

TEST REPORT

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Report Number: 2501Z35009E-RF-00
FCC ID: 2BRBT-KASTRAL251219

Test Standard (s)

FCC PART 15.247

Sample Description

Product Type: Marine Navigation Equipment
Model No.: K-Astral 12S
Multiple Model(s) No.: K-Astral 8, K-Astral 8C, K-Astral 8S, K-Astral 8A, K-Astral 8X, K-Astral 12, K-Astral 12A, K-Astral 12C, K-Astral 12X
Trade Mark: ONWA
Date Received: 2025-11-25
Issue Date: 2026-04-23

Test Result:	Pass▲
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▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

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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	2501Z35009E-RF-00	Original Report	2026-04-23

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Marine Navigation Equipment
Test Model	K-Astral 12S
Multiple Model(s)	K-Astral 8, K-Astral 8C, K-Astral 8S, K-Astral 8A, K-Astral 8X, K-Astral 12, K-Astral 12A, K-Astral 12C, K-Astral 12X
Frequency Range	802.11b/g/n20: 2412~2462MHz; 802.11n40: 2422~2452MHz
Mode	802.11b/g/n20/n40
Maximum Conducted Output Peak Power	21.05dBm
Modulation Technique	DSSS, OFDM
Antenna Specification[#]	1.83dBi (provided by the applicant)
Voltage Range	DC 10.5~31.2V from DC port
Sample serial number	3DF2-1 for Radiated Emissions Test 3DF2-2 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	N/A

Note: The Multiple models are electrically identical with the test model except for model name, dimensions(L*W*H), weight, display, display area (W*H), Built-in GNSS Antenna and transducer, Please refer to the declaration letter[#] for more detail, which was provided by manufacturer.

Note: The model K-Astral 8, K-Astral 8C, K-Astral 8S, K-Astral 8A and K-Astral 8X have differences in motherboard size and display screen circuit board between the main test models, Therefore, the K-Astral 8 model was selected for differential testing of radiation Emissions(Below 1G).

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, 15.209 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.

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		52.29kHz(k=1.96, 95% level of confidence)
RF output power, conducted		1.57dB(k=1.96, 95% level of confidence)
Power Spectral Density		2.09dB(k=1.96, 95% level of confidence)
Conducted Spurious Emission		2.48dB(k=1.96, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz~150 kHz	3.46dB(k=2, 95% level of confidence)
	150 kHz ~30MHz	3.72dB(k=2, 95% level of confidence)
Radiated Emissions	0.009MHz~30MHz	3.66dB(k=2, 95% level of confidence)
	30MHz~1000MHz (Horizontal)	5.10dB(k=2, 95% level of confidence)
	30MHz~1000MHz (Vertical)	6.28dB(k=2, 95% level of confidence)
	1GHz - 6GHz	6.18dB(k=2, 95% level of confidence)
	6GHz - 18GHz	6.62dB(k=2, 95% level of confidence)
	18GHz - 40GHz	6.66dB(k=2, 95% level of confidence)
Temperature		$\pm 0.4^{\circ}\text{C}$
Humidity		$\pm 2\%$
Supply voltages		DC $\pm 0.4\%$; AC $\pm 1\%$

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, test firm registration No.: 715558, the FCC Designation No.: CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 2.4GHz Wi-Fi mode, total 11 channels are provided to testing:

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

802.11b, 802.11g and 802.11n-HT20 mode was tested with Channel 1, 6 and 11.

802.11n-HT40 mode was tested with Channel 3, 6 and 9.

EUT Exercise Software

Exercise Software [#]		SecureCRT		
Mode	Data rate	Power Level [#]		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	50	50	50
802.11g	6Mbps	50	50	50
802.11n20	MCS0	50	50	50
802.11n40	MCS0	50	50	50

Note: The worst-case data rates are determined to be as above 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

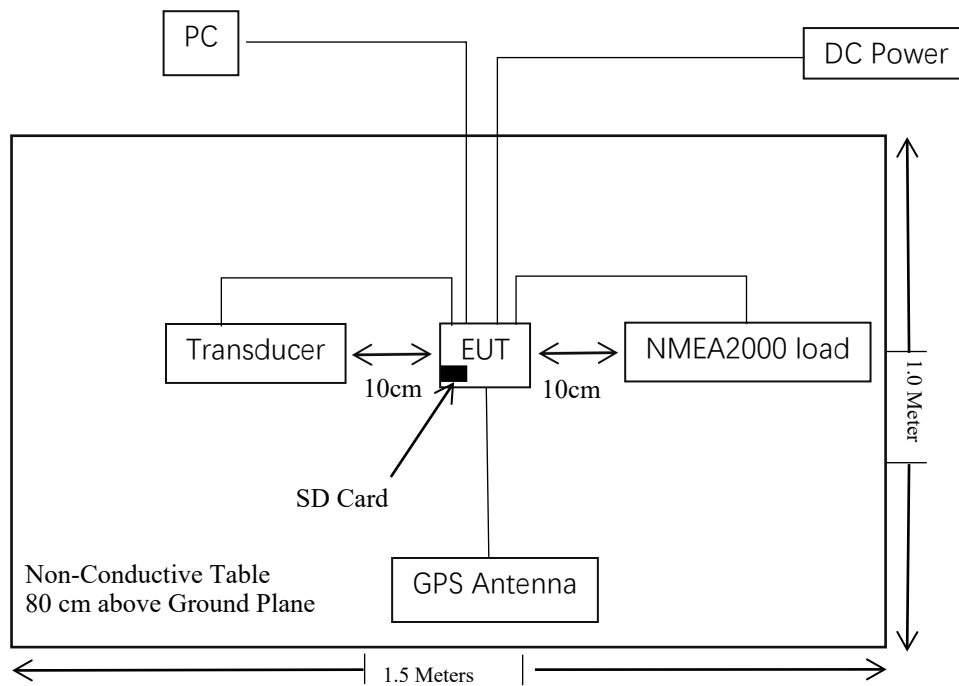
Manufacturer	Description	Model	Serial Number
DELL	PC	Latitude E6520	DL0ZCS1
DELIXI	DC power	DLX-60V5AMF	115848
ONWA	GPS Antenna	Unknown	Unknown
ONWA	Transducer	KTD-TH520	12503123
Unknown	NMEA2000 load	Unknown	Unknown
Eadet	SD Card	T1	Unknown

External I/O Cable

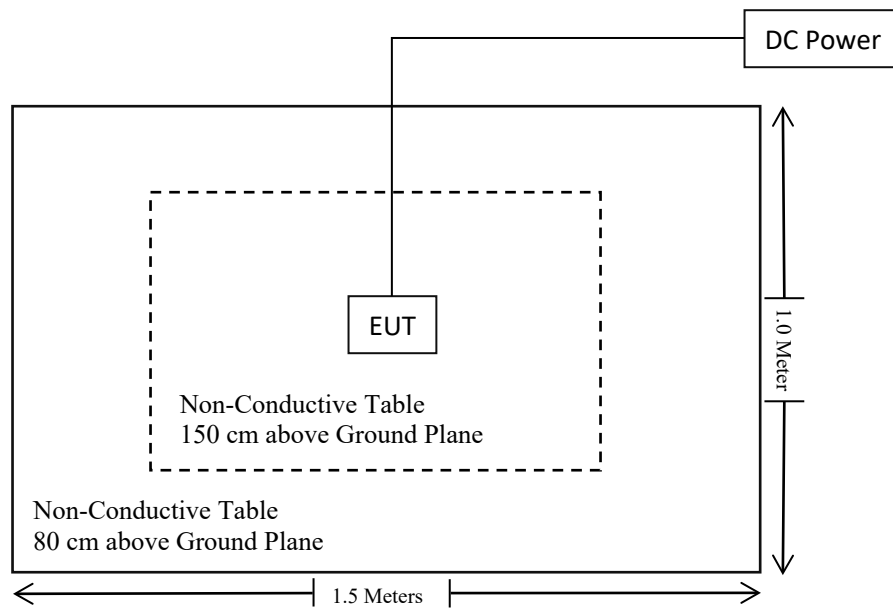
Cable Description	Length (m)	From Port	To
Unshielded un-detachable DC cable	10.0	EUT	DC Power
Unshielded detachable RF cable	13.5	EUT	GPS Antenna
Unshielded detachable XDUCER cable	14.5	EUT	Transducer
Unshielded detachable RJ45 cable	10.5	EUT	PC
Unshielded detachable NMEA cable	1.5	EUT	NMEA2000 load

Block Diagram of Test Setup

For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

Test Rules	Description of Test	Result
§1.1307 (b) & §2.1091	MPE-Based Exemption	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Not Applicable
§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
§15.247(d)	Conducted Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
C63.10 §11.6	Duty Cycle	/

Not Applicable: the device not connected to the public utility (AC) power line.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
TDK	Chamber	Chamber A	2#	2023/07/12	2026/07/11
TDK	Chamber	Chamber B	1#	2023/07/14	2026/07/13
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2025/09/01	2026/08/31
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	Chamber A Cable	Cable A3	Cable A3	2025/09/08	2026/09/07
Unknown	Chamber A Cable	Cable A4	Cable A4	2025/09/08	2026/09/07
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Chamber A Cable	Cable A1	Cable A1	2025/09/08	2026/09/07
Unknown	Chamber A Cable	Cable A2	Cable A2	2025/09/08	2026/09/07
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	2025/09/08	2026/09/07
Schwarzbeck	Horn Antenna	BBHA9120D (1201)	1143	2023/07/26	2026/07/25
Unknown	Chamber B Cable	Cable B1	Cable B1	2025/09/08	2026/09/07
Unknown	Chamber B Cable	Cable B2	Cable B2	2025/09/08	2026/09/07
Unknown	Chamber B Cable	Cable B3	Cable B3	2025/09/08	2026/09/07
JD	Filter Switch Unit	DT7220FSU	DS79906	2025/08/12	2026/08/11
JD	Multiplex Switch Test Control Set	DT7220SCU	DS79903	2025/08/12	2026/08/11
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
Unknown	Chamber B Cable	Cable B4	Cable B4	2025/09/17	2026/09/16
Unknown	Chamber B Cable	Cable B5	Cable B5	2025/09/17	2026/09/16
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
RF Conducted Test					
JD	JD Auto TestSystem	NA	1.0.0.3769	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSV40	101942	2025/09/01	2026/08/31
Unknown	10dB Attenuator	Unknown	F-03-EM190	2025/06/26	2026/06/25
Micro-Tronics	RF Cable	8082135	W1113	2025/06/26	2026/06/25
ANRITSU	Microwave peak power sensor	MA24418A	12622	2025/04/29	2026/04/28

*** 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).

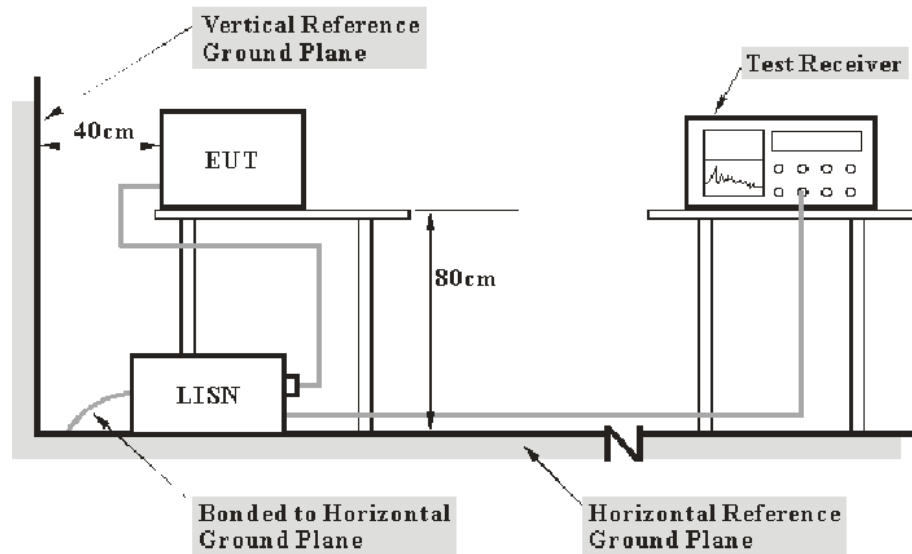
REQUIREMENTS AND TEST PROCEDURES

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).

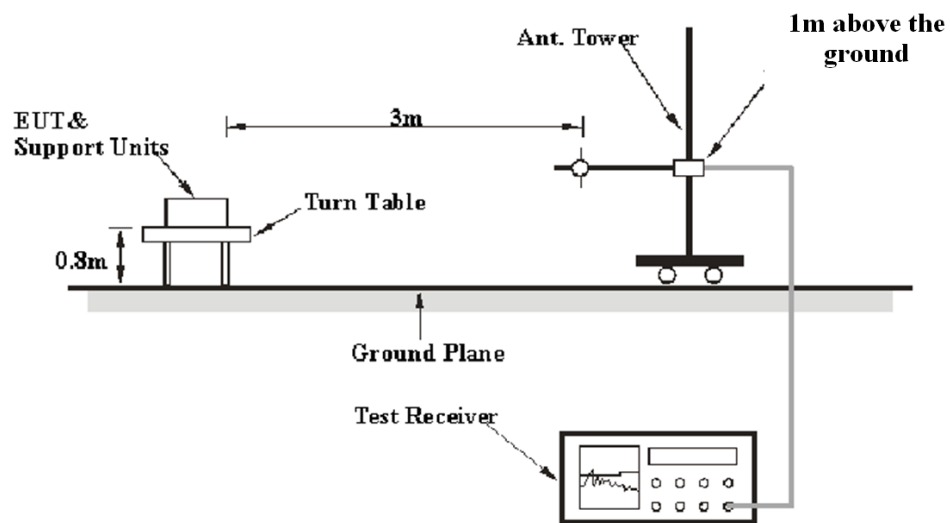
Spurious Emissions

Applicable Standard

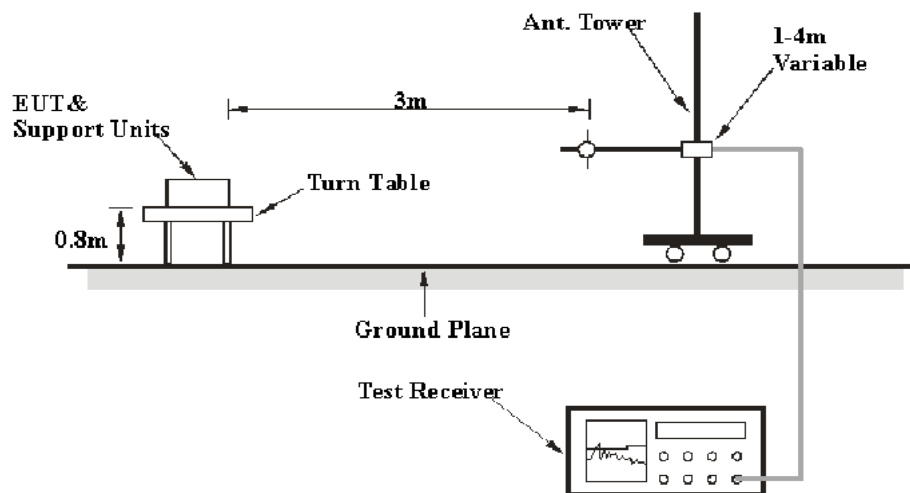
FCC §15.247 (d); §15.209; §15.205;

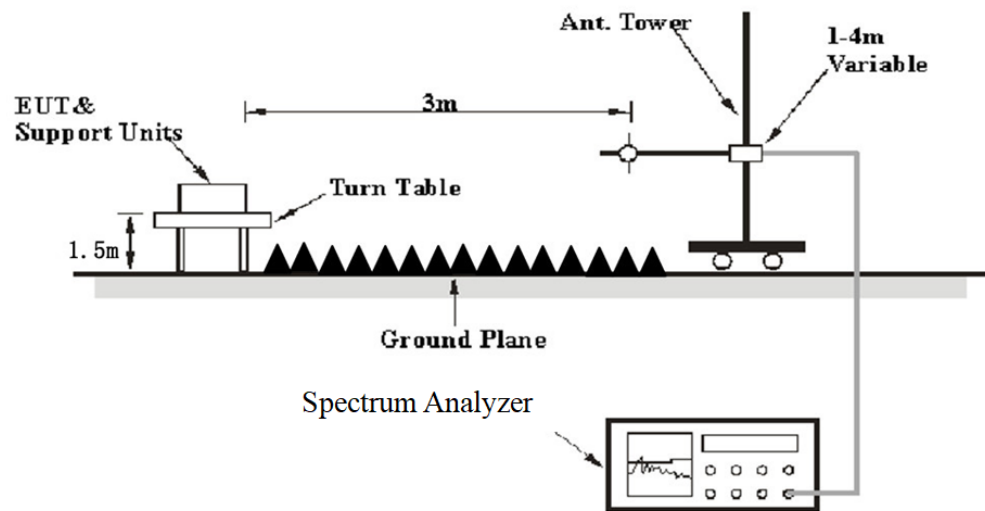
EUT Setup

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, not less than 1kHz	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:

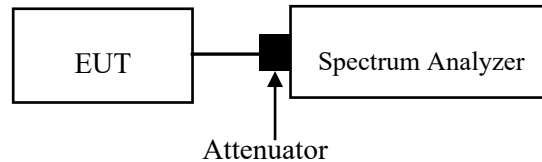
- a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- b) Set the VBW $\geq [3 \times \text{RBW}]$.
- c) Detector = peak.
- d) Trace mode = max-hold.
- e) Sweep = No faster than coupled (auto) time.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of 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

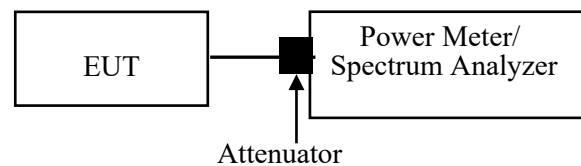
Applicable Standard

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

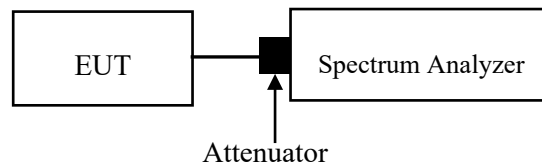
Establish an emission level by using the following procedure:

- 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

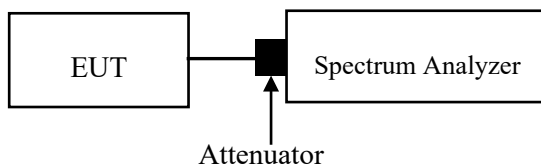
Establish an emission level by using the following procedure:

- 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 1: A short RF cable with low cable loss connected to the EUT antenna port, which was provided by client or lab, the worst case 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: The worst cable loss among the test frequency range was added into plots.

Power Spectral Density

Applicable Standard

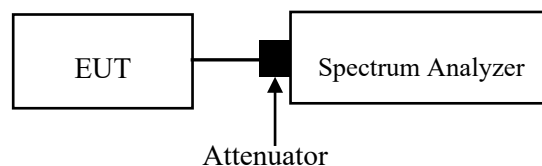
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of 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.



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)

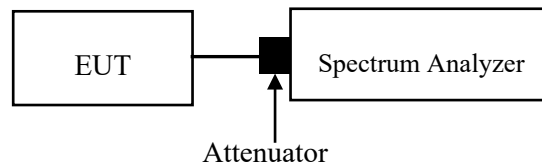
Duty Cycle

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[#] is 1.83dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant

TEST DATA AND RESULTS

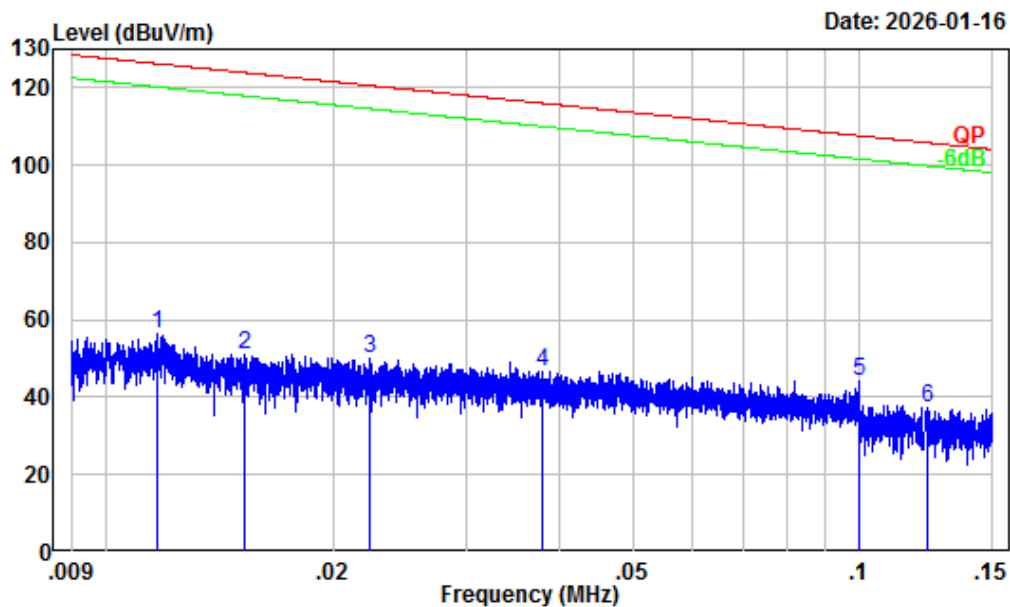
Spurious Emissions

Environmental Conditions

Temperature (°C)	21.8-23.8	Relative Humidity (%)	44-47
ATM Pressure (kPa):	100.1-101.2	Test engineer:	Leon Guo&Nico Wu
Test date:	2025/12/21-2026/1/16		
EUT operation mode:	Below 1GHz: Transmitting (Maximum output power mode, 802.11b Low Channel) Above 1GHz: Transmitting		
Note:	1. For the radiated spurious emission below 30MHz, after pre-scan in the ground-parallel, perpendicular and parallel of orientation, the worst case parallel of orientation were 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 were recorded.		

Below 1GHz:**Model: K-Astral 12S**

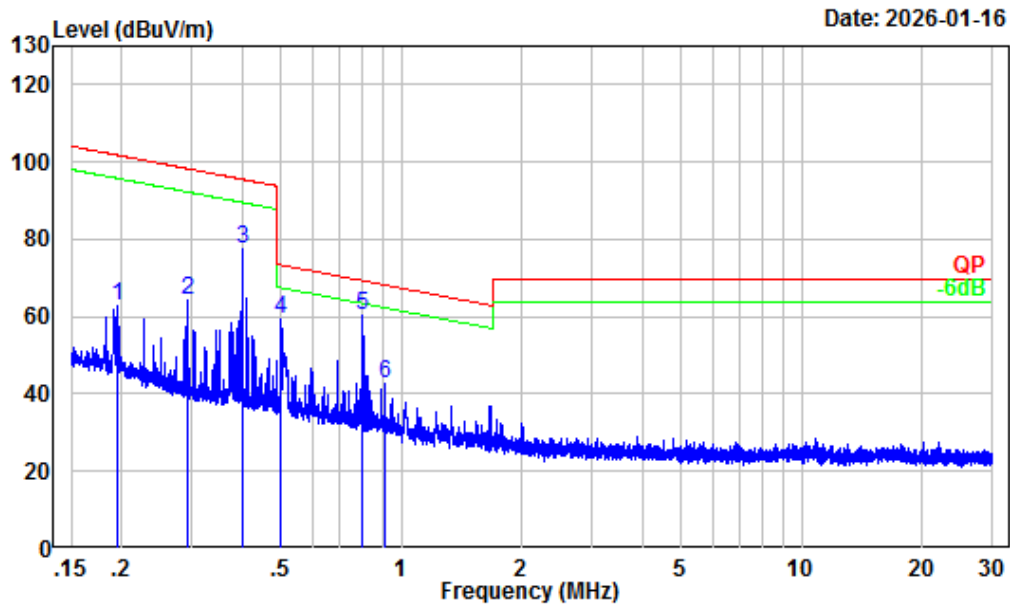
9kHz-150kHz



Site : Chamber A
Condition : 3m
Project Number : 2501Z35009E-RF
Test Mode : 2.4G WIFI Transmitting
Detector: Peak RBW/VBW: 0.3/1kHz
Tester : Nico Wu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	31.97	24.44	56.41	126.22	-69.81	Peak
2	0.015	31.30	19.76	51.06	123.92	-72.86	Peak
3	0.022	29.95	20.16	50.11	120.62	-70.51	Peak
4	0.038	27.67	19.10	46.77	116.04	-69.27	Peak
5	0.100	22.01	22.04	44.05	107.62	-63.57	Peak
6	0.123	20.62	16.77	37.39	105.78	-68.39	Peak

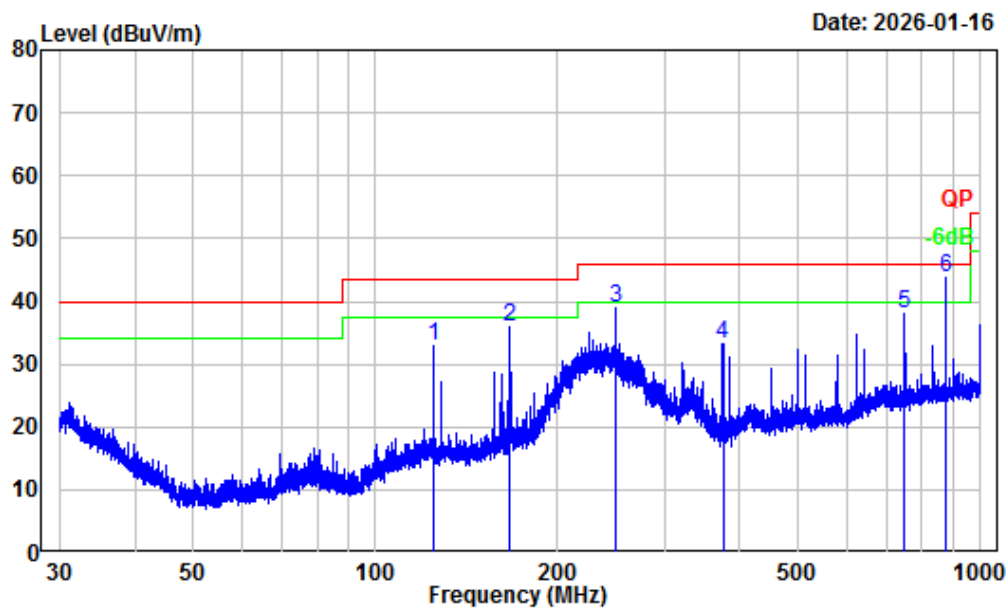
150kHz-30MHz



Site : Chamber A
Condition : 3m
Project Number : 2501Z35009E-RF
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	0.196	16.33	46.32	62.65	101.75	-39.10	Peak
2	0.294	10.58	53.53	64.11	98.25	-34.14	Peak
3	0.401	8.27	69.30	77.57	95.53	-17.96	Peak
4	0.500	6.40	53.07	59.47	73.61	-14.14	Peak
5	0.797	2.74	57.50	60.24	69.49	-9.25	Peak
6	0.907	1.90	40.92	42.82	68.34	-25.52	Peak

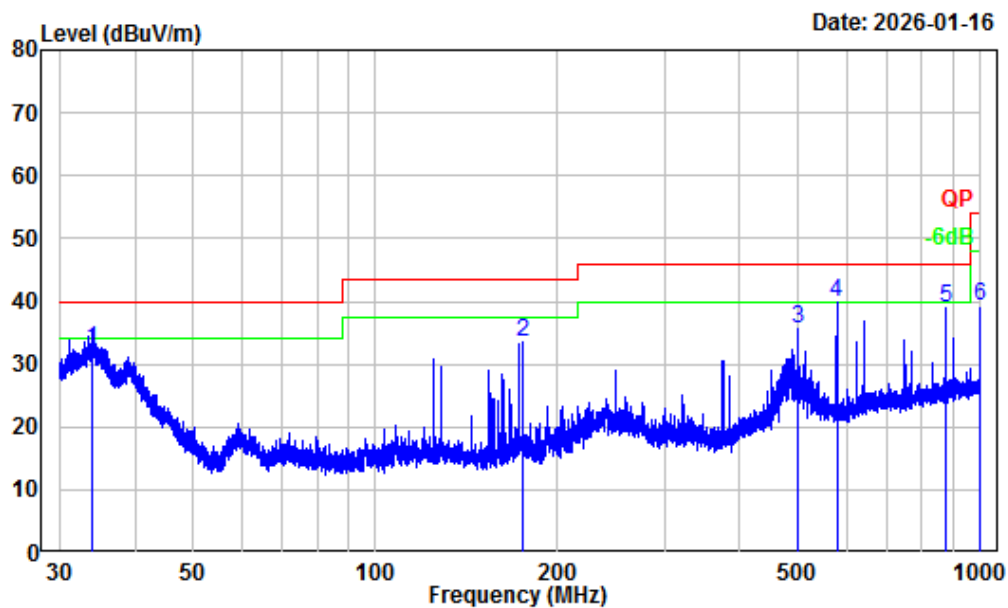
30MHz-1GHz_Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2501Z35009E-RF
Test Mode : 2.4G WIFI Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Nico Wu

	Freq Factor		Read		Limit	Over	Remark
	MHz	dB/m	Level	Level	Line	Limit	
			dBuV	dBuV/m	dBuV/m	dB	
1	125.01	-11.12	43.95	32.83	43.50	-10.67	Peak
2	166.94	-13.00	49.02	36.02	43.50	-7.48	Peak
3	249.97	-13.09	51.96	38.87	46.00	-7.13	Peak
4	375.12	-9.28	42.57	33.29	46.00	-12.71	Peak
5	750.11	-2.88	40.99	38.11	46.00	-7.89	Peak
6	875.25	-1.52	45.20	43.68	46.00	-2.32	QP

30MHz-1GHz_Vertical

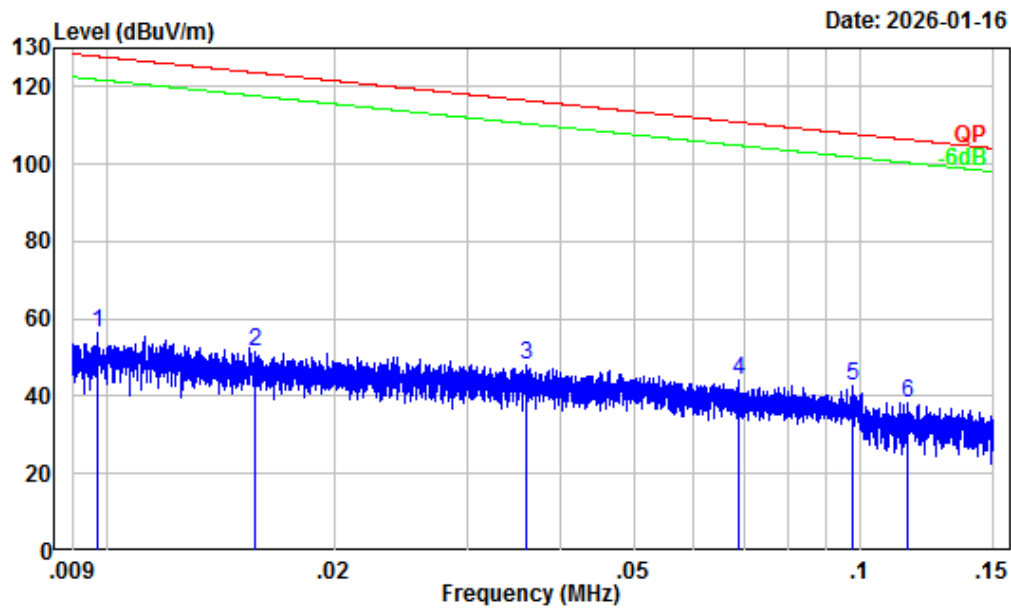


Site : Chamber A
Condition : 3m Vertical
Project Number : 2501Z35009E-RF
Test Mode : 2.4G WIFI Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Nico Wu

	Freq Factor		Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	34.10	-8.34	40.60	32.26	40.00	-7.74	QP
2	174.65	-13.38	46.75	33.37	43.50	-10.13	Peak
3	500.08	-5.76	41.30	35.54	46.00	-10.46	Peak
4	578.67	-5.25	44.98	39.73	46.00	-6.27	Peak
5	875.25	-1.52	40.46	38.94	46.00	-7.06	Peak
6	1000.00	-0.40	39.61	39.21	54.00	-14.79	Peak

Model: K-Astral 8

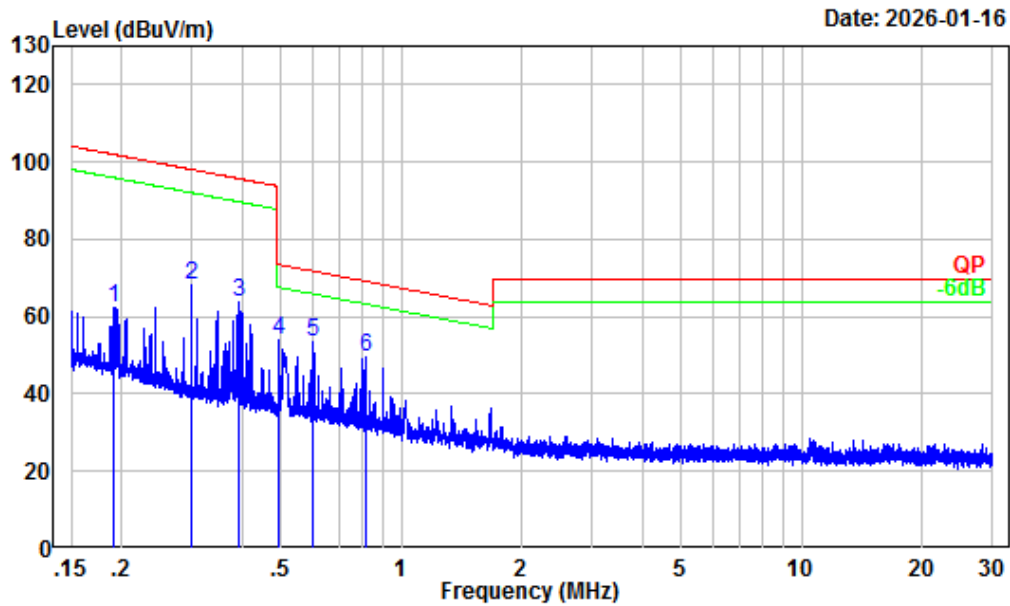
9kHz-150kHz



Site : Chamber A
Condition : 3m
Project Number : 2501Z35009E-RF
Test Mode : 2.4G WIFI Transmitting
Detector: Peak RBW/VBW: 0.3/1kHz
Tester : Nico Wu

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.010	32.36	24.09	56.45	127.85	-71.40	Peak
2	0.016	31.21	20.31	51.52	123.67	-72.15	Peak
3	0.036	27.86	20.23	48.09	116.47	-68.38	Peak
4	0.069	24.50	19.49	43.99	110.82	-66.83	Peak
5	0.098	22.16	20.50	42.66	107.81	-65.15	Peak
6	0.115	21.11	17.29	38.40	106.38	-67.98	Peak

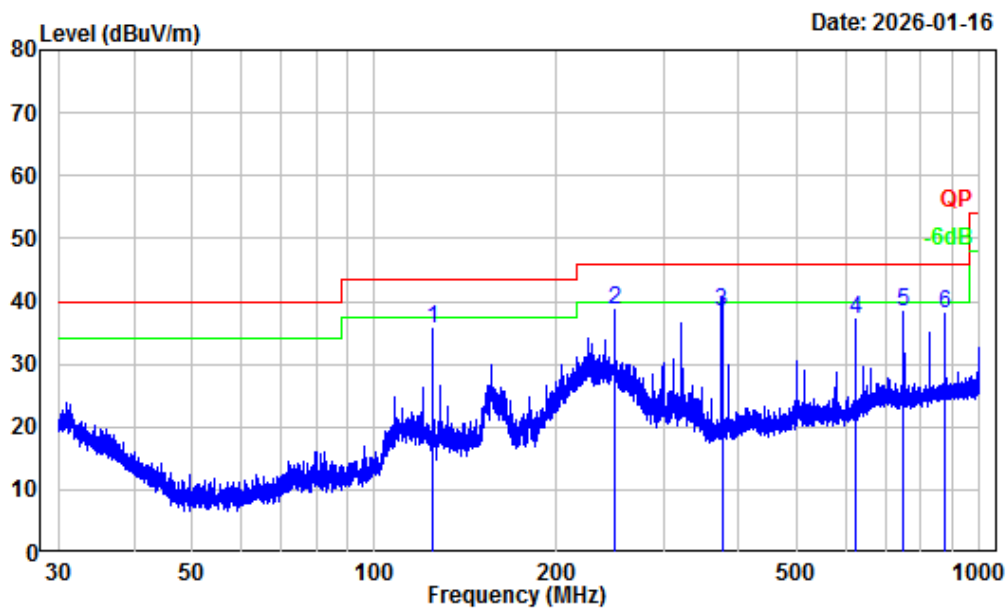
150kHz-30MHz



Site : Chamber A
Condition : 3m
Project Number : 2501Z35009E-RF
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	0.191	16.65	45.79	62.44	102.00	-39.56	Peak
2	0.299	10.25	57.94	68.19	98.09	-29.90	Peak
3	0.392	8.45	55.47	63.92	95.74	-31.82	Peak
4	0.496	6.47	47.37	53.84	73.68	-19.84	Peak
5	0.602	5.14	48.42	53.56	71.98	-18.42	Peak
6	0.813	2.61	46.86	49.47	69.31	-19.84	Peak

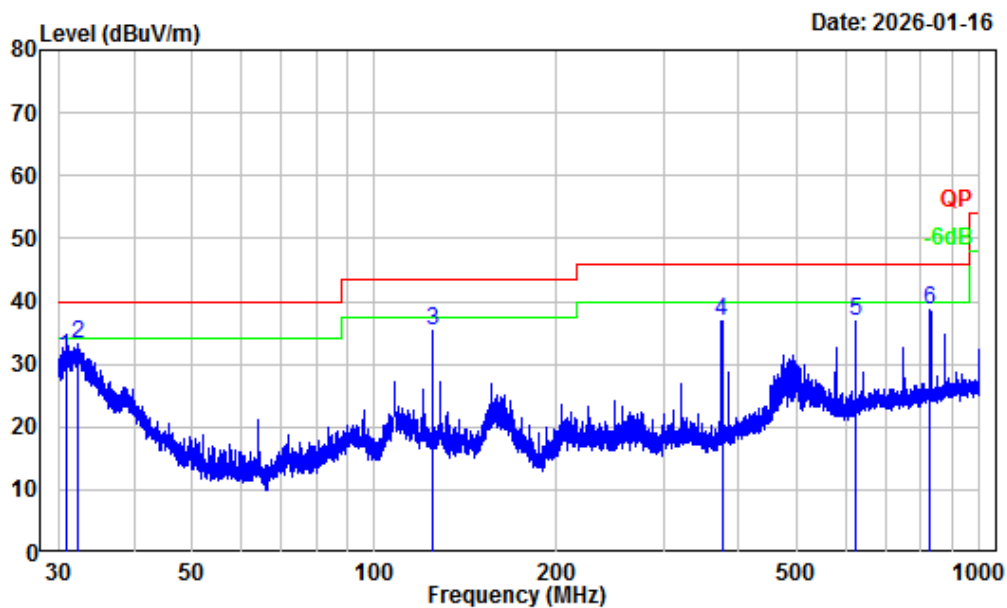
30MHz-1GHz_Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2501Z35009E-RF
Test Mode : 2.4G WIFI Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Nico Wu

	Freq Factor		Read		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	125.01	-11.12	46.70	35.58	43.50	-7.92	Peak
2	249.97	-13.09	51.77	38.68	46.00	-7.32	Peak
3	375.12	-9.28	47.70	38.42	46.00	-7.58	QP
4	625.08	-4.65	41.75	37.10	46.00	-8.90	Peak
5	750.11	-2.88	41.12	38.24	46.00	-7.76	Peak
6	875.25	-1.52	39.70	38.18	46.00	-7.82	Peak

30MHz-1GHz_Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number : 2501Z35009E-RF
Test Mode : 2.4G WIFI Transmitting
Detector: Peak RBW/VBW: 100/300kHz
Tester : Nico Wu

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.84	-6.39	37.50	31.11	40.00	-8.89	QP
2	32.41	-7.27	40.42	33.15	40.00	-6.85	Peak
3	125.01	-11.12	46.41	35.29	43.50	-8.21	Peak
4	375.12	-9.28	46.22	36.94	46.00	-9.06	Peak
5	625.08	-4.65	41.41	36.76	46.00	-9.24	Peak
6	825.32	-1.94	40.46	38.52	46.00	-7.48	Peak

Above 1GHz:

Frequency (MHz)	Reading (dB μ V)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11b							
Low Channel							
4824	59.91	PK	H	-7.80	52.11	74	-21.89
4824	61.10	PK	V	-7.80	53.30	74	-20.70
Middle Channel							
4874	59.94	PK	H	-7.68	52.26	74	-21.74
4874	60.55	PK	V	-7.68	52.87	74	-21.13
High Channel							
4924	58.66	PK	H	-7.62	51.04	74	-22.96
4924	59.35	PK	V	-7.62	51.73	74	-22.27
802.11g							
Low Channel							
4824	52.97	PK	H	-7.80	45.17	74	-28.83
4824	57.31	PK	V	-7.80	49.51	74	-24.49
Middle Channel							
4874	54.06	PK	H	-7.68	46.38	74	-27.62
4874	55.65	PK	V	-7.68	47.97	74	-26.03
High Channel							
4924	53.34	PK	H	-7.62	45.72	74	-28.28
4924	53.89	PK	V	-7.62	46.27	74	-27.73
802.11n20							
Low Channel							
4824	53.27	PK	H	-7.80	45.47	74	-28.53
4824	56.53	PK	V	-7.80	48.73	74	-25.27
Middle Channel							
4874	53.28	PK	H	-7.68	45.60	74	-28.40
4874	55.16	PK	V	-7.68	47.48	74	-26.52
High Channel							
4924	52.93	PK	H	-7.62	45.31	74	-28.69
4924	53.74	PK	V	-7.62	46.12	74	-27.88

Frequency (MHz)	Reading (dB μ V)	PK/Ave	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11n40							
Low Channel							
4844	52.98	PK	H	-7.78	45.20	74	-28.80
4844	53.77	PK	V	-7.78	45.99	74	-28.01
Middle Channel							
4874	52.85	PK	H	-7.68	45.17	74	-28.83
4874	53.29	PK	V	-7.68	45.61	74	-28.39
High Channel							
4904	52.90	PK	H	-7.60	45.30	74	-28.70
4904	52.65	PK	V	-7.60	45.05	74	-28.95

Note:

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

Corrected Amplitude = Corrected Factor + Reading

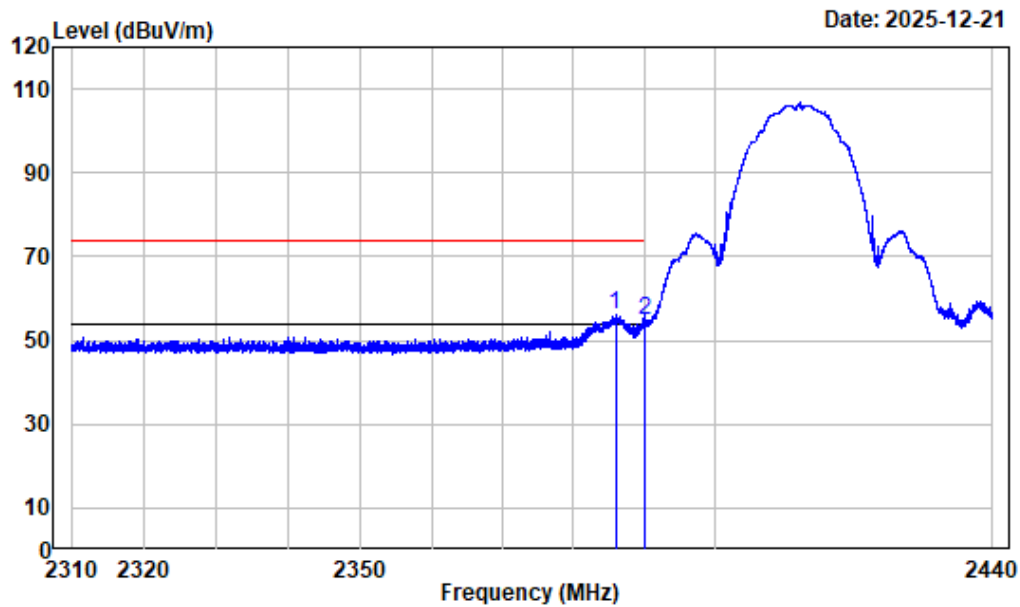
Margin = Corrected. Amplitude - Limit

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**

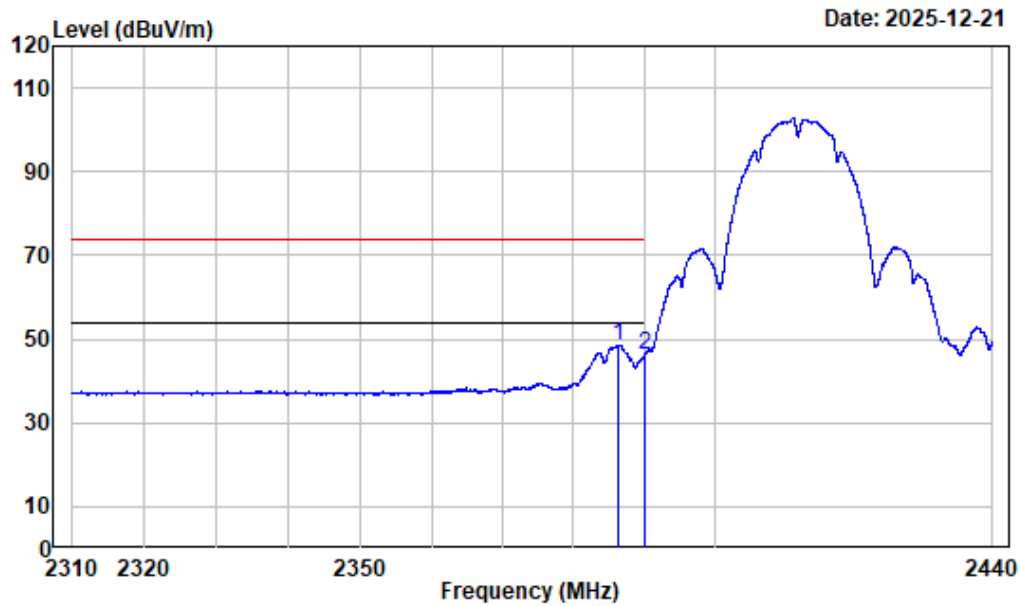
Left Band edge Horizontal Peak 802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

Freq		Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2385.920	1.97	53.99	55.96	74.00	-18.04	peak
2	2390.000	1.96	52.61	54.57	74.00	-19.43	peak

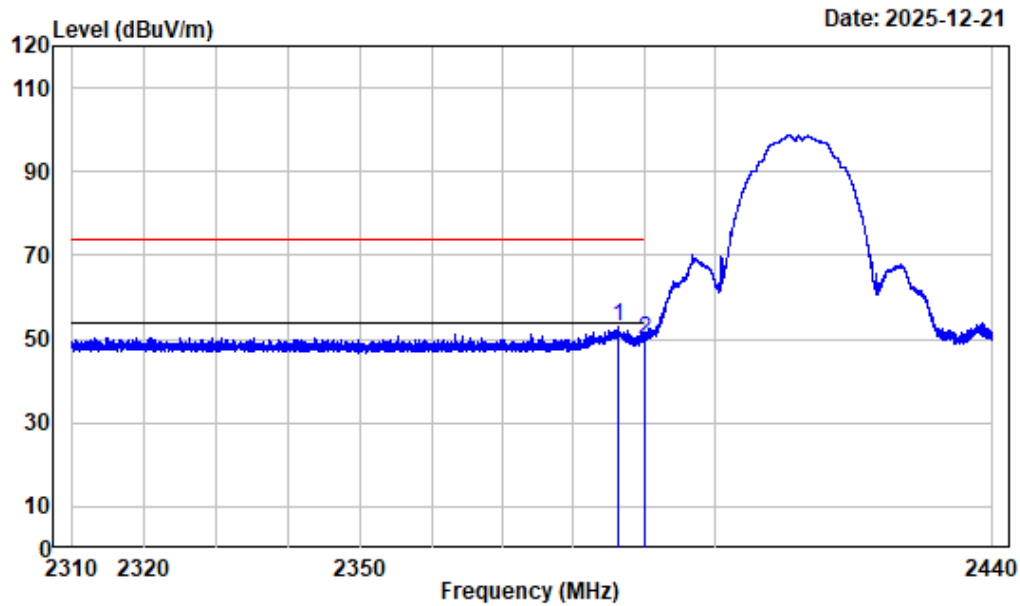
Left Band edge_Horizontal_Average_802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak
Note : 2.4GWiFi_B_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2386.359	1.97	46.70	48.67	54.00	-5.33	Average
2	2390.000	1.96	44.03	45.99	54.00	-8.01	Average

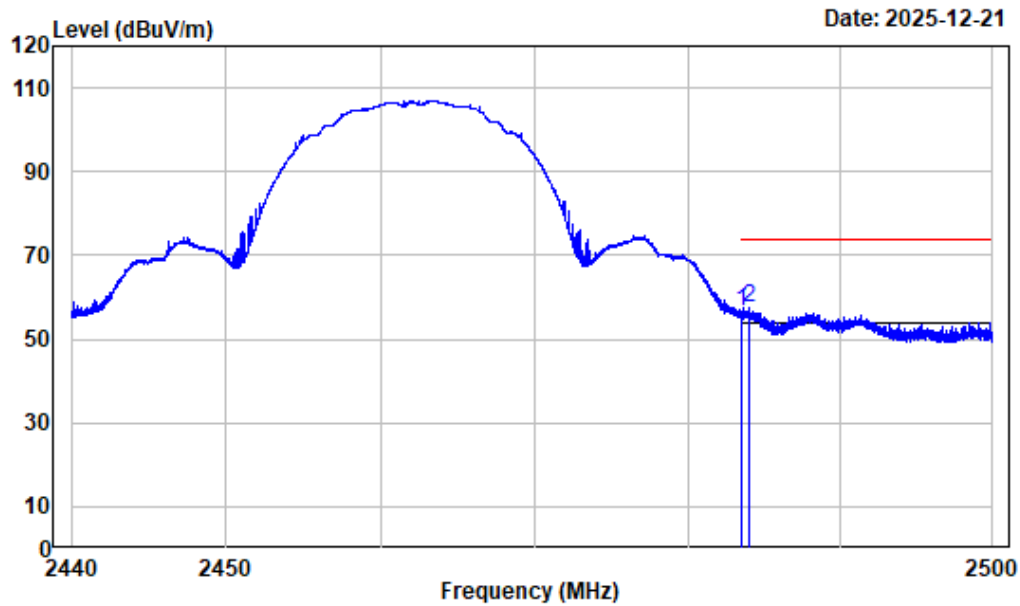
Left Band edge_Vertical_802.11b



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2386.310	1.97	50.88	52.85	74.00	-21.15	peak
2	2390.000	1.96	48.07	50.03	74.00	-23.97	peak

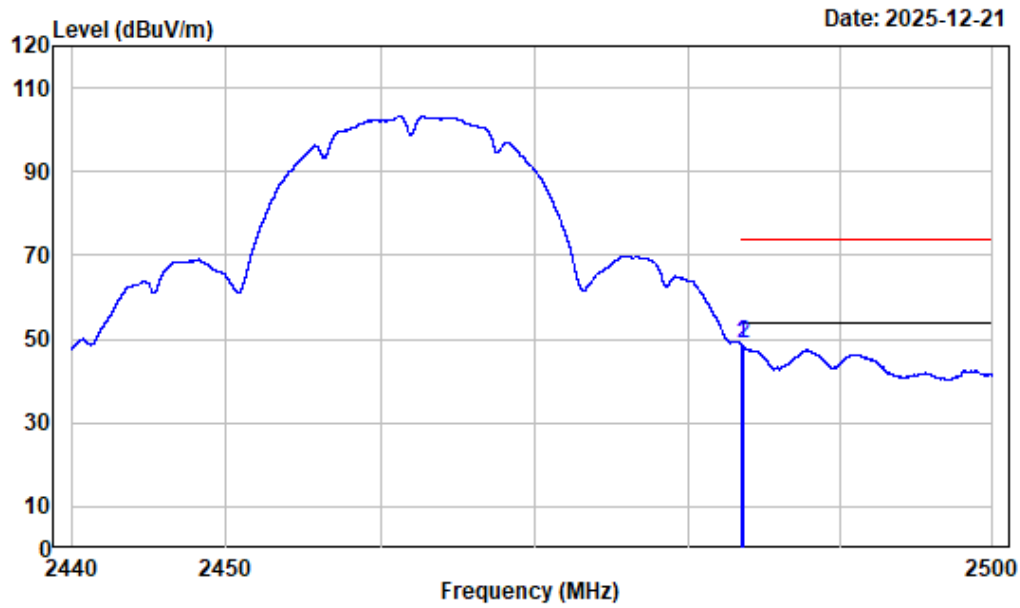
Right Band edge_Horizontal_Peak_802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	2.36	54.16	56.52	74.00	-17.48	peak
2 2483.980	2.36	55.05	57.41	74.00	-16.59	peak

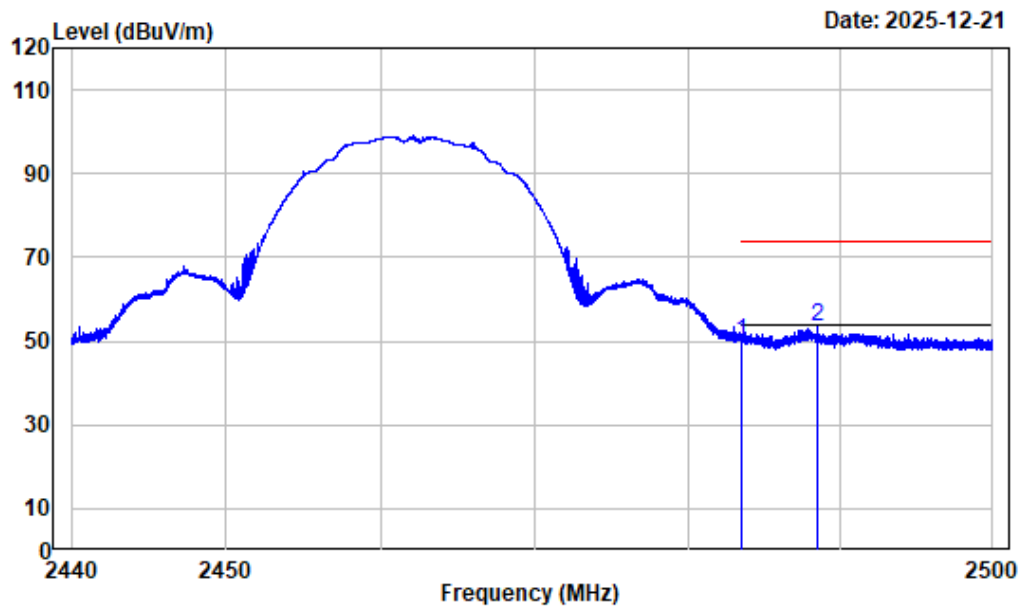
Right Band edge_Horizontal_Average_802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:10Hz Detector:Peak
Note : 2.4GWiFi_B_2462

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	2.36	46.48	48.84	54.00	-5.16	Average
2	2483.610	2.36	46.56	48.92	54.00	-5.08	Average

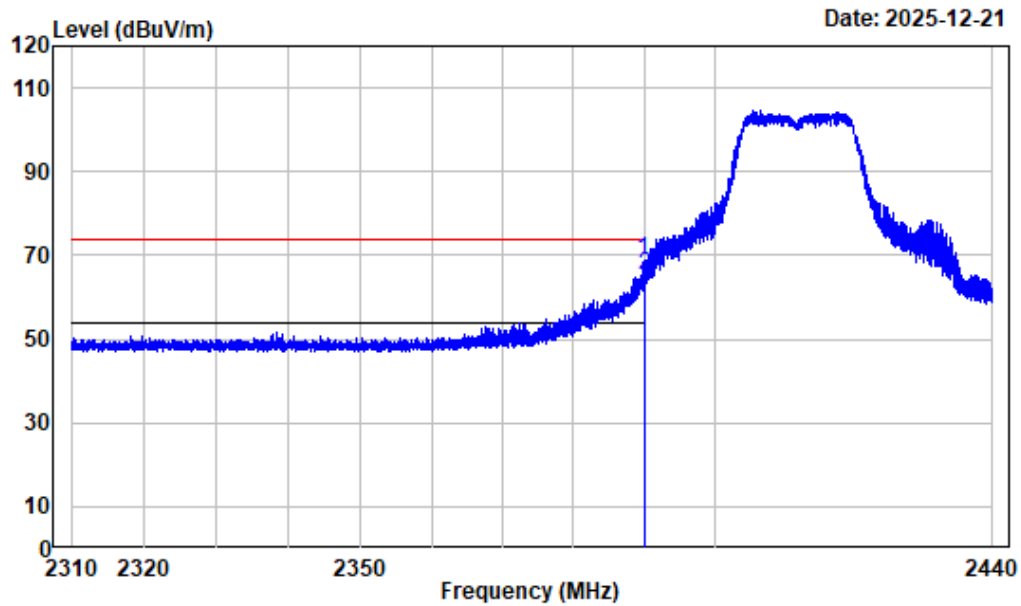
Right Band edge_Vertical_802.11b



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	2483.500	2.36	47.52	49.88	74.00	-24.12 peak
2	2488.488	2.35	51.07	53.42	74.00	-20.58 peak

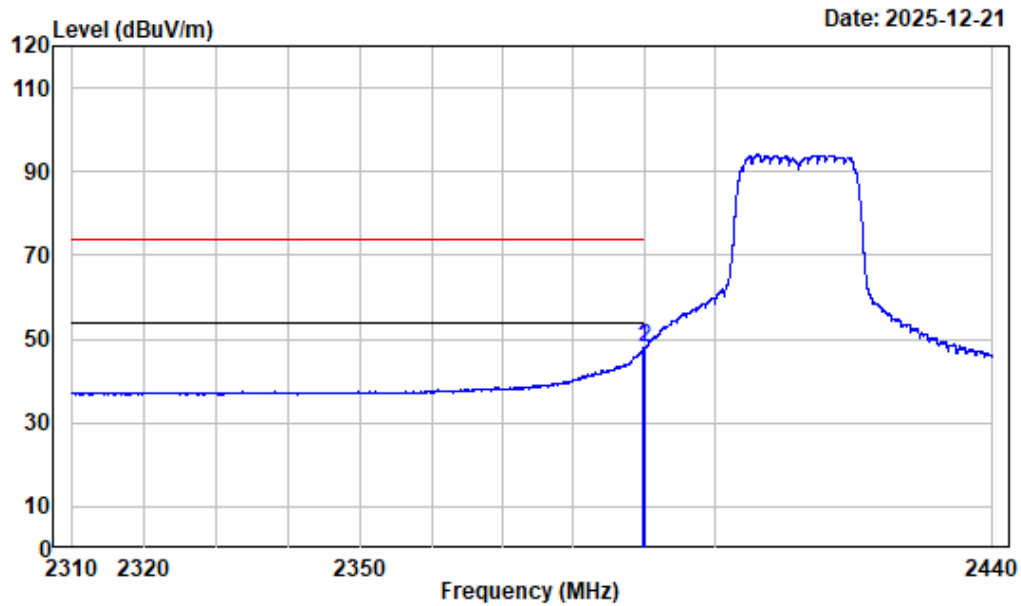
Left Band edge_Horizontal_Peak_802.11g



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2412

Freq Factor		Read Level		Limit	Over	Remark
				Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2389.966	1.96	66.87	68.83	74.00	-5.17	peak
2 2390.000	1.96	63.26	65.22	74.00	-8.78	peak

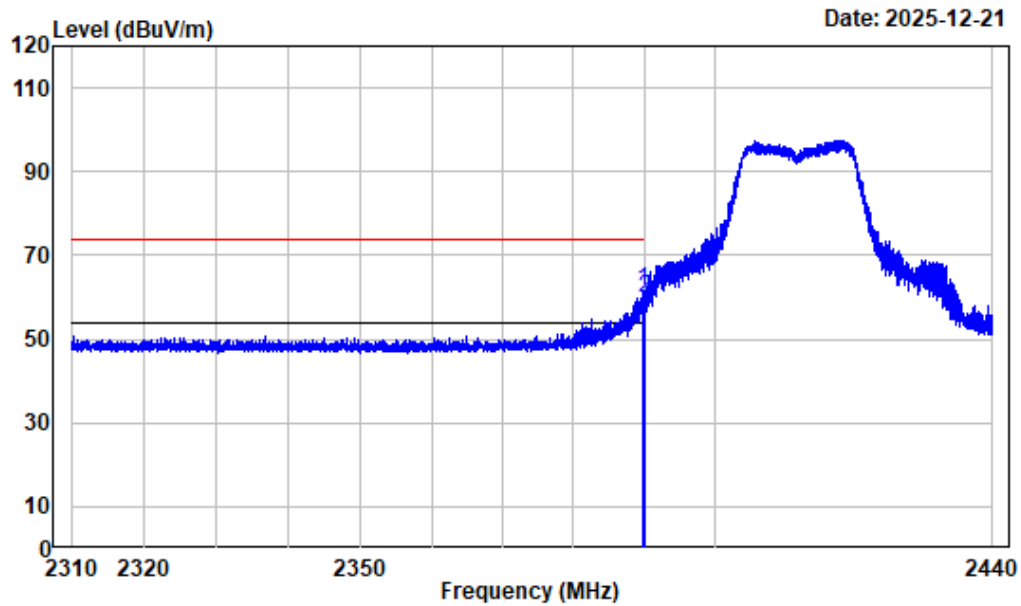
Left Band edge_Horizontal_Average_802.11g



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:500Hz Detector:Peak
Note : 2.4GWiFi_G_2412

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.940	1.96	45.99	47.95	54.00	-6.05 Average
2	2390.000	1.96	45.95	47.91	54.00	-6.09 Average

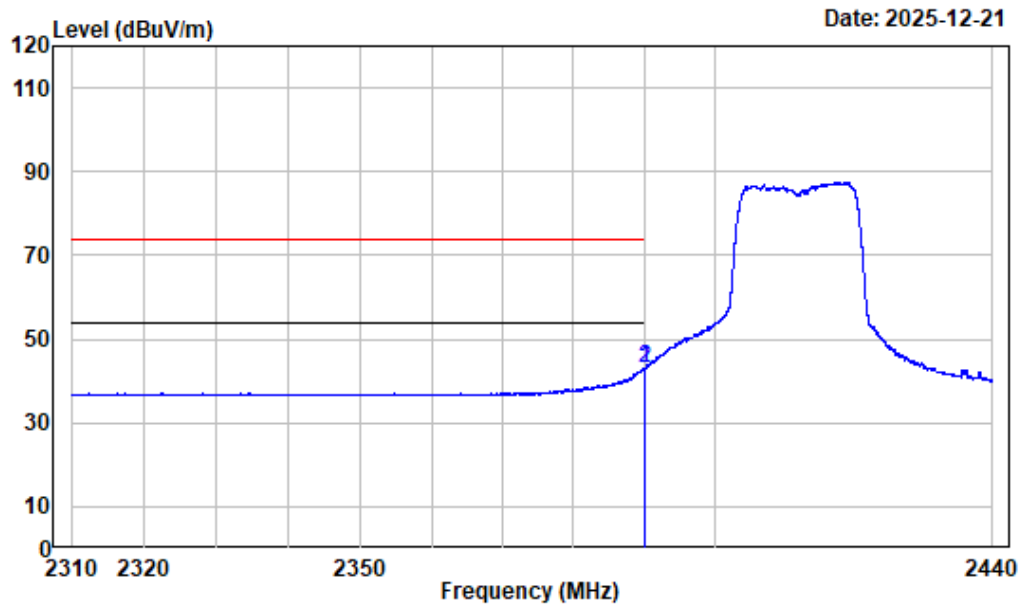
Left Band edge_Vertical_Peak_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.869	1.96	59.61	61.57	74.00	-12.43	peak
2	2390.000	1.96	57.60	59.56	74.00	-14.44	peak

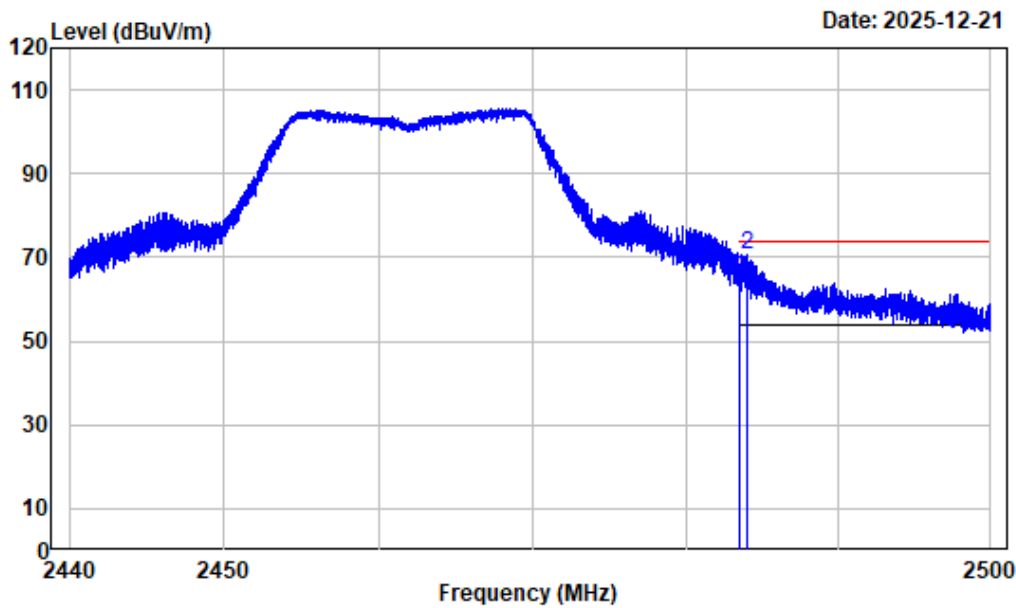
Left Band edge_Vertical_Average_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:500Hz Detector:Peak
Note : 2.4GWiFi_G_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.982	1.96	41.17	43.13	54.00	-10.87	Average
2	2390.000	1.96	40.97	42.93	54.00	-11.07	Average

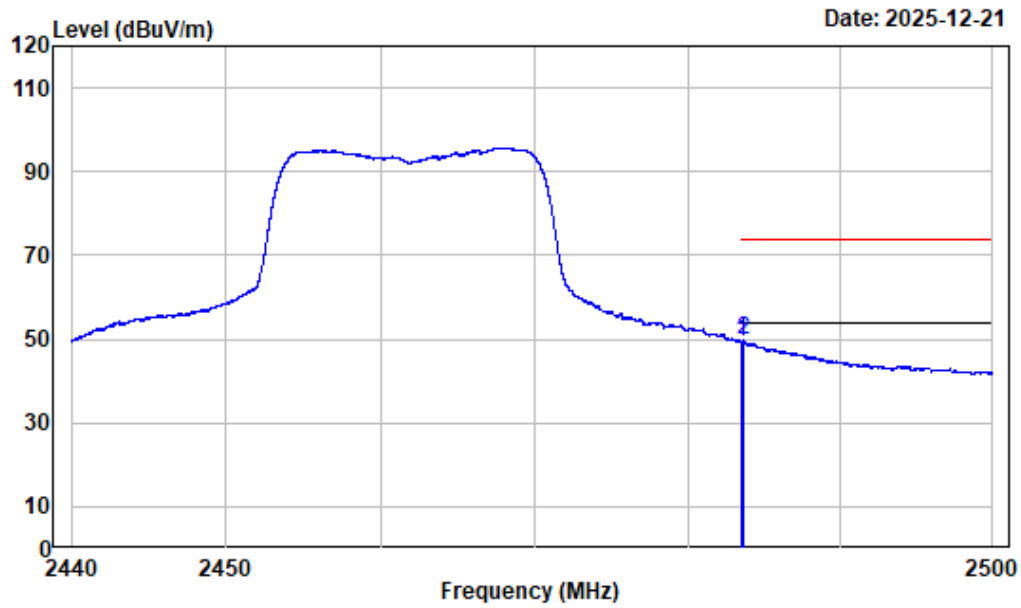
Right Band edge_Horizontal_Peak_802.11g



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	
1	2483.500	2.36	62.73	65.09	74.00	-8.91 Peak
2	2483.950	2.36	68.10	70.46	74.00	-3.54 Peak

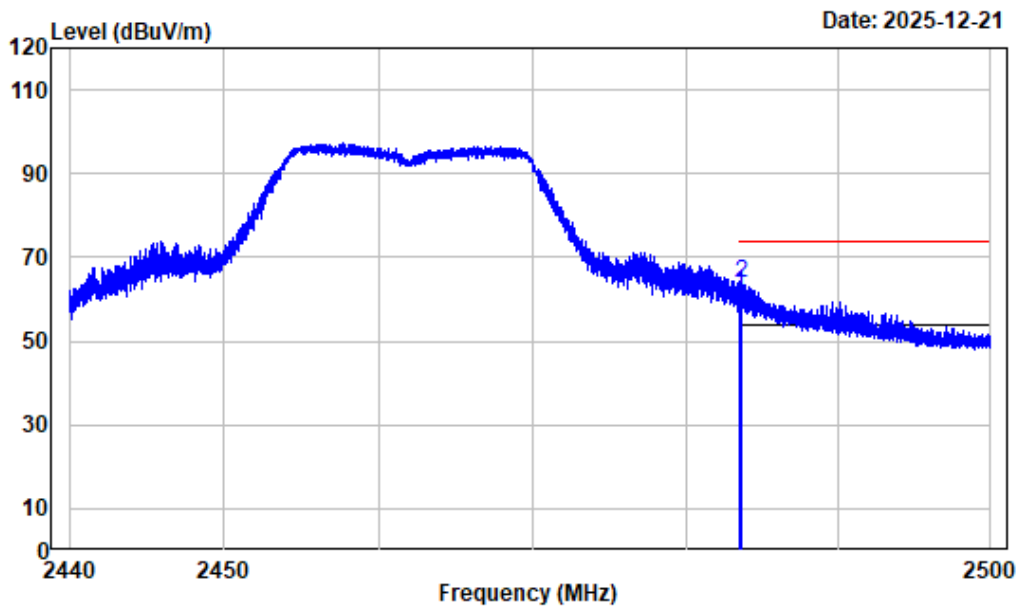
Right Band edge_Horizontal_Average_802.11g



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:500Hz Detector:Peak
Note : 2.4GWiFi_G_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	2483.500	2.36	47.18	49.54	54.00	-4.46 Average
2	2483.590	2.36	47.27	49.63	54.00	-4.37 Average

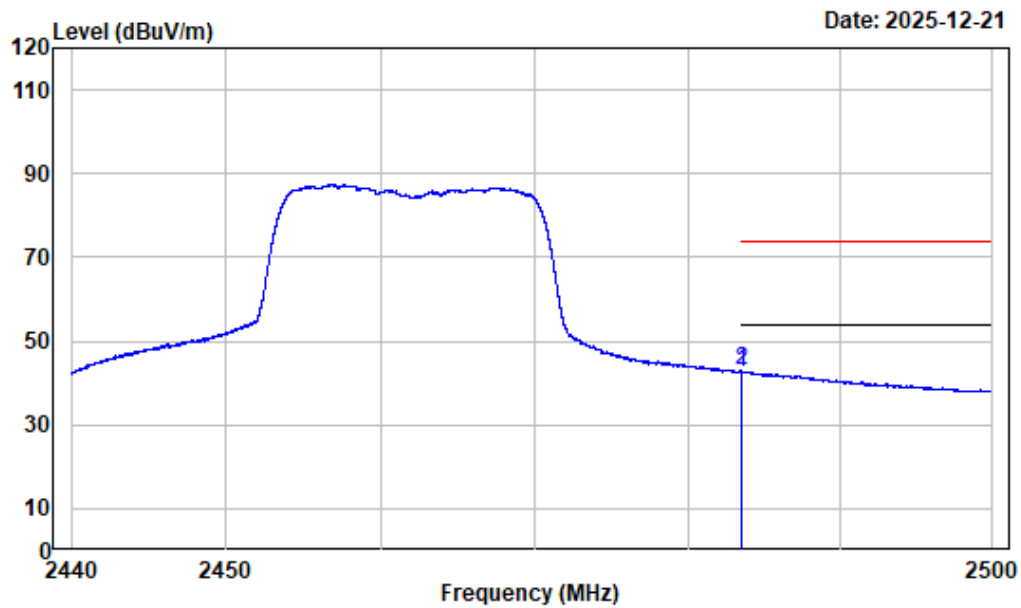
Right Band edge_Vertical_Peak_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	2.36	58.99	61.35	74.00	-12.65	peak
2 2483.680	2.36	61.64	64.00	74.00	-10.00	peak

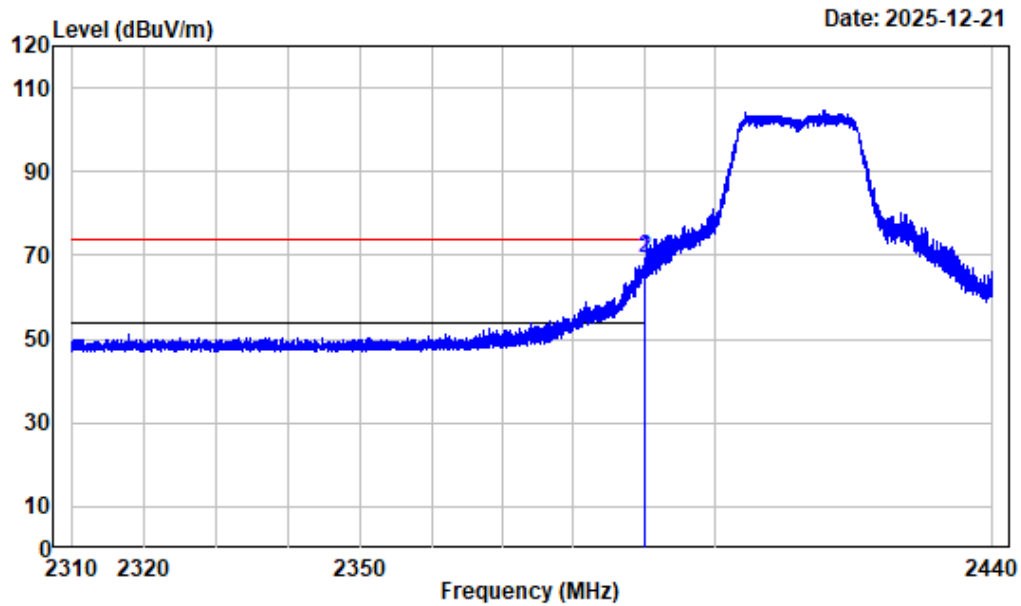
Right Band edge_Vertical_Average_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:500Hz Detector:Peak
Note : 2.4GWiFi_G_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	2483.500	2.36	40.42	42.78	54.00	-11.22 Average
2	2483.513	2.36	40.45	42.81	54.00	-11.19 Average

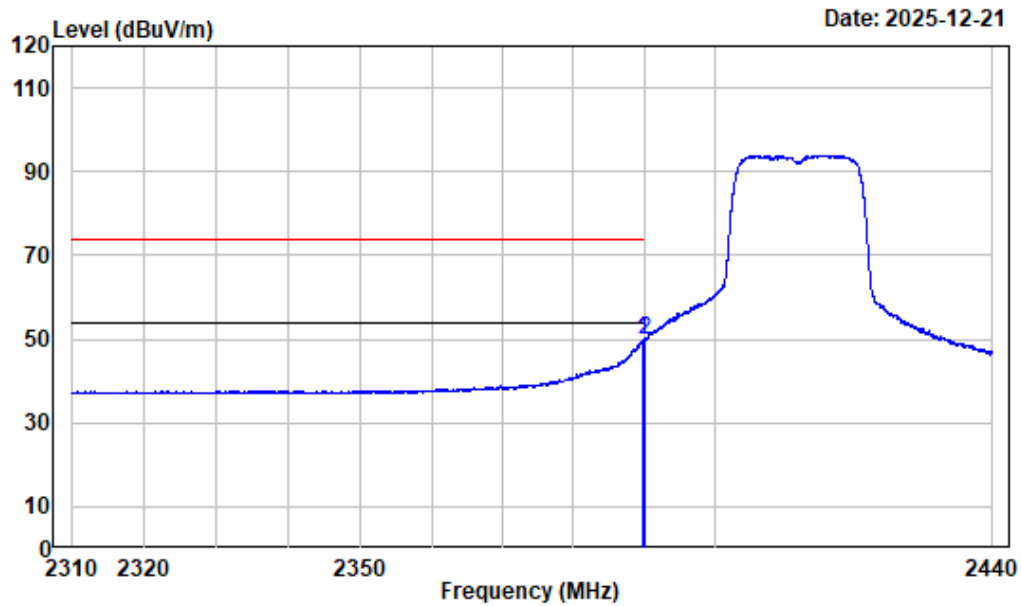
Left Band edge_Horizontal_Peak_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.999	1.96	67.18	69.14	74.00	-4.86	peak
2	2390.000	1.96	67.18	69.14	74.00	-4.86	peak

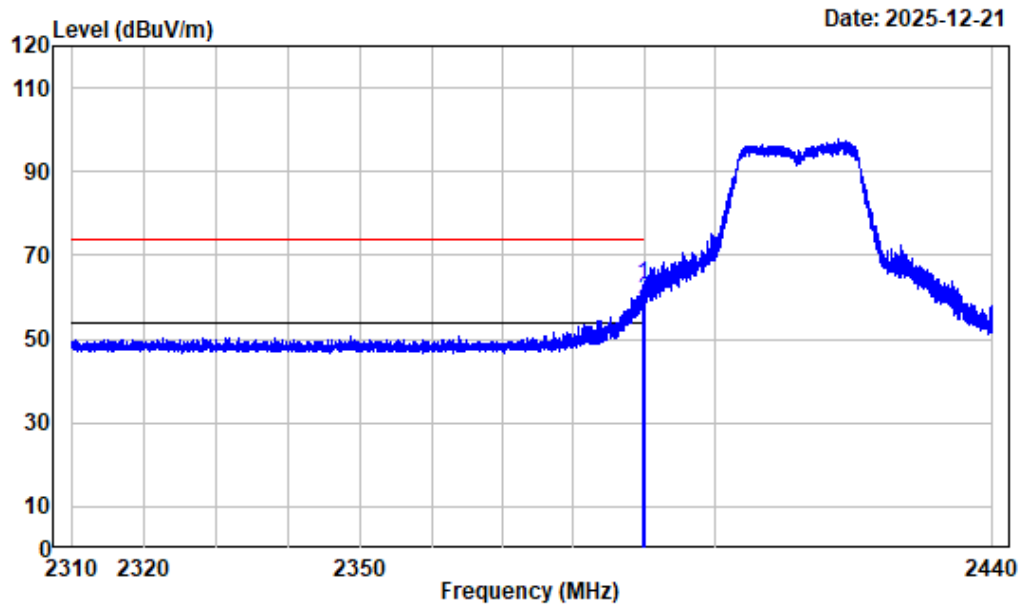
Left Band edge_Horizontal_Average_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_N20_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.901	1.96	47.86	49.82	54.00	-4.18	Average
2	2390.000	1.96	47.77	49.73	54.00	-4.27	Average

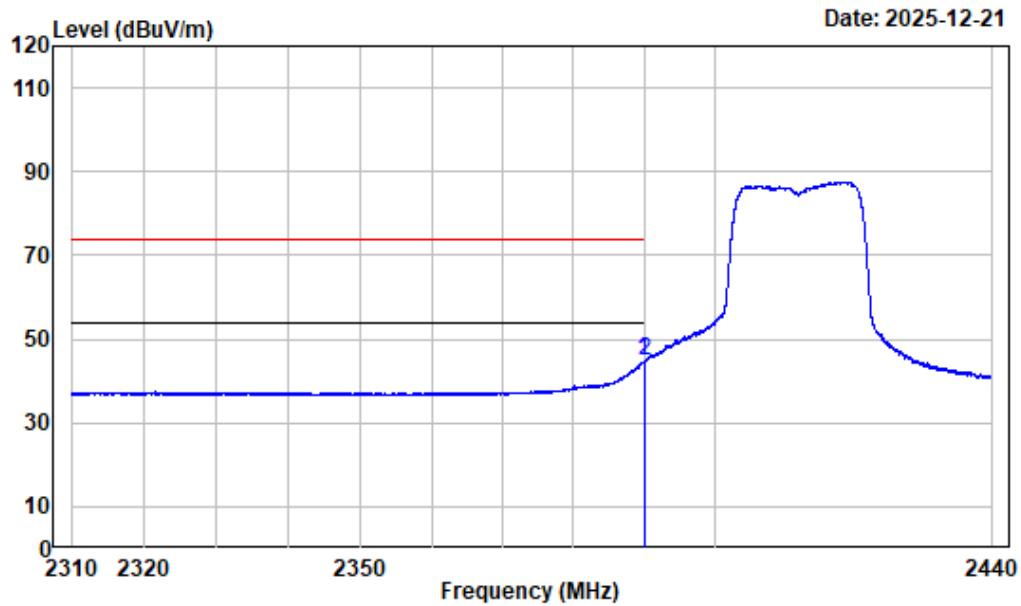
Left Band edge_Vertical_Peak_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.917	1.96	60.99	62.95	74.00	-11.05	peak
2	2390.000	1.96	57.34	59.30	74.00	-14.70	peak

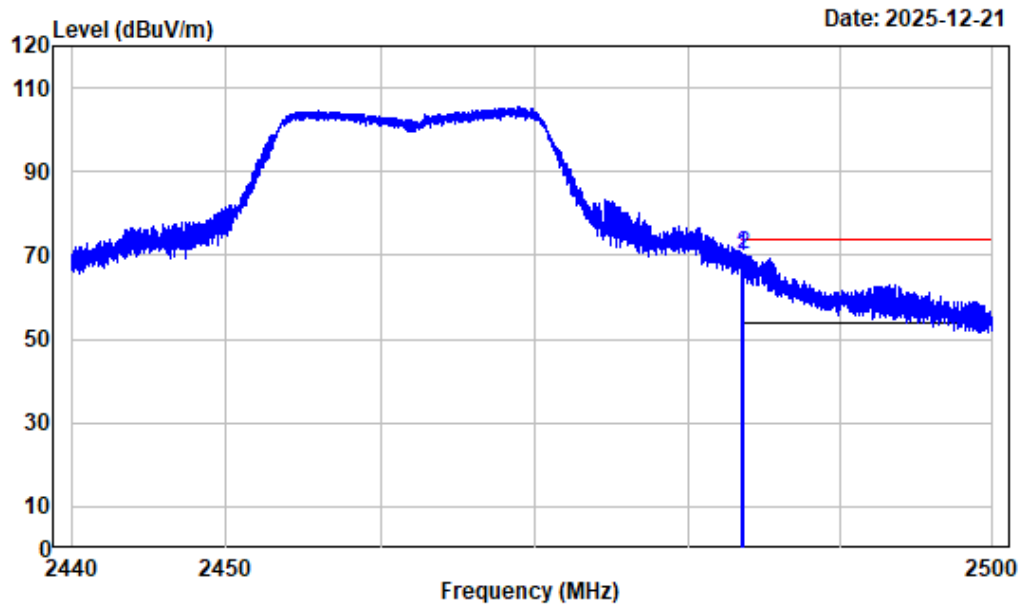
Left Band edge_Vertical_Average_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_N20_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.966	1.96	42.73	44.69	54.00	-9.31	Average
2	2390.000	1.96	42.70	44.66	54.00	-9.34	Average

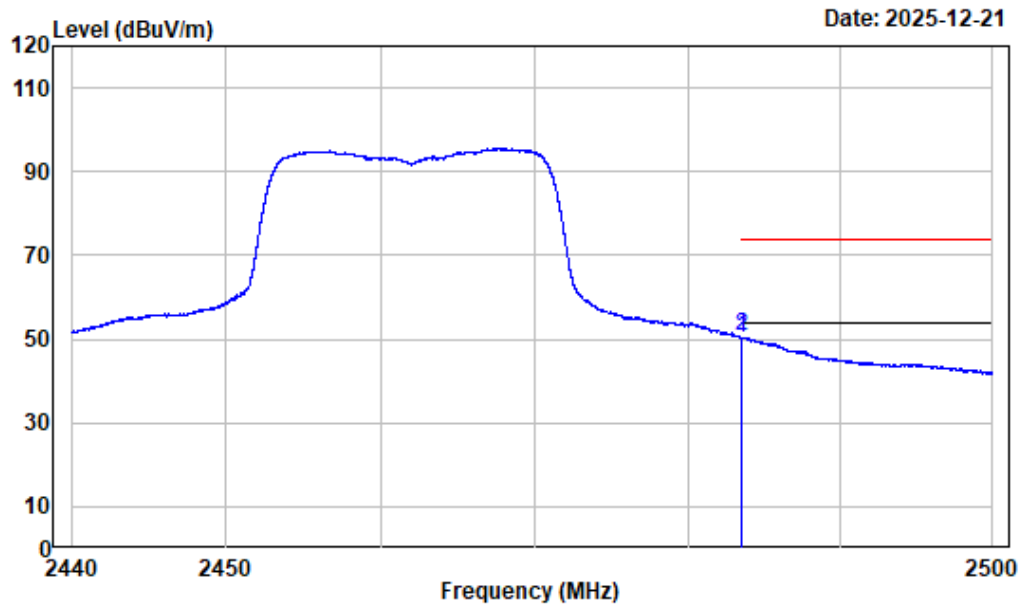
Right Band edge_Horizontal_Peak_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2462

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	2.36	67.44	69.80	74.00	-4.20	Peak
2	2483.635	2.36	67.79	70.15	74.00	-3.85	Peak

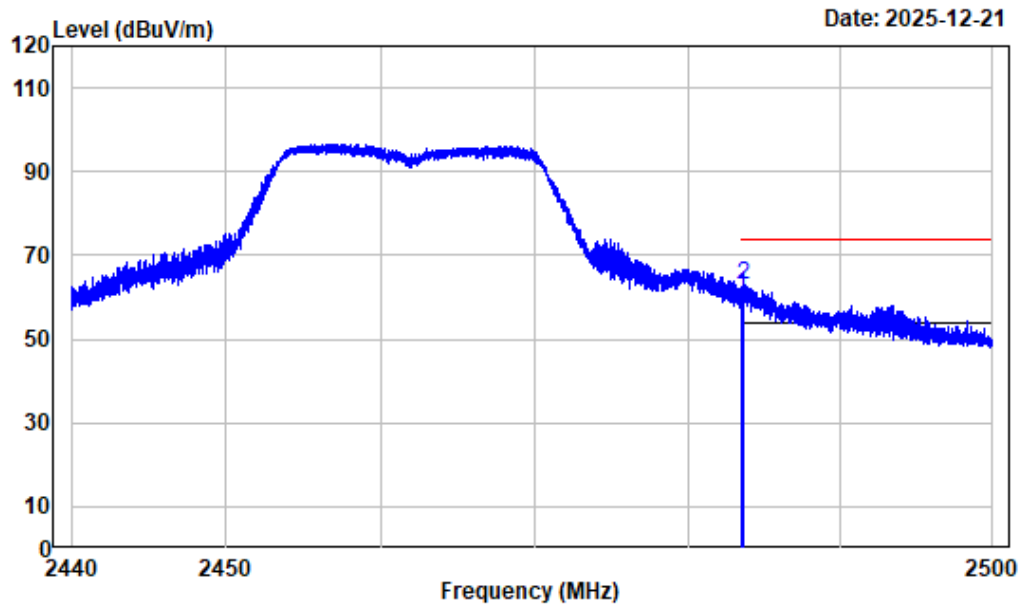
Right Band edge_Horizontal_Average_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_N20_2462

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	2.36	48.10	50.46	54.00	-3.54	Average
2 2483.524	2.36	48.16	50.52	54.00	-3.48	Average

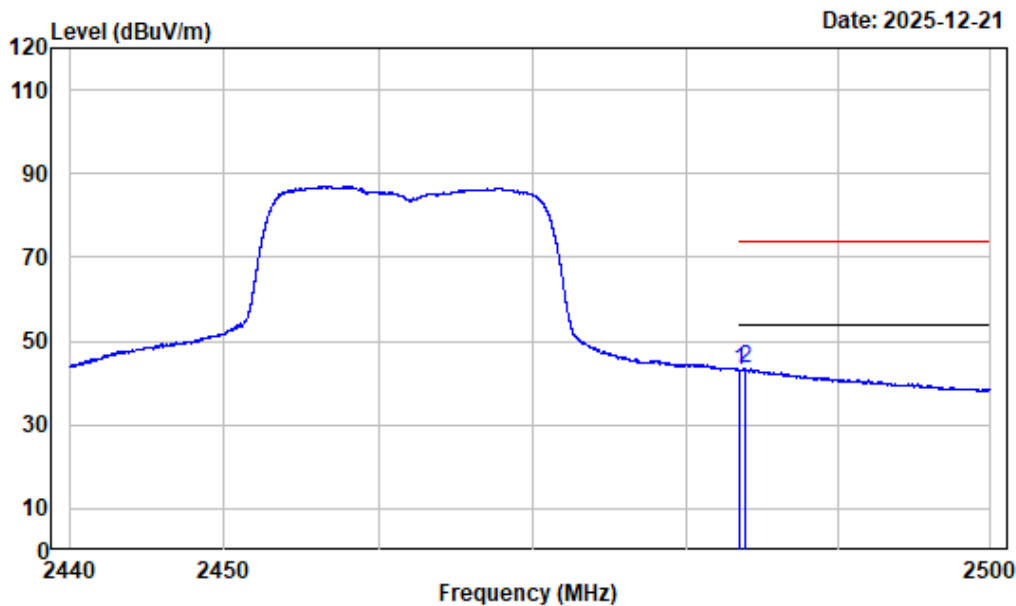
Right Band edge_Vertical_Peak_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2462

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	2.36	57.96	60.32	74.00	-13.68	peak
2 2483.583	2.36	60.75	63.11	74.00	-10.89	peak

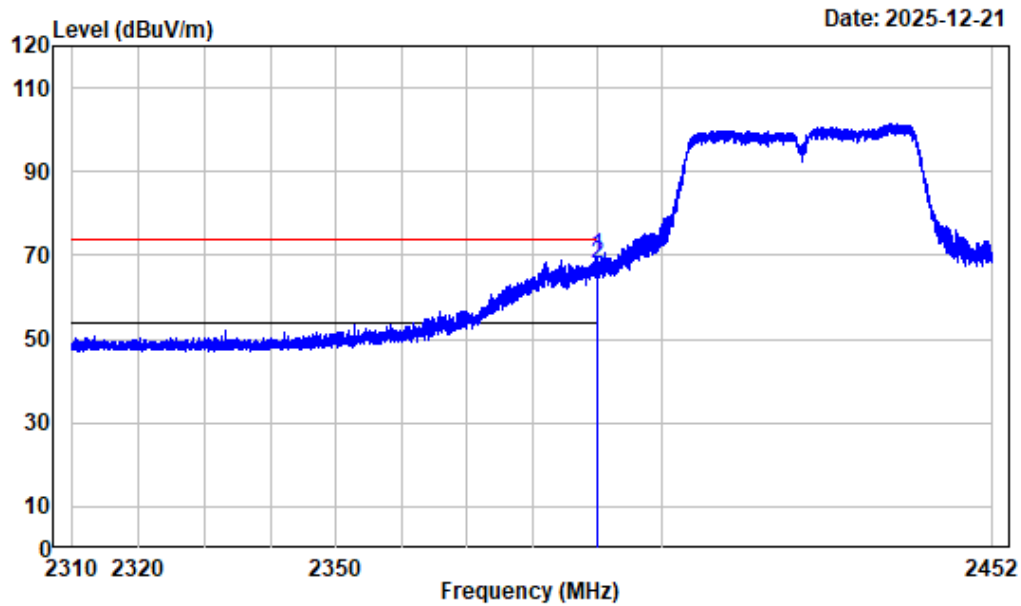
Right Band edge_Vertical_Average_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_N20_2462

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBUV/m	dBUV/m	dB	
1 2483.500	2.36	40.84	43.20	54.00	-10.80	Average
2 2483.845	2.36	41.10	43.46	54.00	-10.54	Average

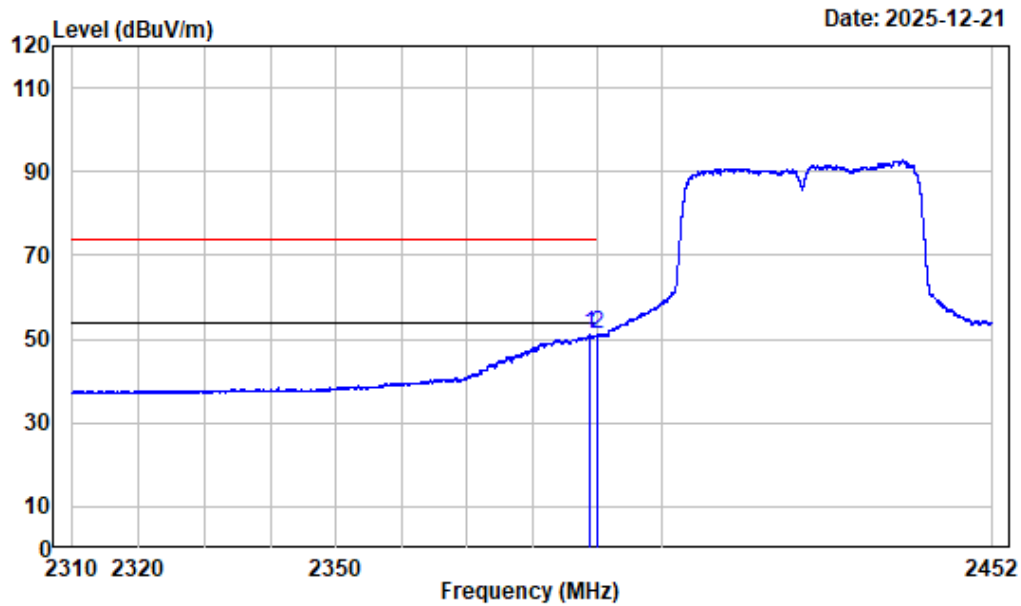
Left Band edge_Horizontal_Peak_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2389.946	1.96	67.63	69.59	74.00	-4.41	Peak
2 2390.000	1.96	65.77	67.73	74.00	-6.27	Peak

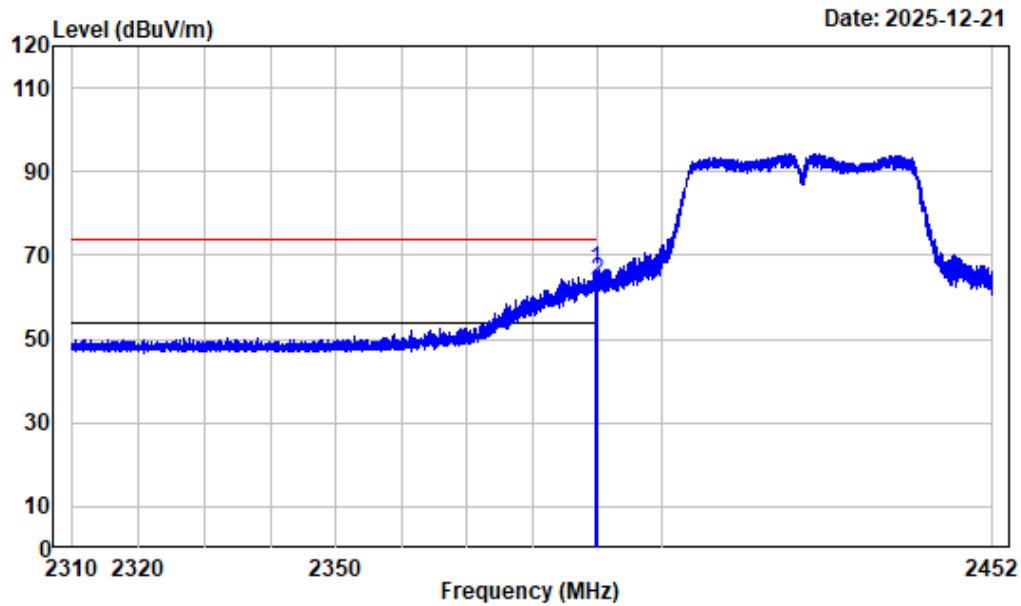
Left Band edge_Horizontal_Average_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:2kHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read Level		Limit	Over	Remark
				Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2388.774	1.97	49.02	50.99	54.00	-3.01	Average
2 2390.000	1.96	49.01	50.97	54.00	-3.03	Average

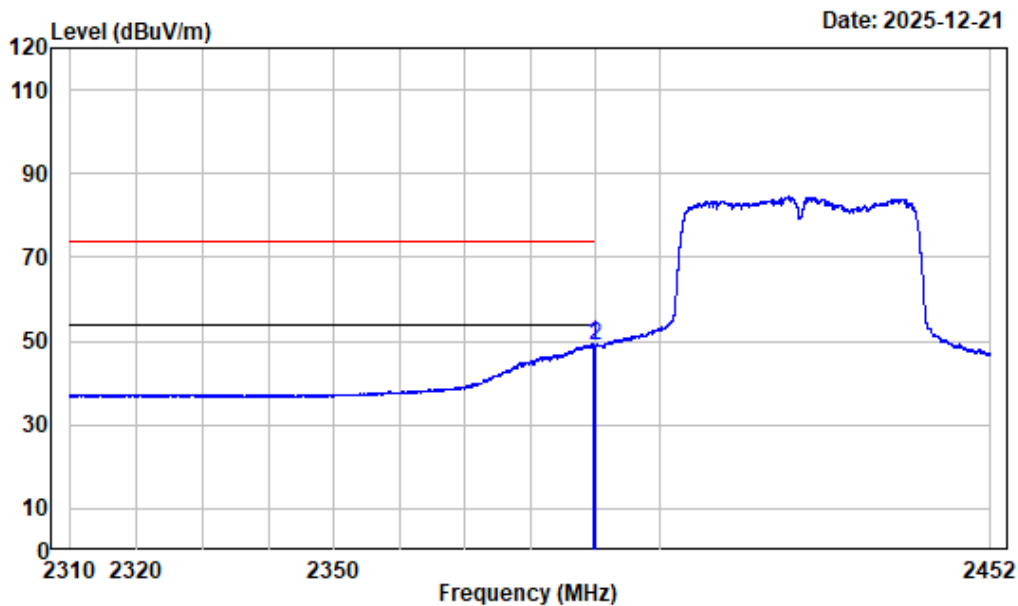
Left Band edge_Vertical_Peak_802.11n-HT40



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2422

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2389.893	1.96	64.66	66.62	74.00	-7.38	peak
2	2390.000	1.96	62.11	64.07	74.00	-9.93	peak

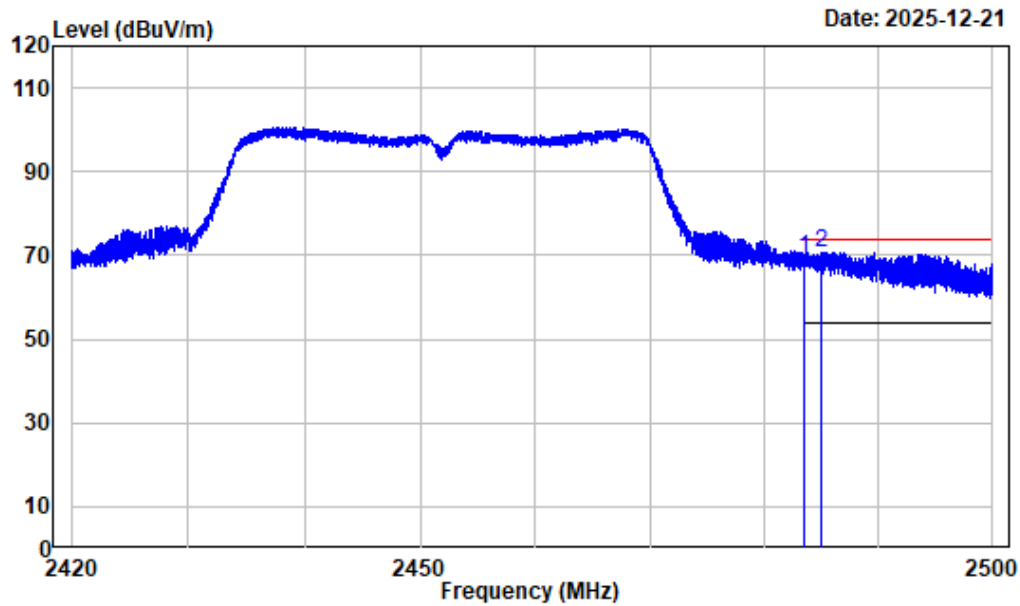
Left Band edge_Vertical_Average_802.11n-HT40



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:2kHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read Level		Limit	Over	Remark
				Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2389.644	1.97	47.29	49.26	54.00	-4.74	Average
2 2390.000	1.96	46.98	48.94	54.00	-5.06	Average

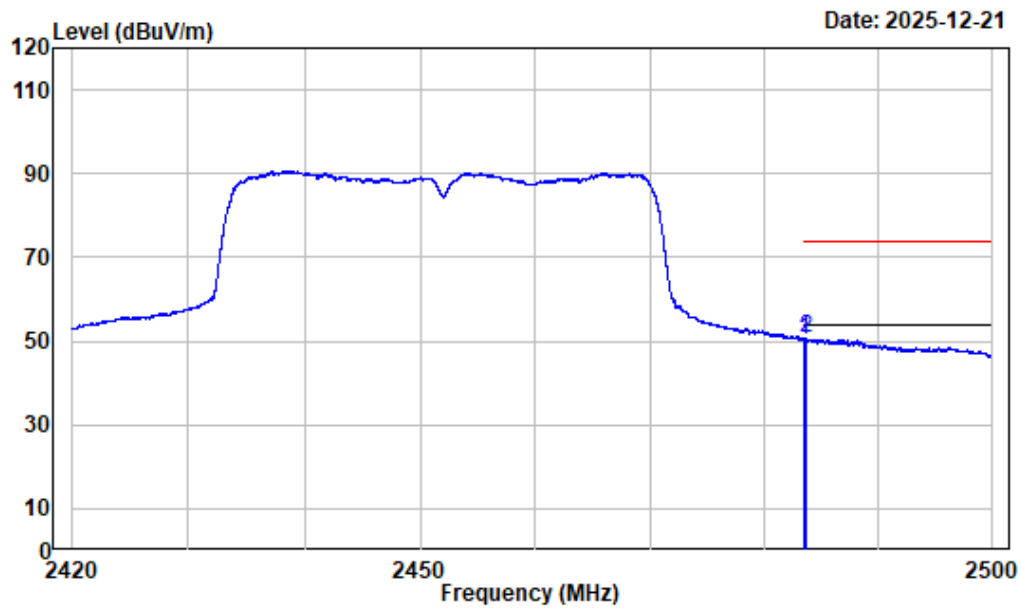
Right Band edge_Horizontal_Peak_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2452

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	2.36	67.09	69.45	74.00	-4.55	Peak
2	2484.930	2.36	68.48	70.84	74.00	-3.16	Peak

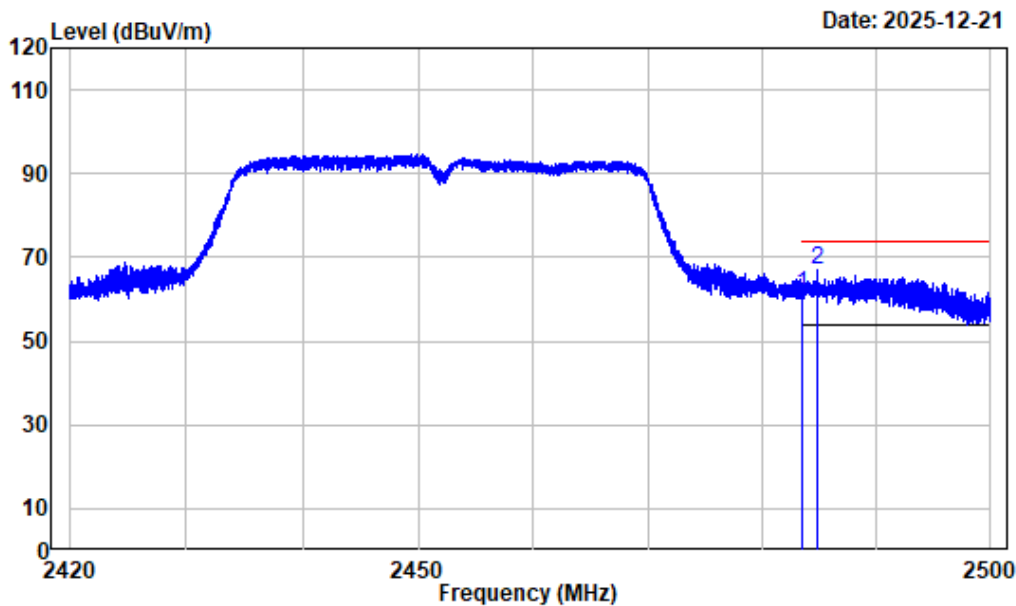
Right Band edge_Horizontal_Average_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:2kHz Detector:Peak
Note : 2.4GWiFi_N40_2452

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz		dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	2.36	47.83	50.19	54.00	-3.81	Average
2	2483.590	2.36	48.49	50.85	54.00	-3.15	Average

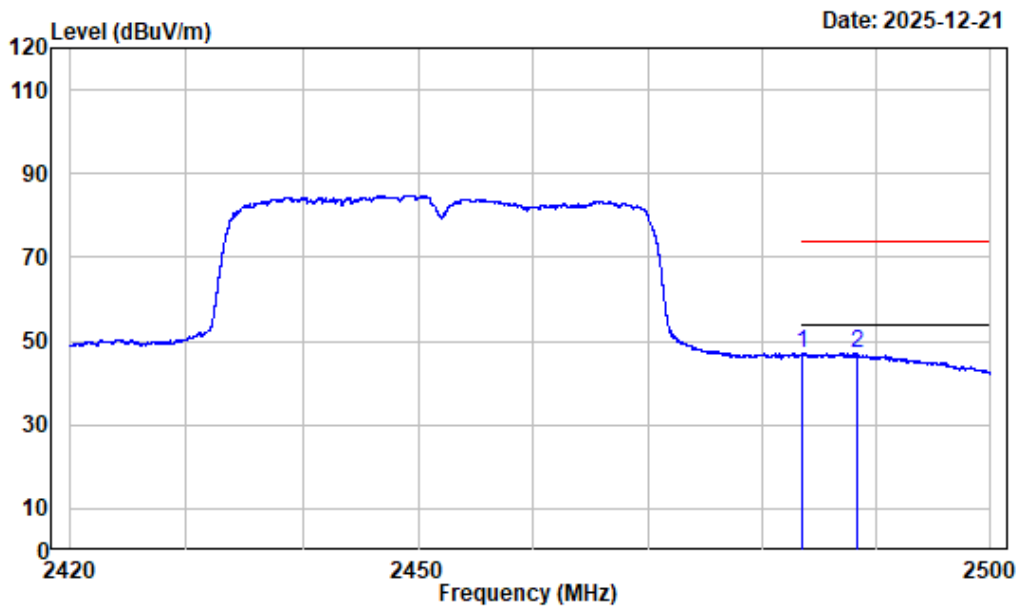
Right Band edge_Vertical_Peak_802.11n-HT40



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2452

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 2483.500	2.36	58.85	61.21	74.00	-12.79	peak
2 2484.820	2.36	64.80	67.16	74.00	-6.84	peak

Right Band edge_Vertical_Average_802.11n-HT40

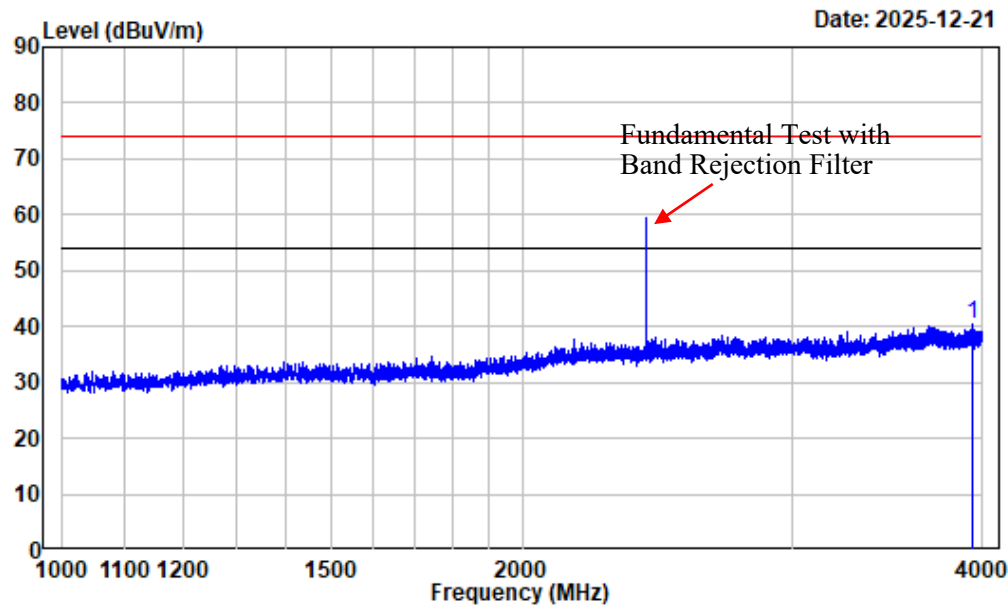


Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:2kHz Detector:Peak
Note : 2.4GWiFi_N40_2452

Freq Factor		Read Level		Limit	Over	Remark
				Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	2483.500	2.36	44.55	46.91	54.00	-7.09 Average
2	2488.240	2.35	44.82	47.17	54.00	-6.83 Average

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

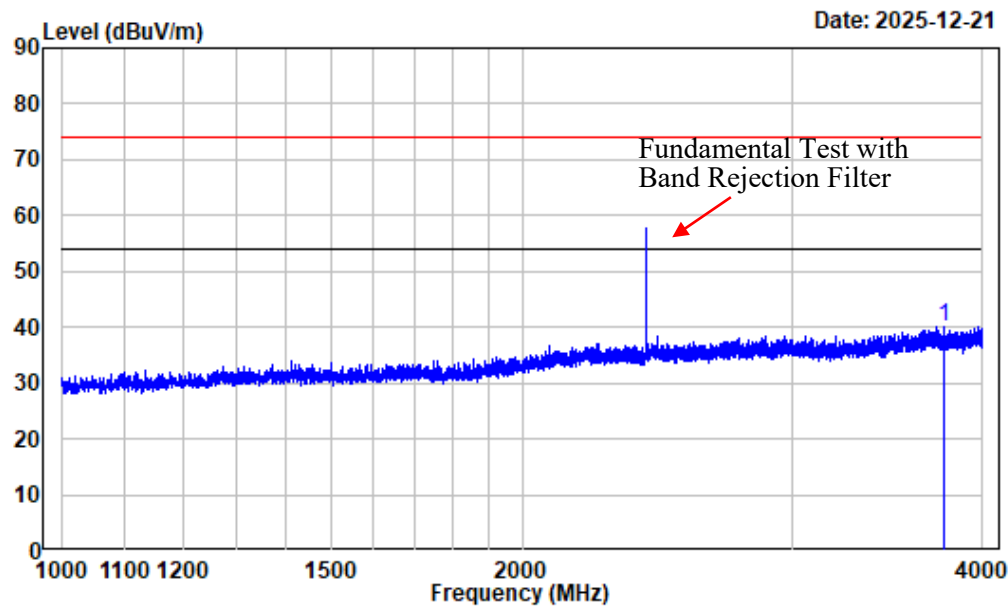
1-4GHz Horizontal 802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3943.000	-8.38	48.95	40.57	74.00	-33.43 Peak

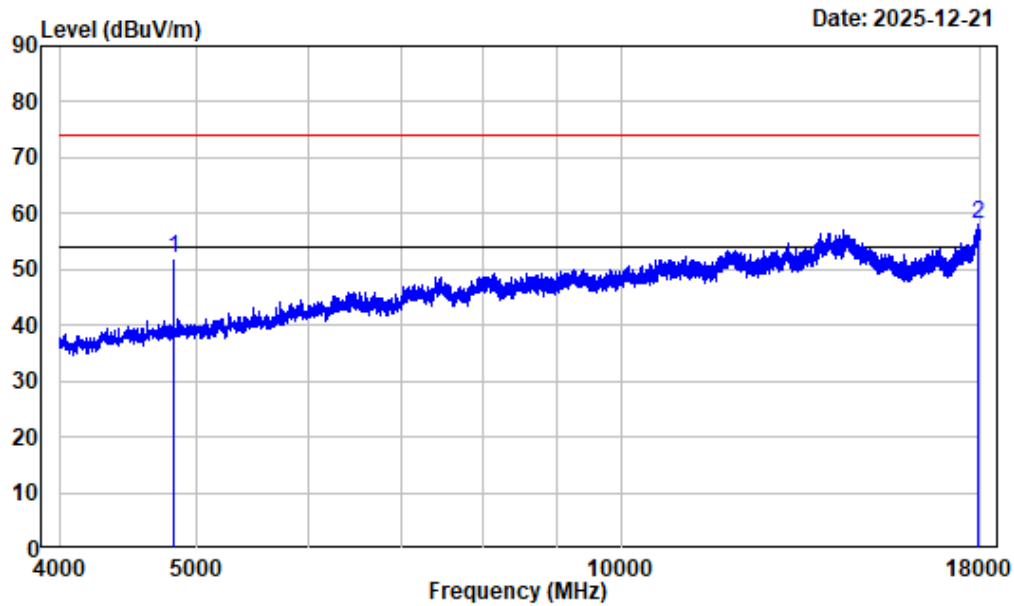
1-4GHz_Vertical_802.11b



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
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	3773.125	-8.83	49.05	40.22	74.00	-33.78 Peak

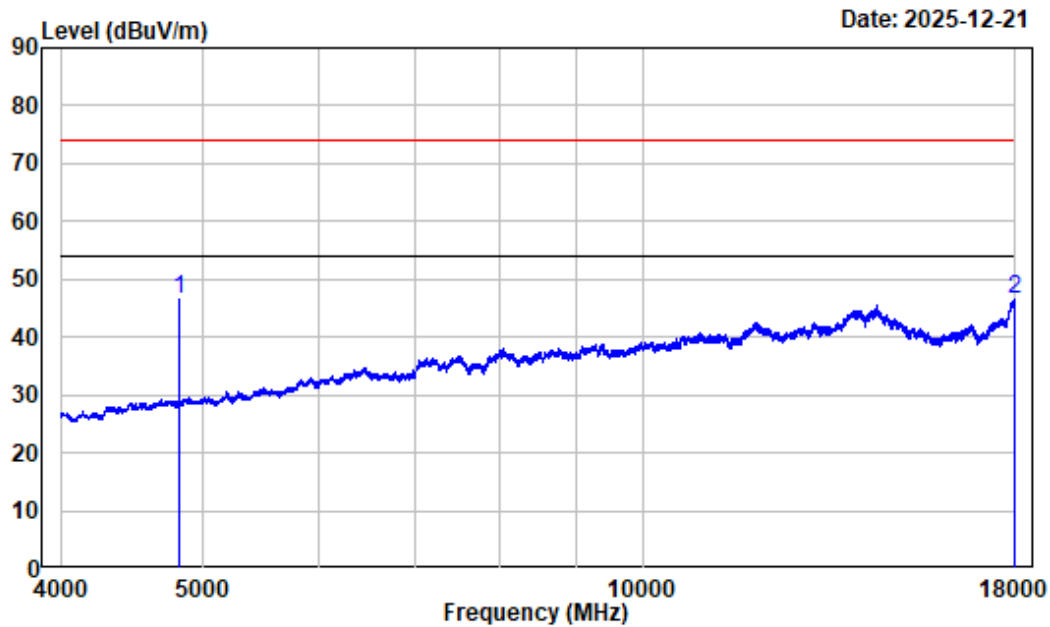
4-18GHz_Horizontal_Peak_802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4824.000	-7.80	59.91	52.11	74.00	-21.89	Peak
2 17923.000	9.20	48.79	57.99	74.00	-16.01	Peak

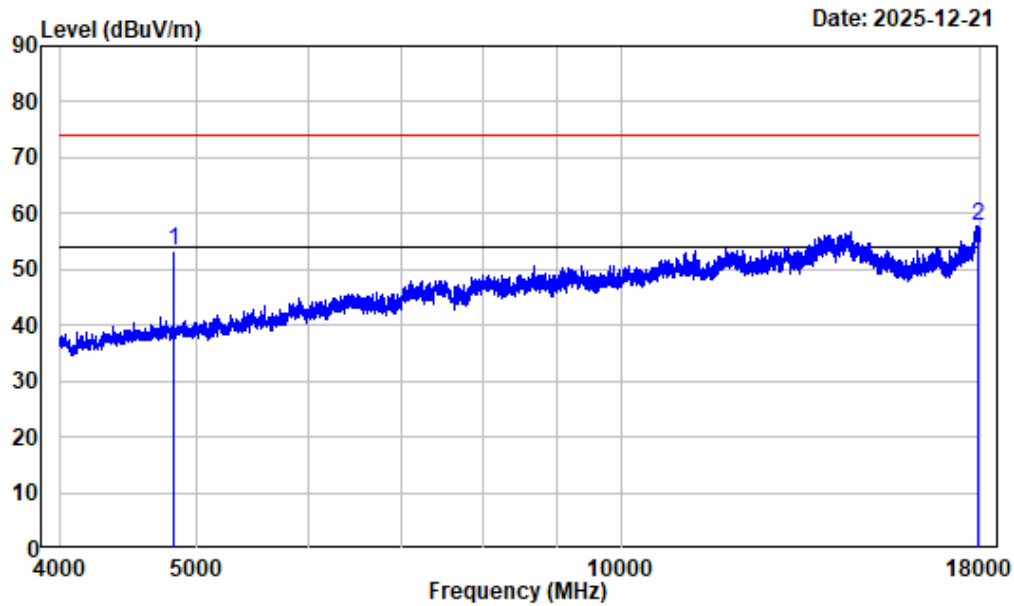
4-18GHz_Horizontal_Average_802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz 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	4824.250	-7.80	54.40	46.60	54.00	-7.40	Average
2	17987.750	9.50	36.94	46.44	54.00	-7.56	Average

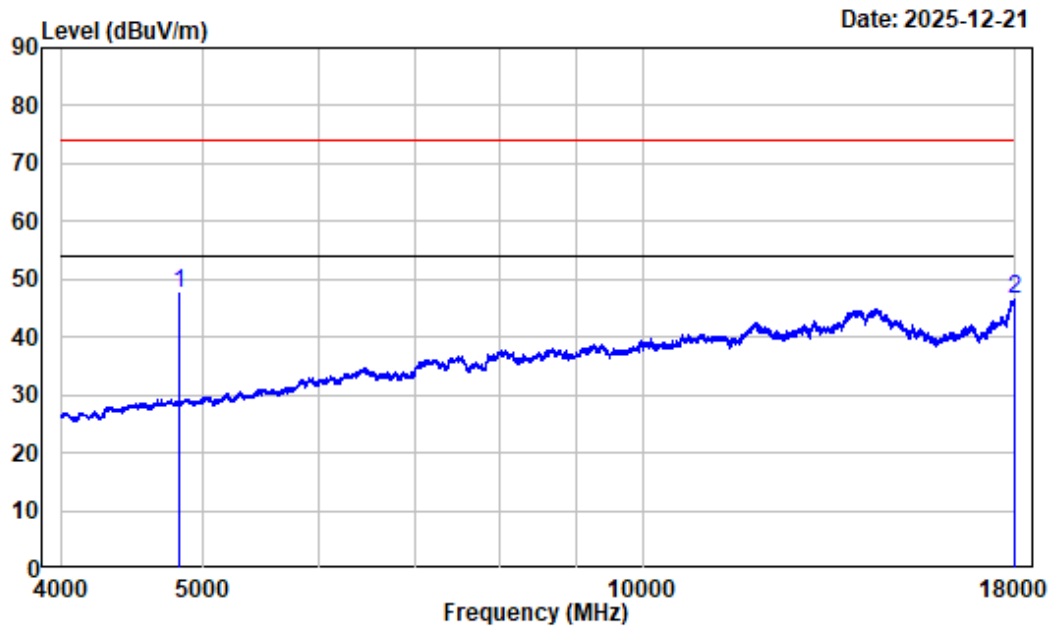
4-18GHz_Vertical_Peak_802.11b



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4824.000	-7.80	61.10	53.30	74.00	-20.70	Peak
2 17940.500	9.28	48.41	57.69	74.00	-16.31	Peak

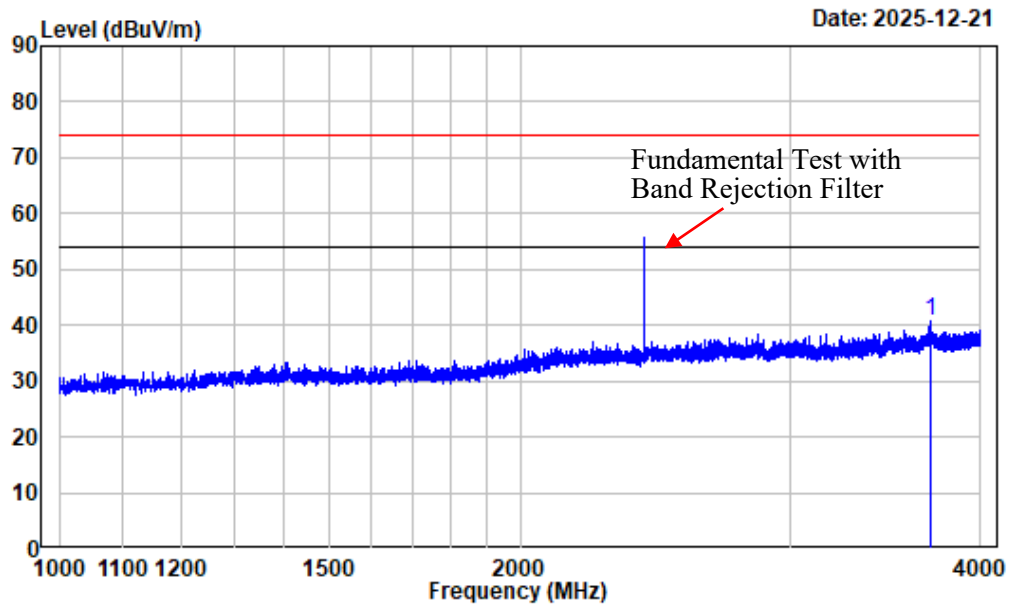
4-18GHz_Vertical_Average_802.11b



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz 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	4824.250	-7.80	55.27	47.47	54.00	-6.53	Average
2	18000.000	9.56	36.87	46.43	54.00	-7.57	Average

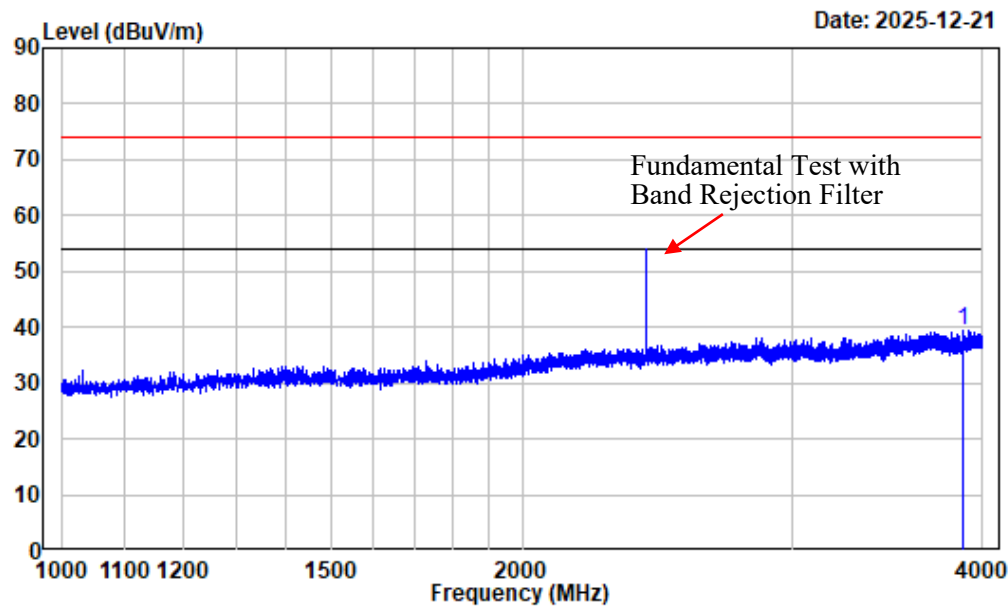
1-4GHz_Horizontal_802.11g



Condition : Horizontal
 Project No. : 2501Z35009E-RF
 Tester : Leon Guo
 Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
 Note : 2.4GWiFi_G_2412

Freq Factor		Read	Limit	Over	Remark
Level	Level	Line	Limit	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1 3708.250	-8.54	49.22	40.68	74.00	-33.32 Peak

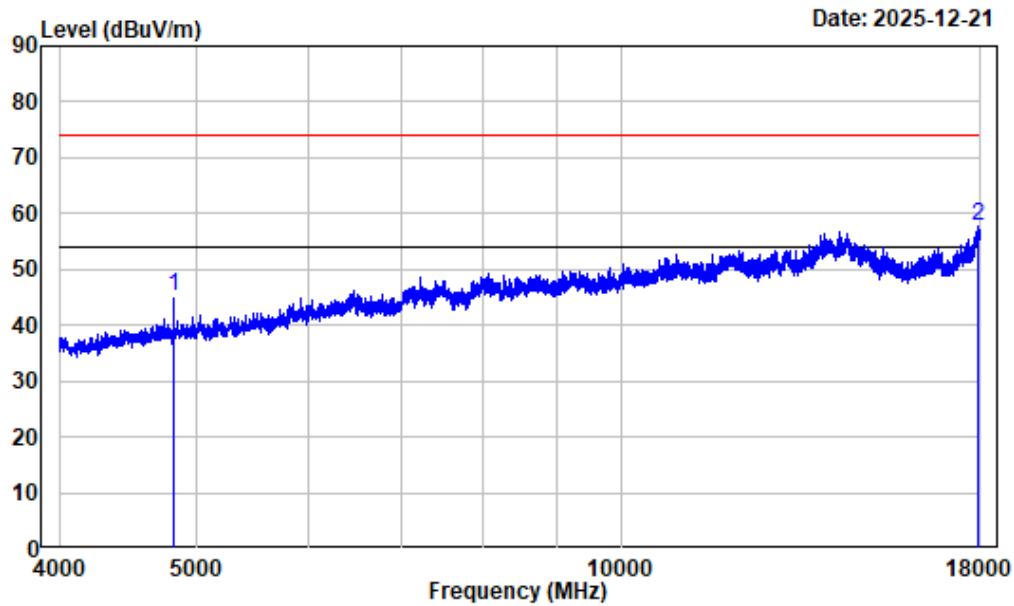
1-4GHz_Vertical_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2412

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3881.125	-8.88	48.24	39.36	74.00	-34.64 Peak

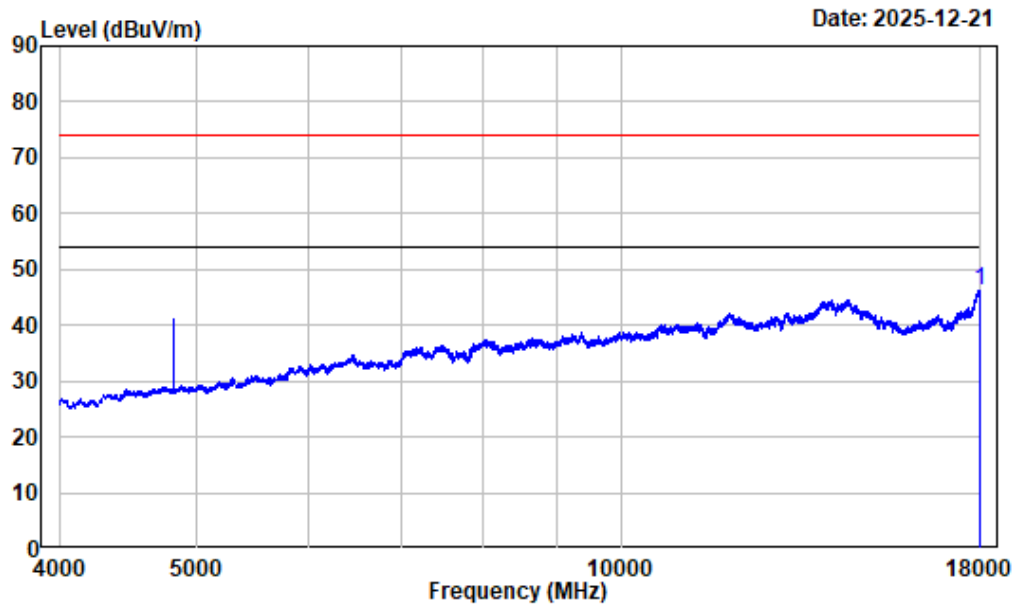
4-18GHz_Horizontal_Peak_802.11g



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2412

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4824.000	-7.80	52.97	45.17	74.00	-28.83	Peak
2 17940.500	9.28	48.45	57.73	74.00	-16.27	Peak

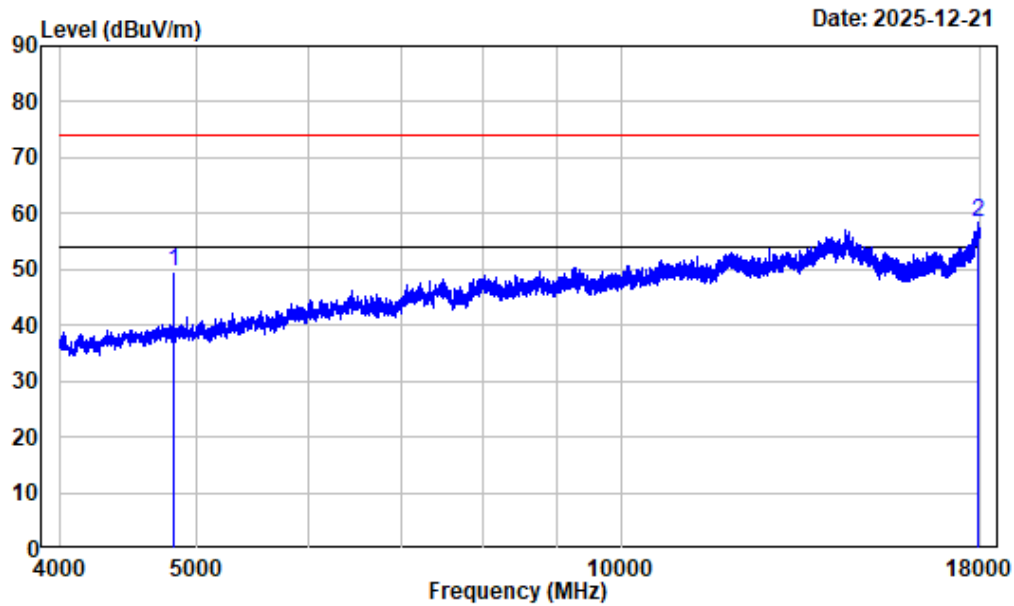
4-18GHz_Horizontal_Average_802.11g



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_G_2412

Freq Factor		Read Level		Limit	Over	Remark
				Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 17966.750	9.41	36.88	46.29	54.00	-7.71	Average

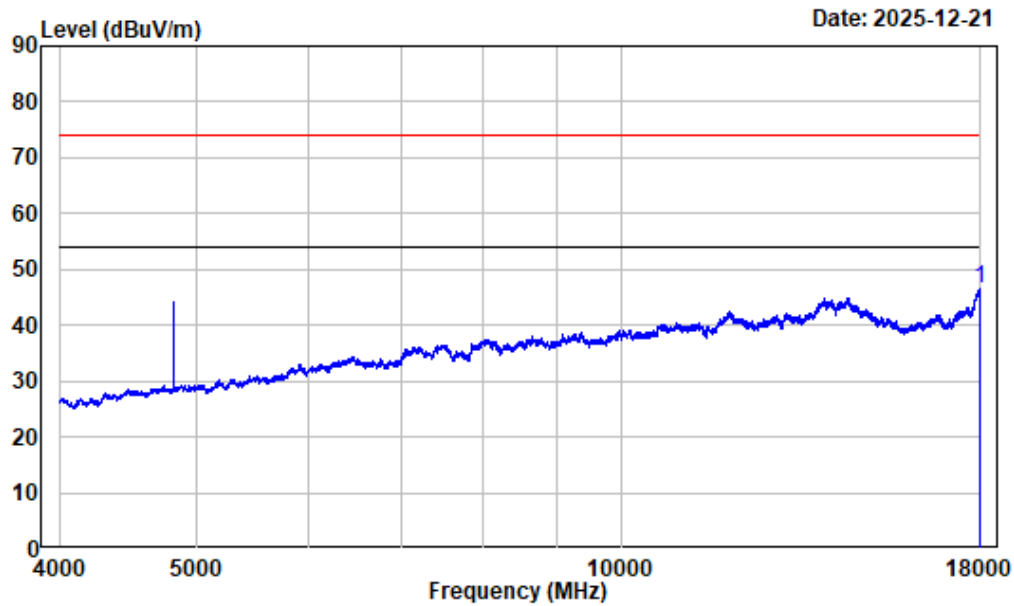
4-18GHz_Vertical_Peak_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_G_2412

Freq Factor		Read		Limit	Over	Remark
MHz	dB/m	Level	Level	Line	Limit	
		dBuV	dBuV/m	dBuV/m	dB	
1 4824.000	-7.80	57.31	49.51	74.00	-24.49	Peak
2 17905.500	9.12	49.31	58.43	74.00	-15.57	Peak

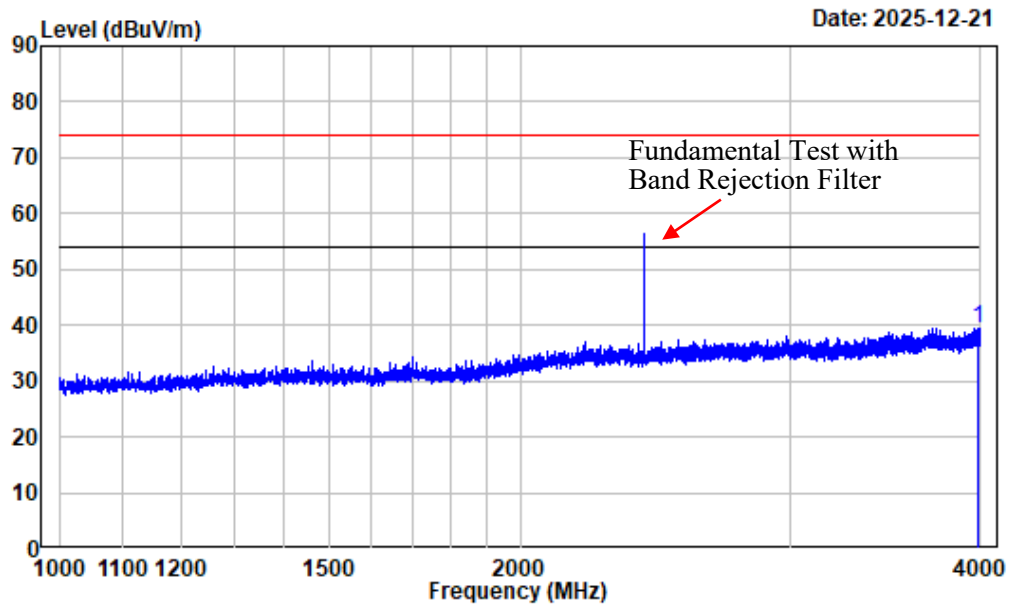
4-18GHz_Vertical_Average_802.11g



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4WiFi_G_2412

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 17989.500	9.52	36.89	46.41	54.00	-7.59	Average

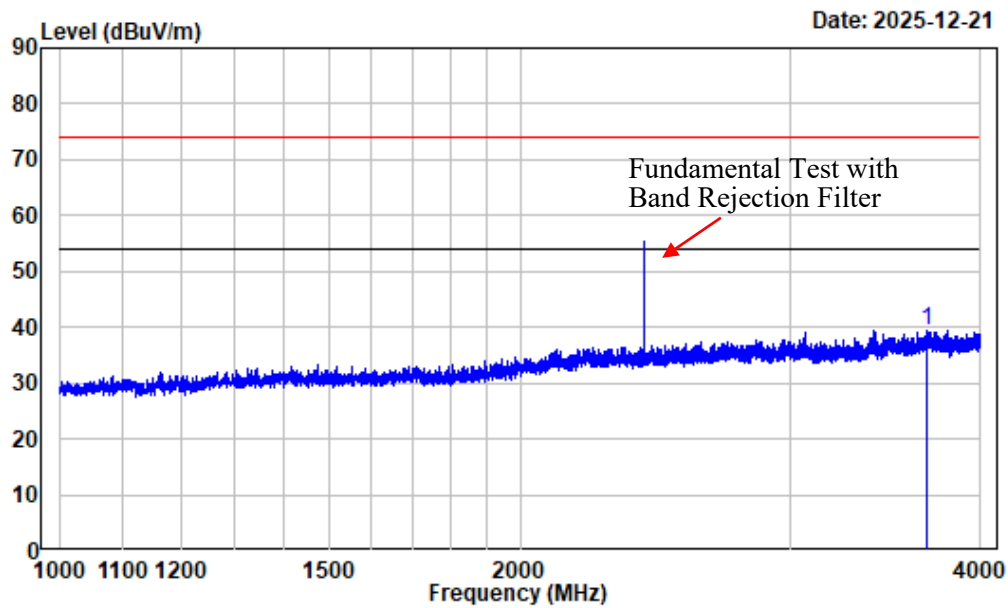
1-4GHz_Horizontal_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2412

Freq Factor		Read	Limit	Over	Remark
		Level	Level	Line	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1 3989.125	-8.25	47.80	39.55	74.00	-34.45 Peak

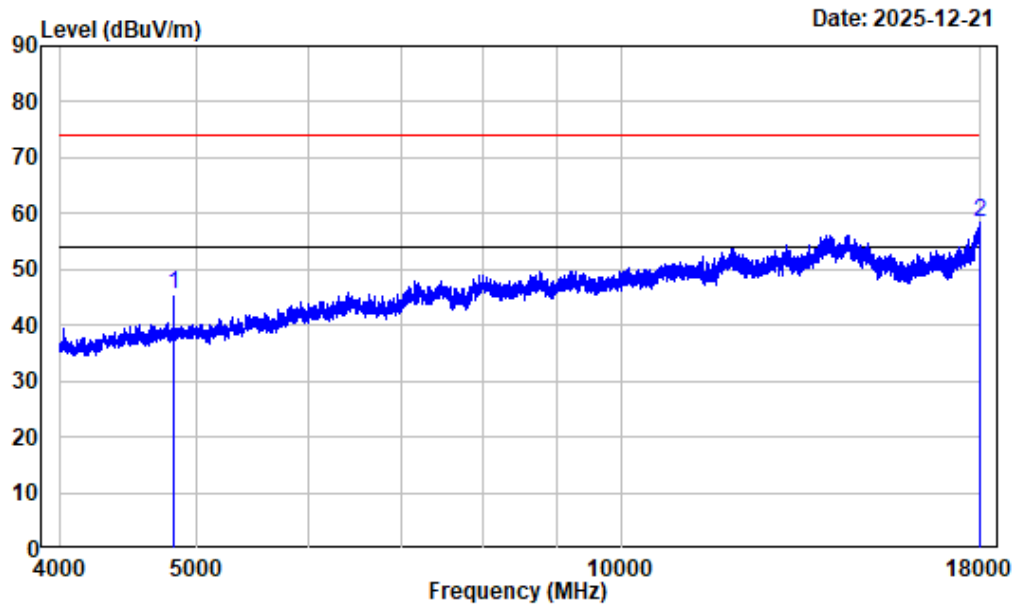
1-4GHz_Vertical_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2412

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3692.125	-8.55	47.91	39.36	74.00	-34.64 Peak

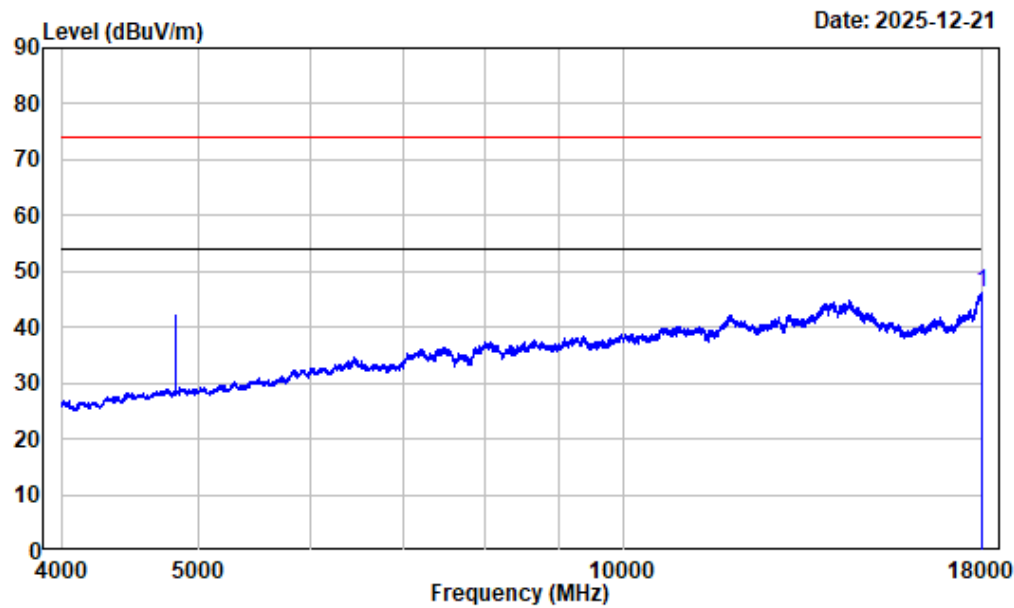
4-18GHz_Horizontal_Peak_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2412

Freq Factor		Read		Limit	Over	Remark
MHz	dB/m	Level	Level	Line	Limit	
		dBuV	dBuV/m	dBuV/m	dB	
1 4824.000	-7.80	53.27	45.47	74.00	-28.53	Peak
2 17975.500	9.45	48.84	58.29	74.00	-15.71	Peak

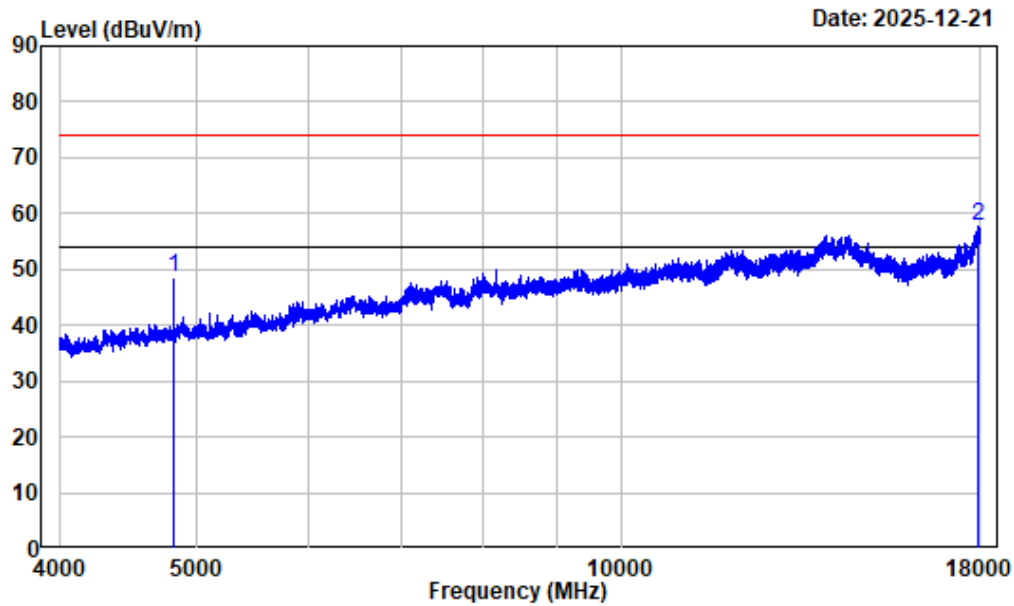
4-18GHz_Horizontal_Average_802.11n-HT20



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_N20_2412

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 17989.500	9.52	36.67	46.19	54.00	-7.81	Average

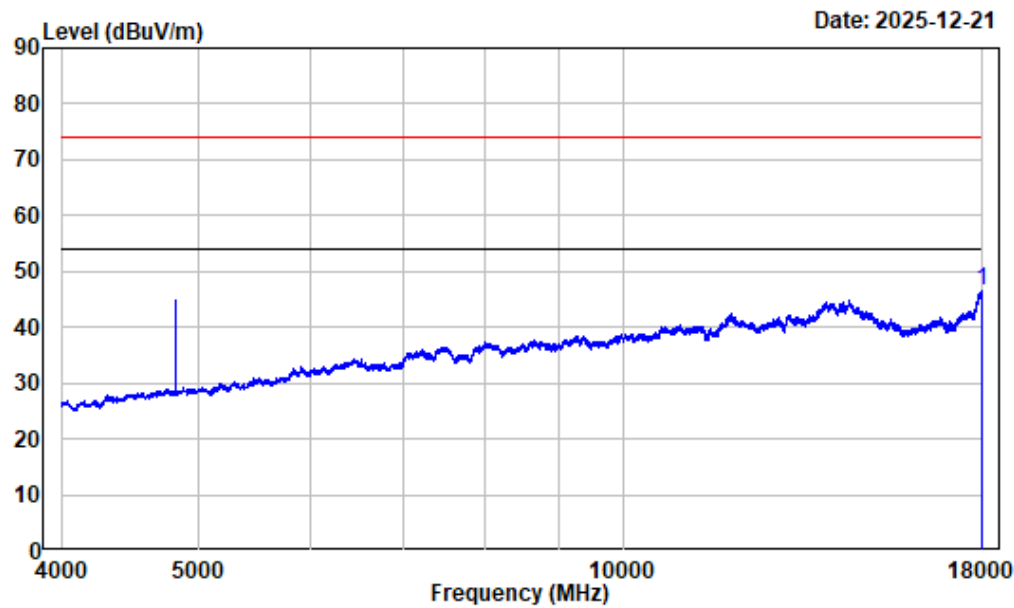
4-18GHz_Vertical_Peak_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N20_2412

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4824.000	-7.80	56.53	48.73	74.00	-25.27	Peak
2 17949.250	9.32	48.30	57.62	74.00	-16.38	Peak

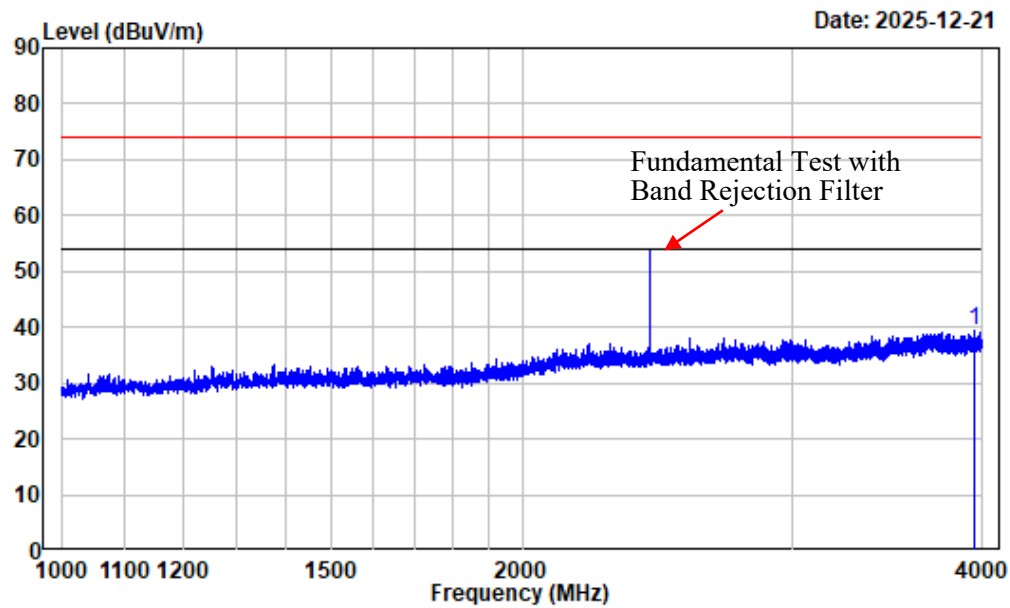
4-18GHz_Vertical_Average_802.11n-HT20



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi_N20_2412

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 17991.250	9.52	36.85	46.37	54.00	-7.63	Average

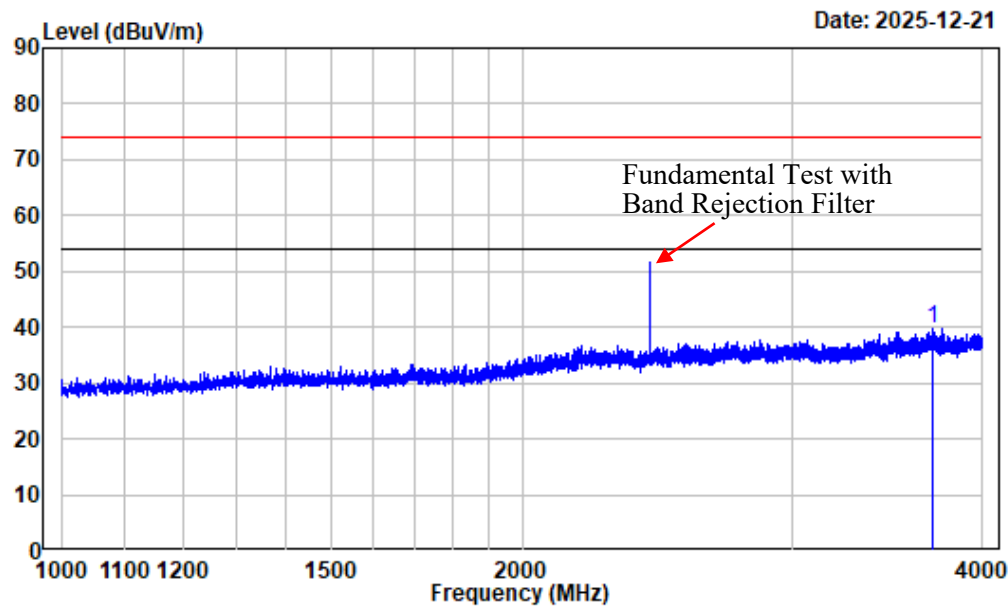
1-4GHz_Horizontal_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3952.000	-8.29	47.84	39.55	74.00	-34.45 Peak

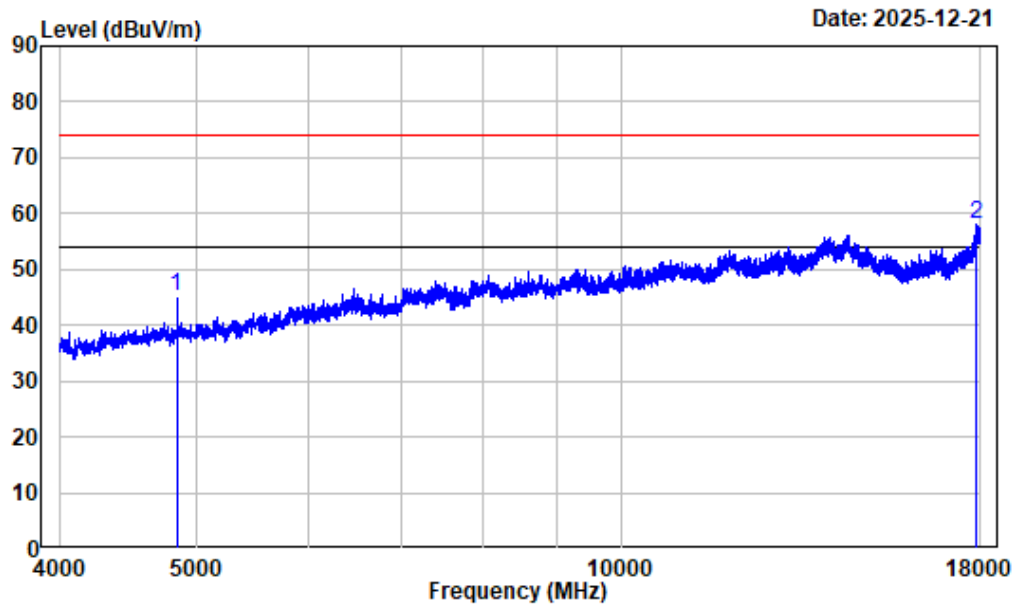
1-4GHz_Vertical_802.11n-HT40



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3710.875	-8.55	48.36	39.81	74.00	-34.19 Peak

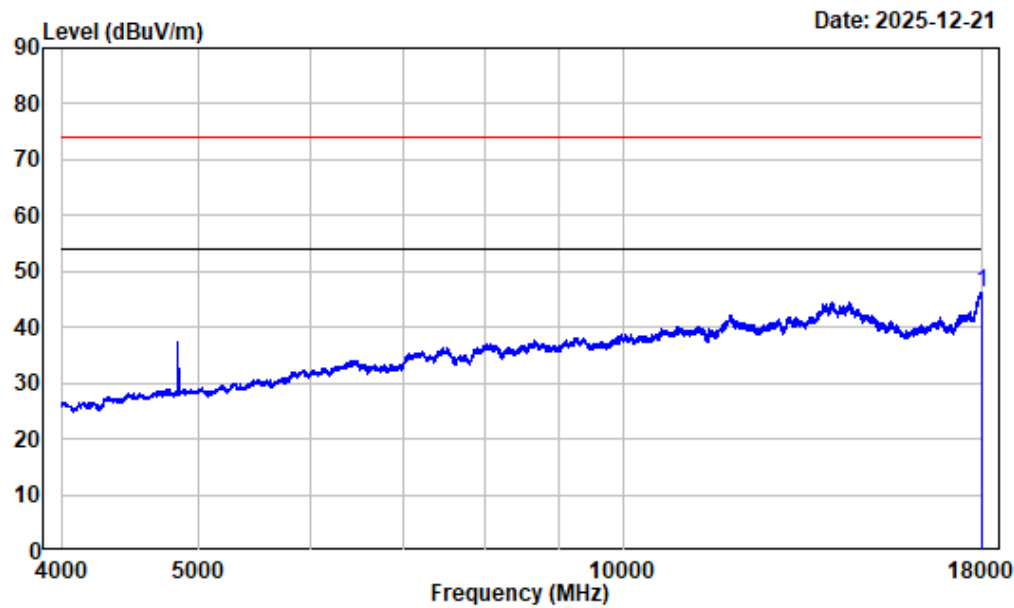
4-18GHz_Horizontal_Peak_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4844.000	-7.78	52.98	45.20	74.00	-28.80	Peak
2 17881.000	8.75	49.22	57.97	74.00	-16.03	Peak

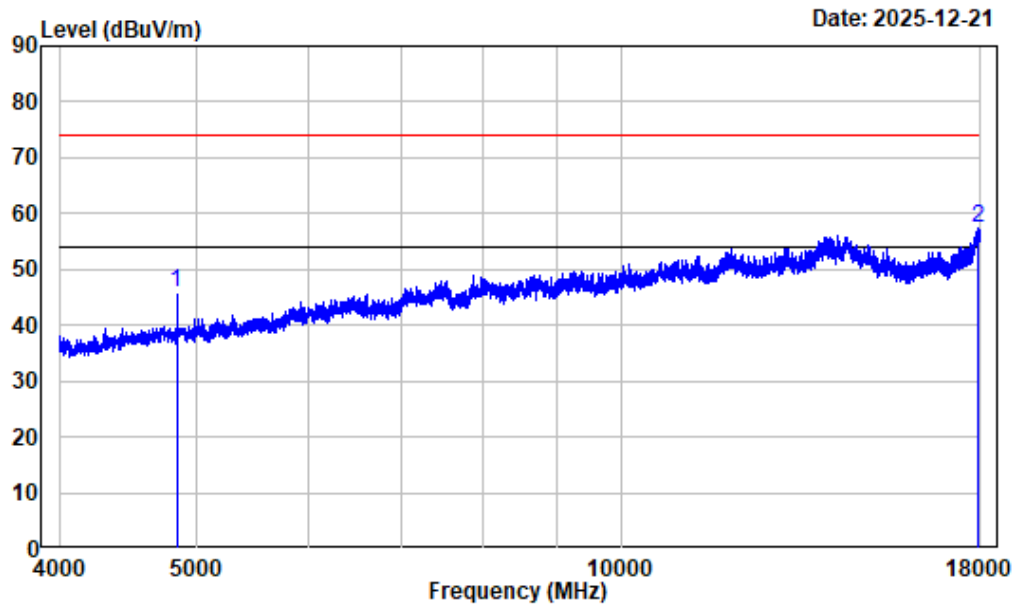
4-18GHz_Horizontal_Average_802.11n-HT40



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:2kHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 18000.000	9.56	36.61	46.17	54.00	-7.83	Average

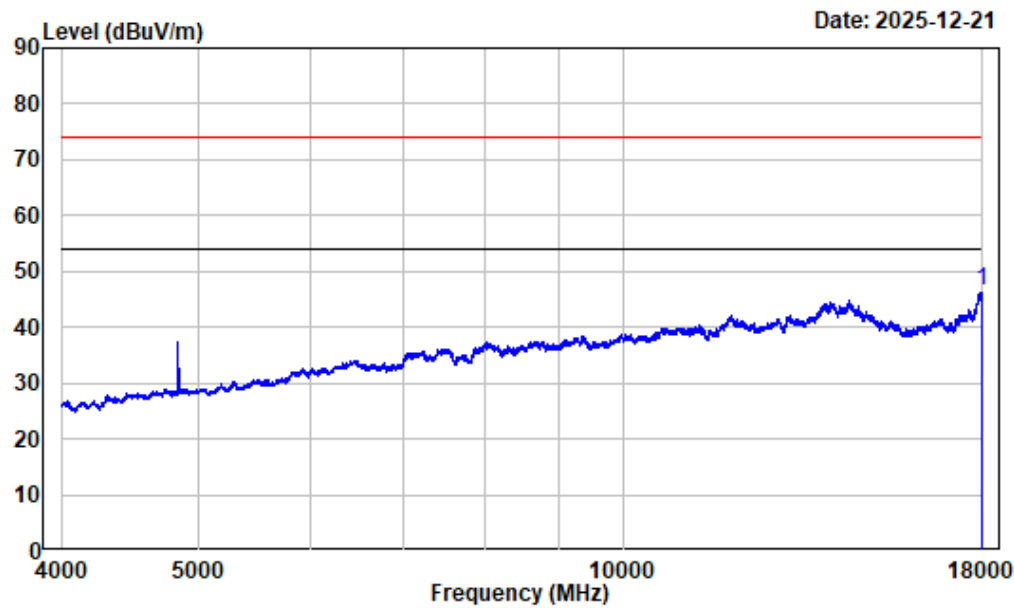
4-18GHz_Vertical_Peak_802.11n-HT40



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read		Limit	Over	Remark
		Level	Level	Line	Limit	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4844.000	-7.78	53.77	45.99	74.00	-28.01	Peak
2 17954.500	9.35	48.12	57.47	74.00	-16.53	Peak

4-18GHz_Vertical_Average_802.11n-HT40

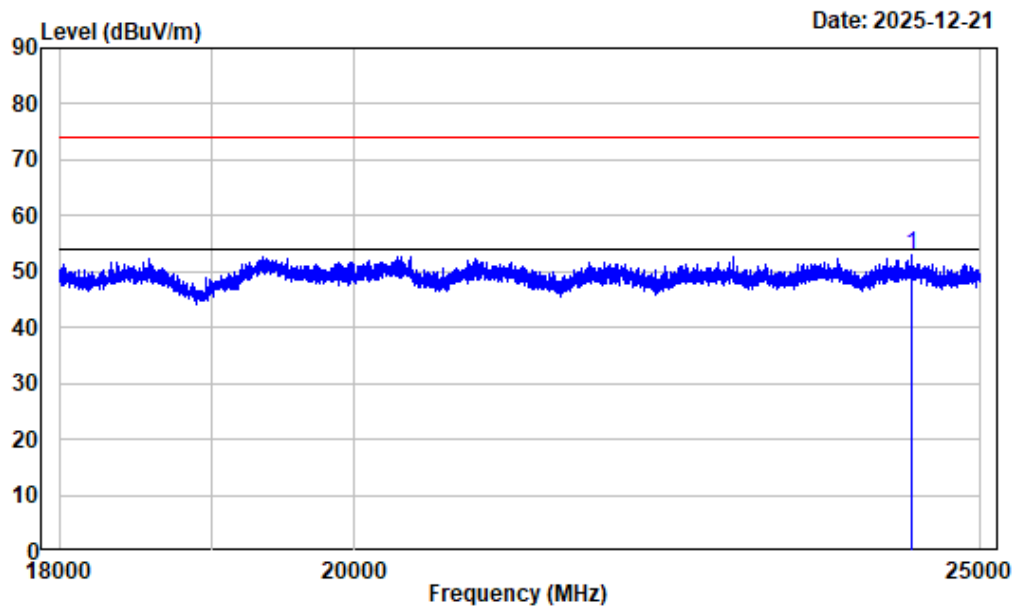


Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Average reading: RBW:1MHz VBW:2kHz Detector:Peak
Note : 2.4GWiFi_N40_2422

Freq Factor		Read Level		Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 18000.000	9.56	36.82	46.38	54.00	-7.62	Average

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

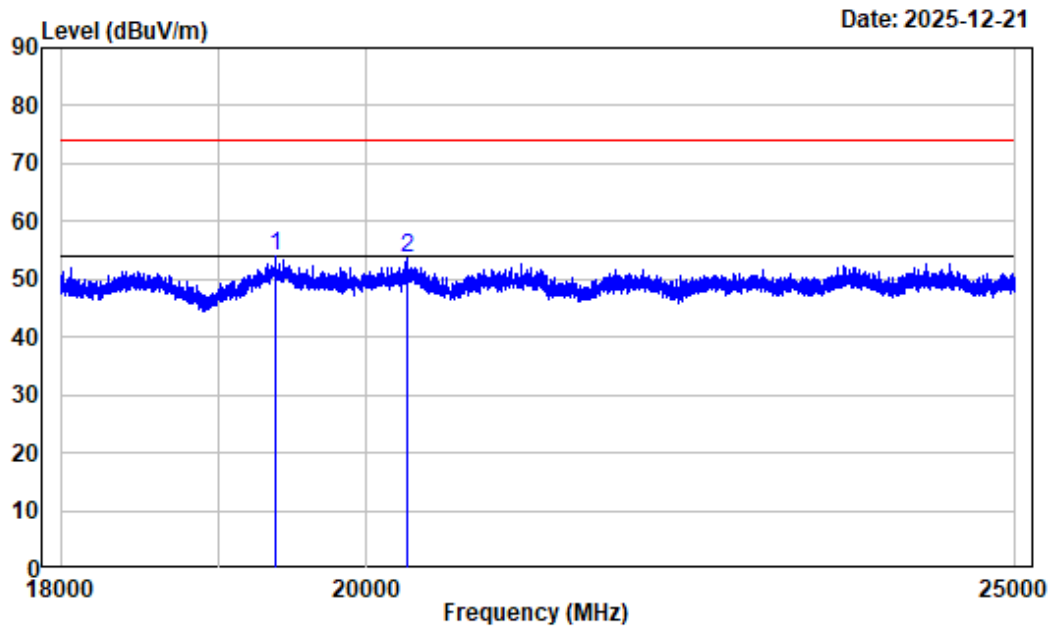
18-25GHz_Horizontal_802.11b



Condition : Horizontal
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 24399.170	16.81	36.27	53.08	74.00	-20.92	peak

18-25GHz_Vertical_802.11b



Condition : Vertical
Project No. : 2501Z35009E-RF
Tester : Leon Guo
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi_B_2412

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	19380.170	15.45	38.54	53.99	74.00	-20.01	peak
2	20276.170	15.32	38.46	53.78	74.00	-20.22	Peak

6dB Emission Bandwidth**Test Information:**

Sample No.:	3DF2-2	Test Date:	2025/12/20~2026/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	Pass

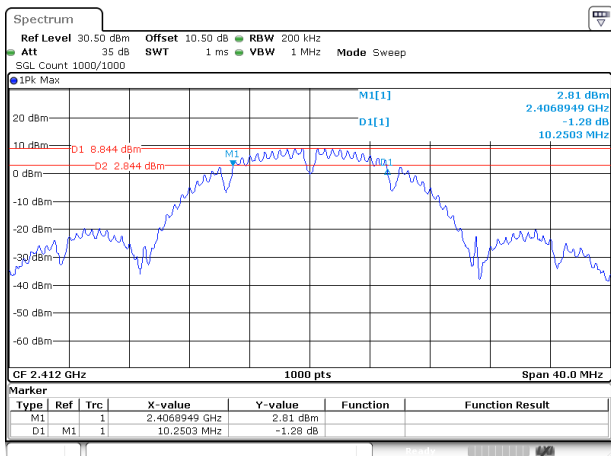
Environmental Conditions:

Temperature: (°C)	22.3-23.5	Relative Humidity: (%)	41-47	ATM Pressure: (kPa)	100.9-101.4
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Test Data:

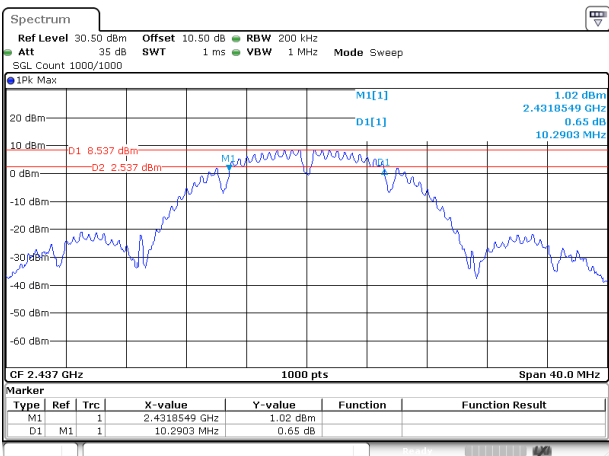
Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11b	2412	10.250	≥ 0.5	Pass
	2437	10.290	≥ 0.5	Pass
	2462	10.250	≥ 0.5	Pass
802.11g	2412	16.497	≥ 0.5	Pass
	2437	16.457	≥ 0.5	Pass
	2462	16.497	≥ 0.5	Pass
802.11n20	2412	17.658	≥ 0.5	Pass
	2437	17.658	≥ 0.5	Pass
	2462	17.658	≥ 0.5	Pass
802.11n40	2422	36.517	≥ 0.5	Pass
	2437	36.517	≥ 0.5	Pass
	2452	36.436	≥ 0.5	Pass

802.11b_2412MHz



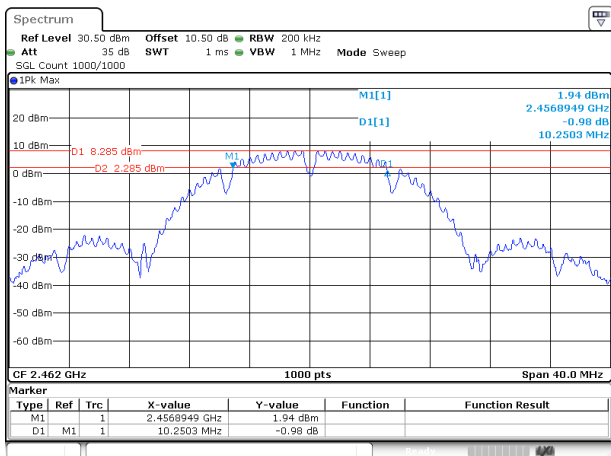
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:22:12

802.11b_2437MHz



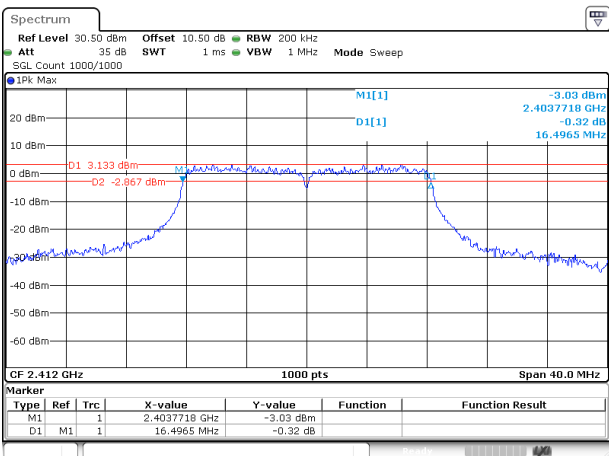
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:26:38

802.11b_2462MHz



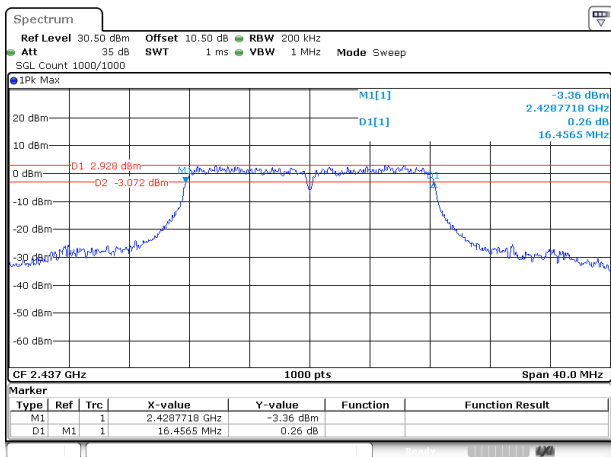
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:29:05

802.11g_2412MHz



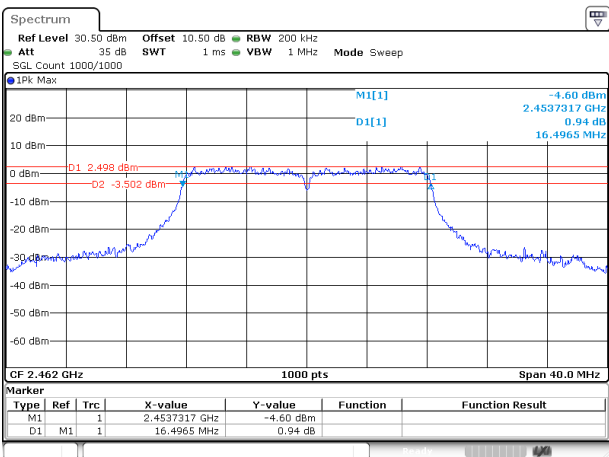
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:32:03

802.11g_2437MHz



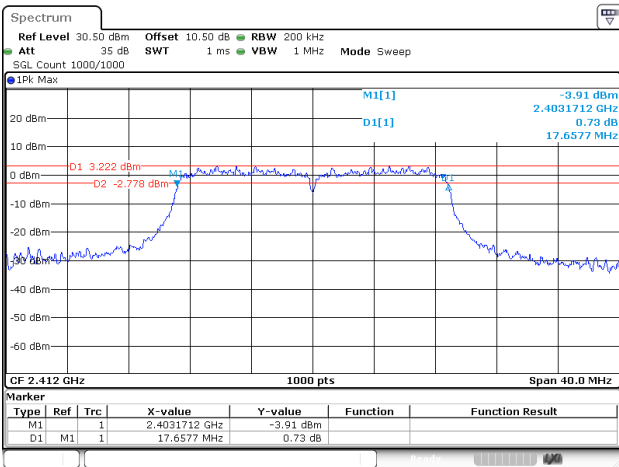
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:35:25

802.11g_2462MHz



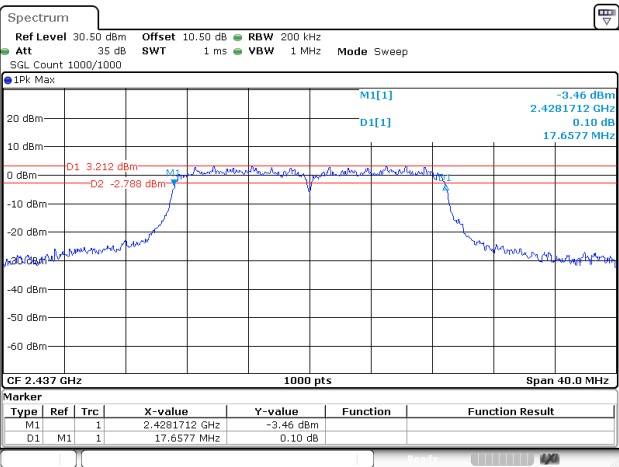
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:38:27

802.11n20_2412MHz



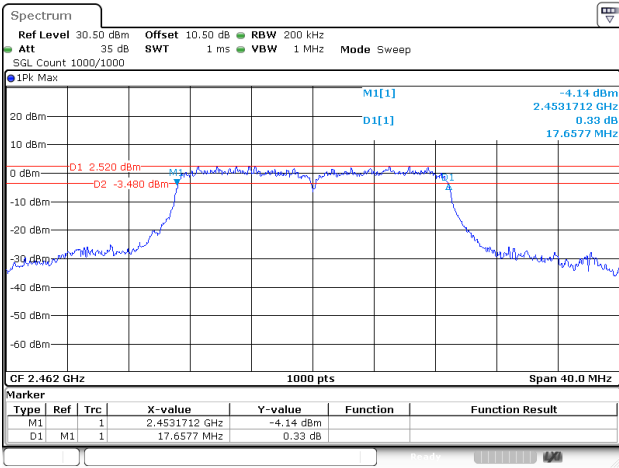
ProjectNo.:2501Z35009E-RF Tester:Btham Bu
Date: 20,DEC,2025 19:43:55

802.11n20_2437MHz



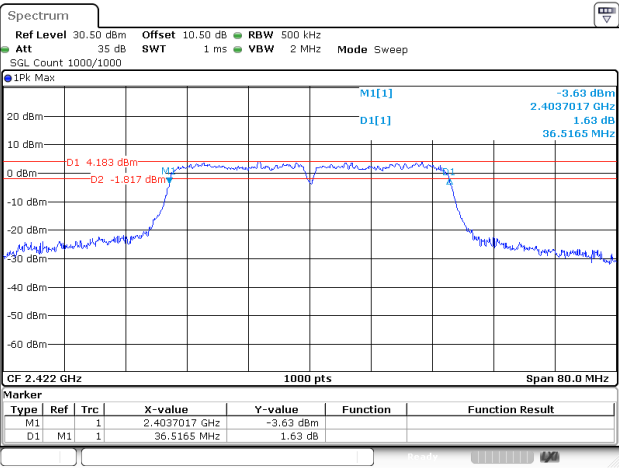
ProjectNo.:2501Z35009E-RF Tester:Btham Bu
Date: 31,MAR,2026 15:00:51

802.11n20_2462MHz



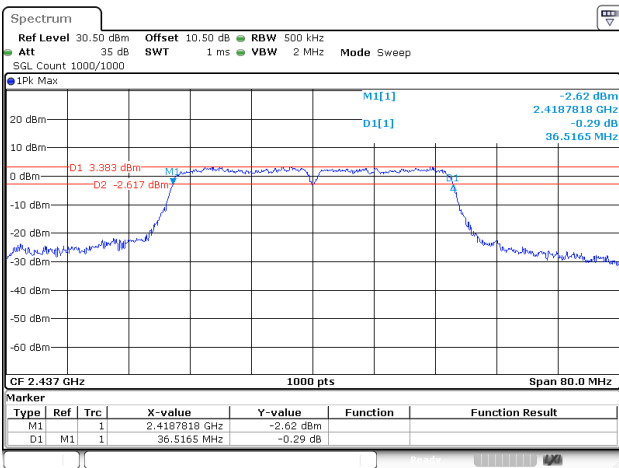
ProjectNo.:2501Z35009E-RF Tester:Btham Bu
Date: 20,DEC,2025 19:50:06

802.11n40_2422MHz



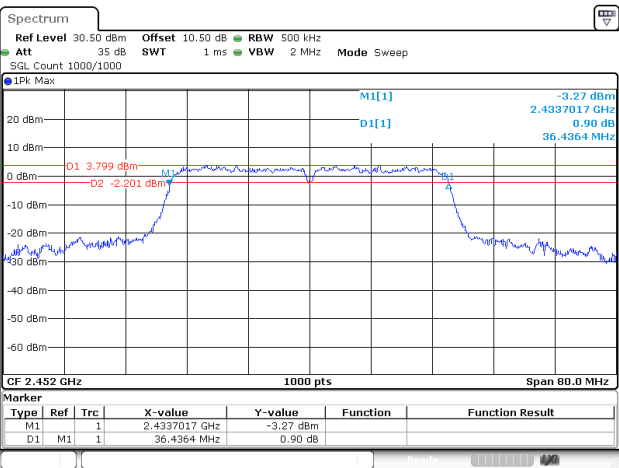
ProjectNo.:2501Z35009E-RF Tester:Btham Bu
Date: 20,DEC,2025 19:54:25

802.11n40_2437MHz



ProjectNo.:2501Z35009E-RF Tester:Btham Bu
Date: 20,DEC,2025 19:58:35

802.11n40_2452MHz



ProjectNo.:2501Z35009E-RF Tester:Btham Bu
Date: 31,MAR,2026 15:04:01

99% Occupied Bandwidth**Test Information:**

Sample No.:	3DF2-2	Test Date:	2025/12/20~2026/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	N/A

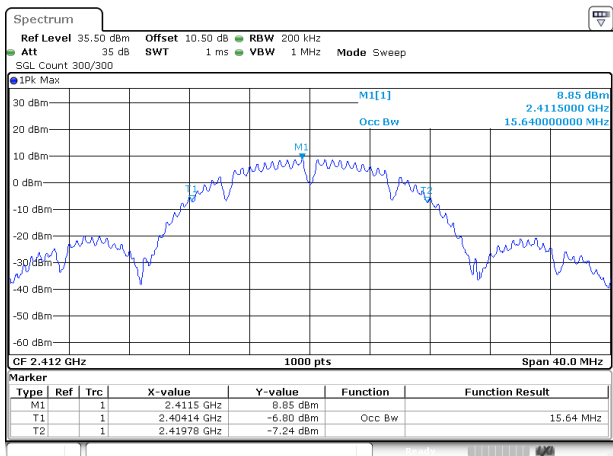
Environmental Conditions:

Temperature: (°C)	22.3-23.5	Relative Humidity: (%)	41-47	ATM Pressure: (kPa)	100.9-101.4
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Test Data:

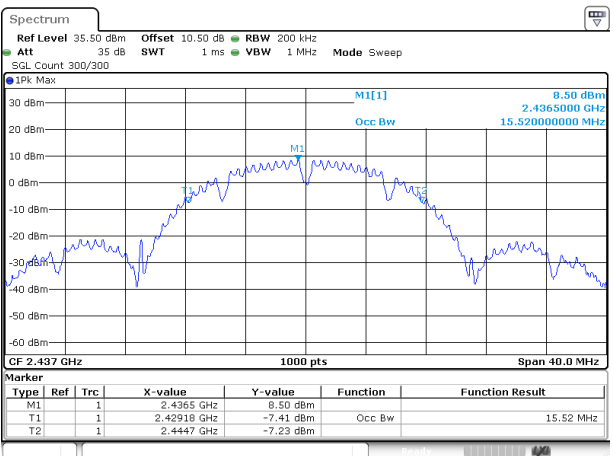
Mode	Test Frequency (MHz)	99% OBW (MHz)
802.11b	2412	15.640
	2437	15.520
	2462	15.360
802.11g	2412	16.680
	2437	16.600
	2462	16.640
802.11n20	2412	17.680
	2437	17.720
	2462	17.720
802.11n40	2422	36.480
	2437	36.720
	2452	36.480

802.11b_2412MHz



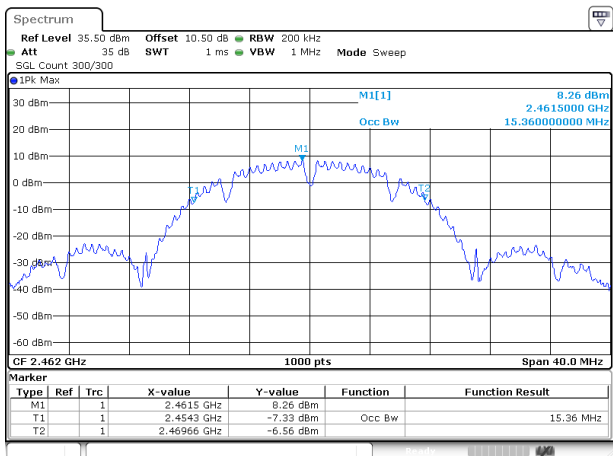
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:22:40

802.11b_2437MHz



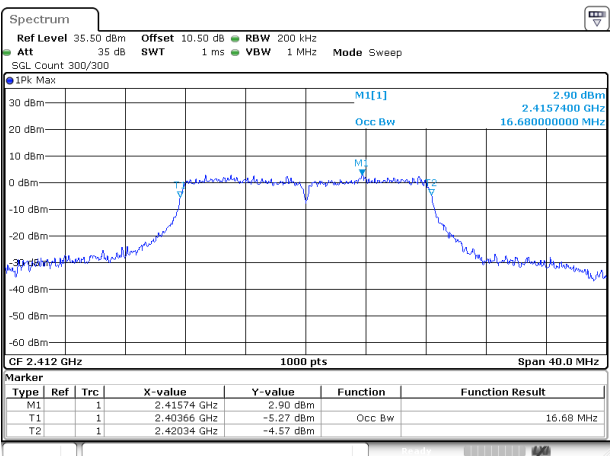
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:26:58

802.11b_2462MHz



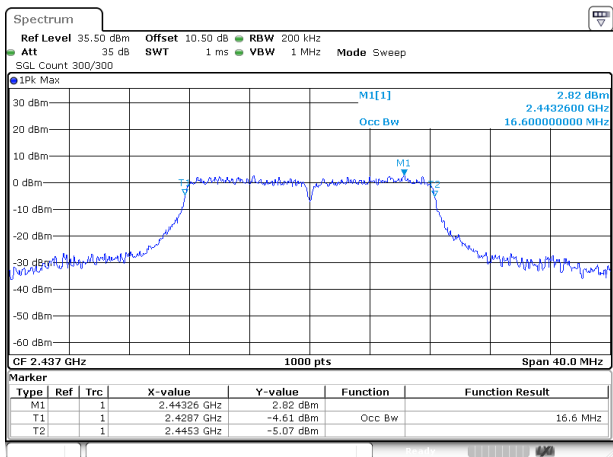
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:29:27

802.11g_2412MHz



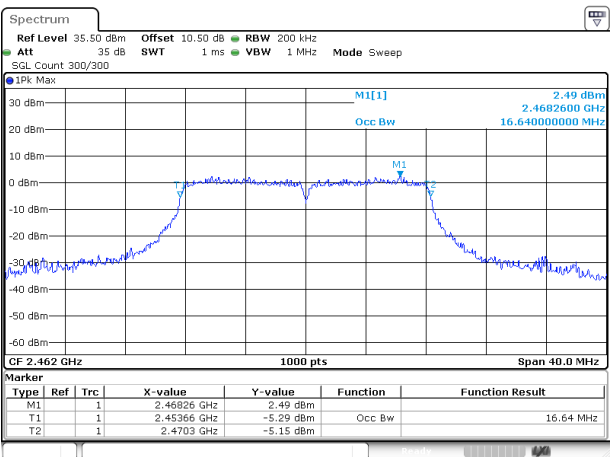
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:32:27

802.11g_2437MHz



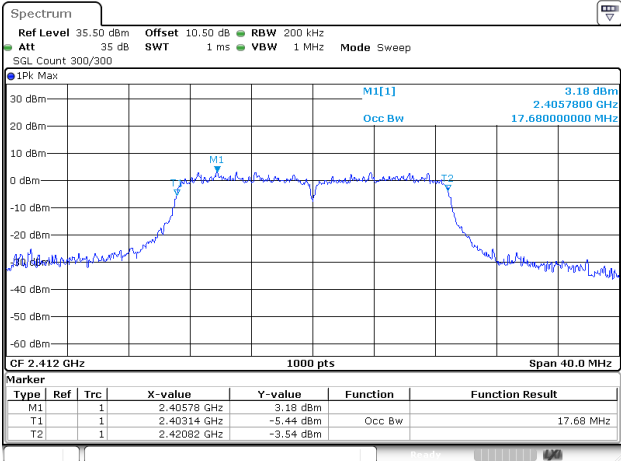
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:35:45

802.11g_2462MHz



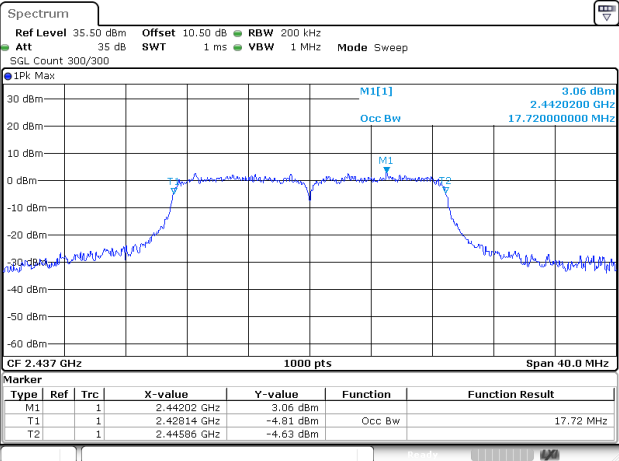
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:38:49

802.11n20_2412MHz



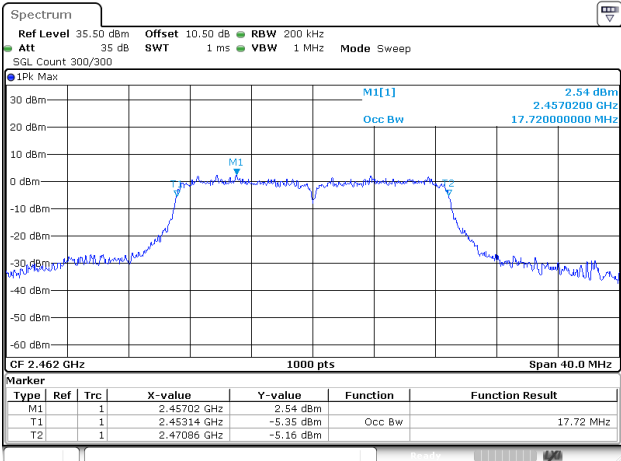
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:44:19

802.11n20_2437MHz



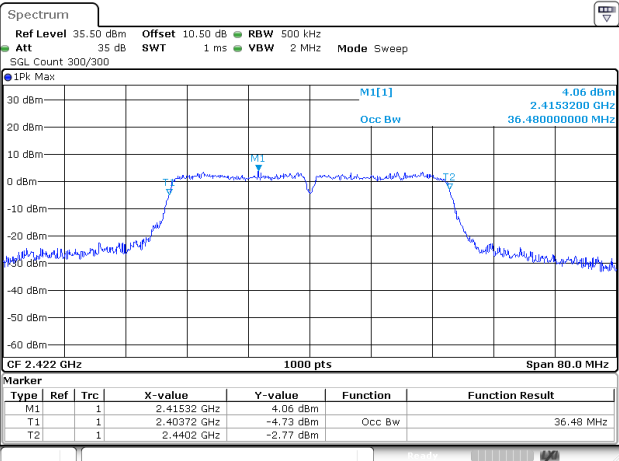
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 31.MAR.2026 15:01:11

802.11n20_2462MHz



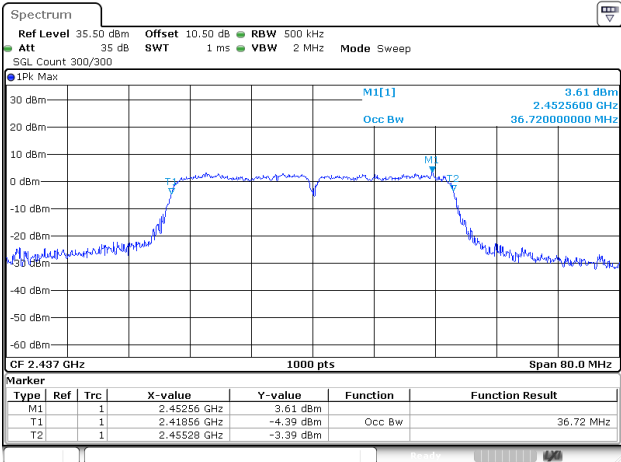
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:50:29

802.11n40_2422MHz



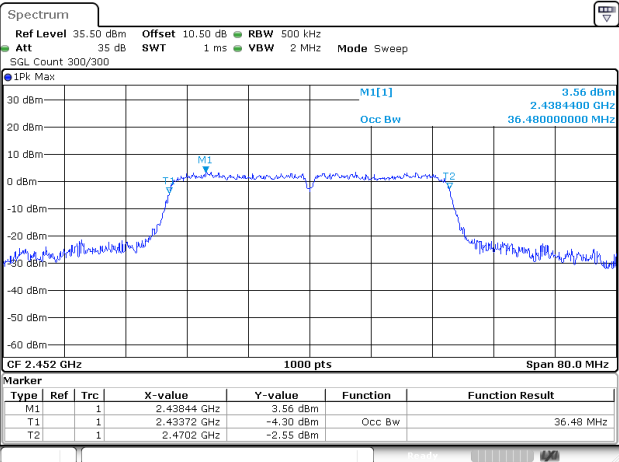
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:54:36

802.11n40_2437MHz



ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:58:46

802.11n40_2452MHz



ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 31.MAR.2026 15:04:11

Maximum Conducted Output Power**Test Information:**

Sample No.:	3DF2-2	Test Date:	2025/12/20
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.3	Relative Humidity: (%)	41	ATM Pressure: (kPa)	100.9
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Test Data:

Mode	Test Frequency (MHz)	Peak Output Power(dBm)	Average Output Power(dBm)	Limit (dBm)	Verdict
802.11b	2412	21.05	17.83	30	Pass
	2437	20.77	17.61	30	Pass
	2462	20.43	17.29	30	Pass
802.11g	2412	20.82	13.46	30	Pass
	2437	20.63	13.14	30	Pass
	2462	20.18	12.71	30	Pass
802.11n20	2412	20.88	13.57	30	Pass
	2437	20.43	13.29	30	Pass
	2462	19.98	12.88	30	Pass
802.11n40	2422	20.87	13.72	30	Pass
	2437	20.68	13.45	30	Pass
	2452	20.45	13.27	30	Pass

Power Spectral Density**Test Information:**

Sample No.:	3DF2-2	Test Date:	2025/12/20~2026/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	Pass

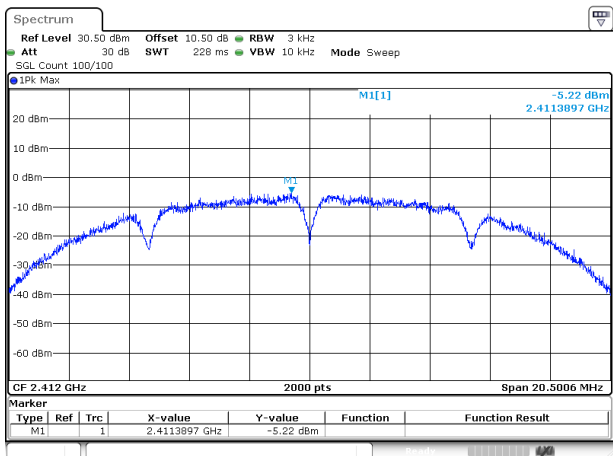
Environmental Conditions:

Temperature: (°C)	22.3-23.5	Relative Humidity: (%)	41-47	ATM Pressure: (kPa)	100.9-101.4
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Test Data:

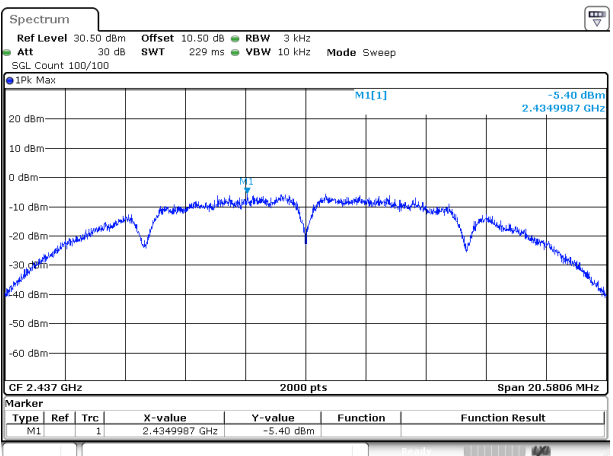
Mode	Test Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
802.11b	2412	-5.22	8	Pass
	2437	-5.40	8	Pass
	2462	-5.79	8	Pass
802.11g	2412	-10.24	8	Pass
	2437	-10.77	8	Pass
	2462	-10.49	8	Pass
802.11n20	2412	-12.17	8	Pass
	2437	-12.15	8	Pass
	2462	-12.69	8	Pass
802.11n40	2422	-14.84	8	Pass
	2437	-14.20	8	Pass
	2452	-15.57	8	Pass

802.11b_2412MHz



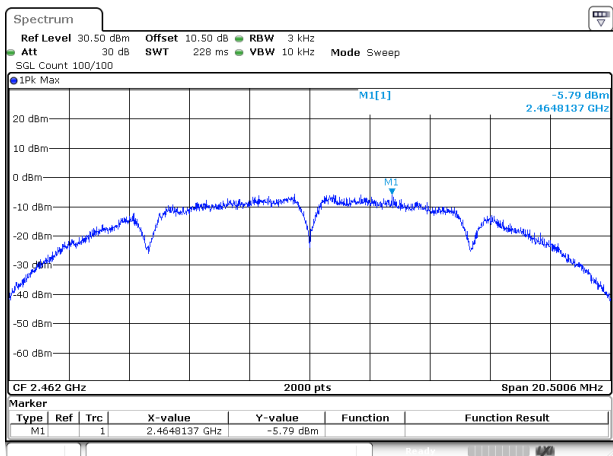
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:24:04

802.11b_2437MHz



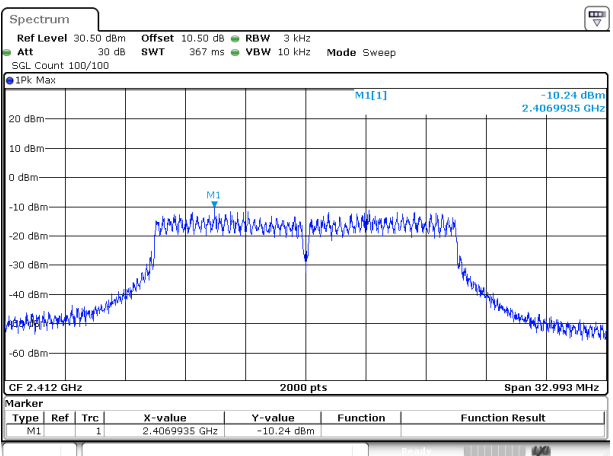
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:27:54

802.11b_2462MHz



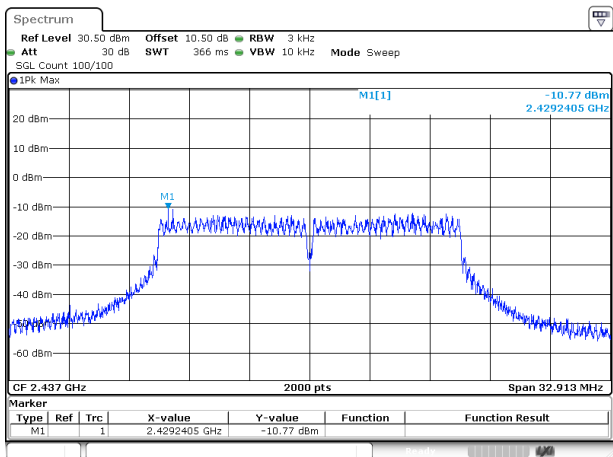
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:30:45

802.11g_2412MHz



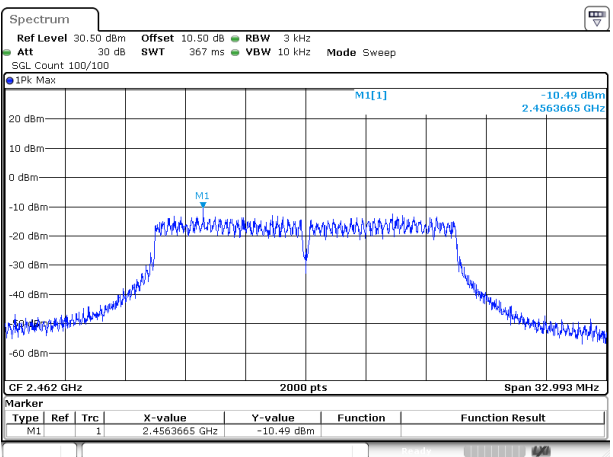
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Date: 20.DEC.2025 19:34:04

802.11g_2437MHz



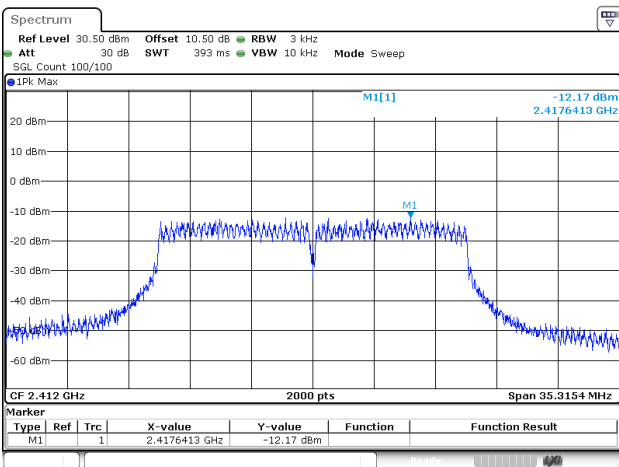
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:37:15

802.11g_2462MHz



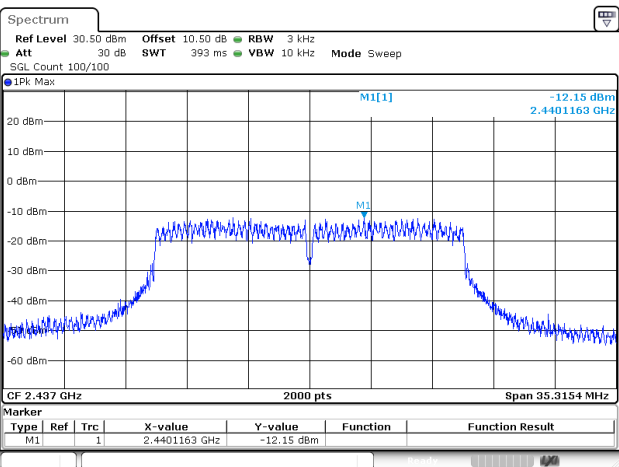
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:41:02

802.11n20_2412MHz



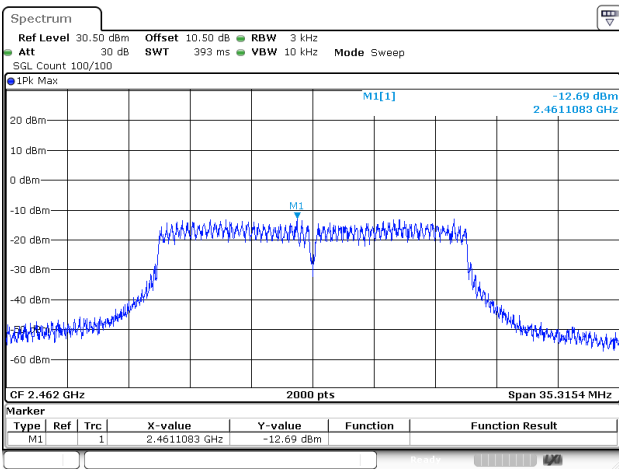
ProjectNo.:2501Z35009E-RF Tester:Ethian Bu
Date: 20,DEC,2025 19:45:58

802.11n20_2437MHz



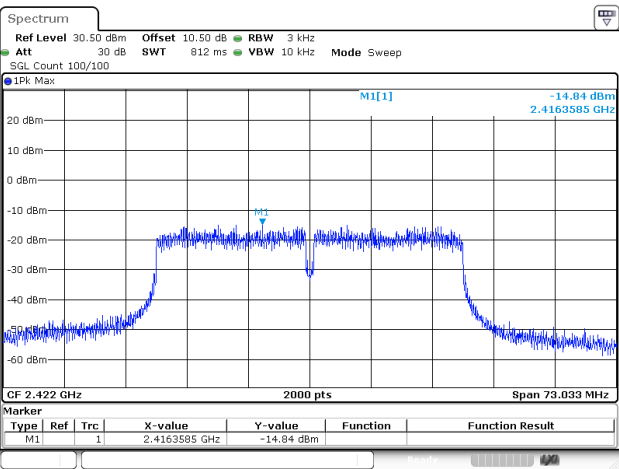
ProjectNo.:2501Z35009E-RF Tester:Ethian Bu
Date: 31,MAR,2026 15:02:52

802.11n20_2462MHz



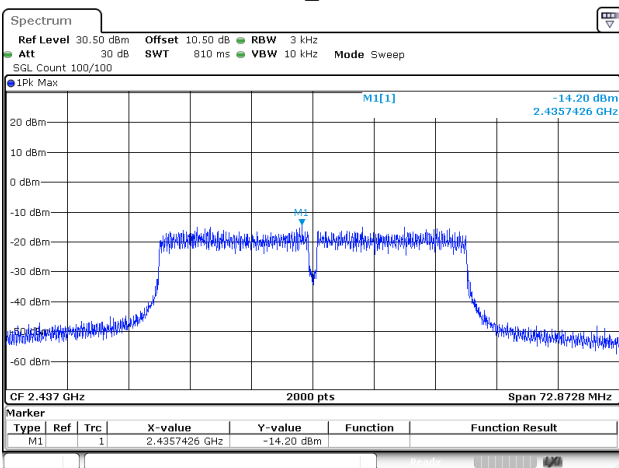
ProjectNo.:2501Z35009E-RF Tester:Ethian Bu
Date: 20,DEC,2025 19:53:41

802.11n40_2422MHz



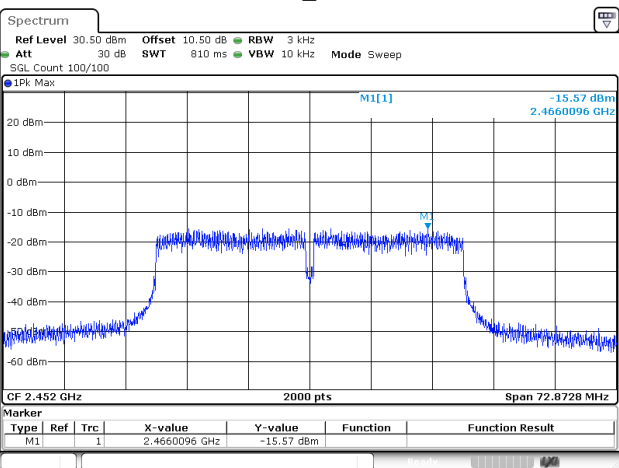
ProjectNo.:2501Z35009E-RF Tester:Ethian Bu
Date: 20,DEC,2025 19:57:57

802.11n40_2437MHz



ProjectNo.:2501Z35009E-RF Tester:Ethian Bu
Date: 31,MAR,2026 15:12:04

802.11n40_2452MHz



ProjectNo.:2501Z35009E-RF Tester:Ethian Bu
Date: 31,MAR,2026 15:07:01

100 kHz Bandwidth of Frequency Band Edge**Test Information:**

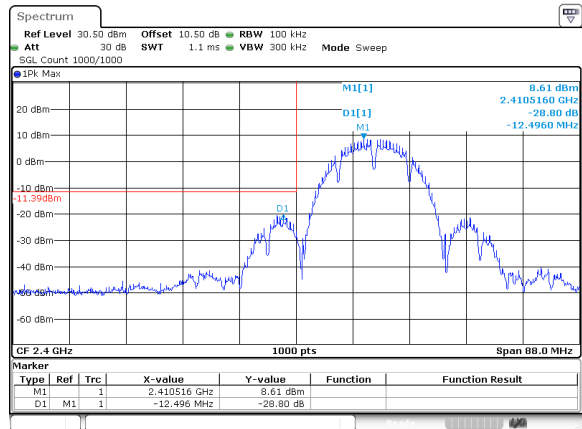
Sample No.:	3DF2-2	Test Date:	2025/12/20~2026/03/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.3-23.5	Relative Humidity: (%)	41-47	ATM Pressure: (kPa)	100.9-101.4
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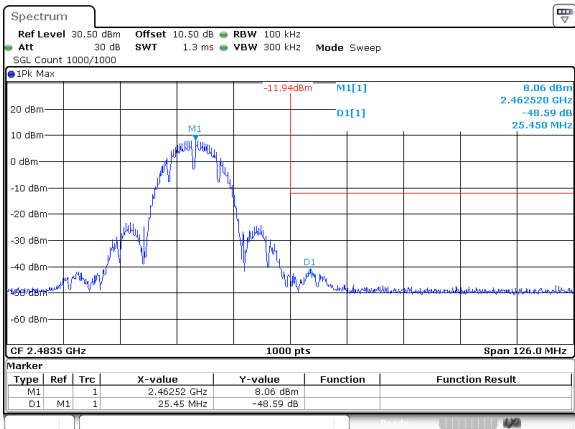
Test Data:

802.11b_2412MHz



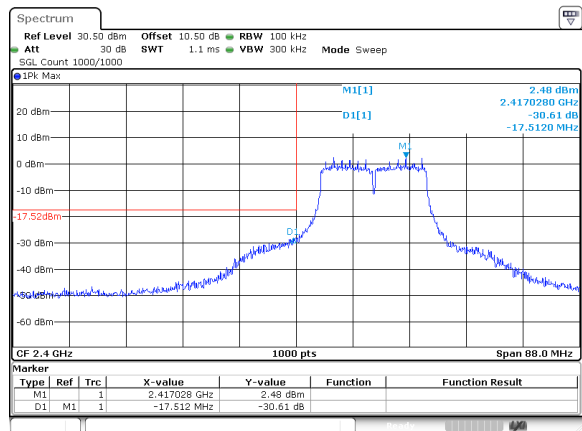
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20,DEC,2025 19:23:22

802.11b_2462MHz



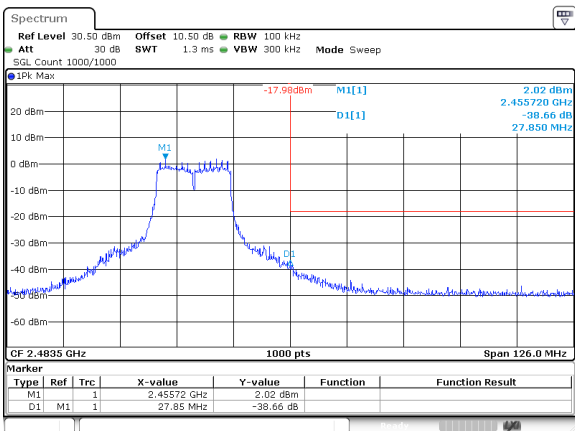
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20,DEC,2025 19:30:04

802.11g_2412MHz



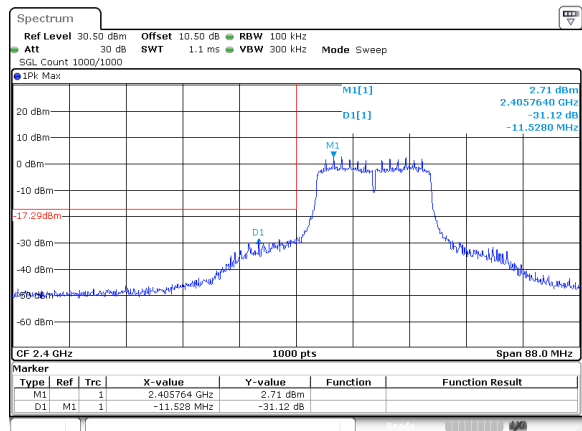
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Date: 20,DEC,2025 19:33:04

802.11g_2462MHz



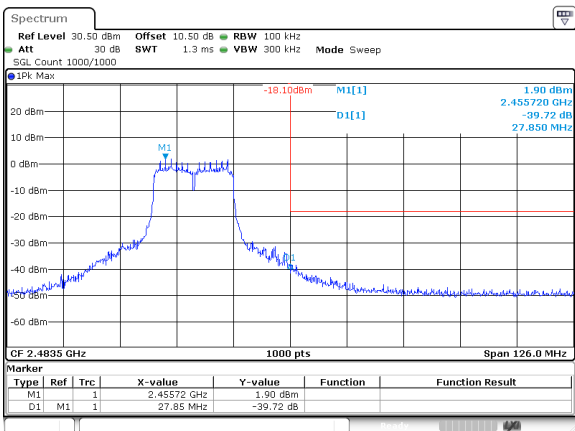
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20,DEC,2025 19:40:03

802.11n20_2412MHz



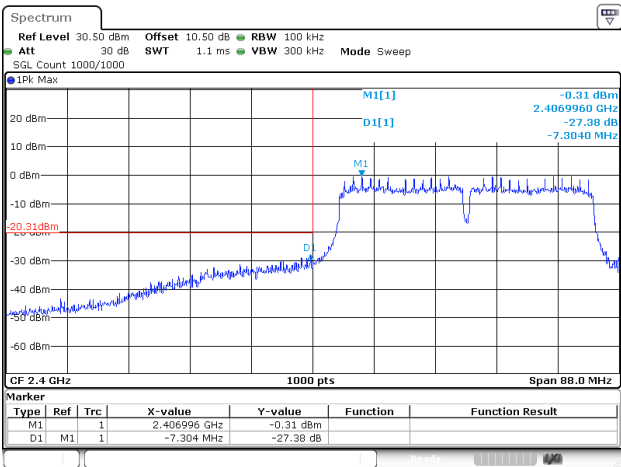
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20,DEC,2025 19:44:54

802.11n20_2462MHz



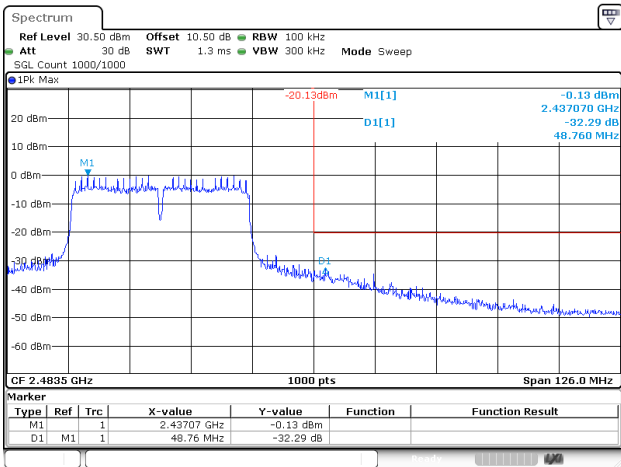
ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20,DEC,2025 19:52:38

802.11n40_2422MHz



ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 20,DEC,2025 19:55:55

802.11n40_2452MHz



ProjectNo.:2501Z35009E-RF Tester:Ethan Bu
Date: 31,MAR,2026 15:04:59

Duty Cycle**Test Information:**

Sample No.:	3DF2-2	Test Date:	2025/12/20
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	N/A

Environmental Conditions:

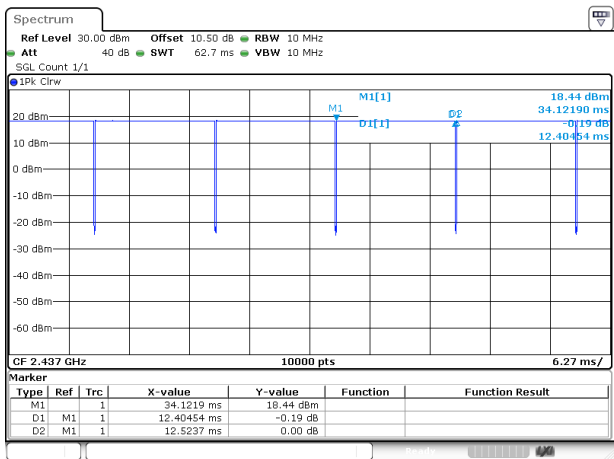
Temperature: (°C)	22.3	Relative Humidity: (%)	41	ATM Pressure: (kPa)	100.9
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Test Data:

Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11b	2437	12.405	12.524	99.05	/	/	0.010
802.11g	2437	2.048	2.106	97.25	0.12	488	0.5
802.11n20	2437	1.907	2.055	92.80	0.32	524	1
802.11n40	2437	0.931	1.068	87.17	0.60	1074	2

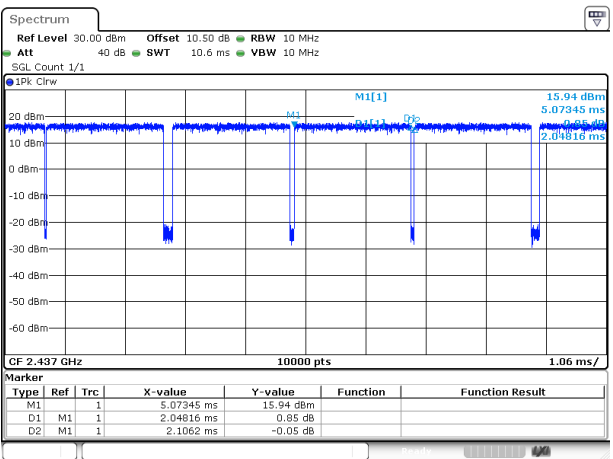
Duty Cycle = Ton/(Ton+Toff)*100%

802.11b_2437MHz



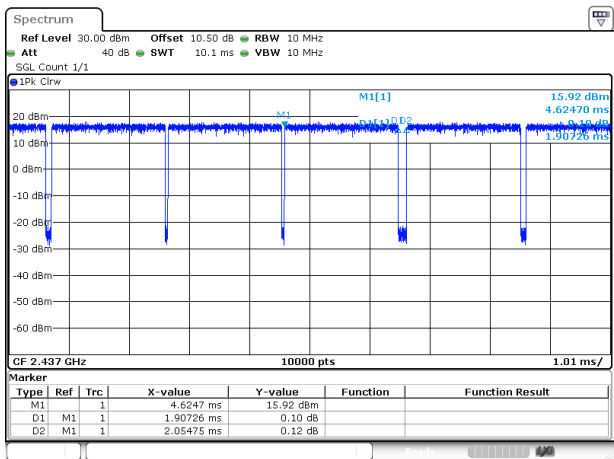
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:11:47

802.11g_2437MHz



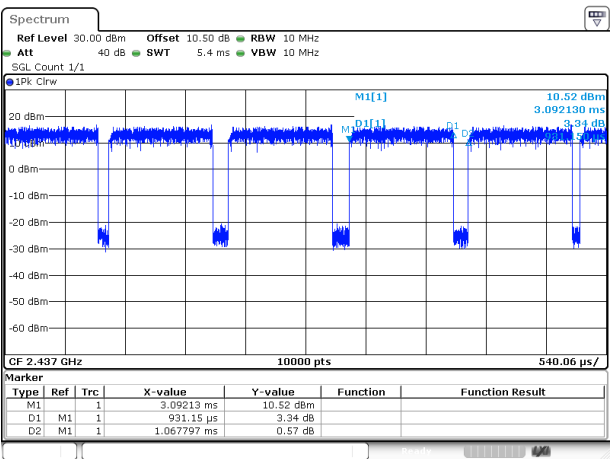
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:12:48

802.11n20_2437MHz



ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:13:54

802.11n40_2437MHz



ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 19:19:33

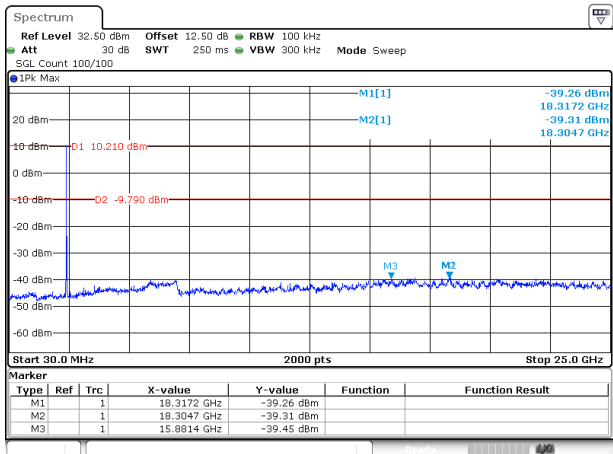
Conducted Spurious Emission**Test Information:**

Sample No.:	3DF2-2	Test Date:	2025/12/20
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ethan Bu	Test Result:	Pass

Environmental Conditions:

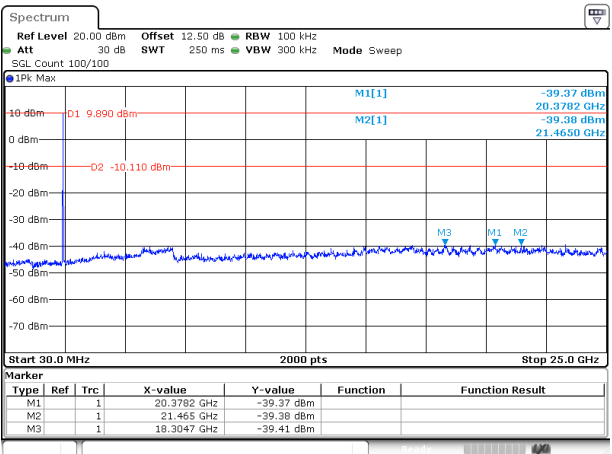
Temperature: (°C)	22.3	Relative Humidity: (%)	41	ATM Pressure: (kPa)	100.9
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802.11b_2412MHz



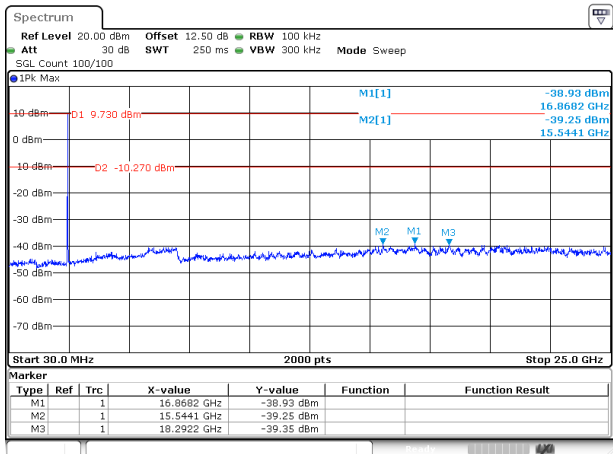
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 21:03:55

802.11b_2437MHz



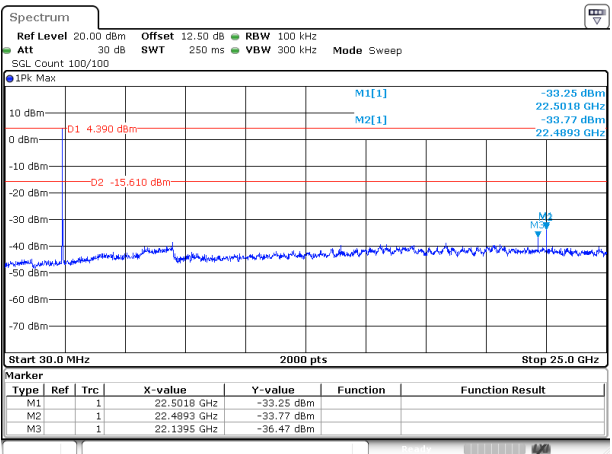
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Date: 20.DEC.2025 20:17:55

802.11b_2462MHz



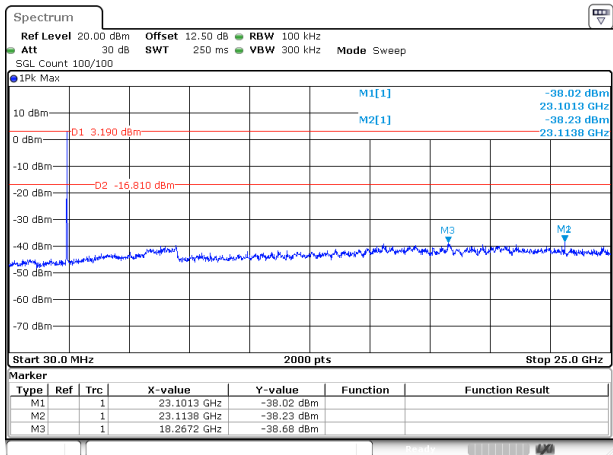
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 20:21:23

802.11g_2412MHz



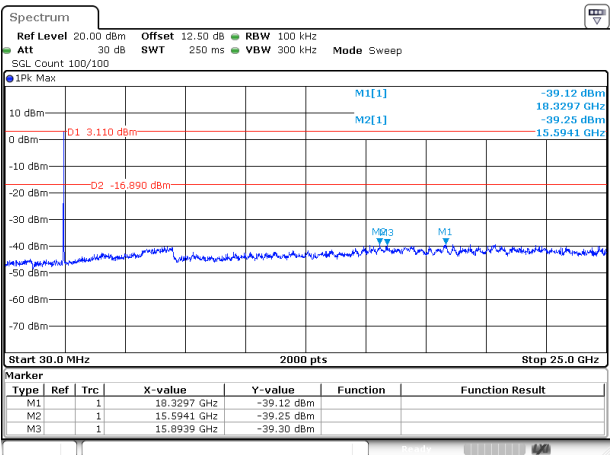
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 20:25:21

802.11g_2437MHz



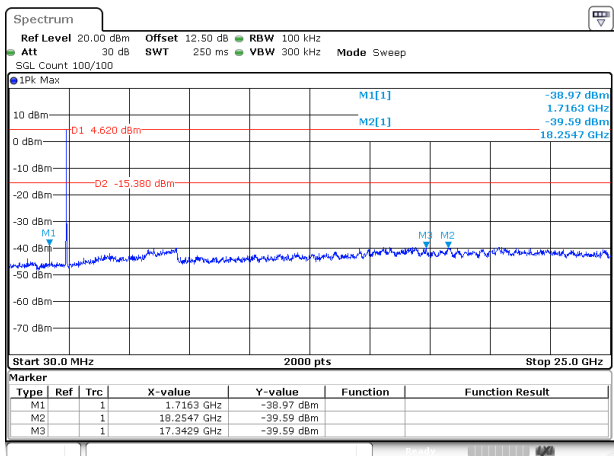
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 20:28:01

802.11g_2462MHz



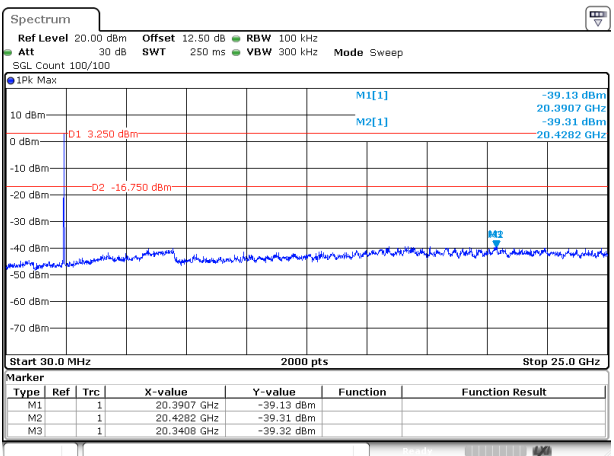
ProjectNo.:2501235009E-RF Tester:Ethan Bu
Date: 20.DEC.2025 20:40:48

802.11n20_2412MHz



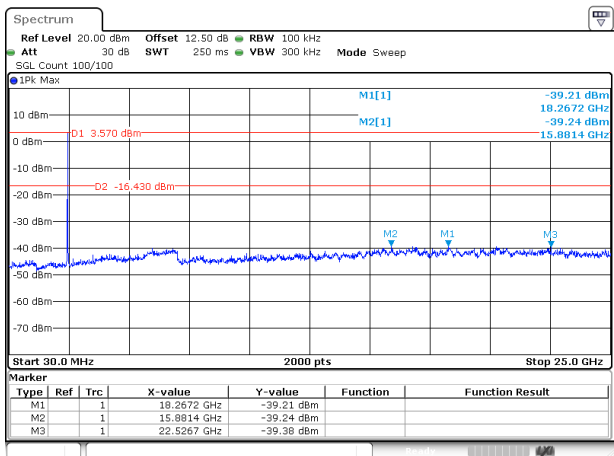
ProjectNo.:2501235009E-RF Tester: Ethan Bu
Date: 20.DEC.2025 20:43:40

802.11n20_2437MHz



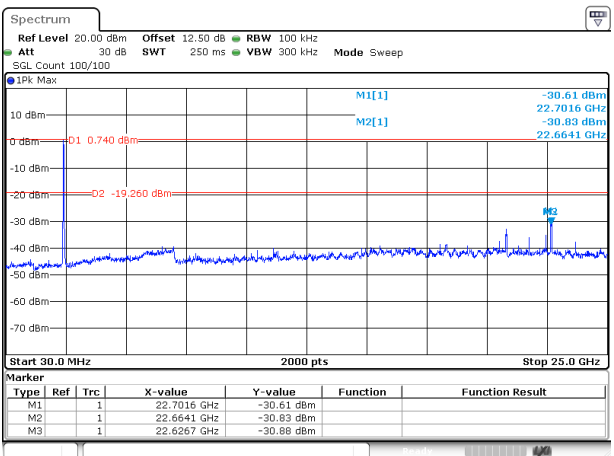
ProjectNo.:2501235009E-RF Tester: Ethan Bu
Date: 20.DEC.2025 20:46:30

802.11n20_2462MHz



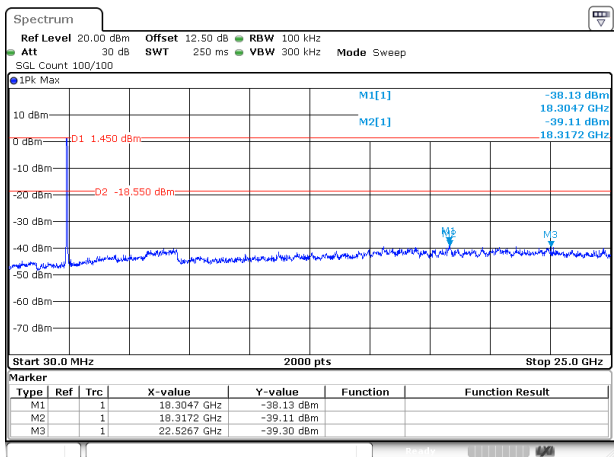
ProjectNo.:2501235009E-RF Tester: Ethan Bu
Date: 20.DEC.2025 20:49:43

802.11n40_2422MHz



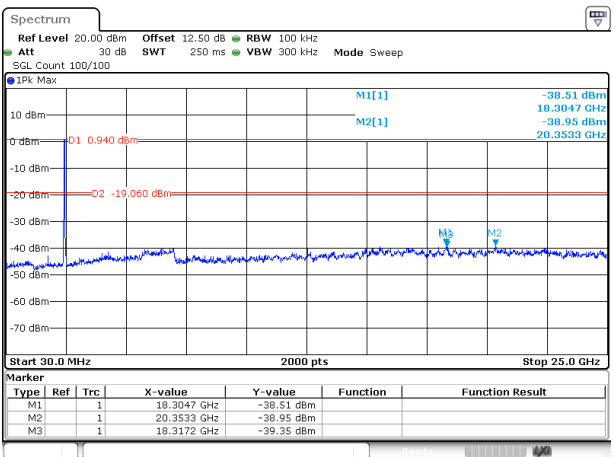
ProjectNo.:2501235009E-RF Tester: Ethan Bu
Date: 20.DEC.2025 20:52:32

802.11n40_2437MHz



ProjectNo.:2501235009E-RF Tester: Ethan Bu
Date: 20.DEC.2025 20:55:18

802.11n40_2452MHz



ProjectNo.:2501235009E-RF Tester: Ethan Bu
Date: 20.DEC.2025 20:58:25

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 (MHz)	Tune up conducted power [#] (dBm)	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (W)
			(dBi)	(dBd)	(dBm)	(W)		
2.4G WIFI	2412-2462	22	1.83	-0.32	21.68	0.147	0.2	0.768

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

Please refer to the attachment 2501Z35009E-RF-EXP External photo and 2501Z35009E-RF-INP Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2501Z35009E-RF-TSP Test Setup photo.

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