



# FCC RF Test Report

**APPLICANT** : Nextivity, Inc.  
**EQUIPMENT** : SHIELD MegaFi 2  
**BRAND NAME** : Nextivity  
**MODEL NAME** : M4D-UC  
**FCC ID** : YETM4D-UC  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System  
**TEST DATE(S)** : Dec. 10, 2024 ~ Jan. 21, 2025

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.



Approved by: Jason Jia

**Sportun 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
<b>1 GENERAL DESCRIPTION.....</b>	<b>5</b>
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 .....	7
1.6 Testing Location .....	7
1.7 Test Software.....	7
1.8 Applicable Standards.....	7
<b>2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....</b>	<b>8</b>
2.1 Carrier Frequency and Channel .....	8
2.2 Test Mode.....	9
2.3 Connection Diagram of Test System.....	9
2.4 Support Unit used in test configuration and system .....	10
2.5 EUT Operation Test Setup .....	10
2.6 Measurement Results Explanation Example.....	10
<b>3 TEST RESULT.....</b>	<b>12</b>
3.1 6dB and 99% Bandwidth Measurement .....	12
3.2 Output Power Measurement.....	13
3.3 Power Spectral Density Measurement .....	16
3.4 Conducted Band Edges and Spurious Emission Measurement .....	18
3.5 Radiated Band Edges and Spurious Emission Measurement .....	19
3.6 AC Conducted Emission Measurement.....	23
3.7 Antenna Requirements .....	25
<b>4 LIST OF MEASURING EQUIPMENT .....</b>	<b>27</b>
<b>5 MEASUREMENT UNCERTAINTY .....</b>	<b>28</b>

### 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



## 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 0.56 dB at 2484.22 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 12.62 dB at 0.156 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/manufacturer 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

**Nextivity, Inc.**

16550 West Bernardo Drive, Building 5, Suite 550, San Diego, CA 92127 USA

### 1.2 Manufacturer

**Asiatelco Technologies Co.**

#68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China

### 1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	SHIELD MegaFi 2
Brand Name	Nextivity
Model Name	M4D-UC
FCC ID	YETM4D-UC
SN Code	Conducted: 243902000030 Conduction: 243902000032 Radiation: 243902000026
HW Version	1.0
SW Version	1.2.0.0
EUT Stage	Identical Prototype

**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	
<b>Tx/Rx Channel Frequency Range</b>	2412 MHz ~ 2462 MHz
<b>Maximum (Peak) Output Power to antenna</b>	<b>&lt;MIMO Ant.1+2&gt;</b> 802.11b : 25.47 dBm (0.3524 W) 802.11g : 26.86 dBm (0.4853 W) 802.11n HT20 : 24.25 dBm (0.2661 W) 802.11n HT40 : 23.03 dBm (0.2009 W) 802.11ax HE20 : 24.48 dBm (0.2805 W) 802.11ax HE40 : 23.11 dBm (0.2046 W)
<b>99% Occupied Bandwidth</b>	802.11b : 12.747MHz 802.11g : 17.662MHz 802.11n HT20 : 18.701MHz 802.11n HT40 : 36.843MHz 802.11ax HE20 : 19.341MHz 802.11ax HE40 : 38.122MHz
<b>Antenna Type</b>	Paddle Antenna: Dipole Antenna Sharkfin Antenna: Monopole Antenna
<b>Type of Modulation</b>	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)

1. The device supports WLAN MIMO CDD mode.
2. For WLAN SISO & MIMO mode, the whole testing has assessed only MIMO mode by referring to the higher normal output power.
3. For 802.11n HT20/ax HE20 mode and 802.11n HT40/ax HE40 mode, the whole testing have assessed only 802.11ax HE20/HE40 by referring to the higher output power for RSE testing.
4. There are two type of EUT, which only differ in antenna. Sample 1 with paddle antenna and sample 2 with sharkfin antenna. Based on the max antenna gain, we chose sample 1 for RF testing.

### Paddle Antenna:

Frequency Band	Max Single Antenna gain (dBi)		CDD DG (dBi)	
	Ant.1	Ant.2	For Power	For PSD
2.4GHz	2.8	2.8	2.8	5.81

### Sharkfin Antenna:

Frequency Band	Max Single Antenna gain (dBi)		CDD DG (dBi)	
	Ant.1	Ant.2	For Power	For PSD
2.4GHz	2.05	2.05	2.05	5.06

### Description of antenna naming for each test item:

Test data	EUT Antenna port	Antenna Report
Ant.1	WIFI1	Wifi 2.4GHz
Ant.2	WIFI3	Wifi 2.4GHz

**Remark:** The Ant.1 of test data in this report corresponding to EUT antenna port is WIFI1, Ant.2 of test data corresponding to EUT antenna port is WIFI3. The two antennas are identical and correspond to Wifi 2.4GHz in the antenna report.



## 1.5 Modification of EUT

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

## 1.6 Testing Location

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

<b>Test Firm</b>	Sportun International Inc. (Kunshan)		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
<b>Test Site No.</b>	<b>Sportun Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CO01-KS 03CH08-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.	03CH08-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:**

- All test items were verified and recorded according to the standards and without any deviation during the test.
- 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 (X 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.

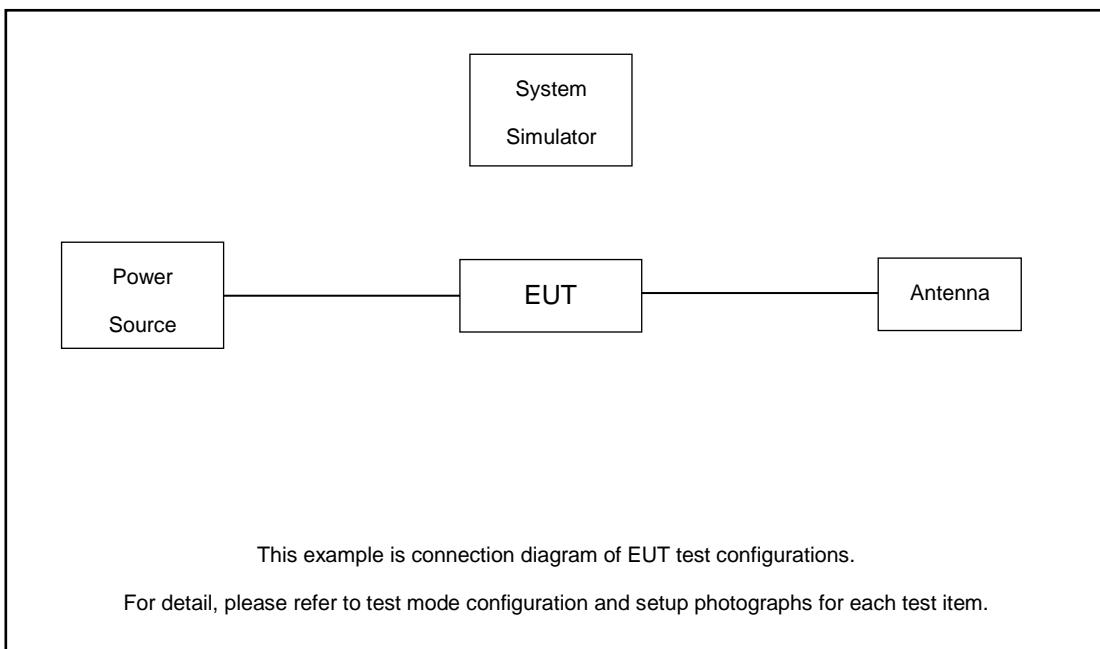
**MIMO Antenna**

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

Test Cases	
AC Conducted Emission	Mode 1 :LTE Band 5 Idle + WLAN Tx(2.4G) + Power From Adapter for sample 1
Remark: For Radiated Test Cases, the tests were performance with Adapter for sample 2.	

## 2.3 Connection Diagram of Test System

AC Conducted Emission:





Radiated Emission:



This example is connection diagram of EUT test configurations.

For detail, please refer to test mode configuration and setup photographs for each test item.

## 2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritus	MT8821C	N/A	N/A	Unshielded,1.8m
2.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

## 2.5 EUT Operation Test Setup

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

## 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 1.71 dB and 20dB attenuator.

*Offset(dB) = RF cable loss(dB) + attenuator factor(dB).*

$$= 1.71 + 20 = 21.71 \text{ (dB)}$$

### 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.

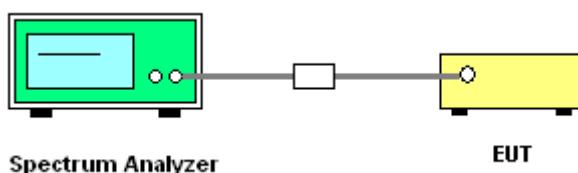
##### 3.1.2 Measuring Instruments

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)  $\geq 3 \times \text{RBW}$ . 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) approximately three times the RBW.
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.

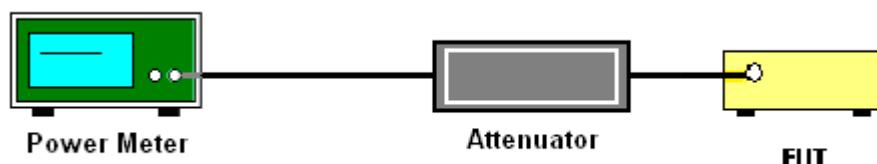
### 3.2.2 Measuring Instruments

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

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	22.43	22.46	25.46	30.00		2.8		28.26		36.00		Pass
11b	1Mbps	2	6	2437	22.47	22.45	25.47	30.00		2.8		28.27		36.00		Pass
11b	1Mbps	2	11	2462	22.48	22.32	25.41	30.00		2.8		28.21		36.00		Pass
11g	6Mbps	2	1	2412	23.76	23.94	26.86	30.00		2.8		29.66		36.00		Pass
11g	6Mbps	2	6	2437	22.76	22.73	25.76	30.00		2.8		28.56		36.00		Pass
11g	6Mbps	2	11	2462	22.95	22.86	25.92	30.00		2.8		28.72		36.00		Pass
HT20	MCS0	2	1	2412	20.66	20.63	23.66	30.00		2.8		26.46		36.00		Pass
HT20	MCS0	2	6	2437	21.19	21.29	24.25	30.00		2.8		27.05		36.00		Pass
HT20	MCS0	2	11	2462	20.91	20.96	23.95	30.00		2.8		26.75		36.00		Pass
HT40	MCS0	2	3	2422	19.98	20.06	23.03	30.00		2.8		25.83		36.00		Pass
HT40	MCS0	2	6	2437	17.09	17.02	20.07	30.00		2.8		22.87		36.00		Pass
HT40	MCS0	2	9	2452	14.39	14.18	17.30	30.00		2.8		20.10		36.00		Pass

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	20.95	21.27	24.12	30.00		2.8		26.92		36.00		Pass
HE20	MCS0	2	6	2437	Full	21.48	21.46	24.48	30.00		2.8		27.28		36.00		Pass
HE20	MCS0	2	11	2462	Full	21.25	21.22	24.25	30.00		2.8		27.05		36.00		Pass
HE40	MCS0	2	3	2422	Full	20.06	20.13	23.11	30.00		2.8		25.91		36.00		Pass
HE40	MCS0	2	6	2437	Full	17.21	17.13	20.18	30.00		2.8		22.98		36.00		Pass
HE40	MCS0	2	9	2452	Full	14.63	14.38	17.52	30.00		2.8		20.32		36.00		Pass



## 3.2.6 Test Result of Average Output Power (Reporting Only)

2.4GHz Band MIMO																				
Mod.	Data Rate	NTX	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	0.03	0.03	19.81	19.98	22.91	30.00		2.8		25.71	36.00	Pass	18.00			
11b	1Mbps	2	6	2437	0.03	0.03	20.04	19.92	22.99	30.00		2.8		25.79	36.00	Pass	18.00			
11b	1Mbps	2	11	2462	0.03	0.03	19.99	19.85	22.93	30.00		2.8		25.73	36.00	Pass	18.00			
11g	6Mbps	2	1	2412	0.18	0.18	17.03	17.11	20.08	30.00		2.8		22.88	36.00	Pass	17.00			
11g	6Mbps	2	6	2437	0.18	0.18	17.11	17.06	20.10	30.00		2.8		22.90	36.00	Pass	17.00			
11g	6Mbps	2	11	2462	0.18	0.18	17.07	17.01	20.05	30.00		2.8		22.85	36.00	Pass	17.00			
HT20	MCS0	2	1	2412	0.19	0.19	14.01	13.94	16.99	30.00		2.8		19.79	36.00	Pass	15.50			
HT20	MCS0	2	6	2437	0.19	0.19	15.52	15.52	18.53	30.00		2.8		21.33	36.00	Pass	17.00			
HT20	MCS0	2	11	2462	0.19	0.19	14.93	14.83	17.89	30.00		2.8		20.69	36.00	Pass	16.50			
HT40	MCS0	2	3	2422	0.36	0.34	13.83	13.73	16.79	30.00		2.8		19.59	36.00	Pass	15.50			
HT40	MCS0	2	6	2437	0.36	0.34	11.14	11.06	14.11	30.00		2.8		16.91	36.00	Pass	13.00			
HT40	MCS0	2	9	2452	0.36	0.34	8.47	8.40	11.45	30.00		2.8		14.25	36.00	Pass	10.50			

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Average Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)		Setting	
						Ant1	Ant2	Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant 1	Ant 2
HE20	MCS0	2	1	2412	Full	0.21	0.24	14.16	14.23	17.21	2.8		20.01		15.50	
HE20	MCS0	2	6	2437	Full	0.21	0.24	15.65	15.70	18.69	2.8		21.49		17.00	
HE20	MCS0	2	11	2462	Full	0.21	0.24	15.07	14.98	18.04	2.8		20.84		16.50	
HE40	MCS0	2	3	2422	Full	0.42	0.44	13.95	13.99	16.98	2.8		19.78		15.50	
HE40	MCS0	2	6	2437	Full	0.42	0.44	11.43	11.42	14.44	2.8		17.24		13.00	
HE40	MCS0	2	9	2452	Full	0.42	0.44	8.79	8.61	11.71	2.8		14.51		10.50	



### 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

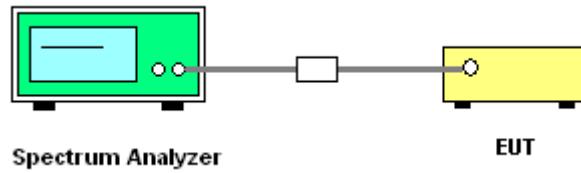
1. The testing follows Measurement Procedure of ANSI C63.10-2013 clause 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the 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 (a): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.



### 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.

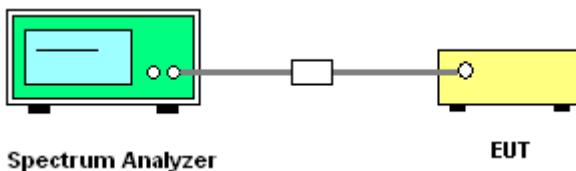
### 3.4.2 Measuring Instruments

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.

#### Antenna-port conducted measurements for Band Edge

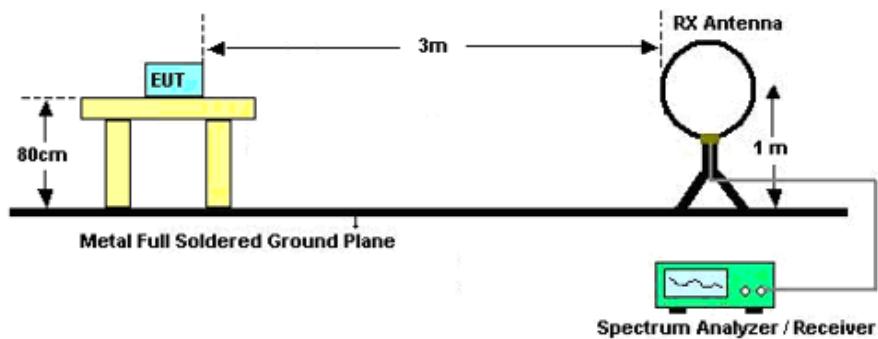
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Peak measurement:  $f \geq 1$  GHz; Set RBW = 1 MHz, VBW= 3MHz; Detector function = peak; Sweep time = auto couple, Trace = max hold.
4. 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.

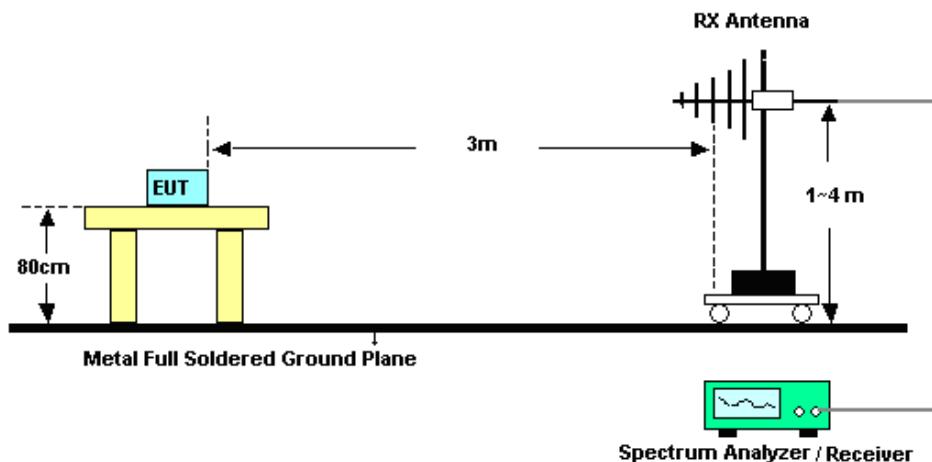
5. The plot has included the antenna port summation compensation  $2 \times 2$  MIMO =  $10 \log 2 = 3$  dB, max gain, attenuation, cable loss and EIRP to E convert factor.

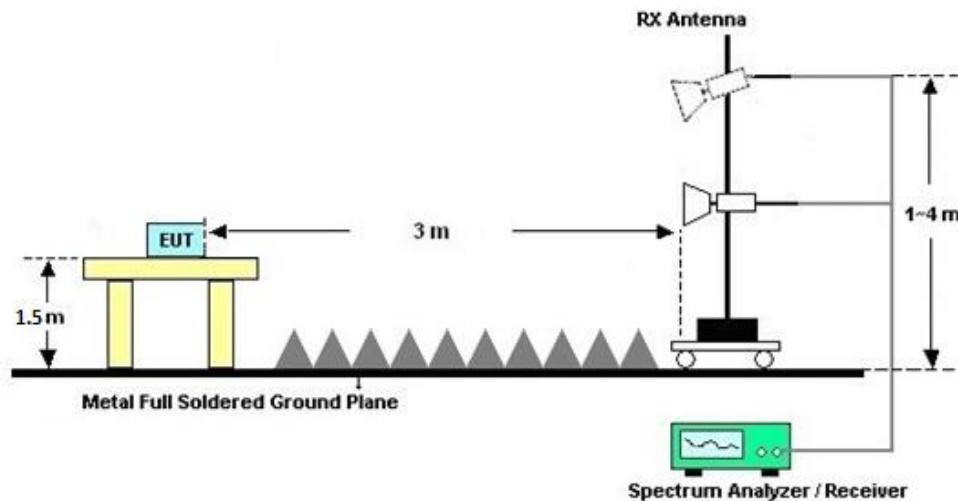
### 3.5.4 Test Setup

#### 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 $\mu$ 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.

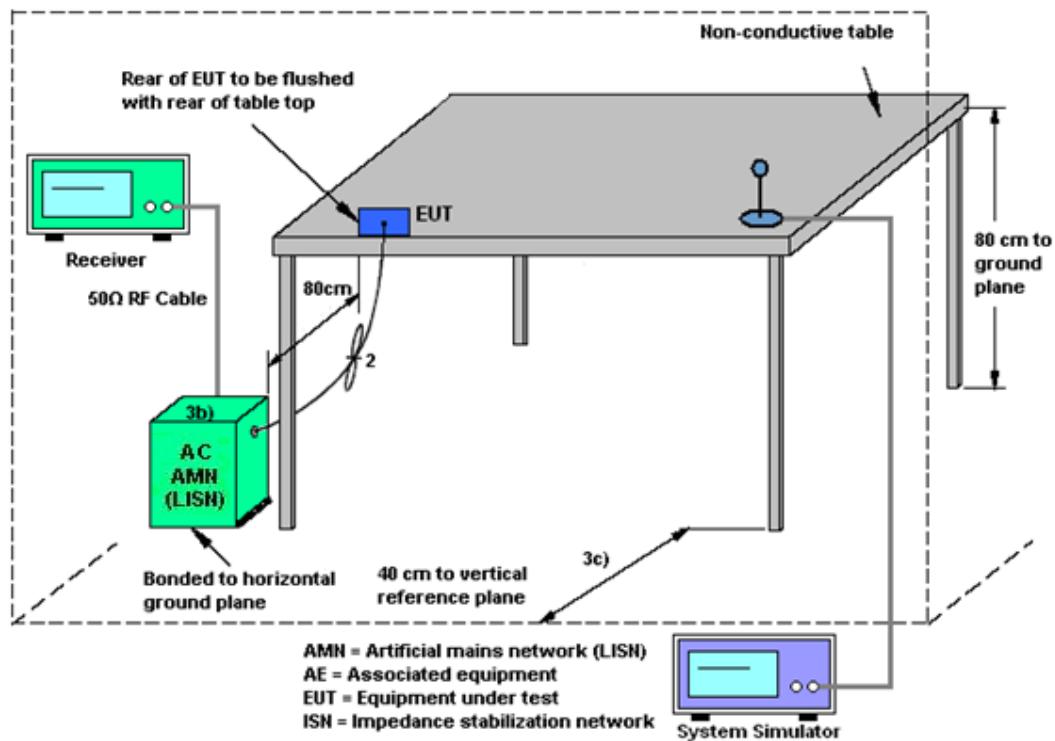
### 3.6.2 Measuring Instruments

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, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

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>		Paddle Antenna:					
		Ant. 1	Ant. 2	DG for Power	DG for PSD	Power Limit Reduction	PSD Limit Reduction
		(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
	<b>2.4 GHz</b>	2.80	2.80	2.80	5.81	0.00	0.00



<CDD Modes>		Sharkfin Antenna:					
		Ant. 1	Ant. 2	DG for Power	DG for PSD	Power Limit	PSD Limit
		(dBi)	(dBi)	(dBi)	(dBi)	Reduction (dB)	Reduction (dB)
<b>2.4 GHz</b>		2.05	2.05	2.05	5.06	0.00	0.00

Power Limit Reduction =  $DG(Power) - 6dB$ i, ( min = 0 )

PSD Limit Reduction =  $DG(PSD) - 6dB$ i, ( 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. 10, 2024	Dec. 10, 2024~Jan. 02, 2025	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Dec. 10, 2024~Jan. 02, 2025	Jan. 01, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 01, 2025		Dec. 31, 2026	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Dec. 10, 2024~Jan. 02, 2025	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 01, 2025		Dec. 31, 2026	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY572901 51	3Hz~8.5GHz; Max 30dBm	Jul. 04, 2024	Jan. 21, 2025	Jul. 03, 2025	Radiation (03CH08-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY574410 79	10Hz~44GHz	Oct. 09, 2024	Jan. 21, 2025	Oct. 08, 2025	Radiation (03CH08-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Jan. 21, 2025	Sep. 07, 2025	Radiation (03CH08-KS)
Bilog Antenna	TESEQ	CBL 6111D	59915	30MHz~1GHz	Aug. 18, 2024	Jan. 21, 2025	Aug. 17, 2025	Radiation (03CH08-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00240138	1GHz~18GHz	Jul. 06, 2024	Jan. 21, 2025	Jul. 05, 2025	Radiation (03CH08-KS)
high gain Amplifier	EM	EM01G18GA	060890	1Ghz~18Ghz	Jul. 23, 2024	Jan. 21, 2025	Jul. 22, 2025	Radiation (03CH08-KS)
SHF-EHF Horn	Com-power	AH-840	101116	18GHz~40GHz	Oct. 22, 2024	Jan. 21, 2025	Oct. 21, 2025	Radiation (03CH08-KS)
Amplifier	SONOMA	310N	380826	9KHz~1GHz	Jul. 03, 2024	Jan. 21, 2025	Jul. 02, 2025	Radiation (03CH08-KS)
Amplifier	Keysight	83017A	MY532704 17	500MHz~26.5GHz	Oct. 09, 2024	Jan. 21, 2025	Oct. 08, 2025	Radiation (03CH08-KS)
Amplifier	EM	EM18G40GG A	060737	18~40GHz	Jan. 03, 2025	Jan. 21, 2025	Jan. 02, 2026	Radiation (03CH08-KS)
AC Power Source	Chroma	61601	616010002 473	N/A	NCR	Jan. 21, 2025	NCR	Radiation (03CH08-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Jan. 21, 2025	NCR	Radiation (03CH08-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Jan. 21, 2025	NCR	Radiation (03CH08-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Jan. 20, 2025	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Aug. 20, 2024	Jan. 20, 2025	Aug. 19, 2025	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Jan. 20, 2025	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 09, 2024	Jan. 20, 2025	Oct. 08, 2025	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	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 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
---	---------

### Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30 dB
---	---------

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.04 dB
---	---------

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.26 dB
---	---------

### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.40 dB
---	---------

----- THE END -----



## **Appendix A. Conducted Test Results**



Ambient Condition: 25 °C, 45 %RH

Test Date: 2024.12.10~2025.1.2

Test Engineer: Gene Wang

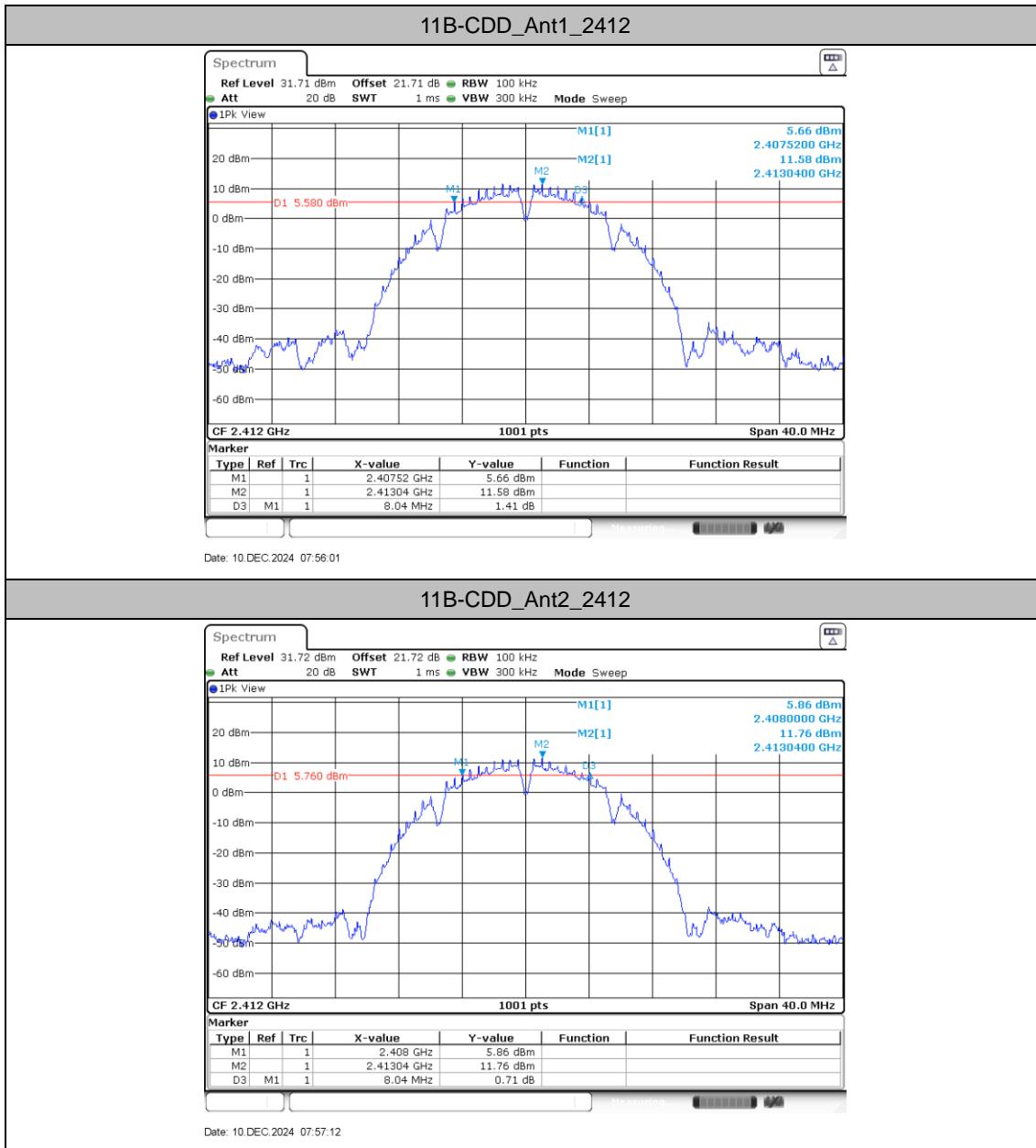
## DTS Bandwidth

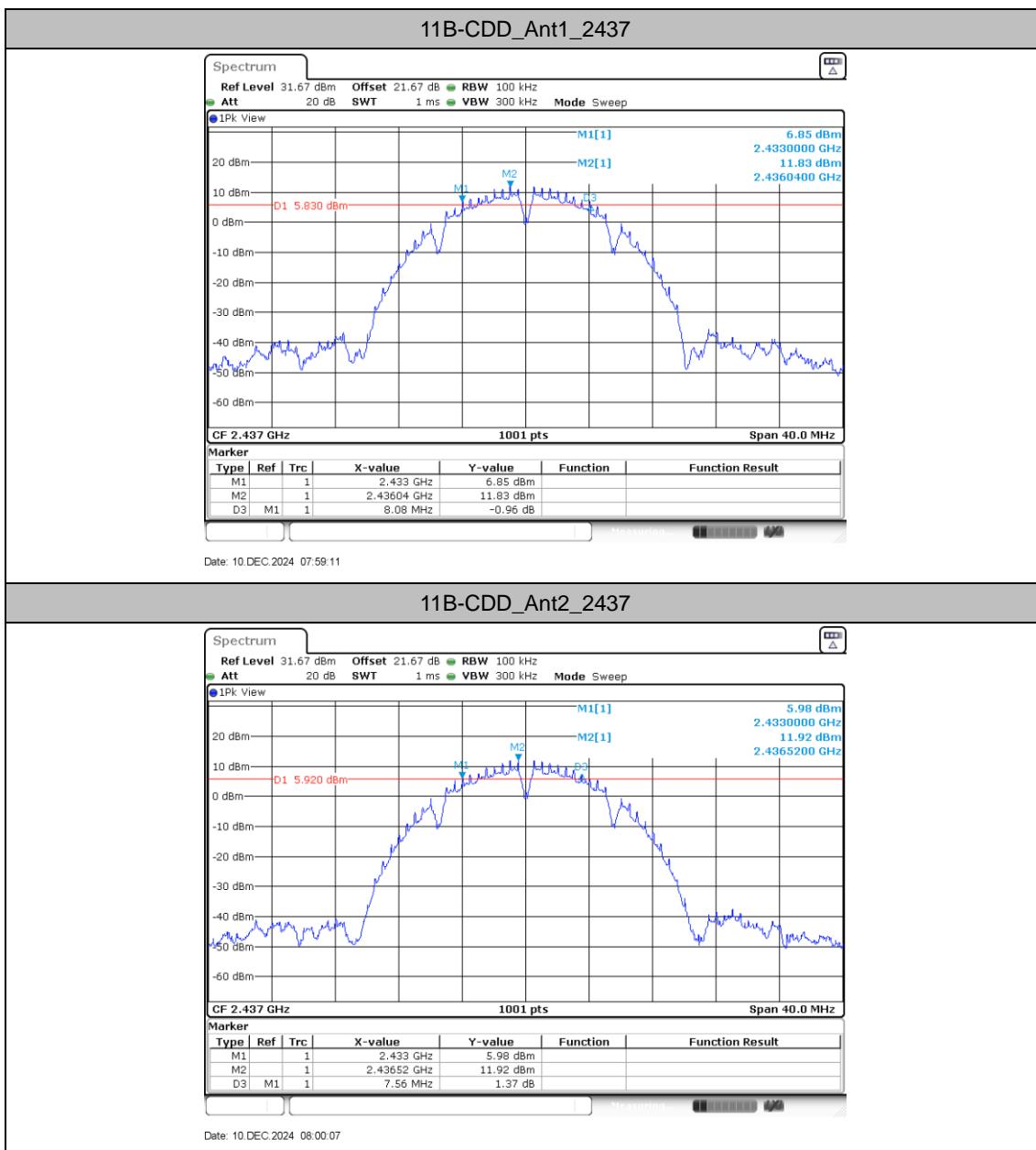
### Test Result

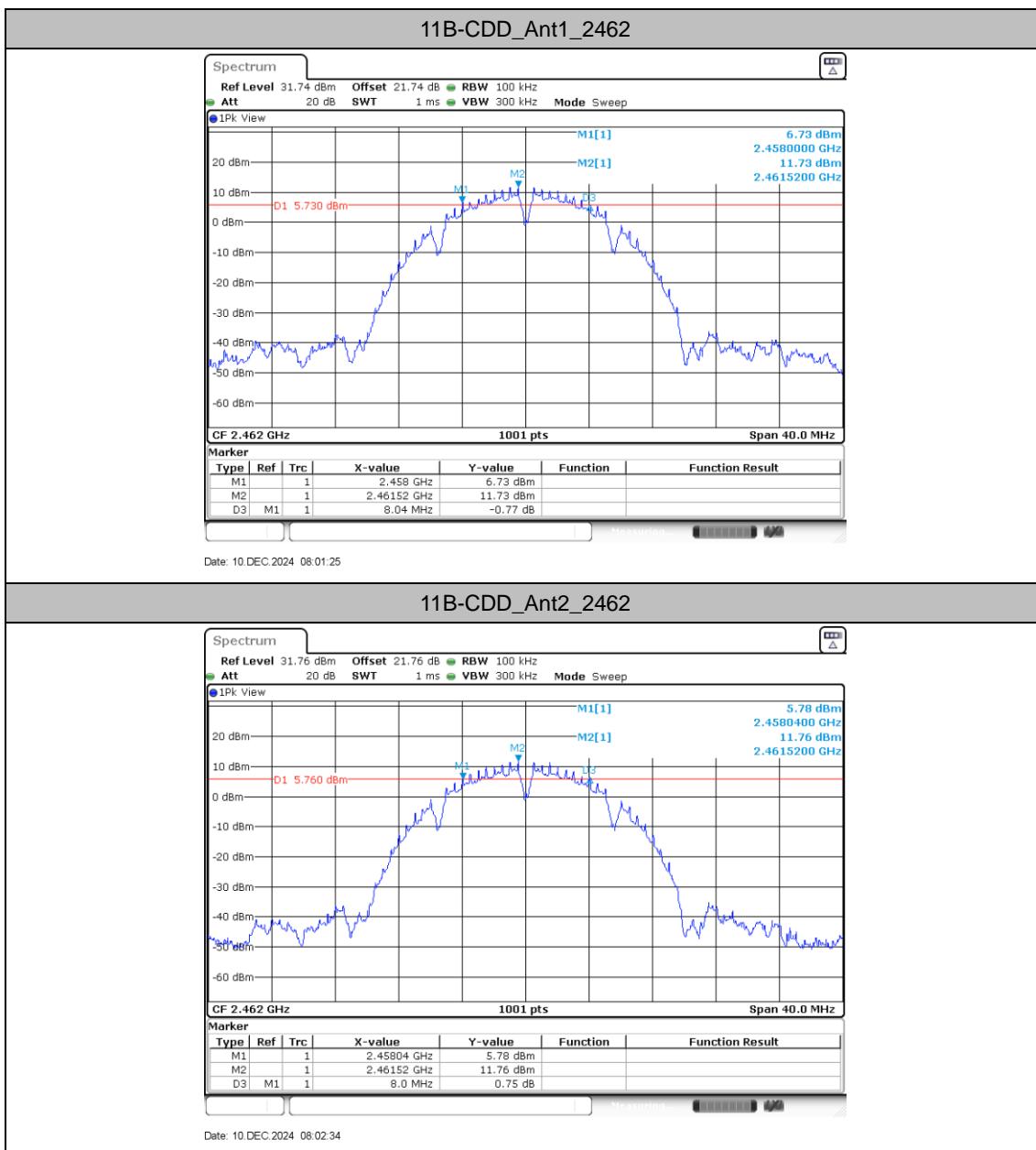
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B-CDD	Ant1	2412	8.04	2407.52	2415.56	0.5	PASS
	Ant2	2412	8.04	2408.00	2416.04	0.5	PASS
	Ant1	2437	8.08	2433.00	2441.08	0.5	PASS
	Ant2	2437	7.56	2433.00	2440.56	0.5	PASS
	Ant1	2462	8.04	2458.00	2466.04	0.5	PASS
	Ant2	2462	8.00	2458.04	2466.04	0.5	PASS
11G-CDD	Ant1	2412	16.04	2403.88	2419.92	0.5	PASS
	Ant2	2412	16.28	2403.88	2420.16	0.5	PASS
	Ant1	2437	15.96	2429.24	2445.20	0.5	PASS
	Ant2	2437	16.28	2428.88	2445.16	0.5	PASS
	Ant1	2462	16.28	2453.88	2470.16	0.5	PASS
	Ant2	2462	16.32	2453.88	2470.20	0.5	PASS
11N20MIMO	Ant1	2412	16.36	2403.24	2419.60	0.5	PASS
	Ant2	2412	17.56	2403.24	2420.80	0.5	PASS
	Ant1	2437	16.56	2429.24	2445.80	0.5	PASS
	Ant2	2437	16.92	2428.28	2445.20	0.5	PASS
	Ant1	2462	17.56	2453.24	2470.80	0.5	PASS
	Ant2	2462	17.56	2453.24	2470.80	0.5	PASS
11N40MIMO	Ant1	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant2	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant1	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant2	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant1	2452	35.12	2434.48	2469.60	0.5	PASS
	Ant2	2452	35.12	2434.48	2469.60	0.5	PASS
11AX20MIMO	Ant1	2412	18.48	2402.80	2421.28	0.5	PASS
	Ant2	2412	18.16	2402.72	2420.88	0.5	PASS
	Ant1	2437	18.20	2428.12	2446.32	0.5	PASS
	Ant2	2437	18.00	2428.08	2446.08	0.5	PASS
	Ant1	2462	18.92	2452.60	2471.52	0.5	PASS
	Ant2	2462	18.32	2453.00	2471.32	0.5	PASS
11AX40MIMO	Ant1	2422	37.12	2403.60	2440.72	0.5	PASS
	Ant2	2422	36.32	2403.28	2439.60	0.5	PASS
	Ant1	2437	36.64	2418.68	2455.32	0.5	PASS
	Ant2	2437	35.68	2418.92	2454.60	0.5	PASS
	Ant1	2452	36.00	2433.76	2469.76	0.5	PASS
	Ant2	2452	35.12	2434.48	2469.60	0.5	PASS

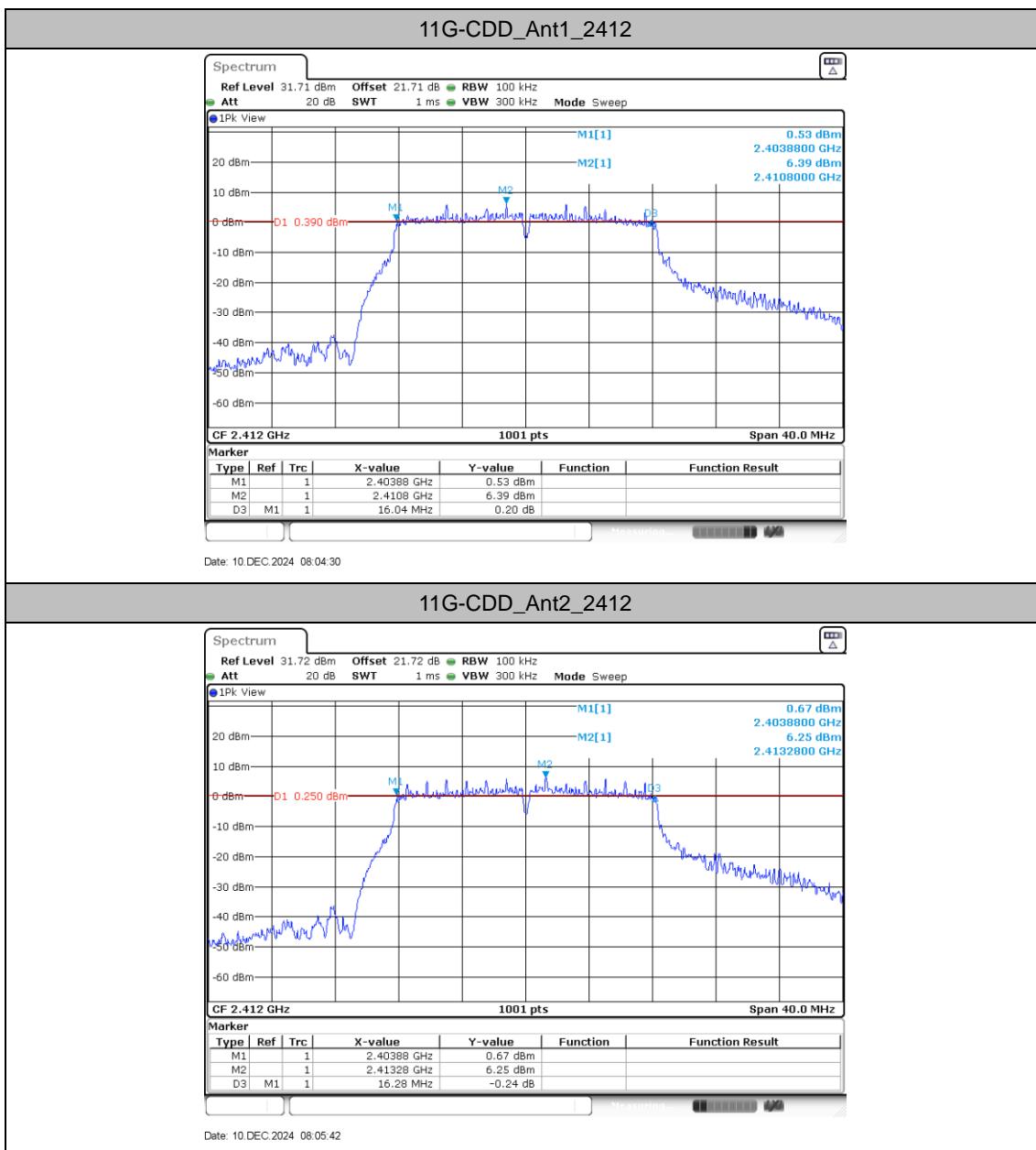


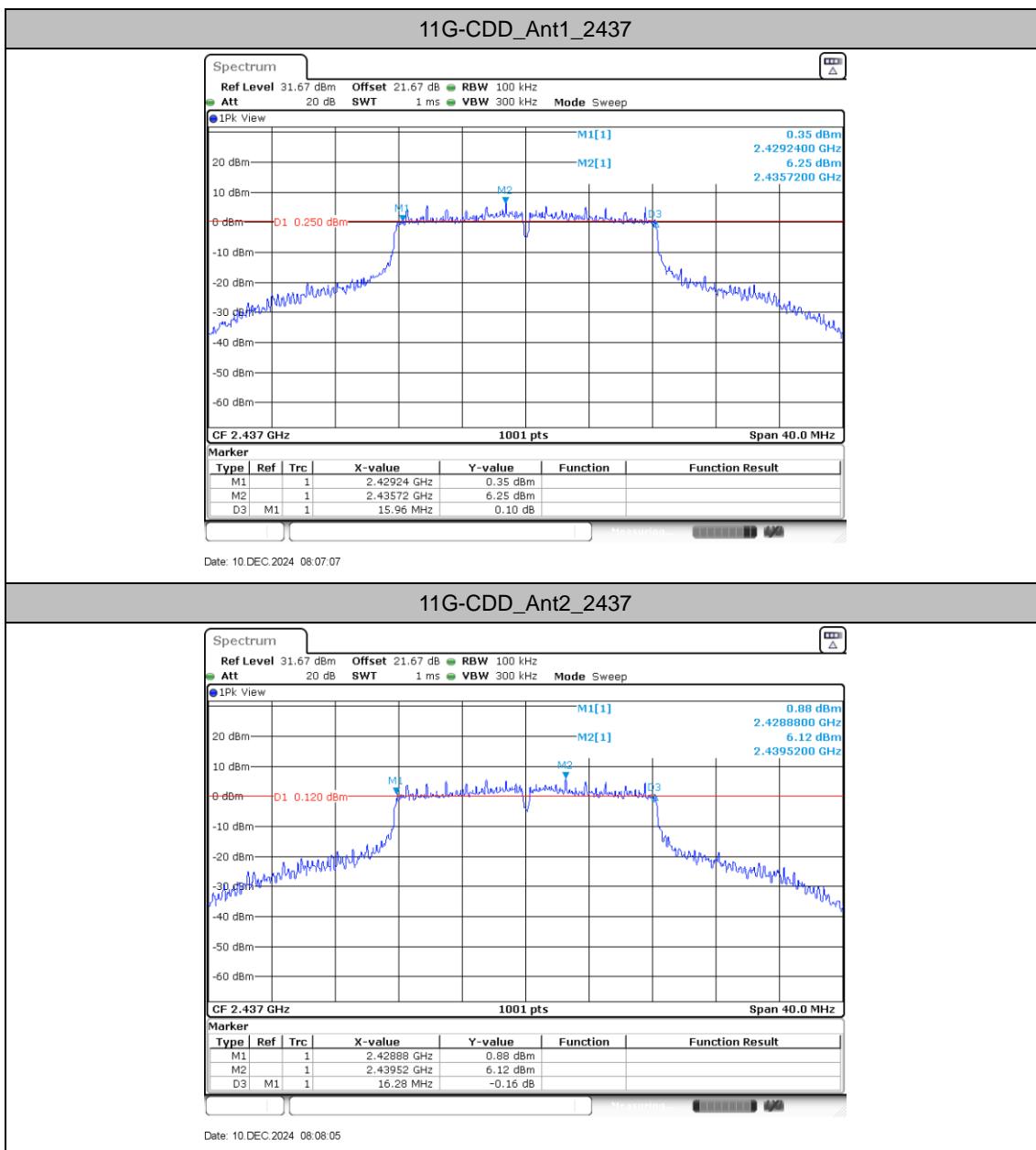
## Test Graphs

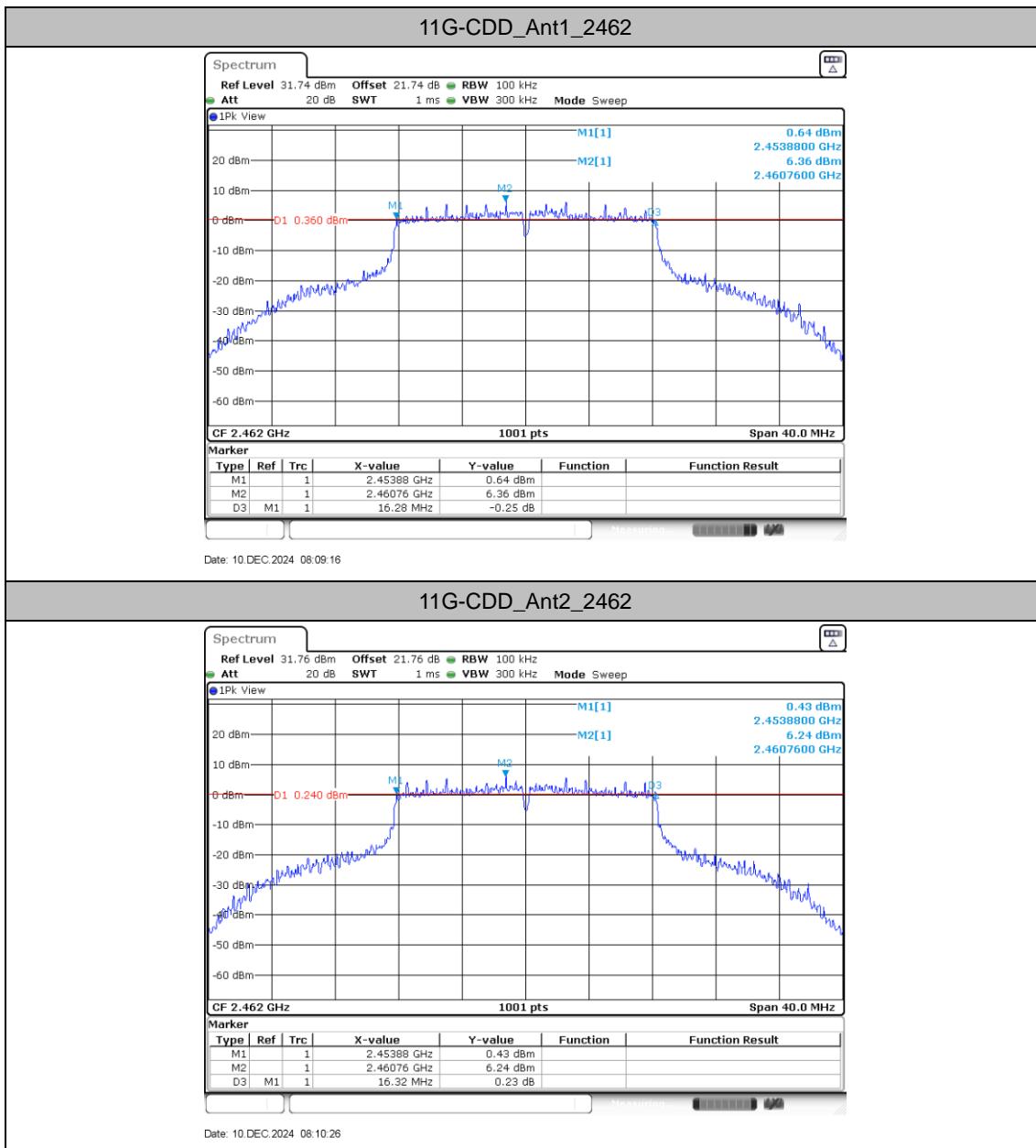


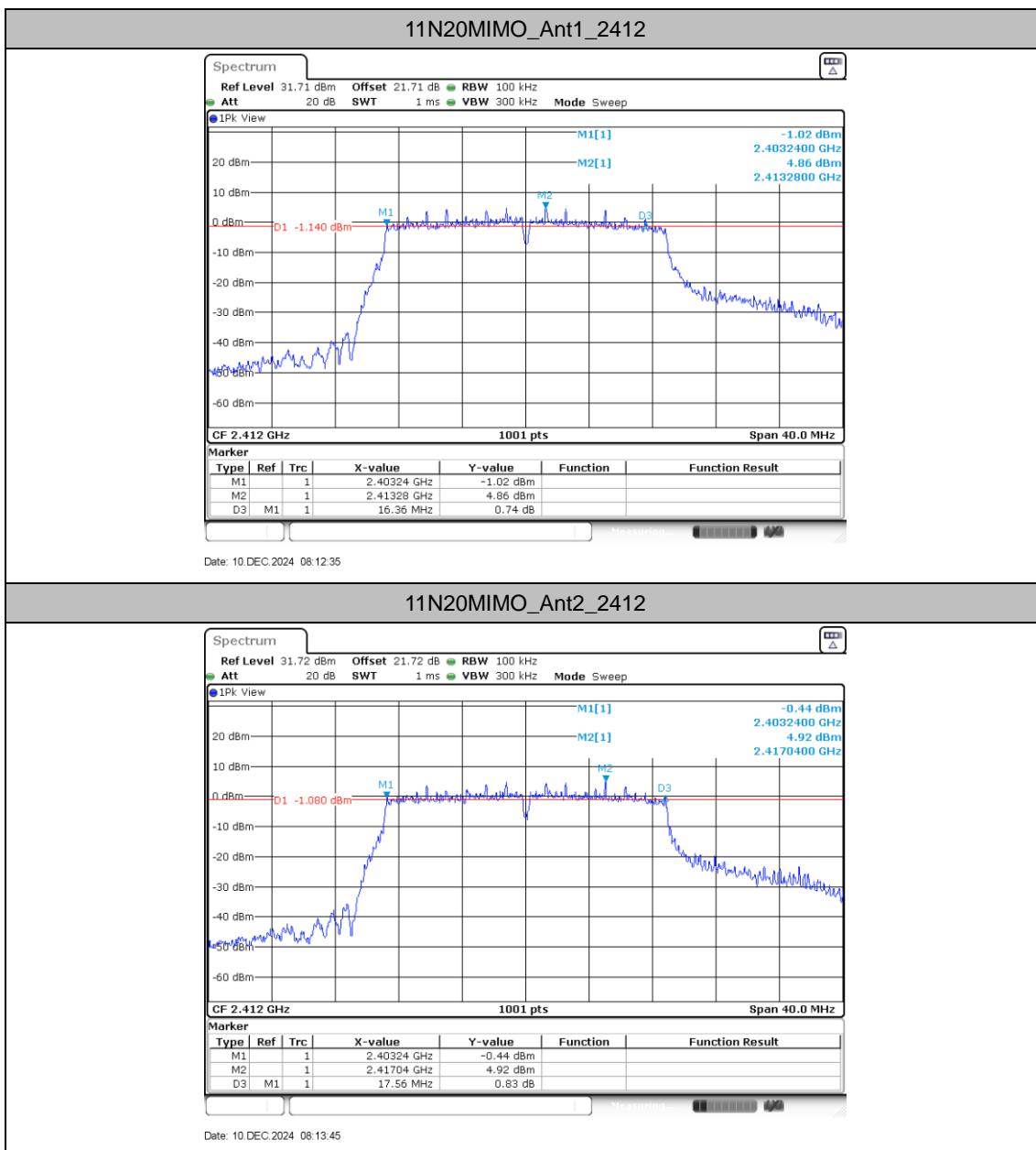


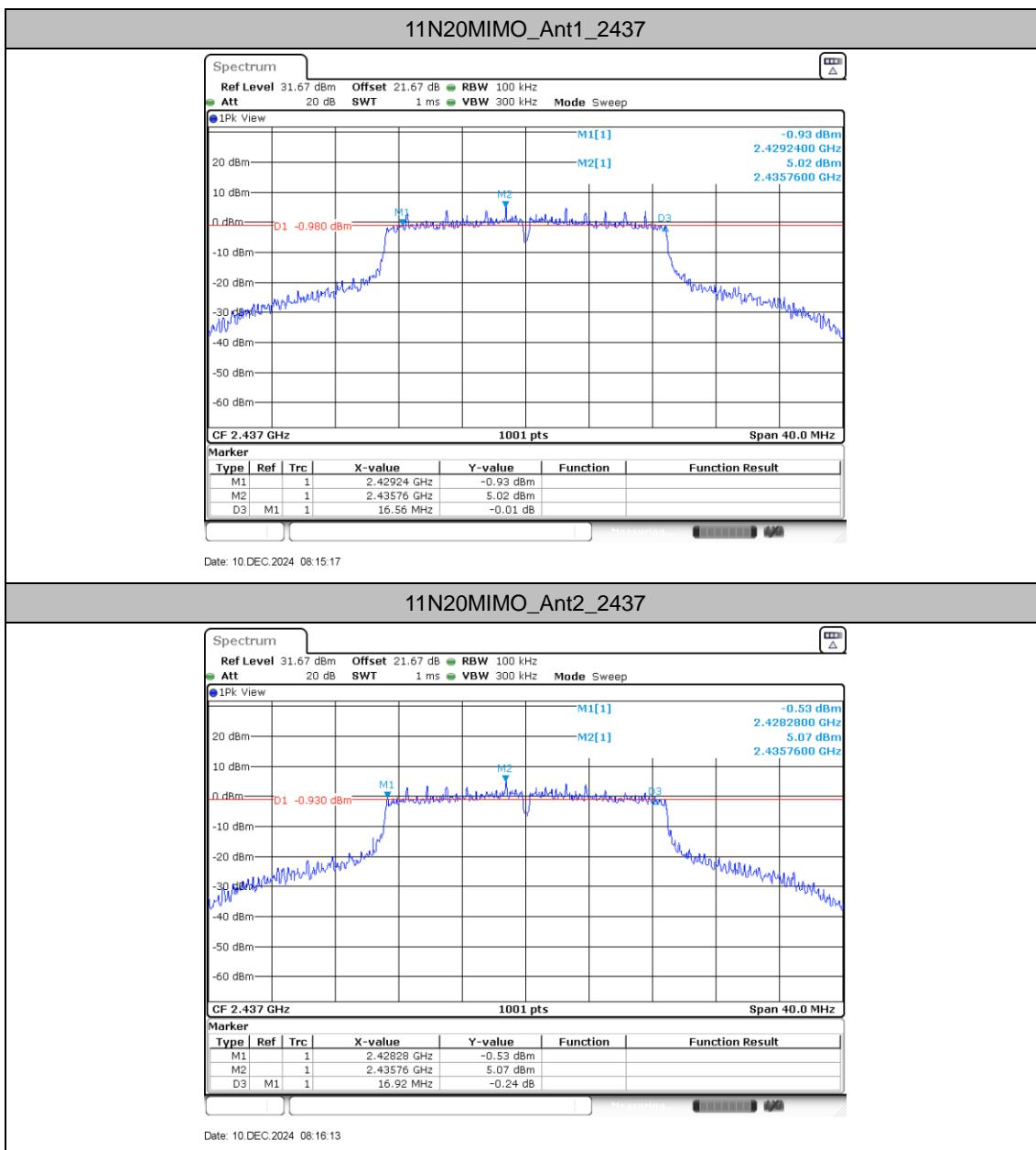


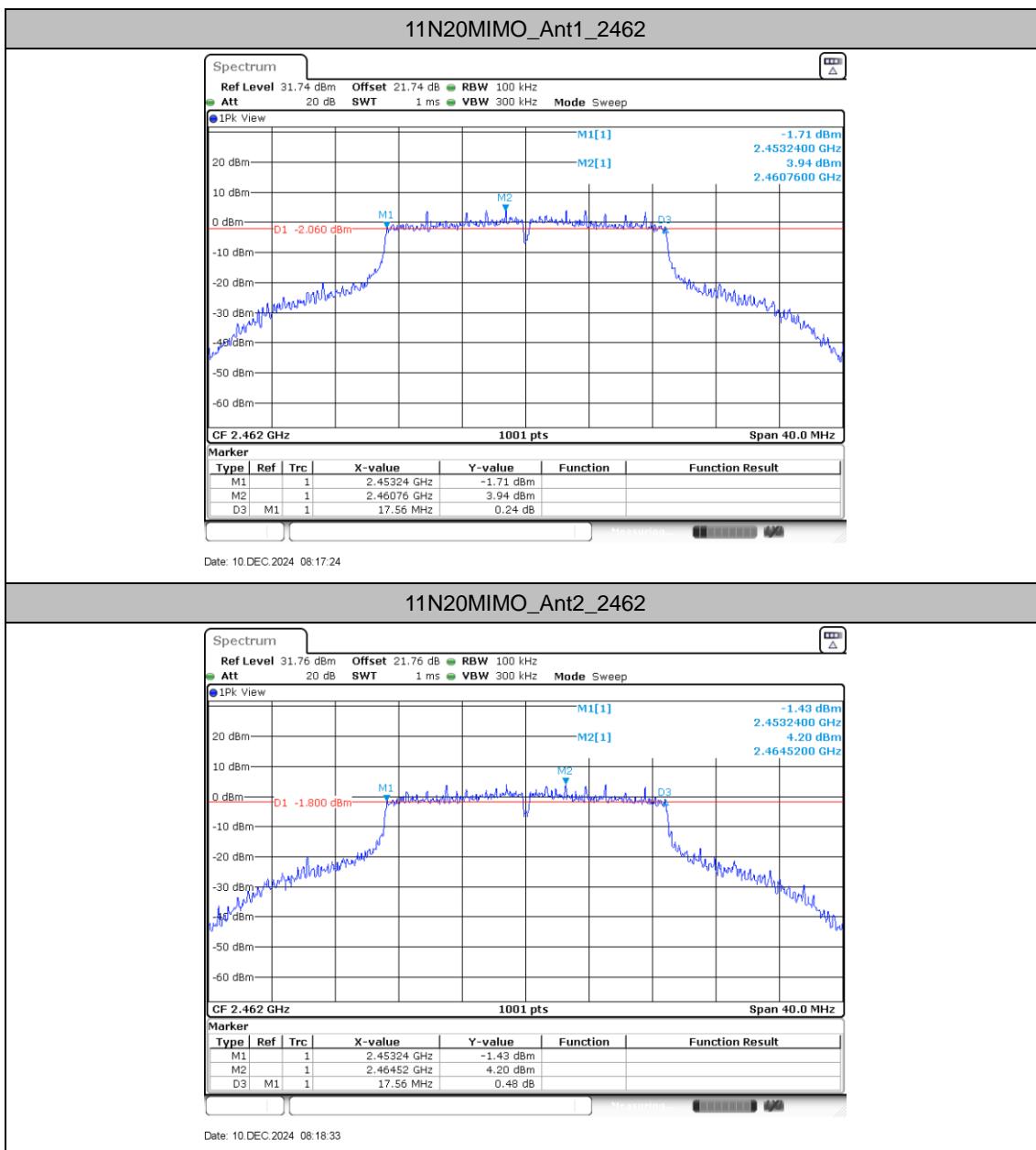


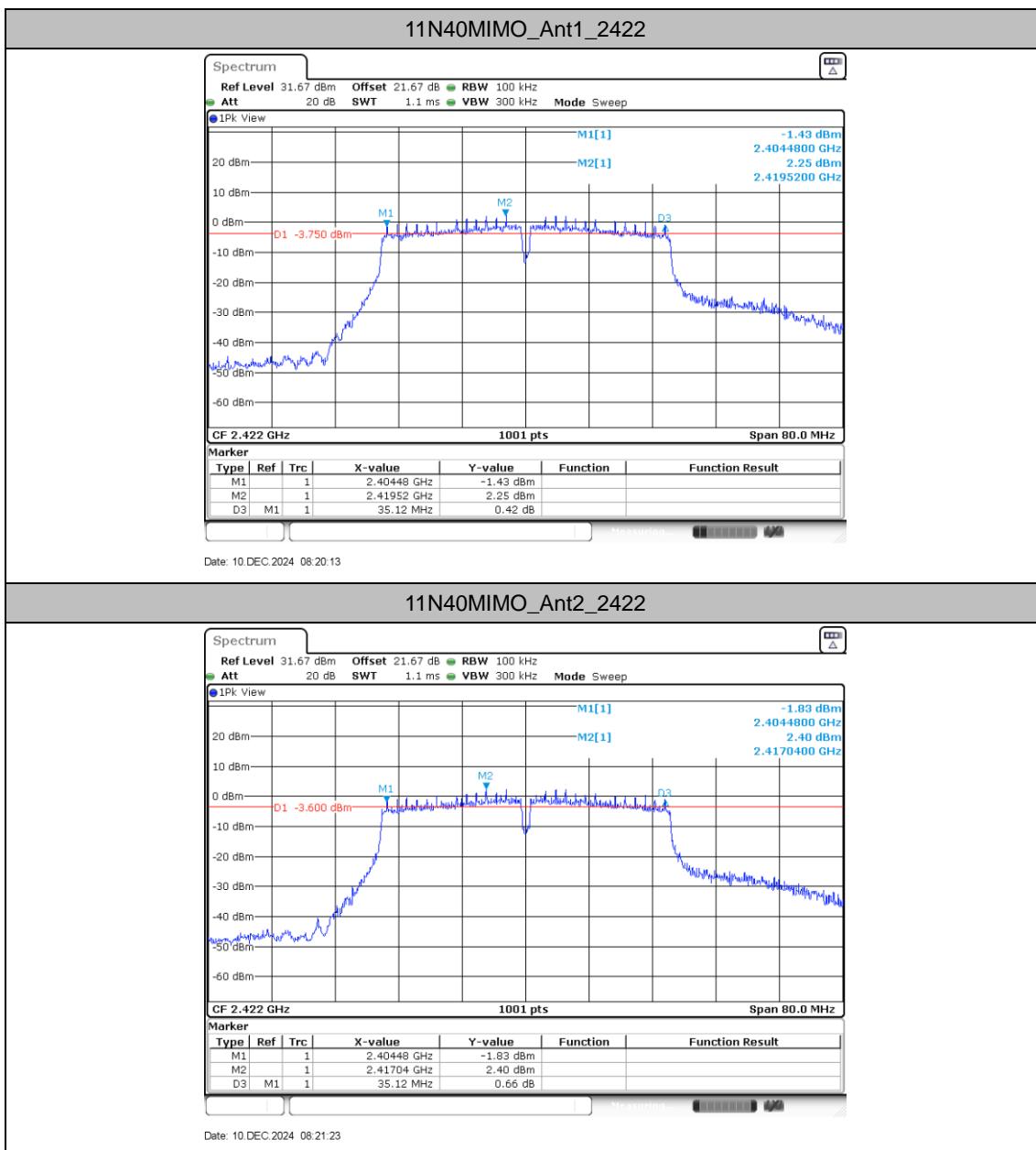


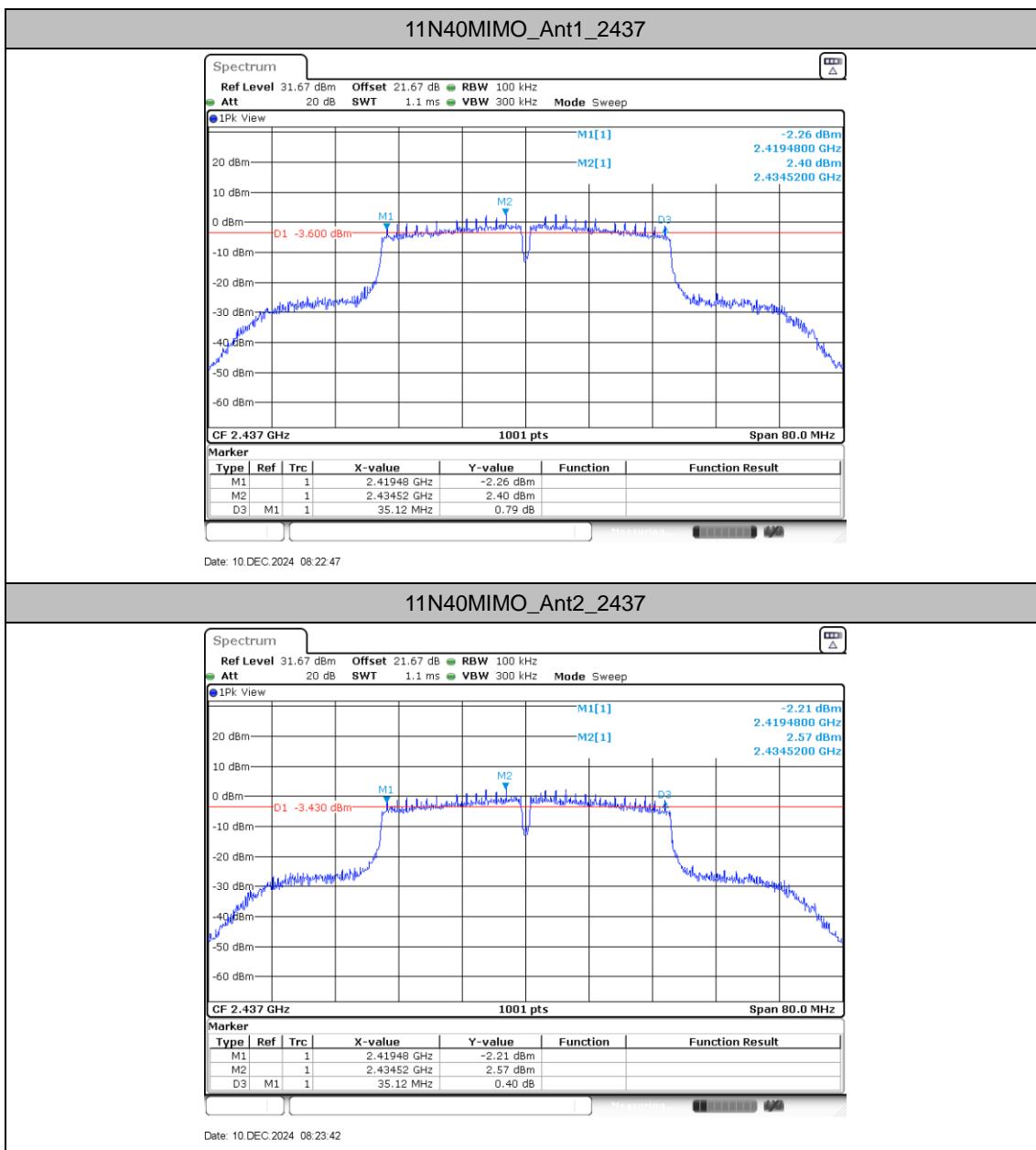


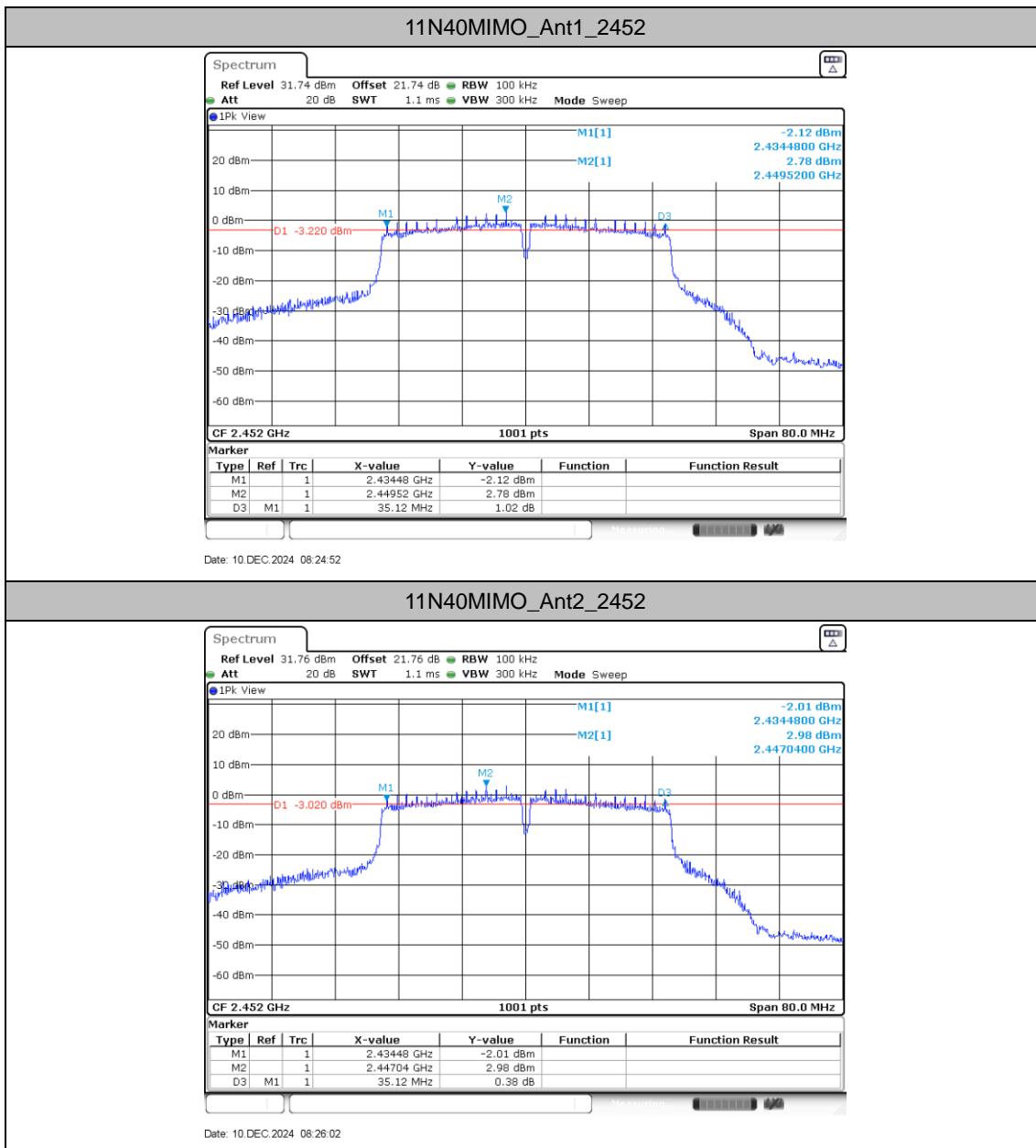


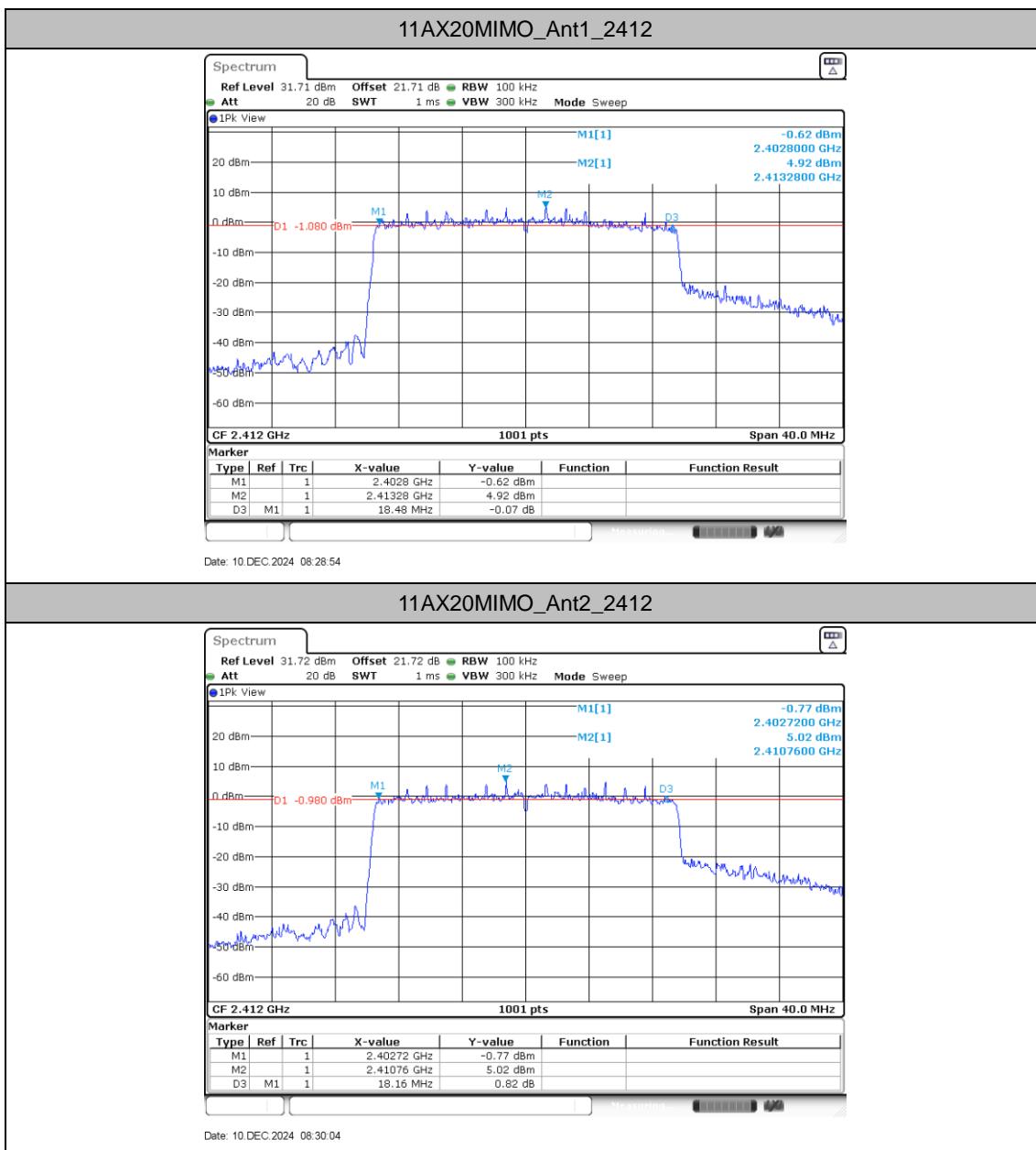


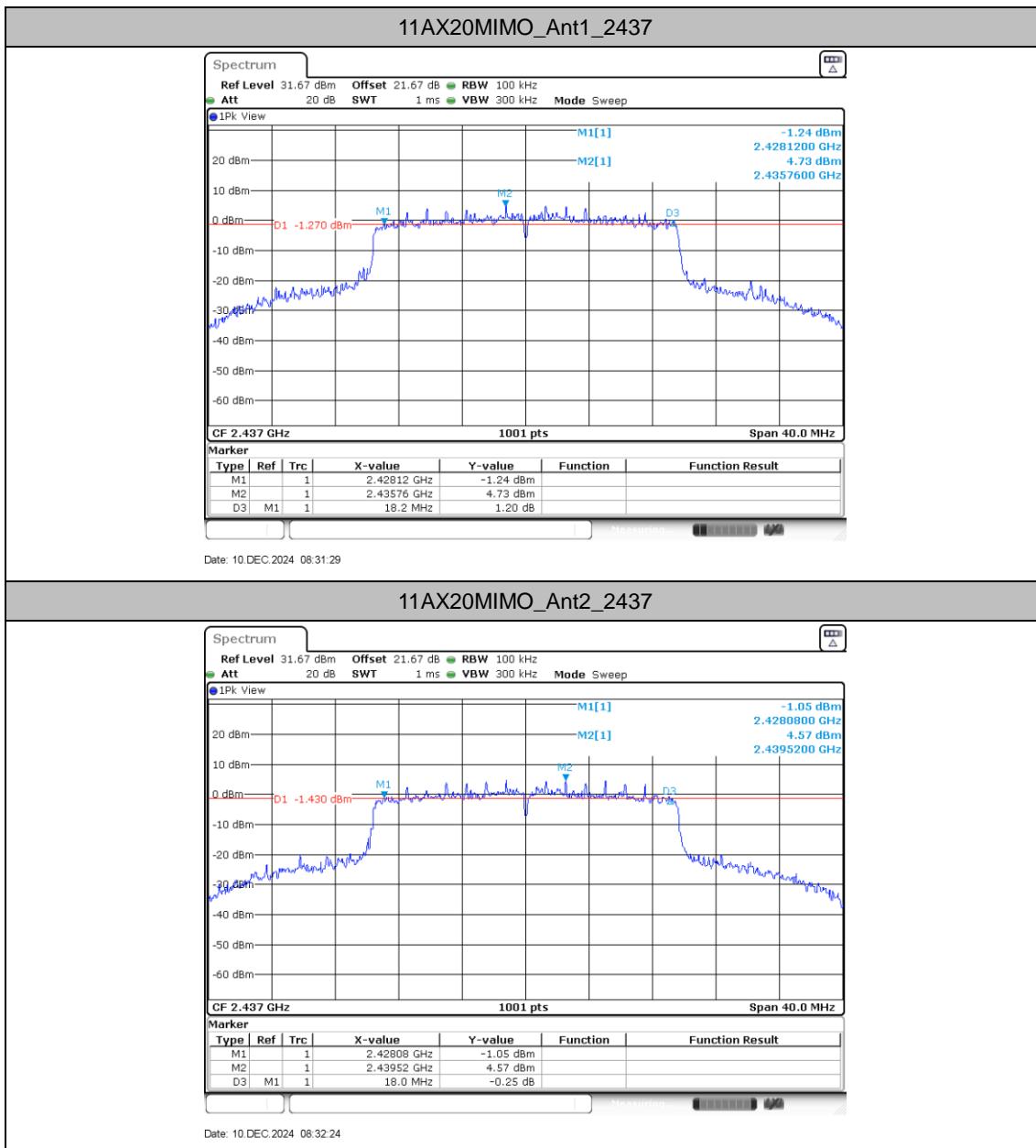


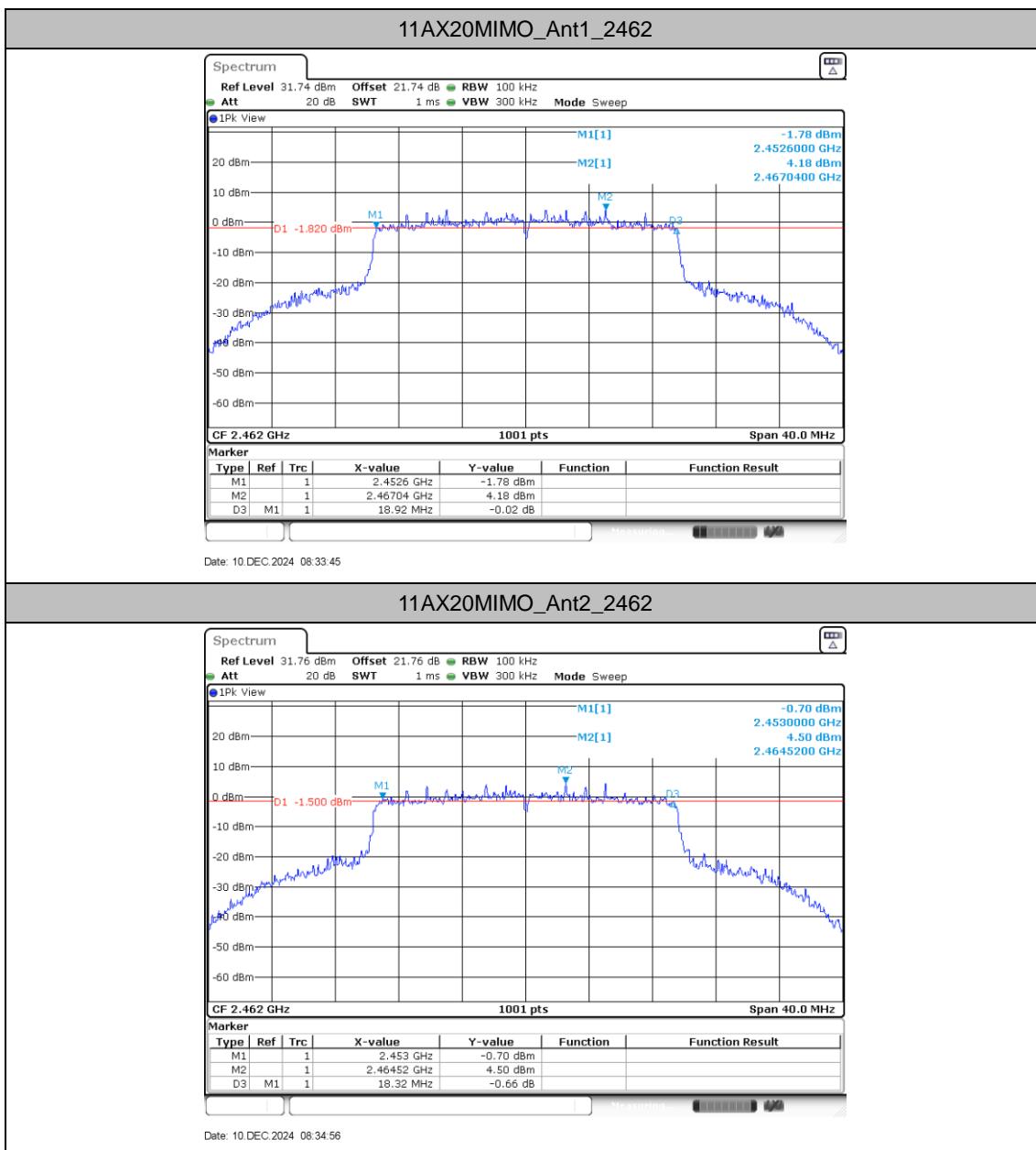


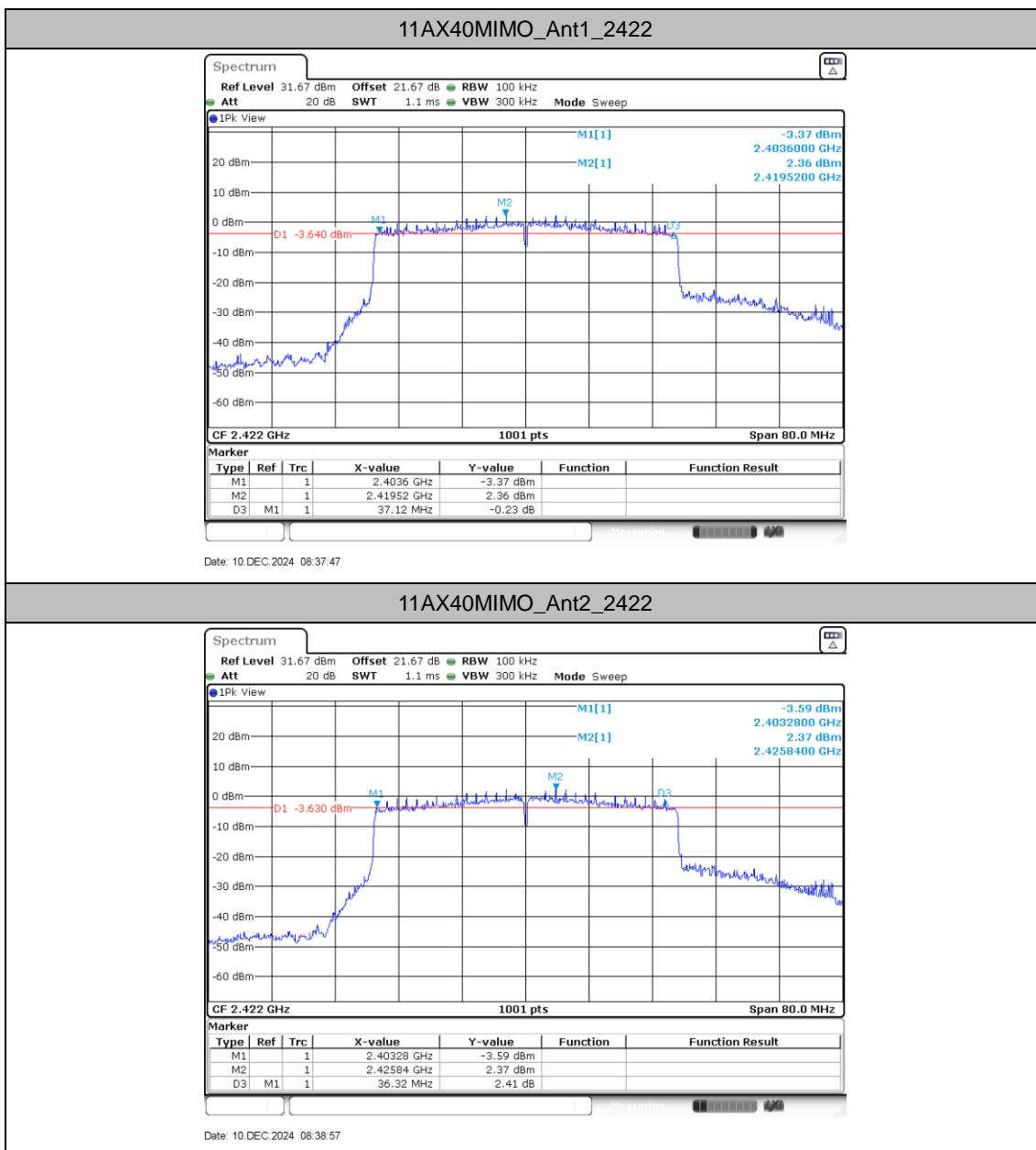


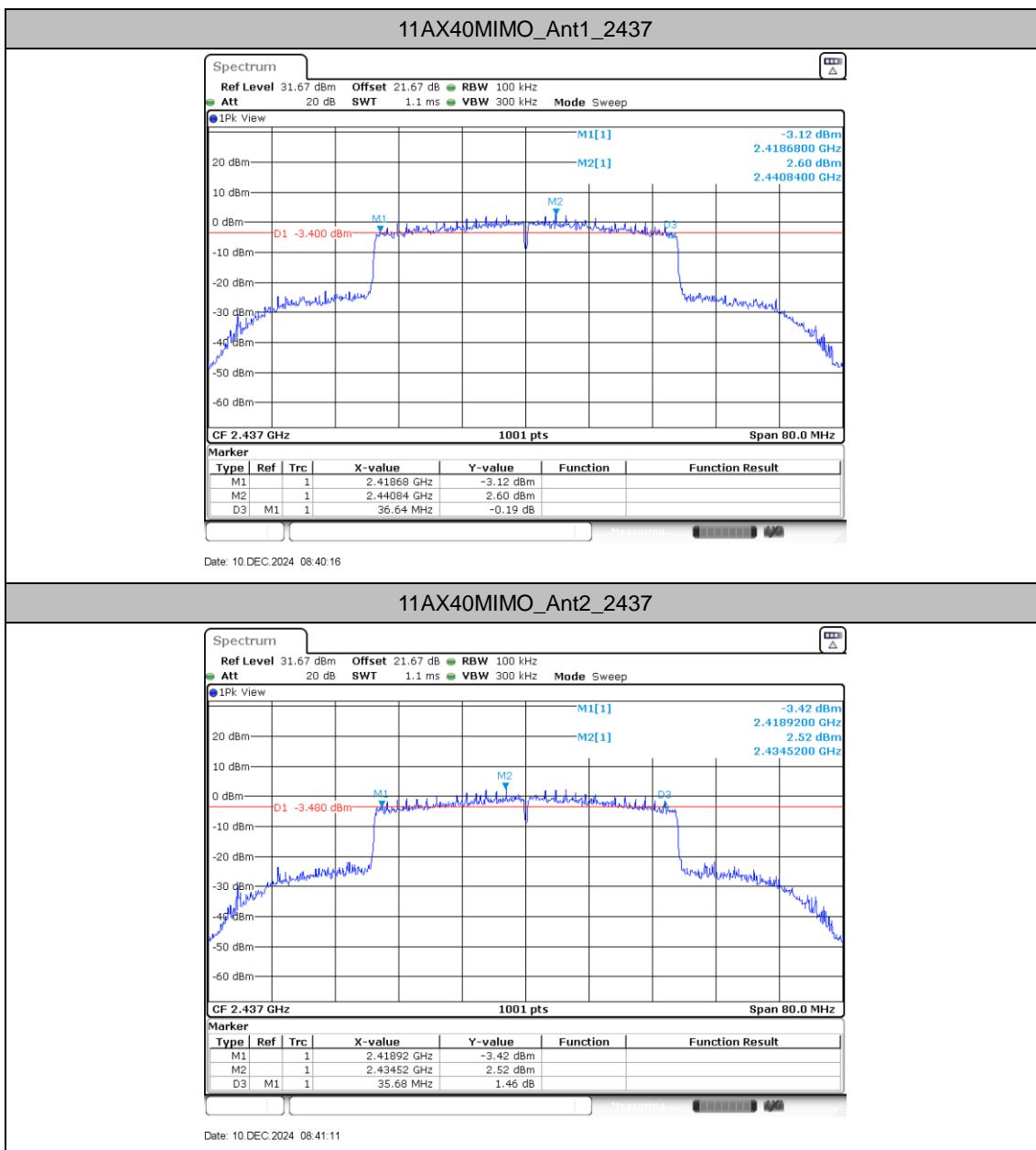


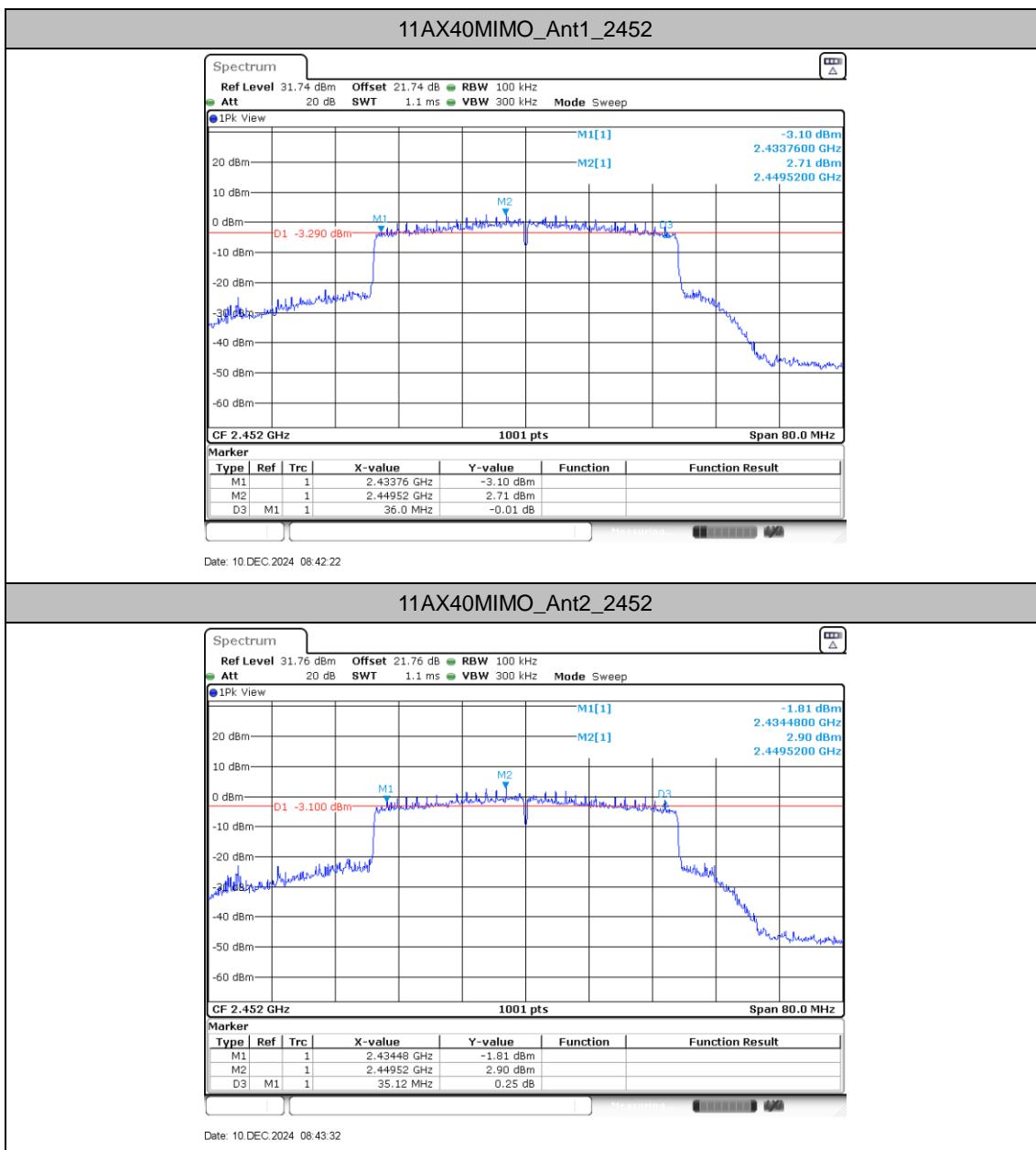














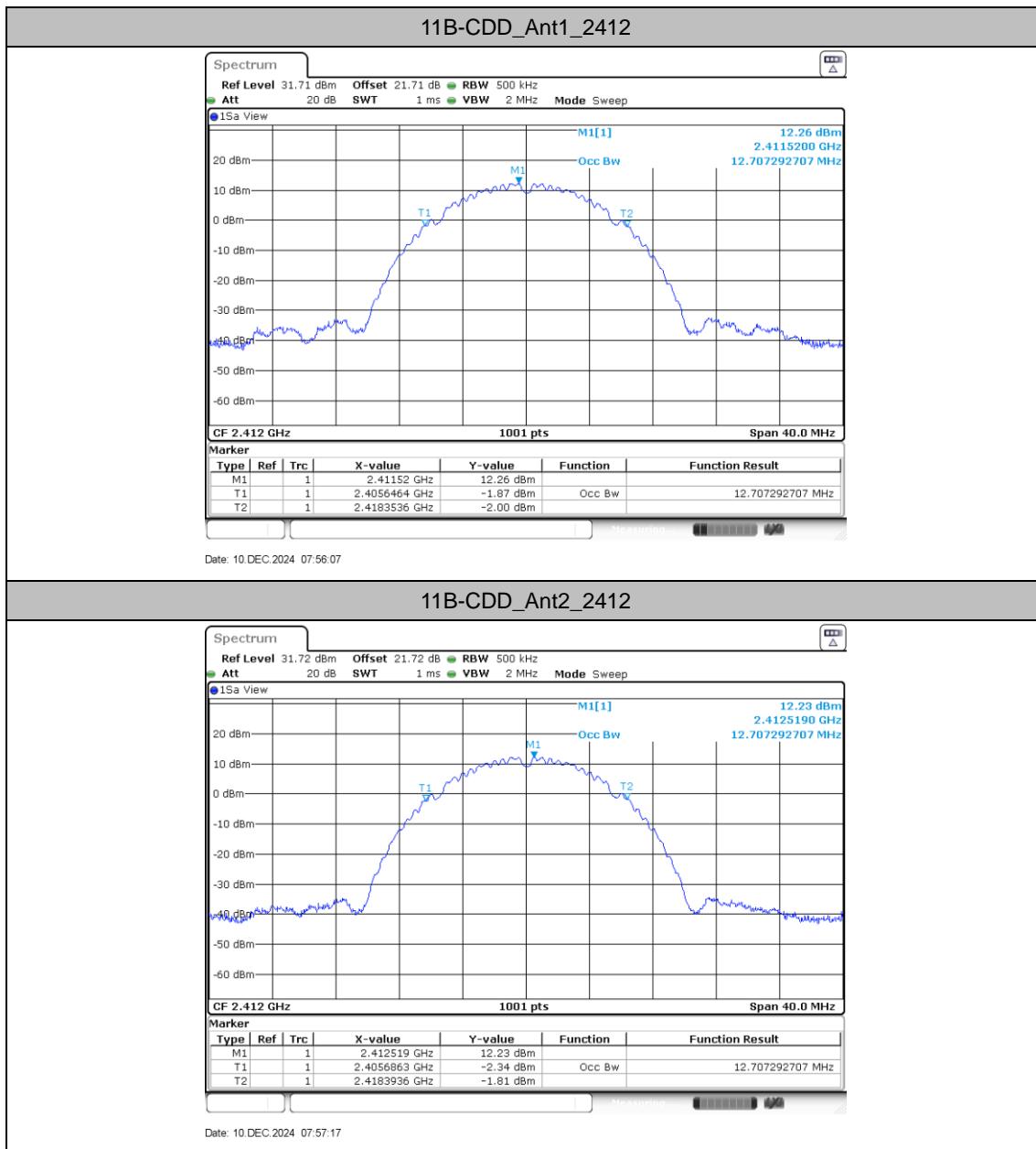
## Occupied Channel Bandwidth

### Test Result

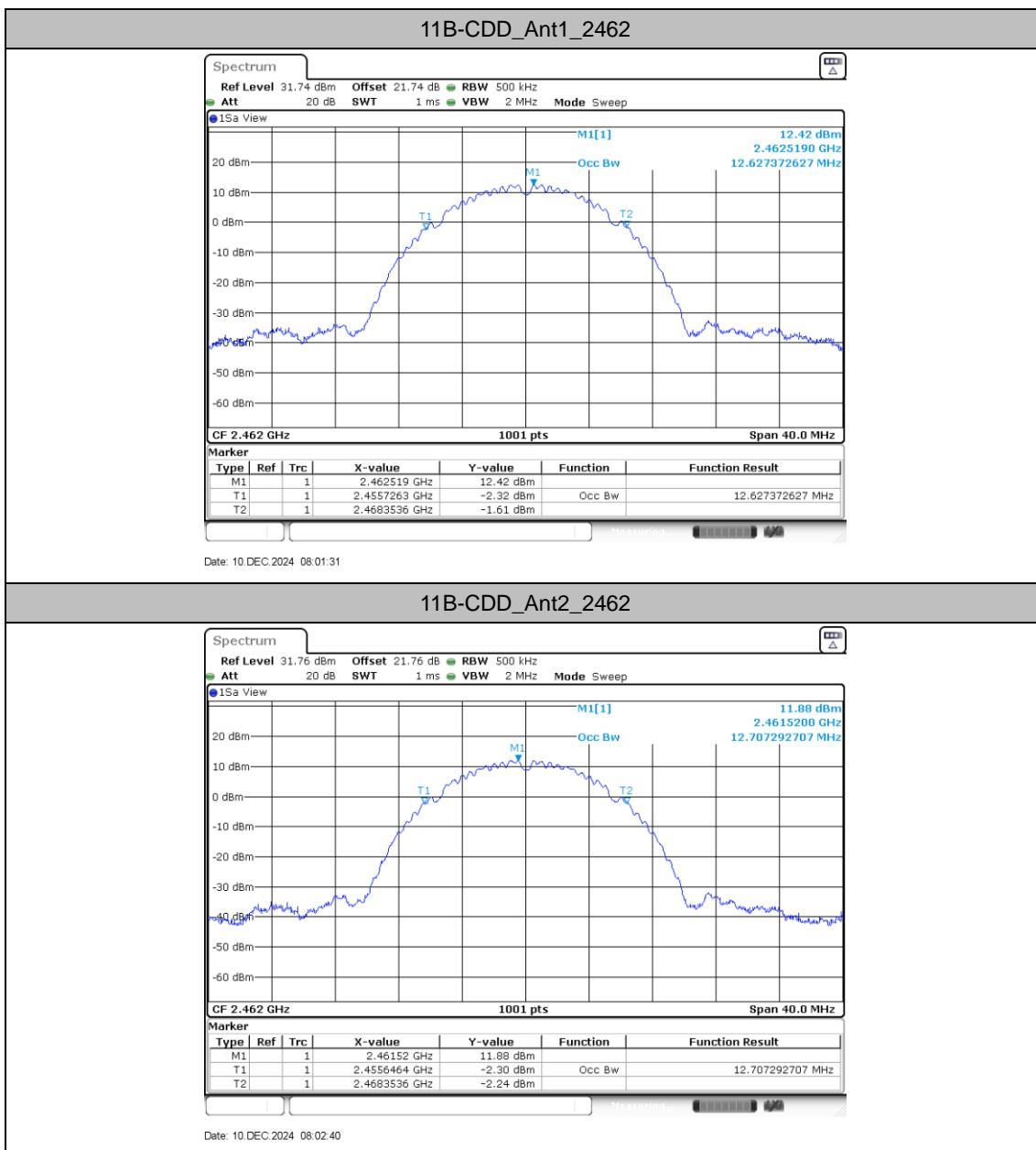
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B-CDD	Ant1	2412	12.707	2405.6464	2418.3536	---	---
	Ant2	2412	12.707	2405.6863	2418.3936	---	---
	Ant1	2437	12.707	2430.6863	2443.3936	---	---
	Ant2	2437	12.747	2430.6863	2443.4336	---	---
	Ant1	2462	12.627	2455.7263	2468.3536	---	---
	Ant2	2462	12.707	2455.6464	2468.3536	---	---
11G-CDD	Ant1	2412	17.542	2403.3287	2420.8711	---	---
	Ant2	2412	17.263	2403.5285	2420.7912	---	---
	Ant1	2437	17.662	2428.2088	2445.8711	---	---
	Ant2	2437	17.343	2428.3287	2445.6713	---	---
	Ant1	2462	17.622	2453.1688	2470.7912	---	---
	Ant2	2462	17.303	2453.3686	2470.6713	---	---
11N20MIMO	Ant1	2412	18.422	2402.8891	2421.3107	---	---
	Ant2	2412	18.142	2403.0490	2421.1908	---	---
	Ant1	2437	18.701	2427.6893	2446.3906	---	---
	Ant2	2437	18.262	2427.8891	2446.1508	---	---
	Ant1	2462	18.661	2452.6893	2471.3506	---	---
	Ant2	2462	18.302	2452.8492	2471.1508	---	---
11N40MIMO	Ant1	2422	36.763	2403.7782	2440.5415	---	---
	Ant2	2422	36.523	2403.8581	2440.3816	---	---
	Ant1	2437	36.843	2418.6184	2455.4615	---	---
	Ant2	2437	36.603	2418.6983	2455.3017	---	---
	Ant1	2452	36.763	2433.6184	2470.3816	---	---
	Ant2	2452	36.683	2433.5385	2470.2218	---	---
11AX20MIMO	Ant1	2412	19.021	2402.4895	2421.5105	---	---
	Ant2	2412	19.021	2402.5694	2421.5904	---	---
	Ant1	2437	19.341	2427.3297	2446.6703	---	---
	Ant2	2437	19.341	2427.3696	2446.7103	---	---
	Ant1	2462	19.301	2452.3696	2471.6703	---	---
	Ant2	2462	19.261	2452.3696	2471.6304	---	---
11AX40MIMO	Ant1	2422	37.962	2403.1389	2441.1009	---	---
	Ant2	2422	38.042	2403.1389	2441.1808	---	---
	Ant1	2437	38.042	2417.9790	2456.0210	---	---
	Ant2	2437	38.042	2417.9790	2456.0210	---	---
	Ant1	2452	38.042	2432.9790	2471.0210	---	---
	Ant2	2452	38.122	2432.8192	2470.9411	---	---

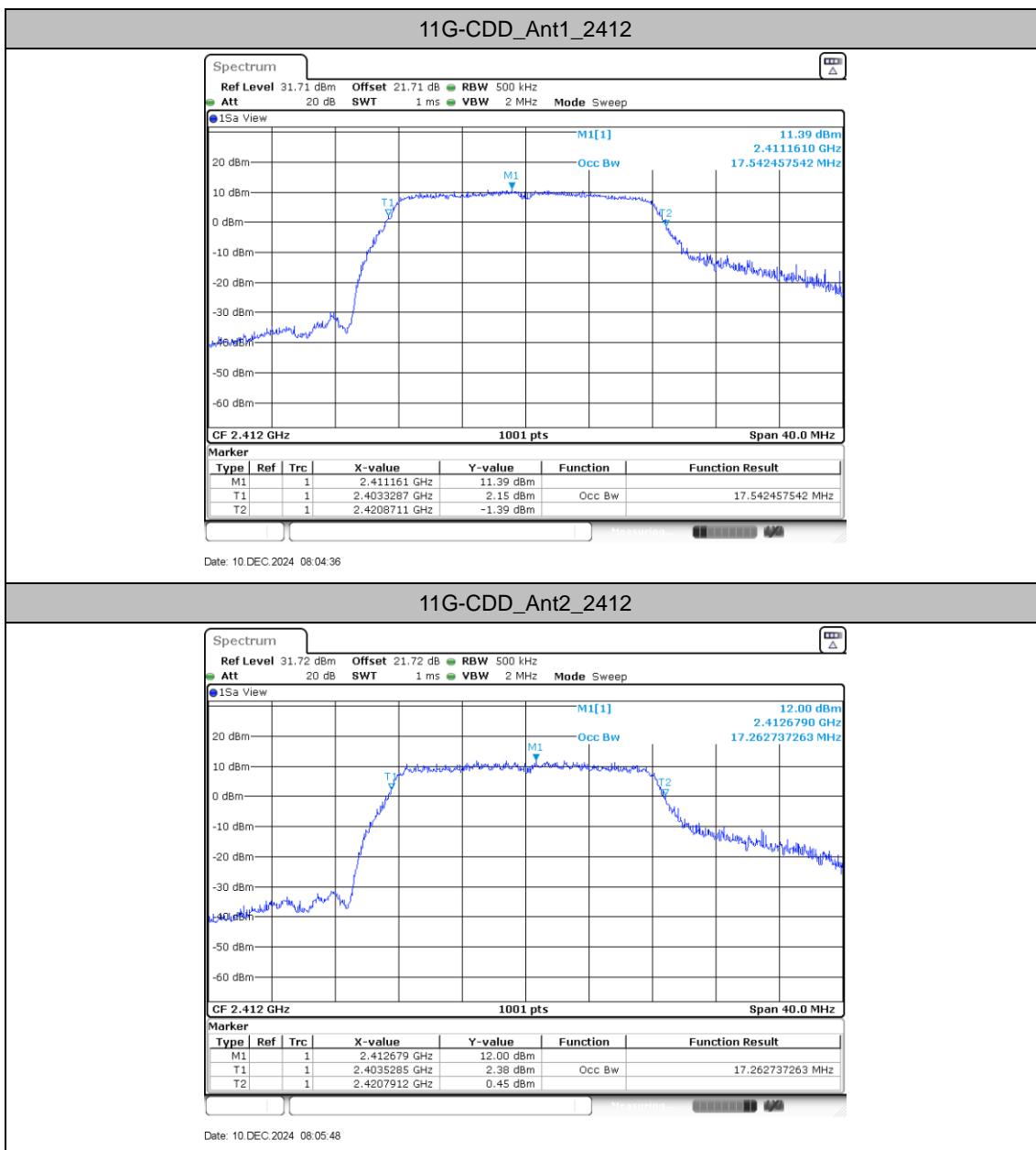


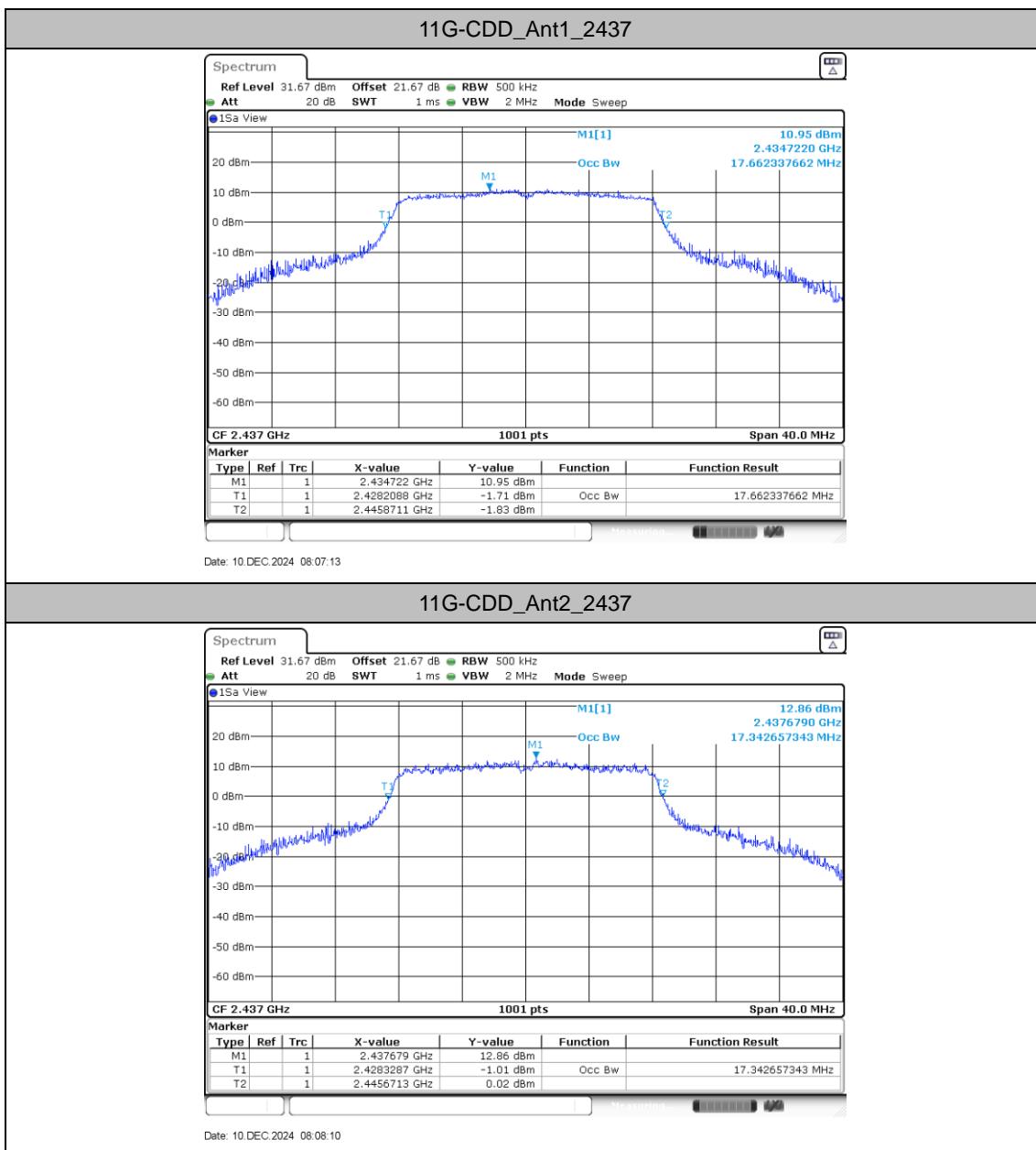
## Test Graphs

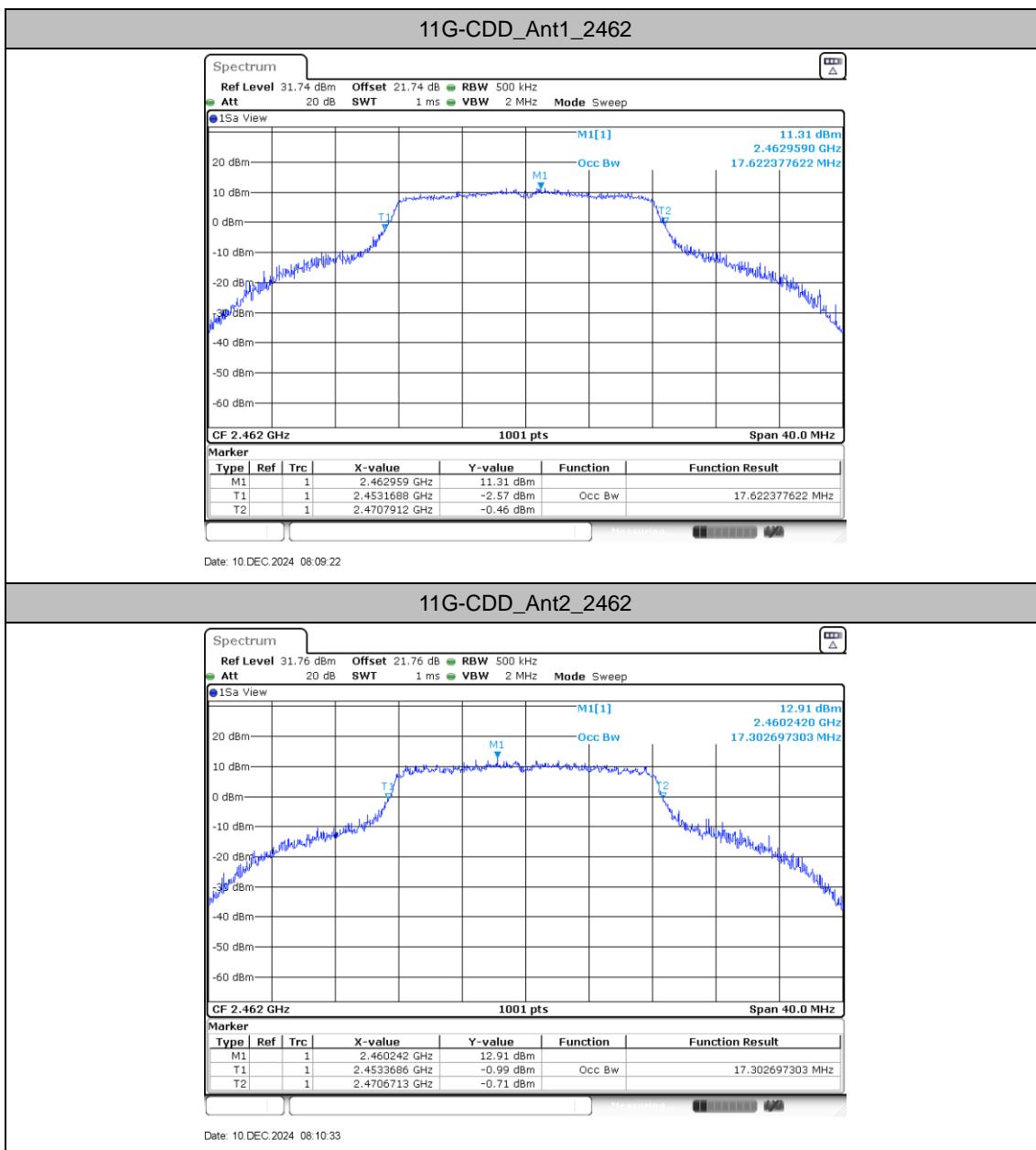


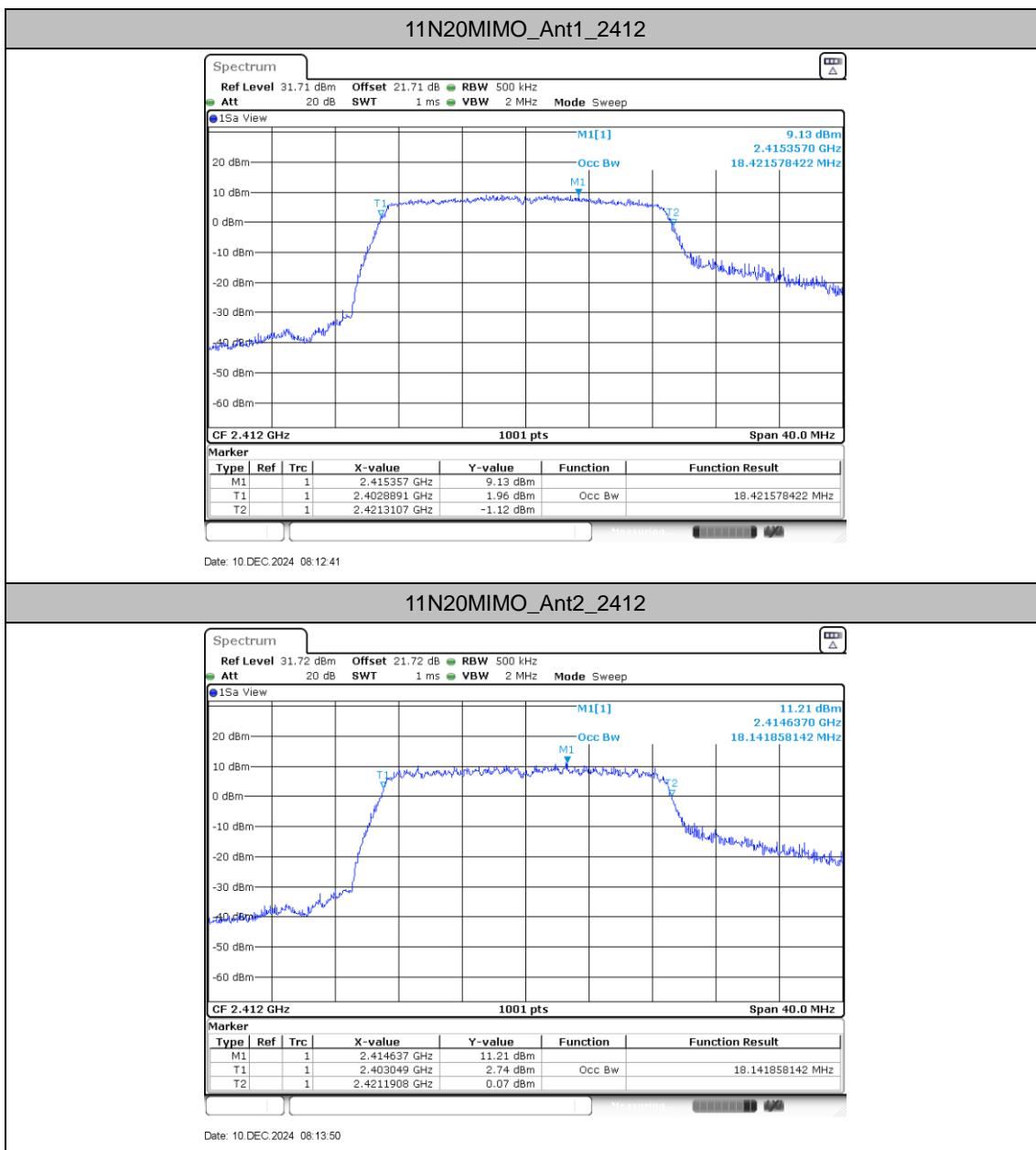


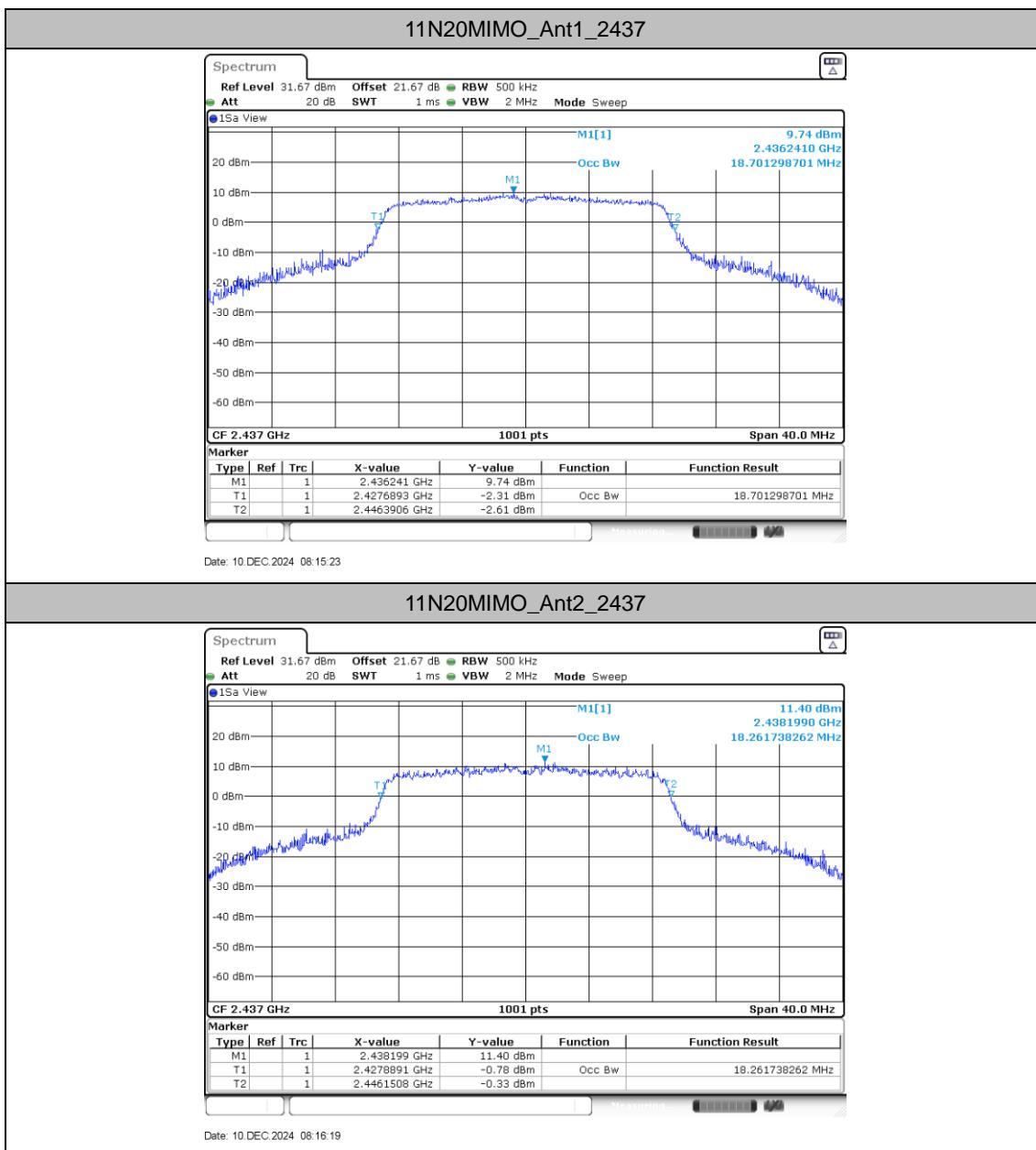


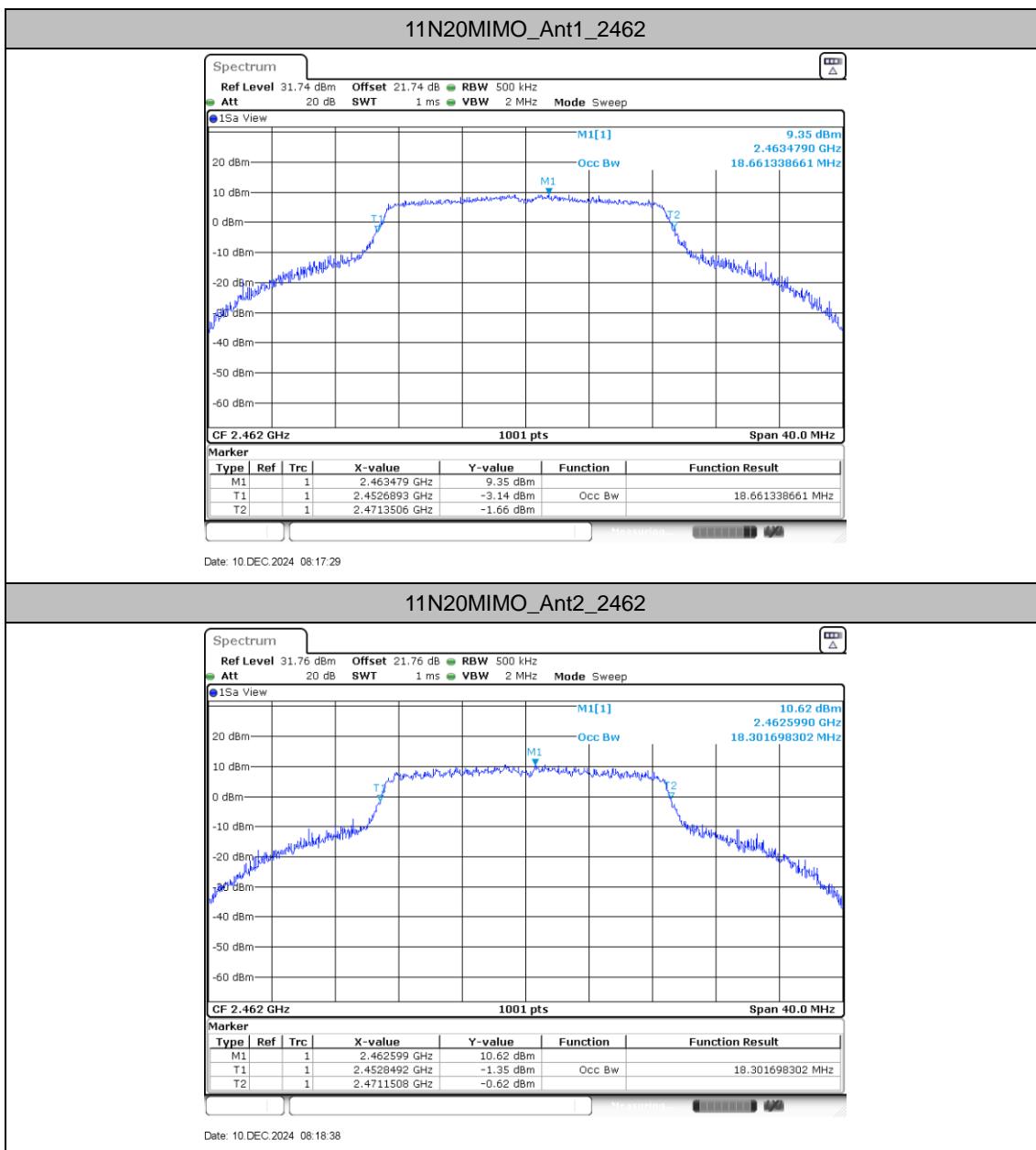


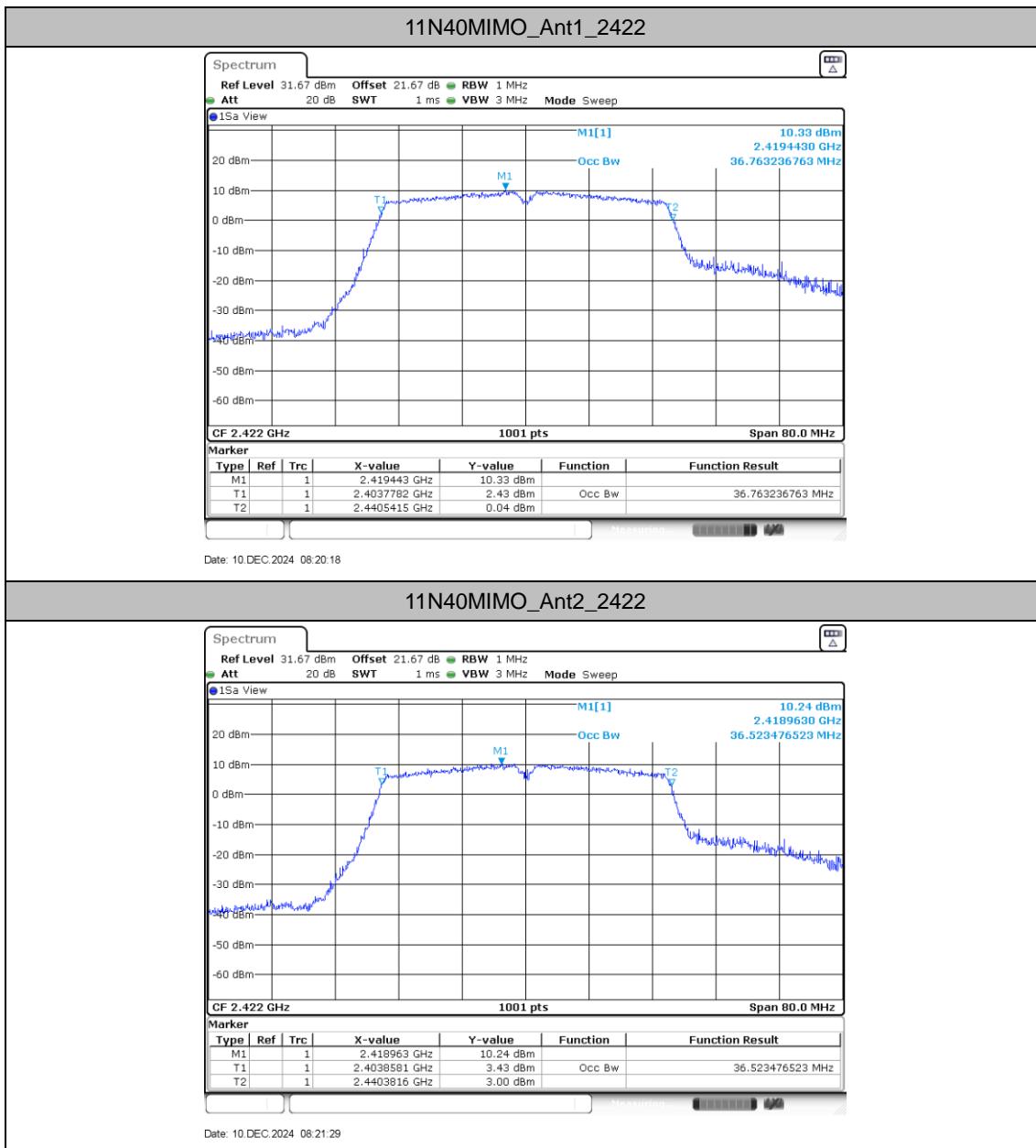


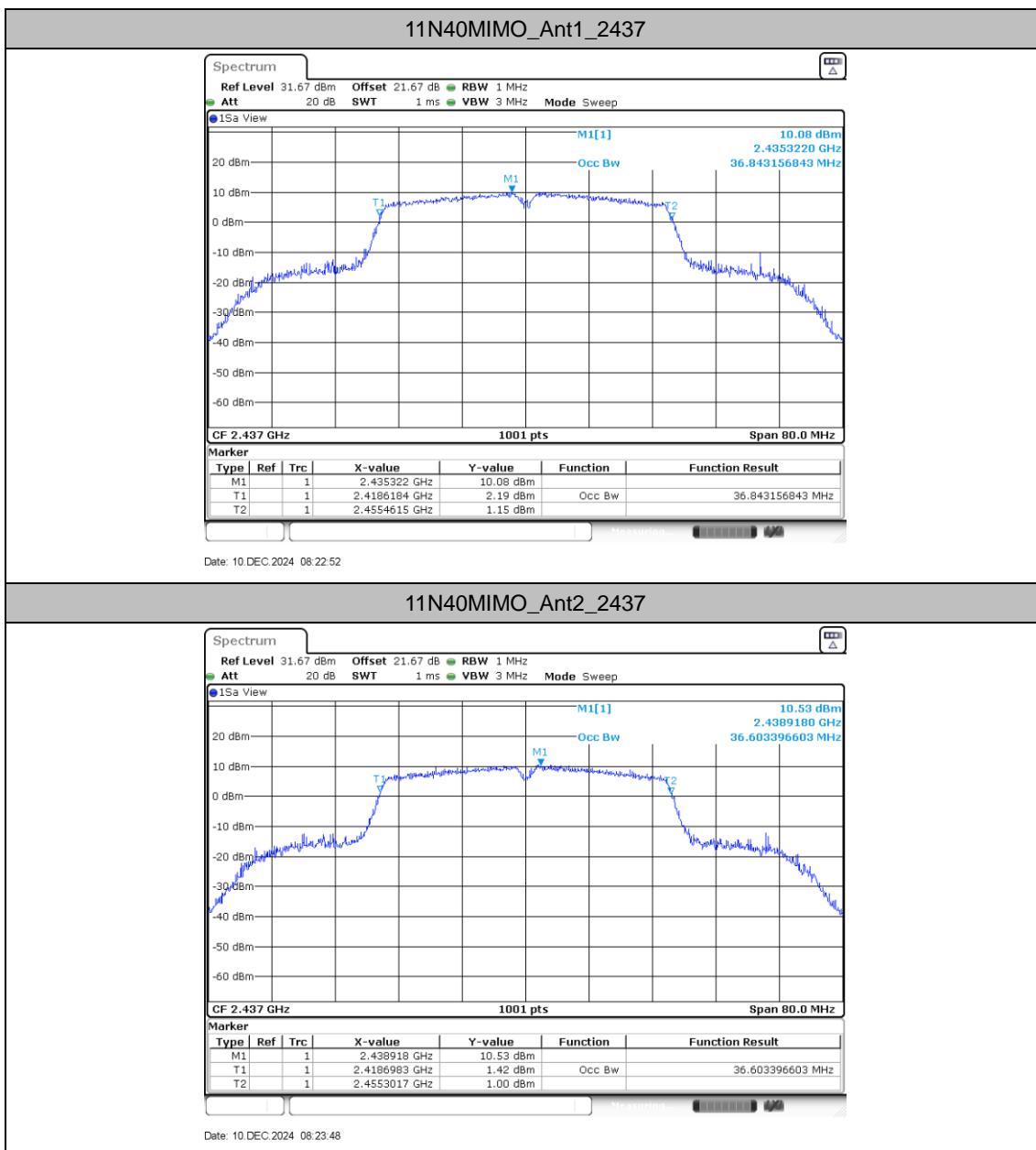


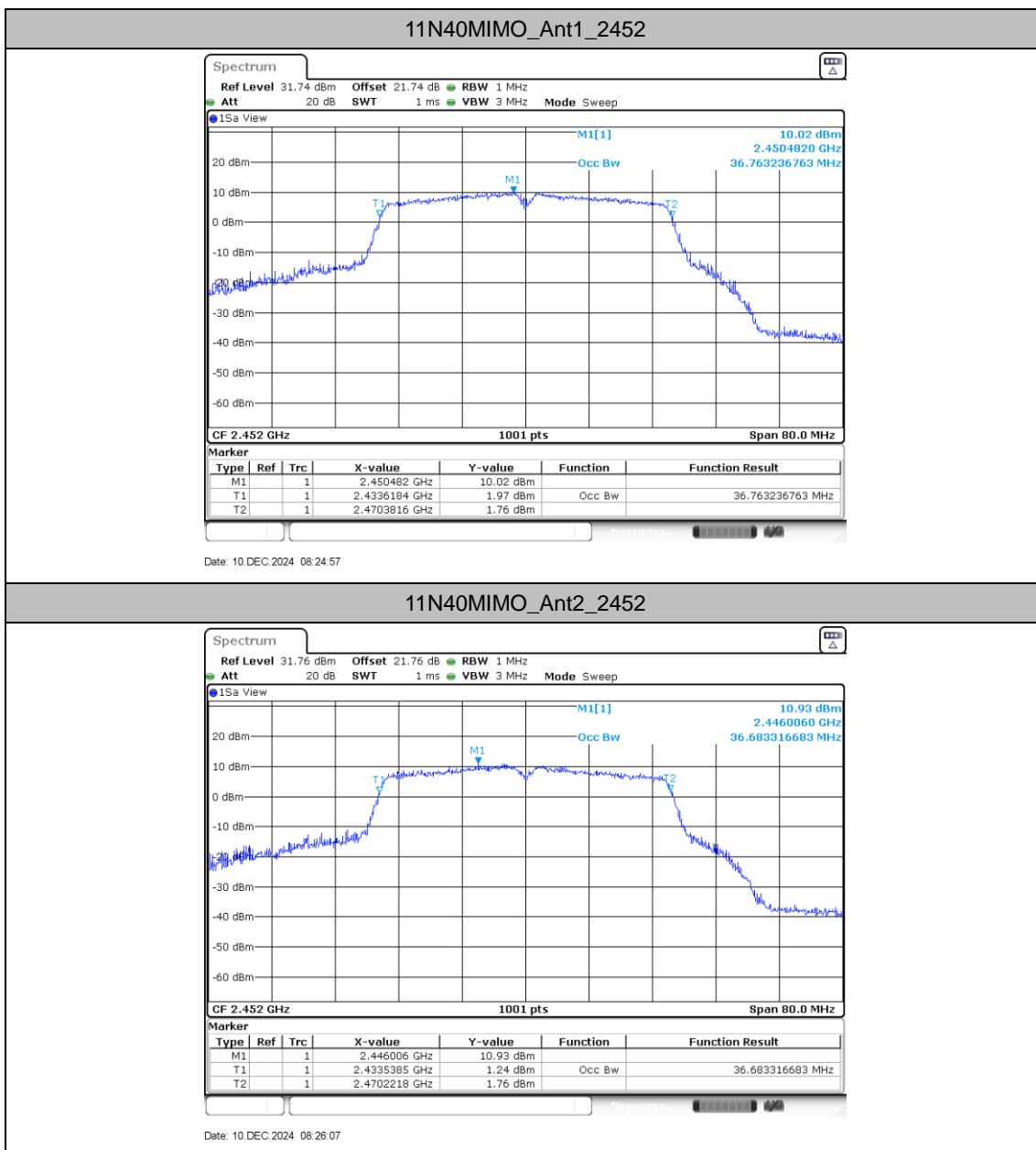


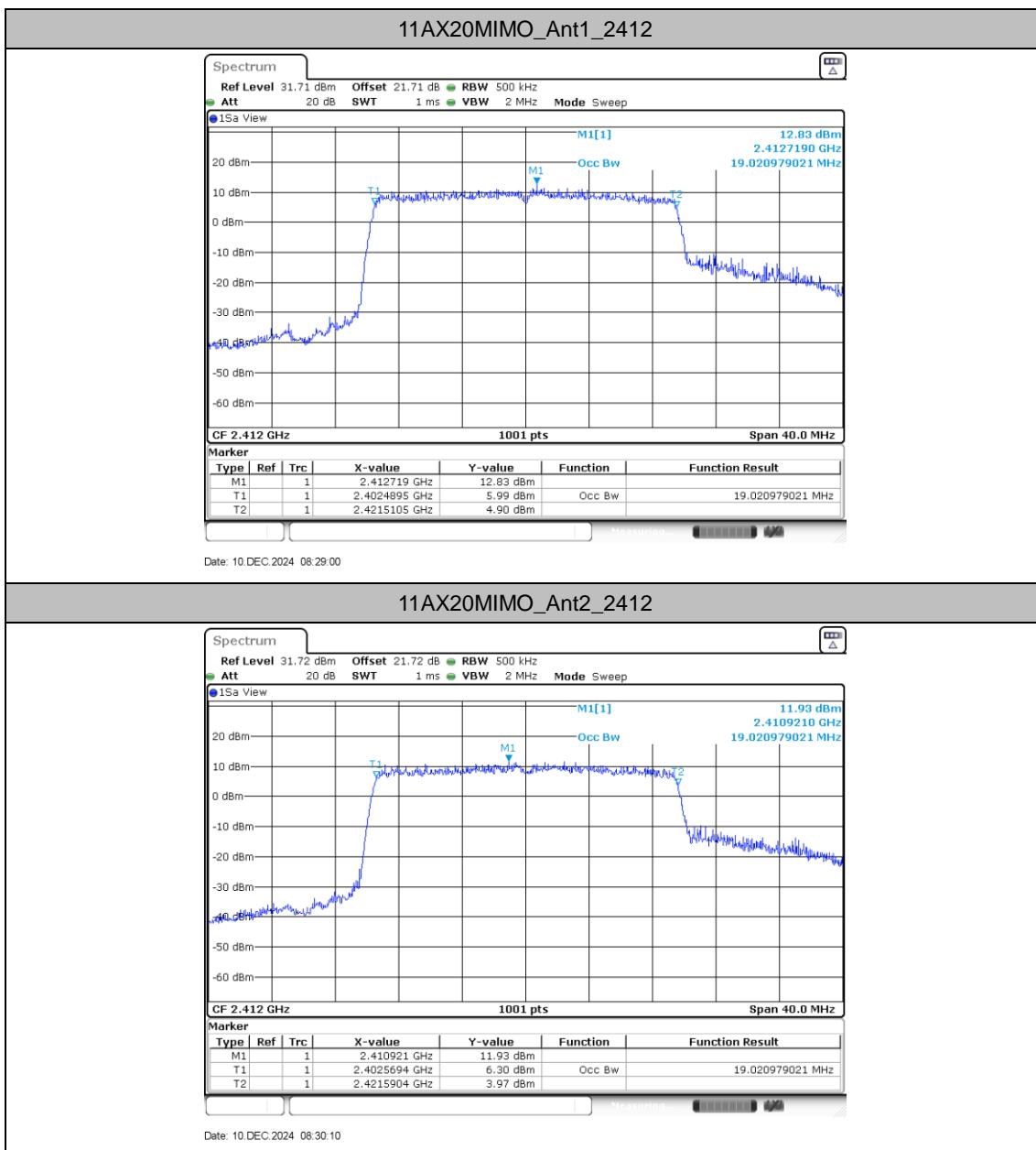


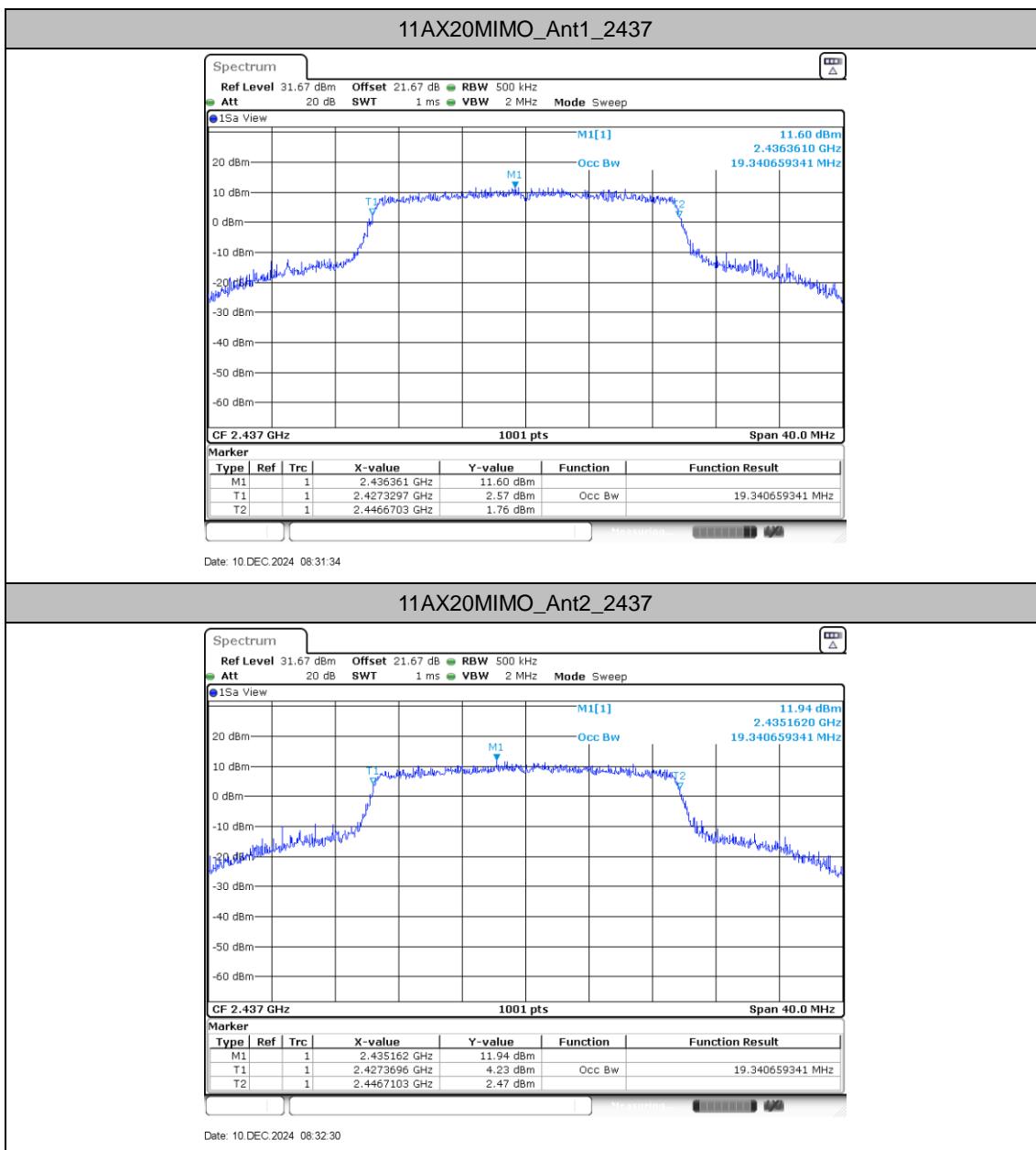


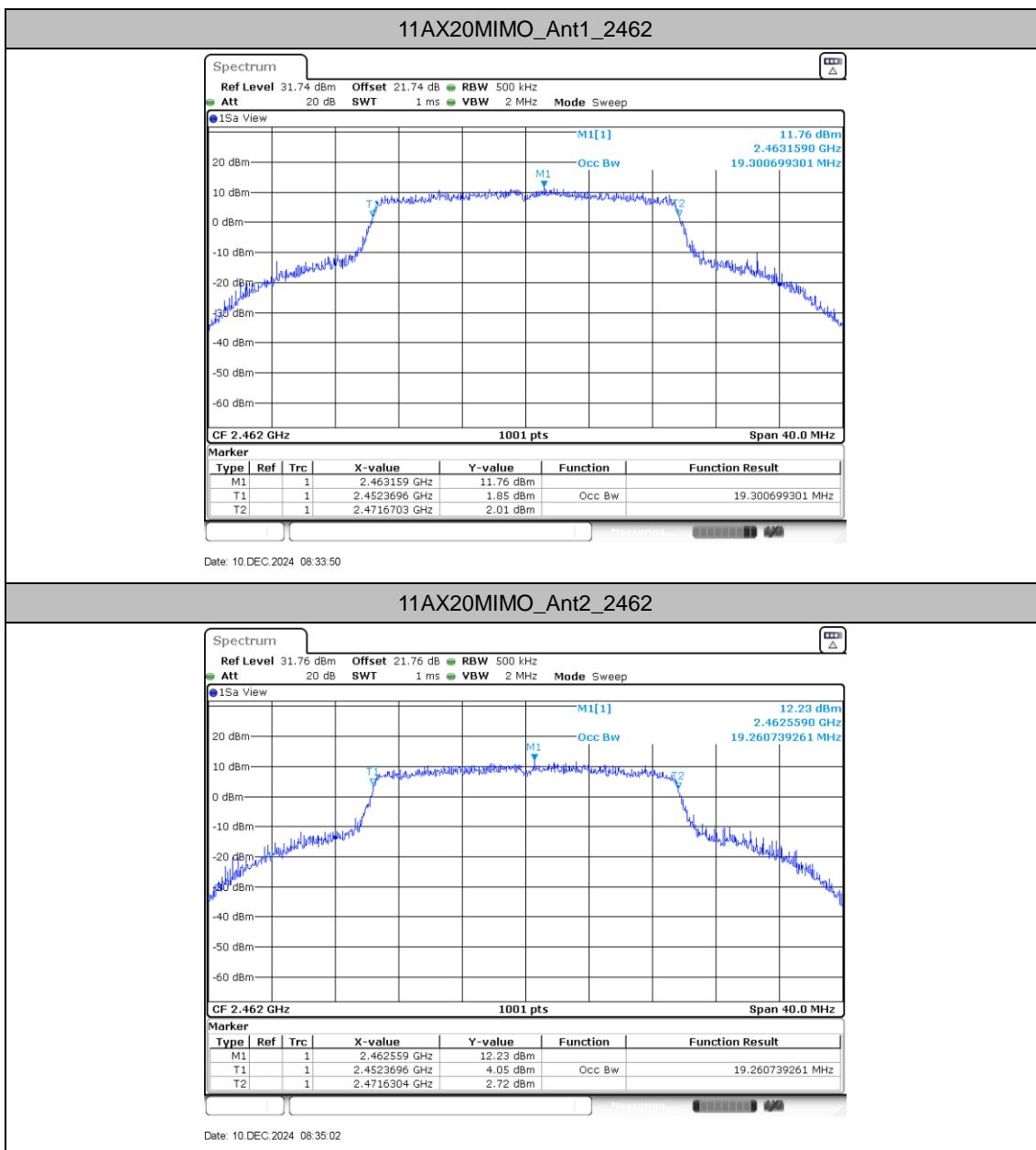


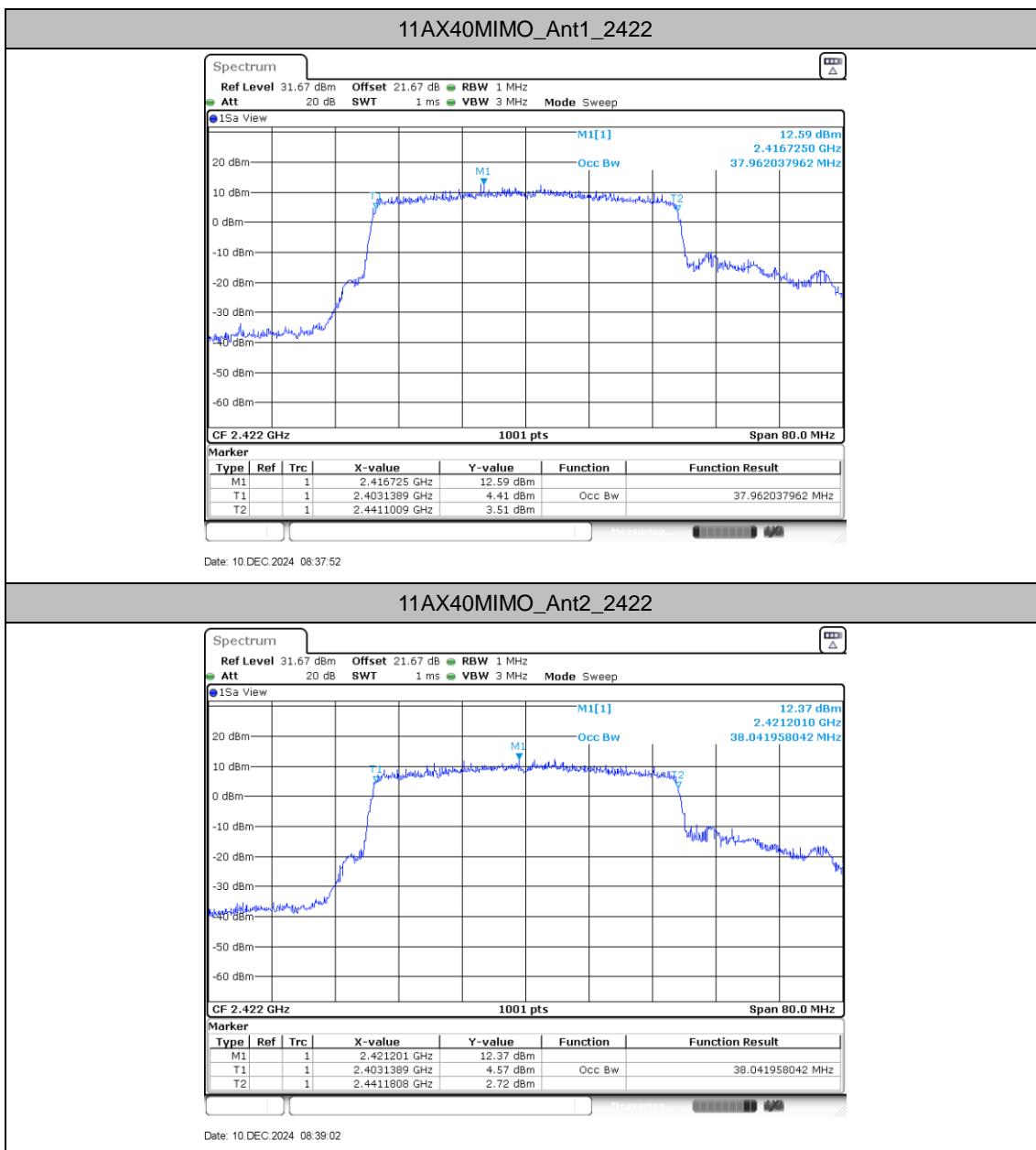


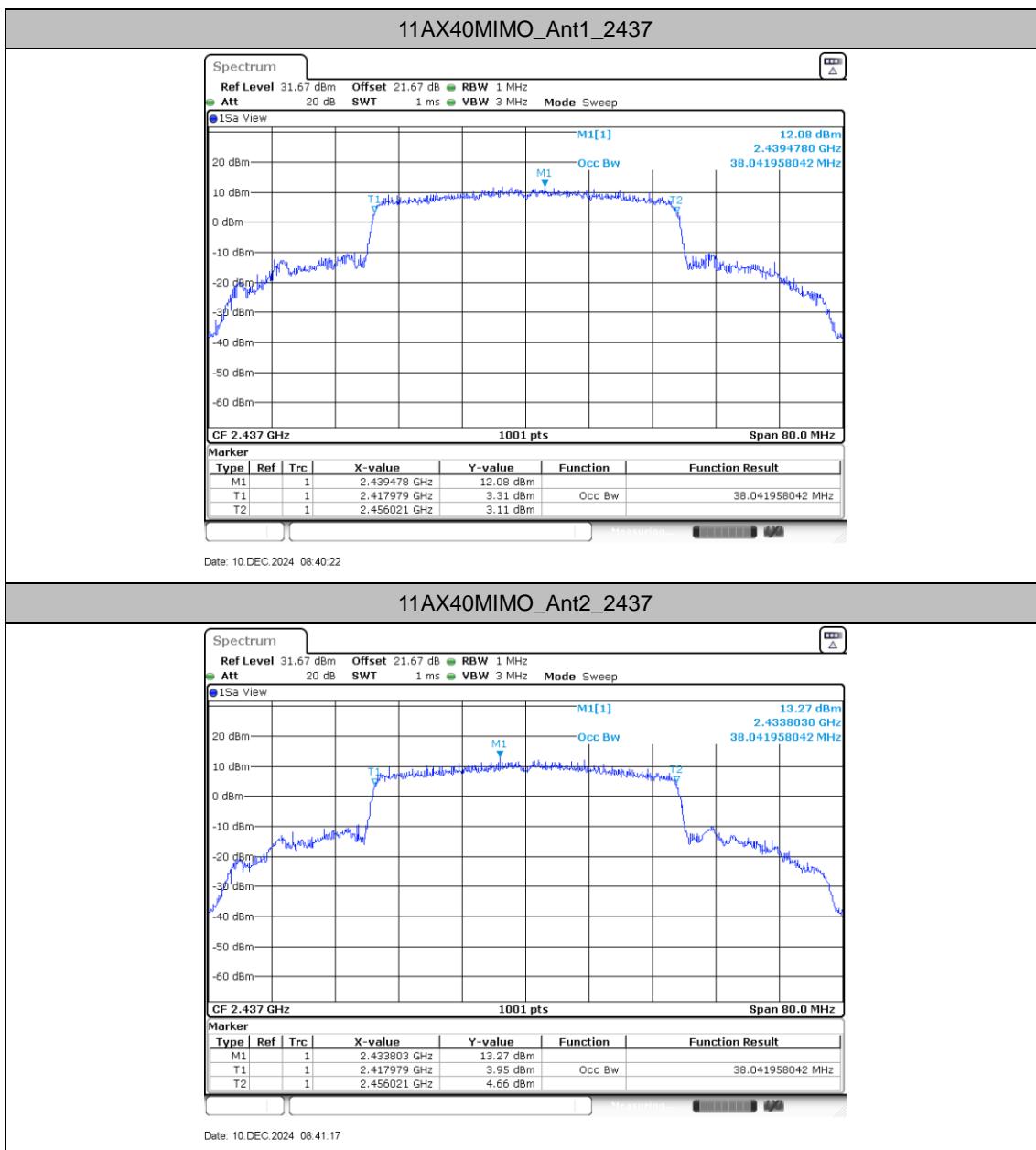


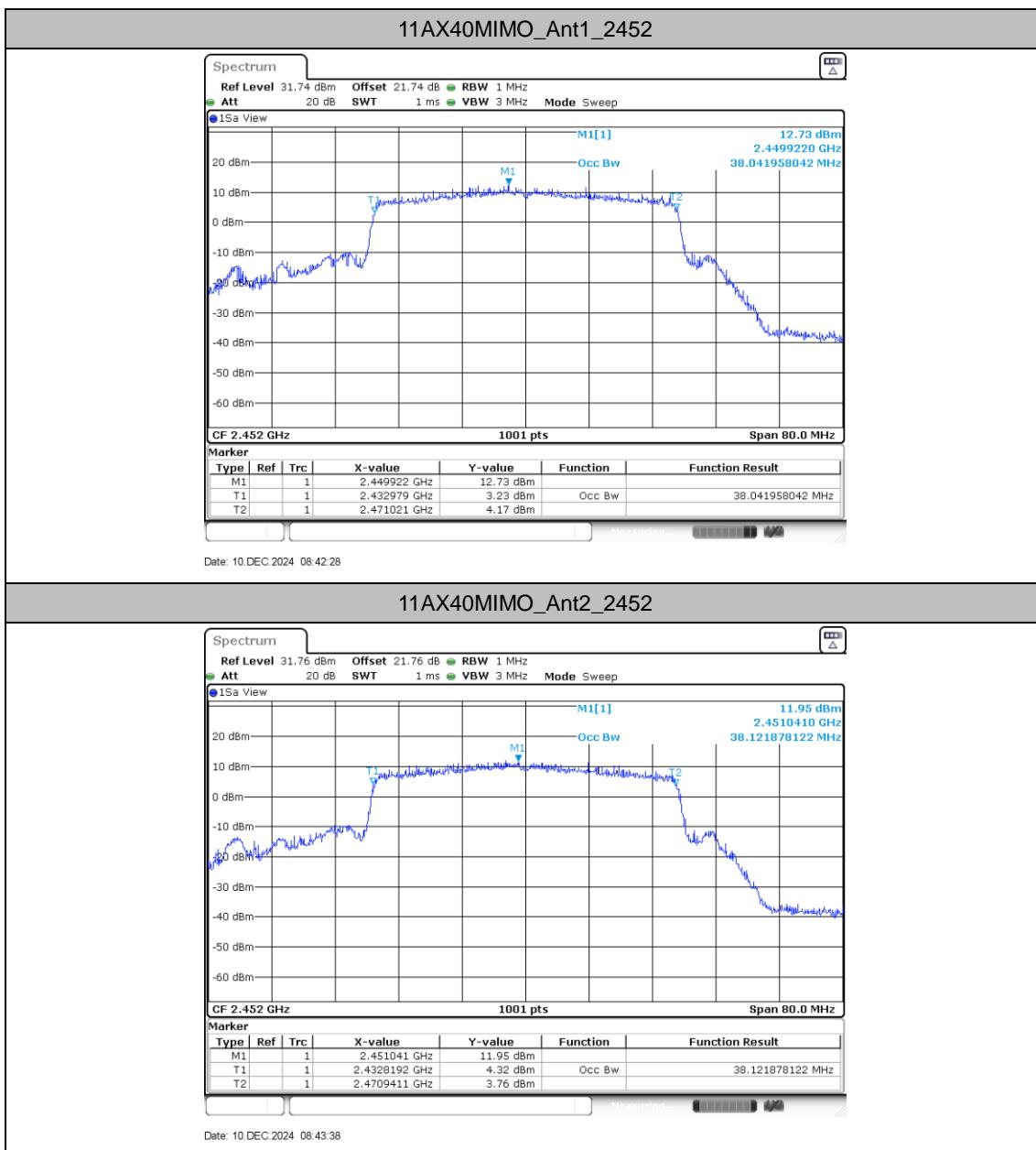














## Maximum power spectral density

### Test Result

TestMode	Antenna	Freq(MHz)	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B-CDD	Ant1	2412	-1.1	≤8.00	PASS
	Ant2	2412	-1.9	≤8.00	PASS
	total	2412	1.53	≤8.00	PASS
	Ant1	2437	-1.43	≤8.00	PASS
	Ant2	2437	-2.68	≤8.00	PASS
	total	2437	1.00	≤8.00	PASS
	Ant1	2462	-1.97	≤8.00	PASS
	Ant2	2462	-2.64	≤8.00	PASS
	total	2462	0.72	≤8.00	PASS
11G-CDD	Ant1	2412	-7.97	≤8.00	PASS
	Ant2	2412	-8.23	≤8.00	PASS
	total	2412	-5.09	≤8.00	PASS
	Ant1	2437	-7.51	≤8.00	PASS
	Ant2	2437	-7.79	≤8.00	PASS
	total	2437	-4.64	≤8.00	PASS
	Ant1	2462	-6.98	≤8.00	PASS
	Ant2	2462	-7.85	≤8.00	PASS
	total	2462	-4.38	≤8.00	PASS
11N20MIMO	Ant1	2412	-10.97	≤8.00	PASS
	Ant2	2412	-10.88	≤8.00	PASS
	total	2412	-7.91	≤8.00	PASS
	Ant1	2437	-9.23	≤8.00	PASS
	Ant2	2437	-9.64	≤8.00	PASS
	total	2437	-6.42	≤8.00	PASS
	Ant1	2462	-10.29	≤8.00	PASS
	Ant2	2462	-10.22	≤8.00	PASS
	total	2462	-7.24	≤8.00	PASS
11N40MIMO	Ant1	2422	-14.08	≤8.00	PASS
	Ant2	2422	-14.1	≤8.00	PASS
	total	2422	-11.08	≤8.00	PASS
	Ant1	2437	-15.84	≤8.00	PASS
	Ant2	2437	-15.42	≤8.00	PASS
	total	2437	-12.61	≤8.00	PASS
	Ant1	2452	-19.61	≤8.00	PASS
	Ant2	2452	-18.57	≤8.00	PASS
	total	2452	-16.05	≤8.00	PASS
11AX20MIMO	Ant1	2412	-11.98	≤8.00	PASS
	Ant2	2412	-12.23	≤8.00	PASS
	total	2412	-9.09	≤8.00	PASS
	Ant1	2437	-10.58	≤8.00	PASS
	Ant2	2437	-9.14	≤8.00	PASS
	total	2437	-6.79	≤8.00	PASS
	Ant1	2462	-10.34	≤8.00	PASS



11AX40MIMO	Ant2	2462	-10.77	$\leq 8.00$	PASS
	total	2462	-7.54	$\leq 8.00$	PASS
	Ant1	2422	-14.03	$\leq 8.00$	PASS
	Ant2	2422	-14.17	$\leq 8.00$	PASS
	total	2422	-11.09	$\leq 8.00$	PASS
	Ant1	2437	-16.11	$\leq 8.00$	PASS
	Ant2	2437	-15.54	$\leq 8.00$	PASS
	total	2437	-12.81	$\leq 8.00$	PASS
	Ant1	2452	-19.28	$\leq 8.00$	PASS
	Ant2	2452	-20.19	$\leq 8.00$	PASS
	total	2452	-16.70	$\leq 8.00$	PASS



## Test Graphs Test Graphs

