



FCC Test Report

Application No.: DNT2510160483R11550-14345
Applicant: Shenzhen Bilian Electronic Co.,Ltd.
Address of Applicant: Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City,China
EUT Description: FWM
Model No.: FWM-4A25
FCC ID: 2AL6KFWM-4A25
Power Supply DC 12V
Trade Mark: /
Standards: 47 CFR FCC Part 2, Subpart J
47 CFR Part 15, Subpart C
ANSI C63.10: 2020
Date of Receipt: 2025/10/16
Date of Test: 2025/10/16 to 2025/11/20
Date of Issue: 2025/11/20
Test Result: **PASS**

Prepared By: Wayne Lin (Testing Engineer)

Reviewed By: Pencils Chen (Project Engineer)

Approved By: Hene Shen (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

Dongguan DN Testing Co., Ltd.

Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

Web: www.dn-testing.com

Tel: +86-769-88087383

E-mail: service@dn-testing.com



Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.20, 2025	Valid	Original Report



1 Test Summary

Test Item	Test Requirement	Test Method	Test Result	Result
Antenna Requirement	15.203/247(b)	--	Clause 3.1	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10: 2020	Clause 3.2	PASS
Duty Cycle	--	--	Clause 3.3	PASS
DTS (6 dB) Bandwidth	15.247 (a)(2)	ANSI C63.10: 2020	Clause 3.4	PASS
Conducted Output Power	15.247 (b)(3)	ANSI C63.10: 2020	Clause 3.5	PASS
Power Spectral Density	15.247 (e)	ANSI C63.10: 2020	Clause 3.6	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10: 2020	Clause 3.7	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10: 2020	Clause 3.8	PASS
Radiated Spurious Emissions	15.247(d);15.205/15.209	ANSI C63.10: 2020	Clause 3.9	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d);15.205/15.209	ANSI C63.10: 2020	Clause 3.10	PASS

Note:

1. "N/A" denotes test is not applicable in this test report.



Contents

1 Test Summary.....	3
2 General Information	5
2.1 Test Location	5
2.2 General Description of EUT	6
2.3 Channel List.....	7
2.4 Test Environment and Mode	7
2.5 Power Setting of Test Software	9
2.6 Description of Support Units	9
2.7 Test Facility.....	10
2.8 Measurement Uncertainty (95% confidence levels, k=2)	10
2.9 Equipment List.....	11
2.10 Assistant equipment used for test	12
3 Test results and Measurement Data.....	13
3.1 Antenna Requirement.....	13
3.2 Duty Cycle	14
3.3 DTS (6 dB) Bandwidth.....	15
3.4 Conducted Output Power	16
3.5 Power Spectral Density	17
3.6 Band-edge for RF Conducted Emissions	18
3.7 RF Conducted Spurious Emissions.....	19
3.8 Radiated Spurious Emissions.....	20
3.9 Restricted bands around fundamental frequency.....	28
3.10 AC Power Line Conducted Emissions.....	33
4 Appendix	35
Appendix A: Duty Cycle	35
Appendix B: DTS Bandwidth	48
Appendix C: Maximum conducted output power	61
Appendix D: Maximum power spectral density.....	62
Appendix E: Band edge measurements	75
Appendix F: Conducted Spurious Emission	84



2 General Information

2.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin



2.2 General Description of EUT

Manufacturer:	Shenzhen Bilian Electronic Co.,Ltd.
Address of Manufacturer:	Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City,China
EUT Description:	FWM
Test Model No.:	FWM-4A25
Additional Model(s):	/
Power Supply:	DC 12V
Trade Mark:	/
Hardware Version:	V1.0
Software Version:	V1.0.3
Chip Type:	MT7975PN
Serial number	PR2510160483R11550
IEEE 802.11 WLAN Mode Supported	☒ 802.11b (20 MHz channel bandwidth), ☒ 802.11g (20 MHz channel bandwidth) ☒ 802.11n HT(20 MHz channel bandwidth), ☒ 802.11 n HT(40 MHz channel bandwidth) ☒ 802.11 ax HE(20 MHz channel bandwidth) ☒ 802.11 ax HE(40 MHz channel bandwidth)
Operation Frequency:	BW(20MHz): 2412-2462MHz BW(40MHz): 2422-2452MHz
Type of Modulation:	IEEE for 802.11b: DSSS IEEE for 802.11g : OFDM IEEE for 802.11n(HT20) : OFDM IEEE for 802.11n(HT40) : OFDM IEEE for 802.11ax(HE20) : OFDMA IEEE for 802.11ax(HE40) : OFDMA
Sample Type:	☐ Portable Device, ☒ Module, ☒ Mobile Device
Antenna Type:	☒ External, ☐ Integrated
Antenna Ports	☒ Ant 1, ☒ Ant 2, ☐ Ant 3
Smart System	☐ SISO (for 802.11b/g/n/ax), ☒ MIMO (for 802.11 b/g/n/ax): 2 Tx & 2 Rx, ☐ Diversity (for 802.11b/g) : Tx & Rx
Antenna Gain*:	☒ Provided by applicant
	Ant1:9.15dBi; Ant2:9.15dBi
Directional gain:	12.16dBi
RF Cable*:	☒ Provided by applicant
	0.5dB(0.6~1GHz); 0.8dB(1.4~2GHz); 1.0dB(2.1~2.7GHz); 1.5dB(3~4GHz); 1.8dB(4.4~6GHz);

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

*Directional Gain=9.15+10LOG(2)=12.16dBi.



2.3 Channel List

Operation Frequency of each channel (802.11b/g/n HT20/ax HE20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		
Operation Frequency of each channel (802.11n HT40/ax HE40)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
3	2422MHz	6	2437MHz	9	2452MHz		
4	2427MHz	7	2442MHz				
5	2432MHz	8	2447MHz				

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency for 802.11 b/g/n (HT20/ac VHT20/ax HE20)	Frequency for 802.11n (HT40)//ax HE40
The Lowest channel	2412MHz	2422MHz
The Middle channel	2437MHz	2437MHz
The Highest channel	2462MHz	2452MHz

2.4 Test Environment and Mode

Operating Environment:	
Temperature:	20~25.0 °C
Humidity:	45~56 % RH
Atmospheric Pressure:	101.0~101.30 KPa
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.



Test Item	Mode	Date Rate	Test Channel	Remark
DTS Bandwidth	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Maximum Peak Output Power	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Power Spectral Density	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Conducted Band Edge	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Conducted Spurious Emissions	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Radiated Spurious Emissions(Below 1GHz)	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-



	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Radiated Spurious Emissions(Above 1GHz)	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU
Radiated Band Edge	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU

AC Power Line Conducted Emissions	IEEE 802.11b	1Mbps	Low/Middle/High	-
	IEEE 802.11g	6Mbps	Low/Middle/High	-
	IEEE 802.11n HT20	MCS0	Low/Middle/High	-
	IEEE 802.11n HT40	MCS0	Low/Middle/High	-
	IEEE 802.11ax HE20	MCS0	Low/Middle/High	Full RU
	IEEE 802.11ax HE40	MCS0	Low/Middle/High	Full RU

Note: Only full RU is supported.

2.5 Power Setting of Test Software

Software Name	QATool		
Frequency(MHz)	2412	2437	2462
11B Setting	12	12	12
11G Setting	12	12	12
11N20 Setting	11	11	11
11AX20 Setting	11	11	11
Frequency(MHz)	2422	2437	2452
11N40 Setting	11	11	11
11AX40 Setting	11	11	11

2.6 Description of Support Units



The EUT has been tested independent unit.

2.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

• **FCC, USA**

Designation Number: CN1348

• **A2LA (Certificate No. 7050.01)**

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

• **Innovation, Science and Economic Development Canada**

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

2.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	DTS Bandwidth	$\pm 0.0196\%$
2	Maximum Conducted Output Power	± 0.686 dB
3	Maximum Power Spectral Density Level	± 0.743 dB
4	Band-edge Compliance	± 1.328 dB
5	Unwanted Emissions In Non-restricted Freq Bands	9KHz-1GHz: ± 0.746 dB 1GHz-26GHz: ± 1.328 dB

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0 dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8 dB (Below 1GHz)
		± 4.8 dB (1GHz to 6GHz)
		± 4.5 dB (6GHz to 18GHz)
		± 5.02 dB (Above 18GHz)



2.9 Equipment List

For Connect EUT Antenna Terminal Test					
Description	Manufacturer	Model	Serial Number	Cal date	Due date
Signal Generator	Keysight	N5181A-6G	MY48180415	2025-10-21	2026-10-20
Signal Generator	Keysight	N5182B	MY57300617	2025-10-21	2026-10-20
Power supply	Keysight	E3640A	ZB2022656	2025-10-21	2026-10-20
Radio Communication Tester	R&S	CMW500	105082	2025-10-21	2026-10-20
Spectrum Analyzer	Aglient	N9010A	MY52220200	2025-10-21	2026-10-20
BT/WIFI Test Software	Tonscend	JS1120 V3.1.83	NA	NA	NA
RF Control Unit	Tonscend	JS0806-2	22F8060581	NA	NA
Power Sensor	Anritsu	ML2495A	2129005	2025-10-21	2026-10-20
Pulse Power Sensor	Anritsu	MA2411B	1911397	2025-10-21	2026-10-20
temperature and humidity box	SCOTEK	SCD-C40-80PRO	6866682020008	2025-10-21	2026-10-20
RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	NA	2025-10-21	2026-10-20

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESCI3	101152	2025-10-21	2026-10-20
LISN	R&S	ENV216	102874	2025-10-21	2026-10-20
ISN	R&S	ENY81-CA6	1309.8590.03	2025-10-21	2026-10-20
RF Cable	ETS-LINDGREN	Cable-CE TS01	/	2025-10-21	2026-10-20

Test Equipment for Radiated Emission(30MHz-1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESR7	102497	2025-10-21	2026-10-20
Test Software	ETS-LINDGREN	TiLE-FULL	NA	NA	NA
RF Cable	ETS-LINDGREN	RE Cable-TS01	NA	2025-10-21	2026-10-20
Log periodic antenna	ETS-LINDGREN	VULB 9168	01475	2022-11-28	2025-11-27
Pre-amplifier	Schwarzbeck	BBV9743B	00423	2025-10-21	2026-10-20



Attenuator 1	Shanghai Huaxiang	TS2-6-18-A	22061803	2025-5-6	2026-5-5
Attenuator 2	Shanghai Huaxiang	TS2-6-6-A	230927163	2025-5-6	2026-5-5

Test Equipment for Radiated Emission(Above 1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Frequency analyser	Keysight	N9010A	MY52221458	2025-10-21	2026-10-20
RF Cable	ETS-LINDGREN	RE Cable-TS02	NA	2025-10-21	2026-10-20
Horn Antenna	ETS-LINDGREN	3117	00252567	2022-11-28	2025-11-27
Double ridged waveguide antenna	ETS-LINDGREN	3116C	00251780	2022-11-28	2025-11-27
Test Software	ETS-LINDGREN	TILE-FULL	NA	NA	NA
Pre-amplifier	ETS-LINDGREN	3117-PA	252567	2025-10-21	2026-10-20
Pre-amplifier	ETS-LINDGREN	3116C-PA	251780	2025-10-21	2026-10-20

2.10 Assistant equipment used for test

Code	Equipment	Manufacturer	Model No.	Equipment No.
1	Adapter	GaoFanDe	GFDQ3-0502000U	NA
2	Computer	acer	N22C8	EMC notebook01



3 Test results and Measurement Data

3.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: 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, 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. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi. Operation with directional antenna gains greater than 6 dBi. (1) Fixed point-to-point operation: (i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. (ii) Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power. (iii) Fixed, point-to-point operation, as used in paragraphs (c)(1)(i) and (c)(1)(ii) of this section, excludes the use of point-to-multipoint systems, omnidirectional applications, and multiple co located intentional radiators transmitting the same information. The operator of the spread spectrum or digitally modulated intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility	
The antenna is externally connected to the motherboard, The 2.4G directional gain of the antenna is 12.16dBi.	



3.2 Duty Cycle

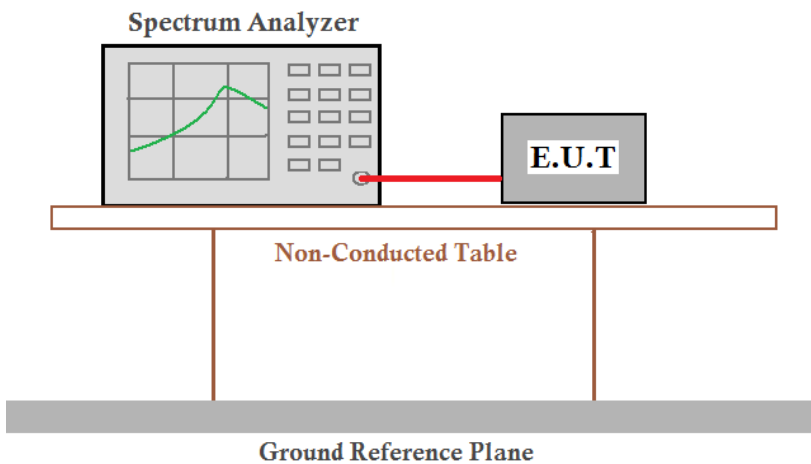
Refer to section : **Appendix A**

Note:

- 1.If duty cycle $< 98\%$, the conducted average output power and average power spectral density should be add duty factor.
- 2.If duty cycle $\geq 98\%$, the EUT is consider to be transmitting continuously, the conducted average output power and average power spectral density no need to add duty factor (consider to be zero).
- 3.The conducted peak output power and peak power spectral density no need to consider duty factor.
- 4.The on-time time is transmission duration (T).



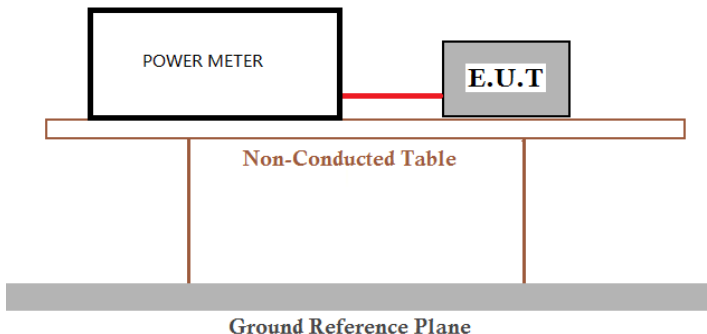
3.3 DTS (6 dB) Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2020 Section 11.8.1 Option 1
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40). 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40).
Limit:	≥ 500 kHz
Test Results:	Pass

The detailed test data see: **Appendix B**



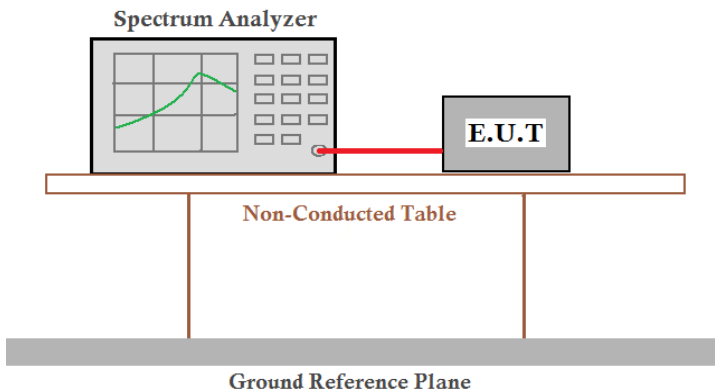
3.4 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10: 2020 Section 11.9.2.3.1
Test Setup:	
Test Instruments:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40).
Limit:	30dBm
Test Results:	Pass

The detailed test data see: **Appendix C**



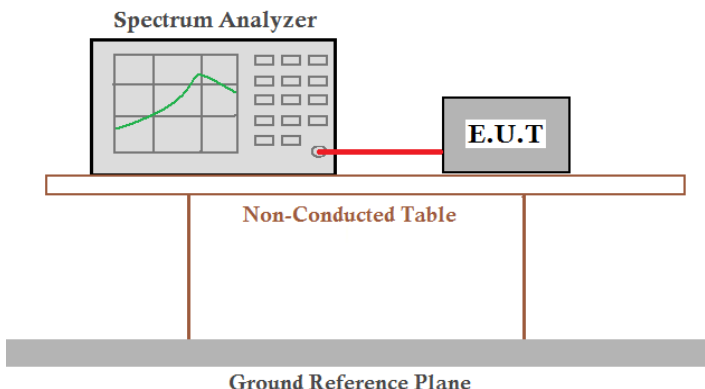
3.5 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10: 2020 Section 11.10.5
Test Setup:	
Test Instruments:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40).
Limit:	$\leq 8.00\text{dBm}/3\text{kHz}$
Test Results:	Pass

The detailed test data see: **Appendix D**



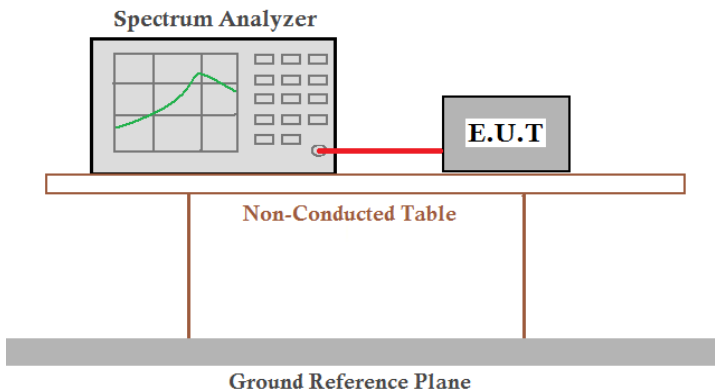
3.6 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2020 Section 11.13
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40).
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass

The detailed test data see: **Appendix E**



3.7 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2020 Section 11.11
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40).
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass

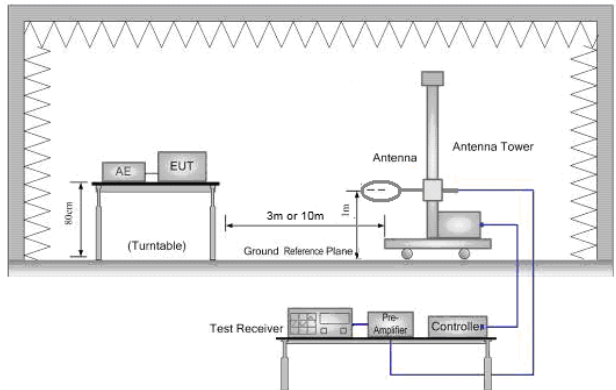
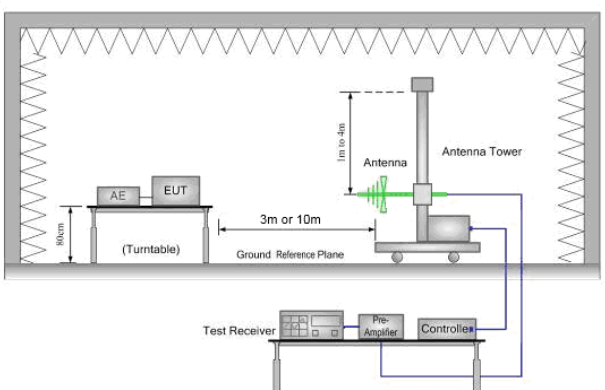
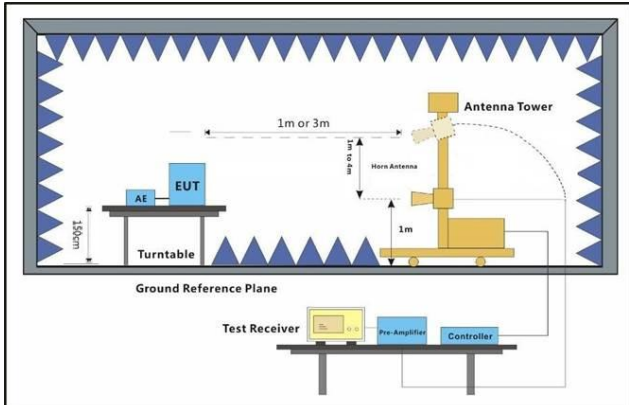
The detailed test data see: **Appendix F**



3.8 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2020 Section 11.12				
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz ($DC \geq 0.98$) $\geq 1/T$ ($DC < 0.98$)	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Remark: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				



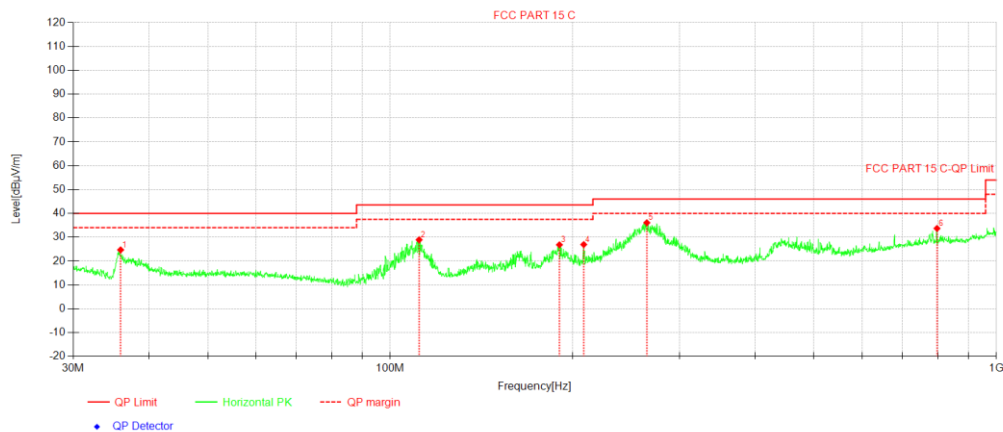
Test Setup:	
	
Figure 1. Below 30MHz	Figure 2. 30MHz to 1GHz
	
Figure 3. Above 1 GHz	
Test Procedure:	- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation - The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. - Test the EUT in the lowest channel, the middle channel, the Highest channel. - The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. - Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz



	• RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW $\geq$ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40). For below 1GHz, through Pre-scan, Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details
Test Results:	Pass

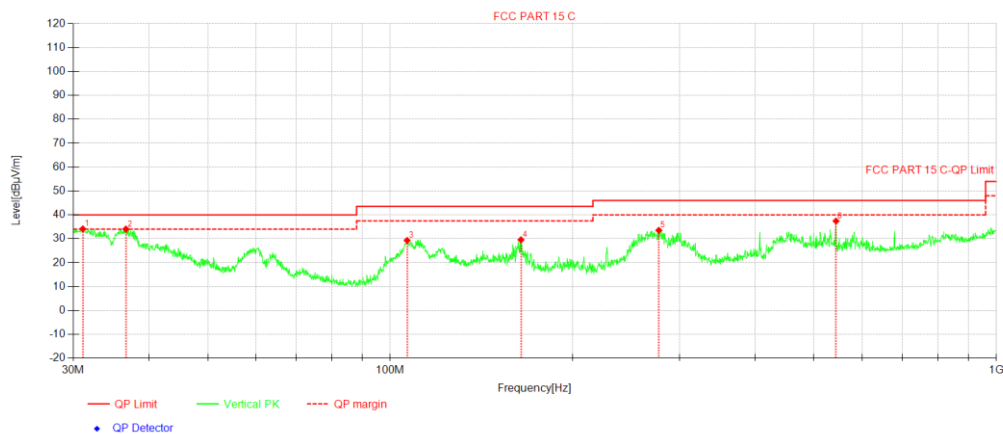
**Test data****For 30-1000MHz**

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	35.92	33.96	-9.26	24.70	40.00	15.30	200	337	QP
2	111.61	39.96	-11.03	28.93	43.50	14.57	200	313	QP
3	190.18	37.38	-10.55	26.83	43.50	16.67	200	337	QP
4	208.58	37.92	-10.98	26.94	43.50	16.56	200	303	QP
5	265.06	44.42	-8.34	36.08	46.00	9.92	200	102	QP
6	798.05	29.52	4.18	33.70	46.00	12.30	200	117	QP

Vertical :



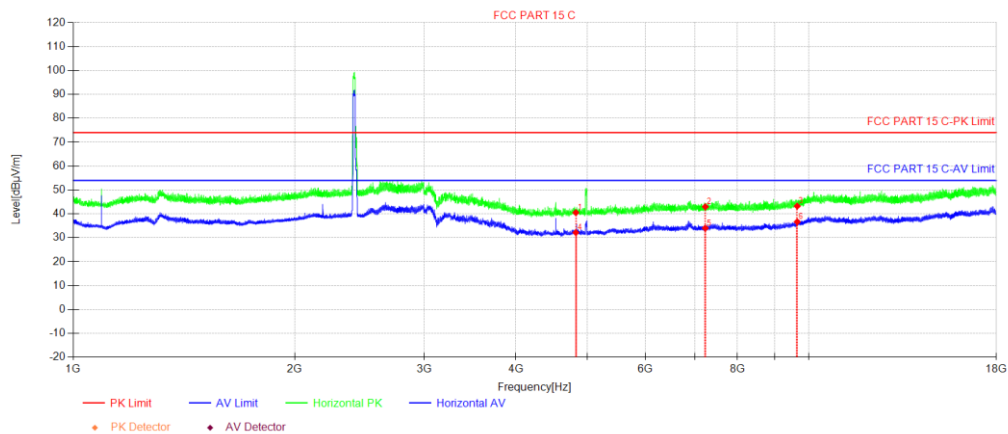
NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	31.11	44.00	-9.87	34.13	40.00	5.87	100	307	QP
2	36.64	43.28	-9.21	34.07	40.00	5.93	100	72	QP
3	106.63	40.93	-11.62	29.31	43.50	14.19	100	322	QP
4	164.33	37.50	-7.92	29.58	43.50	13.92	100	297	QP
5	277.42	41.20	-7.65	33.55	46.00	12.45	100	259	QP
6	543.91	39.51	-2.09	37.42	46.00	8.58	100	158	QP



For above 1GHz

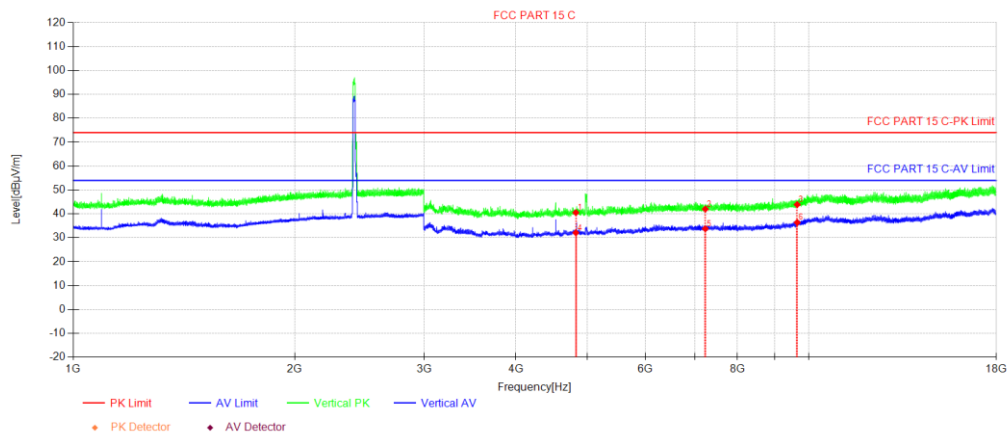
11B Ant1 2412MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4824.09	45.15	-4.63	40.52	74.00	33.48	150	36	PK
2	7236.21	44.68	-1.70	42.98	74.00	31.02	150	0	PK
3	9648.33	42.16	1.07	43.23	74.00	30.77	150	296	PK
4	4824.09	36.78	-4.63	32.15	54.00	21.85	150	296	AV
5	7236.21	35.74	-1.70	34.04	54.00	19.96	150	272	AV
6	9648.33	35.60	1.07	36.67	54.00	17.33	150	272	AV

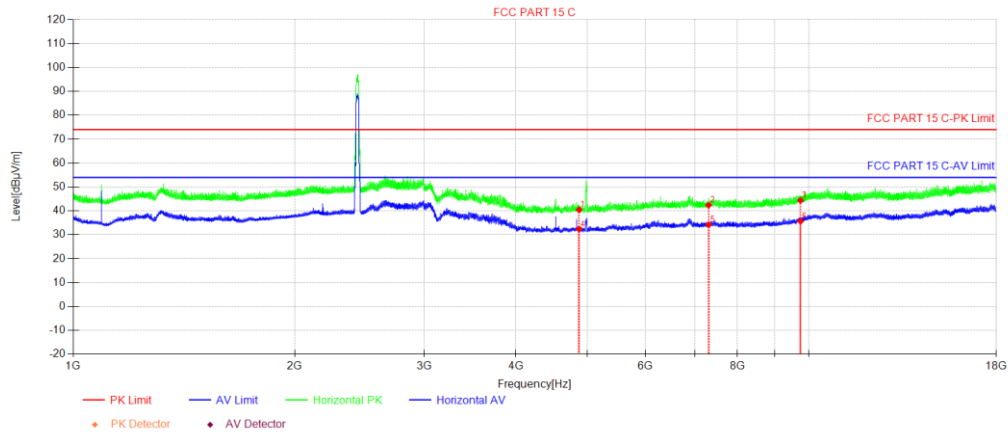
Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4824.09	45.15	-4.63	40.52	74.00	33.48	150	0	PK
2	7236.21	43.70	-1.70	42.00	74.00	32.00	150	314	PK
3	9648.33	42.80	1.07	43.87	74.00	30.13	150	229	PK
4	4824.09	36.72	-4.63	32.09	54.00	21.91	150	357	AV
5	7236.21	35.49	-1.70	33.79	54.00	20.21	150	272	AV
6	9648.33	35.34	1.07	36.41	54.00	17.59	150	121	AV

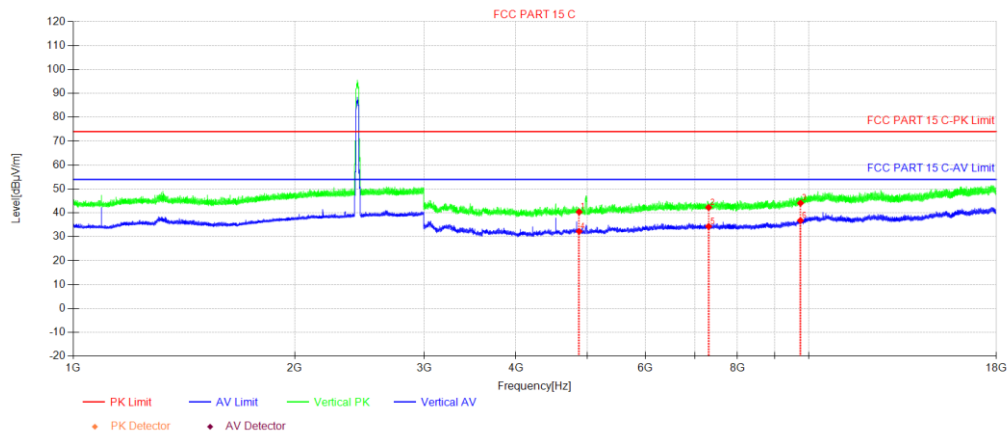
**11B Ant1 2437MHz**

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4874.34	45.16	-4.70	40.46	74.00	33.54	150	229	PK
2	7311.22	43.93	-1.53	42.40	74.00	31.60	150	37	PK
3	9748.09	42.83	1.56	44.39	74.00	29.61	150	78	PK
4	4874.34	37.06	-4.70	32.36	54.00	21.64	150	14	AV
5	7311.22	35.77	-1.53	34.24	54.00	19.76	150	317	AV
6	9748.09	34.11	1.56	35.67	54.00	18.33	150	229	AV

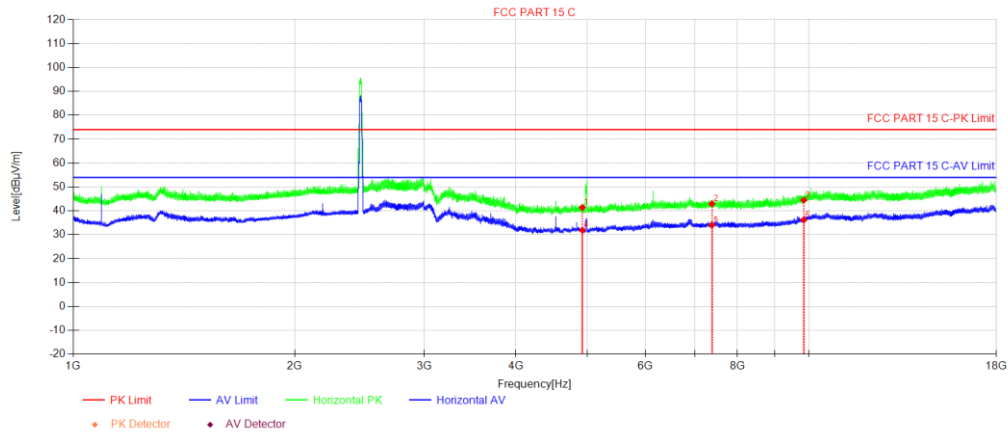
Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4874.34	45.08	-4.70	40.38	74.00	33.62	150	251	PK
2	7311.22	43.80	-1.53	42.27	74.00	31.73	150	11	PK
3	9748.09	42.50	1.56	44.06	74.00	29.94	150	357	PK
4	4874.34	36.96	-4.70	32.26	54.00	21.74	150	184	AV
5	7311.22	35.88	-1.53	34.35	54.00	19.65	150	0	AV
6	9748.09	35.24	1.56	36.80	54.00	17.20	150	270	AV

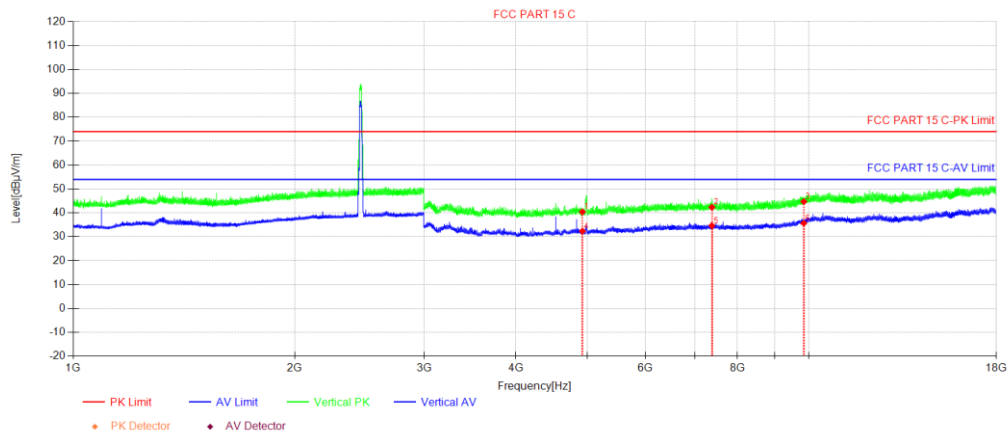
**11B Ant1 2462MHz**

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4924.60	46.22	-4.79	41.43	74.00	32.57	150	279	PK
2	7386.22	44.27	-1.32	42.95	74.00	31.05	150	2	PK
3	9848.59	42.50	2.00	44.50	74.00	29.50	150	131	PK
4	4924.60	36.66	-4.79	31.87	54.00	22.13	150	307	AV
5	7386.22	35.35	-1.32	34.03	54.00	19.97	150	307	AV
6	9848.59	34.20	2.00	36.20	54.00	17.80	150	43	AV

Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4924.60	45.22	-4.79	40.43	74.00	33.57	150	66	PK
2	7386.22	43.67	-1.32	42.35	74.00	31.65	150	306	PK
3	9848.59	42.71	2.00	44.71	74.00	29.29	150	158	PK
4	4924.60	37.15	-4.79	32.36	54.00	21.64	150	356	AV
5	7386.22	35.95	-1.32	34.63	54.00	19.37	150	306	AV
6	9848.59	33.66	2.00	35.66	54.00	18.34	150	1	AV



Note:

1. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{Correct Factor}(\text{including Ant.Factor, Cable Factor etc.})$$

2. The amplitude of 9KHz to 30MHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

3. The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be report.

4. All channels had been pre-test,802.11b ant1 is the worst caseonly the worst case was reported.



3.9 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2020 Section 11.12		
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			

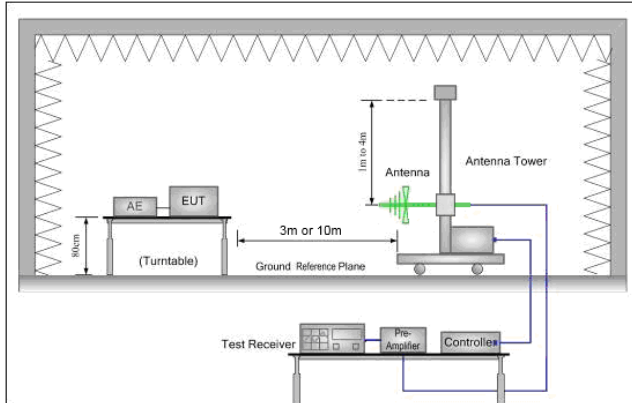


Figure 1. 30MHz to 1GHz

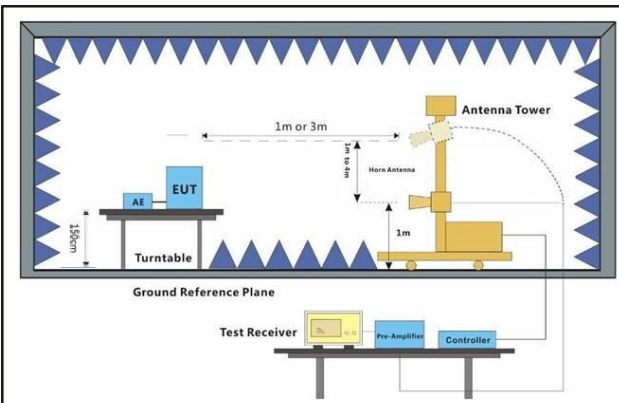


Figure 2. Above 1 GHz



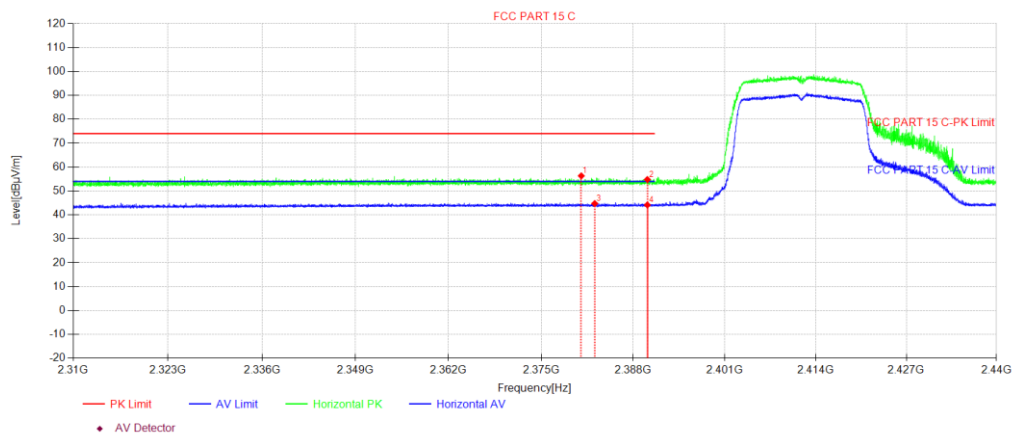
Test Procedure:	- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel - Test the EUT in the lowest channel , the Highest channel - The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. - Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW $\geq$ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge + Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g;



	6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8Mbps of rate is the worst case of 802.11ax(HE20); 16Mbps of rate is the worst case of 802.11ax(HE40). Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details
Test Results:	Pass

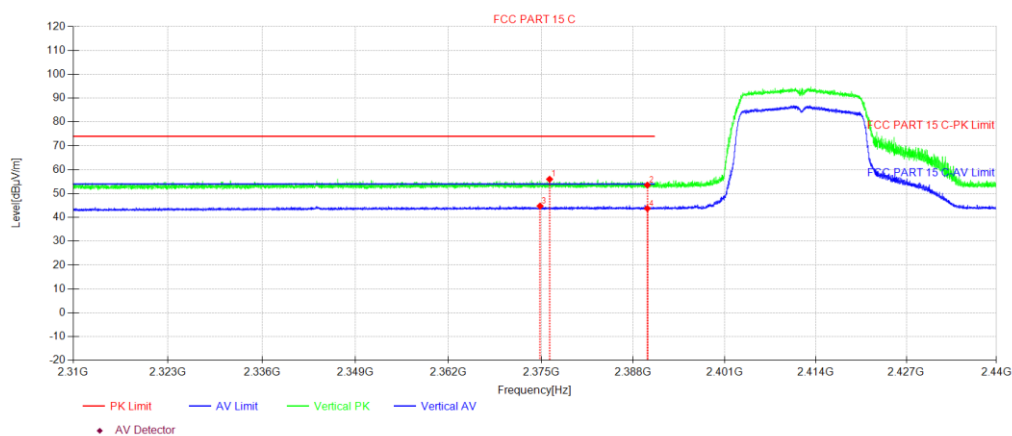
Test Date**11AX40 MIMO 2412MHz**

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2380.66	57.15	-0.83	56.32	74.00	17.68	150	46	PK
2	2390.01	55.59	-0.80	54.79	74.00	19.21	150	122	PK
3	2382.56	45.56	-0.83	44.73	54.00	9.27	150	122	AV
4	2390.01	44.93	-0.80	44.13	54.00	9.87	150	193	AV

Vertical:

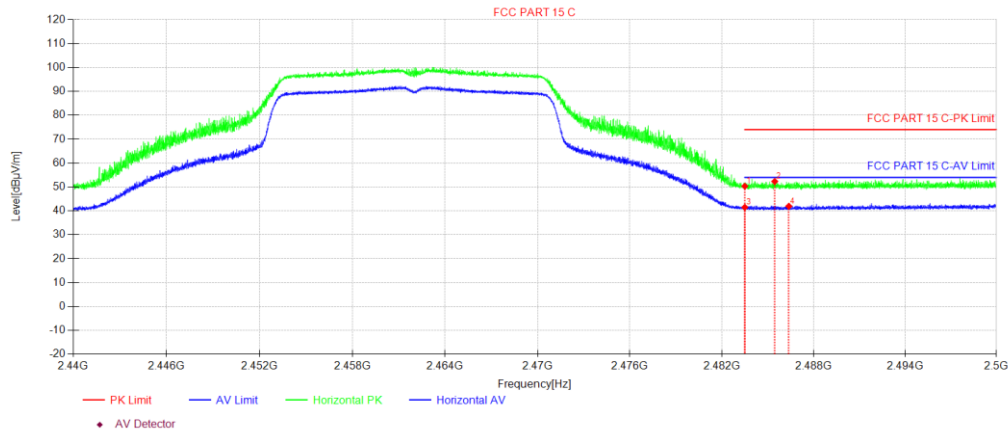


NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2376.19	56.82	-0.84	55.98	74.00	18.02	150	214	PK
2	2390.01	54.33	-0.80	53.53	74.00	20.47	150	346	PK
3	2374.85	45.60	-0.85	44.75	54.00	9.25	150	227	AV
4	2390.01	44.54	-0.80	43.74	54.00	10.26	150	302	AV



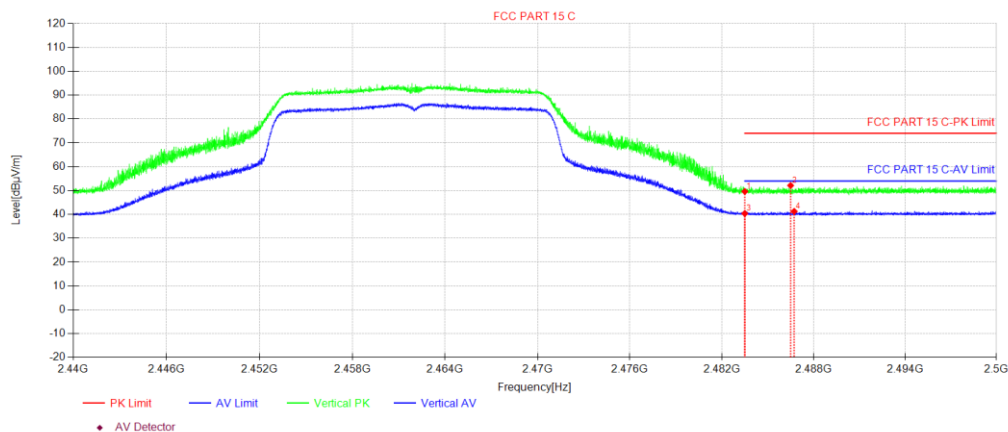
**11AX40 2452MHz**

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2483.50	50.61	-0.29	50.32	74.00	23.68	150	229	PK
2	2485.46	52.58	-0.27	52.31	74.00	21.69	150	218	PK
3	2483.50	41.78	-0.29	41.49	54.00	12.51	150	229	AV
4	2486.38	42.20	-0.26	41.94	54.00	12.06	150	229	AV

Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2483.50	49.89	-0.29	49.60	74.00	24.40	150	155	PK
2	2486.50	52.37	-0.26	52.11	74.00	21.89	150	30	PK
3	2483.50	40.65	-0.29	40.36	54.00	13.64	150	76	AV
4	2486.73	41.52	-0.26	41.26	54.00	12.74	150	109	AV

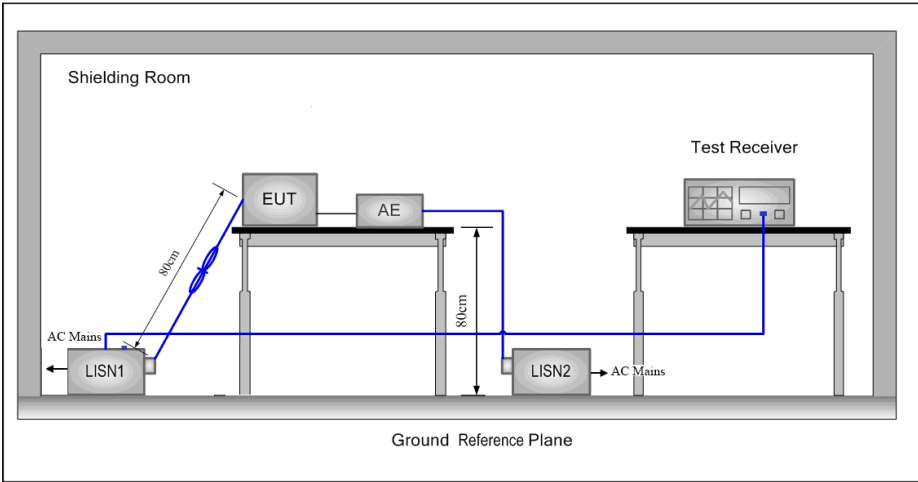
Note:

1. The 802.11ax40 ant1 is the worse case.
2. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

$$\text{Result Level} = \text{Reading Level} + \text{Correct Factor}(\text{including Ant.Factor, Cable Factor etc.})$$



3.10AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2020		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		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.			
Test Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 2020 on conducted measurement.		
Test Setup:			
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel. Charge + Transmitting mode.		



Final Test Mode:	Through Pre-scan, find the 6.5Mbps of rate of 802.11n(HT20) at lowest channel is the worst case. Charge + Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details
Test Results:	N/A



4 Appendix

Appendix A: Duty Cycle

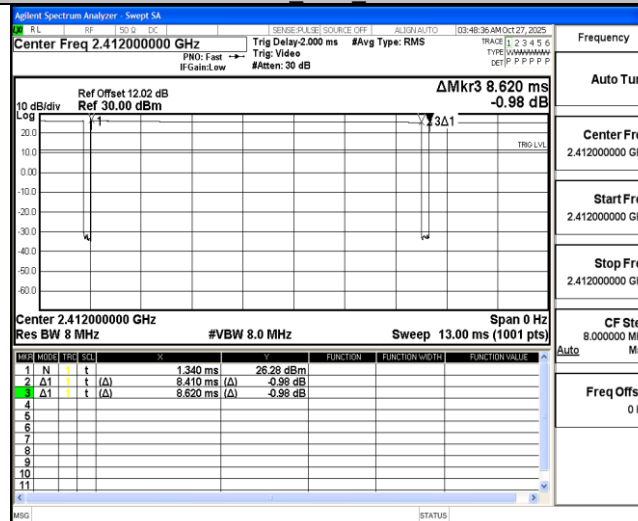
Test Result

Test Mode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	8.41	8.62	97.56
	Ant2	2412	8.42	8.62	97.68
	Ant1	2437	8.42	8.64	97.45
	Ant2	2437	8.42	8.62	97.68
	Ant1	2462	8.41	8.62	97.56
	Ant2	2462	8.41	8.62	97.56
11G	Ant1	2412	1.39	1.60	86.88
	Ant2	2412	1.40	1.61	86.96
	Ant1	2437	1.40	1.61	86.96
	Ant2	2437	1.40	1.60	87.50
	Ant1	2462	1.39	1.60	86.88
	Ant2	2462	1.39	1.60	86.88
11N20MIMO	Ant1	2412	1.30	1.51	86.09
	Ant2	2412	1.31	1.52	86.18
	Ant1	2437	1.30	1.51	86.09
	Ant2	2437	1.30	1.51	86.09
	Ant1	2462	1.30	1.51	86.09
	Ant2	2462	1.30	1.51	86.09
11N40MIMO	Ant1	2422	0.35	0.41	85.37
	Ant2	2422	0.65	0.86	75.58
	Ant1	2437	0.65	0.86	75.58
	Ant2	2437	0.65	0.86	75.58
	Ant1	2452	0.65	0.86	75.58
	Ant2	2452	0.65	0.86	75.58
11AX20MIMO	Ant1	2412	0.35	0.55	63.64
	Ant2	2412	0.14	0.35	40.00
	Ant1	2437	0.35	0.56	62.50
	Ant2	2437	0.14	0.35	40.00
	Ant1	2462	0.35	0.56	62.50
	Ant2	2462	0.14	0.35	40.00
11AX40MIMO	Ant1	2422	0.23	0.44	52.27
	Ant2	2422	0.23	0.44	52.27
	Ant1	2437	0.23	0.44	52.27
	Ant2	2437	0.23	0.44	52.27
	Ant1	2452	0.23	0.44	52.27
	Ant2	2452	0.23	0.44	52.27

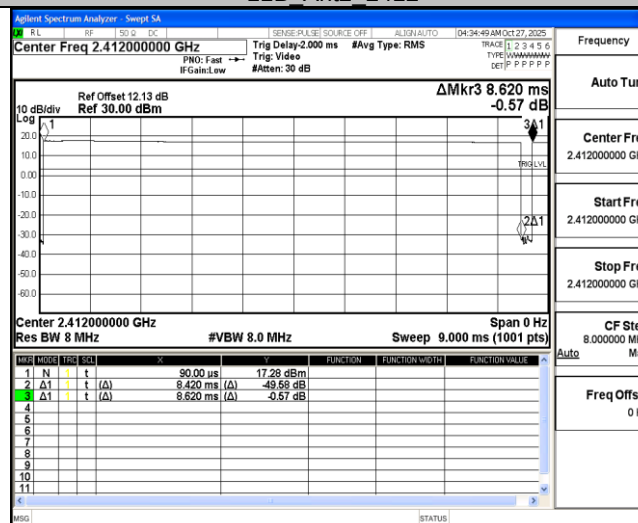


Test Graphs

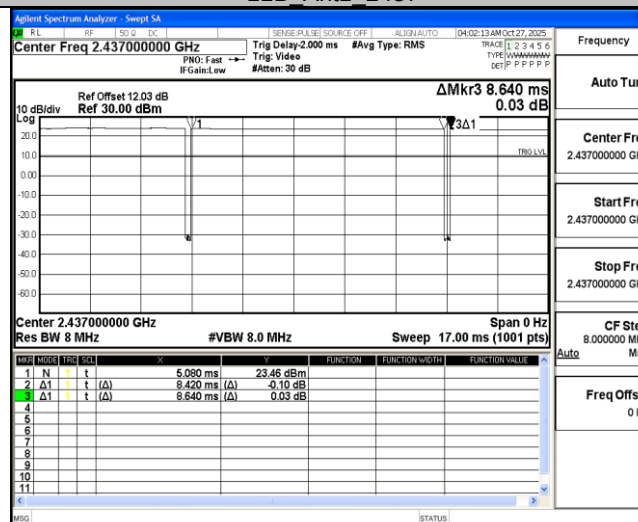
11B_Ant1_2412



11B_Ant2_2412

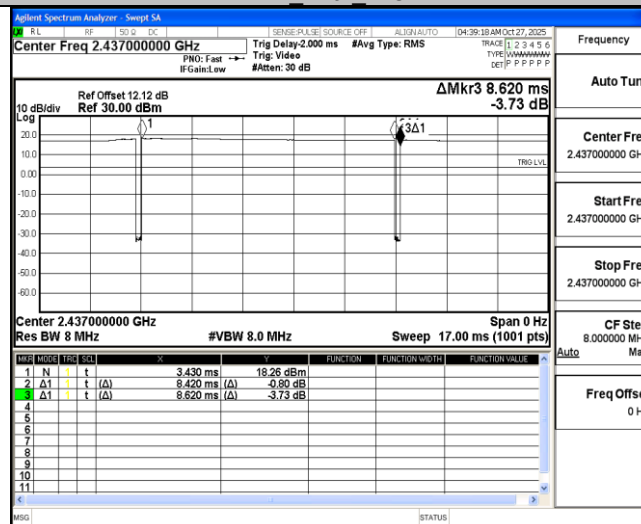


11B_Ant1_2437

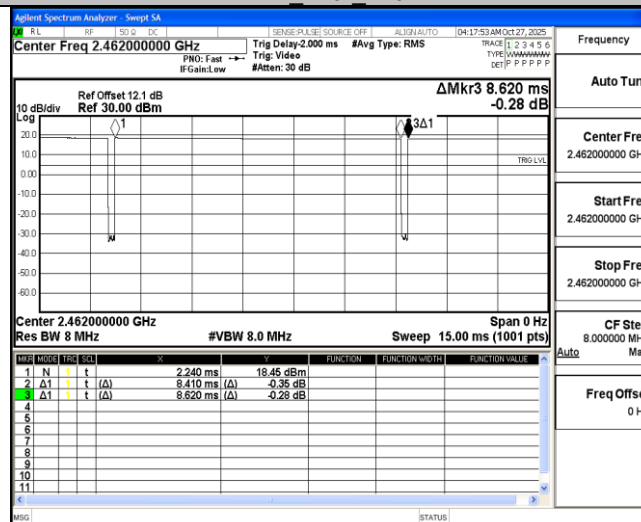




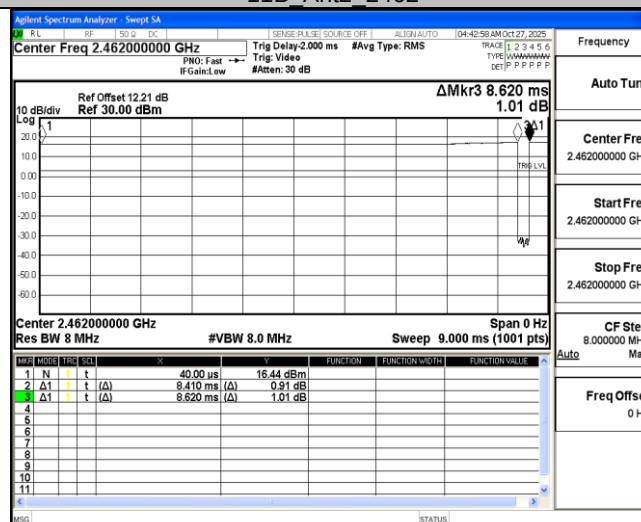
11B_Ant2_2437



11B_Ant1_2462

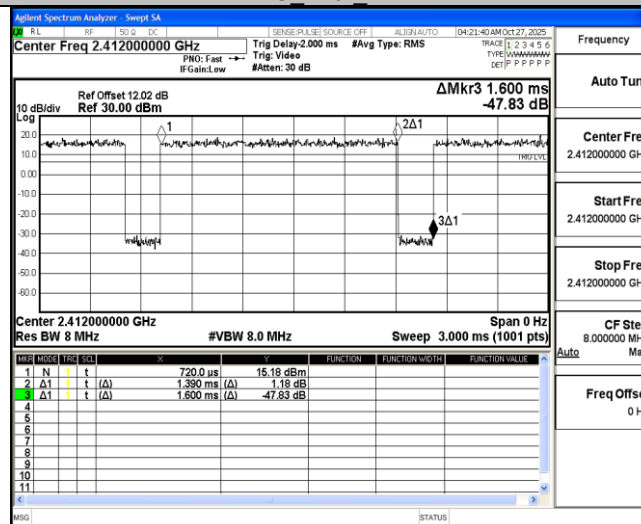


11B_Ant2_2462

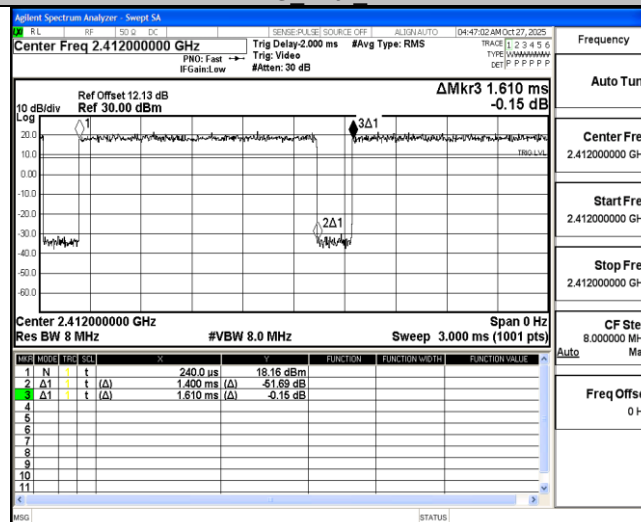




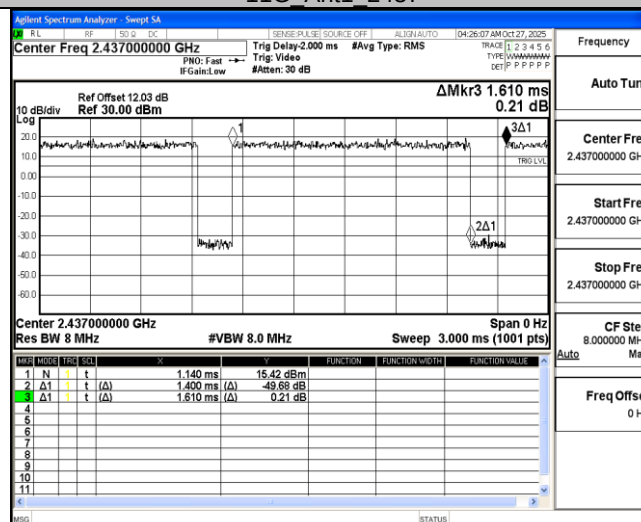
11G_Ant1_2412



11G_Ant2_2412

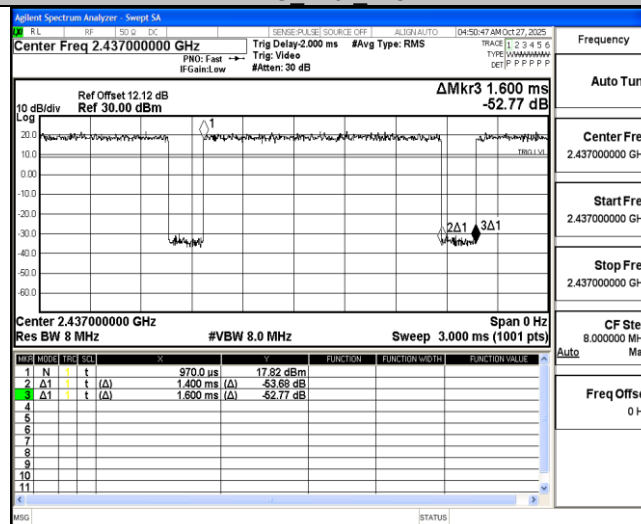


11G_Ant1_2437

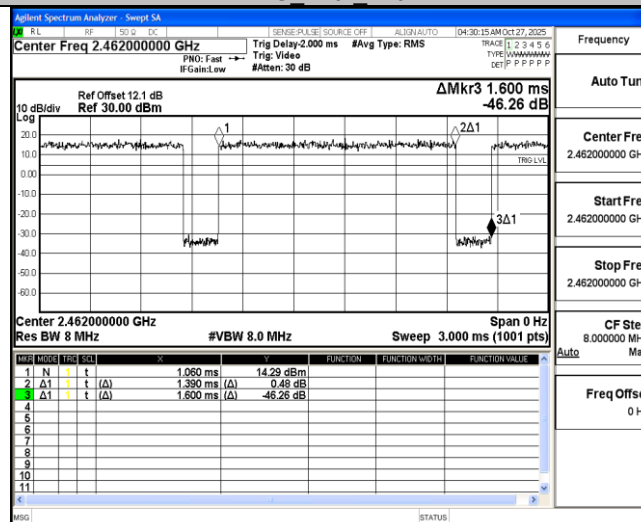




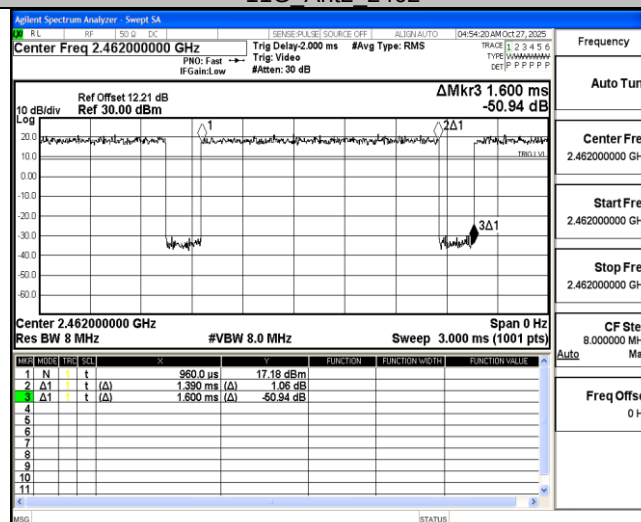
11G_Ant2_2437



11G_Ant1_2462

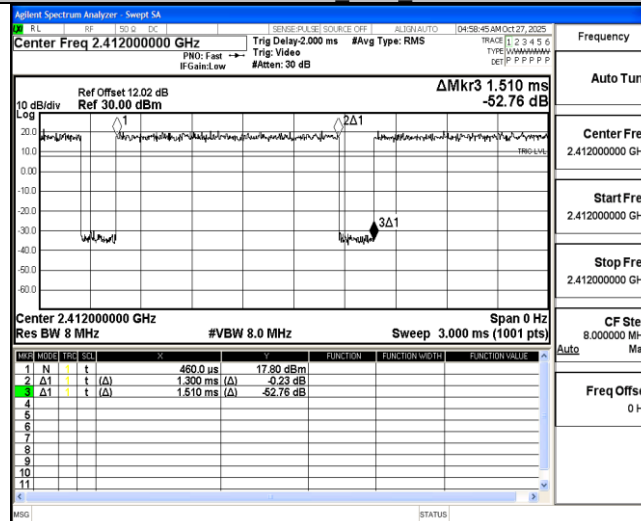


11G_Ant2_2462

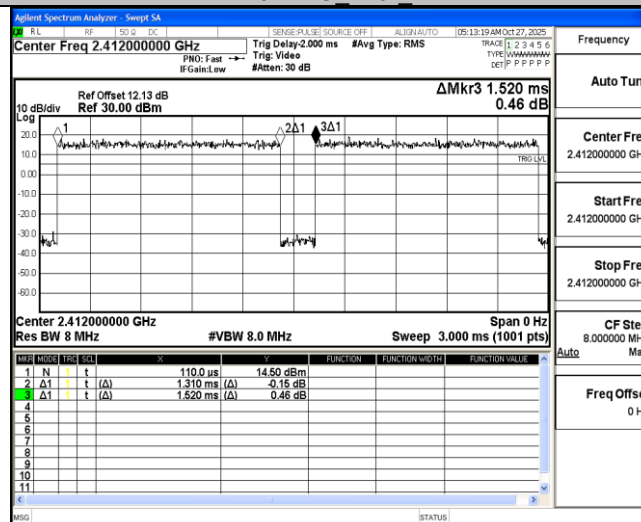




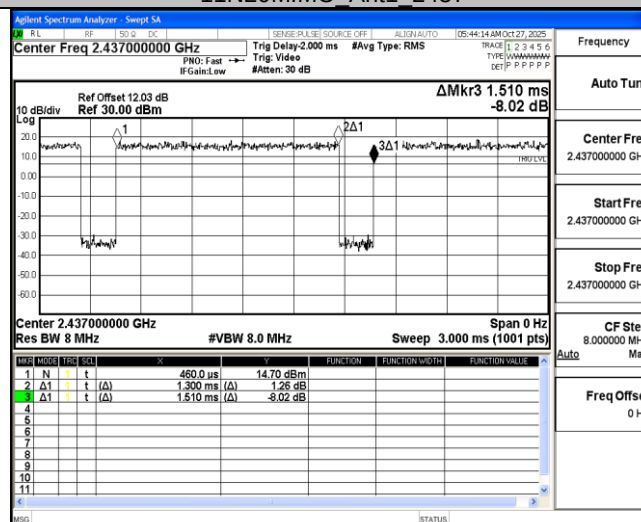
11N20MIMO Ant1 2412



11N20MIMO Ant2 2412

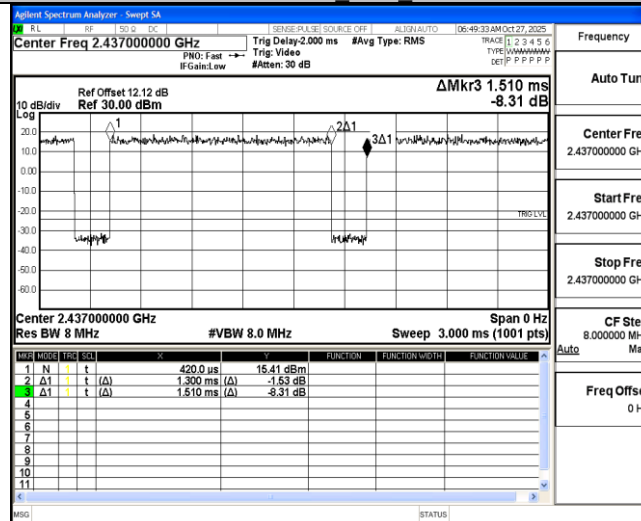


11N20MIMO Ant1 2437

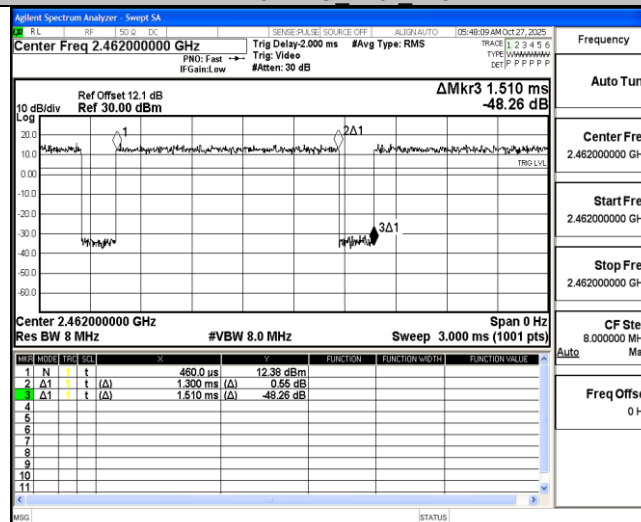




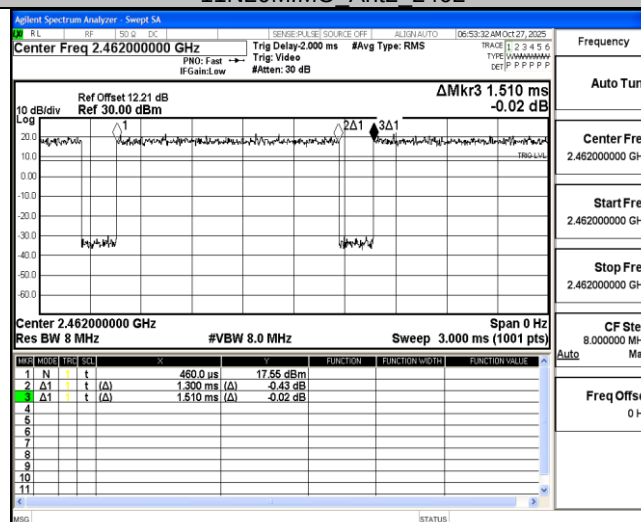
11N20MIMO Ant2 2437



11N20MIMO Ant1 2462

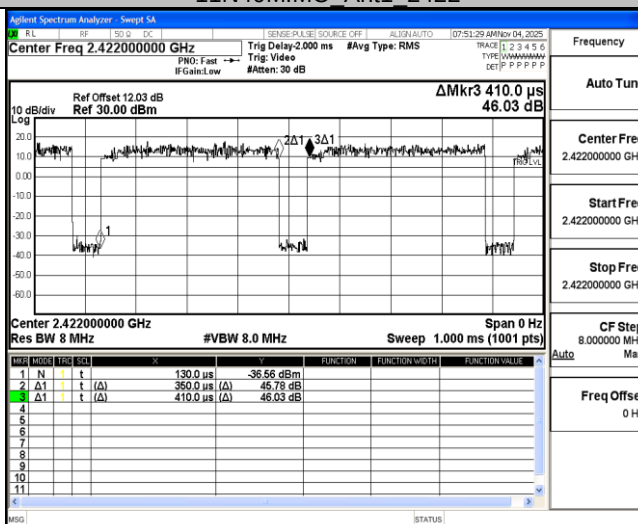


11N20MIMO Ant2 2462

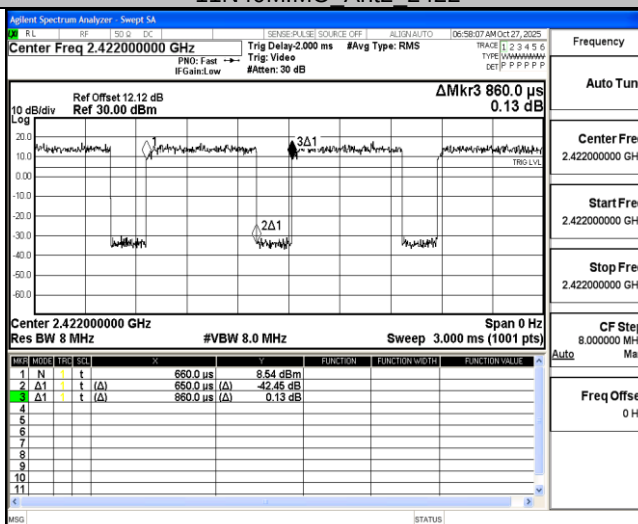




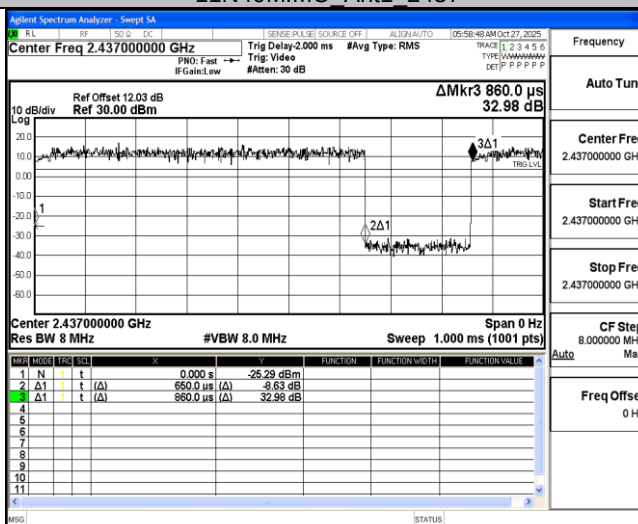
11N40MIMO Ant1 2422



11N40MIMO Ant2 2422

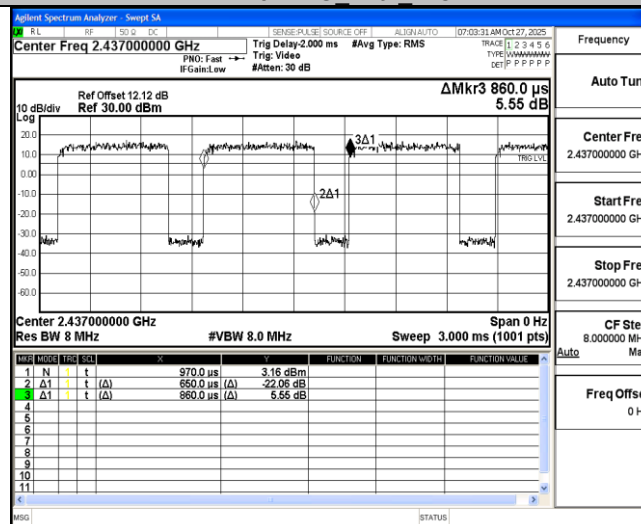


11N40MIMO Ant1 2437

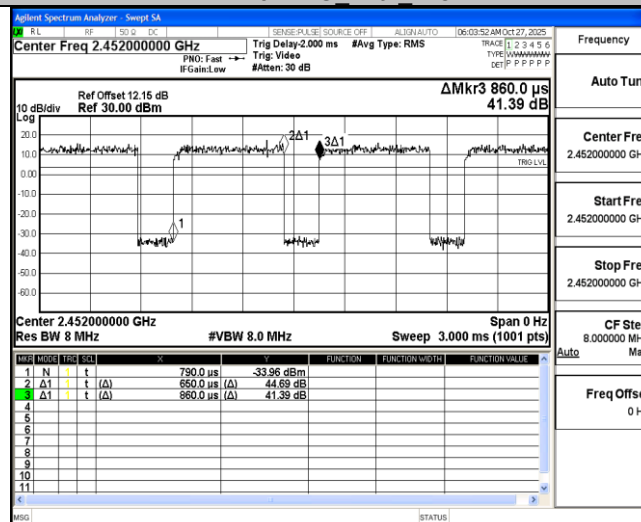




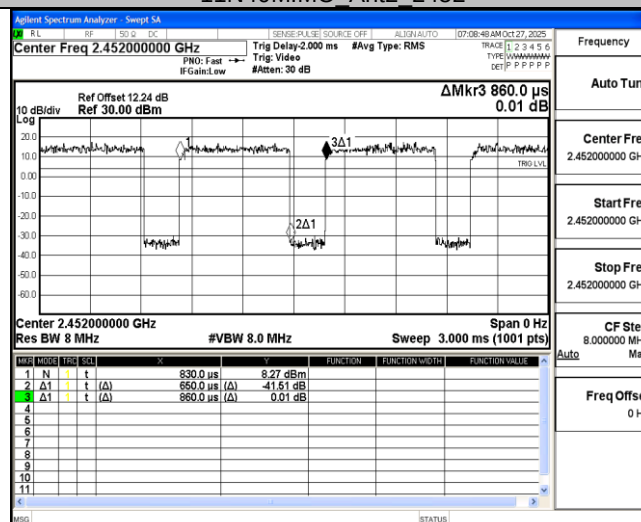
11N40MIMO Ant2 2437



11N40MIMO Ant1 2452

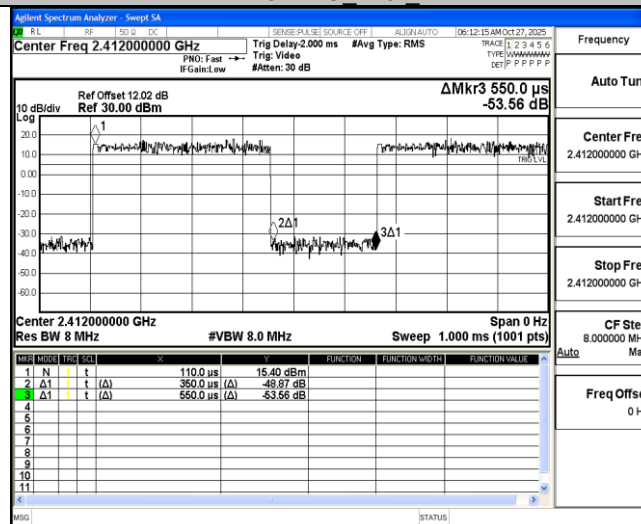


11N40MIMO Ant2 2452

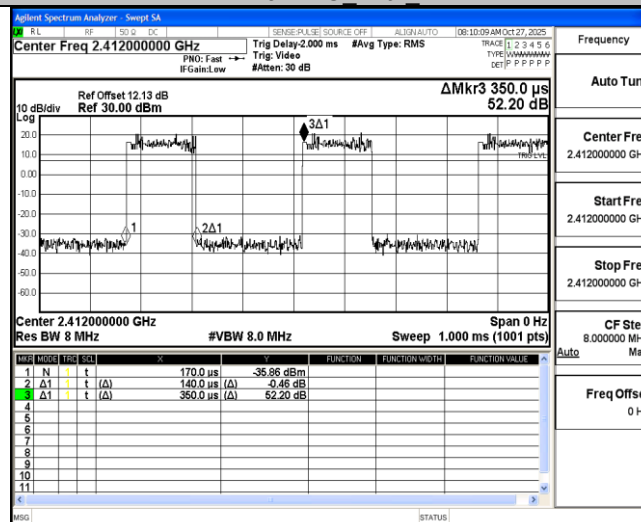




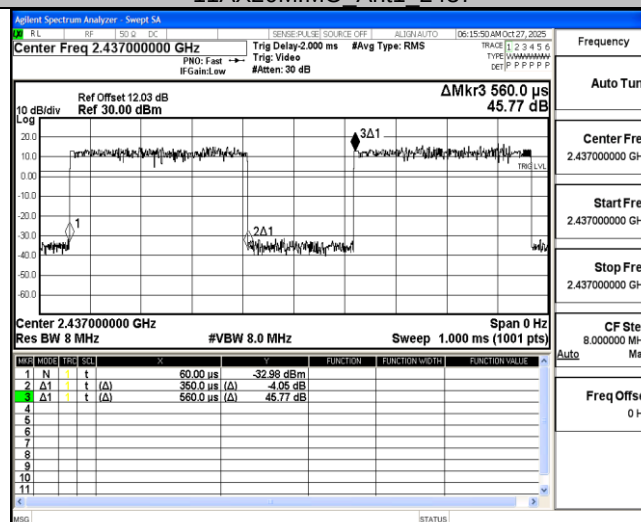
11AX20MIMO_Ant1_2412



11AX20MIMO_Ant2_2412

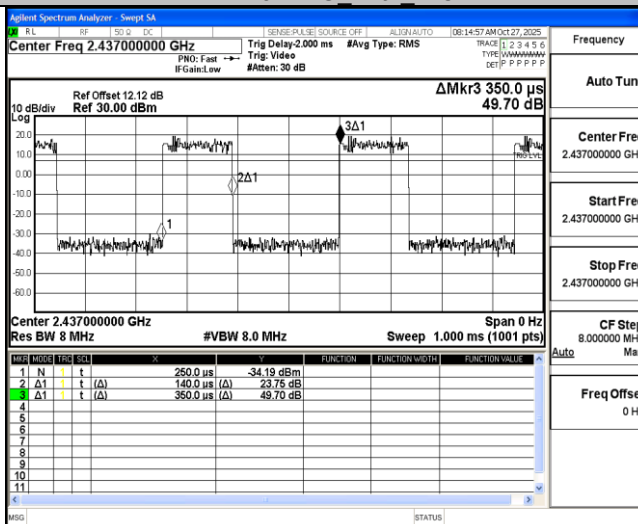


11AX20MIMO_Ant1_2437

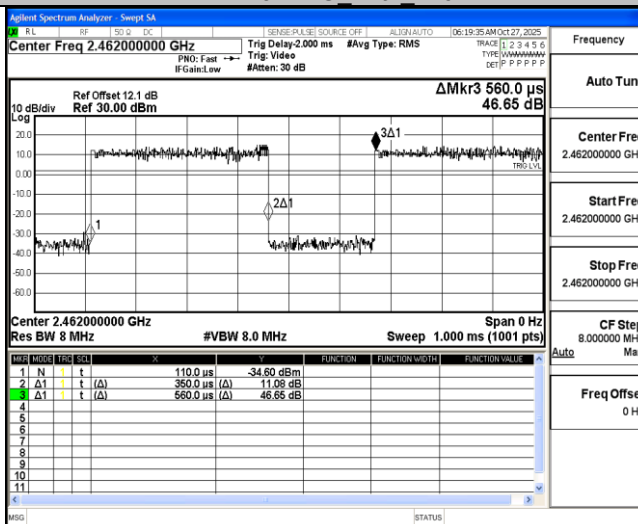




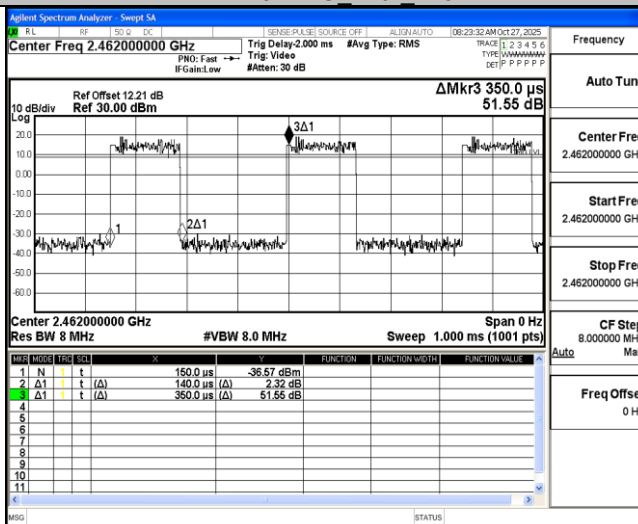
11AX20MIMO_Ant2_2437



11AX20MIMO_Ant1_2462

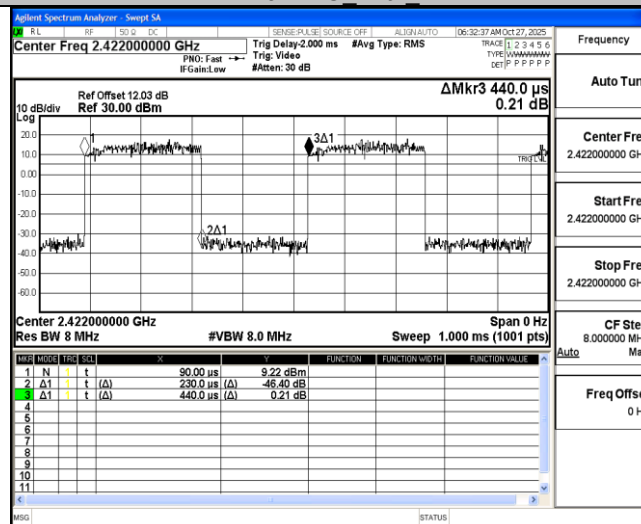


11AX20MIMO_Ant2_2462

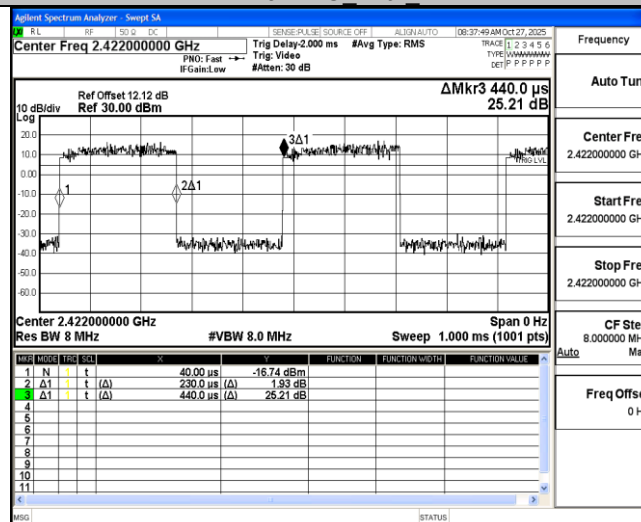




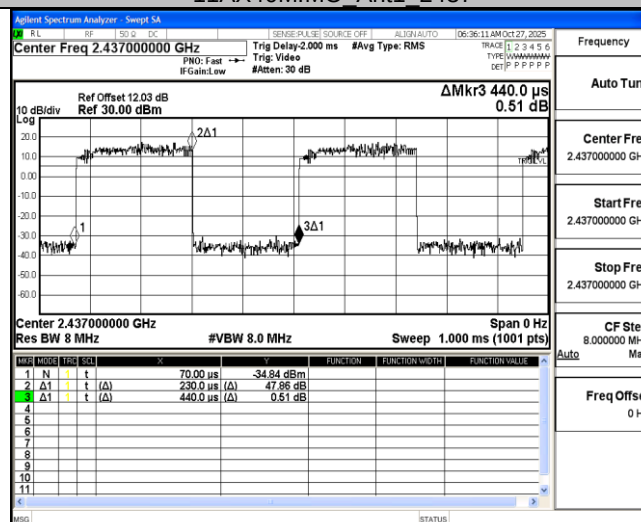
11AX40MIMO_Ant1_2422



11AX40MIMO_Ant2_2422

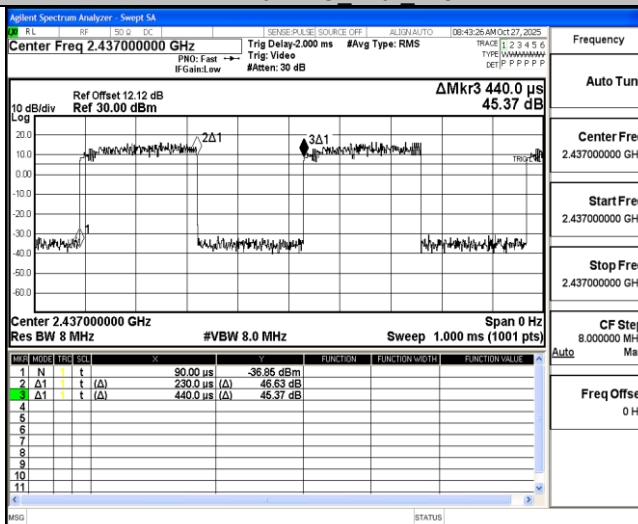


11AX40MIMO_Ant1_2437

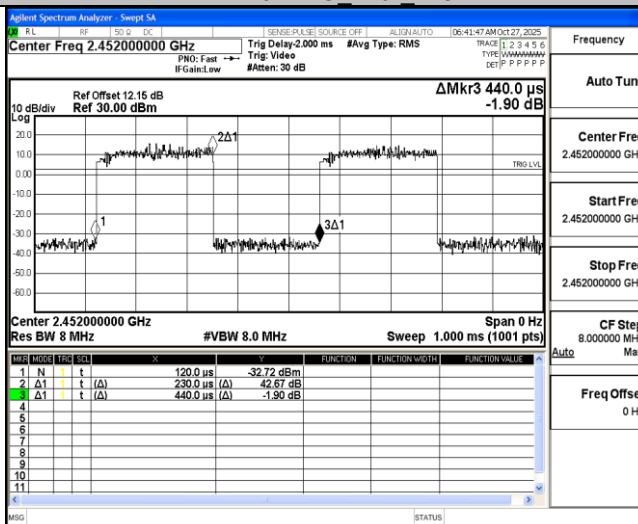




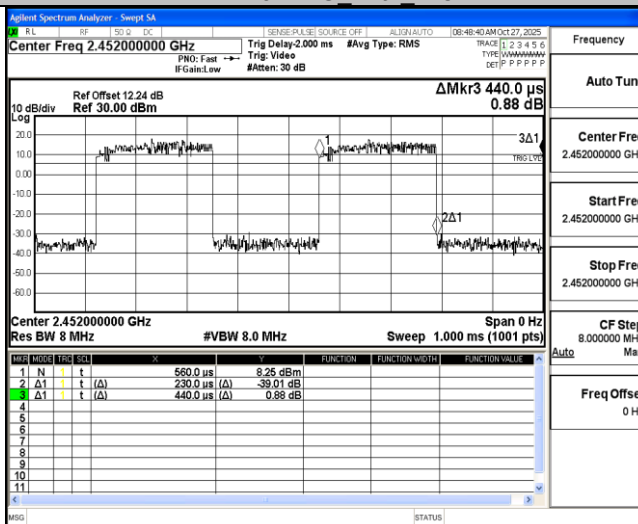
11AX40MIMO_Ant2_2437



11AX40MIMO_Ant1_2452



11AX40MIMO_Ant2_2452





Appendix B: DTS Bandwidth

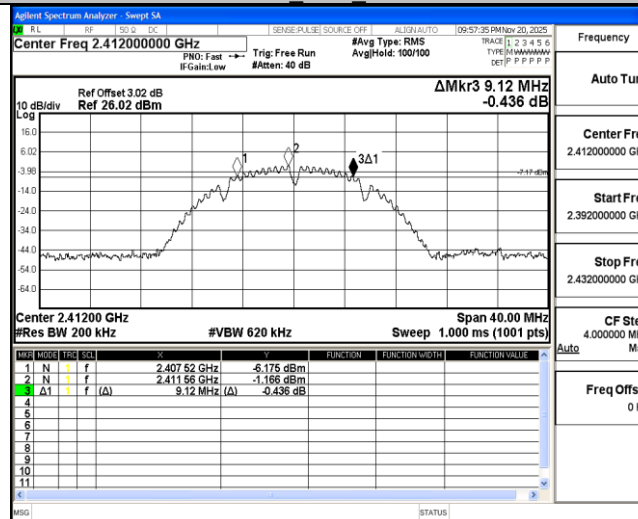
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.120	2407.520	2416.640	0.5	PASS
	Ant2	2412	9.600	2407.480	2417.080	0.5	PASS
	Ant1	2437	9.600	2432.480	2442.080	0.5	PASS
	Ant2	2437	9.600	2432.040	2441.640	0.5	PASS
	Ant1	2462	9.200	2457.480	2466.680	0.5	PASS
	Ant2	2462	9.560	2457.080	2466.640	0.5	PASS
11G	Ant1	2412	15.560	2404.320	2419.880	0.5	PASS
	Ant2	2412	15.520	2404.360	2419.880	0.5	PASS
	Ant1	2437	15.480	2429.320	2444.800	0.5	PASS
	Ant2	2437	15.520	2429.320	2444.840	0.5	PASS
	Ant1	2462	15.560	2454.320	2469.880	0.5	PASS
	Ant2	2462	15.120	2454.120	2469.240	0.5	PASS
11N20MIMO	Ant1	2412	16.120	2404.400	2420.520	0.5	PASS
	Ant2	2412	16.000	2404.520	2420.520	0.5	PASS
	Ant1	2437	15.800	2429.480	2445.280	0.5	PASS
	Ant2	2437	15.240	2429.440	2444.680	0.5	PASS
	Ant1	2462	16.000	2453.720	2469.720	0.5	PASS
	Ant2	2462	16.280	2453.520	2469.800	0.5	PASS
11N40MIMO	Ant1	2422	36.160	2403.920	2440.080	0.5	PASS
	Ant2	2422	36.800	2403.600	2440.400	0.5	PASS
	Ant1	2437	36.400	2419.480	2455.880	0.5	PASS
	Ant2	2437	36.400	2419.160	2455.560	0.5	PASS
	Ant1	2452	35.520	2434.320	2469.840	0.5	PASS
	Ant2	2452	37.280	2433.600	2470.880	0.5	PASS
11AX20MIMO	Ant1	2412	18.000	2403.320	2421.320	0.5	PASS
	Ant2	2412	17.080	2404.400	2421.480	0.5	PASS
	Ant1	2437	18.280	2427.880	2446.160	0.5	PASS
	Ant2	2437	18.240	2428.040	2446.280	0.5	PASS
	Ant1	2462	16.360	2453.760	2470.120	0.5	PASS
	Ant2	2462	15.840	2455.200	2471.040	0.5	PASS
11AX40MIMO	Ant1	2422	35.760	2404.240	2440.000	0.5	PASS
	Ant2	2422	35.600	2404.480	2440.080	0.5	PASS
	Ant1	2437	37.520	2418.520	2456.040	0.5	PASS
	Ant2	2437	36.560	2419.080	2455.640	0.5	PASS
	Ant1	2452	37.440	2433.280	2470.720	0.5	PASS
	Ant2	2452	37.040	2433.440	2470.480	0.5	PASS

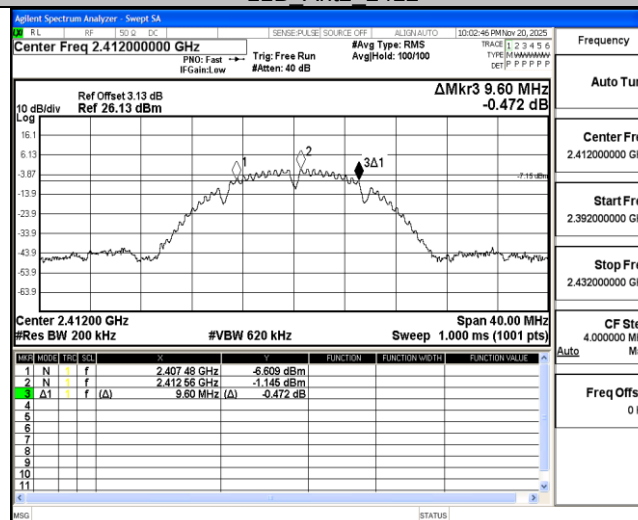


Test Graphs

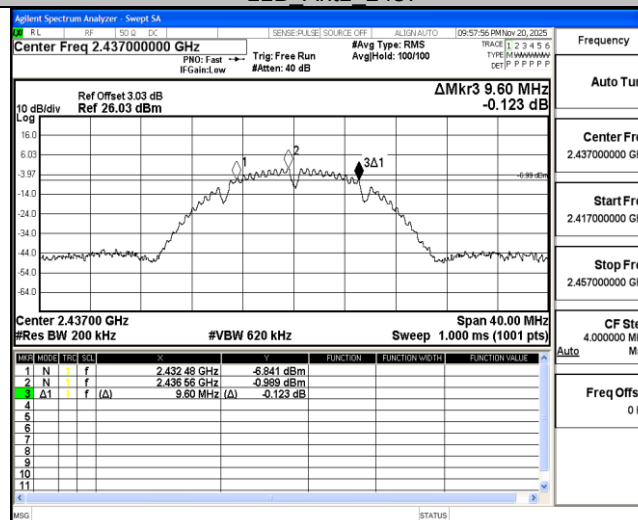
11B_Ant1_2412



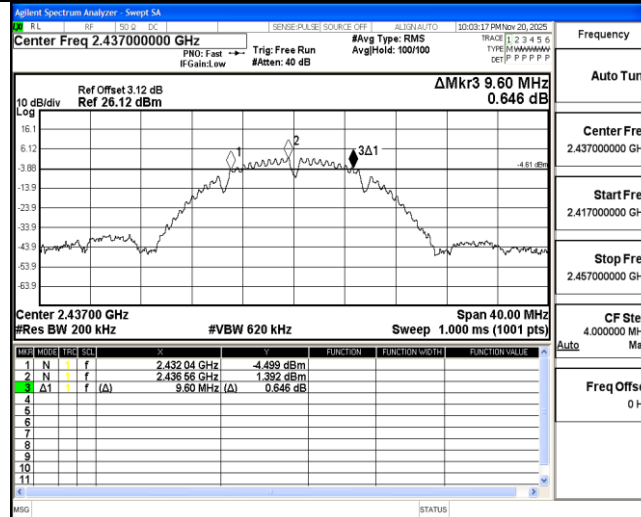
11B_Ant2_2412



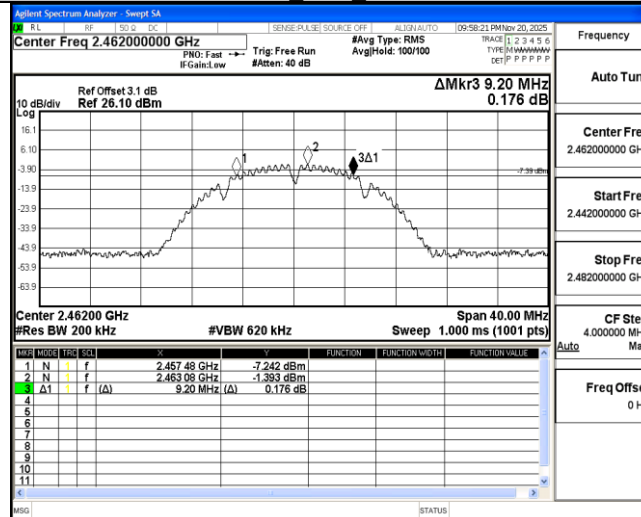
11B_Ant1_2437



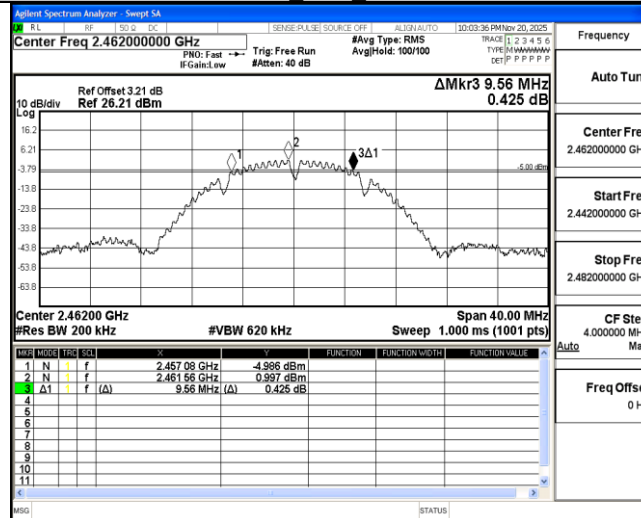
11B_Ant2_2437



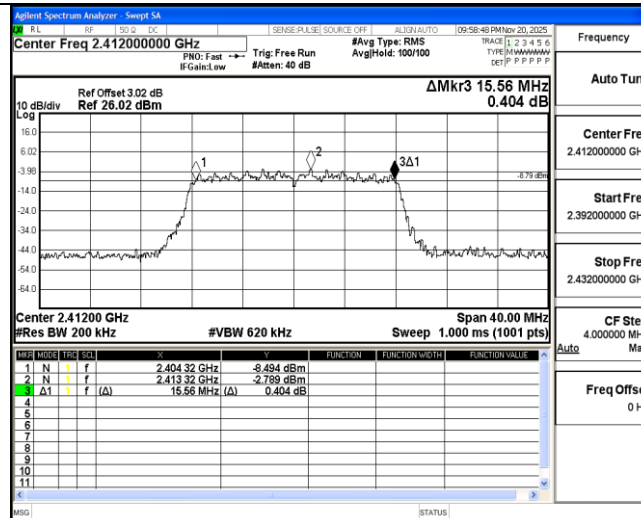
11B Ant1 2462



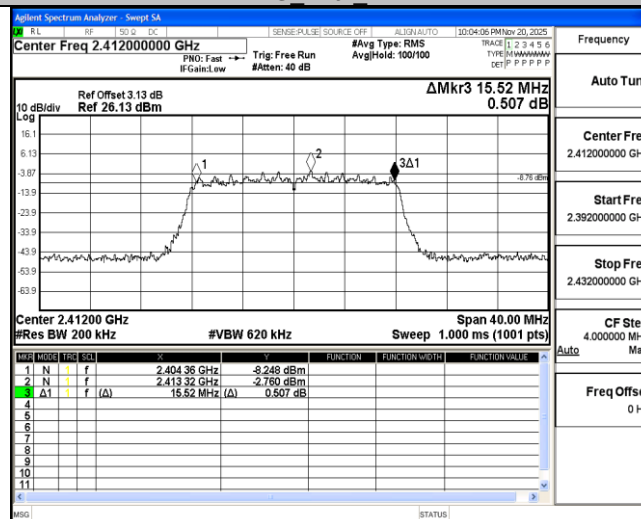
11B Ant2 2462



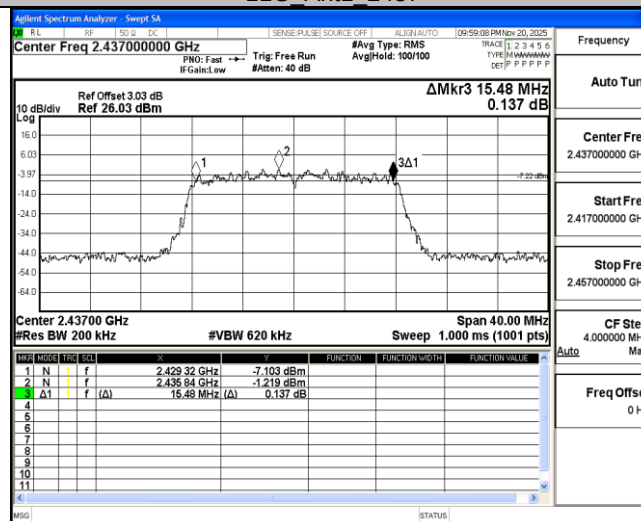
11G Ant1 2412



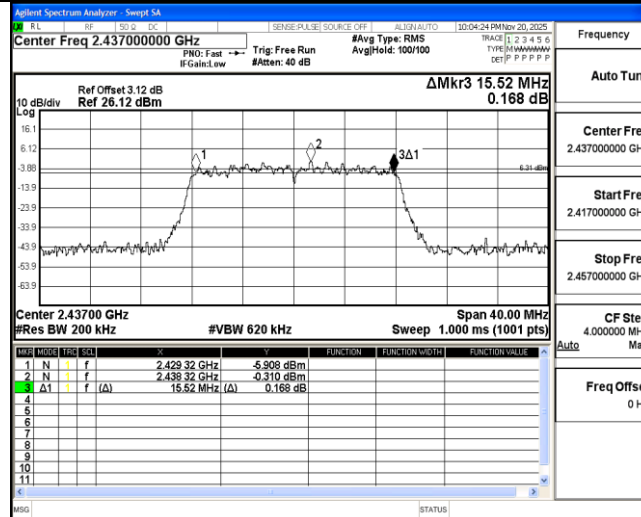
11G_Ant2_2412



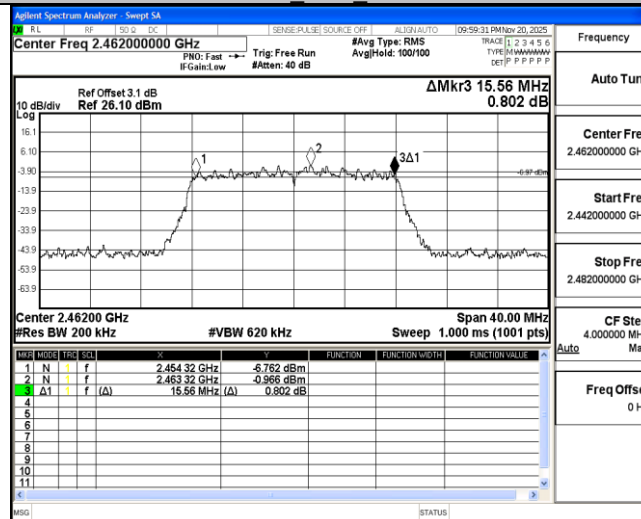
11G_Ant1_2437



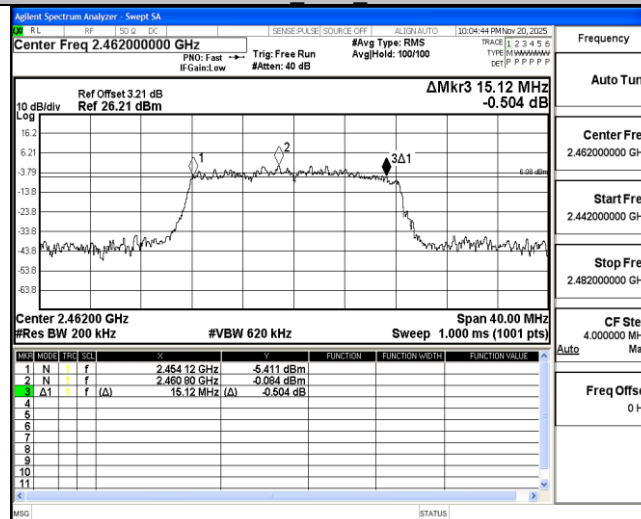
11G_Ant2_2437



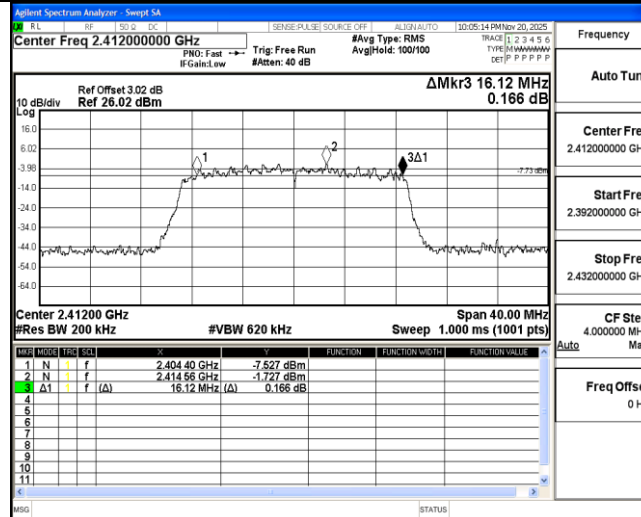
11G_Ant1_2462



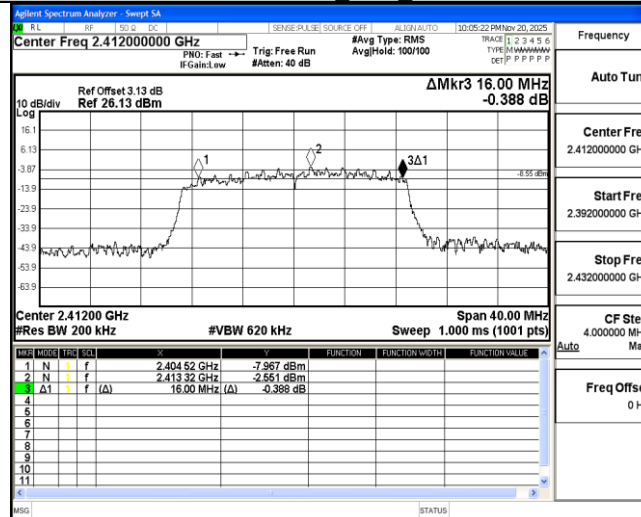
11G_Ant2_2462



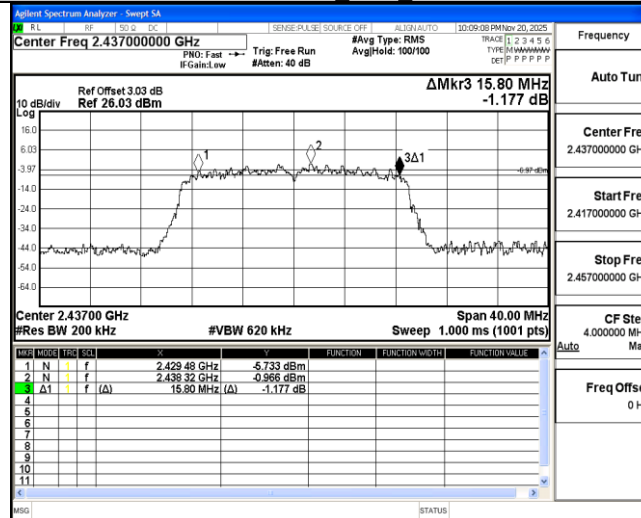
11N20MIMO_Ant1_2412



11N20MIMO Ant2 2412



11N20MIMO Ant1 2437



11N20MIMO Ant2 2437