

# TEST REPORT

Applicant Name: Southern Telecom Inc.  
Address: 5601 1st Ave, 2nd Floor, Brooklyn, NY 11220  
Report Number: 2501V02265E-RF-00  
FCC ID: 2ABV4-HKBTBUBSPK

## Test Standard (s)

FCC PART 15.247

## Sample Description

Product Type: HK BUBBLE WATER SPEAKER  
Model No.: HKBTBUBSPK-PK  
Multiple Model(s) No.: HKWTRSPKPOM  
Trade Mark: HELLO KITTY  
Date Received: 2025-07-04  
Issue Date: 2025-09-26

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

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

## Prepared and Checked By:

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Bruce Lin  
RF Engineer

## Approved By:

*Nancy Wang*

Nancy Wang  
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               | 2501V02265E-RF-00 | Original Report         | 2025-09-26       |

## GENERAL INFORMATION

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

|                                                                                                                                                                                                                                                  |                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Product Type</b>                                                                                                                                                                                                                              | HK BUBBLE WATER SPEAKER                                                                                       |
| <b>Model No.</b>                                                                                                                                                                                                                                 | HKBTBUBSPK-PK                                                                                                 |
| <b>Multiple Model(s) No.</b>                                                                                                                                                                                                                     | HKWTRSPKPOM                                                                                                   |
| <b>Frequency Range</b>                                                                                                                                                                                                                           | 2402~2480MHz                                                                                                  |
| <b>Transmit Peak Power</b>                                                                                                                                                                                                                       | 7.96dBm                                                                                                       |
| <b>Modulation Technique</b>                                                                                                                                                                                                                      | BDR (DH1/DH3/DH5): GFSK,<br>EDR (2DH1/2DH3/2DH5): $\pi/4$ -DQPSK<br>EDR (3DH1/3DH3/3DH5): 8DPSK               |
| <b>Antenna Specification#</b>                                                                                                                                                                                                                    | 0.58dBi (provided by the applicant)                                                                           |
| <b>Voltage Range</b>                                                                                                                                                                                                                             | DC 5V from Type-C Port                                                                                        |
| <b>Sample serial number</b>                                                                                                                                                                                                                      | 3621-2 for Conducted and Radiated Emissions Test<br>3621-3 for RF Conducted Test (Assigned by BACL, Shenzhen) |
| <b>Sample/EUT Status</b>                                                                                                                                                                                                                         | Good condition                                                                                                |
| <b>Adapter Information</b>                                                                                                                                                                                                                       | N/A                                                                                                           |
| Note: The Multiple models are electrically identical with the test model except for model name, inter decoration, appearance and color. Please refer to the declaration letter <sup>#</sup> for more detail, which was provided by manufacturer. |                                                                                                               |

### 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, 15.207, 15.205, 15.209 and 15.247 rules.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

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 output power, conducted         |                             | 0.86dB(k=2, 95% level of confidence)   |
| Dwell Time                         |                             | ±1%(k=2, 95% level of confidence)      |
| AC Power Lines Conducted Emissions | 9kHz-150kHz                 | 3.63dB(k=2, 95% level of confidence)   |
|                                    | 150kHz-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 | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 0       | 2402            | 40      | 2442            |
| 1       | 2403            | 41      | 2443            |
| 2       | 2404            | 42      | 2444            |
| ...     | ...             | ...     | ...             |
| ...     | ...             | ...     | ...             |
| 36      | 2438            | 75      | 2477            |
| 37      | 2439            | 76      | 2478            |
| 38      | 2440            | 77      | 2479            |
| 39      | 2441            | 78      | 2480            |

EUT was tested with Channel 0, 39 and 78.

### EUT Exercise Software

|                                |                        |
|--------------------------------|------------------------|
| Exercise Software <sup>#</sup> | FCC_assist_1.0.2.2.exe |
| Power Level <sup>#</sup>       | 0                      |

### Special Accessories

No special accessory.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

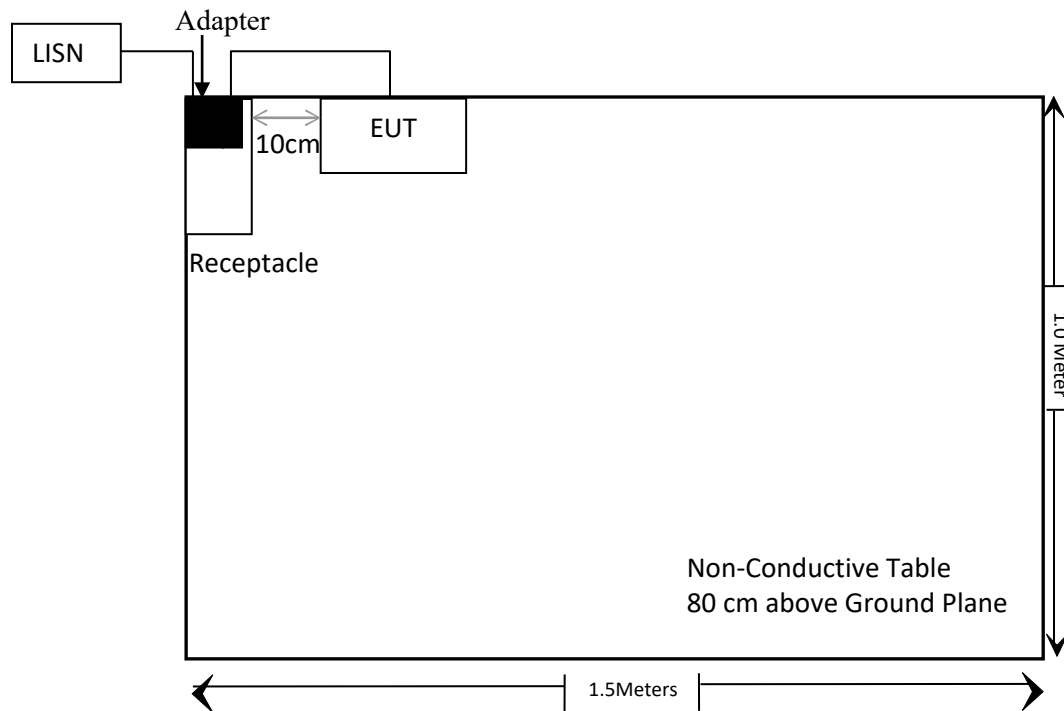
| Manufacturer | Description | Model          | Serial Number |
|--------------|-------------|----------------|---------------|
| OUPU         | Receptacle  | PDU-OP1606K    | 6971041358020 |
| XED          | Adapter     | XED-UL050100CU | Unknown       |

### External I/O Cable

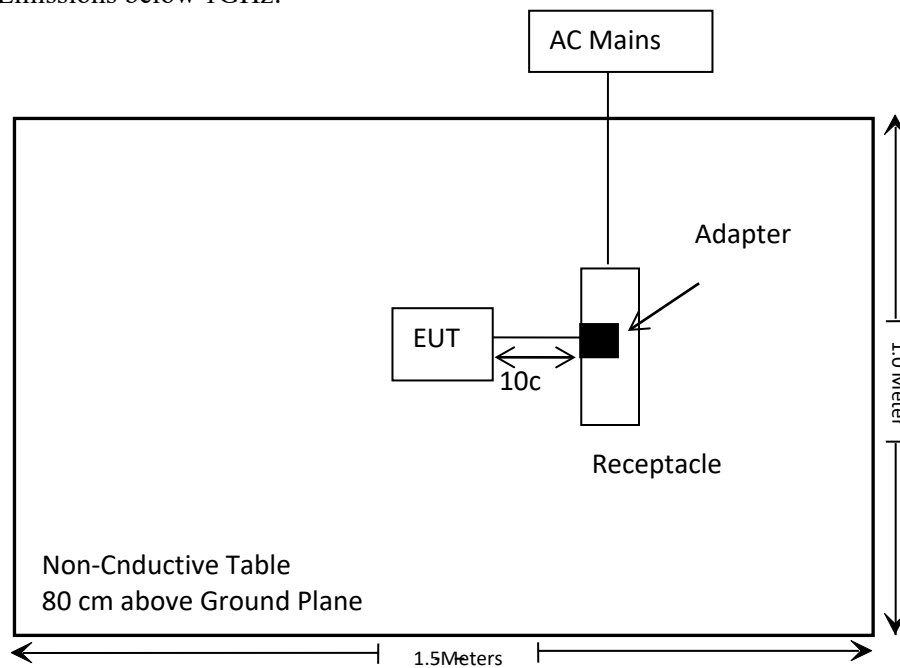
| Cable Description                 | Length (m) | From Port     | To         |
|-----------------------------------|------------|---------------|------------|
| Unshielded Un-detachable AC cable | 1.2        | AC Mains/LISN | Receptacle |
| Unshielded Detachable DC cable    | 1.0        | EUT           | Adapter    |

## Block Diagram of Test Setup

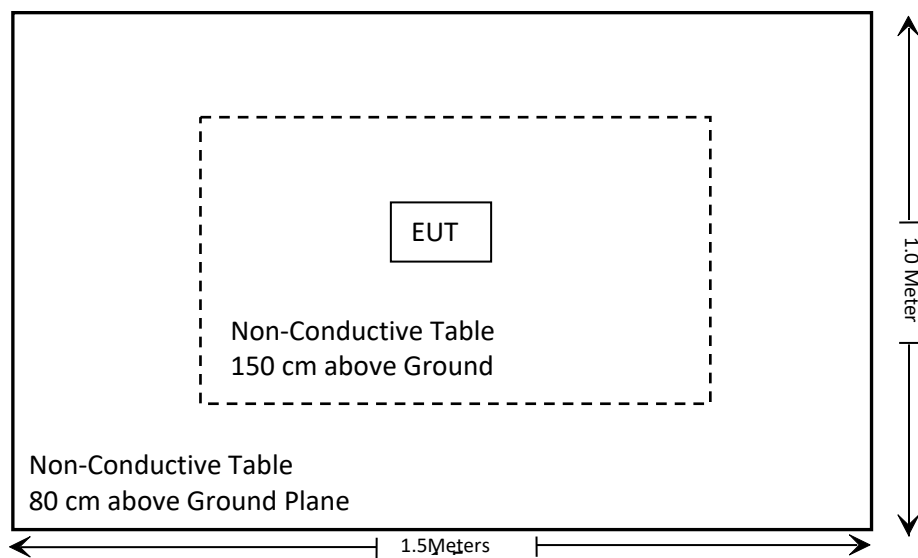
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



**SUMMARY OF TEST RESULTS**

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

## TEST EQUIPMENT LIST

| Manufacturer                   | Description                       | Model            | Serial Number          | Calibration Date | Calibration Due Date |
|--------------------------------|-----------------------------------|------------------|------------------------|------------------|----------------------|
| <b>Conducted Emission Test</b> |                                   |                  |                        |                  |                      |
| Rohde & Schwarz                | EMI Test Receiver                 | ESCI             | 101120                 | 2024/12/04       | 2025/12/03           |
| Rohde & Schwarz                | Transient Limiter                 | ESH3Z2           | DE25985                | 2025/04/29       | 2026/04/28           |
| Rohde & Schwarz                | LISN                              | ENV216           | 101613                 | 2024/12/04       | 2025/12/03           |
| Unknown                        | CE Cable                          | Unknown          | UF A210B-1-0720-504504 | 2025/04/29       | 2026/04/28           |
| Audix                          | EMI Test software                 | E3               | 191218(V9)             | NCR              | NCR                  |
| <b>Radiated Emission Test</b>  |                                   |                  |                        |                  |                      |
| Rohde & Schwarz                | EMI Test Receiver                 | ESR3             | 102455                 | 2024/12/04       | 2025/12/03           |
| Sonoma instrument              | Pre-amplifier                     | 310N             | 186238                 | 2025/04/29       | 2026/04/28           |
| Sunol Sciences                 | Broadband Antenna                 | JB1              | A040904-1              | 2023/07/20       | 2026/07/19           |
| Unknown                        | Cable                             | Chamber Cable 1  | F-03-EM236             | 2025/04/29       | 2026/04/28           |
| Unknown                        | Cable                             | XH500C           | J-10M-A                | 2025/04/29       | 2026/04/28           |
| BACL                           | Active Loop Antenna               | 1313-1A          | 4031911                | 2024/05/14       | 2027/05/13           |
| unknown                        | Cable                             | PNG214           | 1354                   | 2024/12/04       | 2025/12/03           |
| Unknown                        | Cable                             | 2Y194            | 0735                   | 2024/12/04       | 2025/12/03           |
| Audix                          | EMI Test software                 | E3               | 19821b(V9)             | NCR              | NCR                  |
| Rohde&Schwarz                  | Spectrum Analyzer                 | FSV40            | 101605                 | 2025/03/26       | 2026/03/25           |
| A.H.System                     | Preamplifier                      | PAM-0118P        | 489                    | 2024/11/15       | 2025/11/14           |
| Schwarzbeck                    | Horn Antenna                      | BBHA9120D (1201) | 1143                   | 2023/07/26       | 2026/07/25           |
| Unknown                        | RF Cable                          | KMSE             | 0735                   | 2024/12/06       | 2025/12/05           |
| Unknown                        | RF Cable                          | UFA147           | 219661                 | 2024/12/06       | 2025/12/05           |
| Unknown                        | RF Cable                          | XH750A-N         | J-10M                  | 2024/12/06       | 2025/12/05           |
| 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           |
| A.H.System                     | Pre-amplifier                     | PAM-1840VH       | 190                    | 2025/04/29       | 2026/04/28           |
| Electro-Mechanics Co           | Horn Antenna                      | 3116             | 9510-2270              | 2023/09/18       | 2026/09/17           |
| UTIFLEX                        | RF Cable                          | NO. 13           | 232308-001             | 2024/12/18       | 2025/12/17           |
| Audix                          | EMI Test software                 | E3               | 191218(V9)             | NCR              | NCR                  |
| <b>RF Conducted Test</b>       |                                   |                  |                        |                  |                      |
| Rohde&Schwarz                  | Spectrum Analyzer                 | FSV40-N          | 102259                 | 2024/12/04       | 2025/12/03           |
| Unknown                        | 10dB Attenuator                   | Unknown          | F-03-EM065             | 2025/06/26       | 2026/06/25           |
| Rohde & Schwarz                | Spectrum Analyzer                 | FSU26            | 200982                 | 2024/09/20       | 2025/09/19           |

\* **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).

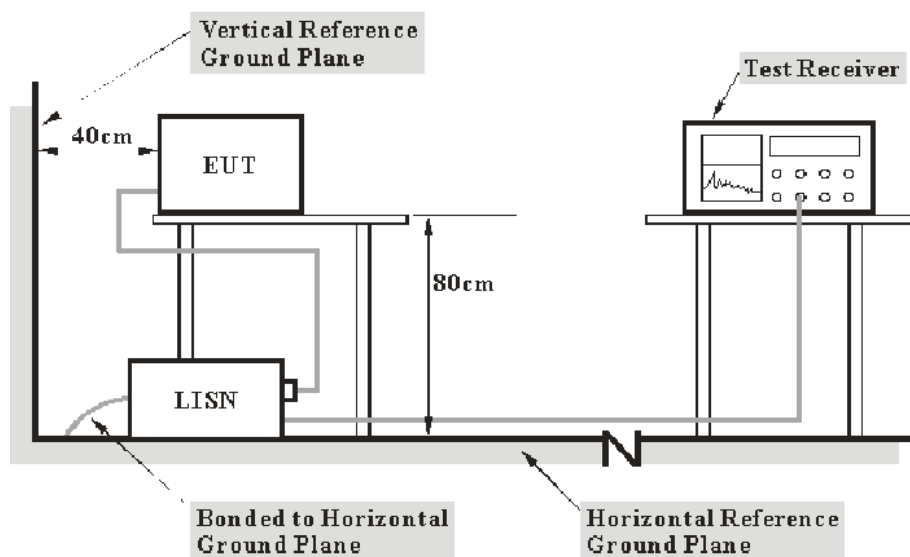
## REQUIREMENTS AND TEST PROCEDURES

### 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 C63.10-2020. 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  | RBW   |
|------------------|-------|
| 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:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit} \\ \text{Level} &= \text{Read Level} + \text{Factor}\end{aligned}$$

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

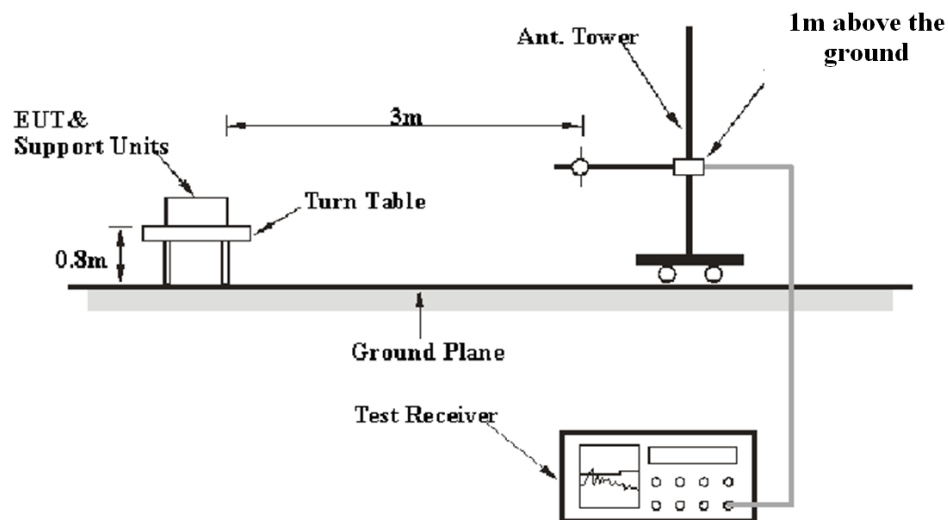
## Radiated Emissions

### Applicable Standard

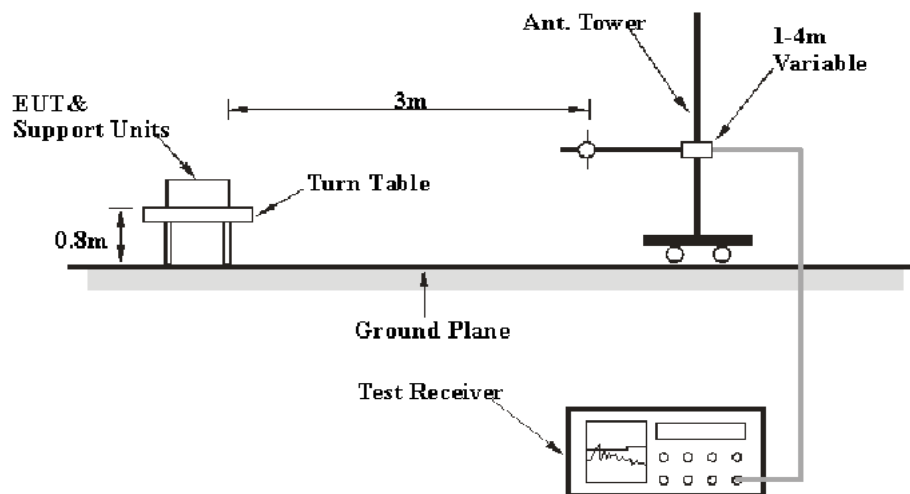
FCC §15.205; §15.209; §15.247(d)

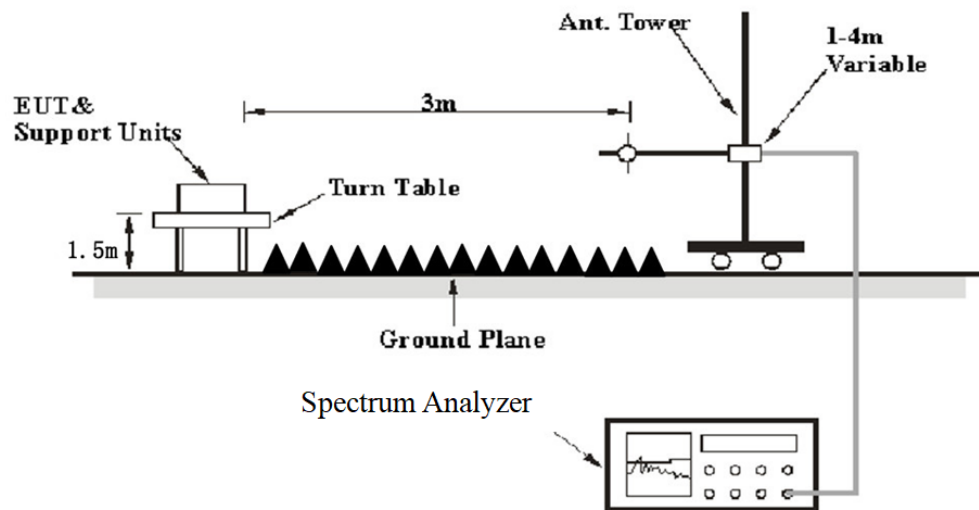
### EUT Setup

#### 9 kHz-30MHz:



#### 30MHz-1GHz:



**Above 1GHz:**

The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.10-2020. 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 | Detector |
|-------------------|---------------------------------------------------------------|-----------|---------|-------------|----------|
| 9 kHz – 150 kHz   | /                                                             | /         | 200 Hz  | QP          | QP       |
|                   | 300 Hz                                                        | 1 kHz     | /       | PK          | Peak     |
| 150 kHz – 30 MHz  | /                                                             | /         | 9 kHz   | QP          | QP       |
|                   | 10 kHz                                                        | 30 kHz    | /       | PK          | Peak     |
| 30 MHz – 1000 MHz | /                                                             | /         | 120 kHz | QP          | QP       |
|                   | 100 kHz                                                       | 300 kHz   | /       | PK          | Peak     |
| Above 1 GHz       | Harmonics                                                     |           |         |             |          |
|                   | 1MHz                                                          | 3 MHz     | /       | PK          | Peak     |
|                   | Average Emission Level=Peak Emission Level+20*log(Duty cycle) |           |         |             |          |
|                   | Band Edge & Other Emissions                                   |           |         |             |          |
|                   | 1MHz                                                          | 3 MHz     | /       | PK          | Peak     |
|                   | 1MHz                                                          | ≥10 Hz    | /       | Average     | Peak     |

For Duty cycle measurement:

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

Duty cycle=On time/100milliseconds, On time= $N_1 \cdot L_1 + N_2 \cdot L_2 + \dots + N_{n-1} \cdot L_{n-1} + N_n \cdot L_n$ ,

Where  $N_1$  is number of type 1 pulses,  $L_1$  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/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 calculation is as follows:

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

## 20 dB Emission 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.

### Test Procedure

Test Method: ANSI C63.10-2020 Clause 6.9.2

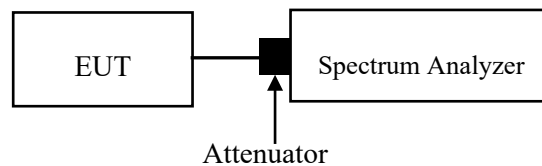
- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be at least 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  $[10 \log (\text{OBW}/\text{RBW})]$  below the reference level. Specific guidance is given in 4.1.6.2.
- 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 unmodulated 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 [(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 unmodulated 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 dBc 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 dBc bandwidth shall be reported by providing spectral 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).



## 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

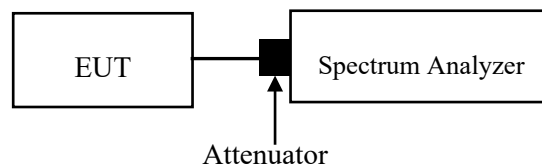
Test Method: ANSI C63.10-2020 Clause 7.8.2

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: No faster than coupled (auto) time.
- 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. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the carrier separation need only be measured for one of those modulation schemes or data rates.



Note: The limit is  $\frac{2}{3} \times 20$  dB bandwidth

## 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 C63.10-2020 Clause 7.8.3

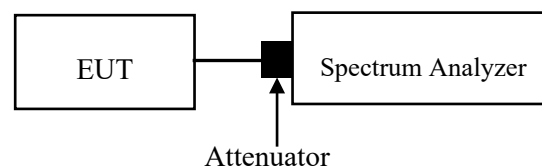
The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: The frequency band of operation. Depending on the number of channels the device supports, it could 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: No faster than coupled (auto) time.
- e) Detector function: Peak.
- f) Trace: Max-hold.
- g) Allow the trace to stabilize.

It might prove necessary to break the span up into subranges 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. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the number of channels need only be measured for one of those modulation schemes or data rates.



## Time of Occupancy (Dwell Time)

### Applicable Standard

Frequency hopping systems 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 C63.10-2020 Clause 7.8.4

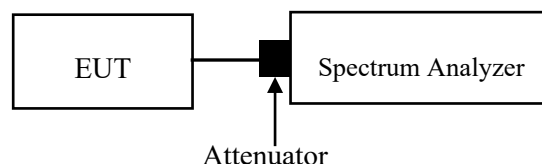
Use the following spectrum analyzer settings to determine the dwell time per hop:

- a) Span: Zero span, centered on a hopping channel.
- b) RBW shall be  $\leq$  channel spacing and where possible RBW should be set  $\gg 1 / T$ , where T is the expected transmission time per hop.
- c) Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period =  $1/\text{hopping rate}$ ) should achieve this.
- d) Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
- e) Detector function: Peak.
- f) Trace: Clear-write, single sweep.
- g) Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

To determine the number of hops on a channel in the regulatory observation period repeat the measurement using a longer sweep time. When the device uses a single hopping sequence the period of measurement should be sufficient to capture at least 2 hops. When the device uses a dynamic hopping sequence, or the sequence varies, the period of measurement may need to capture multiple hops to better determine the average time of occupancy. Count the number of hops on the channel across the sweep time.

The average number of hops on the same channel within the regulatory observation period is calculated from the number of hops on the channel divided by the spectrum analyzer sweep time multiplied by the regulatory observation period. For example, if three hops are counted with an analyzer sweep time of 500 ms and the regulatory observation period is 10 s, then the number of hops in that ten seconds is  $3 / 0.5 \times 10$ , or 60 hops.

The average time of occupancy is calculated by multiplying the dwell time per hop by the number of hops in the observation period.



## Peak Output Power Measurement

### Applicable Standard

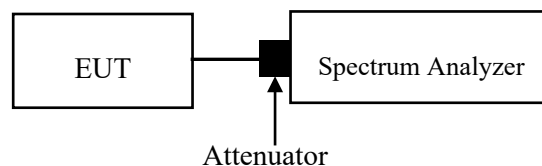
According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125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

### Test Procedure

Test Method: ANSI C63.10-2020 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. Frequency hopping shall be disabled for this test. Use the following spectrum analyzer settings:

- a) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- b) RBW > 20 dB bandwidth of the emission being measured.
- c) VBW  $\geq$  RBW.
- d) Sweep: No faster than coupled (auto) time.
- e) Detector function: Peak.
- f) Trace: Max-hold.
- g) Allow trace to stabilize.
- h) Use the marker-to-peak function to set the marker to the peak of the emission.
- i) The indicated level is the peak output power, after any corrections for external attenuators and cables.
- j) A spectral plot of the test results and setup description shall be included in the test report.



Note: A short RF cable with low cable loss connected to the EUT antenna port, which was provided by client or lab, the cable loss was added with offset into test equipment, the total offset consists of attenuator and/or RF cable loss

## Band Edges

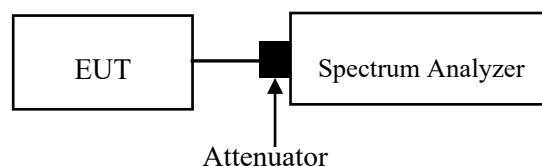
### Applicable Standard

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 C63.10-2020 Clause 7.8.7.2 & Clause 6.10

- 1) Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products that fall outside of the authorized band of operation.
- 2) Reference level: As required to keep the signal from exceeding the maximum instrument 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 4.1.6.2.
- 3) Attenuation: Auto (at least 10 dB preferred).
- 4) Sweep time: No faster than coupled (auto) time.
- 5) Resolution bandwidth: 100 kHz.
- 6) Video bandwidth: 300 kHz.
- 7) Detector: Peak.
- 8) Trace: Max-hold.



## Conducted Spurious Emission

### Applicable Standard

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)).

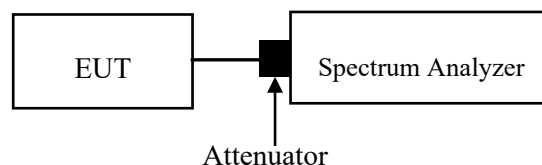
### Test Procedure

Test Method: ANSI C63.10-2020 Clause 7.8.7.1

To demonstrate compliance with the relative out-of-band emissions requirements conducted spurious emissions shall be measured for the transmit frequencies, per 5.5 and 5.6, and at the maximum transmit powers. Frequency hopping shall be disabled for this test with the exception of measurements at the allocated band-edges which shall be repeated with hopping enabled.

Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The frequency range of testing shall span 30 MHz to 10 times the operating frequency and this may be done in a single sweep or, to aid resolution, across a number of sweeps. The resolution bandwidth shall be 100 kHz, video bandwidth 300 kHz, and a coupled sweep time with a peak detector.

The limit is based on the highest in-band level across all channels measured using the same instrument settings (resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector). To help clearly demonstrate compliance a display line may be set at the required offset (typically 20 dB) below the highest in-band level. Where the highest in-band level is not clearly identified in the out-of-band measurements a separate spectral plot showing the in-band level shall be provided.



## ANTENNA REQUIREMENT

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### 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 an internal antenna arrangement, which was permanently attached, the antenna gain<sup>#</sup> is 0.58dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result: Compliant**

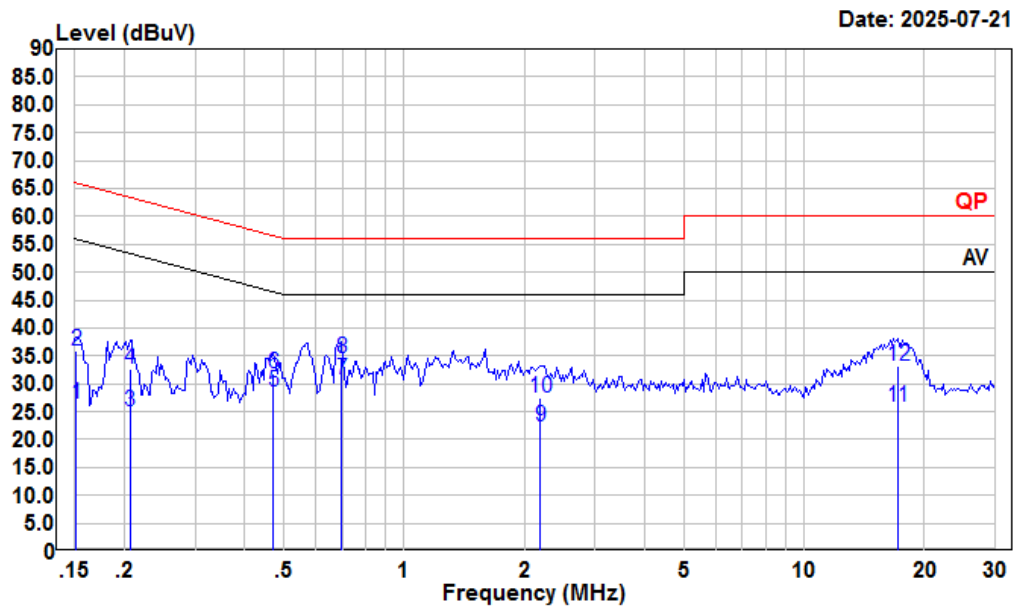
## TEST DATA AND RESULTS

### AC Line Conducted Emissions

#### Environmental Conditions

|                               |                                                                   |                                  |          |
|-------------------------------|-------------------------------------------------------------------|----------------------------------|----------|
| <b>Temperature<br/>(°C)</b>   | 27.7                                                              | <b>Relative Humidity<br/>(%)</b> | 72       |
| <b>ATM Pressure<br/>(kPa)</b> | 99.3                                                              | <b>Test engineer</b>             | Macy.shi |
| <b>Test date</b>              | 2025.7.21                                                         |                                  |          |
| <b>EUT operation mode</b>     | Transmitting (Maximum output power mode, EDR (8DPSK) Low Channel) |                                  |          |

## AC 120V 60 Hz, Line



Condition: Line

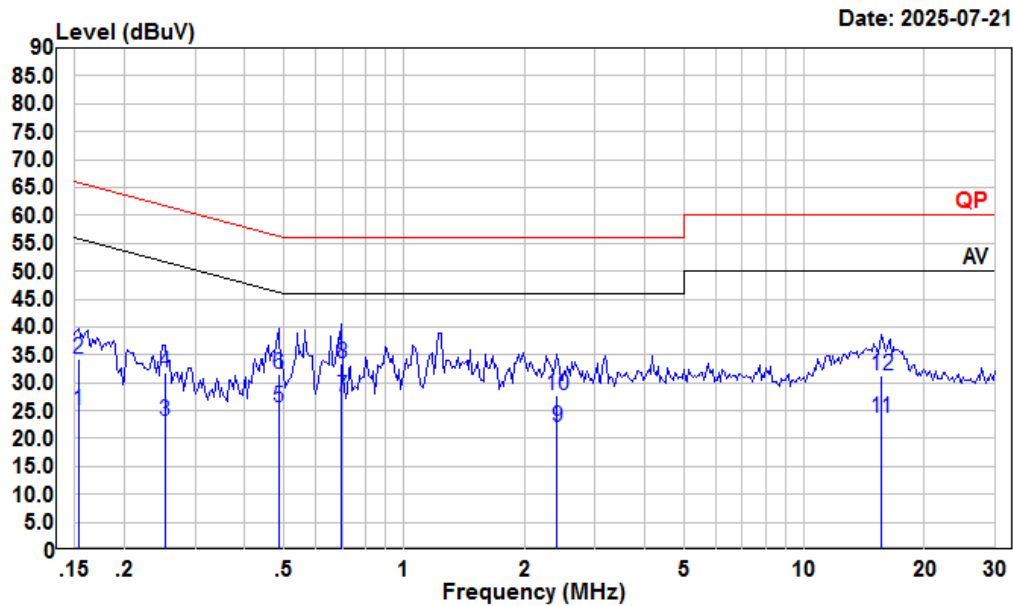
Project : 2501V02265E-RF

tester : Macy.shi Note:Transmitting

Setting : RBW:9kHz

|    | Freq   | Read Level | LISN Level | Cable Factor | Cable Loss | Limit Line | Over Limit | Remark  |
|----|--------|------------|------------|--------------|------------|------------|------------|---------|
|    | MHz    | dBuV       | dBuV       | dB           | dB         | dBuV       | dB         |         |
| 1  | 0.152  | 5.77       | 26.34      | 10.41        | 10.16      | 55.91      | -29.57     | Average |
| 2  | 0.152  | 15.46      | 36.03      | 10.41        | 10.16      | 65.91      | -29.88     | QP      |
| 3  | 0.206  | 4.03       | 24.91      | 10.69        | 10.19      | 53.36      | -28.45     | Average |
| 4  | 0.206  | 11.70      | 32.58      | 10.69        | 10.19      | 63.36      | -30.78     | QP      |
| 5  | 0.471  | 7.85       | 28.55      | 10.51        | 10.19      | 46.49      | -17.94     | Average |
| 6  | 0.471  | 11.06      | 31.76      | 10.51        | 10.19      | 56.49      | -24.73     | QP      |
| 7  | 0.697  | 9.70       | 30.83      | 10.90        | 10.23      | 46.00      | -15.17     | Average |
| 8  | 0.697  | 13.40      | 34.53      | 10.90        | 10.23      | 56.00      | -21.47     | QP      |
| 9  | 2.190  | 1.08       | 22.39      | 11.07        | 10.24      | 46.00      | -23.61     | Average |
| 10 | 2.190  | 6.30       | 27.61      | 11.07        | 10.24      | 56.00      | -28.39     | QP      |
| 11 | 17.109 | 4.88       | 25.76      | 10.62        | 10.26      | 50.00      | -24.24     | Average |
| 12 | 17.109 | 12.29      | 33.17      | 10.62        | 10.26      | 60.00      | -26.83     | QP      |

## AC 120V 60 Hz, Neutral



Condition: Neutral

Project : 2501V02265E-RF

tester : Macy.shi Note: Transmitting

Setting : RBW:9kHz

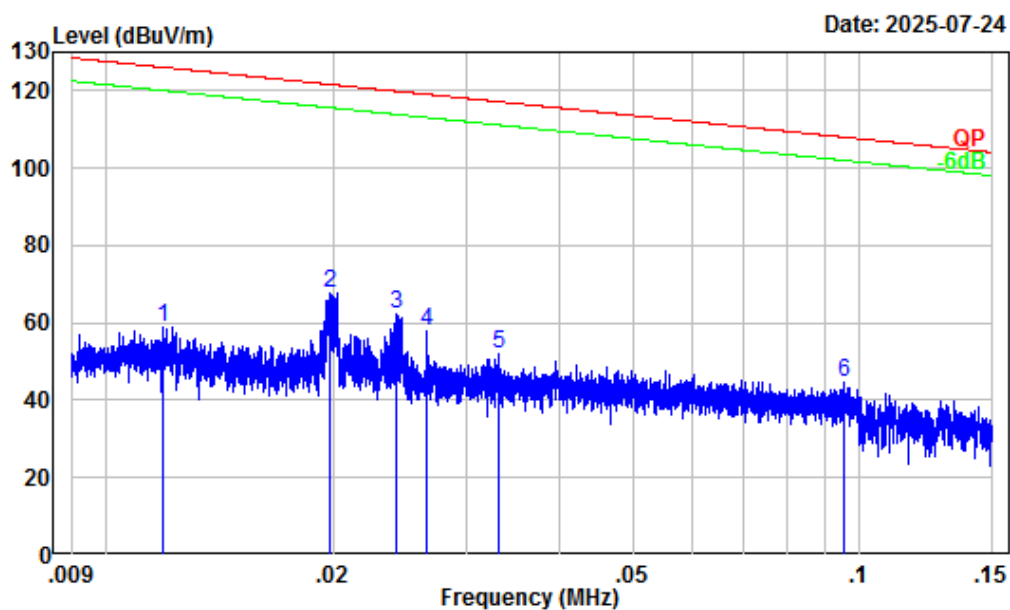
|    | Freq   | Read Level | LISN Level | LISN Factor | Cable Loss | Limit Line | Over Limit | Remark  |
|----|--------|------------|------------|-------------|------------|------------|------------|---------|
|    | MHz    | dBuV       | dBuV       | dB          | dB         | dBuV       | dB         |         |
| 1  | 0.153  | 4.44       | 25.03      | 10.43       | 10.16      | 55.82      | -30.79     | Average |
| 2  | 0.153  | 13.75      | 34.34      | 10.43       | 10.16      | 65.82      | -31.48     | QP      |
| 3  | 0.252  | 2.26       | 23.18      | 10.72       | 10.20      | 51.69      | -28.51     | Average |
| 4  | 0.252  | 11.00      | 31.92      | 10.72       | 10.20      | 61.69      | -29.77     | QP      |
| 5  | 0.486  | 4.94       | 25.64      | 10.51       | 10.19      | 46.23      | -20.59     | Average |
| 6  | 0.486  | 10.86      | 31.56      | 10.51       | 10.19      | 56.23      | -24.67     | QP      |
| 7  | 0.697  | 6.57       | 27.40      | 10.60       | 10.23      | 46.00      | -18.60     | Average |
| 8  | 0.697  | 12.63      | 33.46      | 10.60       | 10.23      | 56.00      | -22.54     | QP      |
| 9  | 2.409  | 1.04       | 22.07      | 10.78       | 10.25      | 46.00      | -23.93     | Average |
| 10 | 2.409  | 6.59       | 27.62      | 10.78       | 10.25      | 56.00      | -28.38     | QP      |
| 11 | 15.552 | 2.97       | 23.64      | 10.40       | 10.27      | 50.00      | -26.36     | Average |
| 12 | 15.552 | 10.69      | 31.36      | 10.40       | 10.27      | 60.00      | -28.64     | QP      |

**Radiated Emissions****Environmental Conditions**

|                            |                                                                                                                                                                                                                                                                       |                              |                     |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------|
| <b>Temperature (°C)</b>    | 25-26                                                                                                                                                                                                                                                                 | <b>Relative Humidity (%)</b> | 46-50               |
| <b>ATM Pressure (kPa):</b> | 100-101                                                                                                                                                                                                                                                               | <b>Test engineer:</b>        | Alex Yan & Ive Wang |
| <b>Test date:</b>          | 2025.07.24 to 2025.08.20                                                                                                                                                                                                                                              |                              |                     |
| <b>EUT operation mode:</b> | Below 1GHz: Transmitting(Maximum output power mode, EDR (8DPSK) 2402MHz)<br>Above 1GHz: Transmitting                                                                                                                                                                  |                              |                     |
| <b>Note:</b>               | 1. For the radiated spurious emission below 30MHz, only the worst case (parallel) was recorded.<br>2. For the radiated spurious emission below 1GHz, When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded. |                              |                     |

**Below 1GHz:**

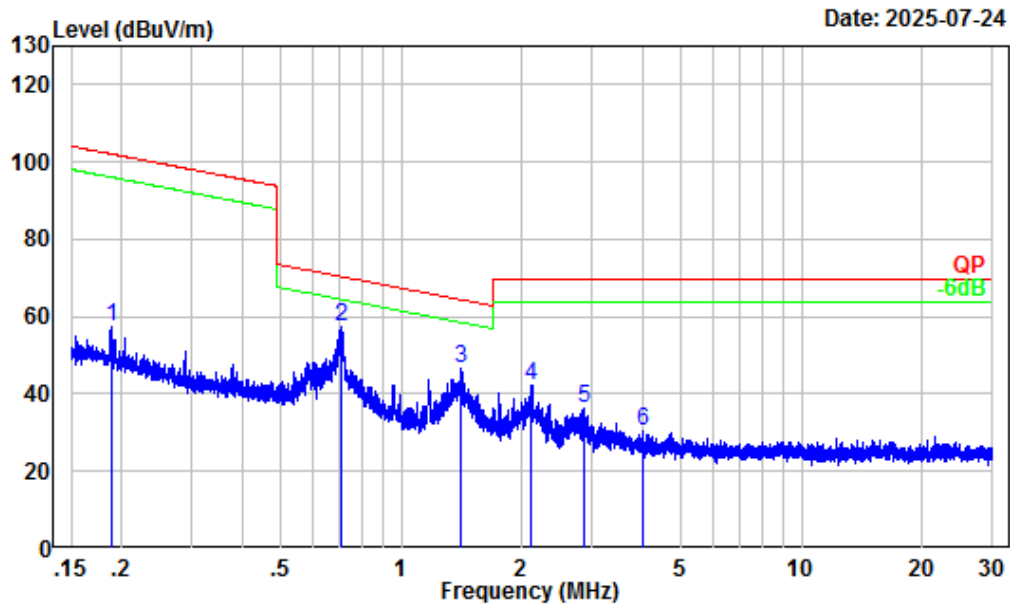
9kHz-150kHz



Site : Chamber A  
Condition : 3m  
Project Number : 2501V02265E-RF  
Test Mode : BT Transmitting  
Detector: Peak RBW/VBW: 0.3/1kHz  
Tester : Alex Yan

|   | Freq  | Factor | Read<br>Level | Limit<br>Level | Over<br>Line | Over<br>Limit | Remark |
|---|-------|--------|---------------|----------------|--------------|---------------|--------|
|   | MHz   | dB/m   | dBuV          | dBuV/m         | dBuV/m       | dB            |        |
| 1 | 0.012 | 31.94  | 26.87         | 58.81          | 126.09       | -67.28        | Peak   |
| 2 | 0.020 | 30.43  | 37.46         | 67.89          | 121.65       | -53.76        | Peak   |
| 3 | 0.024 | 29.59  | 32.84         | 62.43          | 119.91       | -57.48        | Peak   |
| 4 | 0.027 | 29.15  | 28.62         | 57.77          | 119.11       | -61.34        | Peak   |
| 5 | 0.033 | 28.17  | 23.93         | 52.10          | 117.19       | -65.09        | Peak   |
| 6 | 0.095 | 22.33  | 22.31         | 44.64          | 108.02       | -63.38        | Peak   |

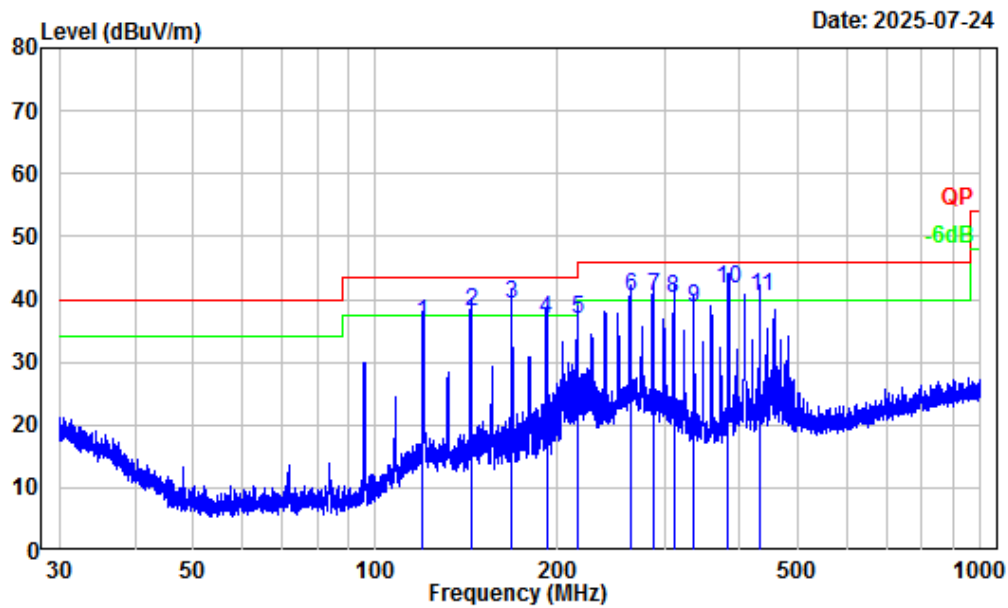
150kHz-30MHz



Site : Chamber A  
Condition : 3m  
Project Number : 2501V02265E-RF  
Test Mode : BT Transmitting  
Detector: Peak RBW/VBW: 10/30kHz  
Tester : Alex Yan

|   | Freq  | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|-------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz   | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 0.189 | 16.78  | 40.52         | 57.30  | 102.10        | -44.80        | Peak   |
| 2 | 0.711 | 3.80   | 53.80         | 57.60  | 70.50         | -12.90        | Peak   |
| 3 | 1.414 | 0.04   | 46.38         | 46.42  | 64.40         | -17.98        | Peak   |
| 4 | 2.120 | -1.67  | 43.81         | 42.14  | 69.54         | -27.40        | Peak   |
| 5 | 2.873 | -2.08  | 38.39         | 36.31  | 69.54         | -33.23        | Peak   |
| 6 | 4.035 | -2.70  | 33.05         | 30.35  | 69.54         | -39.19        | Peak   |

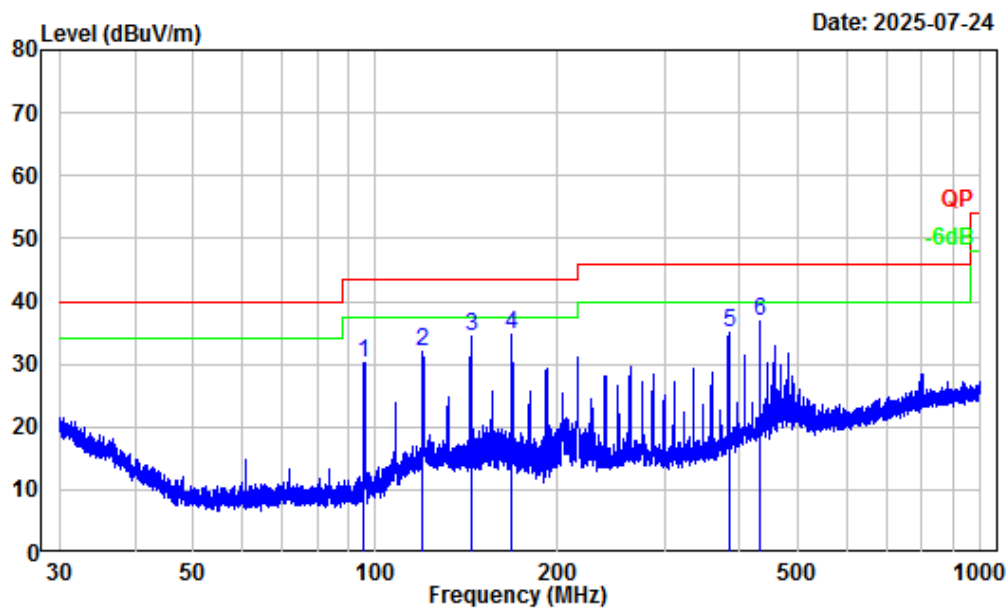
## 30MHz-1GHz\_Horizontal



Site : Chamber A  
Condition : 3m Horizontal  
Project Number : 2501V02265E-RF  
Test Mode : BT Transmitting  
Detector: Peak RBW/VBW: 100/300kHz  
Tester : Alex Yan

|    |        |        | Read  |        | Limit  | Over  |        |
|----|--------|--------|-------|--------|--------|-------|--------|
|    | Freq   | Factor | Level | Level  | Line   | Limit | Remark |
|    | MHz    | dB/m   | dBuV  | dBuV/m | dBuV/m | dB    |        |
| 1  | 119.59 | -11.50 | 47.60 | 36.10  | 43.50  | -7.40 | QP     |
| 2  | 143.96 | -12.18 | 50.11 | 37.93  | 43.50  | -5.57 | QP     |
| 3  | 167.75 | -13.00 | 52.10 | 39.10  | 43.50  | -4.40 | QP     |
| 4  | 191.66 | -14.03 | 50.89 | 36.86  | 43.50  | -6.64 | QP     |
| 5  | 215.93 | -14.20 | 50.99 | 36.79  | 43.50  | -6.71 | QP     |
| 6  | 263.59 | -12.40 | 52.89 | 40.49  | 46.00  | -5.51 | QP     |
| 7  | 287.61 | -11.22 | 51.70 | 40.48  | 46.00  | -5.52 | QP     |
| 8  | 310.95 | -11.02 | 51.29 | 40.27  | 46.00  | -5.73 | QP     |
| 9  | 335.15 | -10.53 | 49.20 | 38.67  | 46.00  | -7.33 | QP     |
| 10 | 383.26 | -9.05  | 50.69 | 41.64  | 46.00  | -4.36 | QP     |
| 11 | 432.36 | -7.77  | 48.09 | 40.32  | 46.00  | -5.68 | QP     |

## 30MHz-1GHz\_Vertical



Site : Chamber A  
Condition : 3m Vertical  
Project Number : 2501V02265E-RF  
Test Mode : BT Transmitting  
Detector: Peak RBW/VBW: 100/300kHz  
Tester : Alex Yan

|   | Freq Factor |        | Read  |        | Limit  | Over   | Remark |
|---|-------------|--------|-------|--------|--------|--------|--------|
|   | MHz         | dB/m   | Level | Level  | Line   | Limit  |        |
|   | MHz         | dB/m   | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 | 95.72       | -17.11 | 47.34 | 30.23  | 43.50  | -13.27 | Peak   |
| 2 | 119.75      | -11.47 | 43.48 | 32.01  | 43.50  | -11.49 | Peak   |
| 3 | 144.02      | -12.18 | 46.70 | 34.52  | 43.50  | -8.98  | Peak   |
| 4 | 167.60      | -13.01 | 47.76 | 34.75  | 43.50  | -8.75  | Peak   |
| 5 | 383.43      | -9.05  | 43.96 | 34.91  | 46.00  | -11.09 | Peak   |
| 6 | 431.22      | -7.80  | 44.60 | 36.80  | 46.00  | -9.20  | Peak   |

**Above 1GHz:**

| Frequency (MHz)                               | Reading (dBμV) | PK/Ave | Polar (H/V) | Factor (dB/m) | Corrected Amplitude (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|-----------------------------------------------|----------------|--------|-------------|---------------|------------------------------|----------------|-------------|
| <b>Maximum output power mode, EDR (8DPSK)</b> |                |        |             |               |                              |                |             |
| Low Channel                                   |                |        |             |               |                              |                |             |
| 4804                                          | 56.32          | PK     | H           | -7.79         | 48.53                        | 74             | -25.47      |
| 4804                                          | 53.94          | PK     | V           | -7.79         | 46.15                        | 74             | -27.85      |
| Middle Channel                                |                |        |             |               |                              |                |             |
| 4882                                          | 58.22          | PK     | H           | -7.59         | 50.63                        | 74             | -23.37      |
| 4882                                          | 56.01          | PK     | V           | -7.59         | 48.42                        | 74             | -25.58      |
| High Channel                                  |                |        |             |               |                              |                |             |
| 4960                                          | 57.38          | PK     | H           | -7.56         | 49.82                        | 74             | -24.18      |
| 4960                                          | 56.26          | PK     | V           | -7.56         | 48.7                         | 74             | -25.30      |

Note:

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

Corrected Amplitude = Factor + Reading

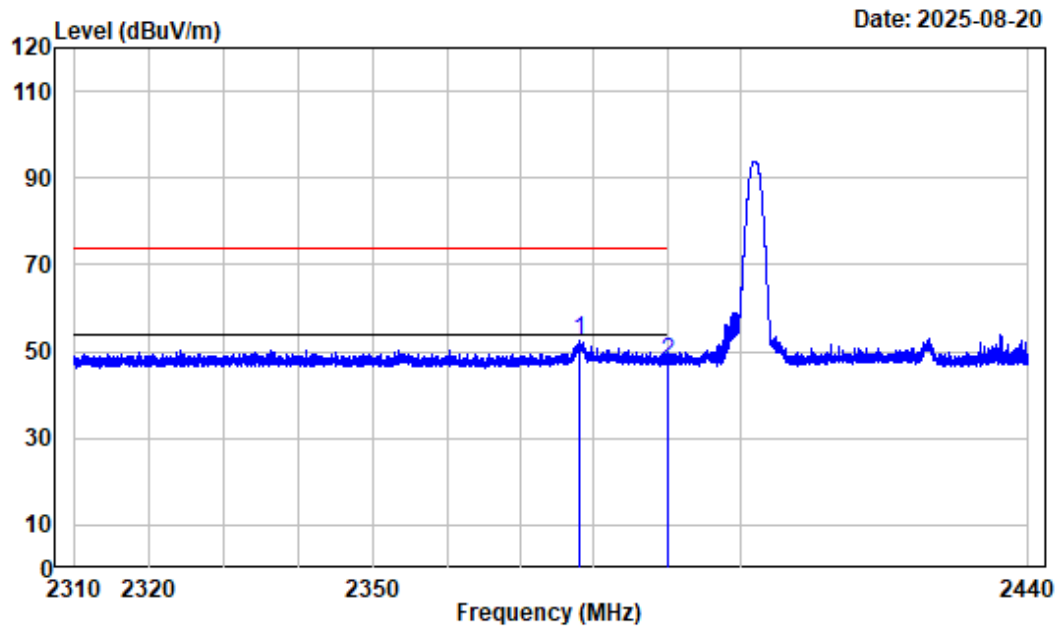
Margin = Corrected. Amplitude - Limit

The other spurious emission which is in the noise floor level was not recorded.

The test result of peak was less than the limit of average, so just peak values were recorded.

**Test plots:****Band Edge**

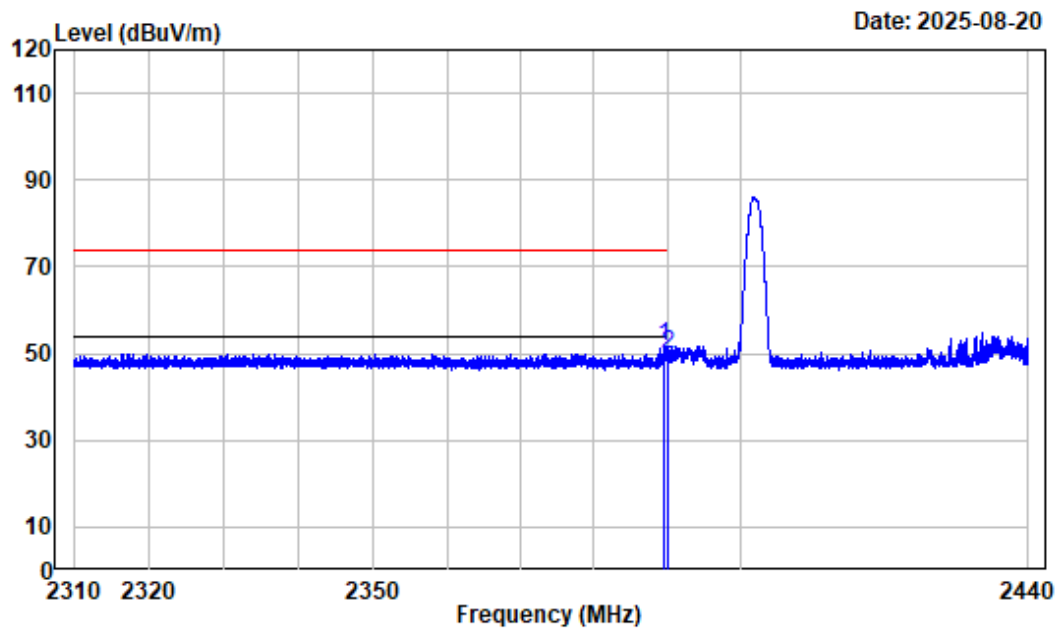
Left Band edge\_Horizontal\_Peak\_DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_DH5\_2402

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2378.071 | -10.96 | 63.64         | 52.68  | 74.00         | -21.32        | Peak   |
| 2 | 2390.000 | -10.98 | 58.74         | 47.76  | 74.00         | -26.24        | Peak   |

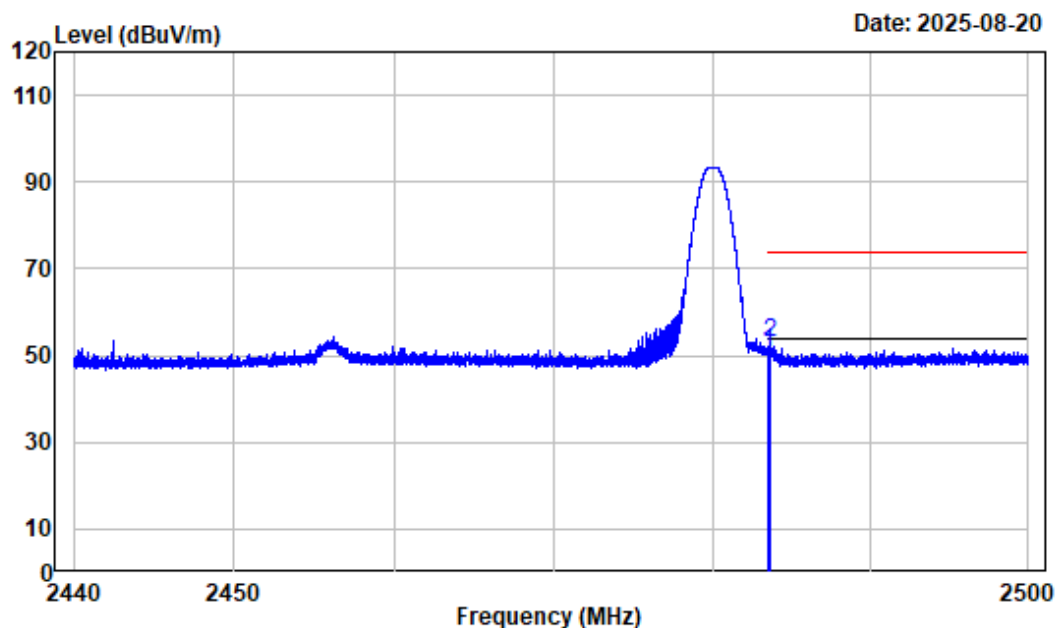
## Left Band edge\_Vertical\_Peak\_DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_DH5\_2402

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2389.576 | -10.98 | 62.73         | 51.75  | 74.00         | -22.25        | Peak   |
| 2 | 2390.000 | -10.98 | 60.89         | 49.91  | 74.00         | -24.09        | Peak   |

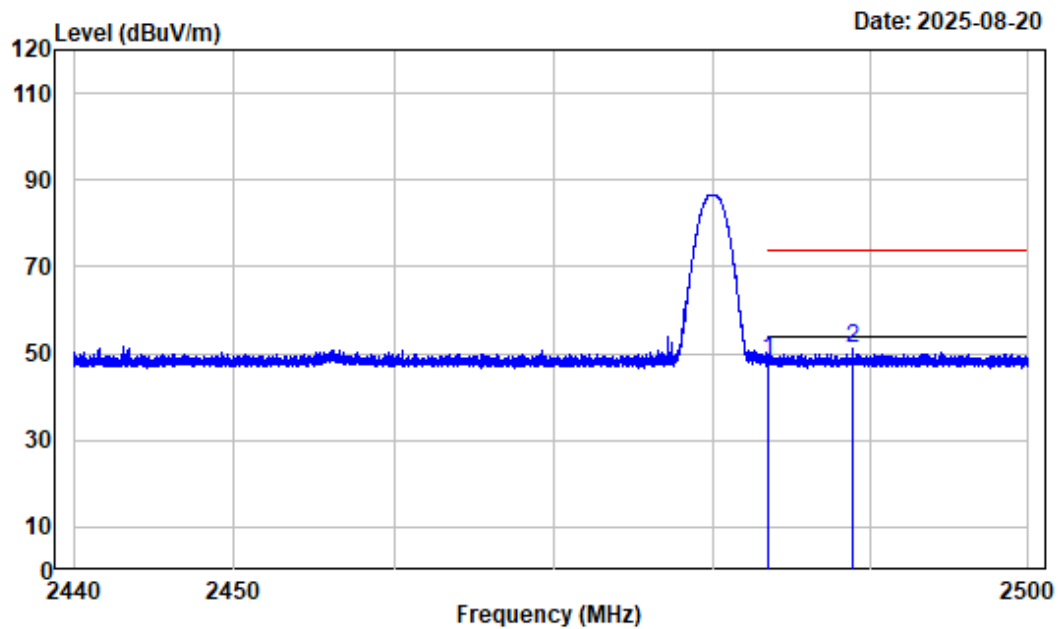
## Right Band edge\_Horizontal\_Peak\_DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_DH5\_2480

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2483.500 | -10.97 | 61.69         | 50.72  | 74.00         | -23.28        | Peak   |
| 2 | 2483.650 | -10.97 | 63.80         | 52.83  | 74.00         | -21.17        | Peak   |

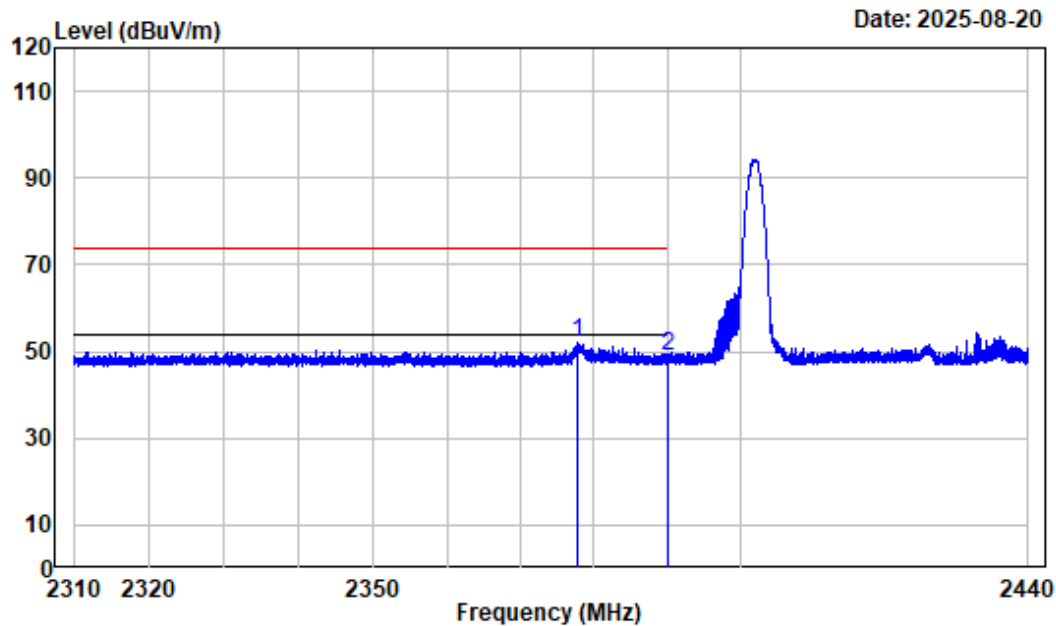
## Right Band edge\_Vertical\_Peak\_DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_DH5\_2480

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2483.500 | -10.97 | 59.40         | 48.43  | 74.00         | -25.57        | Peak   |
| 2 | 2488.825 | -10.98 | 62.08         | 51.10  | 74.00         | -22.90        | Peak   |

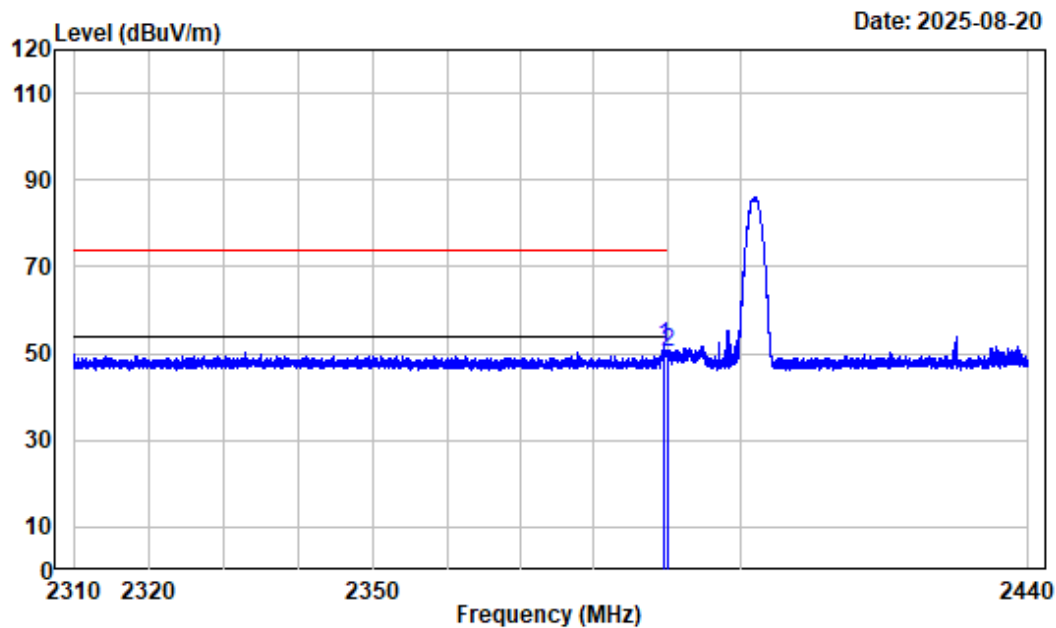
## Left Band edge\_Horizontal\_Peak\_2DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_2DH5\_2402

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2377.730 | -10.96 | 63.00         | 52.04  | 74.00         | -21.96        | Peak   |
| 2 | 2390.000 | -10.98 | 60.04         | 49.06  | 74.00         | -24.94        | Peak   |

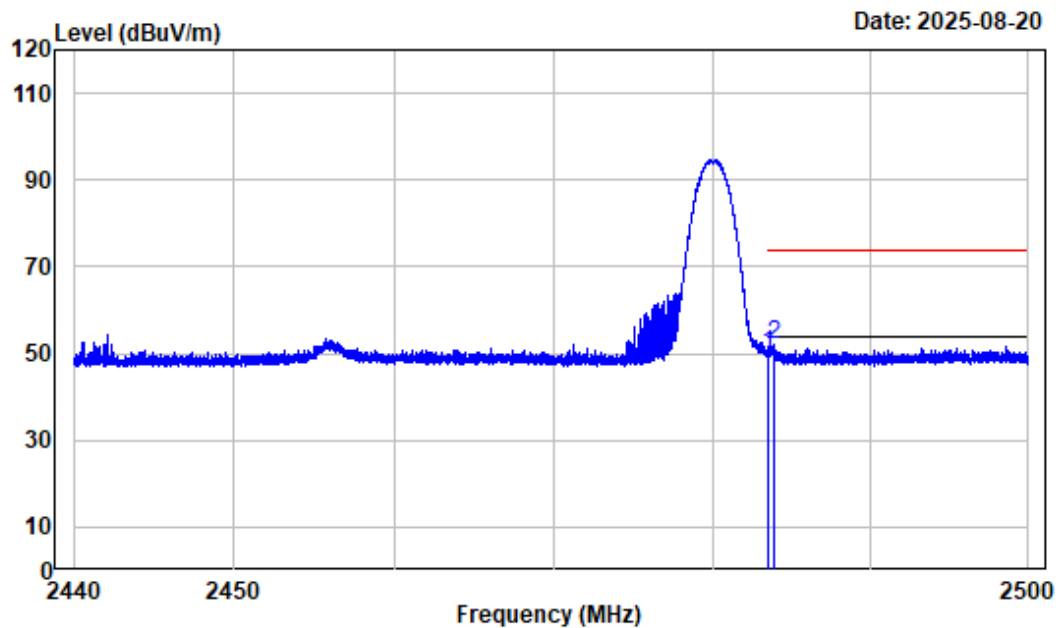
## Left Band edge\_Vertical\_Peak\_2DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_2DH5\_2402

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2389.430 | -10.98 | 62.40         | 51.42  | 74.00         | -22.58        | Peak   |
| 2 | 2390.000 | -10.98 | 61.46         | 50.48  | 74.00         | -23.52        | Peak   |

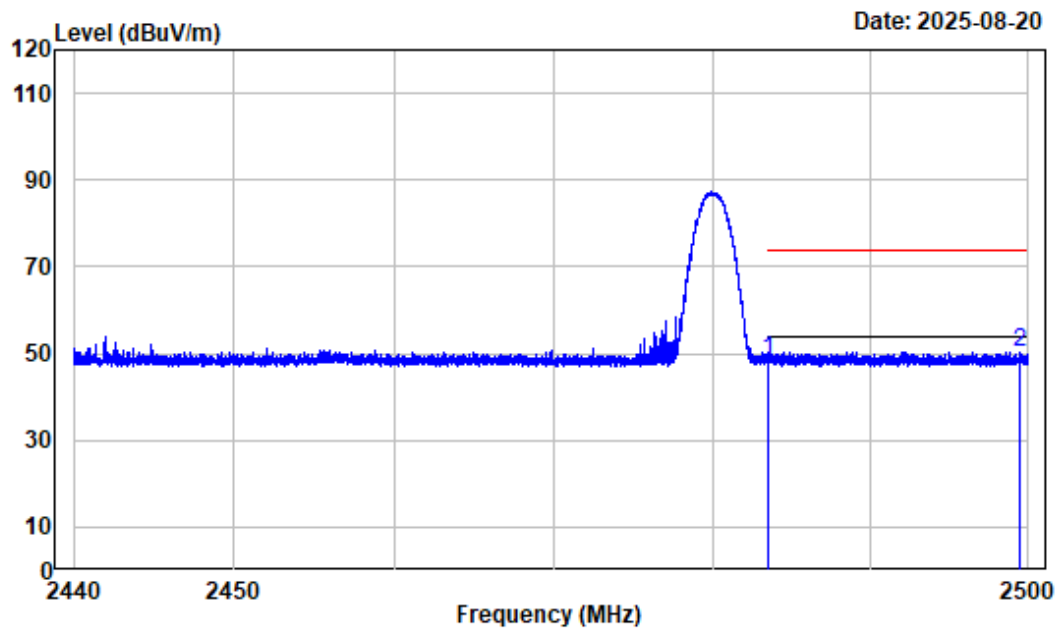
## Right Band edge\_Horizontal\_Peak\_2DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_2DH5\_2480

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2483.500 | -10.97 | 60.63         | 49.66  | 74.00         | -24.34        | Peak   |
| 2 | 2483.853 | -10.97 | 63.22         | 52.25  | 74.00         | -21.75        | Peak   |

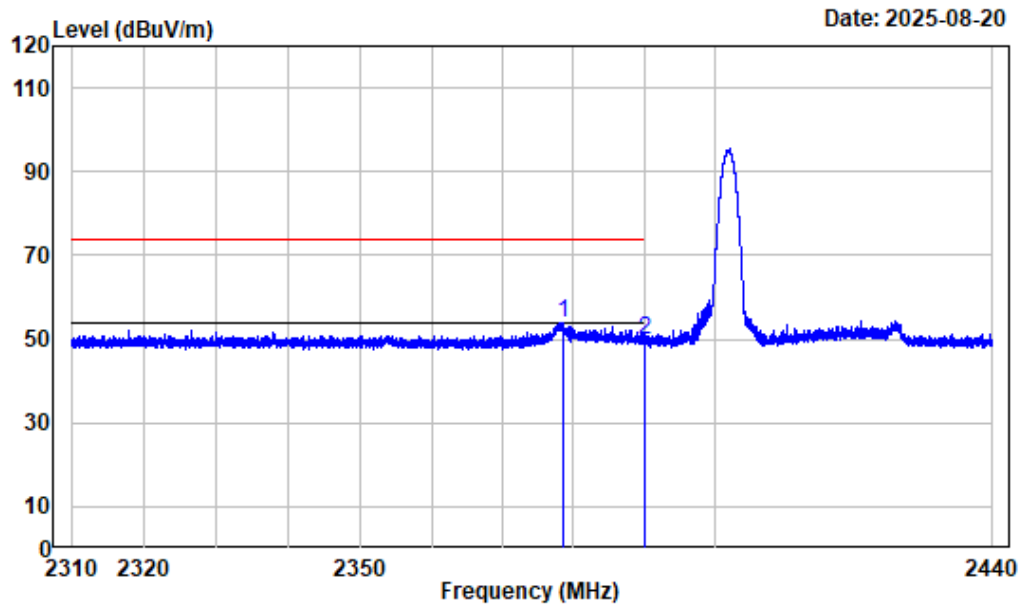
## Right Band edge\_Vertical\_Peak\_2DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_2DH5\_2480

|   | Freq     | Factor | Read<br>Level | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|----------|--------|---------------|--------|---------------|---------------|--------|
|   | MHz      | dB/m   | dBuV          | dBuV/m | dBuV/m        | dB            |        |
| 1 | 2483.500 | -10.97 | 59.25         | 48.28  | 74.00         | -25.72        | Peak   |
| 2 | 2499.430 | -11.00 | 61.39         | 50.39  | 74.00         | -23.61        | Peak   |

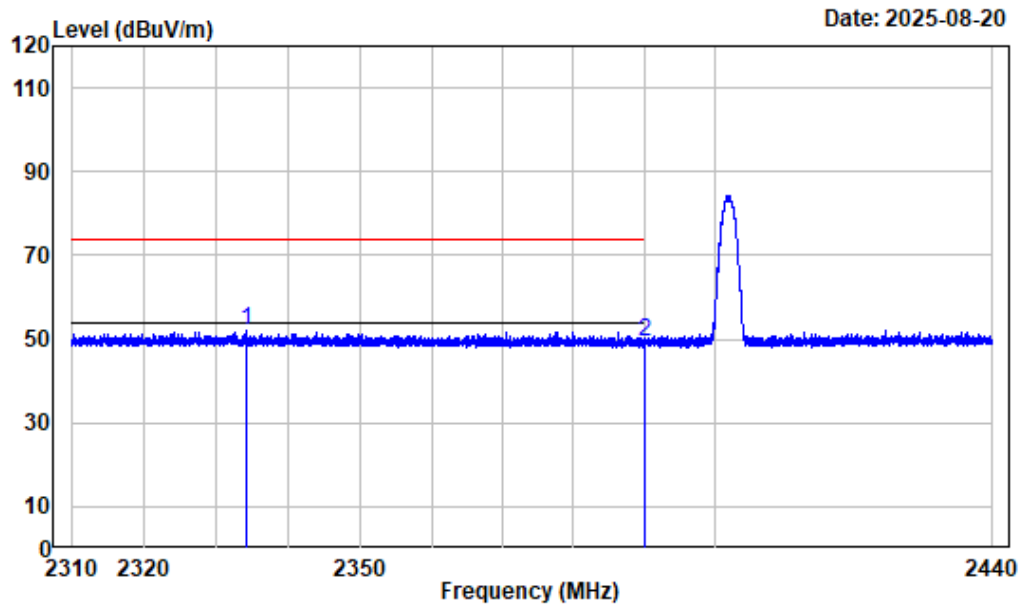
## Left Band edge\_Horizontal\_Peak\_3DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2402

| Freq Factor |          | Read   |        | Limit  | Over  | Remark      |
|-------------|----------|--------|--------|--------|-------|-------------|
|             |          | Level  | Level  | Line   | Limit |             |
| MHz         | dB/m     | dBuV   | dBuV/m | dBuV/m | dB    |             |
| 1           | 2378.470 | -10.96 | 64.88  | 53.92  | 74.00 | -20.08 Peak |
| 2           | 2390.000 | -10.98 | 60.88  | 49.90  | 74.00 | -24.10 Peak |

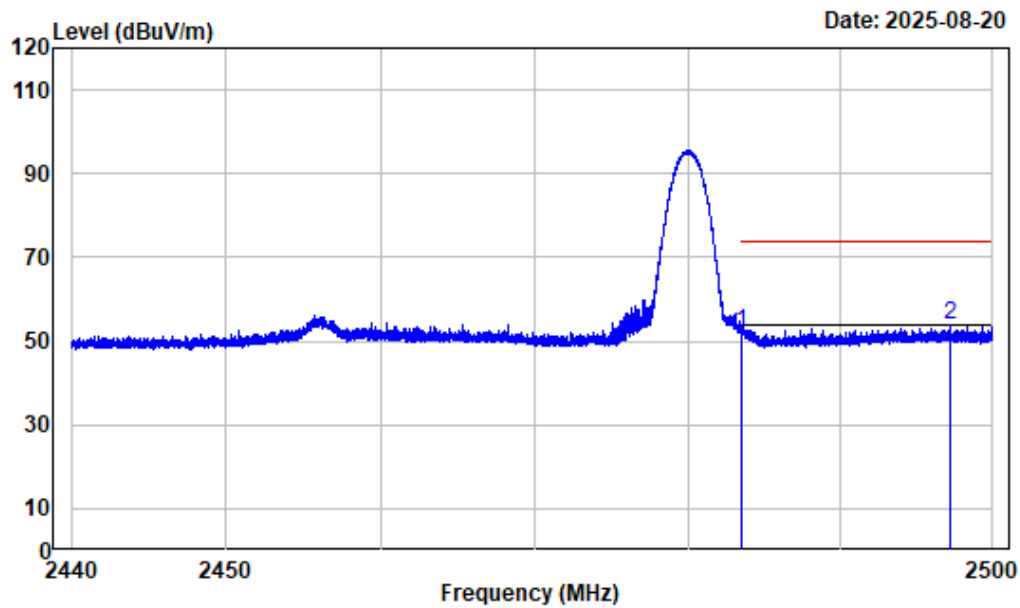
## Left Band edge\_Vertical\_Peak\_3DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2402

|   | Freq Factor |        | Read  |        | Limit  | Over   | Remark |
|---|-------------|--------|-------|--------|--------|--------|--------|
|   | MHz         | dB/m   | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 | 2334.069    | -10.85 | 63.06 | 52.21  | 74.00  | -21.79 | Peak   |
| 2 | 2390.000    | -10.98 | 60.46 | 49.48  | 74.00  | -24.52 | Peak   |

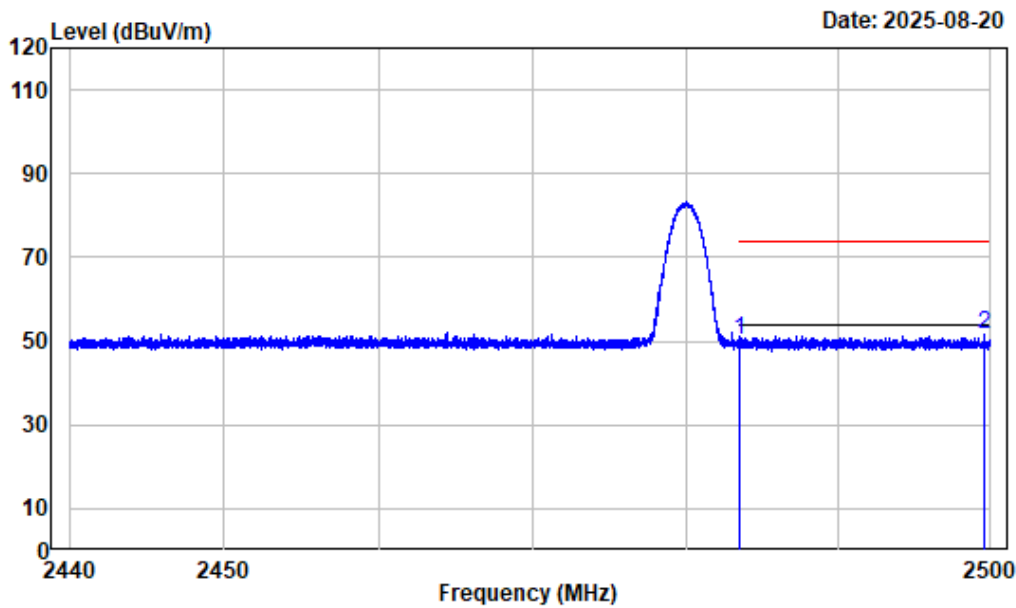
## Right Band edge\_Horizontal\_Peak\_3DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2480

| Freq Factor |        | Read  |        | Limit  | Over   | Remark |
|-------------|--------|-------|--------|--------|--------|--------|
|             |        | Level | Level  | Line   | Limit  |        |
| MHz         | dB/m   | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 2483.500  | -10.97 | 63.17 | 52.20  | 74.00  | -21.80 | Peak   |
| 2 2497.217  | -10.99 | 64.87 | 53.88  | 74.00  | -20.12 | Peak   |

Right Band edge\_Vertical\_Peak\_3DH5

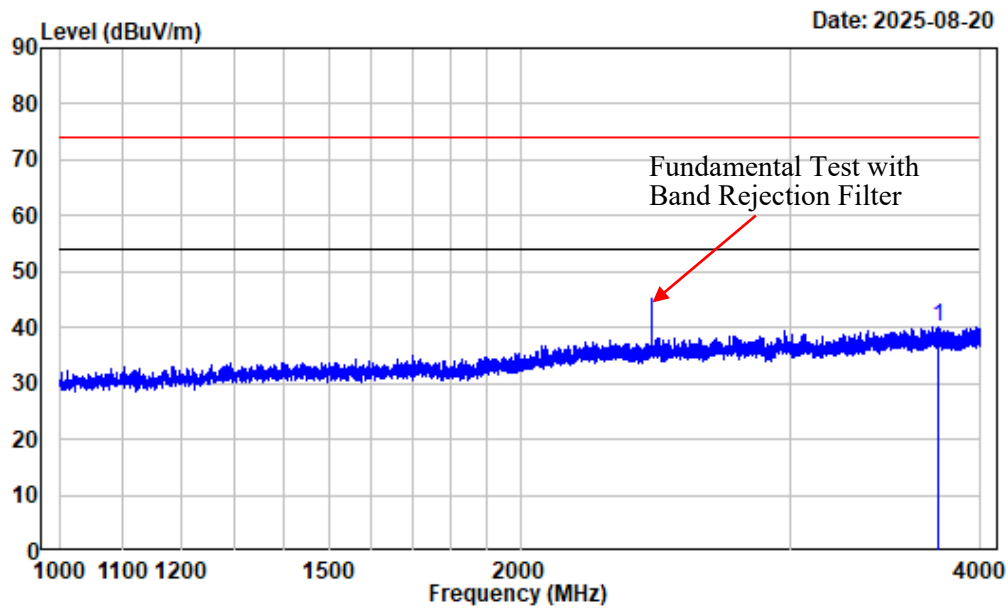


Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2480

| Freq Factor |        | Read  |        | Limit  | Over   | Remark |
|-------------|--------|-------|--------|--------|--------|--------|
|             |        | Level | Level  | Line   | Limit  |        |
| MHz         | dB/m   | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 2483.500  | -10.97 | 61.12 | 50.15  | 74.00  | -23.85 | Peak   |
| 2 2499.557  | -11.00 | 62.48 | 51.48  | 74.00  | -22.52 | Peak   |

**1-25GHz (Listed with the worst harmonic margin test plot)**

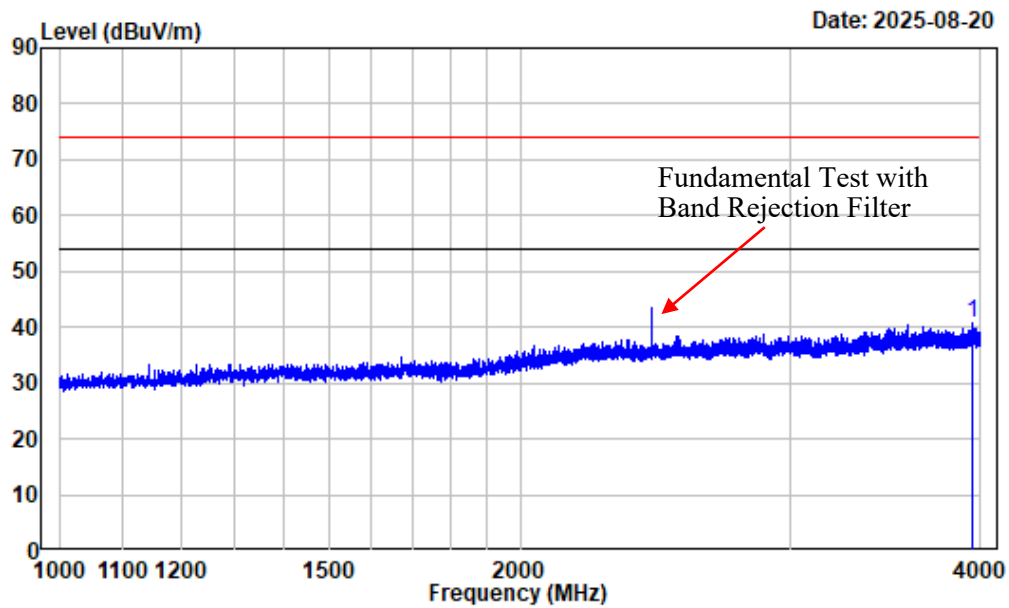
1-4GHz\_Horizontal-3DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2441

| Freq Factor |          | Read Level |        | Limit  | Over  | Remark      |
|-------------|----------|------------|--------|--------|-------|-------------|
| MHz         | dB/m     | dBuV       | dBuV/m | dBuV/m | dB    |             |
| 1           | 3752.844 | -9.61      | 49.66  | 40.05  | 74.00 | -33.95 Peak |

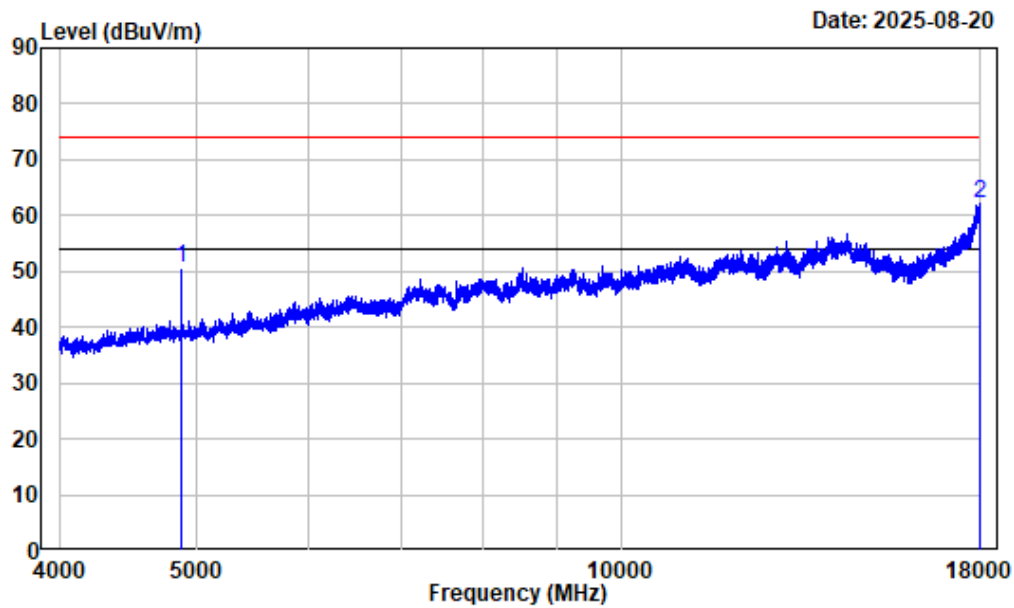
1-4GHz\_Vertical-3DH5



Condition : Vertical  
 Project No. : 2501V02265E-RF  
 Tester : Ive Wang  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : BT\_3DH5\_2441

| Freq Factor |       | Read  | Limit  | Over   | Remark      |
|-------------|-------|-------|--------|--------|-------------|
| Level       | Level | Line  | Limit  | Limit  |             |
| MHz         | dB/m  | dBuV  | dBuV/m | dBuV/m | dB          |
| 1 3956.495  | -9.32 | 50.10 | 40.78  | 74.00  | -33.22 Peak |

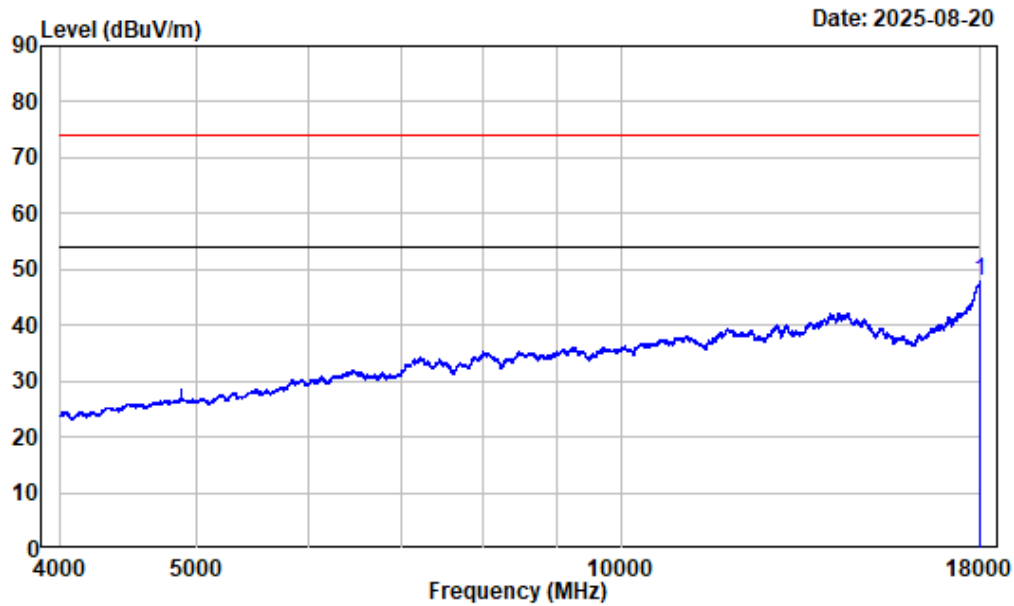
## 4-18GHz\_Horizontal\_Peak-3DH5



Condition : Horizontal  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2441

| Freq Factor |       | Read Level |        | Limit  | Over   | Remark |
|-------------|-------|------------|--------|--------|--------|--------|
| MHz         | dB/m  | dBuV       | dBuV/m | dBuV/m | dB     |        |
| 1 4882.000  | -7.59 | 58.22      | 50.63  | 74.00  | -23.37 | Peak   |
| 2 17996.500 | 13.19 | 48.89      | 62.08  | 74.00  | -11.92 | Peak   |

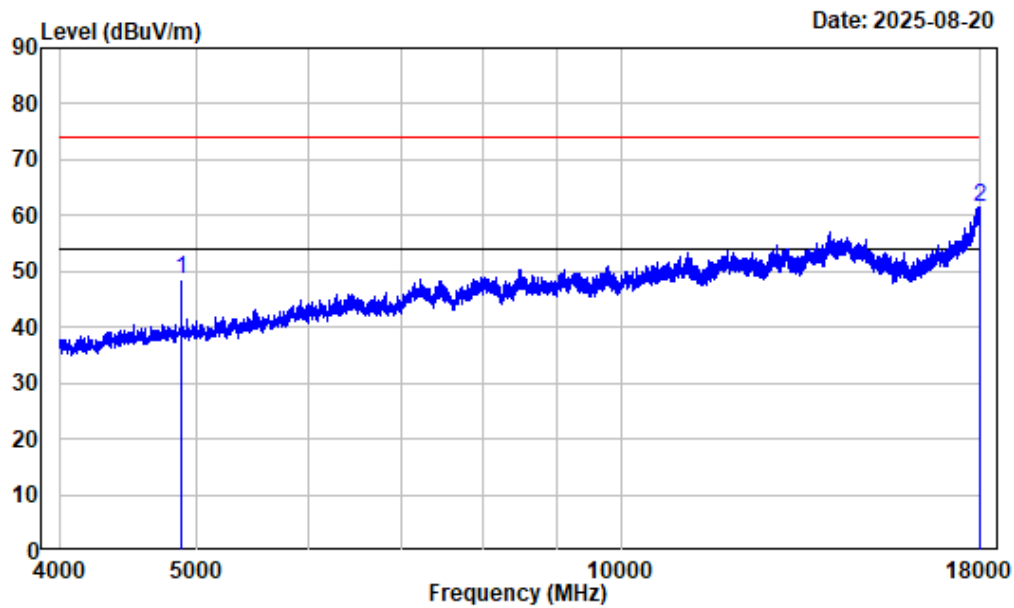
4-18GHz\_Horizontal\_Average-3DH5



Condition : Horizontal  
 Project No. : 2501V02265E-RF  
 Tester : Ive Wang  
 Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak  
 Note : BT\_3DH5\_2441

| Freq Factor |       | Read Level |        | Limit Line | Over Limit | Remark  |
|-------------|-------|------------|--------|------------|------------|---------|
| MHz         | dB/m  | dBuV       | dBuV/m | dBuV/m     | dB         |         |
| 1 17987.750 | 13.13 | 34.66      | 47.79  | 54.00      | -6.21      | Average |

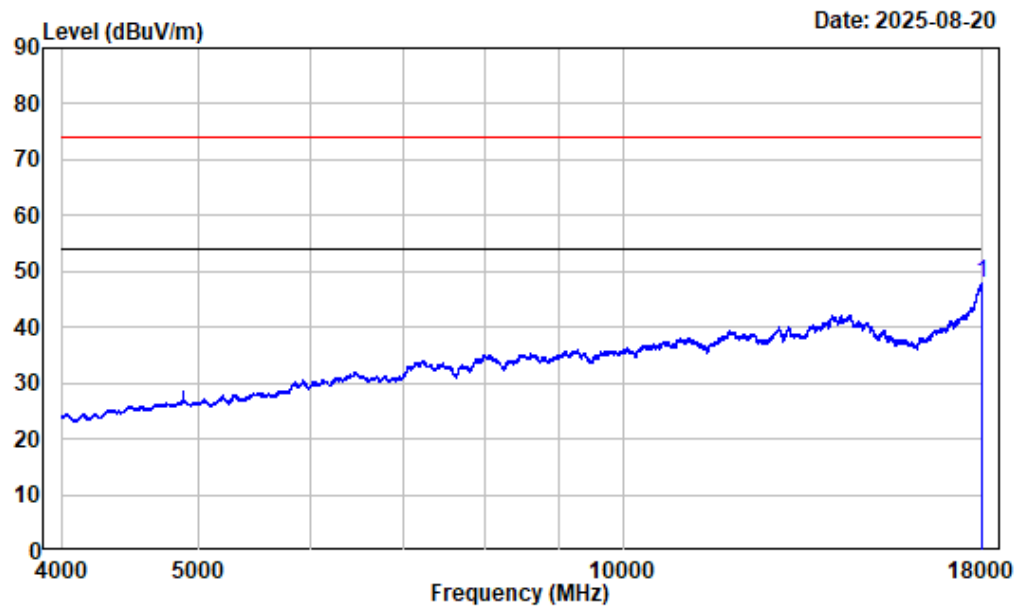
## 4-18GHz\_Vertical\_Peak-3DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2441

| Freq Factor |       | Read  |        | Limit  | Over   | Remark |
|-------------|-------|-------|--------|--------|--------|--------|
|             |       | Level | Level  | Line   | Limit  |        |
| MHz         | dB/m  | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 4882.000  | -7.59 | 56.01 | 48.42  | 74.00  | -25.58 | Peak   |
| 2 17982.500 | 13.11 | 48.44 | 61.55  | 74.00  | -12.45 | Peak   |

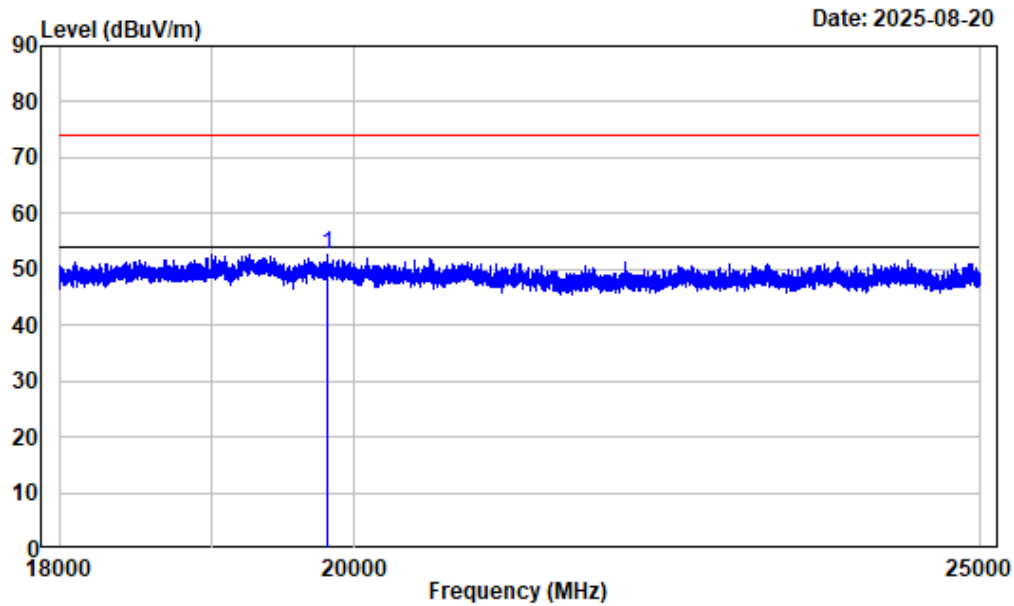
4-18GHz\_Vertical\_Average-3DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak  
Note : BT\_3DH5\_2441

| Freq Factor |           | Read Level |        | Limit  | Over  | Remark        |
|-------------|-----------|------------|--------|--------|-------|---------------|
| MHz         | dB/m      | dBuV       | dBuV/m | dBuV/m | dB    |               |
| 1           | 17998.850 | 13.20      | 34.70  | 47.90  | 54.00 | -6.10 Average |

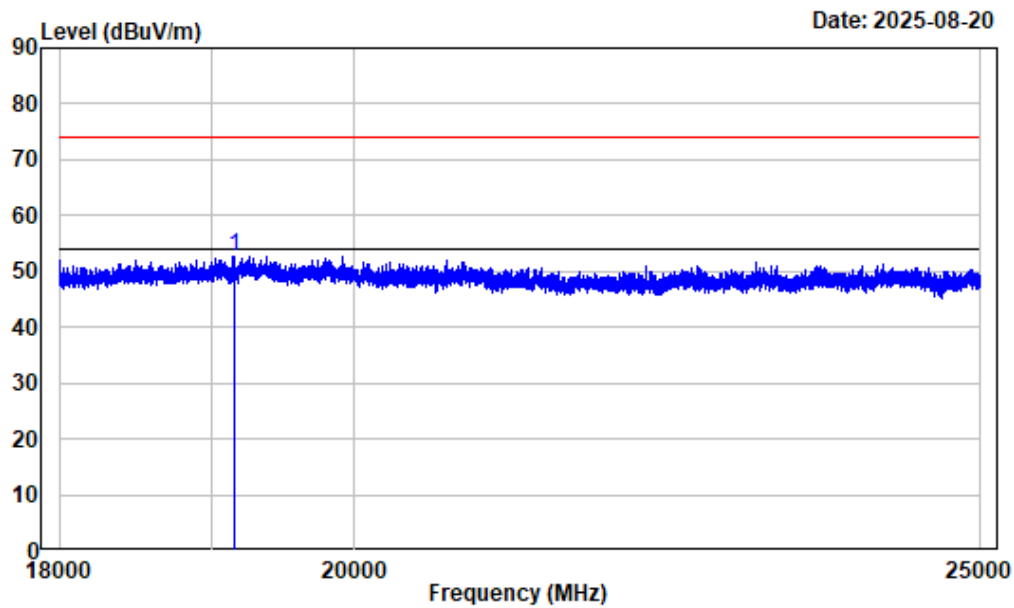
18-25GHz\_Horizontal-3DH5



Condition : Horizontal  
 Project No. : 2501V02265E-RF  
 Tester : Ive Wang  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : BT\_3DH5\_2441

| Freq Factor |       | Read  | Limit  | Over   | Remark      |
|-------------|-------|-------|--------|--------|-------------|
|             |       | Level | Level  | Line   |             |
| MHz         | dB/m  | dBuV  | dBuV/m | dBuV/m | dB          |
| 1 19802.720 | 15.21 | 37.39 | 52.60  | 74.00  | -21.40 peak |

## 18-25GHz\_Vertical-3DH5



Condition : Vertical  
Project No. : 2501V02265E-RF  
Tester : Ive Wang  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : BT\_3DH5\_2441

| Freq Factor |       | Read  | Limit  | Over   | Remark      |
|-------------|-------|-------|--------|--------|-------------|
|             |       | Level | Level  | Line   |             |
| MHz         | dB/m  | dBuV  | dBuV/m | dBuV/m | dB          |
| 1 19160.390 | 15.35 | 37.42 | 52.77  | 74.00  | -21.23 peak |

**20 dB Emission Bandwidth****Test Information:**

|                    |             |                     |                       |
|--------------------|-------------|---------------------|-----------------------|
| <b>Sample No.:</b> | 3621-3      | <b>Test Date:</b>   | 2025/07/24~2025/07/26 |
| <b>Test Site:</b>  | RF          | <b>Test Mode:</b>   | Transmitting          |
| <b>Tester:</b>     | Rainbow Zhu | <b>Test Result:</b> | N/A                   |

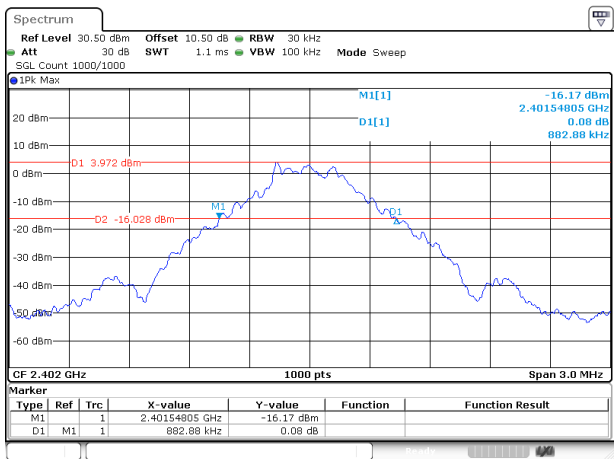
**Environmental Conditions:**

|                             |           |                                  |       |                               |           |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|-----------|
| <b>Temperature:</b><br>(°C) | 24.8~25.5 | <b>Relative Humidity:</b><br>(%) | 56~57 | <b>ATM Pressure:</b><br>(kPa) | 99.3~99.5 |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|-----------|

**Test Data:**

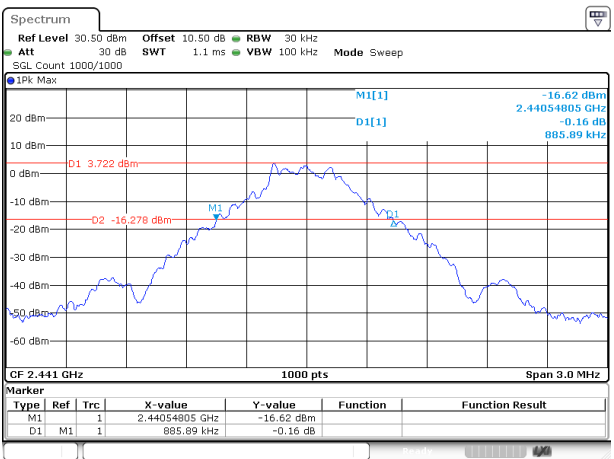
| <b>Mode</b> | <b>Channel</b> | <b>Result (MHz)</b> |
|-------------|----------------|---------------------|
| DH1         | Low Channel    | 0.883               |
|             | Middle Channel | 0.886               |
|             | High Channel   | 0.886               |
| 2DH1        | Low Channel    | <b>1.256</b>        |
|             | Middle Channel | <b>1.256</b>        |
|             | High Channel   | <b>1.256</b>        |
| 3DH1        | Low Channel    | 1.249               |
|             | Middle Channel | 1.249               |
|             | High Channel   | 1.245               |

DH1\_Low



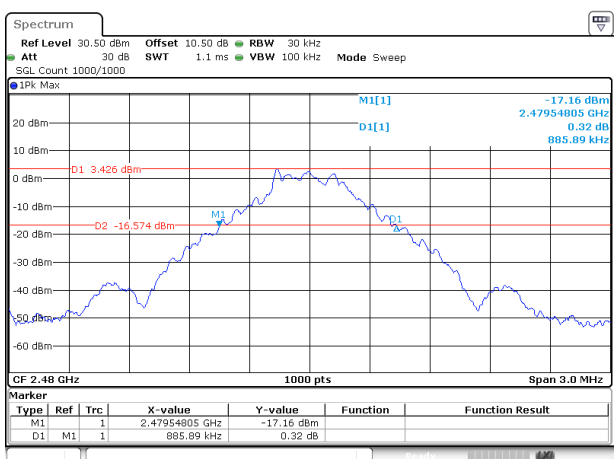
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:24:59

DH1\_Middle



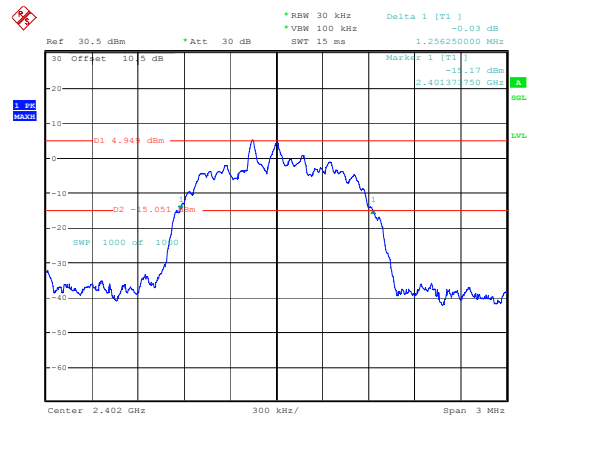
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:31:33

DH1\_High



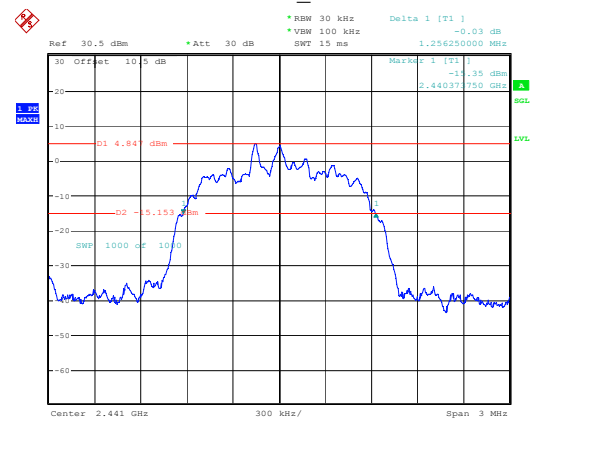
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:35:54

2DH1\_Low



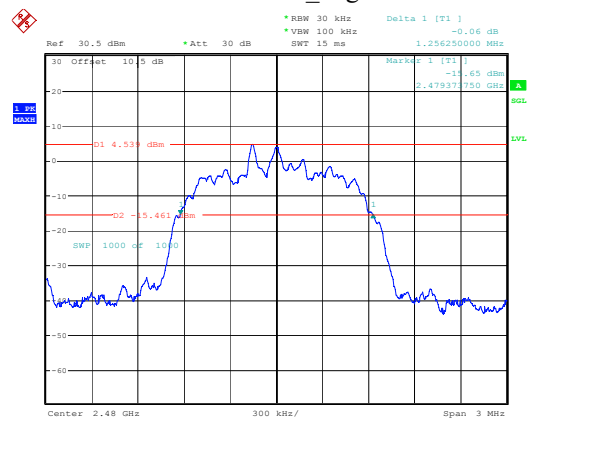
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 16:05:57

2DH1\_Middle



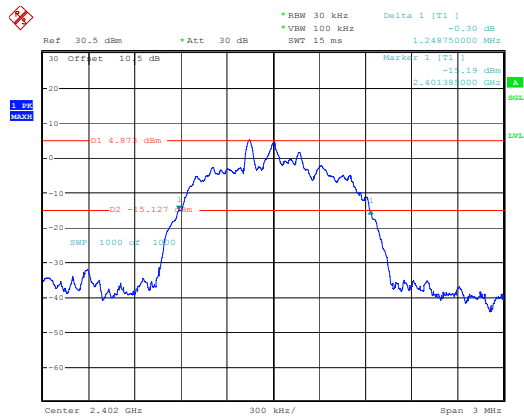
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:13:39

2DH1\_High



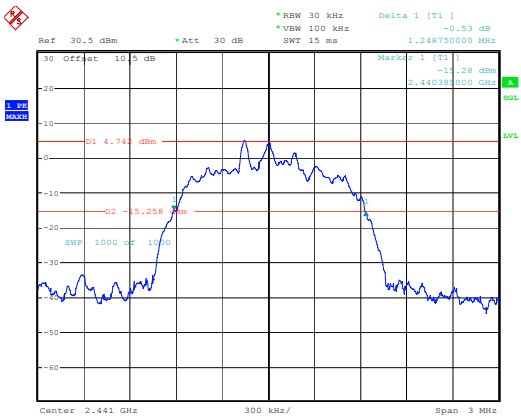
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:16:15

3DH1\_Low



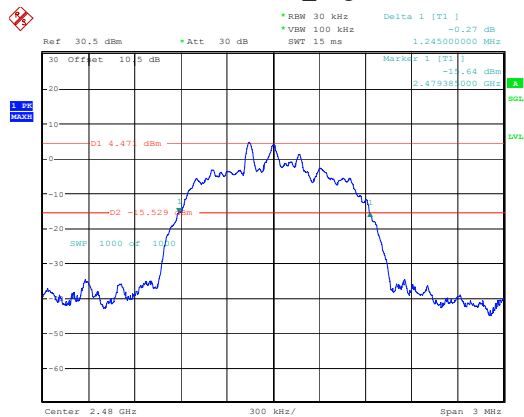
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:22:37

3DH1\_Middle



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:26:54

3DH1\_High



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:29:48

**99% Occupied Bandwidth****Test Information:**

|                    |             |                     |                       |
|--------------------|-------------|---------------------|-----------------------|
| <b>Sample No.:</b> | 3621-3      | <b>Test Date:</b>   | 2025/07/24~2025/07/26 |
| <b>Test Site:</b>  | RF          | <b>Test Mode:</b>   | Transmitting          |
| <b>Tester:</b>     | Rainbow Zhu | <b>Test Result:</b> | N/A                   |

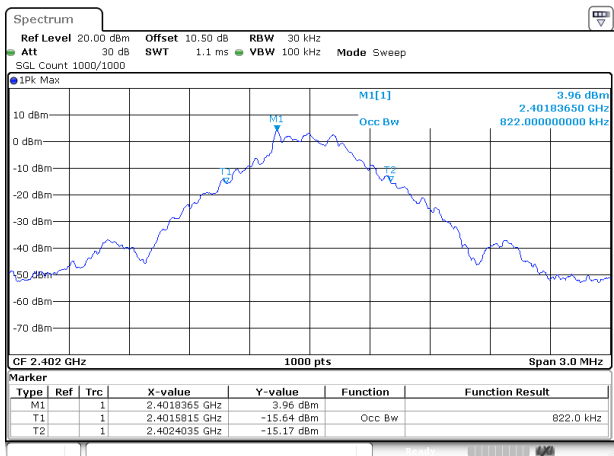
**Environmental Conditions:**

|                             |           |                                  |       |                               |           |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|-----------|
| <b>Temperature:</b><br>(°C) | 24.8~25.5 | <b>Relative Humidity:</b><br>(%) | 56~57 | <b>ATM Pressure:</b><br>(kPa) | 99.3~99.5 |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|-----------|

**Test Data:**

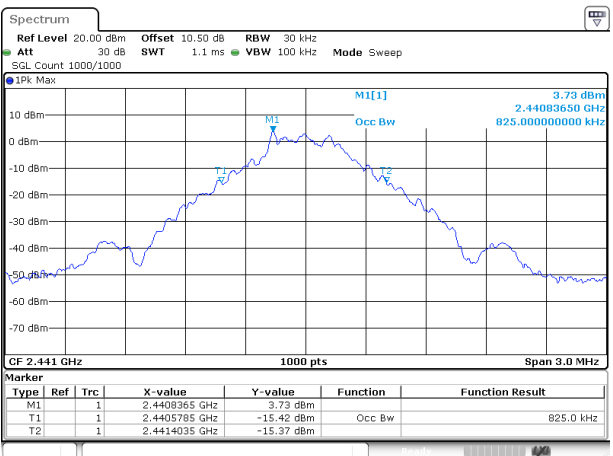
| <b>Mode</b> | <b>Channel</b> | <b>99% OBW<br/>(MHz)</b> |
|-------------|----------------|--------------------------|
| DH1         | Low Channel    | 0.822                    |
|             | Middle Channel | 0.825                    |
|             | High Channel   | 0.822                    |
| 2DH1        | Low Channel    | <b>1.170</b>             |
|             | Middle Channel | <b>1.170</b>             |
|             | High Channel   | 1.166                    |
| 3DH1        | Low Channel    | 1.159                    |
|             | Middle Channel | 1.159                    |
|             | High Channel   | 1.159                    |

DH1\_Low



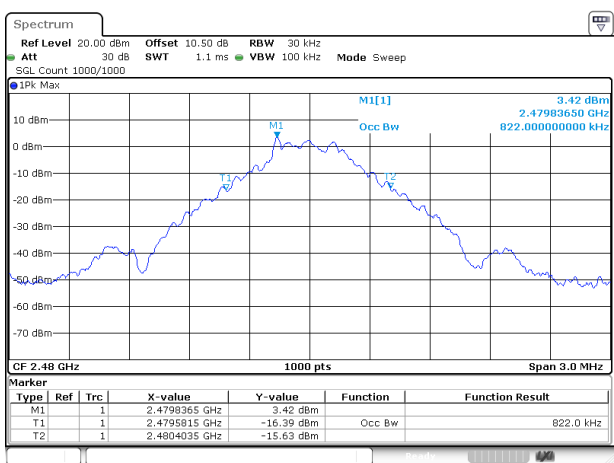
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:25:15

DH1\_Middle



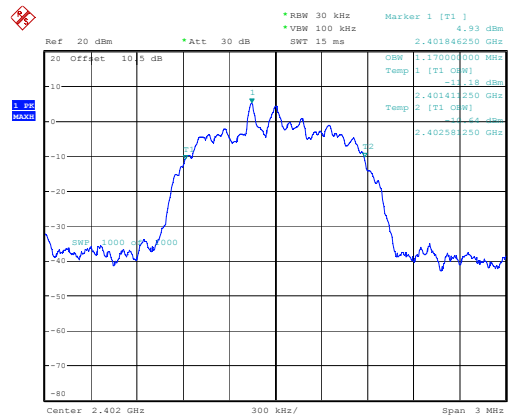
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:31:49

DH1\_High



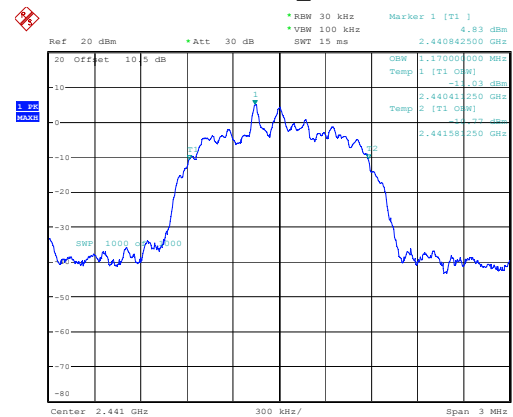
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:36:11

2DH1\_Low



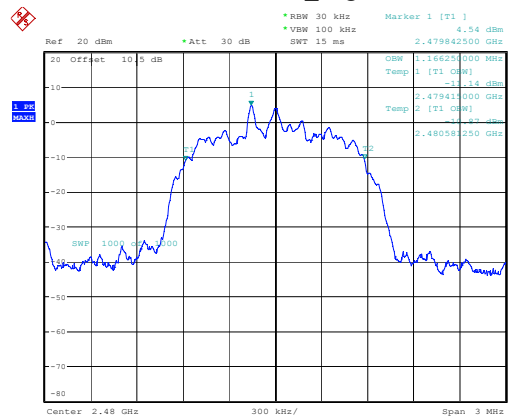
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 16:06:38

2DH1\_Middle

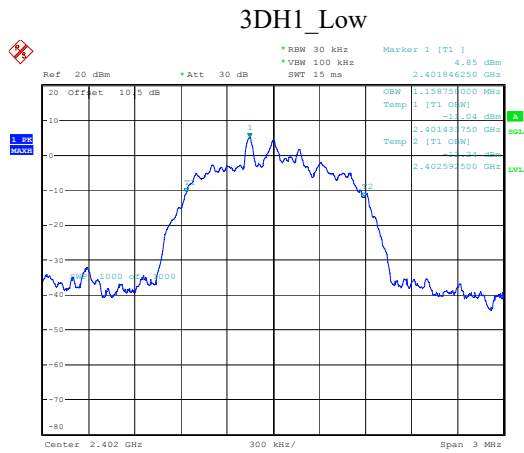


ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:14:14

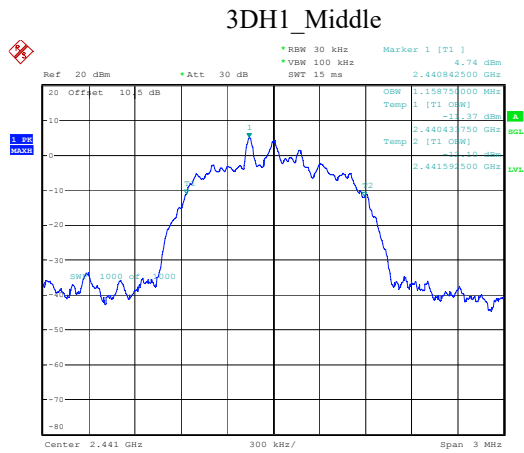
2DH1\_High



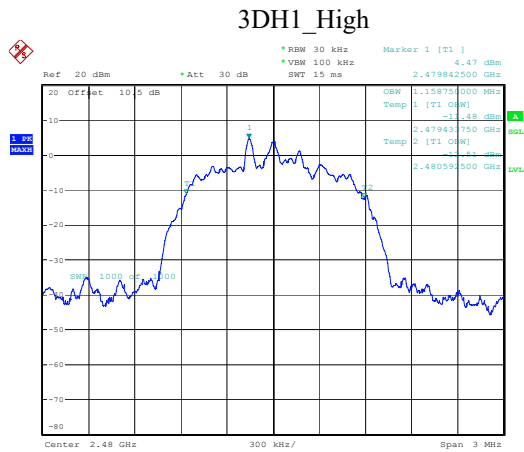
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:16:49



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:23:15



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:27:28



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:30:25

### Channel Separation

#### Test Information:

|             |             |              |              |
|-------------|-------------|--------------|--------------|
| Sample No.: | 3621-3      | Test Date:   | 2025/07/26   |
| Test Site:  | RF          | Test Mode:   | Transmitting |
| Tester:     | Rainbow Zhu | Test Result: | Pass         |

#### Environmental Conditions:

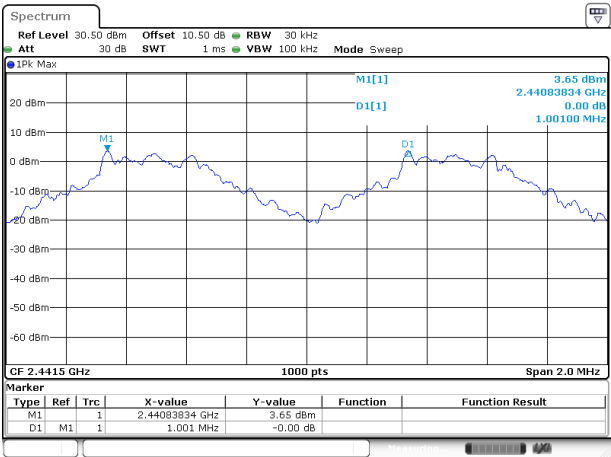
|                      |      |                              |    |                        |      |
|----------------------|------|------------------------------|----|------------------------|------|
| Temperature:<br>(°C) | 25.5 | Relative<br>Humidity:<br>(%) | 57 | ATM Pressure:<br>(kPa) | 99.5 |
|----------------------|------|------------------------------|----|------------------------|------|

#### Test Data:

| Mode | Channel        | Result (MHz) | Limit (MHz) | Verdict |
|------|----------------|--------------|-------------|---------|
| DH1  | Middle Channel | 1.001        | 0.837       | Pass    |

**Note:** Only the BDR (GFSK) mode result is reported since EDR ( $\pi/4$ -DQPSK) and EDR (8DPSK) modes have the exact same channel plan, and the limit is the maximum 20dB bandwidth \*2/3.

DH1\_Middle



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:43:37

**Number of Hopping Frequency****Test Information:**

|                    |             |                     |                       |
|--------------------|-------------|---------------------|-----------------------|
| <b>Sample No.:</b> | 3621-3      | <b>Test Date:</b>   | 2025/07/24~2025/09/03 |
| <b>Test Site:</b>  | RF          | <b>Test Mode:</b>   | Transmitting          |
| <b>Tester:</b>     | Rainbow Zhu | <b>Test Result:</b> | Pass                  |

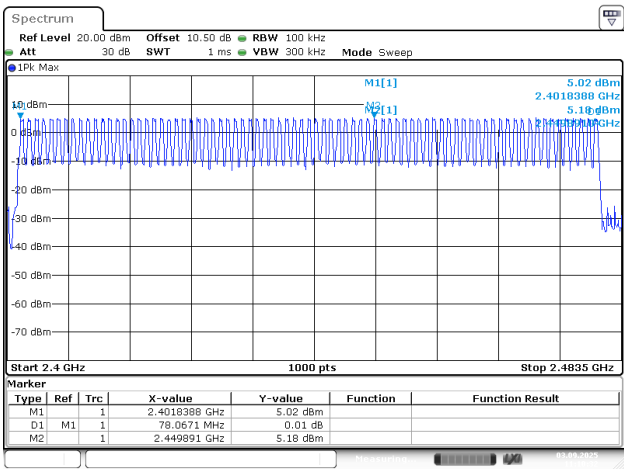
**Environmental Conditions:**

|                             |           |                                  |       |                               |            |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|------------|
| <b>Temperature:</b><br>(°C) | 24.8~27.1 | <b>Relative Humidity:</b><br>(%) | 51~57 | <b>ATM Pressure:</b><br>(kPa) | 99.3~100.1 |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|------------|

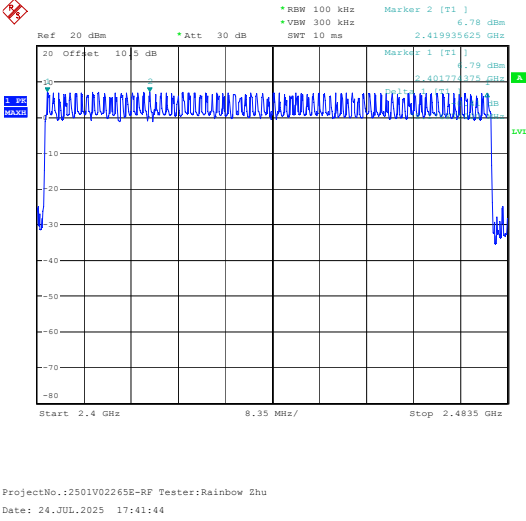
**Test Data:**

| <b>Mode</b> | <b>Channel</b>  | <b>Result</b> | <b>Limit</b> | <b>Verdict</b> |
|-------------|-----------------|---------------|--------------|----------------|
| DH1         | Hopping Channel | <b>79</b>     | 15           | Pass           |
| 2DH1        | Hopping Channel | <b>79</b>     | 15           | Pass           |
| 3DH1        | Hopping Channel | <b>79</b>     | 15           | Pass           |

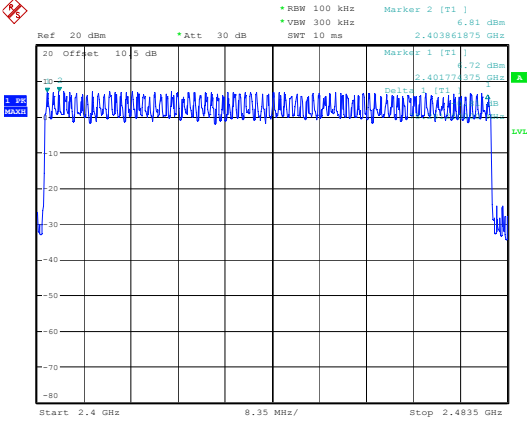
DH1\_Hopping



2DH1\_Hopping



3DH1\_Hopping



**Maximum Conducted Output Power****Test Information:**

|                    |             |                     |                       |
|--------------------|-------------|---------------------|-----------------------|
| <b>Sample No.:</b> | 3621-3      | <b>Test Date:</b>   | 2025/07/24~2025/07/26 |
| <b>Test Site:</b>  | RF          | <b>Test Mode:</b>   | Transmitting          |
| <b>Tester:</b>     | Rainbow Zhu | <b>Test Result:</b> | Pass                  |

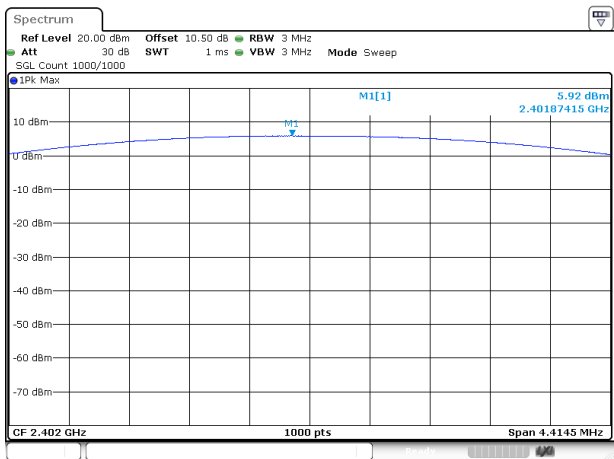
**Environmental Conditions:**

|                              |           |                                       |       |                                |           |
|------------------------------|-----------|---------------------------------------|-------|--------------------------------|-----------|
| <b>Temperature:<br/>(°C)</b> | 24.8~25.5 | <b>Relative<br/>Humidity:<br/>(%)</b> | 56~57 | <b>ATM Pressure:<br/>(kPa)</b> | 99.3~99.5 |
|------------------------------|-----------|---------------------------------------|-------|--------------------------------|-----------|

**Test Data:**

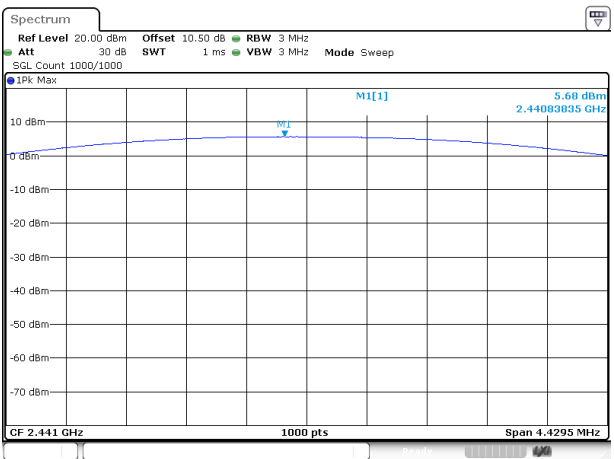
| <b>Mode</b> | <b>Test Frequency<br/>(MHz)</b> | <b>Peak Output Power<br/>(dBm)</b> | <b>Limit<br/>(dBm)</b> | <b>Verdict</b> |
|-------------|---------------------------------|------------------------------------|------------------------|----------------|
| DH1         | 2402                            | 5.92                               | 21.00                  | Pass           |
|             | 2441                            | 5.68                               | 21.00                  | Pass           |
|             | 2480                            | 5.36                               | 21.00                  | Pass           |
| 2DH1        | 2402                            | 7.60                               | 21.00                  | Pass           |
|             | 2441                            | 7.54                               | 21.00                  | Pass           |
|             | 2480                            | 7.28                               | 21.00                  | Pass           |
| 3DH1        | 2402                            | <b>7.96</b>                        | 21.00                  | Pass           |
|             | 2441                            | 7.91                               | 21.00                  | Pass           |
|             | 2480                            | 7.69                               | 21.00                  | Pass           |

DH1\_Low



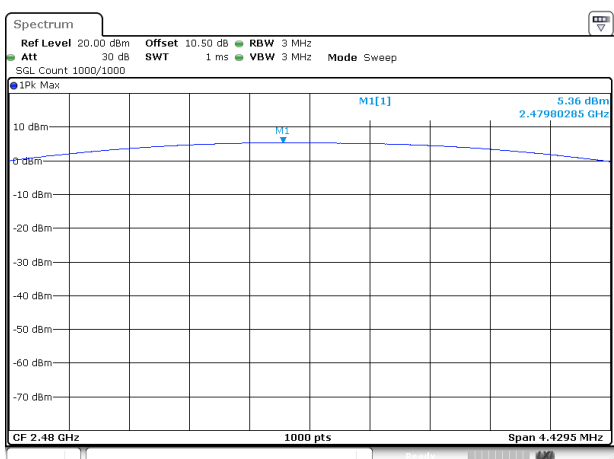
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:25:27

DH1\_Middle



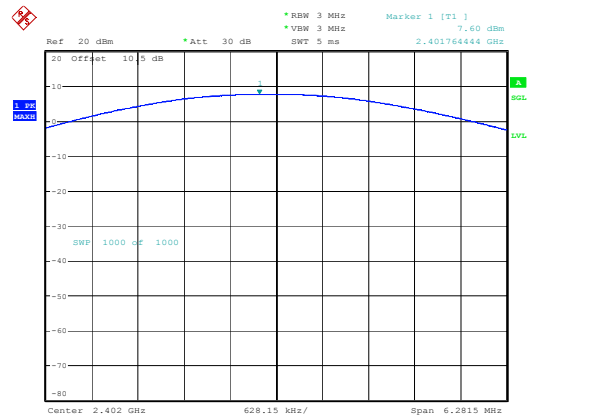
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:32:58

DH1\_High



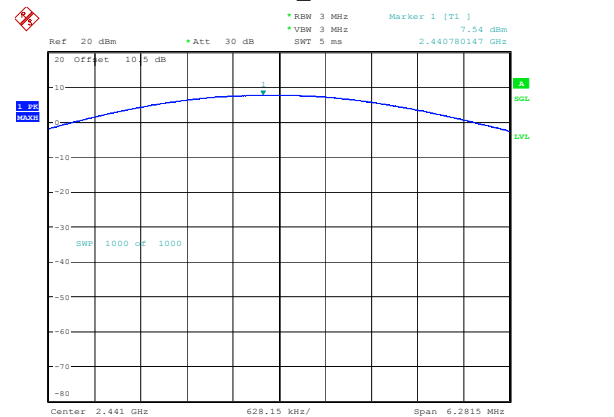
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:36:58

2DH1\_Low



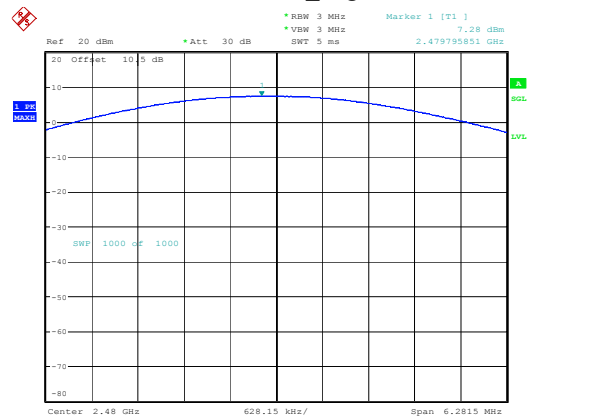
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 16:07:01

2DH1\_Middle

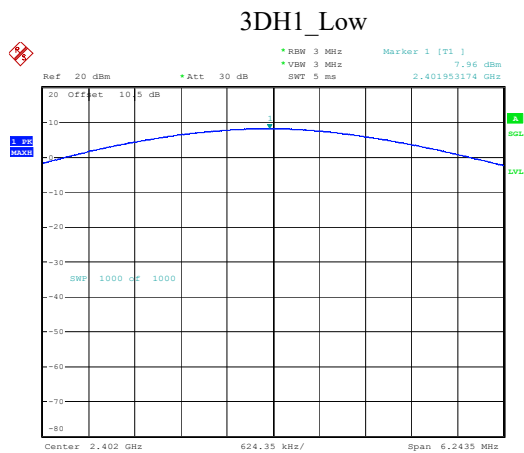


ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:14:58

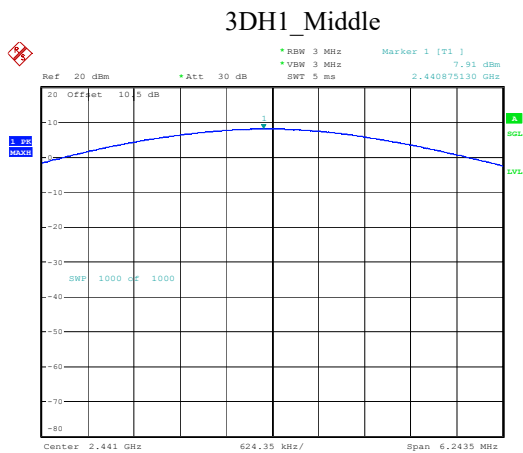
2DH1\_High



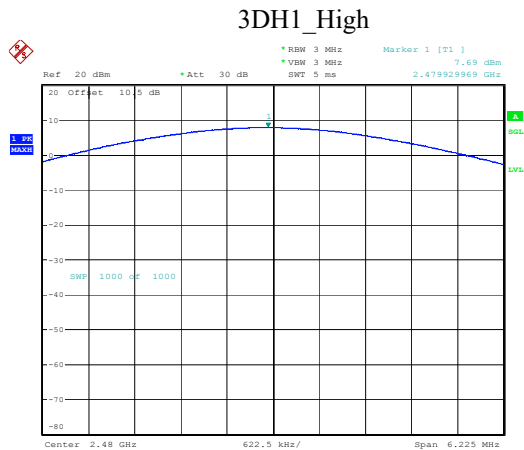
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:17:09



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:23:35



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:28:01



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:31:01

# 100 kHz Bandwidth of Frequency Band Edge

## Test Information:

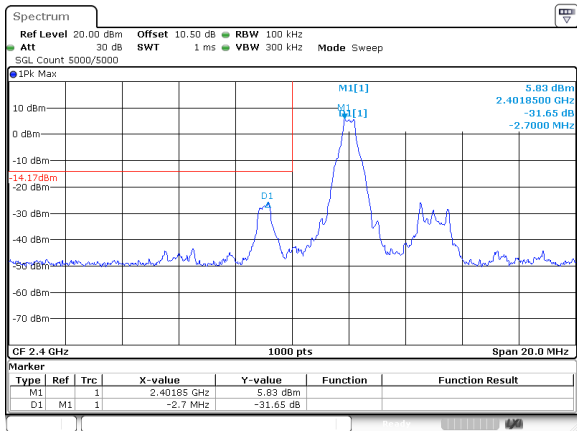
|             |             |              |                       |
|-------------|-------------|--------------|-----------------------|
| Sample No.: | 3621-3      | Test Date:   | 2025/07/24~2025/07/26 |
| Test Site:  | RF          | Test Mode:   | Transmitting          |
| Tester:     | Rainbow Zhu | Test Result: | Pass                  |

## Environmental Conditions:

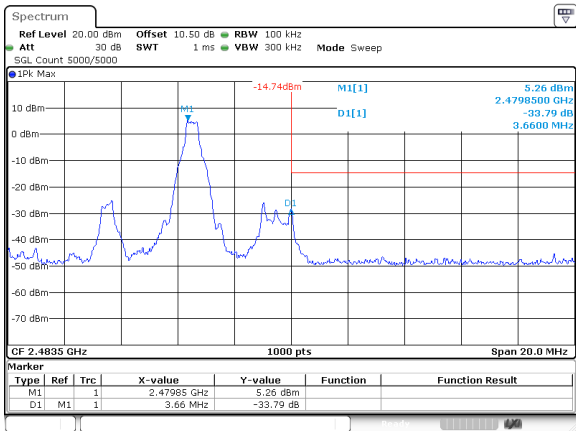
|                      |           |                           |       |                        |           |
|----------------------|-----------|---------------------------|-------|------------------------|-----------|
| Temperature:<br>(°C) | 24.8~25.5 | Relative Humidity:<br>(%) | 56~57 | ATM Pressure:<br>(kPa) | 99.3~99.5 |
|----------------------|-----------|---------------------------|-------|------------------------|-----------|

## Test Data:

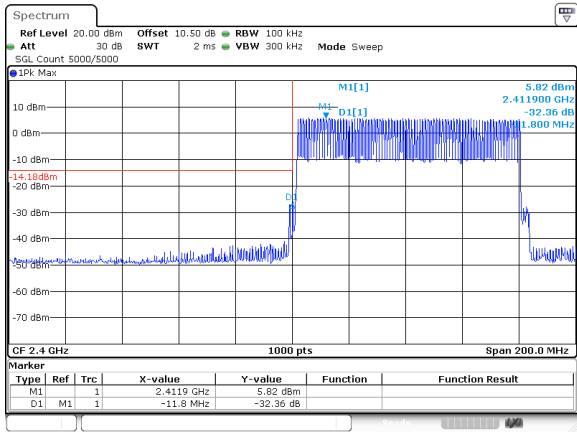
DH1\_Low



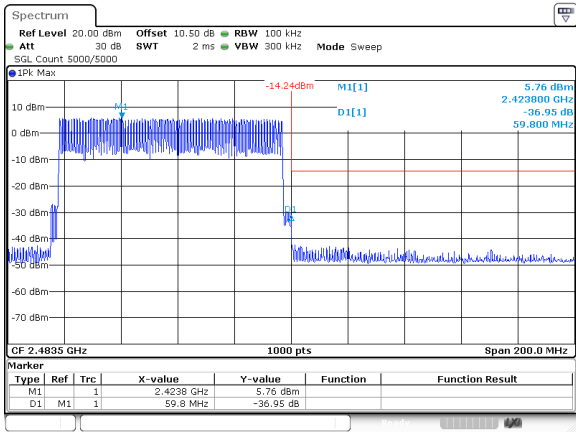
DH1\_High



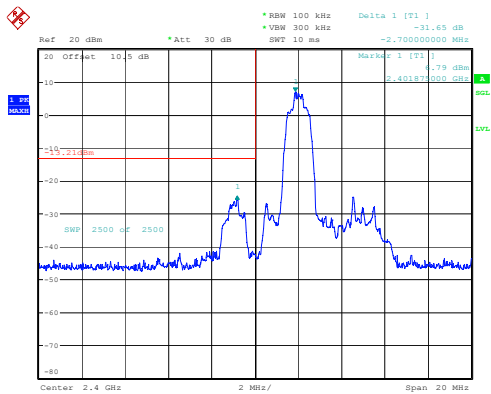
DH1\_Hopping\_Lower



DH1\_Hopping\_Upper

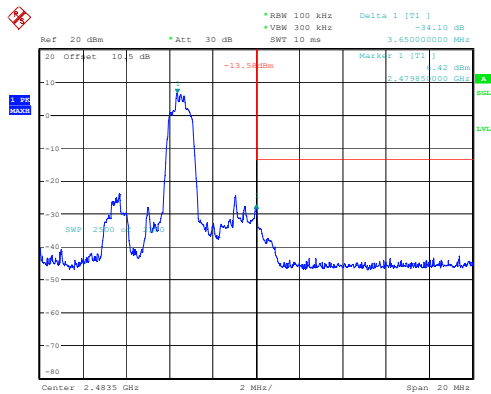


2DH1\_Low



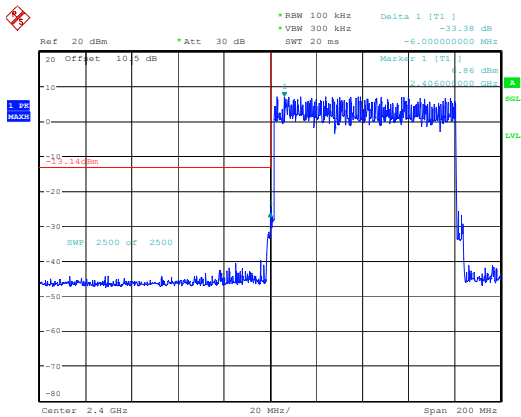
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 16:08:47

2DH1\_High



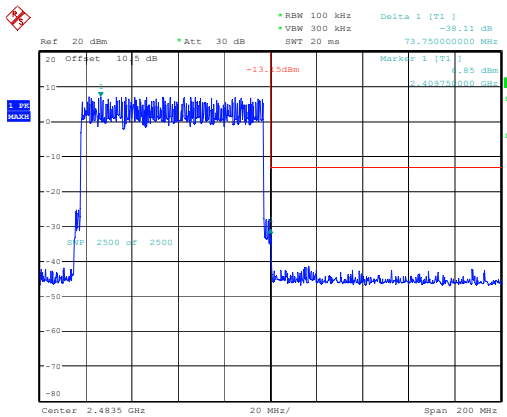
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:18:54

2DH1\_Hopping\_Lower



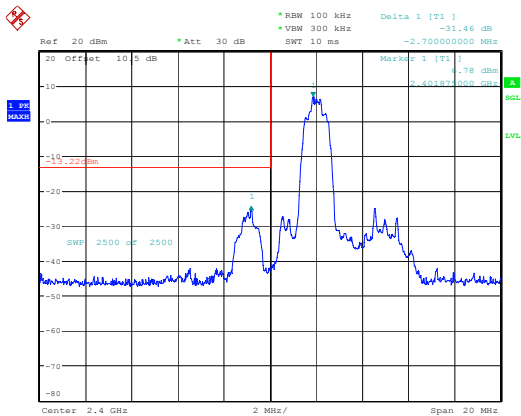
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:47:56

2DH1\_Hopping\_Upper



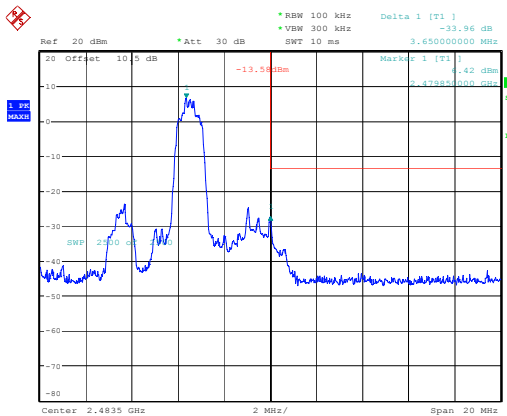
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:50:41

3DH1\_Low

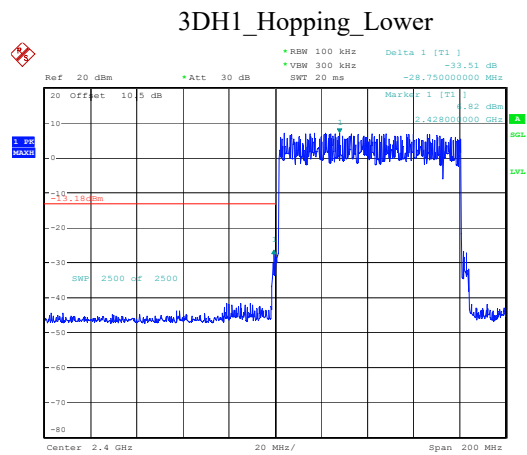


ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:25:23

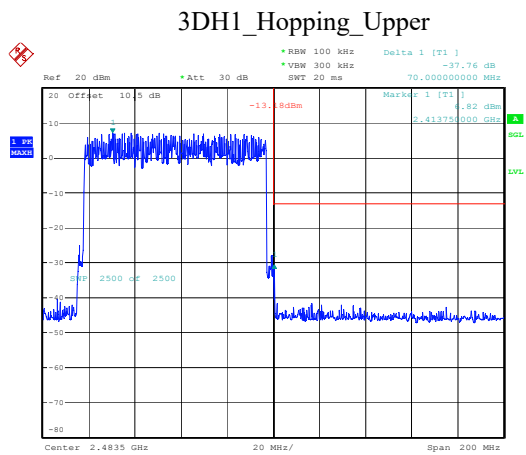
3DH1\_High



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:33:01



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:52:43



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:54:20

**Time of Occupancy (dwell time)****Test Information:**

|                    |             |                     |                       |
|--------------------|-------------|---------------------|-----------------------|
| <b>Sample No.:</b> | 3621-3      | <b>Test Date:</b>   | 2025/07/24~2025/07/26 |
| <b>Test Site:</b>  | RF          | <b>Test Mode:</b>   | Transmitting          |
| <b>Tester:</b>     | Rainbow Zhu | <b>Test Result:</b> | Pass                  |

**Environmental Conditions:**

|                              |           |                                       |       |                                |           |
|------------------------------|-----------|---------------------------------------|-------|--------------------------------|-----------|
| <b>Temperature:<br/>(°C)</b> | 24.8~25.5 | <b>Relative<br/>Humidity:<br/>(%)</b> | 56~57 | <b>ATM Pressure:<br/>(kPa)</b> | 99.3~99.5 |
|------------------------------|-----------|---------------------------------------|-------|--------------------------------|-----------|

**Test Data:**

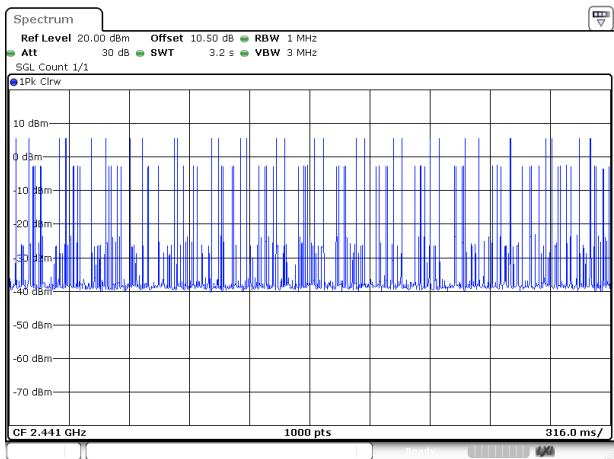
| Test Mode | Channel         | BurstWidth<br>(ms) | TotalHops<br>(Num) | Result<br>(s) | Limit<br>(s) | Verdict |
|-----------|-----------------|--------------------|--------------------|---------------|--------------|---------|
| DH1       | Hopping Channel | 0.381              | 310                | 0.118         | $\leq 0.4$   | Pass    |
| DH3       | Hopping Channel | 1.640              | 160                | 0.262         | $\leq 0.4$   | Pass    |
| DH5       | Hopping Channel | 2.893              | 130                | 0.376         | $\leq 0.4$   | Pass    |
| 2DH1      | Hopping Channel | 0.396              | 320                | 0.127         | $\leq 0.4$   | Pass    |
| 2DH3      | Hopping Channel | 1.652              | 150                | 0.248         | $\leq 0.4$   | Pass    |
| 2DH5      | Hopping Channel | <b>2.908</b>       | 90                 | 0.262         | $\leq 0.4$   | Pass    |
| 3DH1      | Hopping Channel | 0.396              | 320                | 0.127         | $\leq 0.4$   | Pass    |
| 3DH3      | Hopping Channel | 1.646              | 170                | 0.280         | $\leq 0.4$   | Pass    |
| 3DH5      | Hopping Channel | <b>2.908</b>       | 100                | 0.291         | $\leq 0.4$   | Pass    |

**Note 1:** A period time =  $0.4 \times 79 = 31.6(S)$ , Result = BurstWidth \* Totalhops

**Note 2:** Totalhops = Hopping Number in  $3.16s \times 10$

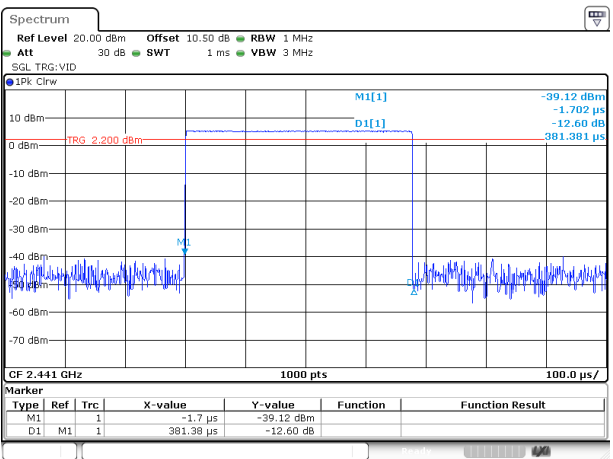
**Note 3:** Hopping Number in 3.16s = Total of highest signals in 3.16s(Second high signals were other channel)

DH1\_Hopping



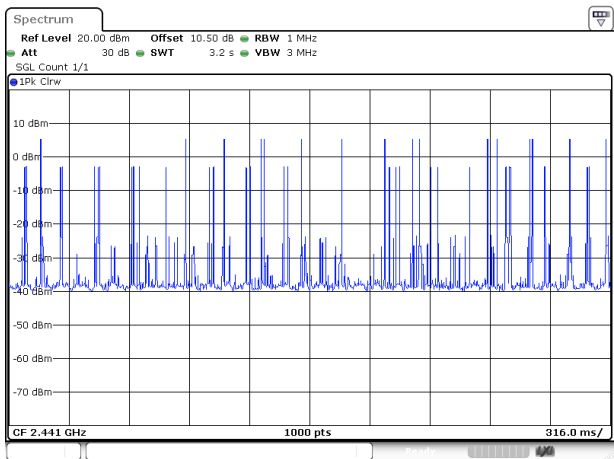
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 14:00:13

DH1\_Hopping



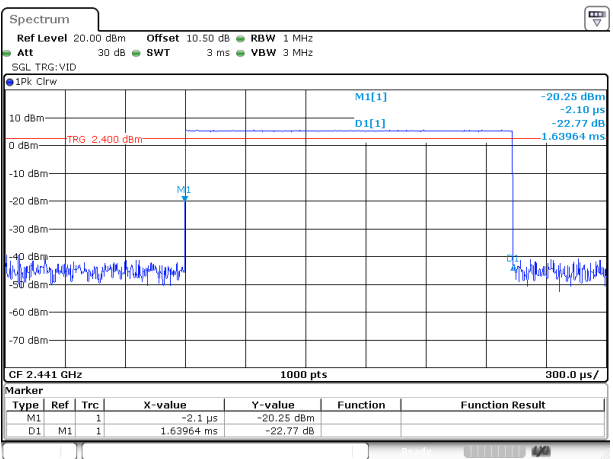
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 14:00:53

DH3\_Hopping



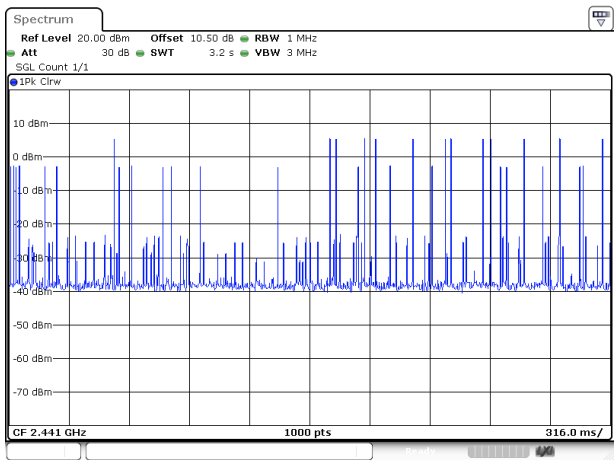
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 14:01:49

DH3\_Hopping



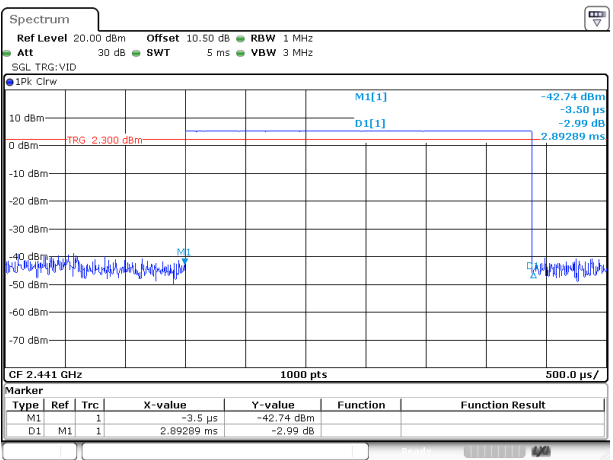
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 14:02:27

DH5\_Hopping



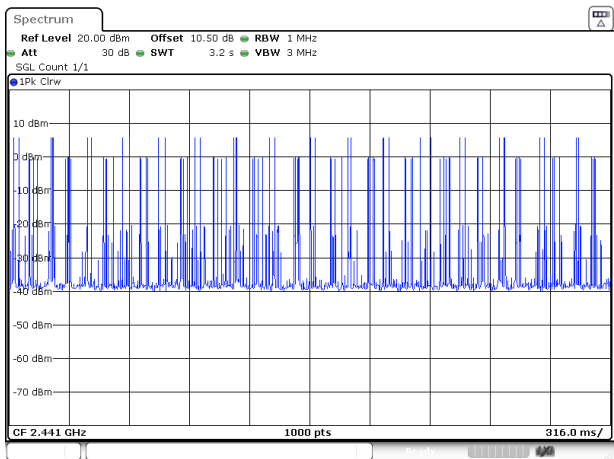
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 14:03:04

DH5\_Hopping



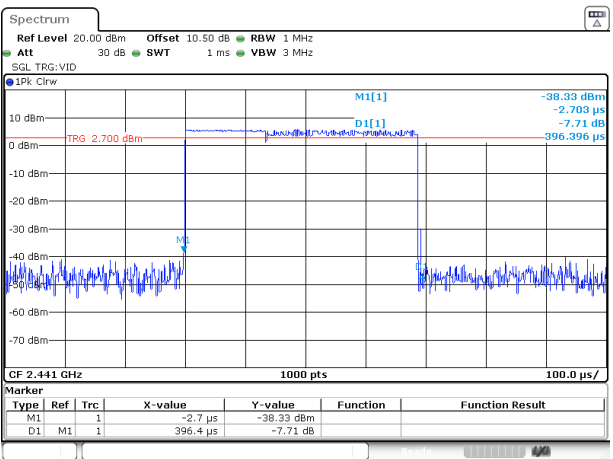
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 14:03:49

2DH1\_Hopping



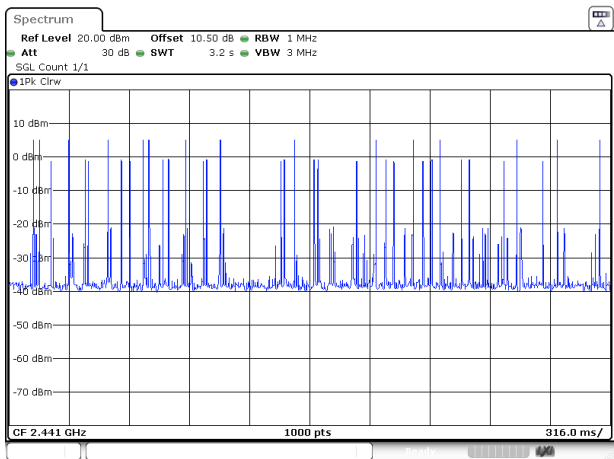
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 18:36:28

2DH1\_Hopping



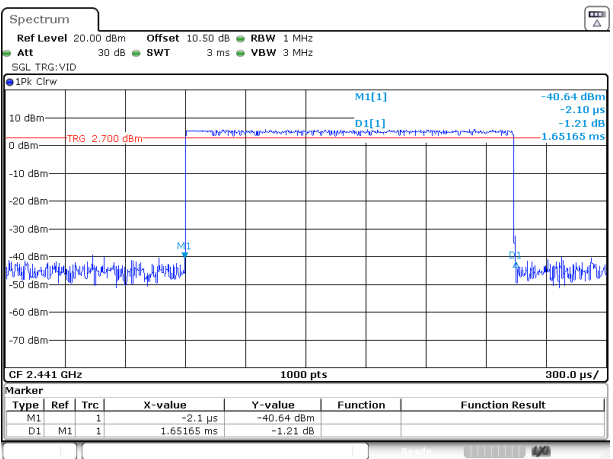
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 18:37:42

2DH3\_Hopping



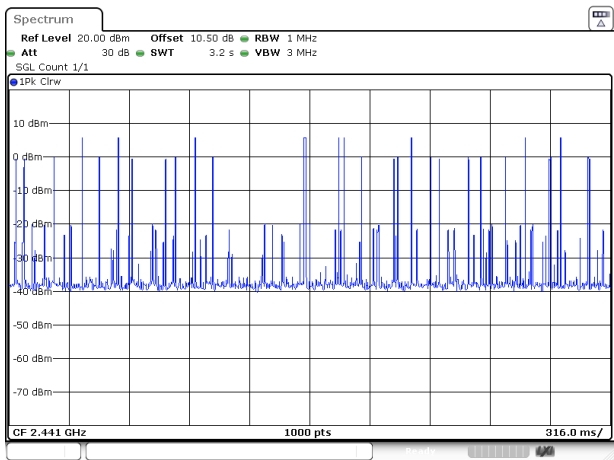
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Date: 24.JUL.2025 18:39:22

2DH3\_Hopping



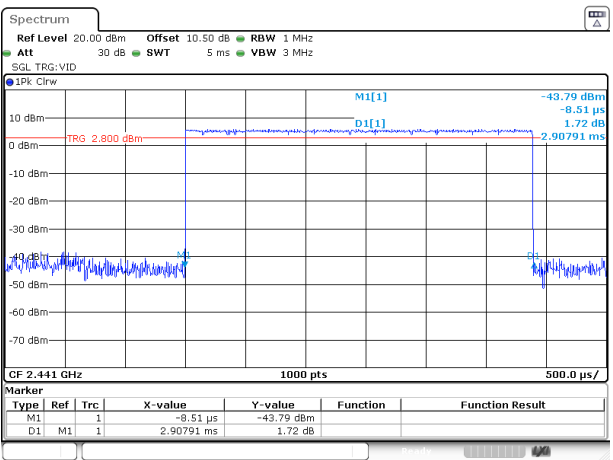
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Date: 24.JUL.2025 18:39:54

2DH5\_Hopping



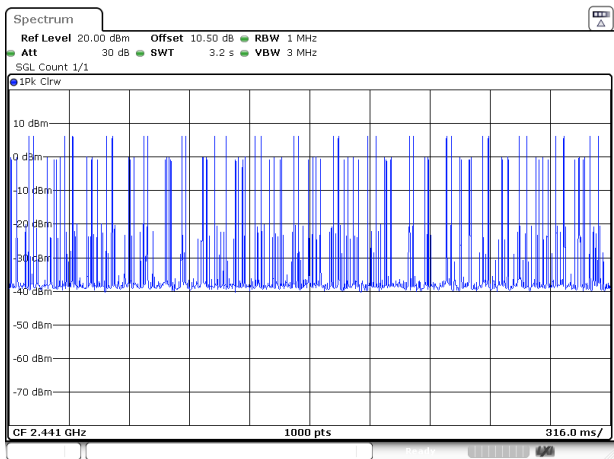
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Date: 24.JUL.2025 18:45:18

2DH5\_Hopping



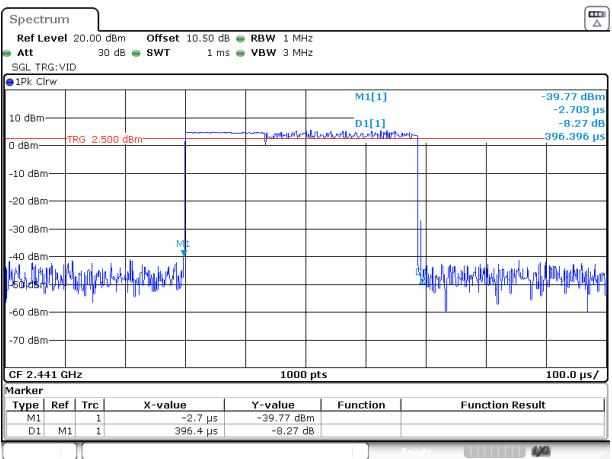
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Date: 24.JUL.2025 18:46:03

3DH1\_Hopping



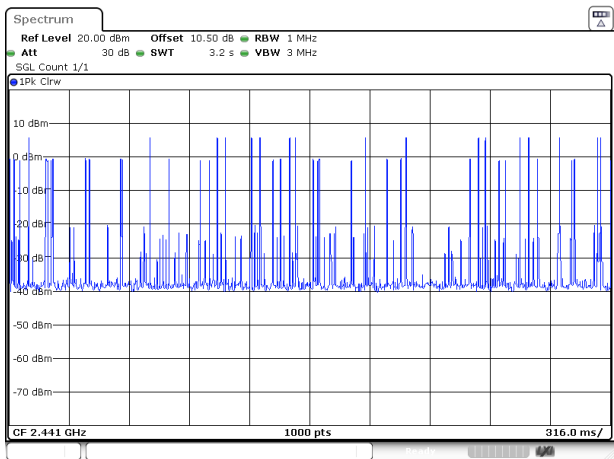
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 18:41:18

3DH1\_Hopping



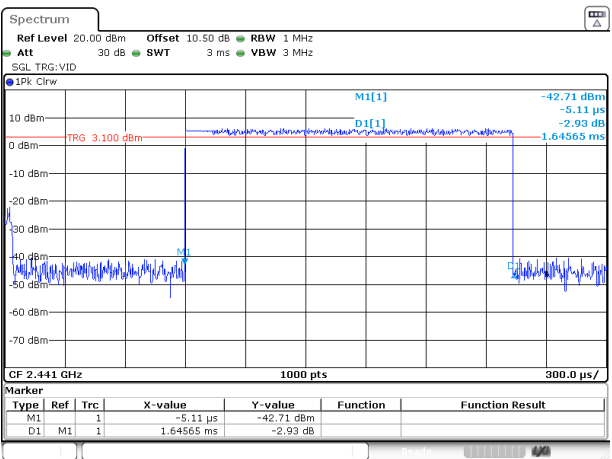
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Date: 24.JUL.2025 18:42:29

3DH3\_Hopping



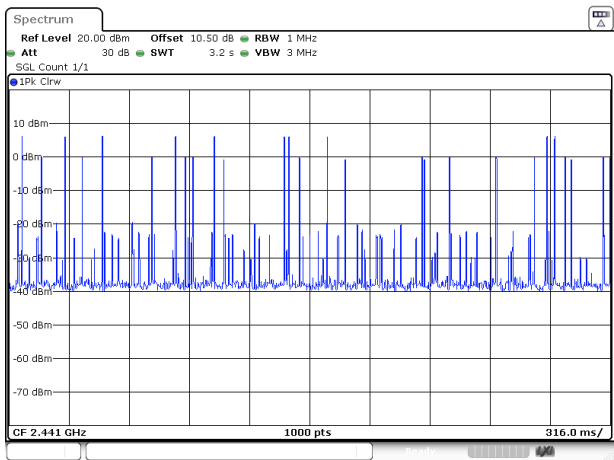
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Date: 24.JUL.2025 18:42:52

3DH3\_Hopping



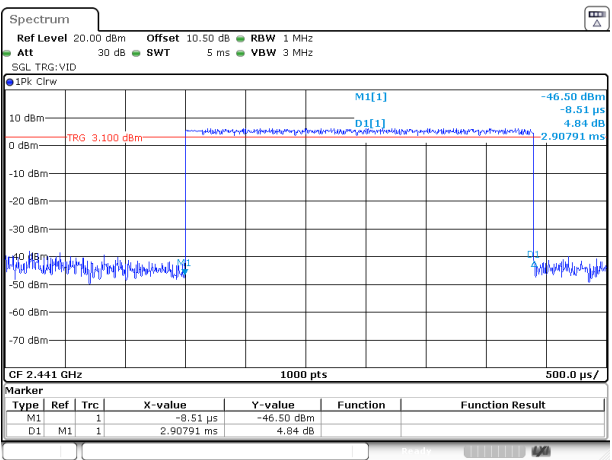
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 18:43:22

3DH5\_Hopping



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 18:43:39

3DH5\_Hopping



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 18:44:48

**Conducted Spurious Emission****Test Information:**

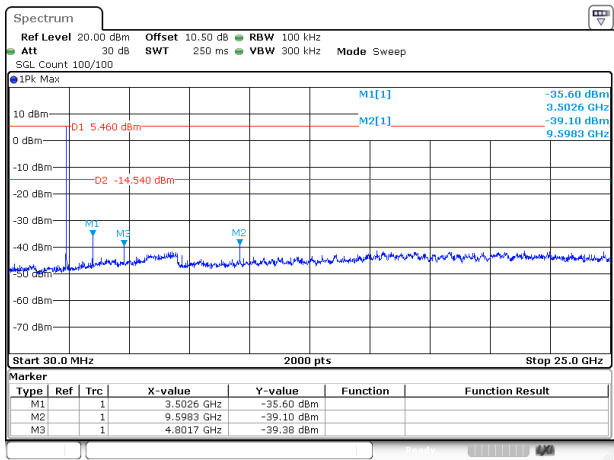
|                    |             |                     |                       |
|--------------------|-------------|---------------------|-----------------------|
| <b>Sample No.:</b> | 3621-3      | <b>Test Date:</b>   | 2025/07/24~2025/07/26 |
| <b>Test Site:</b>  | RF          | <b>Test Mode:</b>   | Transmitting          |
| <b>Tester:</b>     | Rainbow Zhu | <b>Test Result:</b> | Pass                  |

**Environmental Conditions:**

|                             |           |                                  |       |                               |           |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|-----------|
| <b>Temperature:</b><br>(°C) | 24.8~25.5 | <b>Relative Humidity:</b><br>(%) | 56~57 | <b>ATM Pressure:</b><br>(kPa) | 99.3~99.5 |
|-----------------------------|-----------|----------------------------------|-------|-------------------------------|-----------|

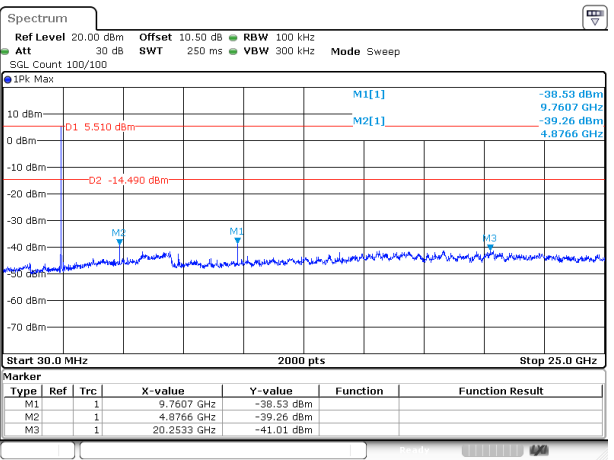
Test Data:

DH1\_Low



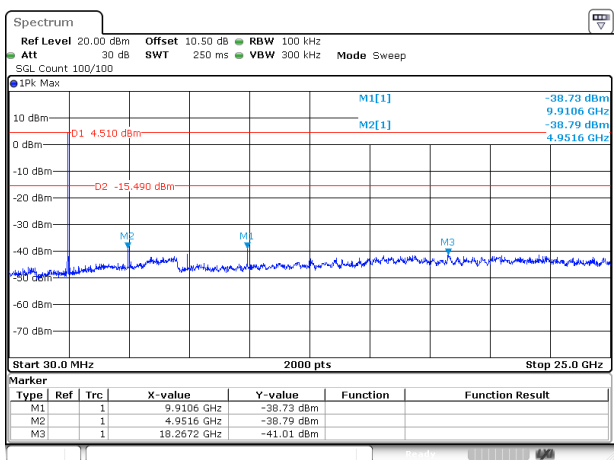
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:30:45

DH1\_Middle



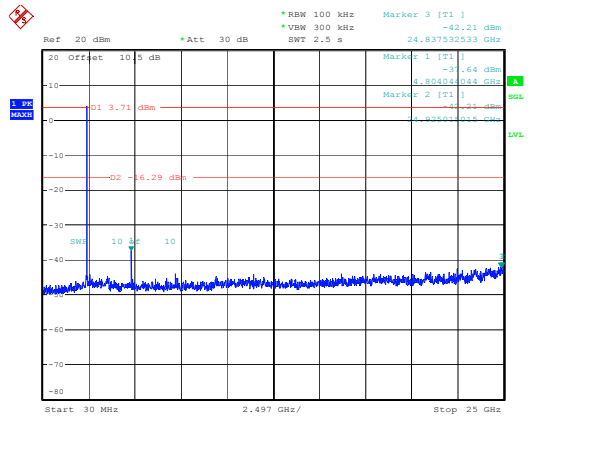
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:35:28

DH1\_High



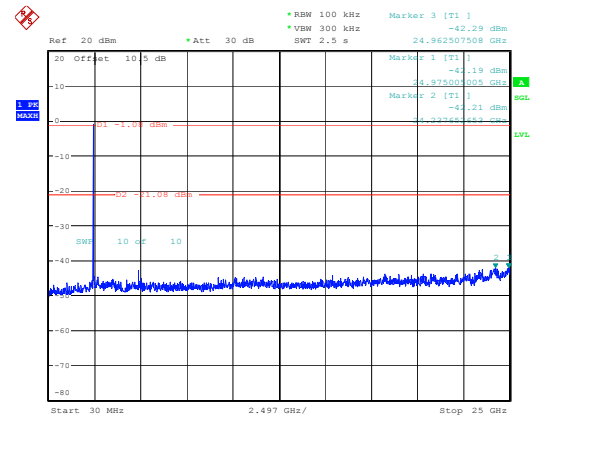
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 26.JUL.2025 13:41:22

2DH1\_Low



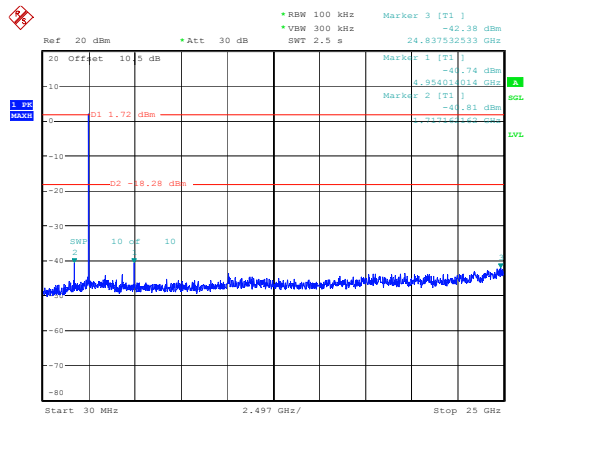
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:10:38

2DH1\_Middle



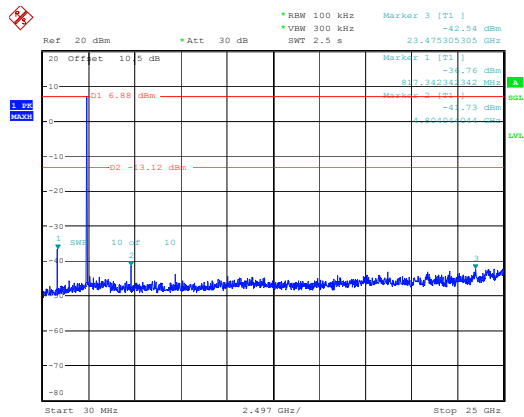
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:15:30

2DH1\_High



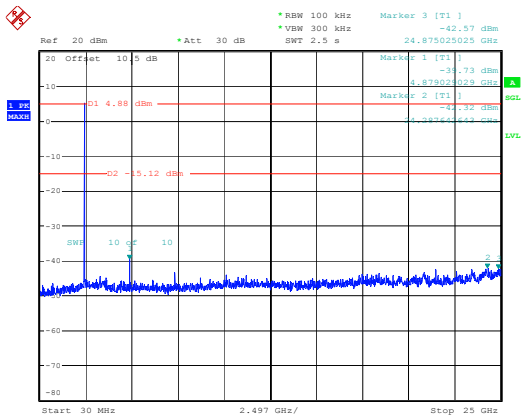
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:21:00

3DH1\_Low



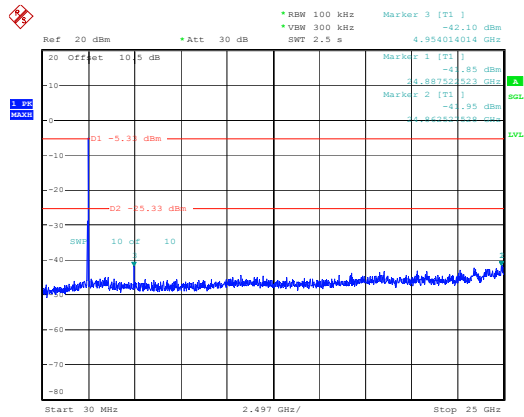
ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:25:56

3DH1\_Middle



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:28:36

3DH1\_High



ProjectNo.:2501V02265E-RF Tester:Rainbow Zhu  
Date: 24.JUL.2025 17:33:39

## RF EXPOSURE EVALUATION

### MPE-Based Exemption

#### 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 v01 Interim General RF Exposure Guidance

#### 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

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

**Result**

| Mode | Frequency<br>(MHz) | Tune up<br>conducted<br>power <sup>#</sup> (dBm) | Antenna Gain# |       | ERP   |      | Evaluation<br>Distance<br>(m) | ERP<br>Limit<br>(mW) |
|------|--------------------|--------------------------------------------------|---------------|-------|-------|------|-------------------------------|----------------------|
|      |                    |                                                  | (dBi)         | (dBd) | (dBm) | (mW) |                               |                      |
| BT   | 2402-2480          | 8.0                                              | -0.58         | -2.73 | 5.27  | 3.37 | 0.2                           | 768                  |

Note: The tune up conducted power and antenna gain was 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**

## **EUT PHOTOGRAPHS**

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Please refer to the attachment 2501V02265E-RF-EXP External photo and 2501V02265E-RF-INP Internal photo.

## **TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment 2501V02265E-RF-00-TSP Test Setup photo.

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