

# TEST REPORT

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Shenzhen, China  
Report Number: 2501V71889E-RFW-00B  
FCC ID: 2A7VD-H7071

## Test Standard (s)

FCC PART 15.247

## Sample Description

Product Type: Govee Outdoor Decoration Projector Light  
Model No.: H7071  
Multiple Model(s) No.: N/A  
Trade Mark: Govee  
Date Received: 2025/08/26  
Issue Date: 2025/09/17

Test Result:

Pass▲

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

## Prepared and Checked By:

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Ruby Huang  
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	2501V71889E-RFW-00B	Original Report	2025/09/17

## GENERAL INFORMATION

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

<b>Frequency Range</b>	2412~2472MHz
<b>Maximum Conducted Output Peak Power</b>	13.69dBm
<b>Modulation Technique</b>	DSSS, OFDM
<b>Antenna Specification<sup>#</sup></b>	2.89dBi (provided by the applicant)
<b>Voltage Range</b>	DC 12V from Adapter
<b>Sample serial number</b>	37NC-1 for Conducted and Radiated Emissions Test 37NC-2 for RF Conducted Test (Assigned by BACL, Shenzhen)
<b>Sample/EUT Status</b>	Good condition
<b>Adapter Information</b>	Model: BI24G-120200-AdU2 Input: AC 100-240V, 50/60Hz 0.8A Output: DC 12V, 2A

### Objective

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

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

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, 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)
Power Spectral Density		0.90dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz~150 kHz	3.63dB(k=2, 95% level of confidence)
	150 kHz ~30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	0.009MHz~30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.34dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.40dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.64dB(k=2, 95% level of confidence)
Temperature		±1°C
Humidity		±1%
Supply voltages		±0.4%

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

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

For 2.4GHz Wi-Fi mode, total 13 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

802.11b, 802.11g and 802.11n-HT20 mode was tested with Channel 1, 7 and 13.

### EUT Exercise Software

Exercise Software <sup>#</sup>		UI_mptool.exe		
Mode	Data rate	Power Level <sup>#</sup>		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	49	49	49
802.11g	6Mbps	10	10	10
802.11n20	MCS0	2	2	2

Note: The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the power and PSD across all data rates bandwidths, and modulations.

### Special Accessories

No special accessory.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

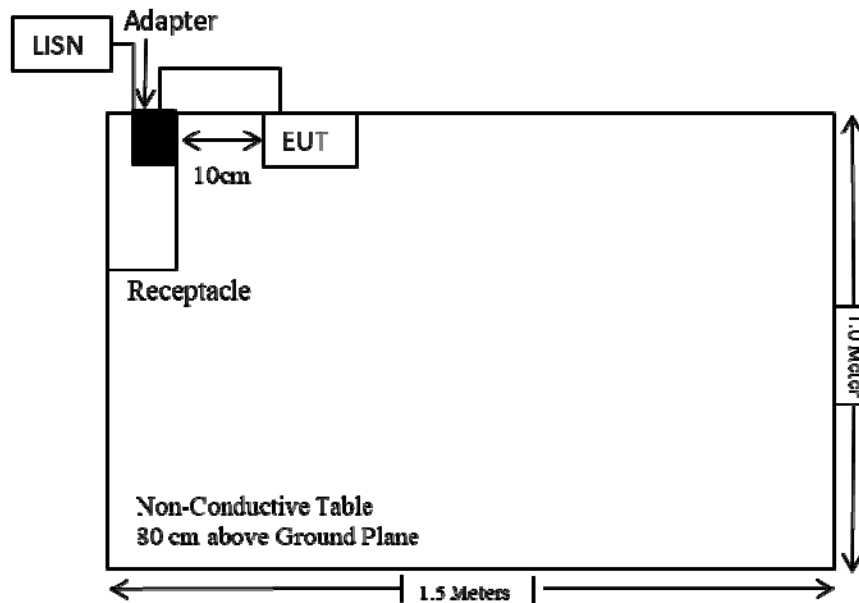
Manufacturer	Description	Model	Serial Number
/	/	/	/

### External I/O Cable

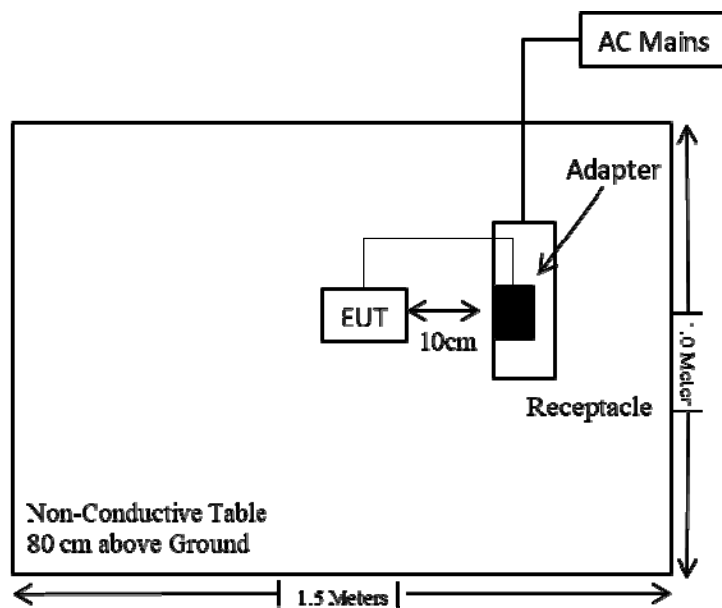
Cable Description	Length (m)	From Port	To
Unshielded un-detachable AC cable	1.2	Receptacle	LISN/AC Mains
Shielded un-detachable DC cable	5	EUT	Adapter

## Block Diagram of Test Setup

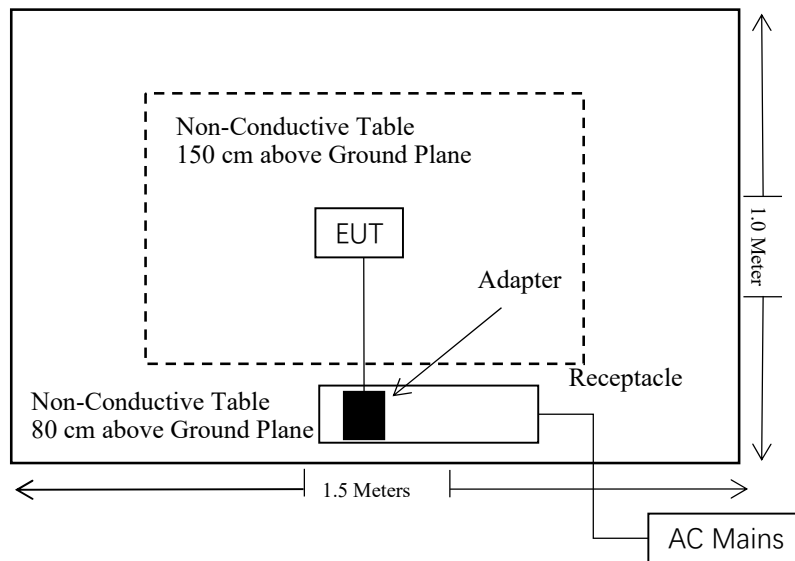
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:





**SUMMARY OF TEST RESULTS**

Test Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §15.247(d)	Conducted Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
C63.10 §11.6	Duty Cycle	/
§1.1307 (b) & §2.1091	MPE-Based Exemption	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	LISN	ENV216	101613	2024/12/04	2025/12/03
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2025/04/29	2026/04/28
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
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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
R&S	Spectrum Analyzer	FSV40	101942	2024/09/20	2025/09/19
Unknown	RF Cable	65475	01670515	2025/06/26	2026/06/25
Unknown	10dB Attenuator	Unknown	F-03-EM190	2025/06/26	2026/06/25
ANRITSU	Microwave peak power sensor	MA24418A	12622	2025/04/29	2026/04/28
R&S	Spectrum Analyzer	FSU26	200120	2024/12/04	2025/12/03

\* **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).

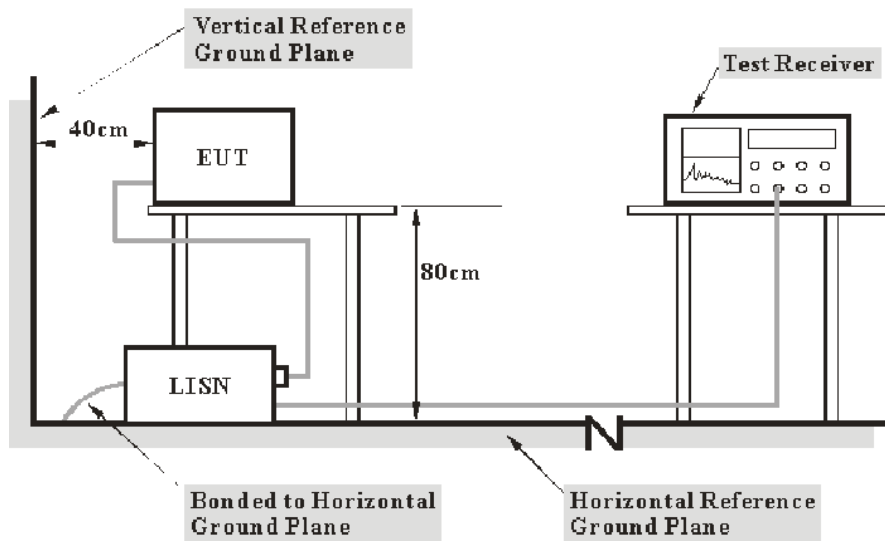
## REQUIREMENTS AND TEST PROCEDURES

### AC Line Conducted Emissions

#### Applicable Standard

FCC§15.207

#### 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 setup of EUT is according with per ANSI C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.207 limits.

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 margin calculation is as follows:

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

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

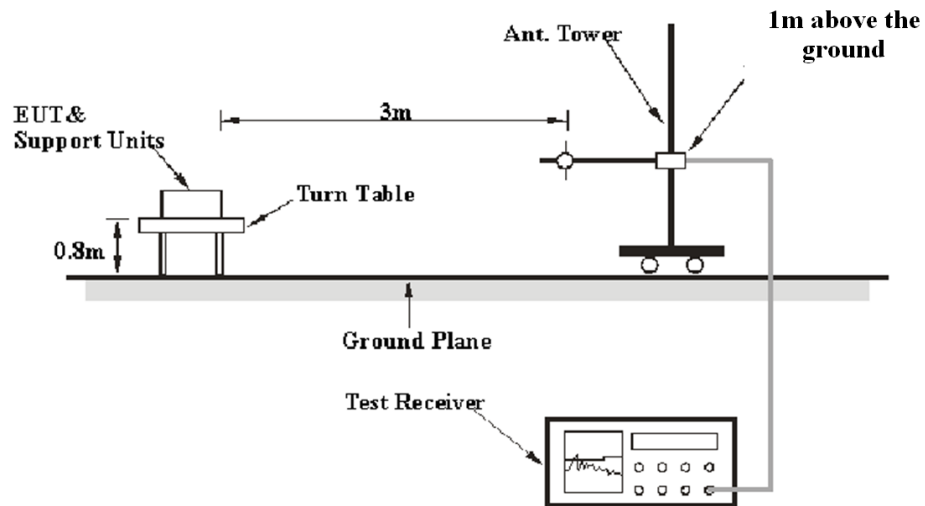
## Spurious Emissions

### Applicable Standard

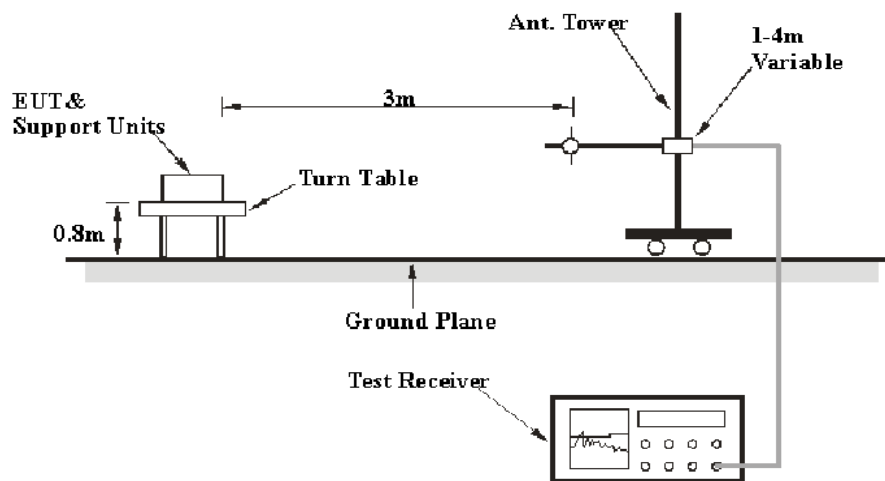
FCC §15.247 (d); §15.209; §15.205;

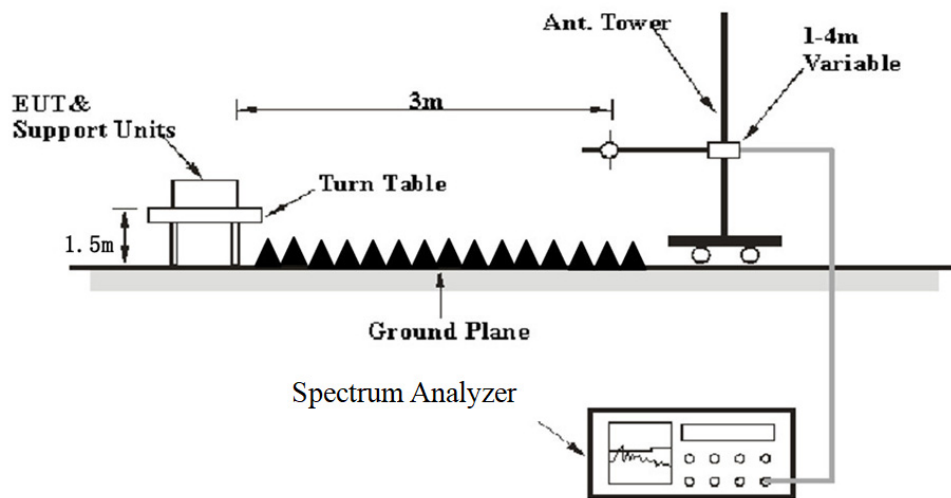
### EUT Setup

#### 9 kHz-30MHz:



#### 30MHz-1GHz:



**Above 1GHz:**

The radiated emission performed in the 3 meters, using the setup accordance with the ANSI C63.10-2020. The specification used was the FCC 15.209, FCC 15.247 limits.

**EMI Test Receiver & Spectrum Analyzer Setup**

The system was investigated from 9 kHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

9 kHz-1GHz:

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

1-25GHz:

Pre-scan

Measurement	Duty cycle	RBW	Video B/W	Detector
PK	Any	1MHz	3 MHz	Peak
AV	>98%	1MHz	1 kHz	Peak
	<98%	1MHz	≥1/Ton	Peak

Final measurement for emission identified during pre-scan

Measurement	Duty cycle	RBW	Video B/W	Detector
PK	Any	1MHz	3 MHz	Peak
AV	>98%	1MHz	10 Hz	Peak
	<98%	1MHz	≥1/Ton	Peak

Note: Ton is minimum transmission duration

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.

### 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.

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:

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



## 6 dB Emission Bandwidth & 99% Occupied Bandwidth

### Applicable Standard

According to FCC §15.247(a) (2)

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### Test Procedure

Test Method: ANSI C63.10-2020 Clause 11.8.1 & Clause 6.9.3

The steps for the first option are as follows:

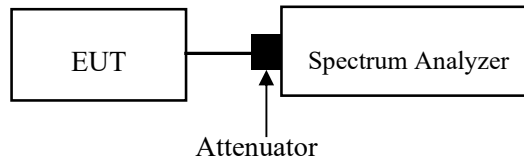
- a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- b) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- c) Detector = peak.
- d) Trace mode = max-hold.
- e) Sweep = No faster than coupled (auto) time.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission by placing 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 “–6 dB down amplitude”. If a marker is below this “–6 dB down amplitude” value, then it shall be as close as possible to this value.

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

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the 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) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing 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).



Note: Offset (10.5dB) = Attenuator (10dB) + Cable loss (0.5dB)

## Maximum Conducted Output Power

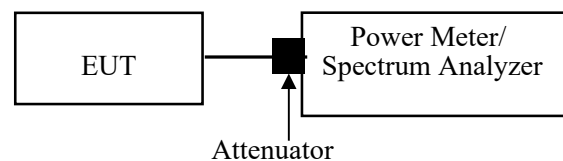
### Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### Test Procedure

Test method: ANSI C63.10-2020 clause 11.9.1.2 for peak power method or clause 11.9.2.3.2 for average power method.

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.



Note 1: 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 add with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

Note 2: Offset (10.5dB) = Attenuator (10dB) + Cable loss (0.5dB)

## 100 kHz Bandwidth of Frequency Band Edge

### 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 11.11.3

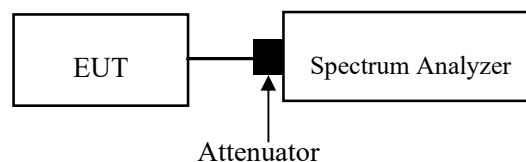
Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.

NOTE—the number of points can also be increased for large spans to retain frequency resolution

- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- d) Detector = peak.
- e) Sweep time = No faster than coupled (auto) time.
- f) Trace mode = max-hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.



Note: Offset (10.5dB) = Attenuator (10dB) + Cable loss (0.5dB)

## 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 11.11.3

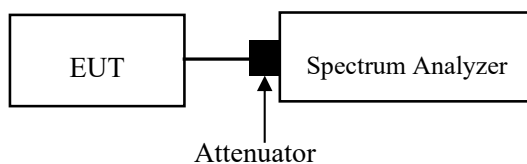
Establish an emission level by using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.

NOTE—the number of points can also be increased for large spans to retain frequency resolution

- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- d) Detector = peak.
- e) Sweep time = No faster than coupled (auto) time.
- f) Trace mode = max-hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.



Note: Offset (10.5dB) = Attenuator (10dB) + Cable loss (0.5dB)

## Power Spectral Density

### Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### Test Procedure

Test Method: ANSI C63.10-2020 Clause 11.10.2

The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span  $> 1.5$  times the DTS bandwidth.
- c) Set the RBW to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- e) Detector = peak.
- f) Sweep time = No faster than coupled (auto) time.
- g) Trace mode = max-hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Test Method: ANSI C63.10-2020 Clause 11.10.3 Method AVGPSD-1

The following procedure may be used when the maximum (average) conducted output power was used to determine compliance to the fundamental output power limit. This is the baseline method for determining the maximum (average) conducted PSD level. If the instrument has a power averaging (rms) detector, then it must be used; otherwise, use the sample detector. The EUT must be configured to transmit continuously ( $D \geq 98\%$ ), or else sweep triggering/signal gating must be implemented to help ensure that measurements are made only when the EUT is transmitting at its maximum power control level (no transmitter OFF time to be considered):

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to  $> 1.5$  times the OBW.

- c) Set RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set VBW  $\geq [3 \times \text{RBW}]$ .
- e) Detector = power averaging (rms) or sample detector (when rms not available).
- f) Ensure that the number of measurement points in the sweep  $\geq [2 \times \text{span} / \text{RBW}]$ .
- g) Sweep time = auto couple.
- h) Employ trace averaging (rms) mode over a minimum of 100 traces.
- i) Use the peak marker function to determine the maximum amplitude level.
- j) If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this might require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

Test Method: ANSI C63.10-2020 Clause 11.10.5 Method AVGPS-2

The following procedure is applicable when the EUT cannot be configured to transmit continuously (i.e.,  $D < 98\%$ ), when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty cycle is constant (i.e., duty cycle variations are less than  $\pm 2\%$ ):

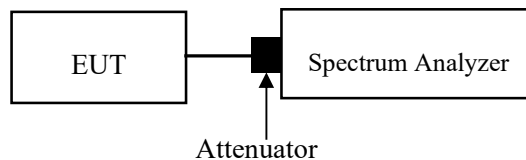
- a) Measure the duty cycle (D) of the transmitter output signal as described in 11.6.
- b) Set instrument center frequency to DTS channel center frequency.
- c) Set span to  $> 1.5$  times the OBW.
- d) Set RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- e) Set VBW  $\geq [3 \times \text{RBW}]$ .
- f) Detector = power averaging (rms) or sample detector (when rms not available).
- g) Ensure that the number of measurement points in the sweep  $\geq [2 \times \text{span} / \text{RBW}]$ .
- h) Sweep time = auto couple.
- i) Do not use sweep triggering; allow sweep to “free run.”
- j) Employ trace averaging (rms) mode over a minimum of 100 traces.
- k) Use the peak marker function to determine the maximum amplitude level.
- l) Add  $[10 \log (1 / D)]$ , where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.

m) If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this might require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

Test Method: ANSI C63.10-2020 Clause 11.10.7 Method AVGPSSD-3

The following procedure is applicable when the EUT cannot be configured to transmit continuously (i.e.,  $D < 98\%$ ), when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty cycle is not constant (i.e., duty cycle variations exceed  $\pm 2\%$ ):

- a) Set the instrument span to  $> 1.5$  times the OBW.
- b) Set sweep trigger to “free run.”
- c) Set RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set VBW  $\geq [3 \times \text{RBW}]$ .
- e) Number of points in sweep  $\geq [2 \times \text{span} / \text{RBW}]$ . (This ensures that bin-to-bin spacing is
- f)  $\leq \text{RBW} / 2$ , so that narrowband signals are not lost between frequency bins.)
- g) Sweep time  $\leq [(\text{number of points in sweep}) \times T]$ , where T is defined in 11.6.  
NOTE—If this results in a sweep time less than the auto sweep time of the instrument, then this method shall not be used (use AVGPSSD-2A instead). The purpose of this step is to ensure that averaging time in each bin is less than or equal to the minimum time of a transmission.
- h) Detector = Power averaging (rms).
- i) Trace mode = max-hold.
- j) Allow max-hold to run for at least 60 s or longer as needed to allow the trace to stabilize.
- k) Use the peak marker function to determine the maximum PSD level.
- l) If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this might require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).



Note 1: 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 add with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

Note 2: Offset (10.5dB) = Attenuator (10dB) + Cable loss (0.5dB)



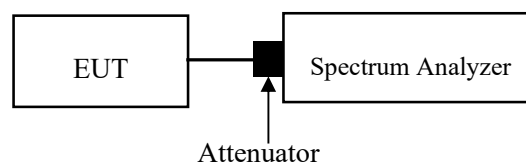
## Duty Cycle

### Test Procedure

According to ANSI C63.10-2020 Section 11.6

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

- a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.
- b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
  - 1) Set the center frequency of the instrument to the center frequency of the transmission.
  - 2) Set  $RBW \geq OBW$  if possible; otherwise, set RBW to the largest available value.
  - 3) Set  $VBW \geq RBW$ . Set detector = peak or average.
  - 4) The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$  and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if  $T \leq 16.7 \mu s$ .)



Note: Offset (10.5dB) = Attenuator (10dB) + Cable loss (0.5dB)

## **ANTENNA REQUIREMENT**

---

### **Applicable Standard**

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### **Antenna Connector Construction**

The EUT has an internal antenna arrangement, which was permanently attached, the antenna gain<sup>#</sup> is 2.89dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result: Compliant**

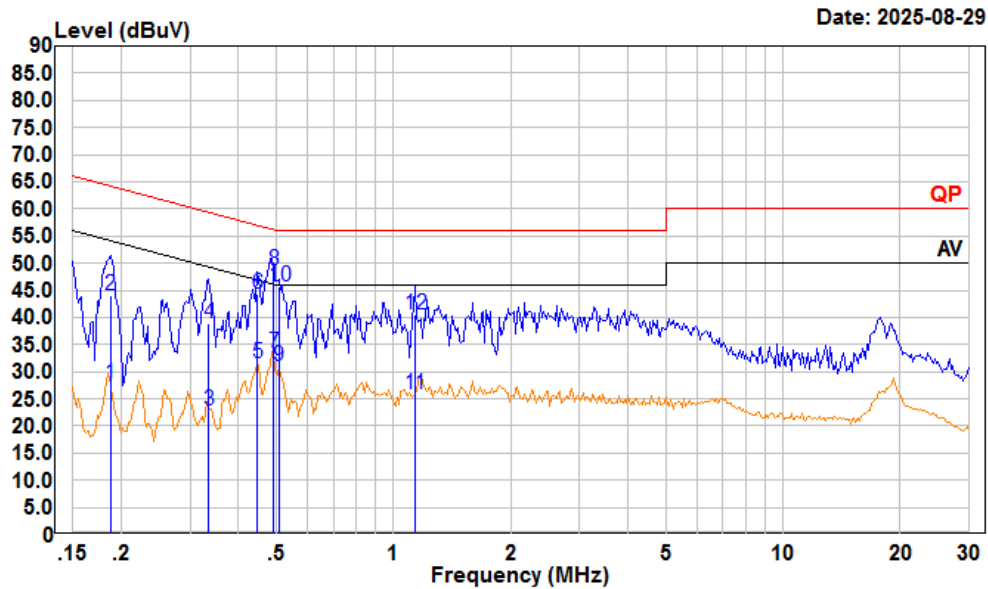
## TEST DATA AND RESULTS

### AC Line Conducted Emissions

#### Environmental Conditions

Temperature (°C)	25.5	Relative Humidity (%)	62
ATM Pressure (kPa)	100.2	Test engineer	Macy Shi
Test date	2025.8.29		
EUT operation mode	Transmitting(Maximum output power mode, 802.11b High Channel)		

## AC 120V 60 Hz, Line



Condition: Line

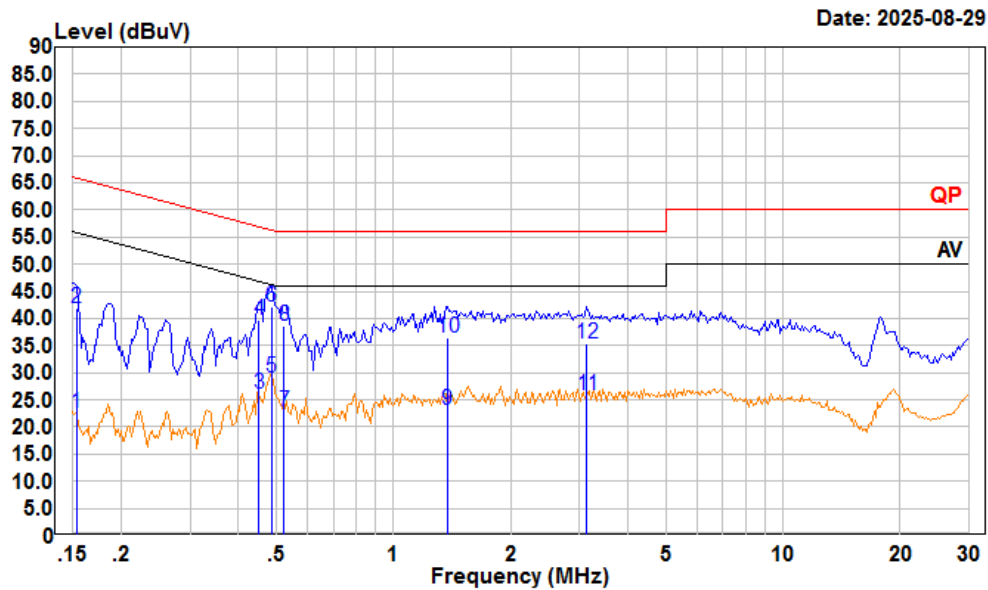
Project : 2501V71889E-RFW

tester : Macy.shi Note:2.4G WIFI Transmitting

Setting : RBW:9kHz

		Read		LISN	Cable	Limit	Over	
	Freq	Level	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.187	6.91	27.73	10.63	10.19	54.15	-26.42	Average
2	0.187	23.30	44.12	10.63	10.19	64.15	-20.03	QP
3	0.336	2.13	22.90	10.59	10.18	49.31	-26.41	Average
4	0.336	18.10	38.87	10.59	10.18	59.31	-20.44	QP
5	0.447	10.96	31.68	10.52	10.20	46.93	-15.25	Average
6	0.447	23.71	44.43	10.52	10.20	56.93	-12.50	QP
7	0.491	12.90	33.58	10.50	10.18	46.14	-12.56	Average
8	0.491	28.11	48.79	10.50	10.18	56.14	-7.35	QP
9	0.507	10.44	31.14	10.52	10.18	46.00	-14.86	Average
10	0.507	25.10	45.80	10.52	10.18	56.00	-10.20	QP
11	1.135	4.87	25.75	10.69	10.19	46.00	-20.25	Average
12	1.135	19.60	40.48	10.69	10.19	56.00	-15.52	QP

## AC 120V 60 Hz, Neutral



Trace: 1

Condition: Neutral

Project : 2501V71889E-RFW

tester : Macy.shi Note:2.4G WIFI Transmitting

Setting : RBW:9kHz

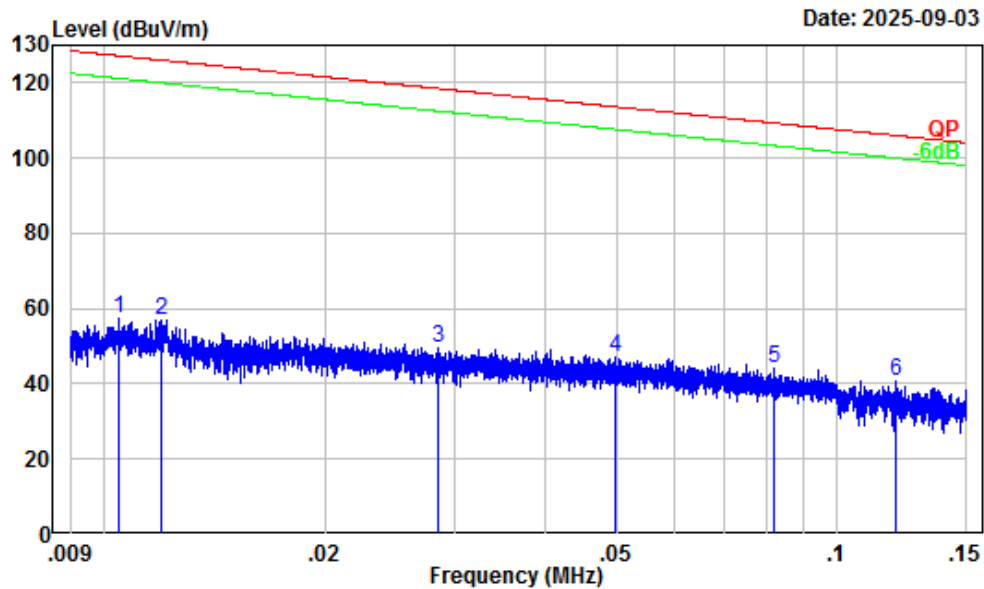
		Read		LISN	Cable	Limit	Over	
	Freq	Level	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.153	2.07	22.66	10.43	10.16	55.82	-33.16	Average
2	0.153	21.30	41.89	10.43	10.16	65.82	-23.93	QP
3	0.452	5.27	26.00	10.53	10.20	46.85	-20.85	Average
4	0.452	19.00	39.73	10.53	10.20	56.85	-17.12	QP
5	0.486	8.50	29.20	10.51	10.19	46.23	-17.03	Average
6	0.486	21.39	42.09	10.51	10.19	56.23	-14.14	QP
7	0.524	2.09	22.79	10.51	10.19	46.00	-23.21	Average
8	0.524	17.81	38.51	10.51	10.19	56.00	-17.49	QP
9	1.374	2.13	23.07	10.75	10.19	46.00	-22.93	Average
10	1.374	15.50	36.44	10.75	10.19	56.00	-19.56	QP
11	3.140	4.69	25.86	10.90	10.27	46.00	-20.14	Average
12	3.140	14.09	35.26	10.90	10.27	56.00	-20.74	QP

**Spurious Emissions****Environmental Conditions**

<b>Temperature (°C)</b>	25.4&25.8	<b>Relative Humidity (%)</b>	50&66
<b>ATM Pressure (kPa):</b>	100.2&101.0	<b>Test engineer:</b>	Nico Wu & Wing K Ji
<b>Test date:</b>	2025.09.03&2025.09.08		
<b>EUT operation mode:</b>	Below 1GHz: Transmitting(Maximum output power mode, 802.11b High Channel) Above 1GHz: Transmitting		
<b>Note:</b>	1. For the radiated spurious emission below 30MHz, only the worst case (parallel) was recorded. 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 was recorded.		

**Below 1GHz:**

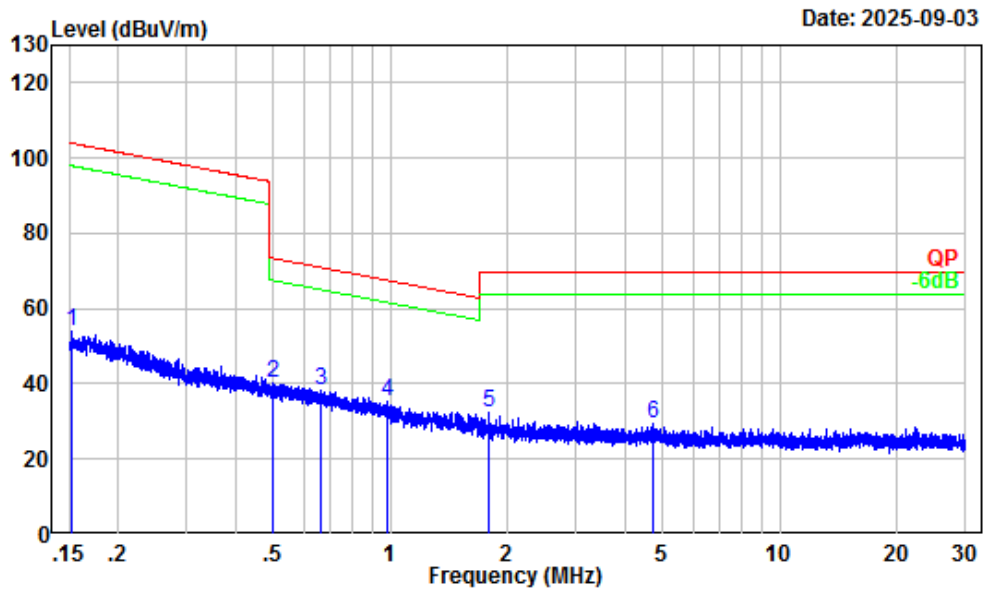
9kHz-150kHz



Site : Chamber A  
 Condition : 3m  
 Project Number : 2501V71889E-RFW  
 Test Mode : 2.4G WIFI Transmitting  
 Detector: Peak RBW/VBW: 0.3/1kHz  
 Tester : Nico Wu

	Freq	Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.010	32.21	25.40	57.61	127.19	-69.58	Peak
2	0.012	31.92	24.99	56.91	126.02	-69.11	Peak
3	0.029	28.77	20.60	49.37	118.49	-69.12	Peak
4	0.050	26.42	20.67	47.09	113.66	-66.57	Peak
5	0.082	23.26	20.70	43.96	109.33	-65.37	Peak
6	0.120	20.79	19.99	40.78	105.99	-65.21	Peak

## 150kHz-30MHz

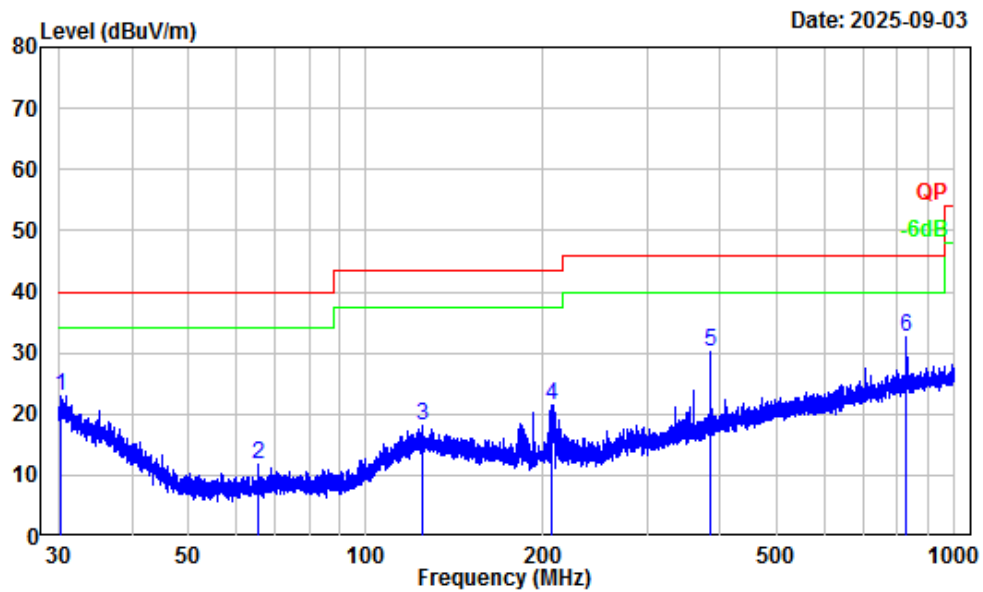


Site : Chamber A  
Condition : 3m  
Project Number : 2501V71889E-RFW  
Test Mode : 2.4G WIFI Transmitting  
Detector: Peak RBW/VBW: 10/30kHz  
Tester : Nico Wu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.153	18.90	35.20	54.10	103.94	-49.84	Peak
2	0.502	6.38	33.80	40.18	73.59	-33.41	Peak
3	0.665	4.37	33.96	38.33	71.09	-32.76	Peak
4	0.980	1.35	34.12	35.47	67.65	-32.18	Peak
5	1.799	-1.04	33.65	32.61	69.54	-36.93	Peak
6	4.737	-2.77	32.37	29.60	69.54	-39.94	Peak



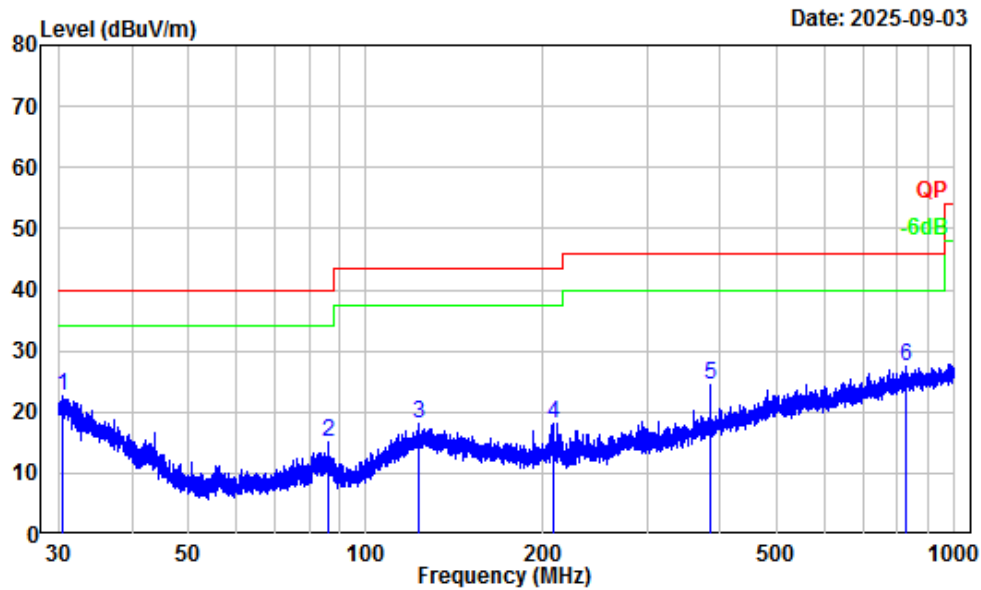
## 30MHz-1GHz\_Horizontal



Site : Chamber A  
Condition : 3m Horizontal  
Project Number : 2501V71889E-RFW  
Test Mode : 2.4G WIFI Transmitting  
Detector: Peak RBW/VBW: 100/300kHz  
Tester : Nico Wu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.25	-6.09	29.04	22.95	40.00	-17.05	Peak
2	65.52	-17.94	29.63	11.69	40.00	-28.31	Peak
3	124.90	-11.14	29.23	18.09	43.50	-25.41	Peak
4	207.40	-13.73	35.07	21.34	43.50	-22.16	Peak
5	384.10	-9.04	39.34	30.30	46.00	-15.70	Peak
6	825.32	-1.94	34.56	32.62	46.00	-13.38	Peak

## 30MHz-1GHz\_Vertical



Site : Chamber A  
Condition : 3m Vertical  
Project Number : 2501V71889E-RFW  
Test Mode : 2.4G WIFI Transmitting  
Detector: Peak RBW/VBW: 100/300kHz  
Tester : Nico Wu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.56	-6.25	28.91	22.66	40.00	-17.34	Peak
2	86.28	-18.08	33.20	15.12	40.00	-24.88	Peak
3	122.94	-11.15	29.40	18.25	43.50	-25.25	Peak
4	207.76	-13.77	32.03	18.26	43.50	-25.24	Peak
5	384.10	-9.04	33.59	24.55	46.00	-21.45	Peak
6	826.77	-1.93	29.48	27.55	46.00	-18.45	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>802.11b</b>							
Low Channel							
4824	53.34	PK	H	-7.75	45.59	74	-28.41
4824	52.11	PK	V	-7.75	44.36	74	-29.64
Middle Channel							
4884	52.84	PK	H	-7.57	45.27	74	-28.73
4884	51.88	PK	V	-7.57	44.31	74	-29.69
High Channel							
4944	53.65	PK	H	-7.61	46.04	74	-27.96
4944	52.91	PK	V	-7.61	45.30	74	-28.7
<b>802.11g</b>							
Low Channel							
4824	52.93	PK	H	-7.75	45.18	74	-28.82
4824	52.52	PK	V	-7.75	44.77	74	-29.23
Middle Channel							
4884	52.34	PK	H	-7.57	44.77	74	-29.23
4884	51.67	PK	V	-7.57	44.10	74	-29.9
High Channel							
4944	53.11	PK	H	-7.61	45.5	74	-28.5
4944	52	PK	V	-7.61	44.39	74	-29.61
<b>802.11n20</b>							
Low Channel							
4824	52.64	PK	H	-7.75	44.89	74	-29.11
4824	51.77	PK	V	-7.75	44.02	74	-29.98
Middle Channel							
4884	52.76	PK	H	-7.57	45.19	74	-28.81
4884	52.71	PK	V	-7.57	45.14	74	-28.86
High Channel							
4944	53.41	PK	H	-7.61	45.8	74	-28.2
4944	52.46	PK	V	-7.61	44.85	74	-29.15

Note:

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

Corrected Amplitude = Corrected Factor + Reading

Margin = Corrected. Amplitude - Limit

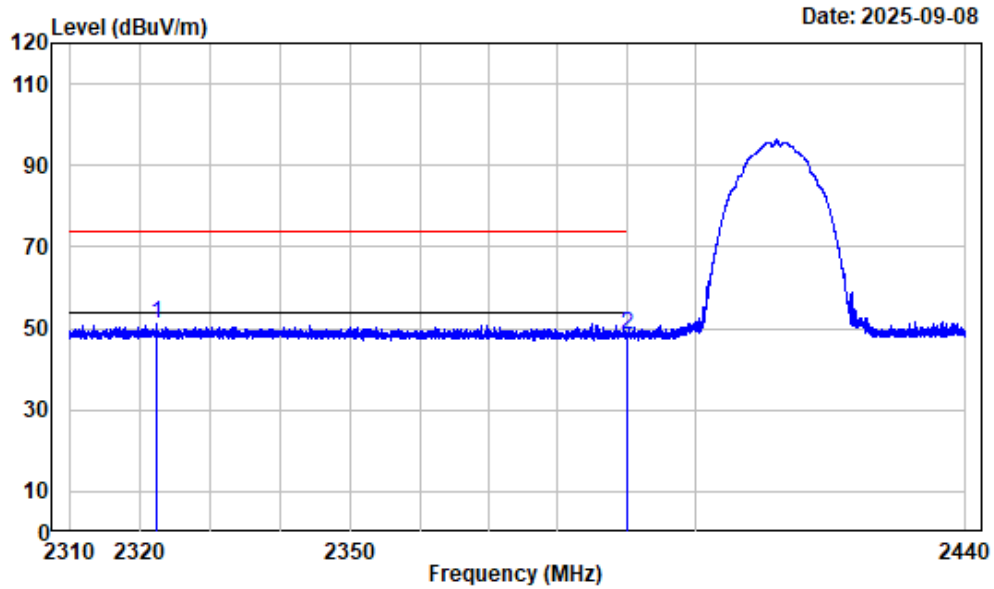
The other spurious emission which is in the noise floor level was not recorded.

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

# Test plots

## Band Edge

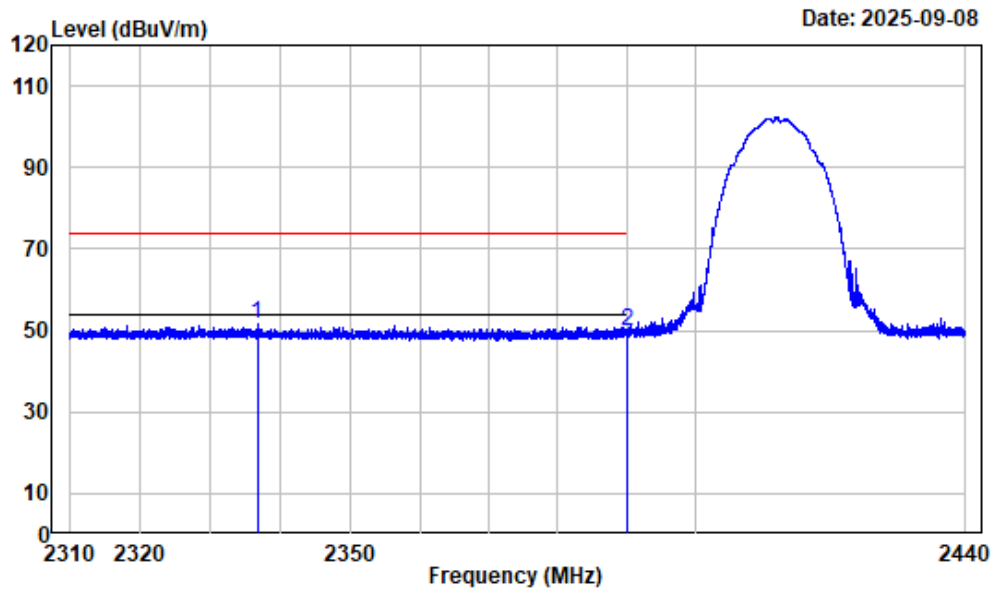
Left Band edge\_Horizontal\_802.11b



Condition : Horizontal  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4GWiFi\_b\_2412

	Freq		Read		Limit	Over	Remark
	Factor		Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2322.458	-10.81	61.96	51.15	74.00	-22.85	Peak
2	2390.000	-10.98	59.62	48.64	74.00	-25.36	Peak

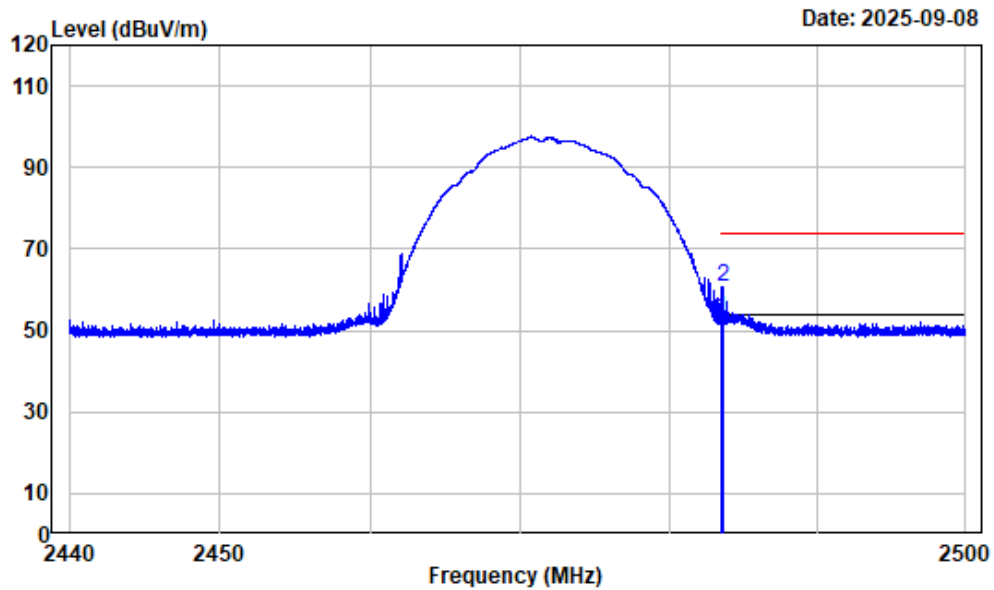
Left Band edge\_Veritical\_802.11b



Condition : Vertical  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4GWiFi\_b\_2412

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2336.672	-10.85	62.30	51.45	74.00	-22.55	Peak
2	2390.000	-10.98	60.79	49.81	74.00	-24.19	Peak

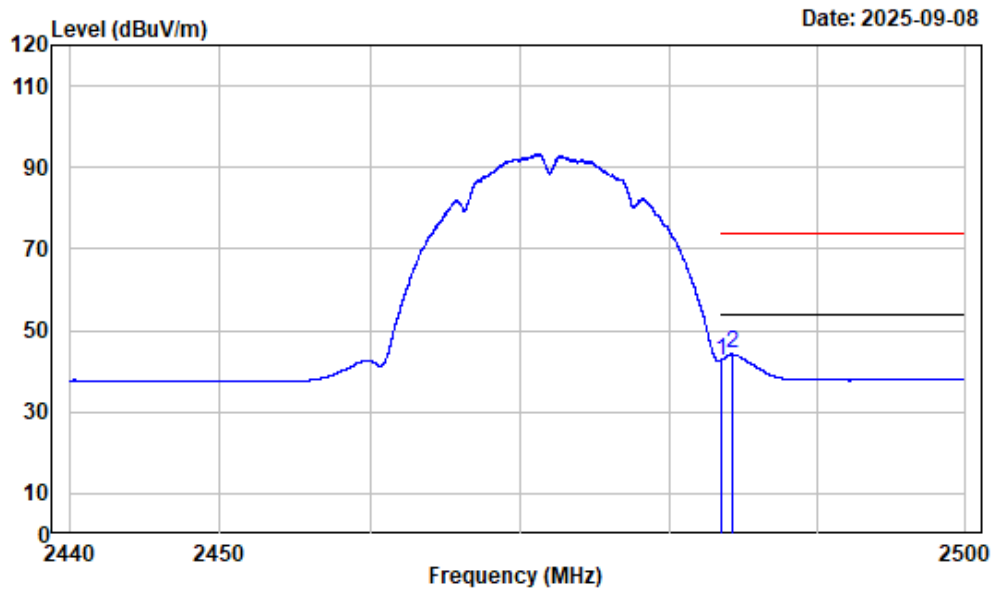
Right Band edge\_Horizontal\_802.11b



Condition : Horizontal  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4GWiFi\_b\_2472

		Read		Limit	Over	Remark
Freq Factor		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	-10.97	63.93	52.96	74.00	-21.04	Peak
2 2483.580	-10.97	71.60	60.63	74.00	-13.37	Peak

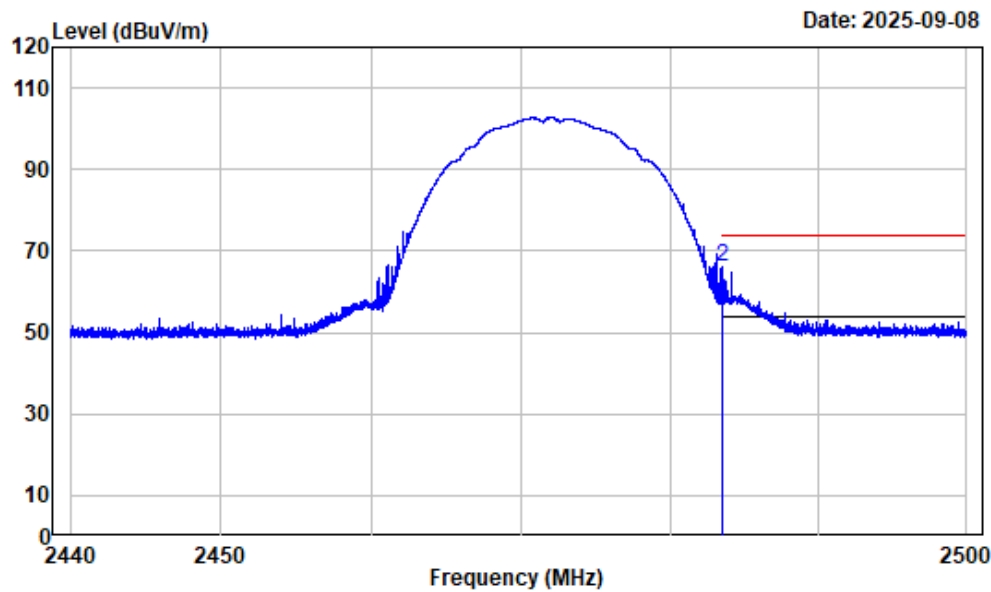
Right Band edge\_Horizontal\_Average\_802.11b



Condition : Horizontal  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak  
 Note : 2.4GWiFi\_b\_2472

		Read		Limit	Over	Remark
Freq	Factor	Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	-10.97	53.72	42.75	54.00	-11.25	Average
2 2484.200	-10.97	55.13	44.16	54.00	-9.84	Average

Right Band edge\_Vertical\_802.11b

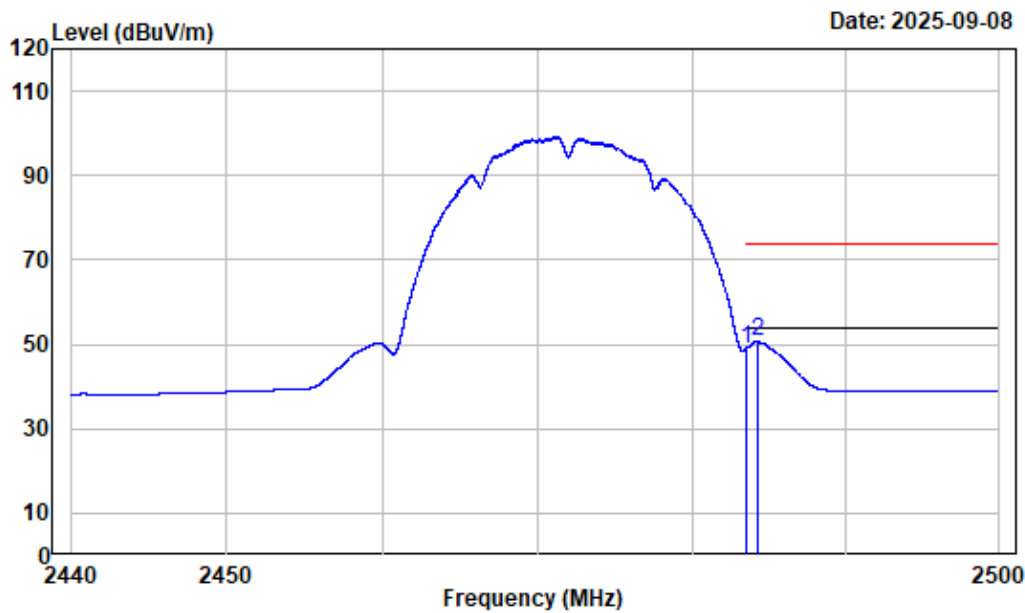


Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq		Factor	Read Level	Level	Limit	Over	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	68.47	57.50	74.00	-16.50	Peak
2	2483.510	-10.97	77.10	66.13	74.00	-7.87	Peak



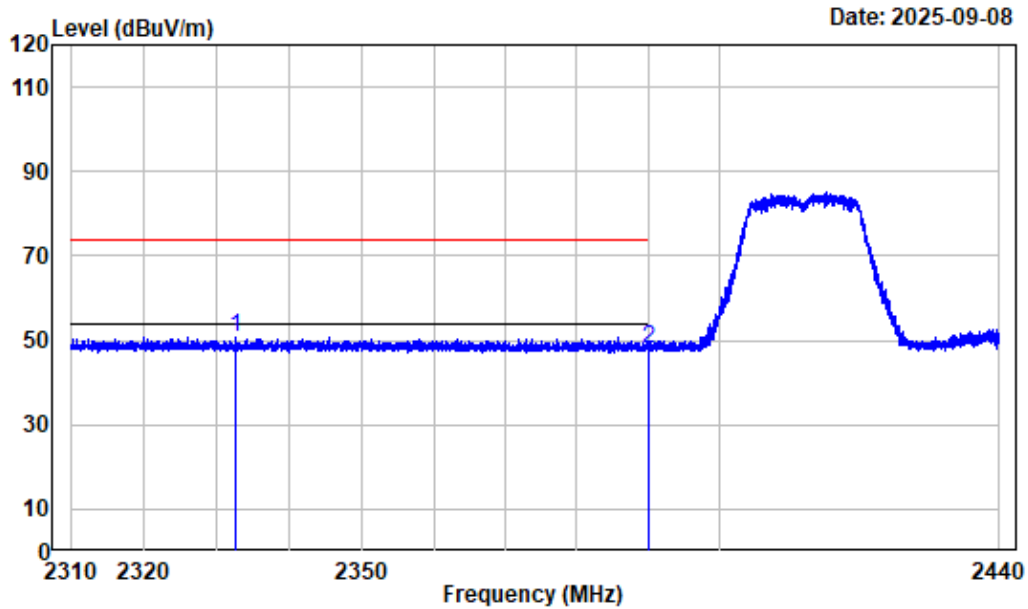
Right Band edge\_Vertical\_Average\_802.11b



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	59.90	48.93	54.00	-5.07 Average
2	2484.230	-10.97	61.73	50.76	54.00	-3.24 Average

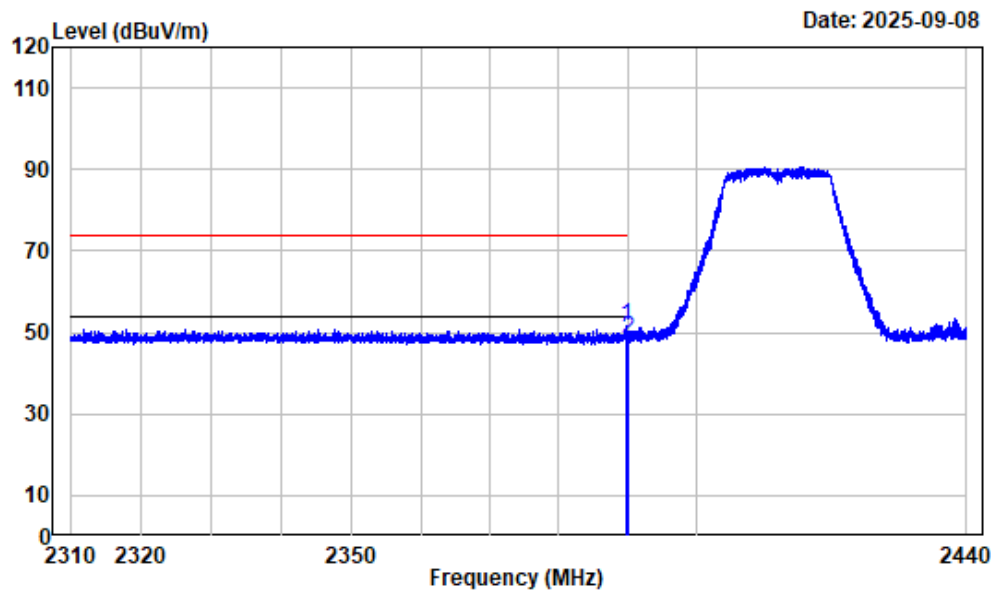
Left Band edge\_Horizontal\_802.11g



Condition : Horizontal  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4GWiFi\_g\_2412

	Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2332.642	-10.85	61.61	50.76	74.00	-23.24	Peak
2	2390.000	-10.98	59.14	48.16	74.00	-25.84	Peak

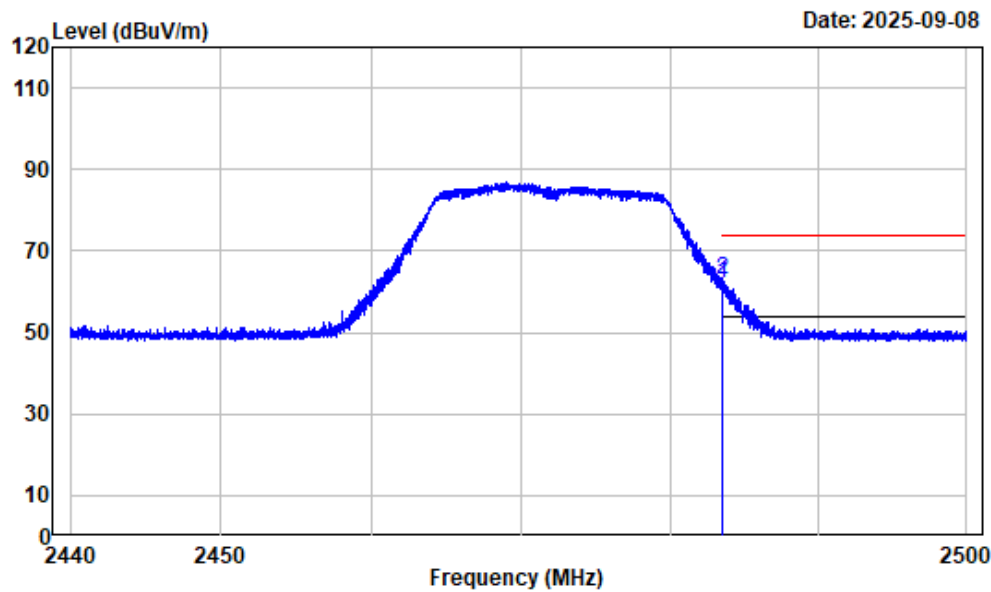
Left Band edge\_Vertical\_802.11g



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_g\_2412

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.863	-10.98	62.75	51.77	74.00	-22.23	Peak
2	2390.000	-10.98	59.31	48.33	74.00	-25.67	Peak

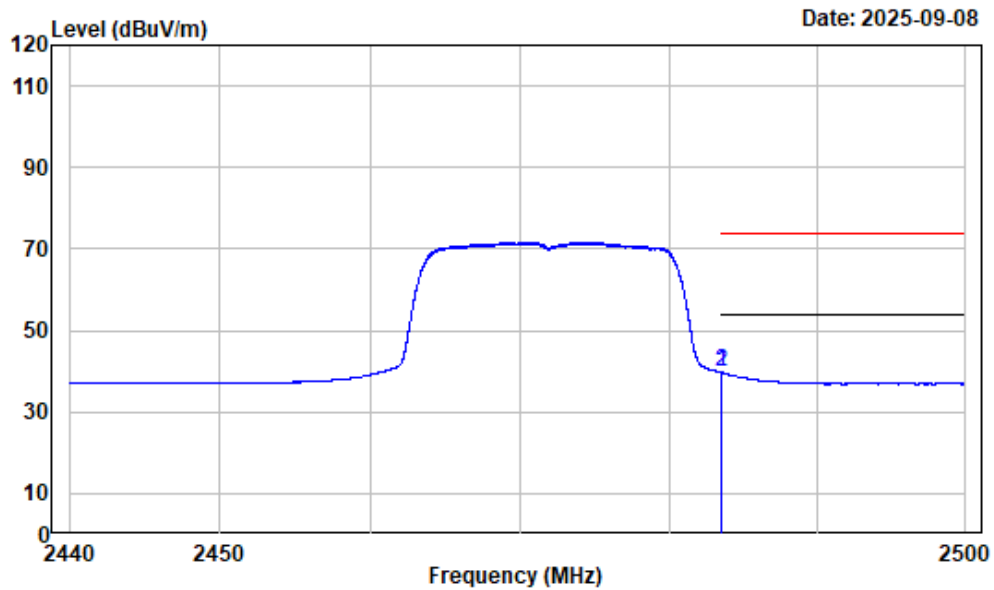
Right Band edge\_Horizontal\_802.11g



Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_g\_2472

		Read		Limit	Over	Remark
Freq Factor		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	73.20	62.23	74.00	-11.77 Peak
2	2483.510	-10.97	73.78	62.81	74.00	-11.19 Peak

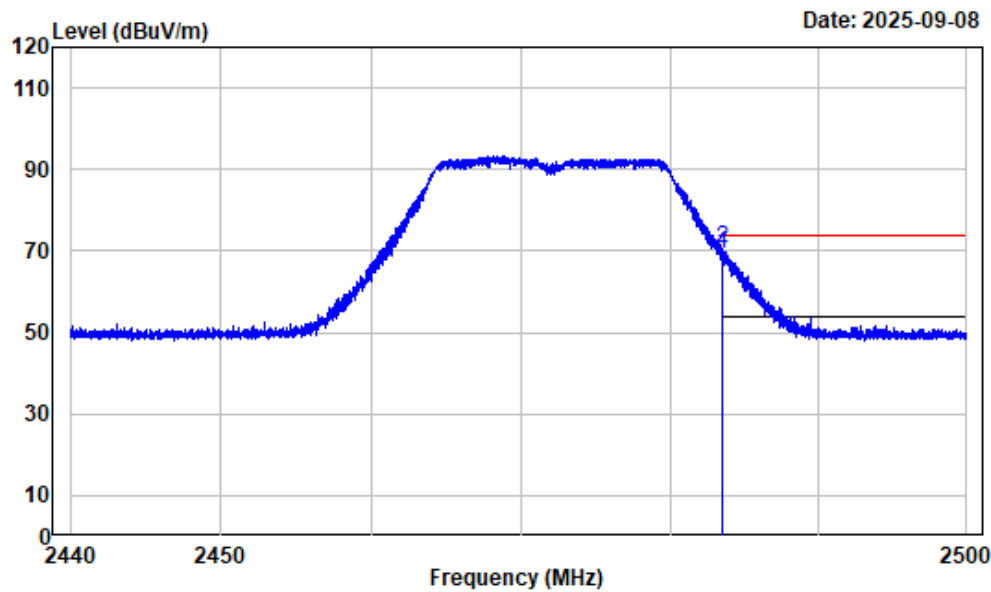
Right Band edge\_Horizontal\_Average\_802.11g



Condition : Horizontal  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak  
 Note : 2.4GWiFi\_g\_2472

		Read		Limit	Over	Remark
Freq Factor		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	-10.97	50.66	39.69	54.00	-14.31	Average
2 2483.562	-10.97	50.68	39.71	54.00	-14.29	Average

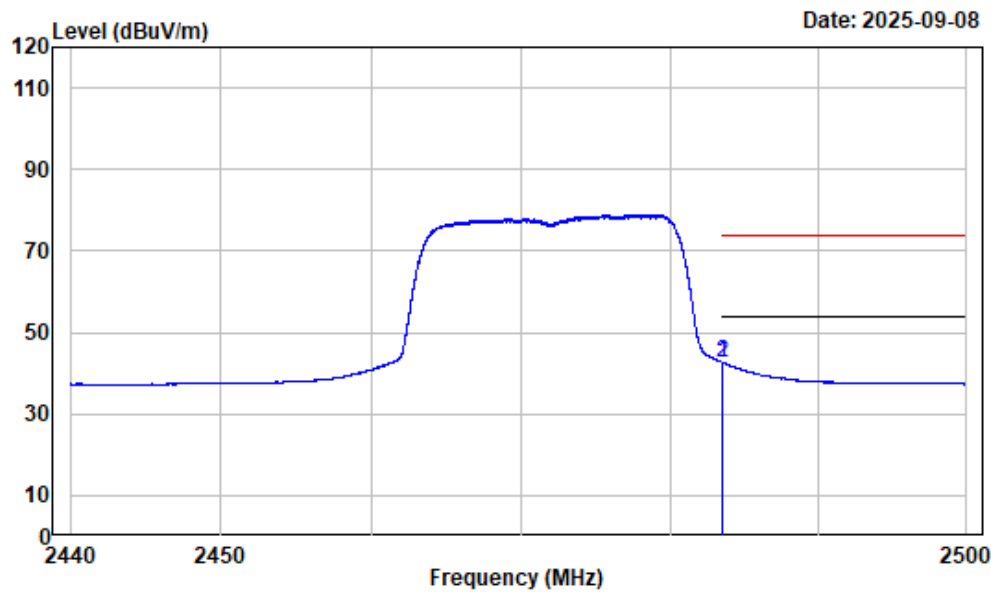
Right Band edge\_Vertical\_802.11g



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4WiFi\_g\_2472

Freq		Factor	Read Level	Level	Limit	Over	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	80.25	69.28	74.00	-4.72	Peak
2	2483.510	-10.97	81.80	70.83	74.00	-3.17	Peak

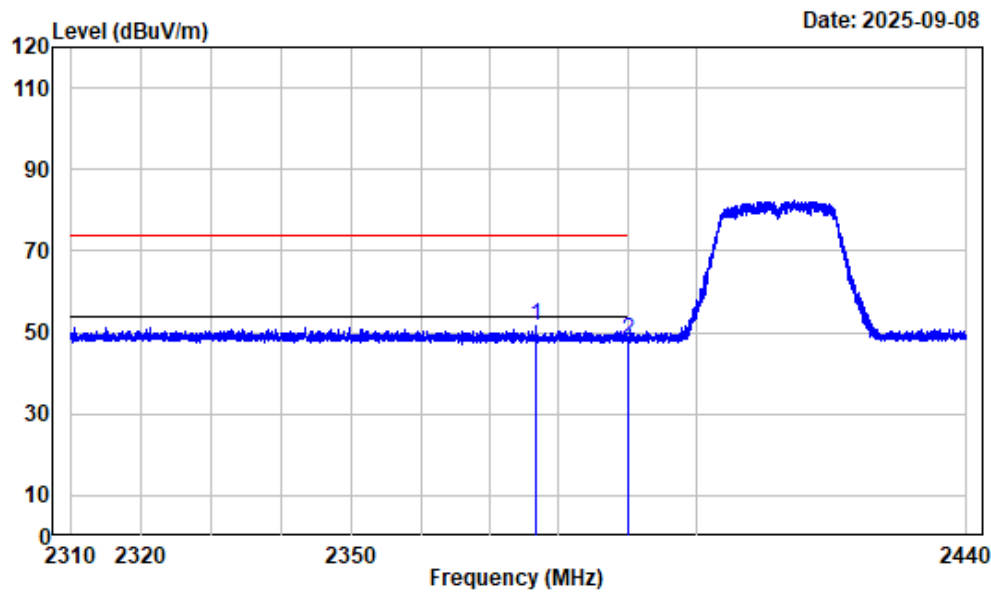
Right Band edge\_Vertical\_Average\_802.11g



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak  
Note : 2.4GWiFi\_g\_2472

		Read		Limit	Over	Remark
Freq Factor		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500 -10.97	53.63	42.66	54.00	-11.34	Average
2	2483.530 -10.97	53.64	42.67	54.00	-11.33	Average

Left Band edge\_Horizontal\_802.11n-HT20

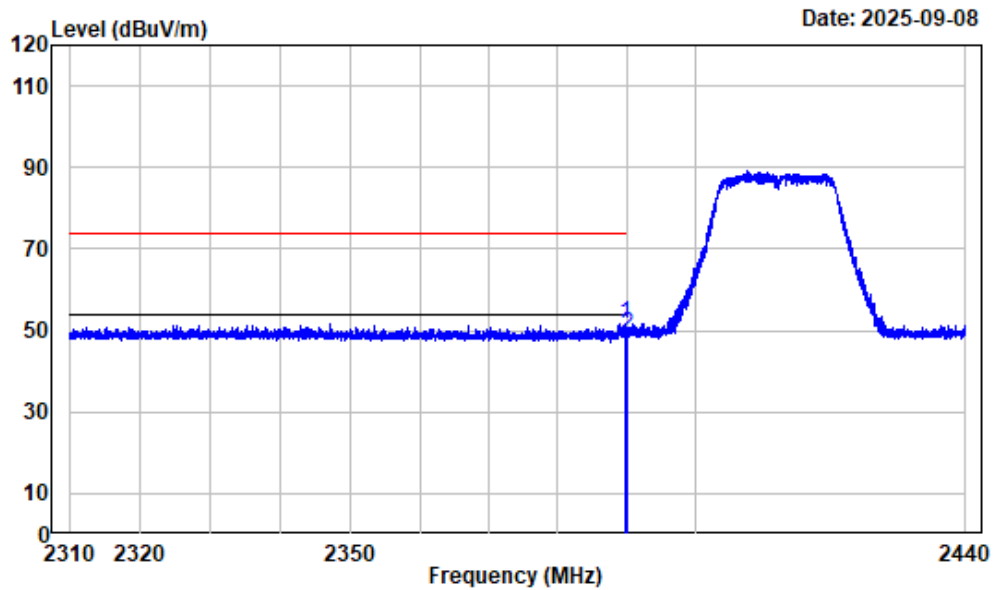


Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_n20\_2412

		Read		Limit	Over	Remark
Freq Factor		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2376.625 -10.95	62.54	51.59	74.00	-22.41	Peak
2	2390.000 -10.98	59.14	48.16	74.00	-25.84	Peak



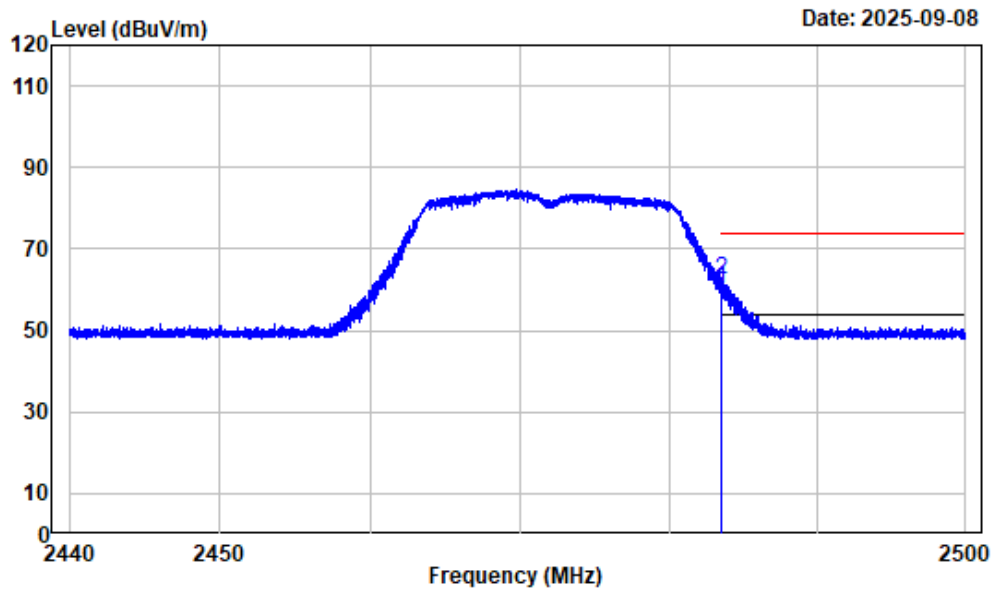
Left Band edge\_Vertical\_802.11n-HT20



Condition : Vertical  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4GWiFi\_n20\_2412

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.777	-10.98	62.71	51.73	74.00	-22.27	Peak
2	2390.000	-10.98	59.67	48.69	74.00	-25.31	Peak

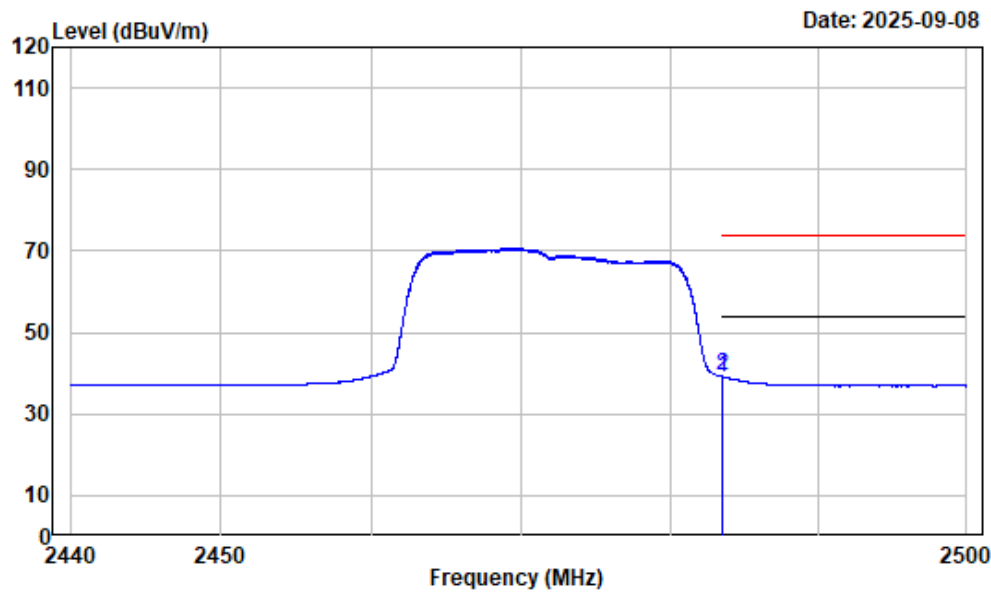
## Right Band edge\_Horizontal\_802.11n-HT20



Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_n20\_2472

Freq		Factor	Read Level	Level	Limit	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	71.33	60.36	74.00	-13.64	Peak
2	2483.520	-10.97	73.42	62.45	74.00	-11.55	Peak

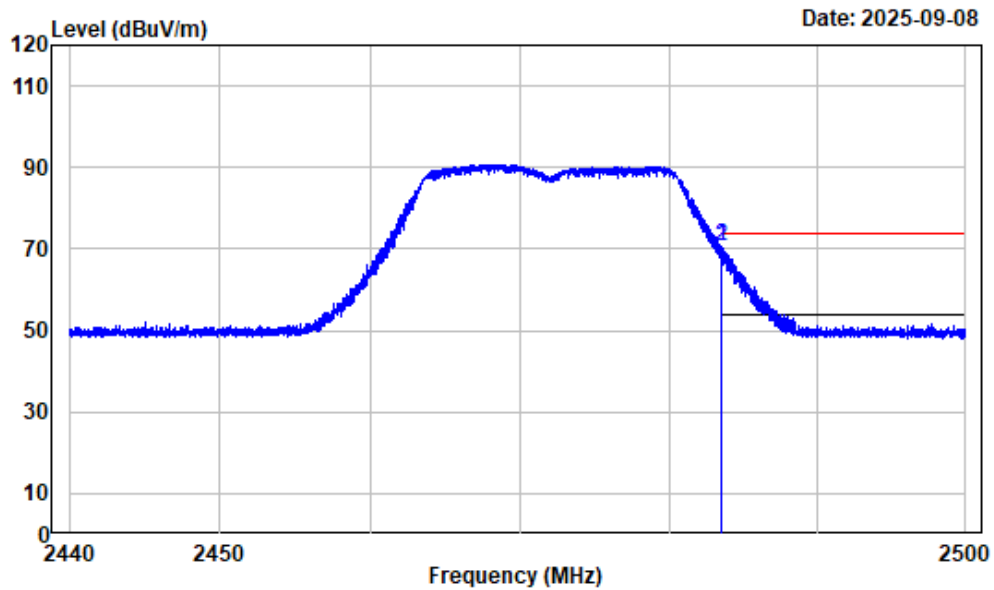
Right Band edge\_Horizontal\_Average\_802.11n-HT20



Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak  
Note : 2.4GWiFi\_n20\_2472

		Read		Limit	Over	Remark
Freq Factor		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	50.13	39.16	54.00	-14.84 Average
2	2483.530	-10.97	50.14	39.17	54.00	-14.83 Average

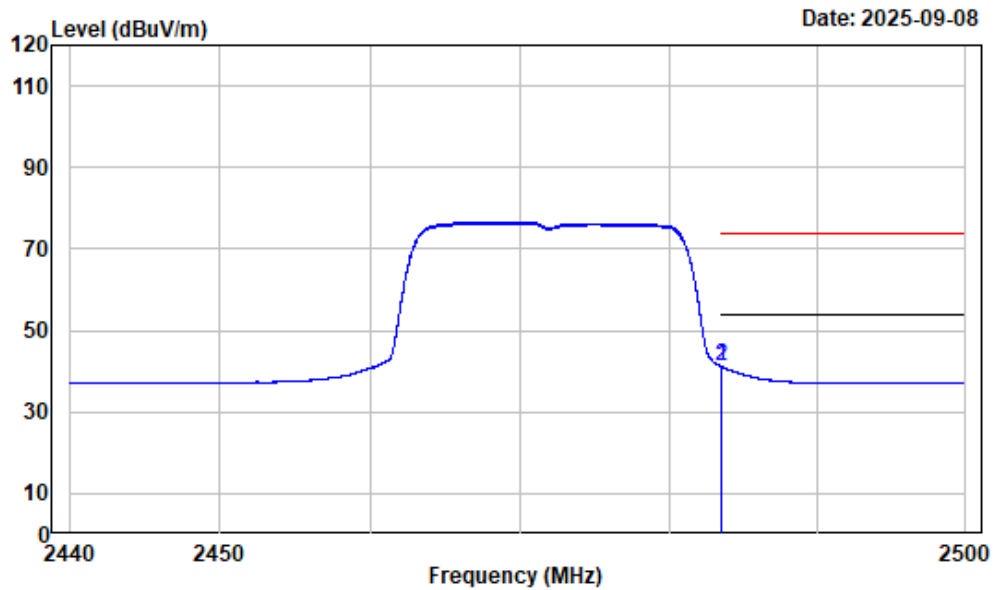
Right Band edge\_Vertical\_802.11n-HT20



Condition : Vertical  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4WiFi\_n20\_2472

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	81.81	70.84	74.00	-3.16	Peak
2	2483.533	-10.97	81.83	70.86	74.00	-3.14	Peak

Right Band edge\_Vertical\_Average\_802.11n-HT20

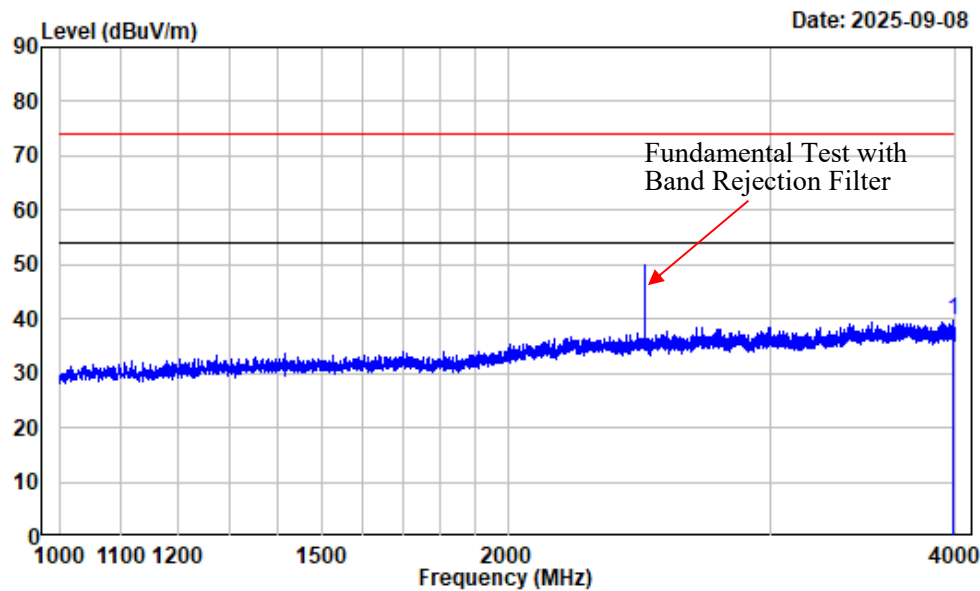


Condition : Vertical  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak  
 Note : 2.4GWiFi\_n20\_2472

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.97	52.18	41.21	54.00	-12.79	Average
2	2483.510	-10.97	52.19	41.22	54.00	-12.78	Average

1-18GHz (Listed with the worst harmonic margin test plot)

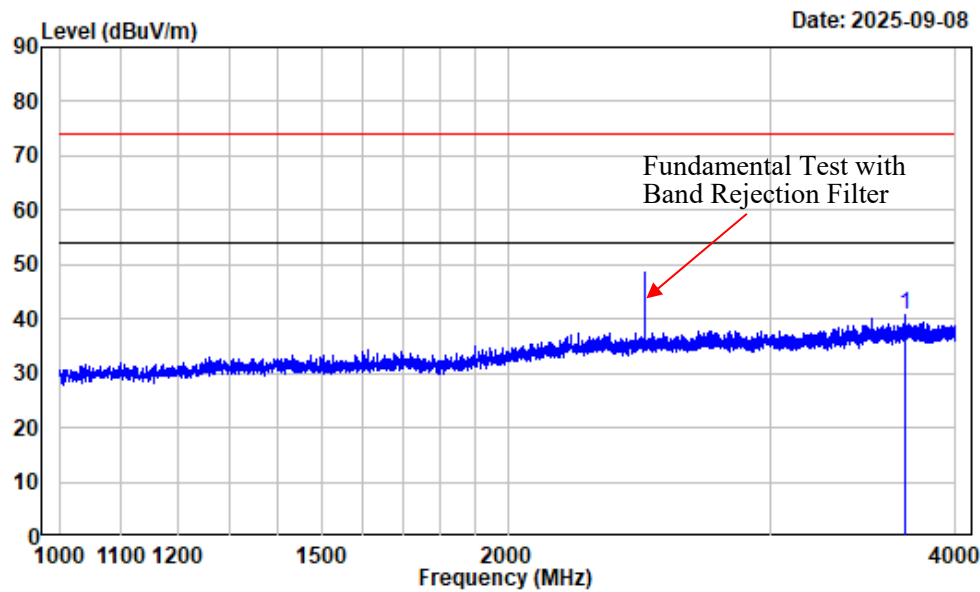
1-4GHz\_Horizontal\_802.11b\_2472MHz



Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3984.000	-9.27	48.87	39.60	74.00	-34.40 Peak

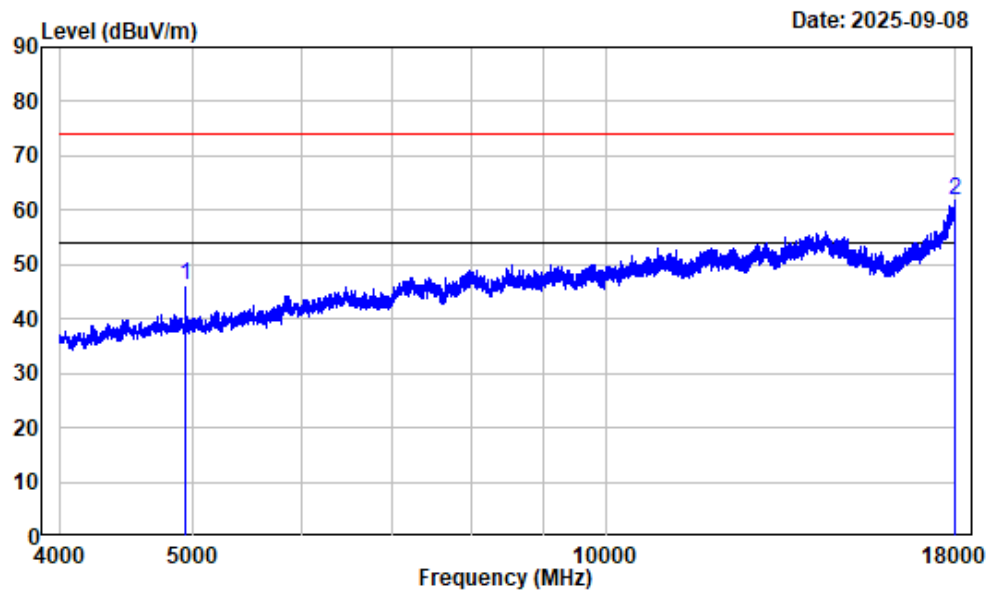
1-4GHz\_Vertical\_802.11b\_2472MHz



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq		Factor	Read Level	Level	Limit	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3696.500	-9.51	50.35	40.84	74.00	-33.16	Peak

4-18GHz\_Horizontal\_Peak\_802.11b\_2472MHz

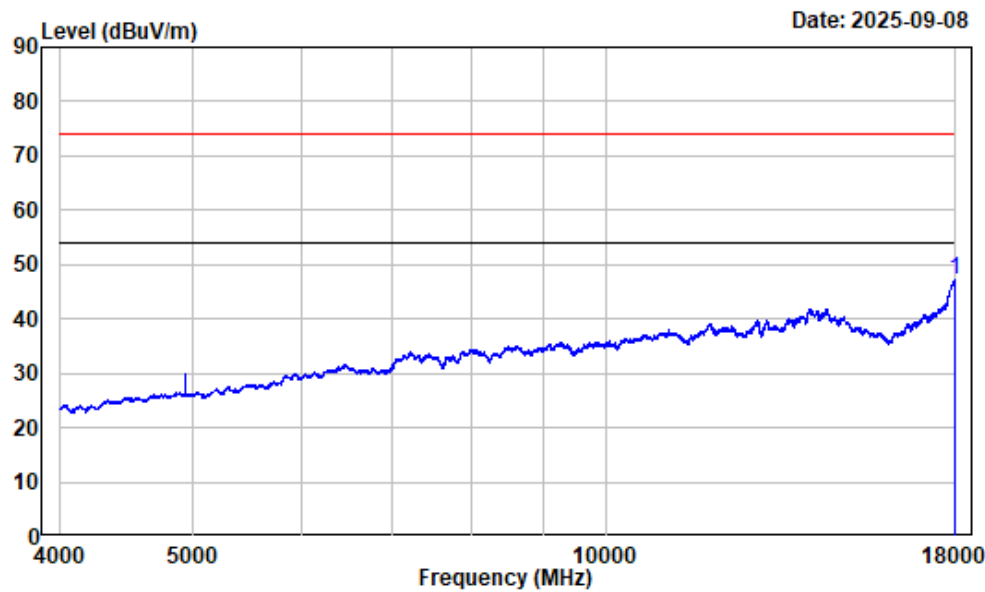


Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4WiFi\_b\_2472

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4944.000	-7.61	53.65	46.04	74.00	-27.96	Peak
2	17975.500	13.08	48.57	61.65	74.00	-12.35	Peak



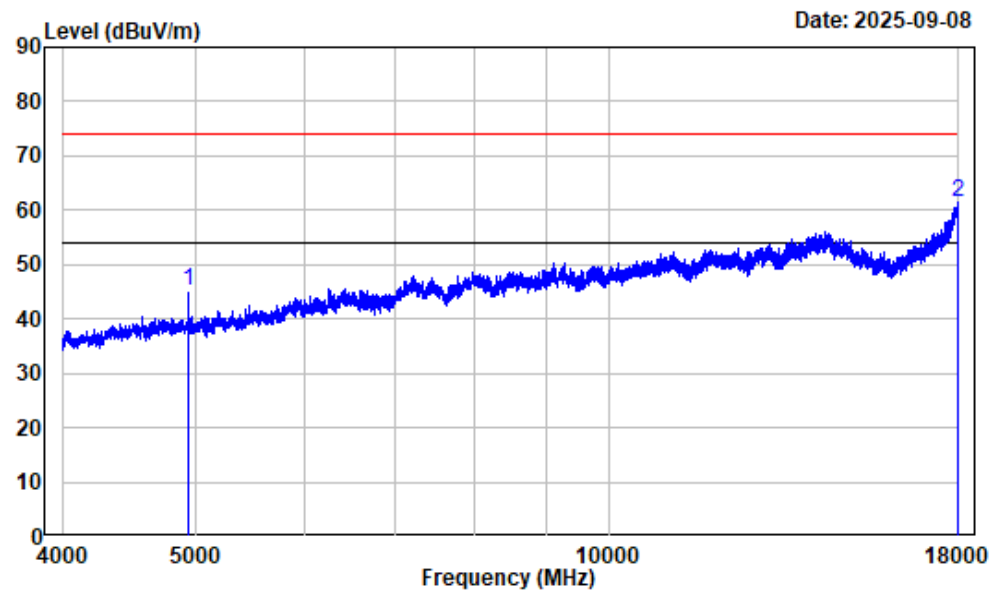
4-18GHz\_Horizontal\_Average\_802.11b\_2472MHz



Condition : Horizontal  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 17998.250	13.19	33.94	47.13	54.00	-6.87	Average

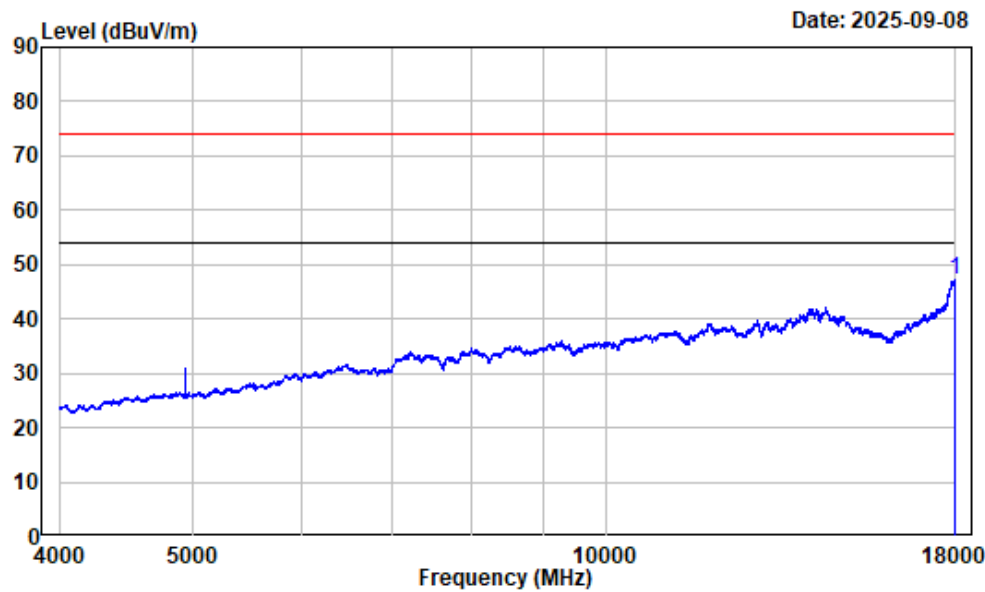
4-18GHz\_Vertical\_Peak\_802.11b\_2472MHz



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4944.000	-7.61	52.91	45.30	74.00	-28.70	Peak
2	17979.000	13.09	48.24	61.33	74.00	-12.67	Peak

4-18GHz\_Vertical\_Average\_802.11b\_2472MHz

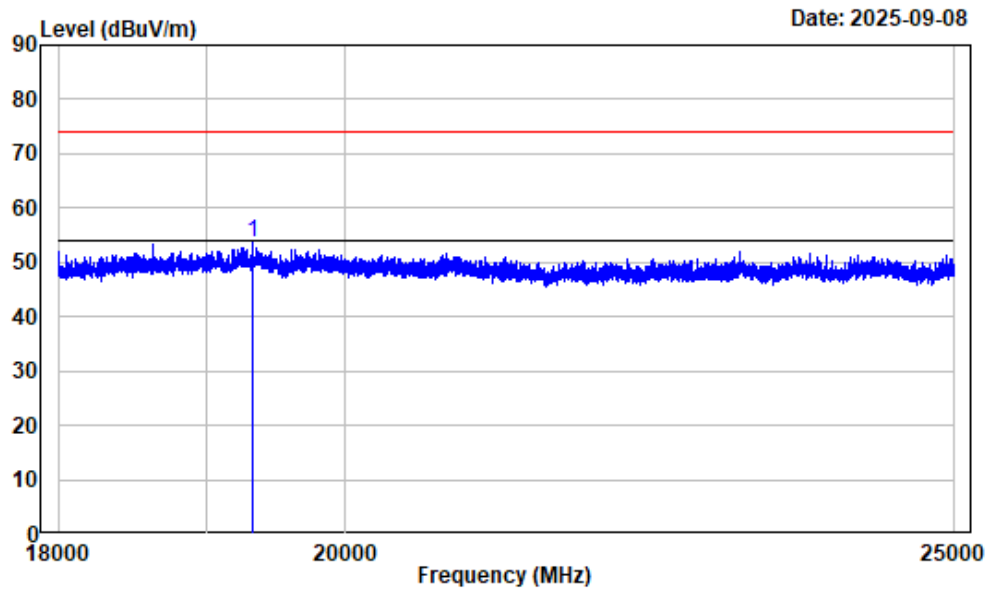


Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 17963.250	13.01	34.25	47.26	54.00	-6.74	Average

**18-25GHz (Only Listed with the worst harmonic margin test plot)**

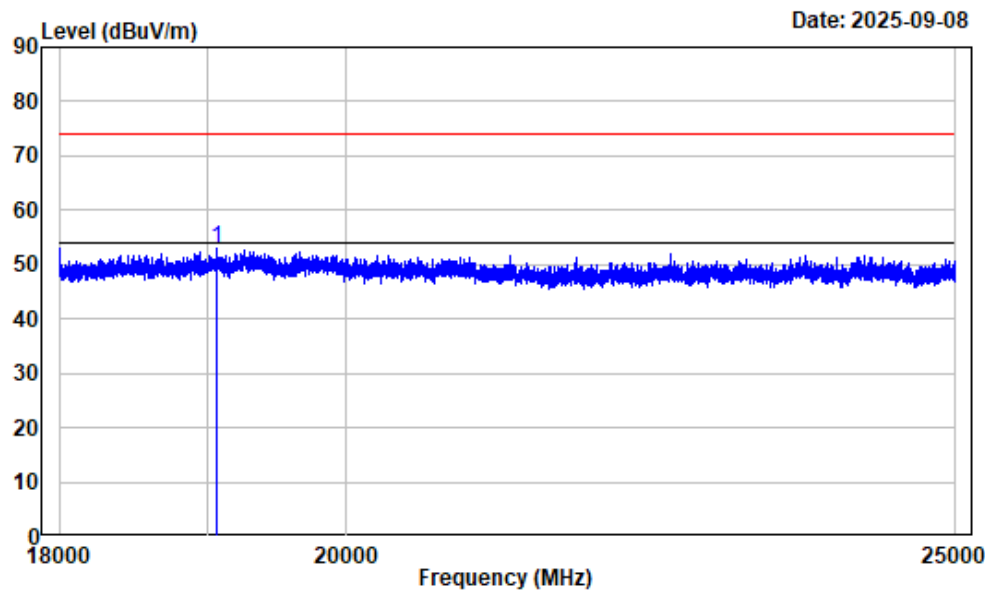
18-25GHz\_Horizontal\_Peak\_802.11b\_2472MHz



Condition : Horizontal  
 Project No. : 2501V71889E-RFW  
 Tester : Wing K Ji  
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
 Note : 2.4GWiFi\_b\_2472

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 19334.540		15.43	38.06	53.49	74.00	-20.51	peak

18-25GHz\_Vertical\_Peak\_802.11b\_2472MHz



Condition : Vertical  
Project No. : 2501V71889E-RFW  
Tester : Wing K Ji  
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak  
Note : 2.4GWiFi\_b\_2472

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 19065.010		15.28	37.70	52.98	74.00	-21.02	peak

6dB Emission Bandwidth

Test Information:

Sample No.:	37NC-2	Test Date:	2025/09/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cheeb Huang	Test Result:	Pass

Environmental Conditions:

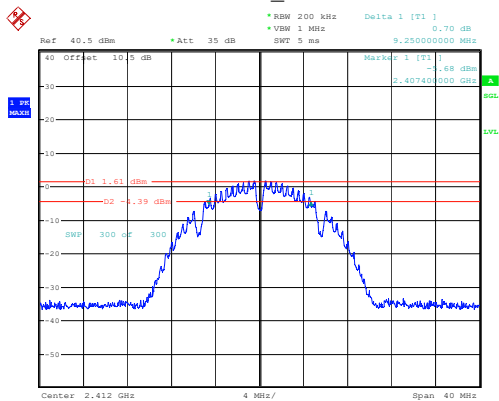
Temperature: (°C)	25.9	Relative Humidity: (%)	51	ATM Pressure: (kPa)	100.8
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Test Data:

Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11b	2412	9.250	≥0.5	Pass
	2442	9.250	≥0.5	Pass
	2472	9.250	≥0.5	Pass
802.11g	2412	16.500	≥0.5	Pass
	2442	16.500	≥0.5	Pass
	2472	16.550	≥0.5	Pass
802.11n20	2412	17.800	≥0.5	Pass
	2442	17.800	≥0.5	Pass
	2472	17.750	≥0.5	Pass

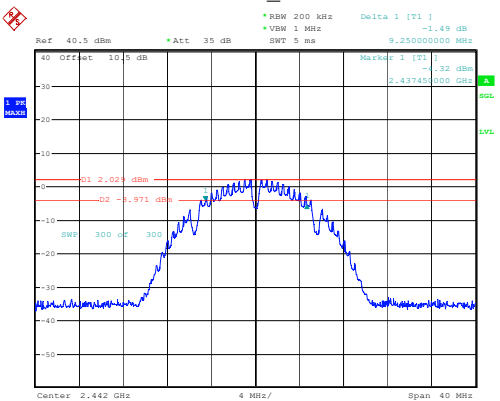
2412~2472

802.11b\_2412MHz



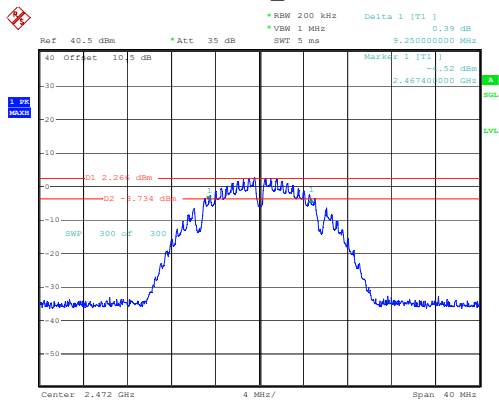
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:01:51

802.11b\_2442MHz



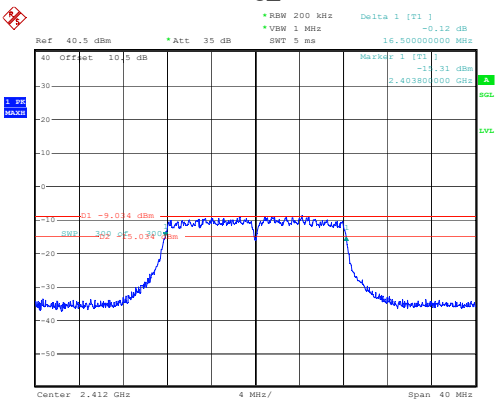
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:03:58

802.11b\_2472MHz



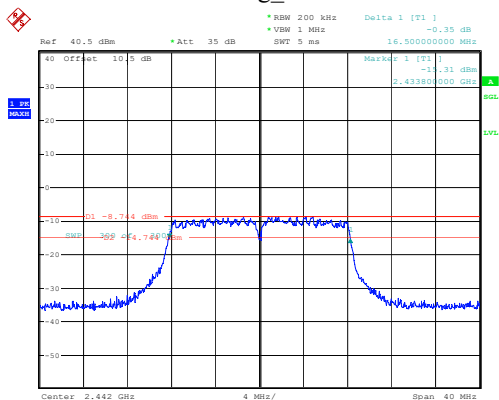
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:05:39

802.11g\_2412MHz



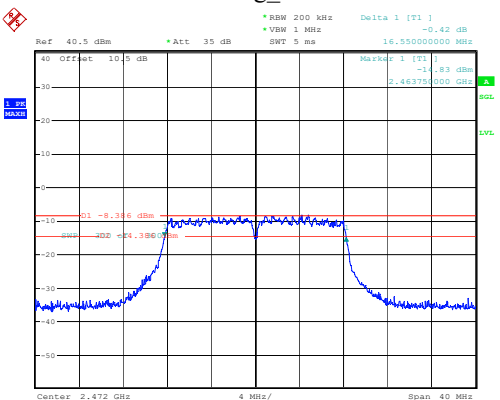
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:07:54

802.11g\_2442MHz

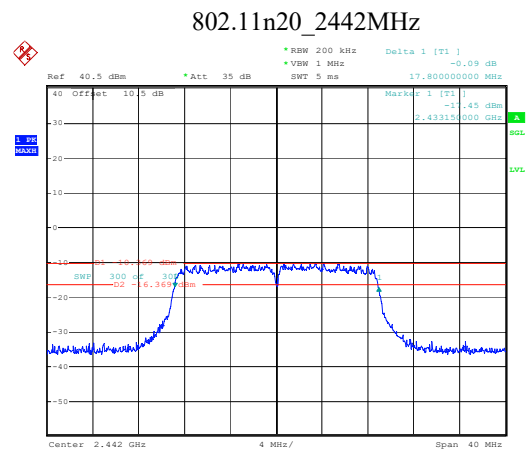


ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:10:53

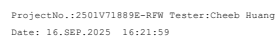
802.11g\_2472MHz



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:12:43



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:20:04





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

<b>Sample No.:</b>	37NC-2	<b>Test Date:</b>	2025/09/16
<b>Test Site:</b>	RF	<b>Test Mode:</b>	Transmitting
<b>Tester:</b>	Cheeb Huang	<b>Test Result:</b>	Pass

**Environmental Conditions:**

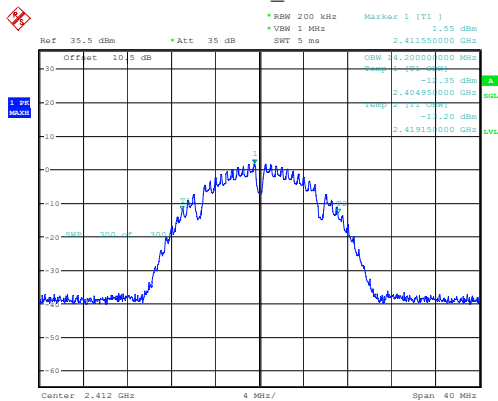
<b>Temperature:</b> (°C)	25.9	<b>Relative Humidity:</b> (%)	51	<b>ATM Pressure:</b> (kPa)	100.8
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**Test Data:**

<b>Mode</b>	<b>Test Frequency (MHz)</b>	<b>99% OBW (MHz)</b>
802.11b	2412	14.200
	2442	14.200
	2472	14.200
802.11g	2412	16.950
	2442	16.950
	2472	16.950
802.11n20	2412	<b>18.100</b>
	2442	<b>18.100</b>
	2472	<b>18.100</b>

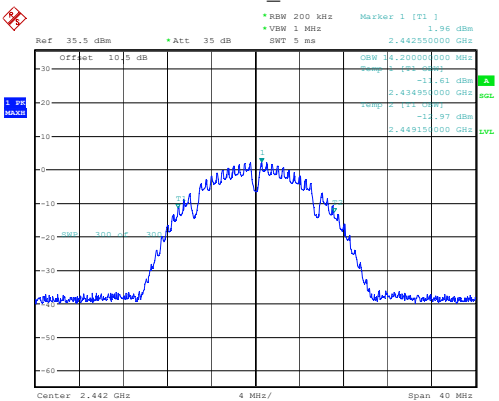
2412~2472

802.11b\_2412MHz



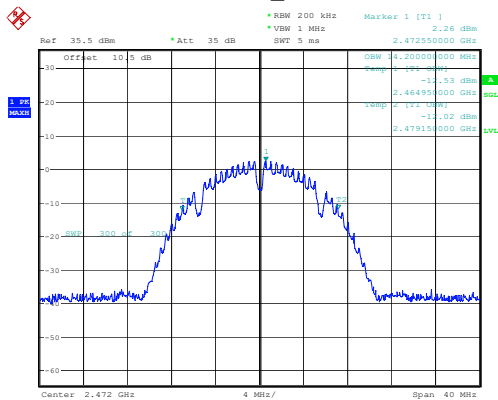
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:02:05

802.11b\_2442MHz



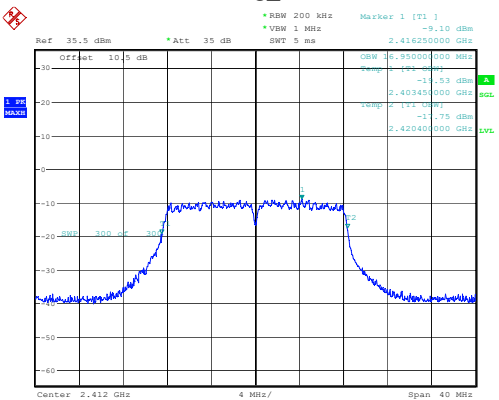
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:04:10

802.11b\_2472MHz



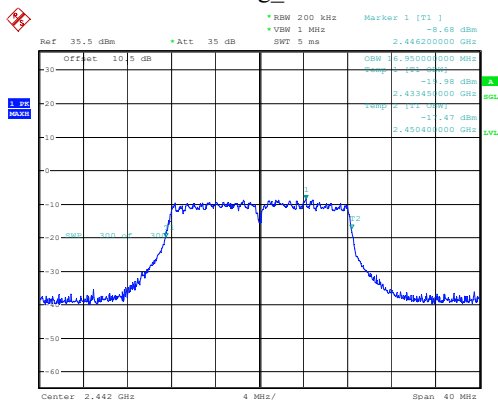
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:05:52

802.11g\_2412MHz



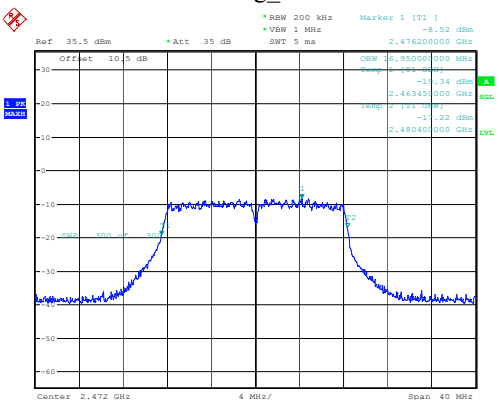
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Date: 16.SEP.2025 16:08:08

802.11g\_2442MHz

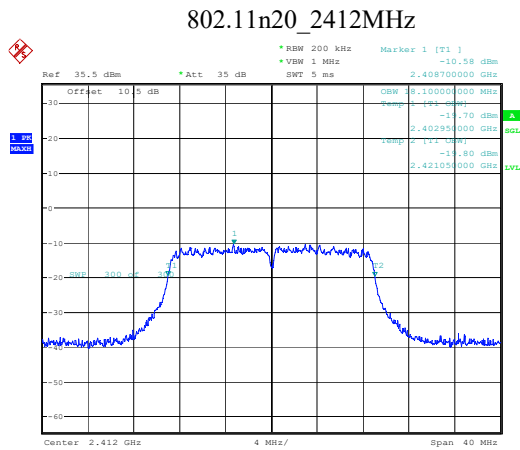


ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:11:06

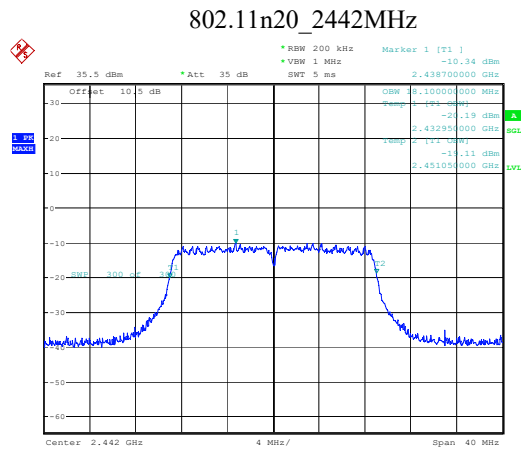
802.11g\_2472MHz



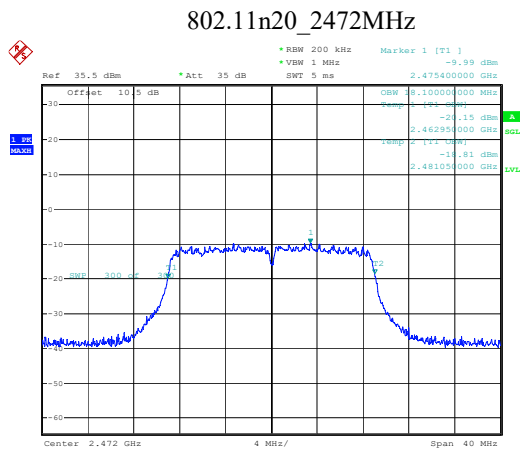
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:12:58



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:25:09



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:20:18



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:22:13

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

<b>Sample No.:</b>	37NC-2	<b>Test Date:</b>	2025/09/16
<b>Test Site:</b>	RF	<b>Test Mode:</b>	Transmitting
<b>Tester:</b>	Cheeb Huang	<b>Test Result:</b>	Pass

**Environmental Conditions:**

<b>Temperature:</b> (°C)	25.9	<b>Relative Humidity:</b> (%)	51	<b>ATM Pressure:</b> (kPa)	100.8
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**Test Data:**

Mode	Test Frequency (MHz)	Peak Output Power(dBm)	Average Output Power(dBm)	Limit (dBm)	Verdict
802.11b	2412	12.96	10.23	30	Pass
	2442	13.32	10.61	30	Pass
	2472	<b>13.69</b>	10.96	30	Pass
802.11g	2412	9.90	-0.10	30	Pass
	2442	10.23	0.25	30	Pass
	2472	10.53	0.54	30	Pass
802.11n20	2412	8.26	-1.18	30	Pass
	2442	8.53	-0.84	30	Pass
	2472	8.80	-0.54	30	Pass

Power Spectral Density

Test Information:

Sample No.:	37NC-2	Test Date:	2025/09/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cheeb Huang	Test Result:	Pass

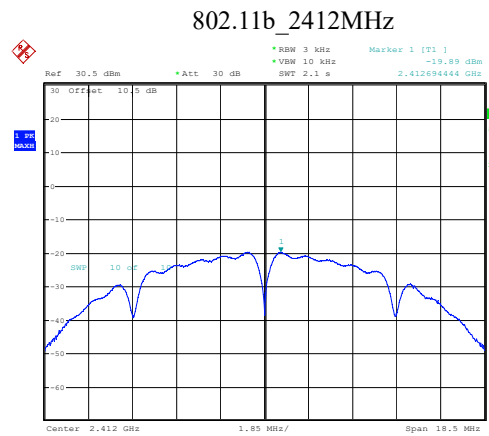
Environmental Conditions:

Temperature: (°C)	25.9	Relative Humidity: (%)	51	ATM Pressure: (kPa)	100.8
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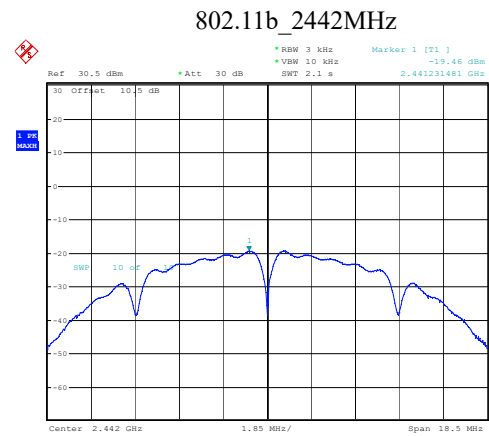
Test Data:

Mode	Test Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
802.11b	2412	-19.89	8	Pass
	2442	-19.46	8	Pass
	2472	-19.15	8	Pass
802.11g	2412	-27.37	8	Pass
	2442	-27.01	8	Pass
	2472	-26.73	8	Pass
802.11n20	2412	-28.17	8	Pass
	2442	-27.76	8	Pass
	2472	-27.49	8	Pass

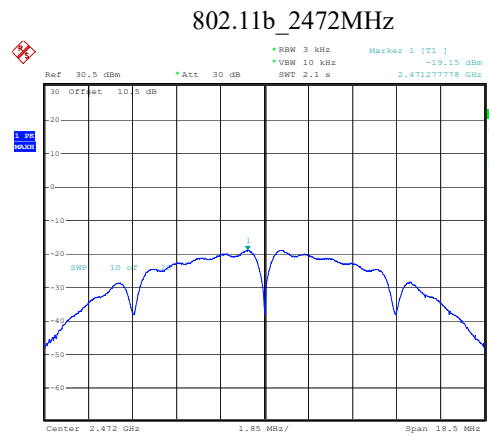
2412~2472



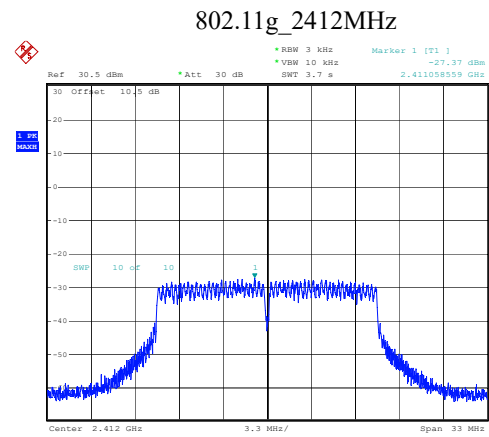
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:03:32



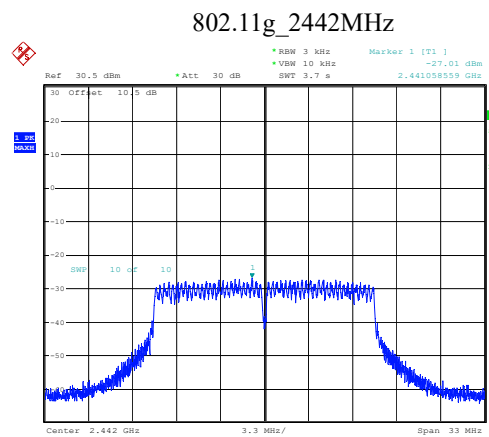
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:05:08



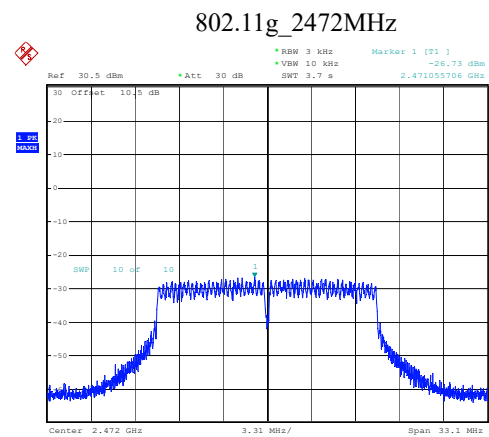
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:07:24



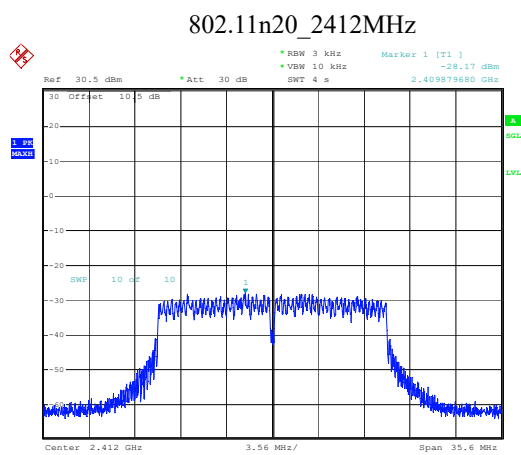
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:09:53



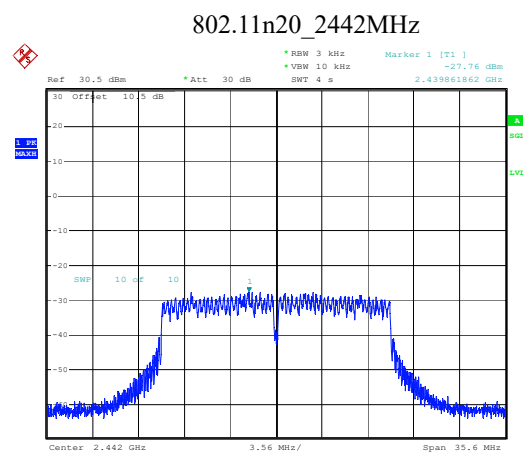
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:12:21



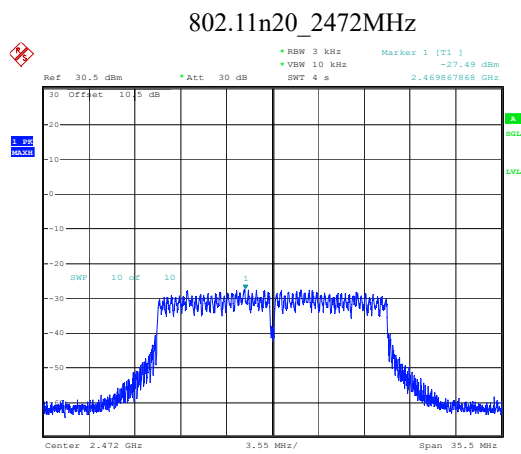
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:14:45



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:26:58



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:21:36



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:24:03

100 kHz Bandwidth of Frequency Band Edge

Test Information:

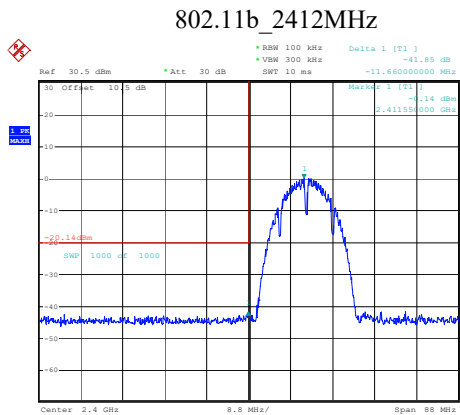
Sample No.:	37NC-2	Test Date:	2025/09/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cheeb Huang	Test Result:	Pass

Environmental Conditions:

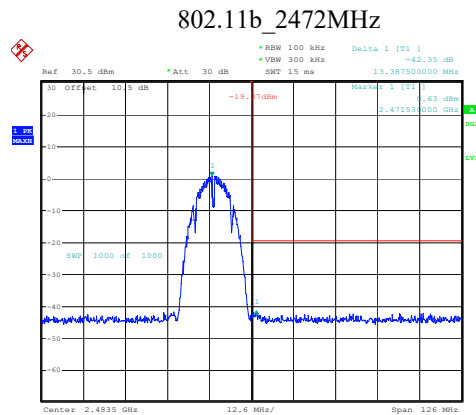
Temperature: (°C)	25.9	Relative Humidity: (%)	51	ATM Pressure: (kPa)	100.8
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Test Data:

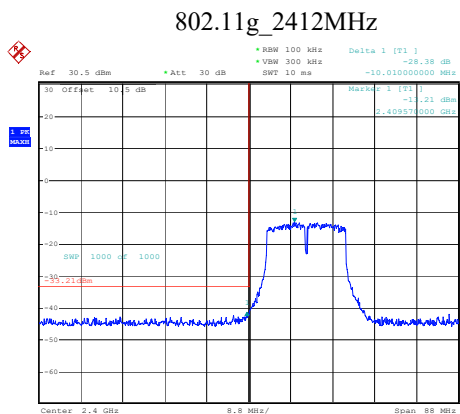
2412~2472



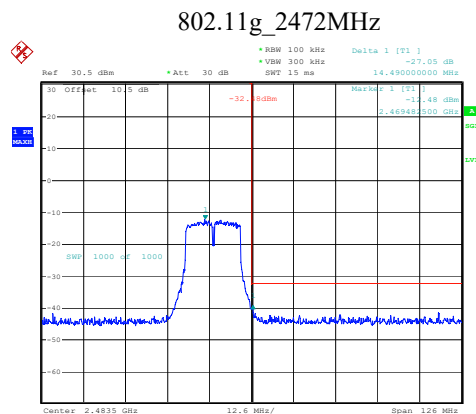
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:02:34



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:06:25

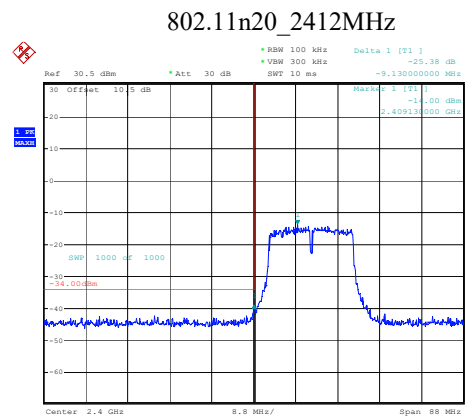


ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:08:38

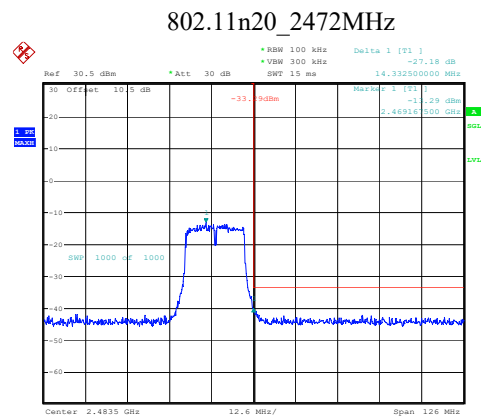


ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:13:30





ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:25:39



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:22:44

**Duty Cycle****Test Information:**

<b>Sample No.:</b>	37NC-2	<b>Test Date:</b>	2025/09/16
<b>Test Site:</b>	RF	<b>Test Mode:</b>	Transmitting
<b>Tester:</b>	Cheeb Huang	<b>Test Result:</b>	Pass

**Environmental Conditions:**

<b>Temperature:</b> (°C)	25.9	<b>Relative Humidity:</b> (%)	51	<b>ATM Pressure:</b> (kPa)	100.8
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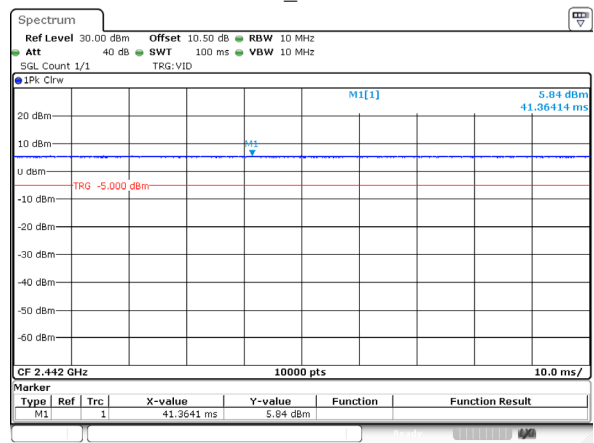
**Test Data:**

Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11b	2442	100	100	100	0	NA	0.010
802.11g	2442	100	100	100	0	NA	0.010
802.11n20	2442	100	100	100	0	NA	0.010

$$\text{Duty Cycle} = \text{Ton}/(\text{Ton}+\text{Toff})*100\%$$

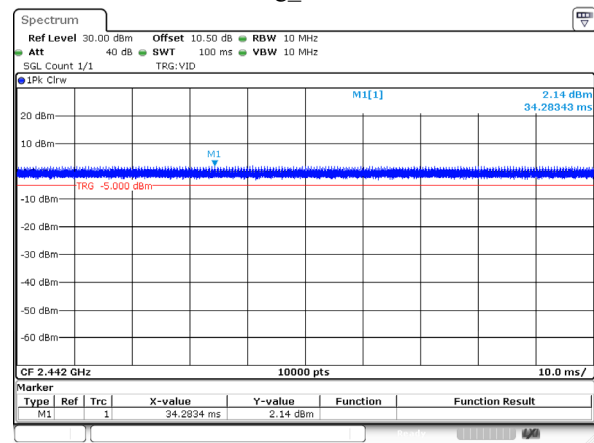
2412~2472

802.11b\_2442MHz



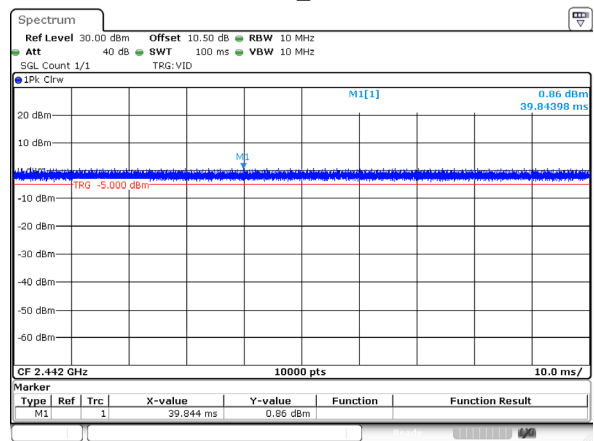
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:34:29

802.11g\_2442MHz



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:34:56

802.11n20\_2442MHz



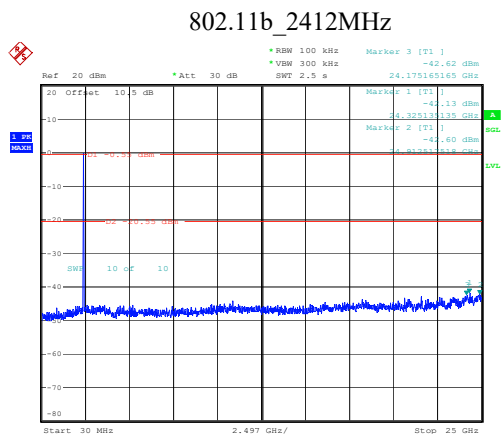
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:35:40

**Test Information:**

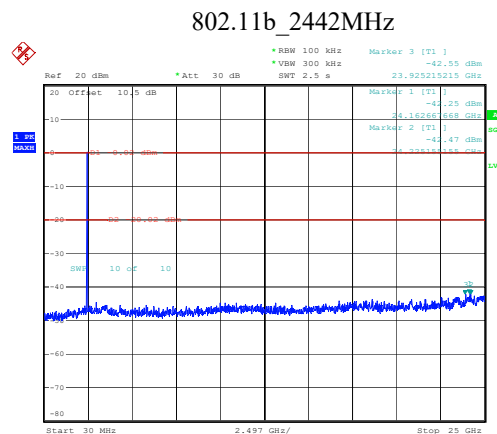
<b>Sample No.:</b>	37NC-2	<b>Test Date:</b>	2025/09/16
<b>Test Site:</b>	RF	<b>Test Mode:</b>	Transmitting
<b>Tester:</b>	Cheeb Huang	<b>Test Result:</b>	Pass

Temperature: (°C)	25.9	Relative Humidity: (%)	51	ATM Pressure: (kPa)	100.8
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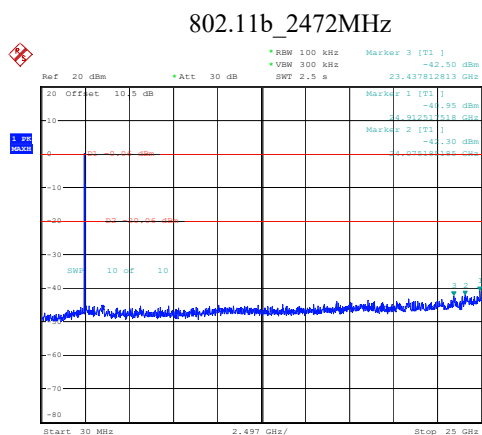
**2412~2472**



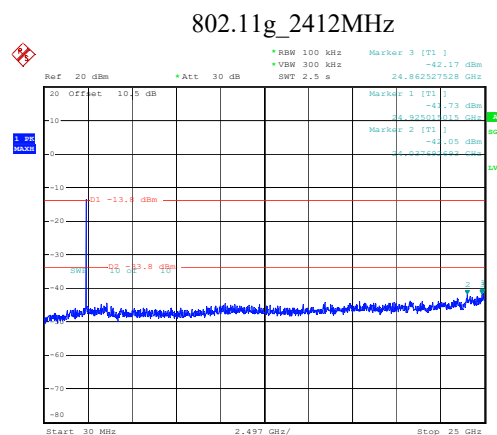
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:03:06



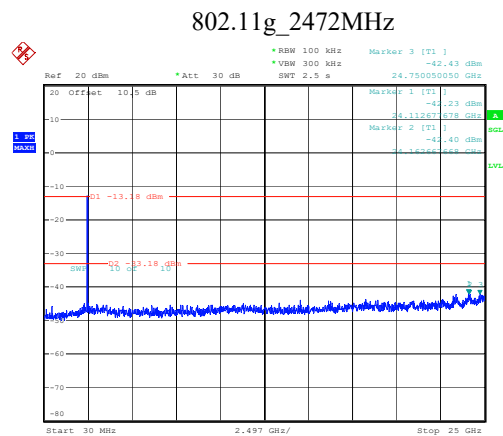
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:04:42



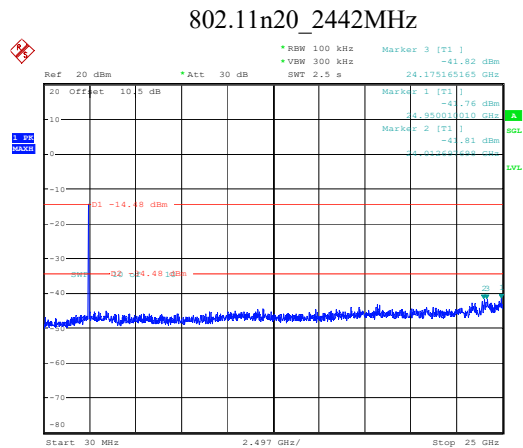
ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16-SEP-2025 16:06:57



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16-SEP-2025 16:09:11



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:14:03



ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:20:50

ProjectNo.:2501V71889E-RFW Tester:Cheeb Huang  
Date: 16.SEP.2025 16:23:17

## RF EXPOSURE EVALUATION

### MPE-Based Exemption

#### Applicable Standard

According to 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 (MHz)	Tune up conducted power <sup>#</sup> (dBm)	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (W)
			(dBi)	(dBd)	(dBm)	(W)		
BLE	2402-2480	-7	2.89	0.74	-6.26	0.0002	0.2	0.768
2.4GWIFI	2412-2472	14	2.89	0.74	14.74	0.030	0.2	0.768

Note: The tune up conducted power and antenna gain was declared by the applicant.

Simultaneous transmitting consideration (worst case):

The ratio=  $ERP_{BLE}/limit + ERP_{2.4G\ Wi-Fi}/limit = 0.0002/0.768 + 71.61/0.768 + 0.03/0.768 = 0.039 < 1.0$

So simultaneous exposure is compliant.

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 2501V71889E-RFW-EXP External photo and 2501V71889E-RFW-INP Internal photo.



## **TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment 2501V71889E-RFW-TSP Test Setup photo.

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