

# FCC AND ISED CERTIFICATION TEST REPORT

## FOR

<b>Applicant</b>	:	Harman International Industries, Inc.
<b>Address</b>	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
<b>Equipment under Test</b>	:	Wireless Speaker
<b>Model No.</b>	:	BOOMBOX 3 Wi-Fi
<b>Trade Mark</b>	:	JBL
<b>FCC ID</b>	:	APIJBLBB3WIFI
<b>IC</b>	:	6132A-JBLBB3WIFI
<b>Manufacturer</b>	:	Harman International Industries, Inc.
<b>Address</b>	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

**Issued By: Dongguan Dongdian Testing Service Co., Ltd.**

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# REPORT

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## Test Report Declare

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### Test Standard Used:

FCC Rules and Regulations Part 15 Subpart E, RSS-247 Issue 2 February 2017.

**Test procedure used:** 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 Dongguan 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 Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC&ISED standards.**

<b>Report No:</b>	DDT-R22071330-2E04		
<b>Date of Receipt:</b>	Jul. 15, 2022	<b>Date of Test:</b>	Jul. 15, 2022 ~ Aug. 25, 2022

**Prepared By:**

*Johnny Wang*

**Johnny Wang/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 Dongguan Dongdian Testing Service Co., Ltd.

## Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Aug. 25, 2022	

## 1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	Standard	Results
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e) RSS-247 Clause 6.2	Pass
Maximum Conducted Output Power	FCC 15.407 (a) RSS-247 Clause 6.2	Pass
Power Spectral Density	FCC 15.407 (a) RSS-247 Clause 6.2	Pass
Frequency Stability Measurement	FCC 15.407 (g) RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass
Emissions in restricted frequency bands	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass
Band Edge Compliance	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass
Power Line Conducted Emission	FCC 15.207 RSS-GEN Clause 8.8	Pass
Antenna requirement	FCC 15.203 RSS-GEN Clause 8.3	Pass
Dynamic Frequency Selection	FCC 15.407 (h) RSS-247 Clause 6.3	Pass

## 2. General test information

### 2.1. Description of EUT

EUT* Name	: Wireless Speaker
Model Number	: BOOMBOX 3 Wi-Fi
EUT function description	: Please reference user manual of this device
Power Supply	: AC 100-240V~, 50/60Hz 80W DC 7.2V by Polymer Li-ion built-in battery
Radio Technology	: IEEE 802.11a/n/ac/ax
Operation frequency	: IEEE 802.11a: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11n HT20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11n HT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5670MHz, 5755MHz-5755MHz IEEE 802.11ac HT20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11ac HT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5670MHz, 5755MHz-5755MHz IEEE 802.11ac HT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5775MHz IEEE 802.11ax HT20: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz IEEE 802.11ax HT40: 5190MHz-5230MHz, 5270MHz-5310MHz, 5510MHz-5670MHz, 5755MHz-5755MHz IEEE 802.11ax HT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 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, OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	: IEEE 802.11a: up to 54 Mbps IEEE 802.11n HT20: up to 144.4 Mbps IEEE 802.11n HT40: up to 300 Mbps IEEE 802.11ac VHT20: up to 173.4 Mbps IEEE 802.11ac VHT40: up to 400 Mbps IEEE 802.11ac VHT80: up to 866.6 Mbps IEEE 802.11ax HE20: up to 286.8 Mbps IEEE 802.11ax HE40: up to 573.5 Mbps IEEE 802.11ax HE80: up to 1201 Mbps
Antenna Type	: Antenna 1: FPC antenna, Maximum PK gain: 2.95 dBi Antenna 2: FPC antenna, Maximum PK gain: 3.14 dBi
Sample Type	: Series production
Sample Number	: S22071330-07 for conductive S22071330-08 for radiation

Note 1: EUT is the ab. of equipment under test.

Note 2: Band 5600-5650MHz will be disabled when shipped to Canada.

Note 3: According exploratory explorer test, The 802.11n HT20/n HT40 mode are the same attribute with the 802.11ac VHT20/ac VHT40 mode, so choose the 802.11n HT20/n HT40 mode to test and report.

Antenna information			
	Ant1 gain	Ant2 gain	Directional gain
IEEE 802.11a	2.95	3.14	/
IEEE 802.11n HT20	2.95	3.14	3.05
IEEE 802.11n HT40	2.95	3.14	3.05
IEEE 802.11ac VHT20	2.95	3.14	3.05
IEEE 802.11ac VHT40	2.95	3.14	3.05
IEEE 802.11ac VHT80	2.95	3.14	3.05
IEEE 802.11ax HE20	2.95	3.14	3.05
IEEE 802.11ax HE40	2.95	3.14	3.05
IEEE 802.11ax HE80	2.95	3.14	3.05

Note: This EUT supports STBC, any transmit signals are uncorrelated with each other. So the Directional gain =  $10 \log[10^{G1/10} + 10^{G2/10}]/2$  dBi

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	/	/
112	5560	126	5630	/	/
116	5580	134	5670	/	/
120	5600	/	/	/	/
124	5620	/	/	/	/
128	5640	/	/	/	/
132	5660	/	/	/	/
134	5680	/	/	/	/
140	5700	/	/	/	/
UNII-3					
149	5745	151	5755	155	5725
153	5765	159	5795	/	/
157	5785	/	/	/	/
161	5805	/	/	/	/
165	5825	/	/	/	/



IEEE 802.11ax(HE20)	Operating Mode	Resource Unit	26 Tone(2M)	
	Specific Resource Unit		0	
			1	
			2	
			3	
			4	
			5	
			6	
			7	
			8	
		9		
		Resource Unit	52 Tone(4M)	
	Specific Resource Unit		37	
			38	
		39		
		40		
	Resource Unit	106 Tone(8M)		
Specific Resource Unit		53		
		54		
	Resource Unit	242 Tone(20M)		
	Specific Resource Unit	61		
Operating Mode	Resource Unit	26 Tone(2M)		
IEEE 802.11ax(HE40)	Specific Resource Unit	0	9	
		1	10	
		2	11	
		3	12	
		4	13	
		5	14	
		6	15	
		7	16	
		8	17	
		Resource Unit	52 Tone(4M)	
	Specific Resource Unit		37	41
			38	42
			39	43
			40	44
		Resource Unit	106 Tone(8M)	
	Specific Resource Unit		53	55
			54	56
		Resource Unit	242 Tone(20M)	
	Specific Resource Unit	61	62	
	Resource Unit	484 Tone(40M)		
Specific Resource Unit	65			
Operating Mode	Resource Unit	26 Tone(2M)		
IEEE 802.11ax(HE80)	Specific Resource Unit	0	19	
		1	20	
		2	21	
		3	22	
		4	23	
		5	24	

		6	25
		7	26
		8	27
		9	28
		10	29
		11	30
		12	31
		13	32
		14	33
		15	34
		16	35
		17	36
		18	
	Resource Unit	52 Tone(4M)	
	Specific Resource Unit	37	45
		38	46
		39	47
		40	48
		41	49
		42	50
		43	51
	44	52	
	Resource Unit	106 Tone(8M)	
	Specific Resource Unit	53	57
		54	58
		55	59
		56	60
	Resource Unit	242 Tone(20M)	
	Specific Resource Unit	61	62
		63	64
	Resource Unit	484 Tone(40M)	
	Specific Resource Unit	65	66
	Resource Unit	996 Tone(80M)	
	Specific Resource Unit	67	

## 2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Other
AC cable	Harman	N/A	N/A	Length: 1.85m

## 2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
N/A	N/A	N/A	N/A	N/A

## 2.4. Block diagram of EUT configuration for test



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: 0.5dB (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)
IEEE 802.11a	/	54	Low: CH36	5180
	/	54	Middle: CH40	5200
	/	54	High: CH48	5240
	/	54	Low: CH52	5260
	/	54	Middle: CH56	5280
	/	54	High: CH64	5320
	/	54	Low: CH100	5500
	/	54	Middle: CH116	5580
	/	54	High: CH140	5700
	/	54	Low: CH149	5745
	/	54	Middle: CH157	5785
IEEE 802.11n HT20	/	MCS 15	Low: CH36	5180
	/	MCS 15	Middle: CH40	5200
	/	MCS 15	High: CH48	5240
	/	MCS 15	Low: CH52	5260
	/	MCS 15	Middle: CH56	5280
	/	MCS 15	High: CH64	5320
	/	MCS 15	Low: CH100	5500
	/	MCS 15	Middle: CH116	5580
	/	MCS 15	High: CH140	5700
	/	MCS 15	Low: CH149	5745
	/	MCS 15	Middle: CH157	5785
/	MCS 15	High: CH165	5825	

IEEE 802.11n HT40	/	MCS 15	Low: CH38	5190
	/	MCS 15	Middle: CH46	5230
	/	MCS 15	High: CH54	5270
	/	MCS 15	Low: CH62	5310
	/	MCS 15	Middle: CH102	5510
	/	MCS 15	High: CH110	5550
	/	MCS 15	Low: CH134	5670
	/	MCS 15	Middle: CH151	5755
IEEE 802.11ac HT20	/	MCS 9	Low: CH36	5180
	/	MCS 9	Middle: CH40	5200
	/	MCS 9	High: CH48	5240
	/	MCS 9	Low: CH52	5260
	/	MCS 9	Middle: CH56	5280
	/	MCS 9	High: CH64	5320
	/	MCS 9	Low: CH100	5500
	/	MCS 9	Middle: CH116	5580
	/	MCS 9	High: CH140	5700
	/	MCS 9	Low: CH149	5745
	/	MCS 9	Middle: CH157	5785
IEEE 802.11ac HT40	/	MCS 9	High: CH165	5825
	/	MCS 9	Low: CH38	5190
	/	MCS 9	Middle: CH46	5230
	/	MCS 9	High: CH54	5270
	/	MCS 9	Low: CH62	5310
	/	MCS 9	Middle: CH102	5510
	/	MCS 9	High: CH110	5550
	/	MCS 9	Low: CH134	5670
IEEE 802.11ac HT80	/	MCS 9	Middle: CH151	5755
	/	MCS 9	High: CH159	5795
	/	MCS 9	CH42	5210
	/	MCS 9	CH58	5290
	/	MCS 9	CH106	5530
IEEE 802.11ax HE20	/	MCS 9	CH122	5610
	/	MCS 9	CH155	5775
	SU:/ RU:07	MCS 11	Low: CH36	5180
	SU:/ RU:07	MCS 11	Middle: CH40	5200
	SU:/ RU:07	MCS 11	High: CH48	5240
	SU:/ RU:07	MCS 11	Low: CH52	5260
	SU:/ RU:07	MCS 11	Middle: CH56	5280
	SU:/ RU:07	MCS 11	High: CH64	5320
	SU:/ RU:07	MCS 11	Low: CH100	5500
	SU:/ RU:07	MCS 11	Middle: CH116	5580
	SU:/ RU:07	MCS 11	High: CH140	5700
IEEE 802.11ax HE40	SU:/ RU:07	MCS 11	Low: CH149	5745
	SU:/ RU:07	MCS 11	Middle: CH157	5785
	SU:/ RU:07	MCS 11	High: CH165	5825
	SU:/ RU:07	MCS 11	Low: CH38	5190
IEEE 802.11ax HE40	SU:/ RU:07	MCS 11	Middle: CH46	5230
	SU:/ RU:07	MCS 11	High: CH54	5270
	SU:/ RU:07	MCS 11	Low: CH62	5310

	SU:/ RU:07	MCS 11	Middle: CH102	5510
	SU:/ RU:07	MCS 11	High: CH110	5550
	SU:/ RU:07	MCS 11	Low: CH134	5670
	SU:/ RU:07	MCS 11	Middle: CH151	5755
	SU:/ RU:07	MCS 11	High: CH159	5795
IEEE 802.11ax HE80	SU:/ RU:07	MCS 11	CH42	5210
	SU:/ RU:07	MCS 11	CH58	5290
	SU:/ RU:07	MCS 11	CH106	5530
	SU:/ RU:07	MCS 11	CH122	5610
	SU:/ RU:07	MCS 11	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:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106 kPa

## 2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, 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 × 10 <sup>-8</sup> (Antenna couple method)
	5.5 × 10 <sup>-8</sup> (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 22 GHz)
Uncertainty for radio frequency (RBW<20kHz)	3×10 <sup>-8</sup>
Temperature	0.4℃
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-40GHz)	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	3.32 dB (150 kHz-30 MHz)
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 Test

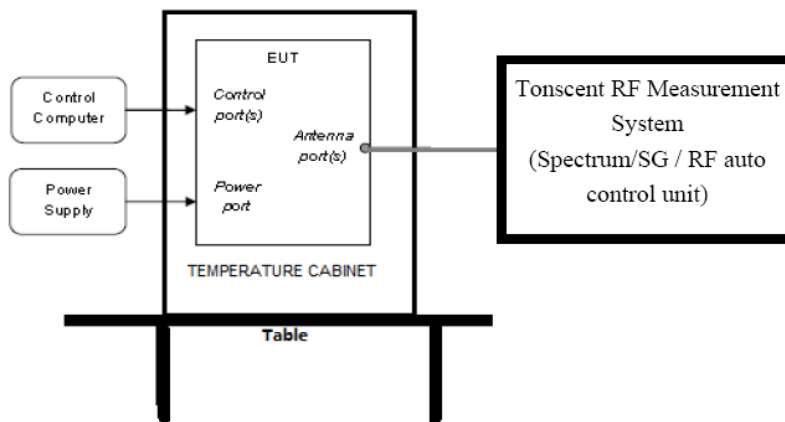
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
<b>☑RF Connected Test (Tonscend RF Measurement System 3#)</b>					
SPECTRUM ANALYZER	R&S	FSU26	200071	Sep. 02, 2021	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	May 18, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY19060405	May 18, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180912	May 18, 2022	1 Year
RF Control Unit	Tonsend	JS0806-2	DDT-ZC01449	May 18, 2022	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	May 26, 2022	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.77.0518	N/A	N/A
<b>☑RF Connected Test (Tonscend RF Measurement System 4#)</b>					
Signal &Spectrum analyzer	R&S	FSV3044	101173	Apr. 13, 2022	1 Year
Wideband Radio Communication tester	R&S	CMW500	120259	May 18, 2022	1 Year
MXG Vector Signal Generator	Agilent	N5182B	MY59100192	May 18, 2022	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Oct. 15, 2021	1 Year
RF Control Unit	Tonsend	JS0806-2	2118060485	Oct. 18, 2021	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	May 26, 2022	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.88.0346	N/A	N/A
<b>☑Radiation 3#chamber</b>					
EMI Test Receiver	R&S	ESU	100472	May 18, 2022	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	May 18, 2022	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 19, 2021	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Aug. 07, 2021	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Jul. 22, 2022	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA 9120D	02468	Nov. 29, 2021	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 06, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Sep. 02, 2021	1 Year
Pre-amplifier	COM-POWER	PAM-840A	461369	Apr. 11, 2022	1 Year
Test software	Audix	E3	V 6.1.1.1	N/A	N/A
<b>☑Power Line Conducted Emissions Test 1#</b>					
Test Receiver	R&S	ESCI	100551	Sep. 02, 2021	1 Year
LISN 1	R&S	ENV216	101109	Sep. 07, 2021	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 07, 2021	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 02, 2021	1 Year

CE Cable 1	HUBSER	N/A	W10.01	Sep. 02, 2021	1 Year
LISN 3	SCHWARZBECK	NSLK 8163	00017	Sep. 02, 2021	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A



## 4. 26dB Bandwidth, 6dB Bandwidth and 99% Bandwidth

### 4.1. Block diagram of test setup



### 4.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5150 - 5250
	26 dB Bandwidth	5250 - 5350
	26 dB Bandwidth	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 5725
	Minimum 500 kHz 6 dB Bandwidth	5725 - 5850

### 4.3. Test Procedure

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

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth: RBW=100 kHz For 26 dB Bandwidth: approximately 1% of the emission bandwidth.
VBW	For 6 dB Bandwidth: VBW=300 kHz For 26 dB Bandwidth: >3 RBW
Trace	Max hold
Sweep	Auto couple

(2) 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 and 6 dB relative to the maximum level measured in the fundamental emission.

## 4.4. Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.023	5171.409	5188.432	---	PASS
	Ant2	5180	17.023	5171.369	5188.392	---	PASS
	Ant1	5200	17.063	5191.329	5208.392	---	PASS
	Ant2	5200	17.063	5191.329	5208.392	---	PASS
	Ant1	5240	16.543	5231.688	5248.232	---	PASS
	Ant2	5240	16.543	5231.688	5248.232	---	PASS
	Ant1	5260	17.023	5251.369	5268.392	---	PASS
	Ant2	5260	16.983	5251.409	5268.392	---	PASS
	Ant1	5280	17.063	5271.329	5288.392	---	PASS
	Ant2	5280	17.063	5271.369	5288.432	---	PASS
	Ant1	5320	17.023	5311.369	5328.392	---	PASS
	Ant2	5320	17.023	5311.369	5328.392	---	PASS
	Ant1	5500	17.023	5491.369	5508.392	---	PASS
	Ant2	5500	17.023	5491.409	5508.432	---	PASS
	Ant1	5580	17.023	5571.409	5588.432	---	PASS
	Ant2	5580	17.023	5571.409	5588.432	---	PASS
	Ant1	5700	17.063	5691.329	5708.392	---	PASS
	Ant2	5700	17.063	5691.369	5708.432	---	PASS
	Ant1	5745	17.023	5736.369	5753.392	---	PASS
	Ant2	5745	17.063	5736.369	5753.432	---	PASS
	Ant1	5785	17.063	5776.329	5793.392	---	PASS
	Ant2	5785	17.063	5776.369	5793.432	---	PASS
	Ant1	5825	17.023	5816.369	5833.392	---	PASS
	Ant2	5825	17.023	5816.369	5833.392	---	PASS
11N20MIMO	Ant1	5180	18.142	5170.889	5189.031	---	PASS
	Ant2	5180	18.142	5171.009	5189.151	---	PASS
	Ant1	5200	18.142	5190.849	5208.991	---	PASS
	Ant2	5200	18.142	5191.009	5209.151	---	PASS
	Ant1	5240	17.782	5231.049	5248.831	---	PASS
	Ant2	5240	17.702	5231.169	5248.871	---	PASS
	Ant1	5260	18.102	5250.889	5268.991	---	PASS
	Ant2	5260	18.102	5251.049	5269.151	---	PASS
	Ant1	5280	18.142	5270.849	5288.991	---	PASS
	Ant2	5280	18.182	5270.969	5289.151	---	PASS
	Ant1	5320	18.142	5310.849	5328.991	---	PASS
	Ant2	5320	18.182	5311.009	5329.191	---	PASS
	Ant1	5500	18.102	5490.889	5508.991	---	PASS
	Ant2	5500	18.102	5491.049	5509.151	---	PASS
	Ant1	5580	18.102	5570.889	5588.991	---	PASS
	Ant2	5580	18.142	5571.009	5589.151	---	PASS
	Ant1	5700	18.142	5690.849	5708.991	---	PASS
	Ant2	5700	18.142	5691.009	5709.151	---	PASS
	Ant1	5745	18.142	5735.849	5753.991	---	PASS
	Ant2	5745	18.102	5736.009	5754.111	---	PASS
	Ant1	5785	18.142	5775.849	5793.991	---	PASS
	Ant2	5785	18.102	5776.009	5794.111	---	PASS
	Ant1	5825	18.142	5815.849	5833.991	---	PASS

	Ant2	5825	18.142	5816.009	5834.151	---	PASS
11N40MIMO	Ant1	5190	35.724	5172.178	5207.902	---	PASS
	Ant2	5190	35.804	5172.098	5207.902	---	PASS
	Ant1	5230	35.804	5212.098	5247.902	---	PASS
	Ant2	5230	35.804	5212.098	5247.902	---	PASS
	Ant1	5270	35.804	5252.098	5287.902	---	PASS
	Ant2	5270	35.804	5252.098	5287.902	---	PASS
	Ant1	5310	35.804	5292.098	5327.902	---	PASS
	Ant2	5310	35.804	5292.178	5327.982	---	PASS
	Ant1	5510	35.804	5492.098	5527.902	---	PASS
	Ant2	5510	35.724	5492.178	5527.902	---	PASS
	Ant1	5550	35.804	5532.098	5567.902	---	PASS
	Ant2	5550	35.804	5532.098	5567.902	---	PASS
	Ant1	5670	35.804	5652.098	5687.902	---	PASS
	Ant2	5670	35.804	5652.098	5687.902	---	PASS
	Ant1	5755	35.884	5737.018	5772.902	---	PASS
	Ant2	5755	35.804	5737.098	5772.902	---	PASS
	Ant1	5795	35.804	5777.098	5812.902	---	PASS
	Ant2	5795	35.804	5777.098	5812.902	---	PASS
11AC80MIMO	Ant1	5210	75.764	5172.118	5247.882	---	PASS
	Ant2	5210	75.764	5172.118	5247.882	---	PASS
	Ant1	5290	75.764	5252.118	5327.882	---	PASS
	Ant2	5290	75.764	5252.118	5327.882	---	PASS
	Ant1	5530	75.604	5492.278	5567.882	---	PASS
	Ant2	5530	75.764	5492.118	5567.882	---	PASS
	Ant1	5610	75.924	5572.118	5648.042	---	PASS
	Ant2	5610	75.764	5572.118	5647.882	---	PASS
	Ant1	5775	75.764	5737.118	5812.882	---	PASS
	Ant2	5775	75.764	5737.118	5812.882	---	PASS
11AX20SU	Ant1	5180	19.381	5170.330	5189.710	---	PASS
	Ant2	5180	19.301	5170.330	5189.630	---	PASS
	Ant1	5200	19.261	5190.370	5209.630	---	PASS
	Ant2	5200	19.341	5190.290	5209.630	---	PASS
	Ant1	5240	18.981	5230.490	5249.471	---	PASS
	Ant2	5240	18.941	5230.529	5249.471	---	PASS
	Ant1	5260	19.301	5250.370	5269.670	---	PASS
	Ant2	5260	19.301	5250.330	5269.630	---	PASS
	Ant1	5280	19.301	5270.330	5289.630	---	PASS
	Ant2	5280	19.341	5270.290	5289.630	---	PASS
	Ant1	5320	19.301	5310.370	5329.670	---	PASS
	Ant2	5320	19.301	5310.330	5329.630	---	PASS
	Ant1	5500	19.301	5490.370	5509.670	---	PASS
	Ant2	5500	19.301	5490.330	5509.630	---	PASS
	Ant1	5580	19.301	5570.370	5589.670	---	PASS
	Ant2	5580	19.301	5570.330	5589.630	---	PASS
	Ant1	5700	19.301	5690.330	5709.630	---	PASS
	Ant2	5700	19.301	5690.330	5709.630	---	PASS
	Ant1	5745	19.301	5735.330	5754.630	---	PASS
	Ant2	5745	19.261	5735.330	5754.590	---	PASS
	Ant1	5785	19.341	5775.330	5794.670	---	PASS
	Ant2	5785	19.301	5775.290	5794.590	---	PASS

	Ant1	5825	19.301	5815.330	5834.630	---	PASS
	Ant2	5825	19.301	5815.330	5834.630	---	PASS
11AX40SU	Ant1	5190	37.802	5171.139	5208.941	---	PASS
	Ant2	5190	37.802	5171.059	5208.861	---	PASS
	Ant1	5230	37.722	5211.139	5248.861	---	PASS
	Ant2	5230	37.882	5211.059	5248.941	---	PASS
	Ant1	5270	37.882	5251.059	5288.941	---	PASS
	Ant2	5270	37.802	5251.059	5288.861	---	PASS
	Ant1	5310	37.802	5291.059	5328.861	---	PASS
	Ant2	5310	37.722	5291.139	5328.861	---	PASS
	Ant1	5510	37.802	5491.059	5528.861	---	PASS
	Ant2	5510	37.722	5491.139	5528.861	---	PASS
	Ant1	5550	37.802	5531.059	5568.861	---	PASS
	Ant2	5550	37.802	5531.059	5568.861	---	PASS
	Ant1	5670	37.802	5651.059	5688.861	---	PASS
	Ant2	5670	37.882	5651.059	5688.941	---	PASS
	Ant1	5755	37.802	5736.059	5773.861	---	PASS
	Ant2	5755	37.802	5736.059	5773.861	---	PASS
	Ant1	5795	37.802	5776.059	5813.861	---	PASS
	Ant2	5795	37.882	5776.059	5813.941	---	PASS
11AX80SU	Ant1	5210	77.363	5171.319	5248.681	---	PASS
	Ant2	5210	77.363	5171.319	5248.681	---	PASS
	Ant1	5290	77.522	5251.159	5328.681	---	PASS
	Ant2	5290	77.522	5251.159	5328.681	---	PASS
	Ant1	5530	77.363	5491.319	5568.681	---	PASS
	Ant2	5530	77.522	5491.159	5568.681	---	PASS
	Ant1	5610	77.363	5571.319	5648.681	---	PASS
	Ant2	5610	77.522	5571.159	5648.681	---	PASS
Ant1	5775	77.522	5736.159	5813.681	---	PASS	
Ant2	5775	77.522	5736.159	5813.681	---	PASS	

Note: according exploratory explorer test, for 802.11ax Mode, Specific Resource Unit have no distinct influence on 99% OBW, so for 99% OBW, the final test was only performed with EUT working in 802.11ax SU mode.

Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	23.88	5167.64	5191.52	---	PASS
	Ant2	5180	23.68	5168.00	5191.68	---	PASS
	Ant1	5200	23.64	5187.84	5211.48	---	PASS
	Ant2	5200	23.76	5187.96	5211.72	---	PASS
	Ant1	5240	19.64	5230.20	5249.84	---	PASS
	Ant2	5240	19.92	5230.04	5249.96	---	PASS
	Ant1	5260	23.12	5248.20	5271.32	---	PASS
	Ant2	5260	23.16	5248.20	5271.36	---	PASS
	Ant1	5280	24.24	5267.84	5292.08	---	PASS
	Ant2	5280	23.28	5268.20	5291.48	---	PASS
	Ant1	5320	23.24	5308.12	5331.36	---	PASS
	Ant2	5320	23.80	5307.92	5331.72	---	PASS
	Ant1	5500	23.72	5487.92	5511.64	---	PASS

	Ant2	5500	23.52	5488.00	5511.52	---	PASS
	Ant1	5580	24.24	5567.84	5592.08	---	PASS
	Ant2	5580	24.60	5567.28	5591.88	---	PASS
	Ant1	5700	23.76	5687.88	5711.64	---	PASS
	Ant2	5700	23.32	5688.12	5711.44	---	PASS
	Ant1	5745	23.52	5732.96	5756.48	---	PASS
	Ant2	5745	24.20	5732.84	5757.04	---	PASS
	Ant1	5785	24.04	5772.68	5796.72	---	PASS
	Ant2	5785	24.52	5772.48	5797.00	---	PASS
	Ant1	5825	24.28	5812.84	5837.12	---	PASS
11N20MIMO	Ant2	5825	23.28	5813.04	5836.32	---	PASS
	Ant1	5180	25.56	5167.40	5192.96	---	PASS
	Ant2	5180	25.08	5167.92	5193.00	---	PASS
	Ant1	5200	25.80	5187.32	5213.12	---	PASS
	Ant2	5200	26.00	5186.92	5212.92	---	PASS
	Ant1	5240	20.64	5229.72	5250.36	---	PASS
	Ant2	5240	20.32	5229.84	5250.16	---	PASS
	Ant1	5260	25.60	5247.44	5273.04	---	PASS
	Ant2	5260	25.96	5247.48	5273.44	---	PASS
	Ant1	5280	25.52	5267.44	5292.96	---	PASS
	Ant2	5280	25.72	5267.24	5292.96	---	PASS
	Ant1	5320	25.84	5307.40	5333.24	---	PASS
	Ant2	5320	25.36	5307.76	5333.12	---	PASS
	Ant1	5500	25.28	5487.44	5512.72	---	PASS
	Ant2	5500	25.56	5487.80	5513.36	---	PASS
	Ant1	5580	25.64	5567.28	5592.92	---	PASS
	Ant2	5580	26.76	5566.40	5593.16	---	PASS
	Ant1	5700	25.36	5687.48	5712.84	---	PASS
	Ant2	5700	26.28	5687.12	5713.40	---	PASS
	Ant1	5745	25.76	5732.16	5757.92	---	PASS
	Ant2	5745	25.52	5732.88	5758.40	---	PASS
	Ant1	5785	26.00	5772.12	5798.12	---	PASS
	Ant2	5785	25.96	5772.12	5798.08	---	PASS
	Ant1	5825	25.92	5812.24	5838.16	---	PASS
Ant2	5825	25.44	5812.72	5838.16	---	PASS	
11N40MIMO	Ant1	5190	39.84	5170.16	5210.00	---	PASS
	Ant2	5190	40.32	5170.00	5210.32	---	PASS
	Ant1	5230	40.32	5210.00	5250.32	---	PASS
	Ant2	5230	40.32	5209.92	5250.24	---	PASS
	Ant1	5270	40.16	5250.08	5290.24	---	PASS
	Ant2	5270	40.16	5250.00	5290.16	---	PASS
	Ant1	5310	40.16	5290.00	5330.16	---	PASS
	Ant2	5310	40.48	5289.76	5330.24	---	PASS
	Ant1	5510	40.08	5490.00	5530.08	---	PASS
	Ant2	5510	40.32	5489.92	5530.24	---	PASS
	Ant1	5550	40.24	5529.84	5570.08	---	PASS
	Ant2	5550	40.24	5529.84	5570.08	---	PASS
	Ant1	5670	40.48	5649.76	5690.24	---	PASS
	Ant2	5670	40.24	5649.92	5690.16	---	PASS
	Ant1	5755	40.48	5734.76	5775.24	---	PASS
	Ant2	5755	40.24	5734.92	5775.16	---	PASS

	Ant1	5795	40.48	5774.76	5815.24	---	PASS
	Ant2	5795	40.40	5774.84	5815.24	---	PASS
11AC80MIMO	Ant1	5210	80.80	5169.68	5250.48	---	PASS
	Ant2	5210	80.64	5169.68	5250.32	---	PASS
	Ant1	5290	80.80	5249.68	5330.48	---	PASS
	Ant2	5290	80.80	5249.68	5330.48	---	PASS
	Ant1	5530	80.80	5489.68	5570.48	---	PASS
	Ant2	5530	80.80	5489.68	5570.48	---	PASS
	Ant1	5610	80.80	5569.68	5650.48	---	PASS
	Ant2	5610	80.80	5569.68	5650.48	---	PASS
	Ant1	5775	80.80	5734.68	5815.48	---	PASS
	Ant2	5775	81.12	5734.52	5815.64	---	PASS
11AX20SU	Ant1	5180	26.04	5166.96	5193.00	---	PASS
	Ant2	5180	25.56	5167.40	5192.96	---	PASS
	Ant1	5200	25.36	5187.12	5212.48	---	PASS
	Ant2	5200	27.68	5186.60	5214.28	---	PASS
	Ant1	5240	20.12	5229.96	5250.08	---	PASS
	Ant2	5240	20.12	5229.96	5250.08	---	PASS
	Ant1	5260	25.44	5247.40	5272.84	---	PASS
	Ant2	5260	25.72	5248.20	5273.92	---	PASS
	Ant1	5280	26.68	5268.12	5294.80	---	PASS
	Ant2	5280	23.76	5267.88	5291.64	---	PASS
	Ant1	5320	24.76	5307.36	5332.12	---	PASS
	Ant2	5320	25.40	5307.48	5332.88	---	PASS
	Ant1	5500	26.48	5486.56	5513.04	---	PASS
	Ant2	5500	24.20	5487.52	5511.72	---	PASS
	Ant1	5580	25.40	5567.64	5593.04	---	PASS
	Ant2	5580	24.60	5568.48	5593.08	---	PASS
	Ant1	5700	27.04	5686.12	5713.16	---	PASS
	Ant2	5700	23.96	5687.76	5711.72	---	PASS
	Ant1	5745	27.68	5730.60	5758.28	---	PASS
	Ant2	5745	26.80	5731.36	5758.16	---	PASS
	Ant1	5785	26.60	5770.56	5797.16	---	PASS
	Ant2	5785	24.08	5772.76	5796.84	---	PASS
	Ant1	5825	25.56	5812.36	5837.92	---	PASS
	Ant2	5825	26.36	5812.40	5838.76	---	PASS
11AX40SU	Ant1	5190	39.76	5170.16	5209.92	---	PASS
	Ant2	5190	39.76	5170.16	5209.92	---	PASS
	Ant1	5230	39.84	5210.08	5249.92	---	PASS
	Ant2	5230	39.84	5210.08	5249.92	---	PASS
	Ant1	5270	39.92	5250.08	5290.00	---	PASS
	Ant2	5270	39.76	5250.16	5289.92	---	PASS
	Ant1	5310	39.92	5290.00	5329.92	---	PASS
	Ant2	5310	39.84	5290.08	5329.92	---	PASS
	Ant1	5510	39.84	5490.08	5529.92	---	PASS
	Ant2	5510	39.92	5490.08	5530.00	---	PASS
	Ant1	5550	39.84	5530.08	5569.92	---	PASS
	Ant2	5550	39.92	5530.08	5570.00	---	PASS
	Ant1	5670	39.84	5650.08	5689.92	---	PASS
	Ant2	5670	39.84	5650.08	5689.92	---	PASS
Ant1	5755	39.84	5735.08	5774.92	---	PASS	

	Ant2	5755	39.76	5735.16	5774.92	---	PASS
	Ant1	5795	39.84	5775.08	5814.92	---	PASS
	Ant2	5795	39.84	5775.08	5814.92	---	PASS
11AX80SU	Ant1	5210	80.80	5169.68	5250.48	---	PASS
	Ant2	5210	80.64	5169.68	5250.32	---	PASS
	Ant1	5290	80.80	5249.68	5330.48	---	PASS
	Ant2	5290	80.80	5249.52	5330.32	---	PASS
	Ant1	5530	80.96	5489.52	5570.48	---	PASS
	Ant2	5530	80.80	5489.68	5570.48	---	PASS
	Ant1	5610	80.80	5569.68	5650.48	---	PASS
	Ant2	5610	80.80	5569.68	5650.48	---	PASS
	Ant1	5775	80.96	5734.52	5815.48	---	PASS
	Ant2	5775	80.64	5734.68	5815.32	---	PASS

Note: according exploratory explorer test, for 802.11ax Mode, Specific Resource Unit have no distinct influence on 26db EBW, so for 26db EBW, the final test was only performed with EUT working in 802.11ax SU mode.

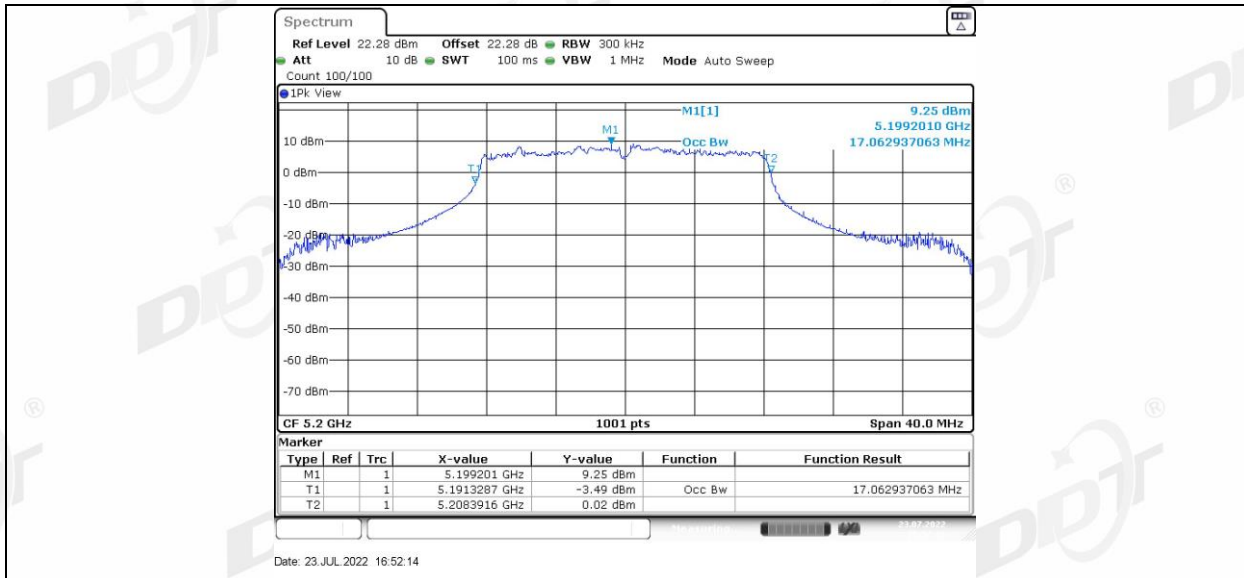
Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.44	5736.72	5753.16	0.5	PASS
	Ant2	5745	16.32	5736.84	5753.16	0.5	PASS
	Ant1	5785	16.40	5776.76	5793.16	0.5	PASS
	Ant2	5785	16.40	5776.76	5793.16	0.5	PASS
	Ant1	5825	16.40	5816.76	5833.16	0.5	PASS
	Ant2	5825	16.40	5816.76	5833.16	0.5	PASS
11N20MIMO	Ant1	5745	17.16	5736.16	5753.32	0.5	PASS
	Ant2	5745	17.64	5736.16	5753.80	0.5	PASS
	Ant1	5785	17.32	5776.48	5793.80	0.5	PASS
	Ant2	5785	17.60	5776.16	5793.76	0.5	PASS
	Ant1	5825	16.88	5816.56	5833.44	0.5	PASS
	Ant2	5825	17.60	5816.20	5833.80	0.5	PASS
11N40MIMO	Ant1	5755	33.84	5738.68	5772.52	0.5	PASS
	Ant2	5755	35.12	5737.40	5772.52	0.5	PASS
	Ant1	5795	35.12	5777.40	5812.52	0.5	PASS
	Ant2	5795	35.12	5777.40	5812.52	0.5	PASS
11AC80MIMO	Ant1	5775	75.68	5736.92	5812.60	0.5	PASS
	Ant2	5775	76.32	5736.76	5813.08	0.5	PASS
11AX20SU	Ant1	5745	19.08	5735.44	5754.52	0.5	PASS
	Ant2	5745	19.08	5735.44	5754.52	0.5	PASS
	Ant1	5785	19.08	5775.44	5794.52	0.5	PASS
	Ant2	5785	19.12	5775.40	5794.52	0.5	PASS
	Ant1	5825	19.08	5815.44	5834.52	0.5	PASS
	Ant2	5825	19.12	5815.40	5834.52	0.5	PASS
11AX40SU	Ant1	5755	38.08	5735.88	5773.96	0.5	PASS
	Ant2	5755	38.16	5735.88	5774.04	0.5	PASS
	Ant1	5795	38.16	5775.88	5814.04	0.5	PASS
	Ant2	5795	38.00	5775.88	5813.88	0.5	PASS
11AX80SU	Ant1	5775	77.92	5736.12	5814.04	0.5	PASS
	Ant2	5775	78.08	5735.80	5813.88	0.5	PASS



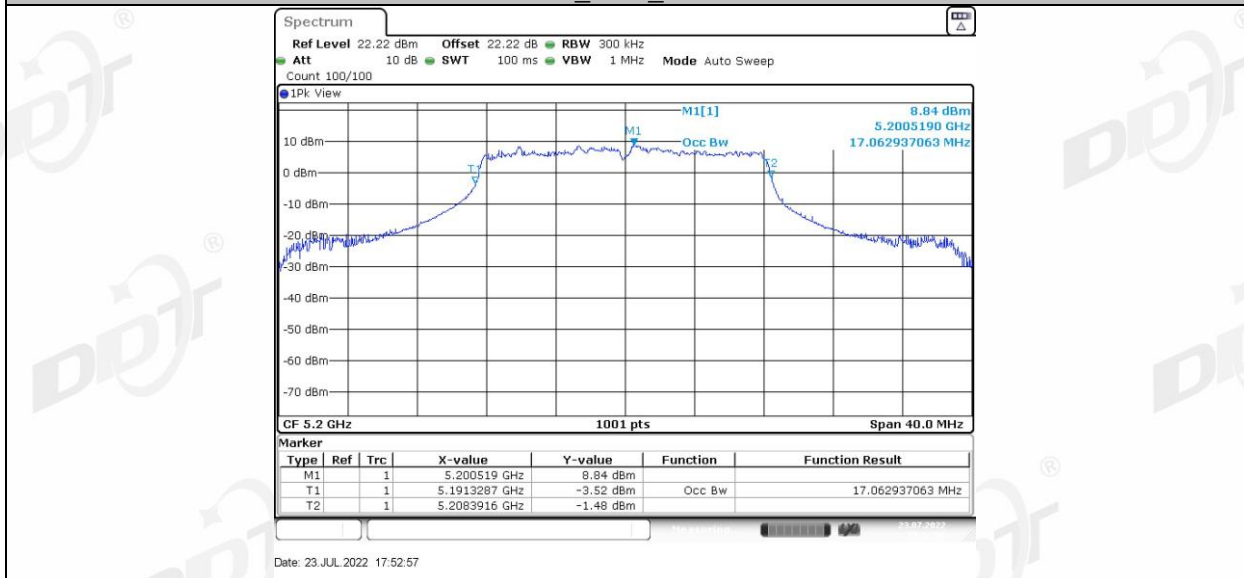
### 4.5. Original test data

99% OBW:

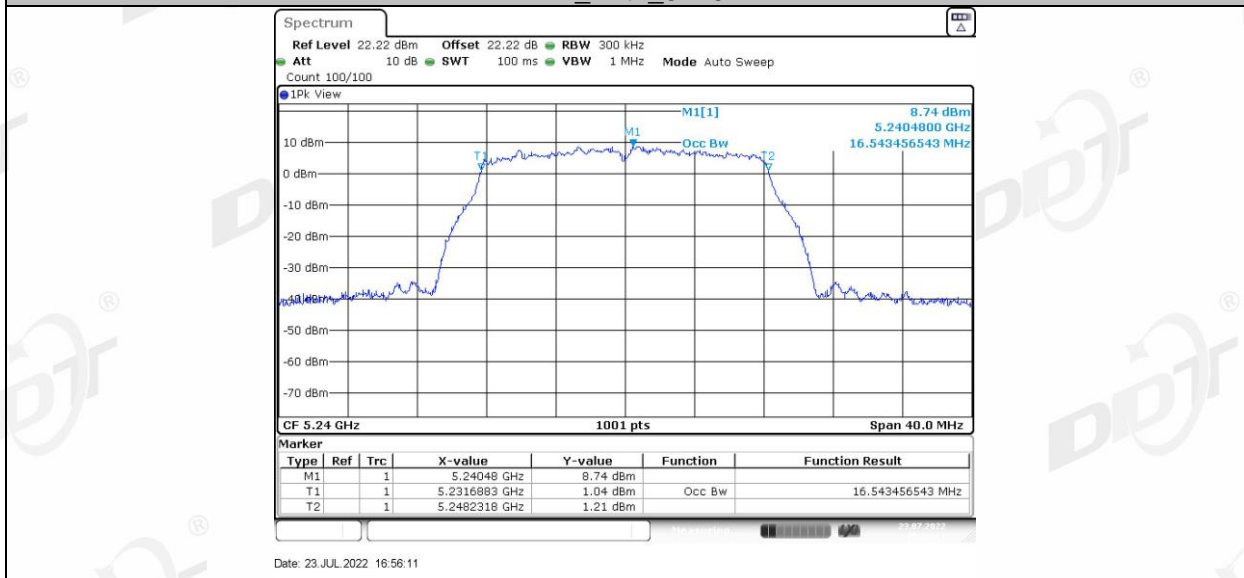




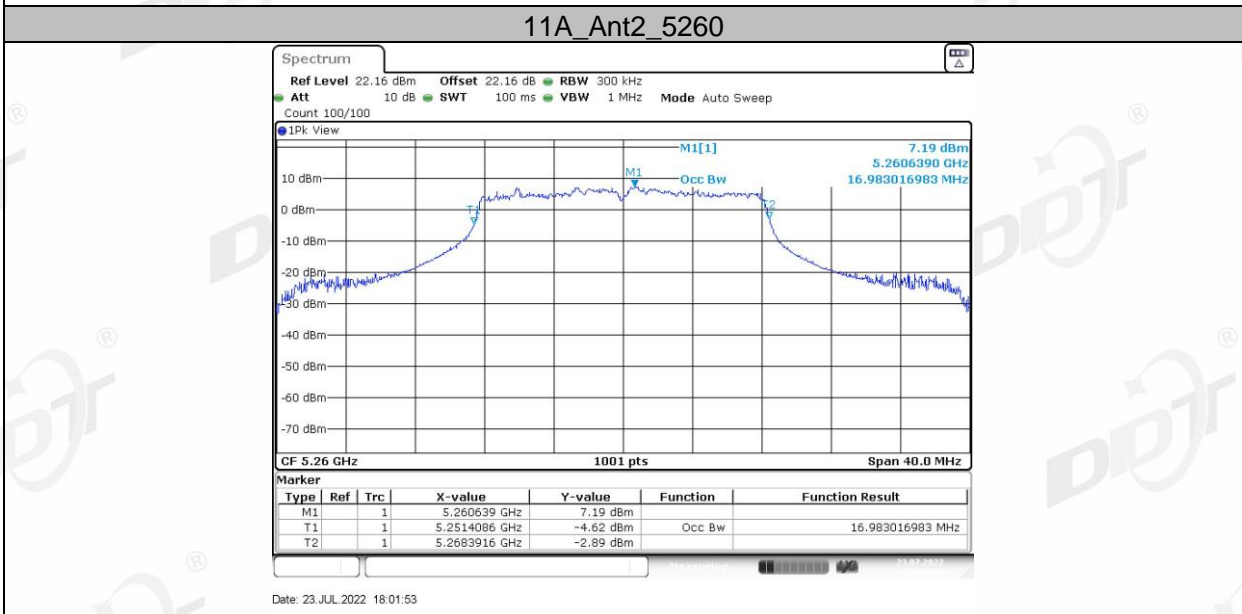
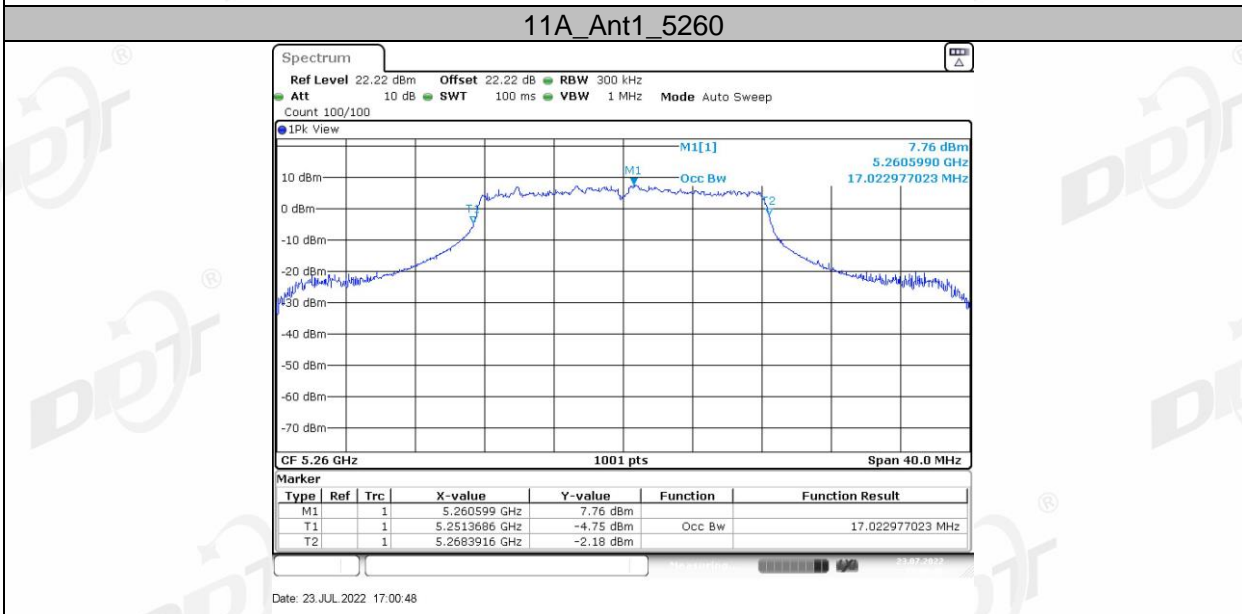
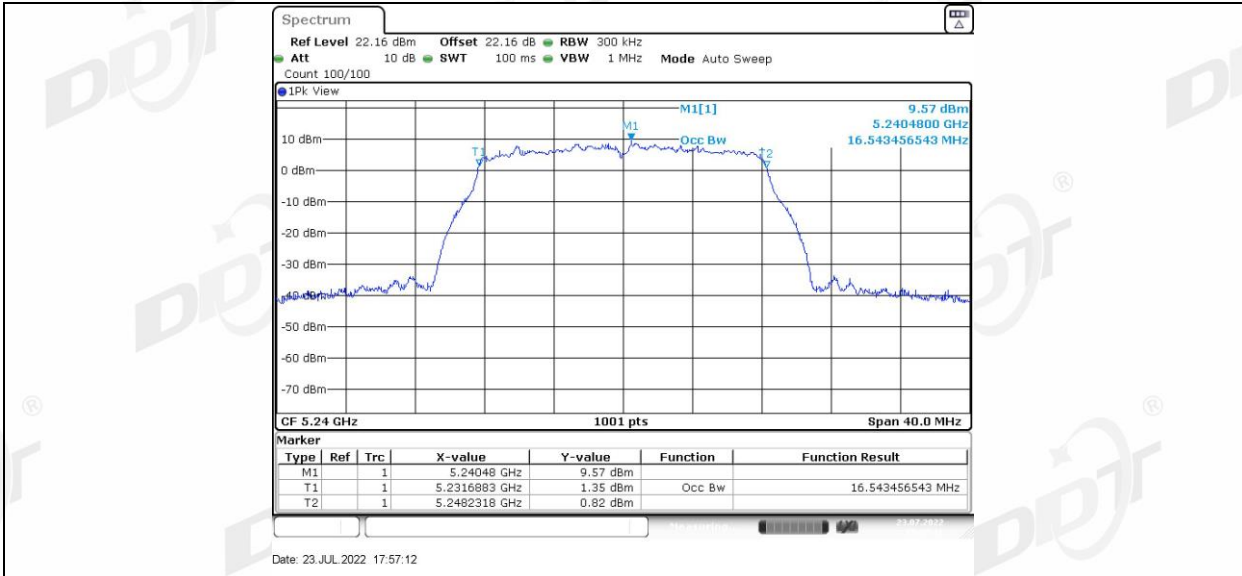
11A\_Ant2\_5200

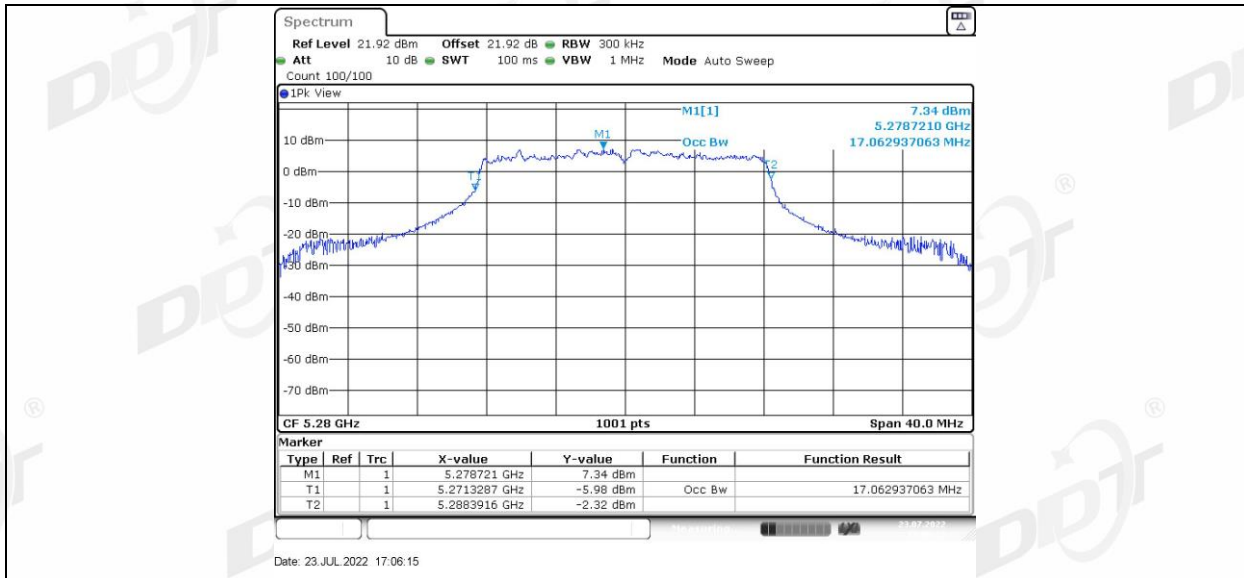


11A\_Ant1\_5240

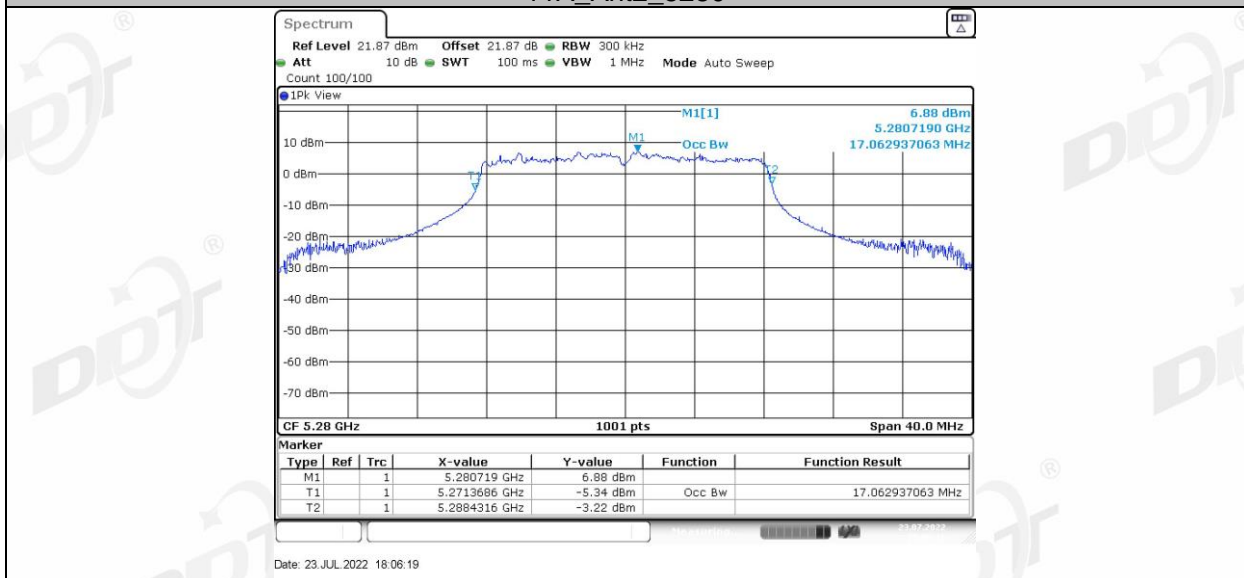


11A\_Ant2\_5240

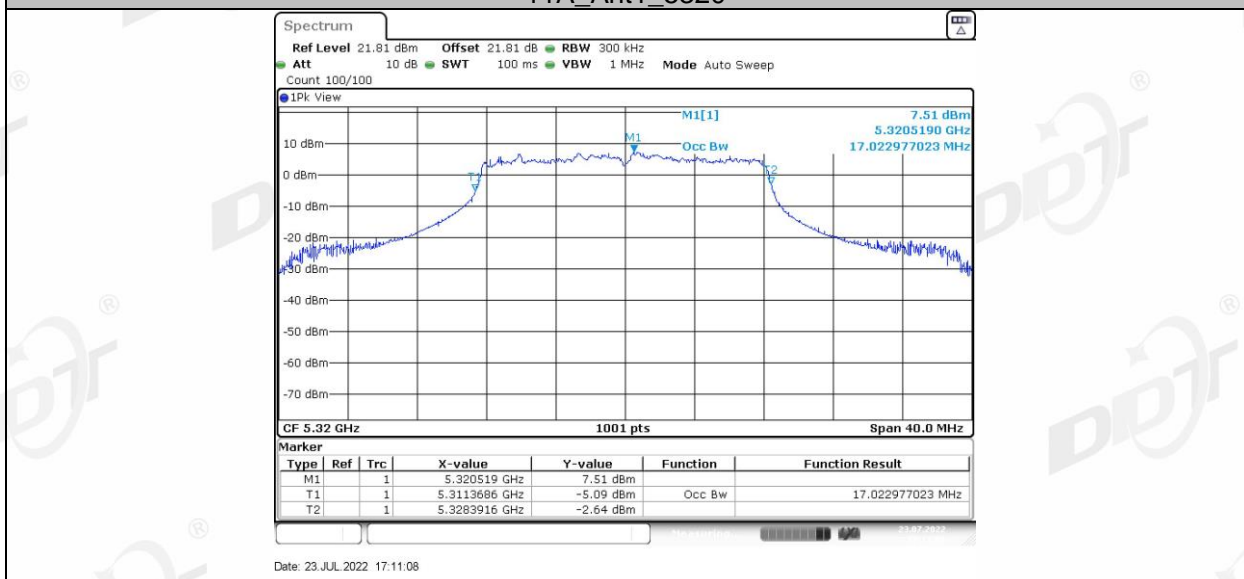




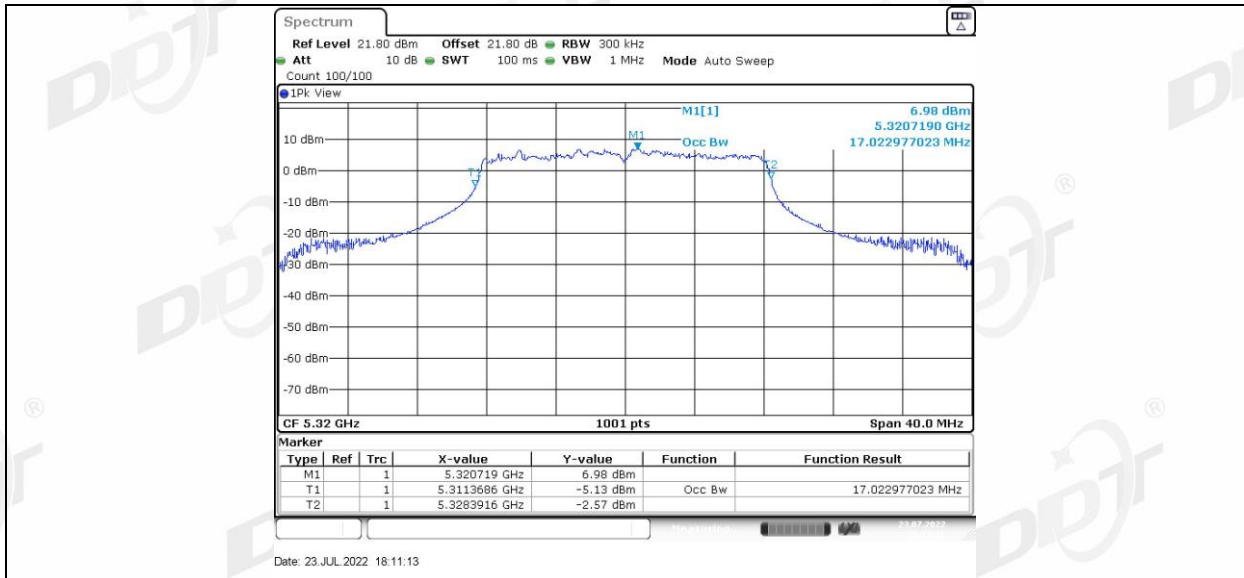
11A\_Ant2\_5280



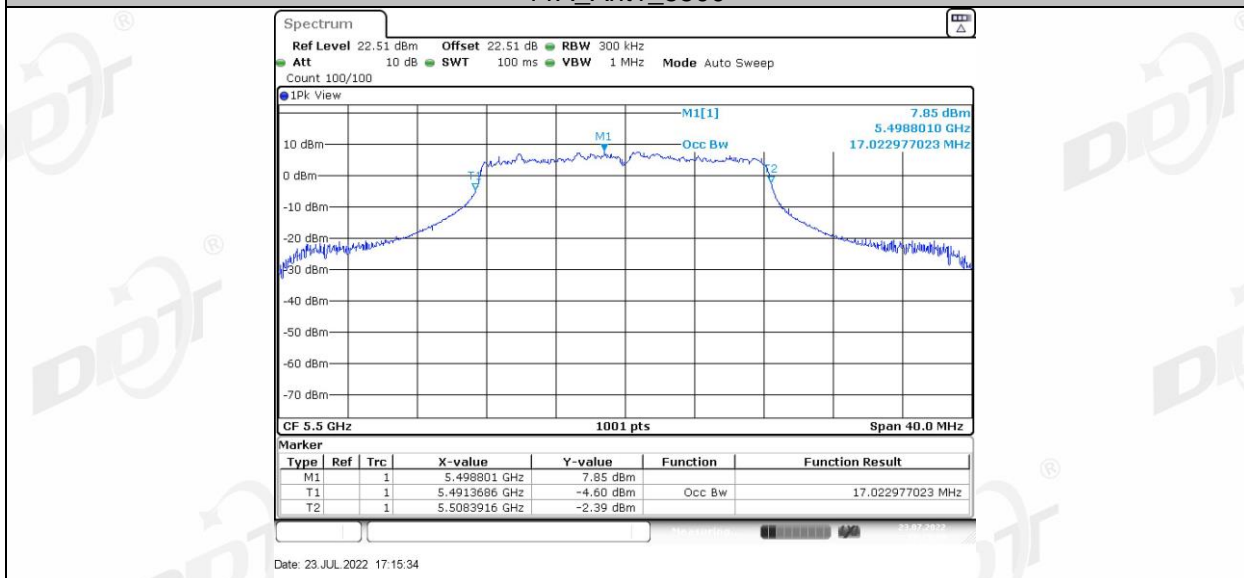
11A\_Ant1\_5320



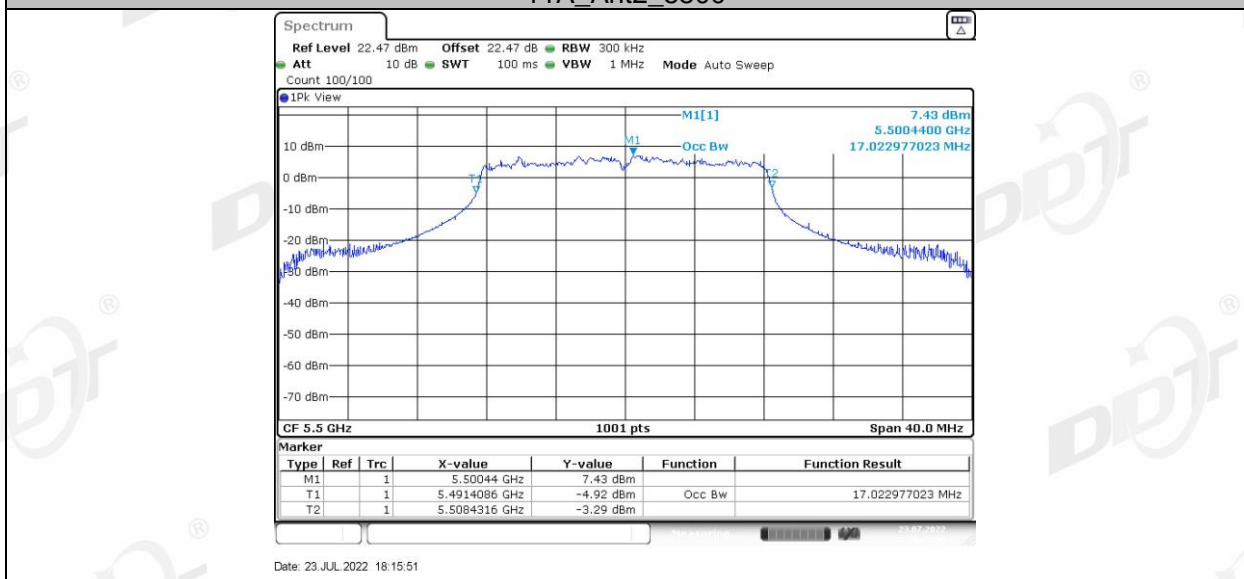
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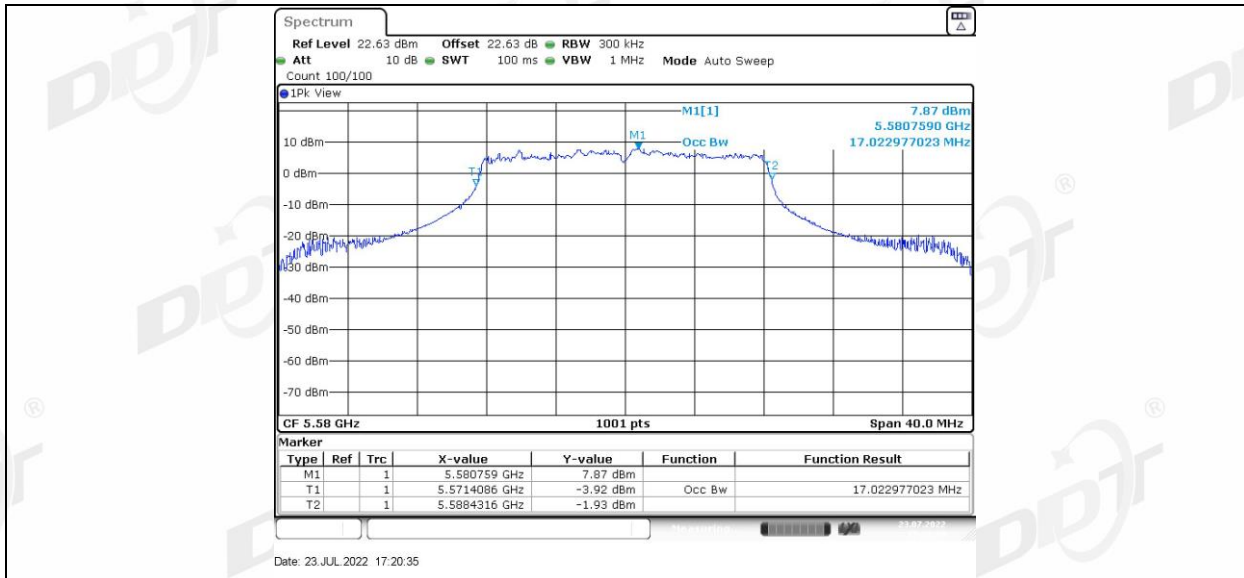
11A\_Ant1\_5500



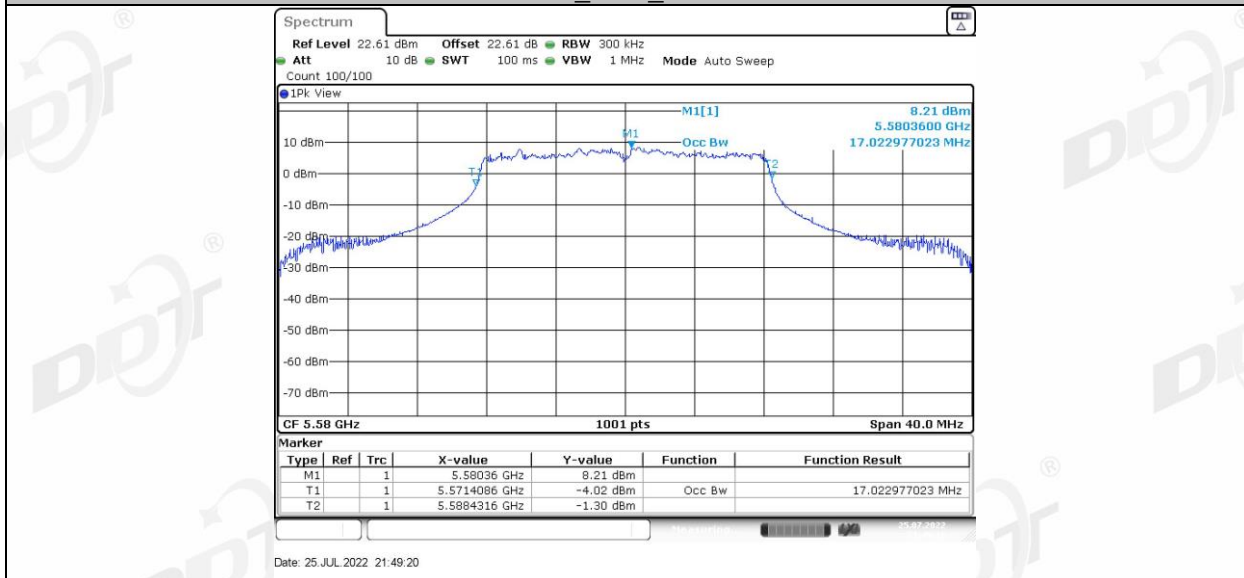
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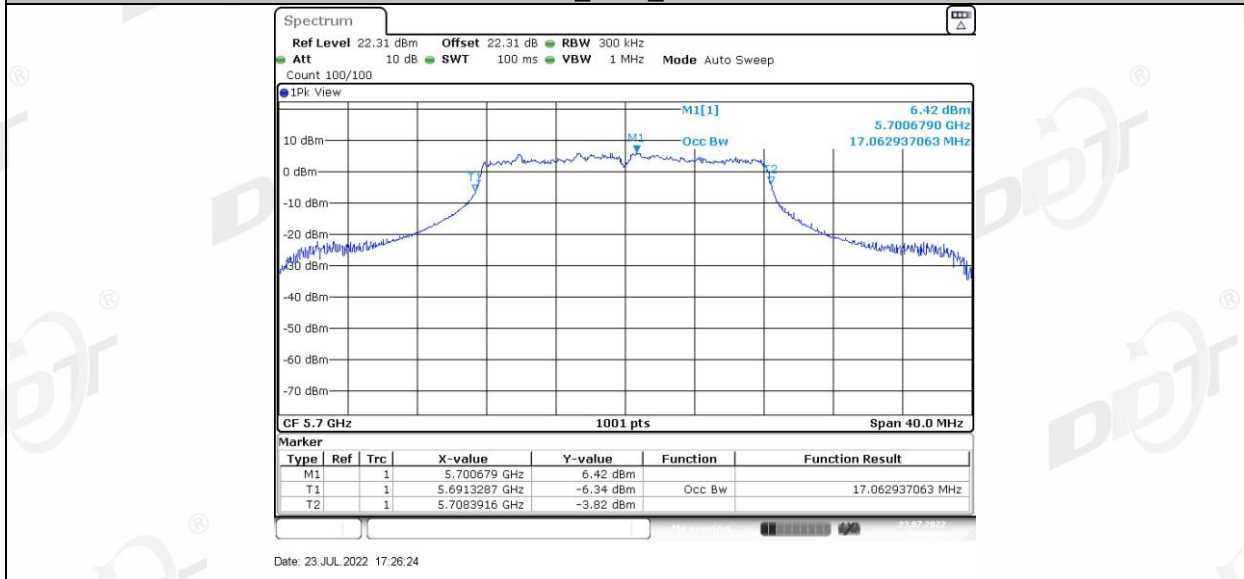
11A\_Ant1\_5580



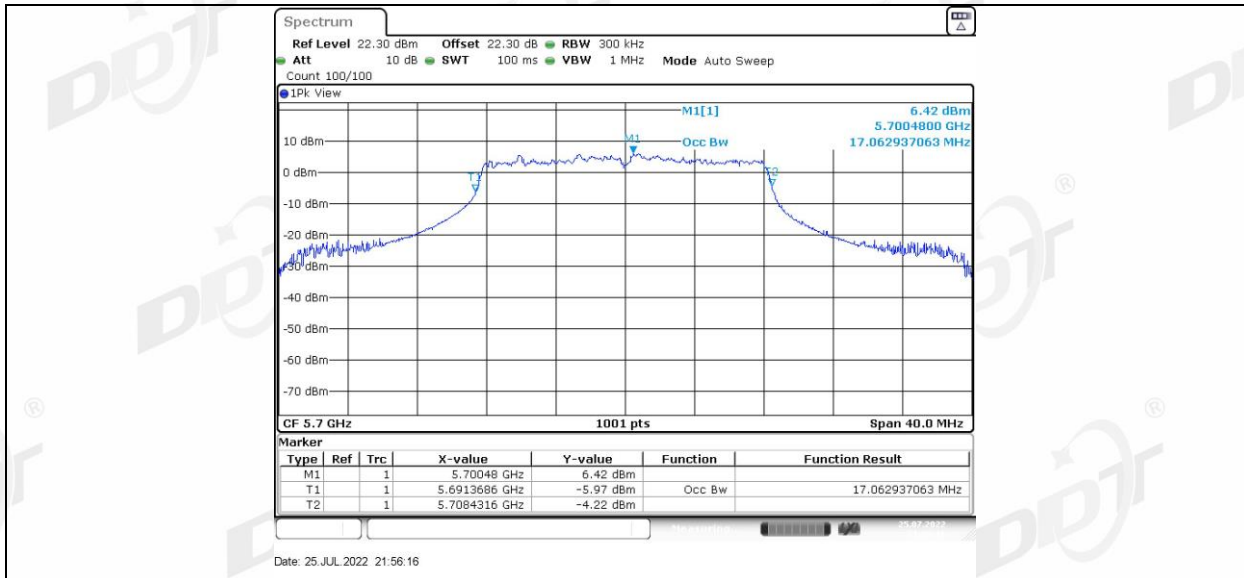
11A\_Ant2\_5580



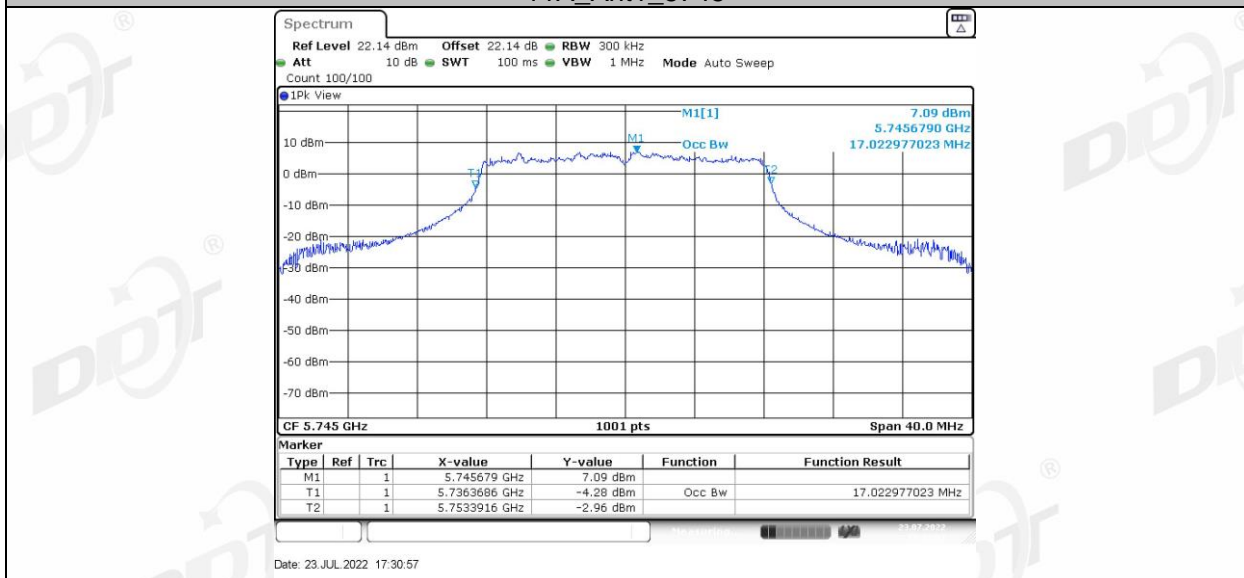
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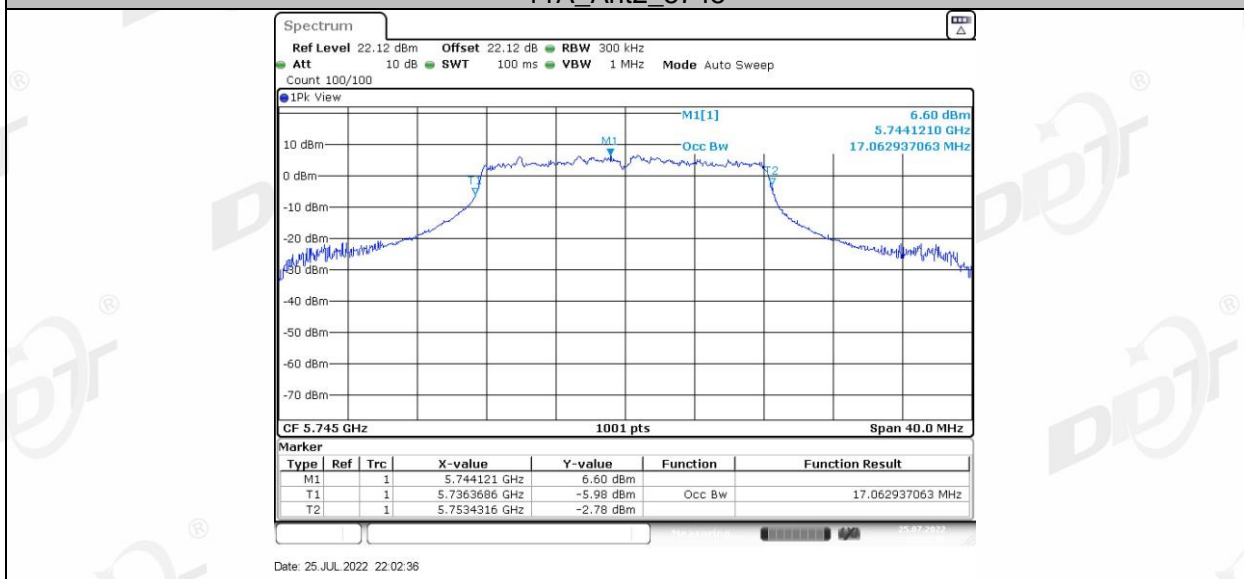
11A\_Ant2\_5700



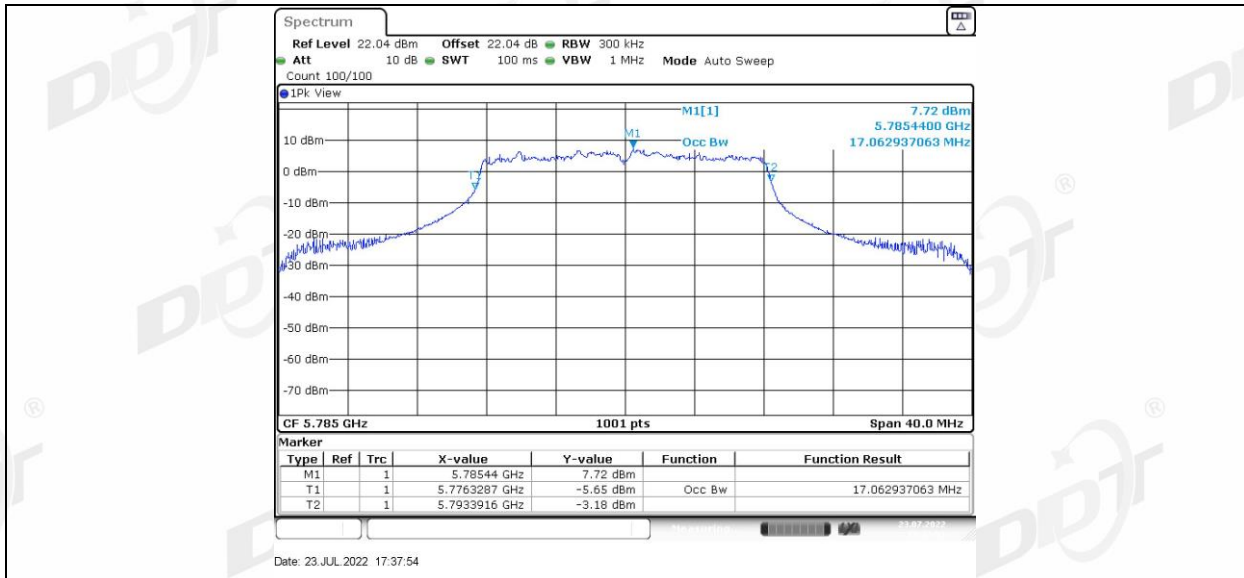
11A\_Ant1\_5745



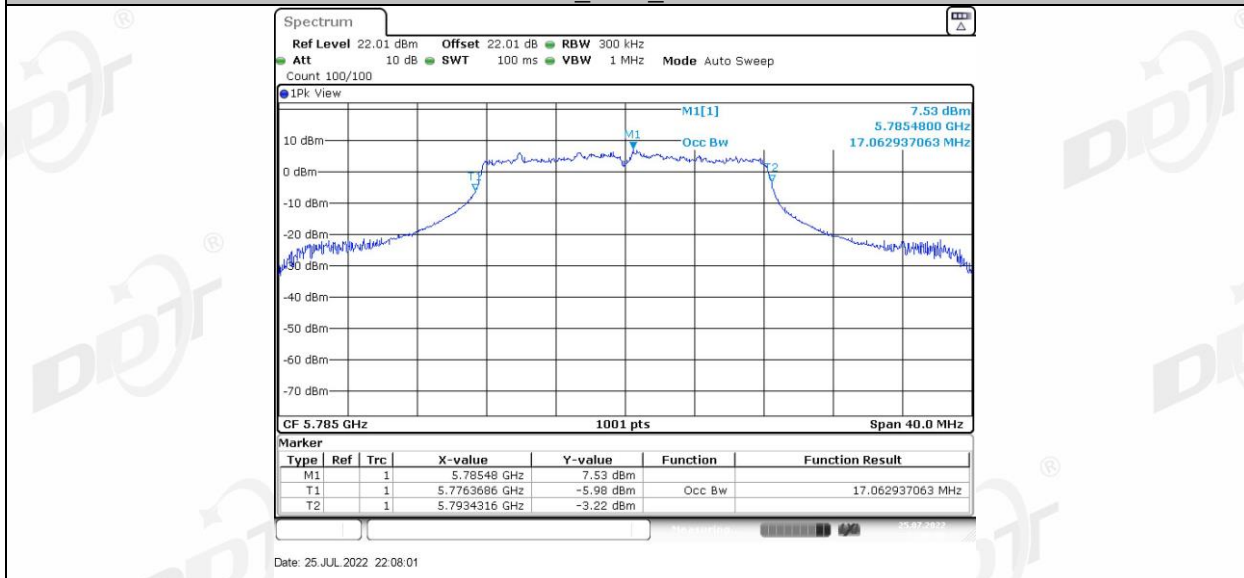
11A\_Ant2\_5745



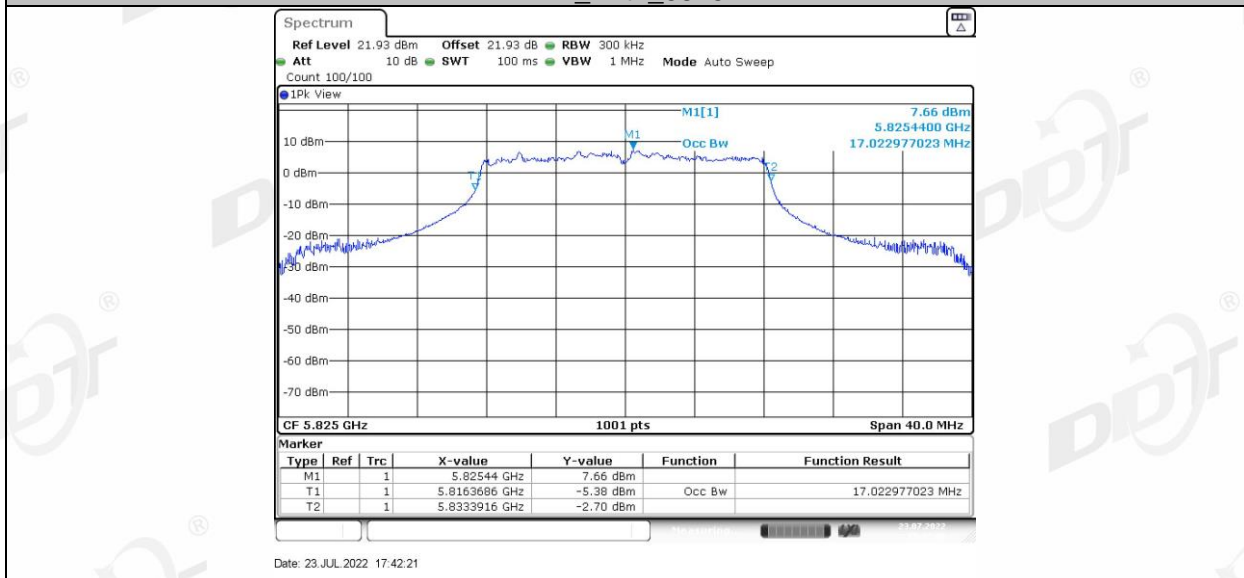
11A\_Ant1\_5785



11A\_Ant2\_5785

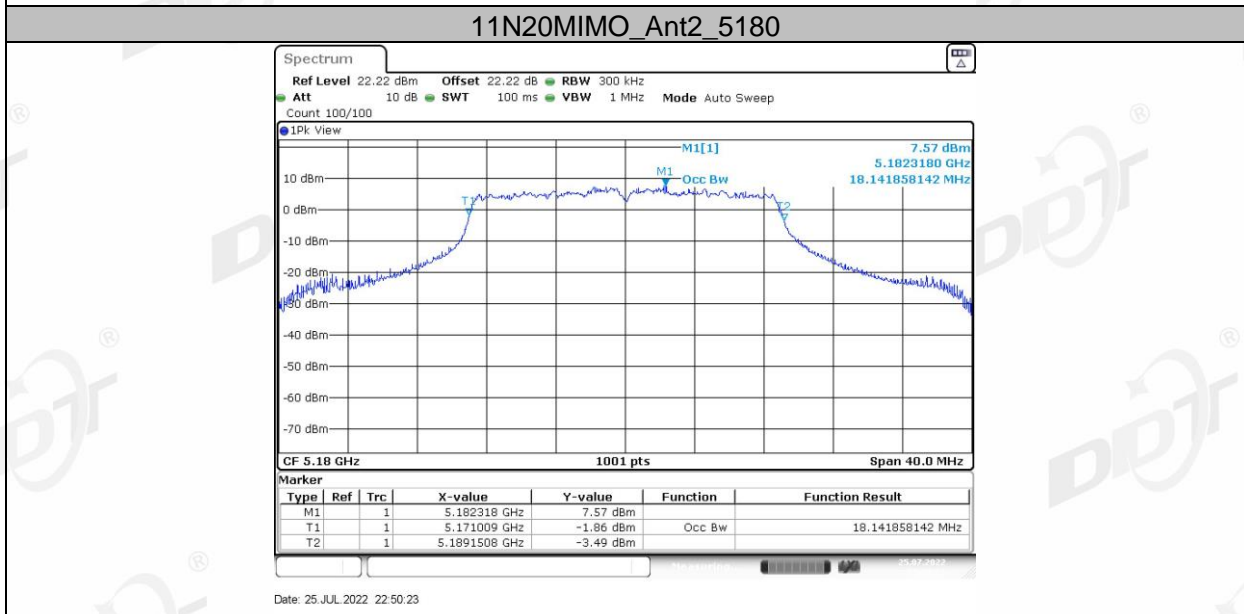
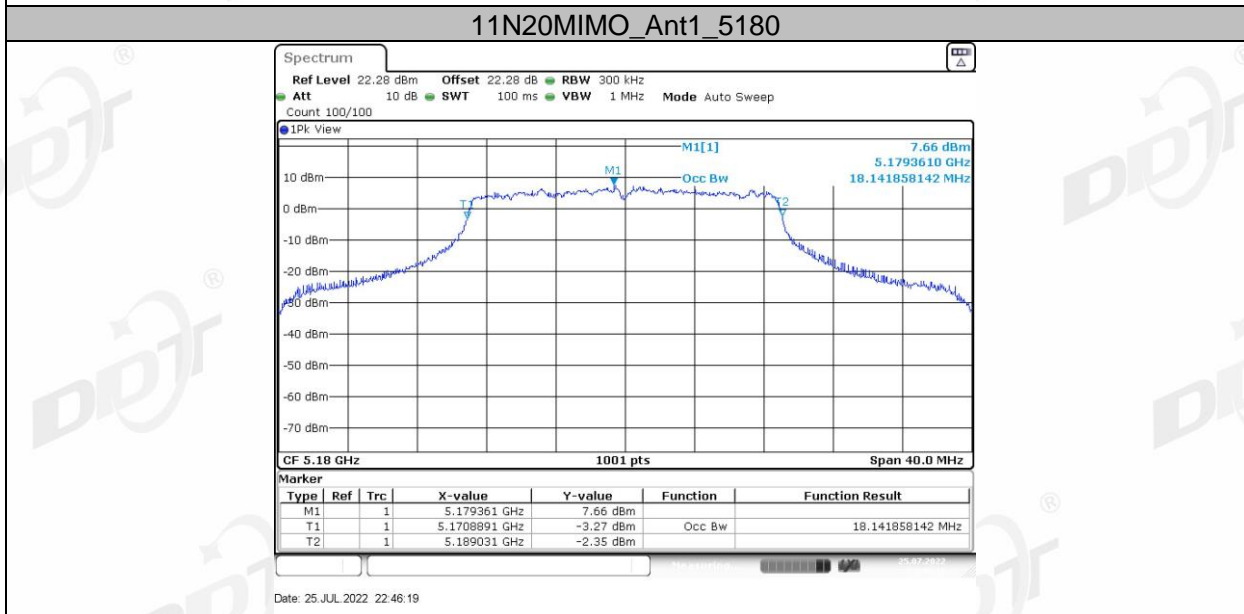
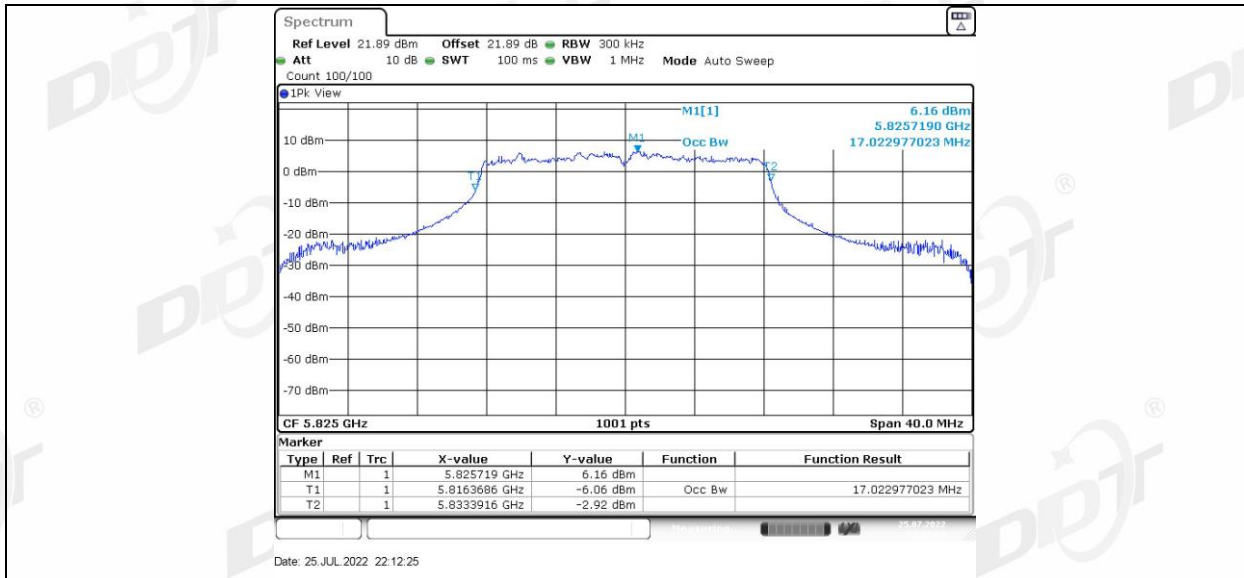


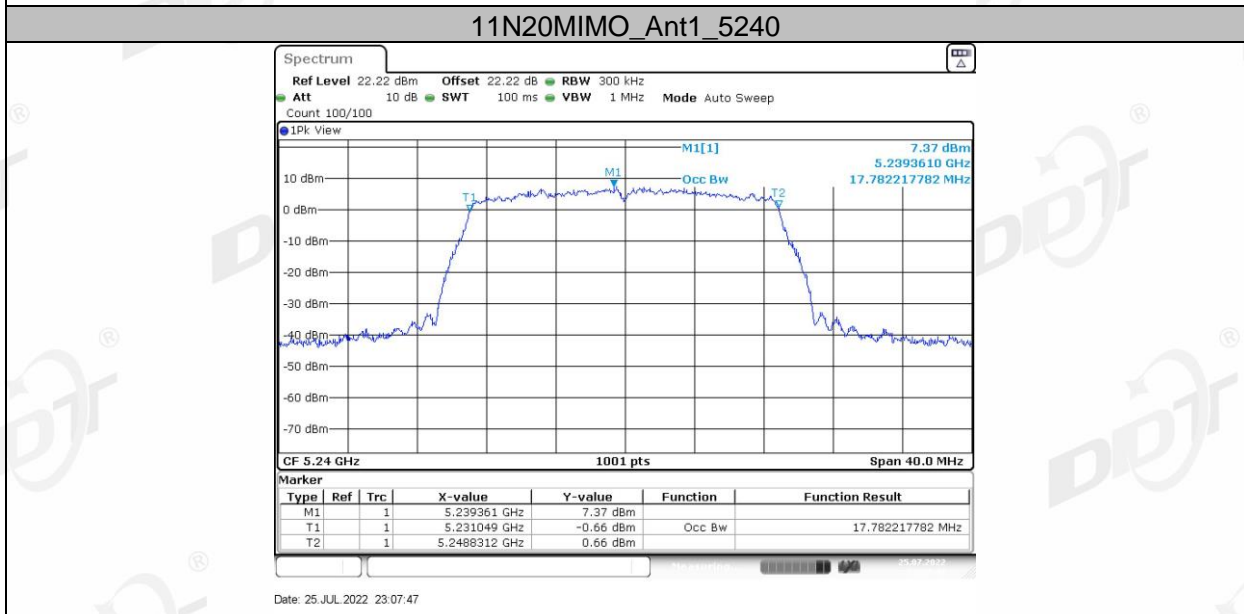
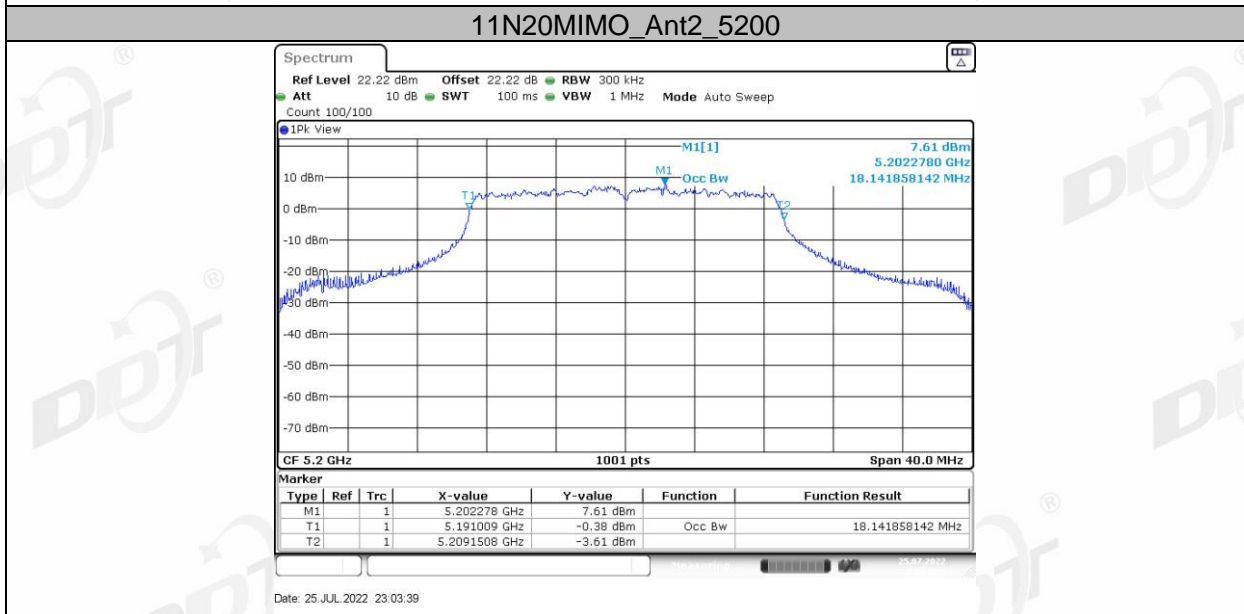
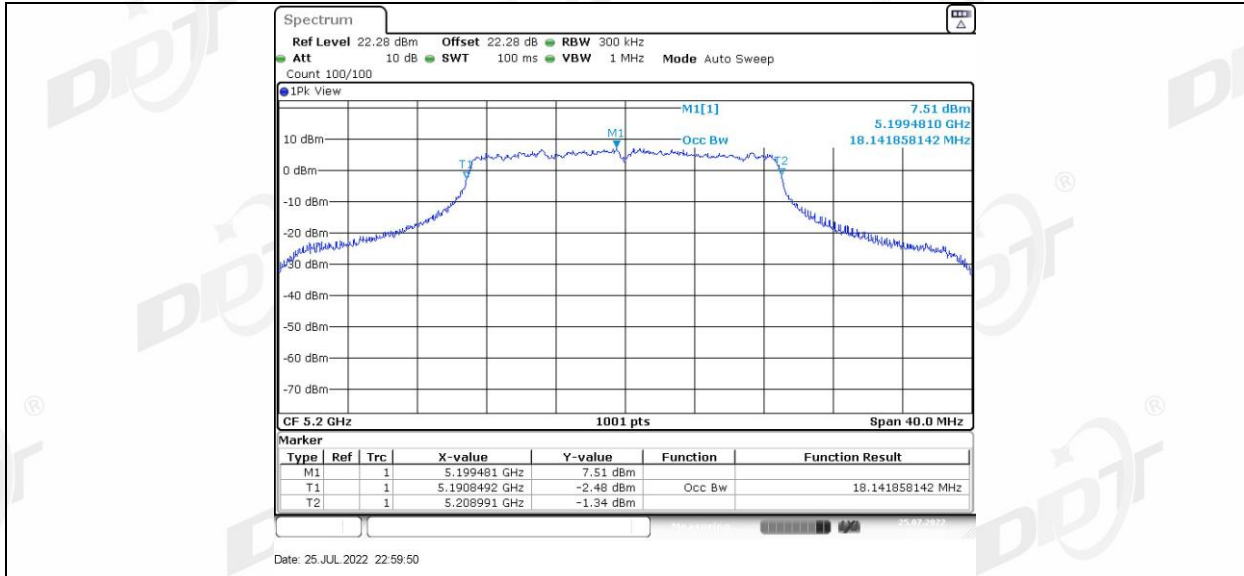
11A\_Ant1\_5825



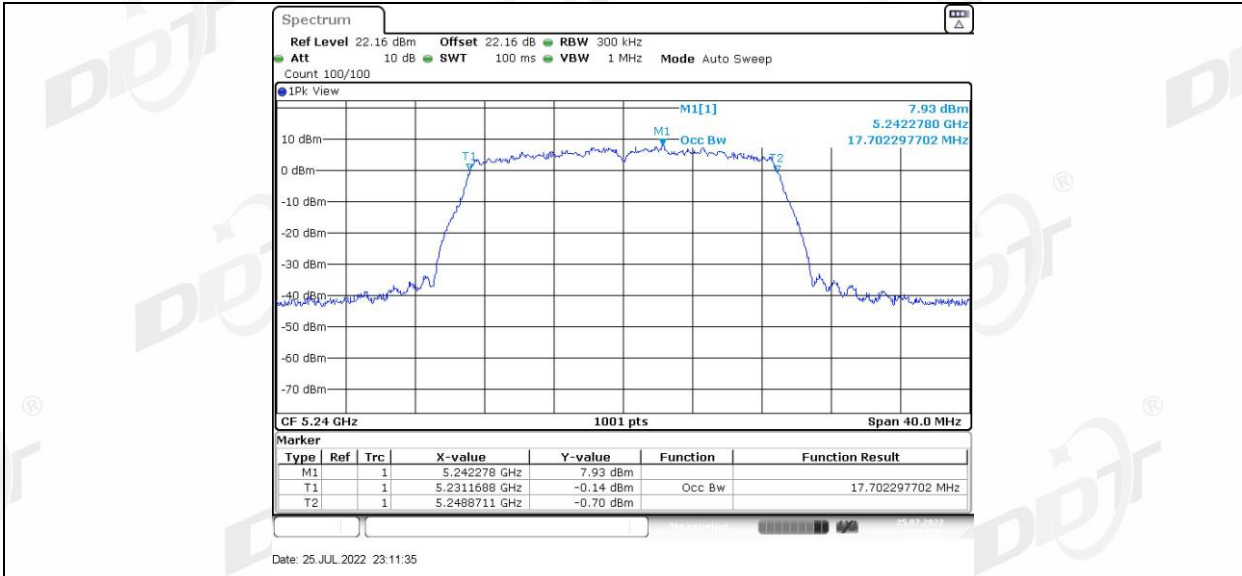
11A\_Ant2\_5825



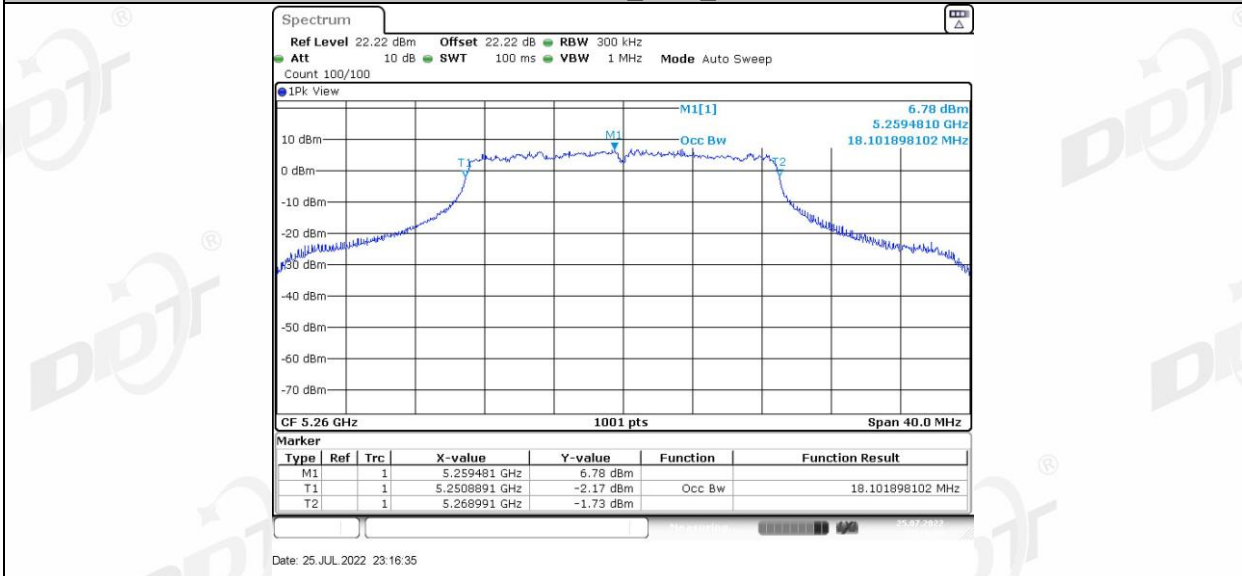




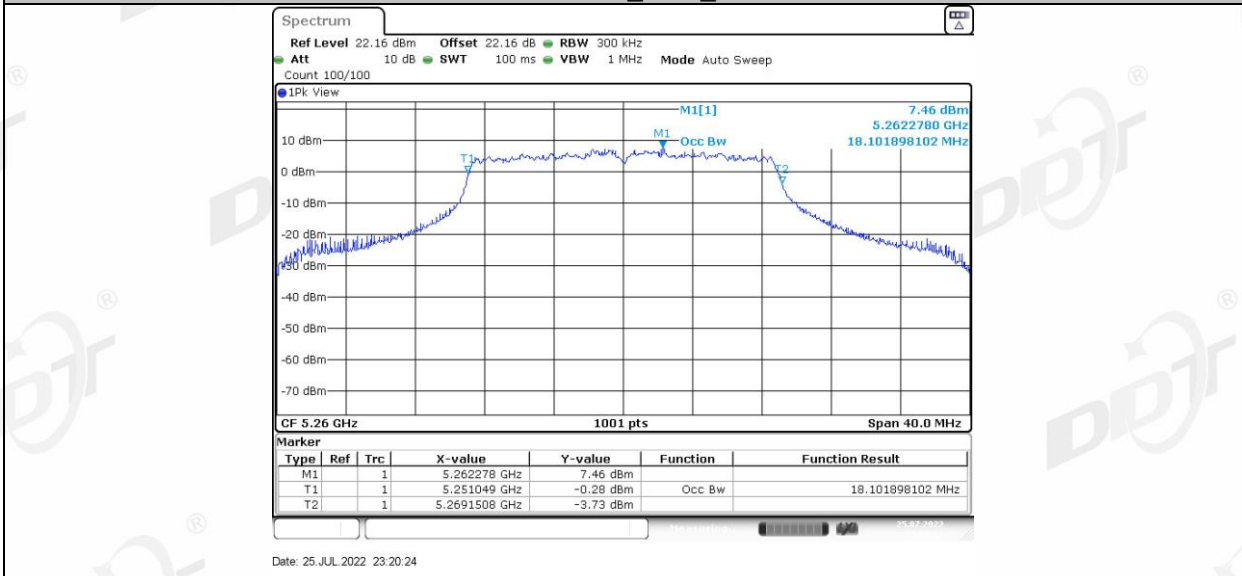
**11N20MIMO\_Ant2\_5240**



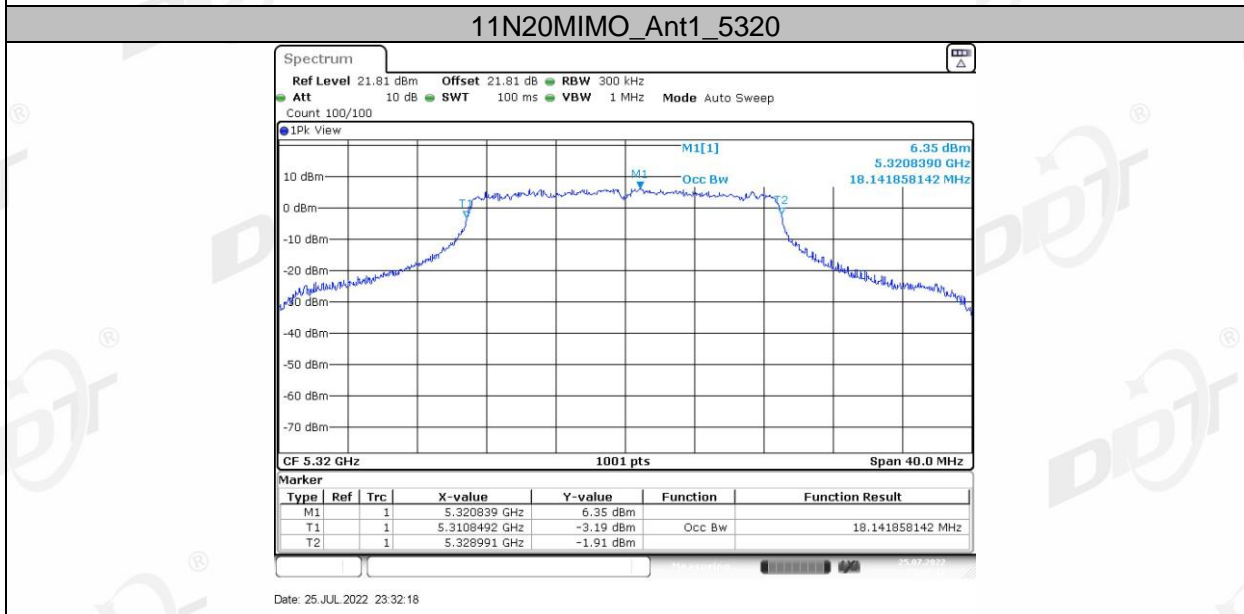
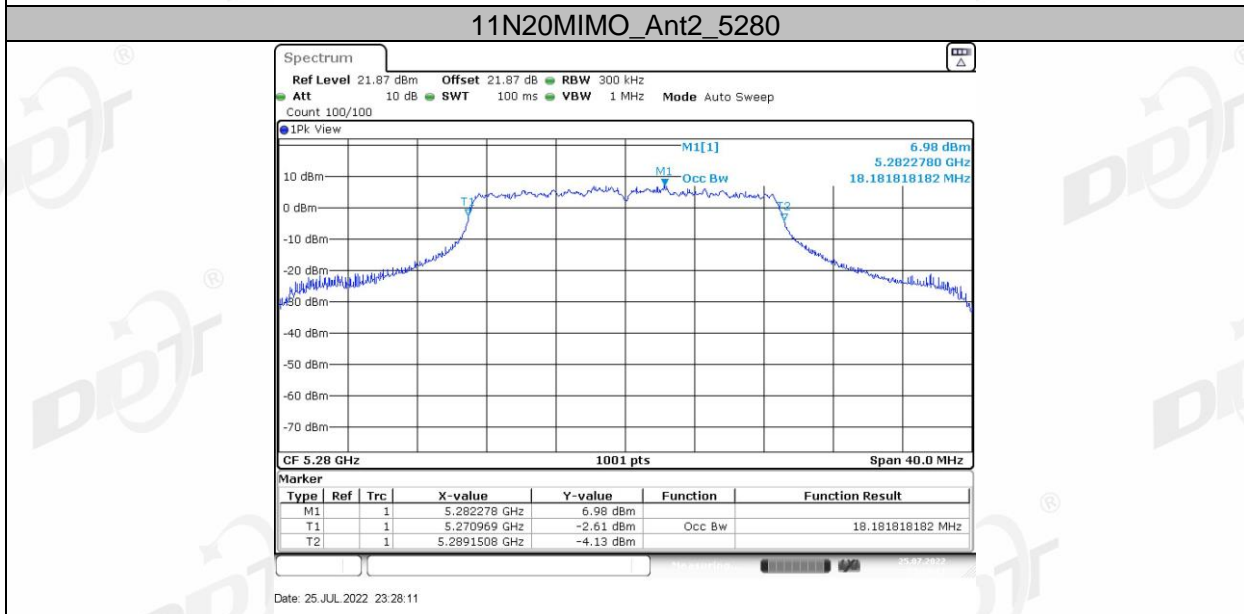
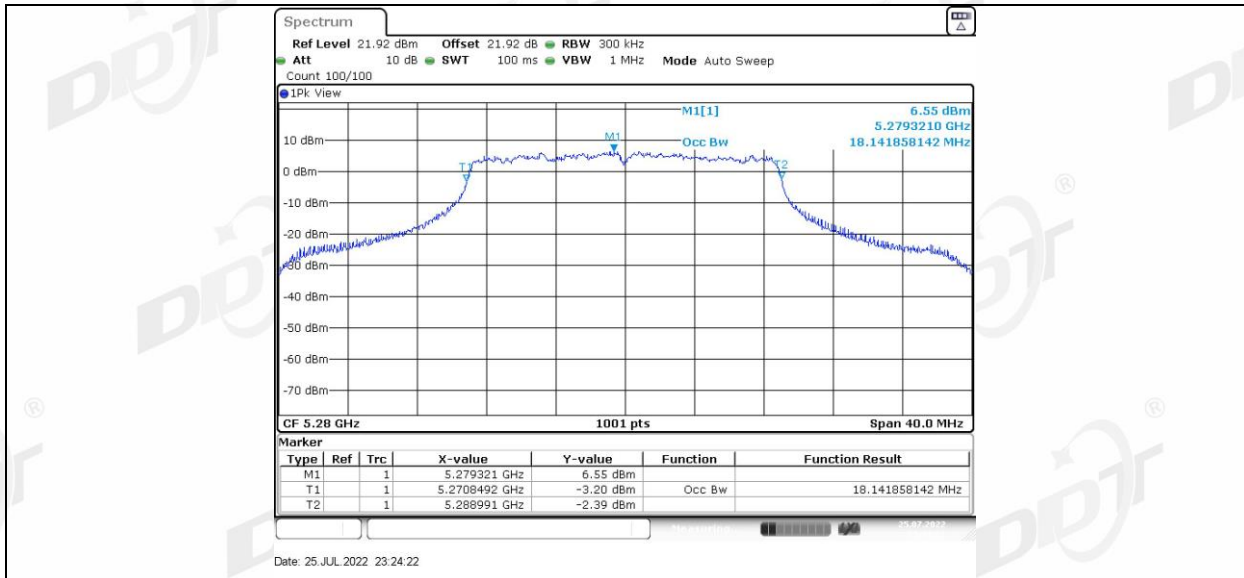
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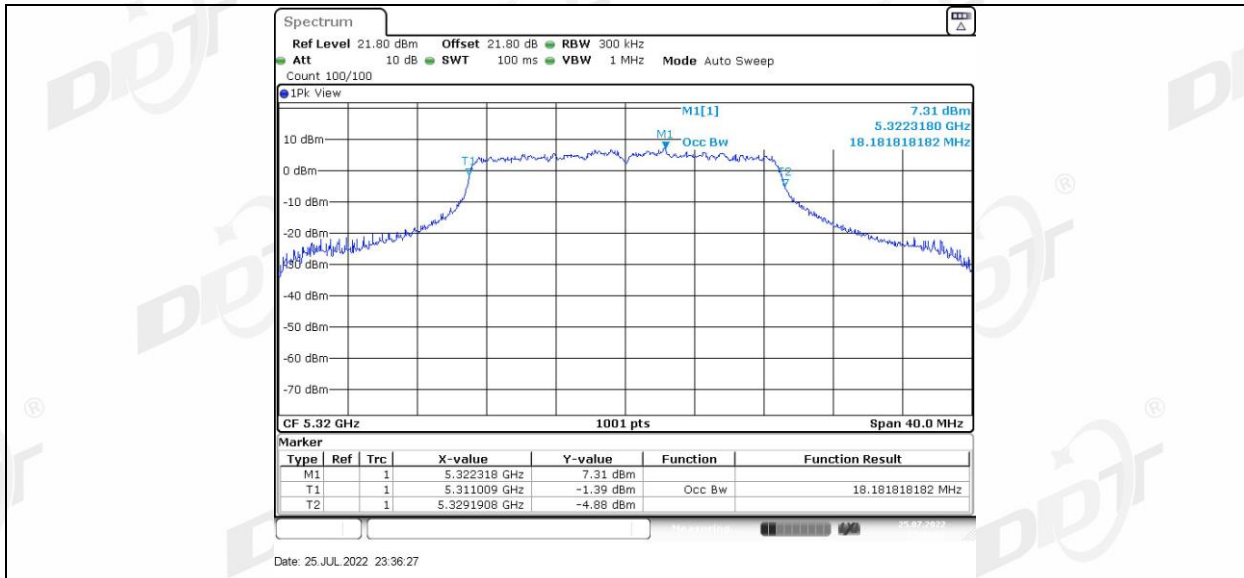


11N20MIMO\_Ant2\_5260

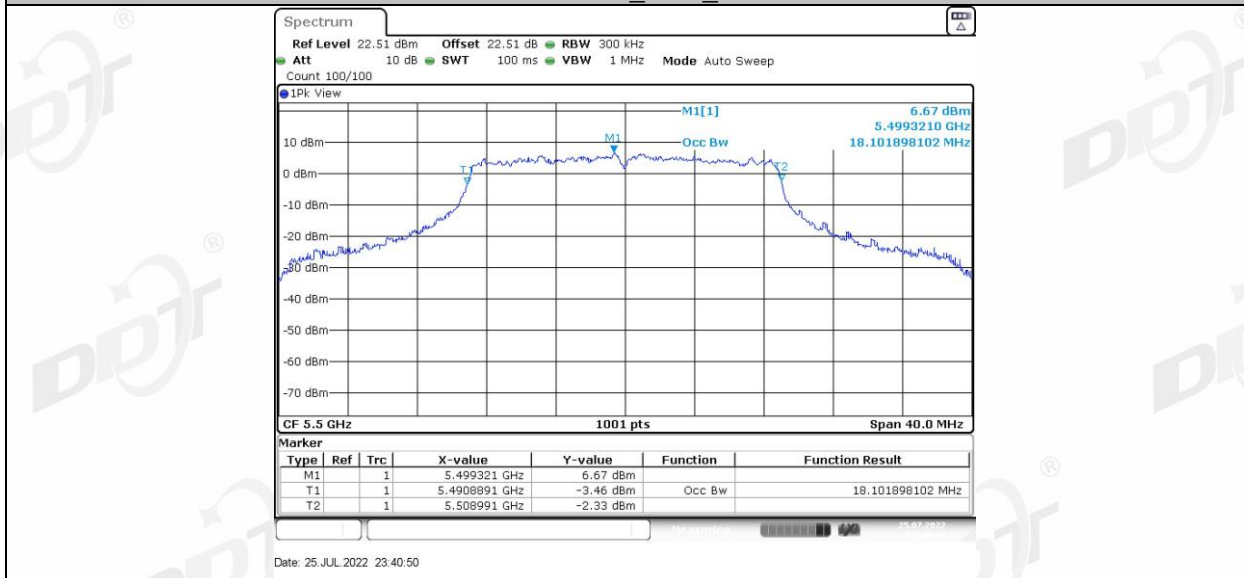


11N20MIMO\_Ant1\_5280

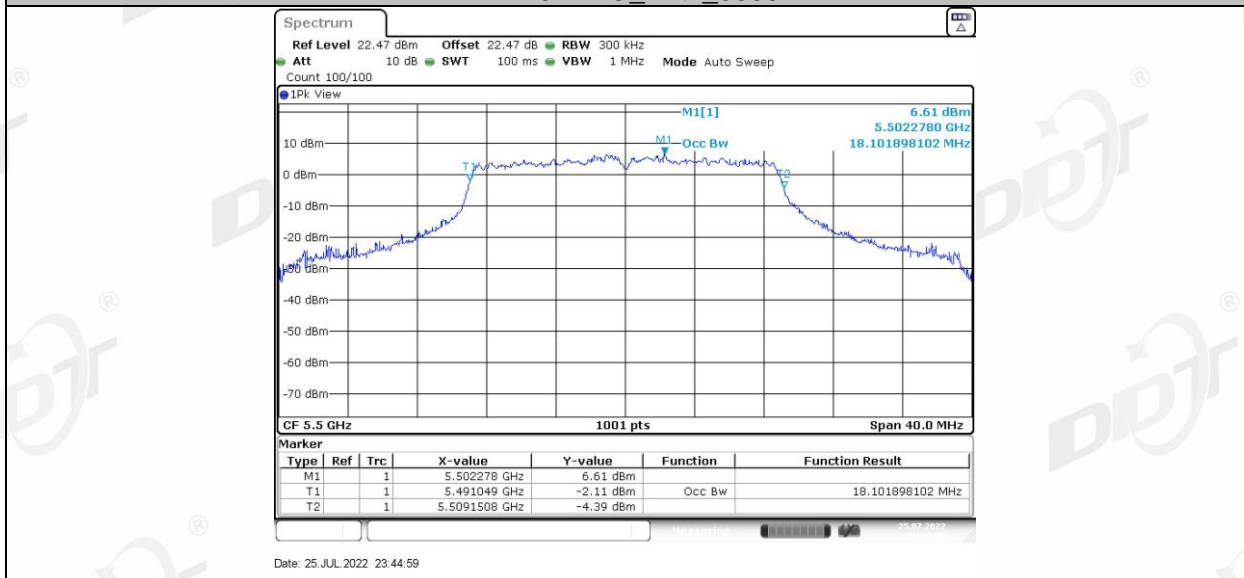




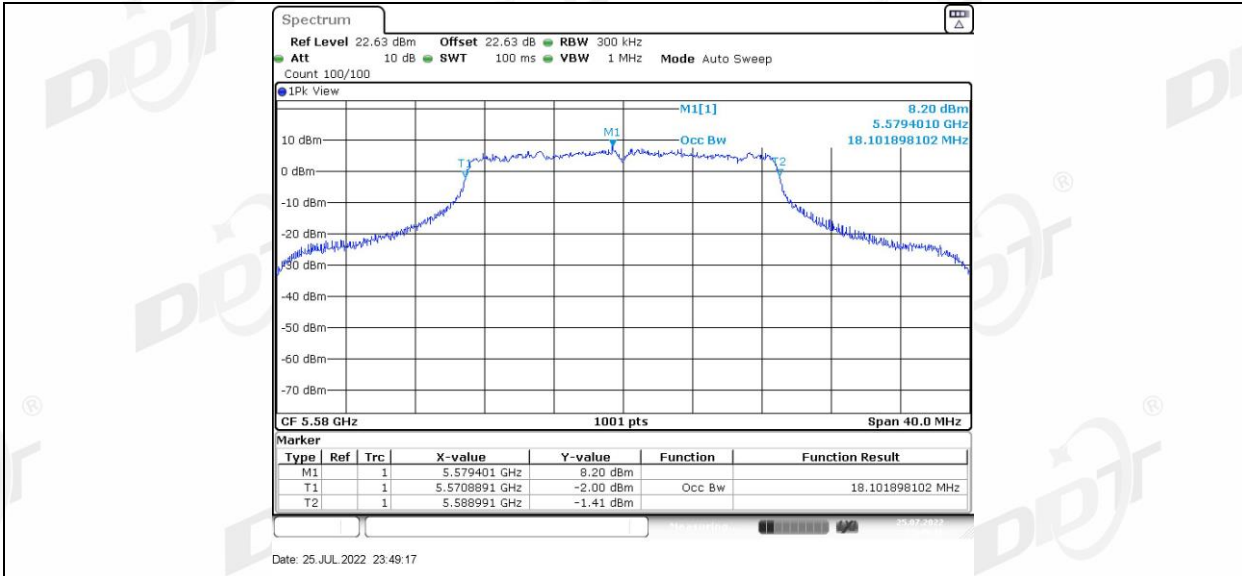
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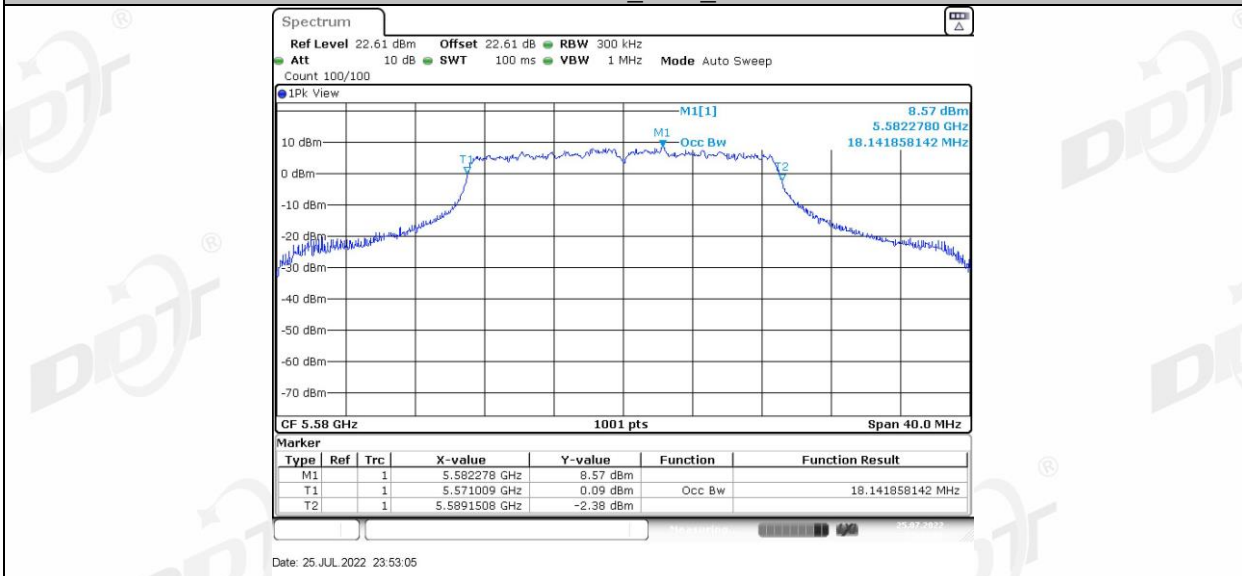
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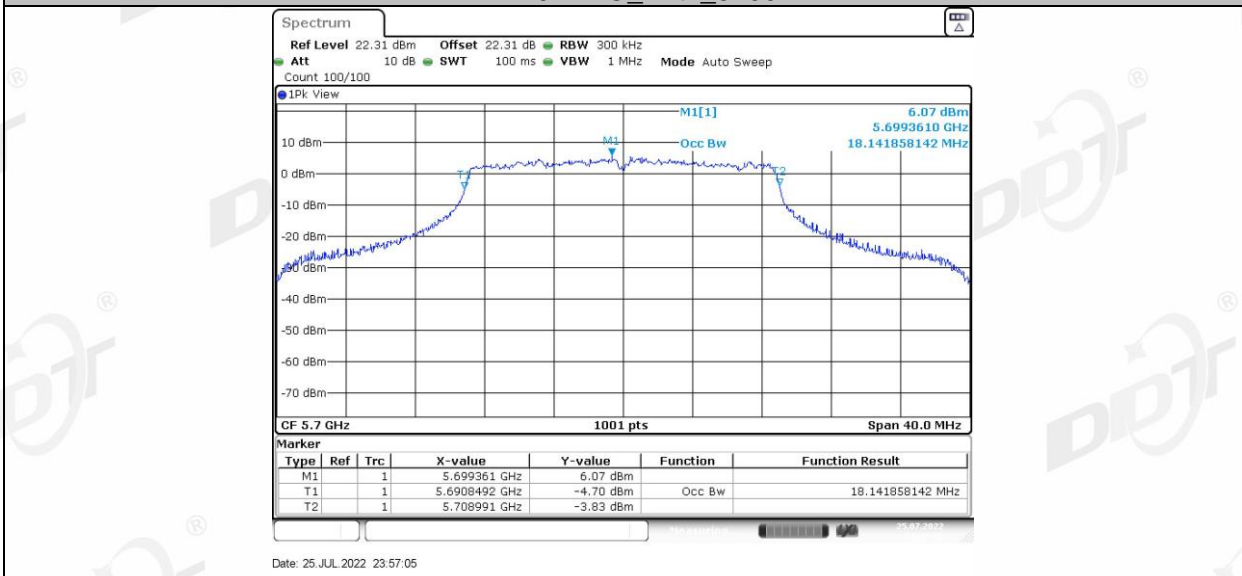
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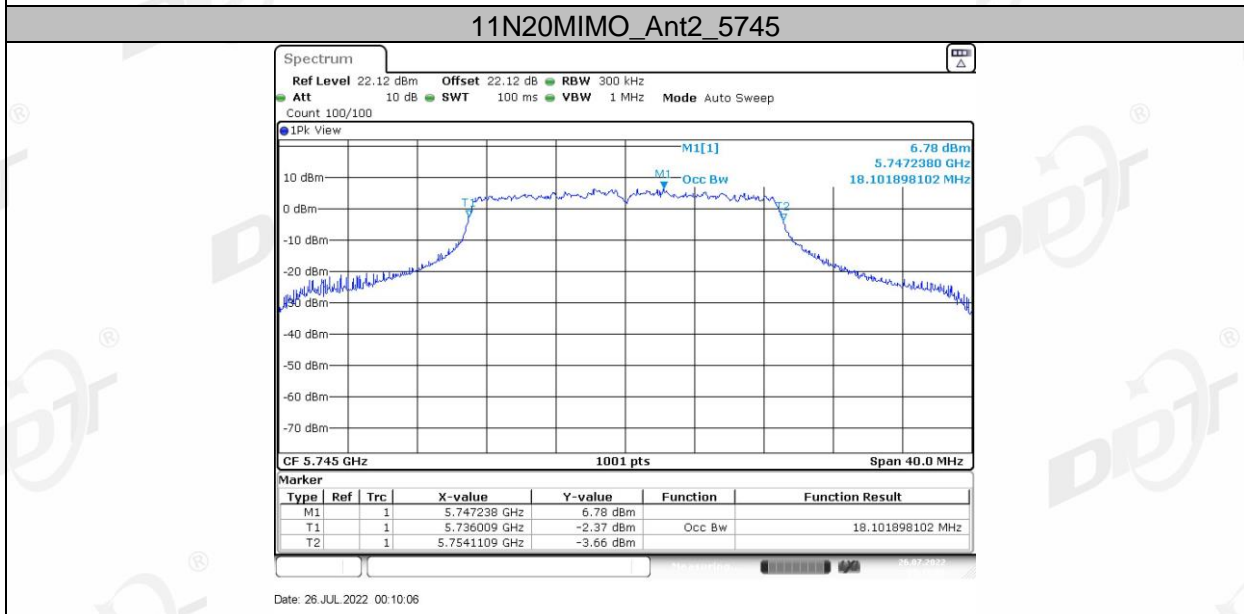
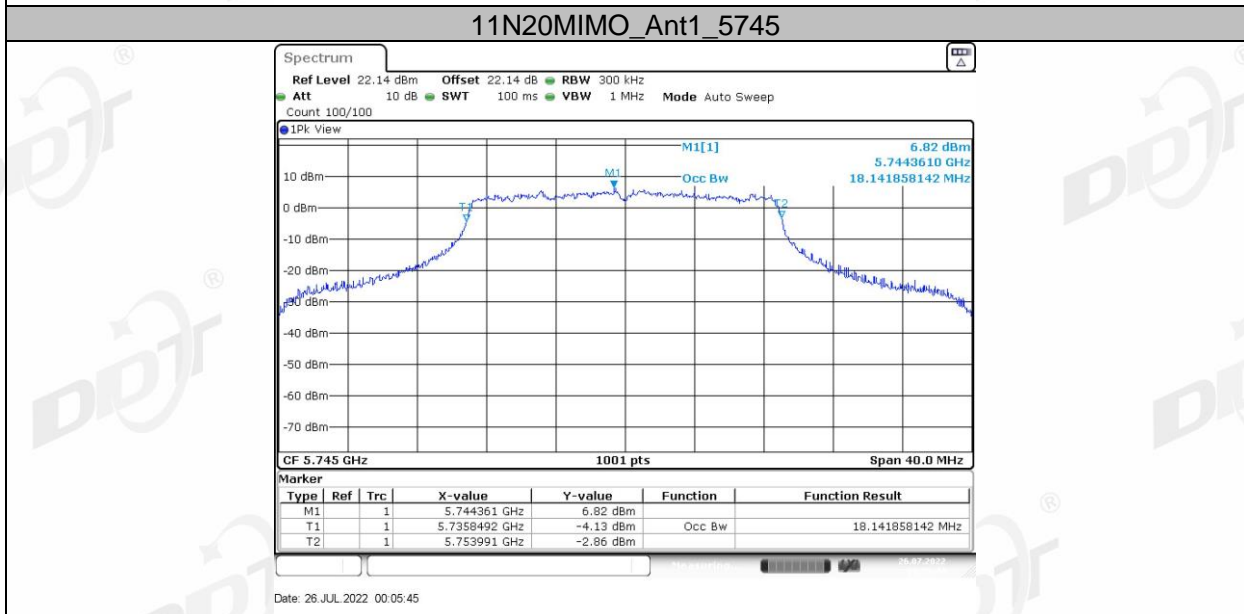
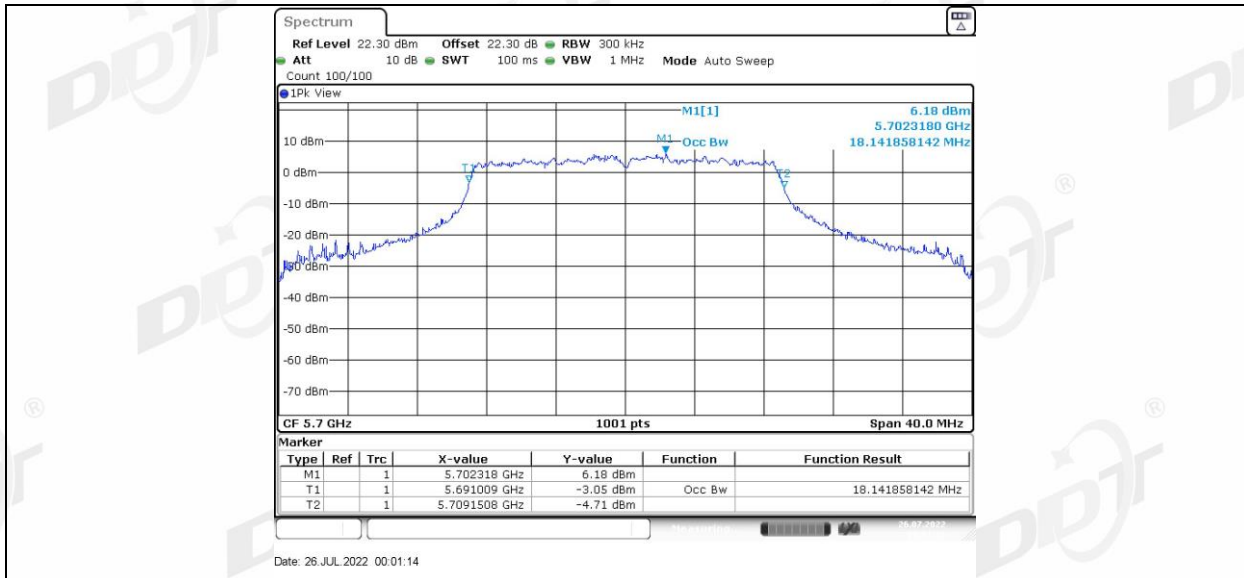
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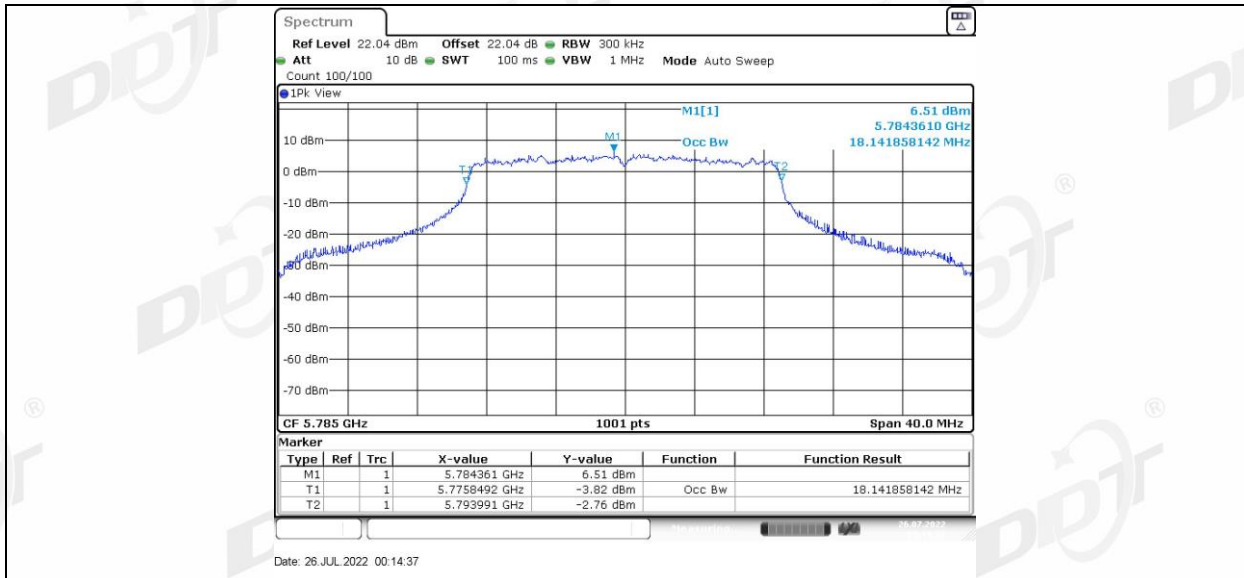


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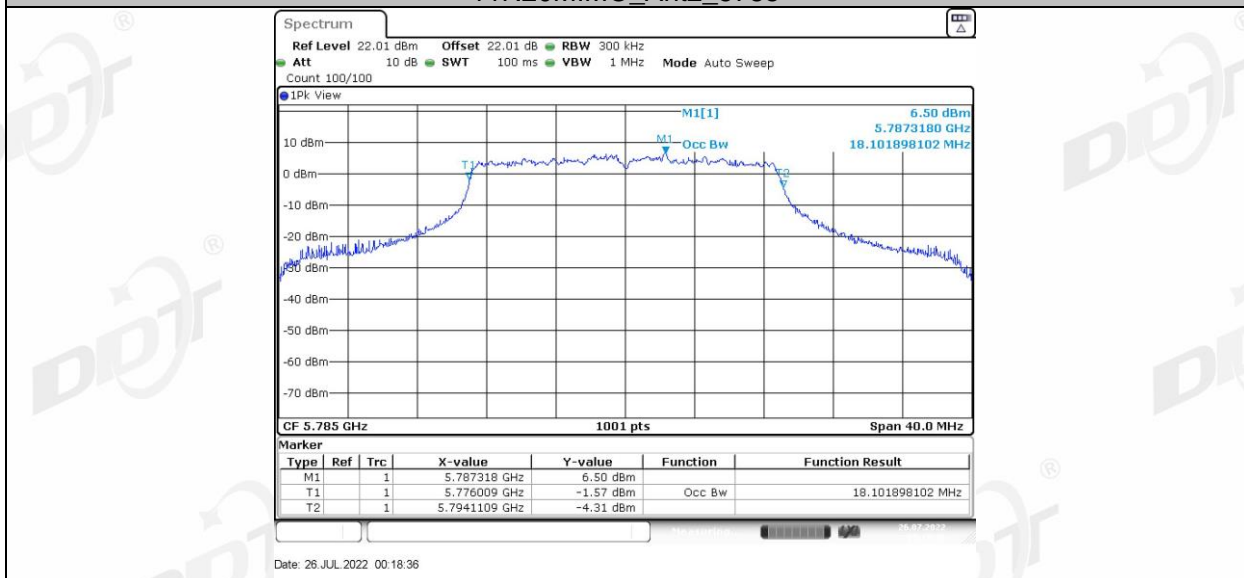


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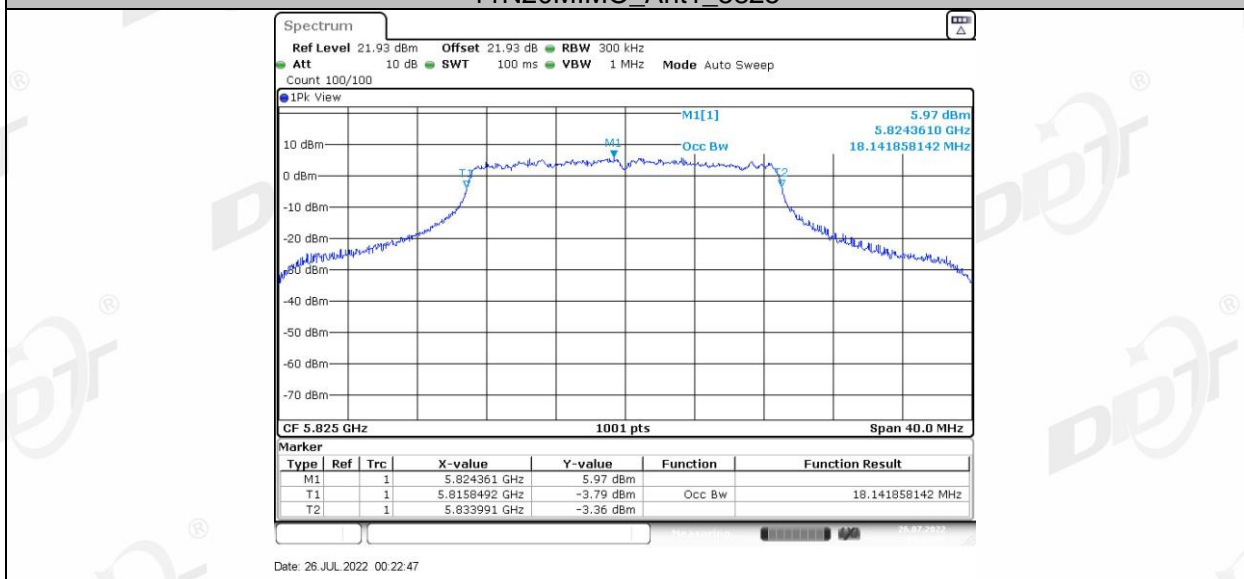




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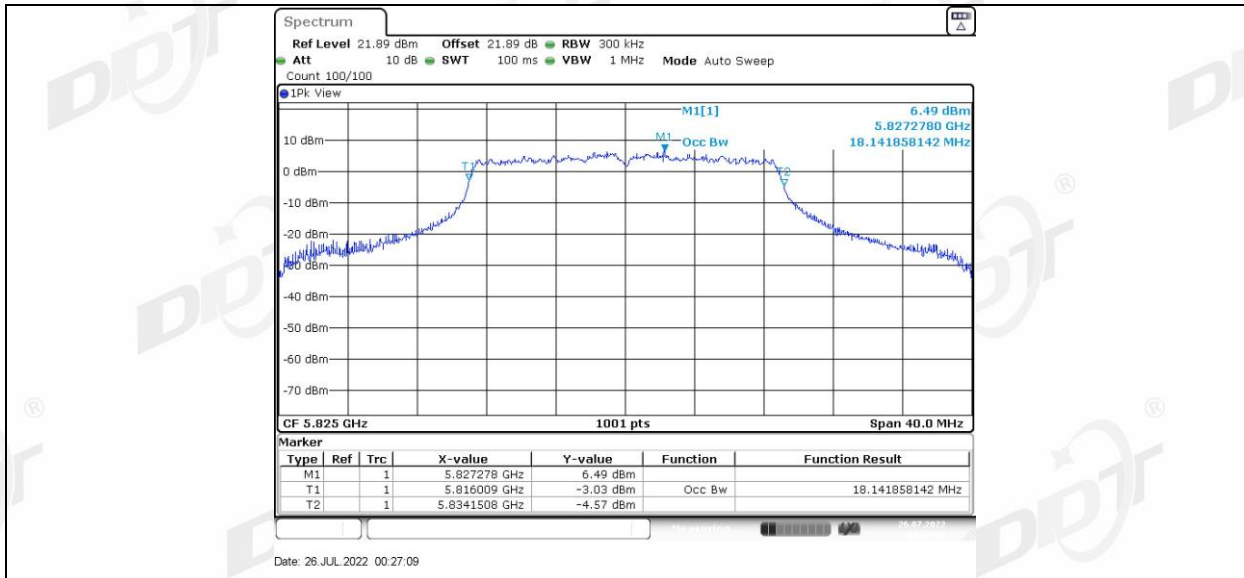


11N20MIMO\_Ant1\_5825

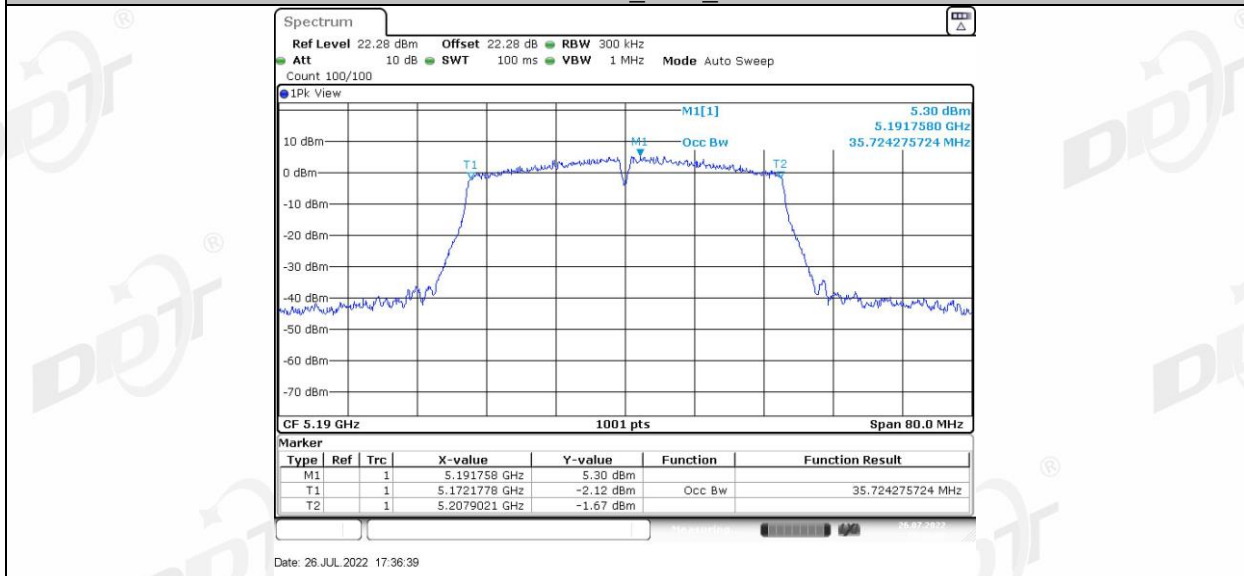


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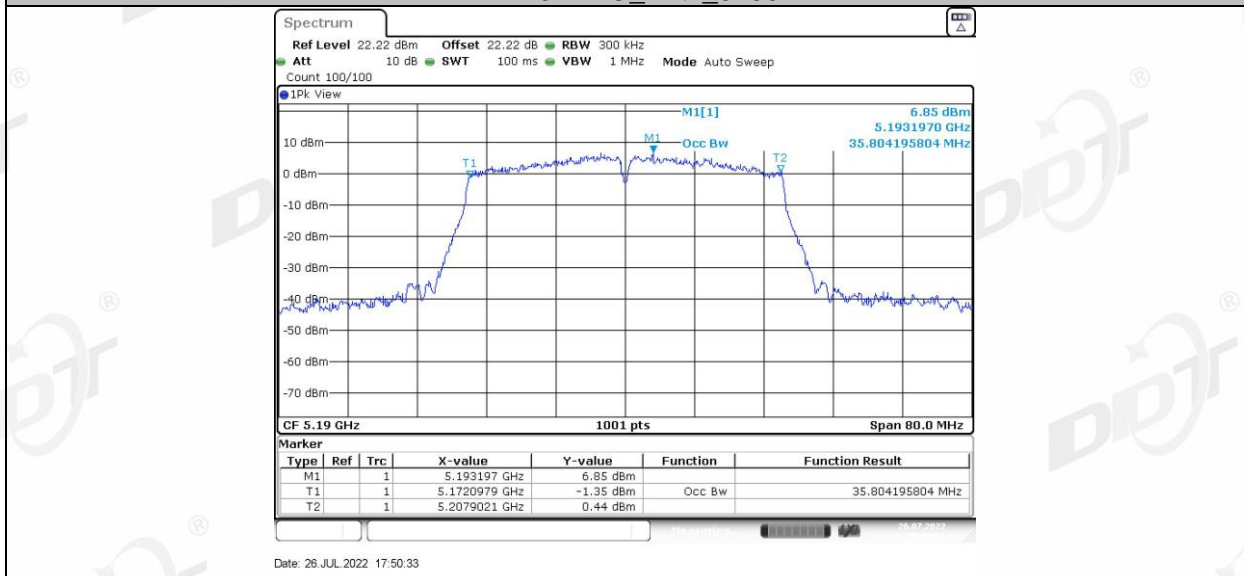




11N40MIMO\_Ant1\_5190



11N40MIMO\_Ant2\_5190



11N40MIMO\_Ant1\_5230