

## FCC - TEST REPORT

Report Number : **68.950.24.0443.01** Date of Issue: **2024-11-26**

Model : **EAV-RC50**

Product Type : Remote Controller

Applicant : SUZHOU EAVISION ROBOTIC TECHNOLOGIES CO., LTD

Address : Unit 1-A, No.3 Workshop, 28 Xiasheng Road, SIP Suzhou, Jiangsu  
China 215000

Manufacturer : SUZHOU EAVISION ROBOTIC TECHNOLOGIES CO., LTD

Address : Unit 1-A, No.3 Workshop, 28 Xiasheng Road, SIP Suzhou, Jiangsu  
China 215000

Factory : SUZHOU EAVISION ROBOTIC TECHNOLOGIES CO., LTD

Address : Unit 1-A, No.3 Workshop, 28 Xiasheng Road, SIP Suzhou, Jiangsu  
China 215000

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : **62**

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## 1 Table of Contents

|     |                                                   |    |
|-----|---------------------------------------------------|----|
| 1   | Table of Contents .....                           | 2  |
| 2   | Details about the Test Laboratory .....           | 3  |
| 3   | Description of the Equipment Under Test .....     | 4  |
| 4   | Summary of Test Standards .....                   | 5  |
| 5   | Summary of Test Results .....                     | 6  |
| 6   | General Remarks .....                             | 7  |
| 7   | Test Setups .....                                 | 8  |
| 8   | Systems Test Configuration .....                  | 9  |
| 9   | Technical Requirement .....                       | 10 |
| 9.1 | Conducted Peak Output Power .....                 | 13 |
| 9.2 | 20 dB Bandwidth .....                             | 18 |
| 9.3 | Carrier Frequency Separation .....                | 23 |
| 9.4 | Number of Hopping Frequencies .....               | 25 |
| 9.5 | Dwell Time .....                                  | 27 |
| 9.6 | Spurious RF Conducted Emissions .....             | 31 |
| 9.7 | Band Edge Testing .....                           | 41 |
| 9.8 | Spurious Radiated Emissions for Transmitter ..... | 47 |
| 10  | Test Equipment List .....                         | 61 |
| 11  | System Measurement Uncertainty .....              | 62 |

## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou,  
Nanshan District  
Shenzhen 518052  
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FCC Registration No.: 514049

FCC Designation Number: CN5009

### 3 Description of the Equipment Under Test

|                            |                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product:                   | Remote Controller                                                                                                                                                                            |
| Model No.:                 | EAV-RC50                                                                                                                                                                                     |
| Brand name:                | EAVISION                                                                                                                                                                                     |
| FCC ID:                    | 2AXLB-EAV-RC50                                                                                                                                                                               |
| Rating:                    | Input: DC20V $\overline{\text{---}}$ 3.25A<br>Battery Capacity: 7.6V, 13100mAh                                                                                                               |
| RF Transmission Frequency: | 2402MHz-2480MHz                                                                                                                                                                              |
| No. of Operated Channel:   | 79                                                                                                                                                                                           |
| Modulation:                | GFSK, $\pi/4$ -DQPSK, 8DPSK                                                                                                                                                                  |
| Antenna Type:              | FPC Antenna                                                                                                                                                                                  |
| Antenna                    | Gain: -3.3dBi                                                                                                                                                                                |
| Description of the EUT:    | EUT is a Remote Controller which support 2.4G (BR, Slot), Bluetooth (BR+EDR+BLE), Wi-Fi operated at 2.4GHz and 5GHz, GSM, WCDMA and LTE.<br>Only Bluetooth (BR+EDR) included in this report. |

NOTE 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 4 Summary of Test Standards

| Test Standards                             |                                                                        |
|--------------------------------------------|------------------------------------------------------------------------|
| FCC Part 15 Subpart C<br>10-1-2023 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators |

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10-2020.

## 5 Summary of Test Results

| Technical Requirements            |                                             |            |             |
|-----------------------------------|---------------------------------------------|------------|-------------|
| FCC Part 15 Subpart C             |                                             |            |             |
| Test Condition                    |                                             | Test Site  | Test Result |
| §15.207                           | Conducted emission AC power port            | N/A        | N/A         |
| §15.247(b)(1)                     | Conducted peak output power                 | Site 1     | Pass        |
| §15.247(a)(1)                     | 20dB bandwidth                              | Site 1     | Pass        |
| §15.247(a)(1)                     | Carrier channel frequency separation        | Site 1     | Pass        |
| §15.247(a)(1)(iii)                | Number of hopping frequencies               | Site 1     | Pass        |
| §15.247(a)(1)(iii)                | Dwell Time - Average Time of Occupancy      | Site 1     | Pass        |
| §15.247(d)                        | Spurious RF conducted emissions             | Site 1     | Pass        |
| §15.247(d)                        | Band edge                                   | Site 1     | Pass        |
| §15.247(d) & §15.209<br>& §15.205 | Spurious radiated emissions for transmitter | Site 1     | Pass        |
| §15.203                           | Antenna requirement                         | See note 2 | Pass        |

Note 1: N/A=Not Applicable.

Note 2: The EUT uses a FPC antenna, which gain is -3.3dBi. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2AXLB-EAV-RC50, complies with Section 15.209, 15.247 of the FCC Part 15, Subpart C rules.

### SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2024-03-01

Testing Start Date: 2024-03-01

Testing End Date: 2024-11-21

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:

Prepared by:

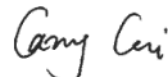
Tested by:



John Zhi  
Section Manager



Hayden Hu  
Project Engineer

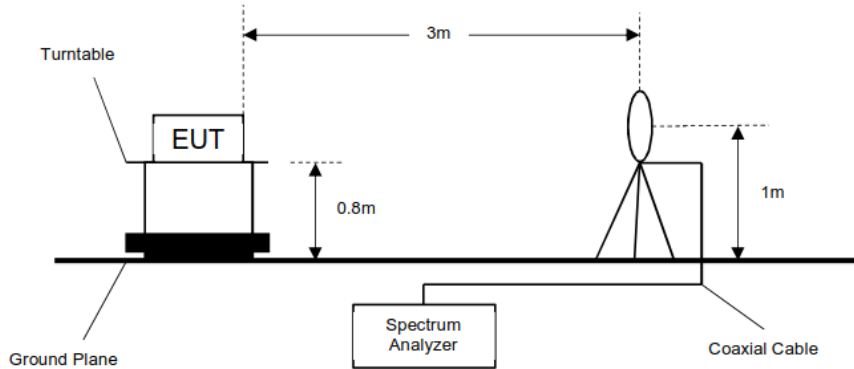


Carry Cai  
Test Engineer

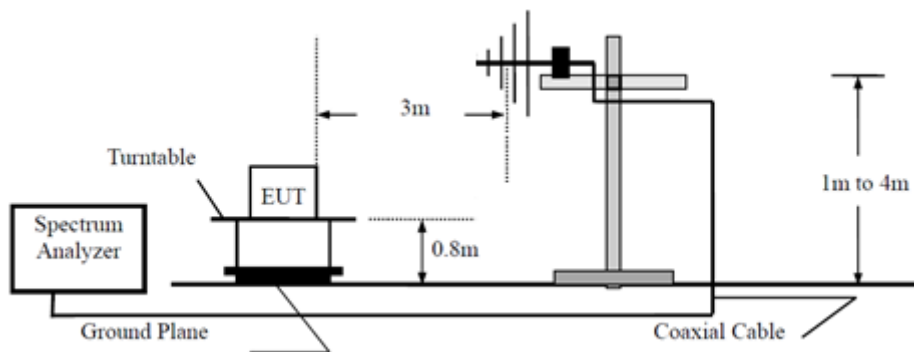
## 7 Test Setups

### 7.1 Radiated test setups

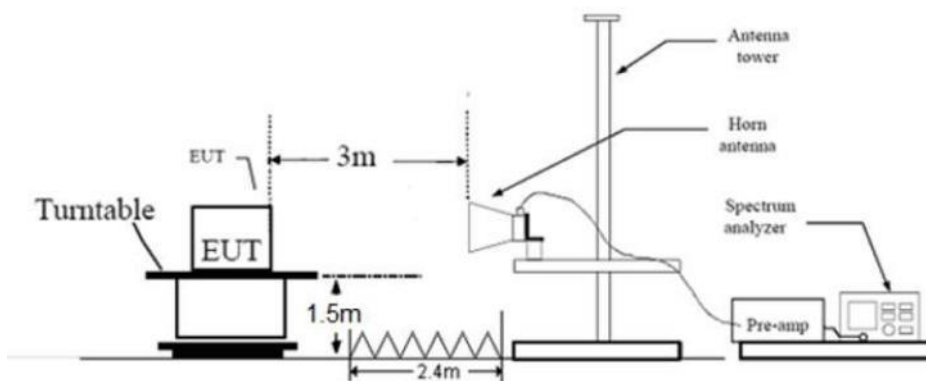
#### 9KHz - 30MHz



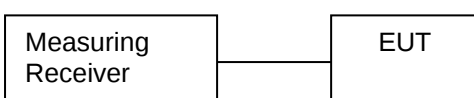
#### 30MHz - 1GHz



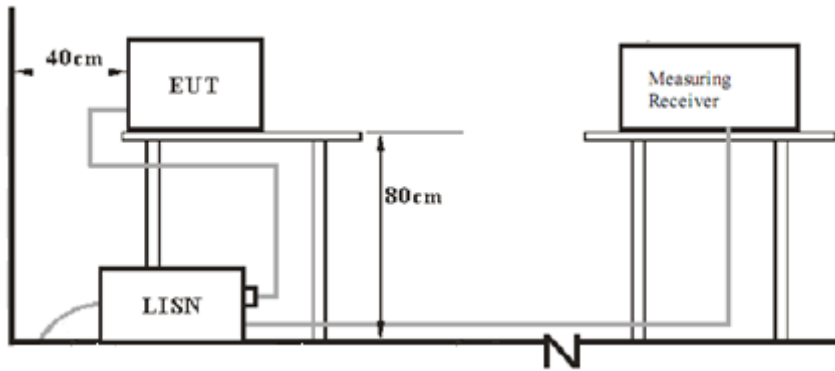
#### Above 1GHz



### 7.3 Conducted RF test setups



## 7.4 AC Power Line Conducted Emission test setups



## 8 Systems Test Configuration

### Auxiliary Equipment Used during Test:

| Description | Manufacturer | Model NO. | S/N |
|-------------|--------------|-----------|-----|
| Notebook    | LENOVO       | X220      | --- |

### Cables Used During Test:

| Cable | Length | Shielded/unshielded | With / without ferrite |
|-------|--------|---------------------|------------------------|
| ---   | ---    | ---                 | ---                    |

### Test software information:

|                       |                          |             |
|-----------------------|--------------------------|-------------|
| Test Software Version | BlueSuiteCda_3_3_11_1269 |             |
| Modulation            | Setting TX Power         | Packet Type |
| GFSK                  | 6                        | PRBS9       |
| $\pi/4$ -DQPSK        | 6                        | PRBS9       |
| 8DPSK                 | 6                        | PRBS9       |

The system was configured to hopping mode and non-hopping mode.

Hopping mode: typical working mode (normal hopping status)

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

## 9 Technical Requirement

### 9.1 Conducted Emission

#### Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

#### Limit

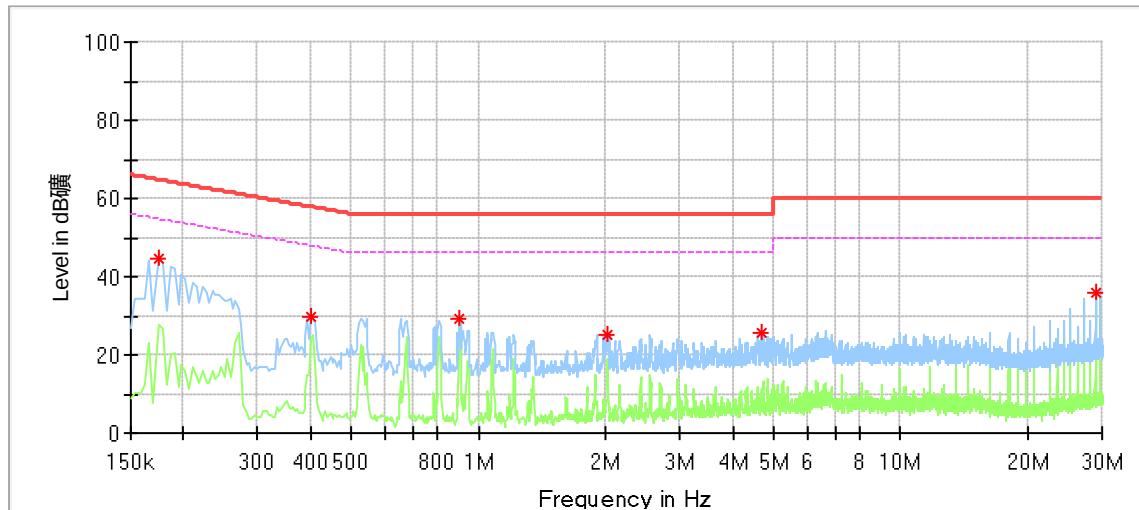
According to §15.207, conducted emissions limit as below:

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

\*Decreasing linearly with logarithm of the frequency

## Conducted Emission

Product Type : Remote Controller  
 M/N : EAV-RC50  
 Operating Condition : Normal Working  
 Test Specification : Line  
 Comment : AC 120V/60Hz



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.174000        | 44.46          | ---            | 64.77        | 20.31       | L1   | 9.54       |
| 0.402000        | 29.87          | ---            | 57.81        | 27.94       | L1   | 9.58       |
| 0.902000        | 29.44          | ---            | 56.00        | 26.56       | L1   | 9.60       |
| 2.026000        | 25.08          | ---            | 56.00        | 30.92       | L1   | 9.62       |
| 4.698000        | 25.62          | ---            | 56.00        | 30.38       | L1   | 9.73       |
| 28.886000       | 35.86          | ---            | 60.00        | 24.14       | L1   | 10.03      |

## Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|------|------------|
| ---             | ---              | ---            | ---          | ---         | ---  | ---        |

Remark:

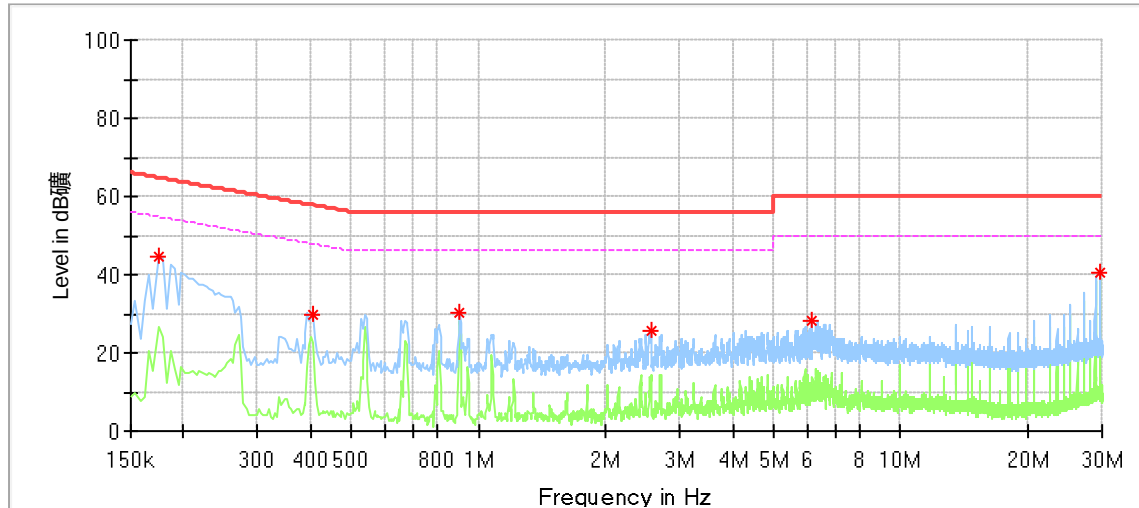
Max Peak= Read level + Corrector factor

Correct factor=cable loss + LISN factor

EUT has more than one typical operation, only the worst test mode will be recorded in this report.

## Conducted Emission

Product Type : Remote Controller  
 M/N : EAV-RC50  
 Operating Condition : WIFI transmission  
 Test Specification : Power Line, Neutral  
 Comment : AC 120V/60Hz



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.174000        | 44.66          | ---            | 64.77        | 20.11       | N    | 9.57       |
| 0.406000        | 29.90          | ---            | 57.73        | 27.83       | N    | 9.61       |
| 0.902000        | 30.17          | ---            | 56.00        | 25.83       | N    | 9.63       |
| 2.558000        | 25.83          | ---            | 56.00        | 30.17       | N    | 9.67       |
| 6.146000        | 28.28          | ---            | 60.00        | 31.72       | N    | 9.83       |
| 29.786000       | 40.43          | ---            | 60.00        | 19.57       | N    | 9.88       |

## Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|------|------------|
| ---             | ---              | ---            | ---          | ---         |      | ---        |

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

## 9.2 Conducted Peak Output Power

### Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:  
Span = approximately 5 times the 20dB bandwidth, centered on a hopping channel  
RBW > the 20dB bandwidth of the emission being measured, VBW ≥ RBW,  
Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power and record the results in the test report.
5. Repeat above procedures until all frequencies measured were complete.

### Limits

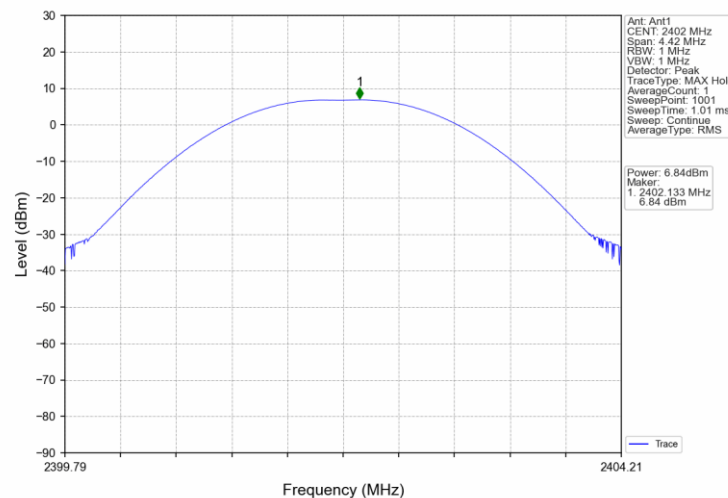
According to §15.247 (b) (1), conducted peak output power limit as below:

| Frequency Range<br>MHz | Limit<br>W | Limit<br>dBm |
|------------------------|------------|--------------|
| 2400-2483.5            | ≤1         | ≤30          |

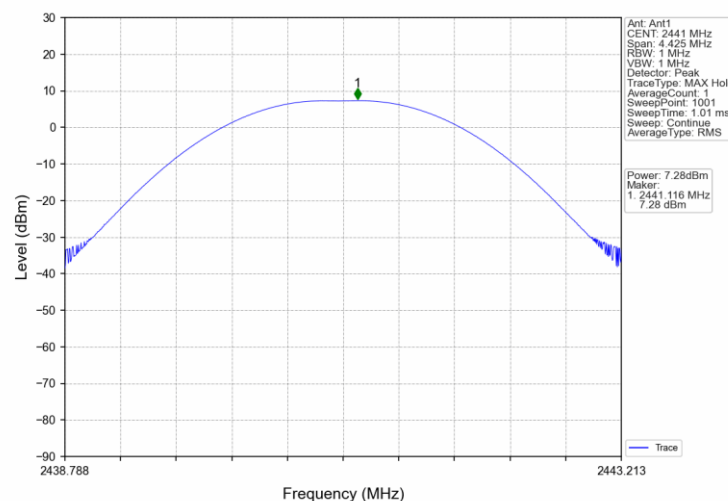
## Conducted Peak Output Power

| Mode      | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |       | Verdict |
|-----------|---------|-----------------|-------------|-------------------------------------------|-------|---------|
|           |         |                 |             | ANT1                                      | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 6.84                                      | <=30  | Pass    |
|           |         | 2441            | DH5         | 7.28                                      | <=30  | Pass    |
|           |         | 2480            | DH5         | 5.93                                      | <=30  | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 6.31                                      | <=30  | Pass    |
|           |         | 2441            | 2DH5        | 6.76                                      | <=30  | Pass    |
|           |         | 2480            | 2DH5        | 5.48                                      | <=30  | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 6.61                                      | <=30  | Pass    |
|           |         | 2441            | 3DH5        | 7.10                                      | <=30  | Pass    |
|           |         | 2480            | 3DH5        | 5.76                                      | <=30  | Pass    |

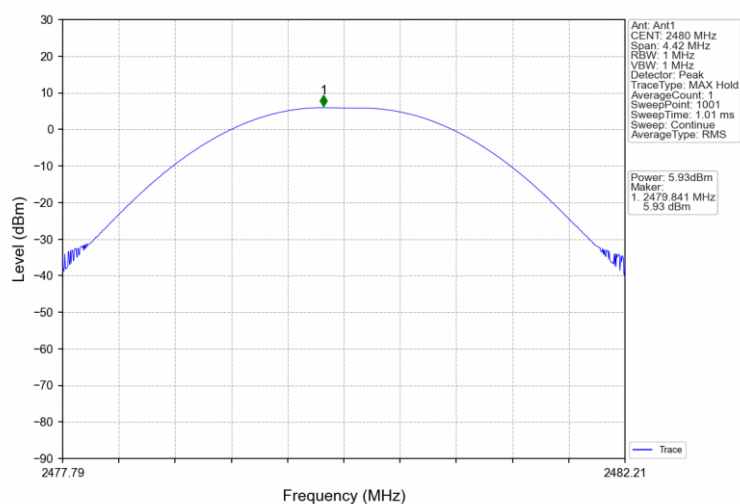
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



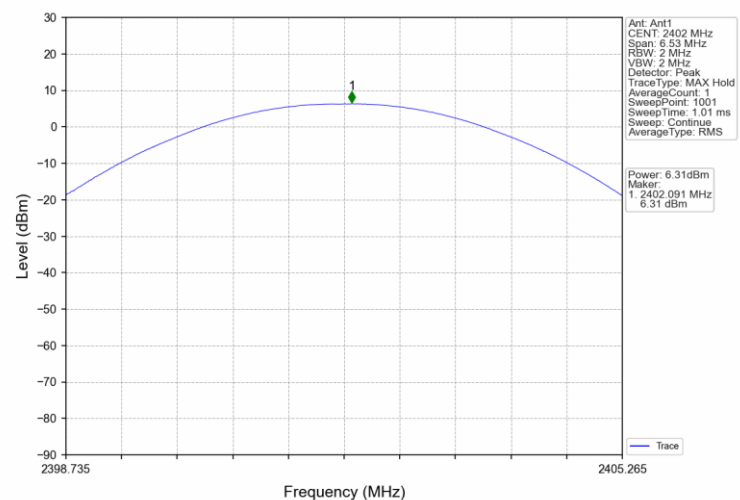
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



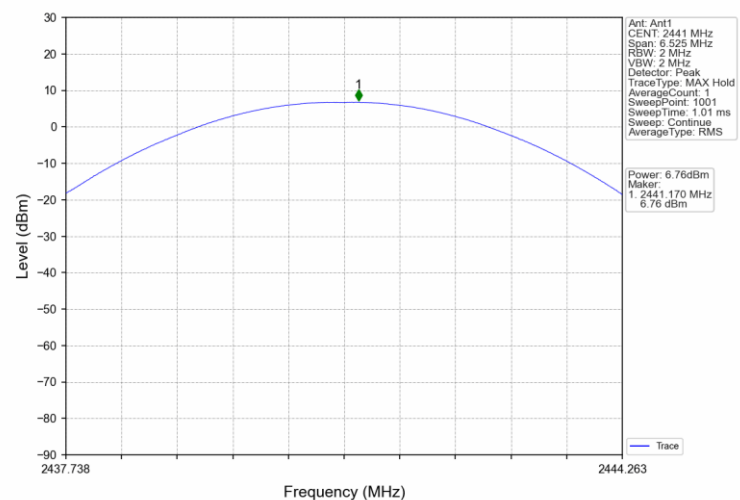
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



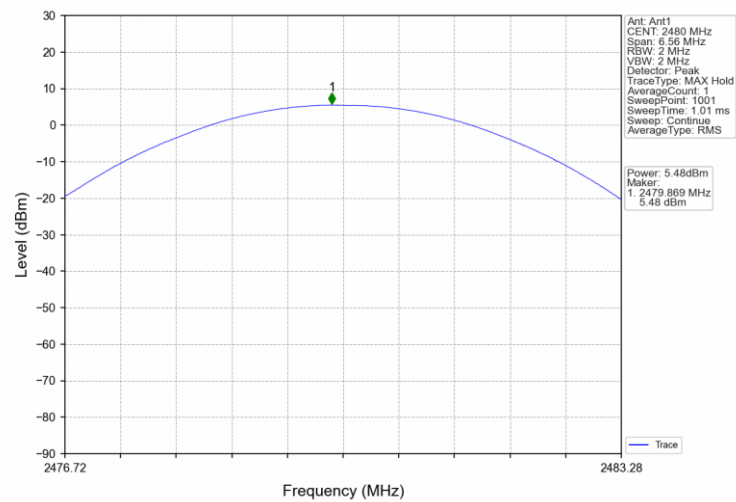
### Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



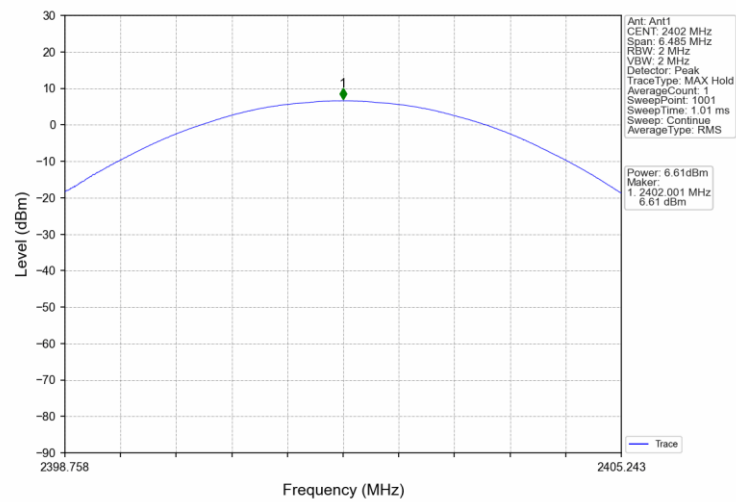
### Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



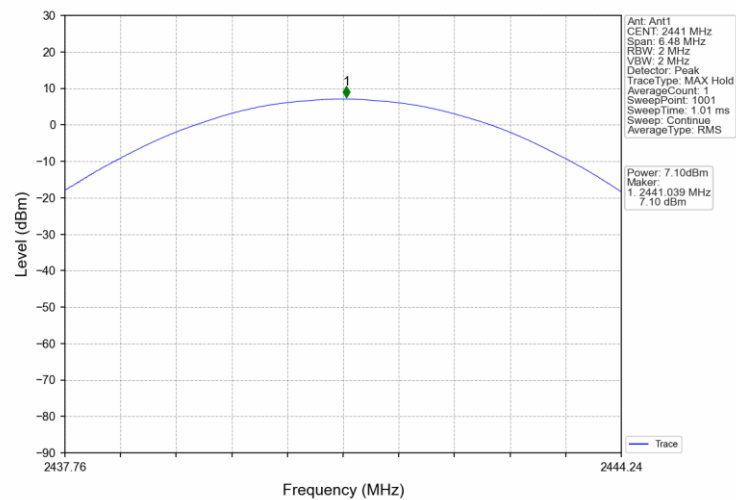
## Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV

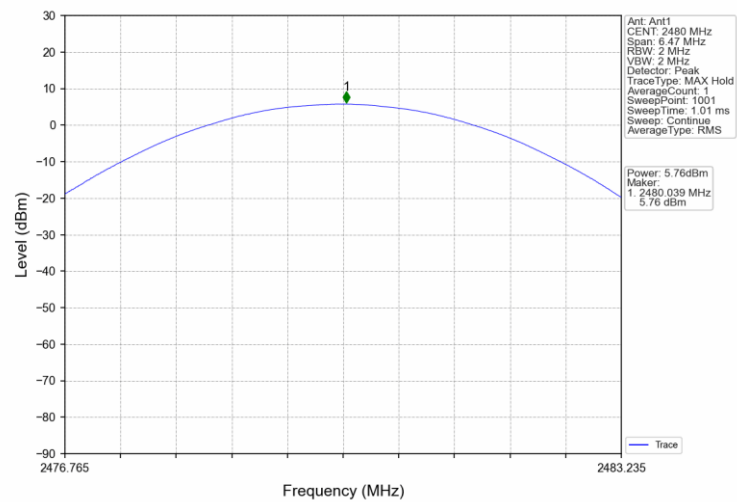


## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV





8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



### 9.3 20 dB Bandwidth

#### Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:  
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel  
RBW  $\geq$  1% to 5% of the 20 dB bandwidth/99% OBW, VBW  $\geq$  3RBW,  
Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.
5. Repeat above procedures until all frequencies measured were complete.

#### Limit

According to §15.247(a)(1), 20 dB Bandwidth limit as below:

Limit [kHz]

---

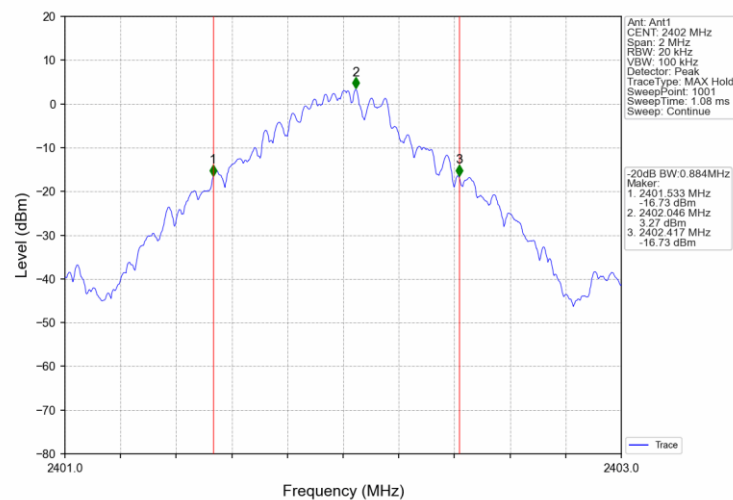
N/A

## 20 dB bandwidth

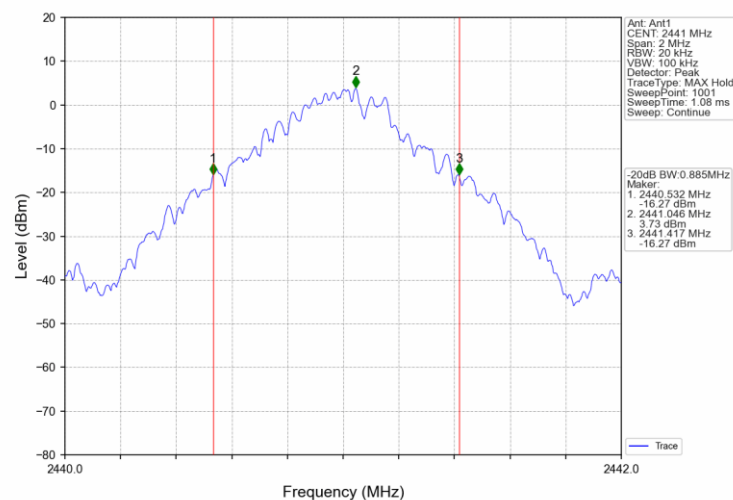
### Test result

| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|           |         |                 |             |     | Result               | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.884                | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 0.885                | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 0.884                | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.306                | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.305                | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.312                | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.297                | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.296                | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.294                | /     | Pass    |

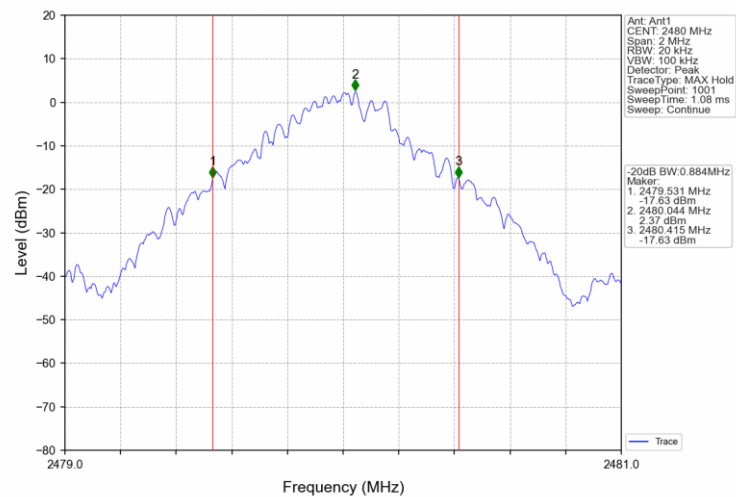
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



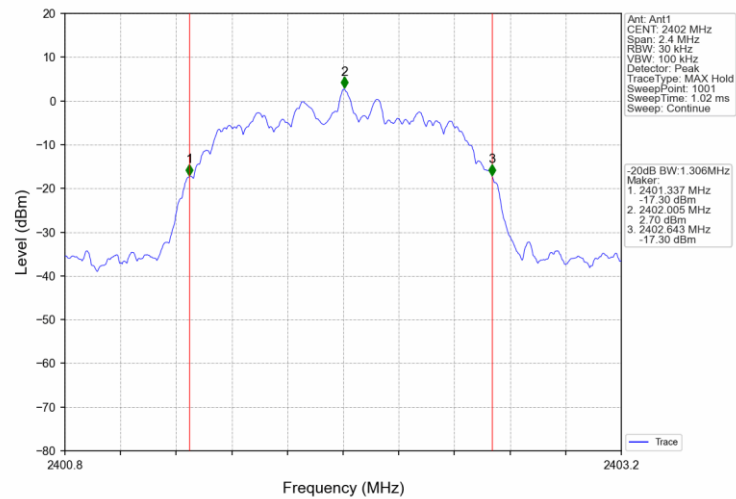
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



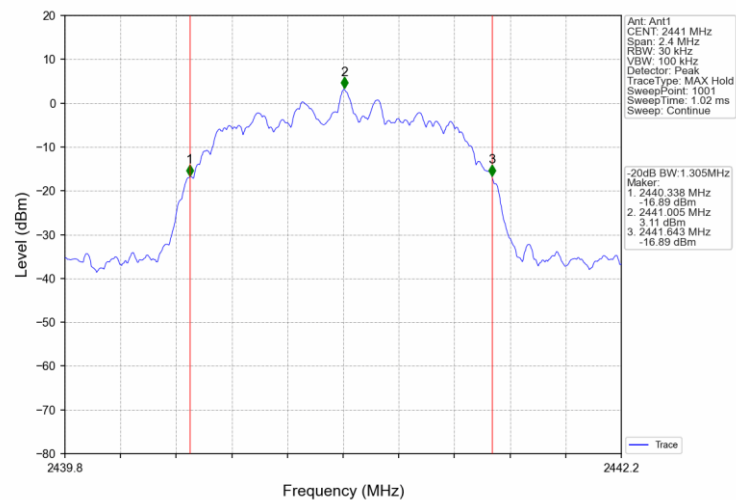
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



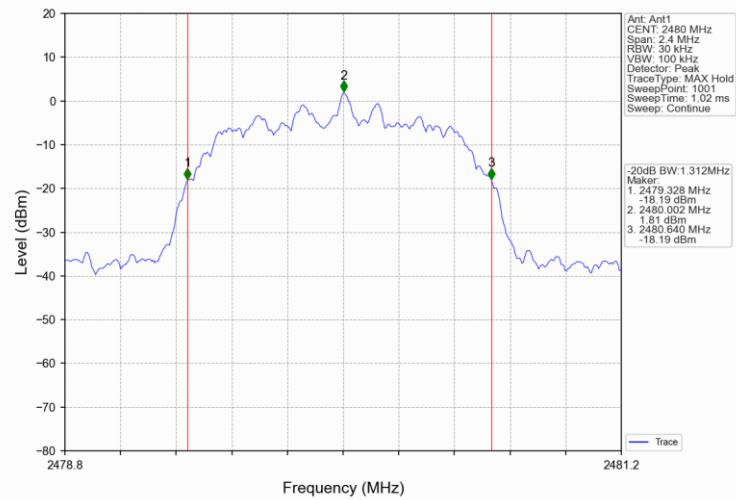
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



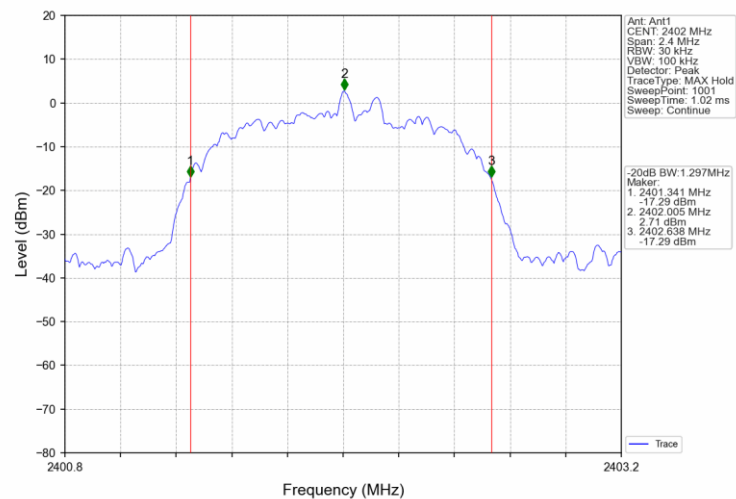
## Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



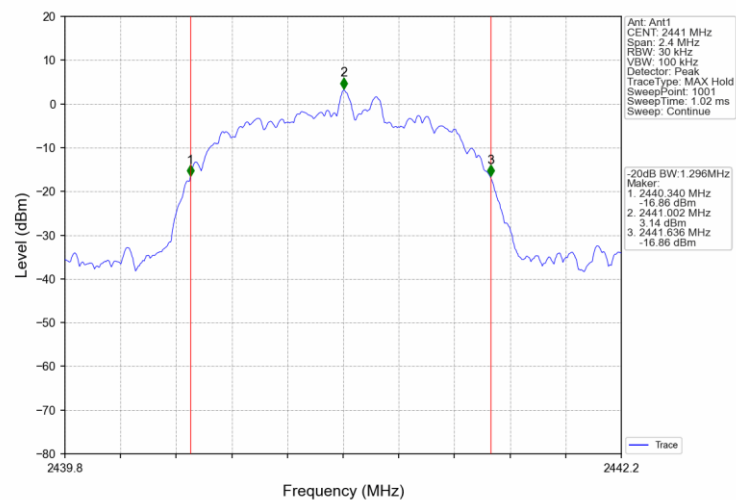
## Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



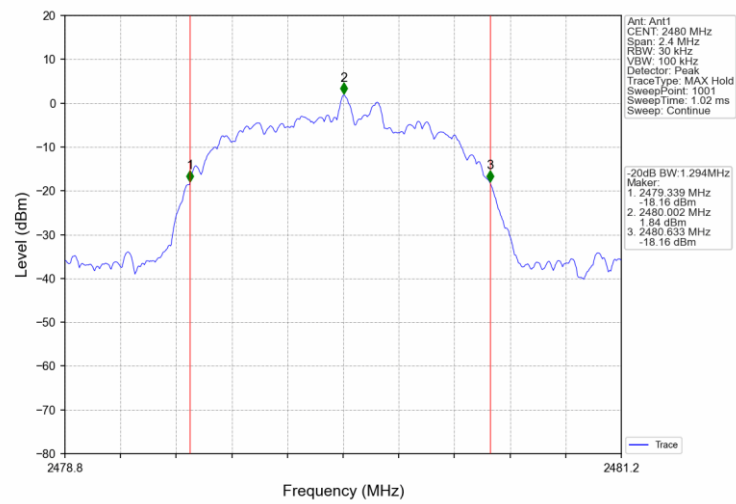
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 9.4 Carrier Frequency Separation

### Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit to hopping mode.
3. Use the following spectrum analyzer settings:  
Span = wide enough to capture the peaks of two adjacent channels, RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. VBW  $\geq$  RBW, Sweep = auto, Detector function = peak.
4. By using the Max-Hold function record the separation of two adjacent channels.
5. Measure the frequency difference of these two adjacent channels by spectrum analyzer marker function. Record the results.
6. Repeat above procedures until all frequencies measured were complete.

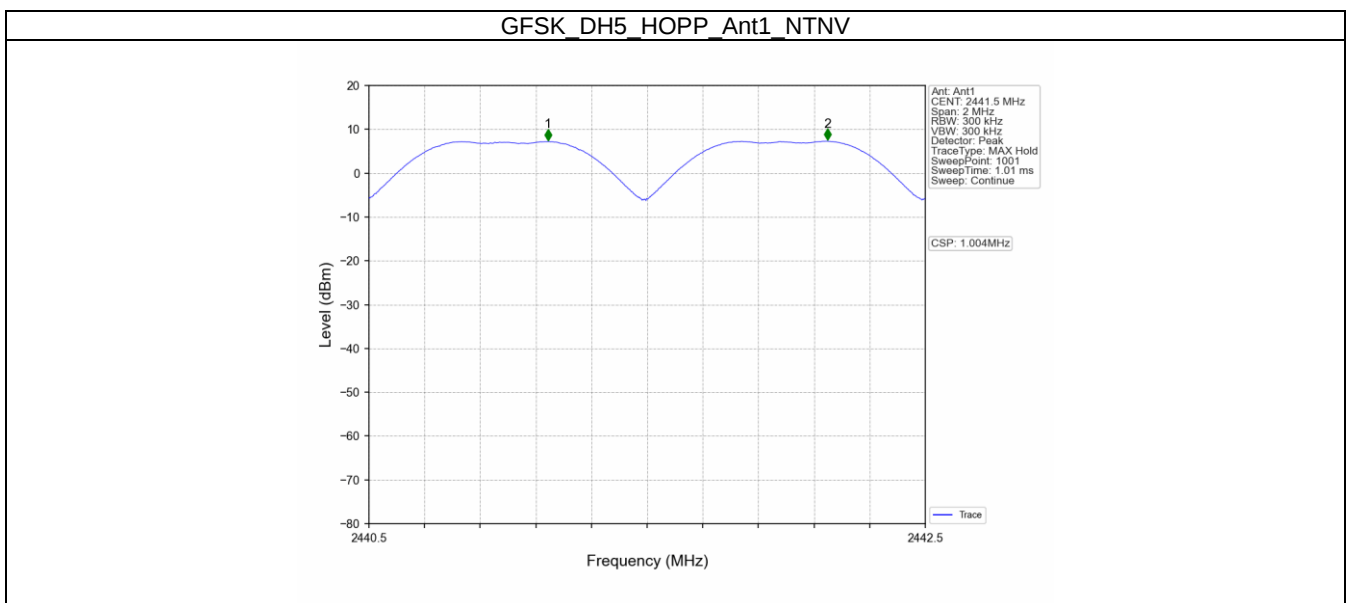
### Limit

According to §15.247(a)(1), Carrier Frequency Separation limit as below:

| Limit<br>kHz                                                         |
|----------------------------------------------------------------------|
| $\geq 25\text{kHz}$ or $2/3$ of the 20 dB bandwidth which is greater |

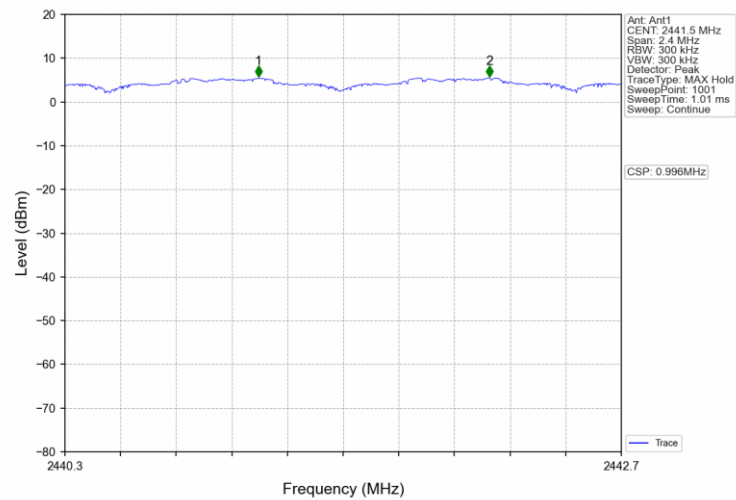
Test result: The measurement was performed with the typical configuration (normal hopping status).

| Ant1      |         |                 |             |                          |                      |              |         |
|-----------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK      | SISO    | HOPP            | DH5         | 1.004                    | 0.885                | $\geq 0.885$ | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 0.996                    | 1.312                | $\geq 0.875$ | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH5        | 1.001                    | 1.297                | $\geq 0.865$ | Pass    |

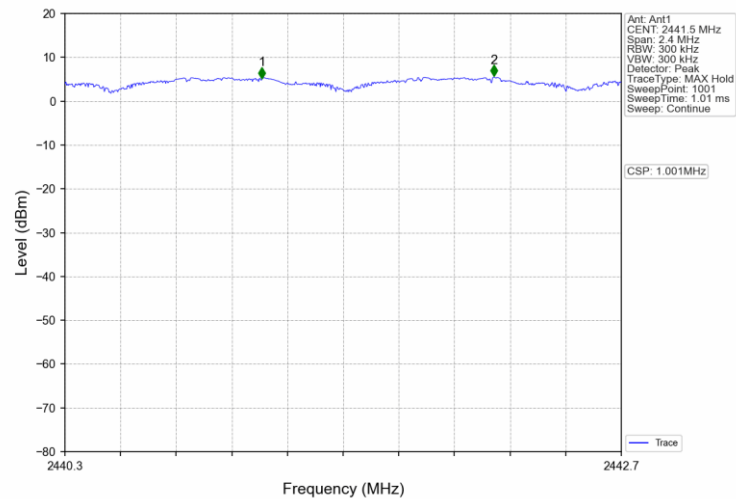




Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 9.5 Number of Hopping Frequencies

### Test Method

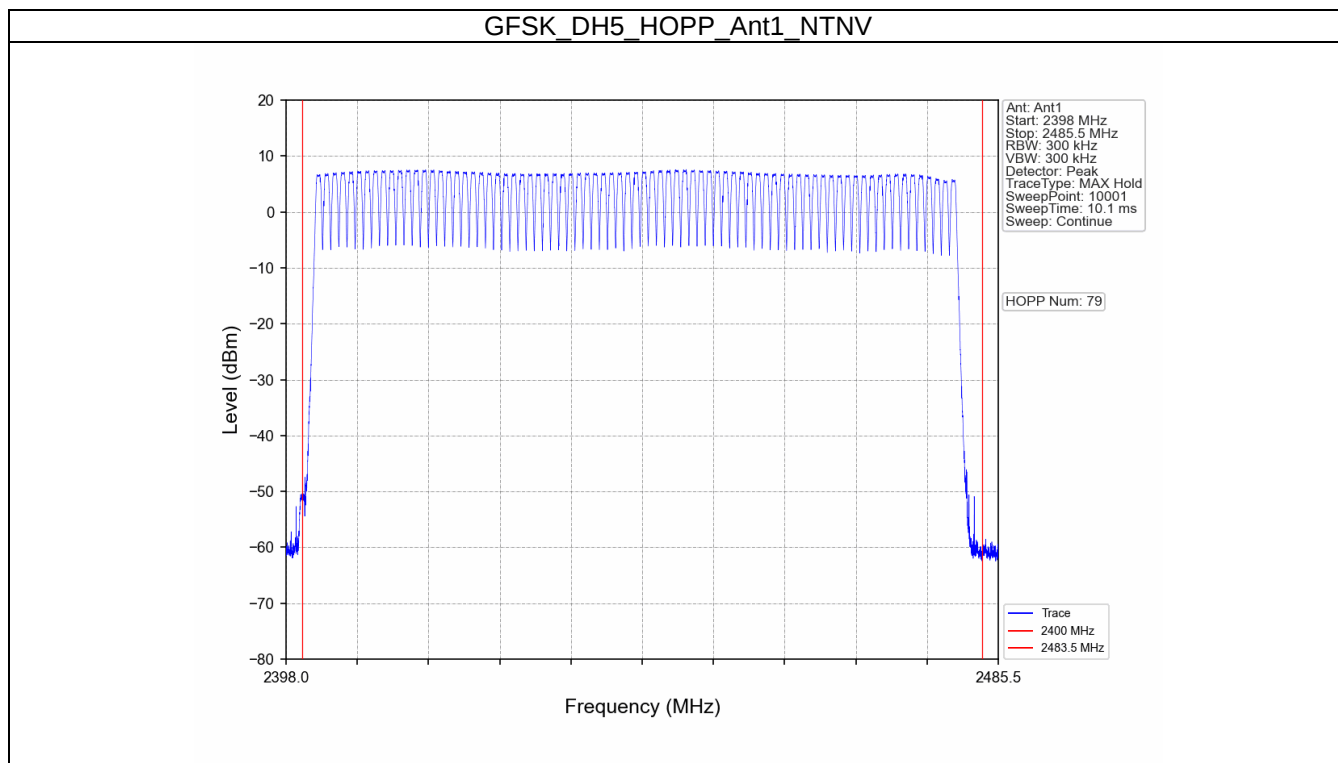
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit to hopping mode.
3. Use the following spectrum analyzer settings:  
Span = the frequency band of operation, RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller, VBW  $\geq$  RBW, Sweep = auto, Detector function = peak, Trace=Max hold.
4. Allow the trace to stabilize. It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

### Limit

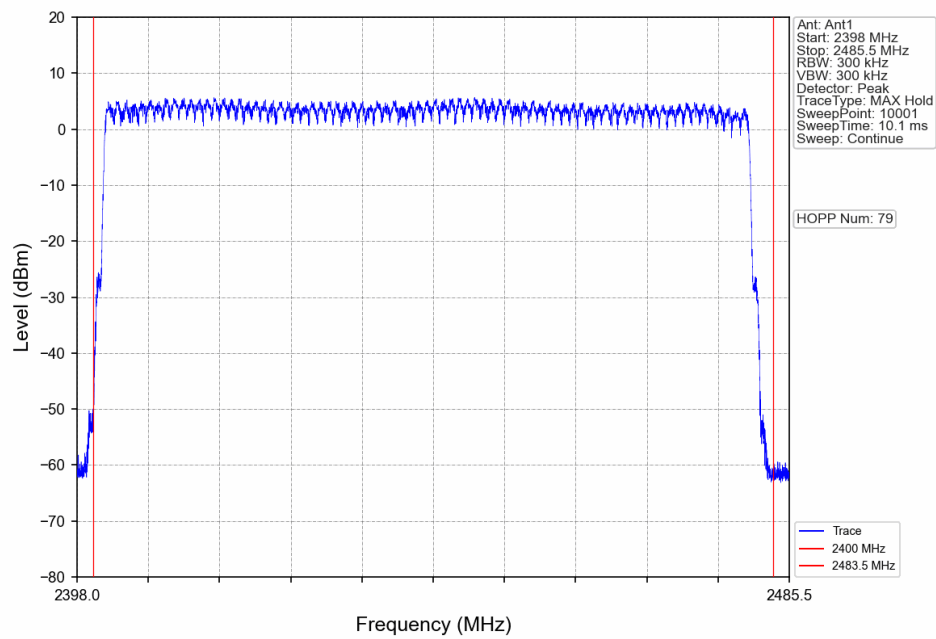
According to §15.247(a)(1)(iii), Number of Hopping Frequencies limit as below:

$$\frac{\text{Limit number}}{\geq 15}$$

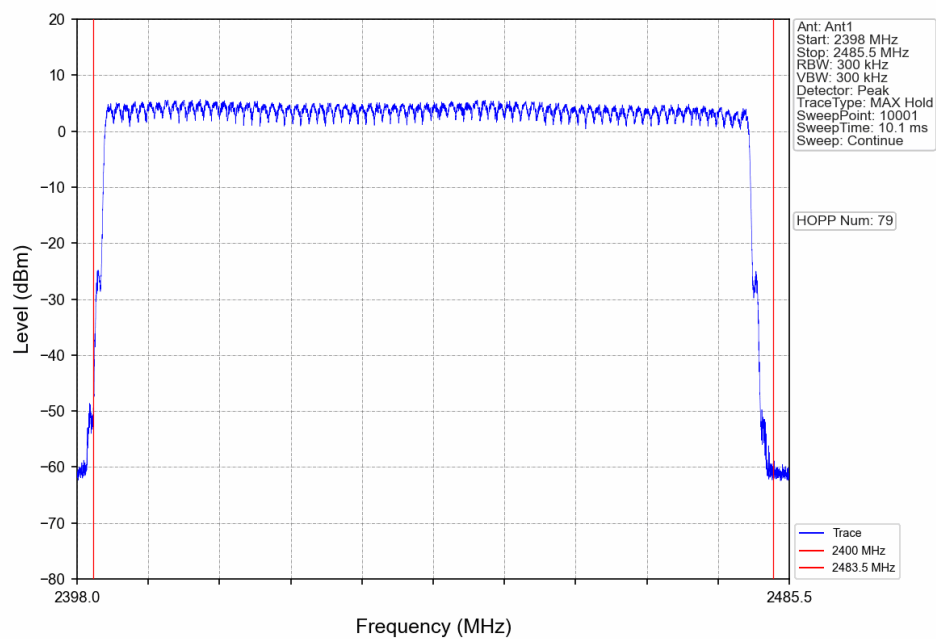
| Mode      | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies |           | Verdict |
|-----------|---------|-----------------|-------------|----------------------------|-----------|---------|
|           |         |                 |             | ANT1                       | Limit     |         |
| GFSK      | SISO    | HOPP            | DH5         | 79                         | $\geq 15$ | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 79                         | $\geq 15$ | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH5        | 79                         | $\geq 15$ | Pass    |



## Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 9.6 Dwell Time

### Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit to hopping mode.
3. Span: Zero span, centered on a hopping channel.
4. RBW shall be  $\leq$  channel spacing and where possible RBW should be set  $\gg 1 / T$ , where T is the expected dwell time per channel.
5. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
6. Detector function: Peak.
7. Trace: Max hold. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

### Limit

According to §15.247(a)(1)(iii), Dwell Time limit as below:

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

## Dwell Time

### Dwell time

The maximum dwell time shall be 0.4 s.

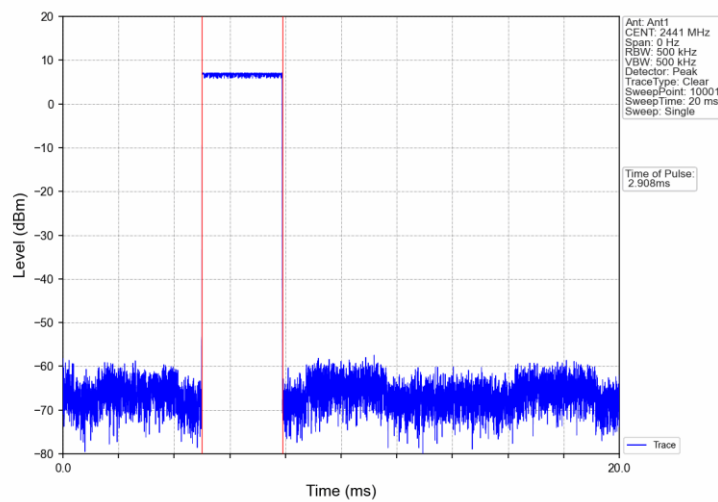
According to the Bluetooth Core Specification,

The duration for dwell time calculation:  $0.4 \text{ [s]} * \text{hopping number} = 0.4 \text{ [s]} * 79 \text{ [ch]} = 31.6 \text{ [s]}$

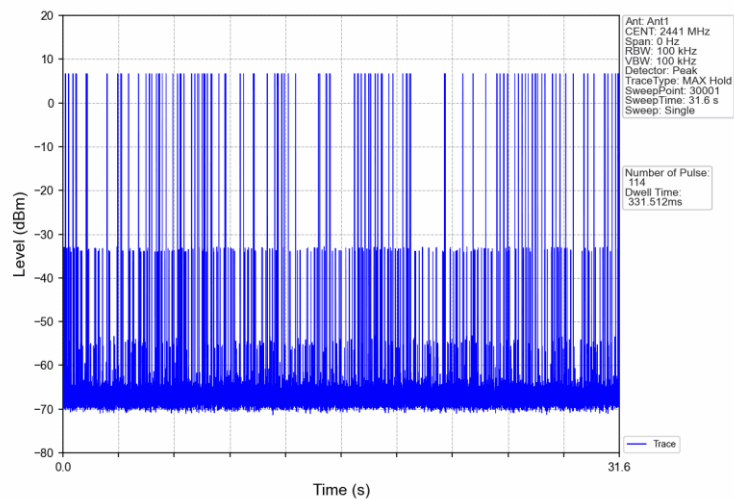
The Dwell Time = Burst Width \* Total Hops.

| Ant1      |         |                 |             |                               |                        |                                    |                 |            |         |
|-----------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Duration of Single Pulse (ms) | Observation Period (s) | Num of Pulse in Observation Period | Dwell Time (ms) | Limit (ms) | Verdict |
| GFSK      | SISO    | HOPP            | DH5         | 2.908                         | 31.600                 | 114                                | 331.512         | <=400      | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 2.898                         | 31.600                 | 102                                | 295.596         | <=400      | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH5        | 2.900                         | 31.600                 | 107                                | 310.300         | <=400      | Pass    |

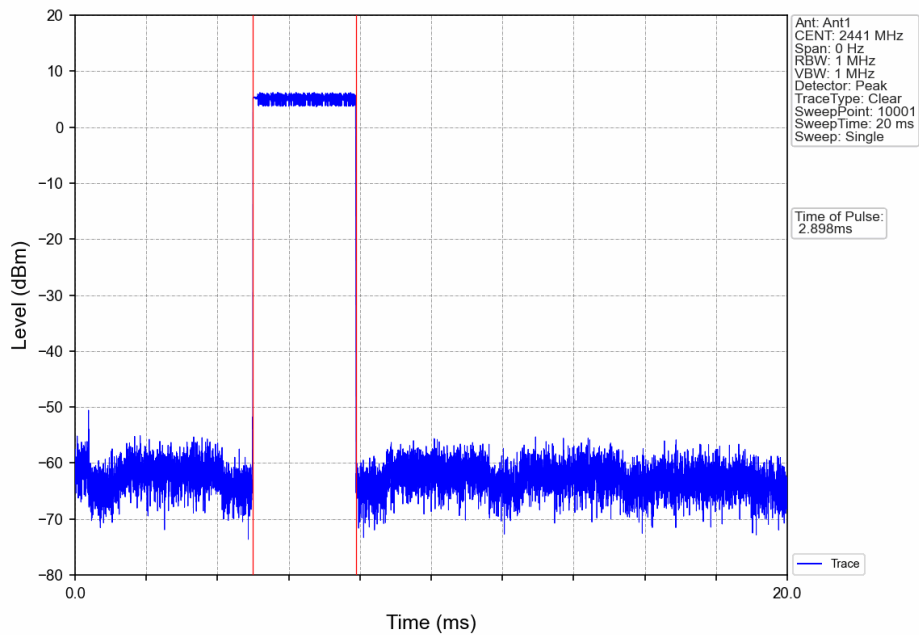
GFSK\_DH5\_HOPP\_Ant1\_NTNV



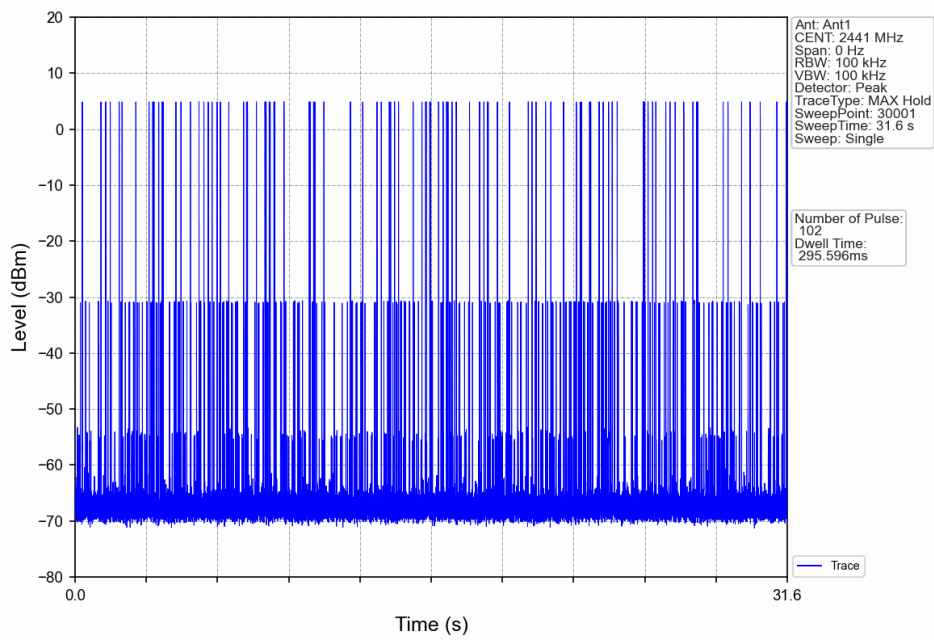
GFSK\_DH5\_HOPP\_Ant1\_NTNV



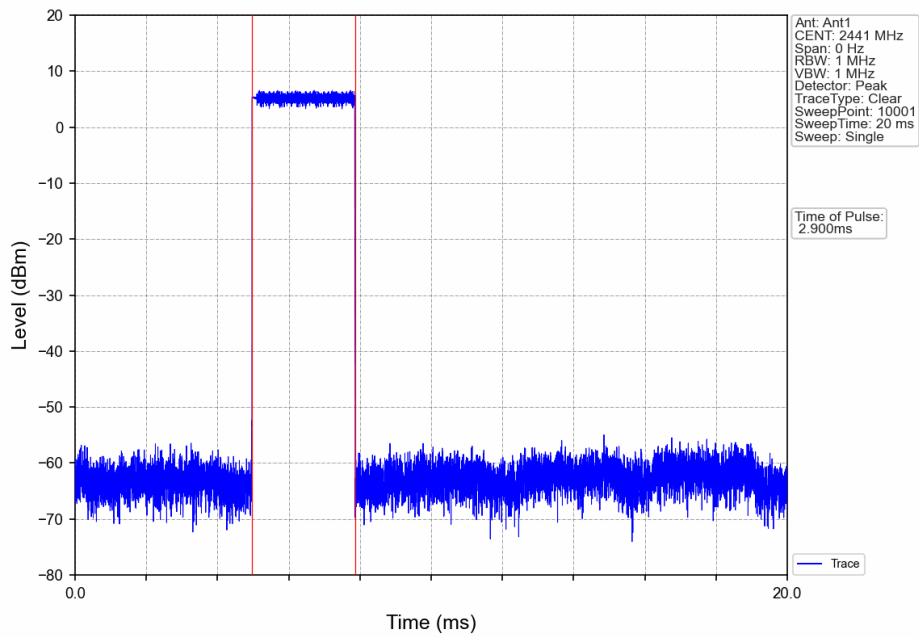
## Pi/4DQPSK 2DH5 HOPP\_Ant1 NTN



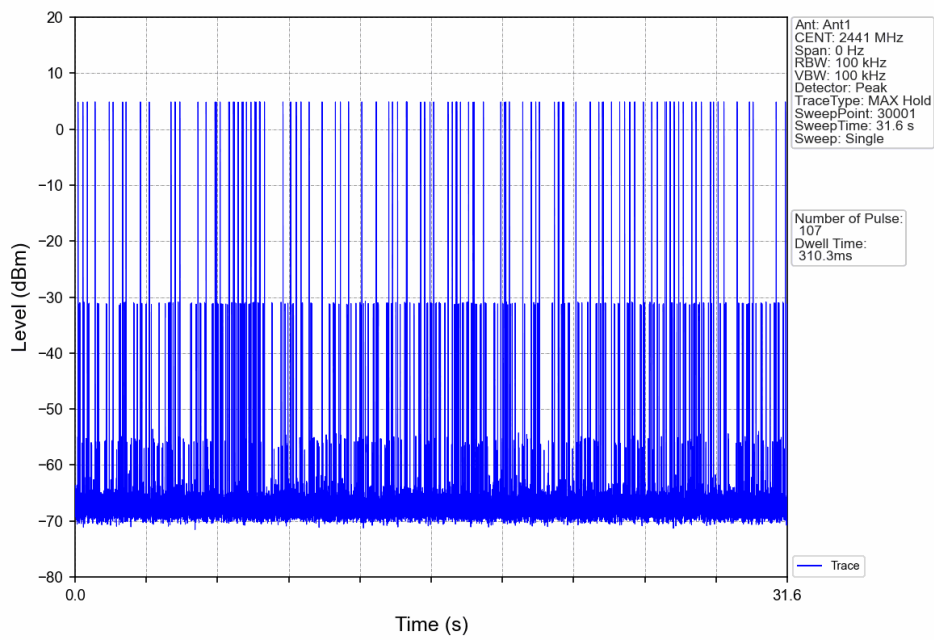
## Pi/4DQPSK 2DH5 HOPP\_Ant1 NTN



### 8DPSK 3DH5 HOPP Ant1 NTN



### 8DPSK 3DH5 HOPP Ant1 NTN



## 9.7 Spurious RF Conducted Emissions

### Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector, Sweep = auto, Span = wide enough to capture the peak level of the in-band emission and all spurious emissions, Trace = max hold. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency.

### Limit

According to §15.247(d), Spurious RF Conducted Emissions limit as below:

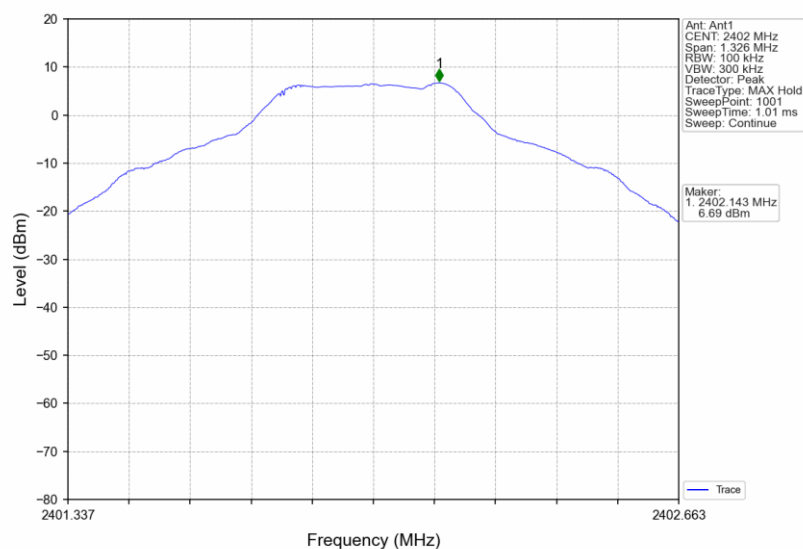
| Frequency Range<br>MHz | Limit (dBc) |
|------------------------|-------------|
| 30-25000               | -20         |

## Spurious RF Conducted Emissions

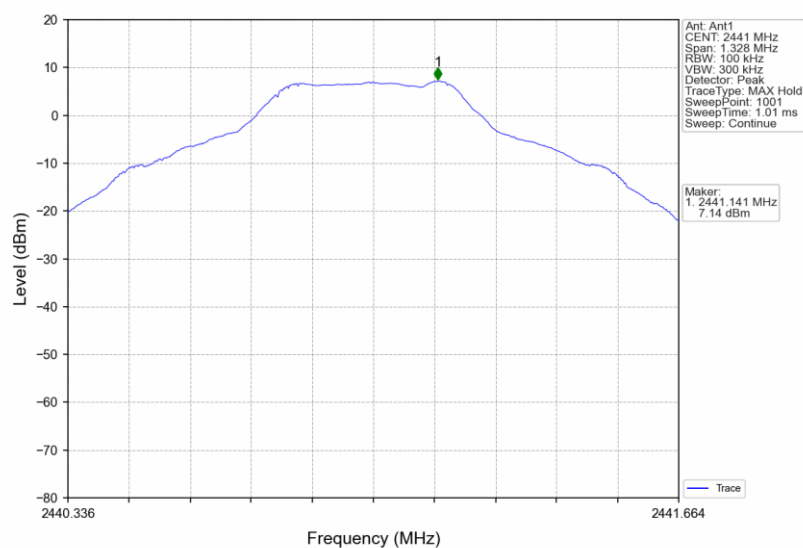
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK      | SISO    | 2402            | DH5         | 1   | 6.69                     | -13.31      | Pass    |
|           |         | 2441            | DH5         | 1   | 7.14                     | -12.86      | Pass    |
|           |         | 2480            | DH5         | 1   | 5.69                     | -14.31      | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 4.72                     | -15.28      | Pass    |
|           |         | 2441            | 2DH5        | 1   | 5.15                     | -14.85      | Pass    |
|           |         | 2480            | 2DH5        | 1   | 3.91                     | -16.09      | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 4.84                     | -15.16      | Pass    |
|           |         | 2441            | 3DH5        | 1   | 5.24                     | -14.76      | Pass    |
|           |         | 2480            | 3DH5        | 1   | 3.89                     | -16.11      | Pass    |

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

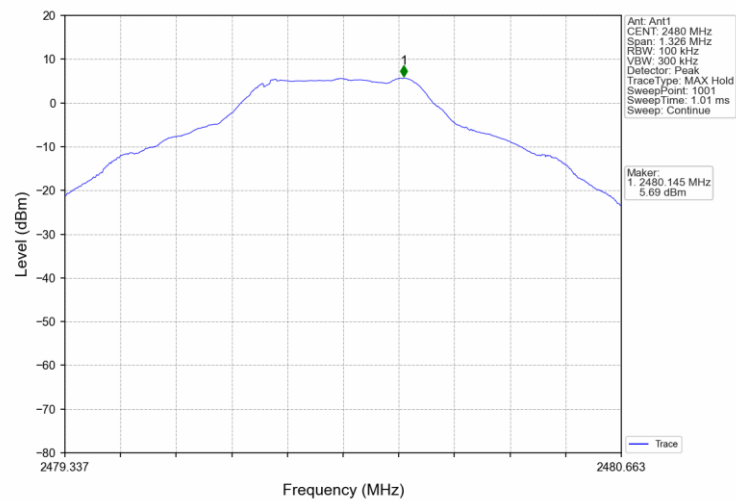
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



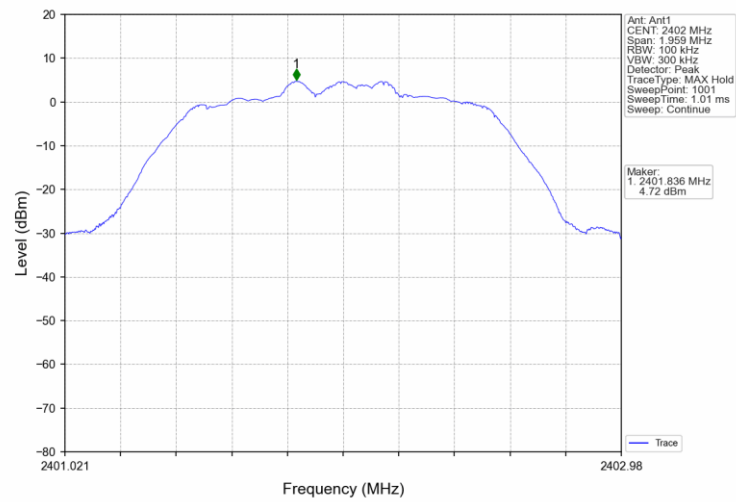
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



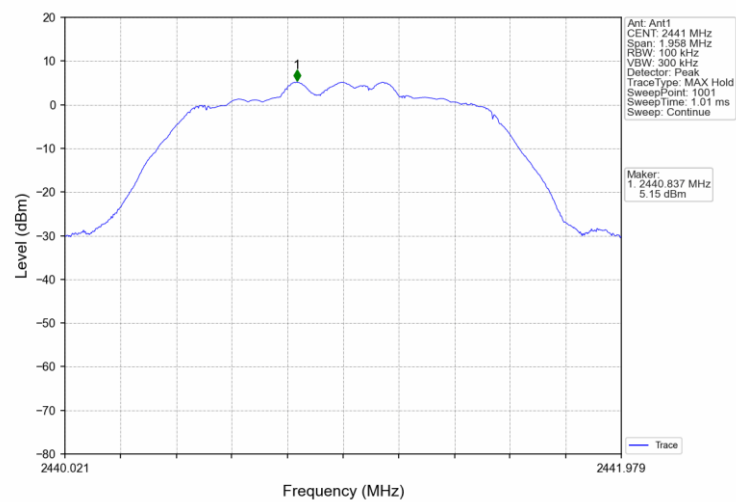
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



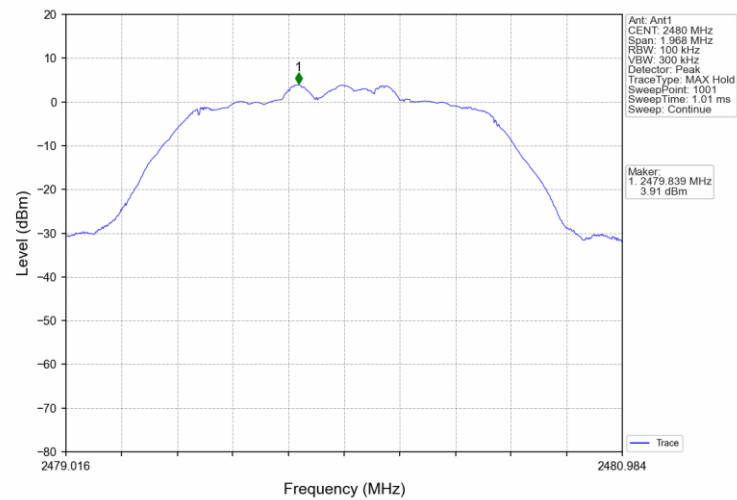
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



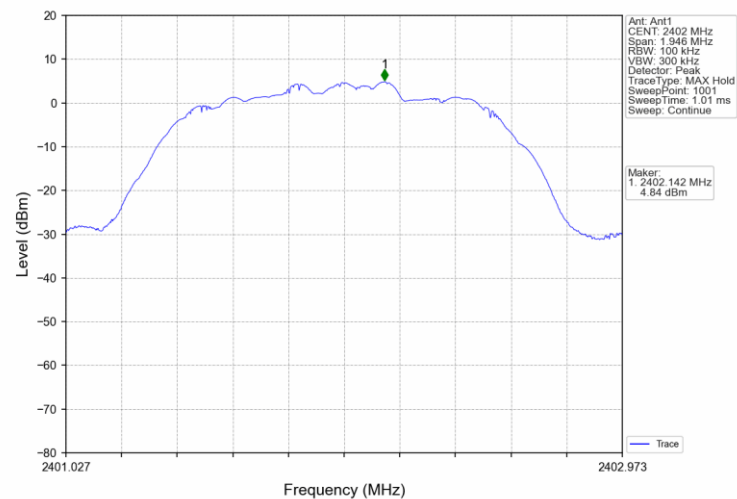
## Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



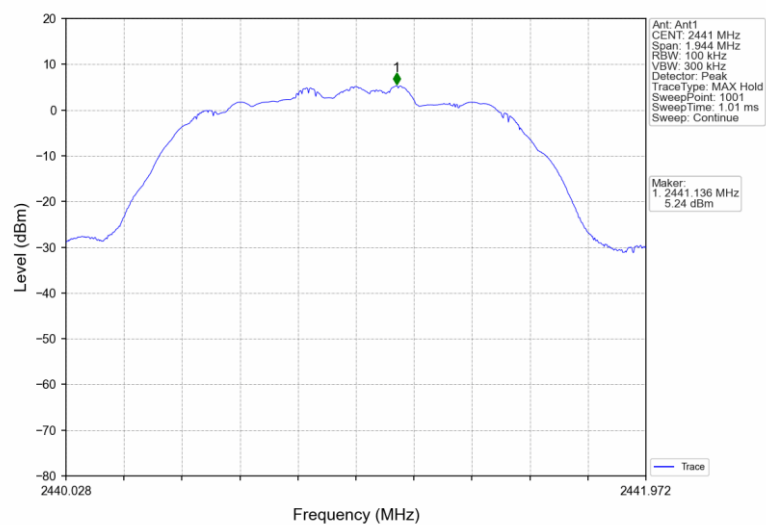
## Pi/4DQPSK 2DH5\_HCH 2480MHz\_Ant1\_NTNV



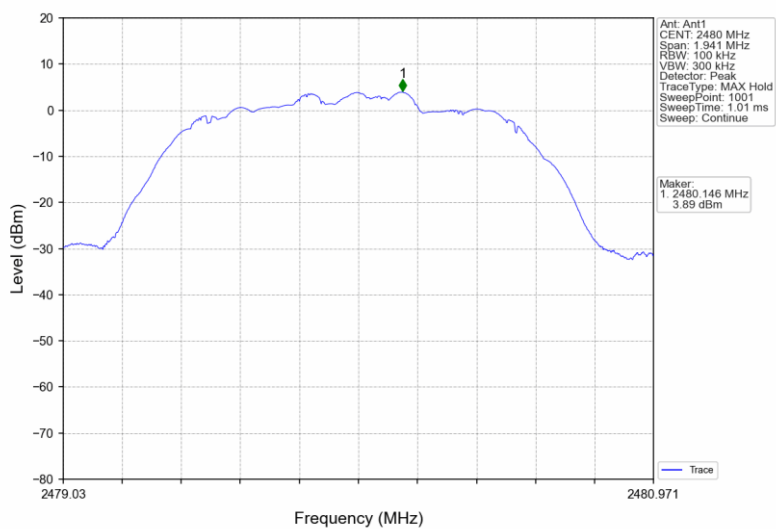
## 8DPSK\_3DH5\_LCH 2402MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_MCH 2441MHz\_Ant1\_NTNV

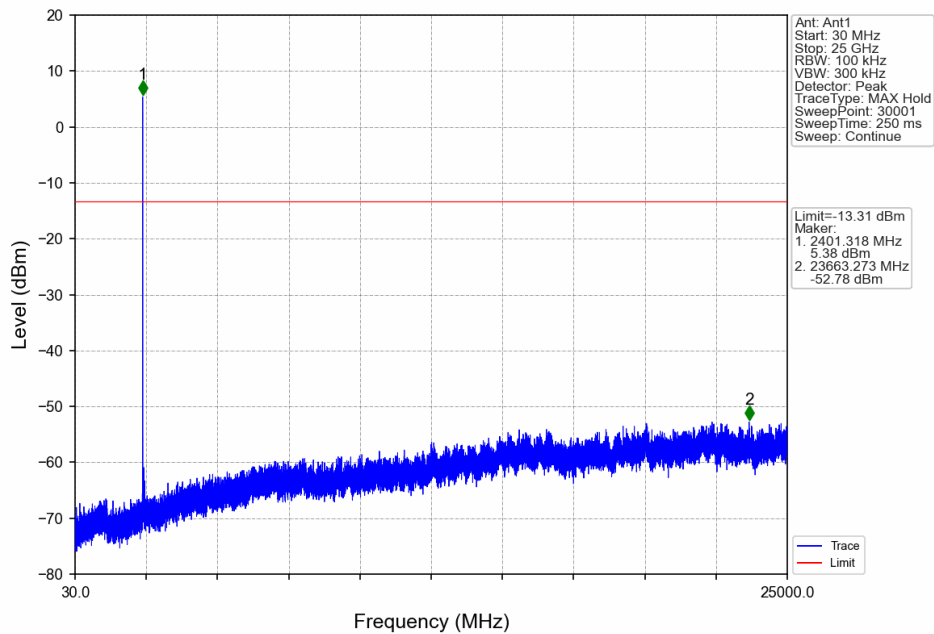


8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV

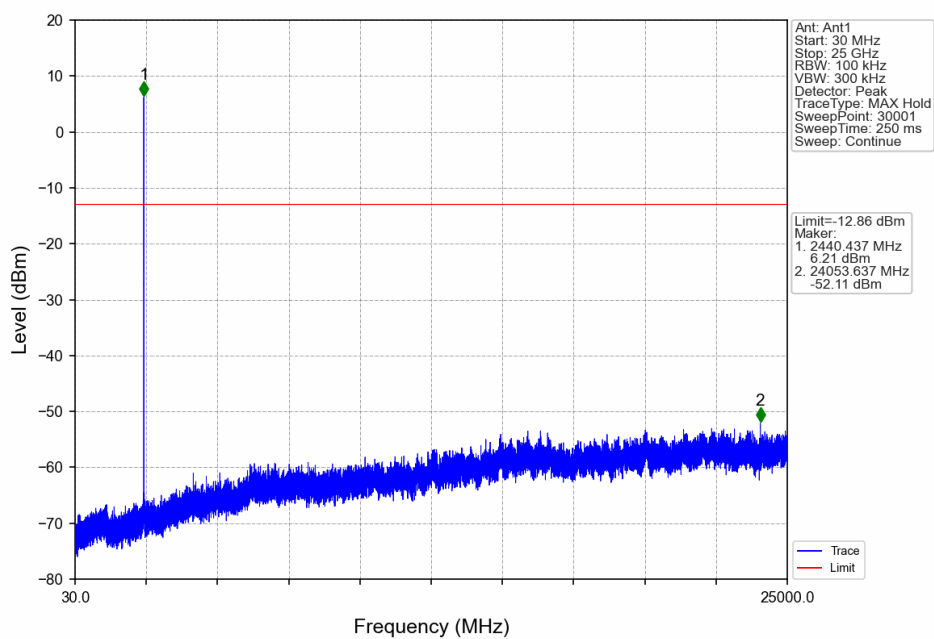


CSE :

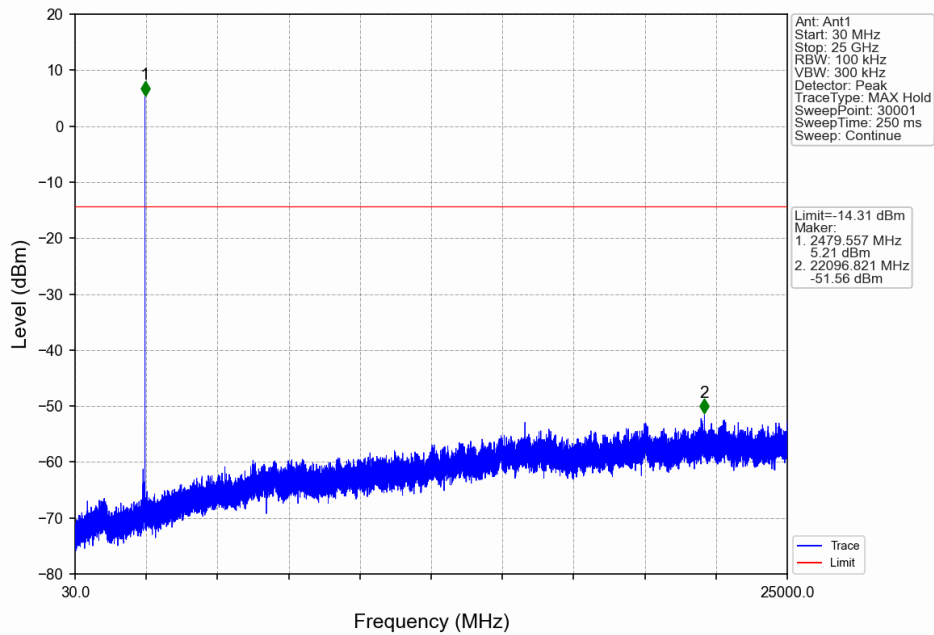
## GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



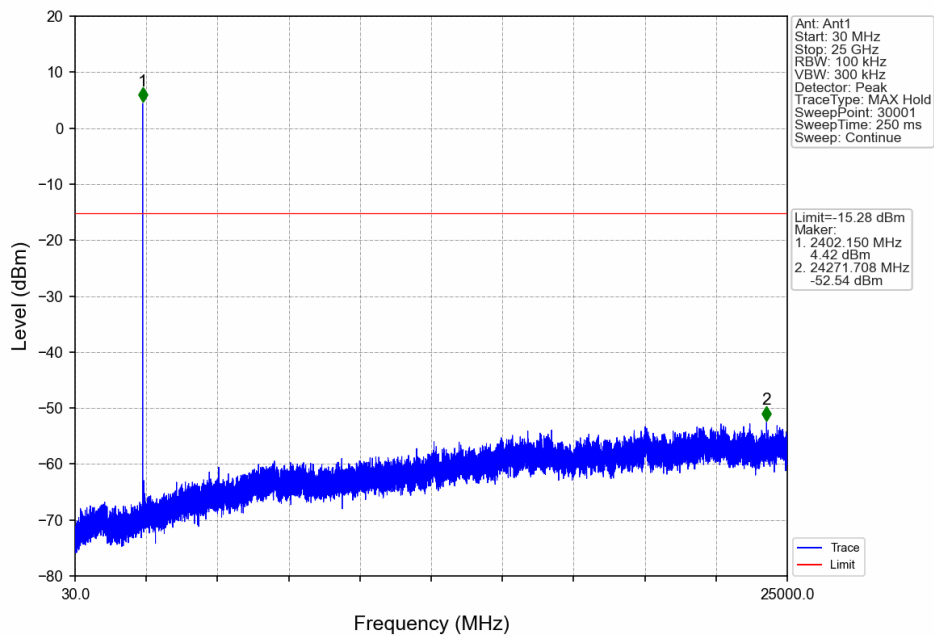
## GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



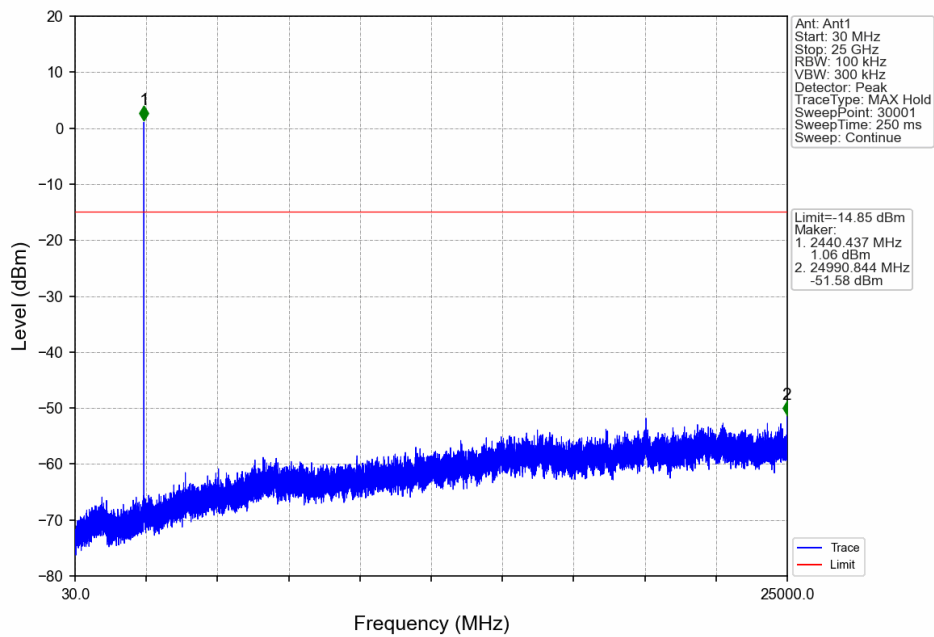
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



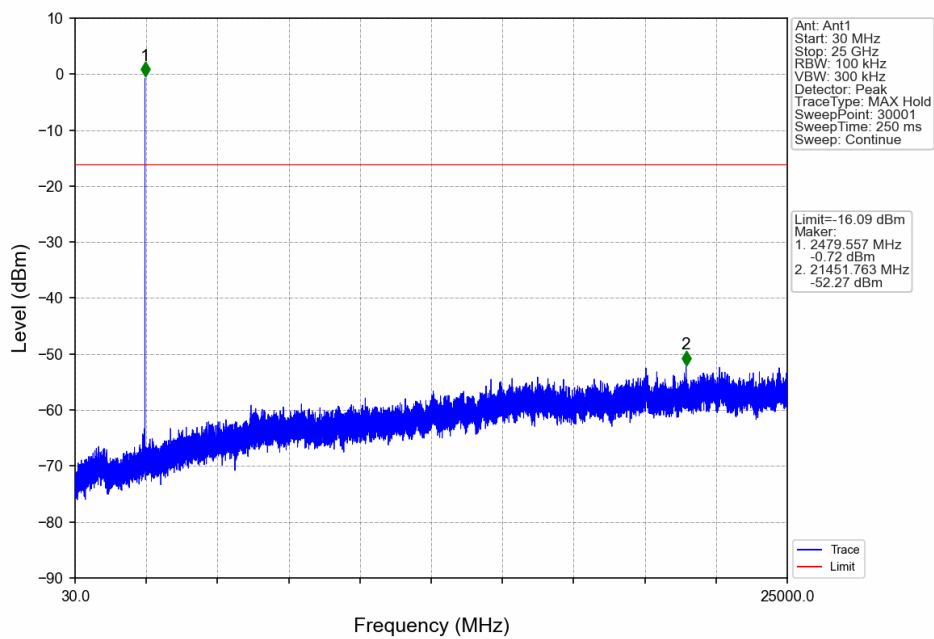
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



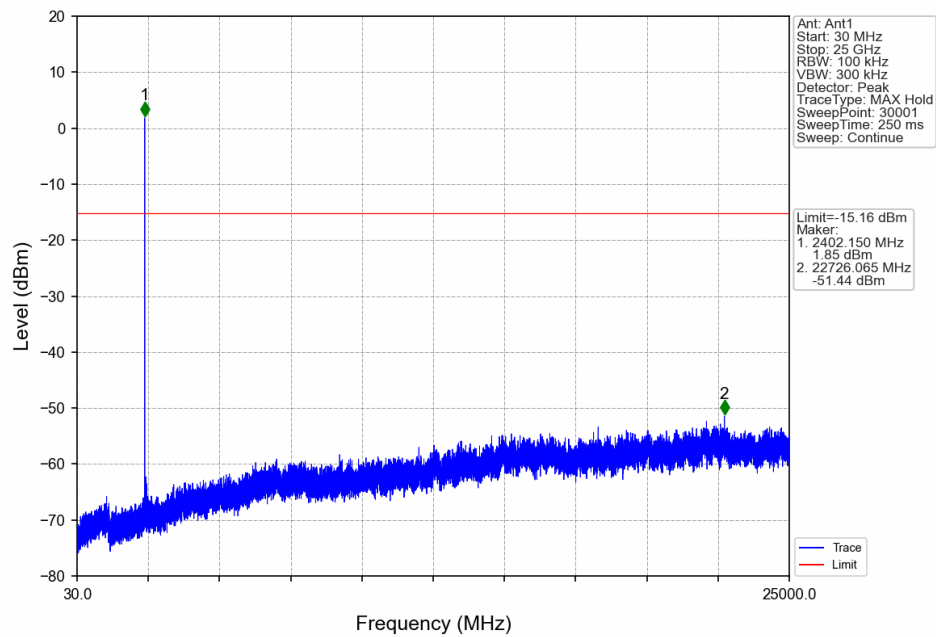
## Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



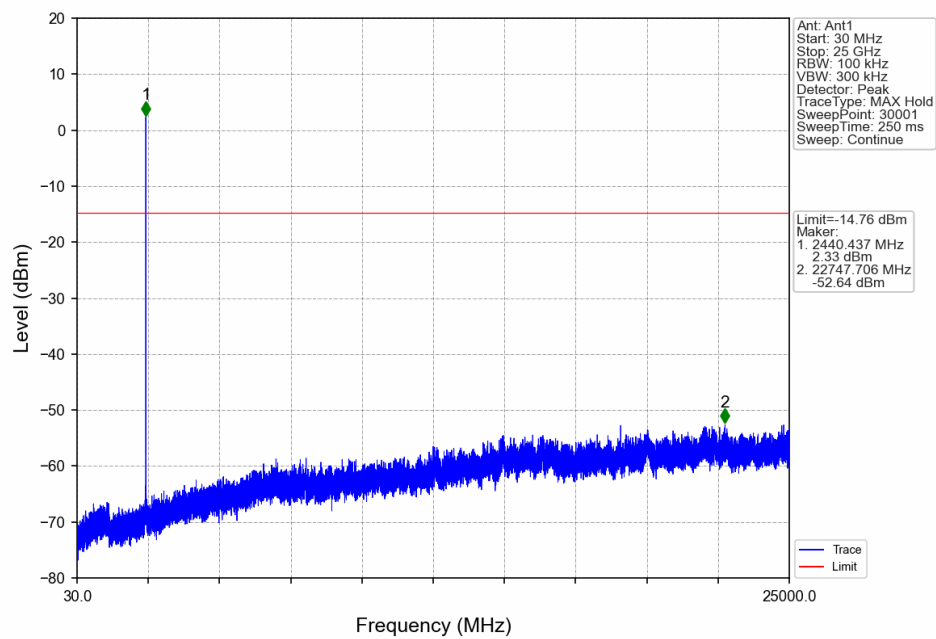
## Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



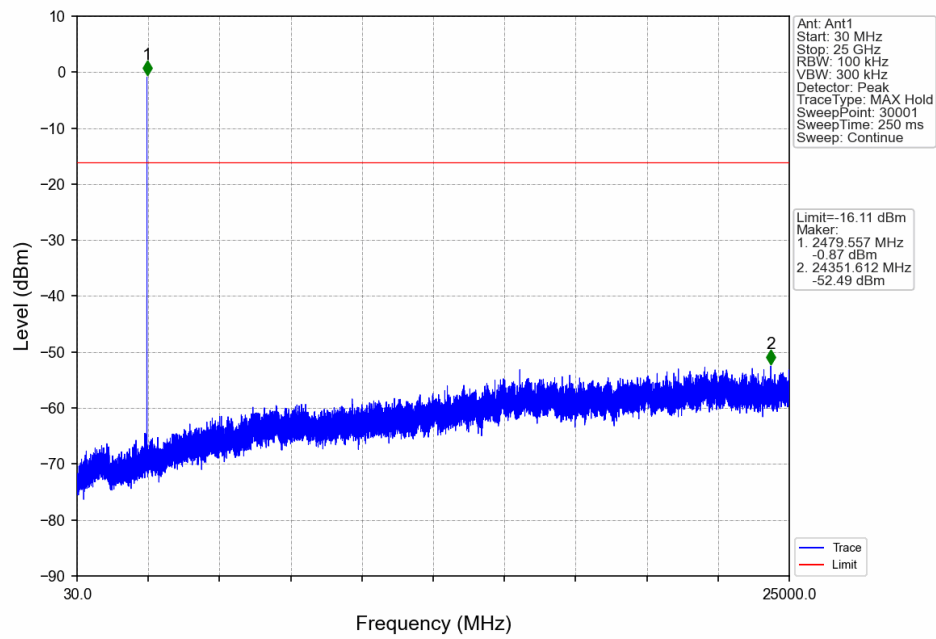
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 9.8 Band Edge Testing

### Test Method

1. The RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously. Set the EUT to the lowest frequency channel.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector, Trace: Max hold, Sweep time: Coupled, Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation. Allow the trace to stabilize.
4. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.
5. Set the EUT to the highest frequency channel and repeat step 2) to 4)
6. Enable the EUT hopping mode, repeat the test.

### Limit:

According to §15.247(d), Band Edge limit as below:

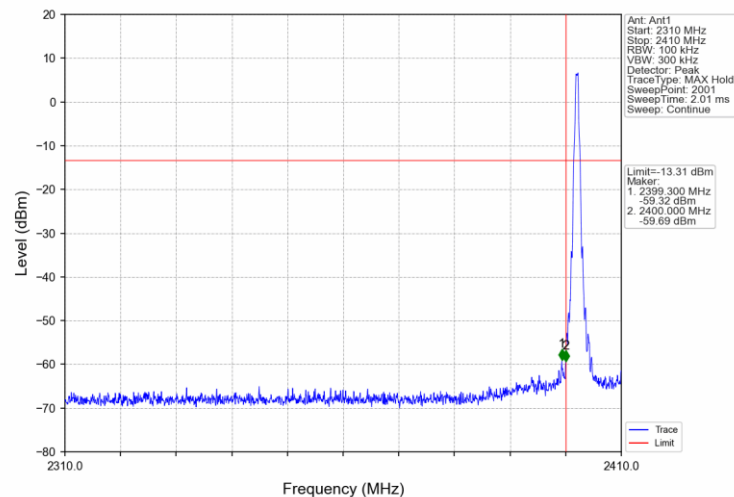
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

## Band Edge

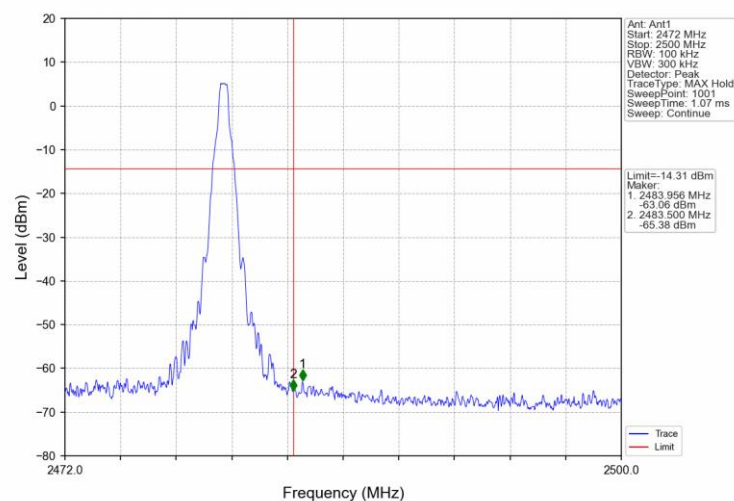
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK      | SISO    | 2402            | DH5         | 1   | 6.69                     | -13.31      | Pass    |
|           |         | 2441            | DH5         | 1   | 7.14                     | -12.86      | Pass    |
|           |         | 2480            | DH5         | 1   | 5.69                     | -14.31      | Pass    |
|           |         | HOPP            | DH5         | 1   | 7.09                     | -12.91      | Pass    |
|           |         | HOPP            | DH5         | 1   | 7.09                     | -12.91      | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 4.72                     | -15.28      | Pass    |
|           |         | 2441            | 2DH5        | 1   | 5.15                     | -14.85      | Pass    |
|           |         | 2480            | 2DH5        | 1   | 3.91                     | -16.09      | Pass    |
|           |         | HOPP            | 2DH5        | 1   | 5.39                     | -14.61      | Pass    |
|           |         | HOPP            | 2DH5        | 1   | 5.39                     | -14.61      | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 4.84                     | -15.16      | Pass    |
|           |         | 2441            | 3DH5        | 1   | 5.24                     | -14.76      | Pass    |
|           |         | 2480            | 3DH5        | 1   | 3.89                     | -16.11      | Pass    |
|           |         | HOPP            | 3DH5        | 1   | 5.53                     | -14.47      | Pass    |
|           |         | HOPP            | 3DH5        | 1   | 5.53                     | -14.47      | Pass    |

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

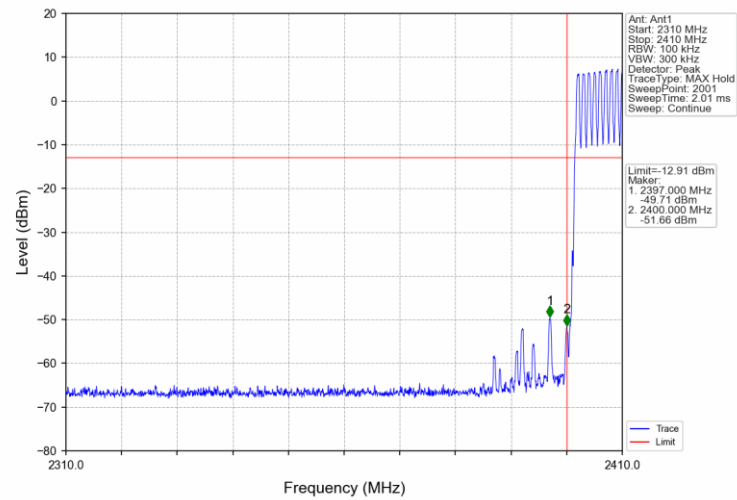
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



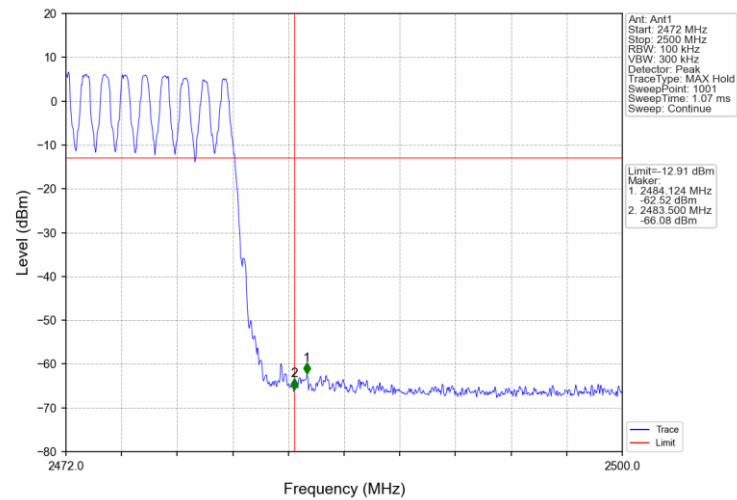
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



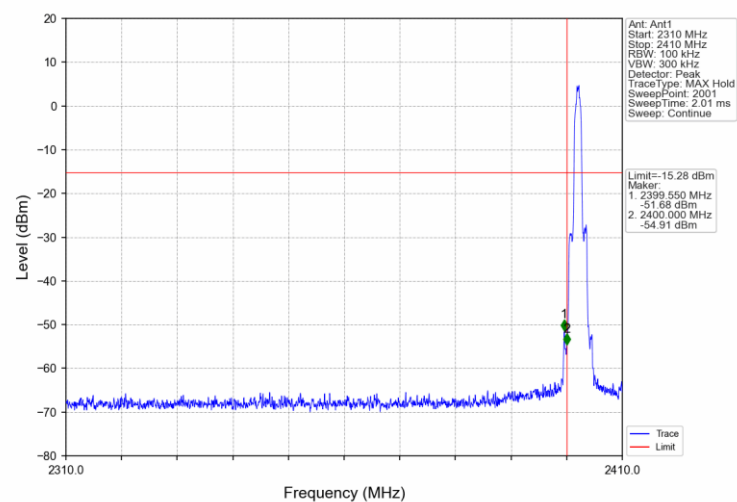
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



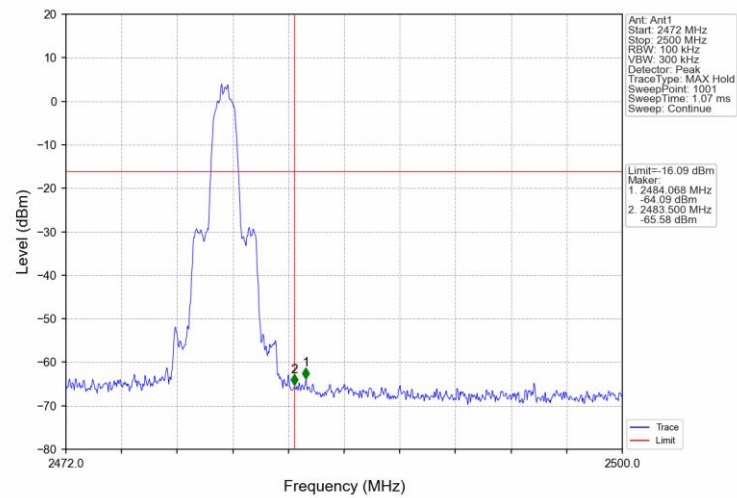
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



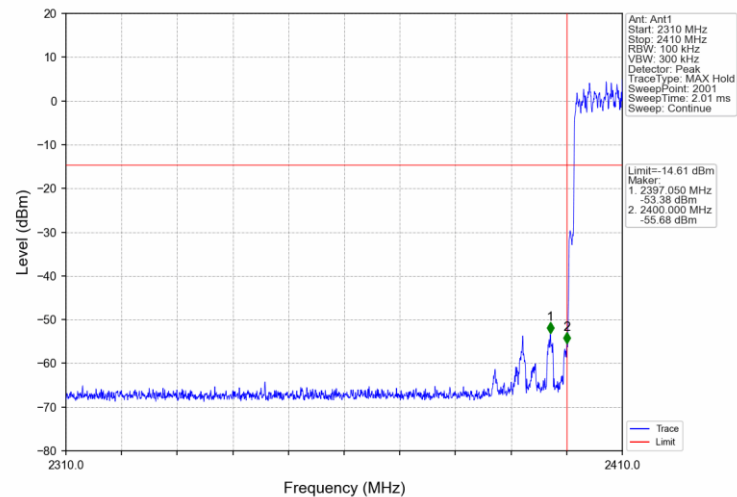
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



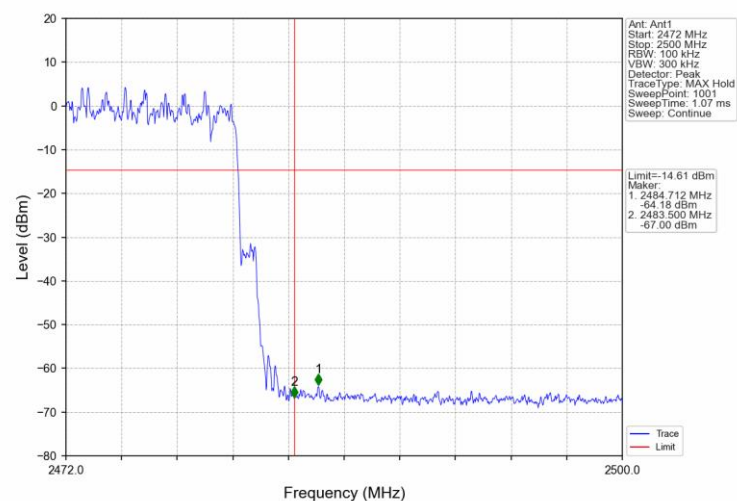
## Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



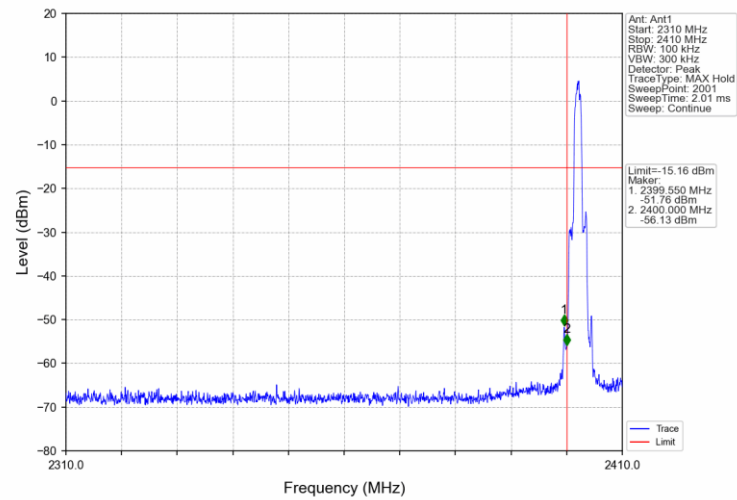
## Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



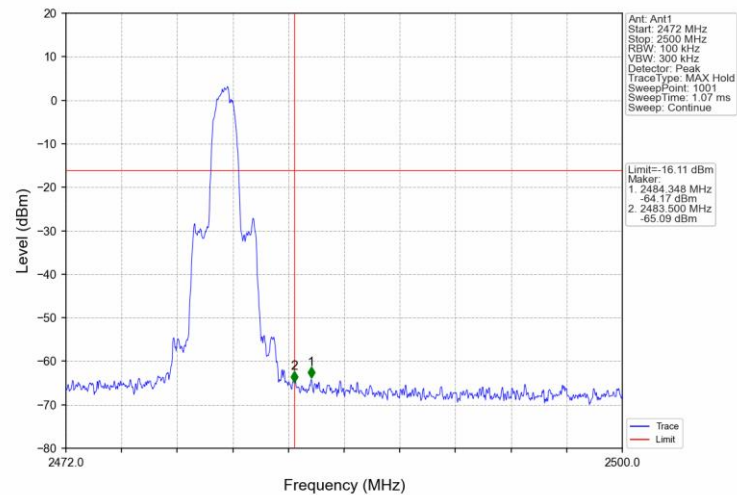
## Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



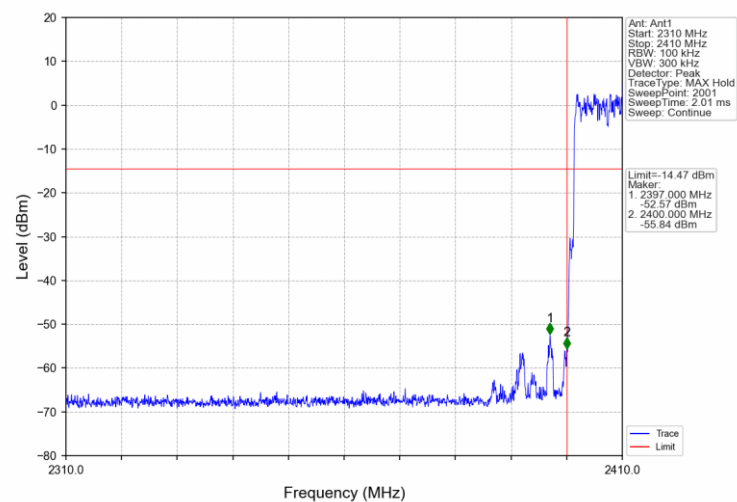
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



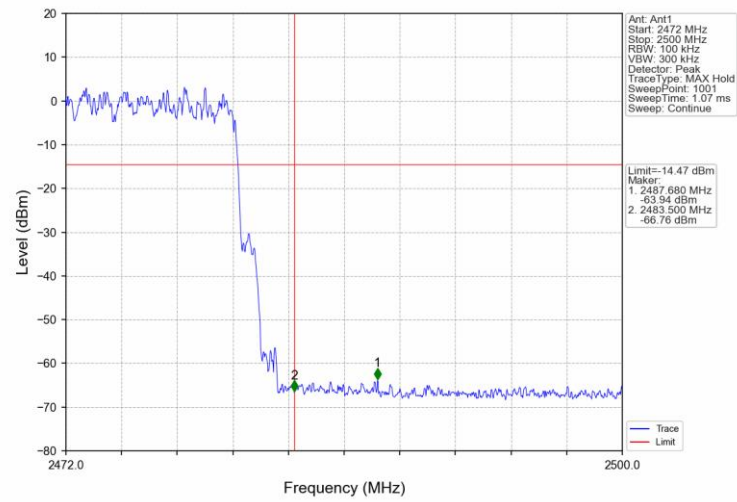
## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 9.9 Spurious Radiated Emissions for Transmitter

### Test Method

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meters chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
6. Use the following test receiver settings According to C63.10:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz to 120KHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = QP; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.

For average measurement:

The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle  $< 98\%$ ) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $20\log(1/\text{duty cycle})$ ).

The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle  $> 98\%$ ) for Average detection (AV) at frequency above 1GHz.

7. Repeat above procedures until all frequencies measured were complete.

## Spurious Radiated Emissions for Transmitter

### Limit

The radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

| Frequency<br>MHz | Field Strength<br>$\mu\text{V/m}$ | Field Strength<br>$\text{dB}\mu\text{V/m}$ | Detector | Measurement distance<br>meters |
|------------------|-----------------------------------|--------------------------------------------|----------|--------------------------------|
| 0.009-0.490      | 2400/F(kHz)                       | 48.5-13.8                                  | AV       | 300                            |
| 0.490-1.705      | 24000/F(kHz)                      | 33.8-23.0                                  | QP       | 30                             |
| 1.705-30         | 30                                | 29.5                                       | QP       | 30                             |
| 30-88            | 100                               | 40                                         | QP       | 3                              |
| 88-216           | 150                               | 43.5                                       | QP       | 3                              |
| 216-960          | 200                               | 46                                         | QP       | 3                              |
| 960-1000         | 500                               | 54                                         | QP       | 3                              |
| Above 1000       | 500                               | 54                                         | AV       | 3                              |
| Above 1000       | 5000                              | 74                                         | PK       | 3                              |

Note 1:  $\text{Limit } 3\text{m}(\text{dB}\mu\text{V/m}) = \text{Limit } 300\text{m}(\text{dB}\mu\text{V/m}) + 40\text{Log}(300\text{m}/3\text{m})$  (Below 30MHz)

Note 2:  $\text{Limit } 3\text{m}(\text{dB}\mu\text{V/m}) = \text{Limit } 30\text{m}(\text{dB}\mu\text{V/m}) + 40\text{Log}(30\text{m}/3\text{m})$  (Below 30MHz)

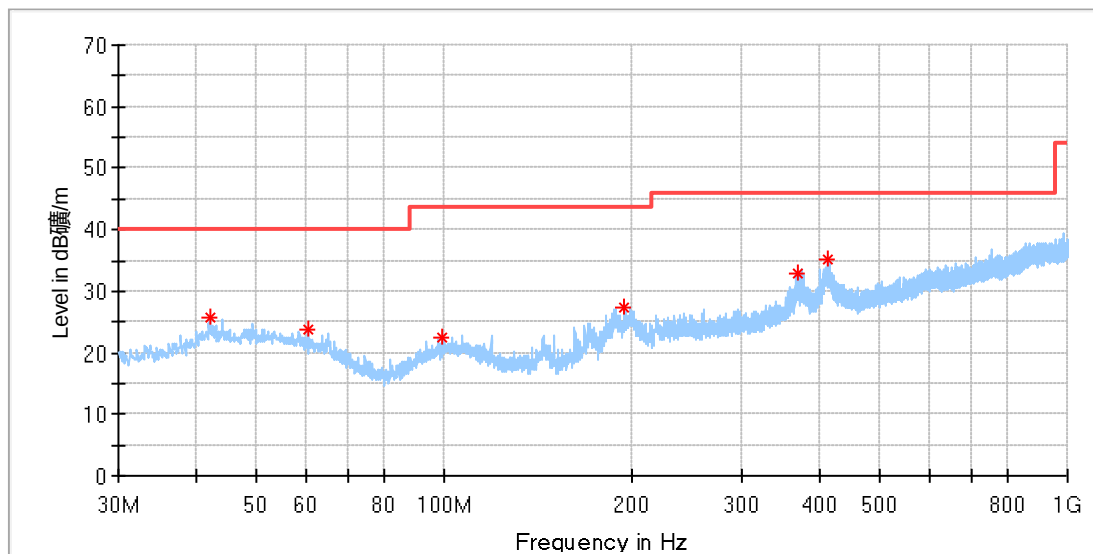
## Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the maximum EIRP, 8DPSK mode) test result is listed in the report.

### Transmitting spurious emission test result as below:

Test data\_30MHz to 1000MHz

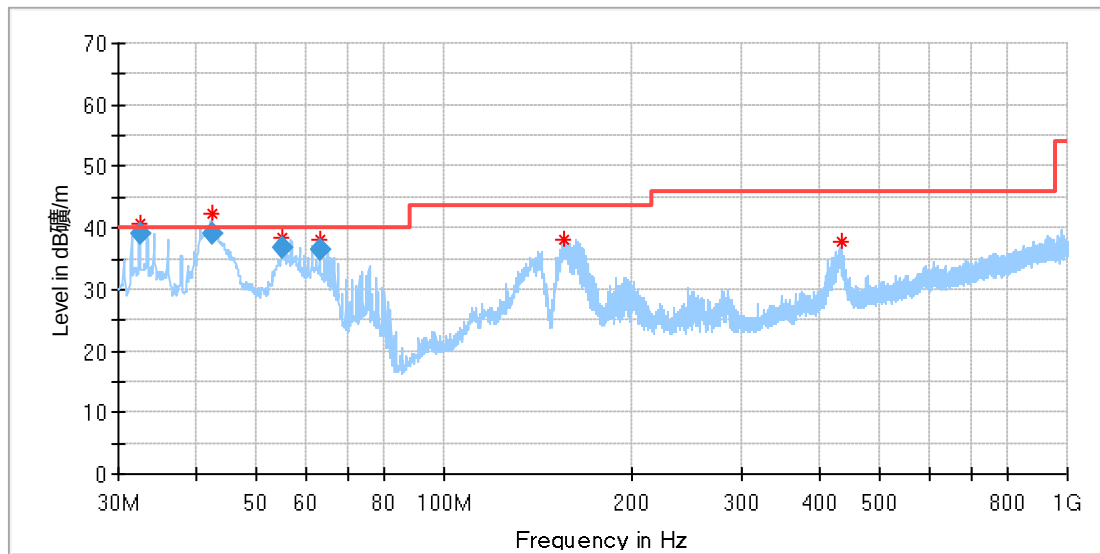


### Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 42.003750       | 25.62            | 40.00          | 14.38       | 100.0       | H   | 0.0           | 19.81        |
| 60.312500       | 23.82            | 40.00          | 16.18       | 200.0       | H   | 208.0         | 19.60        |
| 99.536875       | 22.45            | 43.50          | 21.05       | 200.0       | H   | 302.0         | 18.85        |
| 194.718125      | 27.29            | 43.50          | 16.21       | 100.0       | H   | 9.0           | 19.02        |
| 370.045625      | 33.03            | 46.00          | 12.97       | 100.0       | H   | 195.0         | 22.99        |
| 411.573750      | 35.22            | 46.00          | 10.78       | 200.0       | H   | 0.0           | 24.30        |

### Final\_Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| ---             | ---                | ---            | ---         | ---         |     | ---           | ---          |



### Critical Freqs

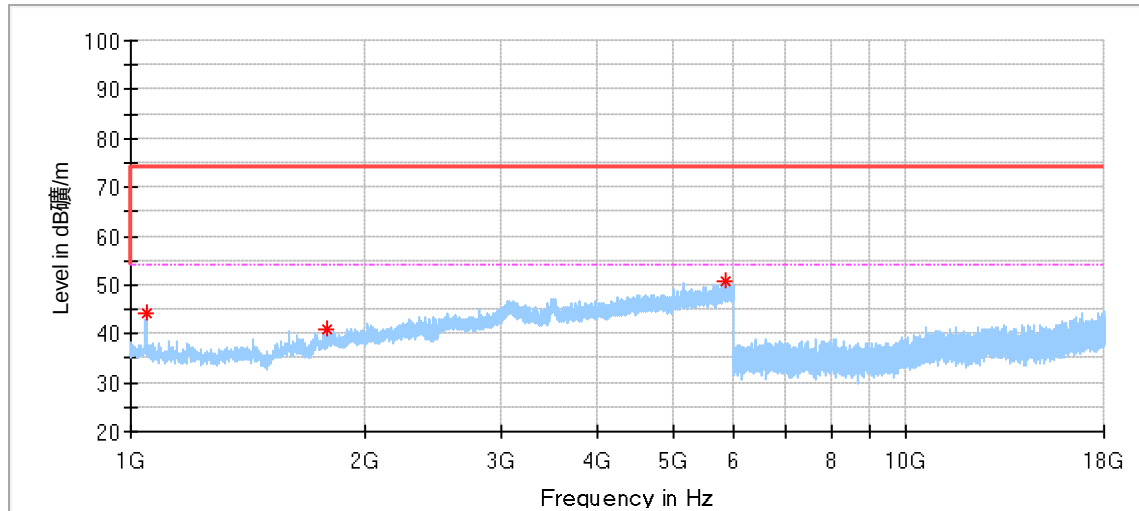
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 32.485625       | 40.61            | 40.00          | -0.61       | 100.0       | V   | 244.0         | 16.68        |
| 42.428125       | 42.24            | 40.00          | -2.24       | 100.0       | V   | 47.0          | 19.90        |
| 55.038125       | 38.28            | 40.00          | 1.72        | 100.0       | V   | 175.0         | 20.51        |
| 63.101250       | 38.21            | 40.00          | 1.79        | 100.0       | V   | 209.0         | 18.87        |
| 155.190625      | 38.21            | 43.50          | 5.29        | 100.0       | V   | 244.0         | 15.59        |
| 433.459375      | 37.65            | 46.00          | 8.35        | 100.0       | V   | 315.0         | 24.80        |

### Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 32.485625       | 39.00              | 40.00          | 1.00        | 100.0       | V   | 244.0         | 16.68        |
| 42.428125       | 39.20              | 40.00          | 0.80        | 100.0       | V   | 47.0          | 19.90        |
| 55.038125       | 36.70              | 40.00          | 3.30        | 100.0       | V   | 175.0         | 20.51        |
| 63.101250       | 36.40              | 40.00          | 3.60        | 100.0       | V   | 209.0         | 18.87        |

Test data 1GHz to 18GHz:

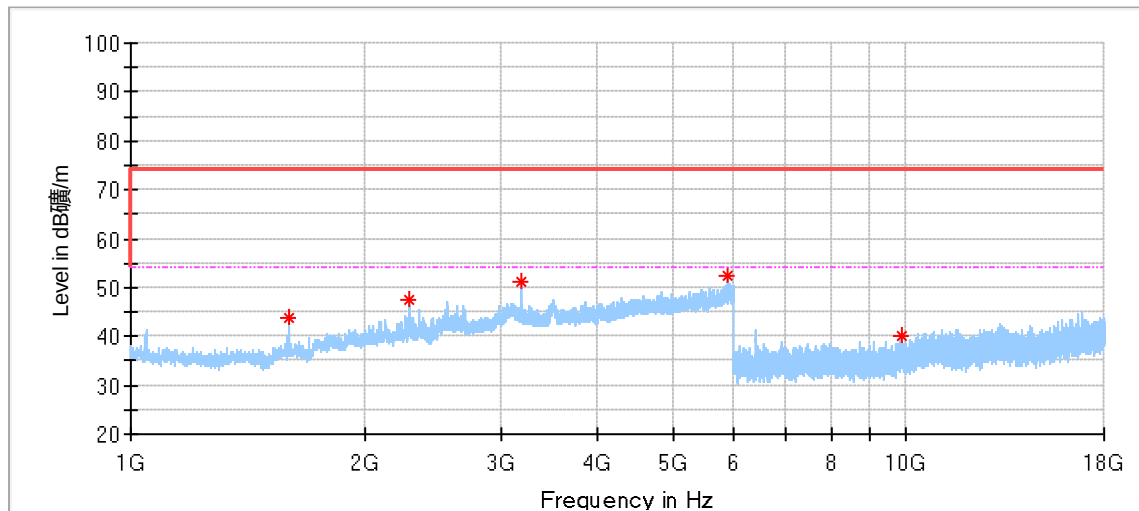
DH5\_2402MHz - Horizontal:



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1047.500000     | 44.05            | 74.00          | 29.95       | 150.0       | H   | 228.0         | -8.58        |
| 1789.000000     | 40.95            | 74.00          | 33.05       | 150.0       | H   | 312.0         | -5.44        |
| 5855.000000     | 50.58            | 74.00          | 23.42       | 150.0       | H   | 240.0         | 6.70         |

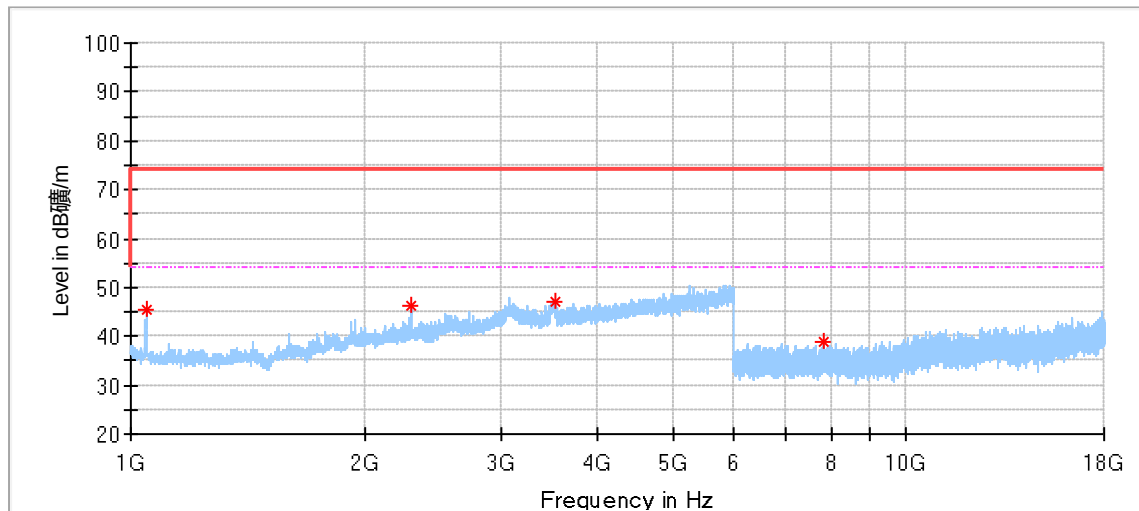
DH5\_2402MHz - Vertical:



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1597.000000     | 43.66            | 74.00          | 30.34       | 150.0       | V   | 177.0         | -7.24        |
| 2290.000000     | 47.30            | 74.00          | 26.70       | 150.0       | V   | 165.0         | -3.57        |
| 3191.500000     | 51.14            | 74.00          | 22.86       | 150.0       | V   | 225.0         | 0.41         |
| 5869.500000     | 52.33            | 74.00          | 21.67       | 150.0       | V   | 201.0         | 6.79         |
| 9883.000000     | 40.14            | 74.00          | 33.86       | 150.0       | V   | 328.0         | 8.38         |

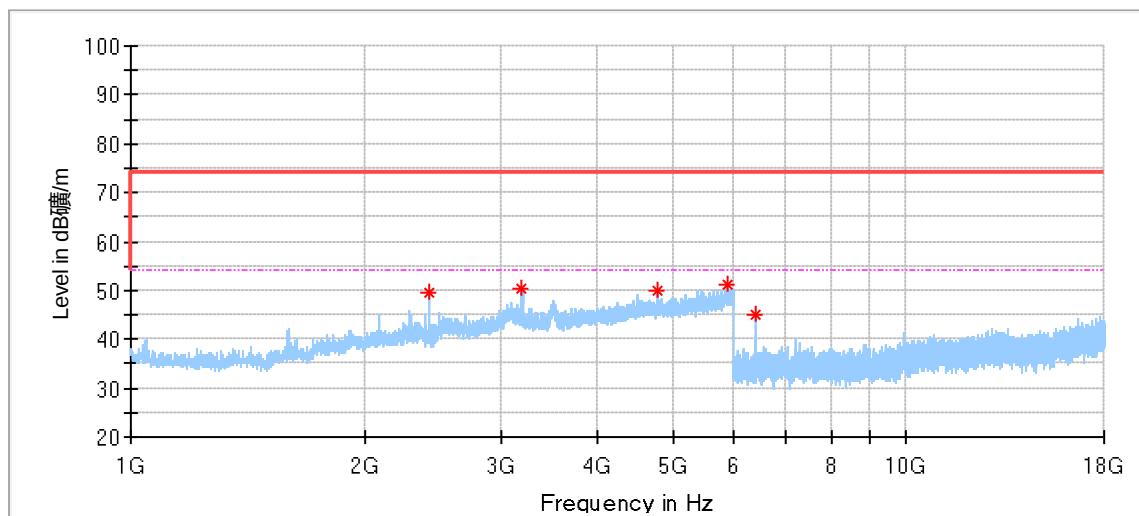
## DH5\_2441MHz - Horizontal:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1047.500000     | 45.27            | 74.00          | 28.73       | 150.0       | H   | 237.0         | -8.58        |
| 2296.000000     | 46.22            | 74.00          | 27.78       | 150.0       | H   | 177.0         | -3.55        |
| 3520.000000     | 47.02            | 74.00          | 26.98       | 150.0       | H   | 273.0         | 2.62         |
| 7835.500000     | 38.77            | 74.00          | 35.23       | 150.0       | H   | 327.0         | 6.37         |

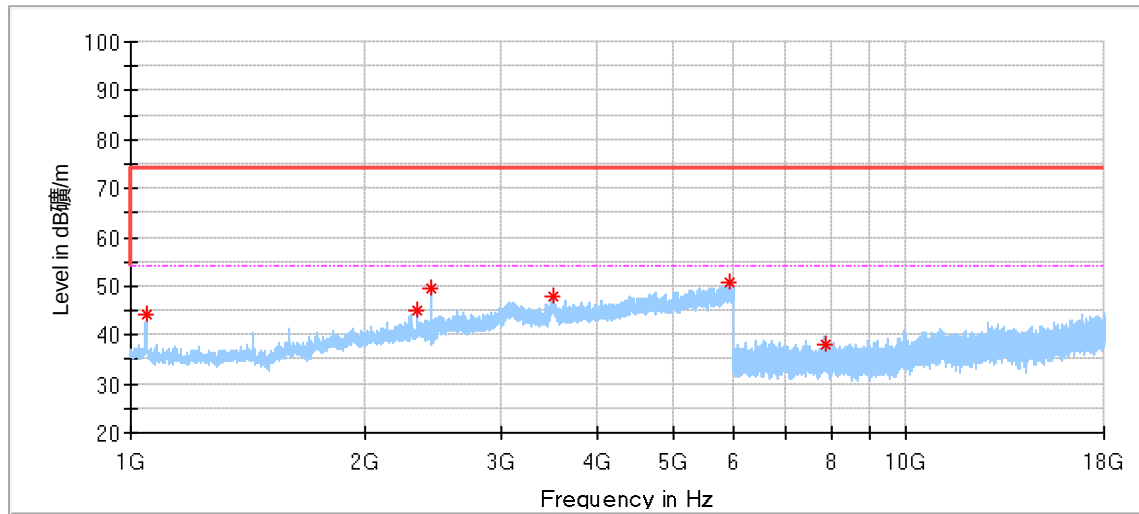
## DH5\_2441MHz - Vertical:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2425.500000     | 49.55            | 74.00          | 24.45       | 150.0       | V   | 177.0         | -2.38        |
| 3192.500000     | 50.49            | 74.00          | 23.51       | 150.0       | V   | 225.0         | 0.41         |
| 4786.500000     | 49.95            | 74.00          | 24.05       | 150.0       | V   | 201.0         | 3.96         |
| 5869.000000     | 51.26            | 74.00          | 22.74       | 150.0       | V   | 34.0          | 6.78         |
| 6396.000000     | 44.96            | 74.00          | 29.04       | 150.0       | V   | 180.0         | 5.34         |

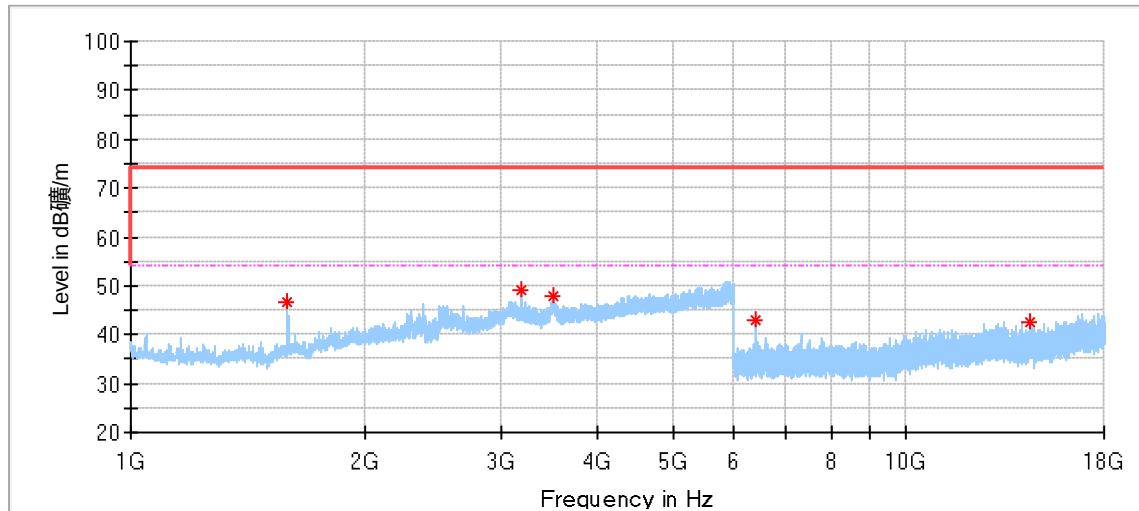
## DH5\_2480MHz - Horizontal:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1048.500000     | 44.13            | 74.00          | 29.87       | 150.0       | H   | 228.0         | -8.59        |
| 2338.000000     | 45.03            | 74.00          | 28.97       | 150.0       | H   | 168.0         | -3.29        |
| 2438.000000     | 49.70            | 74.00          | 24.30       | 150.0       | H   | 216.0         | -2.25        |
| 3501.000000     | 47.78            | 74.00          | 26.22       | 150.0       | H   | 168.0         | 3.71         |
| 5915.000000     | 50.95            | 74.00          | 23.05       | 150.0       | H   | 168.0         | 6.87         |
| 7856.000000     | 37.88            | 74.00          | 36.12       | 150.0       | H   | 81.0          | 6.37         |

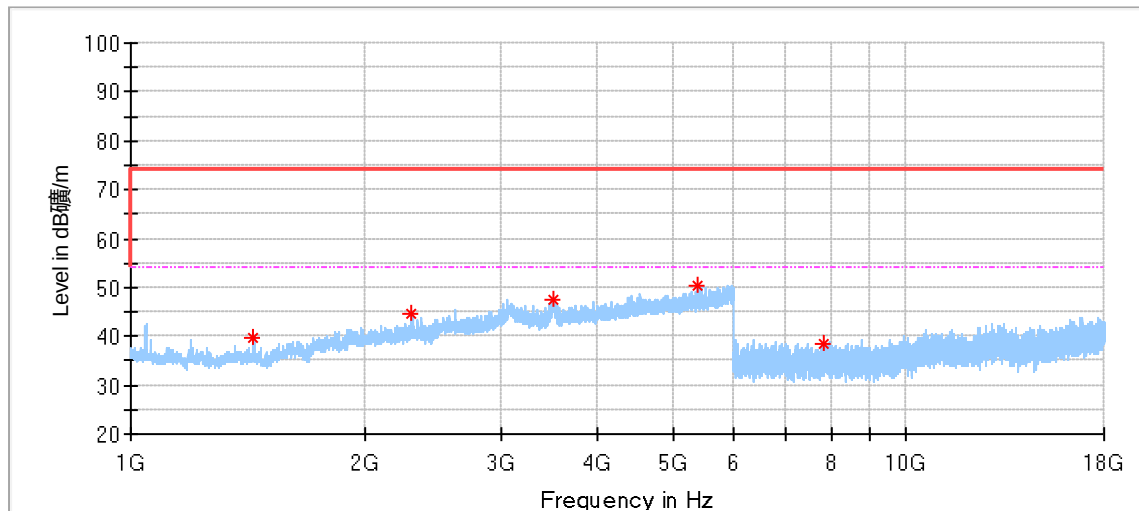
## DH5\_2480MHz - Vertical:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1593.000000     | 46.75            | 74.00          | 27.25       | 150.0       | V   | 189.0         | -7.30        |
| 3196.500000     | 48.93            | 74.00          | 25.07       | 150.0       | V   | 225.0         | 0.39         |
| 3498.500000     | 48.07            | 74.00          | 25.93       | 150.0       | V   | 46.0          | 3.65         |
| 6378.000000     | 43.05            | 74.00          | 30.95       | 150.0       | V   | 202.0         | 5.33         |
| 14477.000000    | 42.39            | 74.00          | 31.61       | 150.0       | V   | 128.0         | 11.98        |

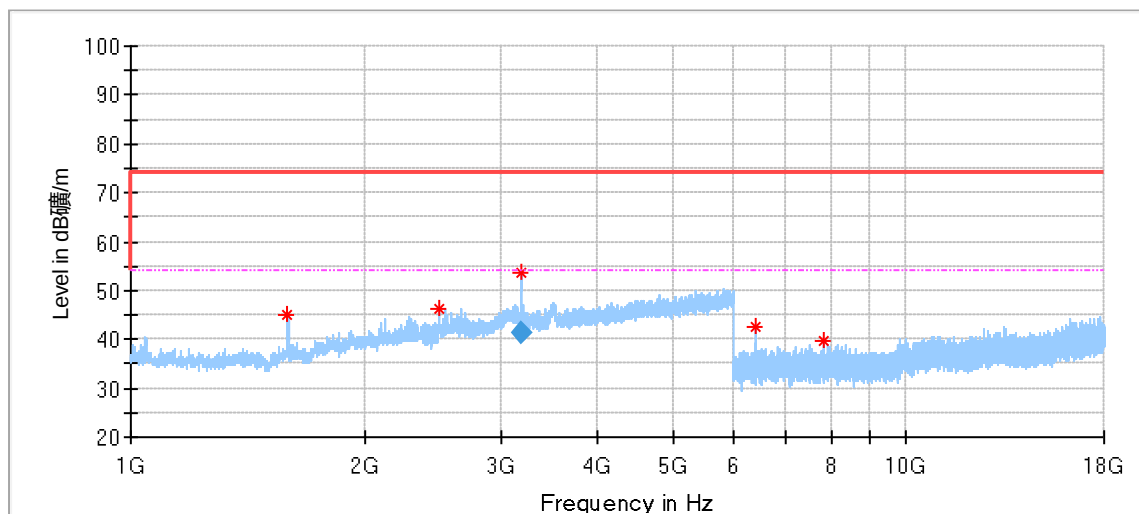
## 3DH5\_2402MHz - Horizontal:



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1439.500000     | 39.88            | 74.00          | 34.12       | 150.0       | H   | 192.0         | -8.85        |
| 2301.000000     | 44.63            | 74.00          | 29.37       | 150.0       | H   | 180.0         | -3.53        |
| 3511.000000     | 47.60            | 74.00          | 26.40       | 150.0       | H   | 156.0         | 3.14         |
| 5393.500000     | 50.50            | 74.00          | 23.50       | 150.0       | H   | 84.0          | 5.44         |
| 7833.000000     | 38.41            | 74.00          | 35.59       | 150.0       | H   | 327.0         | 6.36         |

## 3DH5\_2402MHz - Vertical:



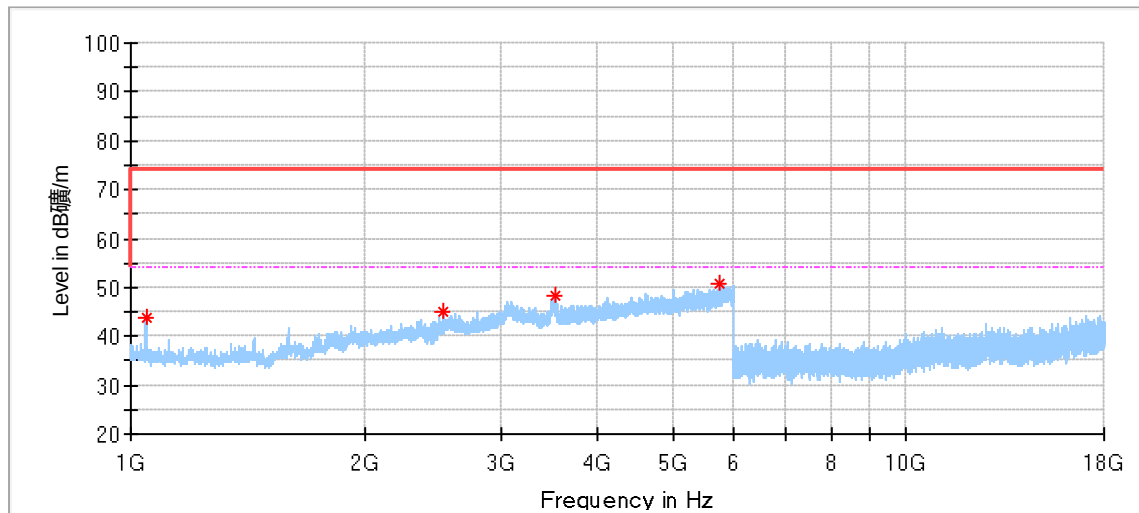
## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1594.500000     | 45.23            | 74.00          | 28.77       | 150.0       | V   | 192.0         | -7.28        |
| 2497.500000     | 46.17            | 74.00          | 27.83       | 150.0       | V   | 180.0         | -2.09        |
| 3190.000000     | 53.59            | 74.00          | 20.41       | 150.0       | V   | 156.0         | 0.42         |
| 6400.000000     | 42.73            | 74.00          | 31.27       | 150.0       | V   | 107.0         | 5.34         |
| 7848.000000     | 39.78            | 74.00          | 34.22       | 150.0       | V   | 350.0         | 6.37         |

## Final Result

| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 3190.000000     | 41.26            | 54.00          | 12.74       | 150.0       | V   | 156.0         | 0.42         |

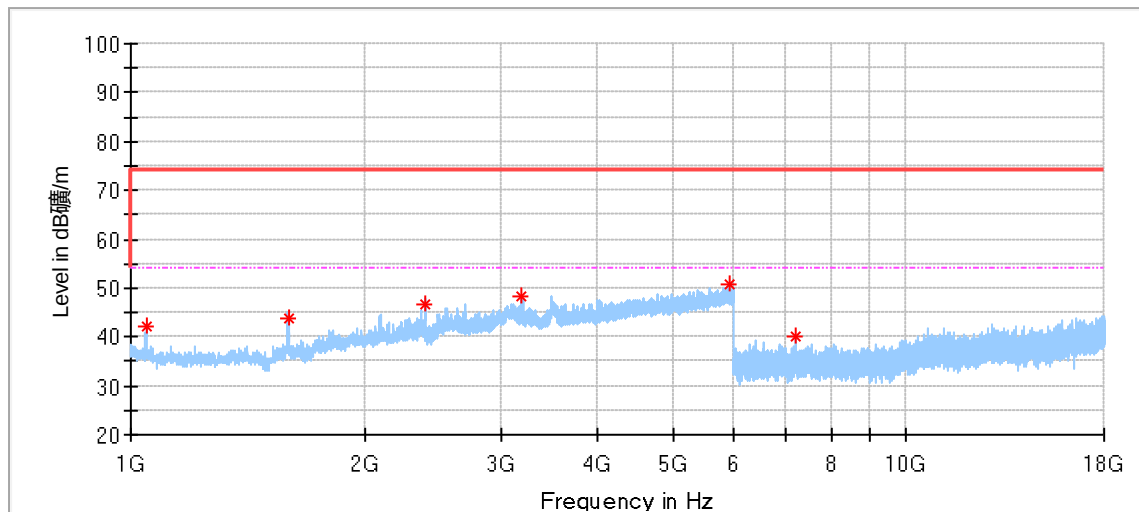
## 3DH5\_2441MHz - Horizontal:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1047.000000     | 43.61            | 74.00          | 30.39       | 150.0       | H   | 228.0         | -8.58        |
| 2530.500000     | 45.15            | 74.00          | 28.85       | 150.0       | H   | 192.0         | -1.81        |
| 3528.500000     | 48.40            | 74.00          | 25.60       | 150.0       | H   | 347.0         | 2.12         |
| 5748.000000     | 50.82            | 74.00          | 23.18       | 150.0       | H   | 0.0           | 5.94         |

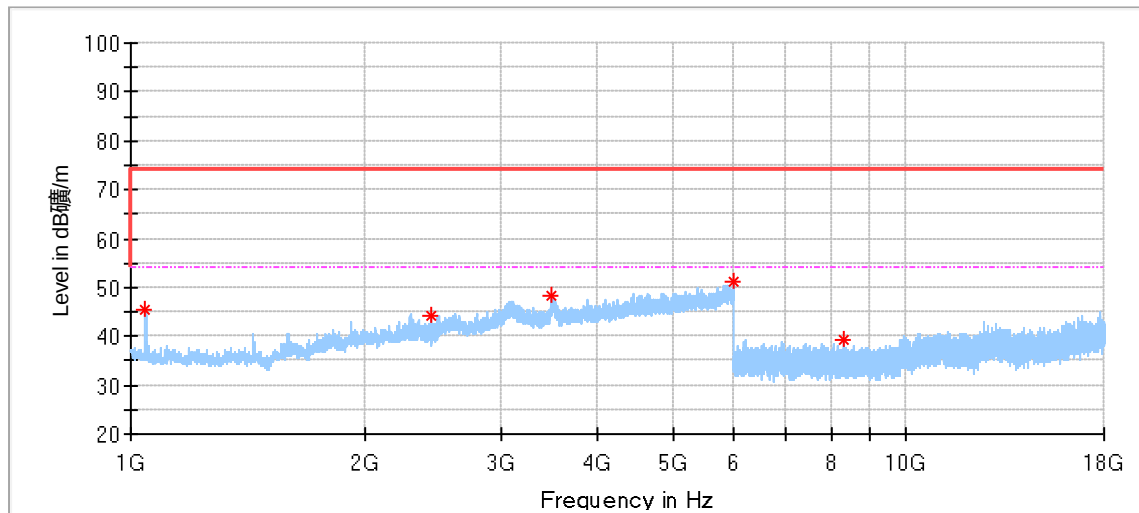
## 3DH5\_2441MHz - Vertical:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1049.500000     | 41.95            | 74.00          | 32.05       | 150.0       | V   | 216.0         | -8.60        |
| 1595.000000     | 43.63            | 74.00          | 30.37       | 150.0       | V   | 228.0         | -7.28        |
| 2390.500000     | 46.64            | 74.00          | 27.36       | 150.0       | V   | 228.0         | -2.80        |
| 3186.000000     | 48.40            | 74.00          | 25.60       | 150.0       | V   | 216.0         | 0.44         |
| 5924.500000     | 50.78            | 74.00          | 23.22       | 150.0       | V   | 276.0         | 6.87         |
| 7197.500000     | 40.17            | 74.00          | 33.83       | 150.0       | V   | 206.0         | 5.67         |

## 3DH5\_2480MHz - Horizontal:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1045.500000     | 45.33            | 74.00          | 28.67       | 150.0       | H   | 228.0         | -8.56        |
| 2445.500000     | 44.07            | 74.00          | 29.93       | 150.0       | H   | 216.0         | -2.17        |
| 3481.000000     | 48.28            | 74.00          | 25.72       | 150.0       | H   | 204.0         | 2.40         |
| 5980.500000     | 51.04            | 74.00          | 22.96       | 150.0       | H   | 144.0         | 6.90         |
| 8291.000000     | 39.35            | 74.00          | 34.65       | 150.0       | H   | 0.0           | 6.58         |

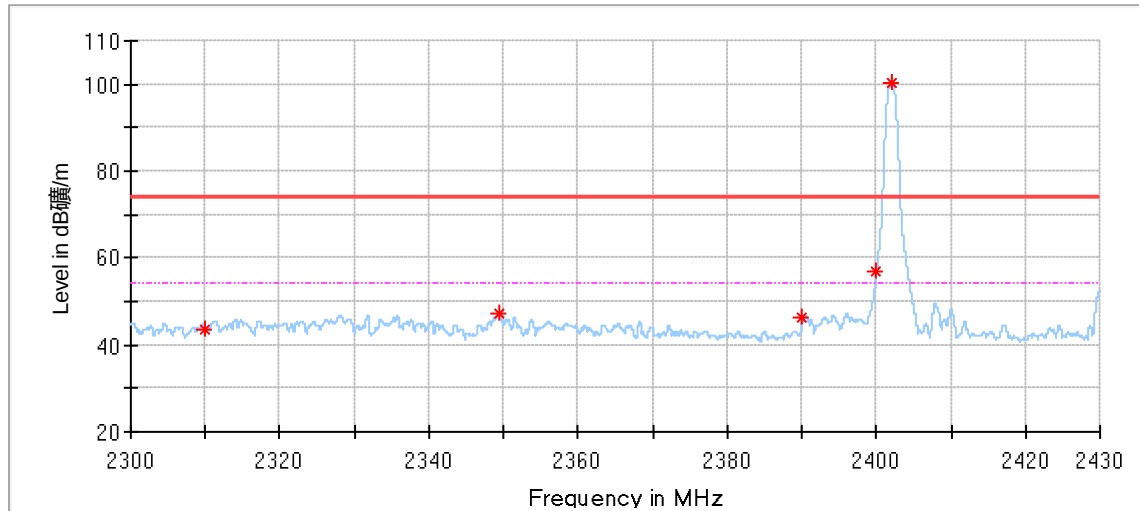
## 3DH5\_2480MHz - Vertical:

## Remark:

- (1) Data of measurement within frequency range 9kHz-30MHz are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.
- (2) Corrected Amplitude = Read level + Corrector factor  
Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain  
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

## Emissions at Restricted Band:

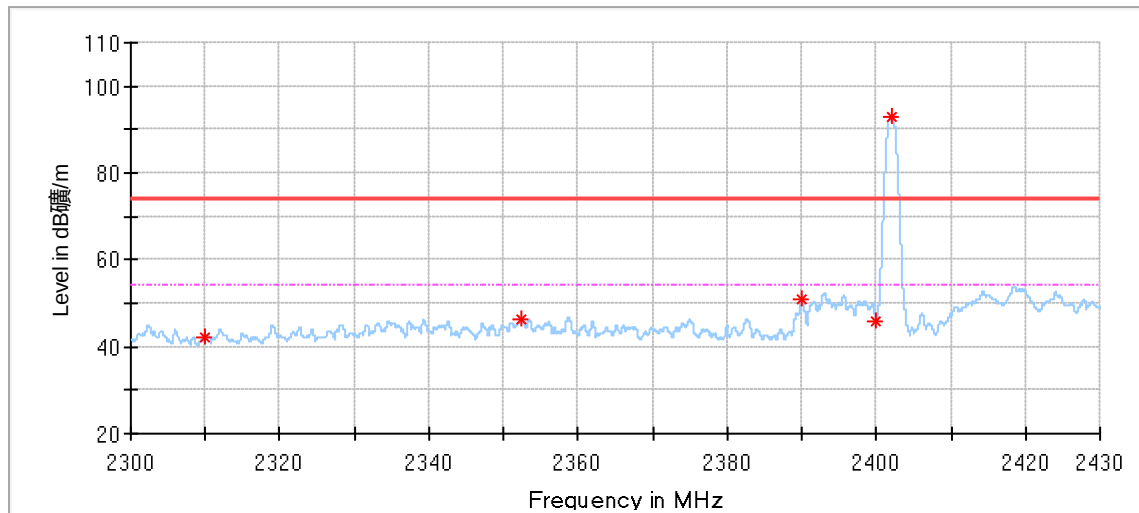
DH5\_2402MHz - Horizontal:



### Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2310.000000     | 43.46            | 74.00          | 30.54       | 150.0       | H   | 2.0           | -4.05        |
| 2349.328000     | 47.18            | 74.00          | 26.82       | 150.0       | H   | 7.0           | -3.82        |
| 2390.000000     | 46.36            | 74.00          | 27.64       | 150.0       | H   | 2.0           | -3.35        |
| 2400.000000     | 56.90            | 74.00          | 17.10       | 150.0       | H   | 56.0          | -3.32        |
| 2402.144000     | 100.20           | 74.00          | -26.20      | 150.0       | H   | 56.0          | -3.30        |

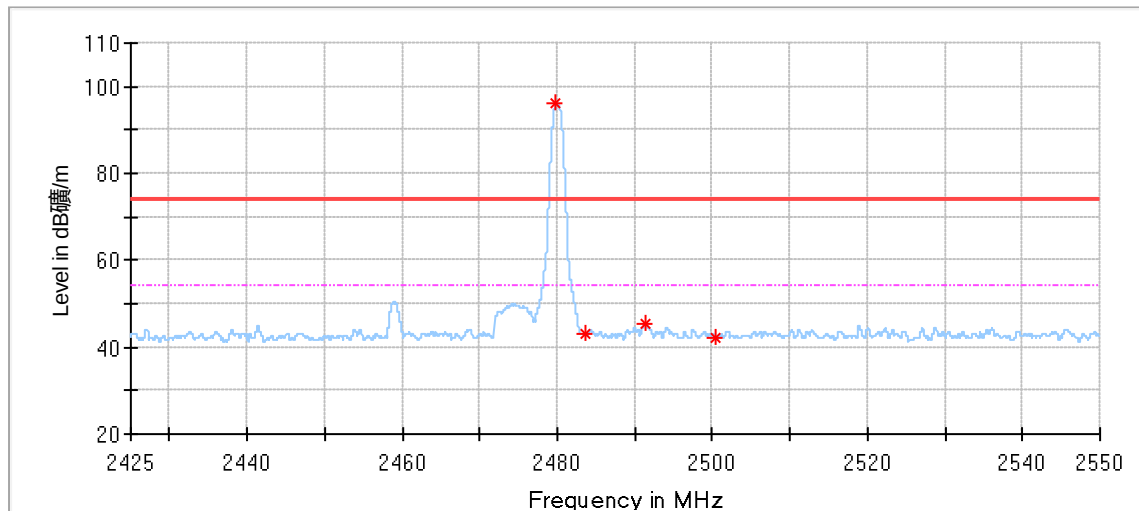
DH5\_2402MHz - Vertical:



### Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2310.000000     | 42.11            | 74.00          | 31.89       | 150.0       | V   | 38.0          | -4.05        |
| 2352.304000     | 46.20            | 74.00          | 27.80       | 150.0       | V   | 38.0          | -3.78        |
| 2390.000000     | 50.88            | 74.00          | 23.12       | 150.0       | V   | 49.0          | -3.36        |
| 2400.000000     | 45.73            | 74.00          | 28.27       | 150.0       | V   | 285.0         | -3.32        |
| 2402.144000     | 93.00            | 74.00          | -19.00      | 150.0       | V   | 285.0         | -3.30        |

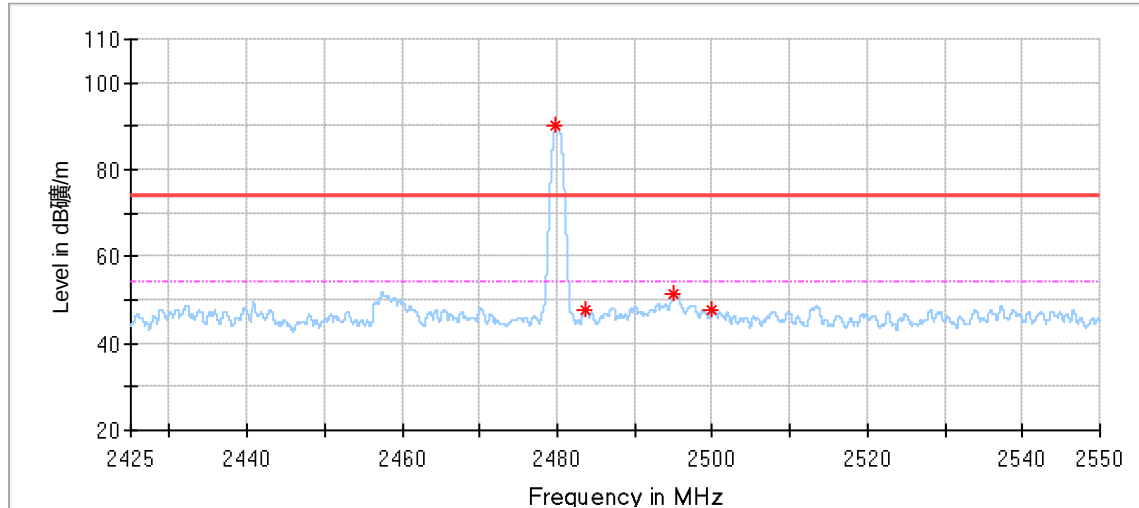
## DH5\_2480MHz - Horizontal:



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2479.837500     | 96.09            | 74.00          | -22.09      | 150.0       | H   | 22.0          | -2.69        |
| 2483.537500     | 42.85            | 74.00          | 31.15       | 150.0       | H   | 0.0           | -2.68        |
| 2491.412500     | 45.19            | 74.00          | 28.81       | 150.0       | H   | 0.0           | -2.66        |
| 2500.337500     | 42.22            | 74.00          | 31.78       | 150.0       | H   | 212.0         | -2.64        |

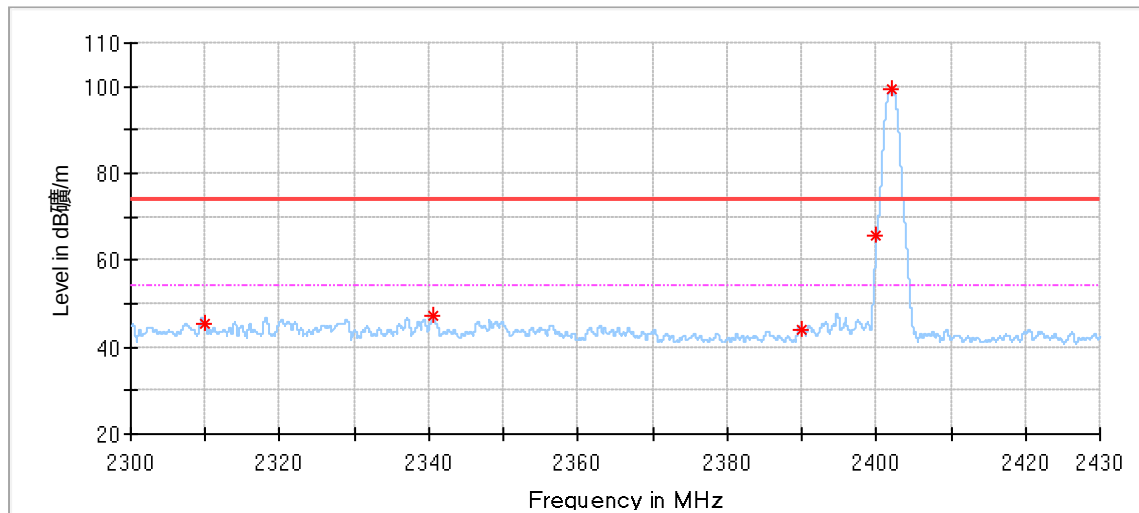
## DH5\_2480MHz - Vertical:



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2479.850000     | 90.08            | 74.00          | -16.08      | 150.0       | V   | 285.0         | -2.69        |
| 2483.500000     | 47.57            | 74.00          | 26.43       | 150.0       | V   | 348.0         | -2.68        |
| 2495.112500     | 51.57            | 74.00          | 22.43       | 150.0       | V   | 0.0           | -2.65        |
| 2500.000000     | 47.56            | 74.00          | 26.44       | 150.0       | V   | 1.0           | -2.64        |

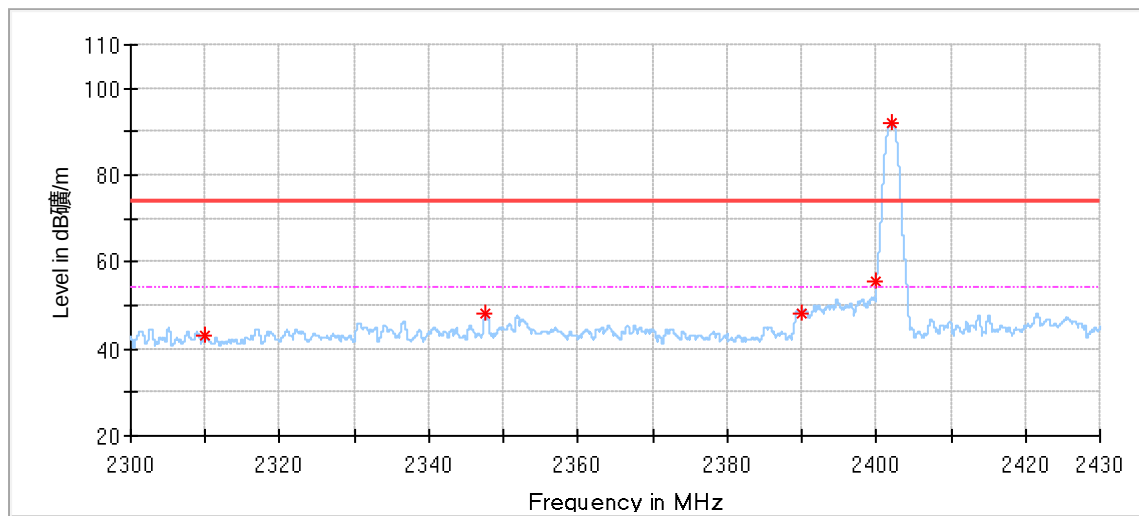
## 3DH5\_2402MHz - Horizontal:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2310.000000     | 45.48            | 74.00          | 28.52       | 150.0       | H   | 0.0           | -4.05        |
| 2340.560000     | 47.24            | 74.00          | 26.76       | 150.0       | H   | 0.0           | -3.89        |
| 2390.000000     | 44.00            | 74.00          | 30.00       | 150.0       | H   | 87.0          | -3.36        |
| 2400.000000     | 65.64            | 74.00          | 8.36        | 150.0       | H   | 49.0          | -3.32        |
| 2402.016000     | 99.28            | 74.00          | -25.28      | 150.0       | H   | 49.0          | -3.30        |

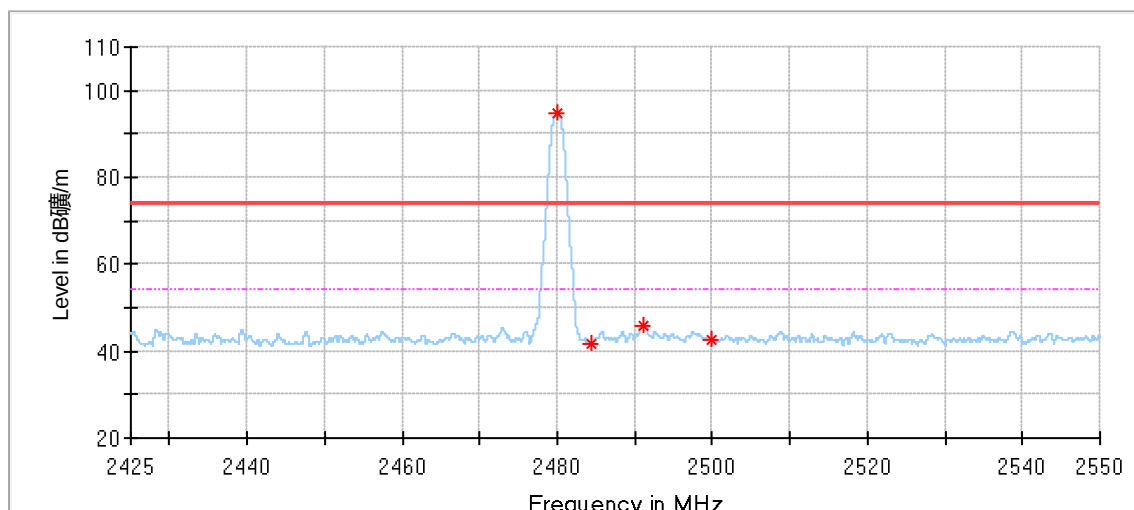
## 3DH5\_2402MHz - Vertical:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2309.000000     | 43.04            | 74.00          | 30.96       | 150.0       | V   | 309.0         | -4.05        |
| 2347.664000     | 48.16            | 74.00          | 25.84       | 150.0       | V   | 40.0          | -3.83        |
| 2390.000000     | 48.12            | 74.00          | 25.88       | 150.0       | V   | 0.0           | -3.36        |
| 2400.000000     | 55.68            | 74.00          | 18.32       | 150.0       | V   | 61.0          | -3.32        |
| 2402.000000     | 91.86            | 74.00          | -17.86      | 150.0       | V   | 61.0          | -3.30        |

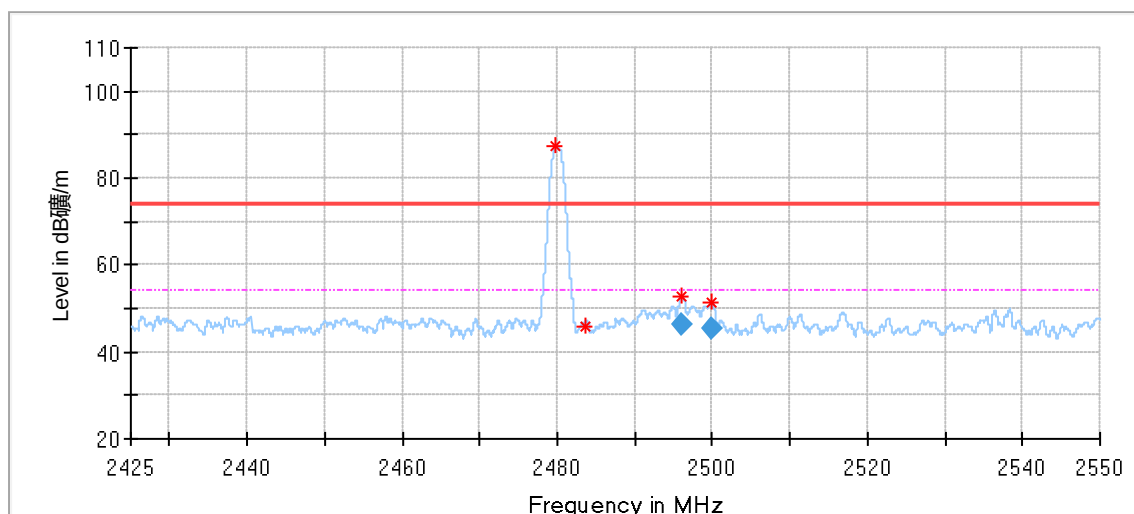
## 3DH5\_2480MHz - Horizontal:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2480.000000     | 94.81            | 74.00          | -20.81      | 150.0       | H   | 31.0          | -2.69        |
| 2484.500000     | 41.89            | 74.00          | 32.11       | 150.0       | H   | 201.0         | -2.68        |
| 2491.200000     | 45.90            | 74.00          | 28.10       | 150.0       | H   | 74.0          | -2.66        |
| 2500.000000     | 42.69            | 74.00          | 31.31       | 150.0       | H   | 285.0         | -2.64        |

## 3DH5\_2480MHz - Vertical:



## Critical\_Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2479.837500     | 87.27            | 74.00          | -13.27      | 150.0       | V   | 288.0         | -2.69        |
| 2483.500000     | 45.85            | 74.00          | 28.15       | 150.0       | V   | 350.0         | -2.68        |
| 2496.137500     | 52.78            | 74.00          | 21.22       | 150.0       | V   | 0.0           | -2.65        |
| 2500.000000     | 51.20            | 74.00          | 22.80       | 150.0       | V   | 0.0           | -2.64        |

## Final\_Result

| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2496.137500     | 46.53            | 54.00          | 7.47        | 150.0       | V   | 0.0           | -2.65        |
| 2500.000000     | 45.39            | 54.00          | 8.61        | 150.0       | V   | 0.0           | -2.64        |

## 10 Test Equipment List

### Radiated Emission Test, SAC-3 #1

| DESCRIPTION                         | MANUFACTURER    | MODEL NO. | EQUIPMENT ID       | SERIAL NO.      | CAL INTERVAL (YEAR) | CAL. DUE DATE |
|-------------------------------------|-----------------|-----------|--------------------|-----------------|---------------------|---------------|
| EMI Test Receiver                   | Rohde & Schwarz | ESR 7     | 68-4-74-19-001     | 102176          | 1                   | 2025-5-13     |
| Trilog Super Broadband Test Antenna | Schwarzbeck     | VULB 9163 | 68-4-80-14-002     | 707             | 1                   | 2025-7-2      |
| Horn Antenna                        | Rohde & Schwarz | HF907     | 68-4-80-14-005     | 102294          | 1                   | 2025-5-27     |
| Loop Antenna                        | Rohde & Schwarz | HFH2-Z2   | 68-4-80-14-006     | 100398          | 1                   | 2025-7-24     |
| Pre-amplifier                       | Rohde & Schwarz | SCU 18    | 68-4-29-14-001     | 102230          | 1                   | 2025-5-11     |
| Attenuator                          | Mini-circuits   | UNAT-6+   | 68-4-81-21-001     | 15542           | 1                   | 2025-5-11     |
| Cable                               | HUBER-SUHNER    | RG214     | 68-4-90-14-001-A20 | ----            | ----                | ----          |
| Cable                               | HUBER-SUHNER    | RG214     | 68-4-90-14-001-A21 | ----            | ----                | ----          |
| Cable                               | JUNFLON         | MWX221    | 68-4-90-14-001-A22 | ----            | ----                | ----          |
| 3m Semi-anechoic chamber            | TDK             | SAC-3 #1  | 68-4-90-14-001     | ----            | 3                   | 2026-10-25    |
| Test software                       | Rohde & Schwarz | EMC32     | 68-4-90-14-001-A10 | Version10.35.02 | N/A                 | N/A           |

### RF Conducted Test

| DESCRIPTION                     | MANUFACTURER    | MODEL NO.          | EQUIPMENT ID       | SERIAL NO.    | CAL INTERVAL (YEAR) | CAL. DUE DATE |
|---------------------------------|-----------------|--------------------|--------------------|---------------|---------------------|---------------|
| Signal Generator                | Rohde & Schwarz | SMB100A            | 68-4-48-14-001     | 108272        | 1                   | 2025-5-11     |
| Vector Signal Generator         | Rohde & Schwarz | SMBV100A           | 68-4-48-18-001     | 262825        | 1                   | 2025-5-11     |
| Signal Analyzer                 | Rohde & Schwarz | FSV40              | 68-4-74-14-004     | 101030        | 1                   | 2025-5-11     |
| RF Switch Module                | Rohde & Schwarz | OSP120/OSP-B157W   | 68-4-93-14-003     | 101226/100929 | 1                   | 2025-5-11     |
| Power Splitter                  | Weinschel       | 1580               | 68-4-85-14-001     | SC319         | 1                   | 2025-5-11     |
| 10dB Attenuator                 | Weinschel       | 4M-10              | 68-4-81-14-003     | 43152         | 1                   | 2025-5-11     |
| RF Meas. and Switch Matrix Unit | TST PASS        | TSCB3023R2         | 68-4-93-23-001     | 2811685c      | 1                   | 2025-5-11     |
| Frequency Extender              | TST PASS        | TSTCMWEXT7         | 68-4-93-23-001-A01 | WEX230017C    | 1                   | 2025-5-12     |
| Frequency Extender              | TST PASS        | TSTSGEXT7          | 68-4-93-23-001-A02 | EX2300BA      | 1                   | 2025-5-12     |
| Cable                           | JUNFLON         | J12J103539         | 68-4-90-19-003-A20 | ----          | ----                | ----          |
| Test software                   | TST PASS        | System for BT/WIFI | 68-4-93-23-001-A03 | Version 2.0   | N/A                 | N/A           |
| Shielding Room                  | TDK             | TS8997             | 68-4-90-19-003     | ----          | 3                   | 2025-10-15    |

### Conducted Emission Test 1# Test

| DESCRIPTION        | MANUFACTURER      | MODEL NO.      | EQUIPMENT ID       | SERIAL NO.     | CAL INTERVAL (YEAR) | CAL. DUE DATE |
|--------------------|-------------------|----------------|--------------------|----------------|---------------------|---------------|
| EMI Test Receiver  | Rohde & Schwarz   | ESR 3          | 68-4-74-14-001     | 101782         | 1                   | 2025-5-13     |
| LISN               | Rohde & Schwarz   | ENV4200        | 68-4-87-14-001     | 100249         | 1                   | 2025-5-13     |
| High Voltage Probe | Schwarzbeck       | TK9420(VT9420) | 68-4-27-14-001     | 9420-584       | 1                   | 2025-5-12     |
| RF Current Probe   | Rohde & Schwarz   | EZ-17          | 68-4-27-14-002     | 100816         | 1                   | 2025-5-13     |
| Attenuator         | Shanghai Huaxiang | TS2-26-3       | 68-4-81-16-003     | 080928189      | 1                   | 2025-5-11     |
| Cable              | OUQIAO            | RG142          | 68-4-90-19-004-A20 | ----           | ----                | ----          |
| Test software      | Rohde & Schwarz   | EMC32          | 68-4-90-14-003-A10 | Version9.15.00 | N/A                 | N/A           |
| Shielding Room     | TDK               | CSR #1         | 68-4-90-19-004     | ----           | 3                   | 2025-10-15    |

## 11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

| System Measurement Uncertainty                               |                                                                                      |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Test Items                                                   | Extended Uncertainty                                                                 |
| Uncertainty for Radiated Emission 9kHz-30MHz                 | 4.69dB                                                                               |
| Uncertainty for Radiated Emission 30MHz-1000MHz              | Horizontal: 4.78dB<br>Vertical: 5.85dB                                               |
| Uncertainty for Radiated Spurious Emission 1000MHz-18000MHz  | 5.11dB                                                                               |
| Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz | 5.10dB                                                                               |
| Uncertainty for Conducted RF test                            | RF Power Conducted: 1.31dB<br>Frequency test involved:<br>$0.6 \times 10^{-8}$ or 1% |

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.4.3 and 4.5.1.

---END OF REPORT---