



## FCC AND ISED CERTIFICATION TEST REPORT

<b>Applicant</b>	:	Harman International Industries, Inc.
<b>Address of Applicant</b>	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
<b>Manufacturer</b>	:	Harman International Industries, Inc.
<b>Address of Manufacturer</b>	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
<b>Equipment under Test</b>	:	Wireless Subwoofer
<b>Model No.</b>	:	ENCHANT SUB
<b>HVIN</b>	:	SUB2
<b>FCC ID</b>	:	APIENCHANTSUB2
<b>IC</b>	:	6132A-ENCHANTSUB2
<b>Test Standard(s)</b>	:	FCC Rules and Regulations Part 15 Subpart E, RSS-247 Issue 3 August 2023, ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01, 662911 D01 Multiple Transmitter Output v02r01, RSS-Gen Issue 5 April 2018
<b>Report No.</b>	:	DDT-RE24081429-2E02
<b>Issue Date</b>	:	2024/10/15
<b>Issue By</b>	:	Guangdong Dongdian Testing Service Co., Ltd. Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

# REPORT

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## Test Report Declare

<b>Applicant</b>	:	Harman International Industries, Inc.
<b>Address of Applicant</b>	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
<b>Equipment under Test</b>	:	Wireless Subwoofer
<b>Model No.</b>	:	ENCHANT SUB
<b>Manufacturer</b>	:	Harman International Industries, Inc.
<b>Address of Manufacturer</b>	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

### Test Standard Used:

FCC Rules and Regulations Part 15 Subpart E,  
 RSS-247 Issue 3 August 2023,  
 ANSI C63.10:2013,  
 789033 D02 General U-NII Test Procedures New Rules v02r01,  
 662911 D01 Multiple Transmitter Output v02r01,  
 RSS-Gen Issue 5 April 2018

### We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

<b>Report No.:</b>	DDT-RE24081429-2E02		
<b>Date of Receipt:</b>	2024/09/26	<b>Date of Test:</b>	2024/09/26 - 2024/10/15

**Prepared By:**

*Bobo Chen*

**Bobo Chen/Engineer**

**Approved By:**



**Damon Hu/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

### Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	2024/10/15	

## 1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e), RSS-247 Clause 6.2	/	Pass
2	Output Power	FCC 15.407 (a) ; RSS-247 Clause 6.2	/	Pass
3	Power Spectral Density	FCC 15.407 (a) ; RSS-247 Clause 6.2	/	Pass
4	Frequency Stability Measurement	FCC 15.407 (g); RSS-247 Clause 6.2; RSS-GEN Clause 8.9	/	Pass
5	Radiated Emission	FCC 15.407 (b); FCC 15.209; FCC 15.205; RSS-247 Clause 6.2; RSS-GEN Clause 8.9	/	Pass
6	Band Edge Compliance	FCC 15.407 (b); FCC 15.209; FCC 15.205; RSS-247 Clause 6.2; RSS-GEN Clause 8.9	/	Pass
7	Antenna Requirement	FCC Part 15: 15.203, RSS-Gen Issue 5 clause 6.8	/	Pass
8	Dynamic Frequency Selection	FCC 15.407 (h); RSS-247 Clause 6.8	/	Pass
9	Power Line Conducted Emissions	FCC Part 15: 15.207(a), RSS-Gen Issue 5 clause 8.8	/	Pass

Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard.

## 2. General Test Information

### 2.1. Description of EUT

EUT Name	: Wireless Subwoofer
Model Number	: ENCHANT SUB
EUT Function Description	: Please reference user manual of this device
Power Supply	: AC 100-240V ~ 50/60Hz 100W

Note: This EUT support 2.4 GHz WLAN, 5 GHz WLAN, this report only for 5 GHz WLAN.

Radio Technology	: IEEE 802.11a/n/ac/ax
Operation frequency	: IEEE 802.11a: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz IEEE 802.11n HT20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz IEEE 802.11n HT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5710MHz, 5755MHz-5795MHz IEEE 802.11ac VHT20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz IEEE 802.11ac VHT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5710MHz, 5755MHz-5795MHz IEEE 802.11ac VHT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz IEEE 802.11ax HE20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11ax HE40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5670MHz, 5755MHz-5795MHz IEEE 802.11ax HE80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz
Modulation	: IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDM (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)

Antenna information			
Antenna Type	FPC		
		Ant1 Gain	Ant2 Gain
Max Antenna Gain (dBi)	IEEE 802.11a	2.95	2.78
	IEEE 802.11n HT20	2.95	2.78
	IEEE 802.11n HT40	2.95	2.78
	IEEE 802.11ac VHT20	2.95	2.78
	IEEE 802.11ac VHT40	2.95	2.78
	IEEE 802.11ac VHT80	2.95	2.78
	IEEE 802.11ax HE20	2.95	2.78
	IEEE 802.11ax HE40	2.95	2.78
	IEEE 802.11ax HE80	2.95	2.78

Note: This product does not support beamforming.

Channel information					
IEEE 802.11a		IEEE 802.11n (HT40)		IEEE 802.11ac (VHT80)	
IEEE 802.11n (HT20)		IEEE 802.11ac (VHT40)		IEEE 802.11ax (HE80)	
IEEE 802.11ac (VHT20)		IEEE 802.11ax (HE40)			
IEEE 802.11ax (HE20)					
UNII-1					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	/	/
44	5220	/	/	/	/
48	5240	/	/	/	/
UNII-2A					
52	5260	54	5270	58	5290
56	5280	62	5310		/
60	5300	/	/	/	/
64	5320	/	/	/	/
UNII-2C					
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	138	5690
112	5560	126	5630	/	/
116	5580	134	5670	/	/
120	5600	142	5710	/	/
124	5620	/	/	/	/
128	5640	/	/	/	/
132	5660	/	/	/	/
136	5680	/	/	/	/
140	5700	/	/	/	/
144	5720				
UNII-3					
149	5745	151	5755	155	5775
153	5765	159	5795	/	/
157	5785	/	/	/	/
161	5805	/	/	/	/
165	5825	/	/	/	/
Note: Band 5600-5650MHz will be disabled when shipped to Canada					

Note : "☑" means to be chosen or applicable; "☐" means don't to be chosen or not applicable; This note applies to entire report.

Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna

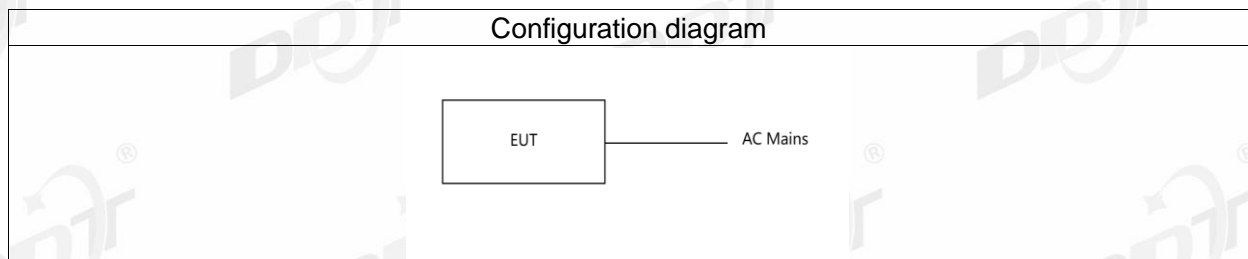
information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

“☑” means to be chosen or applicable; “☐” means don't to be chosen or not applicable; This note applies to entire report.

## 2.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
AC Cable	Harman	N/A	Length: 1.50m, unshielded

## 2.3. Block diagram of EUT configuration for test



## 2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:

Test software: adb.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

The pathloss of external cable: 2 dB (According to the manufacturer's claims)

Tested mode, channel, and data rate information					
Mode	Setting Tx Power		Data rate (Mbps) (see Note)	Channel	Frequency (MHz)
	ANT1	ANT2			
IEEE 802.11a	10	10	6	Low: CH36	5180
	10	10	6	Middle: CH40	5200
	10	10	6	High: CH48	5240
	10	10	6	Low: CH52	5260
	10	10	6	Middle: CH56	5280
	10	10	6	High: CH64	5320
	10	10	6	Low: CH100	5500
	10	10	6	Middle: CH116	5580
	10	10	6	High: CH140	5700
	10	10	6	Straddle:CH144	5720
	Default	Default	6	Low: CH149	5745
	Default	Default	6	Middle: CH157	5785
	Default	Default	6	High: CH165	5825

IEEE 802.11n HT20	Default	Default	MCS 8	Low: CH36	5180
	Default	Default	MCS 8	Middle: CH40	5200
	Default	Default	MCS 8	High: CH48	5240
	Default	Default	MCS 8	Low: CH52	5260
	Default	Default	MCS 8	Middle: CH56	5280
	Default	Default	MCS 8	High: CH64	5320
	Default	Default	MCS 8	Low: CH100	5500
	Default	Default	MCS 8	Middle: CH116	5580
	Default	Default	MCS 8	High: CH140	5700
	Default	Default	MCS 8	Straddle:CH144	5720
	Default	Default	MCS 8	Low: CH149	5745
	Default	Default	MCS 8	Middle: CH157	5785
	Default	Default	MCS 8	High: CH165	5825
IEEE 802.11n HT40	Default	Default	MCS 8	Low: CH38	5190
	Default	Default	MCS 8	Middle: CH46	5230
	Default	Default	MCS 8	High: CH54	5270
	Default	Default	MCS 8	Low: CH62	5310
	Default	Default	MCS 8	Middle: CH102	5510
	Default	Default	MCS 8	High: CH110	5550
	Default	Default	MCS 8	Low: CH134	5670
	Default	Default	MCS 8	Straddle: CH142	5710
	Default	Default	MCS 8	Middle: CH151	5755
IEEE 802.11ac VHT20	Default	Default	MCS 0	Low: CH36	5180
	Default	Default	MCS 0	Middle: CH40	5200
	Default	Default	MCS 0	High: CH48	5240
	Default	Default	MCS 0	Low: CH52	5260
	Default	Default	MCS 0	Middle: CH56	5280
	Default	Default	MCS 0	High: CH64	5320
	Default	Default	MCS 0	Low: CH100	5500
	Default	Default	MCS 0	Middle: CH116	5580
	Default	Default	MCS 0	High: CH140	5700
	Default	Default	MCS 0	Straddle:CH144	5720
	Default	Default	MCS 0	Low: CH149	5745
	Default	Default	MCS 0	Middle: CH157	5785
IEEE 802.11 ac VHT40	Default	Default	MCS 0	High: CH165	5825
	Default	Default	MCS 0	Low: CH38	5190
	Default	Default	MCS 0	Middle: CH46	5230
	Default	Default	MCS 0	High: CH54	5270
	Default	Default	MCS 0	Low: CH62	5310

	Default	Default	MCS 0	Middle: CH102	5510
	Default	Default	MCS 0	High: CH110	5550
	Default	Default	MCS 0	Low: CH134	5670
	Default	Default	MCS 0	Straddle: CH142	5710
	Default	Default	MCS 0	Middle: CH151	5755
	Default	Default	MCS 0	High: CH159	5795
IEEE 802.11ac VHT80	Default	Default	MCS 0	CH42	5210
	Default	Default	MCS 0	CH58	5290
	Default	Default	MCS 0	CH106	5530
	Default	Default	MCS 0	CH122	5610
	Default	Default	MCS 0	CH138	5690
	Default	Default	MCS 0	CH155	5775
IEEE 802.11ax HE20	SU: Default RU: 6	SU: Default RU: 6	MCS 0	Low: CH36	5180
	SU: Default RU: 6	SU: Default RU: 6	MCS 0	Middle: CH40	5200
	SU: Default RU: 6	SU: Default RU: 6	MCS 0	High: CH48	5240
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Low: CH52	5260
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Middle: CH56	5280
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	High: CH64	5320
	SU: Default RU: Default (26Tone: 11)	SU: Default RU: Default (26Tone: 11)	MCS 0	Low: CH100	5500
	SU: Default RU: Default (26Tone: 11)	SU: Default RU: Default (26Tone: 11)	MCS 0	Middle: CH116	5580
	SU: Default RU: Default (26Tone: 11)	SU: Default RU: Default (26Tone: 11)	MCS 0	High: CH140	5700
	SU: Default RU: Default (26Tone: 11)	SU: Default RU: Default (26Tone: 11)	MCS 0	Straddle:CH144	5720
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Low: CH149	5745
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Middle: CH157	5785
SU: Default RU: Default	SU: Default RU: Default	MCS 0	High: CH165	5825	
IEEE 802.11ax HE40	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Low: CH38	5190
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Middle: CH46	5230
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	High: CH54	5270
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Low: CH62	5310
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Middle: CH102	5510

	SU: Default RU: Default	SU: Default RU: Default	MCS 0	High: CH110	5550
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Low: CH134	5670
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Straddle: CH142	5710
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	Middle: CH151	5755
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	High: CH159	5795
IEEE 802.11ax HE80	SU: Default RU: Default	SU: Default RU: Default	MCS 0	CH42	5210
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	CH58	5290
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	CH106	5530
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	CH122	5610
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	CH138	5690
	SU: Default RU: Default	SU: Default RU: Default	MCS 0	CH155	5775
Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.					

## 2.5. Deviations of test standard

No deviation.

## 2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	+15°C to +35 °C
Humidity range:	20% to 75%
Pressure range:	86 kPa to106 kPa

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

## 2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: [ddt@dgddt.com](mailto:ddt@dgddt.com).

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

## 2.8. Measurement uncertainty

Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7 x 10 <sup>-8</sup> (Antenna couple method)
	5.5 x 10 <sup>-8</sup> (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 26.5 GHz)
Uncertainty for radio frequency (RBW < 20 kHz)	3x10 <sup>-8</sup>
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz)
	3.72dB (9KHz-150KHz)

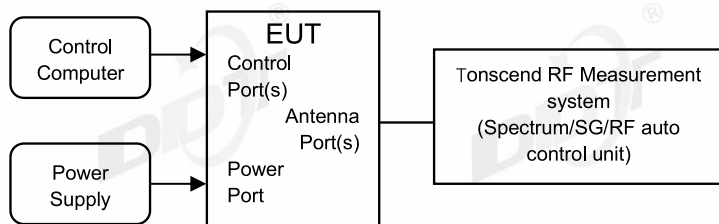
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3. Equipment Used During Conductive Test

Equipment	Manufacturer	Model No.	Serial Number	Due Date
☑RF Connected Test (RF Measurement System 3#)				
SIGNAL ANALYZER	R&S	FSV40	101407	2025/07/08
Wideband Radio Communication Tester	R&S	CMW500	117491	2025/03/31
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2025/07/08
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2025/03/31
RF Control Unit	Tonscend	JS0806-2	20C8060230	2025/03/31
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2025/04/22
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A

## 4. 26dB Bandwidth

### 4.1. Block diagram of test setup



### 4.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
26 dB Bandwidth	---	5150 - 5250
	---	5250 - 5350
	---	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 5725

### 4.3. Test procedure

Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	approximately 1% of the emission bandwidth.
VBW	> RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

## 4.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	24.6-27.2℃,42.9-46.7%RH	Test Date:	2024.09.04-2024.09.11
Test Power Supply:	AC 120V/60Hz	Sample Number:	S24081429-001

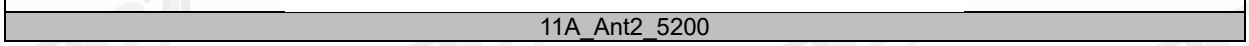
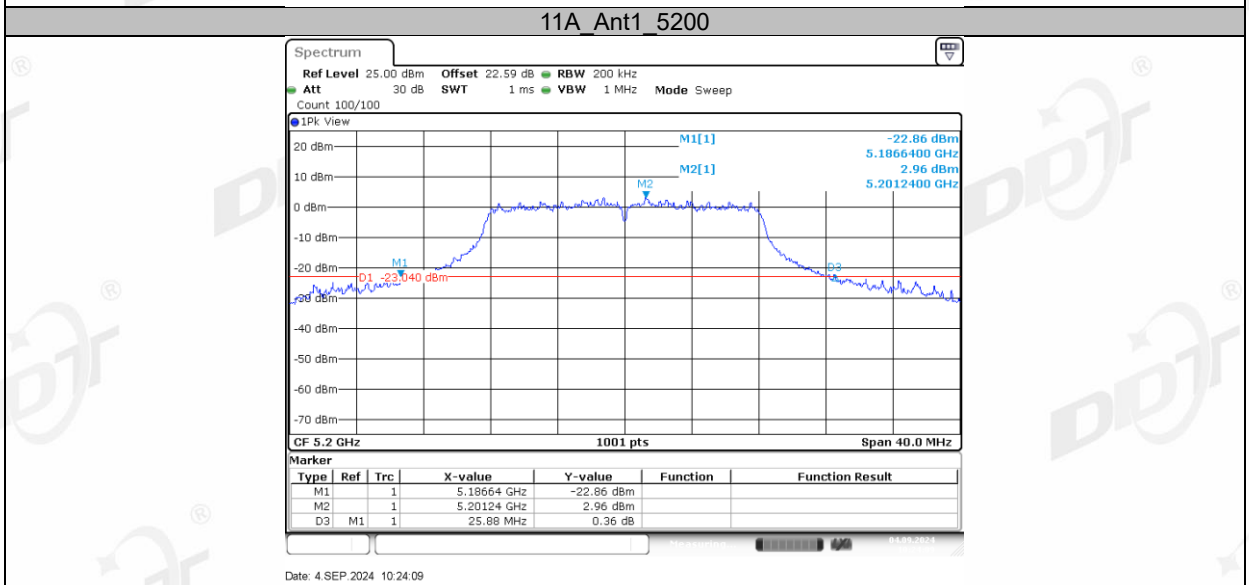
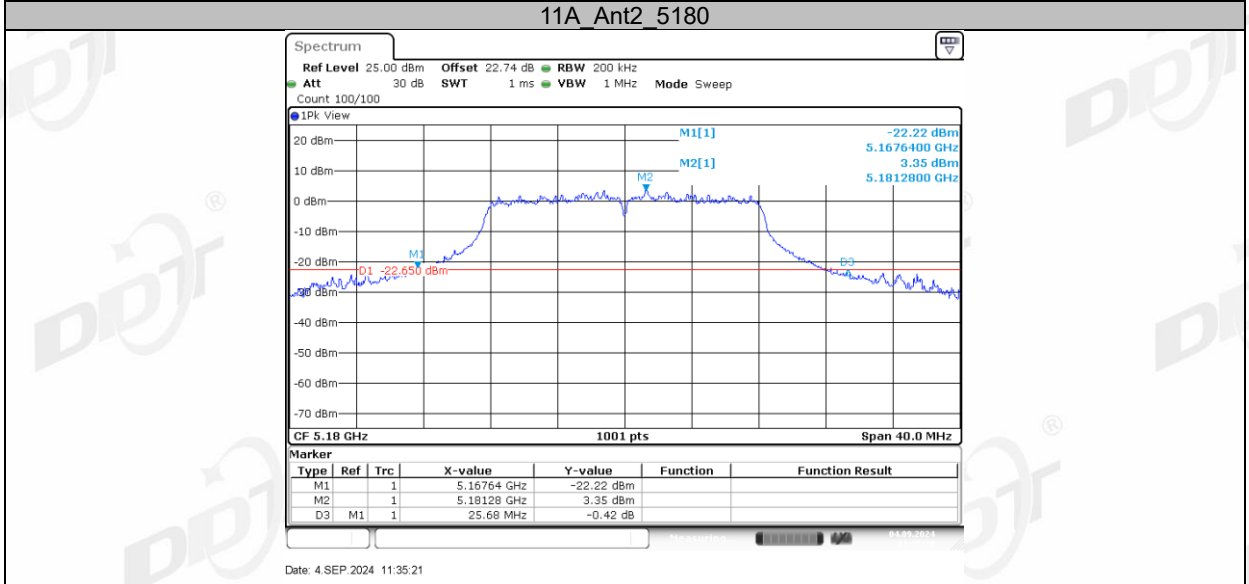
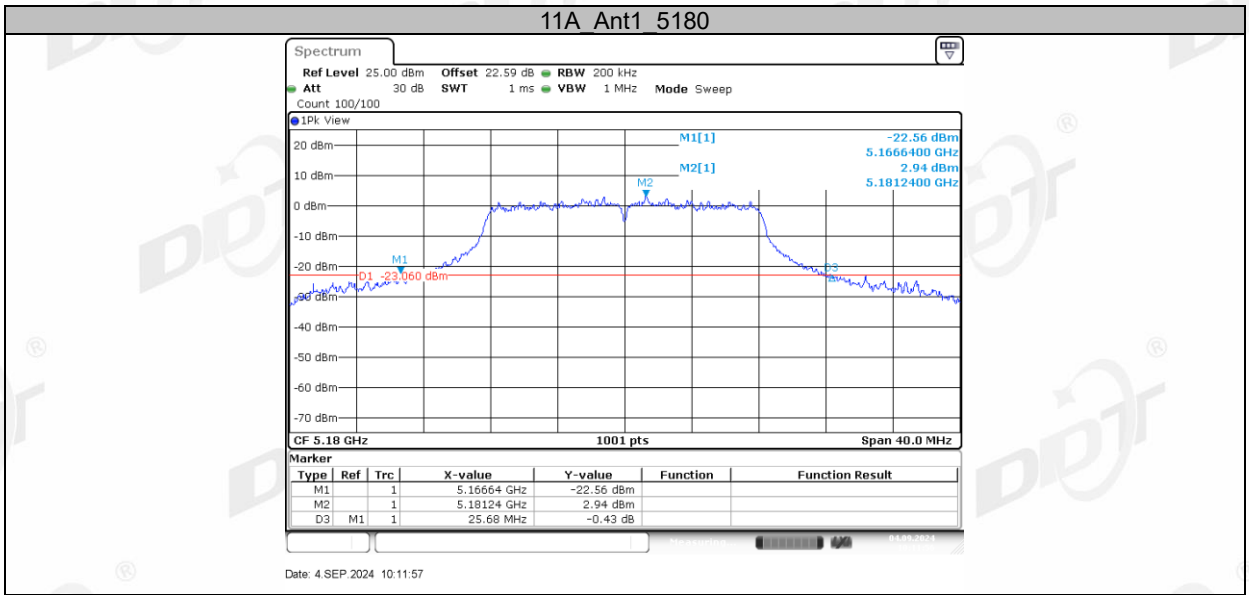
Test Mode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict	
11A	Ant1	5180	25.68	5166.64	5192.32	---	---	
	Ant2	5180	25.68	5167.64	5193.32	---	---	
	Ant1	5200	25.88	5186.64	5212.52	---	---	
	Ant2	5200	25.40	5186.64	5212.04	---	---	
	Ant1	5240	19.68	5230.12	5249.80	---	---	
	Ant2	5240	19.64	5230.16	5249.80	---	---	
	Ant1	5260	24.24	5247.96	5272.20	---	---	
	Ant2	5260	24.40	5248.00	5272.40	---	---	
	Ant1	5280	24.28	5268.00	5292.28	---	---	
	Ant2	5280	32.00	5267.96	5299.96	---	---	
	Ant1	5320	26.92	5306.64	5333.56	---	---	
	Ant2	5320	25.44	5306.68	5332.12	---	---	
	Ant1	5500	24.92	5487.12	5512.04	---	---	
	Ant2	5500	25.60	5486.60	5512.20	---	---	
	Ant1	5580	24.52	5567.64	5592.16	---	---	
	Ant2	5580	24.16	5567.84	5592.00	---	---	
	Ant1	5700	25.48	5686.68	5712.16	---	---	
	Ant2	5700	24.92	5687.32	5712.24	---	---	
	Ant1	5720	23.36	5708.16	5731.52	---	---	
	Ant2	5720	23.48	5708.24	5731.72	---	---	
	Ant1	5720 UNII-2C	16.84	5708.16	5725	---	---	
	Ant2	5720 UNII-2C	16.76	5708.24	5725	---	---	
	Ant1	5720 UNII-3	6.52	5725	5731.52	---	---	
	Ant2	5720 UNII-3	6.72	5725	5731.72	---	---	
	Ant1	5745	24.96	5732.64	5757.60	---	---	
	Ant2	5745	27.20	5730.88	5758.08	---	---	
	Ant1	5785	25.20	5772.84	5798.04	---	---	
	Ant2	5785	24.88	5772.92	5797.80	---	---	
	Ant1	5825	26.80	5811.20	5838.00	---	---	
	Ant2	5825	25.60	5811.92	5837.52	---	---	
	11N20MI MO	Ant1	5180	25.12	5167.36	5192.48	---	---
		Ant2	5180	25.92	5166.04	5191.96	---	---
Ant1		5200	25.56	5187.36	5212.92	---	---	
Ant2		5200	23.92	5188.00	5211.92	---	---	
Ant1		5240	20.12	5229.92	5250.04	---	---	
Ant2		5240	19.96	5229.96	5249.92	---	---	
Ant1		5260	25.24	5247.60	5272.84	---	---	
Ant2		5260	23.84	5247.72	5271.56	---	---	
Ant1		5280	25.32	5267.48	5292.80	---	---	
Ant2		5280	23.72	5267.88	5291.60	---	---	
Ant1		5320	26.24	5306.88	5333.12	---	---	
Ant2		5320	24.92	5307.40	5332.32	---	---	
Ant1		5500	25.64	5487.24	5512.88	---	---	
Ant2		5500	24.20	5487.36	5511.56	---	---	
Ant1		5580	25.08	5567.32	5592.40	---	---	
Ant2		5580	24.04	5567.56	5591.60	---	---	
Ant1		5700	26.44	5686.72	5713.16	---	---	
Ant2		5700	24.72	5687.28	5712.00	---	---	
Ant1		5720	24.48	5707.60	5732.08	---	---	
Ant2		5720	23.36	5708.12	5731.48	---	---	
Ant1		5720 UNII-2C	17.4	5707.60	5725	---	---	
Ant2		5720 UNII-2C	16.88	5708.12	5725	---	---	
Ant1		5720 UNII-3	7.08	5725	5732.08	---	---	
Ant2		5720 UNII-3	6.48	5725	5731.48	---	---	
Ant1	5745	26.72	5731.72	5758.44	---	---		

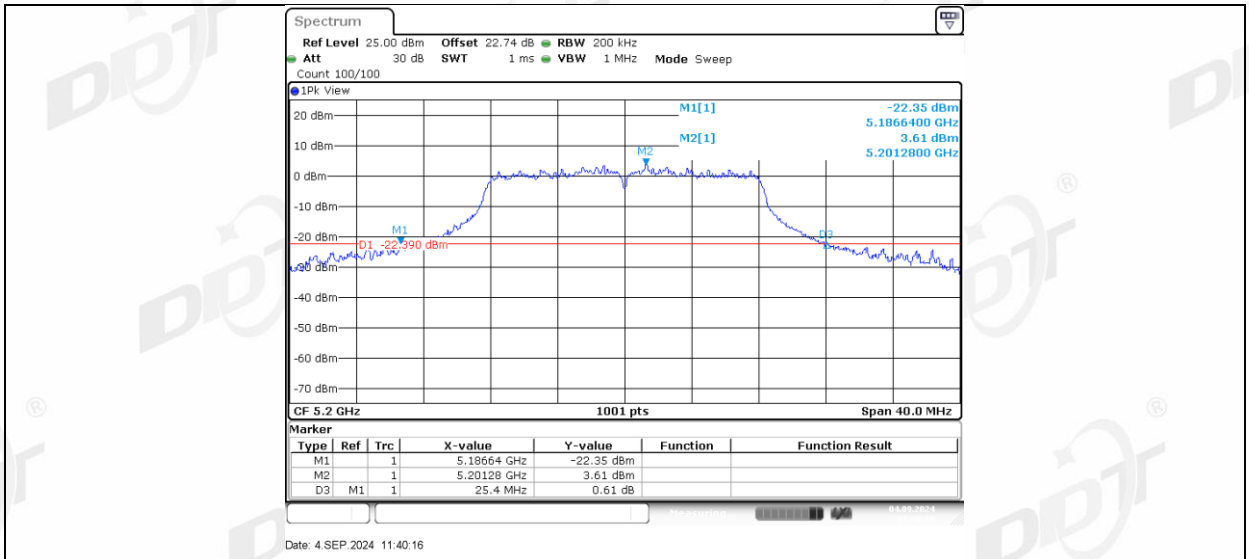
	Ant2	5745	25.04	5732.64	5757.68	---	---
	Ant1	5785	26.04	5772.08	5798.12	---	---
	Ant2	5785	25.20	5771.88	5797.08	---	---
	Ant1	5825	26.56	5811.72	5838.28	---	---
	Ant2	5825	25.68	5811.72	5837.40	---	---
11N40MI MO	Ant1	5190	40.80	5169.68	5210.48	---	---
	Ant2	5190	40.32	5170.00	5210.32	---	---
	Ant1	5230	41.12	5209.68	5250.80	---	---
	Ant2	5230	40.40	5209.68	5250.08	---	---
	Ant1	5270	40.96	5249.60	5290.56	---	---
	Ant2	5270	40.00	5250.08	5290.08	---	---
	Ant1	5310	41.04	5289.60	5330.64	---	---
	Ant2	5310	40.16	5289.84	5330.00	---	---
	Ant1	5510	41.12	5489.60	5530.72	---	---
	Ant2	5510	39.92	5490.00	5529.92	---	---
	Ant1	5550	41.20	5529.44	5570.64	---	---
	Ant2	5550	40.24	5529.84	5570.08	---	---
	Ant1	5670	41.20	5649.44	5690.64	---	---
	Ant2	5670	39.92	5650.16	5690.08	---	---
	Ant1	5710	40.72	5689.68	5730.40	---	---
	Ant2	5710	39.84	5690.16	5730.00	---	---
	Ant1	5710 UNII-2C	35.32	5689.68	5725	---	---
	Ant2	5710 UNII-2C	34.84	5690.16	5725	---	---
	Ant1	5710 UNII-3	5.4	5725	5730.40	---	---
	Ant2	5710 UNII-3	5	5725	5730.00	---	---
	Ant1	5755	40.80	5734.68	5775.48	---	---
	Ant2	5755	39.92	5735.08	5775.00	---	---
	Ant1	5795	40.80	5774.68	5815.48	---	---
	Ant2	5795	39.84	5775.16	5815.00	---	---
11AC20M IMO	Ant1	5180	24.64	5168.04	5192.68	---	---
	Ant2	5180	23.68	5168.20	5191.88	---	---
	Ant1	5200	24.20	5188.16	5212.36	---	---
	Ant2	5200	22.84	5188.92	5211.76	---	---
	Ant1	5240	20.04	5229.96	5250.00	---	---
	Ant2	5240	19.80	5230.08	5249.88	---	---
	Ant1	5260	24.24	5248.04	5272.28	---	---
	Ant2	5260	22.80	5248.68	5271.48	---	---
	Ant1	5280	24.36	5267.92	5292.28	---	---
	Ant2	5280	22.92	5268.52	5291.44	---	---
	Ant1	5320	24.88	5307.96	5332.84	---	---
	Ant2	5320	22.64	5308.68	5331.32	---	---
	Ant1	5500	25.24	5487.56	5512.80	---	---
	Ant2	5500	23.36	5488.56	5511.92	---	---
	Ant1	5580	24.16	5567.88	5592.04	---	---
	Ant2	5580	22.72	5568.68	5591.40	---	---
	Ant1	5700	23.88	5688.16	5712.04	---	---
	Ant2	5700	22.80	5688.80	5711.60	---	---
	Ant1	5720	24.12	5707.96	5732.08	---	---
	Ant2	5720	22.76	5708.80	5731.56	---	---
	Ant1	5720 UNII-2C	17.04	5707.96	5725	---	---
	Ant2	5720 UNII-2C	16.2	5708.80	5725	---	---
	Ant1	5720 UNII-3	7.08	5725	5732.08	---	---
	Ant2	5720 UNII-3	6.56	5725	5731.56	---	---
Ant1	5745	24.08	5733.04	5757.12	---	---	
Ant2	5745	22.60	5733.88	5756.48	---	---	
Ant1	5785	24.84	5772.72	5797.56	---	---	
Ant2	5785	22.52	5774.00	5796.52	---	---	
Ant1	5825	24.48	5812.84	5837.32	---	---	
Ant2	5825	23.04	5813.76	5836.80	---	---	
11AC40M IMO	Ant1	5190	40.40	5169.76	5210.16	---	---
	Ant2	5190	39.76	5170.16	5209.92	---	---
	Ant1	5230	40.24	5209.92	5250.16	---	---
	Ant2	5230	39.52	5210.24	5249.76	---	---
	Ant1	5270	40.24	5249.92	5290.16	---	---

	Ant2	5270	39.60	5250.24	5289.84	---	---
	Ant1	5310	40.16	5289.92	5330.08	---	---
	Ant2	5310	39.92	5290.00	5329.92	---	---
	Ant1	5510	40.16	5489.92	5530.08	---	---
	Ant2	5510	39.60	5490.16	5529.76	---	---
	Ant1	5550	40.40	5529.68	5570.08	---	---
	Ant2	5550	39.84	5530.08	5569.92	---	---
	Ant1	5670	40.56	5649.68	5690.24	---	---
	Ant2	5670	39.76	5650.16	5689.92	---	---
	Ant1	5710	40.32	5689.84	5730.16	---	---
	Ant2	5710	39.84	5690.08	5729.92	---	---
	Ant1	5710 UNII-2C	35.16	5689.84	5725	---	---
	Ant2	5710 UNII-2C	34.92	5690.08	5725	---	---
	Ant1	5710 UNII-3	5.16	5725	5730.16	---	---
	Ant2	5710 UNII-3	4.92	5725	5729.92	---	---
	11AC80M IMO	Ant1	5755	40.24	5734.84	5775.08	---
Ant2		5755	39.76	5735.08	5774.84	---	---
Ant1		5795	40.16	5775.00	5815.16	---	---
Ant2		5795	39.52	5775.24	5814.76	---	---
Ant1		5210	80.48	5169.84	5250.32	---	---
Ant2		5210	79.36	5170.48	5249.84	---	---
Ant1		5290	80.48	5249.84	5330.32	---	---
Ant2		5290	79.52	5250.32	5329.84	---	---
Ant1		5530	80.32	5489.84	5570.16	---	---
Ant2		5530	79.36	5490.48	5569.84	---	---
Ant1		5610	80.48	5569.84	5650.32	---	---
Ant2		5610	79.52	5570.32	5649.84	---	---
Ant1		5690	80.48	5649.84	5730.32	---	---
Ant2		5690	79.36	5650.48	5729.84	---	---
Ant1		5690 UNII-2C	75.16	5649.84	5725	---	---
Ant2		5690 UNII-2C	74.52	5650.48	5725	---	---
11AX20M IMO	Ant1	5690 UNII-3	5.32	5725	5730.32	---	---
	Ant2	5690 UNII-3	4.84	5725	5729.84	---	---
	Ant1	5775	80.48	5734.84	5815.32	---	---
	Ant2	5775	79.52	5735.32	5814.84	---	---
	Ant1	5180	24.08	5168.64	5192.72	---	---
	Ant2	5180	21.56	5169.16	5190.72	---	---
	Ant1	5200	22.92	5189.08	5212.00	---	---
	Ant2	5200	22.40	5188.16	5210.56	---	---
	Ant1	5240	19.88	5230.04	5249.92	---	---
	Ant2	5240	19.84	5230.04	5249.88	---	---
	Ant1	5260	27.48	5245.60	5273.08	---	---
	Ant2	5260	22.84	5248.28	5271.12	---	---
	Ant1	5280	30.72	5265.36	5296.08	---	---
	Ant2	5280	23.00	5268.24	5291.24	---	---
	Ant1	5320	25.04	5307.08	5332.12	---	---
	Ant2	5320	24.40	5308.76	5333.16	---	---
	Ant1	5500	22.44	5488.80	5511.24	---	---
	Ant2	5500	22.80	5489.12	5511.92	---	---
	Ant1	5580	29.48	5562.16	5591.64	---	---
	Ant2	5580	23.52	5568.68	5592.20	---	---
	Ant1	5700	27.56	5686.44	5714.00	---	---
	Ant2	5700	23.04	5688.68	5711.72	---	---
	Ant1	5720	23.76	5708.76	5732.52	---	---
	Ant2	5720	23.16	5707.88	5731.04	---	---
	Ant1	5720 UNII-2C	16.24	5708.76	5725	---	---
	Ant2	5720 UNII-2C	17.12	5707.88	5725	---	---
	Ant1	5720 UNII-3	7.52	5725	5732.52	---	---
	Ant2	5720 UNII-3	6.04	5725	5731.04	---	---
Ant1	5745	23.40	5733.12	5756.52	---	---	
Ant2	5745	22.80	5733.88	5756.68	---	---	
Ant1	5785	22.92	5772.84	5795.76	---	---	
Ant2	5785	22.60	5773.00	5795.60	---	---	
Ant1	5825	28.32	5812.08	5840.40	---	---	

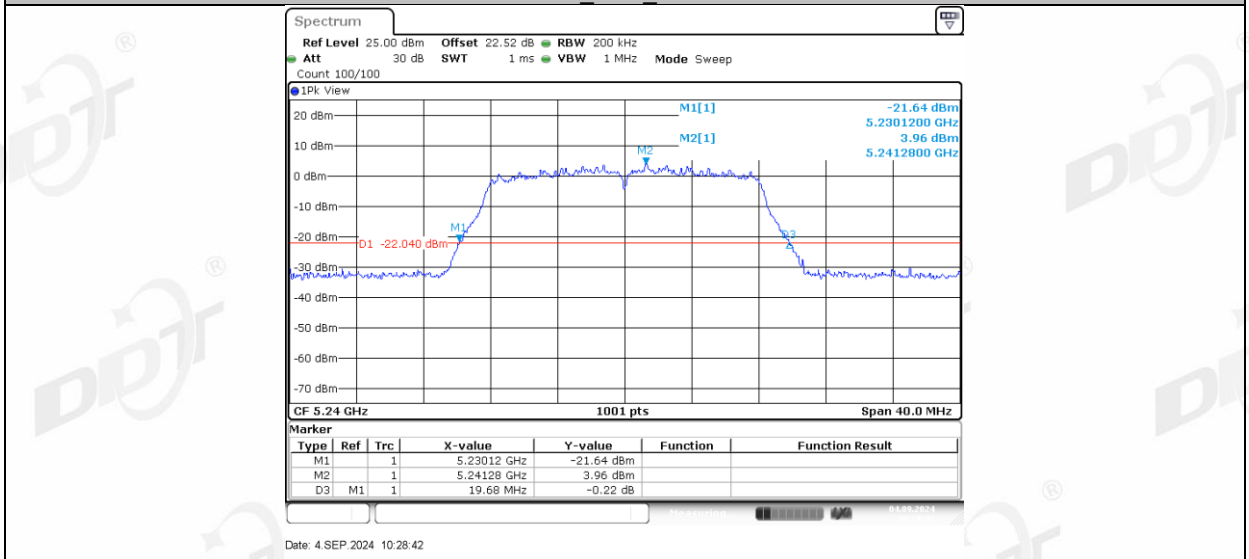
11AX40M IMO	Ant2	5825	21.96	5813.88	5835.84	---	---
	Ant1	5190	39.60	5170.24	5209.84	---	---
	Ant2	5190	39.68	5170.16	5209.84	---	---
	Ant1	5230	39.68	5210.16	5249.84	---	---
	Ant2	5230	39.68	5210.16	5249.84	---	---
	Ant1	5270	39.60	5250.24	5289.84	---	---
	Ant2	5270	39.60	5250.24	5289.84	---	---
	Ant1	5310	39.68	5290.16	5329.84	---	---
	Ant2	5310	39.68	5290.16	5329.84	---	---
	Ant1	5510	39.68	5490.16	5529.84	---	---
	Ant2	5510	39.76	5490.16	5529.92	---	---
	Ant1	5550	39.68	5530.16	5569.84	---	---
	Ant2	5550	39.68	5530.16	5569.84	---	---
	Ant1	5670	39.60	5650.24	5689.84	---	---
	Ant2	5670	39.76	5650.16	5689.92	---	---
	Ant1	5710	39.68	5690.16	5729.84	---	---
	Ant2	5710	39.68	5690.16	5729.84	---	---
	Ant1	5710_UNII-2C	34.84	5690.16	5725	---	---
	Ant2	5710_UNII-2C	34.84	5690.16	5725	---	---
	Ant1	5710_UNII-3	4.84	5725	5729.84	---	---
Ant2	5710_UNII-3	4.84	5725	5729.84	---	---	
Ant1	5755	39.68	5735.16	5774.84	---	---	
Ant2	5755	39.76	5735.16	5774.92	---	---	
Ant1	5795	39.68	5775.16	5814.84	---	---	
Ant2	5795	39.76	5775.16	5814.92	---	---	
11AX80M IMO	Ant1	5210	80.48	5169.84	5250.32	---	---
	Ant2	5210	80.48	5169.84	5250.32	---	---
	Ant1	5290	80.32	5250.00	5330.32	---	---
	Ant2	5290	80.48	5249.84	5330.32	---	---
	Ant1	5530	80.32	5489.84	5570.16	---	---
	Ant2	5530	80.32	5490.00	5570.32	---	---
	Ant1	5610	80.48	5569.84	5650.32	---	---
	Ant2	5610	80.32	5569.84	5650.16	---	---
	Ant1	5690	80.32	5649.84	5730.16	---	---
	Ant2	5690	80.48	5649.84	5730.32	---	---
	Ant1	5690_UNII-2C	75.16	5649.84	5725	---	---
	Ant2	5690_UNII-2C	75.16	5649.84	5725	---	---
	Ant1	5690_UNII-3	5.16	5725	5730.16	---	---
	Ant2	5690_UNII-3	5.32	5725	5730.32	---	---
	Ant1	5775	80.48	5734.84	5815.32	---	---
	Ant2	5775	80.48	5734.84	5815.32	---	---

4.5. Test graphs

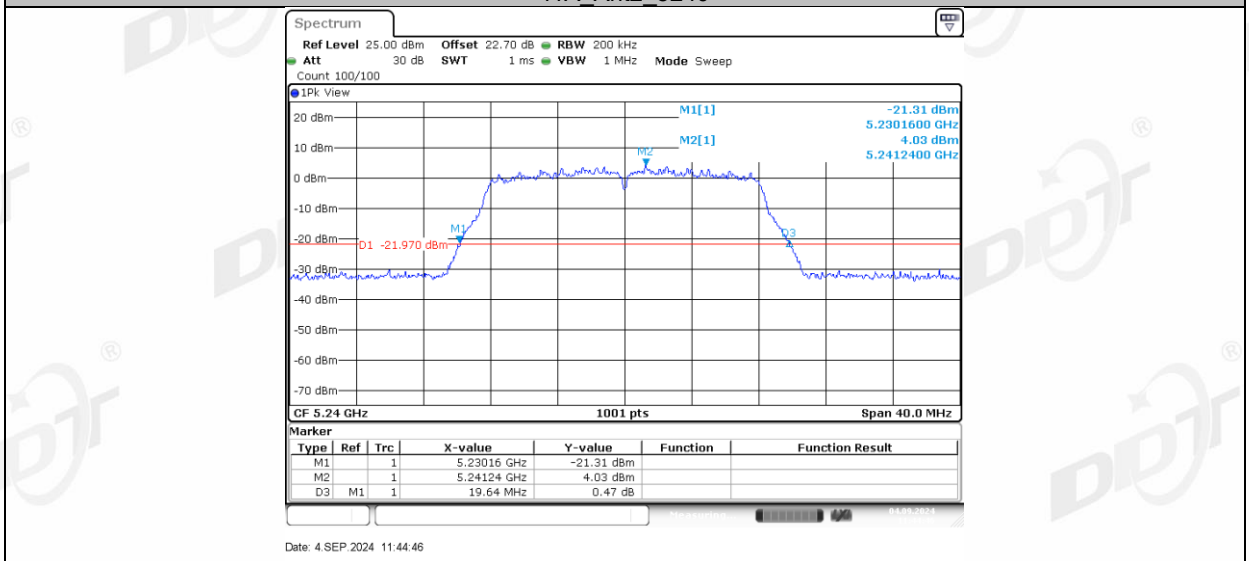




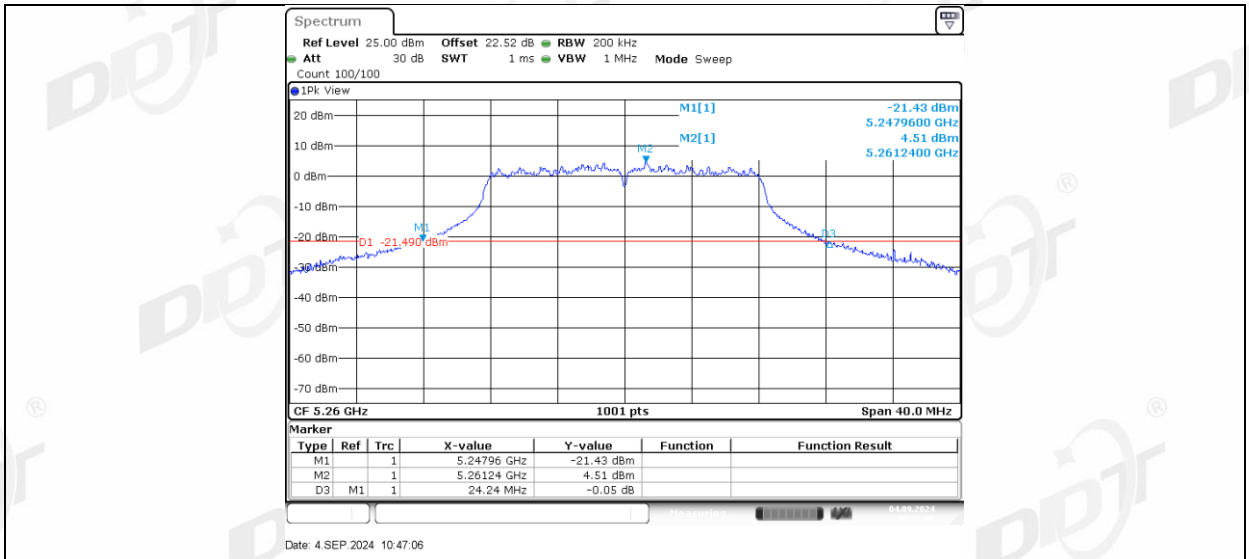
11A\_Ant1\_5240



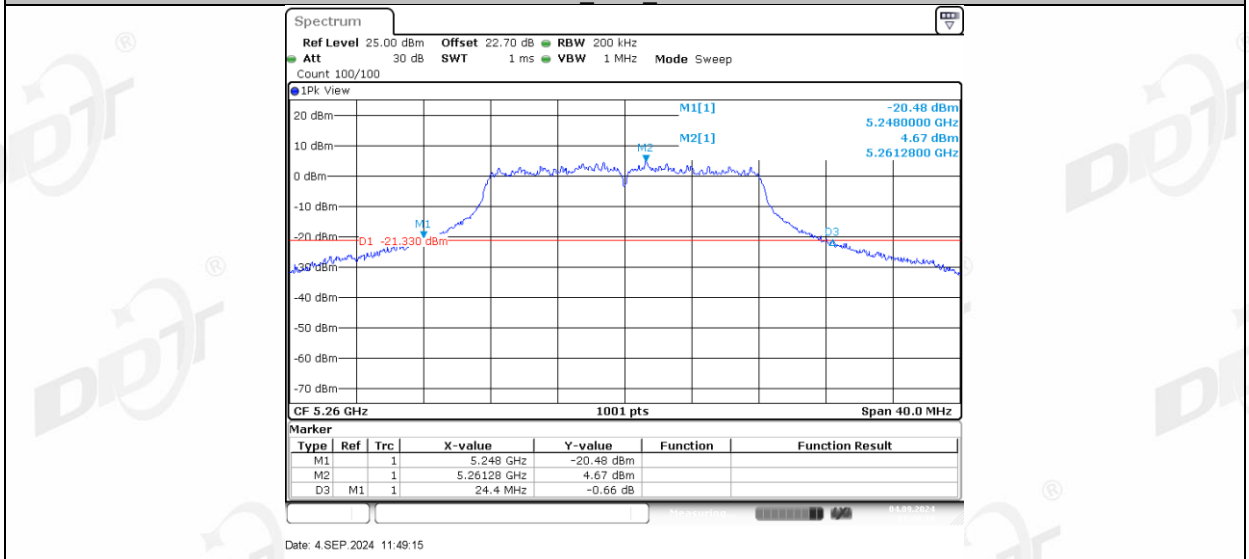
11A\_Ant2\_5240



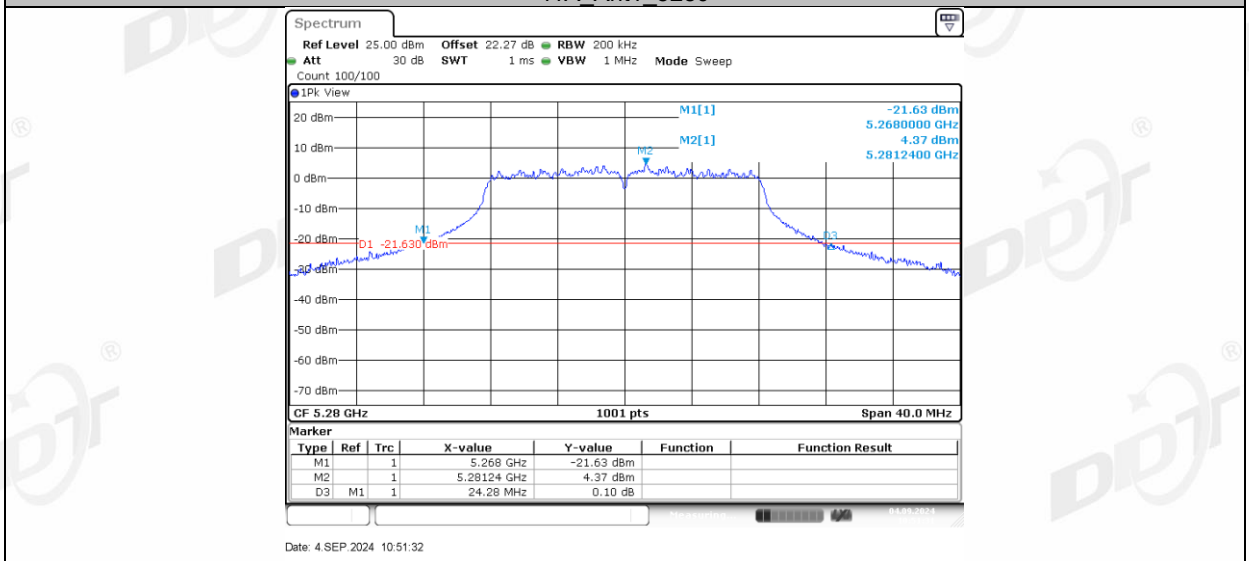
11A\_Ant1\_5260



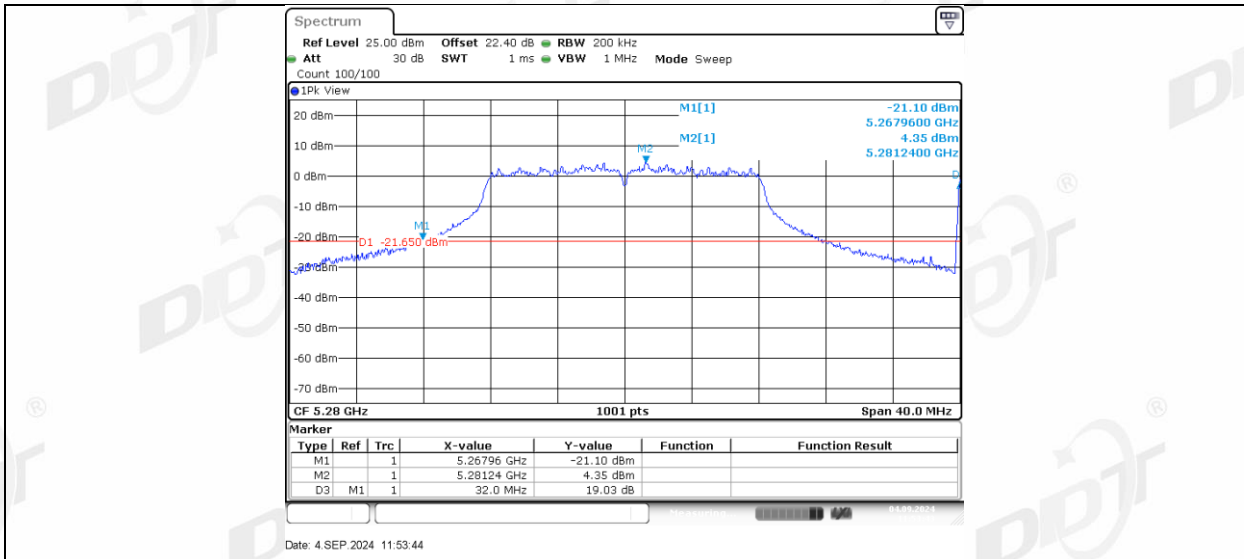
11A\_Ant2\_5260



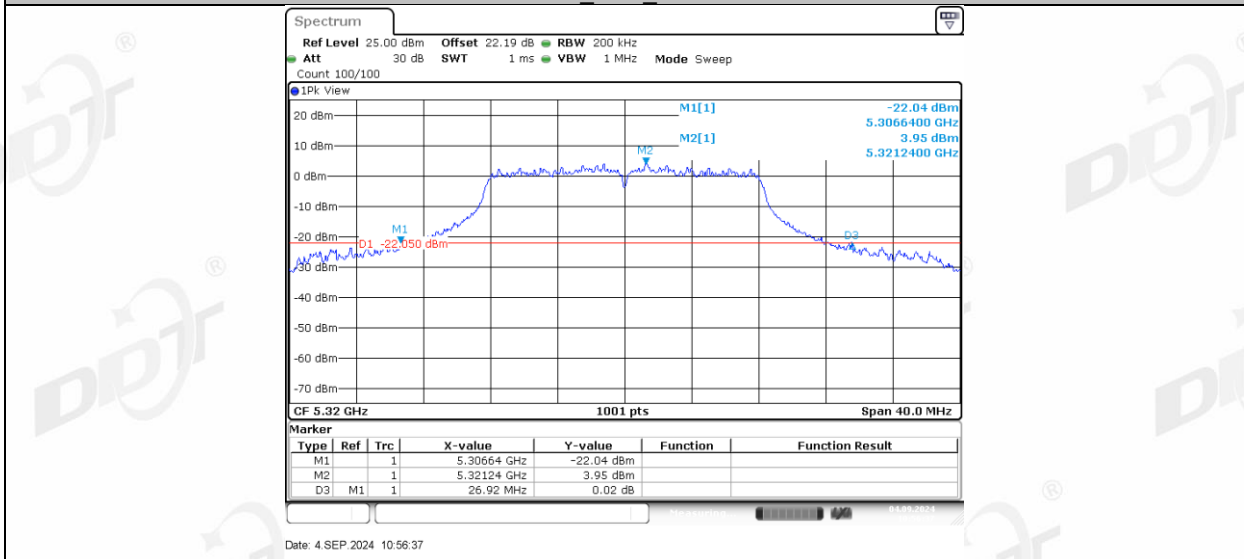
11A\_Ant1\_5280



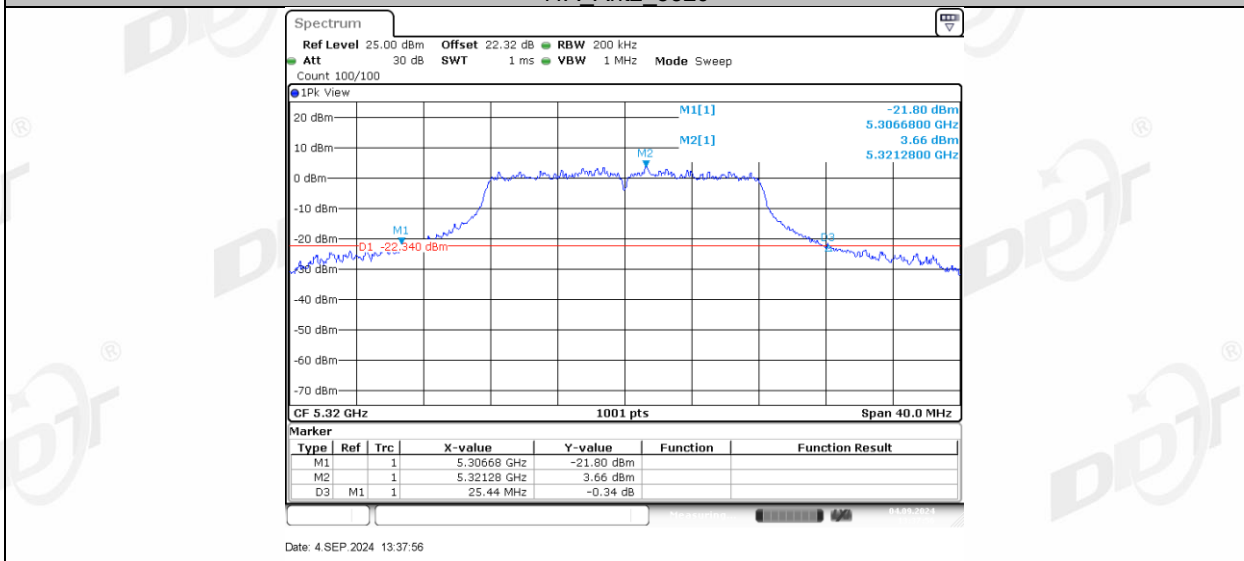
11A\_Ant2\_5280



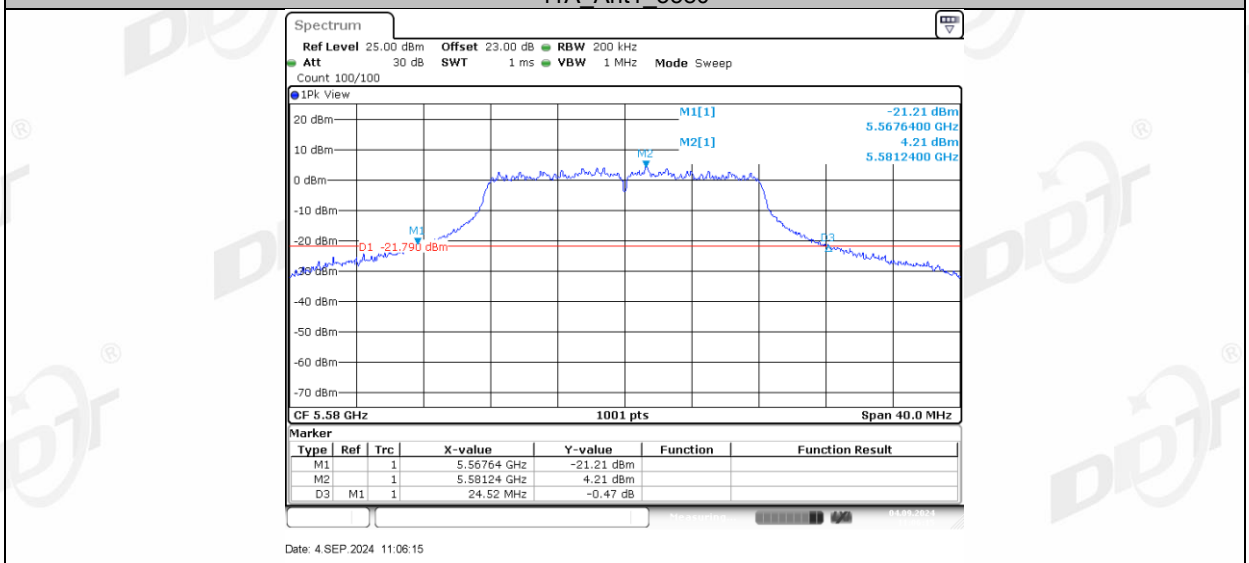
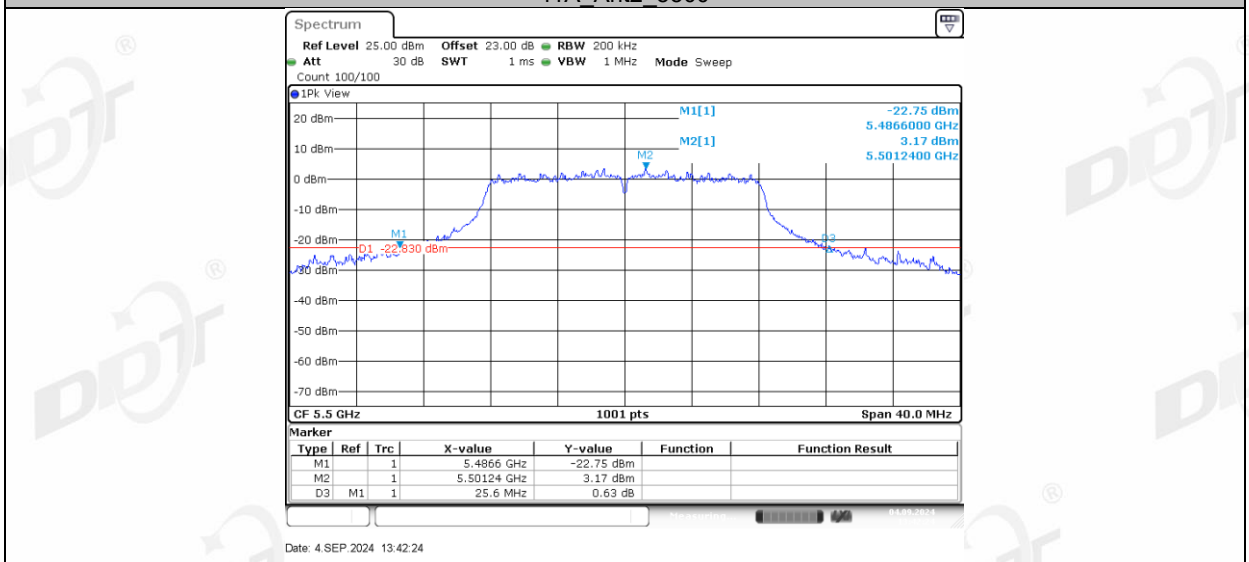
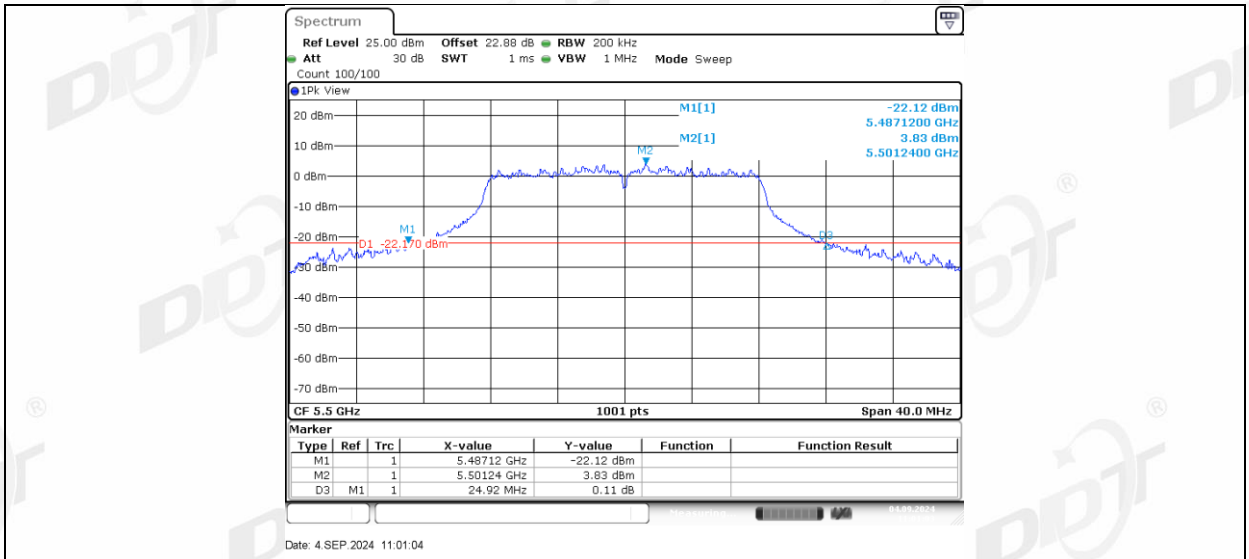
11A\_Ant1\_5320

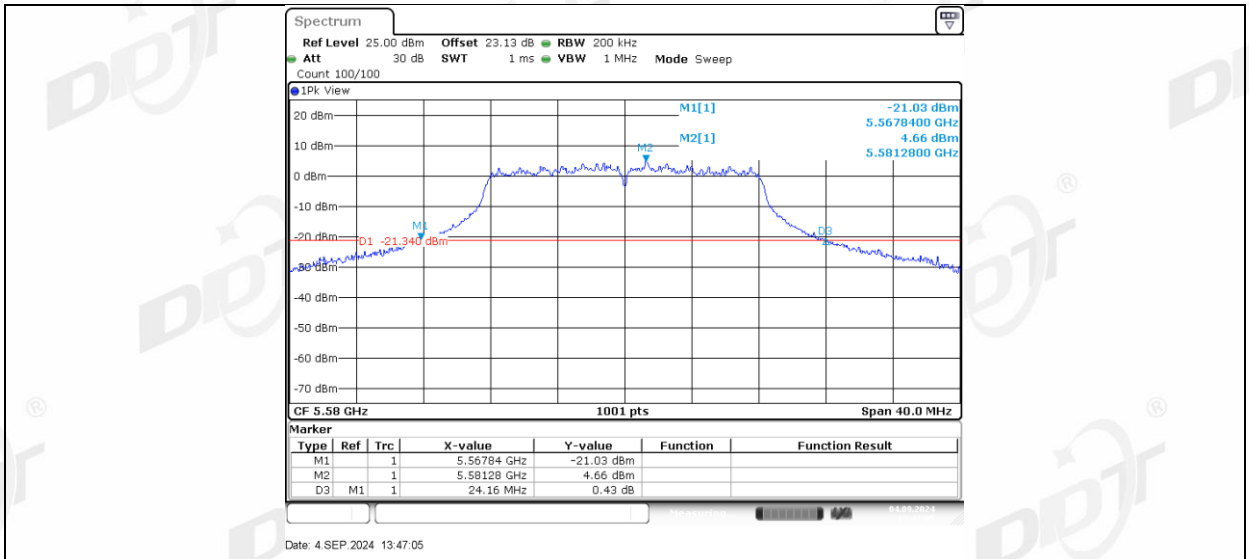


11A\_Ant2\_5320

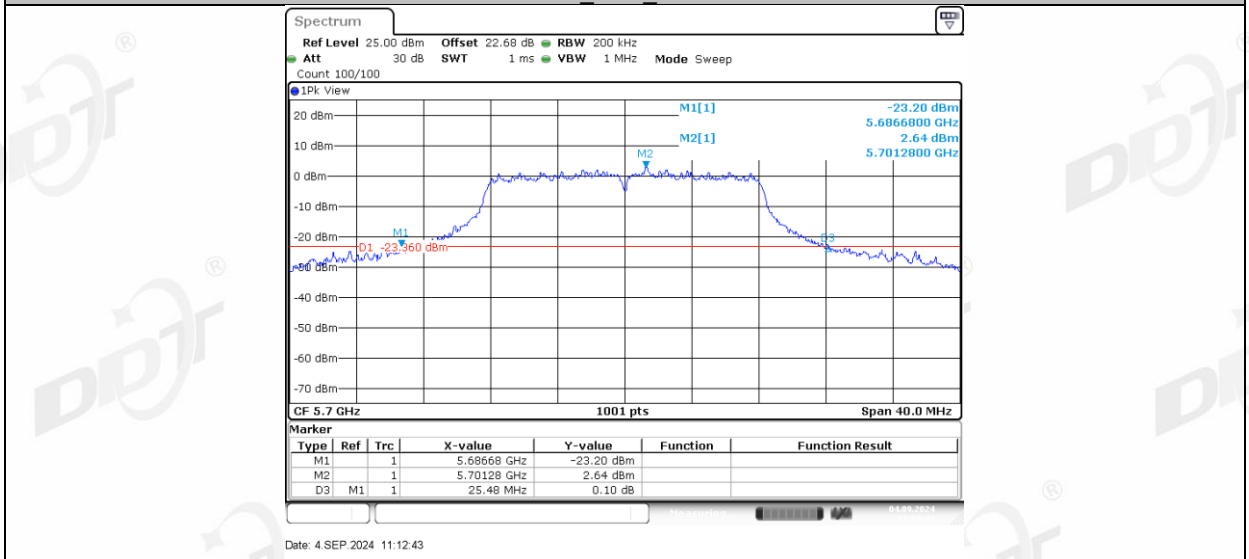


11A\_Ant1\_5500

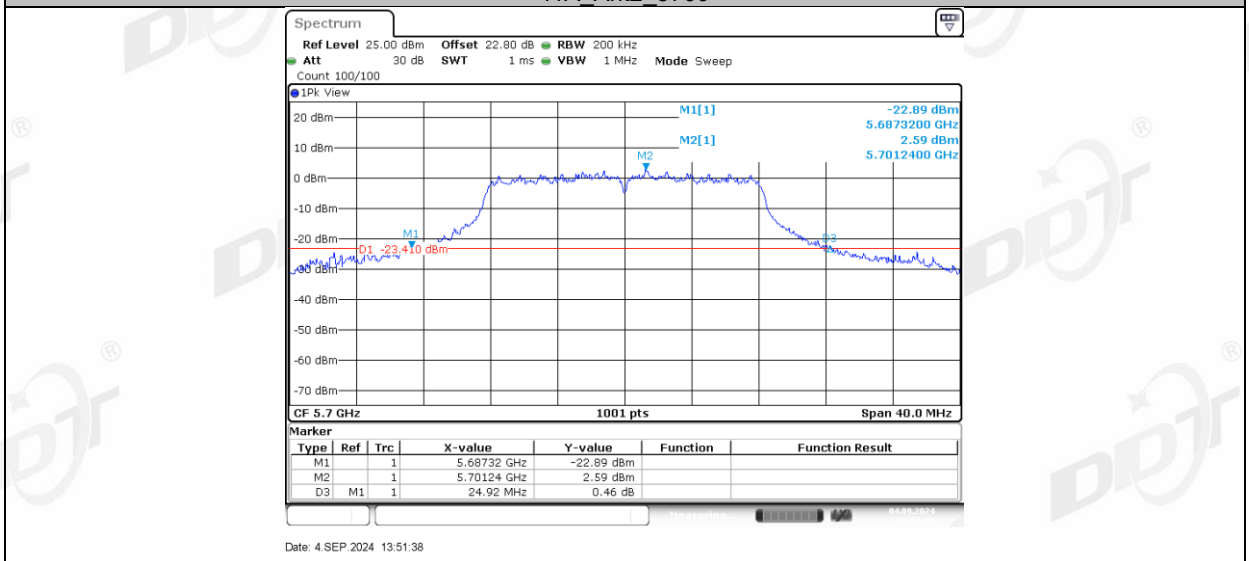




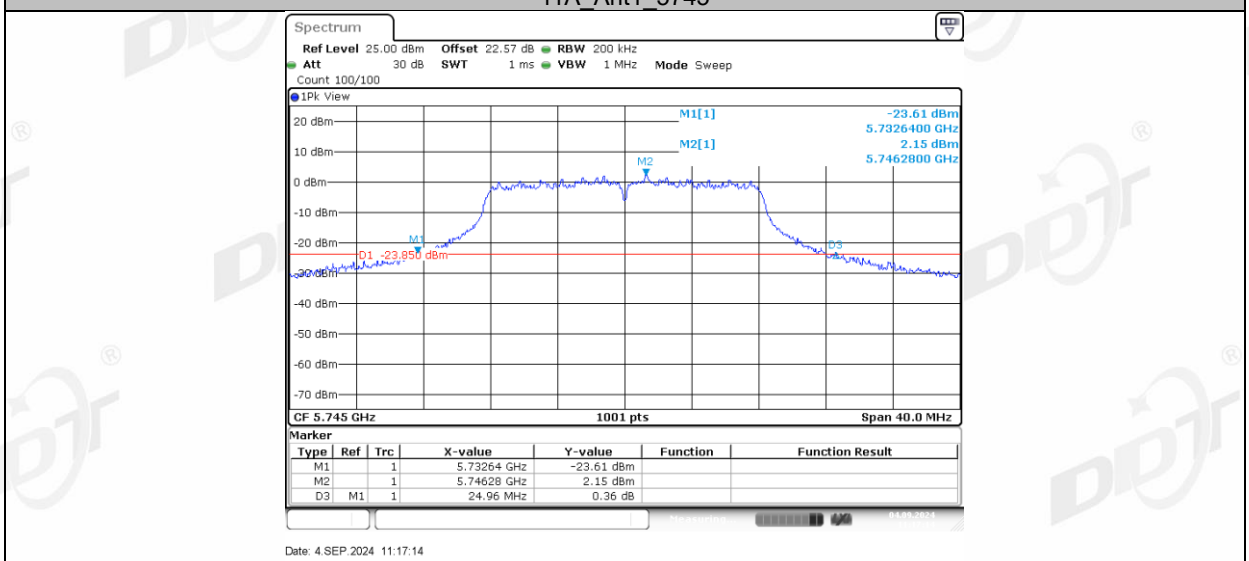
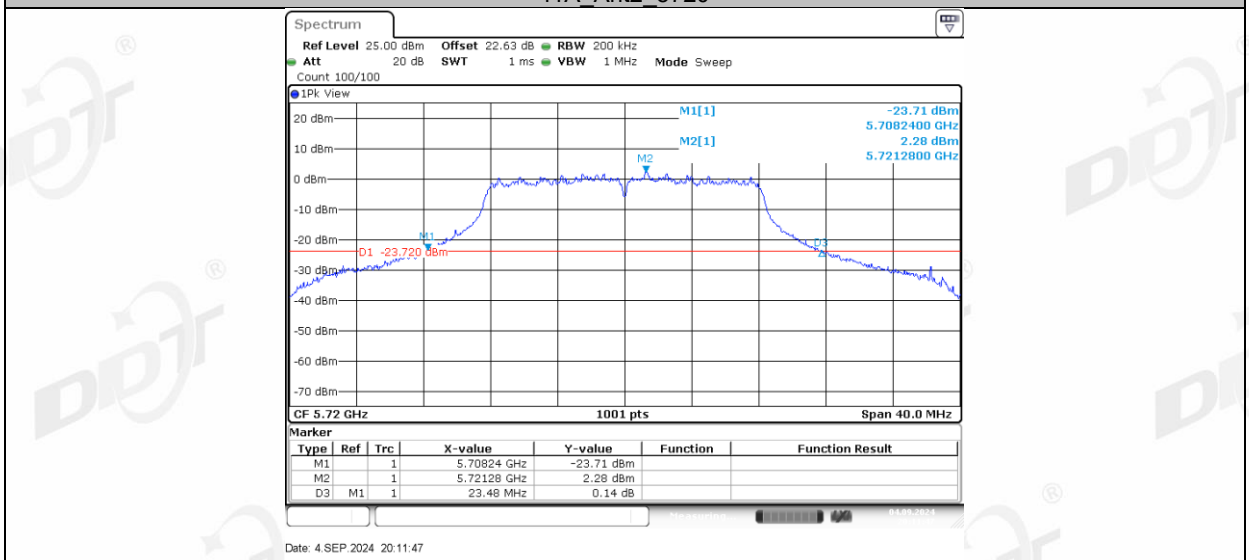
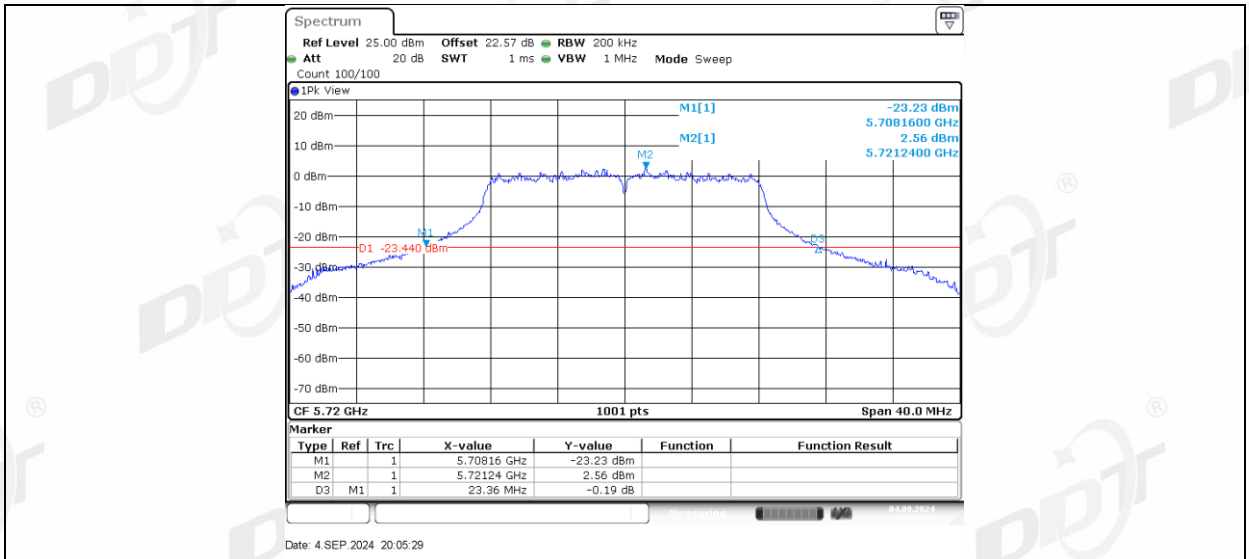
11A\_Ant1\_5700



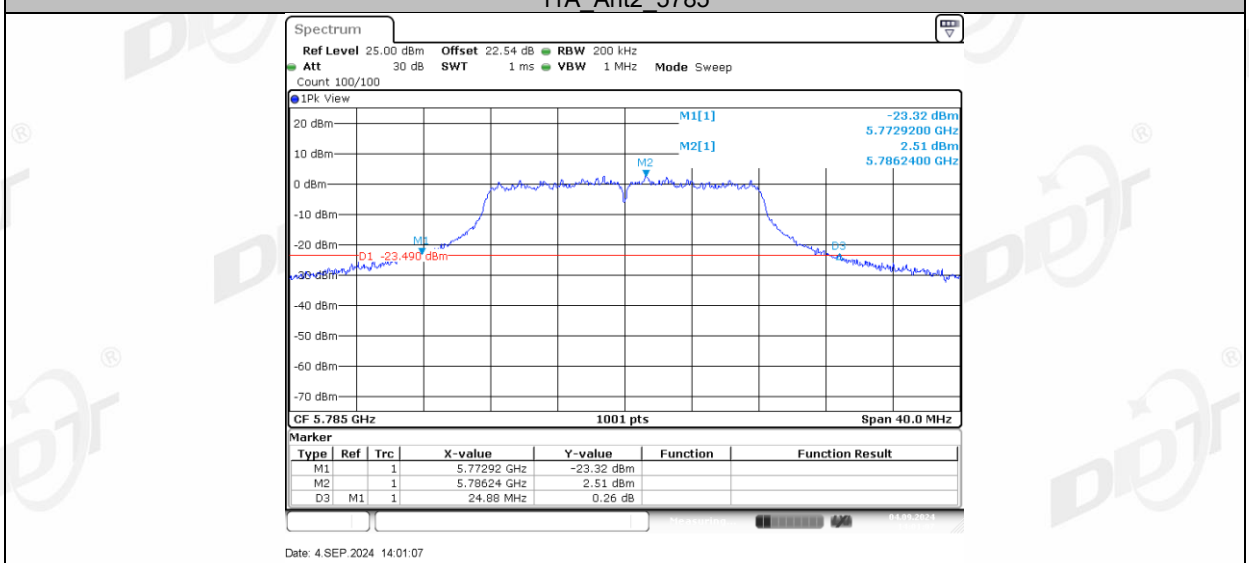
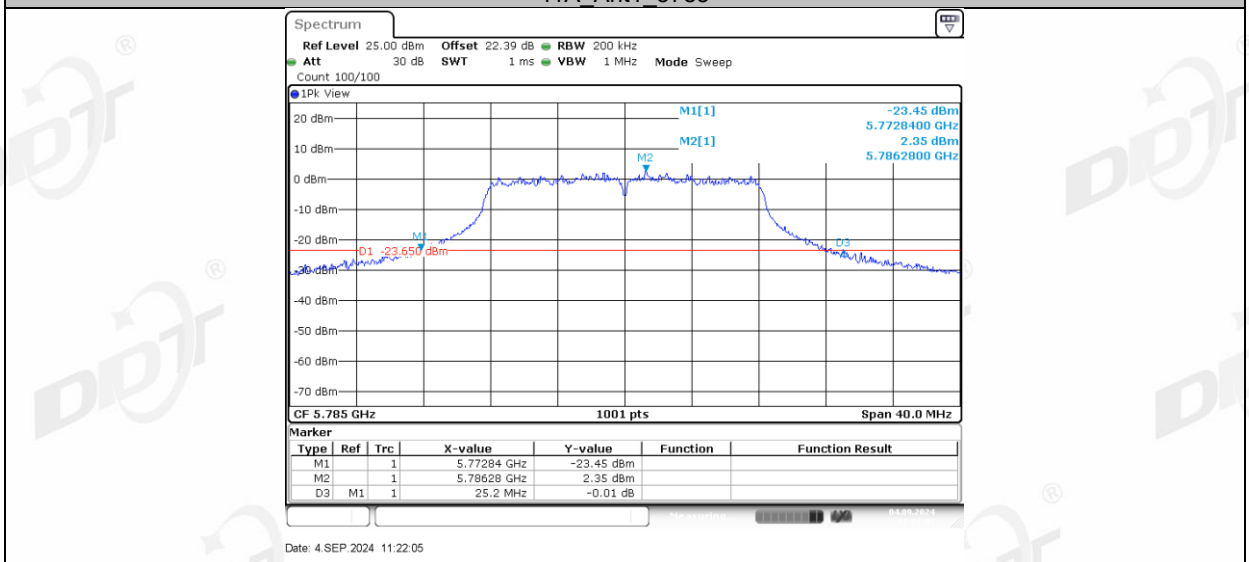
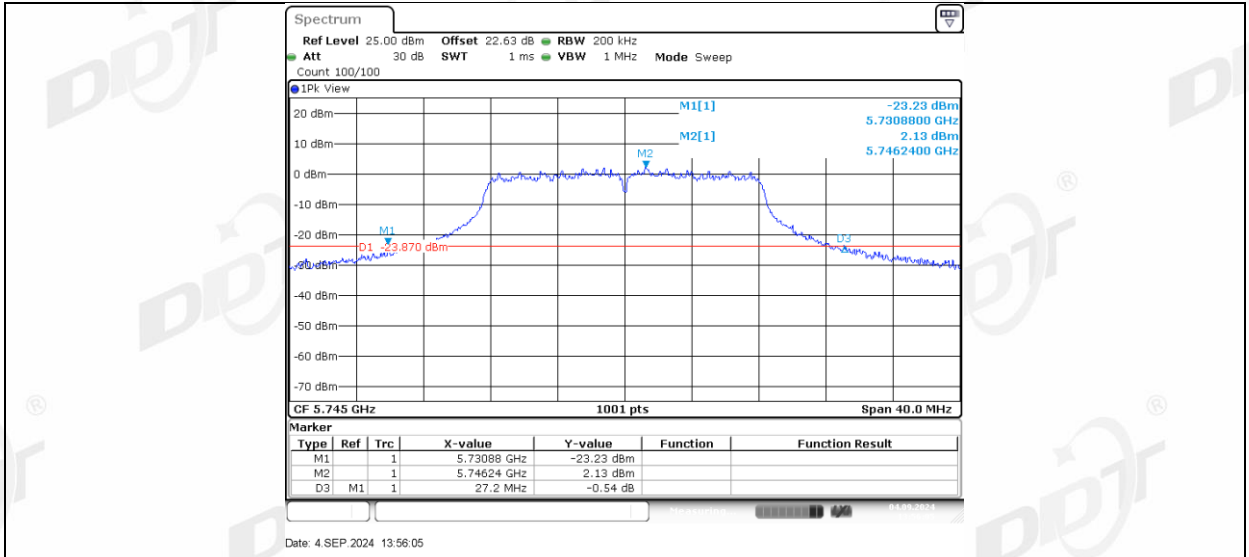
11A\_Ant2\_5700



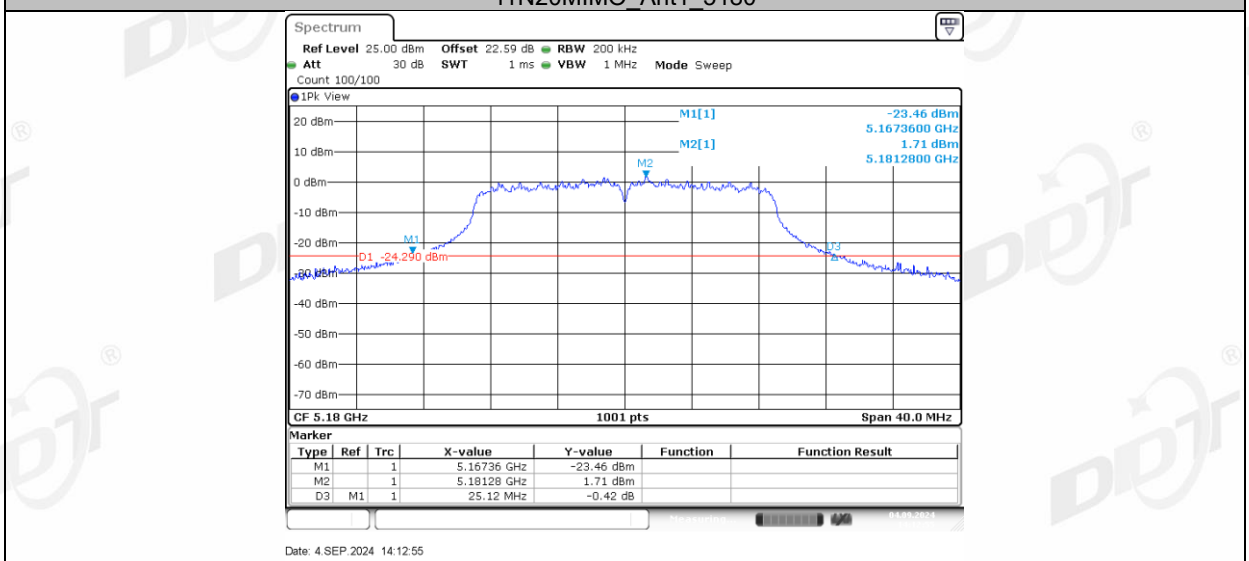
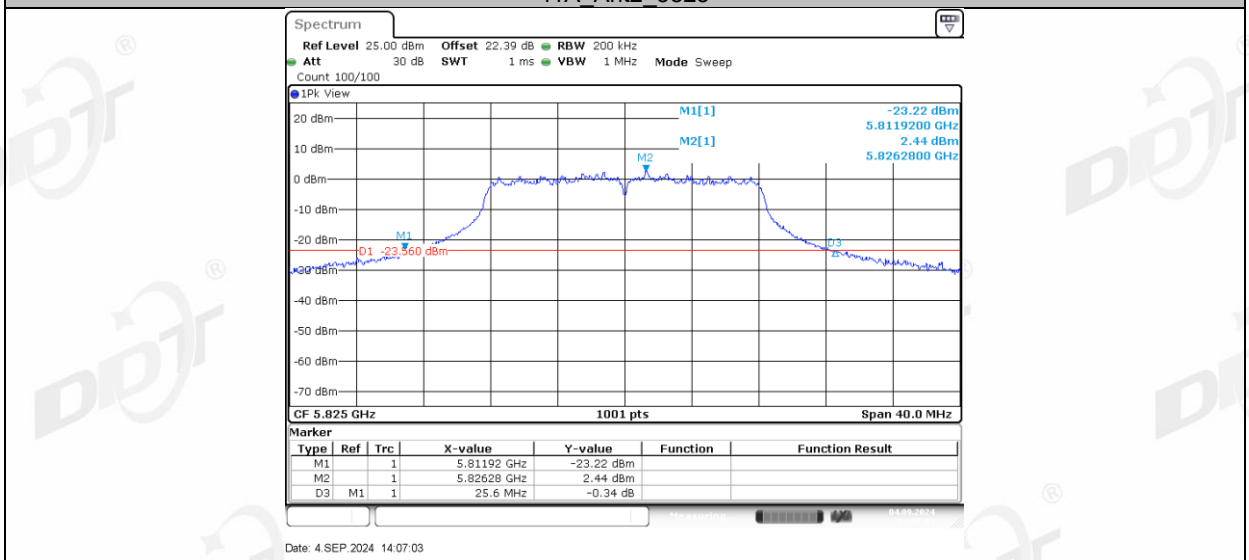
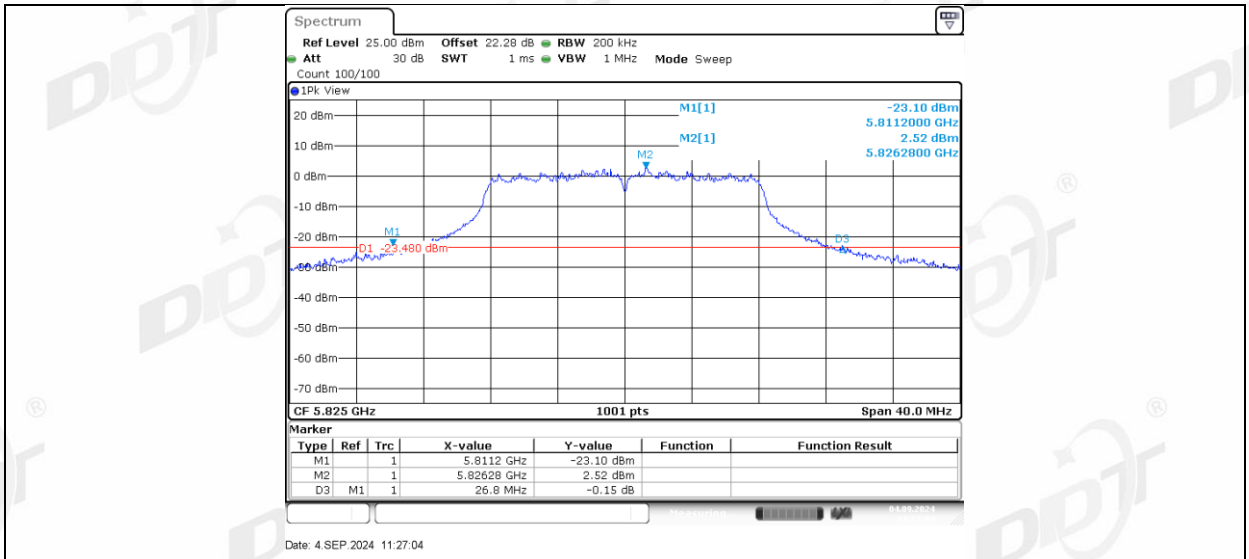
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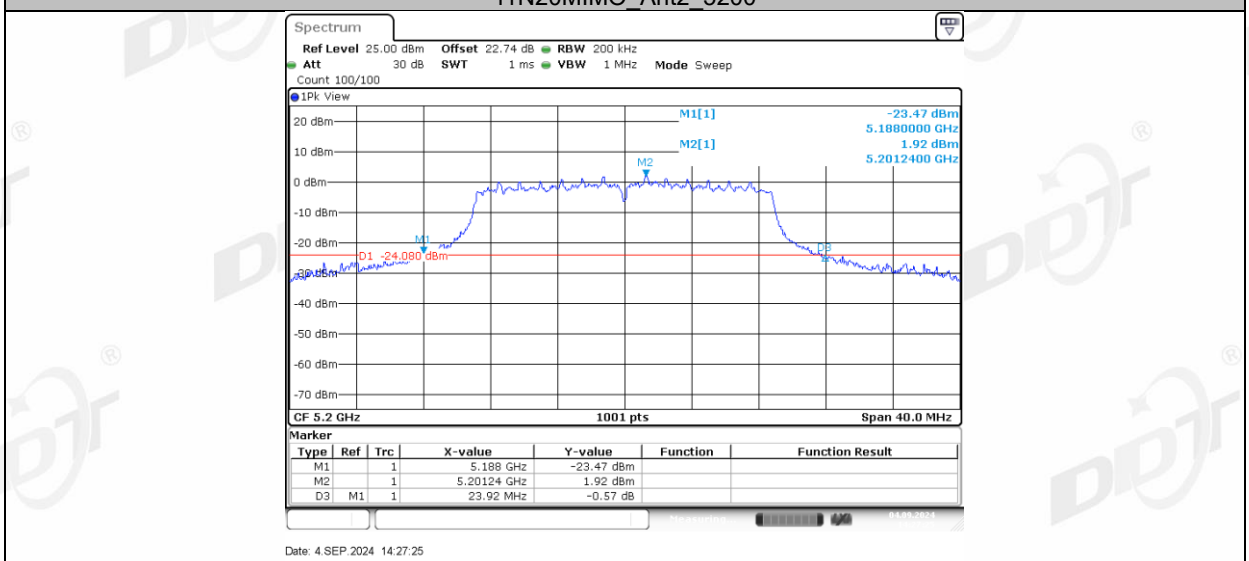
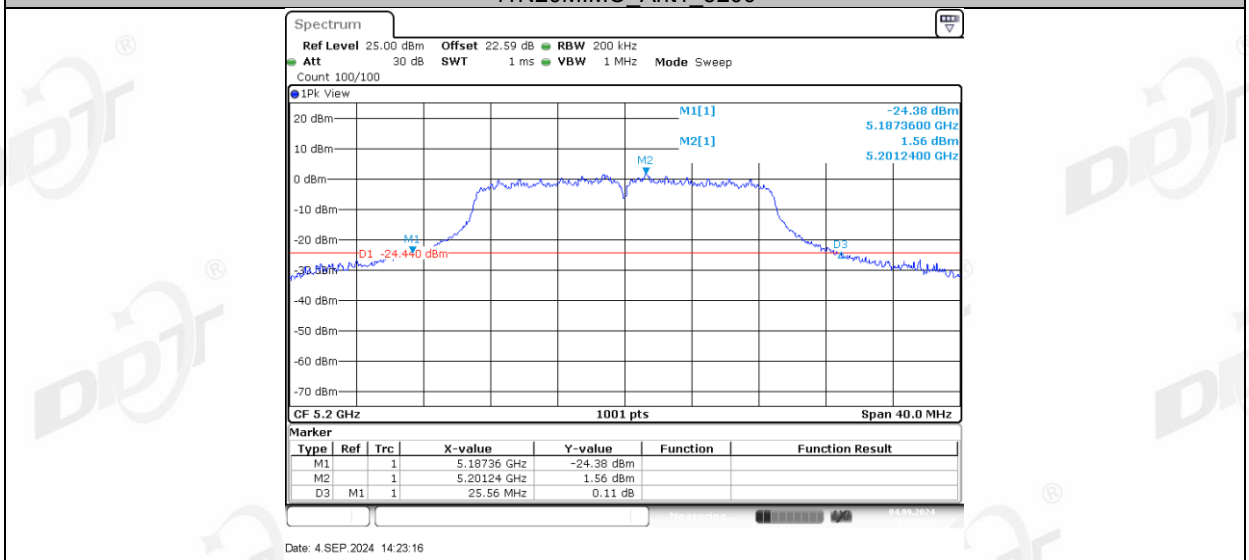
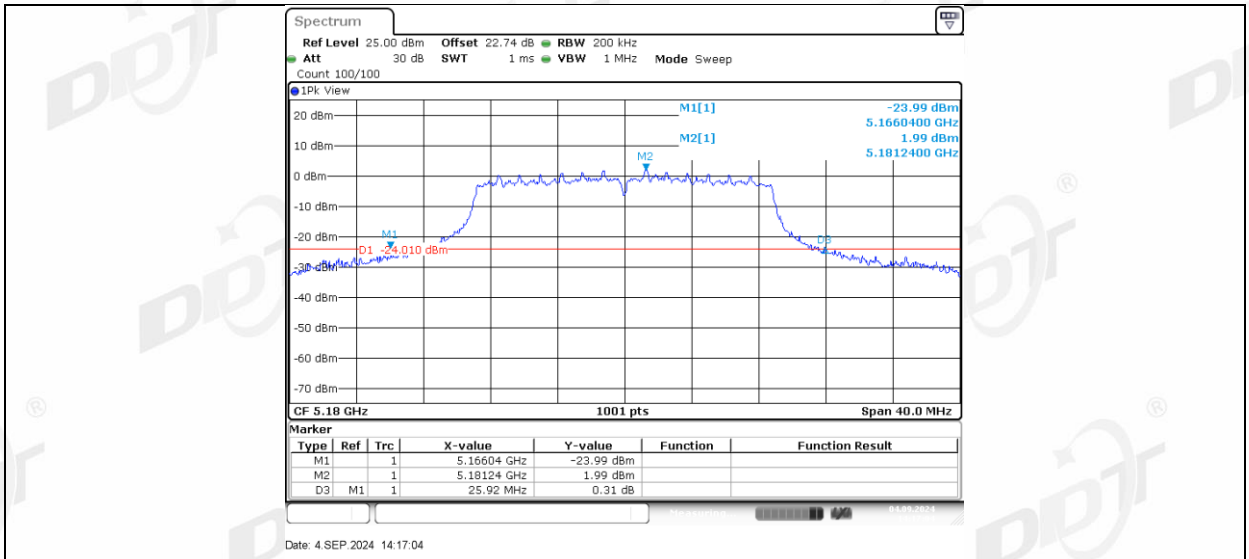


**11A\_Ant2\_5745**

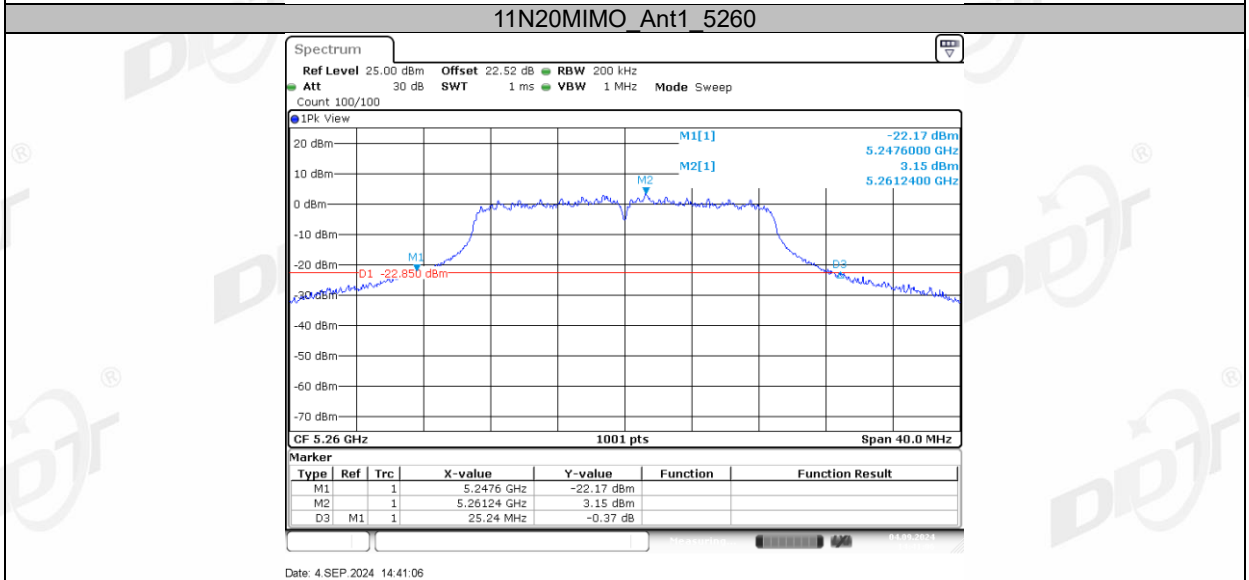
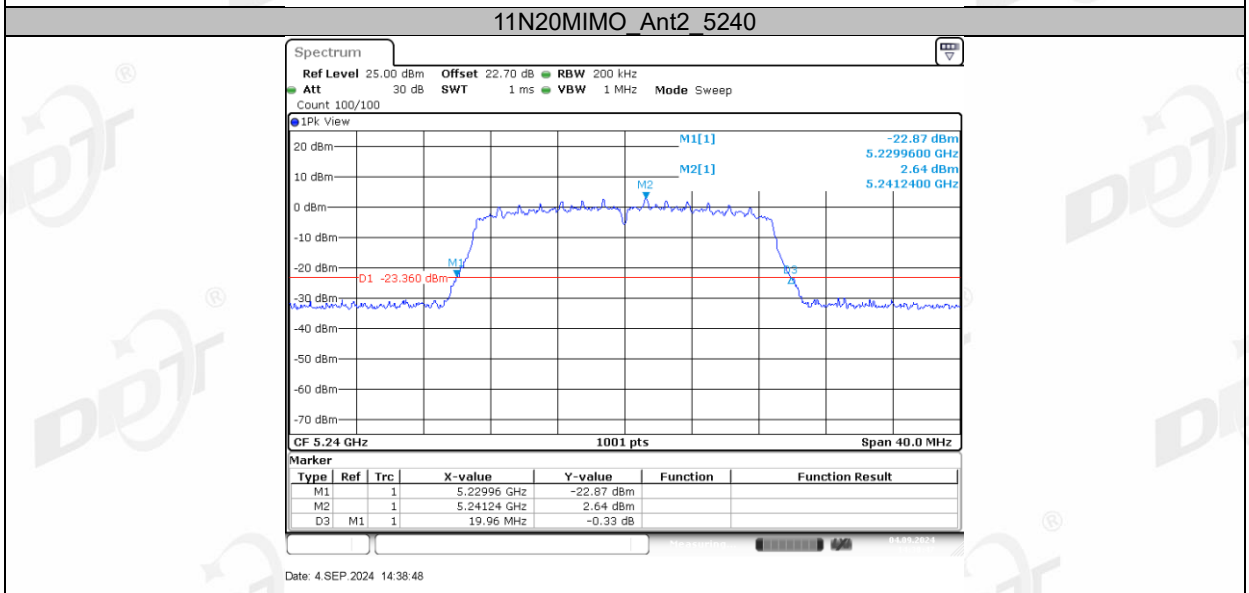
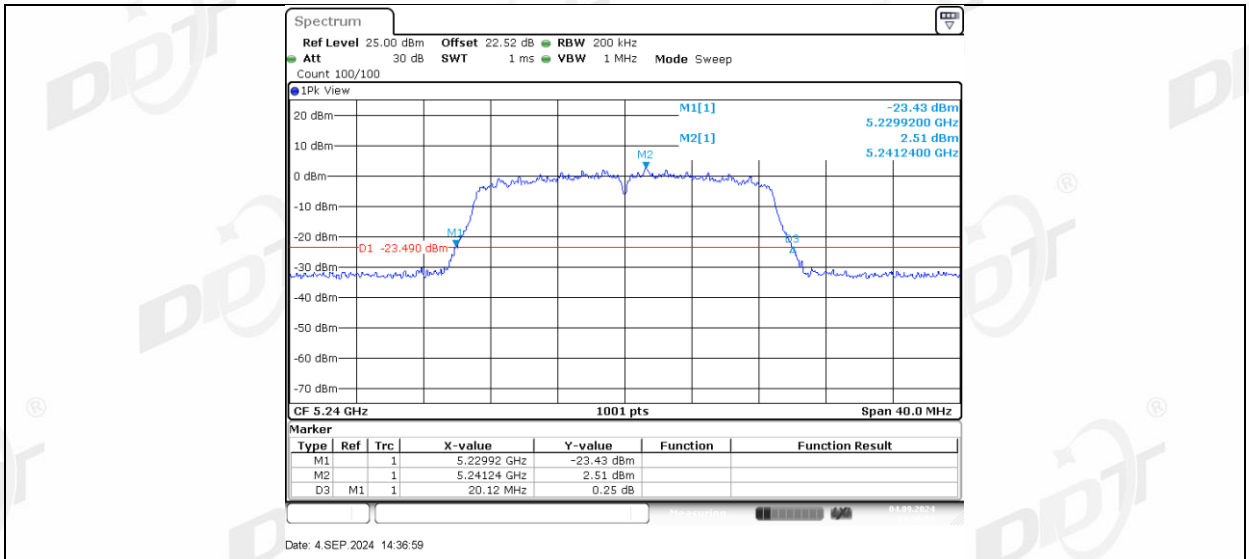


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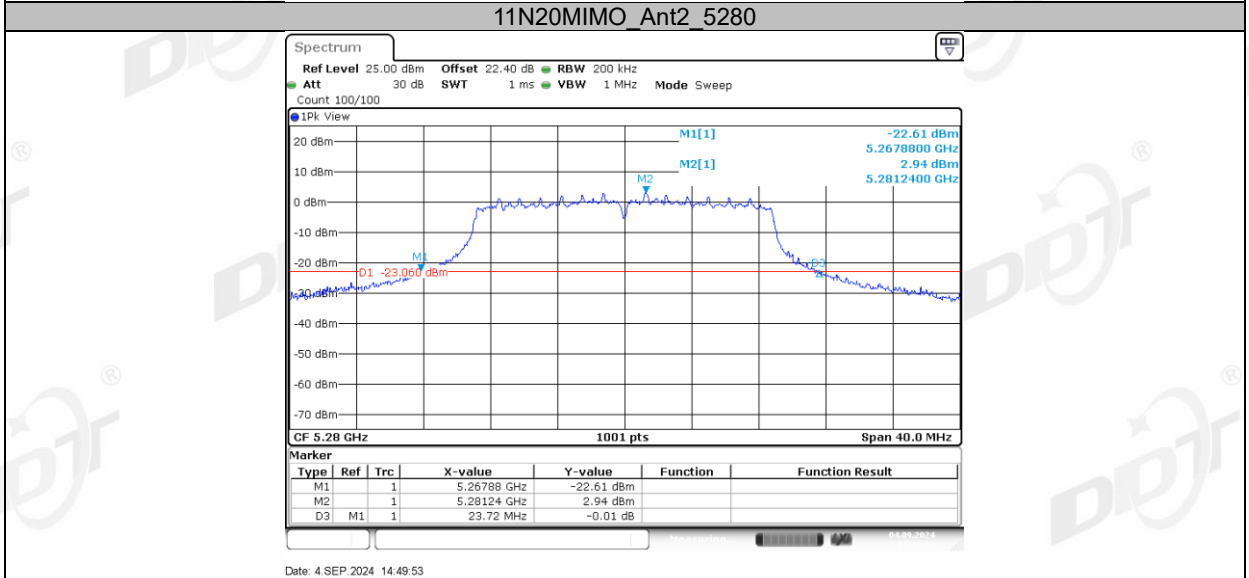
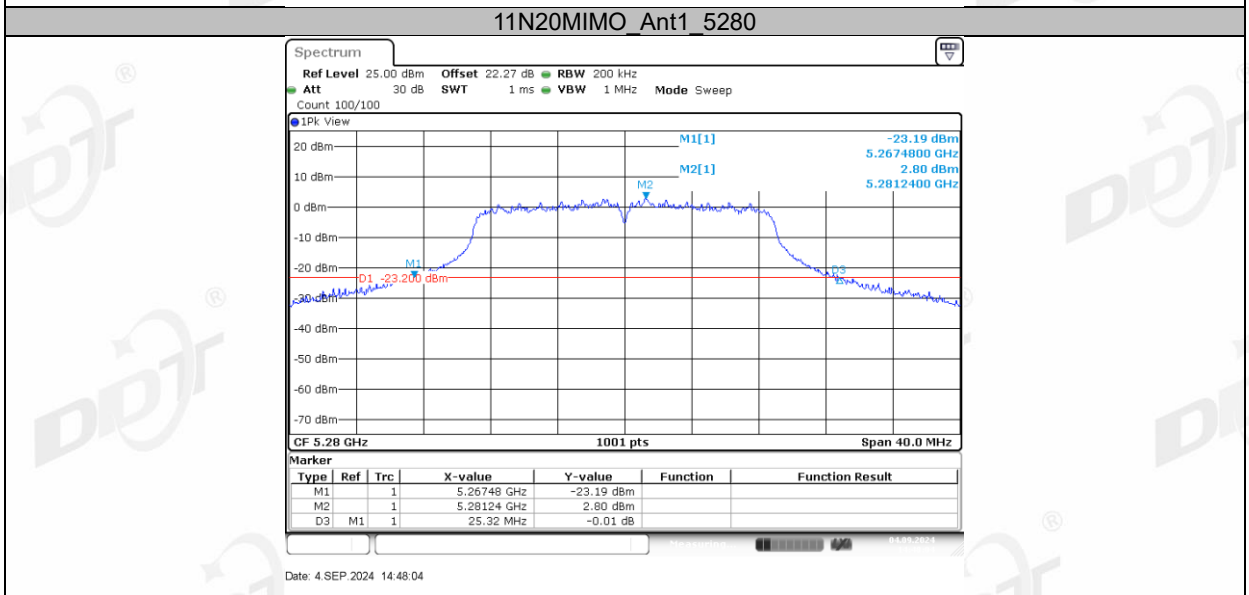
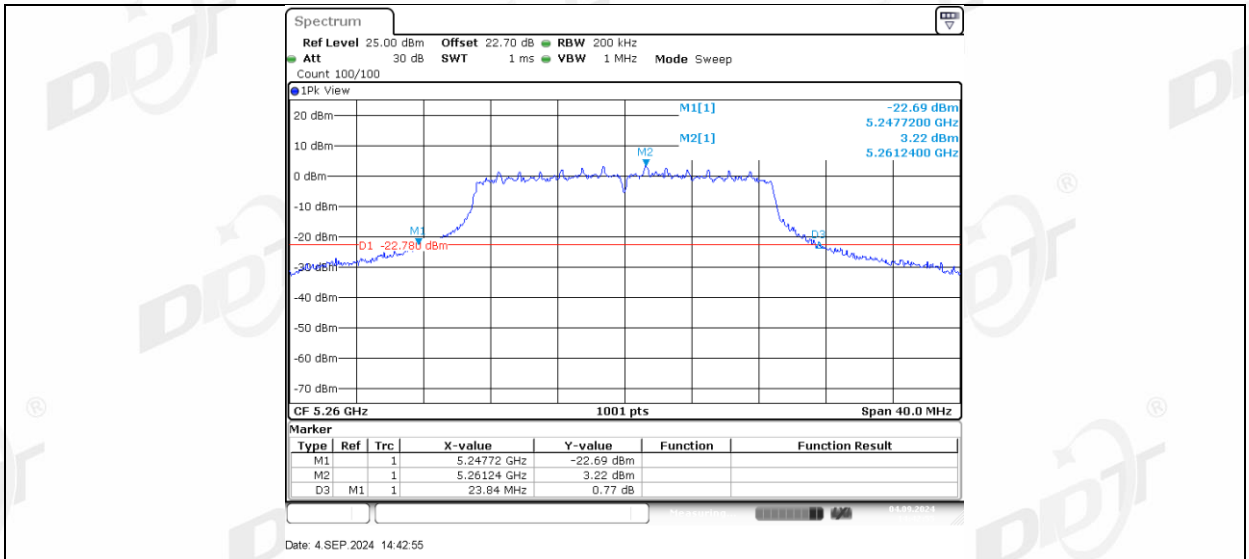




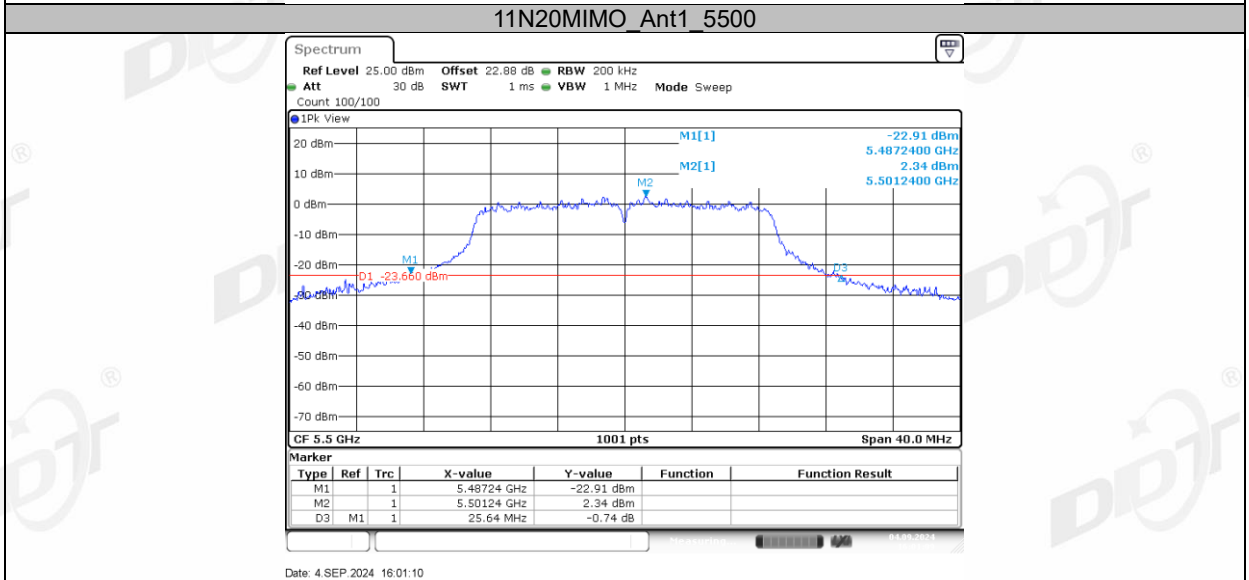
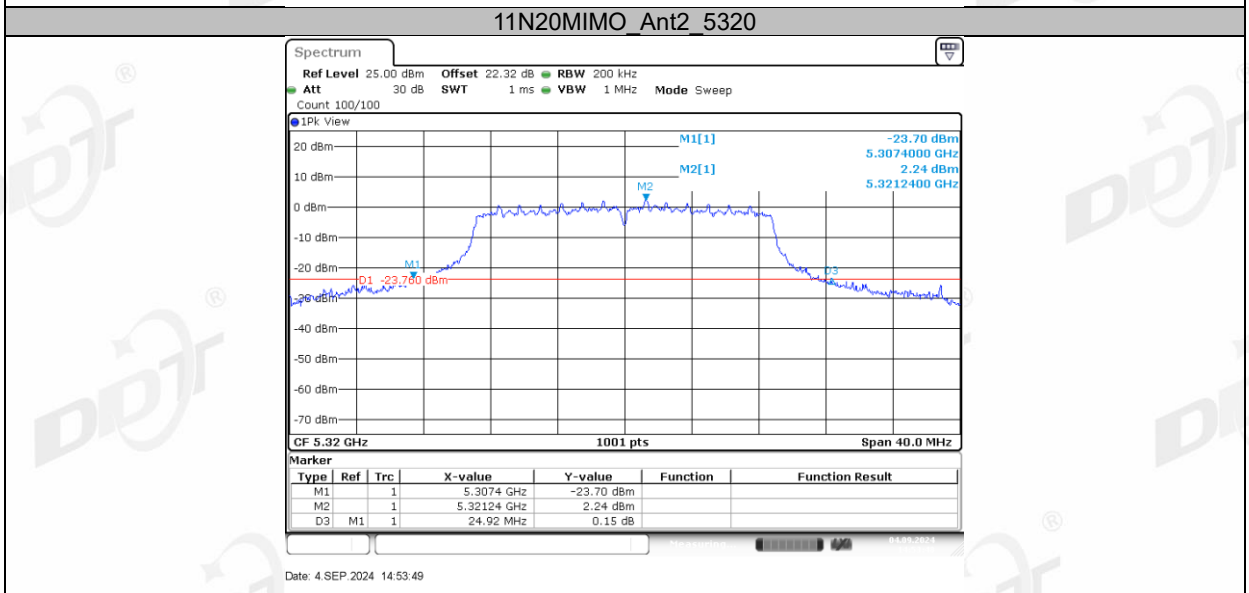
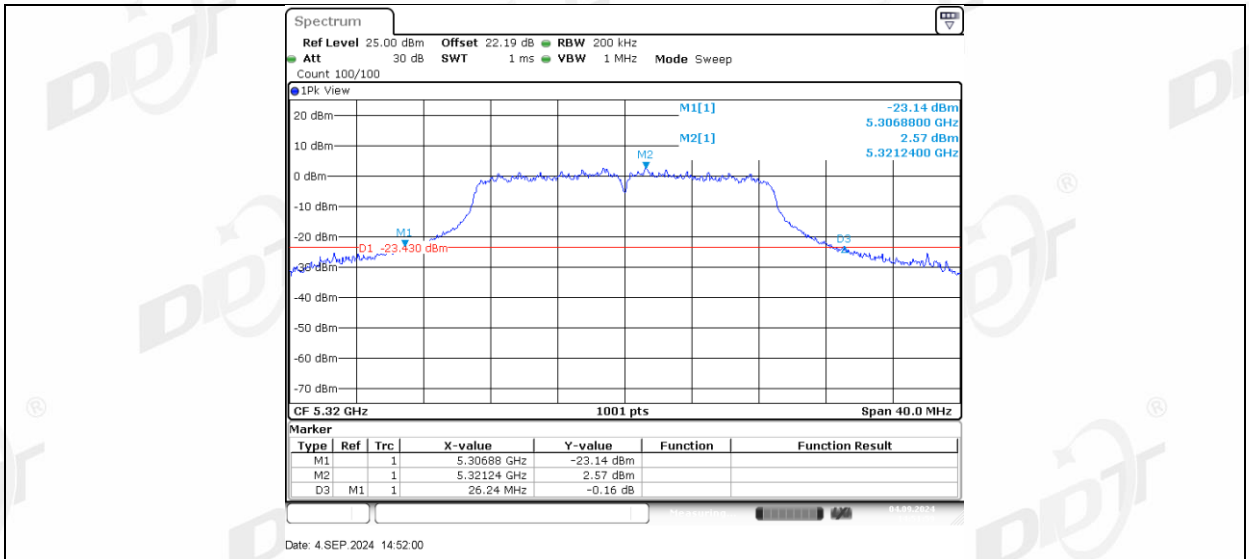
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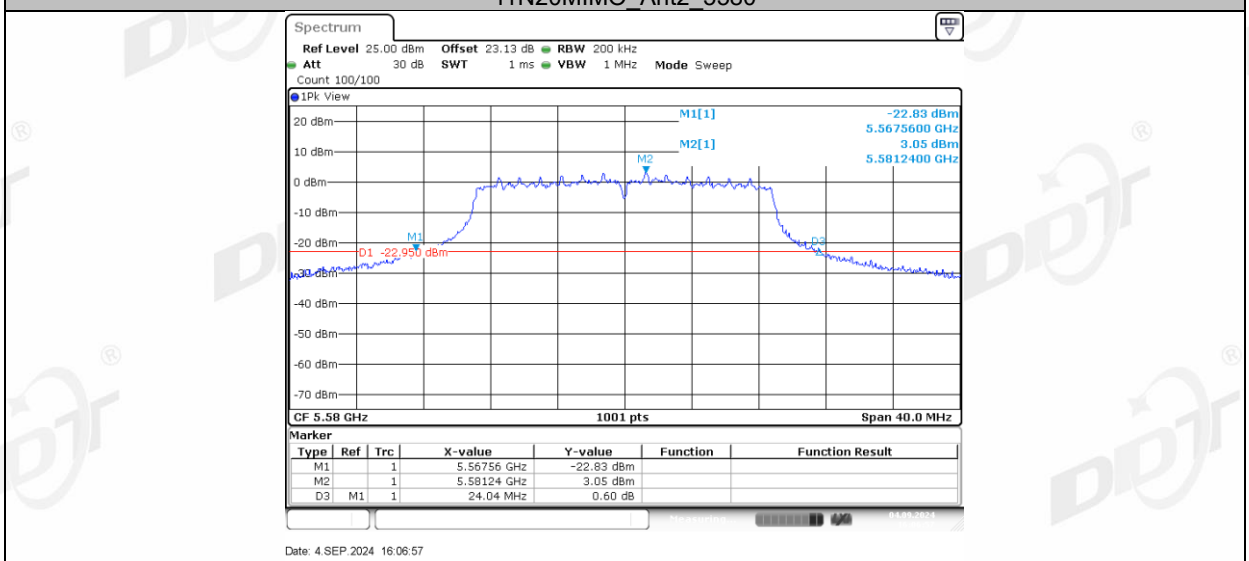
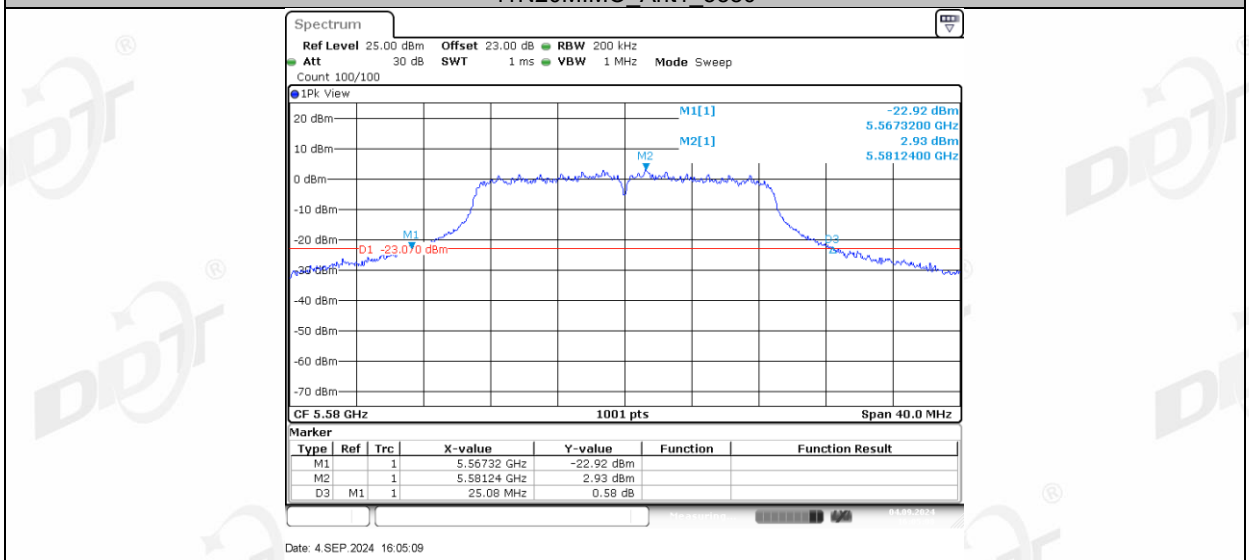
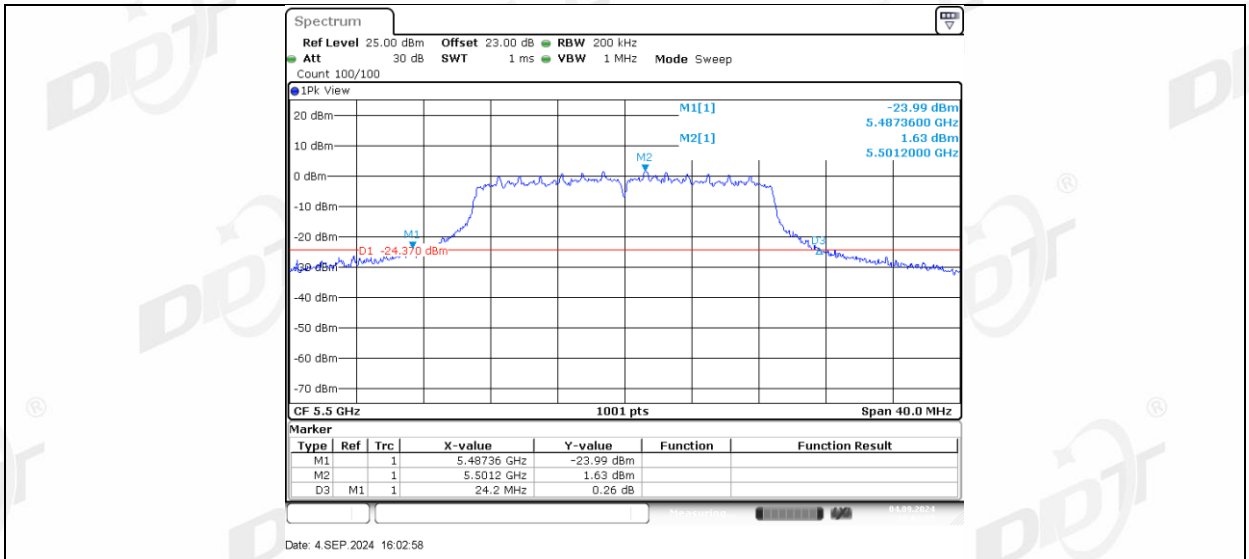


**11N20MIMO\_Ant2\_5260**

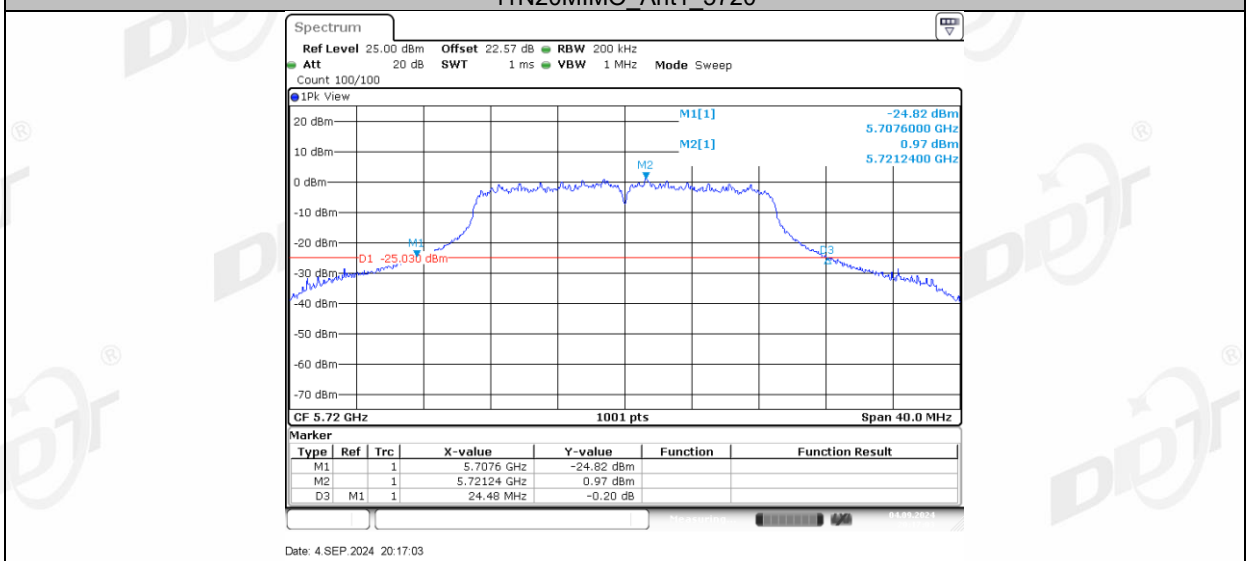
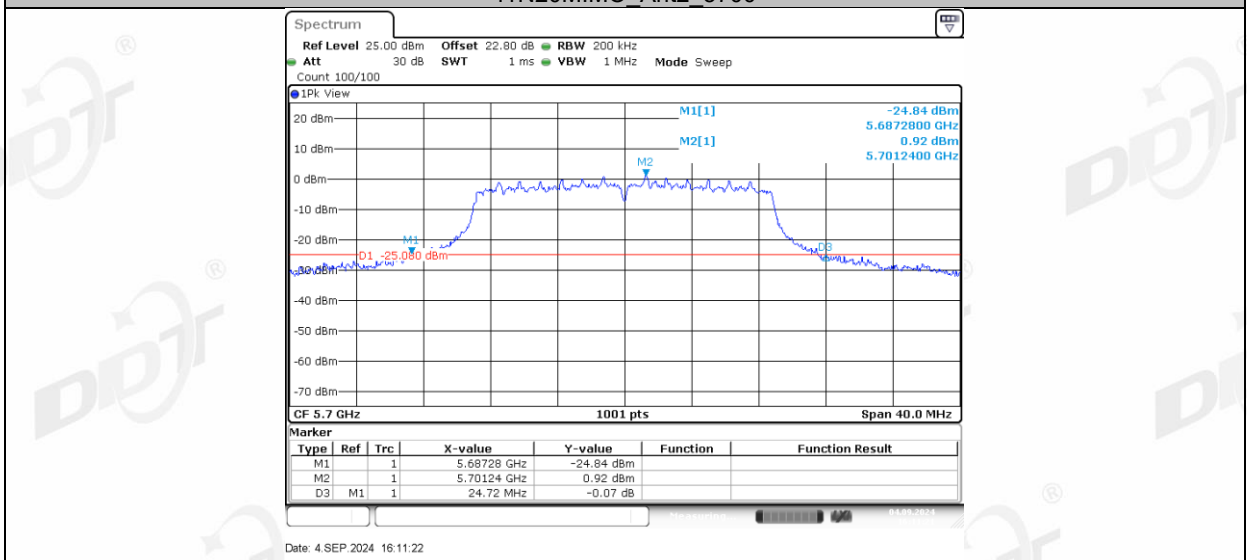
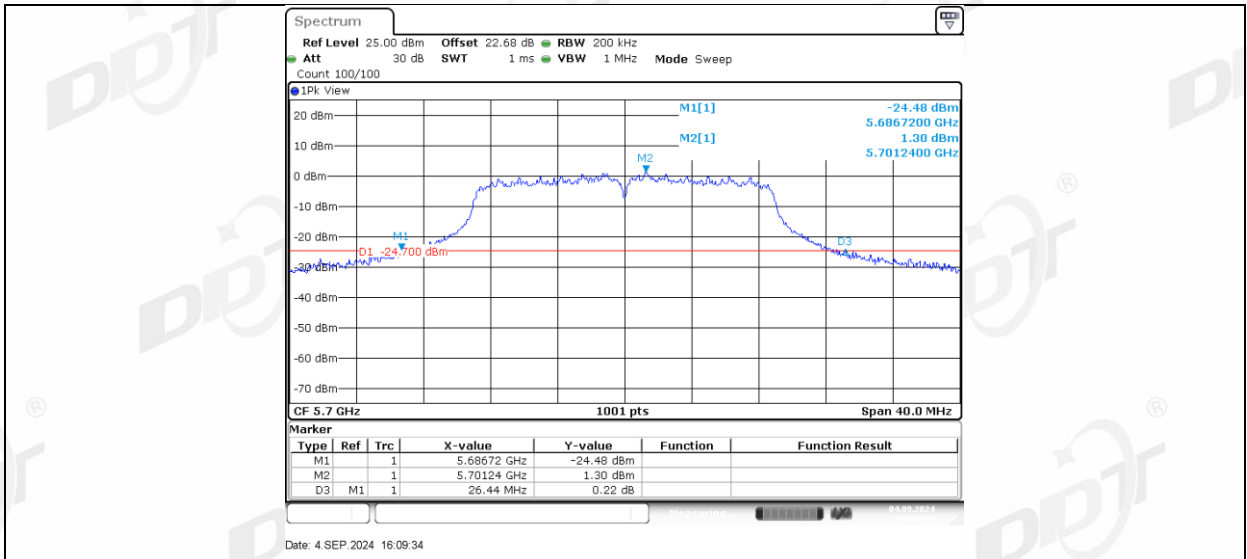


**11N20MIMO\_Ant1\_5320**

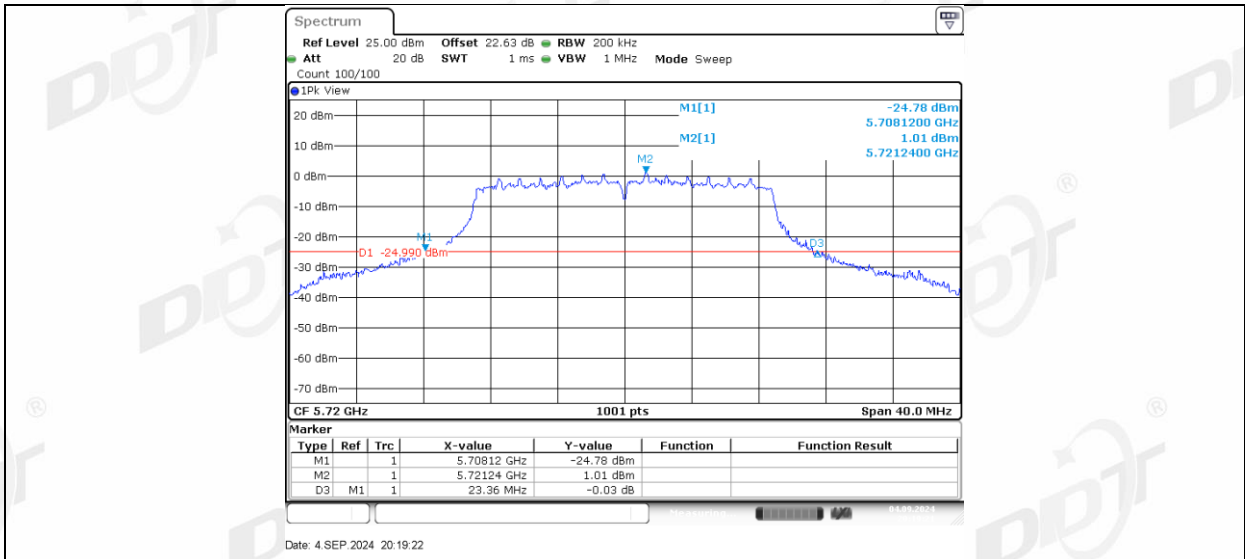




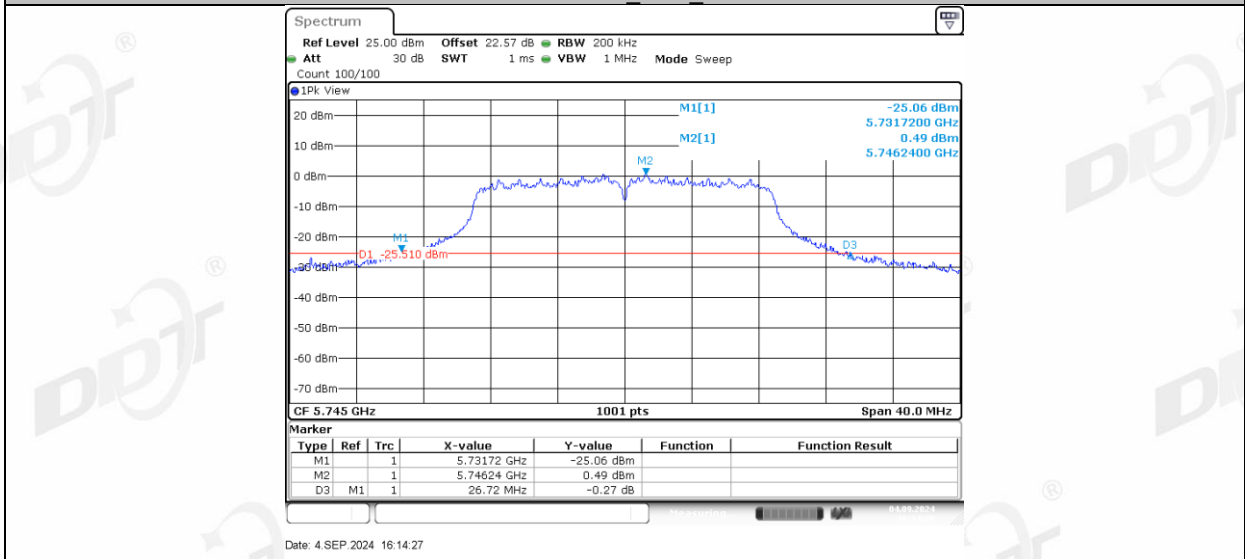
11N20MIMO\_Ant1\_5700



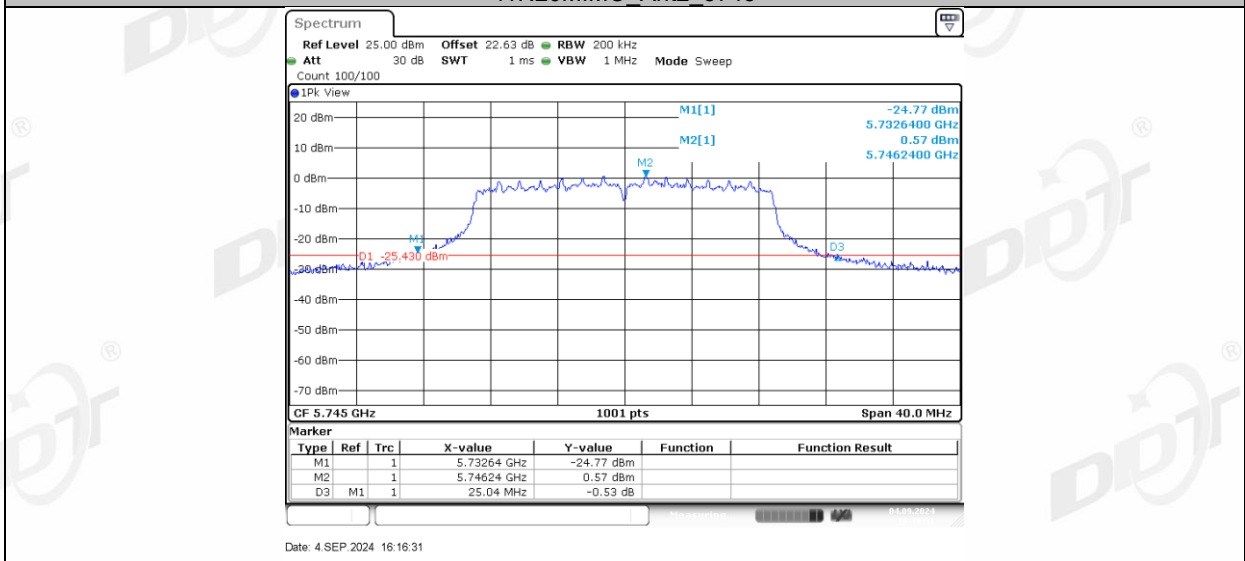
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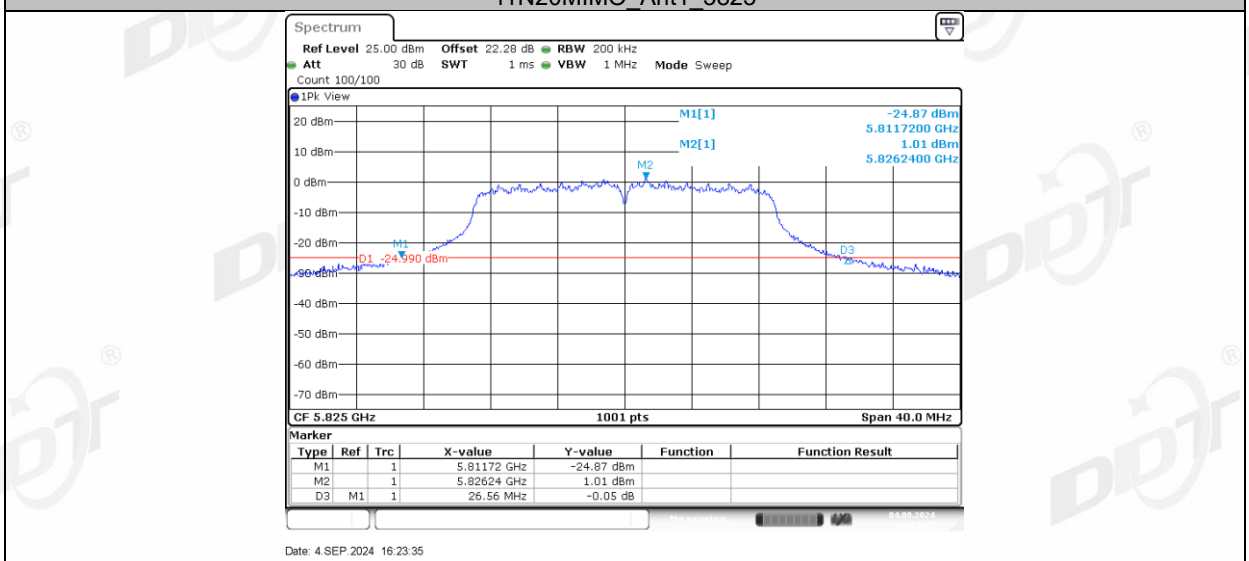
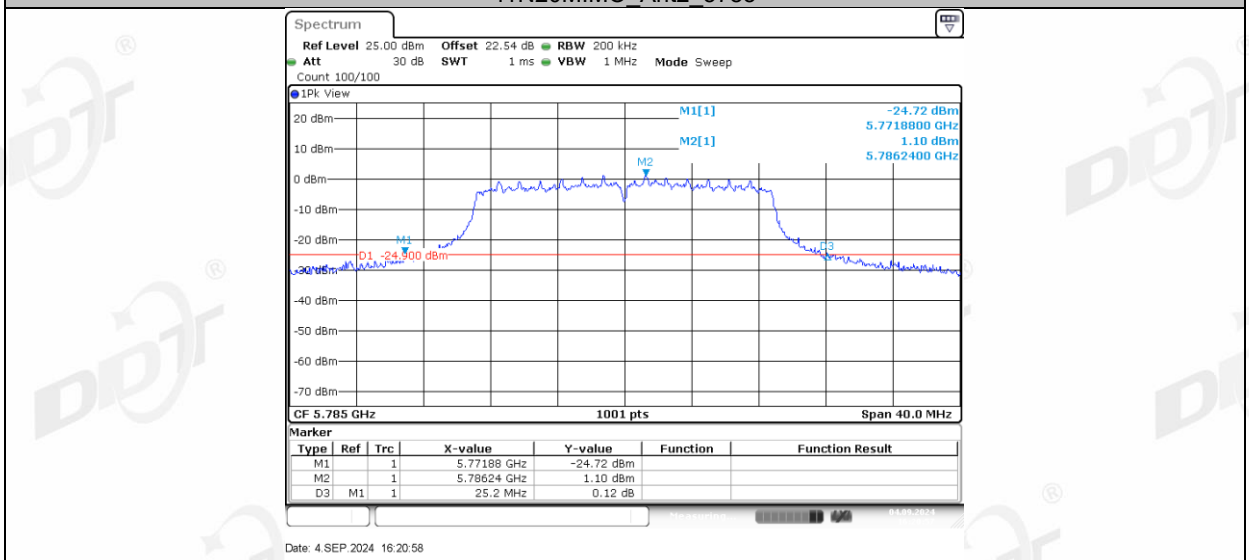
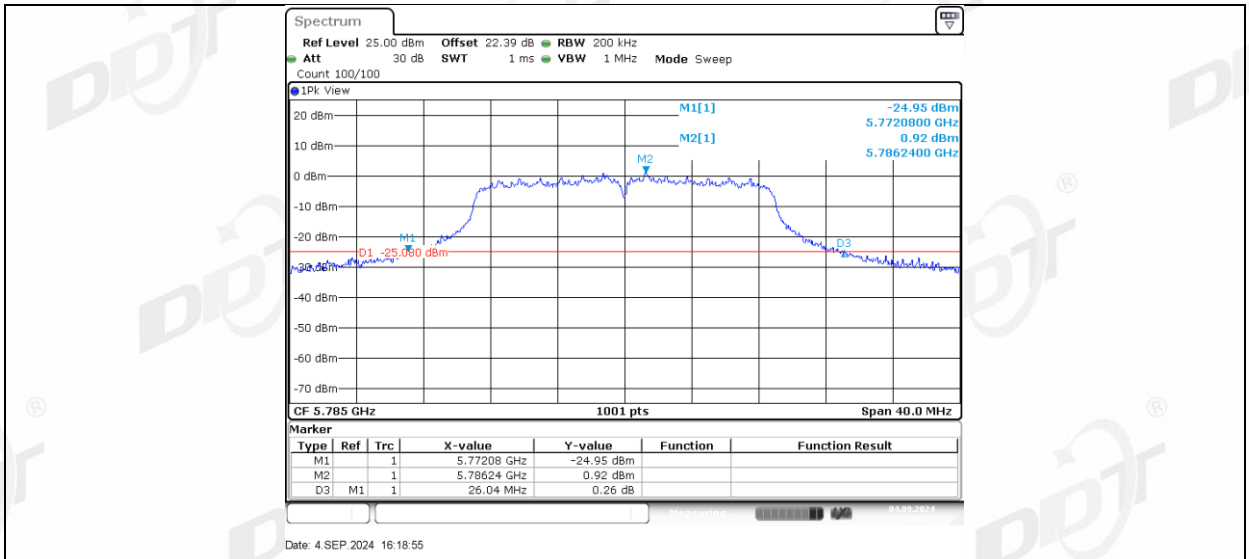
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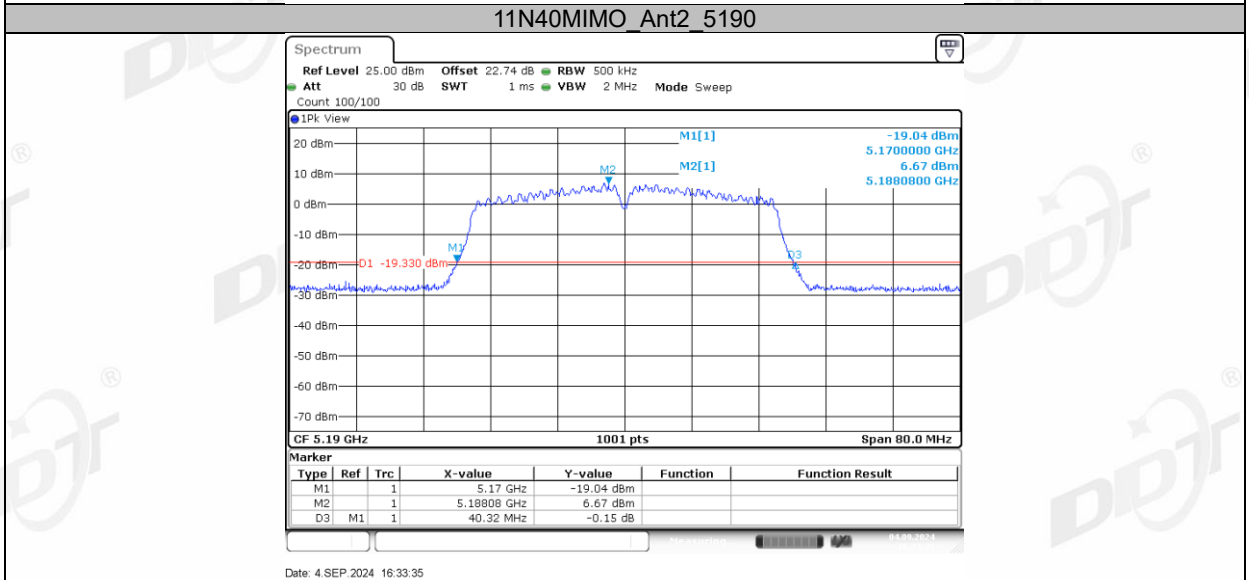
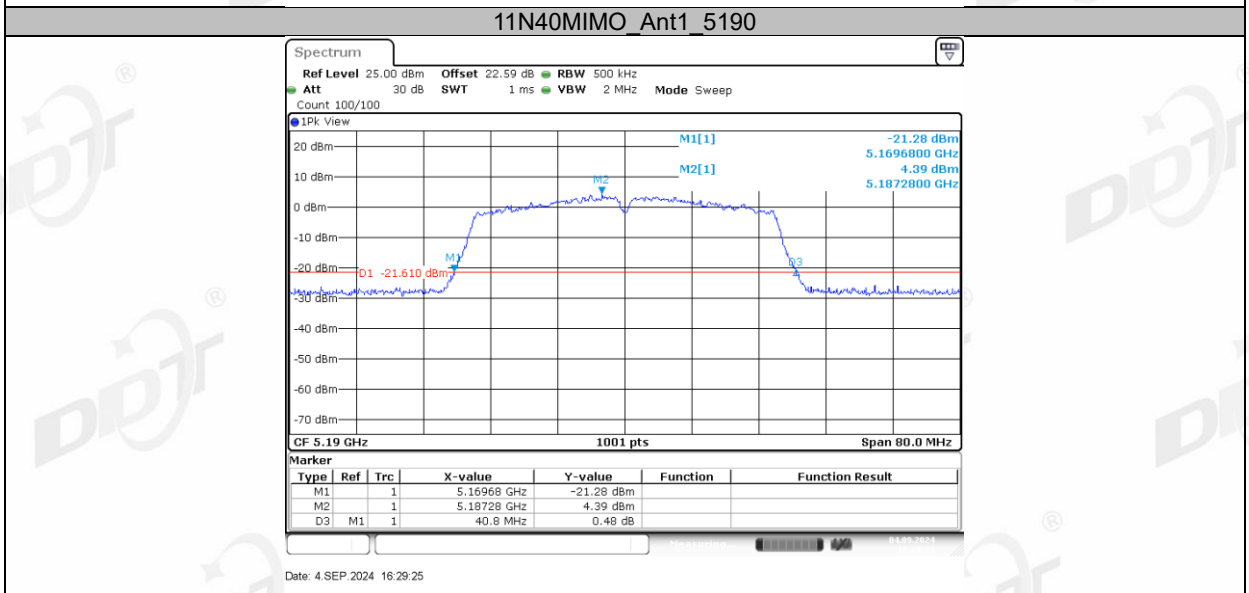
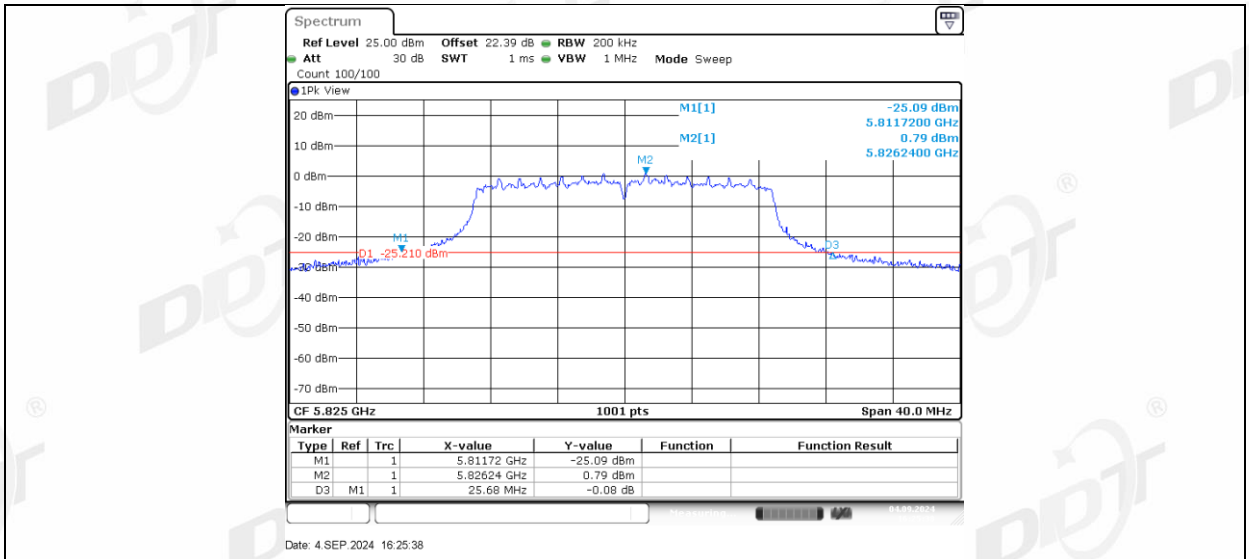


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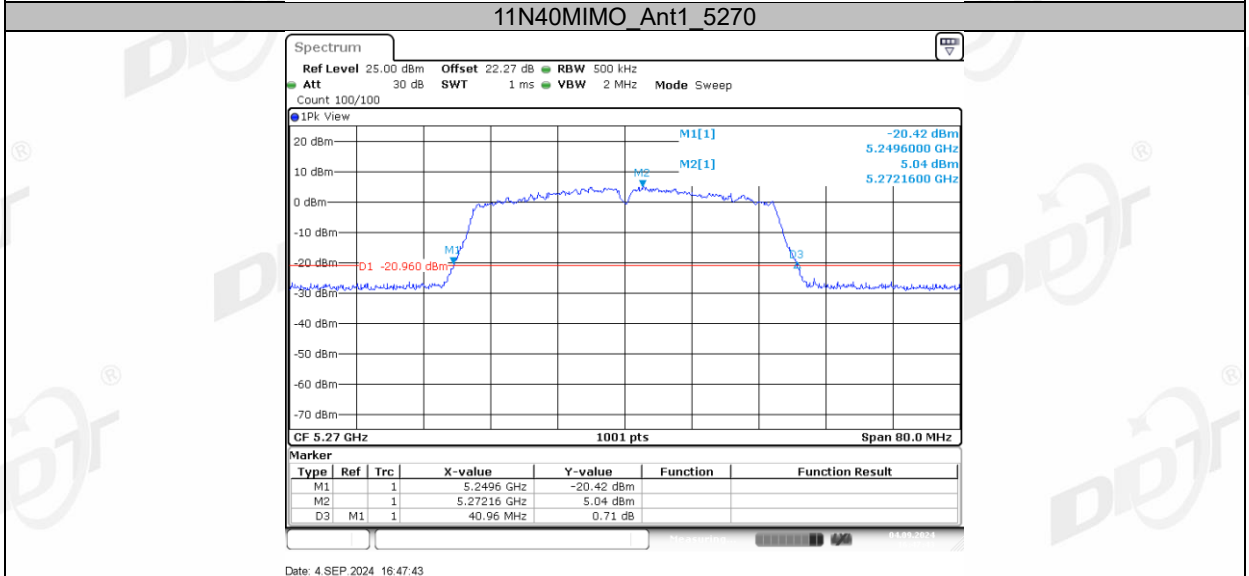
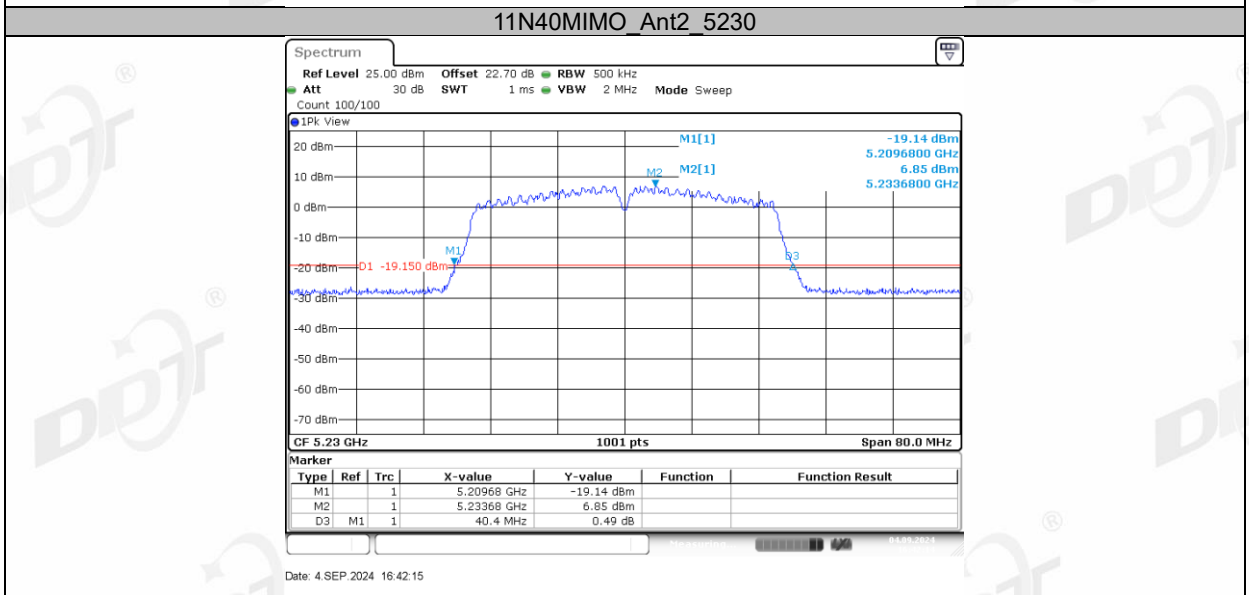
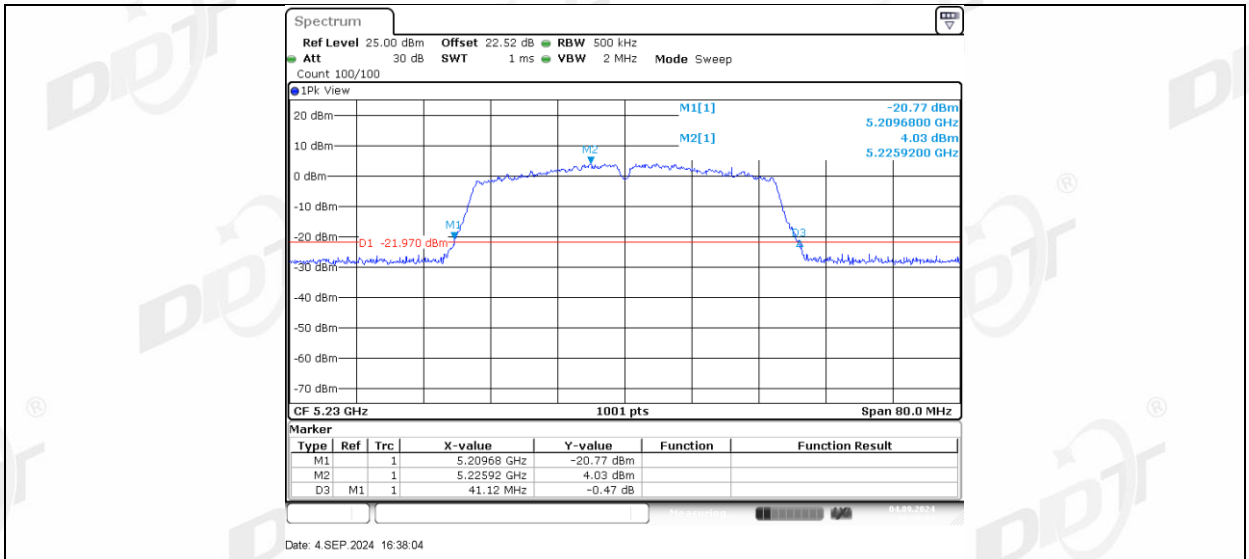


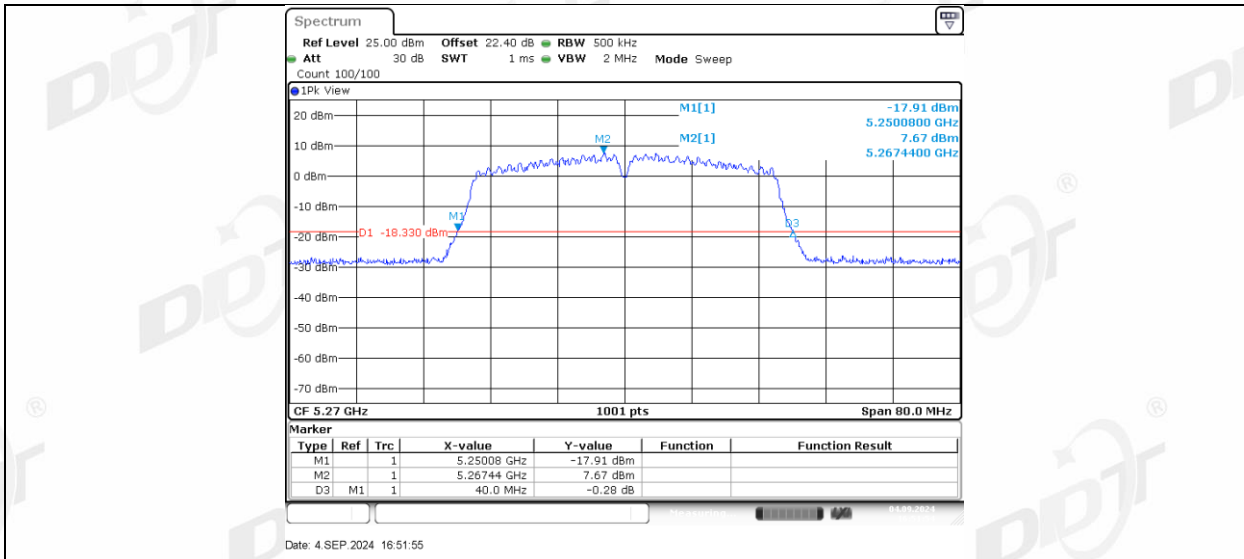
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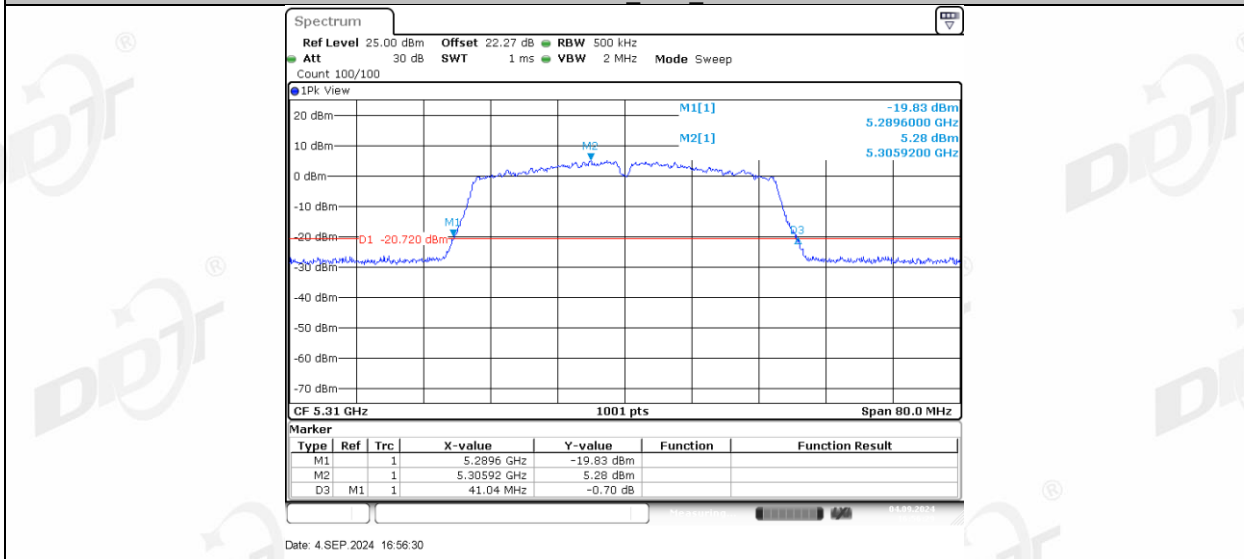


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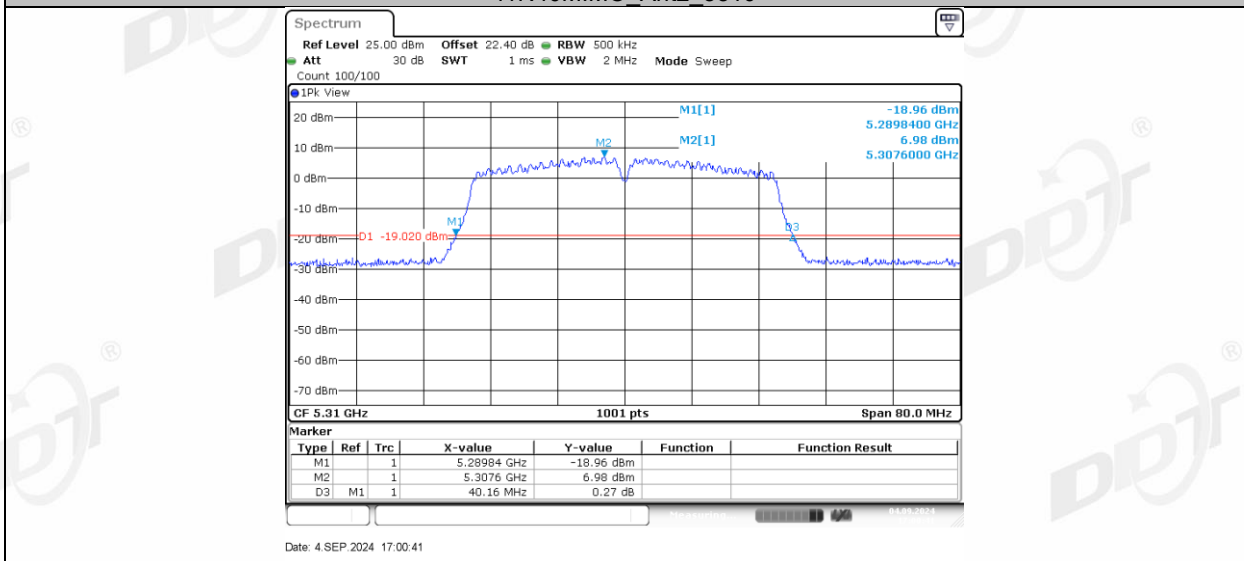




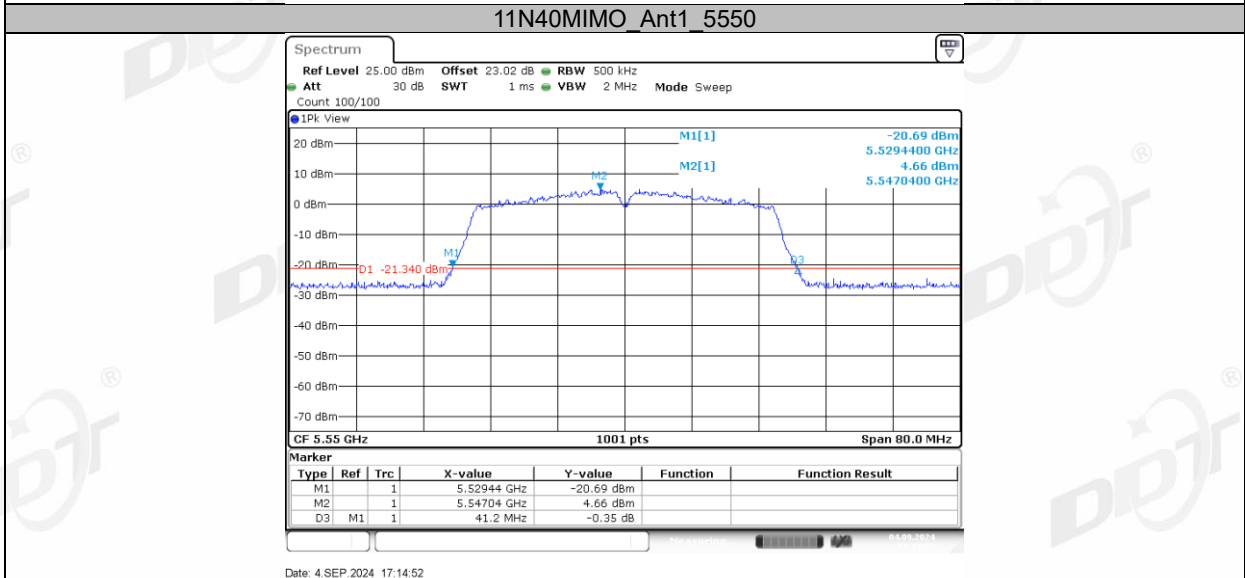
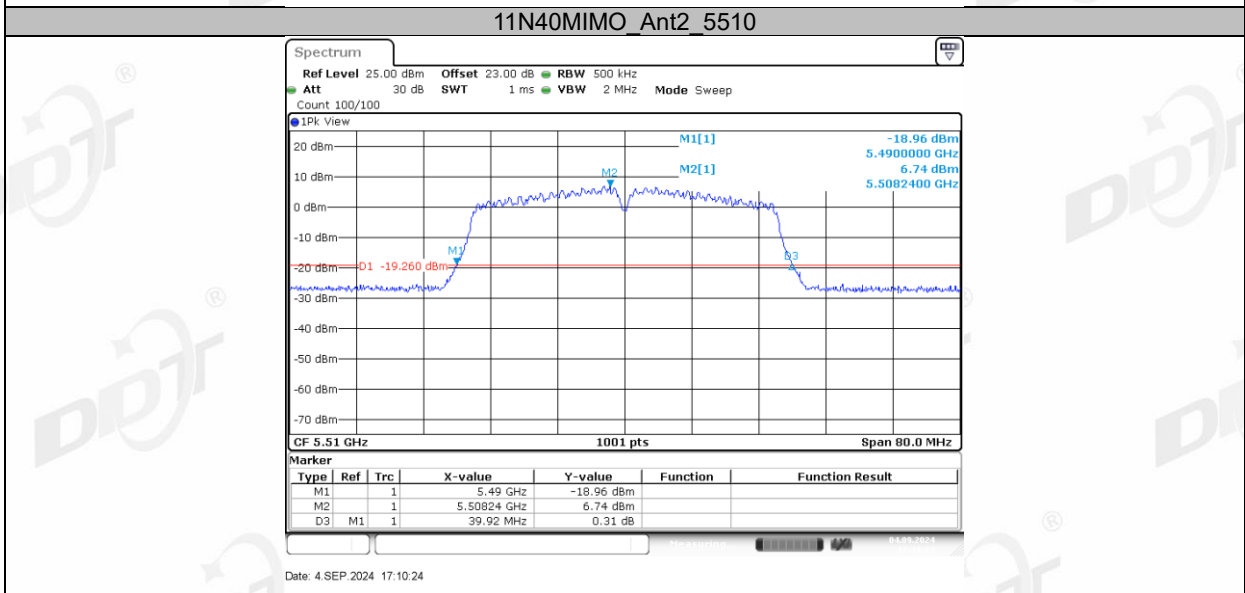
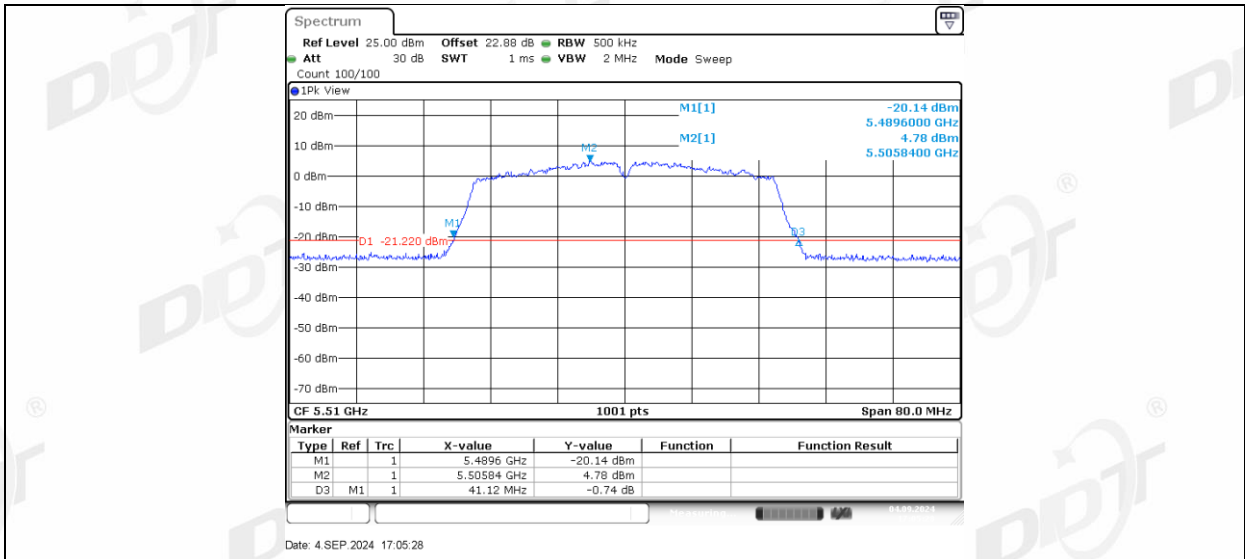
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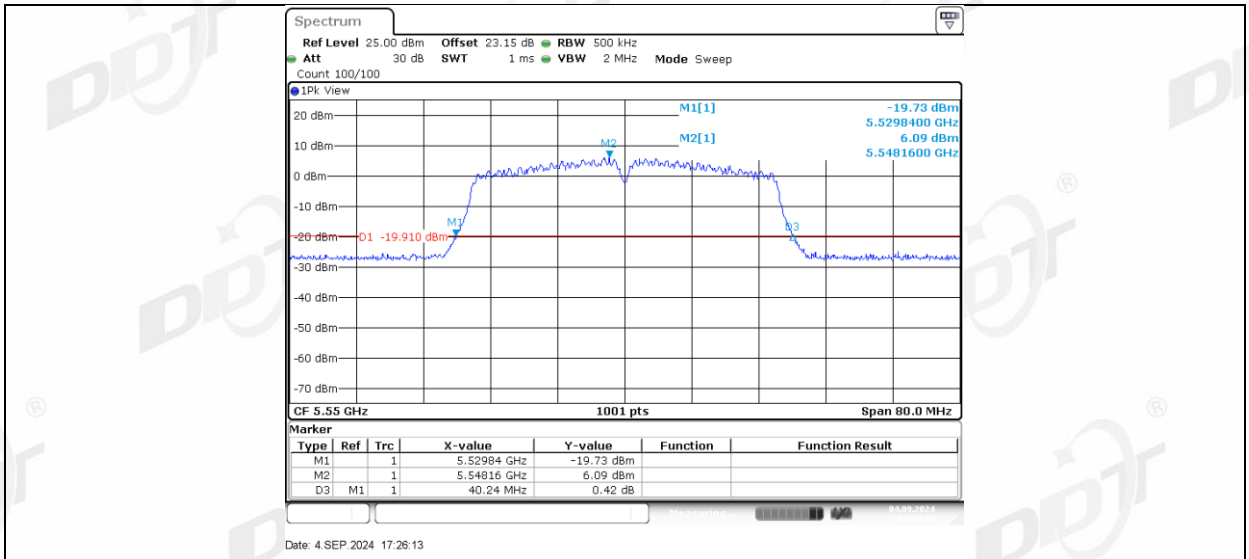


11N40MIMO\_Ant2\_5310

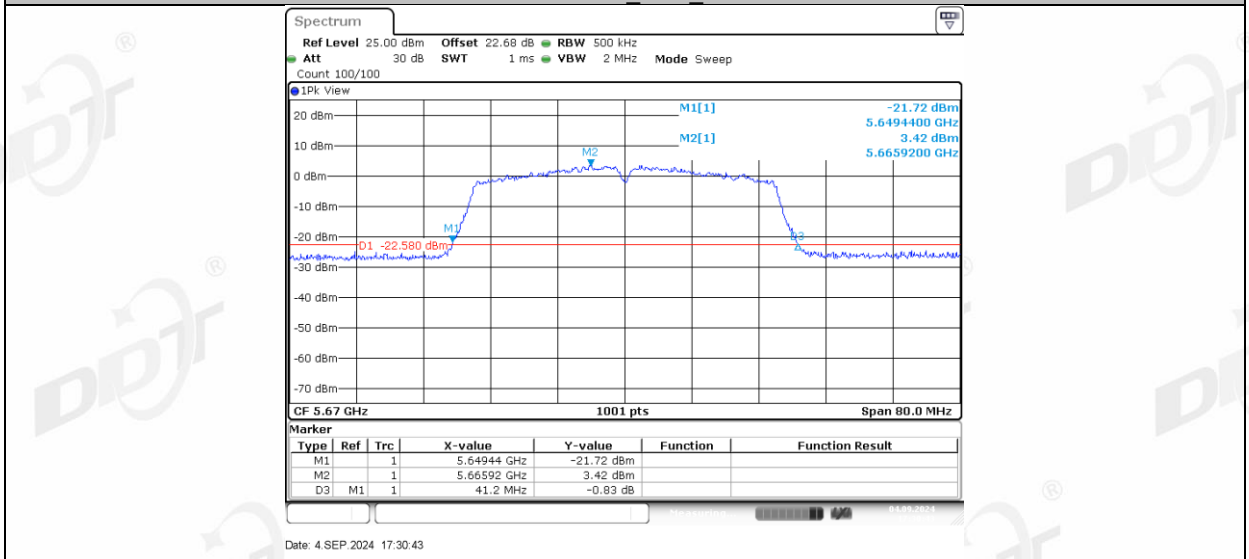


11N40MIMO\_Ant1\_5510

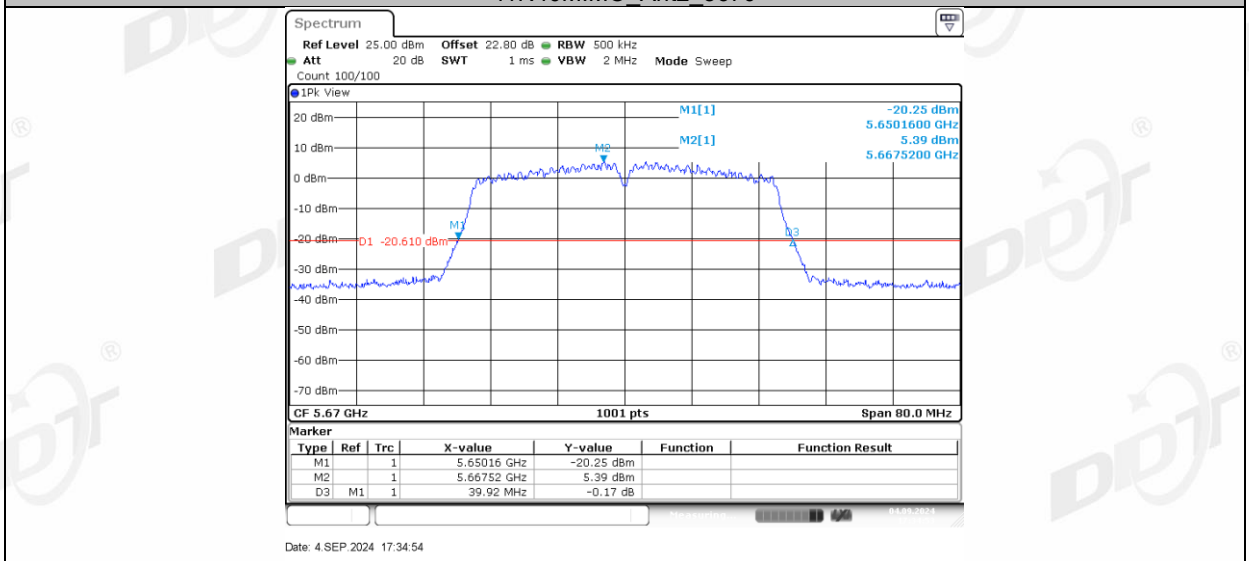




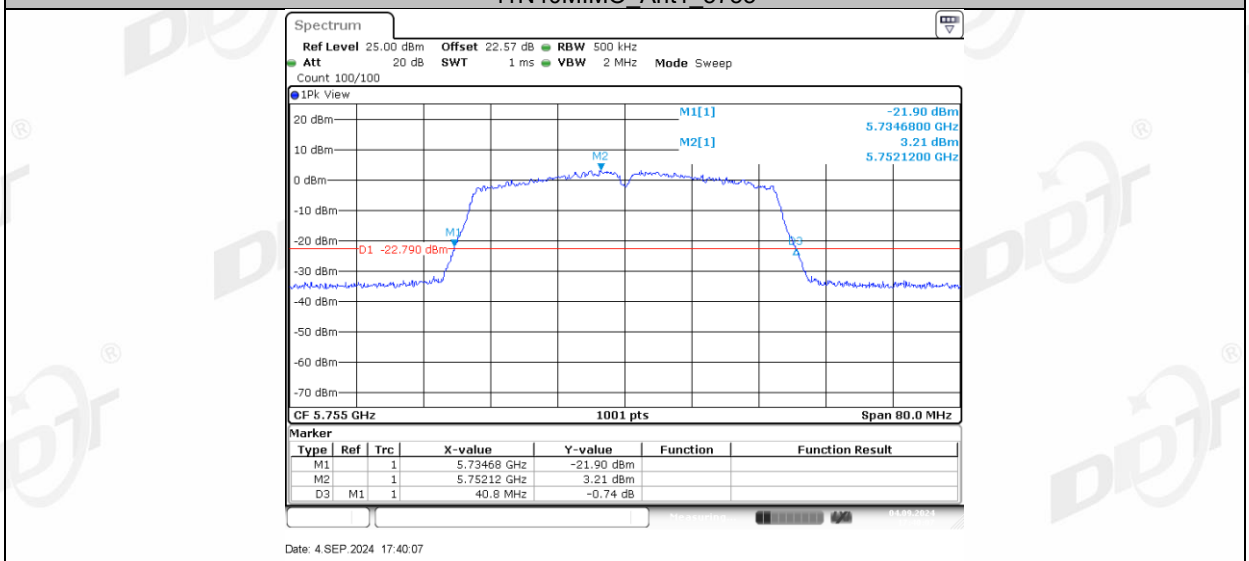
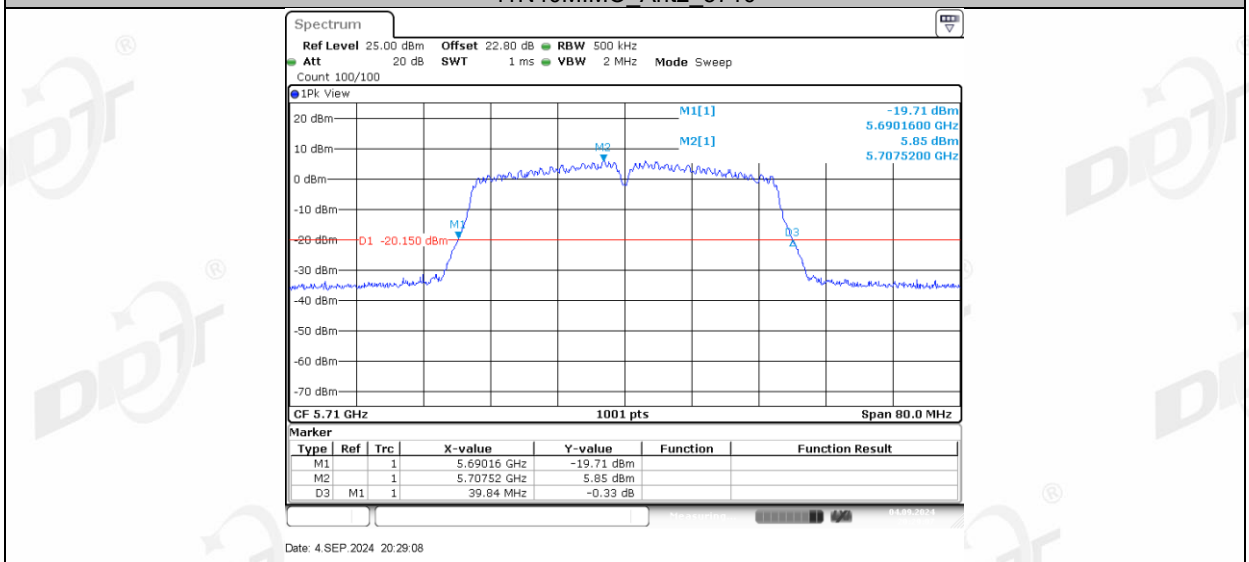
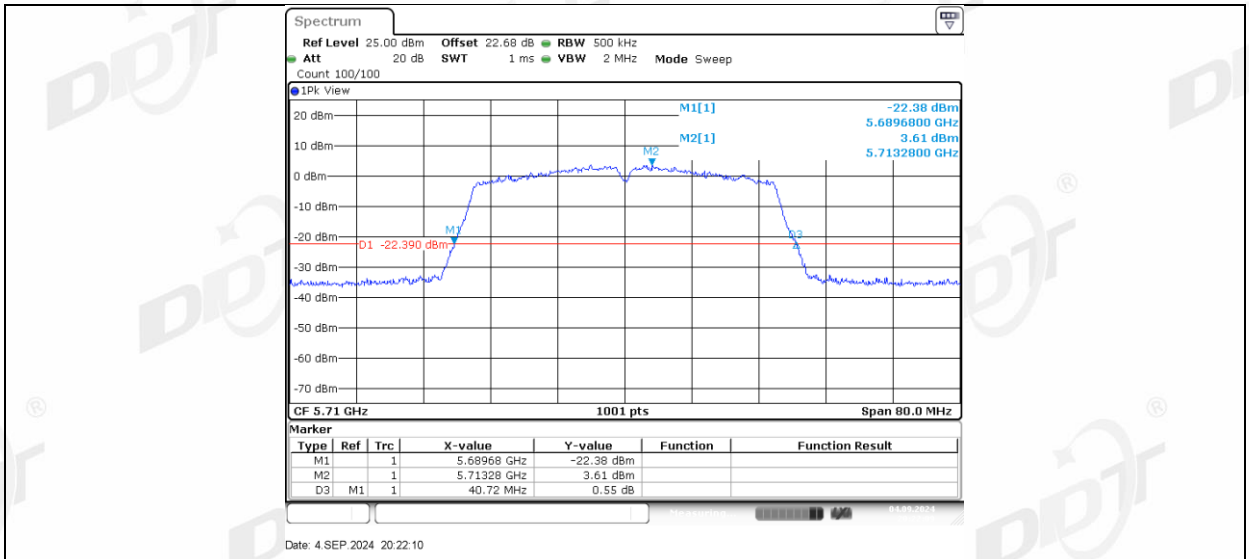
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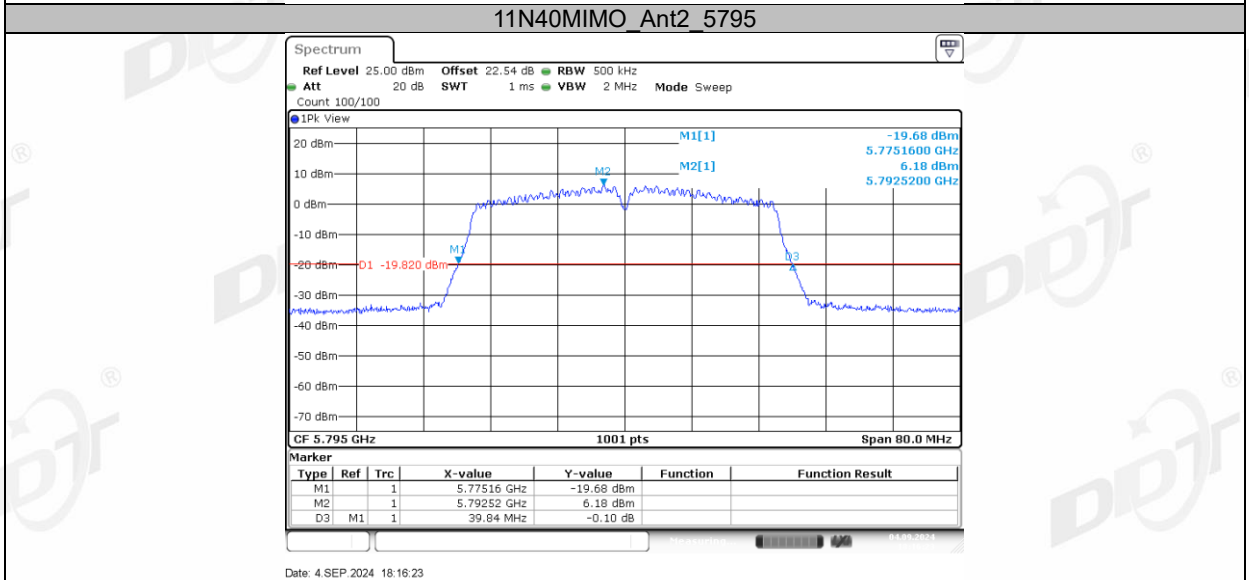
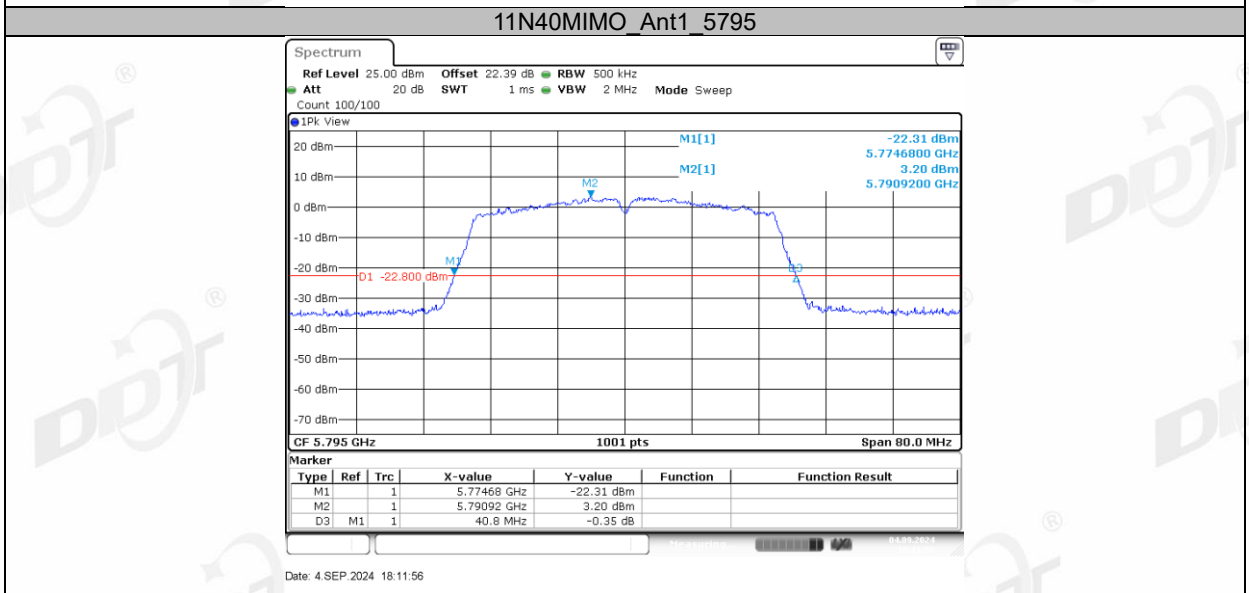
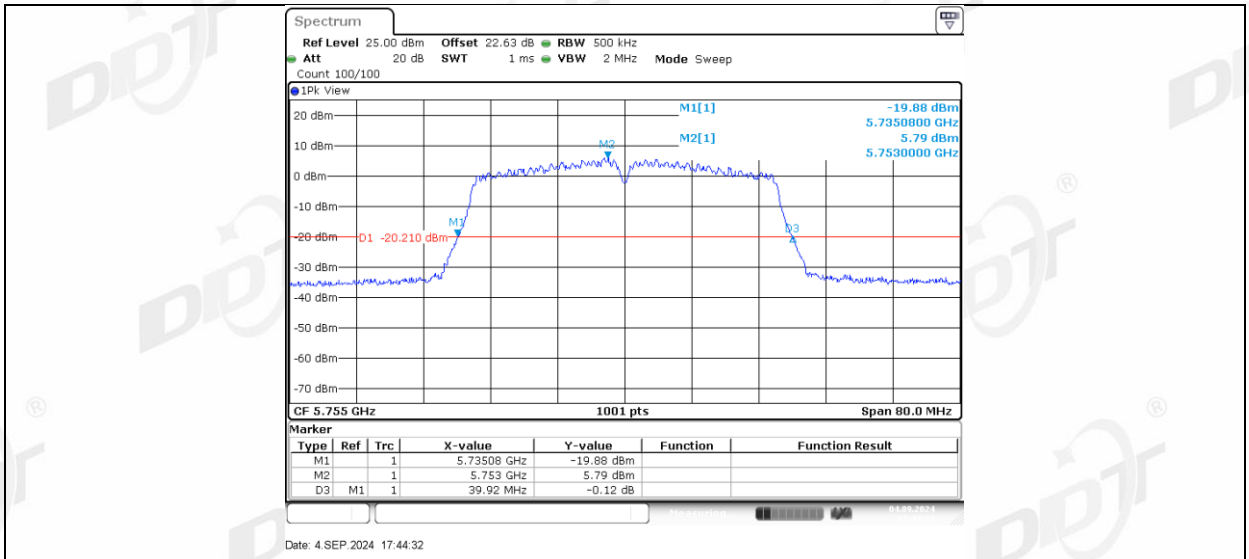


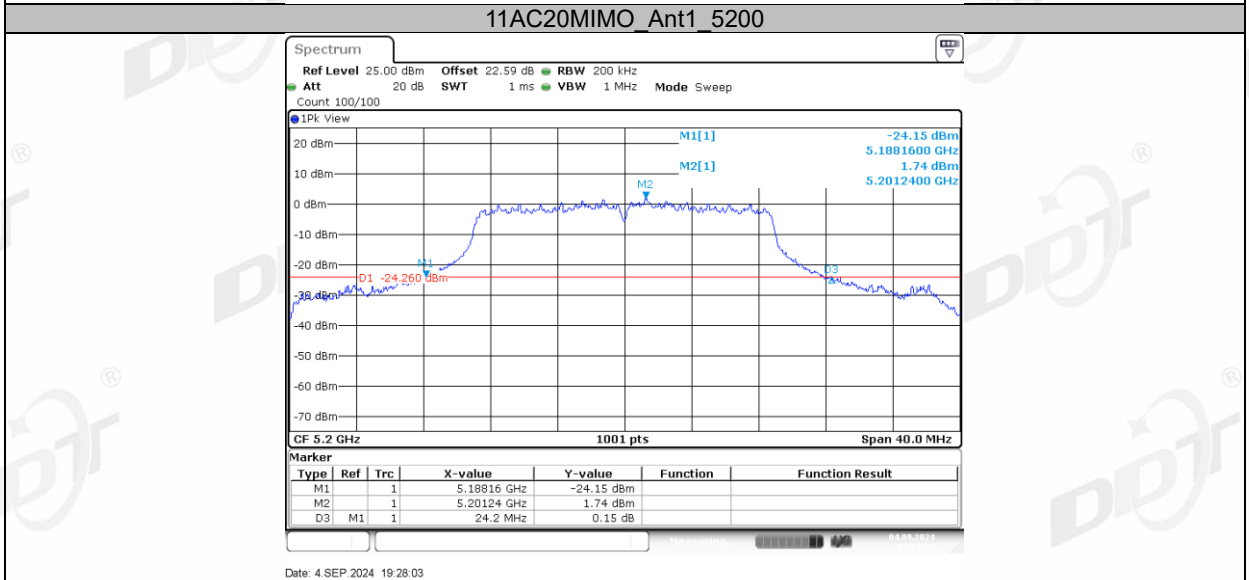
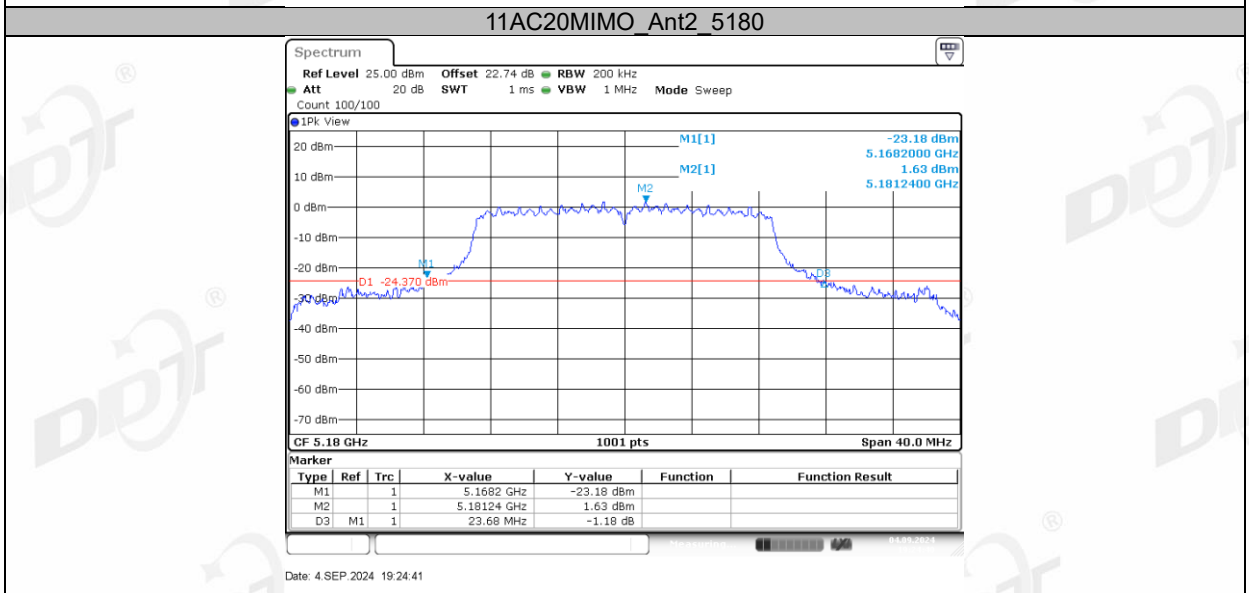
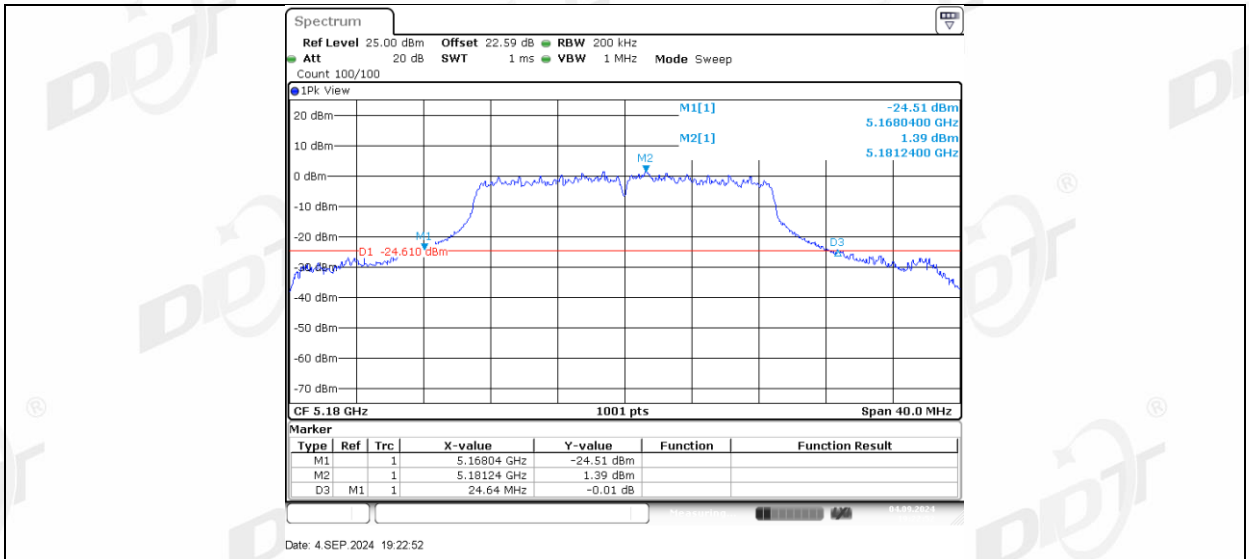
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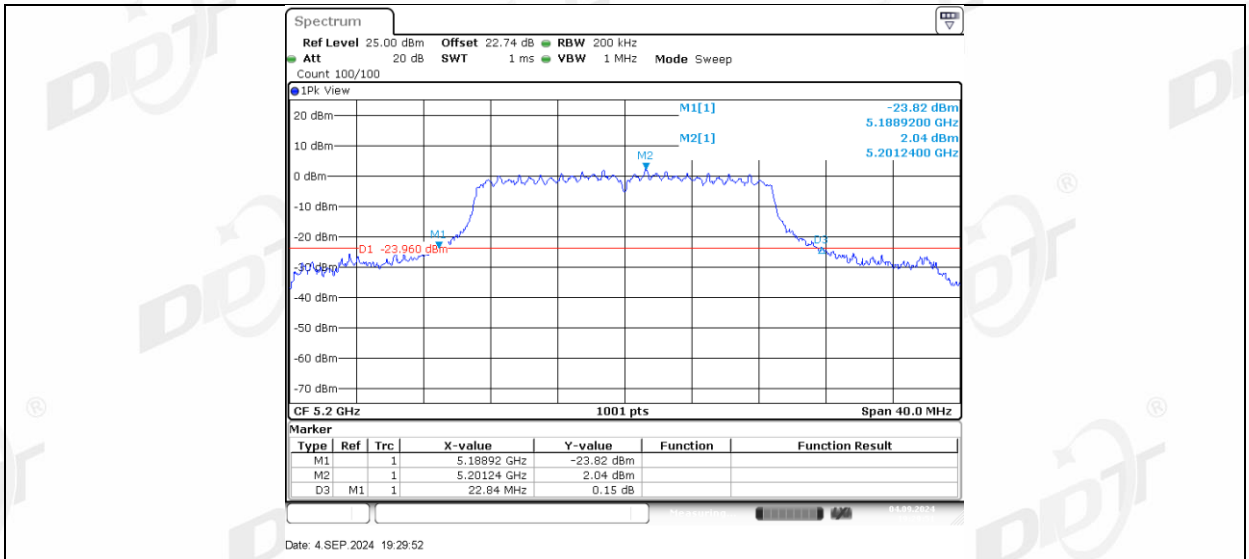


11N40MIMO\_Ant1\_5710

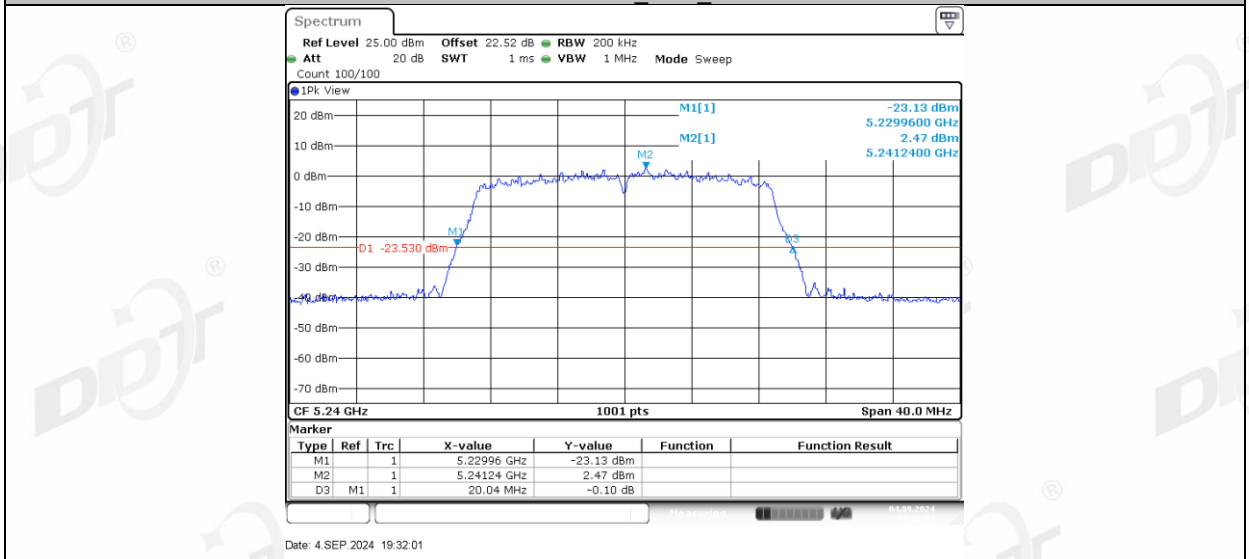




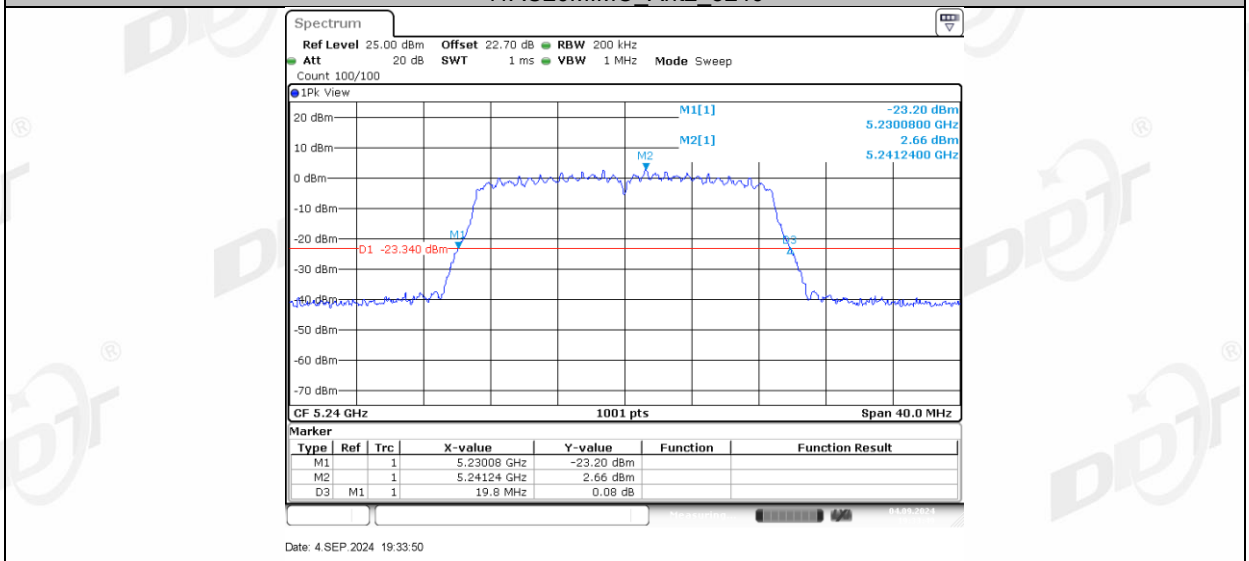




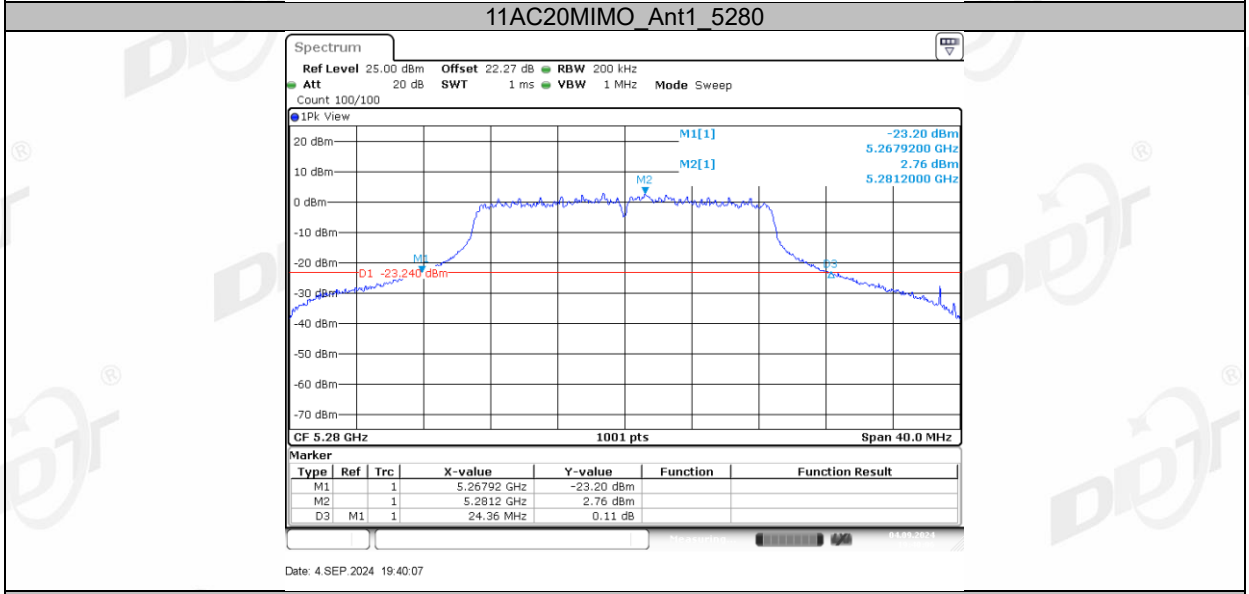
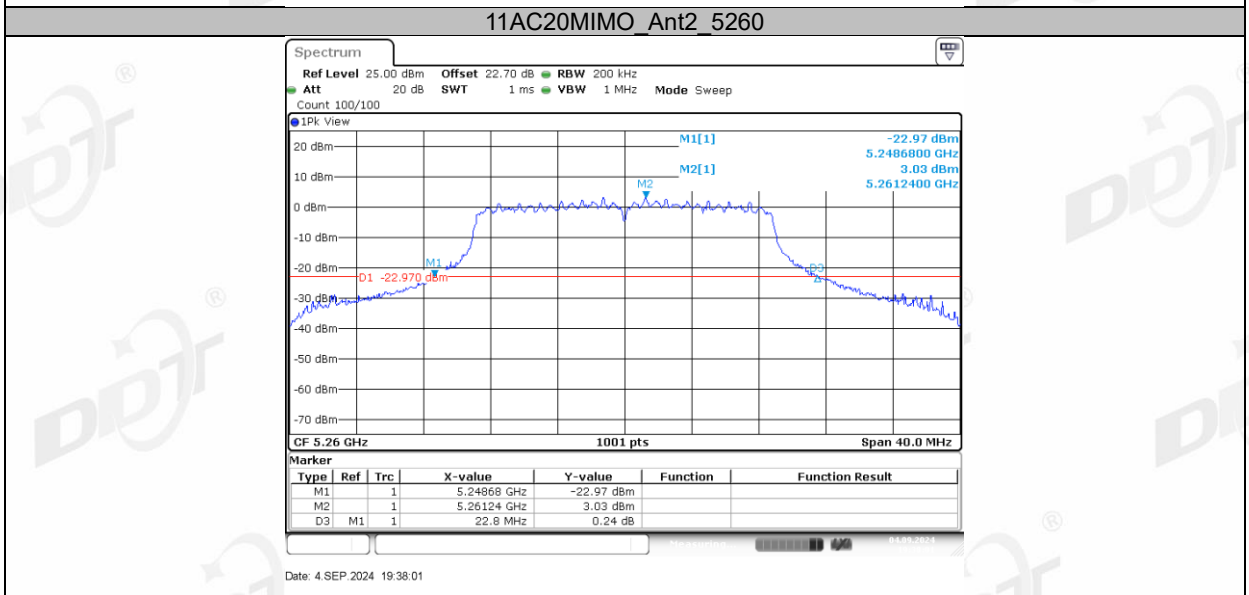
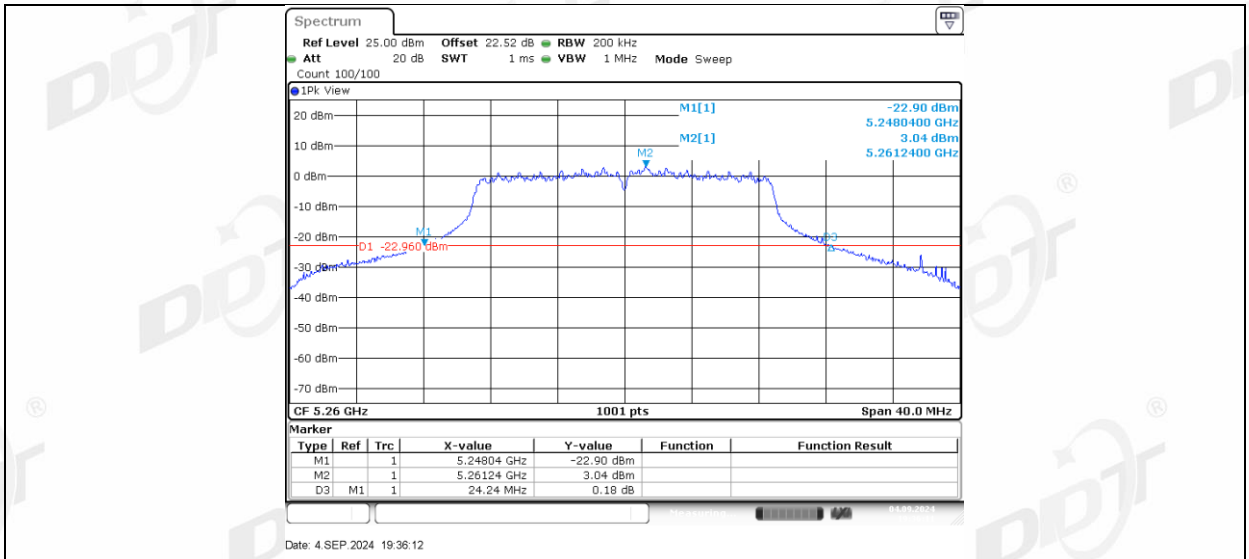
11AC20MIMO\_Ant1\_5240

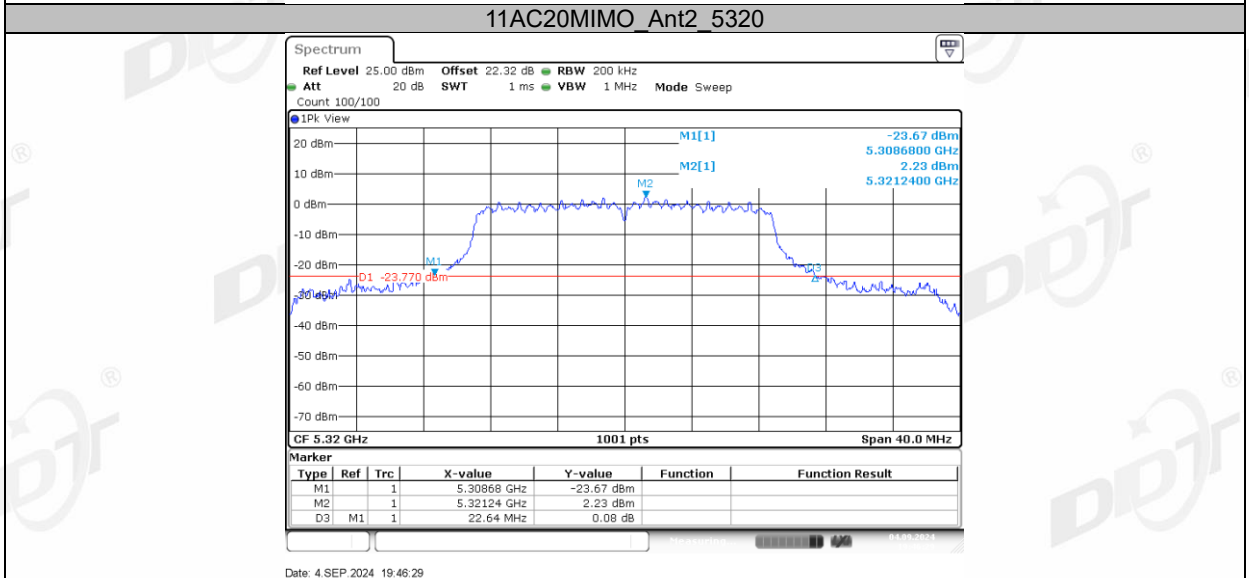
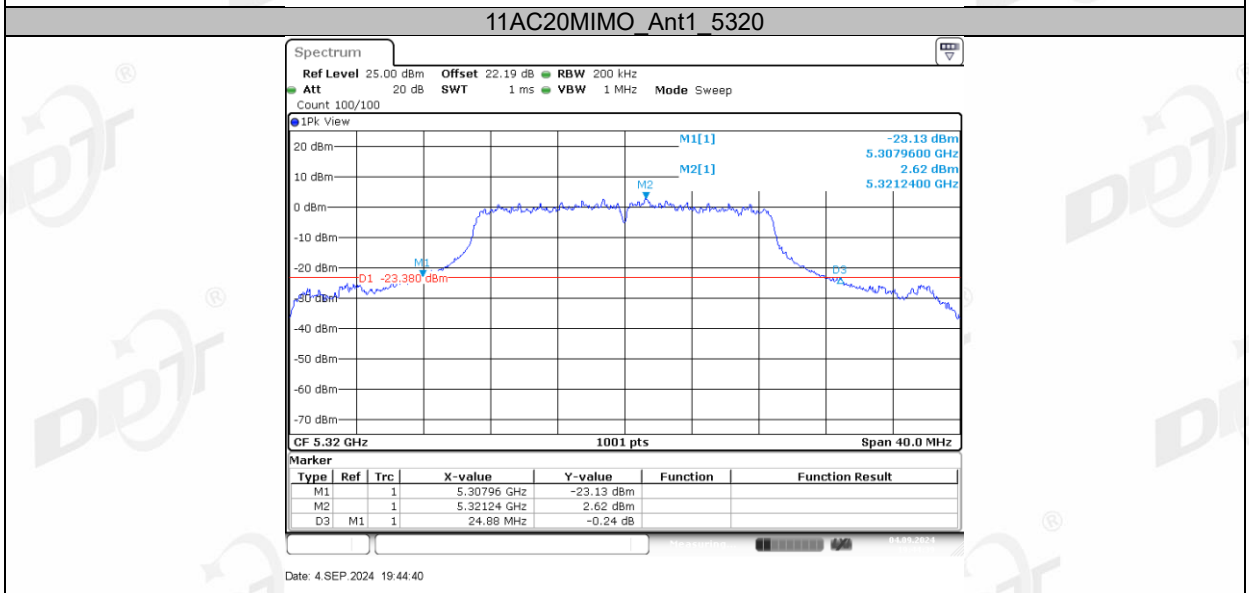
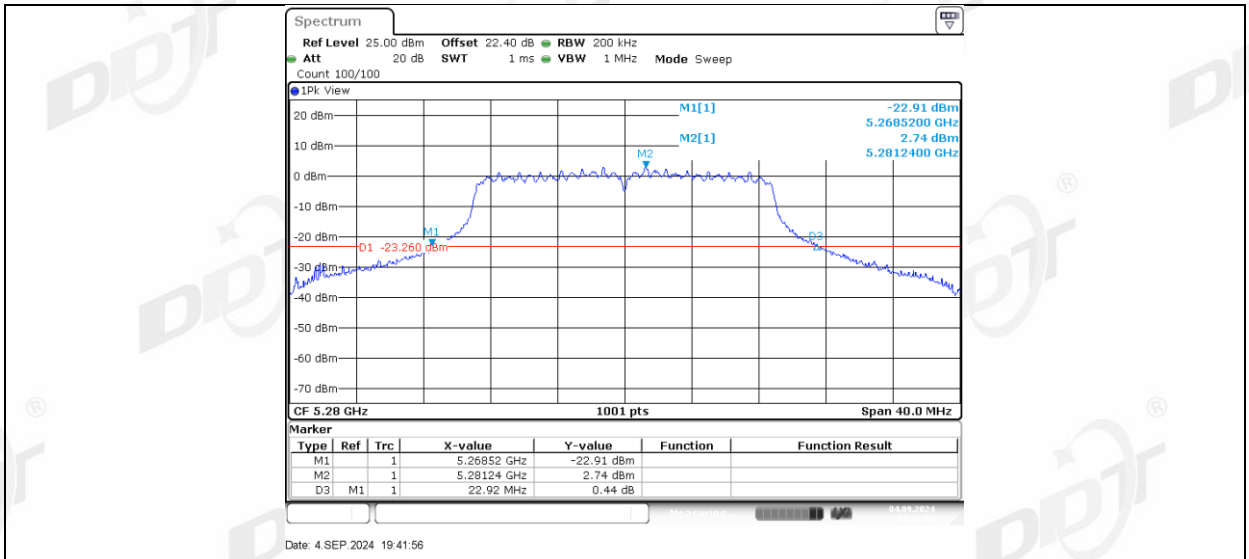


11AC20MIMO\_Ant2\_5240

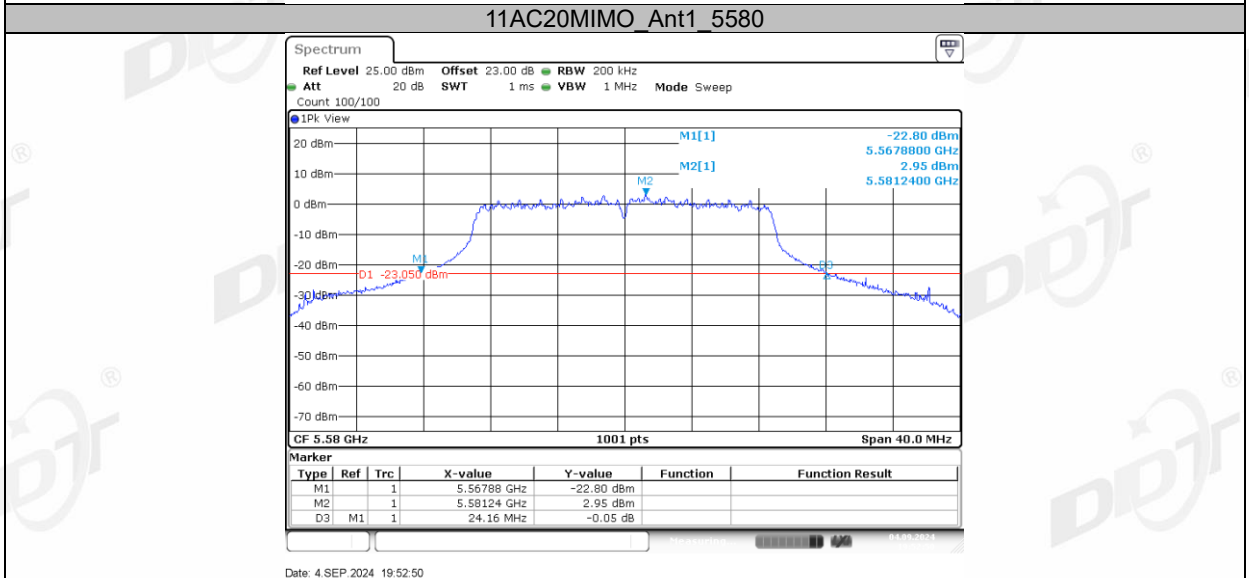
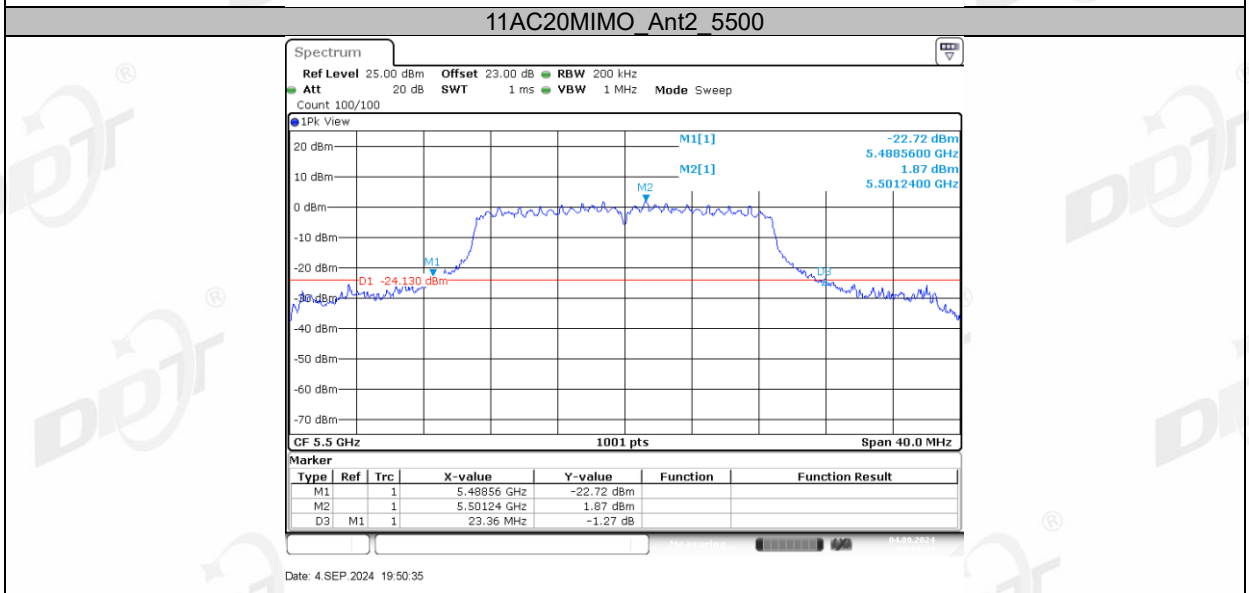
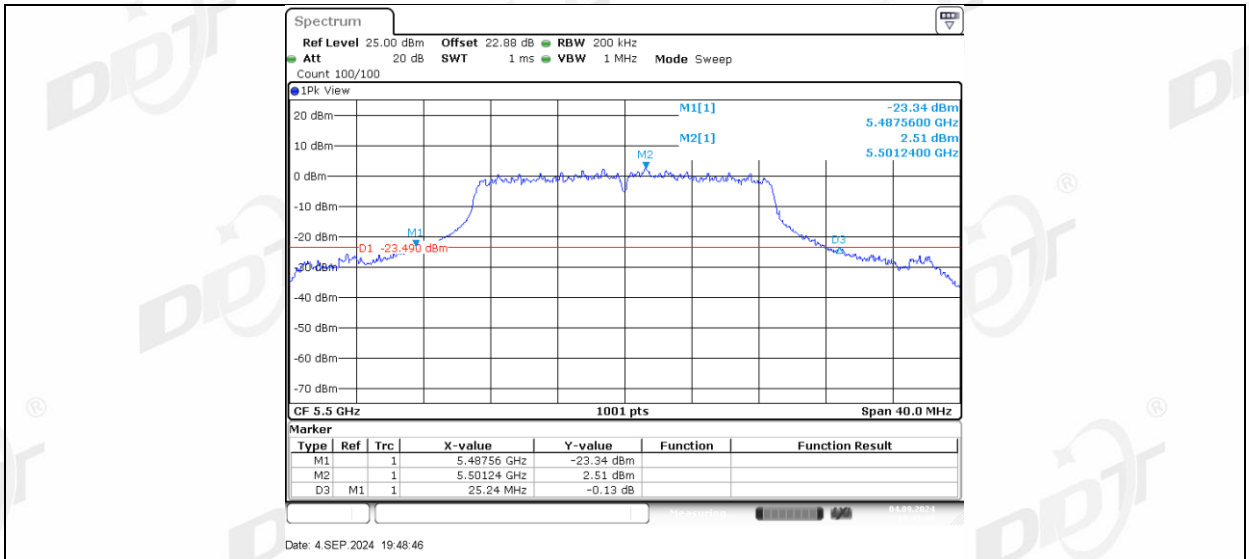


11AC20MIMO\_Ant1\_5260





**11AC20MIMO\_Ant1\_5500**



**11AC20MIMO\_Ant2\_5580**