FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2527-1
FCC ID	:	IHDT56AV5
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System
TEST DATE(S)	:	Apr. 01, 2025 ~ Apr. 17, 2025

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

This report contains data that were produced under subcontract by Sporton International Inc. (Shenzhen)

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR530724C	Rev. 01	Initial issue of report	Apr. 21, 2025
FR530724C	Rev. 02	Update the equipment calibration date in section4. This report is an update version, replacing the report issued on Apr. 21, 2025.	Apr. 23, 2025

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	Report Only	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
0	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.25 dB at 2483.55 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 6.75 dB at 0.18 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2527-1
FCC ID	IHDT56AV5
IMEI/SN Code	Conducted: NN0R260111 Conduction: 358887330039734/358887330039742 Radiation: 358887330040591/358887330040609
HW Version	DVT2
SW Version	V2VN35.50
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to antenna	802.11b : 20.76 dBm (0.1191 W) 802.11g : 24.69 dBm (0.2944 W) 802.11n HT20 : 24.55 dBm (0.2851 W) 802.11n HT40 : 24.22 dBm (0.2642 W) 802.11ax HE20 : 24.66 dBm (0.2924 W) 802.11ax HE40 : 24.47 dBm (0.2799 W)
99% Occupied Bandwidth	802.11b : 13.107MHz 802.11g : 17.662MHz 802.11n HT20 : 18.781MHz 802.11n HT40 : 37.163MHz 802.11ax HE20 : 19.341MHz 802.11ax HE40 : 37.962MHz
Antenna Type / Gain	IFA Antenna type with gain -2.50 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)

Note:

1. For 802. 11n/ax mode, the whole testing have assessed only 802.11ax HE20/HE40 by referring to the higher output power.
2. 802.11ax support OFDMA full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) test output power, the full RU power/PSD > partial RU, therefore the full RU perform full, and partial RU verify bandedge/spurious.

1.5 Modification of EUT

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

1.6 Testing Location

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

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-KS	CN1257	314309

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO02-SZ 03CH03-SZ	CN1256	421272

Note: Test data subcontracted: test cases in section 3.5&3.6 of this report.

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH03-SZ	AUDIX	E3	6.2009-8-24
3.	CO02-SZ	AUDIX	E3	6.120613b

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.9 Specification of Accessory

Accessories Information				
AC Adapter 1(US)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-331L
AC Adapter 1(EU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-332L
AC Adapter 1(UK)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-333L
AC Adapter 1(AU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-335L
AC Adapter 1(AR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-336L
AC Adapter 1(BR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-337L
AC Adapter 2(US)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-331L
AC Adapter 2(EU)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-332L
AC Adapter 2(UK)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-333L
AC Adapter 2(AR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-336L
AC Adapter 2(BR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-337L
Battery 1	**Brand Name**	Motorola(NVT)	**Model Name**	RA52
Battery 2	**Brand Name**	Motorola(SUNWODA)	**Model Name**	RA52
USB Cable 1	**Brand Name**	Motorola(Washin)	**Model Name**	HX-ZN-34
USB Cable 2	**Brand Name**	Motorola(Juwei)	**Model Name**	JWUB1928-ZN01H
Wireless Earphones	**Brand Name**	Motorola	**Model Name**	XT2443-1

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11ax HE20	MCS0
802.11ax HE40	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : GSM 850 Idle + Bluetooth Link with Wireless Earphones + WLAN Link (2.4G) + USB Cable2 (Charging from Adapter2)

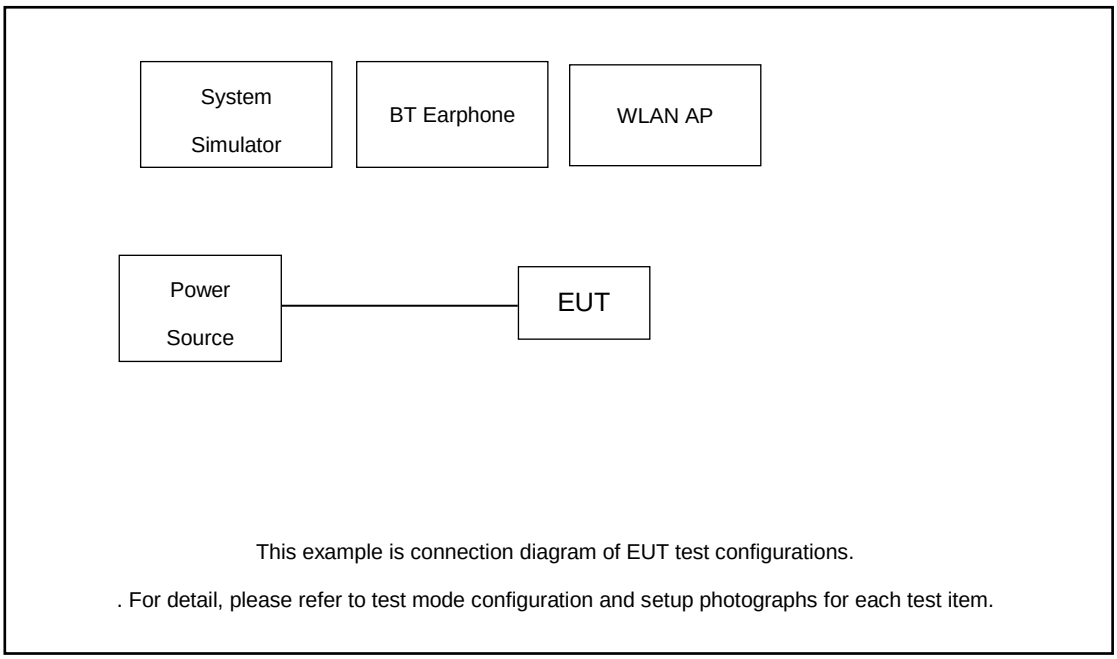
Remark:

1. For Radiated Test Cases, The tests were performance with Adapter 2 and USB Cable 2.
2. Accessories from 15B worse mode.

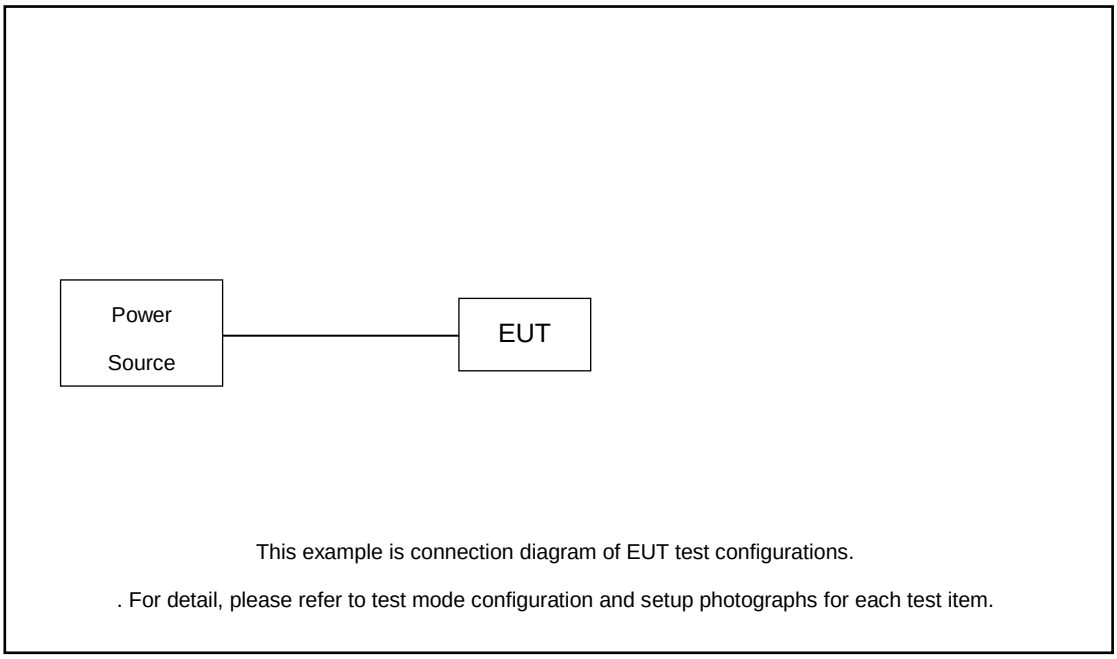
RSE Co-location mode
802.11g CH11 Tx + LTE B13 Link

2.3 Connection Diagram of Test System

AC Conducted Emission:



Radiated Emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m

2.5 EUT Operation Test Setup

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

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 2.25 dB and 20dB attenuator.

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

= 2.25 + 20 = 22.25 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

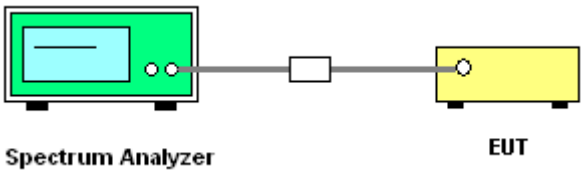
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.8
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) ≥ 3*RBW. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1%~5% of OBW and set the Video bandwidth (VBW) approximately three times the RBW.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

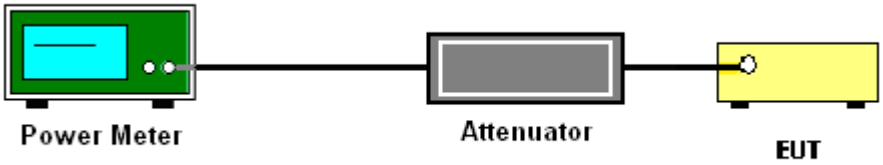
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.1.3 PKPM1 Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.1 Method AVGPM method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

2.4GHz Band Single Antenna										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant6	Ant6	Ant6	Ant6	Ant6	
11b	1Mbps	1	1	2412	20.69	30.00	-2.50	18.19	36.00	Pass
11b	1Mbps	1	6	2437	20.76	30.00	-2.50	18.26	36.00	Pass
11b	1Mbps	1	11	2462	20.57	30.00	-2.50	18.07	36.00	Pass
11g	6Mbps	1	1	2412	24.50	30.00	-2.50	22.00	36.00	Pass
11g	6Mbps	1	6	2437	24.69	30.00	-2.50	22.19	36.00	Pass
11g	6Mbps	1	10	2457	24.26	30.00	-2.50	21.76	36.00	Pass
11g	6Mbps	1	11	2462	23.07	30.00	-2.50	20.57	36.00	Pass
HT20	MCS0	1	1	2412	24.41	30.00	-2.50	21.91	36.00	Pass
HT20	MCS0	1	6	2437	24.55	30.00	-2.50	22.05	36.00	Pass
HT20	MCS0	1	10	2457	23.89	30.00	-2.50	21.39	36.00	Pass
HT20	MCS0	1	11	2462	22.45	30.00	-2.50	19.95	36.00	Pass
HT40	MCS0	1	3	2422	24.22	30.00	-2.50	21.72	36.00	Pass
HT40	MCS0	1	6	2437	23.67	30.00	-2.50	21.17	36.00	Pass
HT40	MCS0	1	9	2452	21.65	30.00	-2.50	19.15	36.00	Pass

2.4GHz Band Single Antenna											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
						Ant6	Ant6	Ant6	Ant6	Ant6	
HE20	MCS0	1	1	2412	Full	24.51	30.00	-2.50	22.01	36.00	Pass
HE20	MCS0	1	1	2412	26/0	18.39	30.00	-2.50	15.89	36.00	Pass
HE20	MCS0	1	1	2412	52/37	21.45	30.00	-2.50	18.95	36.00	Pass
HE20	MCS0	1	1	2412	106/53	23.09	30.00	-2.50	20.59	36.00	Pass
HE20	MCS0	1	6	2437	Full	24.66	30.00	-2.50	22.16	36.00	Pass
HE20	MCS0	1	6	2437	26/0	18.43	30.00	-2.50	15.93	36.00	Pass
HE20	MCS0	1	6	2437	52/37	21.54	30.00	-2.50	19.04	36.00	Pass
HE20	MCS0	1	6	2437	106/53	23.14	30.00	-2.50	20.64	36.00	Pass
HE20	MCS0	1	10	2457	Full	24.03	30.00	-2.50	21.53	36.00	Pass
HE20	MCS0	1	11	2462	Full	22.61	30.00	-2.50	20.11	36.00	Pass
HE20	MCS0	1	11	2462	26/8	14.61	30.00	-2.50	12.11	36.00	Pass
HE20	MCS0	1	11	2462	52/40	17.71	30.00	-2.50	15.21	36.00	Pass
HE20	MCS0	1	11	2462	106/54	20.67	30.00	-2.50	18.17	36.00	Pass
HE40	MCS0	1	3	2422	Full	24.47	30.00	-2.50	21.97	36.00	Pass
HE40	MCS0	1	6	2437	Full	23.88	30.00	-2.50	21.38	36.00	Pass
HE40	MCS0	1	9	2452	Full	21.84	30.00	-2.50	19.34	36.00	Pass

3.2.6 Test Result of Average Output Power (Reporting Only)

2.4GHz Band Single Antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Setting
					Ant 6	Ant6	Ant6	Ant6	Ant6	Ant6		Ant 6
11b	1Mbps	1	1	2412	0.04	18.44	30.00	-2.50	15.94	36.00	Pass	19.00
11b	1Mbps	1	6	2437	0.04	18.51	30.00	-2.50	16.01	36.00	Pass	19.00
11b	1Mbps	1	11	2462	0.04	18.37	30.00	-2.50	15.87	36.00	Pass	19.00
11g	6Mbps	1	1	2412	0.13	18.57	30.00	-2.50	16.07	36.00	Pass	19.00
11g	6Mbps	1	6	2437	0.13	18.48	30.00	-2.50	15.98	36.00	Pass	19.00
11g	6Mbps	1	10	2457	0.13	17.87	30.00	-2.50	15.37	36.00	Pass	18.50
11g	6Mbps	1	11	2462	0.13	14.96	30.00	-2.50	12.46	36.00	Pass	15.50
HT20	MCS0	1	1	2412	0.14	18.59	30.00	-2.50	16.09	36.00	Pass	19.00
HT20	MCS0	1	6	2437	0.14	18.46	30.00	-2.50	15.96	36.00	Pass	19.00
HT20	MCS0	1	10	2457	0.14	16.55	30.00	-2.50	14.05	36.00	Pass	17.00
HT20	MCS0	1	11	2462	0.14	13.62	30.00	-2.50	11.12	36.00	Pass	14.00
HT40	MCS0	1	3	2422	0.28	16.86	30.00	-2.50	14.36	36.00	Pass	17.50
HT40	MCS0	1	6	2437	0.28	14.73	30.00	-2.50	12.23	36.00	Pass	15.50
HT40	MCS0	1	9	2452	0.28	12.71	30.00	-2.50	10.21	36.00	Pass	13.00

2.4GHz Band Single Antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Setting
						Ant6	Ant6	Ant6	Ant6	Ant6	Ant6		Ant 6
HE20	MCS0	1	1	2412	Full	0.18	18.69	30.00	-2.50	16.19	36.00	Pass	19.00
HE20	MCS0	1	1	2412	26/0	0.13	9.01	30.00	-2.50	6.51	36.00	Pass	9.00
HE20	MCS0	1	1	2412	52/37	0.05	11.96	30.00	-2.50	9.46	36.00	Pass	12.00
HE20	MCS0	1	1	2412	106/53	0.08	14.80	30.00	-2.50	12.30	36.00	Pass	15.00
HE20	MCS0	1	6	2437	Full	0.18	18.56	30.00	-2.50	16.06	36.00	Pass	19.00
HE20	MCS0	1	6	2437	26/0	0.13	9.20	30.00	-2.50	6.70	36.00	Pass	9.00
HE20	MCS0	1	6	2437	52/37	0.05	12.01	30.00	-2.50	9.51	36.00	Pass	12.00
HE20	MCS0	1	6	2437	106/53	0.08	14.87	30.00	-2.50	12.37	36.00	Pass	15.00
HE20	MCS0	1	10	2457	Full	0.18	16.70	30.00	-2.50	14.20	36.00	Pass	17.00
HE20	MCS0	1	11	2462	Full	0.18	13.80	30.00	-2.50	11.30	36.00	Pass	14.00
HE20	MCS0	1	11	2462	26/8	0.13	4.54	30.00	-2.50	2.04	36.00	Pass	4.00
HE20	MCS0	1	11	2462	52/40	0.05	7.78	30.00	-2.50	5.28	36.00	Pass	7.00
HE20	MCS0	1	11	2462	106/54	0.08	10.67	30.00	-2.50	8.17	36.00	Pass	10.00
HE40	MCS0	1	3	2422	Full	0.34	17.05	30.00	-2.50	14.55	36.00	Pass	17.50
HE40	MCS0	1	6	2437	Full	0.34	14.96	30.00	-2.50	12.46	36.00	Pass	15.00

HE40	MCS0	1	9	2452	Full	0.34	12.91	30.00	-2.50	10.41	36.00	Pass	13.00

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

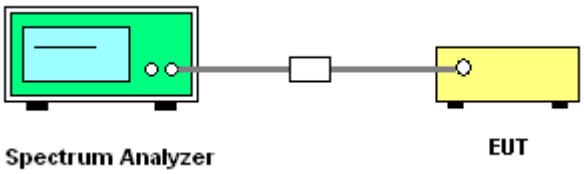
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure of ANSI C63.10-2013 clause 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

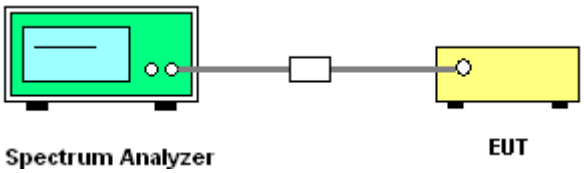
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.11
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Please refer to Appendix A.

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

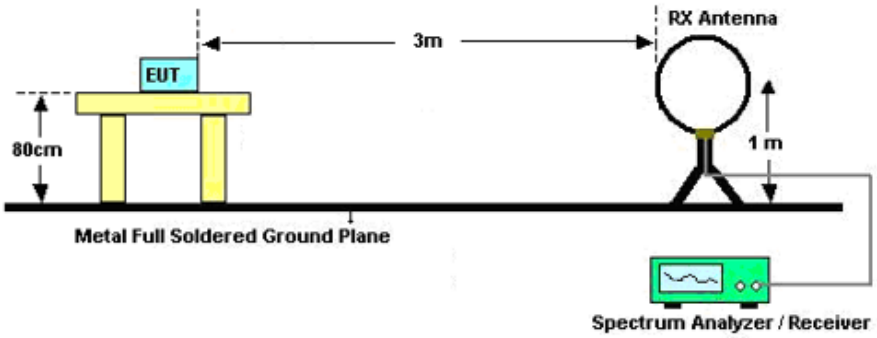
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

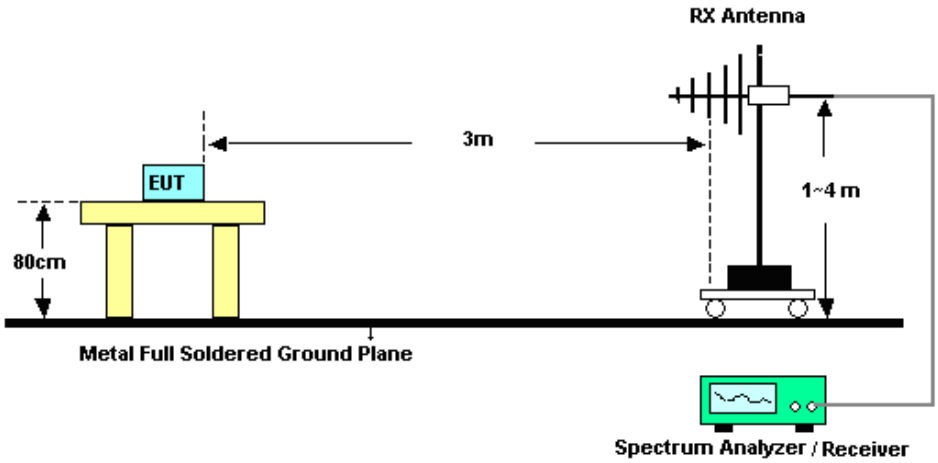
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

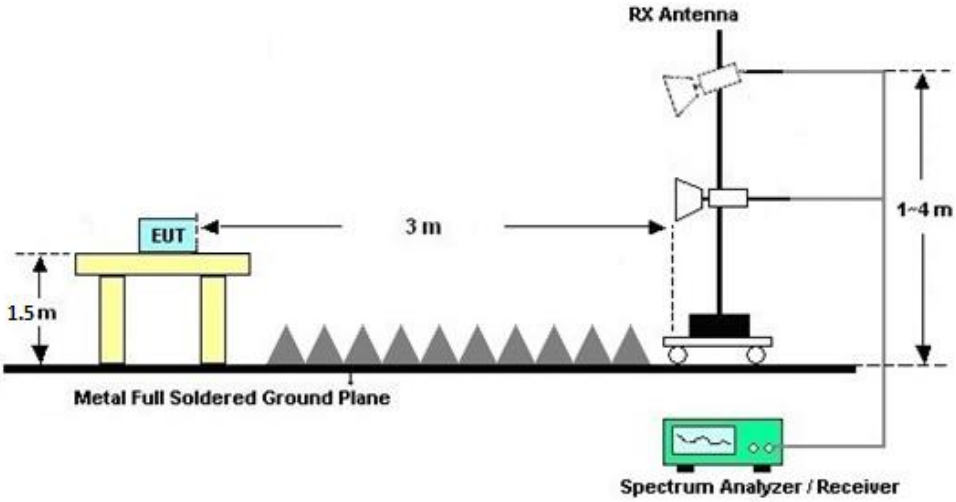
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.5.7 Duty Cycle

Please refer to Appendix D.

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

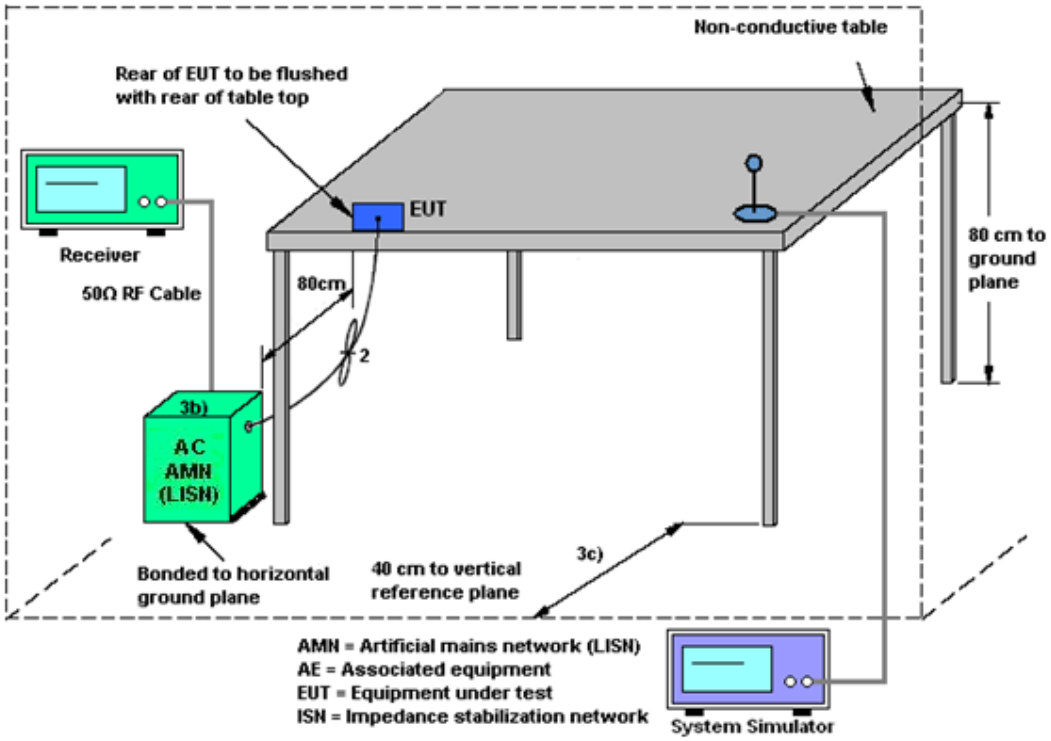
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 09, 2024	Apr. 01, 2025~ Apr. 15, 2025	Apr. 08, 2025	Radiation (03CH03-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 08, 2025		Apr. 07, 2026	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 09, 2024	Apr. 01, 2025~ Apr. 15, 2025	Apr. 08, 2025	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 08, 2025		Apr. 07, 2026	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 28, 2024	Apr. 01, 2025~ Apr. 15, 2025	Dec. 27, 2025	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Aug. 20, 2023	Apr. 01, 2025~ Apr. 15, 2025	Aug. 19, 2025	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 09, 2024	Apr. 01, 2025~ Apr. 15, 2025	Apr. 08, 2025	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 08, 2025		Apr. 07, 2026	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 03, 2024	Apr. 01, 2025~ Apr. 15, 2025	Jul.02, 2025	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	Apr. 01, 2025~ Apr. 15, 2025	Apr. 08, 2025	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 08, 2025		Apr. 07, 2026	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2024	Apr. 01, 2025~ Apr. 15, 2025	Oct. 17, 2025	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 14, 2024	Apr. 01, 2025~ Apr. 15, 2025	Oct. 13, 2025	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 26, 2024	Apr. 01, 2025~ Apr. 15, 2025	Dec. 25, 2025	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010002729	N/A	Oct. 18, 2024	Apr. 01, 2025~ Apr. 15, 2025	Oct. 17, 2025	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 01, 2025~ Apr. 15, 2025	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 01, 2025~ Apr. 15, 2025	NCR	Radiation (03CH03-SZ)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Apr. 08, 2025~ Apr. 11, 2025	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2025	Apr. 08, 2025~ Apr. 11, 2025	Jan. 01, 2026	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2025	Apr. 08, 2025~ Apr. 11, 2025	Jan. 01, 2026	Conducted (TH01-KS)
EMI Receiver	R&S	ESR7	102297	9kHz~7GHz;	Jul. 03, 2024	Apr. 17, 2025	Jul. 02, 2025	Conduction (CO02-SZ)
AC LISN	R&S	ENV216	101499	9kHz~30MHz	Jul. 03, 2024	Apr. 17, 2025	Jul. 02, 2025	Conduction (CO02-SZ)
AC Power Source	CHROMA	61601	616010002470	100Vac~250Vac	Dec.25, 2024	Apr. 17, 2025	Dec. 24, 2025	Conduction (CO02-SZ)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	**±2.22 dB**
Occupied Channel Bandwidth	**±0.1%**
Conducted Power	**±0.50 dB**
Conducted Power Spectral Density	**±0.90 dB**
Frequency	**±0.04 Hz**

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.50 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.00 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.90 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.00 dB**

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

Appendix A. Conducted Test Results

Ambient Condition: 25 ℃, 45 %RH	
Test Date: 2025.4.8~2025.4.11	**Test Engineer:** Gene Wang

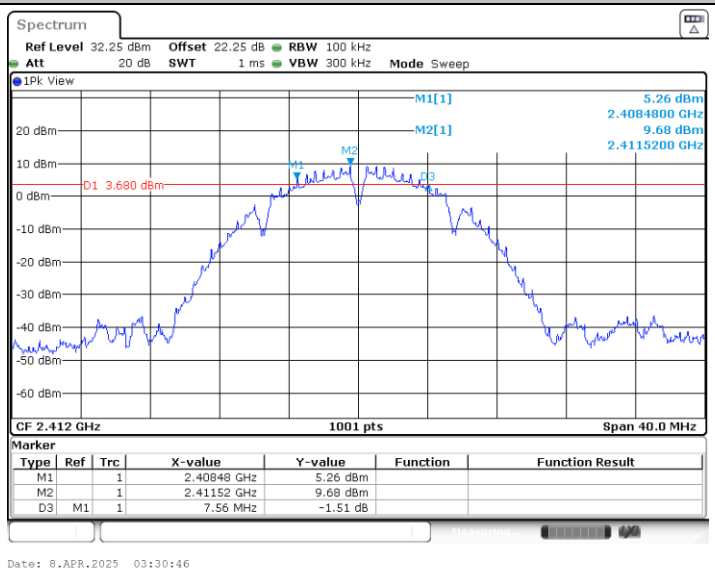
DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant6	2412	7.56	2408.48	2416.04	0.5	PASS
		2437	8.04	2433.00	2441.04	0.5	PASS
		2462	8.04	2458.00	2466.04	0.5	PASS
11G	Ant6	2412	15.72	2404.44	2420.16	0.5	PASS
		2437	16.04	2429.12	2445.16	0.5	PASS
		2457	16.28	2448.88	2465.16	0.5	PASS
		2462	16.32	2453.84	2470.16	0.5	PASS
11N20	Ant6	2412	17.04	2403.48	2420.52	0.5	PASS
		2437	16.56	2428.60	2445.16	0.5	PASS
		2457	17.52	2448.24	2465.76	0.5	PASS
		2462	17.00	2453.52	2470.52	0.5	PASS
11N40	Ant6	2422	35.68	2404.48	2440.16	0.5	PASS
		2437	35.20	2419.48	2454.68	0.5	PASS
		2452	35.68	2434.48	2470.16	0.5	PASS
11AX20	Ant6	2412	17.24	2403.92	2421.16	0.5	PASS
		2437	18.60	2427.84	2446.44	0.5	PASS
		2457	18.40	2447.76	2466.16	0.5	PASS
		2462	18.24	2452.84	2471.08	0.5	PASS
11AX40	Ant6	2422	37.68	2403.44	2441.12	0.5	PASS
		2437	37.20	2418.68	2455.88	0.5	PASS
		2452	37.60	2433.28	2470.88	0.5	PASS

Test Graphs

11B_2412



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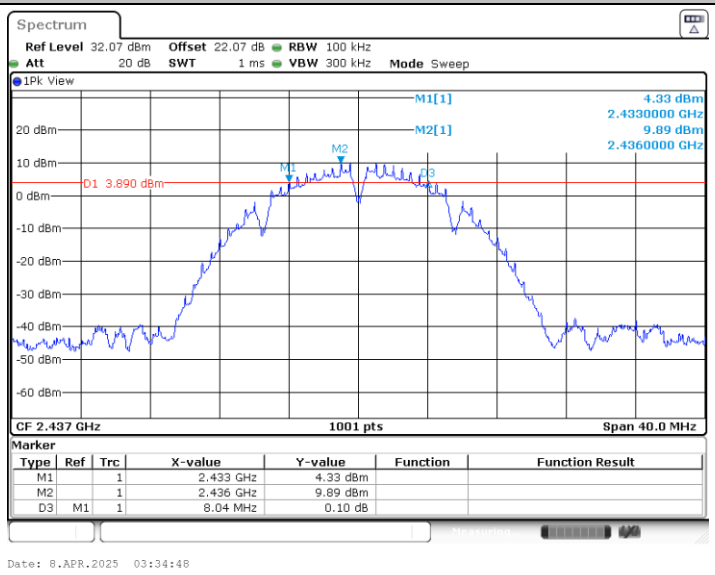

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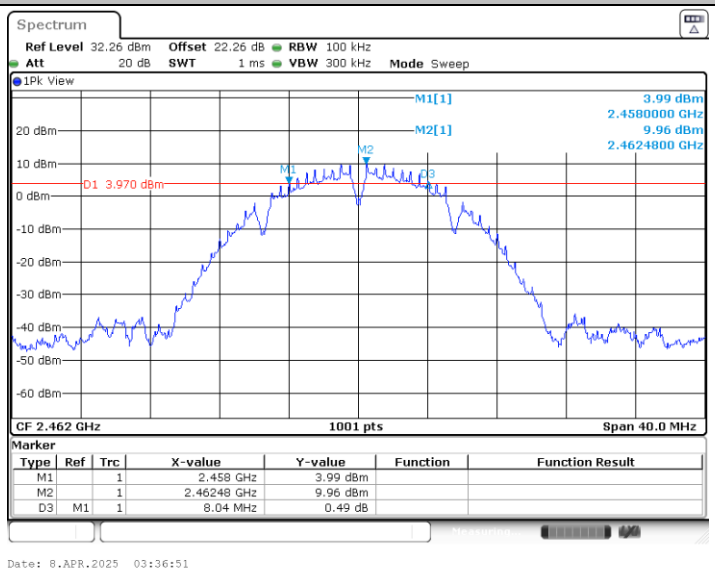

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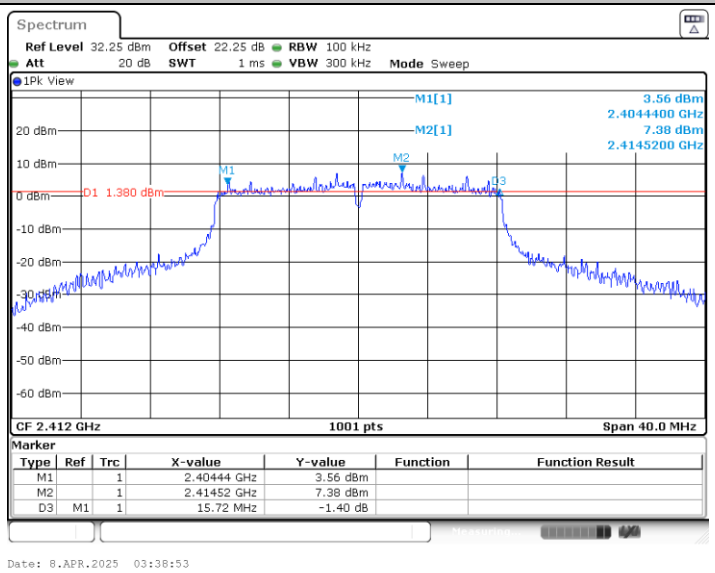

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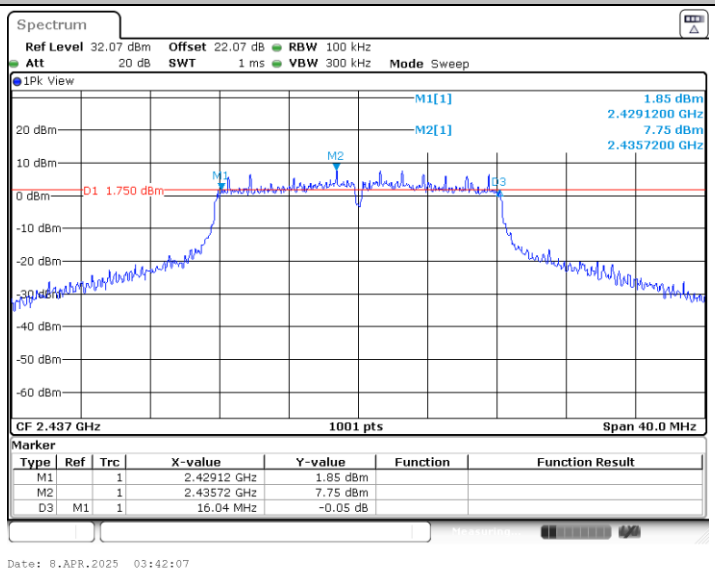

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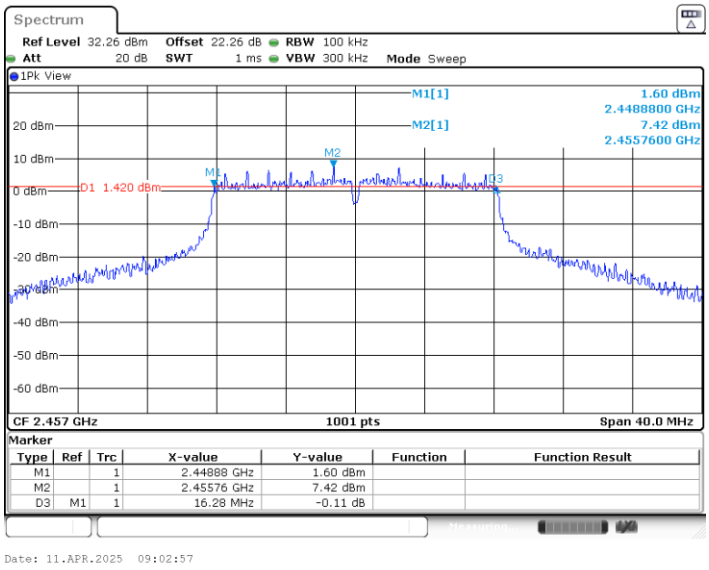

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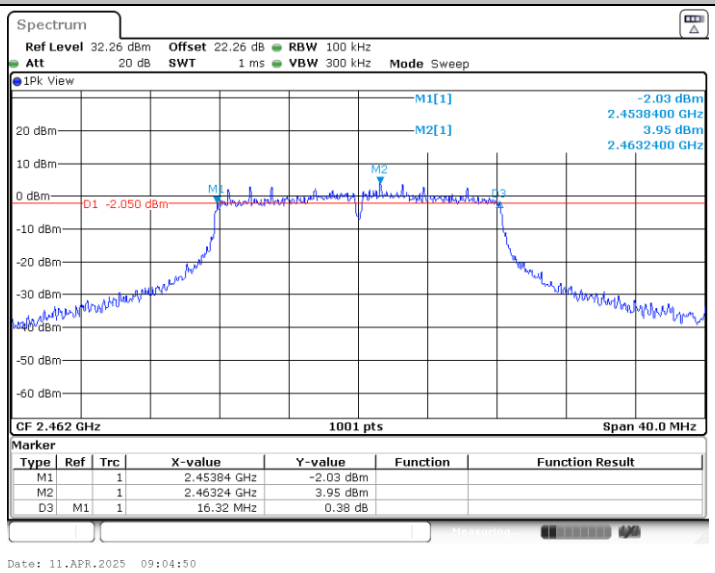

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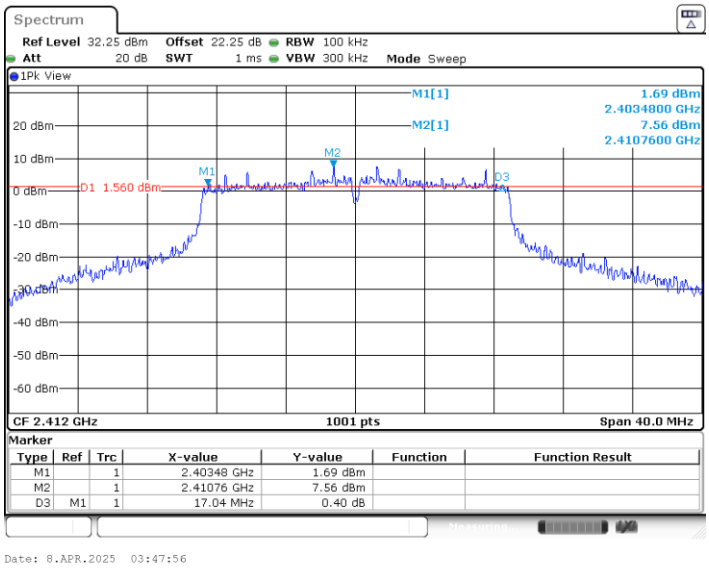

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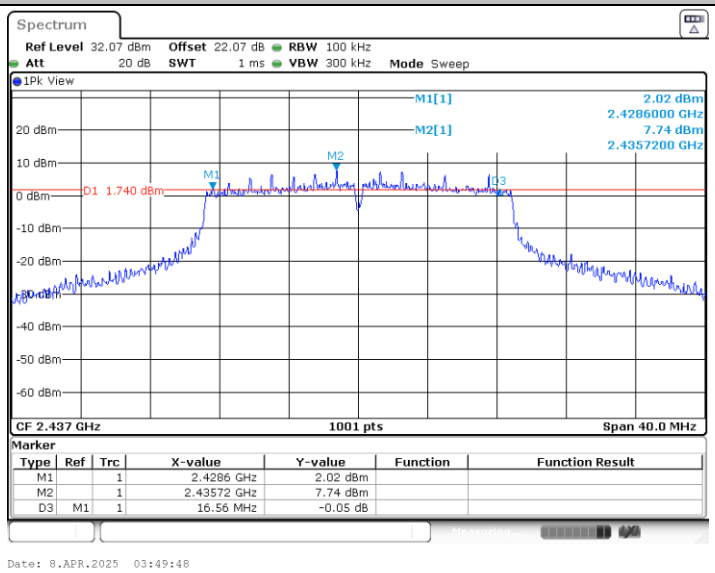

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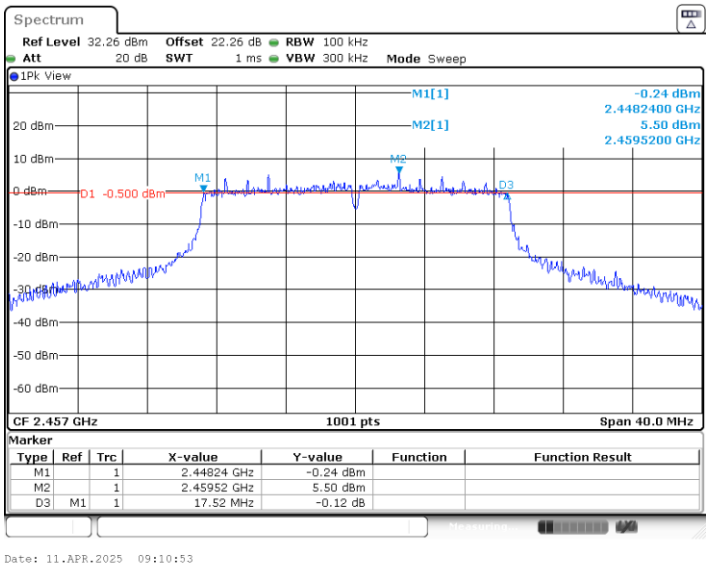

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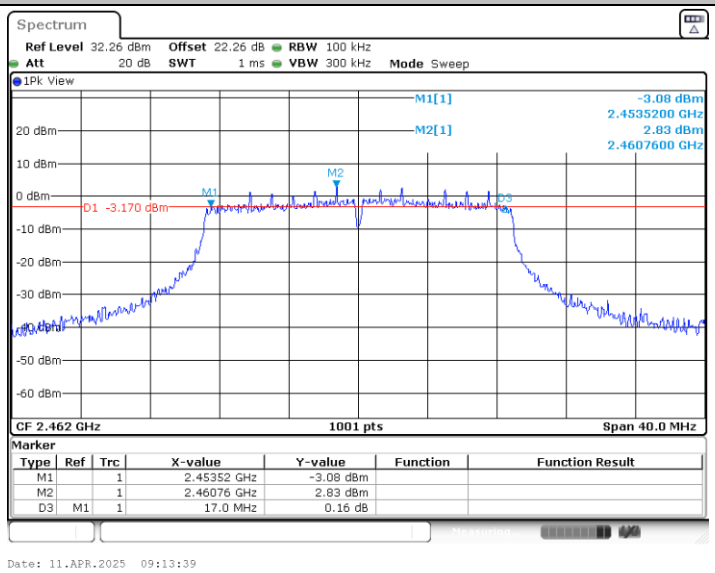

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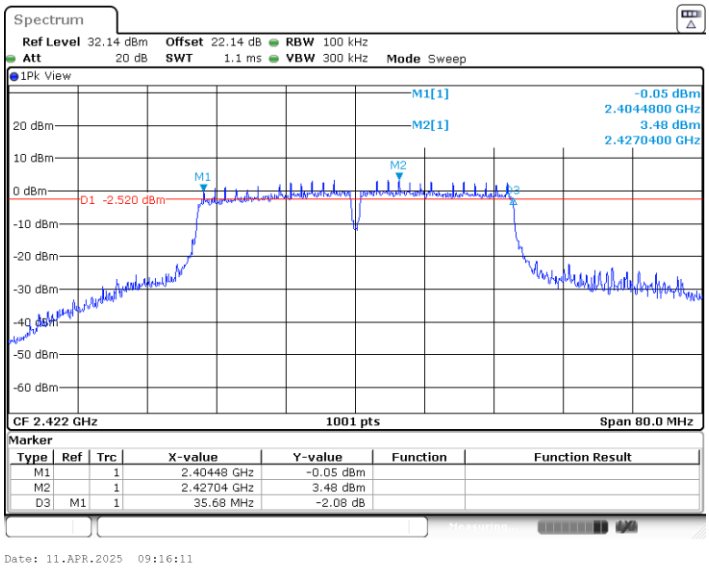

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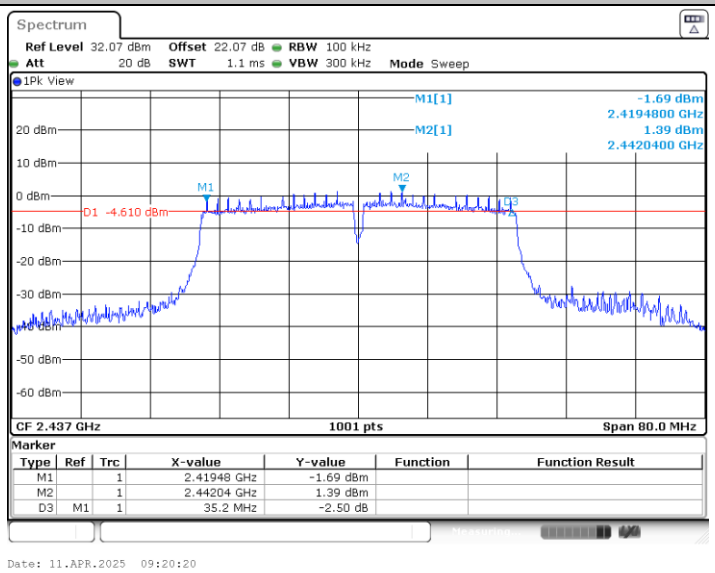

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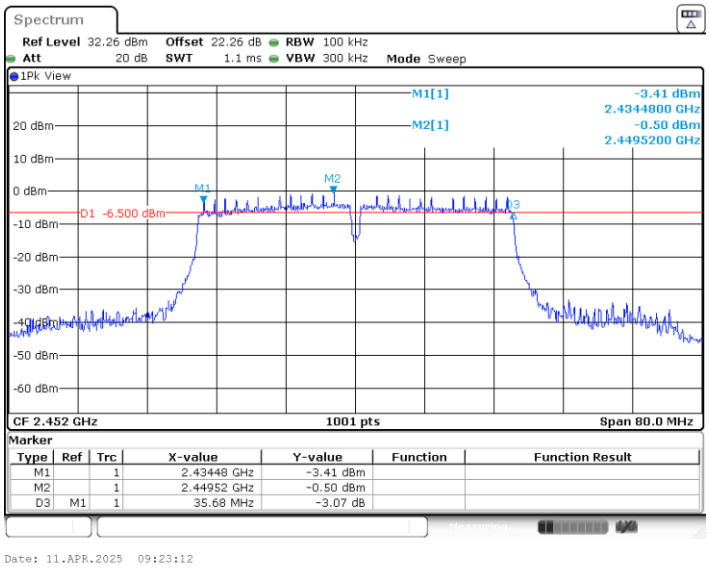

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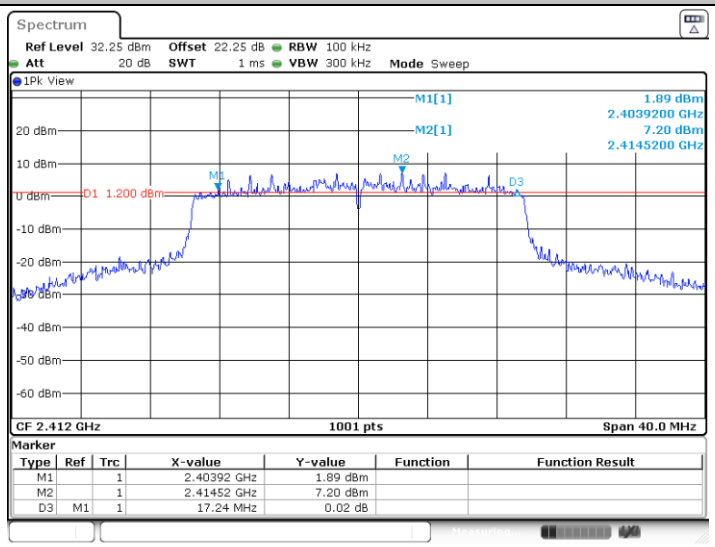

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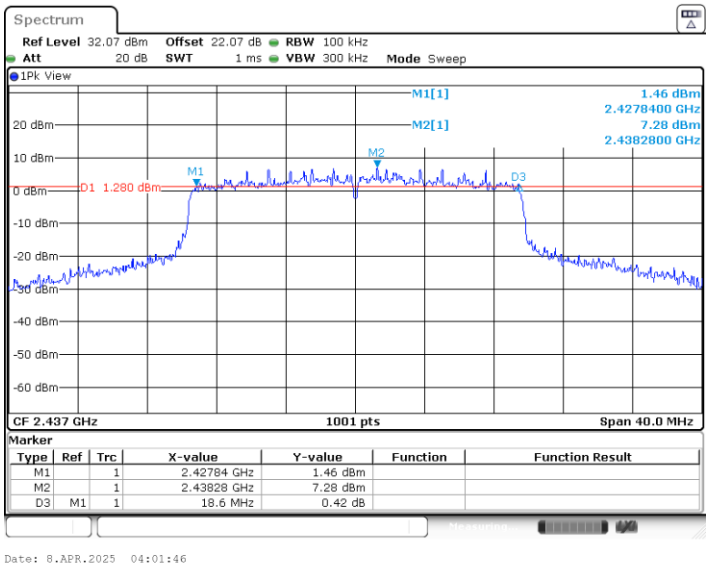

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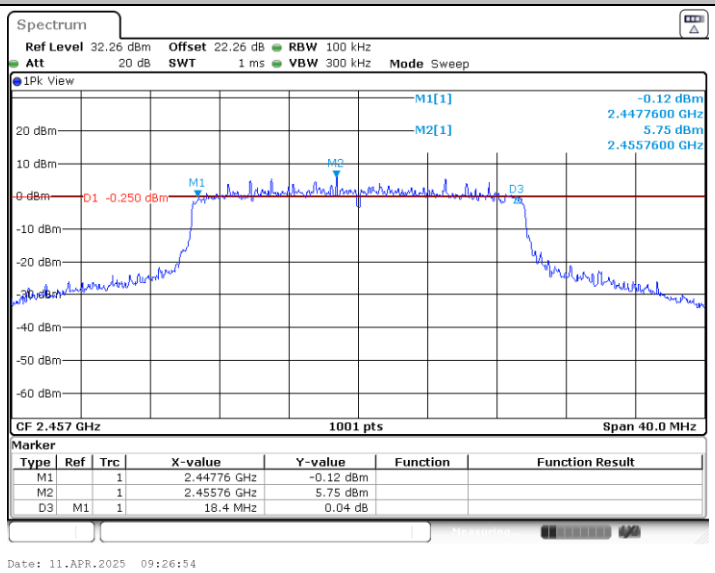
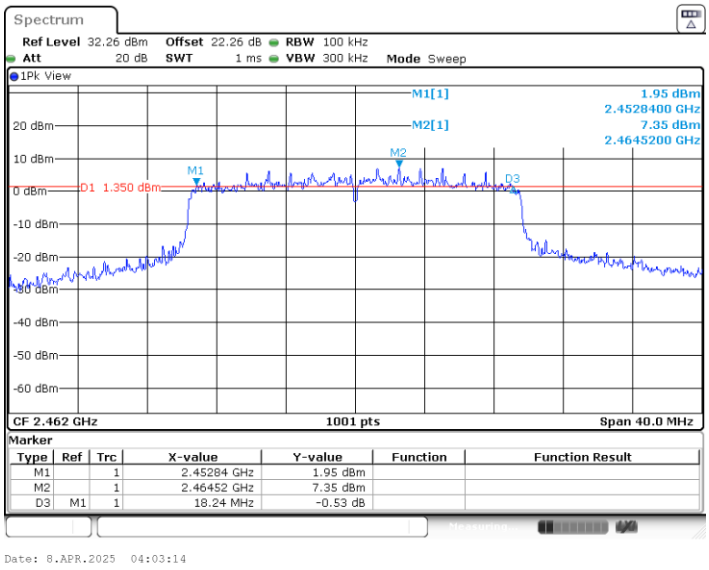
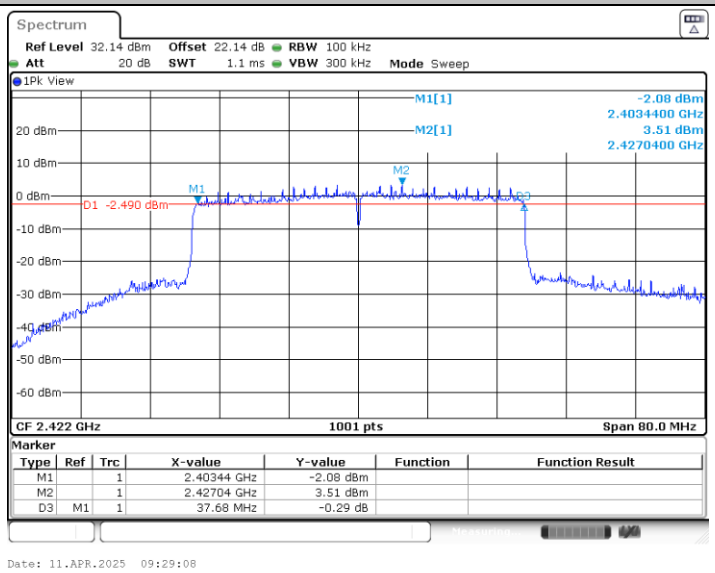


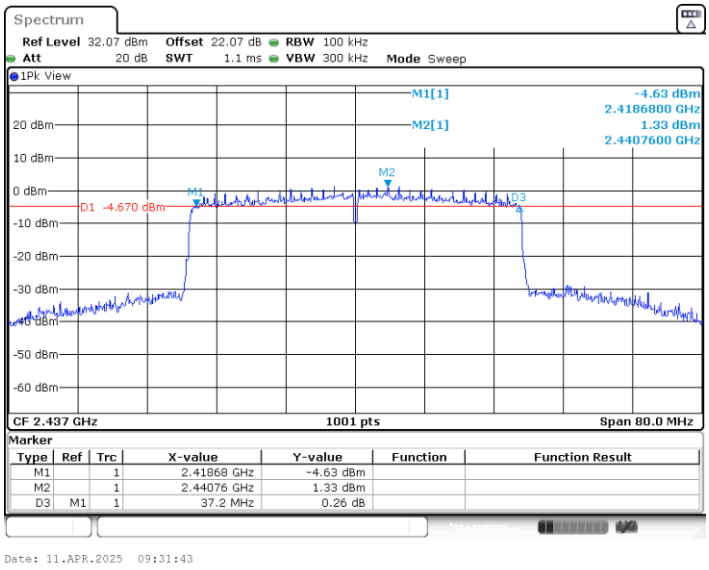
11AX20_2462



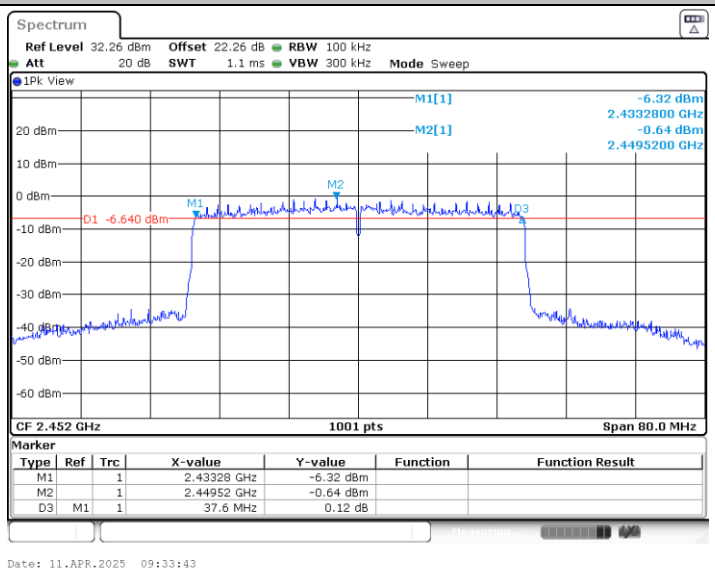
11AX40_2422



11AX40_2437



11AX40_2452


Spectrum
Ref Level 32.26 dBm Offset 22.26 dB RBW 100 kHz
Att 20 dB SWT 1.1 ms VBW 300 kHz Mode Sweep
1Pk View
M1[1] -6.32 dBm 2.4332800 GHz
M2[1] -0.64 dBm 2.4495200 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
D1 -6.640 dBm
M1
M2
D3
CF 2.452 GHz
1001 pts
Span 80.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.43328 GHz -6.32 dBm
M2 1 2.44952 GHz -0.64 dBm
D3 M1 1 37.6 MHz 0.12 dB
Date: 11.APR.2025 09:33:43

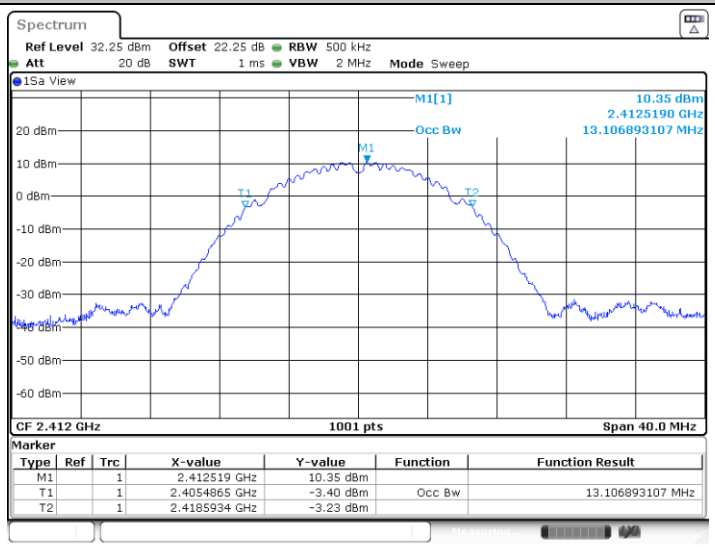
Occupied Channel Bandwidth

Test Result

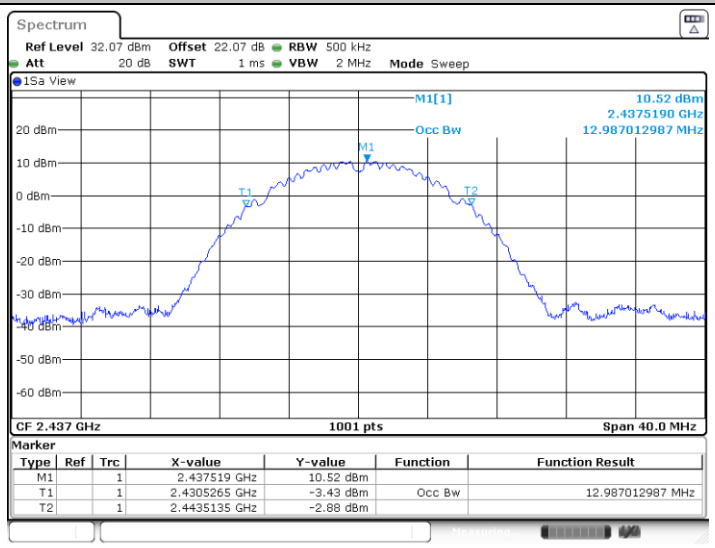
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant6	2412	13.107	2405.4865	2418.5934	---	---
		2437	12.987	2430.5265	2443.5135	---	---
		2462	13.107	2455.5265	2468.6334	---	---
11G	Ant6	2412	17.662	2403.2488	2420.9111	---	---
		2437	17.463	2428.3287	2445.7912	---	---
		2457	17.542	2448.2488	2465.7912	---	---
		2462	17.183	2453.4086	2470.5914	---	---
11N20	Ant6	2412	18.781	2402.6893	2421.4705	---	---
		2437	18.621	2427.7293	2446.3506	---	---
		2457	18.462	2447.7692	2466.2308	---	---
		2462	18.262	2452.8492	2471.1109	---	---
11N40	Ant6	2422	37.163	2403.6983	2440.8611	---	---
		2437	36.683	2418.6983	2455.3816	---	---
		2452	36.683	2433.6983	2470.3816	---	---
11AX20	Ant6	2412	19.341	2402.3696	2421.7103	---	---
		2437	19.341	2427.3696	2446.7103	---	---
		2457	19.261	2447.3696	2466.6304	---	---
		2462	19.061	2452.4496	2471.5105	---	---
11AX40	Ant6	2422	37.962	2403.1389	2441.1009	---	---
		2437	37.882	2418.0589	2455.9411	---	---
		2452	37.882	2433.1389	2471.0210	---	---

Test Graphs

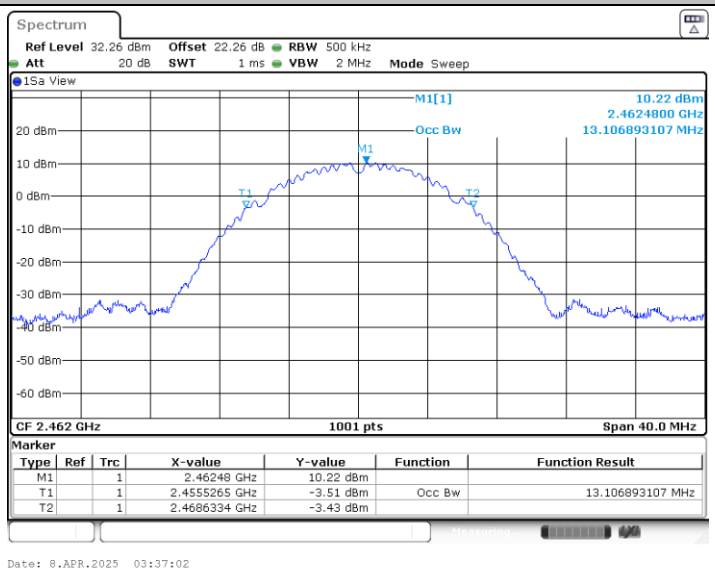
11B_2412



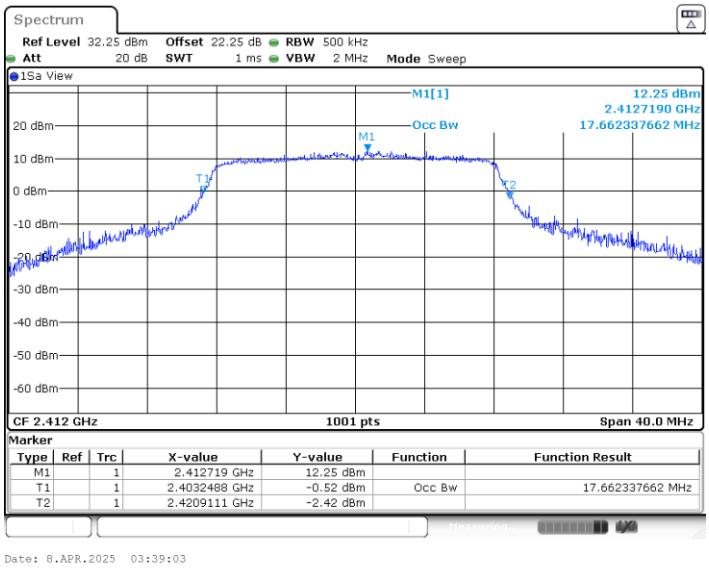
11B_2437



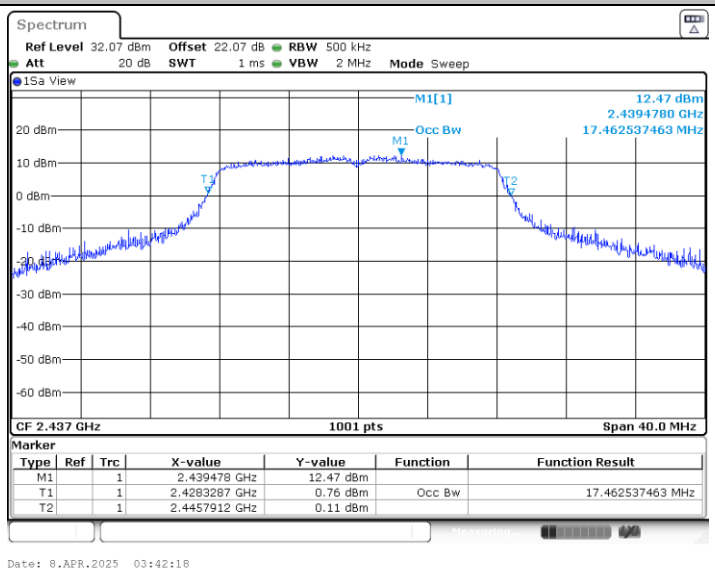
11B_2462



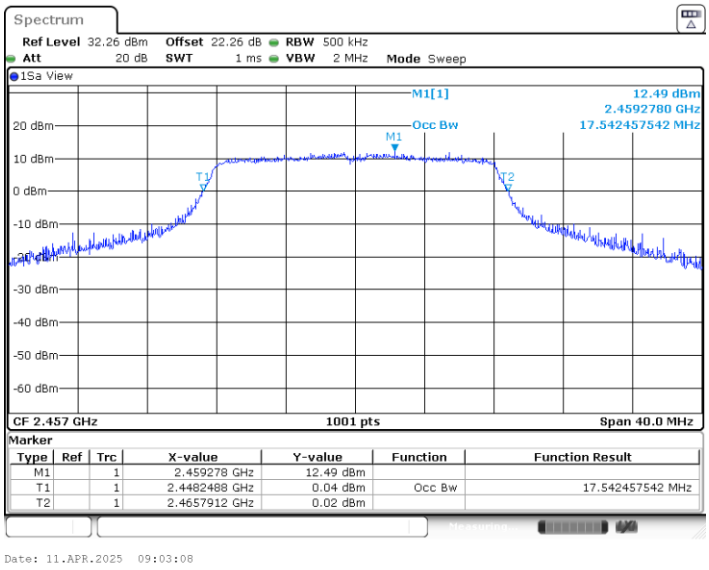
11G_2412



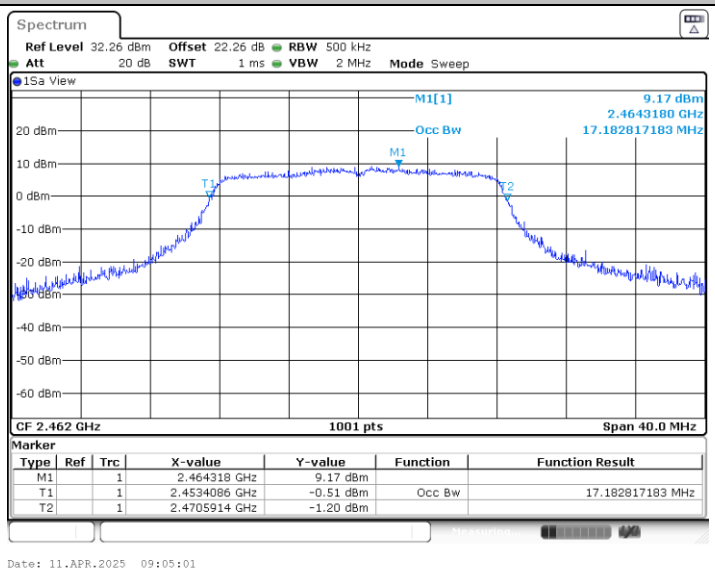
11G_2437



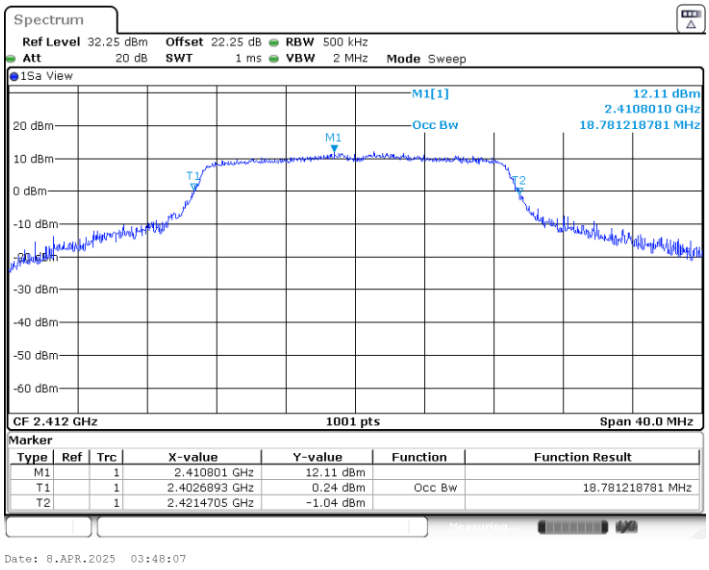
11G_2457



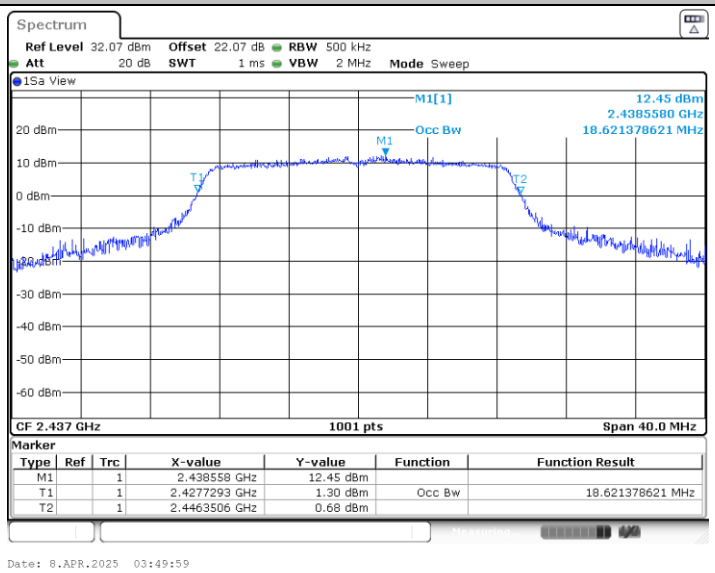
11G_2462



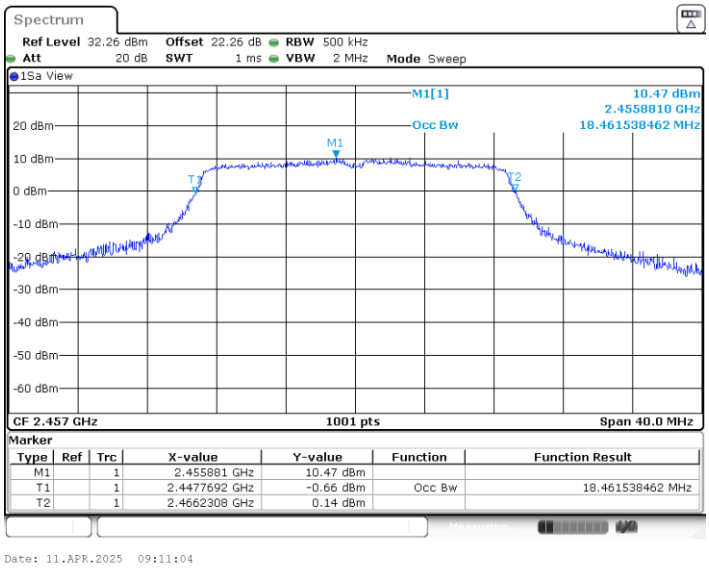
11N20_2412



11N20_2437



11N20_2457



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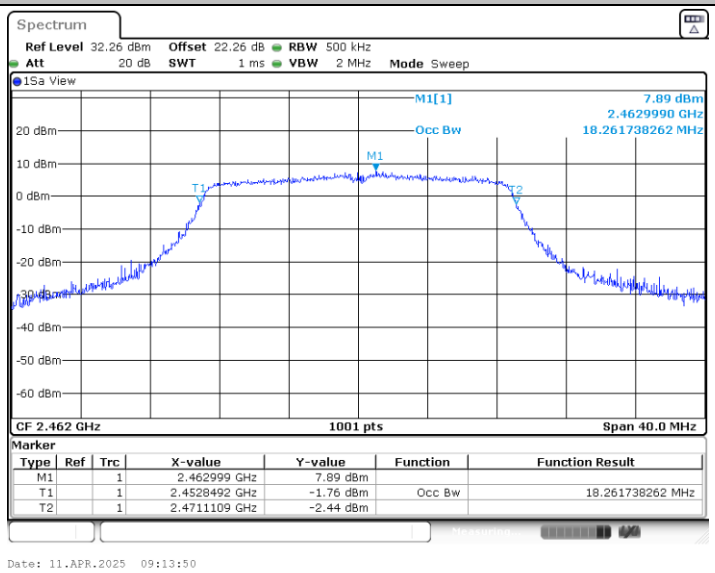
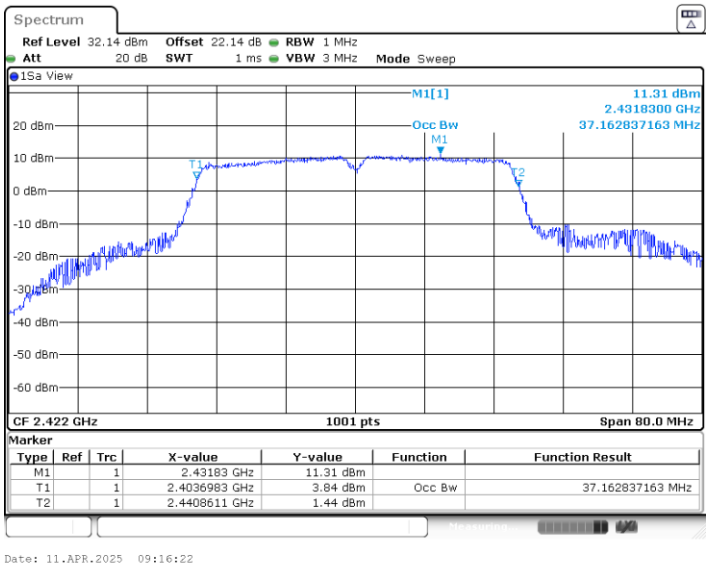
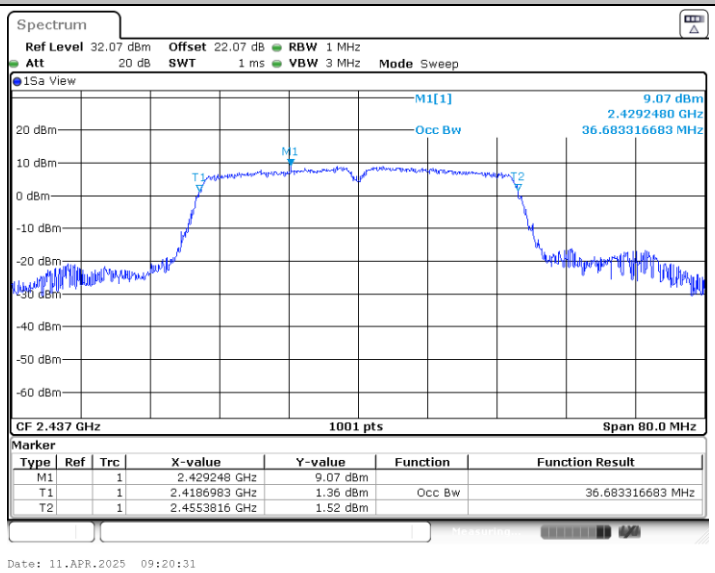


11N40_2422



11N40_2437



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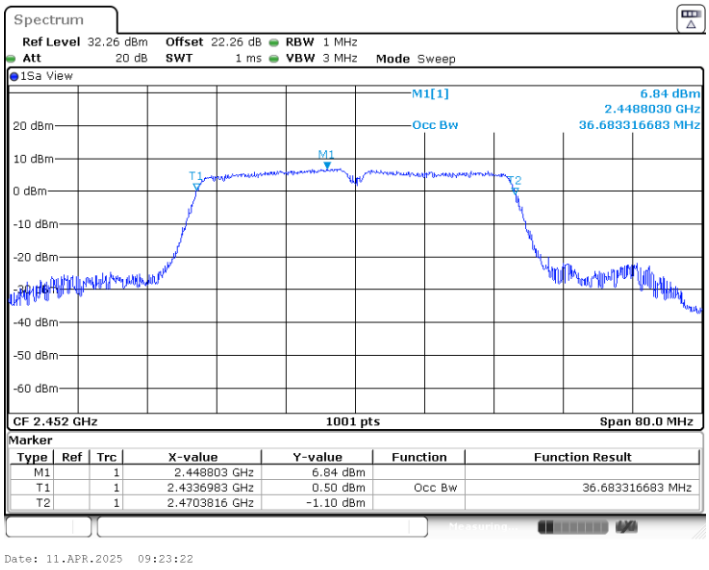
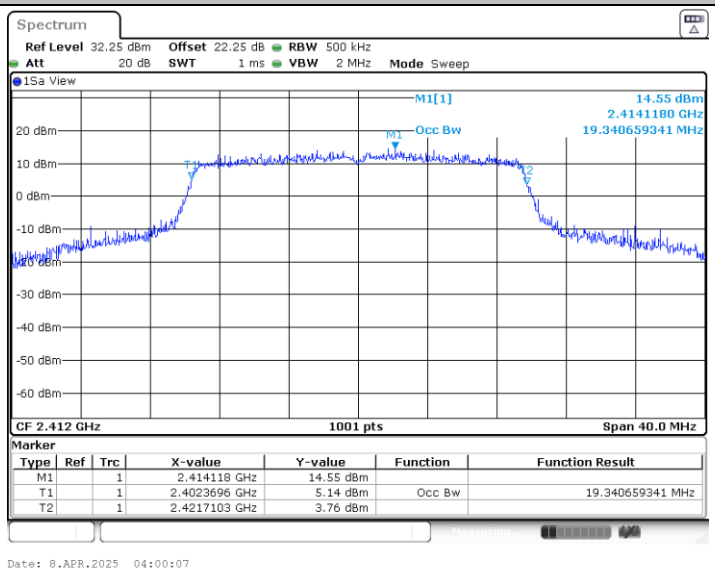
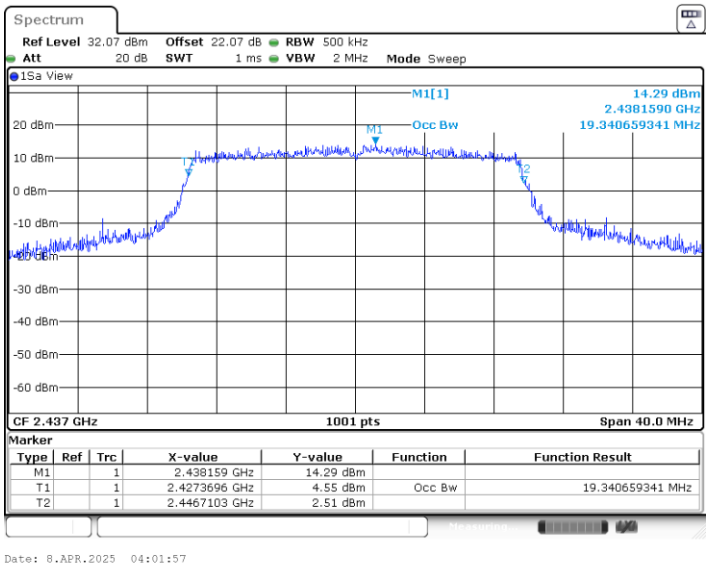


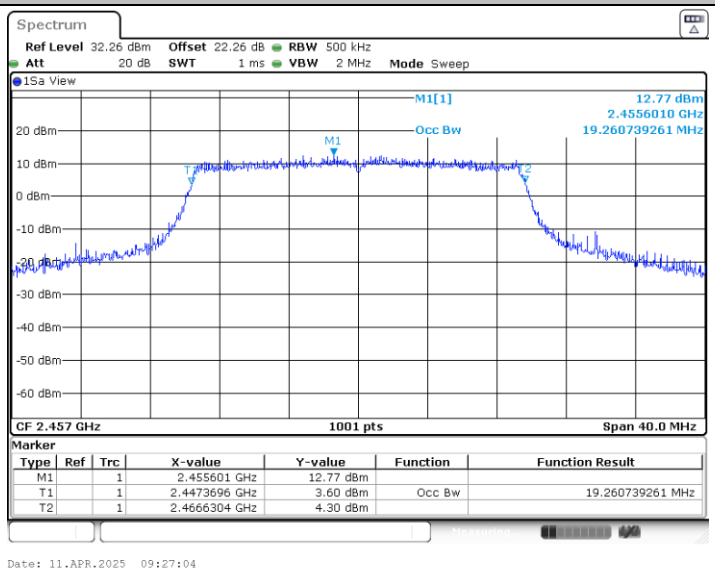
11AX20_2412



11AX20_2437



11AX20_2457



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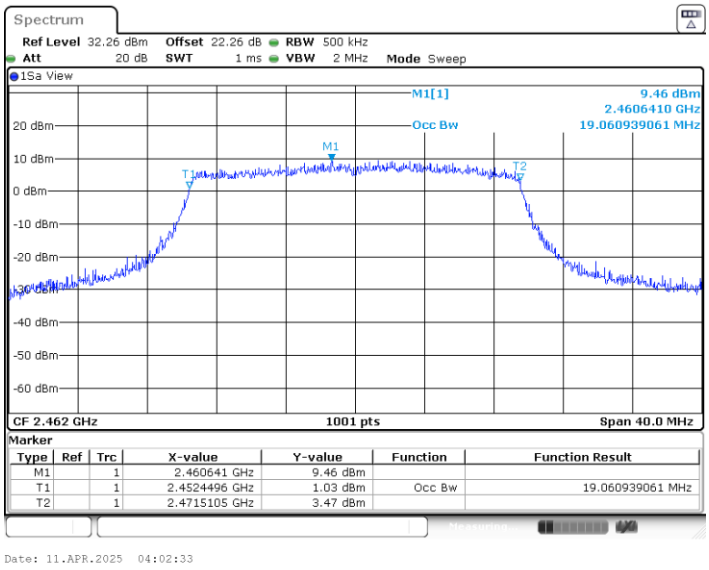

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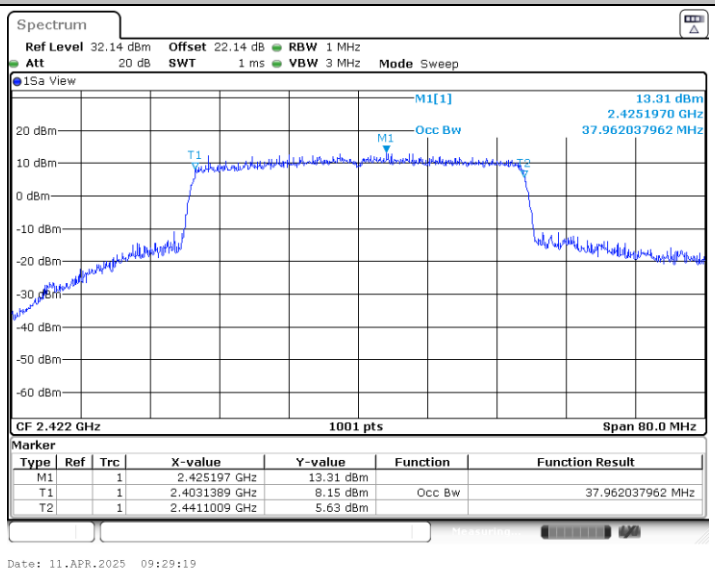

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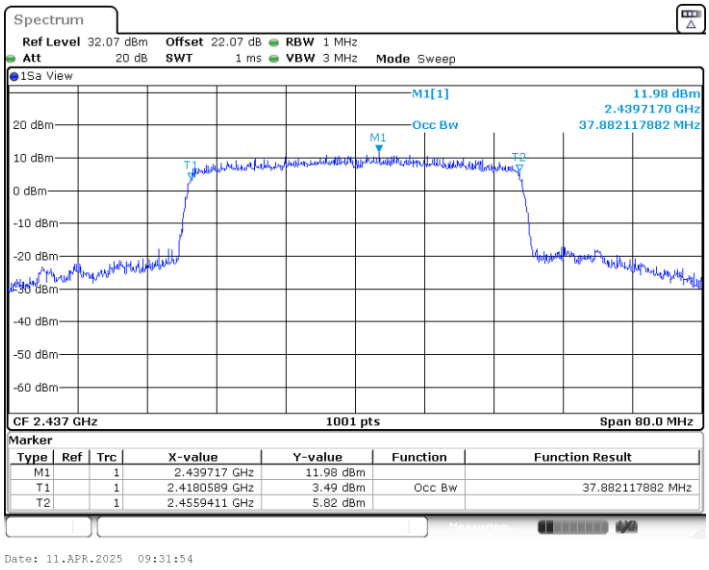
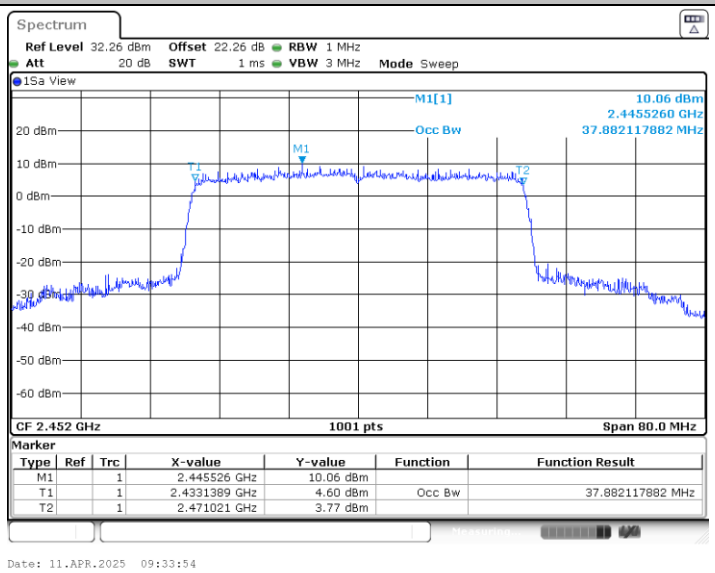


11AX40_2452


Spectrum
Ref Level 32.26 dBm Offset 22.26 dB RBW 1 MHz
Att 20 dB SWT 1 ms VBW 3 MHz Mode Sweep
1Sa View
M1[1] 10.06 dBm
2.4455260 GHz
Occ Bw 37.882117882 MHz
M1
T1
T2
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.452 GHz
1001 pts
Span 80.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.445526 GHz 10.06 dBm
T1 1 2.4331389 GHz 4.60 dBm Occ Bw 37.882117882 MHz
T2 1 2.471021 GHz 3.77 dBm
Date: 11.APR.2025 09:33:54

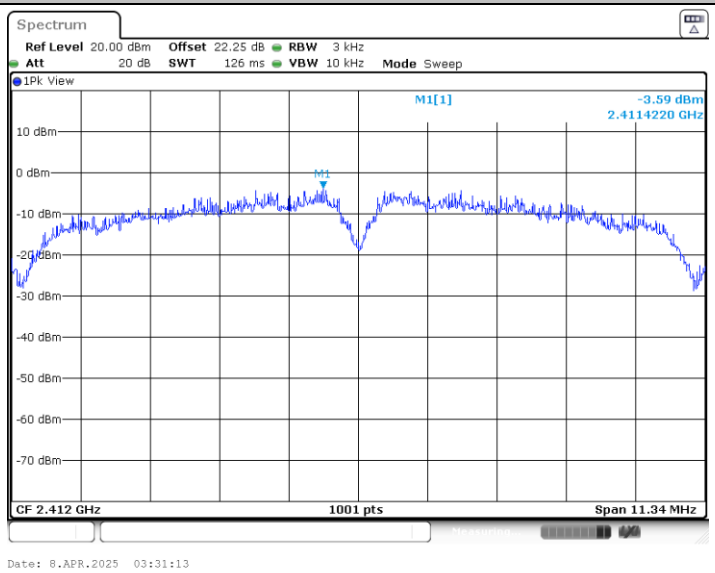
Maximum power spectral density

Test Result

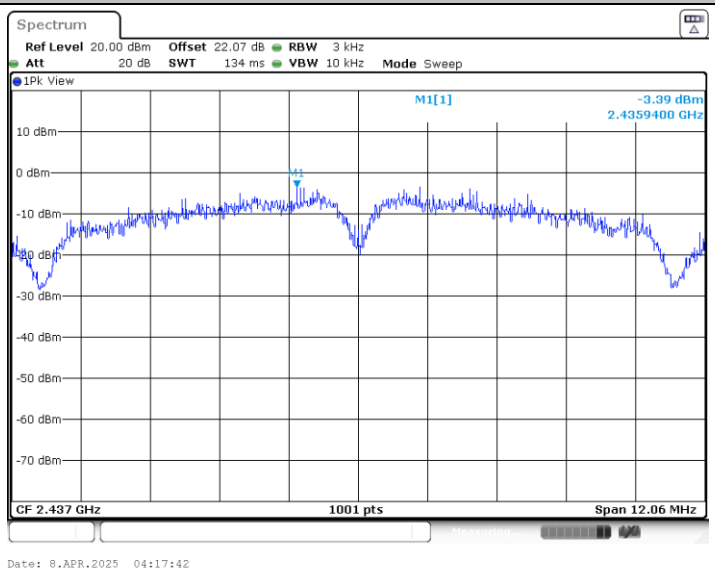
TestMode	Antenna	Freq(MHz)	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant6	2412	-3.59	≤8.00	PASS
		2437	-3.39	≤8.00	PASS
		2462	-4.10	≤8.00	PASS
11G	Ant6	2412	-6.01	≤8.00	PASS
		2437	-6.18	≤8.00	PASS
		2457	-6.68	≤8.00	PASS
		2462	-9.47	≤8.00	PASS
11N20	Ant6	2412	-6.42	≤8.00	PASS
		2437	-6.26	≤8.00	PASS
		2457	-8.82	≤8.00	PASS
		2462	-11.20	≤8.00	PASS
11N40	Ant6	2422	-11.07	≤8.00	PASS
		2437	-13.76	≤8.00	PASS
		2452	-15.84	≤8.00	PASS
11AX20	Ant6	2412	-7.83	≤8.00	PASS
		2437	-7.74	≤8.00	PASS
		2457	-9.43	≤8.00	PASS
		2462	-11.50	≤8.00	PASS
11AX40	Ant6	2422	-11.78	≤8.00	PASS
		2437	-13.42	≤8.00	PASS
		2452	-16.19	≤8.00	PASS

Test Graphs

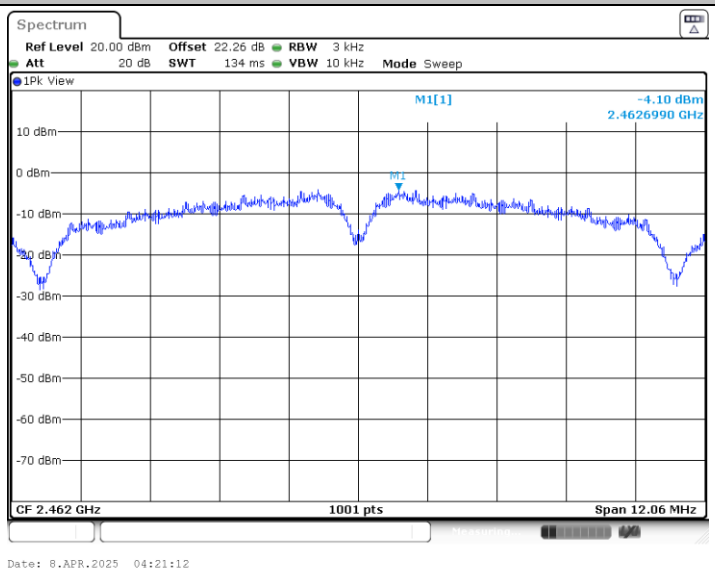
11B_Ant6_2412



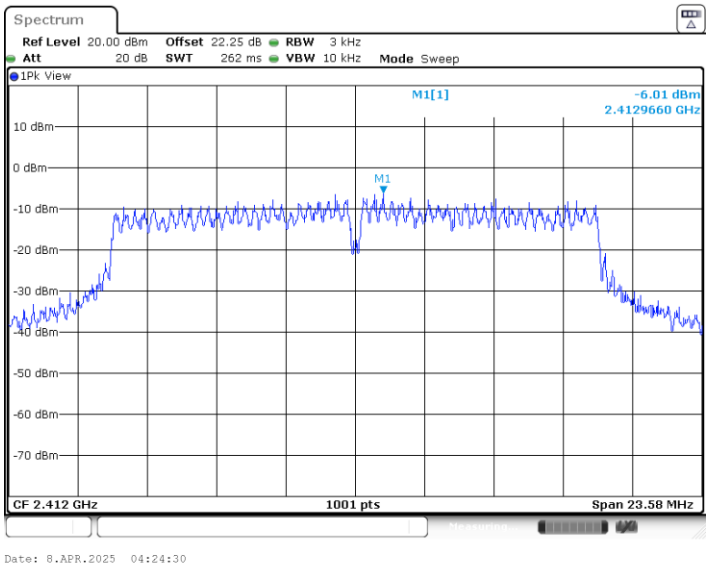
11B_Ant6_2437



11B_Ant6_2462



11G_Ant6_2412



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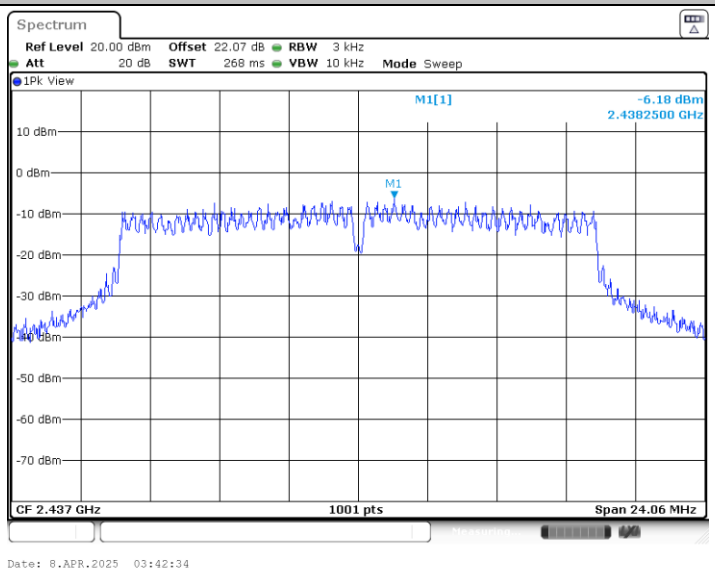
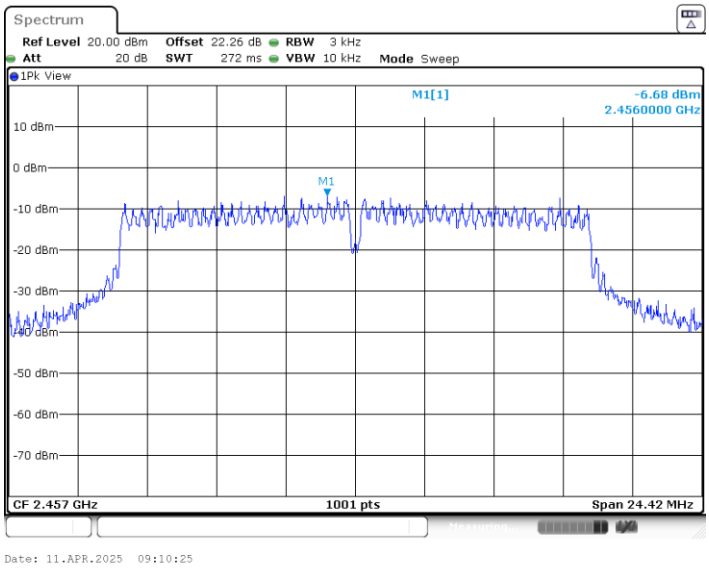
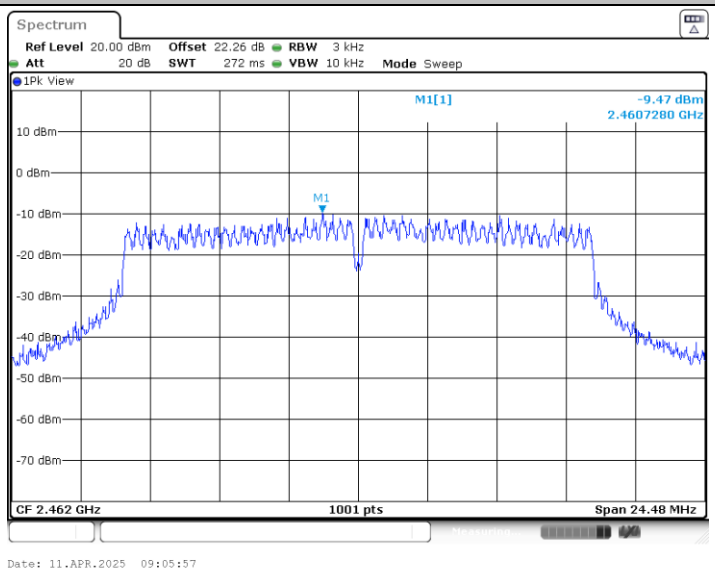


11G_Ant6_2457



11G_Ant6_2462



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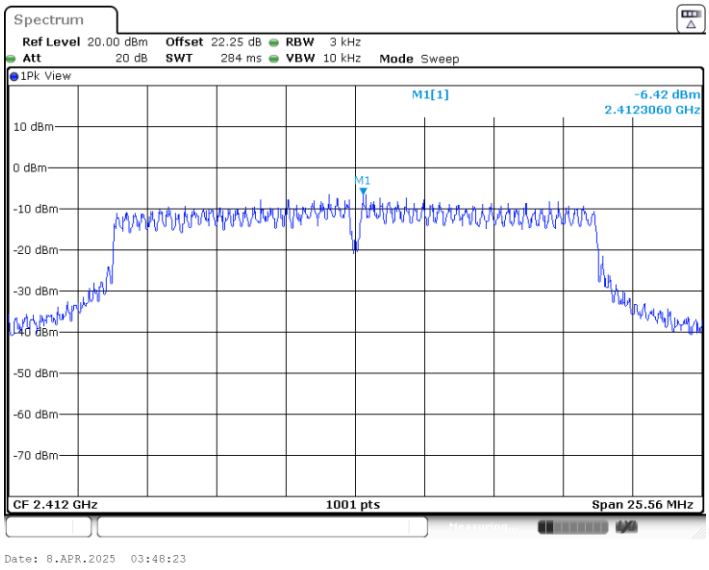
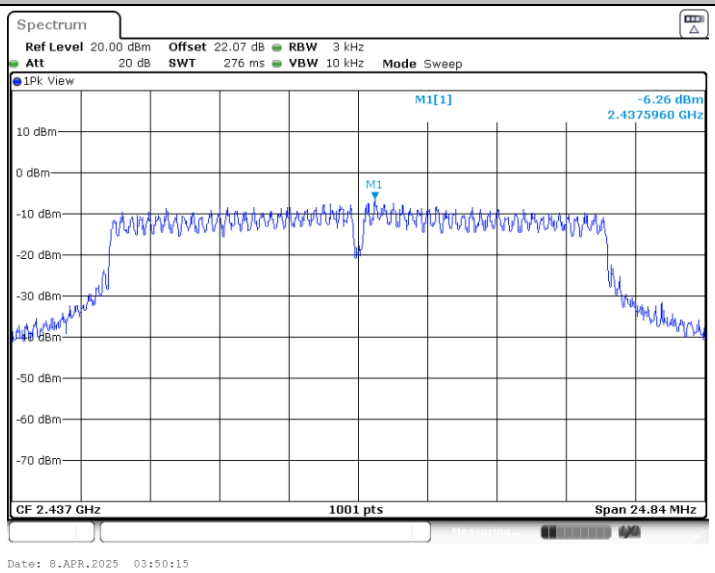
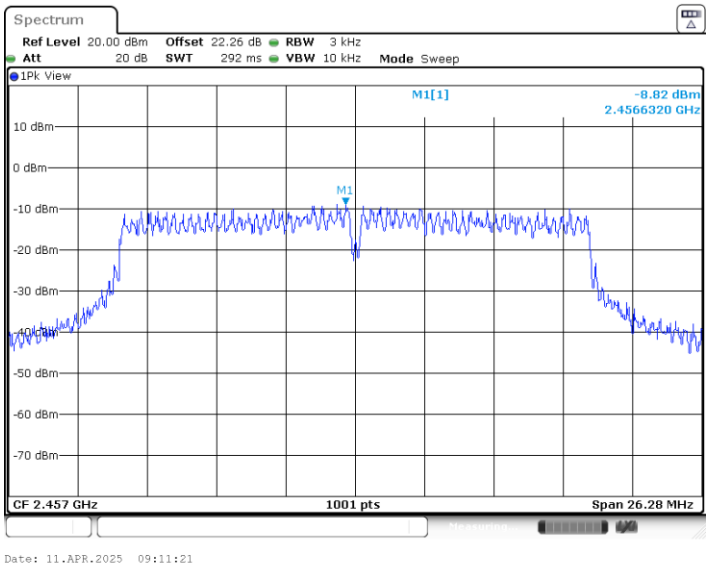


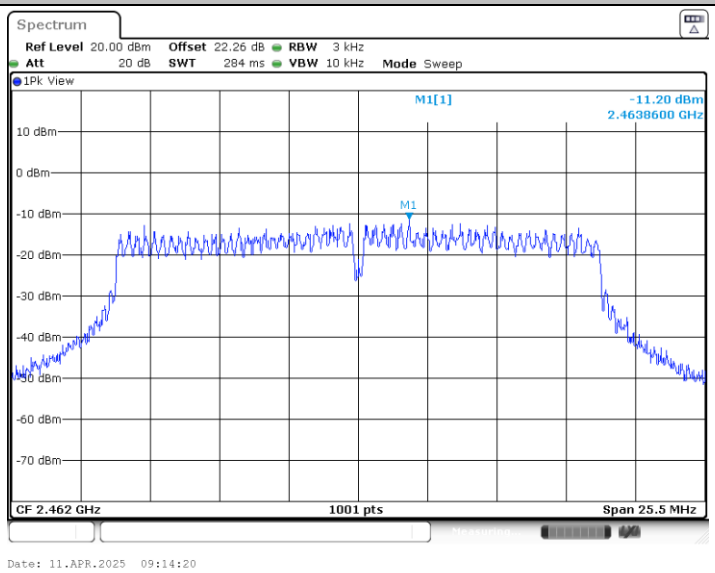
11N20_Ant6_2437



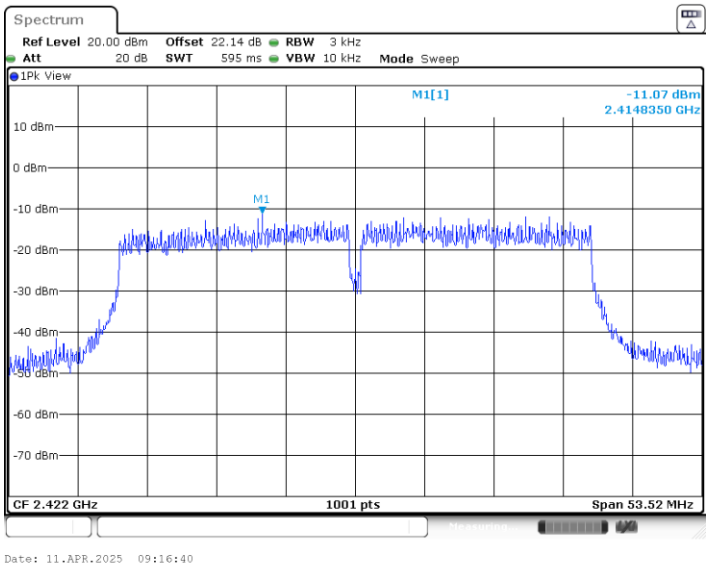
11N20_Ant6_2457



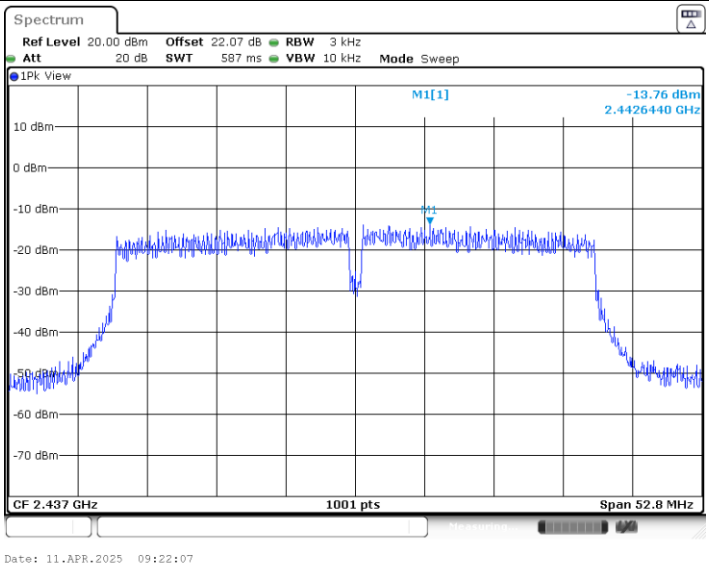
11N20_Ant6_2462



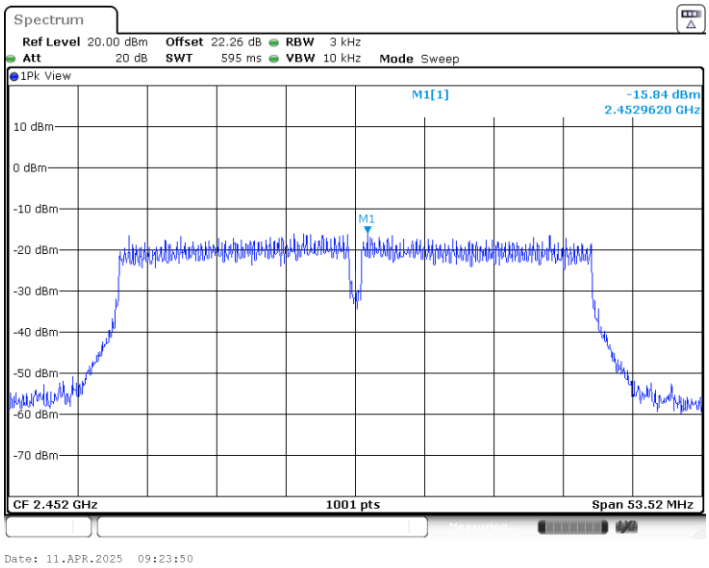
11N40_Ant6_2422



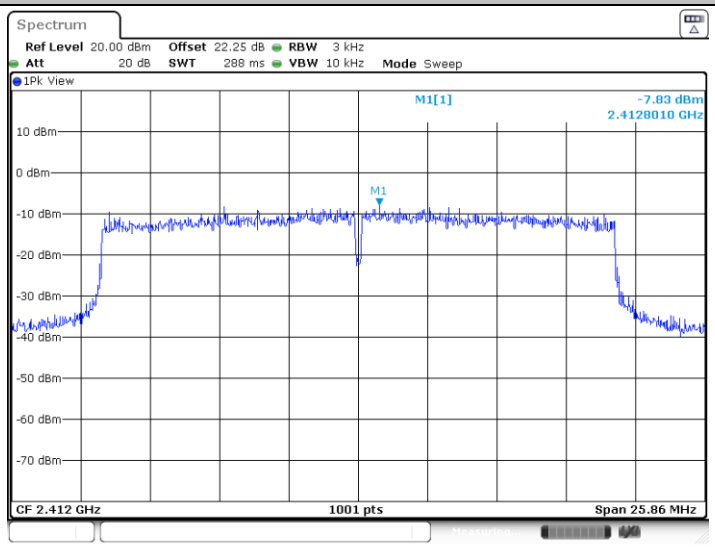
11N40_Ant6_2437



11N40_Ant6_2452

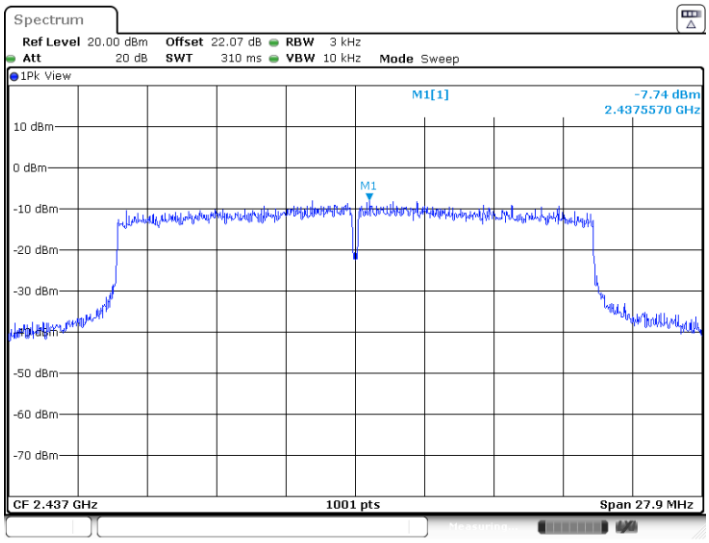


11AX20_Ant6_2412



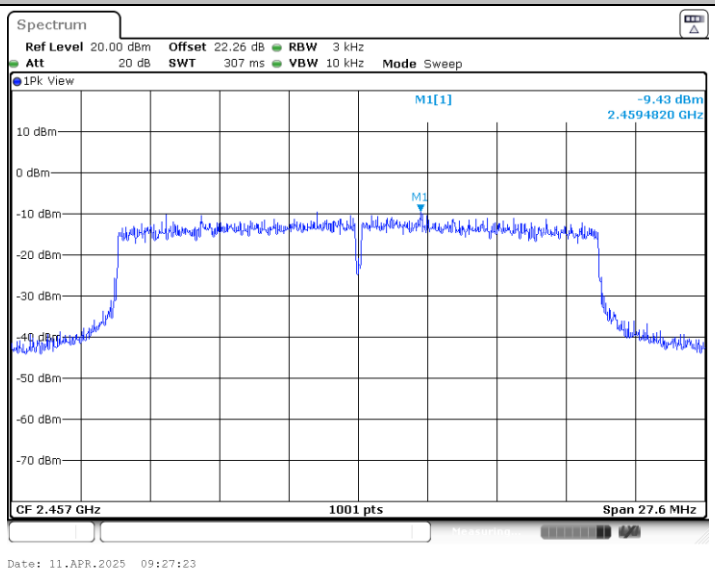
Date: 8.APR.2025 04:00:23

11AX20_Ant6_2437

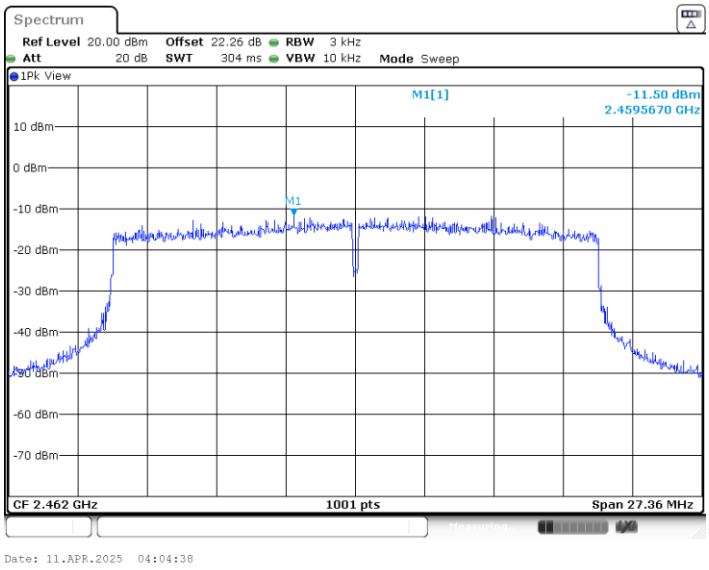


Date: 8.APR.2025 04:02:13

11AX20_Ant6_2457



11AX20_Ant6_2462



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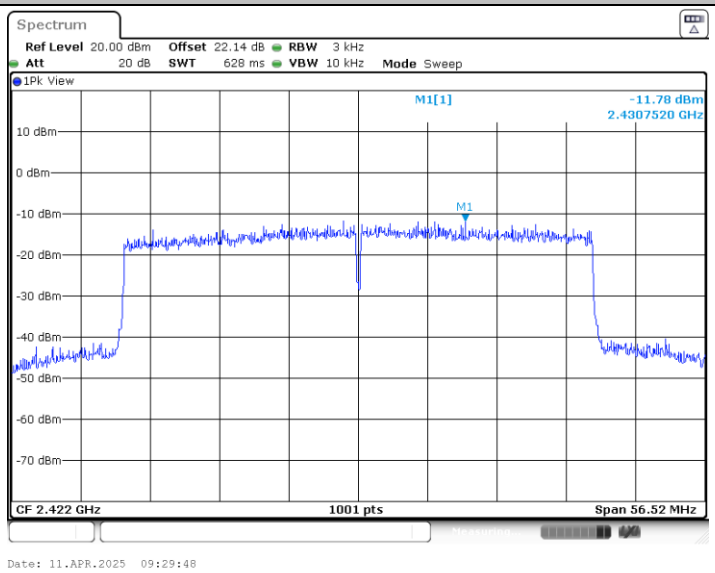

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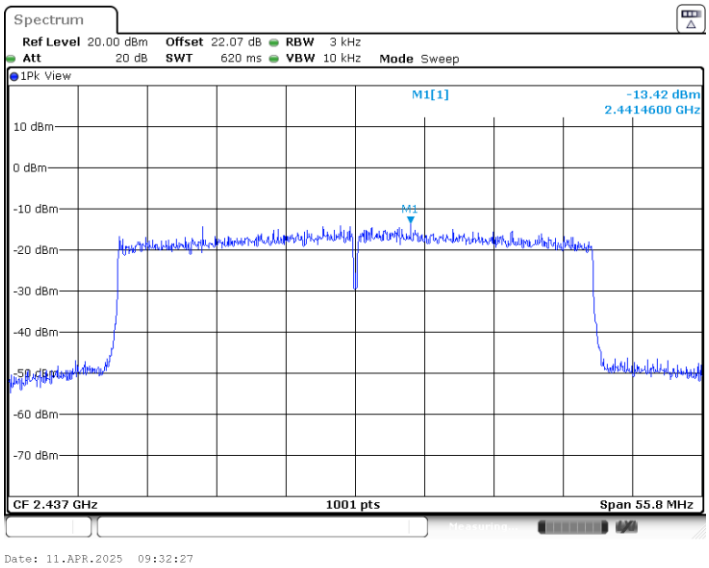

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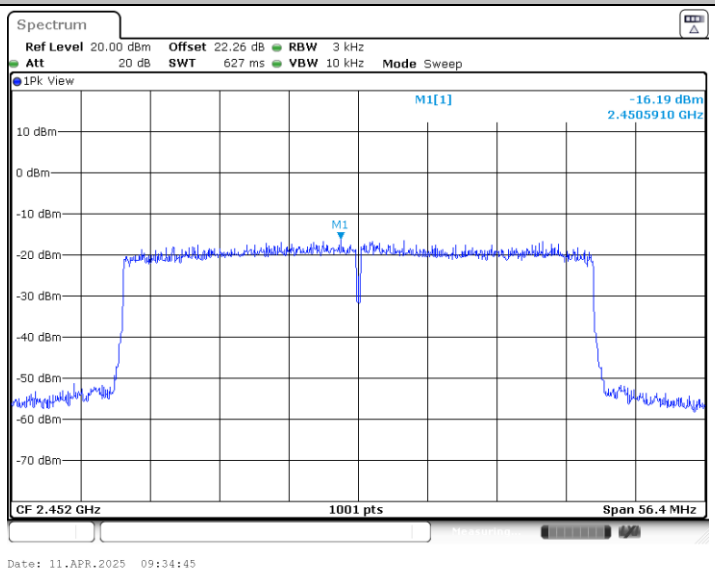


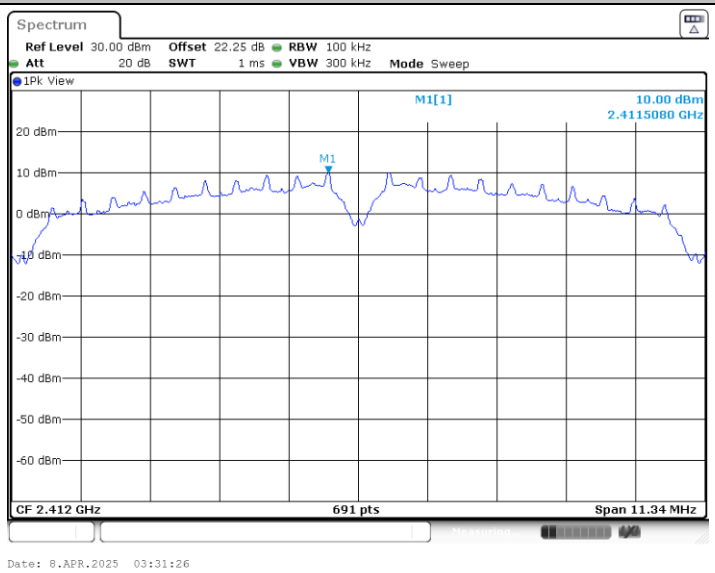
Reference level measurement

Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm/100KHz]
11B	Ant6	2412	2411.51	10.00
		2437	2438.00	9.92
		2462	2462.49	9.96
11G	Ant6	2412	2410.74	7.49
		2437	2438.25	7.69
		2457	2455.73	7.36
		2462	2460.76	4.31
11N20	Ant6	2412	2413.26	7.52
		2437	2435.74	7.65
		2457	2455.75	5.80
		2462	2463.26	2.90
11N40	Ant6	2422	2427.03	3.46
		2437	2442.04	1.49
		2452	2449.52	-0.48
11AX20	Ant6	2412	2413.27	7.42
		2437	2435.75	7.51
		2457	2455.72	5.63
		2462	2464.49	2.55
11AX40	Ant6	2422	2426.99	3.54
		2437	2442.01	1.32
		2452	2449.55	-0.58

Test Graphs

11B_Ant6_2412



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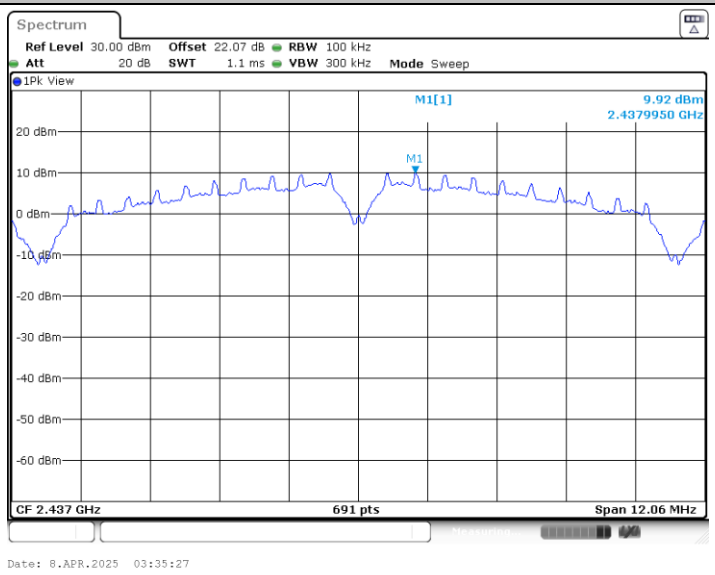

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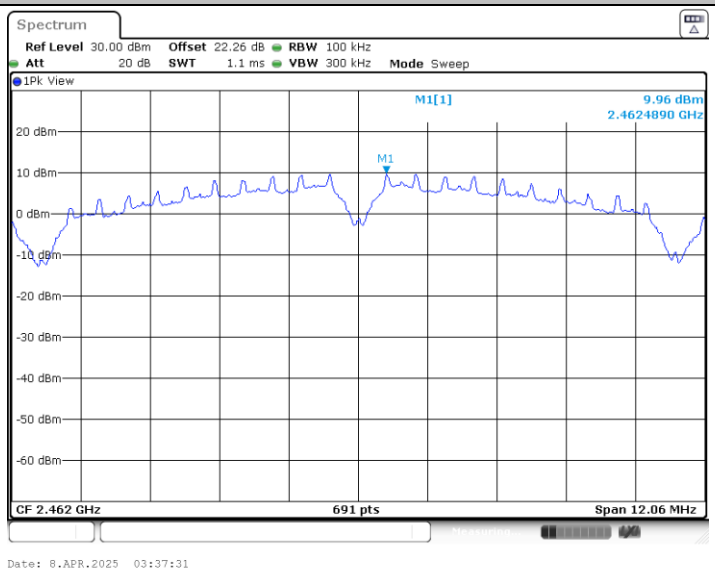

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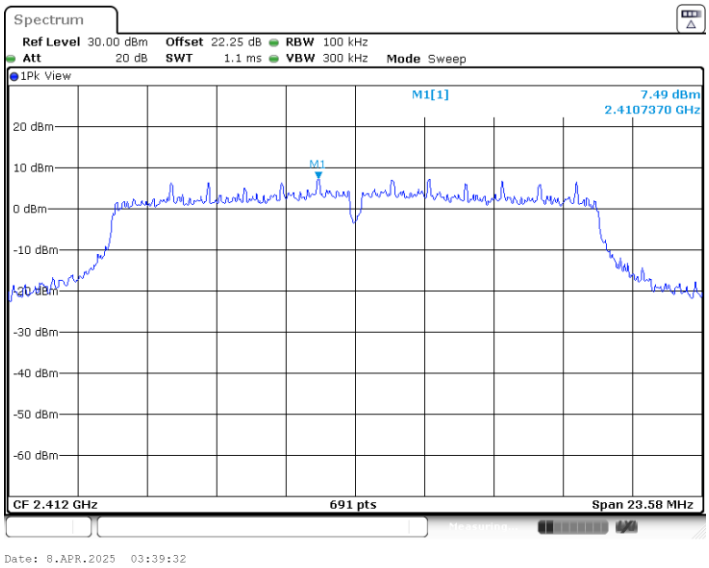

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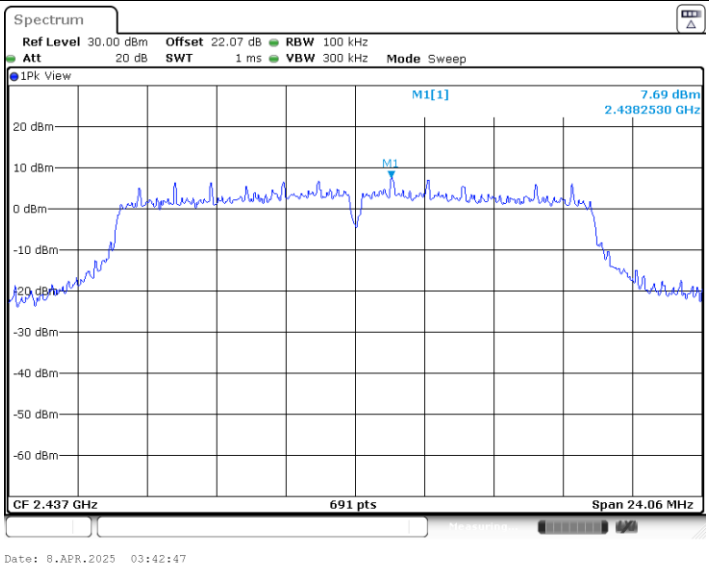

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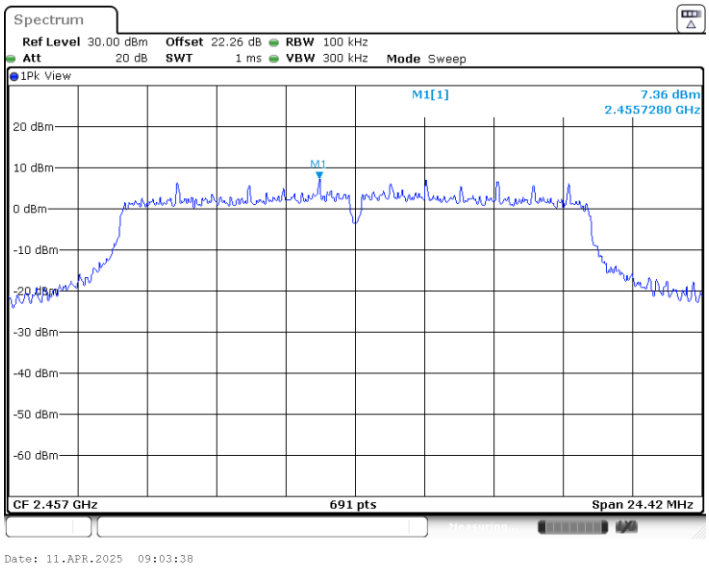

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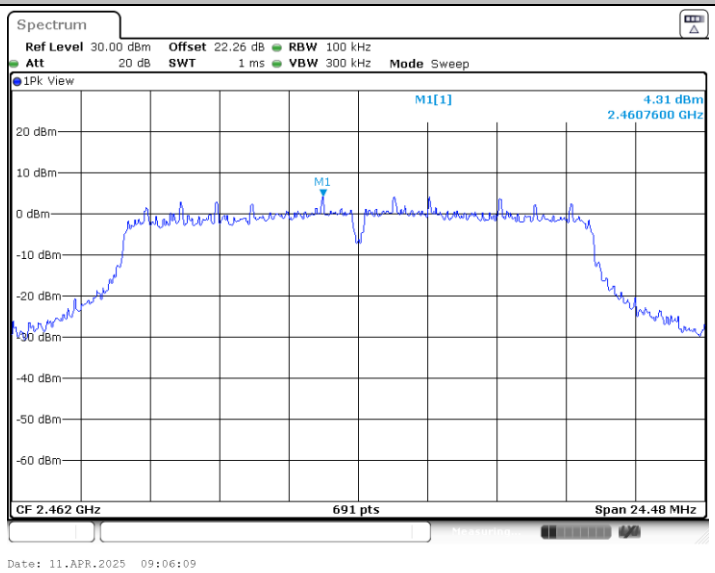

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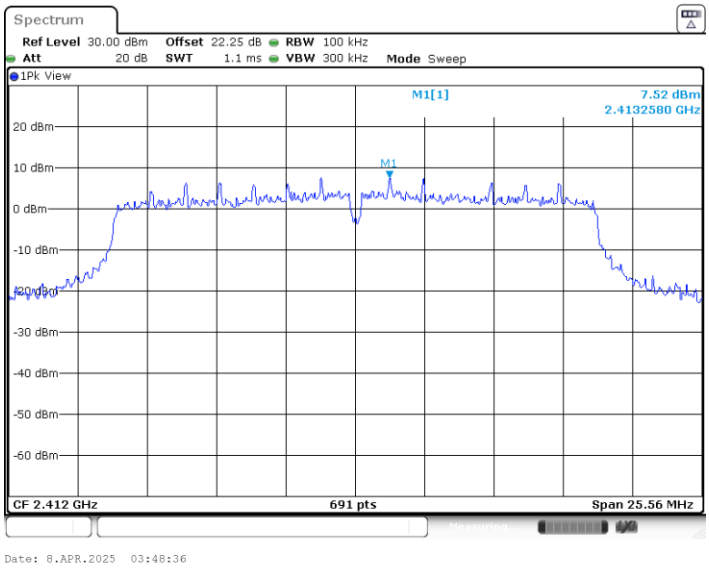

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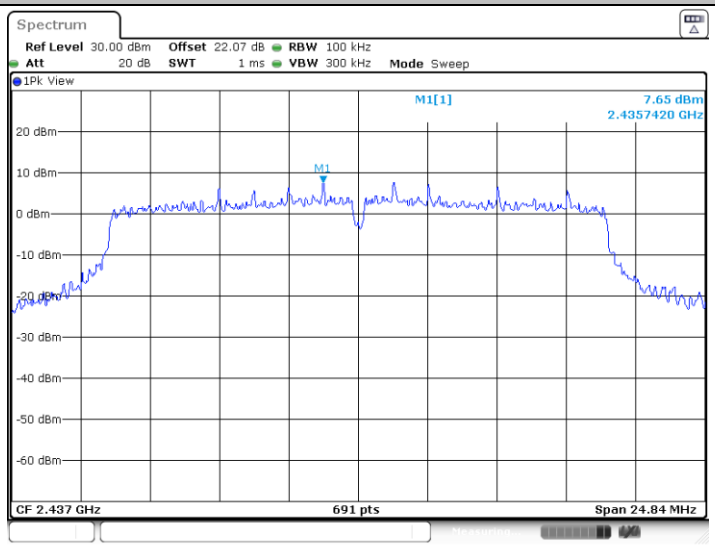

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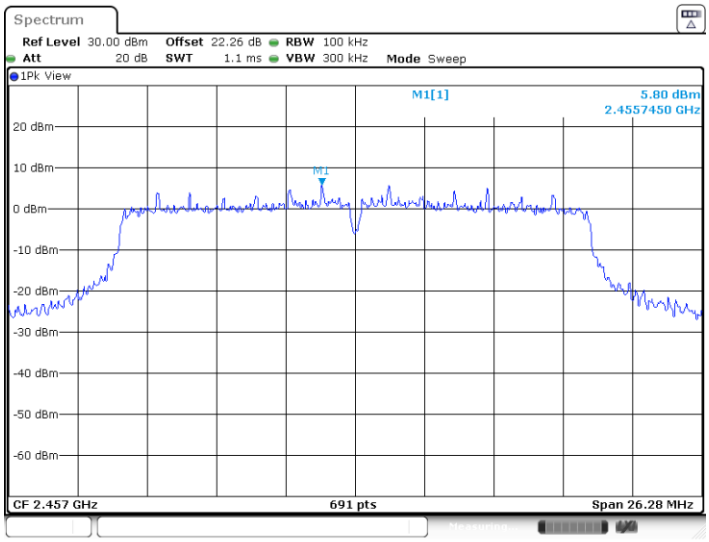

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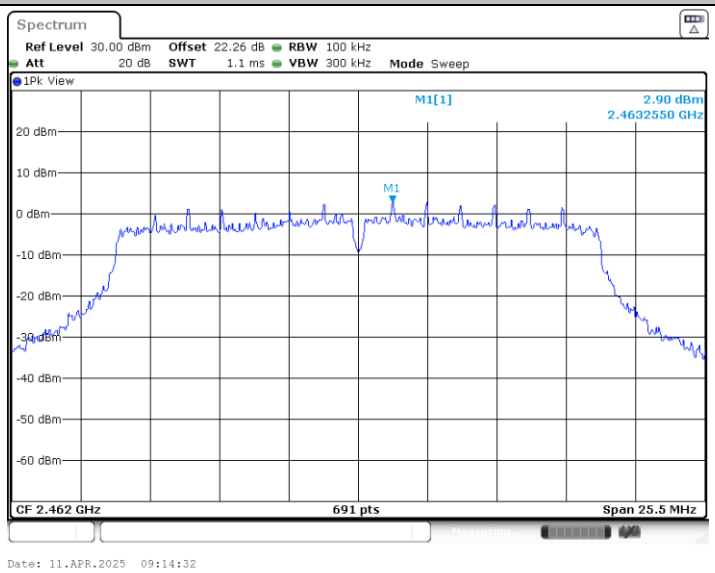

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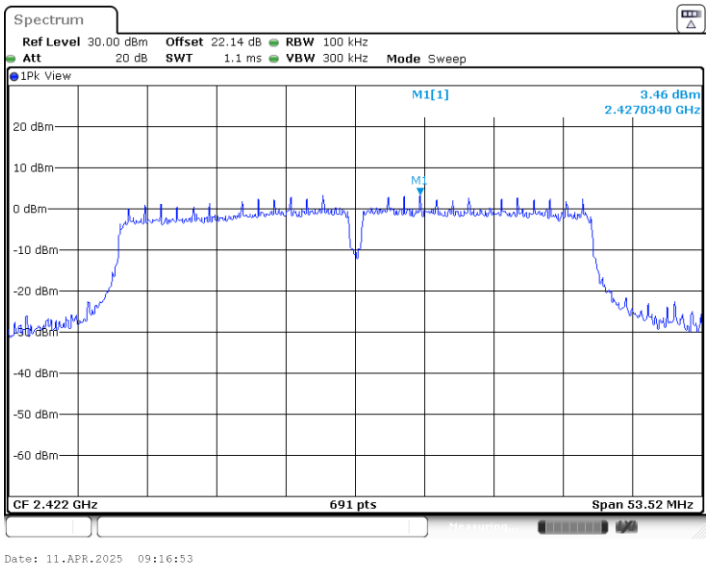

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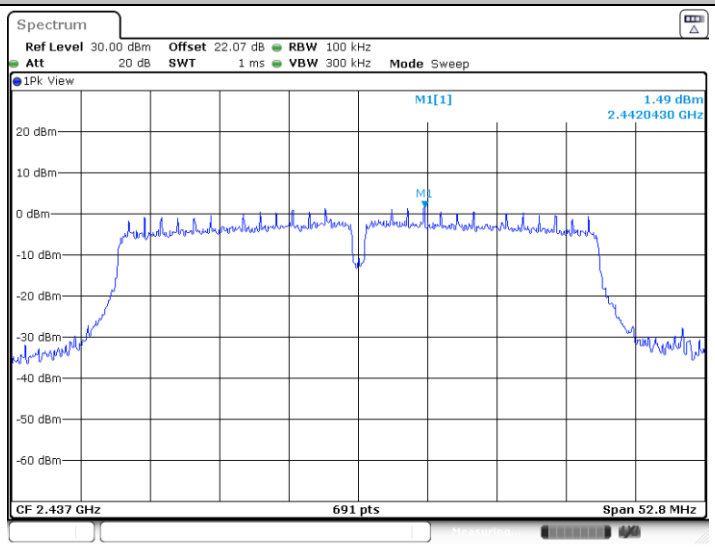

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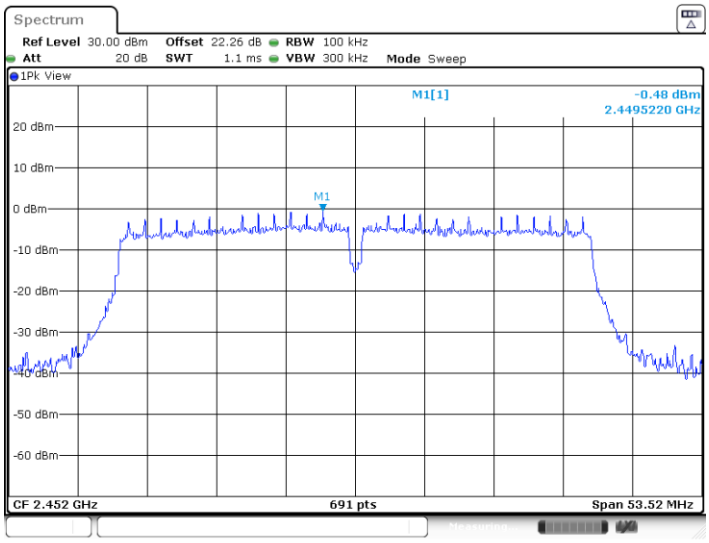

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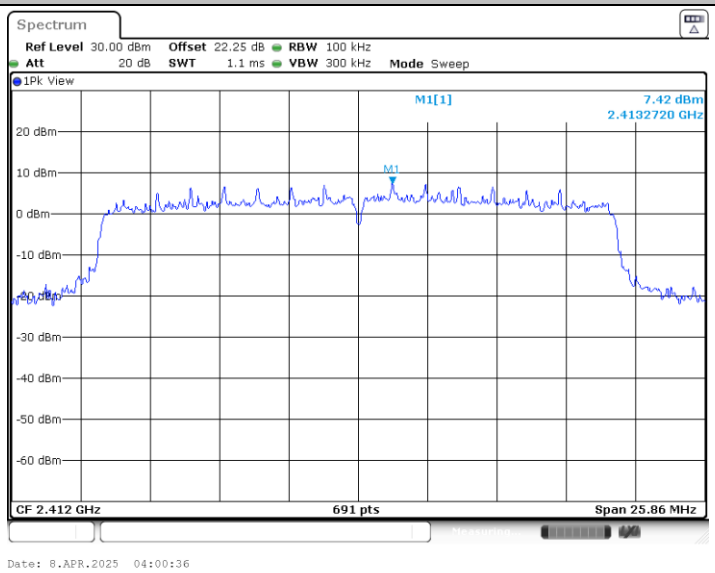

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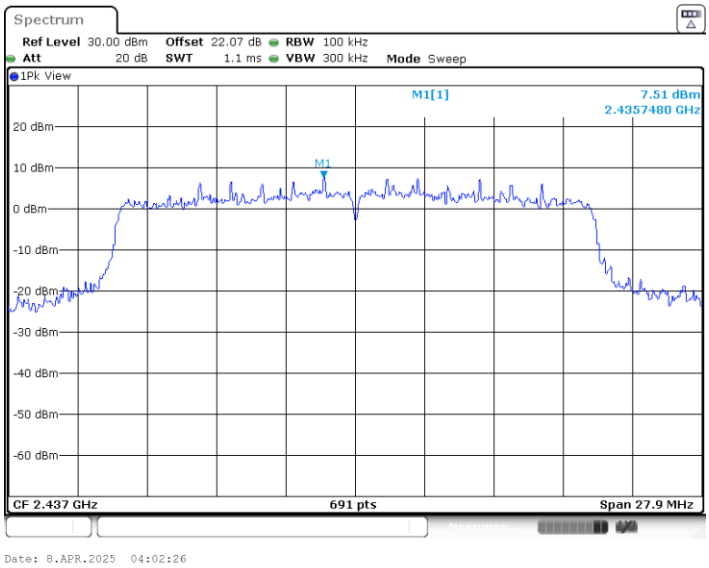

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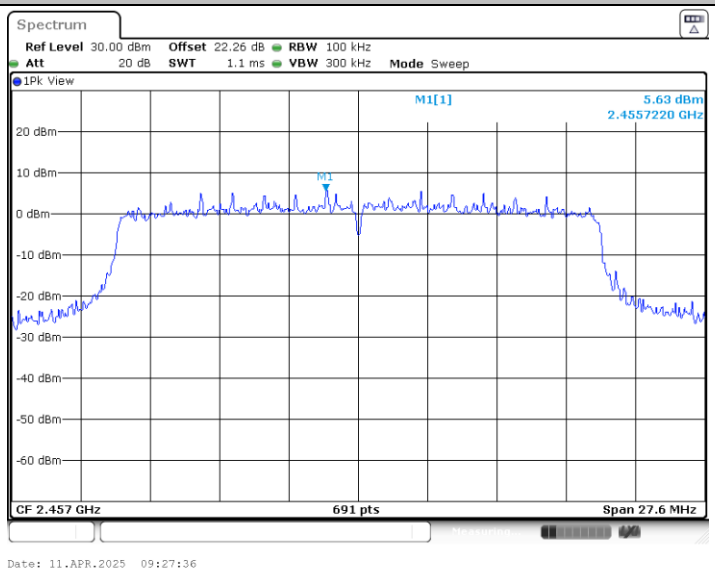

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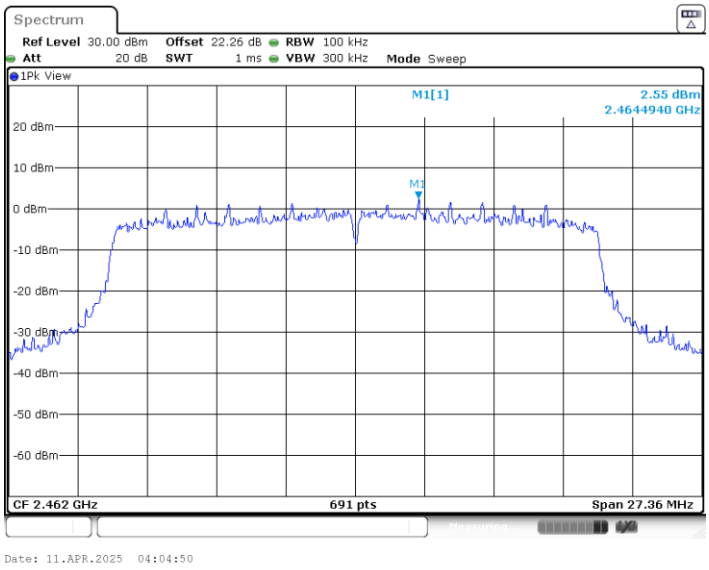

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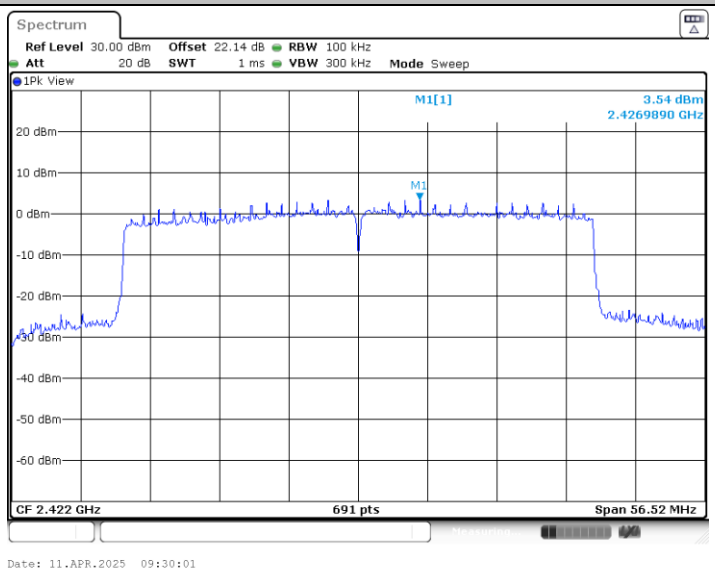

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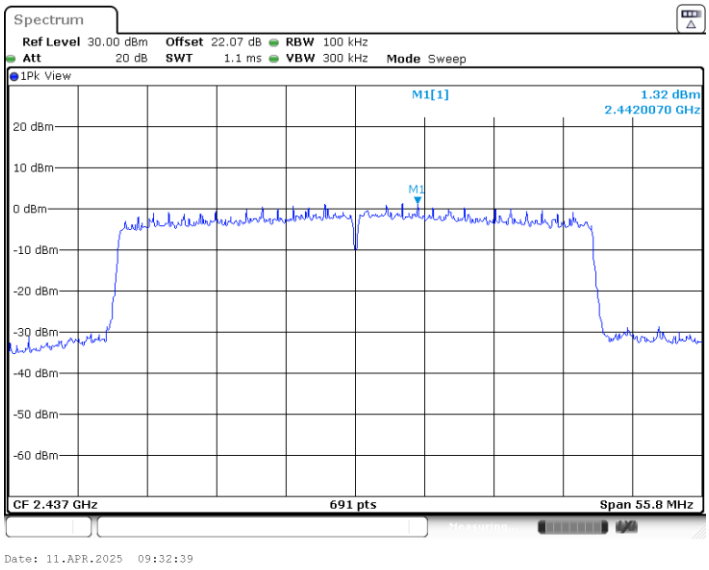
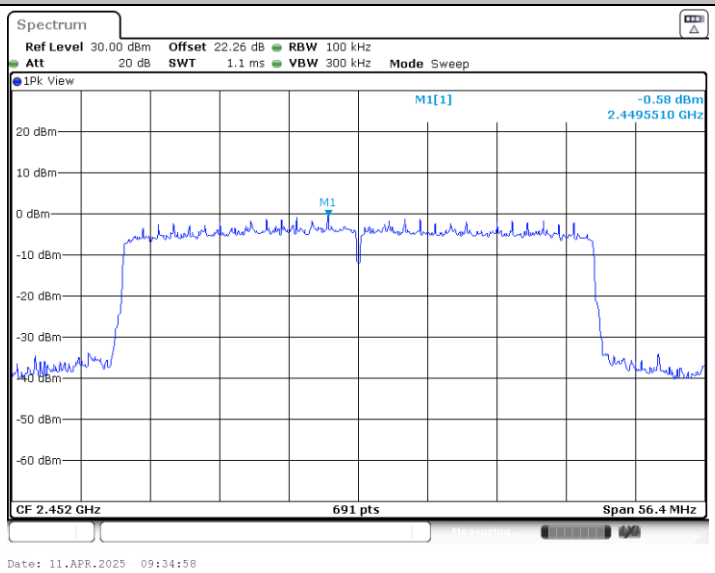
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