TEST REPORT

Applicant Name :	AudioCodes Ltd
Address :	1 Hayarden St. Airportcity, Lod 70151 Israel
Report Number :	SZNS220909-30736E-RF-00
FCC ID:	XAKM800CI

Test Standard (s)

FCC PART 15.247

Sample Description

Product Type:	VoIP gateway and router
Model No.:	Mediant 800Ci
Multiple Model(s) No.:	N/A
Trade Mark:	AudioCodes
Date Received:	2022/09/09
Report Date:	2023/03/15

Test Result:	Pass*

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

Prepared and Checked By:

Nick Fang

EMC Engineer

Approved By:

Candy Li

EMC Engineer

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	SZNS220909-30736E-RF-00	Original Report	2023/03/15

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	Wi-Fi: 2412-2462MHz
Maximum Conducted Average Output Power	Wi-Fi: 802.11b: 16.05dBm, 802.11g: 19.54dBm, 802.11n-HT20: 18.89dBm 802.11n-HT40: 18.89dBm
Modulation Technique	Wi-Fi: DSSS, OFDM
Antenna Specification*	2.2dBi (provided by the applicant)
Voltage Range	AC 120V
Sample serial number	SZNS220909-30736E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition

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 Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		$0.082*10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1℃
Humidity		6%
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 Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For Wi-Fi mode, total 11 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	/	/
6	2437	/	/
7	2442	/	/

802.11b, 802.11g, 802.11n-HT20 mode was tested with Channel 1, 6 and 11.
802.11n-HT40 mode was tested with Channel 3, 6 and 9.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

"DUT_setup.540.82.exe"* software was used to test and power level as below:

Mode	Data rate	Power Level*		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	40	40	40
802.11g	6Mbps	35	35	35
802.11n-HT20	MCS0	35	35	35
802.11n-HT40	MCS0	35	35	35

The device support SISO for all mode, and MIMO for 802.11g/n mode, pre-scan SISO/MIMO, the worst case MIMO was test for 802.11g/n mode

The software and power level was provided by applicant.

Duty cycle

Test Result: Compliant. Please refer to the Appendix.

Support Equipment List and Details

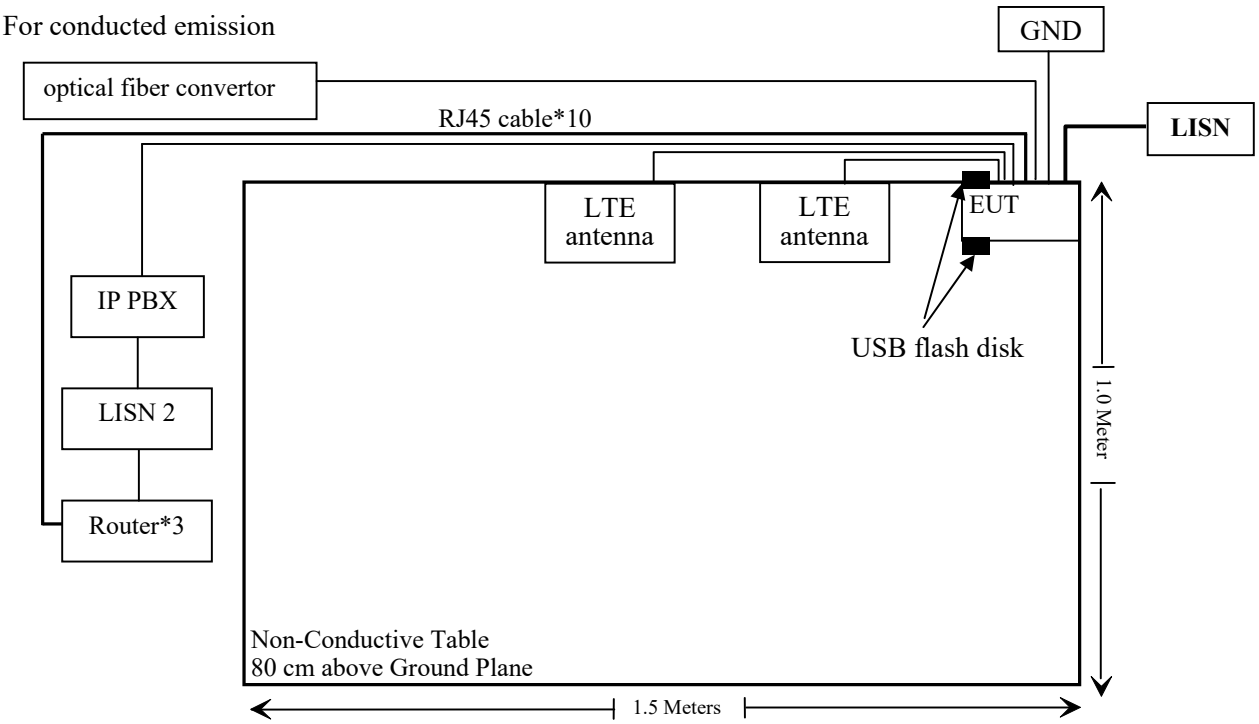
Manufacturer	Description	Model	Serial Number
HUAWEI	Router*3	WS5100	A4933FEF1D01
N/A	IP PBX	MY PBX	M02YS09010133
Kingston	USB flash disk	DTKN	Unknown
Kingston	USB flash disk	DTKN	Unknown
TP-link	optical fiber convertor	TL-FC311A-3	Unknown

External I/O Cable

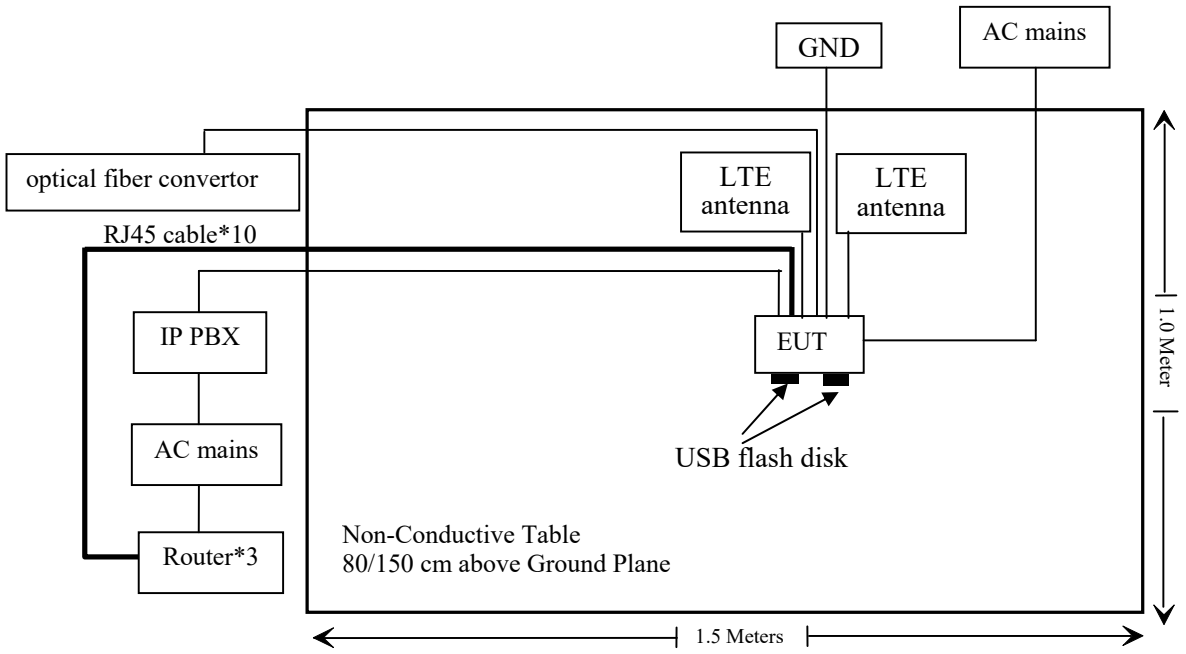
Cable Description	Length (m)	From Port	To
Unshielded detachable RJ11 cable	8.0	IP PBX	EUT
Unshielded detachable AC cable	1.0	EUT	LISN
Un-shielded detachable RJ45 cable*10	8.0	EUT	Router
Unshielded un-detachable AC cable	1.5	Router	LISN 2/AC mains
Unshielded un-detachable AC cable	1.5	IP PBX	LISN 2/AC mains
optical fiber Cable	10	optical fiber convertor	EUT
Antenna Cable	2.0	EUT	LTE ANT
Antenna Cable	2.0	EUT	LTE ANT
GND Cable	1.2	EUT	GND

Block Diagram of Test Setup

For conducted emission



For Radiated Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i) & §1.1307 (b) (3) & §2.1091	Maximum Permissible Exposure(MPE)	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 Emissions Test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2022/11/25	2023/11/24
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2022/11/25	2023/11/24
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2021/12/13	2022/12/12
Unknown	RF Coaxial Cable	No.17	N0350	2022/11/25	2023/11/24
Conducted Emission Test Software: e3 19821b (V9)					
Radiated Emissions Test (30MHz-1GHz)					
Rohde& Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2021/11/09	2022/11/08
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Radiated Emission Test Software: e3 19821b (V9)					
Radiated Emissions Test (Above 1GHz)					
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2021/12/14	2022/12/13

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12
Tonscend	RF Control Unit	JS0806-2	19G8060182	2022/10/24	2023/10/23
WEINSCHEL	10dB Attenuator	5324	AU 3842	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.31	RF-01	Each time	Each time
Agilent	USB wideband power sensor	U2021XA	MY54250003	2022/6/27	2023/6/26
Rohde&Schwarz	Spectrum Analyzer	FSV-40	101948	2022/11/25	2023/11/24
WEINSCHEL	10dB Attenuator	5324	AU 3842	2022/11/25	2023/11/24

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. 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) (3) &§2.1091 – RF EXPOSURE

Applicable Standard

According to FCC §2.1091 and §1.1307(b) (3), 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 D04 Interim General RF Exposure Guidance

SAR-Based Exemption:

SAR-based thresholds are derived based on frequency, power, and separation distance of the RF source. The formula defines the thresholds in general for either available maximum timeaveraged power or maximum time-averaged ERP, whichever is greater.

Per § 1.1307(b)(3)(i)(B), for single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}} + \sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k} \le 1$$

For worst case:

Mode	Frequency (MHz)	Antenna Gain		Tune up conducted power		ERP		Evaluation Distance (m)	Pth (mW)
		(dBi)	(dBd)	(dBm)	(mW)	(dBm)	(mW)		
Wi-Fi	2412-2472	2.2	0.05	20	100.00	20.05	101.16	0.2	3060
WCDMA B2	1850-1910	1.59	-0.56	25	316.23	24.44	277.97	0.2	3060
WCDMA B4	1710-1755	2.0	-0.15	25	316.23	24.85	305.49	0.2	3060
WCDMA B5	824-849	2.53	0.38	25	316.23	25.38	345.14	0.2	1681
LTE B2	1850-1910	1.59	-0.56	25	316.23	24.44	277.97	0.2	3060
LTE B4	1710-1755	2.0	-0.15	25	316.23	24.85	305.49	0.2	3060
LTE B5	824-849	2.53	0.38	25	316.23	25.38	345.14	0.2	1681
LTE B12	699-716	3.95	1.8	25	316.23	26.8	478.63	0.2	1426
LTE B13	777-787	4.45	2.3	25	316.23	27.3	537.03	0.2	1585
LTE B14	788-798	3.63	1.48	25	316.23	26.48	444.63	0.2	1608
LTE B66	1710-1780	2.0	-0.15	25	316.23	24.85	305.49	0.2	3060
LTE B71	663-698	1.66	-0.49	25	316.23	24.51	282.49	0.2	1353

Note: The EUT contains a certified WWAN module (model: EC25-AF MINIPCIE, FCC ID: XMR201808EC25AF) granted on 08/03/2018.
The antenna gain was provided by applicant.

For simultaneously transmit consider:

Worst case Wi-Fi + LTE B13

The ratio=101.16/3060+537.03/1585=0.372<1

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

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 three external antenna arrangement with unique antenna connector and the antenna gain is 2.2dBi, fulfill the requirement of this section. Please refer to the EUT photos.

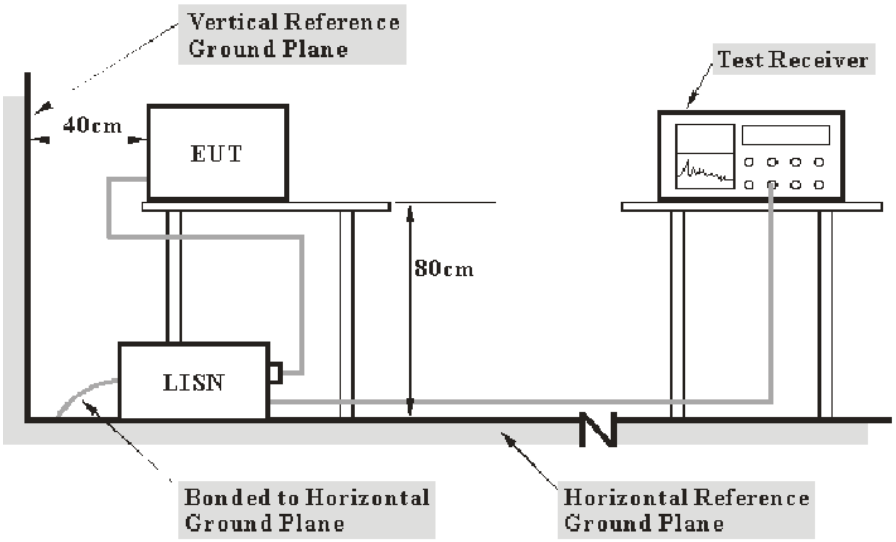
Result: Compliance.

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.

Transd Factor & Margin Calculation

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

Transd 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, a 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+ Transd Factor

Test Data

Environmental Conditions

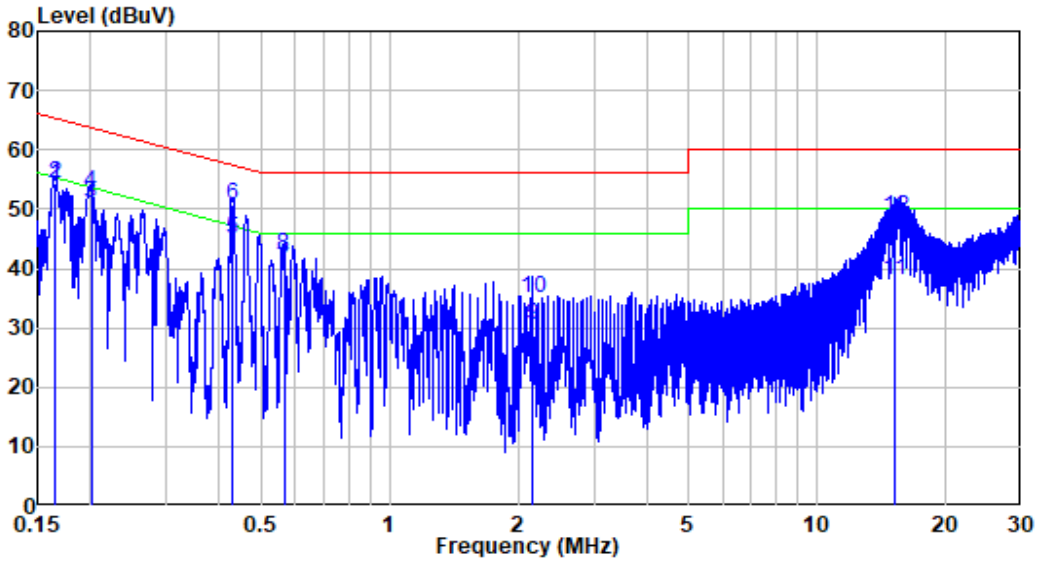
Temperature:	23 ℃
Relative Humidity:	42 %
ATM Pressure:	101.2 kPa

The testing was performed by Jason Liu on 2022-12-02.

EUT operation mode: Transmitting

Wi-Fi: (Worst case is 802.11G mode, low Channel)

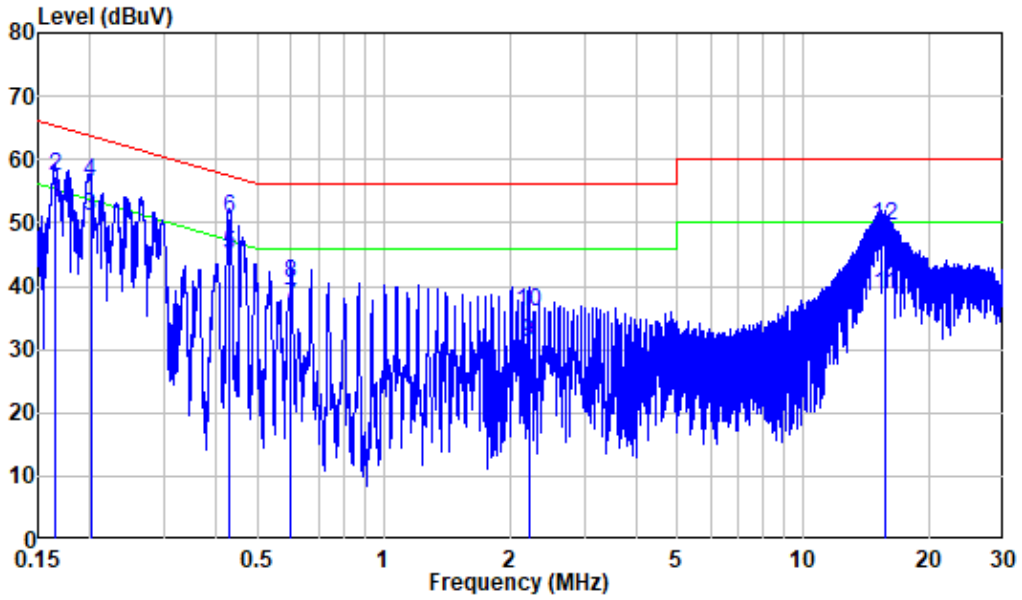
AC 120V/60 Hz, Line



Site : Shielding Room
Condition: Line
Job No. : SZNS220909-30736E-RF
Mode : 2.4G WIFI
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.165	9.80	44.20	54.00	55.21	-1.21	Average
2	0.165	9.80	44.69	54.49	65.21	-10.72	QP
3	0.200	9.80	41.30	51.10	53.60	-2.50	Average
4	0.200	9.80	43.10	52.90	63.60	-10.70	QP
5	0.428	9.80	35.11	44.91	47.29	-2.38	Average
6	0.428	9.80	40.89	50.69	57.29	-6.60	QP
7	0.566	9.81	30.13	39.94	46.00	-6.06	Average
8	0.566	9.81	32.46	42.27	56.00	-13.73	QP
9	2.147	9.82	20.72	30.54	46.00	-15.46	Average
10	2.147	9.82	25.10	34.92	56.00	-21.08	QP
11	15.166	9.95	27.98	37.93	50.00	-12.07	Average
12	15.166	9.95	38.73	48.68	60.00	-11.32	QP

AC 120V/60 Hz, Neutral



Site : Shielding Room
Condition: Neutral
Job No. : SZNS220909-30736E-RF
Mode : 2.4G WIFI
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.164	9.80	43.24	53.04	55.25	-2.21	Average
2	0.164	9.80	47.42	57.22	65.25	-8.03	QP
3	0.200	9.80	41.28	51.08	53.60	-2.52	Average
4	0.200	9.80	46.51	56.31	63.60	-7.29	QP
5	0.430	9.80	35.21	45.01	47.25	-2.24	Average
6	0.430	9.80	41.06	50.86	57.25	-6.39	QP
7	0.602	9.81	27.05	36.86	46.00	-9.14	Average
8	0.602	9.81	30.60	40.41	56.00	-15.59	QP
9	2.213	9.82	21.40	31.22	46.00	-14.78	Average
10	2.213	9.82	26.22	36.04	56.00	-19.96	QP
11	15.573	10.06	28.54	38.60	50.00	-11.40	Average
12	15.573	10.06	39.40	49.46	60.00	-10.54	QP

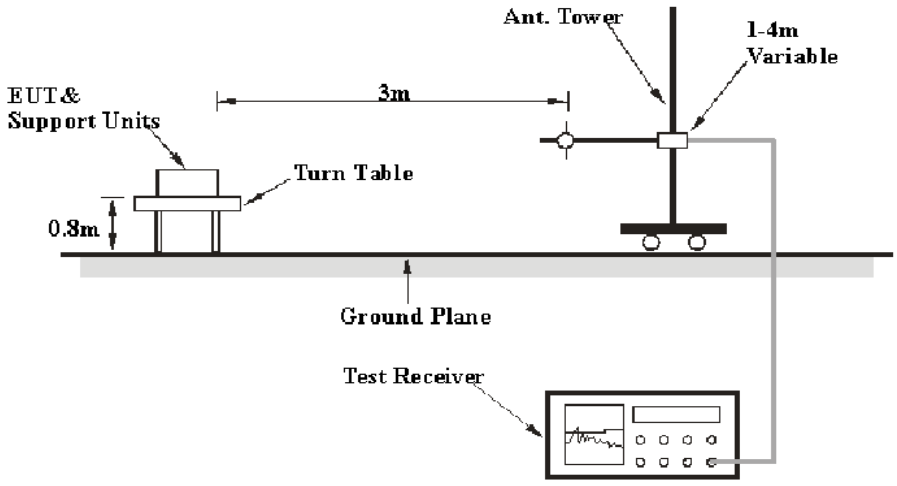
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

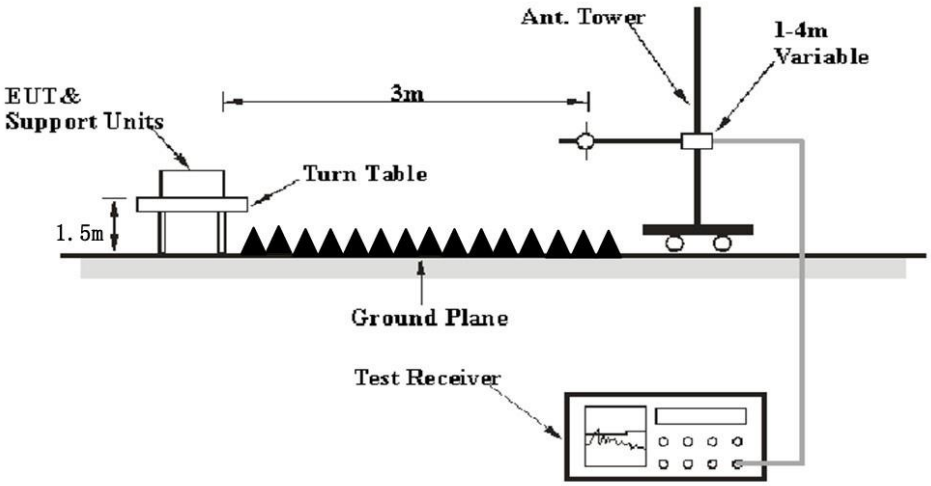
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1 GHz:



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, RSS-247, RSS-Gen limits.

EMI Test Receiver & Spectrum Analyzer Setup

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

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz Note 1	/	Average
	1MHz	＞1/T Note 2	/	Average

Note 1: when duty cycle is no less than 98%
Note 2: when duty cycle is less than 98%

Test Procedure

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

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Factor & 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, a overlimit/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:	25~25.6 ℃
Relative Humidity:	50~57 %
ATM Pressure:	101.0~101.2 kPa

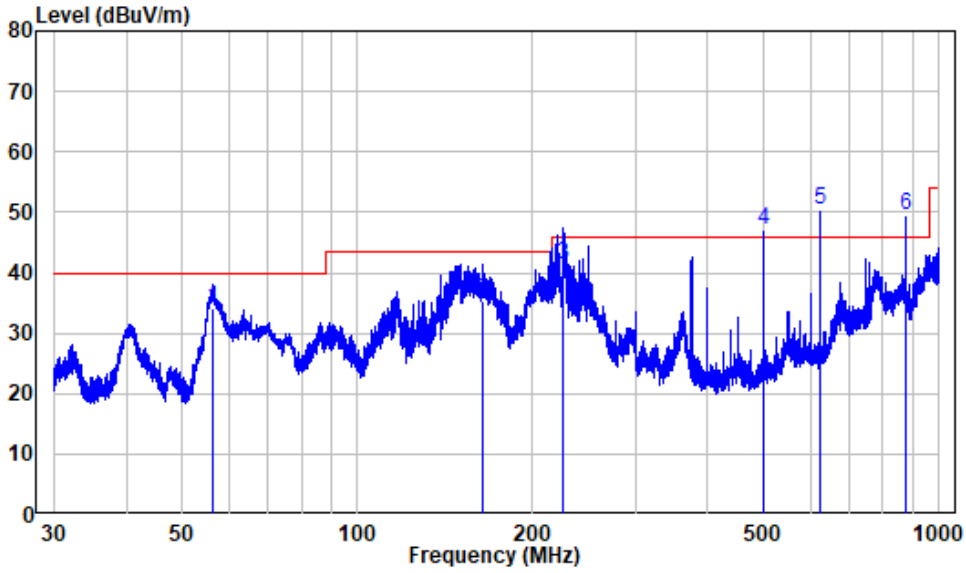
The testing was performed by Level Li on 2022-10-26 for below 1GHz and on 2022-10-19 for above 1GHz.

EUT operation mode: Transmitting

30MHz-1GHz: (Worst case is 802.11n20 mode, middle Channel)

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

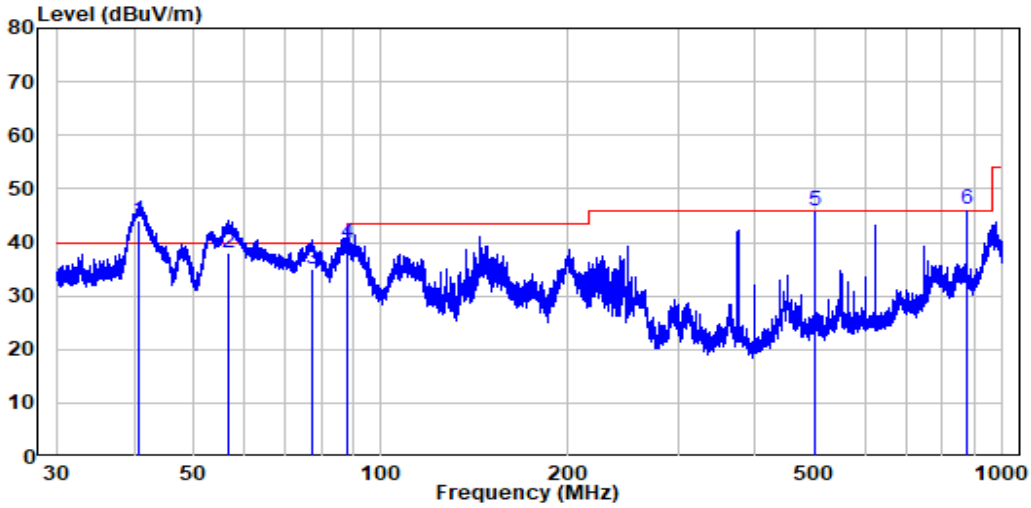
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : SZNS220909-30736E-RF
Test Mode: 2.4G WIFI Transmitting

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	56.271	-10.14	44.29	34.15	40.00	-5.85	QP
2	163.612	-14.28	49.69	35.41	43.50	-8.09	QP
3	226.199	-11.22	52.60	41.38	46.00	-4.62	QP
4	500.082	-4.25	51.40	47.15	46.00	1.15	QP *
5	625.078	-2.35	52.90	50.55	46.00	4.55	QP *
6	875.247	1.18	48.40	49.58	46.00	3.58	QP *

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : SZNS220909-30736E-RF
Test Mode: 2.4G WIFI Transmitting

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.773	-10.21	54.19	43.98	40.00	3.98	QP *
2	56.742	-10.09	48.21	38.12	40.00	-1.88	QP
3	77.389	-16.55	51.50	34.95	40.00	-5.05	QP
4	88.342	-14.47	54.30	39.83	43.50	-3.67	QP
5	500.082	-4.25	50.00	45.75	46.00	-0.25	QP
6	875.247	1.18	45.00	46.18	46.00	0.18	QP *

Note*: The data recorded above represents the worst case for all supported operating modes, there were no spurious emission in the range 30MHz -1GHz over the limit in §15.209&RSS-GEN caused by radio, the emission list at above table was investigated and was not caused by the radio, the emission was present when the radio was disabled. Those emissions comply with the FCC Part 15, Subpart B-Unintentional radiators §15.109(b) and ICES-003 limit set for Class A digital device as the EUT is declared as a Class A equipment according the user manual.

1-25 GHz:

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave.		Height (m)	Polar (H/V)				
802.11b (worst case ANT 1)									
Low Channel(2412MHz)									
2310	68.55	PK	335	1.4	H	-7.24	61.31	74	-12.69
2310	55.09	AV	335	1.4	H	-7.24	47.85	54	-6.15
2310	68.75	PK	190	2.1	V	-7.24	61.51	74	-12.49
2310	55.13	AV	190	2.1	V	-7.24	47.89	54	-6.11
2390	69.65	PK	287	1.5	H	-7.22	62.43	74	-11.57
2390	55.60	AV	287	1.5	H	-7.22	48.38	54	-5.62
2390	69.79	PK	4	1.3	V	-7.22	62.57	74	-11.43
2390	55.71	AV	4	1.3	V	-7.22	48.49	54	-5.51
4824	55.79	PK	261	2.1	H	-3.53	52.26	74	-21.74
4824	41.89	AV	261	2.1	H	-3.53	38.36	54	-15.64
4824	58.49	PK	313	1.6	V	-3.53	54.96	74	-19.04
4824	50.91	AV	313	1.6	V	-3.53	47.38	54	-6.62
Middle Channel(2437MHz)									
4874	56.86	PK	193	1.7	H	-3.41	53.45	74	-20.55
4874	45.55	AV	193	1.7	H	-3.41	42.14	54	-11.86
4874	59.58	PK	256	1.8	V	-3.41	56.17	74	-17.83
4874	52.44	AV	244	1.8	V	-3.41	49.03	54	-4.97
High Channel(2462 MHz)									
2483.5	72.00	PK	275	1.2	H	-7.2	64.8	74	-9.2
2483.5	57.44	AV	275	1.2	H	-7.2	50.24	54	-3.76
2483.5	71.69	PK	111	1.9	V	-7.2	64.49	74	-9.51
2483.5	57.46	AV	111	1.9	V	-7.2	50.26	54	-3.74
2500	68.60	PK	300	2	H	-7.18	61.42	74	-12.58
2500	56.99	AV	300	2	H	-7.18	49.81	54	-4.19
2500	69.07	PK	350	2	V	-7.18	61.89	74	-12.11
2500	56.89	AV	350	2	V	-7.18	49.71	54	-4.29
4924	57.25	PK	80	2.1	H	-3.16	54.09	74	-19.91
4924	47.38	AV	80	2.1	H	-3.16	44.22	54	-9.78
4924	60.15	PK	33	1.4	V	-3.16	56.99	74	-17.01
4924	55.07	AV	33	1.4	V	-3.16	51.91	54	-2.09

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave.		Height (m)	Polar (H/V)				
802.11g (worst case MIMO)									
Low Channel(2412MHz)									
2310	68.52	PK	223	2.4	H	-7.24	61.28	74	-12.72
2310	54.89	AV	223	2.4	H	-7.24	47.65	54	-6.35
2310	68.28	PK	198	2	V	-7.24	61.04	74	-12.96
2310	55.16	AV	198	2	V	-7.24	47.92	54	-6.08
2390	69.82	PK	325	1	H	-7.22	62.60	74	-11.40
2390	56.14	AV	325	1	H	-7.22	48.92	54	-5.08
2390	69.25	PK	173	2.3	V	-7.22	62.03	74	-11.97
2390	56.34	AV	173	2.3	V	-7.22	49.12	54	-4.88
4824	55.75	PK	133	1.8	H	-3.53	52.22	74	-21.78
4824	42.15	AV	133	1.8	H	-3.53	38.62	54	-15.38
4824	58.20	PK	176	2	V	-3.53	54.67	74	-19.33
4824	46.07	AV	176	2	V	-3.53	42.54	54	-11.46
Middle Channel(2437MHz)									
4874	55.55	PK	206	2.5	H	-3.41	52.14	74	-21.86
4874	42.88	AV	206	2.5	H	-3.41	39.47	54	-14.53
4874	58.5	PK	256	1	V	-3.41	55.09	74	-18.91
4874	46.28	AV	244	1	V	-3.41	42.87	54	-11.13
High Channel(2462MHz)									
2483.5	73.31	PK	176	2.3	H	-7.2	66.11	74	-7.89
2483.5	59.32	AV	176	2.3	H	-7.2	52.12	54	-1.88
2483.5	73.62	PK	358	1.1	V	-7.2	66.42	74	-7.58
2483.5	59.59	AV	358	1.1	V	-7.2	52.39	54	-1.61
2500	69.08	PK	93	1.2	H	-7.18	61.9	74	-12.1
2500	57.10	AV	93	1.2	H	-7.18	49.92	54	-4.08
2500	68.58	PK	181	1.2	V	-7.18	61.4	74	-12.6
2500	56.82	AV	181	1.2	V	-7.18	49.64	54	-4.36
4924	55.14	PK	8	1.2	H	-3.16	51.98	74	-22.02
4924	42.72	AV	8	1.2	H	-3.16	39.56	54	-14.44
4924	59.33	PK	242	1.1	V	-3.16	56.17	74	-17.83
4924	47.41	AV	242	1.1	V	-3.16	44.25	54	-9.75

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave.		Height (m)	Polar (H/V)				
802.11n20(worst case MIMO)									
Low Channel(2412MHz)									
2310	68.60	PK	312	1.2	H	-7.24	61.36	74	-12.64
2310	55.07	AV	312	1.2	H	-7.24	47.83	54	-6.17
2310	68.66	PK	190	1.2	V	-7.24	61.42	74	-12.58
2310	55.12	AV	190	1.2	V	-7.24	47.88	54	-6.12
2390	69.55	PK	183	2.1	H	-7.22	62.33	74	-11.67
2390	56.37	AV	183	2.1	H	-7.22	49.15	54	-4.85
2390	69.19	PK	287	1.4	V	-7.22	61.97	74	-12.03
2390	56.22	AV	287	1.4	V	-7.22	49.00	54	-5.00
4824	54.83	PK	132	1.1	H	-3.53	51.30	74	-22.70
4824	41.87	AV	132	1.1	H	-3.53	38.34	54	-15.66
4824	57.90	PK	117	2.4	V	-3.53	54.37	74	-19.63
4824	46.03	AV	117	2.4	V	-3.53	42.50	54	-11.50
Middle Channel(2437MHz)									
4874	55.59	PK	130	1.6	H	-3.41	52.18	74	-21.82
4874	42.44	AV	130	1.6	H	-3.41	39.03	54	-14.97
4874	58.45	PK	257	1.2	V	-3.41	55.04	74	-18.96
4874	55.59	PK	130	1.6	H	-3.41	52.18	74	-21.82
High Channel(2462MHz)									
2483.5	74.30	PK	135	1.6	H	-7.2	67.1	74	-6.9
2483.5	58.59	AV	135	1.6	H	-7.2	51.39	54	-2.61
2483.5	74.61	PK	334	2.4	V	-7.2	67.41	74	-6.59
2483.5	59.32	AV	334	2.4	V	-7.2	52.12	54	-1.88
2500	69.25	PK	233	1.1	H	-7.18	62.07	74	-11.93
2500	57.10	AV	233	1.1	H	-7.18	49.92	54	-4.08
2500	68.48	PK	24	1	V	-7.18	61.3	74	-12.7
2500	56.86	AV	24	1	V	-7.18	49.68	54	-4.32
4924	55.47	PK	321	1.9	H	-3.16	52.31	74	-21.69
4924	42.34	AV	321	1.9	H	-3.16	39.18	54	-14.82
4924	58.17	PK	204	1.3	V	-3.16	55.01	74	-18.99
4924	46.15	AV	204	1.3	V	-3.16	42.99	54	-11.01

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave.		Height (m)	Polar (H/V)				
802.11n40(worst case MIMO)									
Low Channel(2422MHz)									
2310	68.15	PK	111	2.3	H	-7.24	60.91	74	-13.09
2310	55.07	AV	111	2.3	H	-7.24	47.83	54	-6.17
2310	68.08	PK	280	1.7	V	-7.24	60.84	74	-13.16
2310	54.89	AV	280	1.7	V	-7.24	47.65	54	-6.35
2390	72.64	PK	245	1.7	H	-7.22	65.42	74	-8.58
2390	58.28	AV	245	1.7	H	-7.22	51.06	54	-2.94
2390	73.55	PK	341	2.4	V	-7.22	66.33	74	-7.67
2390	58.65	AV	341	2.4	V	-7.22	51.43	54	-2.57
4844	55.71	PK	244	2.1	H	-3.54	52.17	74	-21.83
4844	41.92	AV	244	2.1	H	-3.54	38.38	54	-15.62
4844	57.91	PK	155	2	V	-3.54	54.37	74	-19.63
4844	44.93	AV	155	2	V	-3.54	41.39	54	-12.61
Middle Channel(2437MHz)									
4874	55.38	PK	143	1.2	H	-3.41	51.97	74	-22.03
4874	42.38	AV	143	1.2	H	-3.41	38.97	54	-15.03
4874	58.55	PK	1	1.2	V	-3.41	55.14	74	-18.86
4874	45.29	AV	244	1.2	V	-3.41	41.88	54	-12.12
High Channel(2452MHz)									
2483.5	74.28	PK	300	1.8	H	-7.2	67.08	74	-6.92
2483.5	58.36	AV	300	1.8	H	-7.2	51.16	54	-2.84
2483.5	74.78	PK	9	1.3	V	-7.2	67.58	74	-6.42
2483.5	59.12	AV	9	1.3	V	-7.2	51.92	54	-2.08
2500	68.74	PK	96	1.6	H	-7.18	61.56	74	-12.44
2500	57.06	AV	96	1.6	H	-7.18	49.88	54	-4.12
2500	68.99	PK	154	1.1	V	-7.18	61.81	74	-12.19
2500	56.94	AV	154	1.1	V	-7.18	49.76	54	-4.24
4904	55.89	PK	287	2.2	H	-3.26	52.63	74	-21.37
4904	42.07	AV	287	2.2	H	-3.26	38.81	54	-15.19
4904	58.31	PK	149	1.8	V	-3.26	55.05	74	-18.95
4904	45.37	AV	149	1.8	V	-3.26	42.11	54	-11.89

Note:

Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Absolute Level (Corrected Amplitude） = Factor + Reading

Margin = Absolute Level - Limit

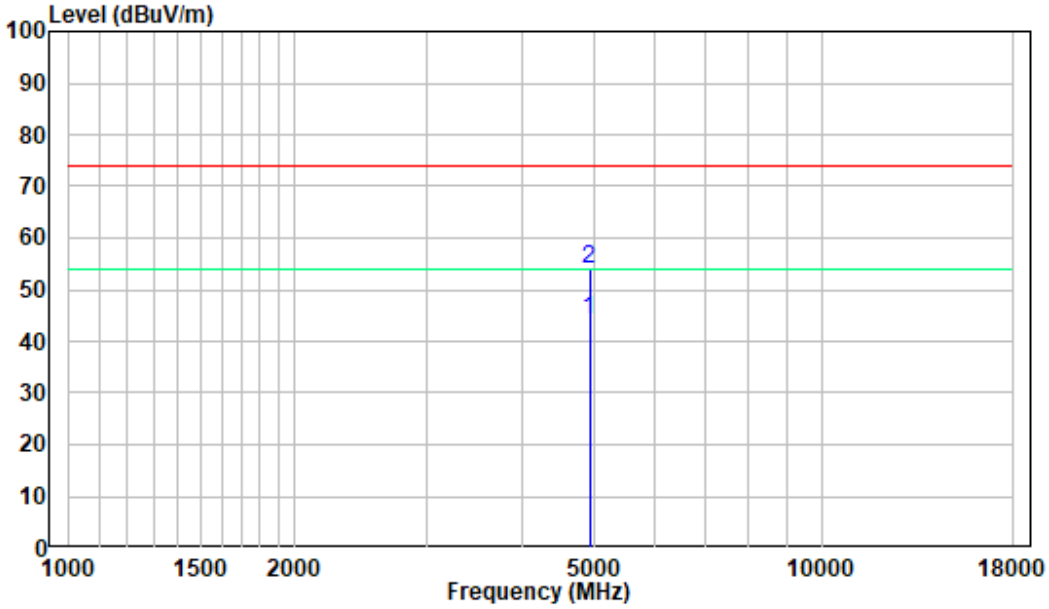
The other spurious emission which is 20dB below to the limit was not recorded.

The test result of peak was less than the limit of average, so just peak values were recorded.

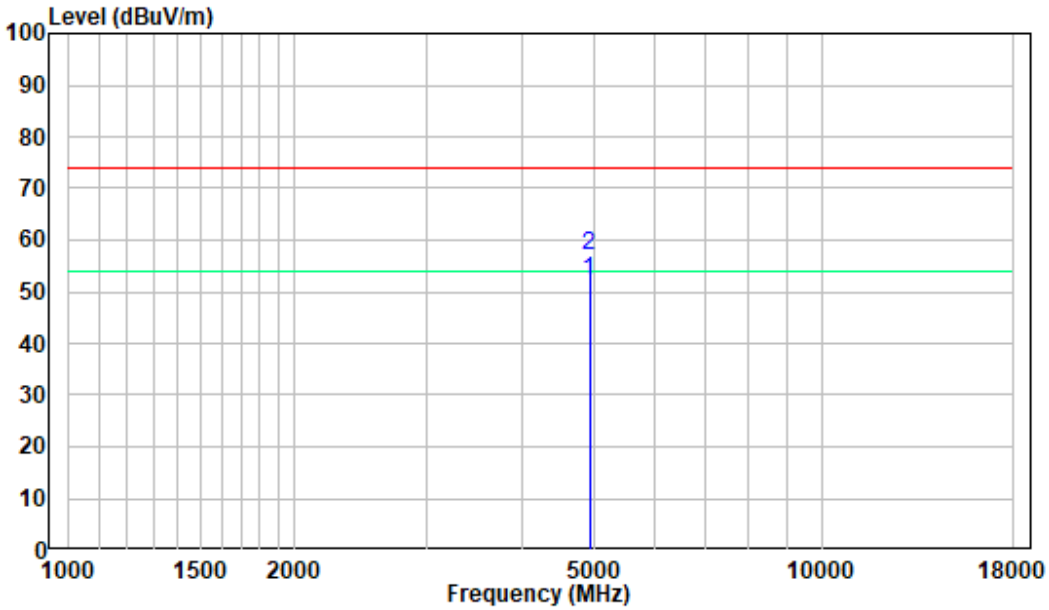
1-18 GHz:

Pre-scan Plots:

802.11 b High Channel ANT1
Horizontal



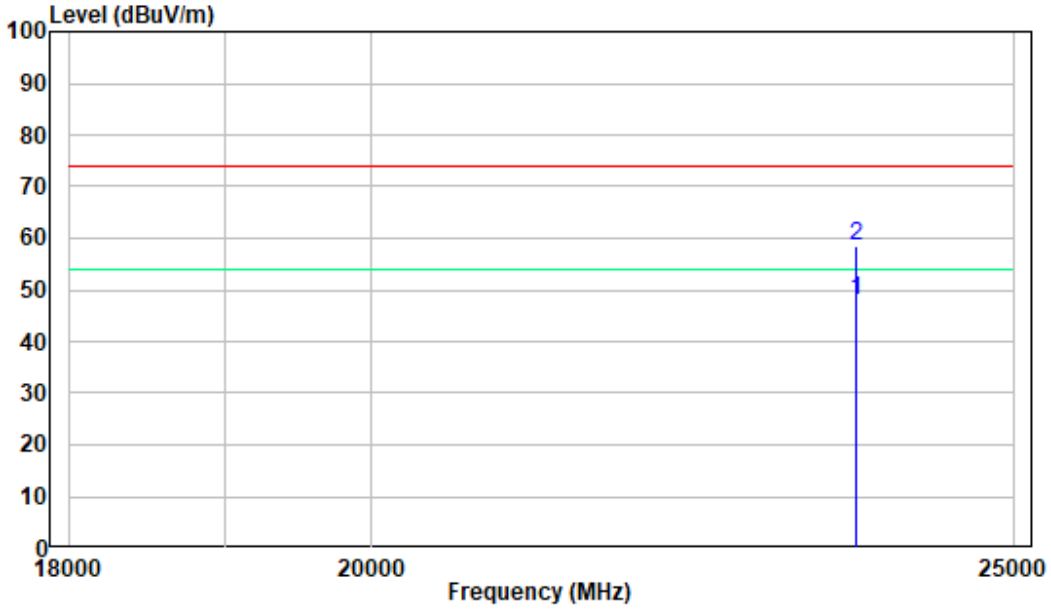
Vertical



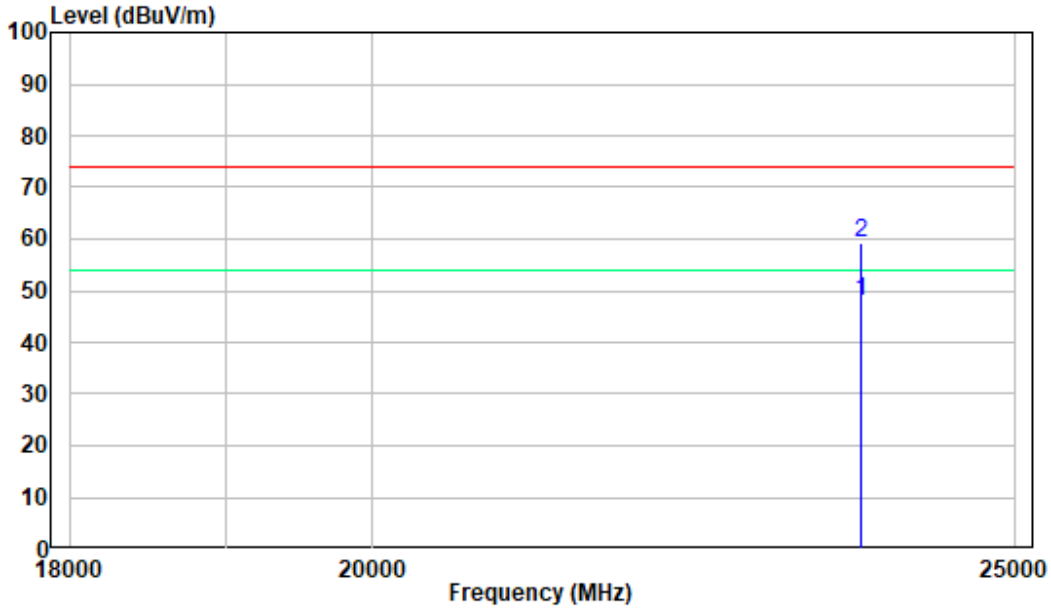
18 -25GHz:

Pre-scan Plots:

802.11 b High Channel ANT1
Horizontal



Vertical



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

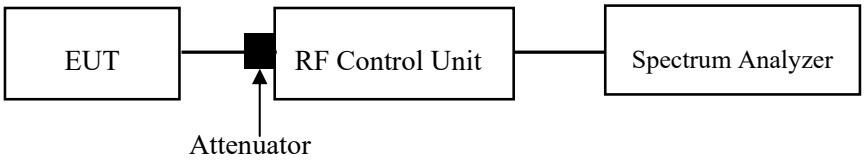
Applicable Standard

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 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Nick Fang on 2022-10-26.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

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

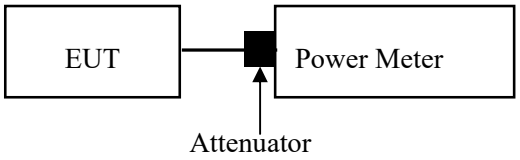
Applicable Standard

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 11.9.2.3.2

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:	25 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Nick Fang on 2022-10-26.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

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

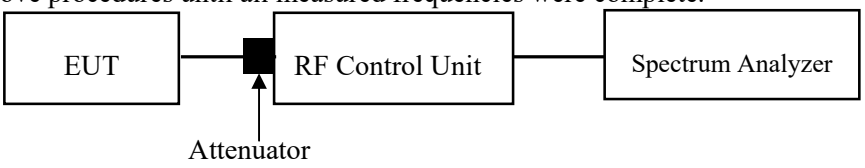
Applicable Standard

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:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Nick Fang on 2022-10-26.

EUT operation mode: Transmitting

Test Result: Compliant.

Conducted Band Edge Result:

Please refer to the Appendix.

FCC §15.247(e) - POWER SPECTRAL DENSITY

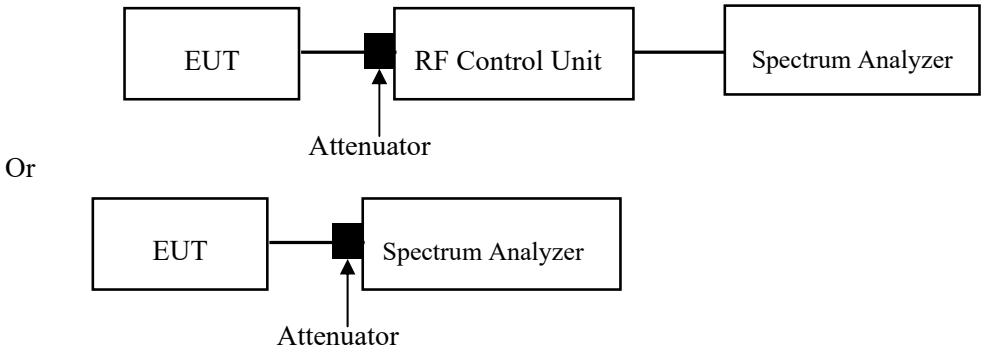
Applicable Standard

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 11.10.3

1. Use this procedure when the maximum conducted (average) output power in the fundamental emission is used to demonstrate compliance and the EUT transmits continuously (or with a D ≥ 98%).
2. Set the RBW to: 3kHz≤ RBW≤100 kHz.
3. Set the VBW ≥ 3×RBW.
4. Set the span to at least 1.5 times the OBW.
5. Detector = power averaging (rms) or sample detector (when rms not available).
6. Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW]
7. Sweep time = auto couple.
8. Employ trace averaging (rms) mode over a minimum of 100 traces
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If the measured value exceeds requirement, 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 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Nick Fang on 2022-10-26 and 2023-03-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

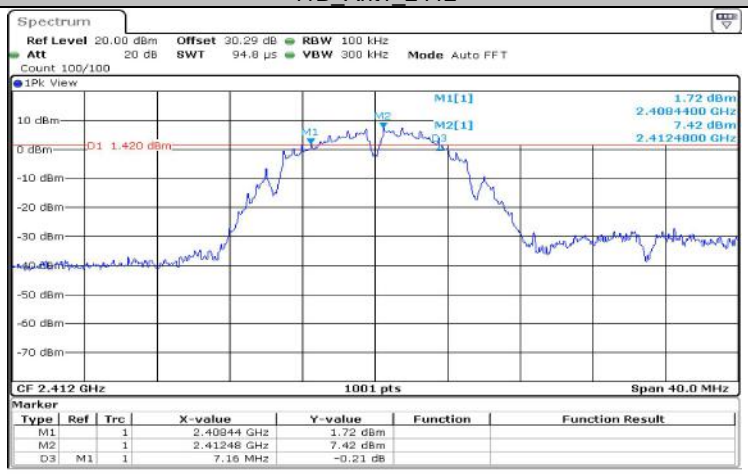
APPENDIX

Appendix A: DTS Bandwidth
Test Result

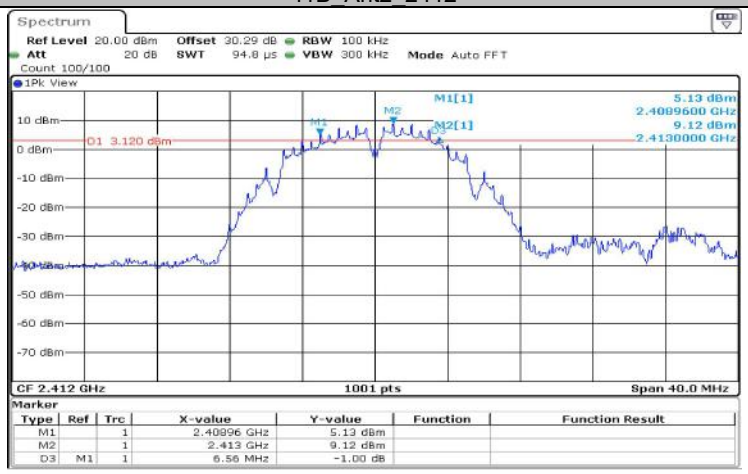
Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	7.16	2408.44	2415.60	0.5	PASS
	Ant2	2412	6.56	2408.96	2415.52	0.5	PASS
	Ant3	2412	7.08	2408.48	2415.56	0.5	PASS
	Ant1	2437	7.28	2433.44	2440.72	0.5	PASS
	Ant2	2437	6.60	2433.96	2440.56	0.5	PASS
	Ant3	2437	7.20	2433.44	2440.64	0.5	PASS
	Ant1	2462	6.56	2458.96	2465.52	0.5	PASS
	Ant2	2462	6.56	2458.96	2465.52	0.5	PASS
	Ant3	2462	7.24	2458.44	2465.68	0.5	PASS
11G-CDD	Ant1	2412	16.28	2403.84	2420.12	0.5	PASS
	Ant2	2412	16.32	2403.84	2420.16	0.5	PASS
	Ant3	2412	15.68	2404.44	2420.12	0.5	PASS
	Ant1	2437	16.04	2428.84	2444.88	0.5	PASS
	Ant2	2437	16.28	2428.84	2445.12	0.5	PASS
	Ant3	2437	15.16	2429.40	2444.56	0.5	PASS
	Ant1	2462	16.00	2454.12	2470.12	0.5	PASS
	Ant2	2462	16.32	2453.84	2470.16	0.5	PASS
	Ant3	2462	16.32	2453.84	2470.16	0.5	PASS
11N20MIMO	Ant1	2412	16.80	2403.60	2420.40	0.5	PASS
	Ant2	2412	16.56	2403.84	2420.40	0.5	PASS
	Ant3	2412	16.32	2403.84	2420.16	0.5	PASS
	Ant1	2437	16.80	2428.60	2445.40	0.5	PASS
	Ant2	2437	16.00	2429.12	2445.12	0.5	PASS
	Ant3	2437	16.92	2428.84	2445.76	0.5	PASS
	Ant1	2462	16.80	2453.60	2470.40	0.5	PASS
	Ant2	2462	17.16	2453.60	2470.76	0.5	PASS
	Ant3	2462	16.92	2453.84	2470.76	0.5	PASS
11N40MIMO	Ant1	2422	35.68	2404.24	2439.92	0.5	PASS
	Ant2	2422	35.68	2404.24	2439.92	0.5	PASS
	Ant3	2422	35.76	2404.40	2440.16	0.5	PASS
	Ant1	2437	35.68	2419.24	2454.92	0.5	PASS
	Ant2	2437	35.68	2419.24	2454.92	0.5	PASS
	Ant3	2437	35.52	2419.40	2454.92	0.5	PASS
	Ant1	2452	35.52	2434.08	2469.60	0.5	PASS
	Ant2	2452	35.84	2434.08	2469.92	0.5	PASS
	Ant3	2452	35.20	2434.40	2469.60	0.5	PASS

Test Graphs

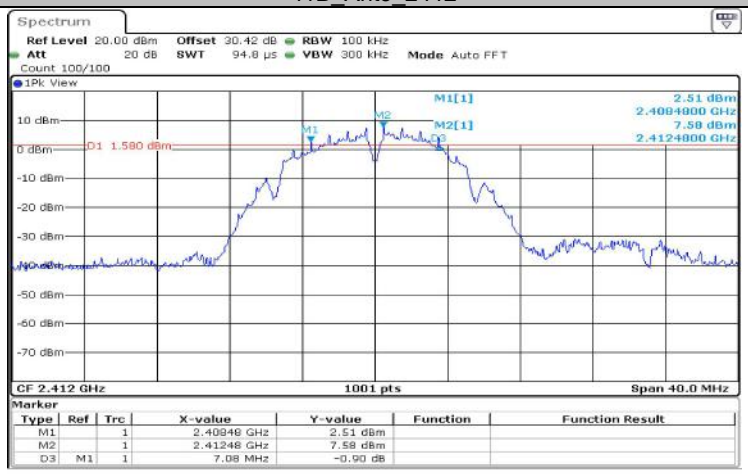
11B_Ant1_2412



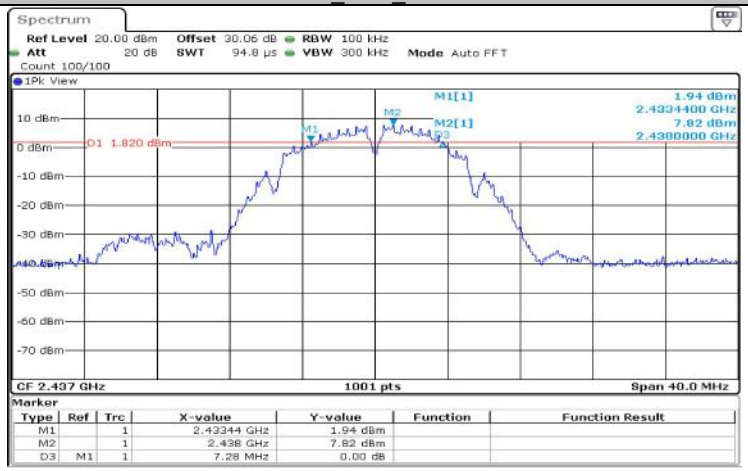
11B_Ant2_2412



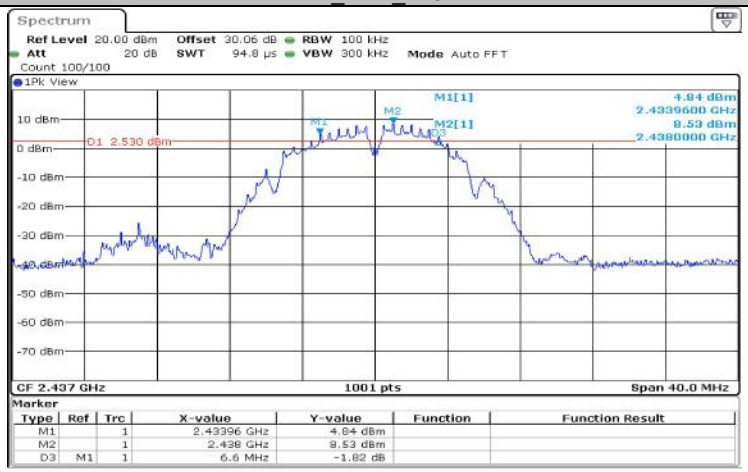
11B_Ant3_2412



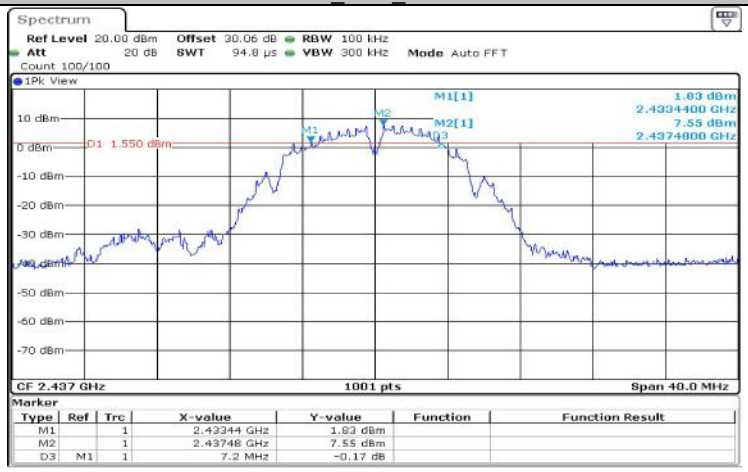
11B_Ant1_2437



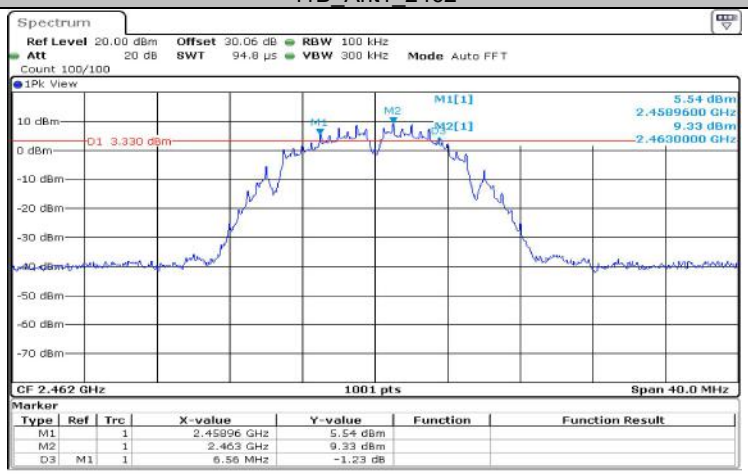
11B_Ant2_2437



11B_Ant3_2437



11B_Ant1_2462



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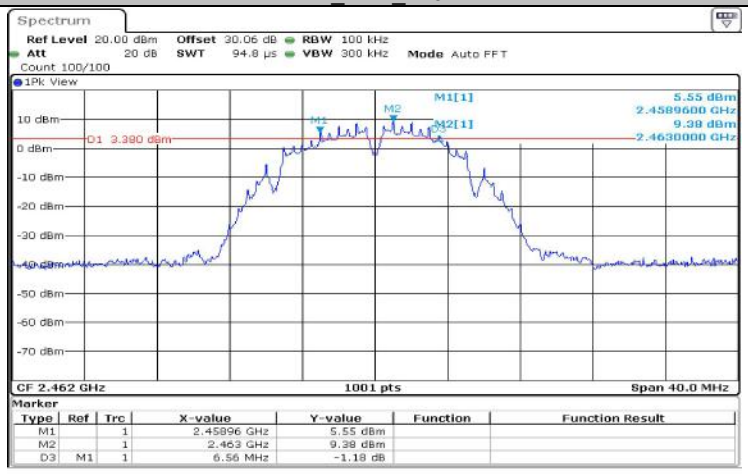
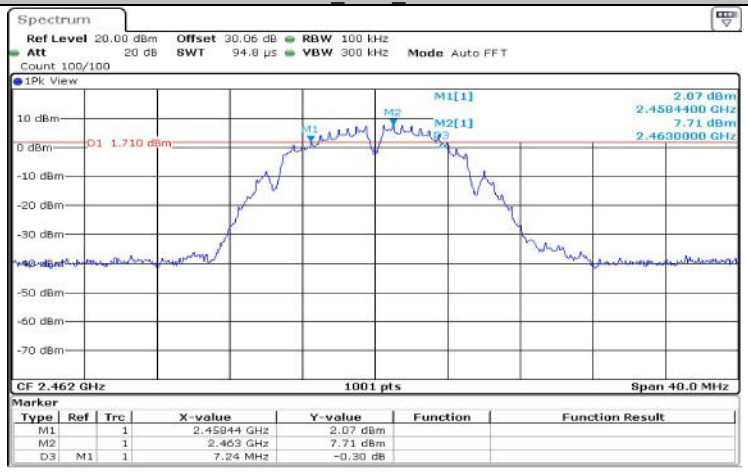
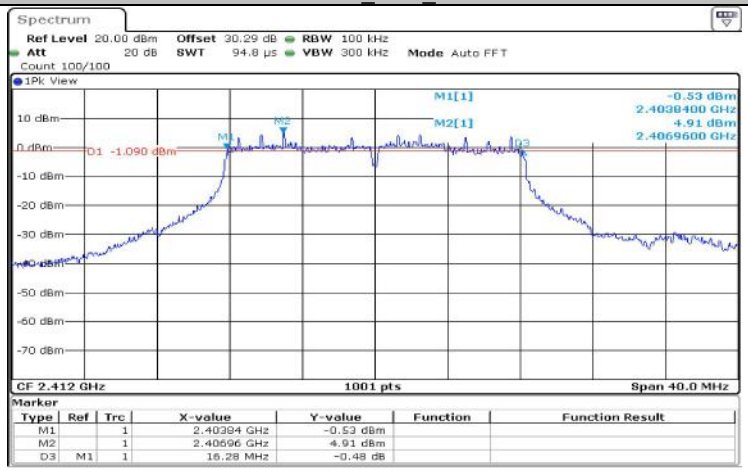


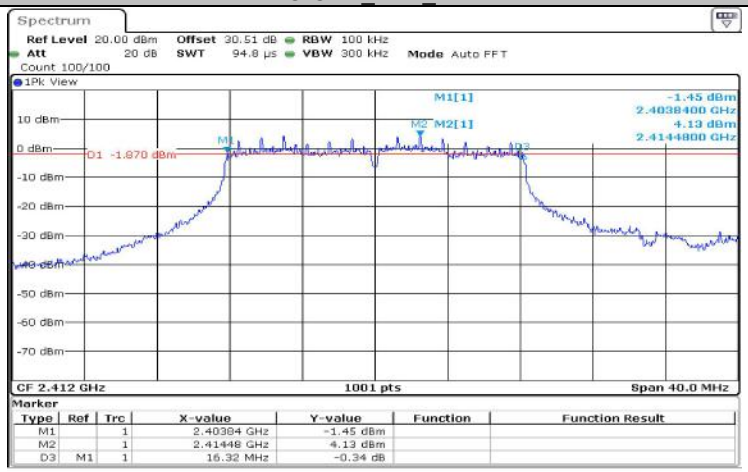
11B_Ant3_2462



11G-CDD_Ant1_2412



11G-CDD_Ant2_2412



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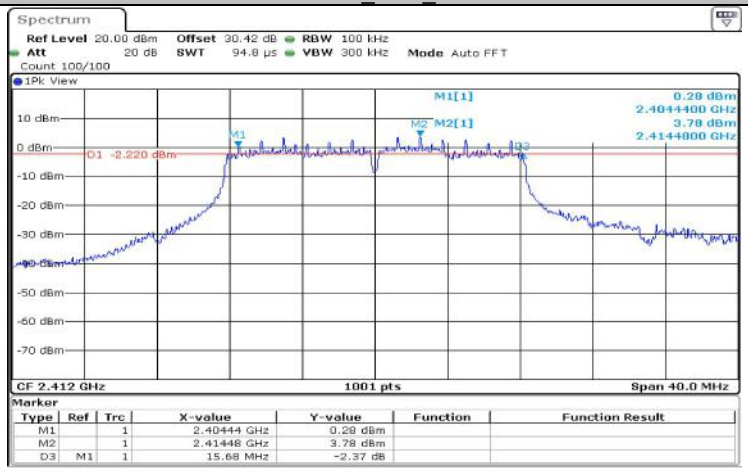

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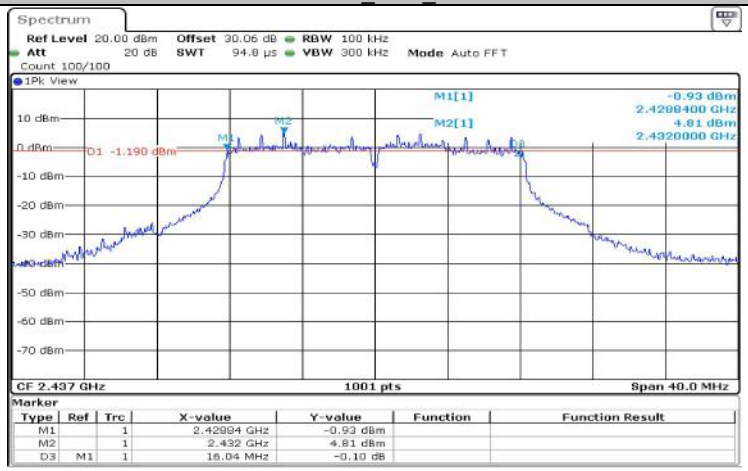
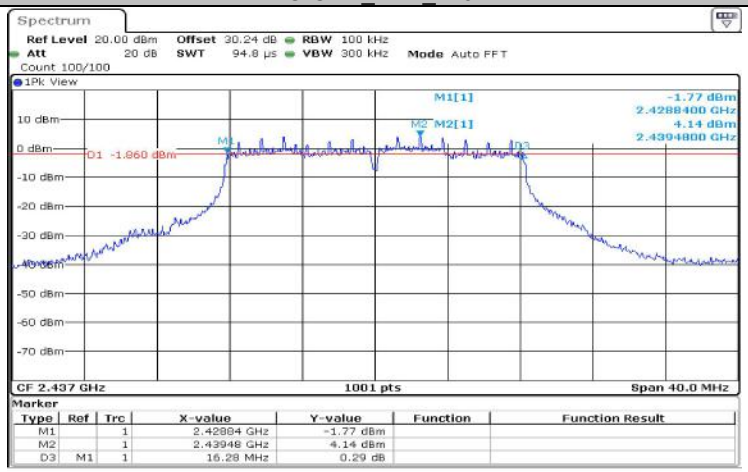
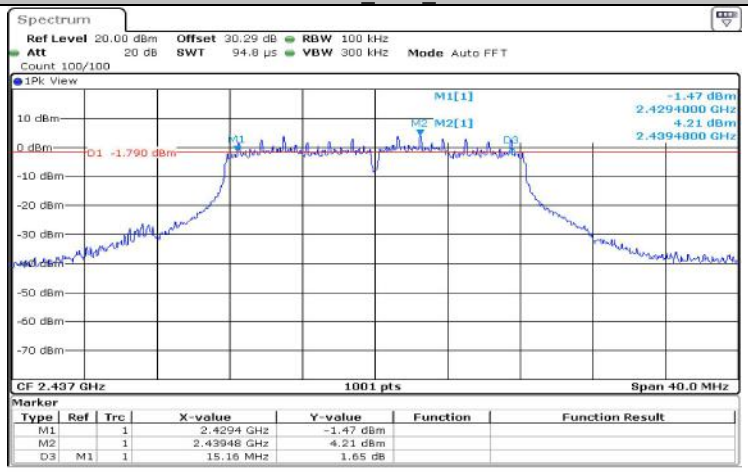


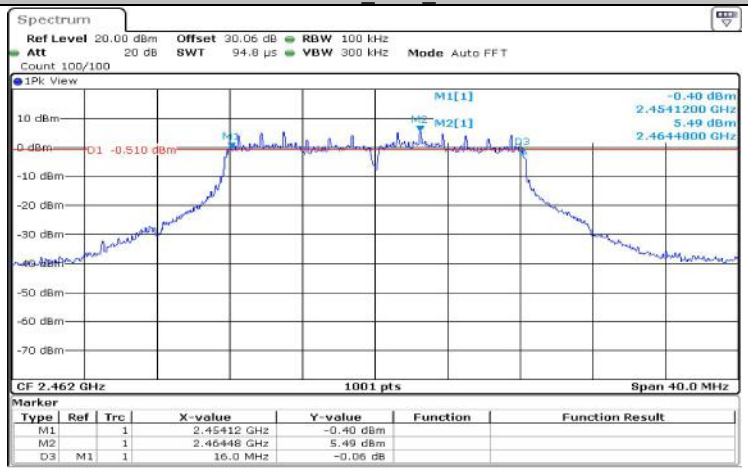
11G-CDD_Ant2_2437



11G-CDD_Ant3_2437



11G-CDD_Ant1_2462



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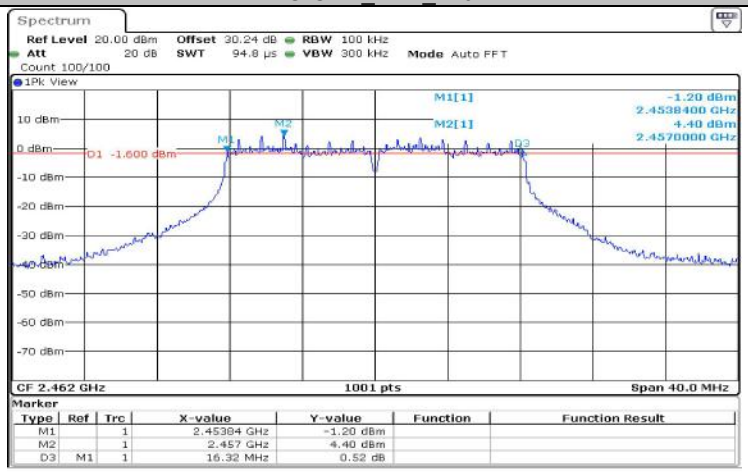

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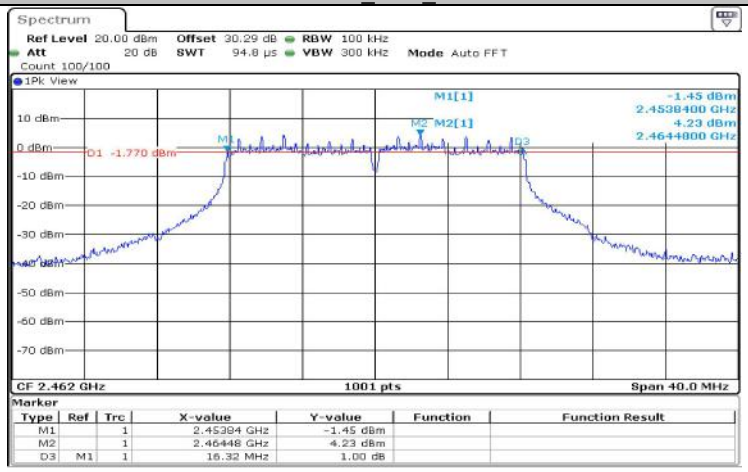
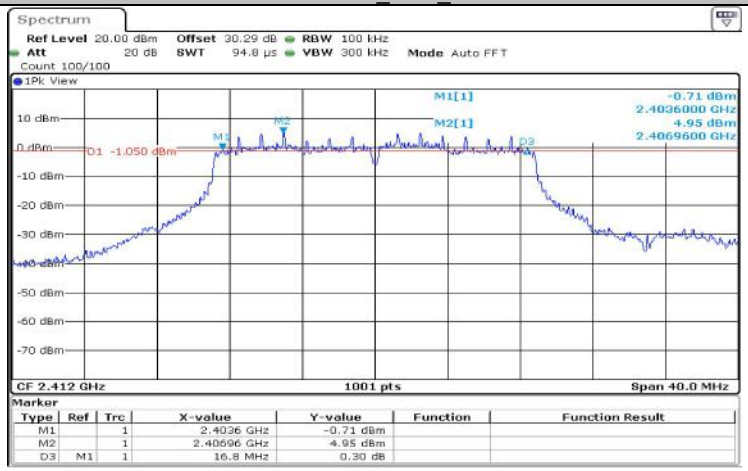


11N20MIMO_Ant1_2412



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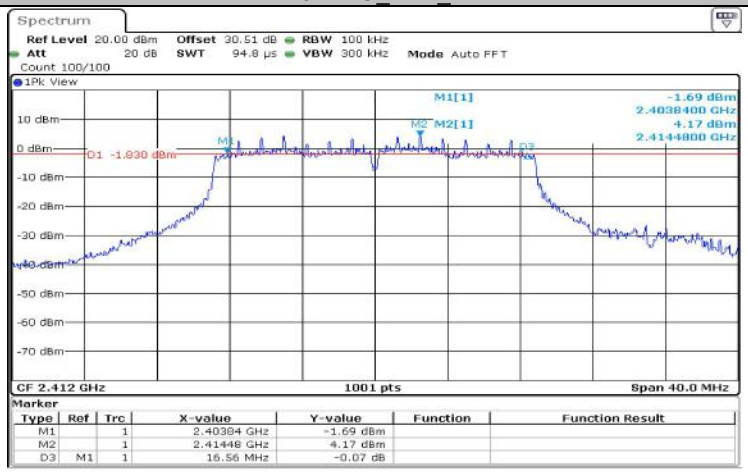

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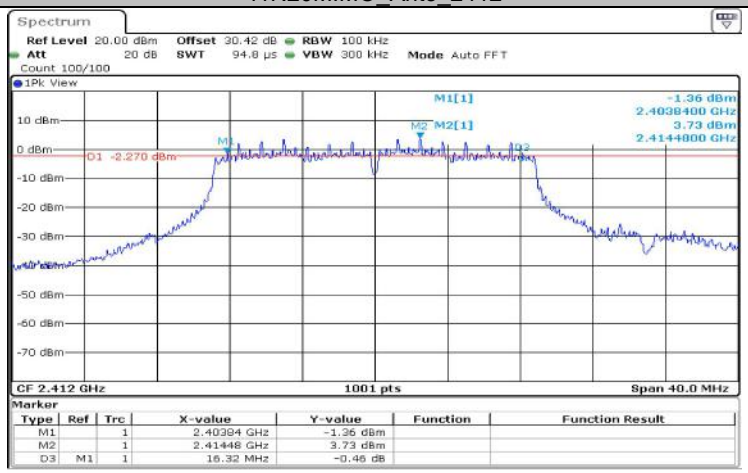

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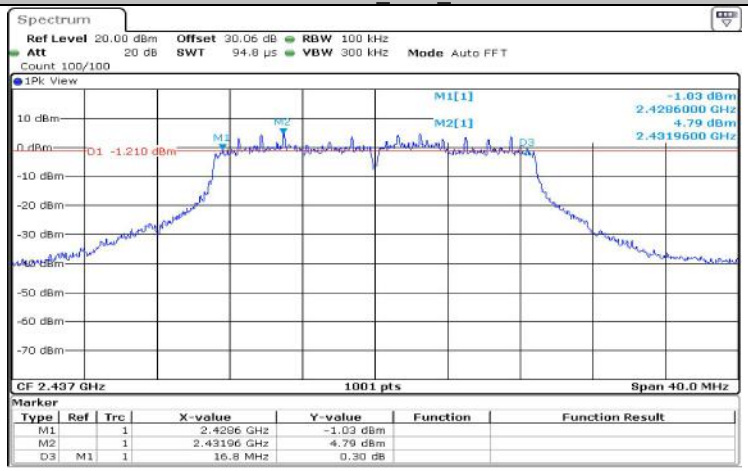

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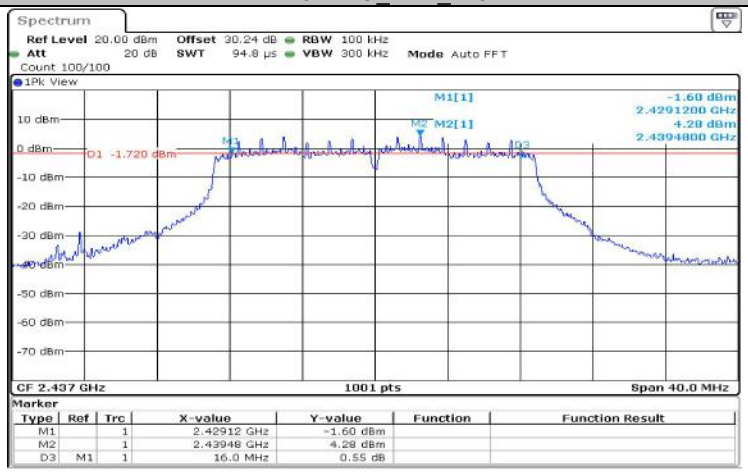

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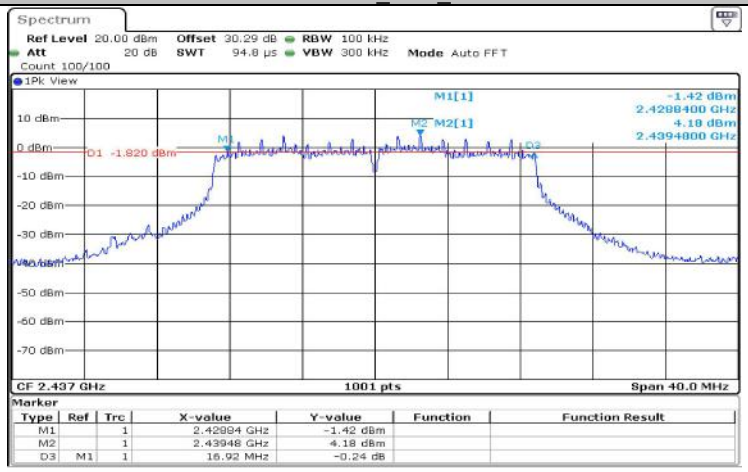

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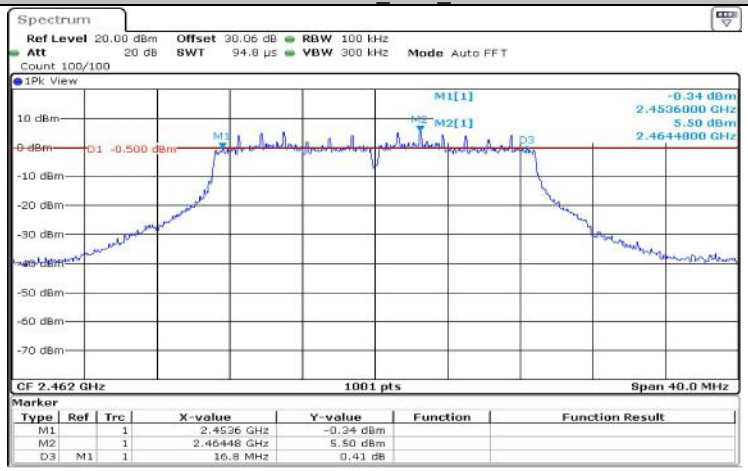

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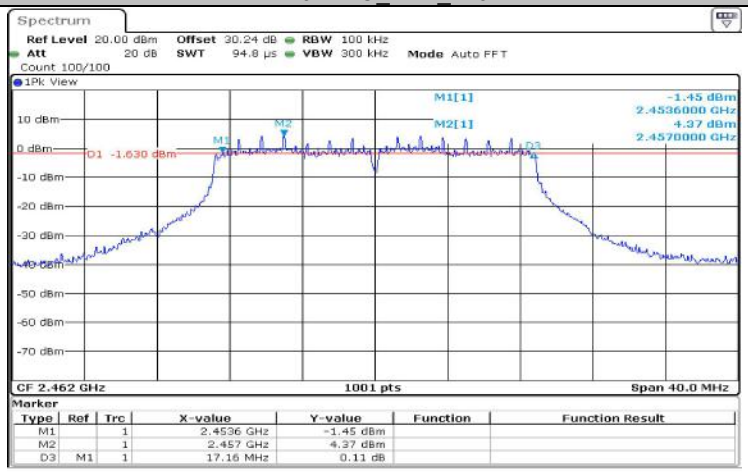

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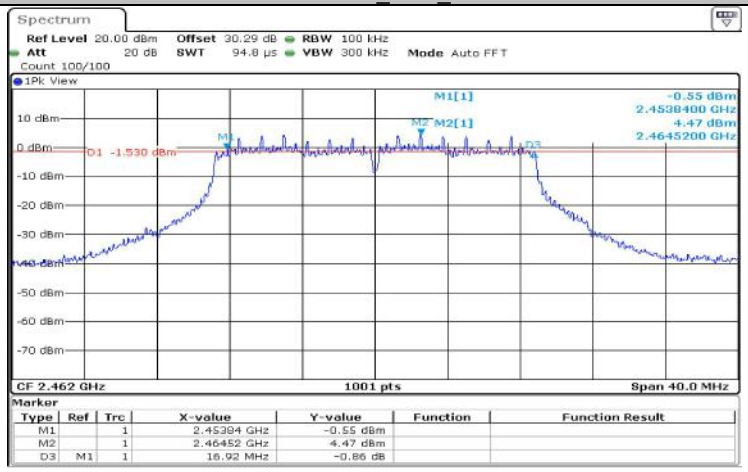
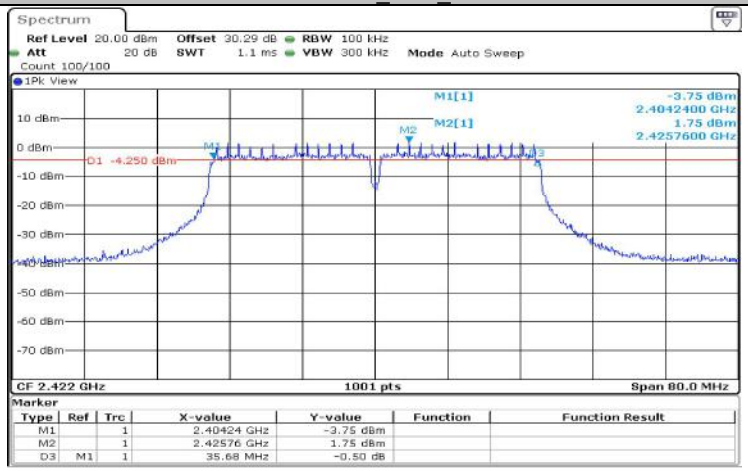
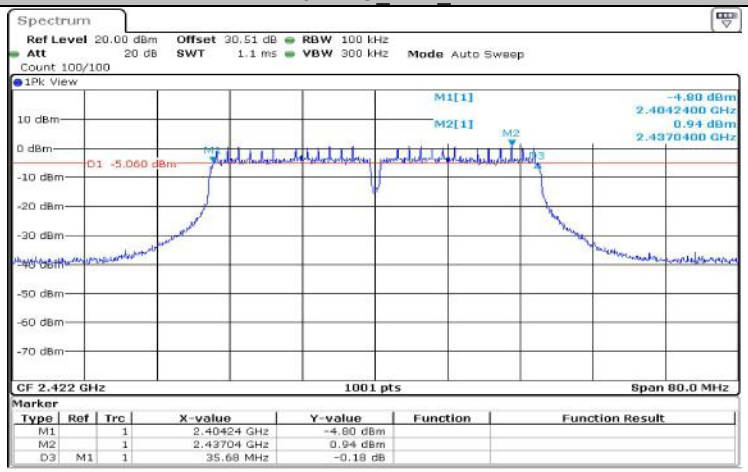


11N40MIMO_Ant1_2422



11N40MIMO_Ant2_2422



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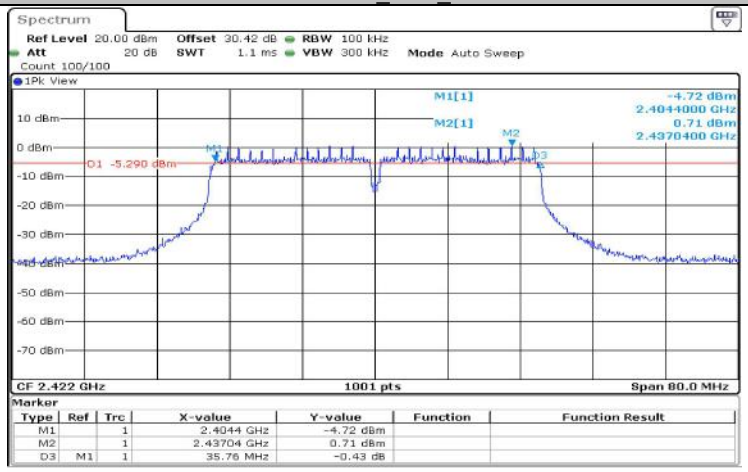

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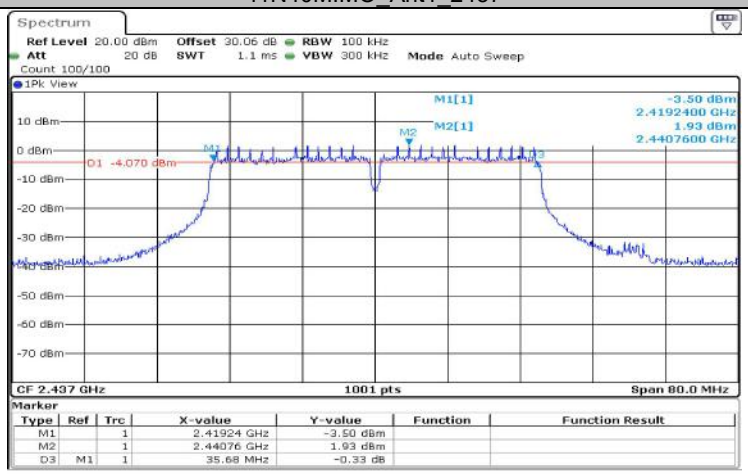

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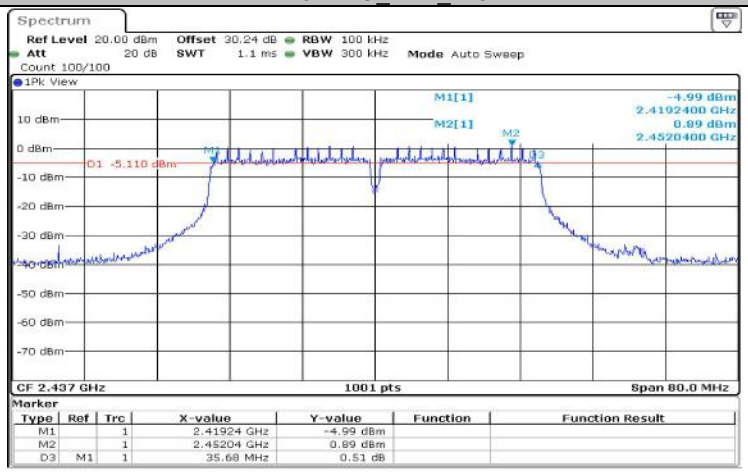
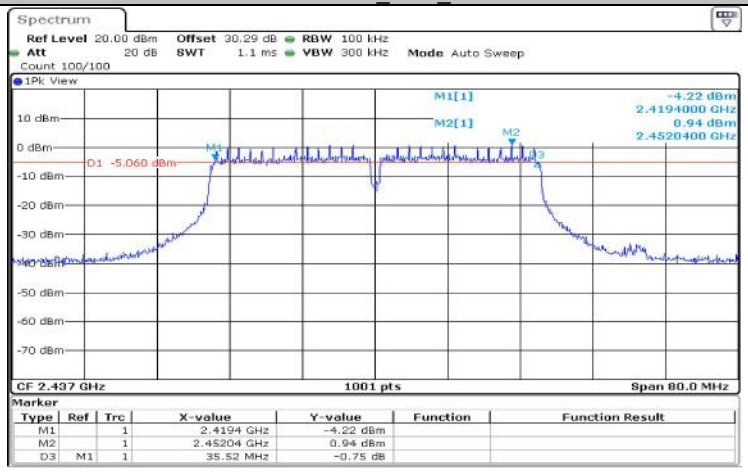
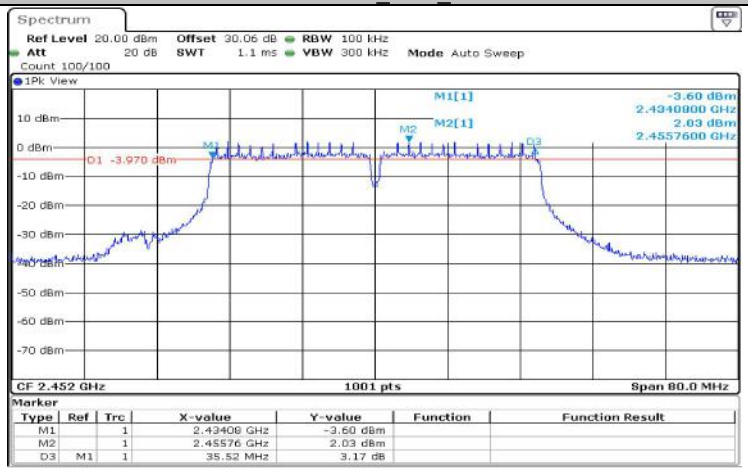


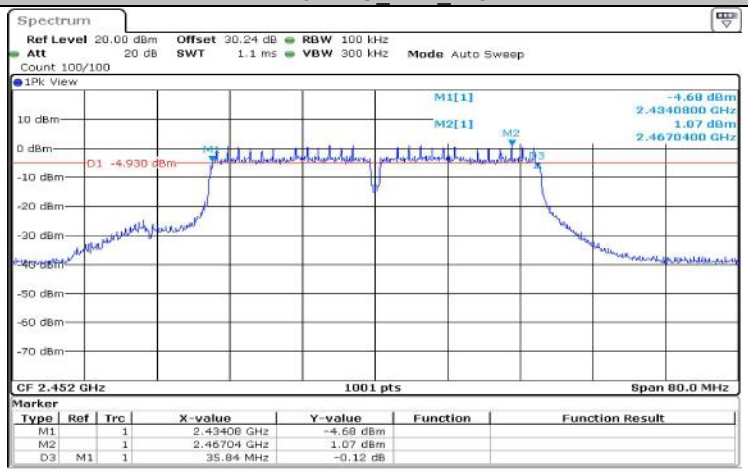
11N40MIMO_Ant3_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



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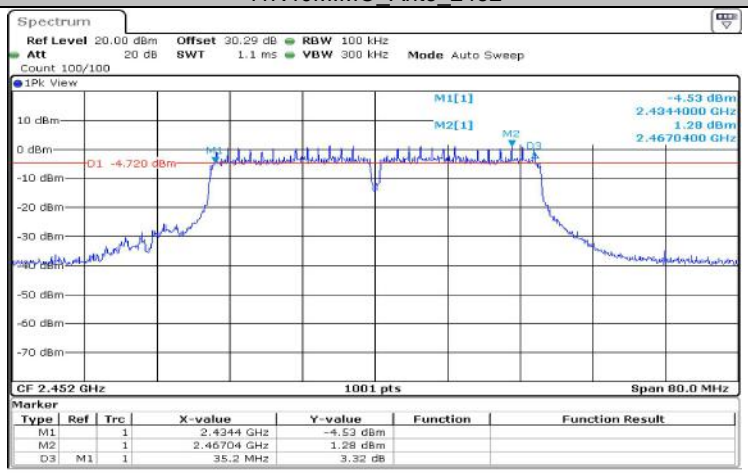
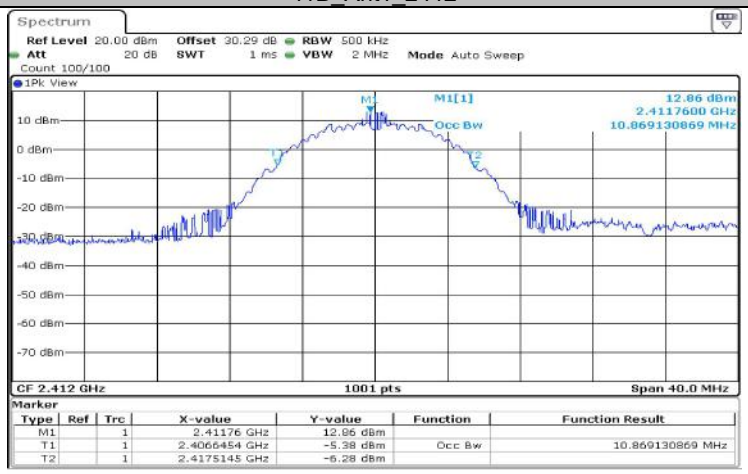


Appendix B: Occupied Channel Bandwidth
Test Result

Test Mode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.869	2406.645	2417.514	---	---
	Ant2	2412	11.029	2406.565	2417.594	---	---
	Ant3	2412	10.909	2406.645	2417.554	---	---
	Ant1	2437	10.709	2431.685	2442.395	---	---
	Ant2	2437	11.029	2431.525	2442.554	---	---
	Ant3	2437	10.869	2431.605	2442.475	---	---
	Ant1	2462	10.949	2456.565	2467.514	---	---
	Ant2	2462	10.749	2456.645	2467.395	---	---
	Ant3	2462	10.789	2456.645	2467.435	---	---
11G-CDD	Ant1	2412	17.782	2403.049	2420.831	---	---
	Ant2	2412	17.463	2403.209	2420.671	---	---
	Ant3	2412	17.303	2403.449	2420.751	---	---
	Ant1	2437	17.742	2428.049	2445.791	---	---
	Ant2	2437	17.383	2428.249	2445.631	---	---
	Ant3	2437	17.263	2428.449	2445.711	---	---
	Ant1	2462	17.742	2453.049	2470.791	---	---
	Ant2	2462	17.463	2453.249	2470.711	---	---
	Ant3	2462	17.143	2453.489	2470.631	---	---
11N20MIMO	Ant1	2412	18.741	2402.649	2421.391	---	---
	Ant2	2412	18.501	2402.729	2421.231	---	---
	Ant3	2412	18.302	2402.929	2421.231	---	---
	Ant1	2437	18.661	2427.689	2446.351	---	---
	Ant2	2437	18.501	2427.729	2446.231	---	---
	Ant3	2437	18.222	2427.969	2446.191	---	---
	Ant1	2462	18.661	2452.649	2471.311	---	---
	Ant2	2462	18.462	2452.769	2471.231	---	---
	Ant3	2462	18.262	2452.969	2471.231	---	---
11N40MIMO	Ant1	2422	37.802	2403.219	2441.021	---	---
	Ant2	2422	37.642	2403.379	2441.021	---	---
	Ant3	2422	37.163	2403.538	2440.701	---	---
	Ant1	2437	37.642	2418.219	2455.861	---	---
	Ant2	2437	37.483	2418.459	2455.941	---	---
	Ant3	2437	37.083	2418.618	2455.701	---	---
	Ant1	2452	37.562	2433.219	2470.781	---	---
	Ant2	2452	37.642	2433.379	2471.021	---	---
	Ant3	2452	37.163	2433.538	2470.701	---	---

Test Graphs

11B_Ant1_2412



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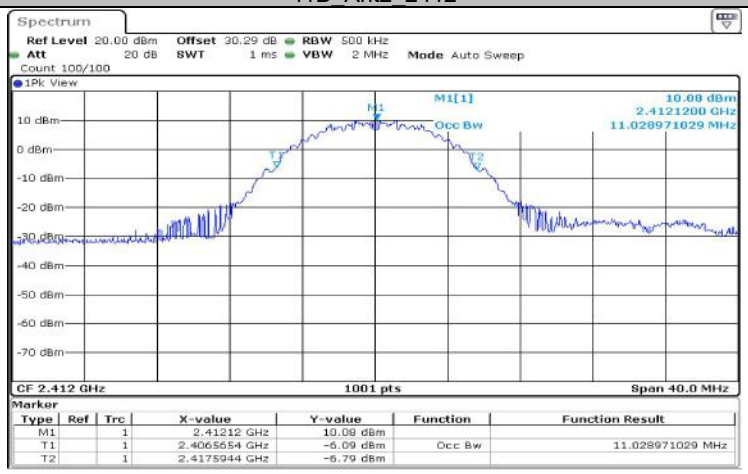
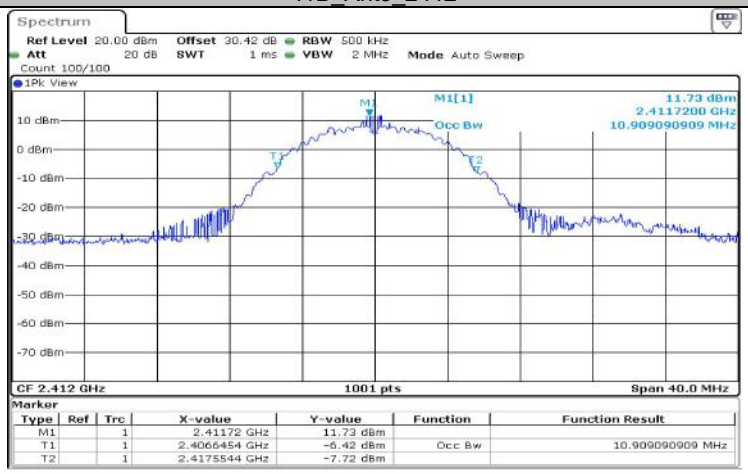
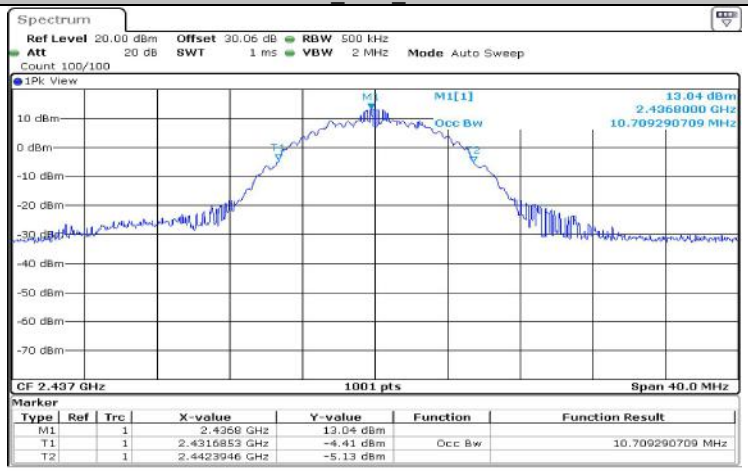


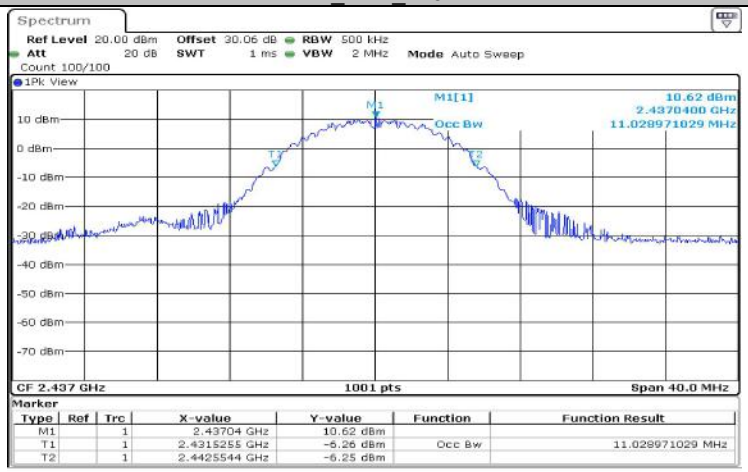
11B_Ant3_2412



11B_Ant1_2437



11B_Ant2_2437



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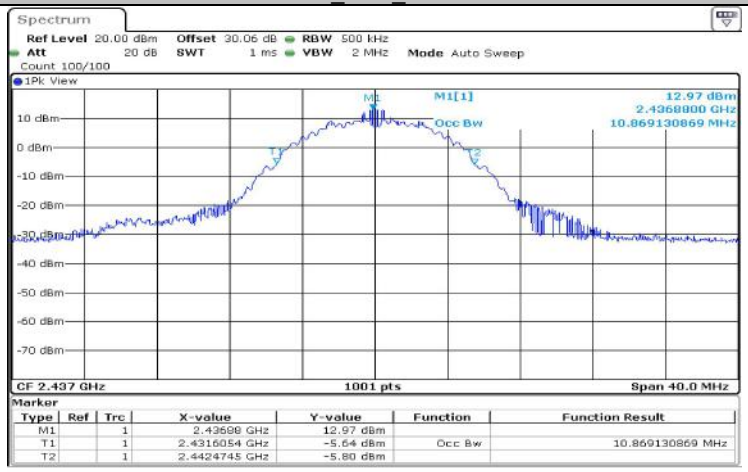
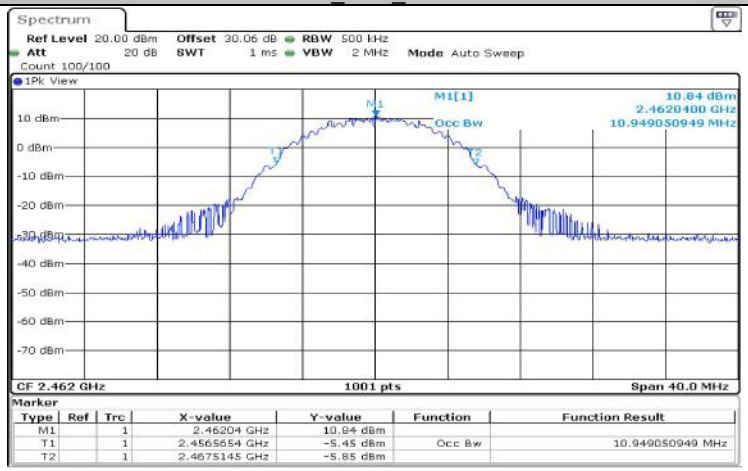
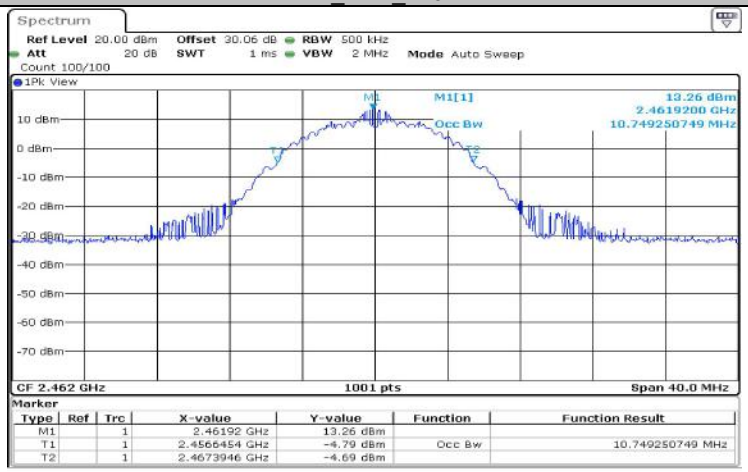


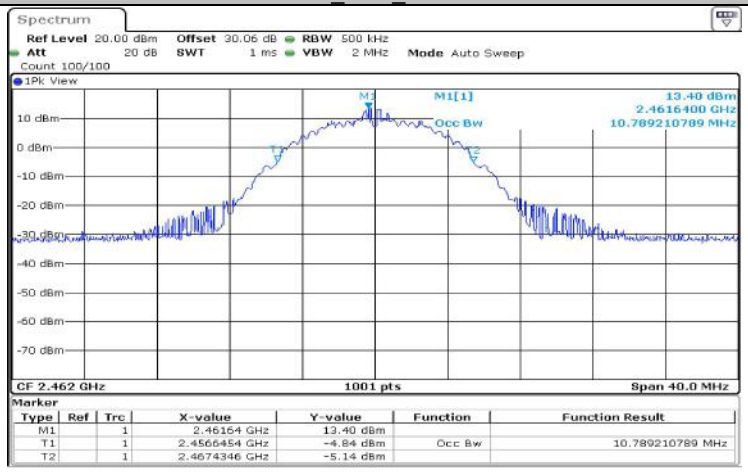
11B_Ant1_2462



11B_Ant2_2462

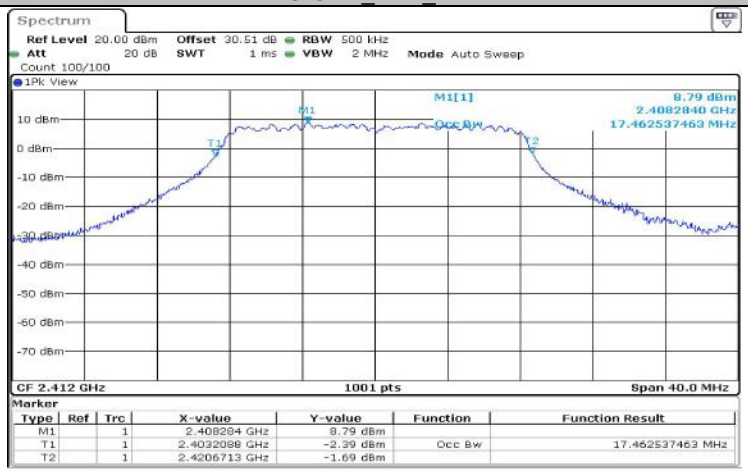


11B_Ant3_2462



11G-CDD_Ant1_2412

11G-CDD_Ant2_2412



11G-CDD_Ant3_2412

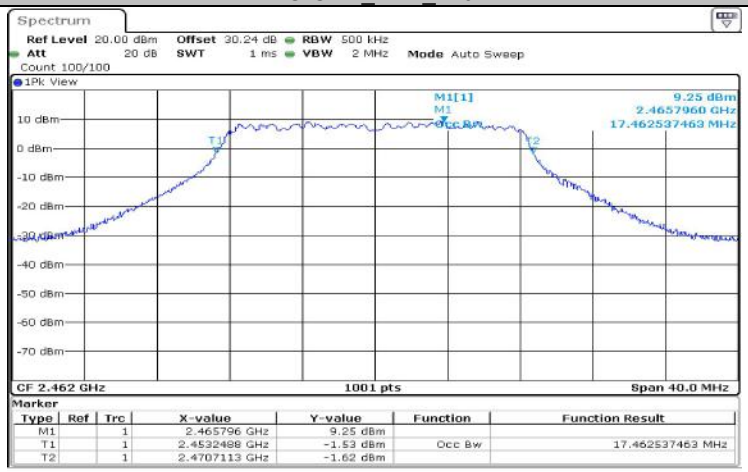
11G-CDD_Ant1_2437

11G-CDD_Ant2_2437

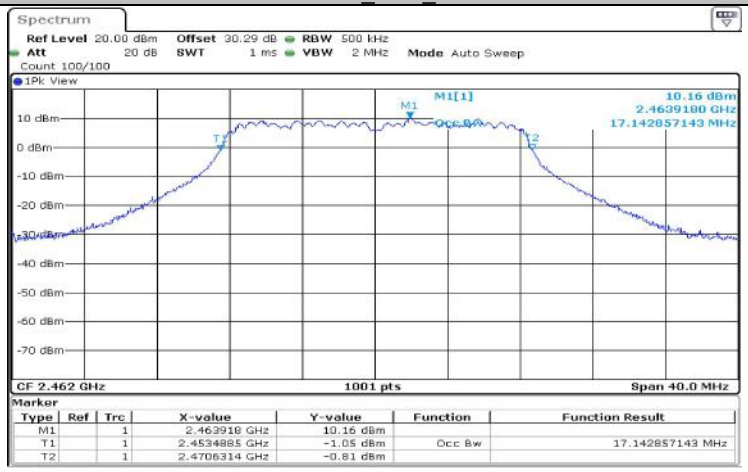
11G-CDD_Ant3_2437

11G-CDD_Ant1_2462

11G-CDD_Ant2_2462

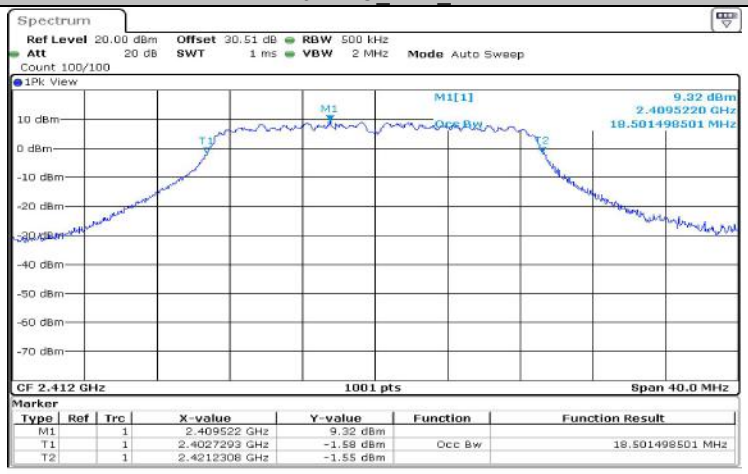


11G-CDD_Ant3_2462



11N20MIMO_Ant1_2412

11N20MIMO_Ant2_2412



11N20MIMO_Ant3_2412

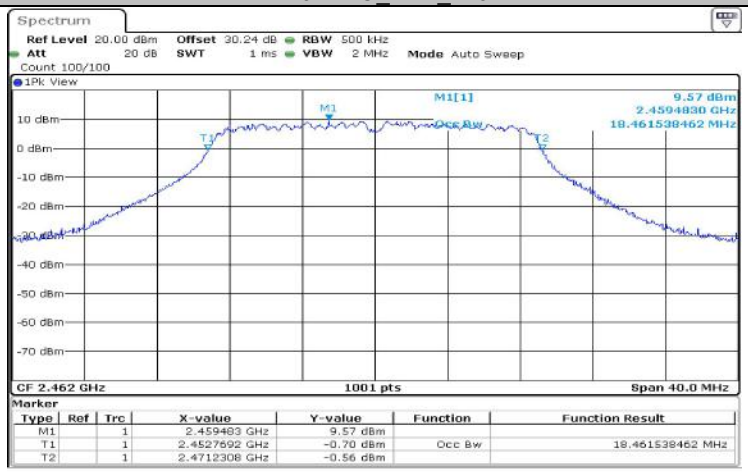
11N20MIMO_Ant1_2437

11N20MIMO_Ant2_2437

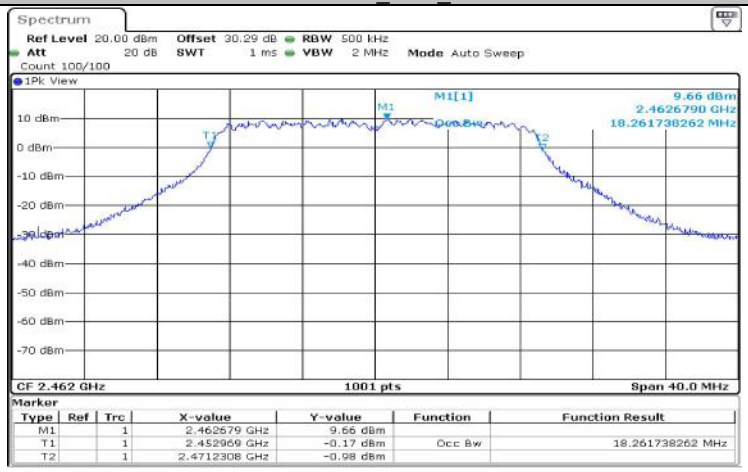
11N20MIMO_Ant3_2437

11N20MIMO_Ant1_2462

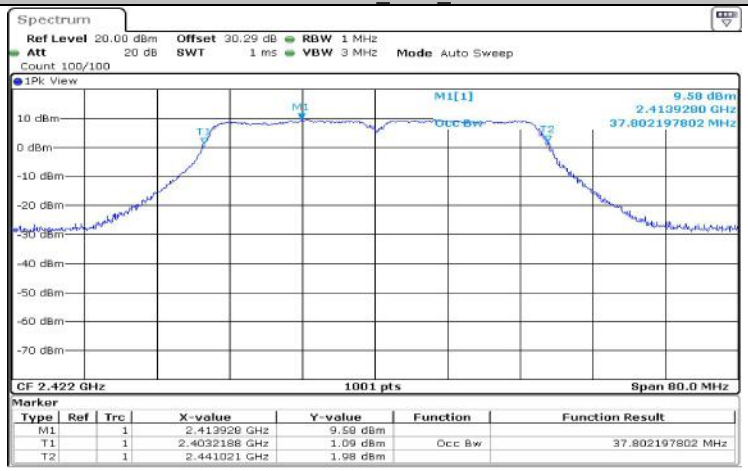
11N20MIMO_Ant2_2462



11N20MIMO_Ant3_2462

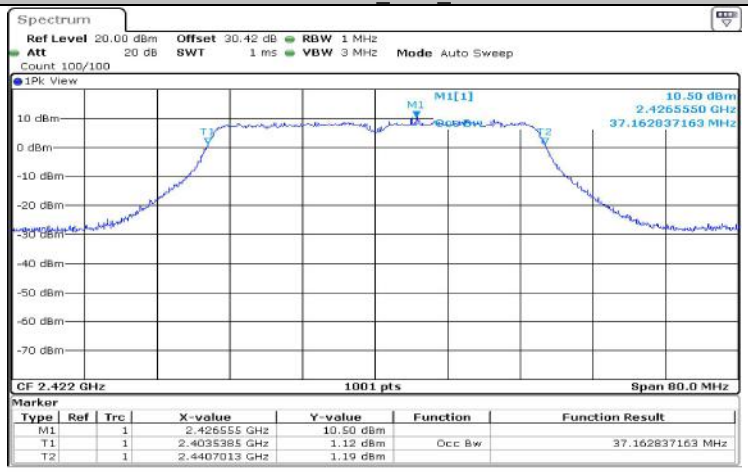


11N40MIMO_Ant1_2422

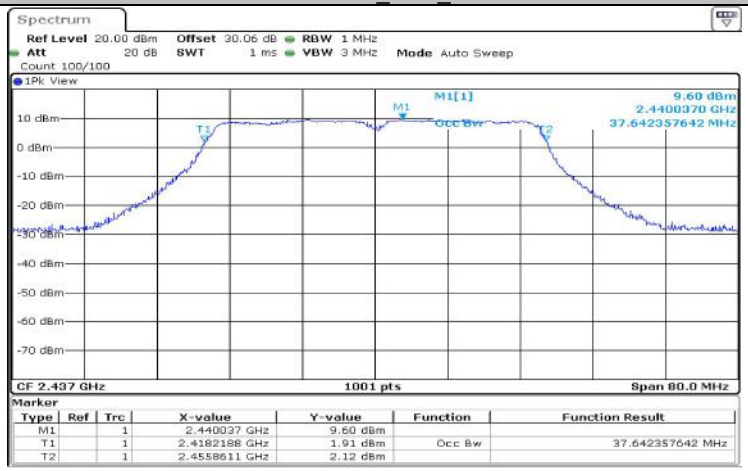


11N40MIMO_Ant2_2422

11N40MIMO_Ant3_2422



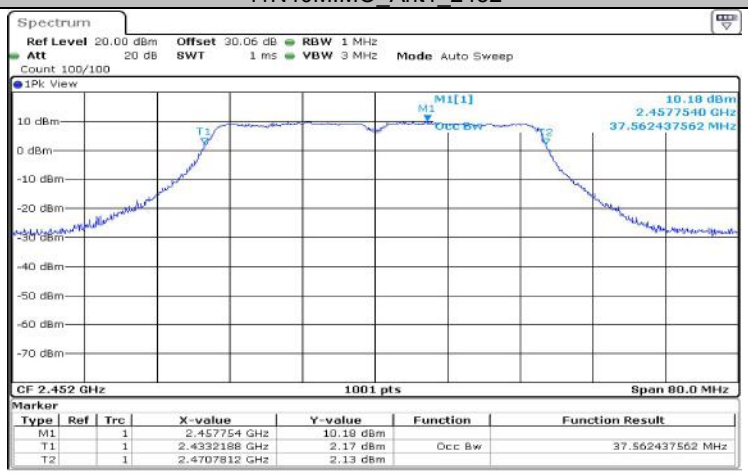
11N40MIMO_Ant1_2437



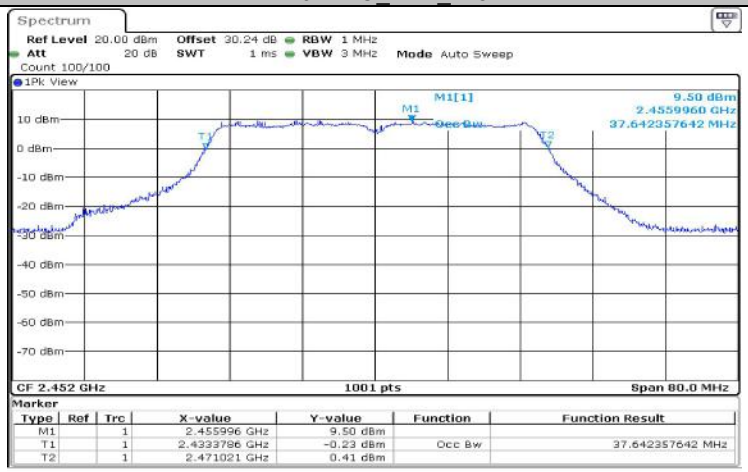
11N40MIMO_Ant2_2437

11N40MIMO_Ant3_2437

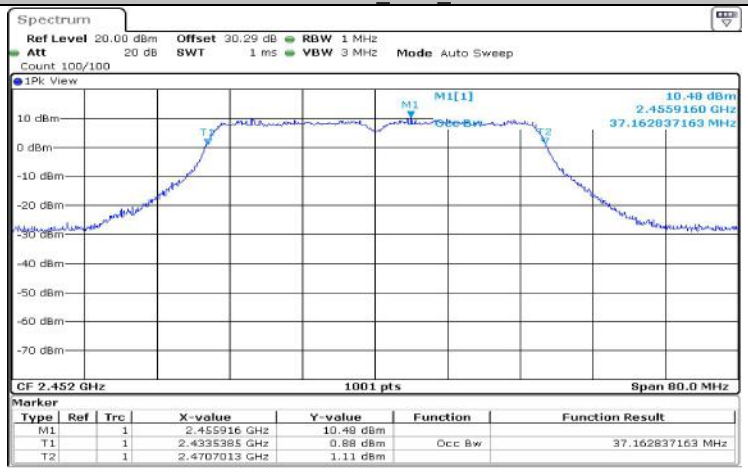
11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



11N40MIMO_Ant3_2452



Appendix C: Maximum conducted output power
Test Result

Test Mode	Antenna	Frequency[MHz]	Average Power[dBm]	Conducted Limit[dBm]	Verdict
11B	Ant1	2412	15.35	≤30.00	PASS
	Ant2	2412	15.47	≤30.00	PASS
	Ant3	2412	15.53	≤30.00	PASS
	Ant1	2437	15.72	≤30.00	PASS
	Ant2	2437	15.79	≤30.00	PASS
	Ant3	2437	15.79	≤30.00	PASS
	Ant1	2462	16.03	≤30.00	PASS
	Ant2	2462	16.05	≤30.00	PASS
	Ant3	2462	16.04	≤30.00	PASS
11G-CDD	Ant1	2412	12.27	≤30.00	PASS
	Ant2	2412	13.08	≤30.00	PASS
	Ant3	2412	14.32	≤30.00	PASS
	total	2412	18.08	≤30.00	PASS
	Ant1	2437	12.28	≤30.00	PASS
	Ant2	2437	13.11	≤30.00	PASS
	Ant3	2437	14.52	≤30.00	PASS
	total	2437	18.17	≤30.00	PASS
	Ant1	2462	13.64	≤30.00	PASS
	Ant2	2462	14.66	≤30.00	PASS
	Ant3	2462	15.75	≤30.00	PASS
	total	2462	19.54	≤30.00	PASS
11N20MIMO	Ant1	2412	12.71	≤30.00	PASS
	Ant2	2412	13.55	≤30.00	PASS
	Ant3	2412	14.77	≤30.00	PASS
	total	2412	18.53	≤30.00	PASS
	Ant1	2437	12.63	≤30.00	PASS
	Ant2	2437	13.54	≤30.00	PASS
	Ant3	2437	14.92	≤30.00	PASS
	total	2437	18.57	≤30.00	PASS
	Ant1	2462	12.86	≤30.00	PASS
	Ant2	2462	13.99	≤30.00	PASS
	Ant3	2462	15.20	≤30.00	PASS
	total	2462	18.89	≤30.00	PASS
11N40MIMO	Ant1	2422	12.82	≤30.00	PASS
	Ant2	2422	13.58	≤30.00	PASS
	Ant3	2422	14.69	≤30.00	PASS
	total	2422	18.54	≤30.00	PASS
	Ant1	2437	13.16	≤30.00	PASS
	Ant2	2437	13.84	≤30.00	PASS
	Ant3	2437	15.04	≤30.00	PASS
	total	2437	18.86	≤30.00	PASS
	Ant1	2452	13.10	≤30.00	PASS
	Ant2	2452	13.98	≤30.00	PASS
	Ant3	2452	15.05	≤30.00	PASS
	total	2452	18.89	≤30.00	PASS

Note:

The EUT employ CDD for MIMO

Directional Gain = G_{ANT} + *Array Gain*

For Output Power Measurement, *Array Gain* = 0dB for $N_{ANT} \leqslant 4$

G_{ANT} = 2.2dBi

Directional Gain =2.2dBi + 0dB = 2.2dBi < 6dBi

Appendix D: Maximum power spectral density
Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-12.38	≤8.00	PASS
	Ant2	2412	-11.76	≤8.00	PASS
	Ant3	2412	-13.48	≤8.00	PASS
	Ant1	2437	-11.7	≤8.00	PASS
	Ant2	2437	-12.11	≤8.00	PASS
	Ant3	2437	-12.11	≤8.00	PASS
	Ant1	2462	-10.23	≤8.00	PASS
	Ant2	2462	-11.83	≤8.00	PASS
	Ant3	2462	-11.64	≤8.00	PASS
11G-CDD	Ant1	2412	-16.66	≤7.03	PASS
	Ant2	2412	-17.43	≤7.03	PASS
	Ant3	2412	-18.05	≤7.03	PASS
	total	2412	-12.57	≤7.03	PASS
	Ant1	2437	-16.68	≤7.03	PASS
	Ant2	2437	-17.56	≤7.03	PASS
	Ant3	2437	-17.41	≤7.03	PASS
	total	2437	-12.43	≤7.03	PASS
	Ant1	2462	-16.6	≤7.03	PASS
	Ant2	2462	-17.08	≤7.03	PASS
	Ant3	2462	-17.17	≤7.03	PASS
	total	2462	-12.17	≤7.03	PASS
11N20MIMO	Ant1	2412	-17.75	≤7.03	PASS
	Ant2	2412	-18.51	≤7.03	PASS
	Ant3	2412	-19.36	≤7.03	PASS
	total	2412	-13.72	≤7.03	PASS
	Ant1	2437	-17.6	≤7.03	PASS
	Ant2	2437	-18.64	≤7.03	PASS
	Ant3	2437	-18.59	≤7.03	PASS
	total	2437	-13.48	≤7.03	PASS
	Ant1	2462	-17.8	≤7.03	PASS
	Ant2	2462	-18.18	≤7.03	PASS
	Ant3	2462	-18.26	≤7.03	PASS
	total	2462	-13.30	≤7.03	PASS
11N40MIMO	Ant1	2422	-18.9	≤7.03	PASS
	Ant2	2422	-18.92	≤7.03	PASS
	Ant3	2422	-18.37	≤7.03	PASS
	total	2422	-13.95	≤7.03	PASS
	Ant1	2437	-18.3	≤7.03	PASS
	Ant2	2437	-18.11	≤7.03	PASS
	Ant3	2437	-18.68	≤7.03	PASS
	total	2437	-13.59	≤7.03	PASS
	Ant1	2452	-17.61	≤7.03	PASS
	Ant2	2452	-17.81	≤7.03	PASS
	Ant3	2452	-18.79	≤7.03	PASS
	total	2452	-13.27	≤7.03	PASS

Note:

The EUT employ CDD for MIMO

Directional Gain = G_{ANT} + *Array Gain*

For PSD Measurement, *Array Gain* = $10*\log N_{ANT}=10*\log 3=4.77dB$

G_{ANT} = 2.2dBi

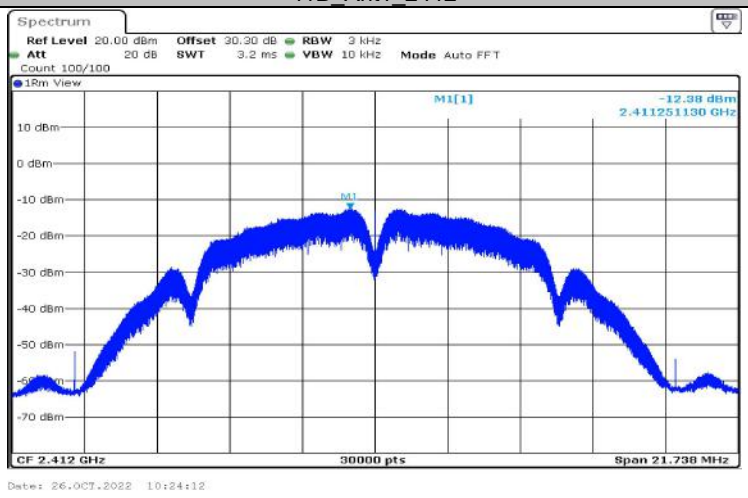
Directional Gain =2.2dBi + 4.77dB = 6.97dBi > 6dBi

So for 802.11 G/N mode, the limit should reduce 0.97

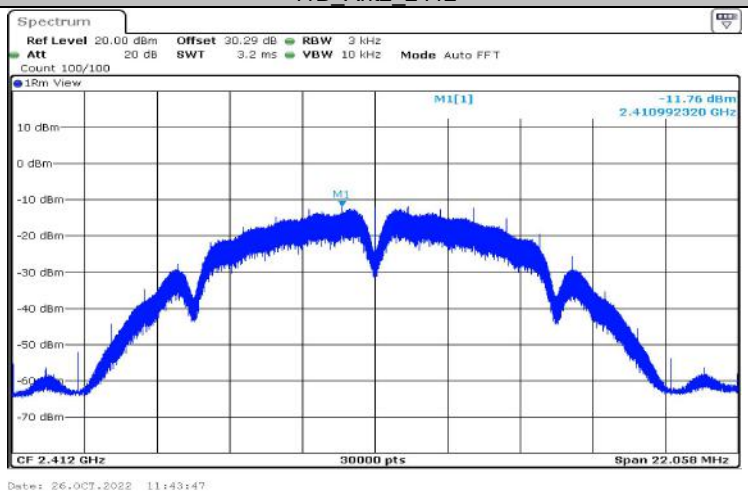
The Result unit is dBm/10kHz for 802.11N40 mode.

Test Graphs

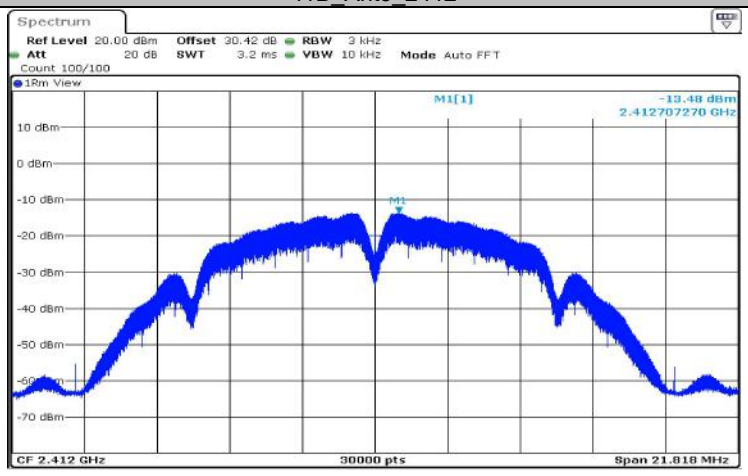
11B_Ant1_2412



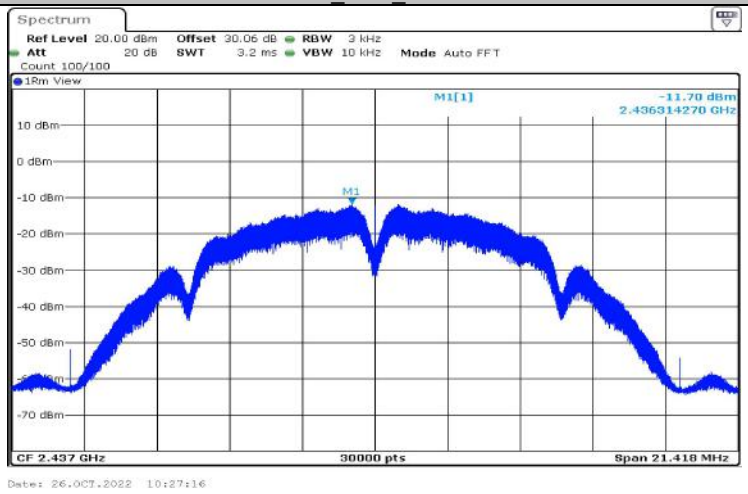
11B_Ant2_2412



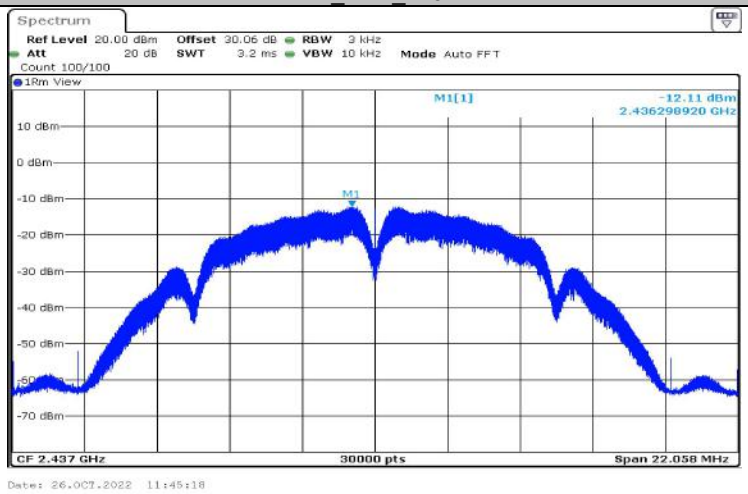
11B_Ant3_2412



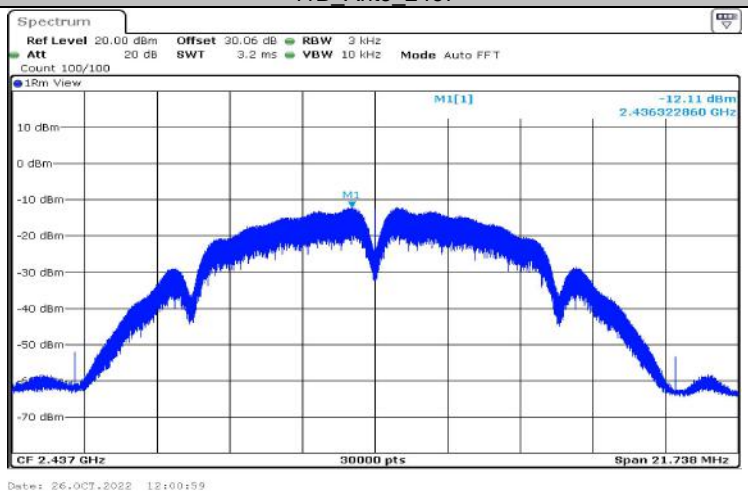
11B_Ant1_2437



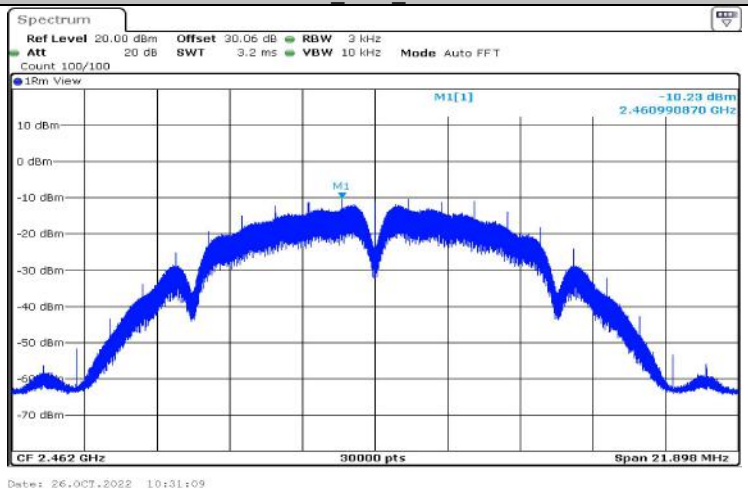
11B_Ant2_2437



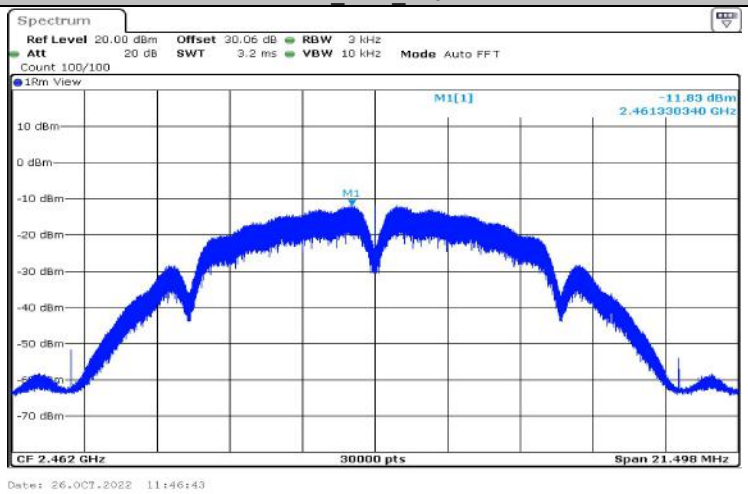
11B_Ant3_2437



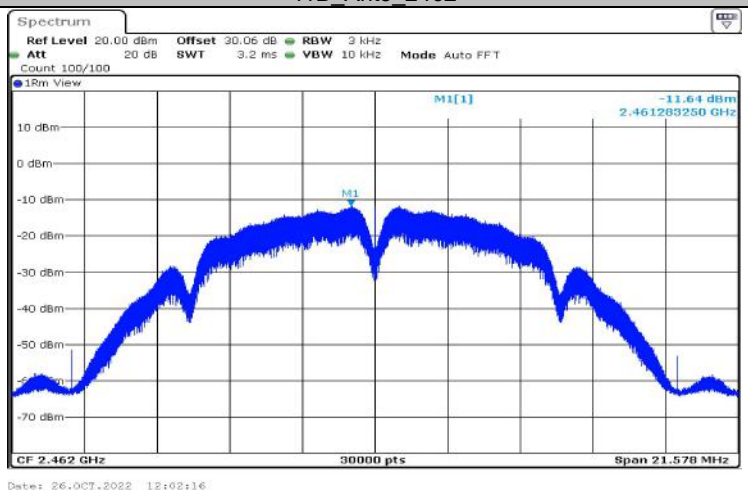
11B_Ant1_2462



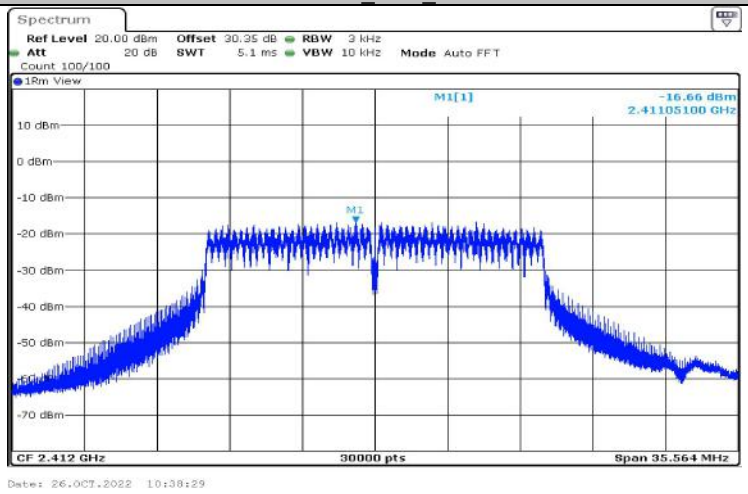
11B_Ant2_2462



11B_Ant3_2462



11G-CDD_Ant1_2412



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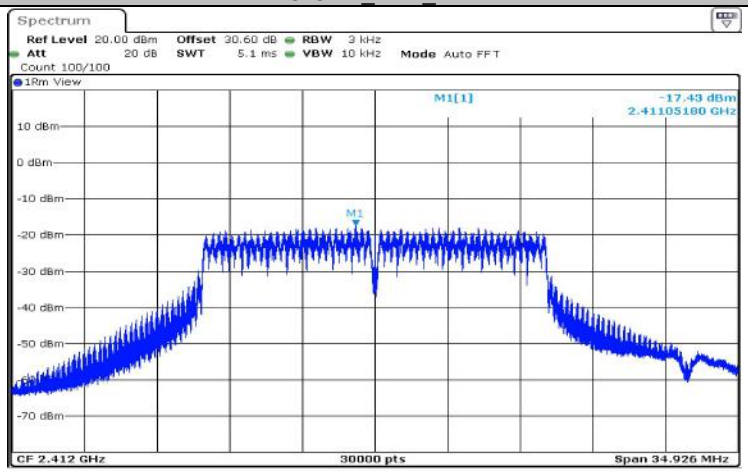

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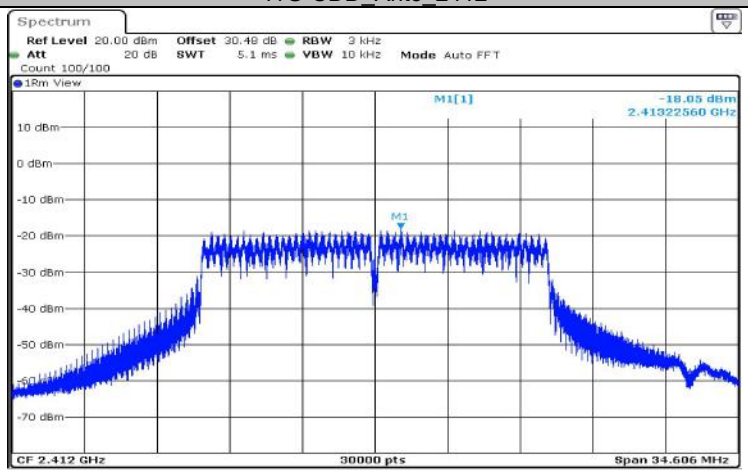

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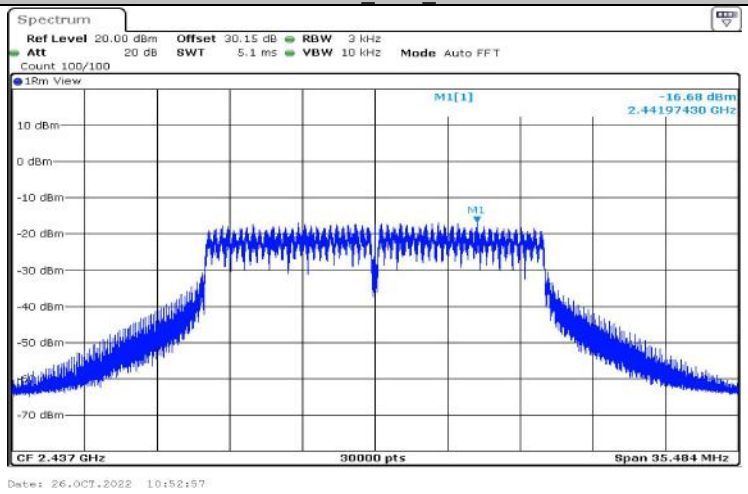

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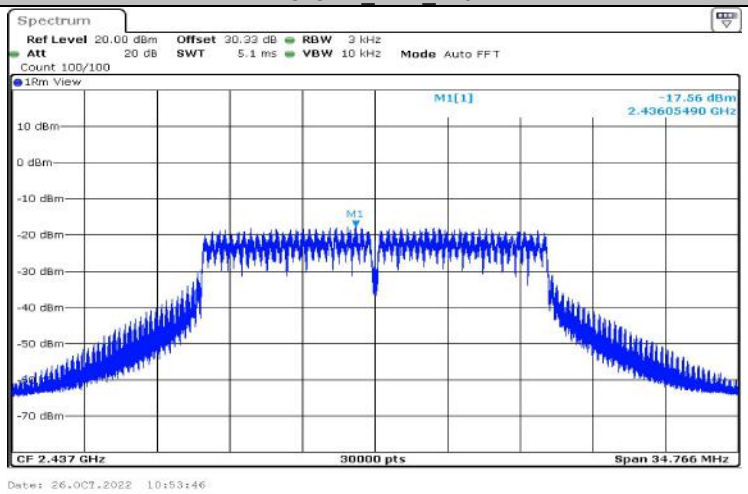

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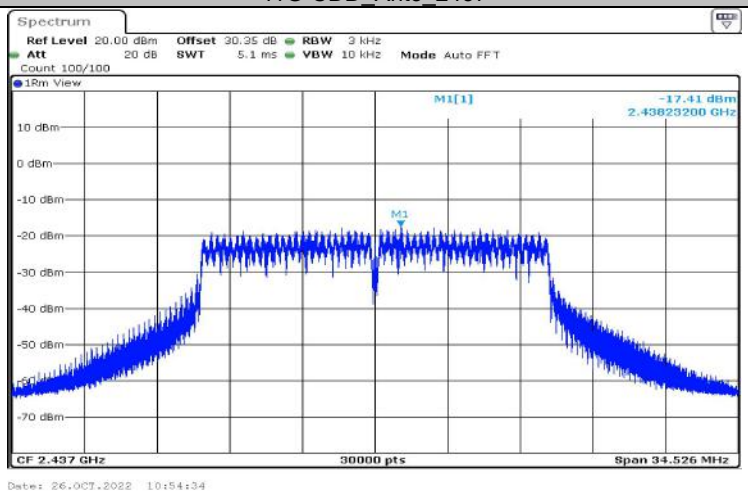
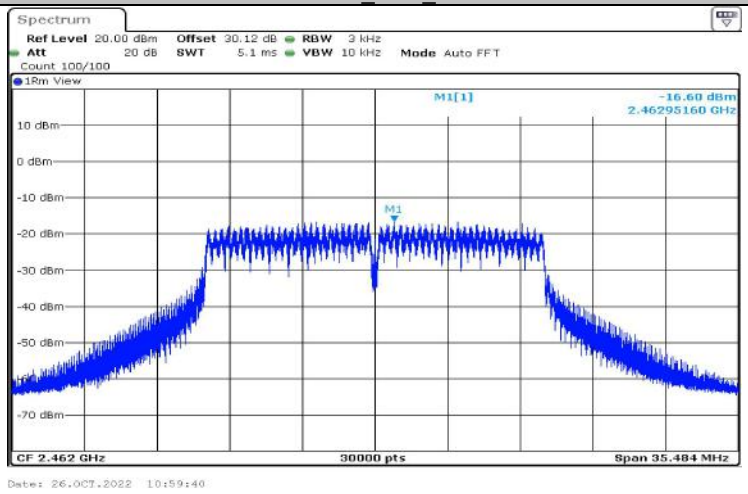
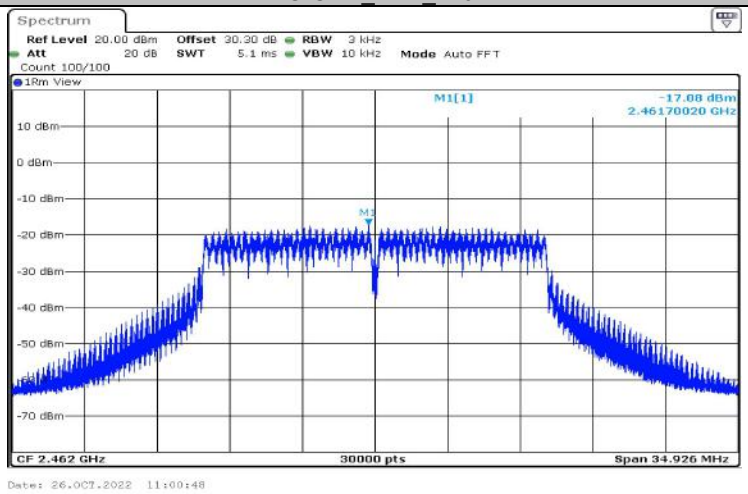


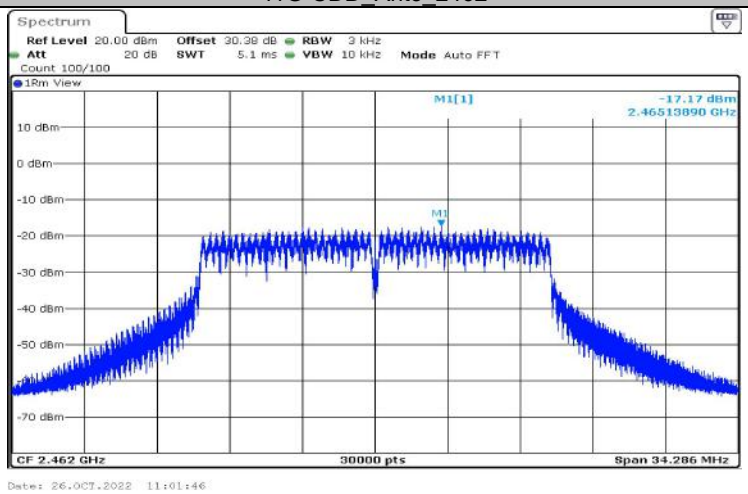
11G-CDD_Ant1_2462



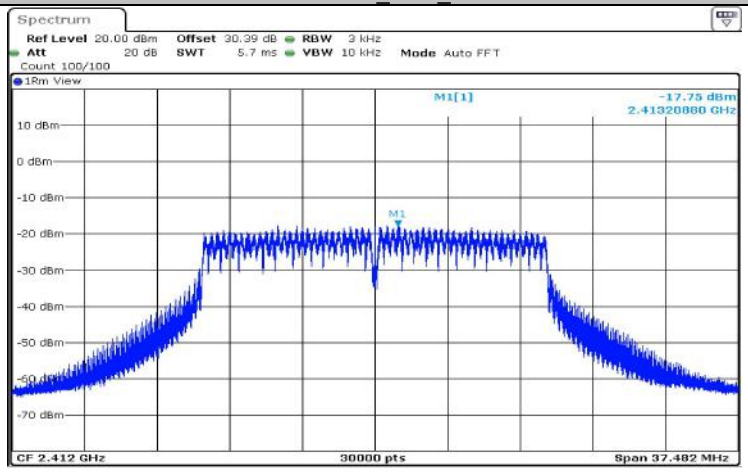
11G-CDD_Ant2_2462



11G-CDD_Ant3_2462



11N20MIMO_Ant1_2412



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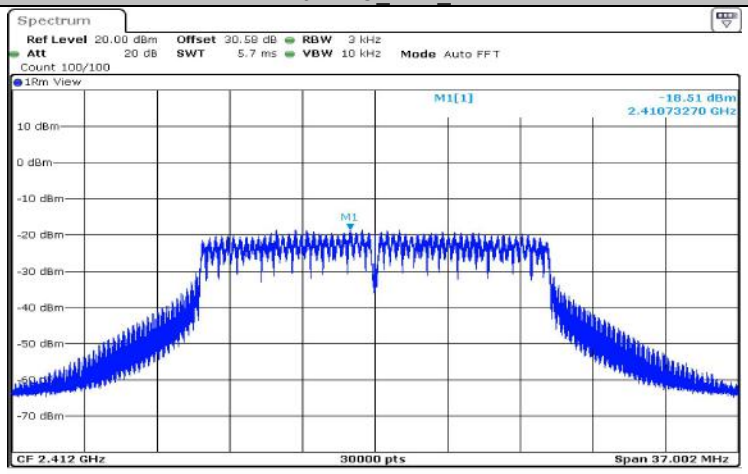

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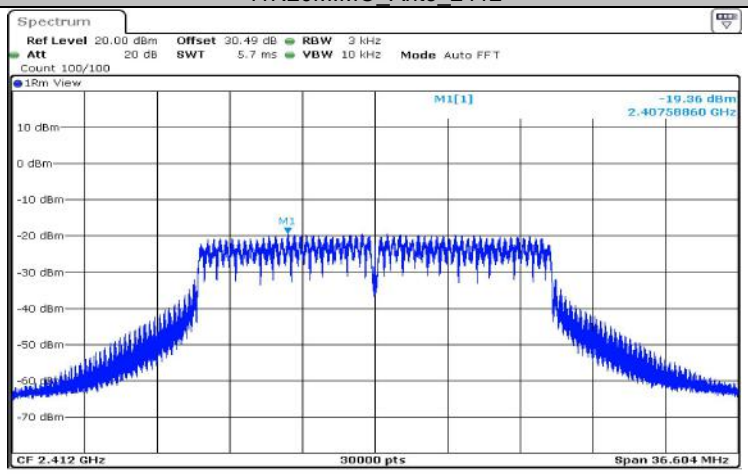

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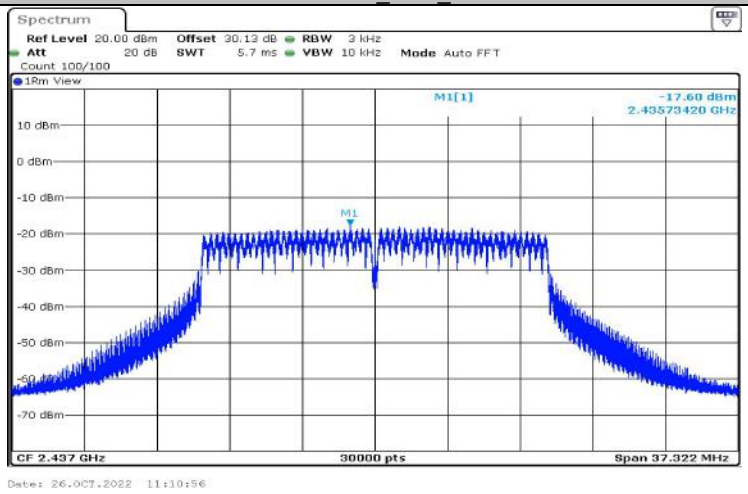

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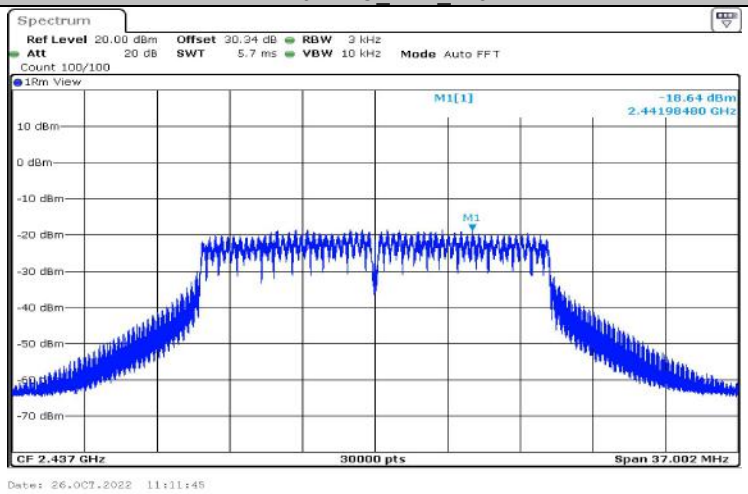
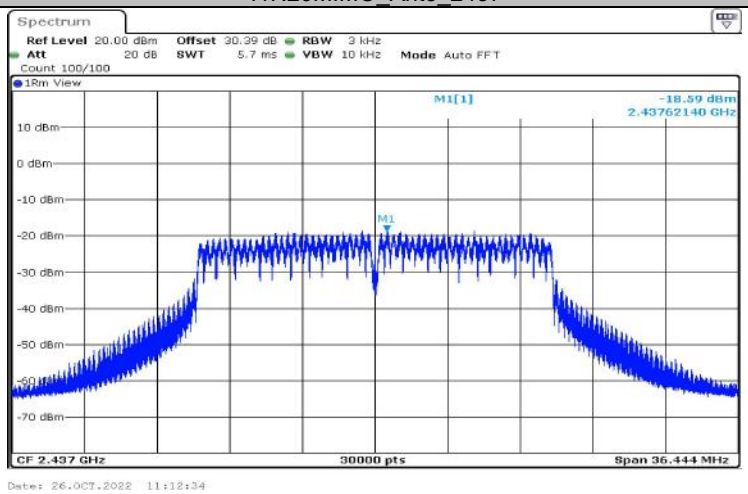
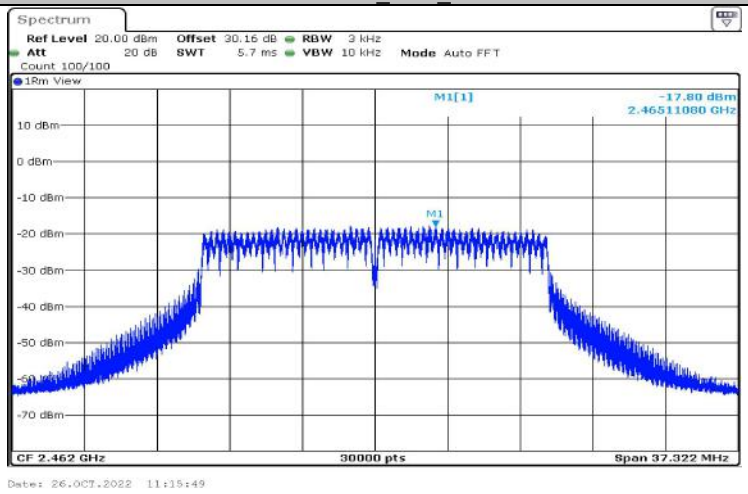


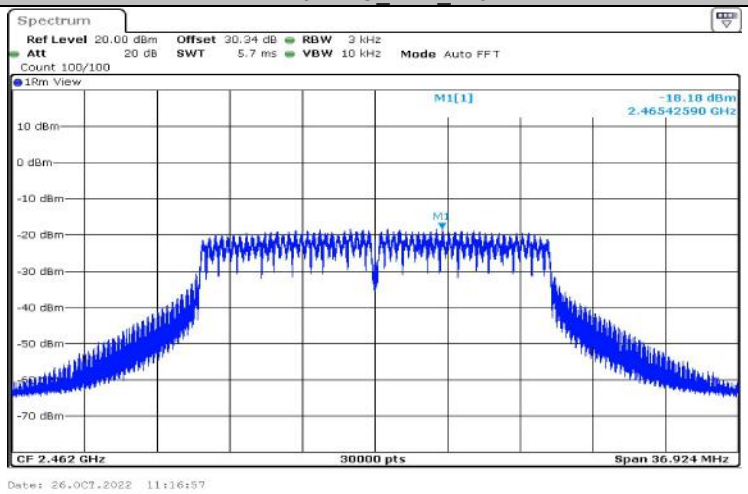
11N20MIMO_Ant3_2437



11N20MIMO_Ant1_2462



11N20MIMO_Ant2_2462



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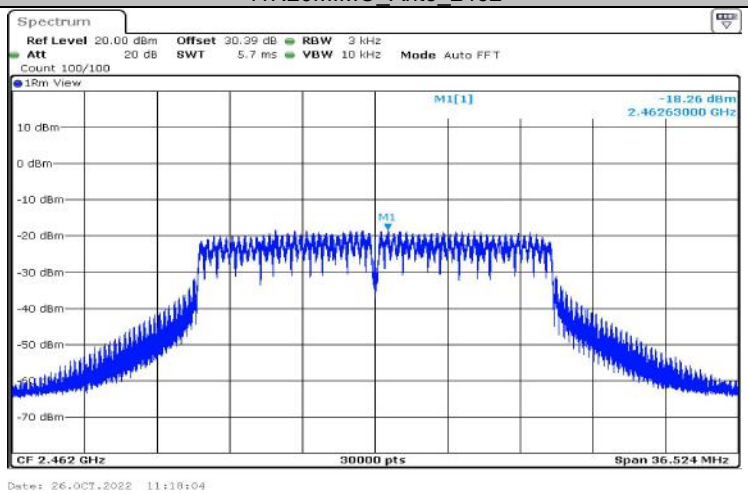
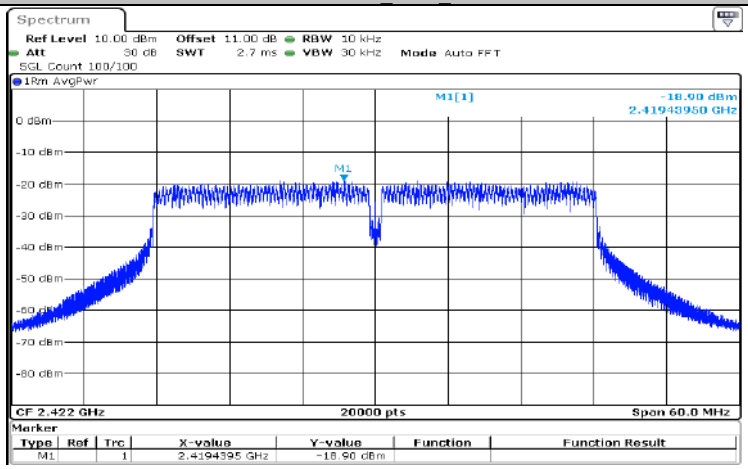


11N40MIMO_Ant1_2422



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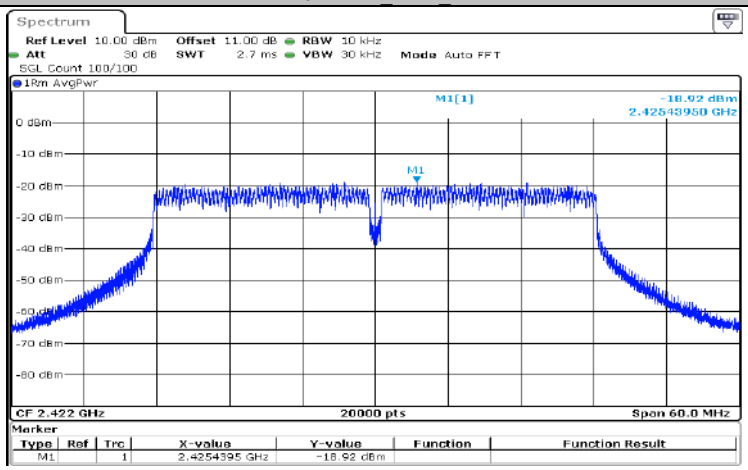
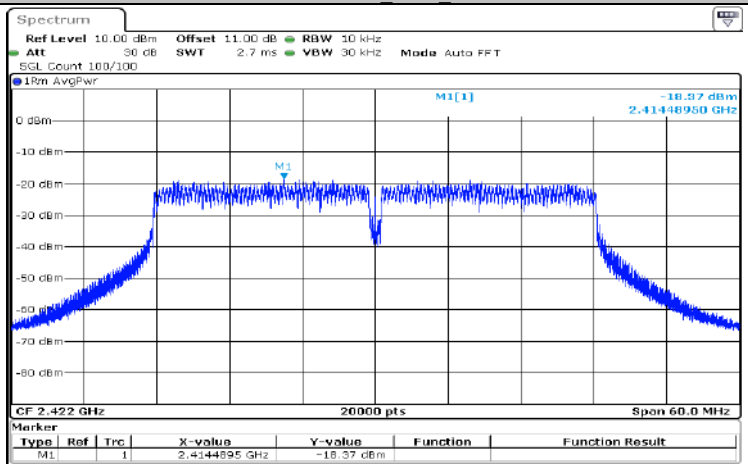
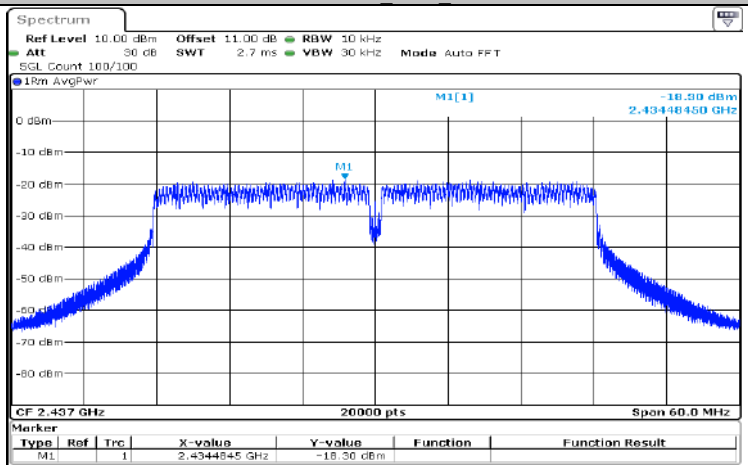


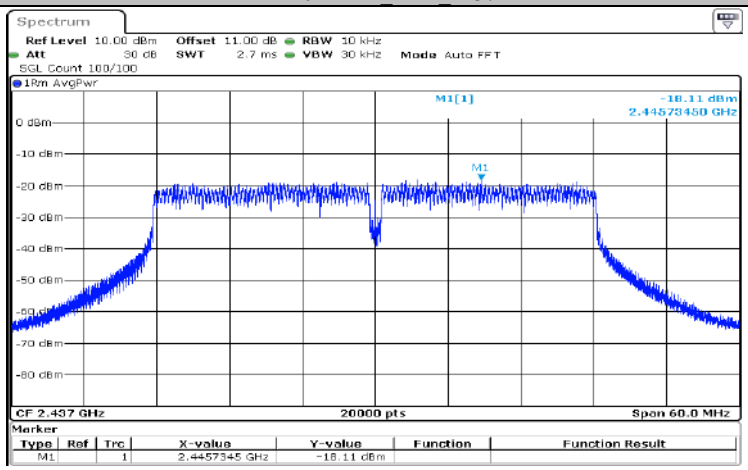
11N40MIMO_Ant3_2422



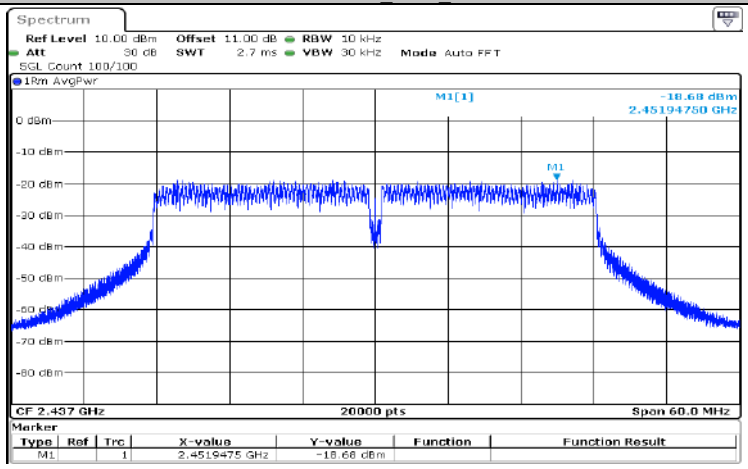
11N40MIMO_Ant1_2437



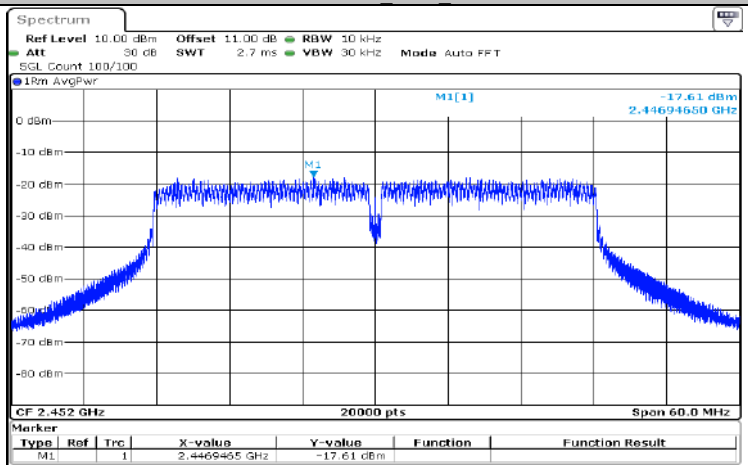
11N40MIMO_Ant2_2437



11N40MIMO_Ant3_2437



11N40MIMO_Ant1_2452



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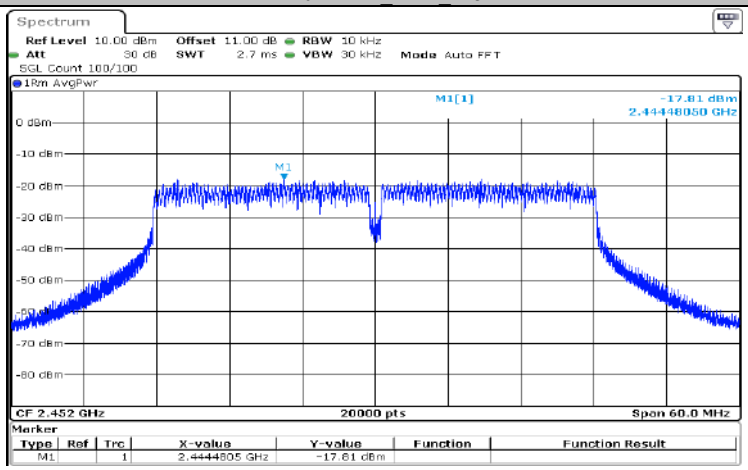

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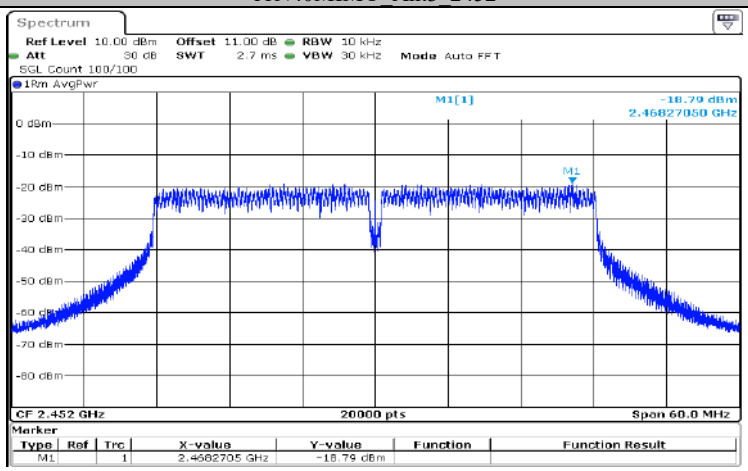
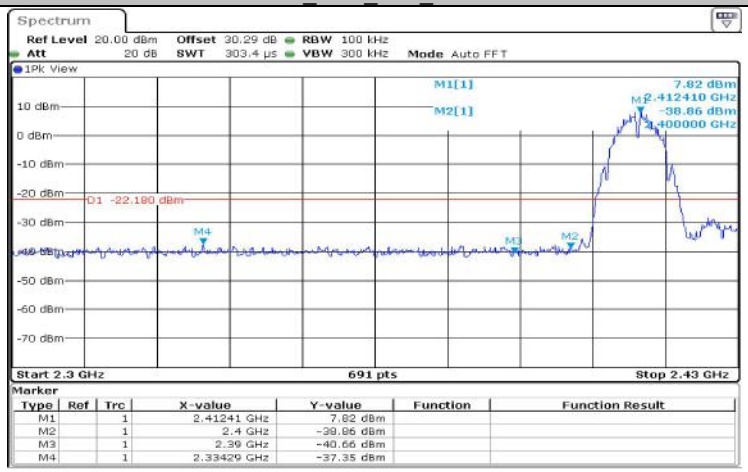
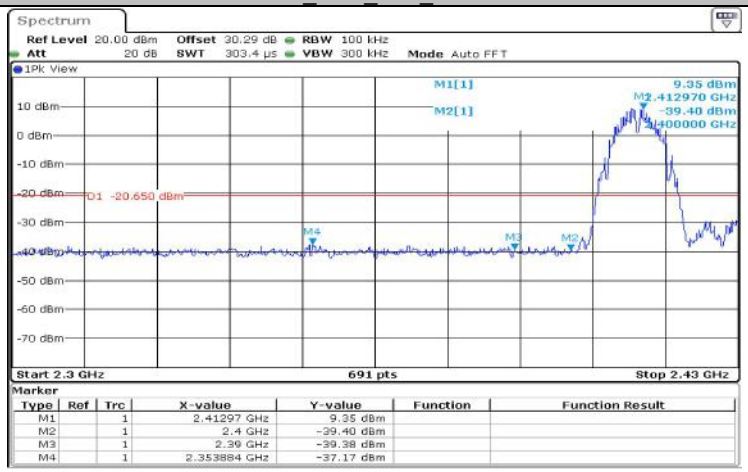


Appendix E: Band edge measurements
Test Graphs

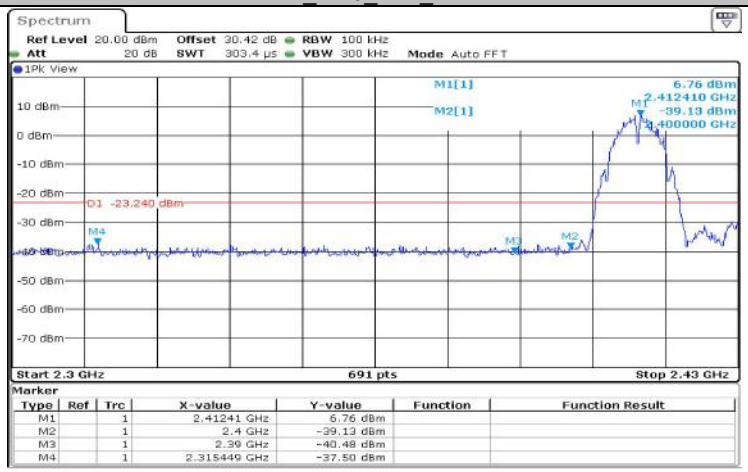
11B_Ant1_Low_2412



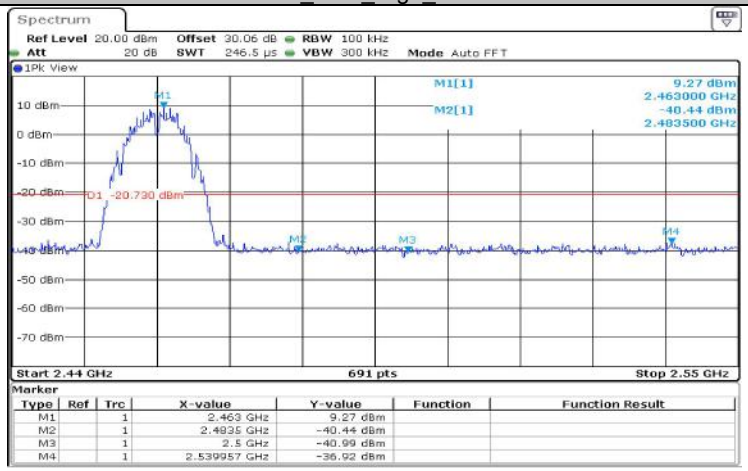
11B_Ant2_Low_2412



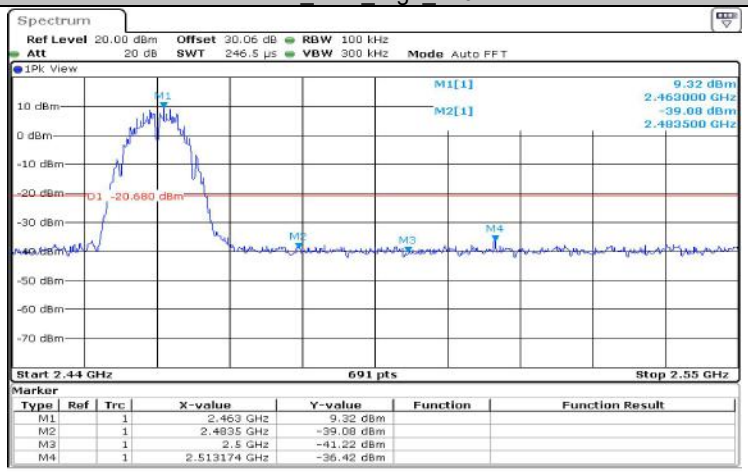
11B_Ant3_Low_2412



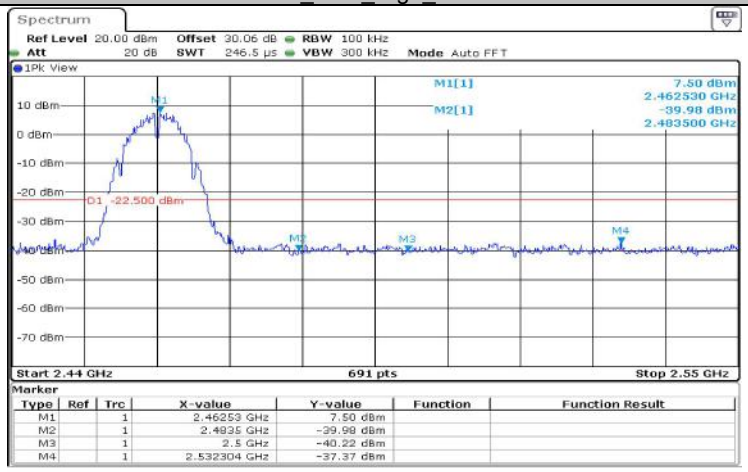
11B_Ant1_High_2462



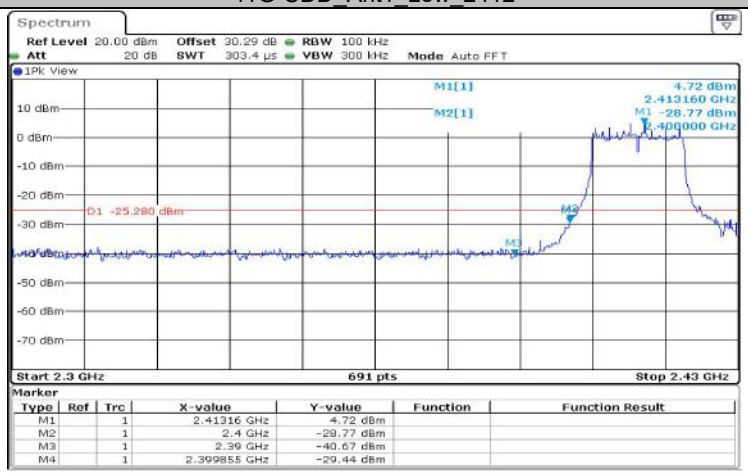
11B_Ant2_High_2462



11B_Ant3_High_2462



11G-CDD_Ant1_Low_2412



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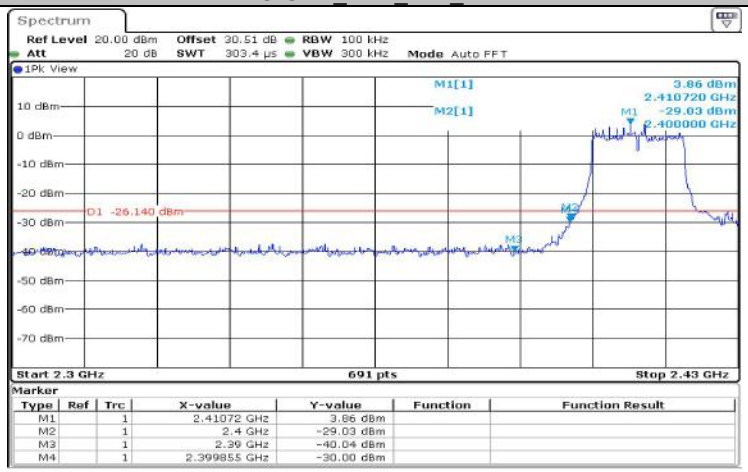
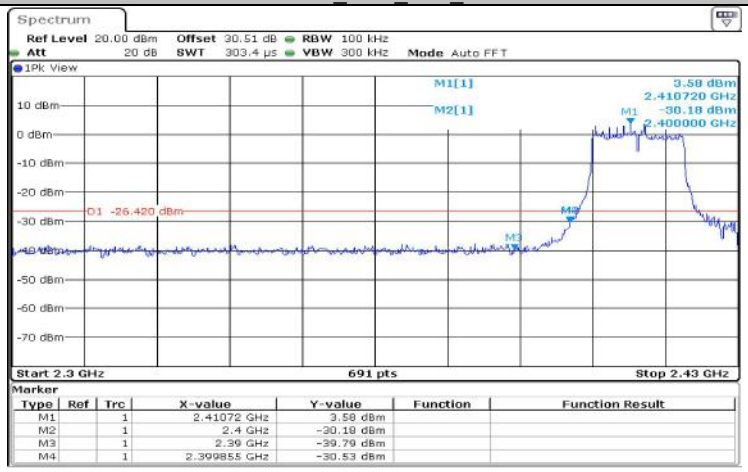
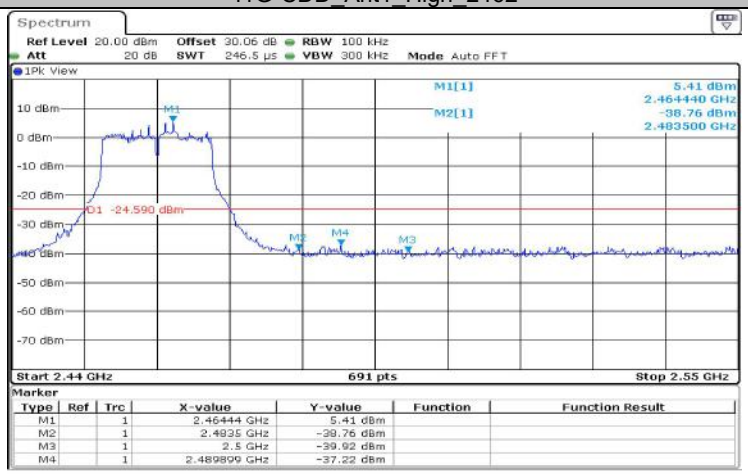


11G-CDD_Ant3_Low_2412



11G-CDD_Ant1_High_2462



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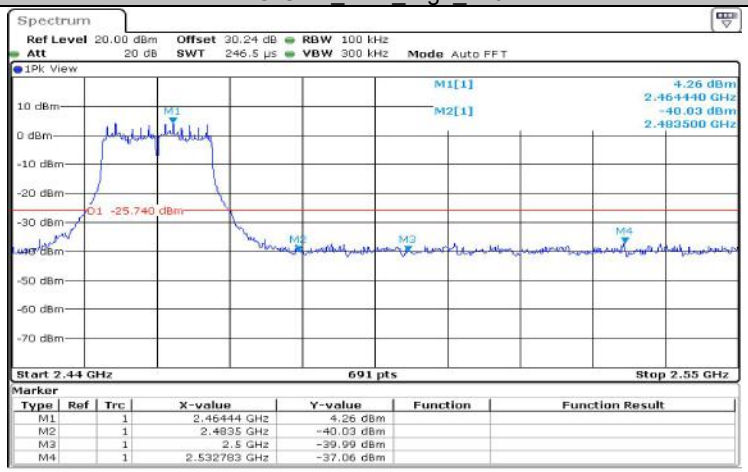

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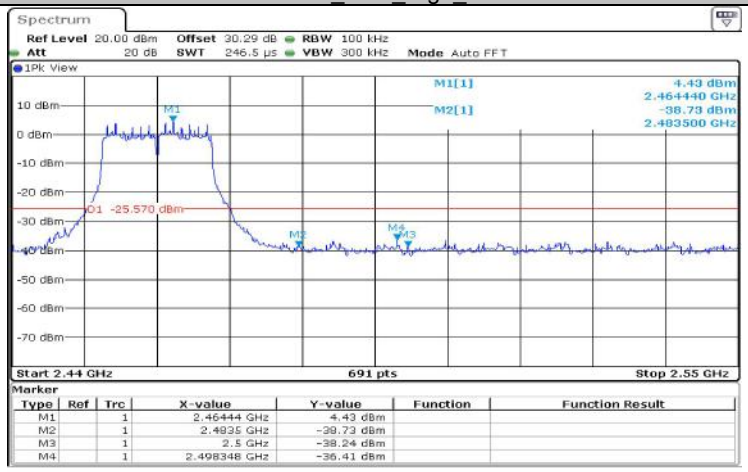
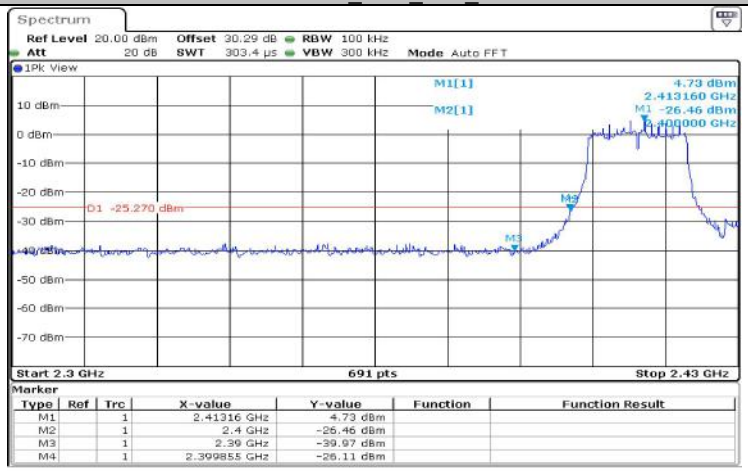
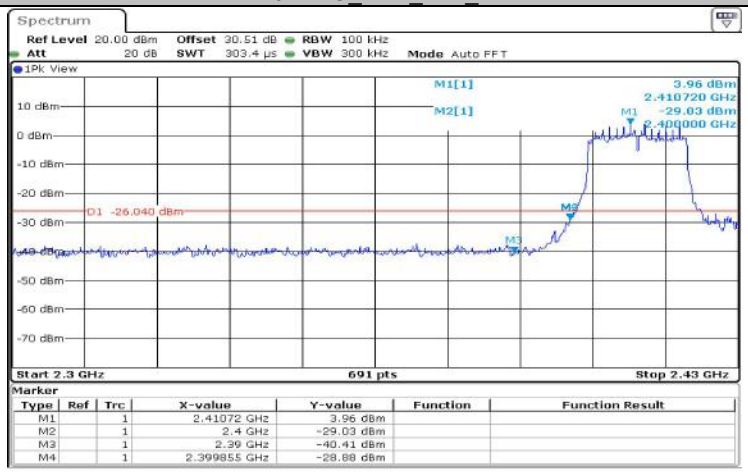


11N20MIMO_Ant1_Low_2412



11N20MIMO_Ant2_Low_2412



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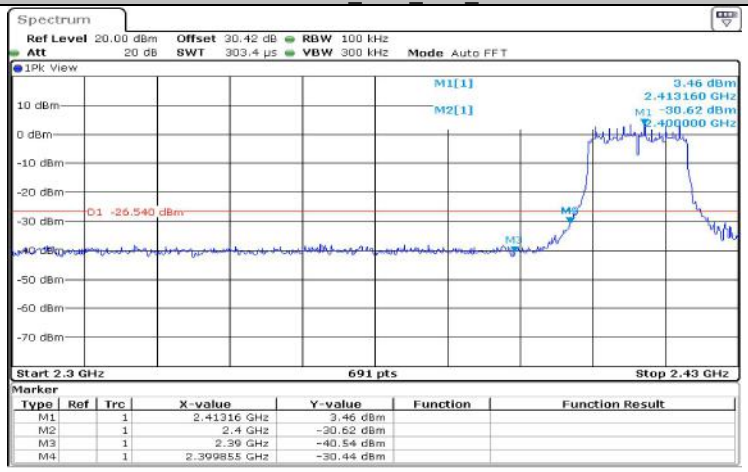
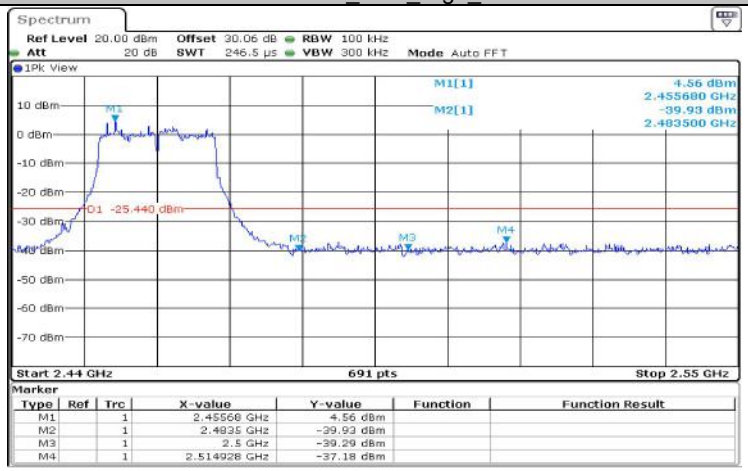


11N20MIMO_Ant1_High_2462



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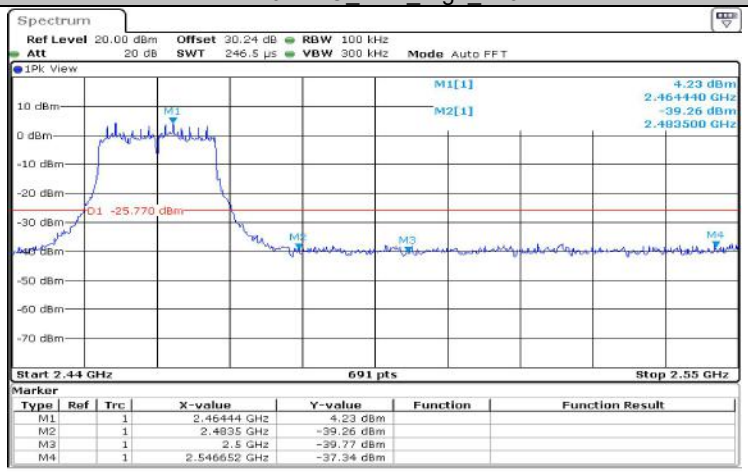

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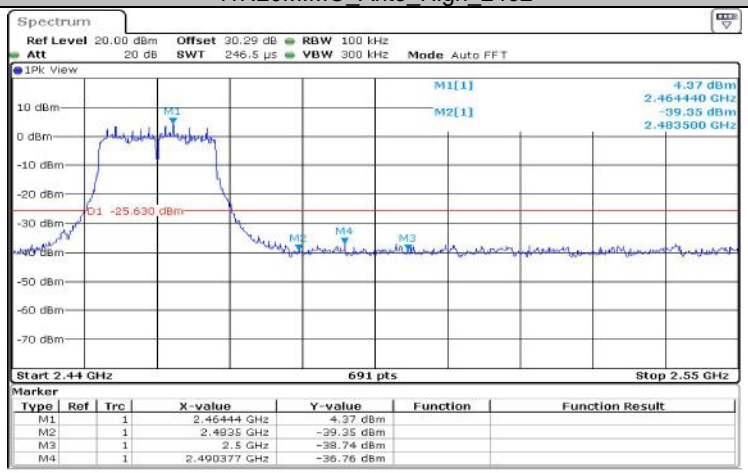
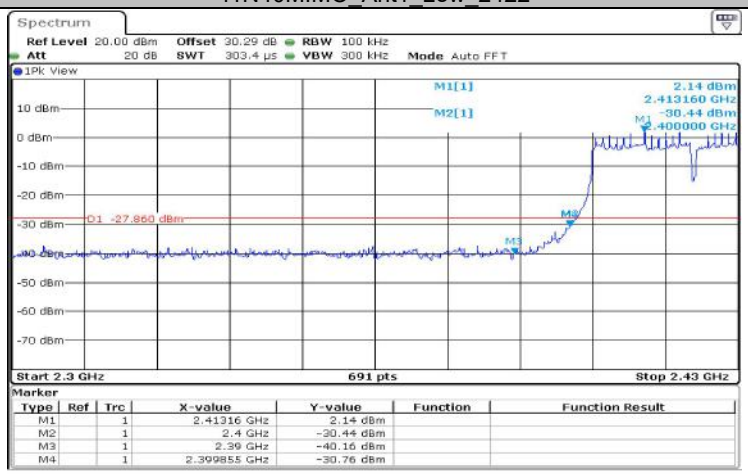


11N40MIMO_Ant1_Low_2422



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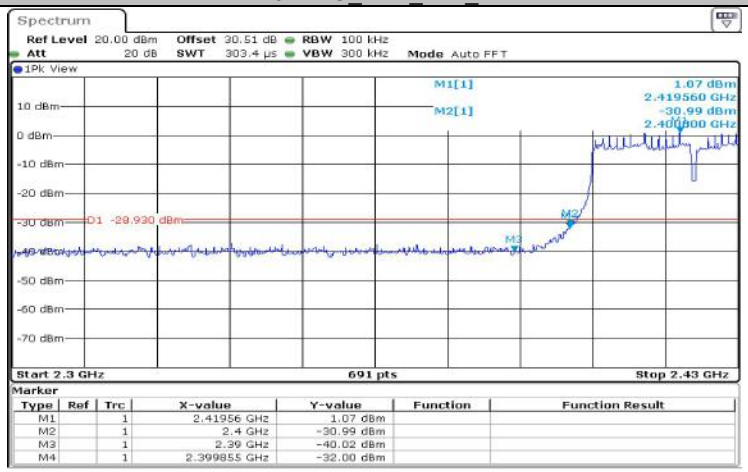

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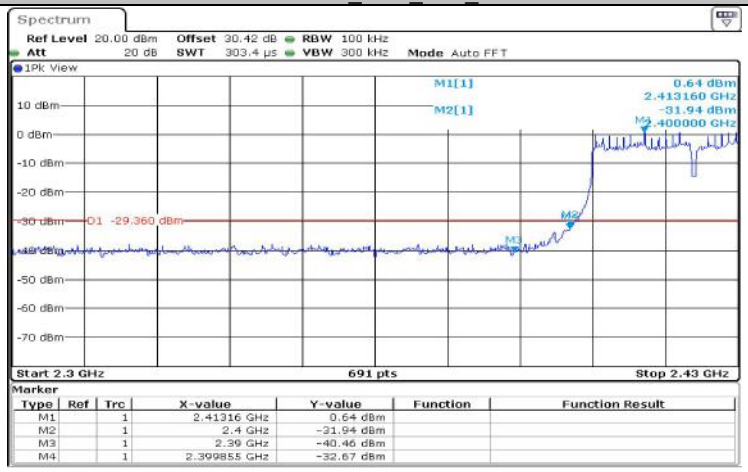

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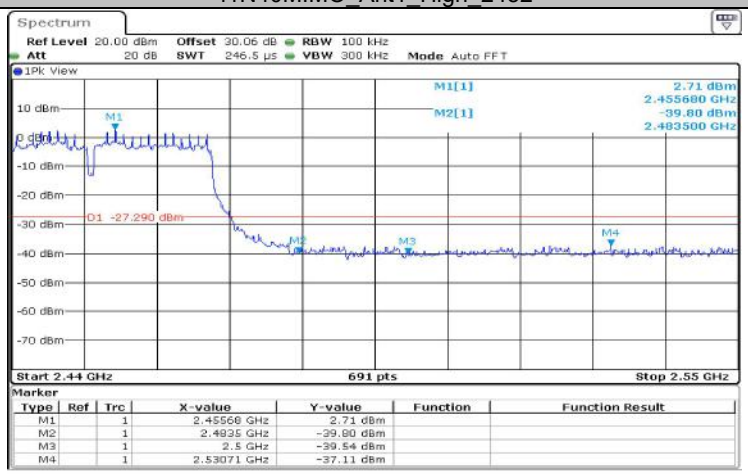

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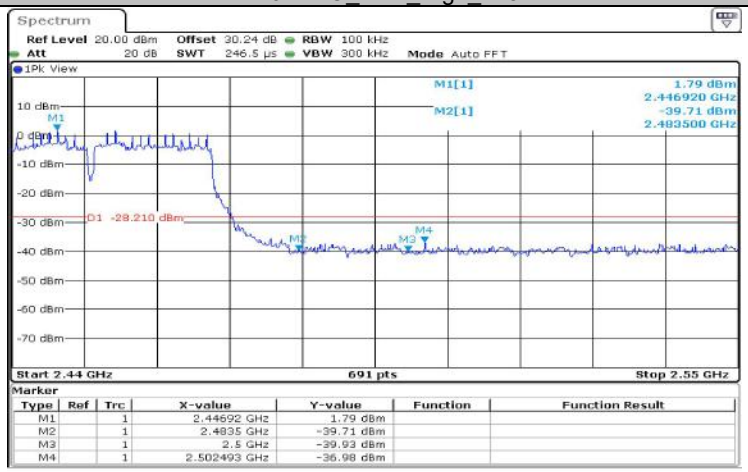

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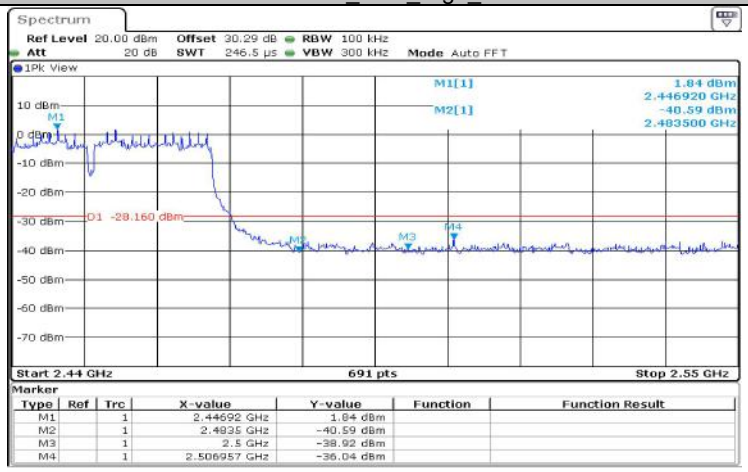


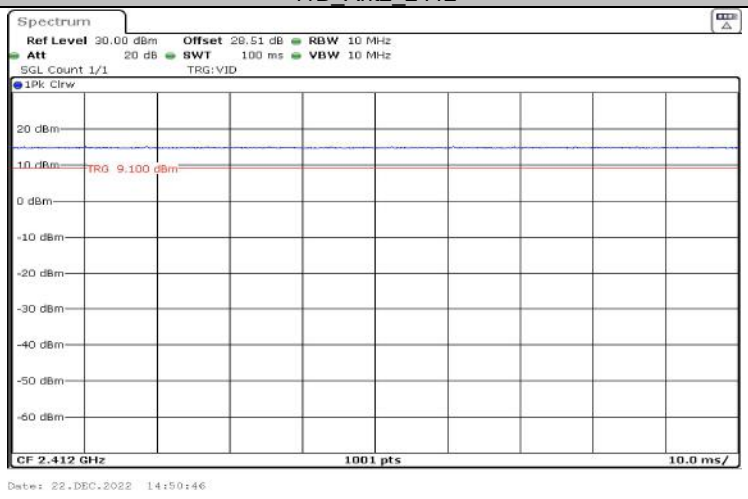
Appendix F: Duty Cycle
Test Result

Test Mode	Antenna	Frequency[MHz]	TransmissionDuration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	100.00	100.00	100.00
	Ant2	2412	100.00	100.00	100.00
	Ant3	2412	100.00	100.00	100.00
	Ant1	2437	100.00	100.00	100.00
	Ant2	2437	100.00	100.00	100.00
	Ant3	2437	100.00	100.00	100.00
	Ant1	2462	100.00	100.00	100.00
	Ant2	2462	100.00	100.00	100.00
	Ant3	2462	100.00	100.00	100.00
11G-CDD	Ant1	2412	100.00	100.00	100.00
	Ant2	2412	100.00	100.00	100.00
	Ant3	2412	100.00	100.00	100.00
	Ant1	2437	100.00	100.00	100.00
	Ant2	2437	100.00	100.00	100.00
	Ant3	2437	100.00	100.00	100.00
	Ant1	2462	100.00	100.00	100.00
	Ant2	2462	100.00	100.00	100.00
	Ant3	2462	100.00	100.00	100.00
11N20MIMO	Ant1	2412	100.00	100.00	100.00
	Ant2	2412	100.00	100.00	100.00
	Ant3	2412	100.00	100.00	100.00
	Ant1	2437	100.00	100.00	100.00
	Ant2	2437	100.00	100.00	100.00
	Ant3	2437	100.00	100.00	100.00
	Ant1	2462	100.00	100.00	100.00
	Ant2	2462	100.00	100.00	100.00
	Ant3	2462	100.00	100.00	100.00
11N40MIMO	Ant1	2422	100.00	100.00	100.00
	Ant2	2422	100.00	100.00	100.00
	Ant3	2422	100.00	100.00	100.00
	Ant1	2437	100.00	100.00	100.00
	Ant2	2437	100.00	100.00	100.00
	Ant3	2437	100.00	100.00	100.00
	Ant1	2452	100.00	100.00	100.00
	Ant2	2452	100.00	100.00	100.00
	Ant3	2452	100.00	100.00	100.00

Test Graphs

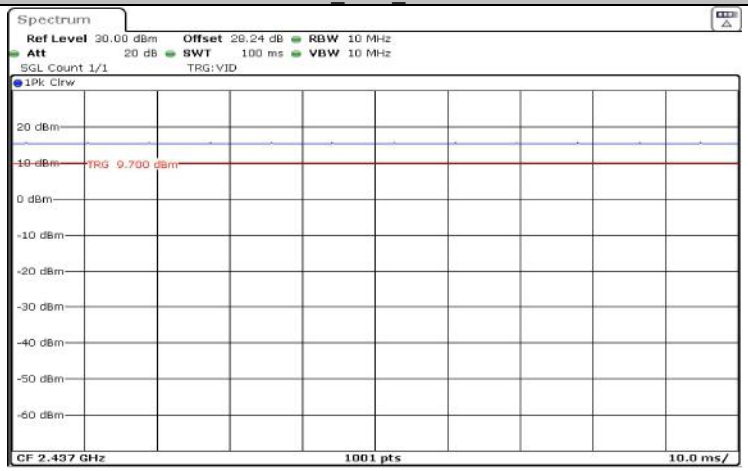
11B_Ant1_2412

11B_Ant2_2412



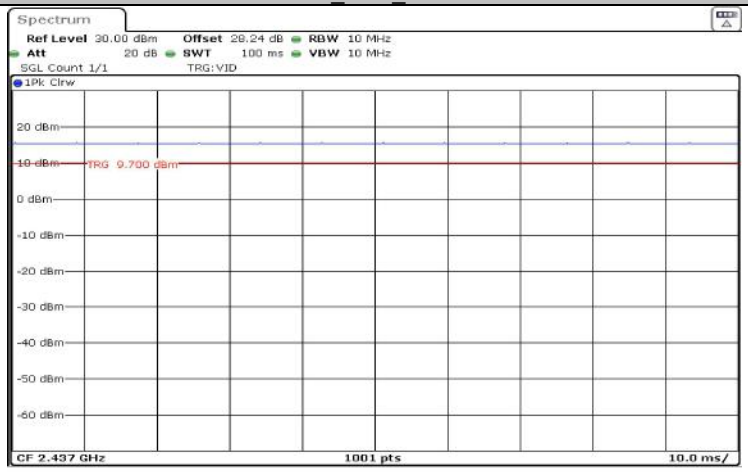
11B_Ant3_2412

11B_Ant1_2437

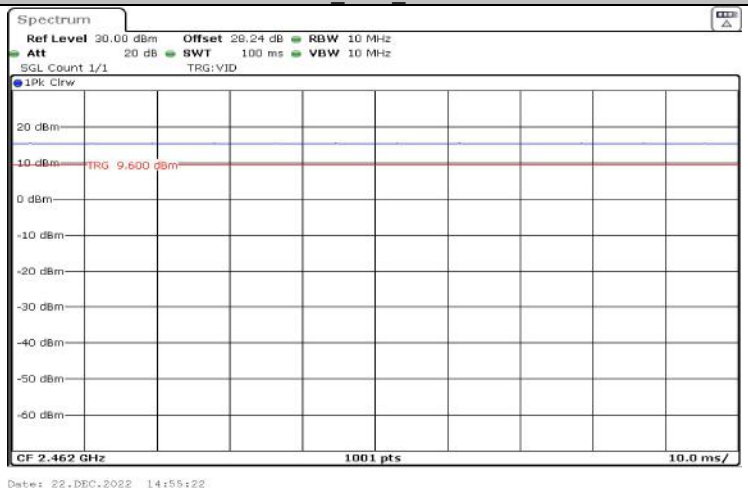


11B_Ant2_2437

11B_Ant3_2437

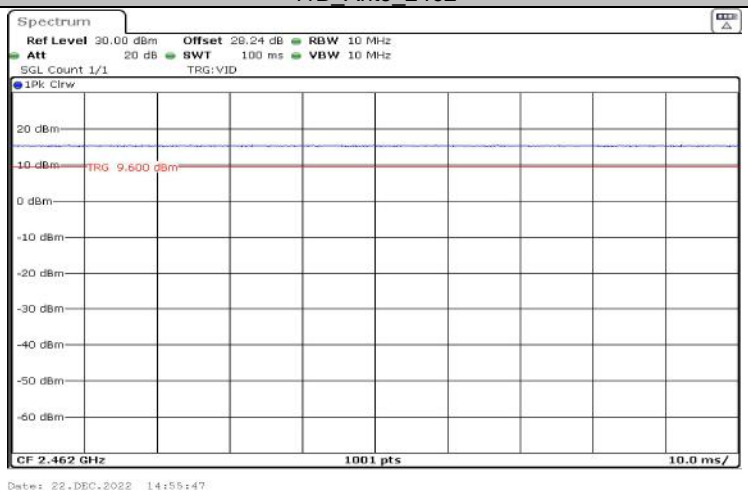


11B_Ant1_2462

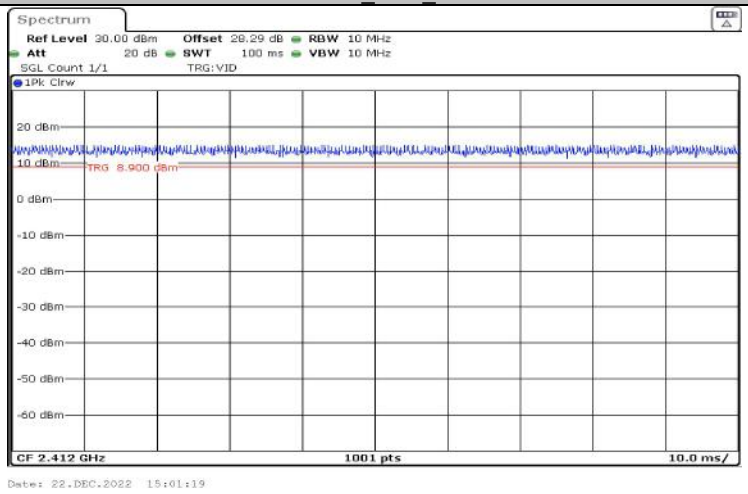


11B_Ant2_2462

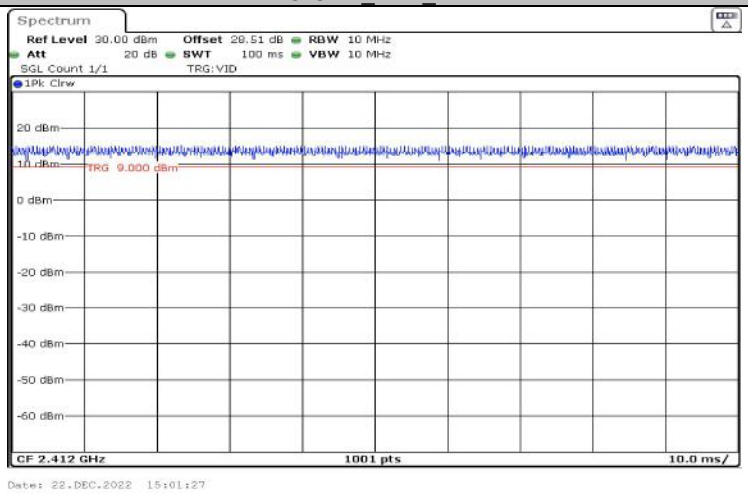
11B_Ant3_2462



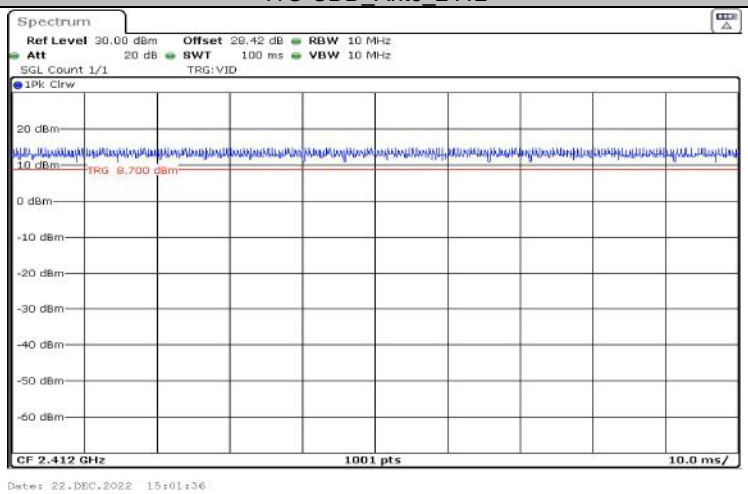
11G-CDD_Ant1_2412



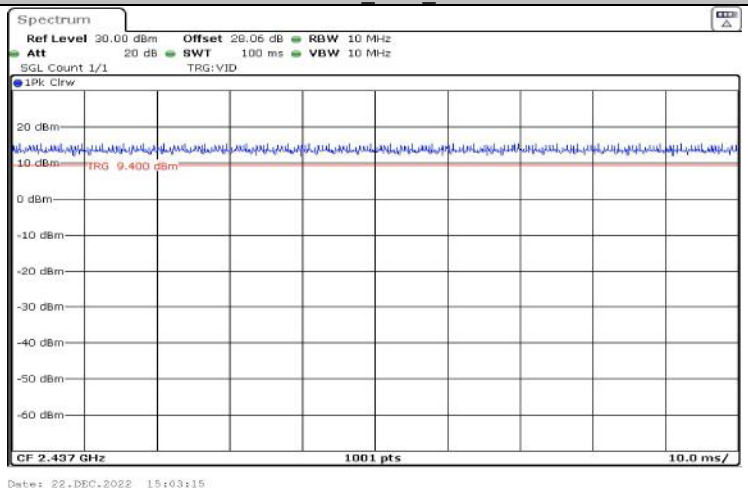
11G-CDD_Ant2_2412



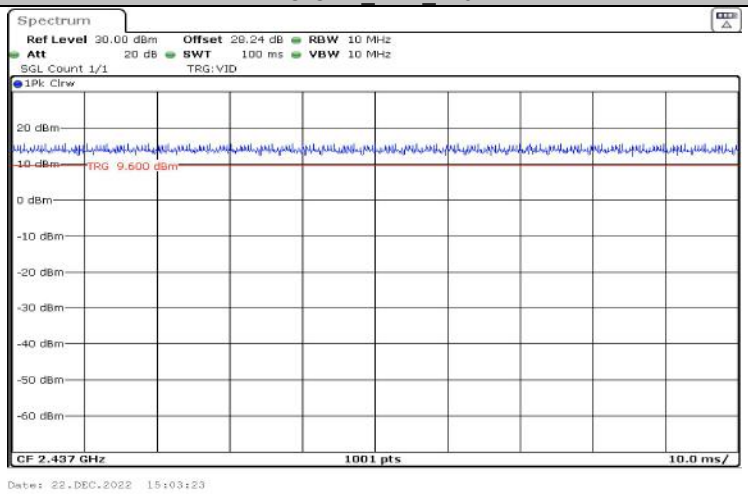
11G-CDD_Ant3_2412



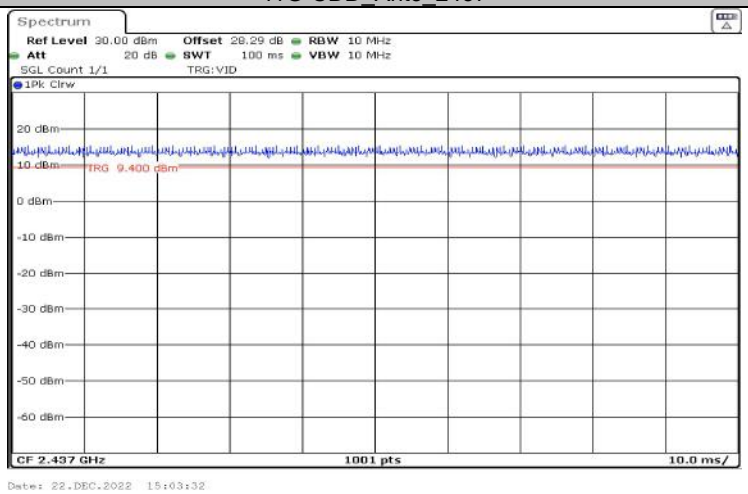
11G-CDD_Ant1_2437



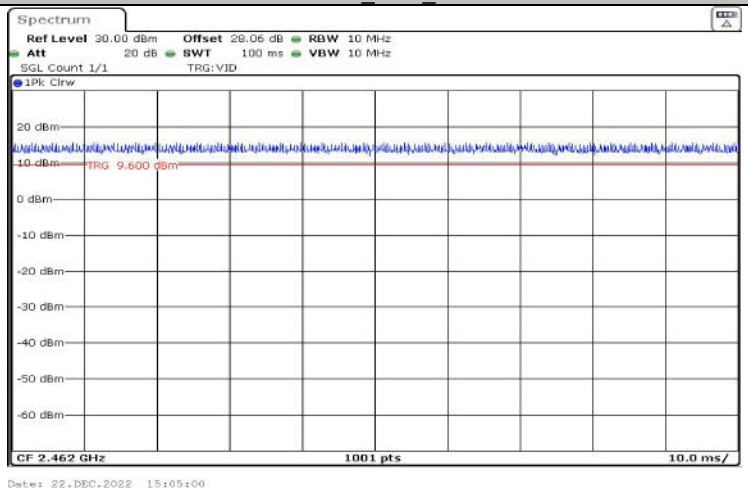
11G-CDD_Ant2_2437



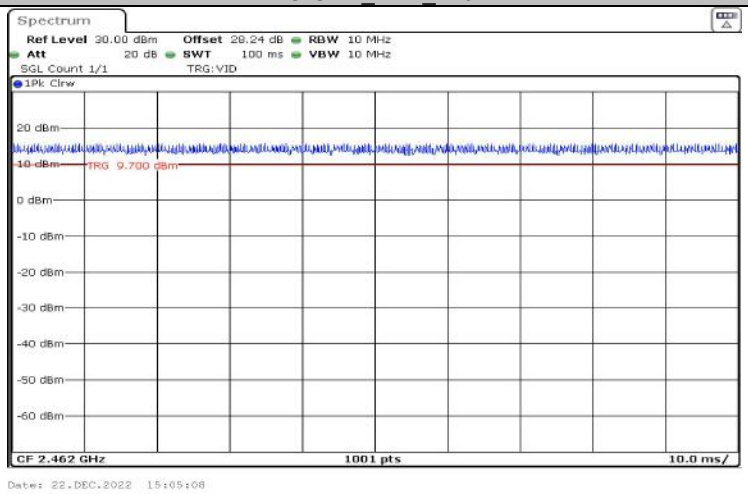
11G-CDD_Ant3_2437



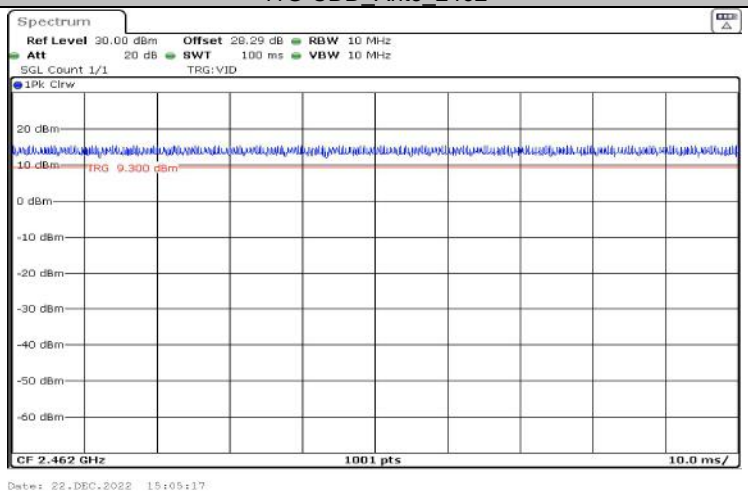
11G-CDD_Ant1_2462



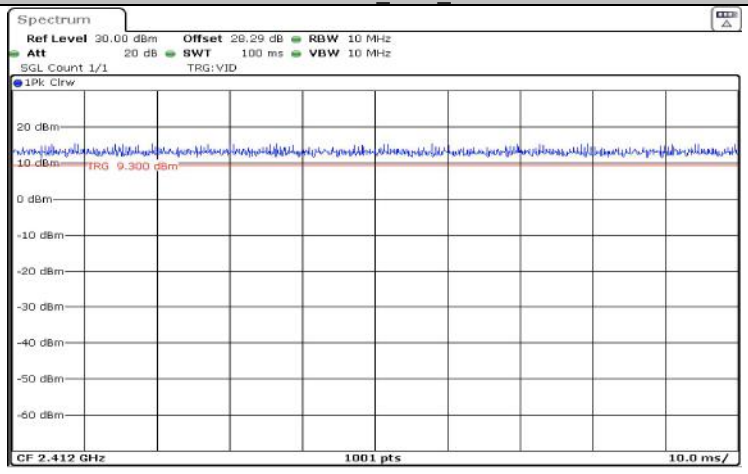
11G-CDD_Ant2_2462



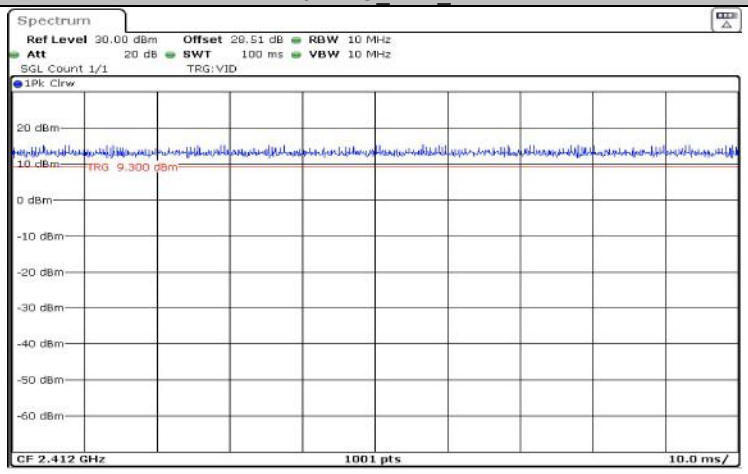
11G-CDD_Ant3_2462



11N20MIMO_Ant1_2412



11N20MIMO_Ant2_2412



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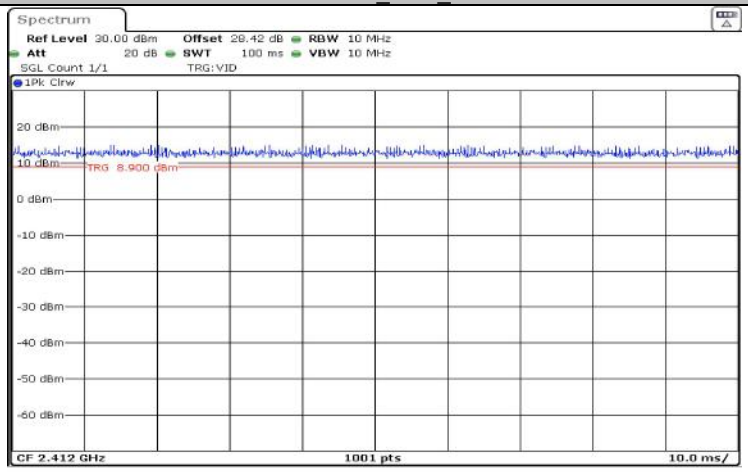

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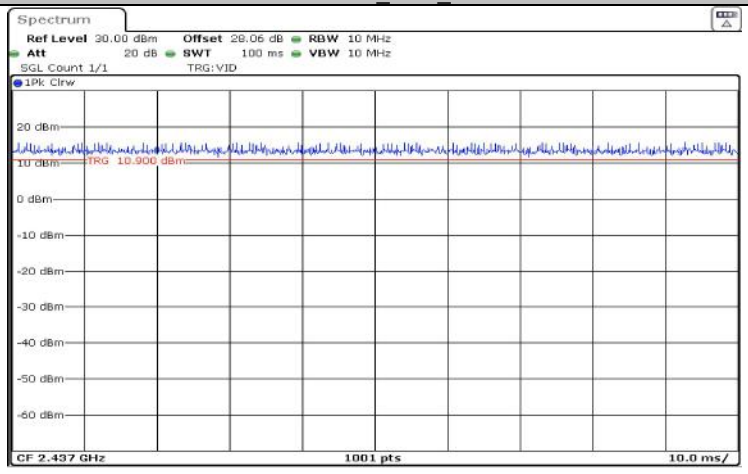
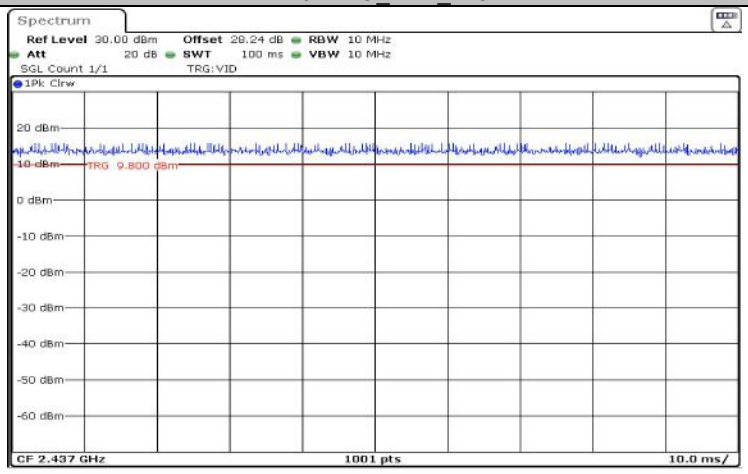
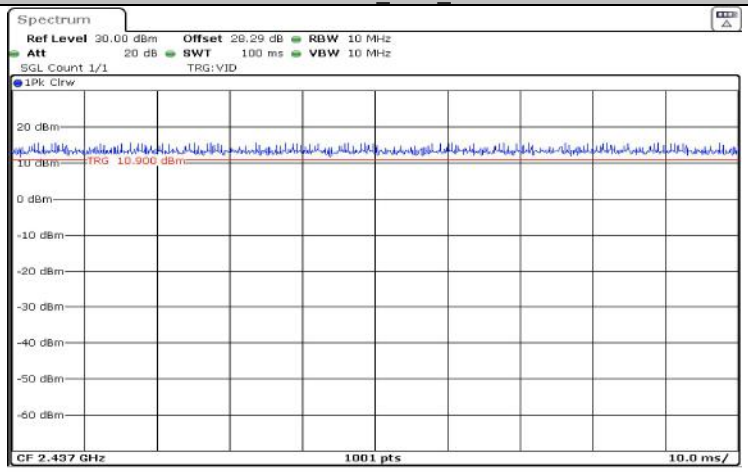


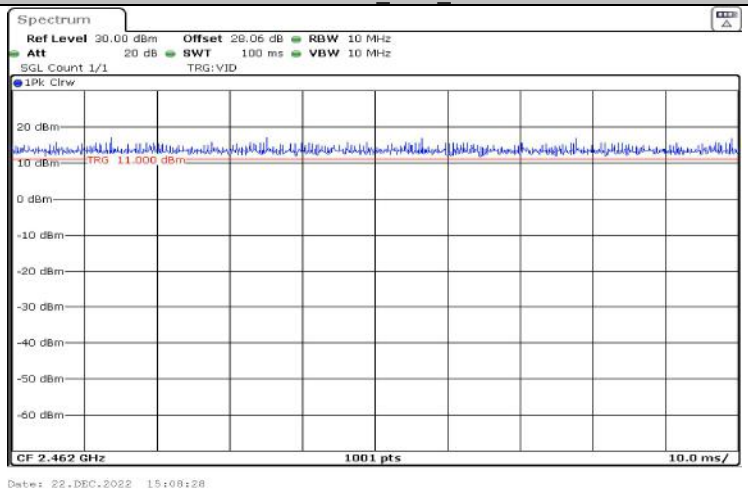
11N20MIMO_Ant2_2437



11N20MIMO_Ant3_2437



11N20MIMO_Ant1_2462



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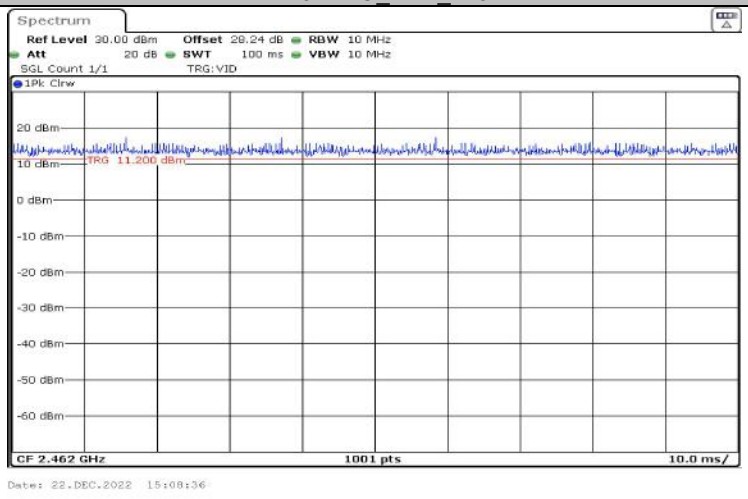

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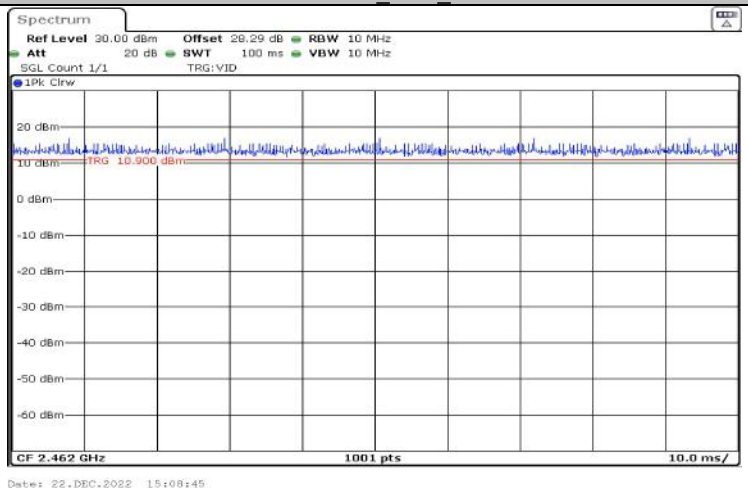

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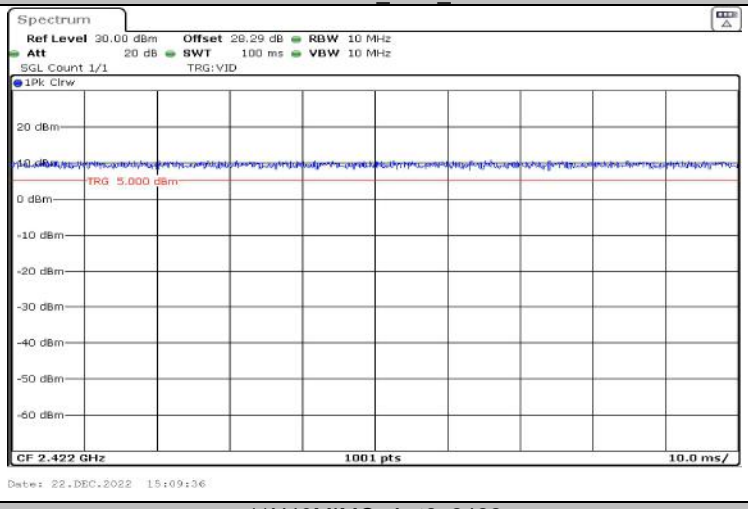
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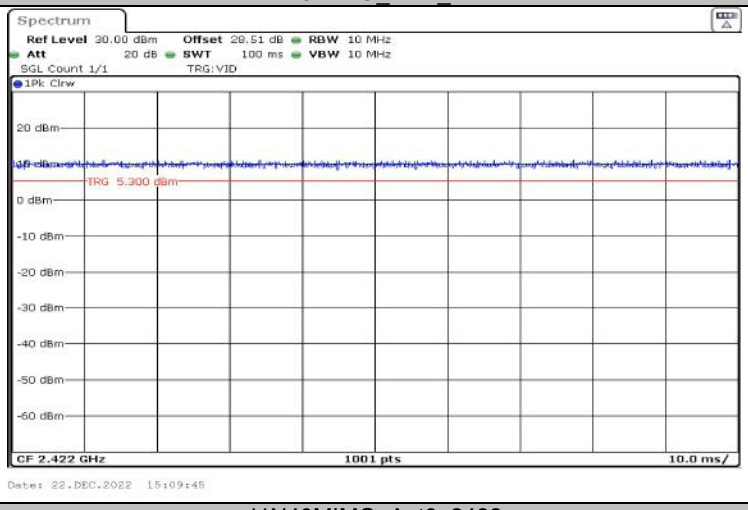
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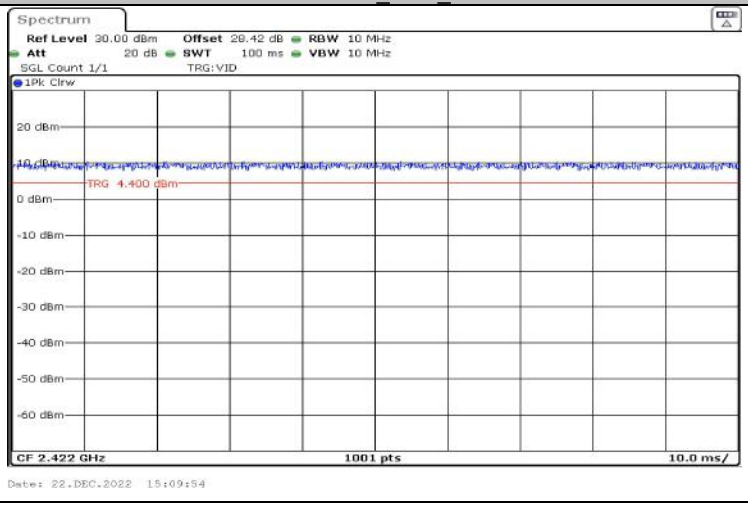

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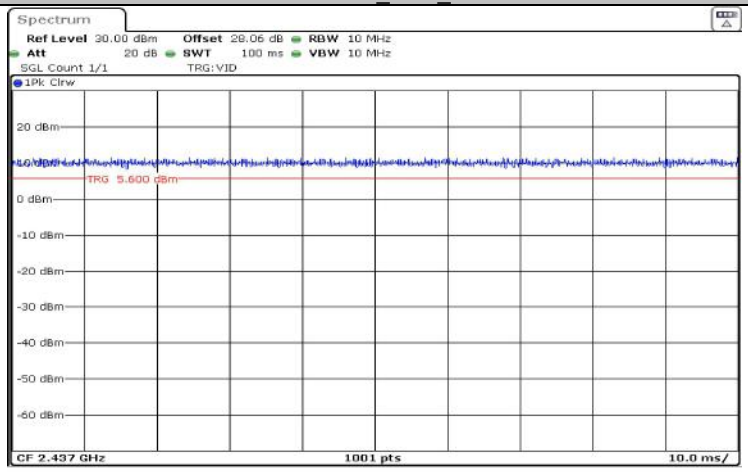

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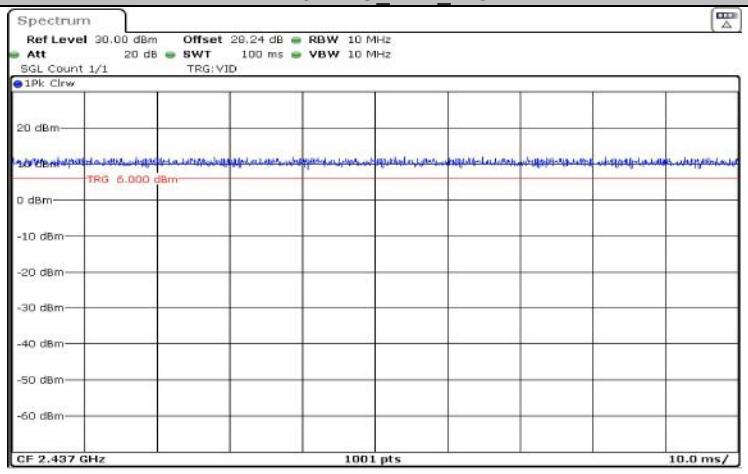

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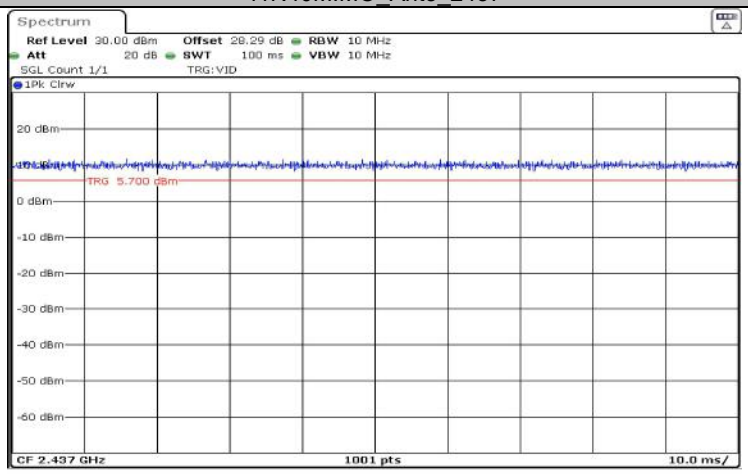

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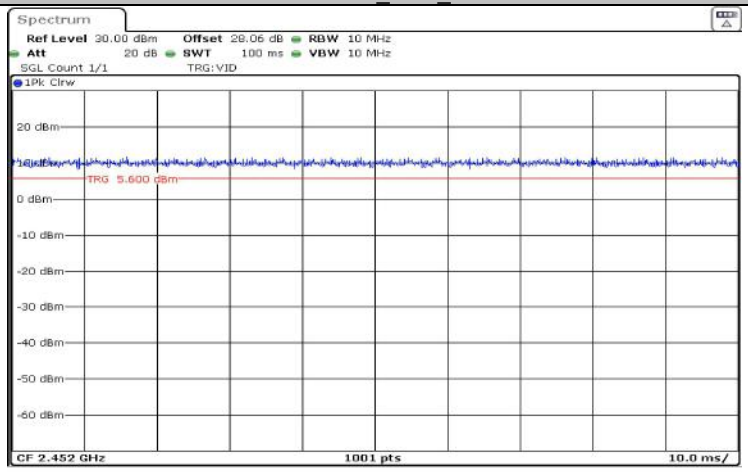

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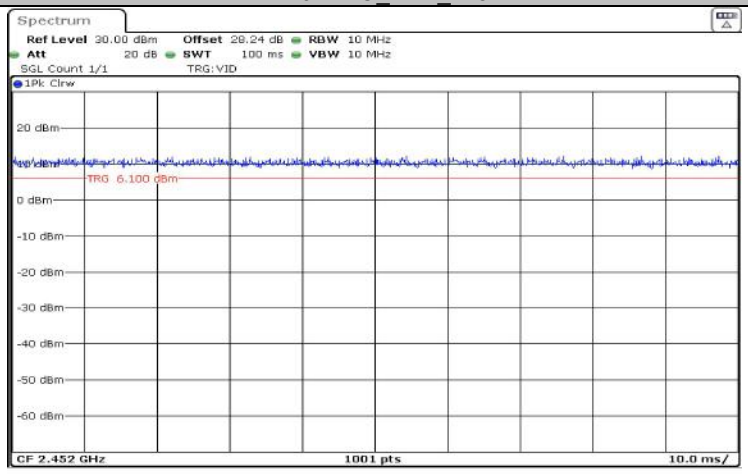

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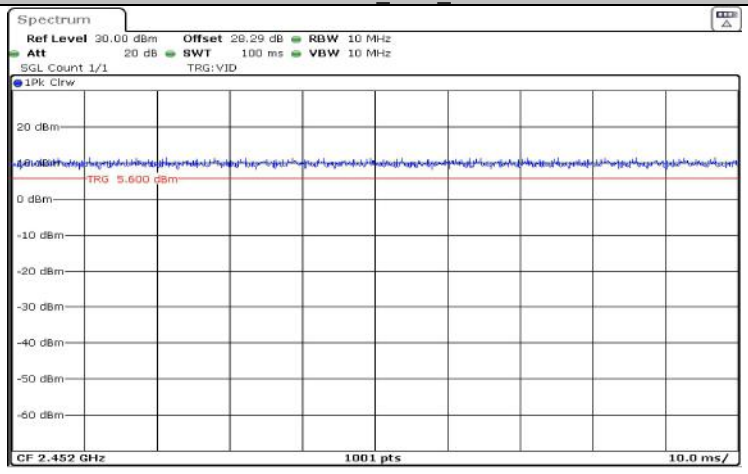

******* END OF REPORT *******