

TEST REPORT

Applicant Name: Grandstream Networks, Inc.
Address: 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Report Number: 2401Y27848E-RFA
FCC ID: YZZGWN7062E
IC: 11964A-GWN7062E

Test Standard (s)

FCC PART 15.247; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2;
RSS-247 ISSUE 3, AUGUST 2023

Sample Description

Product Type: Wi-Fi 6 Router
Model No.: GWN7062E
Multiple Model(s) No.: N/A
Trade Mark: GRANDSTREAM
Date Received: 2024-10-29
Issue Date: 2025-02-05

Test Result:

Pass▲

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

Prepared and Checked By:

Ekko Wu

Ekko Wu
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

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

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Bay Area Compliance Laboratories Corp. (Shenzhen)

5F(B-West), 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China

Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401Y27848E-RFA	Original Report	2025-02-05

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

HVIN	GWN7062E
FVIN	0.0.2.10
Frequency Range	2412~2462MHz
Maximum Conducted Output Peak Power	28.34dBm
Modulation Technique	DSSS, OFDM, OFDMA
Antenna Specification[#]	ANT0 (Chain 0): 4.65dBi ANT1 (Chain 1): 4.61dBi (provided by the applicant)
Voltage Range	DC 5V from Adapter
Sample serial number	2TPH-14 for Conducted and Radiated Emissions Test 2TPH-12 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Adapter 1 Model: DCT18W050300US-A0 Input: 100-240V~50/60Hz, 0.7A max Output: 5.0V, 3.0A Adapter 2 Model: GQ24-050300-AU Input: 100-240V~50/60Hz, 1.0A Max Output: 5.0V, 3.0A Adapter 3 Model: TS-A015-050300A2 Input: 100-240V~50/60Hz, 0.6A Output: 5.0V, 3.0A, 15.0W

Objective

This report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules and RSS-GEN Issue 5, February 2021 Amendment 2 and RSS-247 Issue 3, August 2023 of the Innovation, Science and Economic Development Canada rules.

The tests were performed in order to determine Compliant 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 Compliant Testing of Unlicensed Wireless Devices and RSS-GEN Issue 5, February 2021 Amendment 2 and RSS-247 Issue 3, August 2023.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

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

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		109.2kHz(k=2, 95% level of confidence)
RF output power, conducted		0.86dB(k=2, 95% level of confidence)
Power Spectral Density		0.90dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz~150 kHz	3.63dB(k=2, 95% level of confidence)
	150 kHz ~30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	0.009MHz~30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.34dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.40dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.64dB(k=2, 95% level of confidence)
Temperature		±1°C
Humidity		±1%
Supply voltages		±0.4%

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

Test Facility

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

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

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0023.

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.exe		
Mode	Data rate	Power Level [#]		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	21.5	21.5	21.5
802.11g	6Mbps	18.5	18.5	18.5
802.11n20	MCS0	19.5	19.5	19.5
802.11n40	MCS0	19.5	19.5	19.5
802.11ax20	MCS0	19.5	19.5	19.5
802.11ax40	MCS0	19.5	19.5	19.5

Note:

1. The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PSD across all data rates bandwidths, and modulations.
2. For 802.11b/g mode, the device supports SISO only.
3. For 802.11n/ax mode, the device supports SISO and MIMO, the MIMO mode supports beamforming, the SISO/MIMO and beamforming/nonbeamforming modes have same parameter, which was declared by applicant. The MIMO/beamforming was the worst mode which was selected to test.
4. For 802.11 ax modes, the device does not support partial RU mode.
5. All the antenna ports have the same power level.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

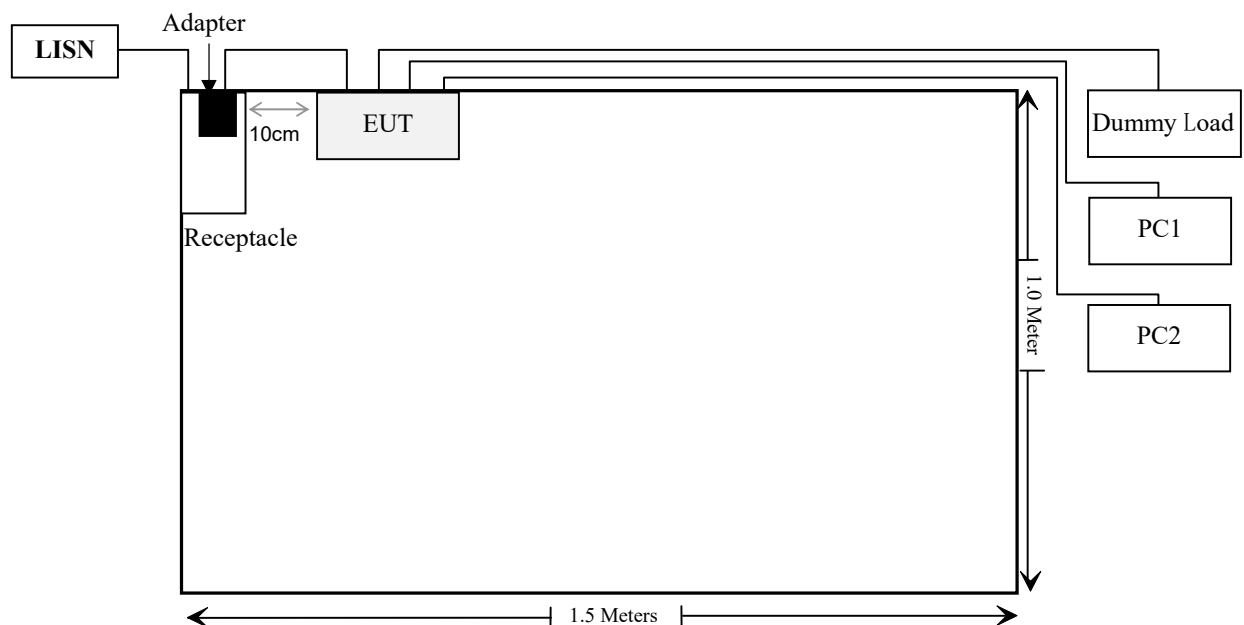
Manufacturer	Description	Model	Serial Number
DELL	PC1	Latitude E6520	DL0ZCS1
GREATWALL	PC2	NF50AL	Unknown
TP-link	Dummy load	Unknown	Unknown

External I/O Cable

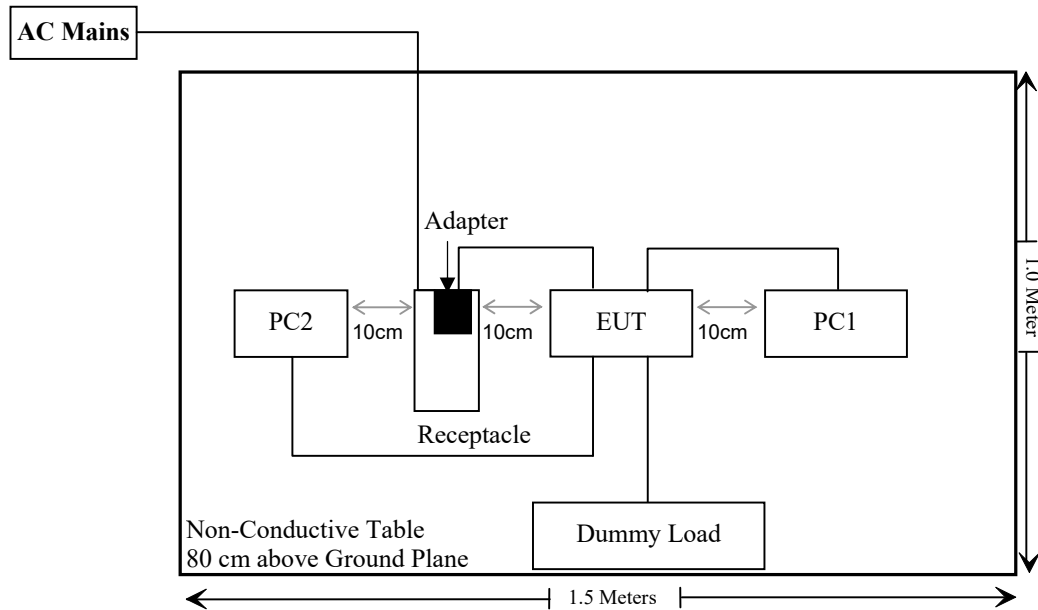
Cable Description	Length (m)	From Port	To
Unshielded Un-detachable AC cable	1.5	Receptacle	LISN/AC Mains
Unshielded Un-detachable DC cable	1.2	EUT	Adapter
Unshielded Detachable RJ45 cable	2.0	EUT	PC1
Unshielded Detachable RJ45 cable	2.0	EUT	PC2
Unshielded Detachable RJ45 cable	2.0	EUT	Dummy Load
Unshielded Detachable RJ45 cable	0.2	EUT	Dummy Load

Block Diagram of Test Setup

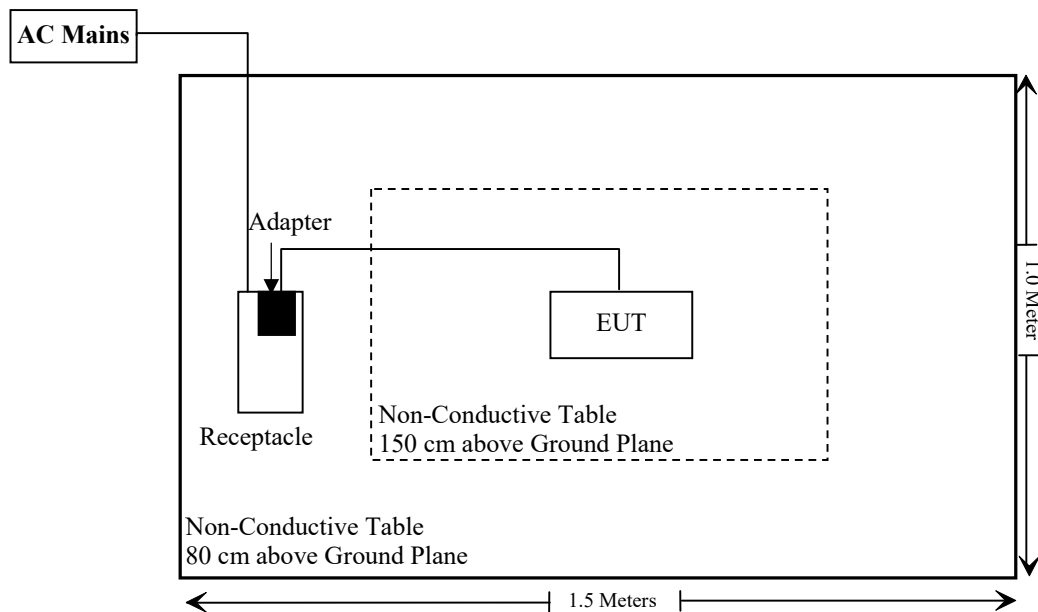
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	RSS Rules	Description of Test	Result
FCC §15.203	RSS-Gen §6.8	Antenna Requirement	Compliant
FCC §15.207(a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliant
FCC §15.205, §15.209, §15.247(d)	RSS-GEN § 8.10 & RSS-247 § 5.5	Radiated Spurious Emission	Compliant
FCC §15.207(a)(2)	RSS-Gen Clause 6.7 RSS-247 § 5.2 (a)	6dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant
FCC §15.247(b)(1)	RSS-247 § 5.4(d)	Maximum Conducted Output Power	Compliant
FCC §15.247(d)	RSS-247 § 5.5	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §15.247(d)	RSS-247 § 5.5	Conducted Spurious Emission	Compliant
FCC §15.247(e)	RSS-247 § 5.2 (b)	Power Spectral Density	Compliant
C63.10 §11.6	C63.10 §11.6	Duty Cycle	/
FCC §1.1310&§2.1091&§15.247 (i)	/	Maximum Permissible Exposure (MPE)	Compliant
/	RSS-102 §5.3.2	Exposure Limits	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
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emission Test_ Below 1GHz					
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
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
Unknown	Cable	Chamber Cable 1	F-03-EM236	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	PNG214	1354	2024/05/21	2025/05/20
Unknown	Cable	2Y194	0735	2024/05/21	2025/05/20
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Radiated Emission Test_ Above 1GHz					
Rohde&Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	0735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
Unknown	RF Cable	XH750A-N	J-10M	2024/06/18	2025/06/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2024/06/18	2025/06/17
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
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20
MARCONI	10dB Attenuator	6534/3	2942	2024/06/27	2025/06/26

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

REQUIREMENTS AND TEST PROCEDURES

AC Line Conducted Emissions

Applicable Standard

FCC § 15.207 (a) & RSS-GEN §8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50 μ H / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for Compliant with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Table 4 - AC Power Lines Conducted Emission Limits		
Frequency range (MHz)	Conducted limit (dB μ V)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56 ¹	56 to 46 ¹
0.5 – 5	56	46
5 – 30	60	50

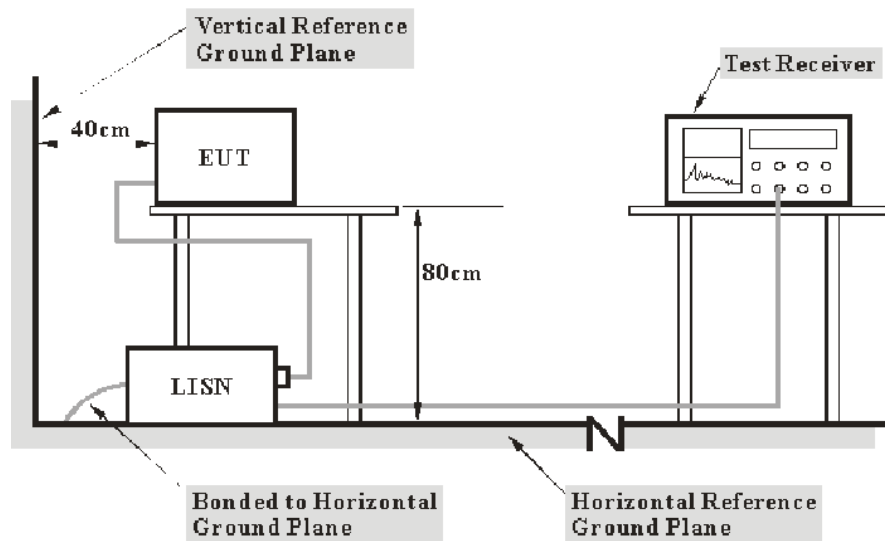
Note 1: The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:

(a) Perform the AC power-line conducted emissions test with the antenna connected to determine Compliant with the limits of table 4 outside the transmitter's fundamental emission band.

(b) Retest with a dummy load instead of the antenna to determine Compliant with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

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 & RSS-247/RSS-Gen limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

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

Test Procedure

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

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

Factor & Over Limit Calculation

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

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

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

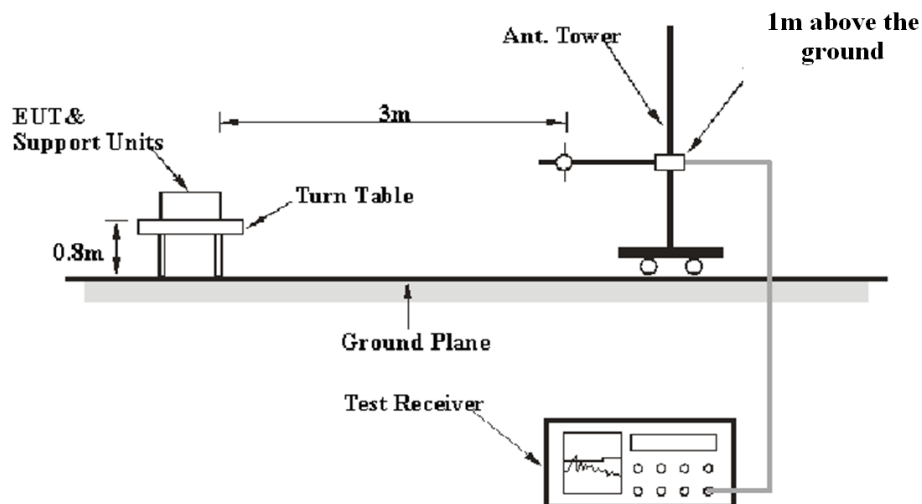
According to RSS-GEN § 8.10 & RSS-247 § 5.5

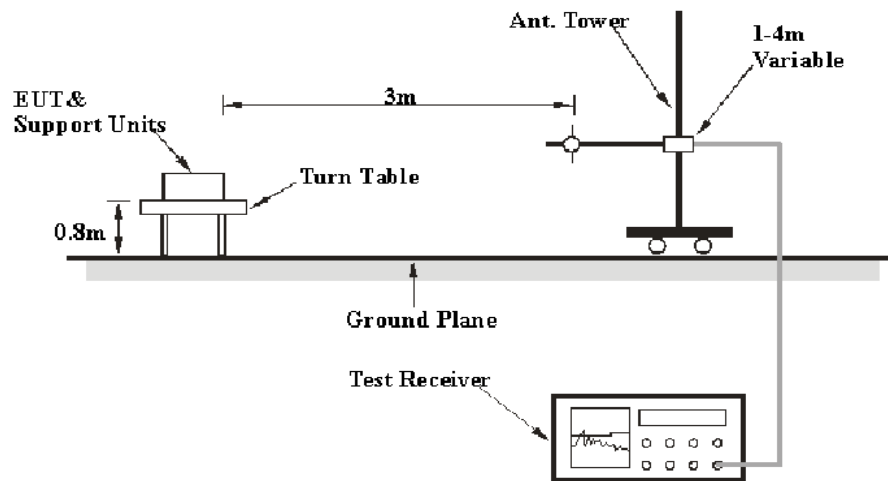
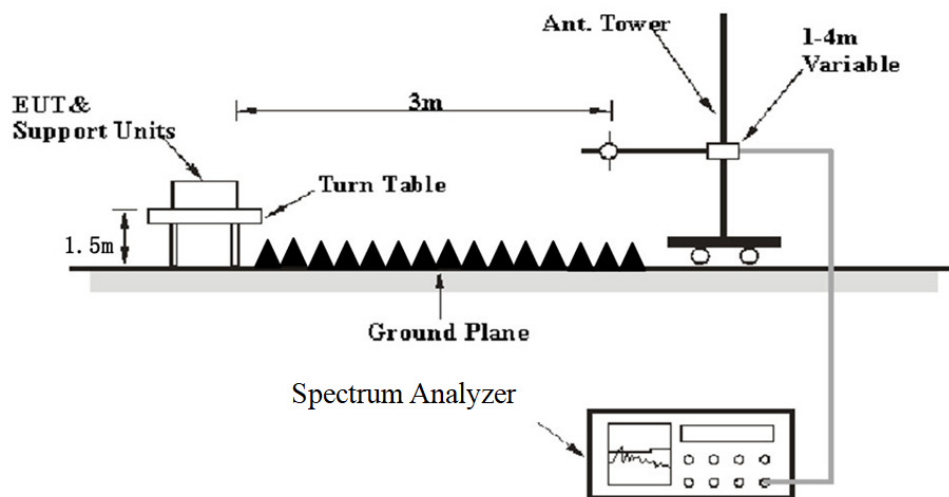
Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply: (a) The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD). (b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6. (c) Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates Compliant with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

EUT Setup

9 kHz-30MHz:



30MHz-1GHz:**Above 1GHz:**

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

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

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
9 kHz – 150 kHz	/	/	200 Hz	QP
	300 Hz	1 kHz	/	PK
150 kHz – 30 MHz	/	/	9 kHz	QP
	10 kHz	30 kHz	/	PK
30 MHz – 1000 MHz	/	/	120 kHz	QP
	100 kHz	300 kHz	/	PK

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, not less than 5 kHz

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:

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

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:

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

99% Occupied Bandwidth & 6 dB Emission Bandwidth

Applicable Standard

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.

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “6 dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated 6 dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

Test Procedure

Test Method: ANSI C63.10-2013 section 11.8&6.9.3

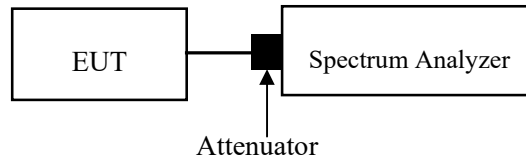
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

The following conditions shall be observed for measuring the occupied bandwidth and 6 dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / 6 dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / 6 dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in Compliant with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level 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, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).



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, Compliant 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.

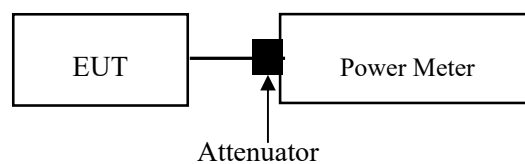
For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

As an alternative to a peak power measurement, Compliant can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling 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 transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

Test Method: ANSI C63.10-2013 section 11.9.1.3

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- c) 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 added with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

100 kHz Bandwidth of Frequency Band Edge

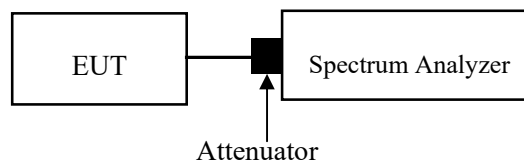
Applicable Standard

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 Compliant 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 section 11.11

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 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.
- 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.
- 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.
- Repeat above procedures until all measured frequencies were complete.



Power Spectral Density

Applicable Standard

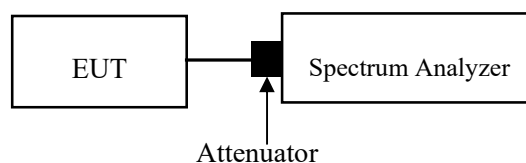
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of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

The transmitter power spectral density conducted from the transmitter 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 section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

Test Procedure

Test Method: ANSI C63.10-2013 section 11.10.2

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 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 = auto couple.
- 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: A short RF cable with low cable loss connected to the EUT antenna port, which was provided by client or lab, the cable loss was added with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss

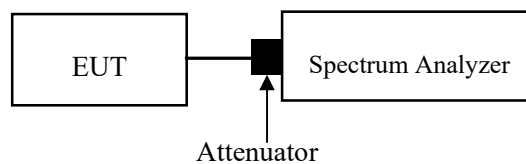
Duty Cycle

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 $RBW \geq OBW$ 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 $T \leq 16.7 \mu s$.)



ANTENNA REQUIREMENT

Applicable Standard

According to § 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine Compliant with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the Compliant of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Antenna Connector Construction

The EUT has two internal antennas arrangement, which were permanently attached, the antenna gain[#] is 4.65dBi for ANT0 and 4.61dBi for ANT1, fulfill the requirement of this section. Please refer to the EUT photos.

Mode	Type	Antenna Gain [#]	Impedance	Frequency Range
ANT 0	PCB	4.65dBi	50Ω	2400-2500MHz
ANT 1	PCB	4.61dBi	50Ω	2400-2500MHz

Result: Compliant

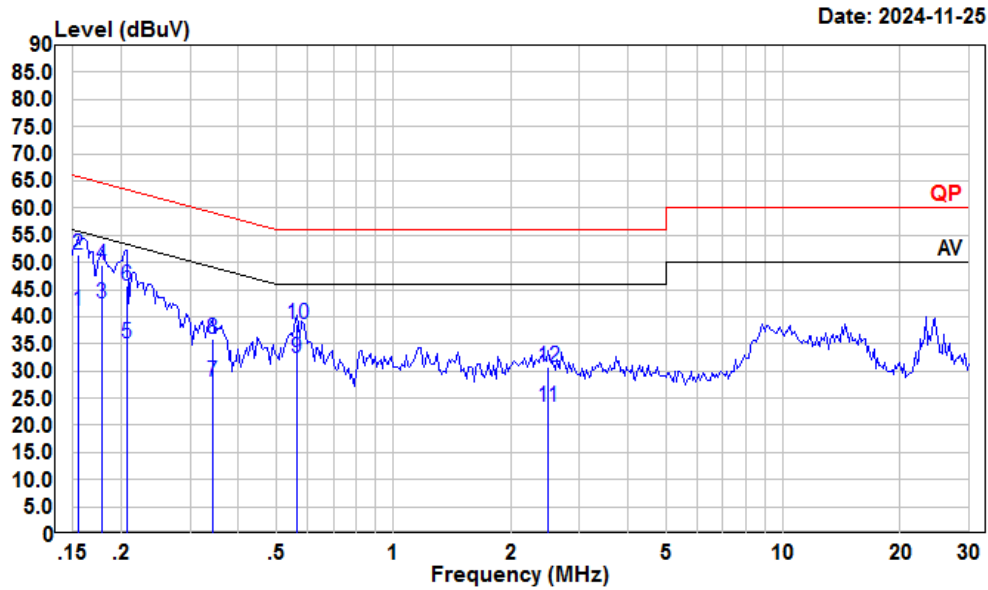
TEST DATA AND RESULTS

AC Line Conducted Emissions

Environmental Conditions

Temperature (°C)	25	Relative Humidity (%)	67
ATM Pressure (kPa)	101	Test engineer	Macy Shi
Test date	2024/11/25		
EUT operation mode	Transmitting (Maximum output power mode, 802.11n20 Low channel)		

AC 120V 60 Hz, Line_Adaper1



Condition: Line

Project : 2401Y27848E-RF

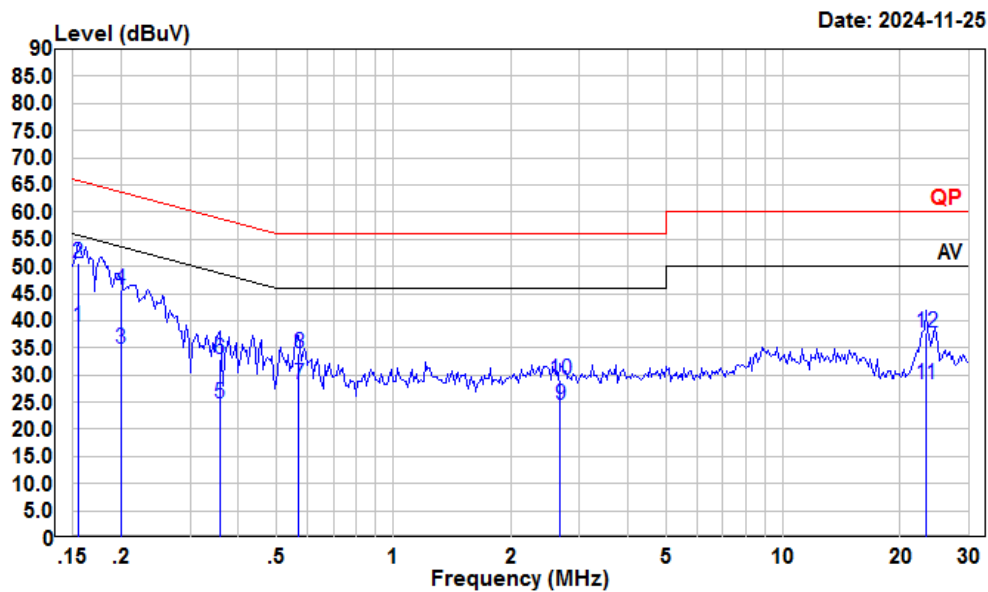
tester : Macy.shi

Note : Transmitting

Condition: RBW:9KHz VBW:Auto SWT:Auto

	Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.155	20.05	41.06	10.89	10.12	55.74	-14.68	Average
2	0.155	30.33	51.34	10.89	10.12	65.74	-14.40	QP
3	0.178	21.47	42.41	10.84	10.10	54.59	-12.18	Average
4	0.178	28.65	49.59	10.84	10.10	64.59	-15.00	QP
5	0.206	14.26	35.14	10.79	10.09	53.36	-18.22	Average
6	0.206	24.80	45.68	10.79	10.09	63.36	-17.68	QP
7	0.343	7.26	28.00	10.62	10.12	49.13	-21.13	Average
8	0.343	15.16	35.90	10.62	10.12	59.13	-23.23	QP
9	0.564	11.81	32.44	10.50	10.13	46.00	-13.56	Average
10	0.564	17.99	38.62	10.50	10.13	56.00	-17.38	QP
11	2.487	2.74	23.42	10.51	10.17	46.00	-22.58	Average
12	2.487	10.18	30.86	10.51	10.17	56.00	-25.14	QP

AC 120V 60 Hz, Neutral_Adaper1



Condition: Neutral

Project : 2401Y27848E-RF

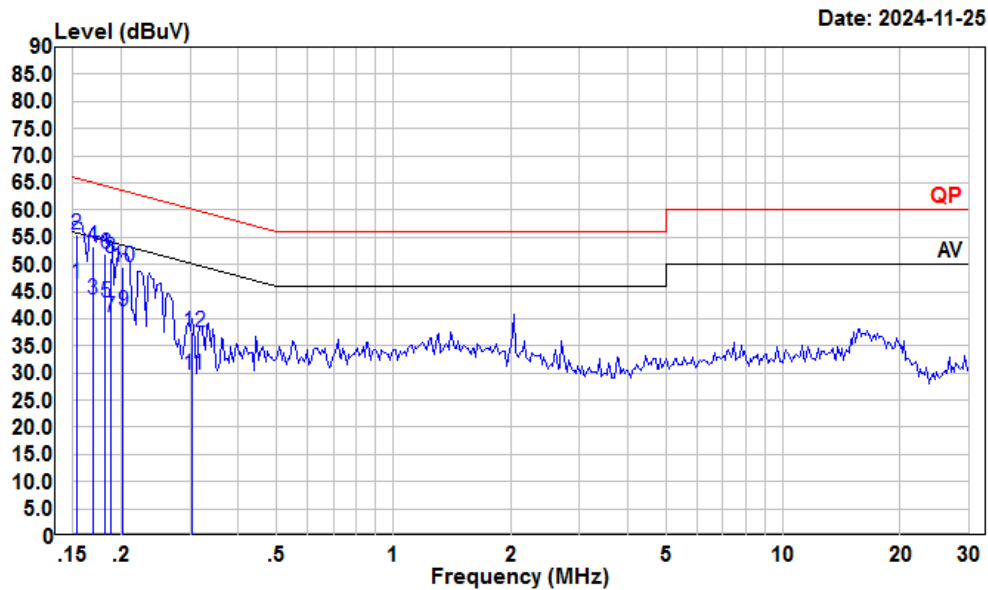
tester : Macy.shi

Note : Transmitting

Condition: RBW:9KHz VBW:Auto SWT:Auto

	Read Freq	Level dBuV	LISN Level dBuV	Cable Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB	Remark
	MHz	dBuV	dBuV					
1	0.155	18.10	38.80	10.58	10.12	55.74	-16.94	Average
2	0.155	29.88	50.58	10.58	10.12	65.74	-15.16	QP
3	0.200	14.29	34.78	10.40	10.09	53.62	-18.84	Average
4	0.200	25.21	45.70	10.40	10.09	63.62	-17.92	QP
5	0.358	4.02	24.73	10.59	10.12	48.78	-24.05	Average
6	0.358	12.08	32.79	10.59	10.12	58.78	-25.99	QP
7	0.570	7.33	28.16	10.70	10.13	46.00	-17.84	Average
8	0.570	13.29	34.12	10.70	10.13	56.00	-21.88	QP
9	2.678	3.95	24.52	10.40	10.17	46.00	-21.48	Average
10	2.678	8.54	29.11	10.40	10.17	56.00	-26.89	QP
11	23.263	7.44	28.25	10.63	10.18	50.00	-21.75	Average
12	23.263	16.97	37.78	10.63	10.18	60.00	-22.22	QP

AC 120V 60 Hz, Line_Adaper2



Condition: Line

Project : 2401Y27848E-RF

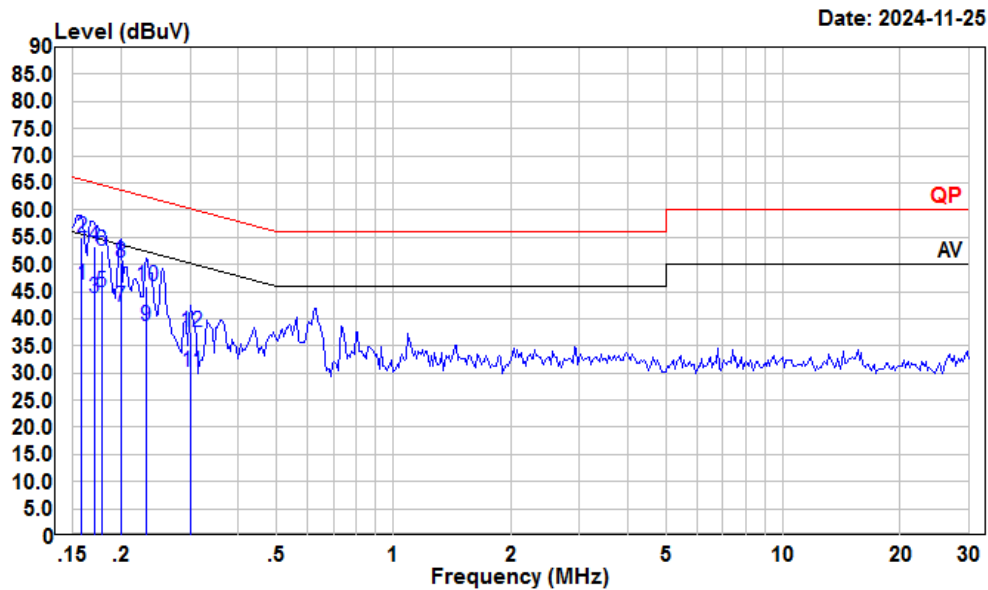
tester : Macy.shi

Note : Transmitting

Condition: RBW:9KHz VBW:Auto SWT:Auto

	Read Freq	Level dBuV	Level dBuV	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB	Remark
	MHz							
1	0.153	25.40	46.42	10.89	10.13	55.82	-9.40	Average
2	0.153	34.46	55.48	10.89	10.13	65.82	-10.34	QP
3	0.169	22.60	43.56	10.86	10.10	55.03	-11.47	Average
4	0.169	32.30	53.26	10.86	10.10	65.03	-11.77	QP
5	0.182	22.00	42.93	10.83	10.10	54.42	-11.49	Average
6	0.182	31.10	52.03	10.83	10.10	64.42	-12.39	QP
7	0.187	19.31	40.22	10.82	10.09	54.15	-13.93	Average
8	0.187	30.11	51.02	10.82	10.09	64.15	-13.13	QP
9	0.202	20.37	41.26	10.80	10.09	53.54	-12.28	Average
10	0.202	28.53	49.42	10.80	10.09	63.54	-14.12	QP
11	0.305	8.85	29.62	10.66	10.11	50.10	-20.48	Average
12	0.305	16.79	37.56	10.66	10.11	60.10	-22.54	QP

AC 120V 60 Hz, Neutral_Adaper2



Condition: Neutral

Project : 2401Y27848E-RF

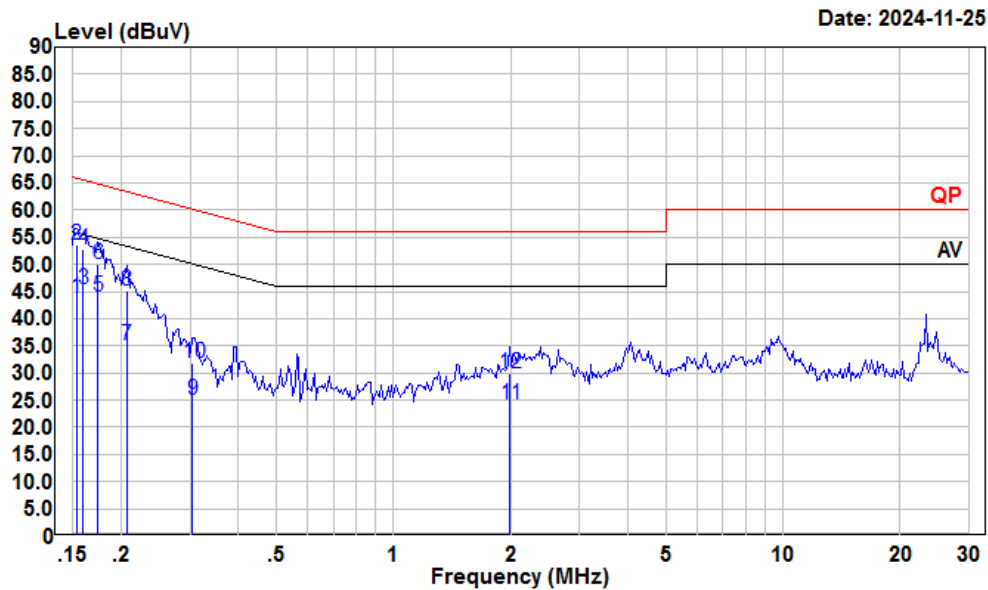
tester : Macy.shi

Note : Transmitting

Condition: RBW:9KHz VBW:Auto SWT:Auto

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.158	25.62	46.30	10.56	10.12	55.56	-9.26	Average
2	0.158	34.28	54.96	10.56	10.12	65.56	-10.60	QP
3	0.170	23.20	43.81	10.51	10.10	54.94	-11.13	Average
4	0.170	32.70	53.31	10.51	10.10	64.94	-11.63	QP
5	0.178	24.30	44.88	10.48	10.10	54.59	-9.71	Average
6	0.178	31.90	52.48	10.48	10.10	64.59	-12.11	QP
7	0.200	21.69	42.18	10.40	10.09	53.62	-11.44	Average
8	0.200	29.72	50.21	10.40	10.09	63.62	-13.41	QP
9	0.232	18.10	38.63	10.45	10.08	52.39	-13.76	Average
10	0.232	25.50	46.03	10.45	10.08	62.39	-16.36	QP
11	0.302	9.54	30.18	10.53	10.11	50.19	-20.01	Average
12	0.302	16.77	37.41	10.53	10.11	60.19	-22.78	QP

AC 120V 60 Hz, Line_Adaper3



Condition: Line

Project : 2401Y27848E-RF

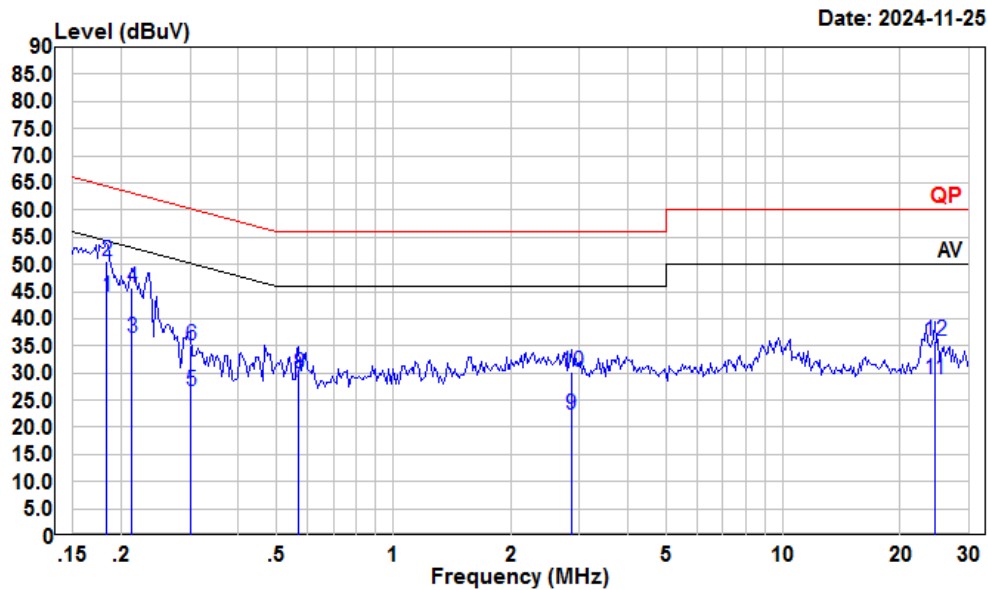
tester : Macy.shi

Note : Transmitting

Condition: RBW:9KHz VBW:Auto SWT:Auto

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.153	22.72	43.74	10.89	10.13	55.82	-12.08	Average
2	0.153	32.44	53.46	10.89	10.13	65.82	-12.36	QP
3	0.160	24.29	45.29	10.88	10.12	55.47	-10.18	Average
4	0.160	31.69	52.69	10.88	10.12	65.47	-12.78	QP
5	0.174	23.14	44.09	10.85	10.10	54.77	-10.68	Average
6	0.174	29.13	50.08	10.85	10.10	64.77	-14.69	QP
7	0.206	14.15	35.03	10.79	10.09	53.36	-18.33	Average
8	0.206	24.17	45.05	10.79	10.09	63.36	-18.31	QP
9	0.305	4.21	24.98	10.66	10.11	50.10	-25.12	Average
10	0.305	10.98	31.75	10.66	10.11	60.10	-28.35	QP
11	1.991	3.31	24.10	10.60	10.19	46.00	-21.90	Average
12	1.991	9.22	30.01	10.60	10.19	56.00	-25.99	QP

AC 120V 60 Hz, Neutral_Adaper3



Condition: Neutral

Project : 2401Y27848E-RF

tester : Macy.shi

Note : Transmitting

Condition: RBW:9KHz VBW:Auto SWT:Auto

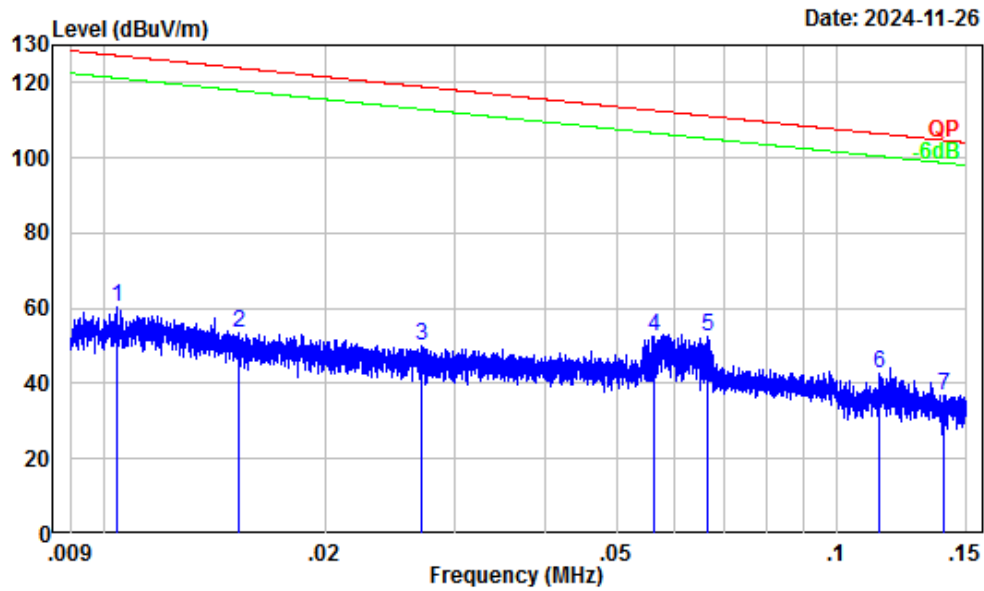
	Read Freq	Level dBuV	Level dBuV	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB	Remark
	MHz							
1	0.183	23.39	43.95	10.46	10.10	54.33	-10.38	Average
2	0.183	30.01	50.57	10.46	10.10	64.33	-13.76	QP
3	0.213	16.03	36.54	10.42	10.09	53.10	-16.56	Average
4	0.213	25.25	45.76	10.42	10.09	63.10	-17.34	QP
5	0.302	6.08	26.72	10.53	10.11	50.19	-23.47	Average
6	0.302	14.32	34.96	10.53	10.11	60.19	-25.23	QP
7	0.570	7.59	28.42	10.70	10.13	46.00	-17.58	Average
8	0.570	9.14	29.97	10.70	10.13	56.00	-26.03	QP
9	2.854	1.71	22.29	10.40	10.18	46.00	-23.71	Average
10	2.854	9.54	30.12	10.40	10.18	56.00	-25.88	QP
11	24.529	7.97	28.76	10.60	10.19	50.00	-21.24	Average
12	24.529	15.16	35.95	10.60	10.19	60.00	-24.05	QP

Spurious Emissions**Environmental Conditions**

Temperature (°C)	24&24.5	Relative Humidity (%)	54~58
ATM Pressure (kPa):	101&101.2	Test engineer:	Carl Zhu & Dylan Yang
Test date:	Below 1GHz: 2024/11/26 Above 1GHz: 2025/01/14~2025/01/15		
EUT operation mode:	Below 1GHz: Transmitting (Maximum output power mode, 802.11n20 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. The spurious emission from 9 kHz-30MHz of IC RSS-GEN standard, the unit of final result on the test plots are dBμV/m, so the limit should be added by 51,5 dB from dBμA/m to dBμV/m. 4. After pre-scan in the X, Y and Z axes of orientation, the worst case z-axis of orientation were recorded.		

Below 1GHz:

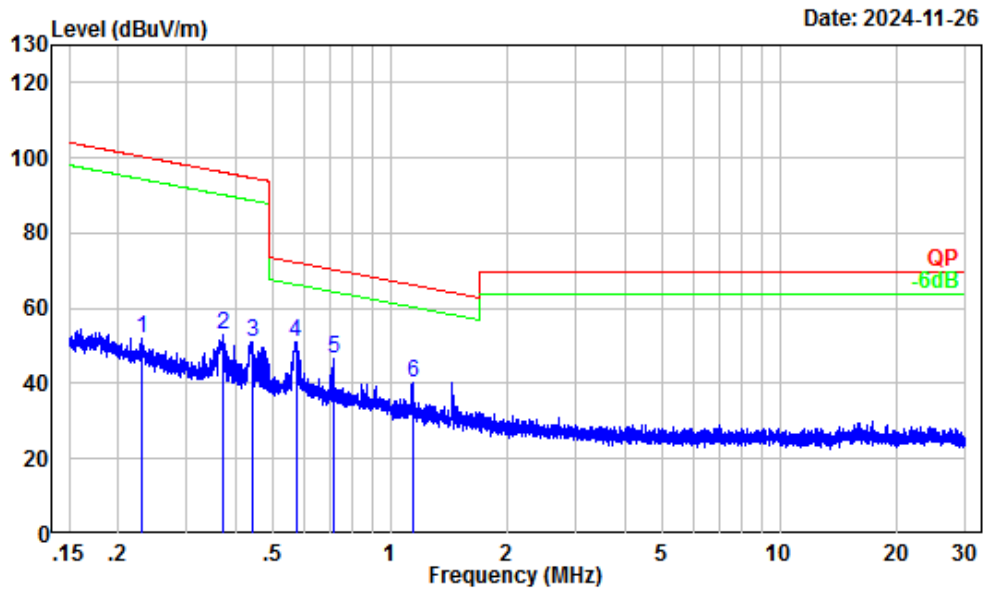
9kHz-150kHz_Adapter1



Site : Chamber A
 Condition : 3m
 Project Number : 2401Y27848E-RF
 Test Mode : Transmitting
 Detector Peak RBW: 0.3KHz VBW:1KHz
 Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.22	28.23	60.45	127.26	-66.81	Peak
2	0.02	31.30	22.17	53.47	123.92	-70.45	Peak
3	0.03	29.04	20.86	49.90	118.93	-69.03	Peak
4	0.06	25.78	26.85	52.63	112.62	-59.99	Peak
5	0.07	24.73	27.88	52.61	111.12	-58.51	Peak
6	0.11	21.17	21.49	42.66	106.46	-63.80	Peak
7	0.14	19.67	17.12	36.79	104.72	-67.93	Peak

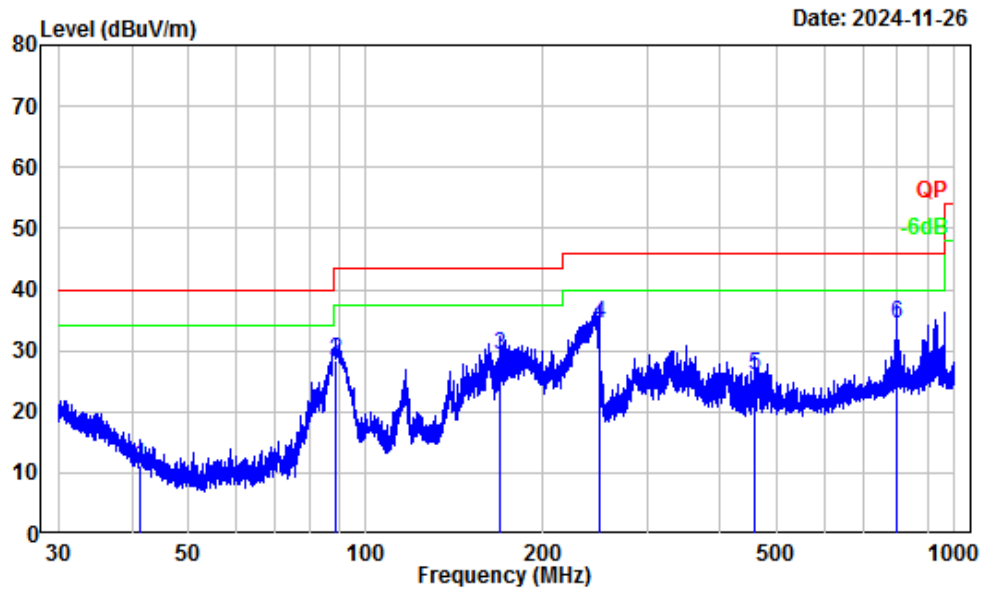
150kHz-30MHz_Adapter1



Site : Chamber A
Condition : 3m
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector Peak RBW: 10KHz VBW:30KHz
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.23	14.31	37.74	52.05	100.35	-48.30	Peak
2	0.37	8.85	43.99	52.84	96.21	-43.37	Peak
3	0.44	7.52	43.43	50.95	94.71	-43.76	Peak
4	0.57	5.50	45.44	50.94	72.42	-21.48	Peak
5	0.72	3.71	42.95	46.66	70.41	-23.75	Peak
6	1.15	0.79	39.51	40.30	66.27	-25.97	Peak

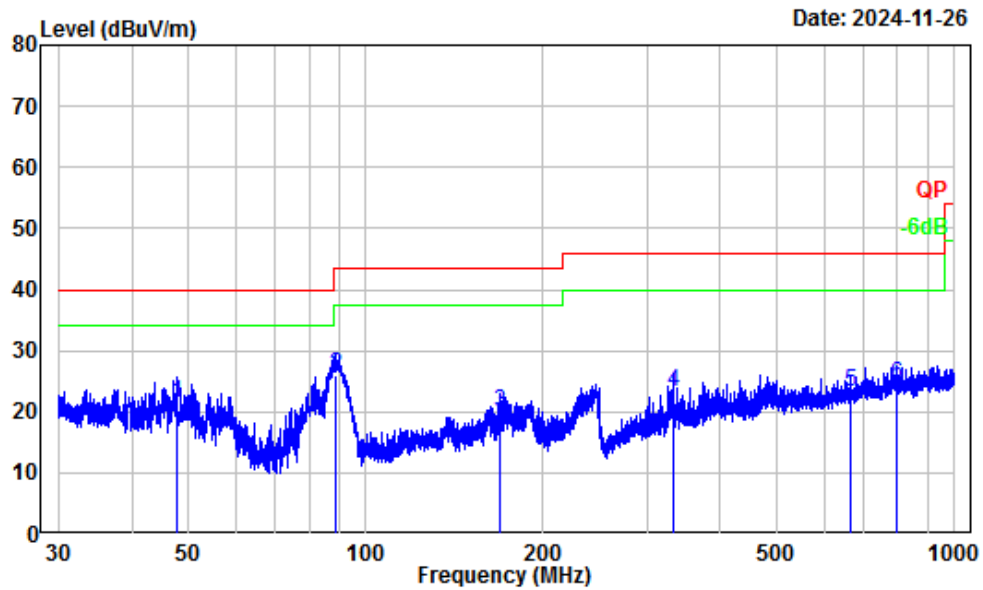
30MHz-1GHz_Horizontal_Adapter1



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Carl Zhu

	Freq		Read	Limit	Over	Remark
	Factor		Level	Level	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	41.19	-13.22	24.46	11.24	40.00	-28.76 QP
2	88.85	-18.07	46.39	28.32	43.50	-15.18 QP
3	168.78	-13.08	42.28	29.20	43.50	-14.30 QP
4	249.97	-13.09	47.56	34.47	46.00	-11.53 QP
5	456.31	-7.22	33.28	26.06	46.00	-19.94 QP
6	800.03	-2.14	36.59	34.45	46.00	-11.55 QP

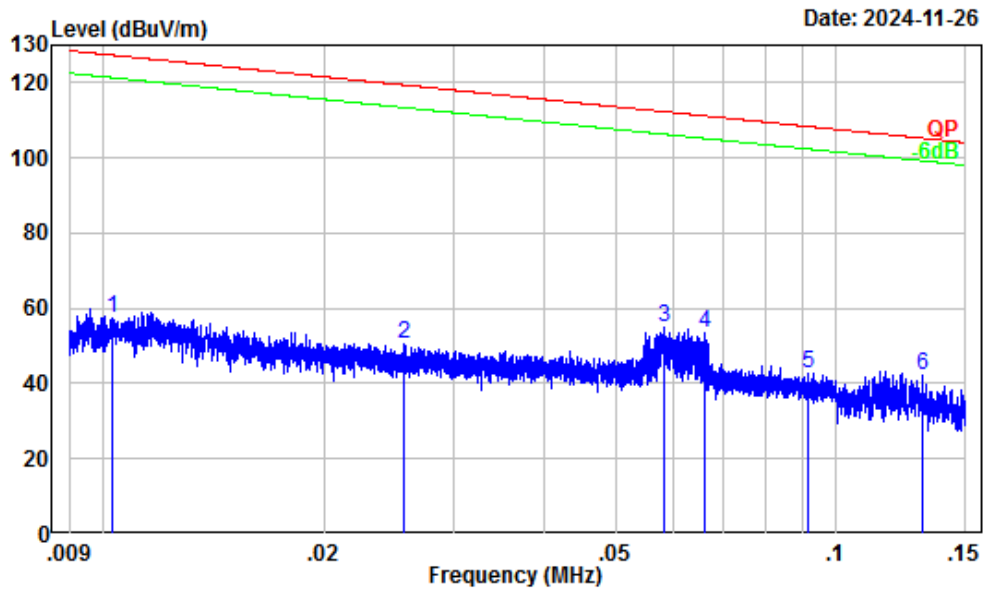
30MHz-1GHz_Vertical_Adapter1



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Carl Zhu

	Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	47.81	-17.26	38.76	21.50	40.00	-18.50	QP
2	88.89	-18.07	43.98	25.91	43.50	-17.59	QP
3	168.78	-13.08	32.85	19.77	43.50	-23.73	QP
4	331.94	-10.61	33.76	23.15	46.00	-22.85	QP
5	664.05	-3.89	27.00	23.11	46.00	-22.89	QP
6	798.98	-2.16	26.68	24.52	46.00	-21.48	QP

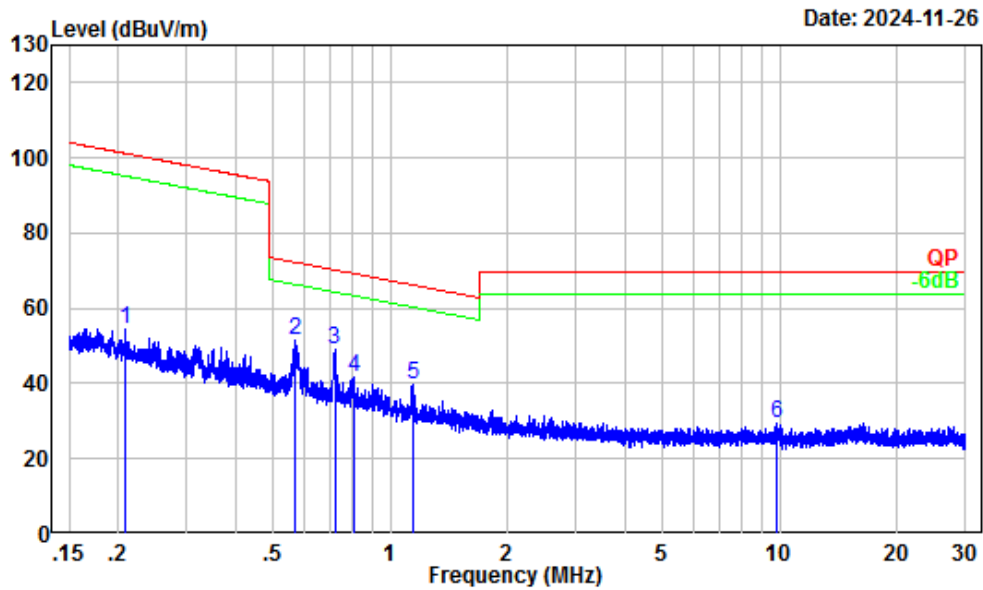
9kHz-150kHz_Adapter2



Site : Chamber A
Condition : 3m
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector Peak RBW: 0.3KHz VBW:1KHz
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.24	25.07	57.31	127.35	-70.04	Peak
2	0.03	29.31	21.15	50.46	119.40	-68.94	Peak
3	0.06	25.56	29.18	54.74	112.28	-57.54	Peak
4	0.07	24.79	28.81	53.60	111.20	-57.60	Peak
5	0.09	22.58	20.18	42.76	108.35	-65.59	Peak
6	0.13	20.17	22.15	42.32	105.26	-62.94	Peak

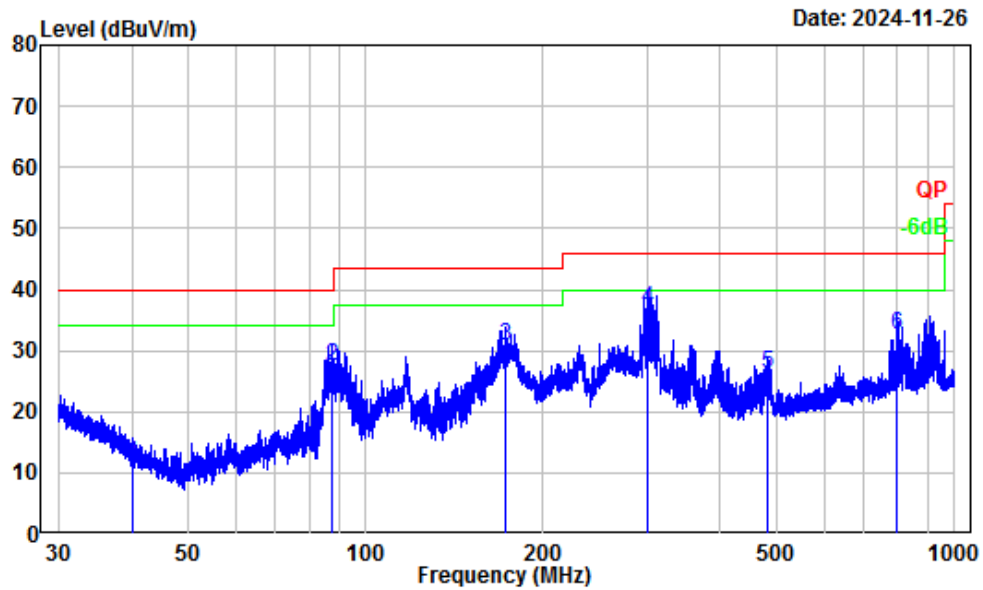
150kHz-30MHz_Adapter2



Site : Chamber A
Condition : 3m
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector Peak RBW: 10KHz VBW:30KHz
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.21	15.57	39.11	54.68	101.20	-46.52	Peak
2	0.57	5.56	45.82	51.38	72.49	-21.11	Peak
3	0.72	3.68	45.34	49.02	70.38	-21.36	Peak
4	0.80	2.67	39.17	41.84	69.40	-27.56	Peak
5	1.15	0.79	38.98	39.77	66.27	-26.50	Peak
6	9.78	-2.82	32.33	29.51	69.54	-40.03	Peak

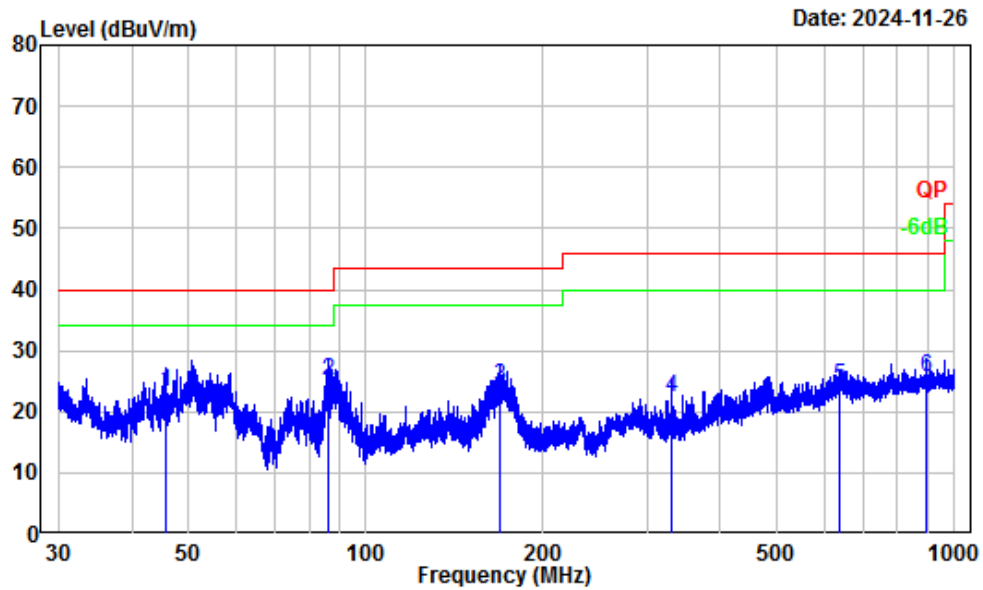
30MHz-1GHz_Horizontal_Adapter2



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Carl Zhu

	Freq		Read		Limit	Over	Remark
	MHz	Factor	Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.17	-12.49	24.07	11.58	40.00	-28.42	QP
2	87.65	-18.08	45.45	27.37	40.00	-12.63	QP
3	172.83	-13.27	44.02	30.75	43.50	-12.75	QP
4	301.29	-11.17	48.04	36.87	46.00	-9.13	QP
5	481.79	-6.27	32.48	26.21	46.00	-19.79	QP
6	799.33	-2.15	34.88	32.73	46.00	-13.27	QP

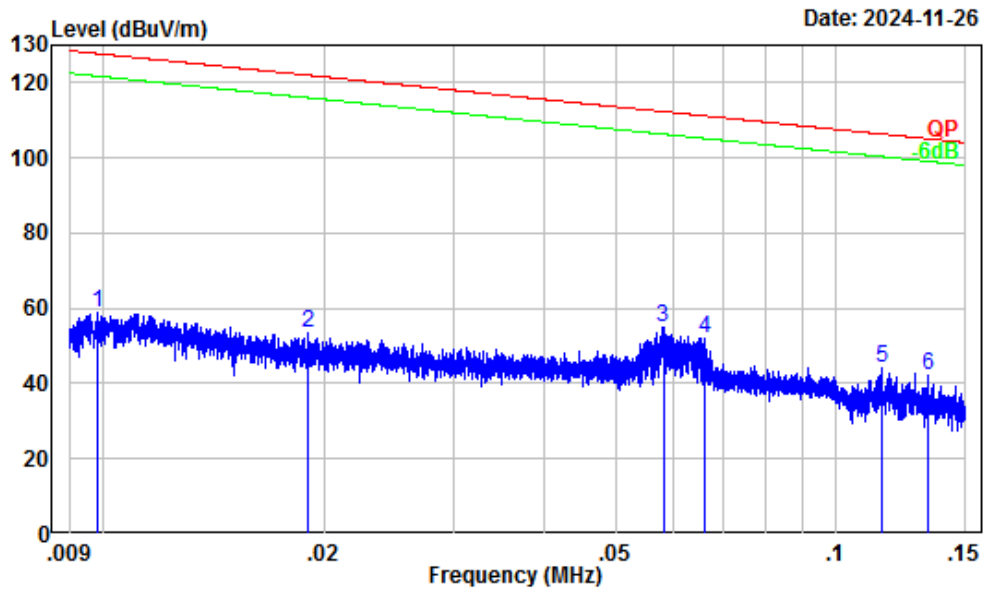
30MHz-1GHz_Vertical_Adapter2



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Carl Zhu

	Freq		Read		Limit	Over	Remark
	Factor		Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.71	-16.29	39.39	23.10	40.00	-16.90	QP
2	86.09	-18.08	43.06	24.98	40.00	-15.02	QP
3	168.78	-13.08	37.28	24.20	43.50	-19.30	QP
4	331.50	-10.62	32.90	22.28	46.00	-23.72	QP
5	640.05	-4.24	28.27	24.03	46.00	-21.97	QP
6	895.43	-1.31	27.03	25.72	46.00	-20.28	QP

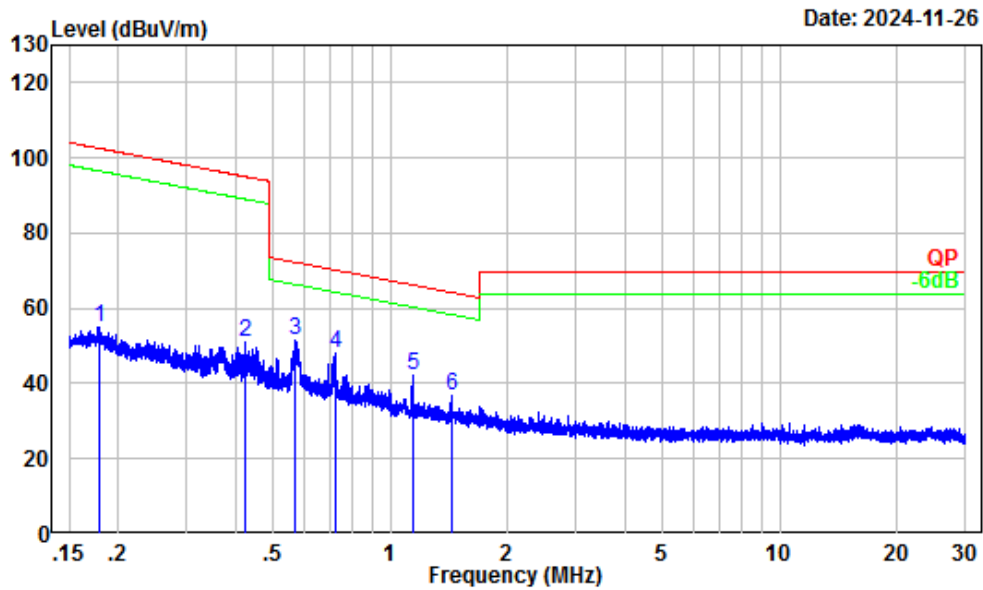
9kHz-150kHz_Adapter3



Site : Chamber A
Condition : 3m
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector Peak RBW: 0.3KHz VBW:1KHz
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.34	26.59	58.93	127.77	-68.84	Peak
2	0.02	30.58	22.85	53.43	122.00	-68.57	Peak
3	0.06	25.59	29.22	54.81	112.32	-57.51	Peak
4	0.07	24.79	27.08	51.87	111.21	-59.34	Peak
5	0.12	21.09	23.03	44.12	106.36	-62.24	Peak
6	0.13	20.03	21.93	41.96	105.10	-63.14	Peak

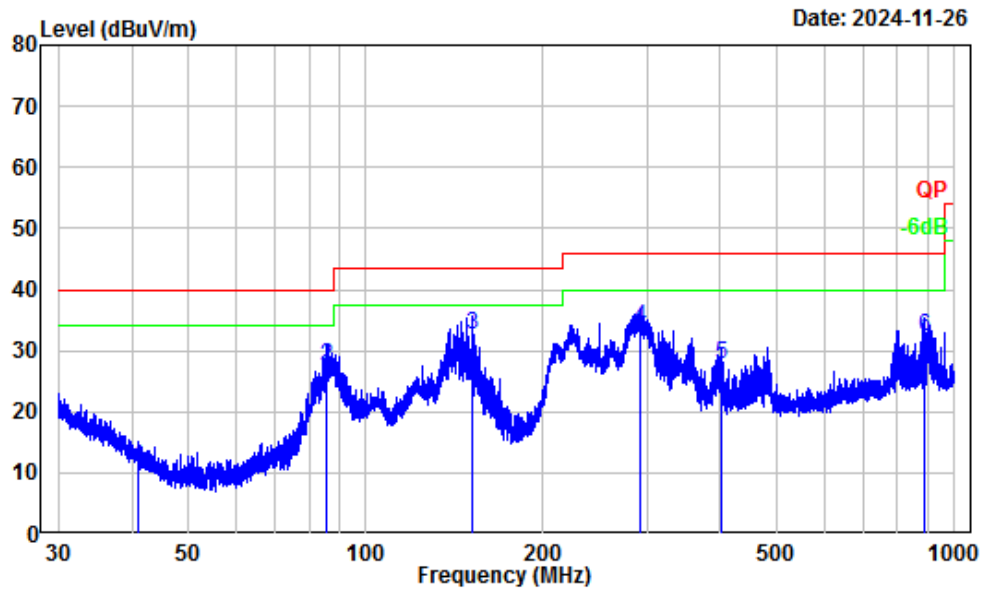
150kHz-30MHz_Adapter3



Site : Chamber A
Condition : 3m
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector Peak RBW: 10KHz VBW:30KHz
Tester : Carl Zhu

	Freq		Read		Limit	Over	Remark
	MHz	Factor	Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.18	17.35	37.50	54.85	102.56	-47.71	Peak
2	0.42	7.88	43.04	50.92	95.09	-44.17	Peak
3	0.57	5.54	45.78	51.32	72.46	-21.14	Peak
4	0.72	3.67	44.37	48.04	70.37	-22.33	Peak
5	1.14	0.80	41.31	42.11	66.28	-24.17	Peak
6	1.43	-0.01	37.01	37.00	64.28	-27.28	Peak

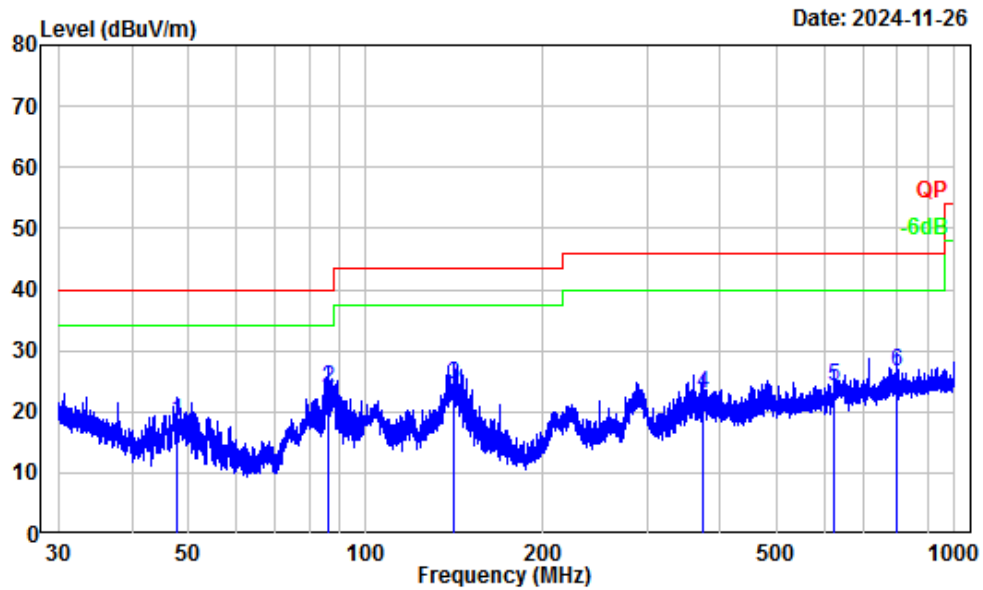
30MHz-1GHz_Horizontal_Adapter3



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Carl Zhu

	Freq		Factor	Read	Level	Limit	Over	Remark
	MHz			Level	Level	Line	Limit	
1	41.01	-13.08	24.07	10.99	40.00	-29.01	QP	
2	85.49	-18.08	45.60	27.52	40.00	-12.48	QP	
3	151.53	-12.50	44.96	32.46	43.50	-11.04	QP	
4	292.44	-11.21	45.00	33.79	46.00	-12.21	QP	
5	402.54	-8.33	35.99	27.66	46.00	-18.34	QP	
6	890.73	-1.40	33.80	32.40	46.00	-13.60	QP	

30MHz-1GHz_Vertical_Adapter3



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401Y27848E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Carl Zhu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	47.81	-17.26	35.57	18.31	40.00	-21.69	QP
2	86.01	-18.08	41.98	23.90	40.00	-16.10	QP
3	141.27	-11.92	36.42	24.50	43.50	-19.00	QP
4	373.47	-9.35	32.22	22.87	46.00	-23.13	QP
5	625.08	-4.65	28.74	24.09	46.00	-21.91	QP
6	799.33	-2.15	28.66	26.51	46.00	-19.49	QP

Above 1GHz:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11b (ANT0)							
Low Channel							
2390	61.94	PK	H	-2.93	59.01	74	-14.99
2390	48.95	AV	H	-2.93	46.02	54	-7.98
2390	66.33	PK	V	-2.93	63.40	74	-10.60
2390	55.09	AV	V	-2.93	52.16	54	-1.84
4824	51.4	PK	H	1.69	53.09	74	-20.91
4824	47.25	AV	H	1.69	48.94	54	-5.06
4824	52.7	PK	V	1.69	54.39	74	-19.61
4824	48.69	AV	V	1.69	50.38	54	-3.62
7236	46.46	PK	H	9.51	55.97	74	-18.03
7236	41.33	AV	H	9.51	50.84	54	-3.16
7236	47.65	PK	V	9.51	57.16	74	-16.84
7236	43.10	AV	V	9.51	52.61	54	-1.39
Middle Channel							
4874	50.5	PK	H	1.69	52.19	74	-21.81
4874	46.01	AV	H	1.69	47.7	54	-6.3
4874	51.48	PK	V	1.69	53.17	74	-20.83
4874	47.86	AV	V	1.69	49.55	54	-4.45
7311	47.13	PK	H	9.71	56.84	74	-17.16
7311	42.01	AV	H	9.71	51.72	54	-2.28
7311	48.41	PK	V	9.71	58.12	74	-15.88
7311	43.13	AV	V	9.71	52.84	54	-1.16
High Channel							
2483.5	62.29	PK	H	-3.10	59.19	74	-14.81
2483.5	49.29	AV	H	-3.10	46.19	54	-7.81
2483.5	64.29	PK	V	-3.10	61.19	74	-12.81
2483.5	52.17	AV	V	-3.10	49.07	54	-4.93
4924	50.07	PK	H	1.79	51.86	74	-22.14
4924	45.73	AV	H	1.79	47.52	54	-6.48
4924	50.3	PK	V	1.79	52.09	74	-21.91
4924	46.39	AV	V	1.79	48.18	54	-5.82
7386	46.10	PK	H	9.71	55.81	74	-18.19
7386	41.71	AV	H	9.71	51.42	54	-2.58
7386	47.28	PK	V	9.71	56.99	74	-17.01
7386	42.48	AV	V	9.71	52.19	54	-1.81

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11b (ANT1)							
Low Channel							
2390	63.02	PK	H	-2.93	60.09	74	-13.91
2390	50.18	AV	H	-2.93	47.25	54	-6.75
2390	64.57	PK	V	-2.93	61.64	74	-12.36
2390	53.93	AV	V	-2.93	51.00	54	-3.00
4824	46.91	PK	H	1.69	48.6	74	-25.4
4824	43.58	AV	H	1.69	45.27	54	-8.73
4824	50.7	PK	V	1.69	52.39	74	-21.61
4824	46.73	AV	V	1.69	48.42	54	-5.58
7236	43.24	PK	H	9.51	52.75	74	-21.25
7236	37.55	AV	H	9.51	47.06	54	-6.94
7236	45.28	PK	V	9.51	54.79	74	-19.21
7236	41.76	AV	V	9.51	51.27	54	-2.73
Middle Channel							
4874	46.95	PK	H	1.69	48.64	74	-25.36
4874	42.99	AV	H	1.69	44.68	54	-9.32
4874	49.71	PK	V	1.69	51.4	74	-22.6
4874	44.75	AV	V	1.69	46.44	54	-7.56
7311	44.06	PK	H	9.71	53.77	74	-20.23
7311	39.83	AV	H	9.71	49.54	54	-4.46
7311	47.52	PK	V	9.71	57.23	74	-16.77
7311	43.29	AV	V	9.71	53.00	54	-1.00
High Channel							
2483.5	62.96	PK	H	-3.10	59.86	74	-14.14
2483.5	49.90	AV	H	-3.10	46.80	54	-7.20
2483.5	66.41	PK	V	-3.10	63.31	74	-10.69
2483.5	55.98	AV	V	-3.10	52.88	54	-1.12
4924	47.93	PK	H	1.79	49.72	74	-24.28
4924	44.34	AV	H	1.79	46.13	54	-7.87
4924	50.48	PK	V	1.79	52.27	74	-21.73
4924	47.63	AV	V	1.79	49.42	54	-4.58
7386	43.84	PK	H	9.71	53.55	74	-20.45
7386	39.41	AV	H	9.71	49.12	54	-4.88
7386	47.58	PK	V	9.71	57.29	74	-16.71
7386	43.04	AV	V	9.71	52.75	54	-1.25

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11g (ANT0)							
Low Channel							
2390	64.61	PK	H	-2.93	61.68	74	-12.32
2390	48.68	AV	H	-2.93	45.75	54	-8.25
2390	75.28	PK	V	-2.93	72.35	74	-1.65
2390	53.26	AV	V	-2.93	50.33	54	-3.67
4824	51.16	PK	H	1.69	52.85	74	-21.15
4824	39.54	AV	H	1.69	41.23	54	-12.77
4824	51.21	PK	V	1.69	52.9	74	-21.1
4824	39.34	AV	V	1.69	41.03	54	-12.97
7236	43.30	PK	H	9.51	52.81	74	-21.19
7236	31.19	AV	H	9.51	40.70	54	-13.30
7236	46.45	PK	V	9.51	55.96	74	-18.04
7236	34.45	AV	V	9.51	43.96	54	-10.04
Middle Channel							
4874	51.6	PK	H	1.69	53.29	74	-20.71
4874	39.49	AV	H	1.69	41.18	54	-12.82
4874	51.76	PK	V	1.69	53.45	74	-20.55
4874	39.49	AV	V	1.69	41.18	54	-12.82
7311	44.15	PK	H	9.71	53.86	74	-20.14
7311	32.65	AV	H	9.71	42.36	54	-11.64
7311	46.39	PK	V	9.71	56.10	74	-17.90
7311	34.50	AV	V	9.71	44.21	54	-9.79
High Channel							
2483.5	66.04	PK	H	-3.10	62.94	74	-11.06
2483.5	49.14	AV	H	-3.10	46.04	54	-7.96
2483.5	76.05	PK	V	-3.10	72.95	74	-1.05
2483.5	53.43	AV	V	-3.10	50.33	54	-3.67
4924	51.5	PK	H	1.79	53.29	74	-20.71
4924	39.37	AV	H	1.79	41.16	54	-12.84
4924	52.11	PK	V	1.79	53.9	74	-20.1
4924	39.65	AV	V	1.79	41.44	54	-12.56
7386	44.19	PK	H	9.71	53.90	74	-20.10
7386	32.51	AV	H	9.71	42.22	54	-11.78
7386	48.19	PK	V	9.71	57.90	74	-16.10
7386	36.30	AV	V	9.71	46.01	54	-7.99

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11g (ANT1)							
Low Channel							
2390	62.78	PK	H	-2.93	59.85	74	-14.15
2390	48.93	AV	H	-2.93	46.00	54	-8.00
2390	75.89	PK	V	-2.93	72.96	74	-1.04
2390	53.59	AV	V	-2.93	50.66	54	-3.34
4824	51.93	PK	H	1.69	53.62	74	-20.38
4824	39.91	AV	H	1.69	41.6	54	-12.4
4824	53.21	PK	V	1.69	54.9	74	-19.1
4824	41.41	AV	V	1.69	43.1	54	-10.9
7236	44.41	PK	H	9.51	53.92	74	-20.08
7236	32.21	AV	H	9.51	41.72	54	-12.28
7236	44.99	PK	V	9.51	54.50	74	-19.50
7236	33.18	AV	V	9.51	42.69	54	-11.31
Middle Channel							
4874	51.71	PK	H	1.69	53.4	74	-20.6
4874	39.8	AV	H	1.69	41.49	54	-12.51
4874	53.15	PK	V	1.69	54.84	74	-19.16
4874	40.99	AV	V	1.69	42.68	54	-11.32
7311	43.44	PK	H	9.71	53.15	74	-20.85
7311	30.97	AV	H	9.71	40.68	54	-13.32
7311	43.93	PK	V	9.71	53.64	74	-20.36
7311	31.44	AV	V	9.71	41.15	54	-12.85
High Channel							
2483.5	63.25	PK	H	-3.10	60.15	74	-13.85
2483.5	49.05	AV	H	-3.10	45.95	54	-8.05
2483.5	76.05	PK	V	-3.10	72.95	74	-1.05
2483.5	53.96	AV	V	-3.10	50.86	54	-3.14
4924	51.41	PK	H	1.79	53.2	74	-20.8
4924	39.29	AV	H	1.79	41.08	54	-12.92
4924	52.86	PK	V	1.79	54.65	74	-19.35
4924	40.54	AV	V	1.79	42.33	54	-11.67
7386	49.21	PK	H	9.71	58.92	74	-15.08
7386	35.66	AV	H	9.71	45.37	54	-8.63
7386	48.68	PK	V	9.71	58.39	74	-15.61
7386	34.80	AV	V	9.71	44.51	54	-9.49

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11n20							
Low Channel							
2390	63.08	PK	H	-2.93	60.15	74	-13.85
2390	50.16	AV	H	-2.93	47.23	54	-6.77
2390	72.32	PK	V	-2.93	69.39	74	-4.61
2390	52.65	AV	V	-2.93	49.72	54	-4.28
4824	51.91	PK	H	1.69	53.6	74	-20.4
4824	38.92	AV	H	1.69	40.61	54	-13.39
4824	53.14	PK	V	1.69	54.83	74	-19.17
4824	40.63	AV	V	1.69	42.32	54	-11.68
7236	45.42	PK	H	9.51	54.93	74	-19.07
7236	32.50	AV	H	9.51	42.01	54	-11.99
7236	46.51	PK	V	9.51	56.02	74	-17.98
7236	33.14	AV	V	9.51	42.65	54	-11.35
Middle Channel							
4874	51.76	PK	H	1.69	53.45	74	-20.55
4874	39.4	AV	H	1.69	41.09	54	-12.91
4874	53.69	PK	V	1.69	55.38	74	-18.62
4874	40.97	AV	V	1.69	42.66	54	-11.34
7311	43.01	PK	H	9.71	52.72	74	-21.28
7311	30.22	AV	H	9.71	39.93	54	-14.07
7311	44.89	PK	V	9.71	54.60	74	-19.40
7311	32.06	AV	V	9.71	41.77	54	-12.23
High Channel							
2483.5	63.97	PK	H	-3.10	60.87	74	-13.13
2483.5	49.21	AV	H	-3.10	46.11	54	-7.89
2483.5	75.23	PK	V	-3.10	72.13	74	-1.87
2483.5	53.19	AV	V	-3.10	50.09	54	-3.91
4924	46.72	PK	H	1.79	48.51	74	-25.49
4924	33.39	AV	H	1.79	35.18	54	-18.82
4924	59.07	PK	V	1.79	60.86	74	-13.14
4924	46.21	AV	V	1.79	48	54	-6
7386	43.56	PK	H	9.71	53.27	74	-20.73
7386	30.47	AV	H	9.71	40.18	54	-13.82
7386	44.98	PK	V	9.71	54.69	74	-19.31
7386	32.46	AV	V	9.71	42.17	54	-11.83

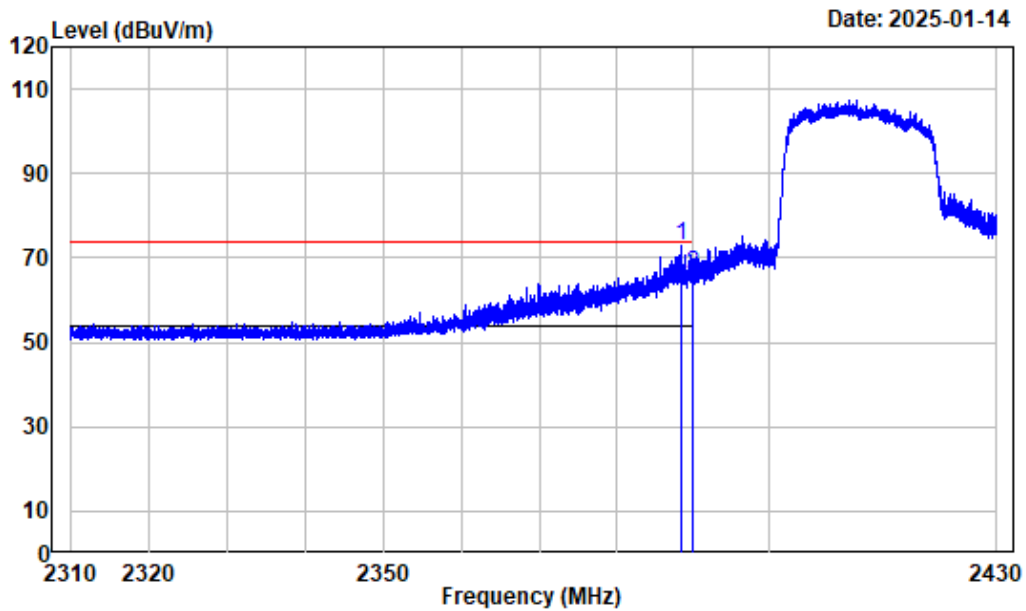
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11n40							
Low Channel							
2390	63.04	PK	H	-2.93	60.11	74	-13.89
2390	49.64	AV	H	-2.93	46.71	54	-7.29
2390	69.92	PK	V	-2.93	66.99	74	-7.01
2390	55.31	AV	V	-2.93	52.38	54	-1.62
4844	51.92	PK	H	1.69	53.61	74	-20.39
4844	39.83	AV	H	1.69	41.52	54	-12.48
4844	53.14	PK	V	1.69	54.83	74	-19.17
4844	40.74	AV	V	1.69	42.43	54	-11.57
7266	43.93	PK	H	9.61	53.54	74	-20.46
7266	32.25	AV	H	9.61	41.86	54	-12.14
7266	45.45	PK	V	9.61	55.06	74	-18.94
7266	33.39	AV	V	9.61	43.00	54	-11.00
Middle Channel							
4874	51.55	PK	H	1.69	53.24	74	-20.76
4874	39.81	AV	H	1.69	41.5	54	-12.5
4874	53.1	PK	V	1.69	54.79	74	-19.21
4874	40.85	AV	V	1.69	42.54	54	-11.46
7311	44.07	PK	H	9.71	53.78	74	-20.22
7311	32.13	AV	H	9.71	41.84	54	-12.16
7311	45.36	PK	V	9.71	55.07	74	-18.93
7311	33.30	AV	V	9.71	43.01	54	-10.99
High Channel							
2483.5	63.57	PK	H	-3.10	60.47	74	-13.53
2483.5	50.08	AV	H	-3.10	46.98	54	-7.02
2483.5	72.06	PK	V	-3.10	68.96	74	-5.04
2483.5	55.51	AV	V	-3.10	52.41	54	-1.59
4904	53.75	PK	H	1.79	55.54	74	-18.46
4904	41.29	AV	H	1.79	43.08	54	-10.92
4904	54.57	PK	V	1.79	56.36	74	-17.64
4904	42.48	AV	V	1.79	44.27	54	-9.73
7356	45.49	PK	H	9.71	55.20	74	-18.80
7356	33.38	AV	H	9.71	43.09	54	-10.91
7356	46.57	PK	V	9.71	56.28	74	-17.72
7356	34.46	AV	V	9.71	44.17	54	-9.83

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11ax20							
Low Channel							
2388.40	75.64	PK	H	-2.93	72.71	74	-1.29
2390	51.25	AV	H	-2.93	48.32	54	-5.68
2390	75.93	PK	V	-2.93	73.00	74	-1.00
2390	52.54	AV	V	-2.93	49.61	54	-4.39
4824	52.45	PK	H	1.69	54.14	74	-19.86
4824	39.55	AV	H	1.69	41.24	54	-12.76
4824	52.82	PK	V	1.69	54.51	74	-19.49
4824	39.62	AV	V	1.69	41.31	54	-12.69
7236	51.57	PK	H	9.51	61.08	74	-12.92
7236	39.08	AV	H	9.51	48.59	54	-5.41
7236	52.14	PK	V	9.51	61.65	74	-12.35
7236	40.19	AV	V	9.51	49.70	54	-4.30
Middle Channel							
4874	52.62	PK	H	1.69	54.31	74	-19.69
4874	39.44	AV	H	1.69	41.13	54	-12.87
4874	52.82	PK	V	1.69	54.51	74	-19.49
4874	39.84	AV	V	1.69	41.53	54	-12.47
7311	51.20	PK	H	9.71	60.91	74	-13.09
7311	39.08	AV	H	9.71	48.79	54	-5.21
7311	52.01	PK	V	9.71	61.72	74	-12.28
7311	40.00	AV	V	9.71	49.71	54	-4.29
High Channel							
2483.5	66.40	PK	H	-3.10	63.30	74	-10.70
2483.5	48.69	AV	H	-3.10	45.59	54	-8.41
2483.5	76.07	PK	V	-3.10	72.97	74	-1.03
2483.5	49.91	AV	V	-3.10	46.81	54	-7.19
4924	51.67	PK	H	1.79	53.46	74	-20.54
4924	39.69	AV	H	1.79	41.48	54	-12.52
4924	52.45	PK	V	1.79	54.24	74	-19.76
4924	40.11	AV	V	1.79	41.9	54	-12.1
7386	45.58	PK	H	9.71	55.29	74	-18.71
7386	33.24	AV	H	9.71	42.95	54	-11.05
7386	46.17	PK	V	9.71	55.88	74	-18.12
7386	34.42	AV	V	9.71	44.13	54	-9.87

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave					
802.11ax40							
Low Channel							
2390	68.86	PK	H	-2.93	65.93	74	-8.07
2390	48.85	AV	H	-2.93	45.92	54	-8.08
2390	75.89	PK	V	-2.93	72.96	74	-1.04
2390	53.59	AV	V	-2.93	50.66	54	-3.34
4844	52.48	PK	H	1.69	54.17	74	-19.83
4844	40.64	AV	H	1.69	42.33	54	-11.67
4844	52.97	PK	V	1.69	54.66	74	-19.34
4844	40.75	AV	V	1.69	42.44	54	-11.56
7266	47.18	PK	H	9.61	56.79	74	-17.21
7266	35.28	AV	H	9.61	44.89	54	-9.11
7266	48.07	PK	V	9.61	57.68	74	-16.32
7266	36.43	AV	V	9.61	46.04	54	-7.96
Middle Channel							
4874	51.63	PK	H	1.69	53.32	74	-20.68
4874	39.58	AV	H	1.69	41.27	54	-12.73
4874	52.8	PK	V	1.69	54.49	74	-19.51
4874	39.51	AV	V	1.69	41.2	54	-12.8
7311	47.11	PK	H	9.71	56.82	74	-17.18
7311	35.23	AV	H	9.71	44.94	54	-9.06
7311	48.40	PK	V	9.71	58.11	74	-15.89
7311	36.19	AV	V	9.71	45.90	54	-8.10
High Channel							
2483.5	61.99	PK	H	-3.10	58.89	74	-15.11
2483.5	48.72	AV	H	-3.10	45.62	54	-8.38
2483.5	75.21	PK	V	-3.10	72.11	74	-1.89
2483.5	51.03	AV	V	-3.10	47.93	54	-6.07
4904	51.64	PK	H	1.79	53.43	74	-20.57
4904	39.53	AV	H	1.79	41.32	54	-12.68
4904	52.75	PK	V	1.79	54.54	74	-19.46
4904	39.22	AV	V	1.79	41.01	54	-12.99
7356	47.09	PK	H	9.71	56.80	74	-17.20
7356	35.29	AV	H	9.71	45.00	54	-9.00
7356	48.82	PK	V	9.71	58.53	74	-15.47
7356	36.29	AV	V	9.71	46.00	54	-8.00
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.							

Listed with the worst band edge margin test plot:

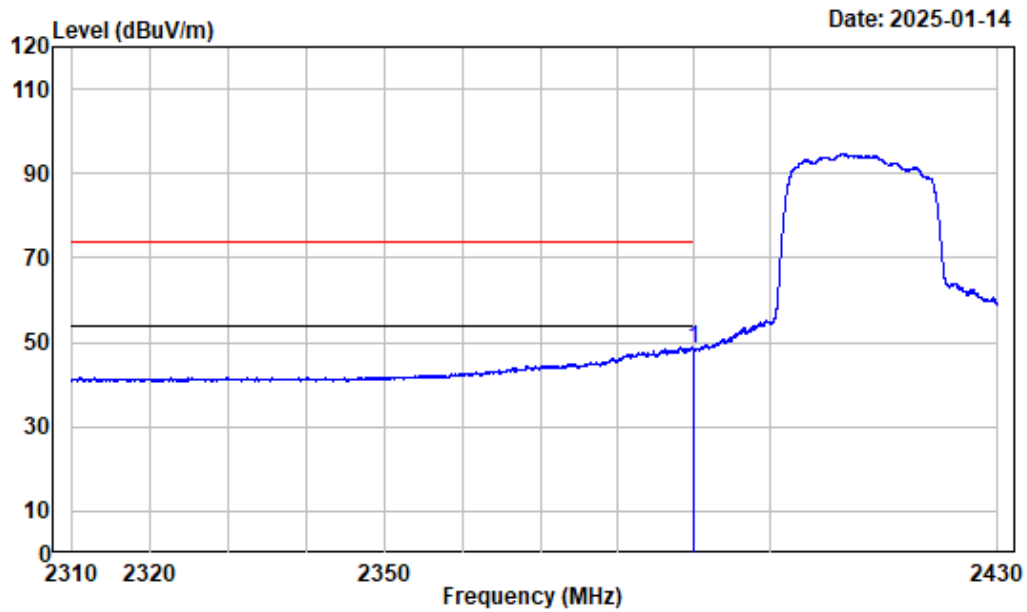
AX20-2412 Horizontal Peak



Condition : Horizontal
 Project No. : 2401Y27848E-RF
 Tester : Dylan Yang
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
 Note : 802.11AX20_2412

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2388.400	-2.93	75.64	72.71	74.00	-1.29	Peak
2	2390.000	-2.93	68.96	66.03	74.00	-7.97	Peak

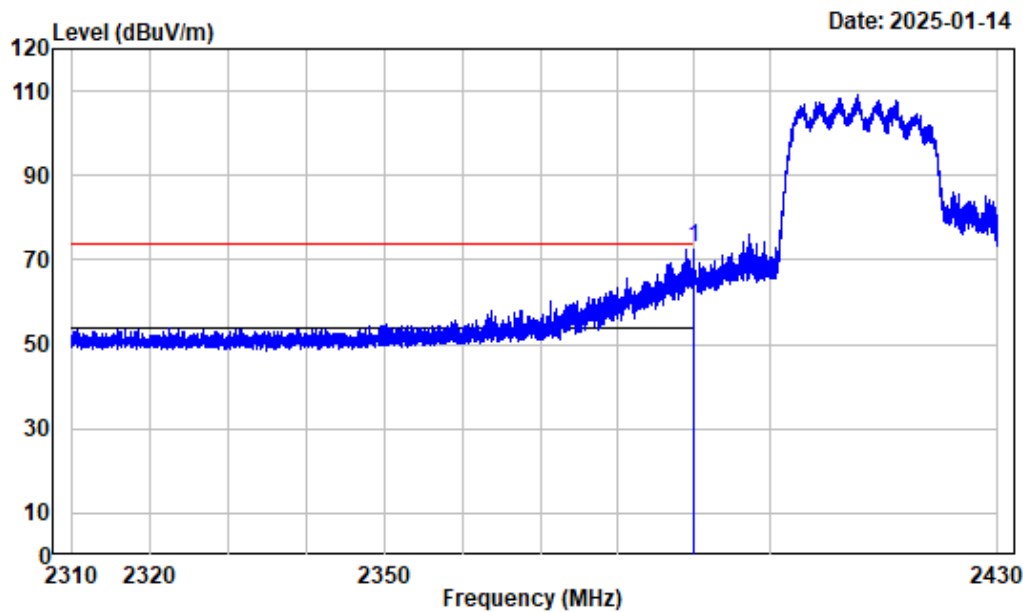
AX20-2412_Horizontal_Average



Condition : Horizontal
 Project No. : 2401Y27848E-RF
 Tester : Dylan Yang
 Spectrum setting: Average reading: RBW:1MHz VBW:5kHz Detector:Peak
 Note : 802.11AX20_2412

	Freq Factor		Read	Limit	Over	Remark
	MHz	dB/m	Level	Line	Limit	
			dBuV	dBuV/m	dBuV/m	dB
1	2390.000	-2.93	51.25	48.32	54.00	-5.68 Average

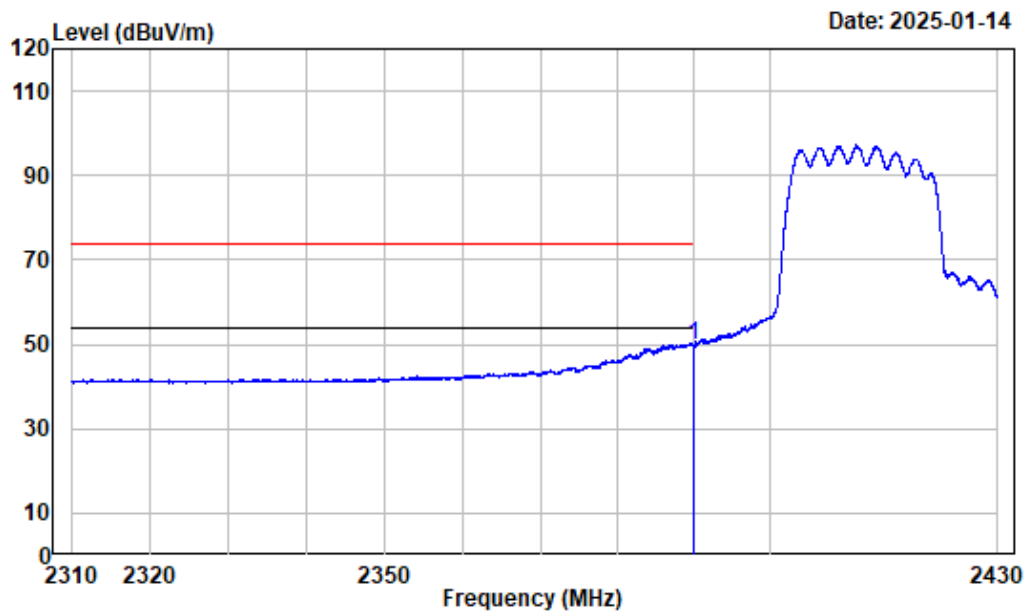
AX20-2412_Vertical_Peak



Condition : Vertical
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 802.11AX20_2412

Freq Factor		Read Level	Limit Level	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1 2390.000	-2.93	75.93	73.00	74.00	-1.00 Peak

AX20-2412_Vertical_Average

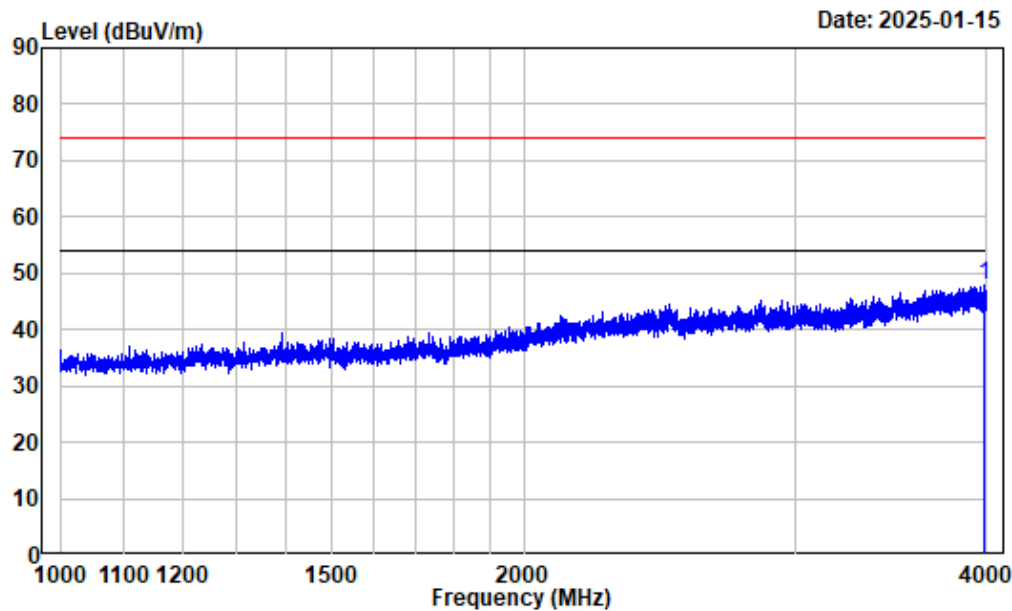


Condition : Vertical
 Project No. : 2401Y27848E-RF
 Tester : Dylan Yang
 Spectrum setting: Average reading: RBW:1MHz VBW:5kHz Detector:Peak
 Note : 802.11AX20_2412

	Freq Factor		Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	-2.93	52.54	49.61	54.00	-4.39	Average

Listed with the worst harmonic margin test plot

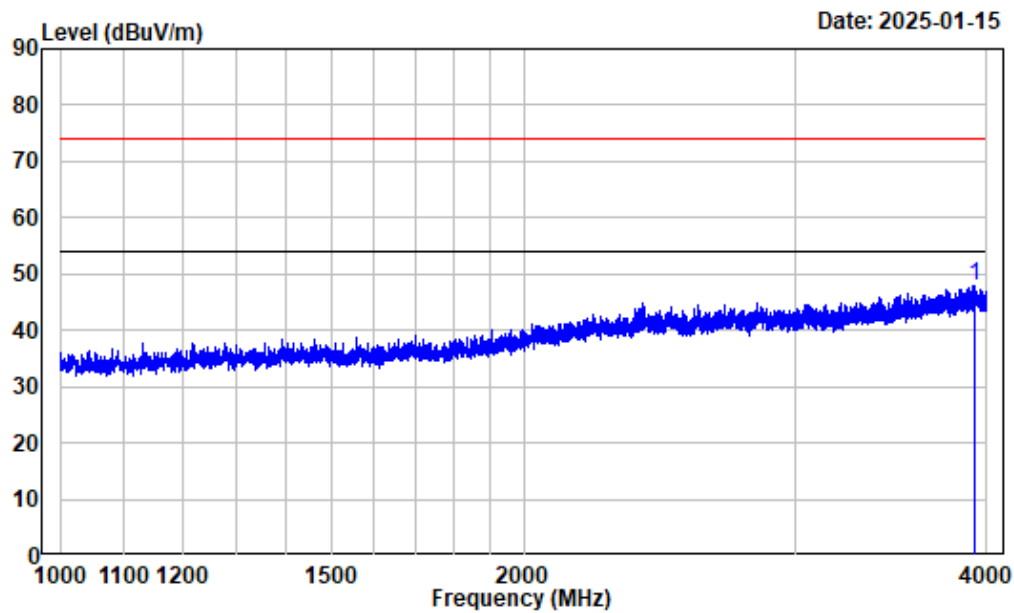
1-4GHz_Horizontal



Site : chamber B
Condition : Horizontal
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4G_ANT1_B_2437

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3980.498	-0.20	48.20	48.00	74.00	-26.00 Peak

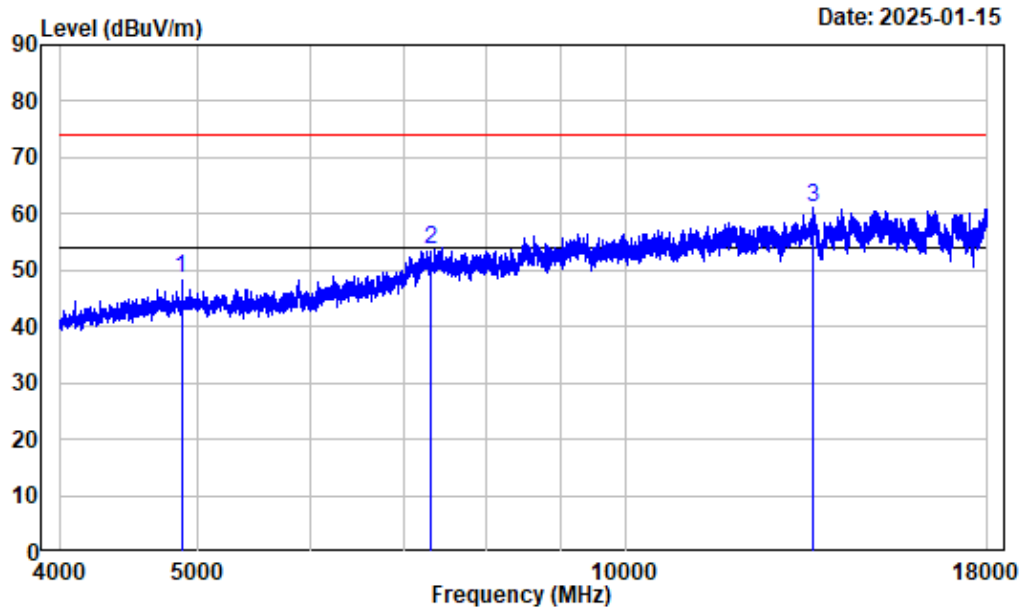
1-4GHz_Vertical



Site : chamber B
Condition : Vertical
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4G_ANT1_B_2437

Freq Factor		Read	Limit	Over	Remark
		Level	Level	Line	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1 3924.240	-0.35	48.15	47.80	74.00	-26.20 Peak

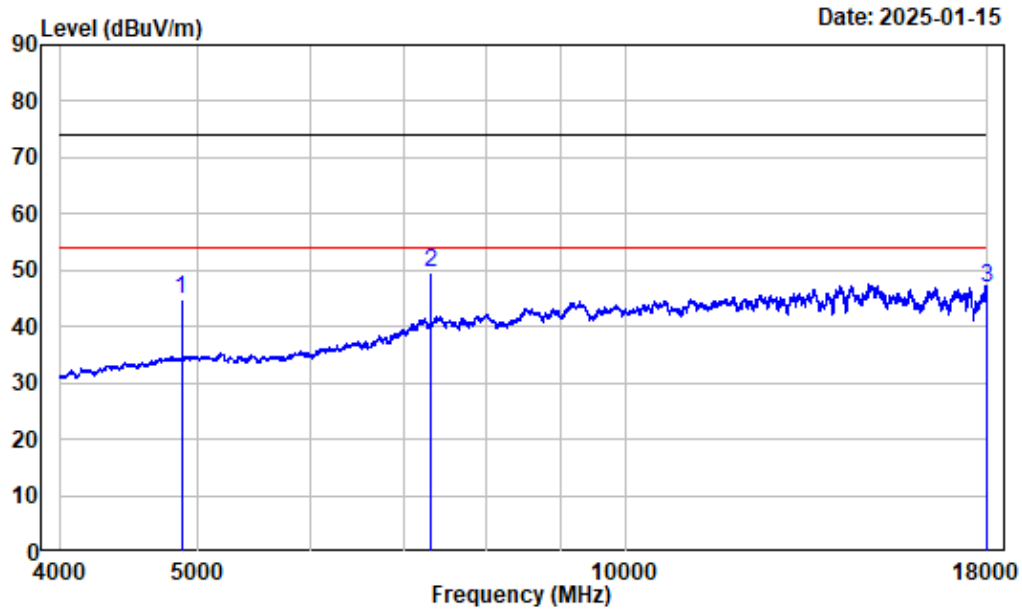
4-18GHz_Horizontal_Peak



Condition : Horizontal
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4G_ANT1_B_2437

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level			
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	1.69	46.95	48.64	74.00	-25.36	Peak
2	7311.000	9.71	44.06	53.77	74.00	-20.23	Peak
3	13570.200	15.10	45.91	61.01	74.00	-12.99	Peak

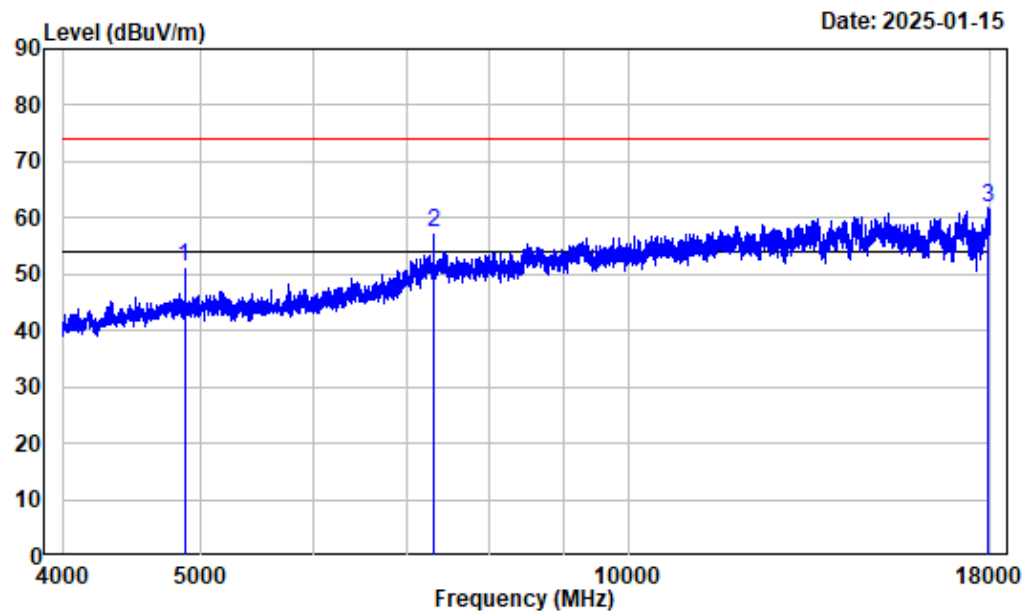
4-18GHz_Horizontal_Average



Condition : Horizontal
 Project No. : 2401Y27848E-RF
 Tester : Dylan Yang
 Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
 Note : 2.4G_ANT1_B_2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	1.69	42.99	44.68	54.00	-9.32	Average
2	7311.000	9.71	39.83	49.54	54.00	-4.46	Average
3	17996.500	24.60	22.16	46.76	54.00	-7.24	Average

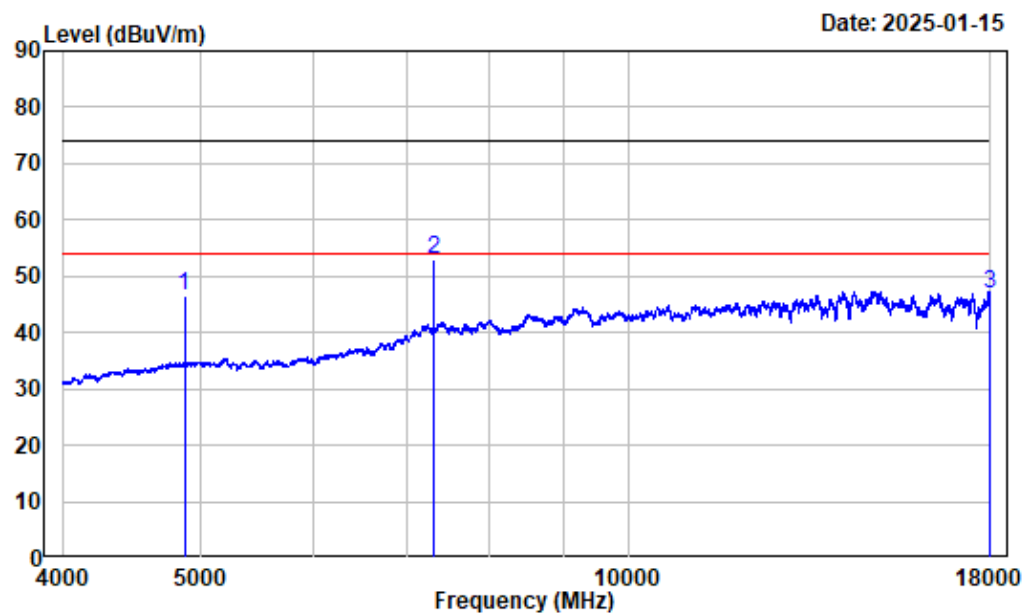
4-18GHz_Vertical_Peak



Condition : Vertical
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4G_ANT1_B_2437

	Freq		Read		Limit	Over	Remark
	MHz	Factor	Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	1.69	49.71	51.40	74.00	-22.60	Peak
2	7311.000	9.71	47.52	57.23	74.00	-16.77	Peak
3	17940.490	24.19	37.65	61.84	74.00	-12.16	Peak

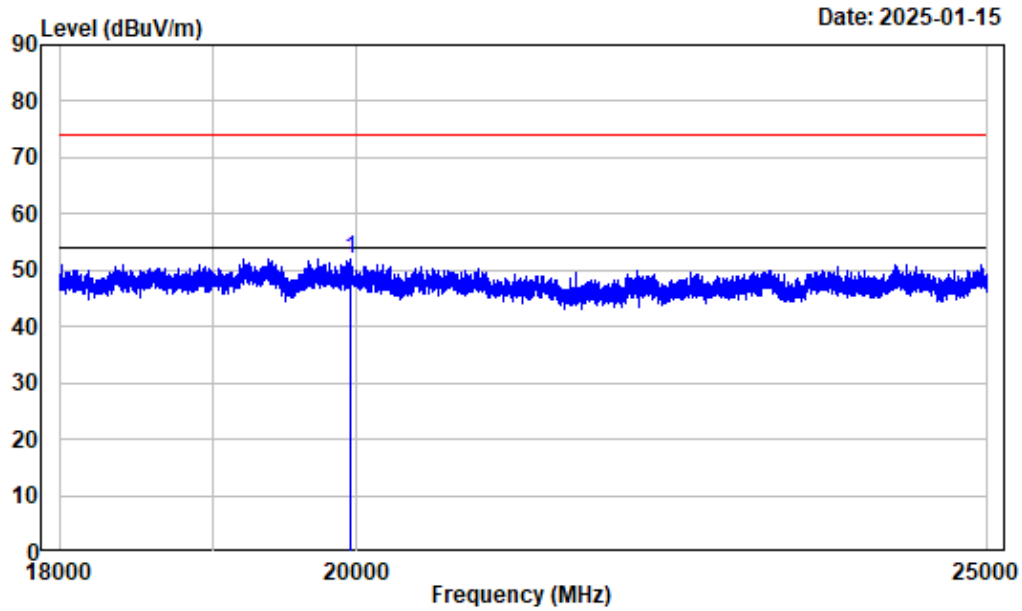
4-18GHz_Vertical_Average



Condition : Vertical
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Average reading: RBW:1MHz VBW:1kHz Detector:Peak
Note : 2.4G_ANT1_B_2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4874.000	1.69	44.75	46.44	54.00	-7.56	Average
2	7311.000	9.71	43.29	53.00	54.00	-1.00	Average
3	17996.500	24.60	22.22	46.82	54.00	-7.18	Average

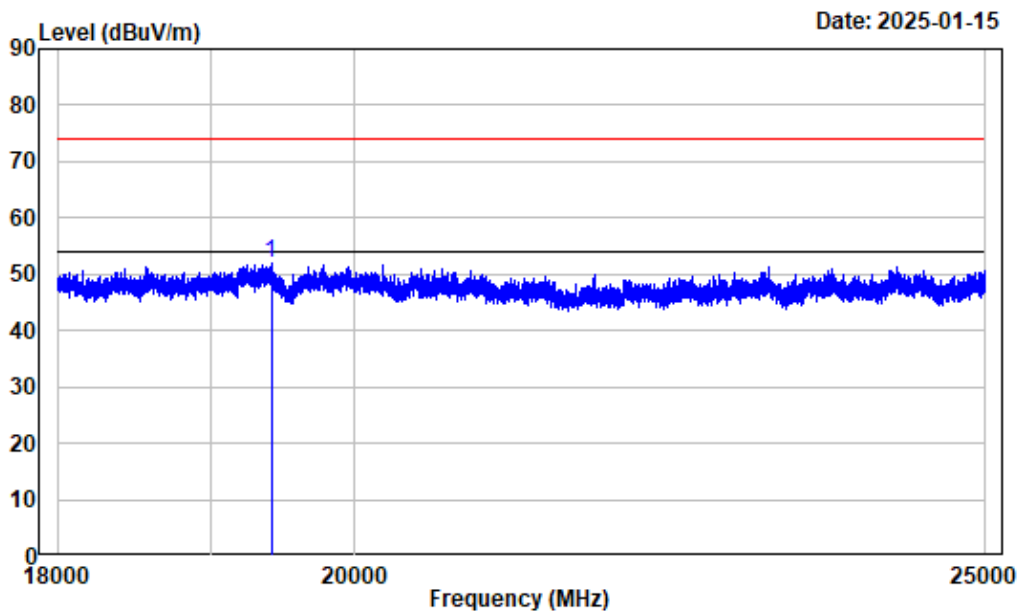
18-25GHz_Horizontal



Condition : Horizontal
 Project No. : 2401Y27848E-RF
 Tester : Dylan Yang
 Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
 Note : 2.4G_ANT1_B_2437

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	19948.870	15.43	36.65	52.08	74.00	-21.92	Peak

18-25GHz_Vertical



Condition : Vertical
Project No. : 2401Y27848E-RF
Tester : Dylan Yang
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak
Note : 2.4G_ANT1_B_2437

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 19414.180		15.10	36.78	51.88	74.00	-22.12	Peak

6dB Emission Bandwidth

Test Information:

Sample No.:	2TPH-12	Test Date:	2024/11/28~2024/12/03
Test Site:	RF	Test Mode:	Transmitting
Tester:	Allen Bai	Test Result:	Pass

Environmental Conditions:

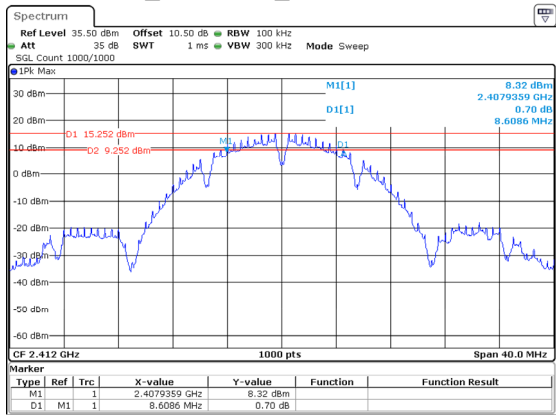
Temperature: (°C):	23-27	Relative Humidity: (%)	41-48	ATM Pressure: (kPa)	101
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Test Data:

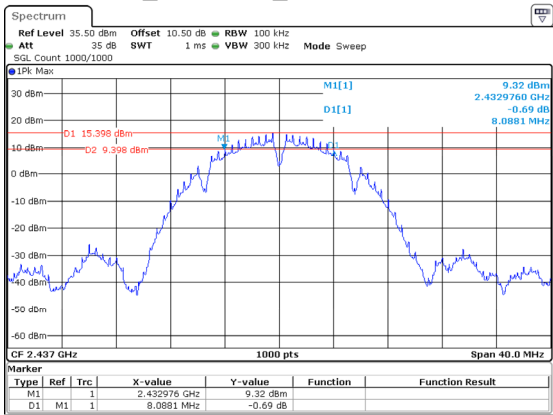
Mode	Antenna	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
802.11b	Chain 0	2412	8.609	≥ 0.5	Pass
		2437	8.088	≥ 0.5	Pass
		2462	8.128	≥ 0.5	Pass
	Chain 1	2412	8.128	≥ 0.5	Pass
		2437	8.609	≥ 0.5	Pass
		2462	8.609	≥ 0.5	Pass
802.11g	Chain 0	2412	16.016	≥ 0.5	Pass
		2437	16.336	≥ 0.5	Pass
		2462	15.736	≥ 0.5	Pass
	Chain 1	2412	16.136	≥ 0.5	Pass
		2437	16.336	≥ 0.5	Pass
		2462	16.136	≥ 0.5	Pass
802.11n20	Chain 0	2412	17.257	≥ 0.5	Pass
		2437	17.217	≥ 0.5	Pass
		2462	16.617	≥ 0.5	Pass
	Chain 1	2412	17.017	≥ 0.5	Pass
		2437	17.618	≥ 0.5	Pass
		2462	16.857	≥ 0.5	Pass
802.11n40	Chain 0	2422	35.235	≥ 0.5	Pass
		2437	35.636	≥ 0.5	Pass
		2452	35.235	≥ 0.5	Pass
	Chain 1	2422	35.235	≥ 0.5	Pass
		2437	35.235	≥ 0.5	Pass
		2452	35.235	≥ 0.5	Pass
802.11ax20_RU_Full	Chain 0	2412	18.338	≥ 0.5	Pass
		2437	17.898	≥ 0.5	Pass
		2462	17.698	≥ 0.5	Pass
	Chain 1	2412	18.058	≥ 0.5	Pass
		2437	18.018	≥ 0.5	Pass
		2462	18.258	≥ 0.5	Pass
802.11ax40_RU_Full	Chain 0	2422	36.196	≥ 0.5	Pass
		2437	36.997	≥ 0.5	Pass
		2452	36.196	≥ 0.5	Pass
	Chain 1	2422	35.956	≥ 0.5	Pass
		2437	35.716	≥ 0.5	Pass
		2452	35.235	≥ 0.5	Pass

2.4G

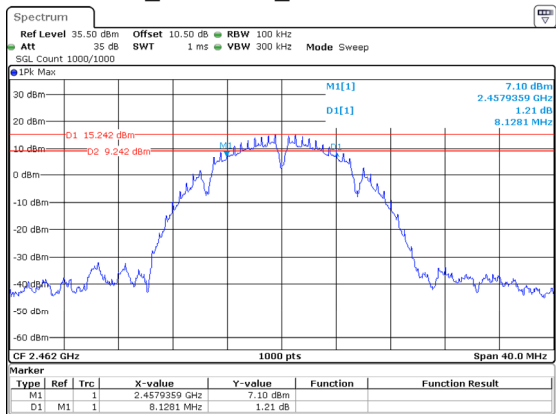
802.11b_2412MHz_Chain 0 8.609MHz



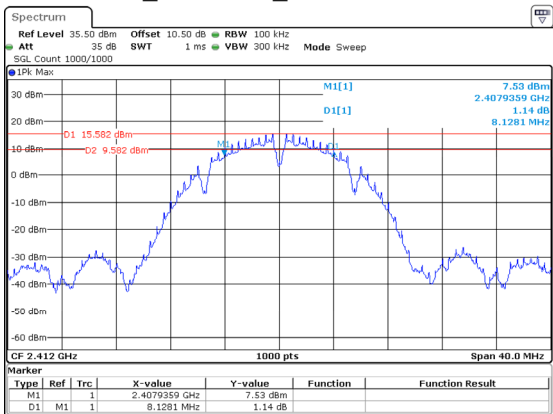
802.11b_2437MHz_Chain 0 8.088MHz



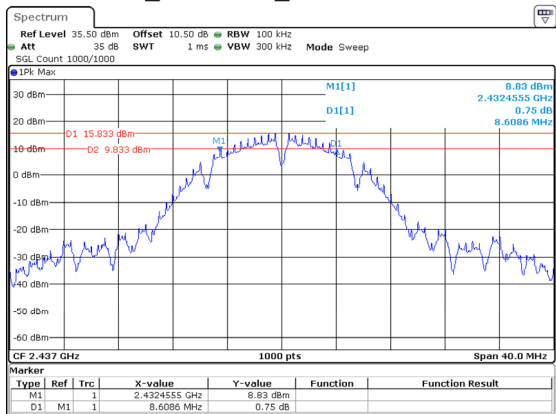
802.11b_2462MHz_Chain 0 8.128MHz



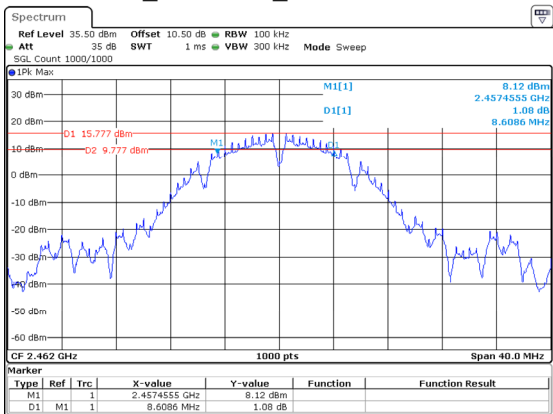
802.11b_2412MHz_Chain 1 8.128MHz



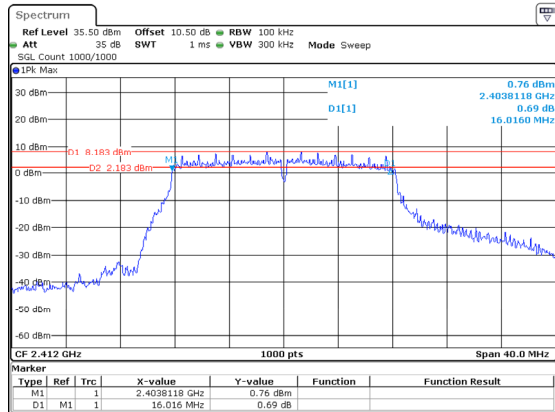
802.11b_2437MHz_Chain 1 8.609MHz



802.11b_2462MHz_Chain 1 8.609MHz



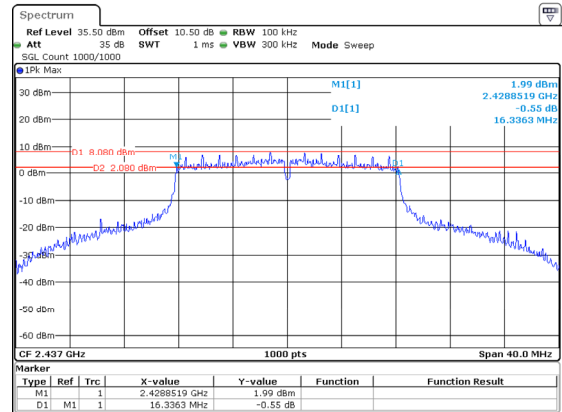
802.11g_2412MHz_Chain 0 16.016MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 02:49:54

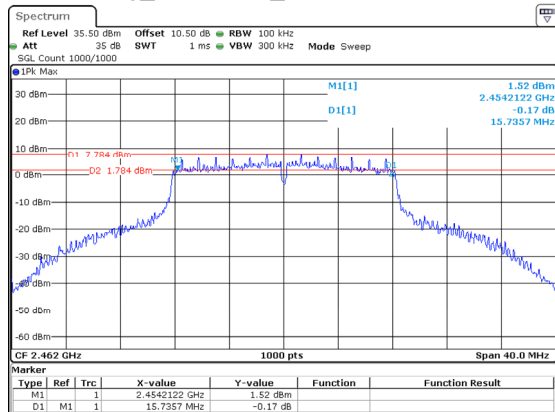
802.11g_2437MHz_Chain 0 16.336MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 02:56:45

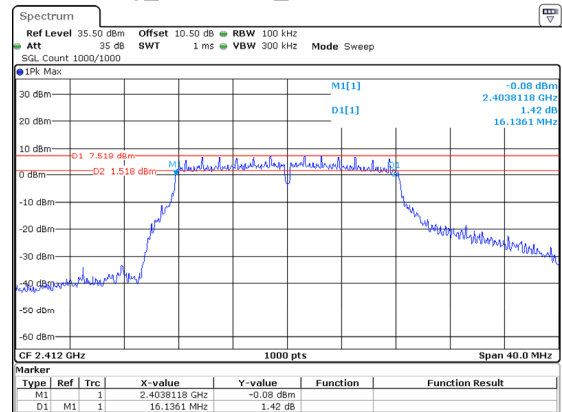
802.11g_2462MHz_Chain 0 15.736MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 02:59:23

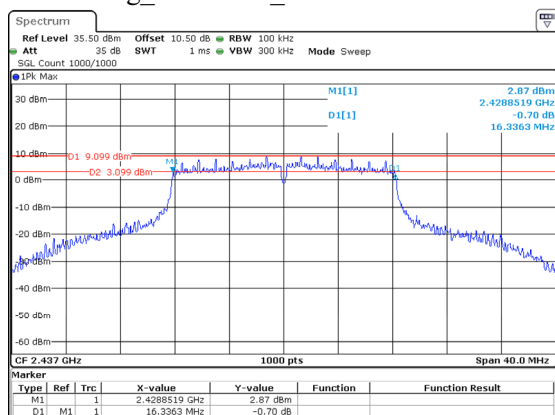
802.11g_2412MHz_Chain 1 16.136MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 02:17:33

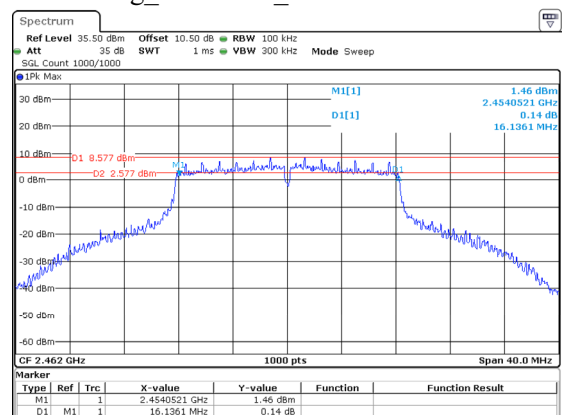
802.11g_2437MHz_Chain 1 16.336MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 01:36:35

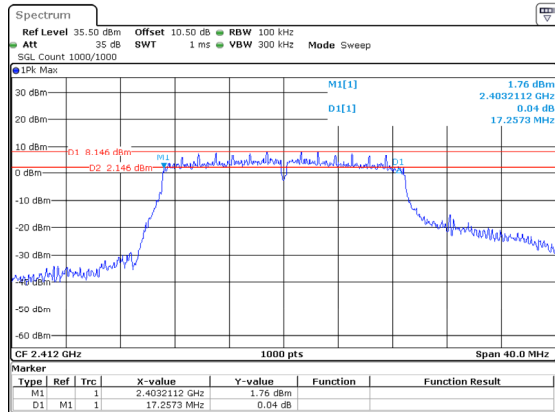
802.11g_2462MHz_Chain 1 16.136MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 02:20:28

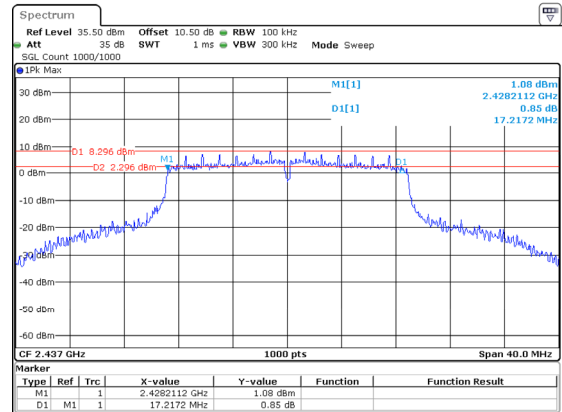
802.11n20_2412MHz_Chain 0 17.257MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 23:02:24

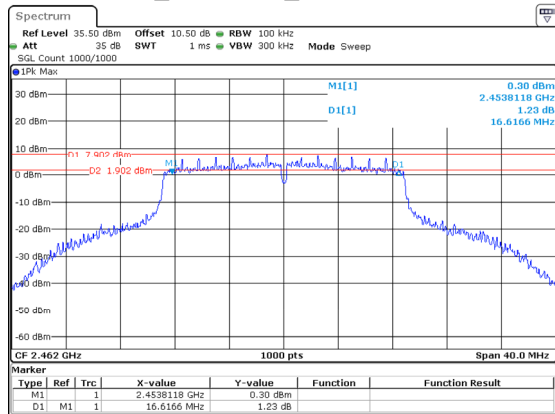
802.11n20_2437MHz_Chain 0 17.217MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 23:03:10

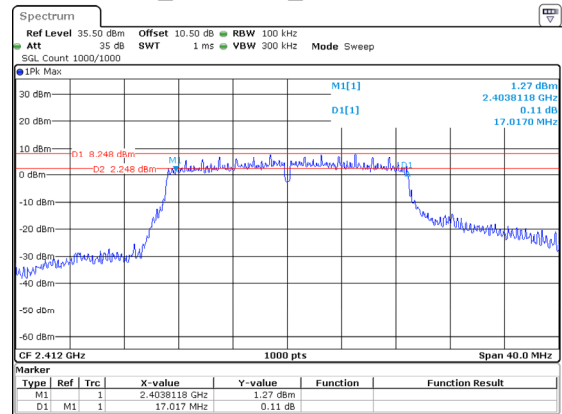
802.11n20_2462MHz_Chain 0 16.617MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 23:03:55

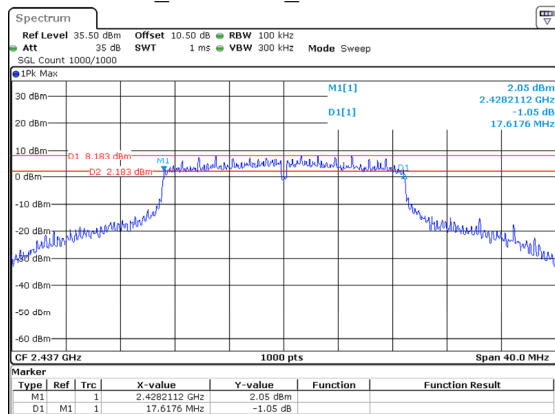
802.11n20_2412MHz_Chain 1 17.017MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 23:05:07

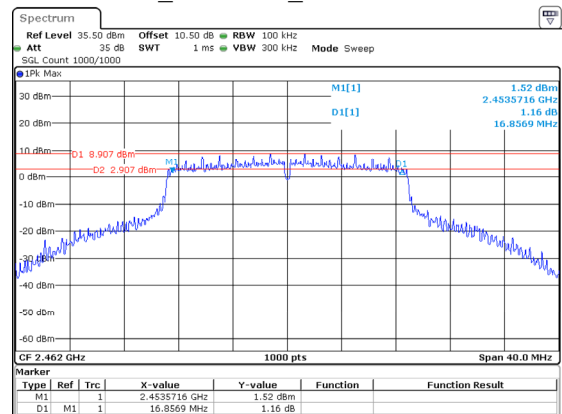
802.11n20_2437MHz_Chain 1 17.618MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

Date: 28.NOV.2024 23:05:58

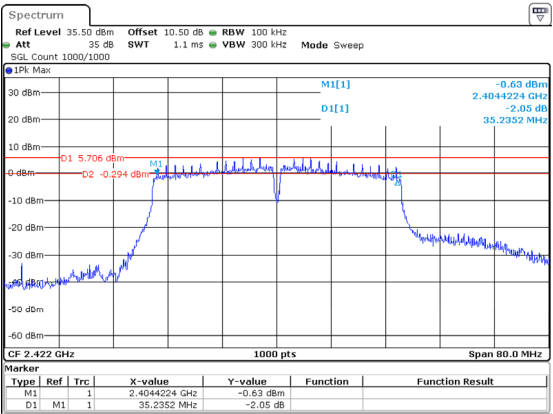
802.11n20_2462MHz_Chain 1 16.857MHz



ProjectNo.:2401Y27848E-RF Tester:Allen Bai

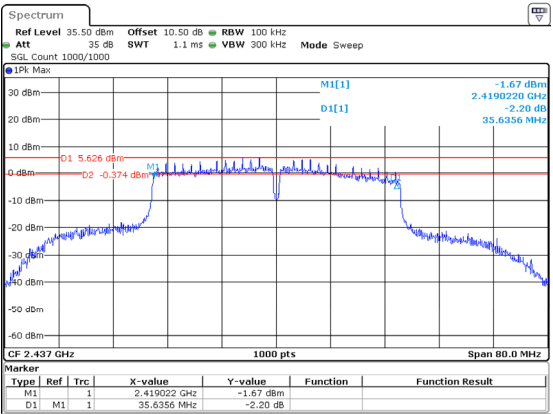
Date: 28.NOV.2024 23:06:41

802.11n40_2422MHz_Chain 0 35.235MHz



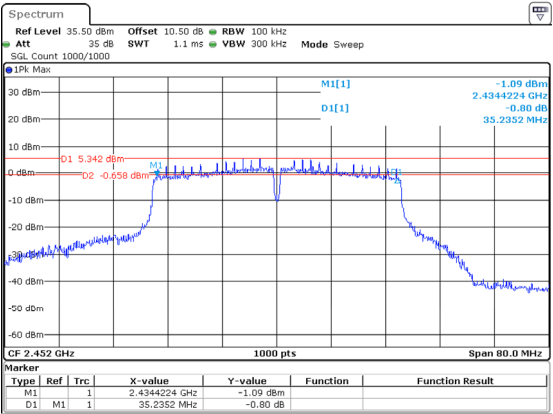
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 22:47:57

802.11n40_2437MHz_Chain 0 35.636MHz



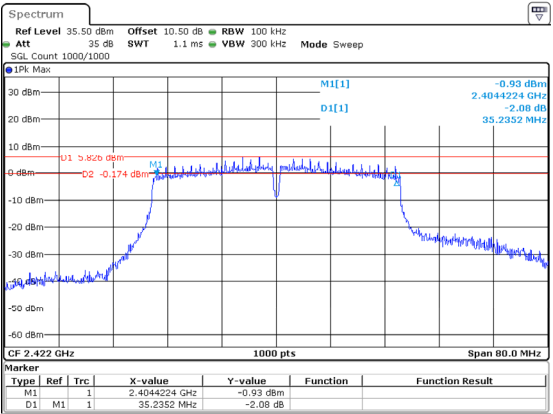
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 22:49:59

802.11n40_2452MHz_Chain 0 35.235MHz



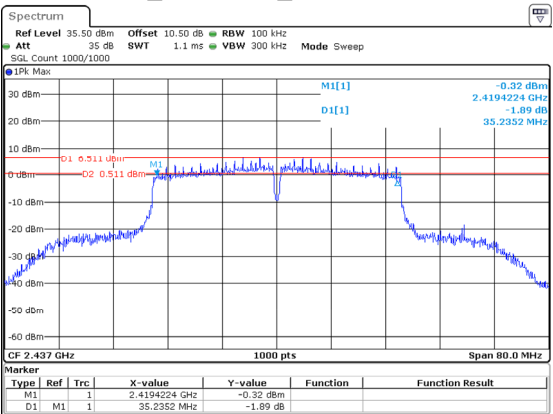
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 22:48:25

802.11n40_2422MHz_Chain 1 35.235MHz



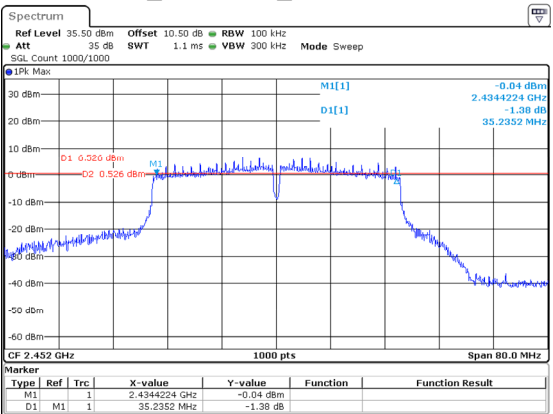
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 22:49:20

802.11n40_2437MHz_Chain 1 35.235MHz

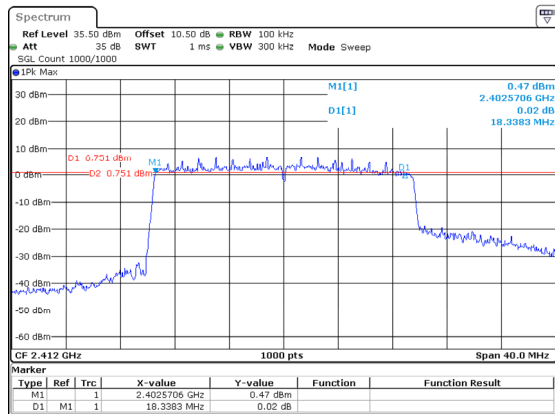


ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 22:44:46

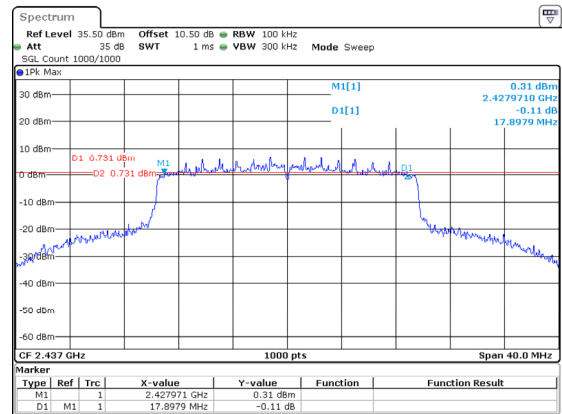
802.11n40_2452MHz_Chain 1 35.235MHz



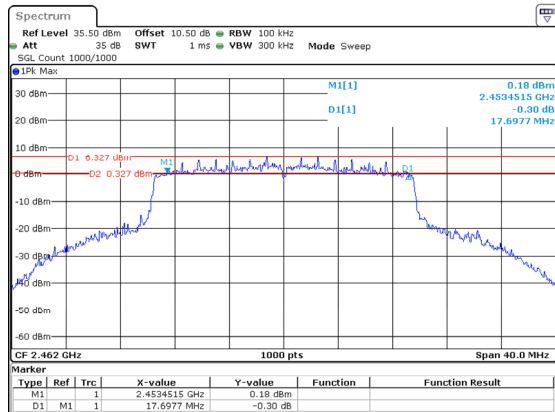
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 22:49:52

802.11ax20_2412MHz_RU_Full_Chain 0
18.338MHz

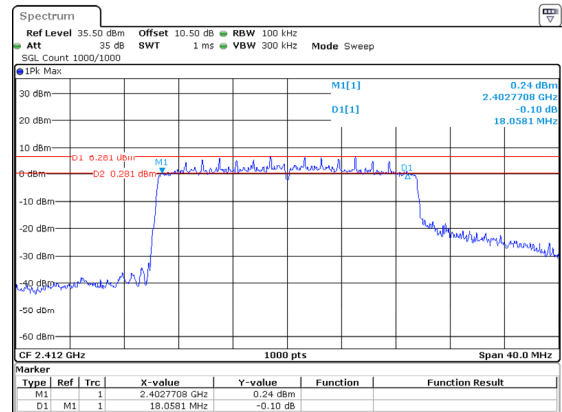
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 23:16:44

802.11ax20_2437MHz_RU_Full_Chain 0
17.898MHz

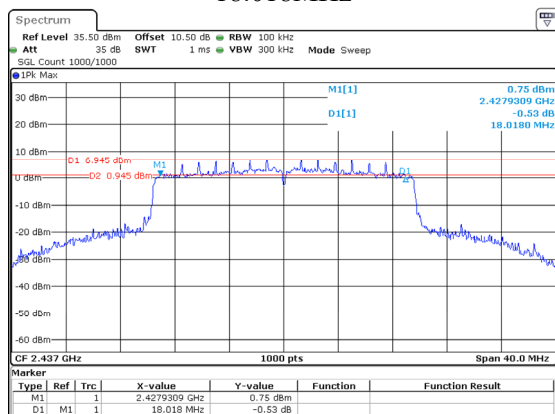
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 23:17:20

802.11ax20_2462MHz_RU_Full_Chain 0
17.698MHz

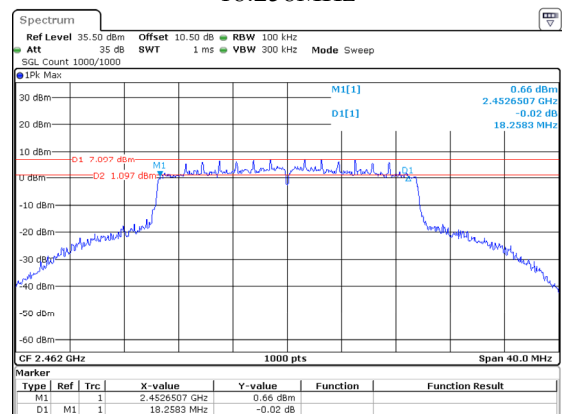
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 23:17:55

802.11ax20_2412MHz_RU_Full_Chain 1
18.058MHz

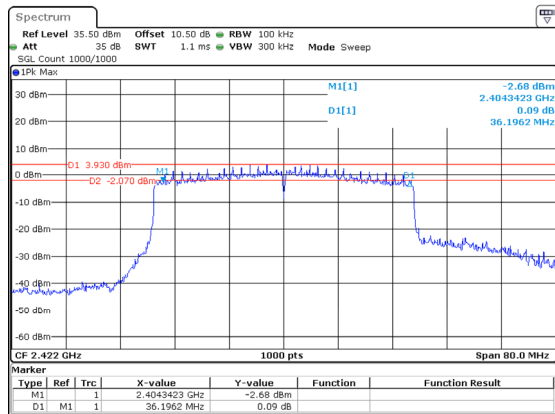
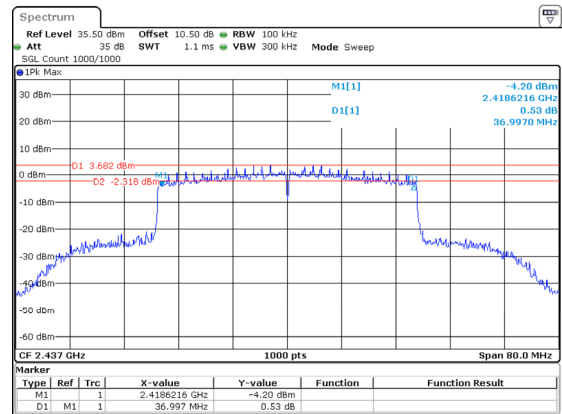
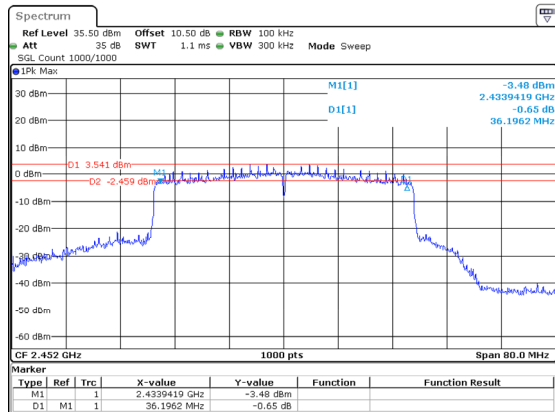
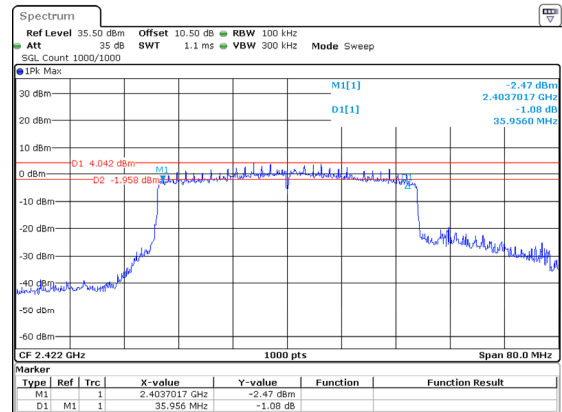
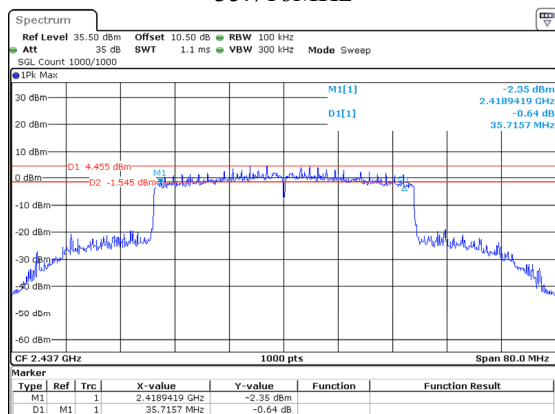
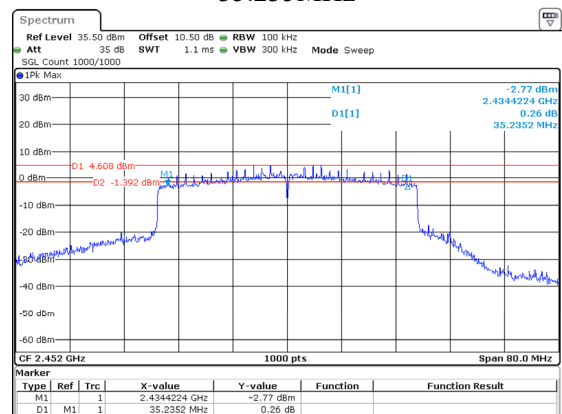
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 23:24:07

802.11ax20_2437MHz_RU_Full_Chain 1
18.018MHz

ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 23:24:57

802.11ax20_2462MHz_RU_Full_Chain 1
18.258MHz

ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 23:25:58

802.11ax40_2422MHz_RU_Full_Chain 0
36.196MHzProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 3.DEC.2024 00:09:54802.11ax40_2437MHz_RU_Full_Chain 0
36.997MHzProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 3.DEC.2024 00:10:22802.11ax40_2452MHz_RU_Full_Chain 0
36.196MHzProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 3.DEC.2024 00:10:47802.11ax40_2422MHz_RU_Full_Chain 1
35.956MHzProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 3.DEC.2024 00:12:42802.11ax40_2437MHz_RU_Full_Chain 1
35.716MHzProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 3.DEC.2024 00:12:47802.11ax40_2452MHz_RU_Full_Chain 1
35.235MHzProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 3.DEC.2024 00:13:21

99% Occupied Bandwidth

Test Information:

Sample No.:	2TPH-12	Test Date:	2024/11/28~2024/12/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Allen Bai	Test Result:	N/A

Environmental Conditions:

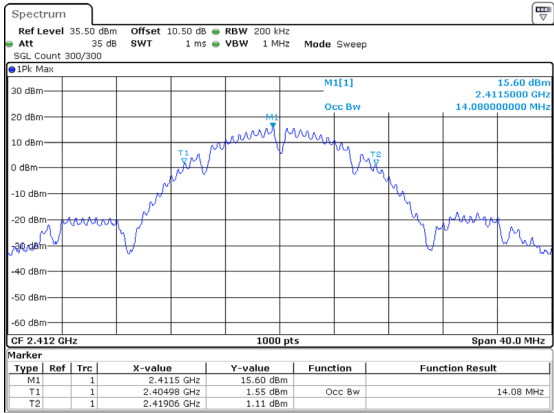
Temperature: (°C):	23-27	Relative Humidity: (%)	41-48	ATM Pressure: (kPa)	101-101.4
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Test Data:

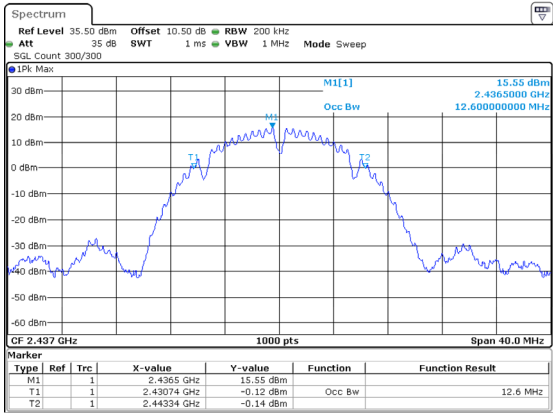
Mode	Antenna	Test Frequency (MHz)	99% OBW (MHz)
802.11b	Chain 0	2412	14.080
		2437	12.600
		2462	12.560
	Chain 1	2412	12.560
		2437	13.080
		2462	13.240
802.11g	Chain 0	2412	16.600
		2437	16.640
		2462	16.640
	Chain 1	2412	16.680
		2437	17.440
		2462	16.600
802.11n20	Chain 0	2412	17.920
		2437	17.840
		2462	17.800
	Chain 1	2412	17.760
		2437	17.840
		2462	17.800
802.11n40	Chain 0	2422	36.400
		2437	36.480
		2452	36.320
	Chain 1	2422	36.240
		2437	36.320
		2452	36.400
802.11ax20_RU_Full	Chain 0	2412	18.920
		2437	19.000
		2462	18.960
	Chain 1	2412	18.920
		2437	19.000
		2462	18.960
802.11ax40_RU_Full	Chain 0	2422	37.840
		2437	37.760
		2452	37.680
	Chain 1	2422	37.760
		2437	37.920
		2452	37.840

2.4G

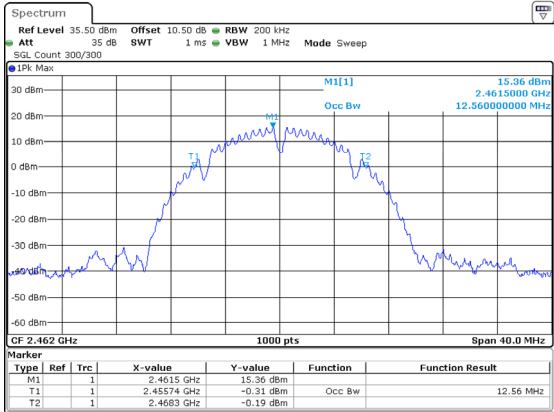
802.11b_2412MHz_Chain 0 14.080MHz



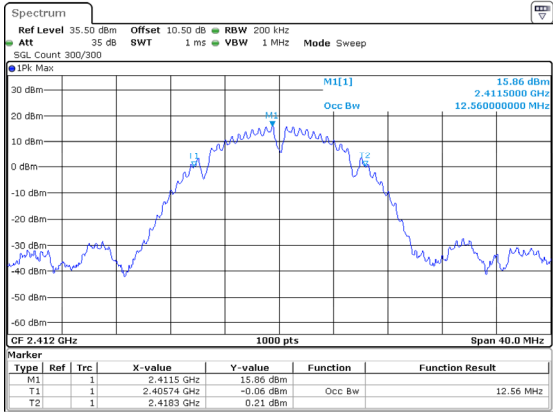
802.11b_2437MHz_Chain 0 12.600MHz



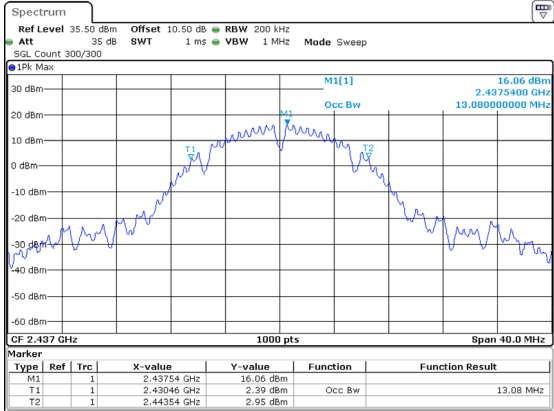
802.11b_2462MHz_Chain 0 12.560MHz



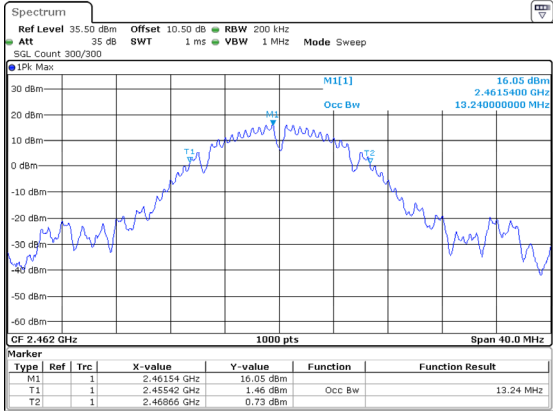
802.11b_2412MHz_Chain 1 12.560MHz



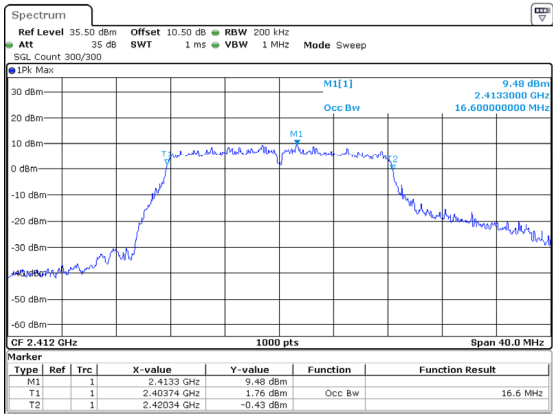
802.11b_2437MHz_Chain 1 13.080MHz



802.11b_2462MHz_Chain 1 13.240MHz

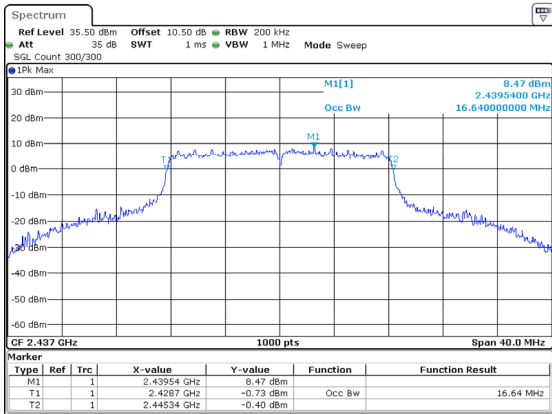


802.11g_2412MHz_Chain 0 16.600MHz



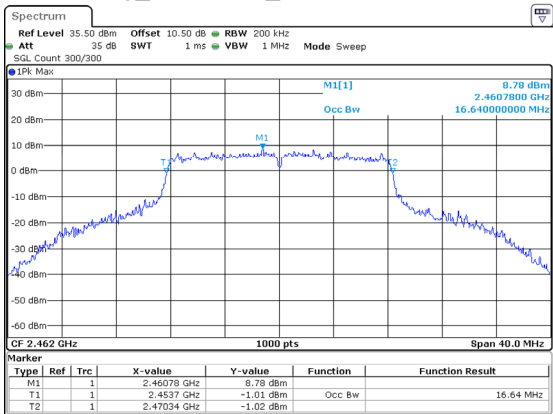
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 02:50:18

802.11g_2437MHz_Chain 0 16.640MHz



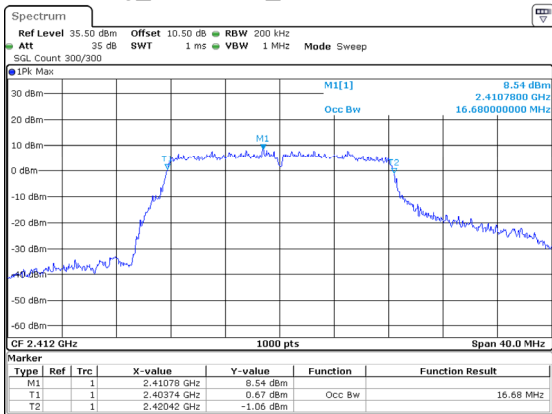
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 02:57:07

802.11g_2462MHz_Chain 0 16.640MHz



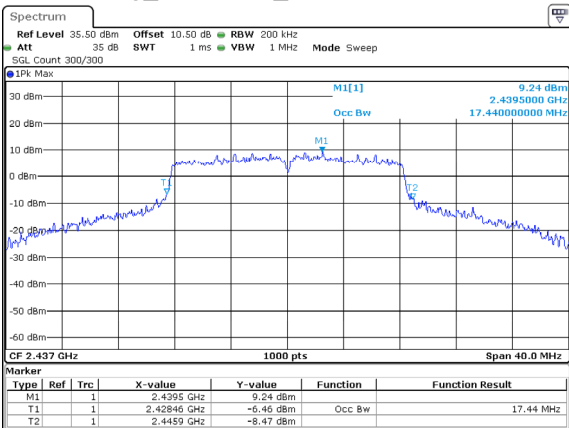
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 02:59:47

802.11g_2412MHz_Chain 1 16.680MHz



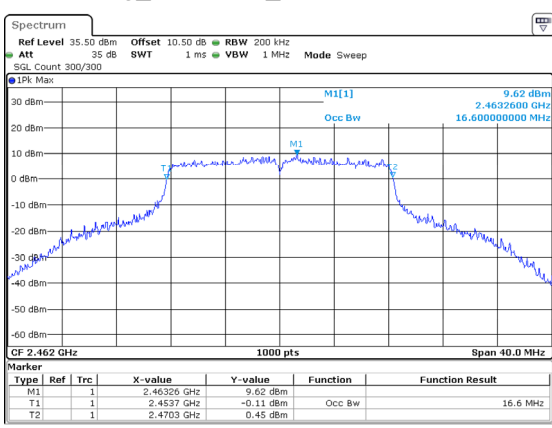
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 02:17:56

802.11g_2437MHz_Chain 1 17.440MHz



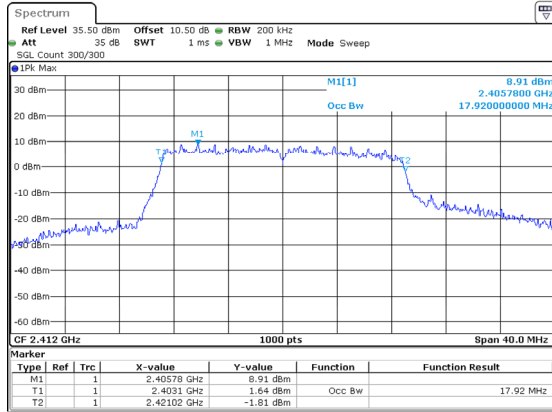
ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 30.DEC.2024 17:43:32

802.11g_2462MHz_Chain 1 16.600MHz

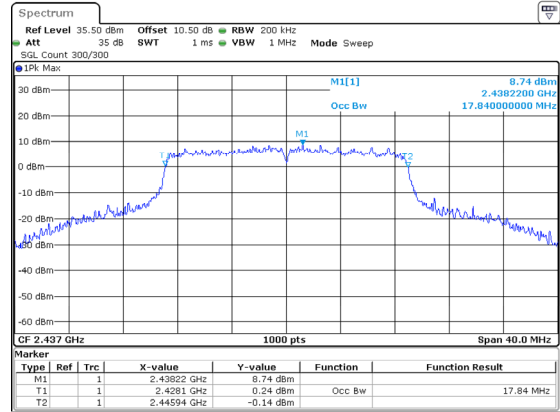


ProjectNo.:2401Y27848E-RF Tester:Allen Bai
Date: 28.NOV.2024 02:20:50

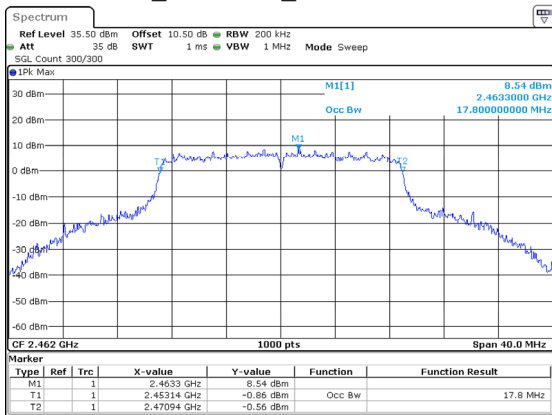
802.11n20_2412MHz_Chain 0 17.920MHz



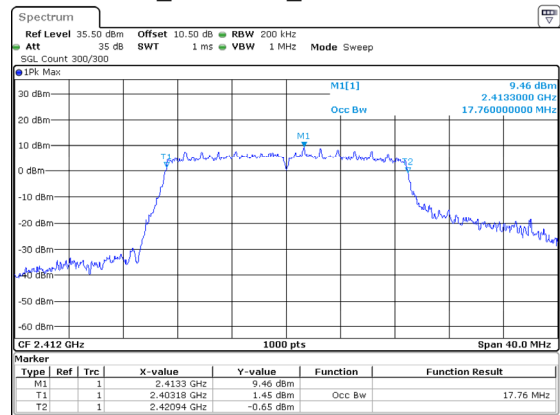
802.11n20_2437MHz_Chain 0 17.840MHz



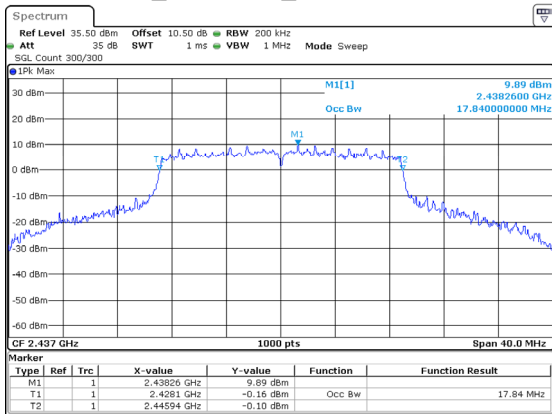
802.11n20_2462MHz_Chain 0 17.800MHz



802.11n20_2412MHz_Chain 1 17.760MHz



802.11n20_2437MHz_Chain 1 17.840MHz



802.11n20_2462MHz_Chain 1 17.800MHz

