# FCC TEST REPORT
# FCC ID: 2AG6FH7

| | | |
|---|---|---|
| Product | : | POS System |
| Model Name | : | H7 |
| Brand | : | CITAQ |
| Report No. | : | PT800429160509E-FC02 |

| |
|---|
| **Prepared for** |
| CITAO CO., LTD. |
| 9th Floor, Chuangye Building, 6 Keji Middle Road |
| New Hi-Tech Zone, Shantou, Guangdong China |
| **Prepared by** |
| DongGuan Precise Testing Service Co.,Ltd. |
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| Dongcheng District, Dongguan, Guangdong, China |

## TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant's name | : | CITAO CO., LTD. |
| Address | : | 9th Floor, Chuangye Building, 6 Keji Middle Road,New Hi-Tech Zone, Shantou, Guangdong China |
| Manufacture's name | : | CITAO CO., LTD. |
| Address | : | 9th Floor, Chuangye Building, 6 Keji Middle Road,New Hi-Tech Zone, Shantou, Guangdong China |
| Product name | : | POS System |
| Model name | : | H1,H2,H3,H4,H5,H6,H7,H8,H9,H10 |
| Standards | : | FCC CFR47 Part 15 Section 15.247 |
| Test procedure | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R03 |
| Test Date | : | May. 11, 2016 ~ Jun.14, 2016 |
| Date of Issue | : | Jun.16, 2016 |
| 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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# 2 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Conduct Emission | 15.207 | PASS |
| Radiated Spurious Emissions | 15.205(a)<br>15.209<br>15.247(d) | PASS |
| Band edge | 15.247(d)<br>15.205(a) | PASS |
| 6dB Bandwidth | 15.247(a)(2) | PASS |
| Maximum Peak Output Power | 15.247(b)(1) | PASS |
| Power Spectral Density | 15.247(e) | PASS |
| Antenna Requirement | 15.203 | PASS |

Remark:

N/A: Not Applicable

# 3 General Information

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

| | | |
|---|---|---|
| Product Name | : | POS System |
| Model Name | : | H7,H1,H2,H3,H4,H5,H6, H8,H9,H10 |
| Model Description | : | Only the model names are different. |
| Bluetooth Version | : | V4.0(With BLE) |
| Operating frequency | : | GSM/GPRS/EDGE 850: 824~849MHz<br>GSM/GPRS/EDGE 900: 925-960MHz<br>DCS 1800: 1805-1880MHz<br>PCS 1900: 1850~1910MHz<br>WCDMA Band I: 1920-1980MHz<br>WCDMA Band II: 1850-1910MHz<br>WCDMA Band V: 824~849MHz<br>WiFi:<br>802.11b/g/n HT20: 2412-2462MHz<br>802.11n HT40: 2422-2452MHz<br>Bluetooth:2402-2480MHz |
| Max. RF output power | : | GSM 850: 32.54dBm<br>PCS1900: 29.79dBm<br>WCDMA Band II: 21.75dBm<br>WCDMA Band V: 22.70dBm<br>WiFi: 9.38dBm<br>Bluetooth: -1.14dBm |
| Type of Modulation | : | GSM,GPRS: GMSK<br>EDGE: 8PSK<br>WCDMA: QPSK<br>WiFi: CCK, OFDM<br>Bluetooth: GFSK, Pi/4 DQPSK,8DPSK |
| Antenna installation: | : | GSM/WCDMA: internal permanent antenna<br>WIFI/Bluetooth: internal permanent antenna |
| Antenna Gain: | : | GSM 850/ WCDMA Band V: -0.5dBi<br>PCS 1900/ WCDMA Band II: 1.2dBi<br>WIFI: 0dBi<br>Bluetooth: 0dBi |
| Power supply | : | DC 24V 2.71A Power by AC adapter |
| Adapter | : | Input:100-240V ~50/60Hz 1.7A max Output: DC 24V 2.71A |

## 3.2 Channel List

| WIFI | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel No.** | **Frequency (MHz)** | **Channel No.** | **Frequency (MHz)** | **Channel No.** | **Frequency (MHz)** | **Channel No.** | **Frequency (MHz)** |
| 1 | 2412 | 4 | 2427 | 7 | 2442 | 10 | 2457 |
| 2 | 2417 | 5 | 2432 | 8 | 2447 | 11 | 2462 |
| 3 | 2422 | 6 | 2437 | 9 | 2452 | / | / |
| **BLE** | | | | | | | |
| **Channel No.** | **Frequency (MHz)** | **Channel No.** | **Frequency (MHz)** | **Channel No.** | **Frequency (MHz)** | **Channel No.** | **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 |

## 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.

| Modulation | Test mode | Low channel | Middle channel | High channel |
|---|---|---|---|---|
| 802.11b/g/n-HT20 | Transmitting | 2412MHz | 2437MHz | 2462MHz |
| 802.11n-HT40 | Transmitting | 2412MHz | 2437MHz | 2452MHz |
| GFSK(BLE) | Transmitting | 2402MHz | 2440MHz | 2480MHz |

| Tests Carried Out Under FCC part 15.207 | |
|---|---|
| Test Item | Test Mode |
| Conduction Emission, 0.15MHz to 30MHz | WIFI & BT Communication |

# 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, 2015 | Aug.03, 2016 | 1 year |
| 2 | EXA Signal Analyzer | Keysight | N9010A | MY50520207 526B25MPB W7X | Aug.04, 2015 | Aug.03, 2016 | 1 year |
| 3 | EMI Test Receiver | R&S | ESCI | 101155 | July 15, 2015 | July 14, 2016 | 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, 2015 | July 14, 2016 | 1 year |
| 2 | Trilog Broadband Antenna | SCHWARZBECK | VULB9160 | 9160-3355 | July 15, 2015 | July 14, 2016 | 1 year |
| 3 | Amplifier | EM | EM-30180 | 060538 | July 15, 2015 | July 14, 2016 | 1 year |
| 4 | Horn Antenna | SCHWARZBECK | BBHA9120 D | 9120D-1246 | July 15, 2015 | July 14, 2016 | 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, 2015 | July 14, 2016 | 1 year |
| 2 | LISN | SCHWARZBECK | NSLK 8128 | 8128-289 | July 15, 2015 | July 14, 2016 | 1 year |
| 3 | Cable | LARGE | RF300 | - | July 15, 2015 | July 14, 2016 | 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 C63.4:2014 |
| Test Result: | : | PASS |
| Frequency Range: | : | 150kHz to 30MHz |
| Class/Severity: | : | Class B |
| Limit: | : | 66-56 dBμV between 0.15MHz & 0.5MHz |
| | : | 56 dBμV between 0.5MHz & 5MHz |
| | : | 60 dBμV between 5MHz & 30MHz |
| Detector: | : | Peak for pre-scan (9kHz Resolution Bandwidth) |

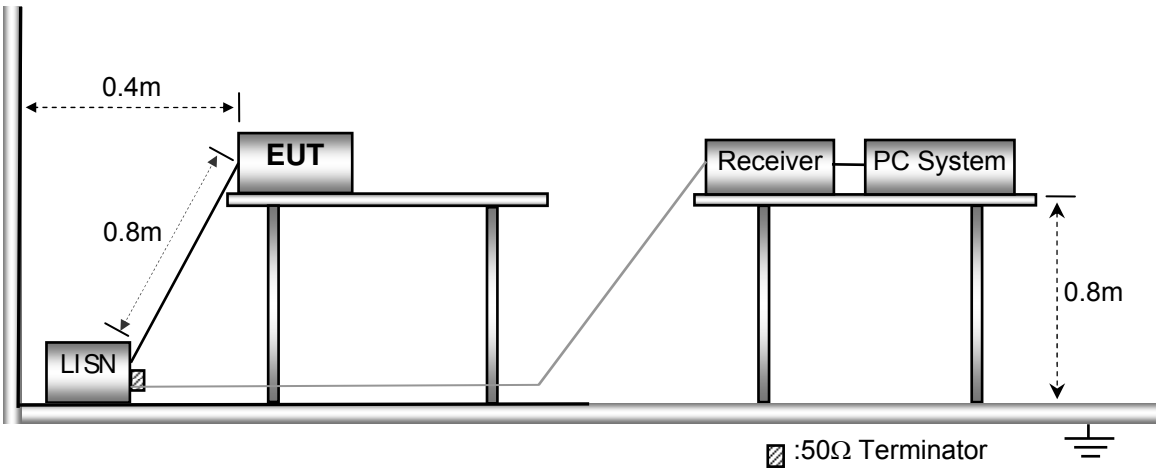
## 5.1 E.U.T. Operation

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 C63.4:2003.

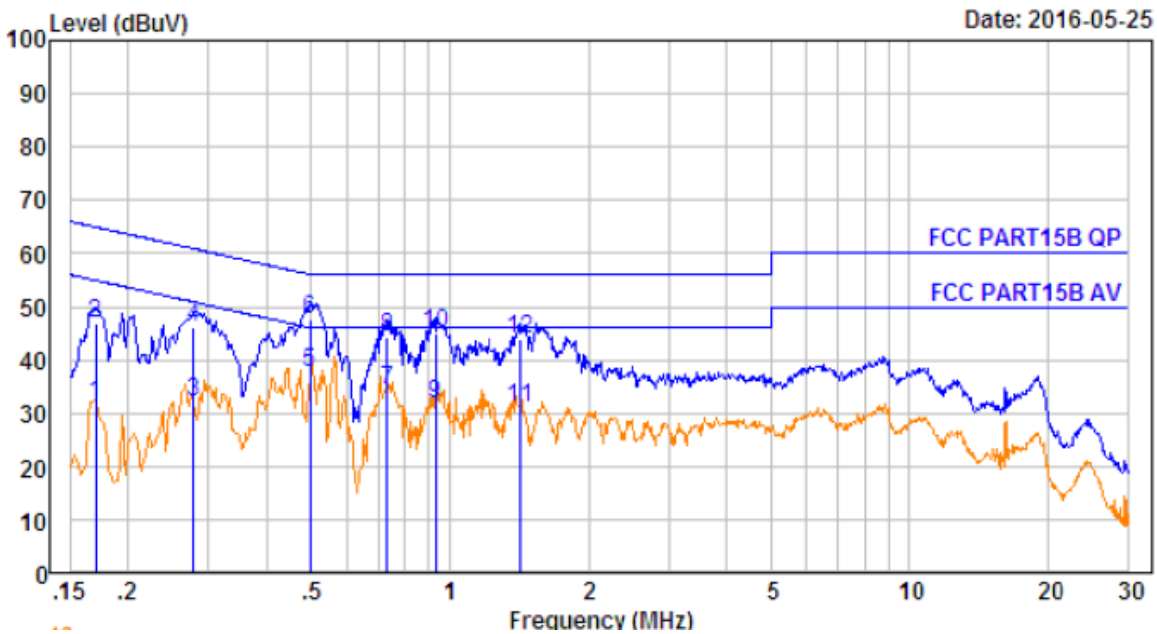


## 5.3 Measurement Description

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.

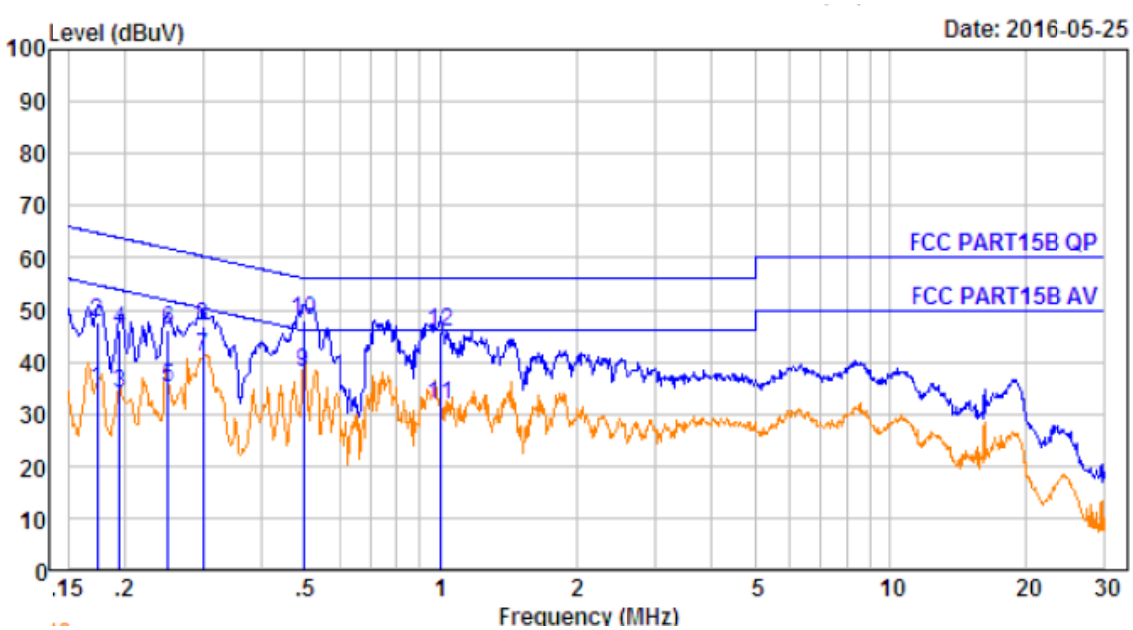
## 5.4 Conducted Emission Test Result

Live line:




| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBuV | Emission Level dBuV | Limit dBuV | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.170 | 10.60 | 0.60 | 20.57 | 31.77 | 54.94 | -23.17 | Average |
| 2. | 0.170 | 10.60 | 0.60 | 35.57 | 46.77 | 64.94 | -18.17 | QP |
| 3. | 0.277 | 10.62 | 0.60 | 20.83 | 32.05 | 50.90 | -18.85 | Average |
| 4. | 0.277 | 10.62 | 0.60 | 34.83 | 46.05 | 60.90 | -14.85 | QP |
| 5. | 0.497 | 10.65 | 0.60 | 26.22 | 37.47 | 46.05 | -8.58 | Average |
| 6. | 0.497 | 10.65 | 0.60 | 36.22 | 47.47 | 56.05 | -8.58 | QP |
| 7. | 0.731 | 10.66 | 0.60 | 23.19 | 34.45 | 46.00 | -11.55 | Average |
| 8. | 0.731 | 10.66 | 0.60 | 33.19 | 44.45 | 56.00 | -11.55 | QP |
| 9. | 0.933 | 10.67 | 0.60 | 20.58 | 31.85 | 46.00 | -14.15 | Average |
| 10. | 0.933 | 10.67 | 0.60 | 33.58 | 44.85 | 56.00 | -11.15 | QP |
| 11. | 1.418 | 10.68 | 0.60 | 19.65 | 30.93 | 46.00 | -15.07 | Average |
| 12. | 1.418 | 10.68 | 0.60 | 32.65 | 43.93 | 56.00 | -12.07 | QP |

Neutral line:




| No. | Freq MHz | Cable Loss dB | AMN Factor dB | Receiver Reading dBuV | Emission Level dBuV | Limit dBuV | Over Limit dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1. | 0.174 | 10.60 | 0.60 | 23.57 | 34.77 | 54.77 | -20.00 | Average |
| 2. | 0.174 | 10.60 | 0.60 | 36.57 | 47.77 | 64.77 | -17.00 | QP |
| 3. | 0.194 | 10.61 | 0.60 | 22.82 | 34.03 | 53.84 | -19.81 | Average |
| 4. | 0.194 | 10.61 | 0.60 | 34.82 | 46.03 | 63.84 | -17.81 | QP |
| 5. | 0.248 | 10.62 | 0.60 | 23.78 | 35.00 | 51.82 | -16.82 | Average |
| 6. | 0.248 | 10.62 | 0.60 | 34.78 | 46.00 | 61.82 | -15.82 | QP |
| 7. | 0.299 | 10.63 | 0.60 | 29.63 | 40.86 | 50.28 | -9.42 | Average |
| 8. | 0.299 | 10.63 | 0.60 | 35.63 | 46.86 | 60.28 | -13.42 | QP |
| 9. | 0.497 | 10.65 | 0.60 | 26.76 | 38.01 | 46.05 | -8.04 | Average |
| 10. | 0.497 | 10.65 | 0.60 | 36.76 | 48.01 | 56.05 | -8.04 | QP |
| 11. | 1.005 | 10.67 | 0.60 | 20.38 | 31.65 | 46.00 | -14.35 | Average |
| 12. | 1.005 | 10.67 | 0.60 | 34.38 | 45.65 | 56.00 | -10.35 | QP |

# 6 Radiated Spurious Emissions

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

Test Method: : ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R03

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

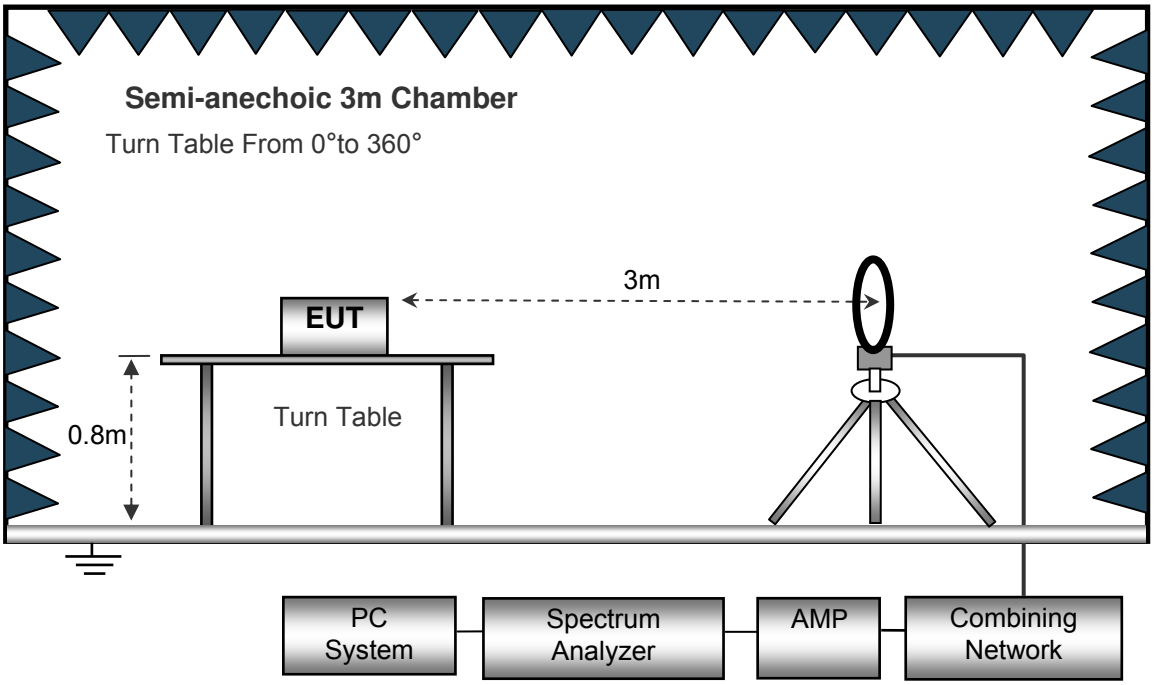
Atmospheric Pressure: : 101.2kPa

EUT Operation : : Refer to section 3.3

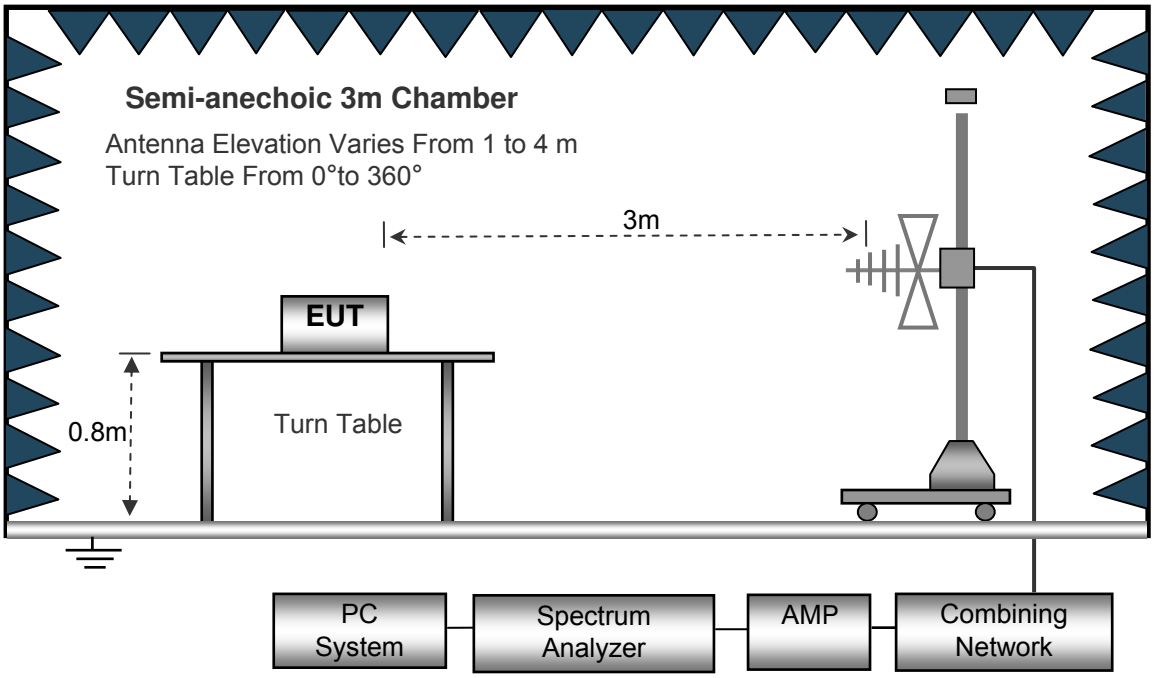
## 6.2 Test Setup

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

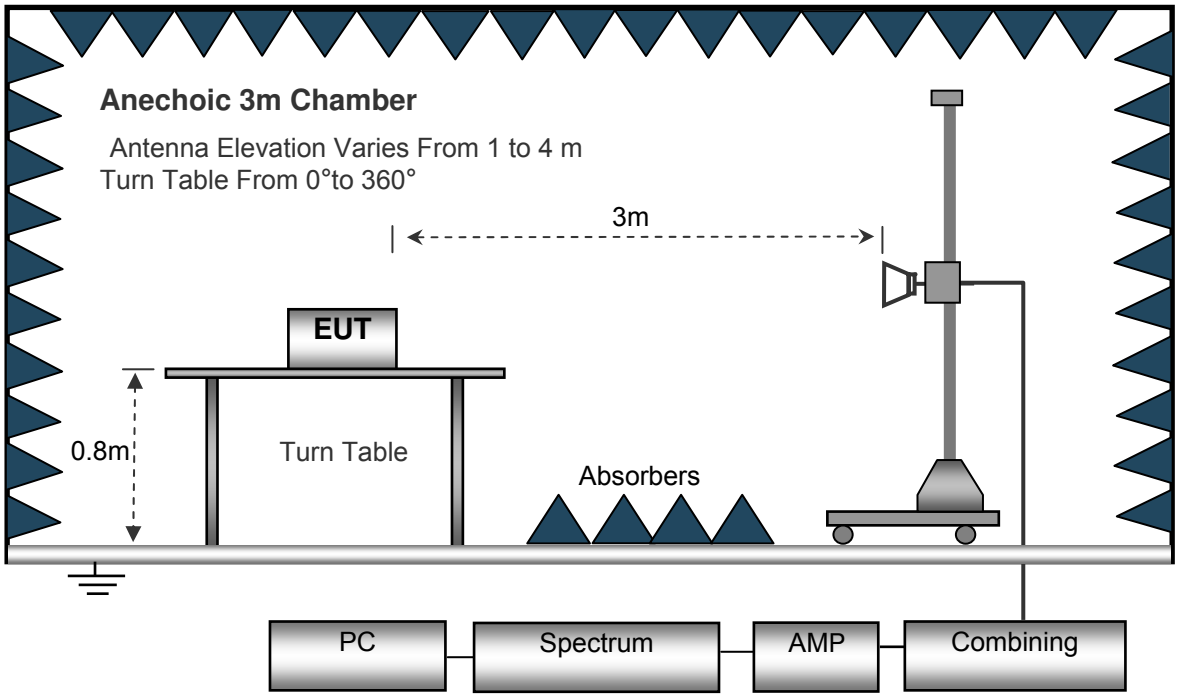
The test setup for emission measurement below 30MHz.




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

Below 30MHz

Sweep Speed..... Auto
IF Bandwidth.....10kHz
Video Bandwidth .....10kHz
Resolution Bandwidth .....10kHz

30MHz ~ 1GHz

Sweep Speed..... Auto
Detector.....PK
Resolution Bandwidth .....100kHz
Video Bandwidth .....300kHz

Above 1GHz

Sweep Speed..... Auto
Detector.....PK
Resolution Bandwidth .....1MHz
Video Bandwidth .....3MHz
Detector.....Ave.
Resolution Bandwidth .....1MHz
Video Bandwidth .....10Hz

## 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.

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.

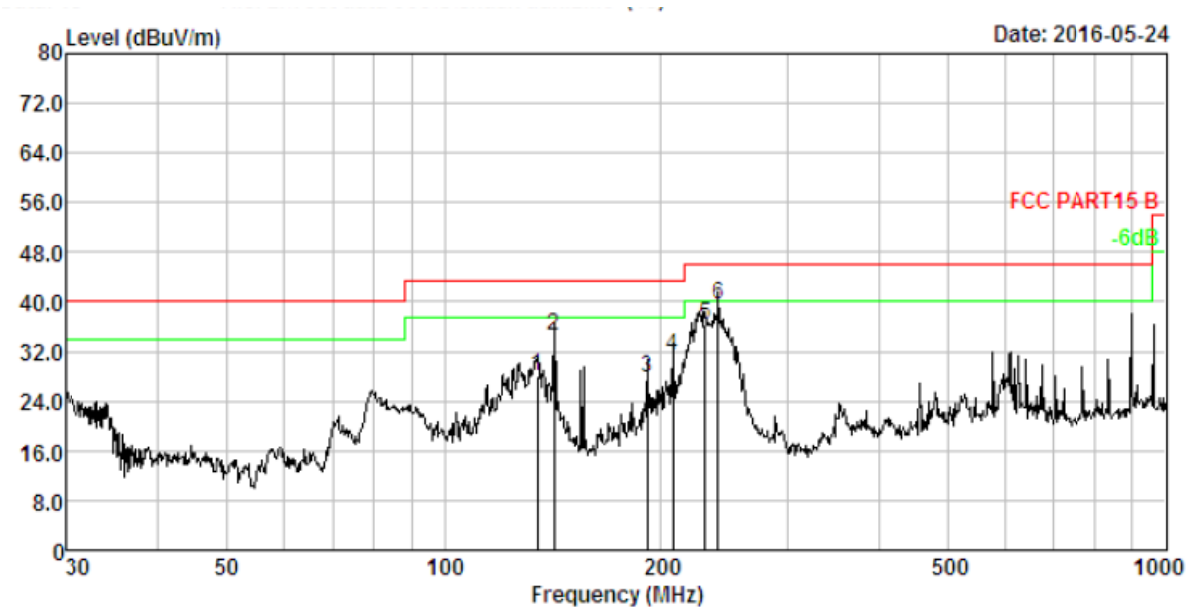
## 6.5 Summary of Test Results

**Test Frequency: Below 30MHz**

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

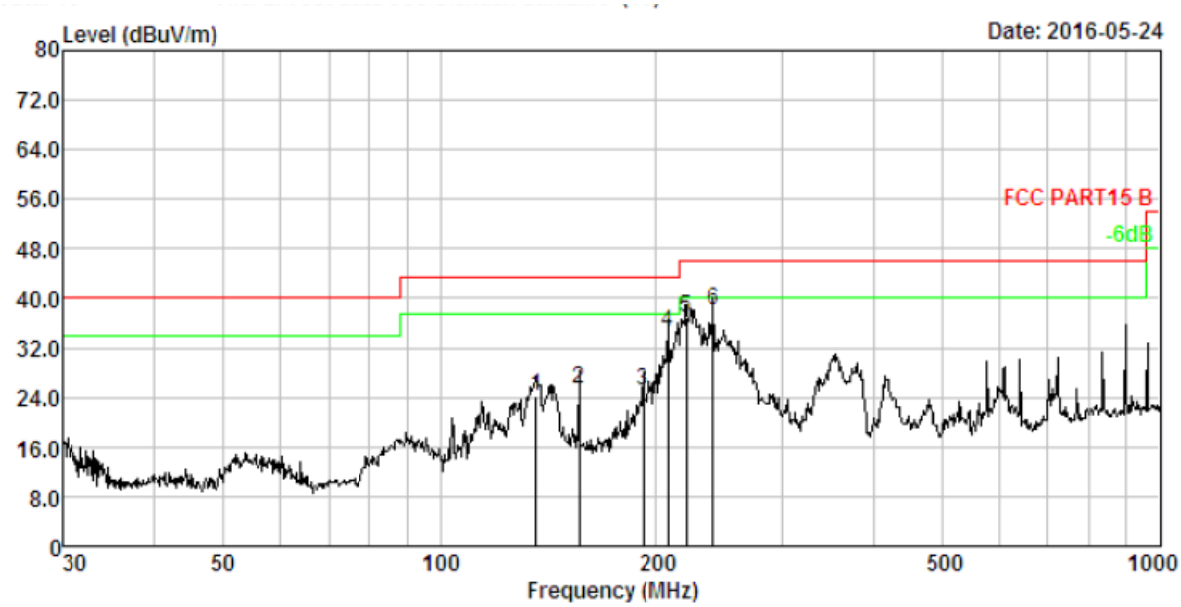
**Test Frequency: 30MHz ~ 1GHz**

Antenna Polarization: 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. | 135.032 | 2.42 | 13.00 | 43.15 | 30.49 | 28.08 | 43.50 | -15.42 | QP |
| 2. | 142.324 | 2.46 | 13.49 | 49.22 | 30.51 | 34.66 | 43.50 | -8.84 | QP |
| 3. | 191.745 | 2.73 | 10.97 | 44.72 | 30.62 | 27.80 | 43.50 | -15.70 | QP |
| 4. | 207.850 | 2.81 | 10.53 | 48.68 | 30.64 | 31.38 | 43.50 | -12.12 | QP |
| 5. | 230.099 | 2.90 | 11.25 | 52.96 | 30.68 | 36.43 | 46.00 | -9.57 | QP |
| 6. | 239.987 | 2.94 | 11.71 | 55.56 | 30.69 | 39.52 | 46.00 | -6.48 | QP |

Antenna Polarization: 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. | 135.982 | 2.42 | 13.07 | 39.32 | 30.50 | 24.31 | 43.50 | -19.19 | QP |
| 2. | 155.910 | 2.55 | 13.89 | 39.58 | 30.54 | 25.48 | 43.50 | -18.02 | QP |
| 3. | 191.745 | 2.73 | 10.97 | 41.93 | 30.62 | 25.01 | 43.50 | -18.49 | QP |
| 4. | 207.850 | 2.81 | 10.53 | 51.97 | 30.64 | 34.67 | 43.50 | -8.83 | QP |
| 5. | 220.617 | 2.86 | 10.79 | 53.97 | 30.66 | 36.96 | 46.00 | -9.04 | QP |
| 6. | 239.987 | 2.94 | 11.71 | 54.14 | 30.69 | 38.10 | 46.00 | -7.90 | QP |

**Test Frequency: 1GHz ~ 18GHz**

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

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| GFSK(BLE) Low Channel | | | | | | |
| 1184.32 | 43.98 | PK | -18.92 | 25.06 | 43.50 | -18.44 |
| 1184.32 | 38.21 | Ave | -18.92 | 19.29 | 43.50 | -24.21 |
| 4804.00 | 48.50 | PK | -1.06 | 47.44 | 74.00 | -26.56 |
| 4804.00 | 44.88 | Ave | -1.06 | 43.82 | 54.00 | -10.18 |
| 7206.00 | 50.75 | PK | 1.33 | 52.08 | 74.00 | -21.92 |
| 7206.00 | 43.72 | Ave | 1.33 | 45.05 | 54.00 | -8.95 |
| 2332.21 | 45.28 | PK | -13.19 | 32.09 | 74.00 | -41.91 |
| 2332.21 | 38.88 | Ave | -13.19 | 25.69 | 54.00 | -28.31 |
| 2361.90 | 43.28 | PK | -13.14 | 30.14 | 74.00 | -43.86 |
| 2361.90 | 37.18 | Ave | -13.14 | 24.04 | 54.00 | -29.96 |
| 2495.97 | 42.27 | PK | -13.08 | 29.19 | 74.00 | -44.81 |
| 2495.97 | 41.02 | Ave | -13.08 | 27.94 | 54.00 | -26.06 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| GFSK(BLE) Middle Channel | | | | | | |
| 1184.32 | 44.41 | PK | -18.92 | 25.49 | 43.50 | -18.01 |
| 1184.32 | 38.23 | Ave | -18.92 | 19.31 | 43.50 | -24.19 |
| 4880.00 | 47.88 | PK | -0.93 | 46.95 | 74.00 | -27.05 |
| 4880.00 | 44.21 | Ave | -0.93 | 43.28 | 54.00 | -10.72 |
| 7320.00 | 50.82 | PK | 1.67 | 52.49 | 74.00 | -21.51 |
| 7320.00 | 43.38 | Ave | 1.67 | 45.05 | 54.00 | -8.95 |
| 2341.76 | 44.87 | PK | -13.19 | 31.68 | 74.00 | -42.32 |
| 2341.76 | 38.44 | Ave | -13.19 | 25.25 | 54.00 | -28.75 |
| 2368.13 | 42.69 | PK | -13.14 | 29.55 | 74.00 | -44.45 |
| 2368.13 | 38.05 | Ave | -13.14 | 24.91 | 54.00 | -29.09 |
| 2499.25 | 41.81 | PK | -13.08 | 28.73 | 74.00 | -45.27 |
| 2499.25 | 41.64 | Ave | -13.08 | 28.56 | 54.00 | -25.44 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| GFSK(BLE) High Channel | | | | | | |
| 1184.32 | 44.57 | PK | -18.92 | 25.65 | 43.50 | -17.85 |
| 1184.32 | 37.26 | Ave | -18.92 | 18.34 | 43.50 | -25.16 |
| 4960.00 | 47.01 | PK | -0.87 | 46.14 | 74.00 | -27.86 |
| 4960.00 | 43.71 | Ave | -0.87 | 42.84 | 54.00 | -11.16 |
| 7440.00 | 50.32 | PK | 1.84 | 52.16 | 74.00 | -21.84 |
| 7440.00 | 44.01 | Ave | 1.84 | 45.85 | 54.00 | -8.15 |
| 2338.64 | 45.09 | PK | -13.19 | 31.90 | 74.00 | -42.10 |
| 2338.64 | 39.17 | Ave | -13.19 | 25.98 | 54.00 | -28.02 |
| 2373.03 | 42.34 | PK | -13.14 | 29.20 | 74.00 | -44.80 |
| 2373.03 | 38.74 | Ave | -13.14 | 25.60 | 54.00 | -28.40 |
| 2499.24 | 42.04 | PK | -13.08 | 28.96 | 74.00 | -45.04 |
| 2499.24 | 40.67 | Ave | -13.08 | 27.59 | 54.00 | -26.41 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11b Low Channel | | | | | | |
| 1350.60 | 43.17 | PK | -17.57 | 25.60 | 43.50 | -17.90 |
| 1350.60 | 45.11 | Ave | -17.57 | 27.54 | 43.50 | -15.96 |
| 4824.00 | 49.46 | PK | -1.06 | 48.40 | 74.00 | -25.60 |
| 4824.00 | 44.72 | Ave | -1.06 | 43.66 | 54.00 | -10.34 |
| 7236.00 | 50.10 | PK | 1.33 | 51.43 | 74.00 | -22.57 |
| 7236.00 | 43.89 | Ave | 1.33 | 45.22 | 54.00 | -8.78 |
| 2345.27 | 44.88 | PK | -13.19 | 31.69 | 74.00 | -42.31 |
| 2345.27 | 39.15 | Ave | -13.19 | 25.96 | 54.00 | -28.04 |
| 2389.72 | 42.83 | PK | -13.14 | 29.69 | 74.00 | -44.31 |
| 2389.72 | 37.65 | Ave | -13.14 | 24.51 | 54.00 | -29.49 |
| 2498.31 | 42.43 | PK | -13.08 | 29.35 | 74.00 | -44.65 |
| 2498.31 | 40.33 | Ave | -13.08 | 27.25 | 54.00 | -26.75 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11b Middle Channel | | | | | | |
| 1350.60 | 43.59 | PK | -17.57 | 26.02 | 43.50 | -17.48 |
| 1350.60 | 45.70 | Ave | -17.57 | 28.13 | 43.50 | -15.37 |
| 4874.00 | 48.56 | PK | -0.93 | 47.63 | 74.00 | -26.37 |
| 4874.00 | 44.22 | Ave | -0.93 | 43.29 | 54.00 | -10.71 |
| 7311.00 | 49.36 | PK | 1.67 | 51.03 | 74.00 | -22.97 |
| 7311.00 | 42.92 | Ave | 1.67 | 44.59 | 54.00 | -9.41 |
| 2341.95 | 45.69 | PK | -13.19 | 32.50 | 74.00 | -41.50 |
| 2341.95 | 39.56 | Ave | -13.19 | 26.37 | 54.00 | -27.63 |
| 2377.15 | 42.50 | PK | -13.14 | 29.36 | 74.00 | -44.64 |
| 2377.15 | 36.67 | Ave | -13.14 | 23.53 | 54.00 | -30.47 |
| 2493.76 | 42.46 | PK | -13.08 | 29.38 | 74.00 | -44.62 |
| 2493.76 | 39.59 | Ave | -13.08 | 26.51 | 54.00 | -27.49 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11b High Channel | | | | | | |
| 1350.60 | 44.56 | PK | -17.57 | 26.99 | 43.50 | -16.51 |
| 1350.60 | 45.82 | Ave | -17.57 | 28.25 | 43.50 | -15.25 |
| 4924.00 | 49.24 | PK | -0.87 | 48.37 | 74.00 | -25.63 |
| 4924.00 | 44.56 | Ave | -0.87 | 43.69 | 54.00 | -10.31 |
| 7386.00 | 49.72 | PK | 1.84 | 51.56 | 74.00 | -22.44 |
| 7386.00 | 42.48 | Ave | 1.84 | 44.32 | 54.00 | -9.68 |
| 2339.40 | 44.79 | PK | -13.19 | 31.60 | 74.00 | -42.40 |
| 2339.40 | 38.86 | Ave | -13.19 | 25.67 | 54.00 | -28.33 |
| 2385.09 | 42.60 | PK | -13.14 | 29.46 | 74.00 | -44.54 |
| 2385.09 | 36.52 | Ave | -13.14 | 23.38 | 54.00 | -30.62 |
| 2494.80 | 41.50 | PK | -13.08 | 28.42 | 74.00 | -45.58 |
| 2494.80 | 40.00 | Ave | -13.08 | 26.92 | 54.00 | -27.08 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11g Low Channel | | | | | | |
| 1350.60 | 42.21 | PK | -17.57 | 24.64 | 43.50 | -18.86 |
| 1350.60 | 45.53 | Ave | -17.57 | 27.96 | 43.50 | -15.54 |
| 4824.00 | 49.93 | PK | -1.06 | 48.87 | 74.00 | -25.13 |
| 4824.00 | 44.24 | Ave | -1.06 | 43.18 | 54.00 | -10.82 |
| 7236.00 | 49.91 | PK | 1.33 | 51.24 | 74.00 | -22.76 |
| 7236.00 | 44.42 | Ave | 1.33 | 45.75 | 54.00 | -8.25 |
| 2323.36 | 45.35 | PK | -13.19 | 32.16 | 74.00 | -41.84 |
| 2323.36 | 40.00 | Ave | -13.19 | 26.81 | 54.00 | -27.19 |
| 2364.21 | 42.17 | PK | -13.14 | 29.03 | 74.00 | -44.97 |
| 2364.21 | 36.73 | Ave | -13.14 | 23.59 | 54.00 | -30.41 |
| 2497.95 | 42.79 | PK | -13.08 | 29.71 | 74.00 | -44.29 |
| 2497.95 | 40.04 | Ave | -13.08 | 26.96 | 54.00 | -27.04 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11g Middle Channel | | | | | | |
| 1350.60 | 41.91 | PK | -17.57 | 24.34 | 43.50 | -19.16 |
| 1350.60 | 44.90 | Ave | -17.57 | 27.33 | 43.50 | -16.17 |
| 4874.00 | 49.02 | PK | -0.93 | 48.09 | 74.00 | -25.91 |
| 4874.00 | 43.25 | Ave | -0.93 | 42.32 | 54.00 | -11.68 |
| 7311.00 | 50.40 | PK | 1.67 | 52.07 | 74.00 | -21.93 |
| 7311.00 | 44.03 | Ave | 1.67 | 45.70 | 54.00 | -8.30 |
| 2339.24 | 46.01 | PK | -13.19 | 32.82 | 74.00 | -41.18 |
| 2339.24 | 40.63 | Ave | -13.19 | 27.44 | 54.00 | -26.56 |
| 2368.06 | 41.21 | PK | -13.14 | 28.07 | 74.00 | -45.93 |
| 2368.06 | 36.81 | Ave | -13.14 | 23.67 | 54.00 | -30.33 |
| 2484.82 | 42.07 | PK | -13.08 | 28.99 | 74.00 | -45.01 |
| 2484.82 | 39.96 | Ave | -13.08 | 26.88 | 54.00 | -27.12 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11g High Channel | | | | | | |
| 1350.60 | 41.11 | PK | -17.57 | 23.54 | 43.50 | -19.96 |
| 1350.60 | 44.31 | Ave | -17.57 | 26.74 | 43.50 | -16.76 |
| 4924.00 | 48.81 | PK | -0.87 | 47.94 | 74.00 | -26.06 |
| 4924.00 | 42.31 | Ave | -0.87 | 41.44 | 54.00 | -12.56 |
| 7386.00 | 51.26 | PK | 1.84 | 53.10 | 74.00 | -20.90 |
| 7386.00 | 44.42 | Ave | 1.84 | 46.26 | 54.00 | -7.74 |
| 2337.28 | 46.07 | PK | -13.19 | 32.88 | 74.00 | -41.12 |
| 2337.28 | 39.82 | Ave | -13.19 | 26.63 | 54.00 | -27.37 |
| 2383.64 | 41.65 | PK | -13.14 | 28.51 | 74.00 | -45.49 |
| 2383.64 | 36.34 | Ave | -13.14 | 23.20 | 54.00 | -30.80 |
| 2495.02 | 41.21 | PK | -13.08 | 28.13 | 74.00 | -45.87 |
| 2495.02 | 38.98 | Ave | -13.08 | 25.90 | 54.00 | -28.10 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11n-HT20 Low Channel | | | | | | |
| 1350.60 | 41.60 | PK | -17.57 | 24.03 | 43.50 | -19.47 |
| 1350.60 | 44.96 | Ave | -17.57 | 27.39 | 43.50 | -16.11 |
| 4824.00 | 49.01 | PK | -1.06 | 47.95 | 74.00 | -26.05 |
| 4824.00 | 43.75 | Ave | -1.06 | 42.69 | 54.00 | -11.31 |
| 7236.00 | 49.91 | PK | 1.33 | 51.24 | 74.00 | -22.76 |
| 7236.00 | 44.92 | Ave | 1.33 | 46.25 | 54.00 | -7.75 |
| 2319.20 | 45.59 | PK | -13.19 | 32.40 | 74.00 | -41.60 |
| 2319.20 | 40.33 | Ave | -13.19 | 27.14 | 54.00 | -26.86 |
| 2370.30 | 43.02 | PK | -13.14 | 29.88 | 74.00 | -44.12 |
| 2370.30 | 37.43 | Ave | -13.14 | 24.29 | 54.00 | -29.71 |
| 2499.79 | 42.60 | PK | -13.08 | 29.52 | 74.00 | -44.48 |
| 2499.79 | 39.18 | Ave | -13.08 | 26.10 | 54.00 | -27.90 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11n-HT20 Middle Channel | | | | | | |
| 1350.60 | 42.09 | PK | -17.57 | 24.52 | 43.50 | -18.98 |
| 1350.60 | 45.31 | Ave | -17.57 | 27.74 | 43.50 | -15.76 |
| 4874.00 | 48.12 | PK | -0.93 | 47.19 | 74.00 | -26.81 |
| 4874.00 | 43.18 | Ave | -0.93 | 42.25 | 54.00 | -11.75 |
| 7311.00 | 50.72 | PK | 1.67 | 52.39 | 74.00 | -21.61 |
| 7311.00 | 44.38 | Ave | 1.67 | 46.05 | 54.00 | -7.95 |
| 2328.05 | 44.93 | PK | -13.19 | 31.74 | 74.00 | -42.26 |
| 2328.05 | 39.35 | Ave | -13.19 | 26.16 | 54.00 | -27.84 |
| 2364.60 | 42.90 | PK | -13.14 | 29.76 | 74.00 | -44.24 |
| 2364.60 | 37.65 | Ave | -13.14 | 24.51 | 54.00 | -29.49 |
| 2499.80 | 43.59 | PK | -13.08 | 30.51 | 74.00 | -43.49 |
| 2499.80 | 40.09 | Ave | -13.08 | 27.01 | 54.00 | -26.99 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11n-HT20 High Channel | | | | | | |
| 1350.60 | 42.71 | PK | -17.57 | 25.14 | 43.50 | -18.36 |
| 1350.60 | 44.91 | Ave | -17.57 | 27.34 | 43.50 | -16.16 |
| 4924.00 | 47.96 | PK | -0.87 | 47.09 | 74.00 | -26.91 |
| 4924.00 | 44.11 | Ave | -0.87 | 43.24 | 54.00 | -10.76 |
| 7386.00 | 50.49 | PK | 1.84 | 52.33 | 74.00 | -21.67 |
| 7386.00 | 43.80 | Ave | 1.84 | 45.64 | 54.00 | -8.36 |
| 2342.38 | 44.69 | PK | -13.19 | 31.50 | 74.00 | -42.50 |
| 2342.38 | 39.23 | Ave | -13.19 | 26.04 | 54.00 | -27.96 |
| 2361.81 | 42.14 | PK | -13.14 | 29.00 | 74.00 | -45.00 |
| 2361.81 | 37.77 | Ave | -13.14 | 24.63 | 54.00 | -29.37 |
| 2499.63 | 43.43 | PK | -13.08 | 30.35 | 74.00 | -43.65 |
| 2499.63 | 39.96 | Ave | -13.08 | 26.88 | 54.00 | -27.12 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11n-HT40 Low Channel | | | | | | |
| 1279.56 | 45.70 | PK | -18.64 | 27.06 | 43.50 | -16.44 |
| 1279.56 | 45.26 | Ave | -18.64 | 26.62 | 43.50 | -16.88 |
| 4844.00 | 46.38 | PK | -1.06 | 45.32 | 74.00 | -28.68 |
| 4844.00 | 43.19 | Ave | -1.06 | 42.13 | 54.00 | -11.87 |
| 7266.00 | 45.98 | PK | 1.33 | 47.31 | 74.00 | -26.69 |
| 7266.00 | 42.05 | Ave | 1.33 | 43.38 | 54.00 | -10.62 |
| 2318.44 | 44.61 | PK | -13.19 | 31.42 | 74.00 | -42.58 |
| 2318.44 | 40.14 | Ave | -13.19 | 26.95 | 54.00 | -27.05 |
| 2354.59 | 42.30 | PK | -13.14 | 29.16 | 74.00 | -44.84 |
| 2354.59 | 38.20 | Ave | -13.14 | 25.06 | 54.00 | -28.94 |
| 2490.58 | 41.98 | PK | -13.08 | 28.90 | 74.00 | -45.10 |
| 2490.58 | 40.21 | Ave | -13.08 | 27.13 | 54.00 | -26.87 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11n-HT40 Middle Channel | | | | | | |
| 1279.56 | 44.91 | PK | -18.64 | 26.27 | 43.50 | -17.23 |
| 1279.56 | 44.34 | Ave | -18.64 | 25.70 | 43.50 | -17.80 |
| 4874.00 | 45.60 | PK | -0.93 | 44.67 | 74.00 | -29.33 |
| 4874.00 | 42.34 | Ave | -0.93 | 41.41 | 54.00 | -12.59 |
| 7311.00 | 45.35 | PK | 1.67 | 47.02 | 74.00 | -26.98 |
| 7311.00 | 43.02 | Ave | 1.67 | 44.69 | 54.00 | -9.31 |
| 2324.57 | 44.18 | PK | -13.19 | 30.99 | 74.00 | -43.01 |
| 2324.57 | 39.59 | Ave | -13.19 | 26.40 | 54.00 | -27.60 |
| 2350.42 | 42.16 | PK | -13.14 | 29.02 | 74.00 | -44.98 |
| 2350.42 | 37.92 | Ave | -13.14 | 24.78 | 54.00 | -29.22 |
| 2487.16 | 42.95 | PK | -13.08 | 29.87 | 74.00 | -44.13 |
| 2487.16 | 40.10 | Ave | -13.08 | 27.02 | 54.00 | -26.98 |

| Frequency | Receiver Reading | Detector | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (PK/QP/Ave) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 802.11n-HT40 High Channel | | | | | | |
| 1279.56 | 45.50 | PK | -18.64 | 26.86 | 43.50 | -16.64 |
| 1279.56 | 44.75 | Ave | -18.64 | 26.11 | 43.50 | -17.39 |
| 4904.00 | 44.63 | PK | -0.87 | 43.76 | 74.00 | -30.24 |
| 4904.00 | 41.59 | Ave | -0.87 | 40.72 | 54.00 | -13.28 |
| 7356.00 | 44.71 | PK | 1.84 | 46.55 | 74.00 | -27.45 |
| 7356.00 | 43.02 | Ave | 1.84 | 44.86 | 54.00 | -9.14 |
| 2339.83 | 43.21 | PK | -13.19 | 30.02 | 74.00 | -43.98 |
| 2339.83 | 38.83 | Ave | -13.19 | 25.64 | 54.00 | -28.36 |
| 2364.43 | 42.96 | PK | -13.14 | 29.82 | 74.00 | -44.18 |
| 2364.43 | 38.05 | Ave | -13.14 | 24.91 | 54.00 | -29.09 |
| 2490.29 | 42.67 | PK | -13.08 | 29.59 | 74.00 | -44.41 |
| 2490.29 | 40.07 | Ave | -13.08 | 26.99 | 54.00 | -27.01 |

**Test Frequency: Above 18GHz**

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

# 7 Band Edge Measurement

| | | |
|---|---|---|
| Test Requirement | : | Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). |
| Test Method | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R03 |
| Test Limit | : | Regulation 15.247 (d),In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). |
| Test Mode | : | Refer to section 3.3 |

## 7.1 Test Procedure

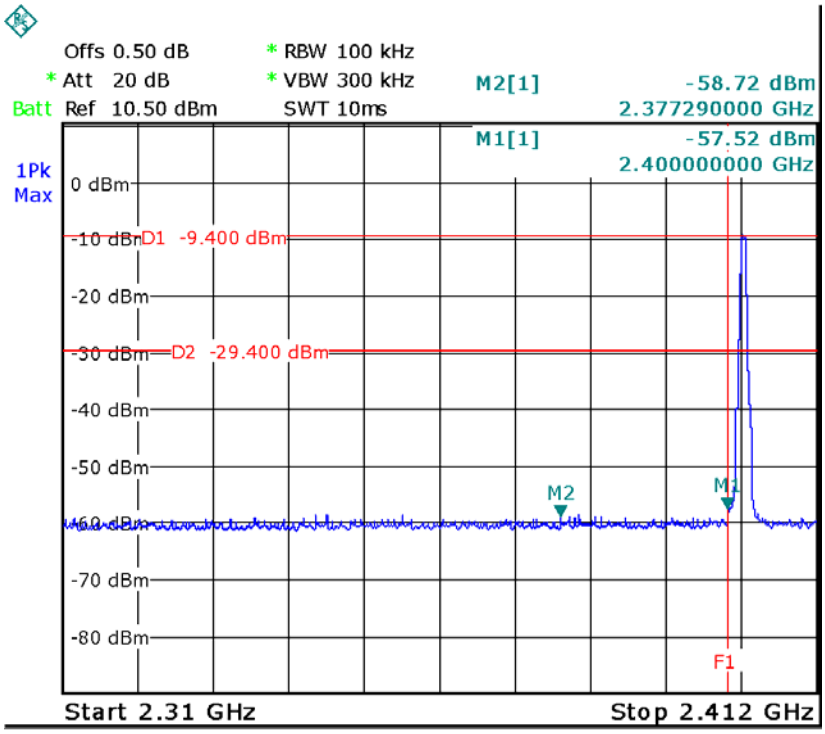
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto

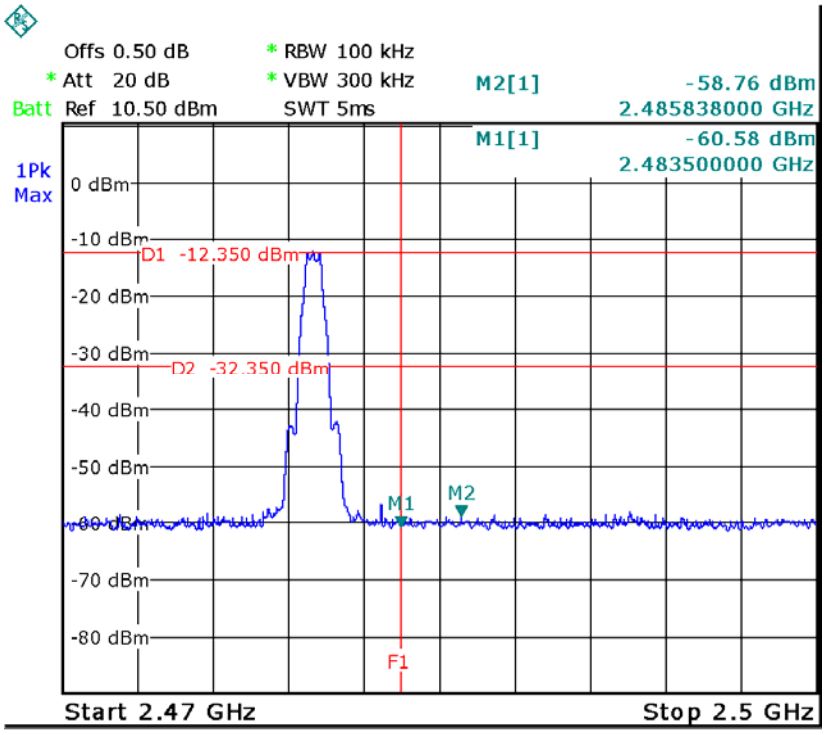
Detector function = peak, Trace = max hold

## 7.2 Test Result

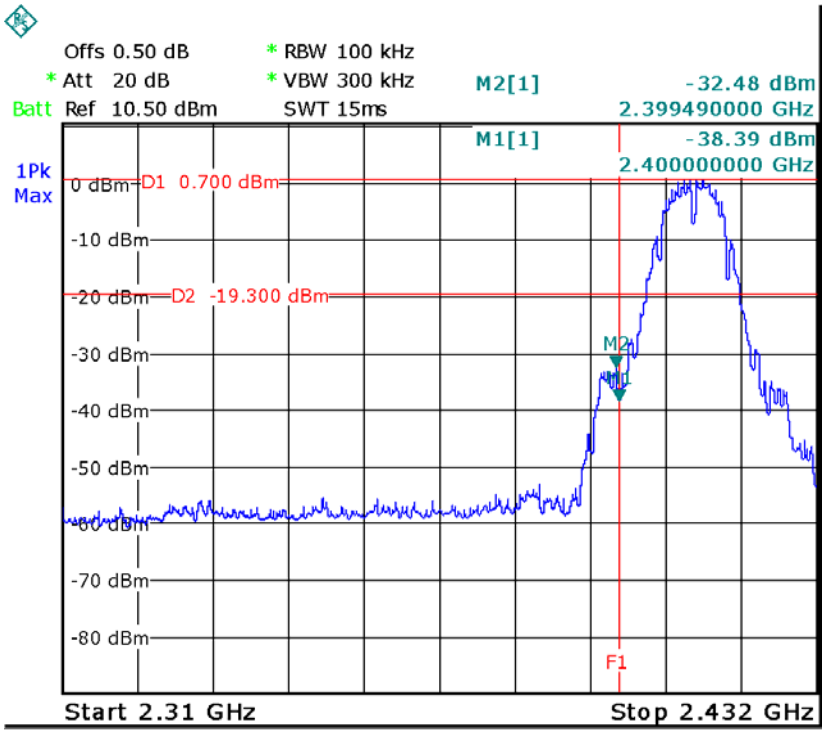
GFSK(BLE) Band edge-left side



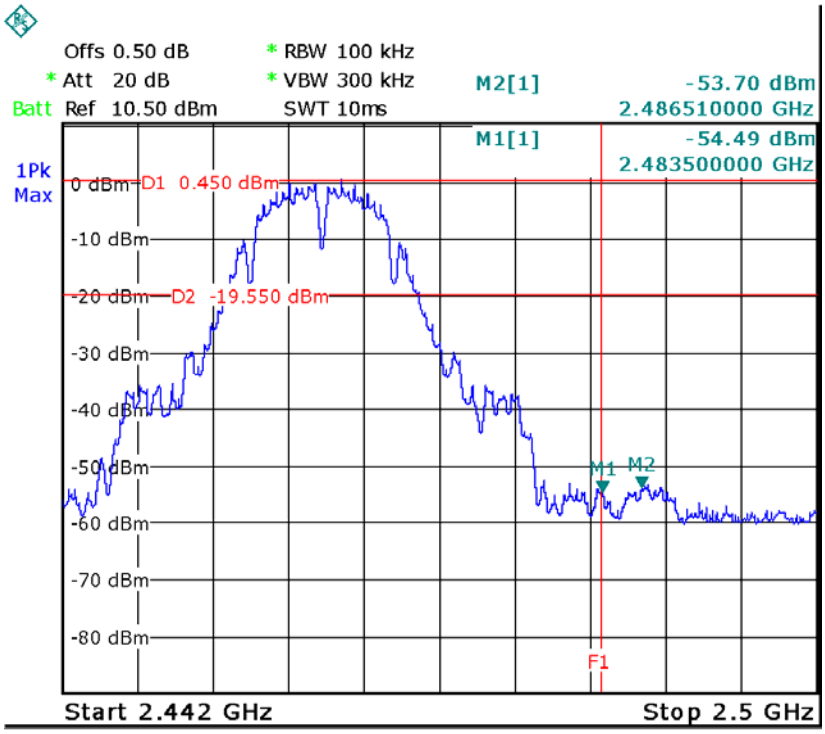

GFSK(BLE) Band edge-right side



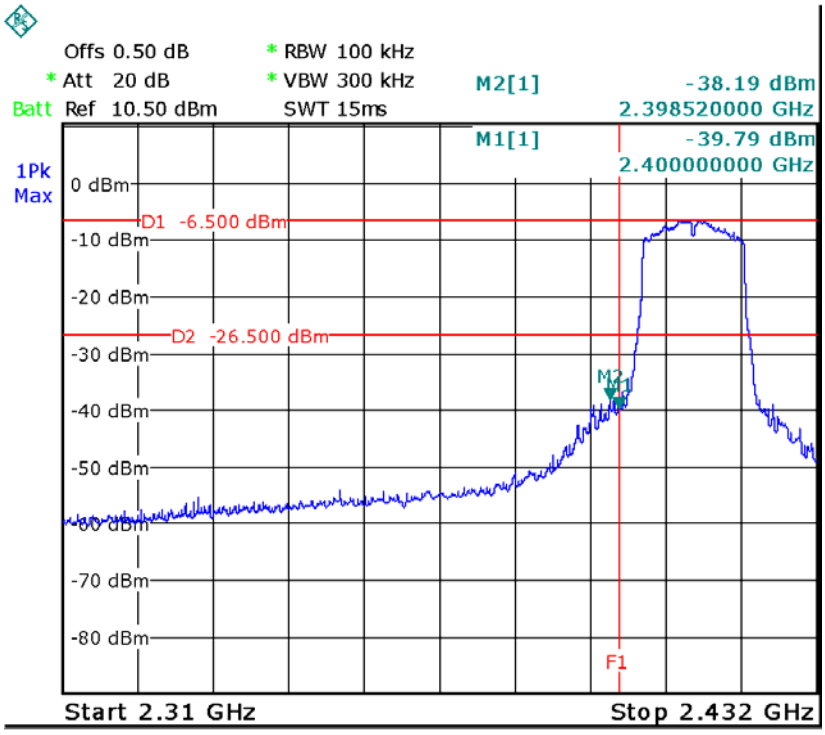
802.11b Band edge-left side



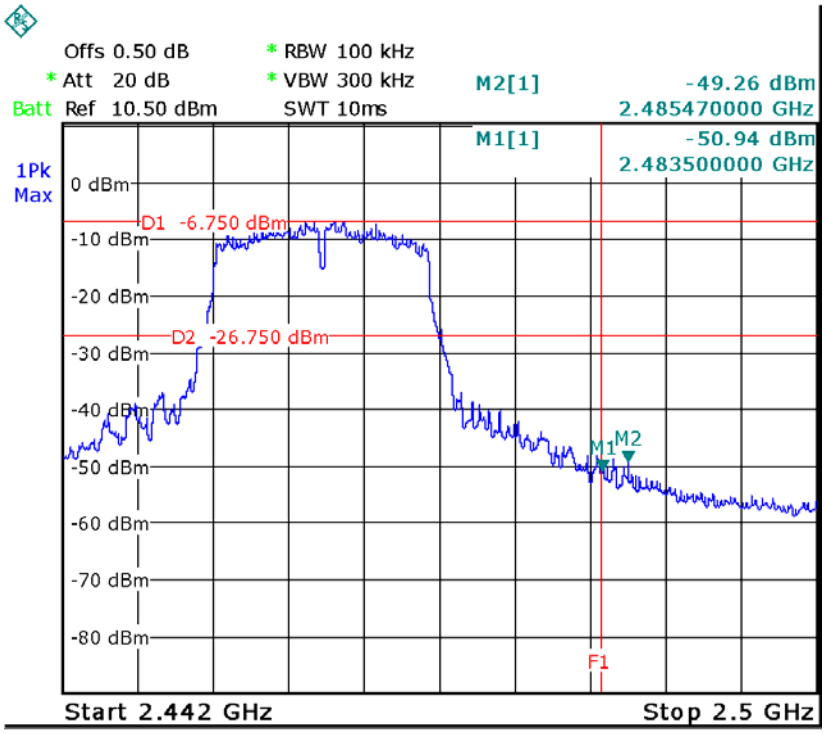

802.11b Band edge-right side



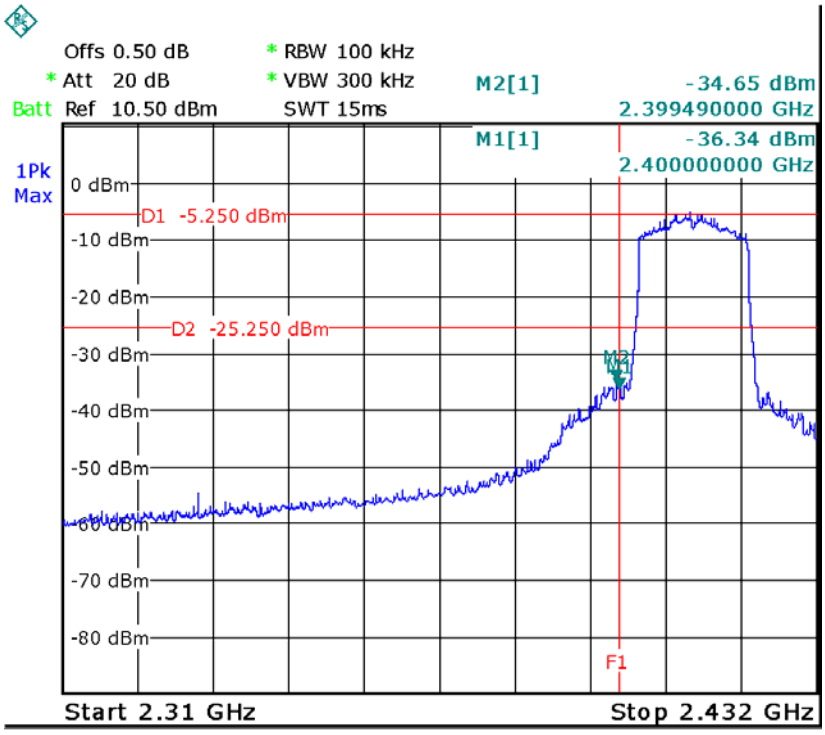
802.11g Band edge-left side



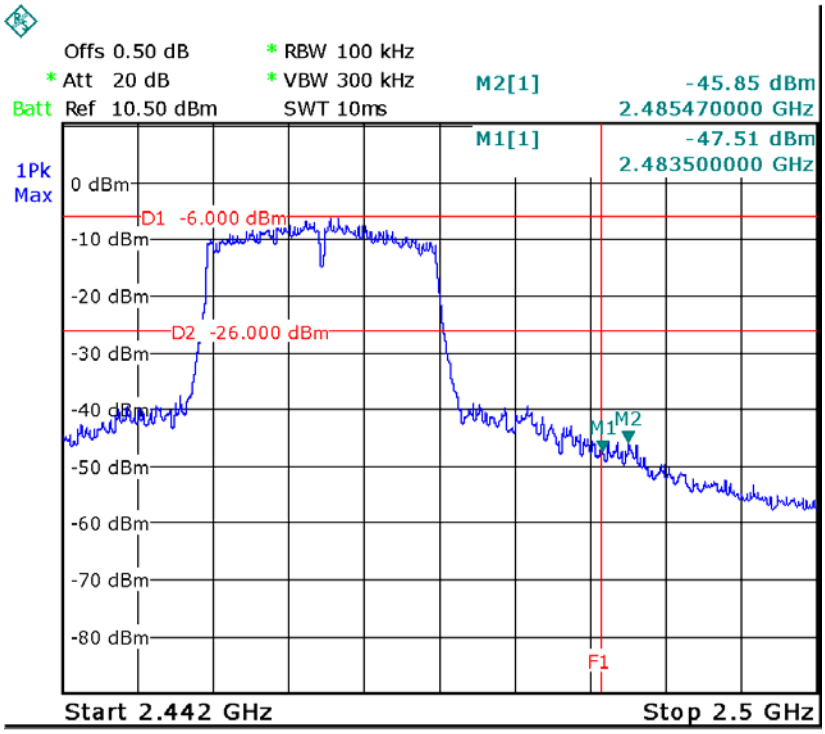

802.11g Band edge-right side



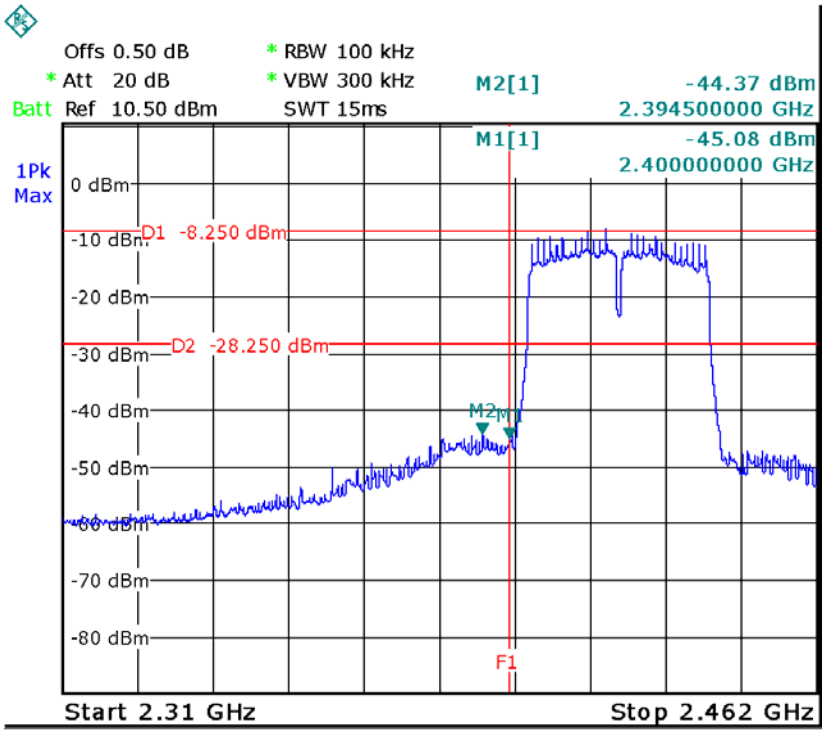
802.11n-HT20 Band edge-left side



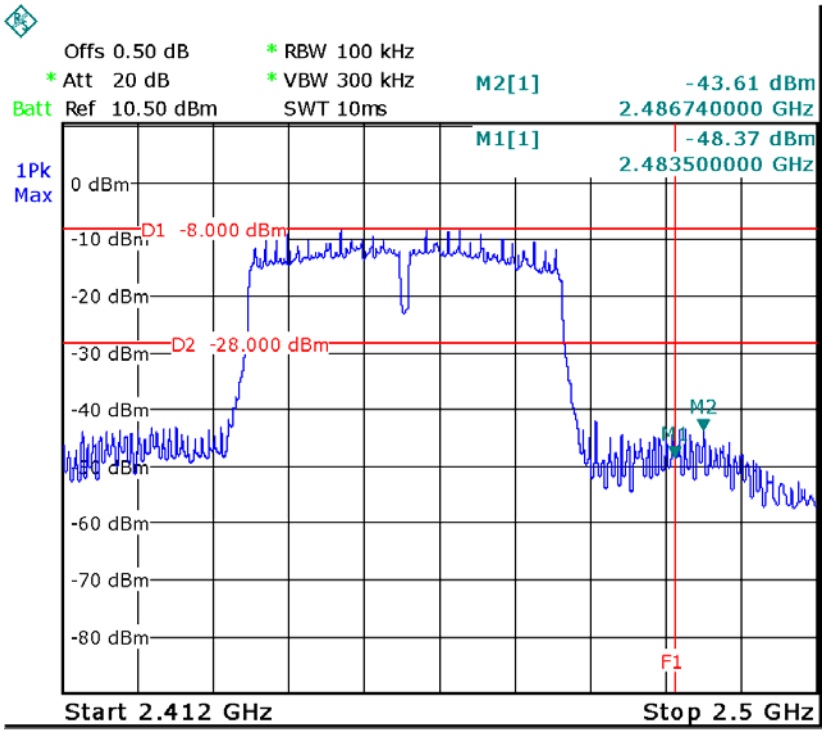

802.11n-HT20 Band edge-right side



802.11n-HT40 Band edge-left side




802.11n-HT40 Band edge-right side



# 8 6dB Bandwidth Measurement

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R03 |
| Test Limit | | Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz. |
| Test Mode | : | Refer to section 3.3 |

## 8.1 Test Procedure

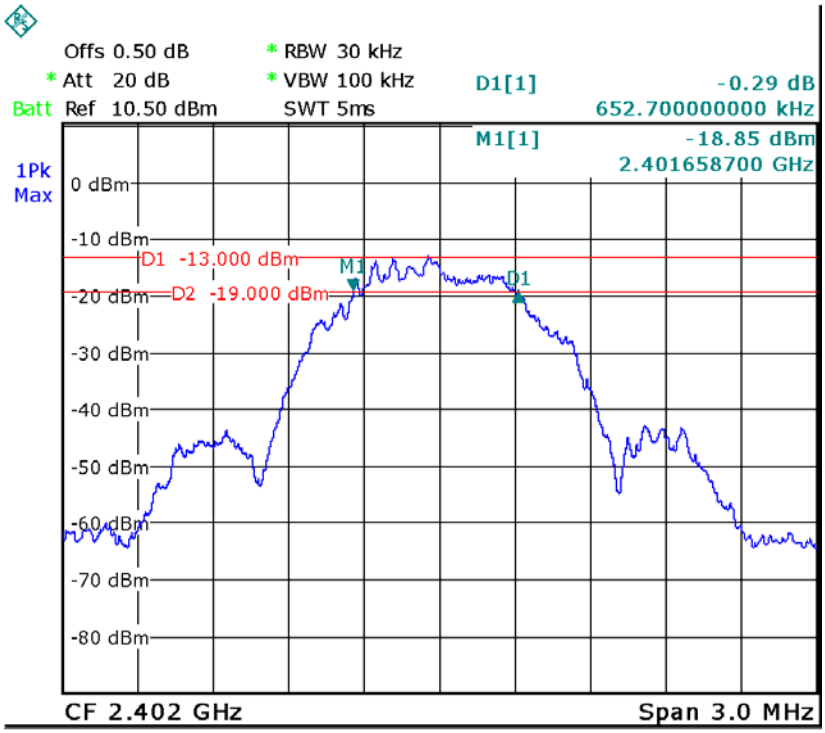
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. Set the spectrum analyzer: For BLE, RBW = 30kHz, VBW = 100kHz, For WIFI, RBW = 100kHz, VBW = 300kHz,

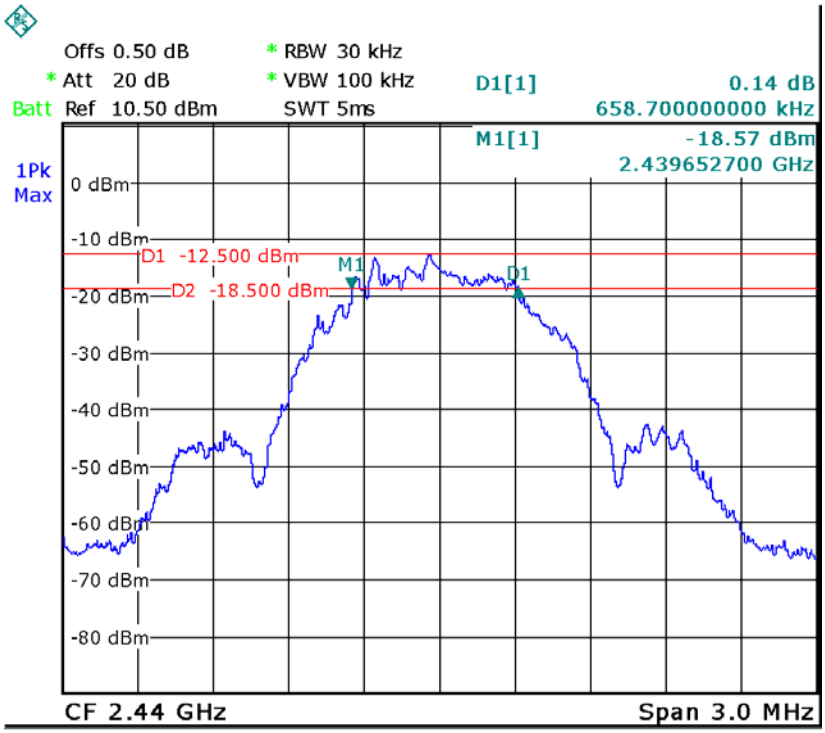
## 8.2 Test Result

| Modulation | Bandwidth(MHz) | | | Limit |
|---|---|---|---|---|
| | Low Channel | Middle Channel | High Channel | |
| GFSK(BLE) | 0.653 | 0.659 | 0.659 | ≥500kHz |
| 802.11b | 10.028 | 10.060 | 10.060 | ≥500kHz |
| 802.11g | 16.417 | 16.517 | 16.417 | ≥500kHz |
| 802.11n-HT20 | 17.623 | 17.623 | 17.623 | ≥500kHz |
| 802.11n-HT40 | 35.680 | 36.270 | 35.980 | ≥500kHz |

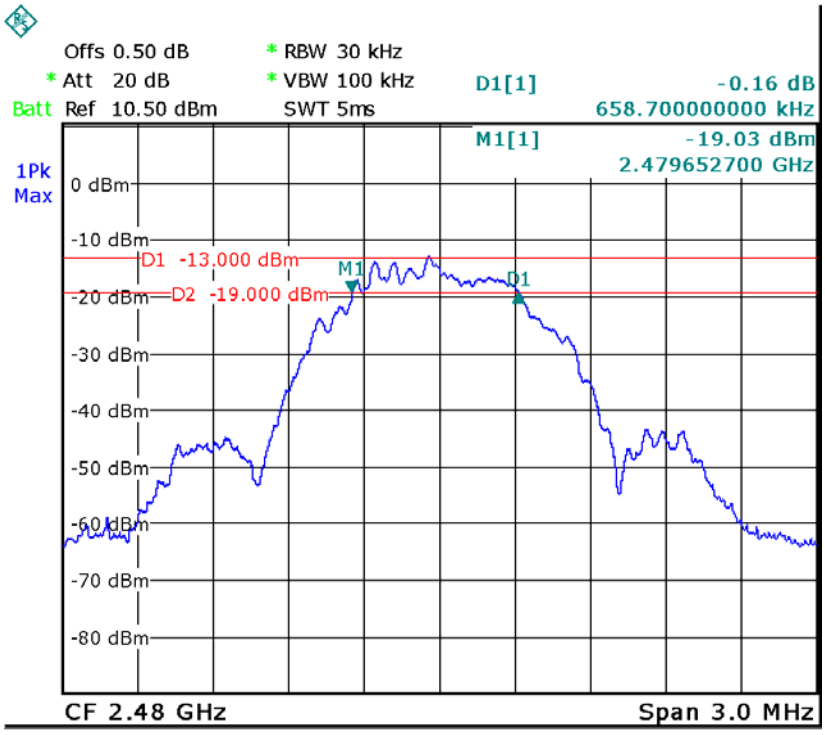
GFSK(BLE) Low Channel



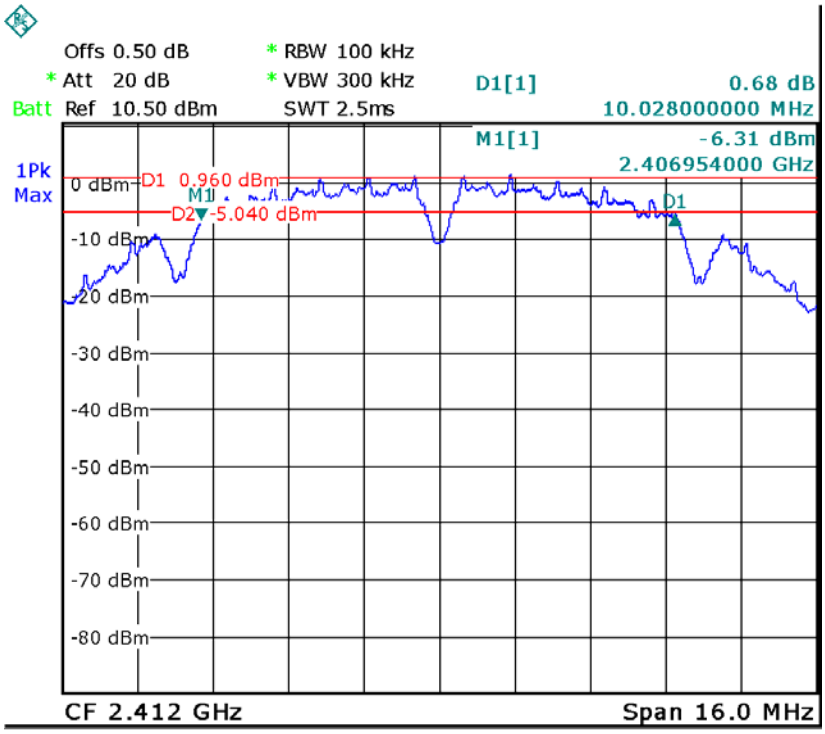

GFSK(BLE) Middle Channel



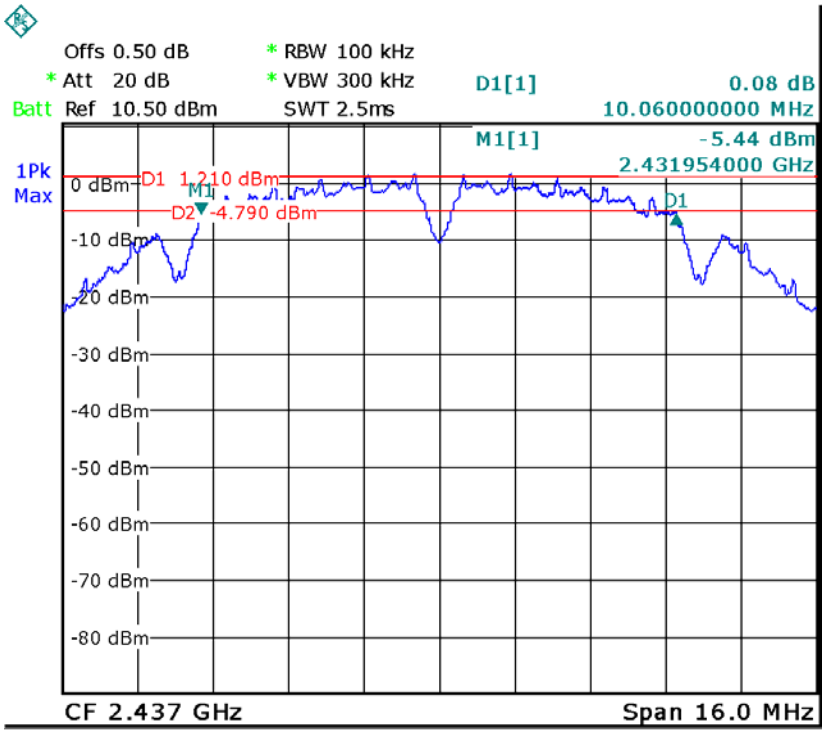
GFSK(BLE) High Channel



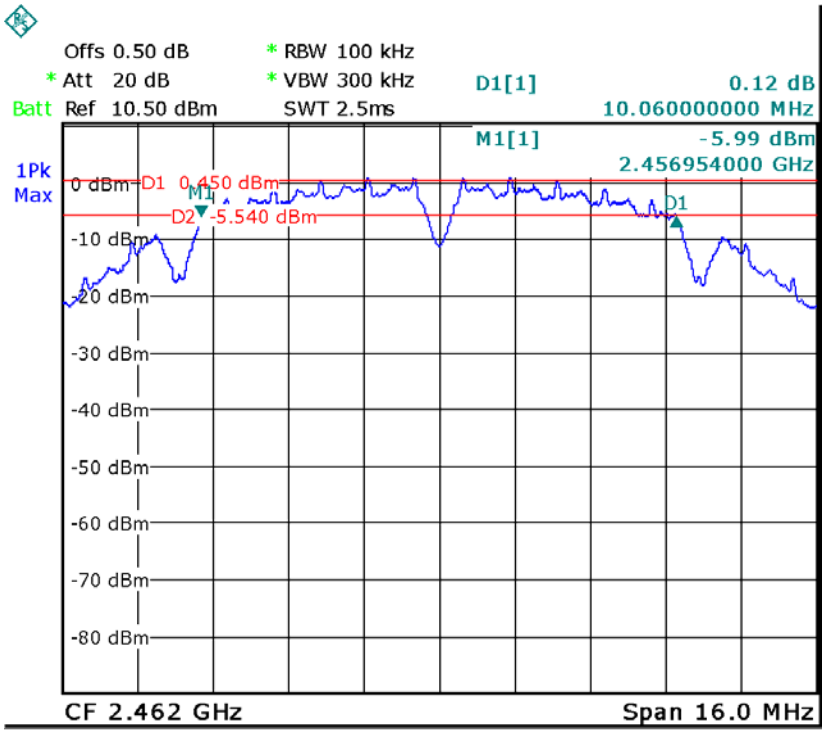

802.11b Low Channel



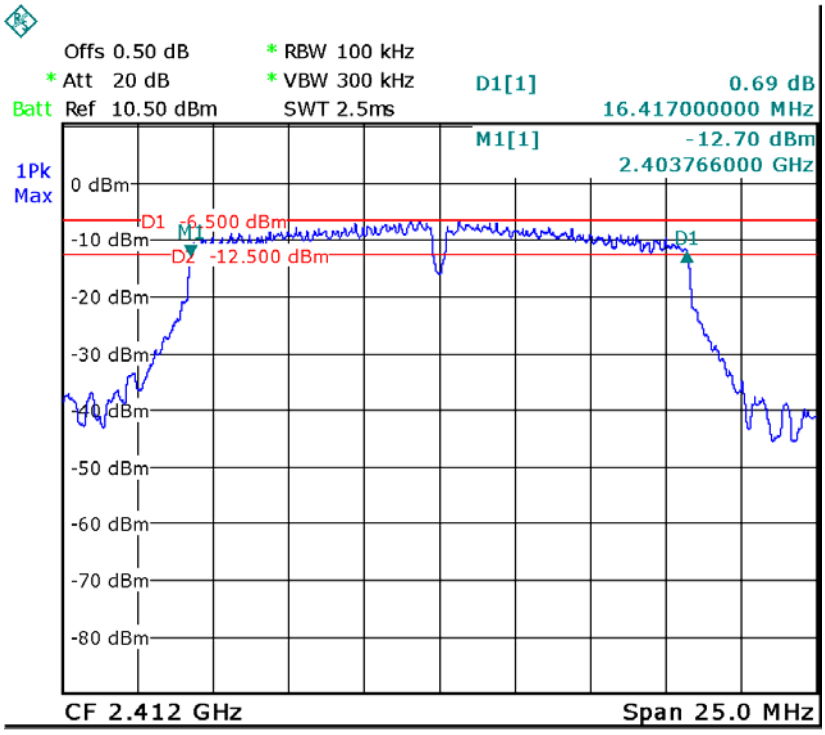
802.11b Middle Channel



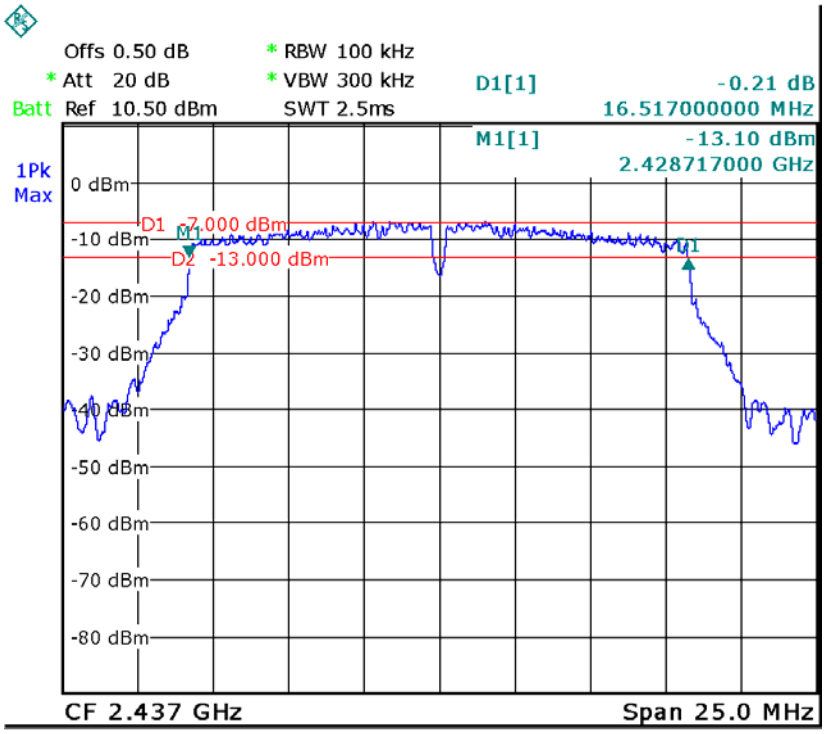

802.11b High Channel



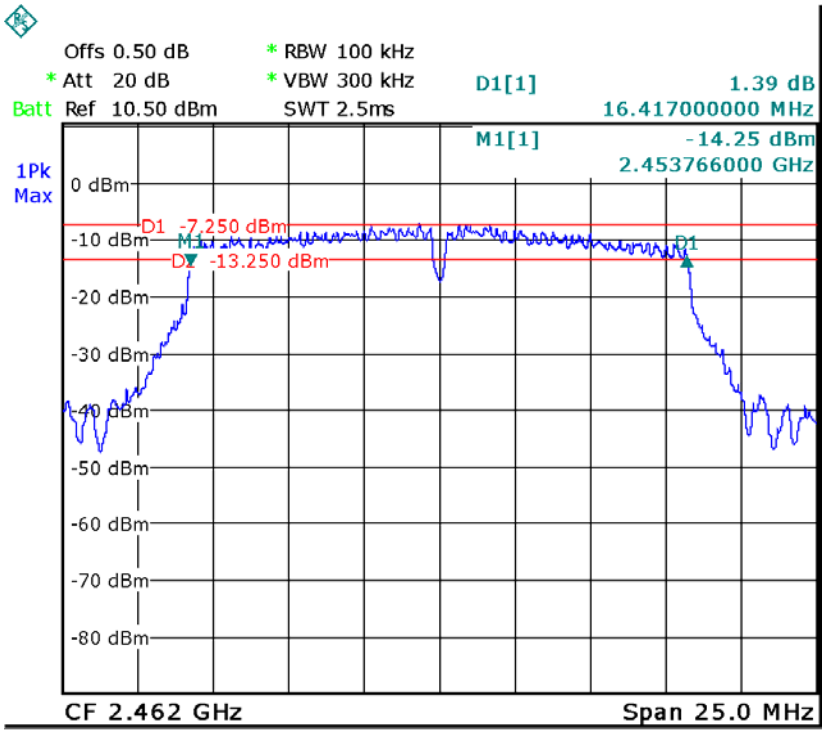
802.11g Low Channel



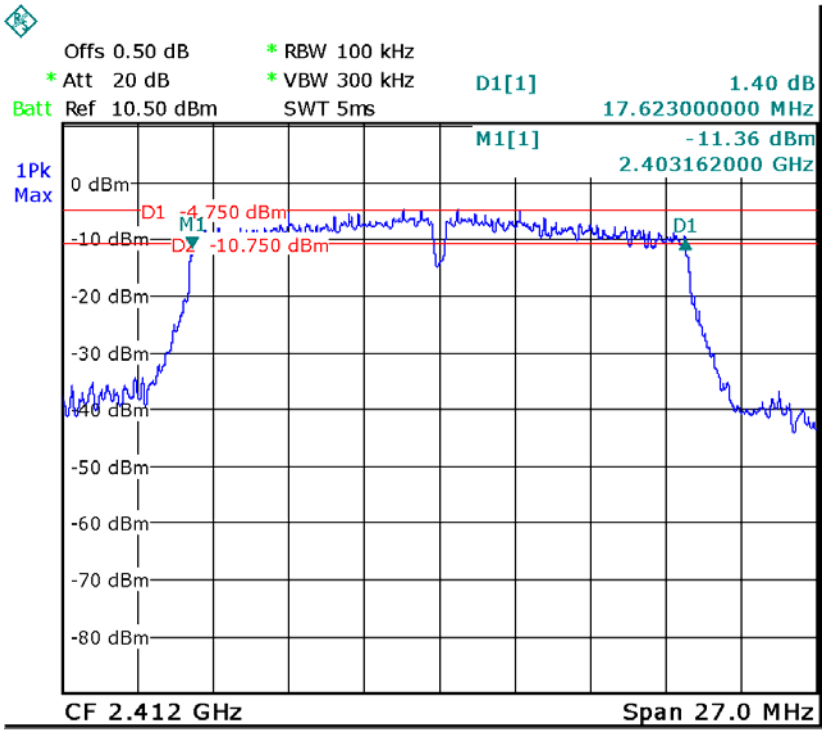

802.11g Middle Channel



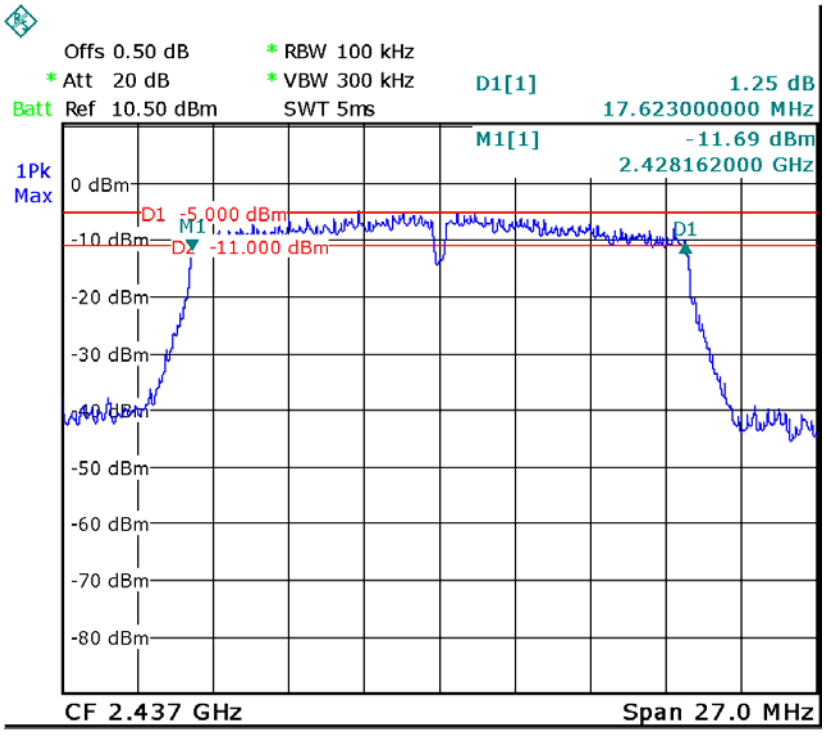
802.11g High Channel



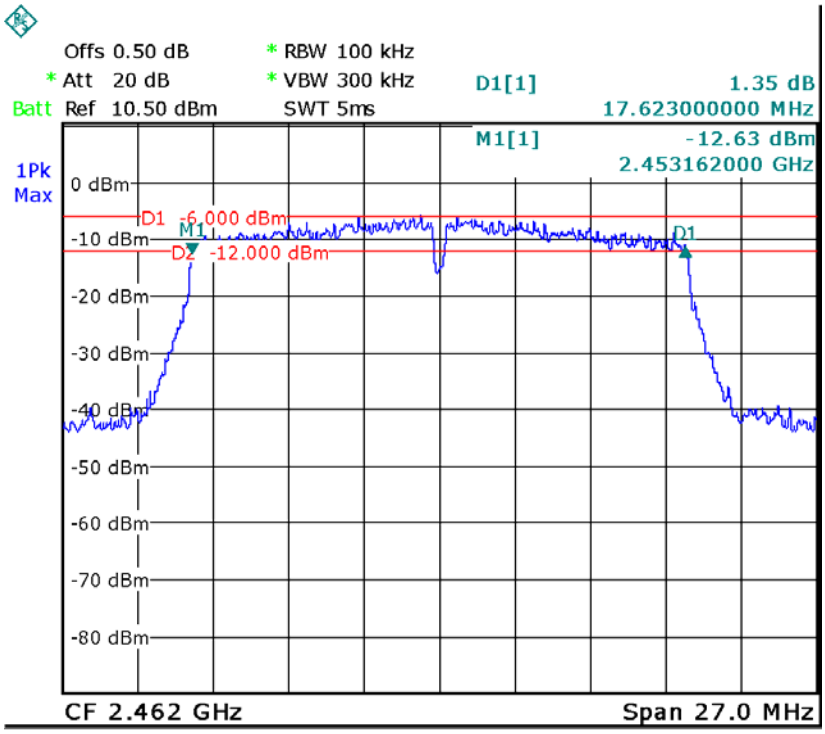

802.11n-HT20 Low Channel



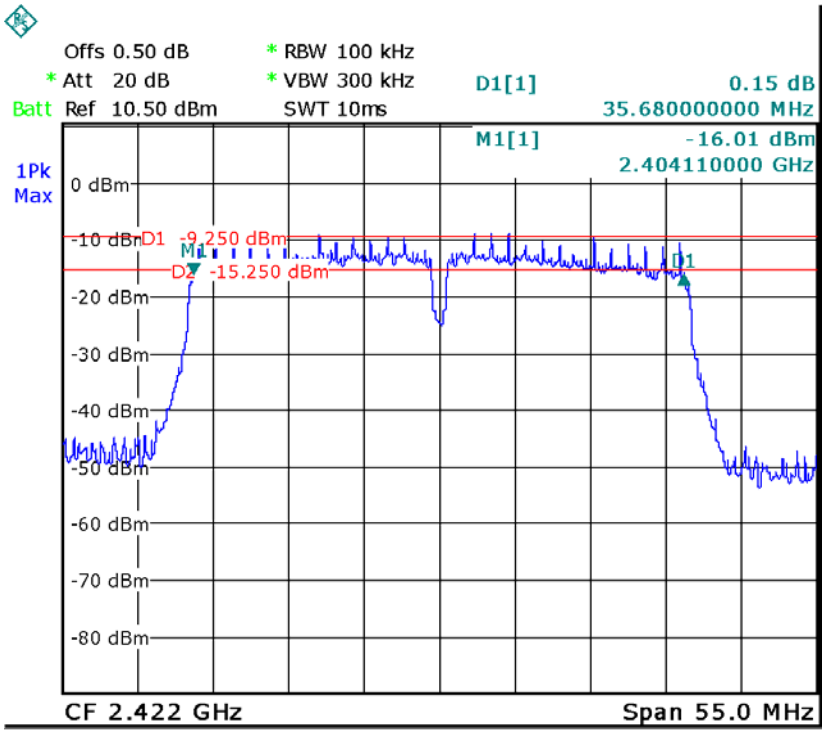
802.11n-HT20 Middle Channel



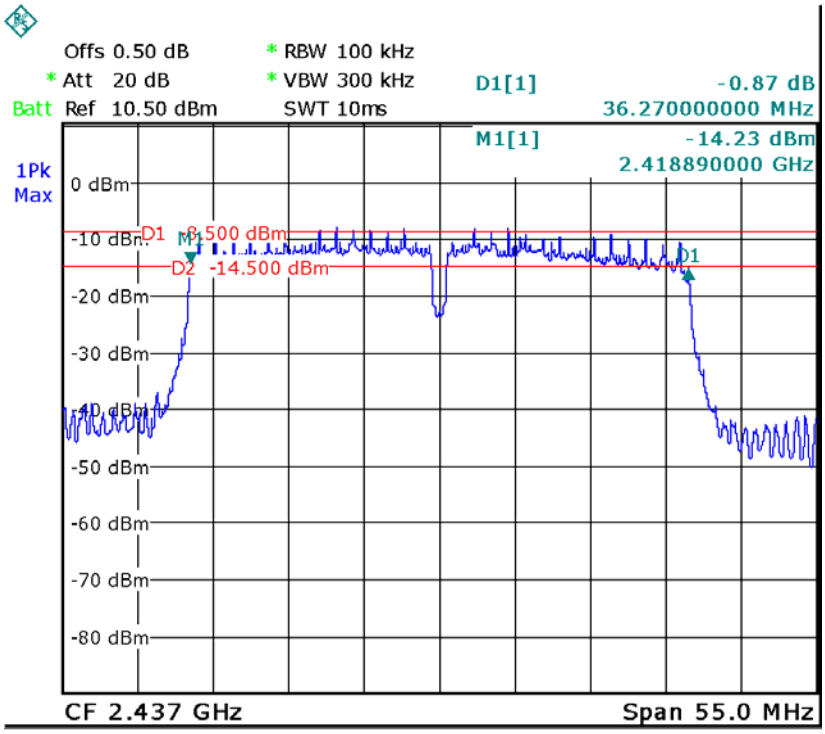

802.11n-HT20 High Channel



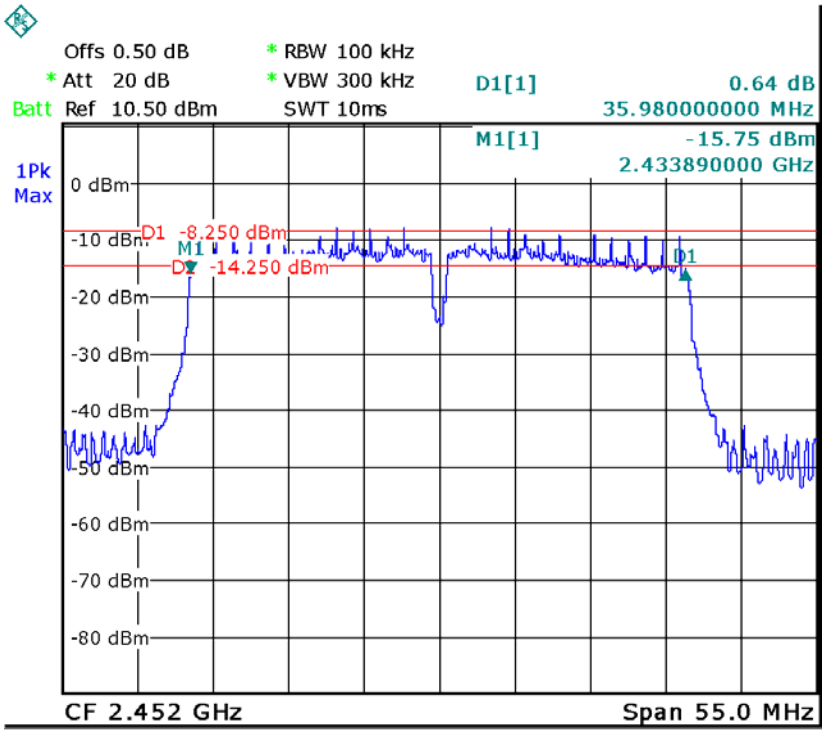
802.11n-HT40 Low Channel




802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



# 9 Maximum Peak Output Power

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R03 |
| Test Limit | : | Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. |
| Test Mode | : | Refer to section 3.3 |

## 9.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance v03r03

section 9.1.1 (For BLE)

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

a)Set the RBW ≥ DTS bandwidth.

b)Set VBW ≥ 3 RBW.

c)Set span ≥ 3 x RBW

d)Sweep time = auto couple.

e)Detector = peak.

f)Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use peak marker function to determine the peak amplitude level.

section 9.1.2 (For WIFI)

This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.

a)Set the RBW = 1 MHz.

b)Set the VBW ≥ 3 RBW

c)Set the span ≥ 1.5 x DTS bandwidth.

d)Detector = peak.

e)Sweep time = auto couple.

f)Trace mode = max hold.

g)Allow trace to fully stabilize.

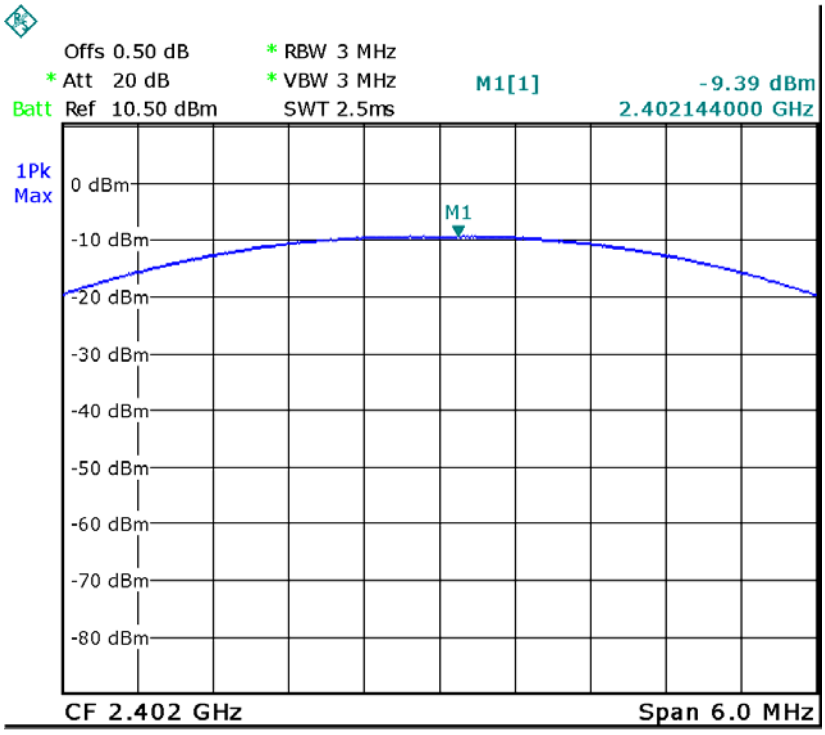
h)Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak

detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

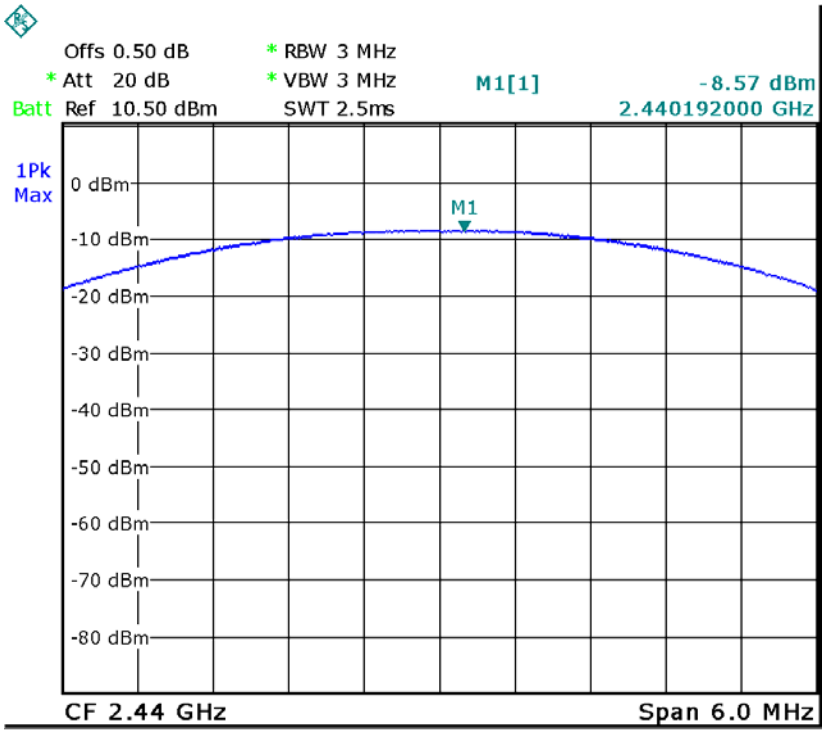
## 9.2 Test Result

| Modulation | Maximum Peak Output Power (dBm) | | | Limit |
|---|---|---|---|---|
| | Low Channel | Middle Channel | High Channel | |
| GFSK(BLE) | -9.39 | -8.57 | -8.79 | 1W(30dBm) |
| 802.11b | 9.36 | 9.32 | 9.31 | 1W(30dBm) |
| 802.11g | 9.22 | 9.24 | 9.20 | 1W(30dBm) |
| 802.11n-HT20 | 9.36 | 9.34 | 9.38 | 1W(30dBm) |
| 802.11n-HT40 | 9.20 | 9.22 | 9.26 | 1W(30dBm) |

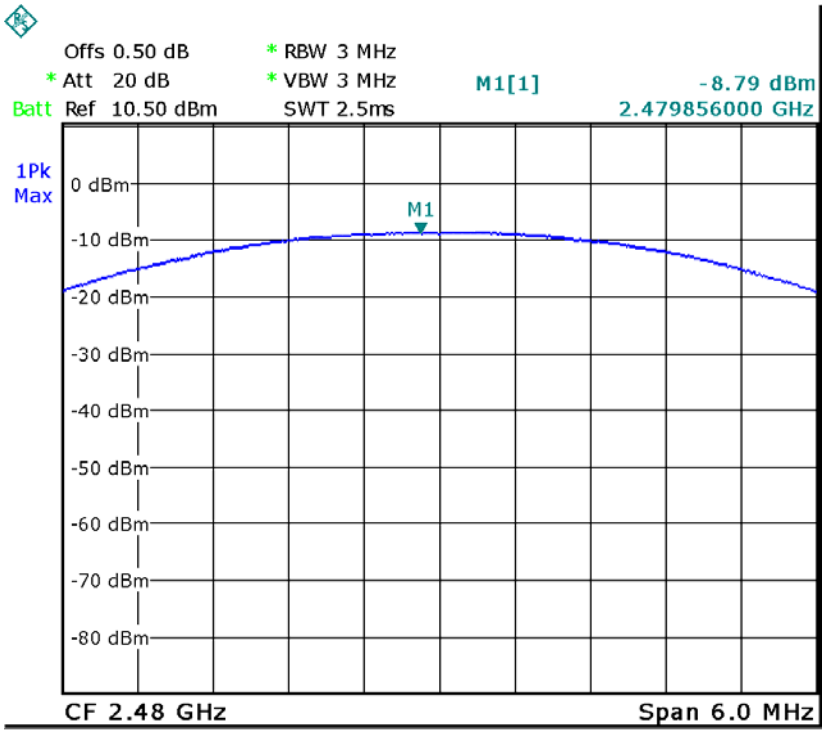
GFSK(BLE) Low Channel



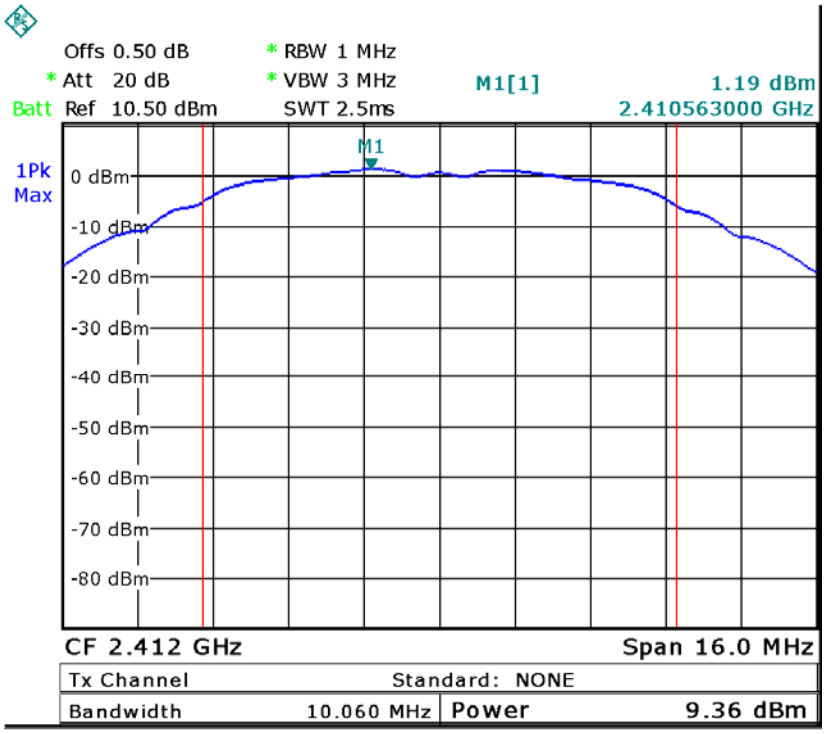

GFSK(BLE) Middle Channel



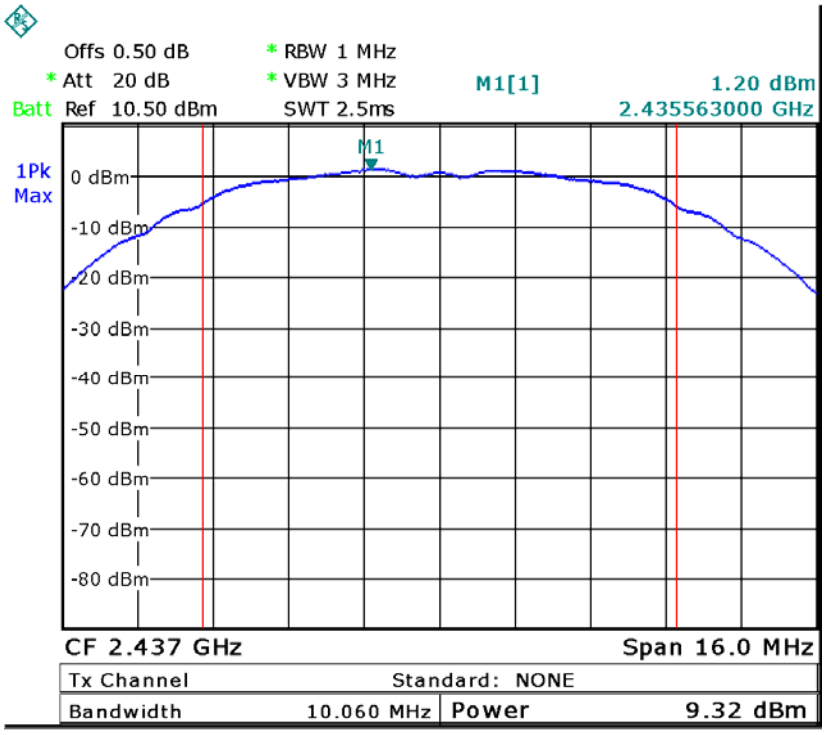
GFSK(BLE) High Channel



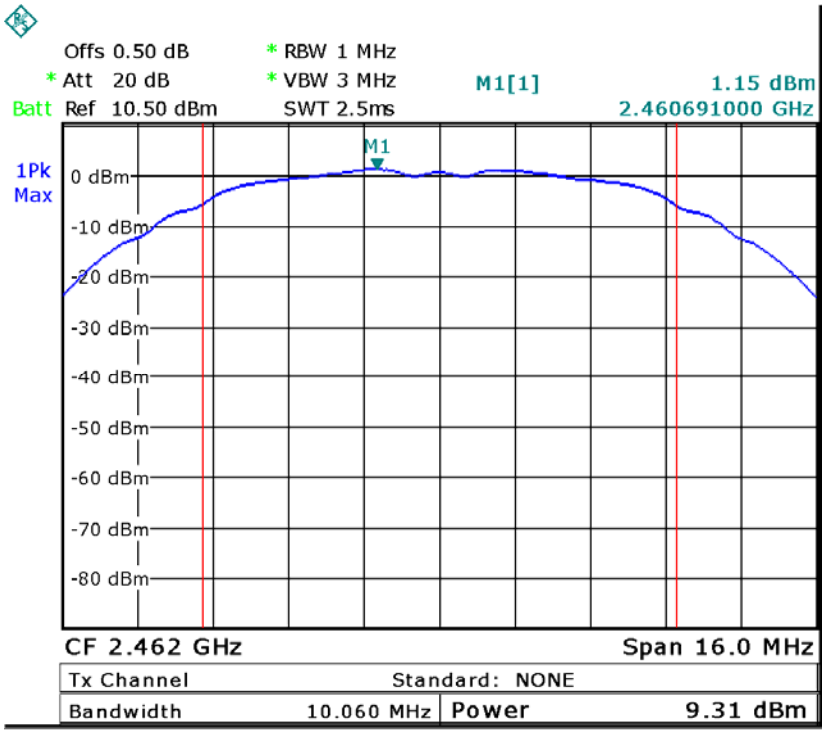

802.11b Low Channel



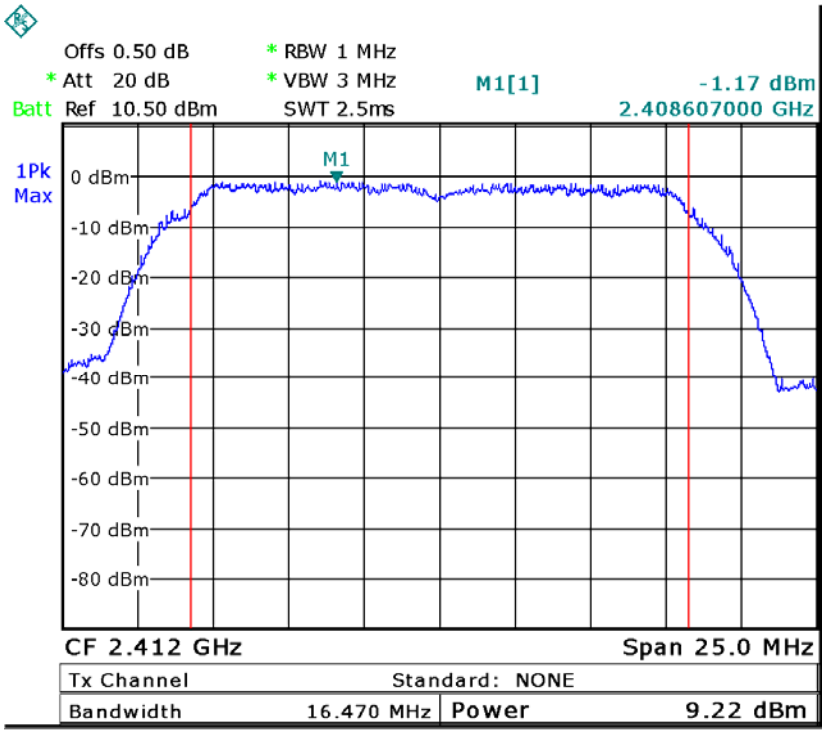
802.11b Middle Channel



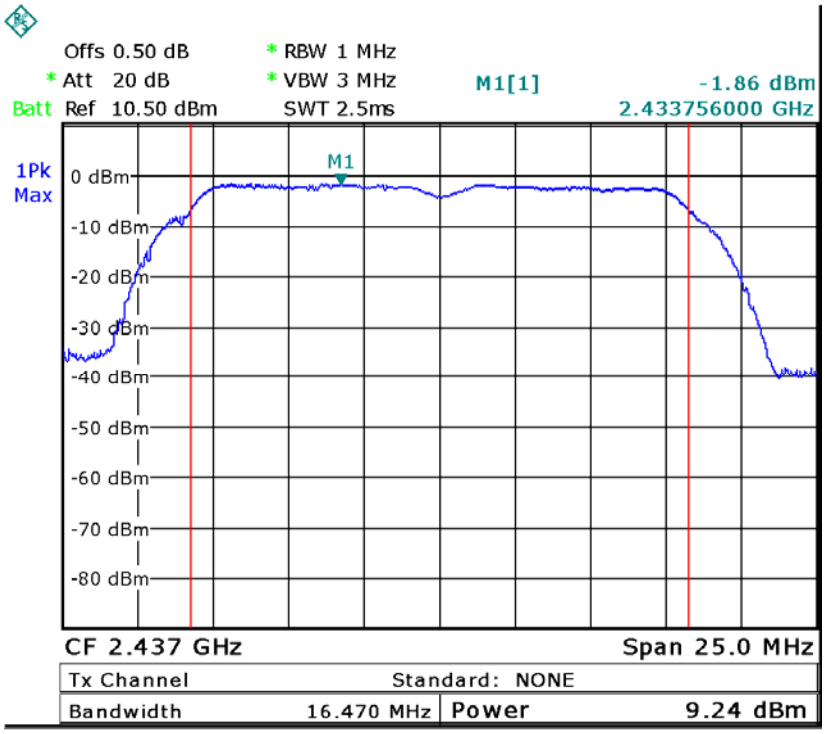

802.11b High Channel



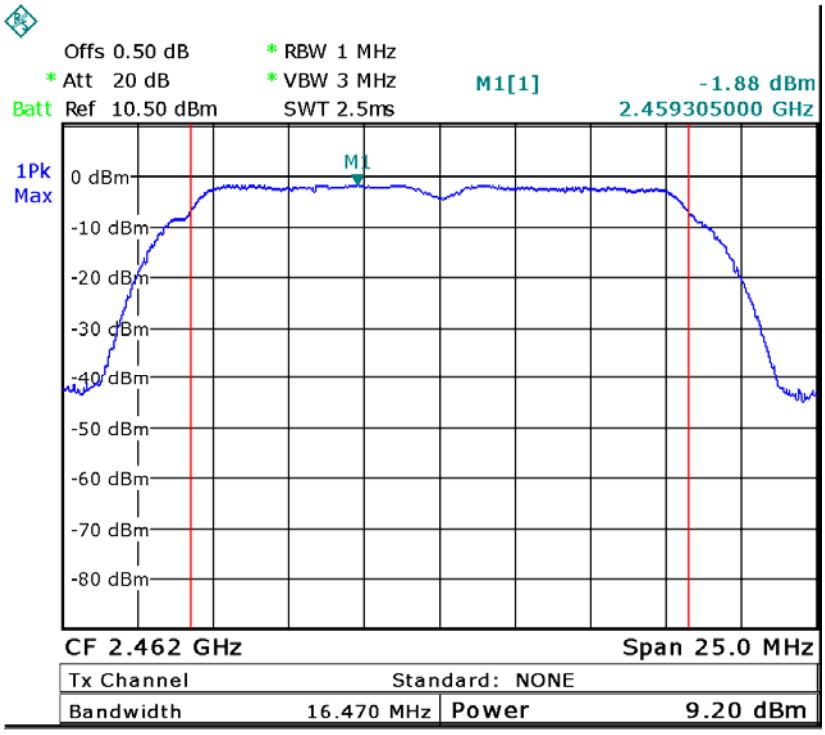
802.11g Low Channel



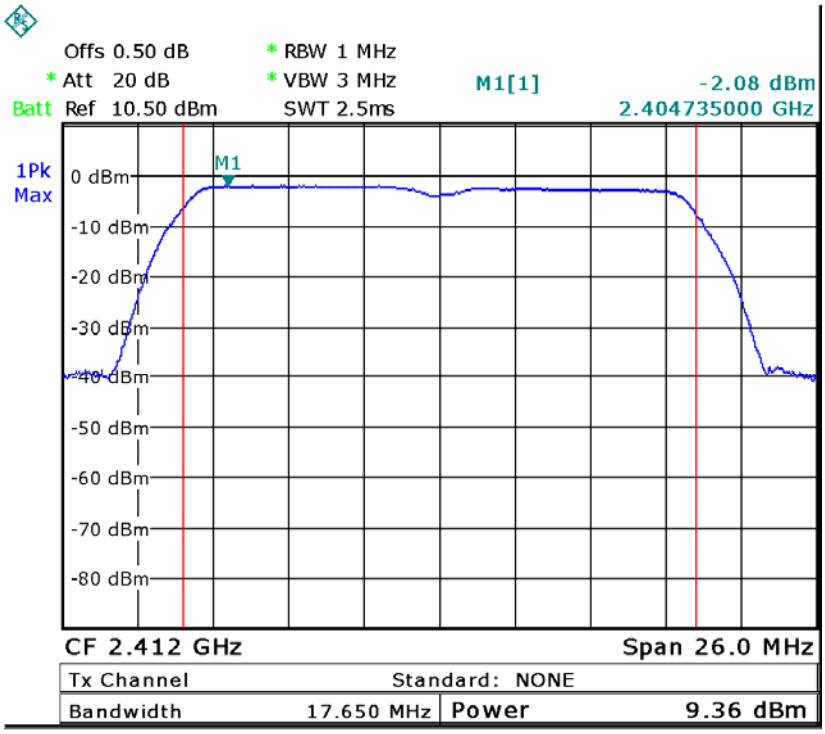

802.11g Middle Channel



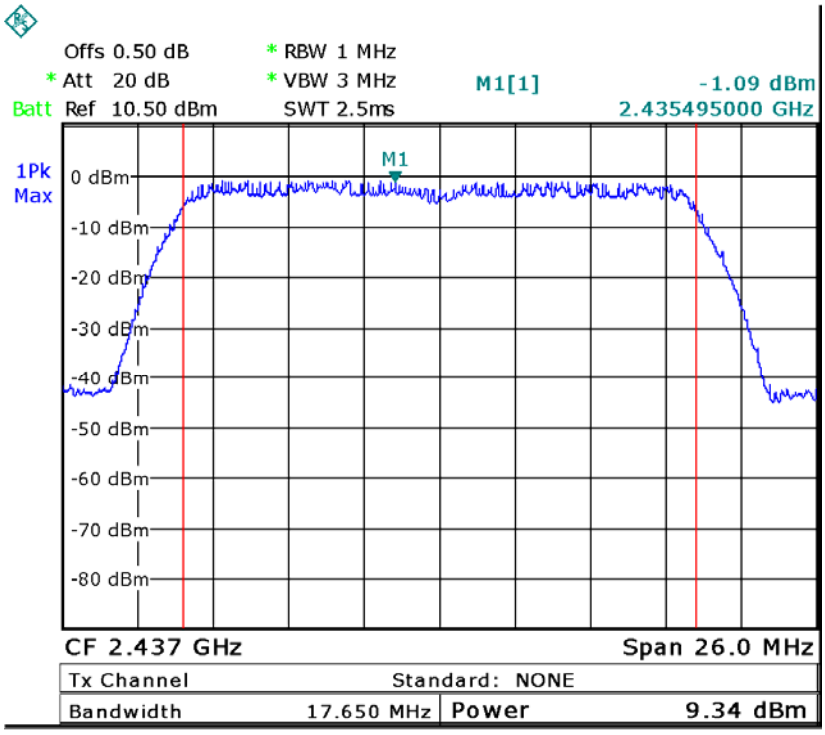
802.11g High Channel



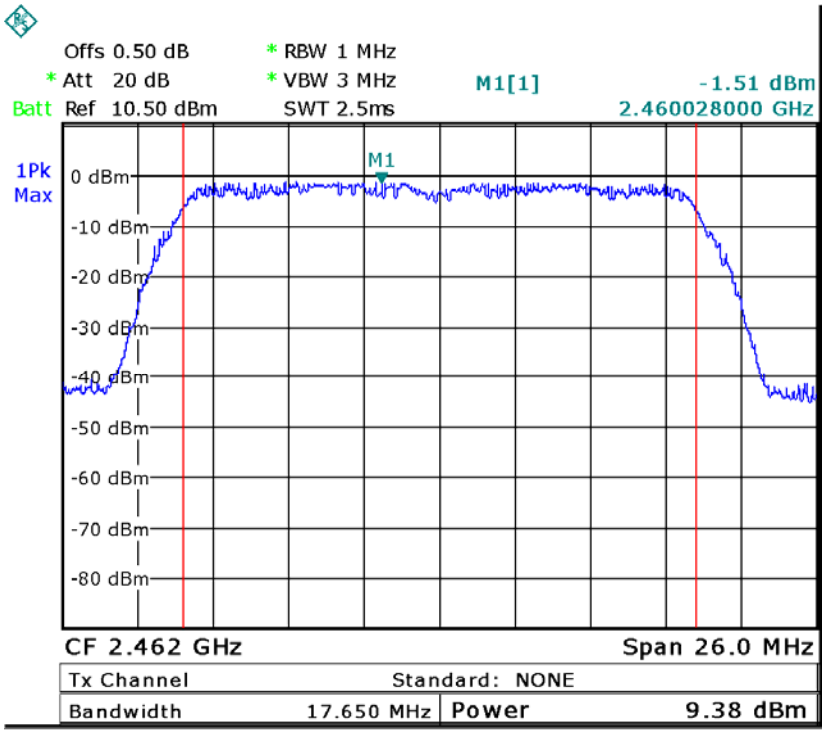

802.11n-HT20 Low Channel



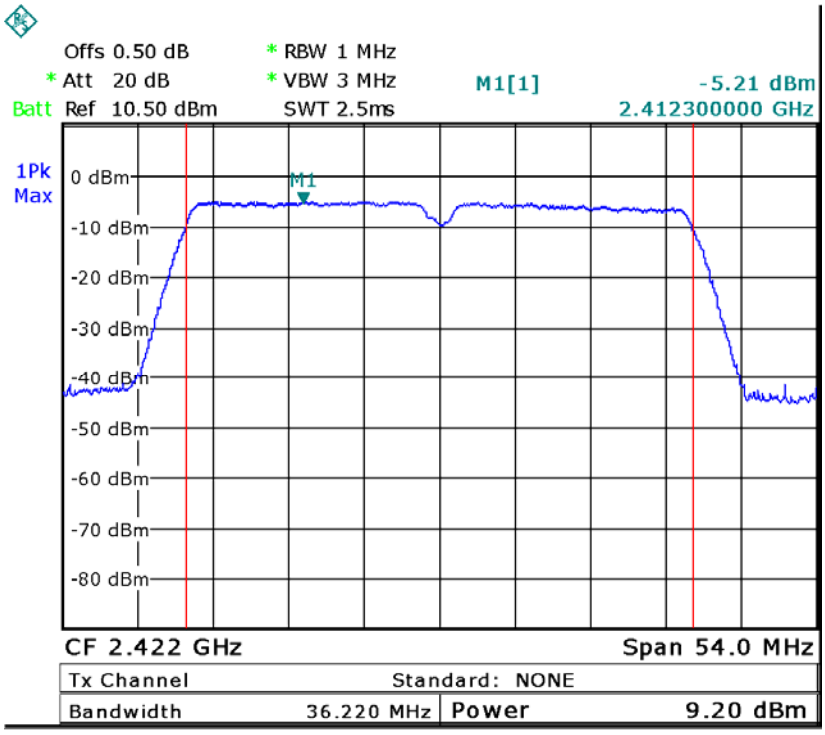
802.11n-HT20 Middle Channel



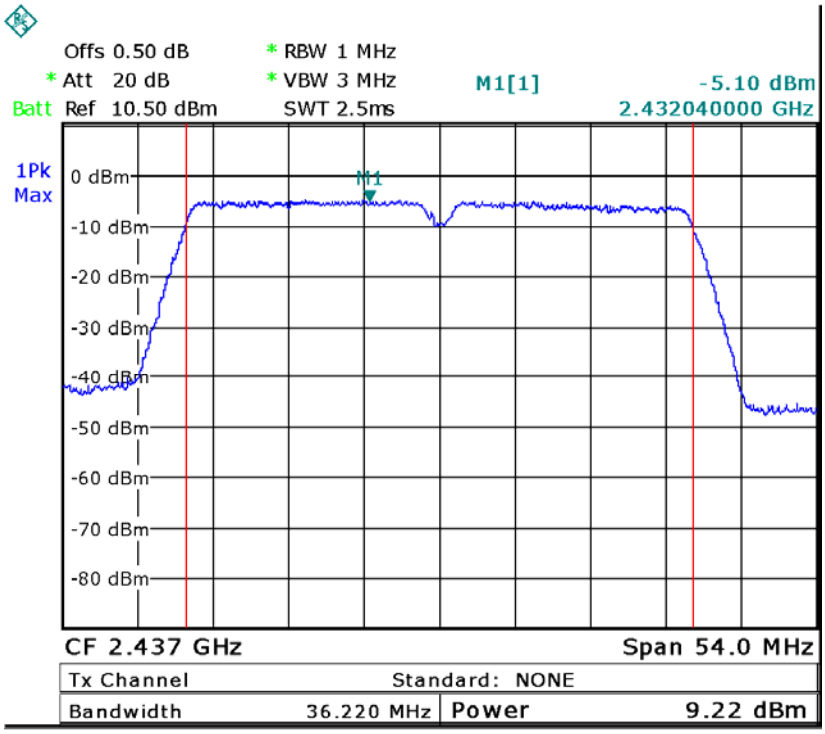

802.11n-HT20 High Channel



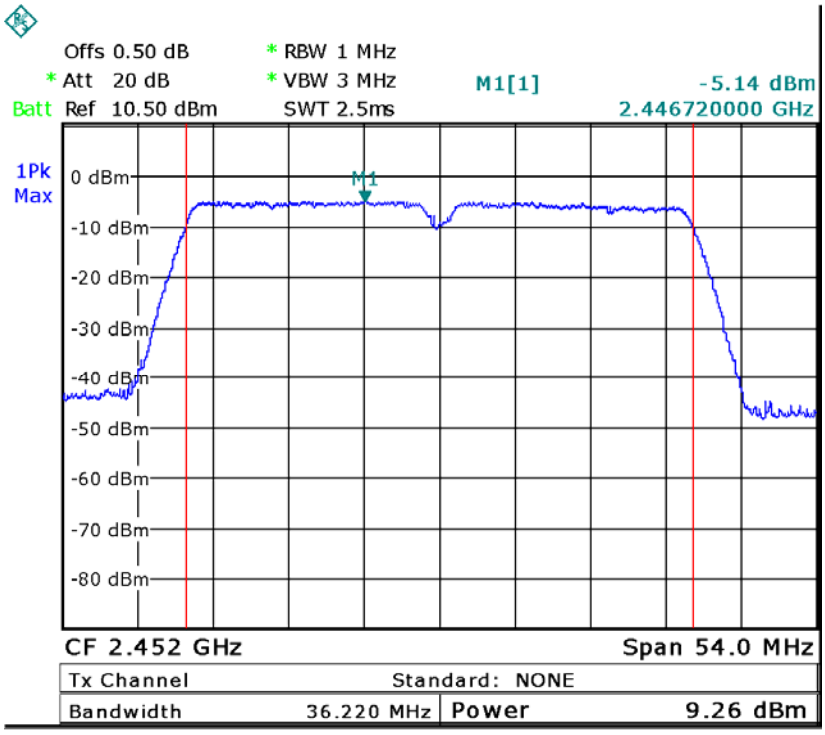
802.11n-HT40 Low Channel




802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



# 10 Power Spectral density

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.247 |
| Test Method | : | ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R03 |
| Test Limit | : | Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. |
| Test Mode | : | Refer to section 3.3 |

## 10.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance v03r03

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

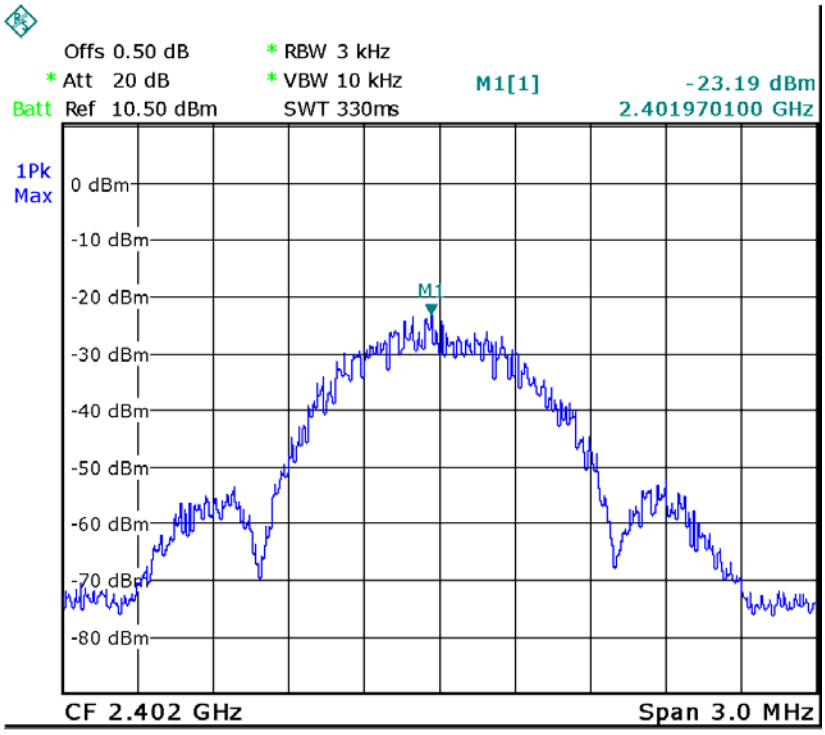
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

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.

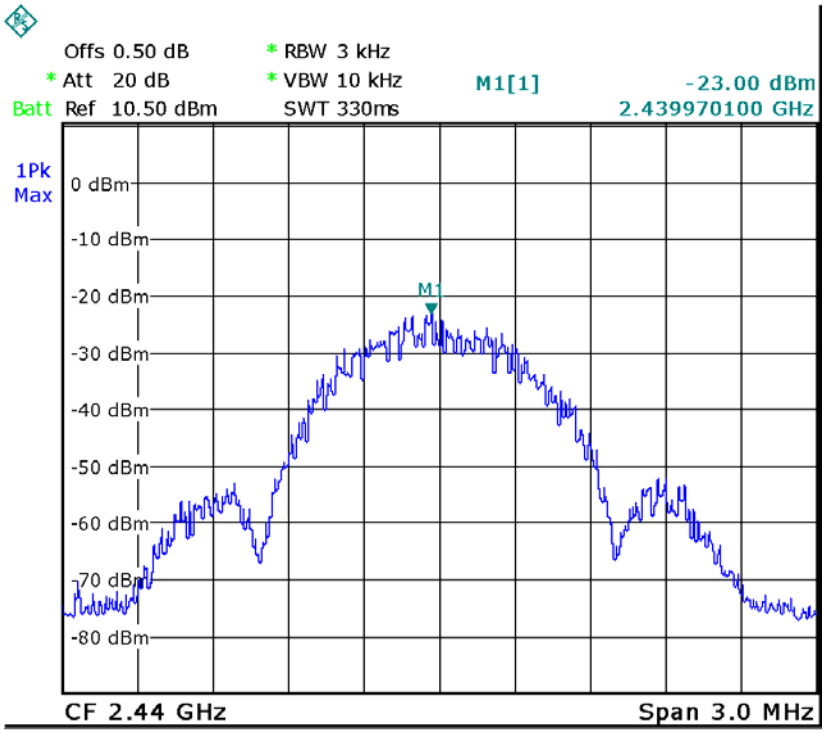
## 10.2 Test Result

| Modulation | Power Spectral density ( dBm/3kHz ) | | | Limit |
|---|---|---|---|---|
| | Low Channel | Middle Channel | High Channel | |
| GFSK(BLE) | -23.19 | -23.00 | -23.55 | 8dBm/3kHz |
| 802.11b | -17.98 | -19.27 | -20.10 | 8dBm/3kHz |
| 802.11g | -19.45 | -20.17 | -20.69 | 8dBm/3kHz |
| 802.11n-HT20 | -19.33 | -19.41 | -19.57 | 8dBm/3kHz |
| 802.11n-HT40 | -22.88 | -21.25 | -23.07 | 8dBm/3kHz |

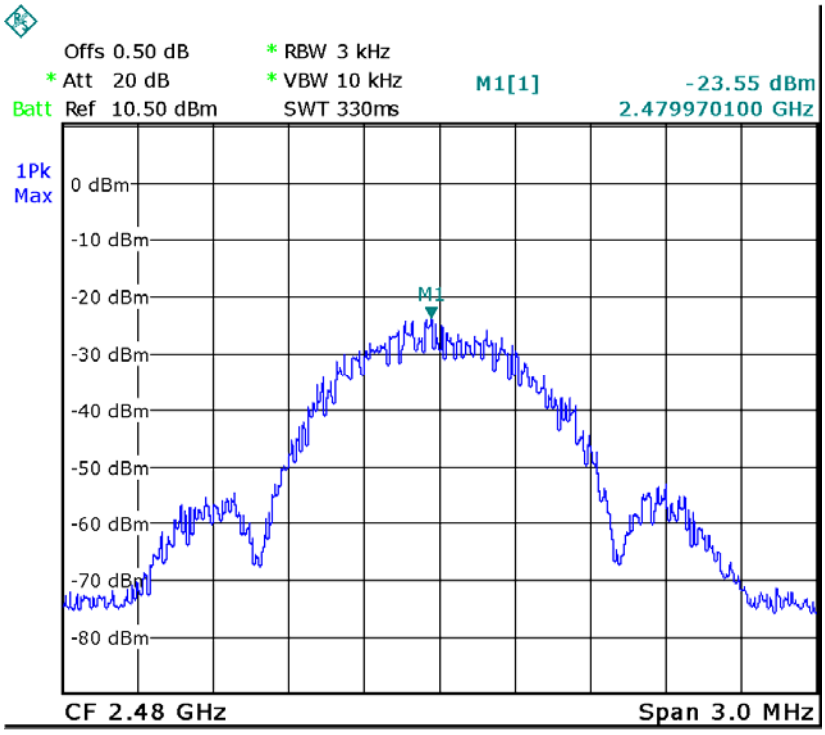
GFSK(BLE) Low Channel



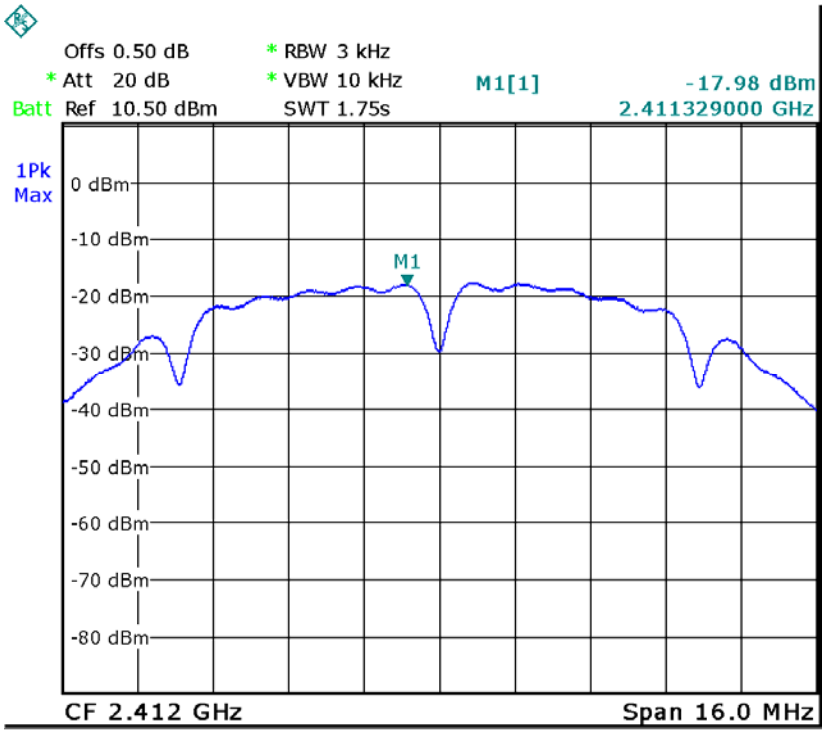

GFSK(BLE) Middle Channel



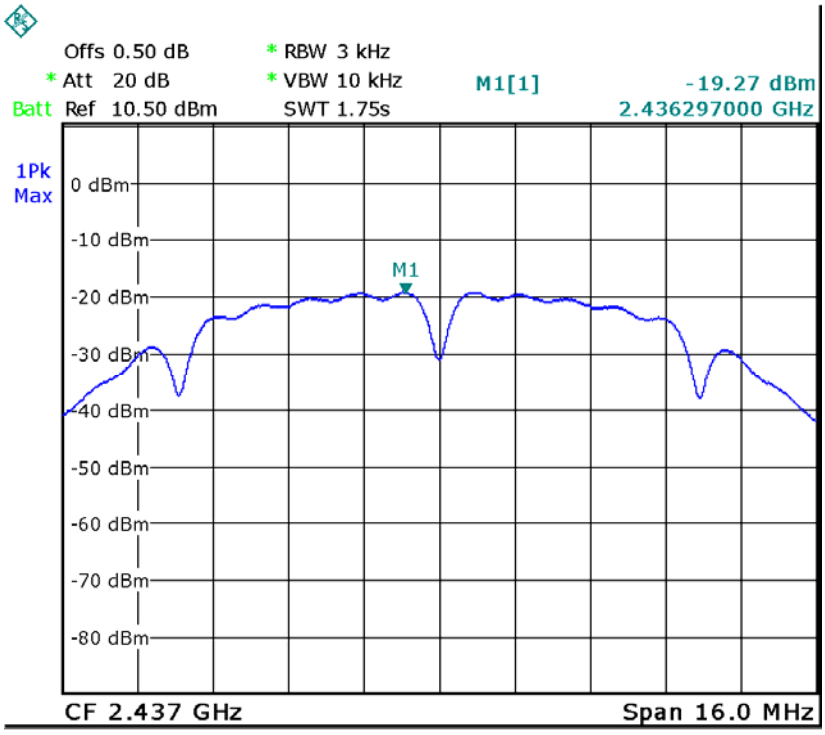
GFSK(BLE) High Channel



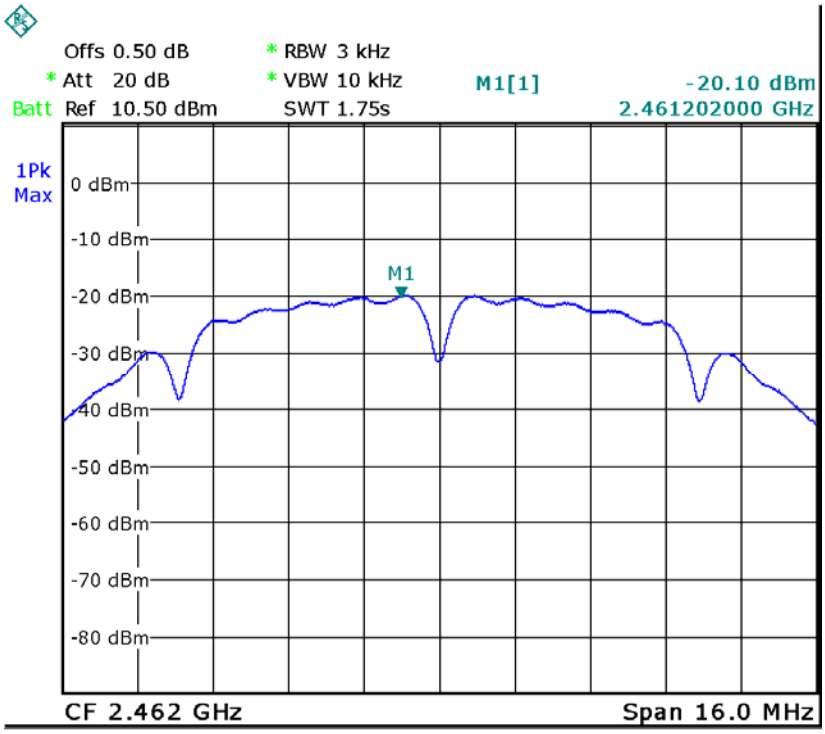

802.11b Low Channel



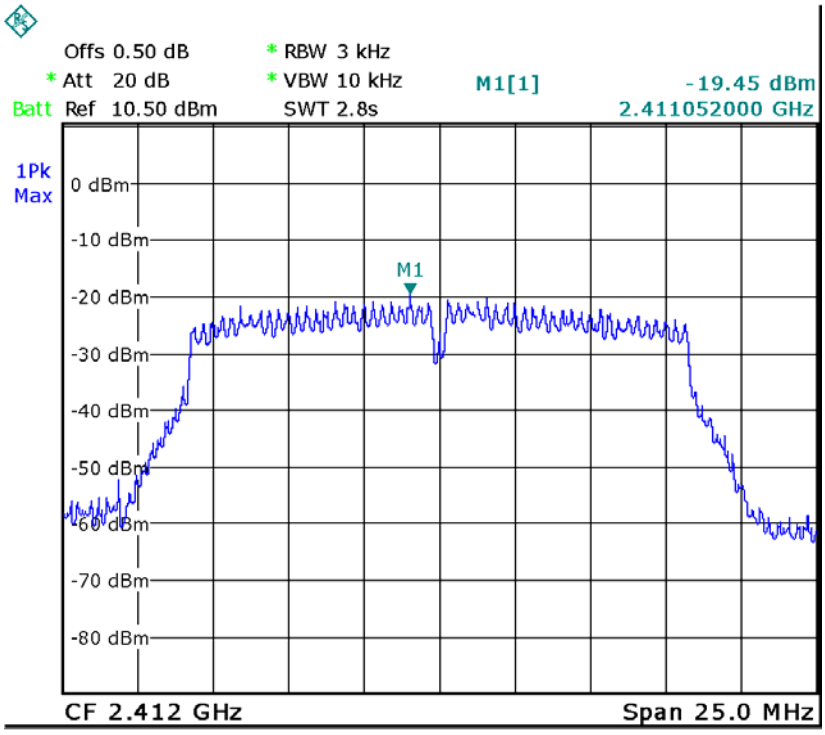
802.11b Middle Channel



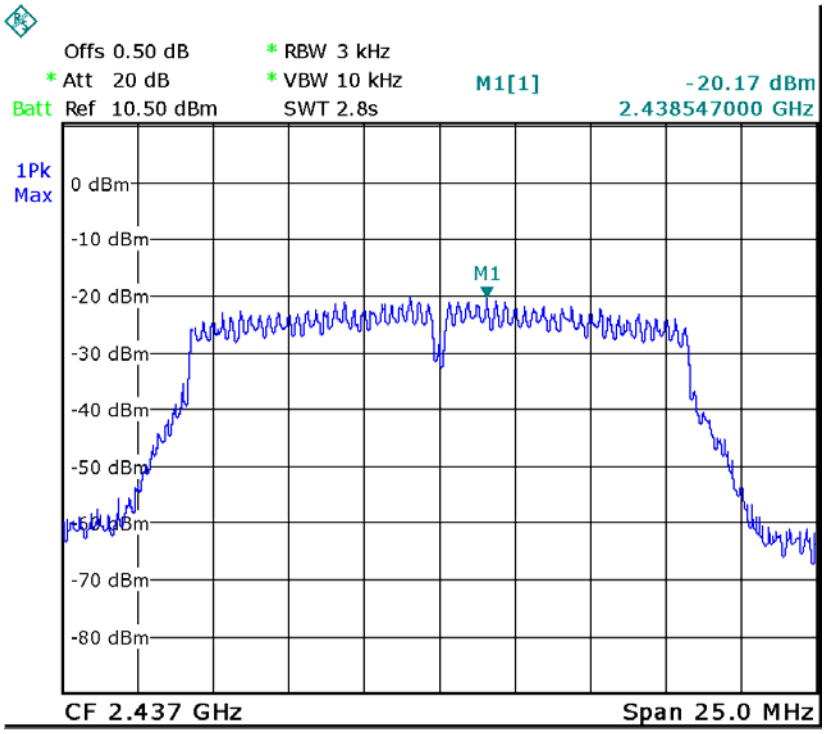

802.11b High Channel



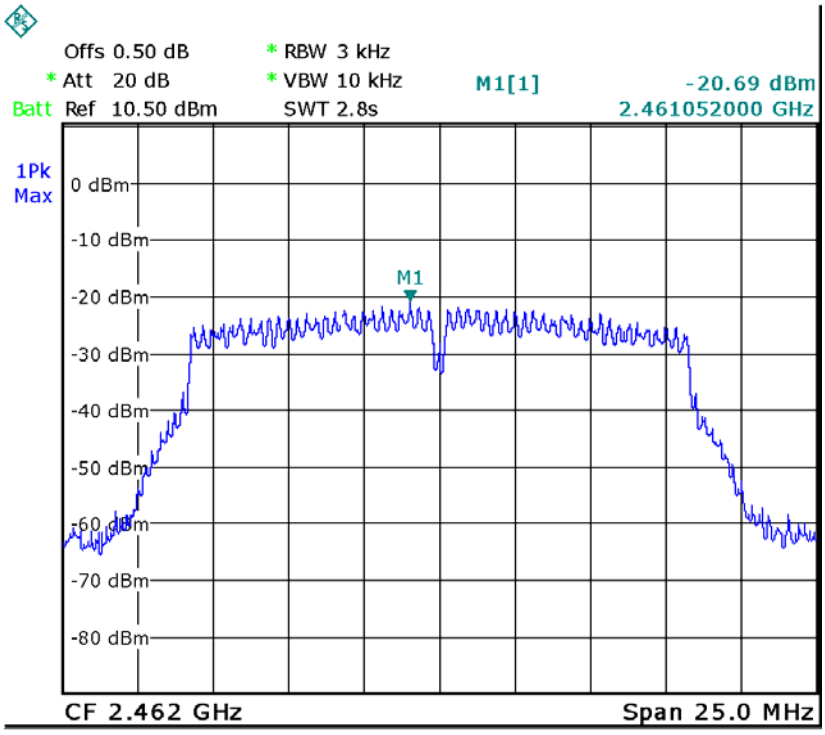
802.11g Low Channel



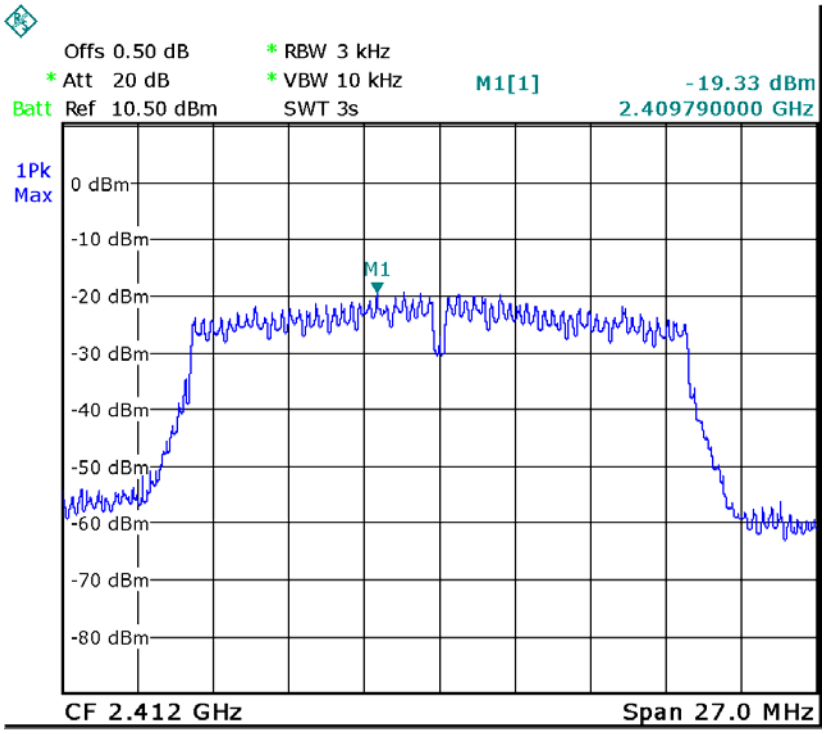

802.11g Middle Channel



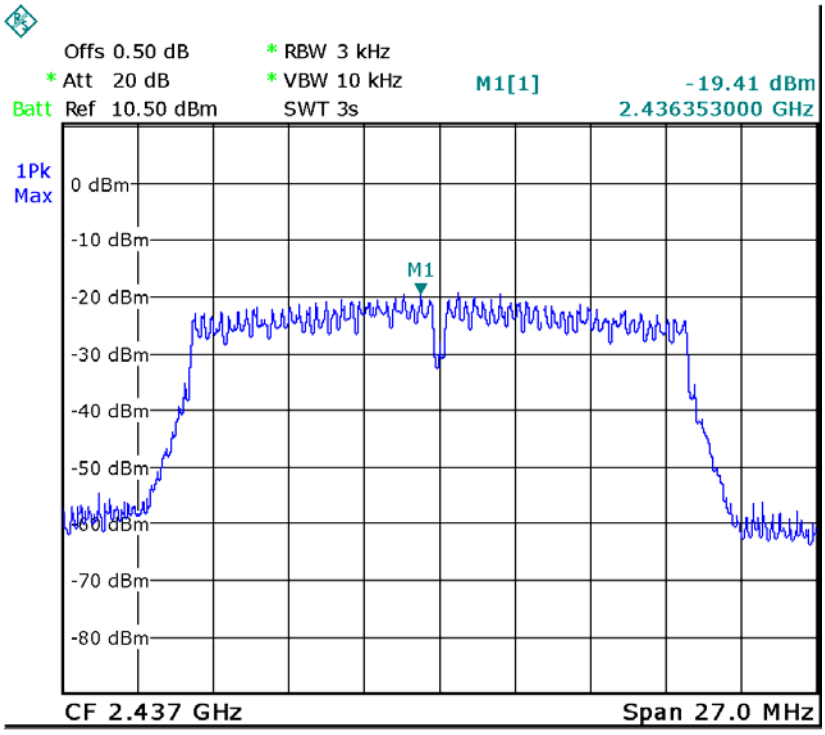
802.11g High Channel



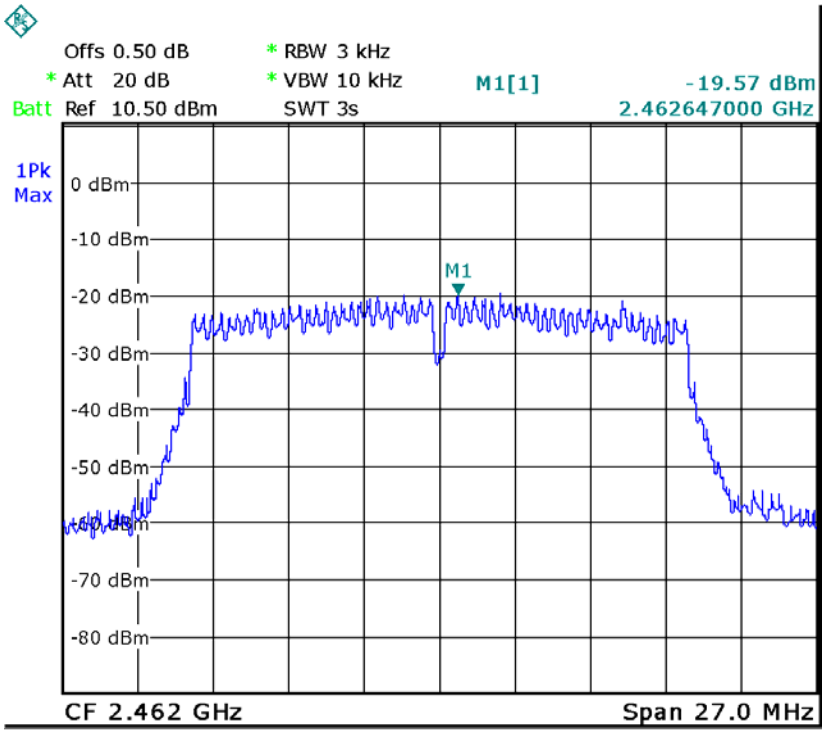

802.11n-HT20 Low Channel



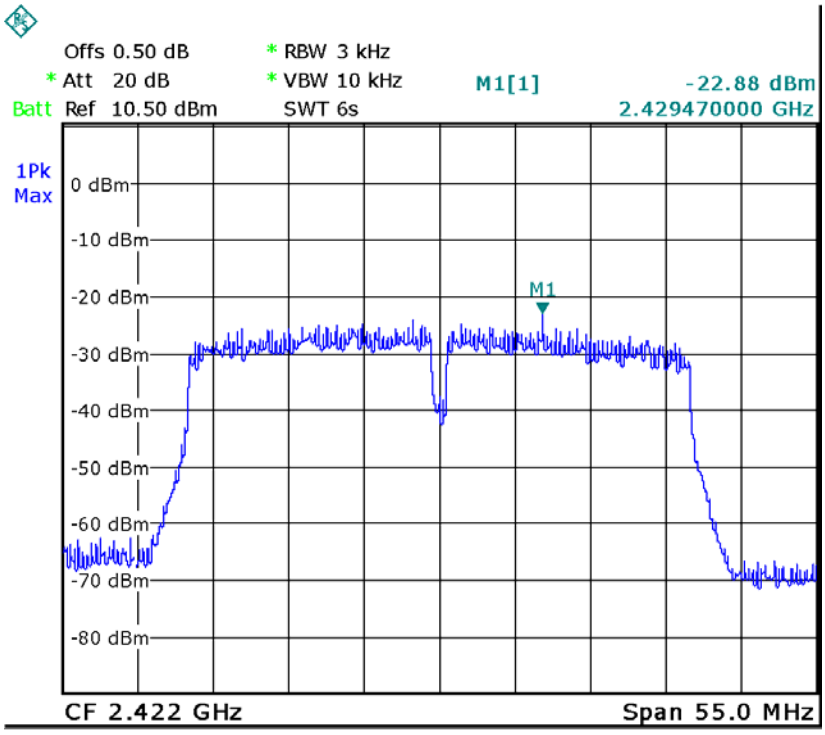
802.11n-HT20 Middle Channel



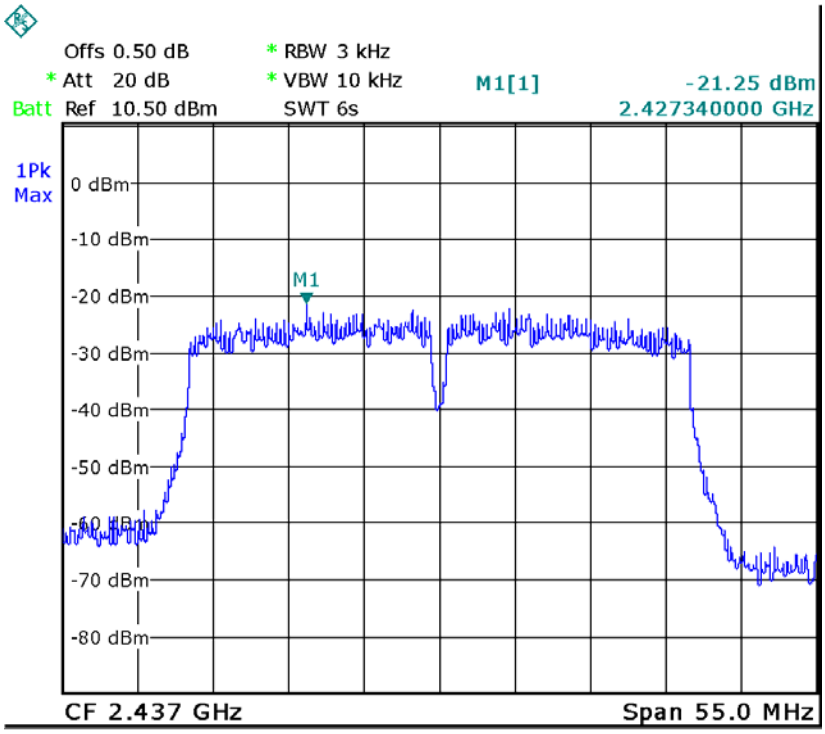

802.11n-HT20 High Channel



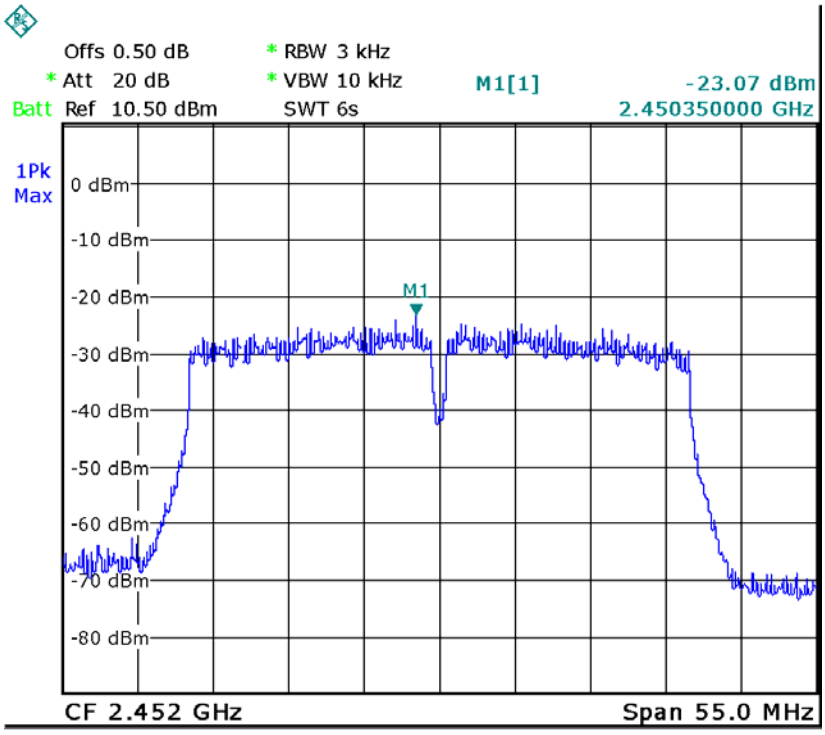
802.11n-HT40 Low Channel




802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



# 11 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 permanent antenna, it meet the requirement of this section.

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