

## TEST REPORT

**Applicant:** Guangdong He Yi Cai Investment Co., Ltd.

**Address:** No. 398-8, Xingyuan 5th Road, Yuanzhou Town, Boluo County,  
Huizhou City, Guangdong Province

**Product Name:** Mechanical keyboard

**FCC ID:** 2BF60-B75

**IC:** 32389-B75

**HVIN:** B75, 777

**47 CFR Part 15, Subpart C(15.249)**

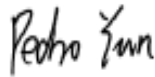
**RSS-210 Issue 11, June 25, 2024**

**Standard(s):** RSS-Gen, Issue 5, February 2021 Amendment 2  
ANSI C63.10-2013

**Report Number:** 2502P40727E-RF-00B

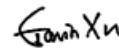
**Report Date:** 2025/2/25

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).



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DOCUMENT REVISION HISTORY

| Revision Number | Report Number      | Description of Revision | Date of Revision |
|-----------------|--------------------|-------------------------|------------------|
| 1.0             | 2502P40727E-RF-00B | Original Report         | 2025/2/25        |

## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

|                                                                                                                                                                       |                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT Name:</b>                                                                                                                                                      | Mechanical keyboard                                                                                                                                   |
| <b>EUT Model:</b>                                                                                                                                                     | B75                                                                                                                                                   |
| <b>Multiple Model:</b>                                                                                                                                                | 777                                                                                                                                                   |
| <b>Operation Frequency:</b>                                                                                                                                           | 2404-2476MHz                                                                                                                                          |
| <b>Modulation Type:</b>                                                                                                                                               | GFSK                                                                                                                                                  |
| <b>Rated Input Voltage:</b>                                                                                                                                           | DC 3.7V From Battery or DC 5V From USB                                                                                                                |
| <b>Serial Number:</b>                                                                                                                                                 | 2X3J-8(AC line conducted emissions and Radiated Spurious Emissions Below 1G)<br>2X3J-6(Radiated Spurious Emissions Above 1G)<br>2X3J-1(RF conducted ) |
| <b>EUT Received Date:</b>                                                                                                                                             | 2025/1/8                                                                                                                                              |
| <b>EUT Received Status:</b>                                                                                                                                           | Good                                                                                                                                                  |
| Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer. |                                                                                                                                                       |

### 1.2 Accessory Information

| Accessory Description | Manufacturer | Model | Parameters |
|-----------------------|--------------|-------|------------|
| /                     | /            | /     | /          |

### 1.3 Antenna Information Detail▲:

| Antenna Manufacturer                                                                                                                                             | Antenna Type | input impedance (Ohm) | Frequency Range | Antenna Gain |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|-----------------|--------------|
| Dingnan Jinpeng Electronics Co., Ltd.                                                                                                                            | PCB          | 50                    | 2.4-2.4835GHz   | 1.2 dBi      |
| <b>The design of compliance with §15.203:</b>                                                                                                                    |              |                       |                 |              |
| <input checked="" type="checkbox"/> Unit uses a permanently attached antenna.                                                                                    |              |                       |                 |              |
| <input type="checkbox"/> Unit uses a unique coupling to the intentional radiator.                                                                                |              |                       |                 |              |
| <input type="checkbox"/> Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit. |              |                       |                 |              |

### 1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

## 2. SUMMARY OF TEST RESULTS

| Standard(s)/Rule(s)                                                                                                                                                                                                     | Description of Test                                       | Result    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------|
| §15.203<br>RSS-Gen Clause 6.8                                                                                                                                                                                           | Antenna Requirement                                       | Compliant |
| §15.207(a)<br>RSS-Gen Clause 8.8                                                                                                                                                                                        | Conduction Emissions                                      | Compliant |
| 15.205, §15.209, §15.249<br>RSS-Gen Clause 8.10<br>RSS-210 Annex B B.10                                                                                                                                                 | Radiated Emissions                                        | Compliant |
| §15.215 (c)                                                                                                                                                                                                             | 20 dB Bandwidth                                           | Compliant |
| RSS-Gen Clause 6.7                                                                                                                                                                                                      | 99% Occupied Bandwidth                                    | Compliant |
| §1.1310 & §2.1093                                                                                                                                                                                                       | SAR Evaluation                                            | Compliant |
| RSS-102 Clause 6.3                                                                                                                                                                                                      | Exemption Limits For Routine<br>Evaluation-SAR Evaluation | Compliant |
| Note 1: For AC line conducted emissions, the maximum output power mode and channel was tested.<br>Note 2: For Radiated Spurious Emissions 9kHz~1GHz and 18~25GHz, the maximum output power mode and channel was tested. |                                                           |           |

### 3. DESCRIPTION OF TEST CONFIGURATION

#### 3.1 Operation Frequency Detail

| Channel         | 1           | 2    | 3    | 4    | 5    | 6    | 7    | 8           |
|-----------------|-------------|------|------|------|------|------|------|-------------|
| Frequency (MHz) | <b>2404</b> | 2407 | 2414 | 2419 | 2422 | 2426 | 2436 | 2439        |
| Channel         | 9           | 10   | 11   | 12   | 13   | 14   | 15   | 16          |
| Frequency (MHz) | <b>2440</b> | 2445 | 2453 | 2459 | 2463 | 2466 | 2471 | <b>2476</b> |

Note: The above frequencies in bold were performed the test.

#### 3.2 EUT Operation Condition

|                                                                                                                               |                                                                                                    |                |                 |
|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------|-----------------|
| EUT Operation Mode:                                                                                                           | The system was configured for testing in Engineering Mode, which was provided by the manufacturer. |                |                 |
| Equipment Modifications:                                                                                                      | No                                                                                                 |                |                 |
| EUT Exercise Software:                                                                                                        | Engineering Mode                                                                                   |                |                 |
| The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲: |                                                                                                    |                |                 |
| Test Modes                                                                                                                    | Power Level Setting                                                                                |                |                 |
|                                                                                                                               | Lowest Channel                                                                                     | Middle Channel | Highest Channel |
| SRD                                                                                                                           | Default                                                                                            | Default        | Default         |

#### 3.3 Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number  |
|--------------|-------------|-------|----------------|
| Lenovo       | Laptop      | G510  | EMZBPC21103006 |

#### 3.4 Support Cable List and Details

| Cable Description | Shielding Type | Ferrite Core | Length (m) | From Port | To     |
|-------------------|----------------|--------------|------------|-----------|--------|
| DC Cable          | Yes            | No           | 1.5        | Adapter   | Laptop |
| USB Cable         | No             | No           | 1.6        | EUT       | Laptop |

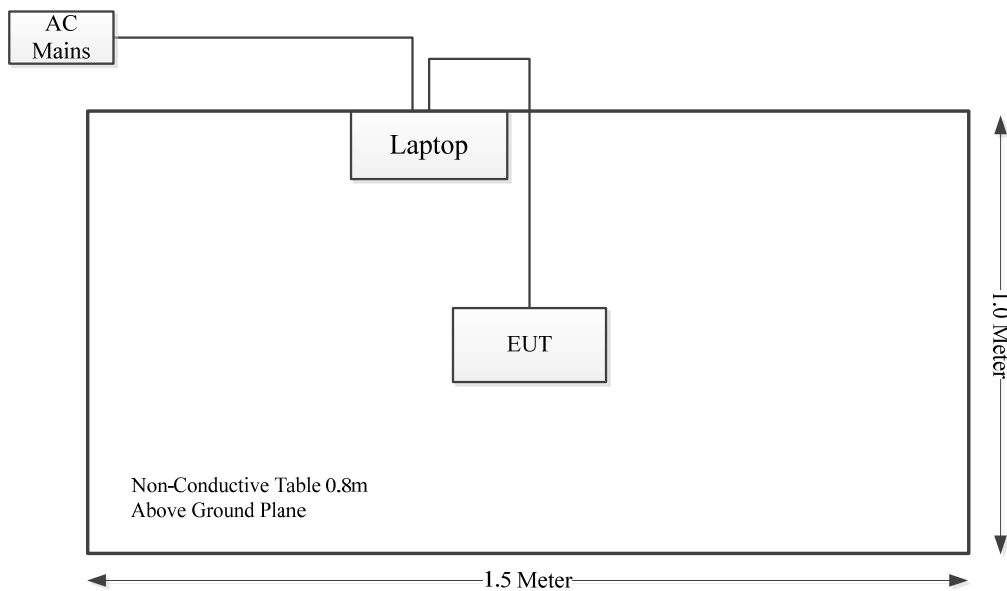
AC line conducted emissions:



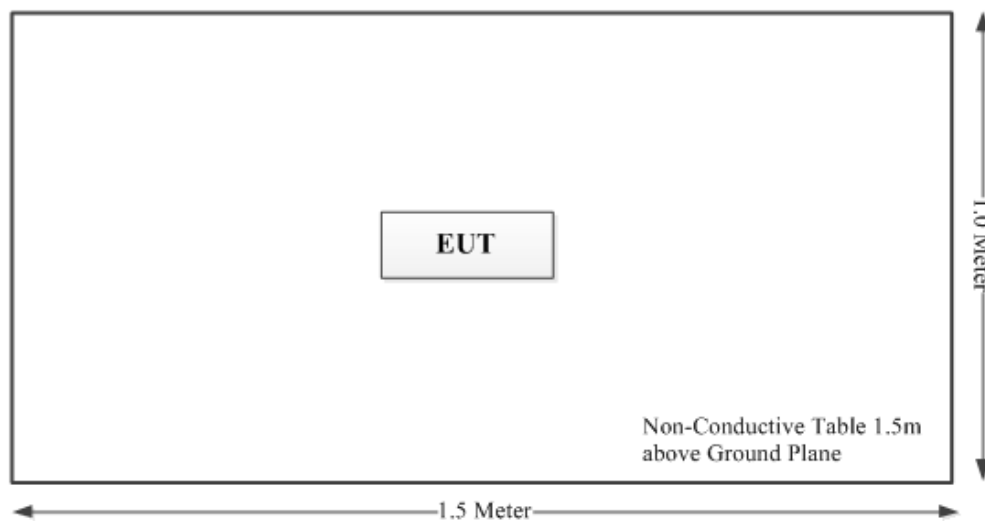


Spurious Emissions:

Below 1GHz:



Above 1GHz:



### 3.6 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

### 3.7 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

| Parameter                         | Measurement Uncertainty                                                                                                                                                                                                                          |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupied Channel Bandwidth        | ±5 %                                                                                                                                                                                                                                             |
| Unwanted Emissions, radiated      | 9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz: 5.47 dB, 26.5GHz~40GHz: 5.63 dB, 40~60G: 4.83dB, 60G~90G: 4.94dB, 90G-140G: 5.46dB, 140G-220G: 6.00dB, 220G-325G: 7.35dB |
| Temperature                       | ±1 °C                                                                                                                                                                                                                                            |
| Humidity                          | ±5%                                                                                                                                                                                                                                              |
| DC and low frequency voltages     | ±0.4%                                                                                                                                                                                                                                            |
| AC Power Lines Conducted Emission | 3.11 dB (150 kHz to 30 MHz)                                                                                                                                                                                                                      |

## 4. REQUIREMENTS AND TEST RESULTS

### 4.1 AC Line Conducted Emissions

#### 4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000  $\mu$ V within the frequency band 535-1705 kHz, as measured using a 50  $\mu$ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

## RSS-Gen Clause 8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50  $\mu$ H / 50  $\Omega$  line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

**Table 4 – AC power-line conducted emissions limits**

| Frequency<br>(MHz) | Conducted limit (dB $\mu$ V) |                       |
|--------------------|------------------------------|-----------------------|
|                    | Quasi-peak                   | Average               |
| 0.15 - 0.5         | 66 to 56 <sup>1</sup>        | 56 to 46 <sup>1</sup> |
| 0.5 – 5            | 56                           | 46                    |
| 5 – 30             | 60                           | 50                    |

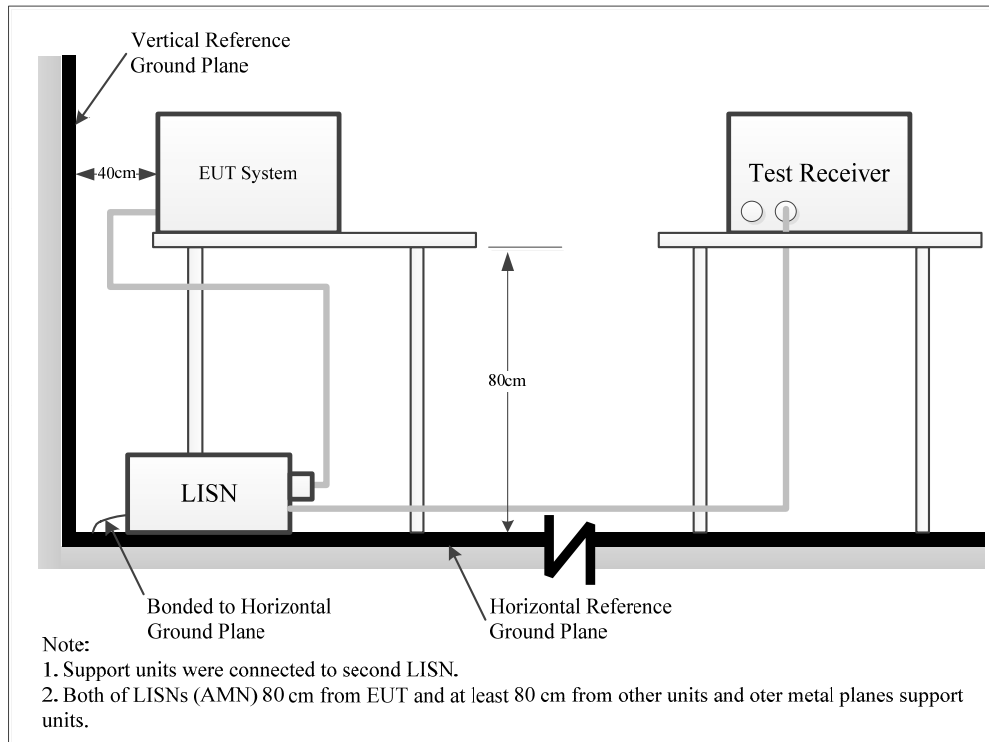
**Note 1:** The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:

(a) Perform the AC power-line conducted emissions test with the antenna connected to determine compliance with the limits of table 4 outside the transmitter's fundamental emission band.

(b) Retest with a dummy load instead of the antenna to determine compliance with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

#### 4.1.2 EUT Setup



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207, RSS-Gen limits.

The spacing between the peripherals was 10 cm.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

#### 4.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range  | IF B/W |
|------------------|--------|
| 150 kHz – 30 MHz | 9 kHz  |

#### 4.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

#### 4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.1.6 Test Result

|                |          |              |              |
|----------------|----------|--------------|--------------|
| Serial Number: | 2X3J-8   | Test Date:   | 2025/01/11   |
| Test Site:     | CE       | Test Mode:   | Transmitting |
| Tester:        | Yolo Fan | Test Result: | Pass         |

Environmental Conditions:

|                      |      |                              |    |                        |       |
|----------------------|------|------------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 22.3 | Relative<br>Humidity:<br>(%) | 30 | ATM Pressure:<br>(kPa) | 102.4 |
|----------------------|------|------------------------------|----|------------------------|-------|

Test Equipment List and Details:

| Manufacturer | Description          | Model     | Serial<br>Number | Calibration Date | Calibration Due<br>Date |
|--------------|----------------------|-----------|------------------|------------------|-------------------------|
| R&S          | LISN                 | ENV216    | 101614           | 2024/9/5         | 2025/9/4                |
| MICRO-COAX   | Coaxial Cable        | C-NJNJ-50 | C-0200-01        | 2024/9/5         | 2025/9/4                |
| R&S          | EMI Test<br>Receiver | ESCI      | 100035           | 2024/8/26        | 2025/8/25               |
| Audix        | Test Software        | E3        | 191218 V9        | N/A              | N/A                     |

\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

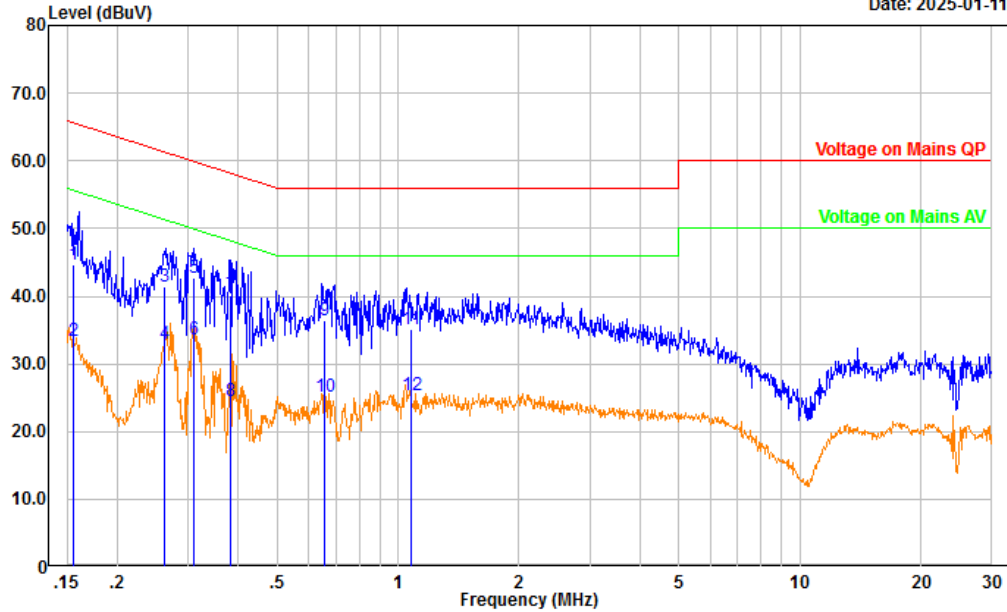
Test Data:

Low channel was tested.

Project No.: 2502P40727E-RF  
 Port: Line  
 Test Mode: Transmitting  
 IF B/W 9kHz PK/AV

Serial No.: 2X3J-8  
 Tester: Yolo Fan

Date: 2025-01-11



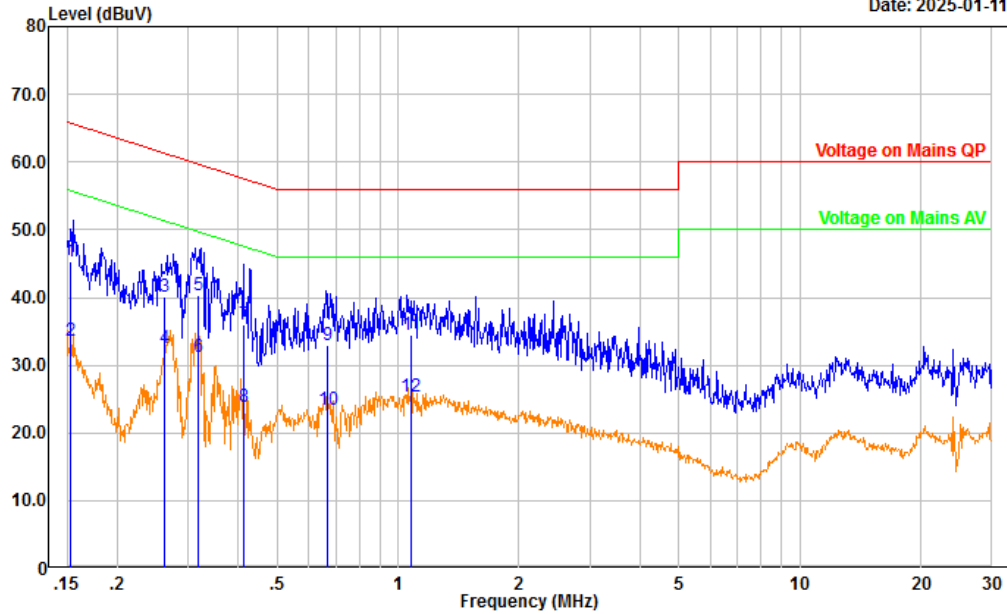
| No. | Frequency (MHz) | Reading (dBμV) | Factor (dB) | Result (dBμV) | Limit (dBμV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|---------------|--------------|-------------|----------|
| 1   | 0.156           | 33.82          | 10.76       | 44.58         | 65.67        | 21.09       | QP       |
| 2   | 0.156           | 22.57          | 10.76       | 33.33         | 55.67        | 22.34       | Average  |
| 3   | 0.262           | 30.61          | 10.83       | 41.44         | 61.38        | 19.94       | QP       |
| 4   | 0.262           | 22.07          | 10.83       | 32.90         | 51.38        | 18.48       | Average  |
| 5   | 0.309           | 31.99          | 10.82       | 42.81         | 59.99        | 17.18       | QP       |
| 6   | 0.309           | 22.74          | 10.82       | 33.56         | 49.99        | 16.43       | Average  |
| 7   | 0.382           | 29.33          | 10.84       | 40.17         | 58.25        | 18.08       | QP       |
| 8   | 0.382           | 13.72          | 10.84       | 24.56         | 48.25        | 23.69       | Average  |
| 9   | 0.656           | 25.55          | 10.84       | 36.39         | 56.00        | 19.61       | QP       |
| 10  | 0.656           | 14.32          | 10.84       | 25.16         | 46.00        | 20.84       | Average  |
| 11  | 1.075           | 24.30          | 10.85       | 35.15         | 56.00        | 20.85       | QP       |
| 12  | 1.075           | 14.44          | 10.85       | 25.29         | 46.00        | 20.71       | Average  |



Project No.: 2502P40727E-RF  
 Port: neutral  
 Test Mode: Transmitting  
 IF B/W 9kHz PK/AV

Serial No.: 2X3J-8  
 Tester: Yolo Fan

Date: 2025-01-11



| No.   | Frequency (MHz) | Reading (dBμV) | Factor (dB) | Result (dBμV) | Limit (dBμV) | Margin (dB) | Detector |
|-------|-----------------|----------------|-------------|---------------|--------------|-------------|----------|
| <hr/> |                 |                |             |               |              |             |          |
| 1     | 0.153           | 34.49          | 10.85       | 45.34         | 65.81        | 20.47       | QP       |
| 2     | 0.153           | 22.80          | 10.85       | 33.65         | 55.81        | 22.16       | Average  |
| 3     | 0.262           | 29.40          | 10.81       | 40.21         | 61.37        | 21.16       | QP       |
| 4     | 0.262           | 21.67          | 10.81       | 32.48         | 51.37        | 18.89       | Average  |
| 5     | 0.318           | 29.65          | 10.78       | 40.43         | 59.76        | 19.33       | QP       |
| 6     | 0.318           | 20.48          | 10.78       | 31.26         | 49.76        | 18.50       | Average  |
| 7     | 0.415           | 25.20          | 10.77       | 35.97         | 57.55        | 21.58       | QP       |
| 8     | 0.415           | 13.01          | 10.77       | 23.78         | 47.55        | 23.77       | Average  |
| 9     | 0.666           | 22.26          | 10.75       | 33.01         | 56.00        | 22.99       | QP       |
| 10    | 0.666           | 12.70          | 10.75       | 23.45         | 46.00        | 22.55       | Average  |
| 11    | 1.074           | 23.56          | 10.86       | 34.42         | 56.00        | 21.58       | QP       |
| 12    | 1.074           | 14.51          | 10.86       | 25.37         | 46.00        | 20.63       | Average  |

## 4.2 Radiated Emissions

### 4.2.1 Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--------------------------------------------------|------------------------------------------------|
| 902–928 MHz           | 50                                               | 500                                            |
| 2400–2483.5 MHz       | 50                                               | 500                                            |
| 5725–5875 MHz         | 50                                               | 500                                            |
| 24.0–24.25 GHz        | 250                                              | 2500                                           |

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

- (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

RSS-210, Annex B, B.10

Devices operating in the frequency bands listed in table B2 may be used for any application and shall comply with the following requirements:

- (a) The field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits in table B2.

**Table B2: Field strength limits for fundamental and harmonic emissions**

| Fundamental frequency (MHz) | Field strength (mV/m) of fundamental emissions | Field strength (mV/m) of harmonic emissions |
|-----------------------------|------------------------------------------------|---------------------------------------------|
| 902-928                     | 50                                             | 0.5                                         |
| 2400-2483.5                 | 50                                             | 0.5                                         |
| 5725-5875                   | 50                                             | 0.5                                         |
| 24000-24250                 | 250                                            | 2.5                                         |

The field strength shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using a CISPR quasi-peak detector.

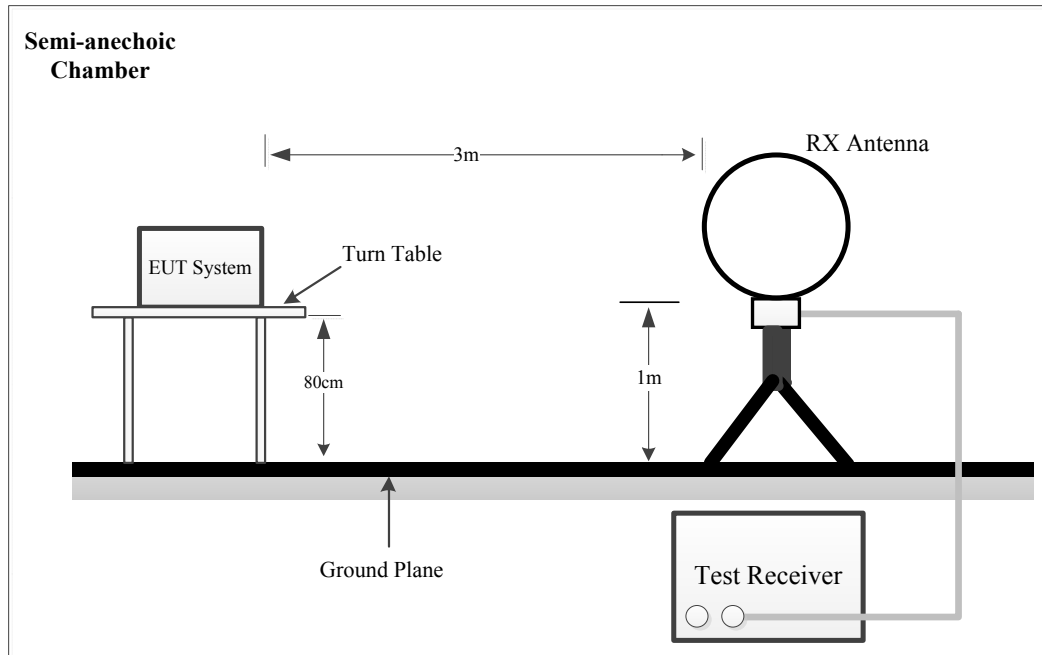
- (b) Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emission or to the general field

strength limits listed in RSS-Gen, whichever is less stringent.

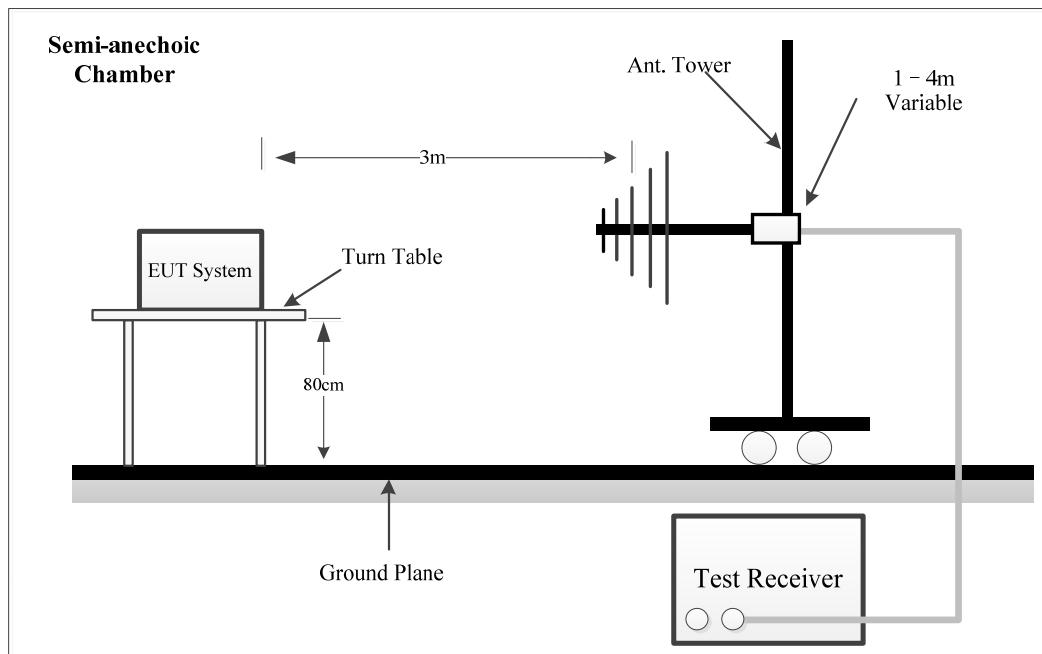
- (c) The provisions of RSS-Gen regarding pulsed operation do not apply to measurements performed in the 902-928 MHz frequency range.

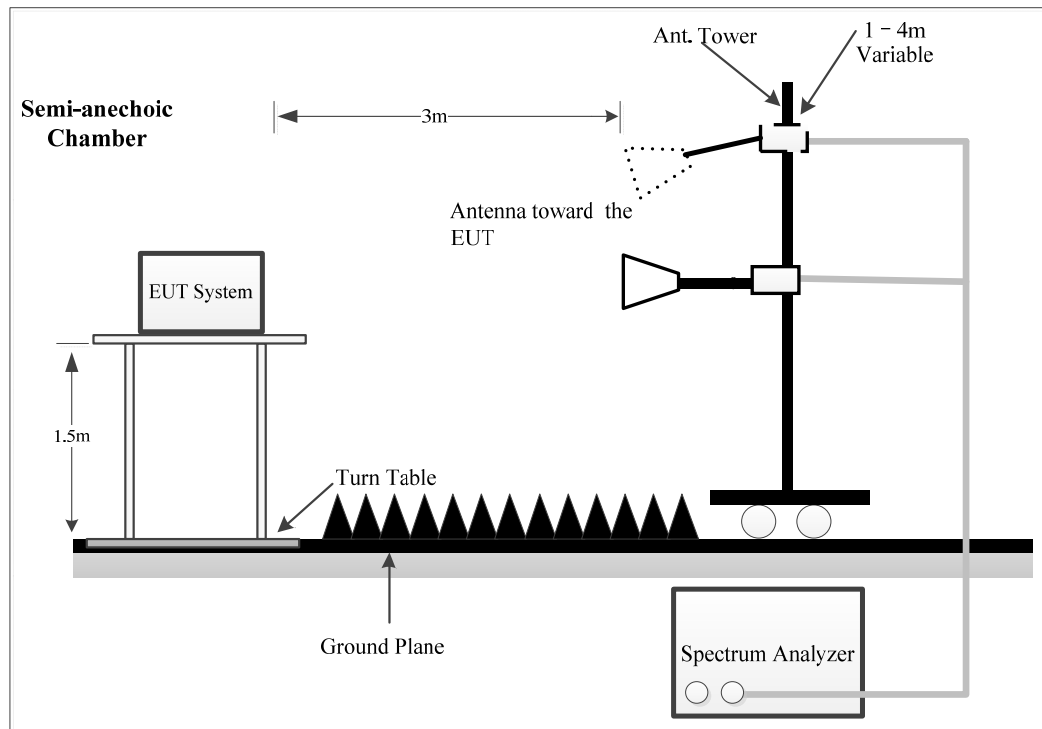
#### 4.2.2 EUT Setup

9kHz~30MHz:



30MHz-1GHz:



**1GHz-25 GHz:**

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

The radiated emission test was performed in the 3 meters chamber, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209/15.205 and FCC 15.249, RSS-210, RSS-Gen limits.

**4.2.3 EMI Test Receiver & Spectrum Analyzer Setup**

The system was investigated from 9 kHz to 25 GHz.

9kHz-1000MHz:

| Frequency Range | Measurement | RBW     | Video B/W | IF B/W  | Detector |
|-----------------|-------------|---------|-----------|---------|----------|
| 9 kHz-150 kHz   | QP/AV       | 300 Hz  | 1 kHz     | 200 Hz  | QP/AV    |
| 150 kHz-30 MHz  | QP/AV       | 10 kHz  | 30 kHz    | 9 kHz   | QP/AV    |
| 30 MHz-1000 MHz | Peak        | 100 kHz | 300 kHz   | /       | PK       |
|                 | QP          | /       | /         | 120 kHz | QP       |

Above 1GHz:

Pre-scan:

| Frequency Range | Measurement | RBW  | Video B/W | Detector |
|-----------------|-------------|------|-----------|----------|
| Above 1 GHz     | Peak        | 1MHz | 3 MHz     | PK       |
|                 | AV          | 1MHz | 5kHz      | PK       |

Final measurement for emission identified during the pre-scan:

| Frequency Range | Measurement | RBW  | Video B/W | Detector |
|-----------------|-------------|------|-----------|----------|
| Above 1 GHz     | Peak        | 1MHz | 3 MHz     | PK       |
|                 | AV          | 1MHz | 10 Hz     | PK       |

#### 4.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was required in Quasi-peak measurement for frequency range of 9 kHz-1 GHz except 9-90 kHz, 110-490 kHz, employing an average measurement, peak and Average measurement for frequencies above 1 GHz.

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

#### 4.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

**4.2.6 Test Result**

|                |                        |              |                                                |
|----------------|------------------------|--------------|------------------------------------------------|
| Serial Number: | 2X3J-6, 2X3J-8         | Test Date:   | Below 1GHz: 2025/1/23<br>Above 1GHz: 2025/2/15 |
| Test Site:     | Chamber B, Chamber A   | Test Mode:   | Transmitting                                   |
| Tester:        | Colin Yang, Jayce Wang | Test Result: | Pass                                           |

**Environmental Conditions:**

|                      |         |                           |       |                        |           |
|----------------------|---------|---------------------------|-------|------------------------|-----------|
| Temperature:<br>(°C) | 21.2~22 | Relative Humidity:<br>(%) | 40~54 | ATM Pressure:<br>(kPa) | 101~101.1 |
|----------------------|---------|---------------------------|-------|------------------------|-----------|

**Test Equipment List and Details:**

| Manufacturer          | Description                                                     | Model                       | Serial Number           | Calibration Date | Calibration Due Date |
|-----------------------|-----------------------------------------------------------------|-----------------------------|-------------------------|------------------|----------------------|
| 9kHz~1000MHz          |                                                                 |                             |                         |                  |                      |
| EMCO                  | Passive Loop Antenna                                            | 6512                        | 9706-1206               | 2023/10/25       | 2026/10/24           |
| Sunol Sciences        | Hybrid Antenna                                                  | JB3                         | A060611-2               | 2024/4/16        | 2027/4/15            |
| Narda                 | Coaxial Attenuator                                              | 757C-6dB                    | 34010                   | 2024/4/16        | 2027/4/15            |
| Unknown               | Coaxial Cable                                                   | C-NJNJ-50                   | C-0075-01               | 2024/7/1         | 2025/6/30            |
| Unknown               | Coaxial Cable                                                   | C-NJNJ-50                   | C-0400-01               | 2024/7/1         | 2025/6/30            |
| Unknown               | Coaxial Cable                                                   | C-NJNJ-50                   | C-1400-01               | 2024/7/1         | 2025/6/30            |
| Sonoma                | Amplifier                                                       | 310N                        | 372193                  | 2024/8/16        | 2025/8/15            |
| R&S                   | EMI Test Receiver                                               | ESR3                        | 102453                  | 2024/8/26        | 2025/8/25            |
| Audix                 | Test Software                                                   | E3                          | 191218 V9               | N/A              | N/A                  |
| Above 1GHz            |                                                                 |                             |                         |                  |                      |
| ETS-Lindgren          | Horn Antenna                                                    | 3115                        | 000 527 35              | 2023/9/7         | 2026/9/6             |
| Xinhang Macrowave     | Coaxial Cable                                                   | XH750A-N/J-SMA/J-10M        | 20231117004 #0001       | 2024/11/17       | 2025/11/16           |
| AH                    | Preamplifier                                                    | PAM-0118P                   | 469                     | 2024/4/15        | 2025/4/14            |
| Audix                 | Test Software                                                   | E3                          | 191218 V9               | N/A              | N/A                  |
| R&S                   | Spectrum Analyzer                                               | FSV40                       | 101944                  | 2024/9/6         | 2025/9/5             |
| Ducommun Technologies | Horn Antenna                                                    | ARH-4223-02                 | 1007726-02 1304         | 2023/2/22        | 2026/2/21            |
| Xinhang Macrowave     | Coaxial Cable                                                   | XH360A-2.92/J-2.92/J-6M-A   | 20231208001 #0001       | 2024/12/9        | 2025/12/8            |
| AH                    | Preamplifier                                                    | PAM-1840VH                  | 191                     | 2024/9/5         | 2025/9/4             |
| Decentest             | Multiplex Switch<br>Test Control Set<br>&<br>Filter Switch Unit | DT7220SCU<br>&<br>DT7220FCU | DC79902<br>&<br>DC79905 | 2024/8/27        | 2025/8/26            |

\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:**

Please refer to the below table and plots.

After pre-scan in the X, Y and Z axes of orientation, the worst case is refer to table and plots.

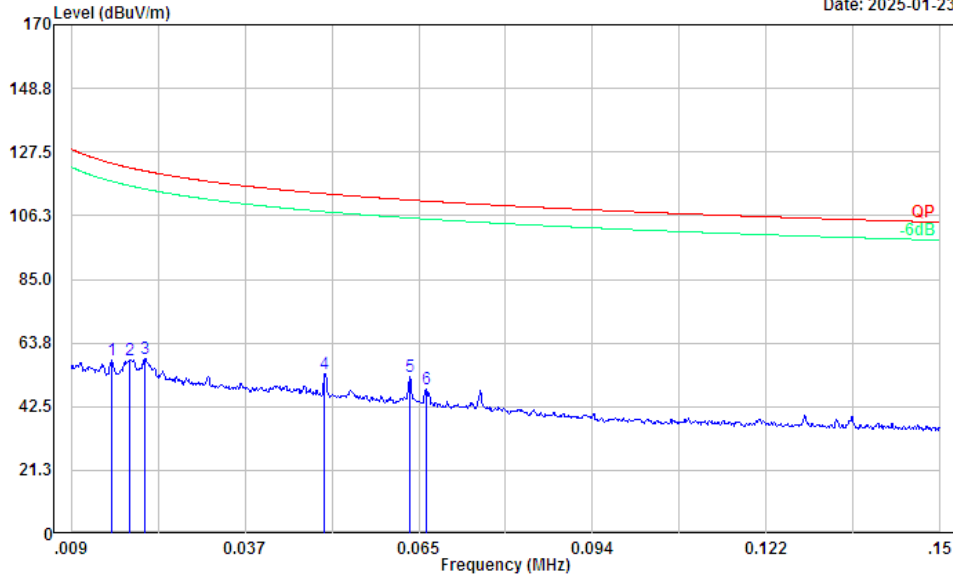
**1) 9kHz-30MHz**(Low channel was tested)

Three antenna orientations (parallel, perpendicular, and ground-parallel) was measured, the worst orientations was below:

Project No.: 2502P40727E-RF  
Polarization: Parallel  
Test Mode: Transmitting  
RBW: 300Hz, VBW: 1kHz

Serial No.: 2X3J-8  
Tester: Jayce Wang

Date: 2025-01-23

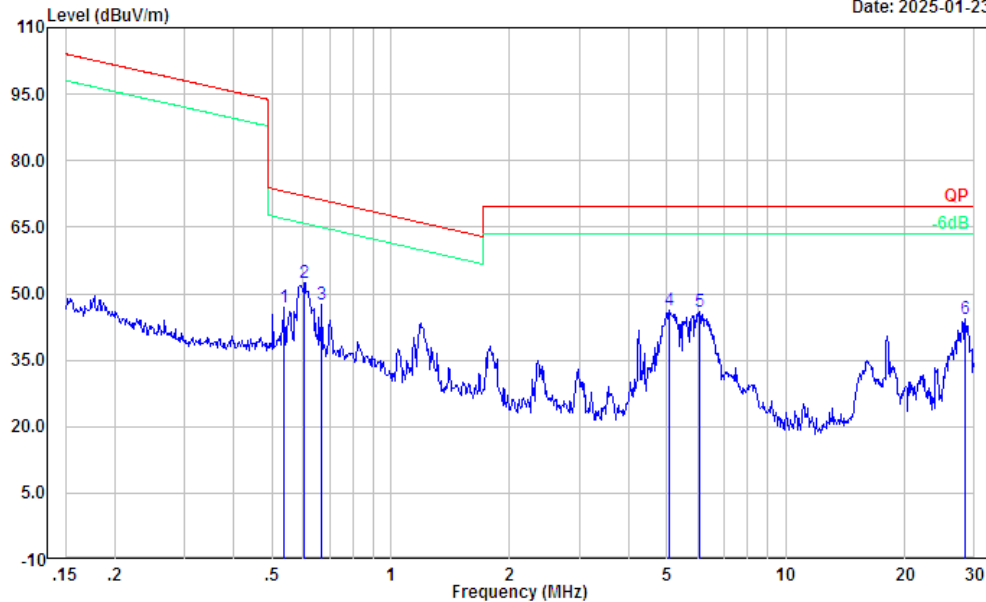


| No. | Frequency (MHz) | Reading (dBμV) | Factor (dB/m) | Result (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|----------|
| 1   | 0.016           | 8.15           | 50.12         | 58.27           | 123.73         | 65.46       | Peak     |
| 2   | 0.019           | 8.90           | 49.36         | 58.26           | 122.22         | 63.96       | Peak     |
| 3   | 0.021           | 9.87           | 48.77         | 58.64           | 121.17         | 62.53       | Peak     |
| 4   | 0.050           | 9.93           | 43.41         | 53.34           | 113.60         | 60.26       | Peak     |
| 5   | 0.064           | 11.32          | 41.15         | 52.47           | 111.48         | 59.01       | Peak     |
| 6   | 0.067           | 7.78           | 40.74         | 48.52           | 111.14         | 62.62       | Peak     |

Project No.: 2502P40727E-RF  
Polarization: Parallel  
Test Mode: Transmitting  
: RBW:10kHz,VBW:30kHz

Serial No.: 2X3J-8  
Tester: Jayce Wang

Date: 2025-01-23



| No. | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector |
|-----|--------------------|-------------------|------------------|--------------------|-------------------|----------------|----------|
| 1   | 0.538              | 24.69             | 22.34            | 47.03              | 72.97             | 25.94          | Peak     |
| 2   | 0.604              | 30.73             | 21.82            | 52.55              | 71.94             | 19.39          | Peak     |
| 3   | 0.668              | 26.57             | 21.03            | 47.60              | 71.05             | 23.45          | Peak     |
| 4   | 5.085              | 40.55             | 5.64             | 46.19              | 69.54             | 23.35          | Peak     |
| 5   | 6.056              | 40.75             | 5.04             | 45.79              | 69.54             | 23.75          | Peak     |
| 6   | 28.452             | 40.77             | 3.52             | 44.29              | 69.54             | 25.25          | Peak     |

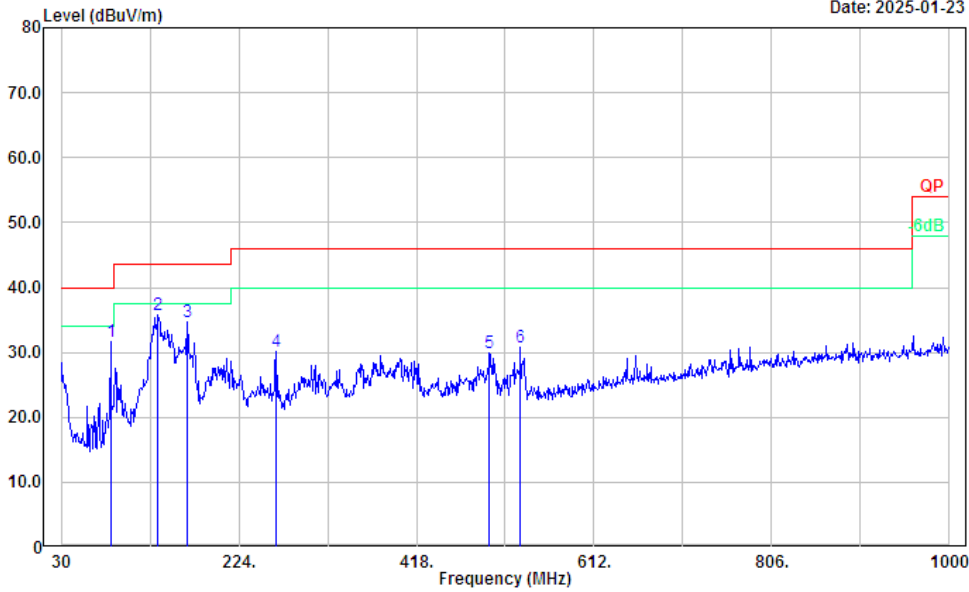


2) 30MHz-1GHz(Low channel was tested)

Project No.: 2502P40727E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
: RBW:100kHz,VBW:300kHz

Serial No.: 2X3J-8  
Tester: Jayce Wang

Date: 2025-01-23

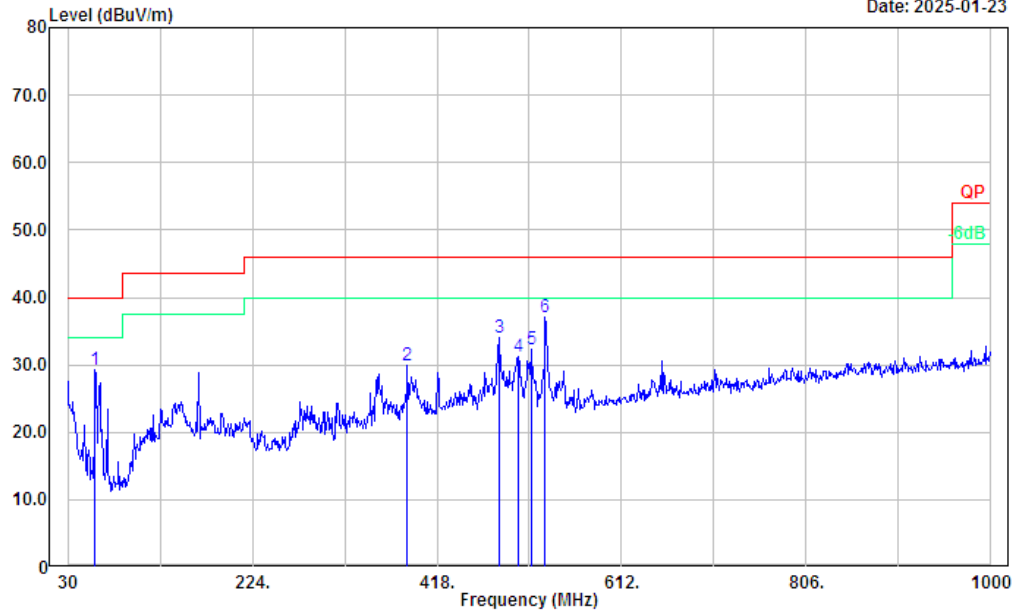


| No.   | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector |
|-------|--------------------|-------------------|------------------|--------------------|-------------------|----------------|----------|
| ----- |                    |                   |                  |                    |                   |                |          |
| 1     | 84.32              | 48.39             | -16.63           | 31.76              | 40.00             | 8.24           | Peak     |
| 2     | 135.73             | 46.09             | -10.42           | 35.67              | 43.50             | 7.83           | Peak     |
| 3     | 167.74             | 46.47             | -11.71           | 34.76              | 43.50             | 8.74           | Peak     |
| 4     | 264.74             | 40.66             | -10.62           | 30.04              | 46.00             | 15.96          | Peak     |
| 5     | 497.54             | 34.29             | -4.36            | 29.93              | 46.00             | 16.07          | Peak     |
| 6     | 531.49             | 34.69             | -3.81            | 30.88              | 46.00             | 15.12          | Peak     |

Project No.: 2502P40727E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
: RBW:100kHz,VBW:300kHz

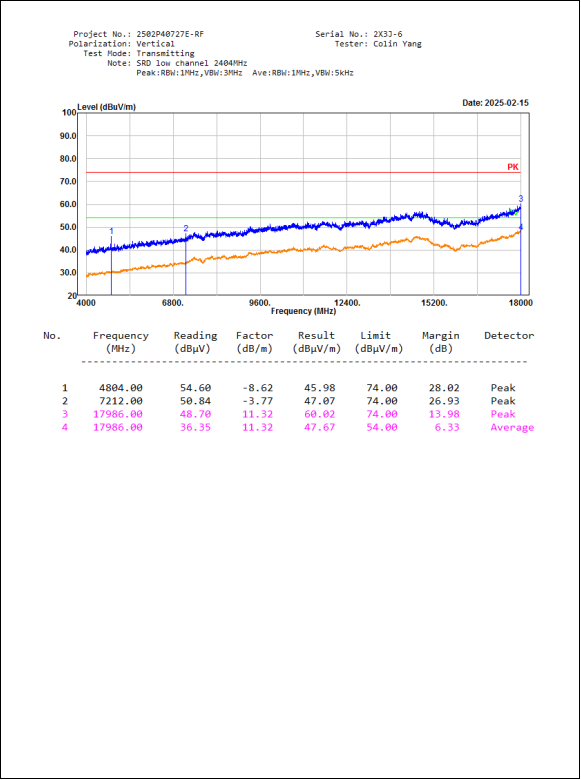
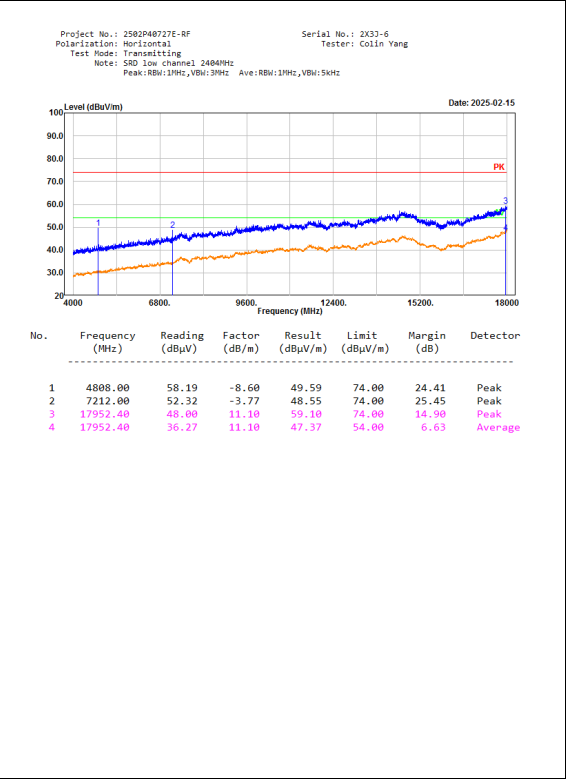
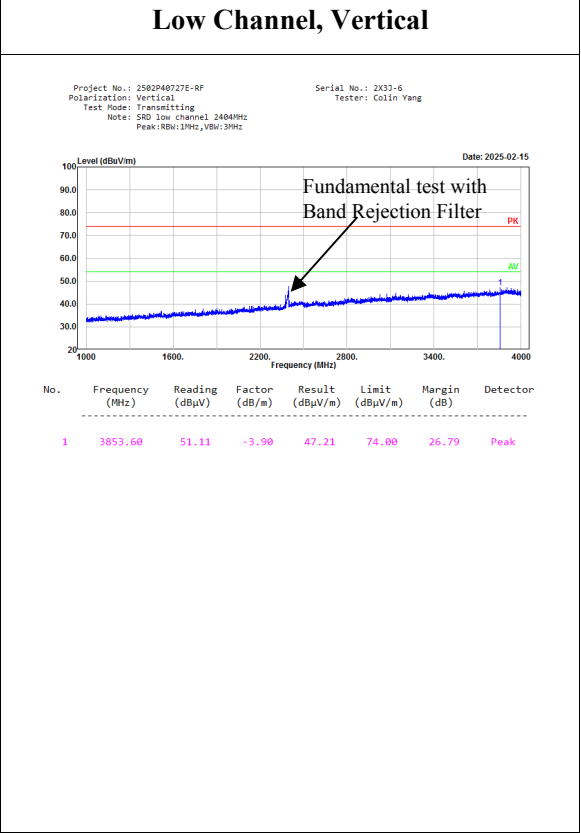
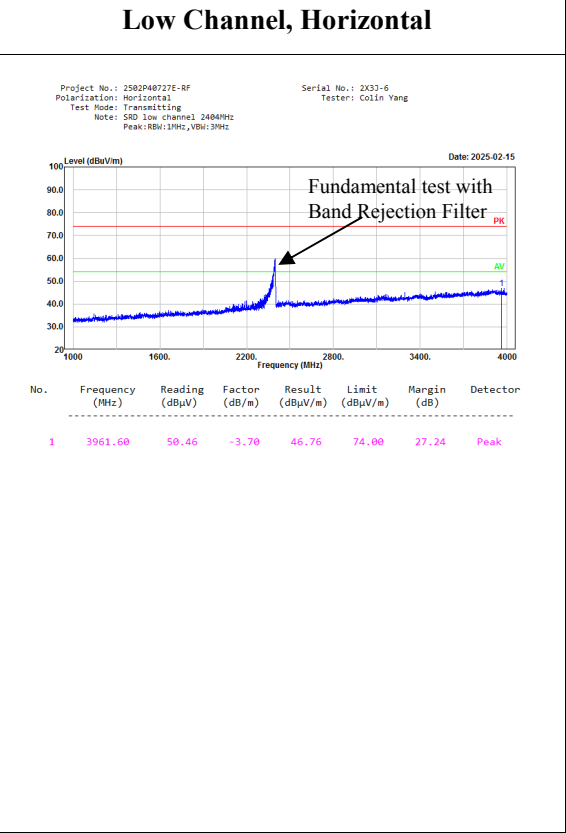
Serial No.: 2X3J-8  
Tester: Jayce Wang

Date: 2025-01-23

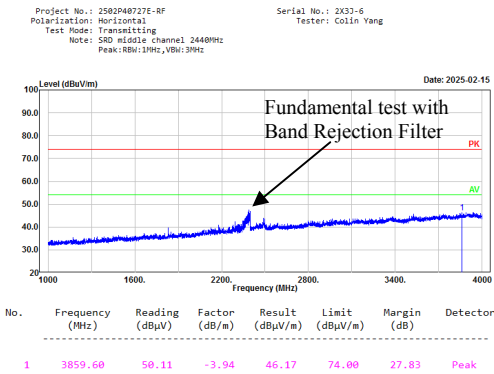


| No. | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector |
|-----|--------------------|-------------------|------------------|--------------------|-------------------|----------------|----------|
| 1   | 59.10              | 46.63             | -17.27           | 29.36              | 40.00             | 10.64          | Peak     |
| 2   | 386.96             | 37.01             | -7.04            | 29.97              | 46.00             | 16.03          | Peak     |
| 3   | 482.99             | 38.64             | -4.63            | 34.01              | 46.00             | 11.99          | Peak     |
| 4   | 503.36             | 35.41             | -4.26            | 31.15              | 46.00             | 14.85          | Peak     |
| 5   | 516.94             | 36.41             | -4.05            | 32.36              | 46.00             | 13.64          | Peak     |
| 6   | 531.49             | 40.79             | -3.81            | 36.98              | 46.00             | 9.02           | Peak     |

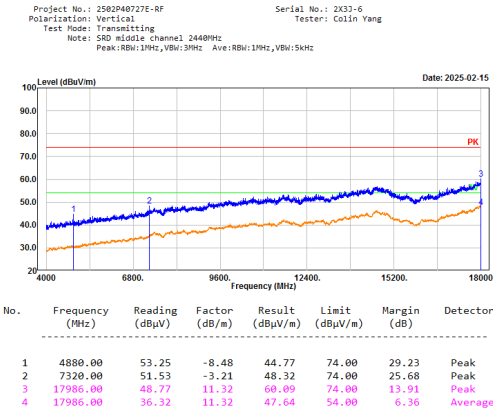
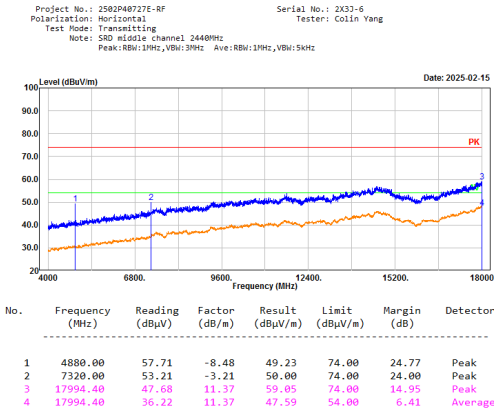
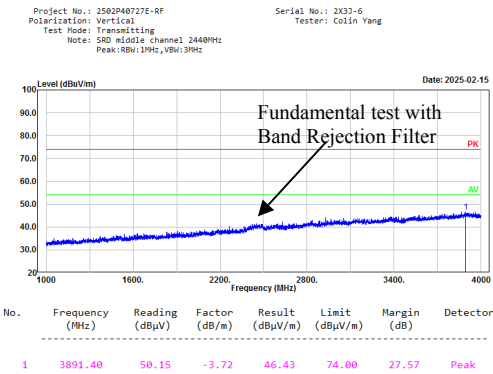
3) 1-25GHz:  
1-18GHz



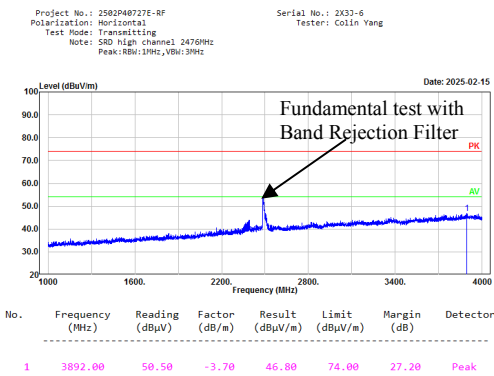
Middle Channel, Horizontal



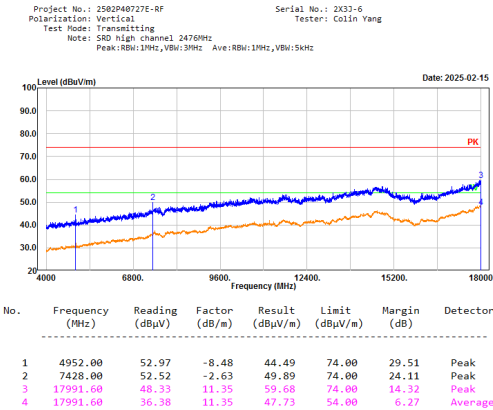
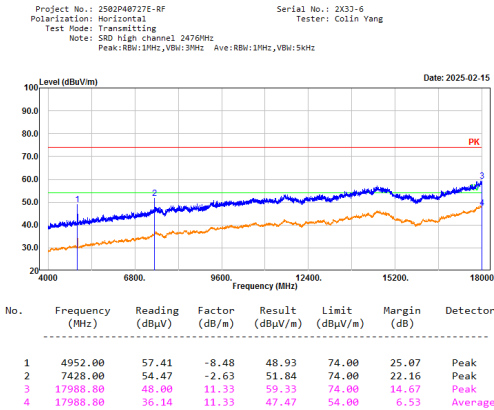
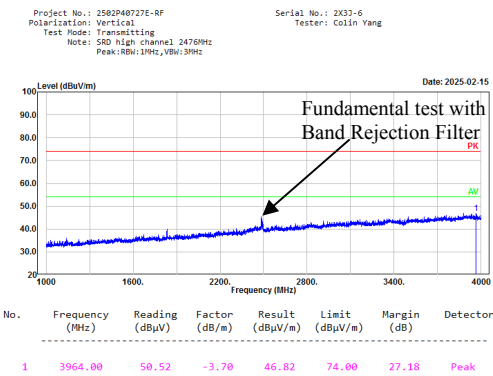
Middle Channel, Vertical



High Channel, Horizontal

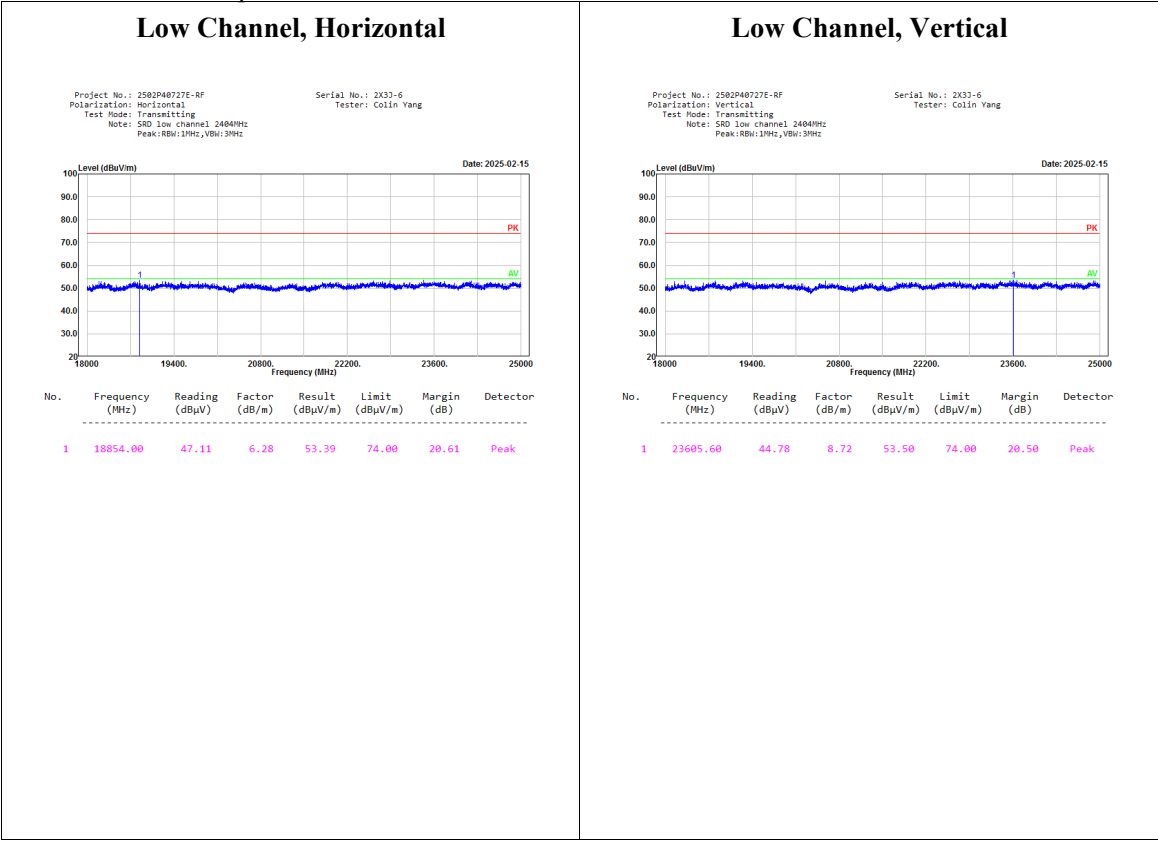


High Channel, Vertical



18-25GHz:

No Emission was detected in the range 18-25GHz, test was performed on the mode and channel which with the maximum power.

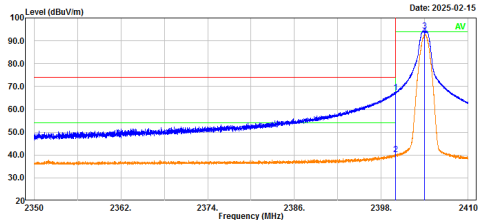


## Fundamental strength and Bandedge:

## Low Channel, Horizontal

Project No.: 2502P40727E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
Note: SRD low channel 2404MHz  
Peak: RBW:1MHz, VBW:30Hz Ave: RBW:1MHz, VBW:5kHz

Serial No.: 2X33-6  
Tester: Colin Yang

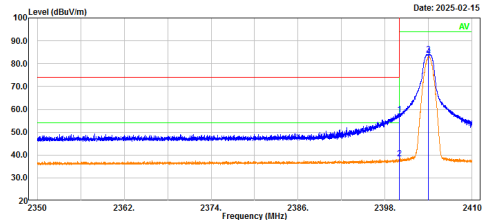


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|----------|
| 1   | 2400.00         | 67.00          | -0.42         | 67.38           | 74.00          | 6.62        | Peak     |
| 2   | 2400.00         | 40.56          | -0.42         | 40.14           | 54.00          | 13.86       | Average  |
| 3   | 2404.00         | 94.74          | -0.40         | 94.34           | 114.00         | 19.66       | Peak     |
| 4   | 2404.00         | 92.44          | -0.40         | 92.04           | 94.00          | 1.96        | Average  |

## Low Channel, Vertical

Project No.: 2502P40727E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
Note: SRD low channel 2404MHz  
Peak: RBW:1MHz, VBW:30Hz Ave: RBW:1MHz, VBW:5kHz

Serial No.: 2X33-6  
Tester: Colin Yang

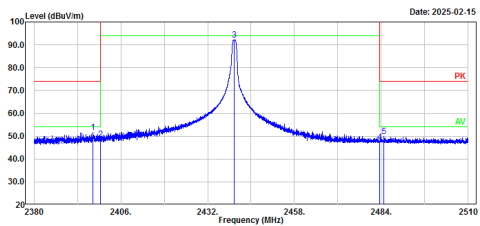


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|----------|
| 1   | 2400.00         | 58.27          | -0.42         | 57.85           | 74.00          | 16.15       | Peak     |
| 2   | 2400.00         | 38.78          | -0.42         | 38.36           | 54.00          | 15.64       | Average  |
| 3   | 2404.00         | 84.34          | -0.40         | 83.94           | 114.00         | 30.06       | Peak     |
| 4   | 2404.00         | 83.36          | -0.40         | 82.96           | 94.00          | 11.04       | Average  |

## Middle Channel, Horizontal

Project No.: 2502P40727E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
Note: SRD middle channel 2440MHz  
Peak: RBW:1MHz, VBW:30Hz

Serial No.: 2X33-6  
Tester: Colin Yang

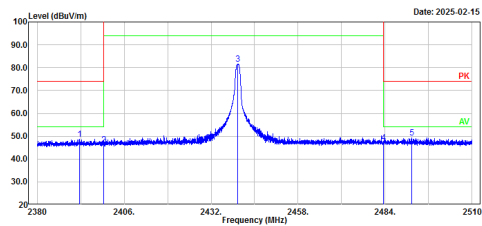


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|----------|
| 1   | 2397.71         | 52.09          | -0.44         | 51.65           | 74.00          | 22.35       | Peak     |
| 2   | 2400.00         | 49.10          | -0.42         | 48.68           | 74.00          | 25.32       | Peak     |
| 3   | 2440.00         | 92.35          | -0.24         | 92.11           | 114.00         | 21.89       | Peak     |
| 4   | 2483.50         | 47.64          | -0.05         | 47.59           | 74.00          | 26.41       | Peak     |
| 5   | 2484.81         | 49.92          | -0.04         | 49.88           | 74.00          | 24.12       | Peak     |

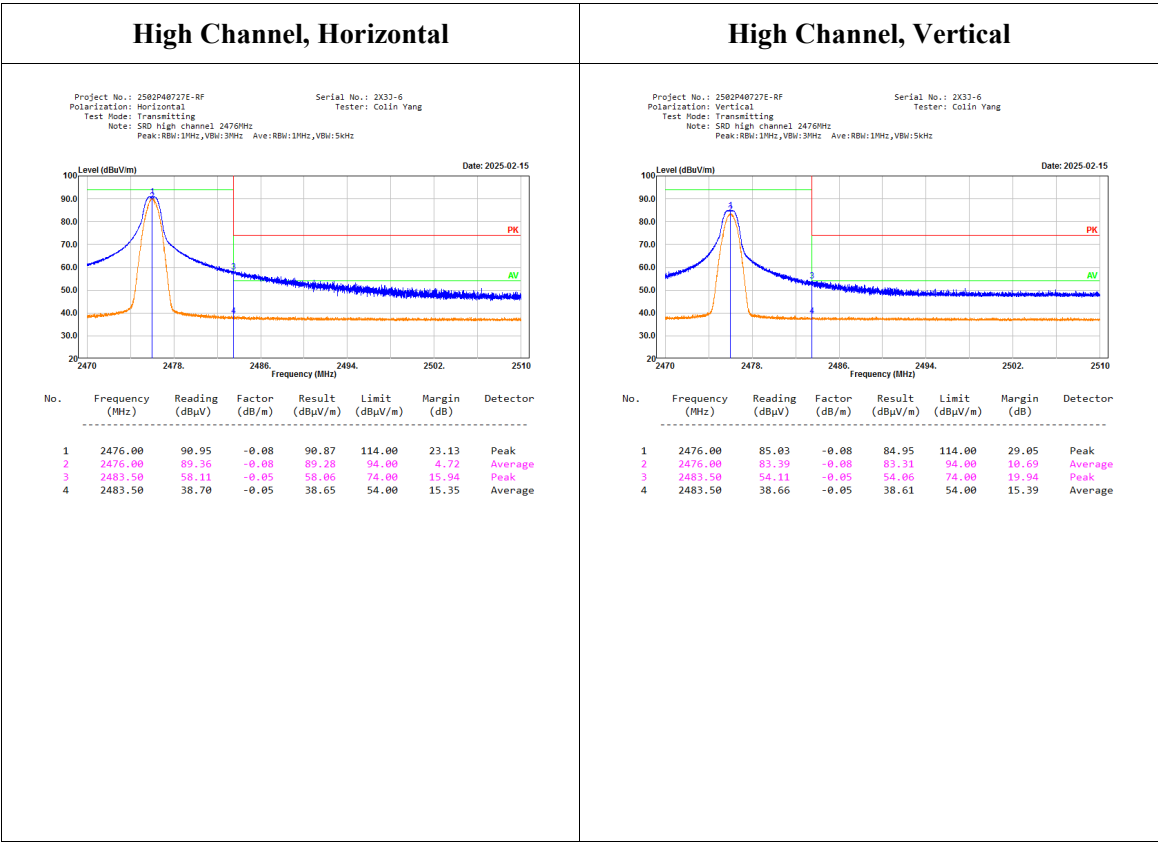
## Middle Channel, Vertical

Project No.: 2502P40727E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
Note: SRD middle channel 2440MHz  
Peak: RBW:1MHz, VBW:30Hz

Serial No.: 2X33-6  
Tester: Colin Yang



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|----------|
| 1   | 2392.66         | 49.17          | -0.47         | 48.70           | 74.00          | 25.30       | Peak     |
| 2   | 2400.00         | 46.81          | -0.42         | 46.39           | 74.00          | 27.61       | Peak     |
| 3   | 2440.00         | 81.76          | -0.24         | 81.52           | 114.00         | 32.48       | Peak     |
| 4   | 2483.50         | 47.34          | -0.05         | 47.29           | 74.00          | 26.71       | Peak     |
| 5   | 2491.88         | 49.31          | 0.00          | 49.31           | 74.00          | 24.69       | Peak     |





### 4.3 20 dB Emission Bandwidth and 99% Occupied Bandwidth

#### 4.3.1 Applicable Standard

FCC §15.215

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

RSS-Gen Clause 6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth: The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

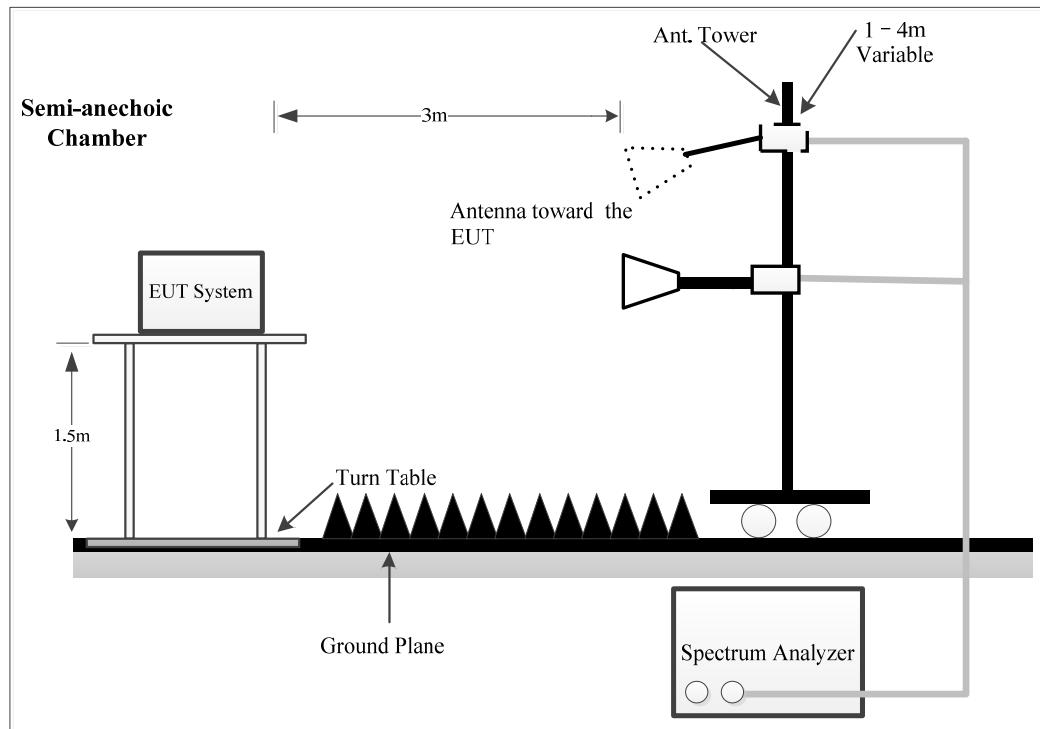
The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

### 4.3.2 EUT Setup



### 4.3.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, unless otherwise specified by the applicable requirement.
- Set the video bandwidth (VBW)  $\geq 3 \times \text{RBW}$ .
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

According to ANSI C63.10-2013 Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than  $[10 \log (\text{OBW}/\text{RBW})]$  below the reference level. Specific guidance is given in 4.1.5.2.

- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.3.4 Test Result

|                |            |              |              |
|----------------|------------|--------------|--------------|
| Serial Number: | 2X3J-6     | Test Date:   | 2025/2/15    |
| Test Site:     | Chamber B  | Test Mode:   | Transmitting |
| Tester:        | Colin Yang | Test Result: | Pass         |

|                                  |    |                           |     |
|----------------------------------|----|---------------------------|-----|
| <b>Environmental Conditions:</b> |    |                           |     |
| Temperature:<br>(°C)             | 22 | Relative Humidity:<br>(%) | 54  |
|                                  |    | ATM<br>Pressure:<br>(kPa) | 101 |

Test Equipment List and Details:

| Manufacturer      | Description       | Model                | Serial Number        | Calibration Date | Calibration Due Date |
|-------------------|-------------------|----------------------|----------------------|------------------|----------------------|
| R&S               | Spectrum Analyzer | FSV40                | 101944               | 2024/9/6         | 2025/9/5             |
| ETS-Lindgren      | Horn Antenna      | 3115                 | 000 527 35           | 2023/9/7         | 2026/9/6             |
| Xinhang Macrowave | Coaxial Cable     | XH750A-N/J-SMA/J-10M | 20231117004<br>#0001 | 2024/11/17       | 2025/11/16           |
| AH                | Preamplifier      | PAM-0118P            | 469                  | 2024/4/15        | 2025/4/14            |

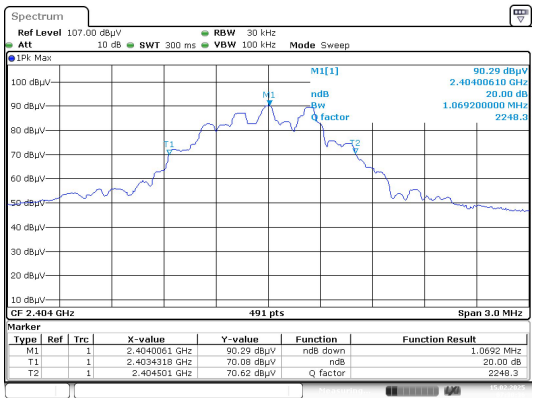
\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

| Test Channel | Test Frequency<br>(MHz) | 99% Occupied Bandwidth<br>(kHz) | 20 dB Bandwidth<br>(kHz) |
|--------------|-------------------------|---------------------------------|--------------------------|
| Lowest       | 2404                    | 989.817                         | 1069.2                   |
| Middle       | 2440                    | 995.927                         | 1075.4                   |
| Highest      | 2476                    | 995.927                         | 1075.4                   |

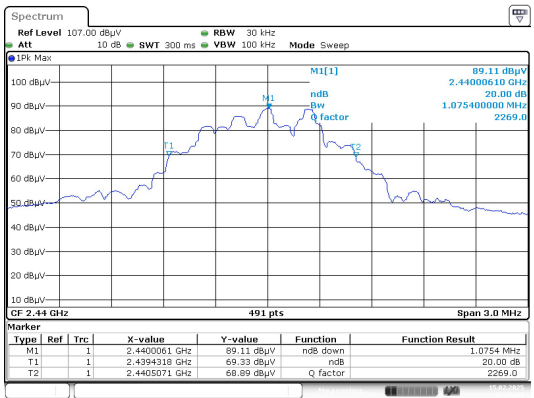
Note: the 20 dB bandwidth of the emission and 99% Occupied Bandwidth is contained within the operation frequency band. Please refer to the below plots.

20 dB Bandwidth \_Low\_Channel



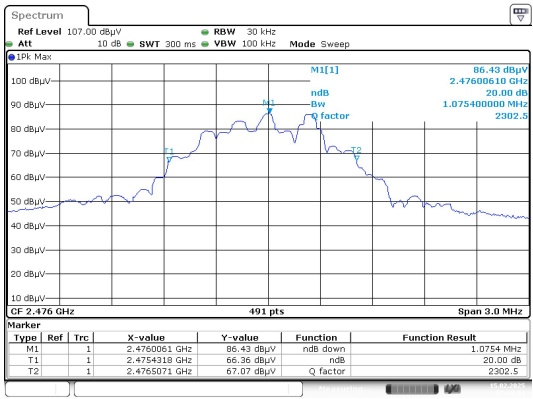
ProjectNo.:2502P40727E-RF Tester:Colin Yang  
Date: 15.FEB.2025 07:30:36

20 dB Bandwidth \_Middle\_Channel



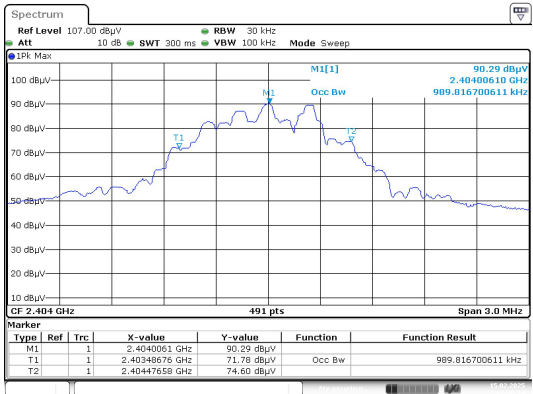
ProjectNo.:2502P40727E-RF Tester:Colin Yang  
Date: 15.FEB.2025 07:29:50

20 dB Bandwidth \_High\_Channel



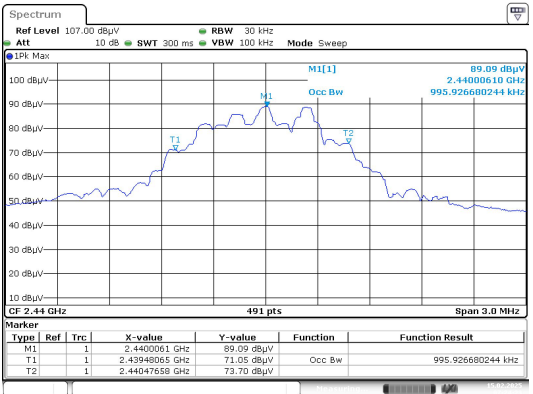
ProjectNo.:2502P40727E-RF Tester:Colin Yang  
Date: 15.FEB.2025 07:28:03

99% Occupied Bandwidth \_Low\_Channel



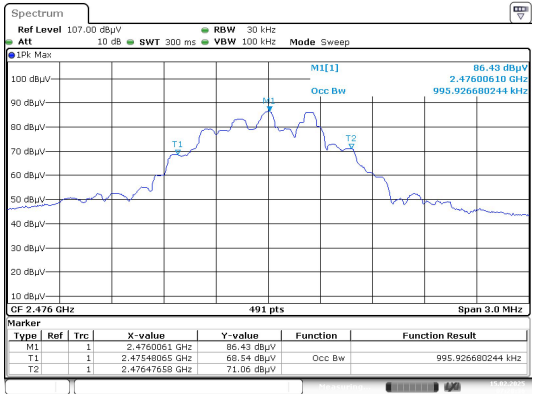
ProjectNo.:2502P40727E-RF Tester:Colin Yang  
Date: 15.FEB.2025 07:30:15

99% Occupied Bandwidth \_Middle\_Channel



ProjectNo.:2502P40727E-RF Tester:Colin Yang  
Date: 15.FEB.2025 07:24:23

99% Occupied Bandwidth \_High\_Channel



ProjectNo.:2502P40727E-RF Tester:Colin Yang  
Date: 15.FEB.2025 07:28:37

## 4.4 Antenna Requirement

### 4.4.1 Applicable Standard

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

RSS-Gen Clause 6.8

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISCED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

### 4.4.2 Judgment

**Compliant.** Please refer to the Antenna Information detail in Section 1.3.

## **EXHIBIT A - EUT PHOTOGRAPHS**

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Please refer to the attachment 2502P40727E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2502P40727E-RF-INP EUT INTERNAL PHOTOGRAPHS



## **EXHIBIT B - TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment 2502P40727E-RF-00B-TSP TEST SETUP PHOTOGRAPHS.

## EXHIBIT C - RF EXPOSURE EVALUATION

### SAR test exclusion

#### Applicable Standard

According to §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

#### Measurement Result

The max EIRP including tune-up tolerance is -0.5dBm, Conducted power is -1.7dBm(0.68mW) (Maximum E-Field is 94.34dBuV/m@3m= -0.86dBm EIRP).

$\text{EIRP(dBm)} = \text{Field Strength of Fundamental(dBuV/m)} - 95.2$

$\text{Conducted power} = \text{EIRP} - \text{Antenna Gain}$

$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$   
 $= 0.68/5 \cdot (\sqrt{2.476}) = 0.2 < 3.0$

Note:

the max conducted power including tune-up tolerance was declared by manufacturer.

BLE/ SRD can't transmit simultaneously.

**Result: Compliant. The stand-alone SAR evaluation is not necessary.**

## Exemption Limits For Routine Evaluation- SAR Evaluation

### Applicable Standard

RSS-102, Issue 6, Clause 6.3:

Devices operating at or below the applicable output power levels (adjusted for tune-up tolerance) specified in table 11, based on the separation distance, are exempt from SAR evaluation. The separation distance, defined as the distance between the user and/or bystander and the antenna and/or radiating element of the device or the outer surface of the device, shall be less than or equal to 20 cm for these exemption limits to apply.

**Table 11: Power limits for exemption from routine SAR evaluation based on the separation distance**

| Frequency (MHz) | ≤ 5 mm (mW) | 10 mm (mW) | 15 mm (mW) | 20 mm (mW) | 25 mm (mW) | 30 mm (mW) | 35 mm (mW) | 40 mm (mW) | 45 mm (mW) | > 50 mm (mW) |
|-----------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|
| ≤ 300           | 45          | 116        | 139        | 163        | 189        | 216        | 246        | 280        | 319        | 362          |
| 450             | 32          | 71         | 87         | 104        | 124        | 147        | 175        | 208        | 248        | 296          |
| 835             | 21          | 32         | 41         | 54         | 72         | 96         | 129        | 172        | 228        | 298          |
| 1900            | 6           | 10         | 18         | 33         | 57         | 92         | 138        | 194        | 257        | 323          |
| 2450            | 3           | 7          | 16         | 32         | 56         | 89         | 128        | 170        | 209        | 245          |
| 3500            | 2           | 6          | 15         | 29         | 50         | 72         | 94         | 114        | 134        | 158          |
| 5800            | 1           | 5          | 13         | 23         | 32         | 41         | 54         | 74         | 102        | 128          |

### Measurement Result:

The max EIRP including tune-up tolerance is -0.5dBm(0.89mW)  
 (Maximum E-Field is 94.34dBuV/m@3m= -0.86dBm EIRP).  
 EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2

The exemption power(P) limits for routine evaluation in 2404-2476MHz is:

$$(2476-2450)/(3500-2450)=(P-3)/(2-3)$$

$$\Rightarrow P=2.98 \text{ mW}@2476 \text{ MHz}$$

$$> 0.89\text{mW}$$

Note: the max conducted power including tune-up tolerance was declared by manufacturer.  
 BLE/SRD can't transmit simultaneously.

**So the stand-alone SAR evaluation can be exempted.**

**\*\*\*\*\* END OF REPORT \*\*\*\*\***