TEST REPORT

Applicant Name:	Shenzhen Feima Robotics Co., Ltd.
Address:	13th Floor, Building A4, Nanshan Zhiyuan, No. 1001 Xueyuan Avenue, Taoyuan Street, Nanshan District, Shenzhen, China
Report Number:	SZ4231220-76923E-RF-00A
FCC ID:	2A7JA-SLAM2000

Test Standard (s)

FCC PART 15.247

Sample Description

Product Type:	HANDHELD LASER SCANNER
Model No.:	SLAM2000
Multiple Model(s) No.:	X70GO
Trade Mark:	FEIMA ROBOTICS / STONEX
Date Received:	2024/01/19
Issue Date:	2024/03/25

Test Result:	Pass▲

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

Prepared and Checked By:

April Zhang

April Zhang
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

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

Revision Number	Report Number	Description of Revision	Date of Revision
0	SZ4231220-76923E-RF-00A	Original Report	2024/03/25

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	HANDHELD LASER SCANNER
Tested Model	SLAM2000
Multiple Model(s)	X70^{GO}
Frequency Range	2412-2472MHz
Maximum Conducted Peak Output Power	21.51dBm
Modulation Technique	DSSS,OFDM
Antenna Specification#	ANT0: 2.13dBi; ANT1: 2.13dBi (It is provided by the manufacturer)
Voltage Range	DC 5-20V from Type-C Port or DC 10.8V from battery
Sample serial number	2FJI-2 for Conducted and Radiated Emissions Test 2FJI-1 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	N/A
Note: The Multiple models are electrically identical with the test model except for model number. Please refer to the declaration letter# for more detail, which was provided by manufacturer.	

Objective

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

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

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

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

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Frequency		213.55 Hz(k=2, 95% level of confidence)
RF output power, conducted		0.72 dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.75 dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.94dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.84dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.30dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.05dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.35dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.44dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.16dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
Supply voltages		±0.4%

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

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

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

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

"cmd.exe"# software was used to test. The software and power level was provided by the applicant. The device was tested with the worst case was performed as below:

Test Modes	Test Channels	Test Frequency	Data rate	Power Level Setting#	
				ANT 0	ANT 1
802.11b	Lowest	2412	1Mbps	12	15
	Middle	2442	1Mbps	12	15
	Highest	2472	1Mbps	12	15
802.11g	Lowest	2412	6Mbps	10	13
	Middle	2442	6Mbps	10	13
	Highest	2472	6Mbps	10	13
802.11n-HT20	Lowest	2412	MCS0	9	9
	Middle	2442	MCS0	9	9
	Highest	2472	MCS0	9	9

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. For 802.11 b/g modes, the device only support SISO mode.
3. For 802.11n mode, the device supports SISO and MIMO in all modes, per pretest, the MIMO mode was the worst mode for all the modes.

Duty cycle

Test Result: Compliant. Please refer to the Appendix.

Support Equipment List and Details

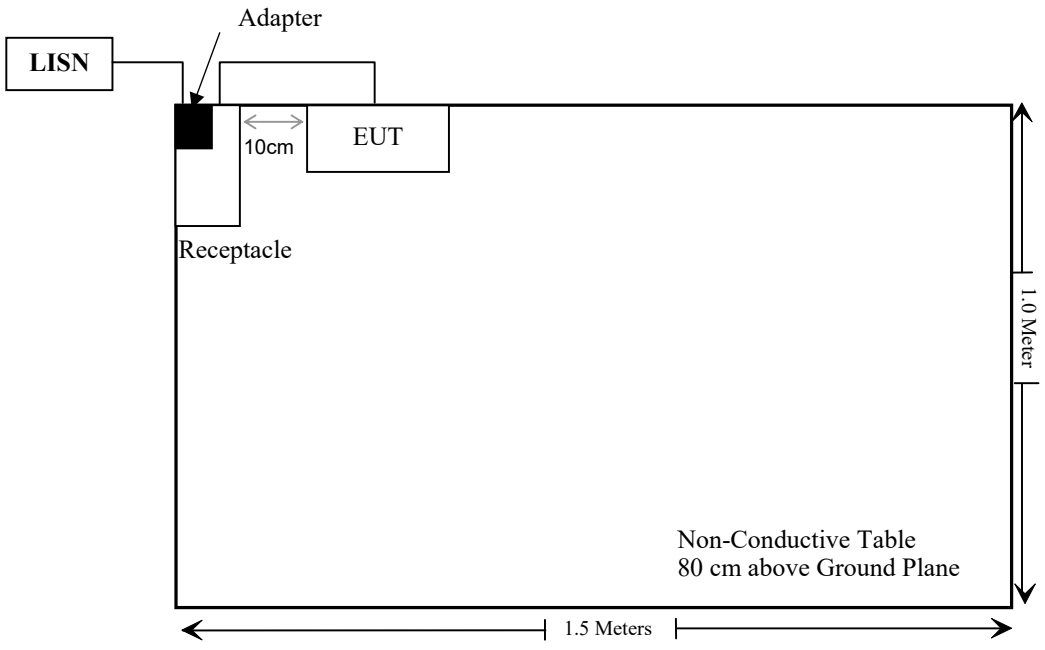
Manufacturer	Description	Model	Serial Number
Huntkey	Adapter	HKA06520033	A65D2N233X000203

External I/O Cable

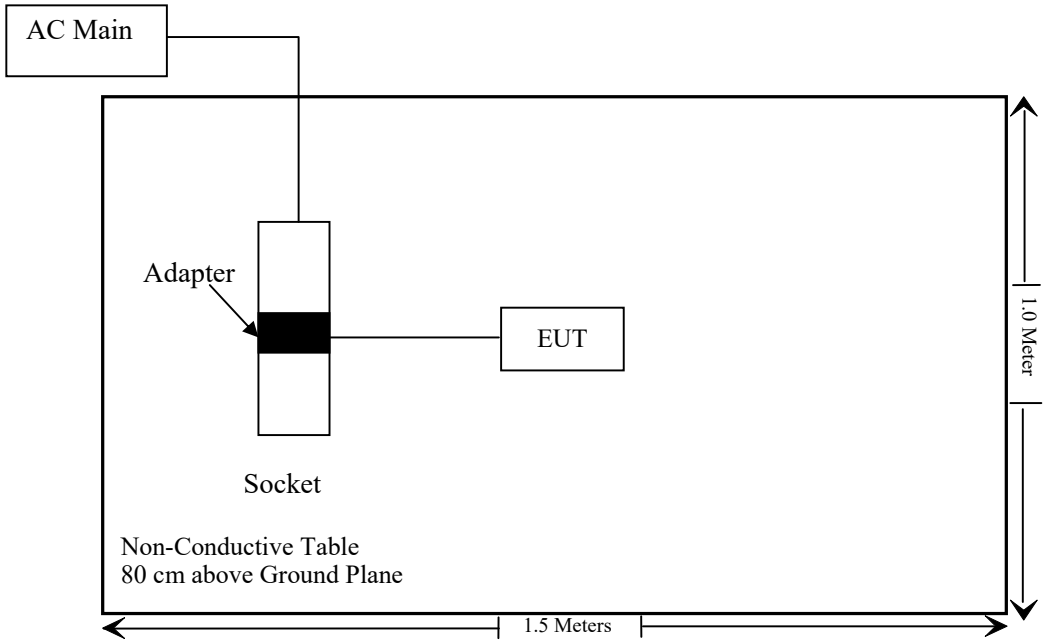
Cable Description	Length (m)	From Port	To
Un-shielding Detachable USB Cable	1.0	EUT	Adapter

Block Diagram of Test Setup

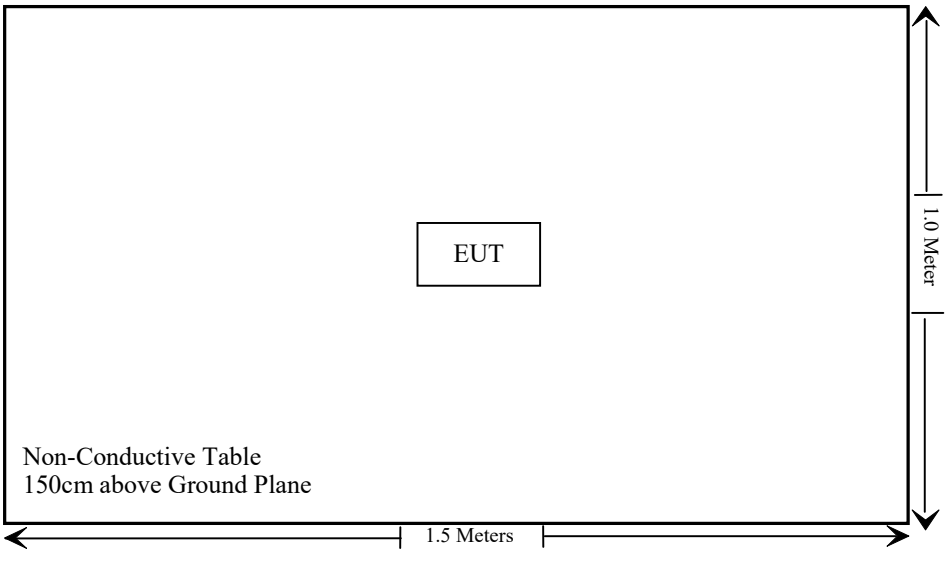
For Conducted Emissions:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (1) &§2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth & Occupied Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/01/16	2025/01/15
Rohde & Schwarz	LISN	ENV216	101613	2024/01/16	2025/01/15
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2023/08/03	2024/08/02
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2023/08/03	2024/08/02
Audix	EMI Test software	E3	191218	NCR	NCR
Radiated Emissions Test					
R&S	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2023/06/08	2024/06/07
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2024/07/19
ETS	Passive Loop Antenna	6512	29604	2023/07/07	2024/07/06
Unknown	Cable	Chamber Cable 1	F-03-EM236	2023/08/03	2024/08/02
Unknown	Cable	Chamber Cable 4	EC-007	2023/08/03	2024/08/02
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2023/04/18	2024/04/17
COM-POWER	Pre-amplifier	PA-122	181919	2023/06/29	2024/06/28
A.H.System	Pre-amplifier	PAM-1840VH	190	2023/08/03	2024/08/02
Schwarzbeck	Horn Antenna	BBHA9120D (1201)	1143	2023/07/26	2024/07/25
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
MICRO-TRONICS	2.8G Passband filter	HPM50111	F-03-EM217	2023/08/03	2024/08/02
Unknown	RF Cable	KMSE	0735	2023/10/08	2024/10/07
Unknown	RF Cable	UFA147	219661	2023/10/08	2024/10/07
Unknown	RF Cable	XH750A-N	J-10M	2023/10/08	2024/10/07
UTIFLEX	RF Cable	NO. 13	232308-001	2023/08/03	2024/08/02
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
RF Conducted Test					
Tonscend	RF control Unit	JS0806-2	19D8060154	2023/09/06	2024/09/05
Agilent	USB wideband power sensor	U2021XA	MY52350001	2023/06/08	2024/06/07
Rohde & Schwarz	Signal and Spectrum Analyzer	FSV40	101473	2024/01/16	2025/01/15
Unknown	10dB Attenuator	Unknown	F-03-EM190	2023/07/04	2024/07/03

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

FCC§15.247 (i), §1.1307 (b) (1) &§2.1093 – RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

Measurement Result

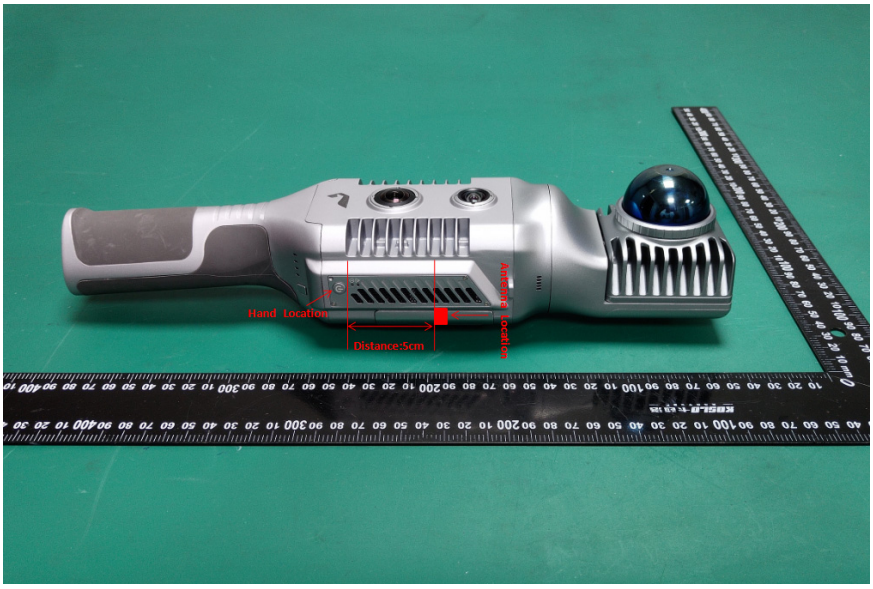
For worst case:

Mode	Frequency (MHz)	Max tune-up conducted Average power# (dBm)	Max tune-up conducted Average power# (mW)	Distance (mm)	Calculated value	Threshold (10-g SAR)	SAR Test Exclusion
Wi-Fi	2412-2472	16.0	39.81	50	1.3	7.5	Yes

Note: This device is a handheld device.

Result: Compliant.

Antennas Location:



FCC §15.203 - 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 compliance 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.

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.

Antenna Connector Construction

The EUT has two internal antennas arrangement, which were permanently attached and the antenna gain[#] is 2.13dBi, fulfill the requirement of this section. Please refer to the EUT photos.

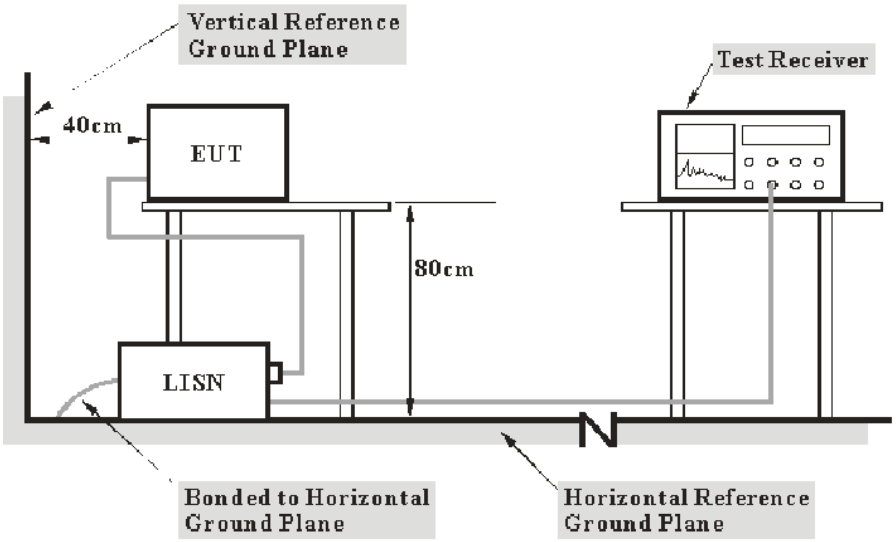
Result: Compliant

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

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

During the conducted emission test, the device was connected to the outlet of the LISN.

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

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

Factor & Over Limit Calculation

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

Factor = LISN VDF + Cable Loss

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

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

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

Test Data

Environmental Conditions

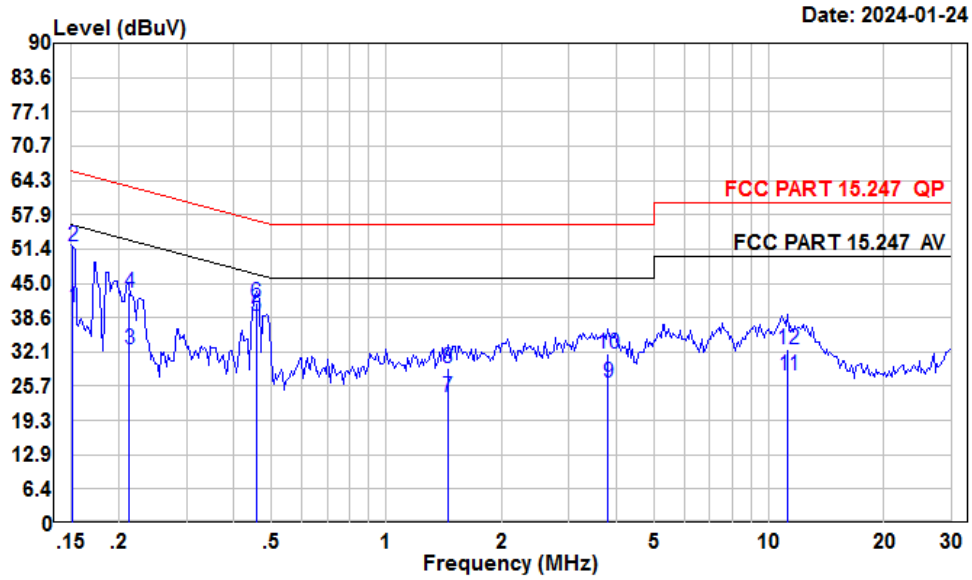
Temperature:	25 ℃
Relative Humidity:	45 %
ATM Pressure:	101 kPa

The testing was performed by Macy Shi on 2024-01-24.

EUT operation mode: Transmitting

Wi-Fi: *(Maximum output power mode, 802.11n20 mode, 2442MHz, MIMO)*

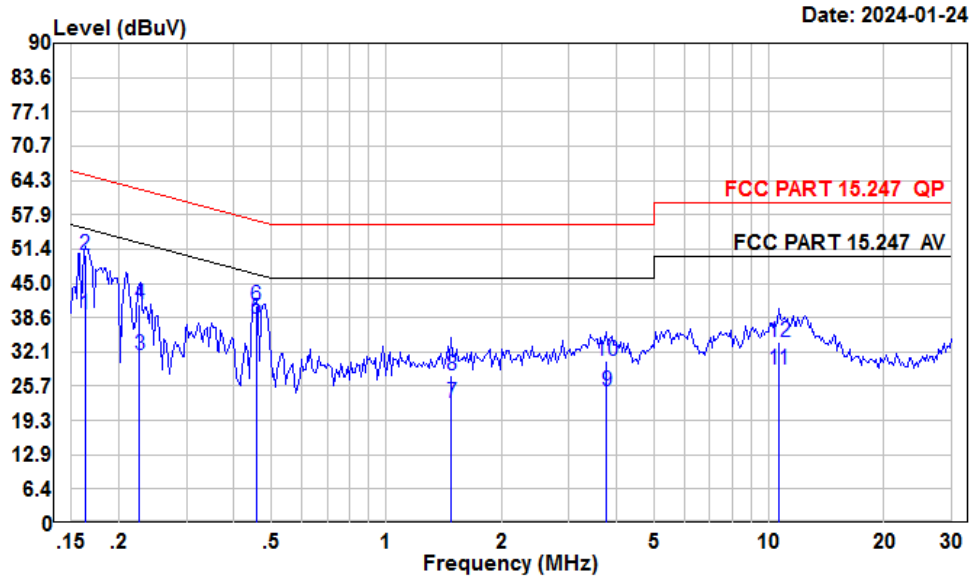
AC 120V/60 Hz, Line



Condition: Line
Project : SZ4231220-76923E-RF
Tester : Macy shi
Note : 2.4G WIFI

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.15	19.66	40.41	10.60	10.15	55.91	-15.50	Average
2	0.15	31.27	52.02	10.60	10.15	65.91	-13.89	QP
3	0.21	12.02	32.75	10.61	10.12	53.10	-20.35	Average
4	0.21	22.45	43.18	10.61	10.12	63.10	-19.92	QP
5	0.46	18.15	39.02	10.69	10.18	46.76	-7.74	Average
6	0.46	20.34	41.21	10.69	10.18	56.76	-15.55	QP
7	1.45	2.83	23.64	10.75	10.06	46.00	-22.36	Average
8	1.45	8.26	29.07	10.75	10.06	56.00	-26.93	QP
9	3.80	5.50	26.37	10.61	10.26	46.00	-19.63	Average
10	3.80	11.05	31.92	10.61	10.26	56.00	-24.08	QP
11	11.20	7.07	27.83	10.54	10.22	50.00	-22.17	Average
12	11.20	11.98	32.74	10.54	10.22	60.00	-27.26	QP

AC 120V/60 Hz, Neutral



Condition: Neutral
Project : SZ4231220-76923E-RF
Tester : Macy shi
Note : 2.4G WIFI

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.16	18.36	39.07	10.56	10.15	55.30	-16.23	Average
2	0.16	29.61	50.32	10.56	10.15	65.30	-14.98	QP
3	0.23	10.66	31.52	10.71	10.15	52.57	-21.05	Average
4	0.23	20.08	40.94	10.71	10.15	62.57	-21.63	QP
5	0.46	17.50	38.47	10.79	10.18	46.76	-8.29	Average
6	0.46	19.84	40.81	10.79	10.18	56.76	-15.95	QP
7	1.48	1.99	22.71	10.66	10.06	46.00	-23.29	Average
8	1.48	6.93	27.65	10.66	10.06	56.00	-28.35	QP
9	3.76	3.74	24.70	10.70	10.26	46.00	-21.30	Average
10	3.76	9.44	30.40	10.70	10.26	56.00	-25.60	QP
11	10.62	7.83	28.83	10.76	10.24	50.00	-21.17	Average
12	10.62	13.10	34.10	10.76	10.24	60.00	-25.90	QP

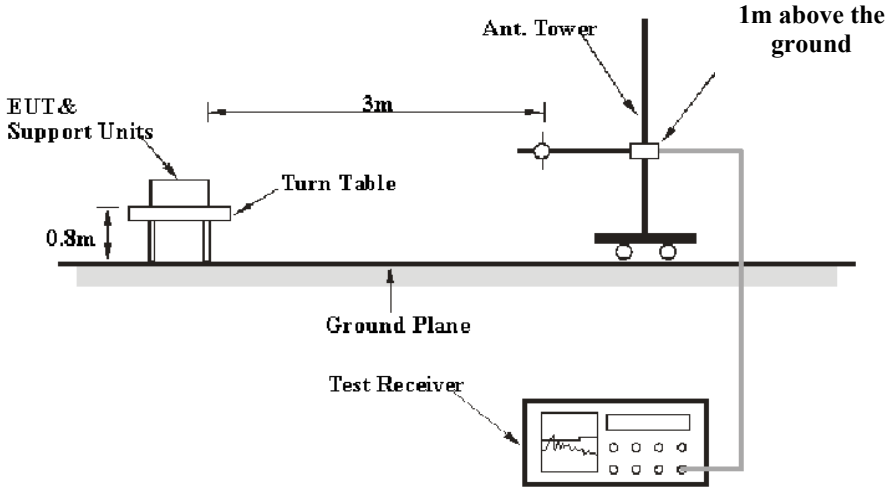
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

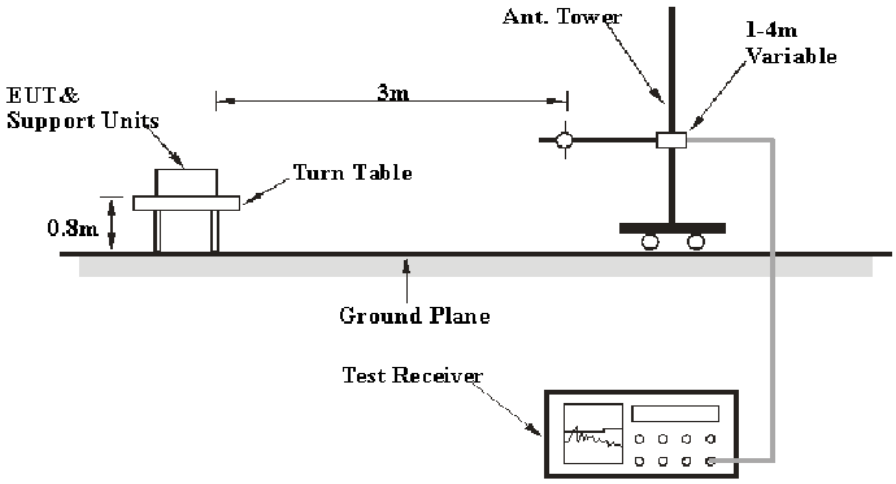
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

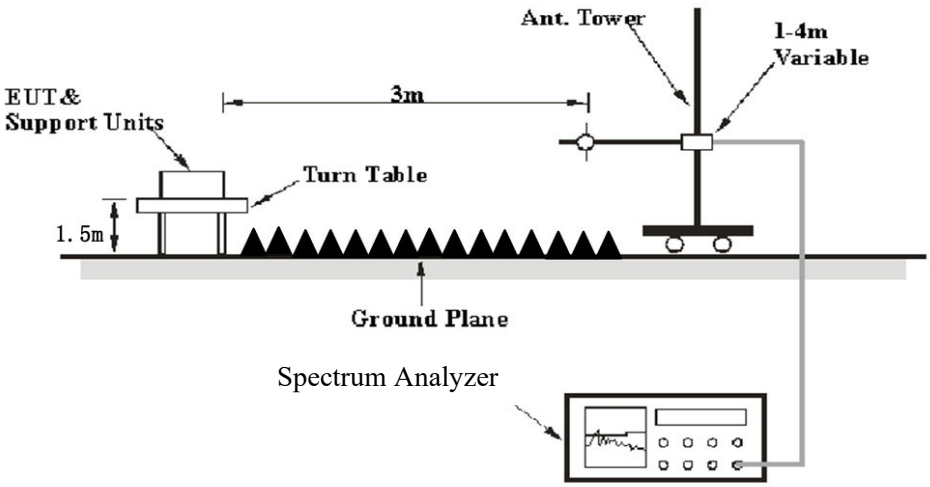
9 kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 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:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>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.

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 Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit or 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 margin calculation is as follows:

Margin/Over Limit = Corrected Amplitude/Level-Limit
Corrected Amplitude/Level = Reading + Corrected Factor

Test Data

Environmental Conditions

Temperature:	22~24 ℃
Relative Humidity:	50~55 %
ATM Pressure:	101 kPa

The testing was performed by Warren Huang on 2024-01-24 and 2024-03-15 for below 1GHz and Zenos Qiao on 2024-02-23 for above 1GHz.

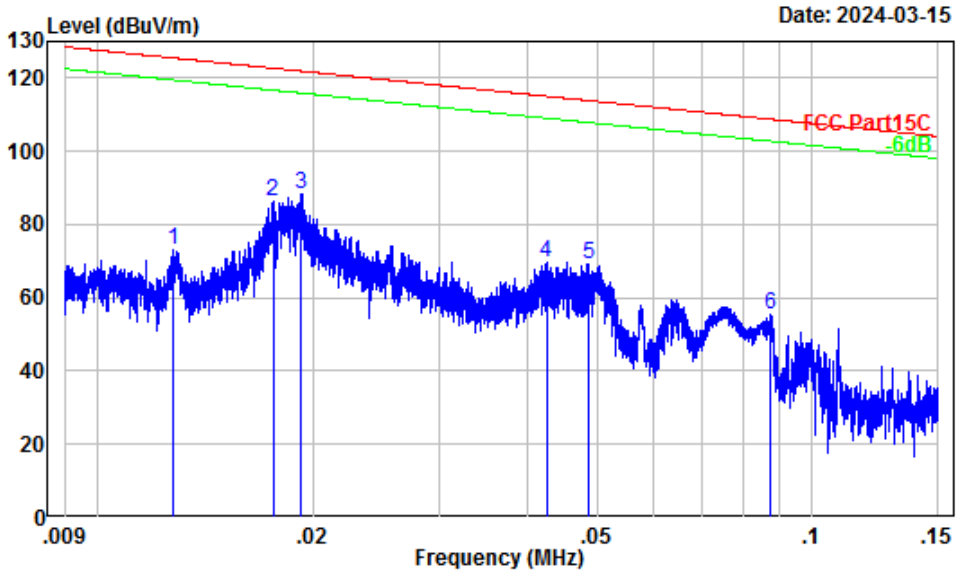
EUT operation mode: Transmitting

Pre-scan in the X, Y and Z axes of orientation, the worst case z-axis of orientation was recorded.

9 kHz-30MHz: *(Maximum output power mode, 802.11n20 mode, 2442MHz, MIMO)*

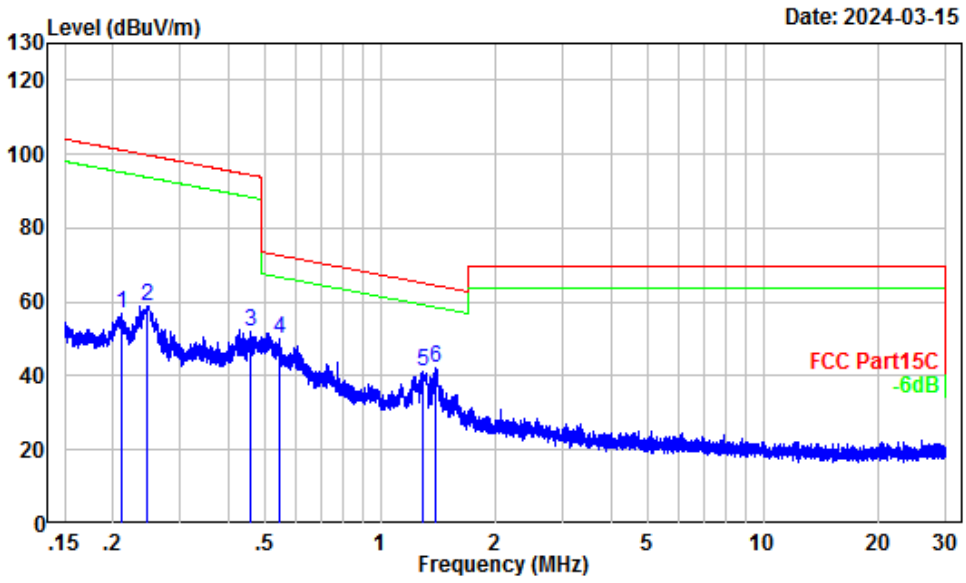
Note: When the test result of peak was less than the limit of QP more than 6dB, just peak value were recorded.

Parallel (worst case)



Site : Chamber A
Condition : 3m
Project Number: SZ4231220-76923E-RF
Note : 2.4G WIFI
Tester : Warren Huang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	52.46	20.50	72.96	125.48	-52.52	Peak
2	0.02	50.97	35.31	86.28	122.69	-36.41	Peak
3	0.02	50.47	37.82	88.29	121.93	-33.64	Peak
4	0.04	43.32	26.21	69.53	115.04	-45.51	Peak
5	0.05	41.40	27.65	69.05	113.86	-44.81	Peak
6	0.09	35.86	19.74	55.60	108.77	-53.17	Peak

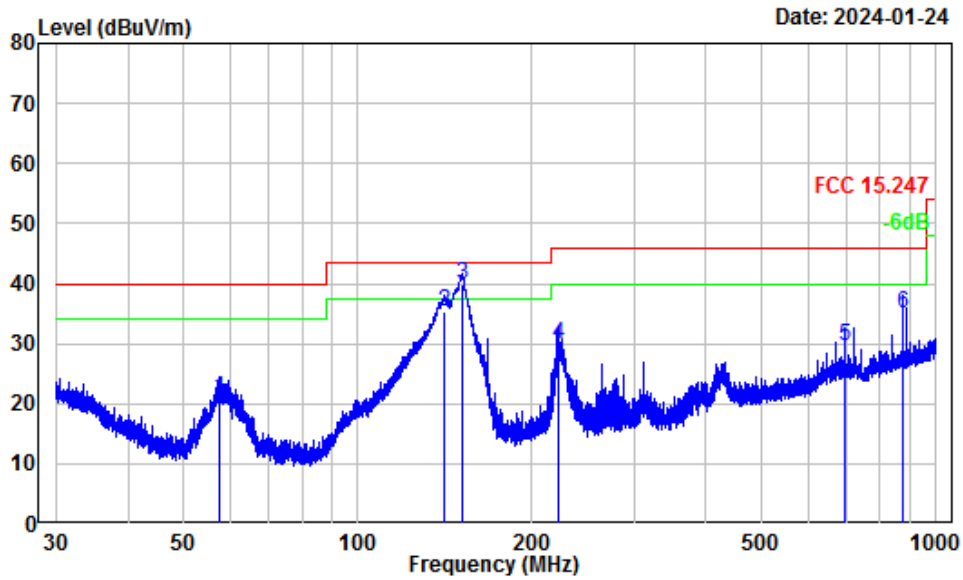


Site : Chamber A
Condition : 3m
Project Number: SZ4231220-76923E-RF
Note : 2.4G WIFI
Tester : Warren Huang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.21	28.62	28.20	56.82	101.14	-44.32	Peak
2	0.25	27.34	31.53	58.87	99.77	-40.90	Peak
3	0.46	21.54	30.25	51.79	94.40	-42.61	Peak
4	0.55	20.35	29.84	50.19	72.81	-22.62	Peak
5	1.29	14.01	27.41	41.42	65.22	-23.80	Peak
6	1.40	13.47	28.47	41.94	64.50	-22.56	Peak

30MHz-1GHz: *(Maximum output power mode, 802.11n20 mode, 2442MHz, MIMO)*

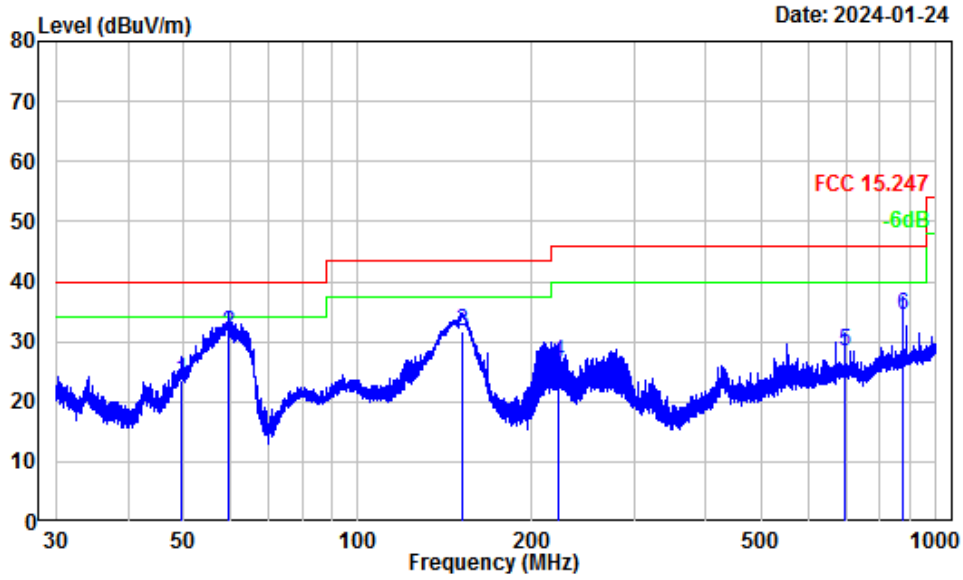
Horizontal



Site : chamber
Condition : 3m Horizontal
Project Number: SZ4231220-76923E-RF
Note : 2.4G WIFI
Tester : Warren Huang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	57.75	-16.53	37.44	20.91	40.00	-19.09	QP
2	140.84	-10.79	46.21	35.42	43.50	-8.08	QP
3	151.13	-11.41	51.20	39.79	43.50	-3.71	QP
4	222.66	-11.40	41.21	29.81	46.00	-16.19	QP
5	696.25	-1.58	31.20	29.62	46.00	-16.38	QP
6	875.25	0.60	34.44	35.04	46.00	-10.96	QP

Vertical



Site : chamber
Condition : 3m Vertical
Project Number: SZ4231220-76923E-RF
Note : 2.4G WIFI
Tester : Warren Huang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	49.47	-17.18	40.58	23.40	40.00	-16.60	QP
2	59.81	-17.59	48.86	31.27	40.00	-8.73	QP
3	151.53	-11.72	43.31	31.59	43.50	-11.91	QP
4	222.56	-12.24	38.78	26.54	46.00	-19.46	QP
5	696.25	-1.98	30.46	28.48	46.00	-17.52	QP
6	875.25	0.25	34.02	34.27	46.00	-11.73	QP

1-18 GHz:

Frequency (MHz)	Receiver		Rx Antenna	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/Ave	Polar (H/V)				
802.11b (ANT 0)							
Low Channel 2412MHz							
4824.00	47.51	PK	H	2.45	49.96	74	-24.04
4824.00	33.02	AV	H	2.45	35.47	54	-18.53
4824.00	48.25	PK	V	2.45	50.70	74	-23.30
4824.00	33.86	AV	V	2.45	36.31	54	-17.69
Middle Channel 2442MHz							
4884.00	47.15	PK	H	2.60	49.75	74	-24.25
4884.00	32.78	AV	H	2.60	35.38	54	-18.62
4884.00	47.81	PK	V	2.60	50.41	74	-23.59
4884.00	33.49	AV	V	2.60	36.09	54	-17.91
High Channel 2472MHz							
4944.00	46.84	PK	H	2.61	49.45	74	-24.55
4944.00	32.69	AV	H	2.61	35.30	54	-18.70
4944.00	47.38	PK	V	2.61	49.99	74	-24.01
4944.00	33.37	AV	V	2.61	35.98	54	-18.02
802.11b (ANT 1)							
Low Channel 2412MHz							
4824.00	49.78	PK	H	2.45	52.23	74	-21.77
4824.00	38.27	AV	H	2.45	40.72	54	-13.28
4824.00	49.13	PK	V	2.45	51.58	74	-22.42
4824.00	37.51	AV	V	2.45	39.96	54	-14.04
Middle Channel 2442MHz							
4884.00	48.89	PK	H	2.60	51.49	74	-22.51
4884.00	36.65	AV	H	2.60	39.25	54	-14.75
4884.00	48.36	PK	V	2.60	50.96	74	-23.04
4884.00	35.92	AV	V	2.60	38.52	54	-15.48
High Channel 2472MHz							
4944.00	48.22	PK	H	2.61	50.83	74	-23.17
4944.00	35.04	AV	H	2.61	37.65	54	-16.35
4944.00	47.69	PK	V	2.61	50.30	74	-23.70
4944.00	34.15	AV	V	2.61	36.76	54	-17.24

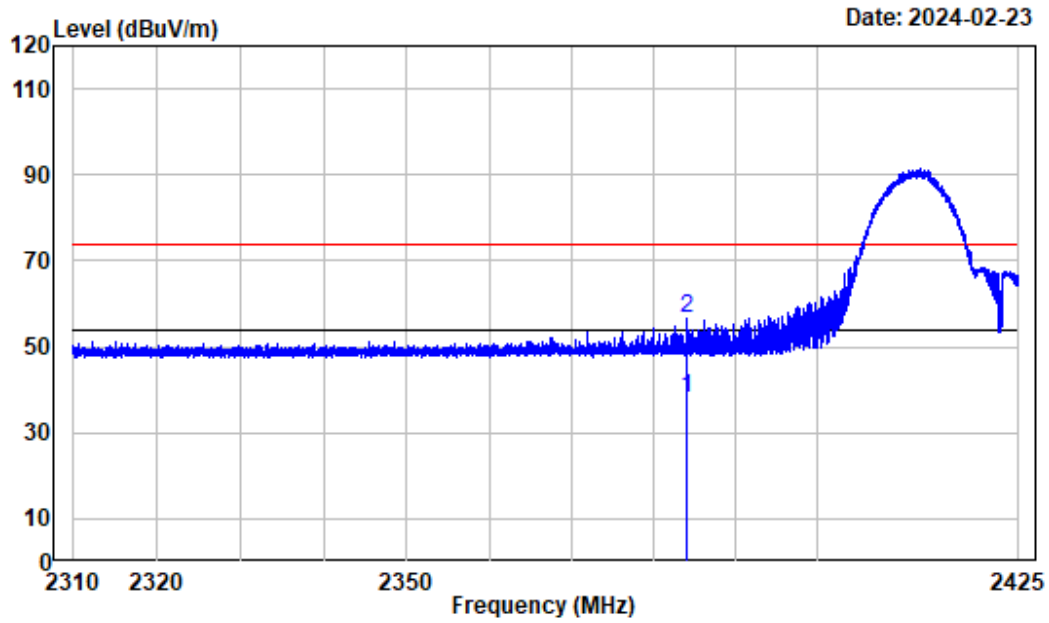
Frequency (MHz)	Receiver		Rx Antenna	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/Ave	Polar (H/V)				
802.11g (ANT 0)							
Low Channel 2412MHz							
4824.00	46.86	PK	H	2.45	49.31	74	-24.69
4824.00	34.37	AV	H	2.45	36.82	54	-17.18
4824.00	46.59	PK	V	2.45	49.04	74	-24.96
4824.00	34.23	AV	V	2.45	36.68	54	-17.32
Middle Channel 2442MHz							
4884.00	46.54	PK	H	2.60	49.14	74	-24.86
4884.00	34.05	AV	H	2.60	36.65	54	-17.35
4884.00	46.32	PK	V	2.60	48.92	74	-25.08
4884.00	33.87	AV	V	2.60	36.47	54	-17.53
High Channel 2472MHz							
4944.00	46.28	PK	H	2.61	48.89	74	-25.11
4944.00	33.85	AV	H	2.61	36.46	54	-17.54
4944.00	46.06	PK	V	2.61	48.67	74	-25.33
4944.00	33.71	AV	V	2.61	36.32	54	-17.68
802.11g (ANT 1)							
Low Channel 2412MHz							
4824.00	47.09	PK	H	2.45	49.54	74	-24.46
4824.00	34.75	AV	H	2.45	37.20	54	-16.80
4824.00	46.87	PK	V	2.45	49.32	74	-24.68
4824.00	34.48	AV	V	2.45	36.93	54	-17.07
Middle Channel 2442MHz							
4884.00	46.78	PK	H	2.60	49.38	74	-24.62
4884.00	34.52	AV	H	2.60	37.12	54	-16.88
4884.00	46.49	PK	V	2.60	49.09	74	-24.91
4884.00	34.27	AV	V	2.60	36.87	54	-17.13
High Channel 2472MHz							
4944.00	46.57	PK	H	2.61	49.18	74	-24.82
4944.00	34.16	AV	H	2.61	36.77	54	-17.23
4944.00	46.32	PK	V	2.61	48.93	74	-25.07
4944.00	33.94	AV	V	2.61	36.55	54	-17.45

Frequency (MHz)	Receiver		Rx Antenna	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/Ave	Polar (H/V)				
802.11n20							
Low Channel 2412MHz							
4824.00	47.08	PK	H	2.45	49.53	74	-24.47
4824.00	34.56	AV	H	2.45	37.01	54	-16.99
4824.00	46.85	PK	V	2.45	49.30	74	-24.70
4824.00	34.48	AV	V	2.45	36.93	54	-17.07
Middle Channel 2442MHz							
4884.00	46.69	PK	H	2.60	49.29	74	-24.71
4884.00	34.25	AV	H	2.60	36.85	54	-17.15
4884.00	46.48	PK	V	2.60	49.08	74	-24.92
4884.00	34.03	AV	V	2.60	36.63	54	-17.37
High Channel 2472MHz							
4944.00	46.37	PK	H	2.61	48.98	74	-25.02
4944.00	33.98	AV	H	2.61	36.59	54	-17.41
4944.00	46.14	PK	V	2.61	48.75	74	-25.25
4944.00	33.82	AV	V	2.61	36.43	54	-17.57

Note:
Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude= Factor + Reading
Margin = Corrected Amplitude - Limit
The other spurious emission which is 20dB below to the limit or in noise floor level was not recorded.

Test plots for Band Edge Measurements (Radiated):

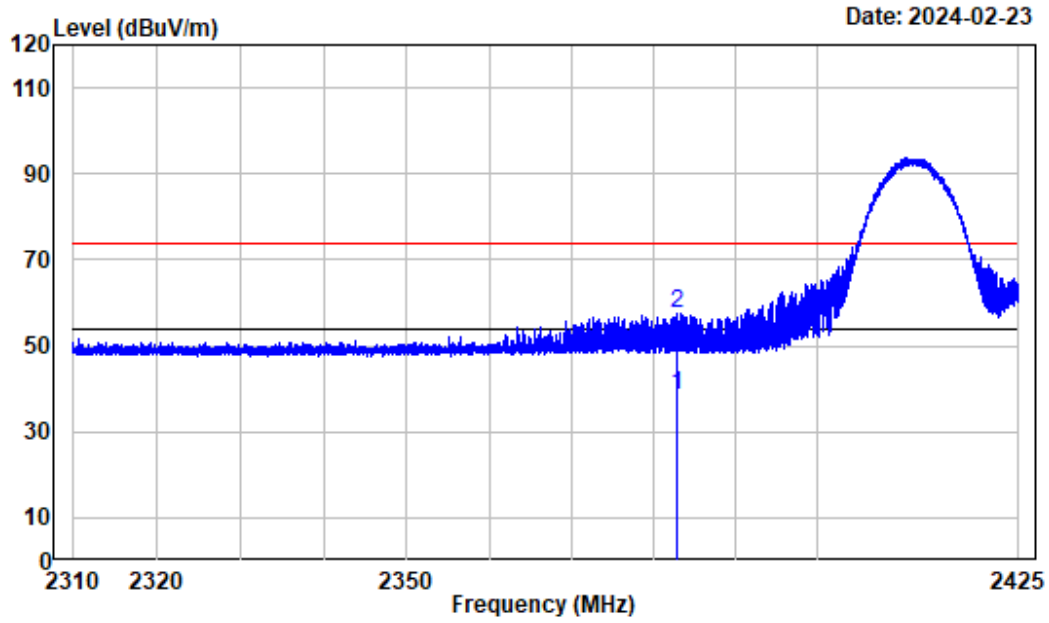
802.11b_ ANT0			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-b-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2384.060	-3.20	41.33	38.13	54.00	Average	-15.87
2	2384.060	-3.20	59.62	56.42	74.00	Peak	-17.58

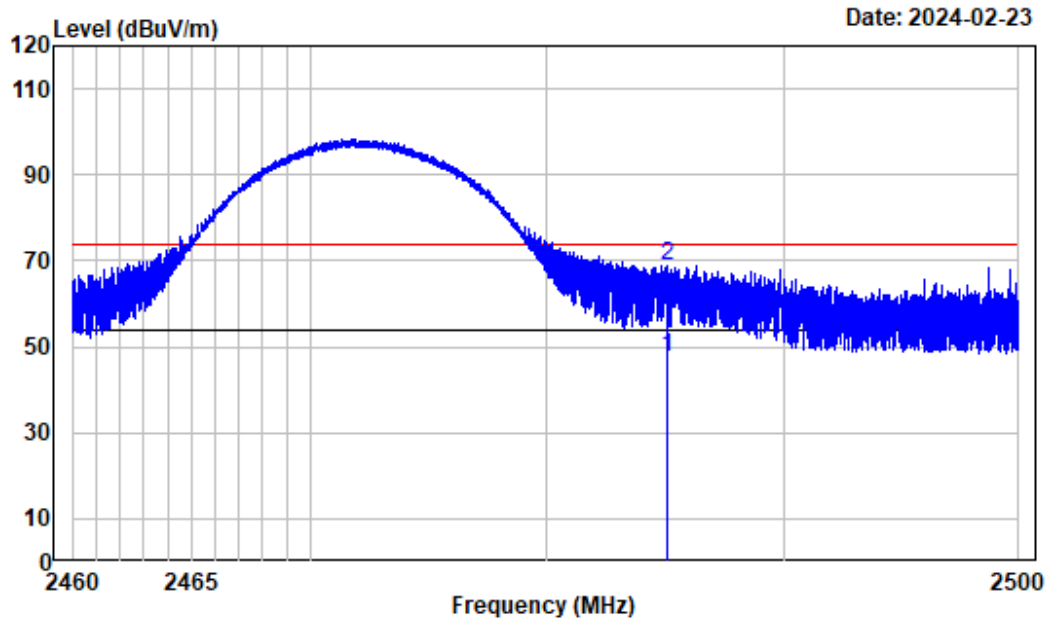
802.11b_ ANT0			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-b-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2382.910	-3.20	41.50	38.30	54.00	Average	-15.70
2	2382.910	-3.20	60.53	57.33	74.00	Peak	-16.67

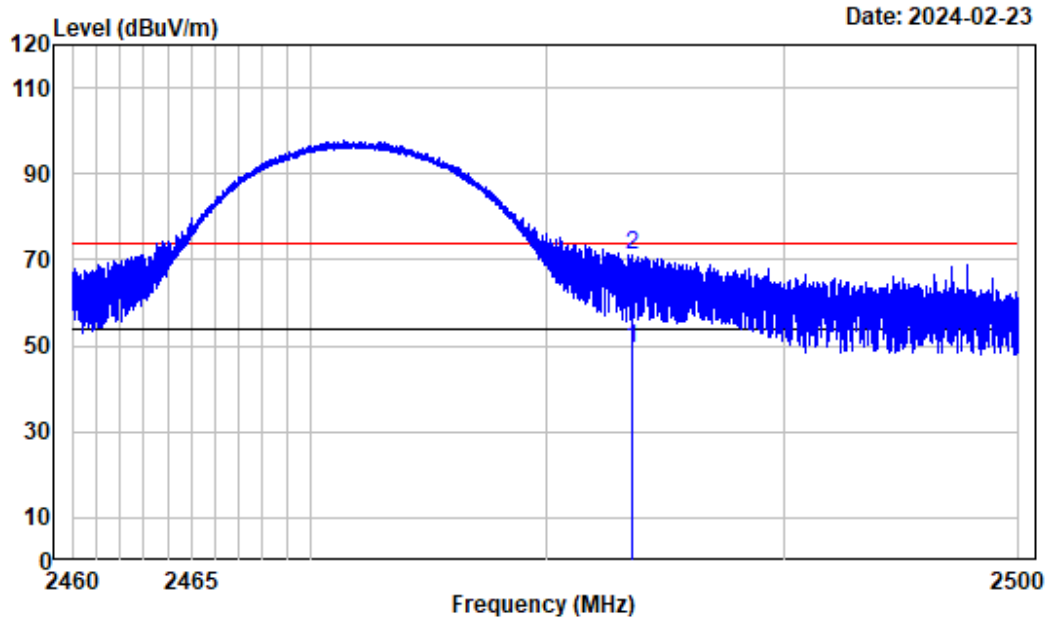
802.11b_ ANT0			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-b-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2485.095	-3.17	50.75	47.58	54.00	Average	-6.42
2	2485.095	-3.17	72.11	68.94	74.00	Peak	-5.06

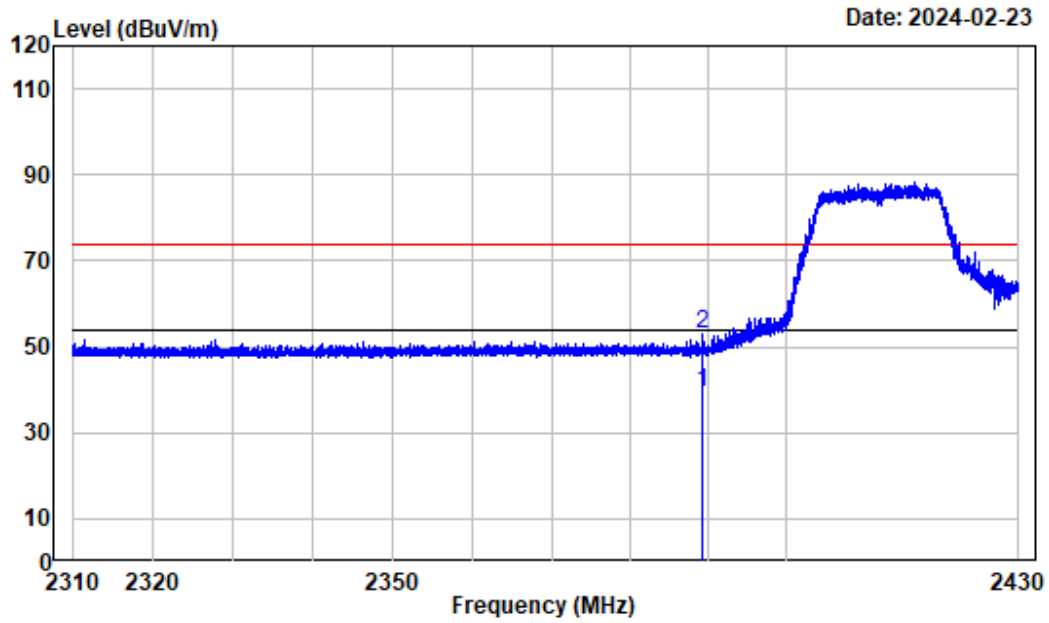
802.11b_ ANT0			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-b-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.600	-3.17	52.68	49.51	54.00	Average	-4.49
2	2483.600	-3.17	74.17	71.00	74.00	Peak	-3.00

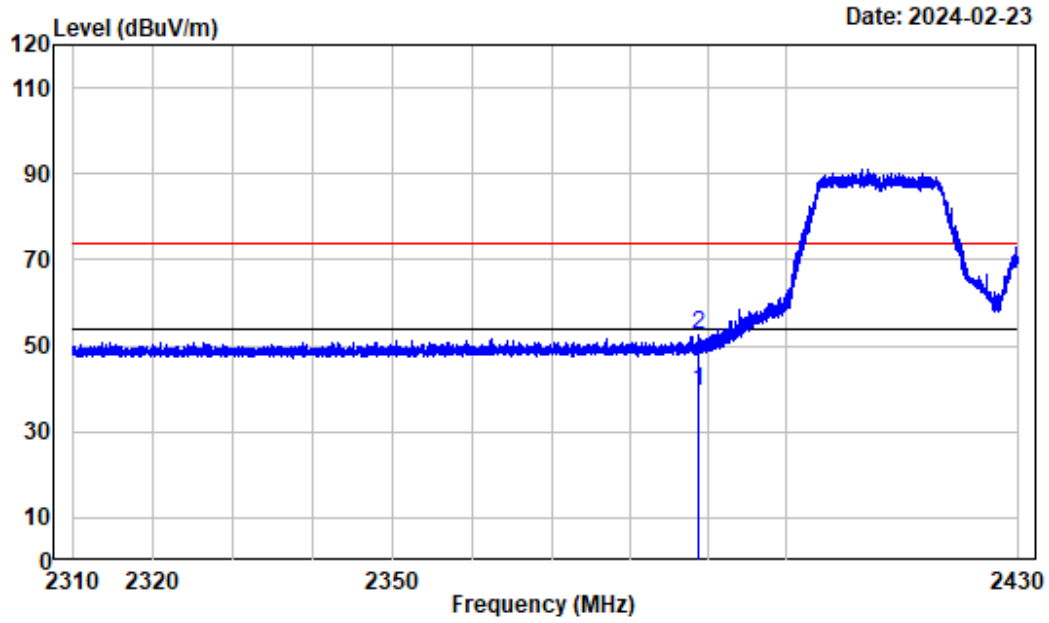
802.11g_ ANT0			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-g-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2389.305	-3.20	42.48	39.28	54.00	Average	-14.72
2	2389.305	-3.20	56.24	53.04	74.00	Peak	-20.96

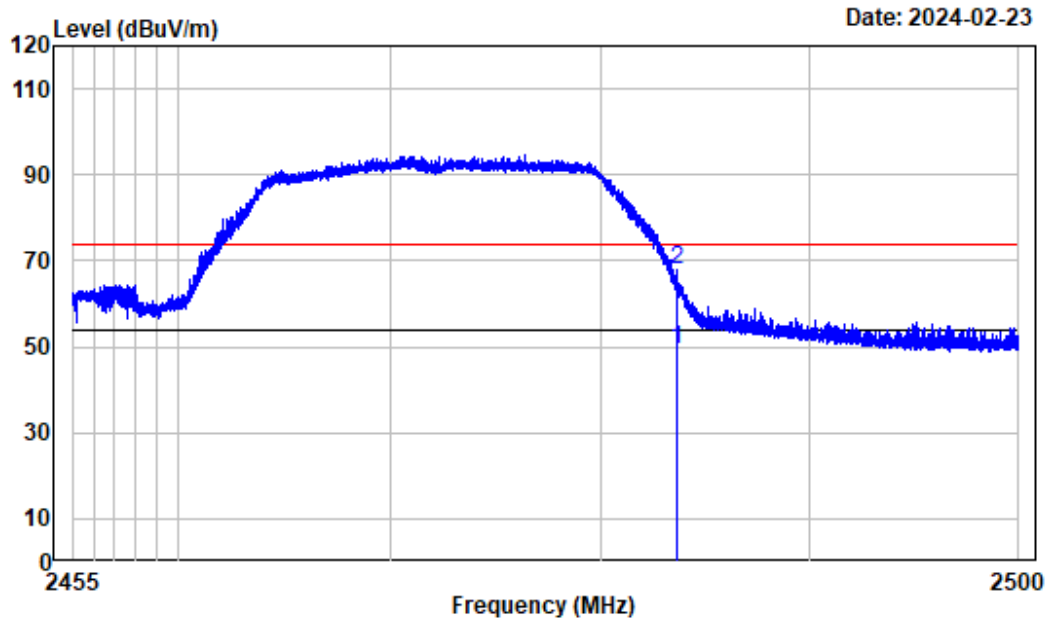
802.11g_ ANT0			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-g-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2388.735	-3.20	42.78	39.58	54.00	Average	-14.42
2	2388.735	-3.20	55.53	52.33	74.00	Peak	-21.67

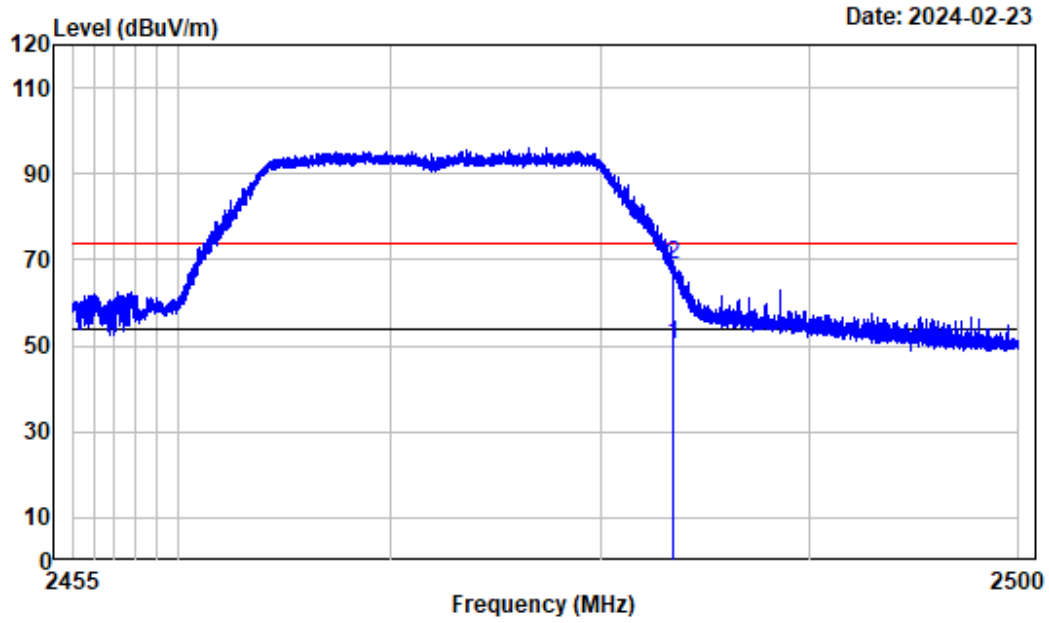
802.11g_ ANT0			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-g-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.620	-3.17	52.36	49.19	54.00	Average	-4.81
2	2483.620	-3.17	71.06	67.89	74.00	Peak	-6.11

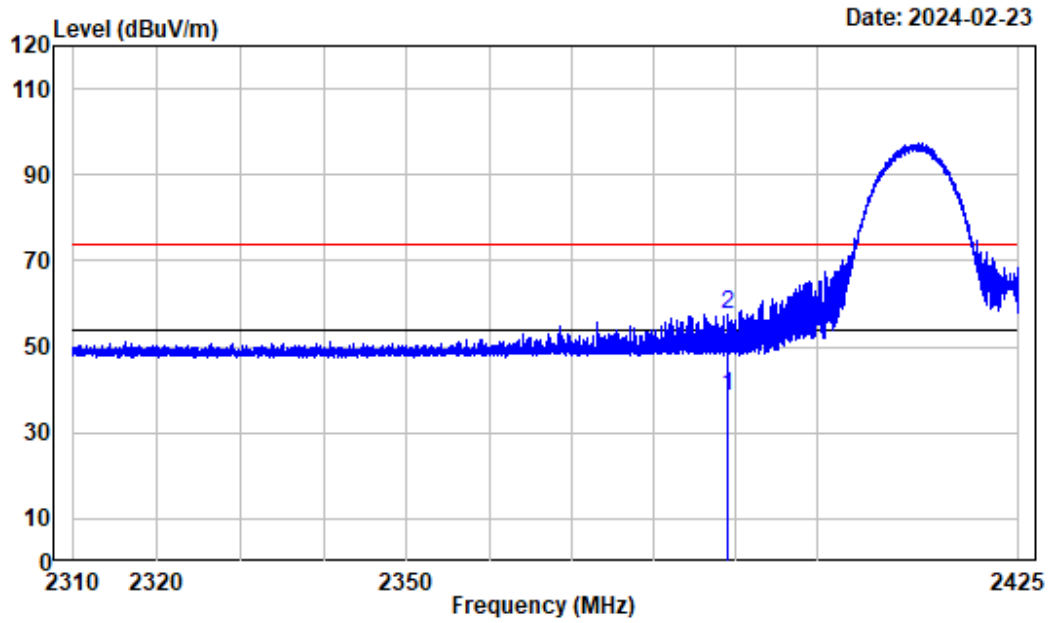
802.11g_ ANT0			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT0-g-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.502	-3.17	53.25	50.08	54.00	Average	-3.92
2	2483.502	-3.17	72.16	68.99	74.00	Peak	-5.01

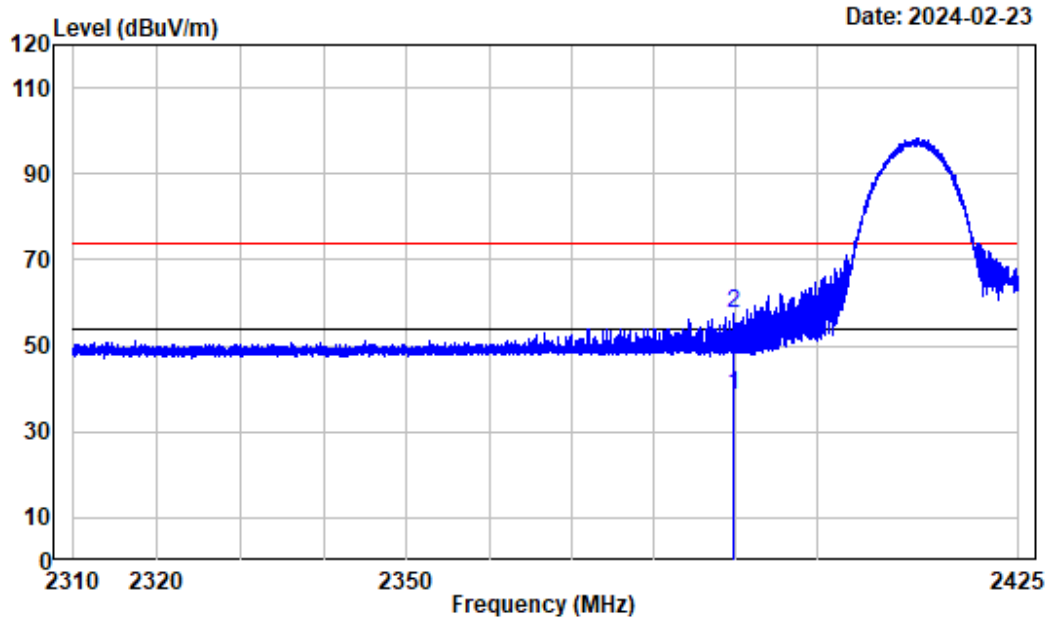
802.11b_ ANT1			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-b-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2389.106	-3.20	41.58	38.38	54.00	Average	-15.62
2	2389.106	-3.20	60.74	57.54	74.00	Peak	-16.46

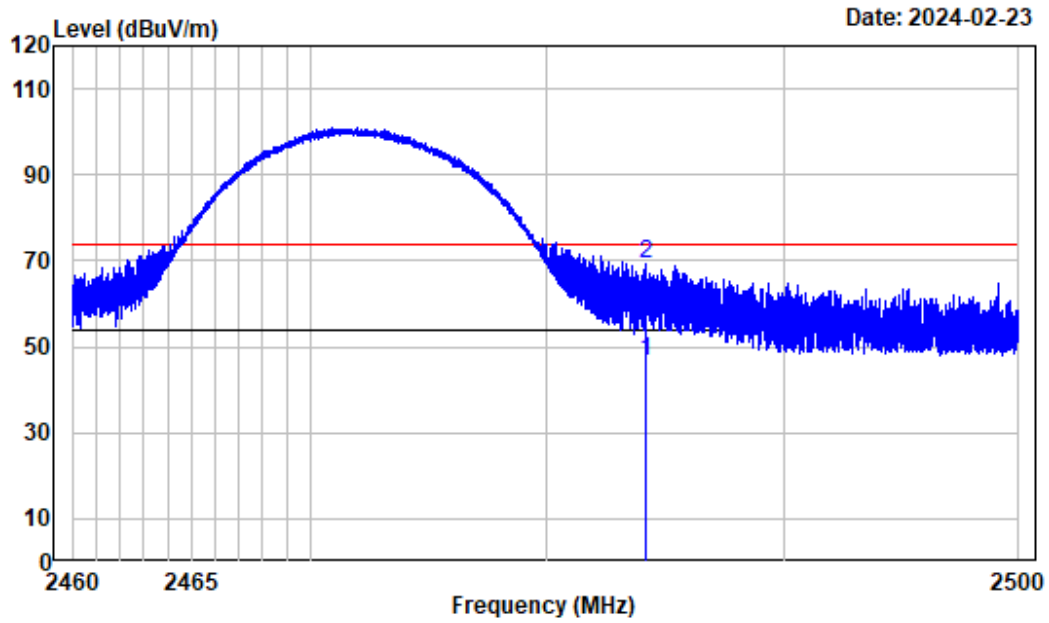
802.11b_ ANT1			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-b-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2389.839	-3.20	41.51	38.31	54.00	Average	-15.69
2	2389.839	-3.20	60.76	57.56	74.00	Peak	-16.44

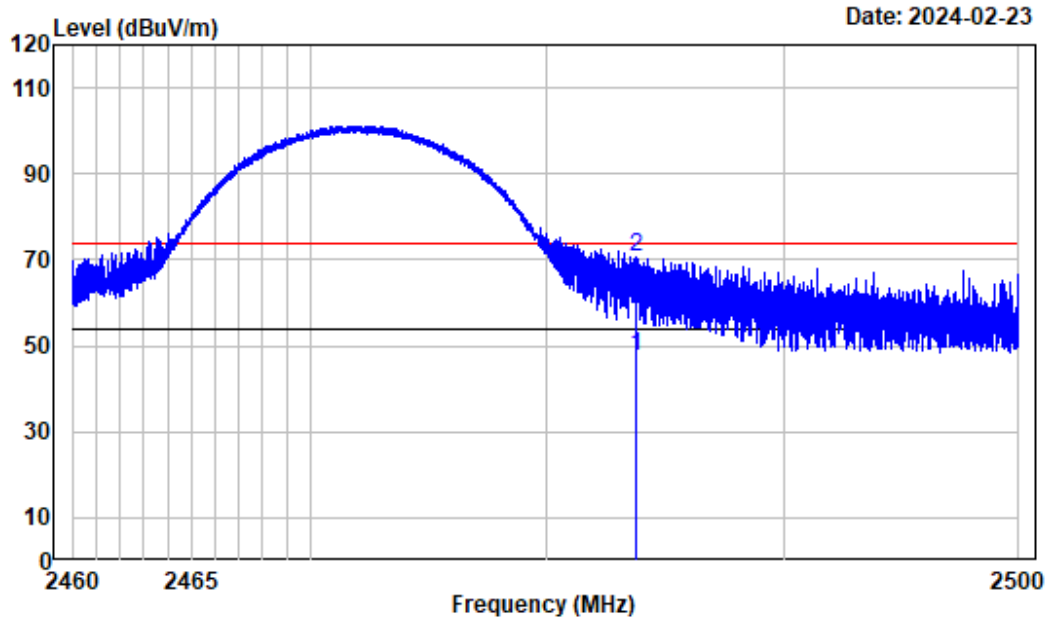
802.11b_ ANT1			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-b-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2484.200	-3.17	49.69	46.52	54.00	Average	-7.48
2	2484.200	-3.17	72.47	69.30	74.00	Peak	-4.70

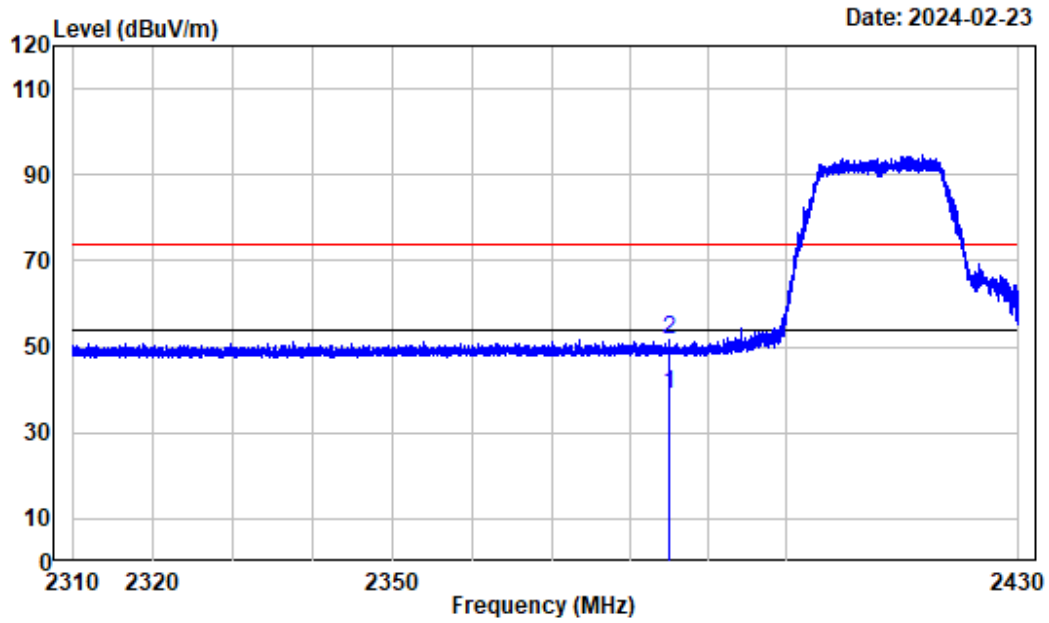
802.11b_ ANT1			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-b-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.775	-3.17	50.86	47.69	54.00	Average	-6.31
2	2483.775	-3.17	73.88	70.71	74.00	Peak	-3.29

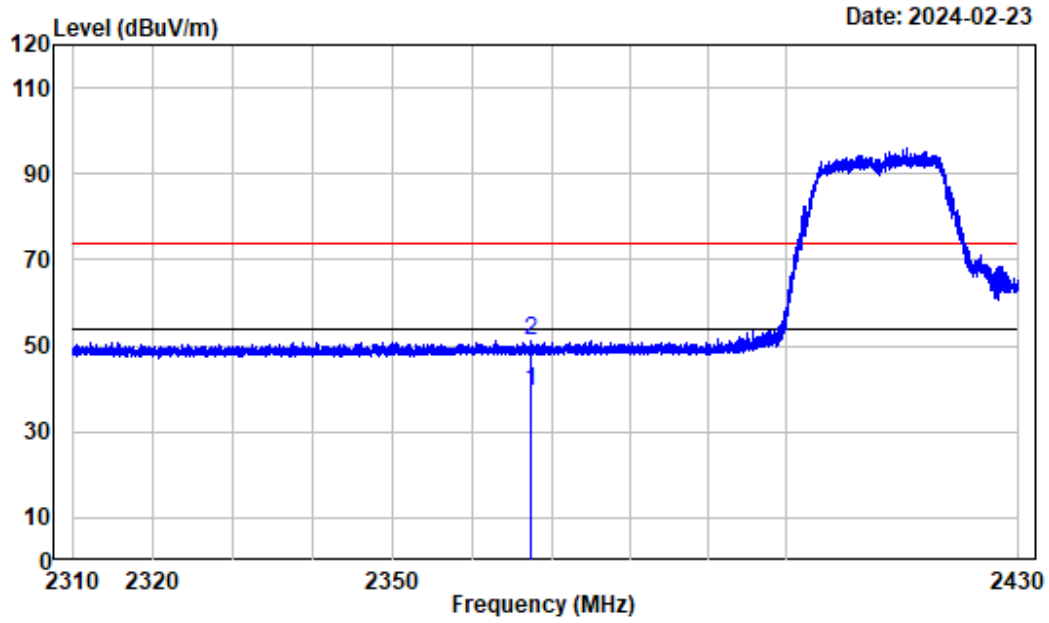
802.11g_ ANT1			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-g-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2384.970	-3.20	42.25	39.05	54.00	Average	-14.95
2	2384.970	-3.20	54.71	51.51	74.00	Peak	-22.49

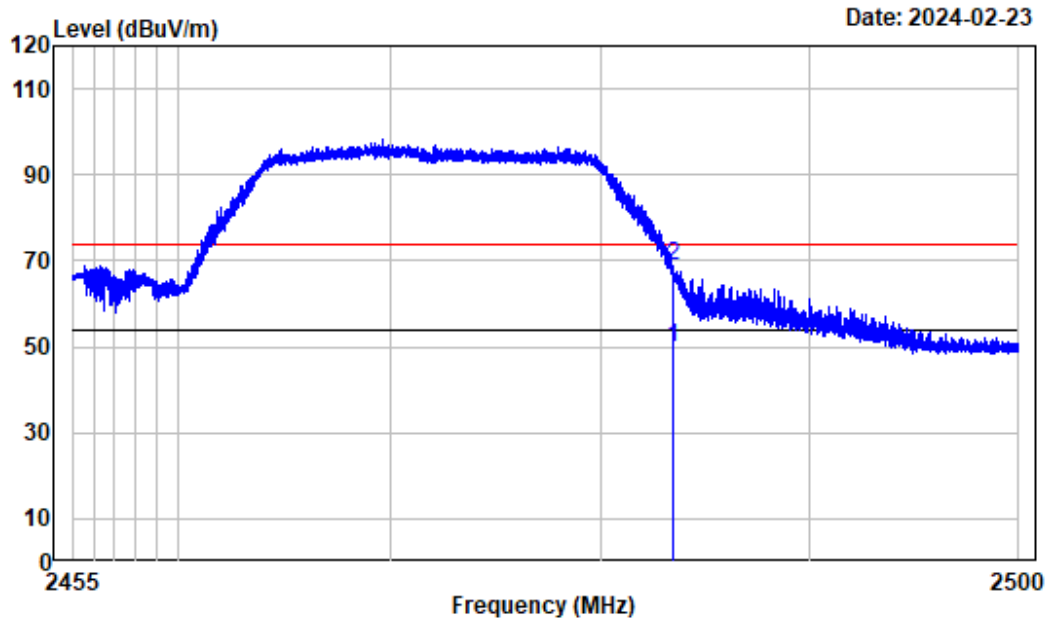
802.11g_ ANT1			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-g-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2367.390	-3.16	42.35	39.19	54.00	Average	-14.81
2	2367.390	-3.16	54.23	51.07	74.00	Peak	-22.93

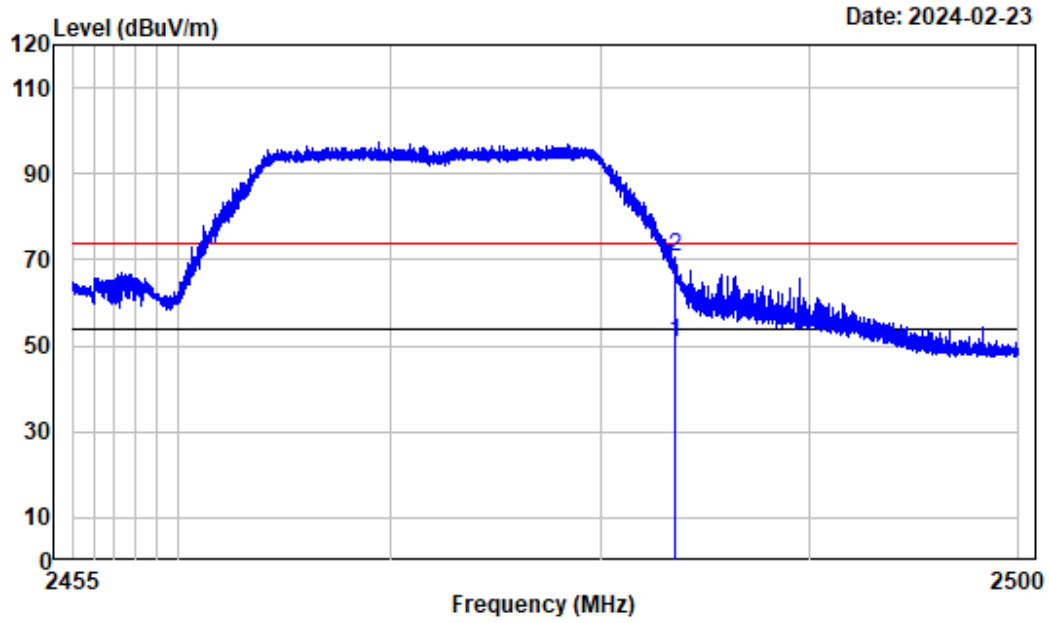
802.11g_ ANT1			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-g-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.502	-3.17	52.94	49.77	54.00	Average	-4.23
2	2483.502	-3.17	71.94	68.77	74.00	Peak	-5.23

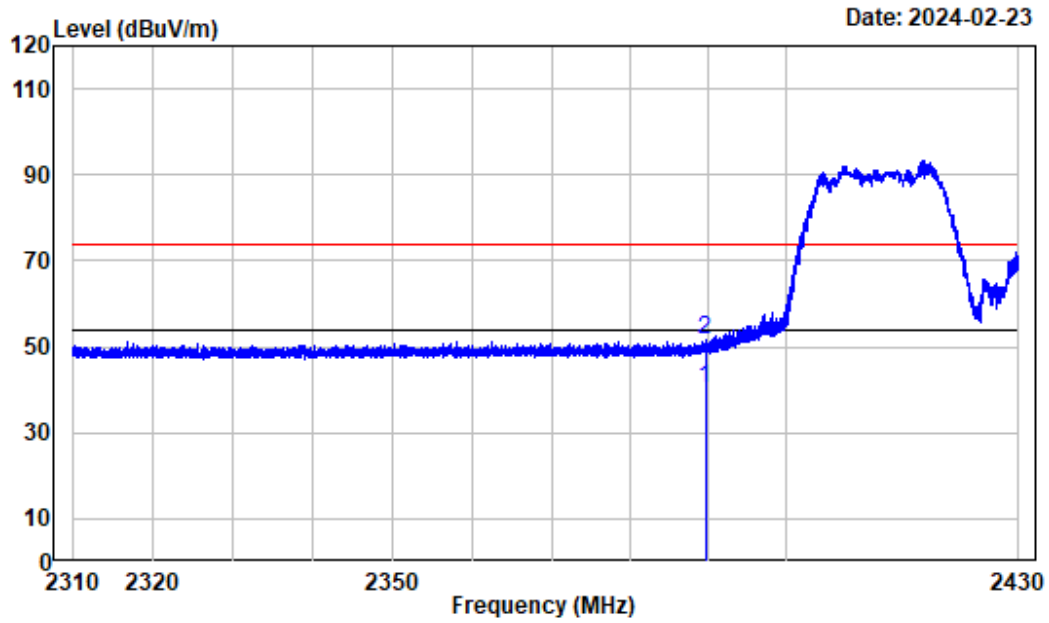
802.11g_ ANT1			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-ANT1-g-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.547	-3.17	54.07	50.90	54.00	Average	-3.10
2	2483.547	-3.17	73.62	70.45	74.00	Peak	-3.55

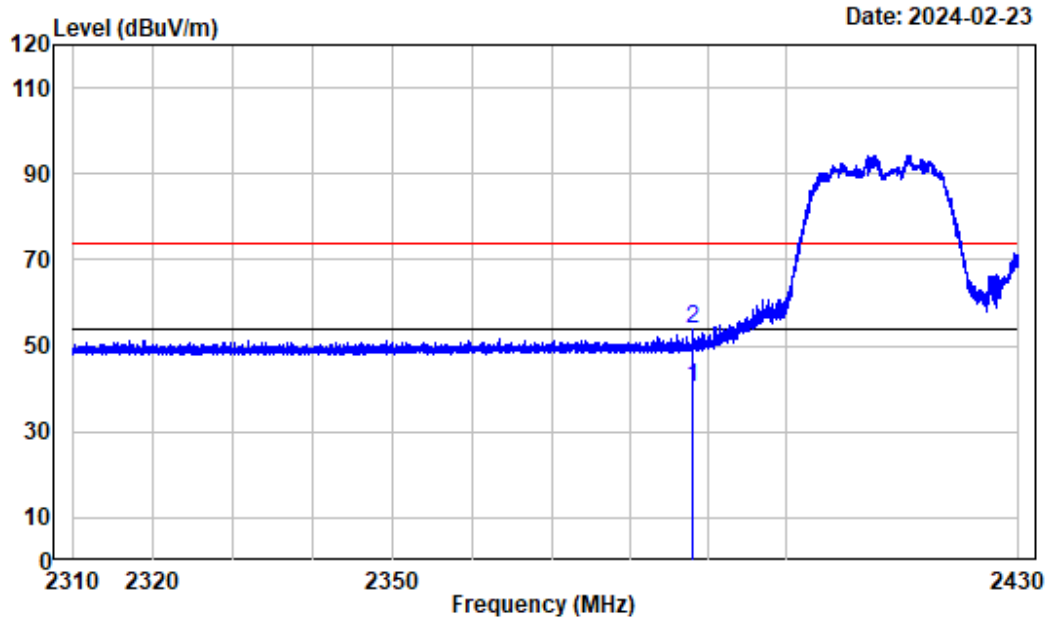
802.11n20			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-n20-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2389.590	-3.20	43.38	40.18	54.00	Average	-13.82
2	2389.590	-3.20	55.03	51.83	74.00	Peak	-22.17

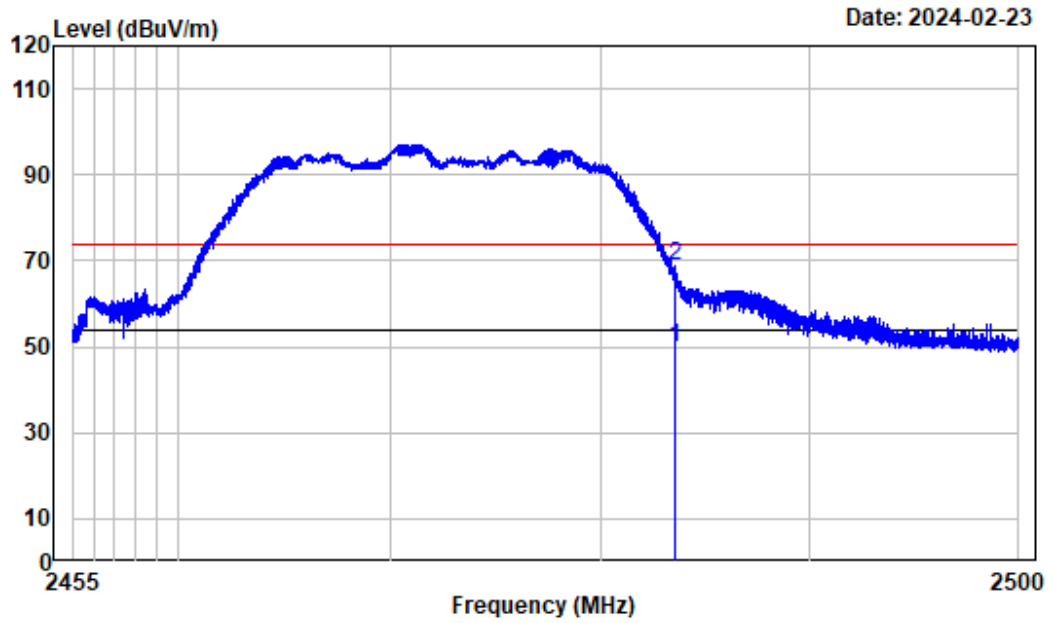
802.11n20			
Test Channel:	**2412MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-n20-2412

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2388.015	-3.20	43.69	40.49	54.00	Average	-13.51
2	2388.015	-3.20	57.04	53.84	74.00	Peak	-20.16

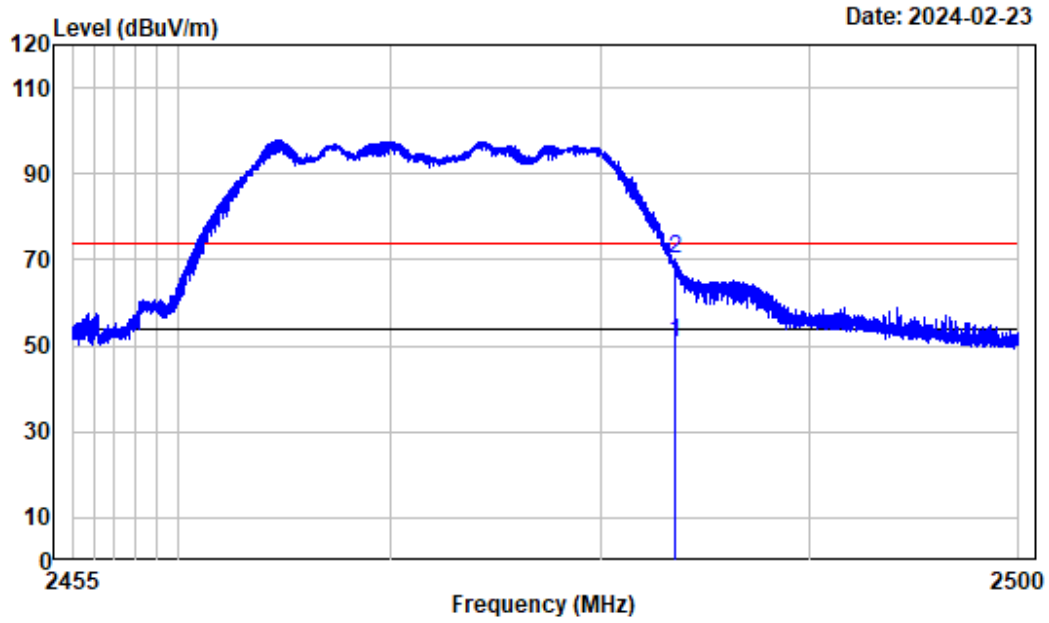
802.11n20			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-n20-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.536	-3.17	52.87	49.70	54.00	Average	-4.30
2	2483.536	-3.17	71.94	68.77	74.00	Peak	-5.23

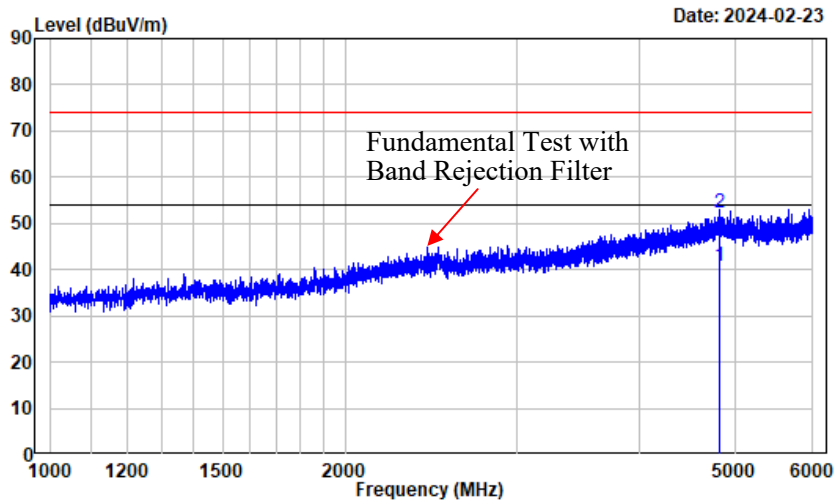
802.11n20			
Test Channel:	**2472MHz**	**Ant. Polar. :**	**Vertical**

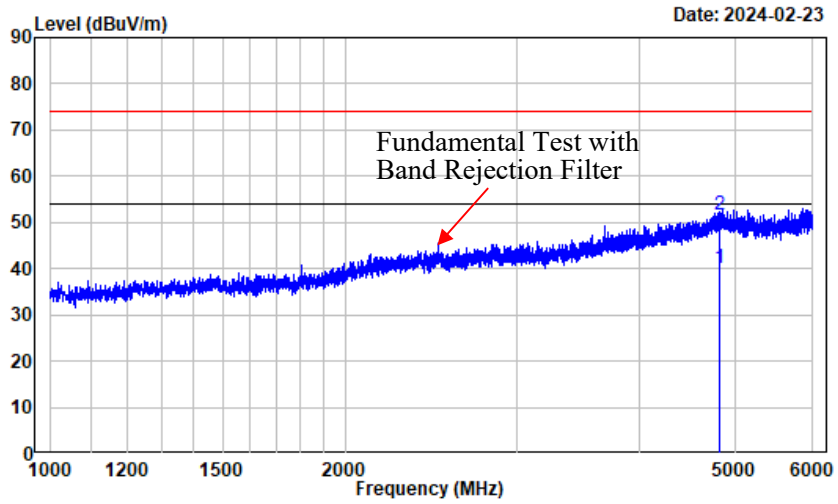


Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : 2.4GWiFi-n20-2472

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	2483.552	-3.17	53.98	50.81	54.00	Average	-3.19
2	2483.552	-3.17	73.35	70.18	74.00	Peak	-3.82

Listed with the worst harmonic margin test plot: (802.11b, ANT1, 2412MHz)

Horizontal	
1-6GHz	 Condition : Horizontal Project No.: SZ4231220-76923E-RF Tester : Zenos Qiao Note : Transmitting Listed with the worst harmonic margin : test plot(2.4GWiFi ANT1 b Mode Low channel) | | Freq | Factor | Read Level | Limit Level | Limit Line | Remark | Over Limit | | | MHz | dB/m | dBuV | dBuV/m | dBuV/m | | dB | | 1 | 4824.000 | 2.45 | 38.27 | 40.72 | 54.00 | Average | -13.28 | | 2 | 4824.000 | 2.45 | 49.78 | 52.23 | 74.00 | Peak | -21.77 |

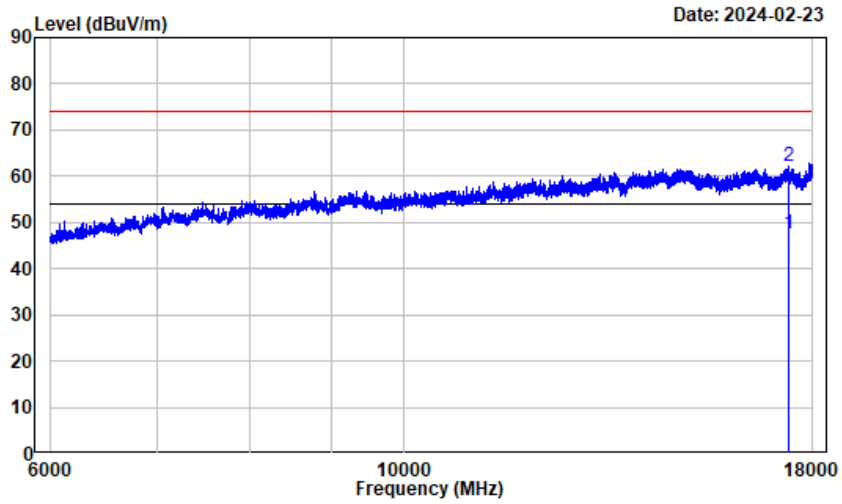
Vertical	
1-6GHz	

Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : Transmitting Listed with the worst harmonic margin
: test plot(2.4GWiFi ANT1 b Mode Low channel)

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	4824.000	2.45	37.51	39.96	54.00	Average	-14.04
2	4824.000	2.45	49.13	51.58	74.00	Peak	-22.42

Horizontal

6-18GHz

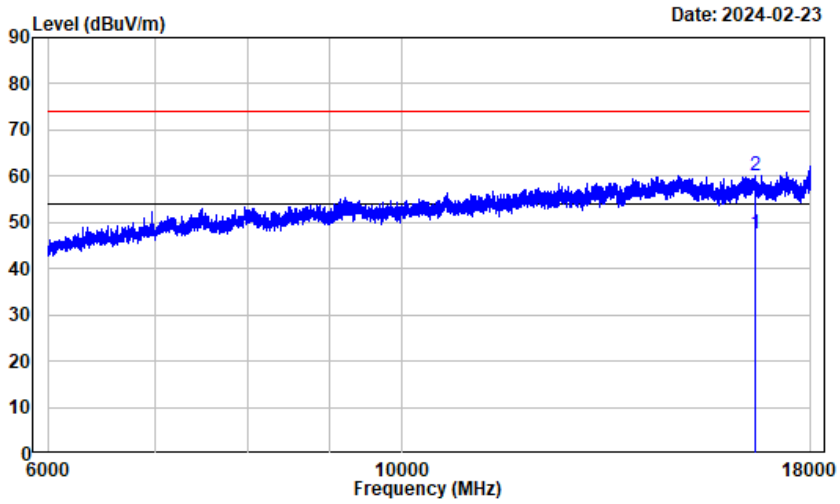


Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : Transmitting Listed with the worst harmonic margin
: test plot(2.4GWiFi ANT1 b Mode Low channel)

	Freq	Factor	Read Level	Limit Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	17383.500	19.76	27.93	47.69	54.00	Average	-6.31
2	17383.500	19.76	42.47	62.23	74.00	Peak	-11.77

Vertical

6-18GHz

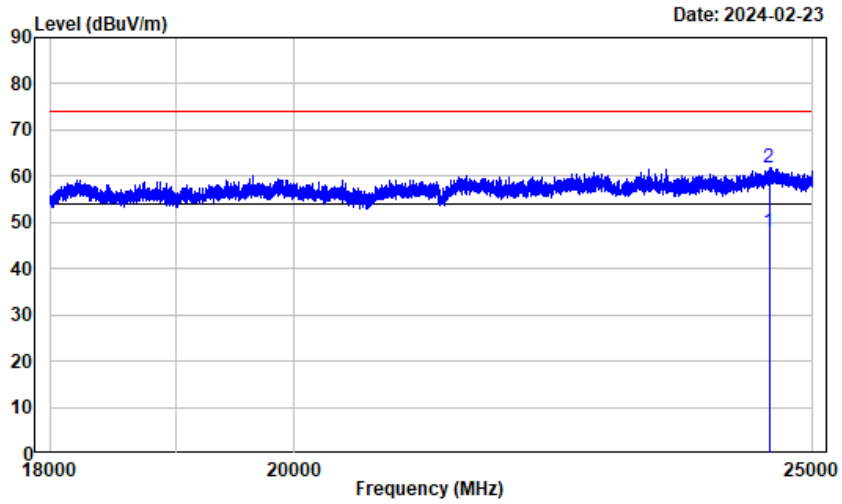


Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : Transmitting Listed with the worst harmonic margin
: test plot(2.4GWiFi ANT1 b Mode Low channel)

	Freq	Factor	Read Level	Limit Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	16612.500	16.10	31.35	47.45	54.00	Average	-6.55
2	16612.500	16.10	44.12	60.22	74.00	Peak	-13.78

Horizontal

18-25GHz

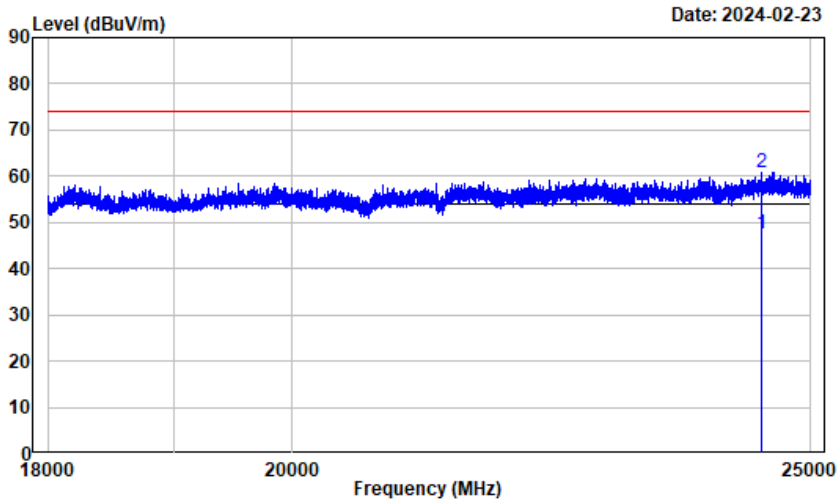


Condition : Horizontal
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : Transmitting Listed with the worst harmonic margin
: test plot(2.4GWiFi ANT1 b Mode Low channel)

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	24534.500	18.96	28.93	47.89	54.00	Average	-6.11
2	24534.500	18.96	42.88	61.84	74.00	Peak	-12.16

Vertical

18-25GHz



Condition : Vertical
Project No.: SZ4231220-76923E-RF
Tester : Zenos Qiao
Note : Transmitting Listed with the worst harmonic margin
: test plot(2.4GWiFi ANT1 b Mode Low channel)

	Freq	Factor	Read Level	Level	Limit Line	Remark	Over Limit
	MHz	dB/m	dBuV	dBuV/m	dBuV/m		dB
1	24484.630	18.97	28.69	47.66	54.00	Average	-6.34
2	24484.630	18.97	41.80	60.77	74.00	Peak	-13.23

FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH & OCCUPIED BANDWIDTH

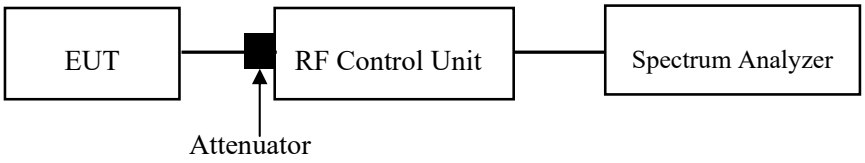
Applicable Standard

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.

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	25~26 ℃
Relative Humidity:	40~43 %
ATM Pressure:	101.5 kPa

The testing was performed by Tom Tan from 2024-02-27 to 2024-03-19.

EUT operation mode: Transmitting

Test Result: Compliant. *Please refer to the Appendix.*

FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

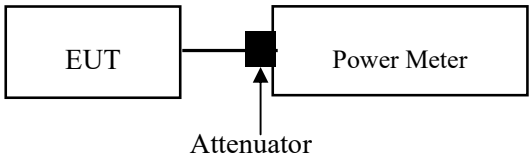
Applicable Standard

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

Test Procedure

Test Method: ANSI C63.10-2013 Clause 11.9.1.3 & 11.9.2.3

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



Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	52 %
ATM Pressure:	101.5 kPa

The testing was performed by Tom Tan on 2024-02-21.

EUT operation mode: Transmitting

***Test Result: Compliant**. Please refer to the Appendix.*

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

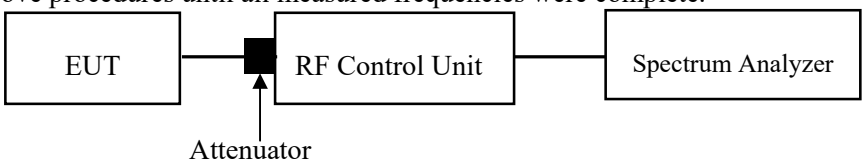
Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

Test Method: ANSI C63.10-2013 Clause 11.11

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



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	40 %
ATM Pressure:	101.5 kPa

The testing was performed by Tom Tan on 2024-02-27.

EUT operation mode: Transmitting

Test Result: Compliant

Conducted Band Edge Result: Please refer to the Appendix.

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

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

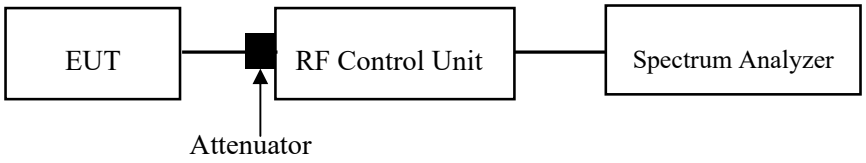
Test Procedure

Test Method: ANSI C63.10-2013 Clause 11.10.5

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

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

a) Measure the duty cycle (D) of the transmitter output signal as described in 11.6.
b) Set instrument center frequency to DTS channel center frequency.
c) Set span to at least 1.5 times the OBW.
d) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e) Set VBW ≥ [3 × RBW].
f) Detector = power averaging (rms) or sample detector (when rms not available).
g) Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].
h) Sweep time = auto couple.
i) Do not use sweep triggering; allow sweep to "free run."
j) Employ trace averaging (rms) mode over a minimum of 100 traces.
k) Use the peak marker function to determine the maximum amplitude level.
l) Add [10 log (1 / D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.
m) If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).



Test Data

Environmental Conditions

Temperature:	25~26 ℃
Relative Humidity:	40~43 %
ATM Pressure:	101.5 kPa

The testing was performed by Tom Tan from 2024-03-18 to 2024-03-19.

EUT operation mode: Transmitting

Test Result: Compliant. *Please refer to the Appendix.*

APPENDIX

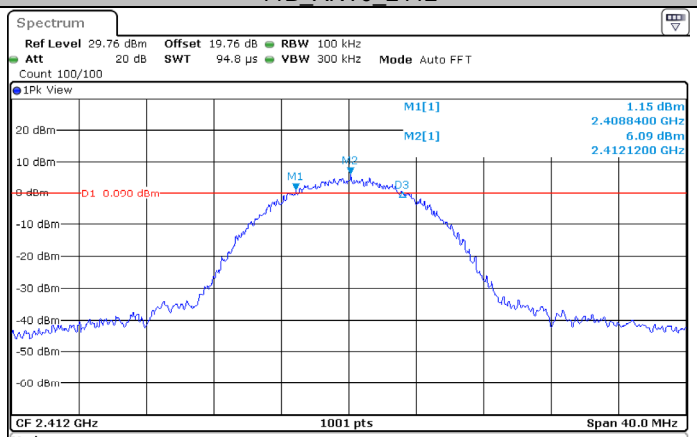
Appendix A: DTS Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	ANT0	2412	6.36	2408.84	2415.20	0.5	PASS
	ANT1	2412	7.20	2408.36	2415.56	0.5	PASS
	ANT0	2442	7.56	2438.24	2445.80	0.5	PASS
	ANT1	2442	7.44	2438.28	2445.72	0.5	PASS
	ANT0	2472	7.32	2468.28	2475.60	0.5	PASS
	ANT1	2472	7.16	2468.44	2475.60	0.5	PASS
11G	ANT0	2412	16.52	2403.76	2420.28	0.5	PASS
	ANT1	2412	16.52	2403.72	2420.24	0.5	PASS
	ANT0	2442	16.52	2433.76	2450.28	0.5	PASS
	ANT1	2442	16.52	2433.76	2450.28	0.5	PASS
	ANT0	2472	16.48	2463.76	2480.24	0.5	PASS
	ANT1	2472	16.56	2463.72	2480.28	0.5	PASS
11N20MIMO	ANT0	2412	15.64	2404.24	2419.88	0.5	PASS
	ANT1	2412	16.76	2403.20	2419.96	0.5	PASS
	ANT0	2442	15.64	2434.24	2449.88	0.5	PASS
	ANT1	2442	17.00	2433.76	2450.76	0.5	PASS
	ANT0	2472	15.60	2464.28	2479.88	0.5	PASS
	ANT1	2472	16.48	2463.48	2479.96	0.5	PASS

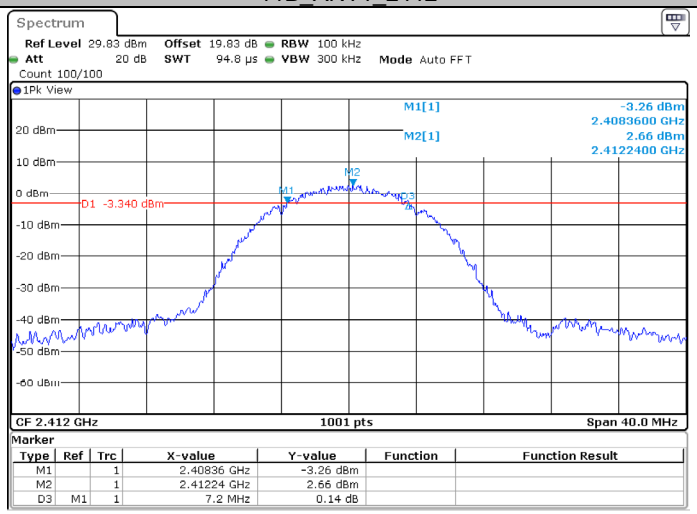
Test Graphs

11B_ANT0_2412



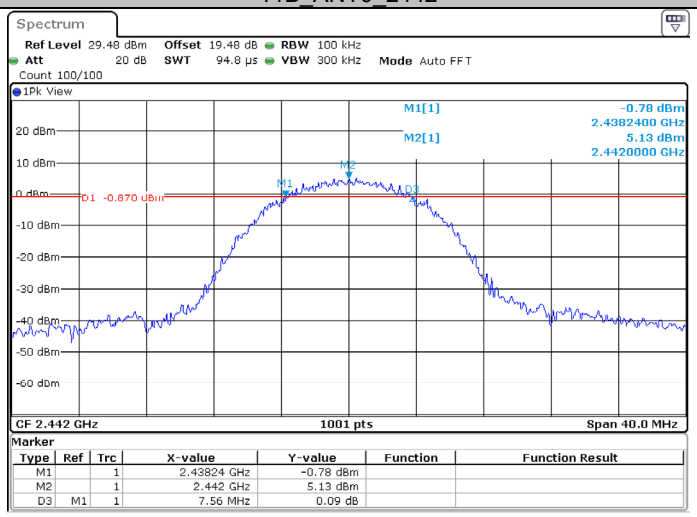
ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 13:50:27

11B_ANT1_2412



ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 14:04:53

11B_ANT0_2442



ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 13:51:21

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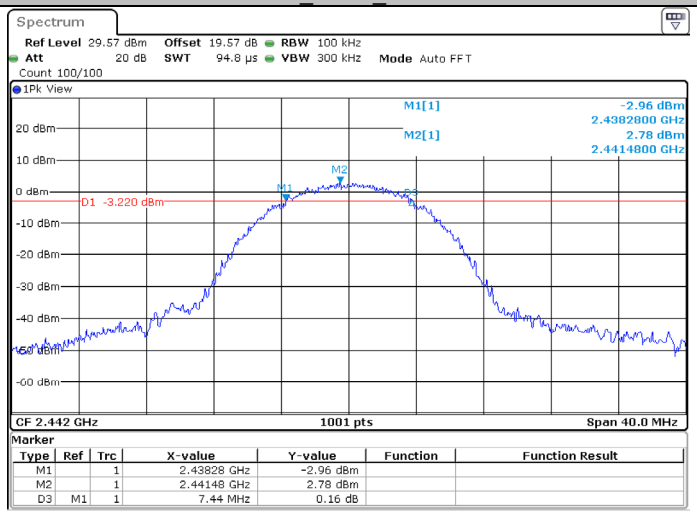

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Date: 27.FEB.2024 14:05:57

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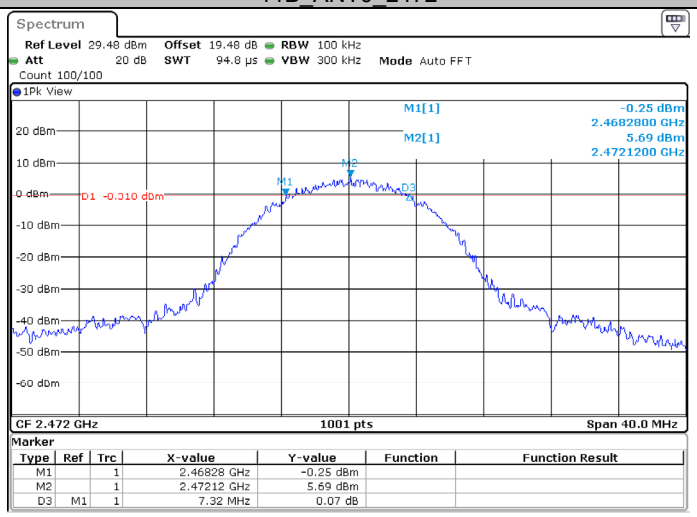

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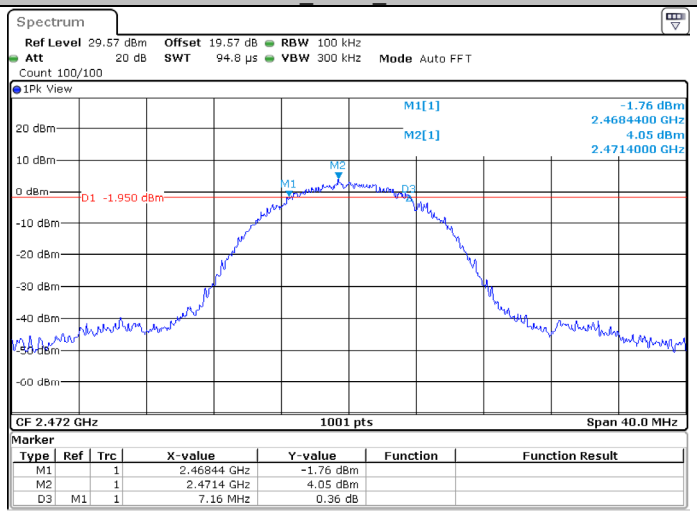

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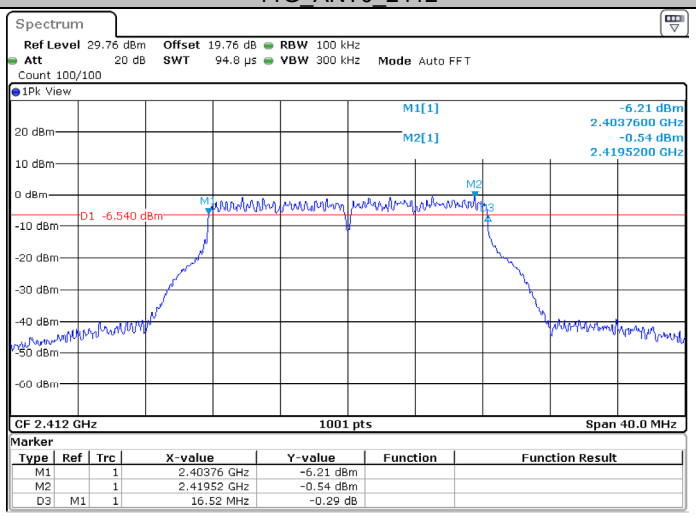

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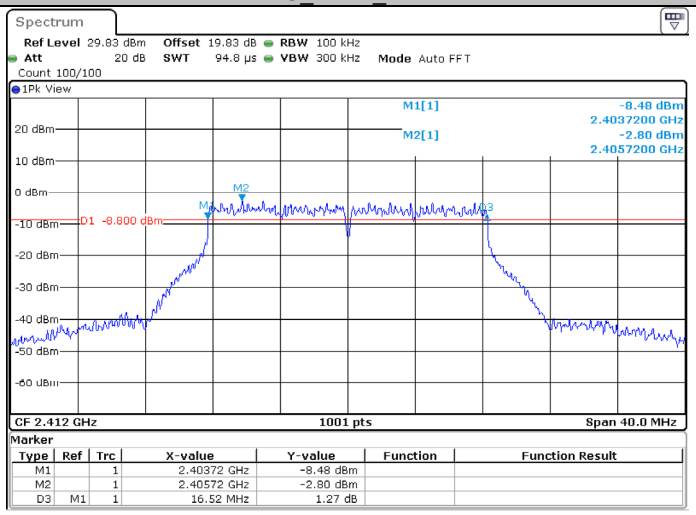

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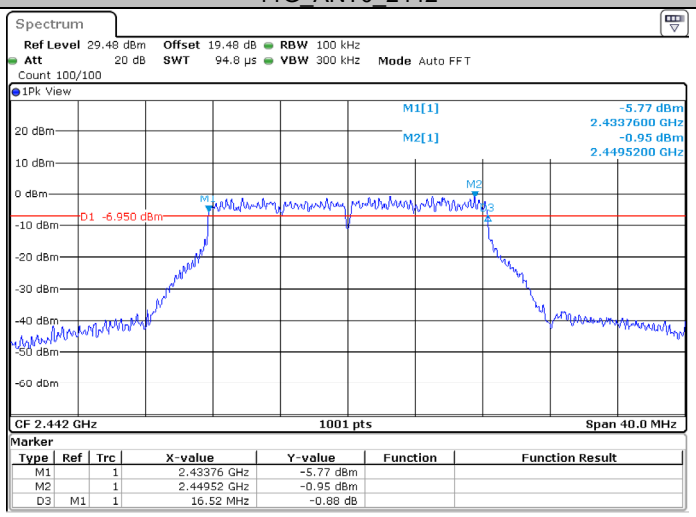

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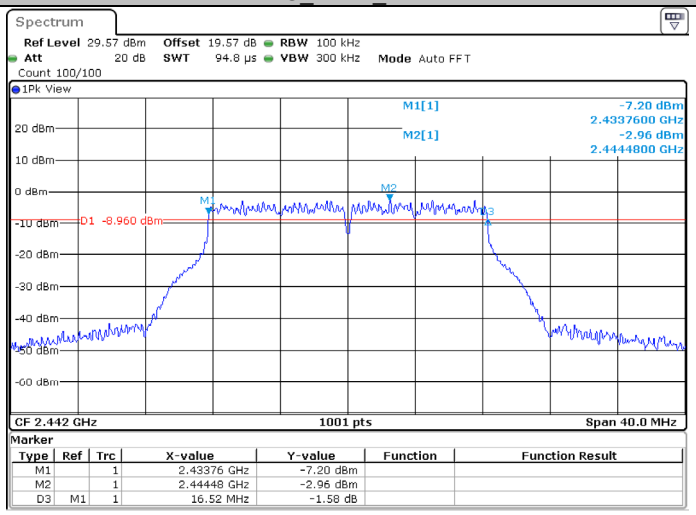

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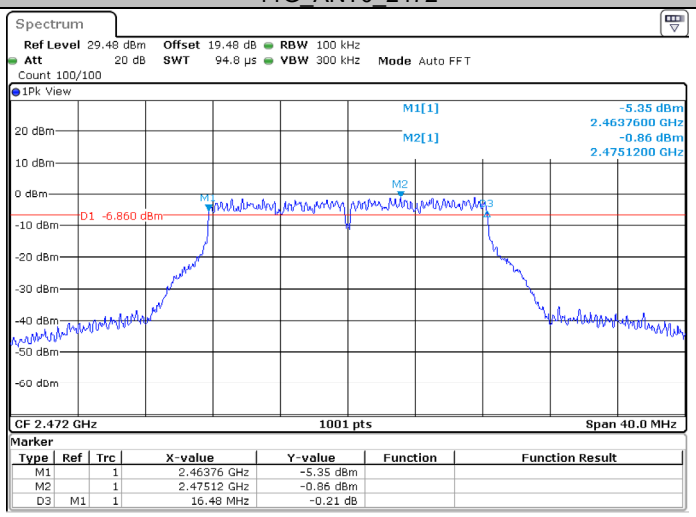

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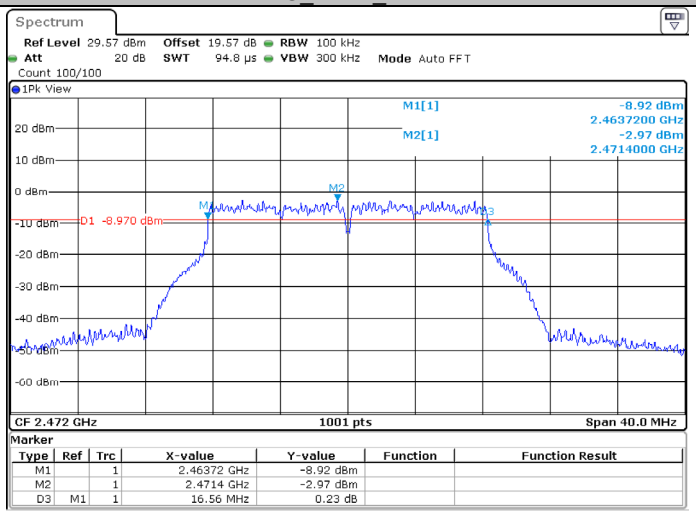

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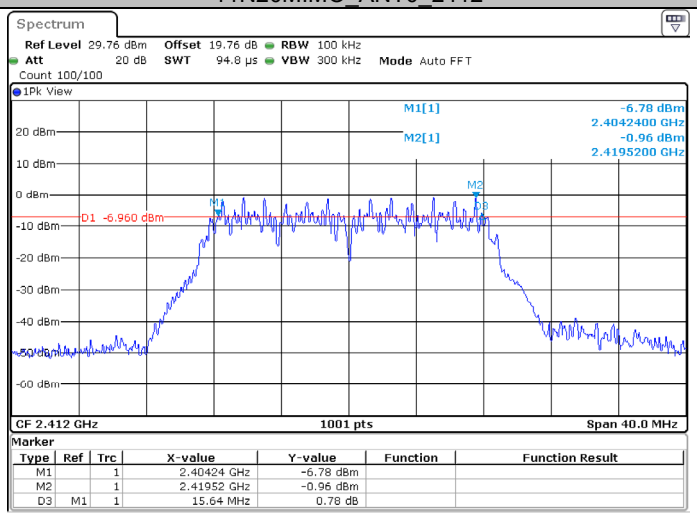

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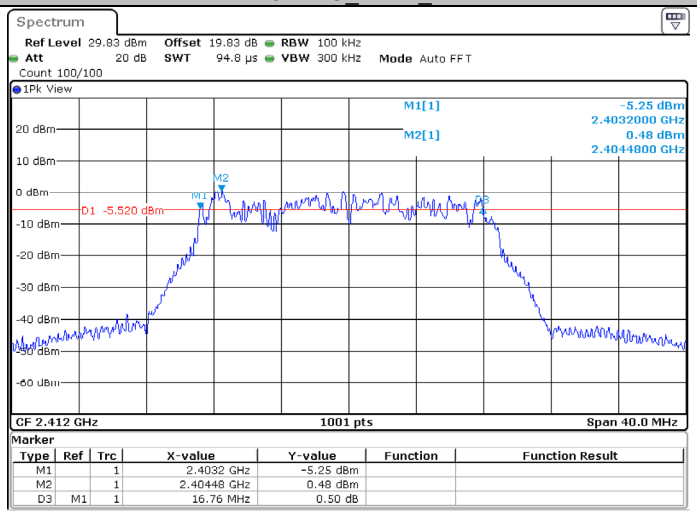

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Date: 27.FEB.2024 15:13:38

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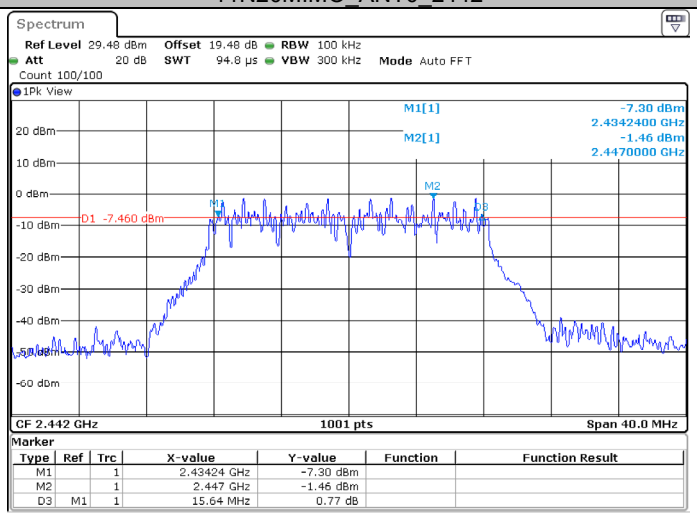

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
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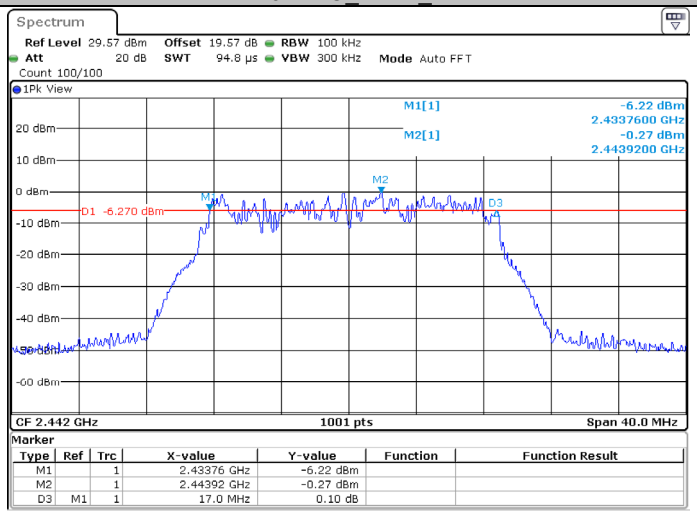

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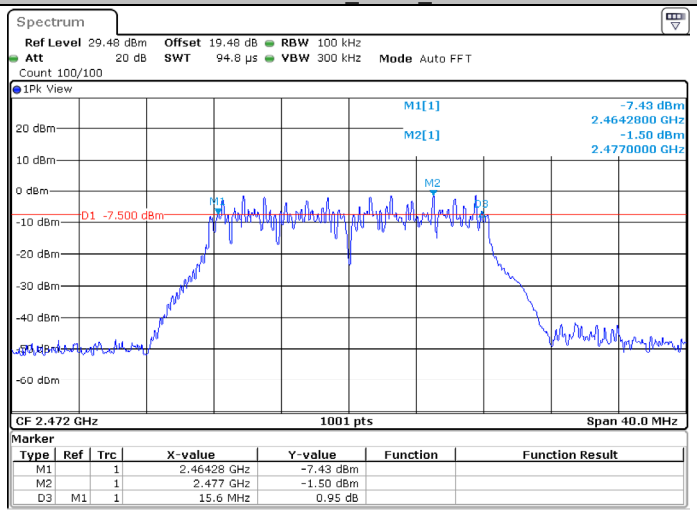
Date: 27.FEB.2024 15:17:44

11N20MIMO_ANT0_2472



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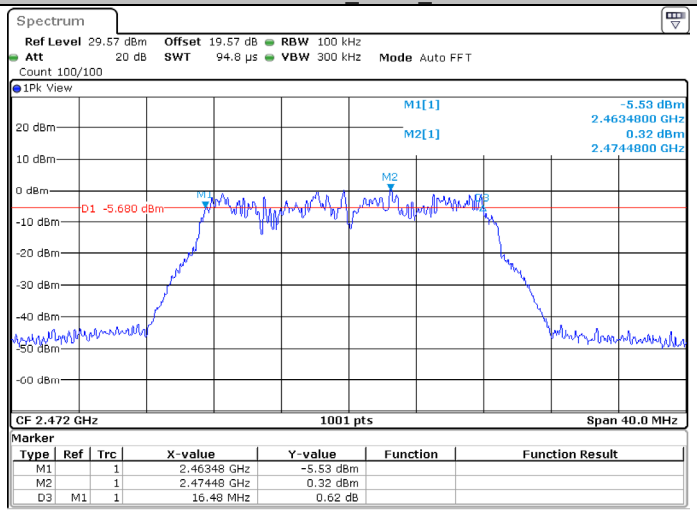


ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 15:19:33

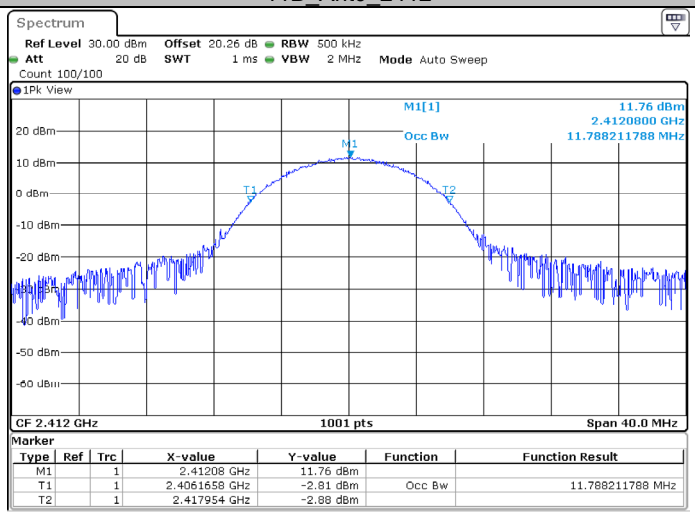
Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	ANT0	2412	11.788	2406.1658	2417.9141	---	---
	ANT1	2412	11.828	2406.1259	2417.7942	---	---
	ANT0	2442	11.748	2436.2058	2447.9540	---	---
	ANT1	2442	11.788	2436.1658	2447.8342	---	---
	ANT0	2472	11.828	2466.1658	2477.9540	---	---
	ANT1	2472	11.788	2466.1658	2477.8342	---	---
11G	ANT0	2412	17.662	2403.3287	2420.9510	---	---
	ANT1	2412	17.542	2403.2488	2420.7512	---	---
	ANT0	2442	17.502	2433.2887	2450.8711	---	---
	ANT1	2442	17.542	2433.2887	2450.7912	---	---
	ANT0	2472	17.662	2463.2488	2480.8711	---	---
	ANT1	2472	17.582	2463.2887	2480.7912	---	---
11N20MIMO	ANT0	2412	18.422	2403.2887	2420.9111	---	---
	ANT1	2412	18.581	2402.7692	2420.9510	---	---
	ANT0	2442	18.382	2433.3287	2450.8711	---	---
	ANT1	2442	18.382	2433.1688	2451.1508	---	---
	ANT0	2472	18.541	2463.3287	2480.9111	---	---
	ANT1	2472	18.422	2462.9690	2480.9910	---	---

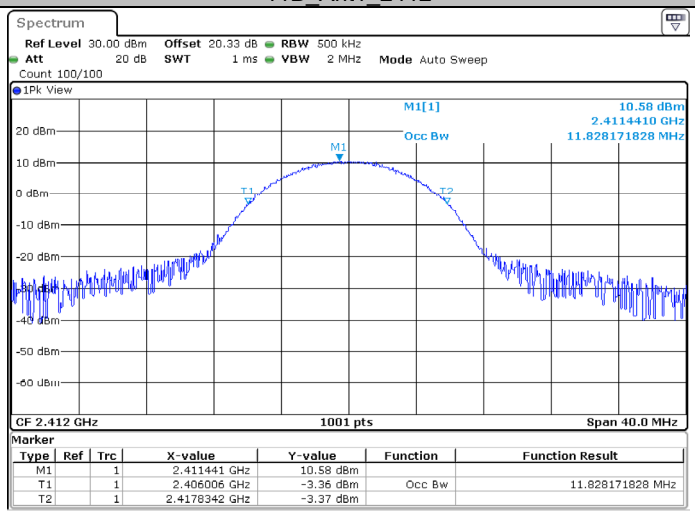
Test Graphs

11B_Ant0_2412



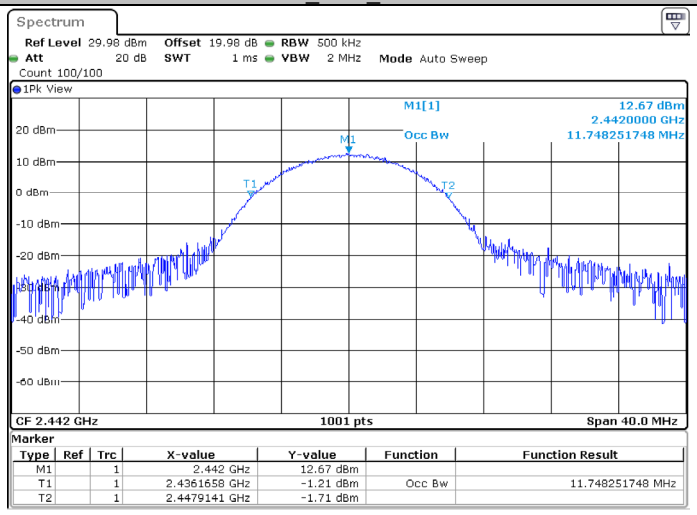
ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:39:13

11B_Ant1_2412



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:54:17

11B_Ant0_2442



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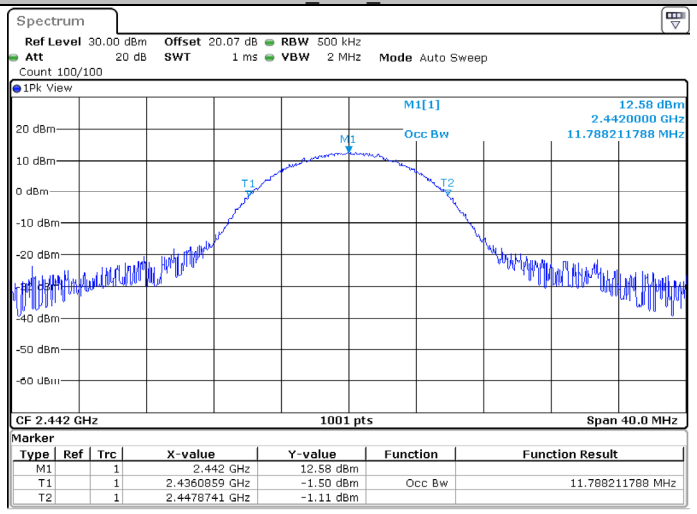
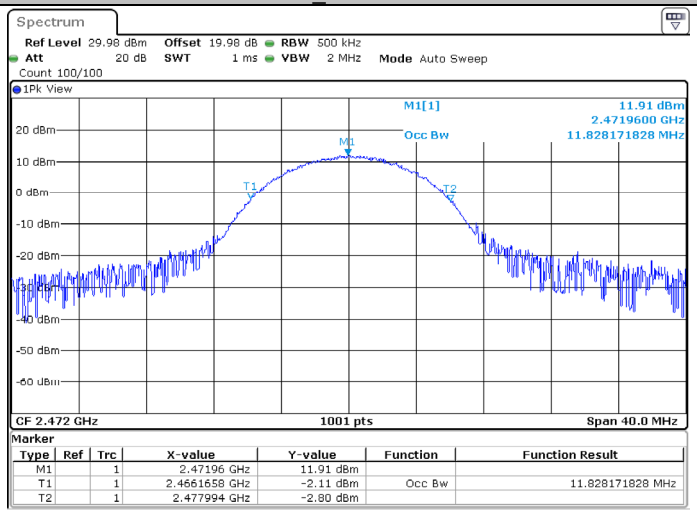
11B_Ant1_2442



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:57:06

11B_Ant02472

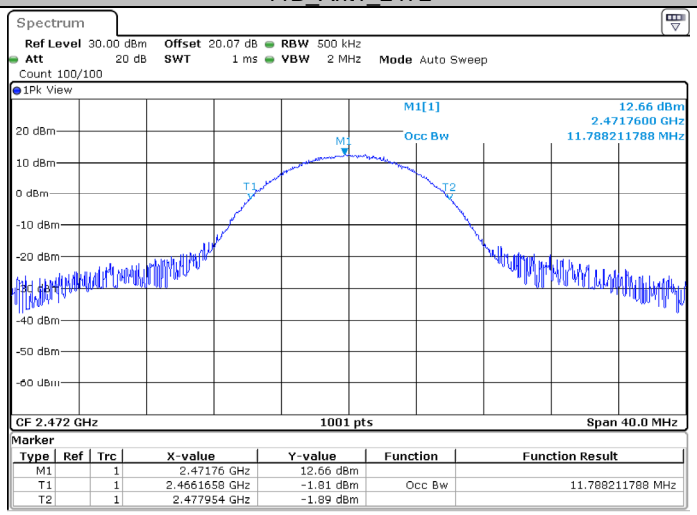


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47196 GHz	11.91 dBm		
T1		1	2.4661658 GHz	-2.11 dBm	Occ Bw	11.828171828 MHz
T2		1	2.477994 GHz	-2.80 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:43:40

11B_Ant1_2472

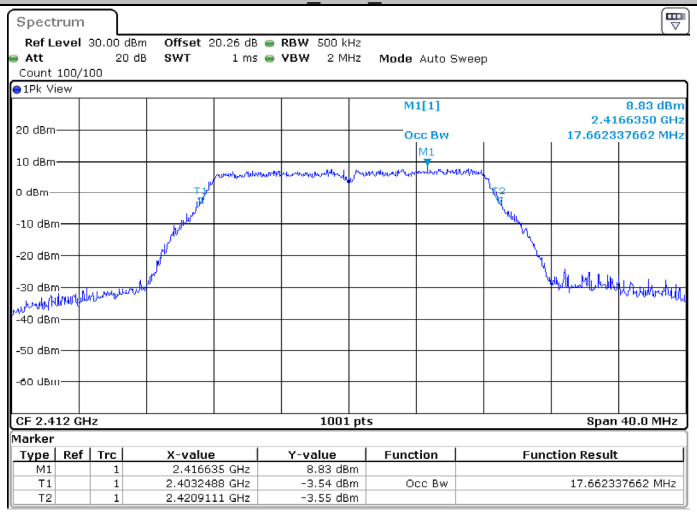


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47176 GHz	12.66 dBm		
T1		1	2.4661658 GHz	-1.81 dBm	Occ Bw	11.788211788 MHz
T2		1	2.477954 GHz	-1.89 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:59:31

11G_Ant0_2412

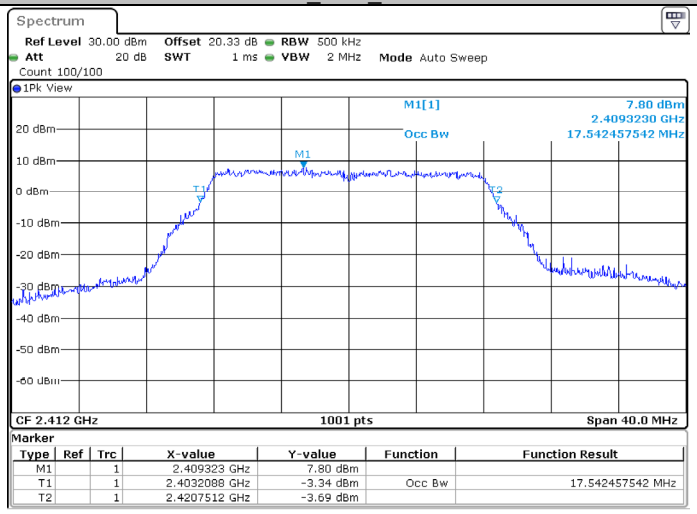


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.416635 GHz	8.83 dBm		
T1		1	2.4032488 GHz	-3.54 dBm	Occ Bw	17.662337662 MHz
T2		1	2.4209111 GHz	-3.55 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:46:28

11G_Ant1_2412

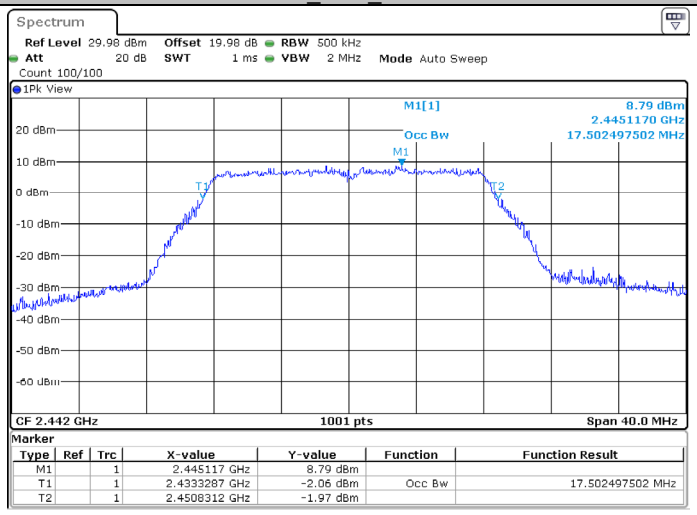


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.409323 GHz	7.80 dBm		
T1		1	2.4032088 GHz	-3.34 dBm	Occ Bw	17.542457542 MHz
T2		1	2.4207512 GHz	-3.69 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:07:16

11G_Ant0_2442

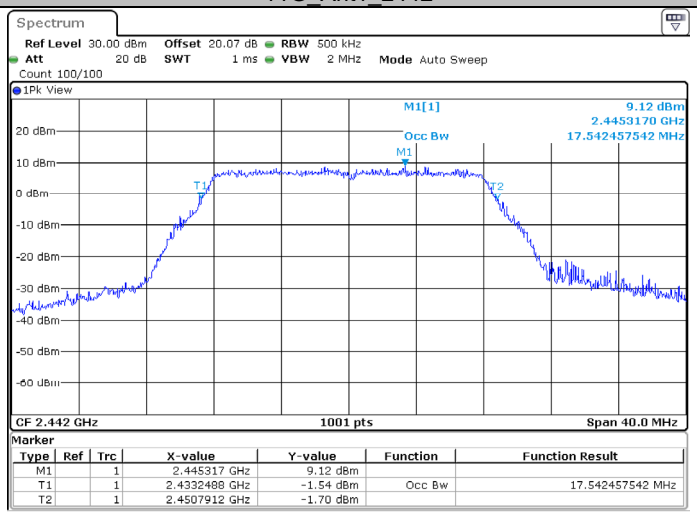


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.445117 GHz	8.79 dBm		
T1		1	2.4333287 GHz	-2.06 dBm	Occ Bw	17.502497502 MHz
T2		1	2.4508312 GHz	-1.97 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:49:13

11G_Ant1_2442

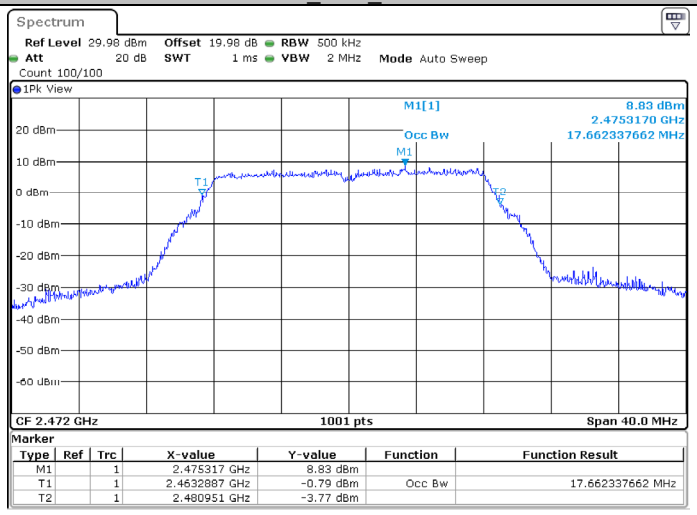


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.445317 GHz	9.12 dBm		
T1		1	2.4332488 GHz	-1.54 dBm	Occ Bw	17.542457542 MHz
T2		1	2.4507912 GHz	-1.70 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:08:33

11G_Ant0_2472

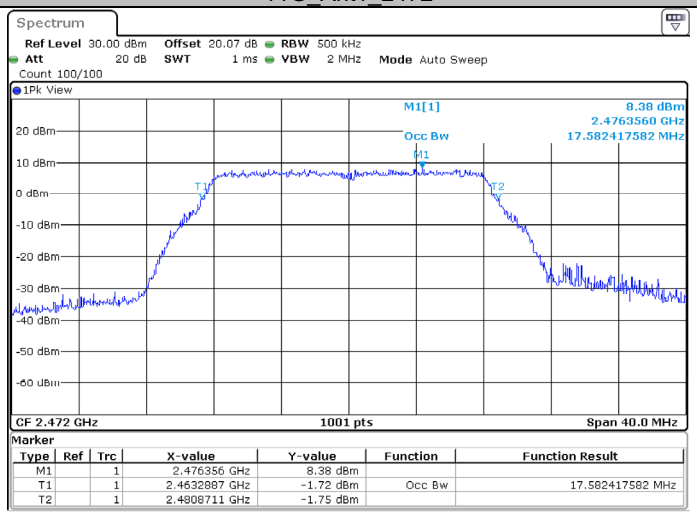


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.475317 GHz	8.83 dBm		
T1		1	2.4632887 GHz	-0.79 dBm	Occ Bw	17.662337662 MHz
T2		1	2.480951 GHz	-3.77 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:50:23

11G_Ant1_2472

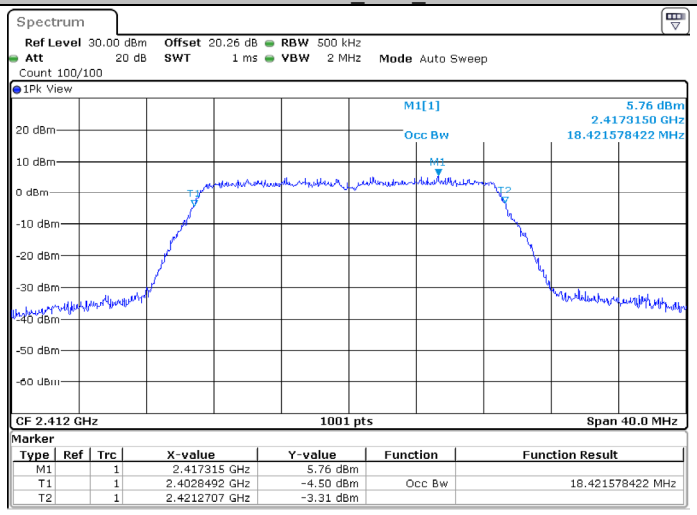


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.476356 GHz	8.38 dBm		
T1		1	2.4632887 GHz	-1.72 dBm	Occ Bw	17.582417582 MHz
T2		1	2.4808711 GHz	-1.75 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:10:36

11N20MIMO_Ant0_2412

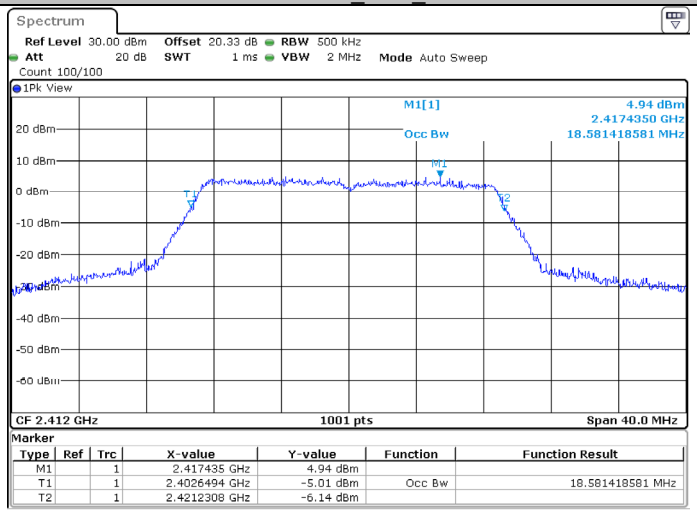


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.417315 GHz	5.76 dBm		
T1		1	2.4028492 GHz	-4.50 dBm	Occ Bw	18.421578422 MHz
T2		1	2.4212707 GHz	-3.31 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:17:08

11N20MIMO_Ant1_2412

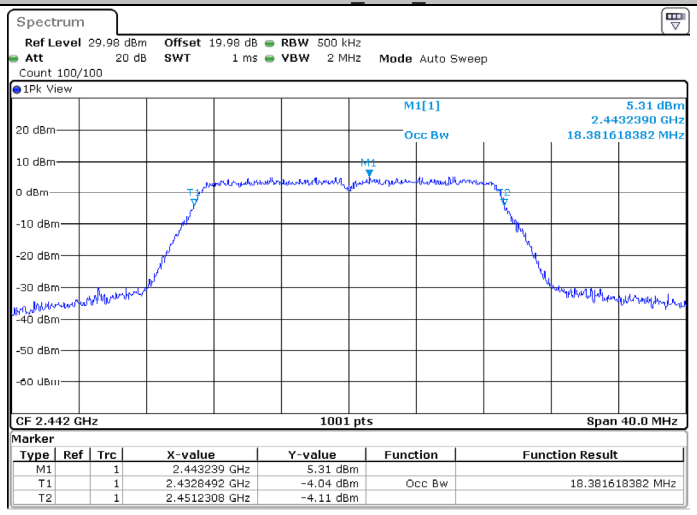


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.417435 GHz	4.94 dBm		
T1		1	2.4026494 GHz	-5.01 dBm	Occ Bw	18.581418581 MHz
T2		1	2.4212308 GHz	-6.14 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:23:09

11N20MIMO_Ant0_2442



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Date: 19.MAR.2024 00:18:32

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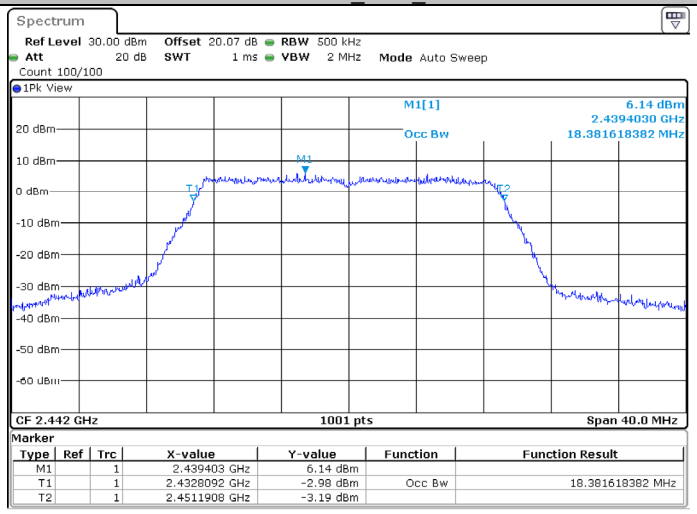

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Date: 19.MAR.2024 00:25:06

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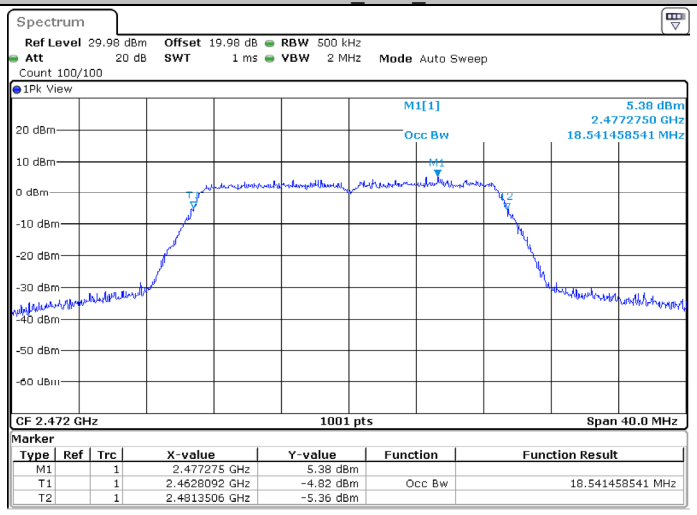

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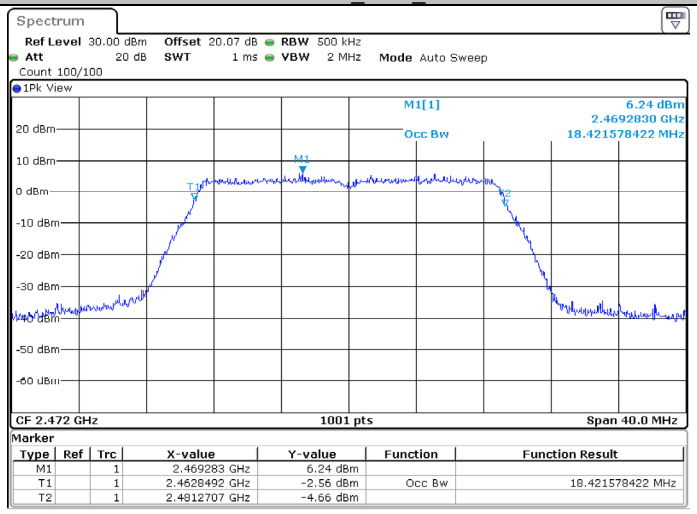
11N20MIMO_Ant1_2472



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:26:21

Appendix C: Maximum conducted output power

Test Result

Test Mode	Antenna	Frequency [MHz]	AVG Power [dBm]	Peak Power [dBm]	Limit [dBm]	Verdict
11B	ANT0	2412	14.82	20.29	≤30.00	PASS
	ANT1	2412	14.67	20.17	≤30.00	PASS
	ANT0	2442	15.50	21.00	≤30.00	PASS
	ANT1	2442	15.88	21.40	≤30.00	PASS
	ANT0	2472	15.06	20.31	≤30.00	PASS
	ANT1	2472	15.88	21.24	≤30.00	PASS
11G	ANT0	2412	13.20	20.88	≤30.00	PASS
	ANT1	2412	12.92	20.50	≤30.00	PASS
	ANT0	2442	13.62	21.18	≤30.00	PASS
	ANT1	2442	13.74	21.38	≤30.00	PASS
	ANT0	2472	12.95	20.87	≤30.00	PASS
	ANT1	2472	13.56	21.16	≤30.00	PASS
11N20MIMO	ANT0	2412	10.65	18.08	≤30.00	PASS
	ANT1	2412	10.48	17.90	≤30.00	PASS
	total	2412	13.58	21.00	≤30.00	PASS
	ANT0	2442	10.77	18.35	≤30.00	PASS
	ANT1	2442	11.03	18.65	≤30.00	PASS
	total	2442	13.91	**21.51**	≤30.00	PASS
	ANT0	2472	10.21	17.57	≤30.00	PASS
	ANT1	2472	11.07	18.57	≤30.00	PASS
	total	2472	13.67	21.11	≤30.00	PASS

Note:
The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$

Antenna Gain:	2.13	dBi	Directional gain:	2.13	dBi

Appendix D: Maximum power spectral density

Test Result

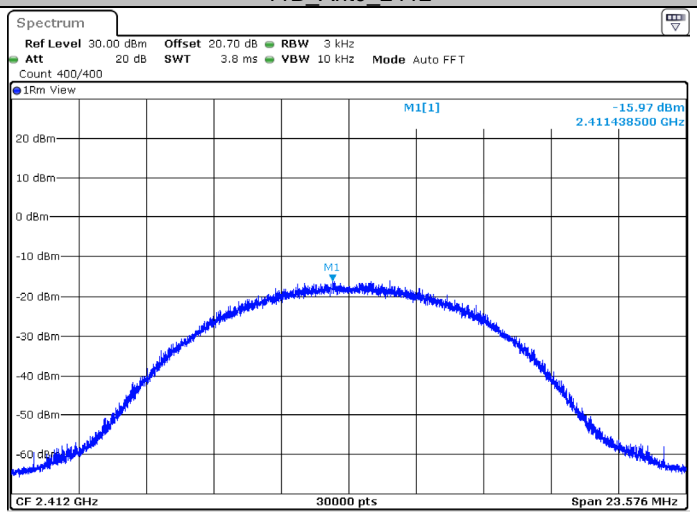
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3kHz]	Duty Cycle Factor [dB]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	ANT0	2412	-15.97	0.49	-15.48	≤8.00	PASS
	ANT1	2412	-16.13	0.49	-15.64	≤8.00	PASS
	ANT0	2442	-15.27	0.49	-14.78	≤8.00	PASS
	ANT1	2442	-15.04	0.49	-14.55	≤8.00	PASS
	ANT0	2472	-15.29	0.49	-14.80	≤8.00	PASS
	ANT1	2472	-15.13	0.49	-14.64	≤8.00	PASS
11G	ANT0	2412	-16.89	2.01	-14.88	≤8.00	PASS
	ANT1	2412	-17.53	2.01	-15.52	≤8.00	PASS
	ANT0	2442	-17.04	2.01	-15.03	≤8.00	PASS
	ANT1	2442	-17.01	2.01	-15.00	≤8.00	PASS
	ANT0	2472	-17.00	2.01	-14.99	≤8.00	PASS
	ANT1	2472	-17.21	2.01	-15.20	≤8.00	PASS
11N20MIMO	ANT0	2412	-19.92	2.01	-17.91	≤8.00	PASS
	ANT1	2412	-20.05	2.11	-17.94	≤8.00	PASS
	total	2412	--	--	-14.91	≤8.00	PASS
	ANT0	2442	-19.49	2.01	-17.48	≤8.00	PASS
	ANT1	2442	-19.45	2.11	-17.34	≤8.00	PASS
	total	2442	--	--	-14.40	≤8.00	PASS
	ANT0	2472	-20.02	2.01	-18.01	≤8.00	PASS
	ANT1	2472	-19.69	2.11	-17.58	≤8.00	PASS
	total	2472	--	--	-14.78	≤8.00	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 $\log(N_{ANT}/N_{SS})$ dB

Antenna Gain:	2.13	dBi	Directional gain:	5.13	dBi

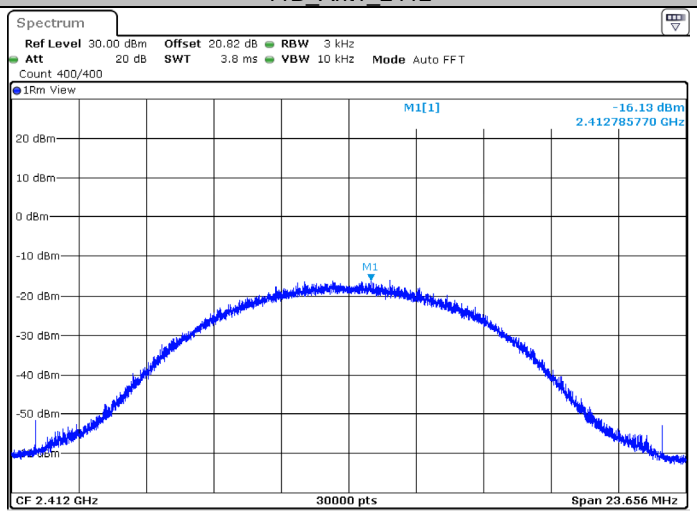
Test Graphs

11B_Ant0_2412



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:39:34

11B_Ant1_2412



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:56:10

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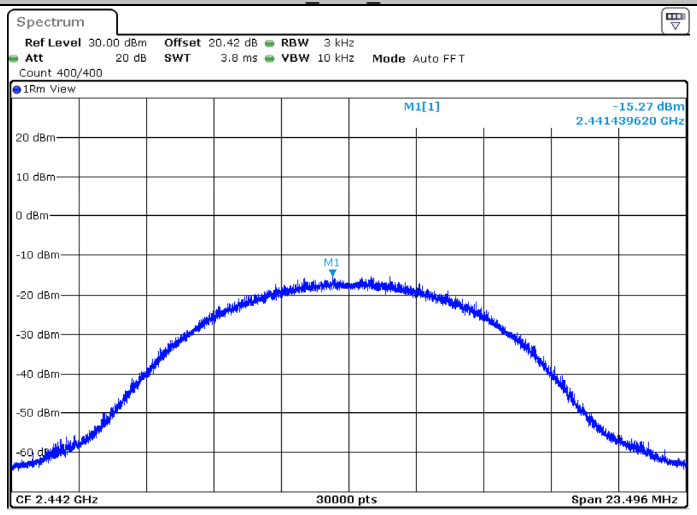

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Date: 18.MAR.2024 23:42:49

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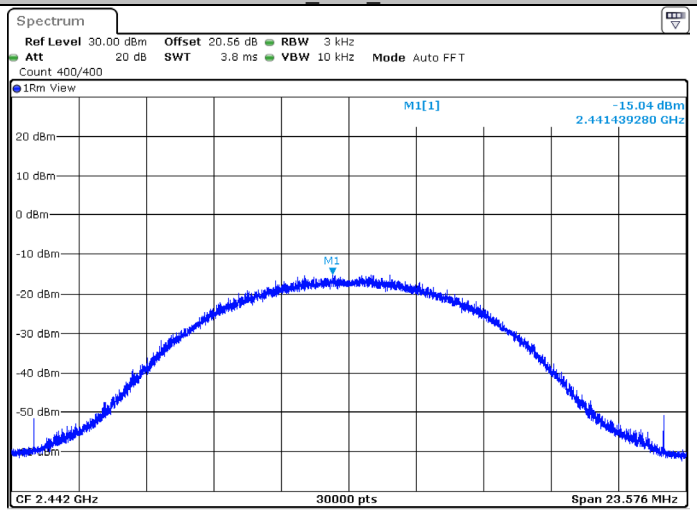

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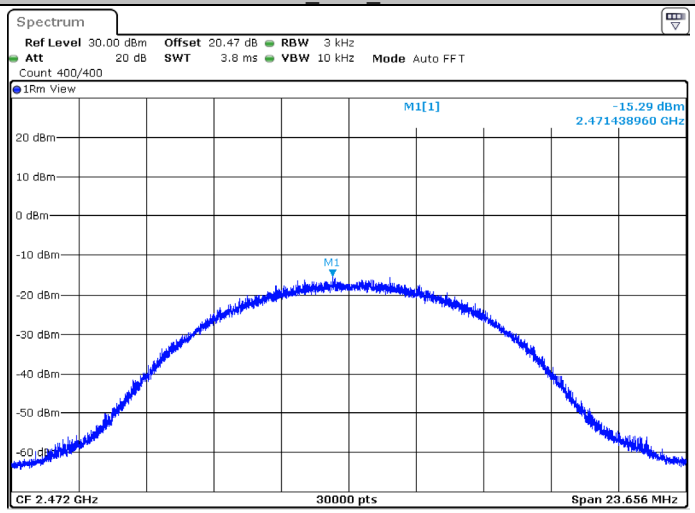
Date: 18.MAR.2024 23:57:26

11B_Ant0_2472



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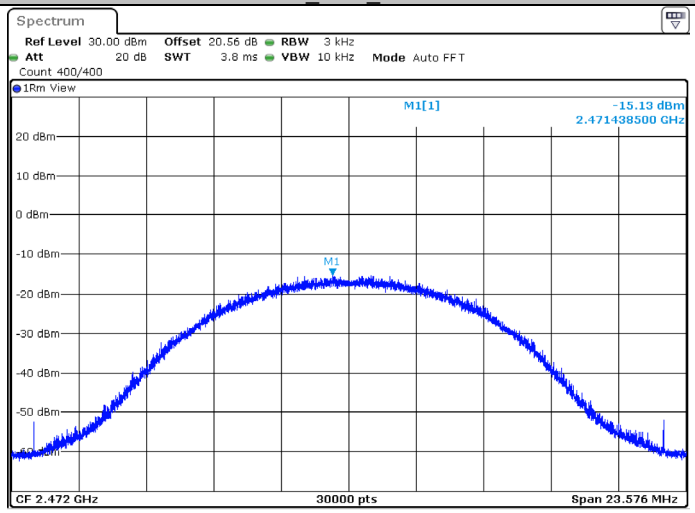
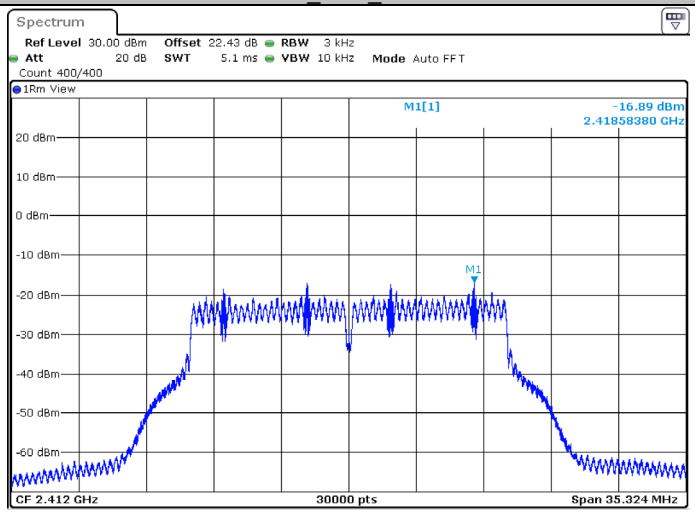
Date: 18.MAR.2024 23:44:00

11B_Ant1_2472



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:59:50

11G_Ant0_2412



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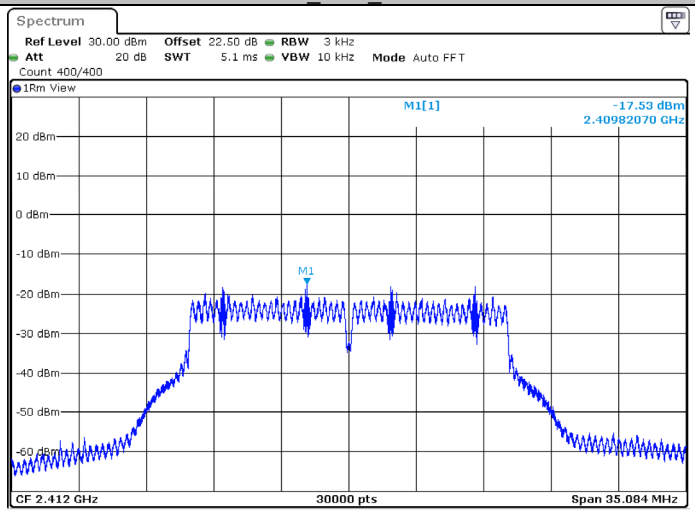
Date: 18.MAR.2024 23:46:48

11G_Ant1_2412



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Date: 19.MAR.2024 00:07:36

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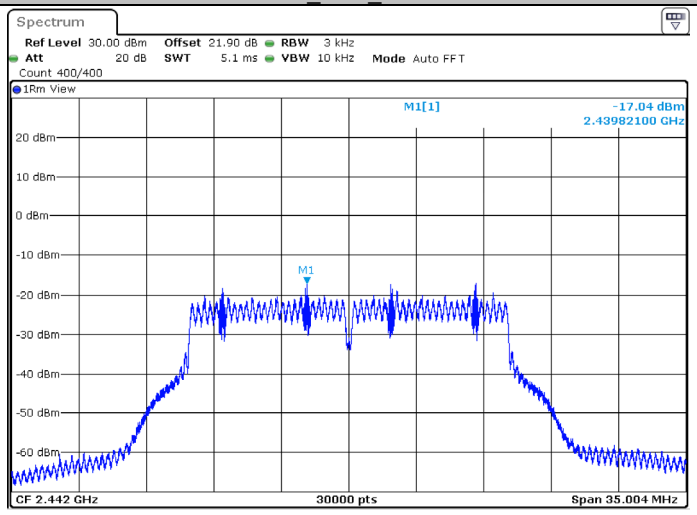

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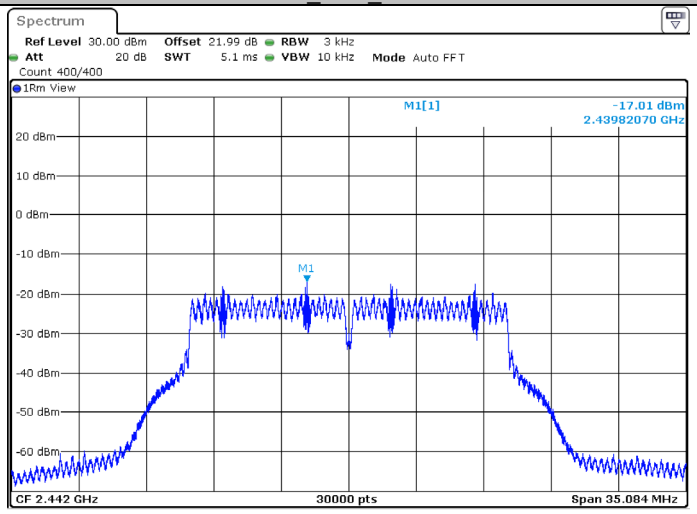
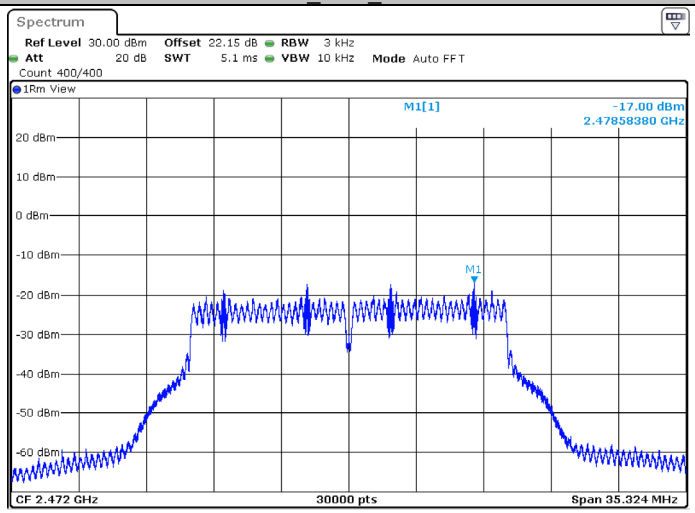
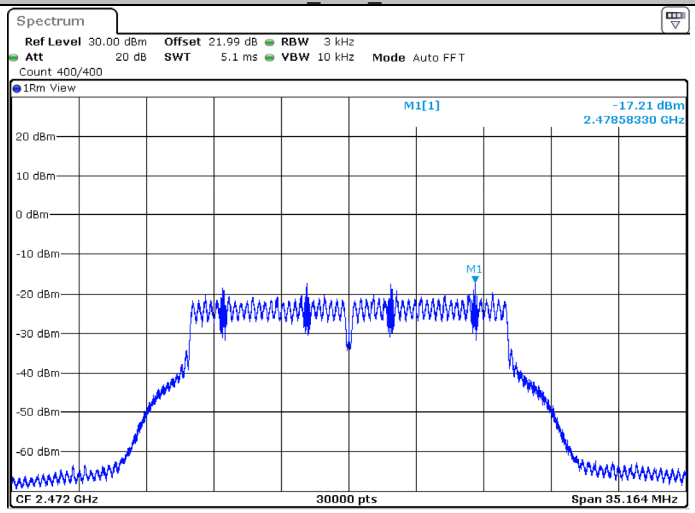


11G_Ant0_2472



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 18.MAR.2024 23:50:44

11G_Ant1_2472



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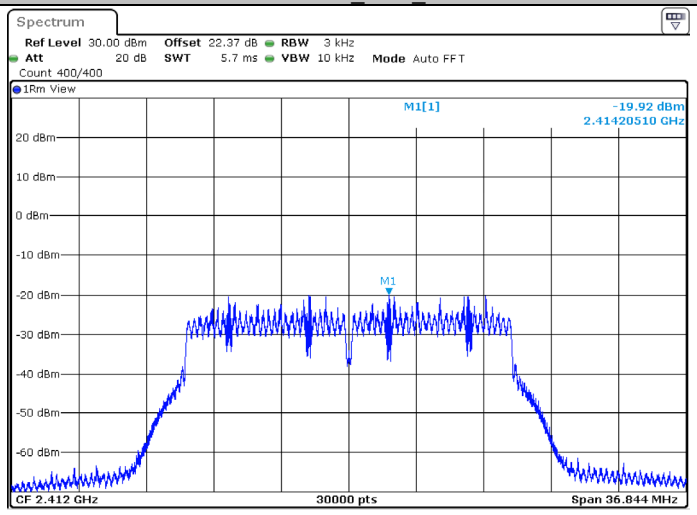

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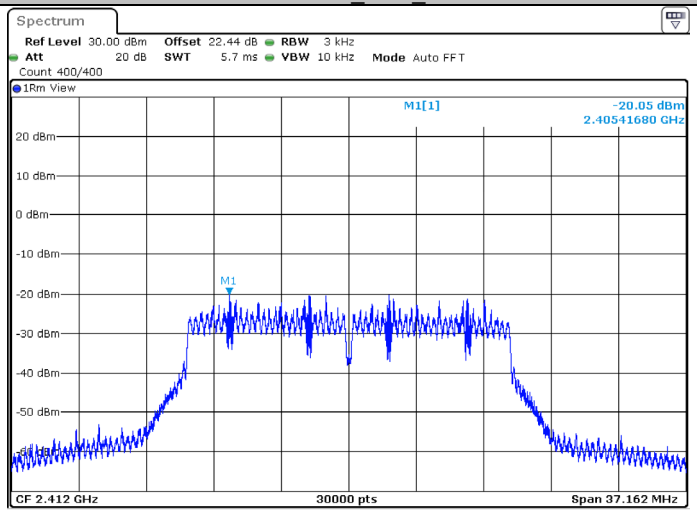

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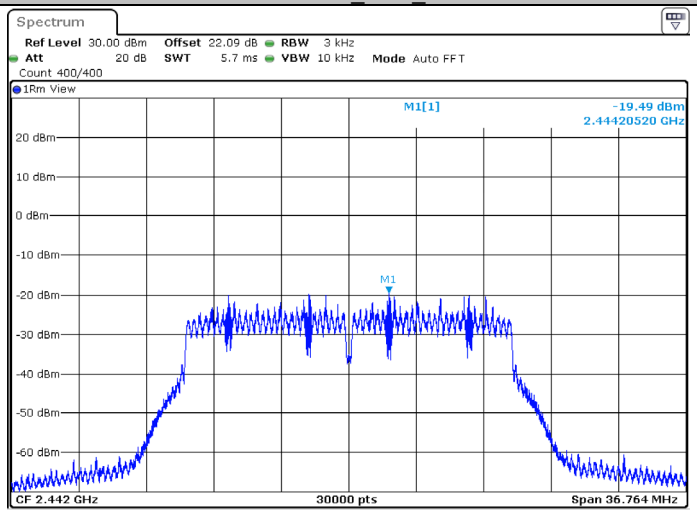 ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan Date: 19.MAR.2024 00:18:52
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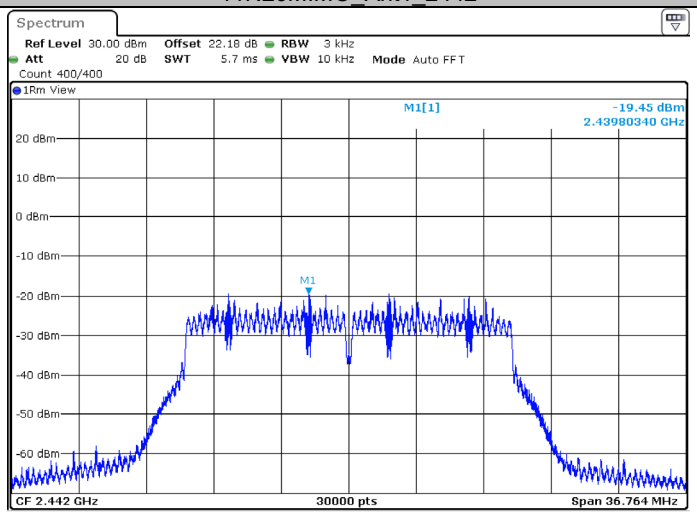
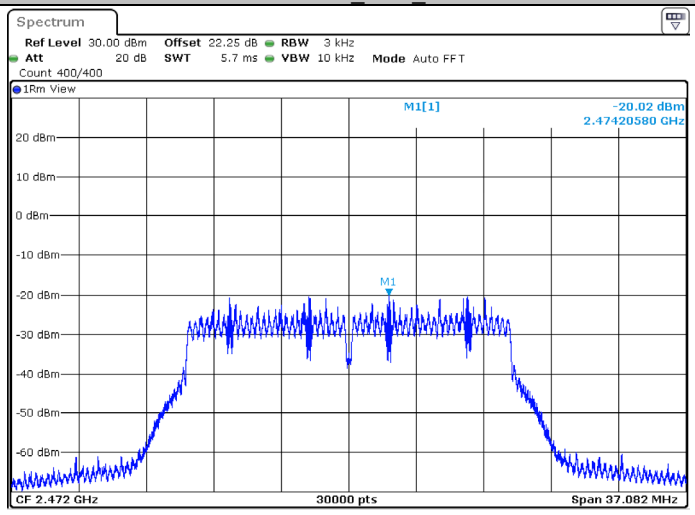
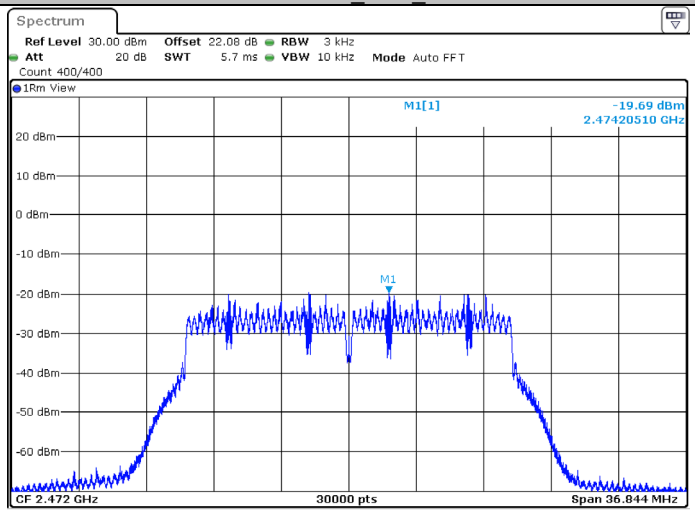
 ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan Date: 19.MAR.2024 00:25:27

11N20MIMO_Ant0_2472



ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:20:53

11N20MIMO_Ant1_2472

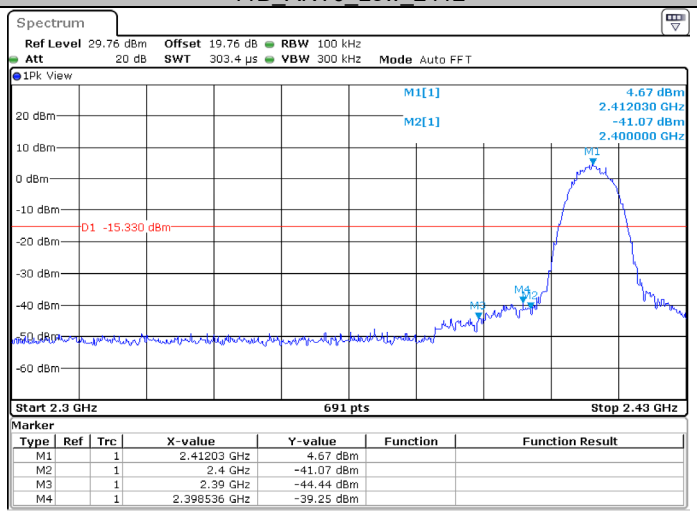


ProjectNo.:SZ4231220-76923E-RF Tester:Tom Tan
Date: 19.MAR.2024 00:26:43

Appendix E: Band edge measurements

Test Graphs

11B_ANT0_Low_2412

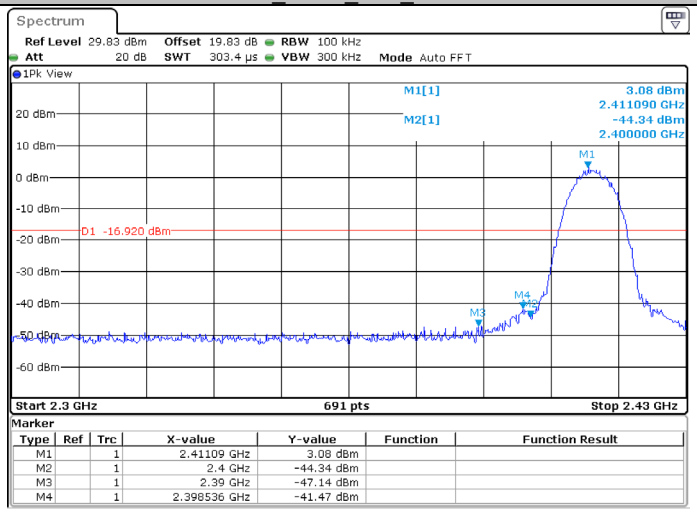


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41203 GHz	4.67 dBm		
M2		1	2.4 GHz	-41.07 dBm		
M3		1	2.39 GHz	-44.44 dBm		
M4		1	2.398536 GHz	-39.25 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 13:50:54

11B_ANT1_Low_2412

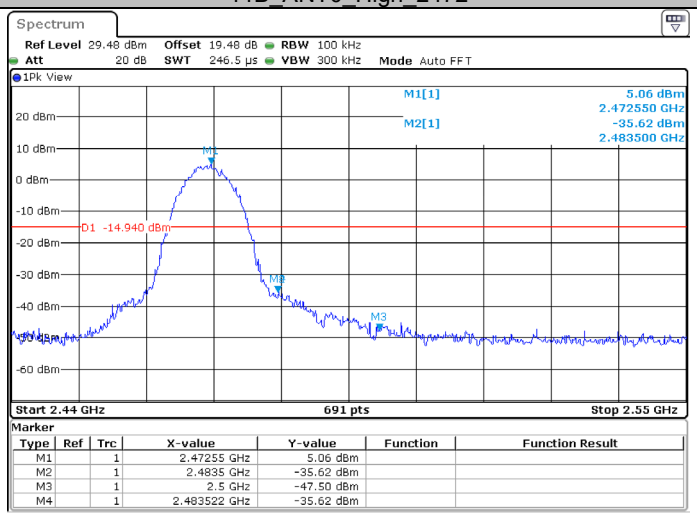


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41109 GHz	3.08 dBm		
M2		1	2.4 GHz	-44.34 dBm		
M3		1	2.39 GHz	-47.14 dBm		
M4		1	2.398536 GHz	-41.47 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 14:05:20

11B_ANT0_High_2472

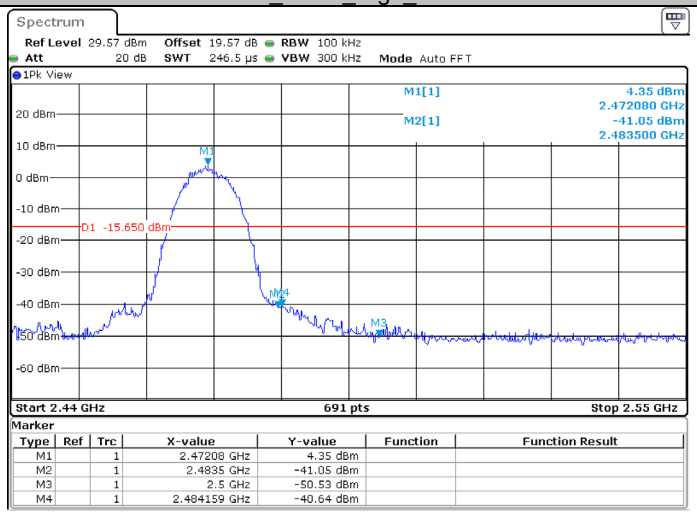


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47255 GHz	5.06 dBm		
M2		1	2.4835 GHz	-35.62 dBm		
M3		1	2.5 GHz	-47.50 dBm		
M4		1	2.483522 GHz	-35.62 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 13:49:49

11B_ANT1_High_2472

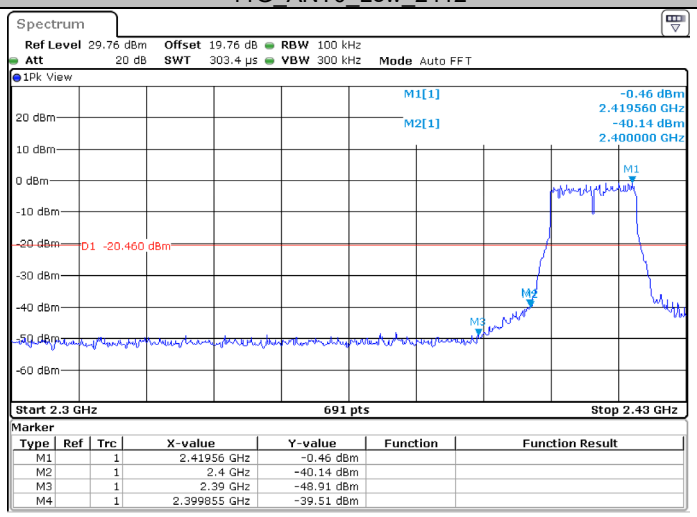


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47208 GHz	4.35 dBm		
M2		1	2.4835 GHz	-41.05 dBm		
M3		1	2.5 GHz	-50.53 dBm		
M4		1	2.484159 GHz	-40.64 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 14:07:30

11G_ANT0_Low_2412

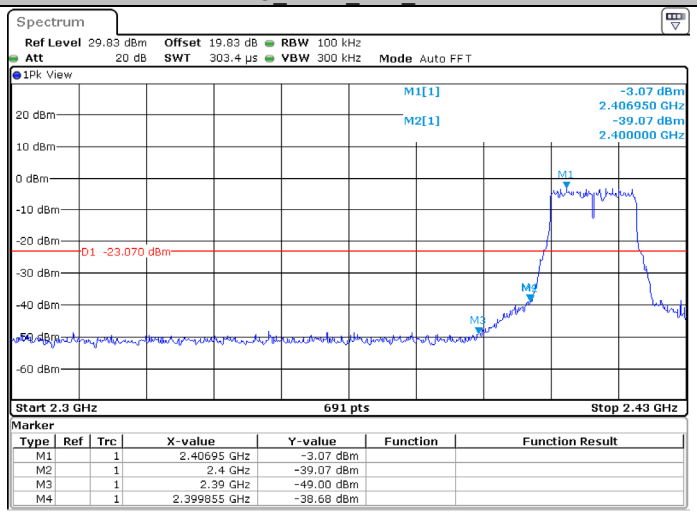


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41956 GHz	-0.46 dBm		
M2		1	2.4 GHz	-40.14 dBm		
M3		1	2.39 GHz	-48.91 dBm		
M4		1	2.399855 GHz	-39.51 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 13:52:55

11G_ANT1_Low_2412

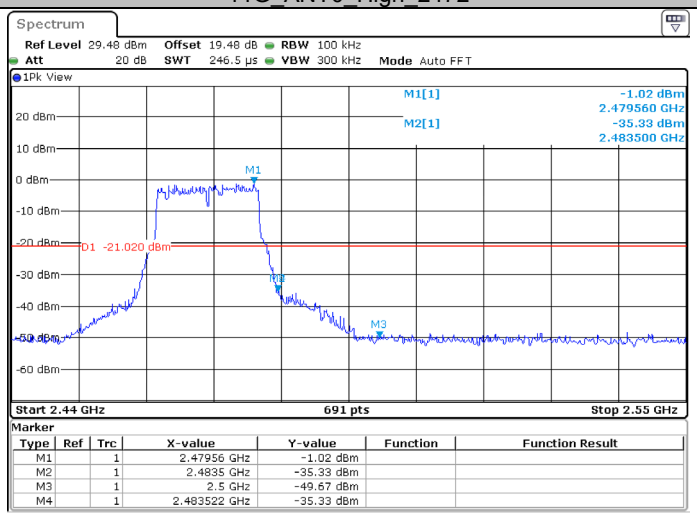


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40695 GHz	-3.07 dBm		
M2		1	2.4 GHz	-39.07 dBm		
M3		1	2.39 GHz	-49.00 dBm		
M4		1	2.399855 GHz	-38.68 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 14:08:43

11G_ANT0_High_2472

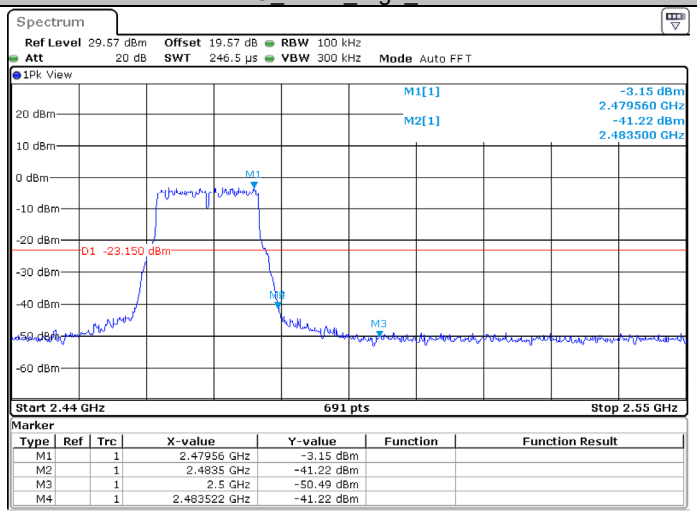


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47956 GHz	-1.02 dBm		
M2		1	2.4835 GHz	-35.33 dBm		
M3		1	2.5 GHz	-49.67 dBm		
M4		1	2.483522 GHz	-35.33 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 13:56:49

11G_ANT1_High_2472

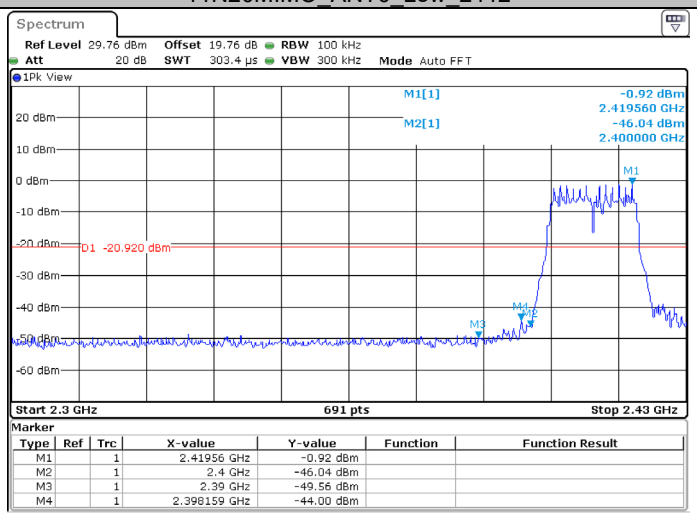


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47956 GHz	-3.15 dBm		
M2		1	2.4835 GHz	-41.22 dBm		
M3		1	2.5 GHz	-50.49 dBm		
M4		1	2.483522 GHz	-41.22 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 14:10:32

11N20MIMO_ANT0_Low_2412

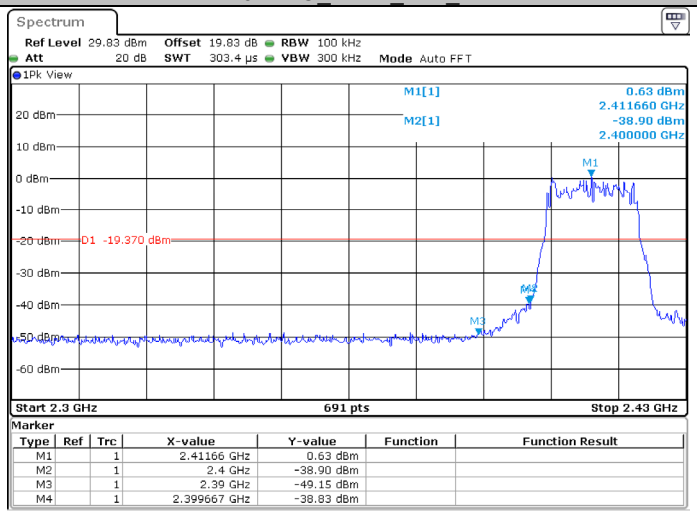


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41956 GHz	-0.92 dBm		
M2		1	2.4 GHz	-46.04 dBm		
M3		1	2.39 GHz	-49.56 dBm		
M4		1	2.398159 GHz	-44.00 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 15:13:19

11N20MIMO_ANT1_Low_2412

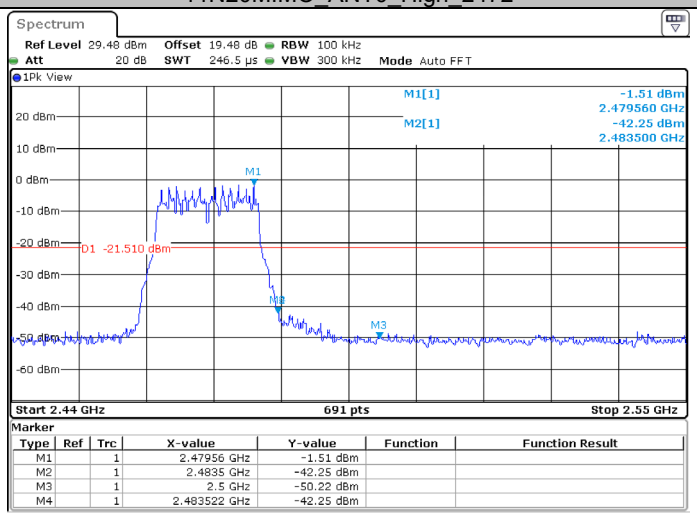


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41166 GHz	0.63 dBm		
M2		1	2.4 GHz	-38.90 dBm		
M3		1	2.39 GHz	-49.15 dBm		
M4		1	2.399667 GHz	-38.83 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 15:14:07

11N20MIMO_ANT0_High_2472

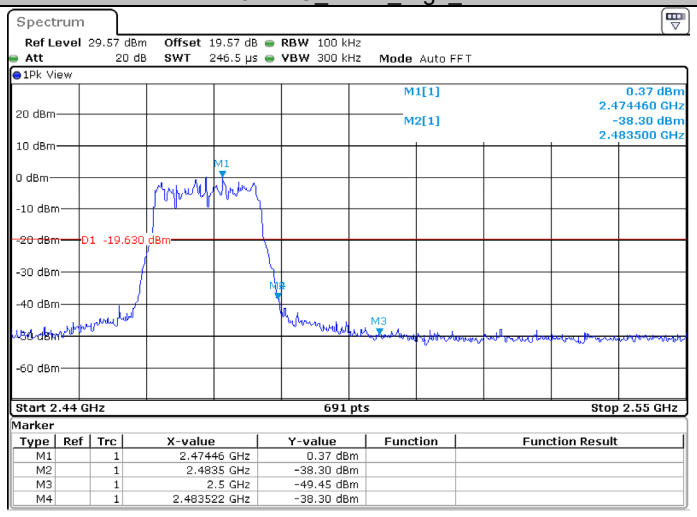


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47956 GHz	-1.51 dBm		
M2		1	2.4835 GHz	-42.25 dBm		
M3		1	2.5 GHz	-50.22 dBm		
M4		1	2.483522 GHz	-42.25 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 15:19:25

11N20MIMO_ANT1_High_2472



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47446 GHz	0.37 dBm		
M2		1	2.4835 GHz	-38.30 dBm		
M3		1	2.5 GHz	-49.45 dBm		
M4		1	2.483522 GHz	-38.30 dBm		

ProjectNo.:SZ4231220-76923E-RF Tester:Tom.Liu
Date: 27.FEB.2024 15:20:02

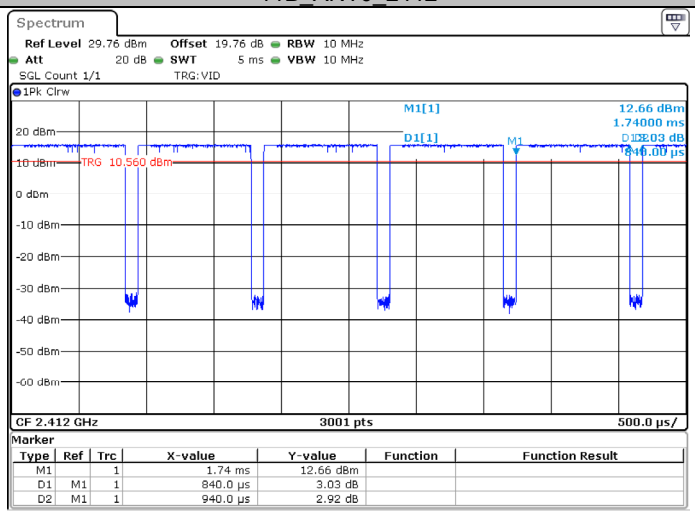
Appendix F: Duty Cycle

Test Result

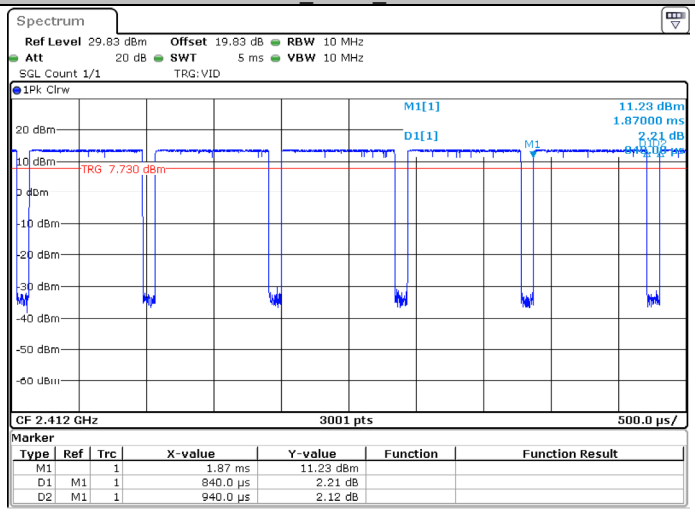
Test Mode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]	1/T [Hz]	VBW Setting [kHz]
11B	ANT0	2412	0.84	0.94	89.36	0.49	1190	2
	ANT1	2412	0.84	0.94	89.36	0.49	1190	2
11G	ANT0	2412	0.17	0.27	62.96	2.01	5882	10
	ANT1	2412	0.17	0.27	62.96	2.01	5882	10
11N20MIMO	ANT0	2412	0.17	0.27	62.96	2.01	5882	10
	ANT1	2412	0.16	0.26	61.54	2.11	6250	10

Test Graphs

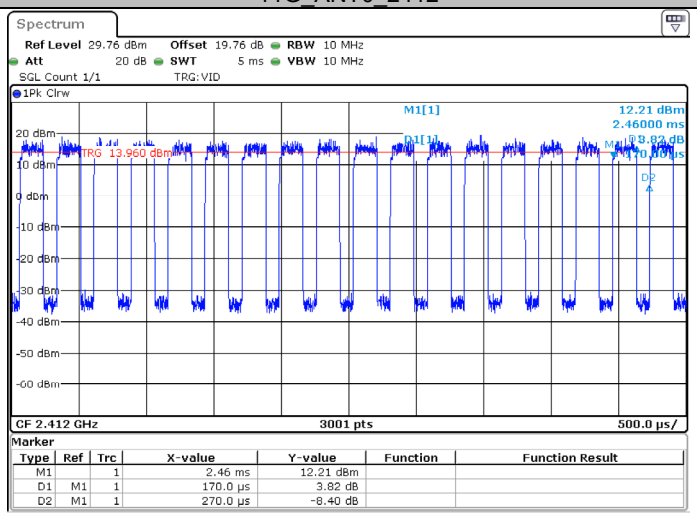
11B_ANT0_2412



11B_ANT1_2412



11G_ANT0_2412



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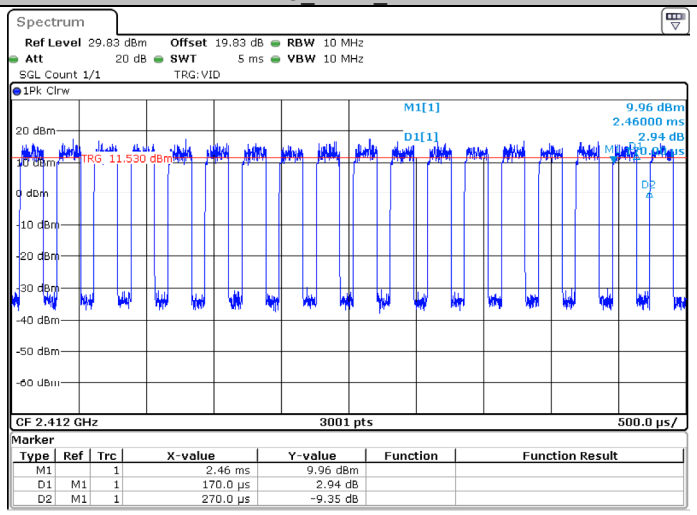

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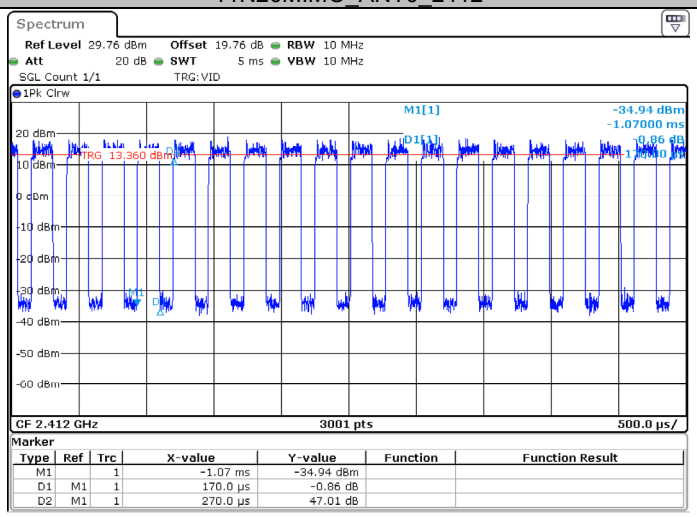

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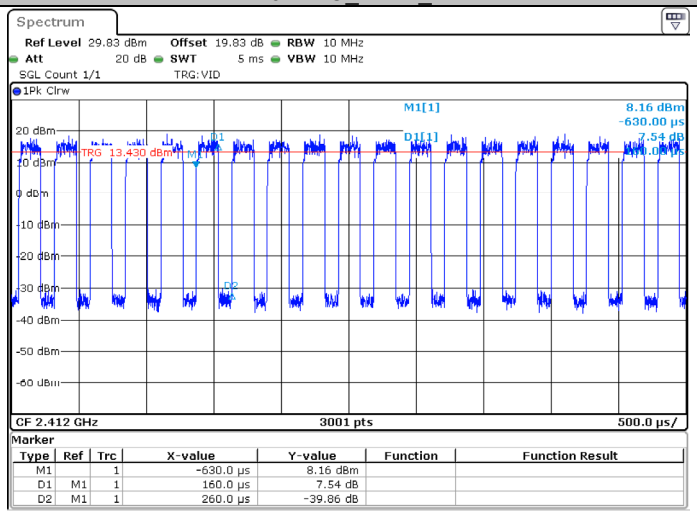

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Date: 27.FEB.2024 15:13:30

EUT PHOTOGRAPHS

Please refer to the attachment SZ4231220-76923E-RF External photo and SZ4231220-76923E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment SZ4231220-76923E-RF Test Setup photo.

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