# FCC TEST REPORT

# FCC ID: 2BBRB-A17

| | | |
|---|---|---|
| Product | : | AI Tempset halter speaker |
| Model Name | : | A17 |
| Brand | : | N/A |
| Report No. | : | PTC23052402101E-FC01 |

**Prepared for**

Shenzhen tie Wei Intelligent Technology Co. , Ltd.

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**Prepared by**

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# 1 TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant's name | : | Shenzhen tie Wei Intelligent Technology Co. , Ltd. |
| Address | : | Room 601, Fenghua Science & Technology Building, high-tech South Seven Road, Yuehai Street Science and Technology Park, Nanshan District, Shenzhen |
| Manufacture's name | : | Shenzhen tie Wei Intelligent Technology Co. , Ltd. |
| Address | : | Room 601, Fenghua Science & Technology Building, high-tech South Seven Road, Yuehai Street Science and Technology Park, Nanshan District, Shenzhen |
| Product name | : | AI Tempset halter speaker |
| Model name | : | A17 |
| Standards | : | FCC CFR47 Part 15 Section 15.247 |
| Test procedure | : | ANSI C63.10:2013 |
| Test Date | : | Jun. 13, 2023 to Jun. 19, 2023 |
| Date of Issue | : | Jun. 20, 2023 |
| Test Result | : | Pass |

This device described above has been tested by PTC, 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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# Contents

Page

**1 TEST RESULT CERTIFICATION** ..... **2**

**2 TEST SUMMARY** ..... **5**

**3 TEST FACILITY** ..... **5**

**4 GENERAL INFORMATION** ..... **6**

4.1 GENERAL DESCRIPTION OF E.U.T. ..... 6

4.2 TEST MODE ..... 7

**5 EQUIPMENT DURING TEST** ..... **9**

5.1 EQUIPMENTS LIST ..... 9

5.2 MEASUREMENT UNCERTAINTY ..... 11

5.3 DESCRIPTION OF SUPPORT UNITS ..... 12

**6 CONDUCTED EMISSION** ..... **13**

6.1 E.U.T. OPERATION ..... 13

6.2 EUT SETUP ..... 13

6.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) ..... 14

6.4 MEASUREMENT PROCEDURE: ..... 14

6.5 CONDUCTED EMISSION LIMIT ..... 14

6.6 MEASUREMENT DESCRIPTION ..... 14

6.7 CONDUCTED EMISSION TEST RESULT ..... 14

**7 RADIATED SPURIOUS EMISSIONS** ..... **17**

7.1 EUT OPERATION ..... 17

7.2 TEST SETUP ..... 18

7.3 SPECTRUM ANALYZER SETUP ..... 19

7.4 TEST PROCEDURE ..... 20

7.5 SUMMARY OF TEST RESULTS ..... 21

**8 MAXIMUM PEAK OUTPUT POWER TEST** ..... **28**

8.1 TEST STANDARD AND LIMIT ..... 28

8.2 TEST SETUP ..... 28

8.3 TEST PROCEDURE ..... 28

8.4 TEST DATA ..... 29

**9 20DB OCCUPY BANDWIDTH TEST ..... 35**

9.1 TEST STANDARD ..... 35

9.2 TEST SETUP ..... 35

9.3 TEST PROCEDURE ..... 35

9.4 TEST DATA ..... 35

**10 CARRIER FREQUENCY SEPARATION TEST ..... 41**

10.1 TEST STANDARD AND LIMIT ..... 41

10.2 TEST SETUP ..... 41

10.3 TEST PROCEDURE ..... 41

10.4 TEST DATA ..... 41

**11 NUMBER OF HOPPING CHANNEL TEST ..... 44**

11.1 TEST STANDARD AND LIMIT ..... 44

11.2 TEST SETUP ..... 44

11.3 TEST PROCEDURE ..... 44

11.4 TEST DATA ..... 45

**12 DWELL TIME TEST ..... 47**

12.1 TEST STANDARD AND LIMIT ..... 47

12.2 TEST SETUP ..... 47

12.3 TEST PROCEDURE ..... 47

12.4 TEST DATA ..... 48

**13 100KHZ BANDWIDTH OF FREQUENCY BAND EDGE REQUIREMENT ..... 54**

13.1 TEST STANDARD AND LIMIT ..... 54

13.2 TEST SETUP ..... 54

13.3 TEST PROCEDURE ..... 54

13.4 TEST DATA ..... 55

**14 ANTENNA REQUIREMENT ..... 72**

14.1 TEST STANDARD AND REQUIREMENT ..... 72

14.2 ANTENNA CONNECTED CONSTRUCTION ..... 72

**15 APPENDIX I -- TEST SETUP PHOTOGRAPH ..... 73**

**16 APPENDIX II -- EUT PHOTOGRAPH ..... 75**

## 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 |

## 3 TEST FACILITY

Precise Testing & Certification Co., Ltd.

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A

FCC Designation Number: CN1219

# 4 General Information

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

| | | |
|---|---|---|
| Product Name | : | AI Tempset halter speaker |
| Model Name | : | A17 |
| Additional model | : | N/A |
| Specification | : | BT BDR+EDR |
| Operation Frequency | : | 2402-2480MHz |
| Number of Channel | : | 79 channels for BDR+EDR |
| Type of Modulation | : | GFSK, Π/4-DQPSK,8DPSK For DSS |
| Antenna installation | : | PCB antenna |
| Antenna Gain | : | 2.853 dBi |
| Rated Power Supply | : | Input:5V--2A 10W |
| Hardware Version | : | N/A |
| Software Version | : | N/A |
| Test sample No. | : | PTC23052402101E-1/2,PTC23052402101E-2/2. |

## 4.2 Test Mode

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonics of the highest fundamental frequency or to 40 GHz, whichever is lower).

The EUT has been tested under TX operating condition.

This EUT is a FHSS system, were conducted to determine the final configuration from all possible combinations. We use software control the EUT, Let EUT hopping on and transmit with highest power, all the modes GFSK, Π/4-DQPSK, 8DPSK have been tested. 79 Channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

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 | - | - |

| Channel | Frequency(MHz) |
|---|---|
| 0 | 2402 |
| 39 | 2441 |
| 78 | 2480 |

# 5 Equipment During Test

## 5.1 Equipments List

RF Conducted Test

| Name of Equipment | Manufacturer | Model | Serial No. | Characteristics | Calibration Due | Calibration period |
|---|---|---|---|---|---|---|
| MXG Signal Analyzer | Agilent | N9020A | SER MY5111038 | 10Hz-30GHz | Aug. 21, 2023 | 1 year |
| Coaxial Cable | CDS | 79254 | 46107086 | 10Hz-30GHz | Aug. 21, 2023 | 1 year |
| Power Meter | Anritsu | ML2495A | 0949003 | 300MHz-40GHz | Aug. 21, 2023 | 1 year |
| Power Sensor | Anritsu | MA2411B | 0917017 | 300MHz-40GHz | Aug. 21, 2023 | 1 year |
| Test S/W | Tonscend | JS1120-3 | / | / | / | / |

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

| Name of Equipment | Manufacturer | Model | Serial No. | Characteristics | Calibration Due | Calibration period |
|---|---|---|---|---|---|---|
| EMI Test Receiver | Rohde&Schwarz | ESCI | 101417 | 9KHz-3GHz | Aug. 21, 2023 | 1 year |
| Loop Antenna | Schwarzbeck | FMZB 1519 | 012 | 9 KHz -30MHz | Aug. 21, 2023 | 1 year |
| Bilog Antenna | SCHWARZBECK | VULB9160 | 9160-3355 | 25MHz-2GHz | Aug. 21, 2023 | 1 year |
| Preamplifier (low frequency) | SCHWARZBECK | BBV 9475 | 9745-0013 | 1MHz-1GHz | Aug. 21, 2023 | 1 year |
| Cable | Schwarzbeck | PLF-100 | 549489 | 9KHz-3GHz | Aug. 21, 2023 | 1 year |
| Spectrum Analyzer | Agilent | E4407B | MY45109572 | 9KHz-40GHz | Aug. 21, 2023 | 1 year |
| Horn Antenna | SCHWARZBECK | 9120D | 9120D-1246 | 1GHz-18GHz | Aug. 21, 2023 | 1 year |
| Power Amplifier | LUNAR EM | LNA1G18-40 | J10100000081 | 1GHz-26.5GHz | Aug. 21, 2023 | 1 year |

| | | | | | | |
|---|---|---|---|---|---|---|
| Horn Antenna | SCHWARZBECK | BBHA 9170 | 9170-181 | 14GHz-40GHz | Aug. 21, 2023 | 1 year |
| Amplifier | SCHWARZBECK | BBV 9721 | 9721-205 | 18GHz-40GHz | Aug. 21, 2023 | 1 year |
| Cable | H+S | CBL-26 | N/A | 1GHz-26.5GHz | Aug. 21, 2023 | 1 year |
| RF Cable | R&S | R204 | R21X | 1GHz-40GHz | Aug. 21, 2023 | 1 year |
| Test S/W | Tonscend | TS+ | / | / | / | / |

Conducted Emissions

| Name of Equipment | Manufacturer | Model | Serial No. | Characteristics | Calibration Due | Calibration period |
|---|---|---|---|---|---|---|
| EMI Test Receiver | Rohde&Schwarz | ESCI | 101417 | 9KHz-3GHz | Aug. 21, 2023 | 1 year |
| Artificial Mains Network | Rohde&Schwarz | ENV216 | 102453 | 9KHz-300MHz | Aug. 21, 2023 | 1 year |
| Artificial Mains Network | Rohde&Schwarz | ENV216 | 101342 | 9KHz-300MHz | Aug. 21, 2023 | 1 year |
| Test S/W | Tonscend | JS32-CE | / | / | / | / |

## 5.2 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(9kHz~30MHz) | ±3.15dB |
| Radiated Emission(30MHz~1GHz) | ±5.03dB |
| Radiated Emission(1GHz~25GHz) | ±4.74dB |

## 5.3 Description of Support Units

| Equipment | Model No. | Series No. | Parameters |
|---|---|---|---|
| Adapter | 500200 | N/A | N/A |

# 6 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) |

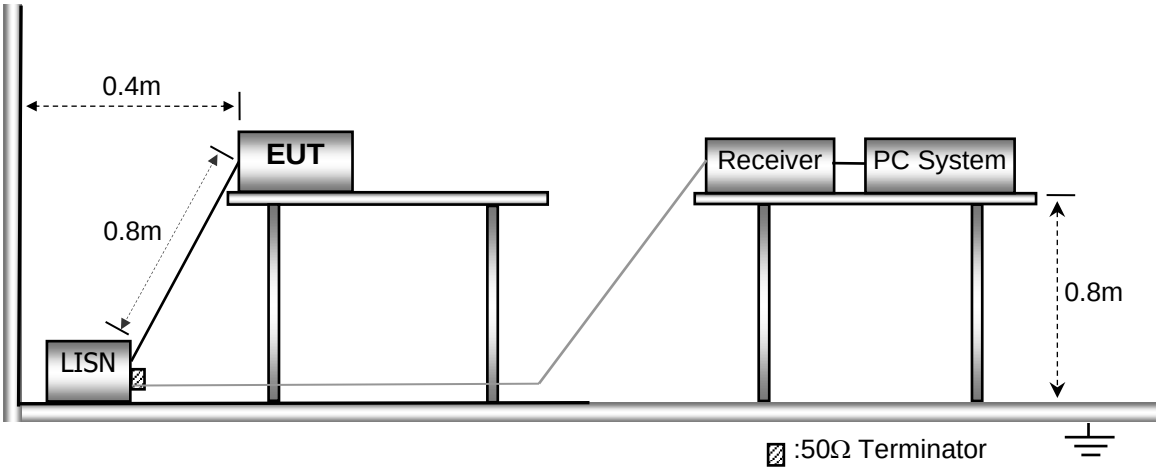
## 6.1 E.U.T. Operation

Operating Environment **:**

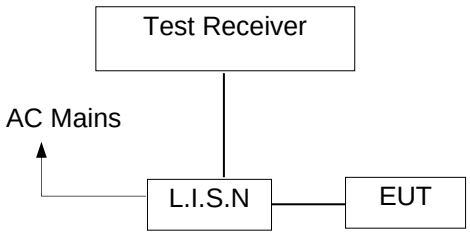
| | | |
|---|---|---|
| Temperature: | : | 23.2°C |
| Humidity: | : | 51 % RH |
| Atmospheric Pressure: | : | 101.12 kPa |
| Test Voltage | : | AC 120V/60Hz |

## 6.2 EUT Setup

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



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




## 6.4 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.

## 6.5 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.

## 6.6 Measurement Description

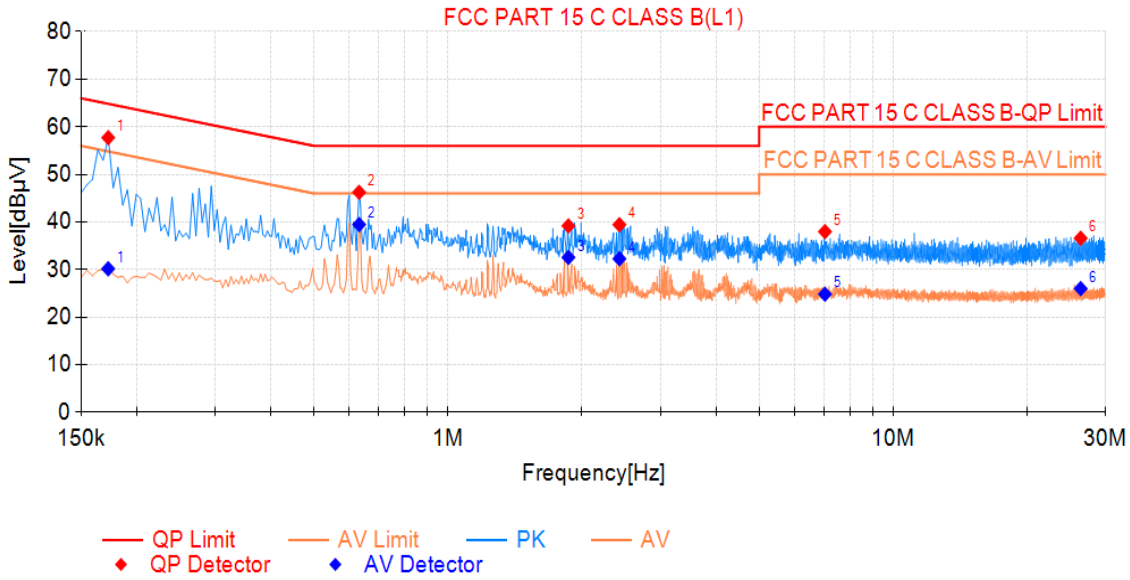
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

## 6.7 Conducted Emission Test Result

Pass

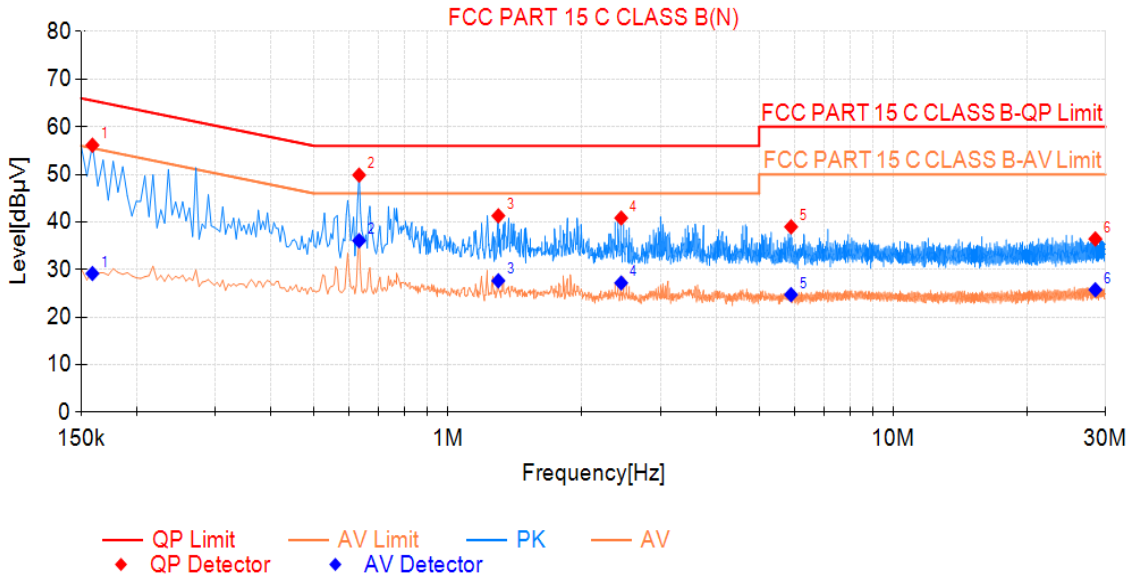
. All the modulation modes were tested the data of the worst mode (GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.

Line -120V/60Hz:




| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
| 1 | 0.173 | 57.73 | 64.84 | 7.11 | 30.17 | 54.84 | 24.67 | PASS |
| 2 | 0.632 | 46.24 | 56.00 | 9.76 | 39.46 | 46.00 | 6.54 | PASS |
| 3 | 1.865 | 39.18 | 56.00 | 16.82 | 32.55 | 46.00 | 13.45 | PASS |
| 4 | 2.427 | 39.43 | 56.00 | 16.57 | 32.27 | 46.00 | 13.73 | PASS |
| 5 | 7.026 | 37.97 | 60.00 | 22.03 | 24.83 | 50.00 | 25.17 | PASS |
| 6 | 26.376 | 36.59 | 60.00 | 23.41 | 26.00 | 50.00 | 24.00 | PASS |

Neutral -120V/60Hz:




| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
| 1 | 0.159 | 56.13 | 65.52 | 9.39 | 29.17 | 55.52 | 26.35 | PASS |
| 2 | 0.632 | 49.86 | 56.00 | 6.14 | 36.08 | 46.00 | 9.92 | PASS |
| 3 | 1.298 | 41.30 | 56.00 | 14.70 | 27.65 | 46.00 | 18.35 | PASS |
| 4 | 2.450 | 40.84 | 56.00 | 15.16 | 27.18 | 46.00 | 18.82 | PASS |
| 5 | 5.897 | 38.98 | 60.00 | 21.02 | 24.74 | 50.00 | 25.26 | PASS |
| 6 | 28.455 | 36.44 | 60.00 | 23.56 | 25.76 | 50.00 | 24.24 | PASS |

Note:QP Margin[dB]= QP Limit[dBµV]- QP Value[dBµV], AV Margin[dB]= AV Limit[dBµV]- AV Value[dBµV].

# 7 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 | $20\log^{(500)}$ |

## 7.1 EUT Operation

Operating Environment :

Temperature : 24.5 °C

Humidity : 55.5% RH

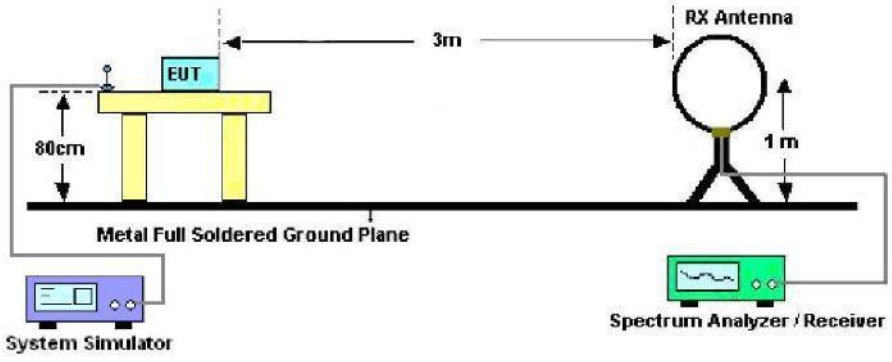
Atmospheric Pressure : 101.3kPa

Test Voltage : AC 120V60Hz

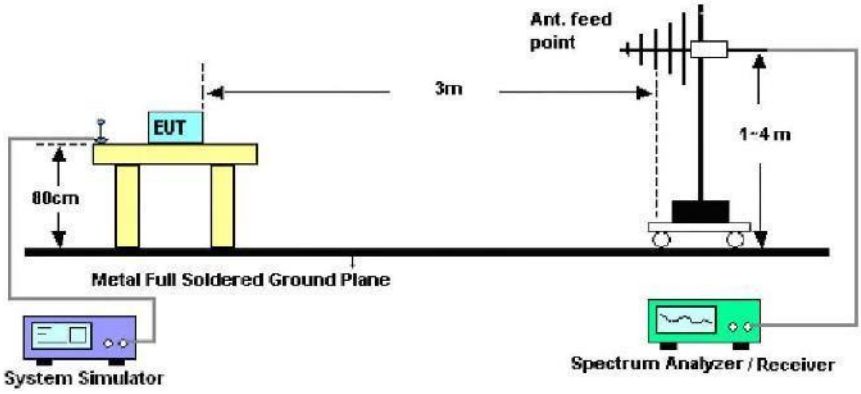
## 7.2 Test Setup

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

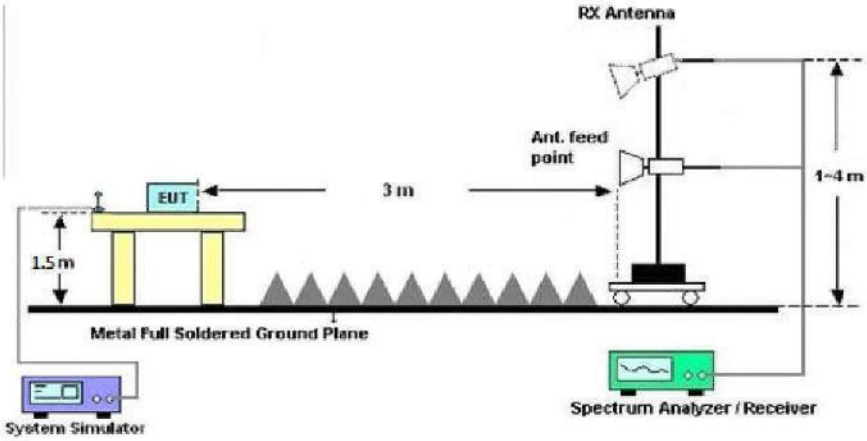
The test setup for emission measurement below 30MHz.




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




The test setup for emission measurement above 1 GHz.



## 7.3 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 |

## 7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.

2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.

3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.

5. Set to the maximum power setting and enable the EUT transmit continuously.

6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.

7. Test Procedure of measurement (For Above 1GHz):

1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).

2) Change the antenna polarization and repeat 1) with vertical polarization.

3) Make a hardcopy of the spectrum.

4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.

5) Change the analyser mode to Clear/ Write and found the cone of emission.

6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.

7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.

8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

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.

## 7.5 Summary of Test Results

**Test Frequency: 9KHz-30MHz**

| Freq. (MHz) | Ant.Pol. H/V | Emission Level (dBuV/m) | Limit 3m (dBuV/m) | Over Limit (dB) |
|---|---|---|---|---|
| -- | -- | -- | -- | >20 |

Note:

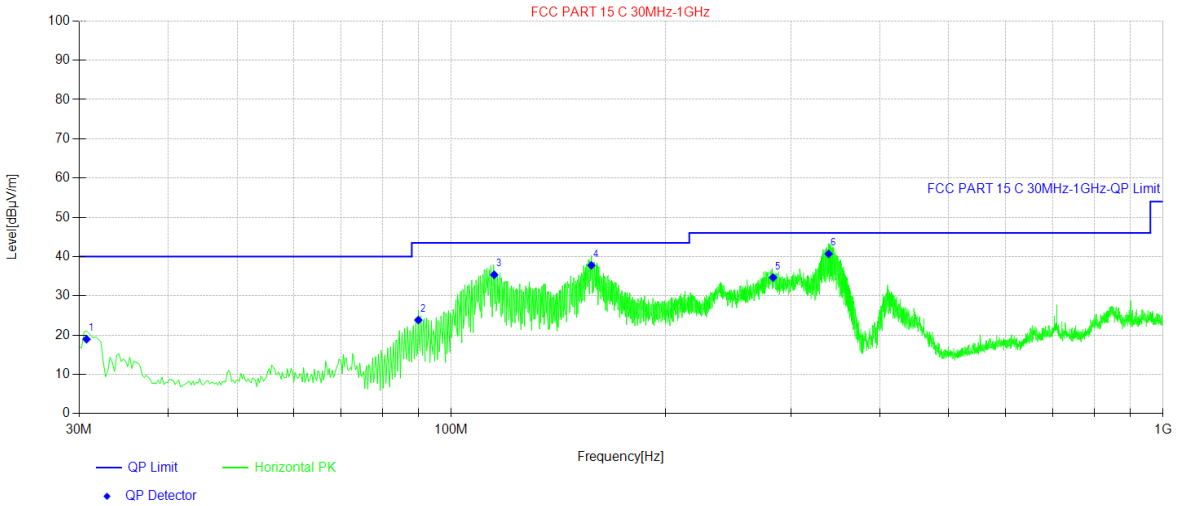
The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor =40log(Specific distance/ test distance)( dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

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

Please refer to the following test plots,Low Channel (2402MHz) Worst case GFSK for record:

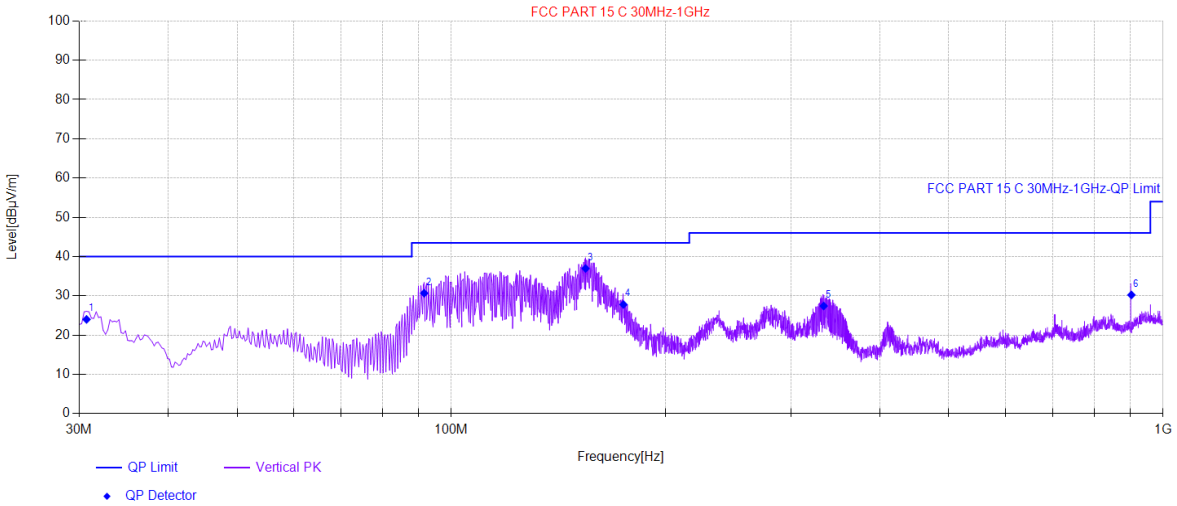
Test plot for Horizontal




| Final Data List[QP] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | QP Reading [dBµV/m] | Factor [dB] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Polarity | Verdict |
| 1 | 30.73 | 37.27 | -18.30 | 18.97 | 40.00 | 21.03 | Horizontal | PASS |
| 2 | 89.90 | 44.5 | -20.66 | 23.84 | 43.50 | 19.66 | Horizontal | PASS |
| 3 | 114.88 | 53.87 | -18.50 | 35.37 | 43.50 | 8.13 | Horizontal | PASS |
| 4 | 157.31 | 53.74 | -15.97 | 37.77 | 43.50 | 5.73 | Horizontal | PASS |
| 5 | 283.17 | 50.61 | -15.94 | 34.67 | 46.00 | 11.33 | Horizontal | PASS |
| 6 | 338.95 | 55.18 | -14.48 | 40.70 | 46.00 | 5.30 | Horizontal | PASS |

Remark: Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Test plot for Vertical




| Final Data List[QP] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | QP Reading [dBµV/m] | Factor [dB] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Polarity | Verdict |
| 1 | 30.73 | 42.31 | -18.30 | 24.01 | 40.00 | 15.99 | Vertical | PASS |
| 2 | 91.60 | 51.22 | -20.54 | 30.68 | 43.50 | 12.82 | Vertical | PASS |
| 3 | 154.40 | 53.06 | -16.09 | 36.97 | 43.50 | 6.53 | Vertical | PASS |
| 4 | 174.53 | 44.43 | -16.64 | 27.79 | 43.50 | 15.71 | Vertical | PASS |
| 5 | 333.61 | 41.95 | -14.53 | 27.42 | 46.00 | 18.58 | Vertical | PASS |
| 6 | 902.76 | 33.2 | -2.96 | 30.24 | 46.00 | 15.76 | Vertical | PASS |

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

## Test Frequency 1GHz-25GHz

Bluetooth (GFSK, Pi/4-DQPSK, 8DPSK)mode have been tested, and the worst result GFSK mode was report as below:

| Test Mode: CH00 GFSK | | | | | Test channel: Lowest | | | |
|---|---|---|---|---|---|---|---|---|
| Peak Value | | | | | | | | |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Pol. |
| 4804 | 44.06 | 34.04 | 6.58 | 34.09 | 50.59 | 74 | -23.41 | V |
| 7206 | 42.22 | 37.11 | 7.73 | 34.5 | 52.56 | 74 | -21.44 | V |
| 9608 | 38.77 | 39.31 | 9.23 | 34.79 | 52.52 | 74 | -21.48 | V |
| 4804 | 45.37 | 34.04 | 6.58 | 34.09 | 51.90 | 74 | -22.10 | H |
| 7206 | 37.44 | 37.11 | 7.73 | 34.5 | 47.78 | 74 | -26.22 | H |
| 9608 | 39.58 | 39.31 | 9.23 | 34.79 | 53.33 | 74 | -20.67 | H |
| Average Value | | | | | | | | |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Pol. |
| 4804 | 33.32 | 34.04 | 6.58 | 34.09 | 39.85 | 54 | -14.15 | V |
| 7206 | 27.93 | 37.11 | 7.73 | 34.5 | 38.27 | 54 | -15.73 | V |
| 9608 | 25.06 | 39.31 | 9.23 | 34.79 | 38.81 | 54 | -15.19 | V |
| 4804 | 33.40 | 34.04 | 6.58 | 34.09 | 39.93 | 54 | -14.07 | H |
| 7206 | 27.38 | 37.11 | 7.73 | 34.5 | 37.72 | 54 | -16.28 | H |
| 9608 | 24.00 | 39.31 | 9.23 | 34.79 | 37.75 | 54 | -16.25 | H |

| Test Mode: CH39 GFSK | | | | | Test channel: Middle | | | |
|---|---|---|---|---|---|---|---|---|
| Peak Value | | | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Pol. |
| 4882 | 41.21 | 34.38 | 6.69 | 34.09 | 48.19 | 74 | -25.81 | V |
| 7323 | 38.98 | 37.22 | 7.78 | 34.53 | 49.45 | 74 | -24.55 | V |
| 9764 | 34.84 | 39.46 | 9.35 | 34.8 | 48.85 | 74 | -25.15 | V |
| 4882 | 44.03 | 34.38 | 6.69 | 34.09 | 51.01 | 74 | -22.99 | H |
| 7323 | 38.44 | 37.22 | 7.78 | 34.53 | 48.91 | 74 | -25.09 | H |
| 9764 | 35.48 | 39.46 | 9.35 | 34.8 | 49.49 | 74 | -24.51 | H |
| Average Value | | | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Pol. |
| 4882 | 33.87 | 34.38 | 6.69 | 34.09 | 40.85 | 54 | -13.15 | V |
| 7323 | 27.83 | 37.22 | 7.78 | 34.53 | 38.30 | 54 | -15.70 | V |
| 9764 | 26.31 | 39.46 | 9.35 | 34.8 | 40.32 | 54 | -13.68 | V |
| 4882 | 33.54 | 34.38 | 6.69 | 34.09 | 40.52 | 54 | -13.48 | H |
| 7323 | 27.88 | 37.22 | 7.78 | 34.53 | 38.35 | 54 | -15.65 | H |
| 9764 | 25.38 | 39.46 | 9.35 | 34.8 | 39.39 | 54 | -14.61 | H |

| Test Mode: CH78 GFSK | | | | | Test channel: Highest | | | |
|---|---|---|---|---|---|---|---|---|
| Peak Value | | | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Pol. |
| 4960 | 42.78 | 34.72 | 6.79 | 34.09 | 50.20 | 74 | -23.80 | V |
| 7440 | 39.79 | 37.34 | 7.82 | 34.57 | 50.38 | 74 | -23.62 | V |
| 9920 | 33.76 | 39.62 | 9.46 | 34.81 | 48.03 | 74 | -25.97 | V |
| 4960 | 40.53 | 34.72 | 6.79 | 34.09 | 47.95 | 74 | -26.05 | H |
| 7440 | 38.16 | 37.34 | 7.82 | 34.57 | 48.75 | 74 | -25.25 | H |
| 9920 | 37.02 | 39.62 | 9.46 | 34.81 | 51.29 | 74 | -22.71 | H |
| Average Value | | | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Pol. |
| 4960 | 33.28 | 34.72 | 6.79 | 34.09 | 40.70 | 54 | -13.30 | V |
| 7440 | 27.06 | 37.34 | 7.82 | 34.5 | 37.72 | 54 | -16.28 | V |
| 9920 | 23.53 | 39.62 | 9.46 | 34.79 | 37.82 | 54 | -16.18 | V |
| 4960 | 32.14 | 34.72 | 6.79 | 34.09 | 39.56 | 54 | -14.44 | H |
| 7440 | 29.34 | 37.34 | 7.82 | 34.5 | 40.00 | 54 | -14.00 | H |
| 9920 | 24.92 | 39.62 | 9.46 | 34.79 | 39.21 | 54 | -14.79 | H |

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

   Over Limit =Emission Level-Limit

## Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

Bluetooth (GFSK, Pi/4-DQPSK, 8DPSK)mode have been tested, and the worst result GFSK model was report as below

| Test Mode: Low Channel 2402MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over (dB) | Polarity H/V | Test Value |
| 2390 | 47.65 | 29.15 | 3.41 | 34.01 | 46.20 | 74 | -27.80 | H | Peak |
| 2400 | 59.45 | 29.16 | 3.43 | 34.01 | 58.03 | 74 | -15.97 | H | Peak |
| 2390 | 47.09 | 29.15 | 3.41 | 34.01 | 45.64 | 74 | -28.36 | V | Peak |
| 2400 | 55.77 | 29.16 | 3.43 | 34.01 | 54.35 | 74 | -19.65 | V | Peak |
| 2390 | 40.86 | 29.15 | 3.41 | 34.01 | 39.41 | 54 | -14.59 | H | AV |
| 2400 | 43.93 | 29.16 | 3.43 | 34.01 | 42.51 | 54 | -11.49 | H | AV |
| 2390 | 39.76 | 29.15 | 3.41 | 34.01 | 38.31 | 54 | -15.69 | V | AV |
| 2400 | 44.53 | 29.16 | 3.43 | 34.01 | 43.11 | 54 | -10.89 | V | AV |

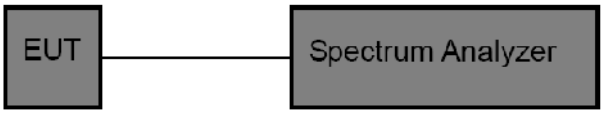
| Test Mode: High Channel 2480MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over (dB) | Polarity H/V | Test Value |
| 2483.5 | 59.82 | 29.28 | 3.53 | 34.03 | 58.60 | 74 | -15.40 | H | Peak |
| 2500 | 48.89 | 29.30 | 3.56 | 34.03 | 47.72 | 74 | -26.28 | H | Peak |
| 2483.5 | 60.43 | 29.28 | 3.53 | 34.03 | 59.21 | 74 | -14.79 | V | Peak |
| 2500 | 49.85 | 29.30 | 3.56 | 34.03 | 48.68 | 74 | -25.32 | V | Peak |
| 2483.5 | 41.82 | 29.28 | 3.53 | 34.03 | 40.60 | 54 | -13.40 | H | AV |
| 2500 | 39.38 | 29.30 | 3.56 | 34.03 | 38.21 | 54 | -15.79 | H | AV |
| 2483.5 | 43.14 | 29.28 | 3.53 | 34.03 | 41.92 | 54 | -12.08 | V | AV |
| 2500 | 39.35 | 29.30 | 3.56 | 34.03 | 38.18 | 54 | -15.82 | V | AV |

# 8 Maximum Peak Output Power Test

## 8.1 Test Standard and Limit

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.247 (b)(3) |
| Test Limit | 125mW |

## 8.2 Test Setup



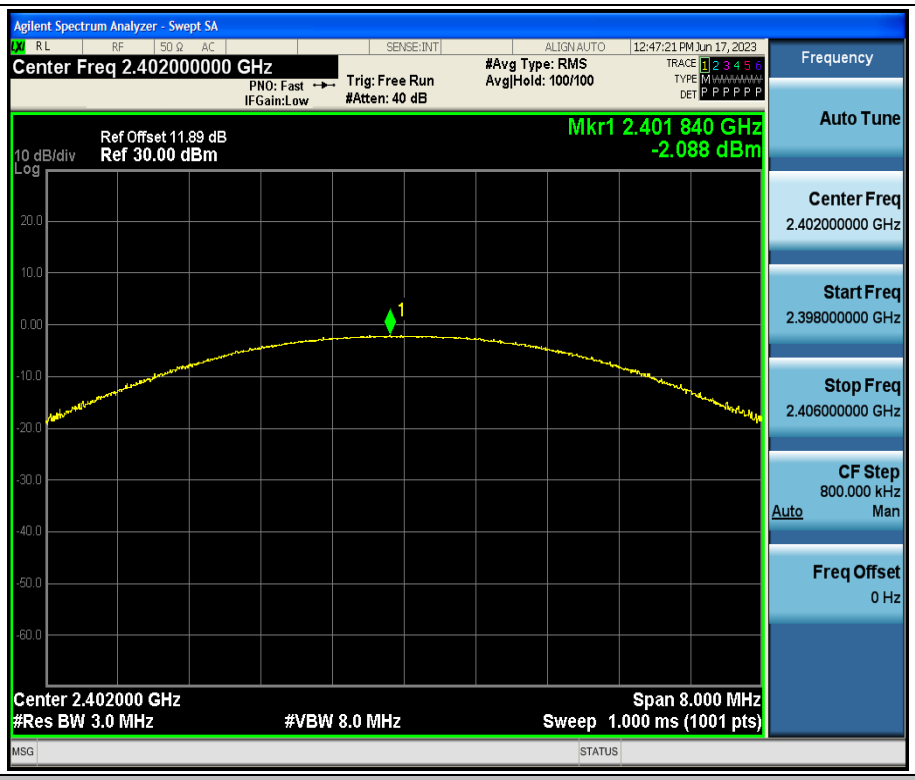

## 8.3 Test Procedure

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 D01 15.247 Meas Guidance v05 section 8.3.1.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

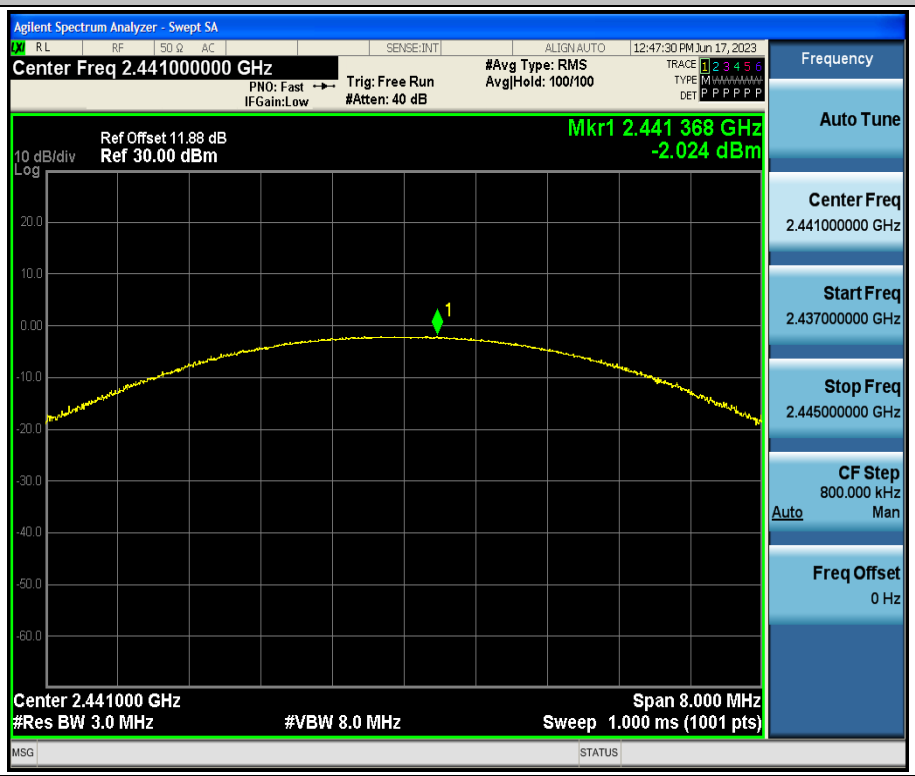
## 8.4 Test Data

| | | | | | |
|---|---|---|---|---|---|
| Test Item | : | Max. peak output power | Test Mode | : | CH Low ~ CH High |
| Test Voltage | : | DC 5V | Temperature | : | 24.5℃ |
| Test Result | : | PASS | Humidity | : | 55%RH |

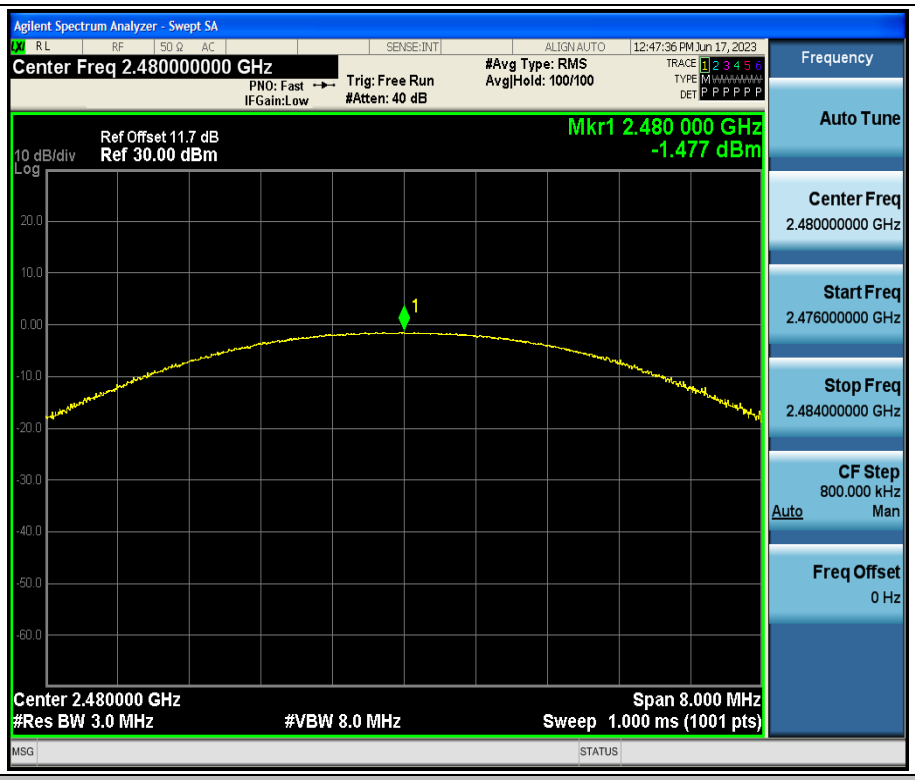
| Test Mode | Antenna | Frequency[MHz] | Conducted Peak Powert[dBm] | Conducted Limit[dBm] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | 2402 | -2.09 | ≤30 | PASS |
| DH5 | Ant1 | 2441 | -2.02 | ≤30 | PASS |
| DH5 | Ant1 | 2480 | -1.48 | ≤30 | PASS |
| 2DH5 | Ant1 | 2402 | -1.38 | ≤20.97 | PASS |
| 2DH5 | Ant1 | 2441 | -1.43 | ≤20.97 | PASS |
| 2DH5 | Ant1 | 2480 | -0.75 | ≤20.97 | PASS |
| 3DH5 | Ant1 | 2402 | -1.09 | ≤20.97 | PASS |
| 3DH5 | Ant1 | 2441 | -1.15 | ≤20.97 | PASS |
| 3DH5 | Ant1 | 2480 | -0.52 | ≤20.97 | PASS |



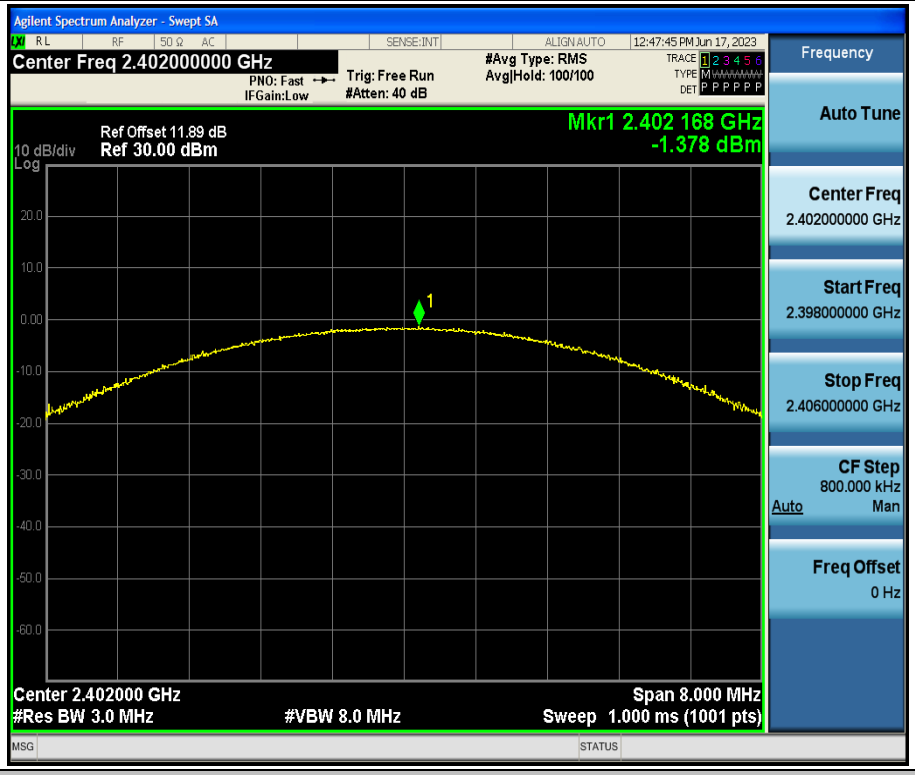

DH5-Ant1-2402



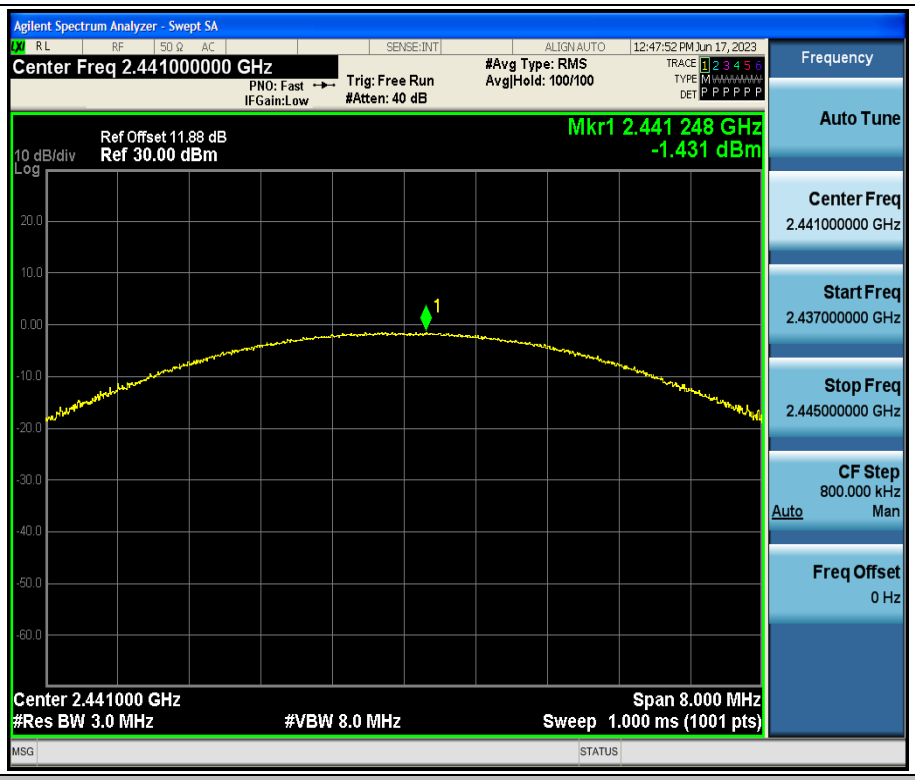

DH5-Ant1-2441



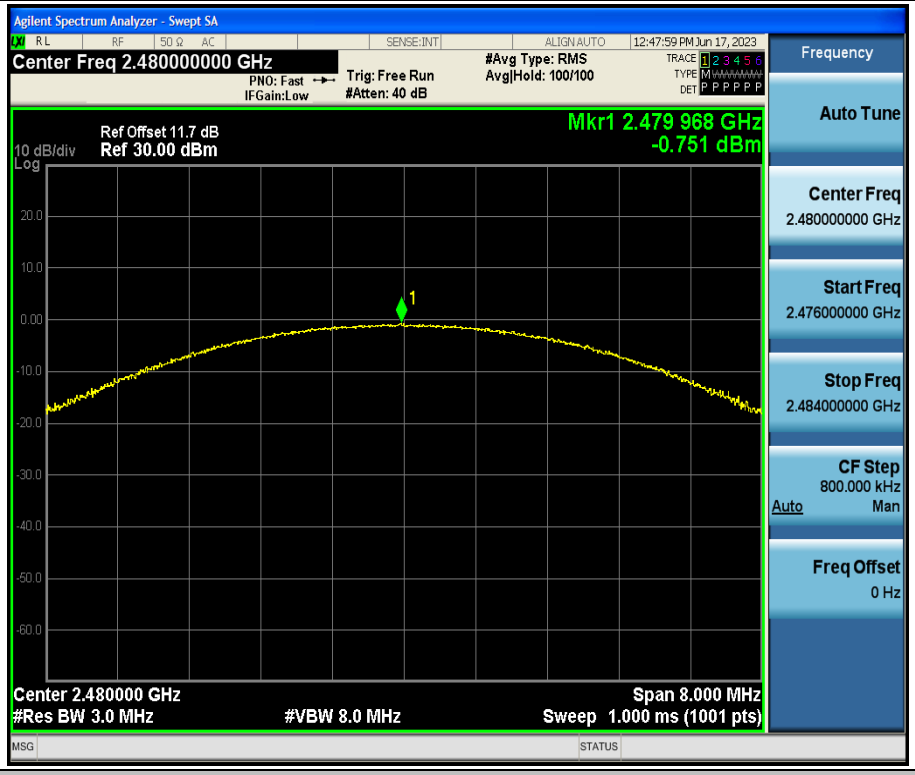

DH5-Ant1-2480



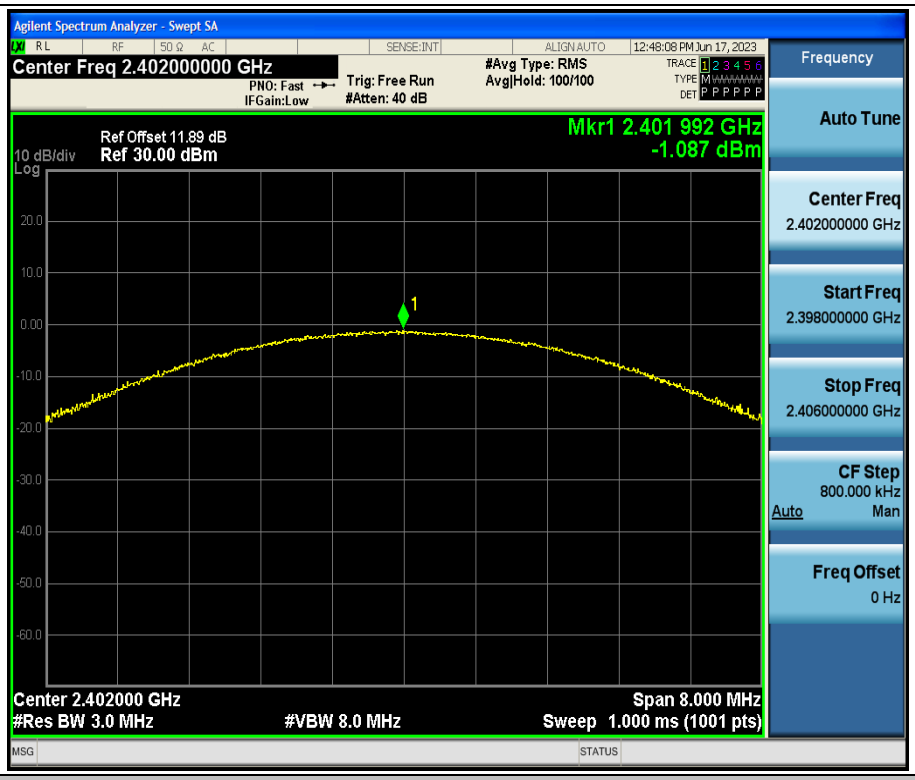

2DH5-Ant1-2402



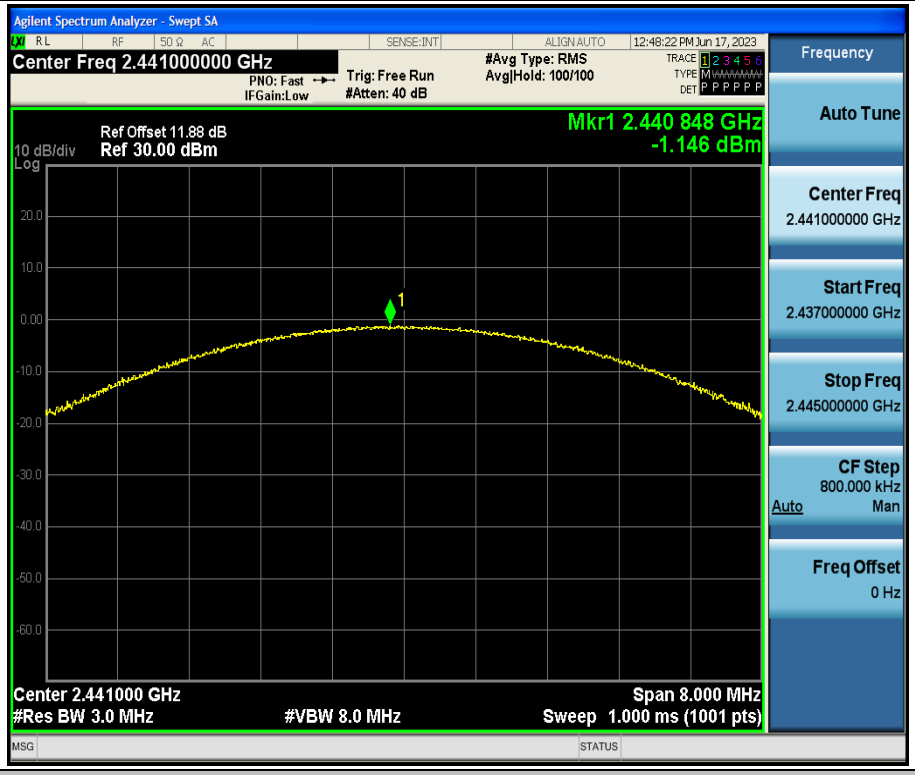

2DH5-Ant1-2441



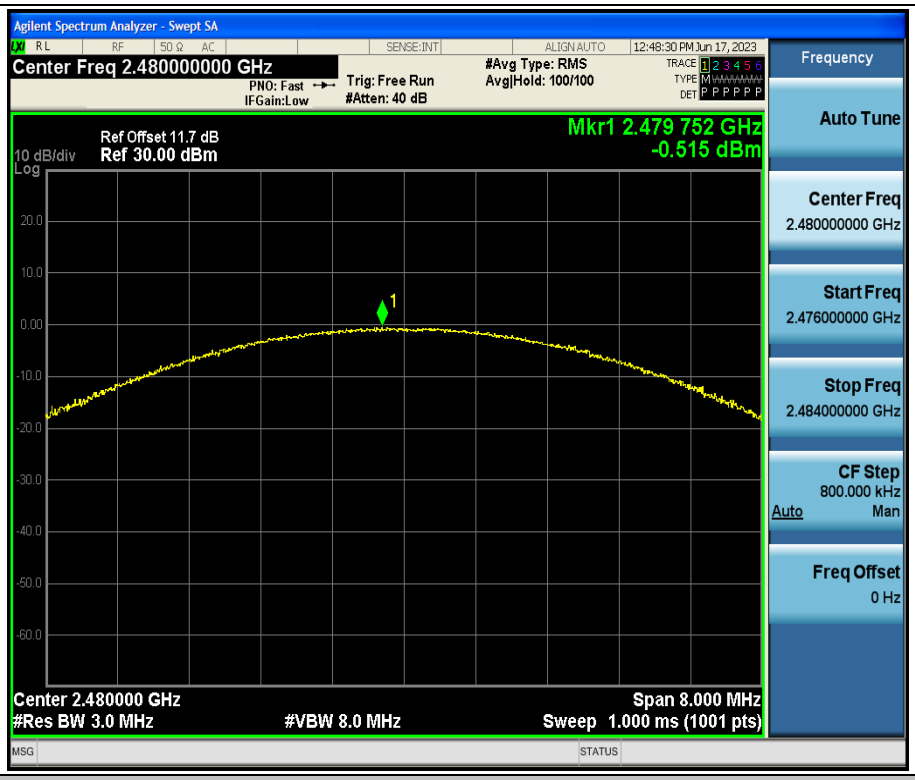

2DH5-Ant1-2480




3DH5-Ant1-2402




3DH5-Ant1-2441



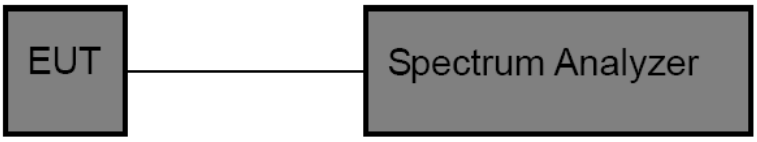

3DH5-Ant1-2480

# 9 20DB Occupy Bandwidth Test

## 9.1 Test Standard

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.247 (a)(1) |

## 9.2 Test Setup




## 9.3 Test Procedure

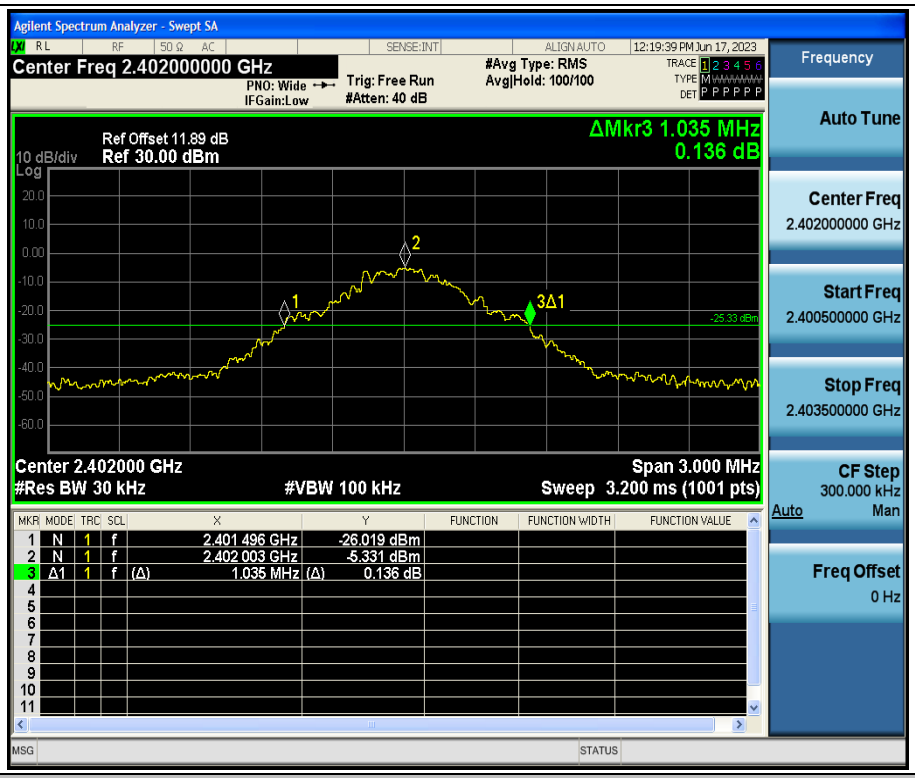
Using the following spectrum analyzer settings:

1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW = 30 kHz.
3. Set the VBW = 100 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

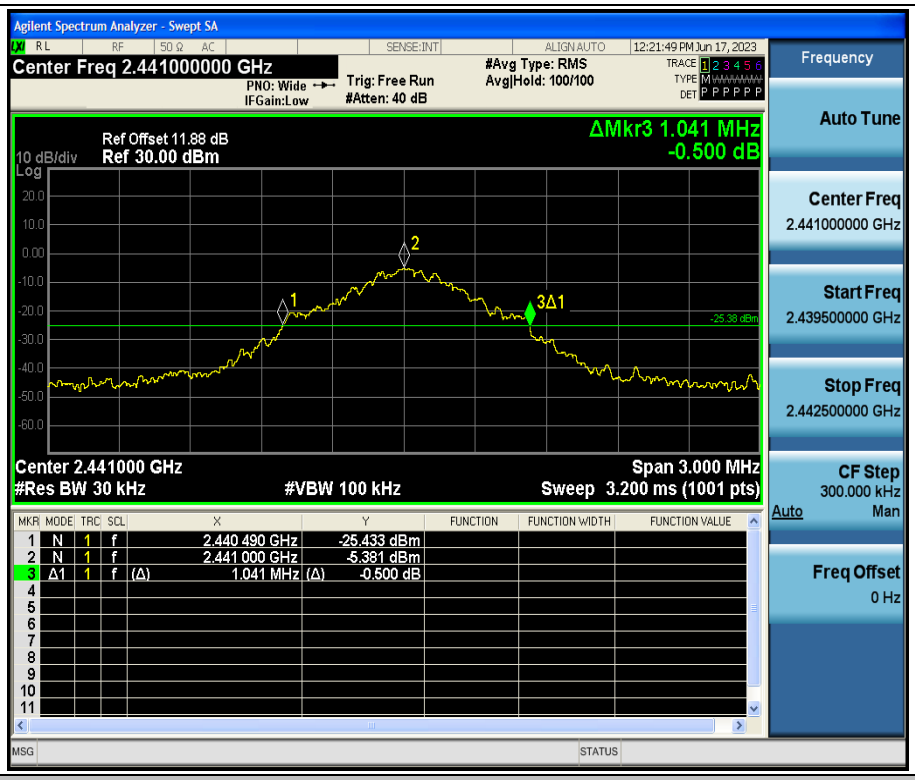
## 9.4 Test Data

| | | | | | |
|---|---|---|---|---|---|
| Test Item | : | 20dB BW | Test Mode | : | CH Low ~ CH High |
| Test Voltage | : | DC 5V | Temperature | : | 24.5℃ |
| Test Result | : | PASS | Humidity | : | 55%RH |

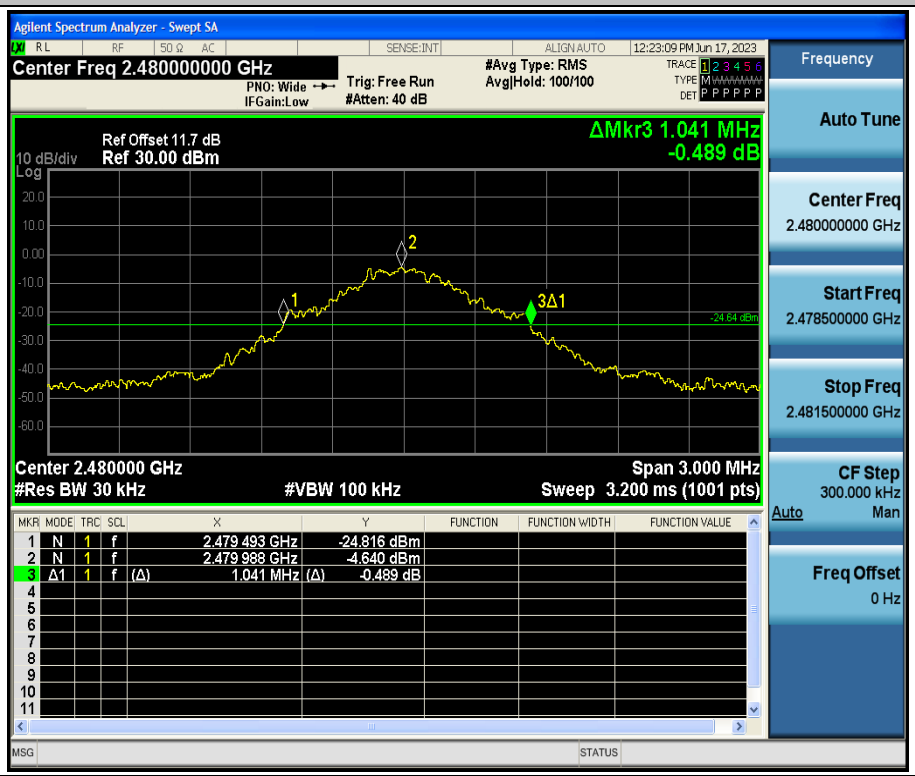
| TestMode | Antenna | Frequency[MHz] | 20db EBW[MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | 2402 | 1.035 | 2401.496 | 2402.531 | --- | --- |
| DH5 | Ant1 | 2441 | 1.041 | 2440.490 | 2441.531 | --- | --- |
| DH5 | Ant1 | 2480 | 1.041 | 2479.493 | 2480.534 | --- | --- |
| 2DH5 | Ant1 | 2402 | 1.341 | 2401.346 | 2402.687 | --- | --- |
| 2DH5 | Ant1 | 2441 | 1.332 | 2440.346 | 2441.678 | --- | --- |
| 2DH5 | Ant1 | 2480 | 1.359 | 2479.328 | 2480.687 | --- | --- |
| 3DH5 | Ant1 | 2402 | 1.341 | 2401.331 | 2402.672 | --- | --- |
| 3DH5 | Ant1 | 2441 | 1.305 | 2440.358 | 2441.663 | --- | --- |
| 3DH5 | Ant1 | 2480 | 1.284 | 2479.358 | 2480.642 | --- | --- |




DH5-Ant1-2402




DH5-Ant1-2441




DH5-Ant1-2480

2DH5-Ant1-2402

2DH5-Ant1-2441

2DH5-Ant1-2480

3DH5-Ant1-2402

3DH5-Ant1-2441

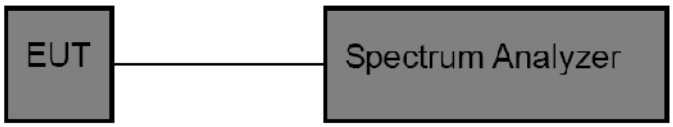
3DH5-Ant1-2480

# 10 Carrier Frequency Separation Test

## 10.1 Test Standard and Limit

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.247 (a)(1) |
| Test Limit | >25KHz or >two-thirds of the 20 dB bandwidth |

## 10.2 Test Setup




## 10.3 Test Procedure

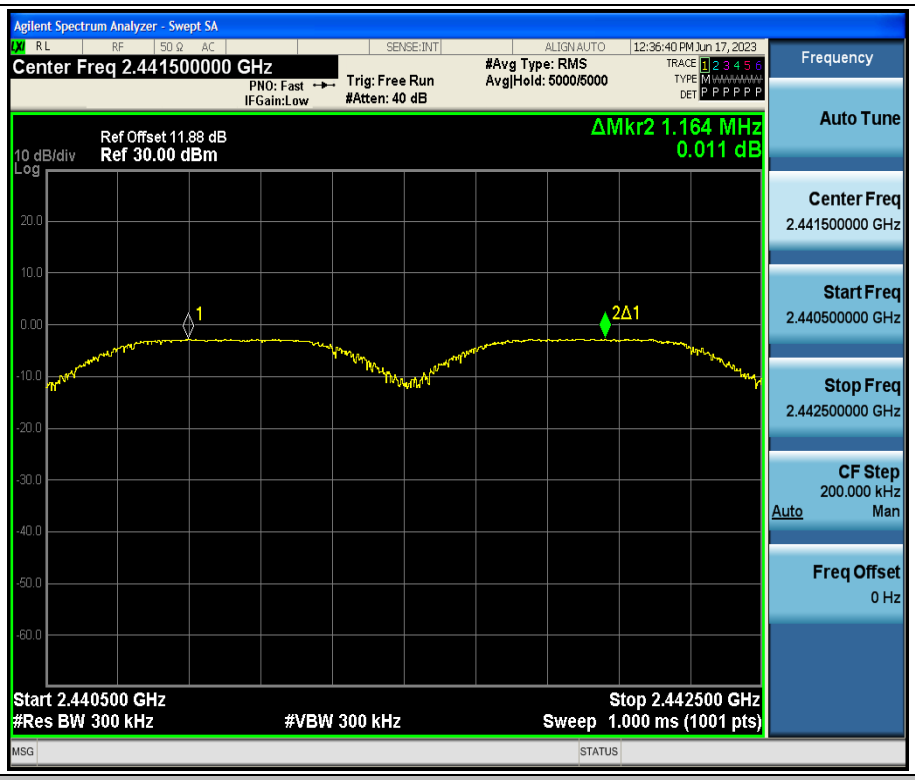
The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:

1. Span= Wide enough to capture the peaks of two adjacent channels
2. Set the RBW = 300 kHz.
3. Set the VBW = 300 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

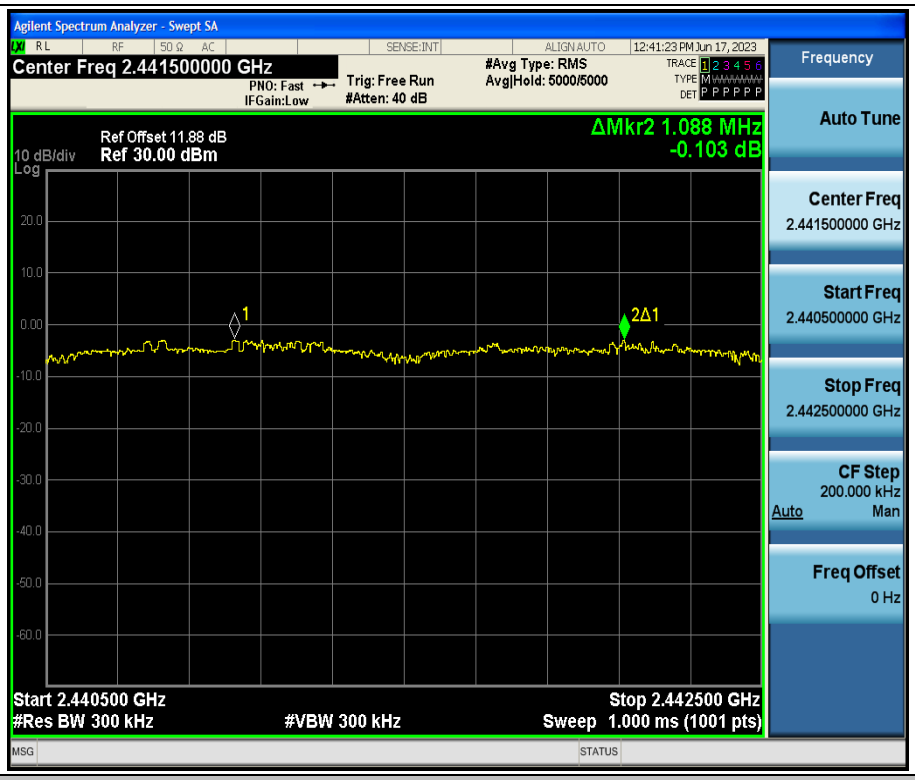
## 10.4 Test Data

| | | | | | |
|---|---|---|---|---|---|
| Test Item | : | Frequency Separation | Test Mode | : | CH Low ~ CH High |
| Test Voltage | : | DC 5V | Temperature | : | 24.5℃ |
| Test Result | : | PASS | Humidity | : | 55%RH |

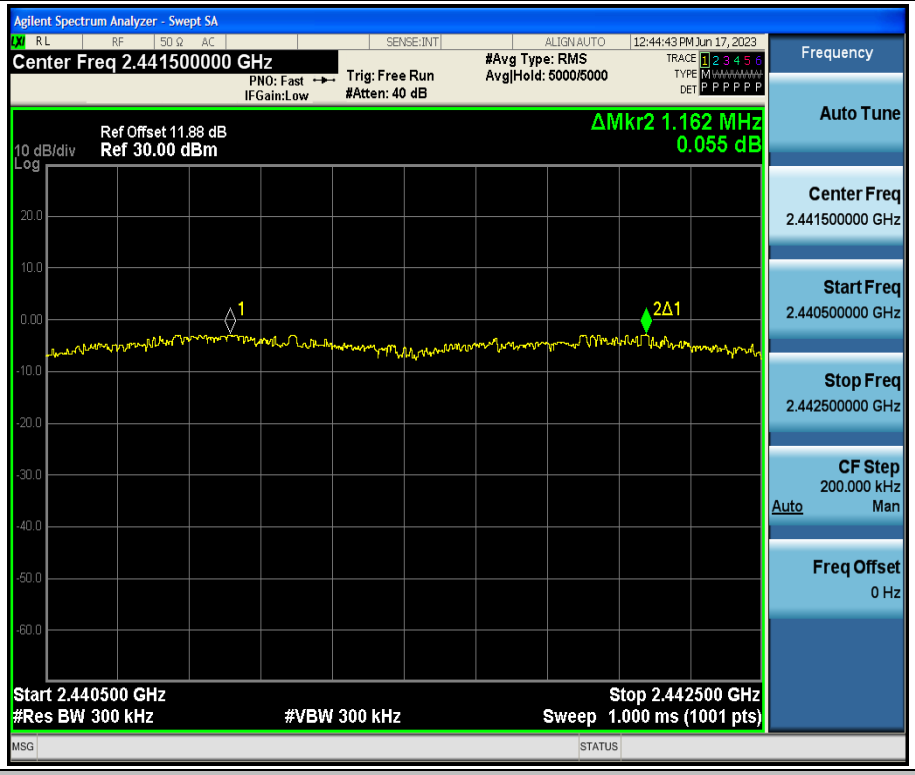
| TestMode | Antenna | Frequency[MHz] | Result[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | Hop | 1.164 | ≥1.041 | PASS |
| 2DH5 | Ant1 | Hop | 1.088 | ≥0.906 | PASS |
| 3DH5 | Ant1 | Hop | 1.162 | ≥0.894 | PASS |




DH5-Ant1-Hop




2DH5-Ant1-Hop



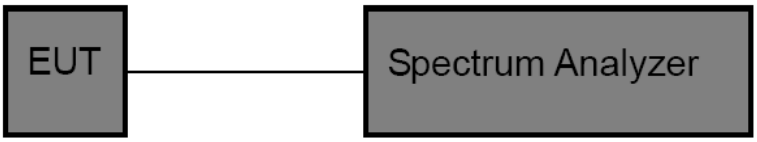

3DH5-Ant1-Hop

# 11 Number of Hopping Channel Test

## 11.1 Test Standard and Limit

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.247 (a)(1) |
| Test Limit | >15 channels |

## 11.2 Test Setup




## 11.3 Test Procedure

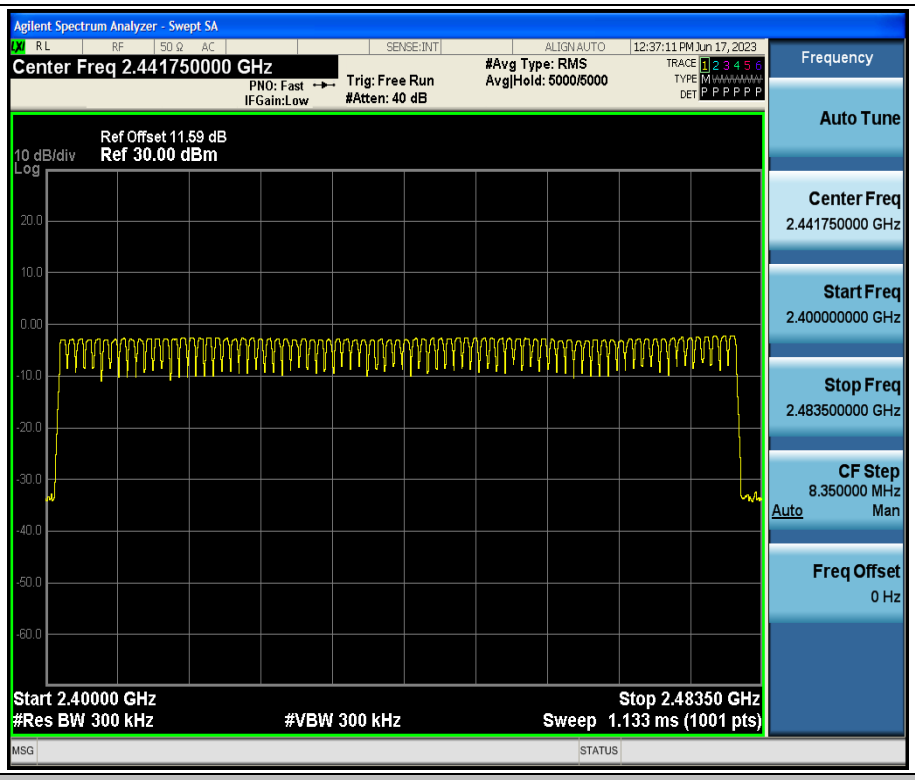
The EUT must have its hopping function enabled. Using the following spectrum analyzer setting:

1. Span= the frequency band of operation
2. Set the RBW = 300kHz.
3. Set the VBW = 300kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

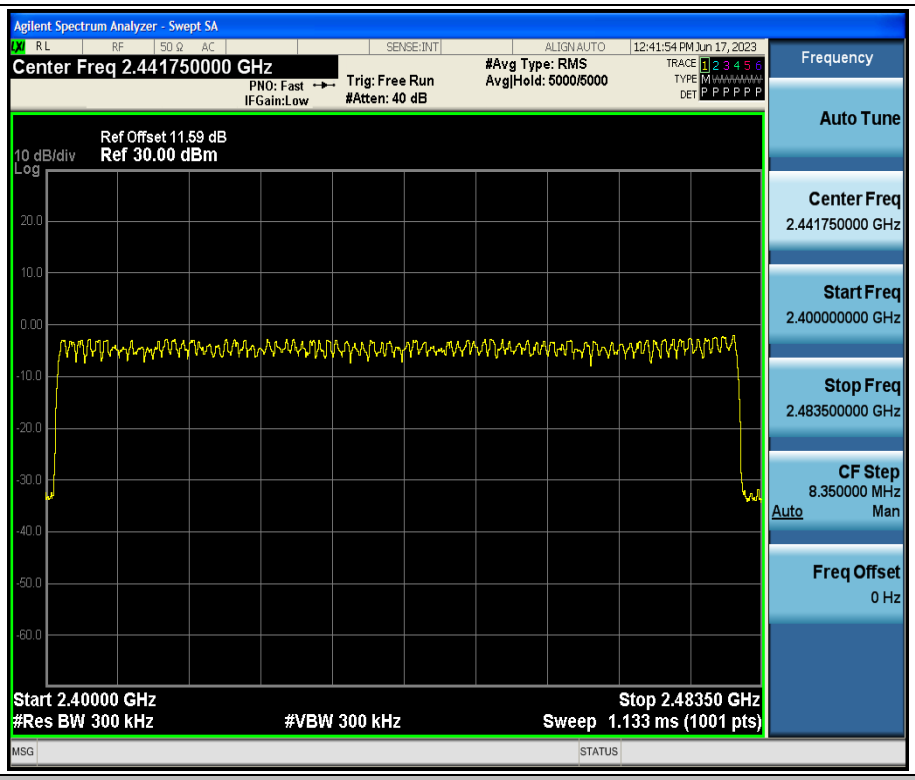
## 11.4 Test Data

| | | | | | |
|---|---|---|---|---|---|
| Test Item | : | Number of Hopping Frequency | Test Mode | : | CH Low ~ CH High |
| Test Voltage | : | DC 5V | Temperature | : | 24.5℃ |
| Test Result | : | PASS | Humidity | : | 55%RH |

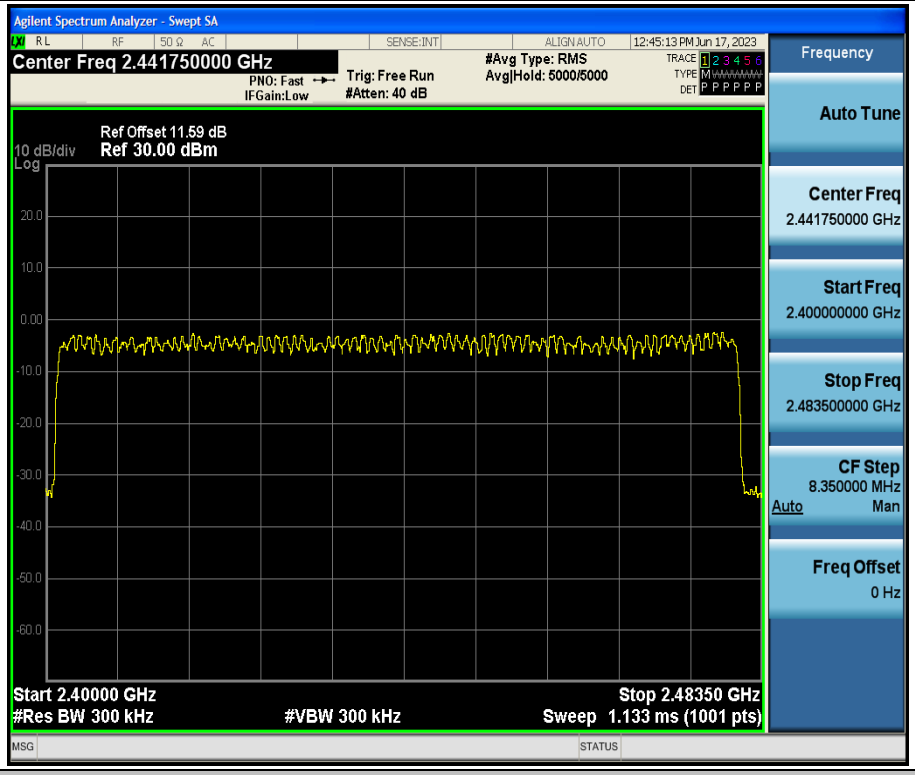
| TestMode | Antenna | Frequency[MHz] | Result[Num] | Limit[Num] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | Hop | 79 | ≥15 | PASS |
| 2DH5 | Ant1 | Hop | 79 | ≥15 | PASS |
| 3DH5 | Ant1 | Hop | 79 | ≥15 | PASS |




DH5-Ant1-Hop




2DH5-Ant1-Hop



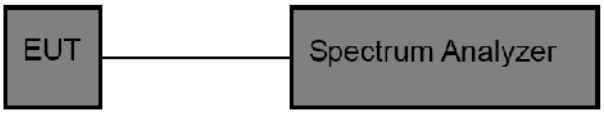

3DH5-Ant1-Hop

# 12 Dwell Time Test

## 12.1 Test Standard and Limit

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.247 (a)(1) |
| Test Limit | 0.4 sec |

## 12.2 Test Setup




## 12.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span= zero span, centered on a hopping channel
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Sweep time = as necessary to capture the entire dwell time per hopping channel.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

## 12.4 Test Data

| | | | | | |
|---|---|---|---|---|---|
| Test Item | : | Time of Occupancy | Test Mode | : | CH Low ~ CH High |
| Test Voltage | : | DC 5V | Temperature | : | 24.5℃ |
| Test Result | : | PASS | Humidity | : | 55%RH |

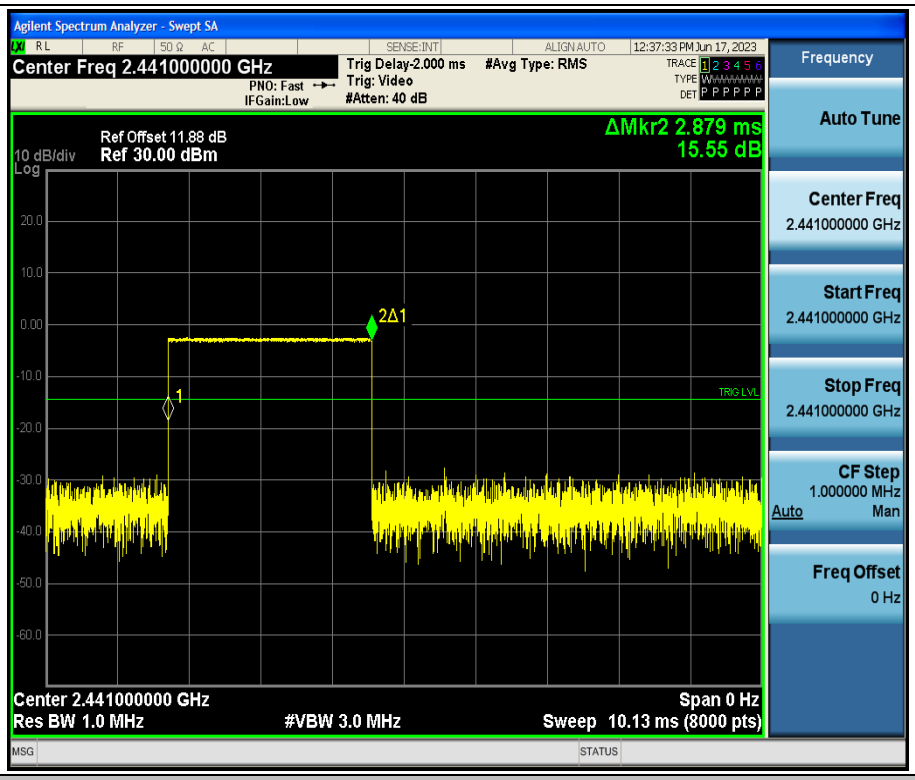
| TestMode | Antenna | Frequency[MHz] | BurstWidth [ms] | Result[s] | Limit[s] | Verdict |
|---|---|---|---|---|---|---|
| DH5 | Ant1 | Hop | 2.879 | 0.307 | ≤0.4 | PASS |
| DH1 | Ant1 | Hop | 0.374 | 0.12 | ≤0.4 | PASS |
| DH3 | Ant1 | Hop | 1.630 | 0.261 | ≤0.4 | PASS |
| 2DH5 | Ant1 | Hop | 2.884 | 0.308 | ≤0.4 | PASS |
| 2DH1 | Ant1 | Hop | 0.384 | 0.123 | ≤0.4 | PASS |
| 2DH3 | Ant1 | Hop | 1.635 | 0.262 | ≤0.4 | PASS |
| 3DH5 | Ant1 | Hop | 2.887 | 0.308 | ≤0.4 | PASS |
| 3DH1 | Ant1 | Hop | 0.385 | 0.123 | ≤0.4 | PASS |
| 3DH3 | Ant1 | Hop | 1.635 | 0.262 | ≤0.4 | PASS |

Note:

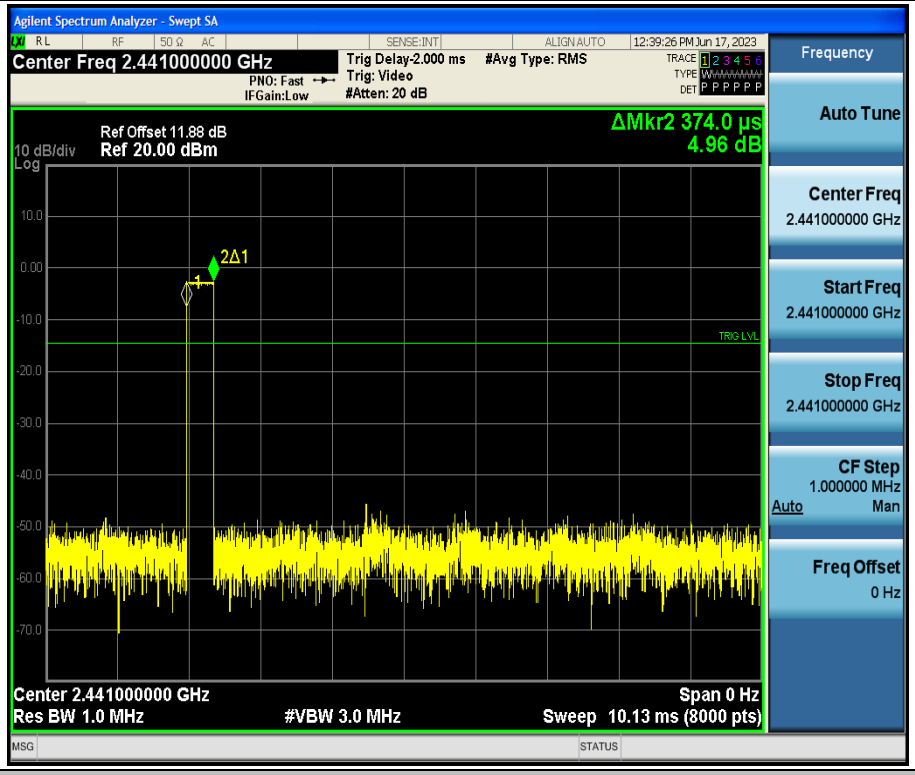
1.DH1/2DH1 Dwell Time: Reading * (1600/2)*31.6/(channel number).

2.DH3/2DH3 Dwell Time: Reading * (1600/4)*31.6/(channel number).

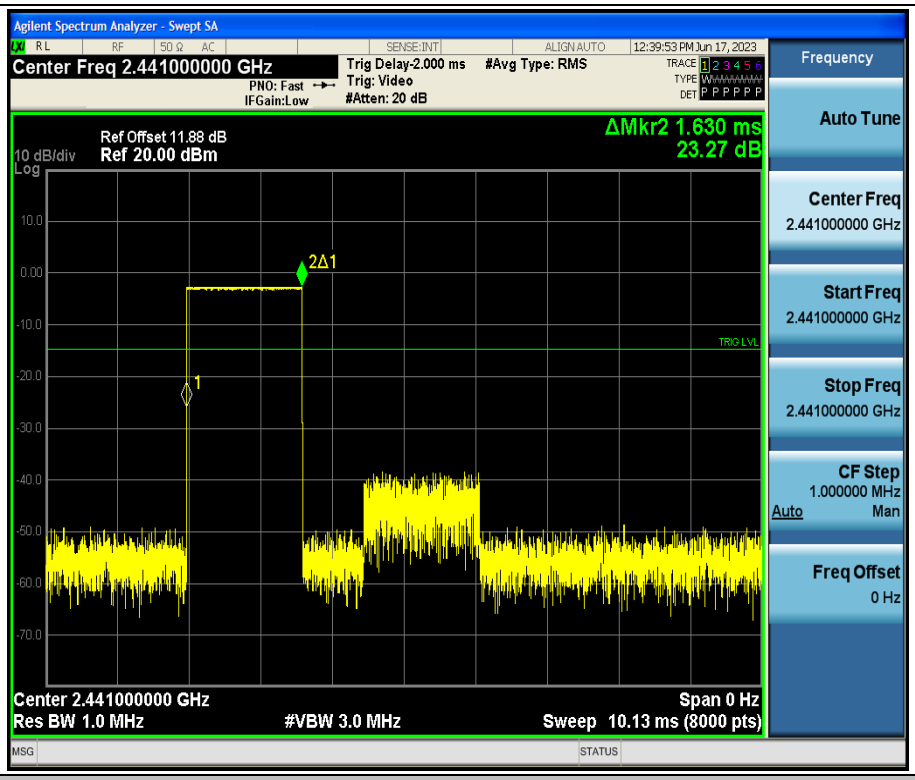
3.DH5/2DH5 Dwell Time: Reading * (1600/6)*31.6/(channel number).



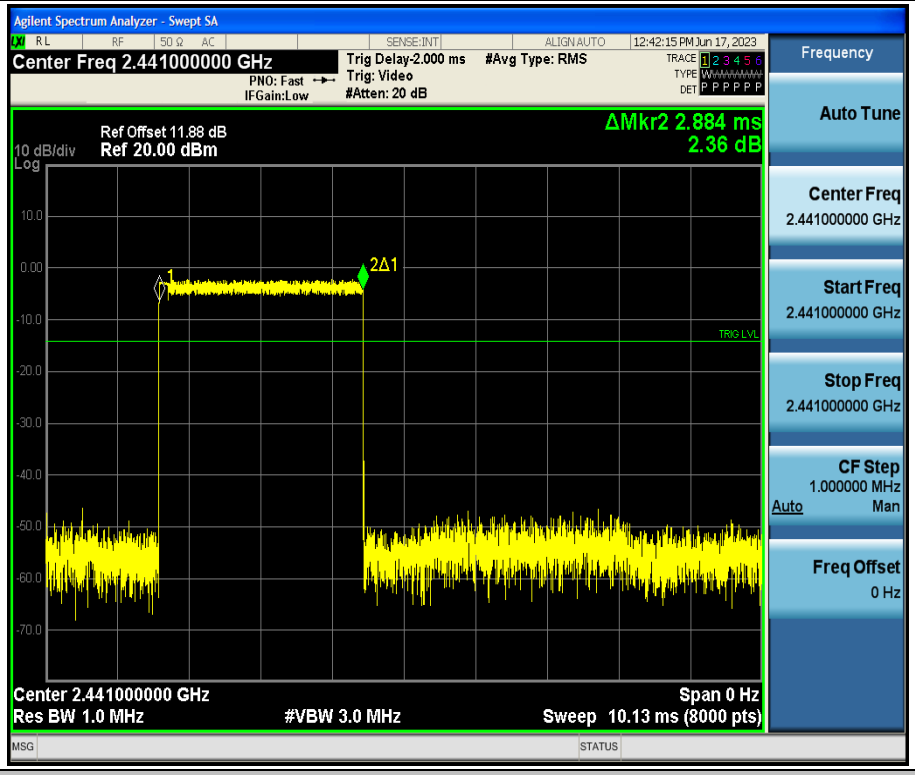

DH5-Ant1-Hop



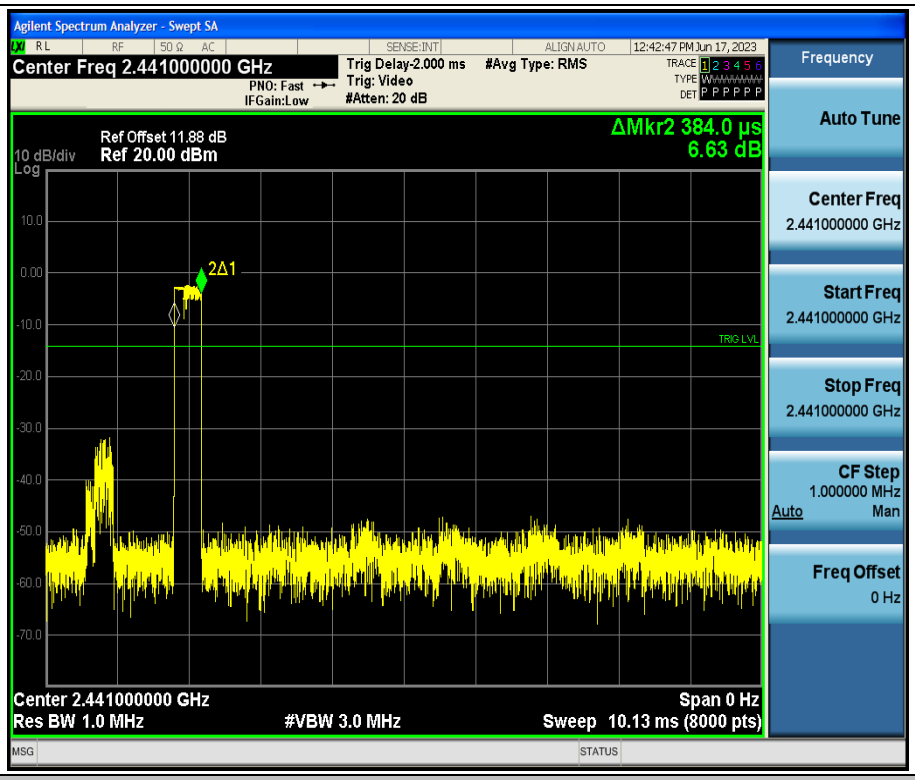

DH1-Ant1-Hop



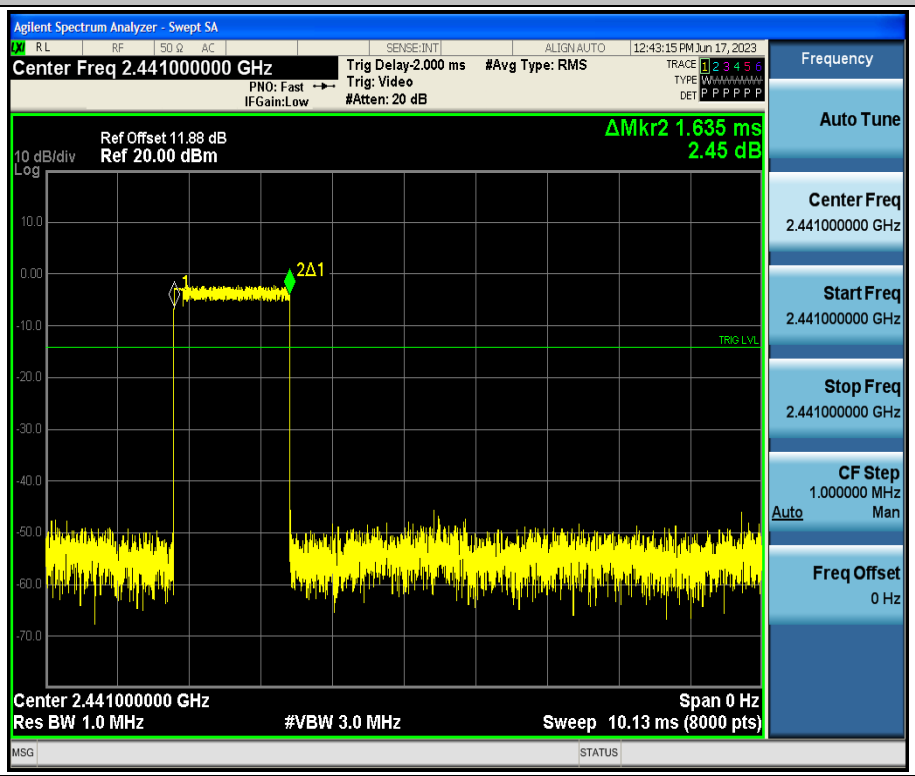

DH3-Ant1-Hop



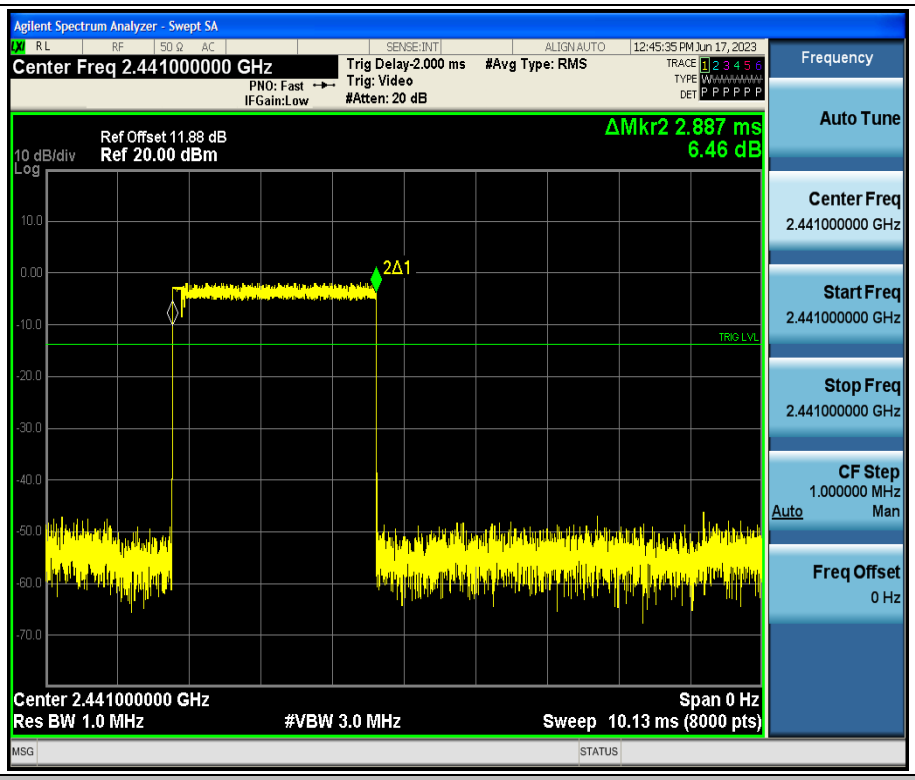

2DH5-Ant1-Hop



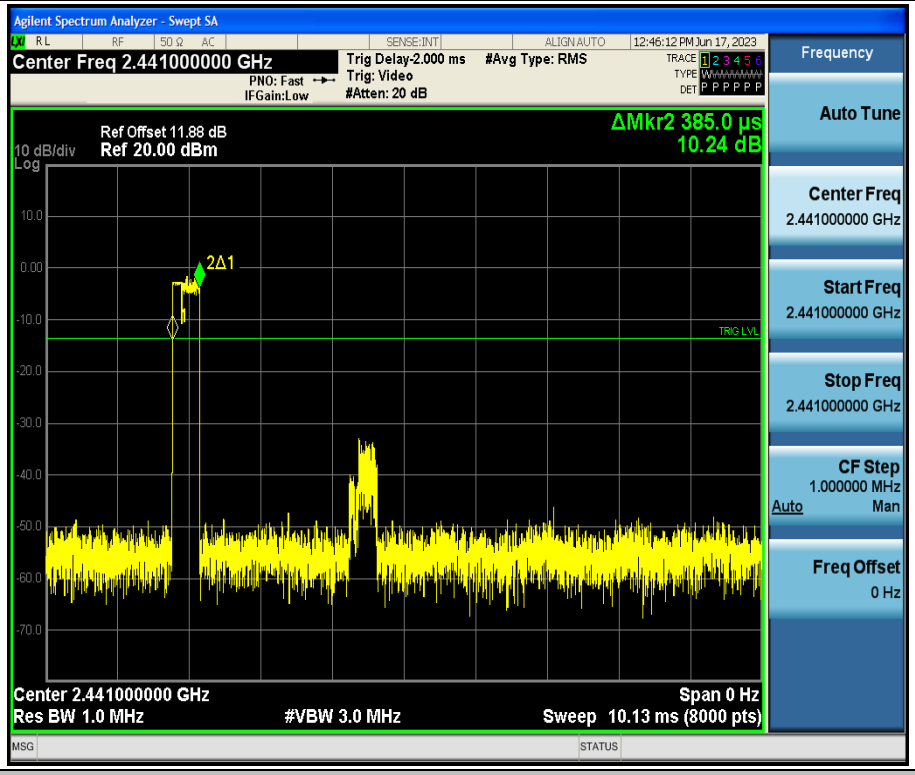

2DH1-Ant1-Hop



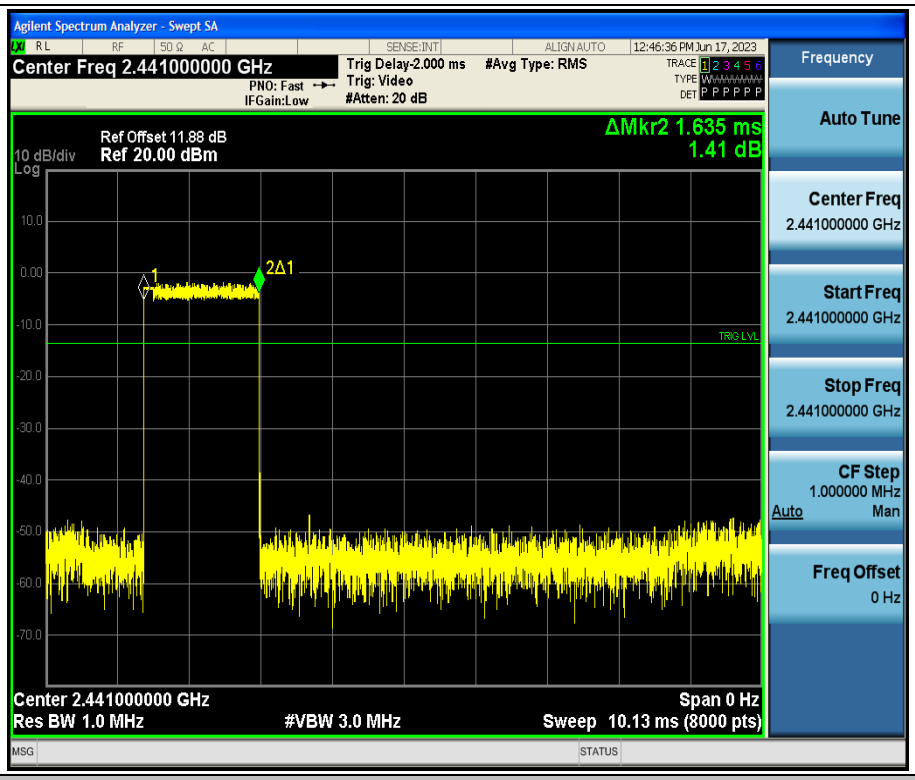

2DH3-Ant1-Hop




3DH5-Ant1-Hop




3DH1-Ant1-Hop



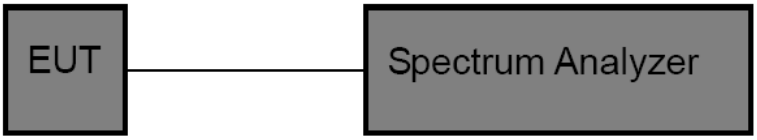

3DH3-Ant1-Hop

# 13 100kHz Bandwidth of Frequency Band Edge Requirement

## 13.1 Test Standard and Limit

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.247 (d) |
| Test Limit | in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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, 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). |

## 13.2 Test Setup




## 13.3 Test Procedure

The EUT must have its hopping/Non-hopping function enabled. Using the following spectrum analyzer setting:

1. Set the RBW = 100kHz.

2. Set the VBW = 300kHz.

3. Sweep time = auto couple.

4. Detector function = peak.

5. Trace mode = max hold.

6. Allow trace to fully stabilize.

## 13.4 Test Data

| | | | | | |
|---|---|---|---|---|---|
| Test Item | : | Band edge | Test Mode | : | CH Low ~ CH High |
| Test Voltage | : | DC 5V | Temperature | : | 24.5℃ |
| Test Result | : | PASS | Humidity | : | 55%RH |

| TestMode | Antenna | ChName | Frequency[MHz] | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | Low | 2402 | -3.30 | -46.58 | ≤-23.3 | PASS |
| DH5 | Ant1 | High | 2480 | -2.36 | -45.86 | ≤-22.36 | PASS |
| 2DH5 | Ant1 | Low | 2402 | -6.18 | -46.11 | ≤-26.18 | PASS |
| 2DH5 | Ant1 | High | 2480 | -2.35 | -45.99 | ≤-22.35 | PASS |
| 3DH5 | Ant1 | Low | 2402 | -3.14 | -46.32 | ≤-23.14 | PASS |
| 3DH5 | Ant1 | High | 2480 | -4.06 | -46.24 | ≤-24.06 | PASS |
| DH5 | Ant1 | Low | Hop_2402 | -3.71 | -46.27 | ≤-23.71 | PASS |
| DH5 | Ant1 | High | Hop_2480 | -2.41 | -46.12 | ≤-22.41 | PASS |
| 2DH5 | Ant1 | Low | Hop_2402 | -3.44 | -46.54 | ≤-23.44 | PASS |
| 2DH5 | Ant1 | High | Hop_2480 | -2.61 | -45.32 | ≤-22.61 | PASS |
| 3DH5 | Ant1 | Low | Hop_2402 | -5.60 | -46.31 | ≤-25.6 | PASS |
| 3DH5 | Ant1 | High | Hop_2480 | -2.88 | -46.35 | ≤-22.88 | PASS |

| TestMode | Antenna | ChName | Frequency[MHz] | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | Low | 2402 | -3.30 | -46.58 | ≤-23.3 | PASS |
| DH5 | Ant1 | High | 2480 | -2.36 | -45.86 | ≤-22.36 | PASS |
| 2DH5 | Ant1 | Low | 2402 | -6.18 | -46.11 | ≤-26.18 | PASS |
| 2DH5 | Ant1 | High | 2480 | -2.35 | -45.99 | ≤-22.35 | PASS |
| 3DH5 | Ant1 | Low | 2402 | -3.14 | -46.32 | ≤-23.14 | PASS |
| 3DH5 | Ant1 | High | 2480 | -4.06 | -46.24 | ≤-24.06 | PASS |
| DH5 | Ant1 | Low | Hop_2402 | -3.71 | -46.27 | ≤-23.71 | PASS |
| DH5 | Ant1 | High | Hop_2480 | -2.41 | -46.12 | ≤-22.41 | PASS |
| 2DH5 | Ant1 | Low | Hop_2402 | -3.44 | -46.54 | ≤-23.44 | PASS |
| 2DH5 | Ant1 | High | Hop_2480 | -2.61 | -45.32 | ≤-22.61 | PASS |
| 3DH5 | Ant1 | Low | Hop_2402 | -5.60 | -46.31 | ≤-25.6 | PASS |
| 3DH5 | Ant1 | High | Hop_2480 | -2.88 | -46.35 | ≤-22.88 | PASS |

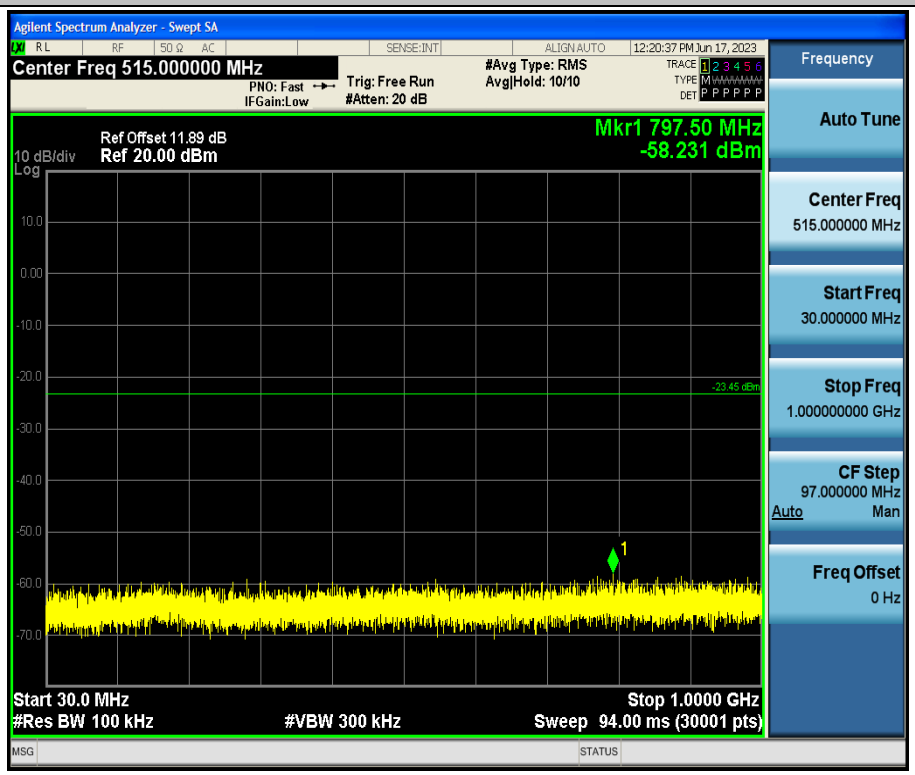
Conducted Emission Method

Test Result

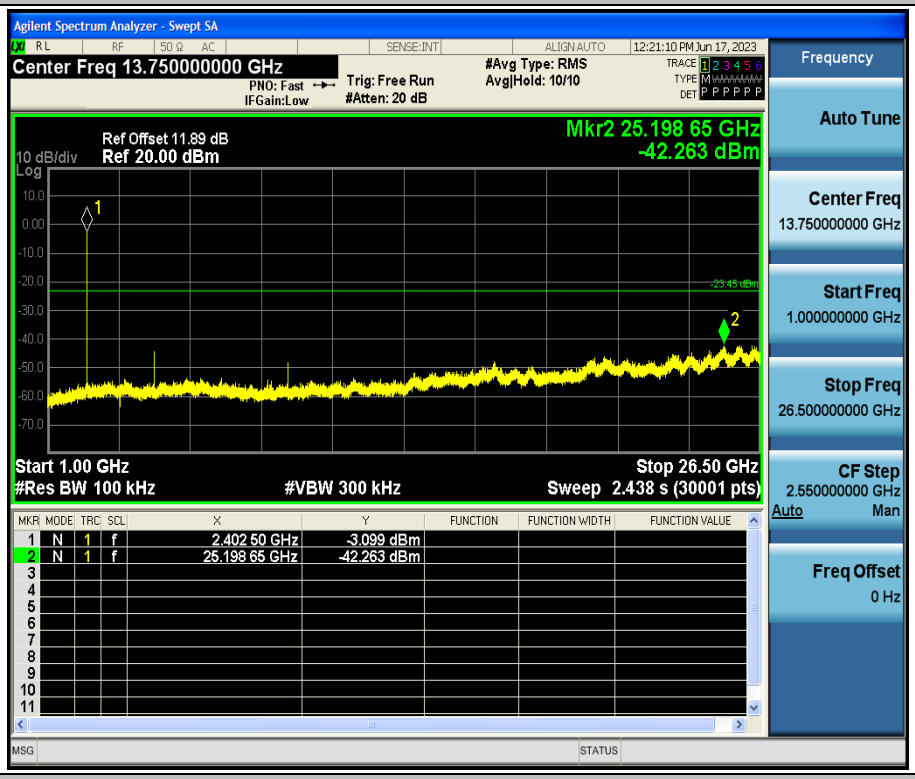
| TestMode | Antenna | Frequency[MHz] | FreqRange [MHz] | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | 2402 | 0~Reference | -3.45 | -3.45 | --- | PASS |
| DH5 | Ant1 | 2402 | 30~1000 | -3.45 | -58.23 | ≤-23.45 | PASS |
| DH5 | Ant1 | 2402 | 1000~26500 | -3.45 | -42.26 | ≤-23.45 | PASS |
| DH5 | Ant1 | 2441 | 0~Reference | -3.41 | -3.41 | --- | PASS |
| DH5 | Ant1 | 2441 | 30~1000 | -3.41 | -58.21 | ≤-23.41 | PASS |
| DH5 | Ant1 | 2441 | 1000~26500 | -3.41 | -42.25 | ≤-23.41 | PASS |
| DH5 | Ant1 | 2480 | 0~Reference | -2.60 | -2.60 | --- | PASS |
| DH5 | Ant1 | 2480 | 30~1000 | -2.60 | -58.35 | ≤-22.6 | PASS |
| DH5 | Ant1 | 2480 | 1000~26500 | -2.60 | -41.68 | ≤-22.6 | PASS |
| 2DH5 | Ant1 | 2402 | 0~Reference | -6.07 | -6.07 | --- | PASS |
| 2DH5 | Ant1 | 2402 | 30~1000 | -6.07 | -57.4 | ≤-26.07 | PASS |
| 2DH5 | Ant1 | 2402 | 1000~26500 | -6.07 | -42.29 | ≤-26.07 | PASS |
| 2DH5 | Ant1 | 2441 | 0~Reference | -4.82 | -4.82 | --- | PASS |
| 2DH5 | Ant1 | 2441 | 30~1000 | -4.82 | -58.16 | ≤-24.82 | PASS |
| 2DH5 | Ant1 | 2441 | 1000~26500 | -4.82 | -42.39 | ≤-24.82 | PASS |
| 2DH5 | Ant1 | 2480 | 0~Reference | -6.04 | -6.04 | --- | PASS |
| 2DH5 | Ant1 | 2480 | 30~1000 | -6.04 | -58.16 | ≤-26.04 | PASS |
| 2DH5 | Ant1 | 2480 | 1000~26500 | -6.04 | -42.12 | ≤-26.04 | PASS |
| 3DH5 | Ant1 | 2402 | 0~Reference | -7.15 | -7.15 | --- | PASS |
| 3DH5 | Ant1 | 2402 | 30~1000 | -7.15 | -58.32 | ≤-27.15 | PASS |
| 3DH5 | Ant1 | 2402 | 1000~26500 | -7.15 | -41.43 | ≤-27.15 | PASS |
| 3DH5 | Ant1 | 2441 | 0~Reference | -6.30 | -6.30 | --- | PASS |
| 3DH5 | Ant1 | 2441 | 30~1000 | -6.30 | -58.24 | ≤-26.3 | PASS |
| 3DH5 | Ant1 | 2441 | 1000~26500 | -6.30 | -41.07 | ≤-26.3 | PASS |
| 3DH5 | Ant1 | 2480 | 0~Reference | -5.78 | -5.78 | --- | PASS |
| 3DH5 | Ant1 | 2480 | 30~1000 | -5.78 | -58.12 | ≤-25.78 | PASS |
| 3DH5 | Ant1 | 2480 | 1000~26500 | -5.78 | -41.63 | ≤-25.78 | PASS |

Test Graphs

DH5-Ant1-2402-0~Reference

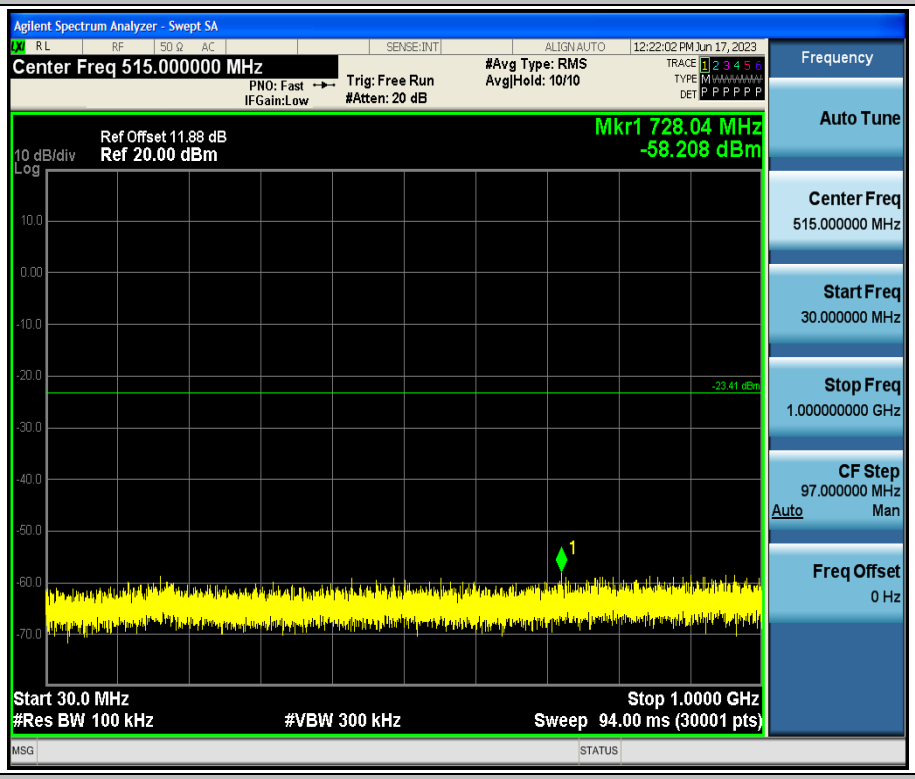


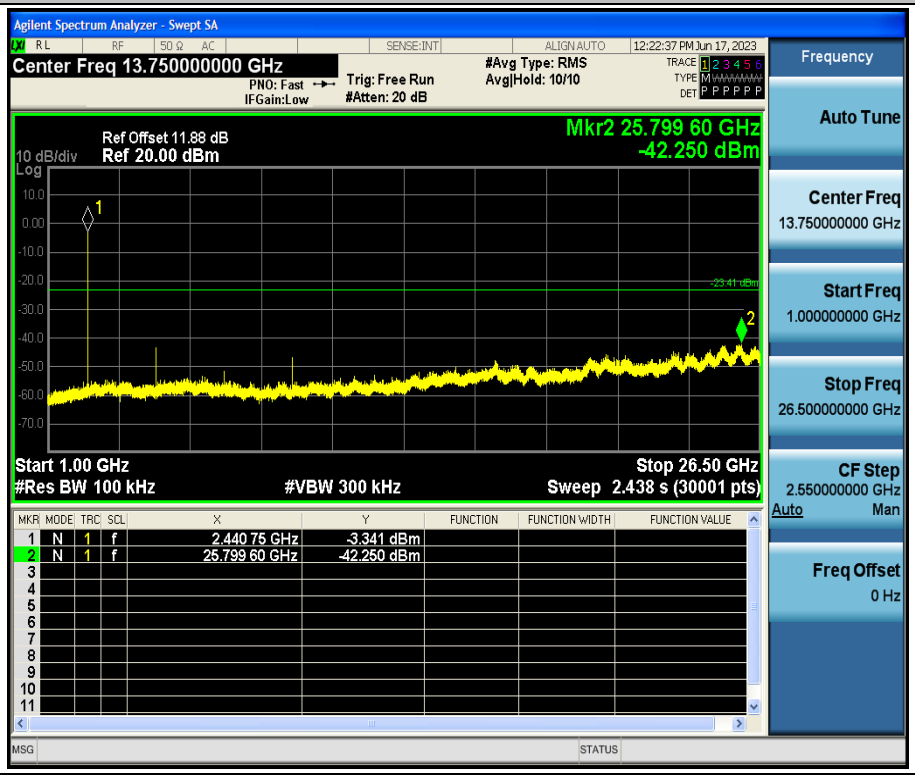
DH5-Ant1-2402-30~1000




DH5-Ant1-2402-1000~26500

DH5-Ant1-2441-0~Reference




DH5-Ant1-2441-30~1000