



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: Glowforge Inc.

Address: 1938 Occidental Ave South, Suite C, Seattle, WA 98134 USA

FCC ID: 2A83C-ND7B0

Product Name: Wireless AP

Standard(s): 47 CFR Part 15, Subpart C(15.247)

ANSI C63.10-2013

KDB 558074 D01 15.247 Meas Guidance v05r02

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: 2403V24649E-RF-00A

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, 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. : 442868, the FCC Designation No. : CN1314.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2403V24649E-RF-00A	Original Report	2024/8/12

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Wireless AP
EUT Model:	Glowforge Ethernet Adapter
Operation Frequency:	2412-2462 MHz(802.11b/g/n ht20) 2422-2452 MHz(802.11n ht40)
Maximum Peak Output Power (Conducted):	25.39dBm
Modulation Type:	802.11b: DSSS-DBPSK, DQPSK, CCK 802.11g/n: OFDM-BPSK, QPSK, 16QAM, 64QAM
Rated Input Voltage:	DC 5V from adapter
Serial Number:	2OWK-1 (for RF Conducted Test) 2OWK-2 (for Radiated Spurious Emissions Test & EMC Emissions Test)
EUT Received Date:	2024/7/26
EUT Received Status:	Good

Operation Frequency Detail:

For 802.11b/g/n ht20:

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	/	/
Per section 15.31(m), the below frequencies were performed the test as below:			
Test Channel		Frequency (MHz)	
Lowest		2412	
Middle		2437	
Highest		2462	

For 802.11n ht40:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437	/	/
Per section 15.31(m), the below frequencies were performed the test as below:			
Test Channel		Frequency (MHz)	
Lowest		2422	
Middle		2437	
Highest		2452	

Antenna Information Detail▲:

Antenna	Antenna Type	input impedance (Ohm)	Frequency Range (MHz)	Antenna Gain (dBi)
Chain 0	PIFA	50	2400-2500	2.77
Chain 1	PIFA	50	2400-2500	2.77
The Method of §15.203 Compliance either: ☒ Antenna was permanently attached to the unit. ☐ Antenna use a unique type of connector to attach to the EUT. ☐ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.				

Accessory Information:

Accessory Description	Manufacturer	Model
Adapter	SHENZHEN KEYU POWER SUPPLY TECHNOLOGY CO., LTD	KA06E-0501000US

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.
Equipment Modifications:	No
EUT Exercise Software:	7628-2.4G QATool_Dbg.exe

The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer ▲:

Test Modes	Test Frequency (MHz)	Data Rate	Power Level Setting	
			Chain 0	Chain 1
802.11b	2412	1Mbps	18	18
	2437	1Mbps	18	18
	2462	1Mbps	18	18
802.11g	2412	6Mbps	1D	24
	2437	6Mbps	1D	24
	2462	6Mbps	1D	24
802.11n ht20	2412	MCS0	17	17
	2437	MCS0	17	17
	2462	MCS0	17	17
802.11n ht40	2422	MCS0	19	19
	2437	MCS0	19	19
	2452	MCS0	19	19

Note:

1. The above are the worst-case data rates, which are determined for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.
2. The device supports SISO in all modes and MIMO in 802.11n modes, per pretest, MIMO mode was the worst mode and reported for 802.11n modes.

1.2.2 Support Equipment List and Details

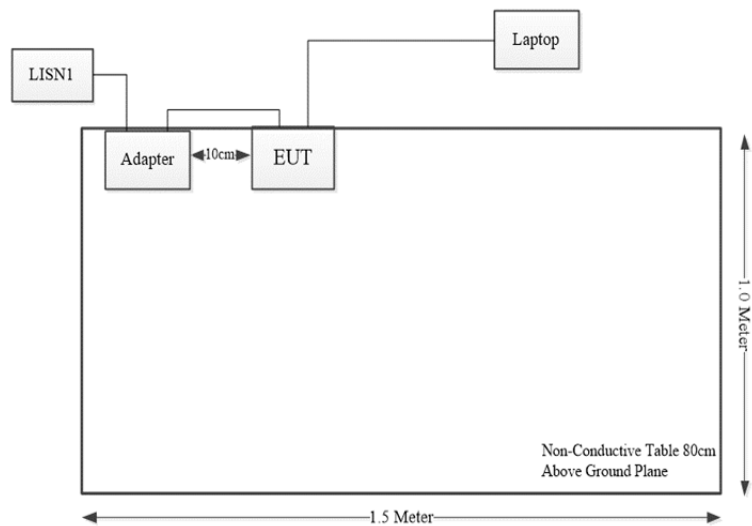
Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T460S	60PDTEK7

1.2.3 Support Cable List and Details

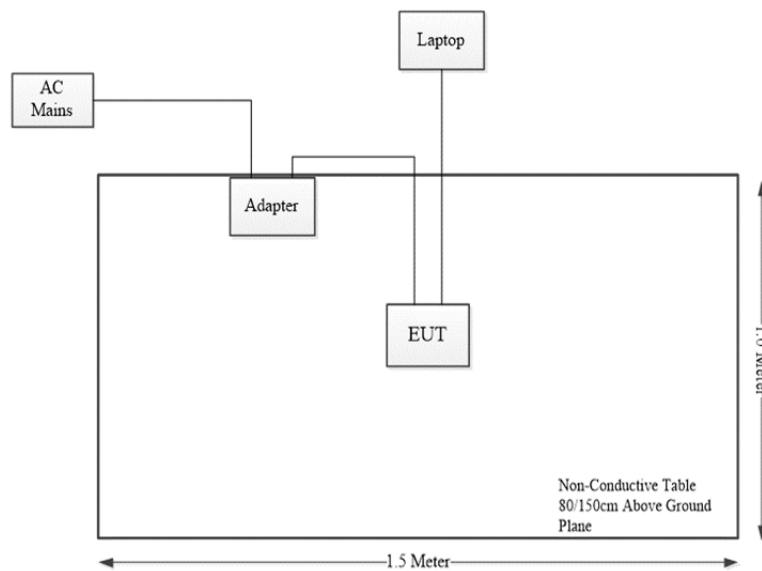
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB-C Cable	No	No	1.2	Adapter	EUT
RJ45 Cable	No	Yes	10	EUT	Laptop

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Spurious Emissions:



1.3 Measurement Uncertainty

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

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	9k~30MHz: 4.12dB, 30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G:5.47 dB, 26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.203	Antenna Requirement	PASS
FCC §15.207(a)	AC Line Conducted Emissions	PASS
FCC §15.205,§15.209,§15.247(d)	Radiated Spurious Emission	PASS
FCC §15.207(a)(2)	6dB Emission Bandwidth	PASS
FCC §15.247(b)(1)	Maximum Conducted Output Power	PASS
FCC §15.247(d)	100 kHz Bandwidth of Frequency Band Edge	PASS
FCC §15.247(d)	Conducted Spurious Emission	PASS
FCC §15.247(d)	Power Spectral Density	PASS
C63.10 §11.6	Duty Cycle	PASS
FCC §1.1310&§2.1091&§15.247 (i)	RF Exposure	PASS

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

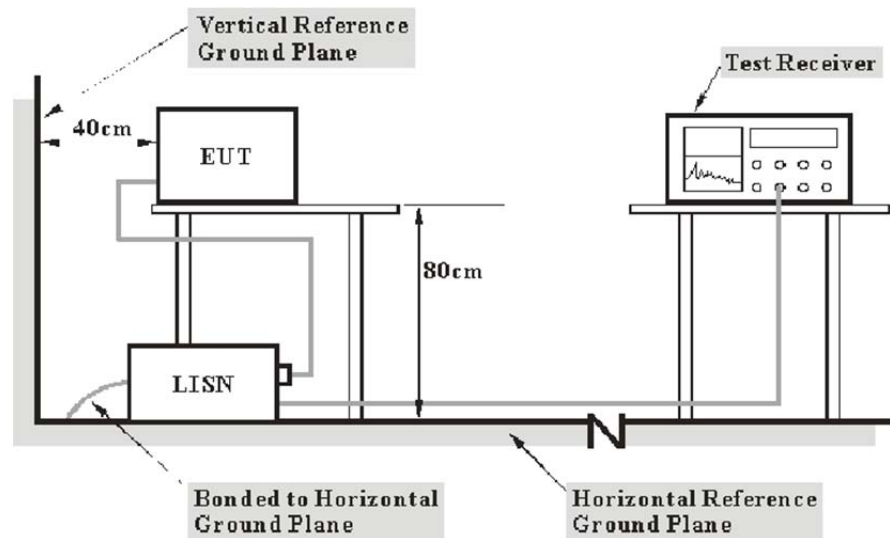
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μ V within the frequency band 535-1705 kHz, as measured using a 50 μ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.1.2 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.

3.1.3 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

3.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

3.2 Radiation Spurious Emissions

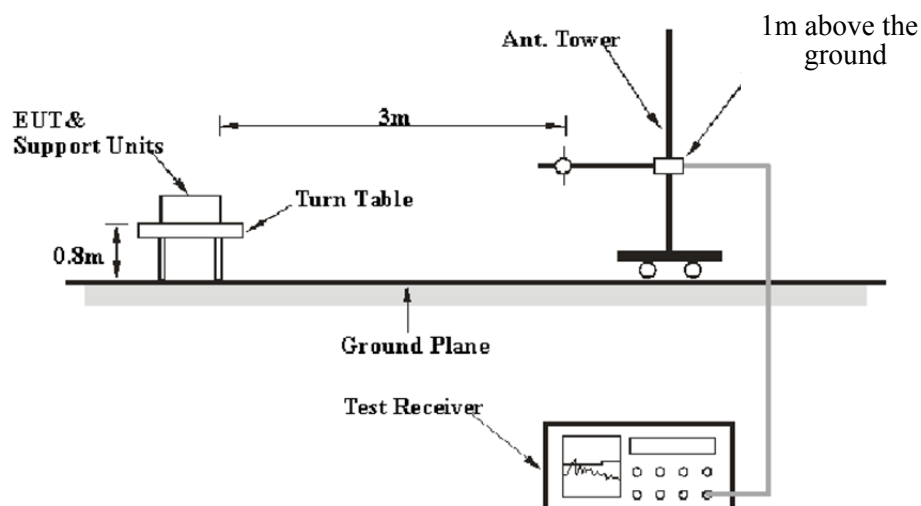
3.2.1 Applicable Standard

FCC §15.247 (d);

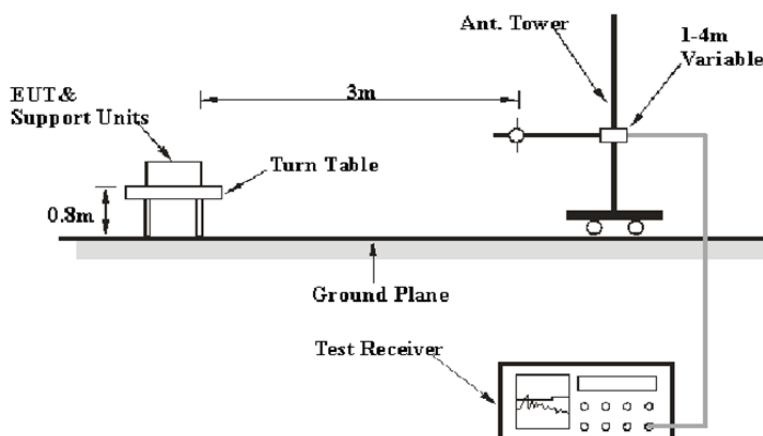
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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)).

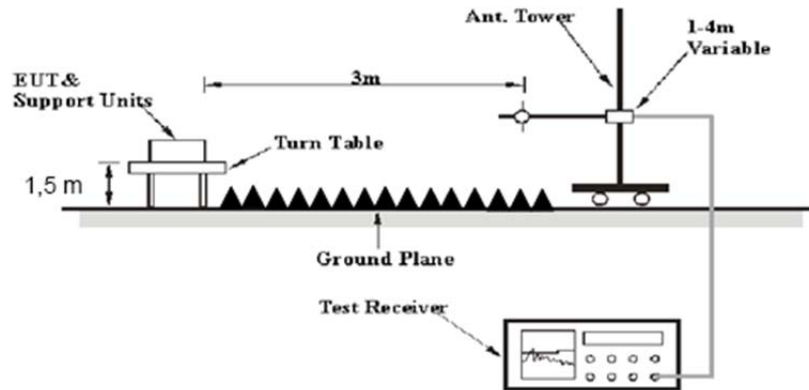
3.2.2 EUT Setup

9kHz - 30MHz:



30M~1GHz:



Above 1GHz:

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

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

The spacing between the peripherals was 10 cm.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

3.2.3 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:

9kHz-1000MHz:

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

1GHz- 25GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T 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.

3.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz-1 GHz except 9–90 kHz, 110–490 kHz, employing an average detector, peak and Average detection modes for frequencies above 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

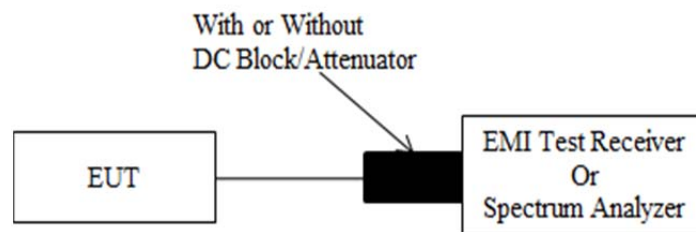
3.3 Minimum 6 dB Emission Bandwidth

3.3.1 Applicable Standard

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.

3.3.2 EUT Setup



3.3.3 Test Procedure

According to ANSI C63.10-2013 Section 11.8

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
- 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 by 6 dB relative to the maximum level measured in the fundamental emission.

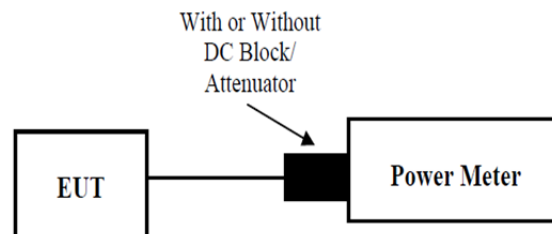
3.4 Maximum Conducted Output Power

3.4.1 Applicable Standard

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.

3.4.2 EUT Setup



3.4.3 Test Procedure

According to ANSI C63.10-2013 Section 11.9.2.3.2

Method AVGPM-G is a measurement using a gated RF average power meter.

Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

According to ANSI C63.10-2013 Section 11.9.1.3

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

- a) Set the EUT in transmitting mode.
- b) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to test equipment.
- c) Add a correction factor to the display.
- d) Set the power meter to test peak output power, record the result.

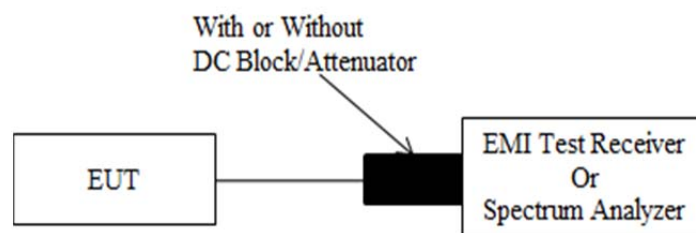
3.5 Maximum Power Spectral Density

3.5.1 Applicable Standard

FCC §15.247 (e)

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.

3.5.2 EUT Setup



3.5.3 Test Procedure

According to ANSI C63.10-2013 Section 11.10.2

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

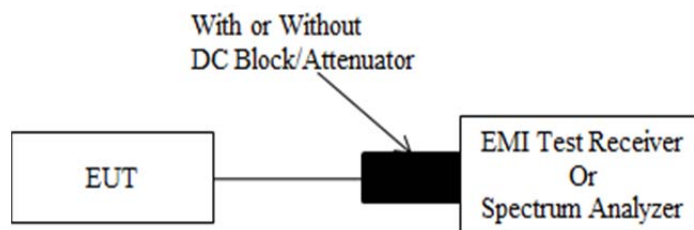
3.6 100 kHz Bandwidth of Frequency Band Edge

3.6.1 Applicable Standard

FCC §15.247 (d);

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)).

3.6.2 EUT Setup



3.6.3 Test Procedure

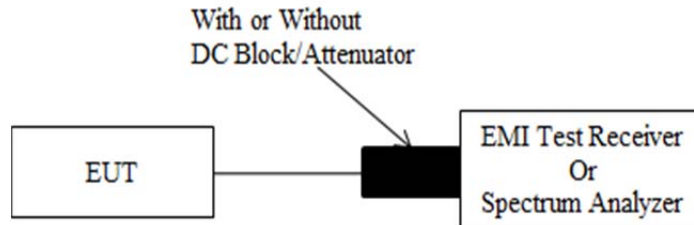
According to ANSI C63.10-2013 Section 11.11

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

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

3.7 Duty Cycle

3.7.1 EUT Setup



3.7.2 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 $T \leq 16.7 \mu s$.)

3.8 Antenna Requirement

3.8.1 Applicable Standard

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. 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.

3.8.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	2OWK-2	Test Date:	2024/8/1
Test Site:	CE	Test Mode:	Transmitting(Max Conduct Out Power Mode 802.11 g High Channel)
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.2	Relative Humidity: (%)	65	ATM Pressure: (kPa)	100.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101132	2024/4/1	2025/3/31
R&S	EMI Test Receiver	ESR3	103104	2024/5/10	2025/5/9
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2024/1/15	2025/1/14
Audix	Test Software	E3	191218 (V9)	N/A	N/A

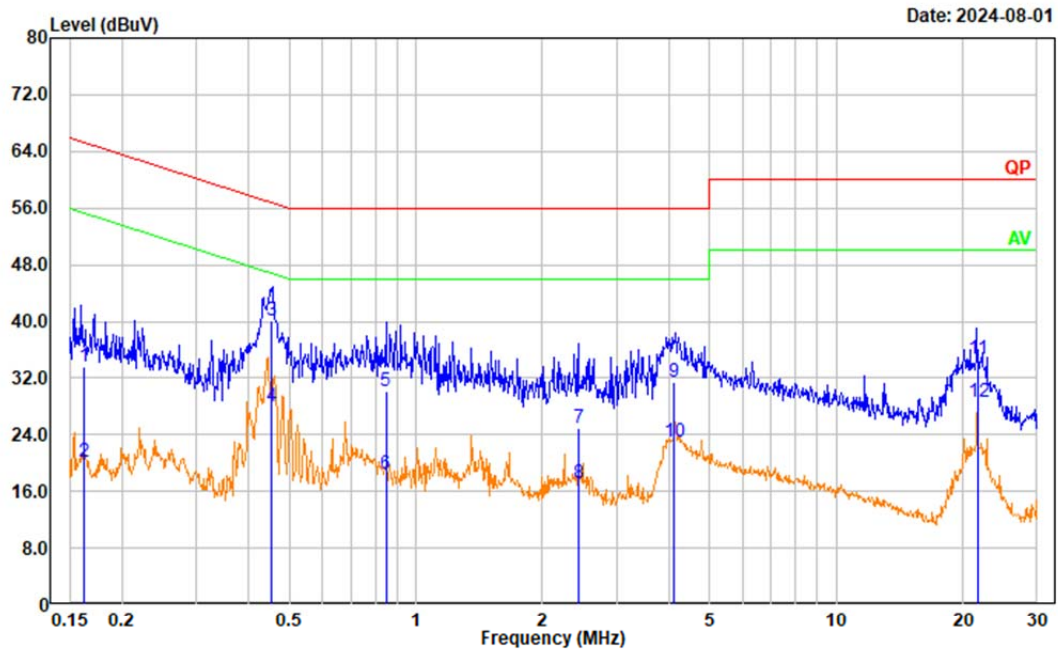
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Project No.: 2403V24649E-RF

Tester: David Huang

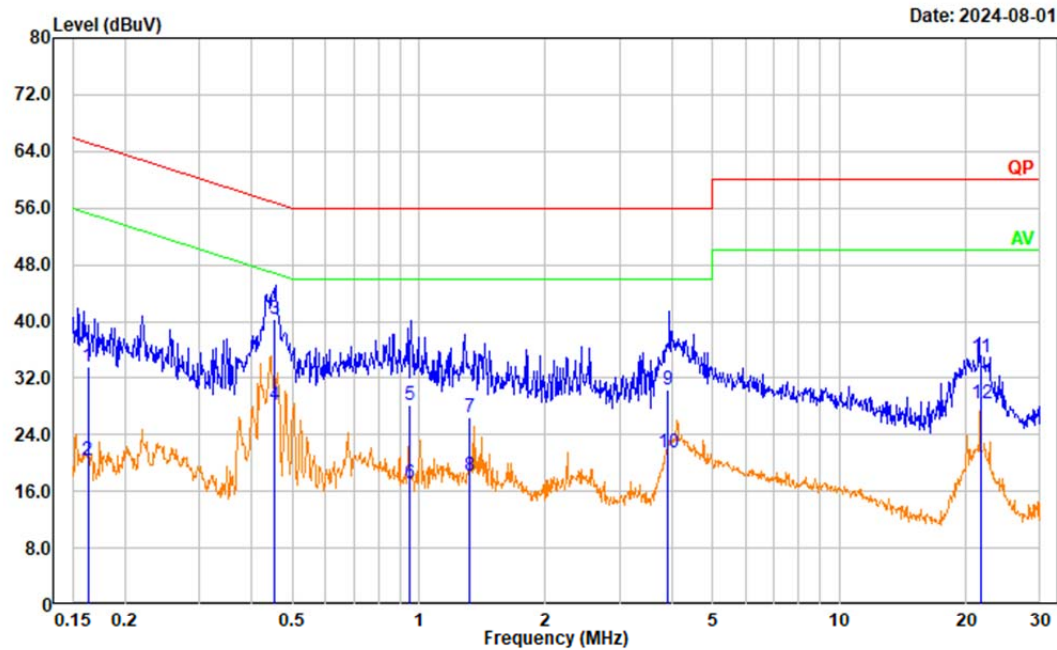
Port: Line

Note: Transmitting



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.163	23.35	10.23	33.58	65.31	31.73	QP
2	0.163	9.97	10.23	20.20	55.31	35.11	Average
3	0.453	29.60	10.43	40.03	56.82	16.79	QP
4	0.453	17.50	10.43	27.93	46.82	18.89	Average
5	0.848	19.53	10.66	30.19	56.00	25.81	QP
6	0.848	7.79	10.66	18.45	46.00	27.55	Average
7	2.436	14.51	10.39	24.90	56.00	31.10	QP
8	2.436	6.75	10.39	17.14	46.00	28.86	Average
9	4.102	21.20	10.26	31.46	56.00	24.54	QP
10	4.102	12.72	10.26	22.98	46.00	23.02	Average
11	21.663	24.72	10.08	34.80	60.00	25.20	QP
12	21.663	18.54	10.08	28.62	50.00	21.38	Average

Project No.: 2403V24649E-RF
 Tester: David Huang
 Port: neutral
 Note: Transmitting



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.163	23.14	10.51	33.65	65.30	31.65	QP
2	0.163	9.79	10.51	20.30	55.30	35.00	Average
3	0.453	29.69	10.59	40.28	56.81	16.53	QP
4	0.453	17.64	10.59	28.23	46.81	18.58	Average
5	0.952	17.87	10.37	28.24	56.00	27.76	QP
6	0.952	6.84	10.37	17.21	46.00	28.79	Average
7	1.316	16.11	10.42	26.53	56.00	29.47	QP
8	1.316	7.69	10.42	18.11	46.00	27.89	Average
9	3.914	19.92	10.35	30.27	56.00	25.73	QP
10	3.914	11.08	10.35	21.43	46.00	24.57	Average
11	21.664	24.70	10.15	34.85	60.00	25.15	QP
12	21.664	18.27	10.15	28.42	50.00	21.58	Average

4.2 Radiation Spurious Emissions

4.2.1 9 kHz – 1 GHz

Serial Number:	2OWK-2	Test Date:	2024/8/8
Test Site:	966-2	Test Mode:	Transmitting(Max Conduct Out Power Mode 802.11 g High Channel)
Tester:	Roinin Fu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	54	ATM Pressure: (kPa)	100.3
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2023/12/1	2026/11/30
BACL	Loop Antenna	1313-1A	3110611	2023/12/4	2026/12/3
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0300-01	2024/1/11	2025/1/10
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0500-01	2024/1/11	2025/1/10
R&S	EMI Test Receiver	ESR3	102724	2024/2/29	2025/2/28
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0100-03	2023/12/4	2024/12/3
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0370-01	2023/12/4	2024/12/3
XQY	Coaxial Cable	XQY-CMR400UF-NJ-NJ-7M	24056379	2024/6/11	2025/6/10
Sonoma	Amplifier	310N	186165	2023/12/4	2024/12/3
Audix	Test Software	E3	191218 (V9)	N/A	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

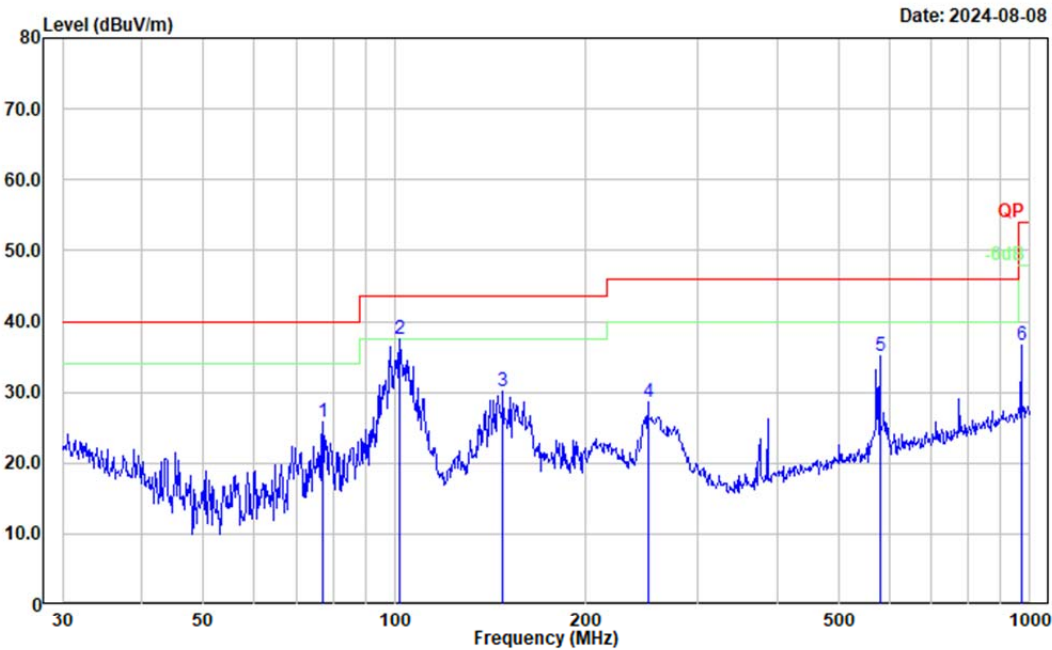
After pre-scan in the X, Y and Z axes of orientation, the worst case is refer to plots.
For 9kHz-30MHz, The amplitude of spurious emissions attenuated more than 20 dB below the limit was not be reported.

Project No.: 2403V24649E-RF

Tester: Roinin Fu

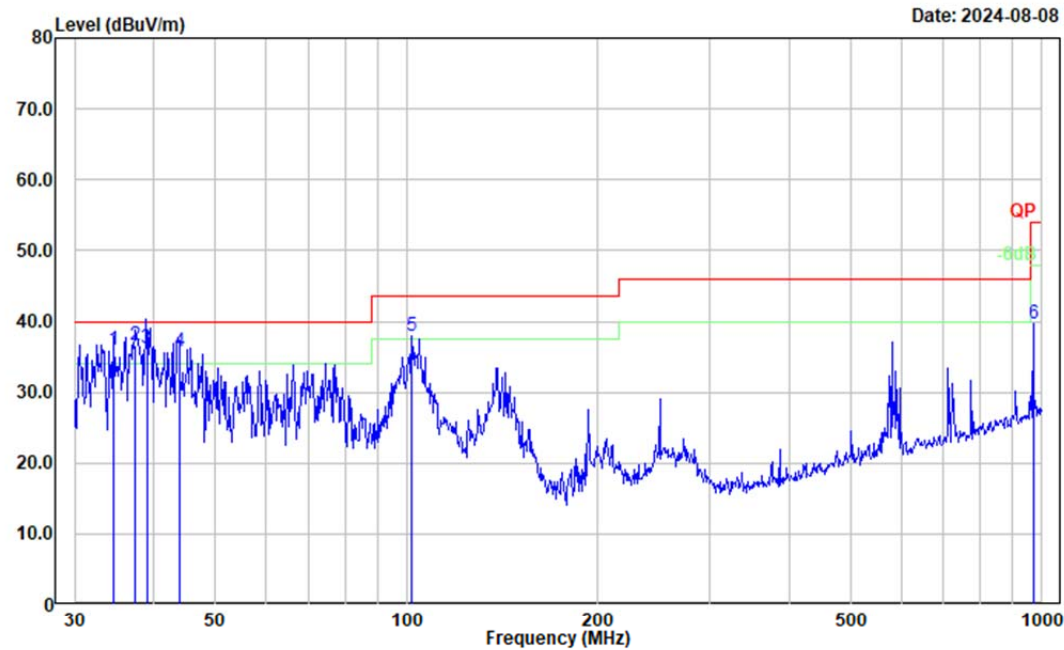
Polarization: horizontal

Note: Transmitting 2.4GWIFI



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	77.051	42.81	-17.10	25.71	40.00	14.29	Peak
2	102.001	51.25	-13.83	37.42	43.50	6.08	Peak
3	147.921	42.22	-12.15	30.07	43.50	13.43	Peak
4	250.301	41.62	-12.91	28.71	46.00	17.29	Peak
5	580.703	39.71	-4.53	35.18	46.00	10.82	Peak
6	968.934	35.35	1.20	36.55	54.00	17.45	Peak

Project No.: 2403V24649E-RF
 Tester: Roinin Fu
 Polarization: vertical
 Note: Transmitting 2.4GWIFI



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	34.645	43.17	-7.22	35.95	40.00	4.05	QP
2	37.367	45.89	-9.33	36.56	40.00	3.44	QP
3	38.958	46.69	-10.59	36.10	40.00	3.90	QP
4	43.800	49.65	-13.96	35.69	40.00	4.31	QP
5	101.644	51.87	-13.95	37.92	43.50	5.58	Peak
6	968.934	38.49	1.20	39.69	54.00	14.31	Peak

4.2.2 1GHz – 25 GHz:

Serial Number:	2OWK-2	Test Date:	2024/8/1
Test Site:	966-1	Test Mode:	Transmitting
Tester:	Tao Zhu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.3	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-Lindgren	Horn Antenna	3115	9912-5985	2023/12/6	2026/12/5
R&S	Spectrum Analyzer	FSV40	101591	2024/4/1	2025/3/31
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2024/1/15	2025/1/14
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2024/1/15	2025/1/14
BACL	Preamplifier	1313-A20M18G	4032311	2024/4/1	2025/3/31
Audix	Test Software	E3	191218 (V9)	N/A	N/A
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2024/2/4	2027/2/3
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2024/1/15	2025/1/14
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2024/1/15	2025/1/14
JD	Multiplex Switch Test Control Set	DT7220SCU	DQ77925	2023/8/6	2024/8/5
JD	Filter Switch Unit	DT7220FSU	DQ77928	2023/8/6	2024/8/5

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

Chain 0**802.11b Mode**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2412	MHz		
2390.000	26.95	PK	H	31.46	58.41	74.00	15.59
2390.000	13.71	AV	H	31.46	45.17	54.00	8.83
2390.000	26.34	PK	V	31.46	57.80	74.00	16.20
2390.000	13.52	AV	V	31.46	44.98	54.00	9.02
4824.000	38.66	PK	H	8.73	47.39	74.00	26.61
4824.000	33.47	AV	H	8.73	42.20	54.00	11.80
4824.000	40.32	PK	V	8.73	49.05	74.00	24.95
4824.000	35.38	AV	V	8.73	44.11	54.00	9.89
7236.000	34.25	PK	H	11.40	45.65	74.00	28.35
7236.000	22.29	AV	H	11.40	33.69	54.00	20.31
7236.000	34.22	PK	V	11.40	45.62	74.00	28.38
7236.000	22.16	AV	V	11.40	33.56	54.00	20.44
Middle Channel:				2437	MHz		
4874.000	34.36	PK	H	8.99	43.35	74.00	30.65
4874.000	22.47	AV	H	8.99	31.46	54.00	22.54
4874.000	34.26	PK	V	8.99	43.25	74.00	30.75
4874.000	22.40	AV	V	8.99	31.39	54.00	22.61
7311.000	34.45	PK	H	11.52	45.97	74.00	28.03
7311.000	22.27	AV	H	11.52	33.79	54.00	20.21
7311.000	34.57	PK	V	11.52	46.09	74.00	27.91
7311.000	22.36	AV	V	11.52	33.88	54.00	20.12
High Channel:				2462	MHz		
2483.500	26.64	PK	H	31.50	58.14	74.00	15.86
2483.500	14.52	AV	H	31.50	46.02	54.00	7.98
2483.500	26.58	PK	V	31.50	58.08	74.00	15.92
2483.500	13.88	AV	V	31.50	45.38	54.00	8.62
4924.000	34.28	PK	H	8.88	43.16	74.00	30.84
4924.000	22.33	AV	H	8.88	31.21	54.00	22.79
4924.000	34.47	PK	V	8.88	43.35	74.00	30.65
4924.000	23.26	AV	V	8.88	32.14	54.00	21.86
7386.000	34.25	PK	H	11.54	45.79	74.00	28.21
7386.000	22.46	AV	H	11.54	34.00	54.00	20.00
7386.000	34.11	PK	V	11.54	45.65	74.00	28.35
7386.000	23.13	AV	V	11.54	34.67	54.00	19.33

Chain 1**802.11b Mode**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2412	MHz		
2390.000	26.32	PK	H	31.46	57.78	74.00	16.22
2390.000	13.52	AV	H	31.46	44.98	54.00	9.02
2390.000	26.41	PK	V	31.46	57.87	74.00	16.13
2390.000	13.47	AV	V	31.46	44.93	54.00	9.07
4824.000	38.65	PK	H	8.73	47.38	74.00	26.62
4824.000	34.20	AV	H	8.73	42.93	54.00	11.07
4824.000	41.59	PK	V	8.73	50.32	74.00	23.68
4824.000	37.43	AV	V	8.73	46.16	54.00	7.84
7236.000	34.56	PK	H	11.40	45.96	74.00	28.04
7236.000	22.57	AV	H	11.40	33.97	54.00	20.03
7236.000	34.25	PK	V	11.40	45.65	74.00	28.35
7236.000	22.47	AV	V	11.40	33.87	54.00	20.13
Middle Channel:				2437	MHz		
4874.000	34.30	PK	H	8.99	43.29	74.00	30.71
4874.000	22.25	AV	H	8.99	31.24	54.00	22.76
4874.000	34.28	PK	V	8.99	43.27	74.00	30.73
4874.000	22.49	AV	V	8.99	31.48	54.00	22.52
7311.000	34.36	PK	H	11.52	45.88	74.00	28.12
7311.000	22.28	AV	H	11.52	33.80	54.00	20.20
7311.000	34.28	PK	V	11.52	45.80	74.00	28.20
7311.000	22.39	AV	V	11.52	33.91	54.00	20.09
High Channel:				2462	MHz		
2483.500	26.47	PK	H	31.50	57.97	74.00	16.03
2483.500	13.58	AV	H	31.50	45.08	54.00	8.92
2483.500	26.33	PK	V	31.50	57.83	74.00	16.17
2483.500	13.59	AV	V	31.50	45.09	54.00	8.91
4924.000	34.52	PK	H	8.88	43.40	74.00	30.60
4924.000	22.28	AV	H	8.88	31.16	54.00	22.84
4924.000	34.69	PK	V	8.88	43.57	74.00	30.43
4924.000	22.78	AV	V	8.88	31.66	54.00	22.34
7386.000	35.19	PK	H	11.54	46.73	74.00	27.27
7386.000	23.16	AV	H	11.54	34.70	54.00	19.30
7386.000	35.35	PK	V	11.54	46.89	74.00	27.11
7386.000	23.43	AV	V	11.54	34.97	54.00	19.03

Chain 0**802.11g Mode**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2412	MHz		
2390.000	35.23	PK	H	31.46	66.69	74.00	7.31
2390.000	18.32	AV	H	31.46	49.78	54.00	4.22
2390.000	34.67	PK	V	31.46	66.13	74.00	7.87
2390.000	16.93	AV	V	31.46	48.39	54.00	5.61
4824.000	35.49	PK	H	8.73	44.22	74.00	29.78
4824.000	23.52	AV	H	8.73	32.25	54.00	21.75
4824.000	35.83	PK	V	8.73	44.56	74.00	29.44
4824.000	23.64	AV	V	8.73	32.37	54.00	21.63
7236.000	35.36	PK	H	11.40	46.76	74.00	27.24
7236.000	23.41	AV	H	11.40	34.81	54.00	19.19
7236.000	35.26	PK	V	11.40	46.66	74.00	27.34
7236.000	23.34	AV	V	11.40	34.74	54.00	19.26
Middle Channel:				2437	MHz		
4874.000	34.57	PK	H	8.99	43.56	74.00	30.44
4874.000	22.50	AV	H	8.99	31.49	54.00	22.51
4874.000	34.52	PK	V	8.99	43.51	74.00	30.49
4874.000	22.25	AV	V	8.99	31.24	54.00	22.76
7311.000	35.37	PK	H	11.52	46.89	74.00	27.11
7311.000	23.30	AV	H	11.52	34.82	54.00	19.18
7311.000	35.58	PK	V	11.52	47.10	74.00	26.90
7311.000	22.56	AV	V	11.52	34.08	54.00	19.92
High Channel:				2462	MHz		
2483.500	29.74	PK	H	31.50	61.24	74.00	12.76
2483.500	15.66	AV	H	31.50	47.16	54.00	6.84
2483.500	29.18	PK	V	31.50	60.68	74.00	13.32
2483.500	14.59	AV	V	31.50	46.09	54.00	7.91
4924.000	36.52	PK	H	8.88	45.40	74.00	28.60
4924.000	24.29	AV	H	8.88	33.17	54.00	20.83
4924.000	36.47	PK	V	8.88	45.35	74.00	28.65
4924.000	24.21	AV	V	8.88	33.09	54.00	20.91
7386.000	34.65	PK	H	11.54	46.19	74.00	27.81
7386.000	22.27	AV	H	11.54	33.81	54.00	20.19
7386.000	34.76	PK	V	11.54	46.30	74.00	27.70
7386.000	22.37	AV	V	11.54	33.91	54.00	20.09

Chain 1**802.11g Mode**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2412	MHz		
2390.000	35.86	PK	H	31.46	67.32	74.00	6.68
2390.000	19.18	AV	H	31.46	50.64	54.00	3.36
2390.000	34.27	PK	V	31.46	65.73	74.00	8.27
2390.000	17.35	AV	V	31.46	48.81	54.00	5.19
4824.000	35.83	PK	H	8.73	44.56	74.00	29.44
4824.000	23.21	AV	H	8.73	31.94	54.00	22.06
4824.000	38.57	PK	V	8.73	47.30	74.00	26.70
4824.000	26.40	AV	V	8.73	35.13	54.00	18.87
7236.000	35.51	PK	H	11.40	46.91	74.00	27.09
7236.000	23.25	AV	H	11.40	34.65	54.00	19.35
7236.000	35.16	PK	V	11.40	46.56	74.00	27.44
7236.000	23.34	AV	V	11.40	34.74	54.00	19.26
Middle Channel:				2437	MHz		
4874.000	36.66	PK	H	8.99	45.65	74.00	28.35
4874.000	24.57	AV	H	8.99	33.56	54.00	20.44
4874.000	38.14	PK	V	8.99	47.13	74.00	26.87
4874.000	26.38	AV	V	8.99	35.37	54.00	18.63
7311.000	34.58	PK	H	11.52	46.10	74.00	27.90
7311.000	22.29	AV	H	11.52	33.81	54.00	20.19
7311.000	35.63	PK	V	11.52	47.15	74.00	26.85
7311.000	23.12	AV	V	11.52	34.64	54.00	19.36
High Channel:				2462	MHz		
2483.500	36.58	PK	H	31.50	68.08	74.00	5.92
2483.500	20.08	AV	H	31.50	51.58	54.00	2.42
2483.500	34.36	PK	V	31.50	65.86	74.00	8.14
2483.500	18.86	AV	V	31.50	50.36	54.00	3.64
4924.000	37.39	PK	H	8.88	46.27	74.00	27.73
4924.000	25.63	AV	H	8.88	34.51	54.00	19.49
4924.000	40.20	PK	V	8.88	49.08	74.00	24.92
4924.000	28.65	AV	V	8.88	37.53	54.00	16.47
7386.000	34.47	PK	H	11.54	46.01	74.00	27.99
7386.000	22.51	AV	H	11.54	34.05	54.00	19.95
7386.000	34.82	PK	V	11.54	46.36	74.00	27.64
7386.000	22.63	AV	V	11.54	34.17	54.00	19.83

802.11n ht20 Mode:

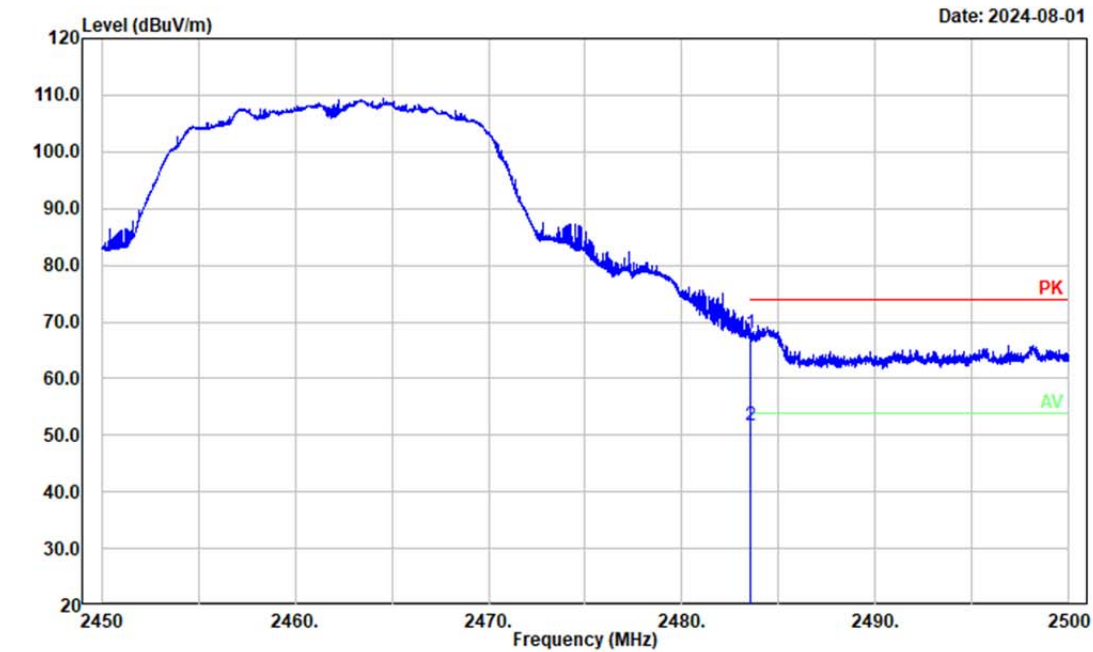
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2412 MHz							
2390.000	37.86	PK	H	31.46	69.32	74.00	4.68
2390.000	16.78	AV	H	31.46	48.24	54.00	5.76
2390.000	30.36	PK	V	31.46	61.82	74.00	12.18
2390.000	14.38	AV	V	31.46	45.84	54.00	8.16
4824.000	34.25	PK	H	8.73	42.98	74.00	31.02
4824.000	22.28	AV	H	8.73	31.01	54.00	22.99
4824.000	34.30	PK	V	8.73	43.03	74.00	30.97
4824.000	22.50	AV	V	8.73	31.23	54.00	22.77
7236.000	34.63	PK	H	11.40	46.03	74.00	27.97
7236.000	22.37	AV	H	11.40	33.77	54.00	20.23
7236.000	34.35	PK	V	11.40	45.75	74.00	28.25
7236.000	22.51	AV	V	11.40	33.91	54.00	20.09
Middle Channel: 2437 MHz							
4874.000	35.20	PK	H	8.99	44.19	74.00	29.81
4874.000	22.41	AV	H	8.99	31.40	54.00	22.60
4874.000	35.26	PK	V	8.99	44.25	74.00	29.75
4874.000	22.39	AV	V	8.99	31.38	54.00	22.62
7311.000	34.28	PK	H	11.52	45.80	74.00	28.20
7311.000	22.43	AV	H	11.52	33.95	54.00	20.05
7311.000	34.34	PK	V	11.52	45.86	74.00	28.14
7311.000	22.48	AV	V	11.52	34.00	54.00	20.00
High Channel: 2462 MHz							
2483.500	31.25	PK	H	31.50	62.75	74.00	11.25
2483.500	15.66	AV	H	31.50	47.16	54.00	6.84
2483.500	29.46	PK	V	31.50	60.96	74.00	13.04
2483.500	15.37	AV	V	31.50	46.87	54.00	7.13
4924.000	35.63	PK	H	8.88	44.51	74.00	29.49
4924.000	22.38	AV	H	8.88	31.26	54.00	22.74
4924.000	35.77	PK	V	8.88	44.65	74.00	29.35
4924.000	23.58	AV	V	8.88	32.46	54.00	21.54
7386.000	34.25	PK	H	11.54	45.79	74.00	28.21
7386.000	22.37	AV	H	11.54	33.91	54.00	20.09
7386.000	34.52	PK	V	11.54	46.06	74.00	27.94
7386.000	22.56	AV	V	11.54	34.10	54.00	19.90

802.11n ht40 Mode:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2422 MHz							
2390.000	39.27	PK	H	31.46	70.73	74.00	3.27
2390.000	19.80	AV	H	31.46	51.26	54.00	2.74
2390.000	33.47	PK	V	31.46	64.93	74.00	9.07
2390.000	16.77	AV	V	31.46	48.23	54.00	5.77
4844.000	34.55	PK	H	8.97	43.52	74.00	30.48
4844.000	22.25	AV	H	8.97	31.22	54.00	22.78
4844.000	35.20	PK	V	8.97	44.17	74.00	29.83
4844.000	23.21	AV	V	8.97	32.18	54.00	21.82
7266.000	34.66	PK	H	11.43	46.09	74.00	27.91
7266.000	22.34	AV	H	11.43	33.77	54.00	20.23
7266.000	34.69	PK	V	11.43	46.12	74.00	27.88
7266.000	22.71	AV	V	11.43	34.14	54.00	19.86
Middle Channel: 2437 MHz							
4874.000	34.65	PK	H	8.99	43.64	74.00	30.36
4874.000	22.66	AV	H	8.99	31.65	54.00	22.35
4874.000	35.02	PK	V	8.99	44.01	74.00	29.99
4874.000	22.87	AV	V	8.99	31.86	54.00	22.14
7311.000	34.39	PK	H	11.52	45.91	74.00	28.09
7311.000	22.18	AV	H	11.52	33.70	54.00	20.30
7311.000	34.32	PK	V	11.52	45.84	74.00	28.16
7311.000	22.40	AV	V	11.52	33.92	54.00	20.08
High Channel: 2452 MHz							
2483.500	32.51	PK	H	31.50	64.01	74.00	9.99
2483.500	16.22	AV	H	31.50	47.72	54.00	6.28
2483.500	31.59	PK	V	31.50	63.09	74.00	10.91
2483.500	15.71	AV	V	31.50	47.21	54.00	6.79
4904.000	34.50	PK	H	8.91	43.41	74.00	30.59
4904.000	22.69	AV	H	8.91	31.60	54.00	22.40
4904.000	35.63	PK	V	8.91	44.54	74.00	29.46
4904.000	23.37	AV	V	8.91	32.28	54.00	21.72
7356.000	34.16	PK	H	11.68	45.84	74.00	28.16
7356.000	22.27	AV	H	11.68	33.95	54.00	20.05
7356.000	35.20	PK	V	11.68	46.88	74.00	27.12
7356.000	22.89	AV	V	11.68	34.57	54.00	19.43

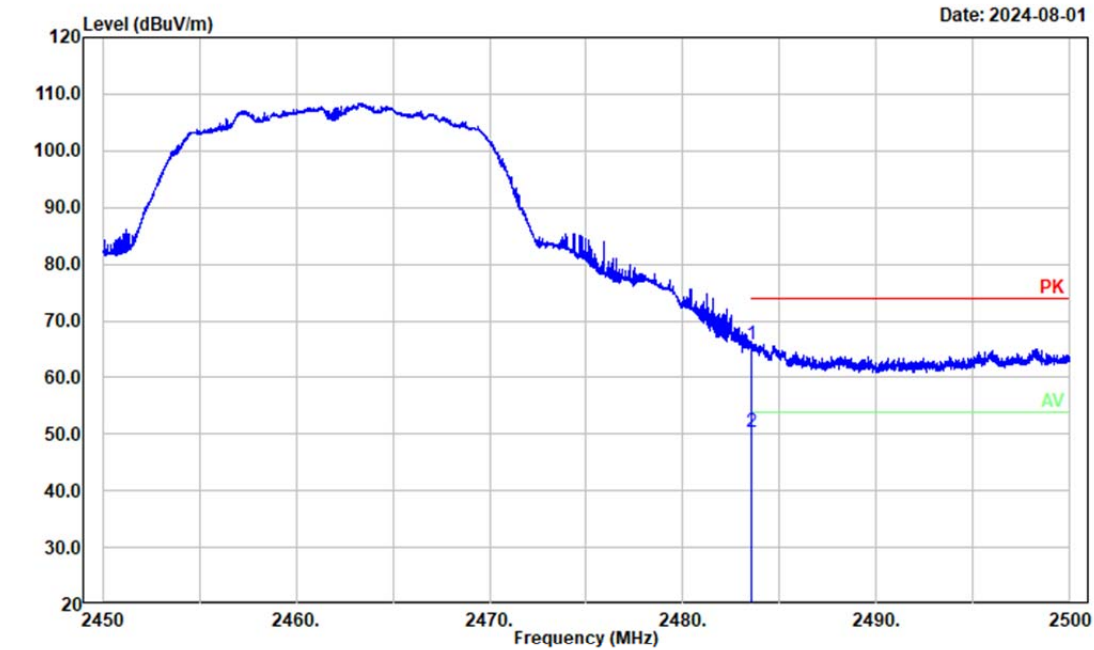
Worst band edge test plots

Project No.: 2403V24649E-RF
Tester: Tao Zhu
Polarization: Horizontal
Note: g High 2462MHz Chain1



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	2483.500	36.58	31.50	68.08	74.00	5.92	Peak
2	2483.500	20.08	31.50	51.58	54.00	2.42	Average

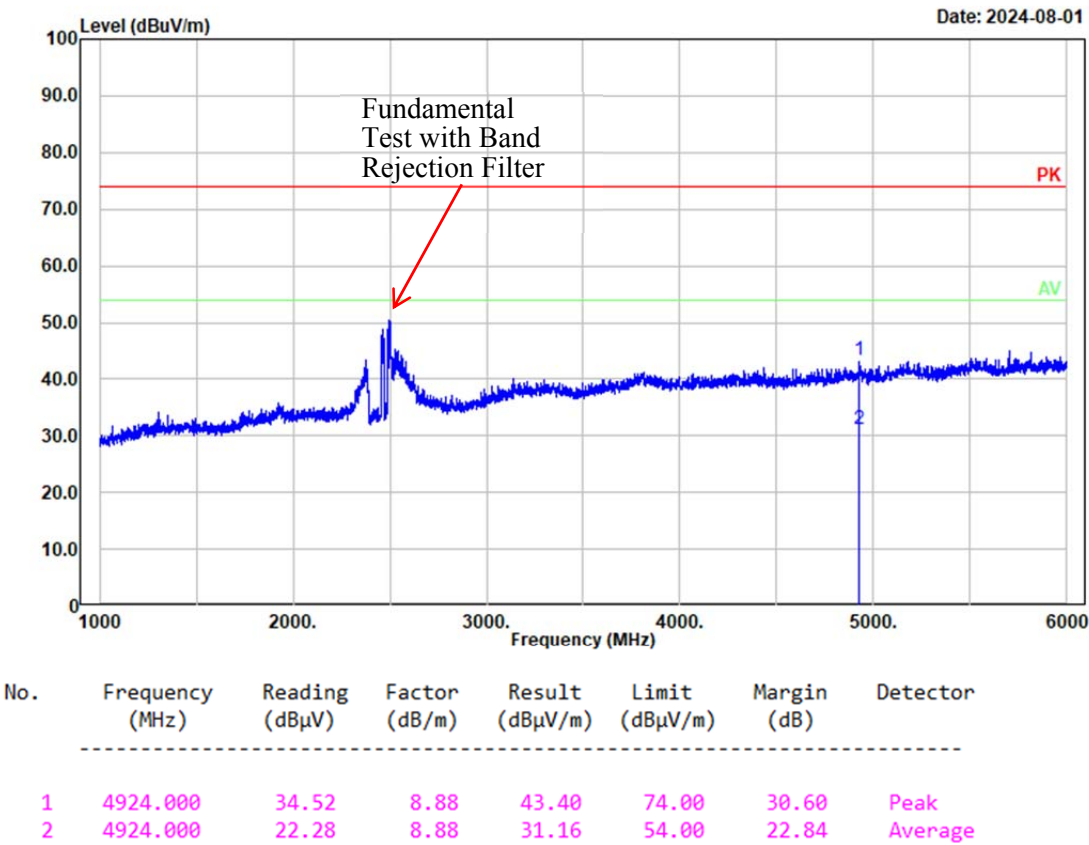
Project No.: 2403V24649E-RF
Tester: Tao Zhu
Polarization: Vertical
Note: g High 2462MHz Chain1



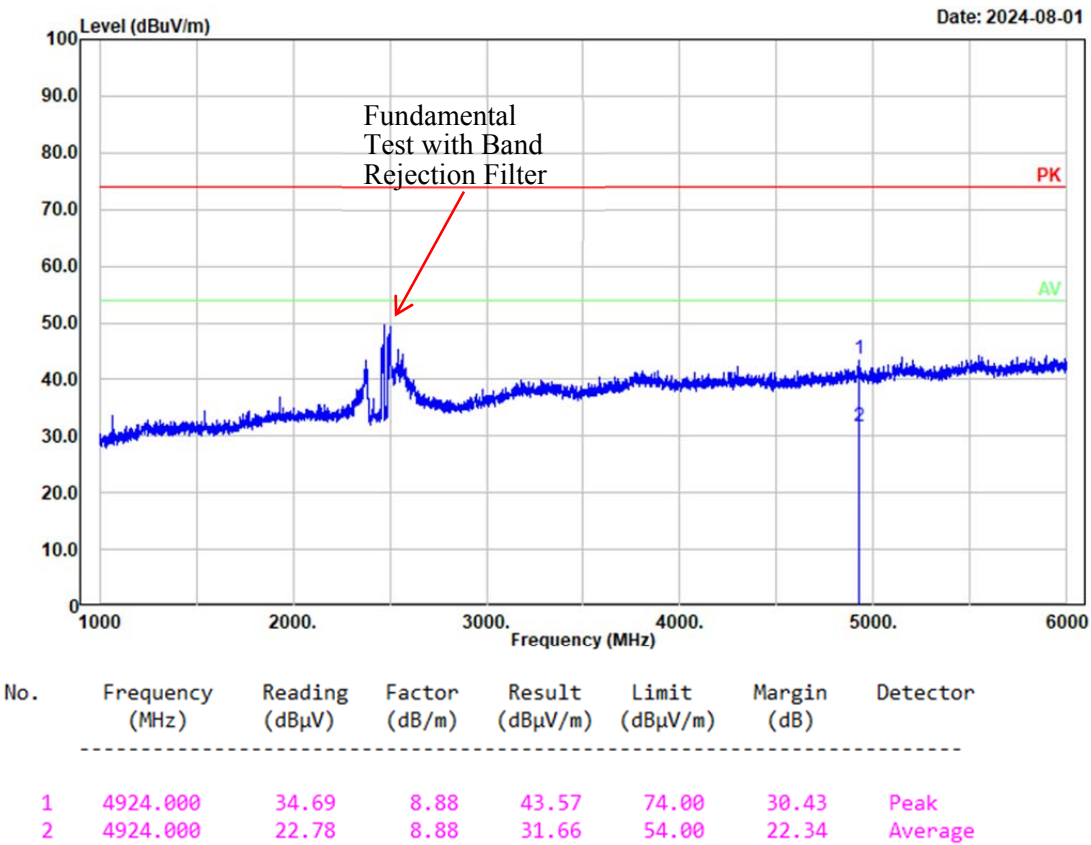
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	2483.500	34.36	31.50	65.86	74.00	8.14	Peak
2	2483.500	18.86	31.50	50.36	54.00	3.64	Average

Worst radiation spurious emissions margin test plots

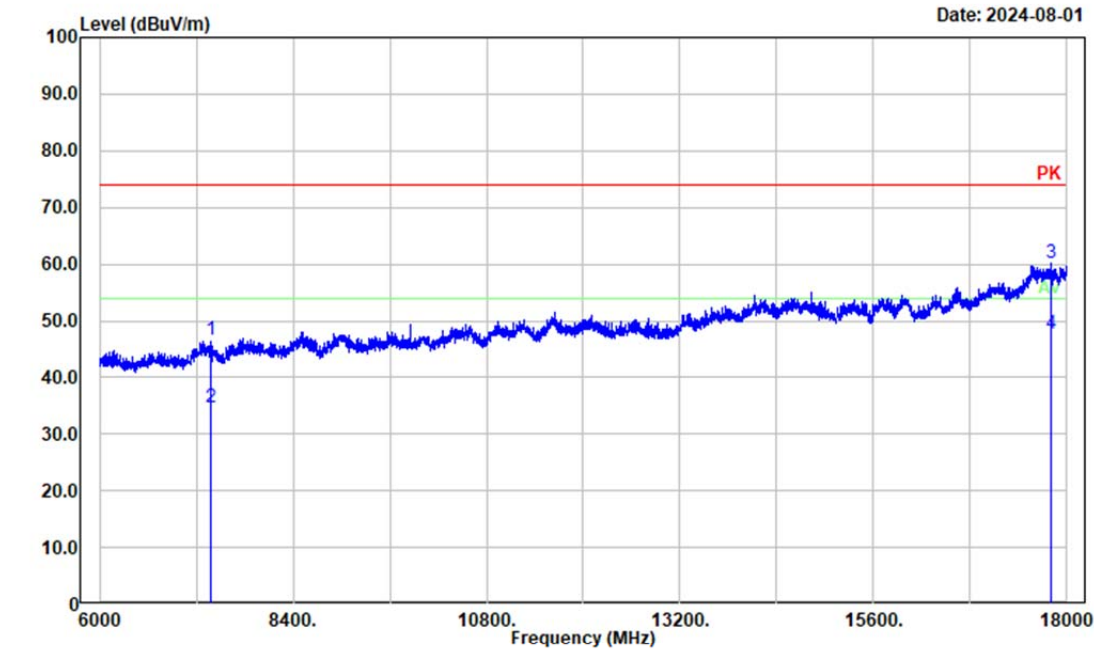
Project No.: 2403V24649E-RF
Tester: Tao Zhu
Polarization: horizontal
Note: b High 2462MHz Chain1



Project No.: 2403V24649E-RF
Tester: Tao Zhu
Polarization: vertical
Note: b High 2462MHz Chain1

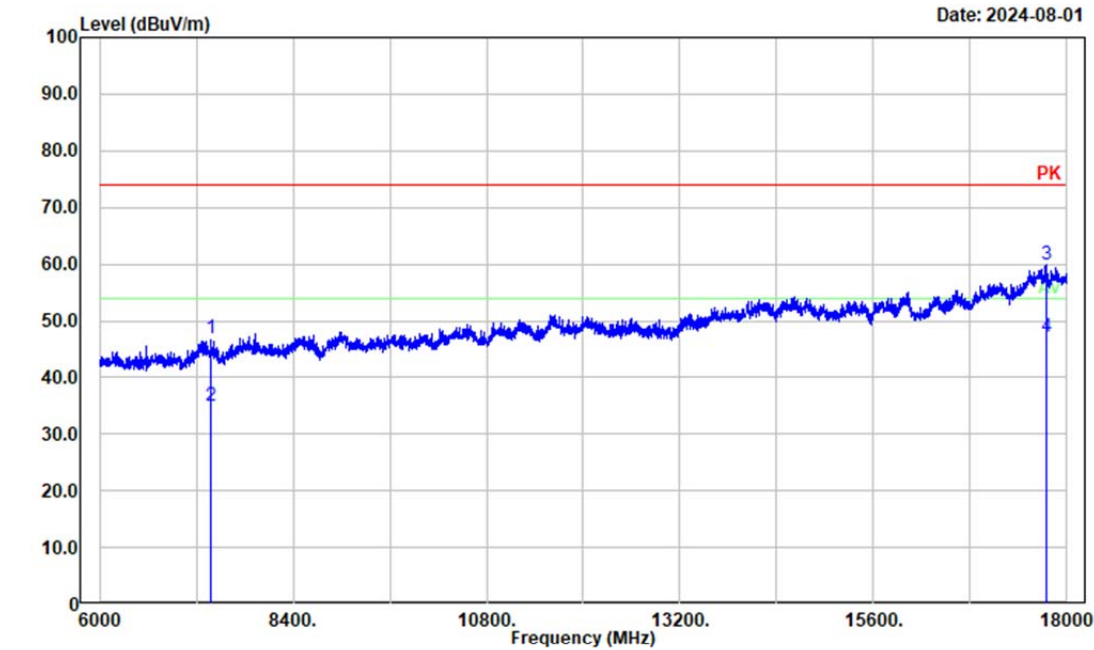


Project No.: 2403V24649E-RF
 Tester: Tao Zhu
 Polarization: horizontal
 Note: b High 2462MHz Chain1



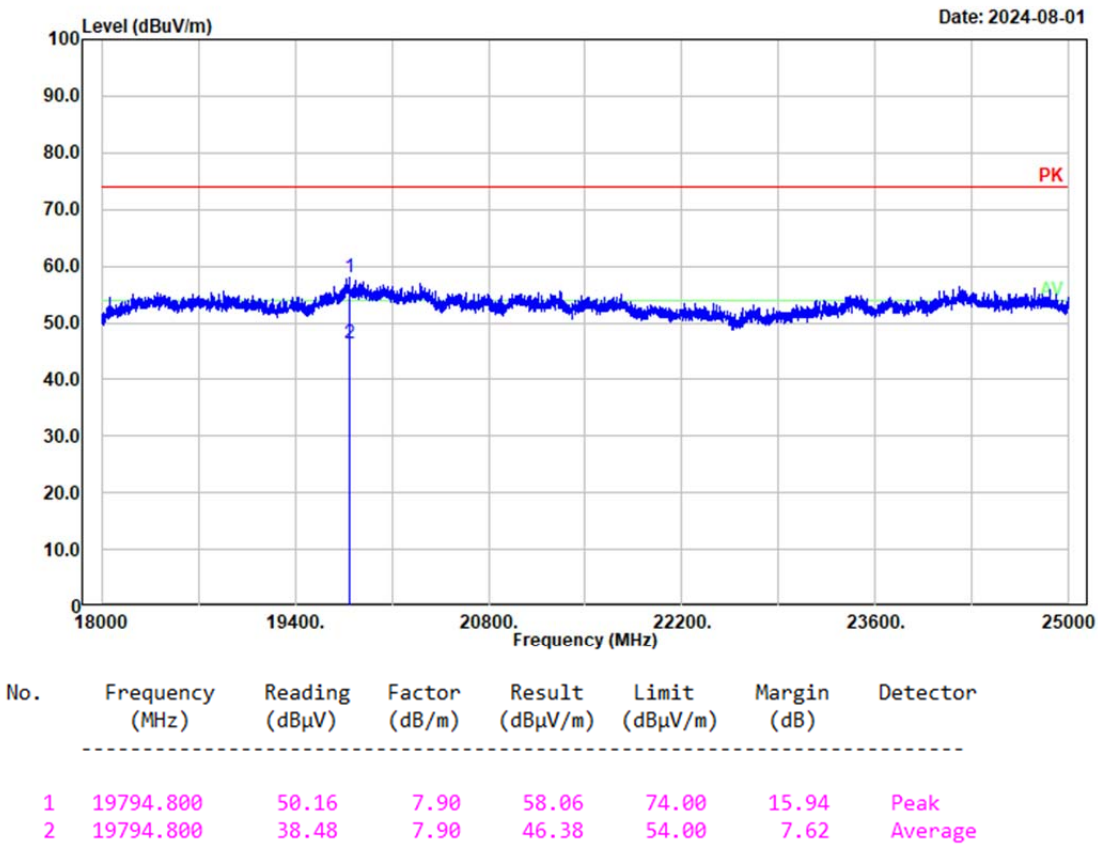
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	7386.000	35.19	11.54	46.73	74.00	27.27	Peak
2	7386.000	23.16	11.54	34.70	54.00	19.30	Average
3	17803.200	34.40	25.77	60.17	74.00	13.83	Peak
4	17803.200	21.89	25.77	47.66	54.00	6.34	Average

Project No.: 2403V24649E-RF
 Tester: Tao Zhu
 Polarization: vertical
 Note: b High 2462MHz Chain1

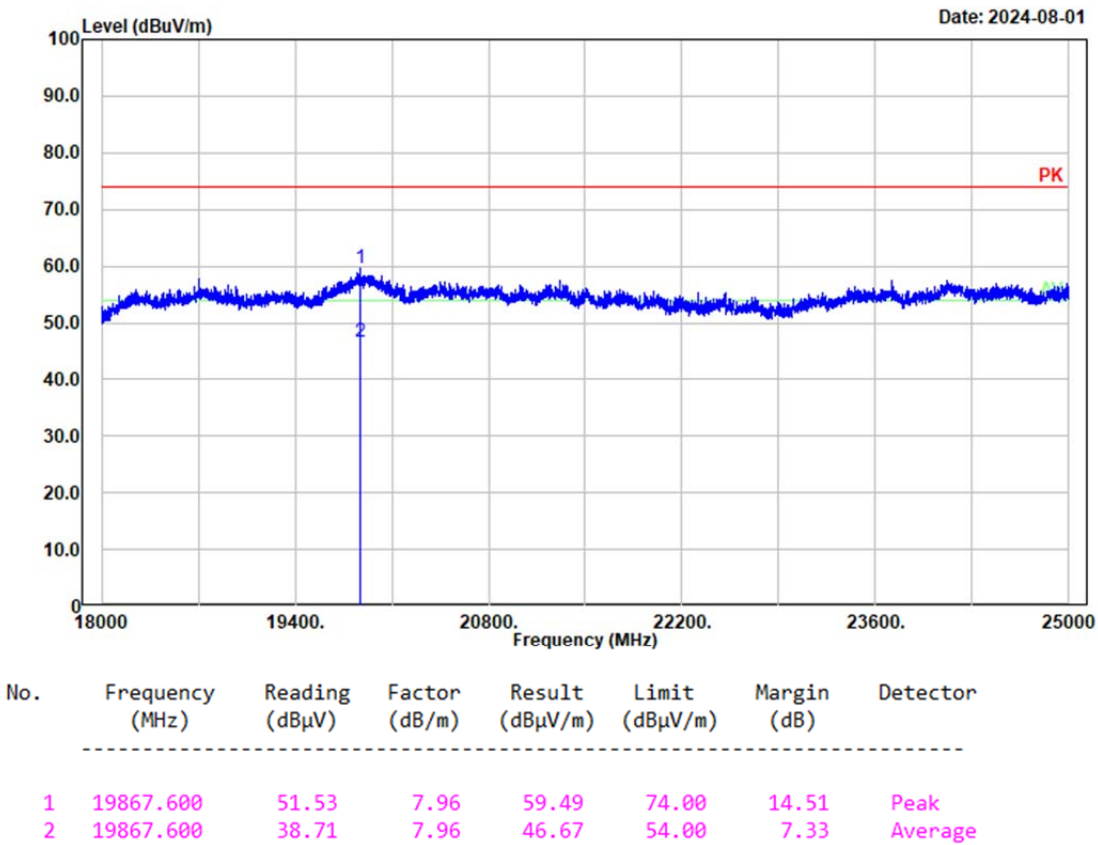


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	7386.000	35.35	11.54	46.89	74.00	27.11	Peak
2	7386.000	23.43	11.54	34.97	54.00	19.03	Average
3	17740.800	33.92	25.85	59.77	74.00	14.23	Peak
4	17740.800	21.38	25.85	47.23	54.00	6.77	Average

Project No.: 2403V24649E-RF
Tester: Tao Zhu
Polarization: Horizontal
Note: b High 2462MHz Chain1



Project No.: 2403V24649E-RF
Tester: Tao Zhu
Polarization: vertical
Note: b High 2462MHz Chain1



4.3 6dB Emission Bandwidth

Test Information:

Serial No.:	20WK-1	Test Date:	2024/8/1
Test Site:	RF	Test Mode:	Transmitting
Tester:	Tao Zhu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	26.3	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101591	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-1 8G	21060301	Each time	N/A

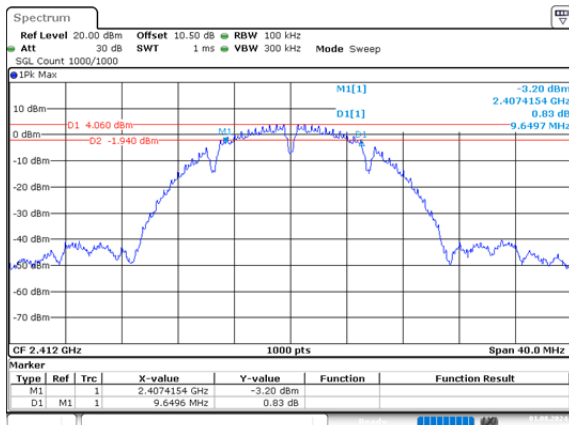
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

2412~2462

Mode	Value (MHz)	Limit (MHz)	Result
b_2412MHz_Chain 0	9.650	≥0.5	Pass
b_2412MHz_Chain 1	9.650	≥0.5	Pass
b_2437MHz_Chain 0	10.090	≥0.5	Pass
b_2437MHz_Chain 1	9.650	≥0.5	Pass
b_2462MHz_Chain 0	10.090	≥0.5	Pass
b_2462MHz_Chain 1	9.650	≥0.5	Pass
g_2412MHz_Chain 0	15.175	≥0.5	Pass
g_2412MHz_Chain 1	15.175	≥0.5	Pass
g_2437MHz_Chain 0	15.175	≥0.5	Pass
g_2437MHz_Chain 1	15.175	≥0.5	Pass
g_2462MHz_Chain 0	15.175	≥0.5	Pass
g_2462MHz_Chain 1	15.215	≥0.5	Pass
n20_2412MHz_Chain 0	15.175	≥0.5	Pass
n20_2412MHz_Chain 1	15.175	≥0.5	Pass
n20_2437MHz_Chain 0	15.175	≥0.5	Pass
n20_2437MHz_Chain 1	15.175	≥0.5	Pass
n20_2462MHz_Chain 0	15.175	≥0.5	Pass
n20_2462MHz_Chain 1	15.175	≥0.5	Pass
n40_2422MHz_Chain 0	35.235	≥0.5	Pass
n40_2422MHz_Chain 1	35.235	≥0.5	Pass
n40_2437MHz_Chain 0	35.235	≥0.5	Pass
n40_2437MHz_Chain 1	35.235	≥0.5	Pass
n40_2452MHz_Chain 0	35.235	≥0.5	Pass
n40_2452MHz_Chain 1	35.235	≥0.5	Pass

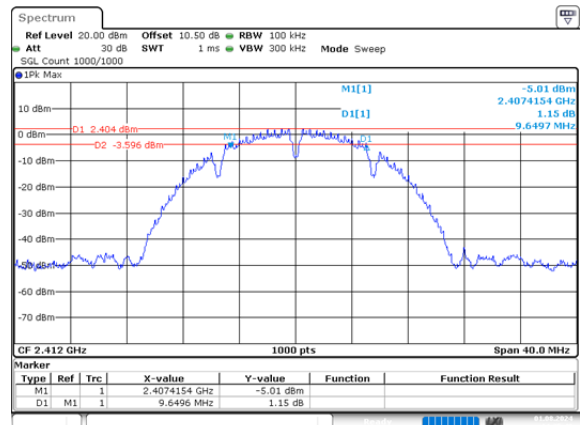
2412~2462

b_2412MHz_Chain 0 9.650MHz



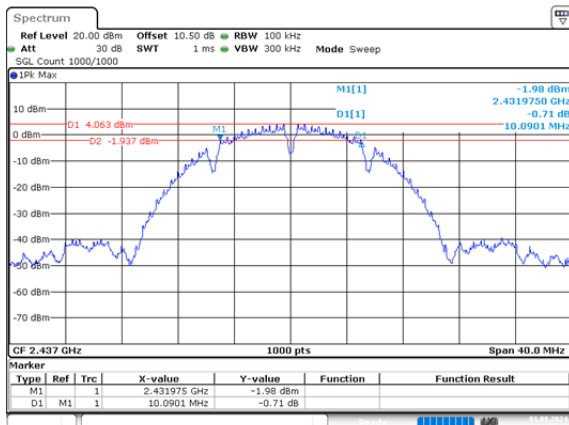
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:19:54

b_2412MHz_Chain 1 9.650MHz



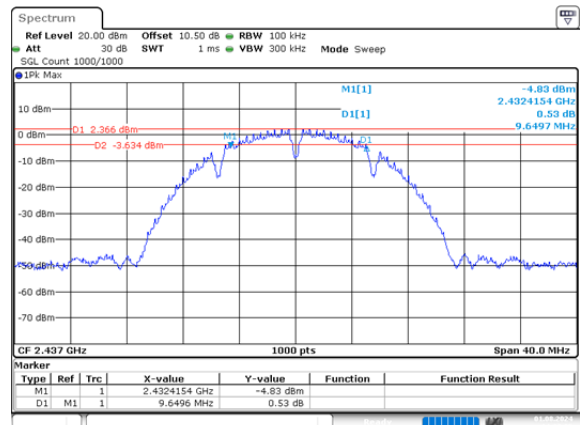
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:35:48

b_2437MHz_Chain 0 10.090MHz



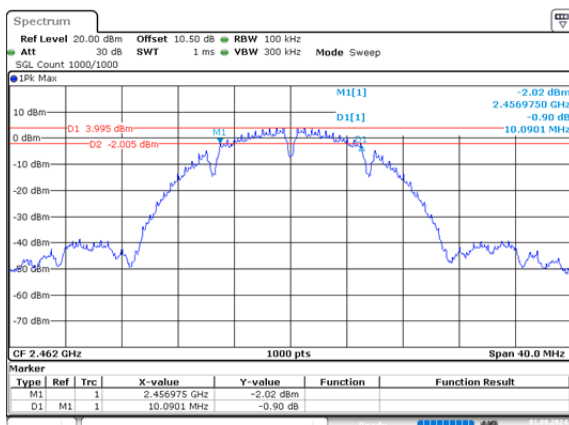
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:21:11

b_2437MHz_Chain 1 9.650MHz



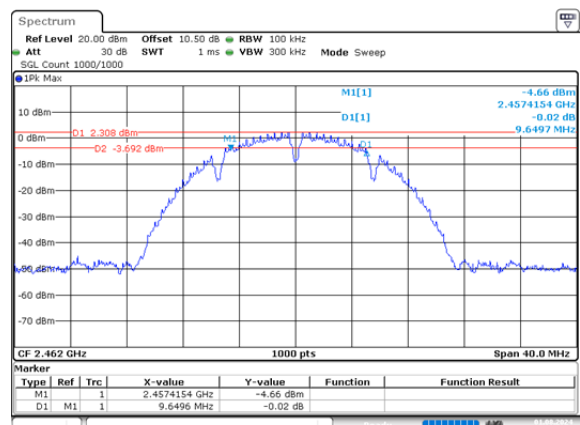
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:37:05

b_2462MHz_Chain 0 10.090MHz



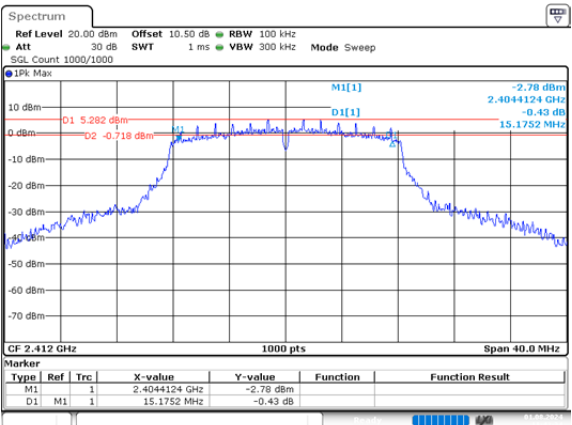
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:23:05

b_2462MHz_Chain 1 9.650MHz



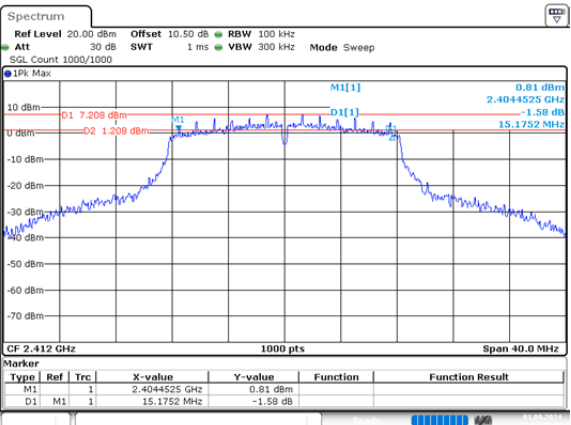
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:39:44

g_2412MHz_Chain 0 15.175MHz



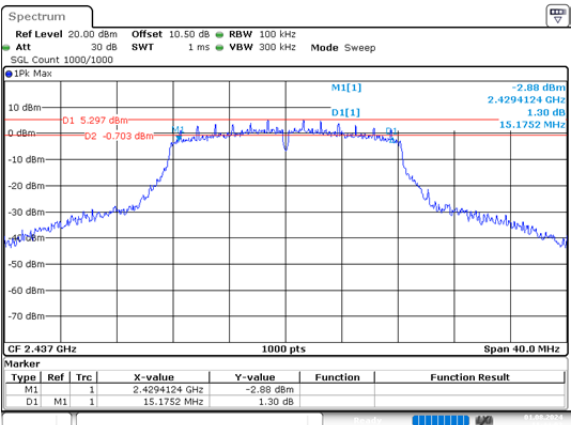
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:42:34

g_2412MHz_Chain 1 15.175MHz



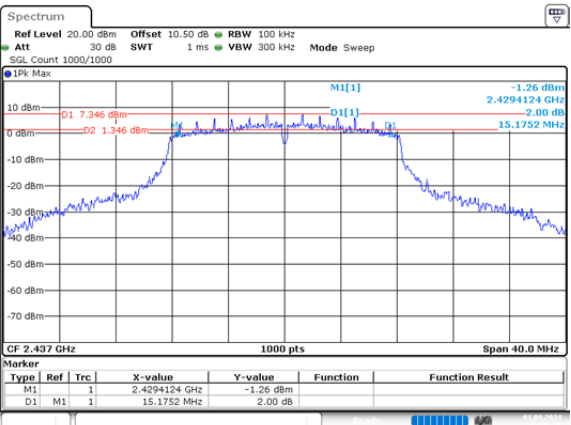
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:23:40

g_2437MHz_Chain 0 15.175MHz



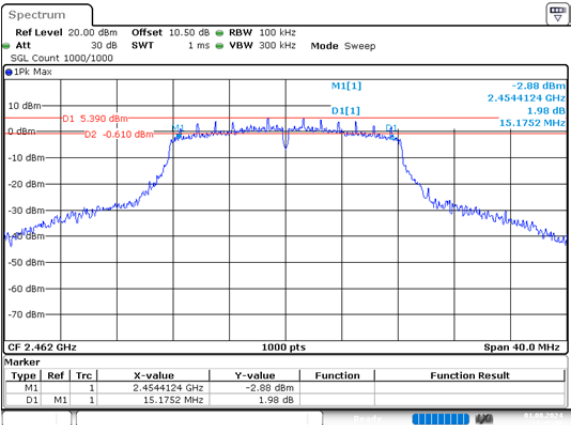
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:44:02

g_2437MHz_Chain 1 15.175MHz



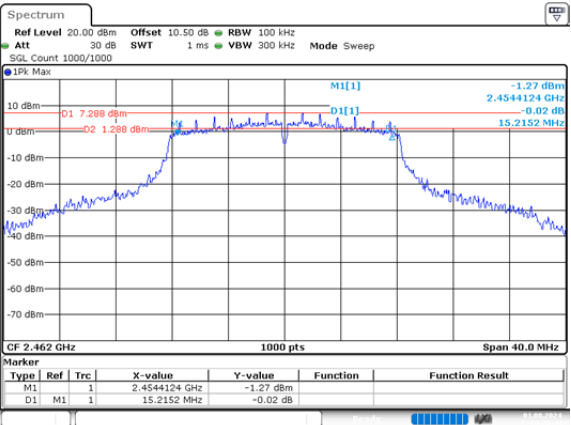
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:26:16

g_2462MHz_Chain 0 15.175MHz



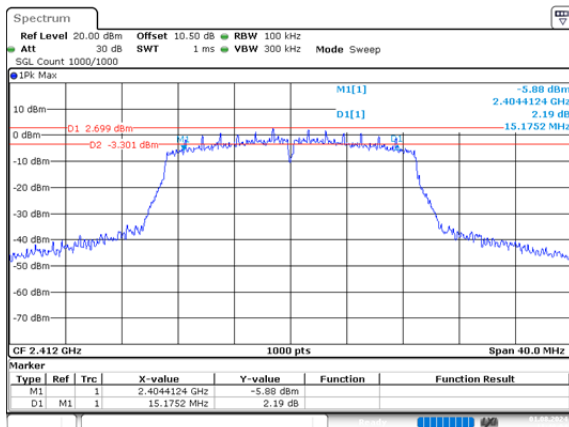
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:45:38

g_2462MHz_Chain 1 15.215MHz



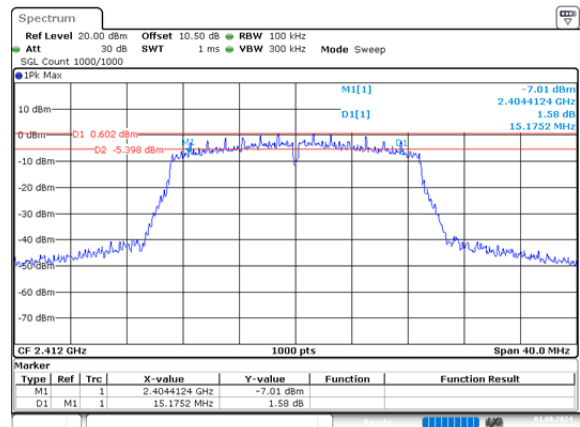
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:28:44

n20_2412MHz_Chain 0 15.175MHz



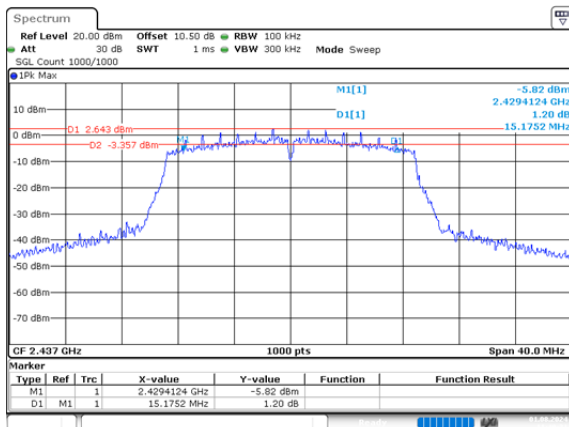
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:48:04

n20_2412MHz_Chain 1 15.175MHz



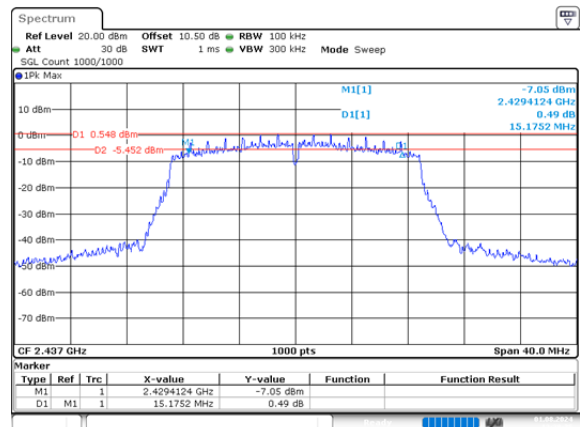
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:35:10

n20_2437MHz_Chain 0 15.175MHz



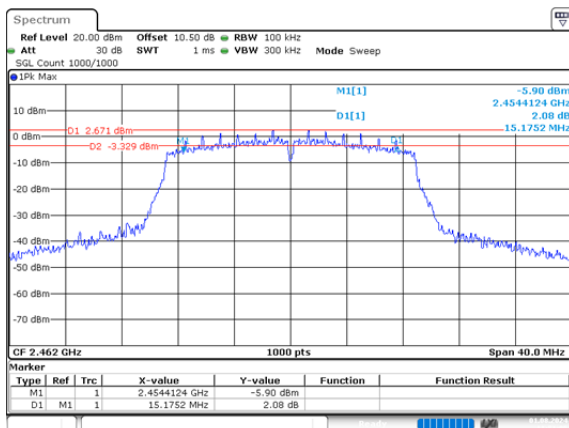
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:49:21

n20_2437MHz_Chain 1 15.175MHz



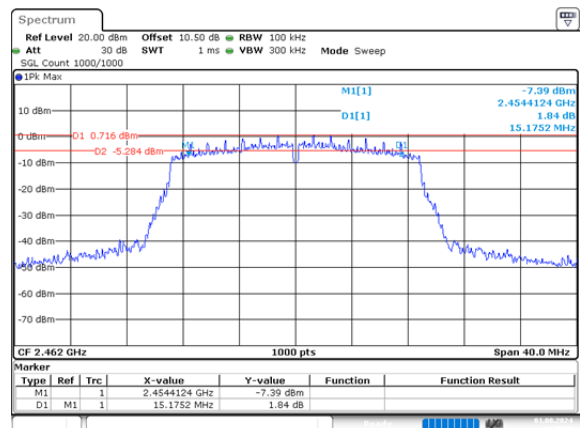
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:38:25

n20_2462MHz_Chain 0 15.175MHz



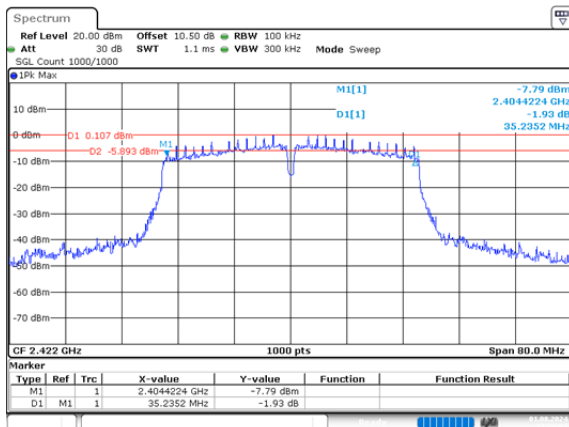
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:51:05

n20_2462MHz_Chain 1 15.175MHz



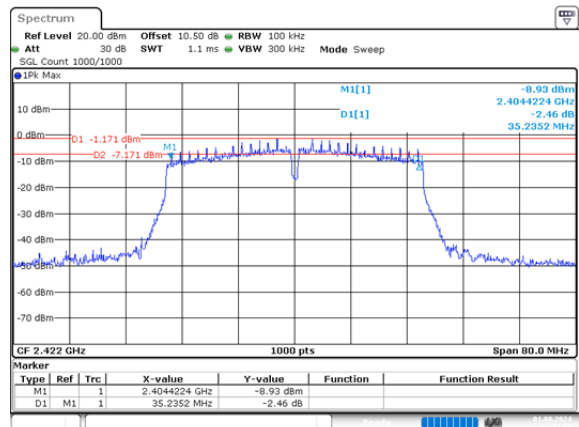
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:40:21

n40_2422MHz_Chain 0 35.235MHz



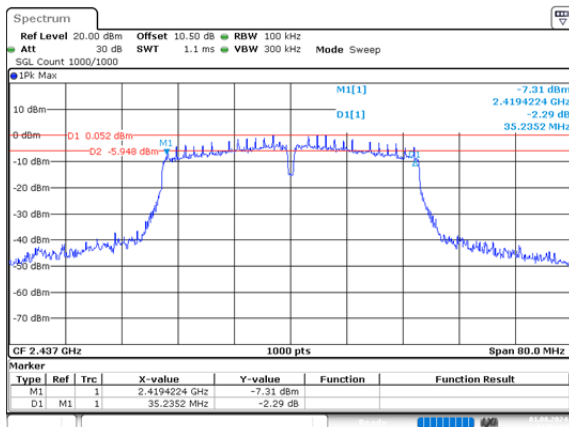
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:52:52

n40_2422MHz_Chain 1 35.235MHz



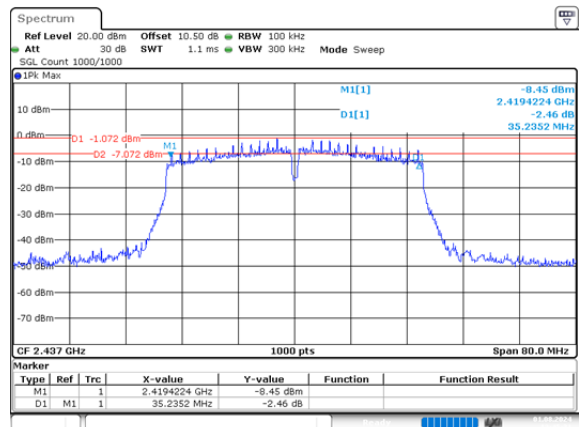
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:42:43

n40_2437MHz_Chain 0 35.235MHz



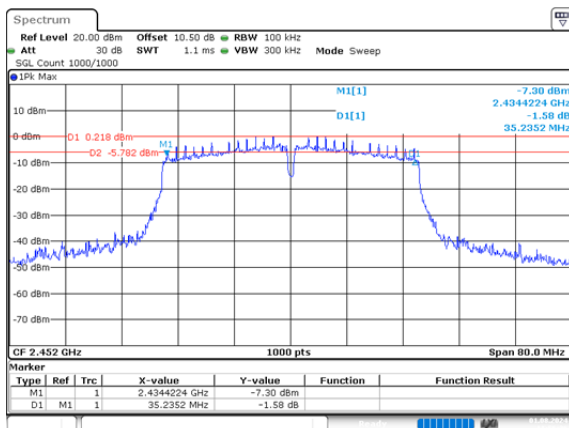
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:54:34

n40_2437MHz_Chain 1 35.235MHz



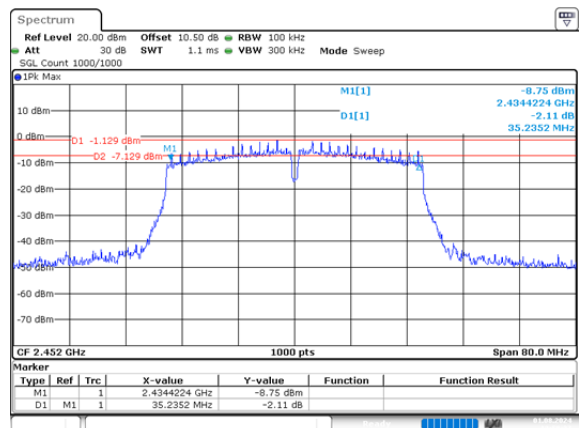
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:45:21

n40_2452MHz_Chain 0 35.235MHz



ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:56:36

n40_2452MHz_Chain 1 35.235MHz



ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:50:38

4.4 Power Spectral Density

Test Information:

Serial No.:	20WK-1	Test Date:	2024/8/1
Test Site:	RF	Test Mode:	Transmitting
Tester:	Tao Zhu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	26.3	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101591	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-1 8G	21060301	Each time	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

2412~2462

Mode	Value (dBm/3kHz)	Limit (dBm/3kHz)	Result
b_2412MHz_Chain 0	3.17	8	Pass
b_2412MHz_Chain 1	1.61	8	Pass
b_2437MHz_Chain 0	3.24	8	Pass
b_2437MHz_Chain 1	1.53	8	Pass
b_2462MHz_Chain 0	3.18	8	Pass
b_2462MHz_Chain 1	1.50	8	Pass
g_2412MHz_Chain 0	-11.21	8	Pass
g_2412MHz_Chain 1	-8.97	8	Pass
g_2437MHz_Chain 0	-10.36	8	Pass
g_2437MHz_Chain 1	-8.56	8	Pass
g_2462MHz_Chain 0	-10.02	8	Pass
g_2462MHz_Chain 1	-8.39	8	Pass
n20_2412MHz_Chain 0	-12.69	8	Pass
n20_2412MHz_Chain 1	-13.96	8	Pass
n20_2412MHz_Chain 0+Chain 1	-10.27	8	Pass
n20_2437MHz_Chain 0	-11.77	8	Pass
n20_2437MHz_Chain 1	-14.19	8	Pass
n20_2437MHz_Chain 0+Chain 1	-9.80	8	Pass
n20_2462MHz_Chain 0	-11.55	8	Pass
n20_2462MHz_Chain 1	-14.56	8	Pass
n20_2462MHz_Chain 0+Chain 1	-9.79	8	Pass
n40_2422MHz_Chain 0	-15.07	8	Pass
n40_2422MHz_Chain 1	-16.46	8	Pass
n40_2422MHz_Chain 0+Chain 1	-12.70	8	Pass
n40_2437MHz_Chain 0	-15.74	8	Pass
n40_2437MHz_Chain 1	-16.54	8	Pass
n40_2437MHz_Chain 0+Chain 1	-13.11	8	Pass
n40_2452MHz_Chain 0	-15.39	8	Pass
n40_2452MHz_Chain 1	-16.56	8	Pass
n40_2452MHz_Chain 0+Chain 1	-12.93	8	Pass

Note:

The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the

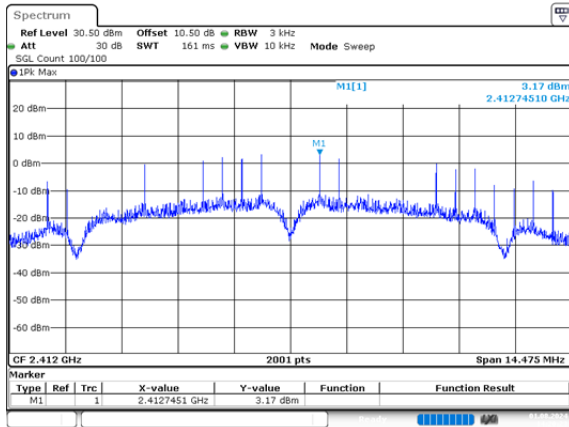
devices:

Array Gain = $10 \log(N_{\text{ANT}}/N_{\text{SS}})$ dB,

So directional gain = antenna gain + array gain = $2.77 + 10 \cdot \log(2/1) = 5.77$ dBi.

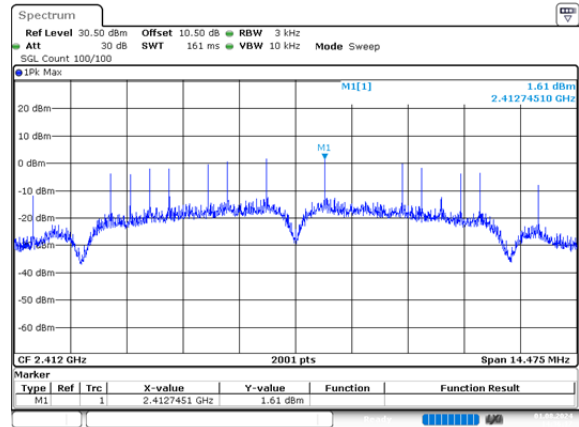
2412~2462

b_2412MHz_Chain 0 3.17dBm/3kHz



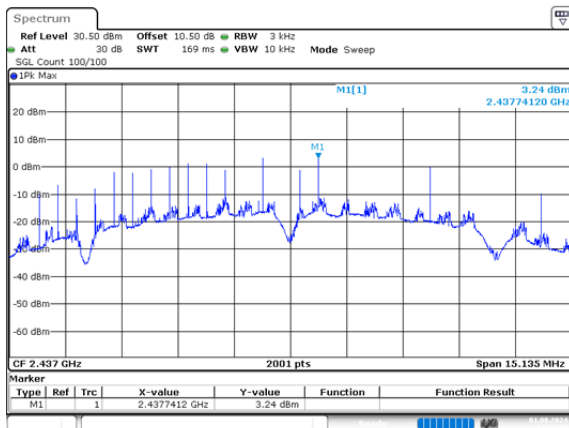
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:20:23

b_2412MHz_Chain 1 1.61dBm/3kHz



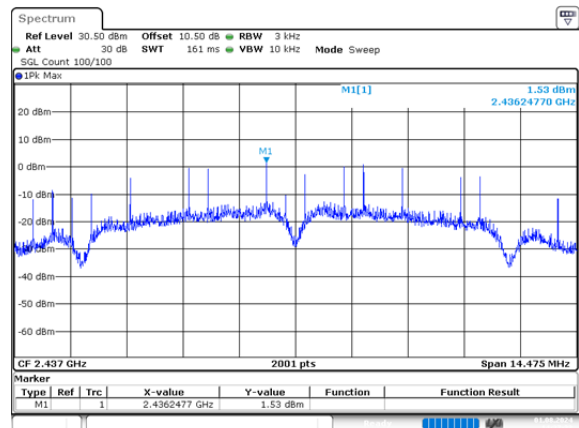
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:36:17

b_2437MHz_Chain 0 3.24dBm/3kHz



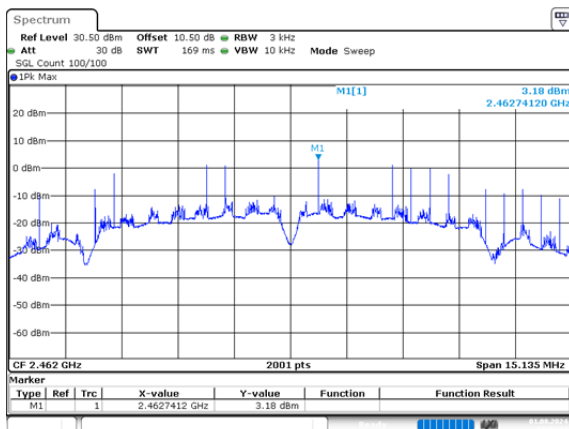
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:21:41

b_2437MHz_Chain 1 1.53dBm/3kHz



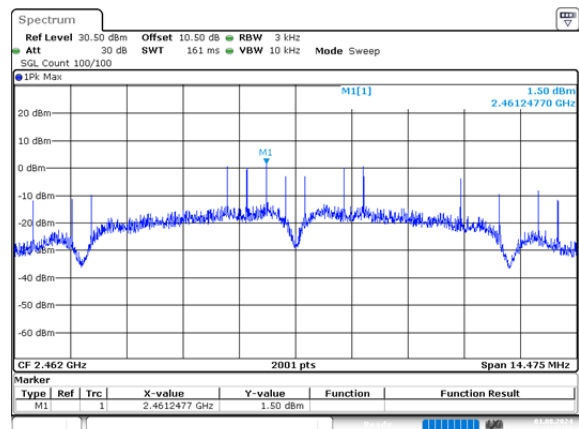
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:37:33

b_2462MHz_Chain 0 3.18dBm/3kHz



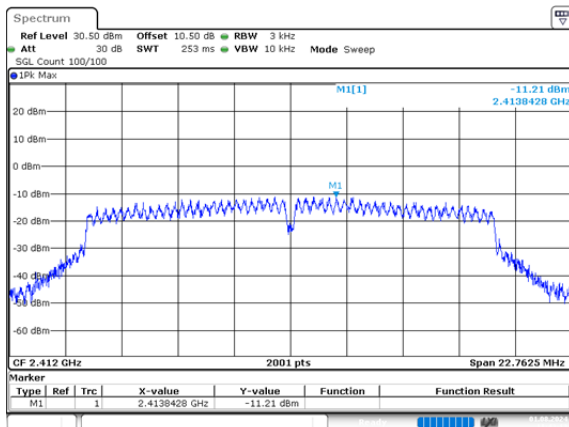
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:23:34

b_2462MHz_Chain 1 1.50dBm/3kHz

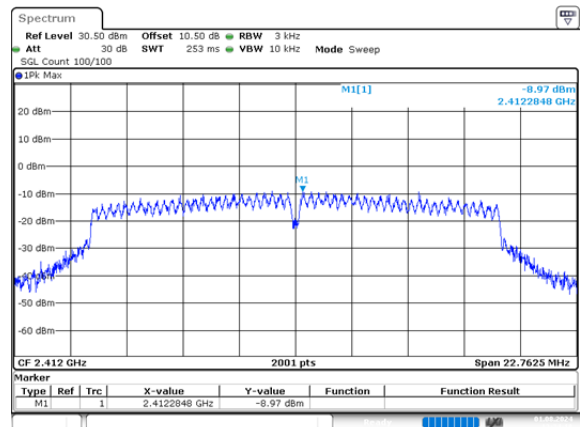


ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:40:12

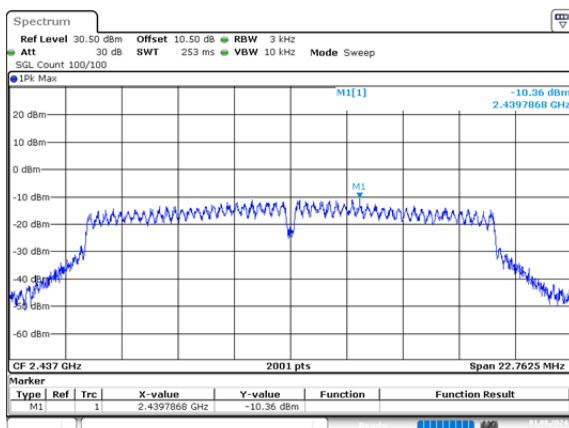
g_2412MHz_Chain 0 -11.21dBm/3kHz



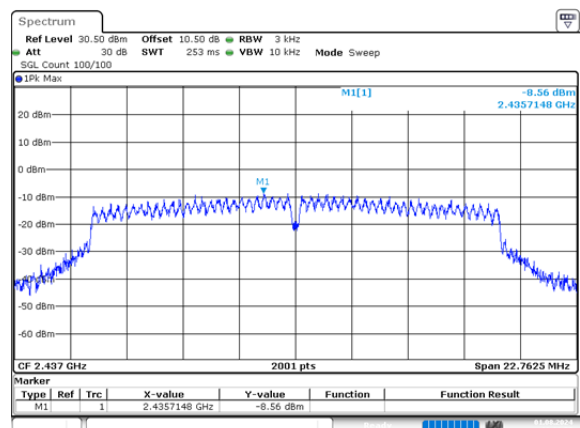
g_2412MHz_Chain 1 -8.97dBm/3kHz



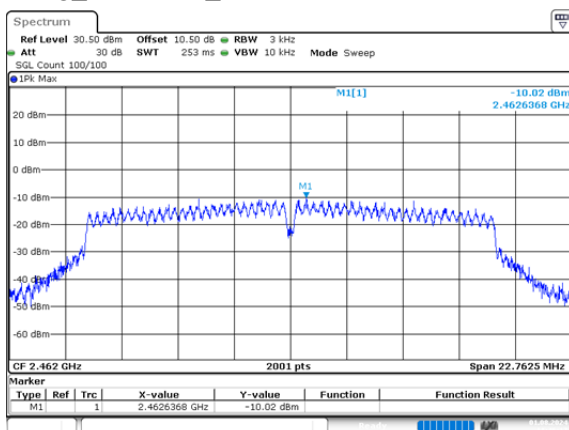
g_2437MHz_Chain 0 -10.36dBm/3kHz



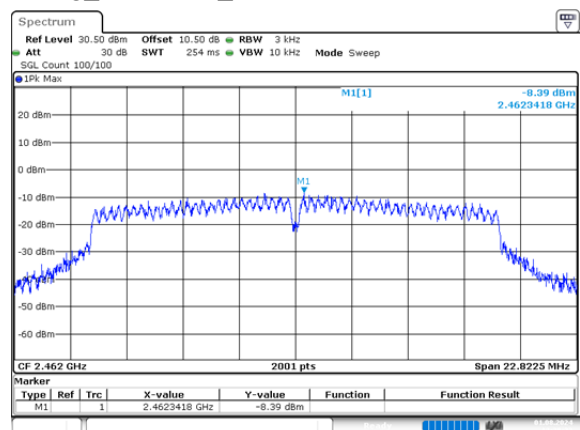
g_2437MHz_Chain 1 -8.56dBm/3kHz



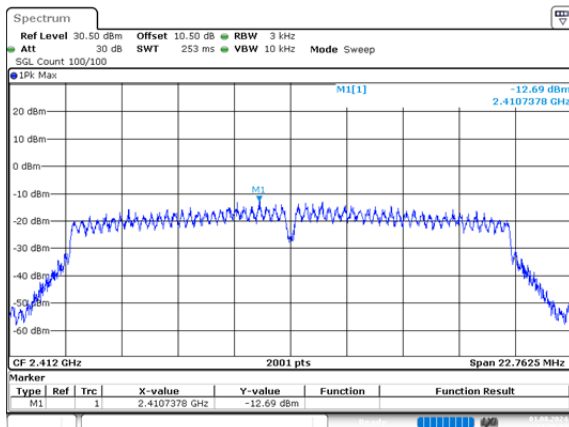
g_2462MHz_Chain 0 -10.02dBm/3kHz



g_2462MHz_Chain 1 -8.39dBm/3kHz

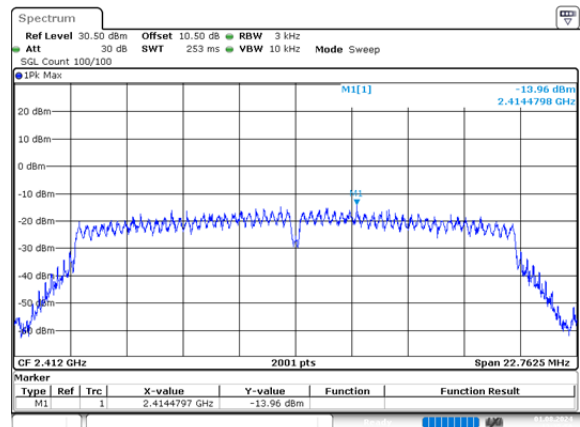


n20_2412MHz_Chain 0 -12.69dBm/3kHz



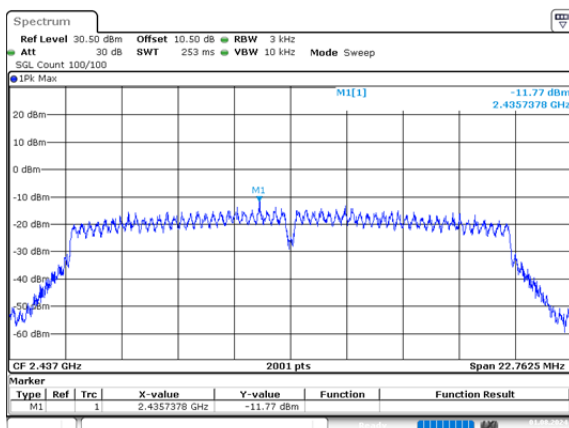
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Date: 1.AUG.2024 11:48:41

n20_2412MHz_Chain 1 -13.96dBm/3kHz



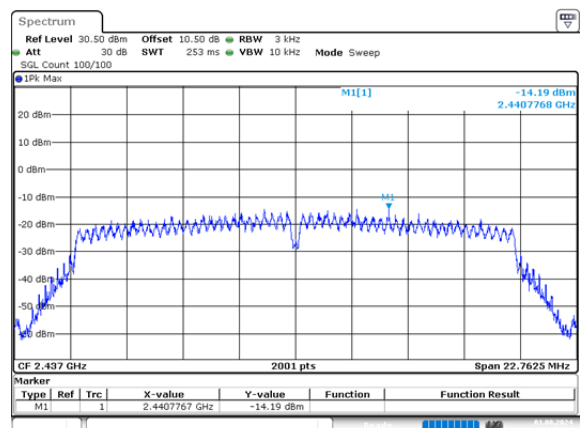
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Date: 1.AUG.2024 13:35:50

n20_2437MHz_Chain 0 -11.77dBm/3kHz



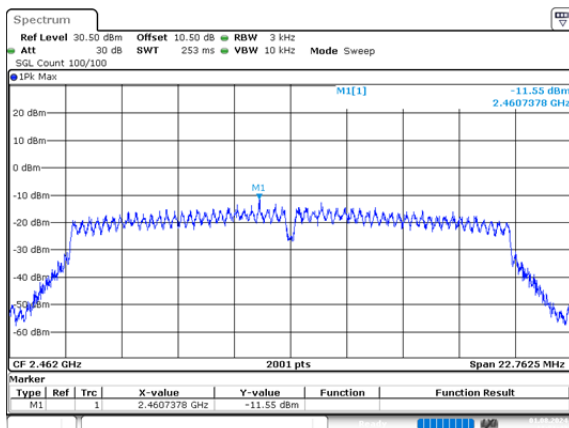
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n20_2437MHz_Chain 1 -14.19dBm/3kHz



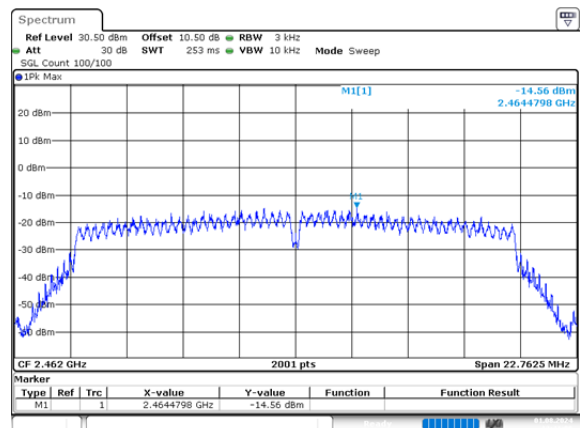
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:39:04

n20_2462MHz_Chain 0 -11.55dBm/3kHz



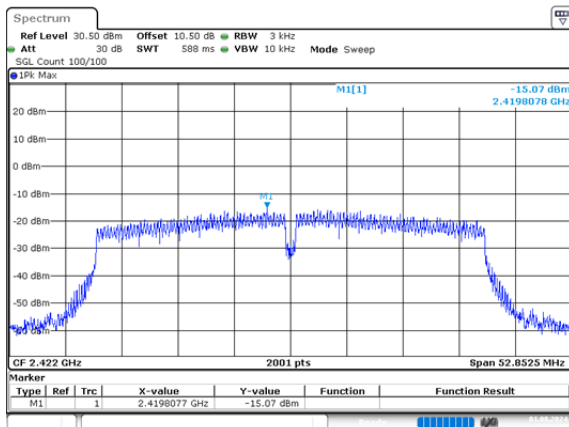
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:51:42

n20_2462MHz_Chain 1 -14.56dBm/3kHz

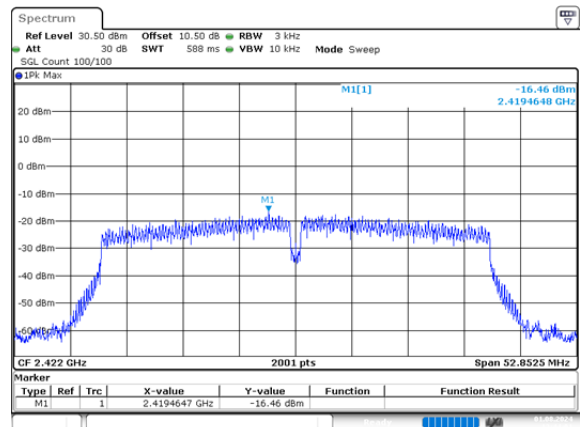


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Date: 1.AUG.2024 13:41:00

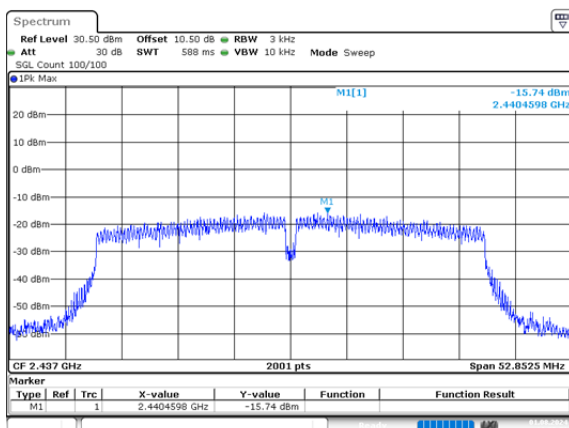
n40_2422MHz_Chain 0 -15.07dBm/3kHz



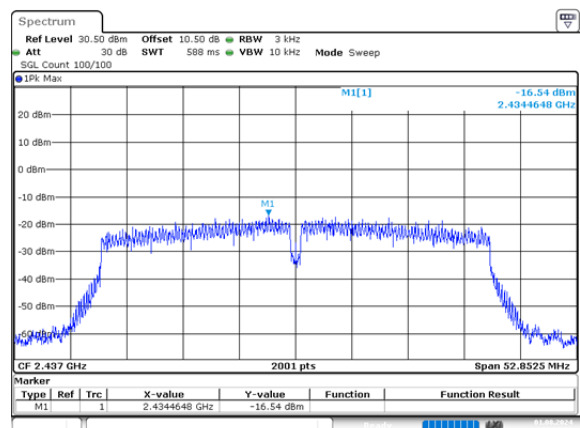
n40_2422MHz_Chain 1 -16.46dBm/3kHz



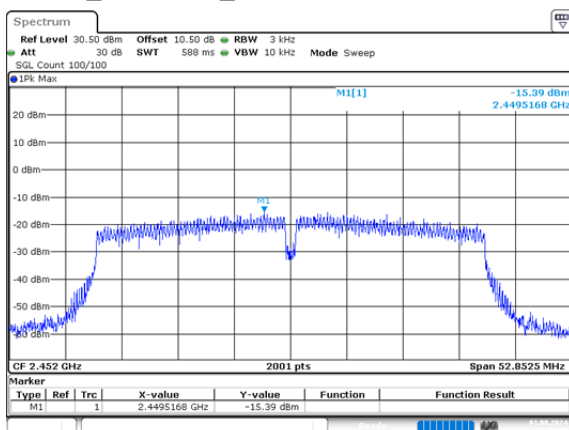
n40_2437MHz_Chain 0 -15.74dBm/3kHz



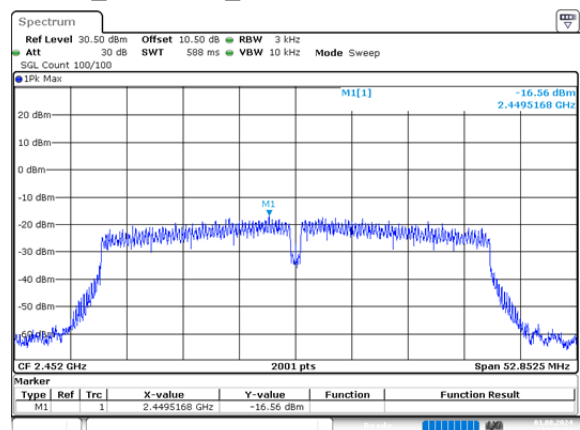
n40_2437MHz_Chain 1 -16.54dBm/3kHz



n40_2452MHz_Chain 0 -15.39dBm/3kHz



n40_2452MHz_Chain 1 -16.56dBm/3kHz



4.5 100 kHz Bandwidth of Frequency Band Edge

Test Information:

Serial No.:	20WK-1	Test Date:	2024/8/1
Test Site:	RF	Test Mode:	Transmitting
Tester:	Tao Zhu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	26.3	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101591	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-1 8G	21060301	Each time	N/A

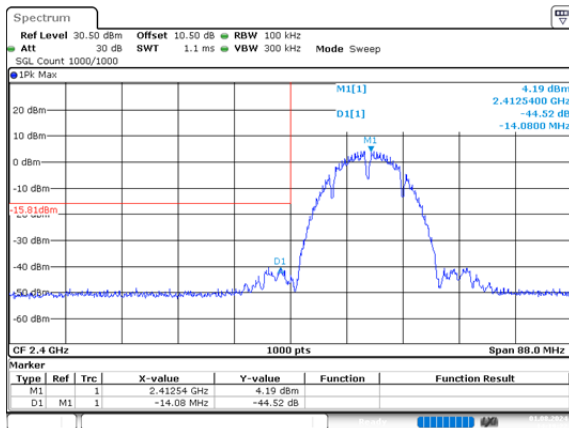
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

2412~2462

Mode	Value (dB)	Limit (dB)	Result
b_2412MHz_Chain 0	44.52	20	Pass
b_2412MHz_Chain 1	47.55	20	Pass
b_2462MHz_Chain 0	51.74	20	Pass
b_2462MHz_Chain 1	50.74	20	Pass
g_2412MHz_Chain 0	32.43	20	Pass
g_2412MHz_Chain 1	30.41	20	Pass
g_2462MHz_Chain 0	47.41	20	Pass
g_2462MHz_Chain 1	45.92	20	Pass
n20_2412MHz_Chain 0	38.65	20	Pass
n20_2412MHz_Chain 1	40.90	20	Pass
n20_2462MHz_Chain 0	48.74	20	Pass
n20_2462MHz_Chain 1	48.21	20	Pass
n40_2422MHz_Chain 0	38.78	20	Pass
n40_2422MHz_Chain 1	41.31	20	Pass
n40_2452MHz_Chain 0	42.05	20	Pass
n40_2452MHz_Chain 1	44.44	20	Pass

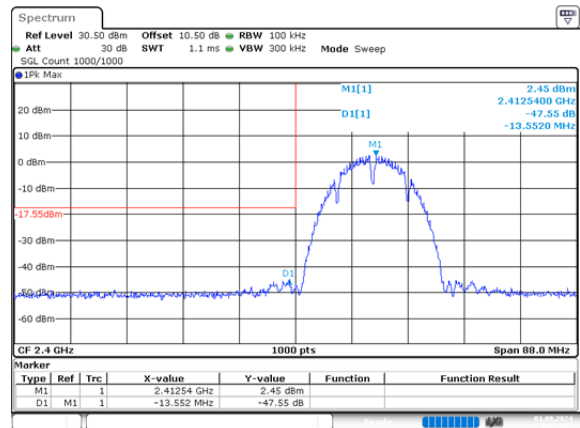
2412~2462

b_2412MHz_Chain 0 44.52dB



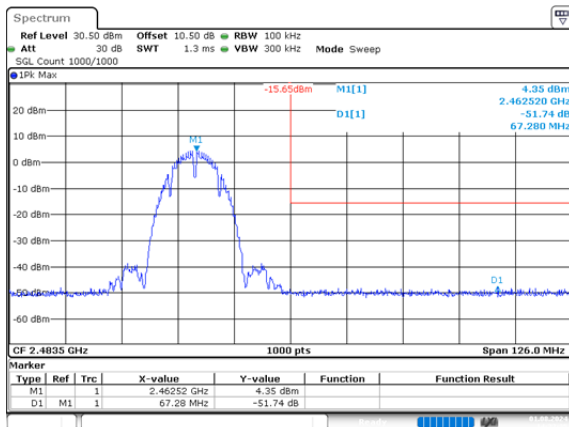
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:19:22

b_2412MHz_Chain 1 47.55dB



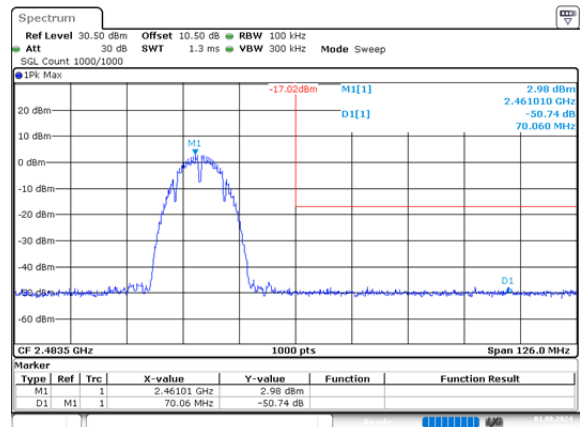
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:35:17

b_2462MHz_Chain 0 51.74dB



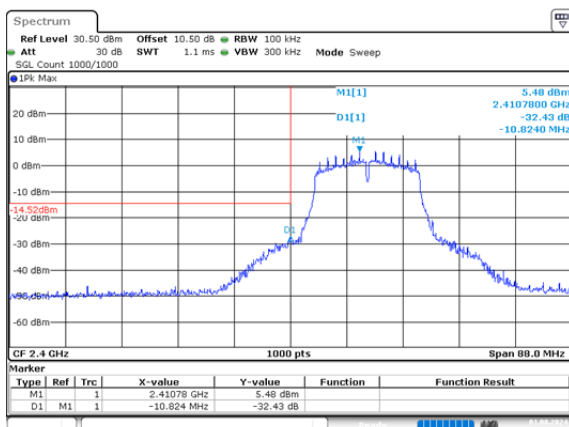
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:22:36

b_2462MHz_Chain 1 50.74dB



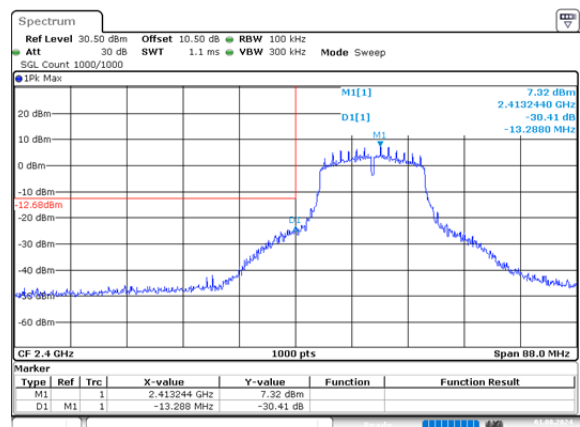
ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 14:39:16

g_2412MHz_Chain 0 32.43dB



ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 11:42:05

g_2412MHz_Chain 1 30.41dB



ProjectNo.:2403V24649E-RF Tester:Tao Zhu
Date: 1.AUG.2024 13:23:10