FCC RF Test Report

APPLICANT	:	Xiaomi Communications Co., Ltd.
EQUIPMENT	:	Tablet Computer
BRAND NAME	:	Xiaomi
MODEL NAME	:	24091RPADG
FCC ID	:	2AFZZ1RPADG
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System
TEST DATE(S)	:	Oct. 18, 2024 ~ Nov. 09, 2024

We, Sporton International Inc. (ShenZhen), 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. (KunShan)

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

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.01

Sporton International Inc. (ShenZhen)

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People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR480902-02C	Rev. 01	Initial issue of report	Dec. 02, 2024

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
-	-	99% Bandwidth	-	Not Required	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
-	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Not Required	-
3.3	15.247(d)	Conducted Band Edges	≤ 30dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.4	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.71 dB at 2483.50 MHz
-	15.207	AC Conducted Emission	15.207(a)	Not Required	-
3.5	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-

Remark:

1. Not required means after assessing, test items are not necessary to carry out.

2. This is a variant report for 24091RPADG, the difference is to add a 2.4 GHz filter. Based on the similarity between current and previous project, only the related test cases from original test report (Sporton Report Number FR480902C) were verified for the differences.

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

Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

1.2 Manufacturer

Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet Computer
Brand Name	Xiaomi
Model Name	24091RPADG
FCC ID	2AFZZ1RPADG
IMEI Code	Conducted: 6287b57e Radiation: 9P439K000030
HW Version	135100O81
SW Version	Xiaomi HyperOS 2.0
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 Output Power to antenna (Average Power)	**<SISO_ANT0>** 802.11g : 18.75 dBm (0.0750 W) **<SISO_ANT2>** 802.11g : 18.89 dBm (0.0774 W) **<MIMO ANT.0+2>** 802.11b : 22.05 dBm (0.1603 W) 802.11n HT20 : 21.39 dBm (0.1377 W) 802.11n HT40 : 21.11 dBm (0.1291 W) 802.11be EHT20 : 21.80 dBm (0.1514 W) 802.11be EHT40 : 20.99 dBm (0.1256 W)
Antenna Type	**<ANT0>** : PIFA Antenna **<ANT2>** : Resonant Cavity Antenna
Antenna Gain	**<ANT0>** : -3.8 dBi **<ANT2>** : -1.57 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) 802.11be: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM)

Note:

1. The device support SISO mode for 11g, and support SISO & MIMO mode for 11b/11n/11ax/11be.
2. For WLAN SISO & MIMO CDD mode, the whole testing has assessed only MIMO CDD mode by referring to the higher normal output power.
3. For 802.11ax/11be mode, the 11ax power is set less than 11be power, thus whole testing have assessed only 802.11be EHT20/EHT40 by referring to the higher output power.
4. 802.11be 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.
5. 802.11be support OFDMA for small size RU, 52Tone + 26 Tone or 106Tone + 26Tone, test combination as below:

<Small size RU 52+26 Tone>:

Bandwidth	Tones		Index		For test modes configure
20MHz	26	52	1	38	1
20MHz	52	26	38	4	2
20MHz	52	26	39	7	3

<Small size RU 106+26 Tone>:

Bandwidth	Tones		Index		For test modes configure
20MHz	106	26	53	4	1
20MHz	26	106	4	54	2

6. The worse cases of RSE for partial RU and small size RU are shown in this report.

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.**
	03CH08-KS	CN1257	314309

Note: Test data subcontracted: Radiation test case in section 3.4 of this report

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	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH08-KS	AUDIX	E3	210616

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
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- 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.

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.

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

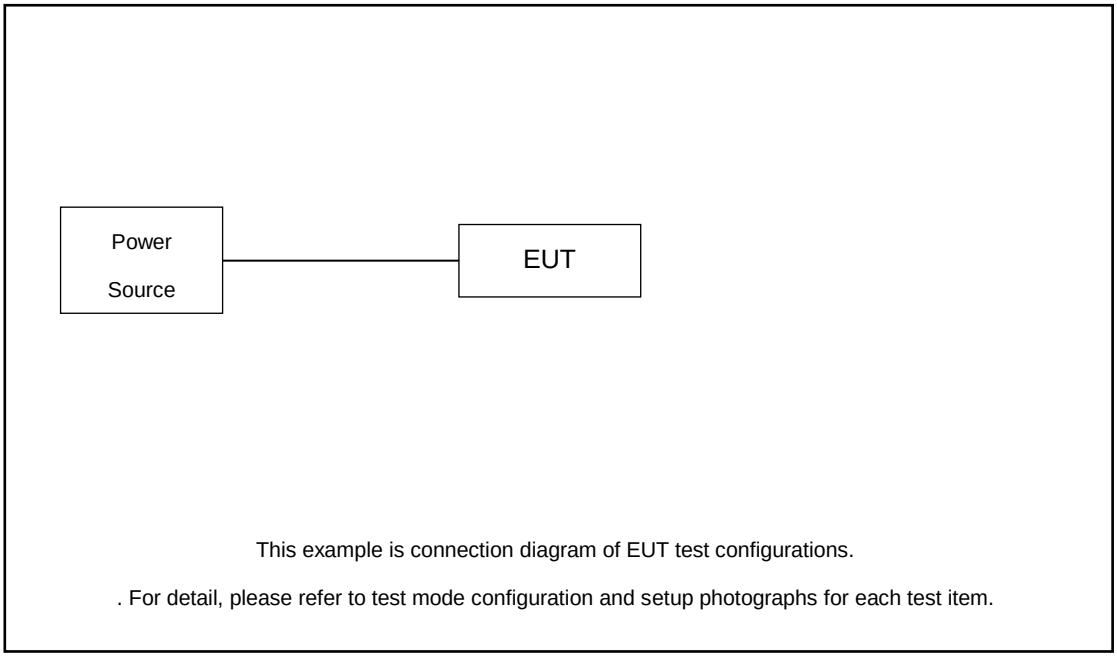
Final test modes are considering the modulation and worse data rates as below table.

MIMO Antenna

Modulation	Data Rate
802.11be EHT20 (Cover 11ax HE20)	**MCS0**

Remark: For Radiated Test Cases, The tests were performance with Adapter and USB Cable.

2.3 Connection Diagram of Test System



2.4 EUT Operation Test Setup

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

2.5 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 2.12 dB and 10dB attenuator.

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

= 2.12 + 10 = 12.12 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

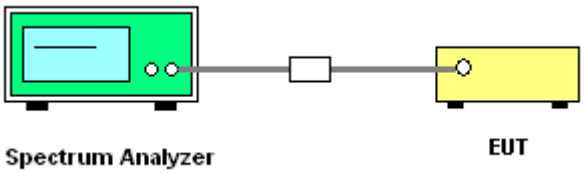
3.1.2 Measuring Instruments

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. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB 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.

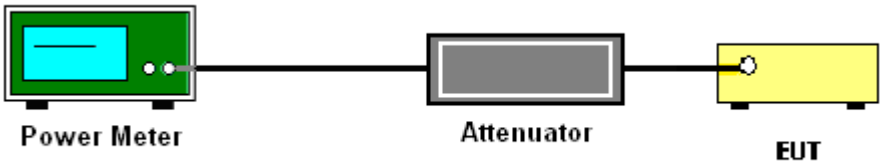
3.2.2 Measuring Instruments

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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Average Output Power

2.4GHz Band Single Antenna									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)		Conducted Power Limit (dBm)		Pass /Fail
					Ant0	Ant2	Ant0	Ant2	
11g	6Mbps	1	1	2412	18.75	18.89	30.00		Pass
11b	1Mbps	2	11	2462	22.05		30.00		Pass
HT20	MCS0	2	1	2412	21.39		30.00		Pass
HT40	MCS0	2	6	2437	21.11		30.00		Pass

Note: Measured power (dBm) has offset with cable loss and Duty Factor.

2.4GHz Band MIMO									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)	Conducted Power Limit (dBm)		Pass /Fail
						SUM	Ant0	Ant2	
EHT20	MCS0	2	6	2437	Full	21.80	30.00		Pass
EHT20	MCS0	2	11	2462	26/8	12.32	30.00		Pass
EHT20	MCS0	2	1	2412	52/40	14.98	30.00		Pass
EHT20	MCS0	2	11	2462	106/54	17.82	30.00		Pass
EHT40	MCS0	2	6	2437	Full	20.99	30.00		Pass

Note: Measured power (dBm) has offset with cable loss and Duty Factor.

<802.11be Small RU>

Test Mode	Antenna	Channel	Mru Type	Mru Index	Set Power	Average power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Verdict
11BE20 MIMO	total	2412	52+26_OFDMA	1	---	---	---	---	17.71	≤30.00	PASS
			106+26_OFDMA	1	---	---	---	---	18.92	≤30.00	PASS

Note: Measured power (dBm) has offset with cable loss and Duty Factor.

3.3 Conducted Band Edges and Spurious Emission Measurement

3.3.1 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.

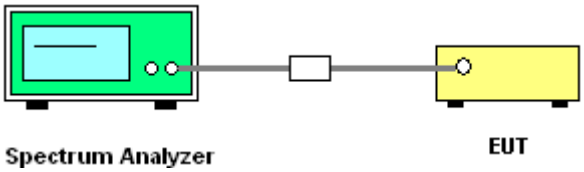
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows 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.

3.3.4 Test Setup



3.3.5 Test Result of Conducted Band Edges and Spurious Emission

Please refer to Appendix A.

3.4 Radiated Band Edges and Spurious Emission Measurement

3.4.1 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

3.4.2 Measuring Instruments

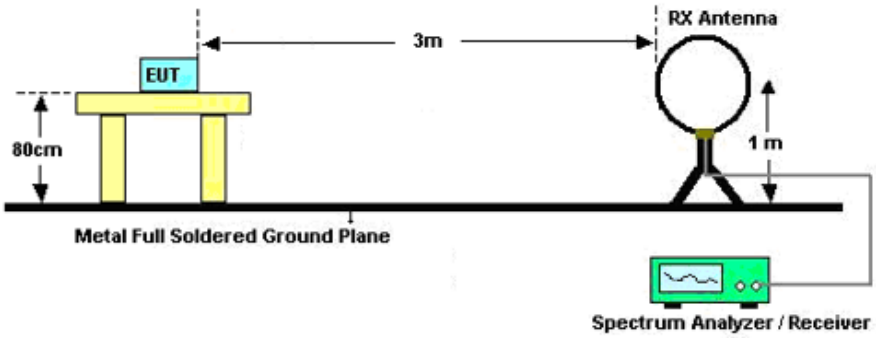
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

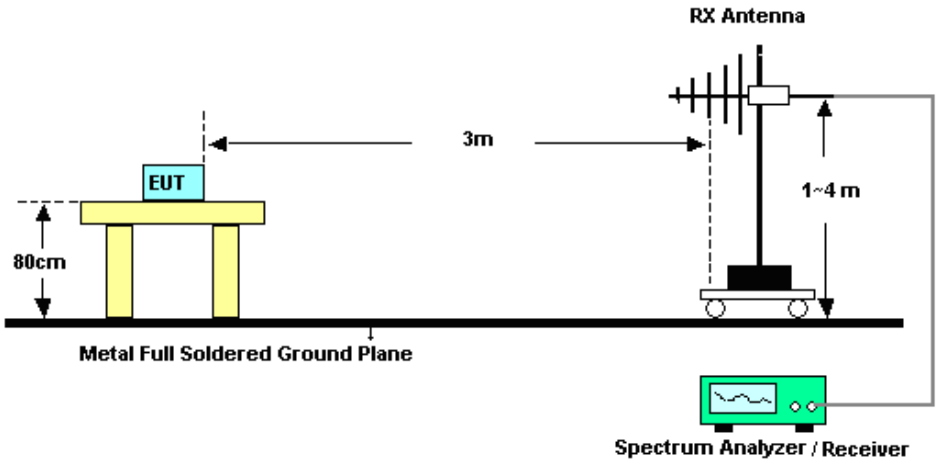
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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.

3.4.4 Test Setup

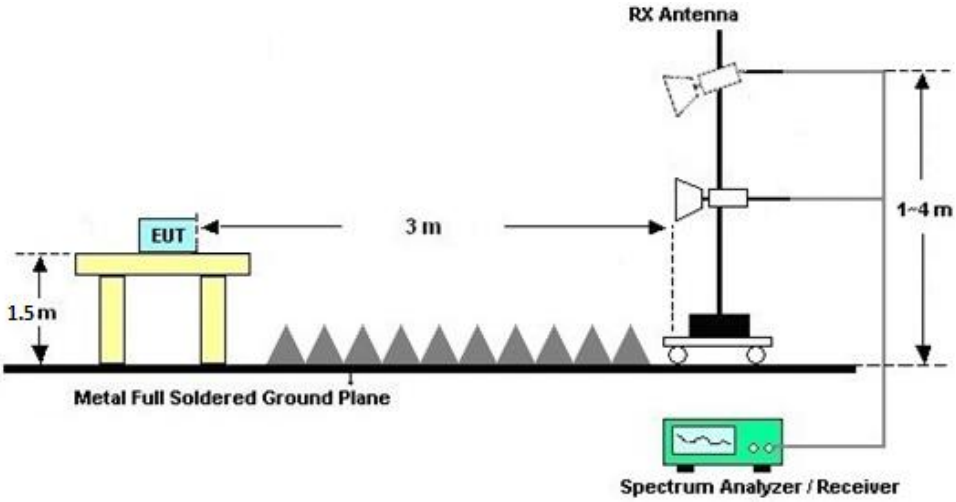
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 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.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.4.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix B.

3.5 Antenna Requirements

3.5.1 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.

3.5.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.5.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(N_{ANT}/N_{SS}=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for N_{ANT} ≤ 4.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

	Ant. 0 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
2.4 GHz	-3.80	-1.57	-1.57	0.40	0.00	0.00

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz;Max 30dBm	Jan. 02, 2024	Nov. 09, 2024	Jan. 01, 2025	Radiation (03CH08-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57441079	10Hz-44GHz	Oct. 09, 2024	Nov. 09, 2024	Oct. 08, 2025	Radiation (03CH08-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Nov. 09, 2024	Sep. 07, 2025	Radiation (03CH08-KS)
Bilog Antenna	TESEQ	CBL 6111D	59915	30MHz-1GHz	Aug. 18, 2024	Nov. 09, 2024	Aug.17, 2025	Radiation (03CH08-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00240138	1GHz~18GHz	Jul. 06, 2024	Nov. 09, 2024	Jul. 05, 2025	Radiation (03CH08-KS)
high gain Amplifier	EM	EM01G18GA	060845	1Ghz-18Ghz	Jan. 03, 2024	Nov. 09, 2024	Jan. 02, 2025	Radiation (03CH08-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 27, 2024	Nov. 09, 2024	Jan. 26, 2025	Radiation (03CH08-KS)
Amplifier	SONOMA	310N	413741	9KHz-1GHz	Jan. 02, 2024	Nov. 09, 2024	Jan. 01, 2025	Radiation (03CH08-KS)
Amplifier	Keysight	83017A	MY53270417	500MHz~26.5GHz	Oct. 09, 2024	Nov. 09, 2024	Oct. 08, 2025	Radiation (03CH08-KS)
Amplifier	EM	EM18G40GGA	060728	18~40GHz	Jan. 02, 2024	Nov. 09, 2024	Jan. 01, 2025	Radiation (03CH08-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Nov. 09, 2024	NCR	Radiation (03CH08-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Nov. 09, 2024	NCR	Radiation (03CH08-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Nov. 09, 2024	NCR	Radiation (03CH08-KS)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Oct. 18, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 29, 2023	Oct. 18, 2024	Dec. 28, 2024	Conducted (TH01-SZ)
Thermo meter	Anymetre	JR593	#7	- 10℃ ~ 50℃ 10%RH~99%RH	Apr. 09, 2024	Oct. 18, 2024	Apr. 08, 2025	Conducted (TH01-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

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
Conducted Power Spectral Density	±1.32 dB
Frequency	±1.3 Hz

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.04 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.26 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.40 dB

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

Appendix A. Conducted Test Results

Ambient Condition: 24-26 ℃, 45-55 %RH	
Test Date: 2024.10.18	**Test Engineer:** Chen ZhiQiang

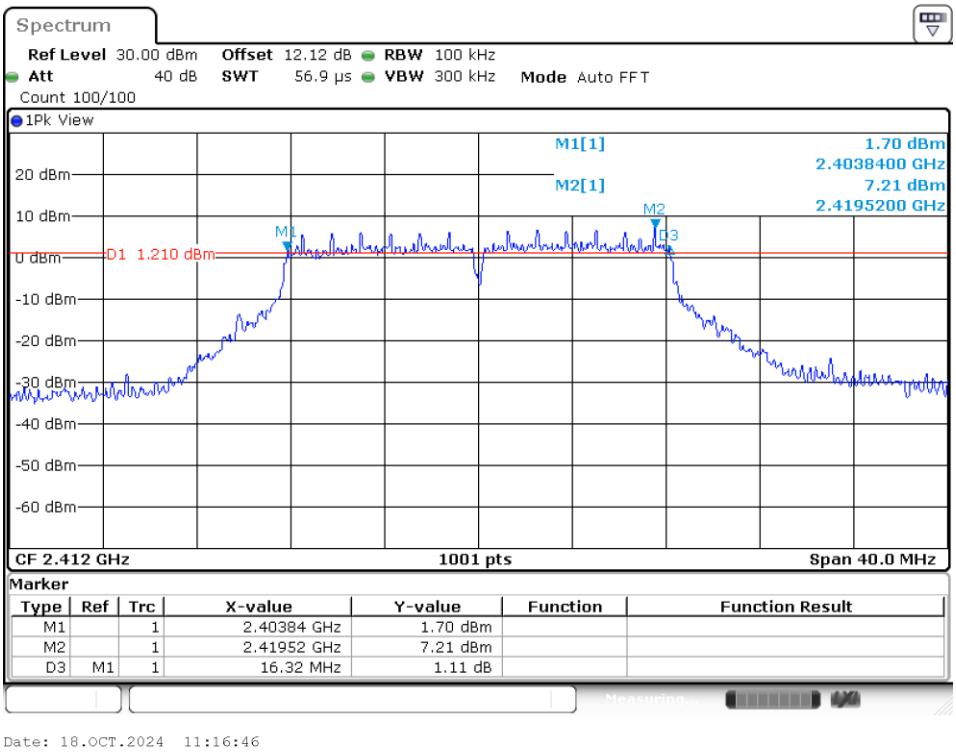
DTS Bandwidth

Test Result

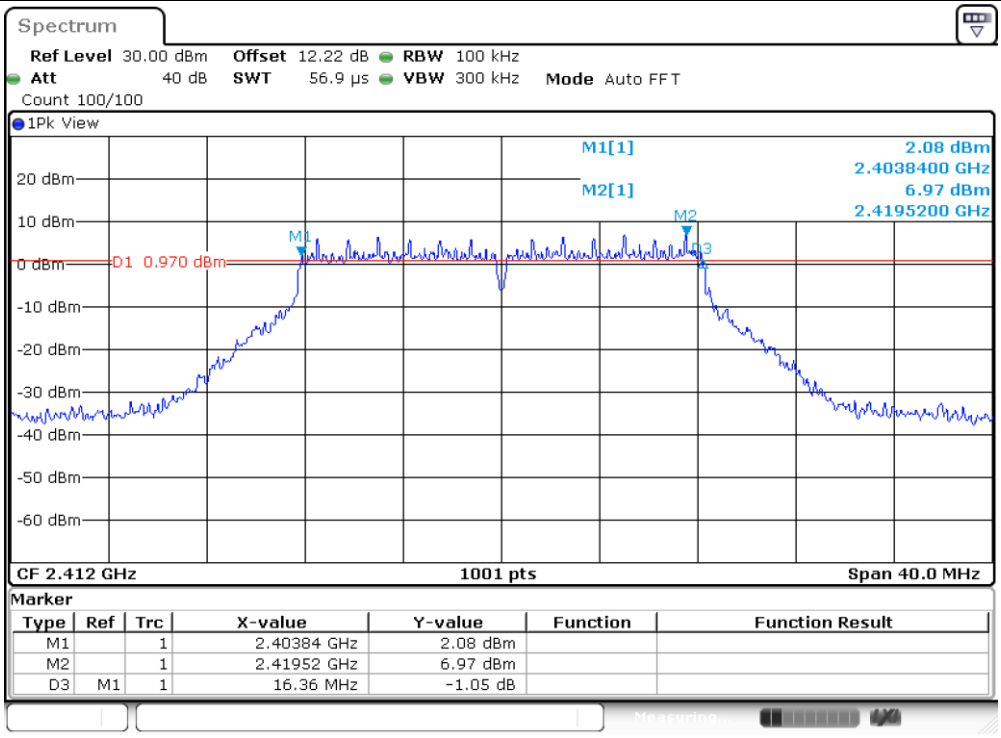
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11G	Ant0	2412	16.32	2403.84	2419.52	0.5	PASS
11G	Ant2	2412	16.36	2403.84	2420.20	0.5	PASS
11B-CDD	Ant0	2462	7.12	2458.44	2465.56	0.5	PASS
	Ant2	2462	7.12	2458.44	2465.56	0.5	PASS
11N20MIMO	Ant0	2412	17.60	2403.20	2420.80	0.5	PASS
	Ant2	2412	17.60	2403.20	2420.80	0.5	PASS
11N40MIMO	Ant0	2437	36.32	2418.84	2455.16	0.5	PASS
	Ant2	2437	36.32	2418.84	2455.16	0.5	PASS
11BE20MIMO	Ant0	2437	18.96	2427.52	2446.48	0.5	PASS
	Ant2	2437	19.00	2427.48	2446.48	0.5	PASS
11BE40MIMO	Ant0	2437	38.40	2417.80	2456.20	0.5	PASS
	Ant2	2437	38.24	2417.88	2456.12	0.5	PASS

Test Graphs

11G_Ant0_2412

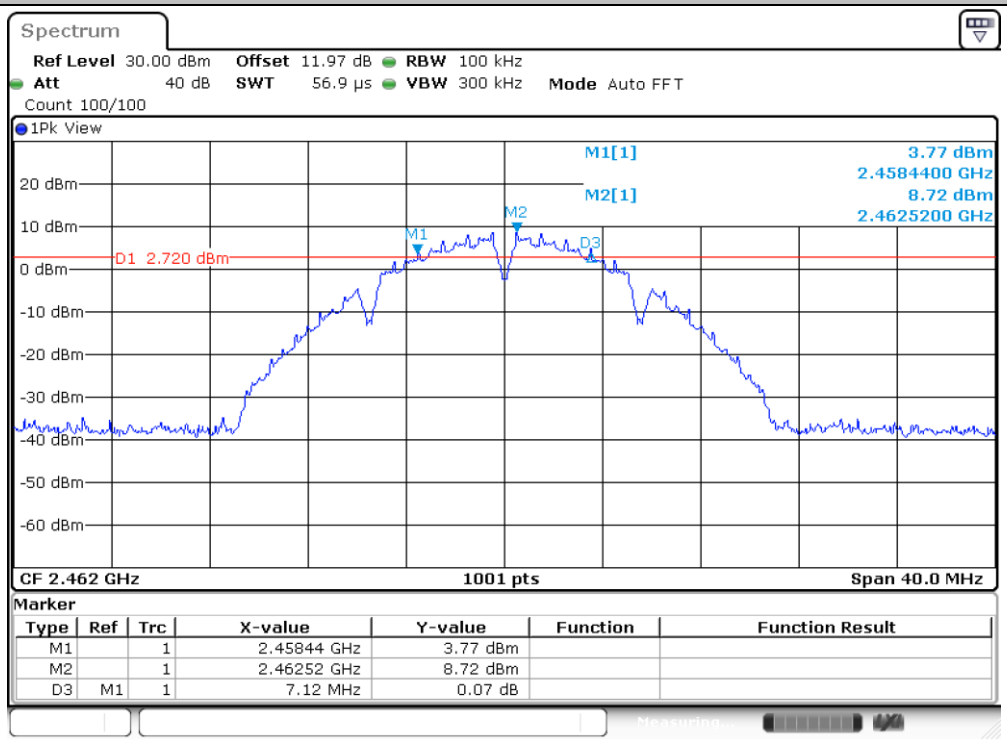


11G_Ant2_2412



Date: 18.OCT.2024 11:27:10

11B-CDD_Ant0_2462



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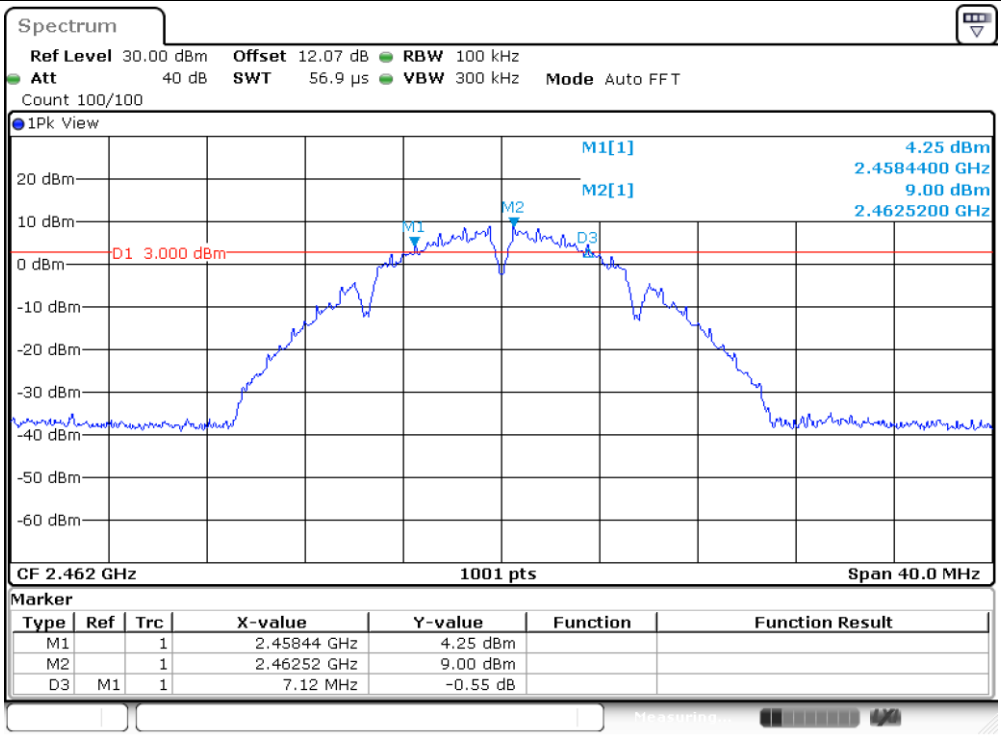
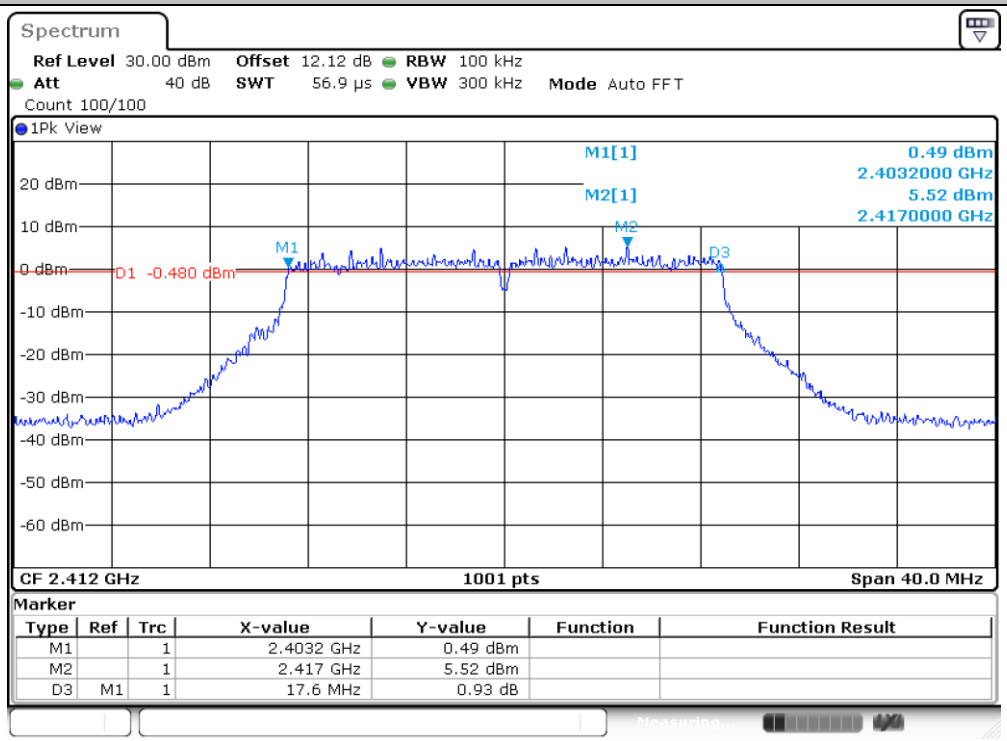


Date: 18.OCT.2024 11:29:37

11N20MIMO_Ant0_2412



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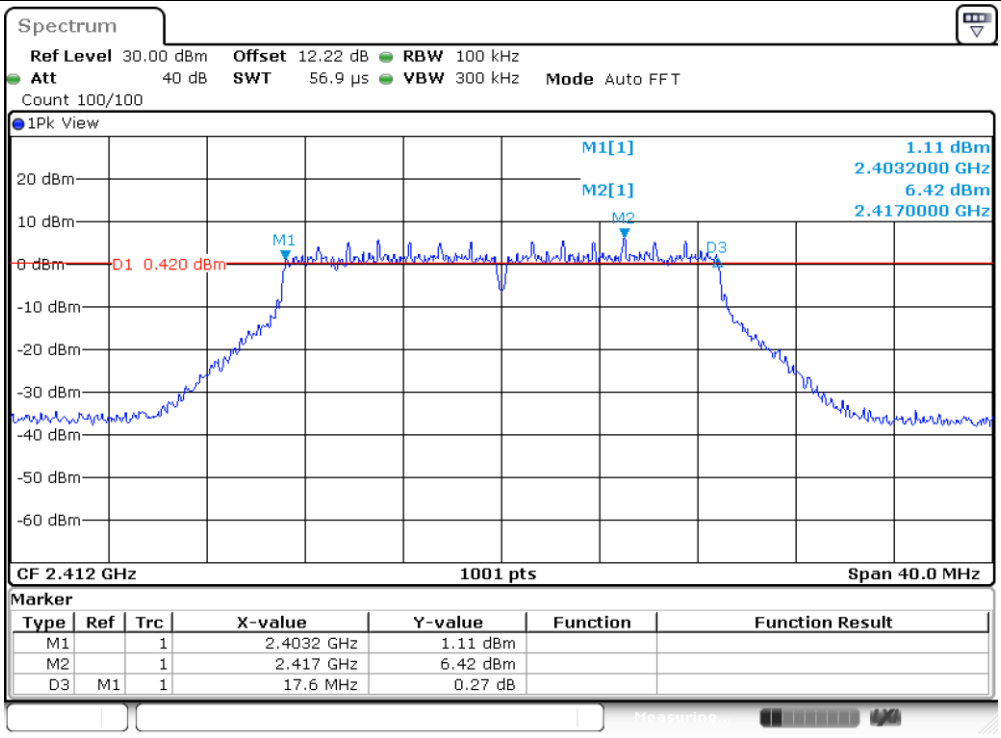

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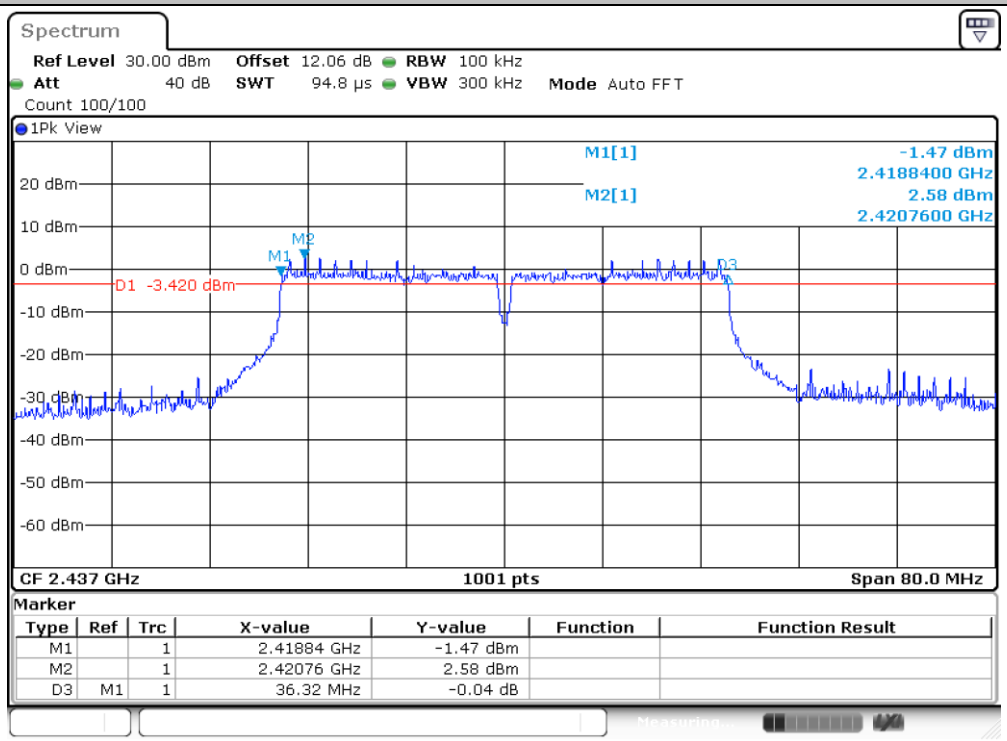
11N40MIMO_Ant0_2437



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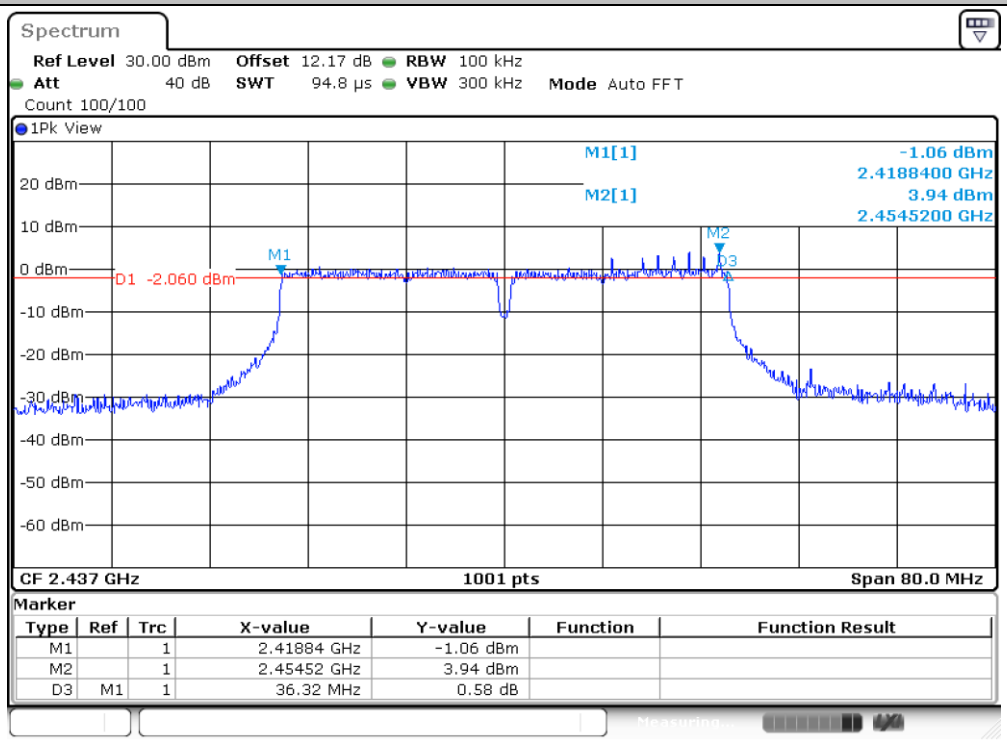

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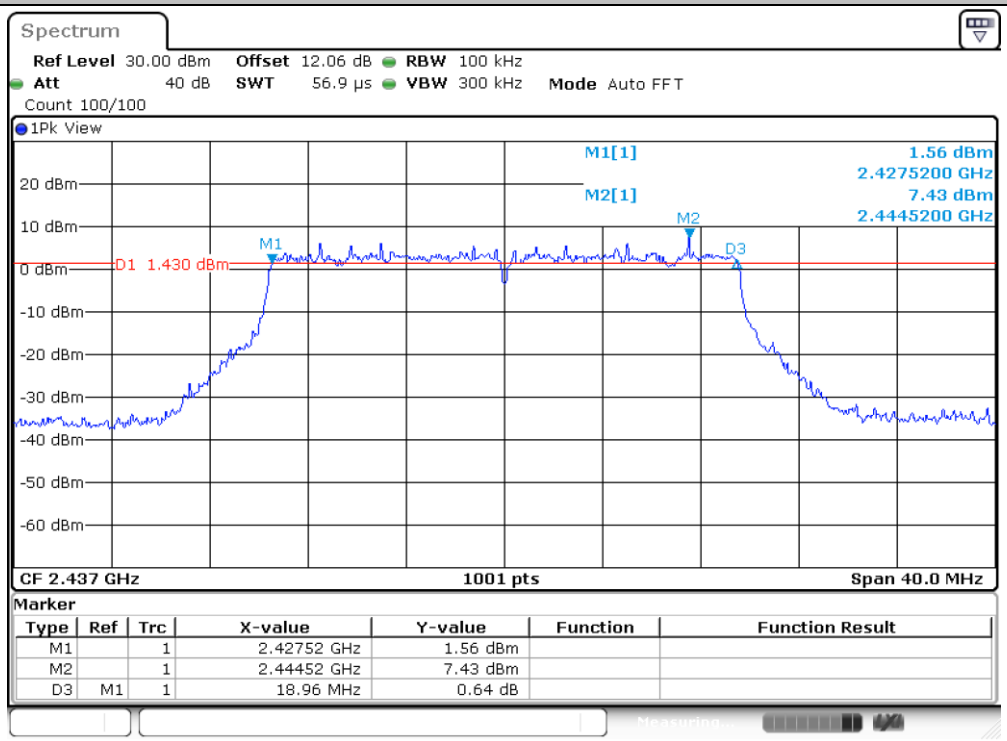
11BE20MIMO_Ant0_2437



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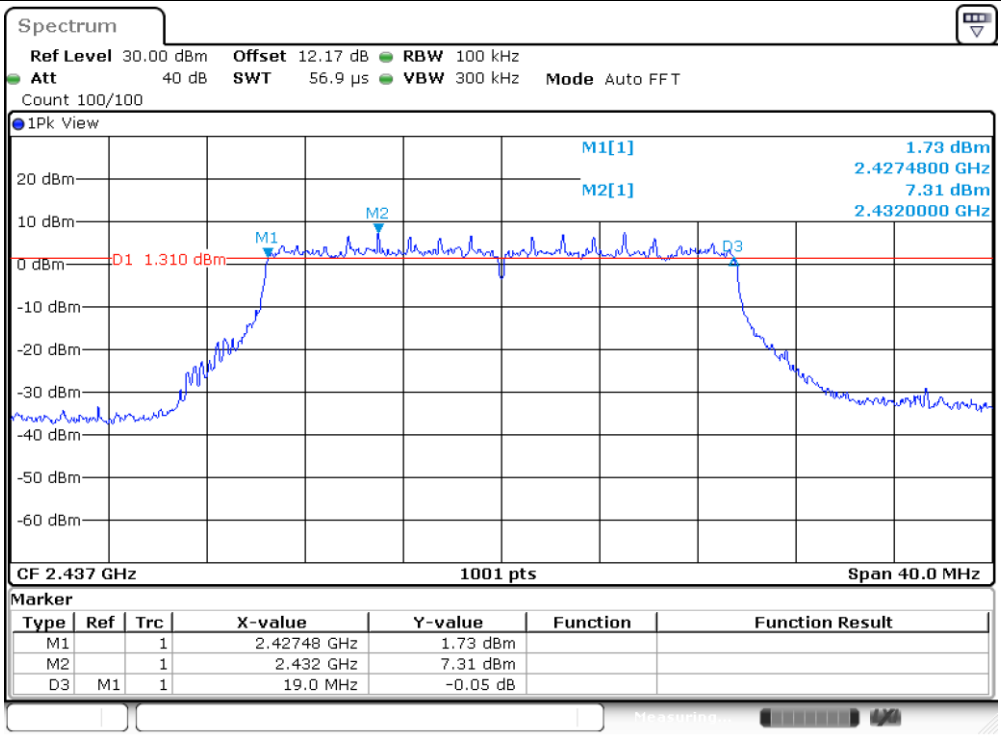

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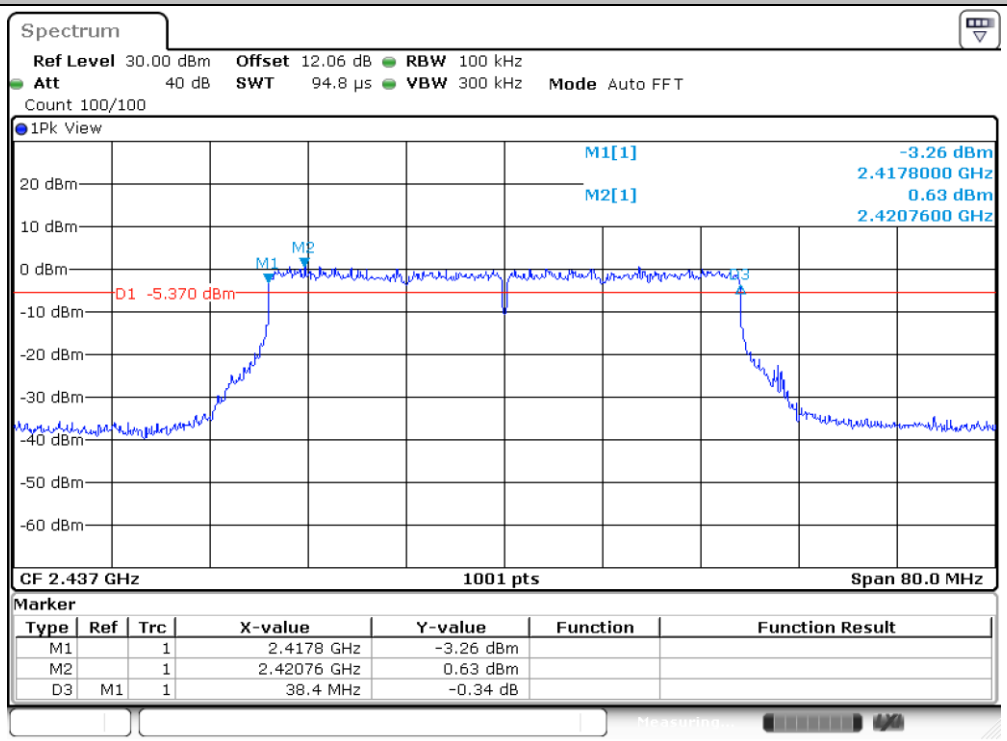
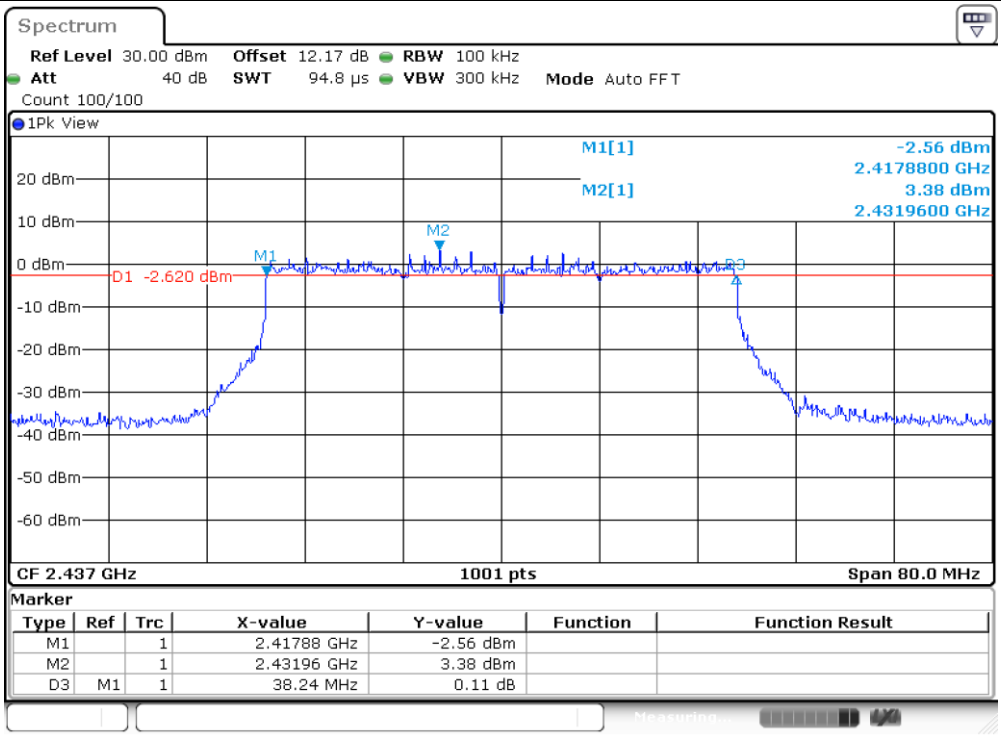


11BE40MIMO_Ant2_2437



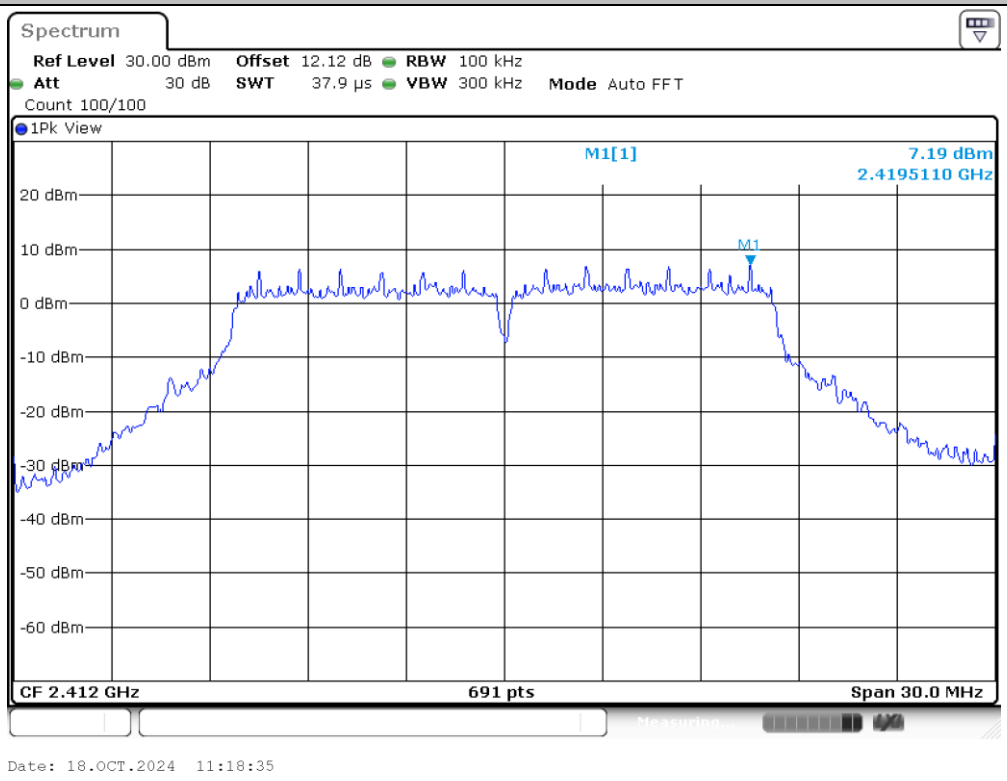
Reference level measurement

Test Result

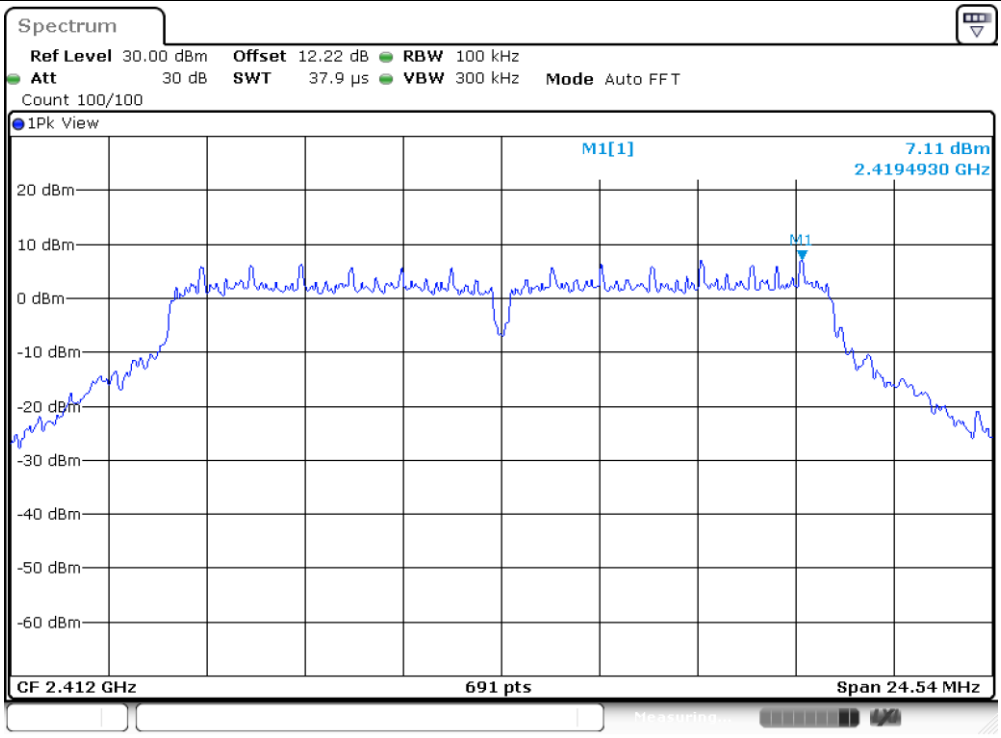
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm/100KHz]
11G	Ant0	2412	2419.51	7.19
	Ant2	2412	2419.49	7.11
11B-CDD	Ant0	2462	2462.51	8.82
	Ant2	2462	2462.50	9.02
11N20MIMO	Ant0	2412	2419.49	6.48
	Ant2	2412	2419.49	6.52
11N40MIMO	Ant0	2437	2420.76	3.00
	Ant2	2437	2454.50	3.73
11BE20MIMO	Ant0	2437	2444.49	7.35
	Ant2	2437	2431.97	7.14
11BE40MIMO	Ant0	2437	2420.75	2.93
	Ant2	2437	2452.03	3.93

Test Graphs

11G_Ant0_2412

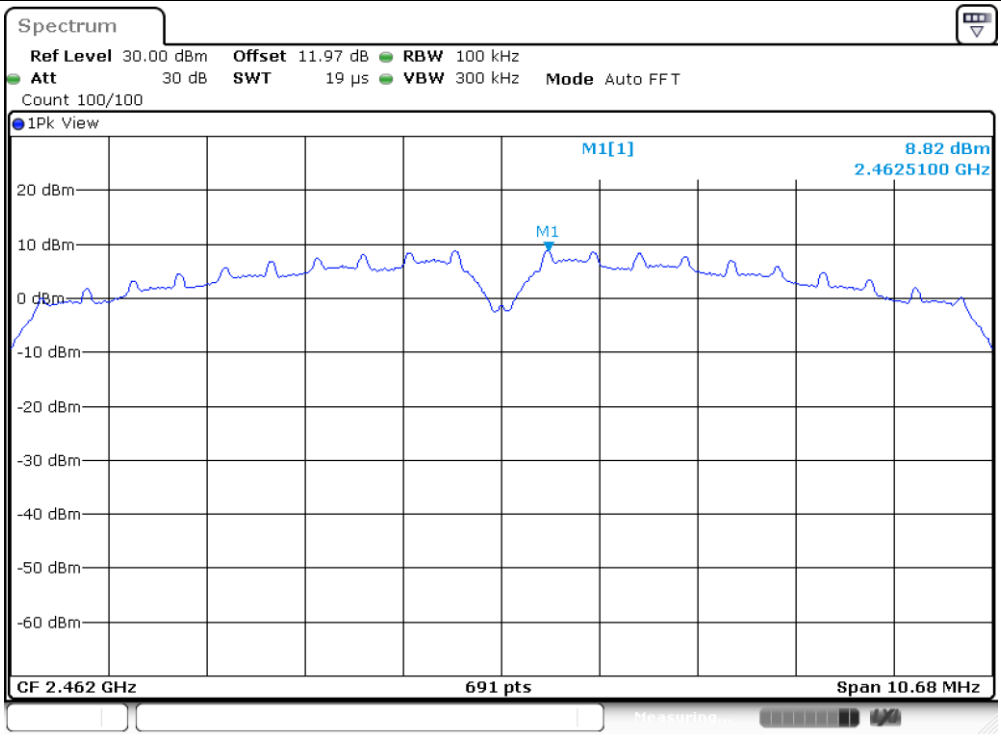


11G_Ant2_2412



Date: 18.OCT.2024 11:27:20

11B-CDD_Ant0_2462



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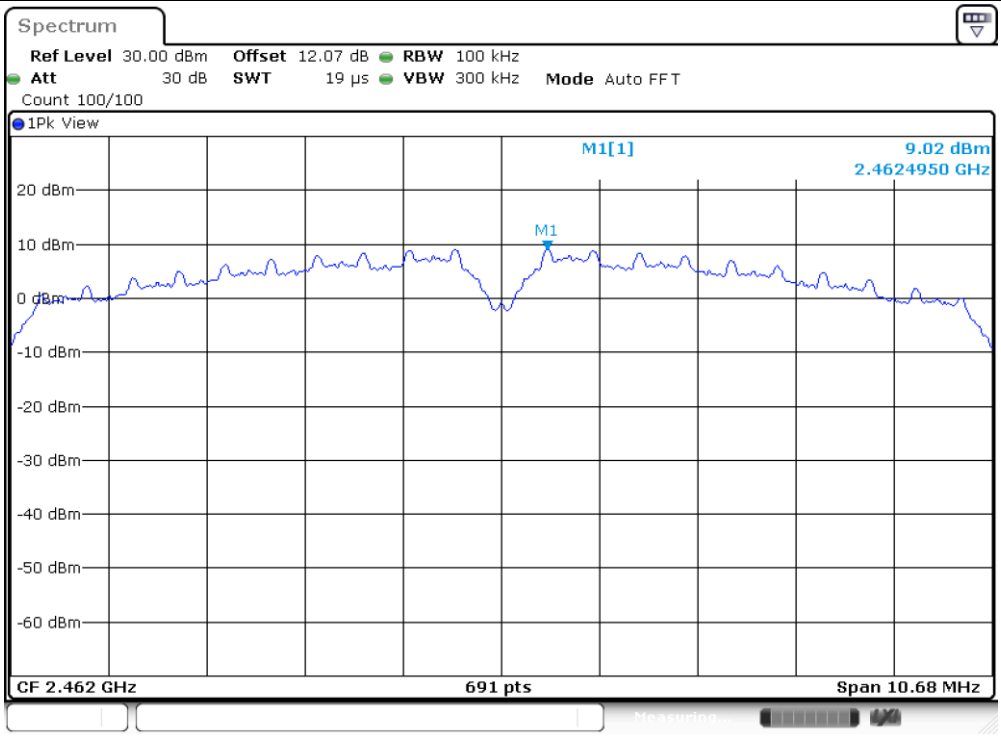

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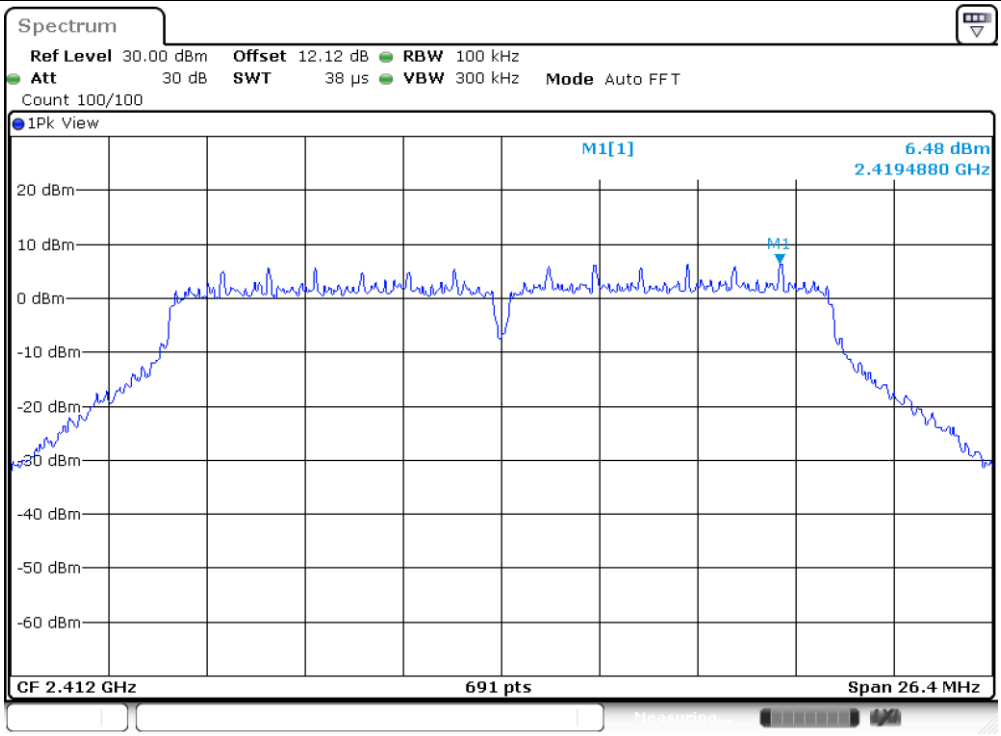

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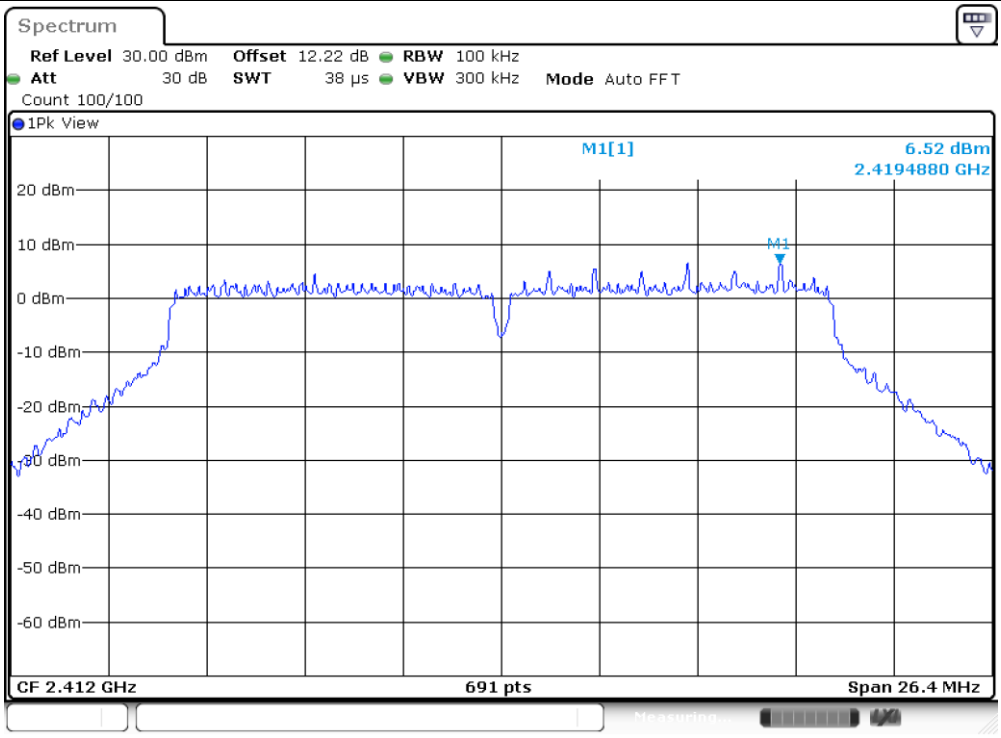
11N20MIMO_Ant2_2412



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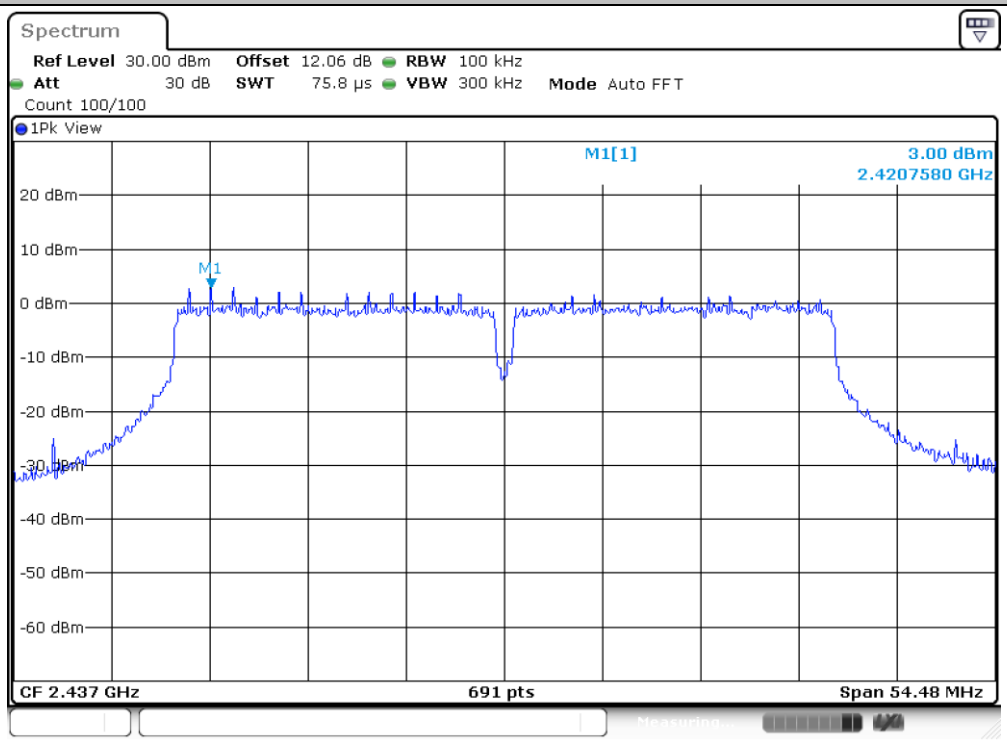
11N40MIMO_Ant0_2437



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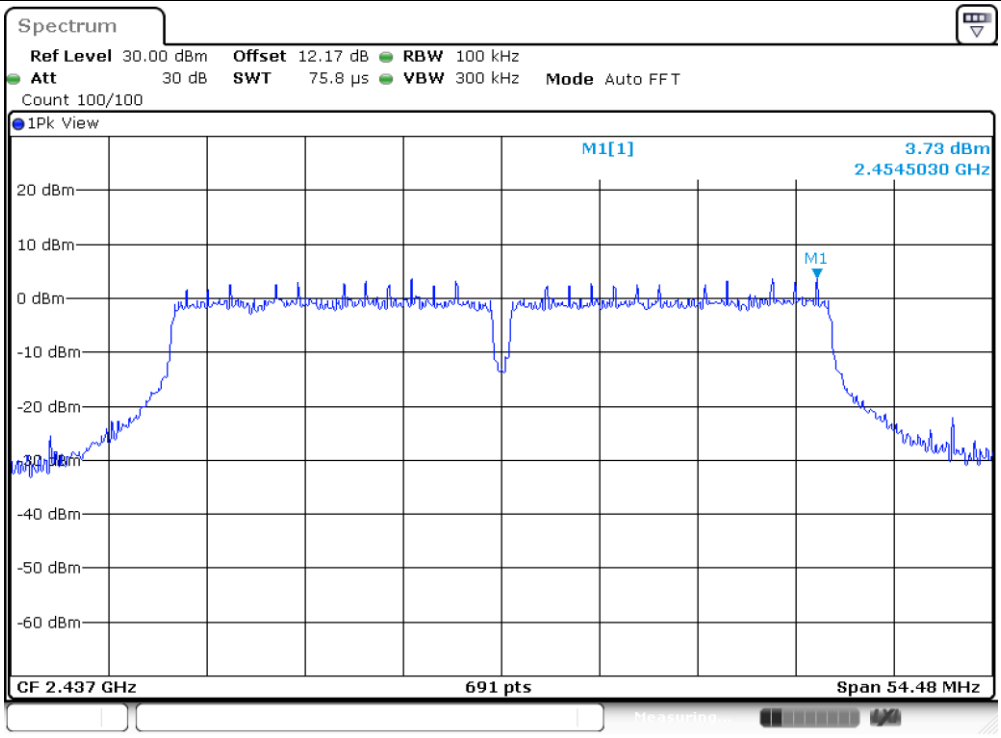
11N40MIMO_Ant2_2437



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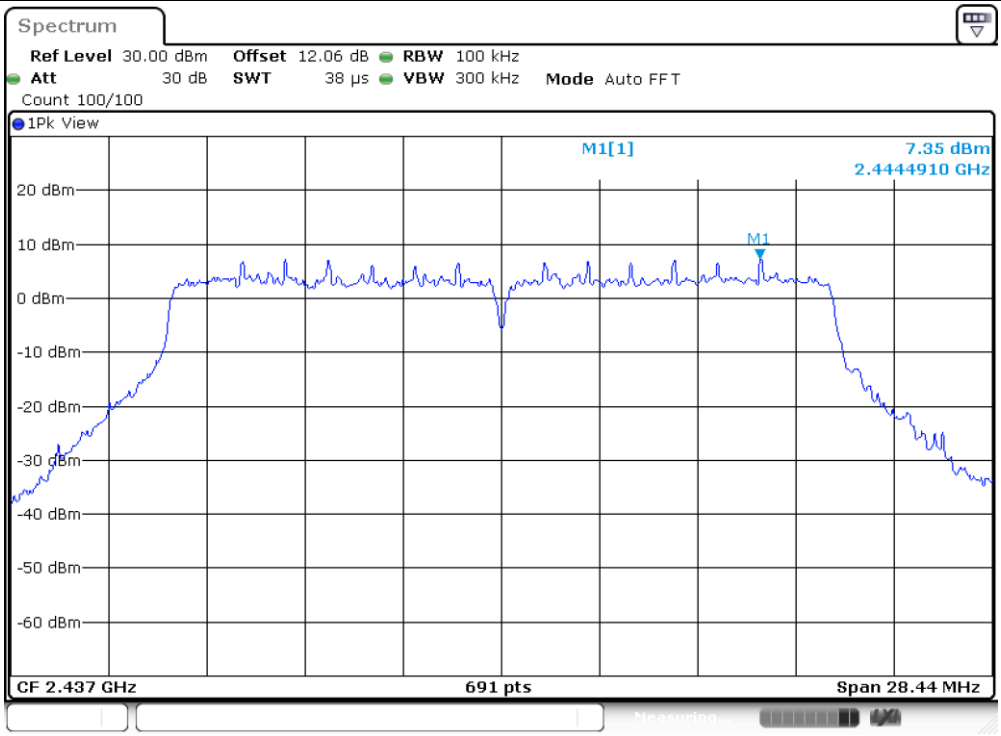
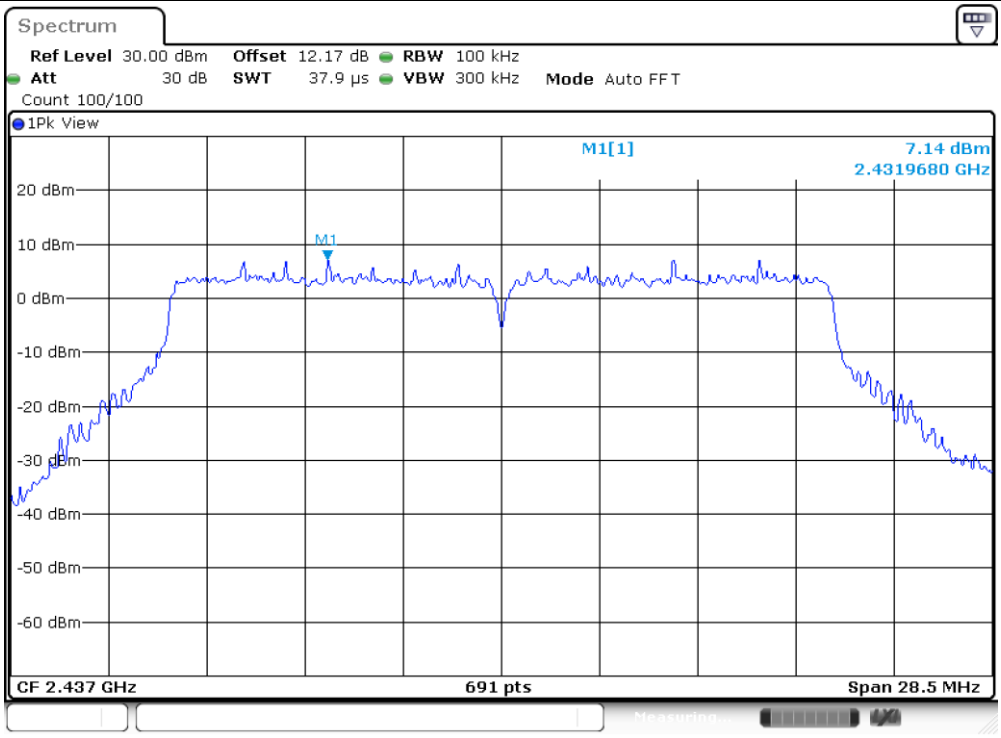
11BE20MIMO_Ant0_2437



Date: 18.OCT.2024 11:36:30

11BE20MIMO_Ant2_2437



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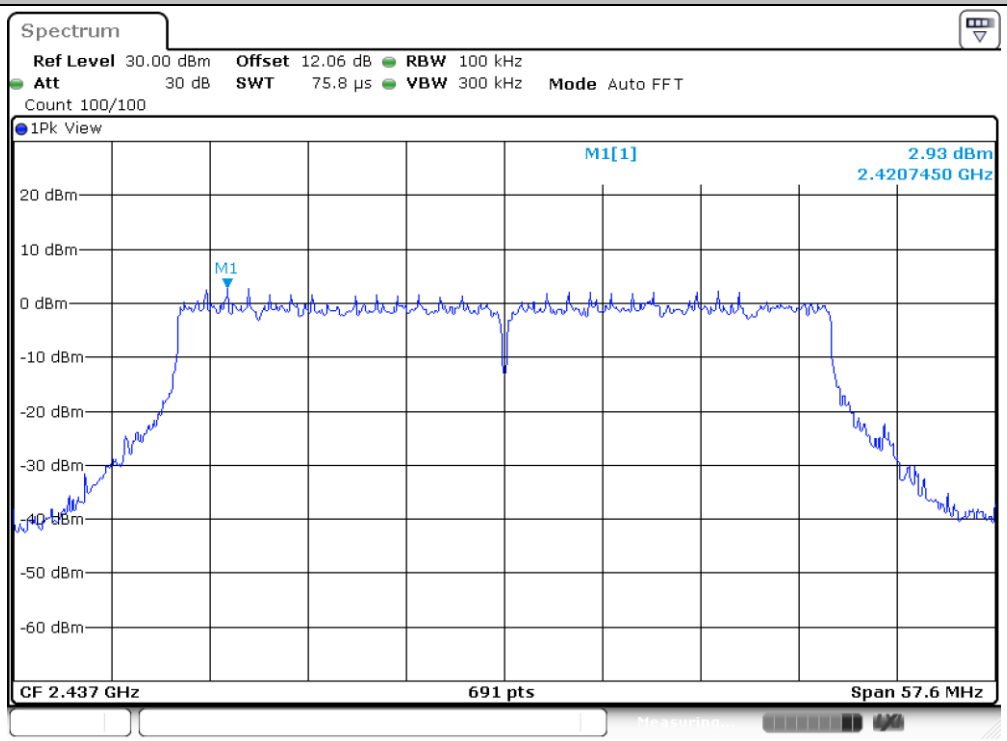
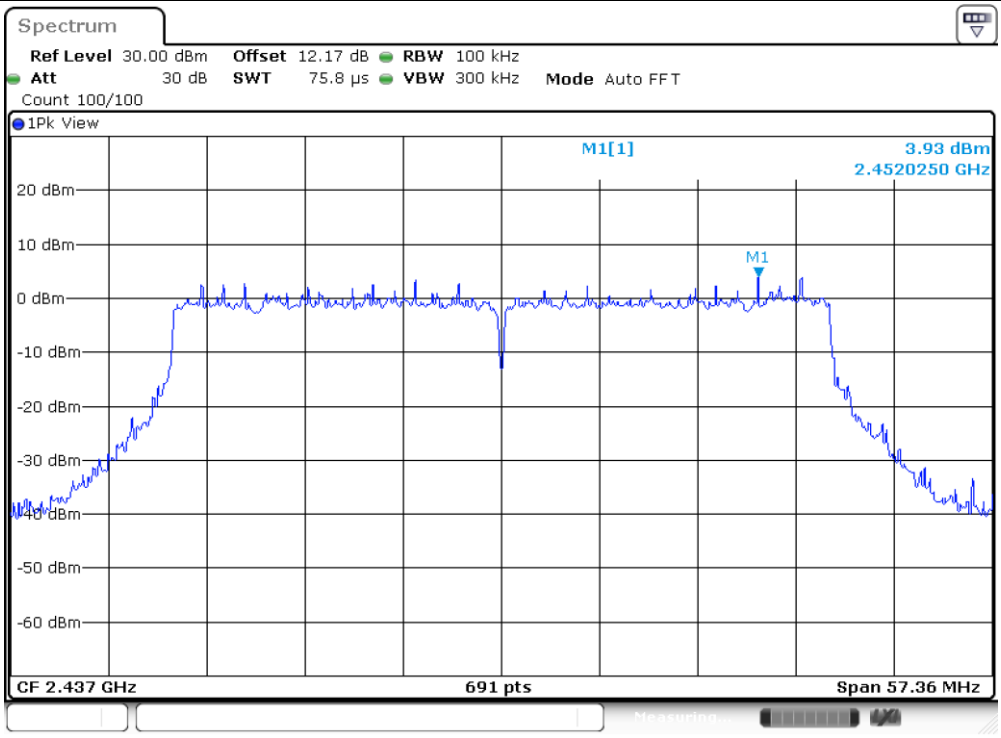
11BE40MIMO_Ant0_2437



Date: 18.OCT.2024 11:40:03

11BE40MIMO_Ant2_2437



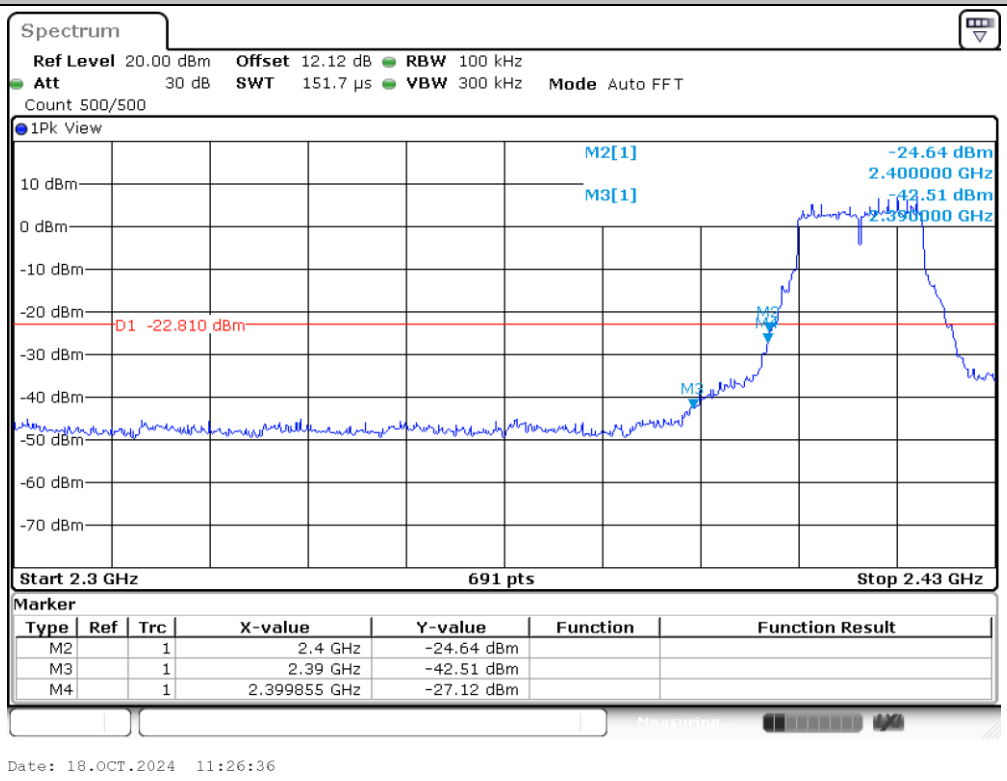
Band edge measurements

Test Result

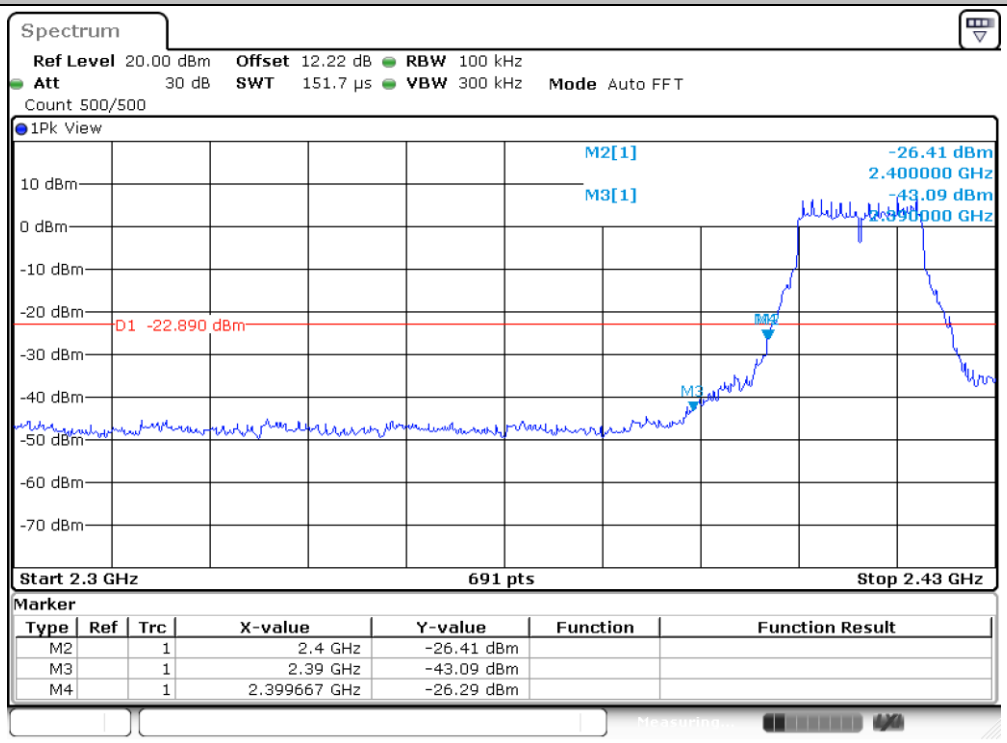
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm/100KHz]	Result[dBm/100KHz]	Limit[dBm/100KHz]	Verdict
11G	Ant0	Low	2412	7.19	-27.12	≤-22.81	PASS
	Ant2	Low	2412	7.11	-26.29	≤-22.89	PASS
11B-CDD	Ant0	High	2462	8.82	-44.65	≤-21.18	PASS
	Ant2	High	2462	9.02	-44.36	≤-20.98	PASS
11N20MIMO	Ant0	Low	2412	6.48	-26.65	≤-23.52	PASS
	Ant2	Low	2412	6.52	-26.67	≤-23.48	PASS

Test Graphs

11G_Ant0_Low_2412

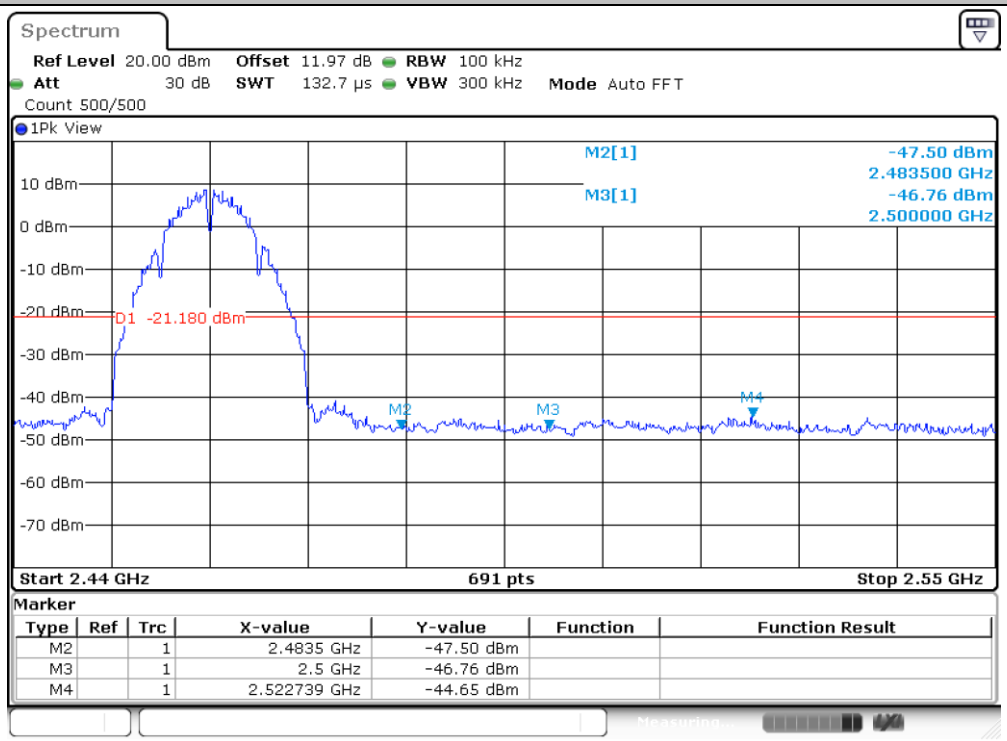


11G_Ant2_Low_2412



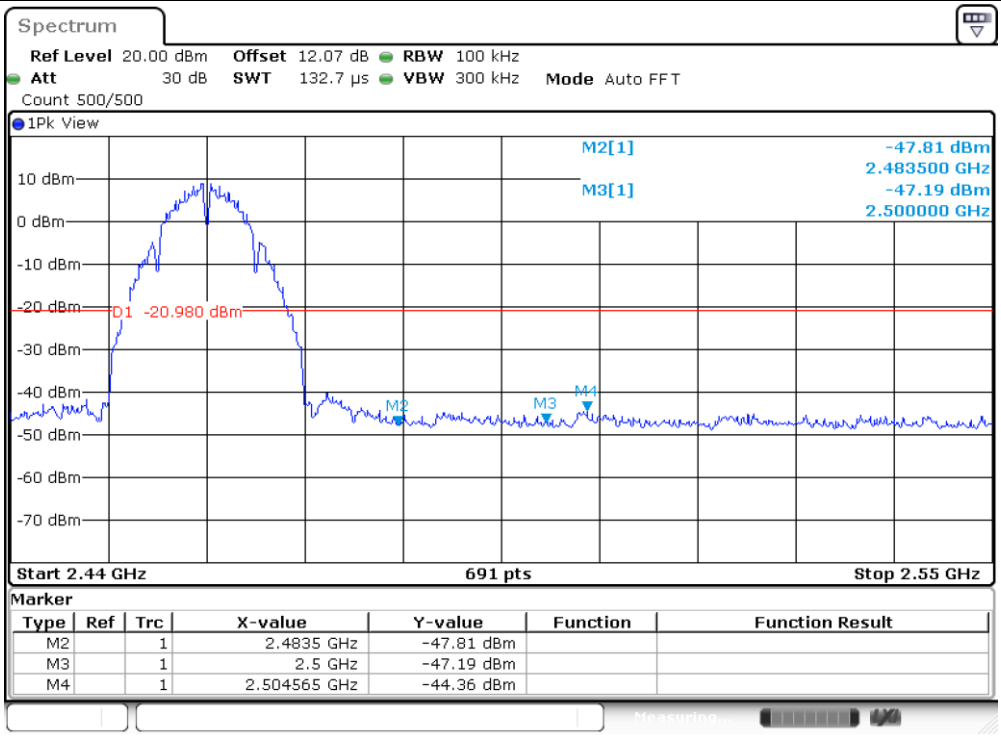
Date: 18.OCT.2024 11:27:31

11B-CDD_Ant0_High_2462

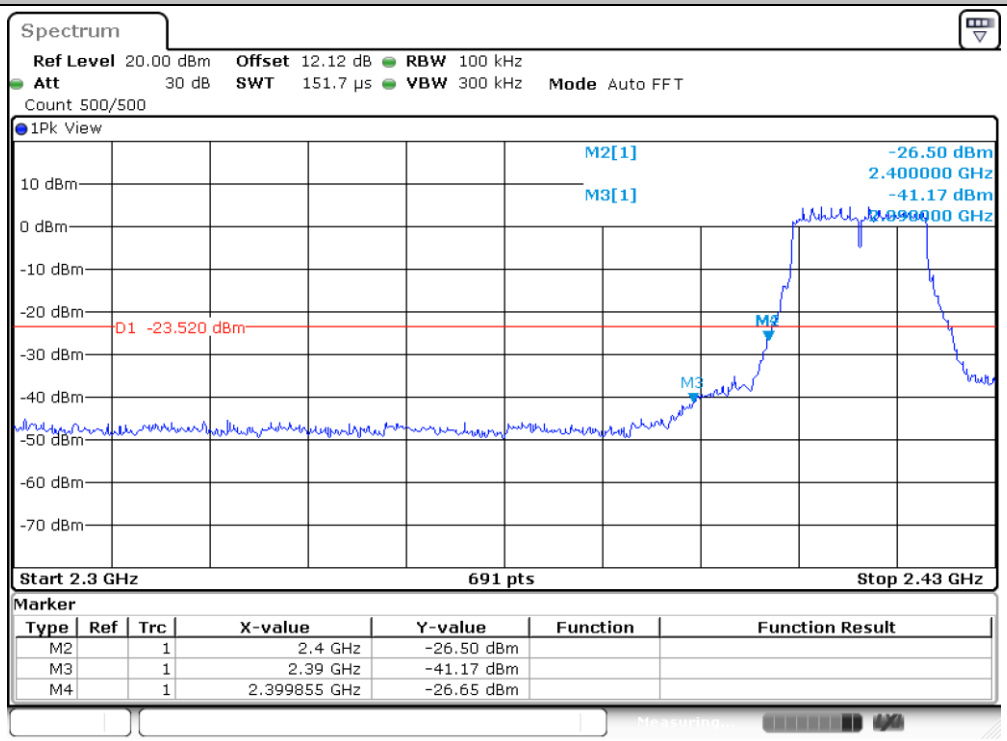


Date: 18.OCT.2024 11:28:55

11B-CDD_Ant2_High_2462



11N20MIMO_Ant0_Low_2412



11N20MIMO_Ant2_Low_2412

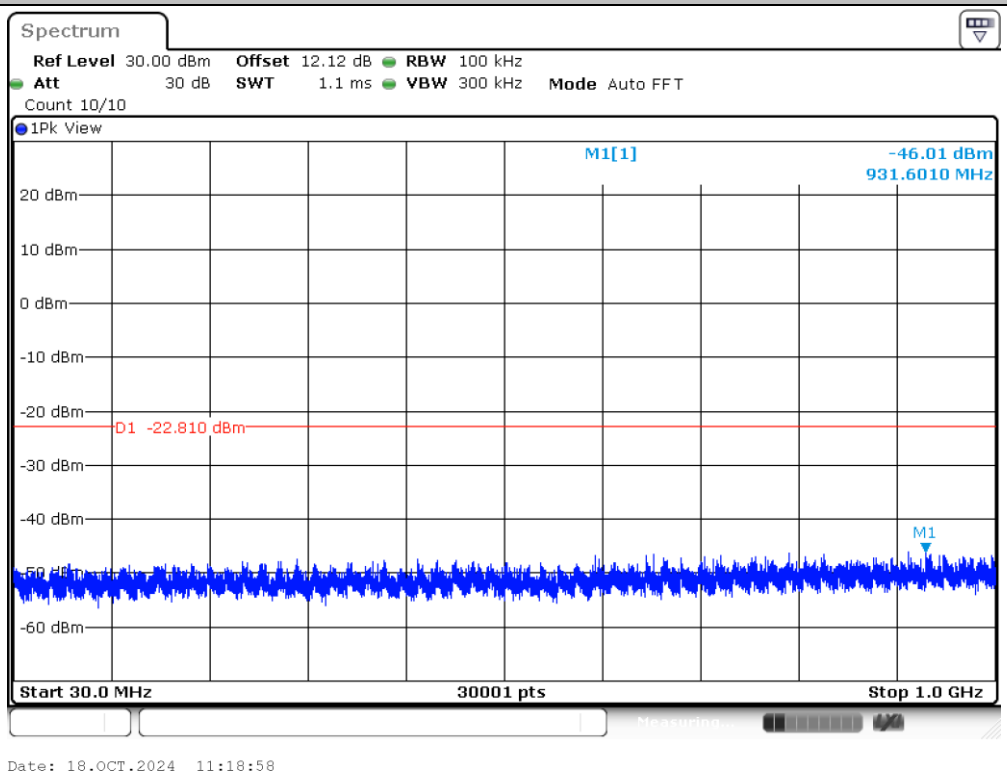
Conducted Spurious Emission

Test Result

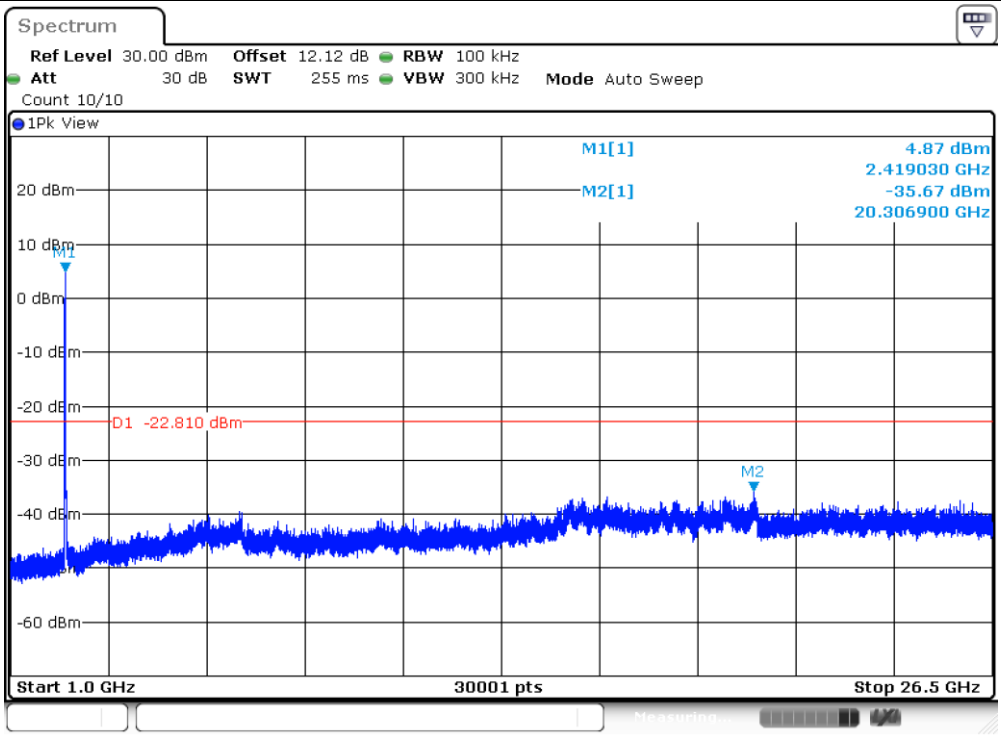
TestMode	Antenna	Freq(MHz)	FreqRange [Mhz]	RefLevel [dBm/100KHz]	Result [dBm/100KHz]	Limit [dBm/100KHz]	Verdict
11G	Ant0	2412	30~1000	7.19	-46.01	≤-22.81	PASS
			1000~26500	7.19	-35.67	≤-22.81	PASS
	Ant2	2412	30~1000	7.11	-45.24	≤-22.89	PASS
			1000~26500	7.11	-36.61	≤-22.89	PASS
11B-CDD	Ant0	2462	30~1000	8.82	-46.3	≤-21.18	PASS
			1000~26500	8.82	-36.31	≤-21.18	PASS
	Ant2	2462	30~1000	9.02	-45.83	≤-20.98	PASS
			1000~26500	9.02	-36.07	≤-20.98	PASS
11N20MIMO	Ant0	2412	30~1000	6.48	-45.44	≤-23.52	PASS
			1000~26500	6.48	-36.14	≤-23.52	PASS
	Ant2	2412	30~1000	6.52	-44.43	≤-23.48	PASS
			1000~26500	6.52	-35.89	≤-23.48	PASS
11N40MIMO	Ant0	2437	30~1000	3.00	-45.93	≤-27	PASS
			1000~26500	3.00	-36.41	≤-27	PASS
	Ant2	2437	30~1000	3.73	-46.07	≤-26.27	PASS
			1000~26500	3.73	-36.32	≤-26.27	PASS
11BE20MIMO	Ant0	2437	30~1000	7.35	-45.74	≤-22.65	PASS
			1000~26500	7.35	-36.55	≤-22.65	PASS
	Ant2	2437	30~1000	7.14	-45.75	≤-22.86	PASS
			1000~26500	7.14	-36.66	≤-22.86	PASS
11BE40MIMO	Ant0	2437	30~1000	2.93	-45.67	≤-27.07	PASS
			1000~26500	2.93	-36.85	≤-27.07	PASS
	Ant2	2437	30~1000	3.93	-45.75	≤-26.07	PASS
			1000~26500	3.93	-36.58	≤-26.07	PASS

Test Graphs

11G_Ant0_2412_30~1000

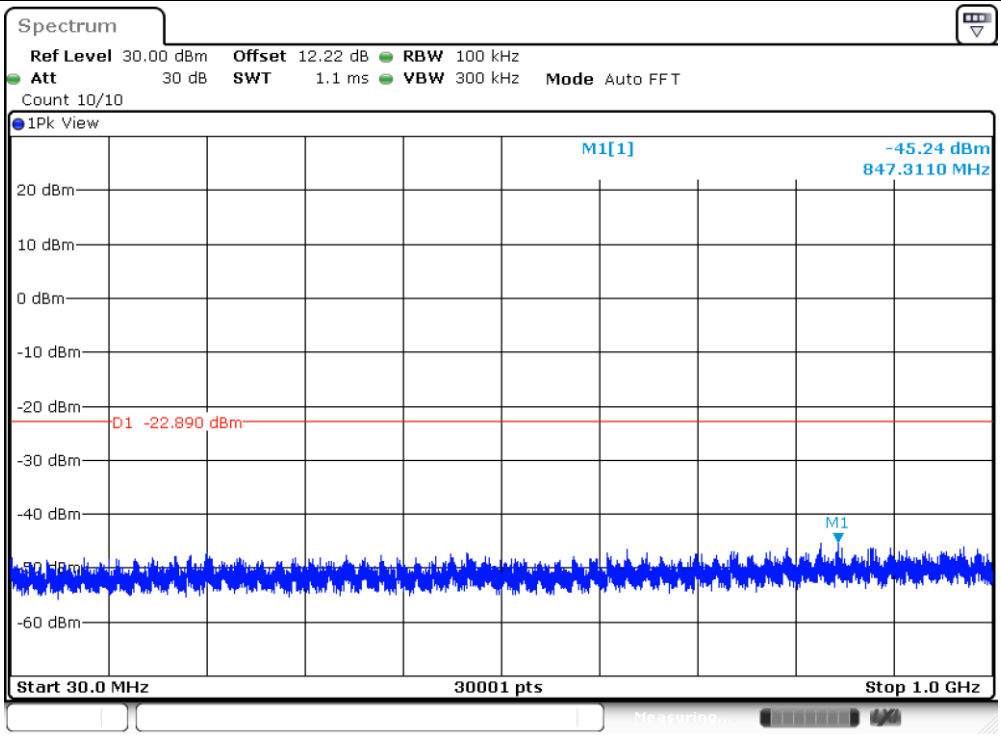


11G_Ant0_2412_1000~26500



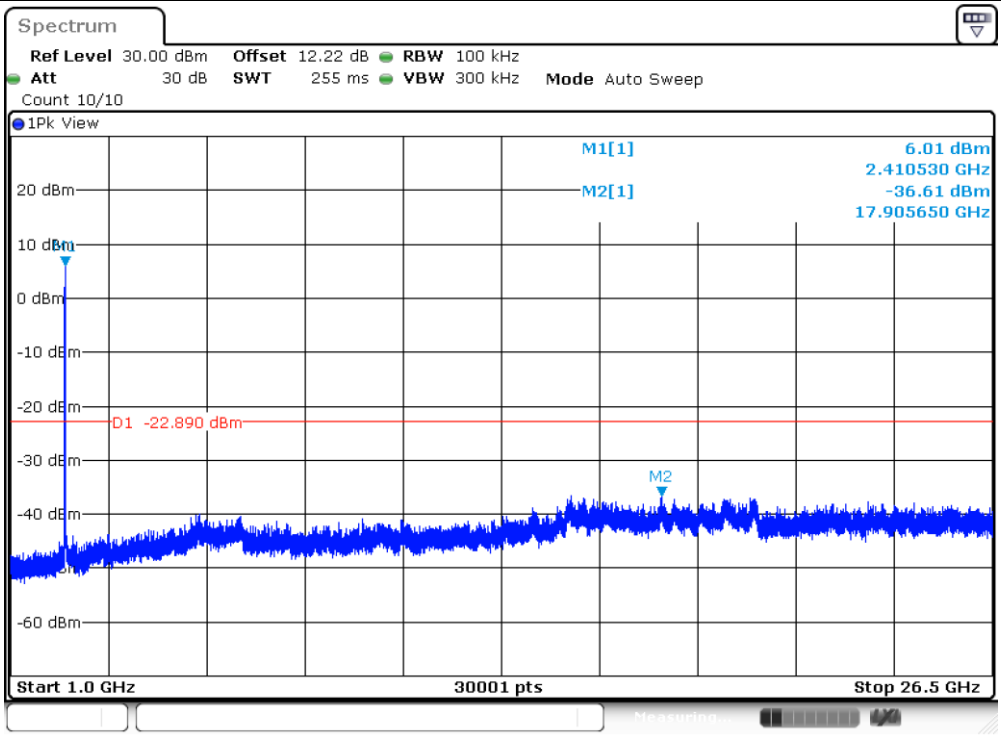
Date: 18.OCT.2024 11:20:03

11G_Ant2_2412_30~1000



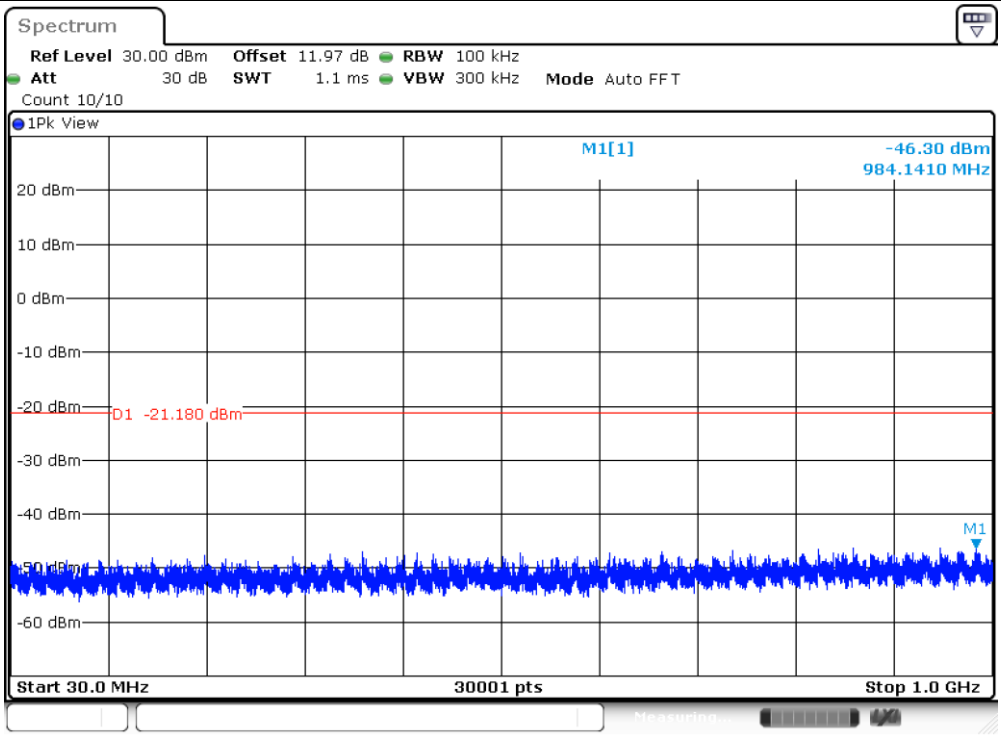
Date: 18.OCT.2024 11:27:42

11G_Ant2_2412_1000~26500



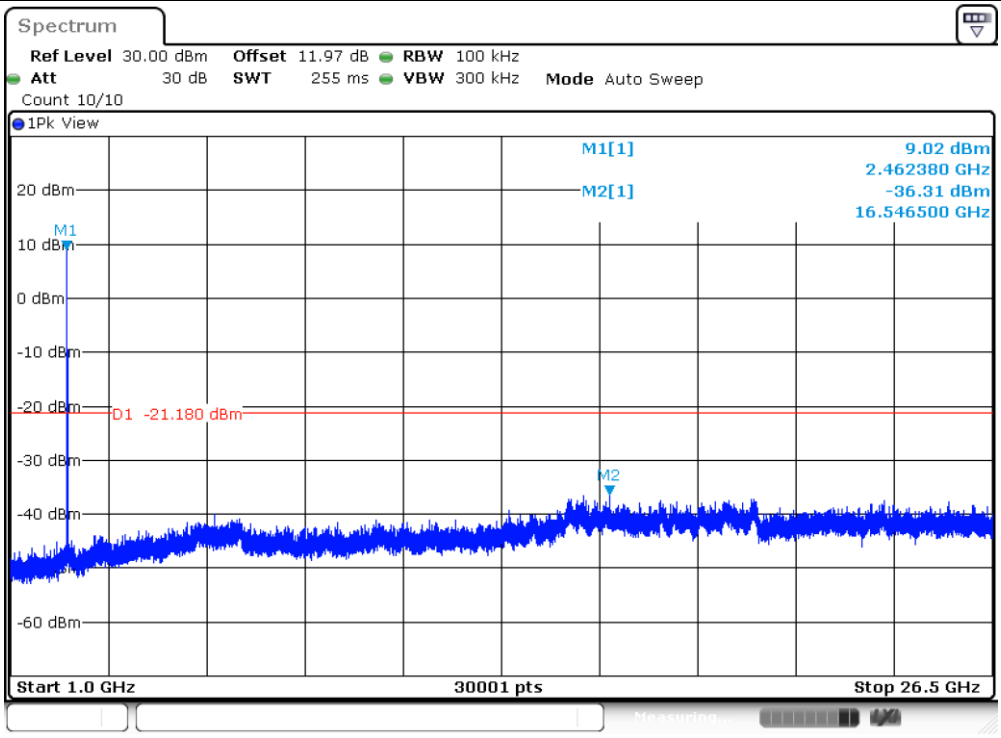
Date: 18.OCT.2024 11:28:04

11B-CDD_Ant0_2462_30~1000



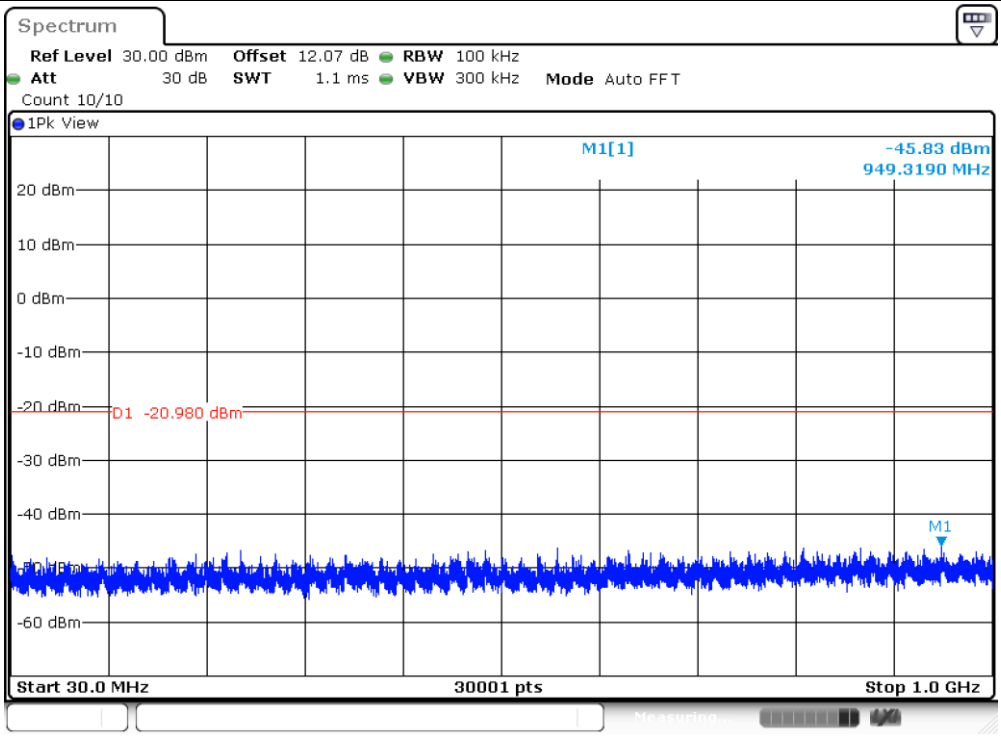
Date: 18.OCT.2024 11:29:06

11B-CDD_Ant0_2462_1000~26500



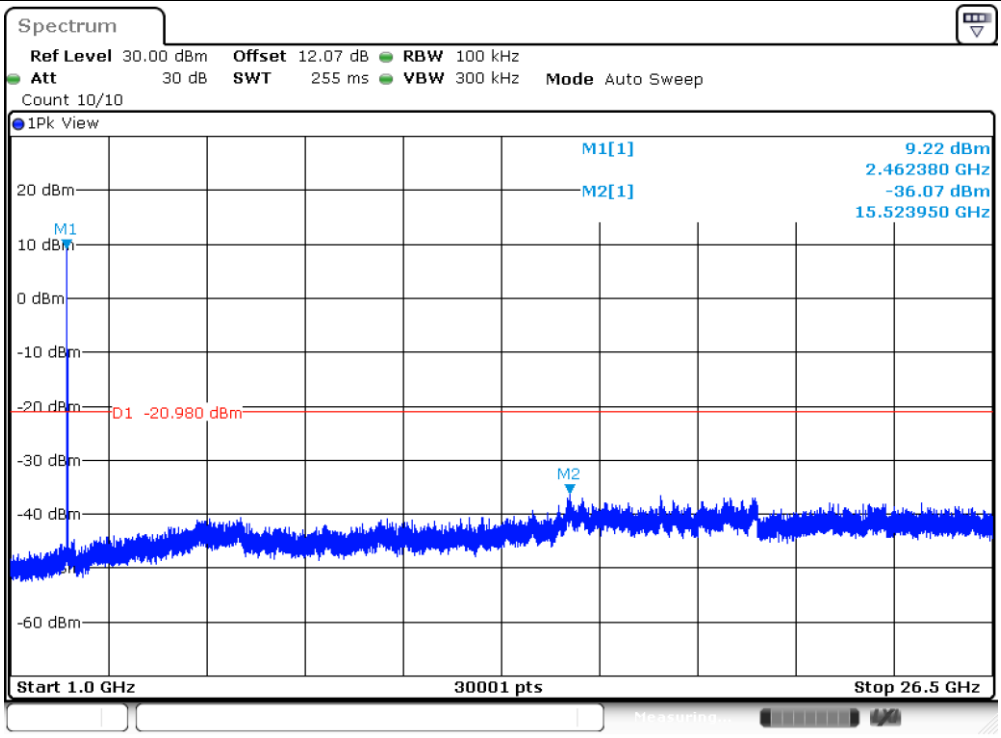
Date: 18.OCT.2024 11:29:28

11B-CDD_Ant2_2462_30~1000



Date: 18.OCT.2024 11:30:10

11B-CDD_Ant2_2462_1000~26500



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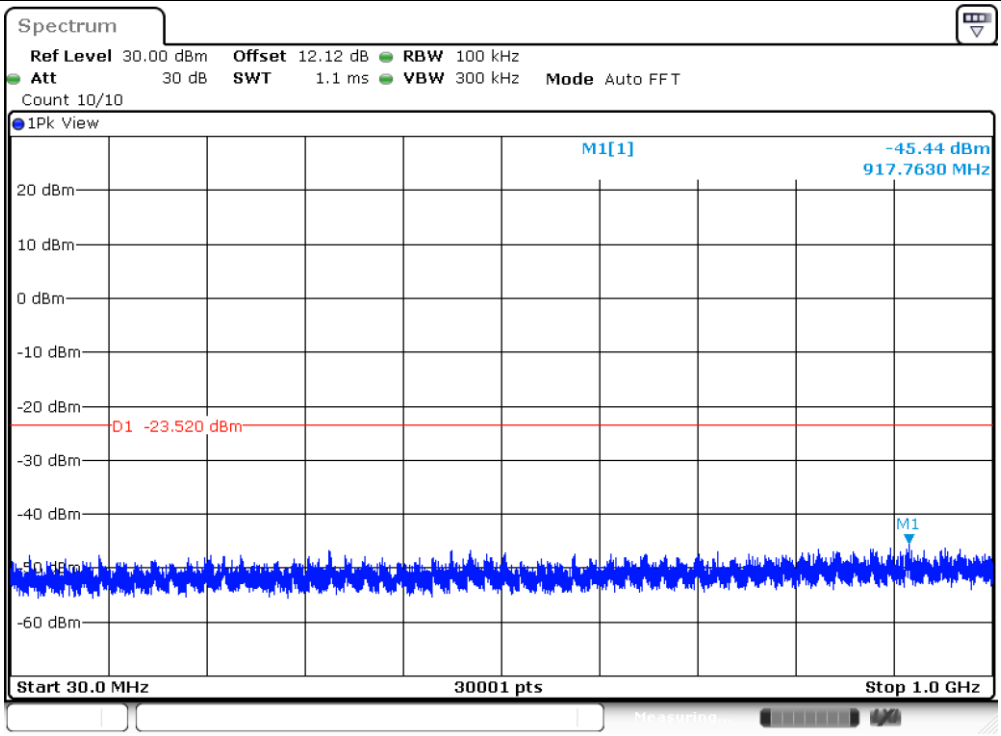

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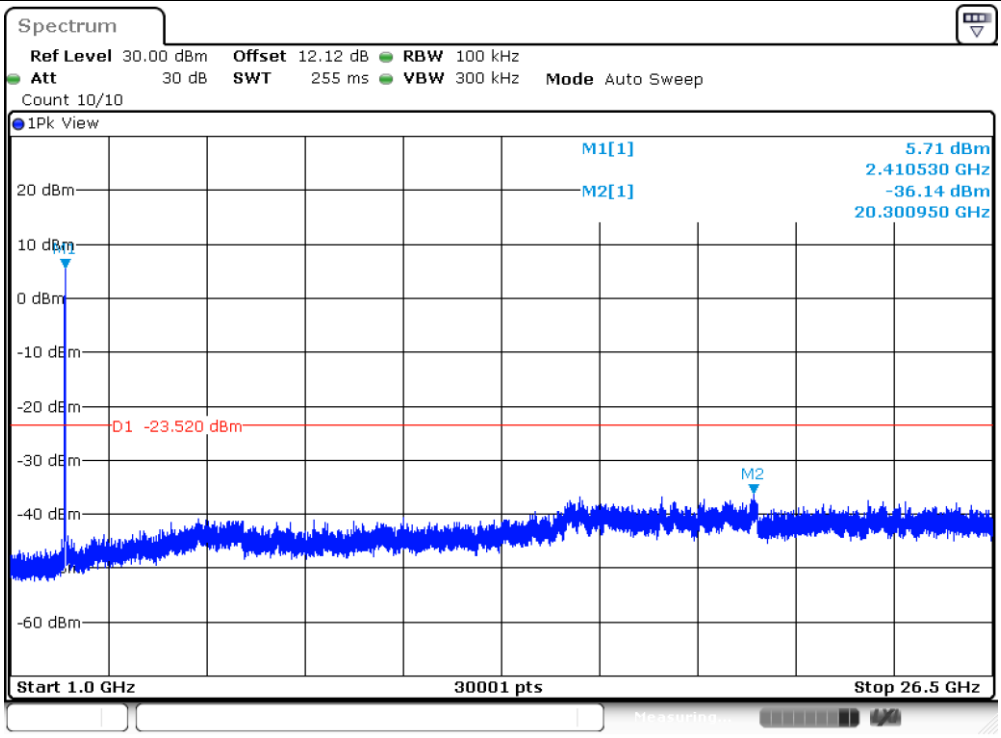
11N20MIMO_Ant0_2412_1000~26500



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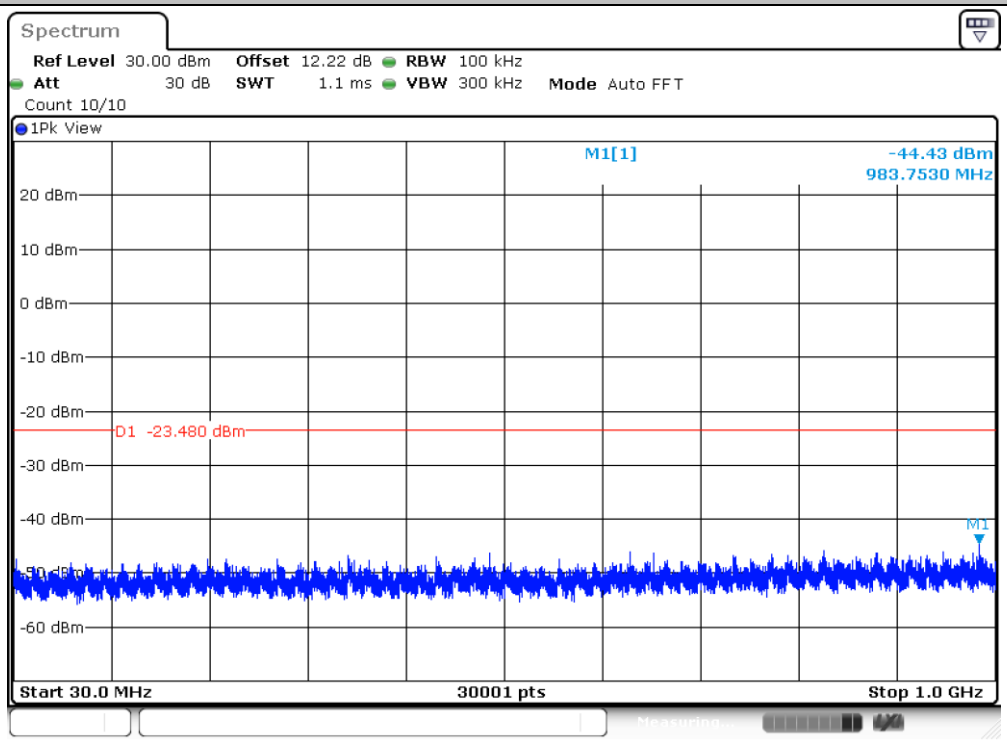
11N20MIMO_Ant2_2412_30~1000



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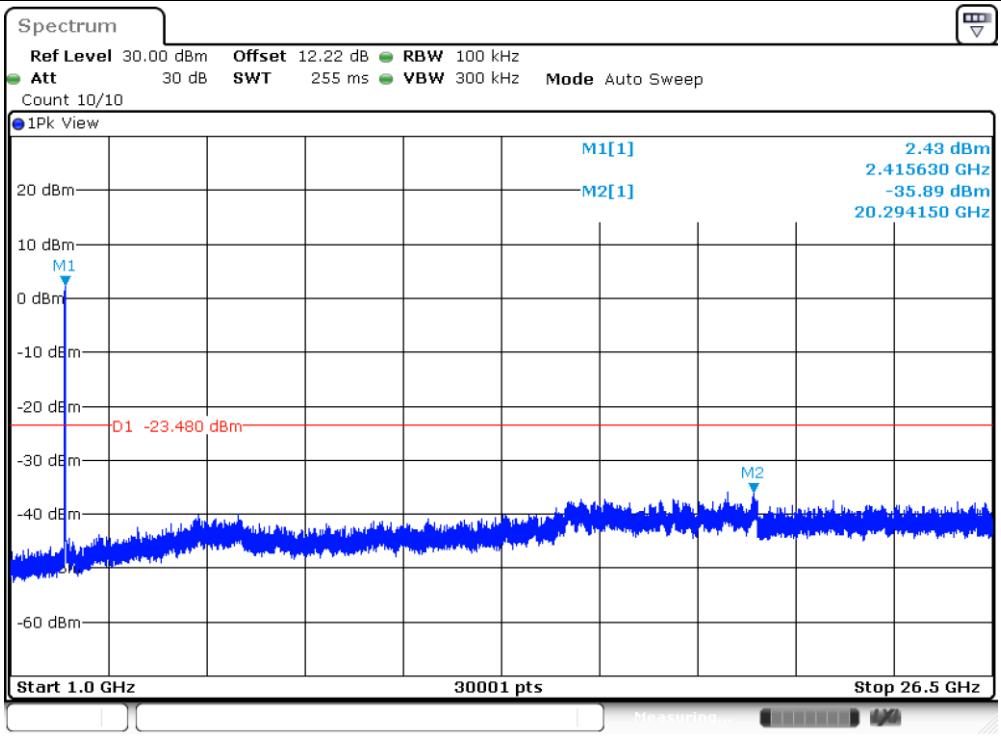
11N20MIMO_Ant2_2412_1000~26500



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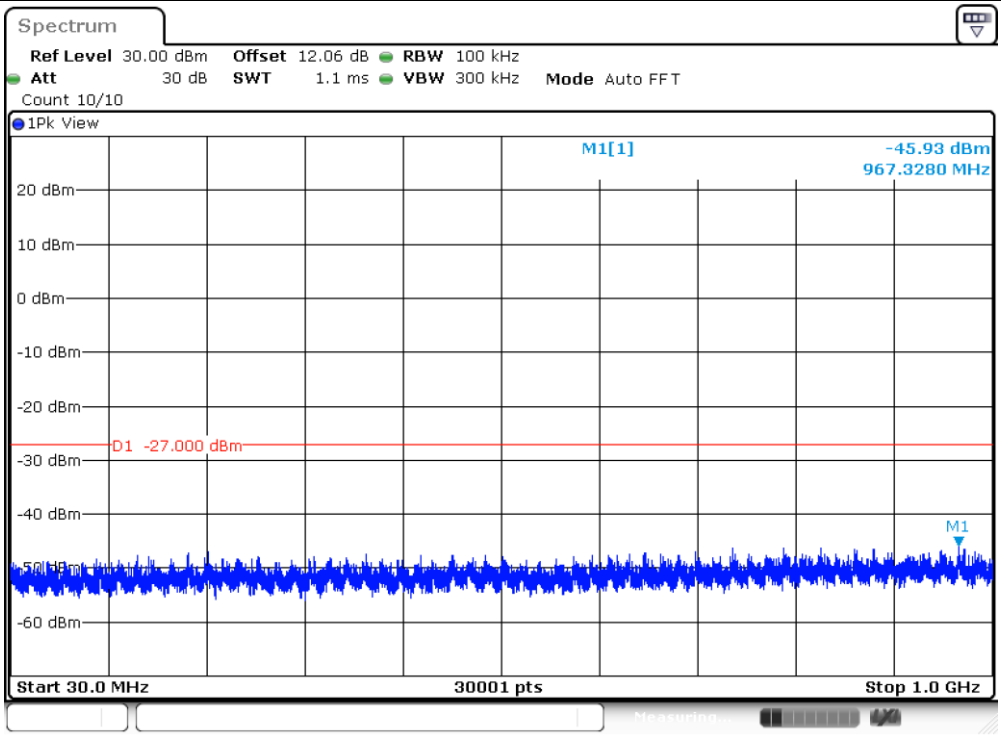
11N40MIMO_Ant0_2437_30~1000



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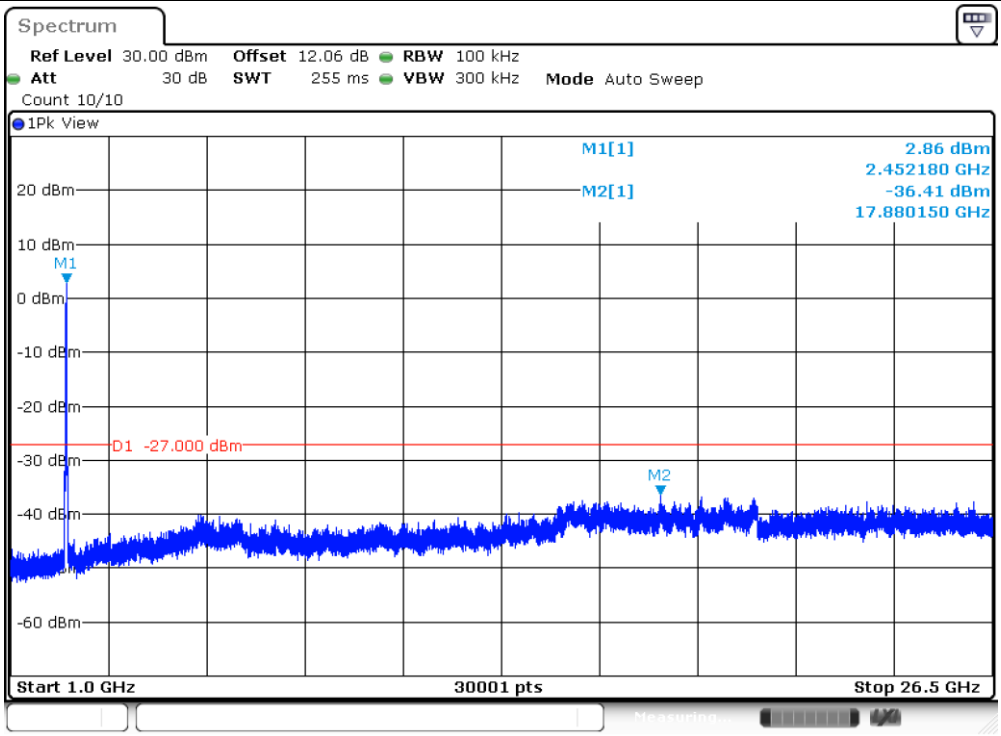
11N40MIMO_Ant0_2437_1000~26500



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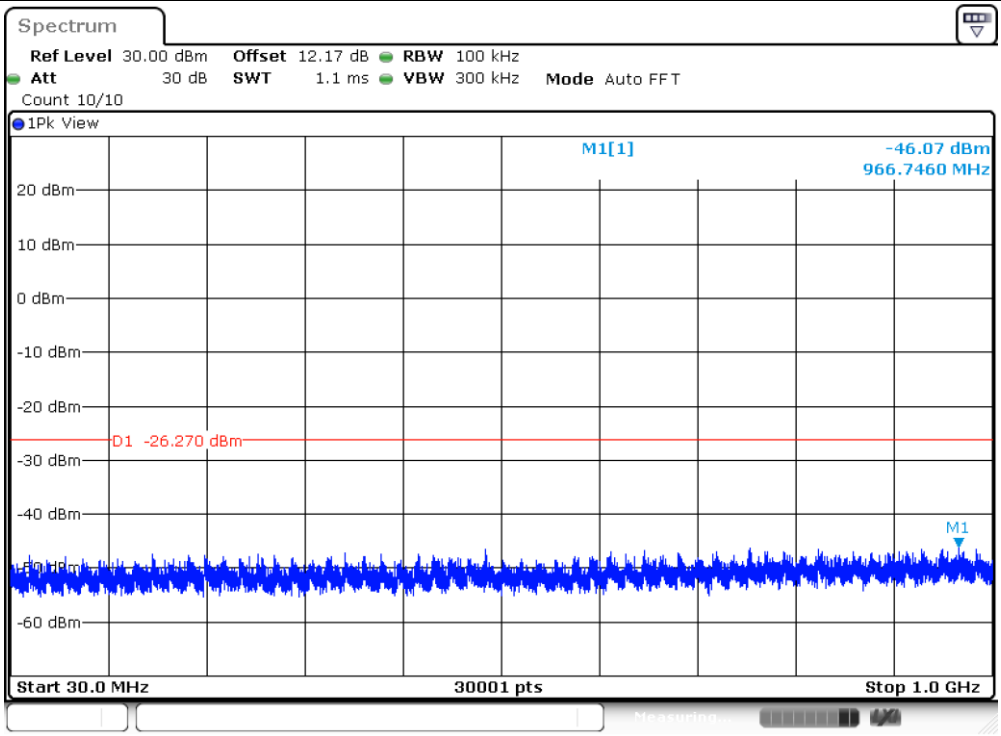

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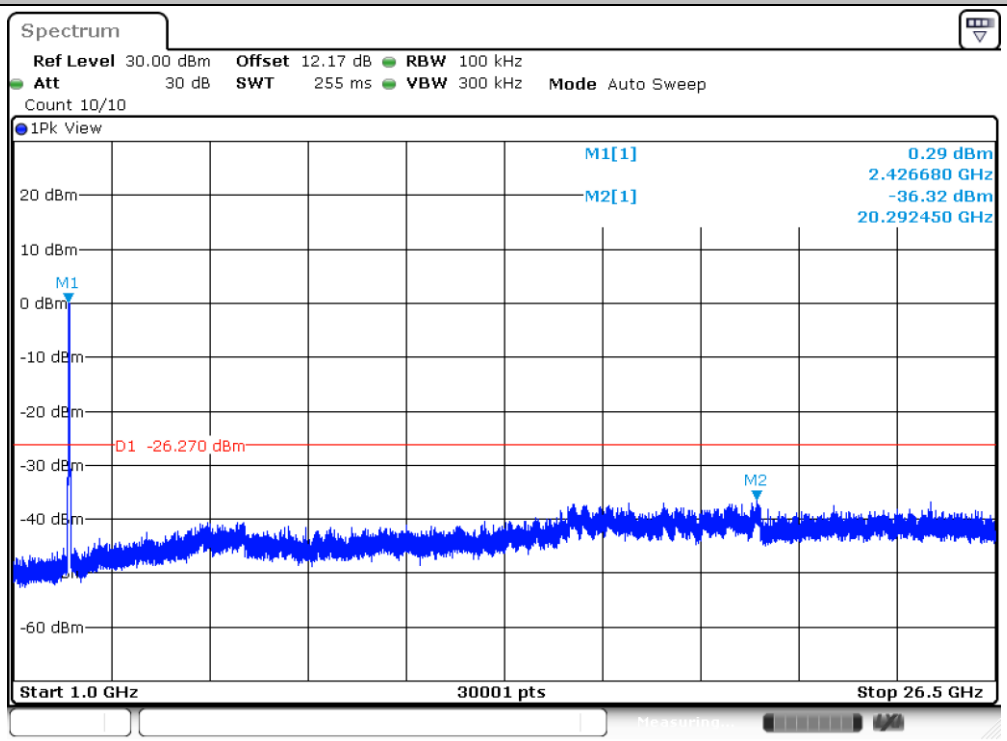

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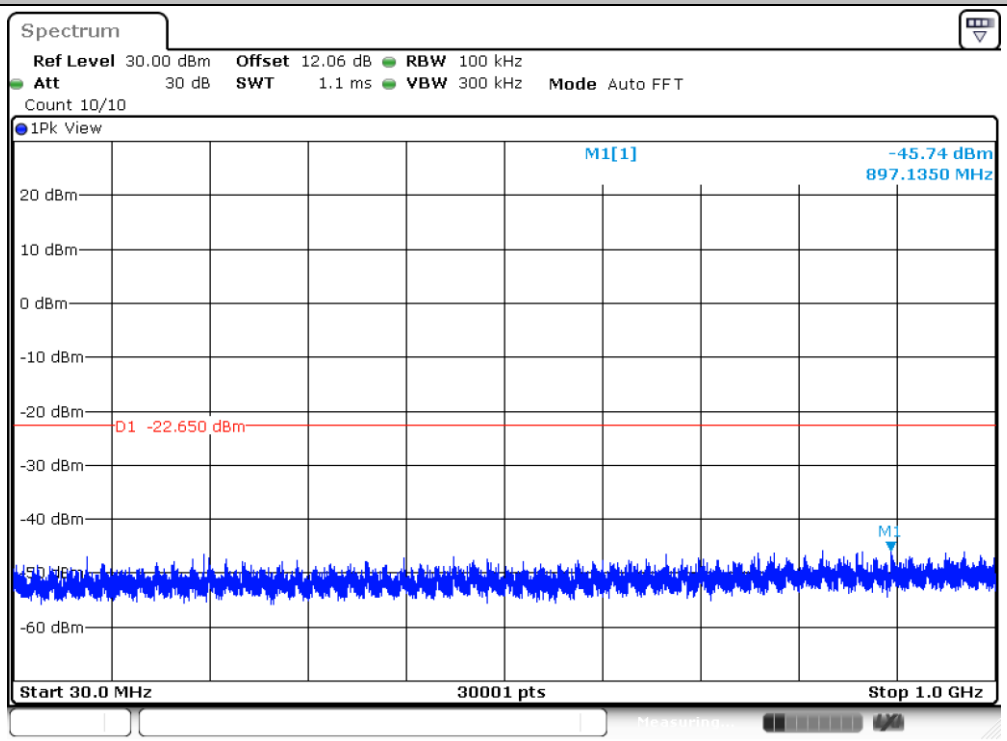
11BE20MIMO_Ant0_2437_30~1000



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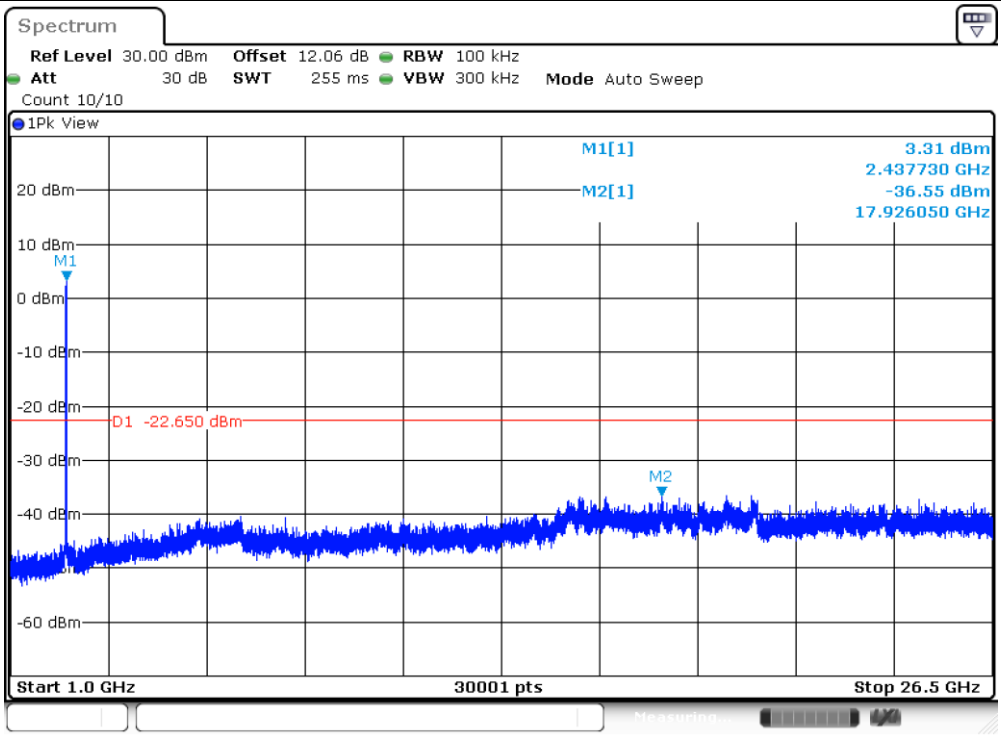
11BE20MIMO_Ant0_2437_1000~26500



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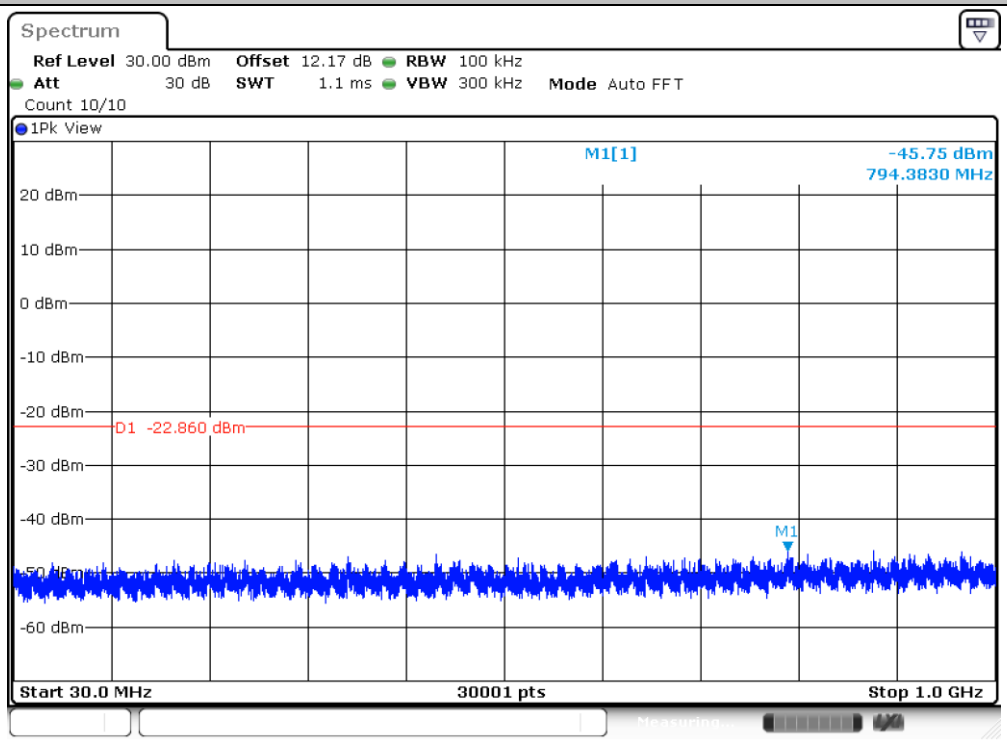
11BE20MIMO_Ant2_2437_30~1000



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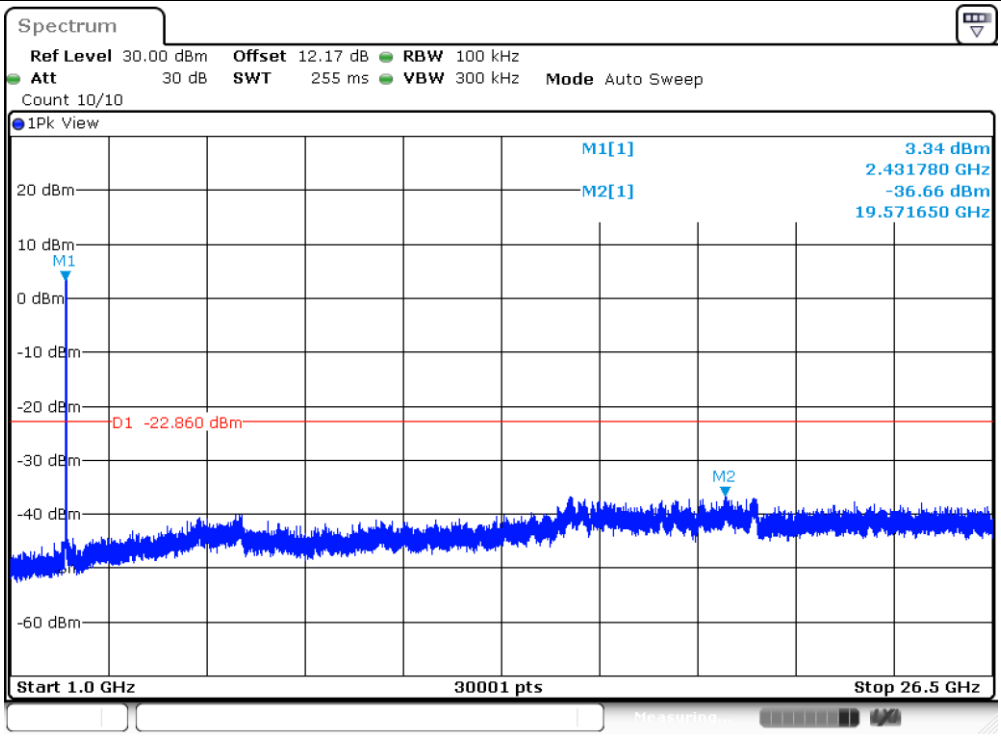
11BE20MIMO_Ant2_2437_1000~26500



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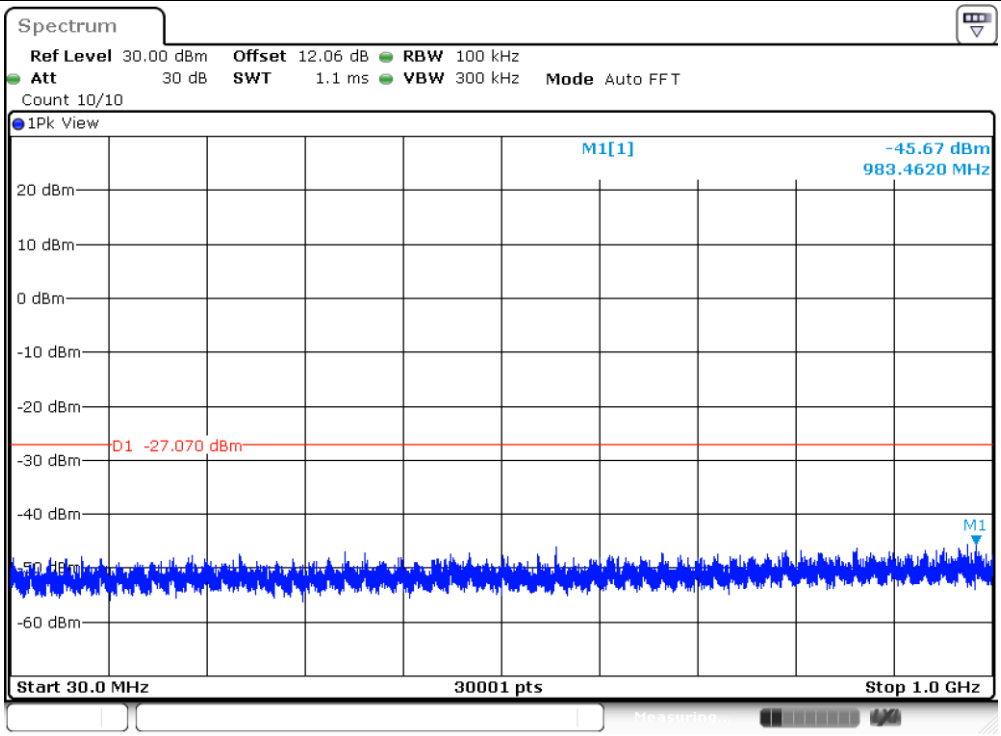
11BE40MIMO_Ant0_2437_30~1000



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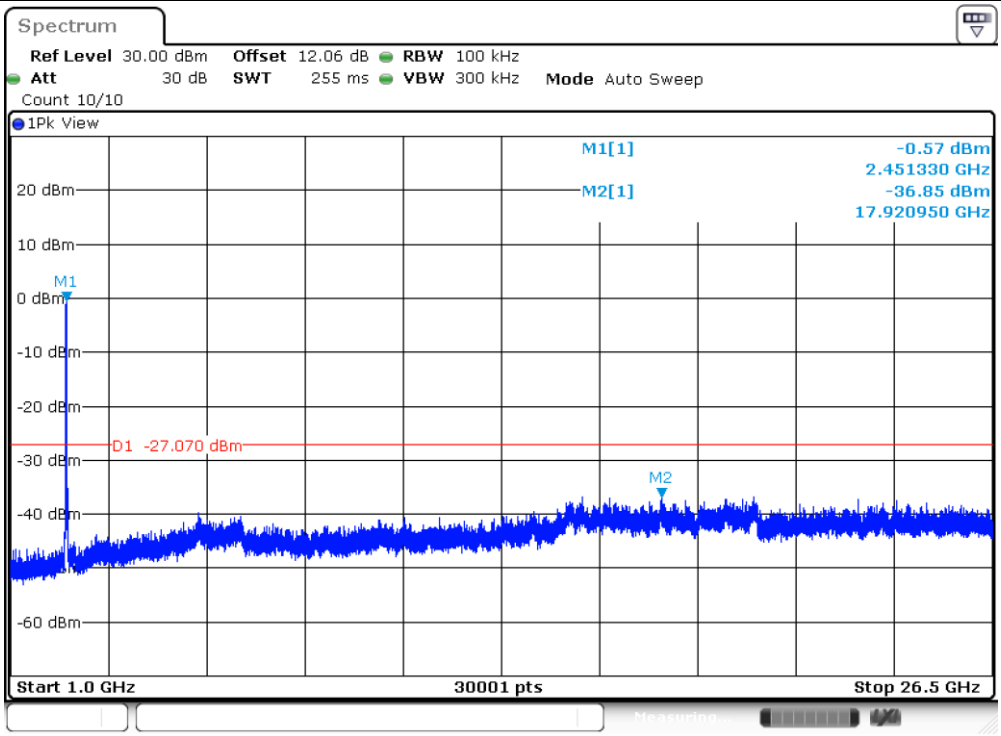

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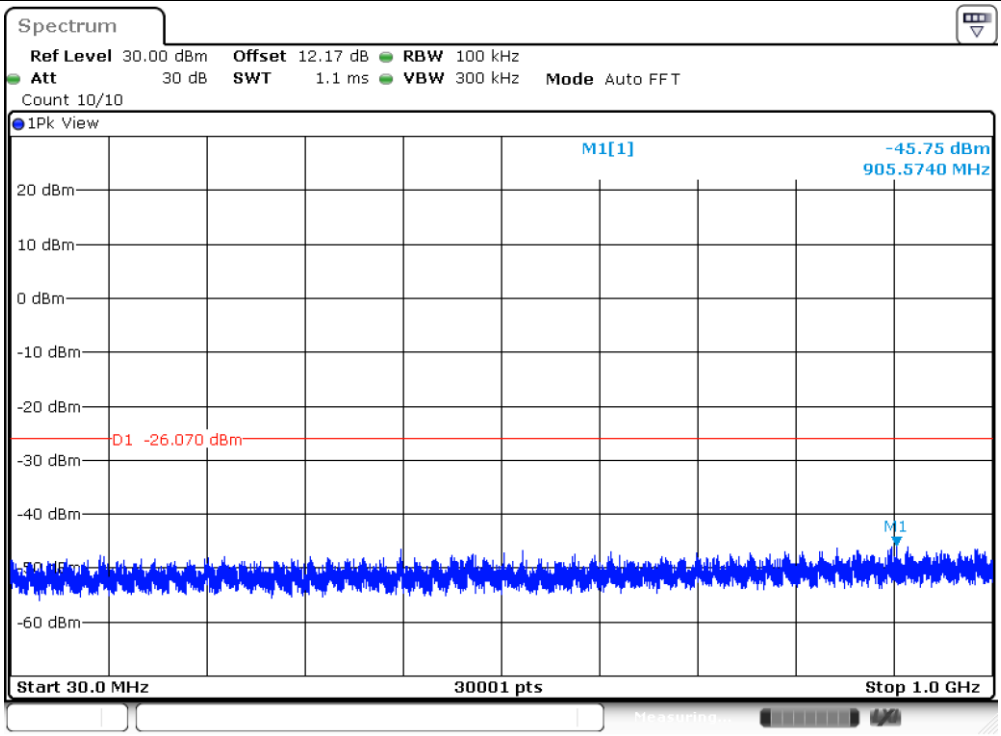

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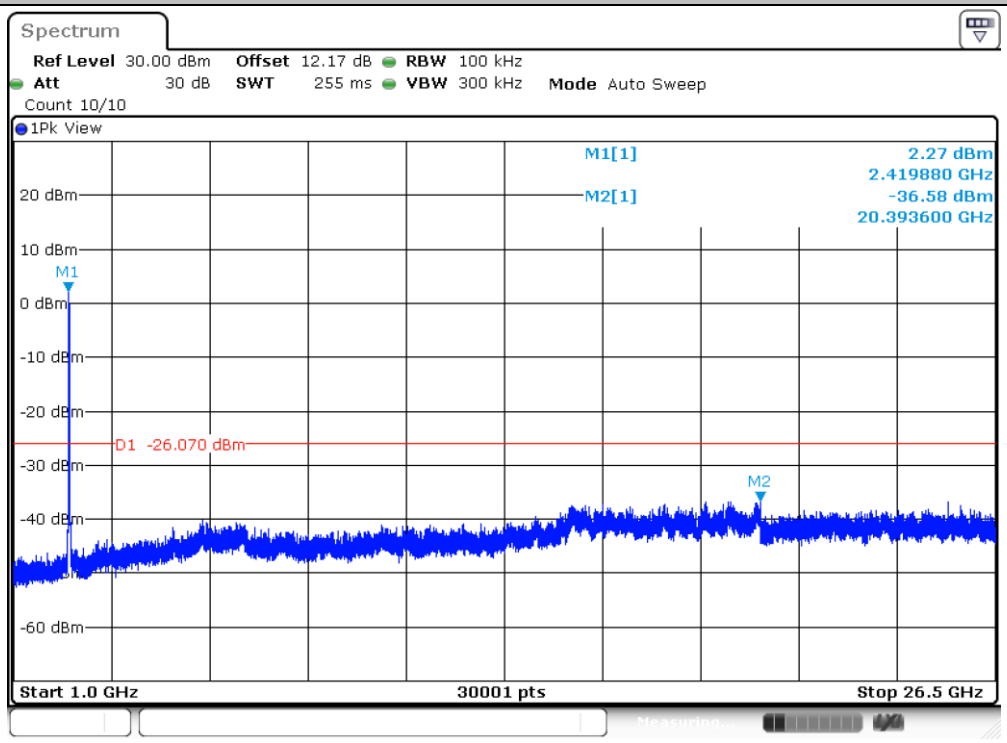
11BE40MIMO_Ant2_2437_1000~26500



Appendix B. Radiated Spurious Emission Test Data

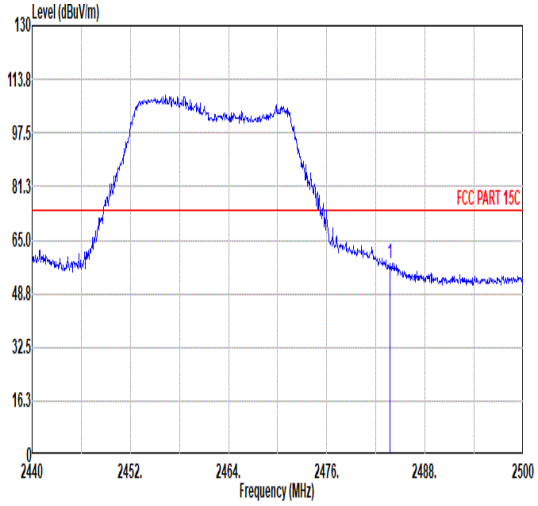
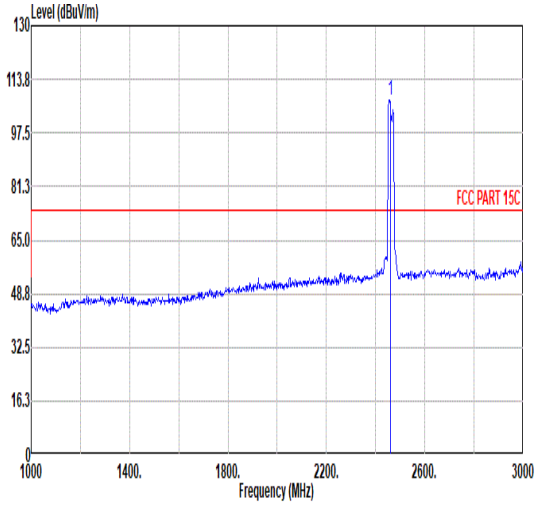
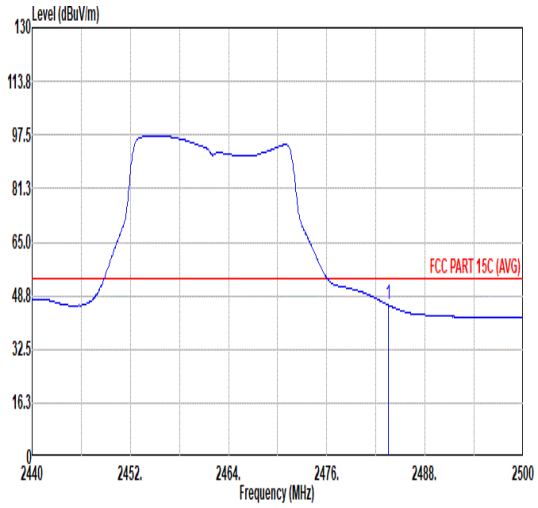
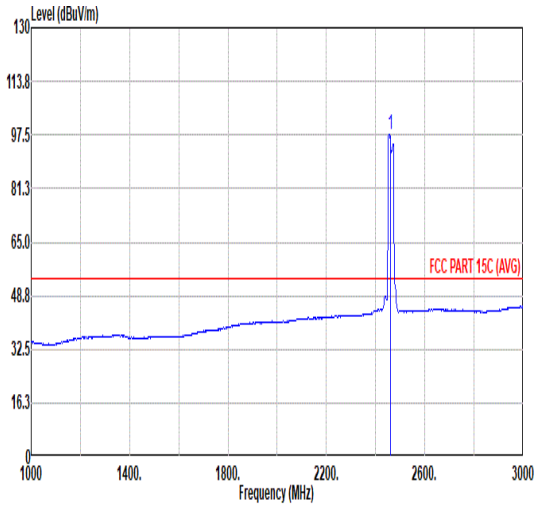
Test Engineer :	Koi Ji	**Relative Humidity :**	51-52%
		Temperature :	20.9-21.4℃

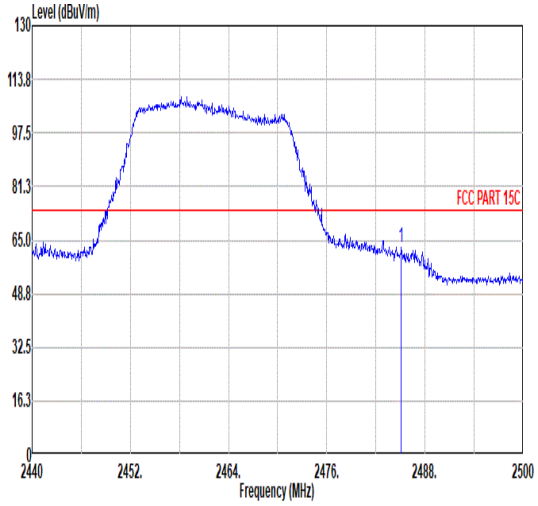
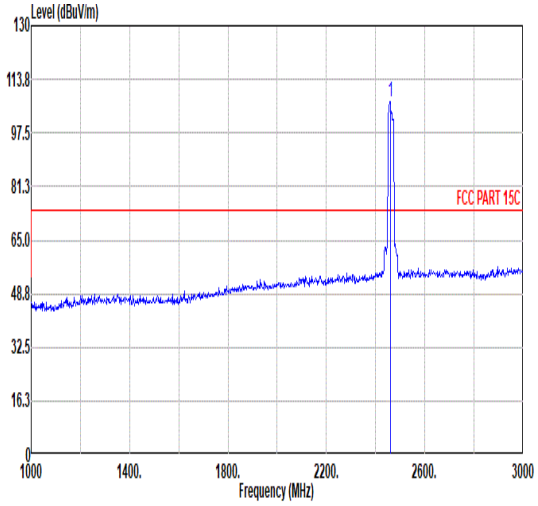
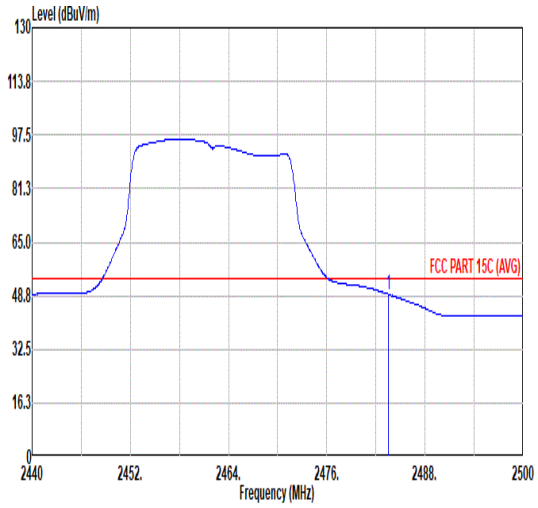
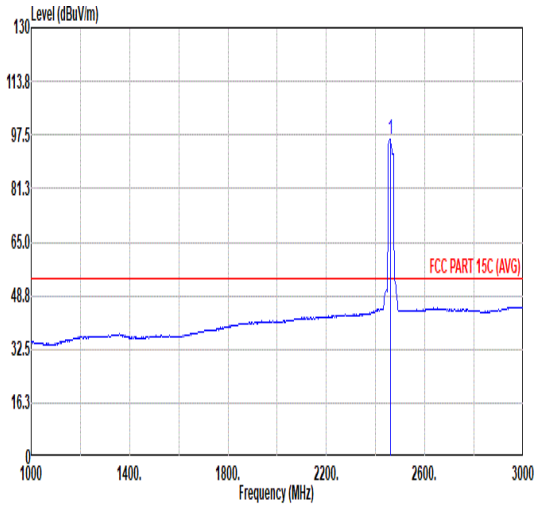
Radiated Spurious Emission Test Modes

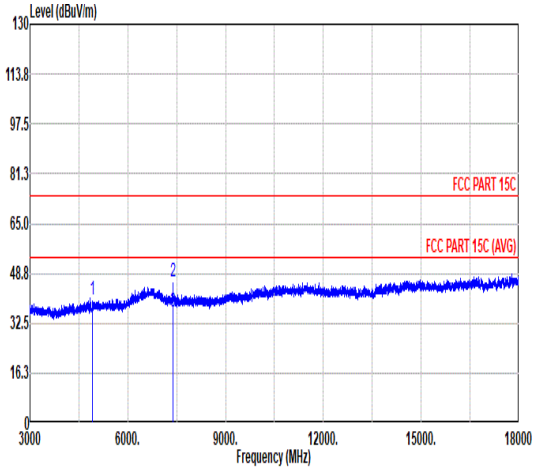
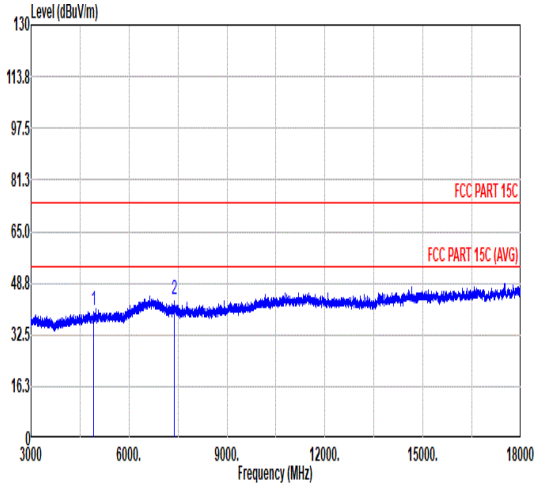
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 3	2400-2483.5	0+2	802.11be EHT20	11	2462	MCS0	-	-

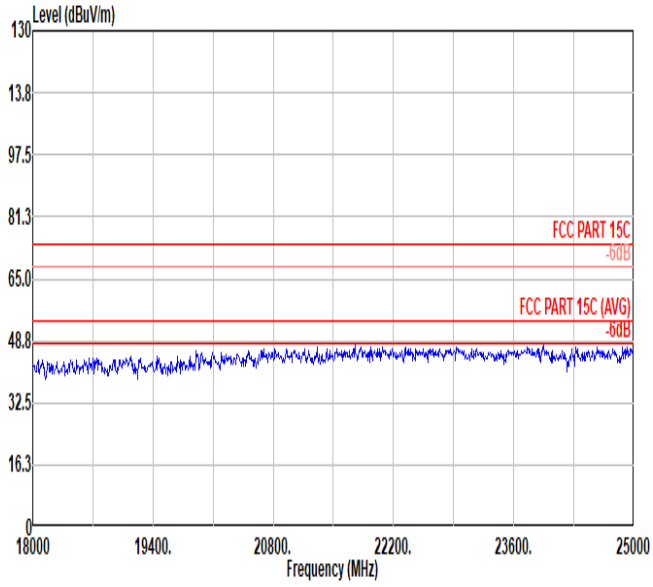
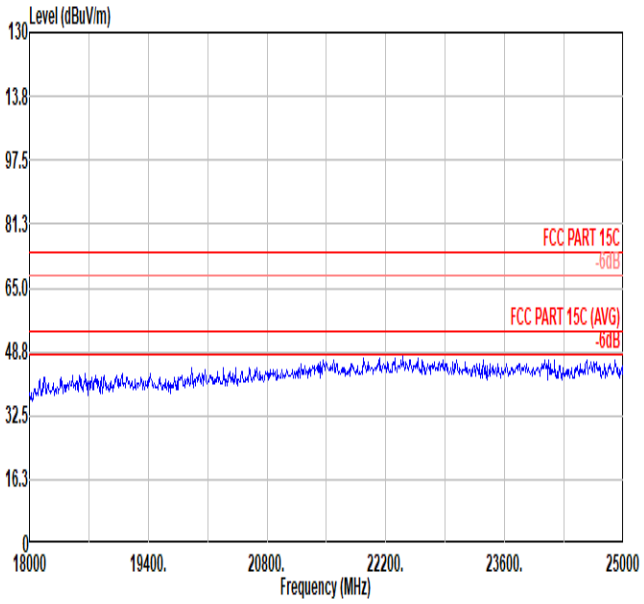
Summary of each worse mode

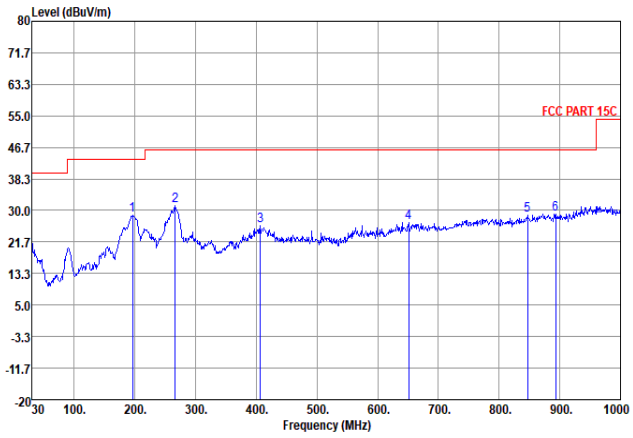
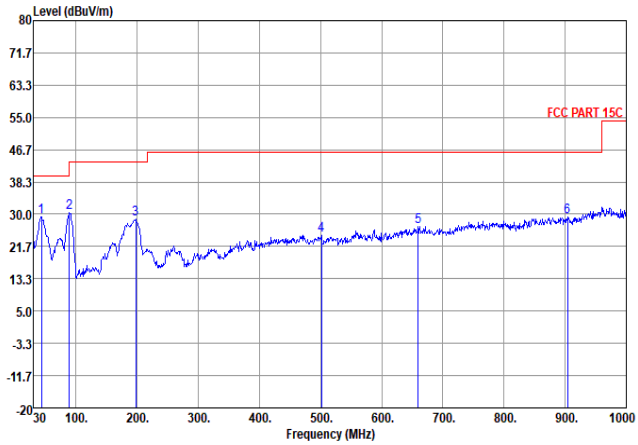
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
3	802.11be EHT20	11	2483.50	49.29	54.00	-4.71	V	AVERAGE	Pass	Band Edge
3	802.11be EHT20	11	7386.00	36.30	54.00	-17.70	H	AVERAGE	Pass	Harmonic

Mode	3	
	Band Edge	
	2400-2483.5_802.11be EHT20_CH11_2462MHz	
ANT	0+2	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.74 57.73 74.00 -16.27 41.78 32.37 8.23 30.65 6.00 100 122 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2462.00 107.50 ------ ------ 91.66 32.32 8.18 30.66 6.00 100 122 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.50 45.99 54.00 -8.01 30.04 32.37 8.23 30.65 6.00 100 122 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2462.00 97.53 ------ ------ 81.70 32.31 8.18 30.66 6.00 100 122 AVERAGE

Mode	3	
	Band Edge	
	2400-2483.5_802.11be EHT20_CH11_2462MHz	
ANT	0+2	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2485.12 62.85 74.00 -11.15 46.89 32.37 8.24 30.65 6.00 193 0 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2462.00 106.78 ------ ------ 90.93 32.32 8.19 30.66 6.00 193 0 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.50 49.29 54.00 -4.71 33.34 32.37 8.23 30.65 6.00 193 0 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2462.00 96.38 ------ ------ 80.54 32.32 8.18 30.66 6.00 193 0 AVERAGE

Mode	3	
	Harmonic	
	2400-2483.5_802.11be EHT20_CH11_2462MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4924.00 40.09 74.00 -33.91 60.11 34.00 11.78 65.80 0.00 -- -- PEAK 2 7386.00 46.18 74.00 -27.82 61.23 35.77 14.58 65.40 0.00 300 360 PEAK 3 7386.00 36.30 54.00 -17.70 51.36 35.76 14.57 65.39 0.00 300 360 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4924.00 40.26 74.00 -33.74 60.28 34.00 11.78 65.80 0.00 -- -- PEAK 2 7386.00 43.87 74.00 -30.13 58.92 35.77 14.58 65.40 0.00 -- -- PEAK

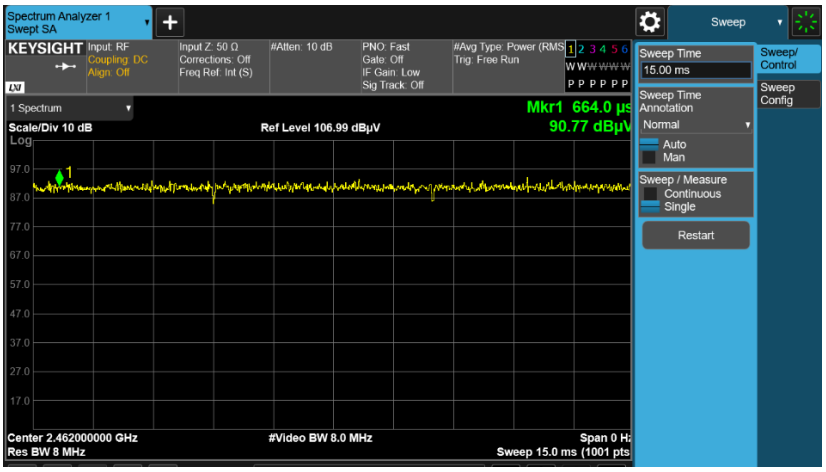
Mode	3	
	18-25G	
	2400-2483.5_802.11be EHT20_CH11_2462MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
Peak Avg		

Mode	3	
	30-1G	
	2400-2483.5_802.11be EHT20_CH11_2462MHz	
ANT	0+2	
Pol.	Horizontal	Vertical
Peak		

	Freq	Level	Limit Line	Over Limit	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	195.87	28.65	43.50	-14.85	44.33	15.27	2.13	33.08	---	---	Peak
2	266.68	31.22	46.00	-14.78	42.92	18.84	2.49	33.03	---	---	Peak
3	406.36	25.91	46.00	-20.09	33.56	22.06	3.08	32.79	---	---	Peak
4	650.80	26.89	46.00	-19.11	29.10	26.60	3.89	32.70	---	---	Peak
5	846.74	28.83	46.00	-17.17	27.83	29.15	4.44	32.59	---	---	Peak
6	893.30	29.04	46.00	-16.96	27.69	29.29	4.57	32.51	---	---	Peak

	Freq	Level	Limit Line	Over Limit	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	
1	43.58	29.24	40.00	-10.76	43.52	17.60	1.00	32.88	---	---	Peak
2	89.17	30.33	43.50	-13.17	46.76	14.78	1.43	32.64	---	---	Peak
3	197.81	28.64	43.50	-14.86	44.40	15.19	2.14	33.09	---	---	Peak
4	501.42	24.68	46.00	-21.32	29.94	24.12	3.42	32.80	---	---	Peak
5	659.53	26.72	46.00	-19.28	28.90	26.62	3.92	32.72	---	---	Peak
6	903.97	29.43	46.00	-16.57	27.96	29.35	4.60	32.48	---	---	Peak

Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
0+2	802.11be EHT20	100	-	-	10HZ

802.11be EHT20