

## FCC - TEST REPORT

|                                  |   |                                                                                                                        |                |            |
|----------------------------------|---|------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Report Number                    | : | 68.950.22.1053.01                                                                                                      | Date of Issue: | 2023-03-15 |
| Model                            | : | SUPER HOGSTER LRF 35mm, SUPER YOTER LRF 50mm                                                                           |                |            |
| Product Type                     | : | Thermal Reflex Sight                                                                                                   |                |            |
| Applicant                        | : | IRay Technology Co., Ltd.                                                                                              |                |            |
| Address                          | : | 11Guiyang Street, YANTAI Economic and Technological,<br>Development Area, 264006 Yantai, PEOPLE'S REPUBLIC OF<br>CHINA |                |            |
| Manufacturer                     | : | IRay Technology Co., Ltd.                                                                                              |                |            |
| Address                          | : | 11Guiyang Street, YANTAI Economic and Technological,<br>Development Area, 264006 Yantai, PEOPLE'S REPUBLIC OF<br>CHINA |                |            |
| Test Result                      | : | <input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative                                         |                |            |
| Total pages including Appendices | : | 62                                                                                                                     |                |            |

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

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## 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, Guangdong, China

Telephone: 86 755 8828 6998

Fax: 86 755 8828 5299

FCC Registration No.: 514049

FCC Designation Number: CA5009

### 3 Description of the Equipment Under Test

|                            |                                                                                                                                          |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Product:                   | Thermal Reflex Sight                                                                                                                     |
| Model no.:                 | SUPER HOGSTER LRF 35mm, SUPER YOTER LRF 50mm                                                                                             |
| FCC ID:                    | 2AYGT-2S-00                                                                                                                              |
| Rating:                    | 6.0VDC, 1.5VDC AA*4 battery                                                                                                              |
| Options and accessories:   | USB Cable                                                                                                                                |
| RF Transmission Frequency: | 2412MHz-2462MHz                                                                                                                          |
| No. of Operated Channel:   | 11                                                                                                                                       |
| Modulation:                | DSSS, OFDM                                                                                                                               |
| Antenna Type:              | Internal Antenna                                                                                                                         |
| Antenna Gain:              | 2.5dBi                                                                                                                                   |
| Description of the EUT:    | The Equipment Under Test (EUT) is an Thermal Reflex Sight which support Wi-Fi. The TX and RX range is 2412MHz – 2462MHz for 2.4GHz Wi-Fi |

## 4 Summary of Test Standards

| Test Standards                             |                                                                        |
|--------------------------------------------|------------------------------------------------------------------------|
| FCC Part 15 Subpart C<br>10-1-2020 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,  
ANSI C63.10 (2013).

## 5 Summary of Test Results

| Technical Requirements |                                             |            |           |                                     |                          |                                     |
|------------------------|---------------------------------------------|------------|-----------|-------------------------------------|--------------------------|-------------------------------------|
| FCC Part 15 Subpart C  |                                             |            |           |                                     |                          |                                     |
| Test Condition         |                                             | Pages      | Test Site | Test Result                         |                          |                                     |
|                        |                                             |            |           | Pass                                | Fail                     | N/A                                 |
| §15.207                | Conducted emission AC power port            | /          | Site 1    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247 (b) (1)        | Conducted peak output power                 | 10         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(a)(1)          | 20dB bandwidth                              | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)          | Carrier frequency separation                | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii)     | Number of hopping frequencies               | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii)     | Dwell Time                                  | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(2)          | 6dB bandwidth and 99% Occupied Bandwidth    | 11         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(e)             | Power spectral density                      | 20         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d)             | Spurious RF conducted emissions             | 24         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d)             | Band edge                                   | 35         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d)             | Spurious radiated emissions for transmitter | 39         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.203                | Antenna requirement                         | See note 2 |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an internal antenna, which gain is 2.5 dBi. 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: 2AYGT-2S-00, complies with Section 15.207, 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.

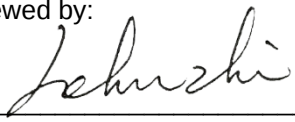
Sample Received Date: 2022-11-17

Testing Start Date: 2022-11-29

Testing End Date: 2022-12-13

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

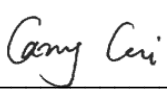
Reviewed by:

  
John Zhi  
Project Manager

Prepared by:

  
Warlen Song  
Project Engineer

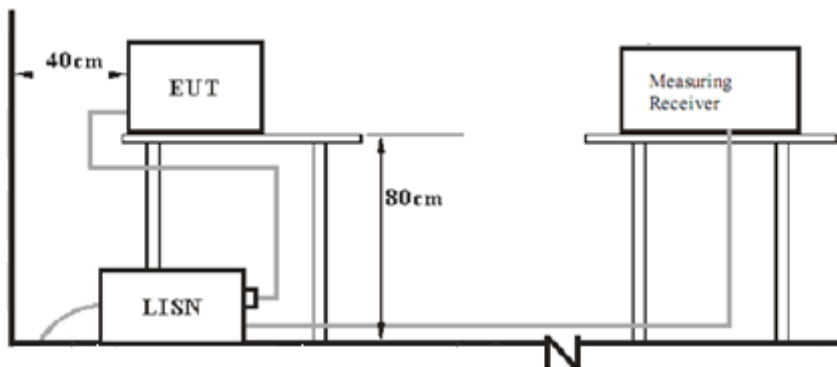
Tested by:

  
Carry Cai  
Test Engineer



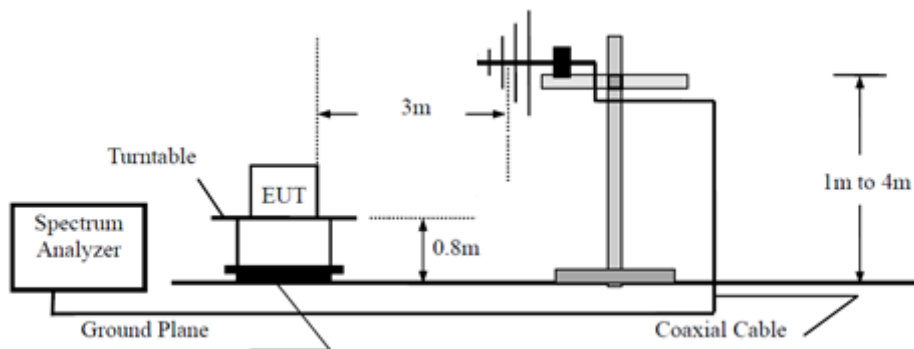
## 7 Test Setups

### 7.1 AC Power Line Conducted Emission test setups

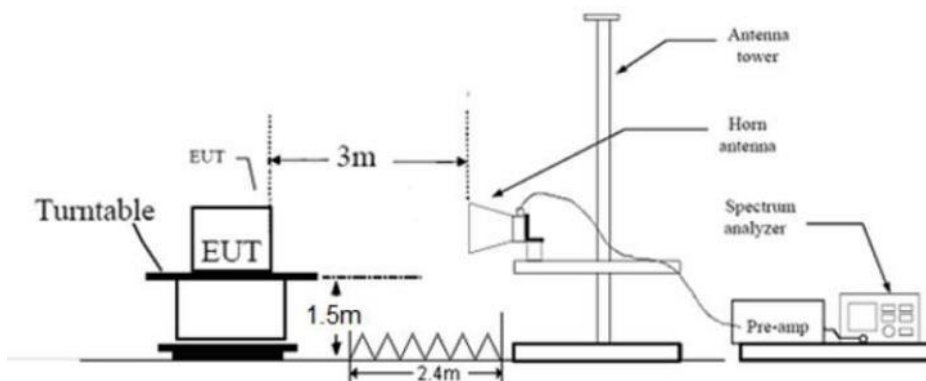


### 7.2 Radiated test setups

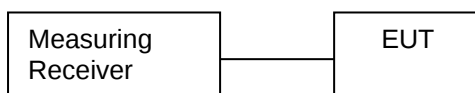
Below 1GHz



### Above 1GHz



### 7.3 Conducted RF test setups



## 8 Systems test configuration

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH) |
|-------------|--------------|-------------------|-------------|
| PC          | Lenovo       | X240              | ---         |

The system was configured to non-hopping mode.

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.

Power Setting:

| Operation Mode | Setting |
|----------------|---------|
| 11b            | 17      |
| 11g            | 17      |
| 11n20          | 17      |

## 9 Technical Requirement

### 9.1 Conducted peak output power

#### Test Method

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the power meter by RF cable. The path loss was compensated to the results for each measurement.
2. Setting the highest output power level of the EUT
3. Record the power value.

#### Limits

According to §15.247 (b) (3), conducted peak output power limit as below:

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

Test result as below table

802.11b modulation Test Result

| Frequency<br>(MHz)        | Conducted Peak Output Power<br>(dBm) | Result |
|---------------------------|--------------------------------------|--------|
|                           | Ant 1                                |        |
| Low channel<br>2412MHz    | 16.9                                 | Pass   |
| Middle channel<br>2437MHz | 16.9                                 | Pass   |
| High channel<br>2462MHz   | 17.4                                 | Pass   |

802.11g modulation Test Result

| Frequency<br>(MHz)        | Conducted Peak Output Power<br>(dBm) | Result |
|---------------------------|--------------------------------------|--------|
|                           | Ant 1                                |        |
| Low channel<br>2412MHz    | 17.3                                 | Pass   |
| Middle channel<br>2437MHz | 17.4                                 | Pass   |
| High channel<br>2462MHz   | 17.5                                 | Pass   |

802.11n20 modulation Test Result

| Frequency<br>(MHz)        | Conducted Peak Output Power<br>(dBm) | Result |
|---------------------------|--------------------------------------|--------|
|                           | Ant 1                                |        |
| Low channel<br>2412MHz    | 17.5                                 | Pass   |
| Middle channel<br>2437MHz | 17.6                                 | Pass   |
| High channel<br>2462MHz   | 17.8                                 | Pass   |

## 9.2 6dB bandwidth and 99% Occupied Bandwidth

### Test Method for 6 dB Bandwidth

1. Use the following spectrum analyzer settings:  
RBW=100K, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be  $\geq$  6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

### Test Method for 99 % Bandwidth

1. Use the following spectrum analyzer settings:  
RBW=1% to 5% of the actual occupied, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be  $\geq$  6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

### Limit

Limit [kHz]

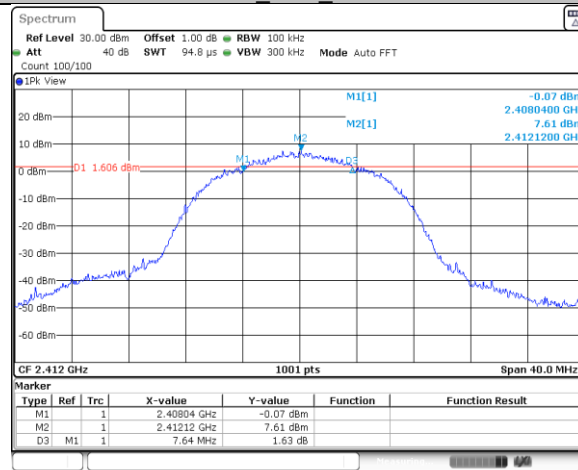
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$\geq 500$

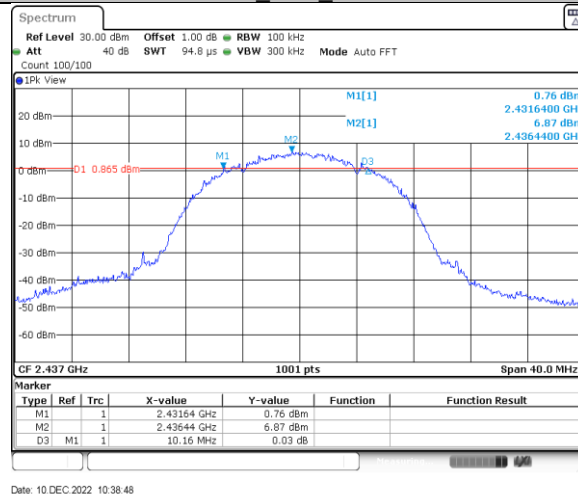
## 6dB Bandwidth

| TestMode | Antenna | Channel [MHz] | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit [MHz] | Verdict |
|----------|---------|---------------|--------------|----------|----------|-------------|---------|
| 11B      | Ant0    | 2412          | 7.640        | 2408.040 | 2415.680 | 0.5         | PASS    |
|          | Ant0    | 2437          | 10.160       | 2431.640 | 2441.800 | 0.5         | PASS    |
|          | Ant0    | 2462          | 7.360        | 2458.240 | 2465.600 | 0.5         | PASS    |
| 11G      | Ant0    | 2412          | 16.440       | 2403.760 | 2420.200 | 0.5         | PASS    |
|          | Ant0    | 2437          | 16.440       | 2428.760 | 2445.200 | 0.5         | PASS    |
|          | Ant0    | 2462          | 16.440       | 2453.760 | 2470.200 | 0.5         | PASS    |
| 11N20    | Ant0    | 2412          | 15.800       | 2403.800 | 2419.600 | 0.5         | PASS    |
|          | Ant0    | 2437          | 15.400       | 2429.400 | 2444.800 | 0.5         | PASS    |
|          | Ant0    | 2462          | 15.720       | 2454.200 | 2469.920 | 0.5         | PASS    |

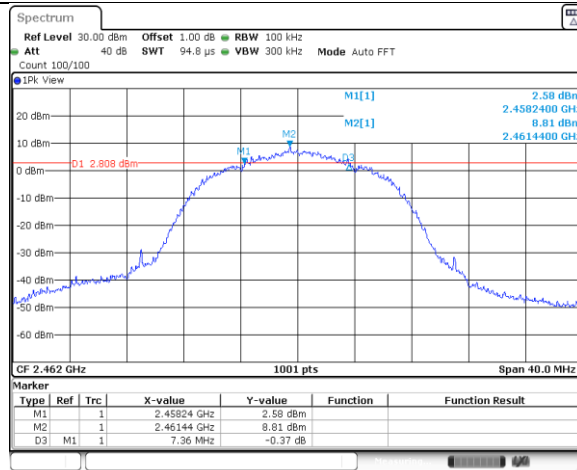
### 11B\_Ant1\_2412



### 11B\_Ant1\_2437

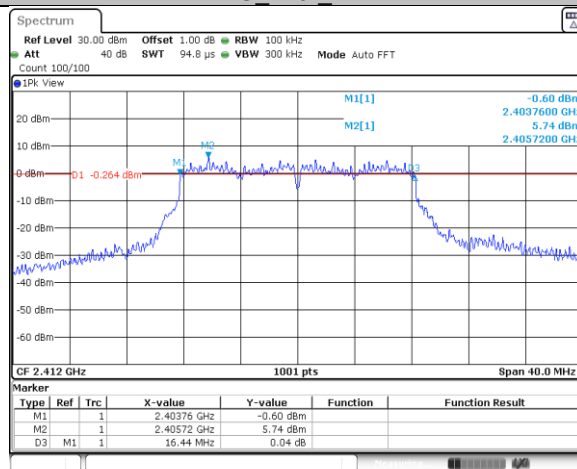


### 11B\_Ant1\_2462



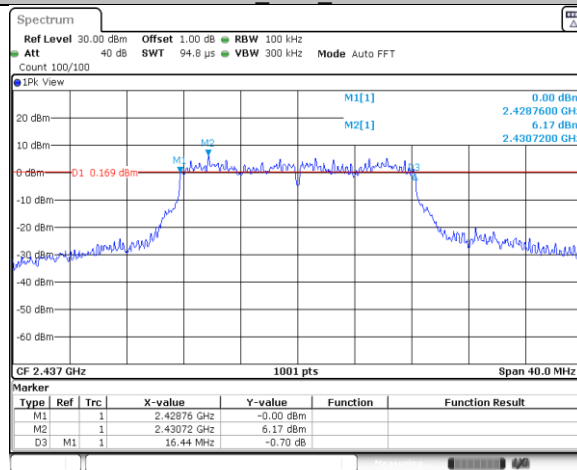
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## 11G\_Ant1\_2412



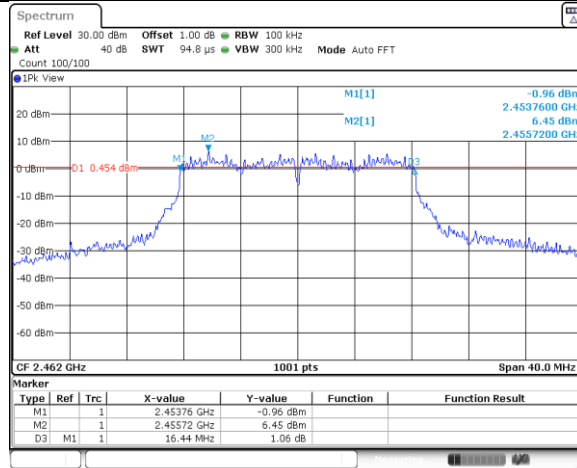
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## 11G\_Ant1\_2437



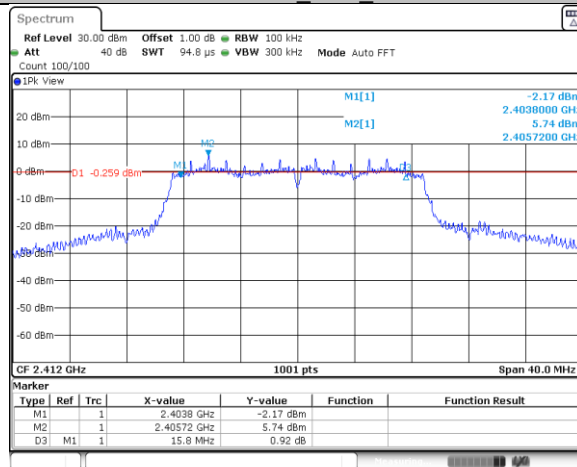
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## 11G\_Ant1\_2462



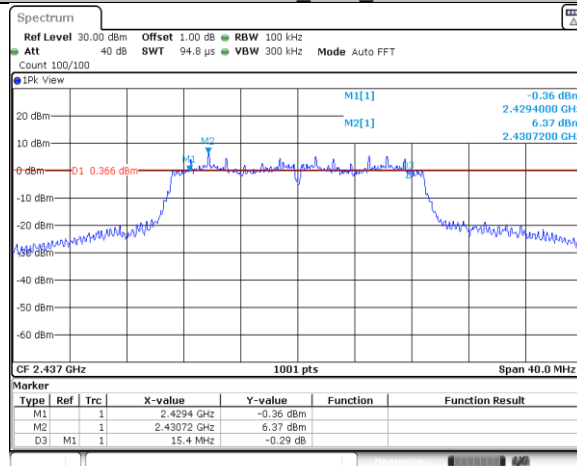
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## 11N20SISO\_Ant1\_2412



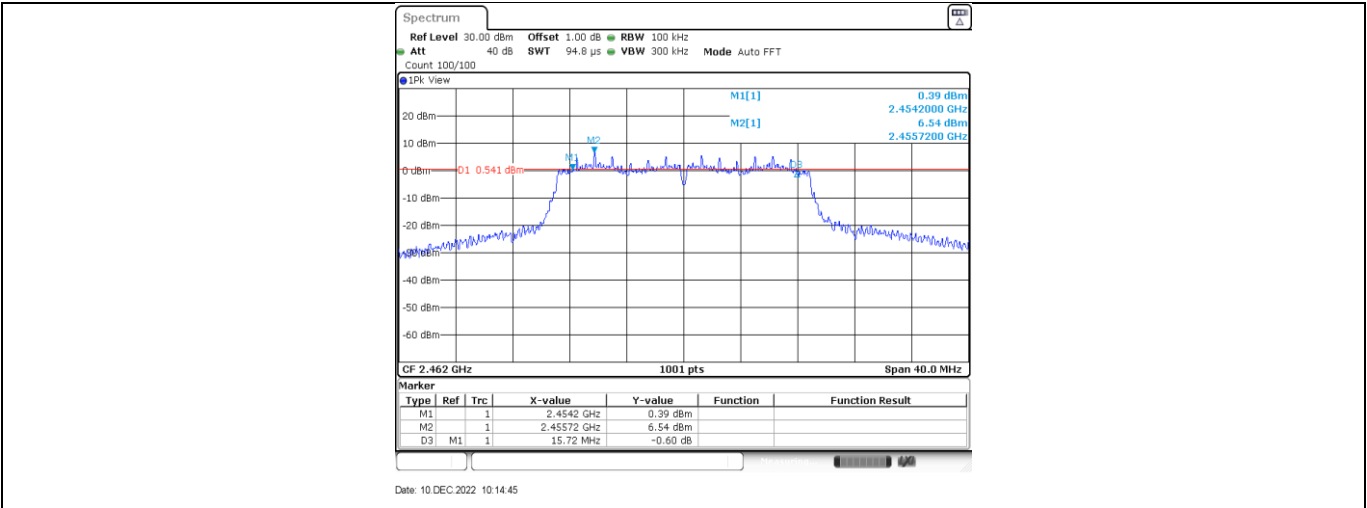
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## 11N20SISO\_Ant1\_2437



Date: 10 DEC 2022 10:18:40

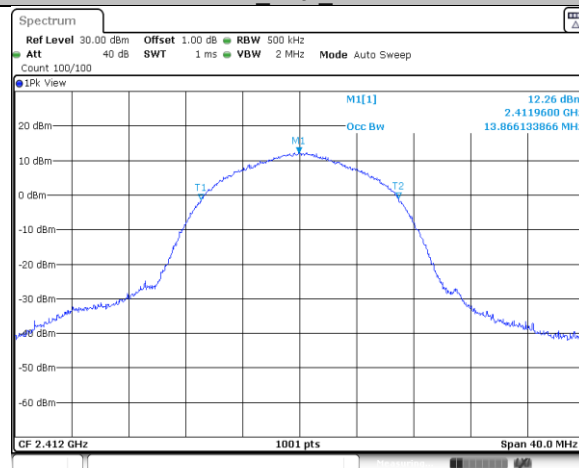
## 11N20SISO\_Ant1\_2462



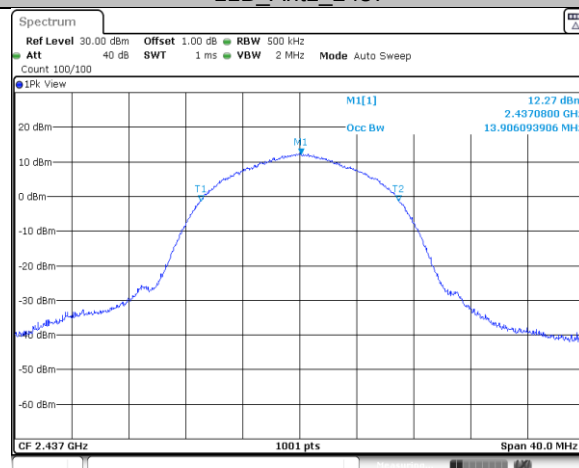
## 99% Bandwidth

| TestMode  | Antenna | Channel [MHz] | OCB [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|-----------|---------|---------------|-----------|----------|----------|------------|---------|
| 11B       | Ant0    | 2412          | 13.866    | 2405.087 | 2418.953 | ---        | PASS    |
|           |         | 2437          | 13.906    | 2430.047 | 2443.953 | ---        | PASS    |
|           |         | 2462          | 13.866    | 2455.047 | 2468.913 | ---        | PASS    |
| 11G       | Ant0    | 2412          | 17.582    | 2403.249 | 2420.831 | ---        | PASS    |
|           |         | 2437          | 17.622    | 2428.249 | 2445.871 | ---        | PASS    |
|           |         | 2462          | 17.622    | 2453.249 | 2470.871 | ---        | PASS    |
| 11N20SISO | Ant0    | 2412          | 19.141    | 2402.569 | 2421.710 | ---        | PASS    |
|           |         | 2437          | 19.141    | 2427.569 | 2446.710 | ---        | PASS    |
|           |         | 2462          | 18.941    | 2452.649 | 2471.590 | ---        | PASS    |

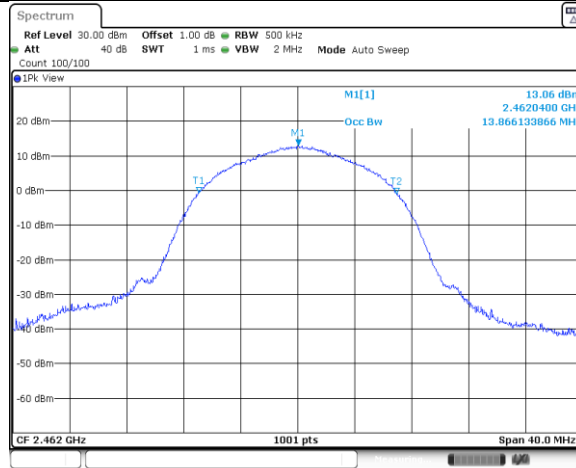
11B\_Ant1\_2412



11B\_Ant1\_2437

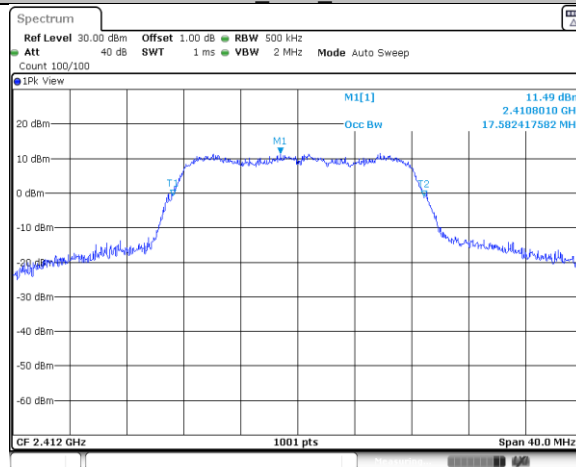


11B\_Ant1\_2462



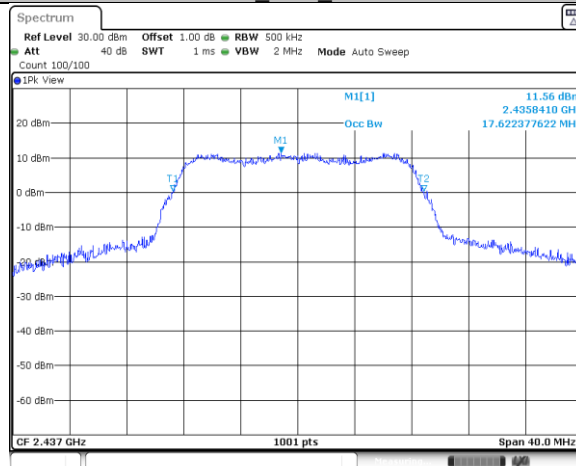
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### 11G\_Ant1\_2412



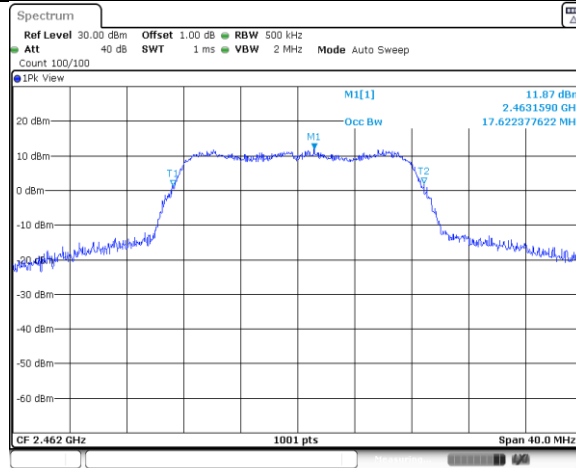
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### 11G\_Ant1\_2437



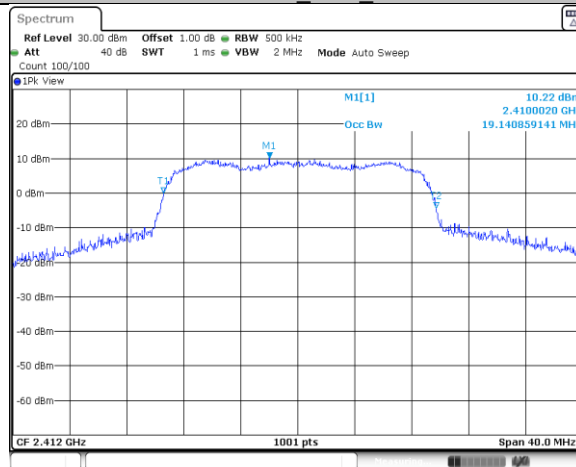
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### 11G\_Ant1\_2462



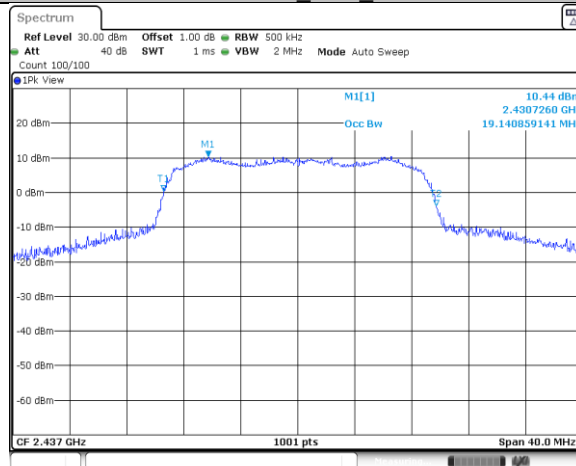
Date: 10 DEC 2022 10:56:53

### 11N20SISO\_Ant1\_2412



Date: 10 DEC 2022 10:24:26

### 11N20SISO\_Ant1\_2437



Date: 10 DEC 2022 10:18:51

### 11N20SISO\_Ant1\_2462



### 9.3 Power spectral density

#### Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

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 analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
3. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
4. Repeat above procedures until other frequencies measured were completed.

#### Limit

Limit [dBm/3KHz

$\leq 8$

802.11b modulation Test Result

| Frequency (MHz)        | Power spectral density (dBm/3KHz) | Limit (dBm) | Result |
|------------------------|-----------------------------------|-------------|--------|
|                        | Ant 1                             |             |        |
| Low channel 2412MHz    | -6.99                             | 8           | Pass   |
| Middle channel 2437MHz | -6.44                             | 8           | Pass   |
| High channel 2462MHz   | -5.86                             | 8           | Pass   |

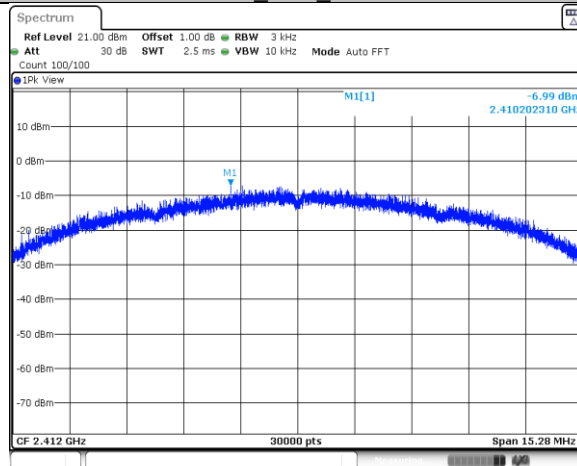
802.11g modulation Test Result

| Frequency (MHz)        | Power spectral density (dBm/3KHz) | Limit (dBm) | Result |
|------------------------|-----------------------------------|-------------|--------|
|                        | Ant 1                             |             |        |
| Low channel 2412MHz    | -9.43                             | 8           | Pass   |
| Middle channel 2437MHz | -9.45                             | 8           | Pass   |
| High channel 2462MHz   | -9.03                             | 8           | Pass   |

802.11n\_HT20 modulation Test Result

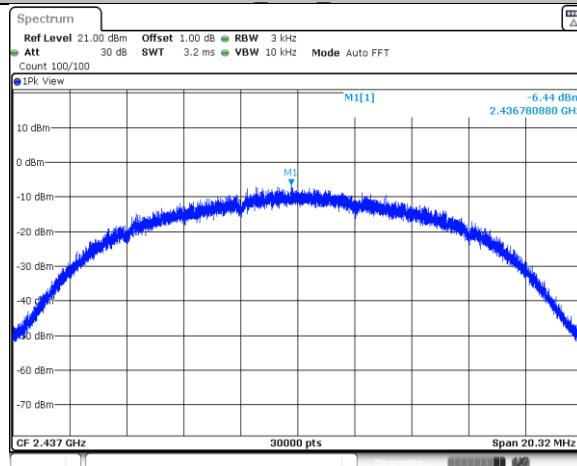
| Frequency (MHz)        | Power spectral density (dBm/3KHz) | Limit (dBm) | Result |
|------------------------|-----------------------------------|-------------|--------|
|                        | Ant 1                             |             |        |
| Low channel 2412MHz    | -8.13                             | 8           | Pass   |
| Middle channel 2437MHz | -8.07                             | 8           | Pass   |
| High channel 2462MHz   | -8.84                             | 8           | Pass   |

### 11B Ant1 2412



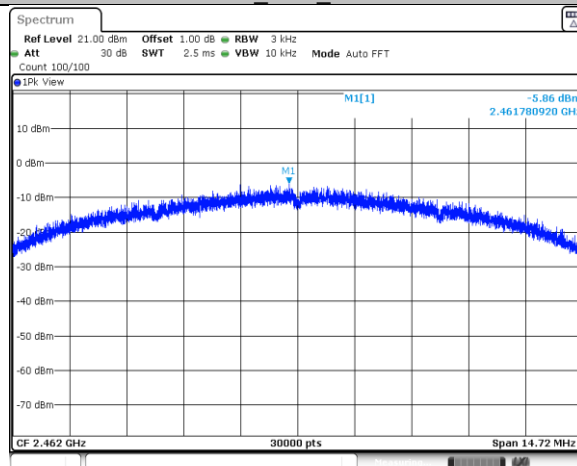
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### 11B Ant1 2437



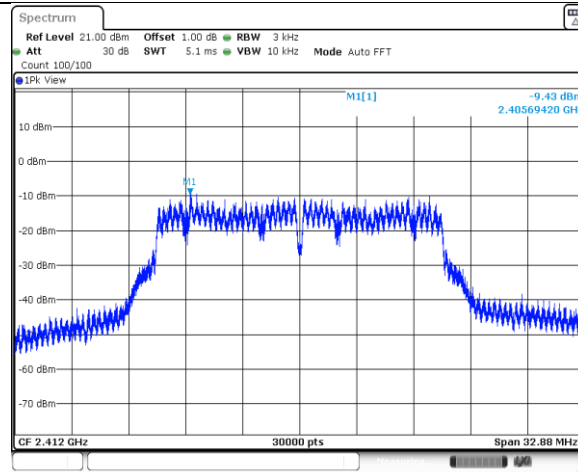
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### 11B Ant1 2462

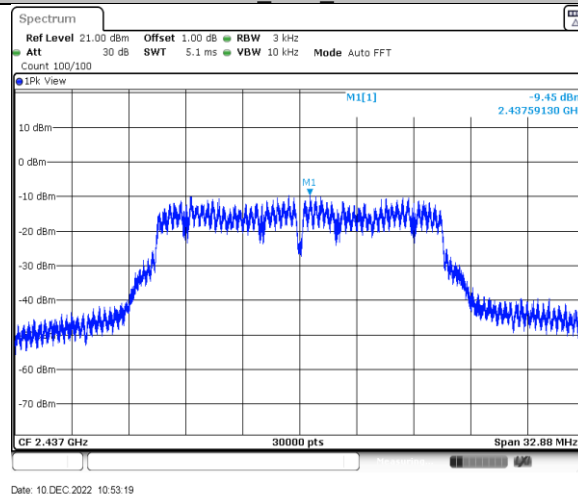


Date: 10 DEC 2022 10:45:29

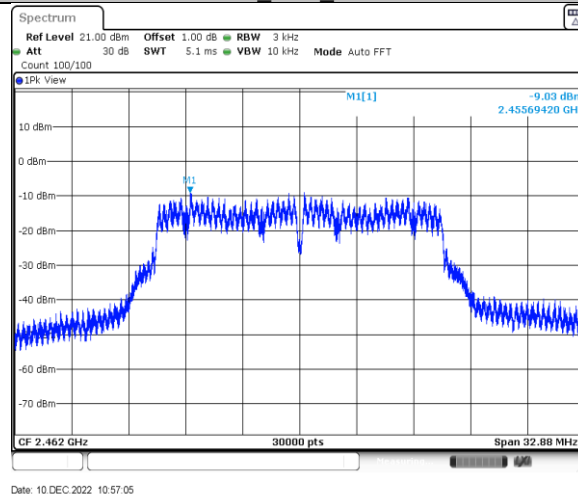
### 11G Ant1 2412



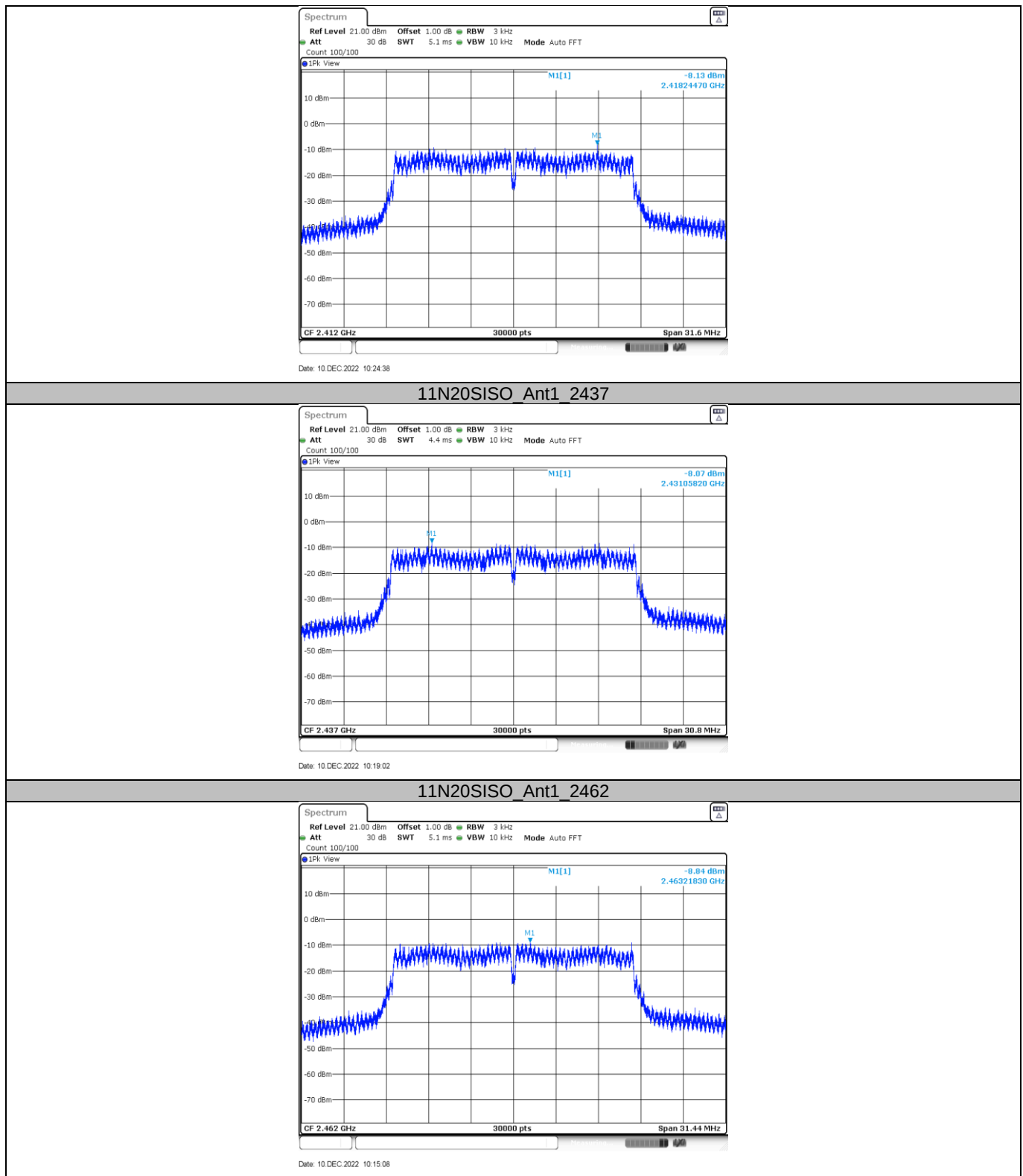
11G Ant1\_2437



11G Ant1\_2462



11N20SISO Ant1\_2412



## 9.4 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. Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10<sup>th</sup> harmonic. Typically, several plots are required to cover this entire span.  
RBW = 100 kHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
3. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
4. The level displayed must comply with the limit specified in this Section. Submit these plots.
5. Repeat above procedures until all frequencies measured were complete.

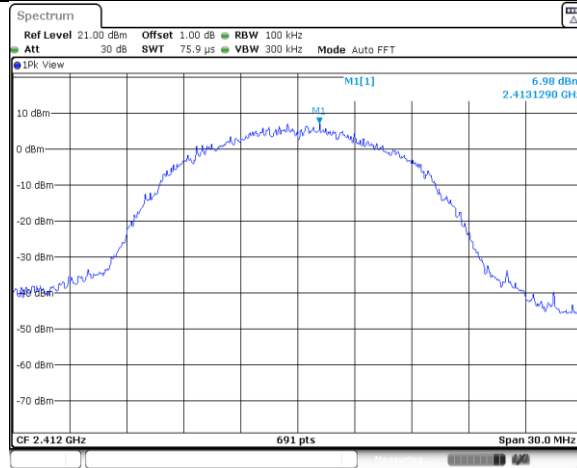
### Limit

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

## Spurious RF conducted emissions

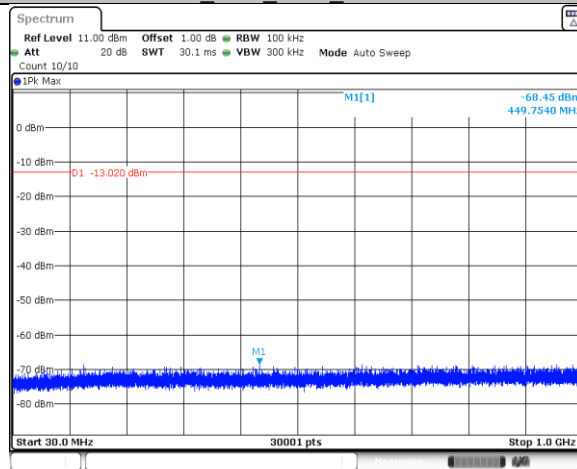
| TestMode  | Antenna | Channel(dBm) | FreqRange(MHz) | RefLevel       | Result(dBm) | Limit(dBm) | Verdict |
|-----------|---------|--------------|----------------|----------------|-------------|------------|---------|
| 11B       | Ant0    | 2412         | Reference      | 6.98 dBm       | 6.98        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -68.45      | <=-13.02   | PASS    |
|           |         |              | 1000~26500     | 1000~26500     | -39.49      | <=-13.02   | PASS    |
|           | Ant0    | 2437         | Reference      | 7.56 dBm       | 7.56        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -67.57      | <=-12.44   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -48.33      | <=-12.44   | PASS    |
|           | Ant0    | 2462         | Reference      | 7.46 dBm       | 7.46        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -67.89      | <=-12.54   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -49.86      | <=-12.54   | PASS    |
| 11G       | Ant0    | 2412         | Reference      | 5.67 dBm       | 5.67        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -68.07      | <=-14.33   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -31.37      | <=-14.33   | PASS    |
|           | Ant0    | 2437         | Reference      | 6.02 dBm       | 6.02        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -67.92      | <=-13.98   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -42.58      | <=-13.98   | PASS    |
|           | Ant0    | 2462         | Reference      | 6.21 dBm       | 6.21        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -68.25      | <=-13.79   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -38.77      | <=-13.79   | PASS    |
| 11N20SISO | Ant0    | 2412         | Reference      | 5.45 dBm       | 5.45        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -67.89      | <=-14.55   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -24.1       | <=-14.55   | PASS    |
|           | Ant0    | 2437         | Reference      | 5.12 dBm       | 5.12        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -68.16      | <=-14.88   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -48.99      | <=-14.88   | PASS    |
|           | Ant0    | 2462         | Reference      | 4.62 dBm       | 4.62        | ---        | PASS    |
|           |         |              | 30~1000        | 30~1000 MHz    | -67.81      | <=-15.38   | PASS    |
|           |         |              | 1000~26500     | 1000~26500 MHz | -34.67      | <=-15.38   | PASS    |

## 11B\_Ant1\_2412\_0~Reference



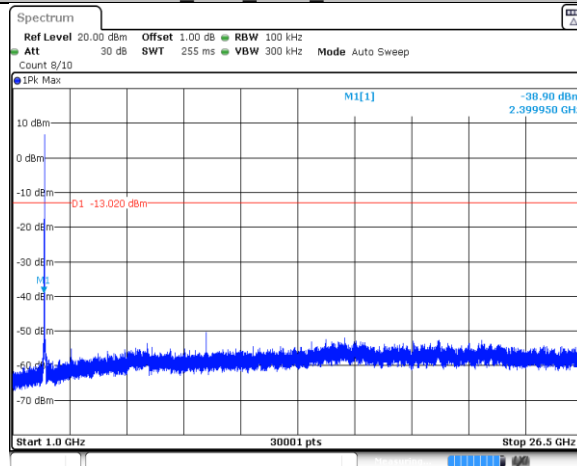
Date: 10 DEC 2022 10:34:34

## 11B\_Ant1\_2412\_30~1000



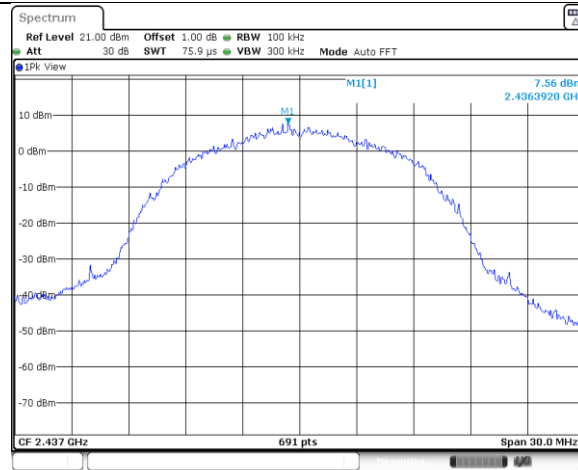
Date: 10 DEC 2022 10:34:40

## 11B\_Ant1\_2412\_1000~26500



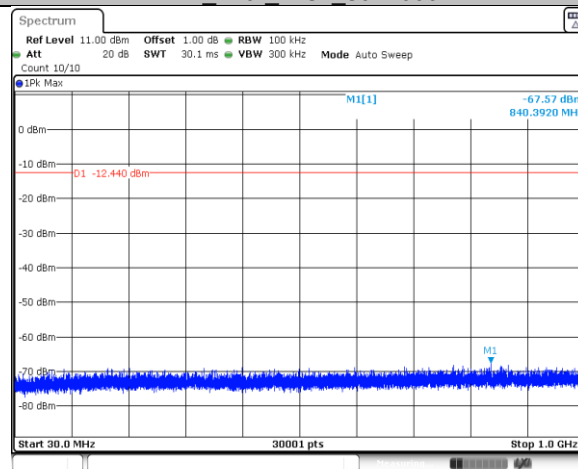
Date: 10 DEC 2022 10:34:48

## 11B\_Ant1\_2437\_0~Reference



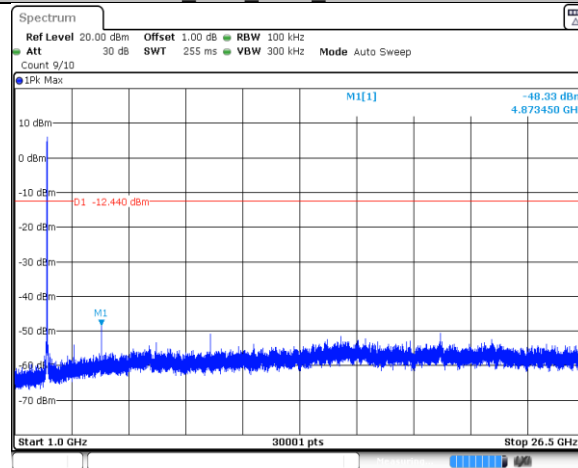
Date: 10 DEC 2022 10:39:17

### 11B\_Ant1\_2437\_30-1000



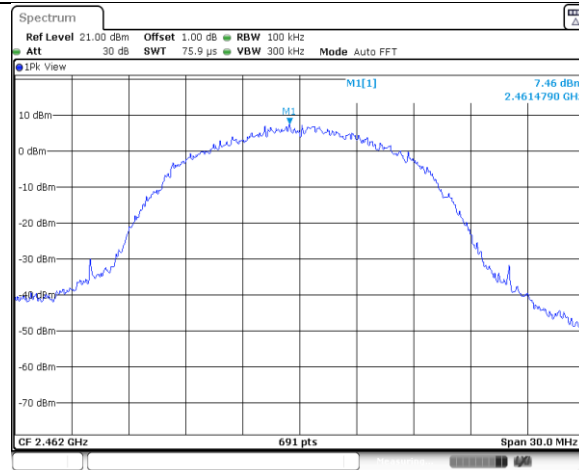
Date: 10 DEC 2022 10:39:23

### 11B\_Ant1\_2437\_1000-26500



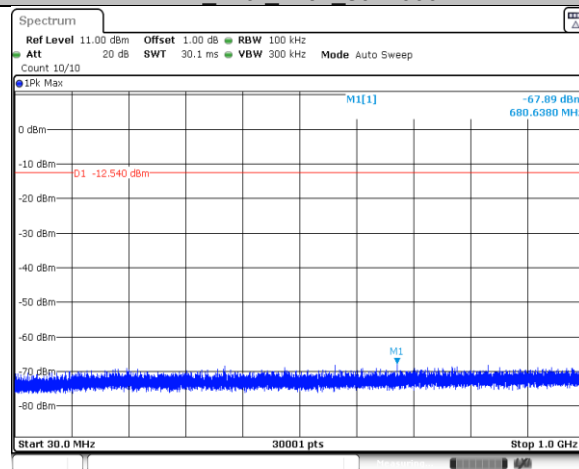
Date: 10 DEC 2022 10:39:30

### 11B\_Ant1\_2462\_0-Reference



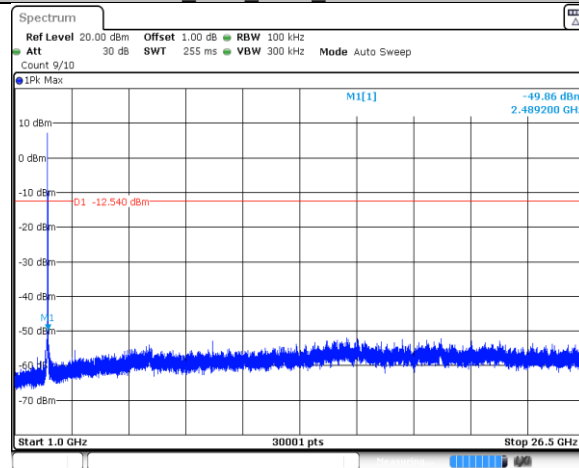
Date: 10 DEC 2022 10:45:44

## 11B\_Ant1\_2462\_30~1000



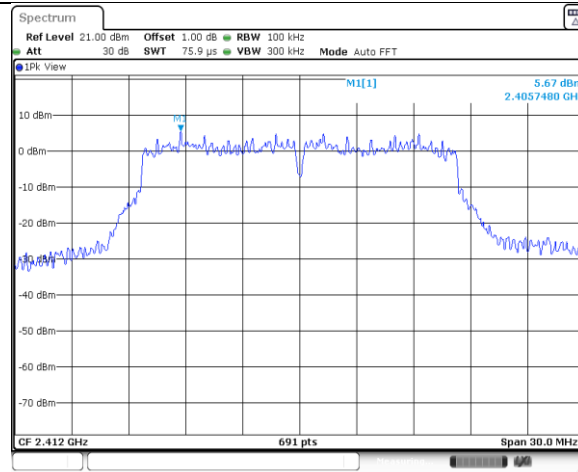
Date: 10 DEC 2022 10:45:50

## 11B\_Ant1\_2462\_1000~26500

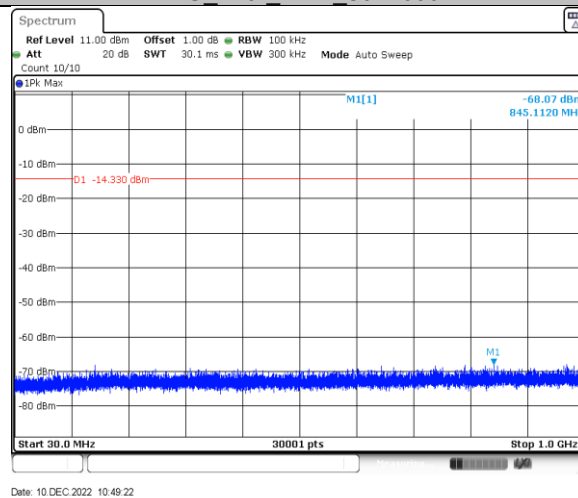


Date: 10 DEC 2022 10:45:58

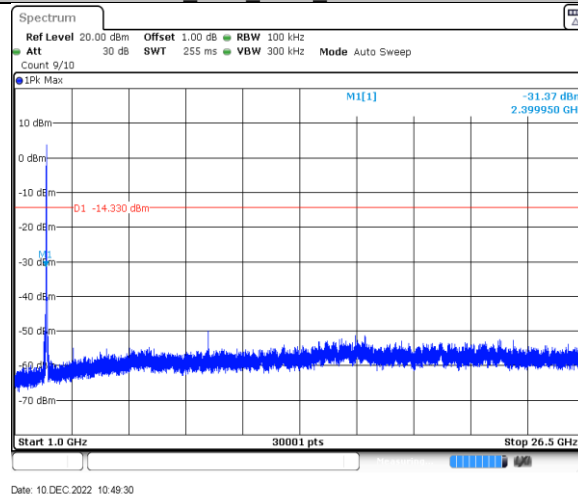
## 11G\_Ant1\_2412\_0~Reference



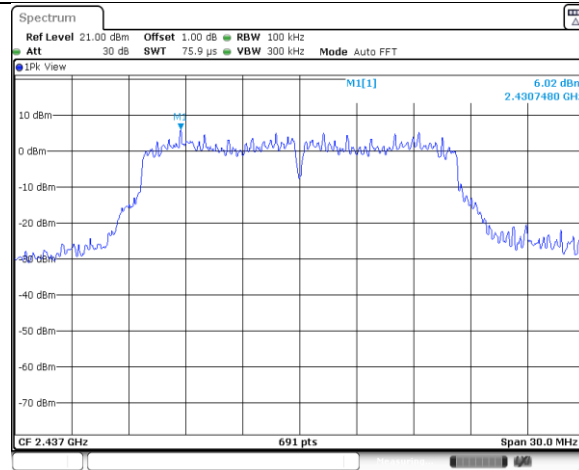
### 11G Ant1 2412 30-1000



### 11G Ant1 2412 1000-26500

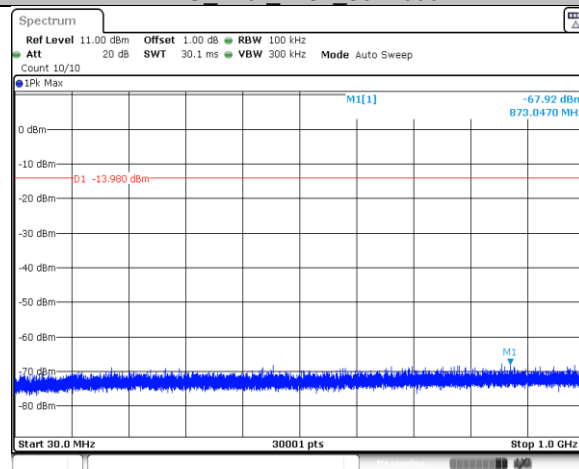


### 11G Ant1 2437 0-Reference



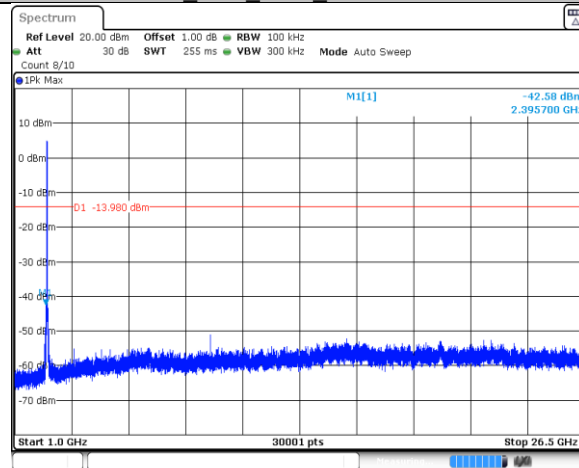
Date: 10 DEC 2022 10:53:24

## 11G\_Ant1\_2437\_30~1000



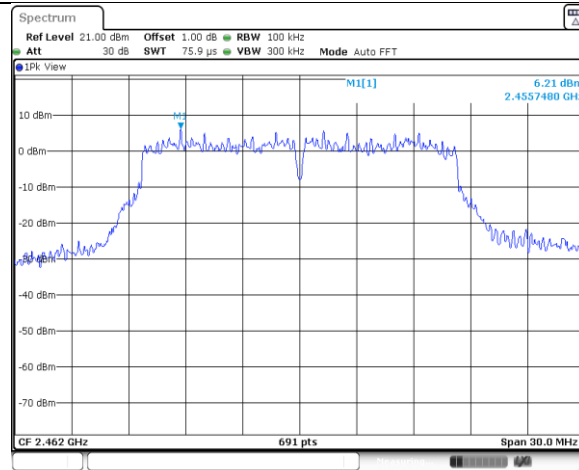
Date: 10 DEC 2022 10:53:31

## 11G\_Ant1\_2437\_1000~26500



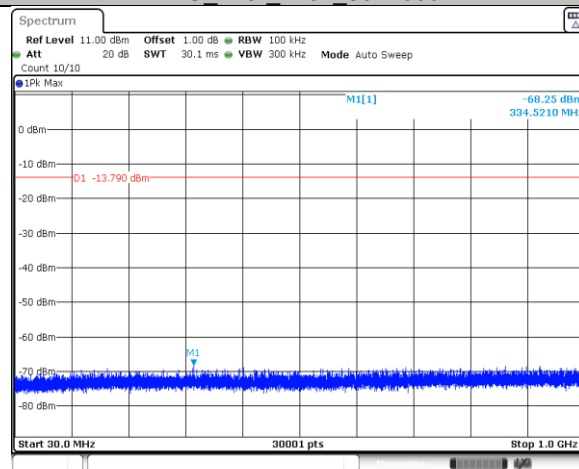
Date: 10 DEC 2022 10:53:38

## 11G\_Ant1\_2462\_0~Reference



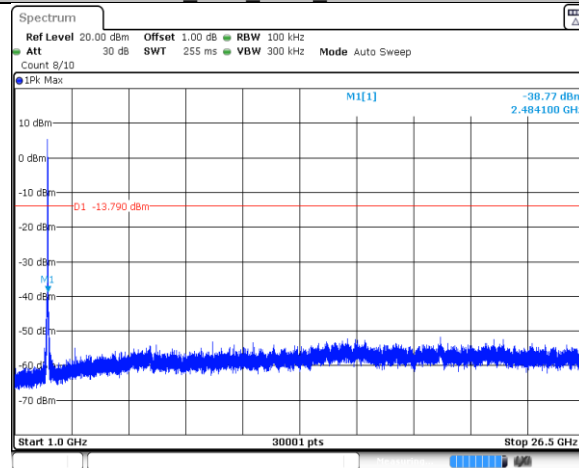
Date: 10 DEC 2022 10:57:20

## 11G\_Ant1\_2462\_30~1000



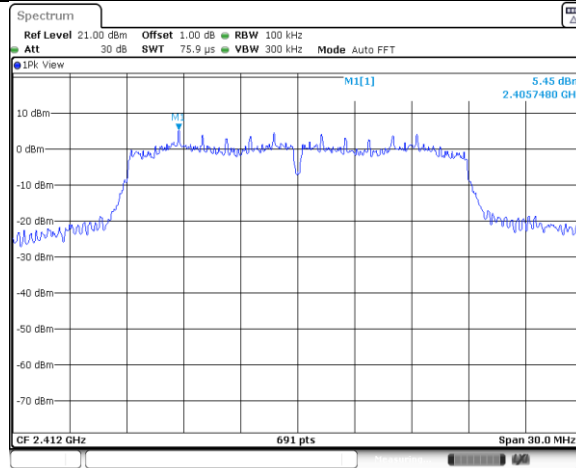
Date: 10 DEC 2022 10:57:26

## 11G\_Ant1\_2462\_1000~26500



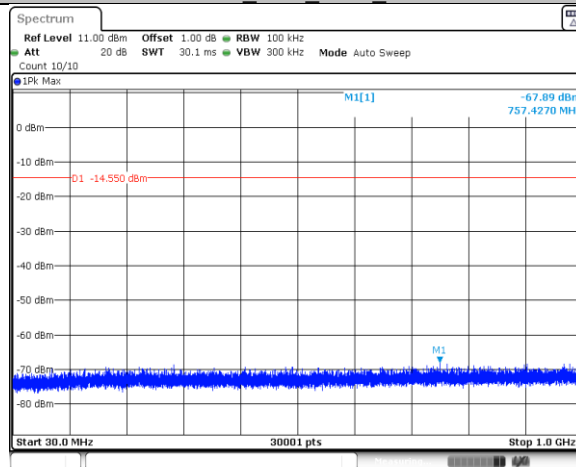
Date: 10 DEC 2022 10:57:34

## 11N20SISO\_Ant1\_2412\_0~Reference



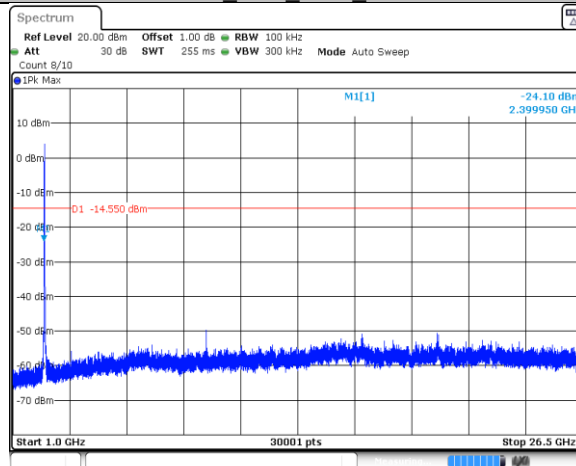
Date: 10 DEC 2022 10:24:53

### 11N20SISO\_Ant1\_2412\_30~1000



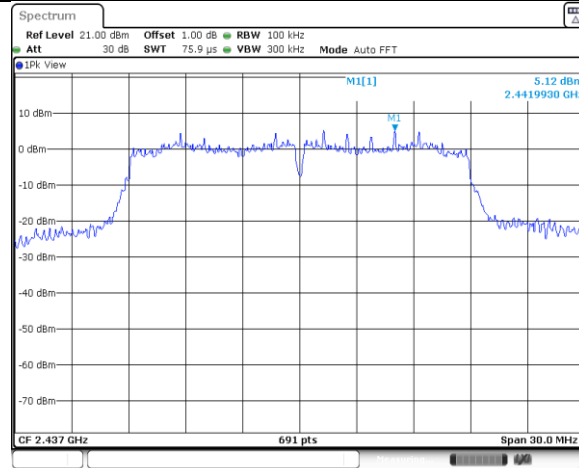
Date: 10 DEC 2022 10:24:59

### 11N20SISO\_Ant1\_2412\_1000~26500



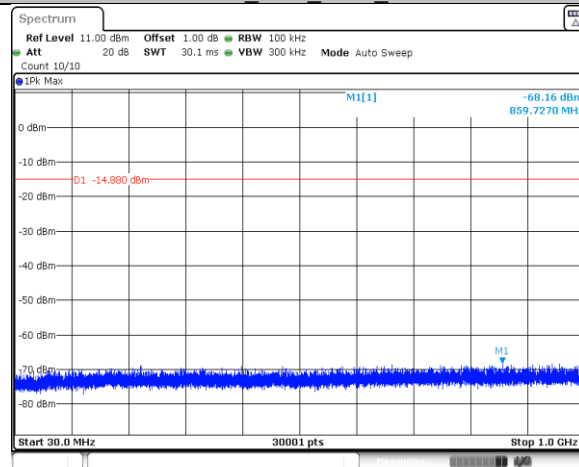
Date: 10 DEC 2022 10:25:07

### 11N20SISO\_Ant1\_2437\_0~Reference



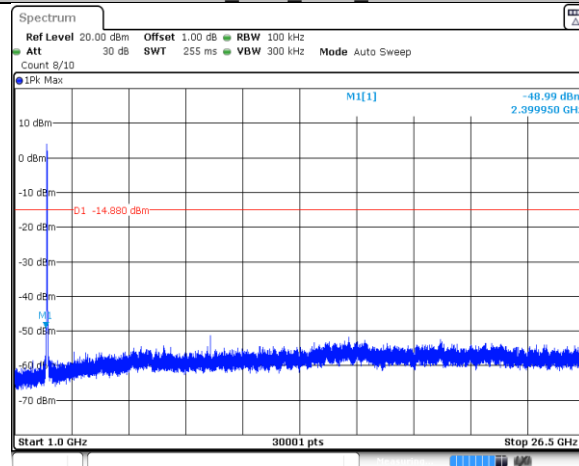
Date: 10 DEC 2022 10:19:08

## 11N20SISO\_Ant1\_2437\_30~1000



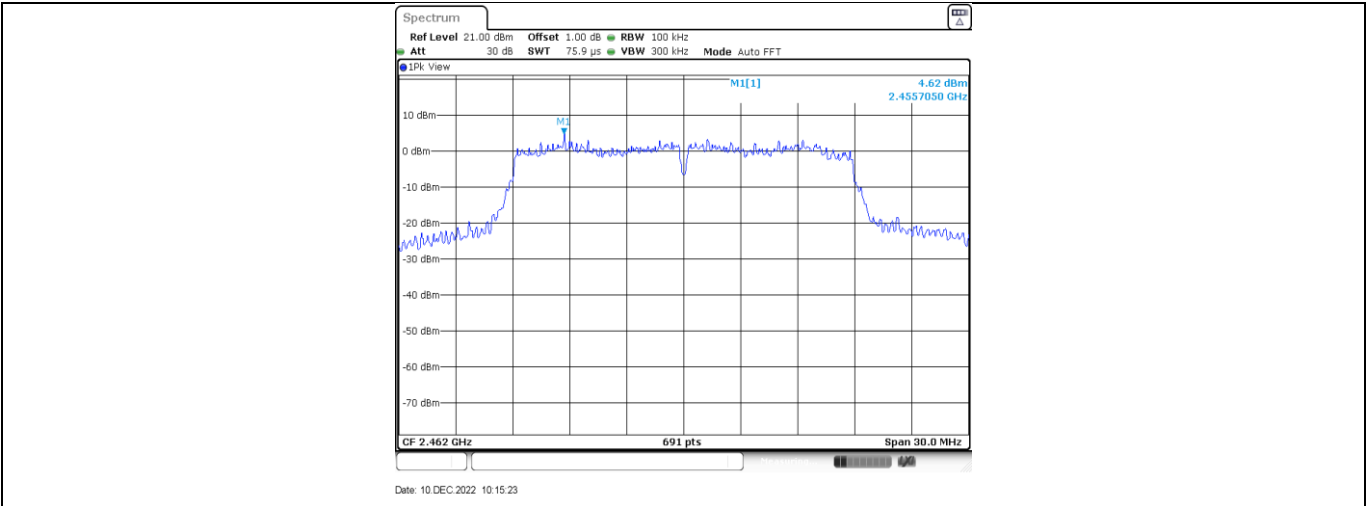
Date: 10 DEC 2022 10:19:14

## 11N20SISO\_Ant1\_2437\_1000~26500

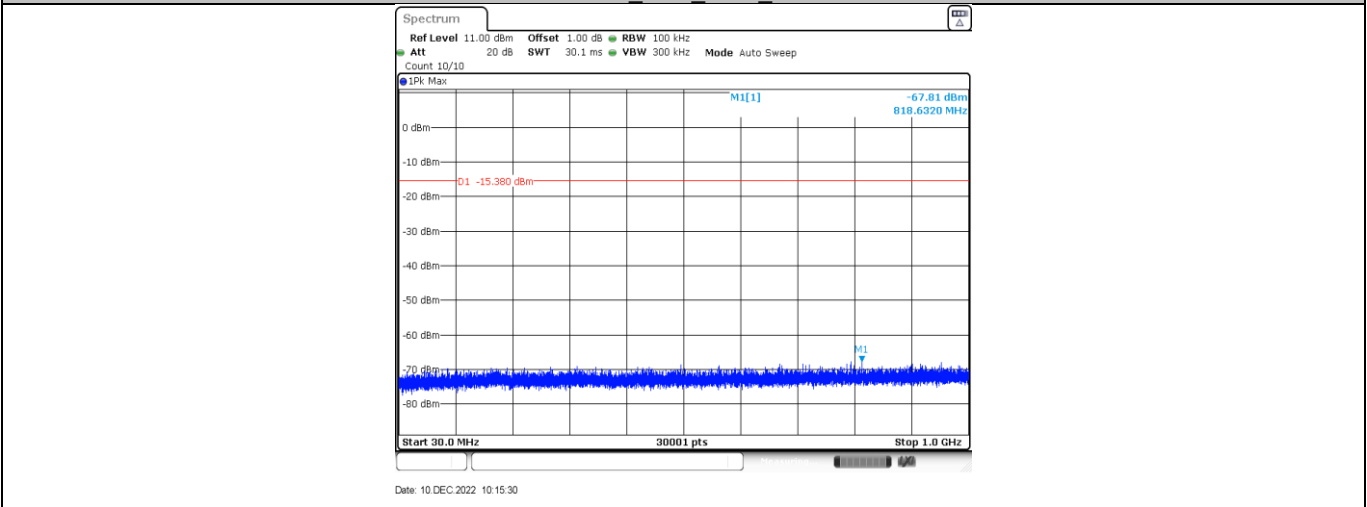


Date: 10 DEC 2022 10:19:22

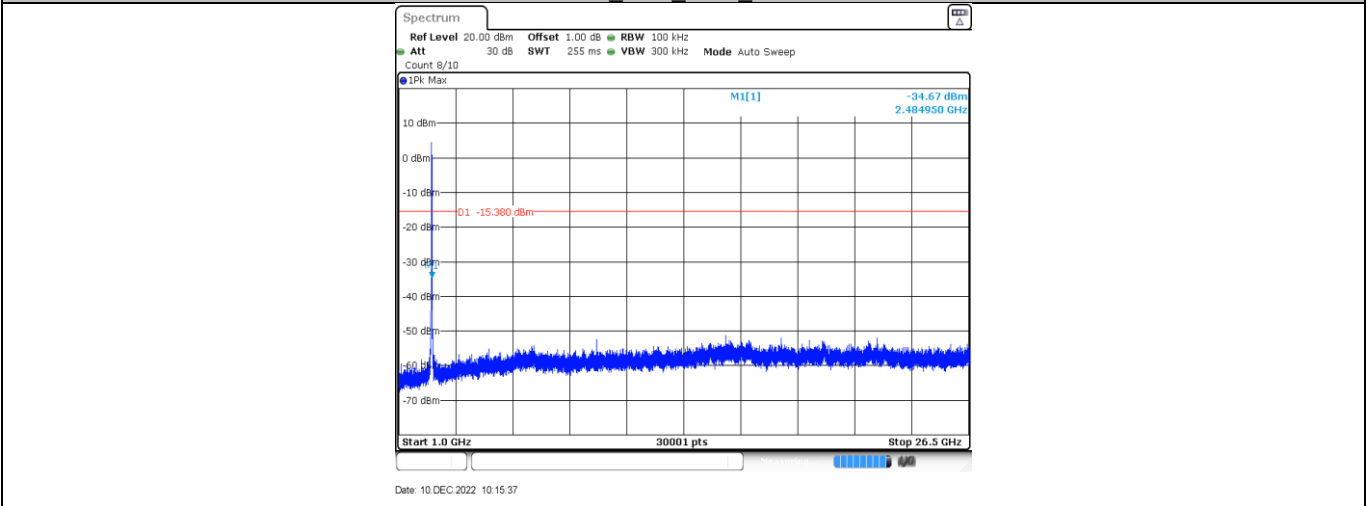
## 11N20SISO\_Ant1\_2462\_0~Reference



11N20SISO\_Ant1\_2462\_30~1000



11N20SISO\_Ant1\_2462\_1000~26500



## 9.5 Band edge testing

### 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. Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 kHz, VBW $\geq$ RBW, Sweep = auto, Detector function = peak, Trace = max hold
3. Allow the trace to stabilize, use the peak and delta measurement to record the result.
4. The level displayed must comply with the limit specified in this Section.
5. Repeat the test at the hopping off and hopping on mode, submit all the plots.

### Limit:

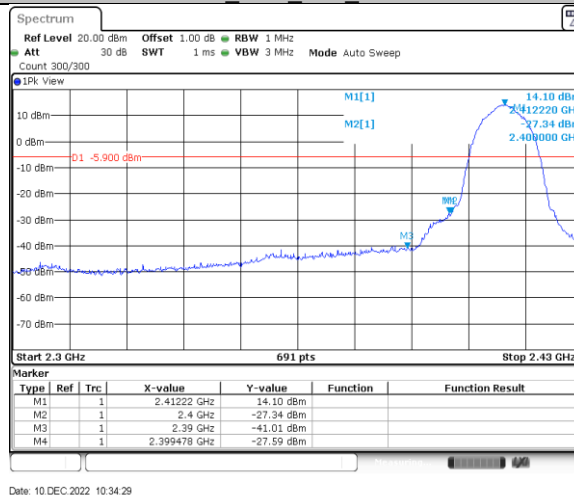
According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

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

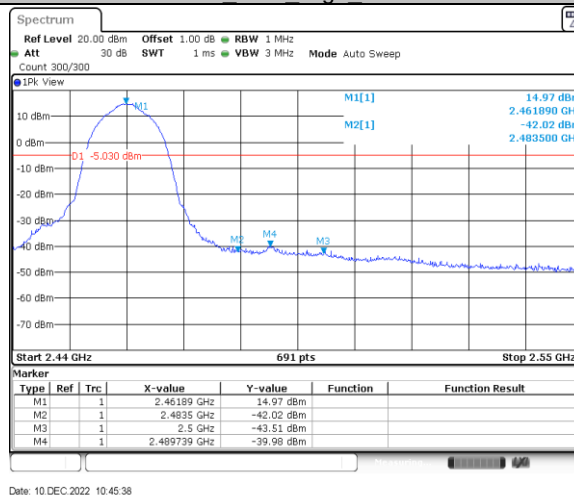
## Band edge testing

| TestMode | Antenna | ChName | Channel (MHz) | RefLevel (dBm) | Result (dBm) | Limit (dBm) | Verdict |
|----------|---------|--------|---------------|----------------|--------------|-------------|---------|
| 11B      | Ant0    | Low    | 2412          | 14.10          | -27.59       | <=-5.9      | PASS    |
|          | Ant0    | High   | 2462          | 14.97          | -39.98       | <=-5.03     | PASS    |
| 11G      | Ant0    | Low    | 2412          | 13.96          | -11.57       | <=-6.04     | PASS    |
|          | Ant0    | High   | 2462          | 15.14          | -17.57       | <=-4.86     | PASS    |
| 11N20    | Ant0    | Low    | 2412          | 12.86          | -8.04        | <=-7.14     | PASS    |
|          | Ant0    | Low    | 2462          | 14.07          | -12.65       | <=-5.93     | PASS    |

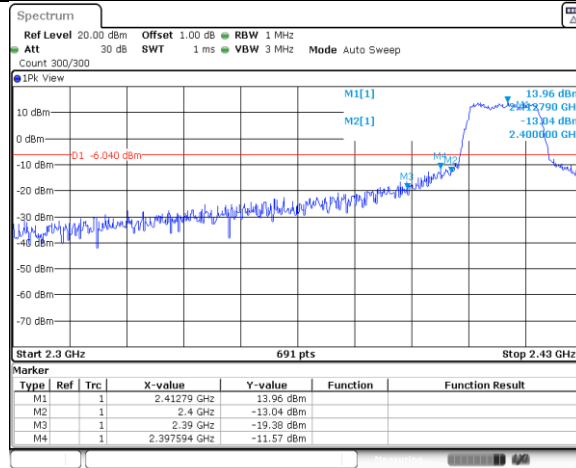
11B\_Ant1\_Low\_2412



11B\_Ant1\_High\_2462

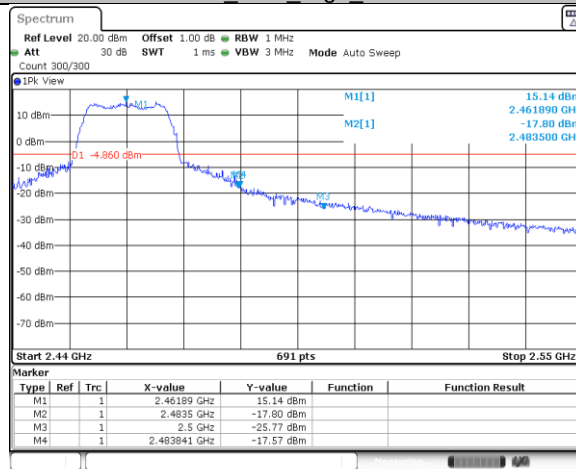


11G\_Ant1\_Low\_2412



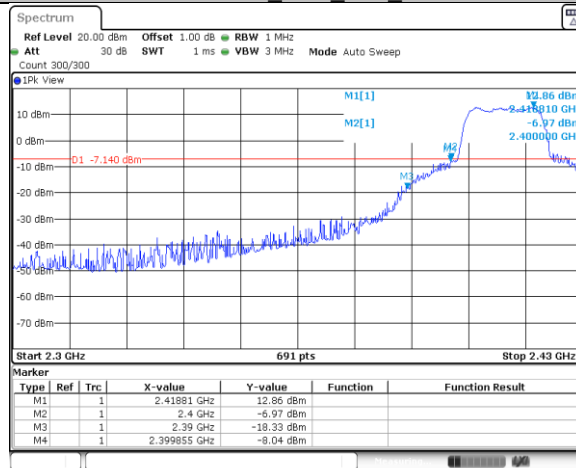
Date: 10 DEC 2022 10:49:10

## 11G Ant1 High 2462



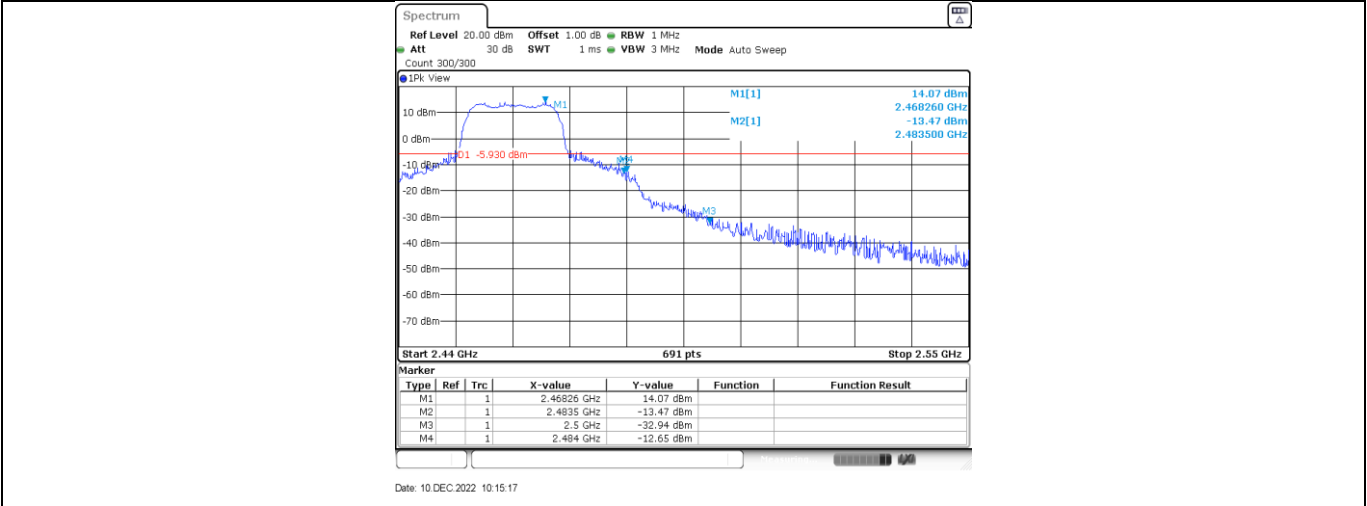
Date: 10 DEC 2022 10:57:14

## 11N20SISO Ant1 Low 2412



Date: 10 DEC 2022 10:24:47

## 11N20SISO Ant1 High 2462



## 9.6 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 spectrum analyzer settings According to C63.10:  
For Below 1GHz  
Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 KHz to 120KHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Peak unwanted emissions Above 1GHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 1MHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Procedures for average unwanted emissions measurements above 1000 MHz

a) RBW = 1MHz.

b)  $VBW \leq [3 \times RBW]$ .

c) Detector = RMS (power averaging), if  $[\text{span} / (\# \text{ of points in sweep})] \leq RBW / 2$ .

Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.

d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)

e) Sweep time = auto.

f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of  $1 / D$ , where  $D$  is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is  $[10 \log (1 / D)]$ , where  $D$  is the duty cycle. For example, if the transmit duty

cycle was 50%, then 3 dB shall be added to the measured emission levels.

2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is  $[20 \log (1 / D)]$ , where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

## 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.

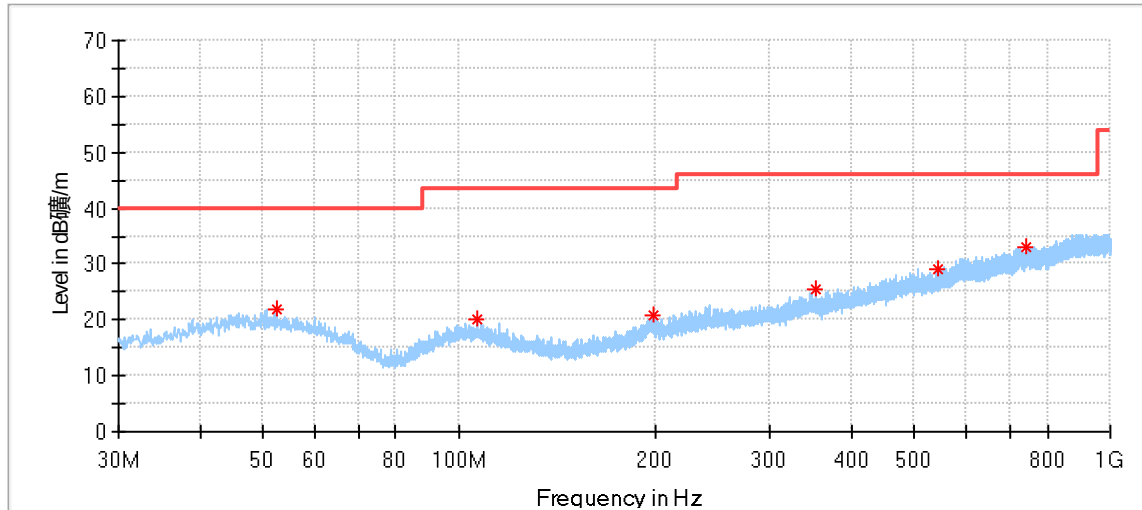
| Frequency<br>MHz | Field Strength<br>$\mu\text{V/m}$ | Field Strength<br>$\text{dB}\mu\text{V/m}$ | Detector |
|------------------|-----------------------------------|--------------------------------------------|----------|
| 30-88            | 100                               | 40                                         | QP       |
| 88-216           | 150                               | 43.5                                       | QP       |
| 216-960          | 200                               | 46                                         | QP       |
| 960-1000         | 500                               | 54                                         | QP       |
| Above 1000       | 500                               | 54                                         | AV       |
| Above 1000       | 5000                              | 74                                         | PK       |

## Spurious radiated emissions for transmitter

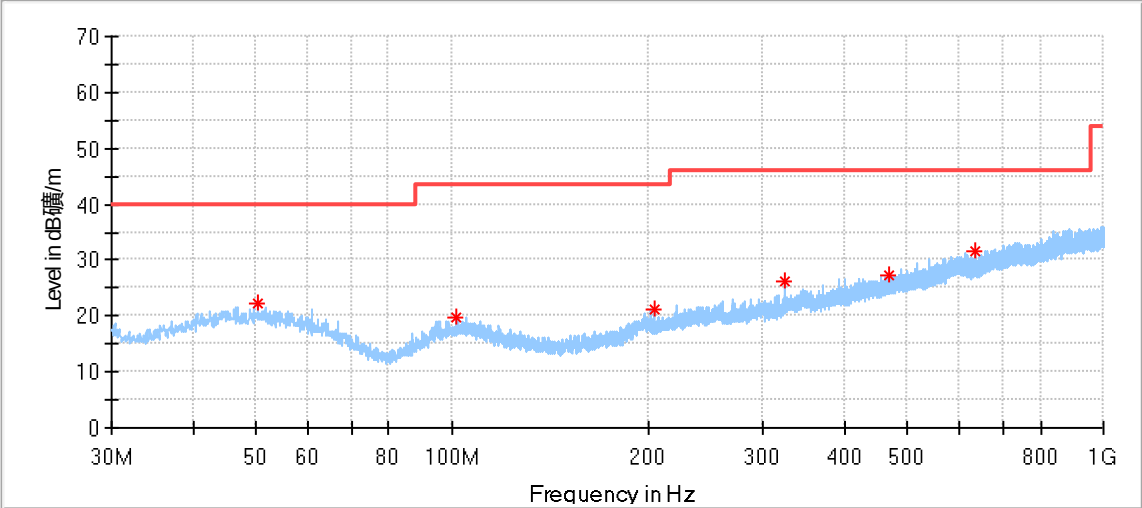
According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Transmitting spurious emission test result as below:

30MHz to 1000MHz:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 52.417778       | 22.04            | 40.00          | 17.96       | 200.0       | H   | 82.0          | 20.83        |
| 106.845556      | 20.26            | 43.50          | 23.24       | 200.0       | H   | 0.0           | 18.35        |
| 198.348889      | 20.67            | 43.50          | 22.83       | 100.0       | H   | 220.0         | 18.81        |
| 353.117778      | 25.51            | 46.00          | 20.49       | 200.0       | H   | 286.0         | 22.51        |
| 544.369444      | 29.13            | 46.00          | 16.87       | 100.0       | H   | 38.0          | 26.14        |
| 740.309444      | 33.18            | 46.00          | 12.82       | 200.0       | H   | 359.0         | 29.70        |

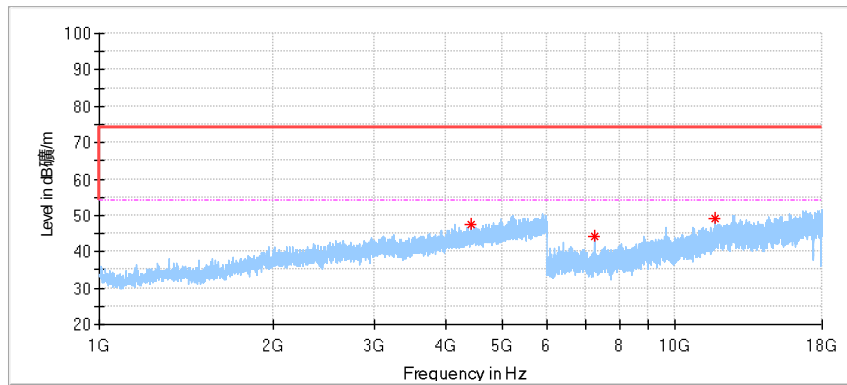


| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 50.316111       | 22.38            | 40.00          | 17.62       | 200.0       | V   | 143.0         | 20.88        |
| 101.402778      | 19.77            | 43.50          | 23.73       | 200.0       | V   | 0.0           | 18.52        |
| 203.953333      | 21.09            | 43.50          | 22.41       | 200.0       | V   | 80.0          | 18.14        |
| 323.963889      | 26.05            | 46.00          | 19.95       | 200.0       | V   | 349.0         | 21.67        |
| 468.709444      | 27.43            | 46.00          | 18.57       | 200.0       | V   | 107.0         | 24.72        |
| 636.842778      | 31.44            | 46.00          | 14.56       | 200.0       | V   | 341.0         | 27.51        |

**1GHz -18GHz:**

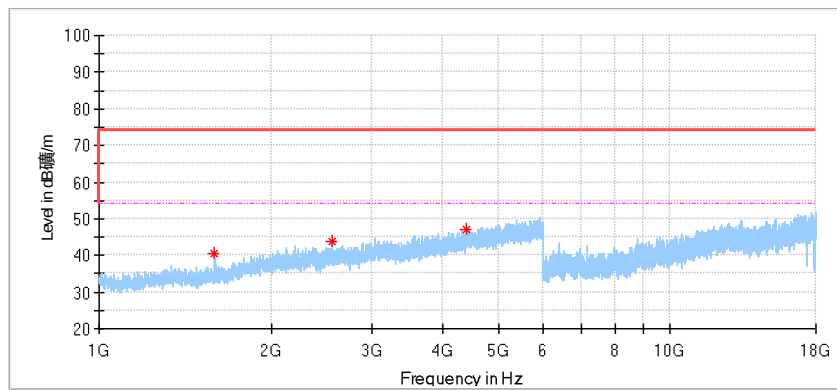
11B-Ant0\_2412MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 4413.000000     | 47.29            | 74.00          | 26.71       | 150.0       | H   | 255.0         | 2.93         |
| 7238.500000     | 44.05            | 74.00          | 29.95       | 150.0       | H   | 29.0          | 9.57         |
| 11734.000000    | 48.93            | 74.00          | 25.07       | 150.0       | H   | 330.0         | 16.50        |

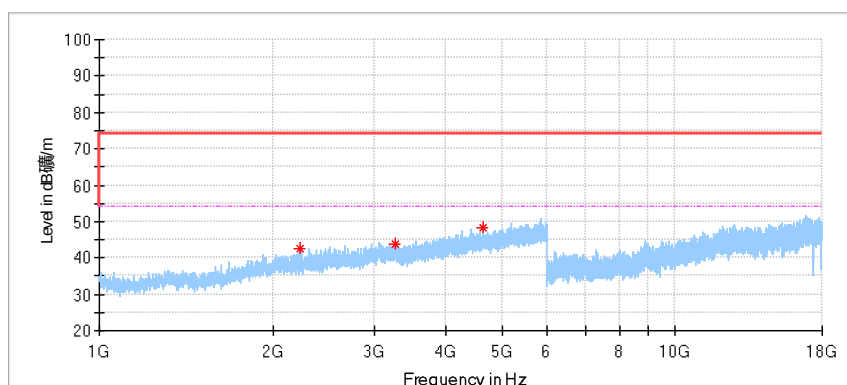
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1594.500000     | 40.46            | 74.00          | 33.54       | 150.0       | V   | 0.0           | -7.96        |
| 2565.000000     | 43.79            | 74.00          | 30.21       | 150.0       | V   | 294.0         | -2.27        |
| 4389.000000     | 47.15            | 74.00          | 26.85       | 150.0       | V   | 187.0         | 2.75         |

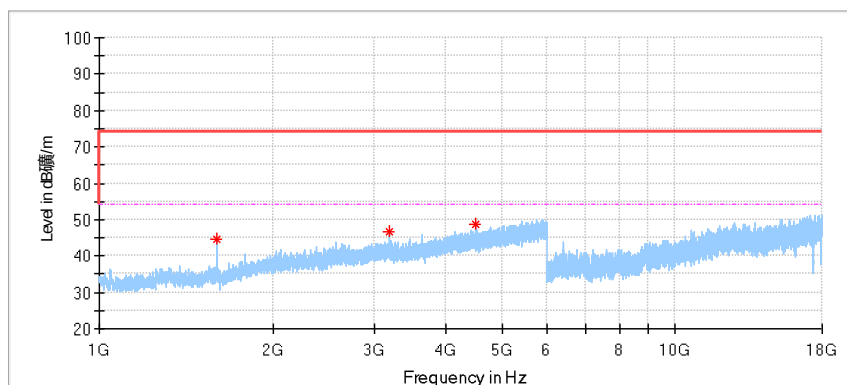
## 11B-Ant0\_2437MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2237.000000     | 42.71            | 74.00          | 31.29       | 150.0       | H   | 265.0         | -3.54        |
| 3272.500000     | 43.93            | 74.00          | 30.07       | 150.0       | H   | 88.0          | -0.52        |
| 4637.000000     | 48.33            | 74.00          | 25.67       | 150.0       | H   | 124.0         | 3.41         |

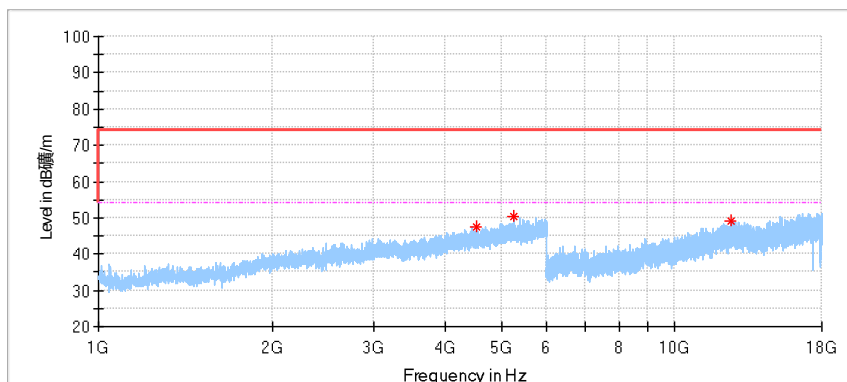
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1597.500000     | 44.57            | 74.00          | 29.43       | 150.0       | V   | 210.0         | -7.95        |
| 3193.000000     | 46.76            | 74.00          | 27.24       | 150.0       | V   | 148.0         | -0.67        |
| 4500.500000     | 48.80            | 74.00          | 25.20       | 150.0       | V   | 0.0           | 3.14         |

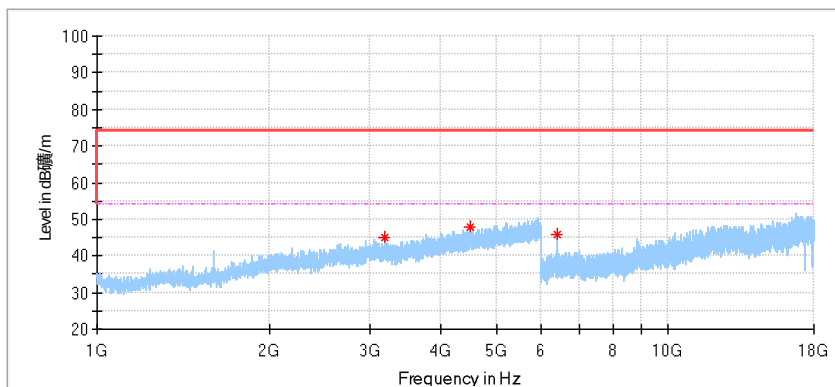
## 11B-Ant0\_2462MHz

## Horizontal:



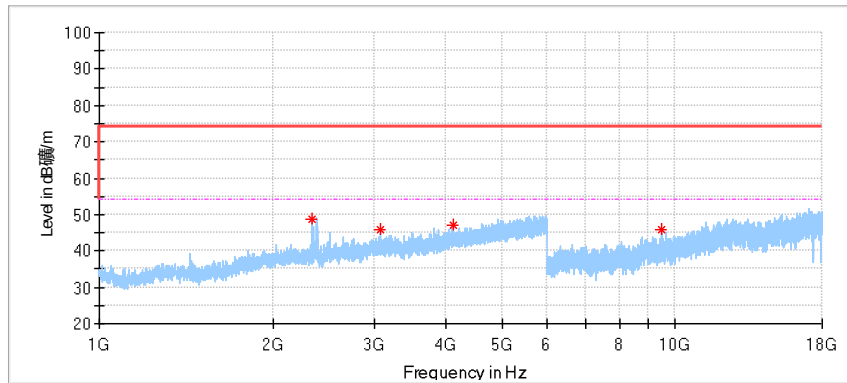
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 4527.000000     | 47.49            | 74.00          | 26.51       | 150.0       | H   | 121.0         | 3.06         |
| 5249.500000     | 50.19            | 74.00          | 23.81       | 150.0       | H   | 9.0           | 5.39         |
| 12534.500000    | 49.23            | 74.00          | 24.77       | 150.0       | H   | 268.0         | 17.53        |

## Vertical



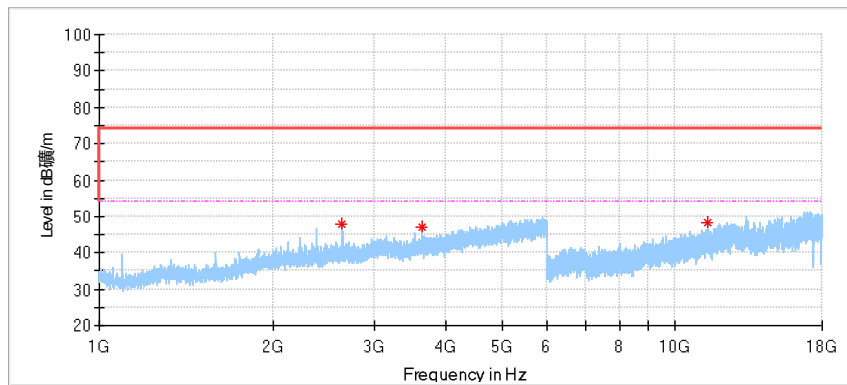
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 3198.000000     | 45.14            | 74.00          | 28.86       | 150.0       | V   | 219.0         | -0.69        |
| 4493.500000     | 48.00            | 74.00          | 26.00       | 150.0       | V   | 357.0         | 3.17         |
| 6394.000000     | 45.84            | 74.00          | 28.16       | 150.0       | V   | 272.0         | 9.28         |

11G-Ant0\_2412MHz  
Horizontal:



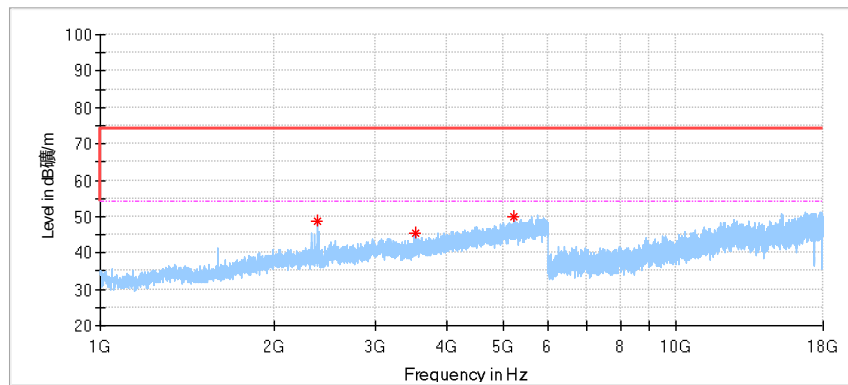
| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2339.500000     | 48.71            | 74.00          | 25.29       | 150.0       | H   | 209.0         | -3.30        |
| 3078.500000     | 45.86            | 74.00          | 28.14       | 150.0       | H   | 318.0         | -0.67        |
| 4109.000000     | 46.91            | 74.00          | 27.09       | 150.0       | H   | 201.0         | 2.14         |
| 9474.000000     | 45.78            | 74.00          | 28.22       | 150.0       | H   | 215.0         | 14.09        |

Vertical



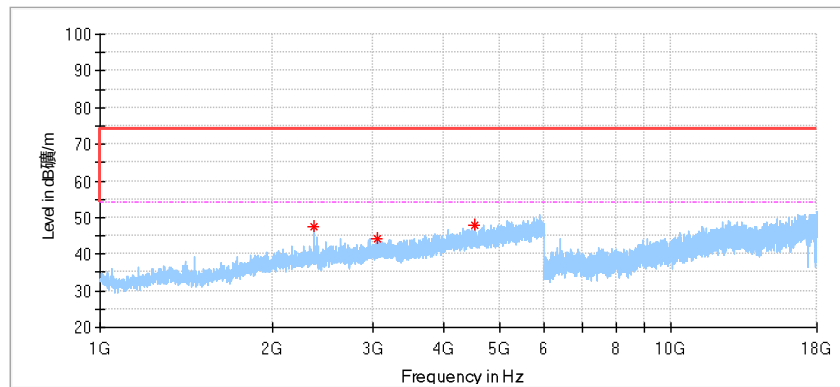
| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2639.500000     | 47.71            | 74.00          | 26.29       | 150.0       | V   | 183.0         | -2.10        |
| 3632.000000     | 47.17            | 74.00          | 26.83       | 150.0       | V   | 69.0          | 0.19         |
| 11400.000000    | 48.36            | 74.00          | 25.64       | 150.0       | V   | 6.0           | 15.91        |

11G-Ant0\_2437MHz  
Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2384.000000     | 48.85            | 74.00          | 25.15       | 150.0       | H   | 340.0         | -3.02        |
| 3535.500000     | 45.39            | 74.00          | 28.61       | 150.0       | H   | 155.0         | 0.06         |
| 5216.500000     | 49.89            | 74.00          | 24.11       | 150.0       | H   | 0.0           | 5.48         |

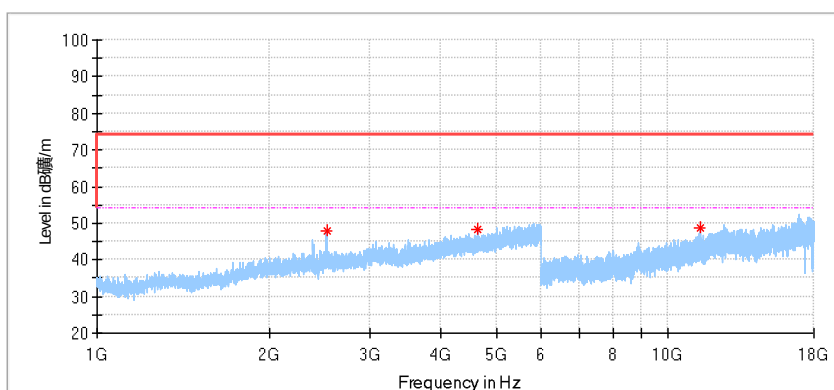
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2374.000000     | 47.30            | 74.00          | 26.70       | 150.0       | V   | 23.0          | -3.16        |
| 3063.500000     | 44.14            | 74.00          | 29.86       | 150.0       | V   | 319.0         | -0.51        |
| 4530.500000     | 47.82            | 74.00          | 26.18       | 150.0       | V   | 221.0         | 3.05         |
| 2374.000000     | 47.30            | 74.00          | 26.70       | 150.0       | V   | 23.0          | -3.16        |

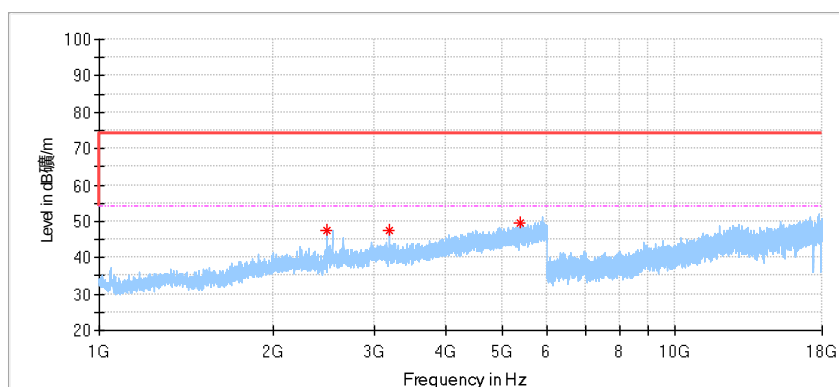
11G-Ant0\_2462MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2523.000000     | 47.90            | 74.00          | 26.10       | 150.0       | H   | 245.0         | -2.20        |
| 4629.000000     | 48.24            | 74.00          | 25.76       | 150.0       | H   | 50.0          | 3.38         |
| 11411.000000    | 48.54            | 74.00          | 25.46       | 150.0       | H   | 269.0         | 15.92        |

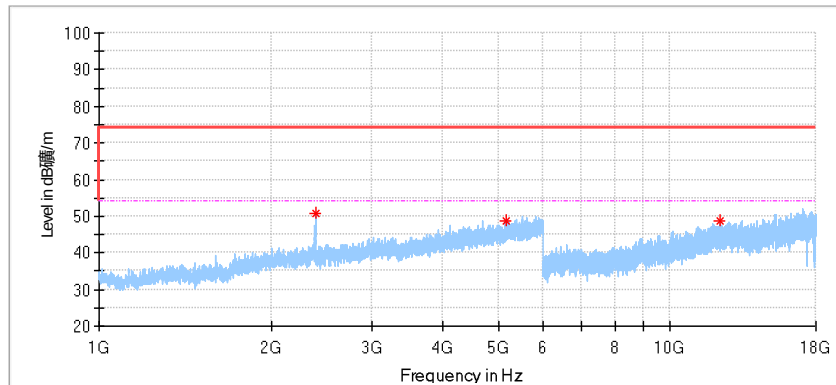
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2490.000000     | 47.52            | 74.00          | 26.48       | 150.0       | V   | 253.0         | -2.18        |
| 3189.500000     | 47.66            | 74.00          | 26.34       | 150.0       | V   | 293.0         | -0.67        |
| 5373.000000     | 49.34            | 74.00          | 24.66       | 150.0       | V   | 226.0         | 5.32         |

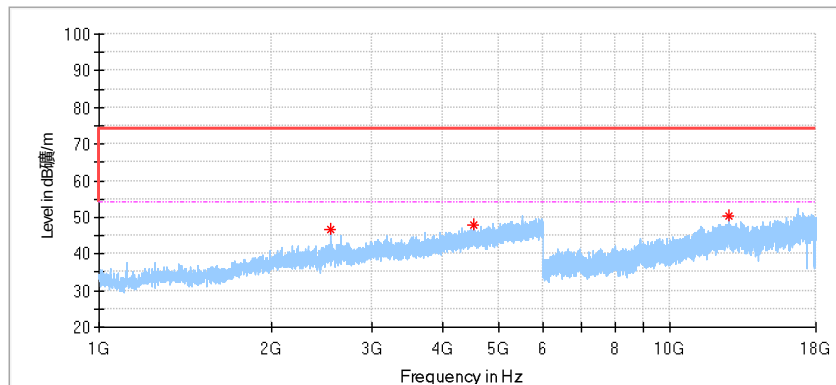
## 11N-HT20-Ant 1\_2412MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|---------------|-------------|-------------|-----|---------------|--------------|
| 2393.500000     | 50.71            | 74.00         | 23.29       | 150.0       | H   | 253.0         | -2.86        |
| 5171.500000     | 48.63            | 74.00         | 25.37       | 150.0       | H   | 59.0          | 5.32         |
| 12220.500000    | 48.80            | 74.00         | 25.20       | 150.0       | H   | 136.0         | 17.27        |

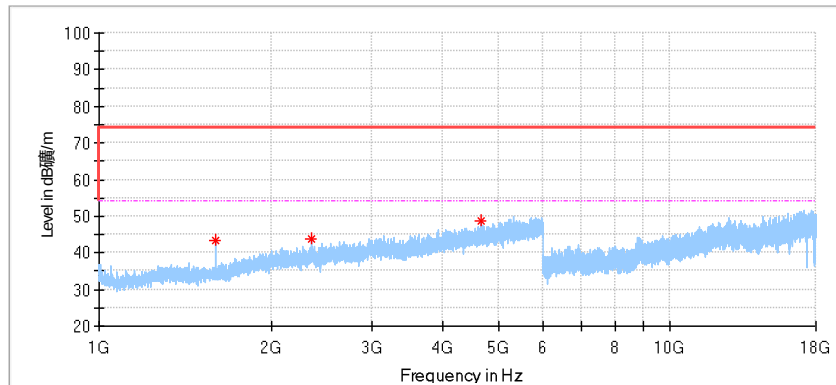
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2539.500000     | 46.87            | 74.00          | 27.13       | 150.0       | V   | 291.0         | -2.21        |
| 4520.000000     | 47.91            | 74.00          | 26.09       | 150.0       | V   | 0.0           | 3.08         |
| 12688.500000    | 50.35            | 74.00          | 23.65       | 150.0       | V   | 216.0         | 18.09        |

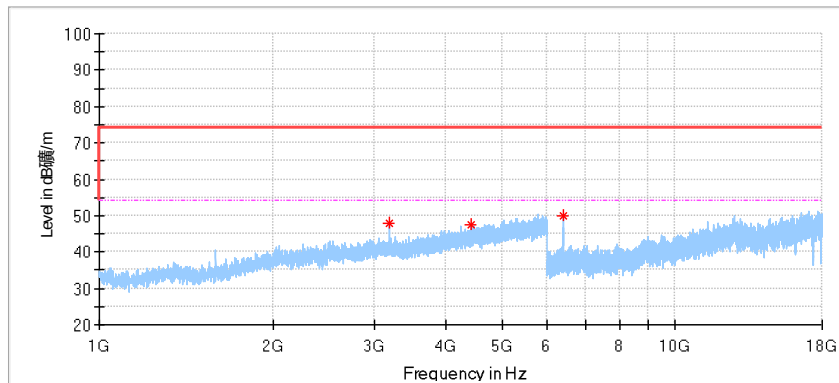
## 11N-HT20-Ant 1\_2437MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1597.000000     | 43.33            | 74.00          | 30.68       | 150.0       | H   | 294.0         | -7.95        |
| 2356.000000     | 43.79            | 74.00          | 30.21       | 150.0       | H   | 276.0         | -3.29        |
| 4676.000000     | 48.52            | 74.00          | 25.48       | 150.0       | H   | 85.0          | 3.57         |

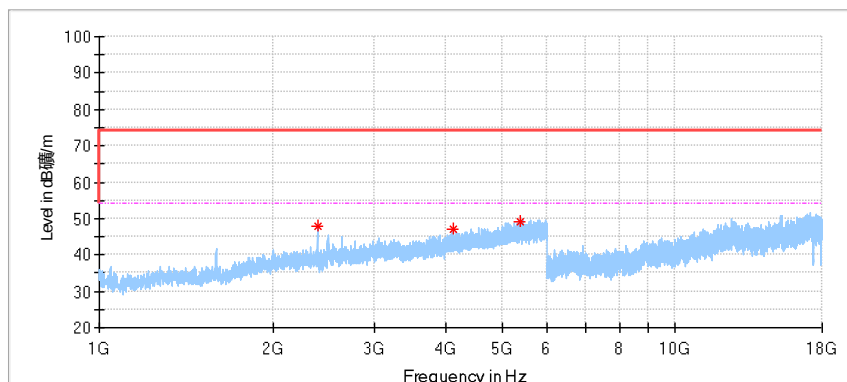
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 3196.500000     | 47.71            | 74.00          | 26.29       | 150.0       | V   | 157.0         | -0.68        |
| 4435.000000     | 47.68            | 74.00          | 26.32       | 150.0       | V   | 59.0          | 3.02         |
| 6386.000000     | 49.97            | 74.00          | 24.03       | 150.0       | V   | 269.0         | 9.34         |

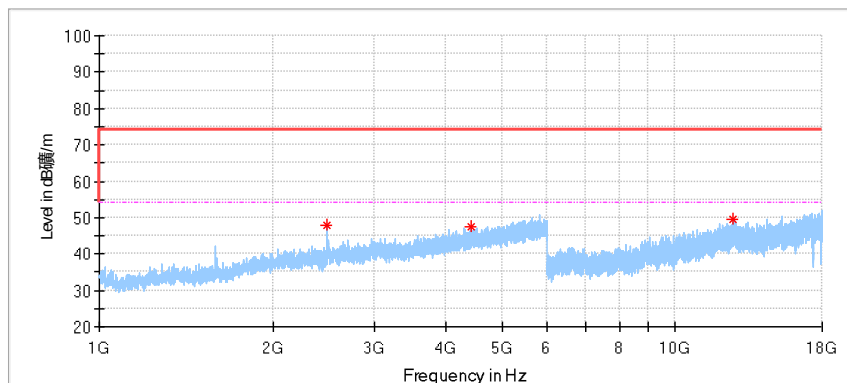
## 11N-HT20-Ant 1\_2462MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2390.000000     | 48.02            | 74.00          | 25.98       | 150.0       | H   | 267.0         | -2.92        |
| 4127.000000     | 46.99            | 74.00          | 27.01       | 150.0       | H   | 4.0           | 2.13         |
| 5381.000000     | 49.06            | 74.00          | 24.94       | 150.0       | H   | 151.0         | 5.33         |

Vertical

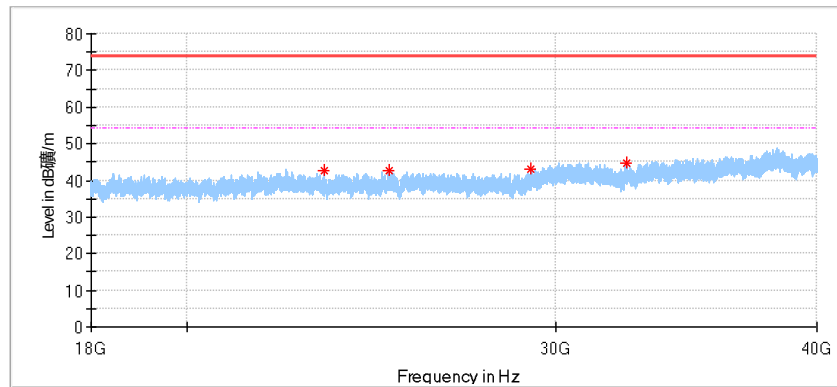


| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2491.000000     | 47.75            | 74.00          | 26.25       | 150.0       | V   | 228.0         | -2.18        |
| 4411.500000     | 47.64            | 74.00          | 26.36       | 150.0       | V   | 264.0         | 2.93         |
| 12606.000000    | 49.74            | 74.00          | 24.26       | 150.0       | V   | 30.0          | 18.26        |

**Above 18GHz:**

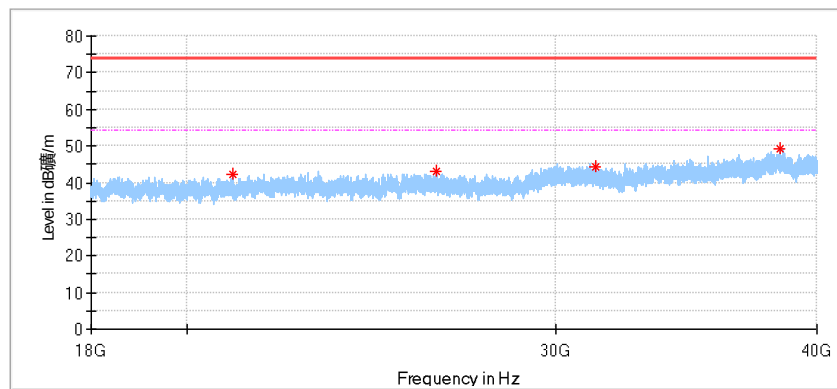
11B\_2412MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 23262.125000    | 42.65            | 74.00          | 31.35       | 150.0       | H   | 0.0           | 0.12         |
| 24976.062500    | 42.52            | 74.00          | 31.48       | 150.0       | H   | 4.0           | 1.21         |
| 29192.500000    | 43.25            | 74.00          | 30.75       | 150.0       | H   | 177.0         | 1.24         |
| 32443.687500    | 44.72            | 74.00          | 29.28       | 150.0       | H   | 207.0         | 1.95         |

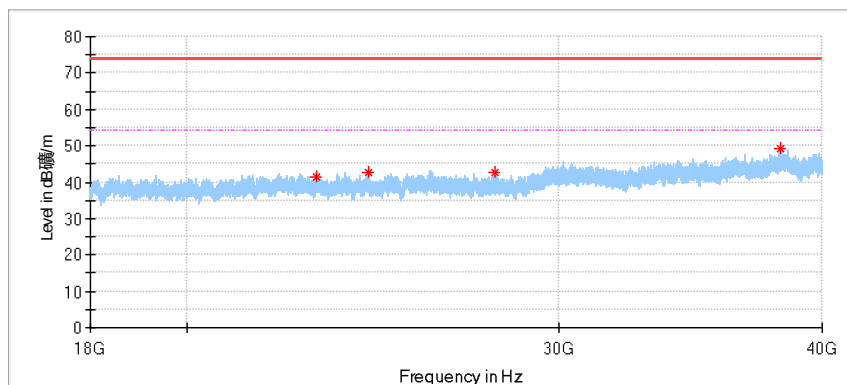
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 21040.812500    | 42.31            | 74.00          | 31.69       | 150.0       | V   | 0.0           | -0.62        |
| 26336.625000    | 43.20            | 74.00          | 30.80       | 150.0       | V   | 199.0         | 1.46         |
| 31364.312500    | 44.42            | 74.00          | 29.58       | 150.0       | V   | 153.0         | 1.72         |
| 38398.812500    | 49.19            | 74.00          | 24.81       | 150.0       | V   | 16.0          | 6.57         |

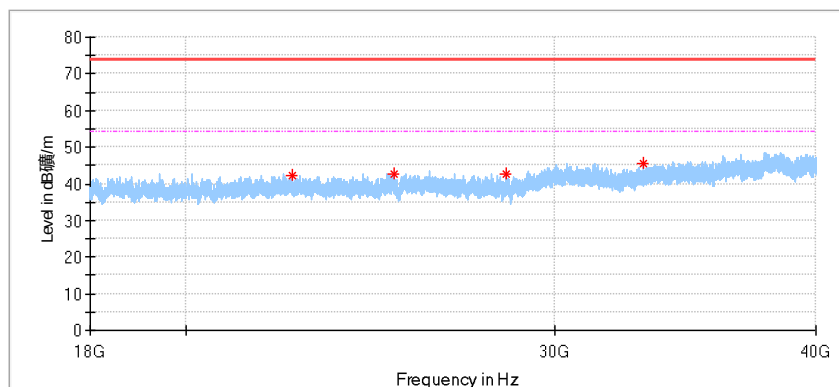
11B\_2437MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 23050.375000    | 41.43            | 74.00          | 32.57       | 150.0       | H   | 0.0           | 0.52         |
| 24399.937500    | 42.82            | 74.00          | 31.18       | 150.0       | H   | 264.0         | 0.59         |
| 27979.750000    | 42.74            | 74.00          | 31.26       | 150.0       | H   | 66.0          | 1.24         |
| 38211.125000    | 49.39            | 74.00          | 24.61       | 150.0       | H   | 188.0         | 6.03         |

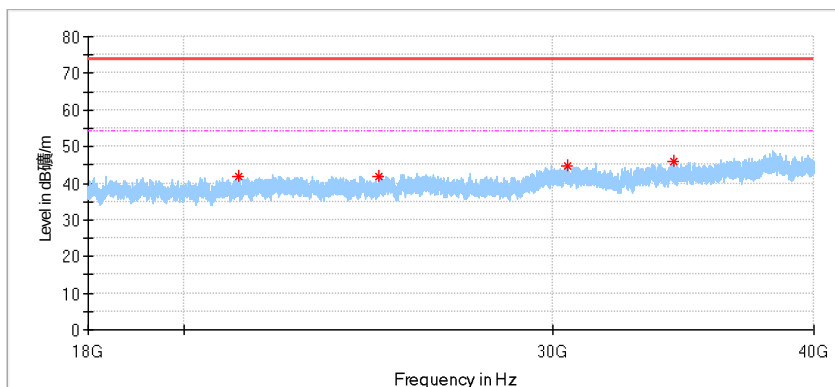
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 22480.437500    | 42.42            | 74.00          | 31.58       | 150.0       | V   | 31.0          | 0.43         |
| 25134.875000    | 42.76            | 74.00          | 31.24       | 150.0       | V   | 312.0         | 1.25         |
| 28466.500000    | 42.50            | 74.00          | 31.50       | 150.0       | V   | 0.0           | 0.96         |
| 33080.312500    | 45.50            | 74.00          | 28.50       | 150.0       | V   | 126.0         | 2.41         |

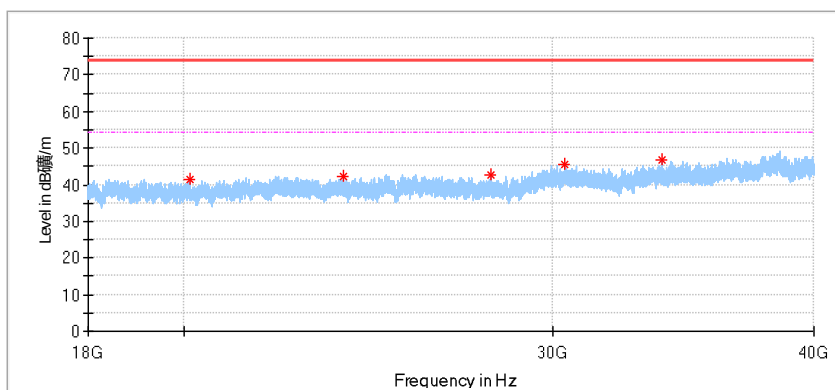
11B\_2462MHz

Horizontal:



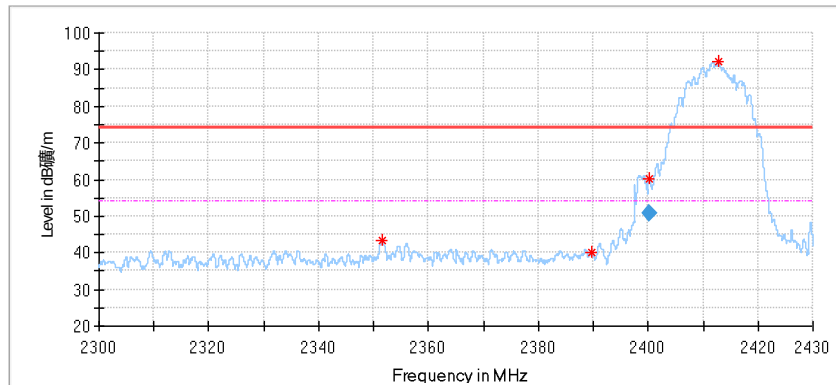
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 21223.687500    | 41.72            | 74.00          | 32.28       | 150.0       | H   | 0.0           | -0.55        |
| 24784.250000    | 42.03            | 74.00          | 31.97       | 150.0       | H   | 111.0         | 0.75         |
| 30492.562500    | 44.79            | 74.00          | 29.21       | 150.0       | H   | 233.0         | 2.00         |
| 34262.812500    | 45.93            | 74.00          | 28.07       | 150.0       | H   | 80.0          | 3.56         |

Vertical



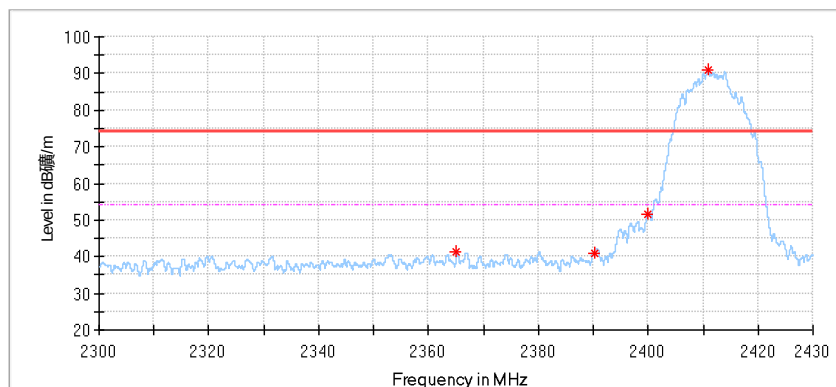
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 20142.937500    | 41.63            | 74.00          | 32.37       | 150.0       | V   | 265.0         | -2.28        |
| 23820.375000    | 42.05            | 74.00          | 31.95       | 150.0       | V   | 4.0           | 0.60         |
| 28023.750000    | 42.58            | 74.00          | 31.42       | 150.0       | V   | 0.0           | 1.23         |
| 30400.437500    | 45.34            | 74.00          | 28.66       | 150.0       | V   | 295.0         | 2.06         |
| 33817.312500    | 46.63            | 74.00          | 27.37       | 150.0       | V   | 326.0         | 3.10         |

11B-Ant0\_2412MHz  
Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2351.545000     | 43.47            | 74.00          | 30.53       | 150.0       | H   | 85.0          | -3.16        |
| 2389.791000     | 40.21            | 74.00          | 33.79       | 150.0       | H   | 323.0         | -2.94        |
| 2400.178000     | 60.39            | 74.00          | 13.61       | 150.0       | H   | 243.0         | -2.86        |
| 2412.866000     | 92.36            | 74.00          | -18.36      | 150.0       | H   | 319.0         | -2.71        |
| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
| 2400.178000     | 50.90            | 54.00          | 3.10        | 150.0       | H   | 243.0         | -2.86        |

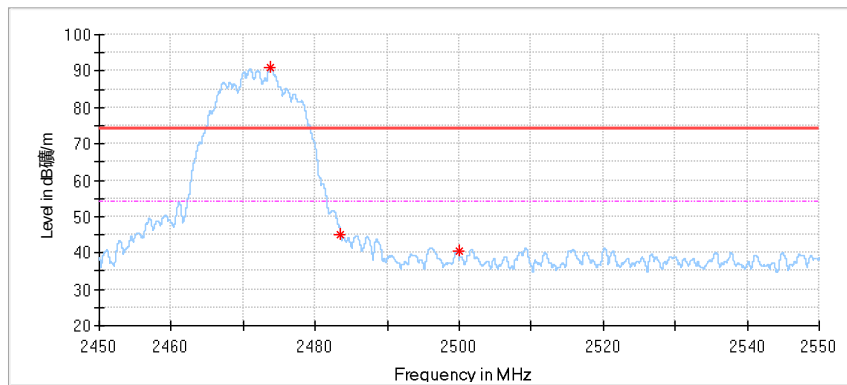
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2365.117000     | 41.26            | 74.00          | 32.74       | 150.0       | V   | 309.0         | -3.08        |
| 2390.220000     | 41.00            | 74.00          | 33.00       | 150.0       | V   | 175.0         | -2.94        |
| 2399.970000     | 51.77            | 74.00          | 22.23       | 150.0       | V   | 20.0          | -2.86        |
| 2410.825000     | 91.04            | 74.00          | -17.04      | 150.0       | V   | 29.0          | -2.73        |

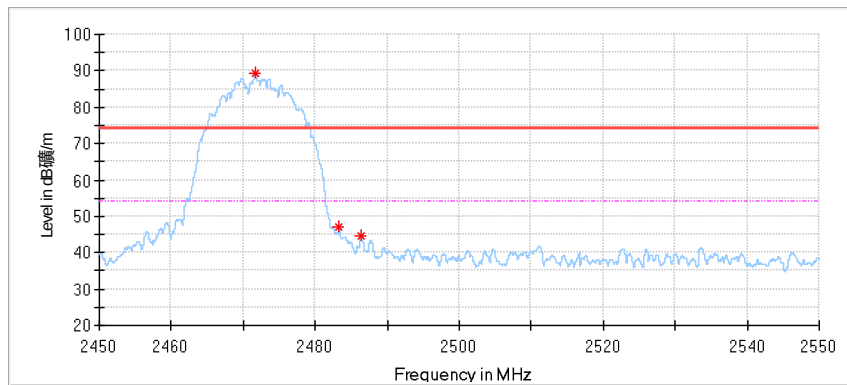
## 11B-Ant0\_2462MHz

Horizontal:



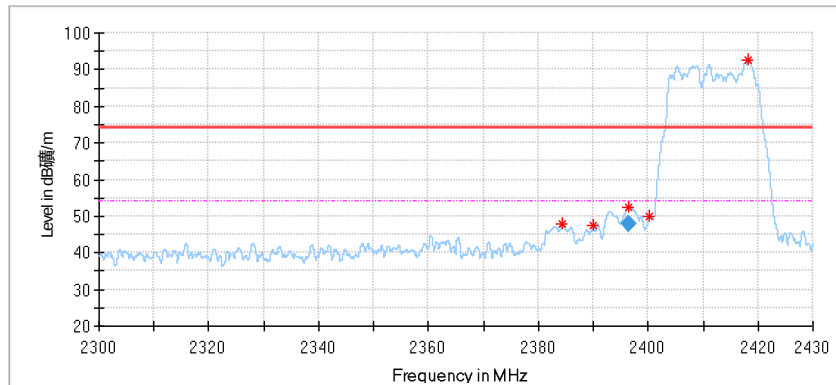
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2473.750000     | 91.16            | 74.00          | -17.16      | 150.0       | H   | 43.0          | -2.24        |
| 2483.570000     | 45.05            | 74.00          | 28.95       | 150.0       | H   | 9.0           | -2.20        |
| 2499.920000     | 40.64            | 74.00          | 33.36       | 150.0       | H   | 73.0          | -2.14        |

Vertical



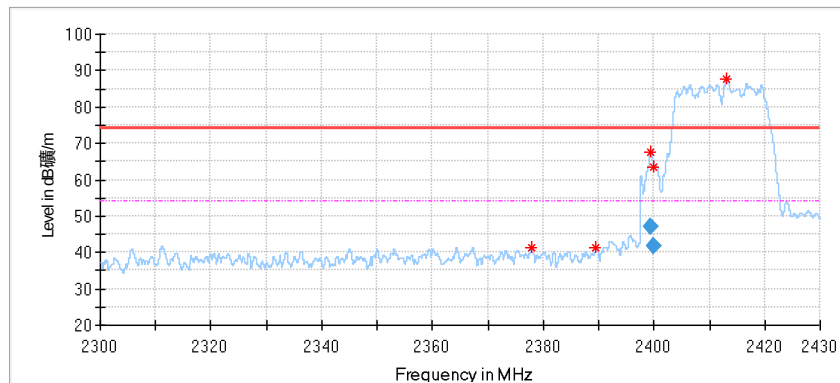
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2471.670000     | 89.15            | 74.00          | -15.15      | 150.0       | V   | 356.0         | -2.24        |
| 2483.340000     | 47.09            | 74.00          | 26.91       | 150.0       | V   | 0.0           | -2.20        |
| 2486.360000     | 44.60            | 74.00          | 29.40       | 150.0       | V   | 356.0         | -2.19        |

11G-Ant0\_2412MHz  
Horizontal:



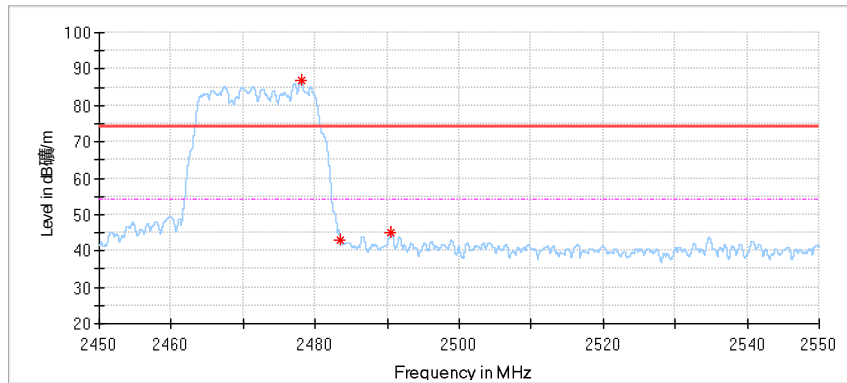
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2384.448000     | 47.73            | 74.00          | 26.27       | 150.0       | H   | 190.0         | -2.99        |
| 2389.856000     | 47.42            | 74.00          | 26.58       | 150.0       | H   | 190.0         | -2.94        |
| 2396.512000     | 52.55            | 74.00          | 21.45       | 150.0       | H   | 190.0         | -2.89        |
| 2400.113000     | 49.88            | 74.00          | 24.12       | 150.0       | H   | 168.0         | -2.86        |
| 2418.196000     | 92.58            | 74.00          | -18.58      | 150.0       | H   | 26.0          | -2.65        |
| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
| 2396.512000     | 47.85            | 54.00          | 6.15        | 150.0       | H   | 190.0         | -2.89        |

Vertical



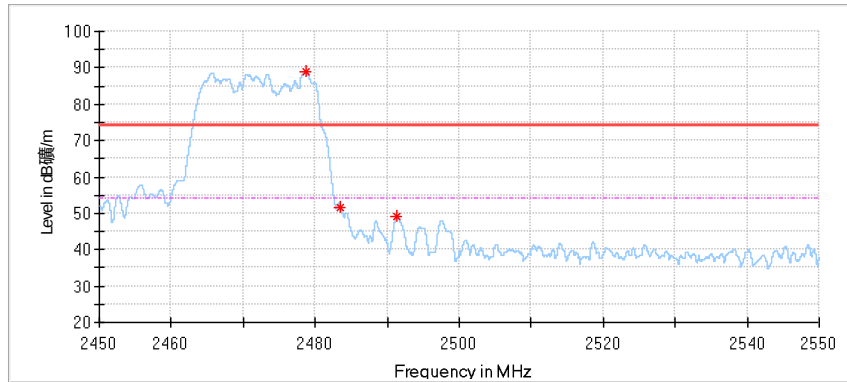
| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2377.805000     | 41.14            | 74.00          | 32.86       | 150.0       | V   | 254.0         | -3.05        |
| 2389.570000     | 41.15            | 74.00          | 32.85       | 150.0       | V   | 38.0          | -2.95        |
| 2399.346000     | 67.57            | 74.00          | 6.43        | 150.0       | V   | 285.0         | -2.86        |
| 2399.996000     | 63.53            | 74.00          | 10.47       | 150.0       | V   | 285.0         | -2.86        |
| 2413.113000     | 87.68            | 74.00          | -13.68      | 150.0       | V   | 285.0         | -2.71        |
| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
| 2399.346000     | 47.25            | 54.00          | 6.75        | 150.0       | V   | 285.0         | -2.86        |
| 2399.996000     | 41.93            | 54.00          | 12.07       | 150.0       | V   | 285.0         | -2.86        |

11G-Ant0\_2462MHz  
Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2478.040000     | 86.68            | 74.00          | -12.68      | 150.0       | H   | 154.0         | -2.22        |
| 2483.550000     | 43.06            | 74.00          | 30.94       | 150.0       | H   | 24.0          | -2.20        |
| 2490.560000     | 45.05            | 74.00          | 28.95       | 150.0       | H   | 37.0          | -2.17        |

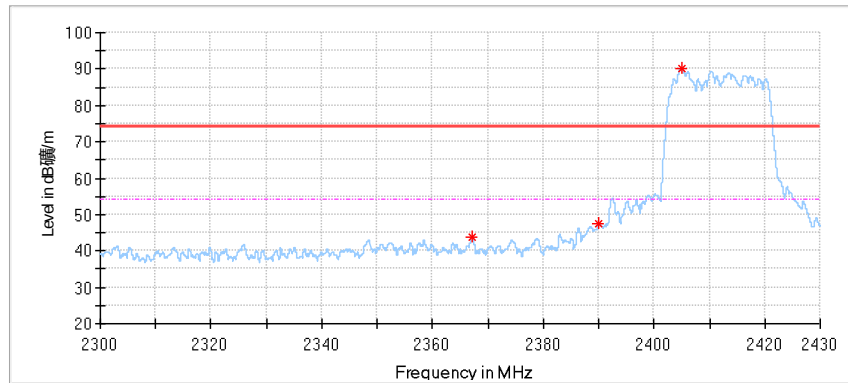
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2478.640000     | 89.07            | 74.00          | -15.07      | 150.0       | V   | 63.0          | -2.22        |
| 2483.410000     | 51.64            | 74.00          | 22.36       | 150.0       | V   | 150.0         | -2.20        |
| 2491.300000     | 49.12            | 74.00          | 24.88       | 150.0       | V   | 50.0          | -2.17        |

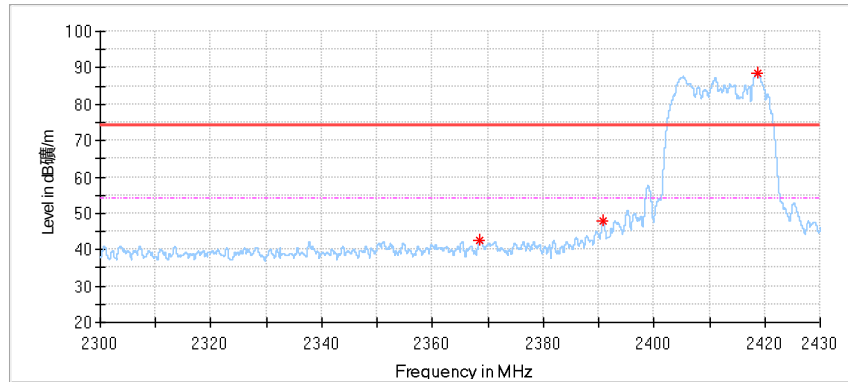
## 11n20-Ant0\_2412MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2367.145000     | 43.97            | 74.00          | 30.03       | 150.0       | H   | 193.0         | -3.08        |
| 2389.999000     | 47.35            | 74.00          | 26.65       | 150.0       | H   | 172.0         | -2.94        |
| 2405.001000     | 90.07            | 74.00          | -16.07      | 150.0       | H   | 154.0         | -2.80        |

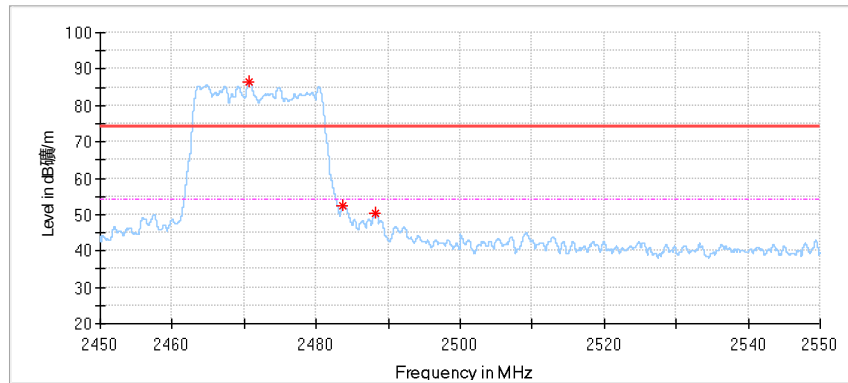
Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2368.588000     | 42.69            | 74.00          | 31.31       | 150.0       | V   | 299.0         | -3.07        |
| 2390.714000     | 47.71            | 74.00          | 26.29       | 150.0       | V   | 217.0         | -2.94        |
| 2418.625000     | 88.57            | 74.00          | -14.57      | 150.0       | V   | 264.0         | -2.64        |

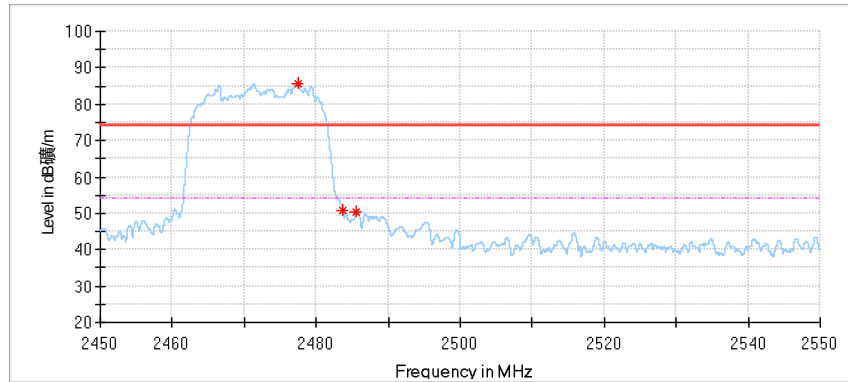
## 11n20-Ant0\_2462MHz

Horizontal:



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2470.750000     | 86.41            | 74.00          | -12.41      | 150.0       | H   | 61.0          | -2.25        |
| 2483.690000     | 52.50            | 74.00          | 21.50       | 150.0       | H   | 61.0          | -2.20        |
| 2488.190000     | 50.44            | 74.00          | 23.56       | 150.0       | H   | 61.0          | -2.18        |

Vertical



| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 2477.390000     | 85.51            | 74.00          | -11.51      | 150.0       | V   | 296.0         | -2.22        |
| 2483.600000     | 50.60            | 74.00          | 23.40       | 150.0       | V   | 175.0         | -2.20        |
| 2485.600000     | 50.43            | 74.00          | 23.57       | 150.0       | V   | 50.0          | -2.19        |

## 10 Test Equipment List

### Radiated Emission Test

| DESCRIPTION                         | MANUFACTURER    | MODEL NO.         | EQUIPMENT ID       | SERIAL NO.          | CAL INTERVAL (YEAR) | CAL. DUE DATE |
|-------------------------------------|-----------------|-------------------|--------------------|---------------------|---------------------|---------------|
| EMI Test Receiver                   | Rohde & Schwarz | ESR 26            | 68-4-74-14-002     | 101269              | 1                   | 2023-5-28     |
| Trilog Super Broadband Test Antenna | Schwarzbeck     | VULB 9162         | 68-4-80-19-003     | 284                 | 1                   | 2023-1-17     |
| Wave Guide Antenna                  | ETS             | 3117              | 68-4-80-19-001     | 00218954            | 1                   | 2023-5-9      |
| Pre-amplifier                       | Rohde & Schwarz | SCU 18F           | 68-4-29-19-001     | 100745              | 1                   | 2023-5-28     |
| Pre-amplifier                       | Rohde & Schwarz | SCU 18F           | 68-4-29-19-002     | 100746              | 1                   | 2023-5-28     |
| Sideband Horn Antenna               | Q-PAR           | QWH-SL-18-40-K-SG | 68-4-80-14-008     | 12827               | 1                   | 2023-7-12     |
| Pre-amplifier                       | Rohde & Schwarz | SCU 40A           | 68-4-29-14-002     | 100432              | 1                   | 2023-7-27     |
| Attenuator                          | Mini-circuits   | UNAT-6+           | 68-4-81-21-002     | 15542               | 1                   | 2023-5-27     |
| 3m Semi-anechoic chamber            | TDK             | SAC-3 #2          | 68-4-90-19-006     | ----                | 2                   | 2023-5-28     |
| Test software                       | Rohde & Schwarz | EMC32             | 68-4-90-19-006-A01 | Version10.3<br>5.02 | N/A                 | N/A           |

### Conducted Emission Test

| DESCRIPTION        | MANUFACTURER      | MODEL NO.      | EQUIPMENT ID       | SERIAL NO.          | CAL INTERVAL (YEAR) | CAL. DUE DATE |
|--------------------|-------------------|----------------|--------------------|---------------------|---------------------|---------------|
| EMI Test Receiver  | Rohde & Schwarz   | ESR 3          | 68-4-74-19-002     | 102590              | 1                   | 2023-5-27     |
| LISN               | Rohde & Schwarz   | ENV216         | 68-4-87-19-001     | 102472              | 1                   | 2023-5-27     |
| ISN                | Rohde & Schwarz   | ENY81          | 68-4-87-14-003     | 100177              | 1                   | 2023-5-27     |
| ISN                | Rohde & Schwarz   | ENY81-CA6      | 68-4-87-14-004     | 101664              | 1                   | 2023-5-27     |
| High Voltage Probe | Schwarzbeck       | TK9420(VT9420) | 68-4-27-14-001     | 9420-584            | 1                   | 2023-5-27     |
| RF Current Probe   | Rohde & Schwarz   | EZ-17          | 68-4-27-14-002     | 100816              | 1                   | 2023-5-31     |
| Attenuator         | Shanghai Huaxiang | TS2-26-3       | 68-4-81-16-003     | 080928189           | 1                   | 2023-5-27     |
| Test software      | Rohde & Schwarz   | EMC32          | 68-4-90-19-005-A01 | Version10.35<br>.02 | N/A                 | N/A           |
| Shielding Room     | TDK               | CSR #2         | 68-4-90-19-005     | ----                | 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 Conducted Emission 150kHz-30MHz<br>(for test using AMN ENV432 or ENV4200) | 3.57dB                                                                               |
| Uncertainty for Radiated Spurious Emission 25MHz-3000MHz                                  | Horizontal: 4.33dB;<br>Vertical: 4.41dB;                                             |
| Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz                               | Horizontal: 4.27dB;<br>Vertical: 4.26dB;                                             |
| Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz                              | Horizontal: 4.52dB;<br>Vertical: 4.51dB;                                             |
| Uncertainty for Conducted RF test with TS 8997                                            | RF Power Conducted: 1.31dB<br>Frequency test involved:<br>0.6×10 <sup>-8</sup> or 1% |
| Uncertainty Evaluation for Humidity                                                       | 0.936%                                                                               |
| Uncertainty Evaluation for Temperature                                                    | 0.195 °C                                                                             |