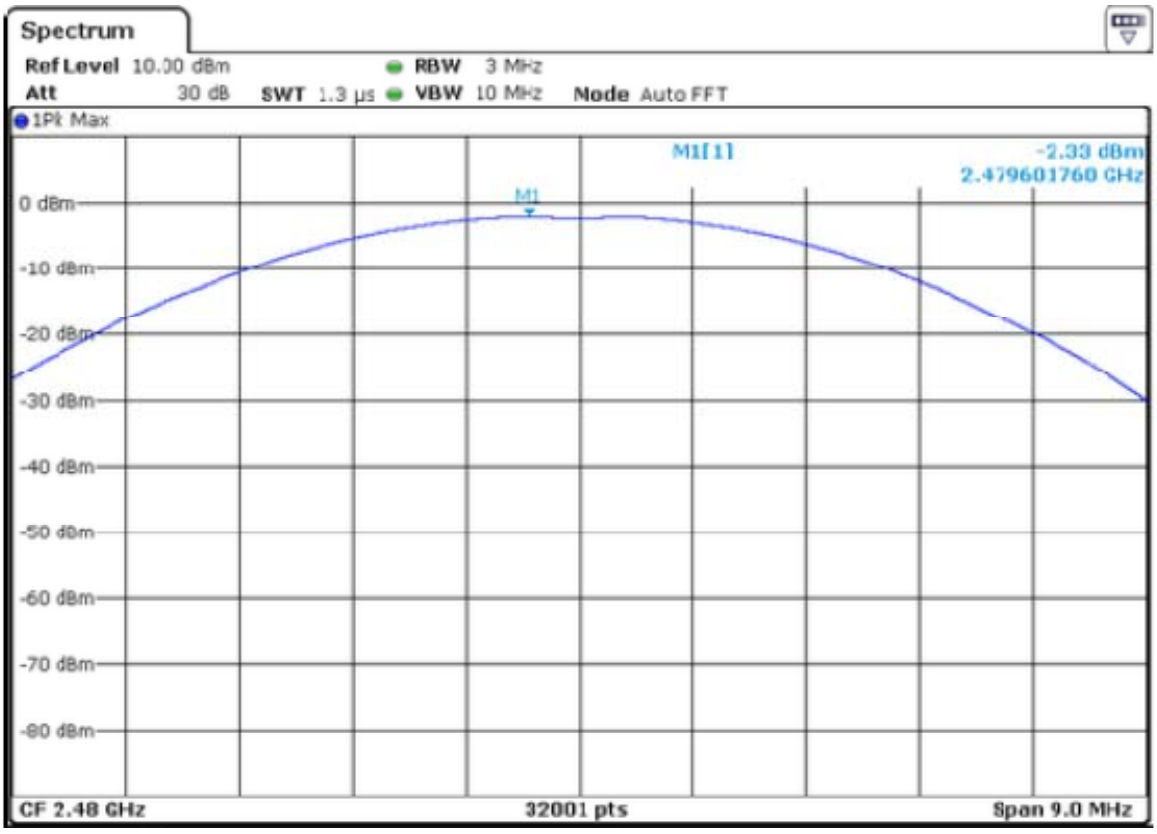

Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
-0.34 dBm
2.440721570 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 9.0 MHz



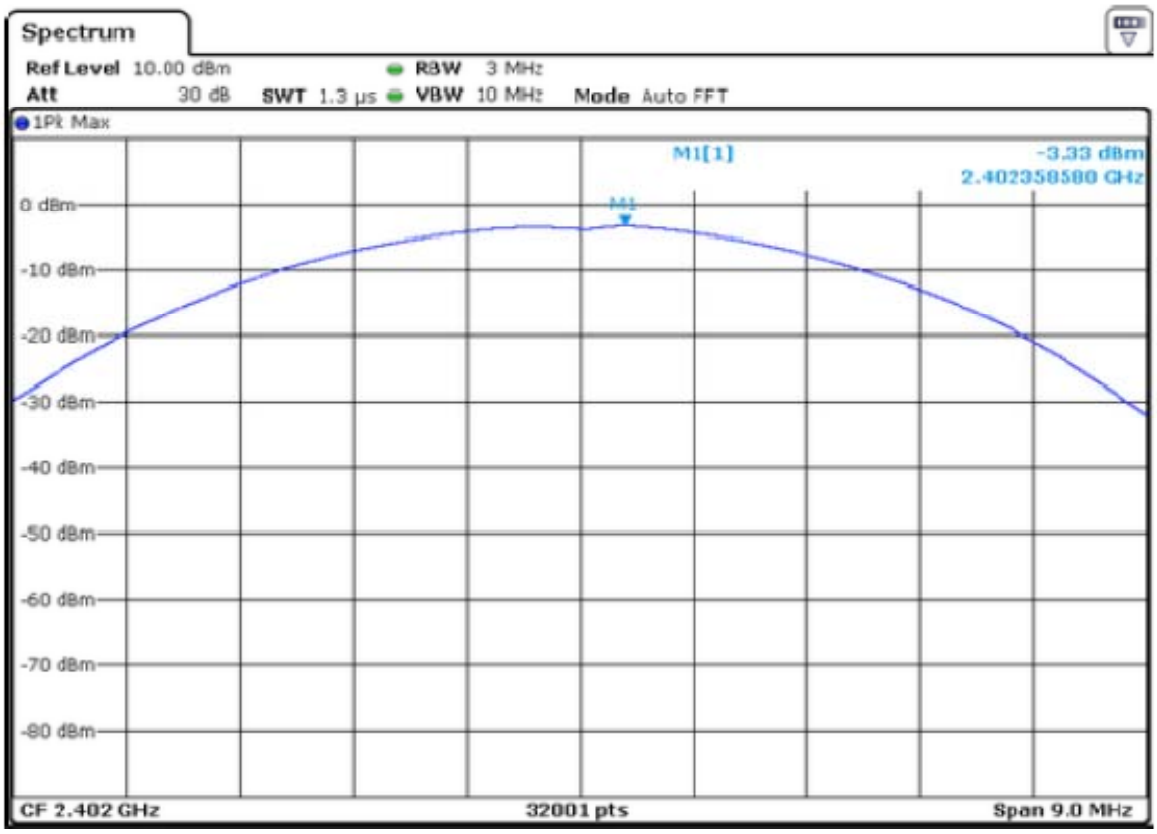

| π /4QPSK(2Mbps) | | | | | |
|---|---|---|---|---|---|
| Test Channel | Frequency | Conducted Output Peak Power | Conducted Output Peak Power | LIMIT | Pass/Fail |
| | (MHz) | (dBm) | (mW) | (mW) | |
| CH00 | 2402 | -0.57 | 0.877 | 125 | Pass |
| CH39 | 2441 | -2.89 | 0.514 | 125 | Pass |
| CH78 | 2480 | -2.33 | 0.585 | 125 | Pass |

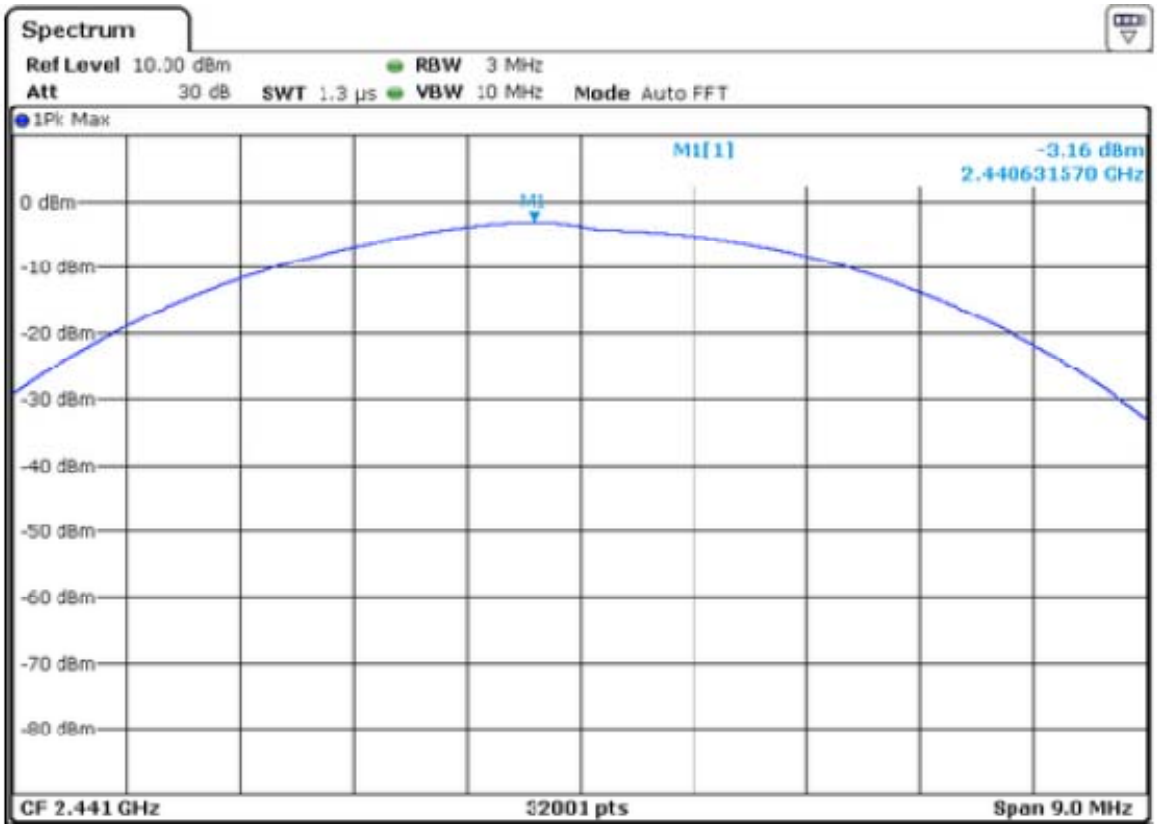

Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
-0.57 dBm
2.402201090 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.402 GHz
32001 pts
Span 9.0 MHz

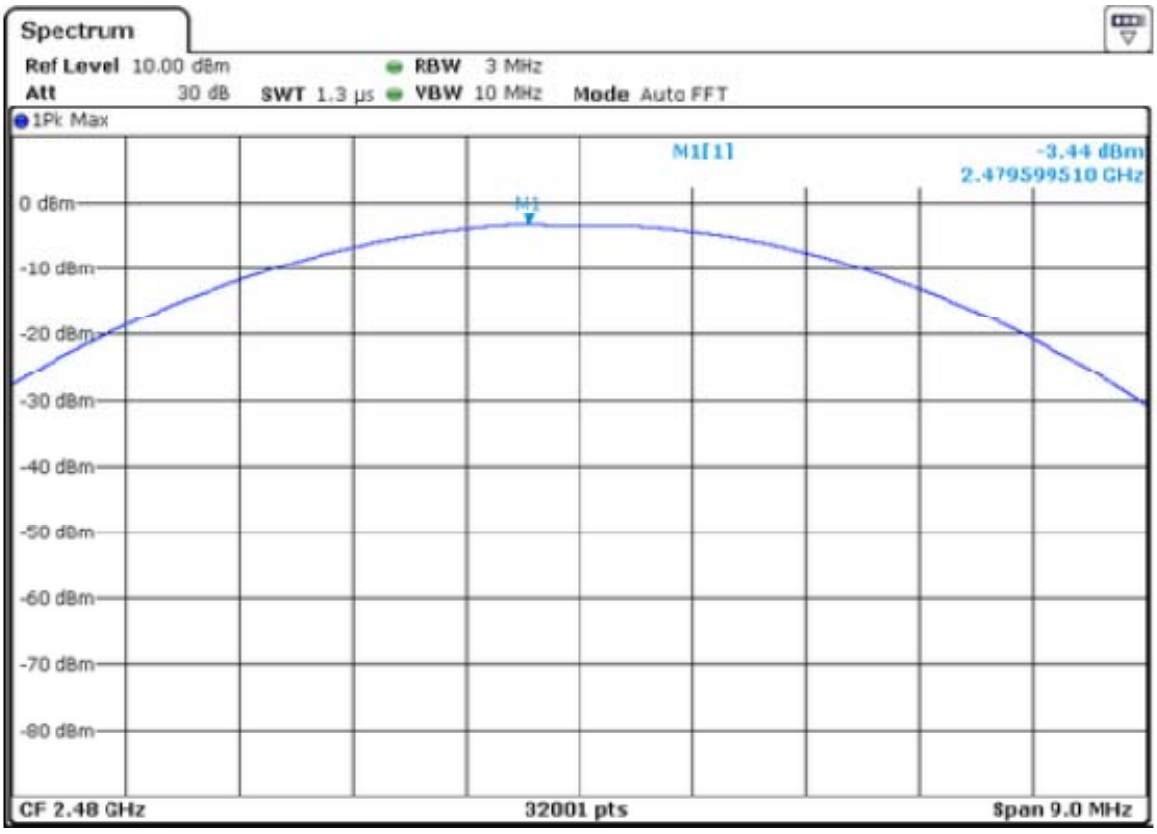

Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
-2.89 dBm
2.440562110 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 9.0 MHz




| 8DPSK(3Mbps) | | | | | |
|---|---|---|---|---|---|
| Test Channel | Frequency | Conducted Output Peak Power | Conducted Output Peak Power | LIMIT | Pass/Fail |
| | (MHz) | (dBm) | (mW) | (mW) | |
| CH00 | 2402 | -3.33 | 0.465 | 125 | Pass |
| CH39 | 2441 | -3.16 | 0.483 | 125 | Pass |
| CH78 | 2480 | -3.44 | 0.453 | 125 | Pass |


Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
-3.33 dBm
2.402358580 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.402 GHz
32001 pts
Span 9.0 MHz


Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
-3.16 dBm
2.440631570 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 9.0 MHz


Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 30 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
-3.44 dBm
2.479599510 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 9.0 MHz

# 10 Hopping Channel Separation

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| Test Limit | : | Regulation 15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 1W. |
| Test Mode | : | Hopping |

## 10.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

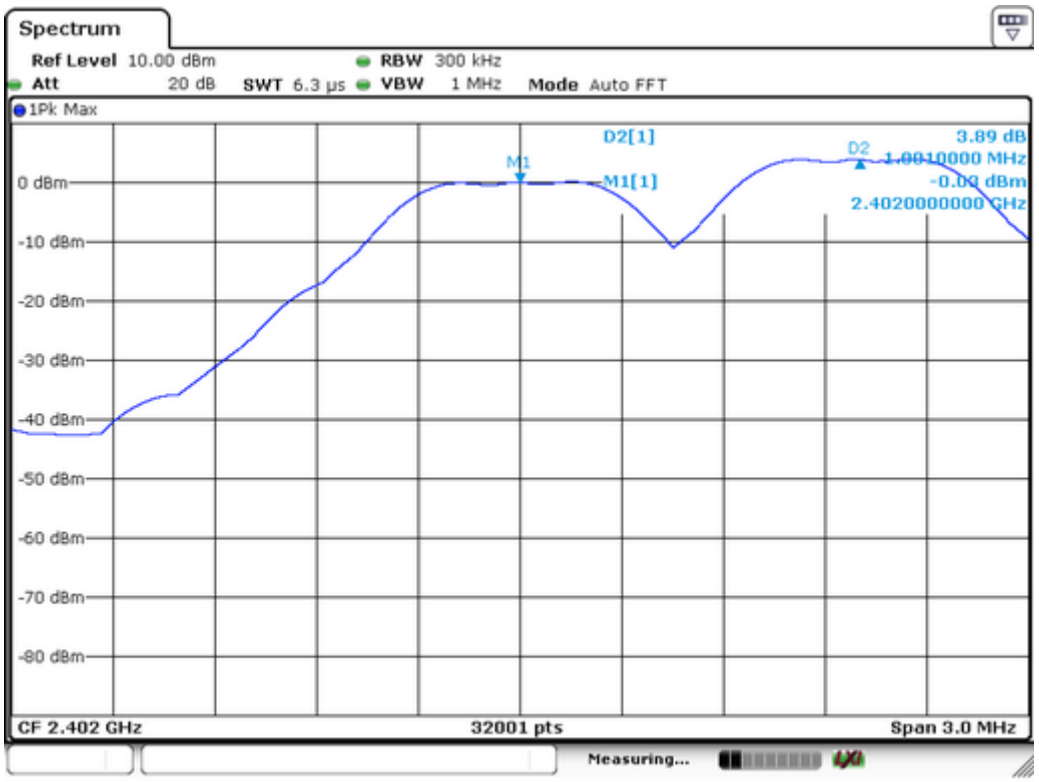
2. Set the spectrum analyzer: RBW = 300KHz. VBW = 1MHz , Span = 3MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

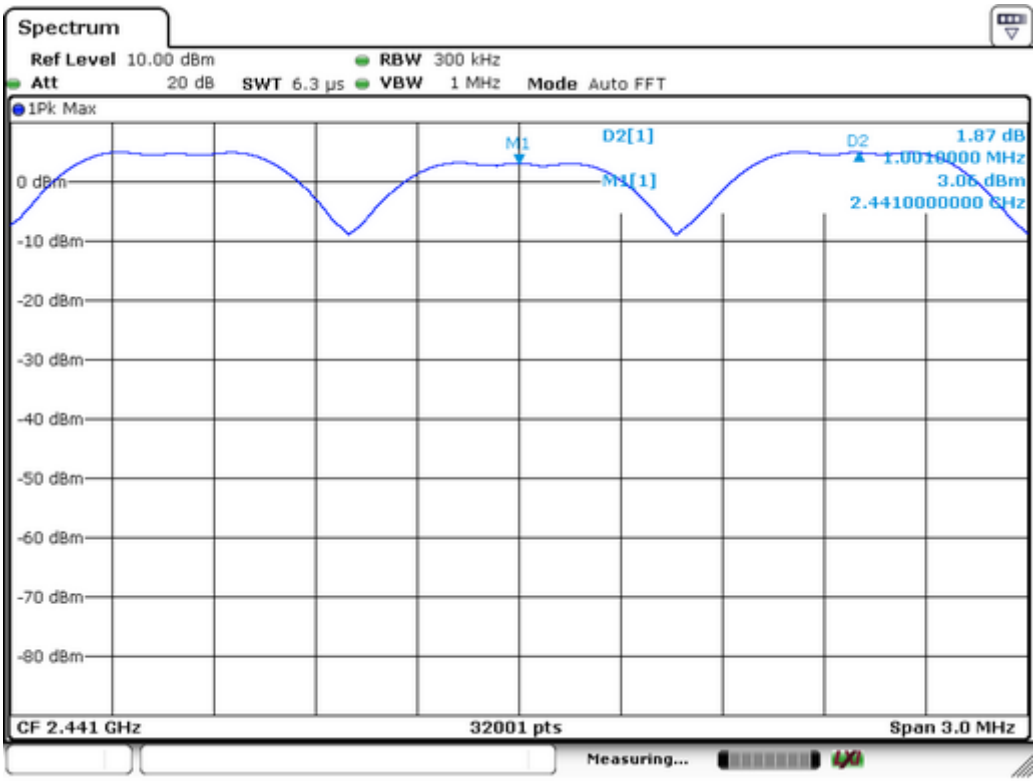
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

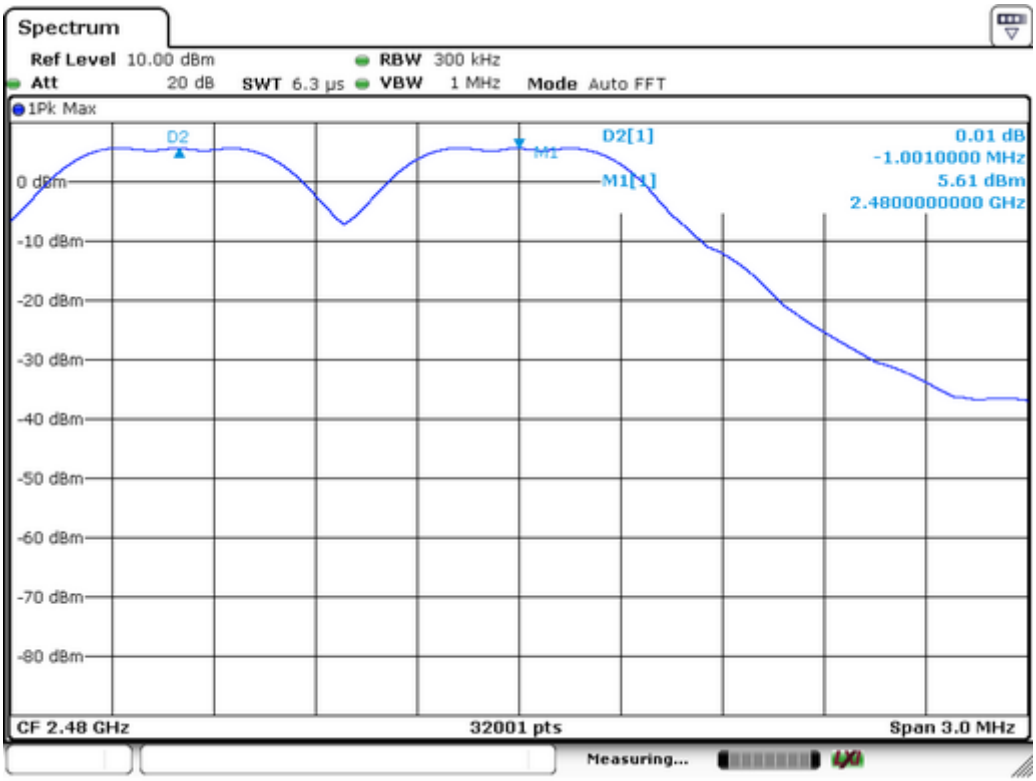
## 10.2 Test Result

| Test Mode: | CH00 / CH39 / CH78 (GFSK(1Mbps) Mode) |
|---|---|

| Channel number | Channel frequency (MHz) | Separation Read Value (kHz) | Separation Limit (kHz) |
|---|---|---|---|
| 00 | 2402 | 1001 | >842 |
| 39 | 2441 | 1001 | >817 |
| 78 | 2480 | 1001 | >819 |

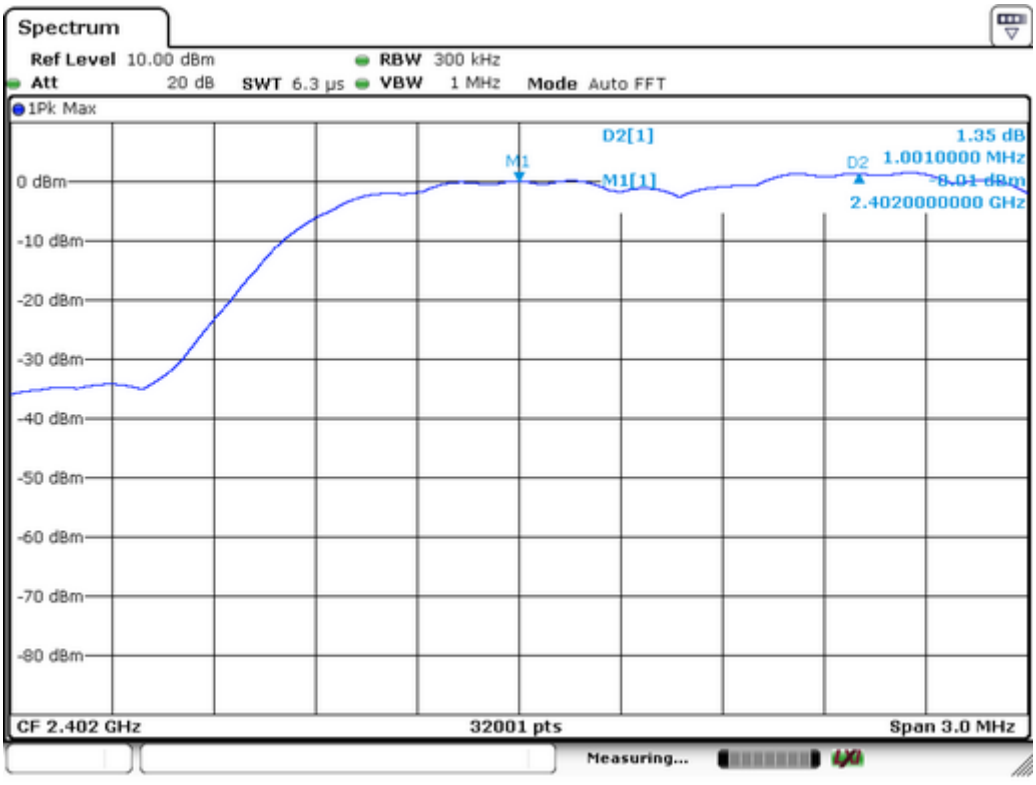


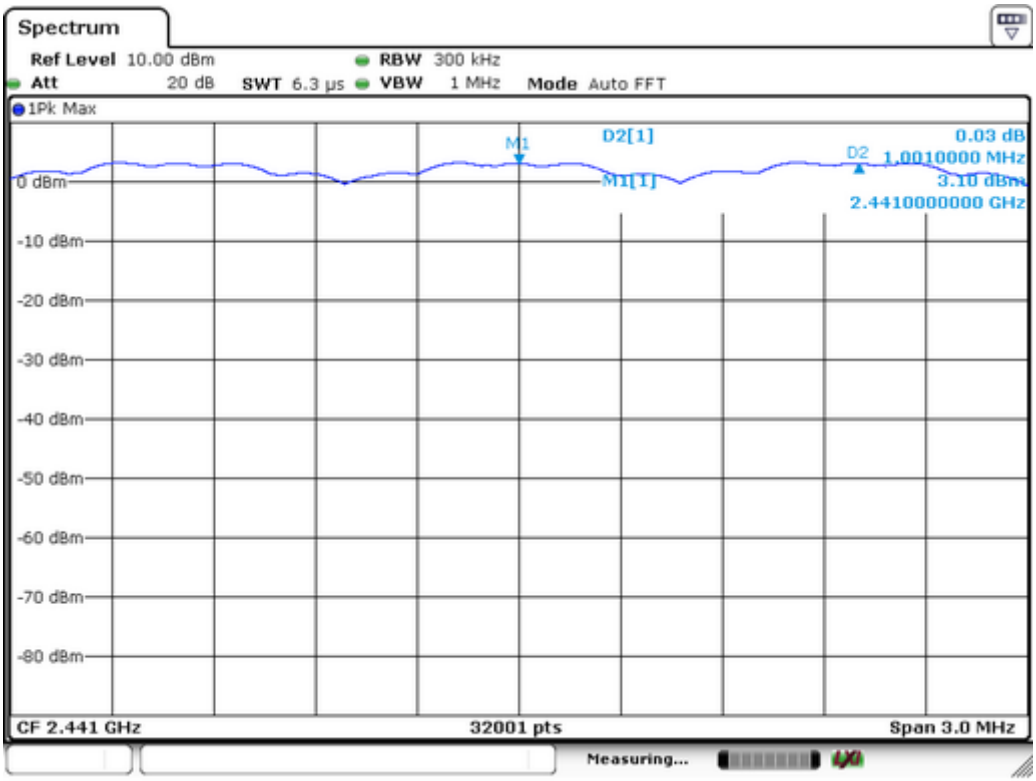

Spectrum
Ref Level 10.00 dBm
RBW 300 kHz
Att 20 dB
SWT 6.3 µs
VBW 1 MHz
Mode Auto FFT
1Pk Max
M1
D2[1]
1.87 dB
M1[1]
3.06 dBm
2.4410000000 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 3.0 MHz
Measuring...

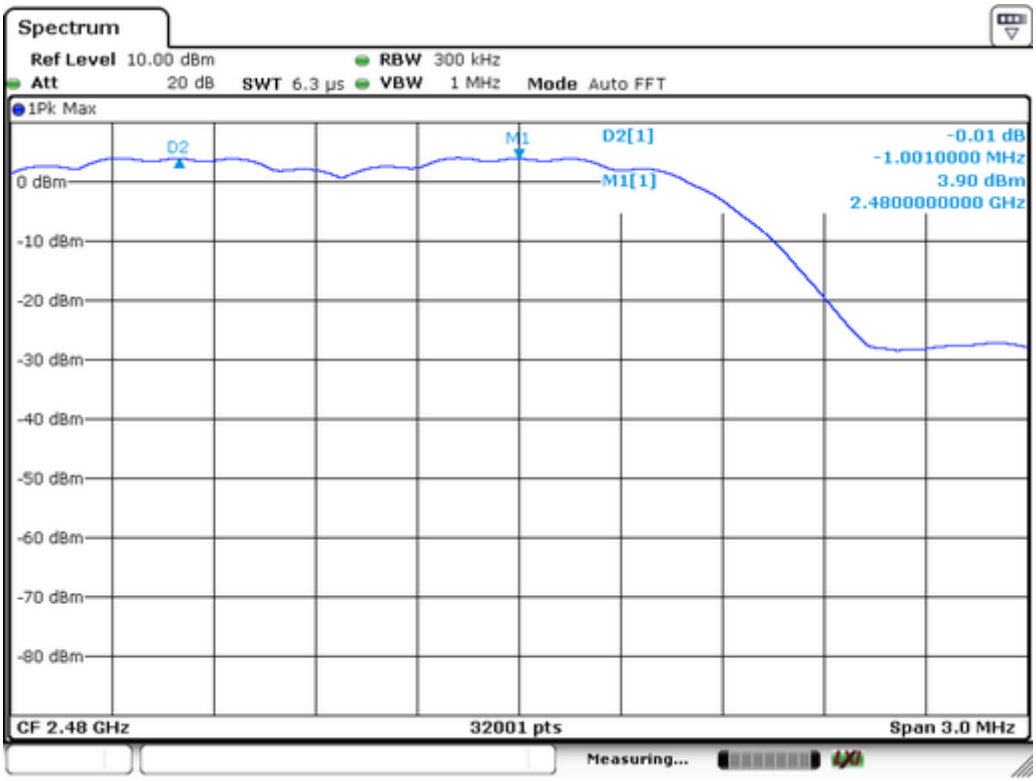

Spectrum
Ref Level 10.00 dBm
RBW 300 kHz
Att 20 dB
SWT 6.3 µs
VBW 1 MHz
Mode Auto FFT
1Pk Max
D2
D2[1]
0.01 dB
M1[1]
5.61 dBm
2.4800000000 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 3.0 MHz
Measuring...

| Test Mode: | CH00 / CH39 / CH78 (π/4-DQPSK(2Mbps) Mode) |
|---|---|

| Channel number | Channel frequency (MHz) | Separation Read Value (kHz) | Separation Limit<br>2/3 20dB Down BW(kHz) |
|---|---|---|---|
| 00 | 2402 | 1001 | >841 |
| 39 | 2441 | 1001 | >834 |
| 78 | 2480 | 1001 | >836 |

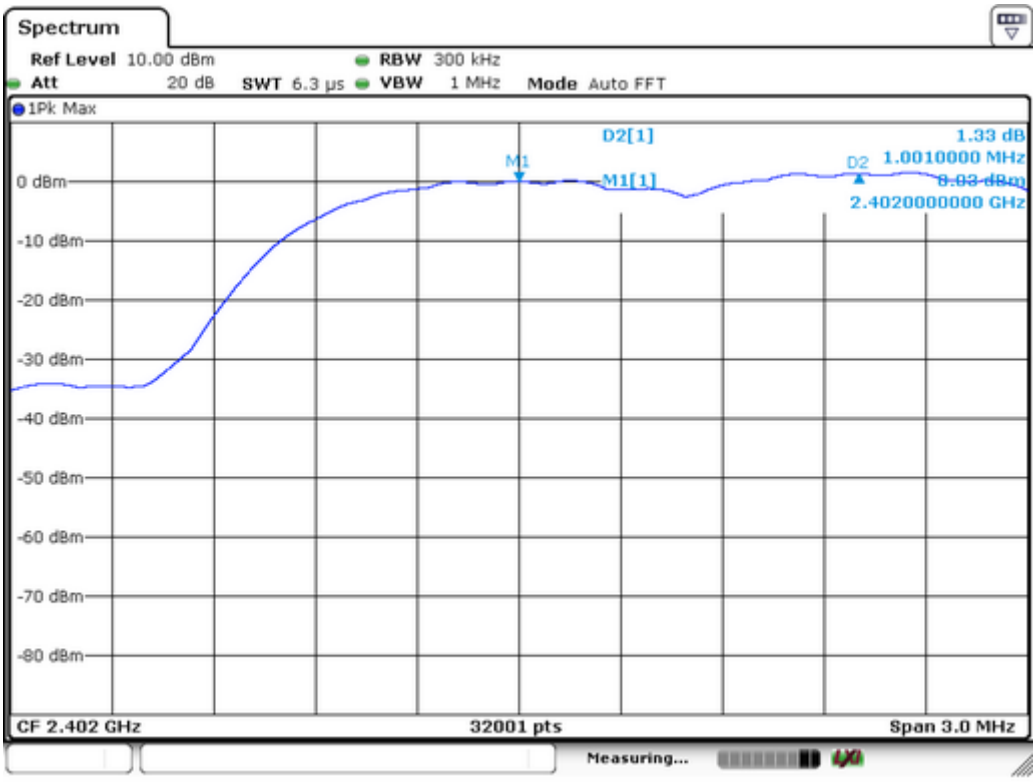


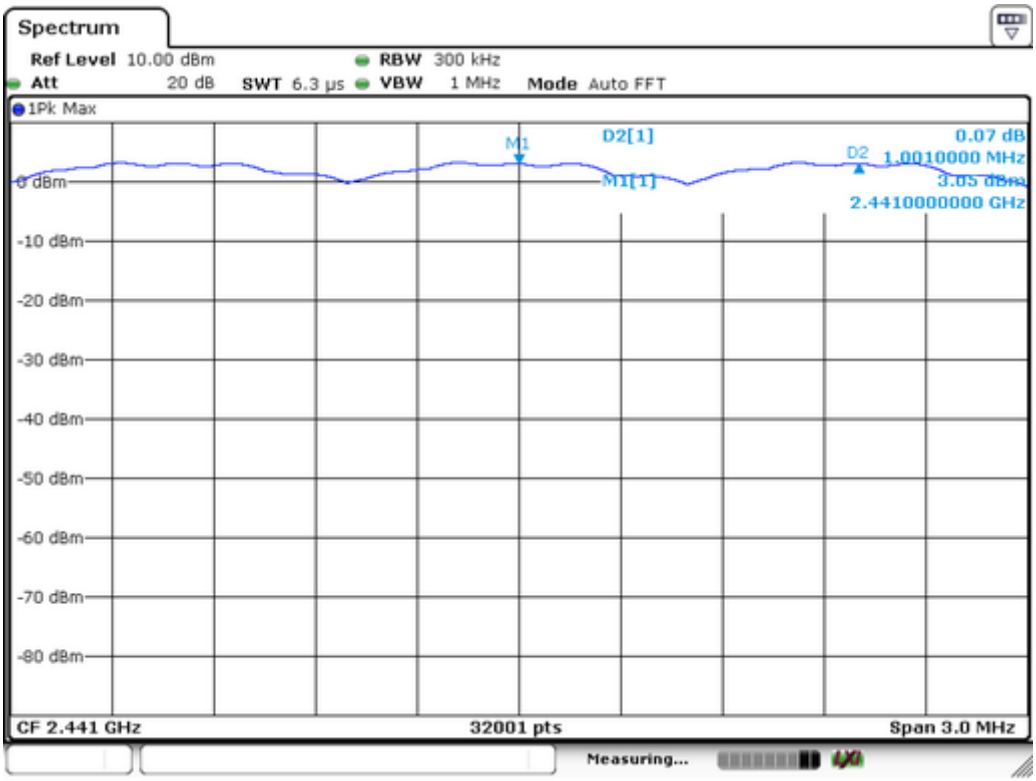

Spectrum
Ref Level 10.00 dBm
RBW 300 kHz
Att 20 dB
SWT 6.3 µs
VBW 1 MHz
Mode Auto FFT
1Pk Max
M1
D2[1]
0.03 dB
D2
1.0010000 MHz
M1[1]
3.10 dBm
2.4410000000 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 3.0 MHz
Measuring...

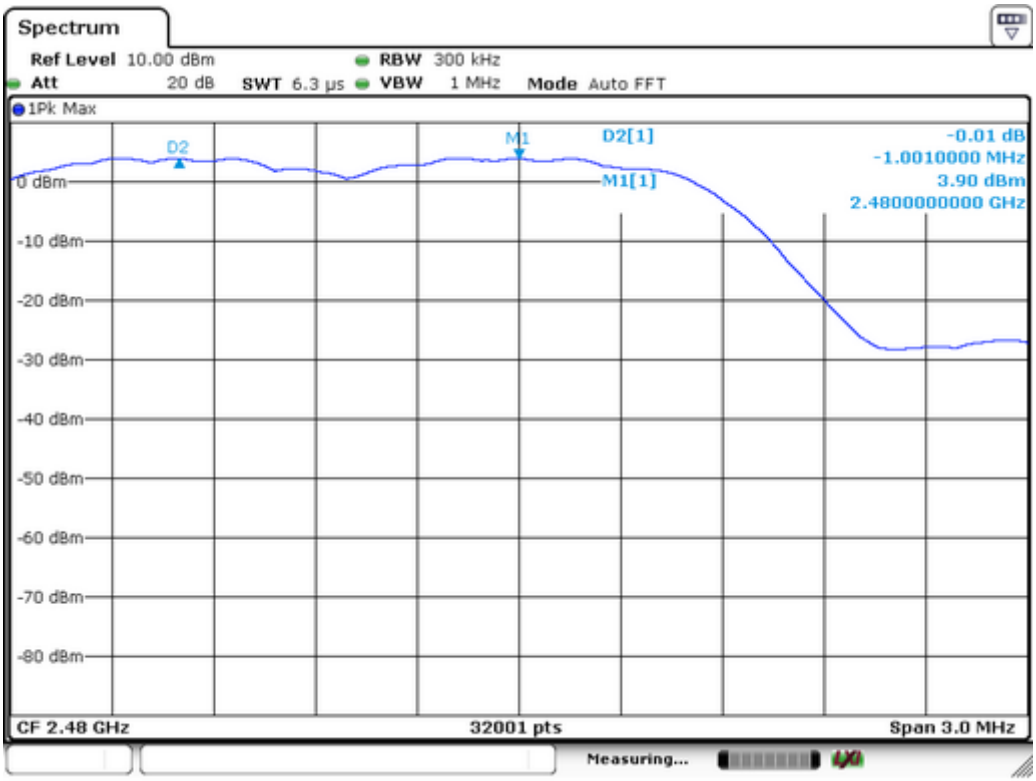

Spectrum
Ref Level 10.00 dBm
RBW 300 kHz
Att 20 dB
SWT 6.3 µs
VBW 1 MHz
Mode Auto FFT
1Pk Max
D2
M1
D2[1]
-0.01 dB
-1.0010000 MHz
M1[1]
3.90 dBm
2.4800000000 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 3.0 MHz
Measuring...

| Test Mode: | CH00 / CH39 / CH78 (8DPSK(3Mbps)Mode) |
|---|---|

| Channel number | Channel frequency (MHz) | Separation Read Value (kHz) | Separation Limit<br>2/3 20dB Down BW(kHz) |
|---|---|---|---|
| 1 | 2402 | 1001 | >819 |
| 40 | 2441 | 1001 | >837 |
| 79 | 2480 | 1001 | >840 |




Spectrum
Ref Level 10.00 dBm
RBW 300 kHz
Att 20 dB
SWT 6.3 µs
VBW 1 MHz
Mode Auto FFT
1Pk Max
M1
D2[1]
0.07 dB
D2
1.0010000 MHz
M1[1]
3.05 dBm
2.4410000000 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.441 GHz
32001 pts
Span 3.0 MHz
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 300 kHz
Att 20 dB
SWT 6.3 µs
VBW 1 MHz
Mode Auto FFT
1Pk Max
D2
M1
D2[1]
-0.01 dB
-1.0010000 MHz
M1[1]
3.90 dBm
2.4800000000 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 3.0 MHz
Measuring...

# 11 Number of Hopping Frequency

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| Test Limit | : | Regulation 15.247 (a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. |
| Test Mode | : | Hopping(GFSK) |

## 11.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

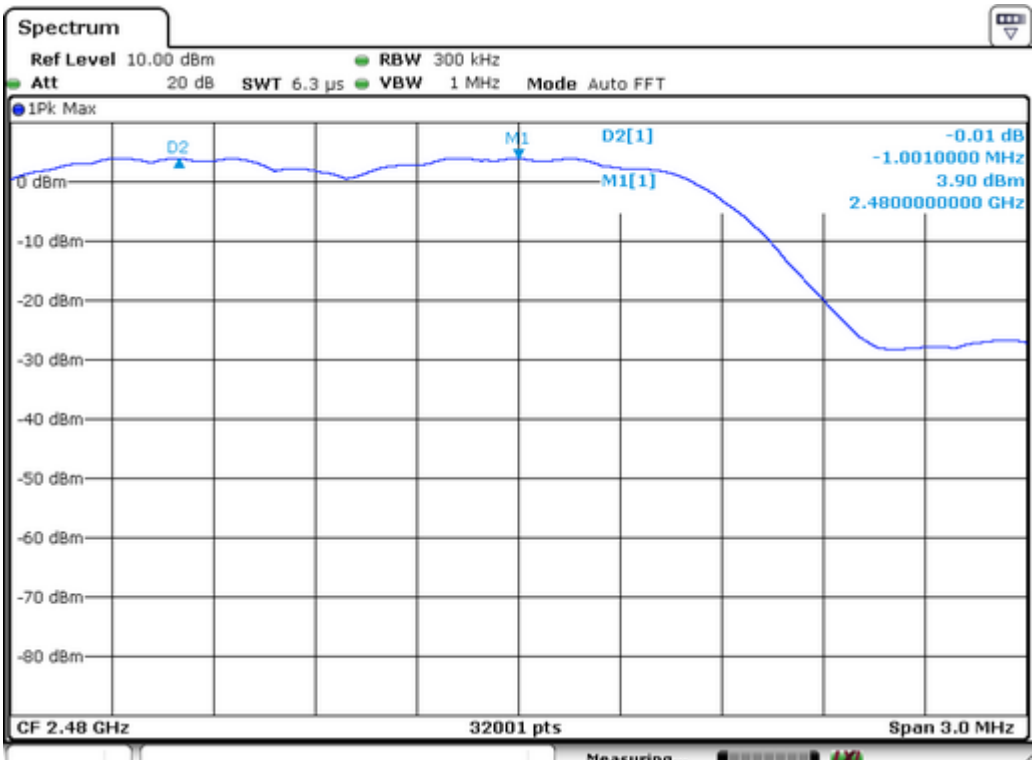
2. Set the spectrum analyzer: RBW = 300KHz. VBW = 1MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.

4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.483GHz. Sweep=auto;

## 11.2 Test Result

| Channel Number | Limit |
|---|---|
| 79 | ≥15 |



# 12 Dwell Time

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013 |
| Test Limit | : | Regulation 15.247(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. |
| Test Mode | : | Hopping |

## 12.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

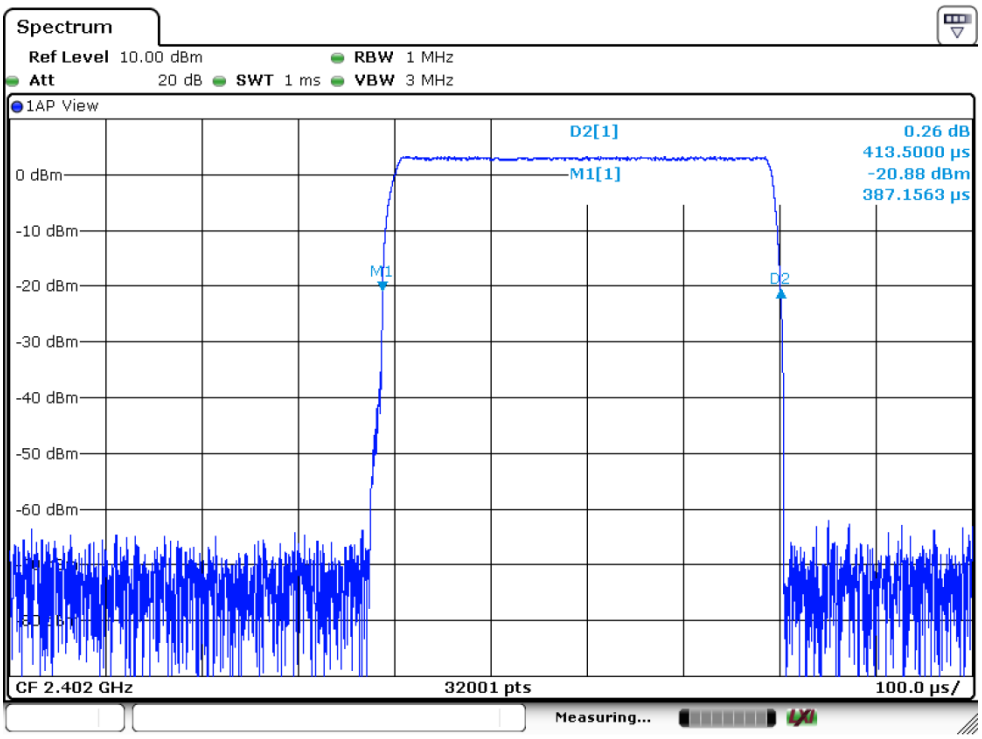
2. Set spectrum analyzer span = 0. Centred on a hopping channel;

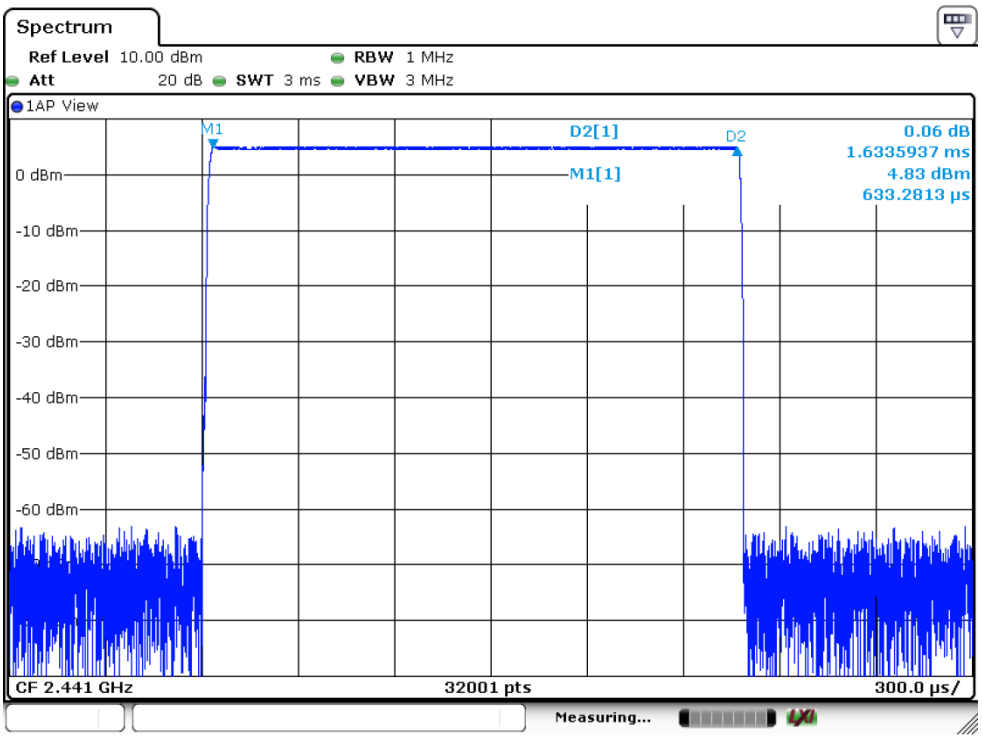
3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.

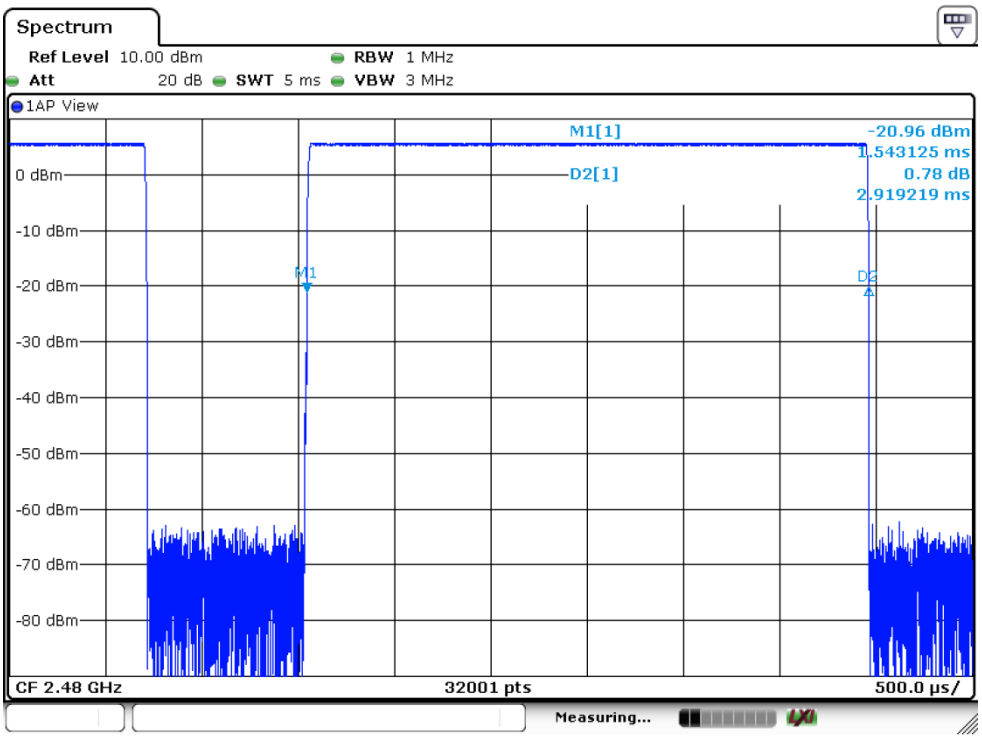
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

## 12.2 Test Result

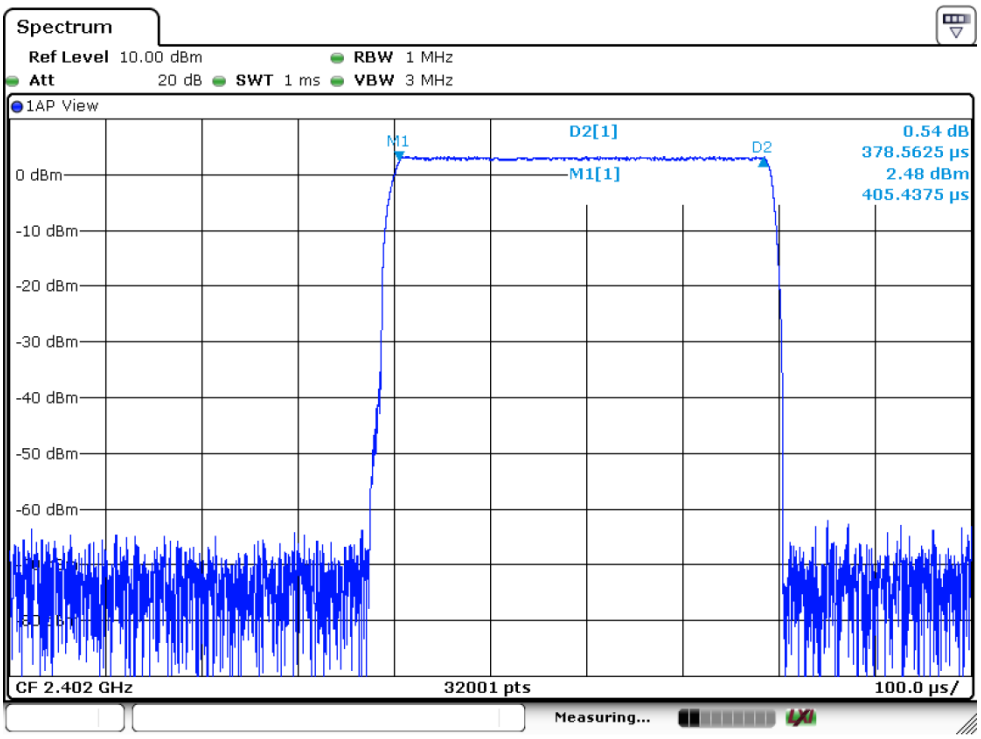
| GFSK(1Mbps) | | | | |
|---|---|---|---|---|
| Mode | Number of transmission in a 31.6( 79 Hopping*0.4) | Length of transmissions time(msec) | Result (msec) | Limit (msec) |
| DH1 | 1600/(2*79) x 31.6 = 320 | 0.413 | 132.16 | 400 |
| DH3 | 1600/(4*79) x 31.6 =160 | 1.634 | 261.44 | 400 |
| DH5 | 1600/(6*79) x 31.6 =106.67 | 2.919 | 311.37 | 400 |

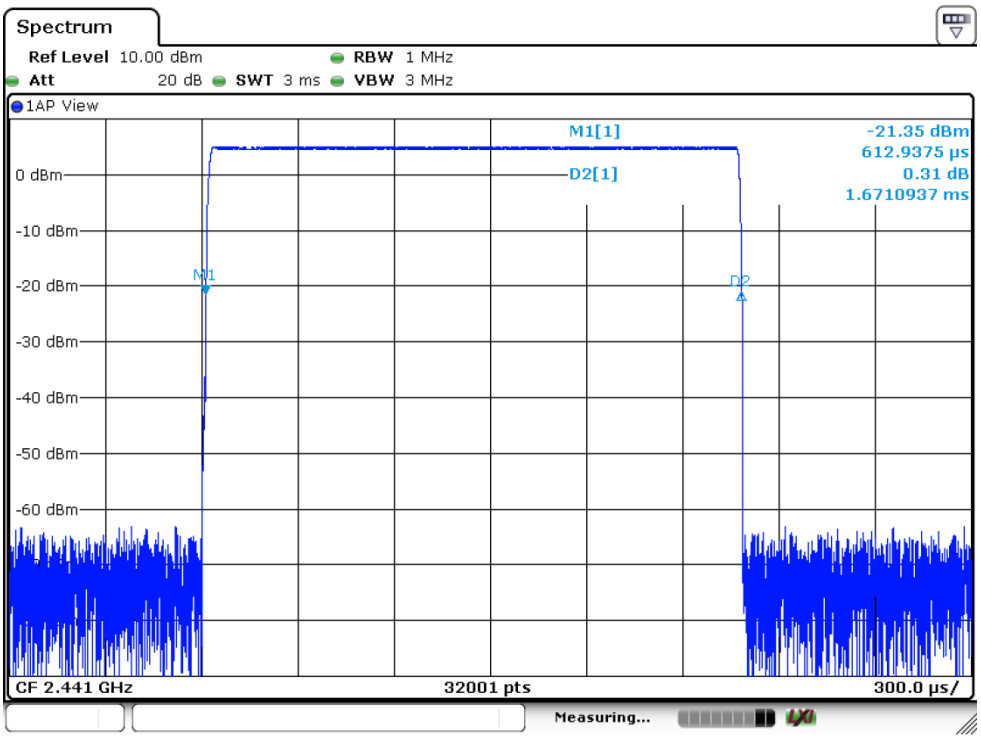

Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 20 dB SWT 1 ms VBW 3 MHz
1AP View
D2[1] 0.26 dB
413.5000 µs
M1[1] -20.88 dBm
387.1563 µs
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
M1
D2
CF 2.402 GHz
32001 pts
100.0 µs/
Measuring...

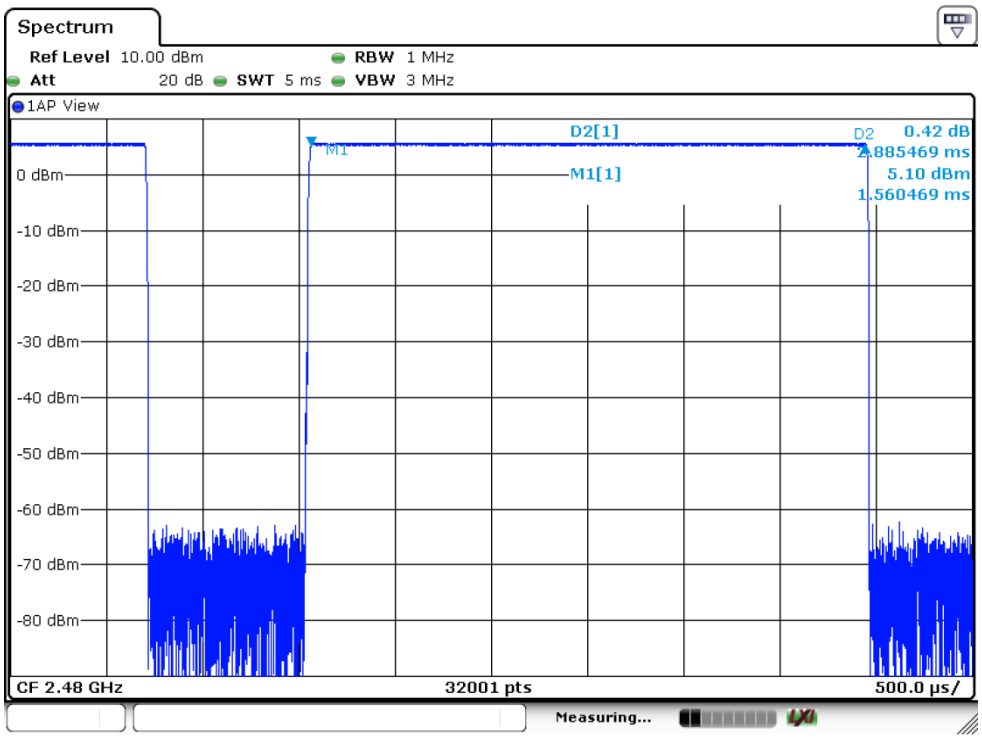

Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 20 dB SWT 3 ms VBW 3 MHz
1AP View
M1
D2[1] 0.06 dB
1.6335937 ms
M1[1] 4.83 dBm
633.2813 µs
D2
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.441 GHz
32001 pts
300.0 µs/
Measuring...



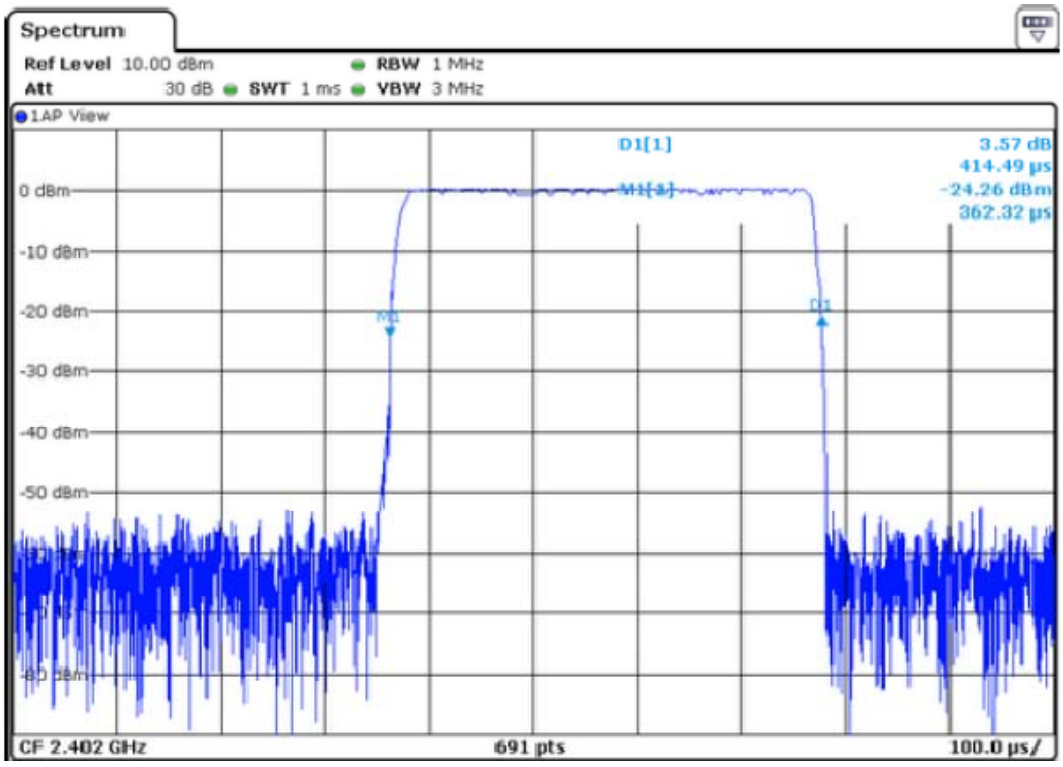

| π/4-DQPSK(2Mbps) | | | | |
|---|---|---|---|---|
| Mode | Number of transmission in a 31.6( 79 Hopping*0.4) | Length of transmissions time(msec) | Result (msec) | Limit (msec) |
| 2DH1 | 1600/(2*79) x 31.6 = 320 | 0.378 | 120.96 | 400 |
| 2DH3 | 1600/(4*79) x 31.6 =160 | 1.671 | 267.36 | 400 |
| 2DH5 | 1600/(6*79) x 31.6 =106.67 | 2.885 | 307.74 | 400 |

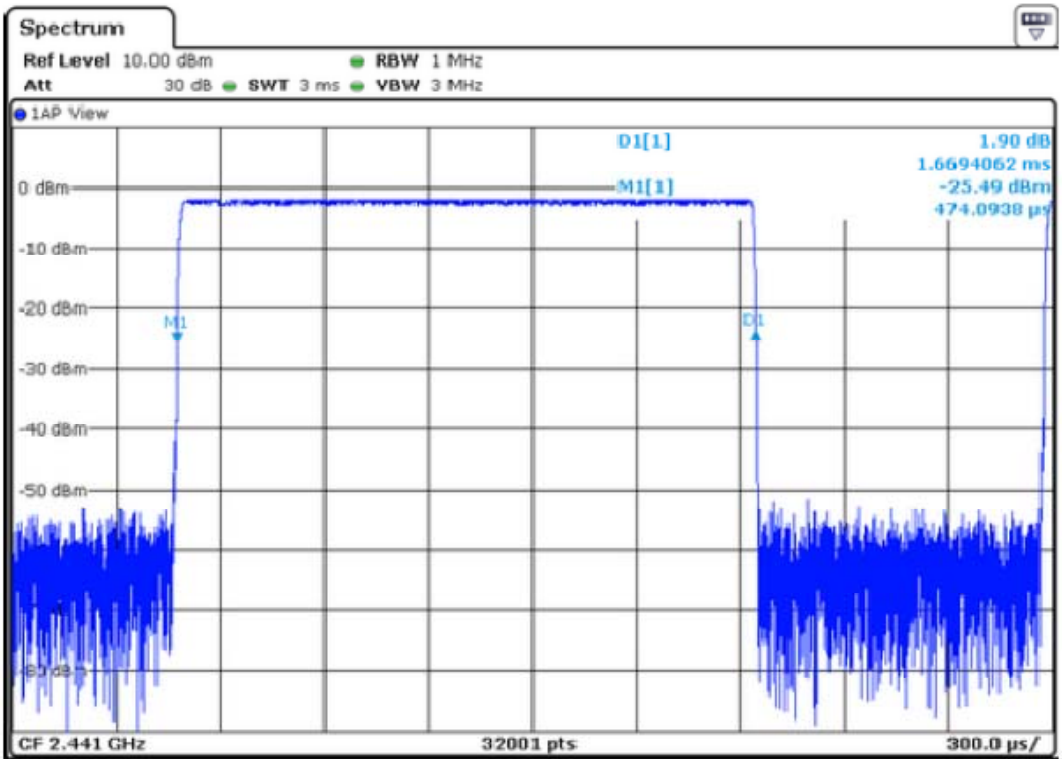

Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 20 dB SWT 1 ms VBW 3 MHz
1AP View
D2[1]
0.54 dB
378.5625 µs
M1[1]
2.48 dBm
405.4375 µs
M1
D2
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.402 GHz
32001 pts
100.0 µs/
Measuring...

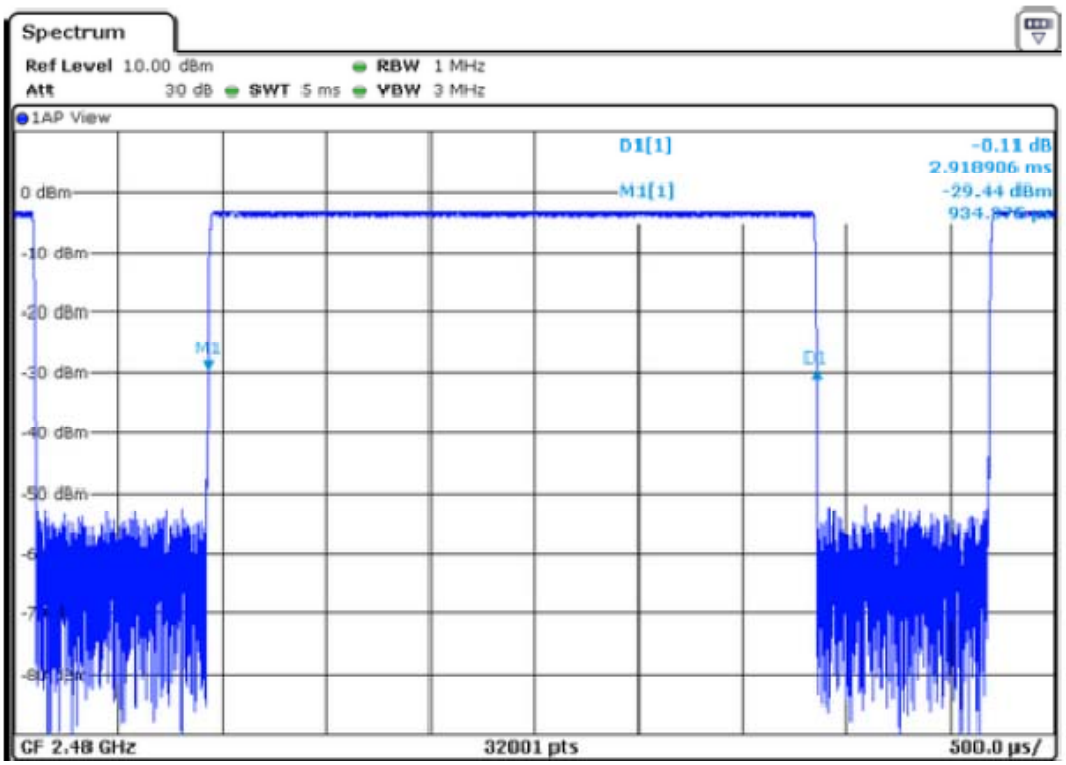

Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 20 dB SWT 3 ms VBW 3 MHz
1AP View
M1[1]
-21.35 dBm
612.9375 µs
D2[1]
0.31 dB
1.6710937 ms
M1
D2
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.441 GHz
32001 pts
300.0 µs/
Measuring...




| 8DPSK(3Mbps) | | | | |
|---|---|---|---|---|
| Mode | Number of transmission in a 31.6( 79 Hopping*0.4) | Length of transmissions time(msec) | Result (msec) | Limit (msec) |
| 3DH1 | 1600/(2*79) x 31.6 = 320 | 0.414 | 132.48 | 400 |
| 3DH3 | 1600/(4*79) x 31.6 =160 | 1.669 | 267.04 | 400 |
| 3DH5 | 1600/(6*79) x 31.6 =106.67 | 2.919 | 311.36 | 400 |


Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 30 dB SWT 1 ms VBW 3 MHz
1AP View
D1[1]
3.57 dB
414.49 µs
-24.26 dBm
362.32 µs
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
M1
D1
CF 2.402 GHz
691 pts
100.0 µs/

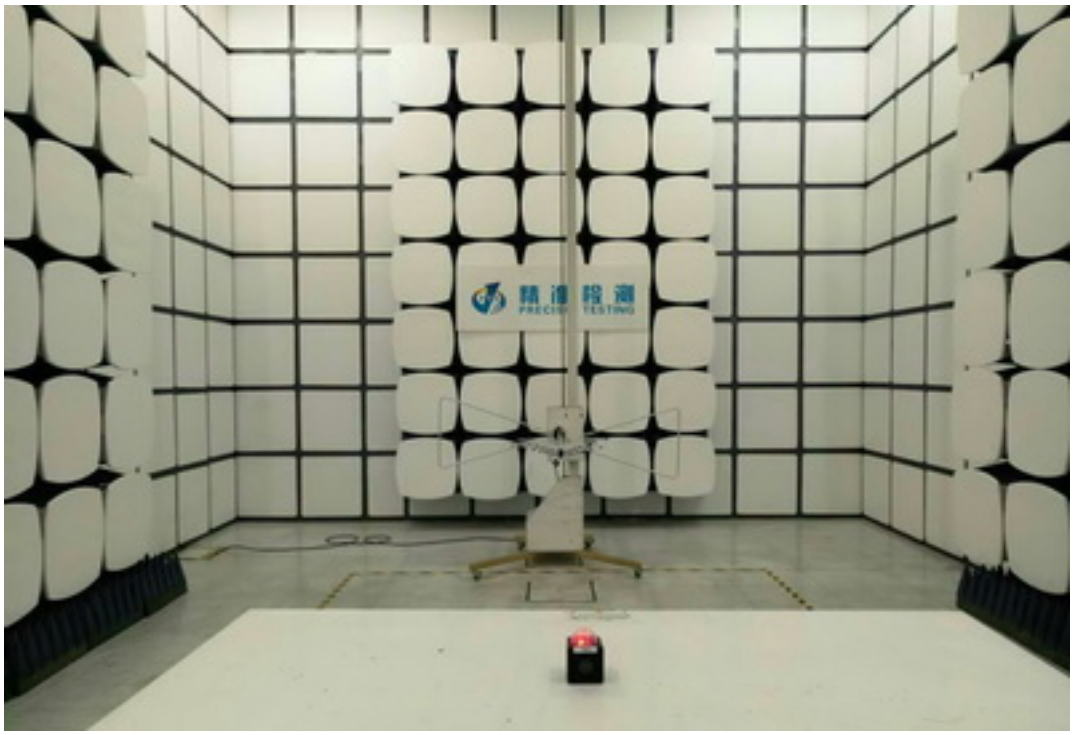

Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 30 dB SWT 3 ms VBW 3 MHz
1AP View
D1[1]
1.90 dB
1.6694062 ms
-25.49 dBm
474.0938 µs
M1[1]
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
M1
D1
CF 2.441 GHz
32001 pts
300.0 µs/

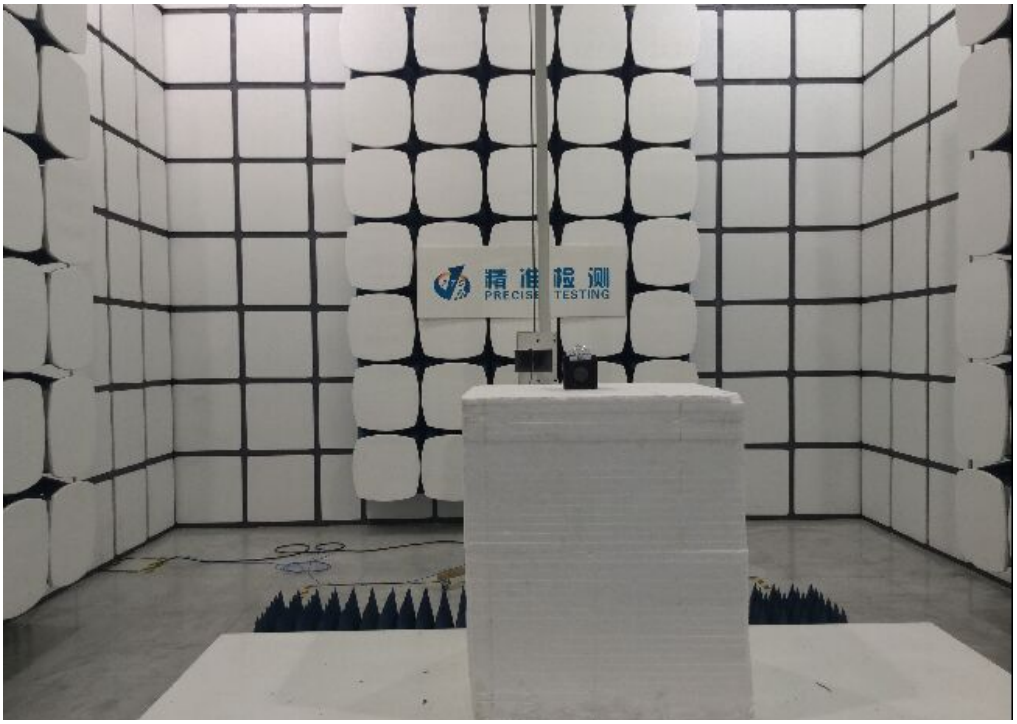

Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 30 dB
SWT 5 ms
VBW 3 MHz
1AP View
D1[1]
-0.11 dB
2.918906 ms
M1[1]
-29.44 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
M1
D1
CF 2.48 GHz
32001 pts
500.0 µs/

# 13 Antenna Requirement

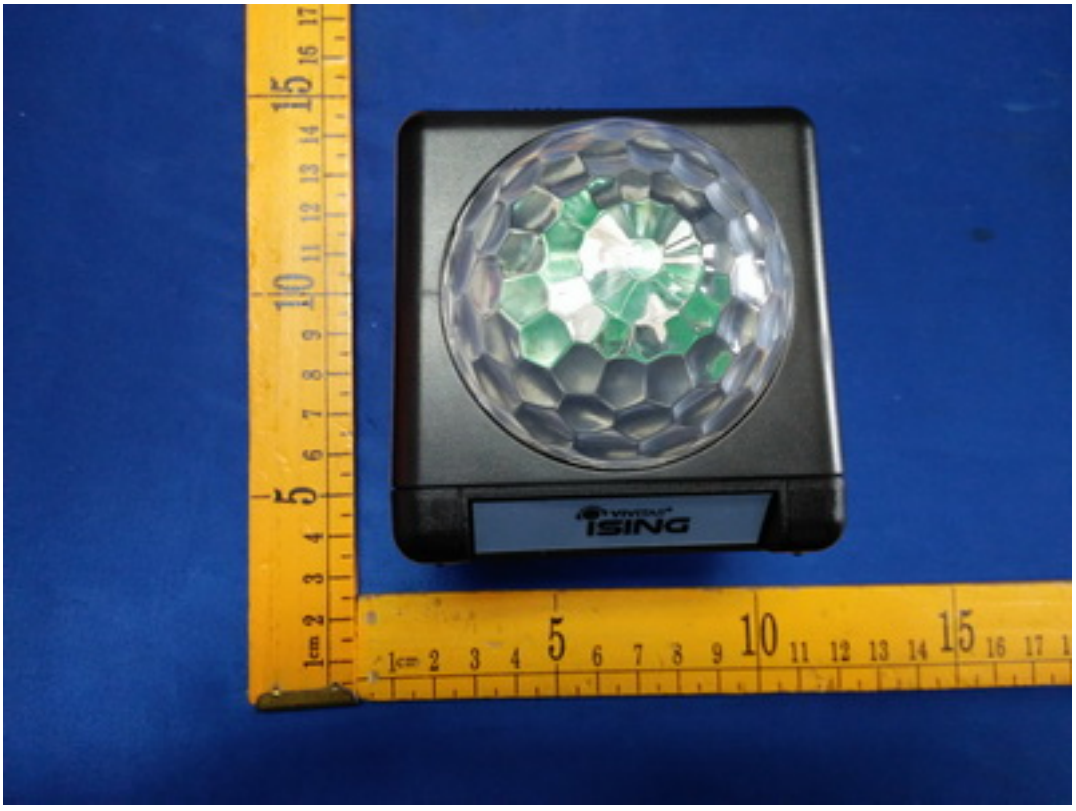
According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has an internal PCB Antenna, it meet the requirement of this section.

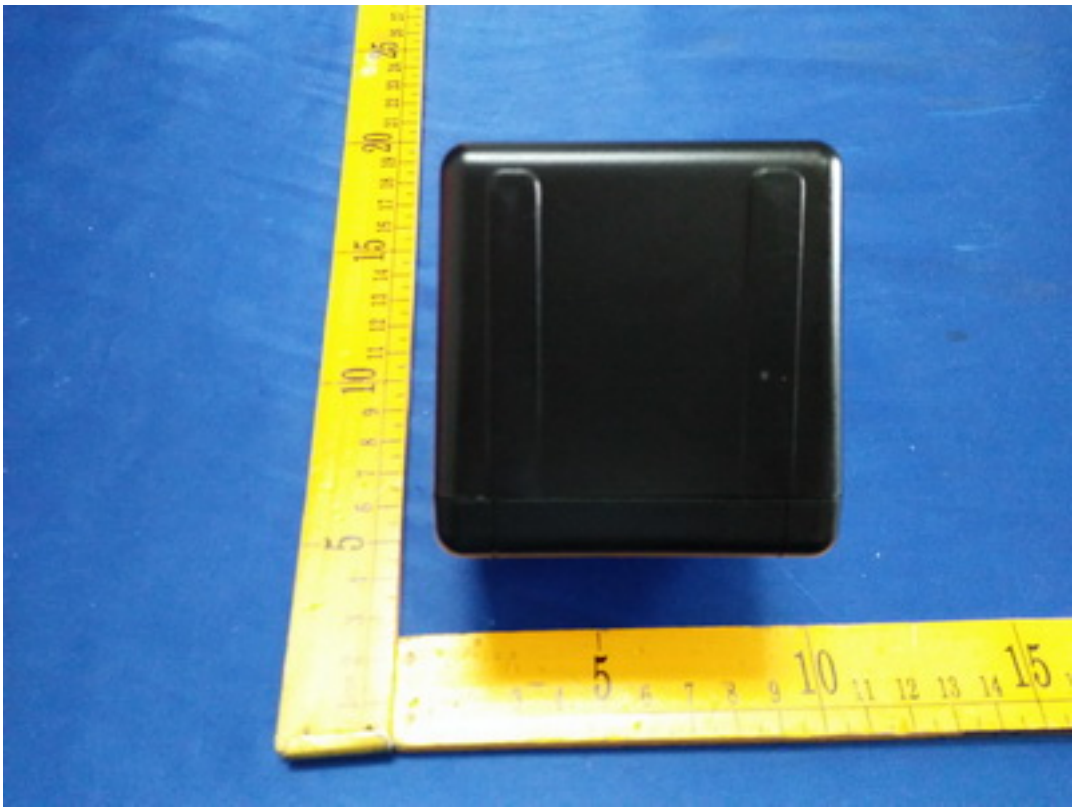
# 14 TEST PHOTOS

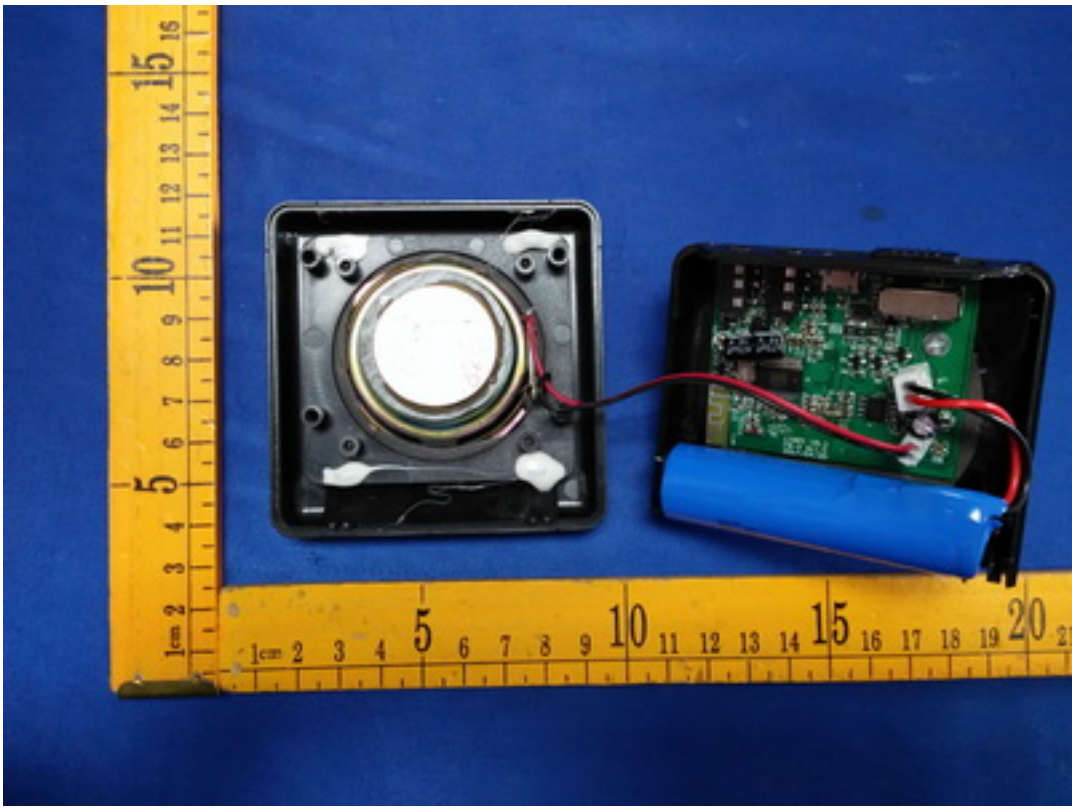


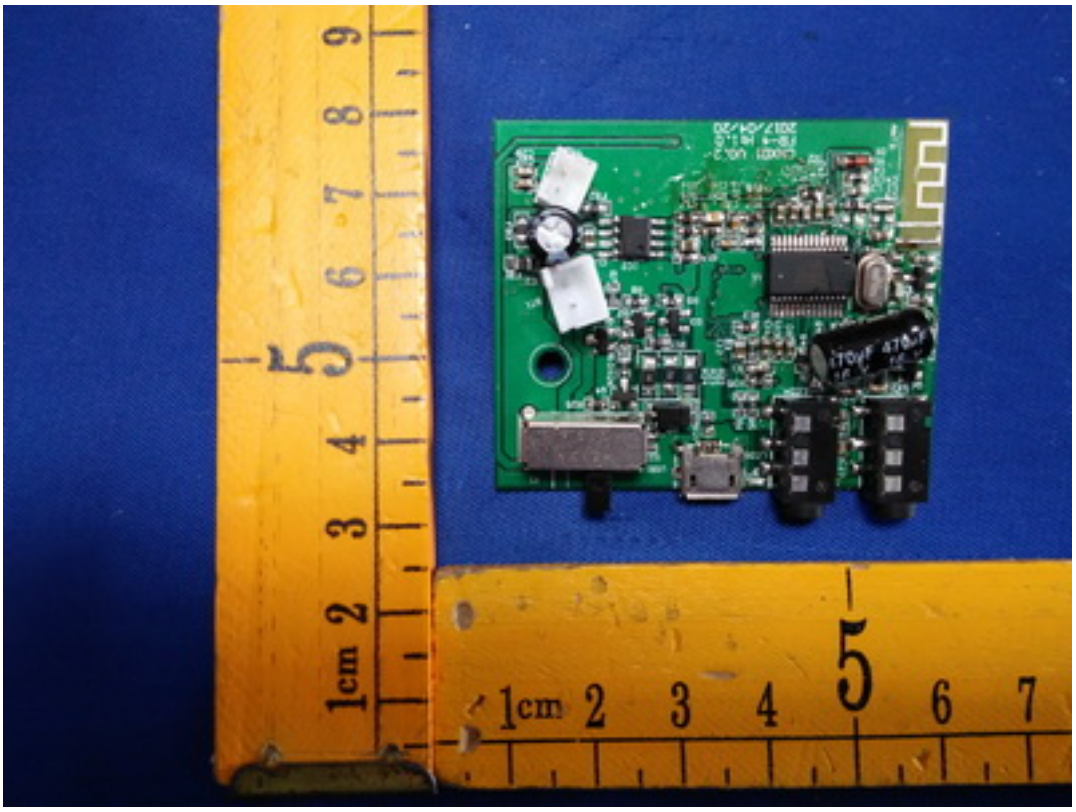


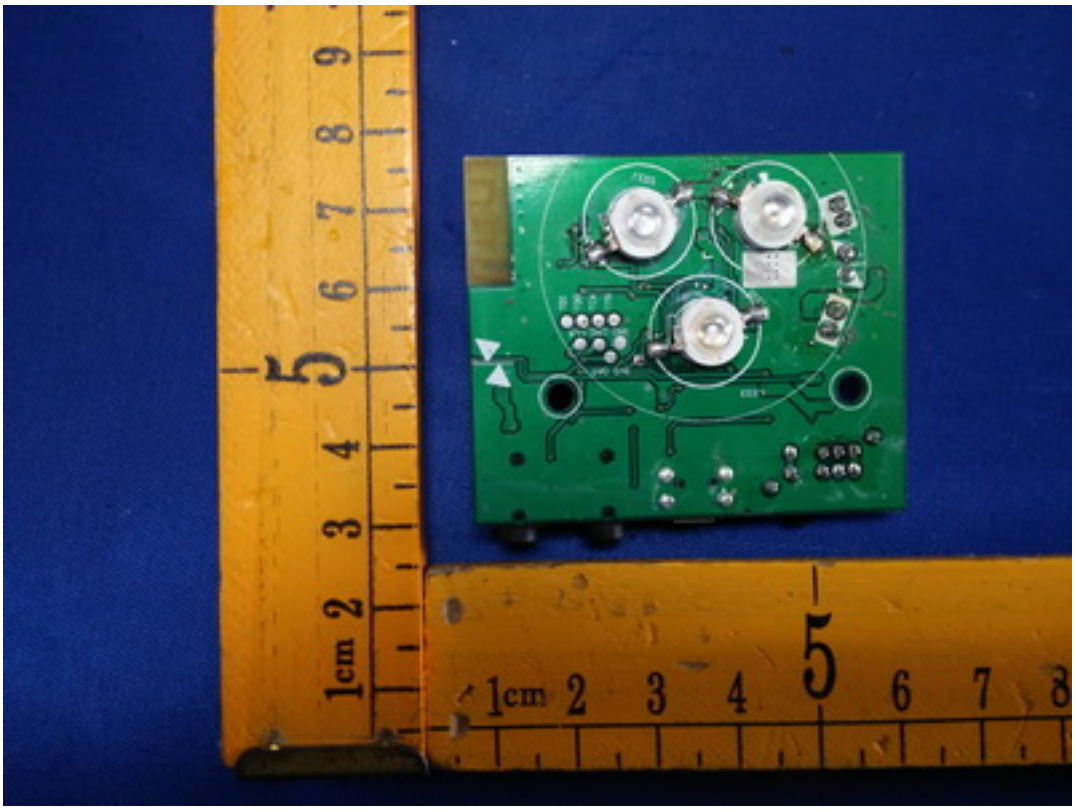
# 15 EUT PHOTOS

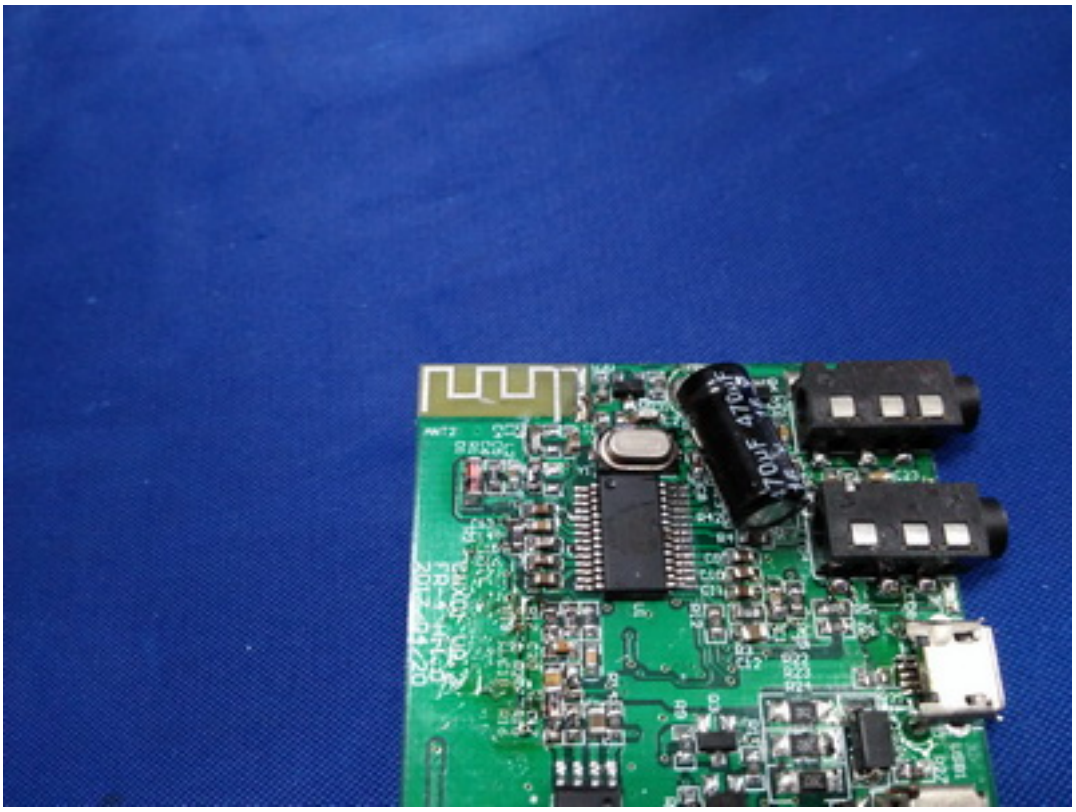



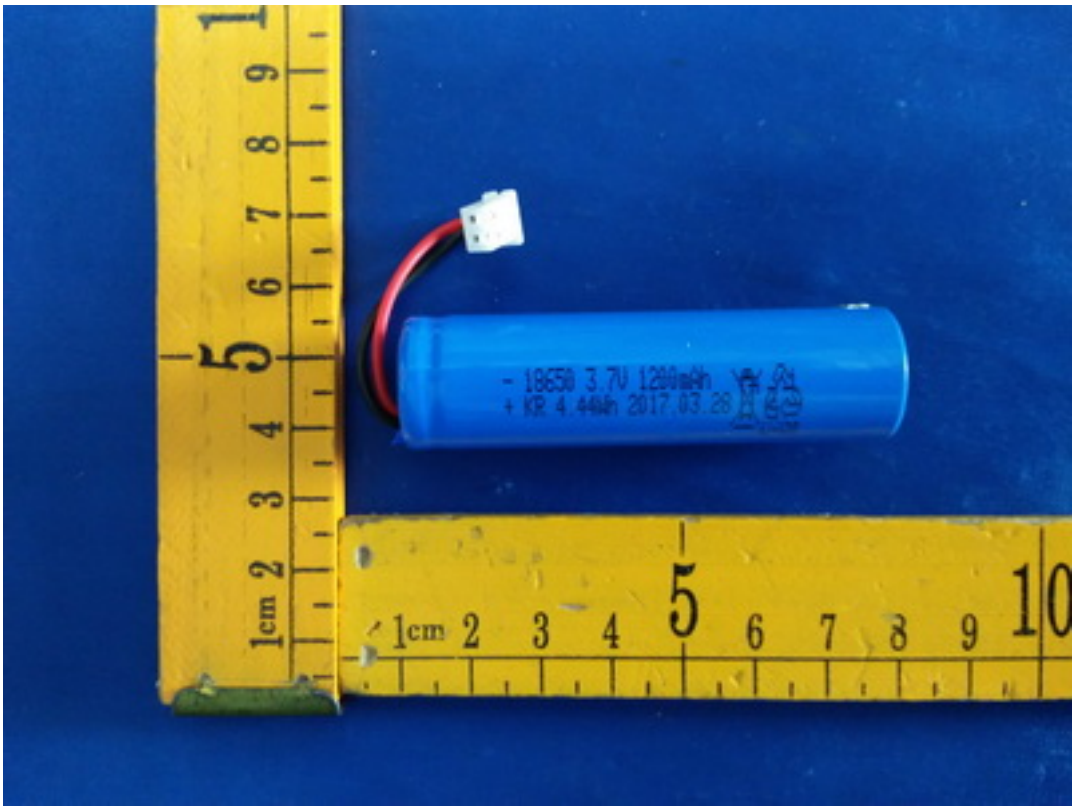













********THE END REPORT********