

FCC AND ISED CERTIFICATION TEST REPORT

FOR

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

Issued By: 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, **E-mail:** ddt@dgddt.com, <http://www.dgddt.com>

REPORT

Table of Contents

	Test report declares.....	4
1.	Summary of Test Results.....	6
2.	General Test Information	7
2.1.	Description of EUT	7
2.2.	Accessories of EUT.....	9
2.3.	Assistant equipment used for test.....	9
2.4.	Block diagram of EUT configuration for test	9
2.5.	Deviations of test standard.....	10
2.6.	Test environment conditions	10
2.7.	Test laboratory	10
2.8.	Measurement uncertainty.....	11
3.	Equipment Used During Test.....	12
4.	6dB Bandwidth and 99% Bandwidth.....	14
4.1.	Block diagram of test setup.....	14
4.2.	Limits	14
4.3.	Test procedure	14
4.4.	Test result.....	15
4.5.	Original test data	17
5.	Conducted Peak Output Power	42
5.1.	Block diagram of test setup.....	42
5.2.	Limits	42
5.3.	Test procedure	42
5.4.	Test result.....	42
6.	Power Spectral Density.....	47
6.1.	Block diagram of test setup.....	47
6.2.	Limits	47
6.3.	Test procedure	47
6.4.	Test result.....	47
6.5.	Original test data	51
7.	Band Edge Compliance (Conducted Method)	86
7.1.	Block diagram of test setup.....	86
7.2.	Limits	86
7.3.	Test procedure	86
7.4.	Test result.....	87
7.5.	Original test data	87
8.	Radiated Spurious Emissions.....	96
8.1.	Block diagram of test setup.....	96

8.2.	Limit	97
8.3.	Test procedure	99
8.4.	Test result	100
9.	RF Conducted Spurious Emissions	127
9.1.	Block diagram of test setup	127
9.2.	Limits	127
9.3.	Test procedure	127
9.4.	Test result	128
9.5.	Original test data	128
10.	Radiated Band Edge Compliance	165
10.1.	Block diagram of test setup	165
10.2.	Limit	165
10.3.	Test procedure	165
10.4.	Test result	165
11.	Power Line Conducted Emission	206
11.1.	Block diagram of test setup	206
11.2.	Power Line Conducted Emission Limits (Class B)	206
11.3.	Test procedure	206
11.4.	Test result	207
12.	Antenna Requirements	210
12.1.	Limit	210
12.2.	Result	210
13.	Test Setup Photograph	211
14.	Photos of the EUT	213

Test Report Declare

Applicant	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Wireless Speaker
Model No	:	BOOMBOX 3 Wi-Fi
Trade Mark	:	JBL
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Test Standard Used: FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 2
February 2017.

Test procedure used: ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, 558074 D01 15.247
Meas Guidance v05r02, 662911 D01 Multiple Transmitter Output v02r01

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.

Report No:	DDT-R22071330-2E03		
Date of Receipt:	Jul. 15, 2022	Date of Test:	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
6dB Bandwidth and 99% Bandwidth	FCC Part 15: 15.247 ANSI C63.10:2013 RSS-247 Issue 2	Pass
Conducted Peak Output Power	FCC Part 15: 15.247 ANSI C63.10:2013 RSS-247 Issue 2	Pass
Power Spectral Density	FCC Part 15:15.247 ANSI C63.10:2013 RSS-247 Issue 2	Pass
Band-edge and Spurious Emissions (Conducted)	FCC Part 15: 15.209 FCC Part 15: 15.247 ANSI C63.10: 2013 RSS-247 Issue 2 RSS-Gen Issue 5	Pass
Radiated Spurious Emissions	FCC Part 15: 15.247 ANSI C63.10:2013 RSS-247 Issue 2 RSS-Gen Issue 5	Pass
Radiated Band Edge Compliance	FCC Part 15: 15.209 FCC Part 15: 15.247 ANSI C63.10: 2013 RSS-247 Issue 2 RSS-Gen Issue 5	Pass
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10: 2013 RSS-Gen Issue 5	Pass
Antenna requirement	FCC Part 15: 15.203 RSS-Gen Issue 5	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 802.11b/g/n/ax
Operation frequency	: IEEE 802.11b: 2412MHz-2462MHz IEEE 802.11g: 2412MHz-2462MHz IEEE 802.11n HT20: 2412MHz-2462MHz IEEE 802.11n HT40: 2422MHz-2452MHz IEEE 802.11ax HE20: 2412MHz-2462MHz IEEE 802.11ax HE40: 2422MHz-2452MHz
Modulation	: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax HE20, HE40: OFDM, OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	: IEEE 802.11b: up to 11 Mbps IEEE 802.11g: up to 54 Mbps IEEE 802.11n HT20, HT40: up to 130 Mbps IEEE 802.11ax HE20, HE40: up to 573.5 Mbps
Antenna Type	: Antenna 1: FPC antenna, Maximum PK gain: 2.67 dBi : Antenna 2: FPC antenna, Maximum PK gain: 2.3 dBi
Sample Type	: Series production
Sample Number	: S22071330-07 for conductive : S22071330-08 for radiation

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

Antenna information			
	Ant1 gain	Ant2 gain	Directional gain
IEEE 802.11b	2.67	2.3	/
IEEE 802.11g	2.67	2.3	/
IEEE 802.11n HT20	2.67	2.3	2.49
IEEE 802.11n HT40	2.67	2.3	2.49
IEEE 802.11ax HE20	2.67	2.3	2.49
IEEE 802.11ax HE40	2.67	2.3	2.49

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					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462

4	2427	8	2447	/	/
---	------	---	------	---	---

Operating Mode	Resource Unit	26 Tone(2M)		
IEEE 802.11ax(HE20)	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	

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



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

Test software: adb.exe

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 802.11b	14	11	LCH: CH1	2412
	14	11	MCH: CH6	2437
	14	11	HCH: CH11	2462
IEEE 802.11g	13	54	LCH: CH1	2412
	13	54	MCH: CH6	2437
	13	54	HCH: CH11	2462
IEEE 802.11n HT20	12	MCS 15	LCH: CH1	2412
	12	MCS 15	MCH: CH6	2437
	12	MCS 15	HCH: CH11	2462
IEEE 802.11n HT40	12	MCS 15	LCH: CH3	2422
	12	MCS 15	MCH: CH6	2437
	12	MCS 15	HCH: CH9	2452
IEEE 802.11ax HE20	SU:12 RU:12	MCS 11	LCH: CH1	2412
	SU:12 RU:12	MCS 11	MCH: CH6	2437
	SU:12 RU:12	MCS 11	HCH: CH11	2462
IEEE 802.11ax HE40	SU:12 RU:12	MCS 11	LCH: CH3	2422
	SU:12 RU:12	MCS 11	MCH: CH6	2437
	SU:12 RU:12	MCS 11	HCH: CH9	2452

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:	86-106kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Addr.: 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.

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 ⁻⁸ (Antenna couple method)
	5.5 x 10 ⁻⁸ (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 < 22 GHz)
Uncertainty for radio frequency (RBW<20 kHz)	3x10 ⁻⁸
Temperature	0.4°C
Humidity	2%
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	3.32 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.	

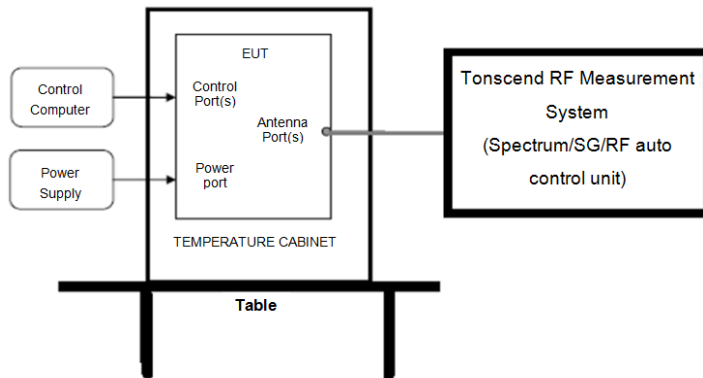
3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑RF Connected Test (Tonscend RF Measurement System 3#)					
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
☑RF Connected Test (Tonscend RF Measurement System 4#)					
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
☑Radiation 3#chamber					
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 9120 D	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
☑Power Line Conducted Emissions Test 1#					
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. 6dB Bandwidth and 99% Bandwidth

4.1. Block diagram of test setup



4.2. Limits

For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz

4.3. Test procedure

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

(2) 99% Bandwidth set the spectrum analyzer as follows:

RBW: 1% to 5% of the OBW

VBW: $\geq 3\text{RBW}$

Detector Mode: Peak

Sweep time: auto

Trace mode Max hold

(3) 6dB Bandwidth set the spectrum analyzer as follows:

RBW: 100 kHz

VBW: 300 kHz

Detector Mode: Peak

Sweep time: auto

Trace mode Max hold

(4) 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 6 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

Test Mode	Test	Ant	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	2412	Ant1	6.08	0.5	Pass
11B	2412	Ant2	6.08	0.5	Pass
11B	2437	Ant1	6.04	0.5	Pass
11B	2437	Ant2	6.08	0.5	Pass
11B	2462	Ant1	6.44	0.5	Pass
11B	2462	Ant2	6.00	0.5	Pass
11G	2412	Ant1	15.12	0.5	Pass
11G	2412	Ant2	15.12	0.5	Pass
11G	2437	Ant1	16.36	0.5	Pass
11G	2437	Ant2	16.36	0.5	Pass
11G	2462	Ant1	16.32	0.5	Pass
11G	2462	Ant2	16.04	0.5	Pass
11N20MIMO	2412	Ant1	15.40	0.5	Pass
11N20MIMO	2412	Ant2	15.36	0.5	Pass
11N20MIMO	2437	Ant1	16.60	0.5	Pass
11N20MIMO	2437	Ant2	17.28	0.5	Pass
11N20MIMO	2462	Ant1	16.60	0.5	Pass
11N20MIMO	2462	Ant2	16.96	0.5	Pass
11N40MIMO	2422	Ant1	35.12	0.5	Pass
11N40MIMO	2422	Ant2	35.12	0.5	Pass
11N40MIMO	2437	Ant1	35.12	0.5	Pass
11N40MIMO	2437	Ant2	35.12	0.5	Pass
11N40MIMO	2452	Ant1	35.12	0.5	Pass
11N40MIMO	2452	Ant2	35.12	0.5	Pass
11AX20SU	2412	Ant1	19.04	0.5	Pass
11AX20SU	2412	Ant2	19.08	0.5	Pass
11AX20SU	2437	Ant1	19.04	0.5	Pass
11AX20SU	2437	Ant2	19.08	0.5	Pass
11AX20SU	2462	Ant1	19.08	0.5	Pass
11AX20SU	2462	Ant2	19.08	0.5	Pass
11AX40SU	2422	Ant1	38.00	0.5	Pass
11AX40SU	2422	Ant2	37.84	0.5	Pass
11AX40SU	2437	Ant1	38.16	0.5	Pass
11AX40SU	2437	Ant2	37.84	0.5	Pass
11AX40SU	2452	Ant1	38.16	0.5	Pass
11AX40SU	2452	Ant2	38.08	0.5	Pass

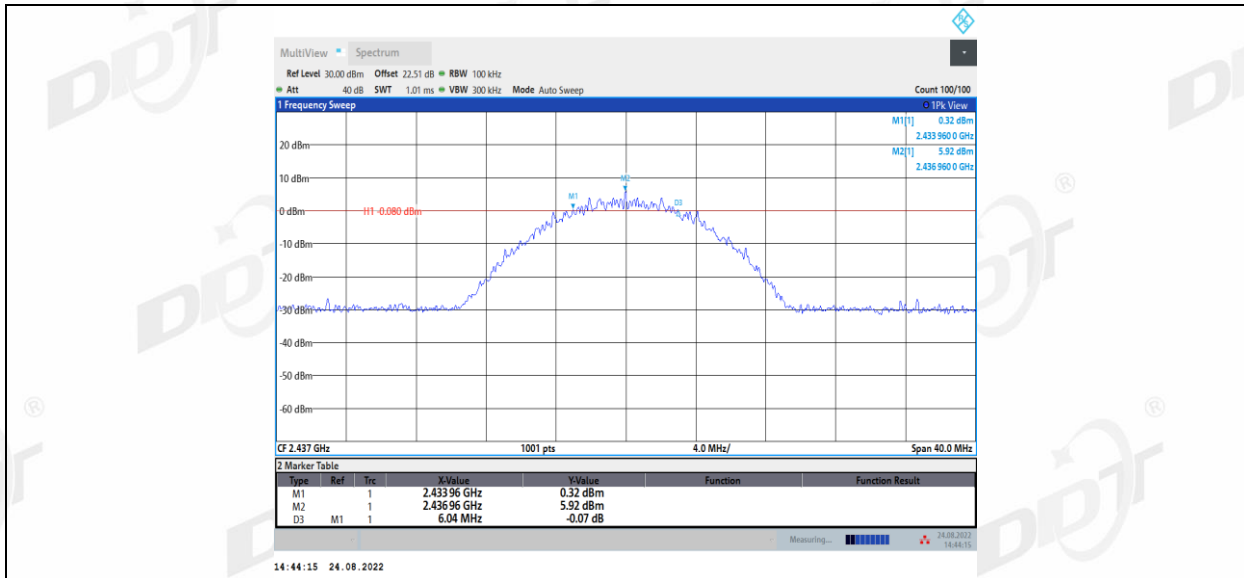
Test Mode	Test	Ant	99% OBW [MHz]	Limit [MHz]	Verdict
11B	2412	Ant1	12.56	---	Pass
11B	2412	Ant2	12.48	---	Pass
11B	2437	Ant1	12.64	---	Pass
11B	2437	Ant2	12.56	---	Pass
11B	2462	Ant1	12.60	---	Pass
11B	2462	Ant2	12.56	---	Pass
11G	2412	Ant1	16.80	---	Pass
11G	2412	Ant2	16.80	---	Pass
11G	2437	Ant1	17.64	---	Pass
11G	2437	Ant2	17.72	---	Pass
11G	2462	Ant1	17.68	---	Pass
11G	2462	Ant2	17.64	---	Pass
11N20MIMO	2412	Ant1	17.76	---	Pass
11N20MIMO	2412	Ant2	17.72	---	Pass
11N20MIMO	2437	Ant1	18.48	---	Pass
11N20MIMO	2437	Ant2	18.48	---	Pass
11N20MIMO	2462	Ant1	18.48	---	Pass
11N20MIMO	2462	Ant2	18.44	---	Pass
11N40MIMO	2422	Ant1	36.08	---	Pass
11N40MIMO	2422	Ant2	36.08	---	Pass
11N40MIMO	2437	Ant1	36.08	---	Pass
11N40MIMO	2437	Ant2	36.08	---	Pass
11N40MIMO	2452	Ant1	36.00	---	Pass
11N40MIMO	2452	Ant2	36.16	---	Pass
11AX20SU	2412	Ant1	18.90	---	Pass
11AX20SU	2412	Ant2	18.90	---	Pass
11AX20SU	2437	Ant1	19.34	---	Pass
11AX20SU	2437	Ant2	19.34	---	Pass
11AX20SU	2462	Ant1	19.22	---	Pass
11AX20SU	2462	Ant2	19.22	---	Pass
11AX40SU	2422	Ant1	37.72	---	Pass
11AX40SU	2422	Ant2	37.72	---	Pass
11AX40SU	2437	Ant1	37.88	---	Pass
11AX40SU	2437	Ant2	37.88	---	Pass
11AX40SU	2452	Ant1	37.88	---	Pass
11AX40SU	2452	Ant2	37.88	---	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.

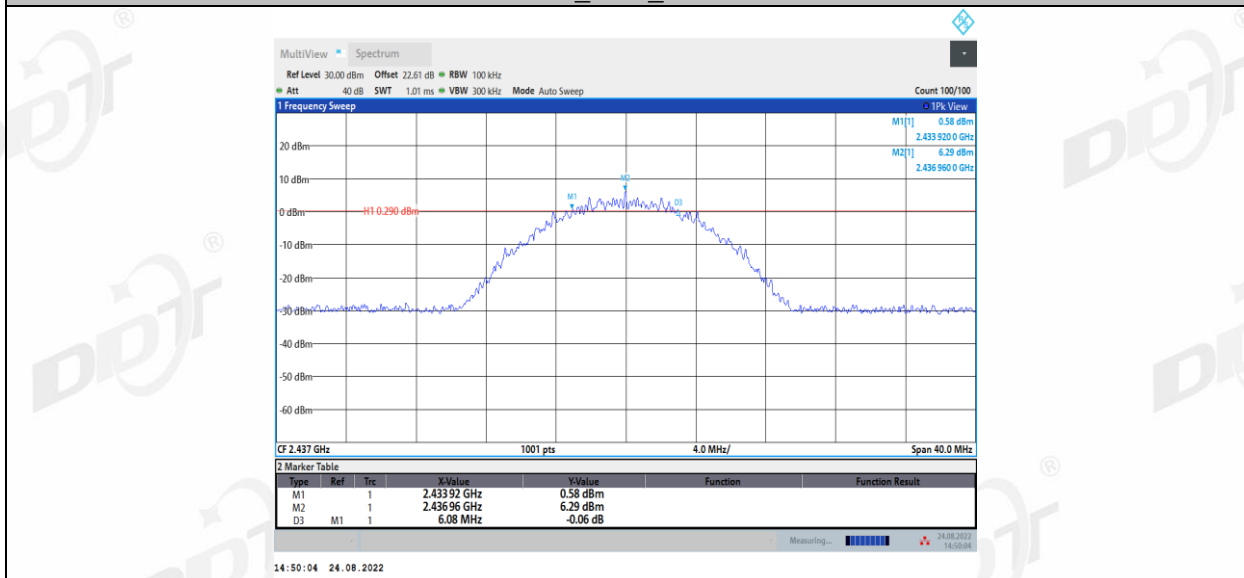
4.5. Original test data

6 dB bandwidth:

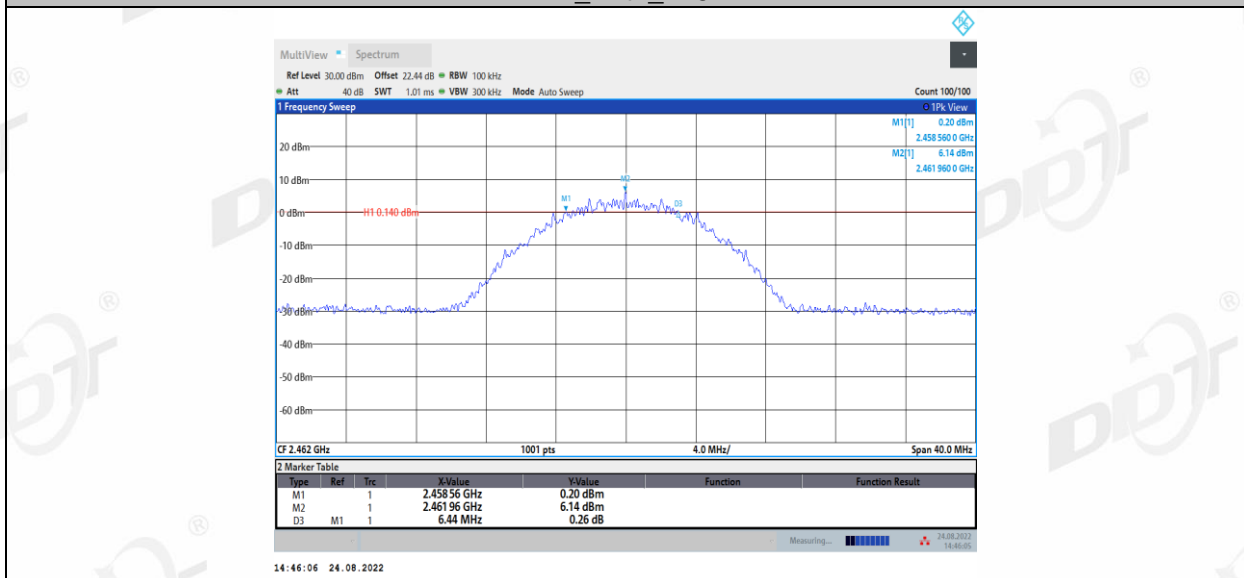




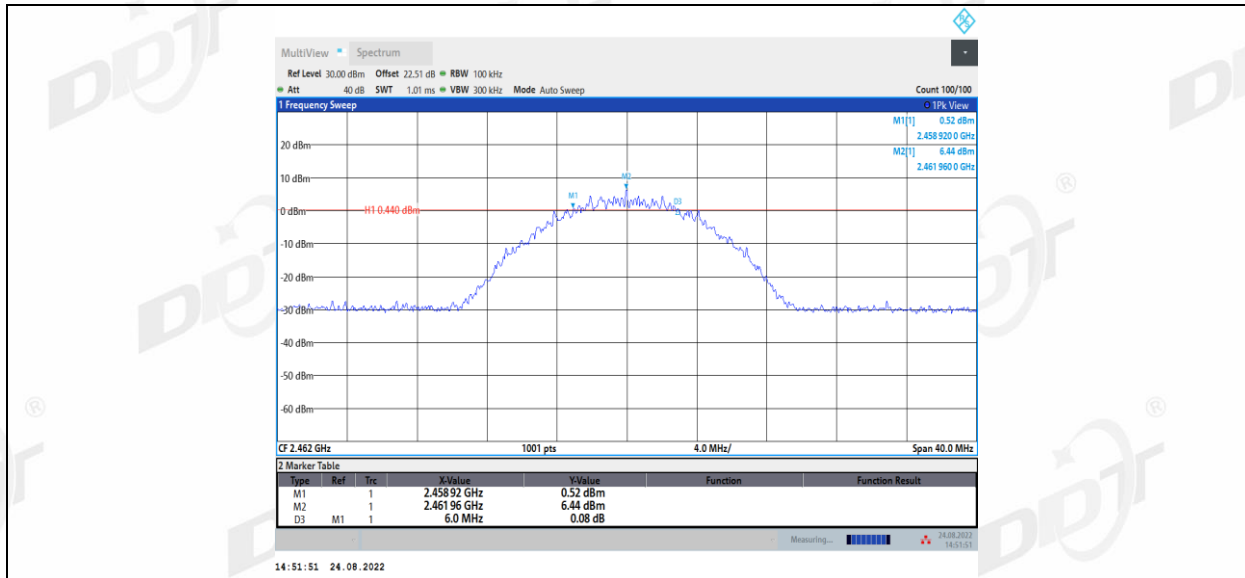
11B_Ant2_2437



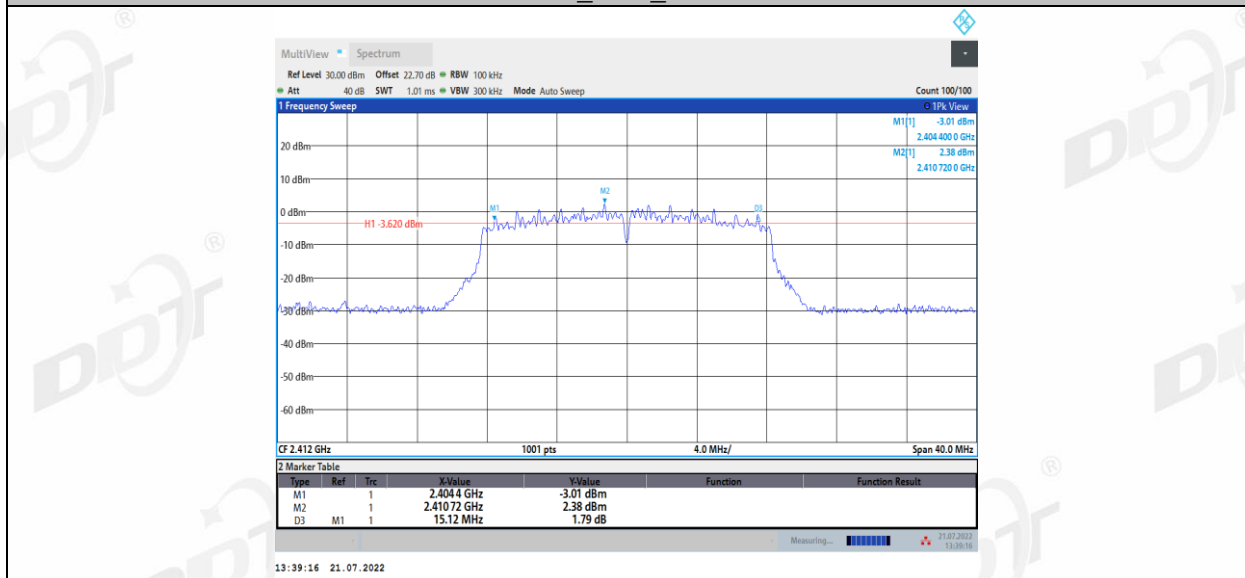
11B_Ant1_2462



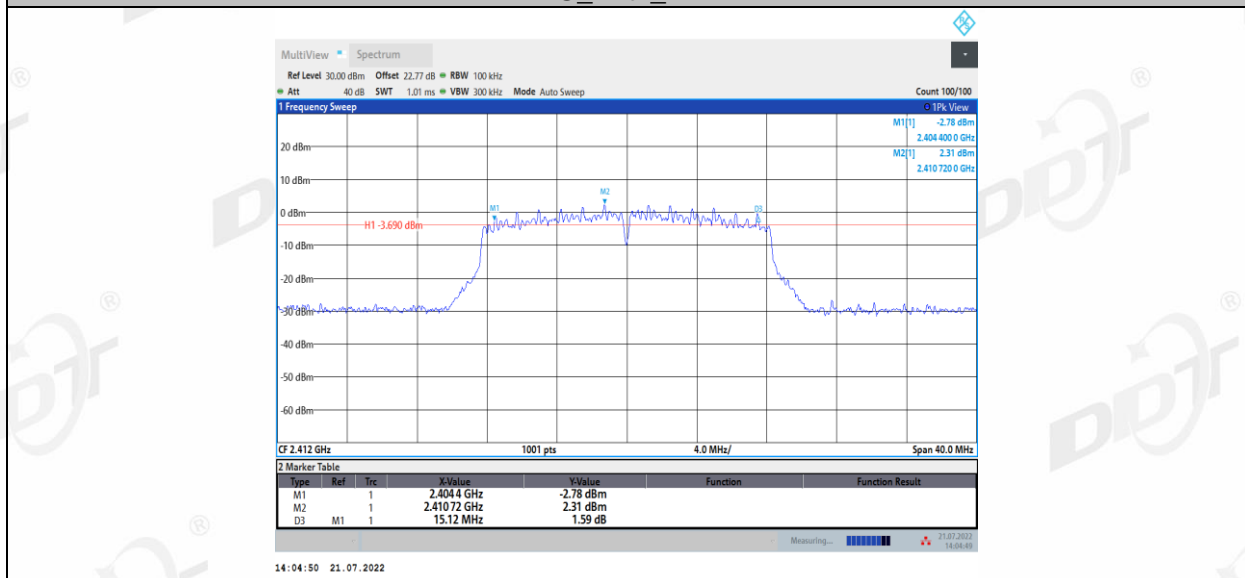
11B_Ant2_2462



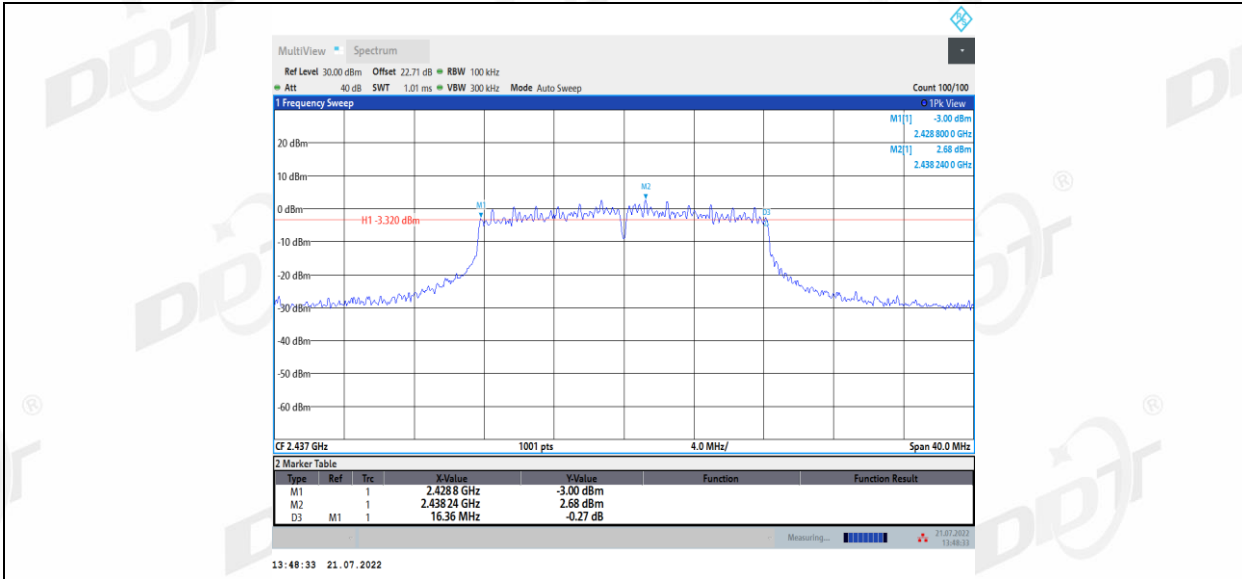
11G_Ant1_2412



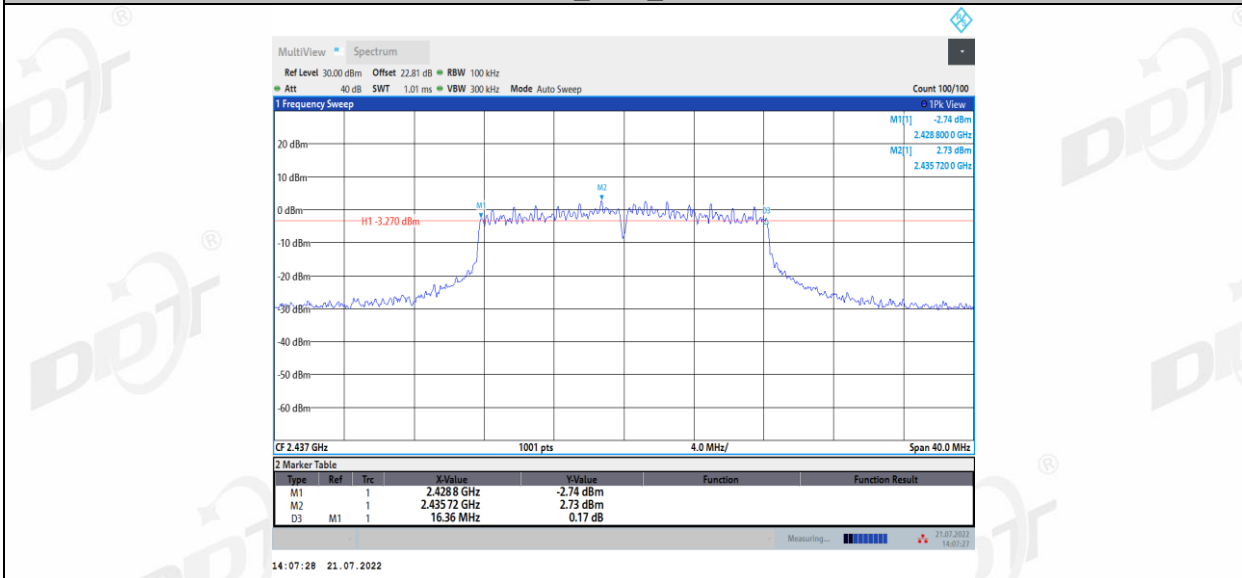
11G_Ant2_2412



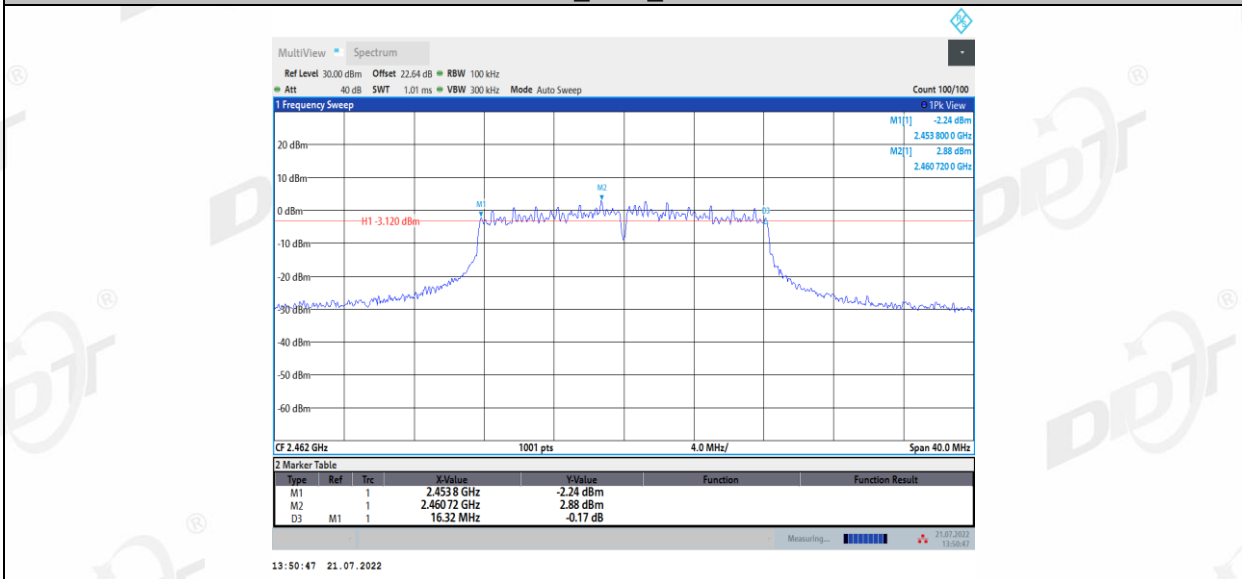
11G_Ant1_2437



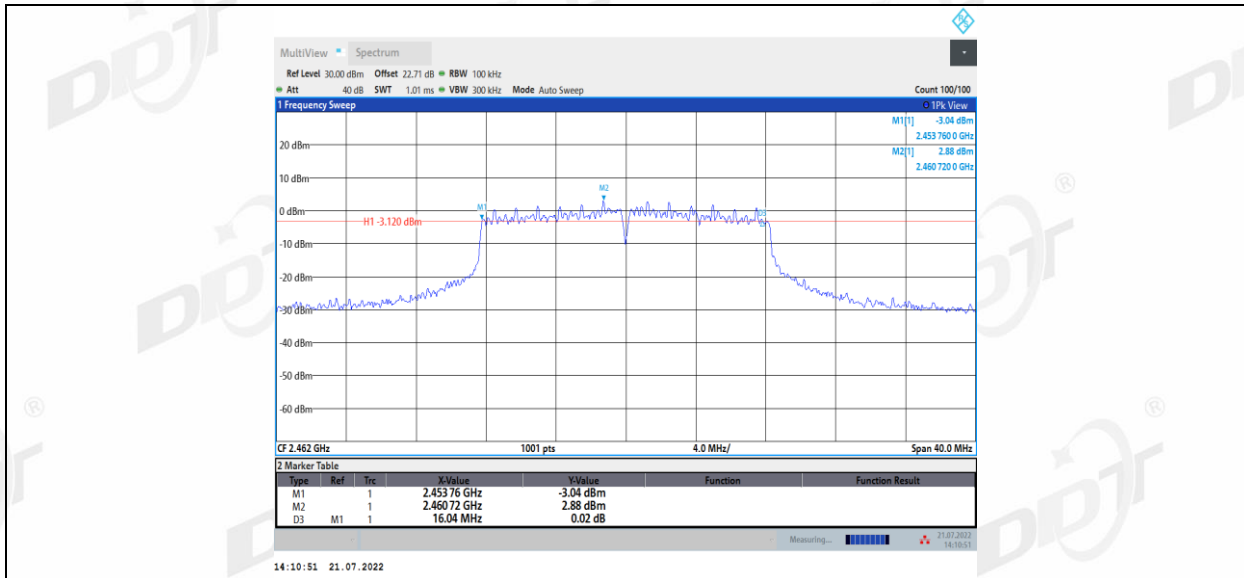
11G_Ant2_2437



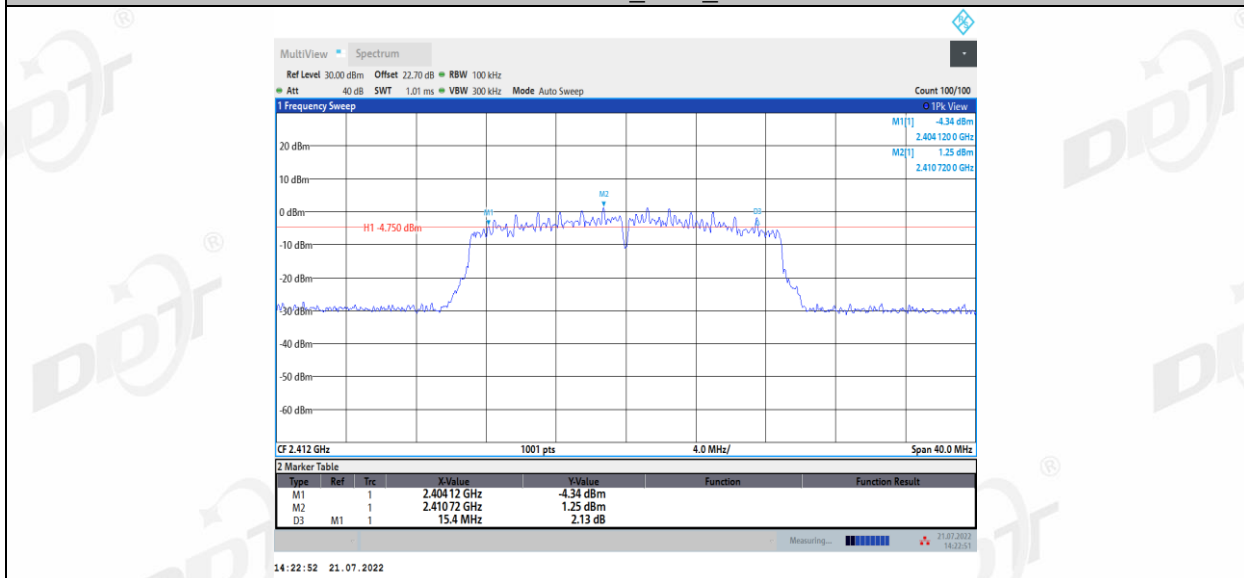
11G_Ant1_2462



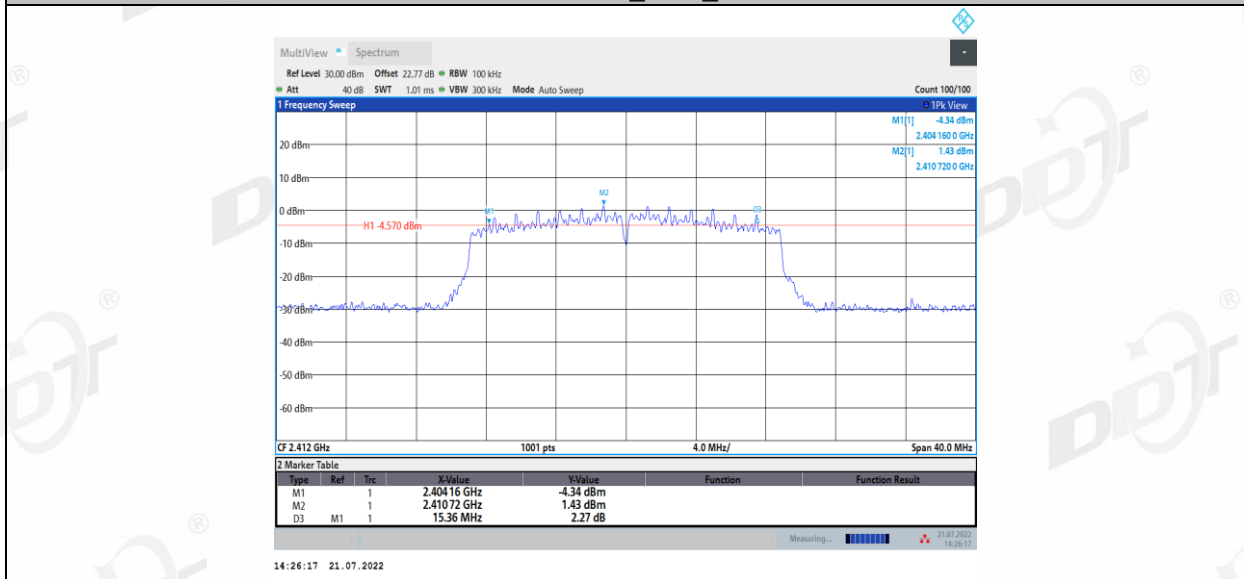
11G_Ant2_2462



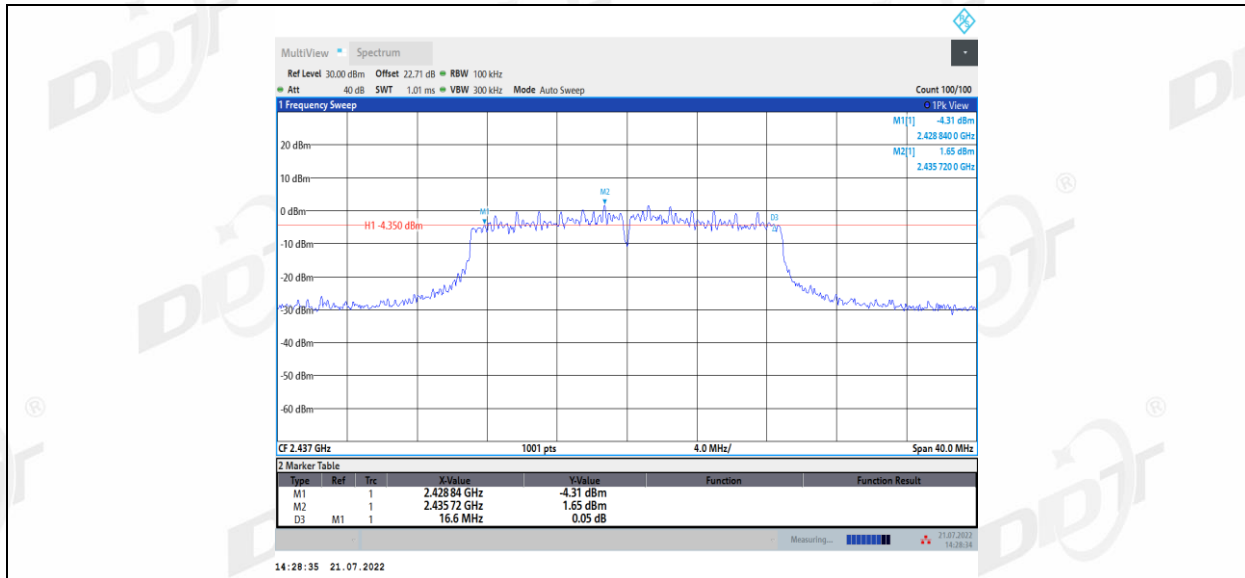
11N20MIMO_Ant1_2412



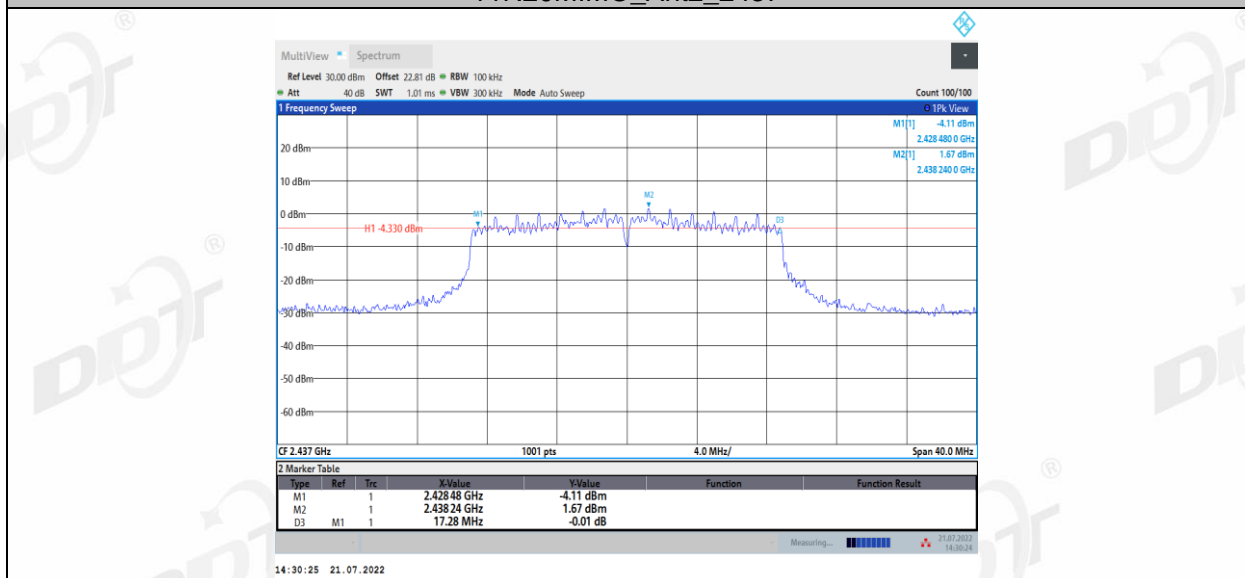
11N20MIMO_Ant2_2412



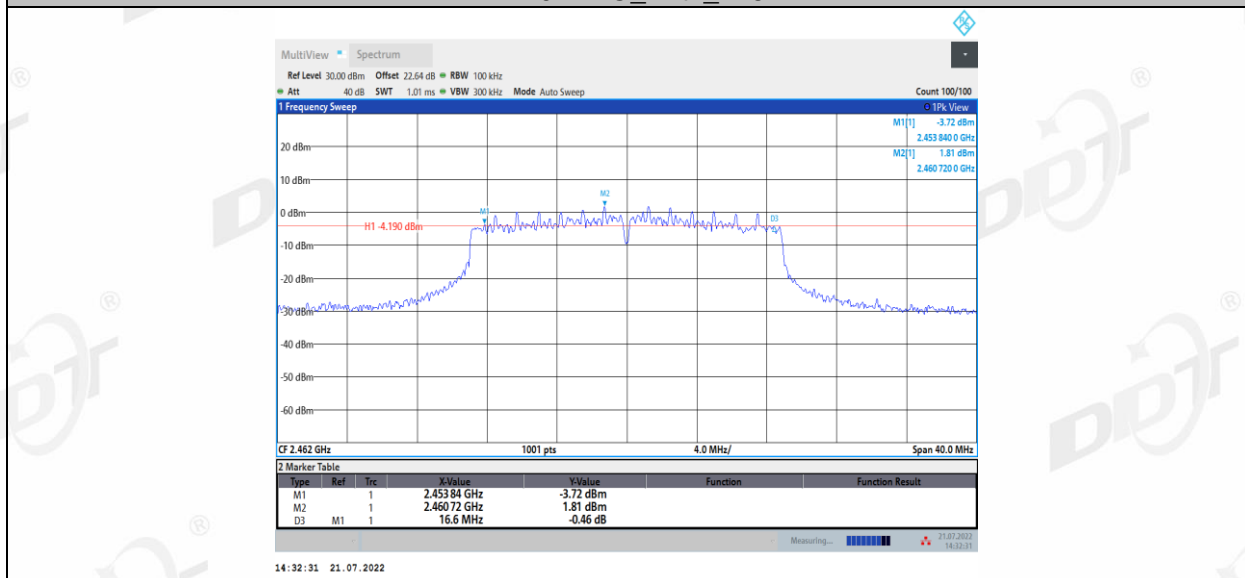
11N20MIMO_Ant1_2437



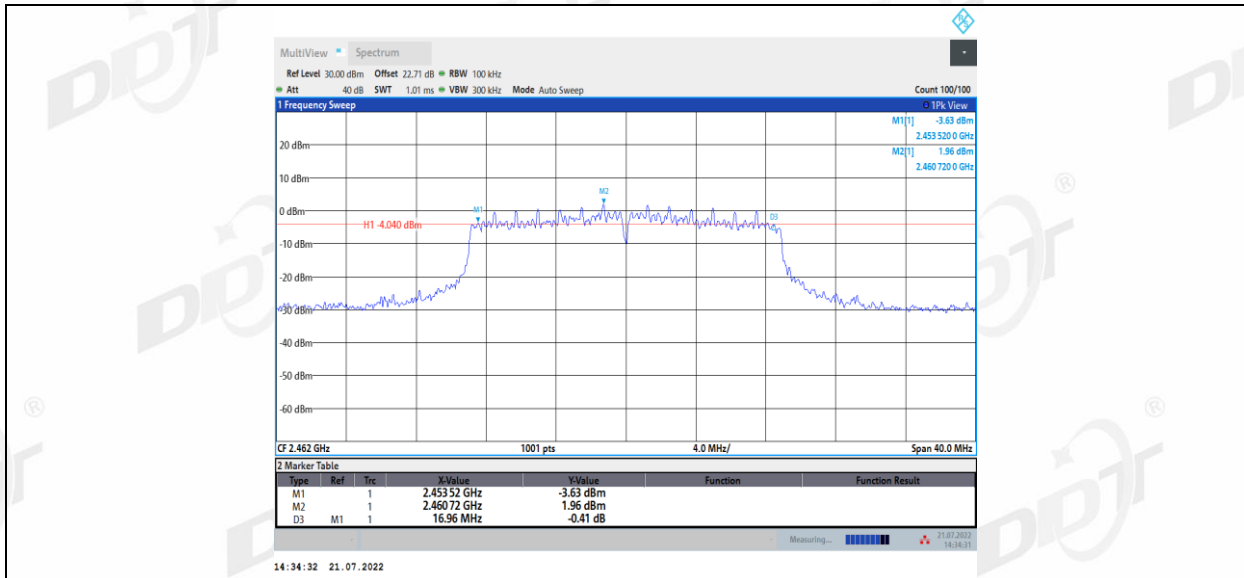
11N20MIMO_Ant2_2437



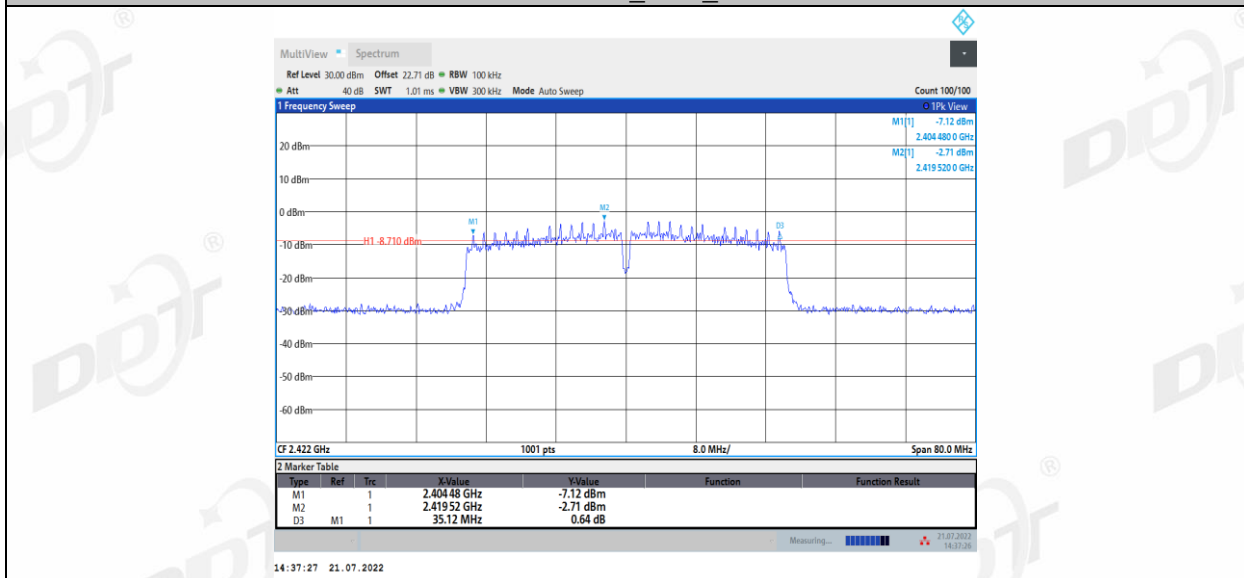
11N20MIMO_Ant1_2462



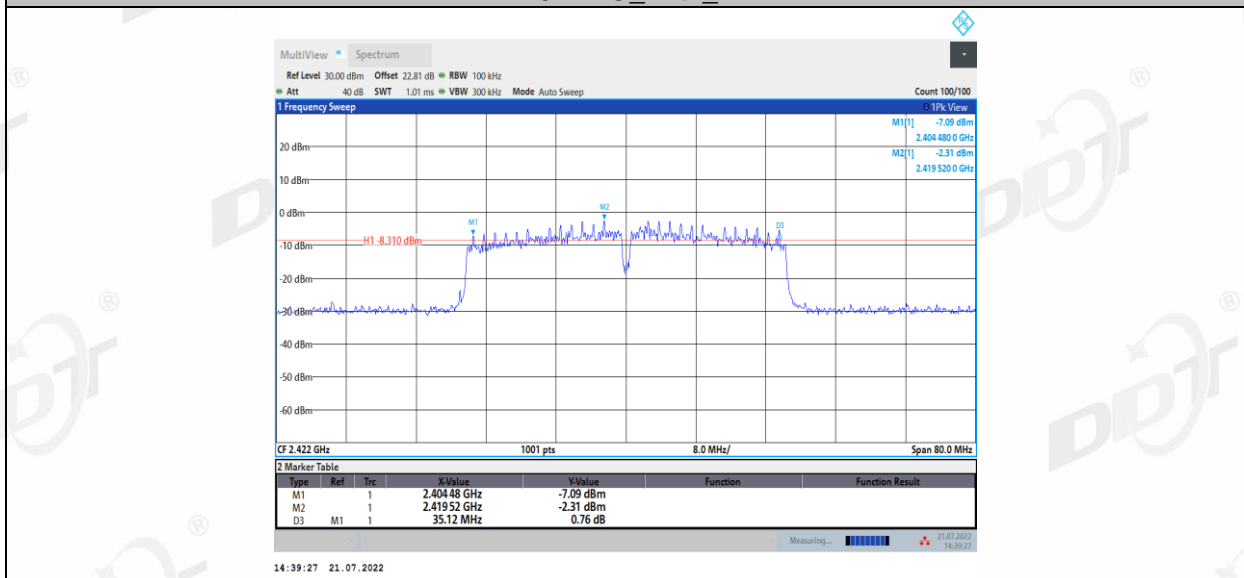
11N20MIMO_Ant2_2462



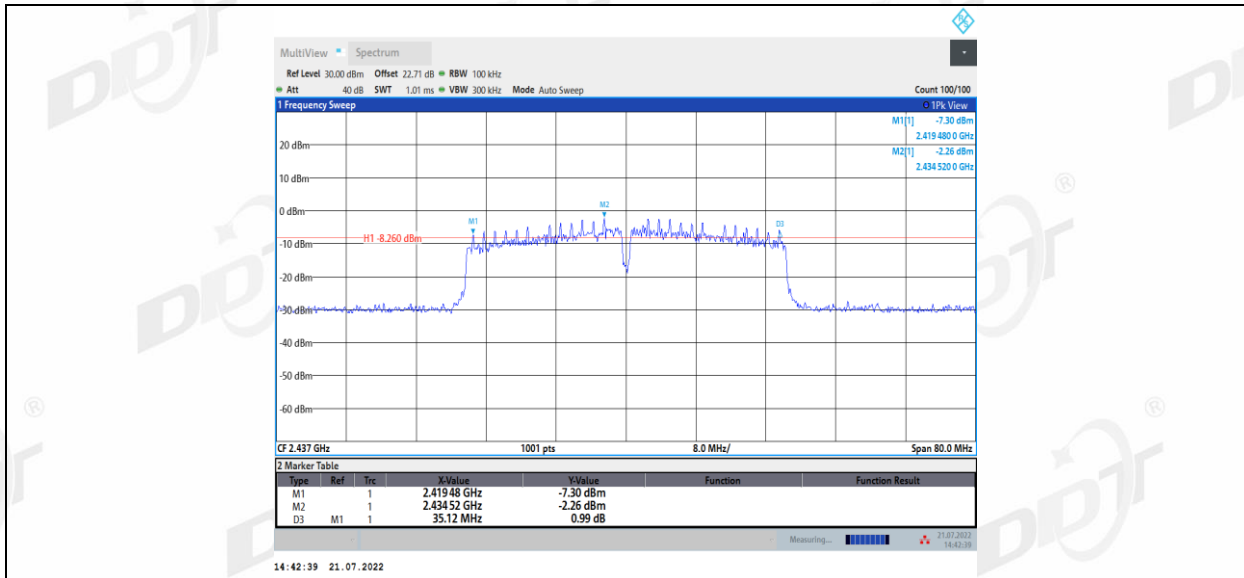
11N40MIMO_Ant1_2422



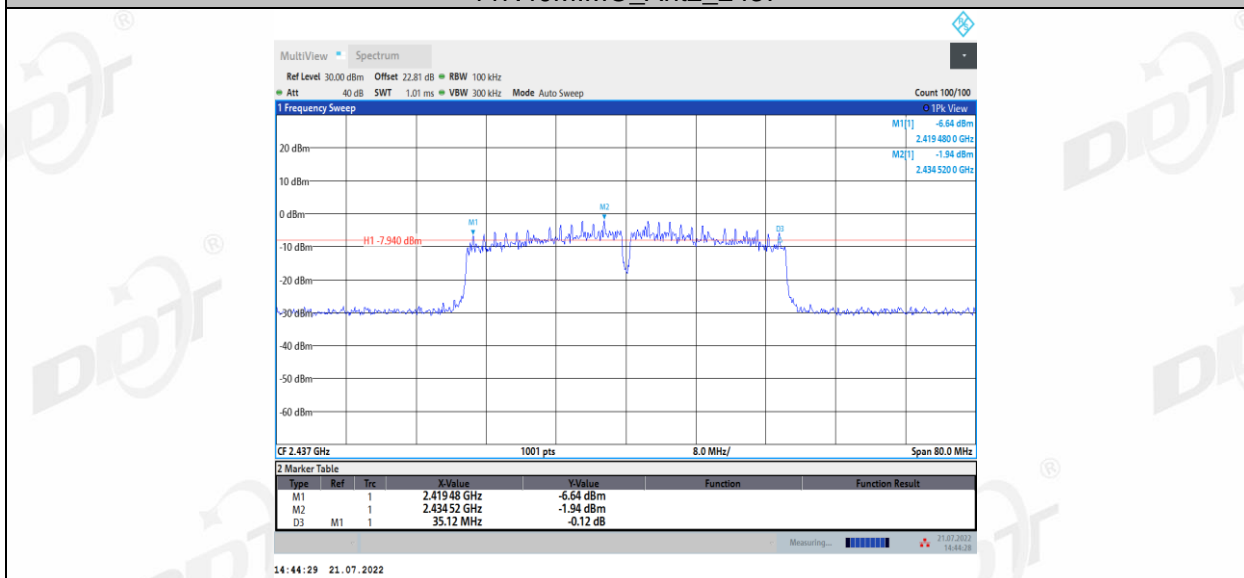
11N40MIMO_Ant2_2422



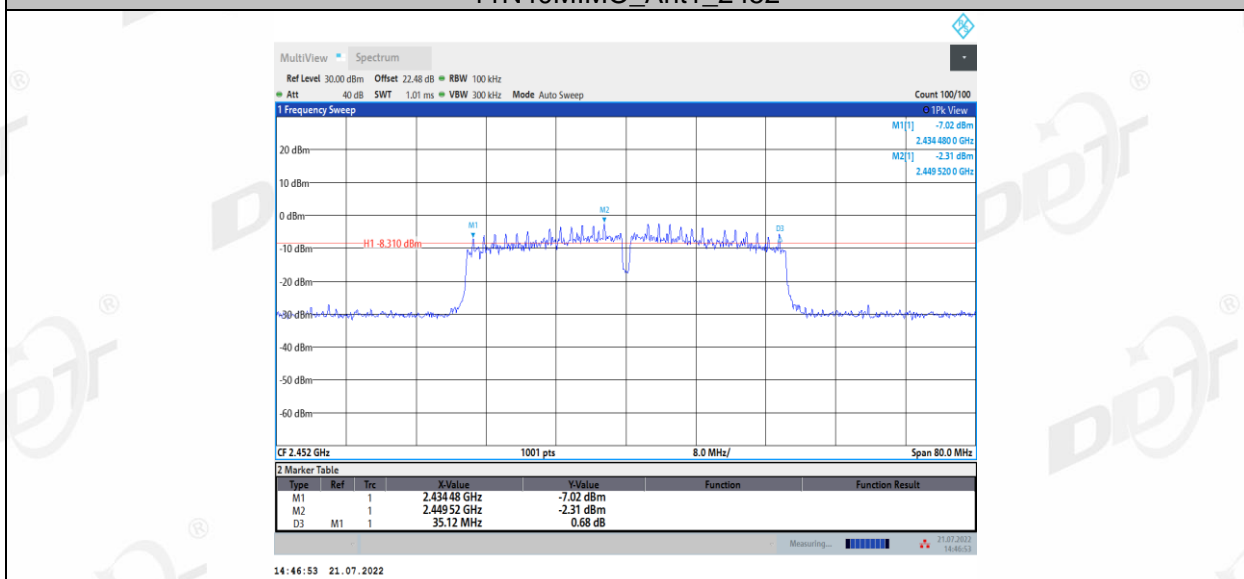
11N40MIMO_Ant1_2437



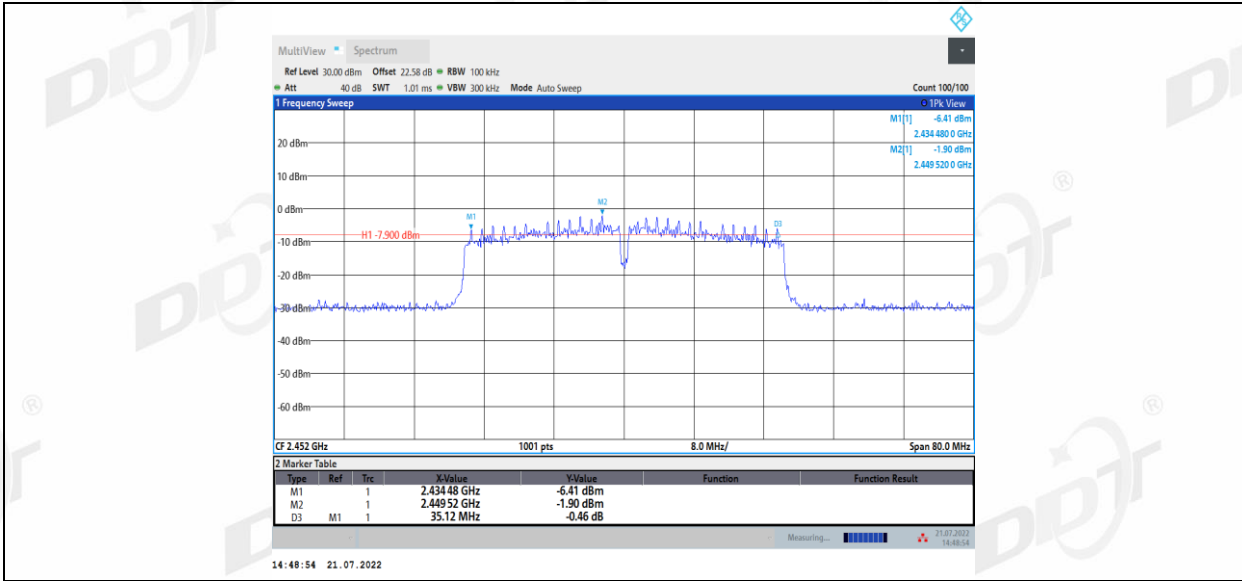
11N40MIMO_Ant2_2437



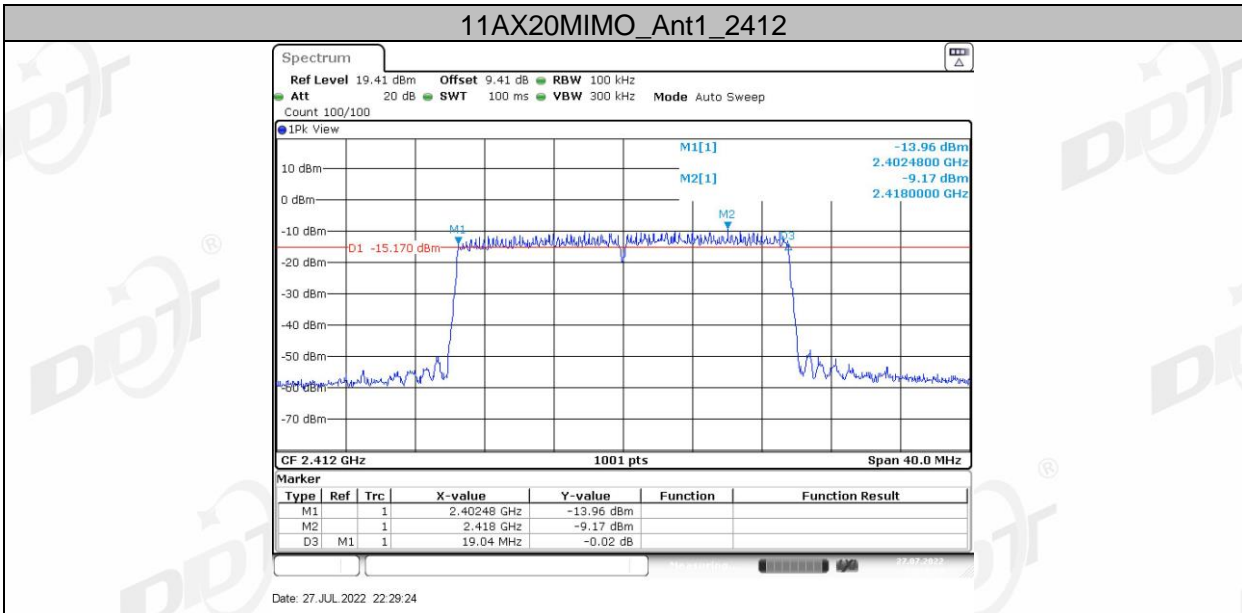
11N40MIMO_Ant1_2452



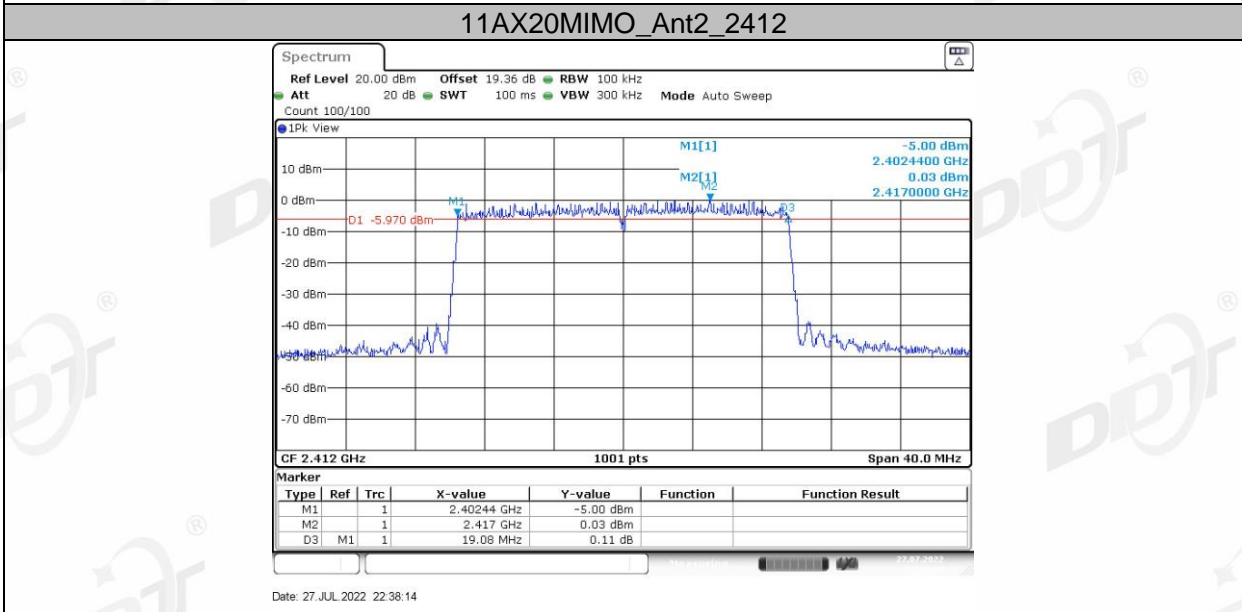
11N40MIMO_Ant2_2452



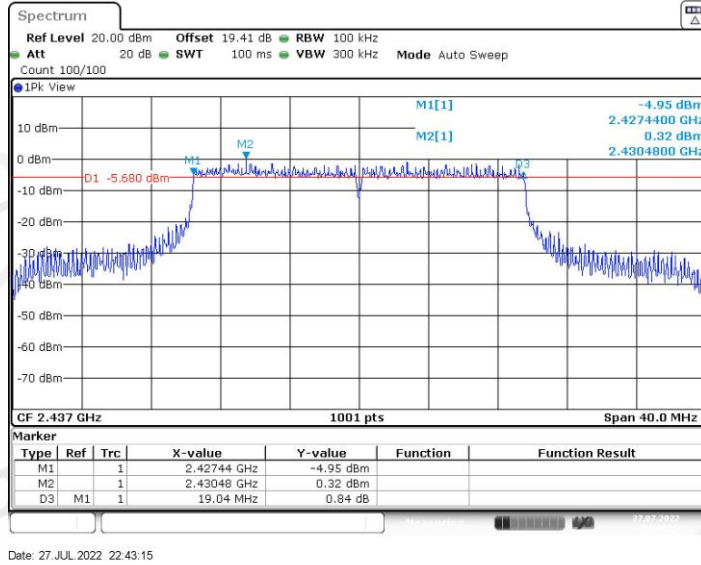
11AX20MIMO_Ant1_2412



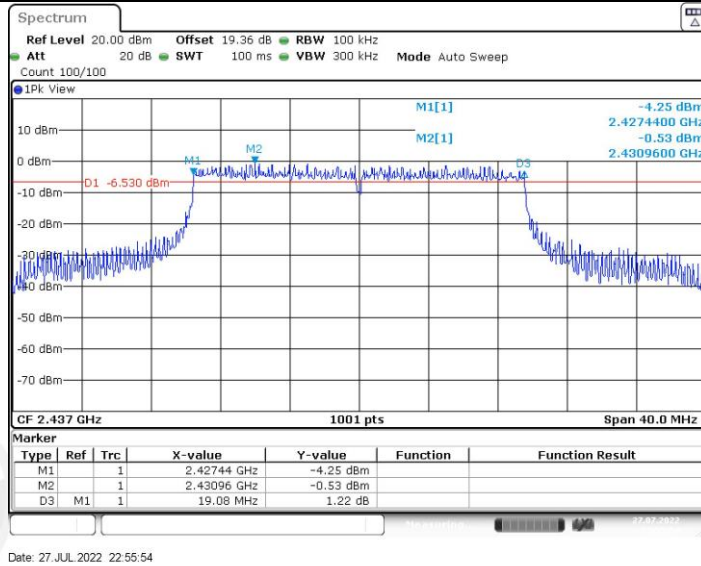
11AX20MIMO_Ant2_2412



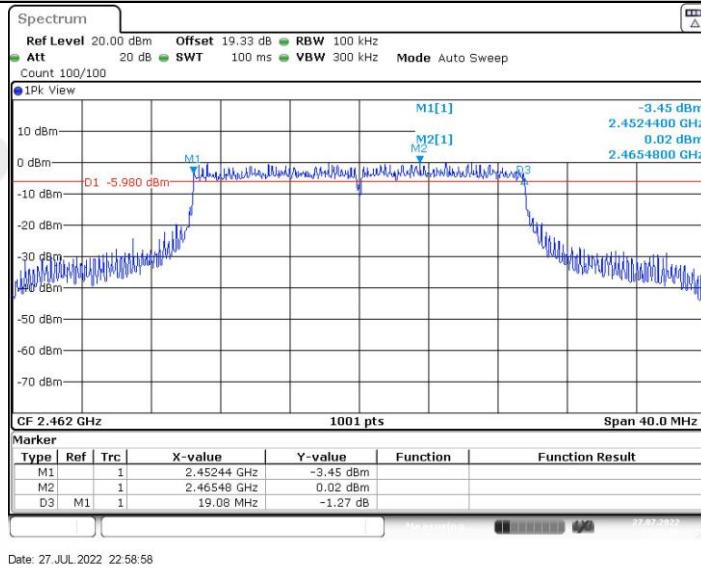
11AX20MIMO_Ant1_2437



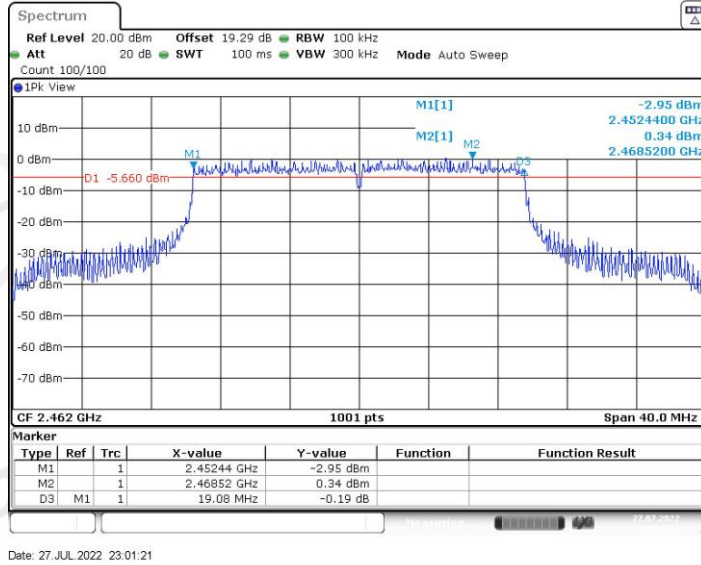
11AX20MIMO_Ant2_2437



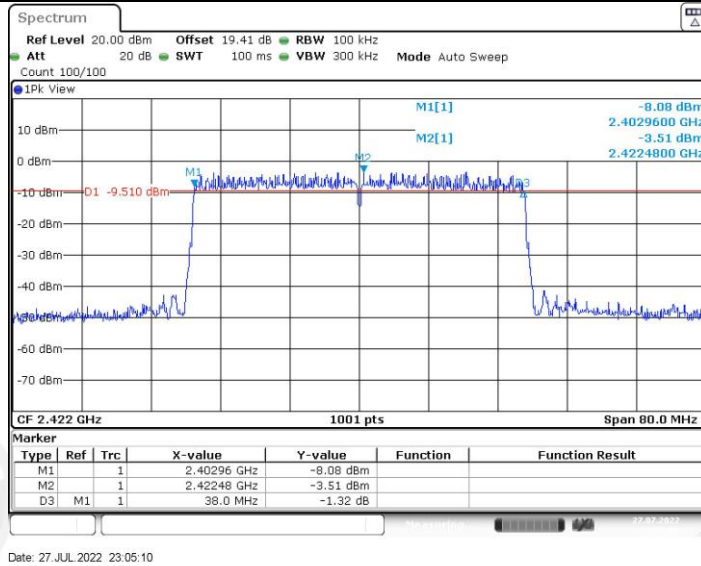
11AX20MIMO_Ant1_2462



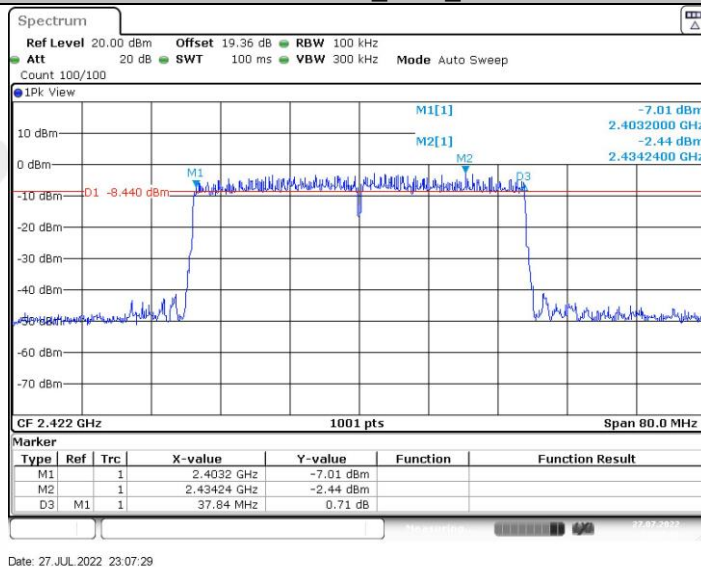
11AX20MIMO_Ant2_2462



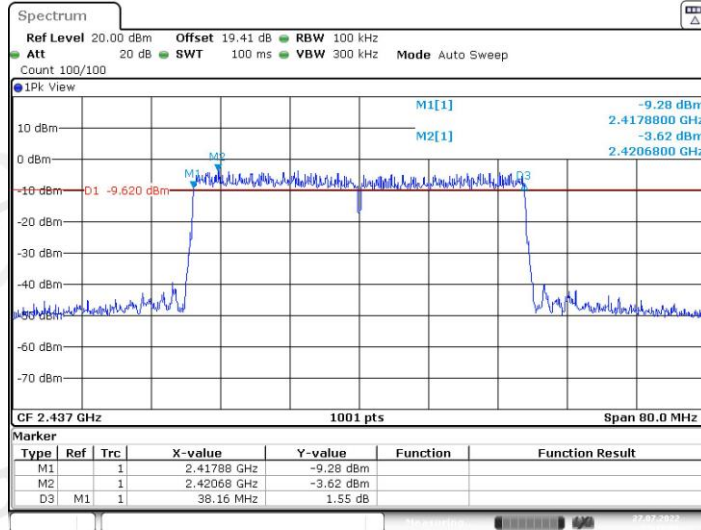
11AX40MIMO_Ant1_2422



11AX40MIMO_Ant2_2422

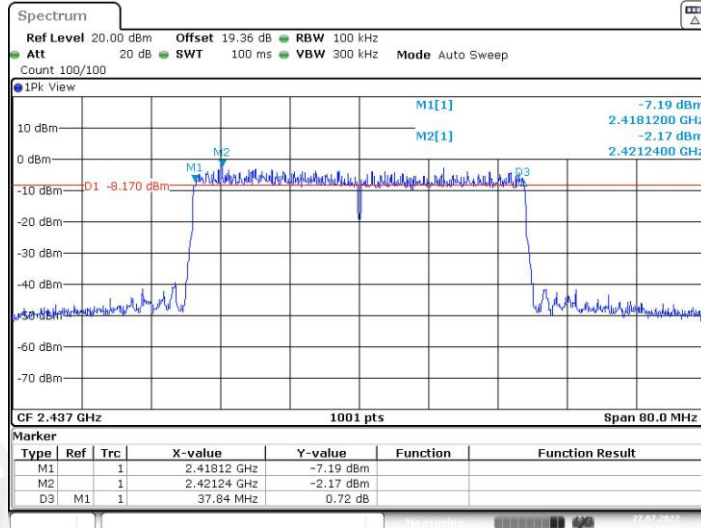


11AX40MIMO_Ant1_2437



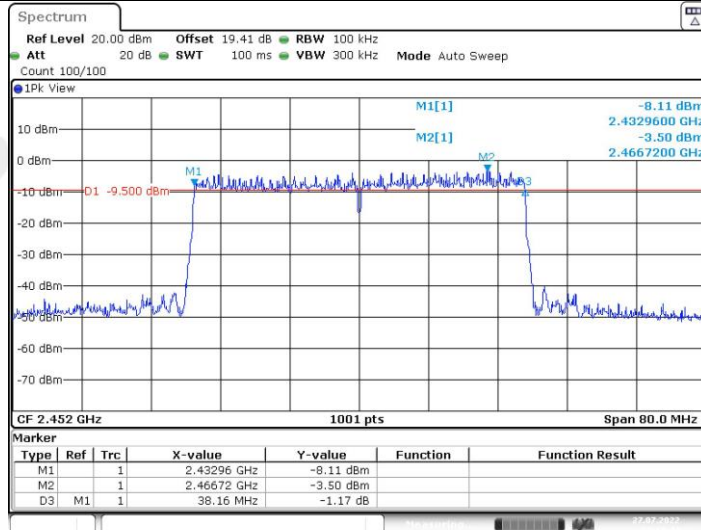
Date: 27 JUL 2022 23:10:09

11AX40MIMO_Ant2_2437

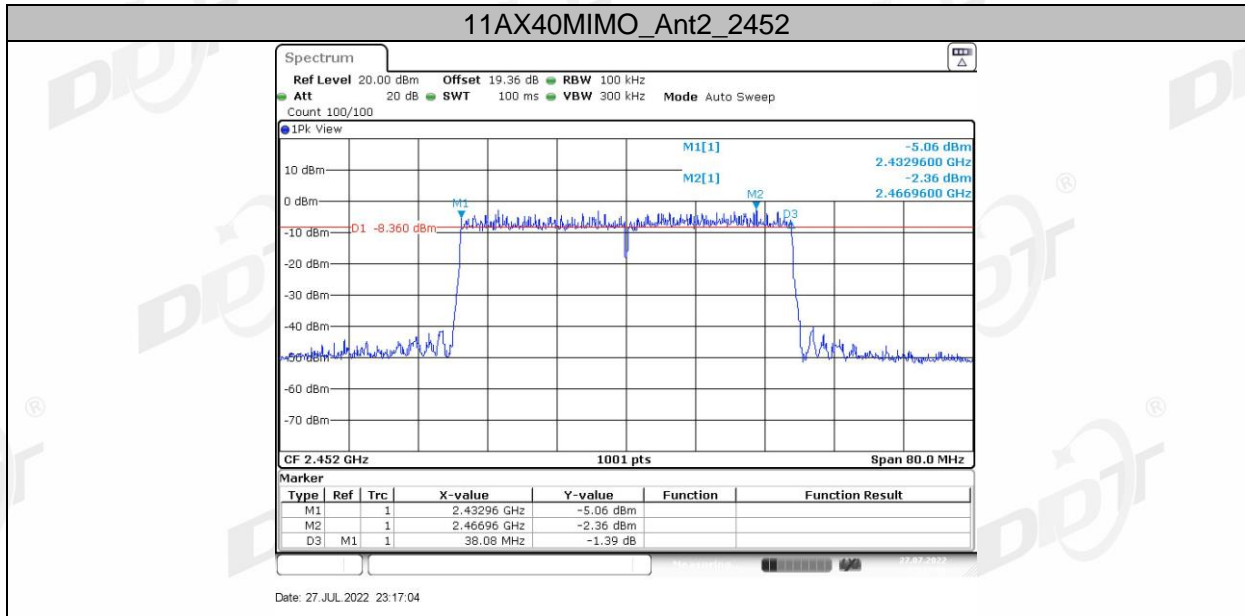


Date: 27 JUL 2022 23:12:17

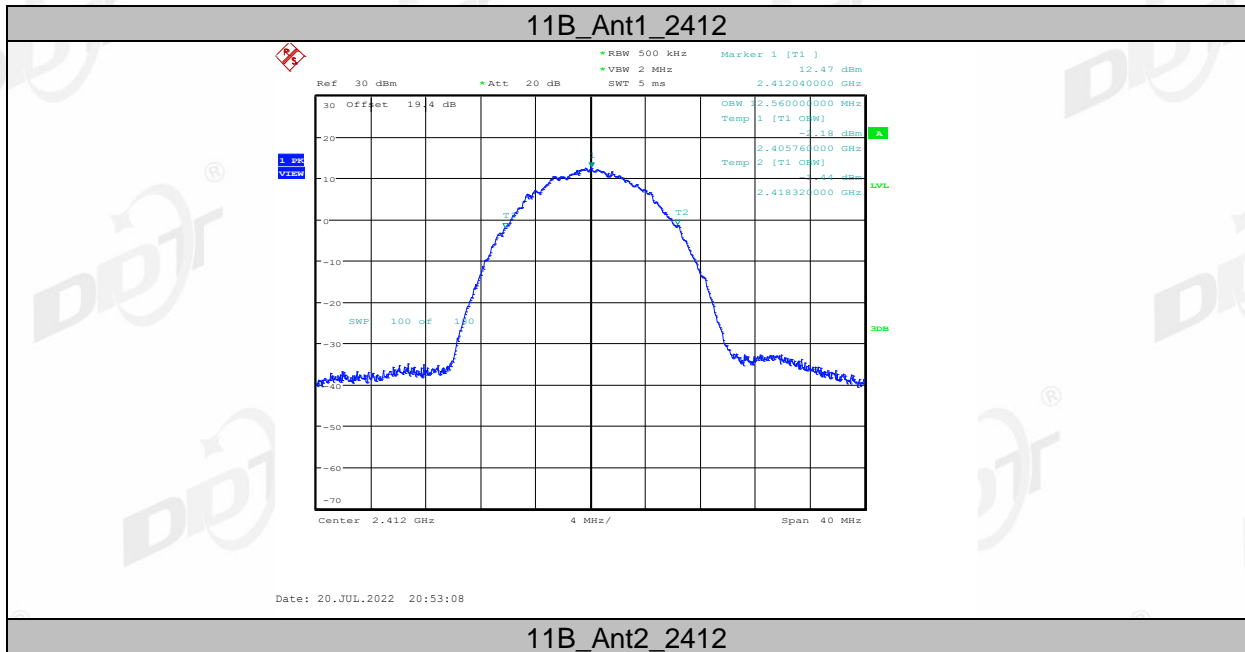
11AX40MIMO_Ant1_2452



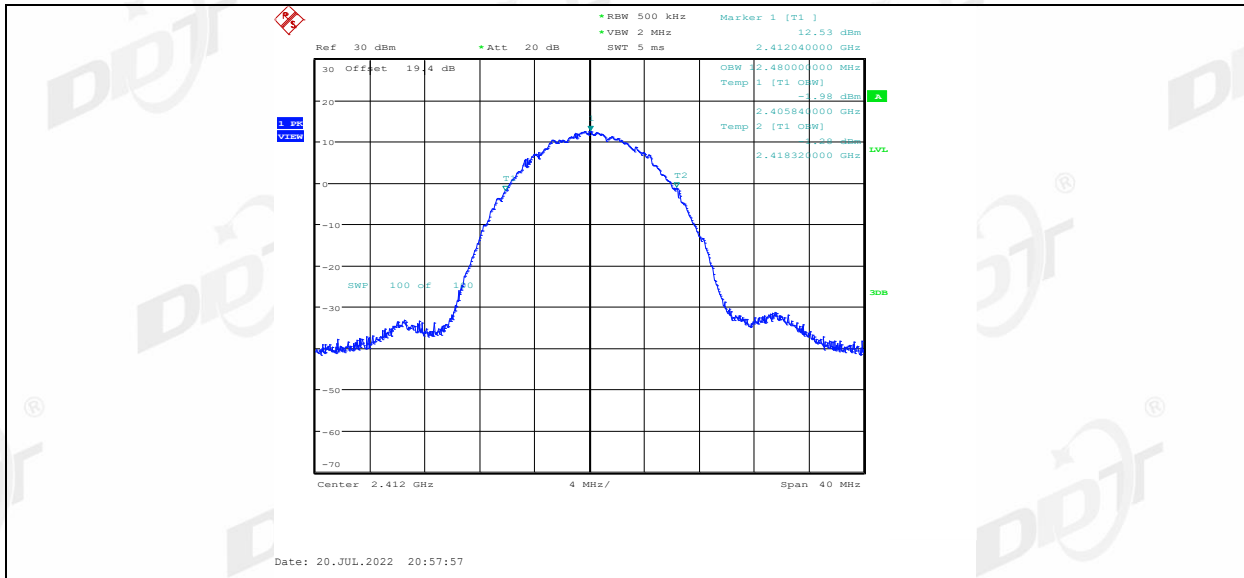
Date: 27 JUL 2022 23:14:45



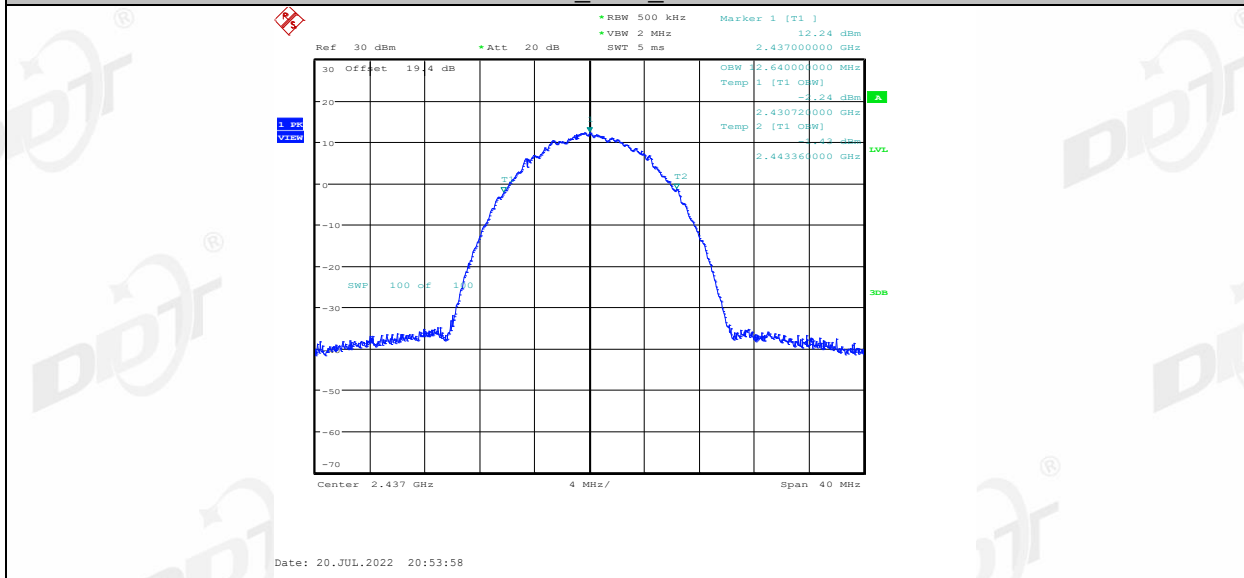
99% bandwidth:



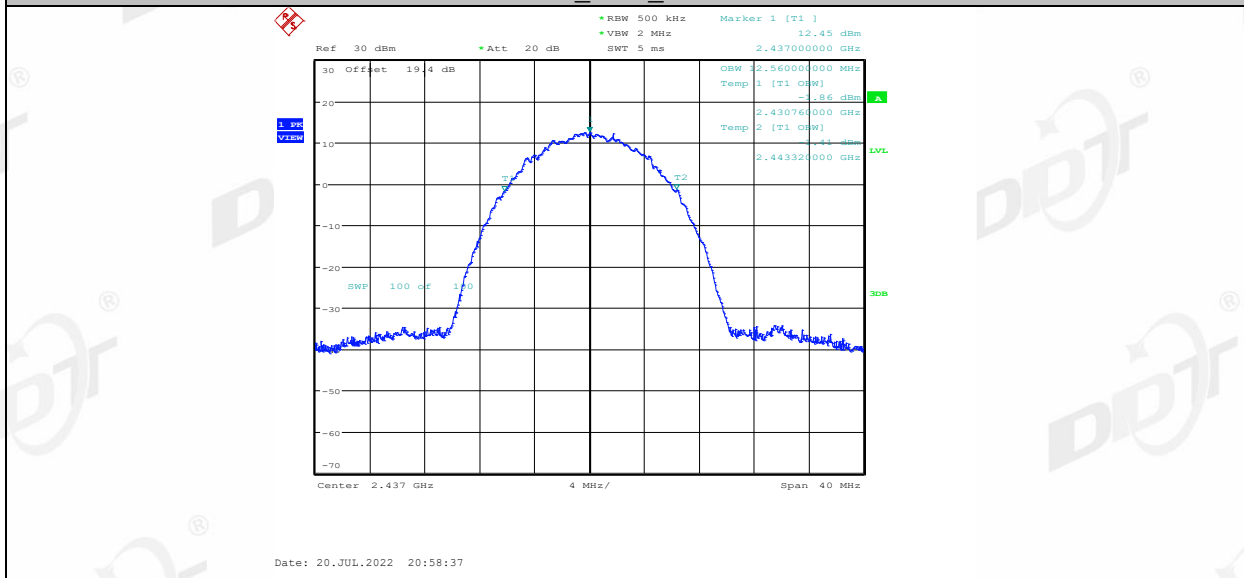
11B_Ant2_2412



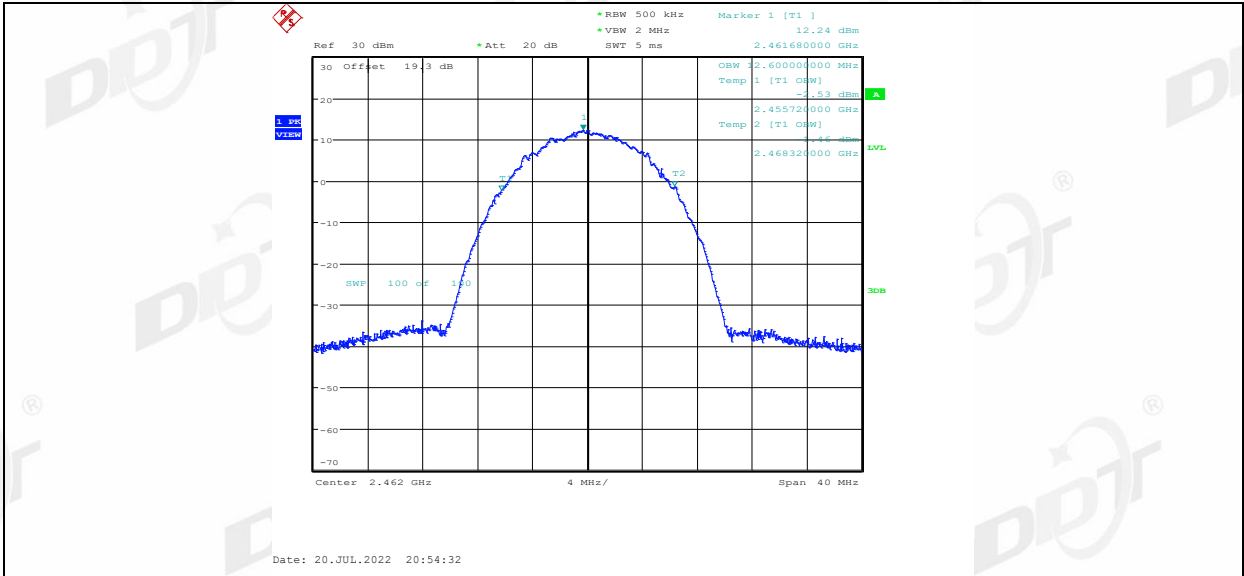
11B_Ant1_2437



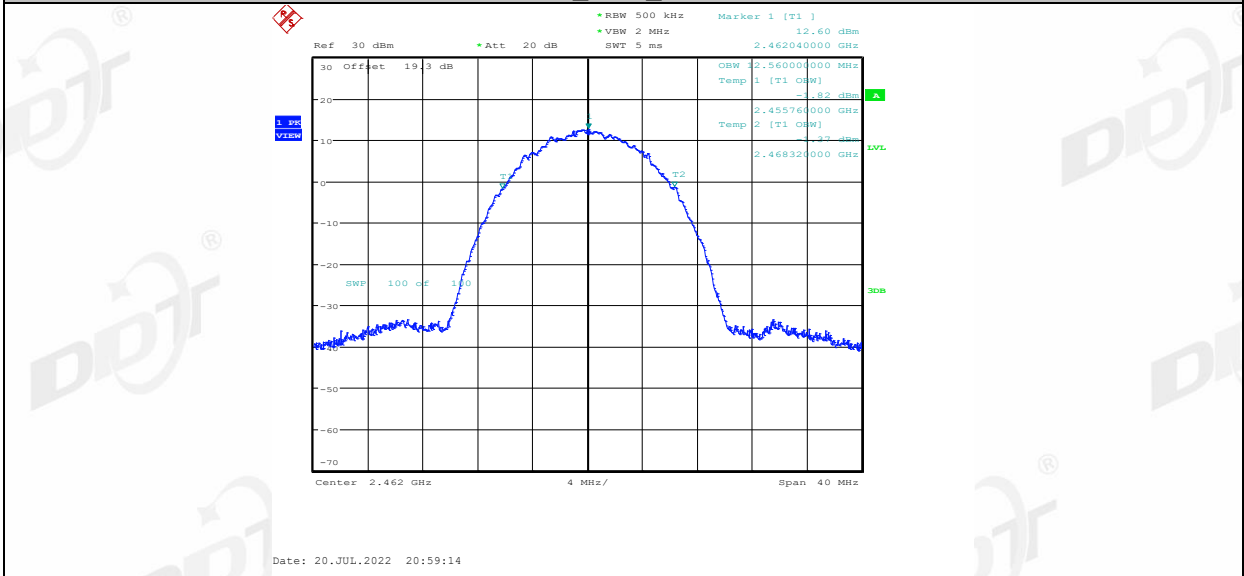
11B_Ant2_2437



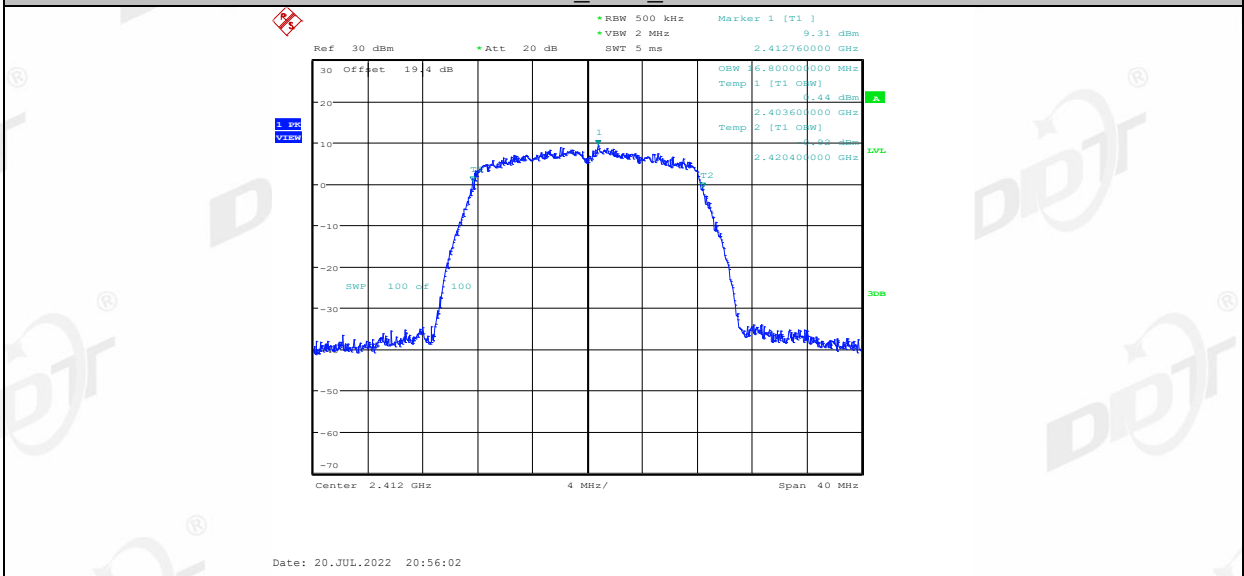
11B_Ant1_2462



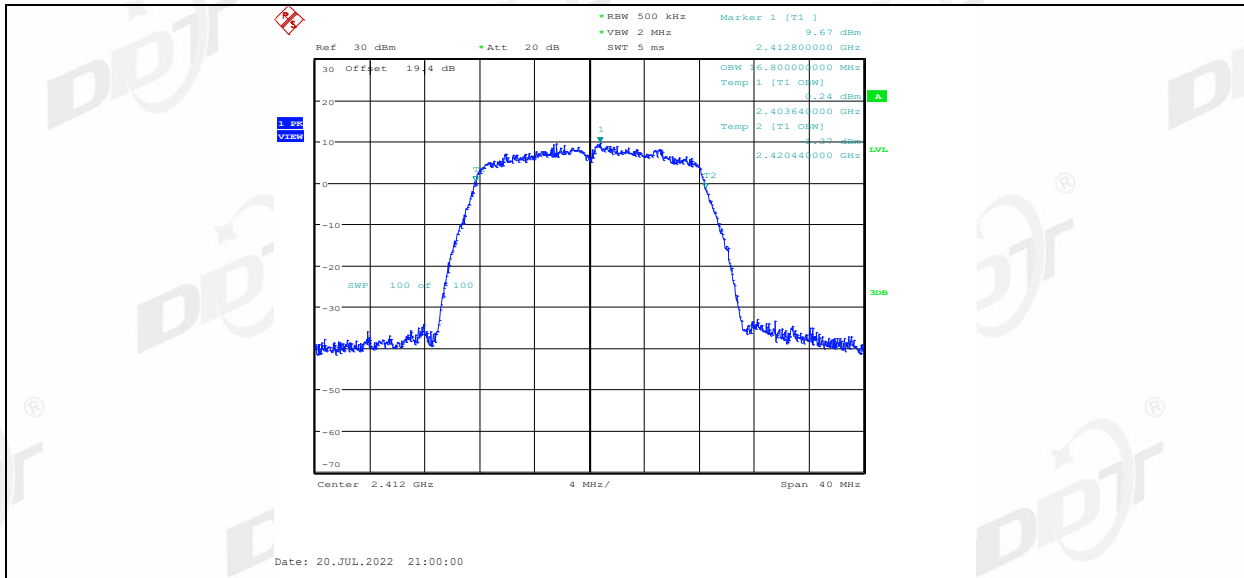
11B_Ant2_2462



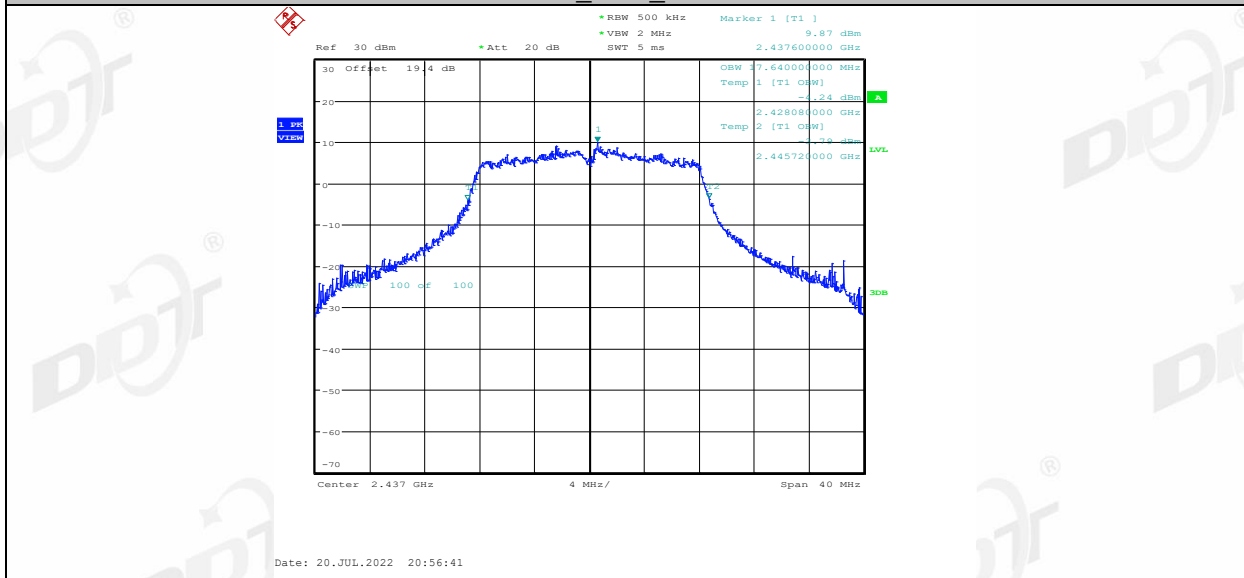
11G_Ant1_2412



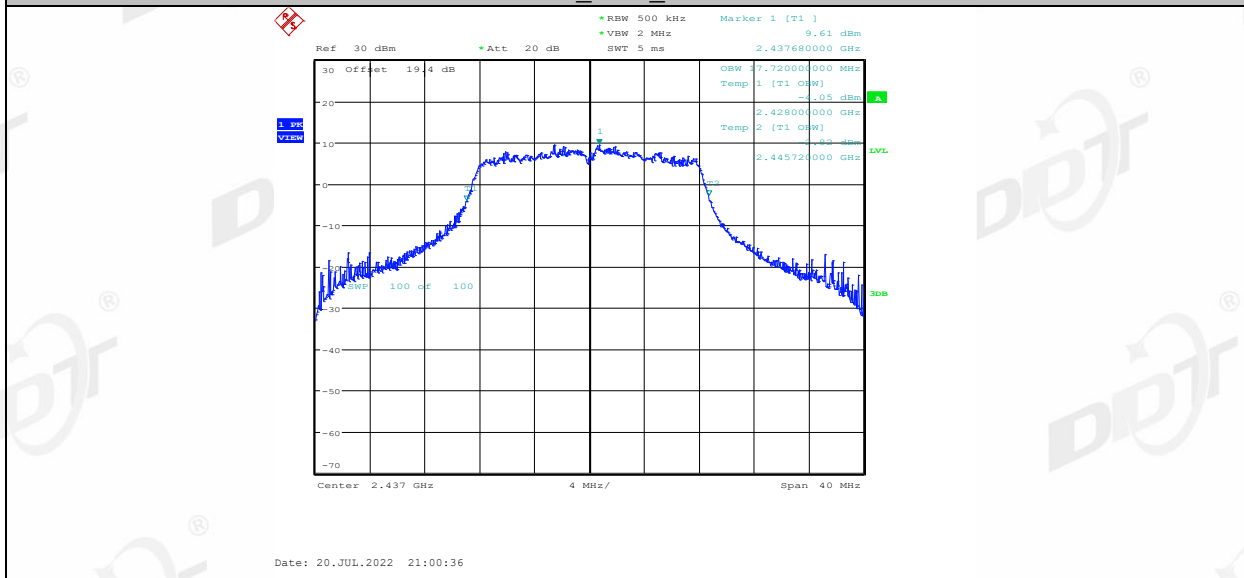
11G_Ant2_2412



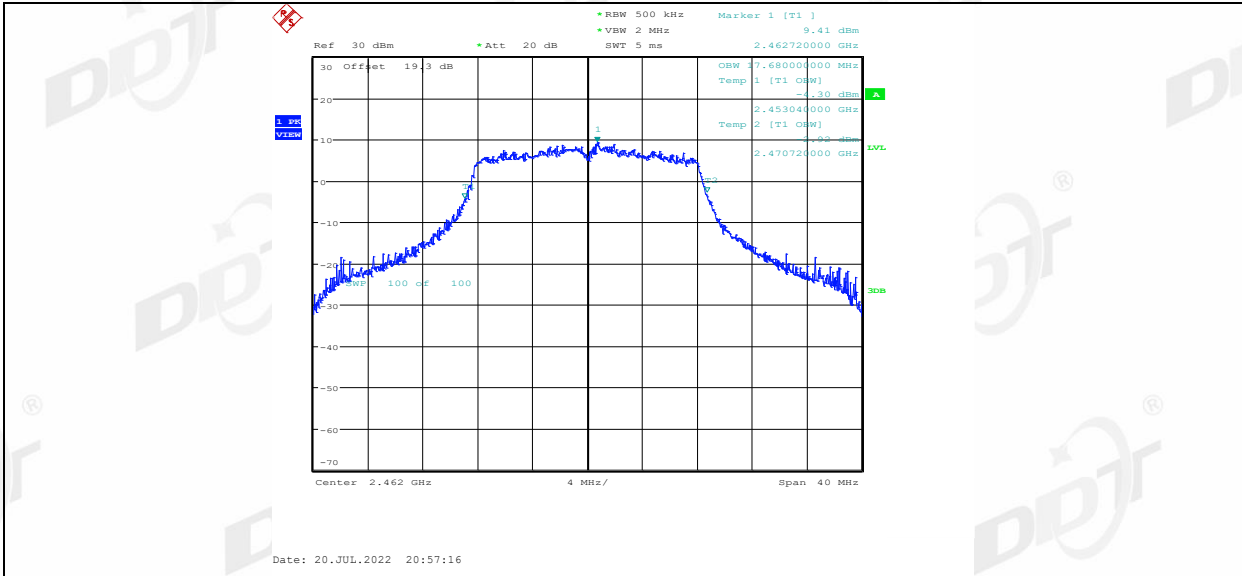
11G_Ant1_2437



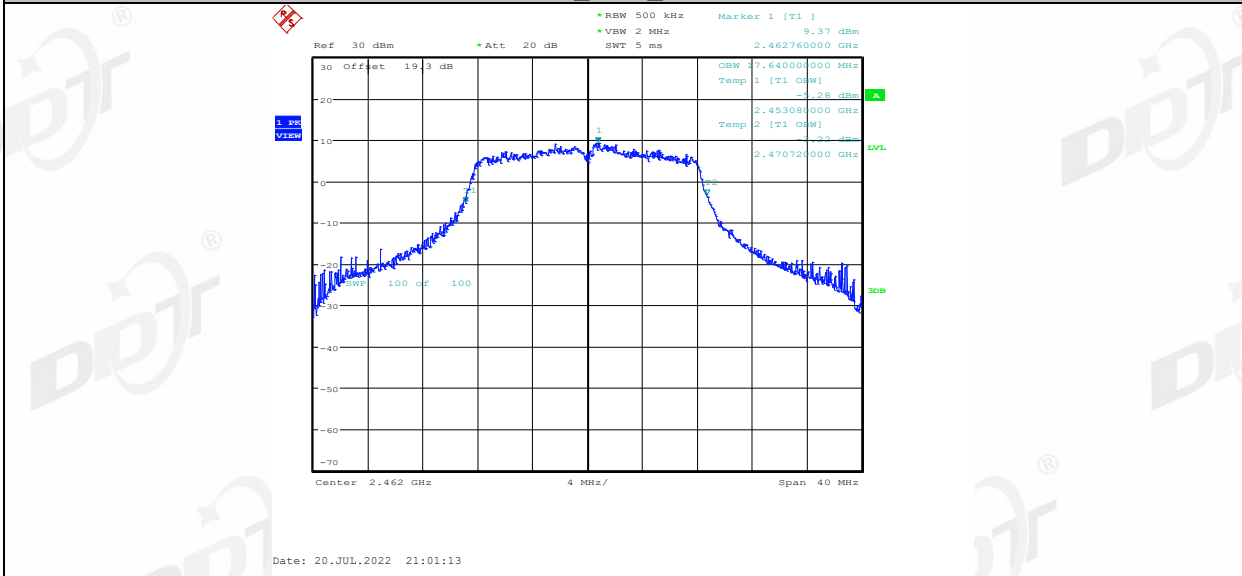
11G_Ant2_2437



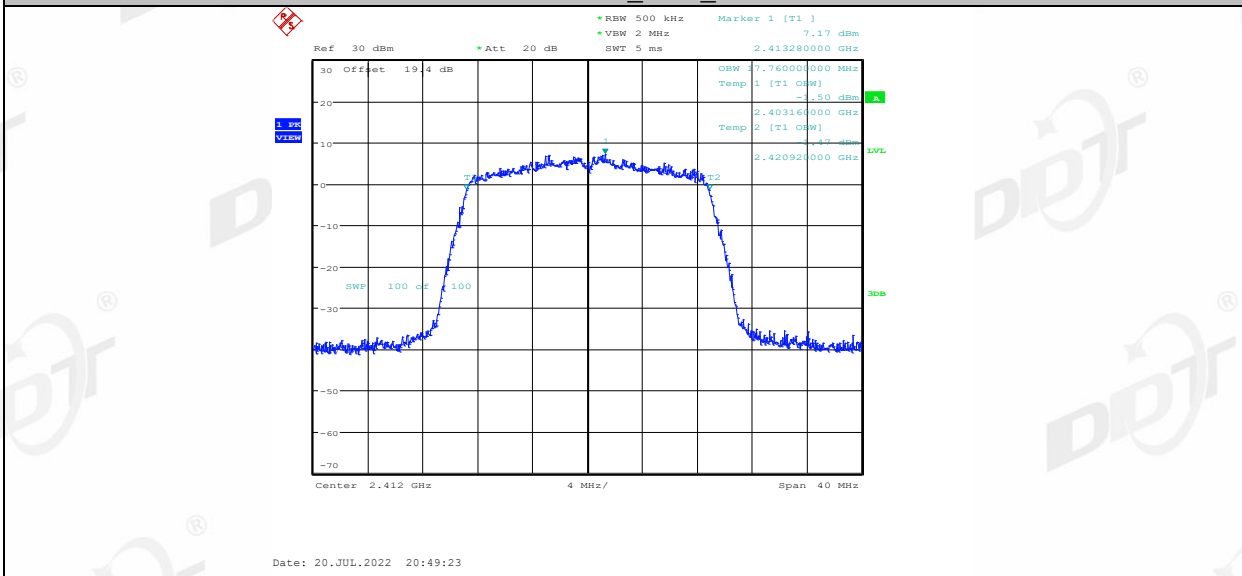
11G_Ant1_2462



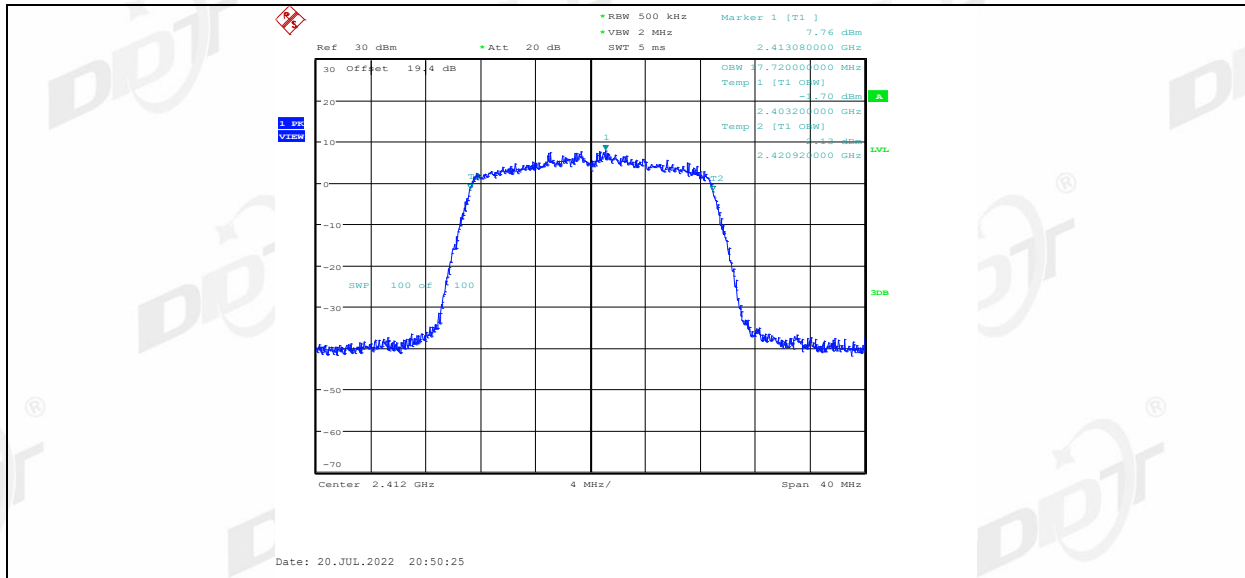
11G_Ant2_2462



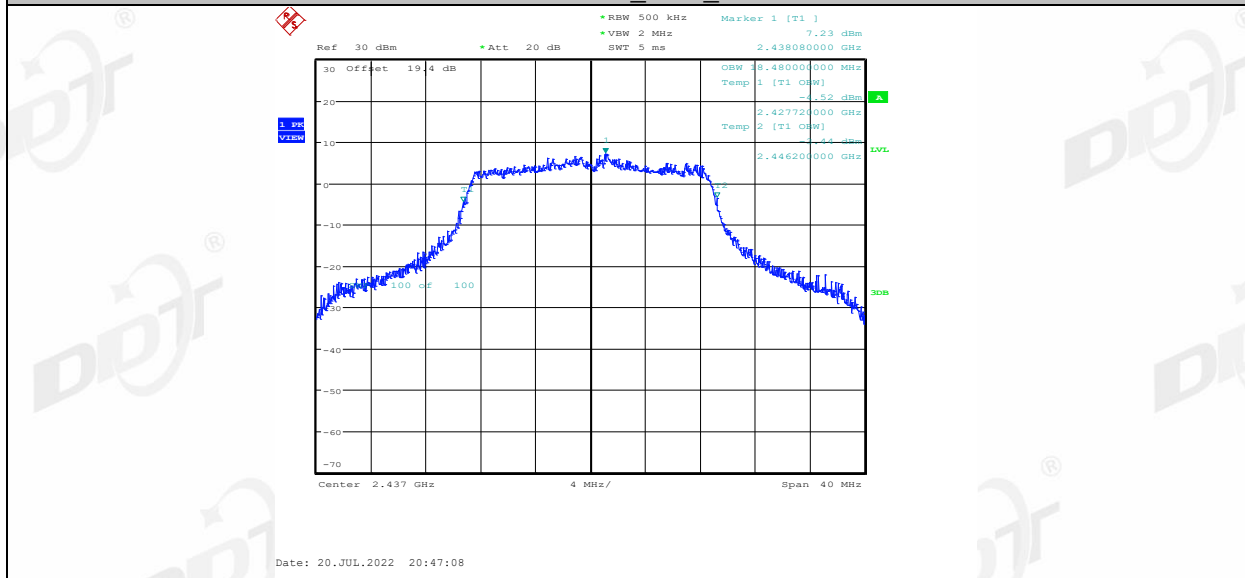
11N20MIMO_Ant1_2412



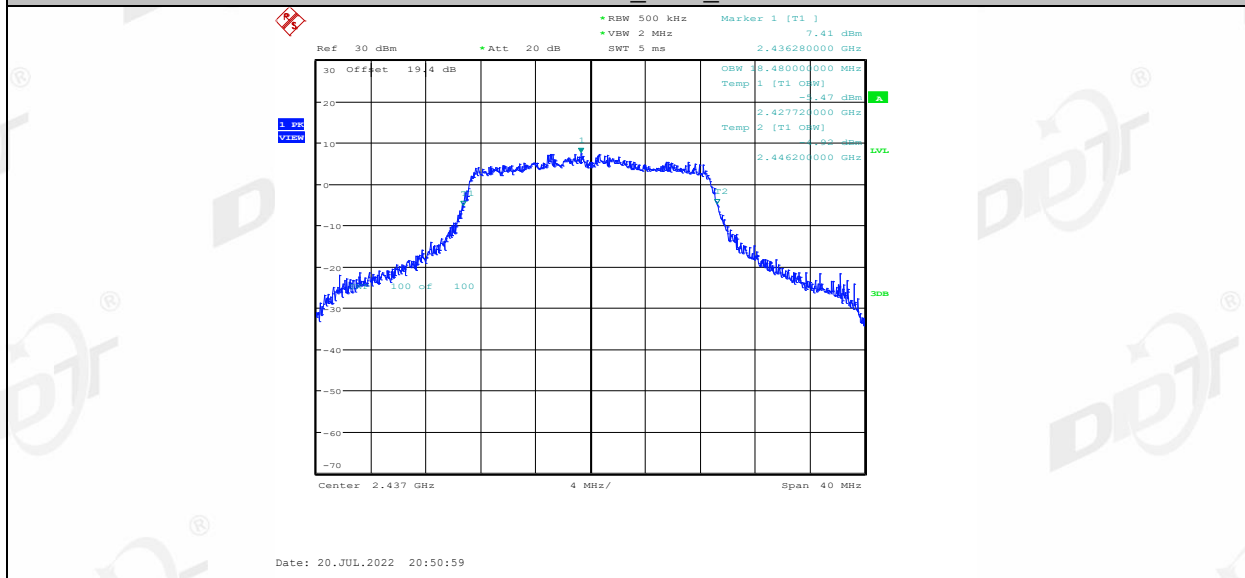
11N20MIMO_Ant2_2412



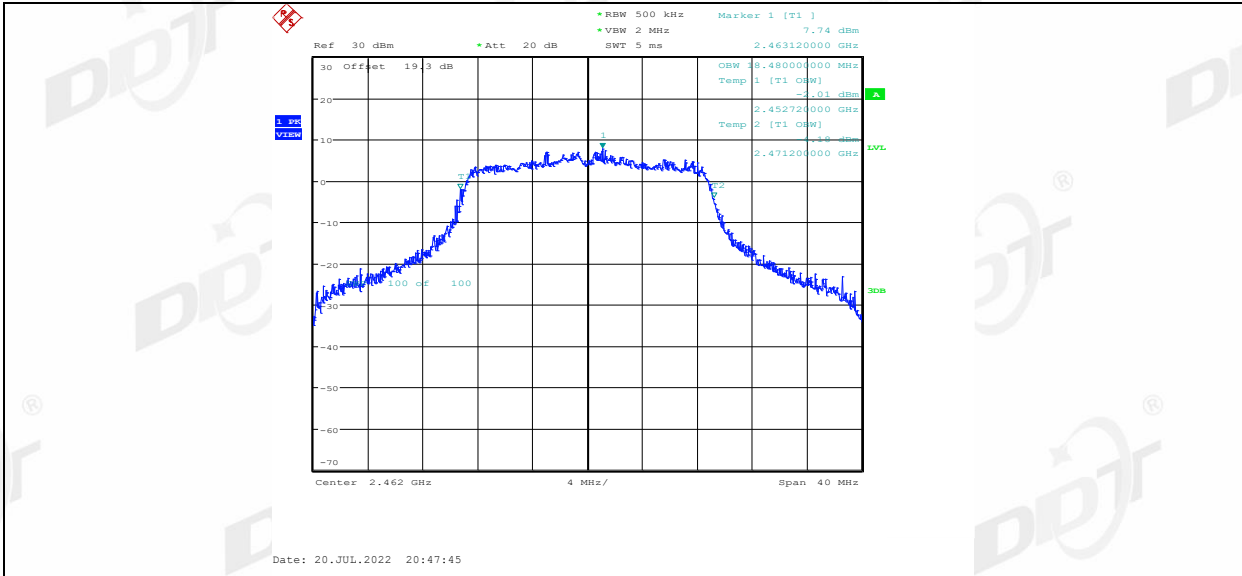
11N20MIMO_Ant1_2437



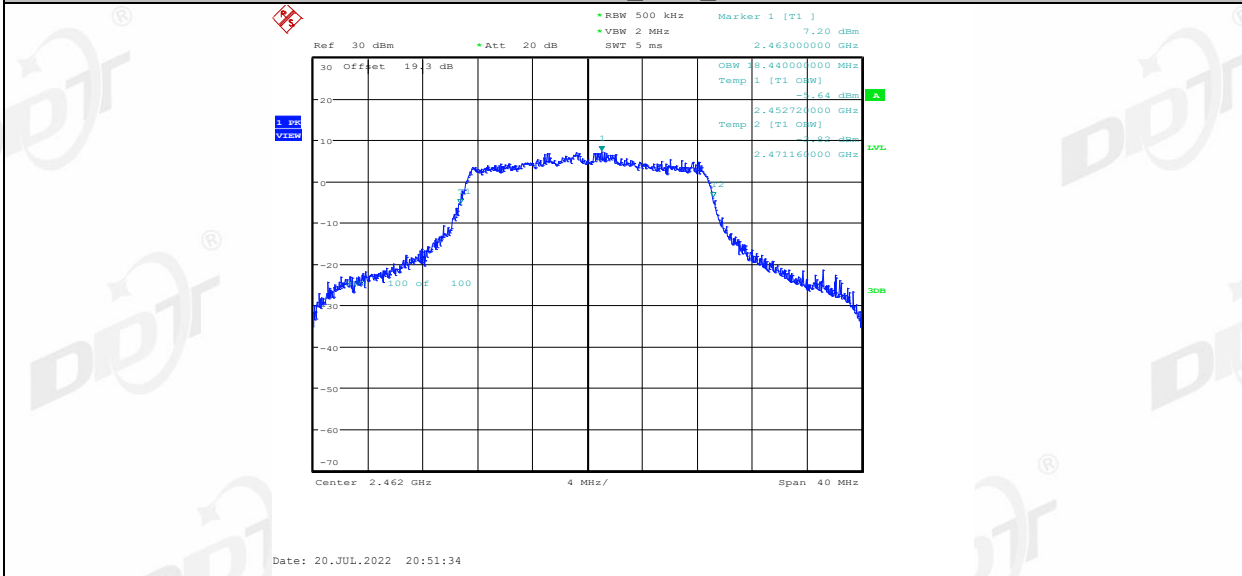
11N20MIMO_Ant2_2437



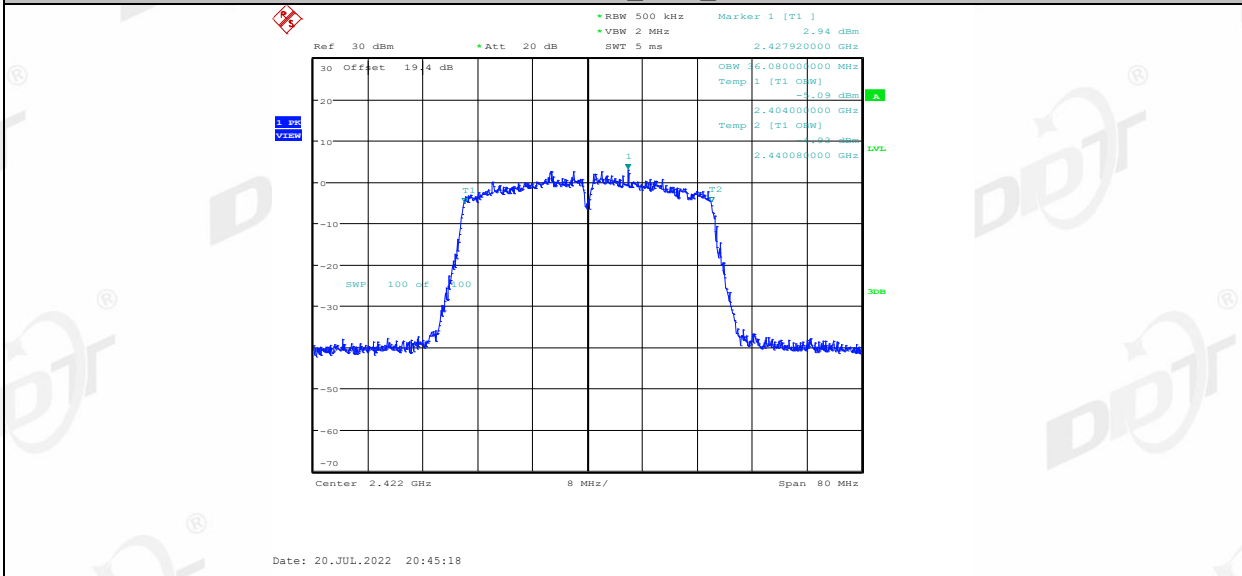
11N20MIMO_Ant1_2462



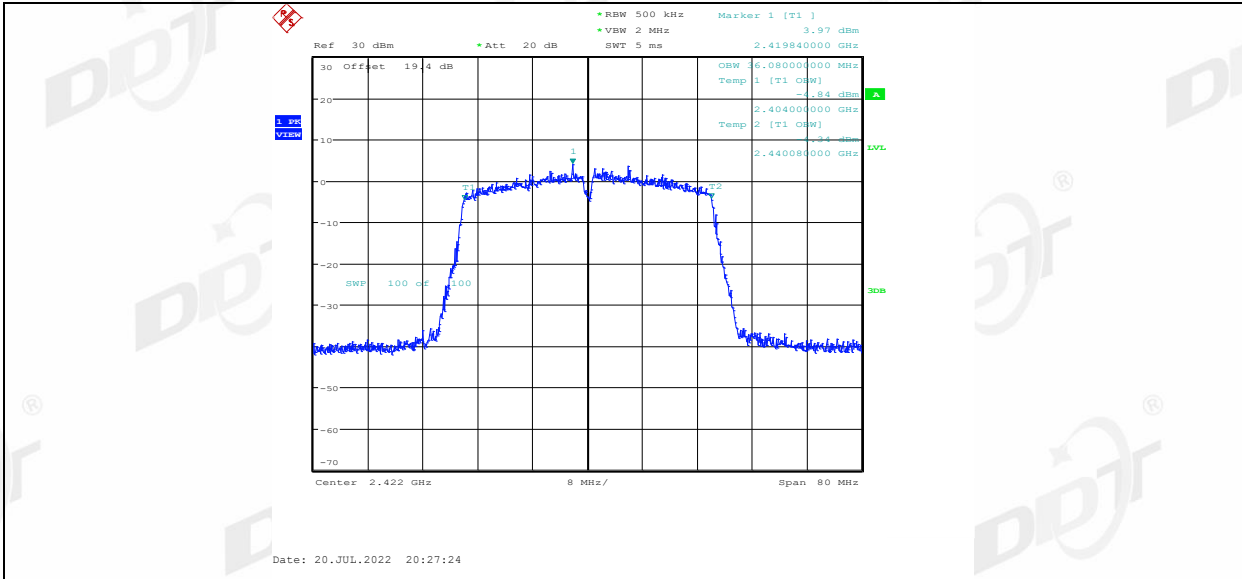
11N20MIMO_Ant2_2462



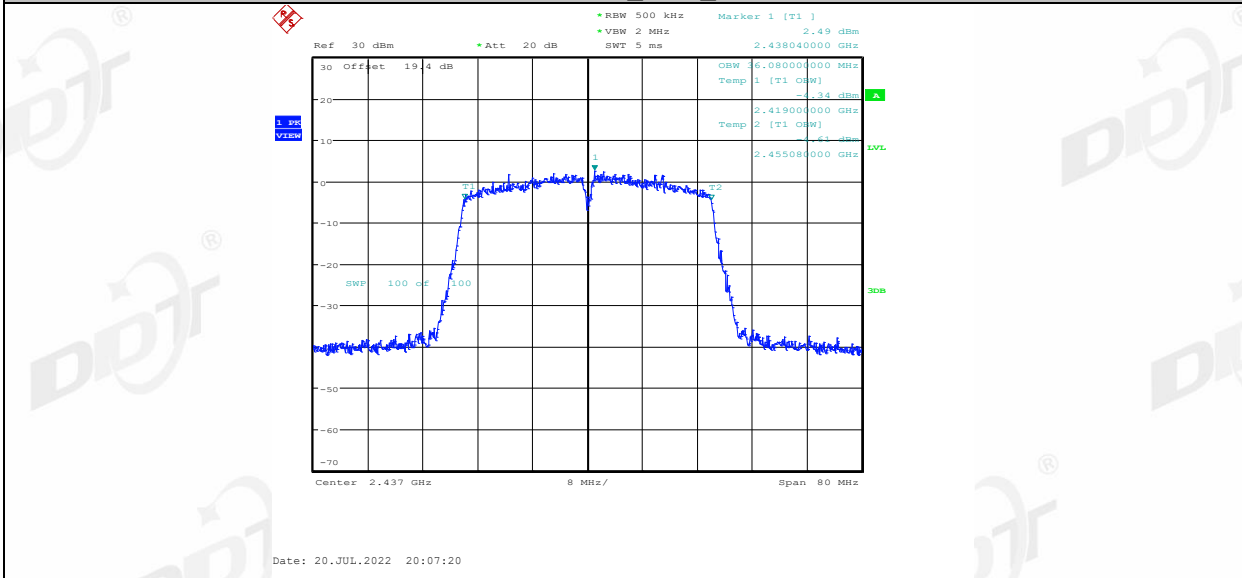
11N40MIMO_Ant1_2422



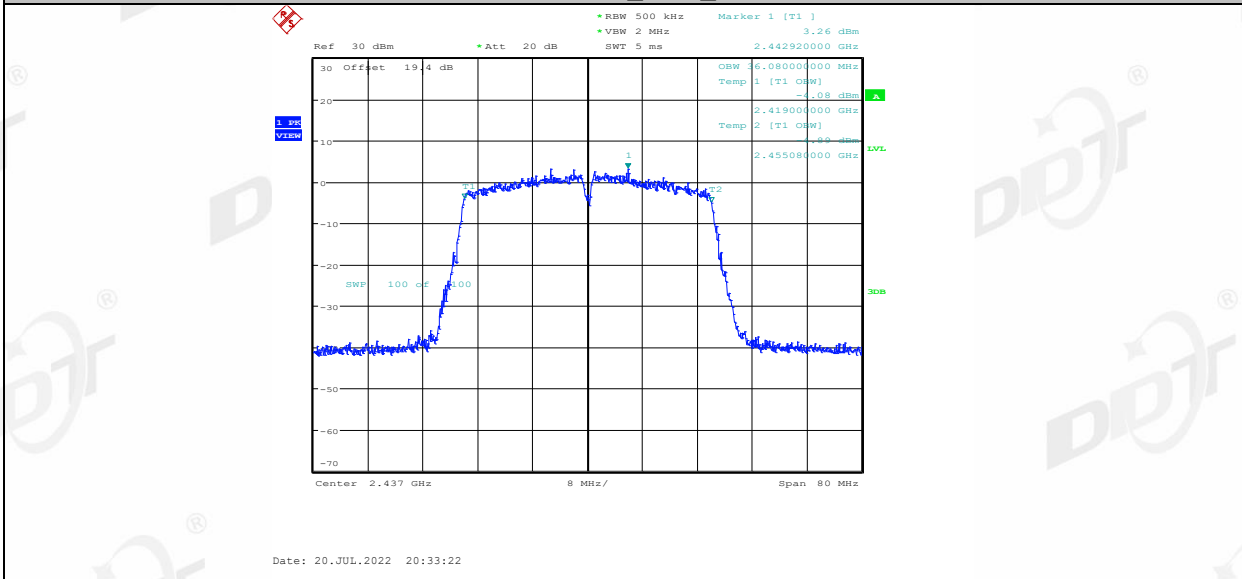
11N40MIMO_Ant2_2422



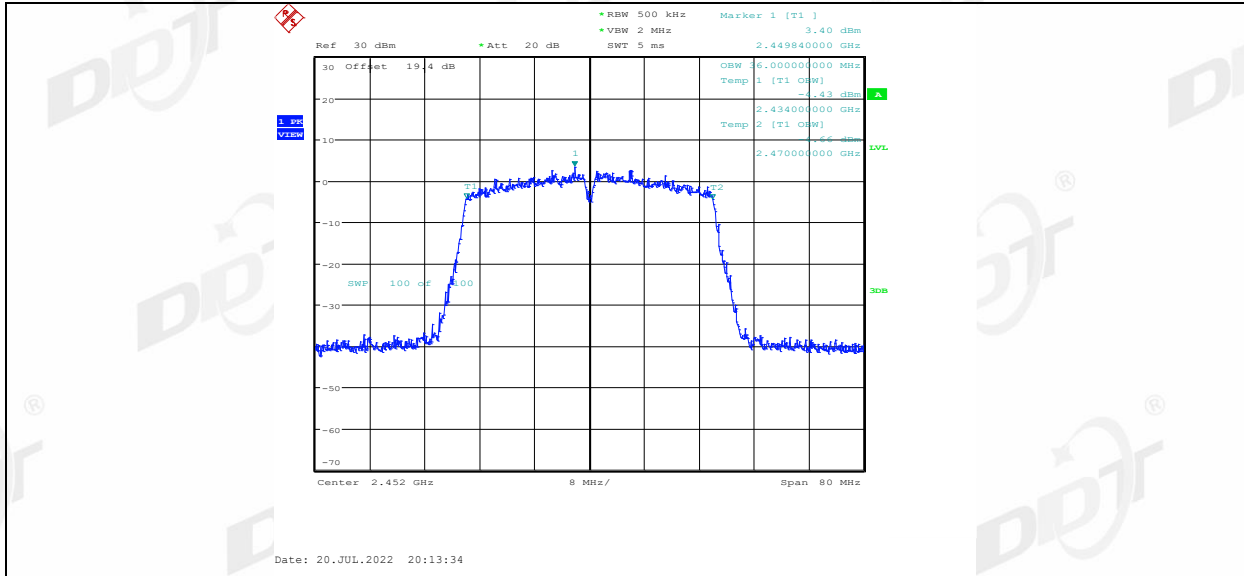
11N40MIMO_Ant1_2437



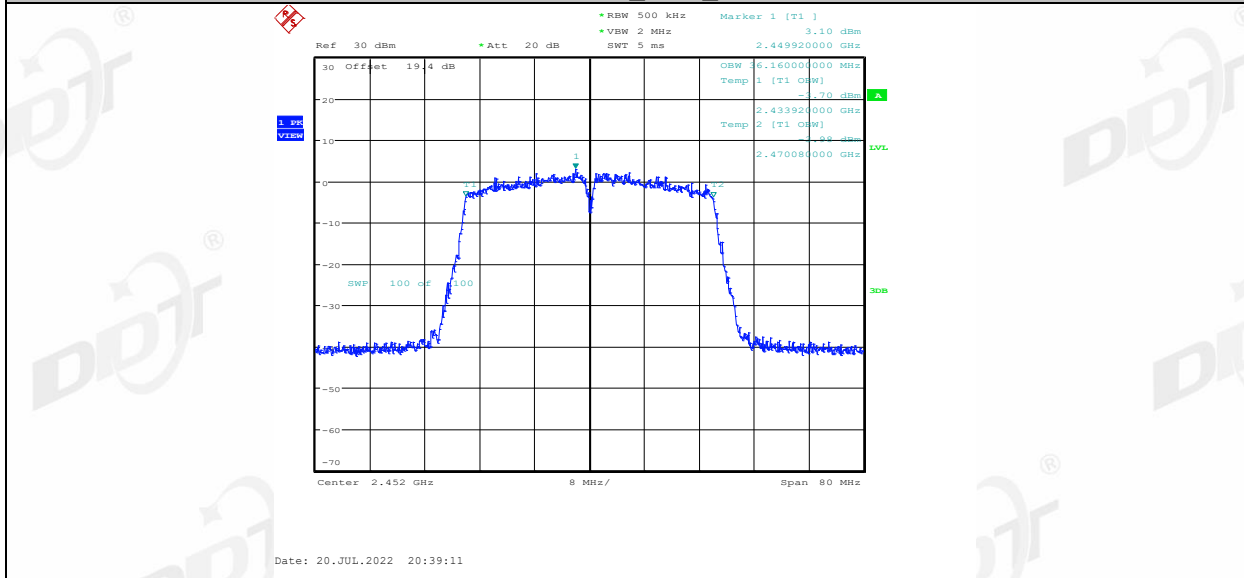
11N40MIMO_Ant2_2437



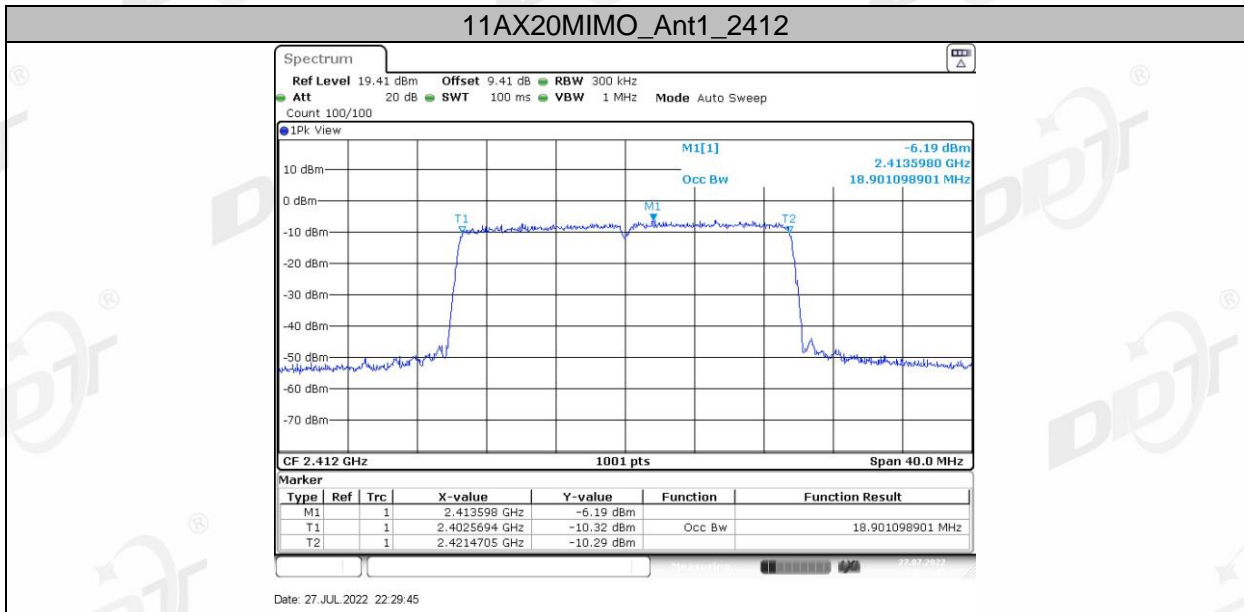
11N40MIMO_Ant1_2452



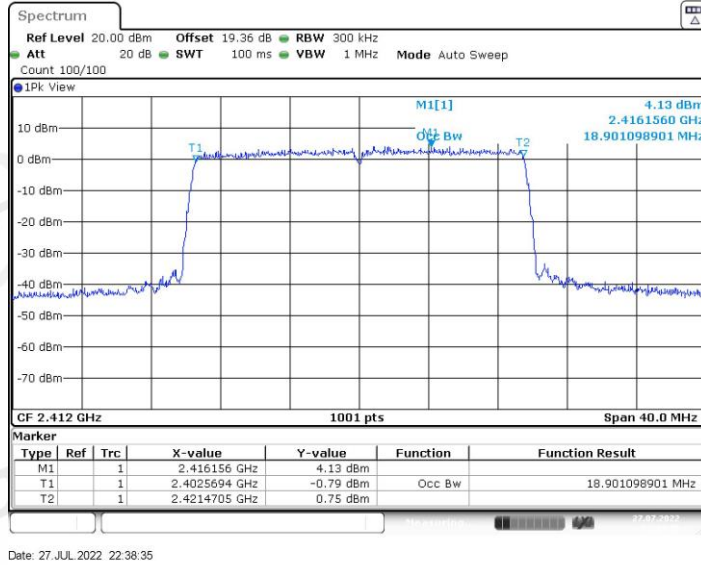
11N40MIMO_Ant2_2452



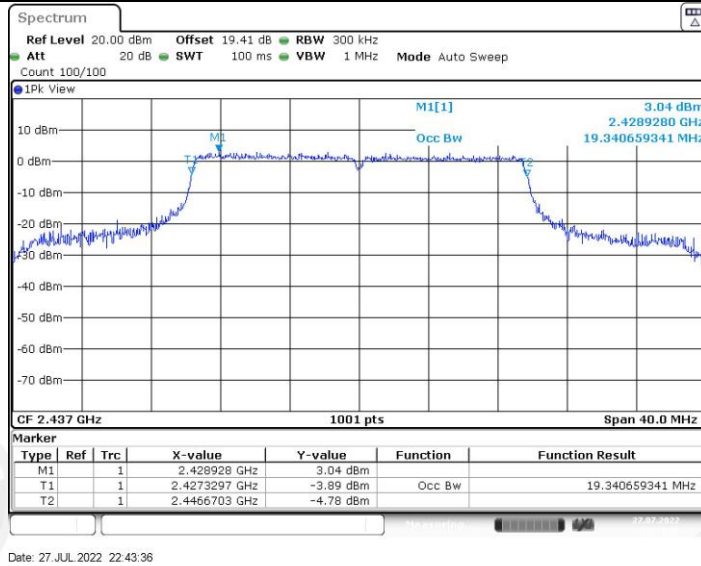
11AX20MIMO_Ant1_2412



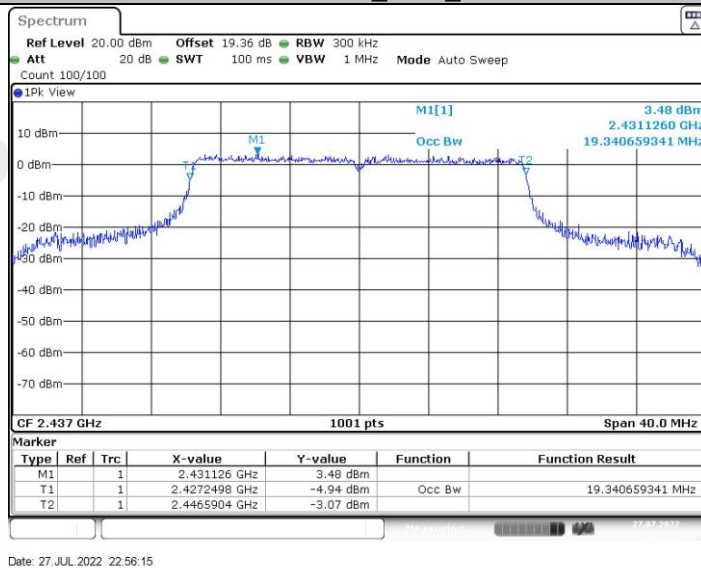
11AX20MIMO_Ant2_2412



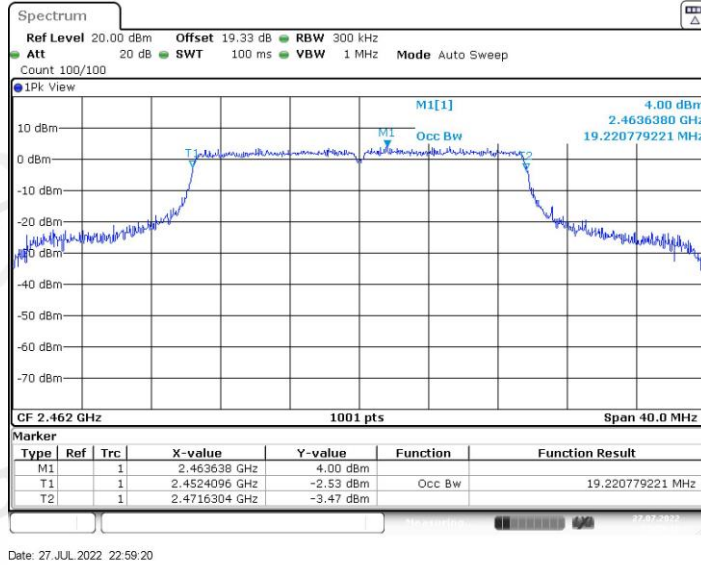
11AX20MIMO_Ant1_2437



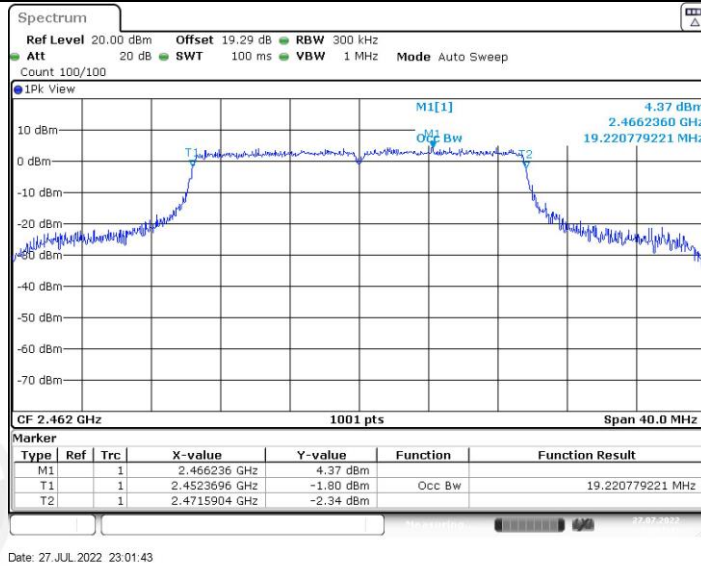
11AX20MIMO_Ant2_2437



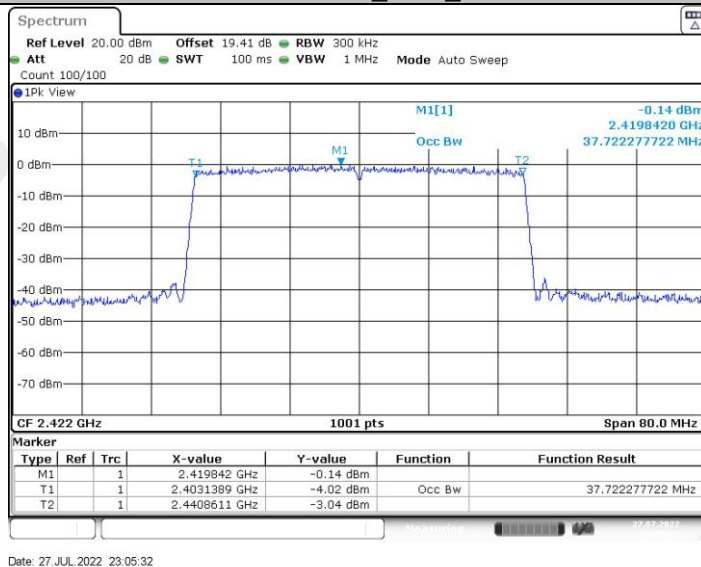
11AX20MIMO_Ant1_2462



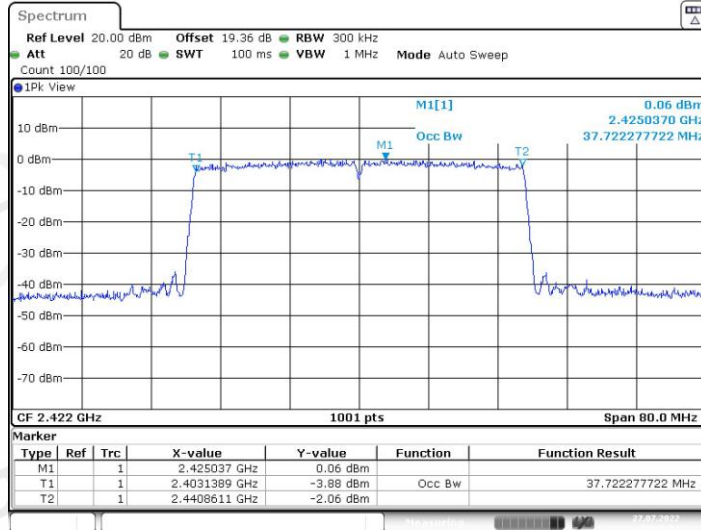
11AX20MIMO_Ant2_2462



11AX40MIMO_Ant1_2422

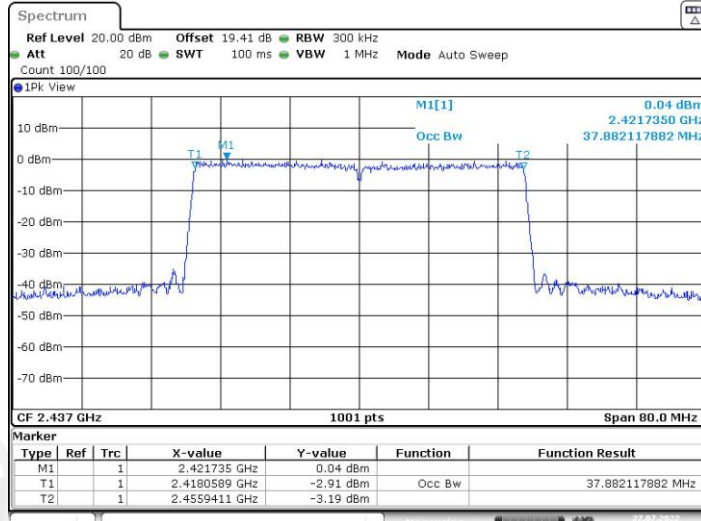


11AX40MIMO_Ant2_2422



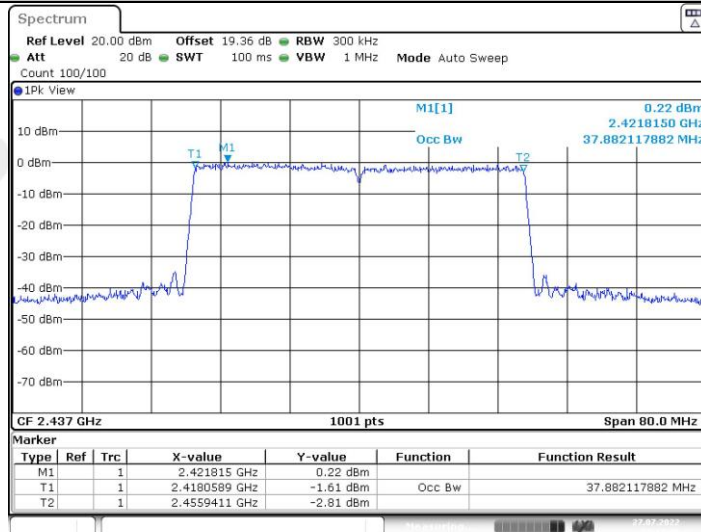
Date: 27 JUL 2022 23:07:51

11AX40MIMO_Ant1_2437

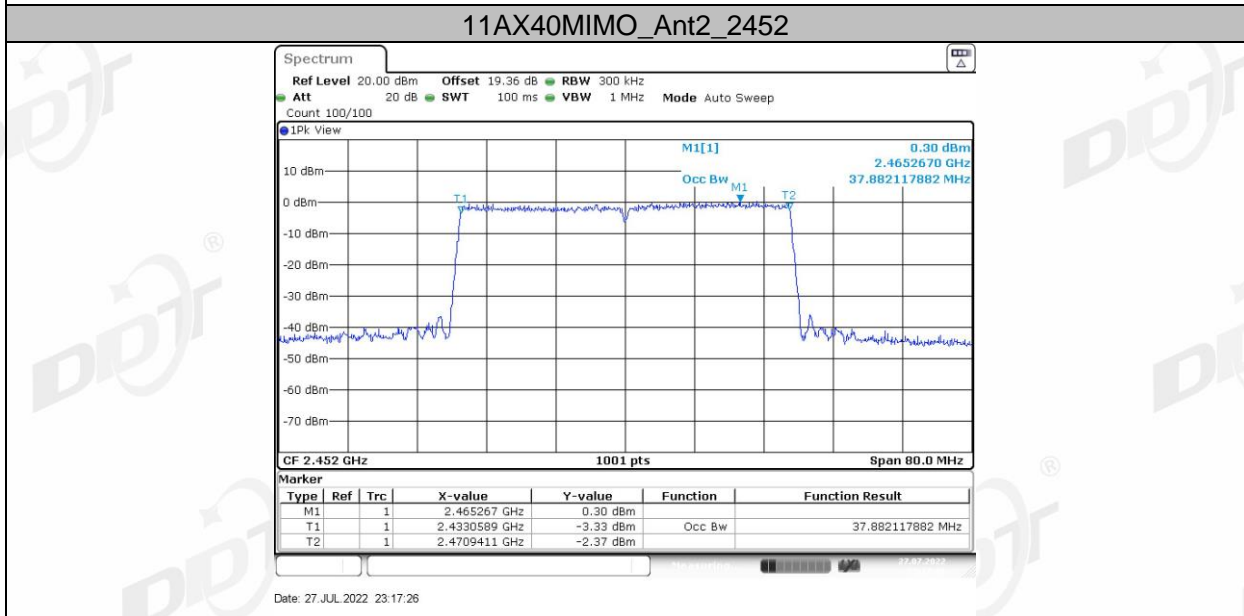
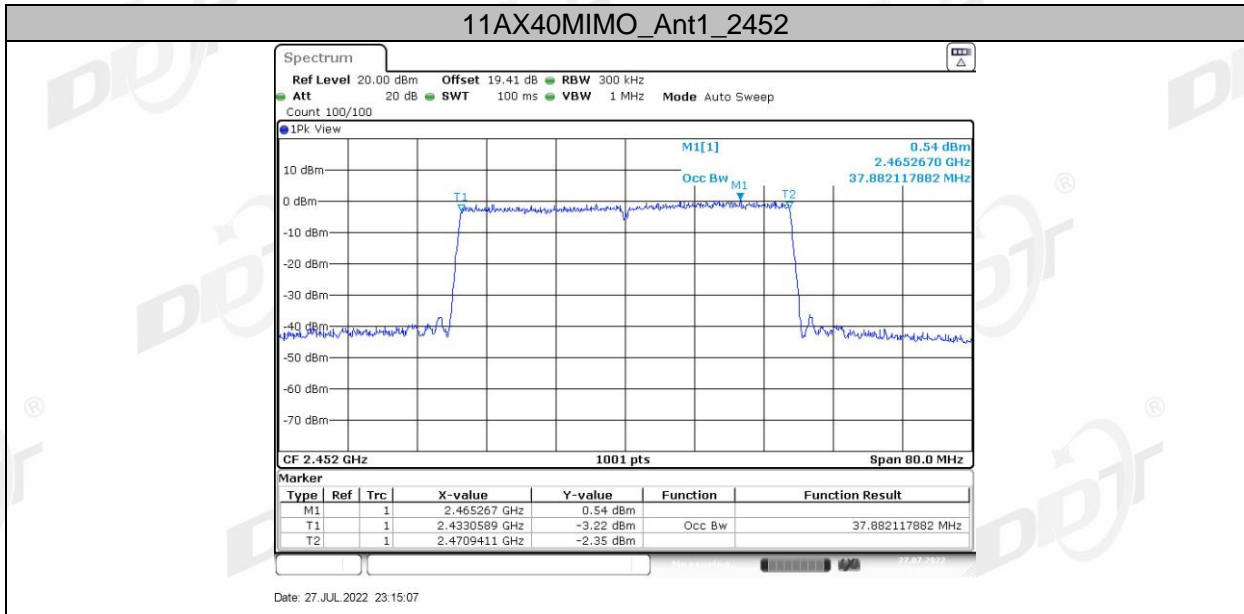


Date: 27 JUL 2022 23:10:31

11AX40MIMO_Ant2_2437



Date: 27 JUL 2022 23:12:39



5. Conducted Peak Output Power

5.1. Block diagram of test setup

Same as section 4.1

5.2. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3. Test procedure

Connect each EUT's antenna output to power sensor by RF cable and attenuator

Measure the PK output power of each antenna port by power meter.

5.4. Test result

Test Mode	Test Channel	Ant	Conducted Output Power (dBm)	Limit [dBm]	EIRP (dBm)	Limit [dBm]	Verdict
11B	2412	ANT1	14.48	30	17.15	36	Pass
11B	2412	ANT2	14.73	30	17.03	36	Pass
11B	2437	ANT1	14.57	30	17.24	36	Pass
11B	2437	ANT2	14.61	30	16.91	36	Pass
11B	2462	ANT1	14.54	30	17.21	36	Pass
11B	2462	ANT2	14.83	30	17.13	36	Pass
11G	2412	ANT1	9.75	30	12.42	36	Pass
11G	2412	ANT2	10.19	30	12.49	36	Pass
11G	2437	ANT1	9.77	30	12.44	36	Pass
11G	2437	ANT2	10.12	30	12.42	36	Pass
11G	2462	ANT1	9.85	30	12.52	36	Pass
11G	2462	ANT2	9.58	30	11.88	36	Pass
11N20MIMO	2412	ANT1	7.92	30	10.59	36	Pass
11N20MIMO	2412	ANT2	8.21	30	10.51	36	Pass
11N20MIMO	2412	total	11.08	30	13.57	36	Pass
11N20MIMO	2437	ANT1	7.91	30	10.58	36	Pass
11N20MIMO	2437	ANT2	8.37	30	10.67	36	Pass
11N20MIMO	2437	total	11.16	30	13.65	36	Pass
11N20MIMO	2462	ANT1	7.92	30	10.59	36	Pass
11N20MIMO	2462	ANT2	8.14	30	10.44	36	Pass

11N20MIMO	2462	total	11.04	30	13.53	36	Pass
11N40MIMO	2422	ANT1	5.81	30	8.48	36	Pass
11N40MIMO	2422	ANT2	6.47	30	8.77	36	Pass
11N40MIMO	2422	total	9.16	30	11.65	36	Pass
11N40MIMO	2437	ANT1	6.07	30	8.74	36	Pass
11N40MIMO	2437	ANT2	6.39	30	8.69	36	Pass
11N40MIMO	2437	total	9.24	30	11.73	36	Pass
11N40MIMO	2452	ANT1	5.91	30	8.58	36	Pass
11N40MIMO	2452	ANT2	6.23	30	8.53	36	Pass
11N40MIMO	2452	total	9.08	30	11.57	36	Pass
11AX20SU	2412	ANT1	6.62	30	9.29	36	Pass
11AX20SU	2412	ANT2	6.96	30	9.26	36	Pass
11AX20SU	2412	total	9.80	30	12.29	36	Pass
11AX20SU	2437	ANT1	6.71	30	9.38	36	Pass
11AX20SU	2437	ANT2	7.02	30	9.32	36	Pass
11AX20SU	2437	total	9.88	30	12.37	36	Pass
11AX20SU	2462	ANT1	6.74	30	9.41	36	Pass
11AX20SU	2462	ANT2	7.29	30	9.59	36	Pass
11AX20SU	2462	total	10.03	30	12.52	36	Pass
11AX40SU	2422	ANT1	5.96	30	8.63	36	Pass
11AX40SU	2422	ANT2	6.14	30	8.44	36	Pass
11AX40SU	2422	total	9.06	30	11.55	36	Pass
11AX40SU	2437	ANT1	5.94	30	8.61	36	Pass
11AX40SU	2437	ANT2	6.32	30	8.62	36	Pass
11AX40SU	2437	total	9.14	30	11.63	36	Pass
11AX40SU	2452	ANT1	6.04	30	8.71	36	Pass
11AX40SU	2452	ANT2	6.42	30	8.72	36	Pass
11AX40SU	2452	total	9.24	30	11.73	36	Pass

Test Mode	Antenna	Channel	Ru Size	Ru Index	Peak Power [dBm]	Conducted Limit [dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict		
11AX20 MIMO	Ant1	2412	26Tone	RU0	8.85	30	11.52	36	PASS		
				RU4	9.13	30	11.80	36	PASS		
				RU8	9.07	30	11.74	36	PASS		
			52Tone	RU37	8.48	30	11.15	36	PASS		
				RU38	8.40	30	11.07	36	PASS		
				RU39	8.42	30	11.09	36	PASS		
			106Tone	RU40	8.49	30	11.16	36	PASS		
				RU53	9.11	30	11.78	36	PASS		
				RU54	8.97	30	11.64	36	PASS		
			Ant2	2412	26Tone	RU0	9.10	30	11.40	36	PASS
						RU4	9.38	30	11.68	36	PASS
						RU8	8.94	30	11.24	36	PASS
	52Tone	RU37			8.63	30	10.93	36	PASS		
		RU38			8.61	30	10.91	36	PASS		
		RU39			8.49	30	10.79	36	PASS		
	106Tone	RU40			8.53	30	10.83	36	PASS		
		RU53			9.28	30	11.58	36	PASS		
		RU54			9.05	30	11.35	36	PASS		
	total	2412			26Tone	RU0	11.99	30	14.48	36	PASS
						RU4	12.27	30	14.76	36	PASS
						RU8	12.02	30	14.51	36	PASS
			52Tone	RU37	11.57	30	14.06	36	PASS		
				RU38	11.52	30	14.01	36	PASS		
				RU39	11.47	30	13.96	36	PASS		
			106Tone	RU40	11.52	30	14.01	36	PASS		
				RU53	12.21	30	14.70	36	PASS		
				RU54	12.02	30	14.51	36	PASS		
			Ant1	2437	26Tone	RU0	8.80	30	11.47	36	PASS
						RU4	9.05	30	11.72	36	PASS
						RU8	8.79	30	11.46	36	PASS
	52Tone	RU37			8.23	30	10.90	36	PASS		
		RU38			8.26	30	10.93	36	PASS		
		RU39			8.33	30	11.00	36	PASS		
	106Tone	RU40			8.26	30	10.93	36	PASS		
		RU53			8.69	30	11.36	36	PASS		
		RU54			8.66	30	11.33	36	PASS		
	Ant2	2437			26Tone	RU0	9.07	30	11.37	36	PASS
						RU4	9.25	30	11.55	36	PASS
						RU8	9.03	30	11.33	36	PASS
			52Tone	RU37	8.37	30	10.67	36	PASS		
				RU38	8.38	30	10.68	36	PASS		
				RU39	8.52	30	10.82	36	PASS		
106Tone			RU40	8.35	30	10.65	36	PASS			
			RU53	8.86	30	11.16	36	PASS			
			RU54	8.95	30	11.25	36	PASS			
total			2437	26Tone	RU0	11.95	30	14.44	36	PASS	
					RU4	12.16	30	14.65	36	PASS	

			52Tone	RU8	11.92	30	14.41	36	PASS		
				RU37	11.31	30	13.80	36	PASS		
				RU38	11.33	30	13.82	36	PASS		
				RU39	11.44	30	13.93	36	PASS		
			106Tone	RU40	11.32	30	13.81	36	PASS		
				RU53	11.79	30	14.28	36	PASS		
			Ant1	2462	26Tone	RU54	11.82	30	14.31	36	PASS
						RU0	8.76	30	11.43	36	PASS
	RU4	9.03				30	11.70	36	PASS		
	52Tone	RU8			9.00	30	11.67	36	PASS		
		RU37			8.21	30	10.88	36	PASS		
		RU38			8.48	30	11.15	36	PASS		
	106Tone	RU39			8.44	30	11.11	36	PASS		
		RU40			8.38	30	11.05	36	PASS		
		RU53	8.71	30	11.38	36	PASS				
	Ant2	2462	26Tone	RU54	8.82	30	11.49	36	PASS		
				RU0	8.83	30	11.13	36	PASS		
				RU4	9.53	30	11.83	36	PASS		
			52Tone	RU8	9.20	30	11.50	36	PASS		
				RU37	8.71	30	11.01	36	PASS		
				RU38	8.70	30	11.00	36	PASS		
			106Tone	RU39	8.81	30	11.11	36	PASS		
				RU40	8.75	30	11.05	36	PASS		
	RU53	9.23		30	11.53	36	PASS				
total	2462	26Tone	RU54	9.08	30	11.38	36	PASS			
			RU0	11.81	30	14.30	36	PASS			
			RU4	12.30	30	14.79	36	PASS			
		52Tone	RU8	12.11	30	14.60	36	PASS			
			RU37	11.48	30	13.97	36	PASS			
			RU38	11.60	30	14.09	36	PASS			
		106Tone	RU39	11.64	30	14.13	36	PASS			
			RU40	11.58	30	14.07	36	PASS			
RU53	11.99		30	14.48	36	PASS					
11AX40 MIMO	Ant1	2422	242Tone	RU54	11.96	30	14.45	36	PASS		
				RU61	9.56	30	12.23	36	PASS		
	Ant2	2422	242Tone	RU62	9.21	30	11.88	36	PASS		
				RU61	9.42	30	11.72	36	PASS		
	total	2422	242Tone	RU62	9.60	30	11.90	36	PASS		
				RU61	12.50	30	14.95	36	PASS		
	Ant1	2437	242Tone	RU62	12.42	30	14.87	36	PASS		
				RU61	9.77	30	12.44	36	PASS		
	Ant2	2437	242Tone	RU62	9.36	30	12.03	36	PASS		
				RU61	9.89	30	12.19	36	PASS		
	total	2437	242Tone	RU62	9.61	30	11.91	36	PASS		
				RU61	12.84	30	15.29	36	PASS		
Ant1	2452	242Tone	RU62	12.50	30	14.95	36	PASS			
			RU61	9.62	30	12.29	36	PASS			
Ant2	2452	242Tone	RU62	9.29	30	11.96	36	PASS			
			RU61	9.67	30	11.97	36	PASS			
total	2452	242Tone	RU62	9.46	30	11.76	36	PASS			
			RU61	12.66	30	15.11	36	PASS			

				RU62	12.39	30	14.84	36	PASS
--	--	--	--	------	-------	----	-------	----	------

Note 1: EIRP (dBm)=Conducted Output Power (dBm)+ Antenna Gain (dBi)

Note 2: HE20 SU represents HE20 242Tone, and HE40 SU represents HE40 484Tone, so for these Tones test performed with SU mode.

6. Power Spectral Density

6.1. Block diagram of test setup

Same as section 4.1

6.2. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

6.3. Test procedure

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

(2) Set the spectrum analyzer as follows:

Center frequency	DTS Channel center frequency
RBW:	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW:	$\geq 3\text{RBW}$
Span	1.5 times the DTS bandwidth
Detector Mode:	RMS
Sweep time:	auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.

(4) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.4. Test result

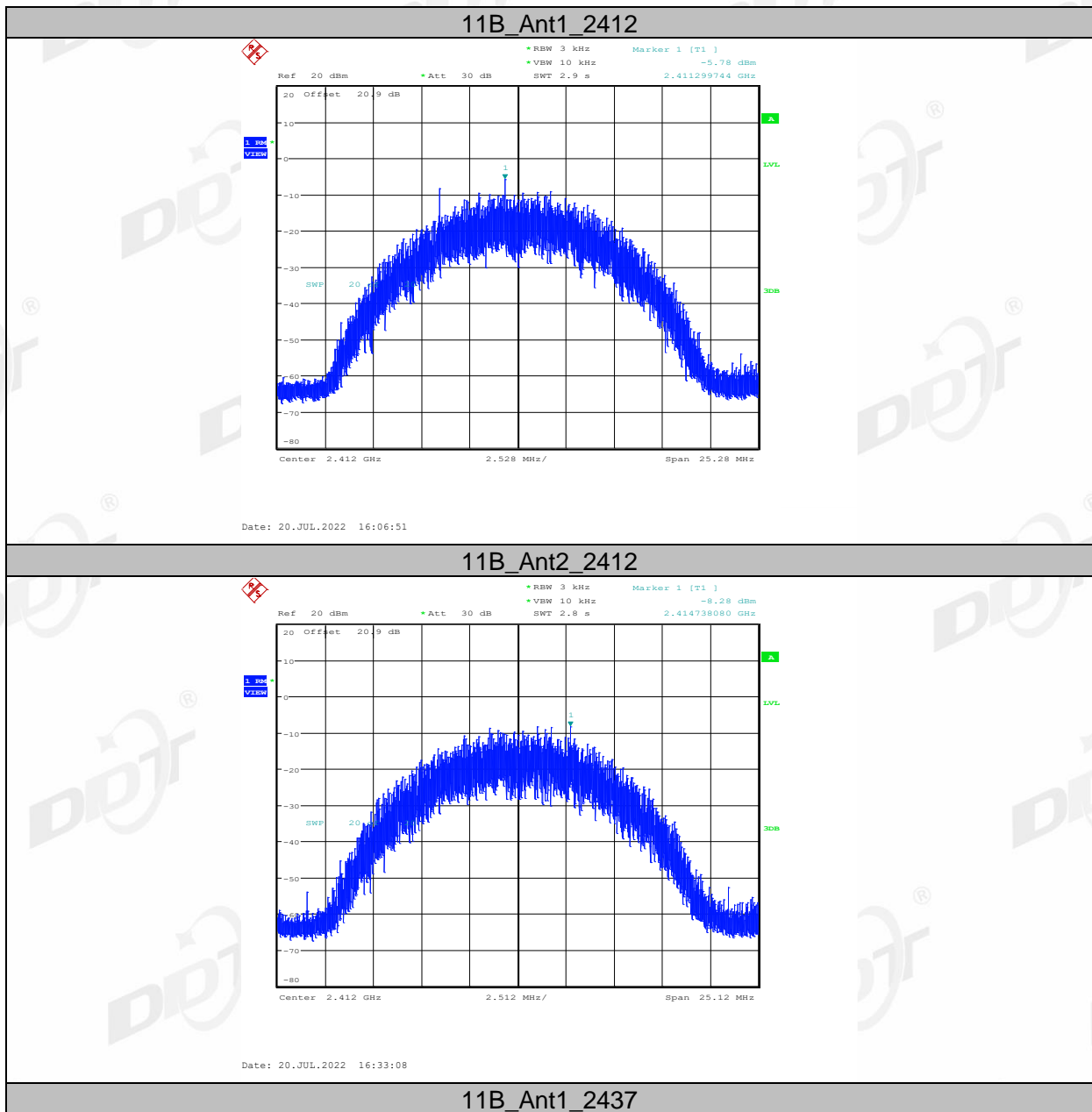
Test Mode	Test Channel	Ant	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	2412	ANT1	-5.78	8.00	Pass
11B	2412	ANT2	-8.28	8.00	Pass
11B	2437	ANT1	-8.86	8.00	Pass
11B	2437	ANT2	-7.89	8.00	Pass
11B	2462	ANT1	-8.15	8.00	Pass
11B	2462	ANT2	-8.42	8.00	Pass
11G	2412	ANT1	-15.24	8.00	Pass
11G	2412	ANT2	-14.66	8.00	Pass
11G	2437	ANT1	-15.09	8.00	Pass
11G	2437	ANT2	-14.48	8.00	Pass
11G	2462	ANT1	-14.91	8.00	Pass
11G	2462	ANT2	-15.09	8.00	Pass

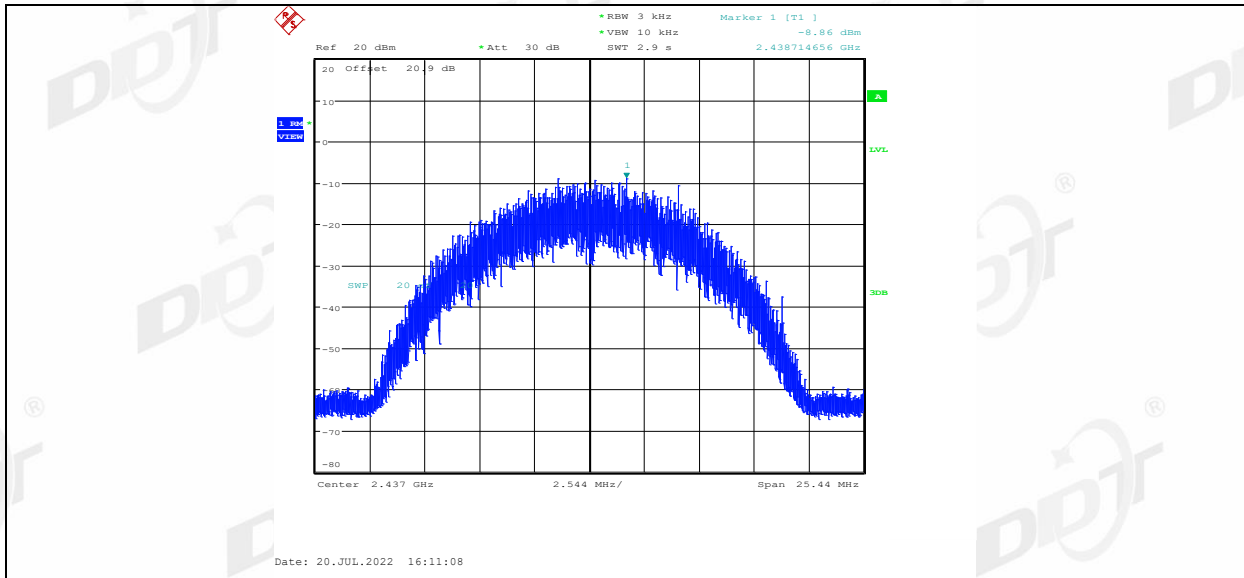
11N20MIMO	2412	ANT1	-17.04	8.00	Pass
11N20MIMO	2412	ANT2	-16.45	8.00	Pass
11N20MIMO	2412	total	-13.72	8.00	Pass
11N20MIMO	2437	ANT1	-17.19	8.00	Pass
11N20MIMO	2437	ANT2	-16.54	8.00	Pass
11N20MIMO	2437	total	-13.84	8.00	Pass
11N20MIMO	2462	ANT1	-16.1	8.00	Pass
11N20MIMO	2462	ANT2	-16.56	8.00	Pass
11N20MIMO	2462	total	-13.31	8.00	Pass
11N40MIMO	2422	ANT1	-20.33	8.00	Pass
11N40MIMO	2422	ANT2	-20.82	8.00	Pass
11N40MIMO	2422	total	-17.56	8.00	Pass
11N40MIMO	2437	ANT1	-20.26	8.00	Pass
11N40MIMO	2437	ANT2	-20.44	8.00	Pass
11N40MIMO	2437	total	-17.34	8.00	Pass
11N40MIMO	2452	ANT1	-20.76	8.00	Pass
11N40MIMO	2452	ANT2	-20.61	8.00	Pass
11N40MIMO	2452	total	-17.67	8.00	Pass
11AX20SU	2412	ANT1	-18.34	8.00	Pass
11AX20SU	2412	ANT2	-17.18	8.00	Pass
11AX20SU	2412	total	-14.71	8.00	Pass
11AX20SU	2437	ANT1	-19.77	8.00	Pass
11AX20SU	2437	ANT2	-18.95	8.00	Pass
11AX20SU	2437	total	-16.33	8.00	Pass
11AX20SU	2462	ANT1	-18.33	8.00	Pass
11AX20SU	2462	ANT2	-17.22	8.00	Pass
11AX20SU	2462	total	-14.73	8.00	Pass
11AX40SU	2422	ANT1	-21.76	8.00	Pass
11AX40SU	2422	ANT2	-21.19	8.00	Pass
11AX40SU	2422	total	-18.46	8.00	Pass
11AX40SU	2437	ANT1	-21.99	8.00	Pass
11AX40SU	2437	ANT2	-21.14	8.00	Pass
11AX40SU	2437	total	-18.53	8.00	Pass
11AX40SU	2452	ANT1	-21.46	8.00	Pass
11AX40SU	2452	ANT2	-20.51	8.00	Pass
11AX40SU	2452	total	-17.95	8.00	Pass

Test Mode	Antenna	Channel	Ru Size	Ru Index	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11AX20 MIMO	Ant1	2412	26Tone	RU0	-11.62	≤8.00	PASS
				RU4	-12.21	≤8.00	PASS
				RU8	-9.98	≤8.00	PASS
			52Tone	RU37	-11.79	≤8.00	PASS
				RU38	-11.66	≤8.00	PASS
				RU39	-17.8	≤8.00	PASS
				RU40	-11.68	≤8.00	PASS
			106Tone	RU53	-15.27	≤8.00	PASS
				RU54	-16.89	≤8.00	PASS
	Ant2	2412	26Tone	RU0	-7.78	≤8.00	PASS
				RU4	-11.14	≤8.00	PASS
				RU8	-8.51	≤8.00	PASS
			52Tone	RU37	-12.19	≤8.00	PASS
				RU38	-11.6	≤8.00	PASS
				RU39	-16.82	≤8.00	PASS
				RU40	-13.15	≤8.00	PASS
			106Tone	RU53	-16.28	≤8.00	PASS
				RU54	-14.61	≤8.00	PASS
	total	2412	26Tone	RU0	-6.28	≤8.00	PASS
				RU4	-8.63	≤8.00	PASS
				RU8	-6.17	≤8.00	PASS
			52Tone	RU37	-8.98	≤8.00	PASS
				RU38	-8.62	≤8.00	PASS
				RU39	-14.27	≤8.00	PASS
				RU40	-9.34	≤8.00	PASS
			106Tone	RU53	-12.74	≤8.00	PASS
				RU54	-12.59	≤8.00	PASS
	Ant1	2437	26Tone	RU0	-10	≤8.00	PASS
				RU4	-8.96	≤8.00	PASS
				RU8	-8.4	≤8.00	PASS
			52Tone	RU37	-11.59	≤8.00	PASS
				RU38	-11.18	≤8.00	PASS
				RU39	-10.37	≤8.00	PASS
				RU40	-12.62	≤8.00	PASS
			106Tone	RU53	-13.8	≤8.00	PASS
				RU54	-17	≤8.00	PASS
	Ant2	2437	26Tone	RU0	-13.98	≤8.00	PASS
				RU4	-10.03	≤8.00	PASS
				RU8	-9.33	≤8.00	PASS
			52Tone	RU37	-9.88	≤8.00	PASS
				RU38	-10.45	≤8.00	PASS
				RU39	-18.46	≤8.00	PASS
RU40				-13.42	≤8.00	PASS	
106Tone			RU53	-12.15	≤8.00	PASS	
			RU54	-15.19	≤8.00	PASS	
total	2437	26Tone	RU0	-8.54	≤8.00	PASS	
			RU4	-6.45	≤8.00	PASS	
			RU8	-5.83	≤8.00	PASS	

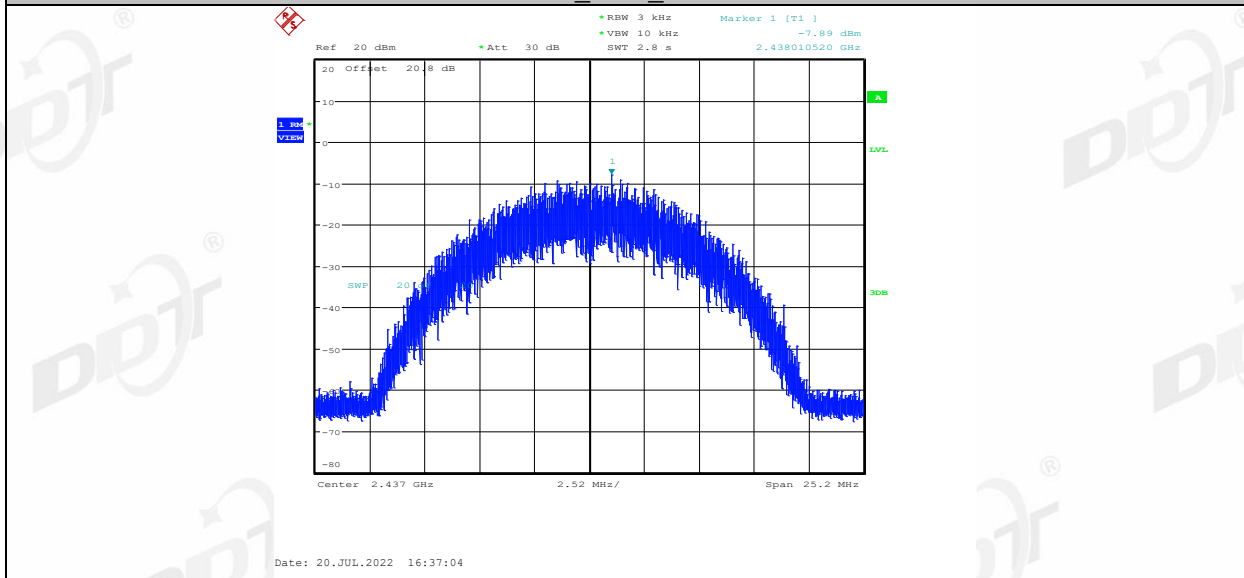
			52Tone	RU37	-7.64	≤8.00	PASS	
				RU38	-7.79	≤8.00	PASS	
				RU39	-9.74	≤8.00	PASS	
				RU40	-9.99	≤8.00	PASS	
			106Tone	RU53	-9.89	≤8.00	PASS	
				RU54	-12.99	≤8.00	PASS	
	Ant1	2462	26Tone	RU0	-9.03	≤8.00	PASS	
				RU4	-10.15	≤8.00	PASS	
				RU8	-8.41	≤8.00	PASS	
			52Tone	RU37	-13.73	≤8.00	PASS	
				RU38	-14.36	≤8.00	PASS	
				RU39	-20.56	≤8.00	PASS	
		RU40		-11.58	≤8.00	PASS		
		106Tone	RU53	-13.53	≤8.00	PASS		
			RU54	-16.13	≤8.00	PASS		
		Ant2	2462	26Tone	RU0	-9.86	≤8.00	PASS
					RU4	-9.06	≤8.00	PASS
					RU8	-8.73	≤8.00	PASS
	52Tone			RU37	-10.28	≤8.00	PASS	
				RU38	-13.7	≤8.00	PASS	
				RU39	-12.23	≤8.00	PASS	
			RU40	-11.54	≤8.00	PASS		
	106Tone		RU53	-12.64	≤8.00	PASS		
			RU54	-12.85	≤8.00	PASS		
total	2462		26Tone	RU0	-6.41	≤8.00	PASS	
				RU4	-6.56	≤8.00	PASS	
				RU8	-5.56	≤8.00	PASS	
		52Tone	RU37	-8.66	≤8.00	PASS		
			RU38	-11.01	≤8.00	PASS		
			RU39	-11.63	≤8.00	PASS		
	RU40		-8.55	≤8.00	PASS			
	106Tone	RU53	-10.05	≤8.00	PASS			
		RU54	-11.18	≤8.00	PASS			
	11AX40 MIMO	Ant1	2422	242Tone	RU61	-14.92	≤8.00	PASS
					RU62	-14.72	≤8.00	PASS
		Ant2	2422	242Tone	RU61	-16.19	≤8.00	PASS
RU62					-19.81	≤8.00	PASS	
total		2422	242Tone	RU61	-12.5	≤8.00	PASS	
				RU62	-13.55	≤8.00	PASS	
Ant1		2437	242Tone	RU61	-12.78	≤8.00	PASS	
				RU62	-13.88	≤8.00	PASS	
Ant2		2437	242Tone	RU61	-15.41	≤8.00	PASS	
				RU62	-12.56	≤8.00	PASS	
total		2437	242Tone	RU61	-10.89	≤8.00	PASS	
				RU62	-10.16	≤8.00	PASS	
Ant1		2452	242Tone	RU61	-15.64	≤8.00	PASS	
				RU62	-12.78	≤8.00	PASS	
Ant2		2452	242Tone	RU61	-17.39	≤8.00	PASS	
				RU62	-13.89	≤8.00	PASS	
total		2452	242Tone	RU61	-13.42	≤8.00	PASS	
				RU62	-10.29	≤8.00	PASS	

6.5. Original test data

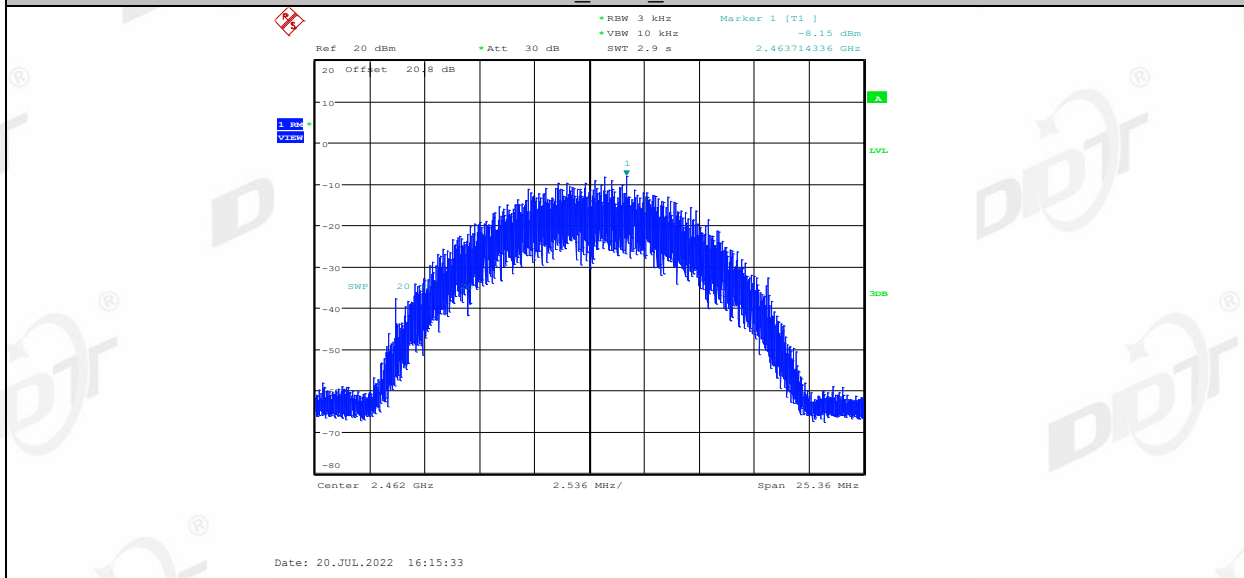




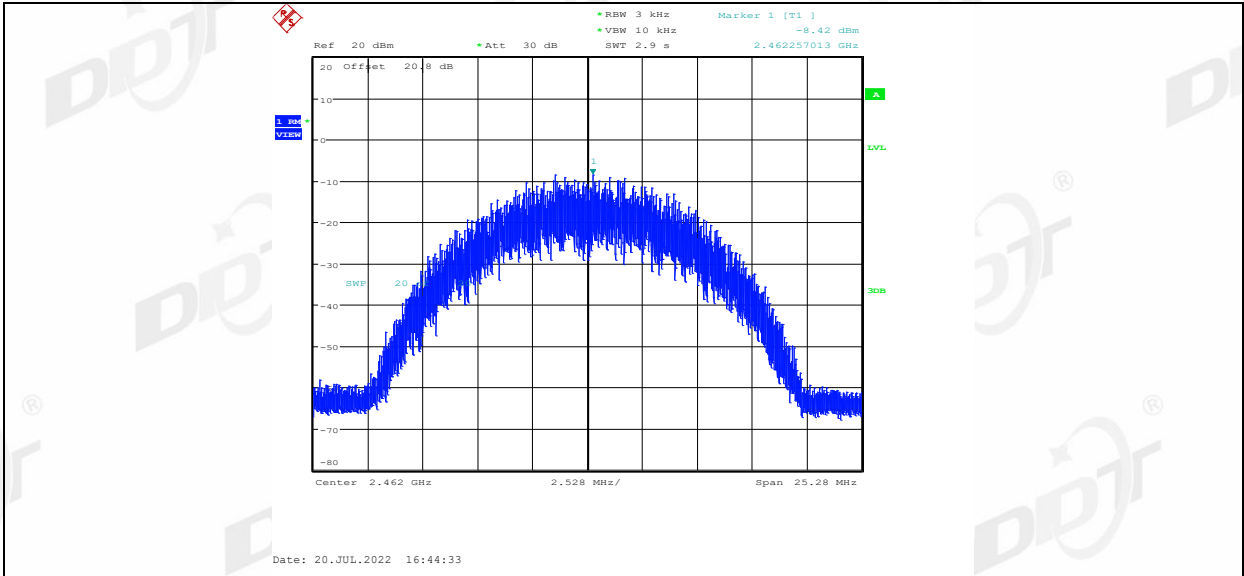
11B_Ant2_2437



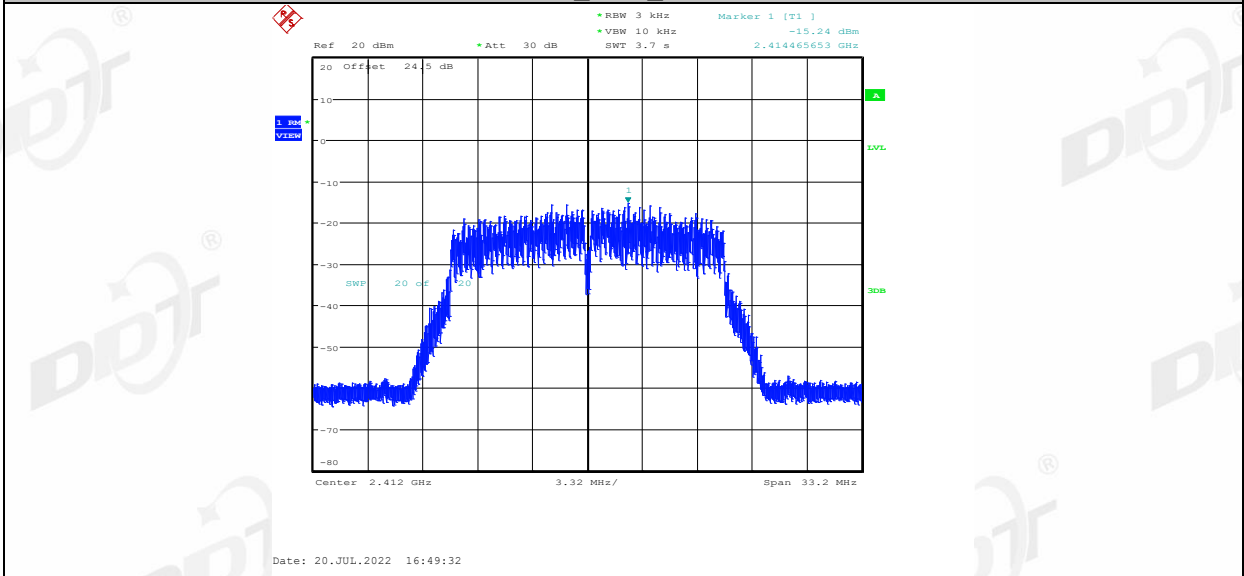
11B_Ant1_2462



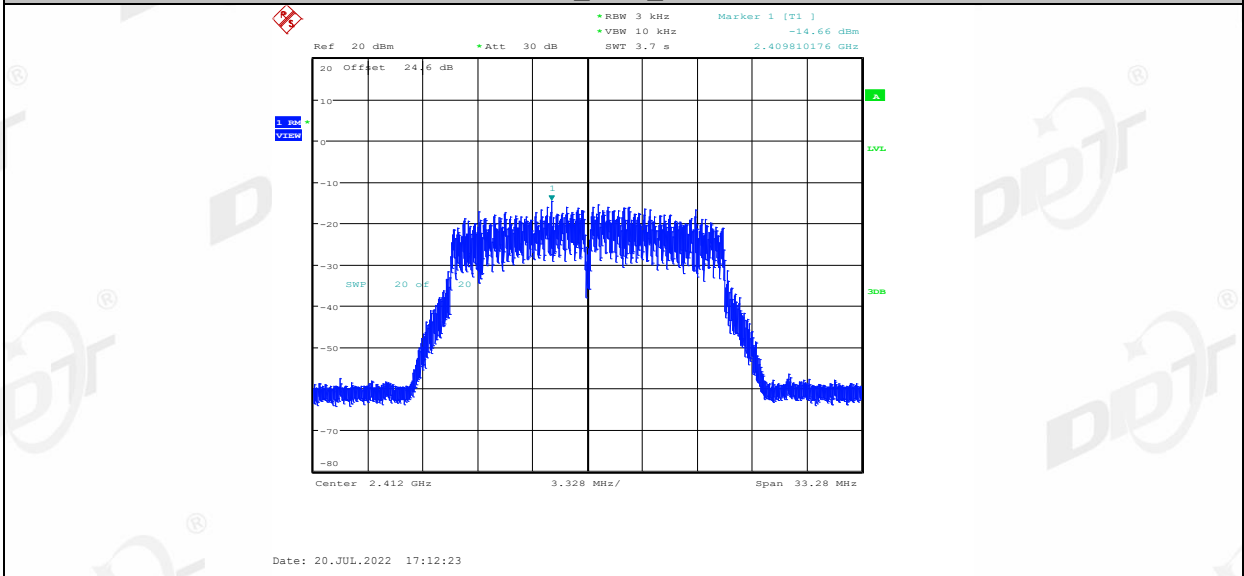
11B_Ant2_2462



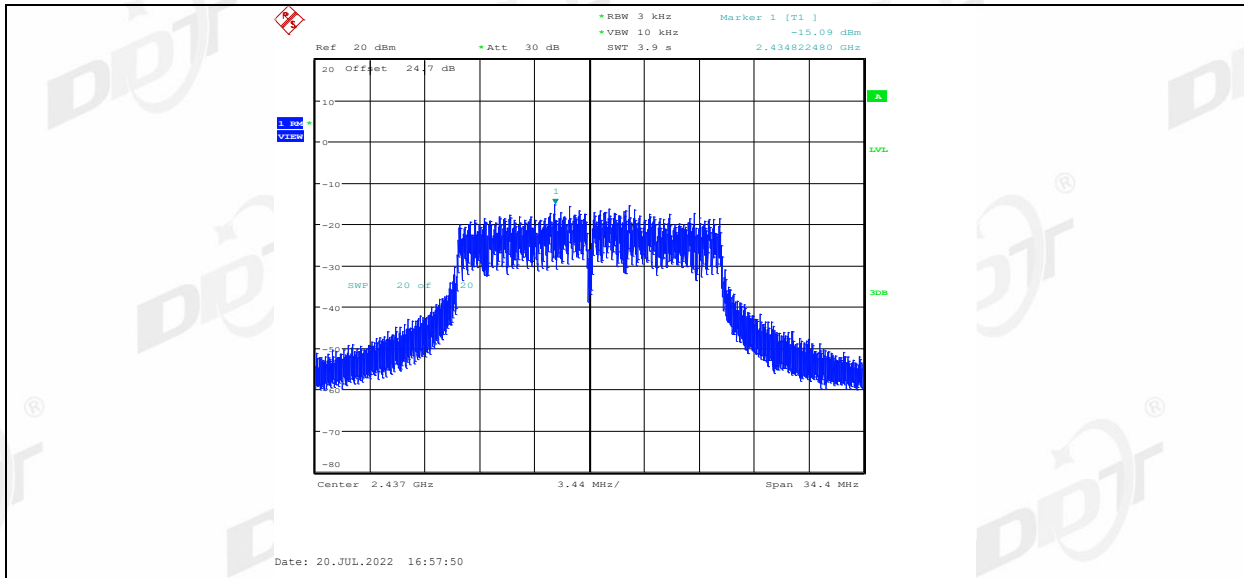
11G_Ant1_2412



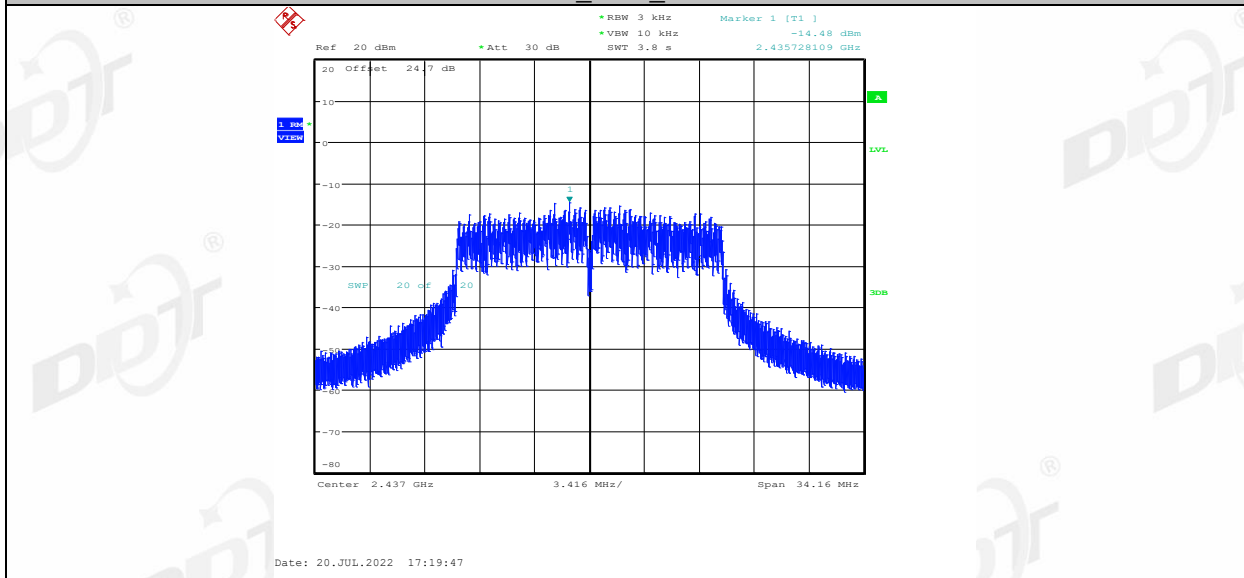
11G_Ant2_2412



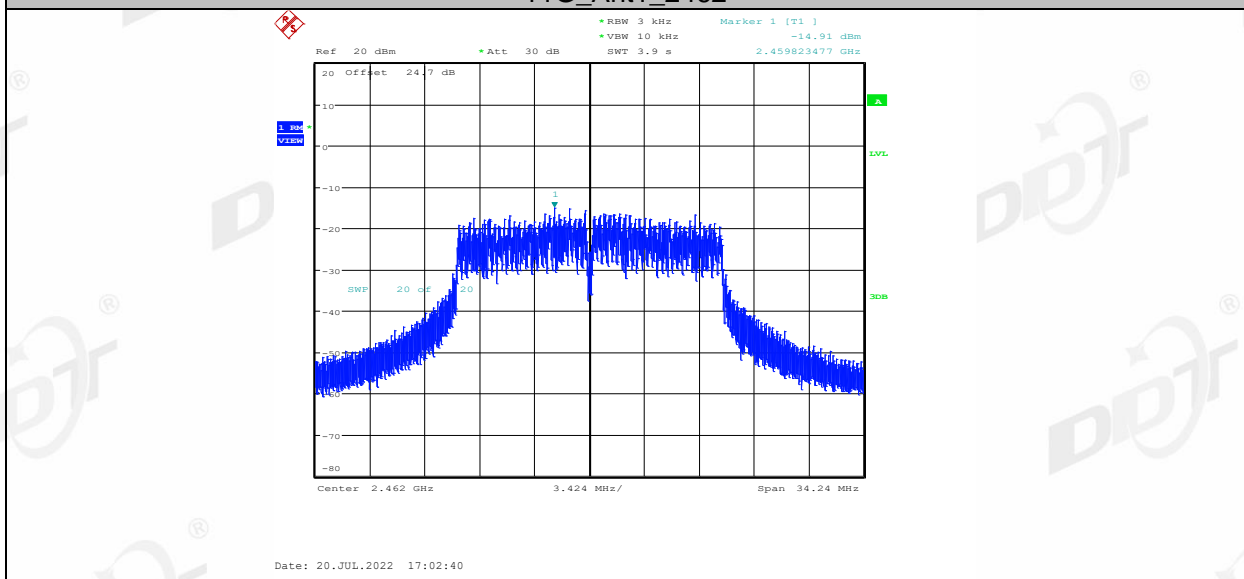
11G_Ant1_2437



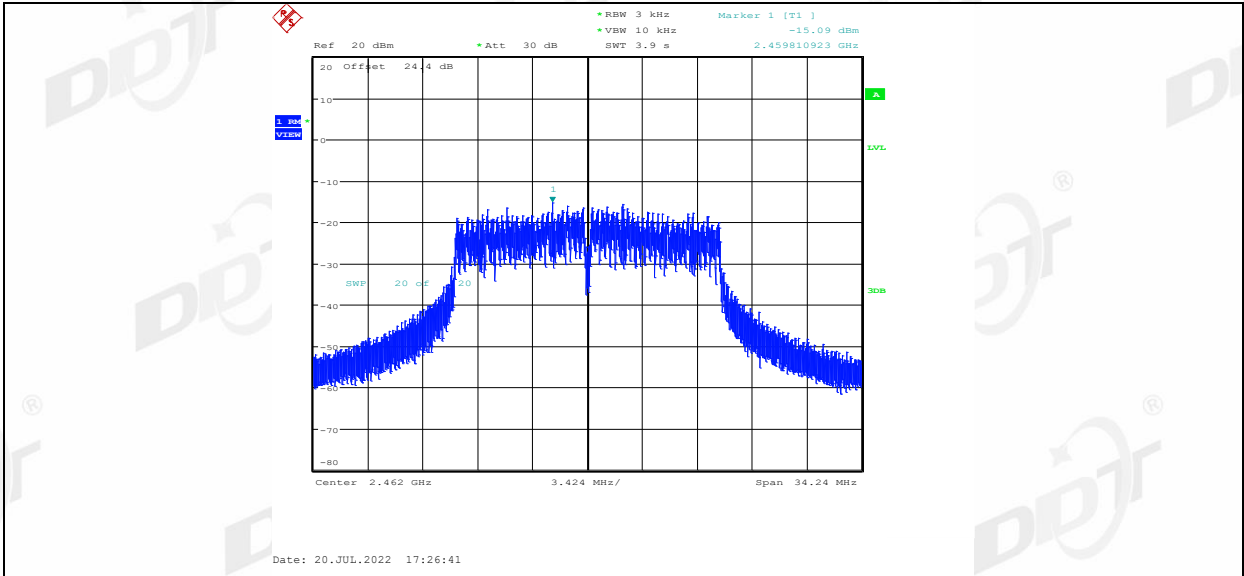
11G_Ant2_2437



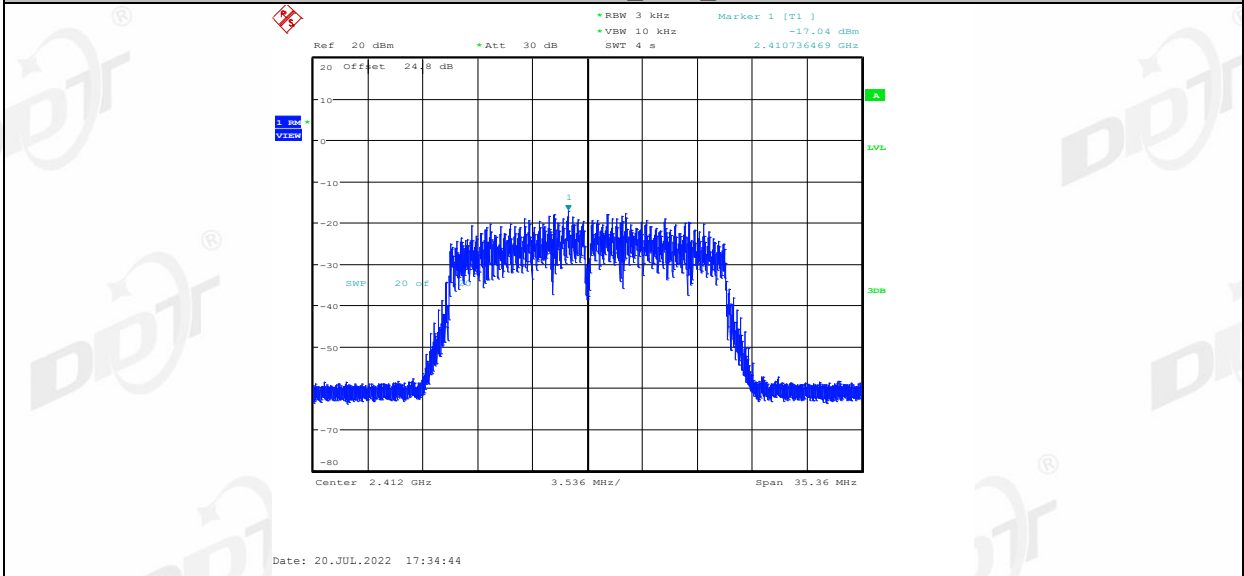
11G_Ant1_2462



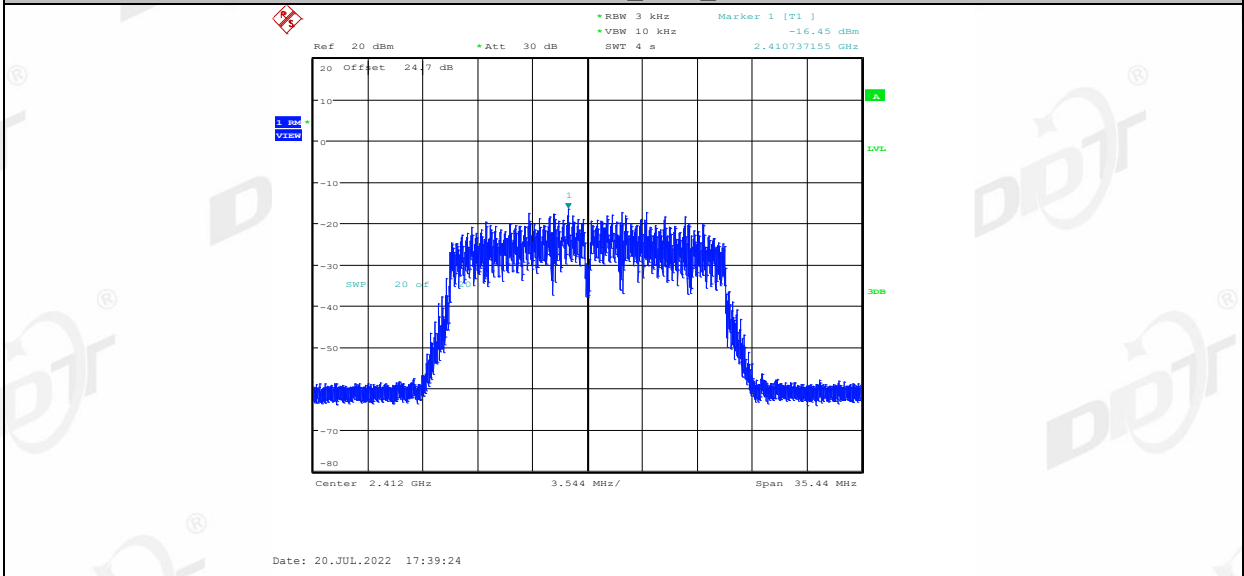
11G_Ant2_2462



11N20MIMO_Ant1_2412



11N20MIMO_Ant2_2412



11N20MIMO_Ant1_2437