

# FCC AND ISED CERTIFICATION TEST REPORT

## FOR

<b>Applicant</b>	:	Formovie (Chongqing) Innovative Technology Co., Ltd.
<b>Address</b>	:	4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China
<b>Equipment under Test</b>	:	LCD Smart Projector
<b>Model No.</b>	:	XMM2101, XMM21**(*=0-9)
<b>Trade Mark</b>	:	Xming, WEWATCH
<b>FCC ID</b>	:	2AZNP-XMM2101
<b>IC</b>	:	27267-XMM2101
<b>Manufacturer</b>	:	Formovie (Chongqing) Innovative Technology Co., Ltd.
<b>Address</b>	:	4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China

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

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# REPORT

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## Test Report Declare

<b>Applicant</b>	:	Formovie (Chongqing) Innovative Technology Co., Ltd.
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**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.**

<b>Report No.:</b>	DDT-RE23042304-2E03		
<b>Date of Receipt:</b>	May 08, 2023	<b>Date of Test:</b>	May 10, 2023~ May. 30, 2023

**Prepared By:**

*Jacky Huang*

**Jacky Huang/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	Jun. 06, 2023	

## 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	: LCD Smart Projector
Model Number	: XMM2101, XMM21**(*=0-9)
Model Differences	: The models used are the same in appearance, process material, hardware and software, just different model for different market or business purposes, therefore was tested on the model XMM2101.
EUT function description	: Please reference user manual of this device
Power supply	: DC 19V from external switching power supply
Radio Technology	: IEEE 802.11b/g/n
Operation frequency	: IEEE 802.11b: 2412MHz-2462MHz IEEE 802.11g: 2412MHz-2462MHz IEEE 802.11n HT20: 2412MHz-2462MHz IEEE 802.11n HT40: 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)
Transmitter rate	: IEEE 802.11b: up to 11 Mbps IEEE 802.11g: up to 54 Mbps IEEE 802.11n HT20: up to 144.4 Mbps IEEE 802.11n HT40: up to 300 Mbps
Antenna	: Antenna 1: FPC antenna, Maximum PK gain: 2.36 dBi Antenna 2: FPC antenna, Maximum PK gain: 3.21 dBi
Sample Number	: S23042304-01

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

Note 2: EUT does not support beamforming and Simultaneous emission with 5G RLAN.

Note 3: Serial model No.: XMM21\*\* only apply for FCC ID.

Antenna information			
	Ant1 gain	Ant2 gain	Directional gain
IEEE 802.11b	2.36	3.21	/
IEEE 802.11g	2.36	3.21	/
IEEE 802.11n HT20	2.36	3.21	2.91
IEEE 802.11n HT40	2.36	3.21	2.91

Note: Directional gain =  $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/NANT]$  dBi. The output signals of EUT are considered completely uncorrelated according to KDB 662911 D01, part F.

Channel information					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447	/	/

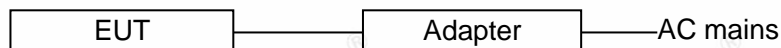
## 2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model Number	Description	Remark
Switching power supply	Huizhou Golden Lake Industrial Co., Ltd.	S065ARU20003 25	N/A	Input: 100-240V~, 50/60Hz, 1.8A MAX Output: 5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/3.25A
Bluetooth Remote Control	Formovie (Chongqing) Innovative Technology Co., Ltd.	RC605B	N/A	N/A

## 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: putty.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 802.11b	Default	1	LCH: CH1	2412
	Default	1	MCH: CH6	2437
	Default	1	HCH: CH11	2462
IEEE 802.11g	14	6	LCH: CH1	2412
	14	6	MCH: CH6	2437
	14	6	HCH: CH11	2462
IEEE 802.11n HT20	14	MCS 8	LCH: CH1	2412
	14	MCS 8	MCH: CH6	2437
	14	MCS 8	HCH: CH11	2462
IEEE 802.11n HT40	14	MCS 8	LCH: CH3	2422
	14	MCS 8	MCH: CH6	2437
	14	MCS 8	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:	+15 °C to +35 °C
Humidity range:	20% to 75%
Pressure range:	86 kPa to 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 x 10 <sup>-8</sup> (Antenna couple method)
	5.5 x 10 <sup>-8</sup> (Conducted method)
Conducted Spurious Emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 26.5 GHz)
Uncertainty for Radio Frequency (RBW<20 KHz)	3×10 <sup>-8</sup>
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission Test (9kHz -30 Mhz)	3.44 dB
Uncertainty for Radiation Emission Test (30 Mhz-1 Ghz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission Test (1 Ghz-40 Ghz)	4.10 dB (1-6 GHz)
	4.40 dB (6 GHz-18 GHz)
	3.54 dB (18 GHz-26 GHz)
	4.30 dB (26 GHz-40 GHz)
Uncertainty for Power Line Conduction Emission Test	3.32 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.

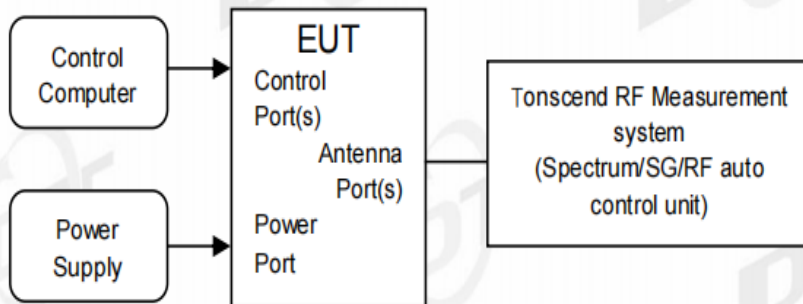
### 3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
<b>☑RF Connected Test (Tonscend RF Measurement System 3#)</b>					
Signal & Spectrum analyzer	R&S	FSV40	101407	Jul. 21, 2022	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Apr. 27, 2023	1 Year
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	Aug. 26, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180912	Apr. 23, 2023	1 Year
RF Control Unit	Tonscend	JS0806-2	20C8060230	Apr. 27, 2023	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	May 15, 2023	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.3.2.22	N/A	N/A
<b>☑Radiation 3#chamber</b>					
EMI Test Receiver	R&S	ESU26	100472	Apr. 23, 2023	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Apr. 23, 2023	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2022	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Jul. 22, 2022	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120 D	02468	Sep. 29, 2022	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Apr. 26, 2023	1 Year
Pre-amplifier	SONOMA	310N	310815	Jun. 15, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Aug.17, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-840A	461369	Apr. 27, 2023	1 Year
RE Cable	N/A	W23.02 CP1-X2 + W23.09 AP1-X8+ JCT26S-NJ-NJ-1.5M+ JCT26S-NJ-NJ-1.5M	4.5M+8M+1.5M+1.5M	Apr. 21, 2023	1 Year
RF Cable	Yuhu Technology	JCTB810-NJ-NJ-9M+ ZT26S-SMAJ-SMAJ-1M	21123964	Apr. 23, 2023	1 Year
Micro-Tronics filters	REBES	BRM50702	G555	N/A	N/A
Micro-Tronics filters	REBES	BRM50716	G392	N/A	N/A
High Pass filter	XB	XBLBQ-GTA67	210820-2-3	N/A	N/A
Test software	Tonscend	JS32-RE	V 5.0.0.1	N/A	N/A

<input checked="" type="checkbox"/> Power Line Conducted Emissions Test 1#					
Test Receiver	R&S	ESCI	100551	Aug. 26, 2022	1 Year
LISN 1	R&S	ENV216	101109	Aug. 26, 2022	1 Year
LISN 2	R&S	ESH2-Z5	100309	Aug. 26, 2022	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Aug. 26, 2022	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Aug. 26, 2022	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Test Receiver	R&S	ESCI	100551	Aug. 26, 2022	1 Year

## 4. 6dB 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) The test according to ANSI C63.10-2013 clause 11.8.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously
- (4) Use the following spectrum analyzer settings for 6 dB Bandwidth:

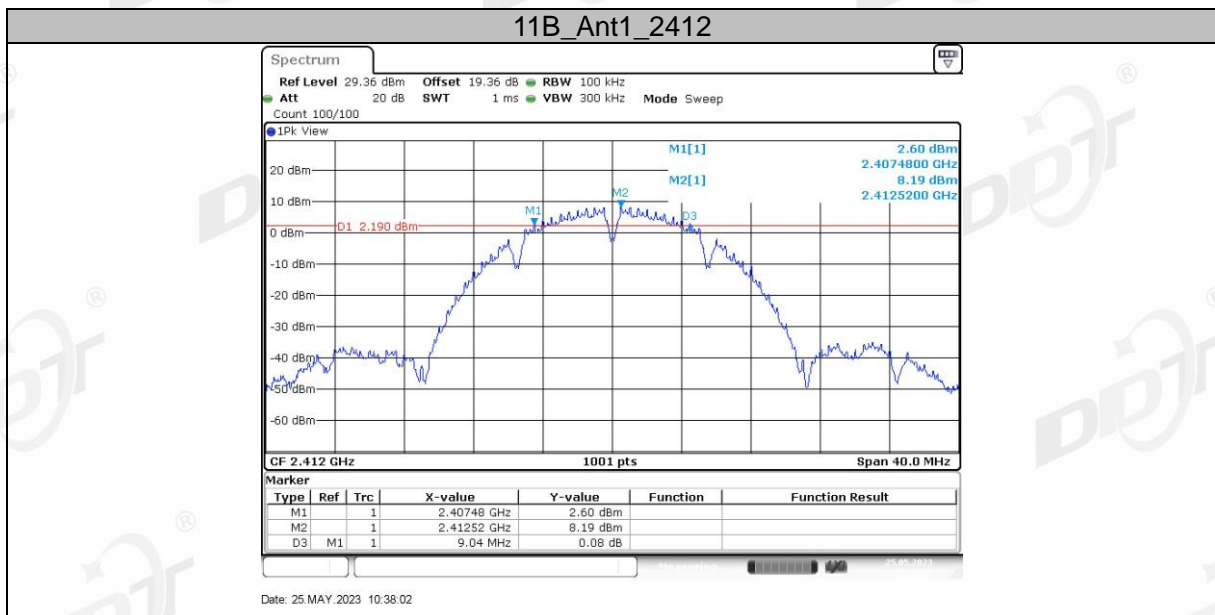
RBW:	100 kHz
VBW:	$\geq [3 \times \text{RBW}]$
Detector Mode:	peak
Sweep time:	auto
Trace mode	max hold
- (5) Allow the trace to stabilize, measure the 6 dB bandwidth of signal, and record the results in the report.



4.4. Test result

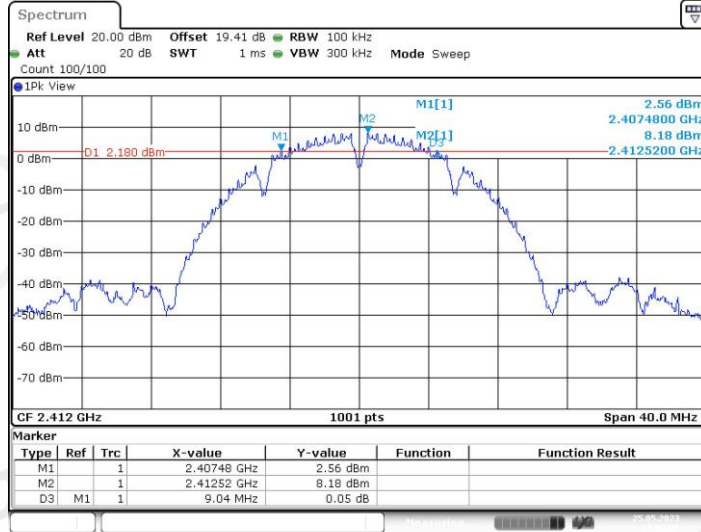
Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	9.04	2407.48	2416.52	0.5	PASS
	Ant2	2412	9.04	2407.48	2416.52	0.5	PASS
	Ant1	2437	9.04	2432.48	2441.52	0.5	PASS
	Ant2	2437	9.04	2432.48	2441.52	0.5	PASS
	Ant1	2462	9.08	2457.44	2466.52	0.5	PASS
	Ant2	2462	9.04	2457.48	2466.52	0.5	PASS
11G	Ant1	2412	15.12	2404.44	2419.56	0.5	PASS
	Ant2	2412	15.12	2404.44	2419.56	0.5	PASS
	Ant1	2437	15.12	2429.44	2444.56	0.5	PASS
	Ant2	2437	15.12	2429.44	2444.56	0.5	PASS
	Ant1	2462	15.12	2454.44	2469.56	0.5	PASS
	Ant2	2462	15.04	2454.44	2469.48	0.5	PASS
11N20MIMO	Ant1	2412	15.12	2404.44	2419.56	0.5	PASS
	Ant2	2412	15.12	2404.44	2419.56	0.5	PASS
	Ant1	2437	15.12	2429.44	2444.56	0.5	PASS
	Ant2	2437	15.12	2429.44	2444.56	0.5	PASS
	Ant1	2462	15.12	2454.44	2469.56	0.5	PASS
	Ant2	2462	15.72	2453.84	2469.56	0.5	PASS
11N40MIMO	Ant1	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant2	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant1	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant2	2437	35.04	2419.48	2454.52	0.5	PASS
	Ant1	2452	35.12	2434.48	2469.60	0.5	PASS
	Ant2	2452	35.12	2434.48	2469.60	0.5	PASS

4.5. Test graphs

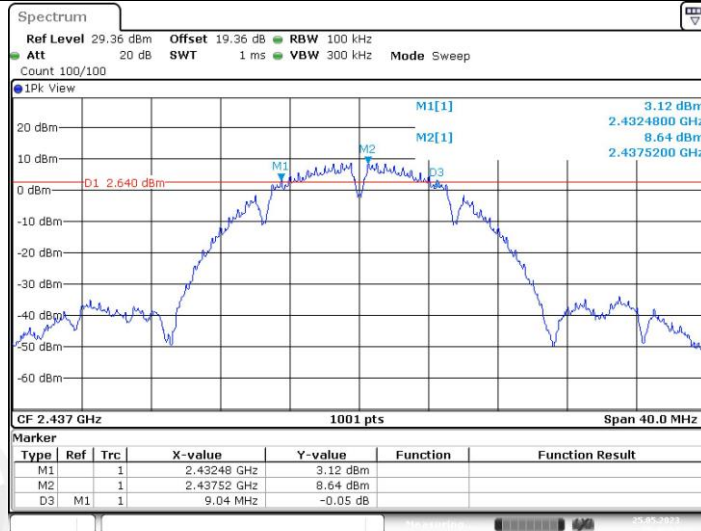




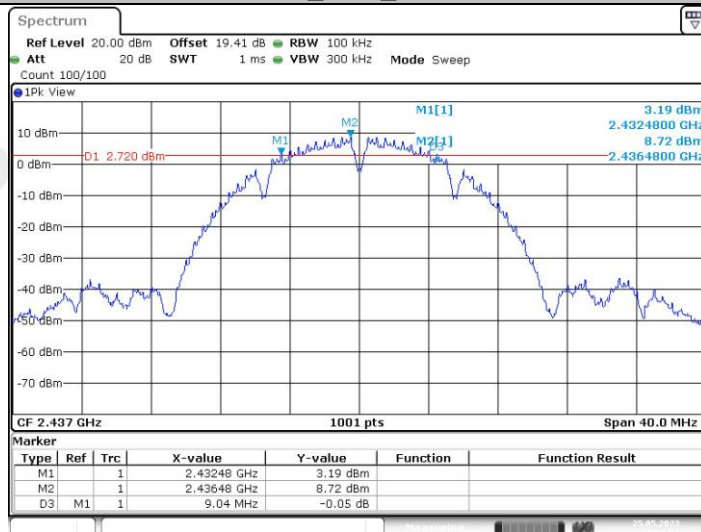
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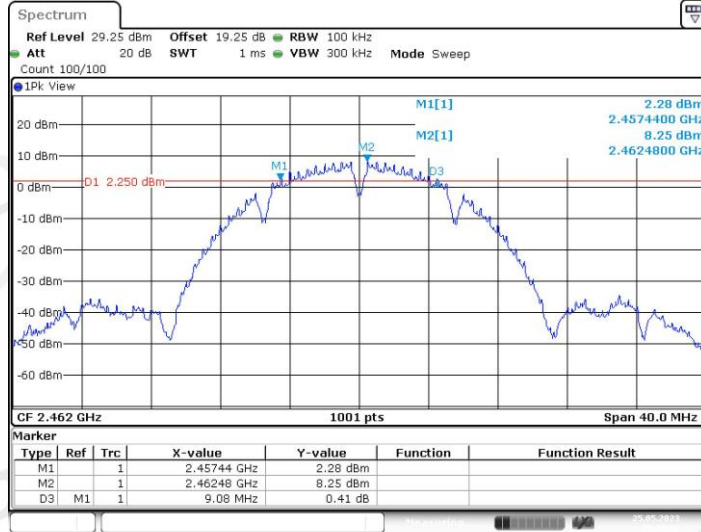
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11B\_Ant2\_2437

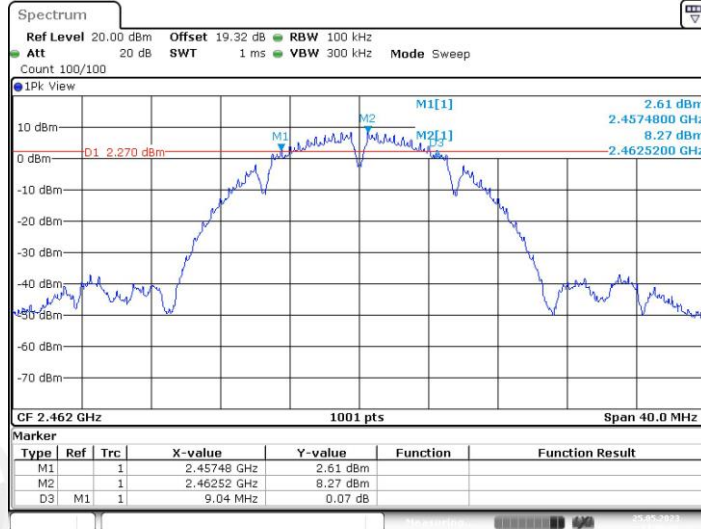


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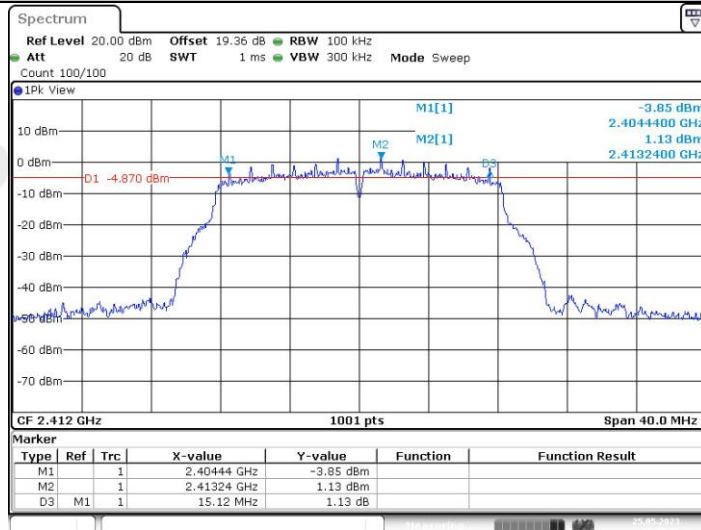
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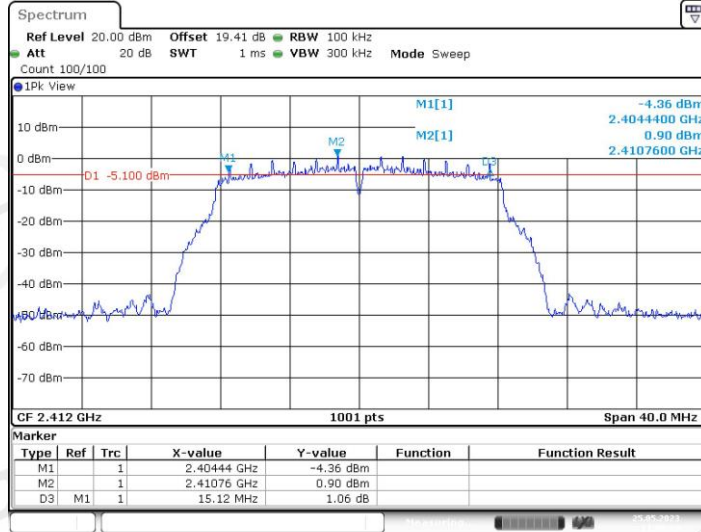
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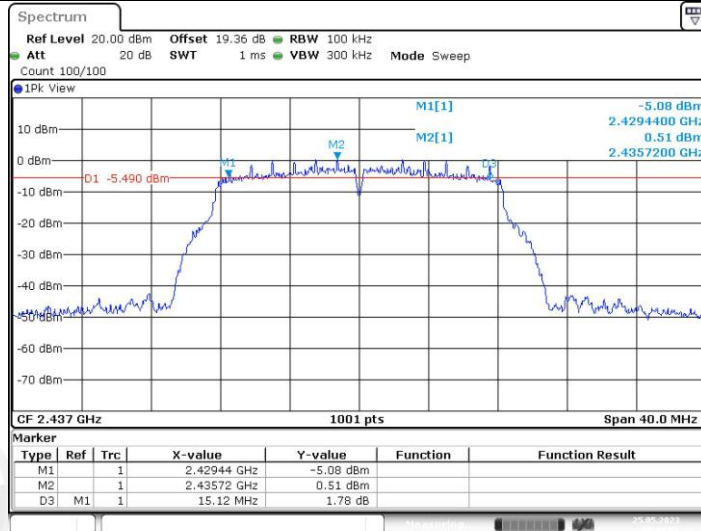
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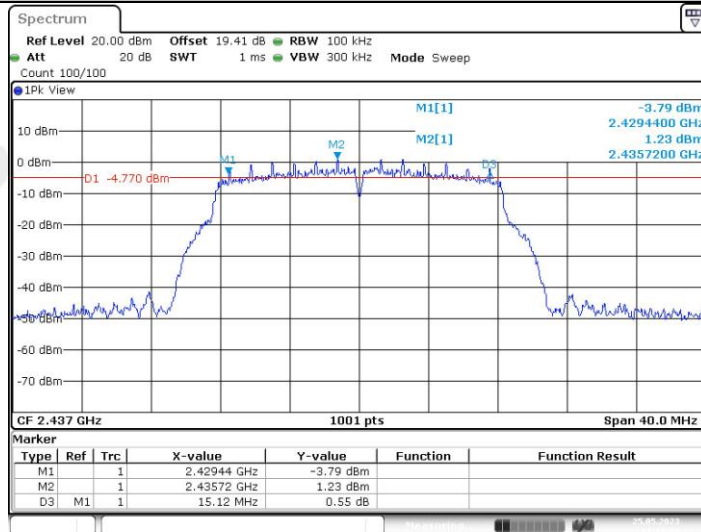
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11G\_Ant1\_2437



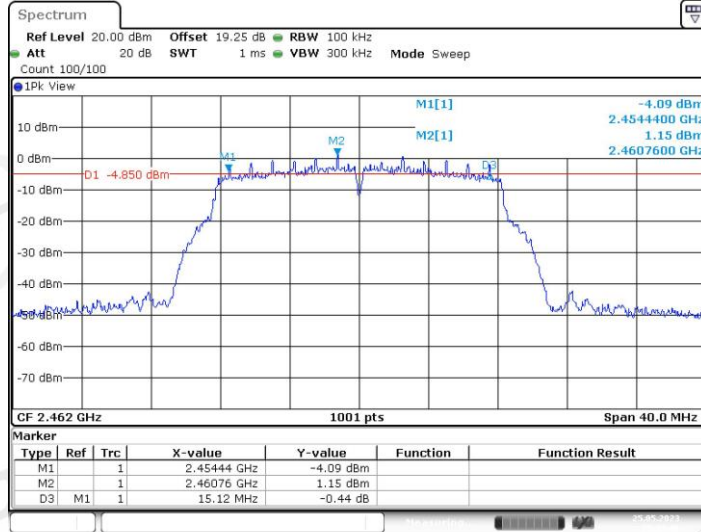
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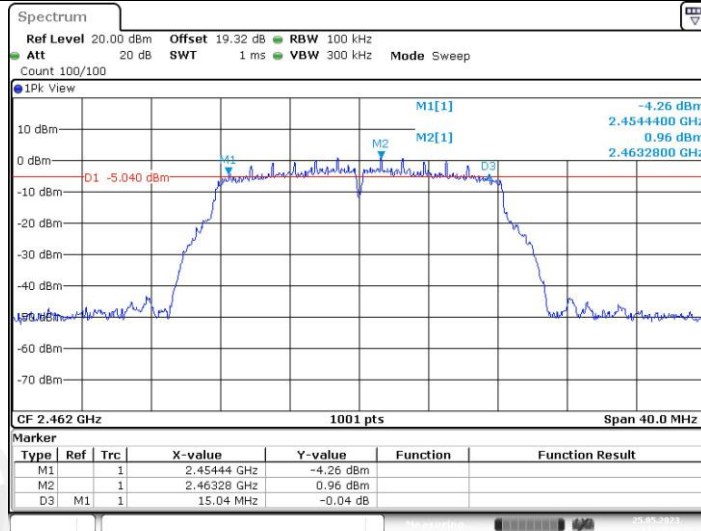
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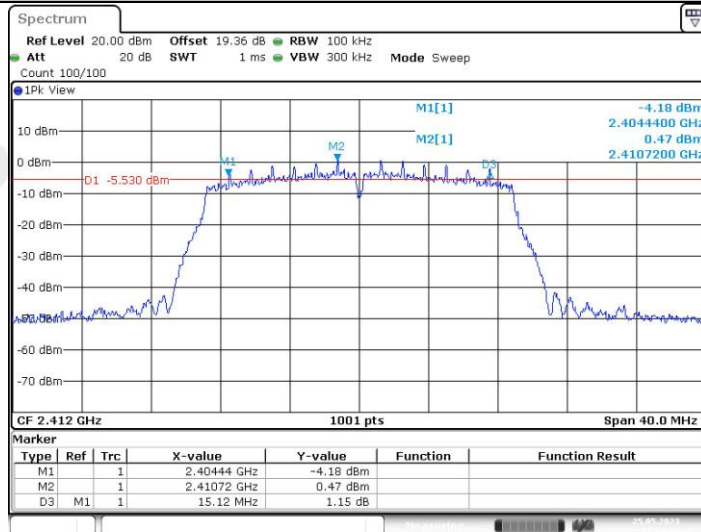
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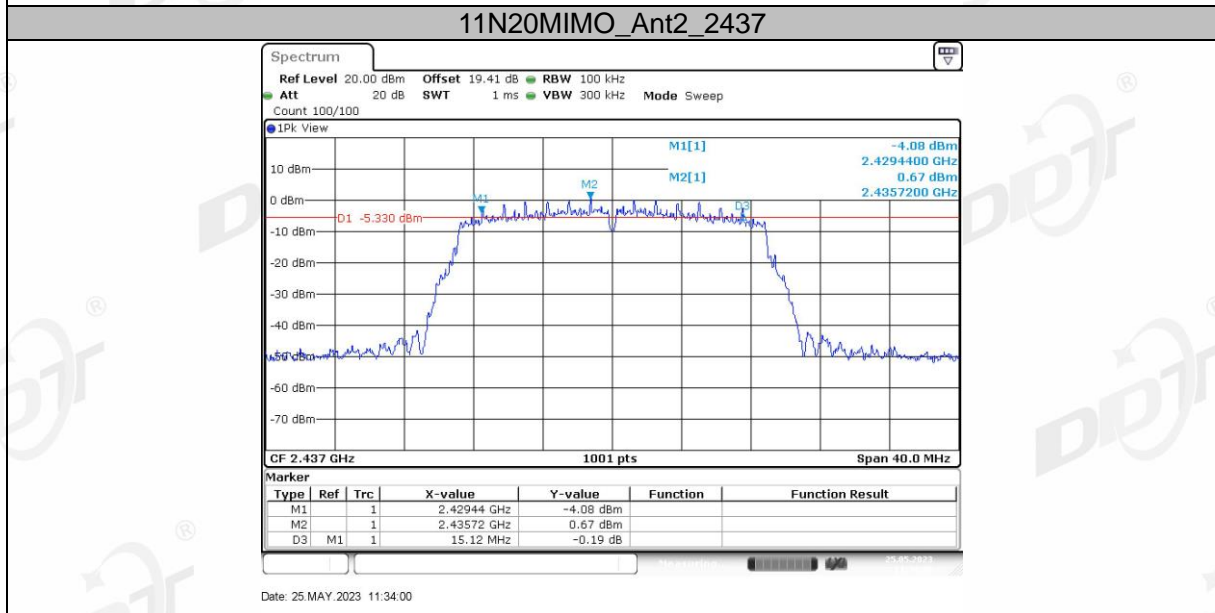
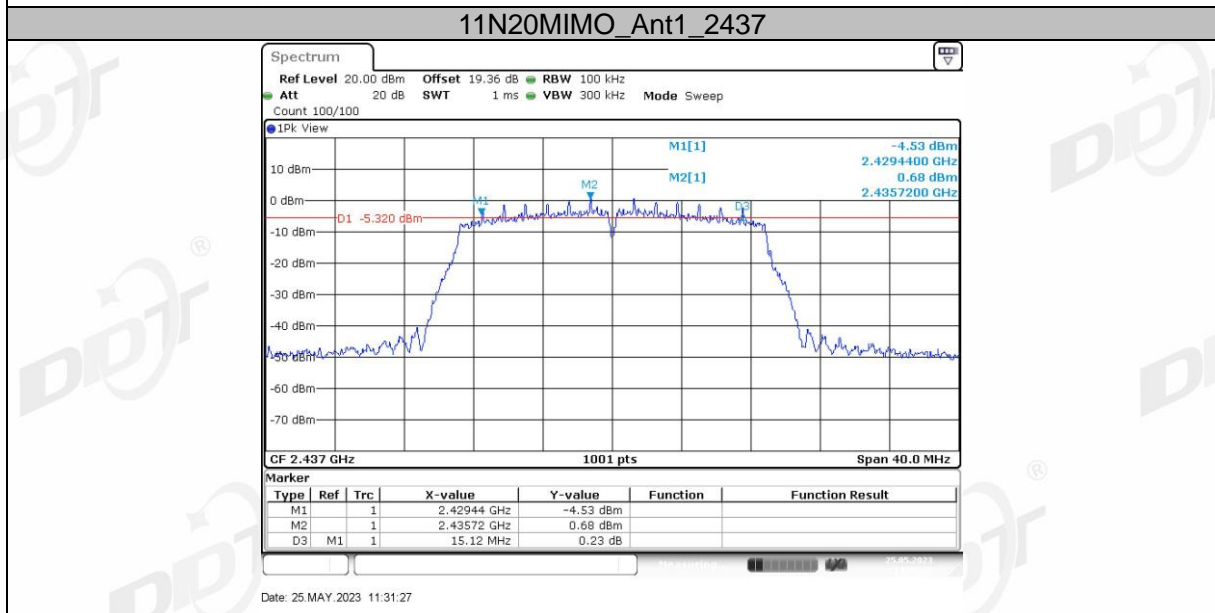
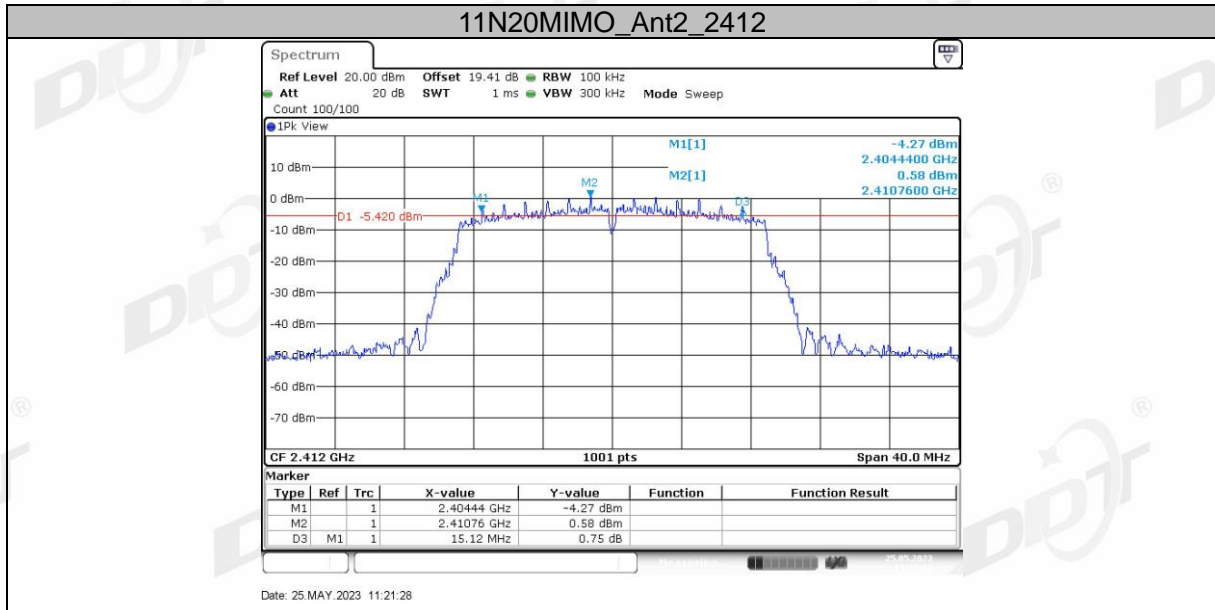
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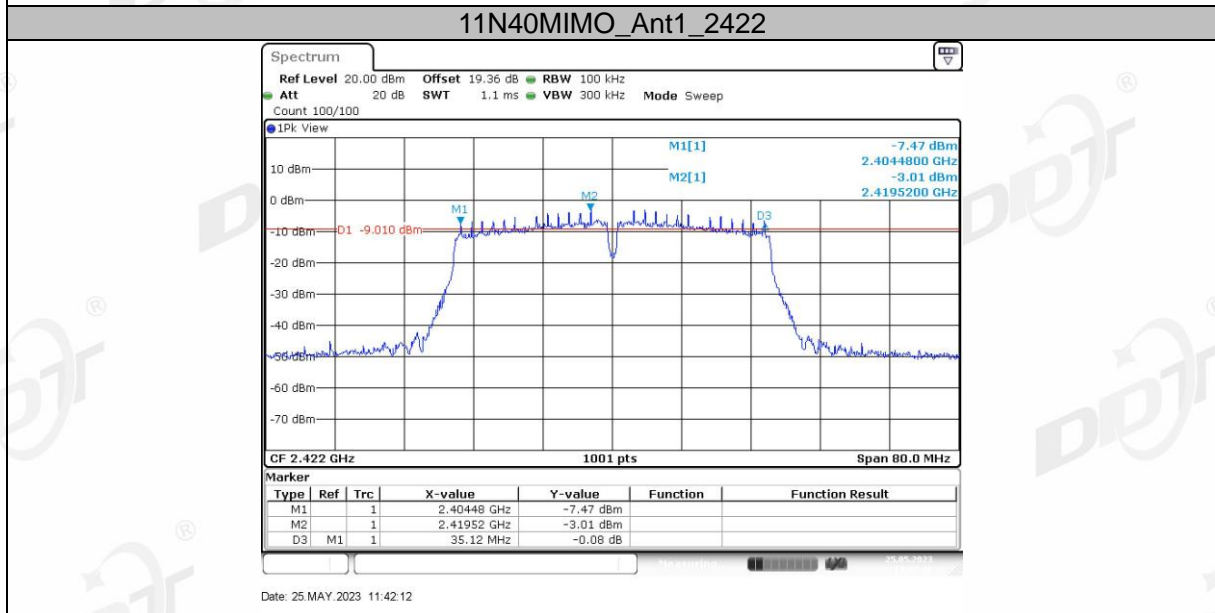
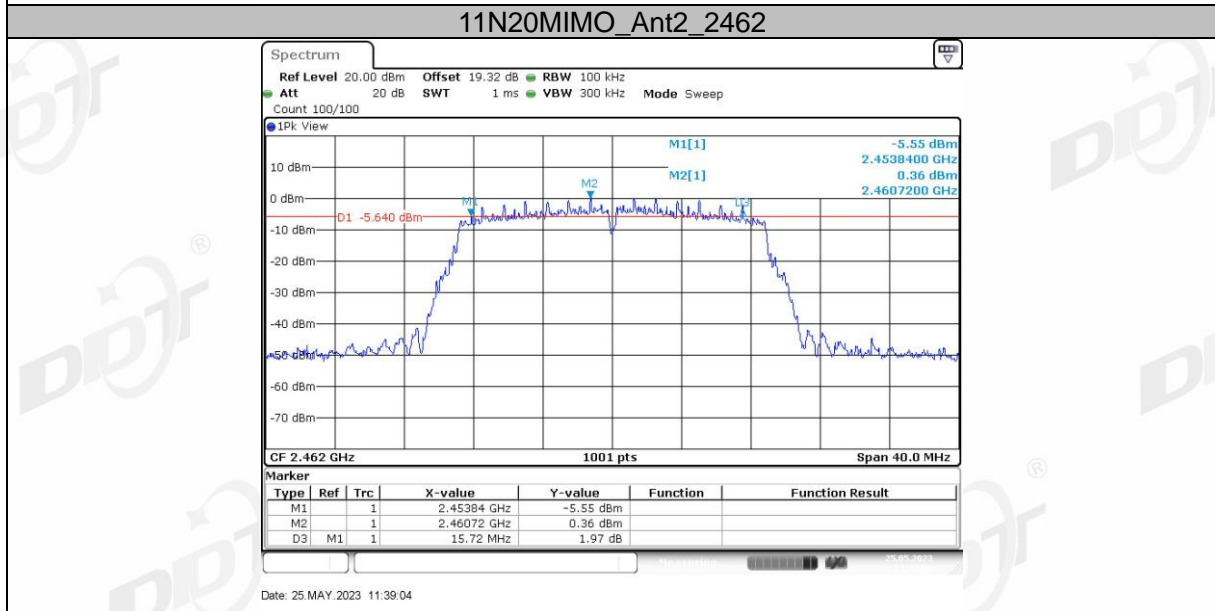
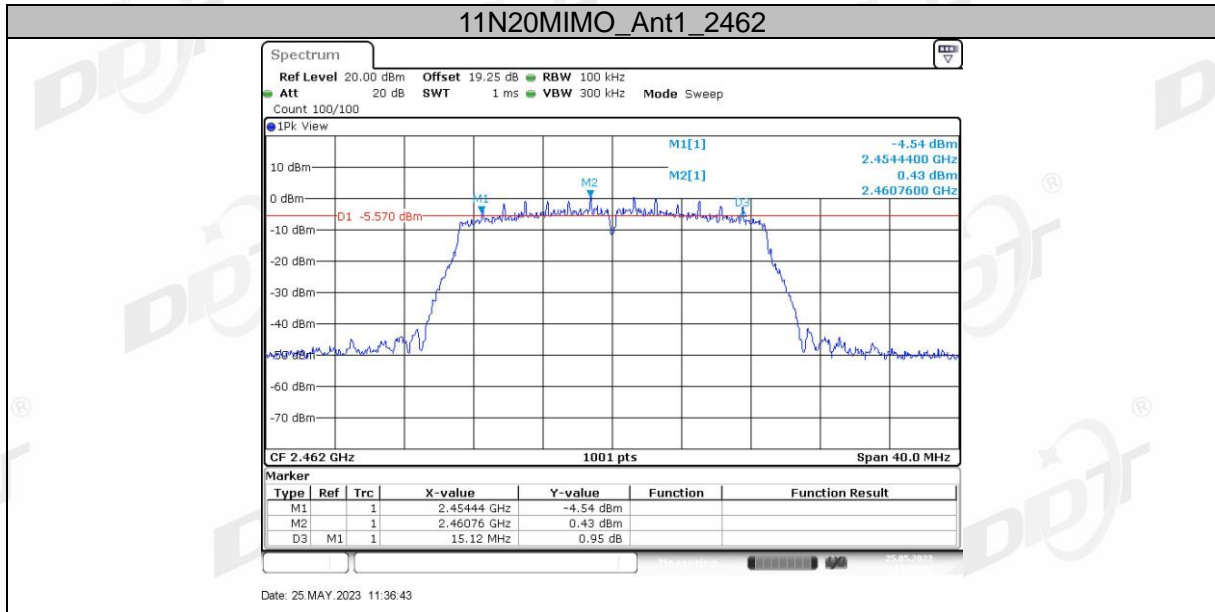
### 11N20MIMO\_Ant1\_2412



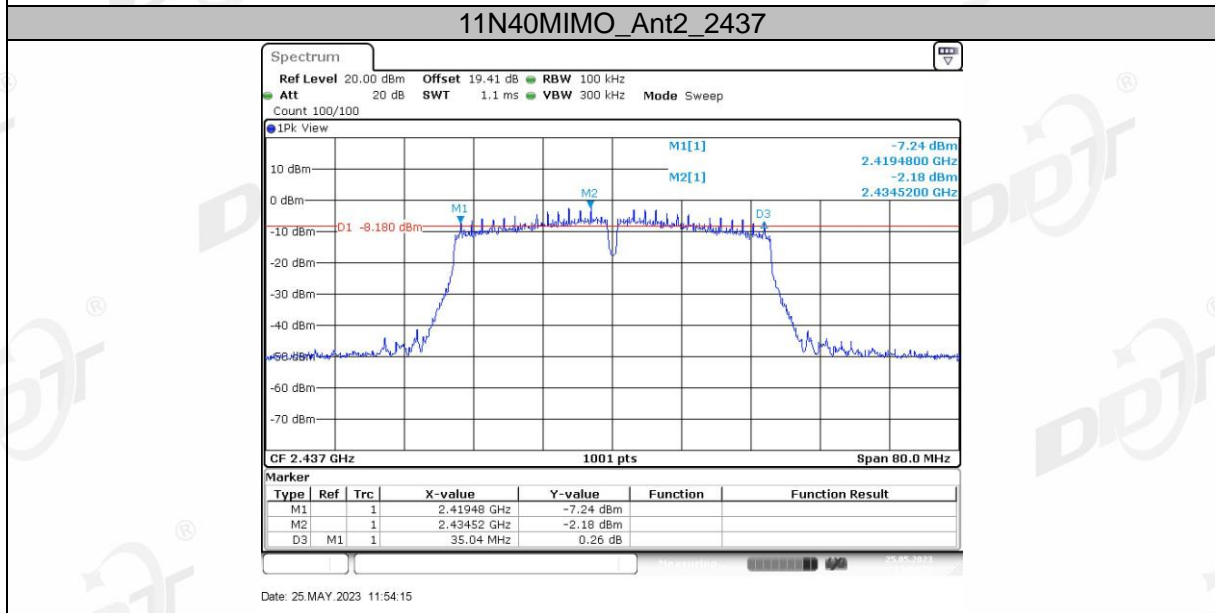
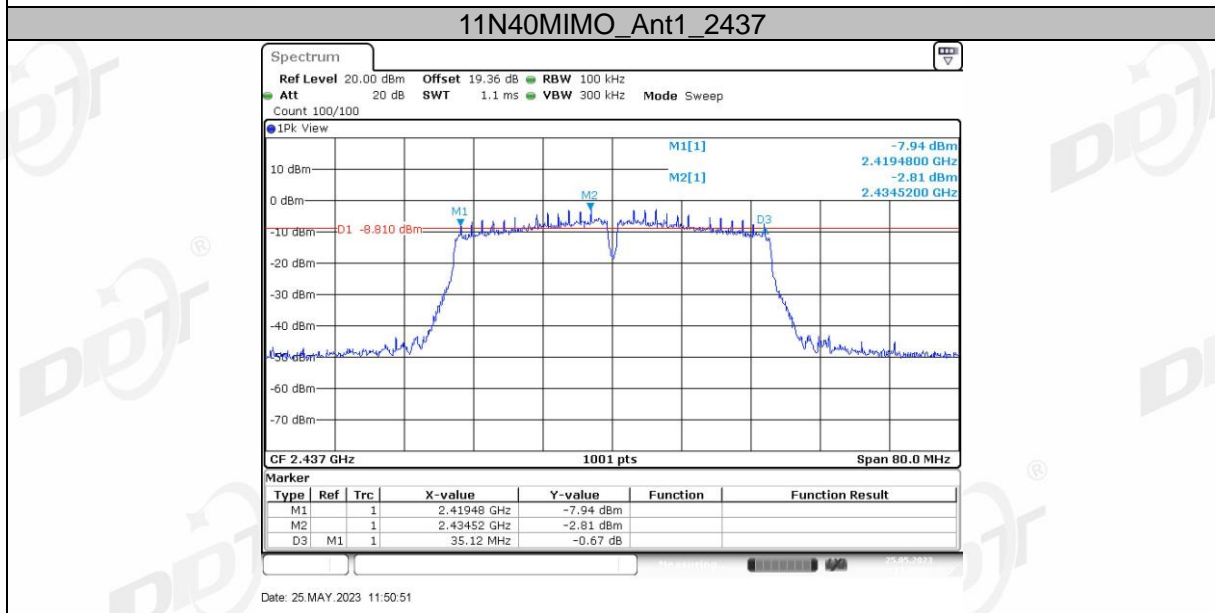
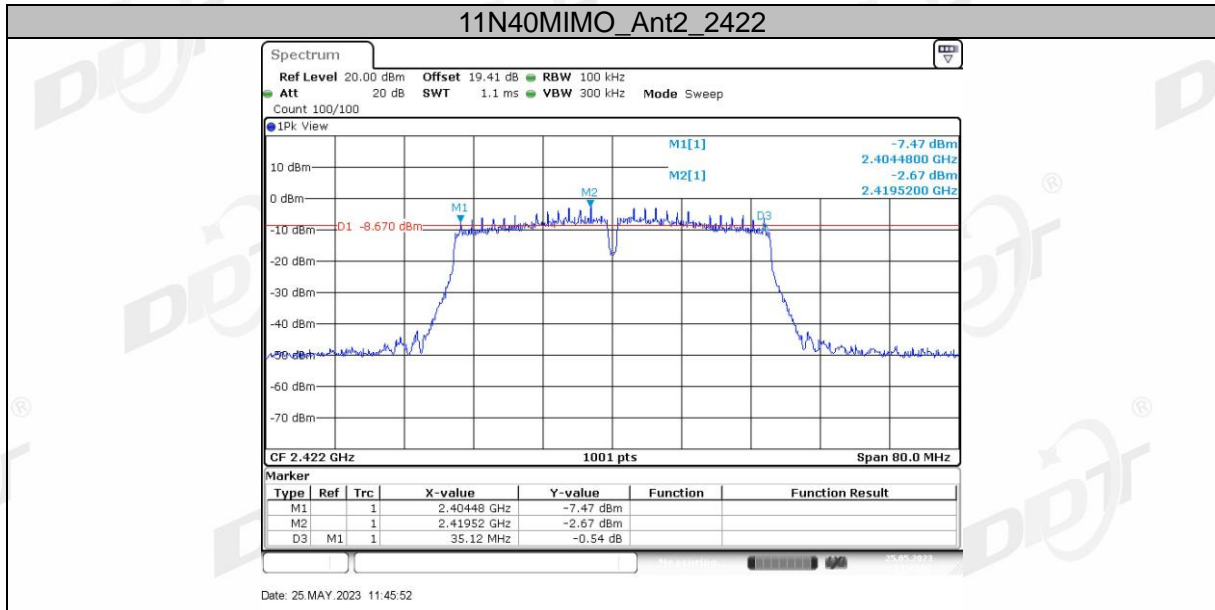
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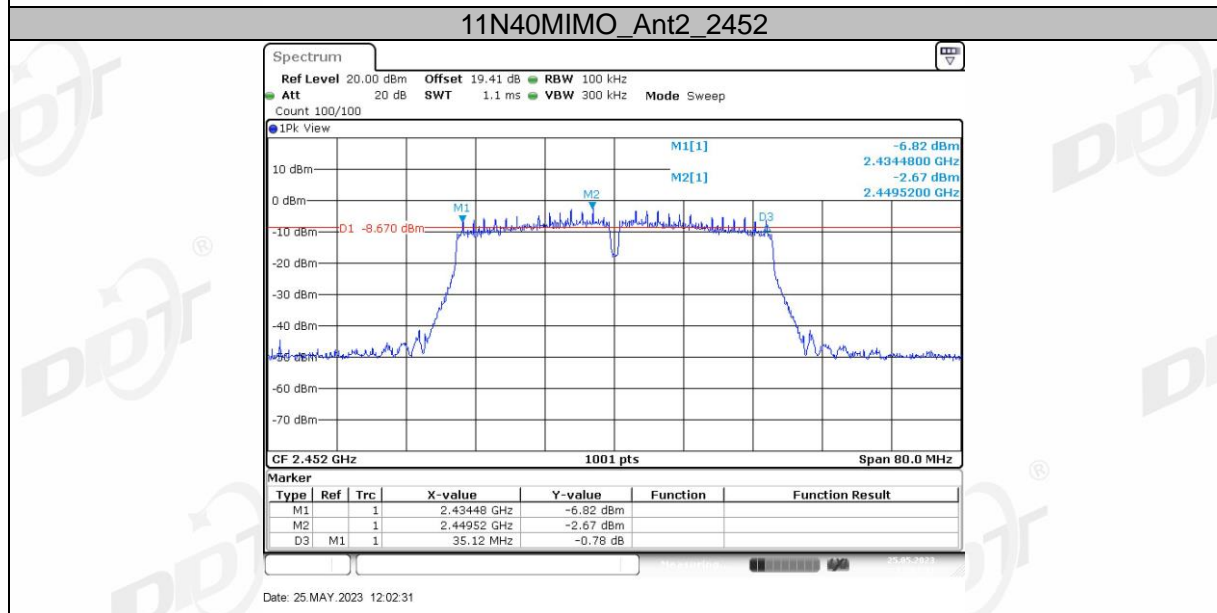
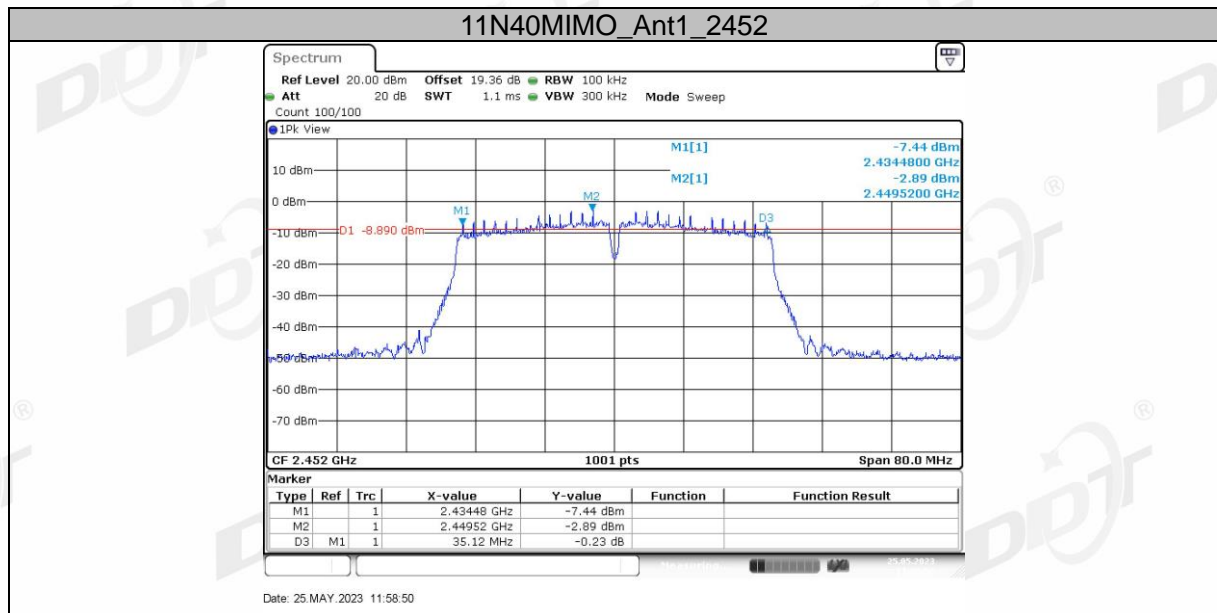






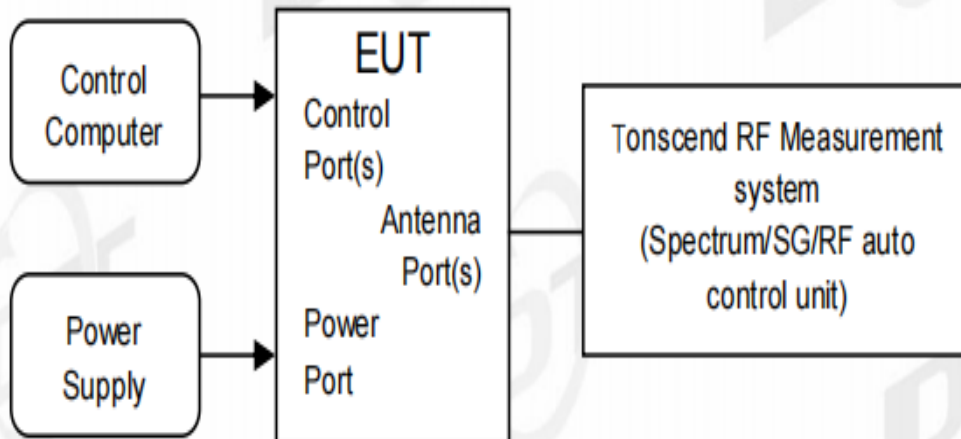






## 5. 99% Bandwidth

### 5.1. Block diagram of test setup



### 5.2. Limits

Just for Report.

### 5.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 6.9.3.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously
- (4) Use the following spectrum analyzer settings for the 99% Bandwidth:

RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Span:	between 1.5 times and 5.0 times the OBW
Detector Mode:	peak
Sweep time:	auto
Trace mode	max hold
- (5) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

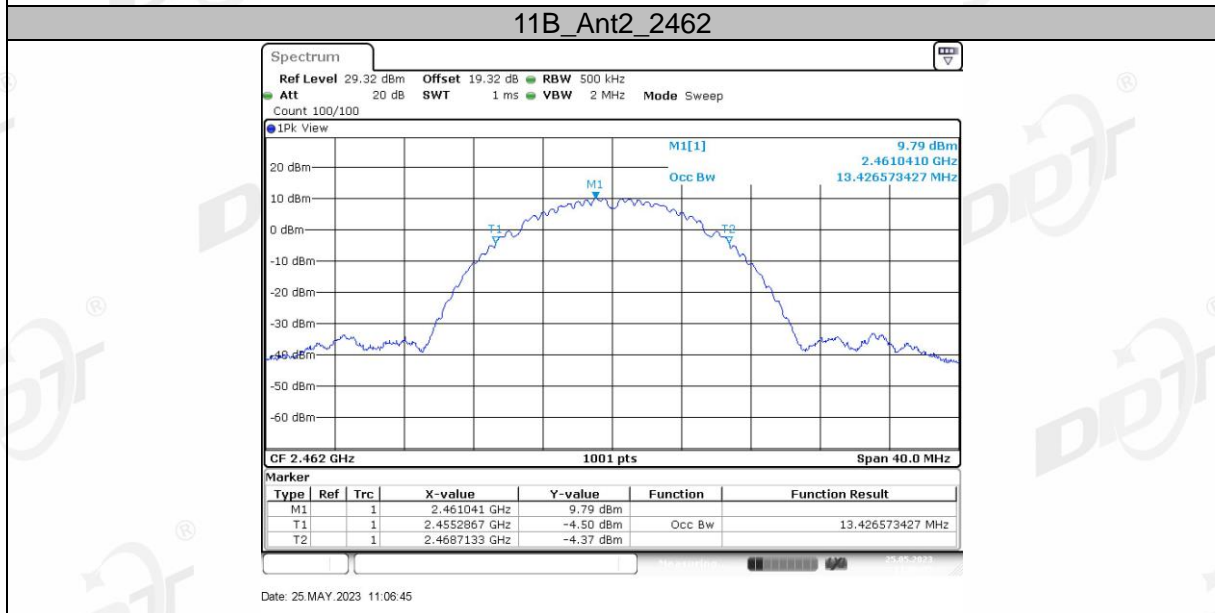
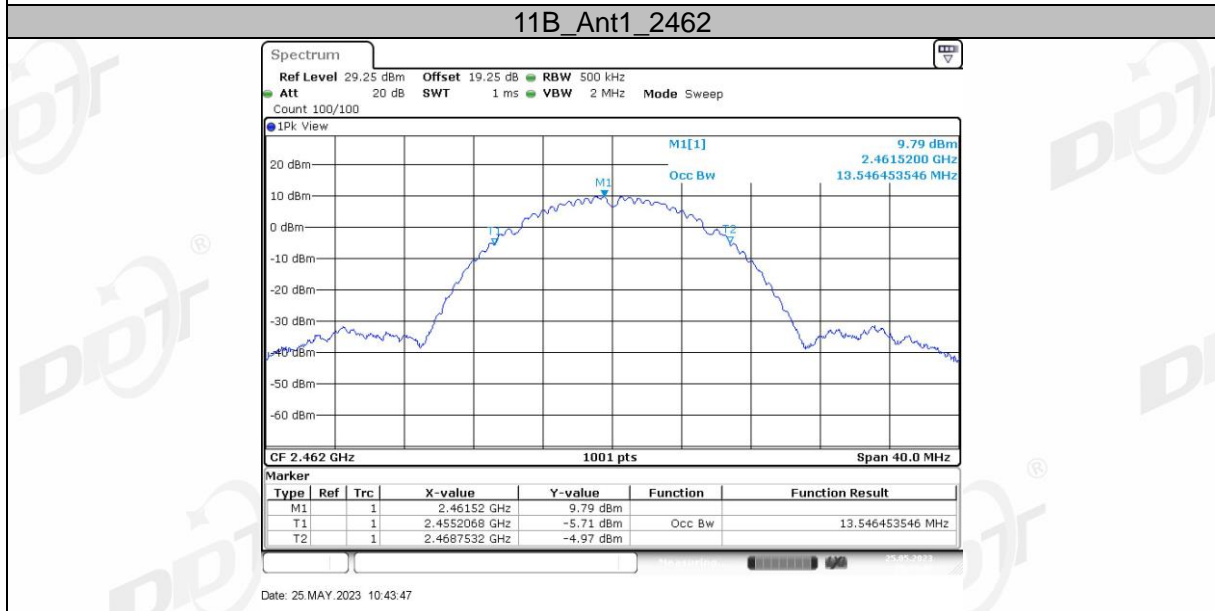
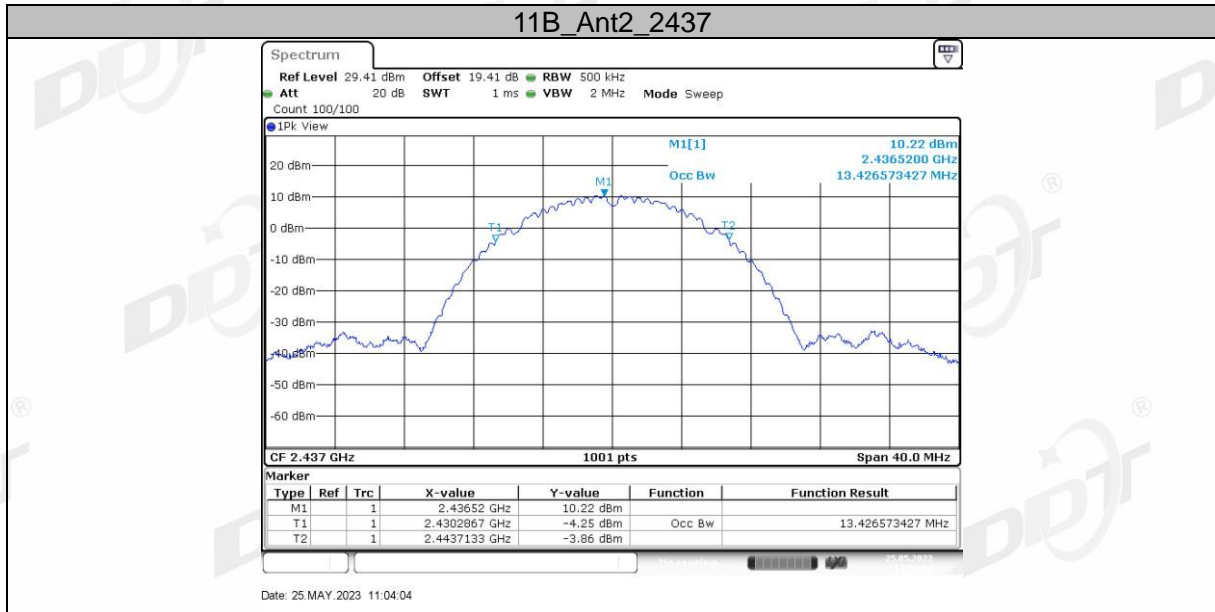
## 5.4. Test result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	13.467	2405.2867	2418.7532	---	---
	Ant2	2412	13.387	2405.3267	2418.7133	---	---
	Ant1	2437	13.506	2430.2468	2443.7532	---	---
	Ant2	2437	13.427	2430.2867	2443.7133	---	---
	Ant1	2462	13.546	2455.2068	2468.7532	---	---
	Ant2	2462	13.427	2455.2867	2468.7133	---	---
11G	Ant1	2412	17.183	2403.4086	2420.5914	---	---
	Ant2	2412	17.223	2403.3686	2420.5914	---	---
	Ant1	2437	17.223	2428.3686	2445.5914	---	---
	Ant2	2437	17.223	2428.3686	2445.5914	---	---
	Ant1	2462	17.223	2453.3686	2470.5914	---	---
	Ant2	2462	17.223	2453.3686	2470.5914	---	---
11N20MIMO	Ant1	2412	18.022	2403.0090	2421.0310	---	---
	Ant2	2412	17.742	2403.1688	2420.9111	---	---
	Ant1	2437	17.982	2428.0090	2445.9910	---	---
	Ant2	2437	17.702	2428.1289	2445.8312	---	---
	Ant1	2462	17.982	2453.0090	2470.9910	---	---
	Ant2	2462	17.742	2453.1289	2470.8711	---	---
11N40MIMO	Ant1	2422	36.284	2403.9381	2440.2218	---	---
	Ant2	2422	36.284	2403.9381	2440.2218	---	---
	Ant1	2437	36.204	2418.9381	2455.1419	---	---
	Ant2	2437	36.124	2418.9381	2455.0619	---	---
	Ant1	2452	36.284	2433.9381	2470.2218	---	---
	Ant2	2452	36.364	2433.8581	2470.2218	---	---

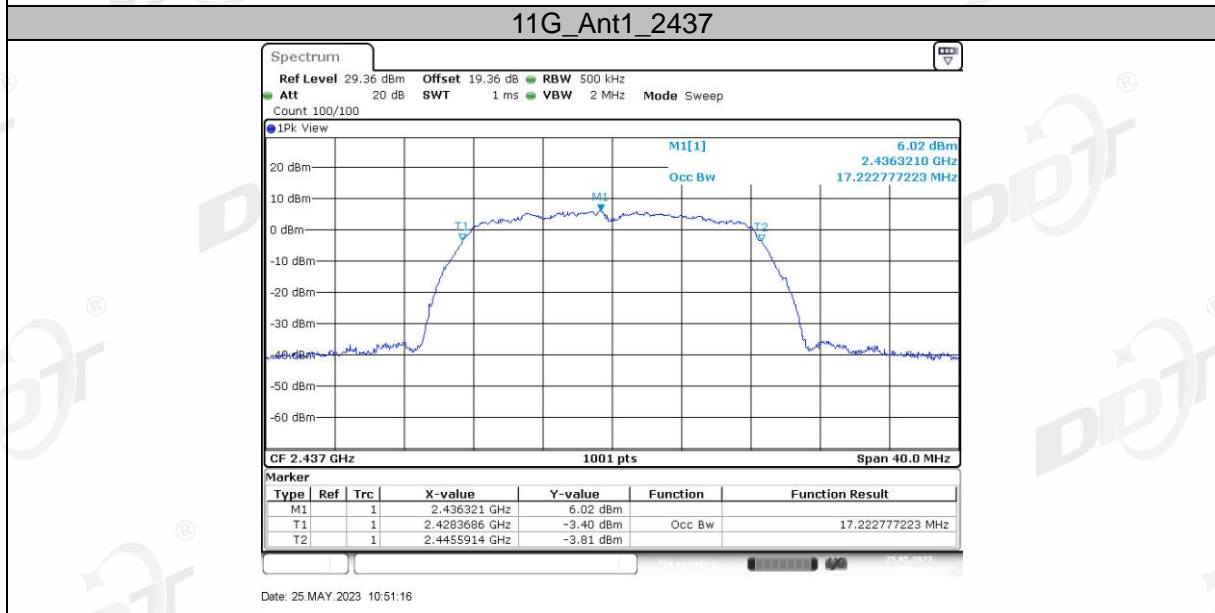
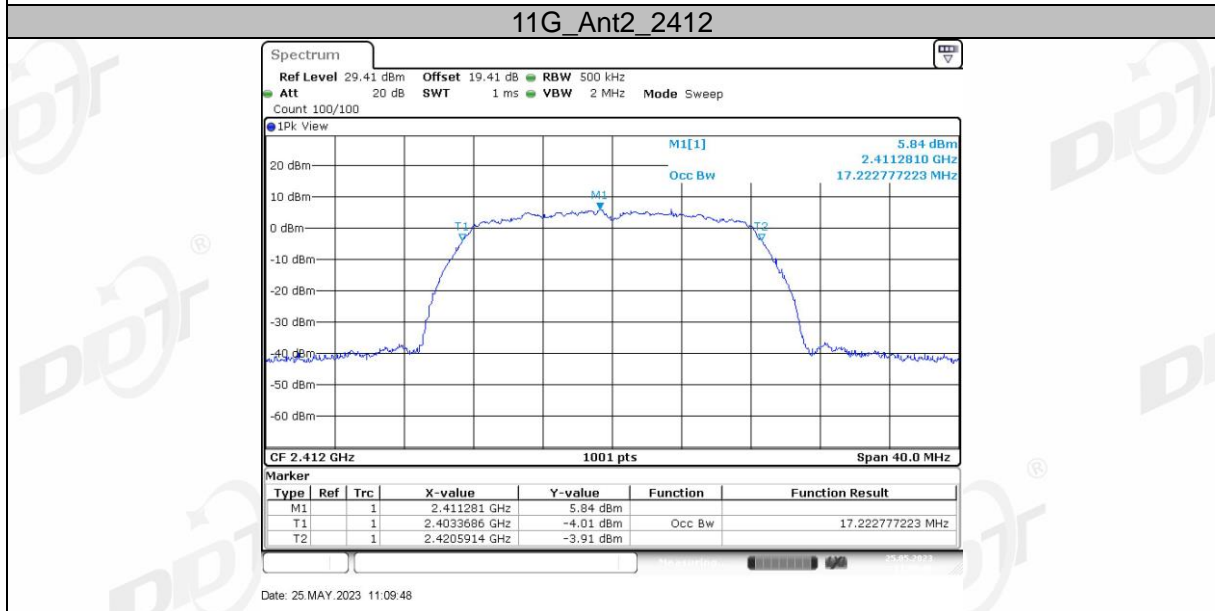
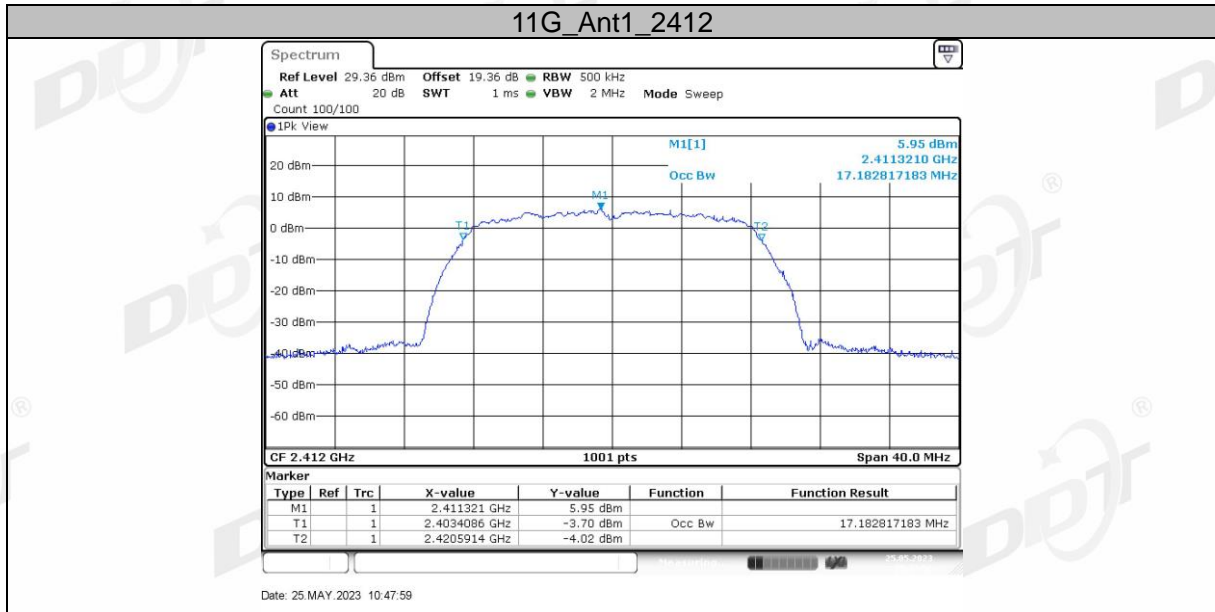
5.5. Test graphs

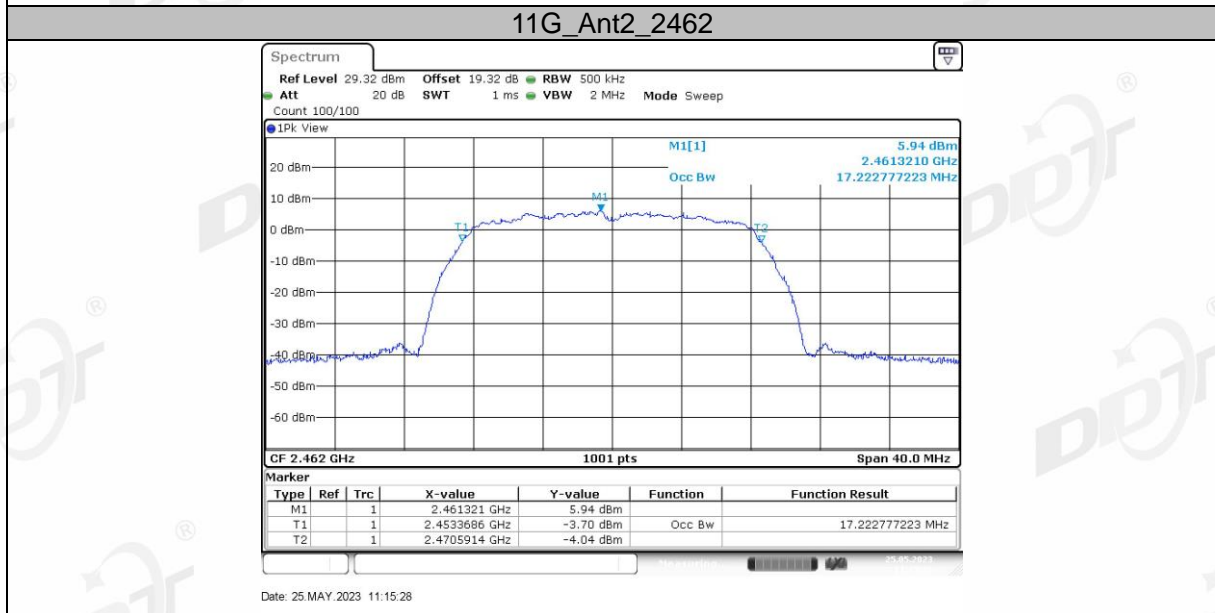
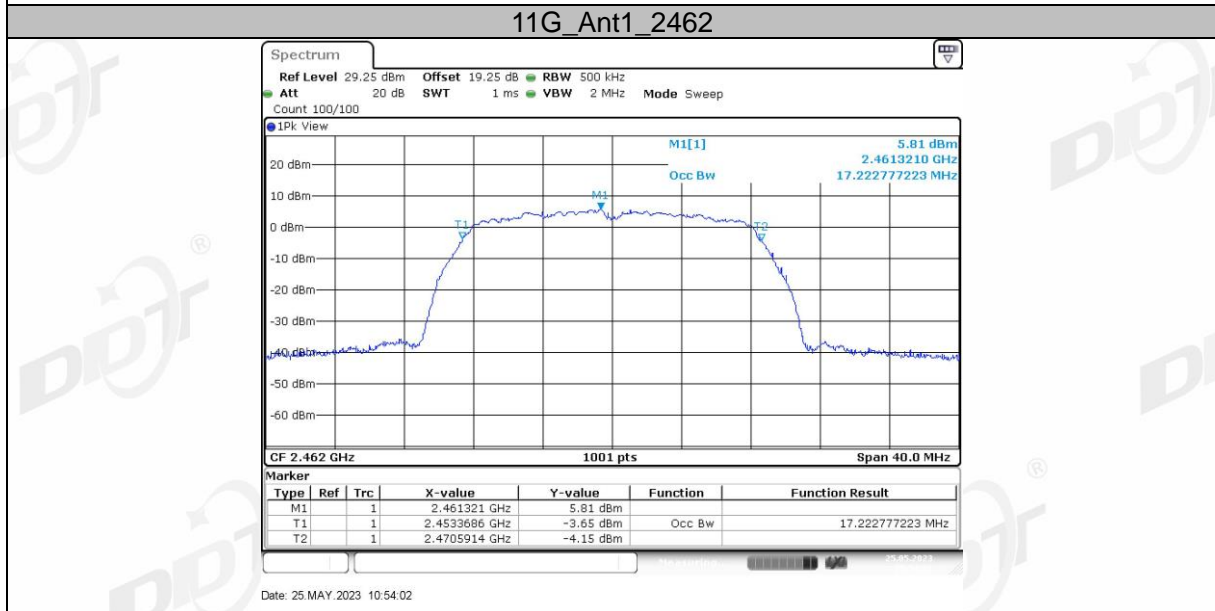
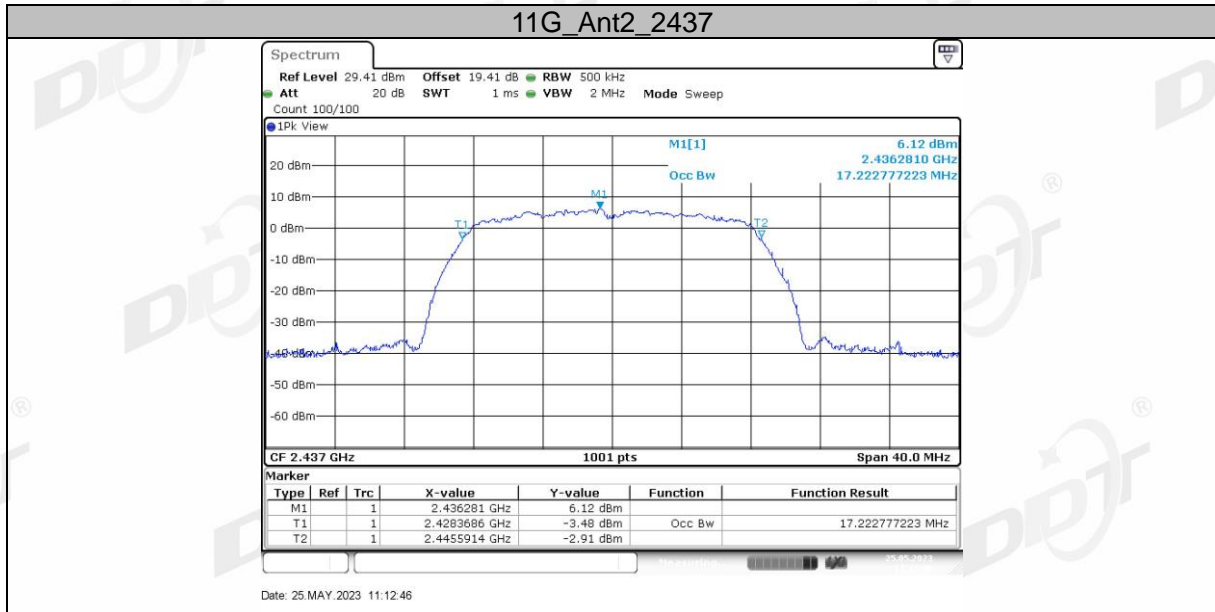


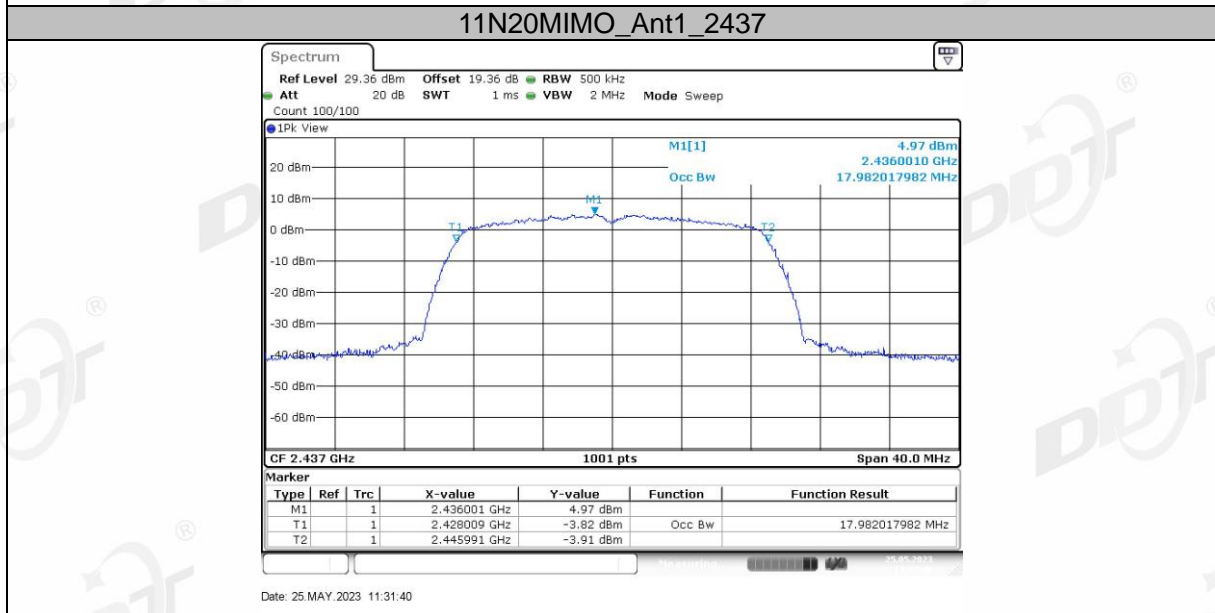
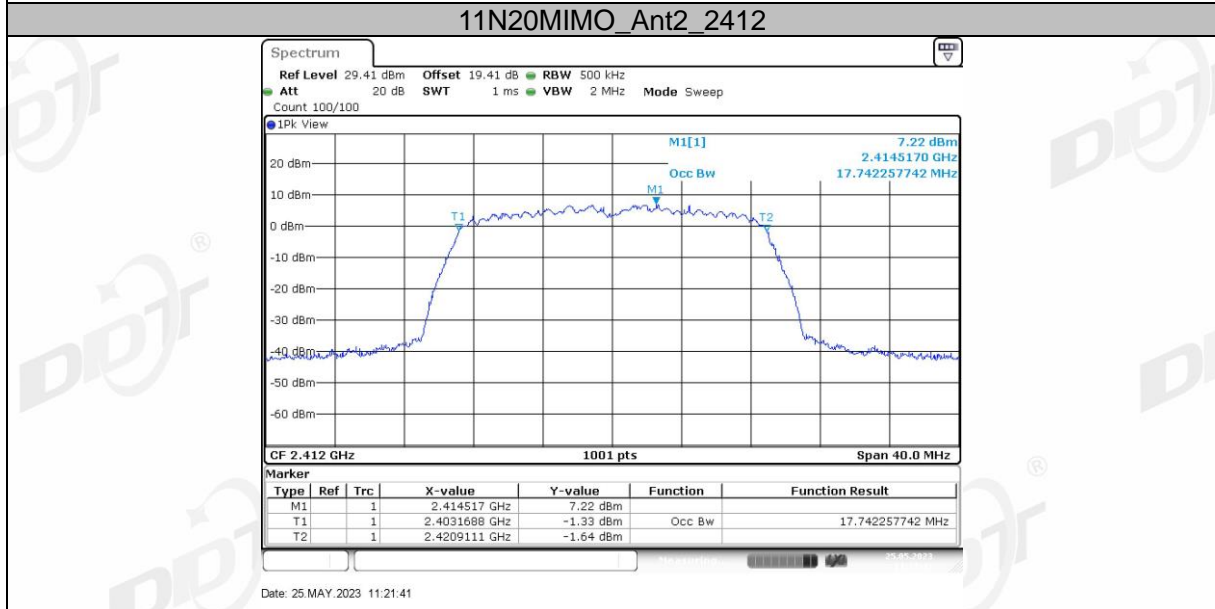
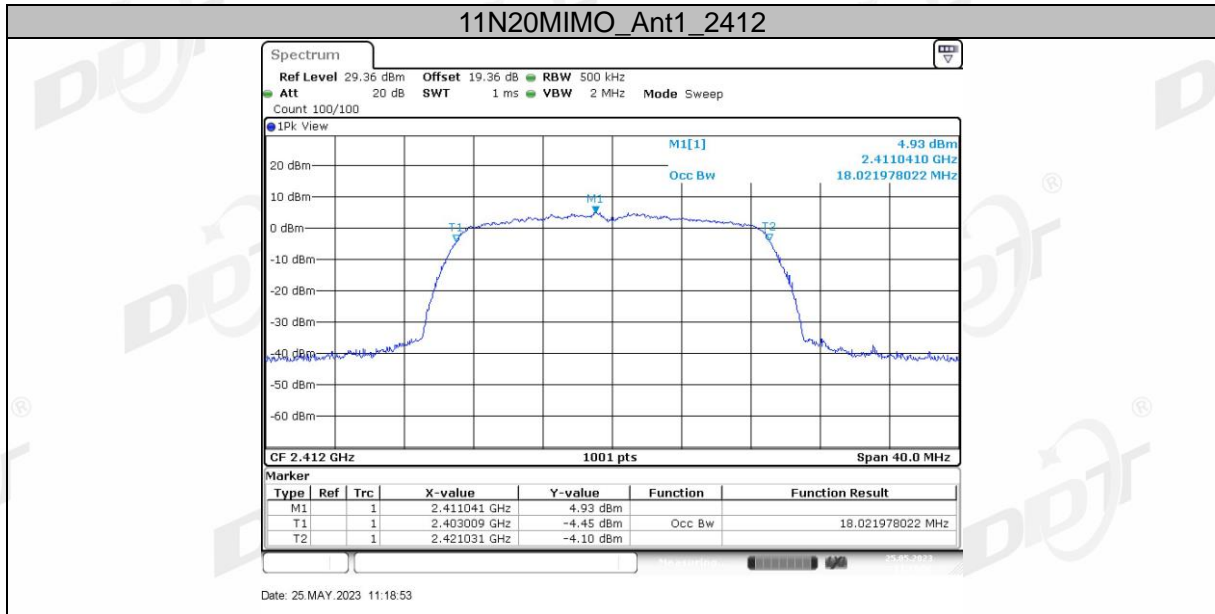


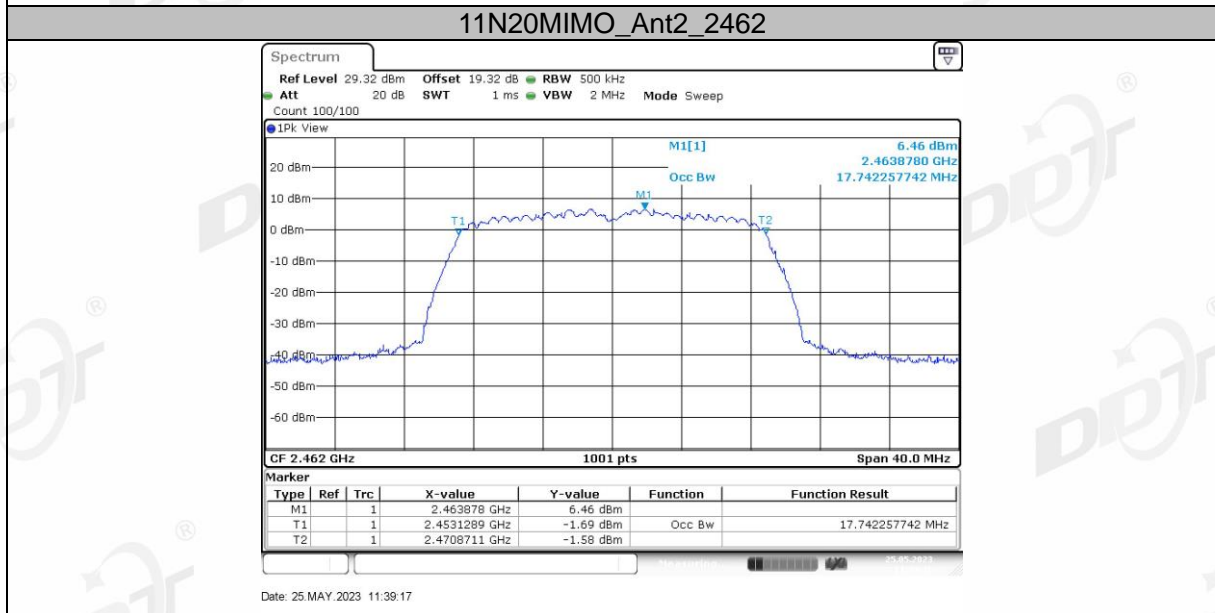
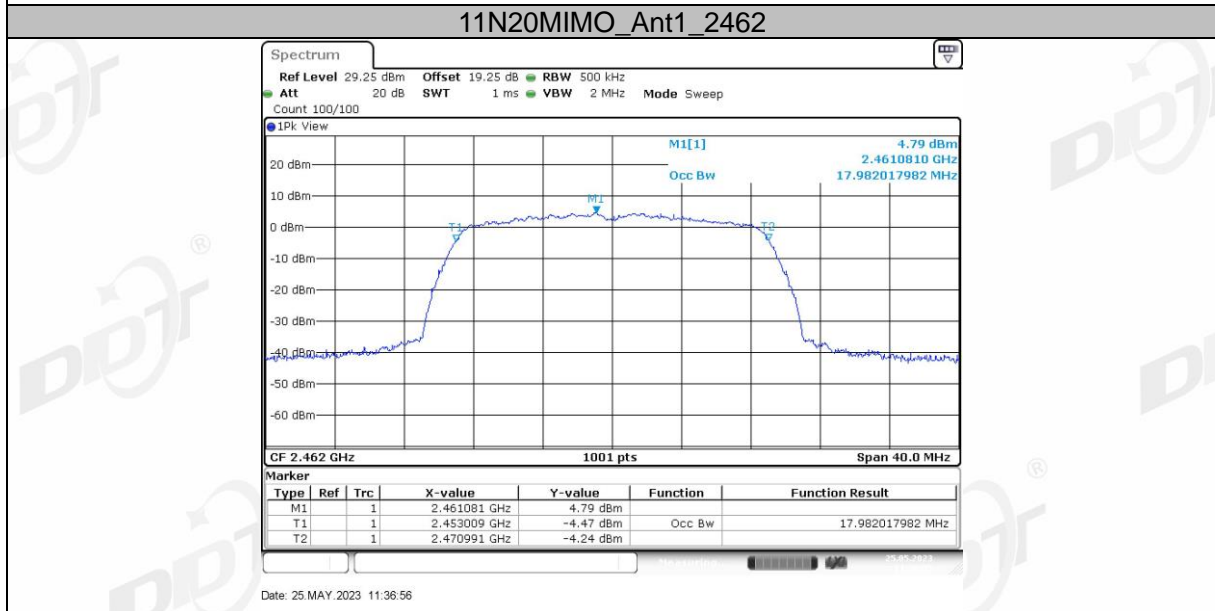
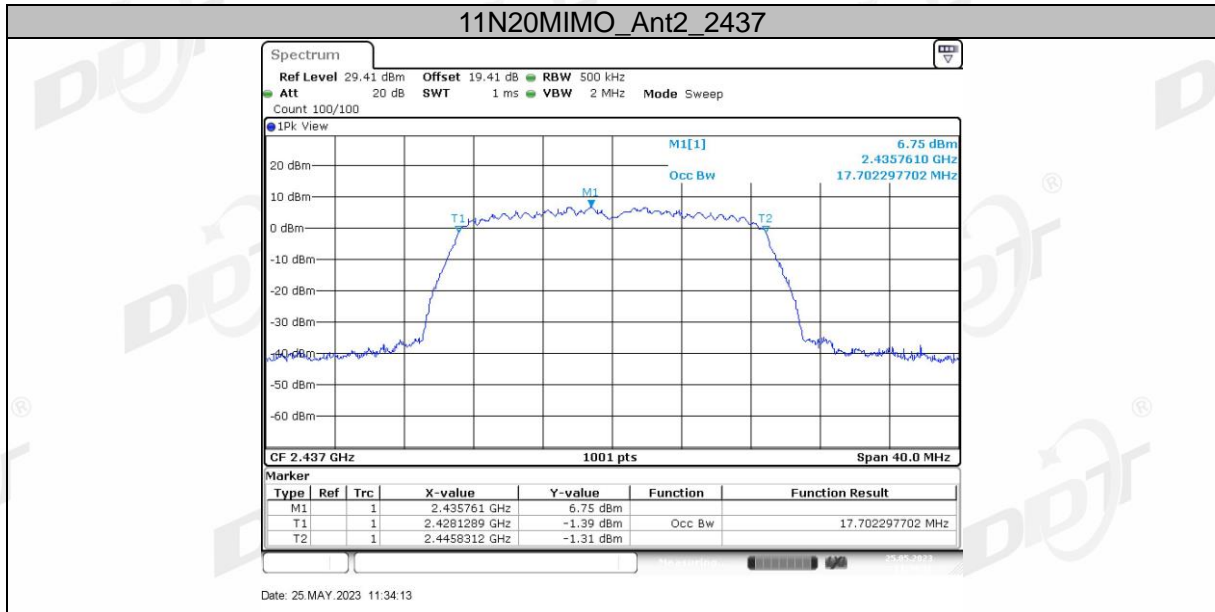




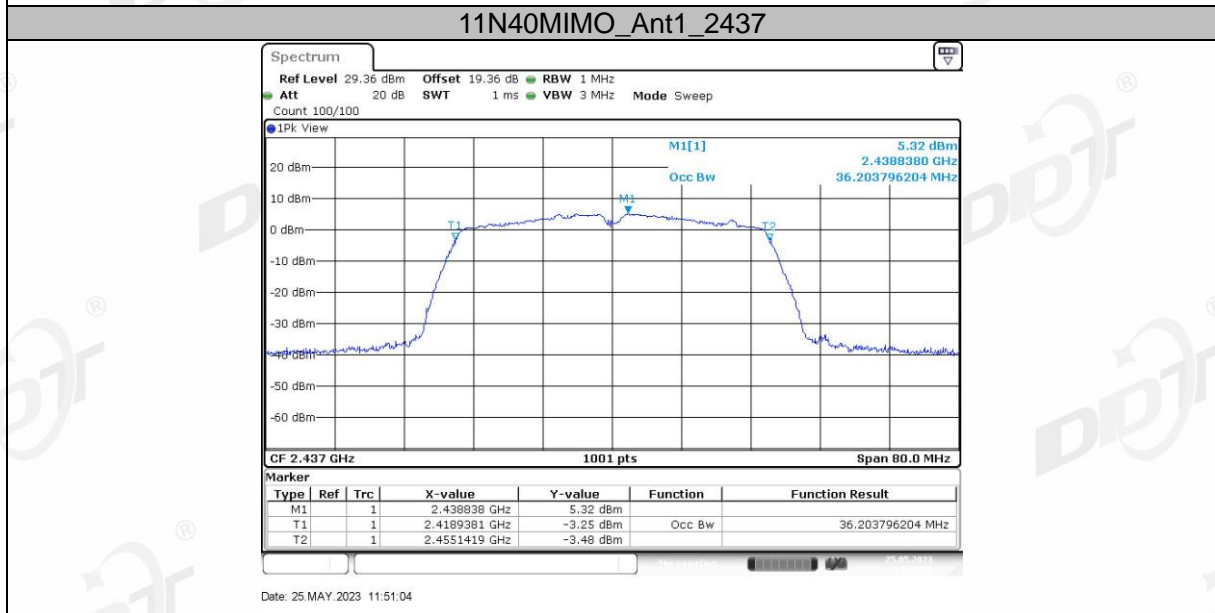
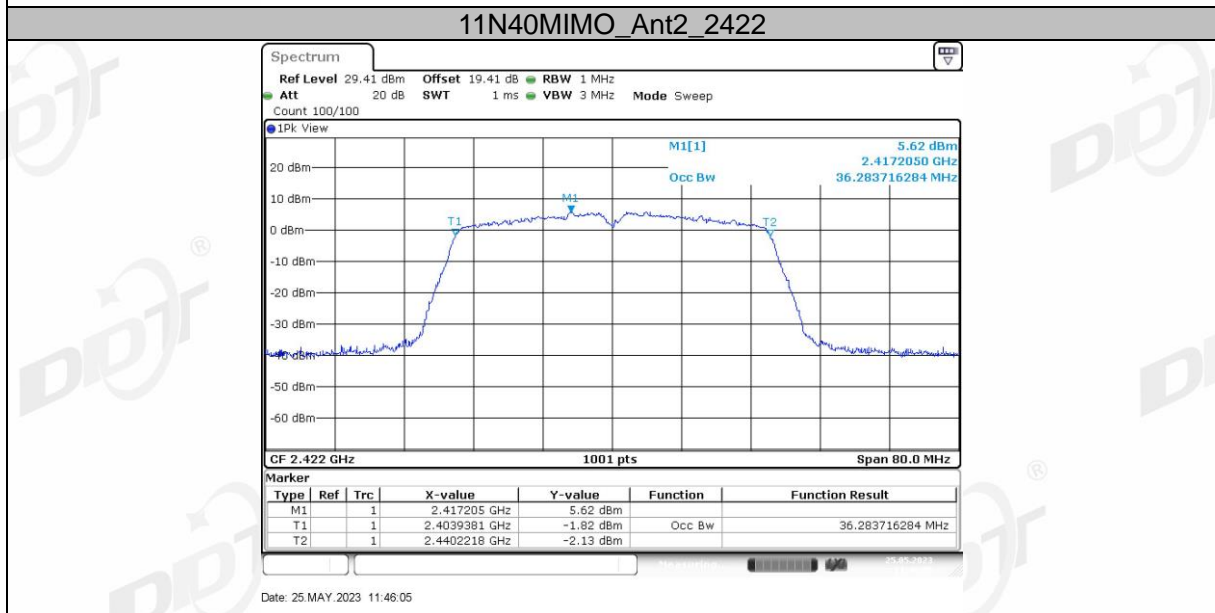
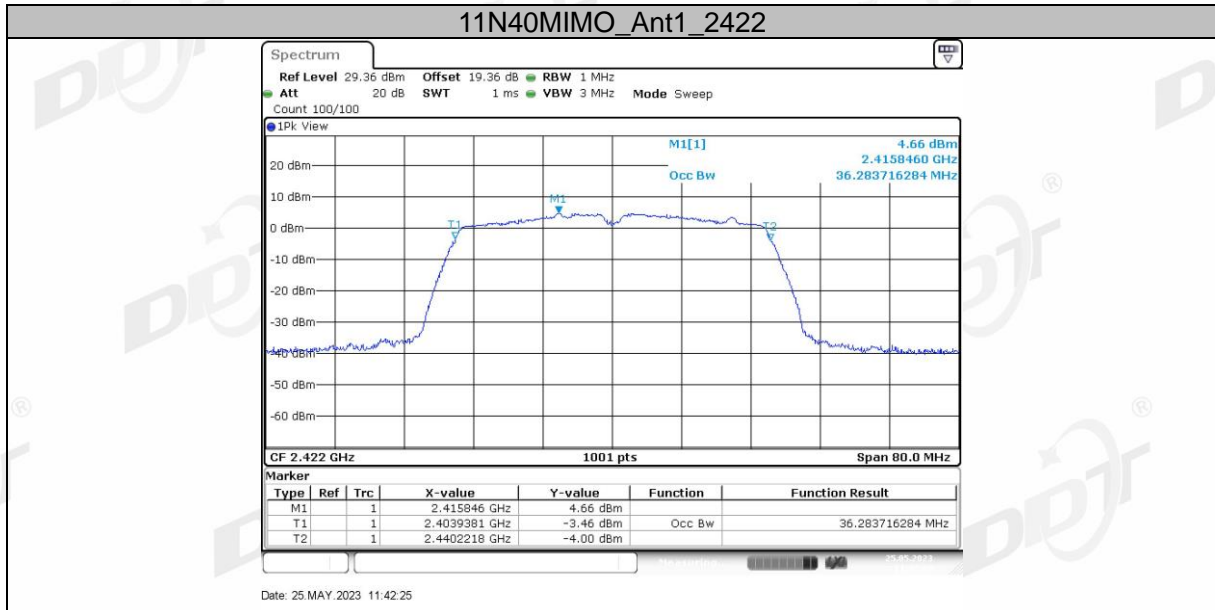


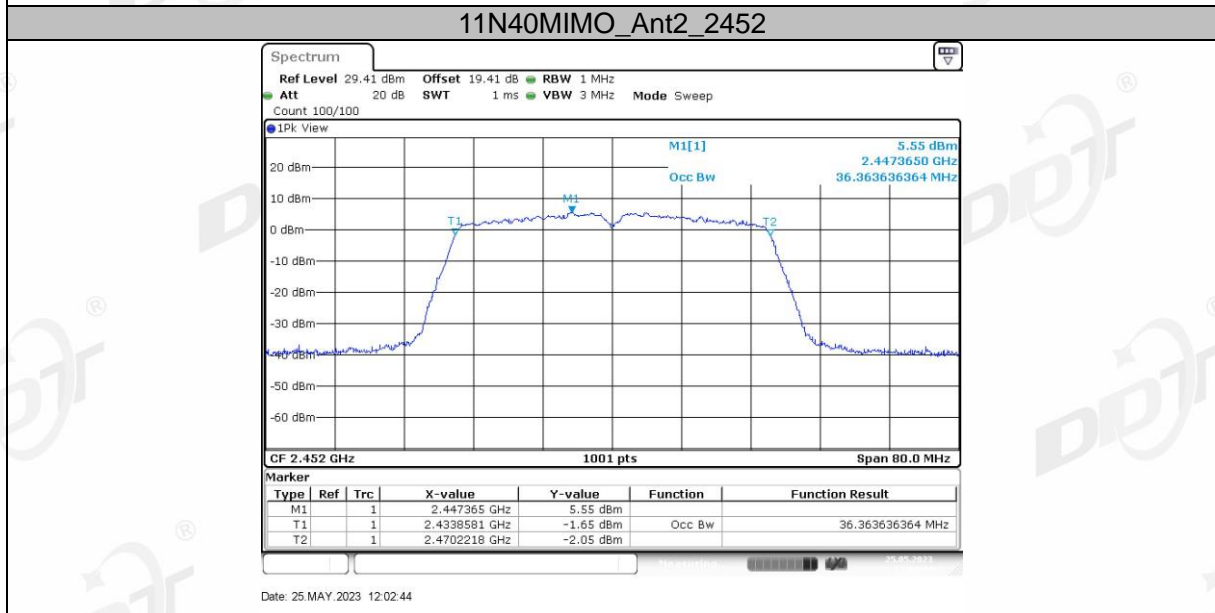
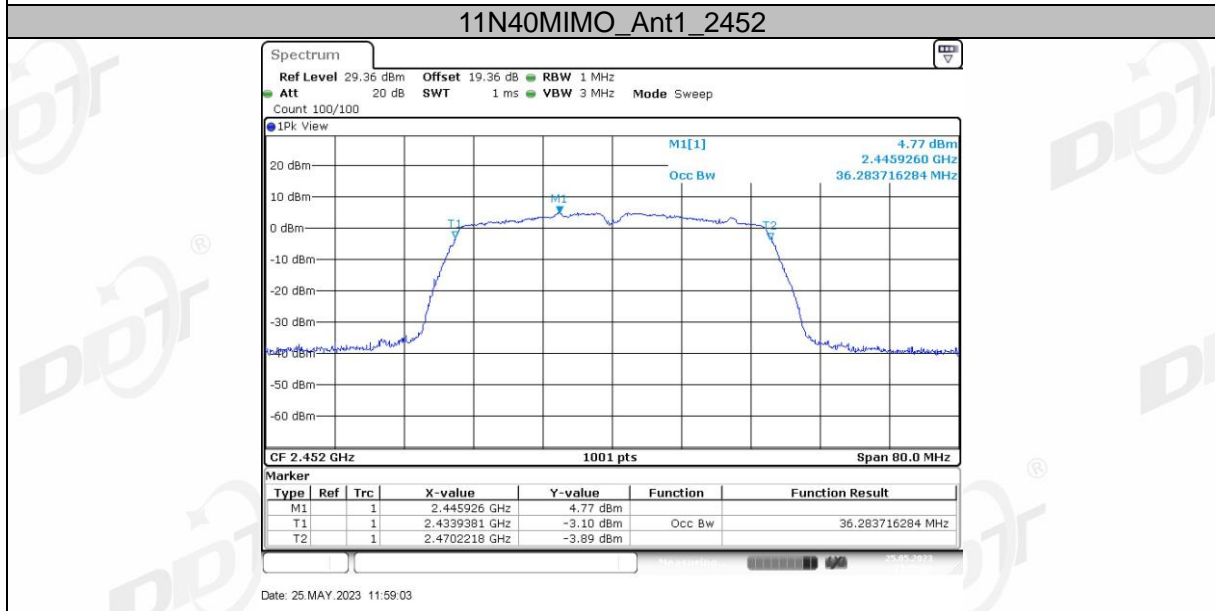
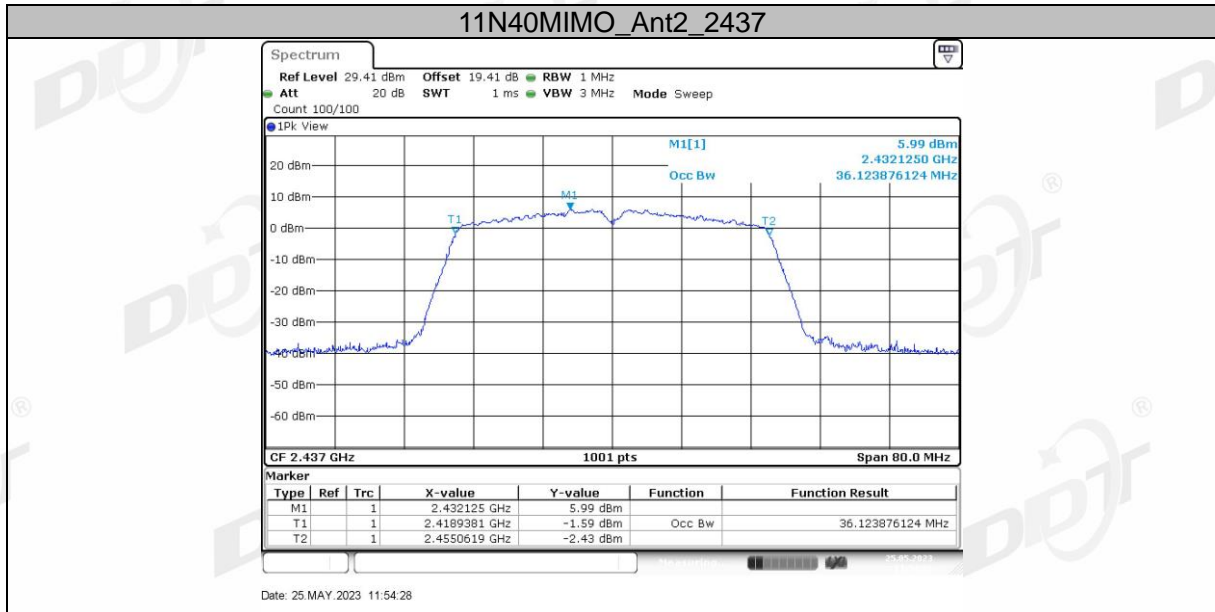








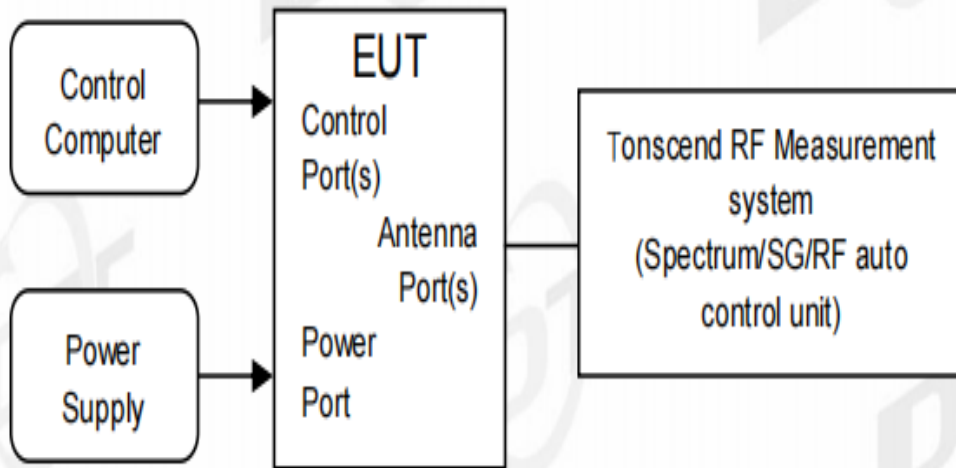






## 6. Conducted Output Power

### 6.1. Block diagram of test setup



### 6.2. 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.

### 6.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.9.2.3.
- (2) Connect EUT's antenna output to RF power meter by RF cable, the path loss was compensated to the results.
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously, If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal.
- (4) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
- (5) Adjust the measurement in dBm by adding  $[10 \log (1 / D)]$ , where D is the duty cycle.
- (6) Record the RF average power of each antenna port.

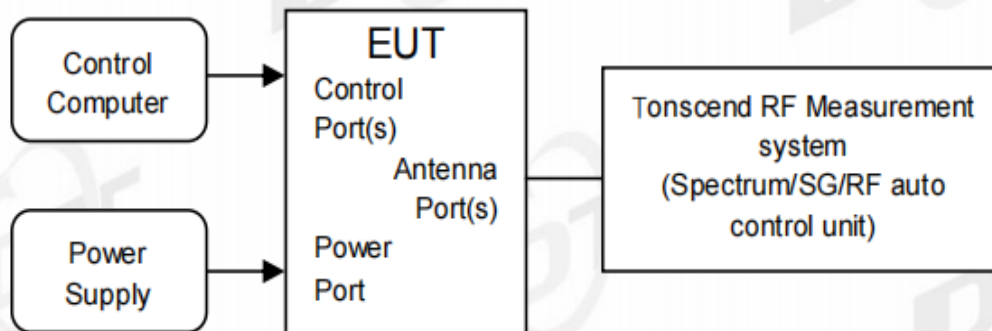
## 6.4. Test result average

Test Mode	Antenna	Frequency [MHz]	Average power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	Ant1	2412	18.12	99.64	0.02	18.14	≤30.00	20.50	≤36.00	PASS
	Ant2	2412	18.12	99.64	0.02	18.14	≤30.00	21.35	≤36.00	PASS
	Ant1	2437	18.43	99.64	0.02	18.45	≤30.00	20.81	≤36.00	PASS
	Ant2	2437	18.41	99.64	0.02	18.43	≤30.00	21.64	≤36.00	PASS
	Ant1	2462	18.29	99.64	0.02	18.31	≤30.00	20.67	≤36.00	PASS
	Ant2	2462	18.19	99.41	0.03	18.22	≤30.00	21.43	≤36.00	PASS
11G	Ant1	2412	13.87	97.22	0.12	13.99	≤30.00	16.35	≤36.00	PASS
	Ant2	2412	13.85	96.53	0.15	14.00	≤30.00	17.21	≤36.00	PASS
	Ant1	2437	13.95	97.20	0.12	14.07	≤30.00	16.43	≤36.00	PASS
	Ant2	2437	13.73	96.53	0.15	13.88	≤30.00	17.09	≤36.00	PASS
	Ant1	2462	13.84	97.22	0.12	13.96	≤30.00	16.32	≤36.00	PASS
	Ant2	2462	13.80	97.20	0.12	13.92	≤30.00	17.13	≤36.00	PASS
11N20 MIMO	Ant1	2412	13.27	93.06	0.31	13.58	≤30.00	15.94	≤36.00	PASS
	Ant2	2412	13.24	94.37	0.25	13.49	≤30.00	16.70	≤36.00	PASS
	total	2412	---	---	---	16.55	≤30.00	19.35	≤36.00	PASS
	Ant1	2437	13.23	94.37	0.25	13.48	≤30.00	15.84	≤36.00	PASS
	Ant2	2437	13.05	93.06	0.31	13.36	≤30.00	16.57	≤36.00	PASS
	total	2437	---	---	---	16.43	≤30.00	19.23	≤36.00	PASS
	Ant1	2462	13.18	93.06	0.31	13.49	≤30.00	15.85	≤36.00	PASS
	Ant2	2462	13.15	93.06	0.31	13.46	≤30.00	16.67	≤36.00	PASS
	total	2462	---	---	---	16.49	≤30.00	19.29	≤36.00	PASS
11N40 MIMO	Ant1	2422	12.07	89.74	0.47	12.54	≤30.00	14.90	≤36.00	PASS
	Ant2	2422	12.12	87.18	0.60	12.72	≤30.00	15.93	≤36.00	PASS
	total	2422	---	---	---	15.64	≤30.00	18.46	≤36.00	PASS
	Ant1	2437	12.02	89.74	0.47	12.49	≤30.00	14.85	≤36.00	PASS
	Ant2	2437	12.18	87.18	0.60	12.78	≤30.00	15.99	≤36.00	PASS
	total	2437	---	---	---	15.65	≤30.00	18.47	≤36.00	PASS
	Ant1	2452	12.07	87.18	0.60	12.67	≤30.00	15.03	≤36.00	PASS
	Ant2	2452	12.11	87.18	0.60	12.71	≤30.00	15.92	≤36.00	PASS
	total	2452	---	---	---	15.70	≤30.00	18.51	≤36.00	PASS

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

## 7. Power Spectral Density

### 7.1. Block diagram of test setup



### 7.2. 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.

### 7.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.10.5.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
- (4) Use the following spectrum analyzer settings for Power Spectral Density measurement:

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
Trace	Employ trace averaging (rms) mode over a minimum of 100 traces.

- (5) Add  $[10 \log (1 / D)]$ , where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.

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

## 7.4. Test result

Test Mode	Antenna	Frequency [MHz]	Result [dBm/3-100kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-13.72	≤8.00	PASS
	Ant2	2412	-14.35	≤8.00	PASS
	Ant1	2437	-13.93	≤8.00	PASS
	Ant2	2437	-13.33	≤8.00	PASS
	Ant1	2462	-14.22	≤8.00	PASS
	Ant2	2462	-14.23	≤8.00	PASS
11G	Ant1	2412	-20.51	≤8.00	PASS
	Ant2	2412	-20.36	≤8.00	PASS
	Ant1	2437	-20.27	≤8.00	PASS
	Ant2	2437	-20.41	≤8.00	PASS
	Ant1	2462	-20.44	≤8.00	PASS
	Ant2	2462	-20.39	≤8.00	PASS
11N20MIMO	Ant1	2412	-21.01	≤8.00	PASS
	Ant2	2412	-20.63	≤8.00	PASS
	total	2412	-17.81	≤8.00	PASS
	Ant1	2437	-20.90	≤8.00	PASS
	Ant2	2437	-20.44	≤8.00	PASS
	total	2437	-17.65	≤8.00	PASS
	Ant1	2462	-20.75	≤8.00	PASS
	Ant2	2462	-20.30	≤8.00	PASS
	total	2462	-17.51	≤8.00	PASS
11N40MIMO	Ant1	2422	-24.37	≤8.00	PASS
	Ant2	2422	-24.18	≤8.00	PASS
	total	2422	-21.26	≤8.00	PASS
	Ant1	2437	-24.08	≤8.00	PASS
	Ant2	2437	-23.41	≤8.00	PASS
	total	2437	-20.72	≤8.00	PASS
	Ant1	2452	-24.10	≤8.00	PASS
	Ant2	2452	-24.42	≤8.00	PASS
	total	2452	-21.25	≤8.00	PASS

Note: The Duty Cycle Factor is compensated in the graph.