



FCC RF Test Report

APPLICANT : Qingdao Chuangjian Weilai
Technology Co., Ltd.
EQUIPMENT : VR All-In-One Headset
BRAND NAME : 
MODEL NAME : A9210
FCC ID : 2A5NV-A9210
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System
TEST DATE(S) : Apr. 17, 2024 ~ May 22, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Product Specification of Equipment Under Test.....	6
1.5 Modification of EUT	6
1.6 Testing Location	7
1.7 Test Software.....	7
1.8 Applicable Standards.....	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
2.1 Carrier Frequency and Channel	8
2.2 Test Mode.....	9
2.3 Connection Diagram of Test System.....	10
2.4 Support Unit used in test configuration and system	11
2.5 EUT Operation Test Setup	11
2.6 Measurement Results Explanation Example.....	11
3 TEST RESULT	12
3.1 6dB and 99% Bandwidth Measurement	12
3.2 Output Power Measurement.....	13
3.3 Power Spectral Density Measurement	18
3.4 Conducted Band Edges and Spurious Emission Measurement	20
3.5 Radiated Band Edges and Spurious Emission Measurement	21
3.6 AC Conducted Emission Measurement.....	25
3.7 Antenna Requirements.....	27
4 LIST OF MEASURING EQUIPMENT	28
5 MEASUREMENT UNCERTAINTY	29
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. AC CONDUCTED EMISSION TEST RESULT	
APPENDIX C. RADIATED SPURIOUS EMISSION	
APPENDIX D. DUTY CYCLE PLOTS	
APPENDIX E. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR432502C	Rev. 01	Initial issue of report	Jun. 11, 2024



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	99% Bandwidth	-	Report Only	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.12 dB at 2389.95 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 18.25 dB at 0.186 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



1 General Description

1.1 Applicant

Qingdao Chuangjian Weilai Technology Co., Ltd.

3rd Floor, Building 4, No. 393 Songling Road, Laoshan District, Qingdao City, Shandong Province
PEOPLE'S REPUBLIC OF CHINA

1.2 Manufacturer

Qingdao Chuangjian Weilai Technology Co., Ltd.

3rd Floor, Building 4, No. 393 Songling Road, Laoshan District, Qingdao City, Shandong Province
PEOPLE'S REPUBLIC OF CHINA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	VR All-In-One Headset
Brand Name	 PICO
Model Name	A9210
FCC ID	2A5NV-A9210
SN	Conducted: HMD2PB4030100417M Conduction: HMD2PB4031201018M Radiation: HMD2PB4031201018M
HW Version	Sparrow_HMD_MB_VER1P0
SW Version	c000_rf01_bv1.0.1_sv6.0.0_202403140018_sparrow_b371
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to antenna	<MIMO Ant.1+2> 802.11b : 24.54 dBm (0.2844 W) 802.11g : 27.94 dBm (0.6223 W) 802.11n HT20 : 28.50 dBm (0.7079 W) 802.11n HT40 : 26.41 dBm (0.4375 W) 802.11ax HE20 : 28.58 dBm (0.7211 W) 802.11ax HE40 : 26.48 dBm (0.4446 W) 802.11be EHT20 : 28.61 dBm (0.7261 W) 802.11be EHT40 : 26.54 dBm (0.4508 W)
99% Occupied Bandwidth	<MIMO Ant.1+2> 802.11b : 13.307MHz 802.11g : 17.742MHz 802.11n HT20 : 18.661MHz 802.11n HT40 : 37.483MHz 802.11be EHT20 : 19.421MHz 802.11be EHT40 : 38.681MHz
Antenna Type / Gain	<ANT1> FPC Antenna type with gain 1.32 dBi <ANT2> FPC Antenna type with gain 1.08 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM) 802.11be : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM)

Note:

1. For WLAN SISO & MIMO mode, the whole testing has assessed only MIMO mode by referring to the higher normal output power.
2. For 802.11ax/11be mode, the whole testing have assessed only 802.11be EHT20/EHT40 by referring to the higher output power.
3. 802.11ax/be support OFDMA full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) test output power, the full RU power/PSD > partial RU, therefore the full RU perform full, and partial RU verify bandedge/spurious.
4. 802.11be support OFDMA for small size RU, 52Tone + 26 Tone or 106Tone + 26Tone, test combination as below,
 - a. For Low channel, 52Tone_Index37 + 26Tone_Index2 and 106Tone_Index53 + 26Tone_Index4
 - b. For High channel, 52Tone_Index40 + 26Tone_Index6 and 106Tone_Index54 + 26Tone_Index4
5. The worse cases of RSE for partial RU and small size RU are shown in this report.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.



1.6 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH06-KS TH01-KS	CN1257	314309

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH06-KS	AUDIX	E3	210616
3.	CO01-KS	AUDIX	E3	6.2009-8-24

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 15 Subpart C §15.247
- ♦ FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

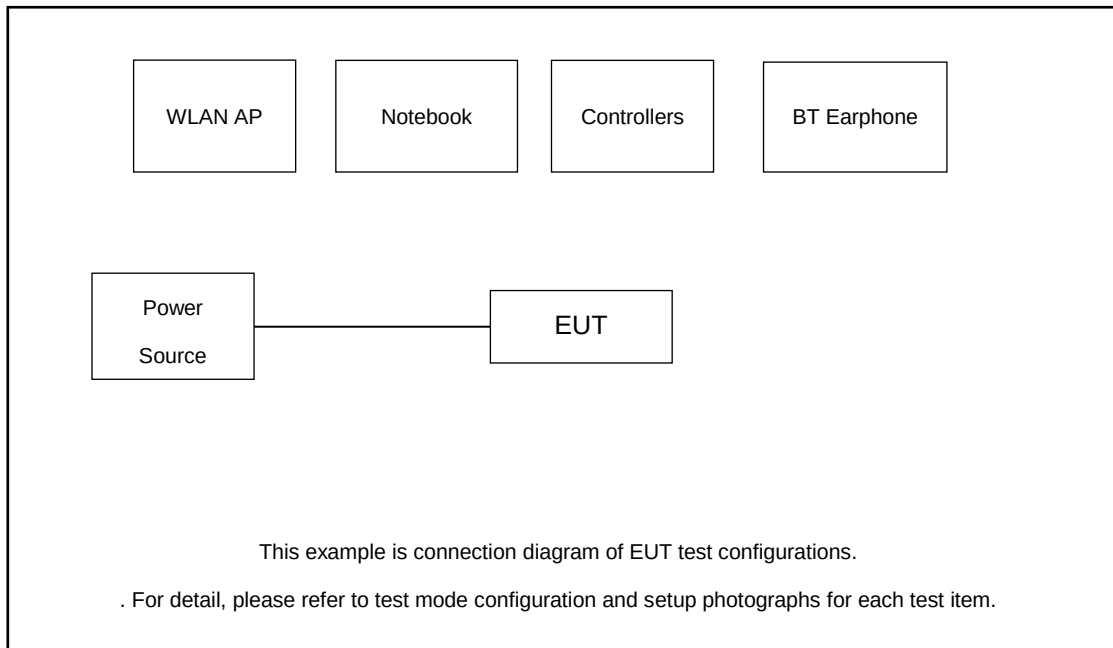
MIMO Antenna

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11be EHT20	MCS0
802.11be EHT40	MCS0

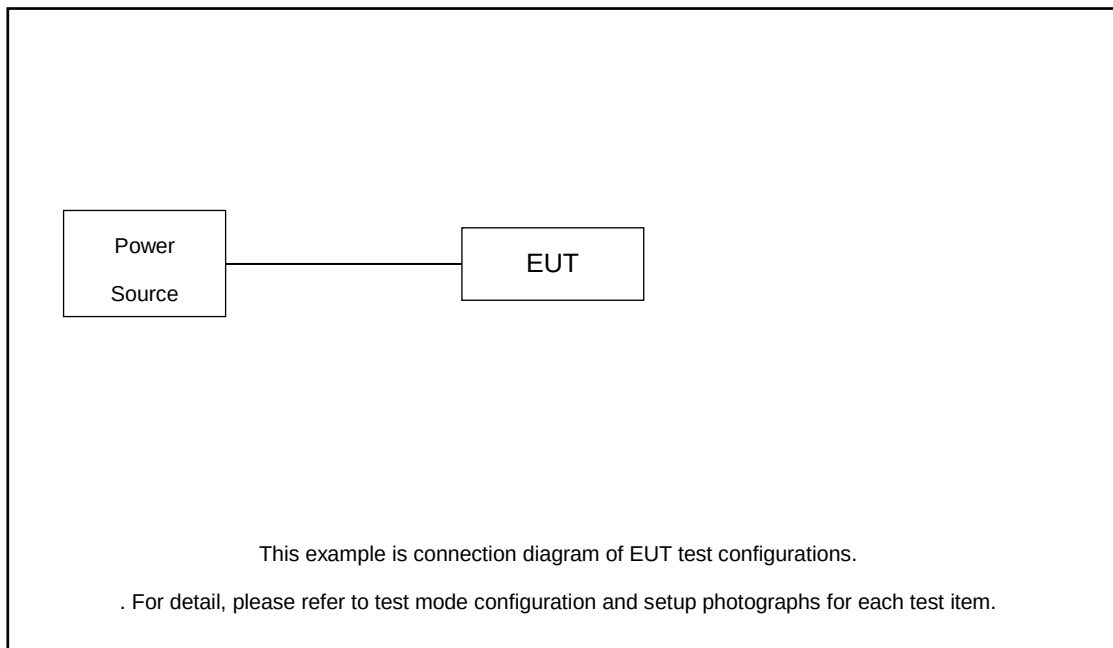
Test Cases	
AC Conducted Emission	Mode 1 : nRF Tx + Bluetooth Link + WLAN Link (2.4G) + USB Cable (Charging from Adapter)
Remark: For Radiated Test Cases, The tests were performed with Adapter and USB Cable .	

2.3 Connection Diagram of Test System

For conduction emission:



For radiated emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Lenovo	thinkplus-BH3	N/A	N/A	N/A
3.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
4.	Adapter	N/A	N/A	N/A	N/A	N/A
5.	Controllers	PICO	N/A	N/A	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 1.91 dB and 10dB attenuator.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 1.91 + 10 = 11.91 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

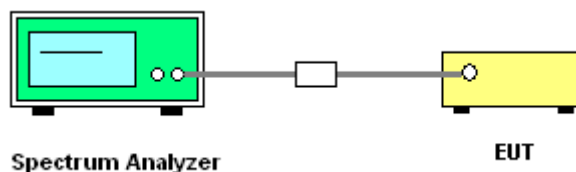
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.8
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1%~5% of OBW and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

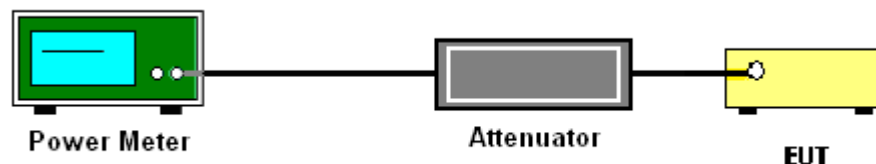
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.1.3 PKPM1 Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.1 Method AVGPM method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup





3.2.5 Test Result of Peak Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	21.33	21.71	24.53	30.00		1.32		25.85		36.00		Pass
11b	1Mbps	2	6	2437	21.43	21.63	24.54	30.00		1.32		25.86		36.00		Pass
11b	1Mbps	2	11	2462	21.34	21.47	24.42	30.00		1.32		25.74		36.00		Pass
11g	6Mbps	2	1	2412	24.14	24.05	27.11	30.00		1.32		28.43		36.00		Pass
11g	6Mbps	2	6	2437	24.95	24.91	27.94	30.00		1.32		29.26		36.00		Pass
11g	6Mbps	2	11	2462	22.52	22.43	25.49	30.00		1.32		26.81		36.00		Pass
HT20	MCS0	2	1	2412	23.14	23.41	26.29	30.00		1.32		27.61		36.00		Pass
HT20	MCS0	2	6	2437	25.45	25.52	28.50	30.00		1.32		29.82		36.00		Pass
HT20	MCS0	2	11	2462	24.34	24.13	27.25	30.00		1.32		28.57		36.00		Pass
HT40	MCS0	2	3	2422	21.94	22.27	25.12	30.00		1.32		26.44		36.00		Pass
HT40	MCS0	2	6	2437	23.25	23.55	26.41	30.00		1.32		27.73		36.00		Pass
HT40	MCS0	2	9	2452	23.13	23.18	26.17	30.00		1.32		27.49		36.00		Pass

2.4GHz Band MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
HE20	MCS0	2	1	2412	Full	23.29	23.49	26.40	30.00		1.32		27.72		36.00		Pass
HE20	MCS0	2	1	2412	26/0	14.48	14.61	17.56	30.00		1.32		18.88		36.00		Pass
HE20	MCS0	2	1	2412	52/37	17.29	17.43	20.37	30.00		1.32		21.69		36.00		Pass
HE20	MCS0	2	1	2412	106/53	19.59	19.54	22.58	30.00		1.32		23.90		36.00		Pass
HE20	MCS0	2	6	2437	Full	25.52	25.61	28.58	30.00		1.32		29.90		36.00		Pass
HE20	MCS0	2	11	2462	Full	24.36	24.23	27.31	30.00		1.32		28.63		36.00		Pass
HE20	MCS0	2	11	2462	26/8	15.99	15.92	18.97	30.00		1.32		20.29		36.00		Pass
HE20	MCS0	2	11	2462	52/40	18.83	18.83	21.84	30.00		1.32		23.16		36.00		Pass
HE20	MCS0	2	11	2462	106/54	21.54	21.81	24.69	30.00		1.32		26.01		36.00		Pass
HE40	MCS0	2	3	2422	Full	21.95	22.34	25.16	30.00		1.32		26.48		36.00		Pass
HE40	MCS0	2	6	2437	Full	23.33	23.61	26.48	30.00		1.32		27.80		36.00		Pass
HE40	MCS0	2	9	2452	Full	23.15	23.24	26.21	30.00		1.32		27.53		36.00		Pass



2.4GHz Band MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
						Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
EHT20	MCS0	2	1	2412	Full	23.32	23.52	26.43	30.00		1.32		27.75		36.00		Pass
EHT20	MCS0	2	1	2412	26/0	14.57	14.66	17.63	30.00		1.32		18.95		36.00		Pass
EHT20	MCS0	2	1	2412	52/37	17.33	17.47	20.41	30.00		1.32		21.73		36.00		Pass
EHT20	MCS0	2	1	2412	106/53	19.63	19.69	22.67	30.00		1.32		23.99		36.00		Pass
EHT20	MCS0	2	1	2412	52+26	18.72	18.97	21.86	30.00		1.32		23.18		36.00		Pass
EHT20	MCS0	2	1	2412	106+26	21.26	21.38	24.33	30.00		1.32		25.65		36.00		Pass
EHT20	MCS0	2	6	2437	Full	25.56	25.64	28.61	30.00		1.32		29.93		36.00		Pass
EHT20	MCS0	2	11	2462	Full	24.42	24.26	27.35	30.00		1.32		28.67		36.00		Pass
EHT20	MCS0	2	11	2462	26/8	16.04	15.96	19.01	30.00		1.32		20.33		36.00		Pass
EHT20	MCS0	2	11	2462	52/40	18.87	18.95	21.92	30.00		1.32		23.24		36.00		Pass
EHT20	MCS0	2	11	2462	106/54	21.65	21.84	24.76	30.00		1.32		26.08		36.00		Pass
EHT20	MCS0	2	11	2462	52+26	21.06	21.13	24.11	30.00		1.32		25.43		36.00		Pass
EHT20	MCS0	2	11	2462	106+26	23.38	23.59	26.50	30.00		1.32		27.82		36.00		Pass
EHT40	MCS0	2	3	2422	Full	21.97	22.39	25.20	30.00		1.32		26.52		36.00		Pass
EHT40	MCS0	2	6	2437	Full	23.39	23.67	26.54	30.00		1.32		27.86		36.00		Pass
EHT40	MCS0	2	9	2452	Full	23.18	23.29	26.25	30.00		1.32		27.57		36.00		Pass



3.2.6 Test Result of Average Output Power (Reporting Only)

2.4GHz Band MIMO																				
Mod.	Data Rate	NT X	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power with duty factor (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail	Setting	
					Ant1	Ant2	Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2		Ant1	Ant2
11b	1Mbps	2	1	2412	0.13	0.13	18.89	19.12	22.02	30.00		1.32		23.34		36.00		Pass	18.00	
11b	1Mbps	2	6	2437	0.13	0.13	18.86	19.01	21.95	30.00		1.32		23.27		36.00		Pass	18.00	
11b	1Mbps	2	11	2462	0.13	0.13	18.94	19.03	22.00	30.00		1.32		23.32		36.00		Pass	18.00	
11g	6Mbps	2	1	2412	0.04	0.03	18.23	18.55	21.40	30.00		1.32		22.72		36.00		Pass	17.50	
11g	6Mbps	2	6	2437	0.04	0.03	18.85	18.88	21.88	30.00		1.32		23.20		36.00		Pass	18.00	
11g	6Mbps	2	11	2462	0.04	0.03	16.70	16.74	19.73	30.00		1.32		21.05		36.00		Pass	16.00	
HT20	MCS0	2	1	2412	0.00	0.00	16.62	16.89	19.77	30.00		1.32		21.09		36.00		Pass	16.00	
HT20	MCS0	2	6	2437	0.00	0.00	18.78	18.95	21.88	30.00		1.32		23.20		36.00		Pass	18.00	
HT20	MCS0	2	11	2462	0.00	0.00	17.91	17.88	20.91	30.00		1.32		22.23		36.00		Pass	17.00	
HT40	MCS0	2	3	2422	0.00	0.00	15.55	15.78	18.68	30.00		1.32		20.00		36.00		Pass	15.50	
HT40	MCS0	2	6	2437	0.00	0.00	16.99	17.35	20.18	30.00		1.32		21.50		36.00		Pass	17.00	
HT40	MCS0	2	9	2452	0.00	0.00	16.43	16.58	19.52	30.00		1.32		20.84		36.00		Pass	16.50	

2.4GHz Band MIMO																					
Mod.	Data Rate	NT X	C H.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Average Conducted Power with duty factor (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail	Setting	
						Ant1	Ant2	Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2		Ant1	Ant2
HE20	MCS0	2	1	2412	Full	0.00	0.00	16.69	16.95	19.83	30.00		1.32		21.15		36.00		Pass	16.00	
HE20	MCS0	2	1	2412	26/0	0.00	0.00	6.91	7.12	10.03	30.00		1.32		11.35		36.00		Pass	0.00	
HE20	MCS0	2	1	2412	52/37	0.00	0.00	9.72	10.02	12.88	30.00		1.32		14.20		36.00		Pass	0.00	
HE20	MCS0	2	1	2412	106/53	0.00	0.00	11.89	11.99	14.95	30.00		1.32		16.27		36.00		Pass	0.00	
HE20	MCS0	2	6	2437	Full	0.00	0.00	18.81	19.01	21.92	30.00		1.32		23.24		36.00		Pass	18.00	
HE20	MCS0	2	11	2462	Full	0.00	0.00	17.93	17.96	20.96	30.00		1.32		22.28		36.00		Pass	17.00	
HE20	MCS0	2	11	2462	26/8	0.00	0.00	8.55	8.38	11.48	30.00		1.32		12.80		36.00		Pass	0.00	
HE20	MCS0	2	11	2462	52/40	0.00	0.00	11.25	11.48	14.38	30.00		1.32		15.70		36.00		Pass	0.00	
HE20	MCS0	2	11	2462	106/54	0.00	0.00	14.12	14.19	17.17	30.00		1.32		18.49		36.00		Pass	0.00	
HE40	MCS0	2	3	2422	Full	0.00	0.00	15.59	15.81	18.71	30.00		1.32		20.03		36.00		Pass	15.50	
HE40	MCS0	2	6	2437	Full	0.00	0.00	17.01	17.39	20.21	30.00		1.32		21.53		36.00		Pass	18.00	
HE40	MCS0	2	9	2452	Full	0.00	0.00	16.46	16.63	19.56	30.00		1.32		20.88		36.00		Pass	16.50	



2.4GHz Band MIMO																					
Mod.	Data Rate	NTX	CH	Freq. (MHz)	RU Config.	Duty Factor (dB)		Average Conducted Power with duty factor (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail	Setting	
						Ant1	Ant2	Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2		Ant1	Ant2
EHT20	MCS0	2	1	2412	Full	0.00	0.00	16.71	16.99	19.86	30.00		1.32		21.18		36.00		Pass	16.00	
EHT20	MCS0	2	1	2412	26/0	0.00	0.00	6.95	7.15	10.06	30.00		1.32		11.38		36.00		Pass	6.00	
EHT20	MCS0	2	1	2412	52/37	0.00	0.00	9.77	10.08	12.94	30.00		1.32		14.26		36.00		Pass	9.00	
EHT20	MCS0	2	1	2412	106/53	0.00	0.00	11.93	12.03	14.99	30.00		1.32		16.31		36.00		Pass	11.00	
EHT20	MCS0	2	1	2412	52+26	0.00	0.00	11.22	11.58	14.41	30.00		1.32		15.73		36.00		Pass	10.50	
EHT20	MCS0	2	1	2412	106+26	0.00	0.00	13.33	13.42	16.39	30.00		1.32		17.71		36.00		Pass	12.50	
EHT20	MCS0	2	6	2437	Full	0.00	0.00	18.86	19.03	21.96	30.00		1.32		23.28		36.00		Pass	18.00	
EHT20	MCS0	2	11	2462	Full	0.00	0.00	17.98	18.03	21.02	30.00		1.32		22.34		36.00		Pass	17.00	
EHT20	MCS0	2	11	2462	26/8	0.00	0.00	8.59	8.41	11.51	30.00		1.32		12.83		36.00		Pass	7.50	
EHT20	MCS0	2	11	2462	52/40	0.00	0.00	11.29	11.54	14.43	30.00		1.32		15.75		36.00		Pass	10.50	
EHT20	MCS0	2	11	2462	106/54	0.00	0.00	14.16	14.22	17.20	30.00		1.32		18.52		36.00		Pass	13.50	
EHT20	MCS0	2	11	2462	52+26	0.00	0.00	13.58	13.78	16.69	30.00		1.32		18.01		36.00		Pass	13.00	
EHT20	MCS0	2	11	2462	106+26	0.00	0.00	15.49	15.62	18.57	30.00		1.32		19.89		36.00		Pass	15.00	
EHT40	MCS0	2	3	2422	Full	0.00	0.00	15.62	15.84	18.74	30.00		1.32		20.06		36.00		Pass	15.50	
EHT40	MCS0	2	6	2437	Full	0.00	0.00	17.05	17.43	20.25	30.00		1.32		21.57		36.00		Pass	17.00	
EHT40	MCS0	2	9	2452	Full	0.00	0.00	16.53	16.69	19.62	30.00		1.32		20.94		36.00		Pass	16.50	

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

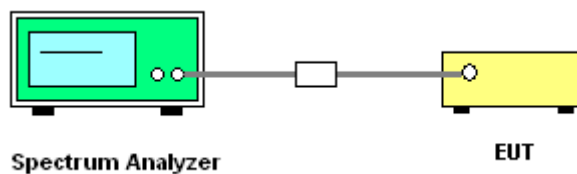
3.3.3 Test Procedures

1. The testing follows Measurement Procedure of ANSI C63.10-2013 clause 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01:

Method (b): Measure and sum spectral maxima across the outputs.

The measurement on each individual output were performed with the same span and number on each individual output. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

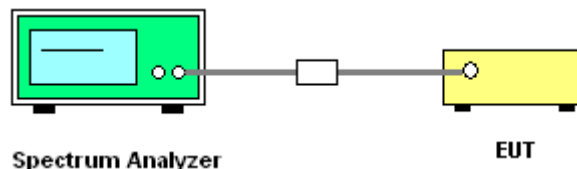
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.11
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Please refer to Appendix A.

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

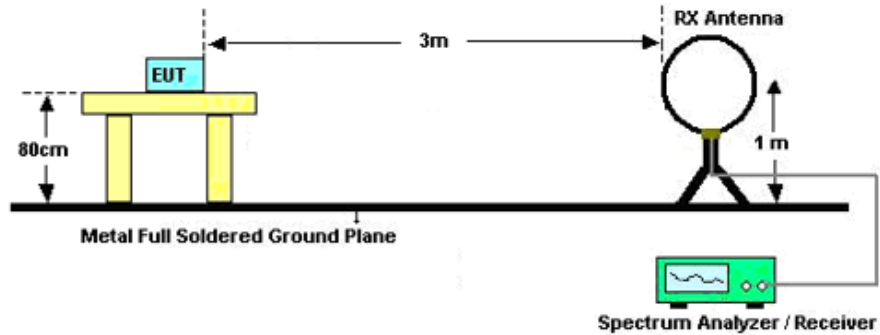
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

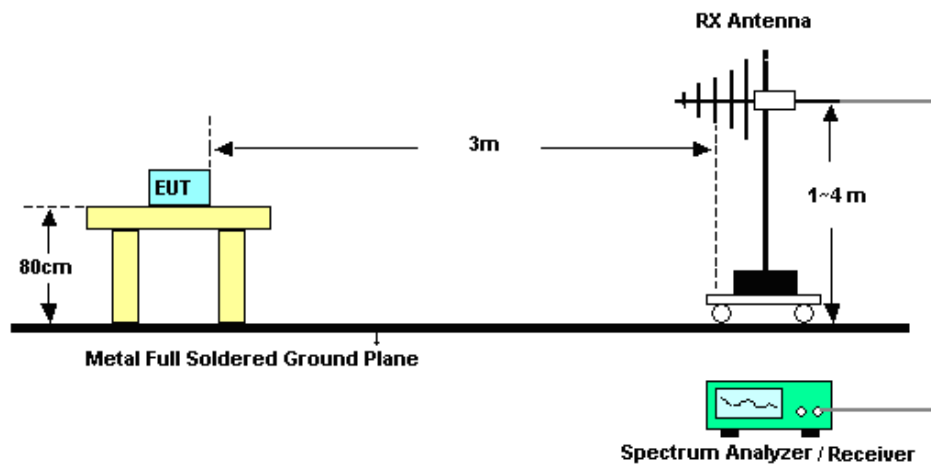
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
For average measurement:
 - 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.

3.5.4 Test Setup

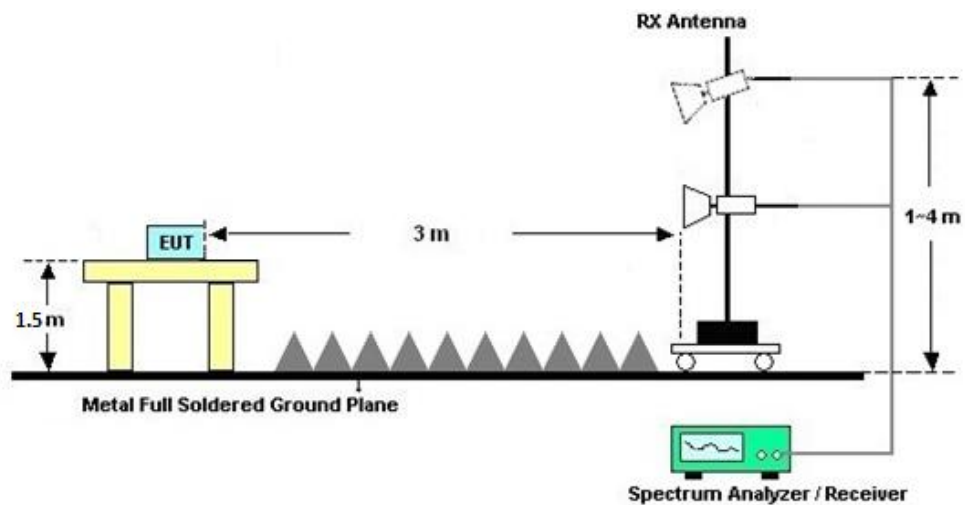
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



**3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.5.7 Duty Cycle

Please refer to Appendix D.

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

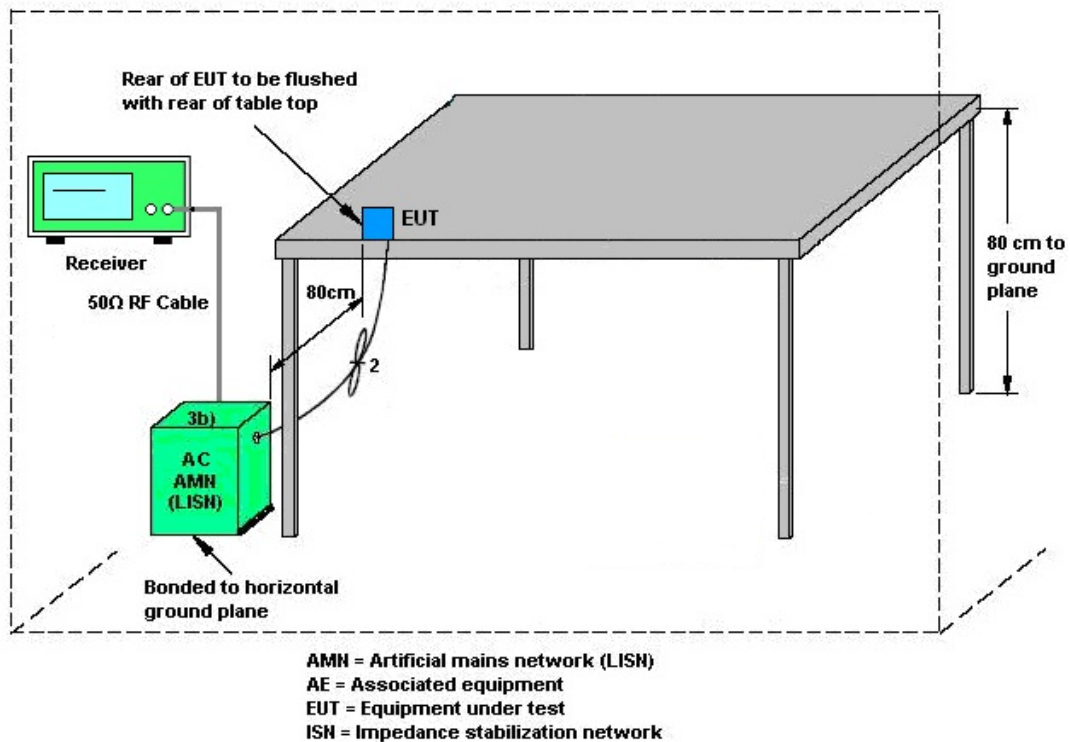
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, Please refer to the antenna report that is provided by manufacturer and direction gain using formula according to KDB 662911.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<CDD Modes>						
			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 1 (dBi)	Ant. 2 (dBi)				
2.4 GHz	1.32	1.08	1.32	3.28	0.00	0.00

$Power\ Limit\ Reduction = DG(Power) - 6dBi, (min = 0)$

$PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Apr. 17, 2024~ May 11, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Apr. 17, 2024~ May 11, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Apr. 17, 2024~ May 11, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz; Max 30dBm	Oct. 10, 2023	May 22, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz~44GHz	Oct. 10, 2023	May 22, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 10, 2023	May 22, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz~1GHz	Aug. 19, 2023	May 22, 2024	Aug. 18, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00240132	1GHz~18GHz	Jul. 12, 2023	May 22, 2024	Jul. 11, 2024	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 05, 2024	May 22, 2024	Jan. 04, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	380827	9KHz ~1GHZ	Jul. 06, 2023	May 22, 2024	Jul. 05, 2024	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 04, 2024	May 22, 2024	Jan. 03, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2082395	1Ghz-18Ghz	Jan. 04, 2024	May 22, 2024	Jan. 03, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 10, 2023	May 22, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 22, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 22, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 22, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 16, 2023	May 08, 2024	May 15, 2024	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	May 08, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	May 16, 2023	May 08, 2024	May 15, 2024	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	May 08, 2024	Oct. 10, 2024	Conduction (CO01-KS)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.46 dB
Conducted Power Spectral Density	±0.88 dB
Frequency	±0.4 Hz

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.84 dB
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Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.06 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.18 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.38 dB
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----- THE END -----



Appendix A. Conducted Test Results



Ambient Condition: 25 °C, 45 %RH

Test Date: 2024.4.17~5.11

Test Engineer: Jiang Jun

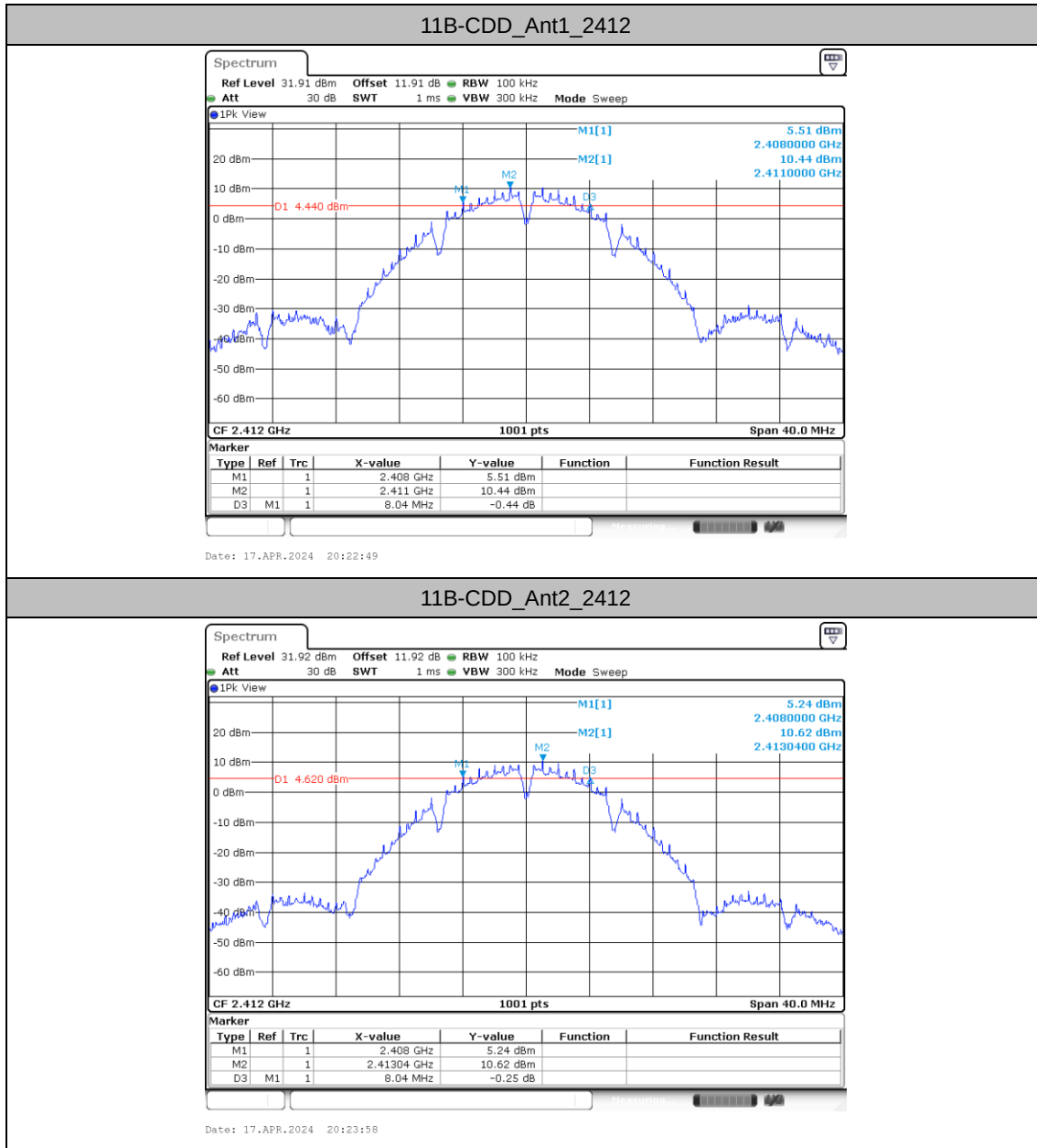
DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B-CDD	Ant1	2412	8.04	2408.00	2416.04	0.5	PASS
	Ant2	2412	8.04	2408.00	2416.04	0.5	PASS
	Ant1	2437	8.04	2433.00	2441.04	0.5	PASS
	Ant2	2437	8.04	2433.00	2441.04	0.5	PASS
	Ant1	2462	8.04	2458.00	2466.04	0.5	PASS
	Ant2	2462	8.04	2458.00	2466.04	0.5	PASS
11G-CDD	Ant1	2412	16.36	2403.84	2420.20	0.5	PASS
	Ant2	2412	16.36	2403.84	2420.20	0.5	PASS
	Ant1	2437	16.36	2428.84	2445.20	0.5	PASS
	Ant2	2437	16.36	2428.84	2445.20	0.5	PASS
	Ant1	2462	16.36	2453.84	2470.20	0.5	PASS
	Ant2	2462	16.36	2453.84	2470.20	0.5	PASS
11N20MIMO	Ant1	2412	17.60	2403.20	2420.80	0.5	PASS
	Ant2	2412	17.60	2403.24	2420.84	0.5	PASS
	Ant1	2437	17.64	2428.20	2445.84	0.5	PASS
	Ant2	2437	17.64	2428.20	2445.84	0.5	PASS
	Ant1	2462	17.60	2453.24	2470.84	0.5	PASS
	Ant2	2462	17.64	2453.20	2470.84	0.5	PASS
11N40MIMO	Ant1	2422	36.40	2403.84	2440.24	0.5	PASS
	Ant2	2422	36.40	2403.84	2440.24	0.5	PASS
	Ant1	2437	36.40	2418.84	2455.24	0.5	PASS
	Ant2	2437	36.40	2418.84	2455.24	0.5	PASS
	Ant1	2452	36.32	2433.84	2470.16	0.5	PASS
	Ant2	2452	36.40	2433.84	2470.24	0.5	PASS
11BE20MIMO	Ant1	2412	18.96	2402.48	2421.44	0.5	PASS
	Ant2	2412	18.88	2402.52	2421.40	0.5	PASS
	Ant1	2437	18.96	2427.52	2446.48	0.5	PASS
	Ant2	2437	19.00	2427.52	2446.52	0.5	PASS
	Ant1	2462	19.00	2452.52	2471.52	0.5	PASS
	Ant2	2462	19.00	2452.52	2471.52	0.5	PASS
11BE40MIMO	Ant1	2422	38.16	2402.88	2441.04	0.5	PASS
	Ant2	2422	38.32	2402.88	2441.20	0.5	PASS
	Ant1	2437	38.24	2417.88	2456.12	0.5	PASS
	Ant2	2437	38.32	2417.88	2456.20	0.5	PASS
	Ant1	2452	38.24	2432.88	2471.12	0.5	PASS
	Ant2	2452	38.32	2432.88	2471.20	0.5	PASS

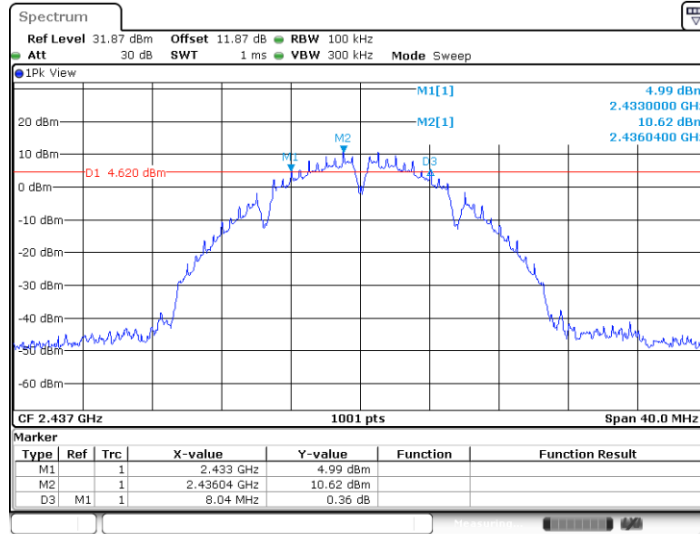


Test Graphs



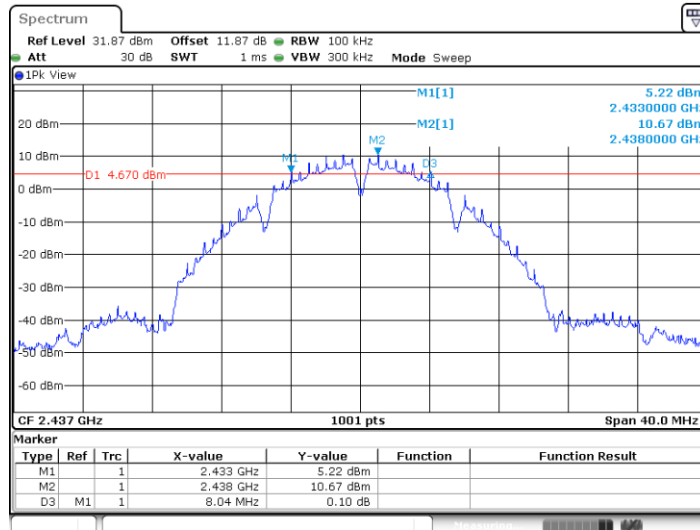


11B-CDD_Ant1_2437



Date: 17.APR.2024 20:25:30

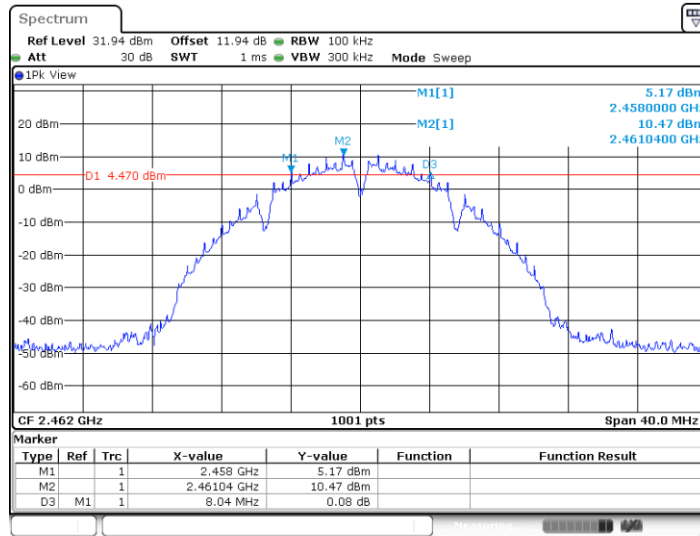
11B-CDD_Ant2_2437



Date: 17.APR.2024 20:26:24

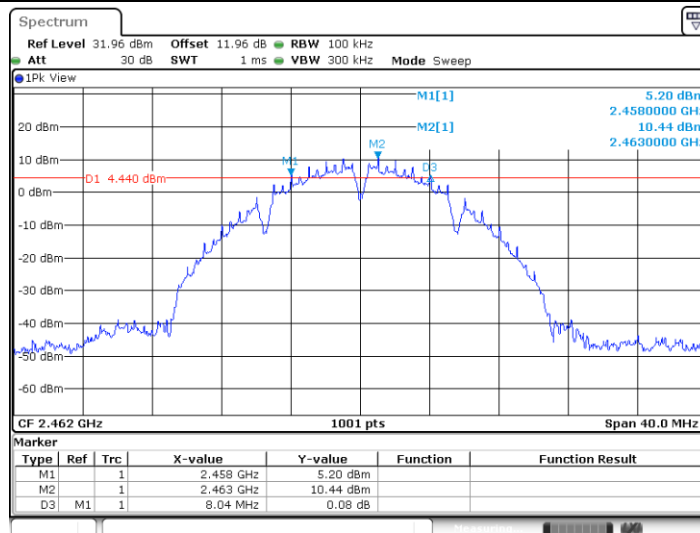


11B-CDD_Ant1_2462



Date: 17.APR.2024 20:27:53

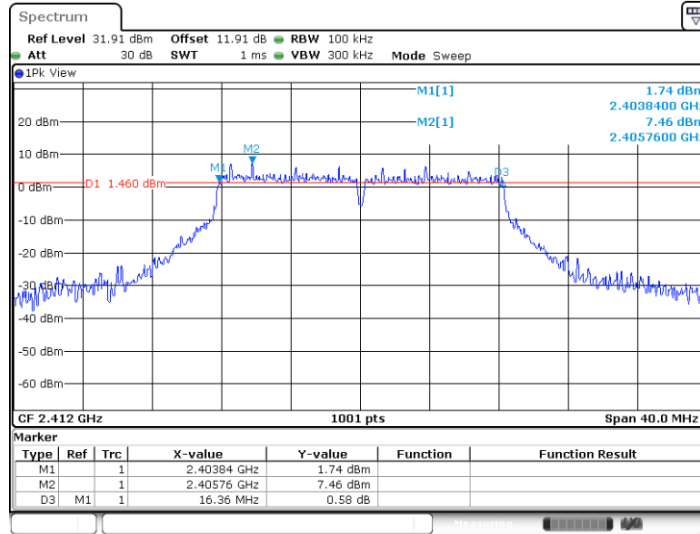
11B-CDD_Ant2_2462



Date: 17.APR.2024 20:29:02

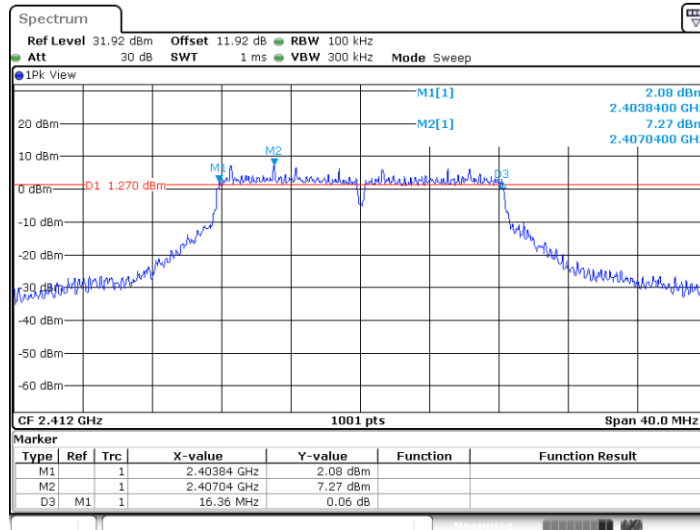


11G-CDD_Ant1_2412



Date: 17.APR.2024 20:30:42

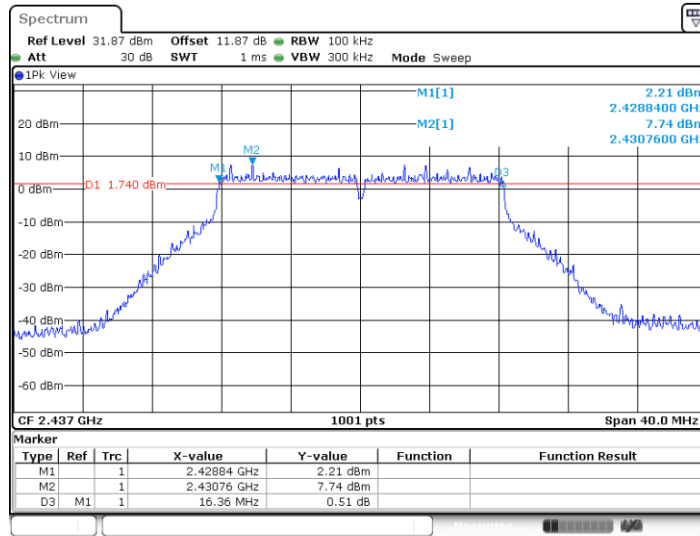
11G-CDD_Ant2_2412



Date: 17.APR.2024 20:31:51

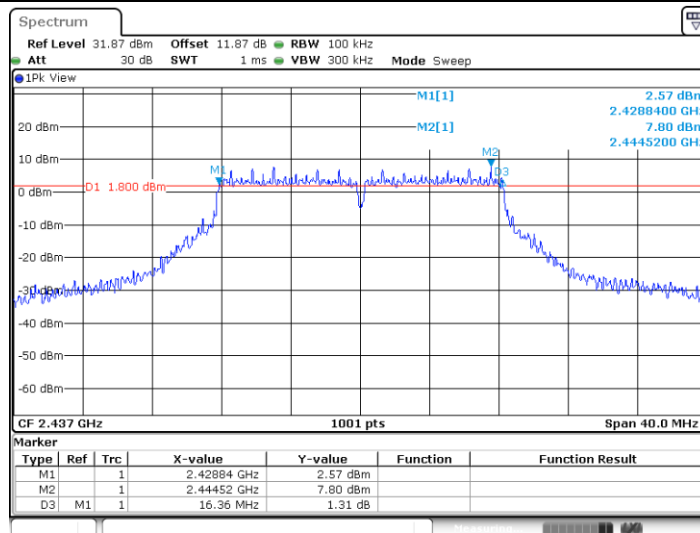


11G-CDD_Ant1_2437



Date: 17.APR.2024 20:33:10

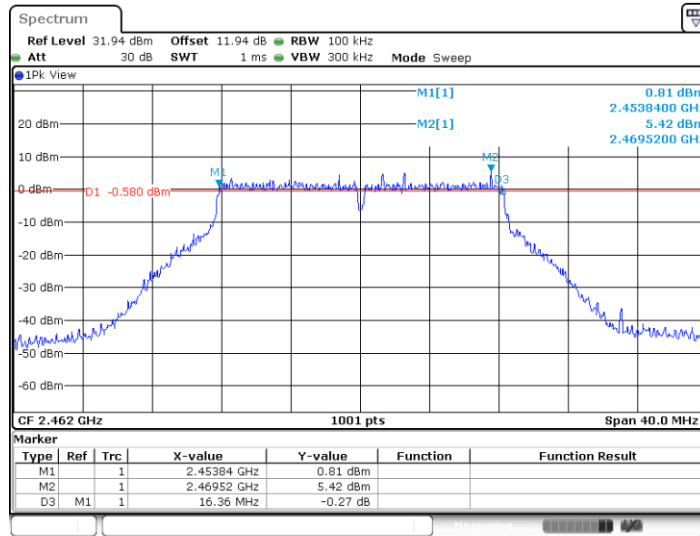
11G-CDD_Ant2_2437



Date: 17.APR.2024 20:34:05

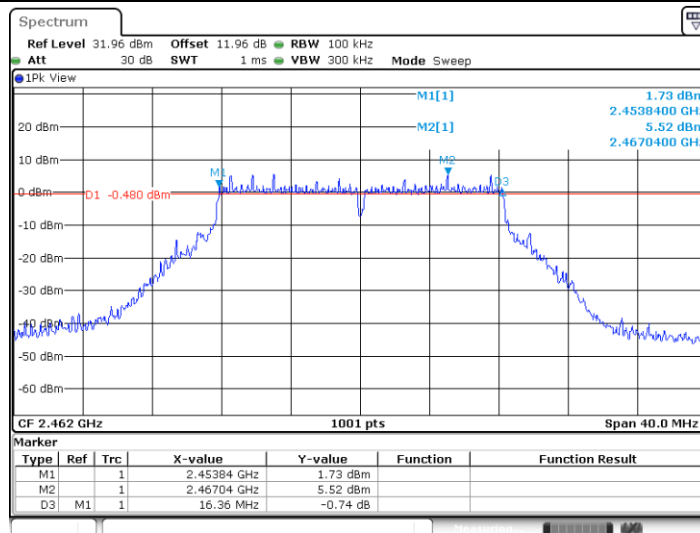


11G-CDD_Ant1_2462



Date: 17.APR.2024 20:35:21

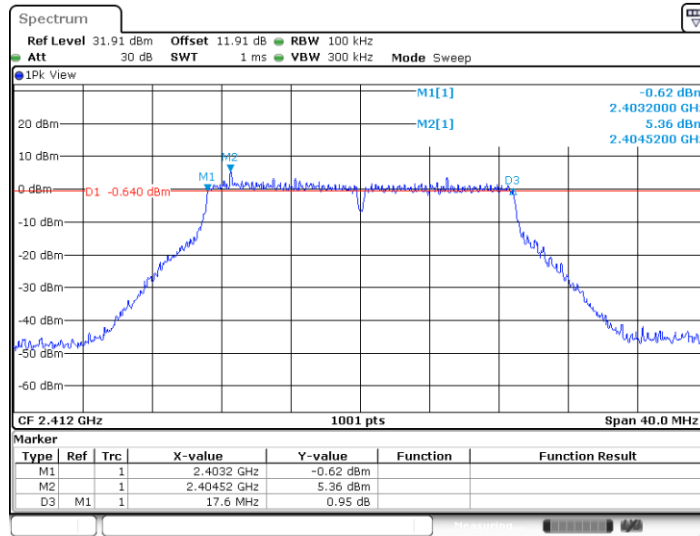
11G-CDD_Ant2_2462



Date: 17.APR.2024 20:36:30

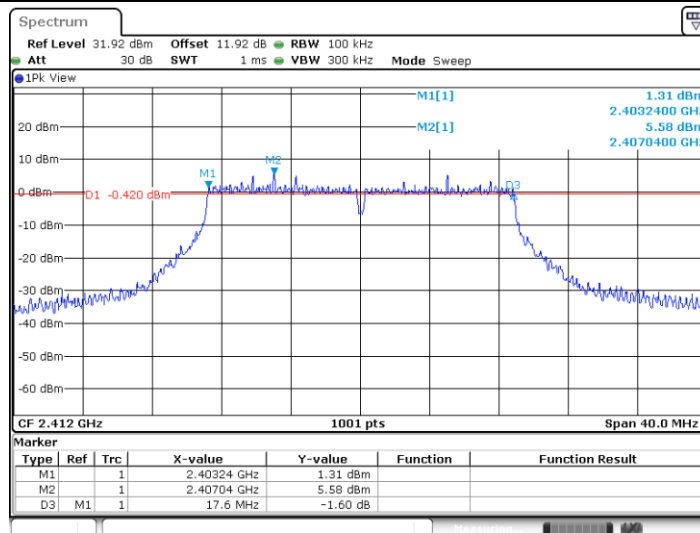


11N20MIMO_Ant1_2412



Date: 17.APR.2024 20:40:04

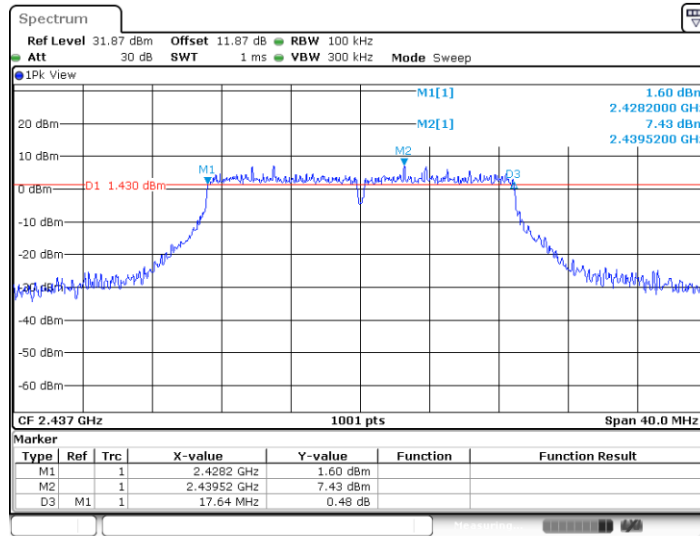
11N20MIMO_Ant2_2412



Date: 17.APR.2024 20:41:14

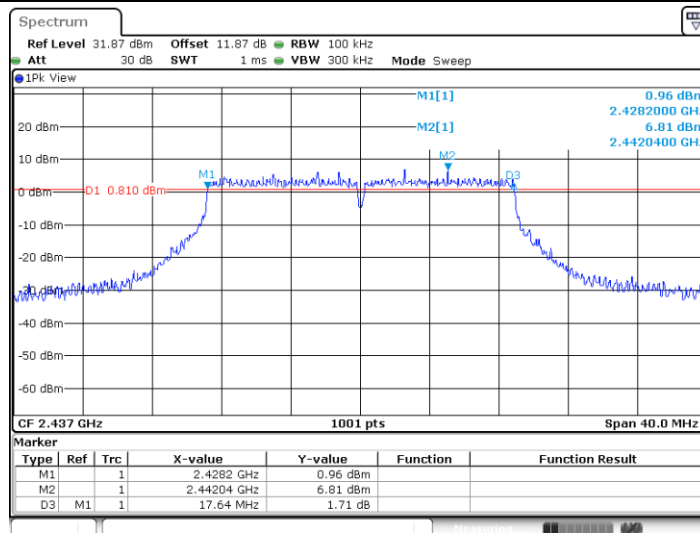


11N20MIMO_Ant1_2437



Date: 17.APR.2024 20:42:28

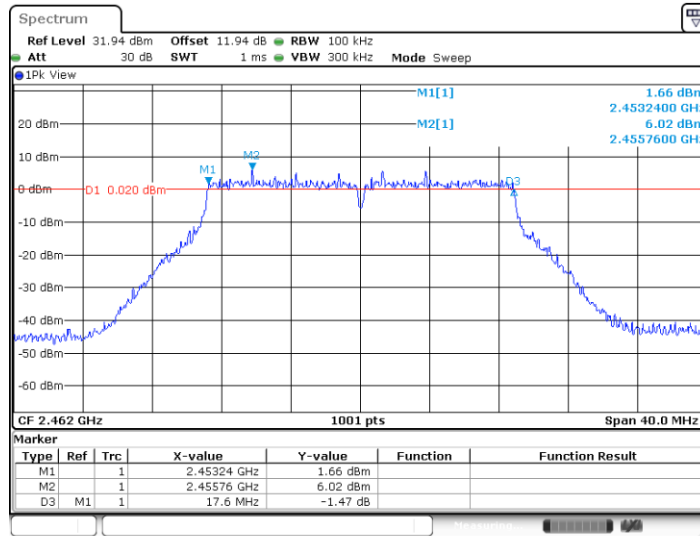
11N20MIMO_Ant2_2437



Date: 17.APR.2024 20:43:24

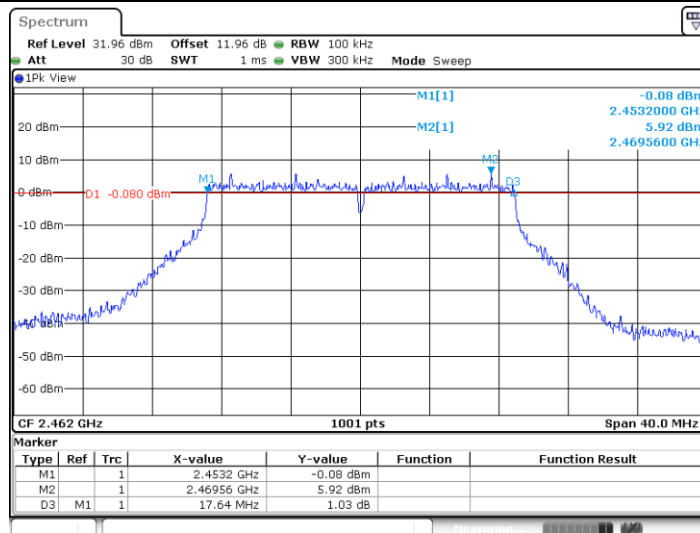


11N20MIMO_Ant1_2462



Date: 17.APR.2024 20:46:28

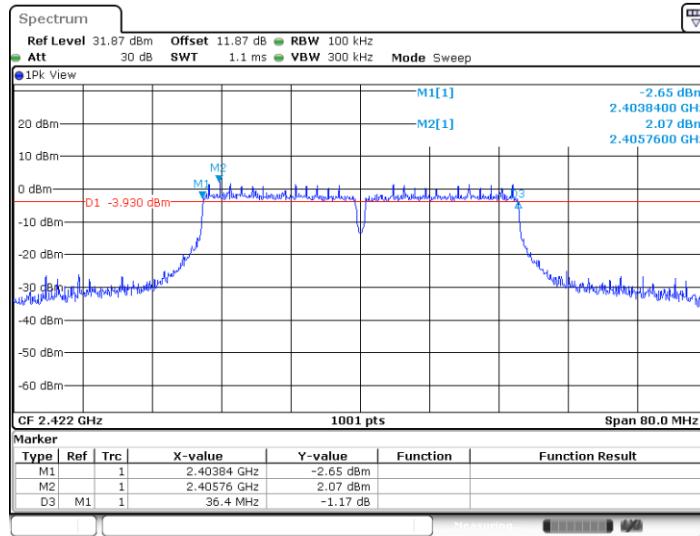
11N20MIMO_Ant2_2462



Date: 17.APR.2024 20:47:37

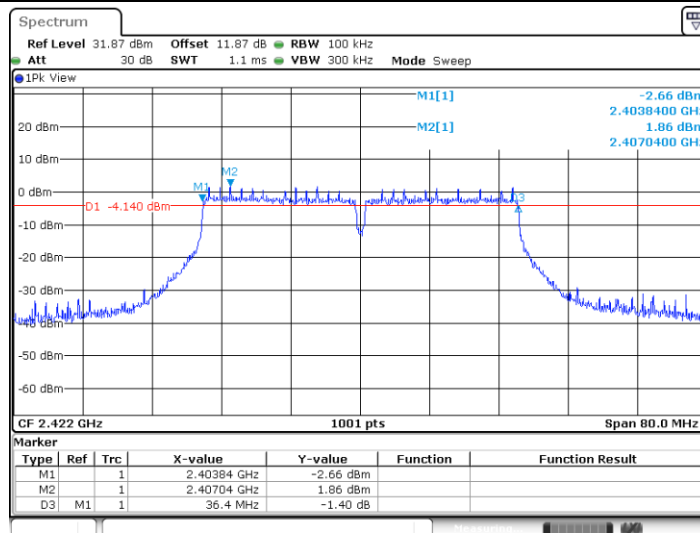


11N40MIMO_Ant1_2422



Date: 17.APR.2024 20:49:14

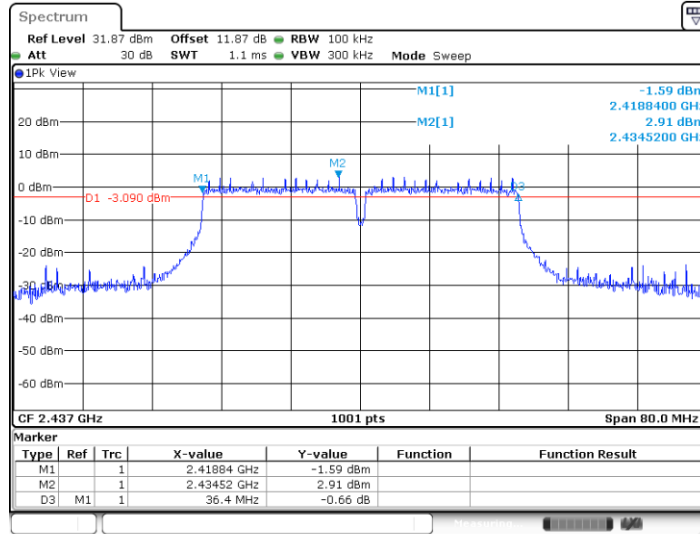
11N40MIMO_Ant2_2422



Date: 17.APR.2024 20:50:23

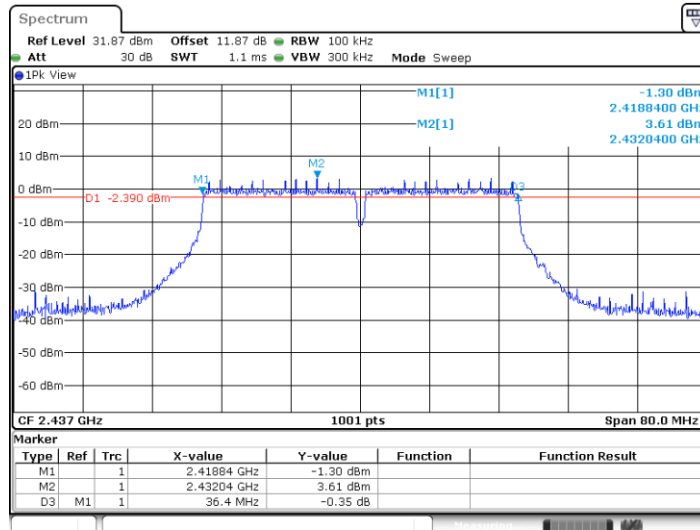


11N40MIMO_Ant1_2437



Date: 17.APR.2024 20:52:00

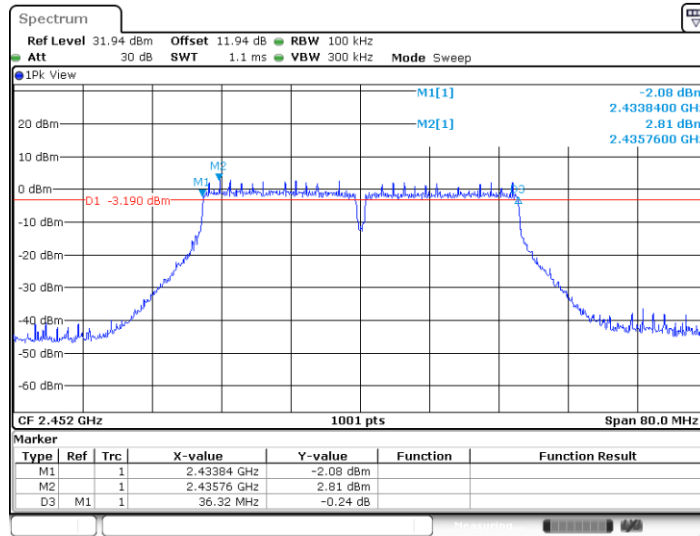
11N40MIMO_Ant2_2437



Date: 17.APR.2024 20:52:55

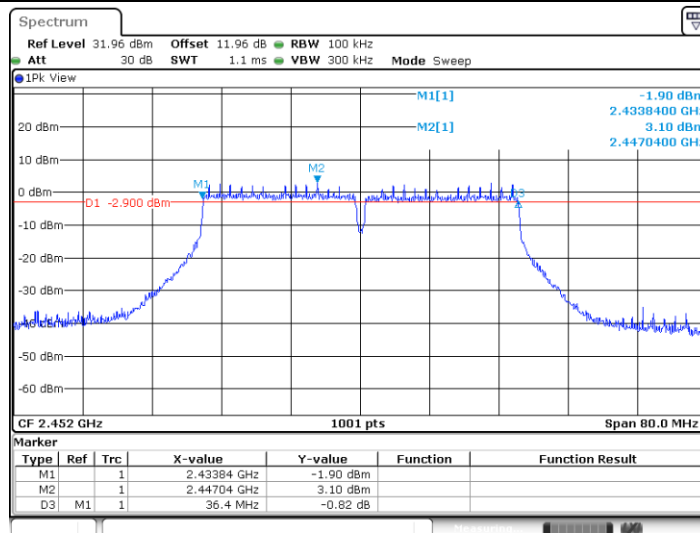


11N40MIMO_Ant1_2452



Date: 17.APR.2024 20:55:26

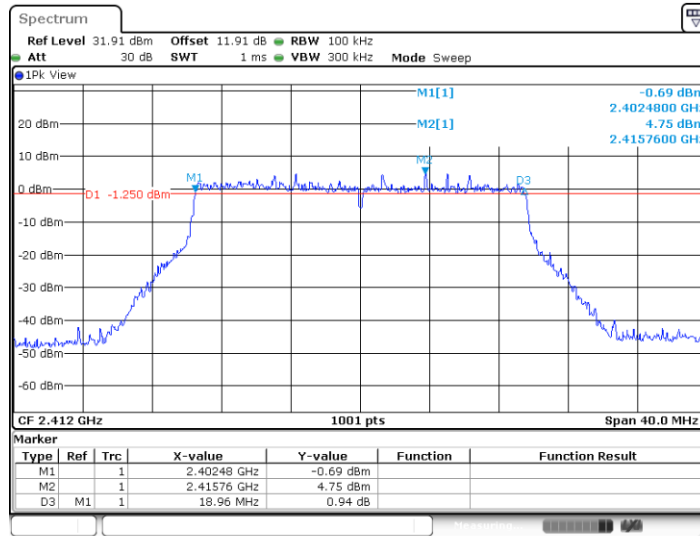
11N40MIMO_Ant2_2452



Date: 17.APR.2024 20:56:35

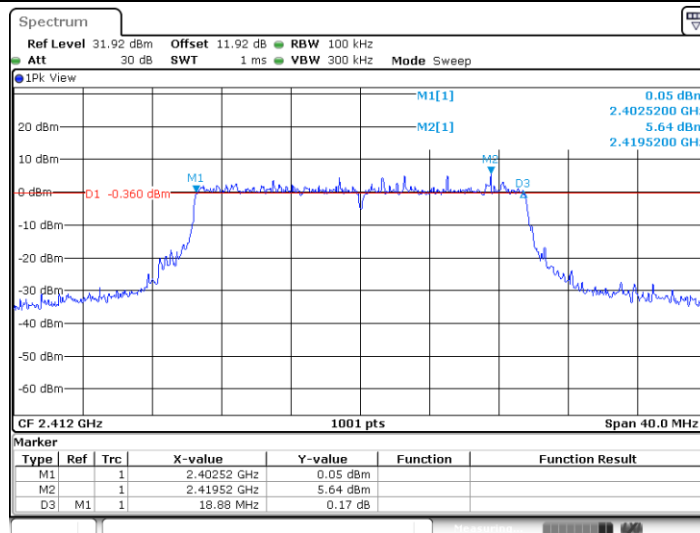


11BE20MIMO_Ant1_2412



Date: 17.APR.2024 20:58:22

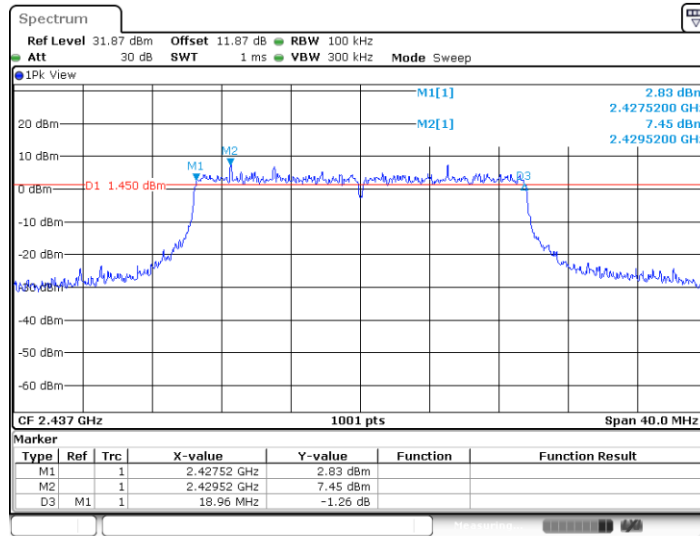
11BE20MIMO_Ant2_2412



Date: 17.APR.2024 20:59:30

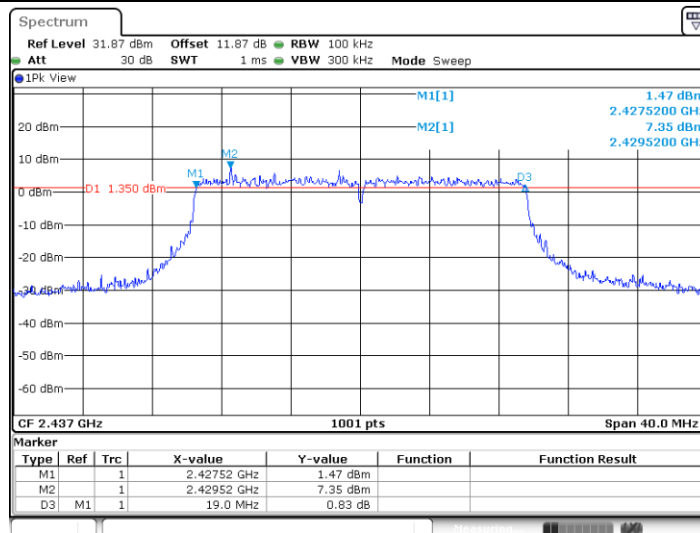


11BE20MIMO_Ant1_2437



Date: 17.APR.2024 21:00:50

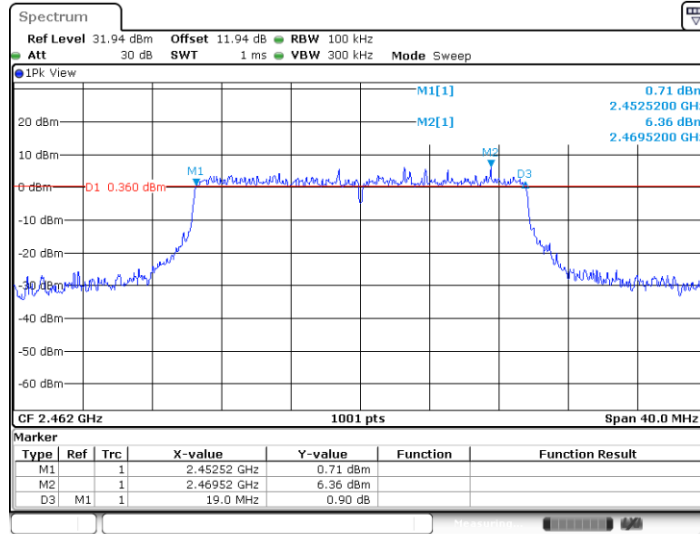
11BE20MIMO_Ant2_2437



Date: 17.APR.2024 21:01:46

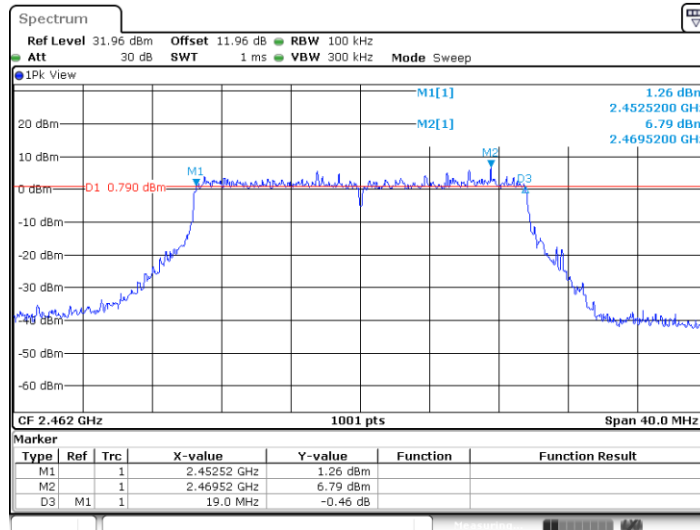


11BE20MIMO_Ant1_2462



Date: 17.APR.2024 21:13:58

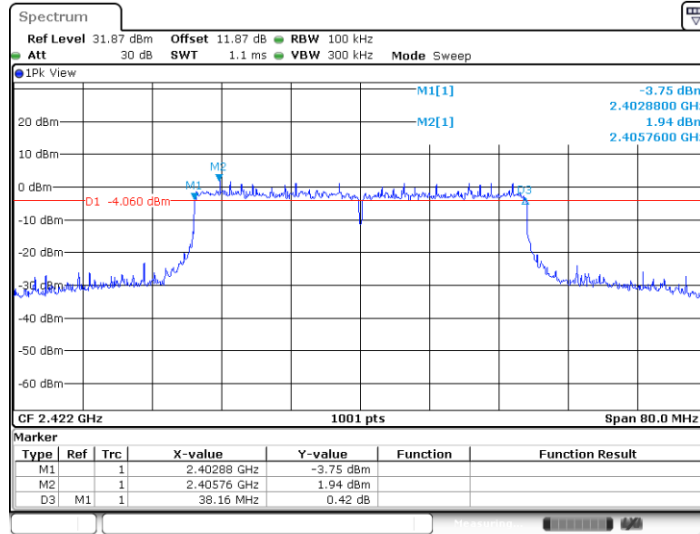
11BE20MIMO_Ant2_2462



Date: 17.APR.2024 21:15:07

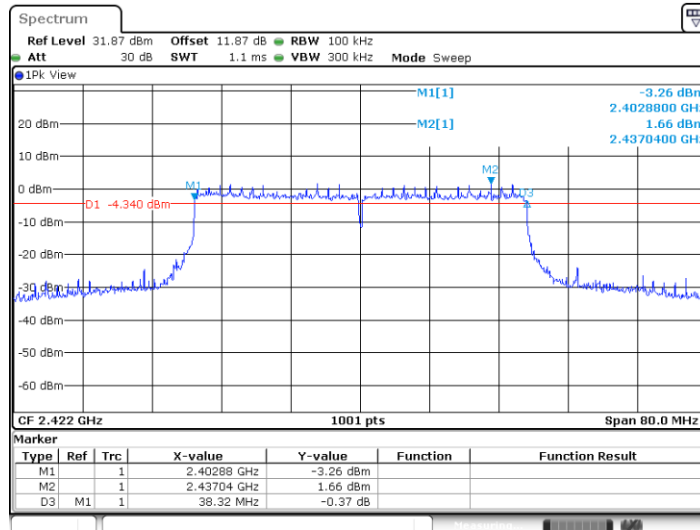


11BE40MIMO_Ant1_2422



Date: 17.APR.2024 21:16:50

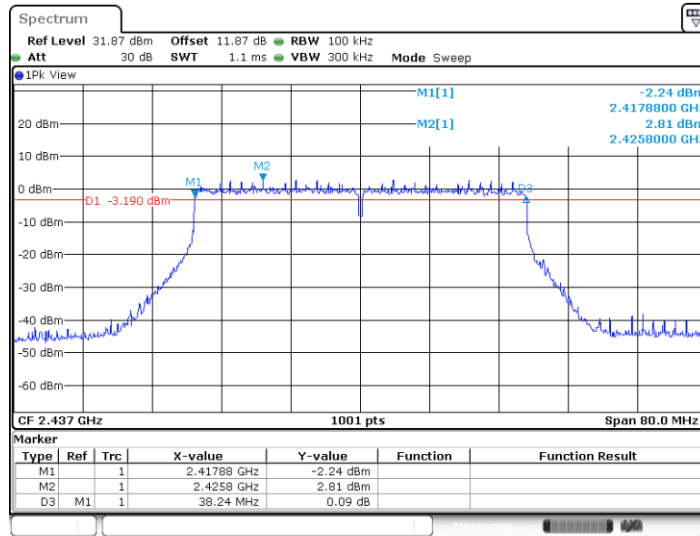
11BE40MIMO_Ant2_2422



Date: 17.APR.2024 21:17:59

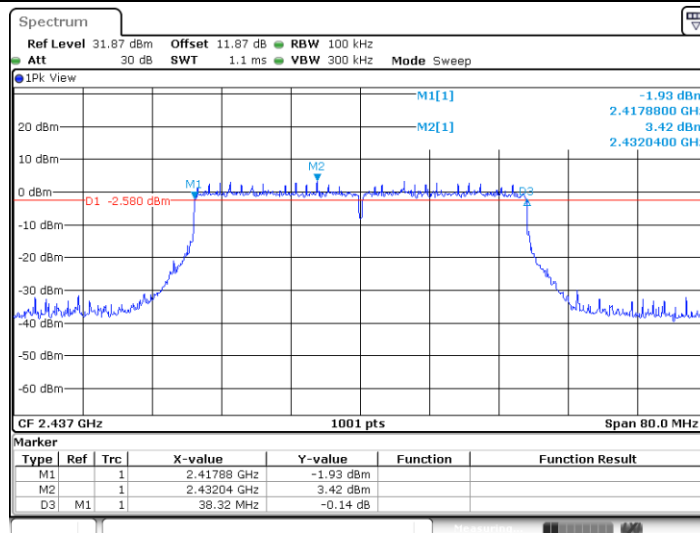


11BE40MIMO_Ant1_2437



Date: 17.APR.2024 21:19:16

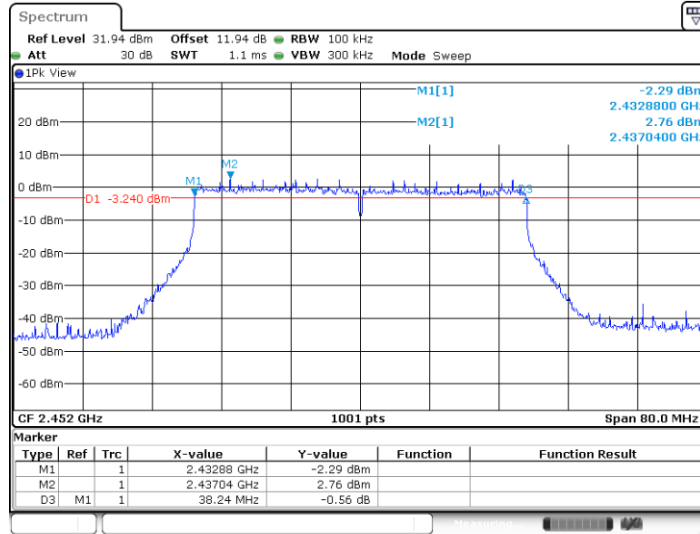
11BE40MIMO_Ant2_2437



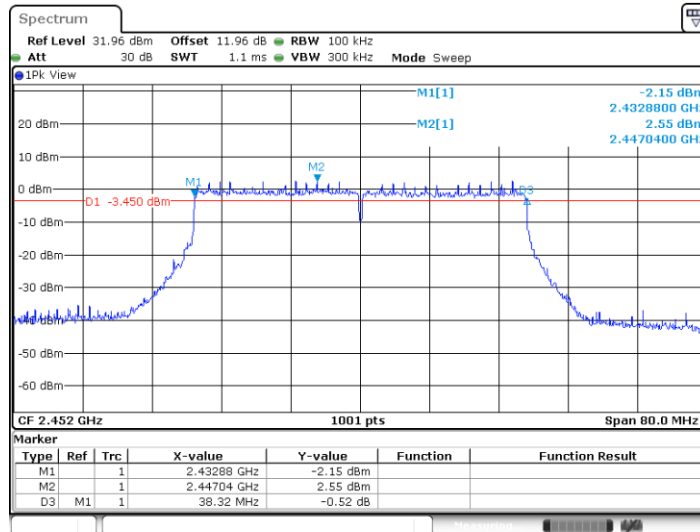
Date: 17.APR.2024 21:20:11



11BE40MIMO_Ant1_2452



11BE40MIMO_Ant2_2452





Occupied Channel Bandwidth

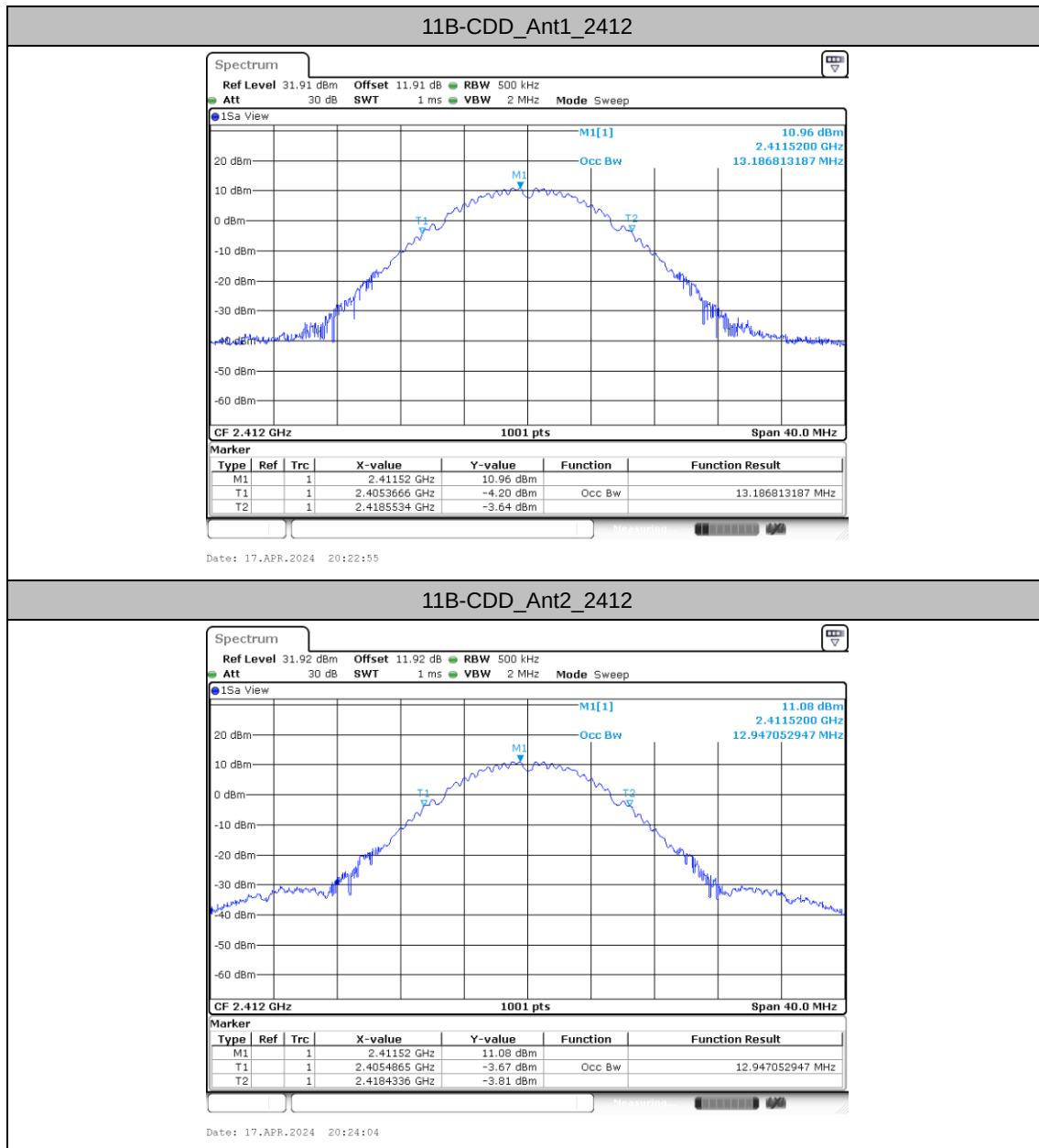
Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B-CDD	Ant1	2412	13.187	2405.3666	2418.5534	---	---
	Ant2	2412	12.947	2405.4865	2418.4336	---	---
	Ant1	2437	13.187	2430.4066	2443.5934	---	---
	Ant2	2437	13.027	2430.4865	2443.5135	---	---
	Ant1	2462	13.267	2455.3666	2468.6334	---	---
	Ant2	2462	13.307	2455.3267	2468.6334	---	---
11G-CDD	Ant1	2412	17.662	2403.0889	2420.7512	---	---
	Ant2	2412	17.463	2403.2488	2420.7113	---	---
	Ant1	2437	17.622	2428.1688	2445.7912	---	---
	Ant2	2437	17.383	2428.3287	2445.7113	---	---
	Ant1	2462	17.742	2453.0889	2470.8312	---	---
	Ant2	2462	17.383	2453.2887	2470.6713	---	---
11N20MIMO	Ant1	2412	18.621	2402.6494	2421.2707	---	---
	Ant2	2412	18.581	2402.6893	2421.2707	---	---
	Ant1	2437	18.581	2427.7293	2446.3107	---	---
	Ant2	2437	18.501	2427.7692	2446.2707	---	---
	Ant1	2462	18.661	2452.6094	2471.2707	---	---
	Ant2	2462	18.501	2452.7293	2471.2308	---	---
11N40MIMO	Ant1	2422	37.323	2403.2987	2440.6214	---	---
	Ant2	2422	37.403	2403.2188	2440.6214	---	---
	Ant1	2437	37.243	2418.3786	2455.6214	---	---
	Ant2	2437	37.323	2418.2987	2455.6214	---	---
	Ant1	2452	37.483	2433.2188	2470.7013	---	---
	Ant2	2452	37.403	2433.2188	2470.6214	---	---
11BE20MIMO	Ant1	2412	19.381	2402.2897	2421.6703	---	---
	Ant2	2412	19.341	2402.3297	2421.6703	---	---
	Ant1	2437	19.341	2427.3297	2446.6703	---	---
	Ant2	2437	19.381	2427.3297	2446.7103	---	---
	Ant1	2462	19.421	2452.2897	2471.7103	---	---
	Ant2	2462	19.421	2452.2897	2471.7103	---	---
11BE40MIMO	Ant1	2422	38.681	2402.6593	2441.3407	---	---
	Ant2	2422	38.681	2402.6593	2441.3407	---	---
	Ant1	2437	38.601	2417.6593	2456.2607	---	---
	Ant2	2437	38.521	2417.7393	2456.2607	---	---
	Ant1	2452	38.601	2432.6593	2471.2607	---	---



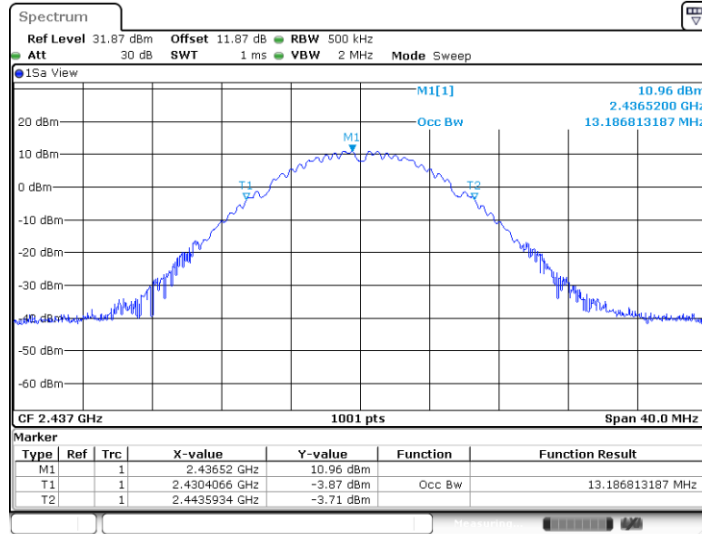
	Ant2	2452	38.681	2432.6593	2471.3407	---	---
--	------	------	--------	-----------	-----------	-----	-----

Test Graphs



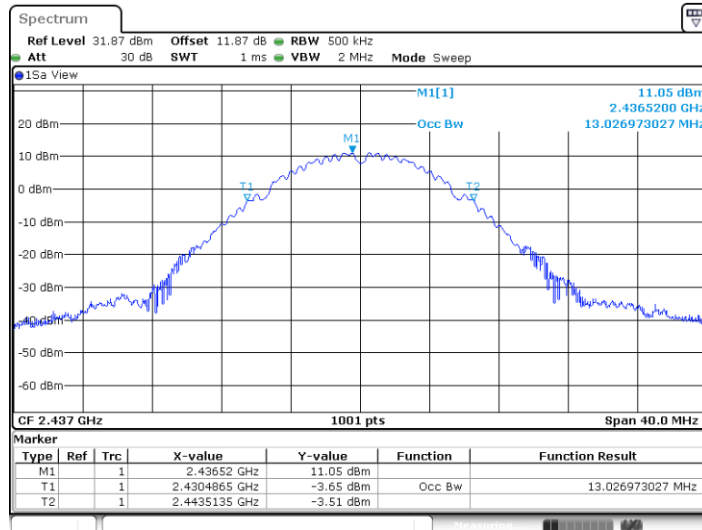


11B-CDD_Ant1_2437



Date: 17.APR.2024 20:25:35

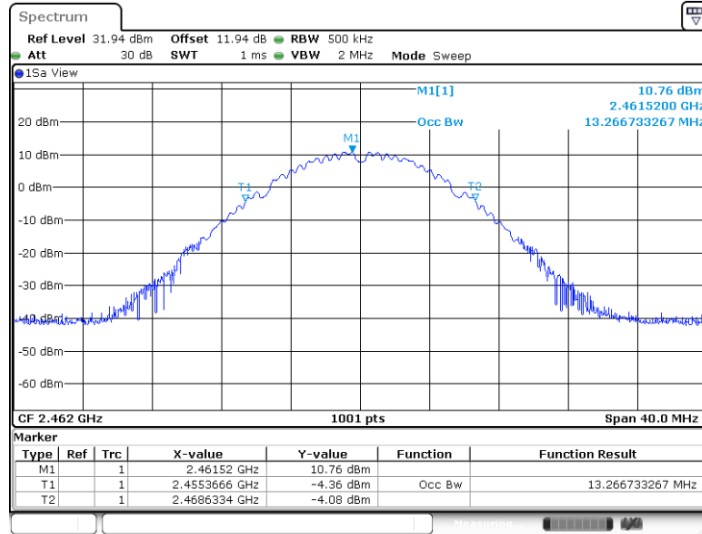
11B-CDD_Ant2_2437



Date: 17.APR.2024 20:26:30

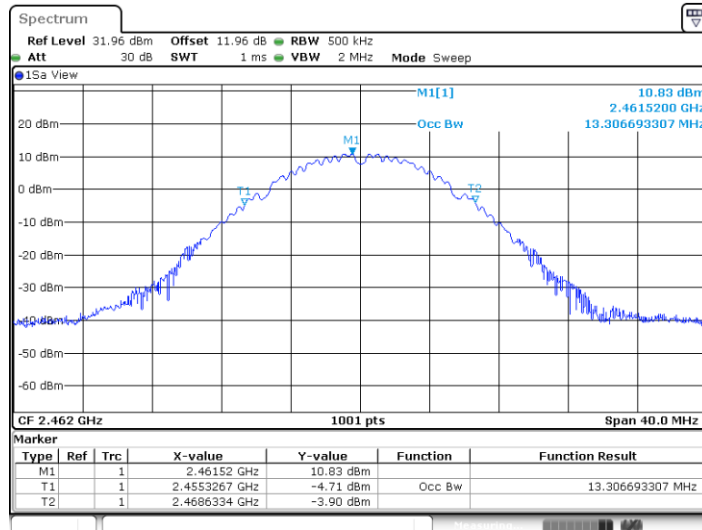


11B-CDD_Ant1_2462



Date: 17.APR.2024 20:27:59

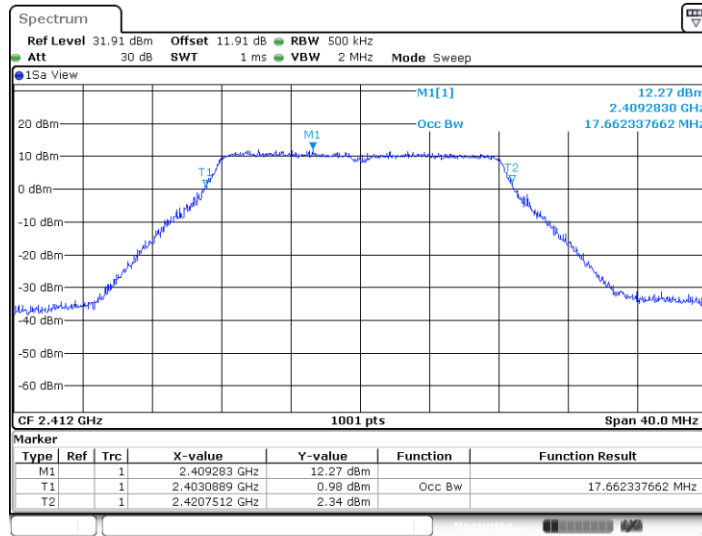
11B-CDD_Ant2_2462



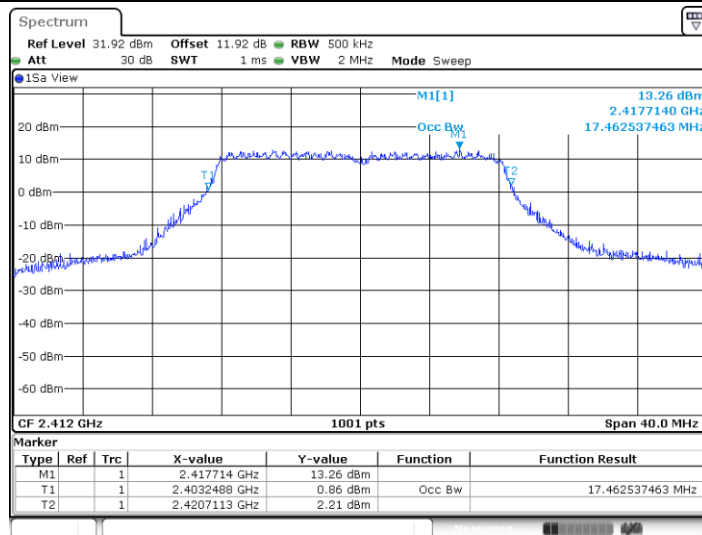
Date: 17.APR.2024 20:29:08



11G-CDD_Ant1_2412

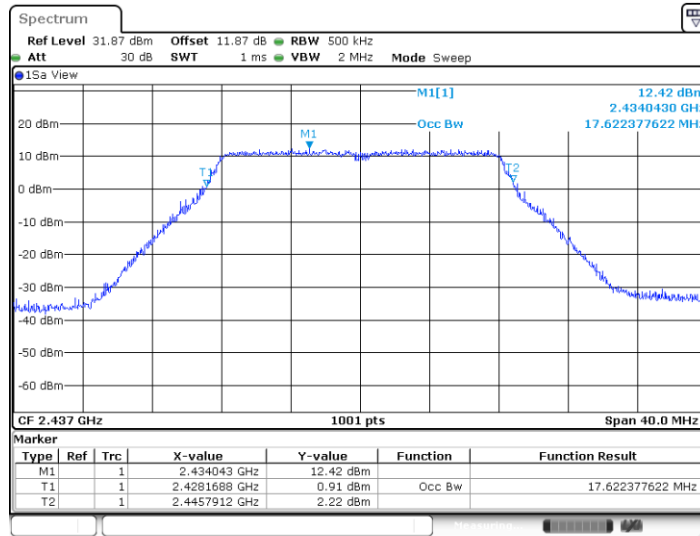


11G-CDD_Ant2_2412



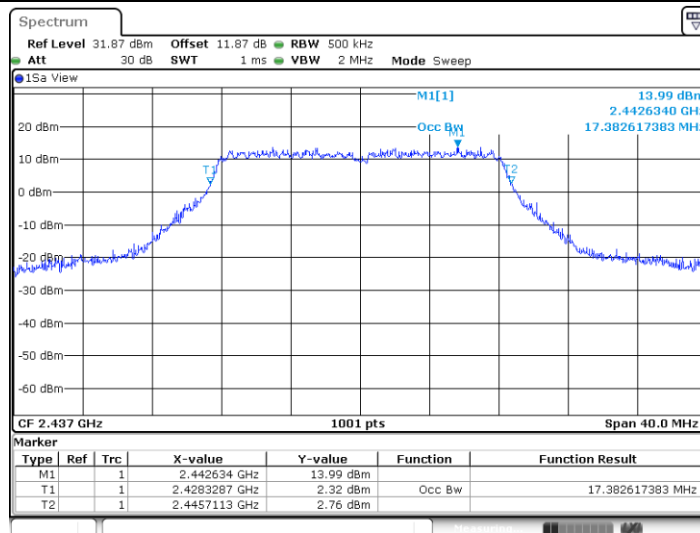


11G-CDD_Ant1_2437



Date: 17.APR.2024 20:33:16

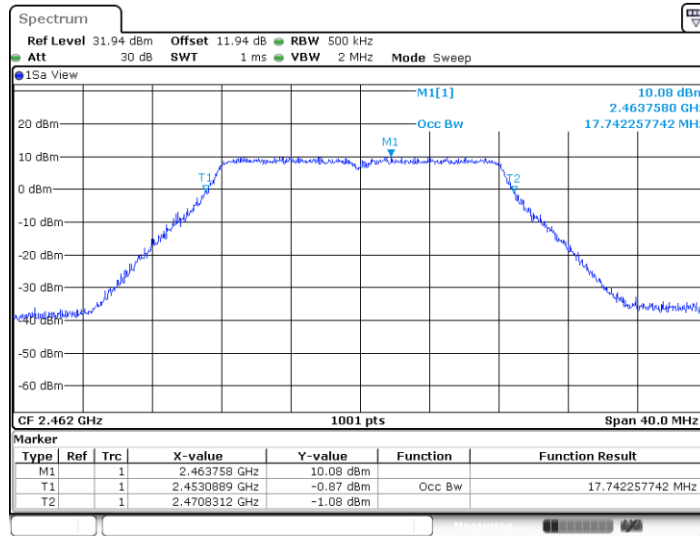
11G-CDD_Ant2_2437



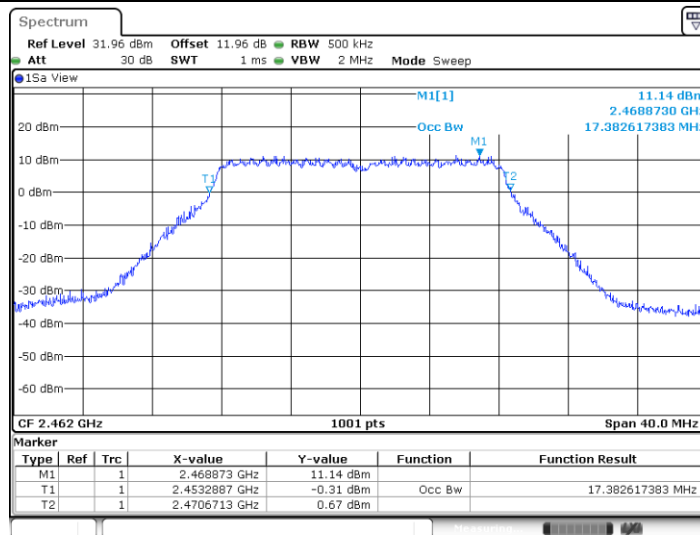
Date: 17.APR.2024 20:34:11



11G-CDD_Ant1_2462

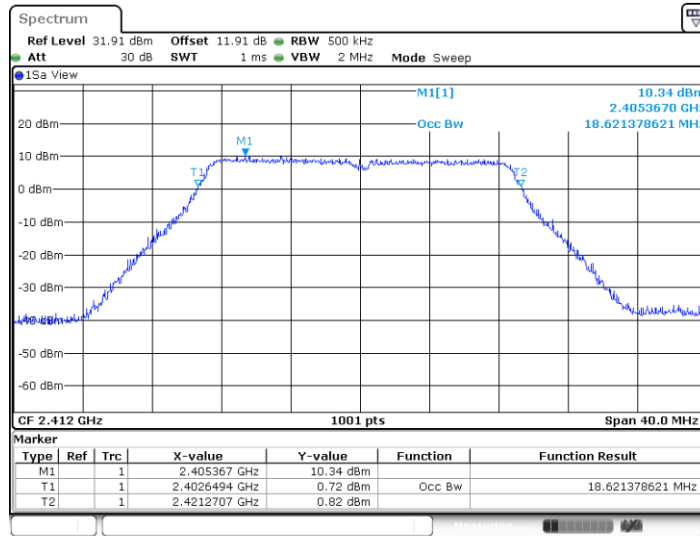


11G-CDD_Ant2_2462

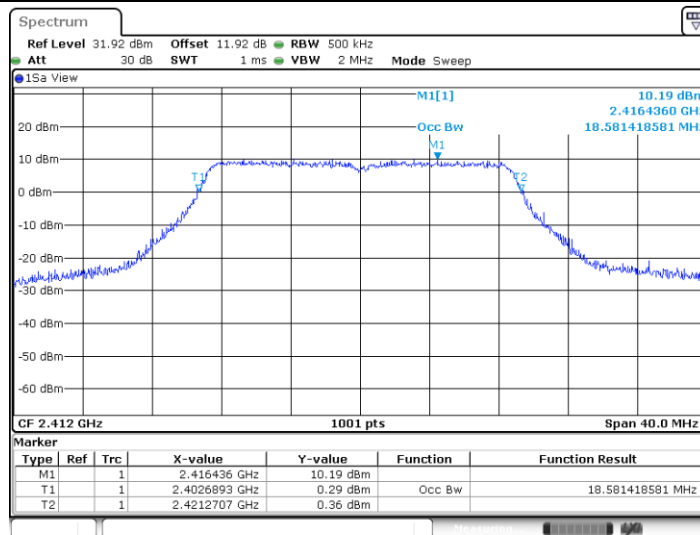




11N20MIMO_Ant1_2412

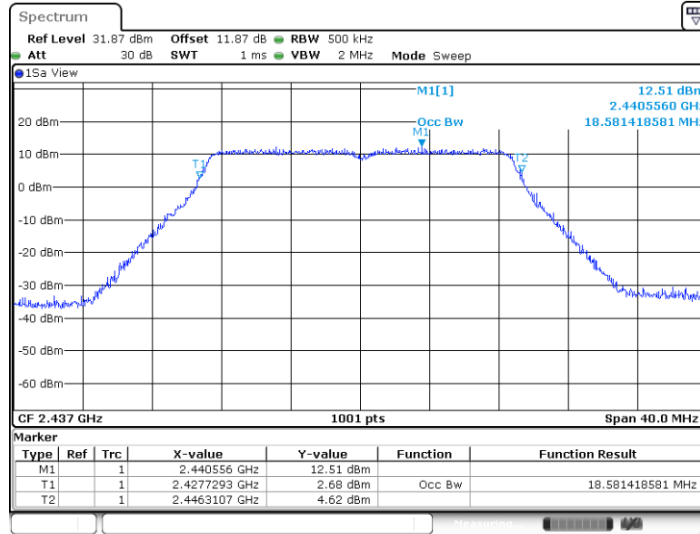


11N20MIMO_Ant2_2412



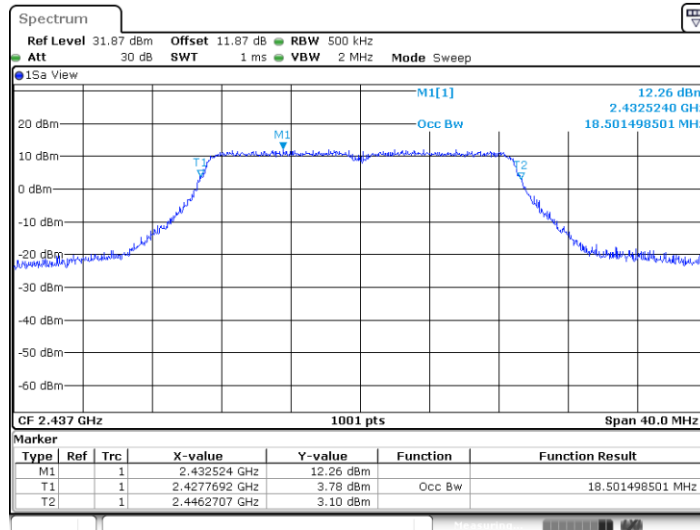


11N20MIMO_Ant1_2437



Date: 17.APR.2024 20:42:35

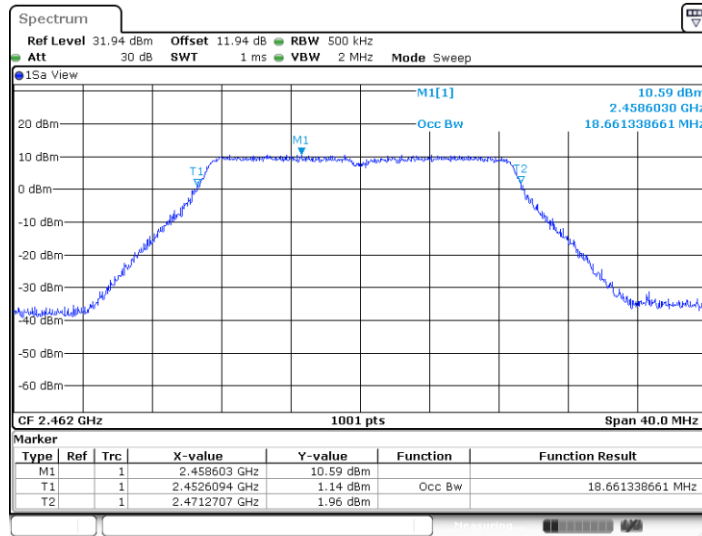
11N20MIMO_Ant2_2437



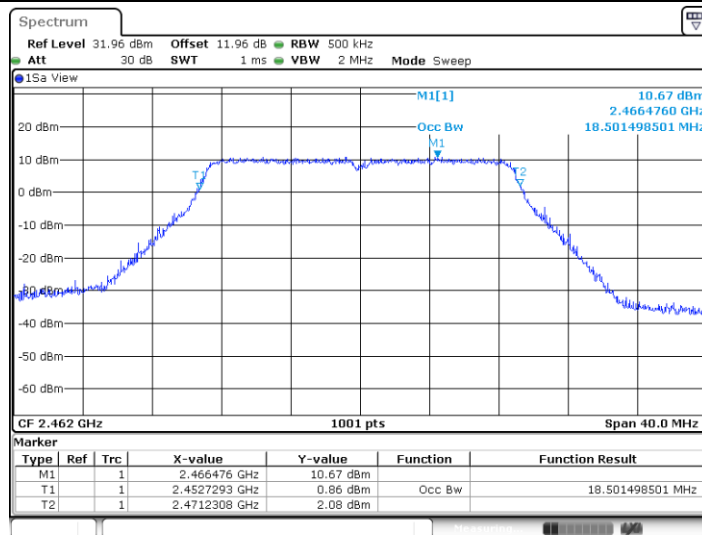
Date: 17.APR.2024 20:43:30



11N20MIMO_Ant1_2462

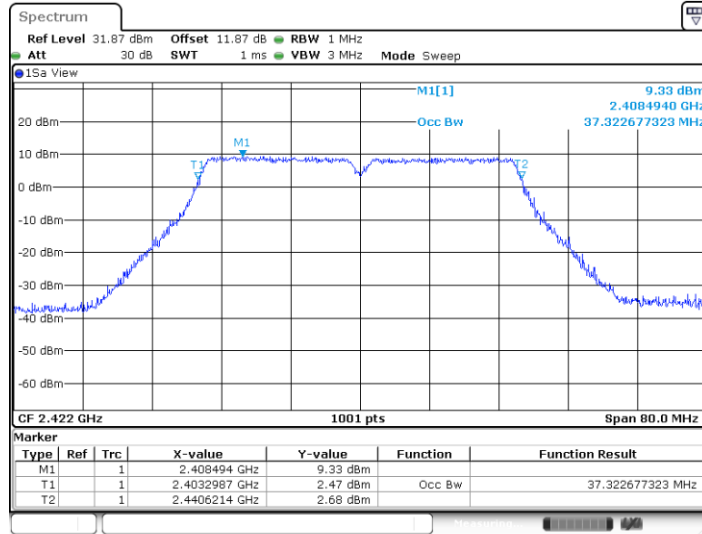


11N20MIMO_Ant2_2462

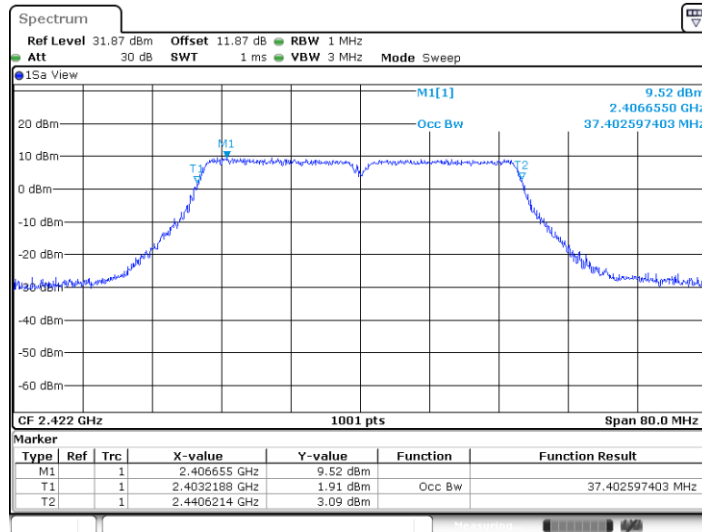




11N40MIMO_Ant1_2422

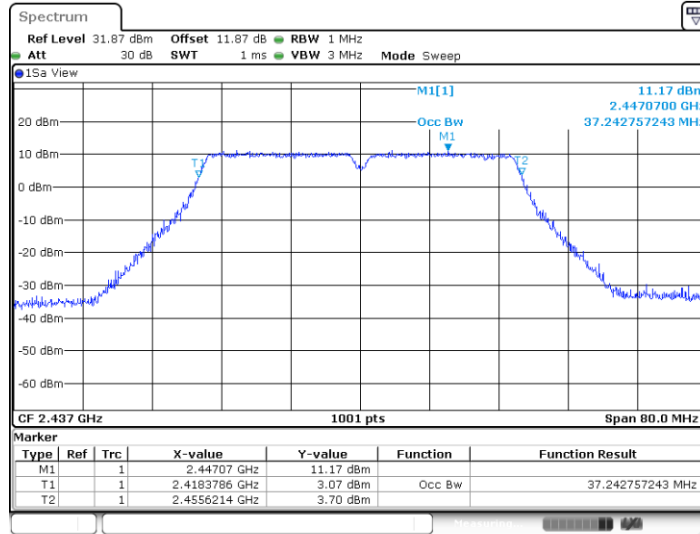


11N40MIMO_Ant2_2422

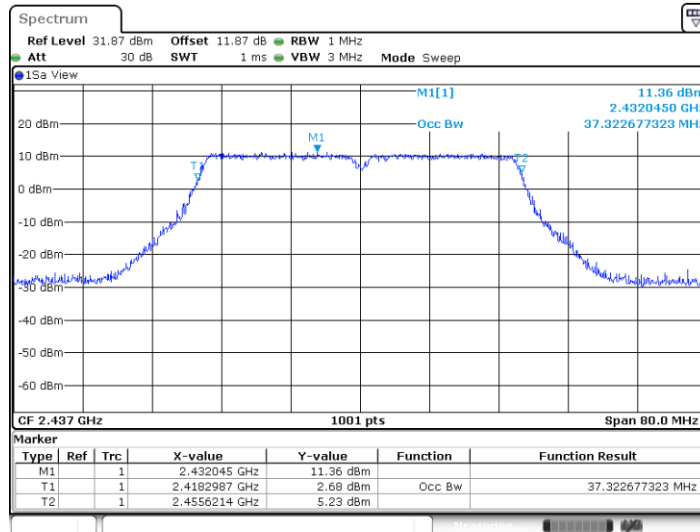




11N40MIMO_Ant1_2437

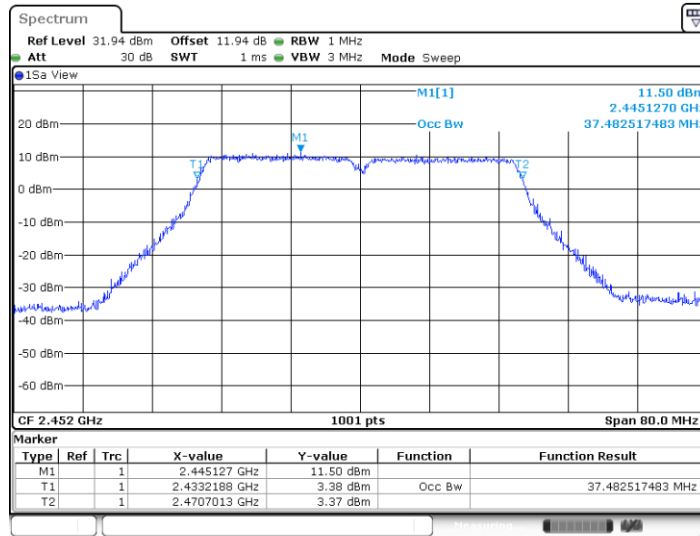


11N40MIMO_Ant2_2437



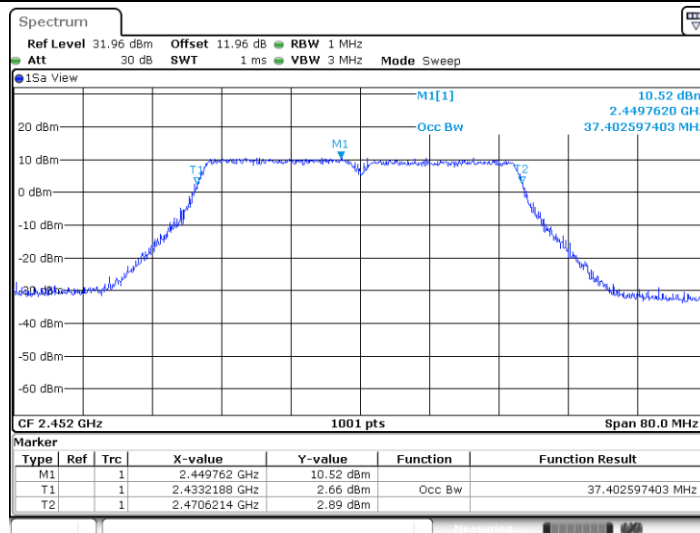


11N40MIMO_Ant1_2452



Date: 17.APR.2024 20:55:32

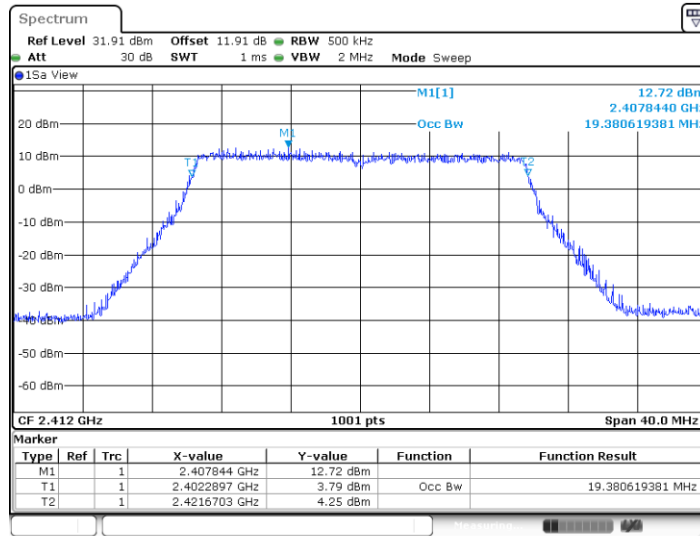
11N40MIMO_Ant2_2452



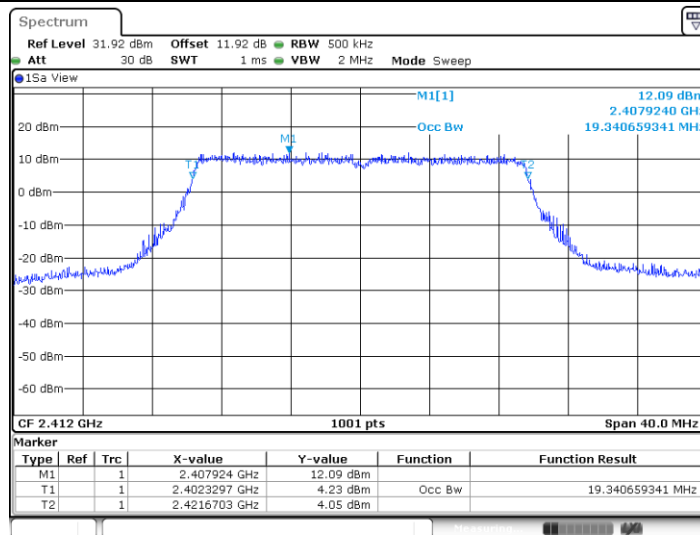
Date: 17.APR.2024 20:56:40



11BE20MIMO_Ant1_2412

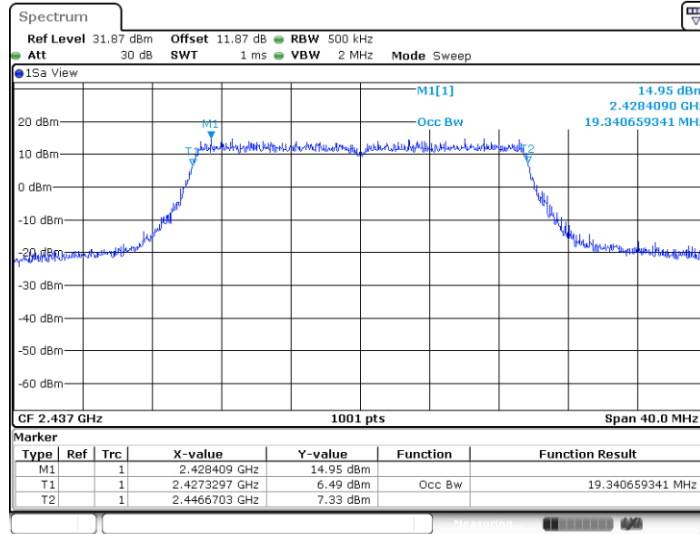


11BE20MIMO_Ant2_2412



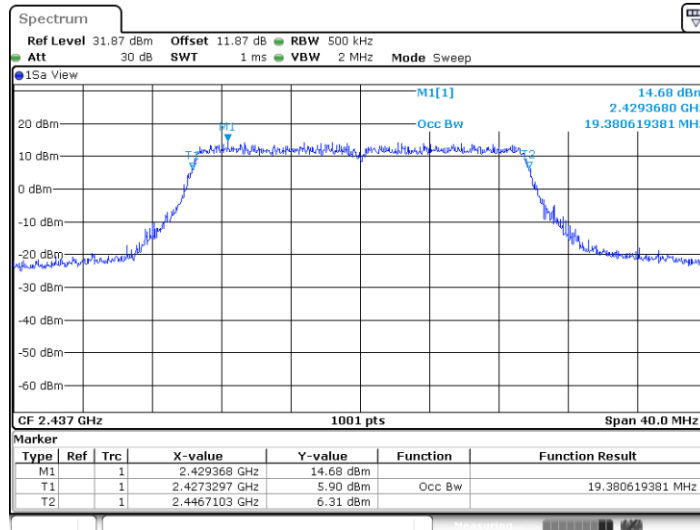


11BE20MIMO_Ant1_2437



Date: 17.APR.2024 21:00:56

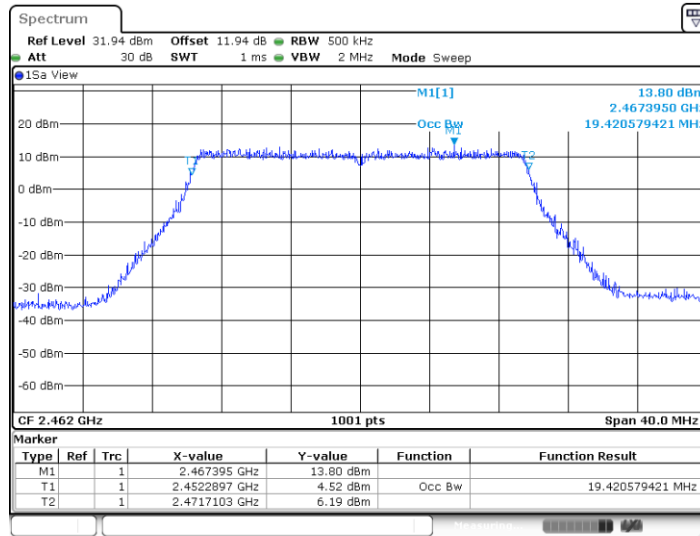
11BE20MIMO_Ant2_2437



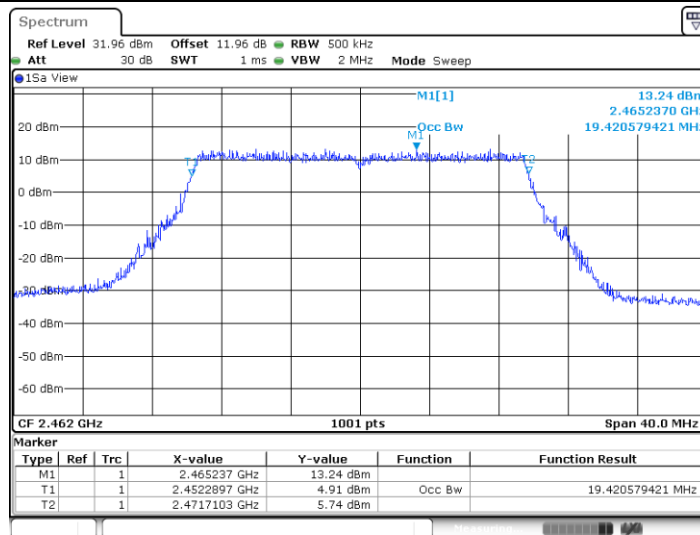
Date: 17.APR.2024 21:01:52



11BE20MIMO_Ant1_2462

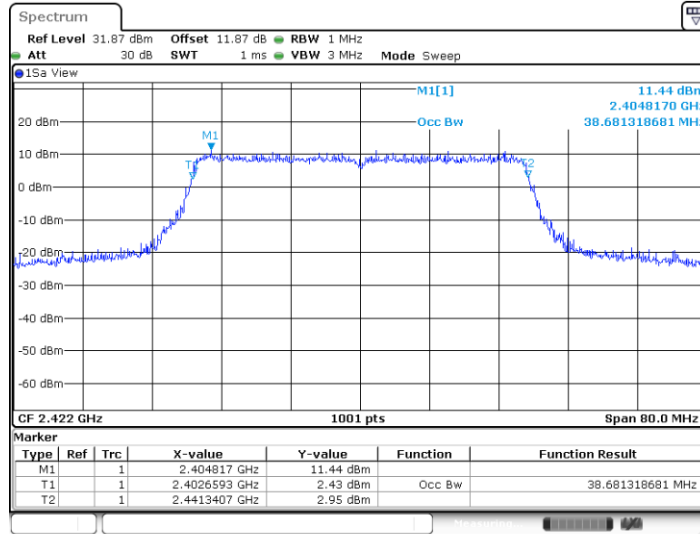


11BE20MIMO_Ant2_2462



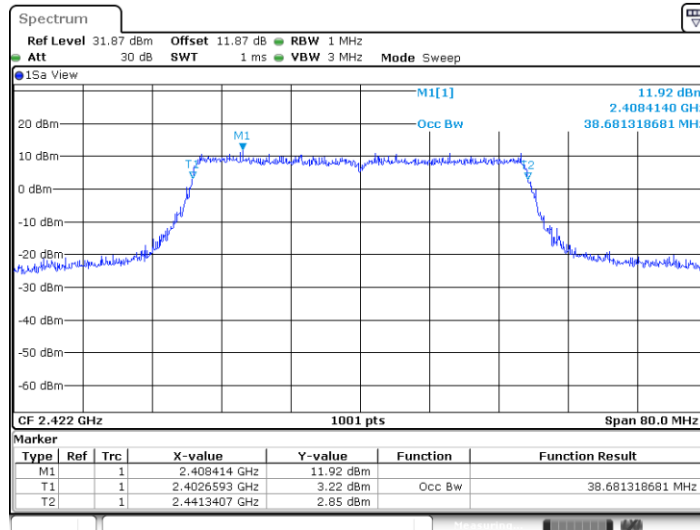


11BE40MIMO_Ant1_2422



Date: 17.APR.2024 21:16:56

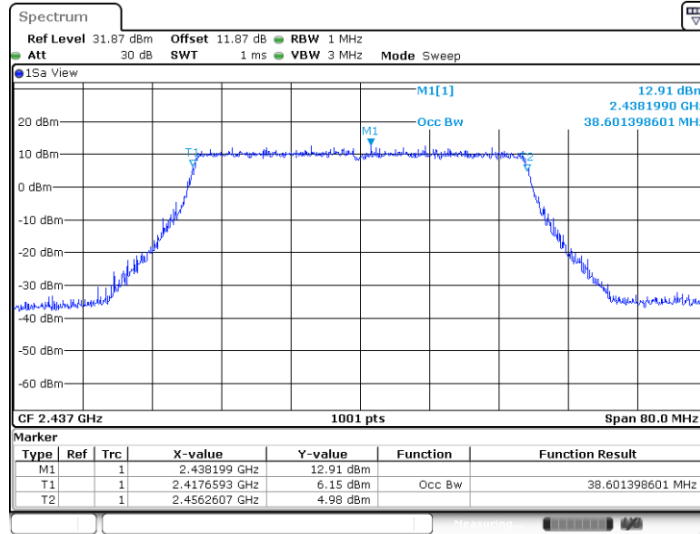
11BE40MIMO_Ant2_2422



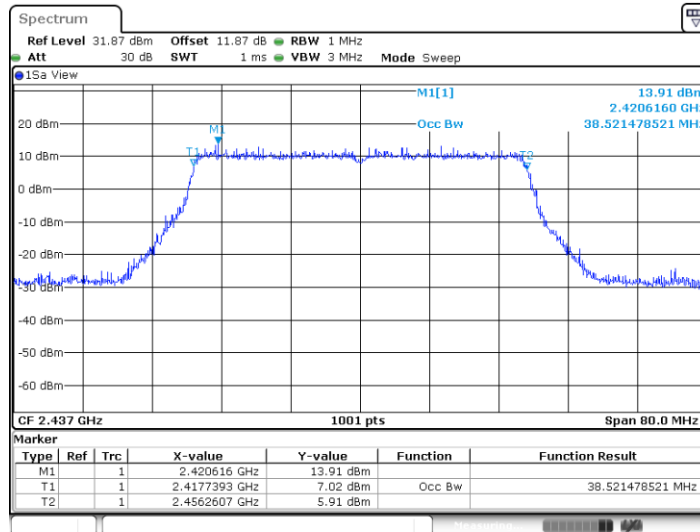
Date: 17.APR.2024 21:18:04



11BE40MIMO_Ant1_2437

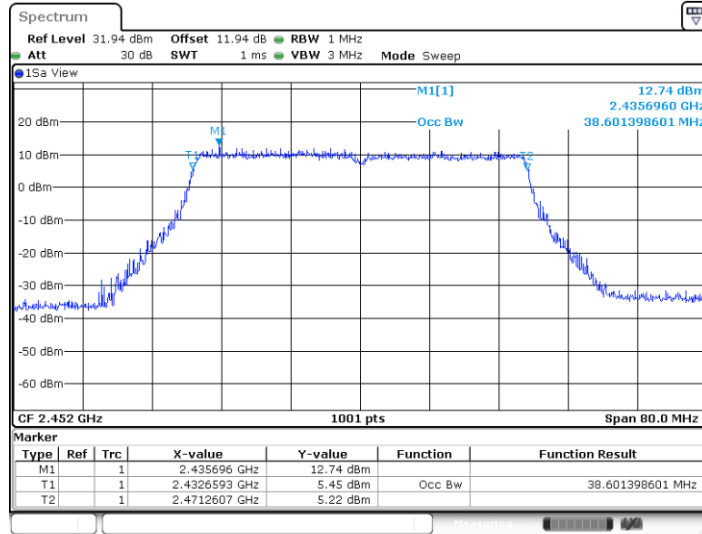


11BE40MIMO_Ant2_2437



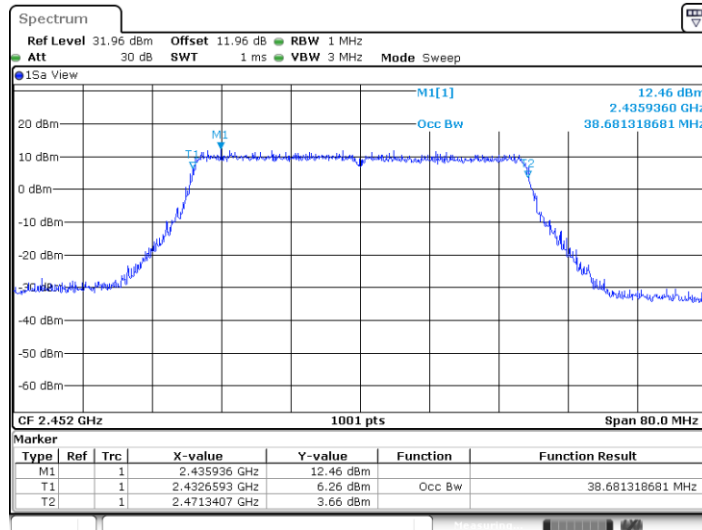


11BE40MIMO_Ant1_2452



Date: 17.APR.2024 21:21:30

11BE40MIMO_Ant2_2452



Date: 17.APR.2024 21:22:38



Maximum power spectral density

Test Result

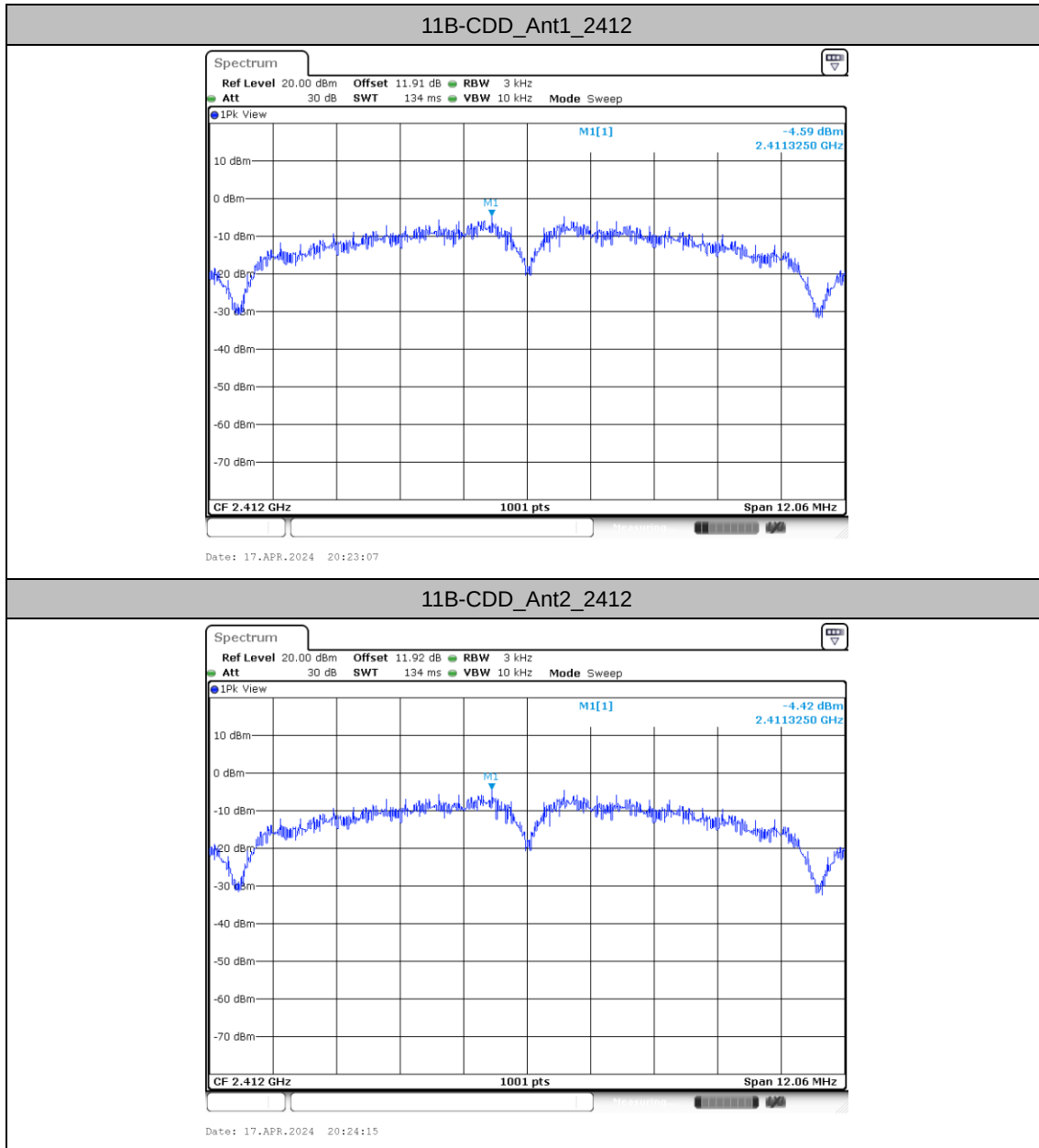
TestMode	Antenna	Freq(MHz)	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B-CDD	Ant1	2412	-4.59	≤8.00	PASS
	Ant2	2412	-4.42	≤8.00	PASS
	total	2412	-1.49	≤8.00	PASS
	Ant1	2437	-4.32	≤8.00	PASS
	Ant2	2437	-4.22	≤8.00	PASS
	total	2437	-1.26	≤8.00	PASS
	Ant1	2462	-4.78	≤8.00	PASS
	Ant2	2462	-4.7	≤8.00	PASS
	total	2462	-1.73	≤8.00	PASS
11G-CDD	Ant1	2412	-7.17	≤8.00	PASS
	Ant2	2412	-6.98	≤8.00	PASS
	total	2412	-4.06	≤8.00	PASS
	Ant1	2437	-6.93	≤8.00	PASS
	Ant2	2437	-5.65	≤8.00	PASS
	total	2437	-3.23	≤8.00	PASS
	Ant1	2462	-9.14	≤8.00	PASS
	Ant2	2462	-9.25	≤8.00	PASS
	total	2462	-6.18	≤8.00	PASS
11N20MIMO	Ant1	2412	-8.11	≤8.00	PASS
	Ant2	2412	-7.78	≤8.00	PASS
	total	2412	-4.93	≤8.00	PASS
	Ant1	2437	-5.67	≤8.00	PASS
	Ant2	2437	-6.64	≤8.00	PASS
	total	2437	-3.12	≤8.00	PASS
	Ant1	2462	-7.15	≤8.00	PASS
	Ant2	2462	-7.67	≤8.00	PASS
	total	2462	-4.39	≤8.00	PASS
11N40MIMO	Ant1	2422	-12.69	≤8.00	PASS
	Ant2	2422	-13.74	≤8.00	PASS
	total	2422	-10.17	≤8.00	PASS
	Ant1	2437	-10.33	≤8.00	PASS
	Ant2	2437	-11.24	≤8.00	PASS
	total	2437	-7.75	≤8.00	PASS
	Ant1	2452	-12.53	≤8.00	PASS



	Ant2	2452	-11.46	≤8.00	PASS
	total	2452	-8.95	≤8.00	PASS
11BE20MIMO	Ant1	2412	-9.4	≤8.00	PASS
	Ant2	2412	-10.09	≤8.00	PASS
	total	2412	-6.72	≤8.00	PASS
	Ant1	2437	-6.89	≤8.00	PASS
	Ant2	2437	-6.87	≤8.00	PASS
	total	2437	-3.87	≤8.00	PASS
	Ant1	2462	-7.16	≤8.00	PASS
	Ant2	2462	-9.02	≤8.00	PASS
	total	2462	-4.98	≤8.00	PASS
11BE40MIMO	Ant1	2422	-13.88	≤8.00	PASS
	Ant2	2422	-12.82	≤8.00	PASS
	total	2422	-10.31	≤8.00	PASS
	Ant1	2437	-11.83	≤8.00	PASS
	Ant2	2437	-11.25	≤8.00	PASS
	total	2437	-8.52	≤8.00	PASS
	Ant1	2452	-12.67	≤8.00	PASS
	Ant2	2452	-12.08	≤8.00	PASS
	total	2452	-9.35	≤8.00	PASS

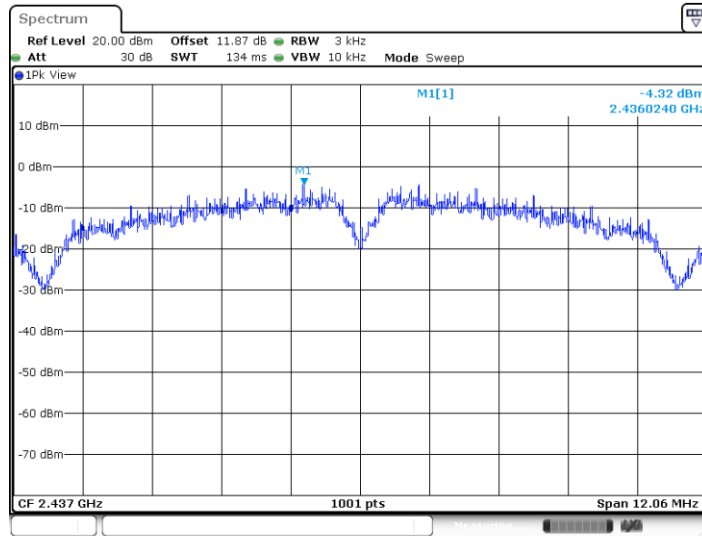


Test Graphs

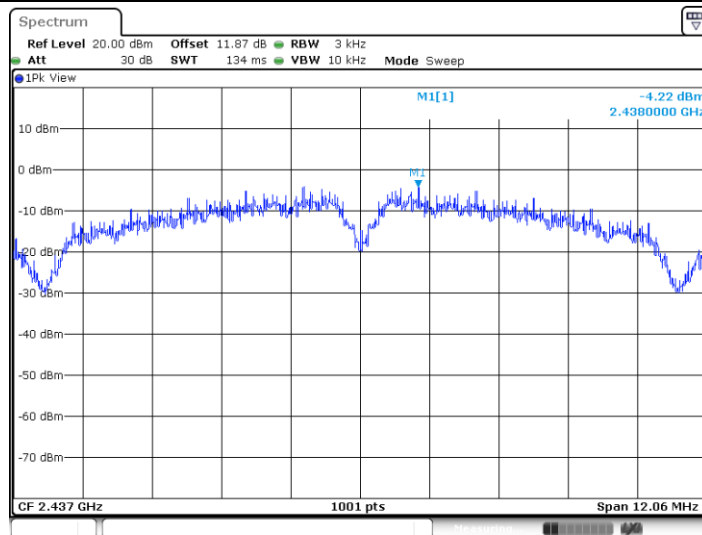




11B-CDD_Ant1_2437

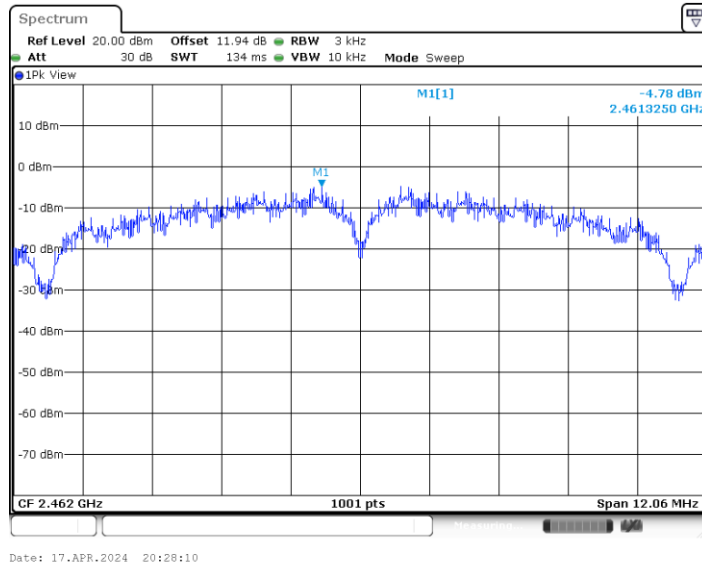


11B-CDD_Ant2_2437

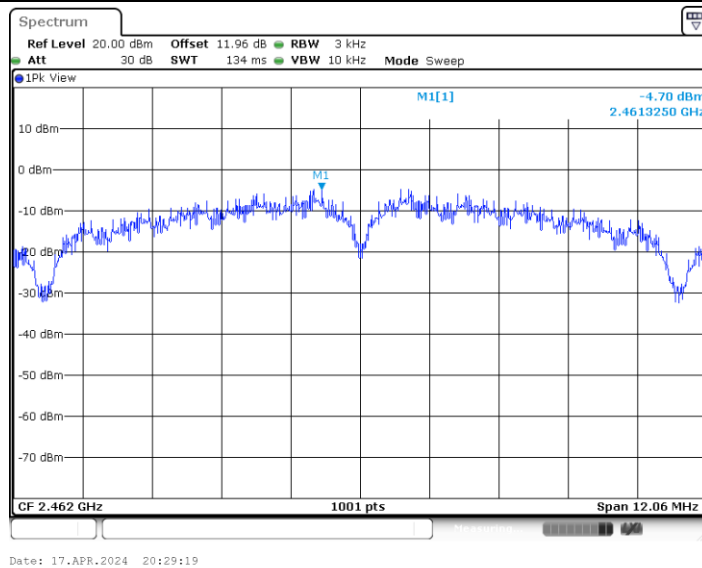




11B-CDD_Ant1_2462

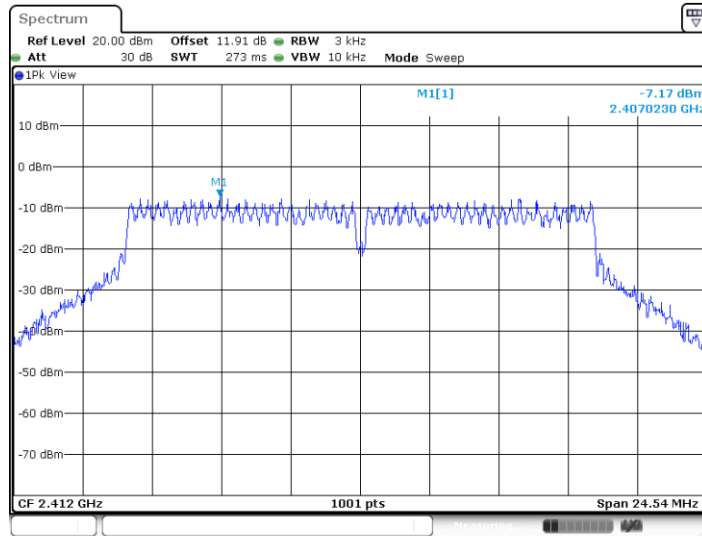


11B-CDD_Ant2_2462



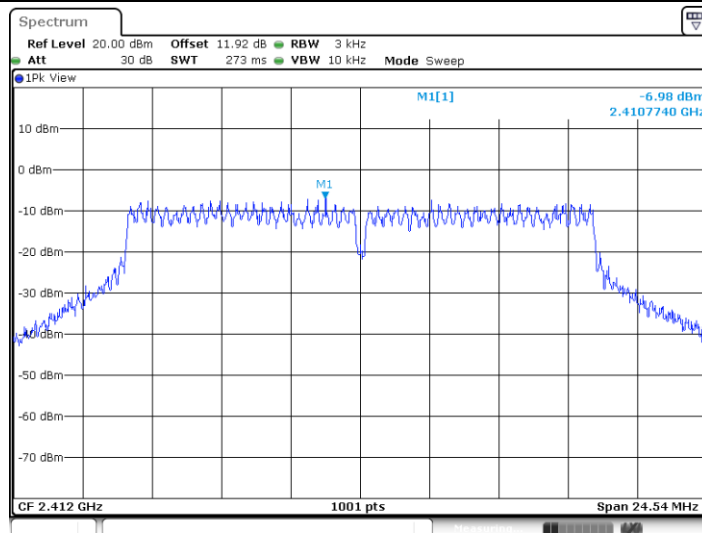


11G-CDD_Ant1_2412



Date: 17.APR.2024 20:30:59

11G-CDD_Ant2_2412



Date: 17.APR.2024 20:32:08