TEST REPORT

Applicant Name:	Shenzhen Neutop Optoelectronics Co., Ltd
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Report Number:	2401Z45477E-RF-00C
FCC ID:	2BEGB-YX04

Test Standard (s)

FCC PART 15.247

Sample Description

Product Type:	Projector
Model No.:	DZ001
Multiple Model(s) No.:	DZ002
Trade Mark:	N/A
Date Received:	2024-11-26
Issue Date:	2025-03-03

Test Result:	Pass▲

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

Prepared and Checked By:

Allen Bai
RF Engineer

Approved By:

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.

This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "▼".

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401Z45477E-RF-00C	Original Report	2025-03-03

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Projector
Tested Model	DZ001
Multiple Model(s)	DZ002
Frequency Range	2412~2462MHz
Maximum Conducted Output Peak Power	22.79dBm
Modulation Technique	DSSS, OFDM
Antenna Specification#	2.1dBi (provided by the applicant)
Voltage Range	DC 3.85V from battery or DC 5V/9V/12V/15V from USB port
Sample serial number	2V1V-2 for Conducted& Radiated Emissions Test 2V1V-1 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 and colors. Please refer to the declaration letter# for more detail, which was provided by manufacturer.	

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission'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 C63.10-2013, 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)
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℃
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 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.

EUT Exercise Software

Exercise Software#		REALTEK 11n 8723FU USB WLAN NIC Kit		
Mode	Data rate	**Power Level#**		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	78	78	78
802.11g	6Mbps	100	100	100
802.11n-HT20	MCS0	100	100	100
Note: The worst-case data rates are determined to be as follows for each mode based upon inverstigation 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

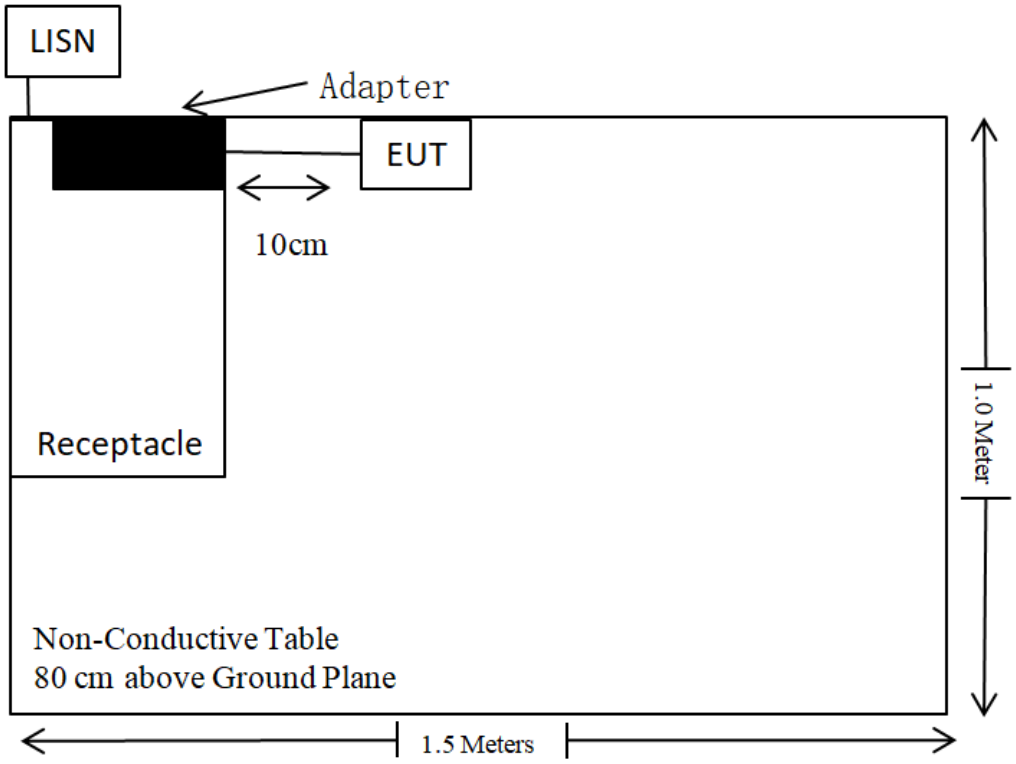
Manufacturer	Description	Model	Serial Number
Shenzhen Keyu Power	Adapter	KA20A-US	Unknown
OUPU	Receptacle	PDU-OP1606K	6971041358020

External I/O Cable

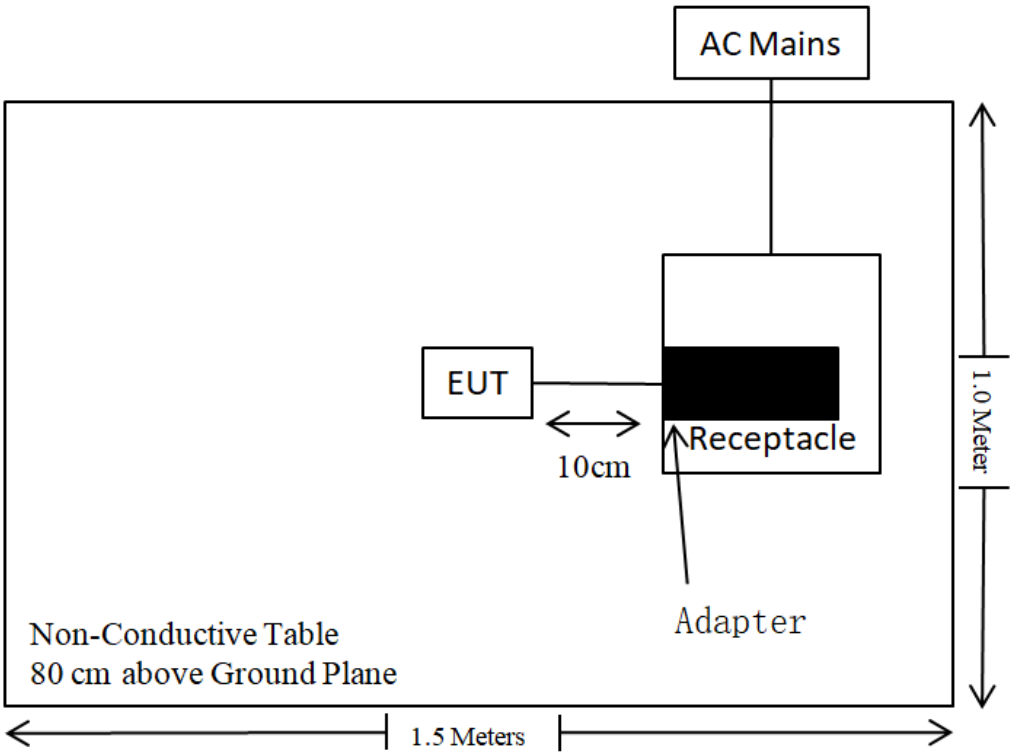
Cable Description	Length (m)	From Port	To
Shielded Un-detachable AC cable	1.5	Receptacle	LISN/AC Mains
Unshielded Detachable USB cable	1.0	Adapter	EUT

Block Diagram of Test Setup

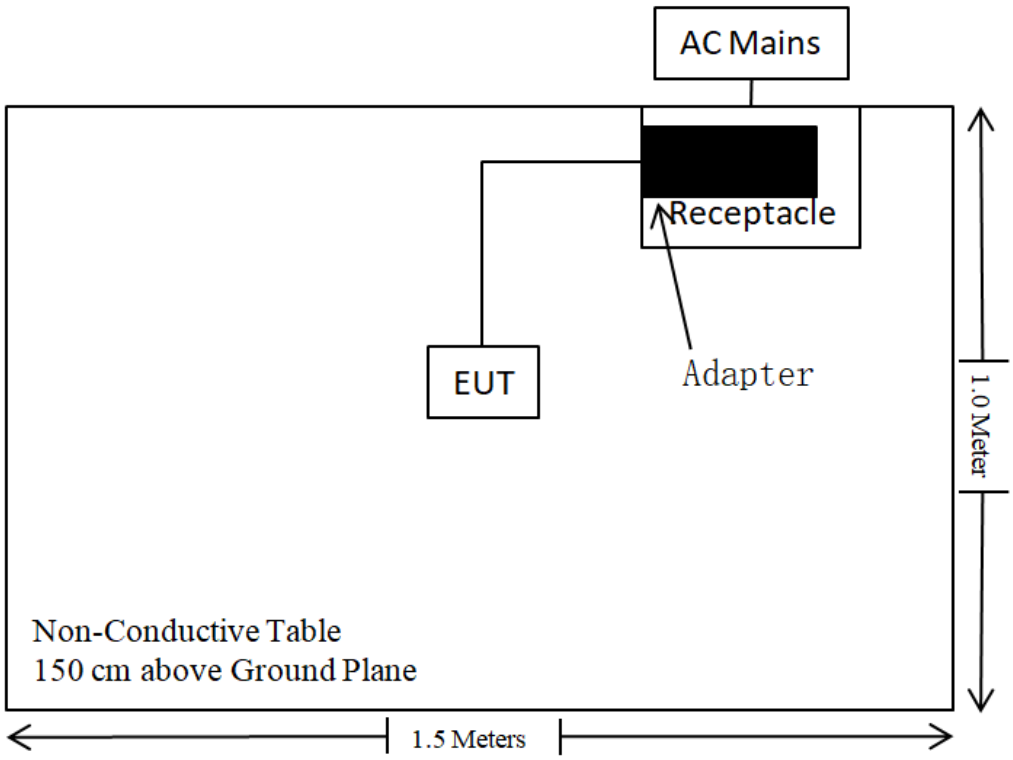
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.203	Antenna Requirement	Compliant
FCC §15.207(a)	AC Line Conducted Emissions	Compliant
FCC §15.205,§15.209,§15.247(d)	Radiated Spurious Emission	Compliant
FCC §15.207(a)(2)	6dB Emission Bandwidth	Compliant
FCC §15.247(b)(1)	Maximum Conducted Output Power	Compliant
FCC §15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §15.247(e)	Power Spectral Density	Compliant
C63.10 §11.6	Duty Cycle	/
FCC § 15.247 (i), §1.1307 (b) (3) & §2.1091	MPE-Based Exemption	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/12/04	2025/12/03
Rohde & Schwarz	LISN	ENV216	101613	2024/12/04	2025/12/03
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/12/04	2025/12/03
Sonoma instrument	Pre-amplifier	310N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/12/04	2025/12/03
Unknown	Cable	PNG214	1354	2024/12/04	2025/12/03
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde&Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
A.H.System	Preamplifier	PAM-0118P	489	2024/11/15	2025/11/14
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	0735	2024/12/04	2025/12/03
Unknown	RF Cable	UFA147	219661	2024/12/04	2025/12/03
Unknown	RF Cable	XH750A-N	J-10M	2024/12/04	2025/12/03
JD	Filter Switch Unit	DT7220FSU	DS79906	2024/09/09	2025/09/08
JD	Multiplex Switch Test Control Set	DT7220SCU	DS79903	2024/09/09	2025/09/08
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	2026	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2024/06/18	2025/06/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV40-N	102259	2024/12/04	2025/12/03
MARCONI	10dB Attenuator	6534/3	2942	2024/06/27	2025/06/26
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20

*** 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).

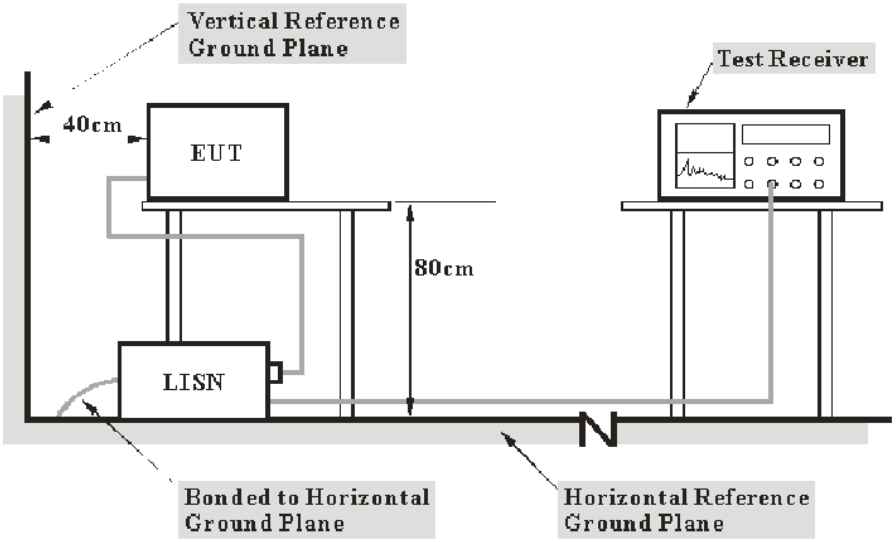
REQUIREMENTS AND TEST PROCEDURES

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 C63.10-2013 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 30MHz.

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

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

Test Procedure

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

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

Factor &Over Limit Calculation

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

Factor = LISN VDF + 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 -7dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Over Limit = level –Limit
Level= reading level+ Factor

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

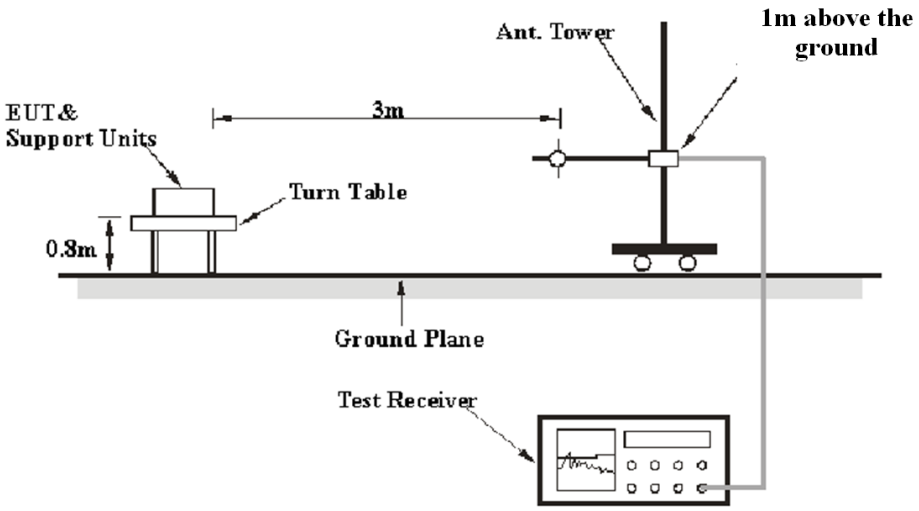
Spurious Emissions

Applicable Standard

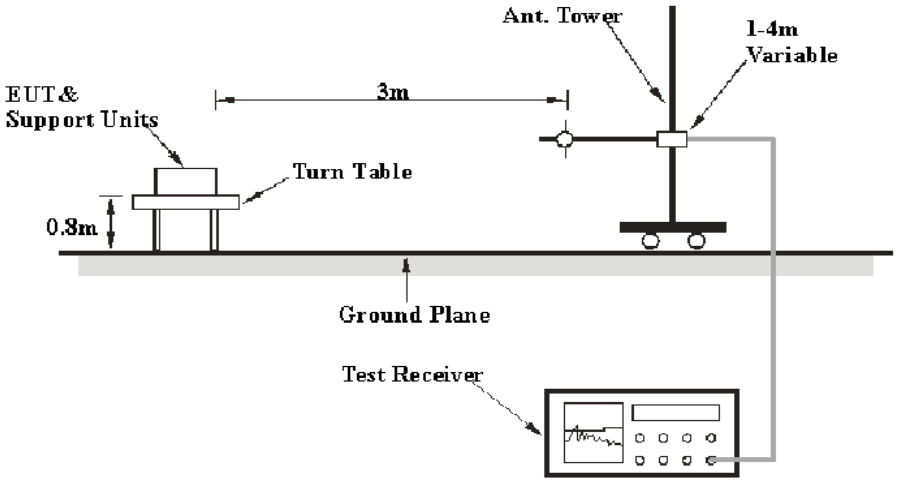
FCC §15.247 (d); §15.209;§15.205;

EUT Setup

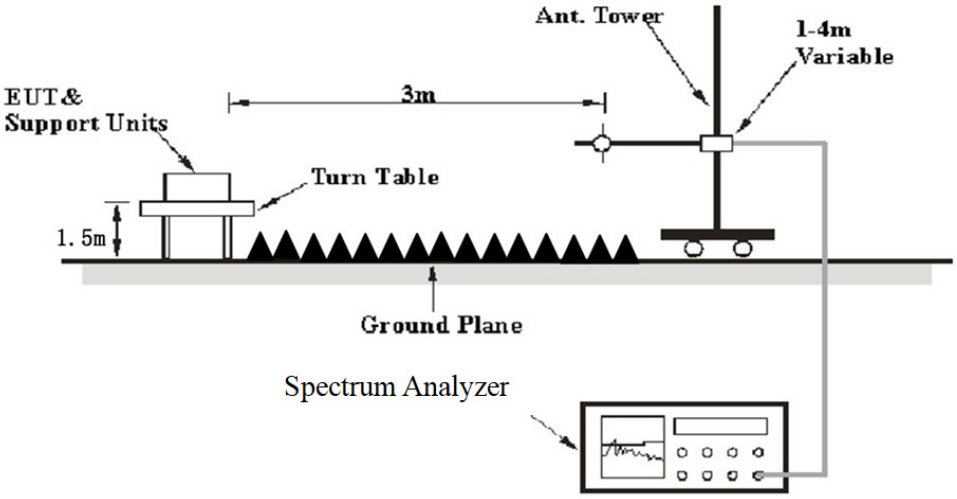
9 kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9kHz to 25 GHz.

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

9kHz-1GHz:

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

1-25GHz:
Pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	5 kHz
	<98%	1MHz	≥1/Ton

Final measurement for emission identified during pre-scan

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

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:

Factor = Antenna Factor + Cable Loss - 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:

Over Limit/Margin = Level/Corrected Amplitude–Limit
Level / Corrected Amplitude = Read Level + Factor

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.

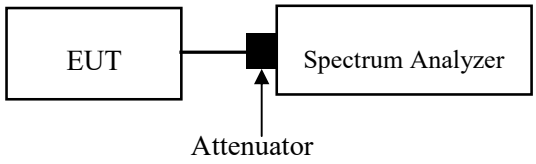
Test Procedure

Test Method: ANSI C63.10-2013 Clause 11.8.1 &Clause 6.9.3

a) Set RBW = 100 kHz.
b) Set the VBW ⩾ [3 × RBW].
c) Detector = peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by6 dB relative to the maximum level measured in the fundamental emission.

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. Procedure as below

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



Maximum Conducted Output Power

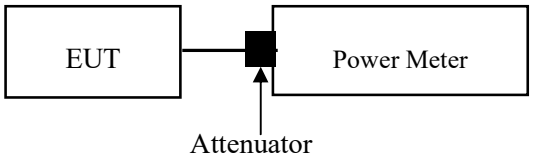
Applicable Standard

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 C63.10-2013 clause 11.9.1.3 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: 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

100kHz Bandwidth of Frequency Band Edge

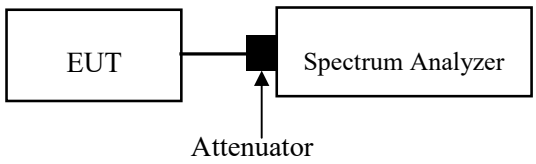
Applicable Standard

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 C63.10-2013 Clause 11.11

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.



Power Spectral Density

Applicable Standard

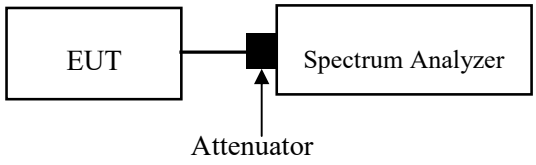
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of 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 C63.10-2013 Clause 11.10.2

Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.

1. Set the RBW to: 3kHz≤ RBW≤100 kHz.
2. Set the VBW ≥ 3×RBW.
3. Set the span to 1.5 times the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level within the RBW.
9. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



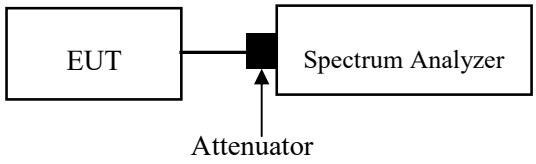
Note: A short RF cable with low cable loss connected to the EUT antenna port,which was provided by client or lab, the cable loss was add with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

Duty Cycle

Test Procedure

According to ANSI C63.10-2013 Section 11.6

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 ≥ OBW if possible; otherwise, set RBW to the largest available value.
3) Set VBW ≥ 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 ≤ 16.7 μs.)



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 2.1dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant

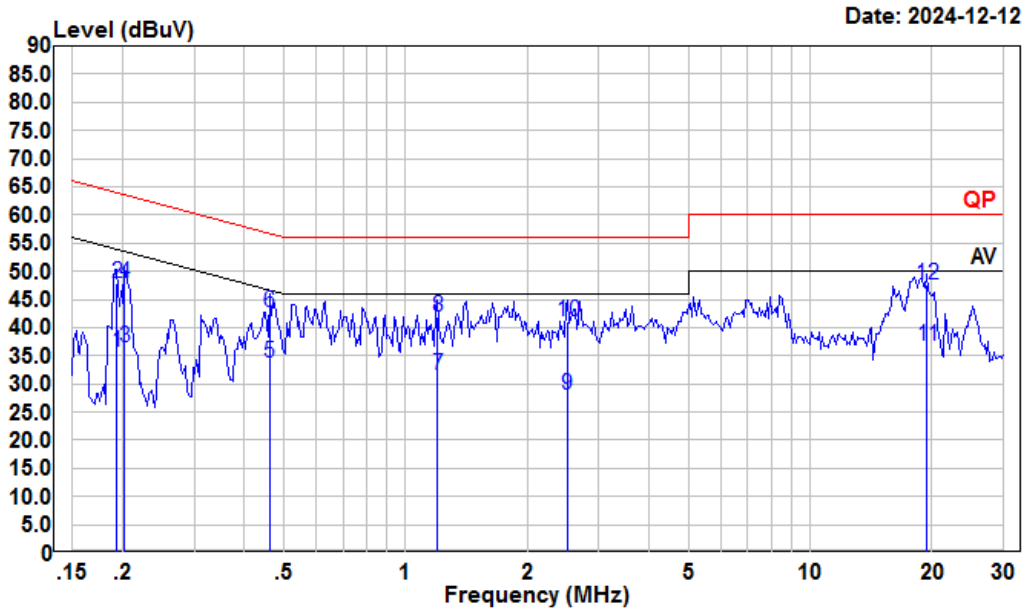
TEST DATA AND RESULTS

AC Line Conducted Emissions

Environmental Conditions

Temperature (℃)	22.6	**Relative Humidity (%)**	60
ATM Pressure (kPa)	101.3	**Test engineer**	Macy.shi
Test date	2024/12/12		
EUT operation mode	Transmitting (Maximum output power mode, 802.11g Low channel)		

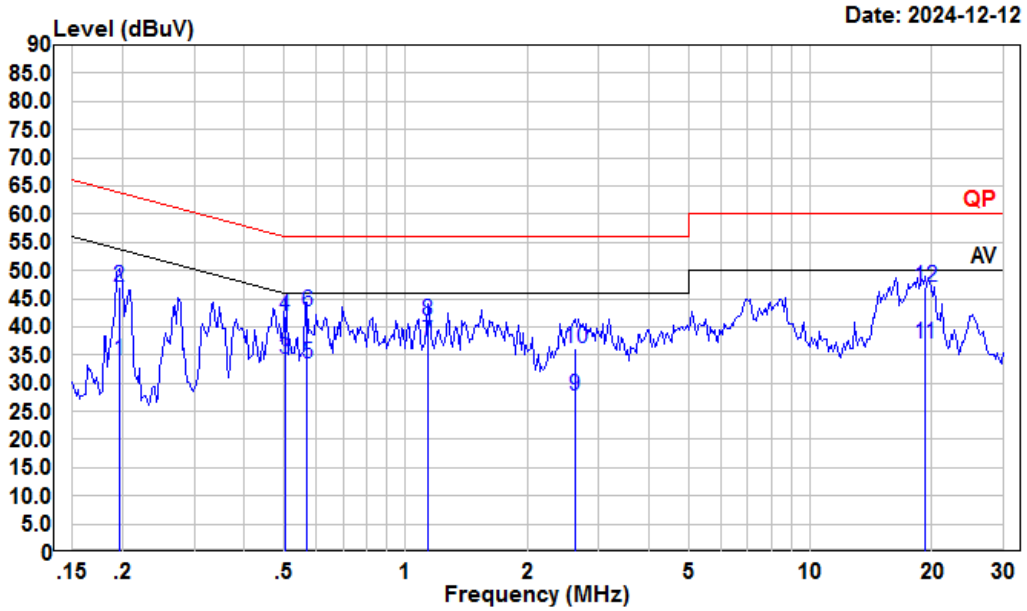
AC 120V 60 Hz, Line



Condition: Line
Project : 2401Z45477E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz VBW:30KHz Detector Peak

	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.193	14.81	35.71	10.81	10.09	53.89	-18.18	Average
2	0.193	27.06	47.96	10.81	10.09	63.89	-15.93	QP
3	0.202	15.45	36.34	10.80	10.09	53.54	-17.20	Average
4	0.202	27.04	47.93	10.80	10.09	63.54	-15.61	QP
5	0.461	13.09	33.74	10.53	10.12	46.67	-12.93	Average
6	0.461	22.13	42.78	10.53	10.12	56.67	-13.89	QP
7	1.197	10.94	31.53	10.45	10.14	46.00	-14.47	Average
8	1.197	21.42	42.01	10.45	10.14	56.00	-13.99	QP
9	2.513	7.40	28.07	10.50	10.17	46.00	-17.93	Average
10	2.513	20.39	41.06	10.50	10.17	56.00	-14.94	QP
11	19.428	15.72	36.77	10.87	10.18	50.00	-13.23	Average
12	19.428	26.51	47.56	10.87	10.18	60.00	-12.44	QP

AC 120V 60 Hz, Neutral



Condition: Neutral
Project : 2401Z45477E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz VBW:30KHz Detector Peak

	Freq	Read Level	LISN Level	Cable Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.196	13.59	34.10	10.42	10.09	53.80	-19.70	Average
2	0.196	26.49	47.00	10.42	10.09	63.80	-16.80	QP
3	0.502	13.48	34.32	10.70	10.14	46.00	-11.68	Average
4	0.502	21.11	41.95	10.70	10.14	56.00	-14.05	QP
5	0.570	12.60	33.43	10.70	10.13	46.00	-12.57	Average
6	0.570	21.97	42.80	10.70	10.13	56.00	-13.20	QP
7	1.135	16.19	37.13	10.81	10.13	46.00	-8.87	Average
8	1.135	20.19	41.13	10.81	10.13	56.00	-14.87	QP
9	2.622	7.12	27.69	10.40	10.17	46.00	-18.31	Average
10	2.622	15.65	36.22	10.40	10.17	56.00	-19.78	QP
11	19.224	16.18	37.07	10.71	10.18	50.00	-12.93	Average
12	19.224	26.24	47.13	10.71	10.18	60.00	-12.87	QP

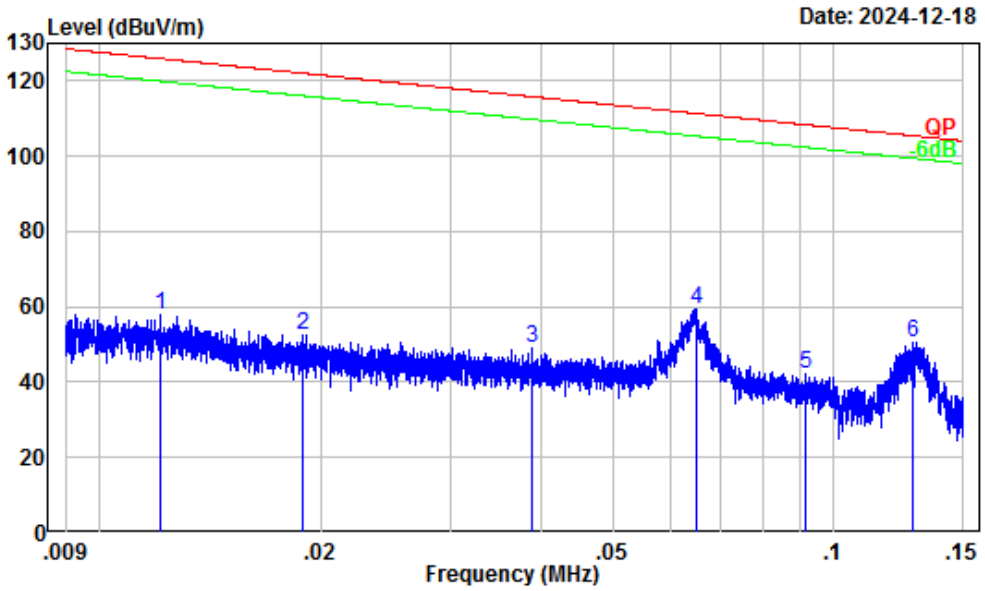
Spurious Emissions

Environmental Conditions

Temperature (℃)	23.3-25.6	**Relative Humidity (%)**	41-47
ATM Pressure (kPa):	101	**Test engineer:**	Anson Su & Zenos Qiao
Test date:	2024/12/11~2024/12/18		
EUT operation mode:	Below 1GHz: Transmitting (Maximum output power mode, 802.11g Low channel) Above 1GHz: Transmitting		
Note:	1. For the radiated spurious emission below 30MHz, only the worst case (parallel) was recorded. 2. For the radiated spurious emission below 30MHz, When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded. 3. After pre-scan in the X, Y and Z axes of orientation, the worst case z-axis of orientation were recorded.		

Below 1GHz:

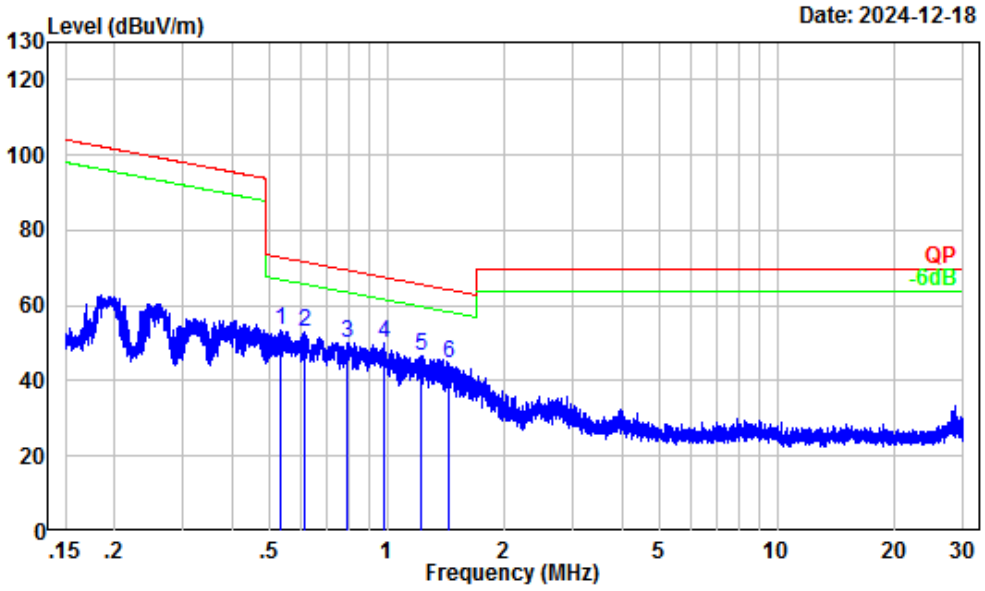
9kHz-150kHz



Site : Chamber A
Condition : 3m
Project Number : 2401Z45477E-RF
Test Mode : 2.4G WIFI Transmitting
Detector PK RBW: 0.3KHz VBW:1KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	31.90	25.78	57.68	125.94	-68.26	Peak
2	0.02	30.61	21.96	52.57	122.08	-69.51	Peak
3	0.04	27.57	21.32	48.89	115.82	-66.93	Peak
4	0.07	24.89	34.47	59.36	111.33	-51.97	Peak
5	0.09	22.58	19.45	42.03	108.35	-66.32	Peak
6	0.13	20.34	30.25	50.59	105.45	-54.86	Peak

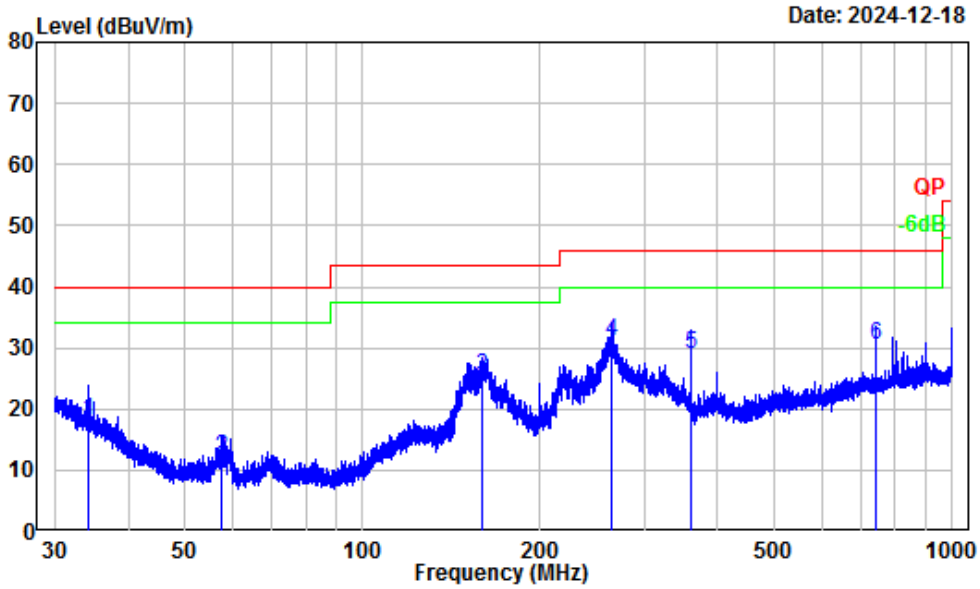
150kHz-30MHz



Site : Chamber A
Condition : 3m
Project Number : 2401Z45477E-RF
Test Mode : 2.4G WIFI Transmitting
Detector PK RBW: 10KHz VBW:30KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.53	5.97	47.33	53.30	73.03	-19.73	Peak
2	0.62	4.95	48.16	53.11	71.75	-18.64	Peak
3	0.79	2.77	47.51	50.28	69.51	-19.23	Peak
4	0.98	1.35	48.71	50.06	67.66	-17.60	Peak
5	1.23	0.56	45.96	46.52	65.64	-19.12	Peak
6	1.44	-0.03	44.50	44.47	64.25	-19.78	Peak

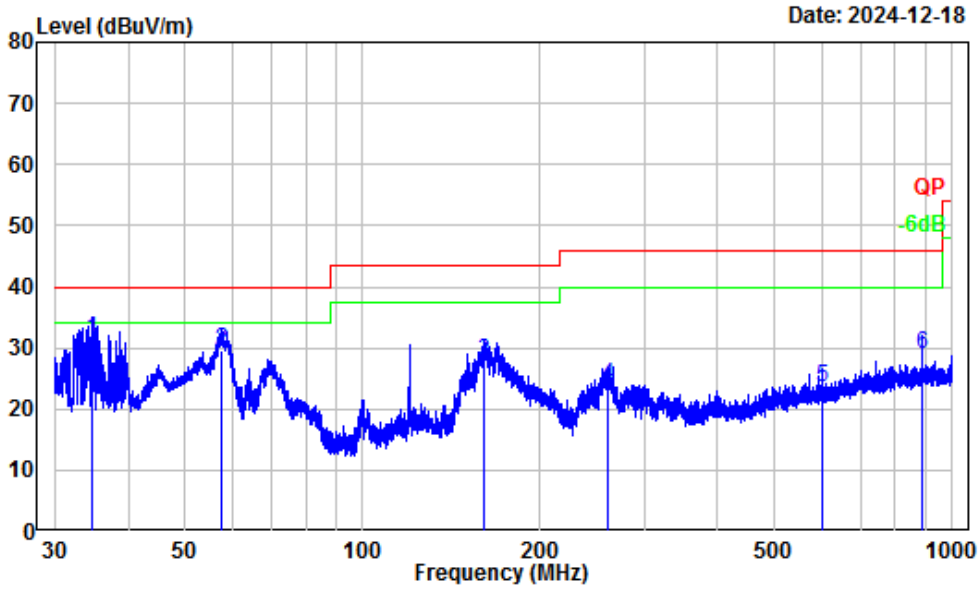
30MHz-1GHz_Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401Z45477E-RF
Test Mode : 2.4G WIFI Transmitting
Detector QP RBW: 120KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	34.14	-8.36	26.59	18.23	40.00	-21.77	QP
2	57.57	-18.26	30.20	11.94	40.00	-28.06	QP
3	159.57	-12.72	37.94	25.22	43.50	-18.28	QP
4	264.05	-12.35	43.37	31.02	46.00	-14.98	QP
5	359.97	-9.89	38.80	28.91	46.00	-17.09	QP
6	742.58	-2.94	33.30	30.36	46.00	-15.64	QP

30MHz-1GHz_Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401Z45477E-RF
Test Mode : 2.4G WIFI Transmitting
Detector QP RBW: 120KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	34.78	-8.76	40.21	31.45	40.00	-8.55	QP
2	57.62	-18.26	47.88	29.62	40.00	-10.38	QP
3	160.56	-12.72	40.62	27.90	43.50	-15.60	QP
4	260.94	-12.68	36.61	23.93	46.00	-22.07	QP
5	600.11	-5.28	28.87	23.59	46.00	-22.41	QP
6	891.12	-1.39	30.38	28.99	46.00	-17.01	QP

Above 1GHz:

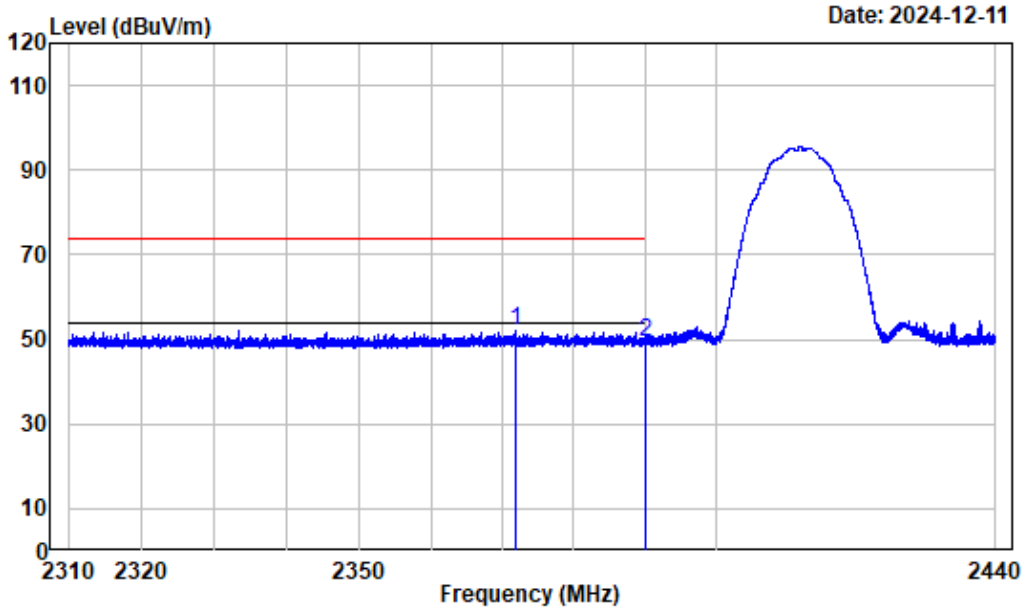
Frequency (MHz)	Reading (dBµV)	Detector (PK/AV)	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11b							
Low Channel							
4824	57.42	PK	H	-7.91	49.51	74	-24.49
4824	54.64	AV	H	-7.91	46.73	54	-7.27
4824	59.58	PK	V	-7.91	51.67	74	-22.33
4824	55.89	AV	V	-7.91	47.98	54	-6.02
Middle Channel							
4874	59.49	PK	H	-7.72	51.77	74	-22.23
4874	57.38	AV	H	-7.72	49.66	54	-4.34
4874	61.61	PK	V	-7.72	53.89	74	-20.11
4874	58.54	AV	V	-7.72	50.82	54	-3.18
High Channel							
4924	55.27	PK	H	-7.64	47.63	74	-26.37
4924	52.34	AV	H	-7.64	44.7	54	-9.3
4924	57.48	PK	V	-7.64	49.84	74	-24.16
4924	53.56	AV	V	-7.64	45.92	54	-8.08
802.11g							
Low Channel							
4824	63.45	PK	H	-7.91	55.54	74	-18.46
4824	49.63	AV	H	-7.91	41.72	54	-12.28
4824	65.02	PK	V	-7.91	57.11	74	-16.89
4824	50.51	AV	V	-7.91	42.6	54	-11.4
Middle Channel							
4874	64.67	PK	H	-7.72	56.95	74	-17.05
4874	50.45	AV	H	-7.72	42.73	54	-11.27
4874	66.21	PK	V	-7.72	58.49	74	-15.51
4874	51.36	AV	V	-7.72	43.64	54	-10.36
High Channel							
4924	62.78	PK	H	-7.64	55.14	74	-18.86
4924	47.62	AV	H	-7.64	39.98	54	-14.02
4924	64.34	PK	V	-7.64	56.7	74	-17.3
4924	48.55	AV	V	-7.64	40.91	54	-13.09

Frequency (MHz)	Reading (dBµV)	Detector (PK/AV)	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11n-HT20							
Low Channel							
4824	62.04	PK	H	-7.91	54.13	74	-19.87
4824	48.87	AV	H	-7.91	40.96	54	-13.04
4824	63.56	PK	V	-7.91	55.65	74	-18.35
4824	49.75	AV	V	-7.91	41.84	54	-12.16
Middle Channel							
4874	63.11	PK	H	-7.72	55.39	74	-18.61
4874	49.86	AV	H	-7.72	42.14	54	-11.86
4874	64.63	PK	V	-7.72	56.91	74	-17.09
4874	50.72	AV	V	-7.72	43	54	-11
High Channel							
4924	61.45	PK	H	-7.64	53.81	74	-20.19
4924	47.02	AV	H	-7.64	39.38	54	-14.62
4924	62.94	PK	V	-7.64	55.3	74	-18.7
4924	47.87	AV	V	-7.64	40.23	54	-13.77

Note:
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude/Level = Corrected Factor + Reading
Margin = Corrected Amplitude/Level - Limit
The other spurious emission which is in the noise floor level was not recorded.

Test plots

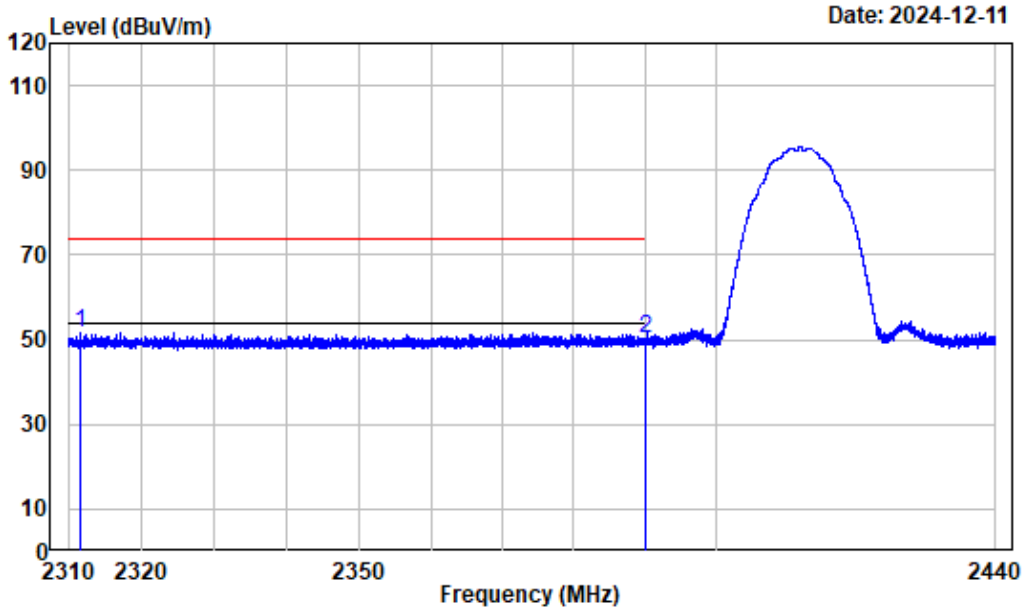
Left Band edge_Horizontal_Peak_802.11b



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
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	2371.823	-10.82	62.90	52.08	74.00	-21.92	Peak
2	2390.000	-10.86	60.08	49.22	74.00	-24.78	Peak

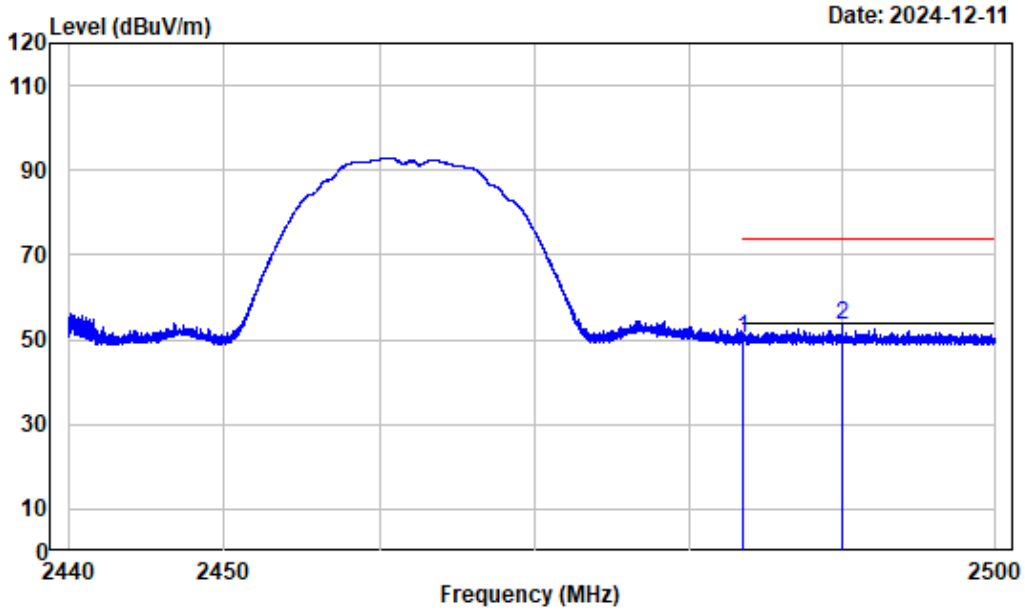
Left Band edge_Vertical_Peak_802.11b



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
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	2311.544	-10.69	62.36	51.67	74.00	-22.33	Peak
2	2390.000	-10.86	61.17	50.31	74.00	-23.69	Peak

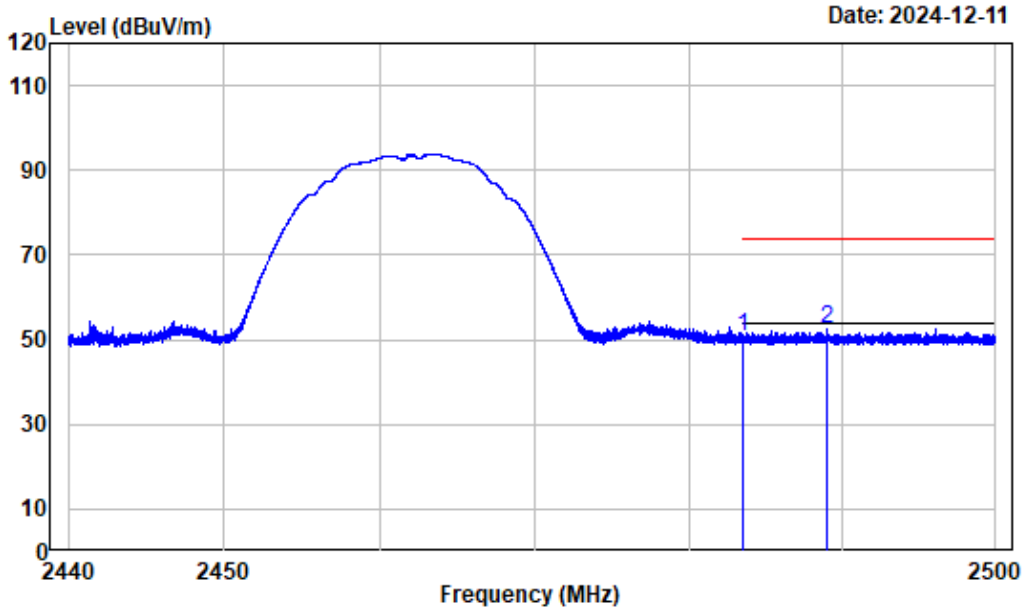
Right Band edge_Horizontal_Peak _802.11b



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-b-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	61.17	50.36	74.00	-23.64	Peak
2	2490.001	-10.83	64.15	53.32	74.00	-20.68	Peak

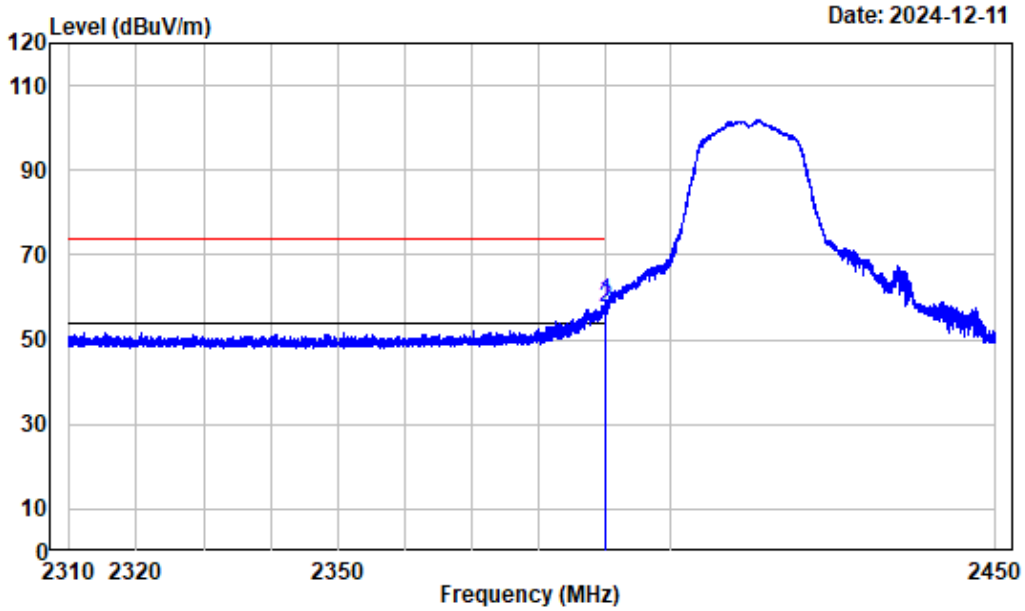
Right Band edge_Vertical_Peak_802.11b



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-b-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	61.50	50.69	74.00	-23.31	Peak
2	2488.989	-10.83	63.50	52.67	74.00	-21.33	Peak

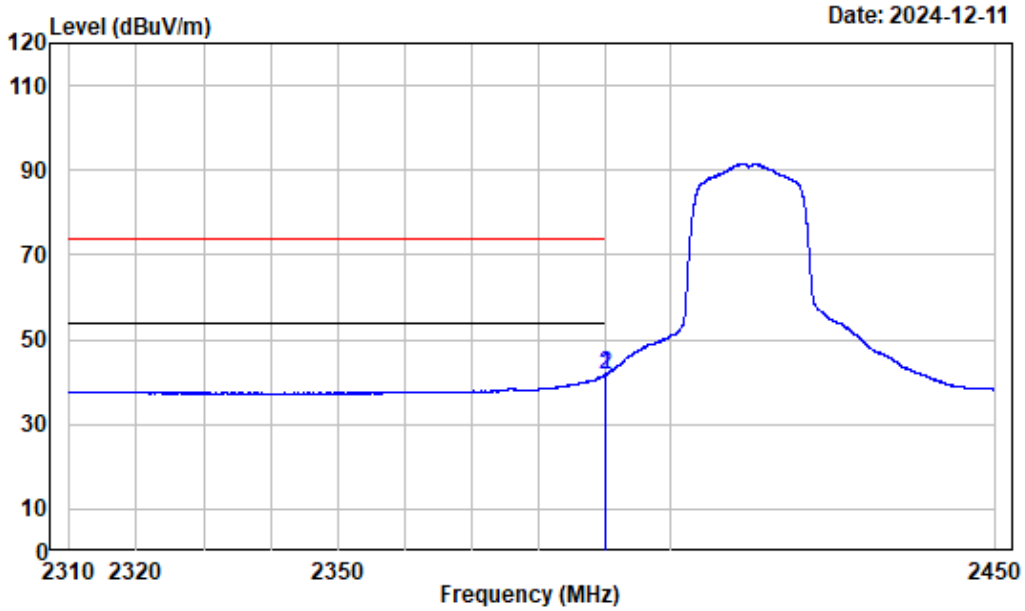
Left Band edge_Horizontal_Peak _802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
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	2389.985	-10.86	69.69	58.83	74.00	-15.17	Peak
2	2390.000	-10.86	68.25	57.39	74.00	-16.61	Peak

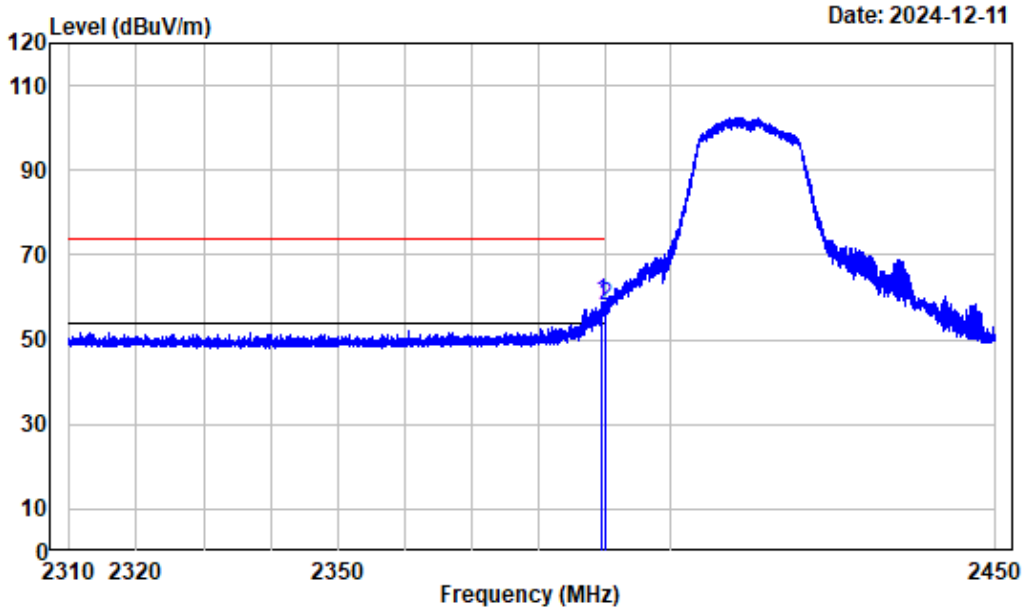
Left Band edge_Horizontal_Average _802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz 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	2389.968	-10.86	52.47	41.61	54.00	-12.39	Average
2	2390.000	-10.86	52.44	41.58	54.00	-12.42	Average

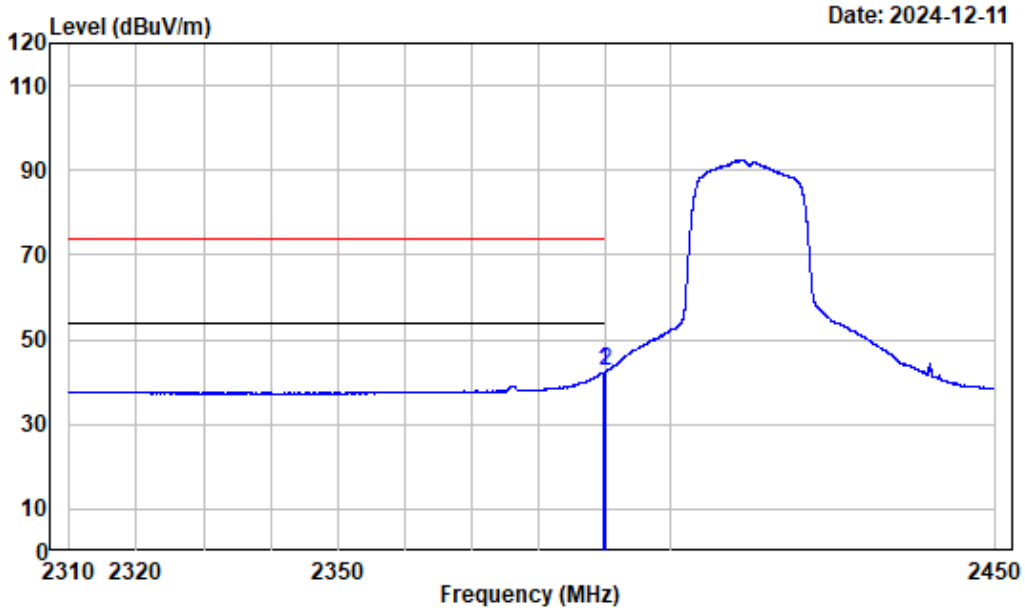
Left Band edge_Vertical_Peak _802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
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	2389.390	-10.86	69.73	58.87	74.00	-15.13	Peak
2	2390.000	-10.86	68.74	57.88	74.00	-16.12	Peak

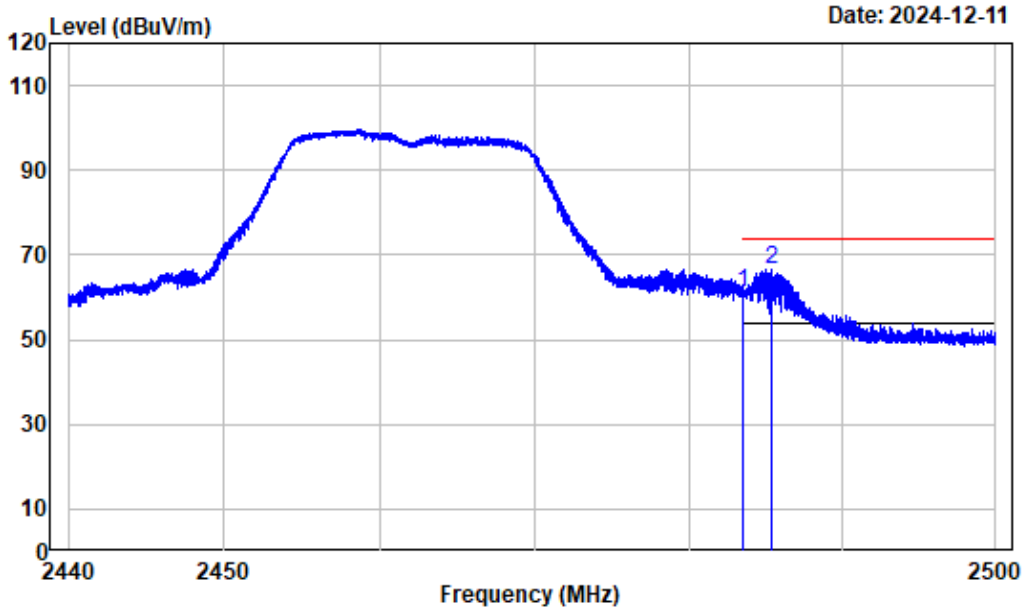
Left Band edge_Vertical_Average _802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz 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	2389.950	-10.86	53.27	42.41	54.00	-11.59	Average
2	2390.000	-10.86	53.20	42.34	54.00	-11.66	Average

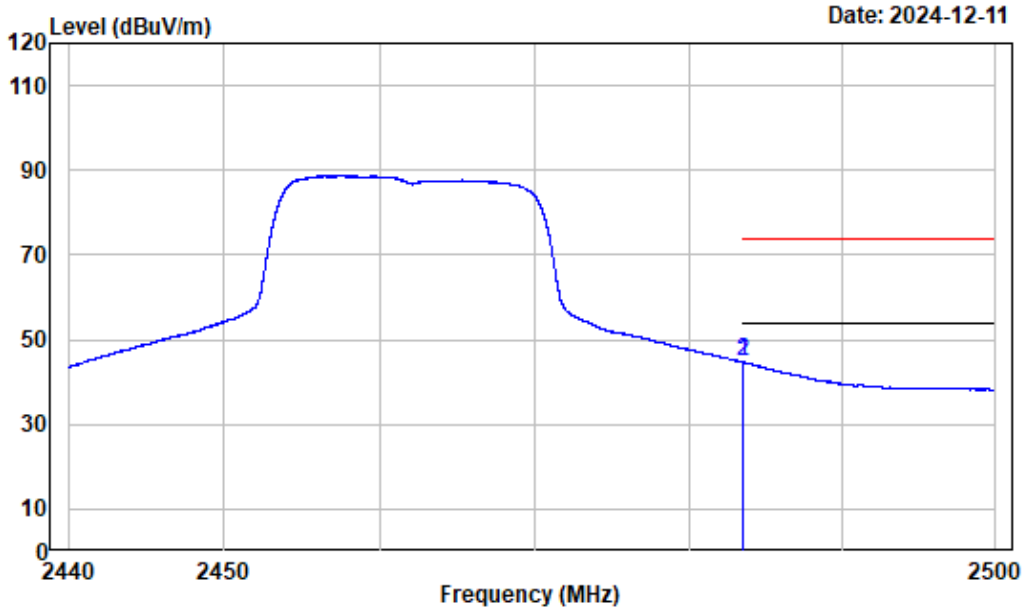
Right Band edge_Horizontal_Peak _802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-g-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	71.81	61.00	74.00	-13.00	Peak
2	2485.351	-10.81	77.39	66.58	74.00	-7.42	Peak

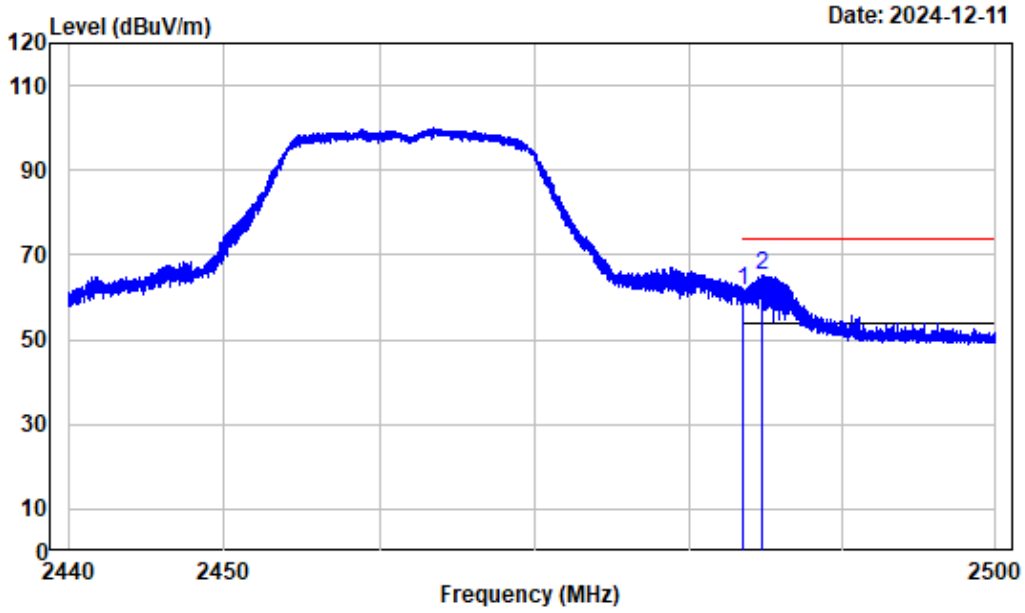
Right Band edge_Horizontal_Average _802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz Detector:Peak
Note : 2.4GWiFi-g-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	55.54	44.73	54.00	-9.27	Average
2	2483.518	-10.81	55.63	44.82	54.00	-9.18	Average

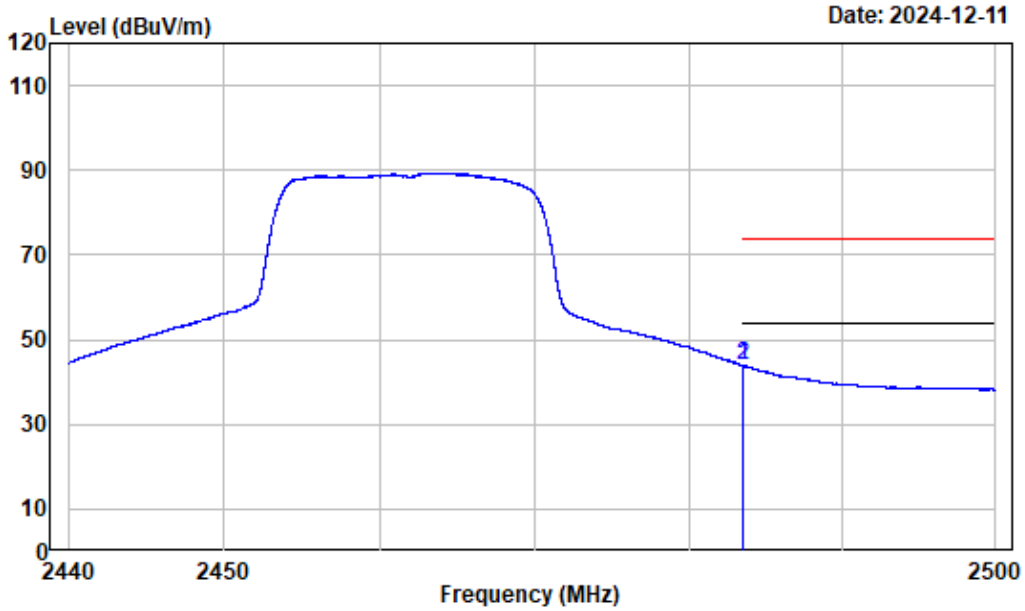
Right Band edge_Vertical_Peak _802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-g-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	72.40	61.59	74.00	-12.41	Peak
2	2484.766	-10.81	75.83	65.02	74.00	-8.98	Peak

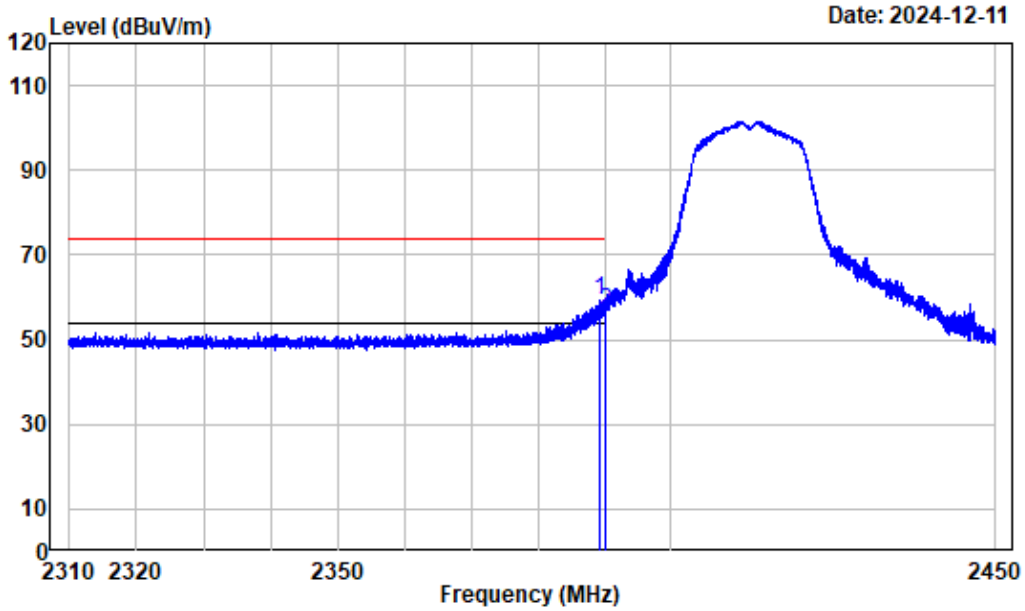
Right Band edge_Vertical_Average _802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz Detector:Peak
Note : 2.4GWiFi-g-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	54.68	43.87	54.00	-10.13	Average
2	2483.525	-10.81	54.80	43.99	54.00	-10.01	Average

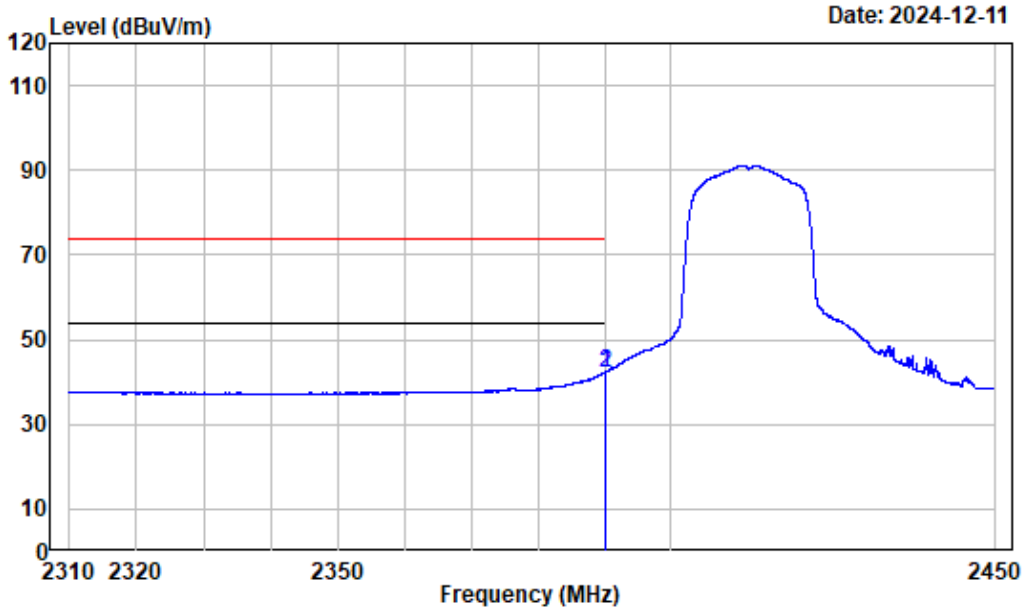
Left Band edge_Horizontal_Peak _802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
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	2389.162	-10.86	70.08	59.22	74.00	-14.78	Peak
2	2390.000	-10.86	67.25	56.39	74.00	-17.61	Peak

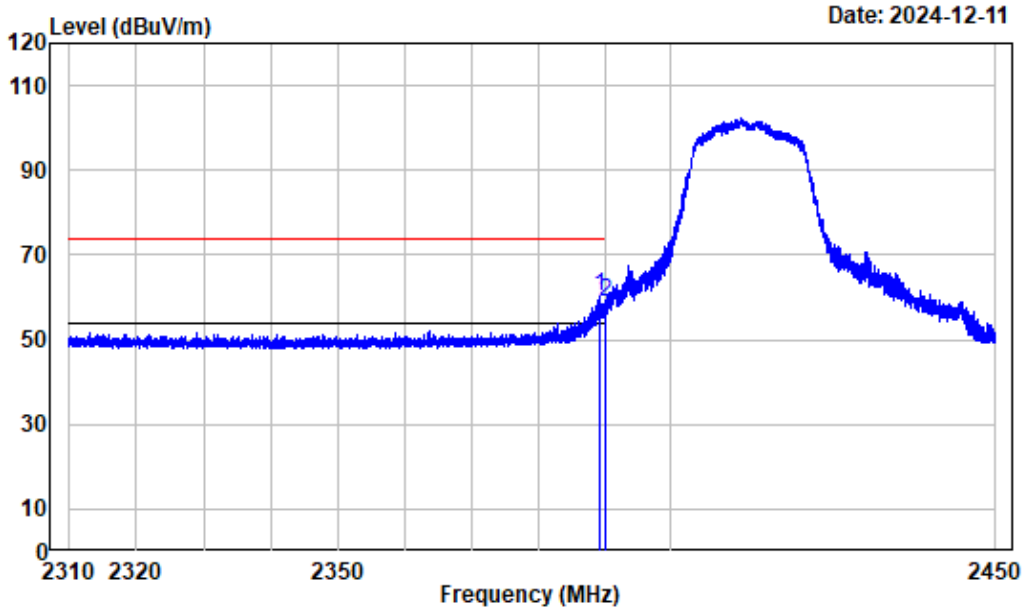
Left Band edge_Horizontal_Average _802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz 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	2389.985	-10.86	53.12	42.26	54.00	-11.74	Average
2	2390.000	-10.86	53.05	42.19	54.00	-11.81	Average

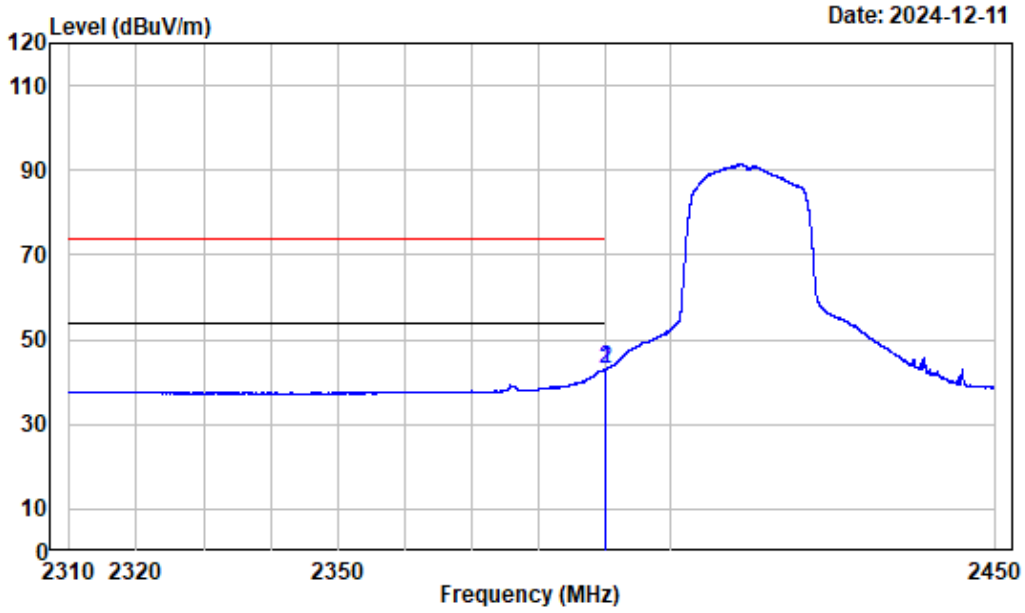
Left Band edge_Vertical_Peak _802.11n-HT20



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
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	2389.145	-10.86	70.99	60.13	74.00	-13.87	Peak
2	2390.000	-10.86	69.80	58.94	74.00	-15.06	Peak

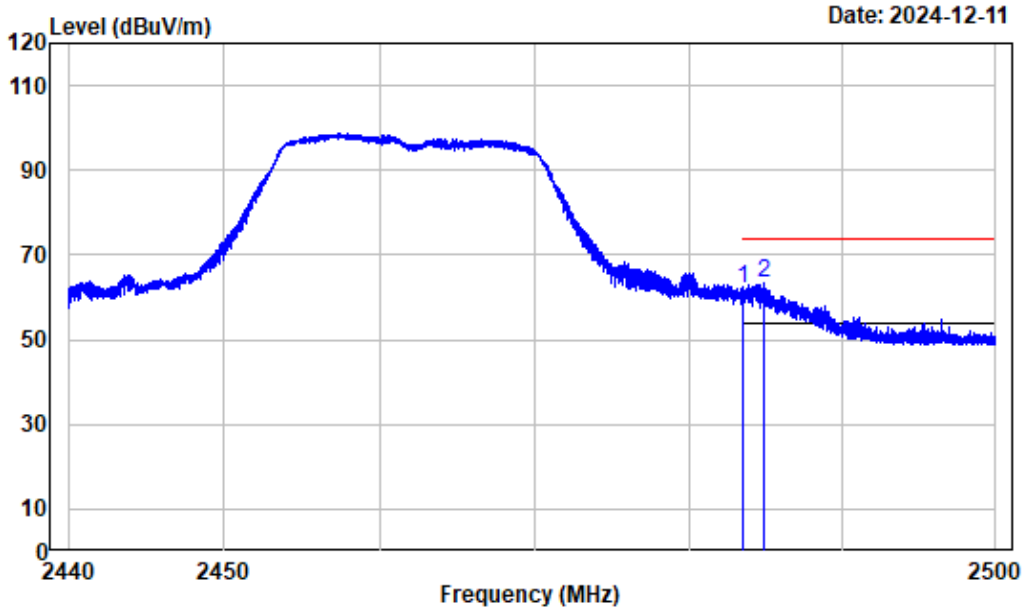
Left Band edge_Vertical_Average _802.11n-HT20



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz 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	2389.985	-10.86	53.92	43.06	54.00	-10.94	Average
2	2390.000	-10.86	53.83	42.97	54.00	-11.03	Average

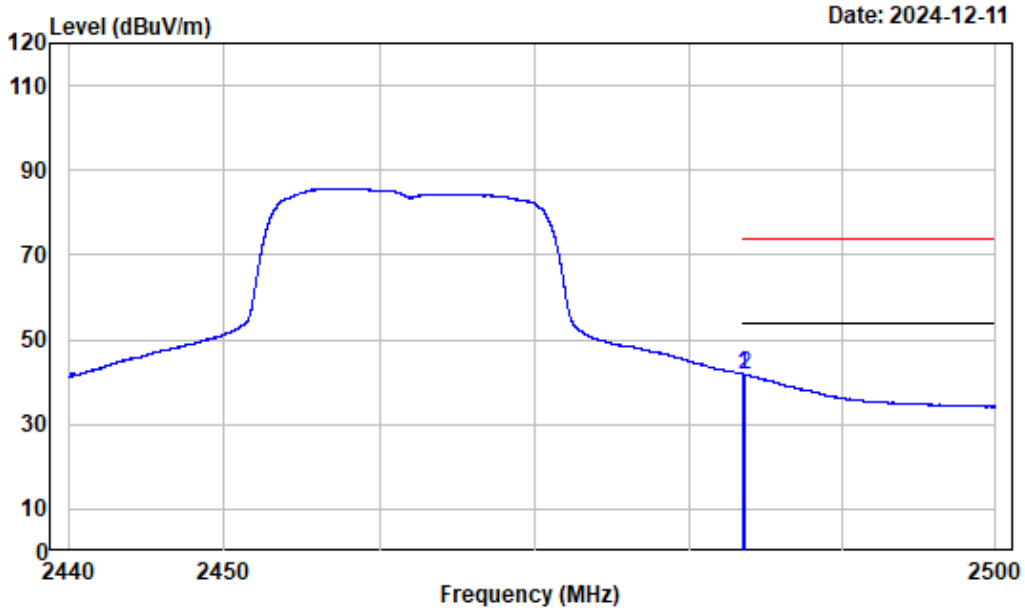
Right Band edge_Horizontal_Peak _802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-n20-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	72.75	61.94	74.00	-12.06	Peak
2	2484.856	-10.81	74.24	63.43	74.00	-10.57	Peak

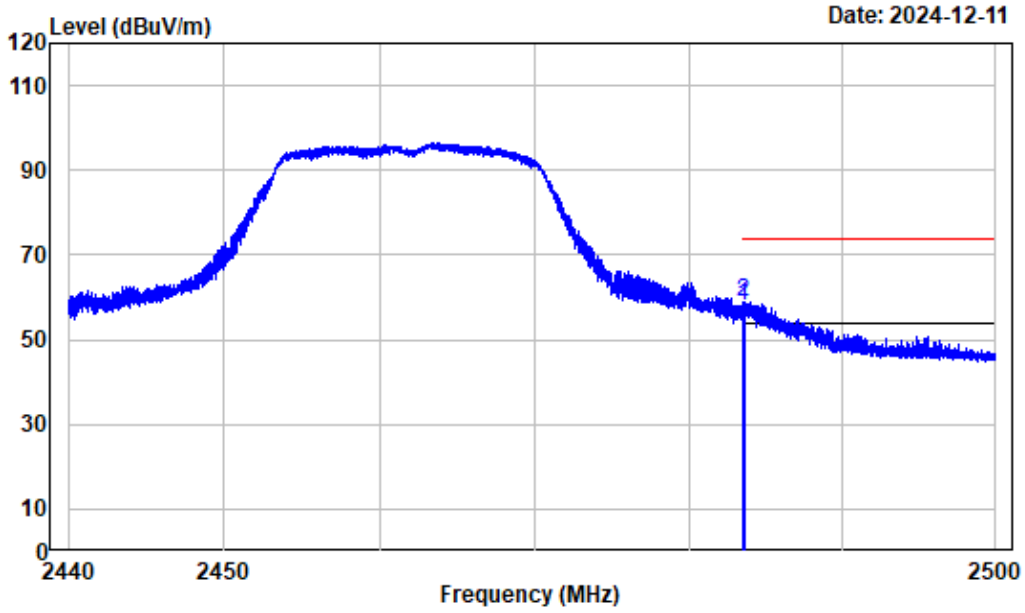
Right Band edge_Horizontal_Average _802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz Detector:Peak
Note : 2.4GWiFi-n20-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	52.65	41.84	54.00	-12.16	Average
2	2483.581	-10.81	52.69	41.88	54.00	-12.12	Average

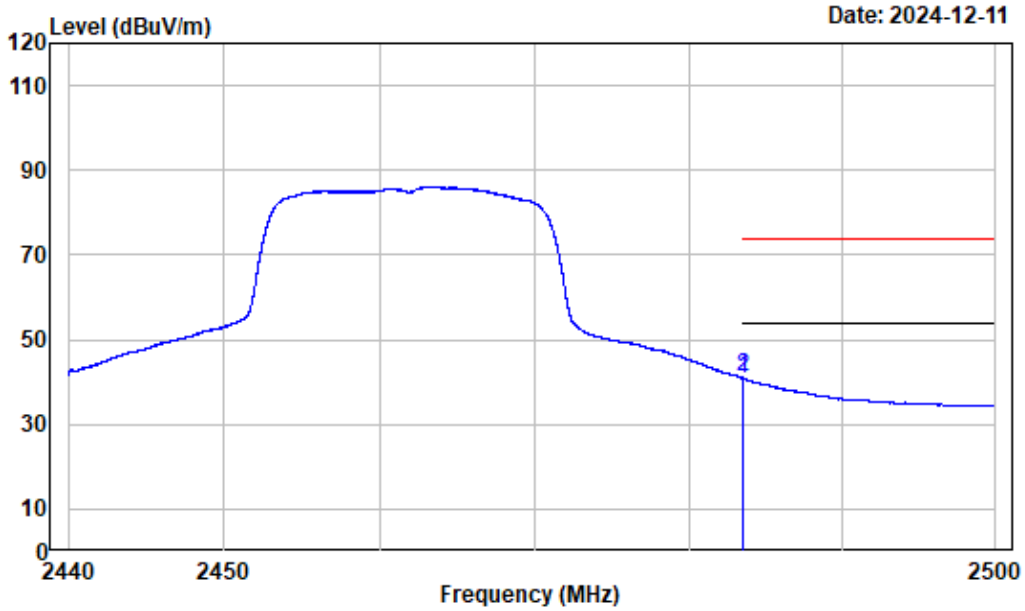
Right Band edge_Vertical_Peak _802.11n-HT20



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-n20-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	68.64	57.83	74.00	-16.17	Peak
2	2483.573	-10.81	69.61	58.80	74.00	-15.20	Peak

Right Band edge_Vertical_Average _802.11n-HT20

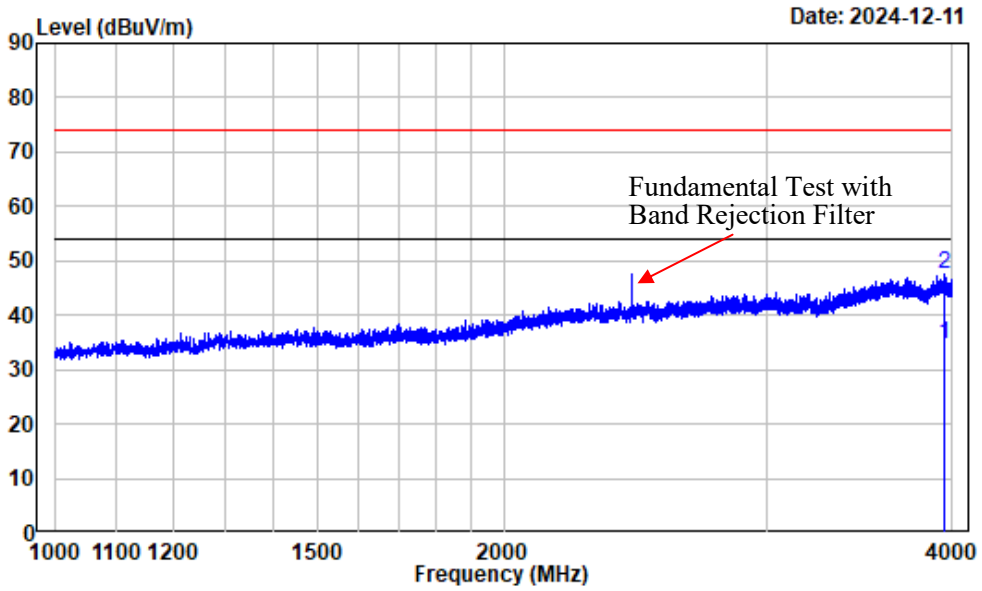


Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:10Hz Detector:Peak
Note : 2.4GWiFi-n20-2462

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.81	51.76	40.95	54.00	-13.05	Average
2	2483.543	-10.81	51.84	41.03	54.00	-12.97	Average

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

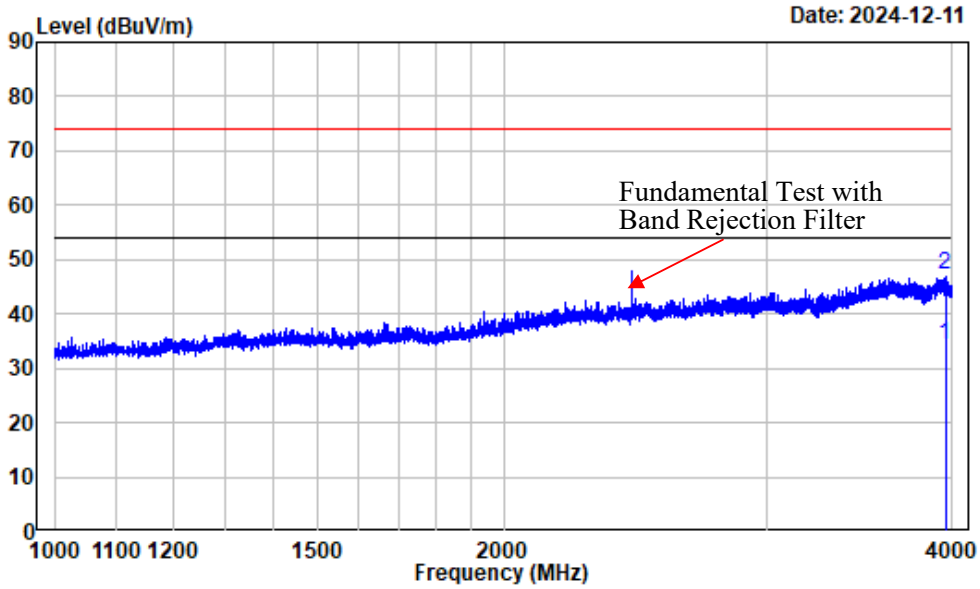
1-4GHz_Horizontal_802.11b




```
Condition        : Horizontal
Project No.      : 2401Z45477E-RF
Tester           : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
                 : Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note             : 2.4GWiFi-b-2437
```

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3950.869	-9.37	43.89	34.52	54.00	-19.48	Average
2	3950.869	-9.37	57.08	47.71	74.00	-26.29	Peak

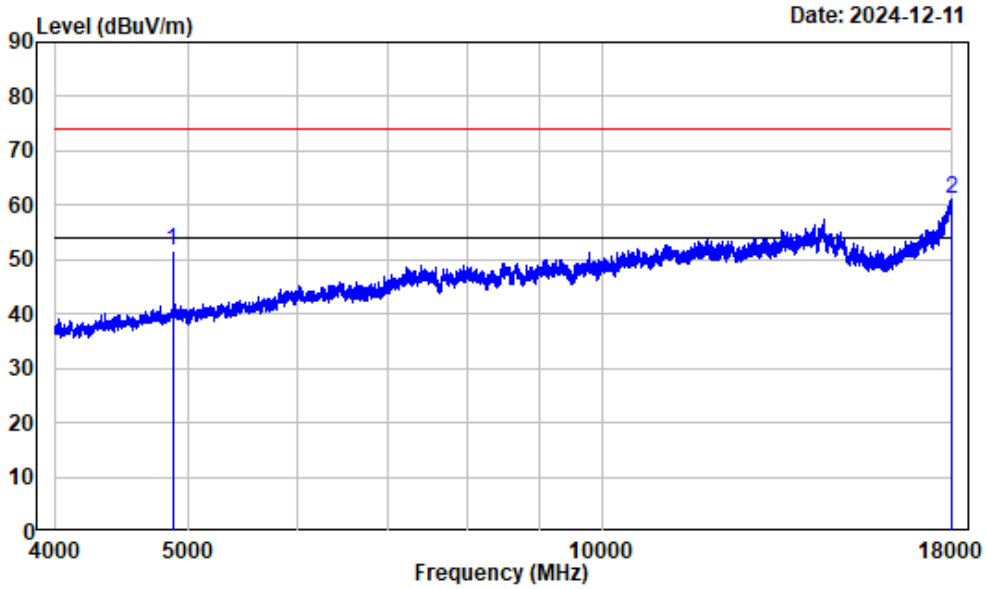
1-4GHz_Vertical_802.11b



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3957.245	-9.35	43.63	34.28	54.00	-19.72	Average
2	3957.245	-9.35	56.58	47.23	74.00	-26.77	Peak

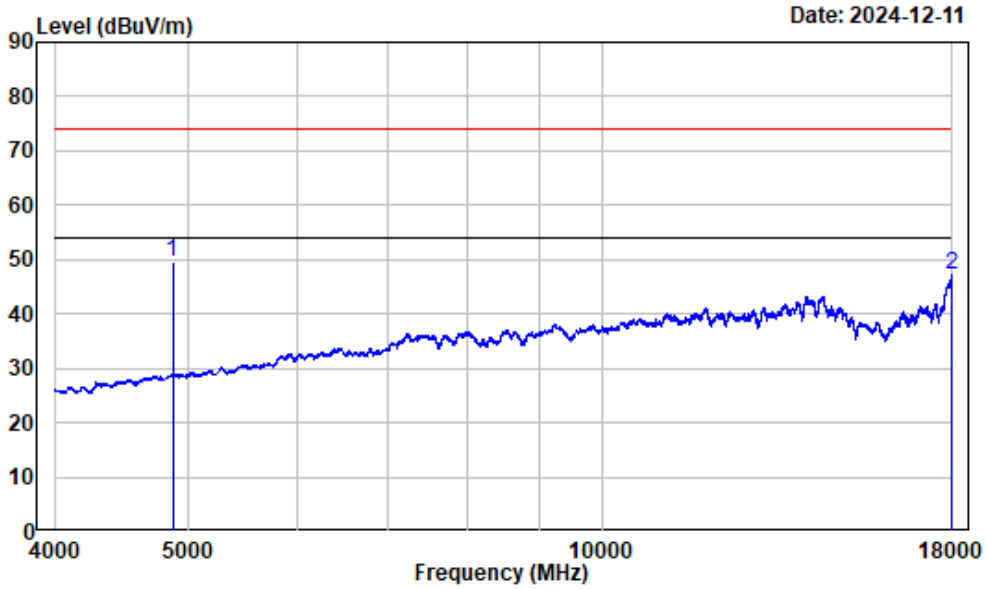
4-18GHz_Horizontal_Peak_802.11b



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	59.49	51.77	74.00	-22.23	Peak
2	17961.500	13.01	48.00	61.01	74.00	-12.99	Peak

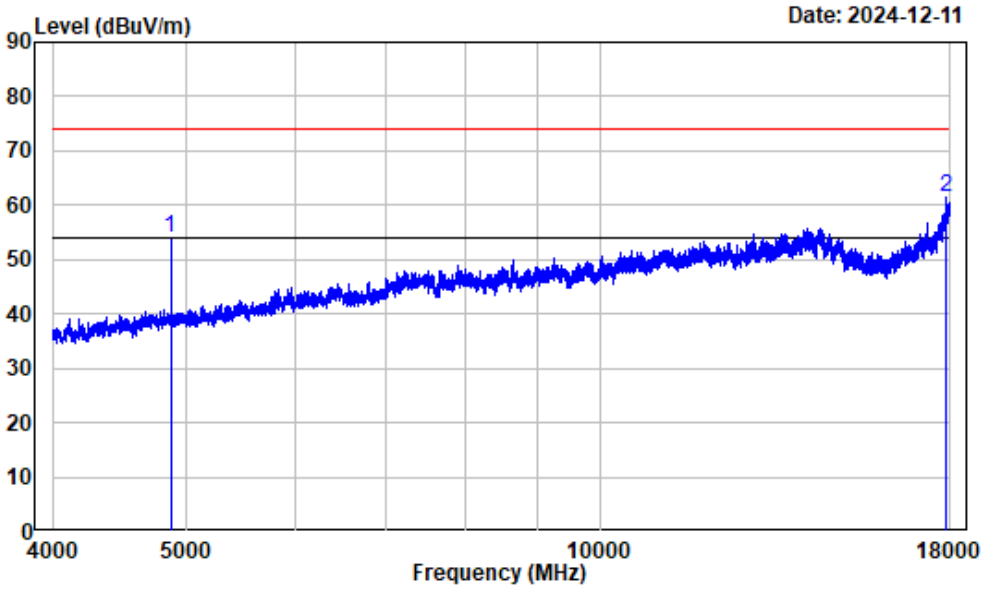
4-18GHz_Horizontal_Average_802.11b



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	57.38	49.66	54.00	-4.34	Average
2	17993.000	13.17	33.87	47.04	54.00	-6.96	Average

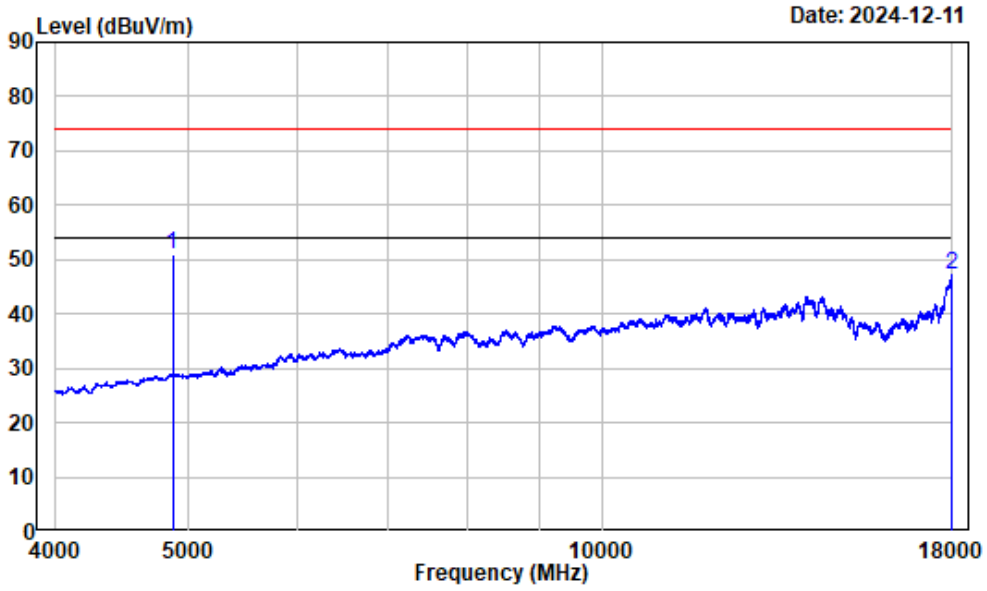
4-18GHz_Vertical_Peak_802.11b



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	61.61	53.89	74.00	-20.11	Peak
2	17865.230	12.06	49.37	61.43	74.00	-12.57	Peak

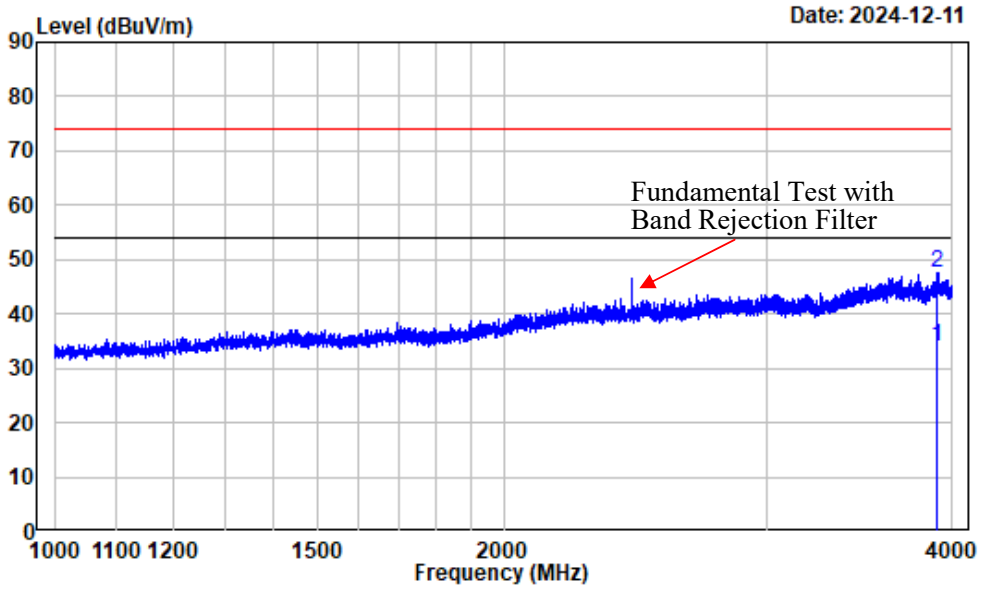
4-18GHz_Vertical_Average_802.11b



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	58.54	50.82	54.00	-3.18	Average
2	17998.250	13.19	34.11	47.30	54.00	-6.70	Average

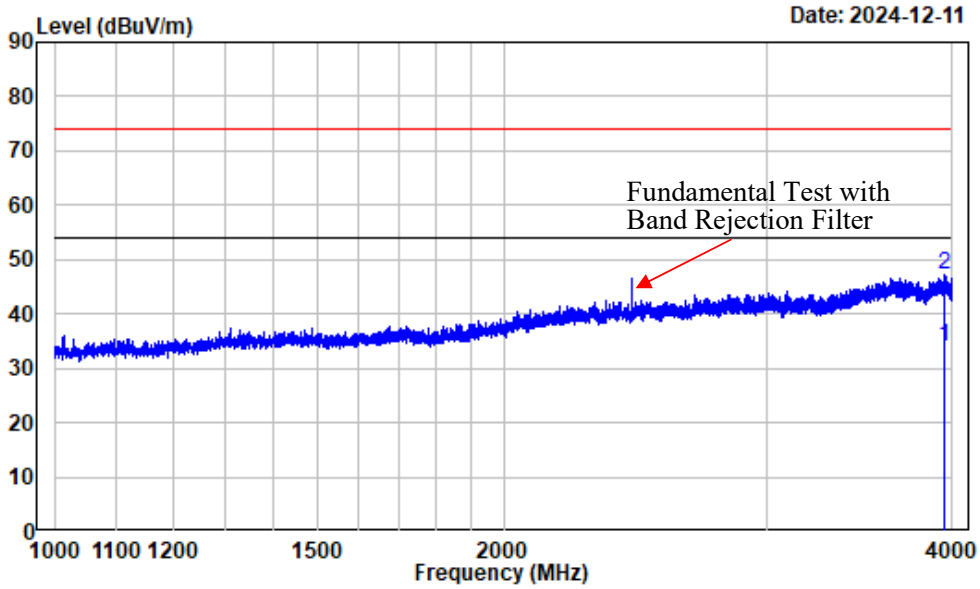
1-4GHz_Horizontal_802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-g-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3905.113	-9.88	43.98	34.10	54.00	-19.90	Average
2	3905.113	-9.88	57.51	47.63	74.00	-26.37	Peak

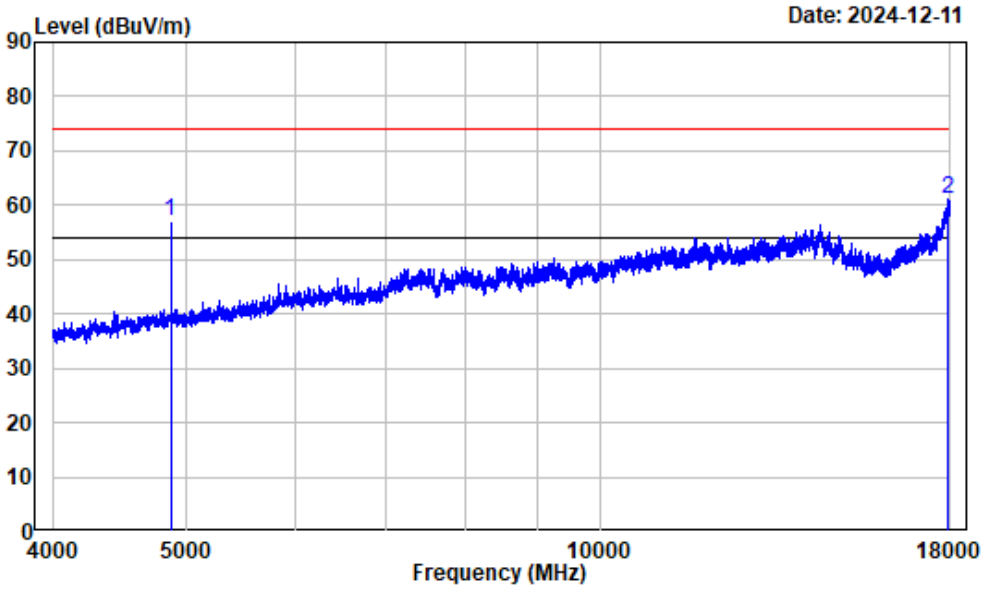
1-4GHz_Vertical_802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-g-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3953.494	-9.38	43.36	33.98	54.00	-20.02	Average
2	3953.494	-9.38	56.74	47.36	74.00	-26.64	Peak

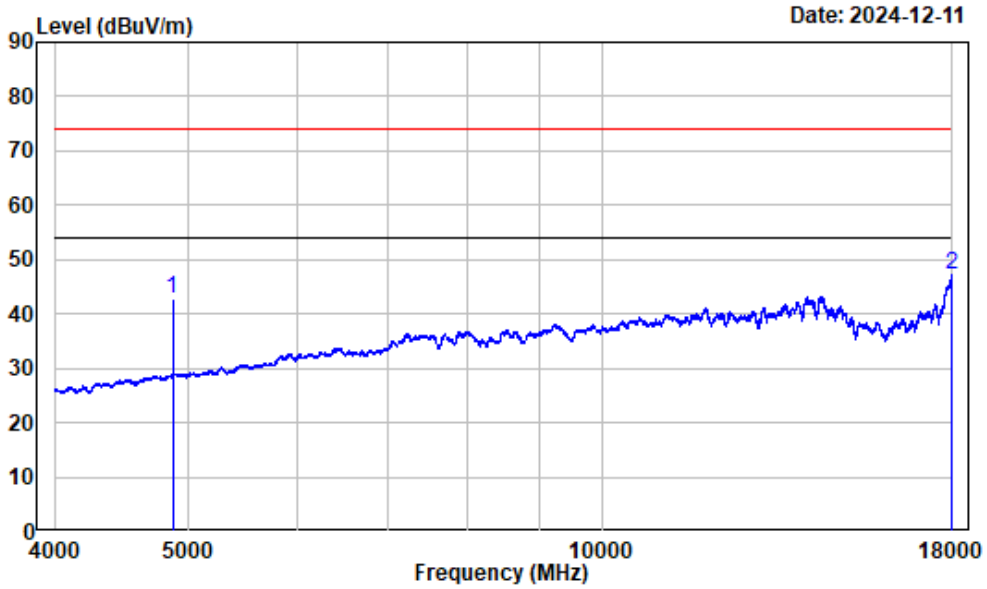
4-18GHz_Horizontal_Peak_802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-g-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	64.67	56.95	74.00	-17.05	Peak
2	17954.490	12.97	48.01	60.98	74.00	-13.02	Peak

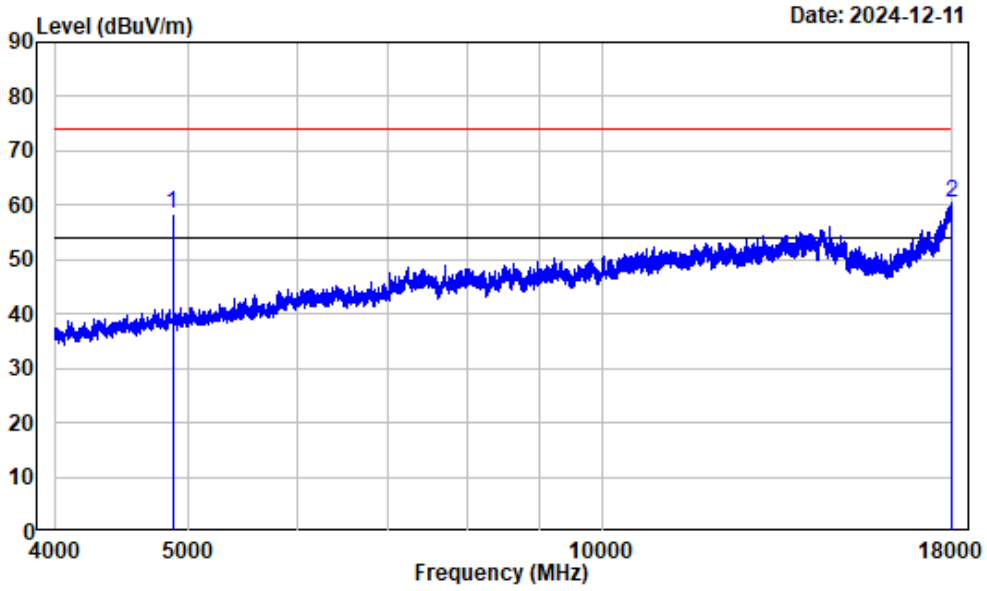
4-18GHz_Horizontal_Average_802.11g



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-g-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	50.45	42.73	54.00	-11.27	Average
2	17998.250	13.19	34.00	47.19	54.00	-6.81	Average

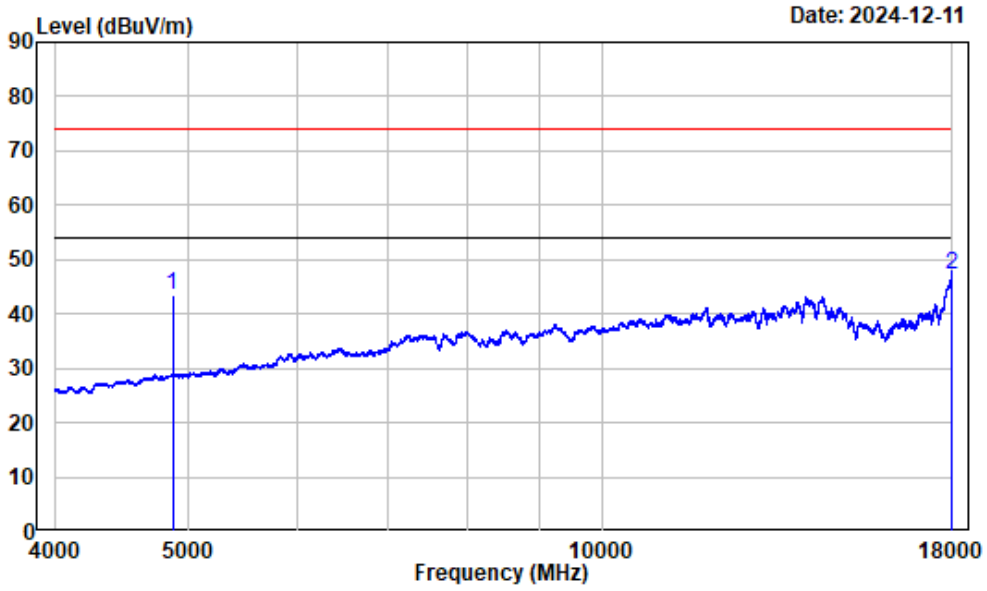
4-18GHz_Vertical_Peak_802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-g-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	66.21	58.49	74.00	-15.51	Peak
2	17961.500	13.01	47.45	60.46	74.00	-13.54	Peak

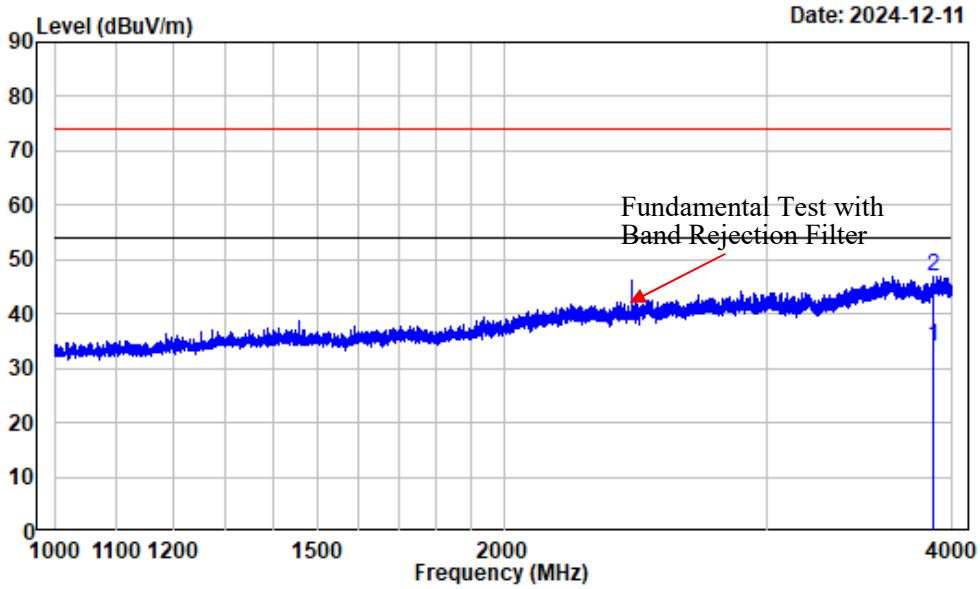
4-18GHz_Vertical_Average_802.11g



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-g-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	51.36	43.64	54.00	-10.36	Average
2	17998.250	13.19	34.13	47.32	54.00	-6.68	Average

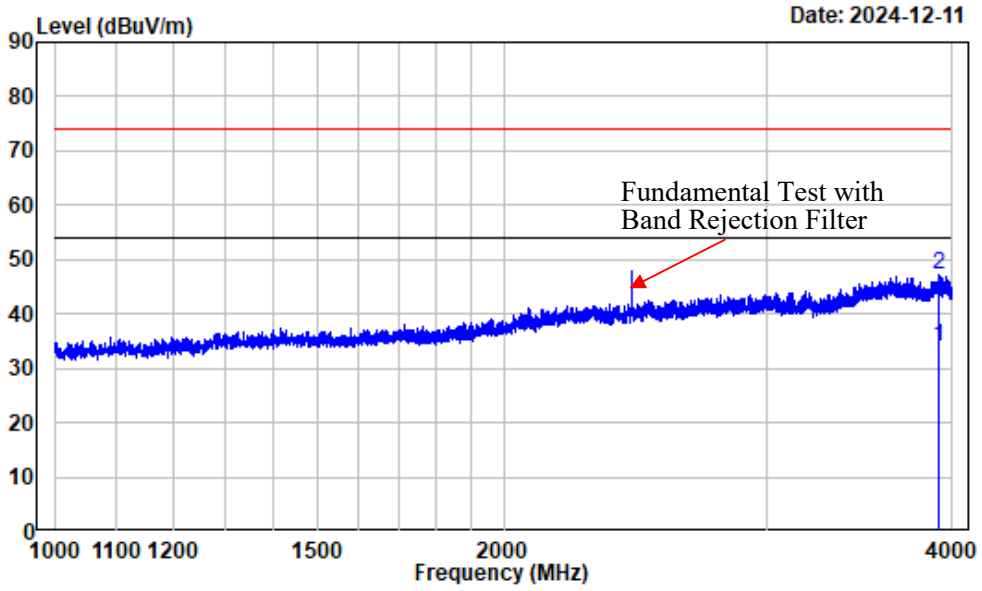
1-4GHz_Horizontal_802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-n20-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3879.610	-10.01	43.84	33.83	54.00	-20.17	Average
2	3879.610	-10.01	57.02	47.01	74.00	-26.99	Peak

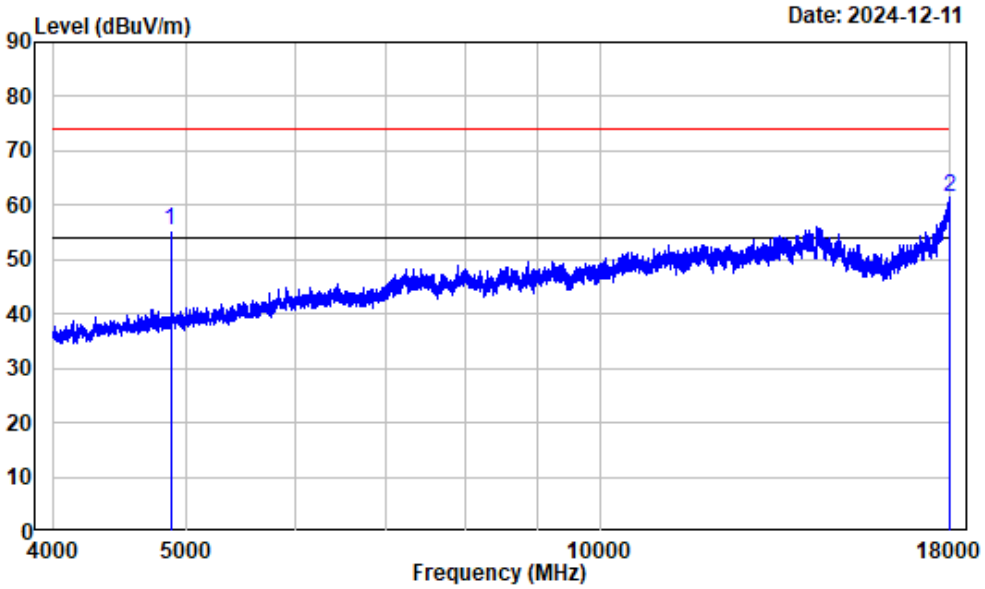
1-4GHz_Vertical_802.11n-HT20



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-n20-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3912.989	-9.78	43.91	34.13	54.00	-19.87	Average
2	3912.989	-9.78	57.00	47.22	74.00	-26.78	Peak

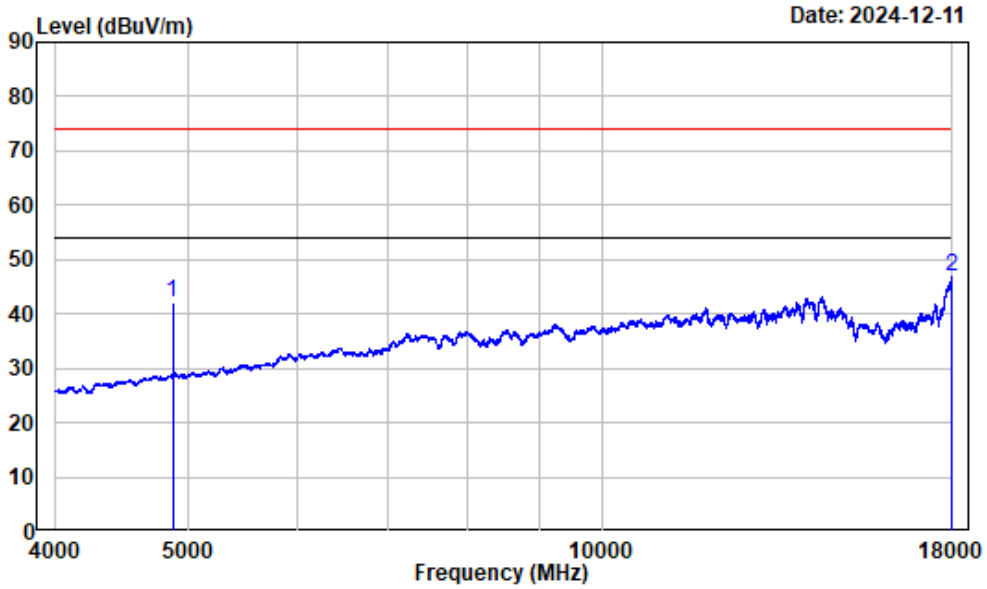
4-18GHz_Horizontal_Peak_802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-n20-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	63.11	55.39	74.00	-18.61	Peak
2	17993.000	13.17	48.35	61.52	74.00	-12.48	Peak

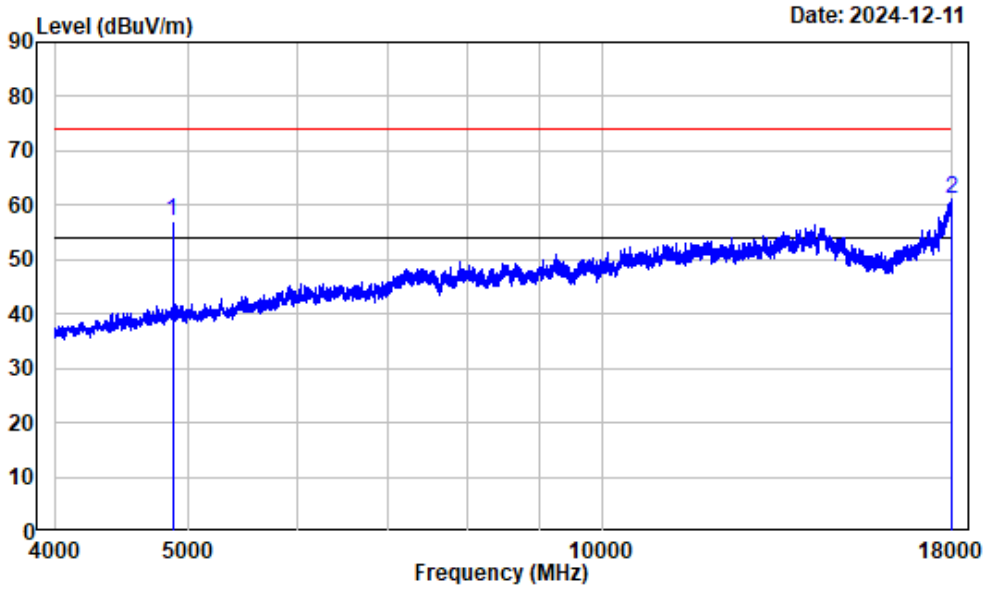
4-18GHz_Horizontal_Average_802.11n-HT20



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-n20-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	49.86	42.14	54.00	-11.86	Average
2	17998.250	13.19	33.79	46.98	54.00	-7.02	Average

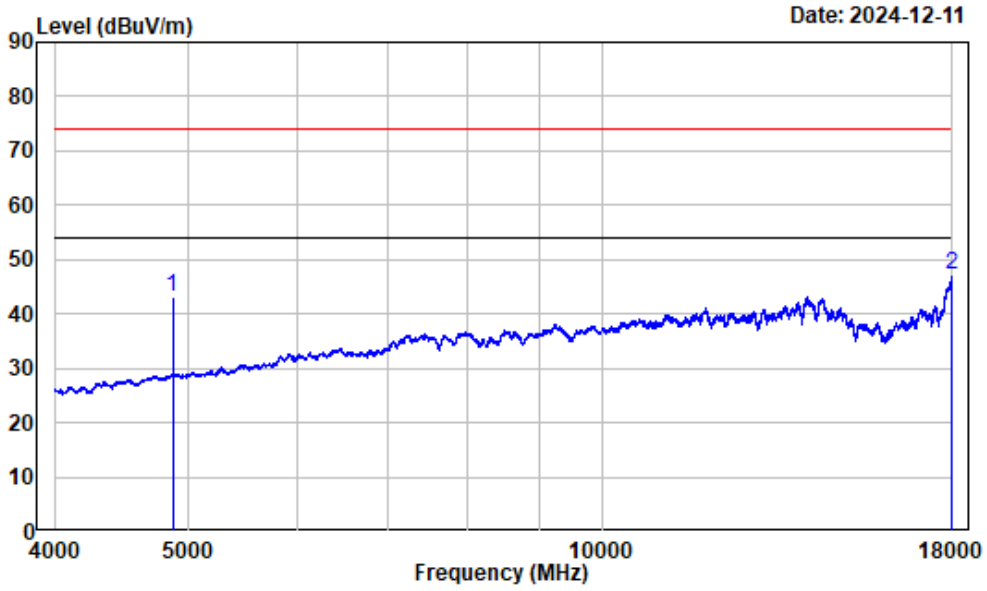
4-18GHz_Vertical_Peak_802.11n-HT20



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4GWiFi-n20-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	64.63	56.91	74.00	-17.09	Peak
2	17998.250	13.19	48.03	61.22	74.00	-12.78	Peak

4-18GHz_Vertical_Average_802.11n-HT20

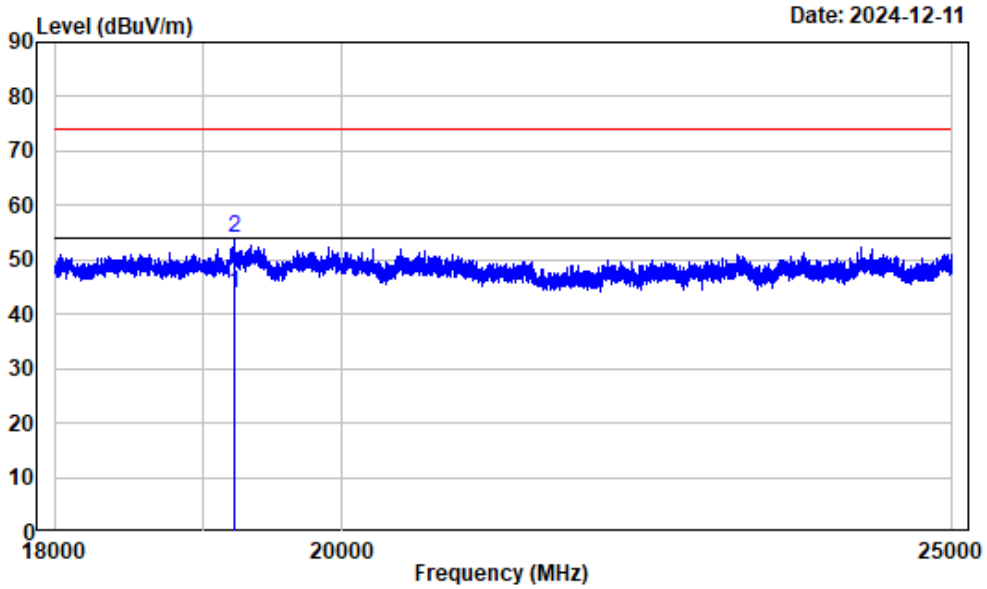


Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-n20-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	-7.72	50.72	43.00	54.00	-11.00	Average
2	17993.000	13.17	33.94	47.11	54.00	-6.89	Average

18-25 GHz test plots only show worst case margin mode plot (802.11b)

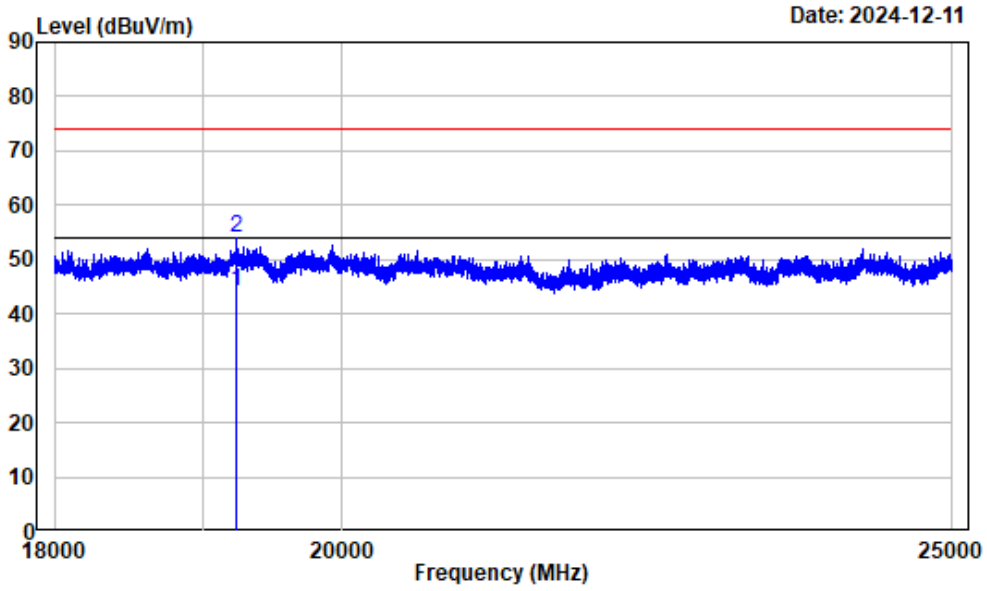
18-25GHz_Horizontal



Condition : Horizontal
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	19227.780	15.30	28.62	43.92	54.00	-10.08	Average
2	19227.780	15.30	38.54	53.84	74.00	-20.16	Peak

18-25GHz_Vertical



Condition : Vertical
Project No. : 2401Z45477E-RF
Tester : Zenos Qiao
Spectrum setting: Peak reading:RBW:1MHz VBW:3MHz Detector:Peak
: Average reading:RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4GWiFi-b-2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	19232.150	15.29	28.84	44.13	54.00	-9.87	Average
2	19232.150	15.29	38.76	54.05	74.00	-19.95	Peak

6dB Emission Bandwidth

Test Information:

Sample No.:	2V1V-1	**Test Date:**	2024/12/12
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Usain Ou	**Test Result:**	Pass

Environmental Conditions:

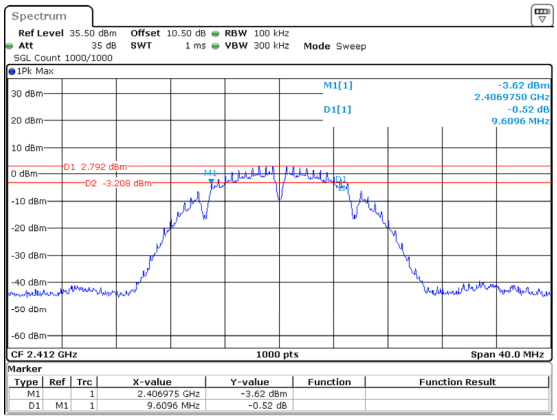
Temperature: (°C):	23.8	**Relative Humidity: (%)**	40	**ATM Pressure: (kPa)**	101

Test Data:

Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11b	2412	9.610	≥0.5	Pass
	2437	10.090	≥0.5	Pass
	2462	9.610	≥0.5	Pass
802.11g	2412	15.175	≥0.5	Pass
	2437	**15.215**	≥0.5	Pass
	2462	15.175	≥0.5	Pass
802.11n-HT20	2412	15.135	≥0.5	Pass
	2437	15.175	≥0.5	Pass
	2462	15.175	≥0.5	Pass

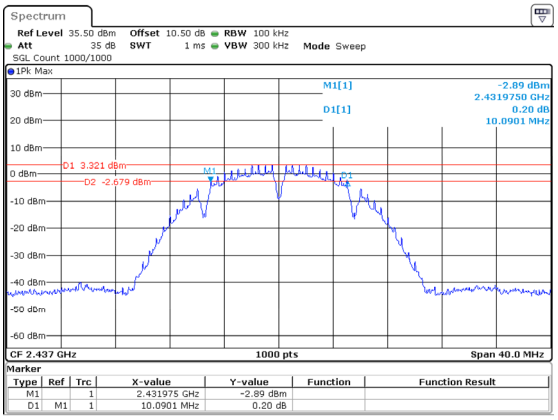
2412~2462

802.11b_2412MHz 9.610MHz



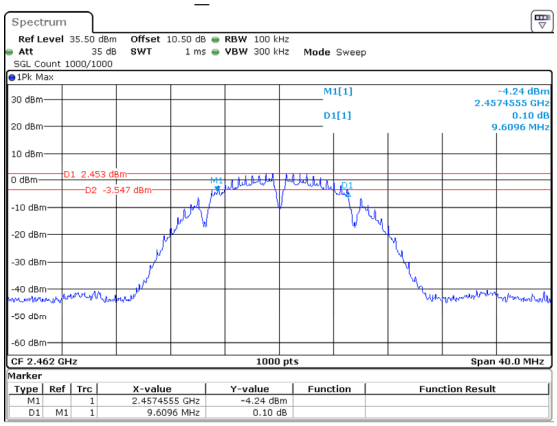
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:52:47

802.11b_2437MHz 10.090MHz



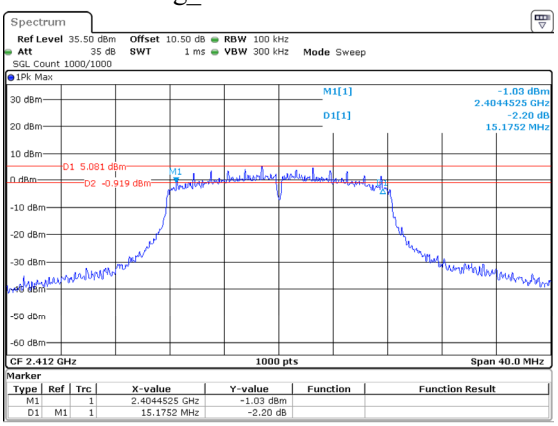
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:53:27

802.11b_2462MHz 9.610MHz



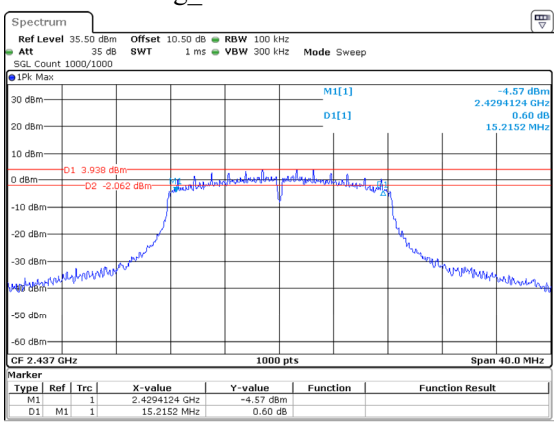
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:54:10

802.11g_2412MHz 15.175MHz



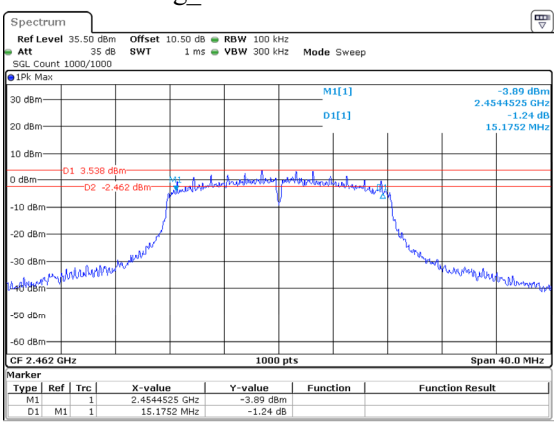
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:55:02

802.11g_2437MHz 15.215MHz



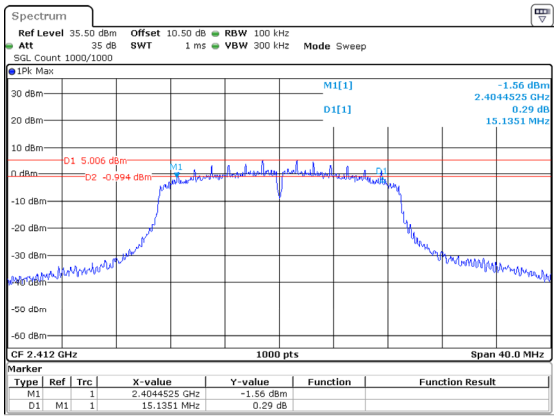
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:55:45

802.11g_2462MHz 15.175MHz



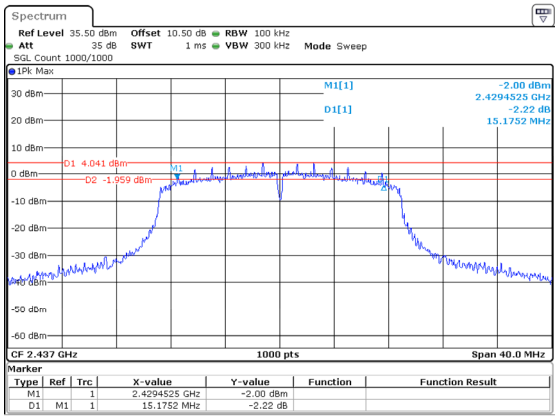
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:56:29

802.11n-HT20_2412MHz 15.135MHz



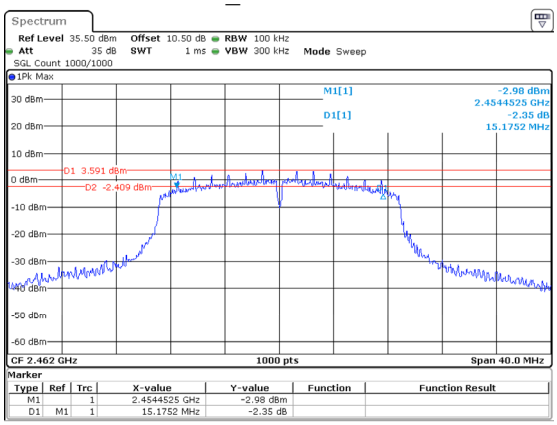
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:57:18

802.11n-HT20_2437MHz 15.175MHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:58:00

802.11n-HT20_2462MHz 15.175MHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:58:46

99% Occupied Bandwidth

Test Information:

Sample No.:	2V1V-1	**Test Date:**	2024/12/12
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Usain Ou	**Test Result:**	N/A

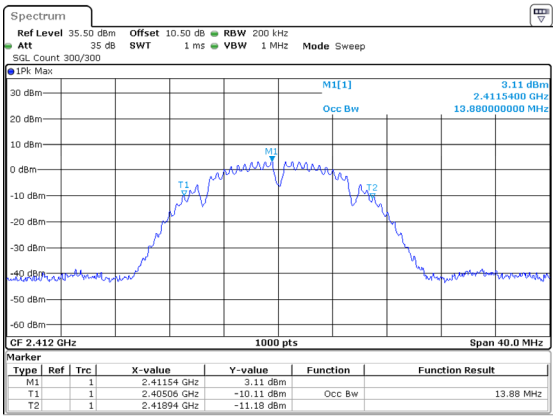
Environmental Conditions:

Temperature: (°C):	23.8	**Relative Humidity: (%)**	40	**ATM Pressure: (kPa)**	101

Test Data:

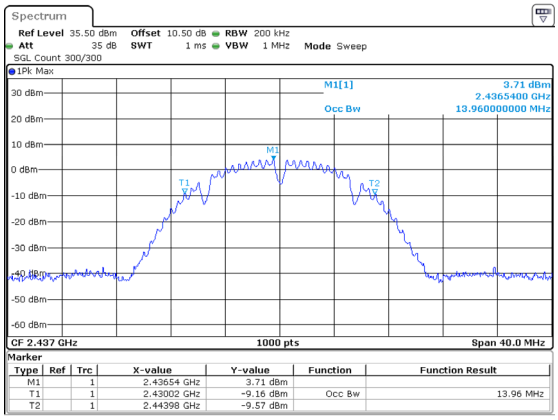
Mode	Test Frequency (MHz)	99% OBW (MHz)
802.11b	2412	13.880
	2437	13.960
	2462	13.880
802.11g	2412	16.320
	2437	16.280
	2462	16.320
802.11n-HT20	2412	17.400
	2437	17.400
	2462	**17.440**

802.11b_2412MHz 13.880MHz



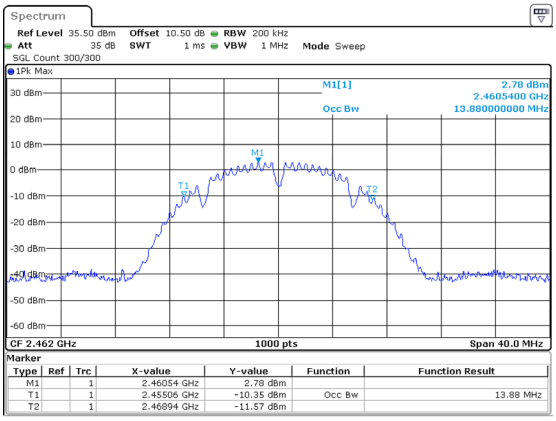
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:52:59

802.11b_2437MHz 13.960MHz



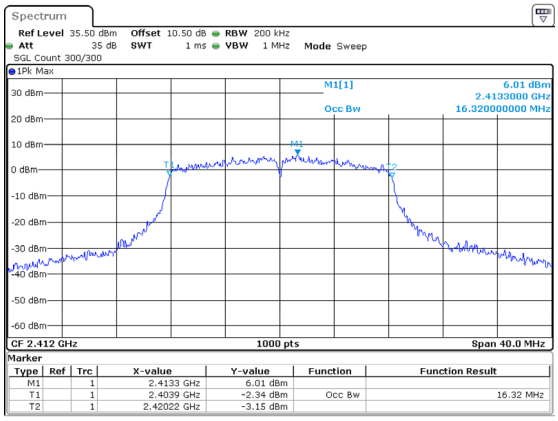
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:53:37

802.11b_2462MHz 13.880MHz



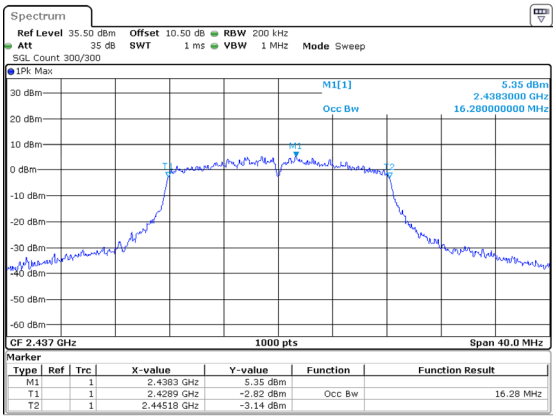
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:54:20

802.11g_2412MHz 16.320MHz



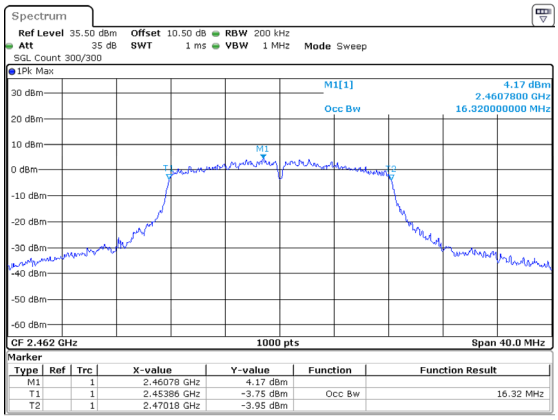
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:55:14

802.11g_2437MHz 16.280MHz



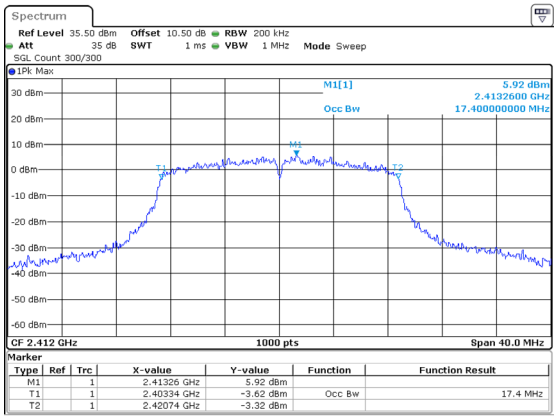
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:55:55

802.11g_2462MHz 16.320MHz



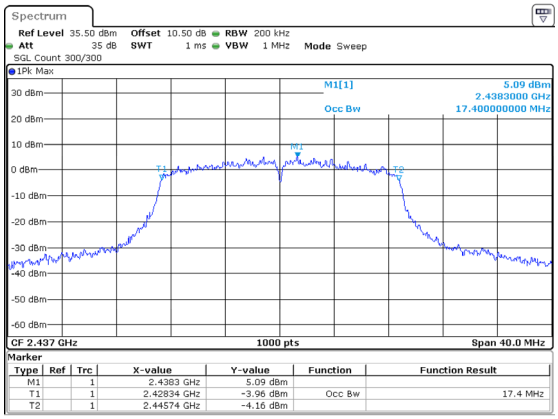
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:56:40

802.11n-HT20_2412MHz 17.400MHz



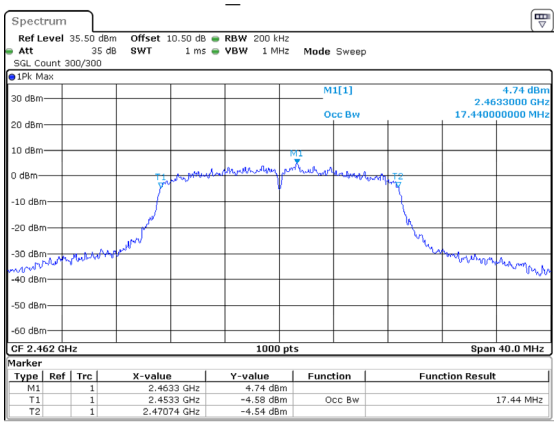
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:57:30

802.11n-HT20_2437MHz 17.400MHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:58:10

802.11n-HT20_2462MHz 17.440MHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 02:58:56

Maximum Conducted Output Power

Test Information:

Sample No.:	2V1V-1	**Test Date:**	2024/12/12
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Usain Ou	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	23.8	**Relative Humidity: (%)**	40	**ATM Pressure: (kPa)**	101

Test Data:

Mode	Test Frequency (MHz)	Peak Output Power(dBm)	Average Output Power(dBm)	Limit (dBm)	Verdict
802.11b	2412	15.00	11.92	30	Pass
	2437	15.67	12.74	30	Pass
	2462	14.56	11.57	30	Pass
802.11g	2412	**22.79**	15.58	30	Pass
	2437	22.17	14.85	30	Pass
	2462	21.52	14.32	30	Pass
802.11n-HT20	2412	22.56	15.54	30	Pass
	2437	21.88	14.76	30	Pass
	2462	21.29	14.10	30	Pass

Power Spectral Density

Test Information:

Sample No.:	2V1V-1	**Test Date:**	2024/12/12
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Usain Ou	**Test Result:**	Pass

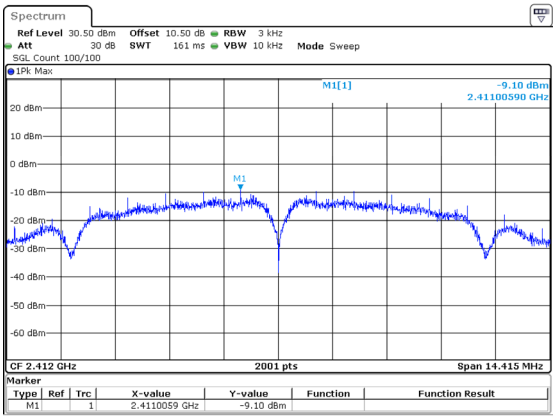
Environmental Conditions:

Temperature: (°C):	23.8	**Relative Humidity: (%)**	40	**ATM Pressure: (kPa)**	101

Test Data:

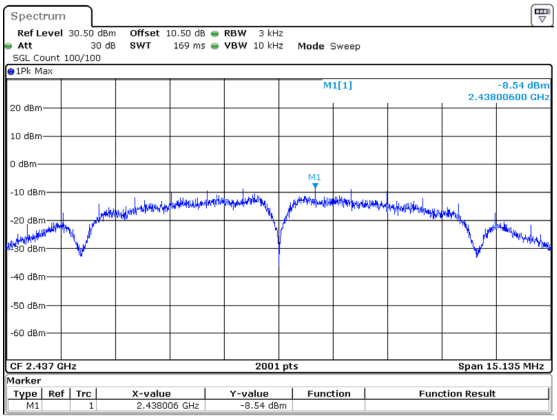
Mode	Test Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
802.11b	2412	-9.10	8	Pass
	2437	**-8.54**	8	Pass
	2462	-9.57	8	Pass
802.11g	2412	-9.93	8	Pass
	2437	-10.52	8	Pass
	2462	-11.25	8	Pass
802.11n-HT20	2412	-8.58	8	Pass
	2437	-9.23	8	Pass
	2462	-9.83	8	Pass

802.11b_2412MHz -9.10dBm/3kHz



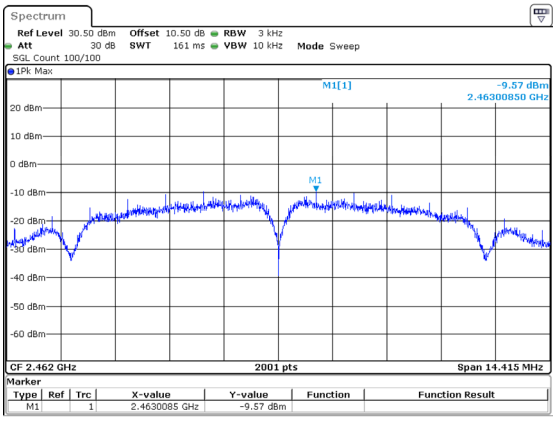
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:00:27

802.11b_2437MHz -8.54dBm/3kHz



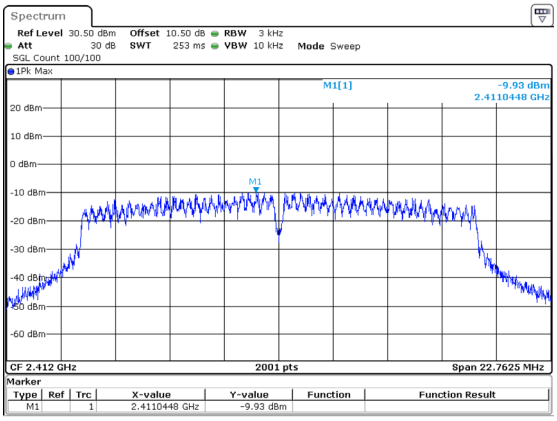
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:01:07

802.11b_2462MHz -9.57dBm/3kHz



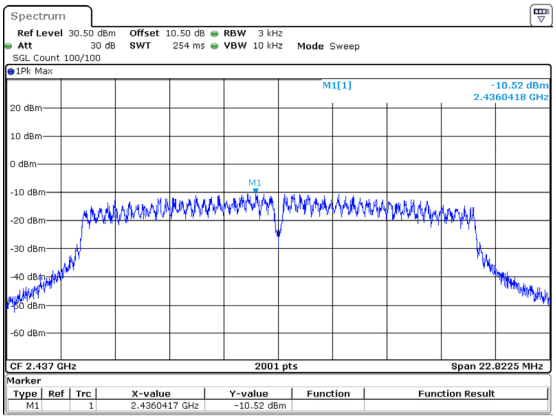
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:02:06

802.11g_2412MHz -9.93dBm/3kHz



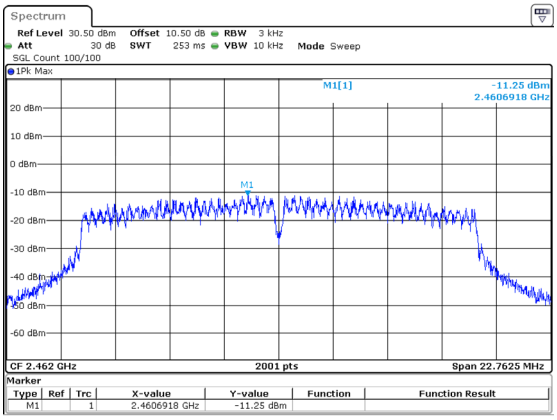
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:03:18

802.11g_2437MHz -10.52dBm/3kHz



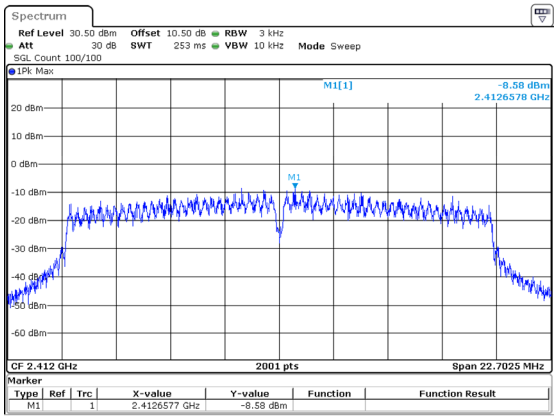
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:04:17

802.11g_2462MHz -11.25dBm/3kHz



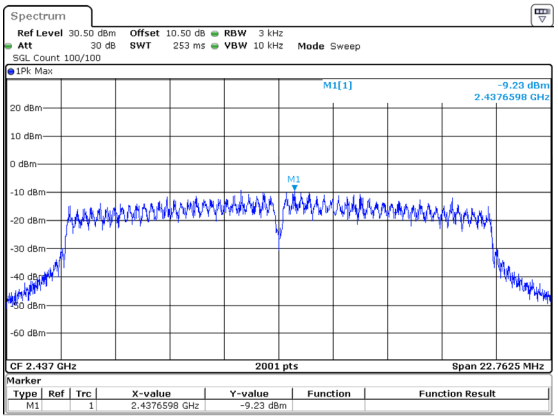
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:05:14

802.11n-HT20_2412MHz -8.58dBm/3kHz



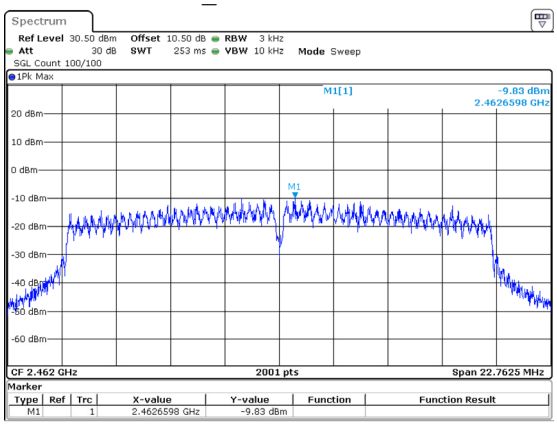
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:06:21

802.11n-HT20_2437MHz -9.23dBm/3kHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:07:14

802.11n-HT20_2462MHz -9.83dBm/3kHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:08:15

100 kHz Bandwidth of Frequency Band Edge

Test Information:

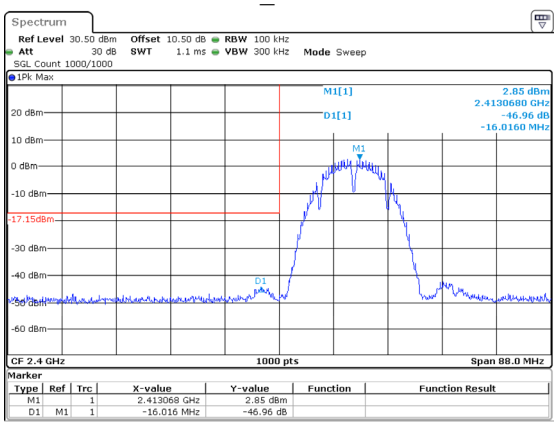
Sample No.:	2V1V-1	**Test Date:**	2024/12/12
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Usain Ou	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	23.8	**Relative Humidity: (%)**	40	**ATM Pressure: (kPa)**	101

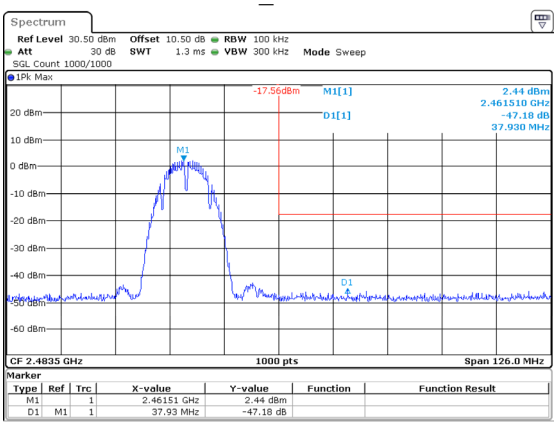
Test Data:

802.11b_2412MHz



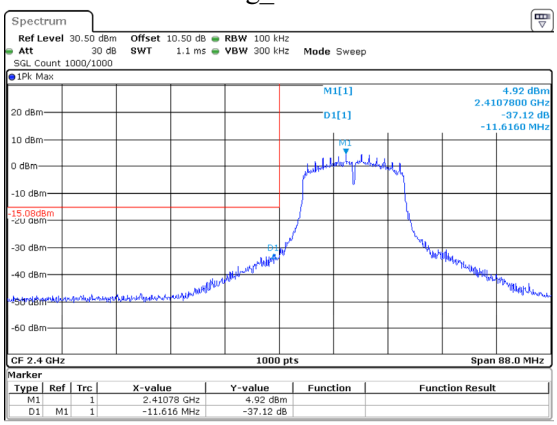
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:00:05

802.11b_2462MHz



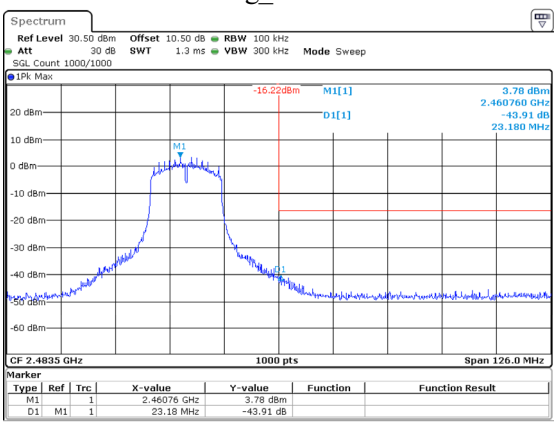
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:01:44

802.11g_2412MHz



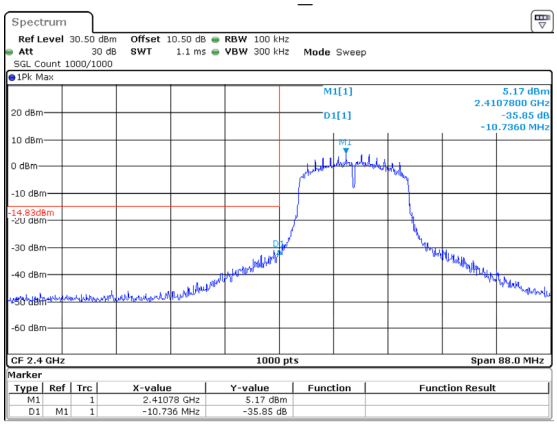
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:02:45

802.11g_2462MHz



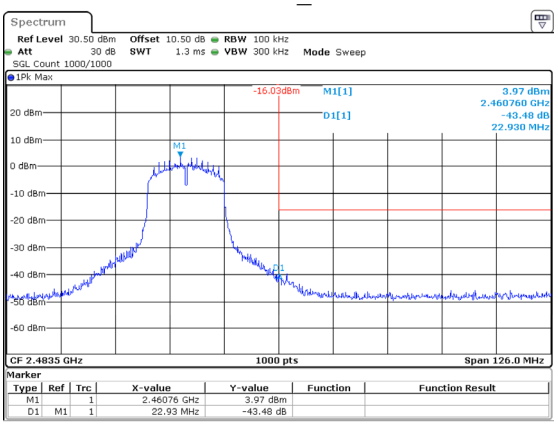
ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:04:42

802.11n-HT20_2412MHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:05:49

802.11n-HT20_2462MHz



ProjectNo.:2401Z45477E-RF Tester:Usain Ou
Date: 12.DEC.2024 03:07:42

Duty Cycle

Test Information:

Sample No.:	2V1V-1	**Test Date:**	2024/12/12-2025/02/11
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Usain Ou	**Test Result:**	N/A

Environmental Conditions:

Temperature: (°C):	23.8-24.5	**Relative Humidity: (%)**	40-46	**ATM Pressure: (kPa)**	101

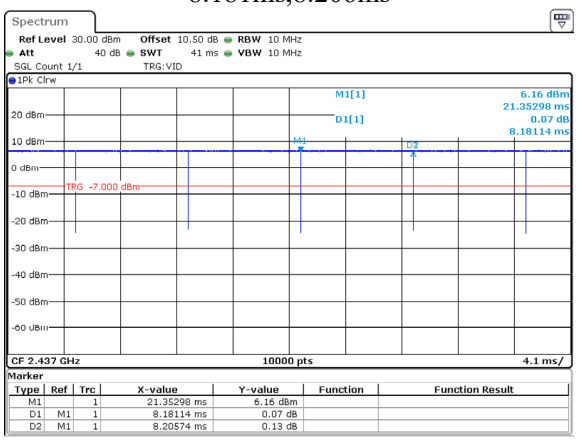
Test Data:

Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11b	2437	**8.181**	8.206	99.70	/	/	0.010
802.11g	2437	1.360	1.367	99.49	/	/	0.010
802.11n-HT20	2437	1.272	1.280	99.38	/	/	0.010

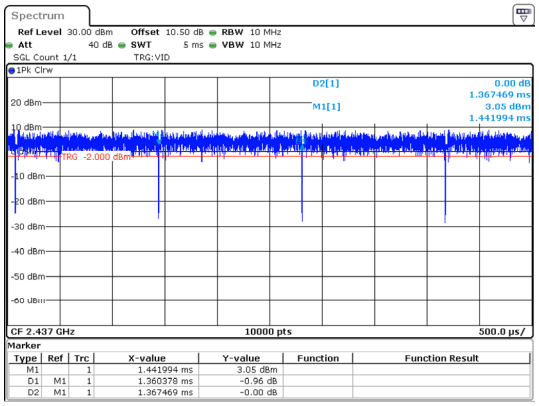
Duty Cycle = Ton/(Ton+Toff)*100%

2412~2462

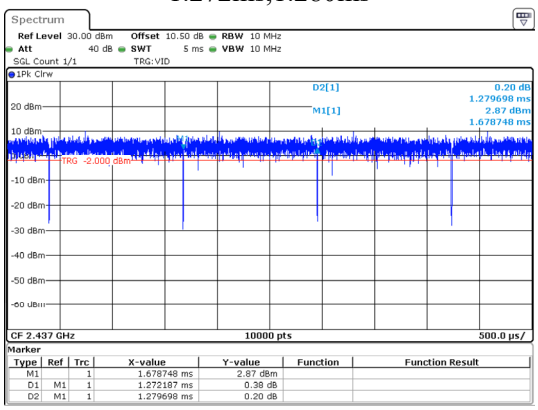
802.11b_2437MHz
8.181ms,8.206ms



802.11g_2437MHz
1.360ms,1.367ms



802.11n-HT20_2437MHz
1.272ms,1.280ms



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 Interim General RF Exposure Guidance V01

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

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

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^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 (mW)
			(dBi)	(dBd)	(dBm)	(mW)		
Bluetooth	2402-2480	15.5	1.2	-0.95	14.55	28.51	0.2	768
BLE	2402-2480	14.0	1.2	-0.95	13.05	20.18	0.2	768
2.4G Wi-Fi	2412-2462	23.0	2.1	-0.05	22.95	197.24	0.2	768
5.2G Wi-Fi	5180-5240	15.5	2.3	0.15	15.65	36.73	0.2	768
5.8G Wi-Fi	5745-5825	14.5	3.8	1.65	16.15	41.21	0.2	768

Note: 1. The tune up conducted power# and antenna gain# was declared by the applicant.
2. The BT and Wi-Fi can transmit at same time, the 2.4G and 5G Wi-Fi cannot transmit at same time.

Simultaneous transmitting consideration (worst case):

The ratio= ERP_{BT}/limit + $ERP_{2.4G\ Wi\text{-}Fi}$/limit = 28.51/768+ 197.24/768 =0.294<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

Please refer to the attachment 2401Z45477E-RF External photo and 2401Z45477E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401Z45477E-RFA Test Setup photo.

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