

TEST REPORT

Applicant Name: Alford Industries Ltd.
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Report Number: 2401A111119E-RF-00
FCC ID: 2BMUJ-MDZ500BU

Test Standard (s)

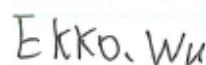
FCC PART 15.247

Sample Description

Product Type: Color Night Vision Baby Monitor
Model No.: MDZ500
Multiple Model(s) No.: N/A
Trade Mark: N/A
Date Received: 2024/12/18
Issue Date: 2025/03/14

| | |
|--------------|-------|
| Test Result: | Pass▲ |
|--------------|-------|

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

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RF Engineer

Approved By:

Michelle Zeng
RF Supervisor

Note: The information marked[#] is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

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DOCUMENT REVISION HISTORY

| Revision Number | Report Number | Description of Revision | Date of Revision |
|-----------------|--------------------|-------------------------|------------------|
| 0 | 2401A111119E-RF-00 | Original Report | 2025/03/14 |

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

| | |
|-------------------------------------|--|
| Product | Color Night Vision Baby Monitor |
| Tested Model | MDZ500 |
| Multiple Model(s) | N/A |
| Frequency Range | 2402-2476MHz |
| Maximum conducted peak output power | 16.65 dBm |
| Modulation Technique | GFSK |
| Antenna Specification [#] | -2.52dBi (provided by the applicant) |
| Voltage Range | DC 5V from adapter |
| Sample serial number | 2W78-3 for RF Conducted Test 2W78-6 for Conducted & Radiated Emissions (Assigned by BACL, Shenzhen) |
| Sample/EUT Status | Good condition |
| Adapter Information | Adapter 1 Model:GLH0501500 Input: 100-240V~50/60Hz 0.4A Output: 5.0V, 1.5A 7.5W Adapter 2 Model:PS12L050K1500UD Input: 100-240V~50/60Hz 0.35A Max Output: 5.0V, 1.5A 7.5W |

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

| Parameter | | Uncertainty |
|---------------------------------------|-----------------------------|--|
| Occupied Channel Bandwidth | | 109.2kHz(k=2, 95% level of confidence) |
| RF Frequency | | 56.6Hz(k=2, 95% level of confidence) |
| RF output power, conducted | | 0.86dB(k=2, 95% level of confidence) |
| Unwanted Emission, conducted | | 1.60dB(k=2, 95% level of confidence) |
| AC Power Lines Conducted Emissions | 9 kHz~150 KHz | 3.63dB(k=2, 95% level of confidence) |
| | 150 kHz ~30MHz | 3.66dB(k=2, 95% level of confidence) |
| Radiated Emissions | 0.009MHz~30MHz | 3.60dB(k=2, 95% level of confidence) |
| | 30MHz~200MHz (Horizontal) | 5.32dB(k=2, 95% level of confidence) |
| | 30MHz~200MHz (Vertical) | 5.43dB(k=2, 95% level of confidence) |
| | 200MHz~1000MHz (Horizontal) | 5.77dB(k=2, 95% level of confidence) |
| | 200MHz~1000MHz (Vertical) | 5.73dB(k=2, 95% level of confidence) |
| | 1GHz - 6GHz | 5.34dB(k=2, 95% level of confidence) |
| | 6GHz - 18GHz | 5.40dB(k=2, 95% level of confidence) |
| | 18GHz - 40GHz | 5.64dB(k=2, 95% level of confidence) |
| Temperature | | ±1°C |
| Humidity | | ±1% |
| Supply voltages | | ±0.4% |

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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. : 715558, the FCC Designation No. : CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

Channel list

| Channel No. | Frequency (MHz) |
|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|
| 1 | 2402 | 11 | 2422 | 21 | 2442 | 31 | 2462 |
| 2 | 2404 | 12 | 2424 | 24 | 2444 | 32 | 2464 |
| 3 | 2406 | 13 | 2426 | 23 | 2446 | 33 | 2466 |
| 4 | 2408 | 14 | 2428 | 24 | 2448 | 34 | 2468 |
| 5 | 2410 | 15 | 2430 | 25 | 2450 | 35 | 2470 |
| 6 | 2412 | 16 | 2432 | 26 | 2452 | 36 | 2472 |
| 7 | 2414 | 17 | 2434 | 27 | 2454 | 37 | 2474 |
| 8 | 2416 | 18 | 2436 | 28 | 2456 | 38 | 2476 |
| 9 | 2418 | 19 | 2438 | 29 | 2458 | / | / |
| 10 | 2420 | 20 | 2440 | 30 | 2460 | / | / |

Channel 1, 20, 38 was tested.

EUT Exercise Software

“SecureCRT”[#] exercise software was used and the power level is Default[#]. The software and power level was provided by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

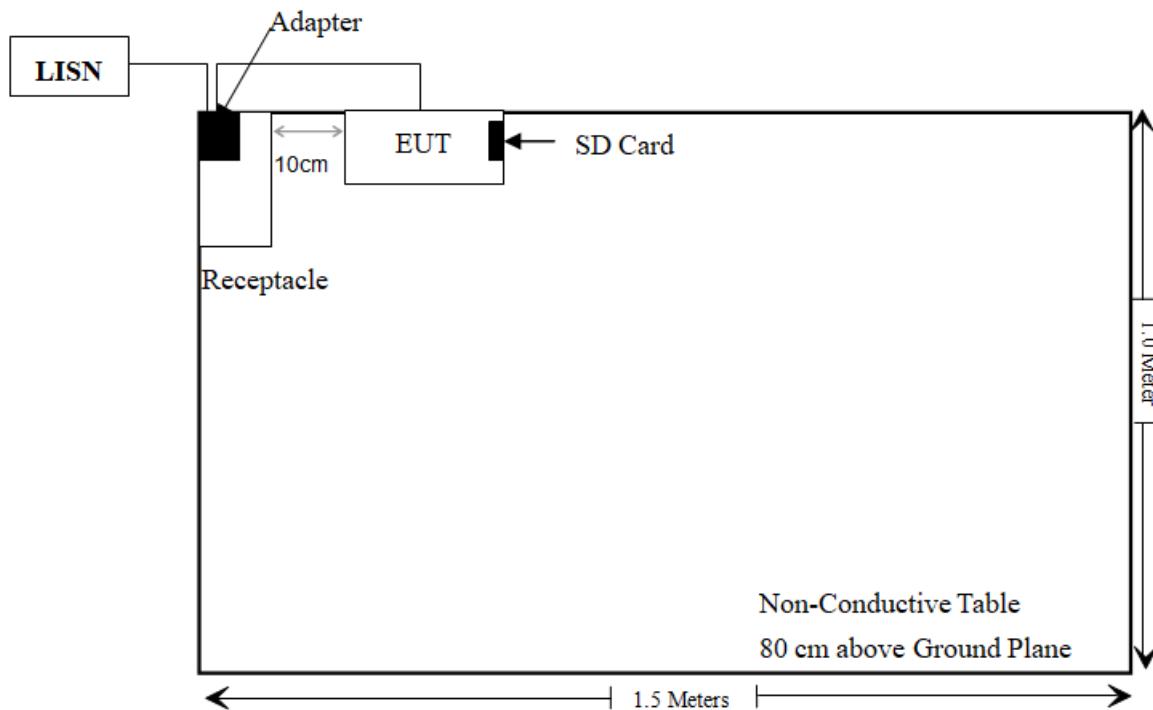
| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|-------------|---------------|
| Unknown | SD Card | Unknown | Unknown |
| OUPU | Receptacle | PDU-OP1606K | 6971041358020 |

External I/O Cable

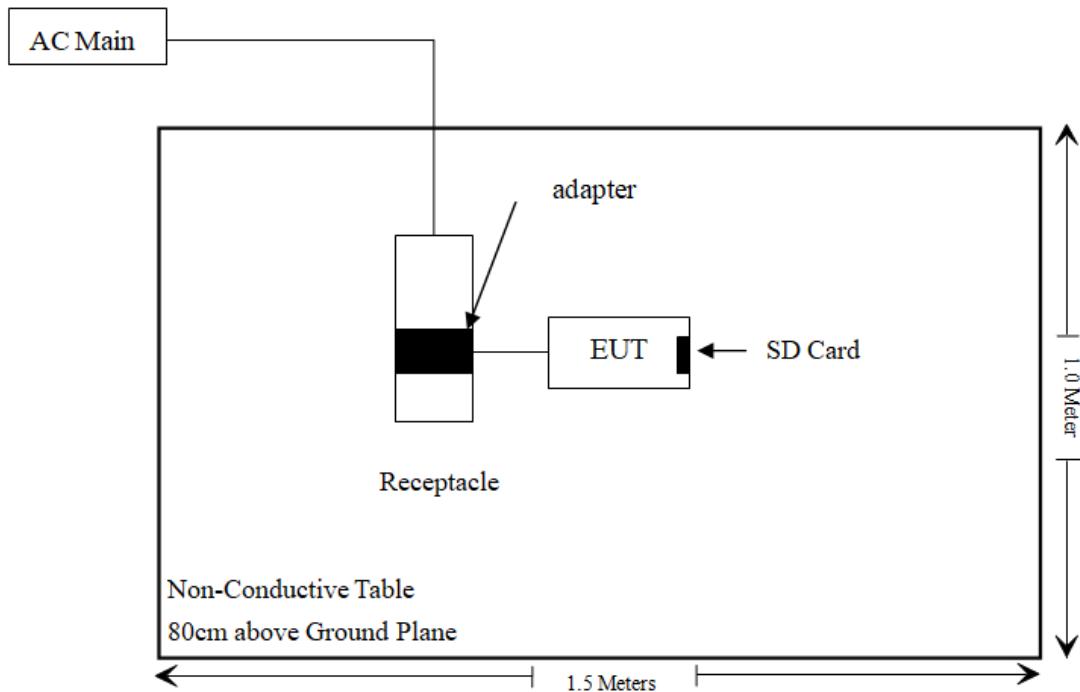
| Cable Description | Length (m) | From/Port | To |
|-----------------------------------|------------|------------|---------------|
| Unshielded Un-detachable DC cable | 2.0 | Adapter | EUT |
| Unshielded Un-detachable AC cable | 1.0 | Receptacle | LISN/AC Mains |

Block Diagram of Test Setup

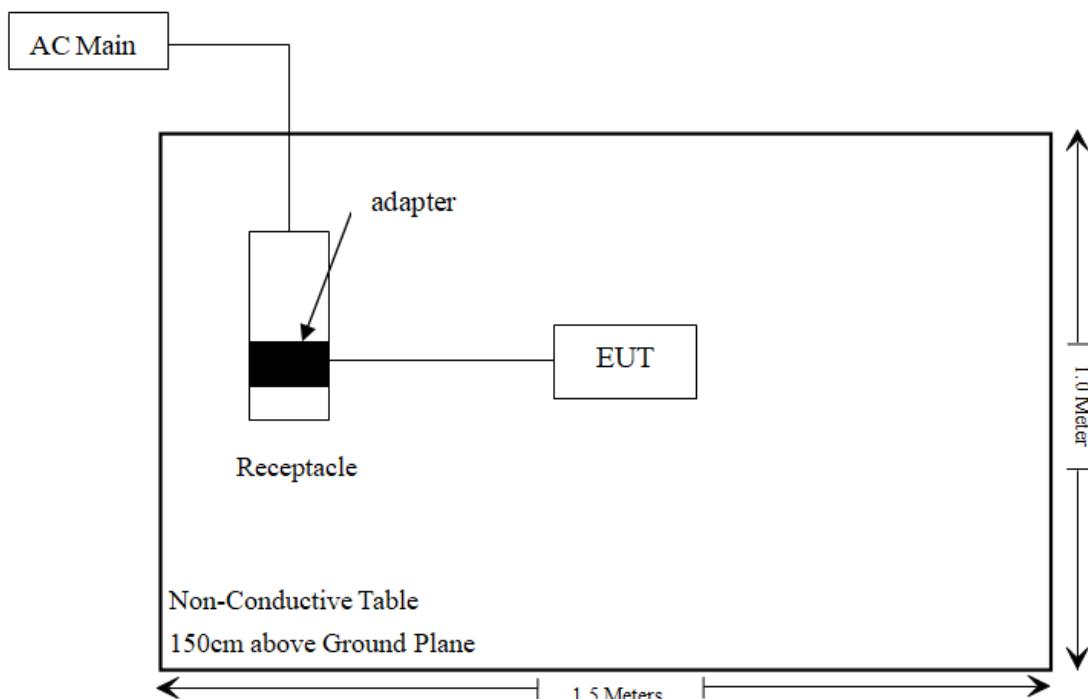
For Conducted Emissions:



For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|--|-----------|
| FCC§15.247 (i), §1.1307 (b) (3) & §2.1091 | Maximum Permissible Exposure(MPE) | Compliant |
| §15.203 | Antenna Requirement | Compliant |
| §15.207(a) | AC Line Conducted Emissions | Compliant |
| §15.205, §15.209 & §15.247(d) | Radiated Emissions | Compliant |
| §15.247(a)(1) | 20dB Emission Bandwidth&99% Occupied Bandwidth | Compliant |
| §15.247(a)(1) | Channel Separation Test | Compliant |
| §15.247(a)(1)(iii) | Time of Occupancy (Dwell Time) | Compliant |
| §15.247(a)(1)(iii) | Quantity of hopping channel Test | Compliant |
| §15.247(b)(1) | Peak Output Power Measurement | Compliant |
| §15.247(d) | Band edges | Compliant |

TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|-----------------------------------|-------------------|------------------------|------------------|----------------------|
| Conducted Emissions Test | | | | | |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 101120 | 2024/12/04 | 2025/12/03 |
| Rohde & Schwarz | LISN | ENV216 | 101613 | 2024/12/04 | 2025/12/03 |
| Rohde & Schwarz | Transient Limiter | ESH3Z2 | DE25985 | 2024/05/21 | 2025/05/20 |
| Unknown | CE Cable | Unknown | UF A210B-1-0720-504504 | 2024/05/21 | 2025/05/20 |
| Audix | EMI Test software | E3 | 191218(V9) | NCR | NCR |
| Radiated Emission Test | | | | | |
| Rohde & Schwarz | EMI Test Receiver | ESR3 | 102455 | 2024/12/04 | 2025/12/03 |
| Sonoma instrument | Pre-amplifier | 310 N | 186238 | 2024/05/21 | 2025/05/20 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-1 | 2023/07/20 | 2026/07/19 |
| Unknown | Cable | Chamber A Cable 1 | N/A | 2024/06/18 | 2025/06/17 |
| Unknown | Cable | XH500C | J-10M-A | 2024/06/18 | 2025/06/17 |
| BACL | Active Loop Antenna | 1313-1A | 4031911 | 2024/05/14 | 2027/05/13 |
| Unknown | Cable | 2Y194 | 0735 | 2024/12/04 | 2025/12/03 |
| Unknown | Cable | PNG214 | 1354 | 2024/12/04 | 2025/12/03 |
| Rohde & Schwarz | Spectrum Analyzer | FSV40 | 101605 | 2024/03/27 | 2025/03/26 |
| A.H.System | Preamplifier | PAM-0118P | 489 | 2024/11/15 | 2025/11/14 |
| The Electro-Mechanics Co. | Horn Antenna | 3115 | 9107-3694 | 2024/06/06 | 2027/06/05 |
| Unknown | RF Cable | KMSE | 735 | 2024/12/04 | 2025/12/03 |
| Unknown | RF Cable | UFA147 | 219661 | 2024/12/04 | 2025/12/03 |
| JD | Filter Switch Unit | DT7220FSU | DS79906 | 2024/09/09 | 2025/09/08 |
| JD | Multiplex Switch Test Control Set | DT7220SCU | DS79903 | 2024/09/09 | 2025/09/08 |
| Audix | EMI Test software | E3 | 191218(V9) | NCR | NCR |
| A.H.System | Pre-amplifier | PAM-840VH | 190 | 2024/06/18 | 2025/06/17 |
| Electro-Mechanics Co | Horn Antenna | 3116 | 9510-2270 | 2023/09/18 | 2026/09/17 |
| UTIFLEX | RF Cable | NO. 13 | 232308-001 | 2024/06/18 | 2025/06/17 |
| Agilent | Signal Generator | N5183A | MY50140588 | 2024/09/13 | 2025/09/12 |
| RF Conducted Test | | | | | |
| Rohde & Schwarz | Spectrum Analyzer | FSU26 | 200982 | 2024/09/20 | 2025/09/19 |
| Unknown | 10dB Attenuator | Unknown | F-03-EM065 | 2024/06/27 | 2025/06/26 |

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

FCC §15.247 (i) & §1.1307 (b) (3) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 Interim General RF Exposure Guidance V01

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power(ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(3)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

| RF Source frequency (MHz) | Threshold ERP (watts) |
|---------------------------|-----------------------|
| 0.3-1.34 | $1,920 R^2$. |
| 1.34-30 | $3,450 R^2/f^2$. |
| 30-300 | $3.83 R^2$. |
| 300-1,500 | $0.0128 R^2 f$. |
| 1,500-100,000 | $19.2 R^2$. |

R is the minimum separation distance in meters

f = frequency in MHz

Result

| Mode | Frequency (MHz) | Tune up conducted power [#] (dBm) | Antenna Gain [#] | | ERP | | Evaluation Distance (m) | ERP Limit (W) |
|------|-----------------|--|---------------------------|-------|-------|-------|-------------------------|---------------|
| | | | (dBi) | (dBd) | (dBm) | (W) | | |
| 2.4G | 2402-2476 | 17.00 | -2.52 | -4.67 | 12.33 | 0.017 | 0.2 | 0.768 |

Note: The tune up conducted power[#] and antenna gain[#] were declared by the applicant.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to 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.

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.

Antenna Connector Construction

The EUT has one internal (brass) antenna arrangement which was permanently attached and the antenna gain[#] is -2.52dBi, fulfill the requirement of this section. Please refer to the EUT photos.

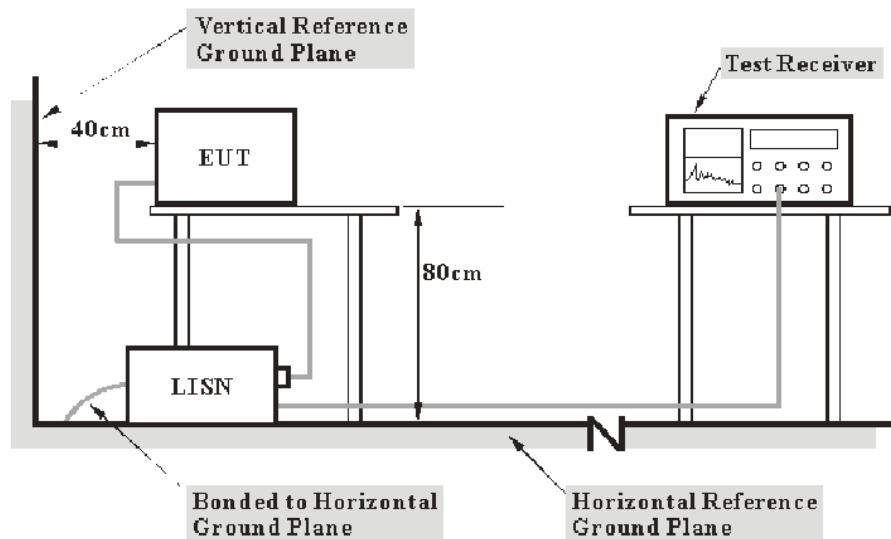
Result: Compliant

FCC §15.207 (a) - AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

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 |

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Factor & Over Limit Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit}$$

$$\text{Level} = \text{Read Level} + \text{Factor}$$

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

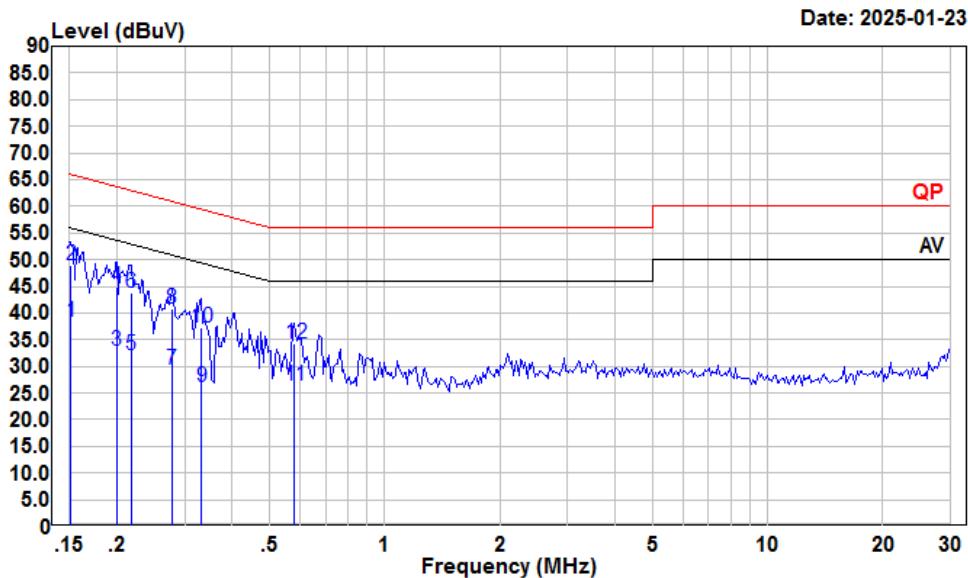
| | |
|--------------------|----------|
| Temperature: | 21.5 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.3kPa |

The testing was performed by Macy Shi on 2025-01-23.

EUT operation mode: Transmitting (Maximum output power, low channel)

For Adapter 1

AC 120V/60 Hz, Line



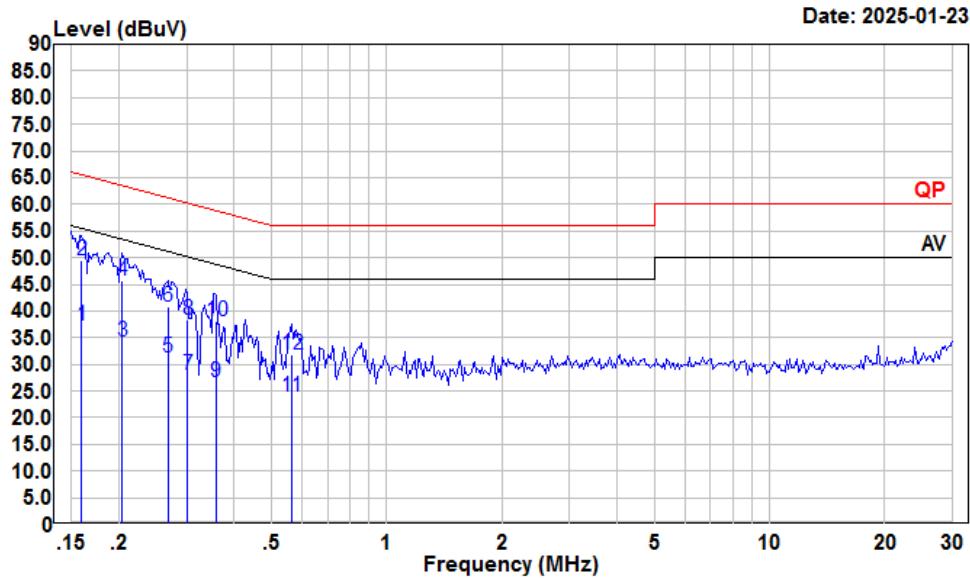
Condition: Line

Project : 2401A111119E-RF

tester : Macy.shi Note:Transmitting

Setting : RBW:9kHz VBW:30KHz Detector Peak

| Freq | Read | LISN | Cable | Limit | Over | Remark |
|------|-------|-------|-------|--------|-------|----------------------|
| | MHz | Level | Level | Factor | Loss | |
| 1 | 0.152 | 17.71 | 38.25 | 10.41 | 10.13 | 55.91 -17.66 Average |
| 2 | 0.152 | 28.31 | 48.85 | 10.41 | 10.13 | 65.91 -17.06 QP |
| 3 | 0.200 | 12.13 | 32.92 | 10.70 | 10.09 | 53.62 -20.70 Average |
| 4 | 0.200 | 24.20 | 44.99 | 10.70 | 10.09 | 63.62 -18.63 QP |
| 5 | 0.217 | 11.40 | 32.17 | 10.68 | 10.09 | 52.92 -20.75 Average |
| 6 | 0.217 | 23.10 | 43.87 | 10.68 | 10.09 | 62.92 -19.05 QP |
| 7 | 0.277 | 8.60 | 29.33 | 10.63 | 10.10 | 50.90 -21.57 Average |
| 8 | 0.277 | 20.10 | 40.83 | 10.63 | 10.10 | 60.90 -20.07 QP |
| 9 | 0.332 | 5.32 | 26.03 | 10.59 | 10.12 | 49.40 -23.37 Average |
| 10 | 0.332 | 16.67 | 37.38 | 10.59 | 10.12 | 59.40 -22.02 QP |
| 11 | 0.582 | 5.53 | 26.33 | 10.68 | 10.12 | 46.00 -19.67 Average |
| 12 | 0.582 | 13.55 | 34.35 | 10.68 | 10.12 | 56.00 -21.65 QP |

AC 120V/60 Hz, Neutral

Condition: Neutral

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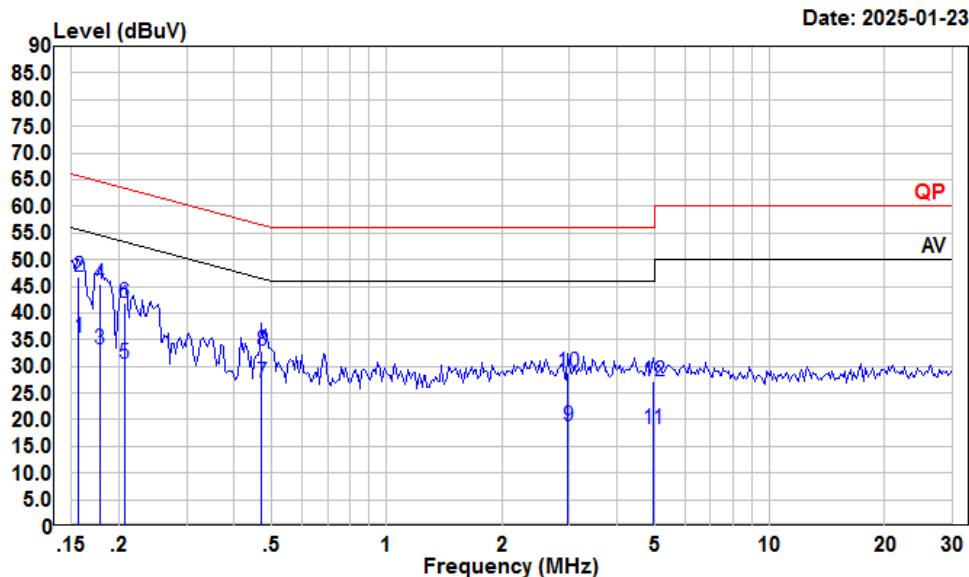
tester : Macy.shi Note:Transmitting

Setting : RBW:9kHz VBW:30KHz Detector Peak

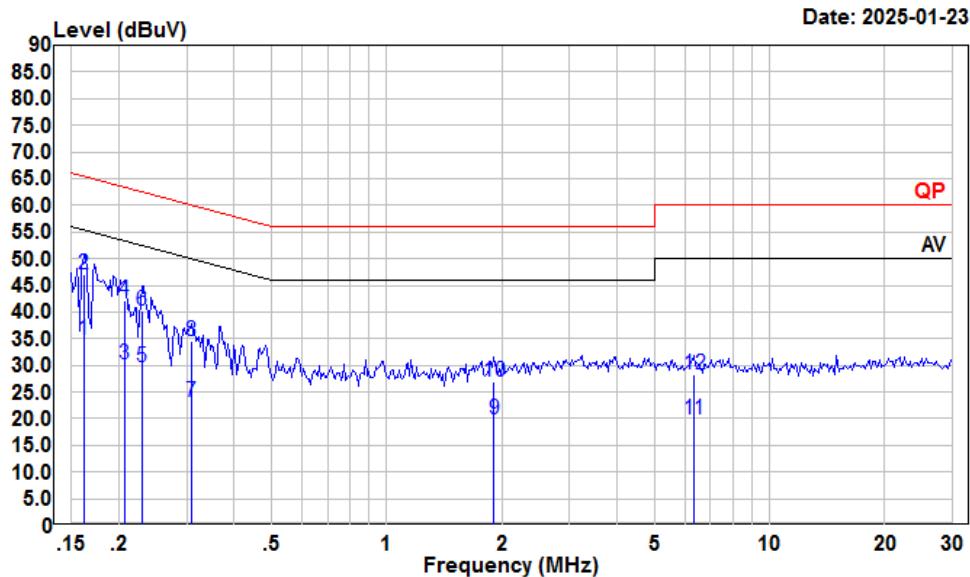
| Freq | Read | | LISN Factor | Cable Loss | Limit Line | Over Limit | Remark |
|------|-------|-------|-------------|------------|------------|------------|----------------|
| | MHz | dBuV | | | | | |
| 1 | 0.160 | 16.71 | 37.32 | 10.49 | 10.12 | 55.47 | -18.15 Average |
| 2 | 0.160 | 28.90 | 49.51 | 10.49 | 10.12 | 65.47 | -15.96 QP |
| 3 | 0.204 | 13.43 | 34.31 | 10.79 | 10.09 | 53.45 | -19.14 Average |
| 4 | 0.204 | 24.95 | 45.83 | 10.79 | 10.09 | 63.45 | -17.62 QP |
| 5 | 0.269 | 10.40 | 31.19 | 10.70 | 10.09 | 51.16 | -19.97 Average |
| 6 | 0.269 | 20.10 | 40.89 | 10.70 | 10.09 | 61.16 | -20.27 QP |
| 7 | 0.302 | 7.25 | 28.03 | 10.67 | 10.11 | 50.19 | -22.16 Average |
| 8 | 0.302 | 17.51 | 38.29 | 10.67 | 10.11 | 60.19 | -21.90 QP |
| 9 | 0.358 | 5.90 | 26.63 | 10.61 | 10.12 | 48.78 | -22.15 Average |
| 10 | 0.358 | 17.40 | 38.13 | 10.61 | 10.12 | 58.78 | -20.65 QP |
| 11 | 0.564 | 3.27 | 23.94 | 10.54 | 10.13 | 46.00 | -22.06 Average |
| 12 | 0.564 | 11.03 | 31.70 | 10.54 | 10.13 | 56.00 | -24.30 QP |

For Adapter 2

AC 120V/60 Hz, Line



| Freq | Read | LISN | Cable | Limit | Over | Remark |
|------|-------|-------|--------|-------|-------|----------------------|
| | Level | Level | Factor | Loss | Line | |
| 1 | 0.156 | 14.67 | 35.23 | 10.44 | 10.12 | 55.65 -20.42 Average |
| 2 | 0.156 | 26.32 | 46.88 | 10.44 | 10.12 | 65.65 -18.77 QP |
| 3 | 0.178 | 12.59 | 33.27 | 10.58 | 10.10 | 54.59 -21.32 Average |
| 4 | 0.178 | 24.69 | 45.37 | 10.58 | 10.10 | 64.59 -19.22 QP |
| 5 | 0.206 | 9.76 | 30.54 | 10.69 | 10.09 | 53.36 -22.82 Average |
| 6 | 0.206 | 21.11 | 41.89 | 10.69 | 10.09 | 63.36 -21.47 QP |
| 7 | 0.471 | 6.22 | 26.86 | 10.51 | 10.13 | 46.49 -19.63 Average |
| 8 | 0.471 | 12.16 | 32.80 | 10.51 | 10.13 | 56.49 -23.69 QP |
| 9 | 2.978 | -2.29 | 18.88 | 10.99 | 10.18 | 46.00 -27.12 Average |
| 10 | 2.978 | 7.75 | 28.92 | 10.99 | 10.18 | 56.00 -27.08 QP |
| 11 | 4.952 | -2.62 | 18.35 | 10.79 | 10.18 | 46.00 -27.65 Average |
| 12 | 4.952 | 6.23 | 27.20 | 10.79 | 10.18 | 56.00 -28.80 QP |

AC 120V/60 Hz, Neutral

Condition: Neutral

Project : 2401A111119E-RF

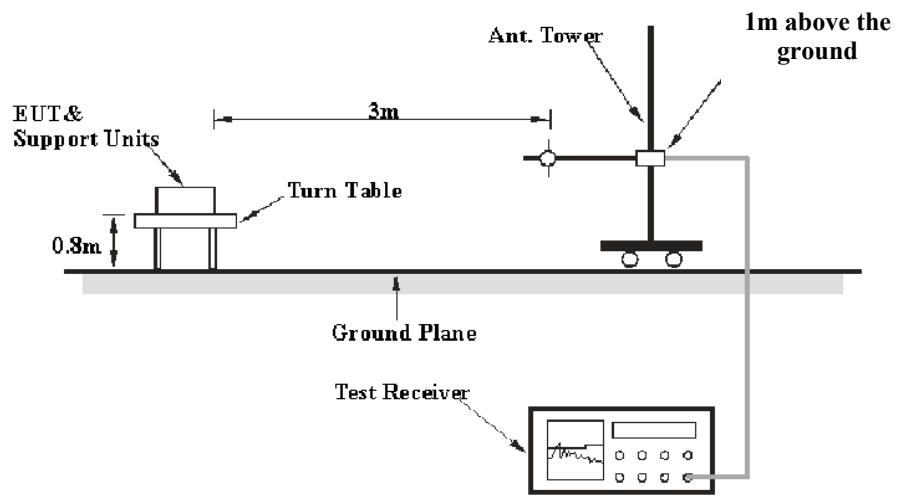
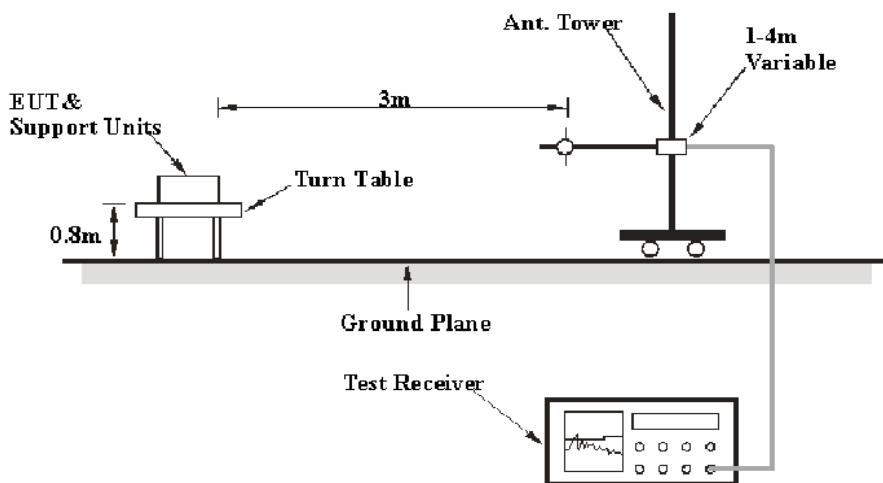
tester : Macy.shi Note:Transmitting

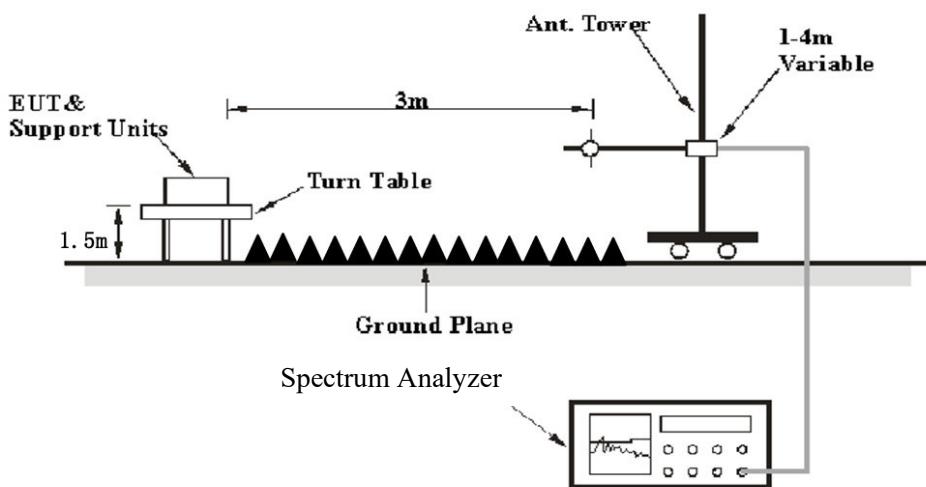
Setting : RBW:9kHz VBW:30KHz Detector Peak

| Freq | Read | | LISN Factor | Cable Loss | Limit Line | Over Limit | Remark |
|------|-------|-------|-------------|------------|------------|------------|----------------|
| | MHz | dBuV | | | | | |
| 1 | 0.162 | 14.17 | 34.78 | 10.50 | 10.11 | 55.38 | -20.60 Average |
| 2 | 0.162 | 26.51 | 47.12 | 10.50 | 10.11 | 65.38 | -18.26 QP |
| 3 | 0.206 | 9.36 | 30.24 | 10.79 | 10.09 | 53.36 | -23.12 Average |
| 4 | 0.206 | 21.40 | 42.28 | 10.79 | 10.09 | 63.36 | -21.08 QP |
| 5 | 0.229 | 8.80 | 29.64 | 10.76 | 10.08 | 52.48 | -22.84 Average |
| 6 | 0.229 | 19.40 | 40.24 | 10.76 | 10.08 | 62.48 | -22.24 QP |
| 7 | 0.308 | 2.22 | 22.99 | 10.66 | 10.11 | 50.02 | -27.03 Average |
| 8 | 0.308 | 13.69 | 34.46 | 10.66 | 10.11 | 60.02 | -25.56 QP |
| 9 | 1.908 | -0.98 | 19.91 | 10.71 | 10.18 | 46.00 | -26.09 Average |
| 10 | 1.908 | 6.16 | 27.05 | 10.71 | 10.18 | 56.00 | -28.95 QP |
| 11 | 6.319 | -1.01 | 19.85 | 10.67 | 10.19 | 50.00 | -30.15 Average |
| 12 | 6.319 | 7.40 | 28.26 | 10.67 | 10.19 | 60.00 | -31.74 QP |

FCC §15.205, §15.209&§15.247(d) – RADIATED EMISSIONS**Applicable Standard**

FCC §15.205; §15.209; §15.247(d)

EUT Setup**9 kHz-30MHz:****30MHz-1GHz:**

Above 1GHz:

The radiated emission tests were performed in the 3meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

The EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

| Frequency Range | RBW | Video B/W | IF B/W | Measurement |
|-------------------|---|-----------|---------|-------------|
| 9 kHz – 150 kHz | / | / | 200 Hz | QP |
| | 300 Hz | 1 kHz | / | PK |
| 150 kHz – 30 MHz | / | / | 9 kHz | QP |
| | 10 kHz | 30 kHz | / | PK |
| 30 MHz – 1000 MHz | / | / | 120 kHz | QP |
| | 100 kHz | 300 kHz | / | PK |
| Above 1 GHz | Harmonics | | | |
| | 1MHz | 3 MHz | / | PK |
| | Average Emission Level=Peak Emission Level+20*log(Duty cycle) | | | |
| | Other Emissions& Band edge | | | |
| | 1MHz | 3 MHz | / | PK |
| | 1MHz | ≥10 Hz | / | Average |

For Duty cycle measurement:

Use the duty cycle factor correction factor method per 15.35(c).

Duty cycle=On time/100milliseconds, On time=N1*L1+N2*L2+...Nn-1*Ln-1+Nn*Ln,
Where N1 is number of type 1 pulses, L1 is length of type 1 pulse, etc.

Test Procedure

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

All final data was recorded in Quasi-peak detection mode except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz, peak and average detection modes for frequencies above 1 GHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

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.

All emissions under the average limit and under the noise floor have not recorded in the report.

Factor & Over Limit/Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Over Limit or Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit/margin of -7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\begin{aligned} \text{Margin/Over Limit} &= \text{Corrected Amplitude/Level-Limit} \\ \text{Corrected Amplitude/Level} &= \text{Reading} + \text{Factor} \end{aligned}$$

Test Data

Environmental Conditions

| | |
|---------------------------|-----------------|
| Temperature: | 22~23.6 °C |
| Relative Humidity: | 41~47 % |
| ATM Pressure: | 101.0~101.3 kPa |

The testing was performed by Anson Su from 2025-01-08 to 2025-02-07 for below 1GHz and Dylan Yang from 2025-01-11 to 2025-01-22 for above 1GHz.

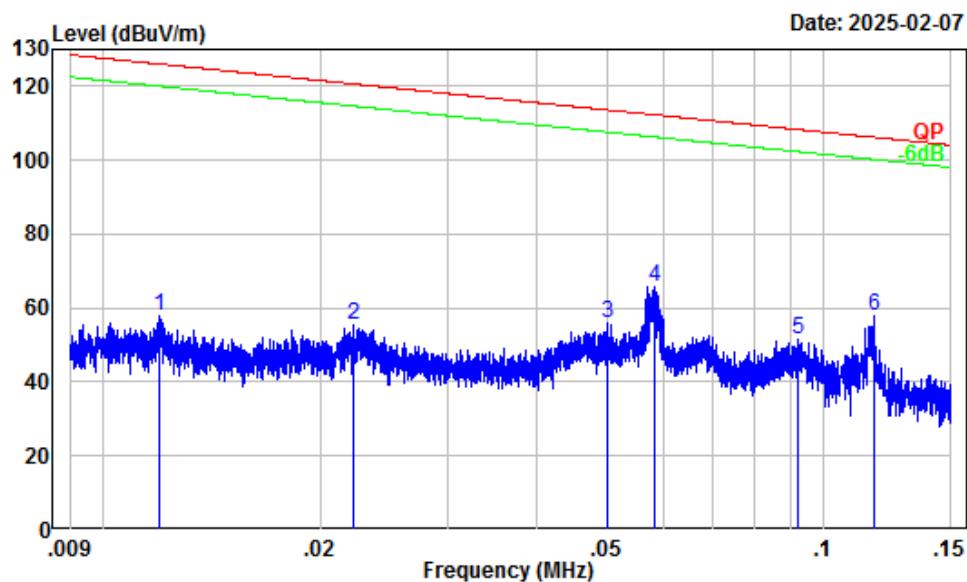
EUT operation mode: Transmitting

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case Y-axis of orientation was recorded.

For Adapter 1

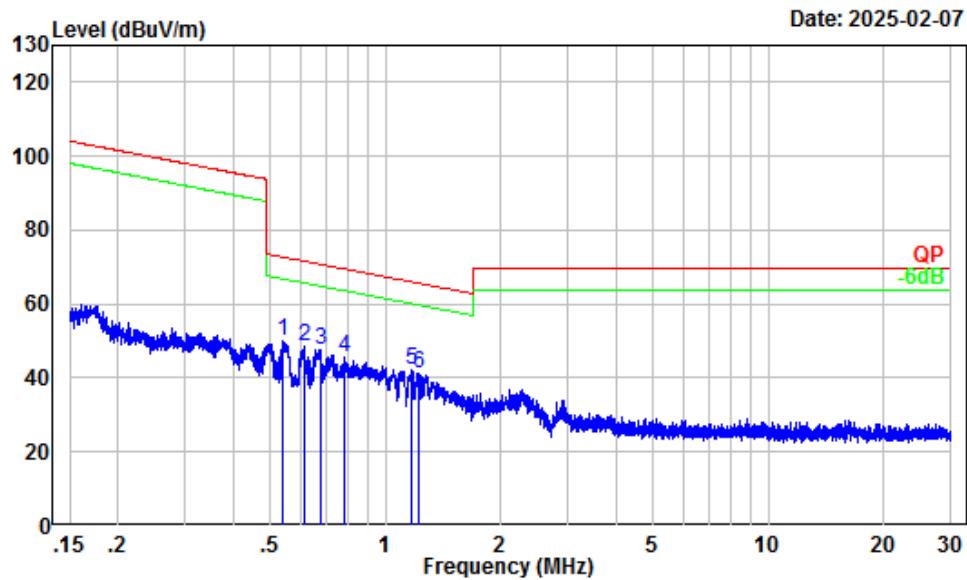
9 kHz-30MHz: (Maximum output power mode, low channel)

Parallel (worst case)



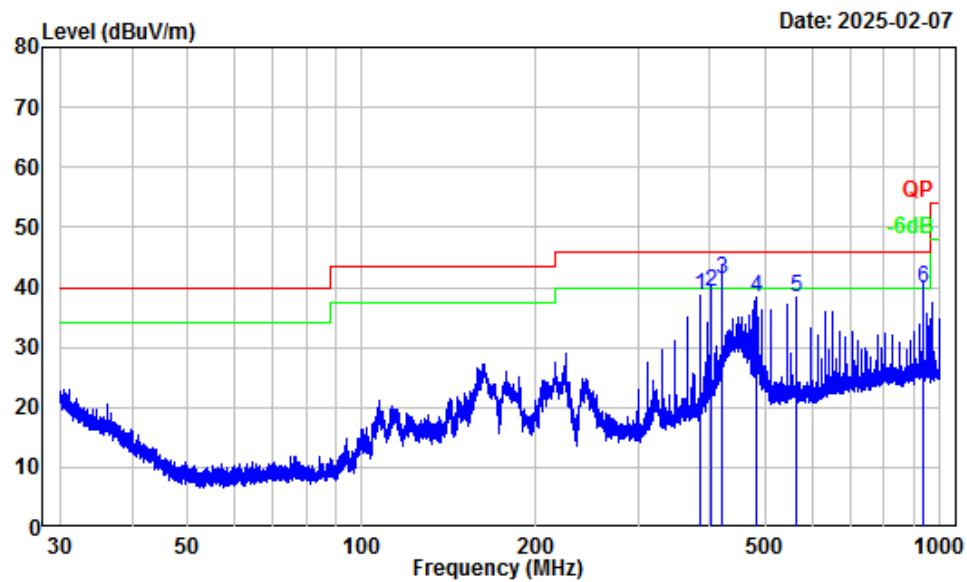
Site : Chamber A
Condition : 3m
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 0.3/1kHz
Tester : Anson Su

| Freq | Factor | Read | | Limit | | Over Limit | Remark |
|------|--------|-------|-------|-------|--------|------------|--------|
| | | MHz | dB/m | dBuV | dBuV/m | | |
| 1 | 0.01 | 31.93 | 25.80 | 57.73 | 126.05 | -68.32 | Peak |
| 2 | 0.02 | 29.97 | 25.37 | 55.34 | 120.65 | -65.31 | Peak |
| 3 | 0.05 | 26.39 | 29.58 | 55.97 | 113.60 | -57.63 | Peak |
| 4 | 0.06 | 25.57 | 39.97 | 65.54 | 112.29 | -46.75 | Peak |
| 5 | 0.09 | 22.54 | 28.98 | 51.52 | 108.30 | -56.78 | Peak |
| 6 | 0.12 | 20.97 | 36.86 | 57.83 | 106.20 | -48.37 | Peak |



Site : Chamber A
Condition : 3m
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 10/30kHz
Tester : Anson Su

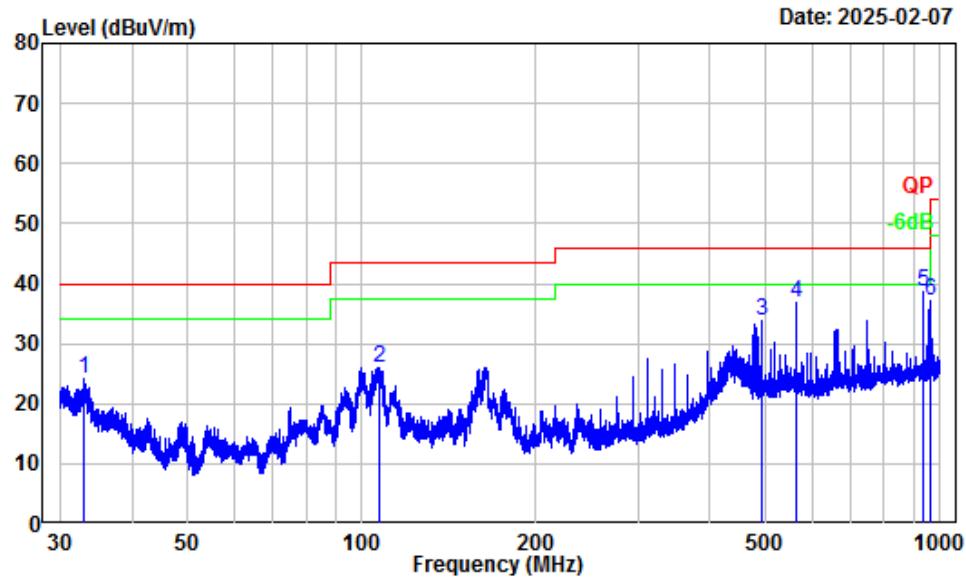
| Freq | Factor | Read | | Limit | | Over | Remark |
|------|--------|------|-------|-------|--------|--------|--------|
| | | MHz | dB/m | dBuV | dBuV/m | dBuV/m | |
| 1 | 0.54 | 5.93 | 43.87 | 49.80 | 72.97 | -23.17 | Peak |
| 2 | 0.61 | 5.00 | 43.37 | 48.37 | 71.81 | -23.44 | Peak |
| 3 | 0.67 | 4.24 | 43.44 | 47.68 | 70.96 | -23.28 | Peak |
| 4 | 0.78 | 2.94 | 42.62 | 45.56 | 69.67 | -24.11 | Peak |
| 5 | 1.18 | 0.71 | 41.48 | 42.19 | 66.04 | -23.85 | Peak |
| 6 | 1.23 | 0.56 | 40.75 | 41.31 | 65.65 | -24.34 | Peak |

30MHz-1GHz: (Maximum output power mode, Low channel)**Horizontal**

Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Anson Su

| | Freq | Factor | Read Level | Limit Level | Over Line | Over Limit | Remark |
|---|--------|--------|-------------------|---------------------|---------------------|------------|--------|
| | MHz | dB/m | dB _{BuV} | dB _{BuV/m} | dB _{BuV/m} | dB | |
| 1 | 383.93 | -9.04 | 47.58 | 38.54 | 46.00 | -7.46 | Peak |
| 2 | 401.84 | -8.35 | 47.50 | 39.15 | 46.00 | -6.85 | QP |
| 3 | 419.66 | -7.96 | 49.21 | 41.25 | 46.00 | -4.75 | QP |
| 4 | 480.11 | -6.34 | 44.79 | 38.45 | 46.00 | -7.55 | Peak |
| 5 | 562.66 | -5.24 | 43.59 | 38.35 | 46.00 | -7.65 | Peak |
| 6 | 937.60 | -1.05 | 40.78 | 39.73 | 46.00 | -6.27 | QP |

Vertical



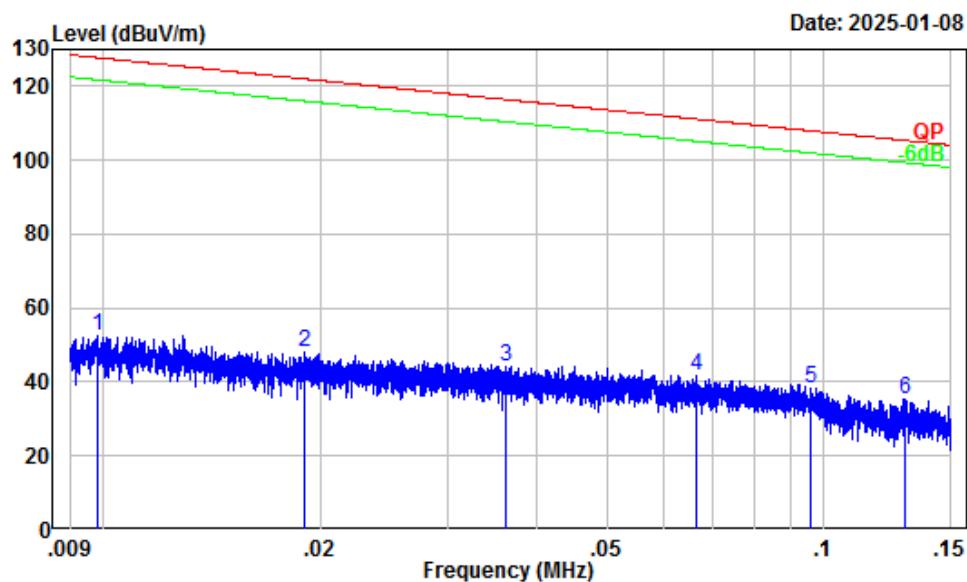
Site : Chamber A
Condition : 3m Vertical
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Anson Su

| Freq | Factor | Read | | Limit | | Over | Remark |
|------|--------|--------|-------|-------|--------|--------|--------|
| | | MHz | dB/m | dBuV | dBuV/m | dBuV/m | |
| 1 | 32.96 | -7.56 | 31.78 | 24.22 | 40.00 | -15.78 | Peak |
| 2 | 107.23 | -13.77 | 39.88 | 26.11 | 43.50 | -17.39 | Peak |
| 3 | 491.18 | -5.98 | 39.77 | 33.79 | 46.00 | -12.21 | Peak |
| 4 | 562.66 | -5.24 | 41.96 | 36.72 | 46.00 | -9.28 | Peak |
| 5 | 937.60 | -1.05 | 39.80 | 38.75 | 46.00 | -7.25 | Peak |
| 6 | 960.06 | -0.86 | 37.95 | 37.09 | 54.00 | -16.91 | Peak |

For Adapter 2

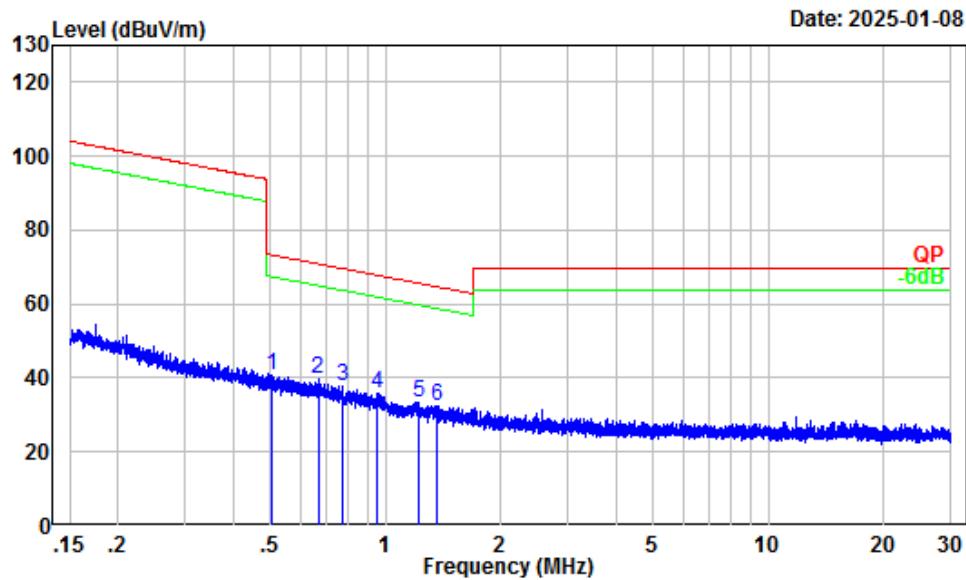
9 kHz-30MHz: (Maximum output power mode, low channel)

Parallel (worst case)



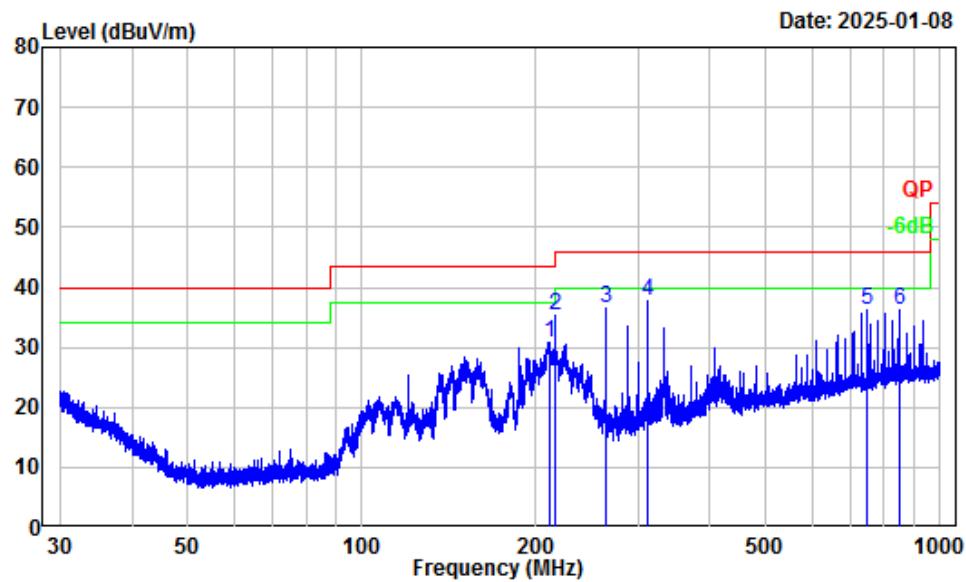
Site : Chamber A
Condition : 3m
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 0.3/1kHz
Tester : Anson Su

| | Freq | Factor | Read Level | Limit Level | Over Line | Over Limit | Remark | |
|---|------|--------|------------|-------------|-----------|------------|--------|----|
| | | | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 0.01 | 32.33 | 20.28 | 52.61 | 127.74 | -75.13 | Peak | |
| 2 | 0.02 | 30.59 | 17.62 | 48.21 | 122.03 | -73.82 | Peak | |
| 3 | 0.04 | 27.84 | 16.55 | 44.39 | 116.41 | -72.02 | Peak | |
| 4 | 0.07 | 24.75 | 17.03 | 41.78 | 111.14 | -69.36 | Peak | |
| 5 | 0.10 | 22.27 | 16.21 | 38.48 | 107.95 | -69.47 | Peak | |
| 6 | 0.13 | 20.28 | 15.18 | 35.46 | 105.38 | -69.92 | Peak | |



Site : Chamber A
Condition : 3m
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 10/30kHz
Tester : Anson Su

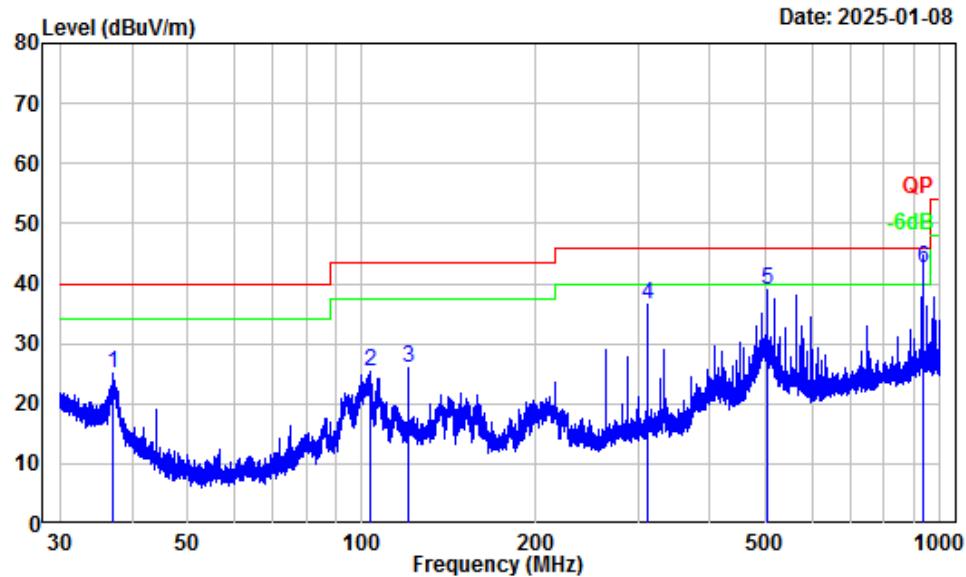
| Freq | Factor | Read | | Limit | | Over | Remark |
|------|--------|------|-------|-------|--------|--------|--------|
| | | MHz | dB/m | dBuV | dBuV/m | dBuV/m | |
| 1 | 0.51 | 6.33 | 34.61 | 40.94 | 73.53 | -32.59 | Peak |
| 2 | 0.67 | 4.34 | 35.36 | 39.70 | 71.06 | -31.36 | Peak |
| 3 | 0.78 | 3.00 | 34.72 | 37.72 | 69.73 | -32.01 | Peak |
| 4 | 0.95 | 1.58 | 34.25 | 35.83 | 67.94 | -32.11 | Peak |
| 5 | 1.22 | 0.59 | 32.73 | 33.32 | 65.73 | -32.41 | Peak |
| 6 | 1.37 | 0.17 | 32.29 | 32.46 | 64.69 | -32.23 | Peak |

30MHz-1GHz: (Maximum output power mode, low channel)**Horizontal**

Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Anson Su

| | Freq | Factor | Read Level | Limit Level | Over Line | Over Limit | Remark |
|---|--------|--------|------------|-------------|-----------|------------|--------|
| | MHz | dB/m | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 211.80 | -14.09 | 44.87 | 30.78 | 43.50 | -12.72 | Peak |
| 2 | 216.02 | -14.20 | 49.63 | 35.43 | 46.00 | -10.57 | Peak |
| 3 | 264.05 | -12.35 | 48.96 | 36.61 | 46.00 | -9.39 | Peak |
| 4 | 312.04 | -11.00 | 48.81 | 37.81 | 46.00 | -8.19 | Peak |
| 5 | 750.11 | -2.88 | 39.22 | 36.34 | 46.00 | -9.66 | Peak |
| 6 | 852.16 | -1.72 | 37.97 | 36.25 | 46.00 | -9.75 | Peak |

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401A111119E-RF
Test Mode : Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Anson Su

| Freq Factor | Read | | Limit | | Over Limit | Remark |
|-------------|--------|--------|------------------|--------------------|------------|-------------|
| | MHz | dB/m | dB _{uV} | dB _{uV/m} | | |
| 1 | 37.12 | -10.37 | 35.48 | 25.11 | 40.00 | -14.89 Peak |
| 2 | 103.40 | -14.89 | 40.11 | 25.22 | 43.50 | -18.28 Peak |
| 3 | 120.01 | -11.45 | 37.54 | 26.09 | 43.50 | -17.41 Peak |
| 4 | 312.04 | -11.00 | 47.39 | 36.39 | 46.00 | -9.61 Peak |
| 5 | 504.04 | -5.77 | 44.72 | 38.95 | 46.00 | -7.05 Peak |
| 6 | 937.60 | -1.05 | 43.70 | 42.65 | 46.00 | -3.35 QP |

Above 1GHz: (with worst case: adapter 2)

| Frequency (MHz) | Reading (dB μ V) | Detector (PK/AV) | Polar (H/V) | Factor (dB/m) | Corrected Amplitude (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) |
|-------------------------|----------------------|------------------|-------------|---------------|------------------------------------|----------------------|-------------|
| Low Channel(2402MHz) | | | | | | | |
| 4804.00 | 52.72 | PK | H | -7.79 | 44.93 | 74 | -29.07 |
| 4804.00 | 52.07 | PK | V | -7.79 | 44.28 | 74 | -29.72 |
| Middle Channel(2440MHz) | | | | | | | |
| 4880.00 | 52.41 | PK | H | -7.59 | 44.82 | 74 | -29.18 |
| 4880.00 | 52.26 | PK | V | -7.59 | 44.67 | 74 | -29.33 |
| High Channel(2476MHz) | | | | | | | |
| 4952.00 | 52.54 | PK | H | -7.62 | 44.92 | 74 | -29.08 |
| 4952.00 | 52.41 | PK | V | -7.62 | 44.79 | 74 | -29.21 |

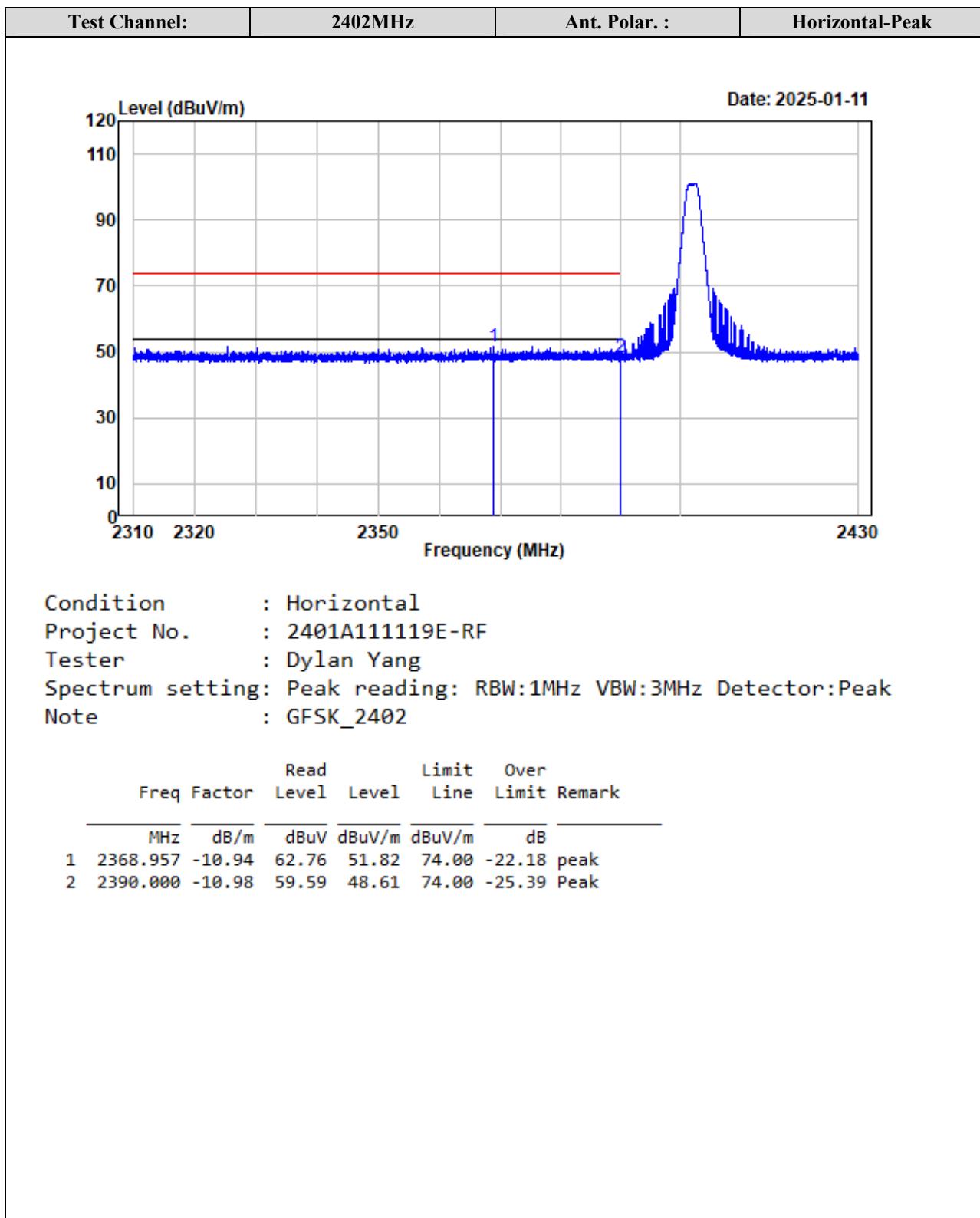
Note:

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

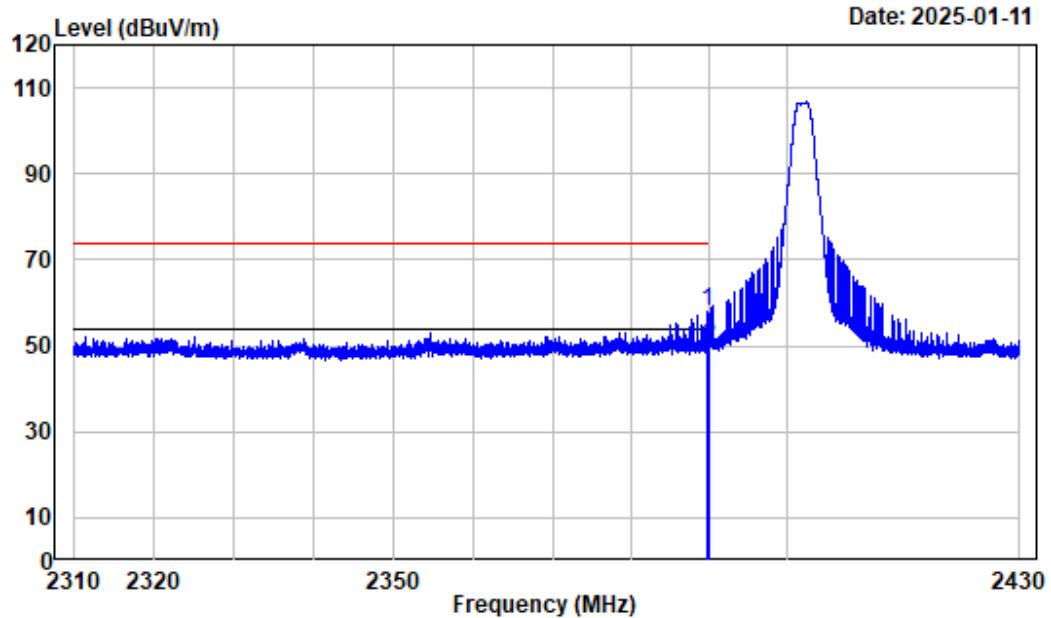
Corrected Amplitude /Level= Corrected Factor + Reading

Margin = Corrected Amplitude/Level - Limit

Other emissions which were more than 20dB below limit or on noise floor level was not recorded and the peak value is less than the average limit that can meet the limit of the average value.

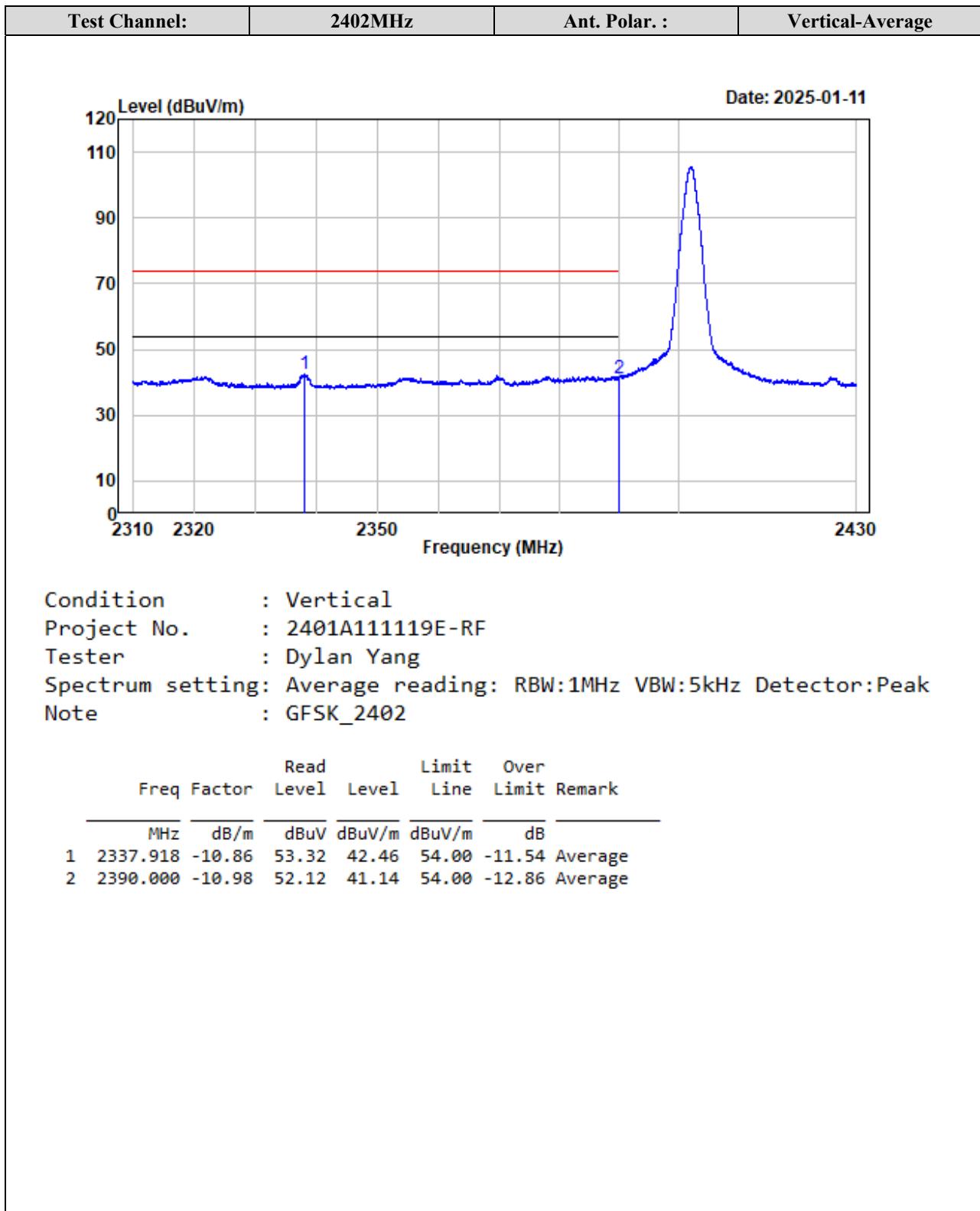
Test plots for Band Edge Measurements (Radiated):

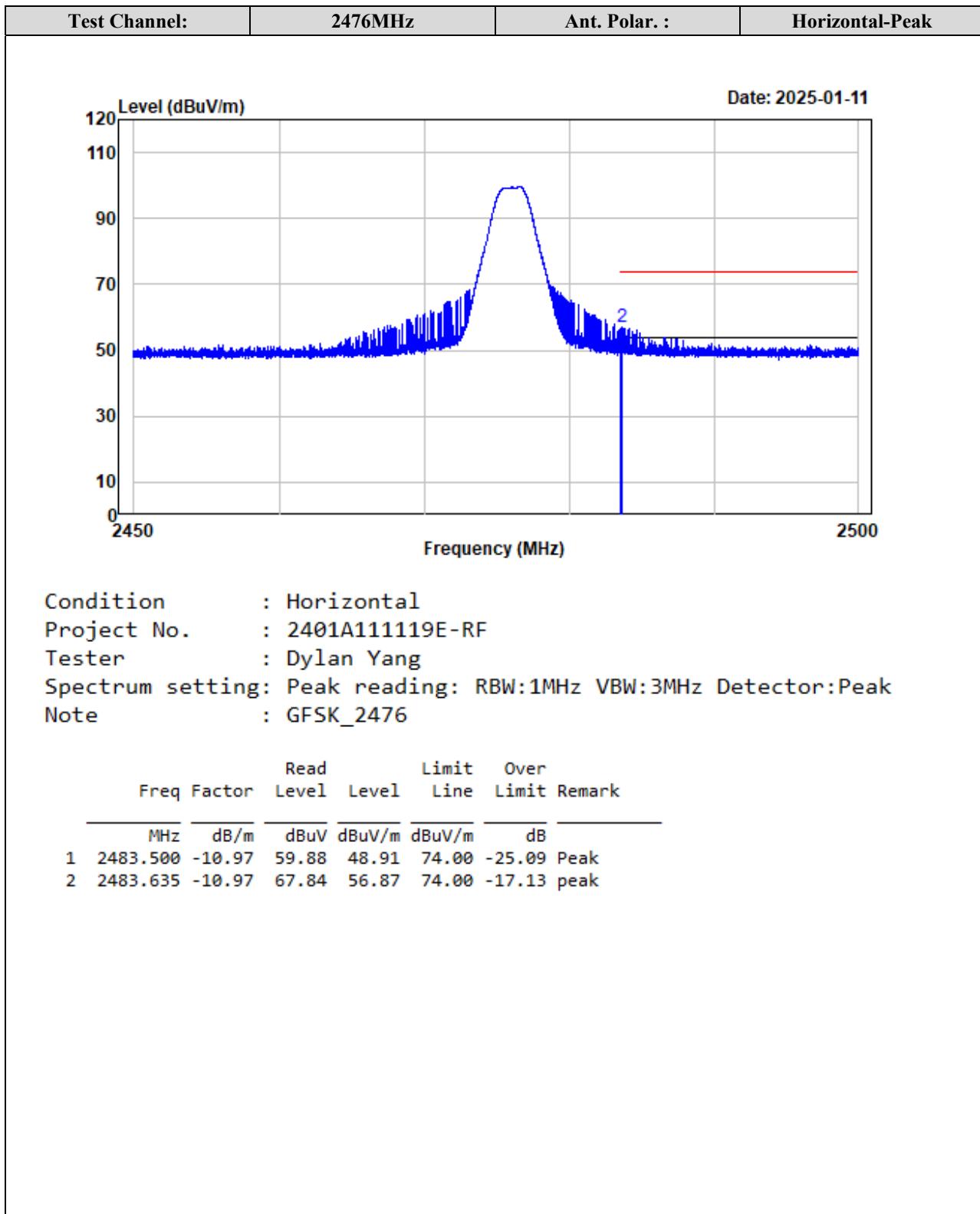
| | | | |
|---------------|---------|---------------|---------------|
| Test Channel: | 2402MHz | Ant. Polar. : | Vertical-Peak |
|---------------|---------|---------------|---------------|

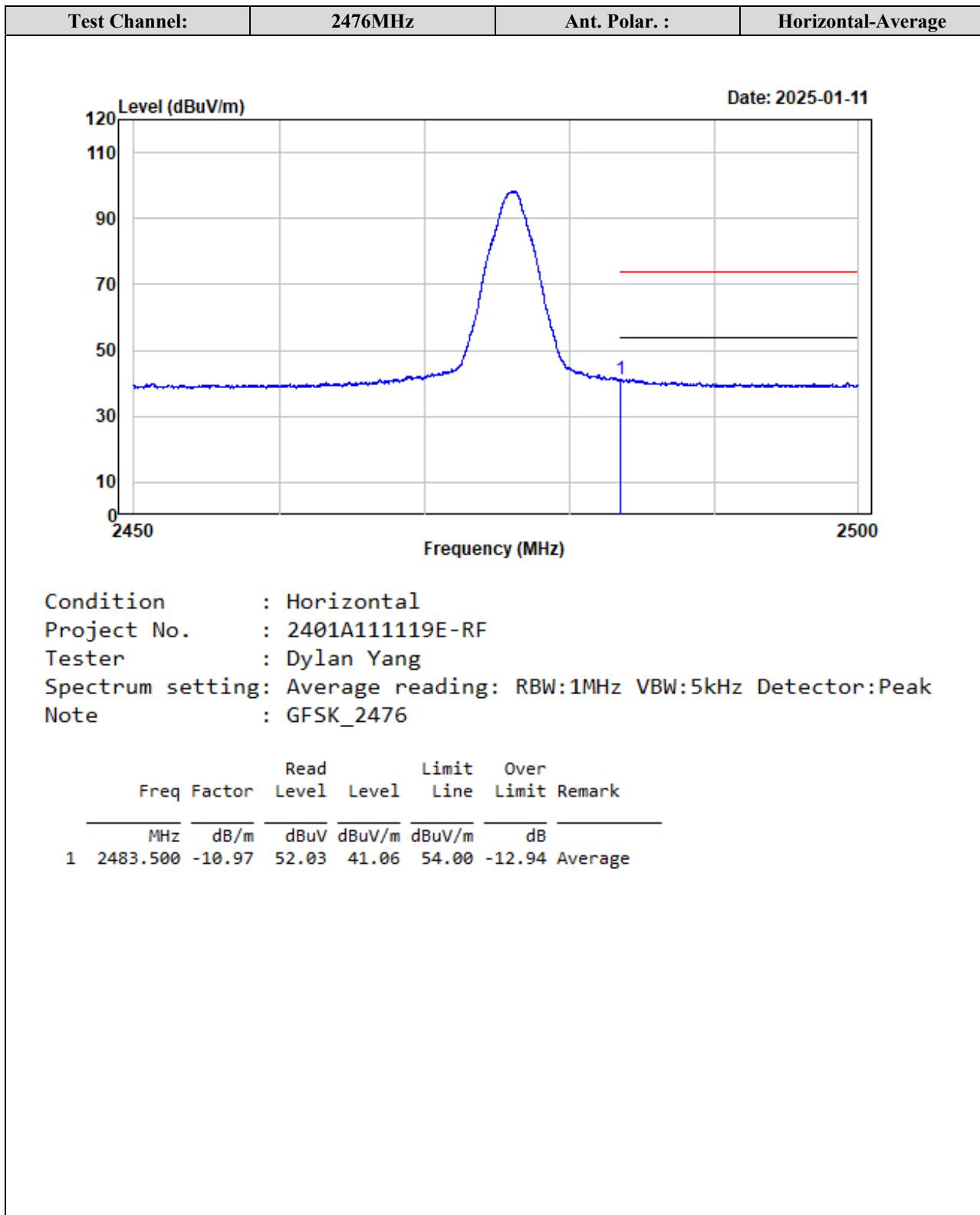


Condition : Vertical
Project No. : 2401A111119E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : GFSK_2402

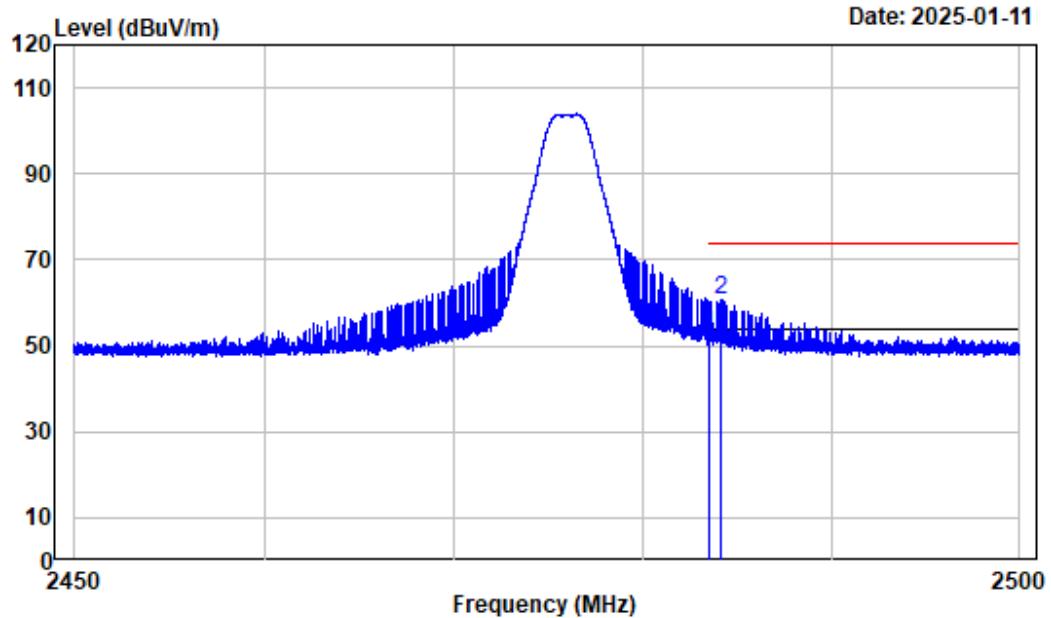
| Freq Factor | Read | | Limit | | Over | Remark |
|-------------|----------|--------|-------|--------|-------|-------------|
| | MHz | dB/m | dBuV | dBuV/m | | |
| 1 | 2389.630 | -10.98 | 68.97 | 57.99 | 74.00 | -16.01 peak |
| 2 | 2390.000 | -10.98 | 60.68 | 49.70 | 74.00 | -24.30 Peak |





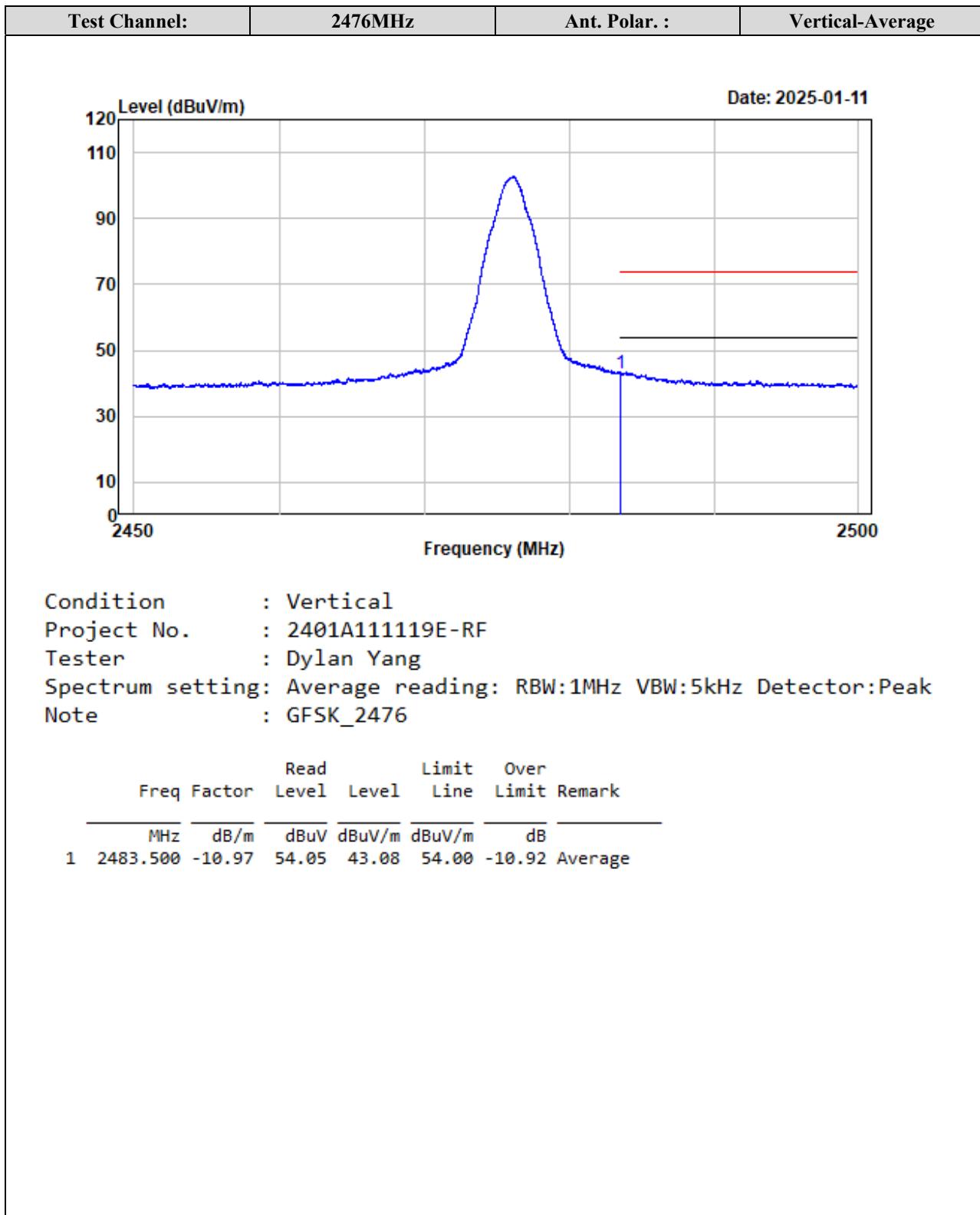


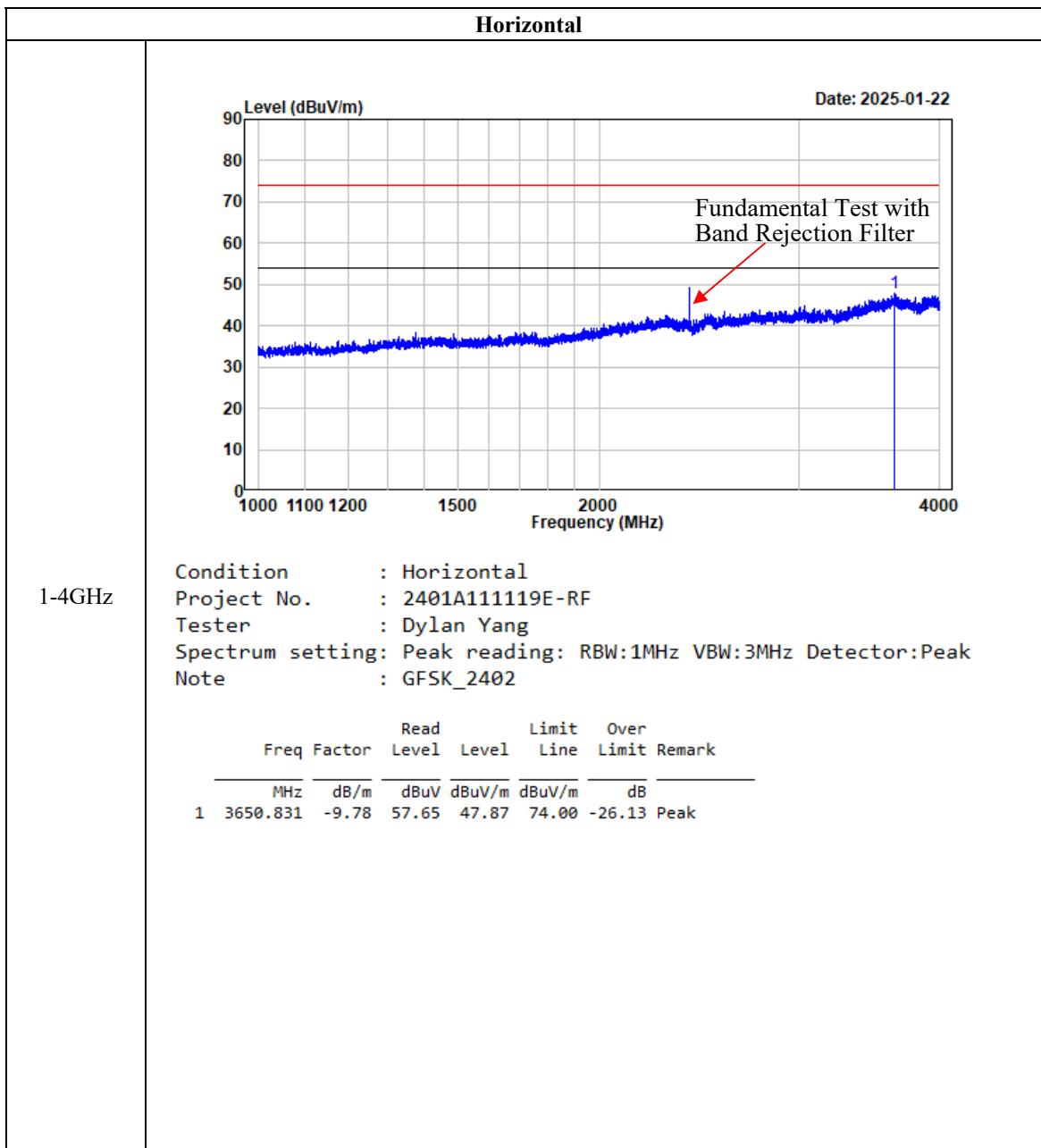
| | | | |
|---------------|---------|---------------|---------------|
| Test Channel: | 2476MHz | Ant. Polar. : | Vertical-Peak |
|---------------|---------|---------------|---------------|

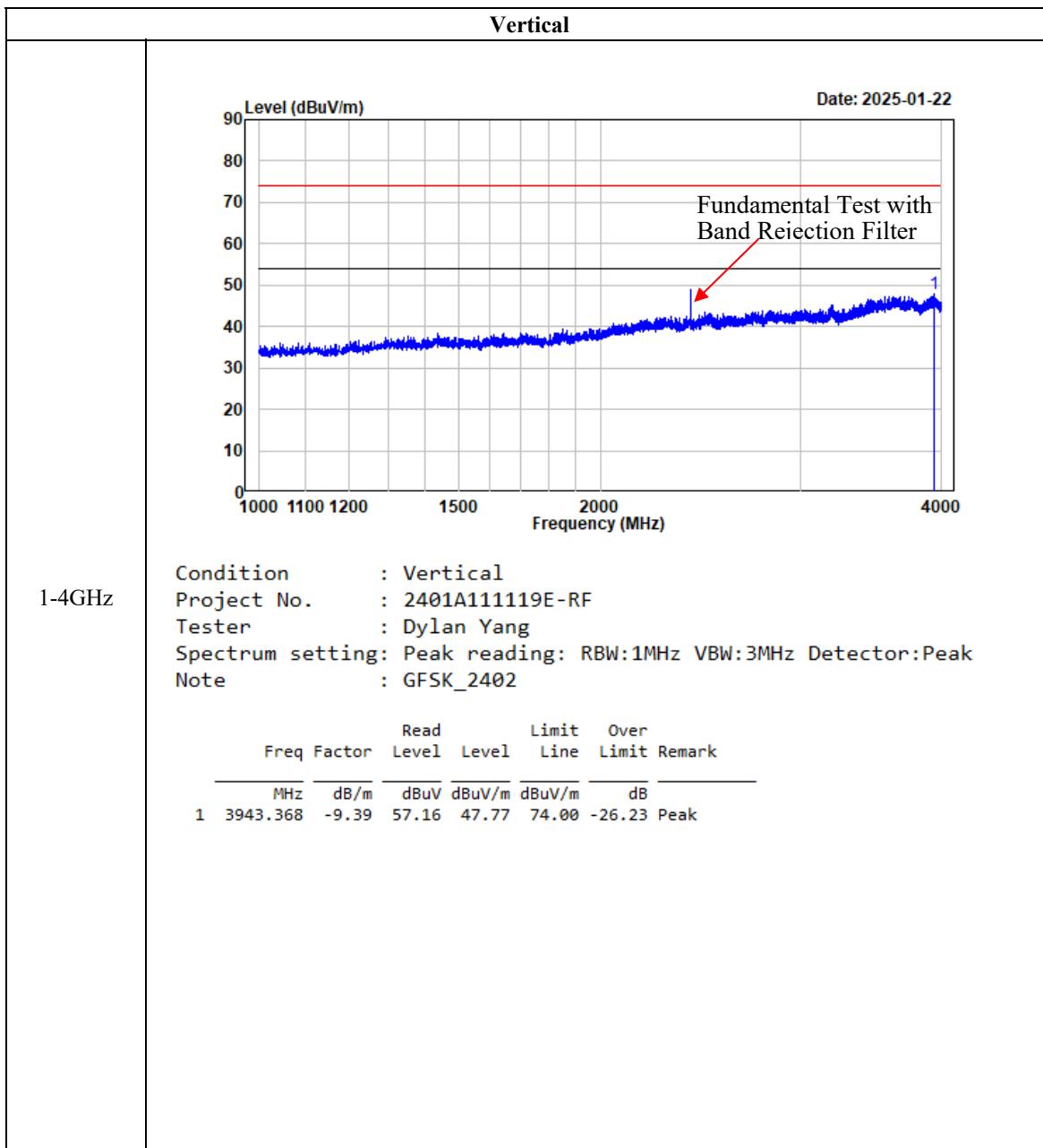


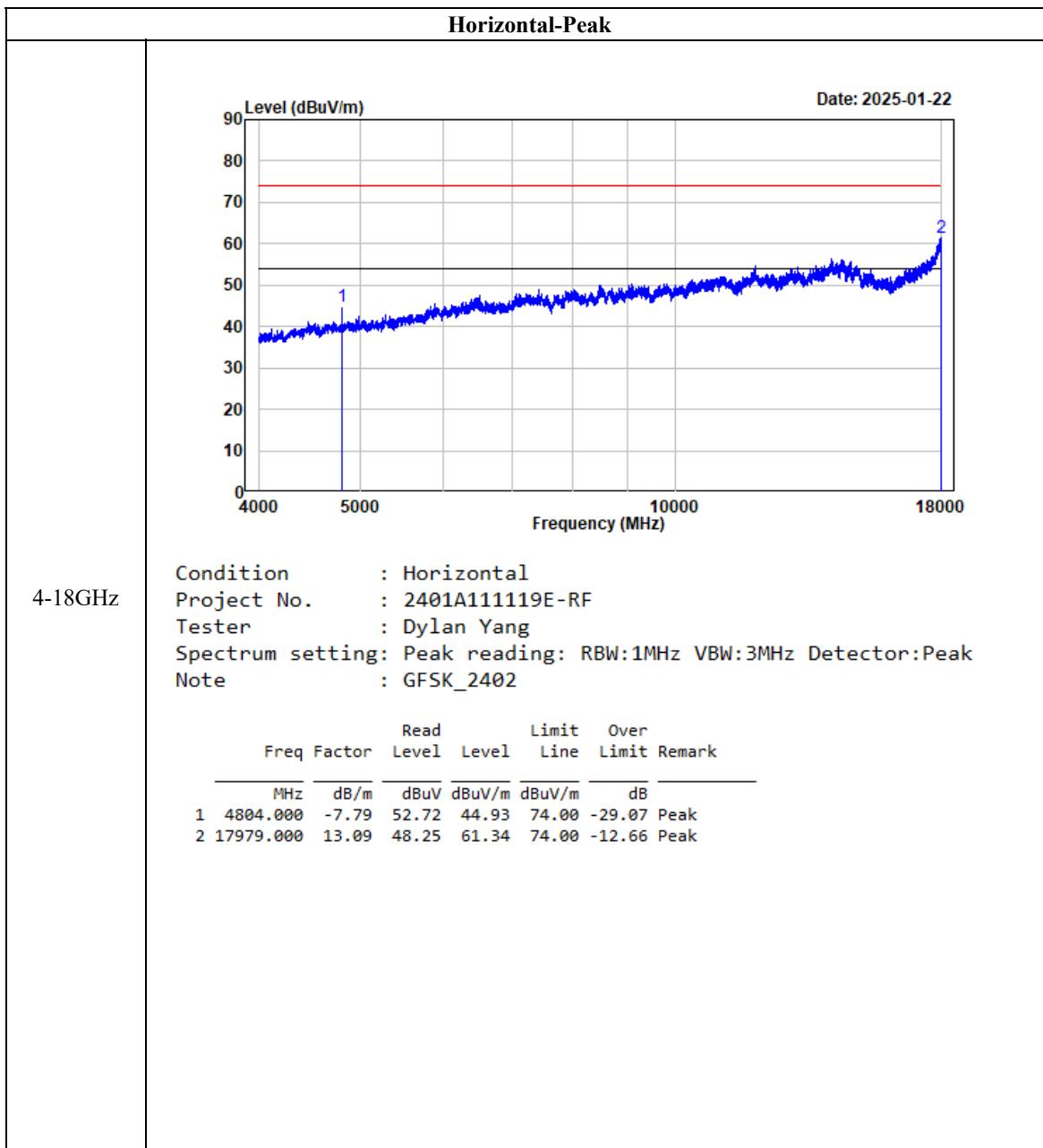
Condition : Vertical
Project No. : 2401A111119E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : GFSK_2476

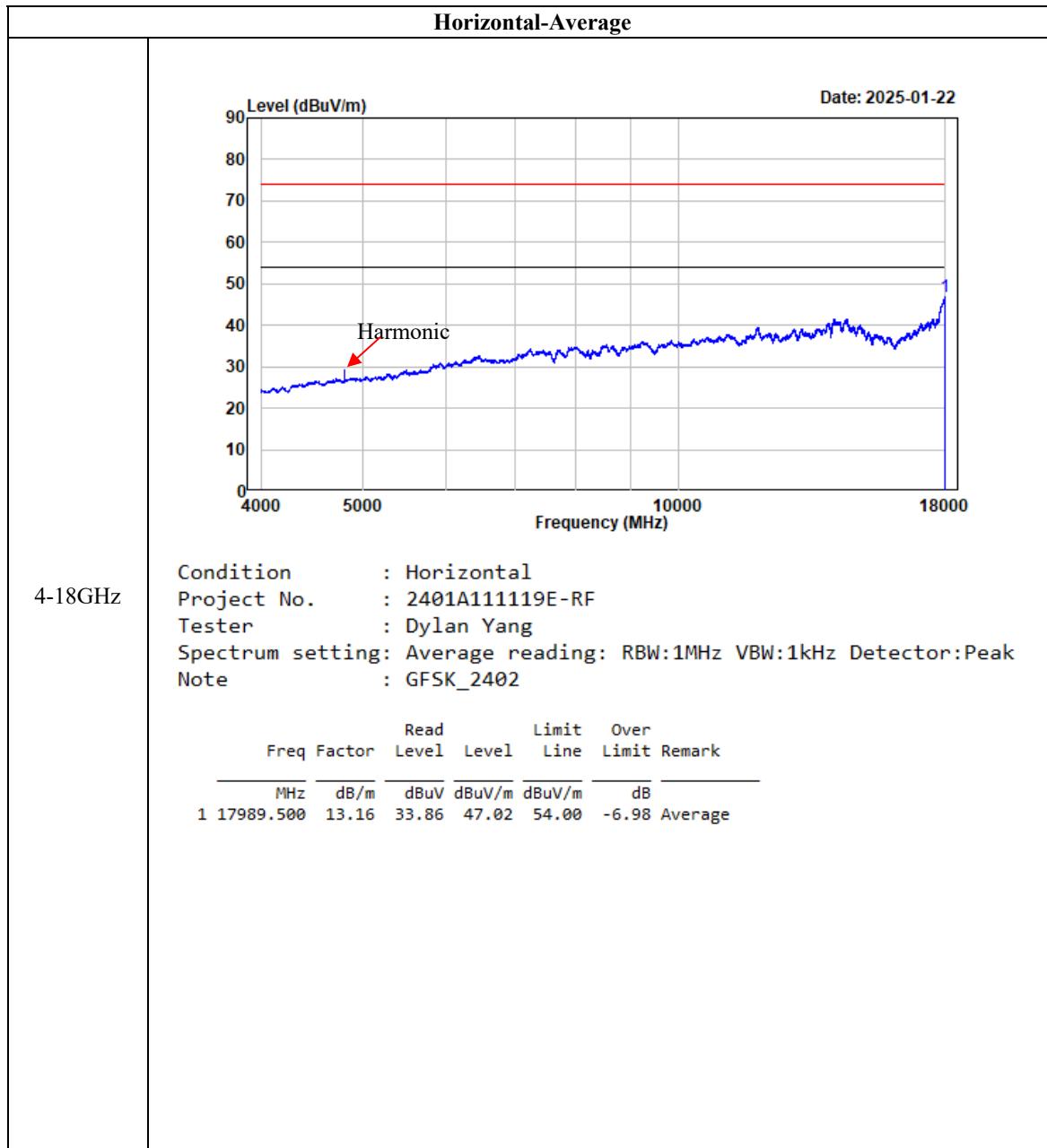
| Freq Factor | Read | | Limit | | Over | Remark |
|-------------|----------|--------|-------|--------|-------|-------------|
| | MHz | dB/m | dBuV | dBuV/m | | |
| 1 | 2483.500 | -10.97 | 63.35 | 52.38 | 74.00 | -21.62 Peak |
| 2 | 2484.154 | -10.97 | 71.56 | 60.59 | 74.00 | -13.41 peak |

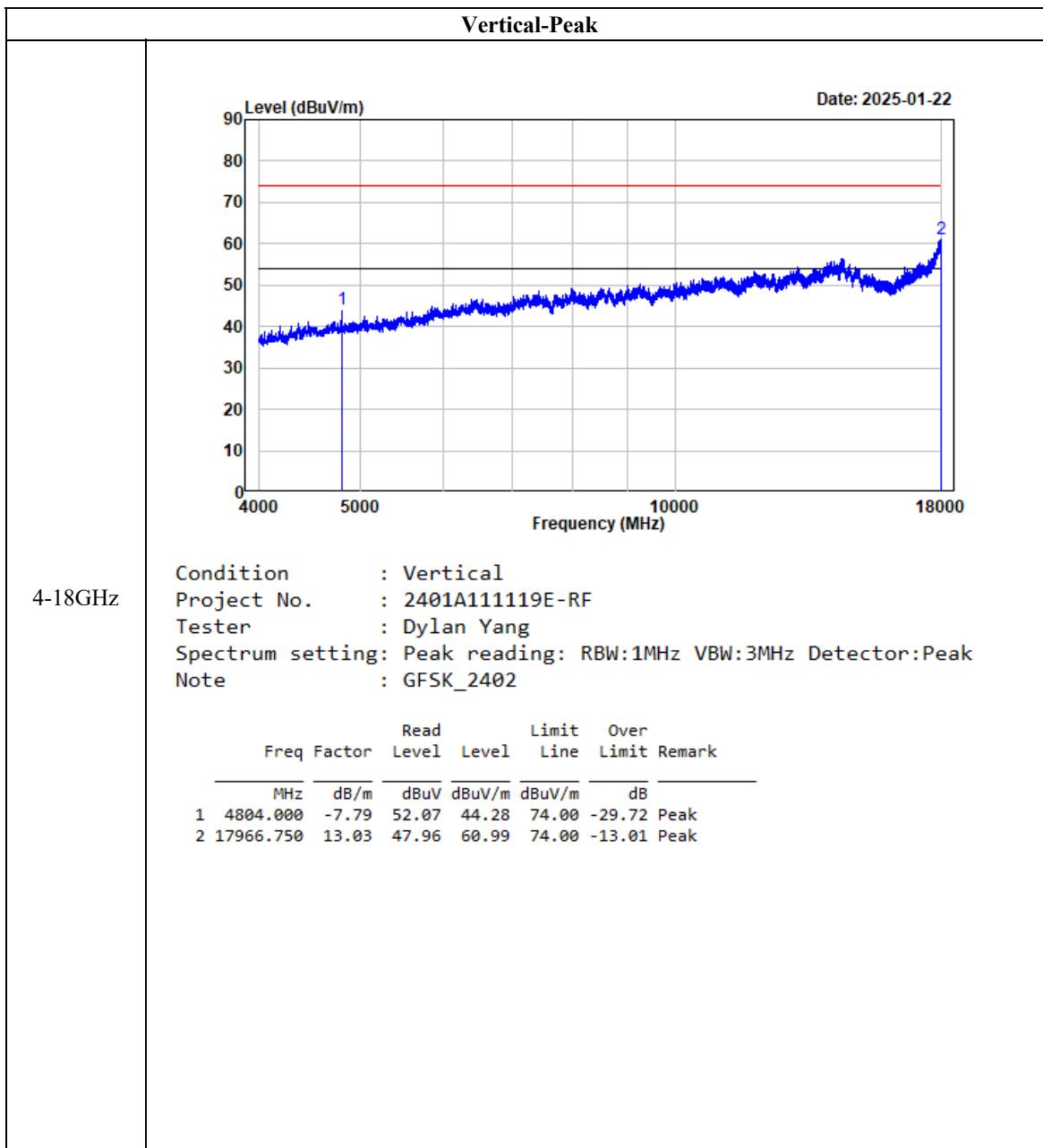


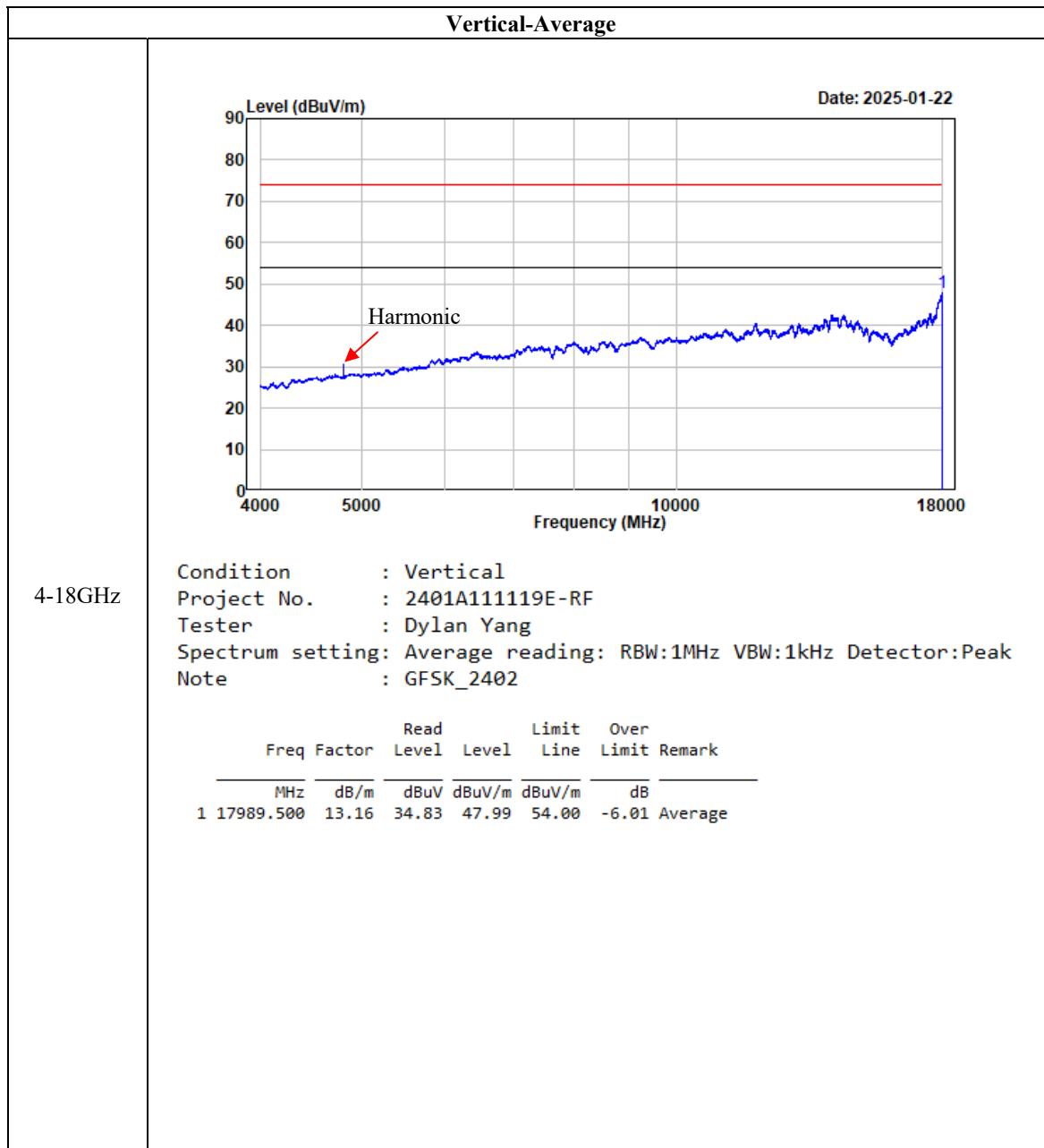
Listed with the worst harmonic margin test plot:

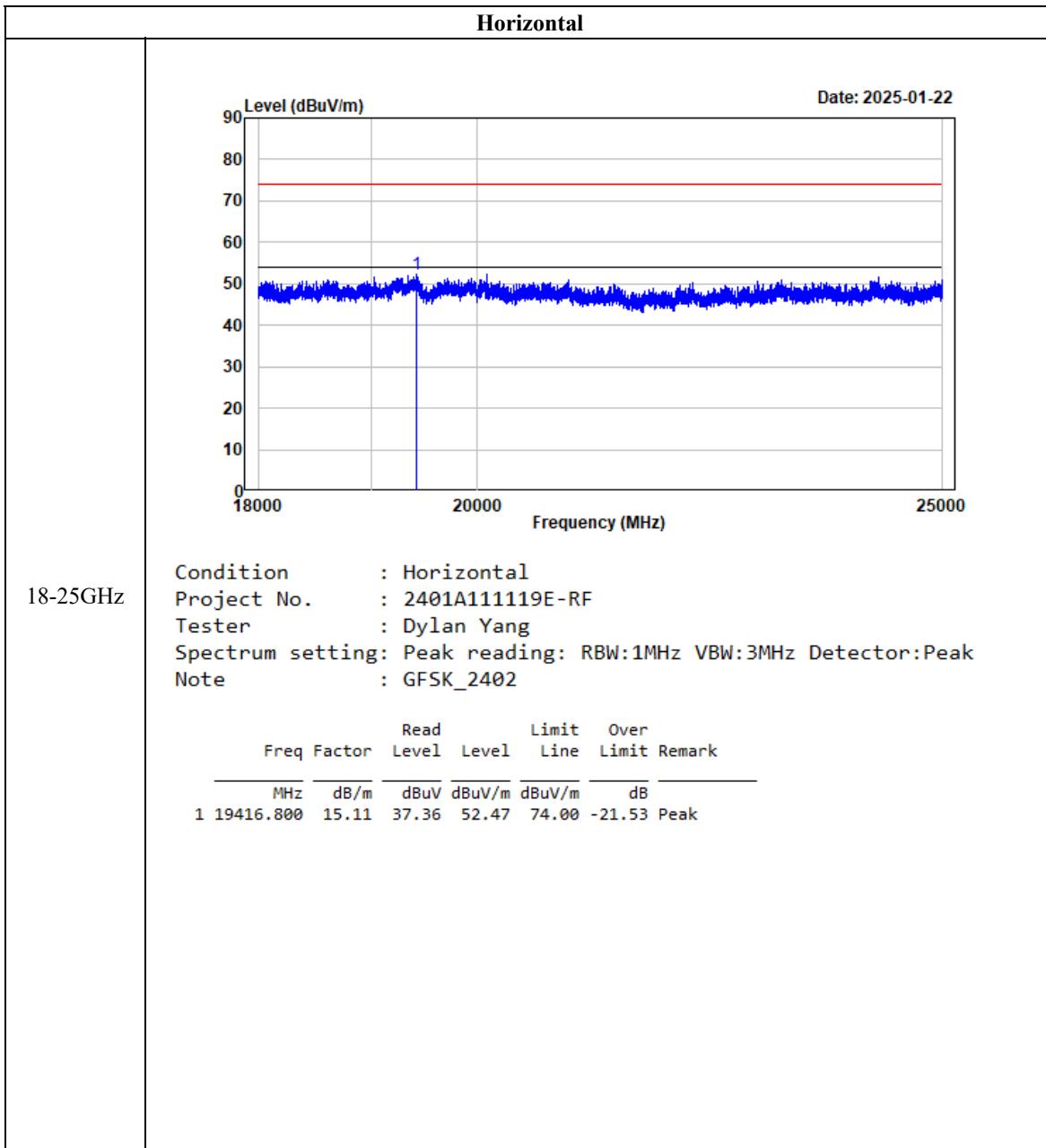


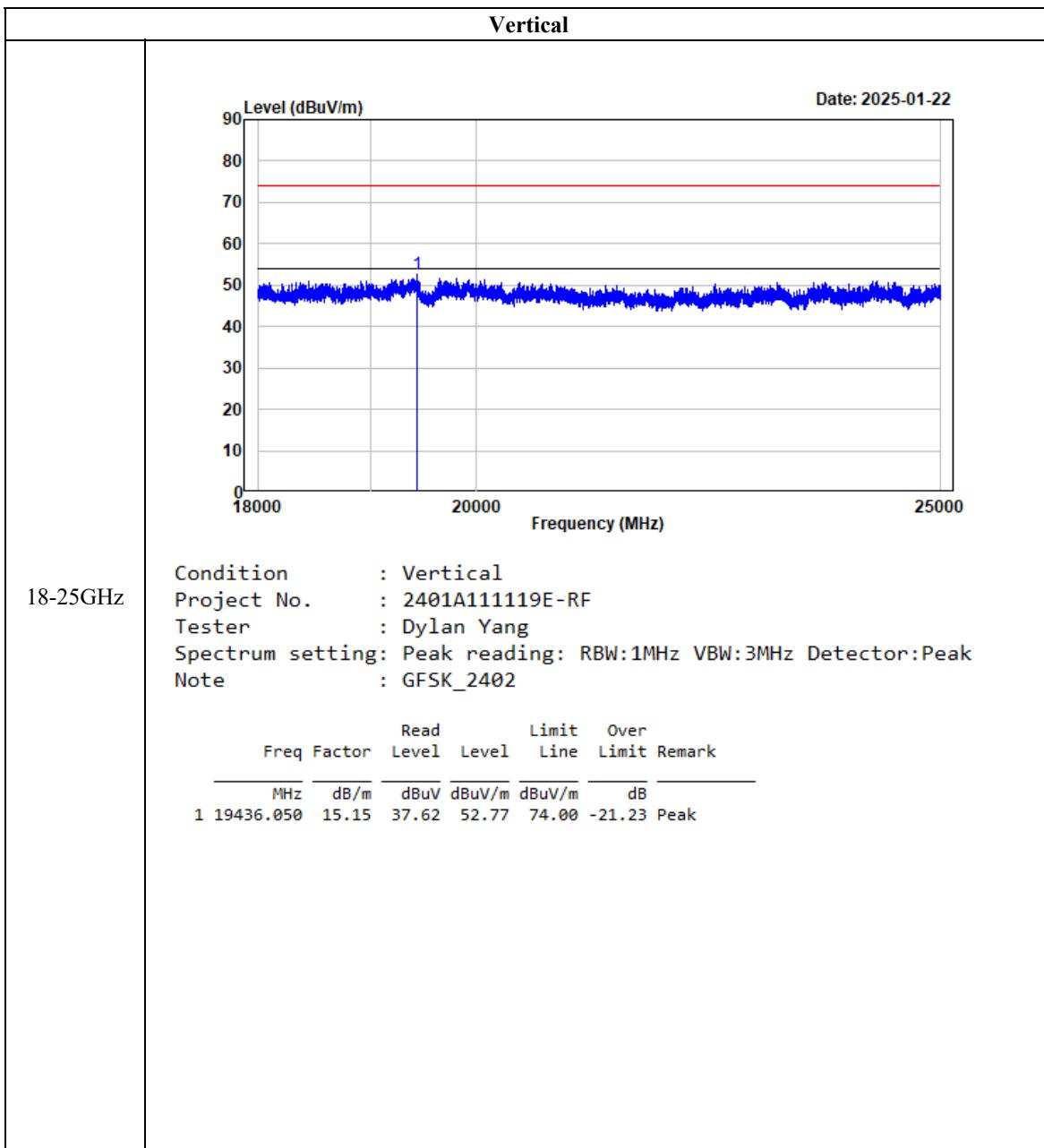












FCC §15.247(a) (1) - CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

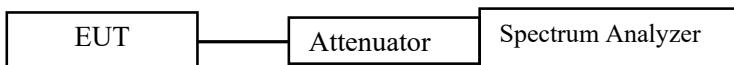
Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.2

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

- a) Span: Wide enough to capture the peaks of two adjacent channels.
- b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- c) Video (or average) bandwidth (VBW) \geq RBW.
- d) Sweep: Auto.
- e) Detector function: Peak.
- f) Trace: Max hold.
- g) Allow the trace to stabilize.

Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined.



Test Data

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.6 kPa |

The testing was performed by Cheeb Huang on 2025-01-13.

EUT operation mode: Transmitting

Test Result: Compliant

| Test Channel | Test Frequency (MHz) | Channel Separation (MHz) | Limits (MHz) |
|--------------|----------------------|--------------------------|--------------|
| Middle | 2440 | 2.019 | 1.391 |

Limit=2/3* maximum 20 dB bandwidth

Please refer to the below plots:



FCC §15.247(a) (1) - 20dBEMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

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 “20 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 20 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.

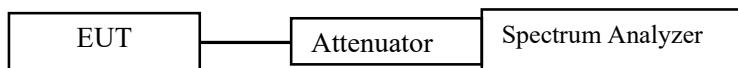
Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.7 & Clause 6.9.2

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.
- c) 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 $[10 \log (OBW/RBW)]$ below the reference level.
- d) Steps a) through c) might require iteration to adjust within the specified tolerances.
- e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
- f) Set detection mode to peak and trace mode to max hold.
- g) Determine the reference value: Set the EUT to transmit an un-modulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
- h) Determine the “-xx dB down amplitude” using $[(\text{reference value}) - xx]$. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
- i) If the reference value is determined by an un-modulated carrier, then turn the EUT modulation on, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
- j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “- xx dB down

“amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “- xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

k) 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).



Test Data

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.6 kPa |

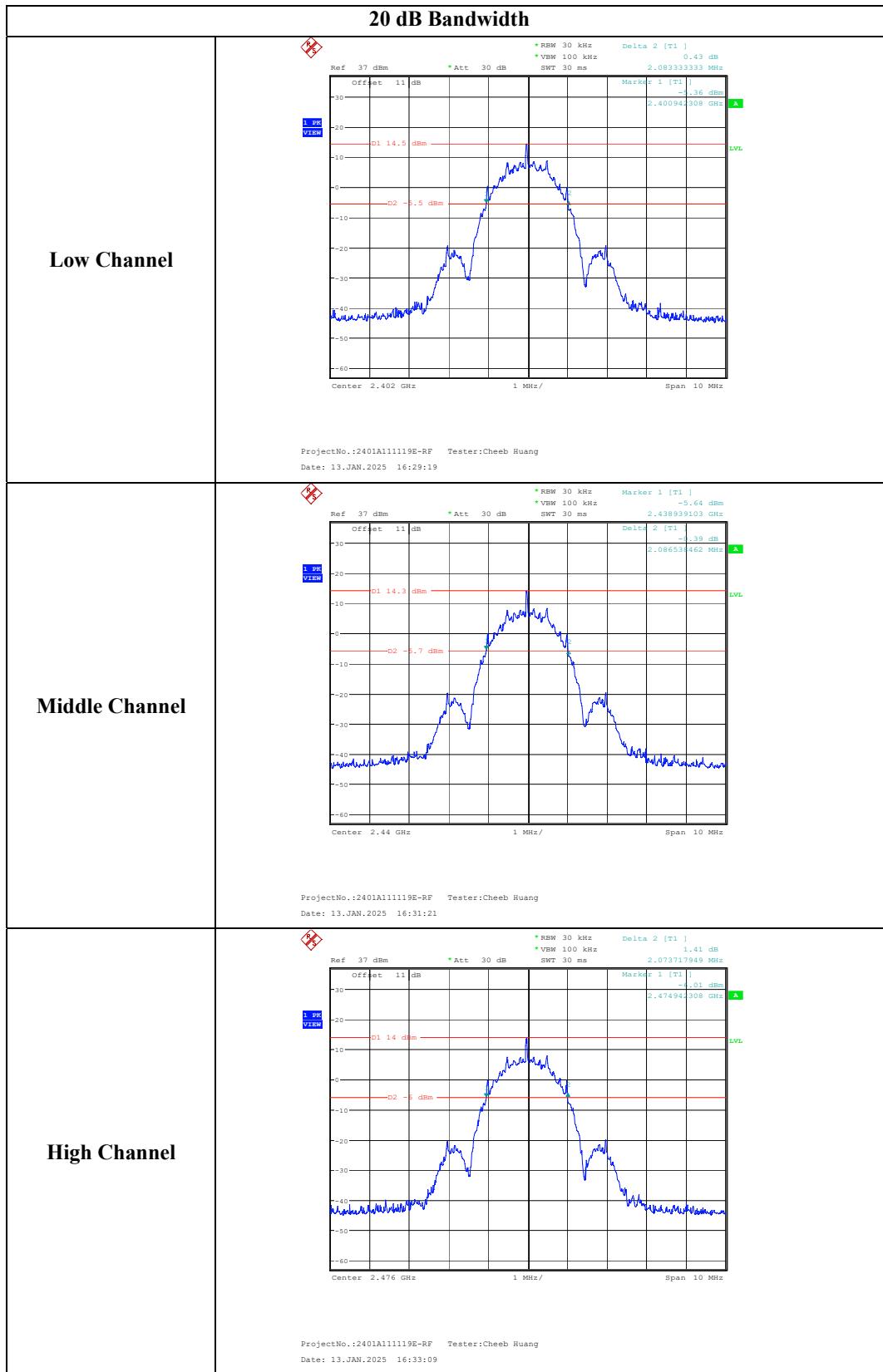
The testing was performed by Cheeb Huang on 2025-01-13.

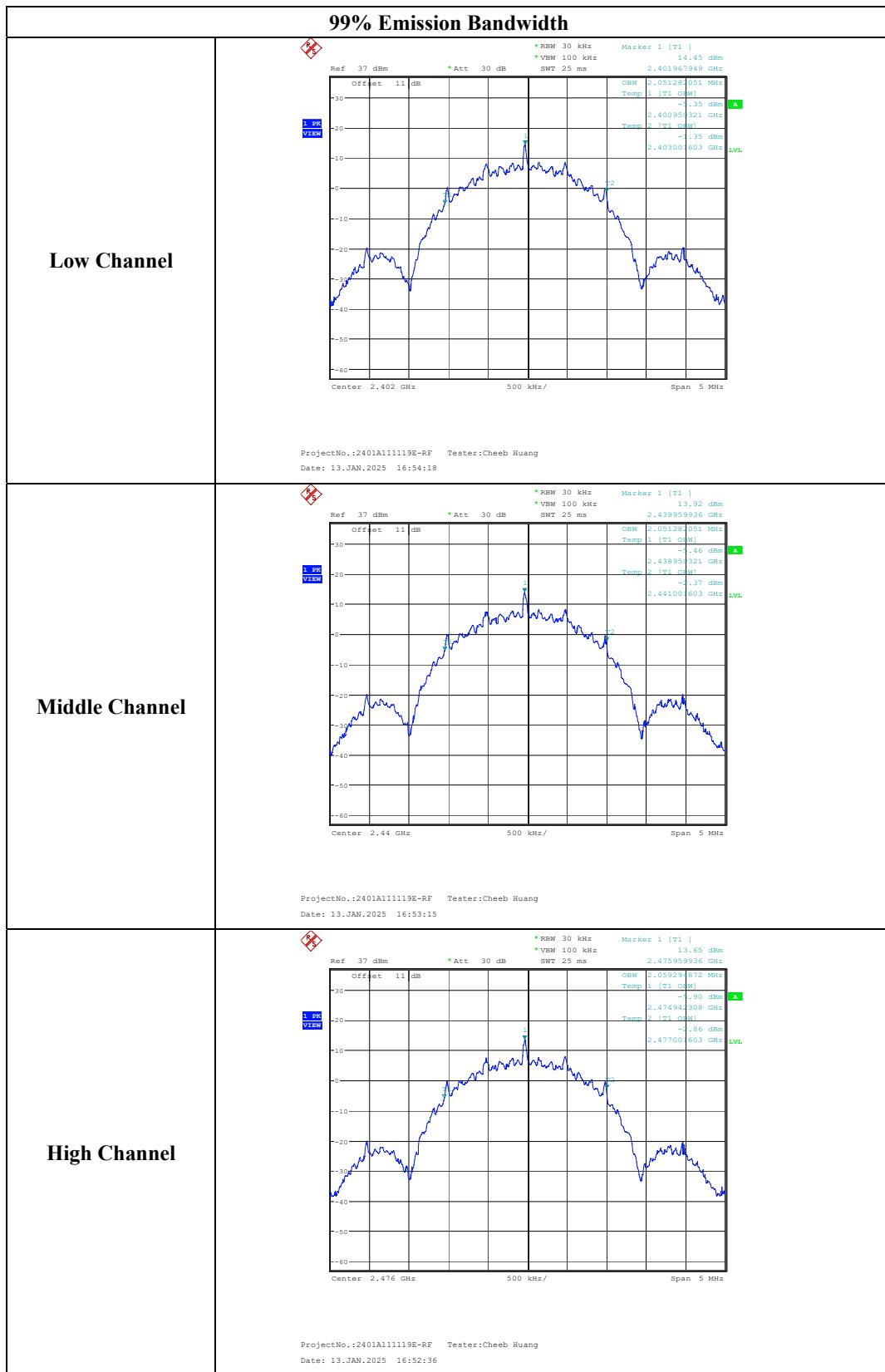
EUT operation mode: Transmitting

Test Result: Compliant

| Mode | Channel | Frequency (MHz) | 99% Emission Bandwidth (MHz) | 20 dB Emission Bandwidth (MHz) |
|------|---------|-----------------|------------------------------|--------------------------------|
| GFSK | Low | 2402 | 2.051 | 2.083 |
| | Middle | 2440 | 2.051 | 2.087 |
| | High | 2476 | 2.059 | 2.074 |

Please refer to the below plots:





FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

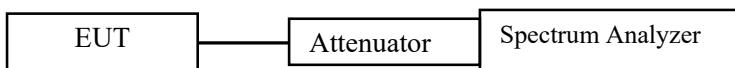
Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.3

- a) Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- c) VBW \geq RBW.
- d) Sweep: Auto.
- e) Detector function: Peak.
- f) Trace: Max hold.

It might prove necessary to break the span up into sub ranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels.



Test Data

Environmental Conditions

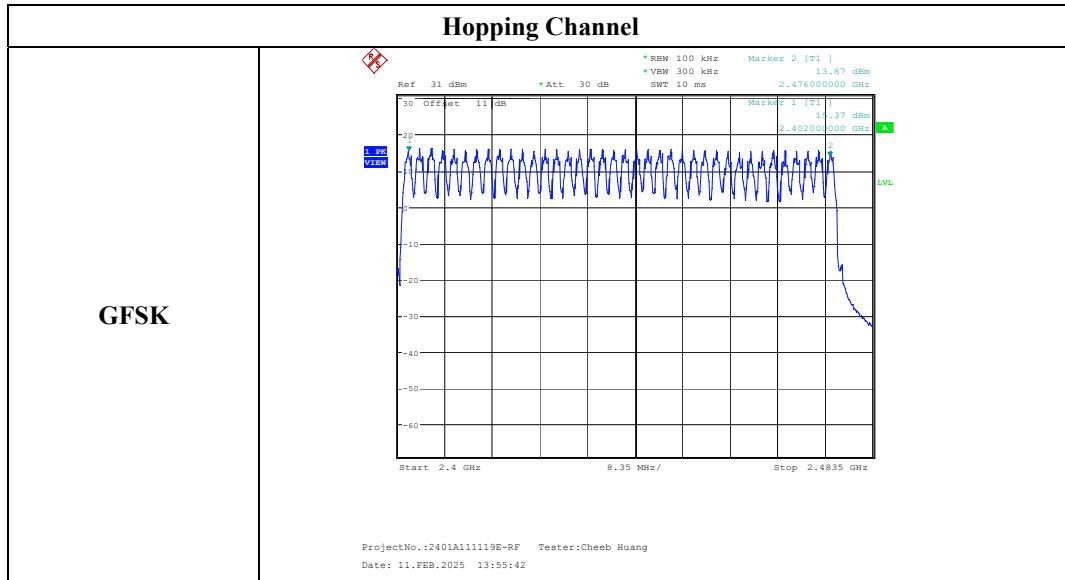
| | |
|---------------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.6 kPa |

The testing was performed by Cheeb Huang on 2025-02-11.

EUT operation mode: Transmitting

Test Result: Compliant

| Mode | Frequency Range (MHz) | Number of Hopping Channel (CH) | Limit (CH) |
|------|-----------------------|--------------------------------|------------|
| GFSK | 2400-2483.5 | 38 | ≥15 |



FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

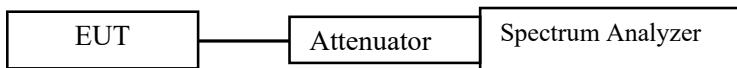
Applicable Standard

Frequency hopping systems (FHSs) in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.4

1. The EUT was worked in channel hopping.
2. Set the RBW to: 1MHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span to 0Hz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Recorded the time of single pulses



Test Data

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.6 kPa |

The testing was performed by Cheeb Huang on 2025-01-13.

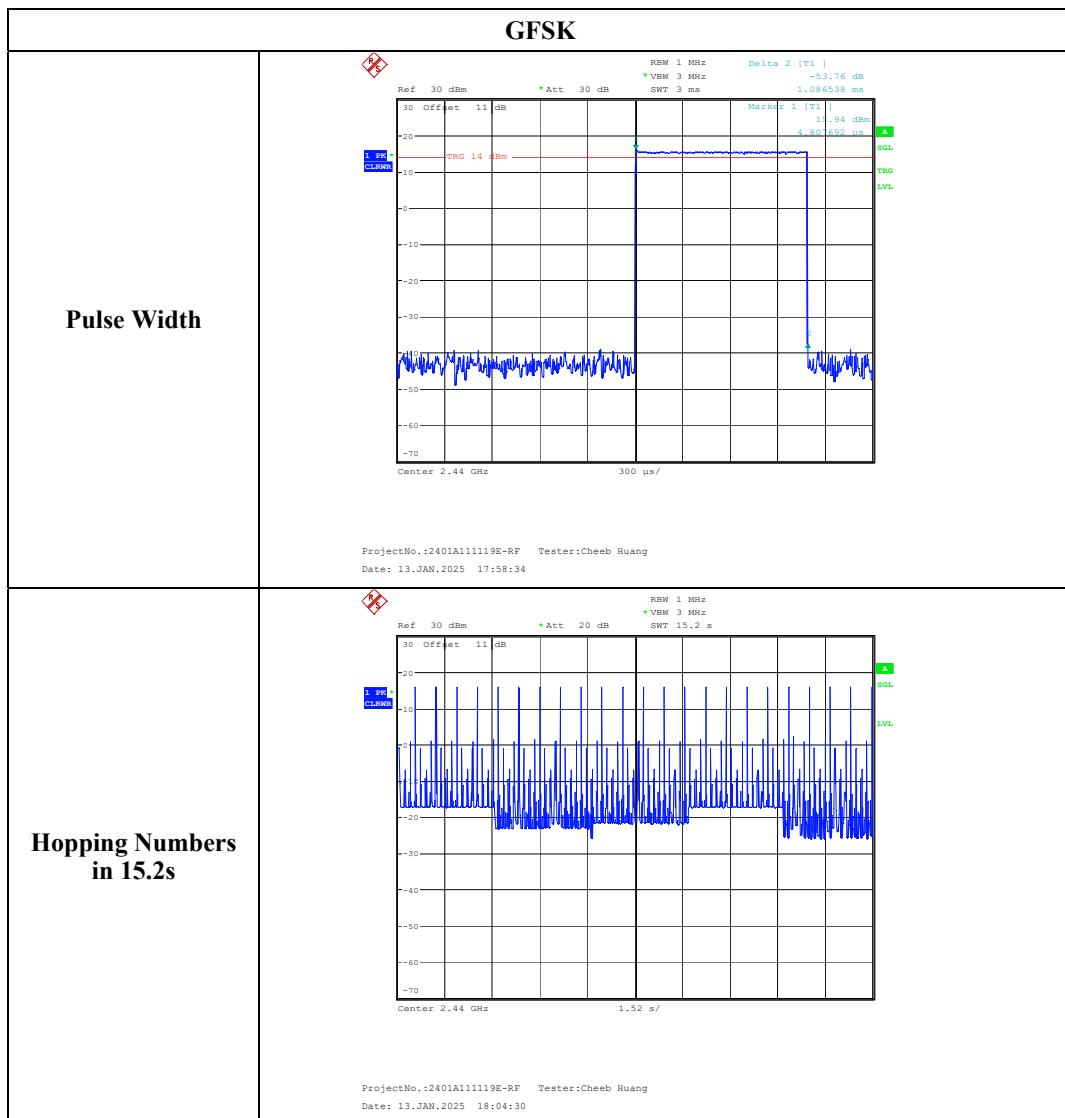
EUT operation mode: Transmitting

Test Result: Compliant

| Test Mode | Test Frequency (MHz) | Pulse width (ms) | Observation time (s) | Hopping Numbers in Observation time | Dwell Time (s) | Limit (s) |
|-----------|----------------------|------------------|----------------------|-------------------------------------|----------------|-----------|
| GFSK | Hop_2440 | 1.087 | 15.2 | 23 | 0.025 | 0.400 |

Note 1: Observation time= Hopping Channel Number \times 0.4

Note 2: Dwell Time = Pulse width *Hopping Numbers in Observation time



FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Frequency hopping systems (FHSs) shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400–2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the -20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.5

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

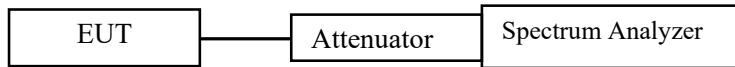
a) Use the following spectrum analyzer settings:

- 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 2) RBW > 20 dB bandwidth of the emission being measured.
- 3) VBW \geq RBW.
- 4) Sweep: Auto.
- 5) Detector function: Peak.
- 6) Trace: Max hold.

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power, after any corrections for external attenuators and cables.



Test Data**Environmental Conditions**

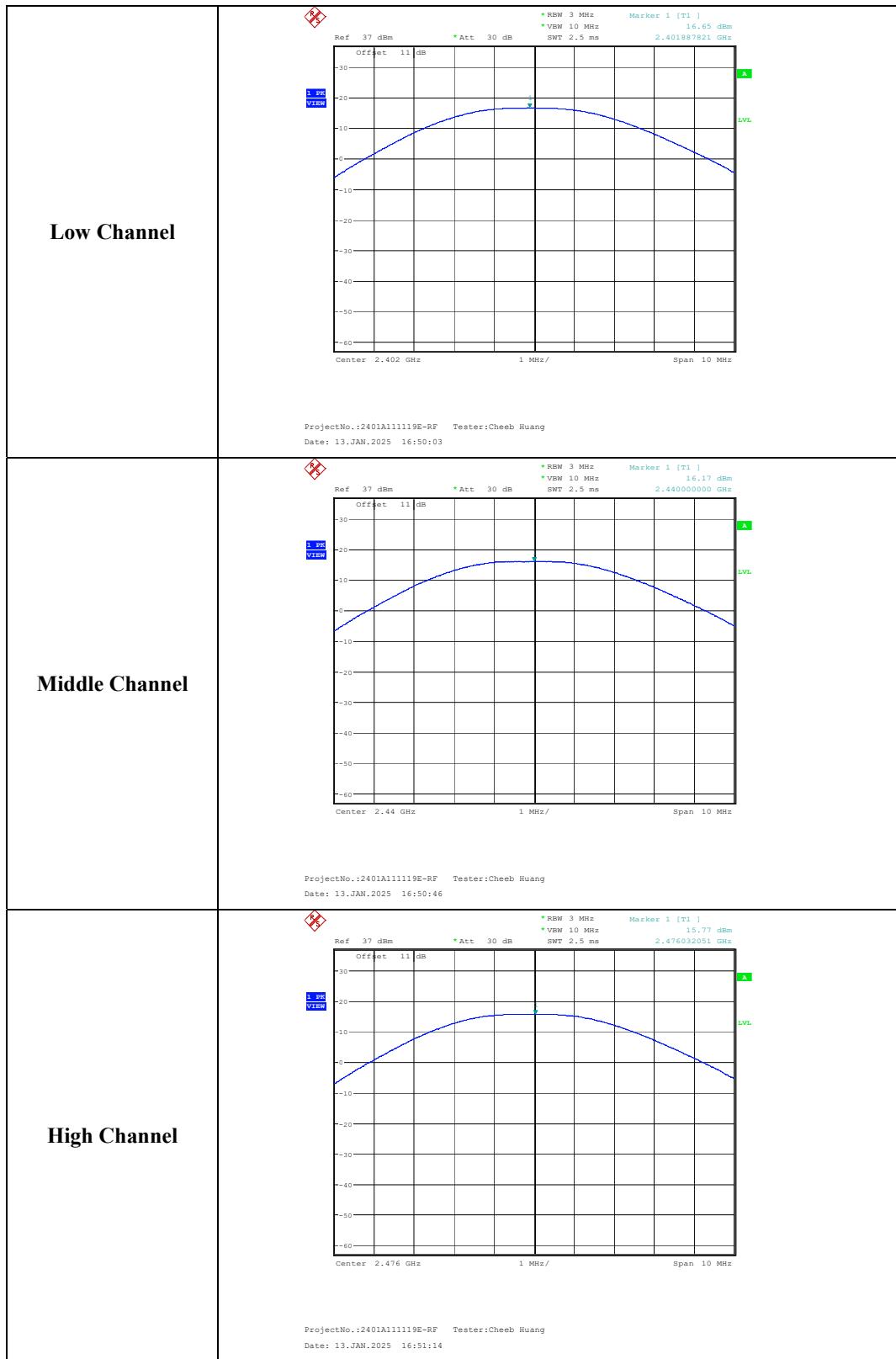
| | |
|---------------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.6 kPa |

The testing was performed by Cheeb Huang on 2025-01-13.

EUT operation mode: Transmitting

Test Result: Compliant

| Mode | Channel | Frequency (MHz) | Peak Output Power (dBm) | Limit (dBm) |
|------|---------|-----------------|-------------------------|-------------|
| GFSK | Low | 2402 | 16.65 | 21 |
| | Middle | 2440 | 16.17 | 21 |
| | High | 2476 | 15.77 | 21 |



FCC §15.247(d) - BAND EDGES TESTING

Applicable Standard

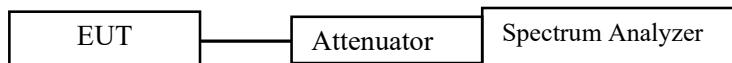
According to FCC §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.6 & Clause 6.10

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.



Test Data

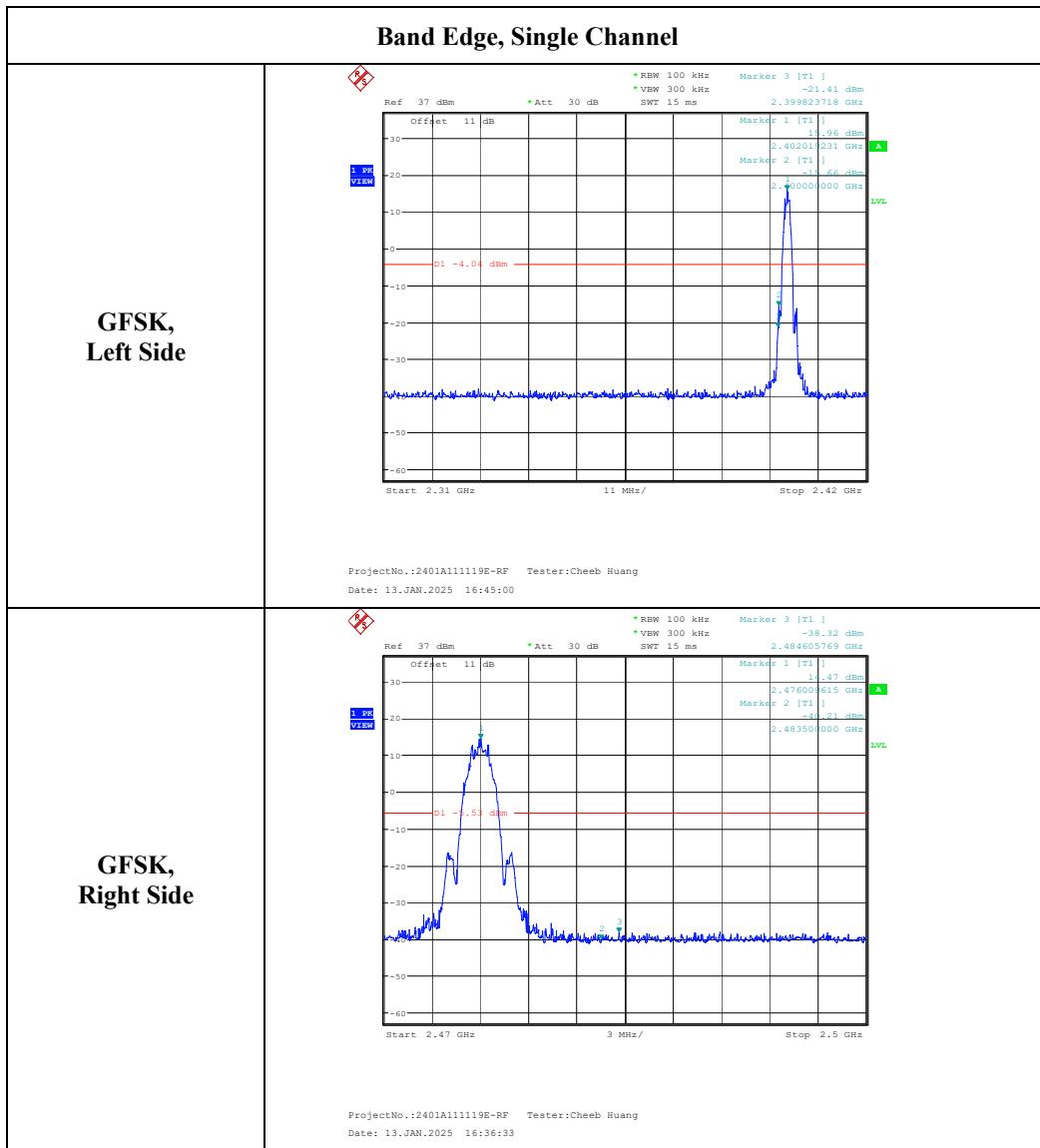
Environmental Conditions

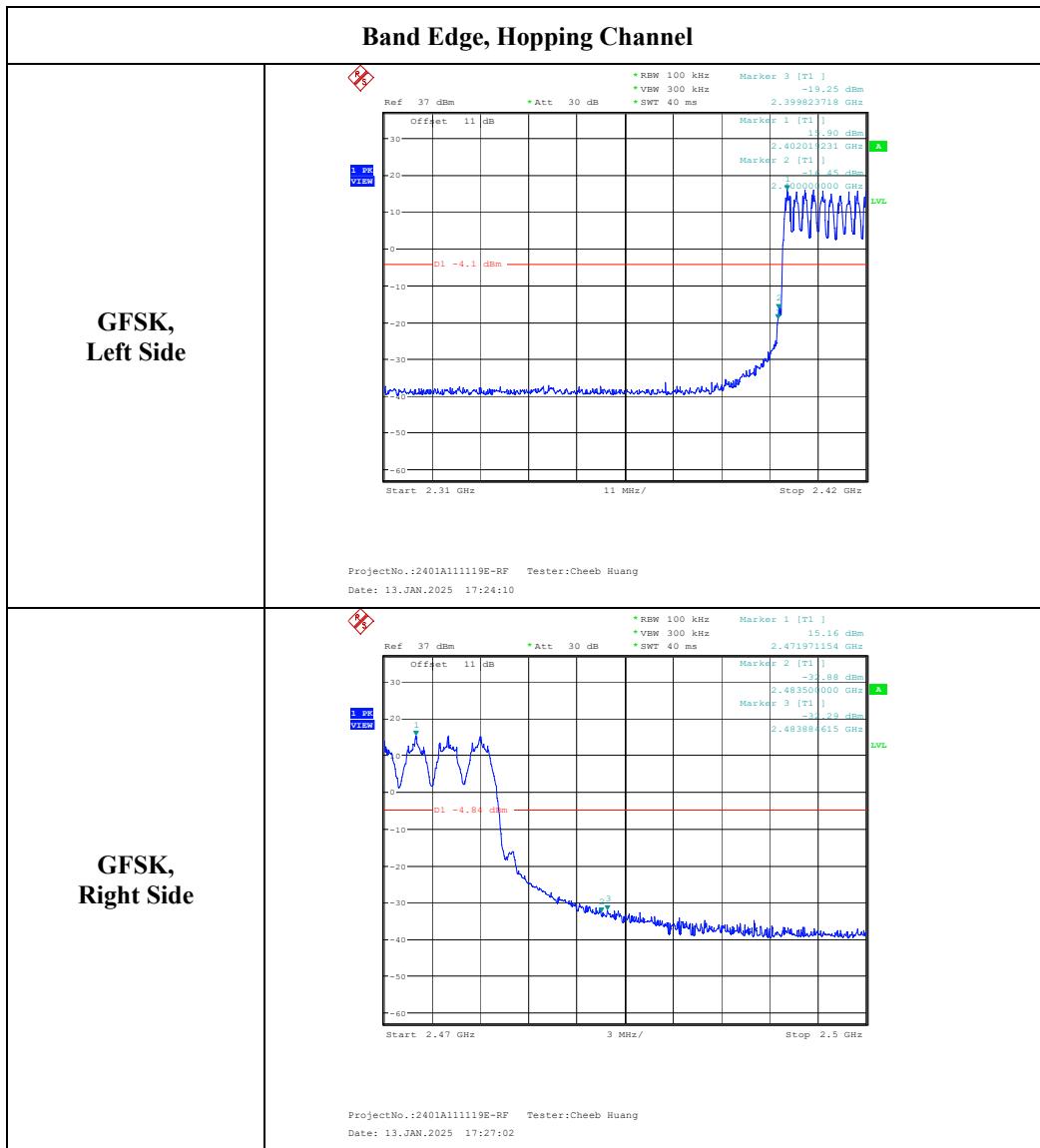
| | |
|--------------------|-----------|
| Temperature: | 25.3 °C |
| Relative Humidity: | 39 % |
| ATM Pressure: | 101.6 kPa |

The testing was performed by Cheeb Huang on 2025-01-13.

EUT operation mode: Transmitting

Test Result: Compliant





EUT PHOTOGRAPHS

Please refer to the attachment 2401A111119E-RF External photo and 2401A111119E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401A111119E-RF Test Setup photo.

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