FCC Part 15.247

TEST REPORT

For

Adtran

901 Explorer Boulevard, Huntsville Alabama , United States 35806-2807

FCC ID: HDC-17600078

Report Type:	**Product Type:**
Original Report	WiFi 6 Router

Report Producer : Coco Lin

Report Number : RXZ240112041RF01

Report Date : 2024-04-10

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ240112041	RXZ240112041RF01	2024-04-10	Original Report	Coco Lin

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	Adtran
	901 Explorer Boulevard, Huntsville Alabama , United States 35806-2807
Brand(Trade) Name	Adtran
Product (Equipment)	WiFi 6 Router
Main Model Name	SDG-8610YYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")
Part Number	17600078FYYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")
Model Discrepancy	The major electrical and mechanical constructions of series models are identical to the basic model, except different Market segmentation. The model, SDG-8610 is the testing sample, and the final test data are shown on this test report.
Frequency Range	IEEE 802.11b/g/n HT20/ax HE20 Mode: 2412 ~ 2462 MHz IEEE 802.11n HT40/ax HE40 Mode: 2422 ~ 2452 MHz
Maximum Conducted Peak Output Power	Non Beamforming: IEEE 802.11b Mode: 28.54 dBm IEEE 802.11g Mode: 28.59 dBm IEEE 802.11n HT20 Mode: 28.39 dBm IEEE 802.11n HT40 Mode: 28.20 dBm IEEE 802.11ax HE20 Mode: 27.33 dBm IEEE 802.11ax HE40 Mode: 24.97 dBm Beamforming: IEEE 802.11n HT20 Mode: 29.34 dBm IEEE 802.11n HT40 Mode: 29.24 dBm IEEE 802.11ax HE20 Mode: 29.26 dBm IEEE 802.11ax HE40 Mode: 28.01 dBm
Modulation Technique	DSSS / OFDM / OFDMA
Power Operation (Voltage Range)	Adapter I/P: 100-240V, 50/60Hz, 0.7A O/P: DC 12V, 1.5A
Received Date	2024/01/24
Date of Test	2024/01/25 ~ 2024/03/12

*All measurement and test data in this report was gathered from production sample serial number: RXZ240112041-01 (Assigned by BACL, New Taipei Laboratory).

1.2 Objective

This report is prepared on behalf of Adtran in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communication Commission's rules.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
KDB 558074 D01 15.247 Meas Guidance v05r02

1.4 Statement

Decision Rule: No, (The test results do not include MU judgment)

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.
Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

1.5 Measurement Uncertainty

Parameter		Uncertainty
AC Mains		+/- 2.53 dB
RF output power, conducted		+/- 3.74 dB
Power Spectral Density, conducted		+/- 0.58 dB
Occupied Bandwidth		+/- 0.09 %
Unwanted Emissions, conducted		+/- 1.13 dB
Emissions, radiated	9 kHz~30 MHz	+/- 3.54 dB
	30 MHz~1 GHz	+/- 4.99 dB
	1 GHz~18 GHz	+/- 7.56 dB
	18 GHz~40 GHz	+/- 5.06 dB
Temperature		+/- 0.79 °C
Humidity		+/- 0.44 %

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

1.6 Environmental Conditions

Test Site	Test Date	Temperature (℃)	Relative Humidity (%)	ATM Pressure (hPa)	Test Engineer
AC Line Conducted Emissions	2024/3/12	21.6	51	1010	Jing Chang
Radiation Spurious Emissions	2024/1/25~2024/3/7	16.2~23.2	61~67	1010	Jim Chen
Conducted Spurious Emissions	2024/1/29~2024/3/12	20.1~24.8	51~59	1010	Anson Lu
Emission Bandwidth	2024/1/29~2024/3/12	20.1~24.8	51~59	1010	Anson Lu
Maximum Output Power	2024/1/29~2024/3/12	20.1~24.8	51~59	1010	Anson Lu
100 kHz Bandwidth of Frequency Band Edge	2024/1/29~2024/3/12	20.1~24.8	51~59	1010	Anson Lu
Power Spectral Density	2024/1/29~2024/3/12	20.1~24.8	51~59	1010	Anson Lu

1.7 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) to collect test data is located on

☒70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3732) and the FCC designation No.TW3732 under the Mutual Recognition Agreement (MRA) in FCC Test.

2 System Test Configuration

2.1 Description of Test Configuration

For WIFI 2.4GHz mode, there are totally 11 channels.

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

For 802.11 b/g/n HT20/ax HE20 Modes were tested with channel 1, 6 and 11.
For 802.11n HT40/ax HE40 Mode were tested with channel 3, 6 and 9.

2.2 Equipment Modifications

No modification was made to the EUT.

2.3 EUT Exercise Software

The test software was used "QATool_UIv2.78_DLLv6.83_ap_2021.11.05_Customer"

The system was configured for testing in engineering mode, which was provided by Applicant.

Non Beamforming:

Engineering Mode (Non Beamforming)		Power Level Setting MIMO(CDD)					
Test Frequency		Low		Middle		High	
		Chain 0	Chain 1	Chain 0	Chain 1	Chain 0	Chain 1
Mode MIMO(CDD)	802.11b Mode	21	21	21.5	21.5	21.5	21.5
	802.11g Mode	18.5	18.5	19.5	19.5	19.5	19.5
	802.11n HT20 Mode	19.5	19.5	20.5	20.5	20.5	20.5
	802.11n HT40 Mode	19.5	19.5	20.5	20.5	20.5	20.5
	802.11ax HE20 Mode	18.5	18.5	19	19	19	19
	802.11ax HE40 Mode	17	17	17	17	17	17

Beamforming:

Engineering Mode (Beamforming)		Power Level Setting MIMO					
Test Frequency		Low		Middle		High	
		Chain 0	Chain 1	Chain 0	Chain 1	Chain 0	Chain 1
Mode MIMO	802.11n HT20 Mode	40	40	41	41	41	41
	802.11n HT40 Mode	39	39	41	41	41	41
	802.11ax HE20 Mode	39	39	40	40	40	40
	802.11ax HE40 Mode	36	36	38	38	38	38

The device support SISO and MIMO.
SISO mode and MIMO mode have the same power level setting and base on output power testing, MIMO mode power large than SISO mode, MIMO mode was selected for full testing.
For n/ax mode, the MIMO mode support beamforming.

The worst case data rates are as follows:
802.11b: 1Mbps
802.11g: 6Mbps
802.11n HT20: MCS0
802.11n HT40: MCS0
802.11ax HE20: MCS0
802.11ax HE40: MCS0

2.4 Test Mode

Full System (model: SDG-8610) for all test item.
The device 802.11ax mode only supports full RU, not partial RU, test with full RU.

2.5 Support Equipment List and Details

Description	Manufacturer	Model Number	Serial Number
NB	DELL	E6410	F4NYJM1
NB	DELL	E6410	7ODSQM1
Adapter	KLEC	KL-WA120150-H1	N/A

2.6 External Cable List and Details

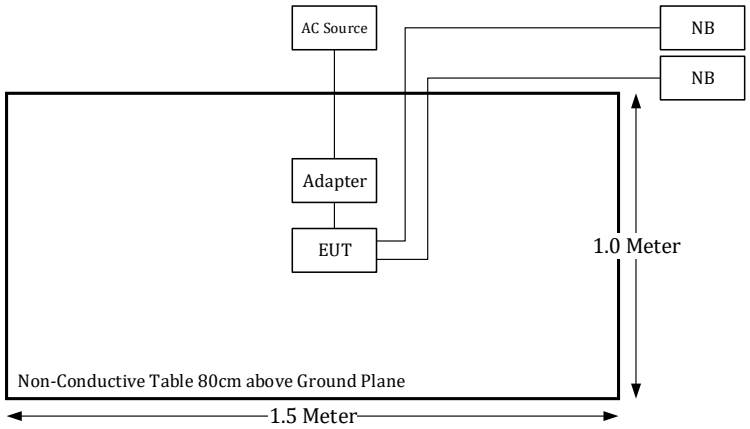
Description	Manufacturer	Cable length
RJ-45 Cable	BACL	8m
RJ-45 Cable	BACL	8m

2.7 Block Diagram of Test Setup

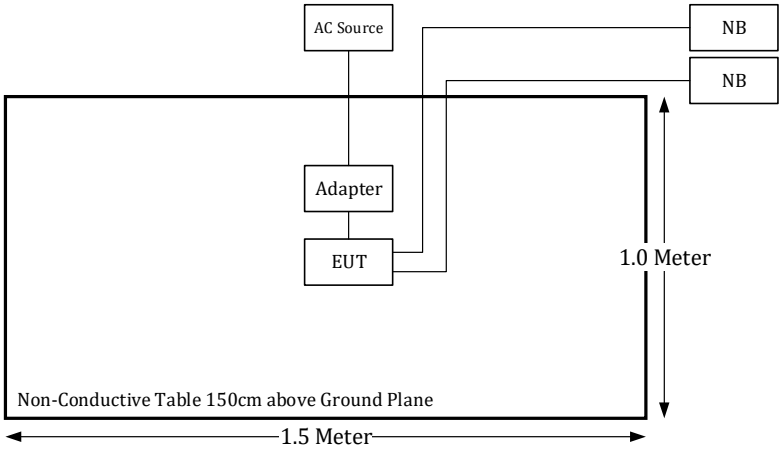
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:

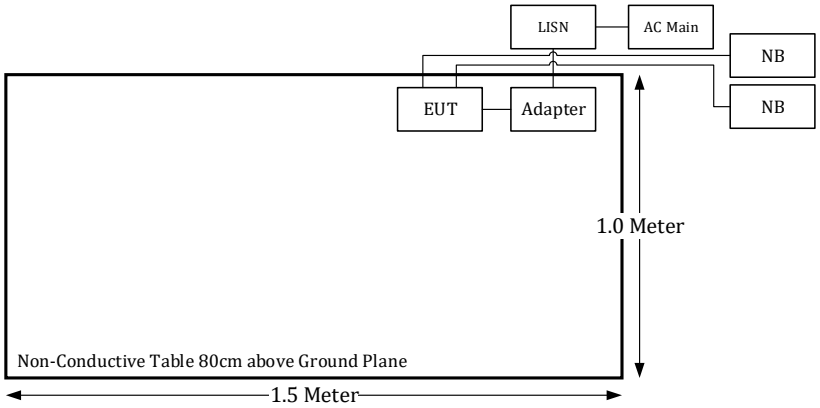
Below 1GHz



Above 1GHz:

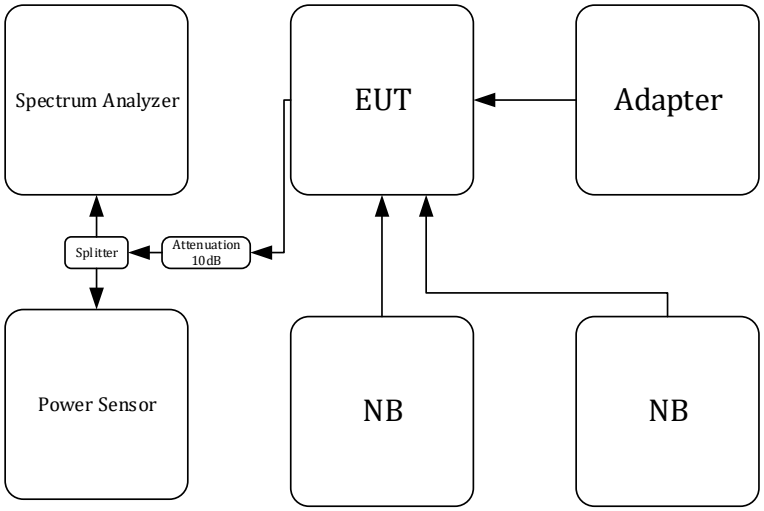


Conduction:



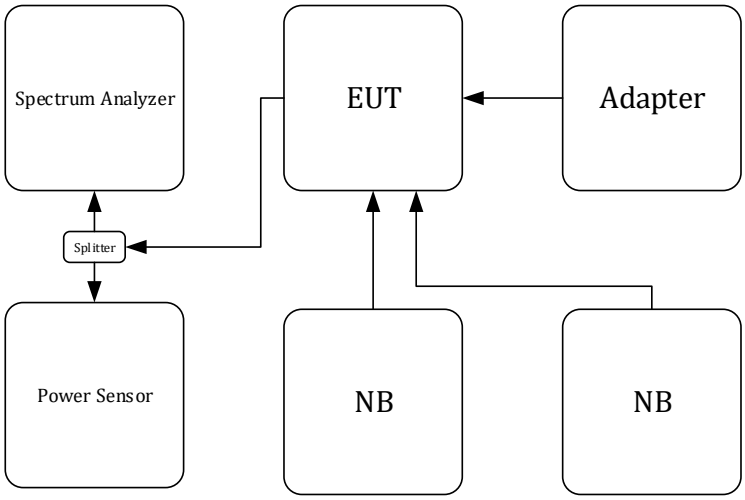
Conducted 1:

Offset:16.5dB(Attenuation 10dB+Splitter)



Conducted 2:

Offset: 6.5dB (Splitter)
Offset: 7dB/8dB (Splitter+Cable)



2.8 Duty Cycle

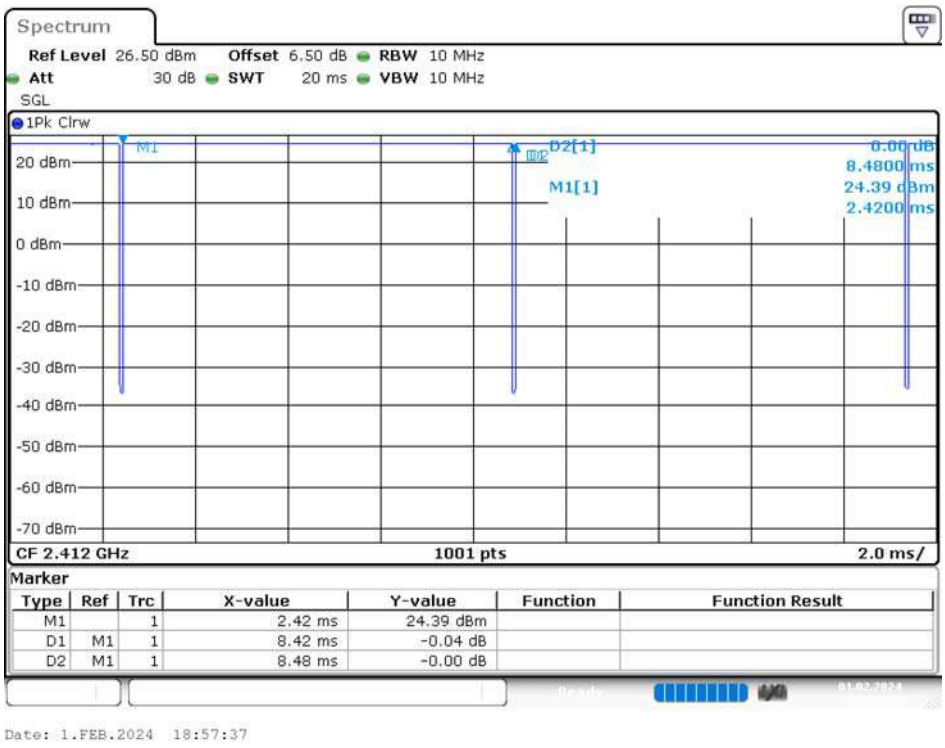
The duty cycle as below:

Radio Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T (kHz)	VBW Setting (kHz)
802.11b	8.42	8.48	99	0.04	/	0.01
802.11g	1.38	1.46	95	0.22	0.72	1.0
802.11n20	0.665	0.735	90	0.46	1.5	2.0
802.11n40	0.349	0.407	86	0.66	2.87	3.0
802.11ax20	0.325	0.382	85	0.71	3.08	5.0
802.11ax40	0.203	0.260	78	1.08	4.93	5.0

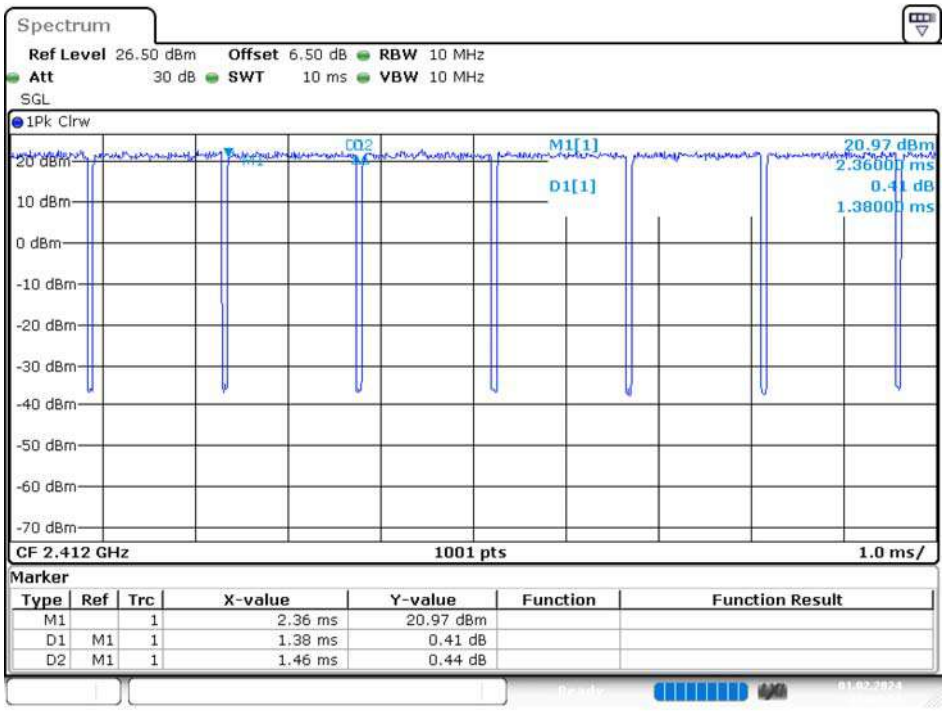
Note: Duty Cycle Correction Factor = 10*log(1/duty cycle)

Please refer to the following plots.

B Mode

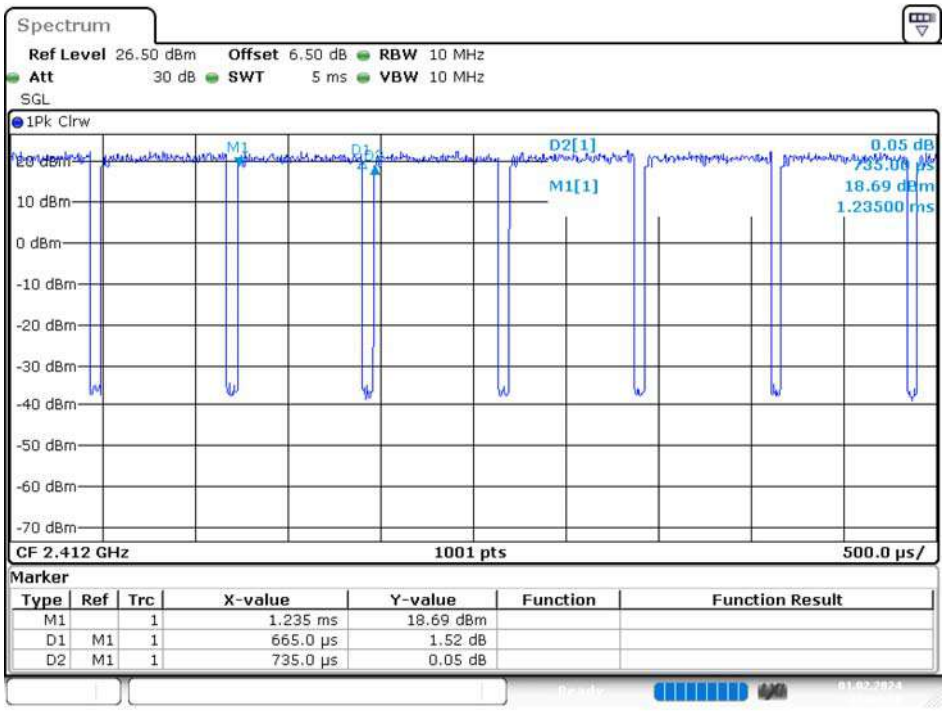


G Mode



Date: 1.FEB.2024 19:00:47

N20 Mode



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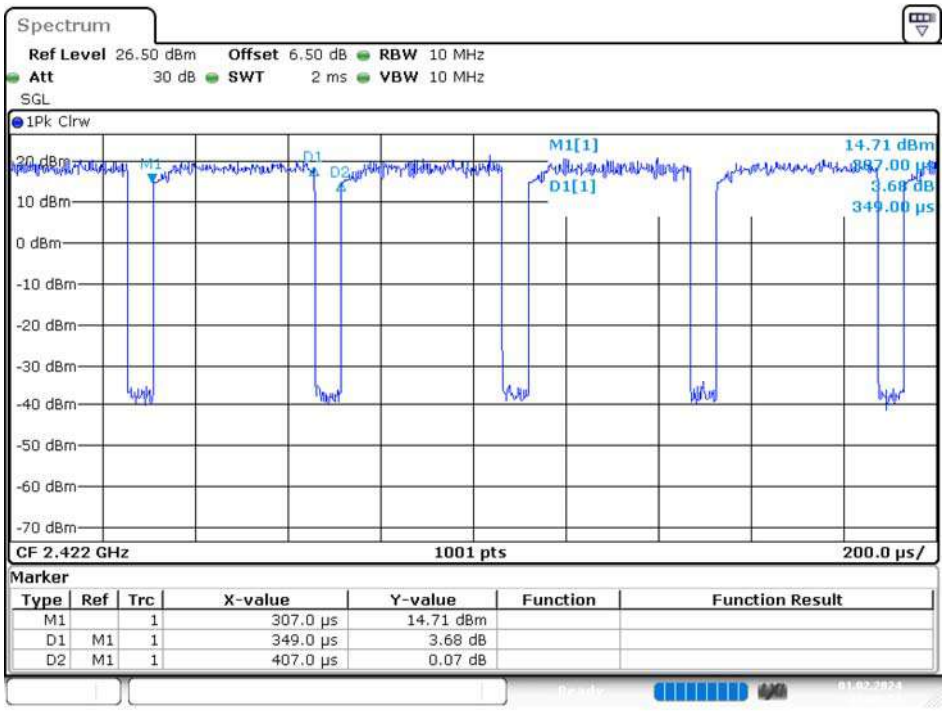
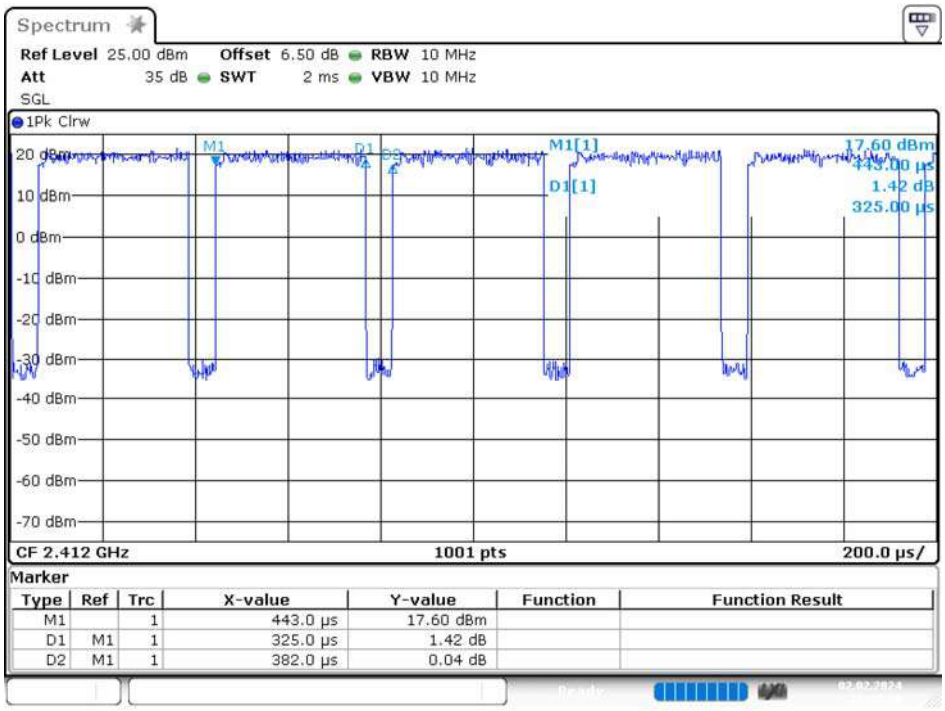
N40 Mode



Date: 1.FEB.2024 19:06:58

AX20 Mode



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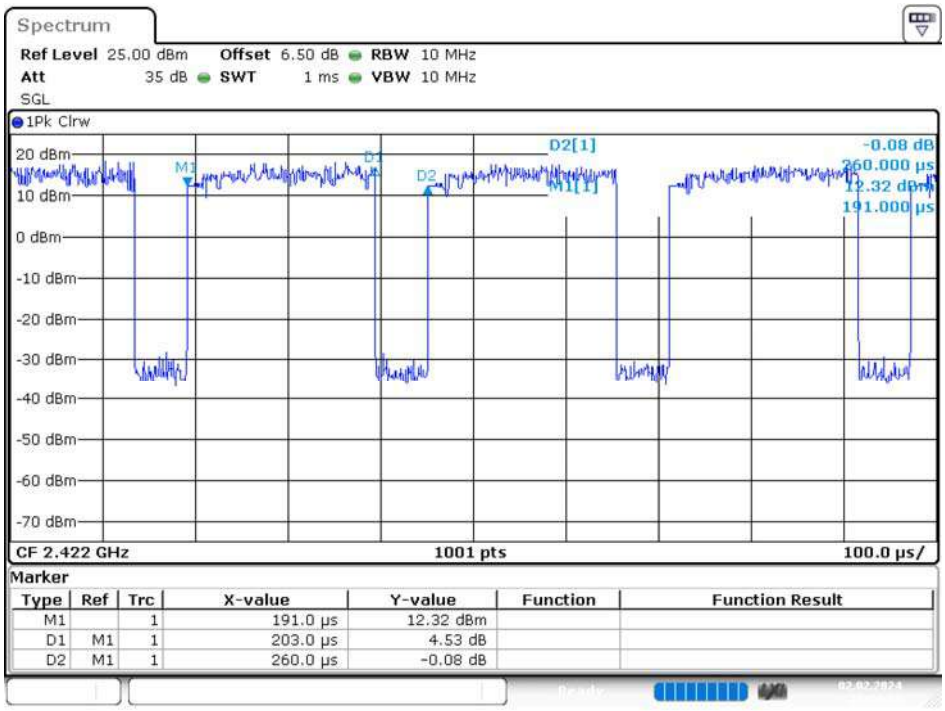
AX40 Mode



3 Summary of Test Results

Rules	Description of Test	Results
FCC §15.247(i), §1.1307(b)(3)	RF Exposure	Compliance
FCC §15.203	Antenna Requirement	Compliance
FCC §15.207(a)	AC Line Conducted Emissions	Compliance
FCC §15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
FCC §15.247(a)(2)	Emission Bandwidth	Compliance
FCC §15.247(b)(3)	Maximum Peak Output Power	Compliance
FCC §15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
FCC §15.247(e)	Power Spectral Density	Compliance

4 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conduction Room (CON-A)					
LISN	Rohde & Schwarz	ENV216	101612	2024/2/16	2025/2/14
EMI Test Receiver	Rohde & Schwarz	ESW8	100947	2023/5/22	2024/5/21
Pulse Limiter	Rohde & Schwarz	ESH3Z2	TXZEM104	2023/5/18	2024/5/17
RF Cable	EMEC	EM-CB5D	001	2023/6/6	2024/6/5
Software	AUDIX	E3	V9.150826k	N.C.R	N.C.R
Radiation Room (966-A)					
Active Loop Antenna	ETS-Lindgren	6502	35796	2023/3/23	2024/3/22
Bilog Antenna with 6 dB Attenuator	SUNOL SCIENCES & MINI-CIRCUITS	JB6/UNAT-6+	A050115/15542_01	2024/1/19	2025/1/17
Horn Antenna	EMCO	SAS-571	1020	2023/5/18	2024/5/17
Horn Antenna	ETS-Lindgren	3116	62638	2023/8/25	2024/8/24
Preamplifier	Sonoma	310N	130602	2023/6/16	2024/6/15
Preamplifier	Channel	ERA-100M-18G-01D1748	EC2300049	2023/12/6	2024/12/6
Preamplifier	EM Electronics Corporation	EM18G40G	60656	2024/1/8	2025/1/6
Spectrum Analyzer	Rohde & Schwarz	FSV40	101941	2023/12/26	2024/12/25
EMI Test Receiver	Rohde & Schwarz	ESR3	102099	2023/6/16	2024/6/15
Micro flex Cable	UTIFLEX	UFB197C-1-2362-70U-70U	225757-001	2024/1/23	2025/1/21
Coaxial Cable	COMMATE	PEWC	8Dr	2023/12/23	2024/12/22
Coaxial Cable	UTIFLEX	UFB311A-Q-1440-300300	220490-006	2024/1/23	2025/1/21
Coaxial Cable	JUNFLON	J12J102248-00-B-5	AUG-07-15-044	2023/12/23	2024/12/22
Cable	EMC	EMC105-SM-SM-10000	201003	2024/1/23	2025/1/21
Coaxial Cable	ROSNOL	K1K50-UP0264-K1K50-450CM	160309-1	2024/1/23	2025/1/21
Coaxial Cable	ROSNOL	K1K50-UP0264-K1K50-50CM	15120-1	2024/1/23	2025/1/21
Band-stop filter	Woken	STI15-9831	STI15-9831-1	2023/10/20	2024/10/19
High-pass filter	XINGBOKEJI	XBLBQ-GTA54	200108-3-2	2023/10/20	2024/10/19
Software	AUDIX	E3	18621a	N.C.R	N.C.R
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz	FSV40	101204	2023/5/30	2024/5/28
Cable	UTIFLEX	UFA210A	9435	2023/10/2	2024/10/1
Cable	UTIFLEX	UFA210A	9434	2023/10/2	2024/10/1
Power Sensor	Boonton	RTP5006	11037	2023/5/23	2024/5/21
Power Splitter	Mini-Circuits	ZFRSC-183-S+	S F448201614	2023/6/6	2024/6/4
Attenuator	MCL	BW-S10W5+	605	2024/1/17	2025/1/16

***Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements.

5 FCC §15.247(i), §1.1307(b)(3) - RF Exposure

5.1 Applicable Standard

According to subpart 15.247(i) and subpart §1.1307(b)(3), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

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(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

5.2 RF Exposure Evaluation Result

Project info

Beam-forming:

For the 2.4G Wi-Fi, as it can support the beam-forming function,

So Directional gain = GANT + 10*log(2)，2.4+3.01 = 5.41 dBi

Band	Freq (MHz)	Tune-up Average Power (dBm)	Ant Gain (dBi)	Distances (mm)	Tune-up Average Power (mW)	ERP (dBm)	ERP (mW)
WIFI 2.4GHz	2412	22.9	5.41	200	194.98	26.16	413.05
WIFI 5GHz Band 1	5180	26.5	9.05	200	446.68	33.4	2187.76
WIFI 5GHz Band 4	5745	26	9.49	200	398.11	33.34	2157.74

§ 1.1307(b)(3)(i)(A) and (C) method is not applicable.

§ 1.1307(b)(3)(i)(B)

Band	Freq (MHz)	Pth (mW)	X	ERP 20cm (mW)	Ratio	Result Option B
WIFI 2.4GHz	**2412**	**3060.00**	**1.899**	**3060**	**0.13**	**exempt**
WIFI 5GHz Band 1	**5180**	**3060.00**	**2.065**	**3060**	**0.71**	**exempt**
WIFI 5GHz Band 4	**5745**	**3060.00**	**2.087**	**3060**	**0.71**	**exempt**

The available maximum time-averaged power or effective radiated power (ERP), whichever is greater
This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).

Non Beam-forming:

Band	Freq (MHz)	Tune-up Average Power (dBm)	Ant Gain (dBi)	Distances (mm)	Tune-up Average Power (mW)	ERP (dBm)	ERP (mW)
WIFI 2.4GHz	2412	26.1	2.4	200	407.38	26.35	431.52
WIFI 5GHz Band 1	5180	25.9	4.8	200	389.05	28.55	716.14
WIFI 5GHz Band 4	5745	29.6	5.8	200	912.01	33.25	2113.49

§ 1.1307(b)(3)(i)(A) and (C) method is not applicable.

§ 1.1307(b)(3)(i)(B)

Band	Freq (MHz)	Pth (mW)	X	ERP 20cm (mW)	Ratio	Result Option B
WIFI 2.4GHz	**2412**	**3060.00**	**1.899**	**3060**	**0.14**	**exempt**
WIFI 5GHz Band 1	**5180**	**3060.00**	**2.065**	**3060**	**0.23**	**exempt**
WIFI 5GHz Band 4	**5745**	**3060.00**	**2.087**	**3060**	**0.69**	**exempt**

The available maximum time-averaged power or effective radiated power (ERP), whichever is greater
This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).

The WIFI 2.4GHz and WIFI 5GHz cannot transmit simultaneously

Result: The device compliant the SAR-Based Exemption at 20cm distances.

6 FCC §15.203 – Antenna Requirements

6.1 Applicable Standard

According to § 15.203,

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited.

6.2 Antenna Information

Manufacturer	Model	Type	Antenna Gain
LYNwave Technology.	BP2	PCB Antenna	Antenna 0: 2.4 dBi Antenna 1: 2.4 dBi

Result: Compliance

7 FCC §15.207(a) – AC Line Conducted Emissions

7.1 Applicable Standard

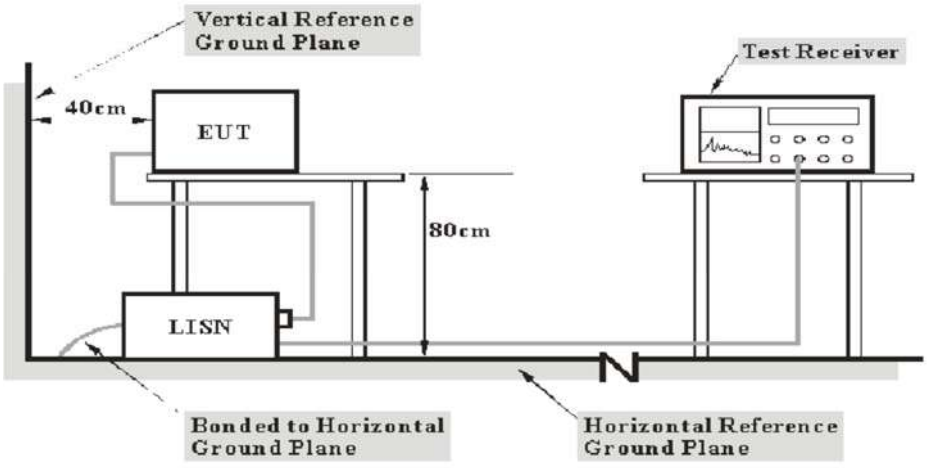
According to §15.207

For an intentional radiator 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, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 Note 1	56 to 46 Note 1
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency.

7.2 EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

7.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	IF B/W
150kHz – 30MHz	9kHz

7.4 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

7.5 Corrected Factor & Over Limit Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

Over Limit = Result – Limit Line

7.6 Test Results

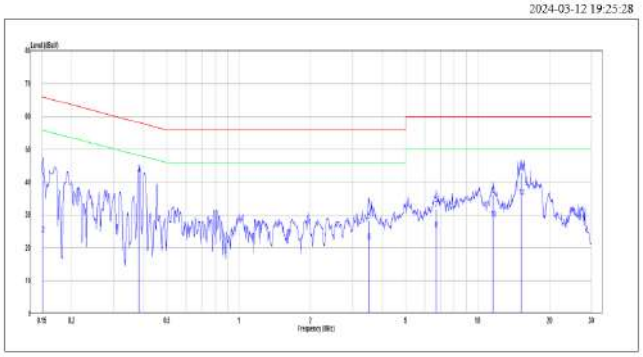
Test Mode: Transmitting

Main: AC120 V, 60 Hz

Non Beamforming:

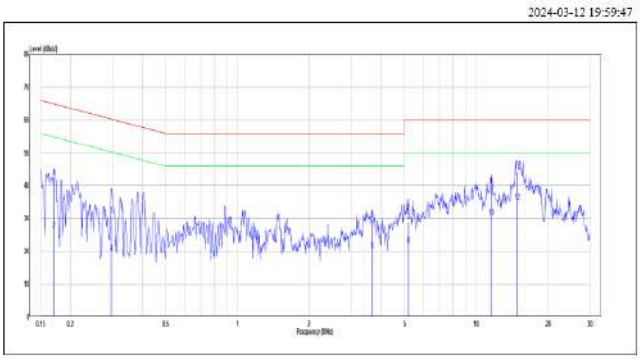
(Worst case is 802.11ax20 mode High channel)

Line



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.152	21.27	19.44	40.71	65.91	-25.20	QP	Line
2	0.152	4.70	19.44	24.14	55.91	-31.77	Average	Line
3	0.383	23.19	19.52	42.71	58.21	-15.50	QP	Line
4	0.383	22.68	19.52	42.20	48.21	-6.01	Average	Line
5	3.509	8.26	20.07	28.33	56.00	-27.67	QP	Line
6	3.509	1.83	20.07	21.89	46.00	-24.11	Average	Line
7	6.733	11.65	20.10	31.75	60.00	-28.25	QP	Line
8	6.733	5.43	20.10	25.53	50.00	-24.47	Average	Line
9	11.621	15.83	20.13	35.96	60.00	-24.04	QP	Line
10	11.621	8.67	20.13	28.80	50.00	-21.20	Average	Line
11	15.307	22.76	20.24	43.00	60.00	-17.00	QP	Line
12	15.307	15.23	20.24	35.48	50.00	-14.52	Average	Line

Neutral



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.170	23.28	19.45	42.73	64.94	-22.21	QP	Neutral
2	0.170	7.13	19.45	26.58	54.94	-28.36	Average	Neutral
3	0.296	11.53	19.49	31.03	60.37	-29.34	QP	Neutral
4	0.296	-0.09	19.49	19.40	50.37	-30.97	Average	Neutral
5	3.661	9.77	20.07	29.85	56.00	-26.15	QP	Neutral
6	3.661	0.10	20.07	20.17	46.00	-25.83	Average	Neutral
7	5.194	8.85	20.11	28.96	60.00	-31.04	QP	Neutral
8	5.194	1.76	20.11	21.87	50.00	-28.13	Average	Neutral
9	11.559	19.82	20.15	39.97	60.00	-20.03	QP	Neutral
10	11.559	10.25	20.15	30.40	50.00	-19.60	Average	Neutral
11	14.828	24.04	20.27	44.31	60.00	-15.69	QP	Neutral
12	14.828	14.70	20.27	34.97	50.00	-15.03	Average	Neutral

Note:

Result = Reading + Factor

Over Limit = Result – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

Beamforming:

Line

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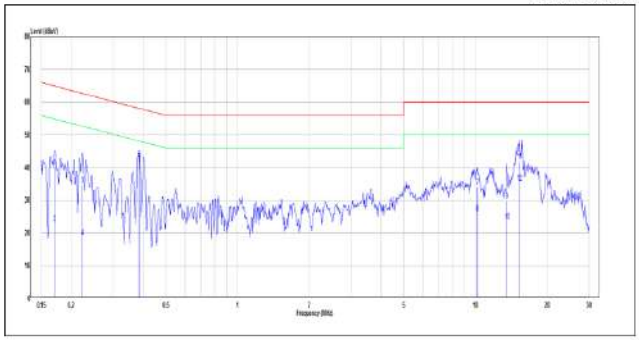

No.	Frequency	Reading	Correct	Result	Limit	Over limit	Remark	Phase
	(MHz)	dBuV	Factor(dB)	dBuV	dBuV	(dB)		
1	0.170	20.66	19.44	40.10	64.94	-24.84	QP	Line
2	0.170	3.52	19.44	22.96	54.94	-31.99	Average	Line
3	0.222	15.15	19.45	34.60	62.74	-28.15	QP	Line
4	0.222	-0.82	19.45	18.63	52.74	-34.11	Average	Line
5	0.385	23.11	19.52	42.63	58.17	-15.53	QP	Line
6	0.385	22.39	19.52	41.91	48.17	-6.26	Average	Line
7	10.179	13.91	20.09	33.99	60.00	-26.01	QP	Line
8	10.179	5.83	20.09	25.92	50.00	-24.08	Average	Line
9	13.551	9.52	20.19	29.70	60.00	-30.30	QP	Line
10	13.551	3.21	20.19	23.39	50.00	-26.61	Average	Line
11	15.307	21.99	20.24	41.83	60.00	-18.17	QP	Line
12	15.307	14.93	20.24	35.17	50.00	-14.83	Average	Line

Neutral

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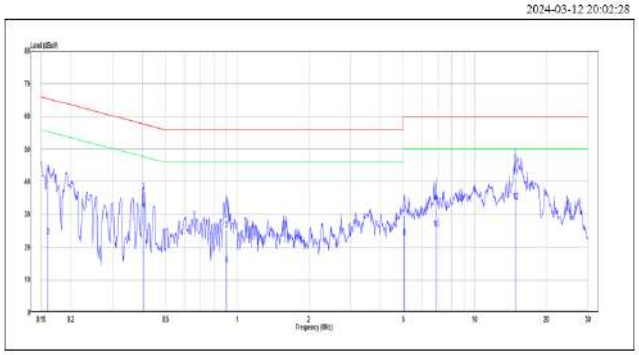


No.	Frequency	Reading	Correct	Result	Limit	Over limit	Remark	Phase
	(MHz)	dBuV	Factor(dB)	dBuV	dBuV	(dB)		
1	0.160	22.25	19.45	41.70	65.47	-23.77	QP	Neutral
2	0.160	3.94	19.45	23.39	55.47	-32.09	Average	Neutral
3	0.404	17.47	19.54	37.01	57.77	-20.76	QP	Neutral
4	0.404	11.79	19.54	31.33	47.77	-16.44	Average	Neutral
5	0.904	5.61	19.78	25.39	56.00	-30.61	QP	Neutral
6	0.904	-5.30	19.78	14.48	46.00	-31.52	Average	Neutral
7	5.058	9.73	20.11	29.84	60.00	-30.16	QP	Neutral
8	5.058	2.90	20.11	23.01	50.00	-26.99	Average	Neutral
9	6.841	13.81	20.11	33.92	60.00	-26.08	QP	Neutral
10	6.841	5.45	20.11	25.56	50.00	-24.44	Average	Neutral
11	14.828	21.25	20.27	41.52	60.00	-18.48	QP	Neutral
12	14.828	13.72	20.27	33.99	50.00	-16.01	Average	Neutral

Note:

Result = Reading + Factor

Over Limit = Result – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

8 FCC §15.209, §15.205, §15.247(d) – Spurious Emissions

8.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	608 – 614	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	960 – 1240	5. 35 – 5. 46
2.1735 – 2.1905	16.80425 – 16.80475	1300 – 1427	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1435 – 1626.5	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1645.5 – 1646.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1660 – 1710	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1718.8 – 1722.2	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	2200 – 2300	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2310 – 2390	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2483.5 – 2500	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2690 – 2900	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	3260 – 3267	22.01 – 23.12
8.41425 – 8.41475	162.0125 –167.17	3.332 – 3.339	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3 3458 – 3 358	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3.600 – 4.400	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4		Above 38.6
13.36 – 13.41	399.9 – 410		

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

According to ANSI C63.10-2013, section 5.3.3

Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field, and the emissions to be measured can be detected by the measurement equipment (see 4.3.4). Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. Measurements from 18 GHz to 40 GHz are typically made at distances significantly less than 3 m from the EUT. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade of distance (inverse of linear distance for field-strength measurements or inverse of linear distance-squared for power-density measurements).

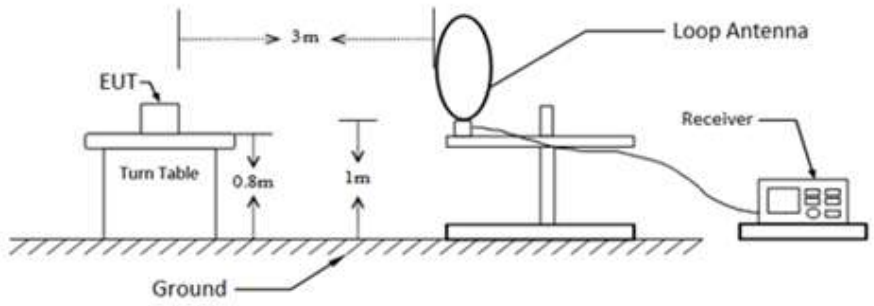
Convert the test distance limit of 3 meters to a limit of 1 meter:

Conversion factor = 20 log (1m/3m) = 9.5 dB , Limit = 63.50 dBuV/m @ 1m

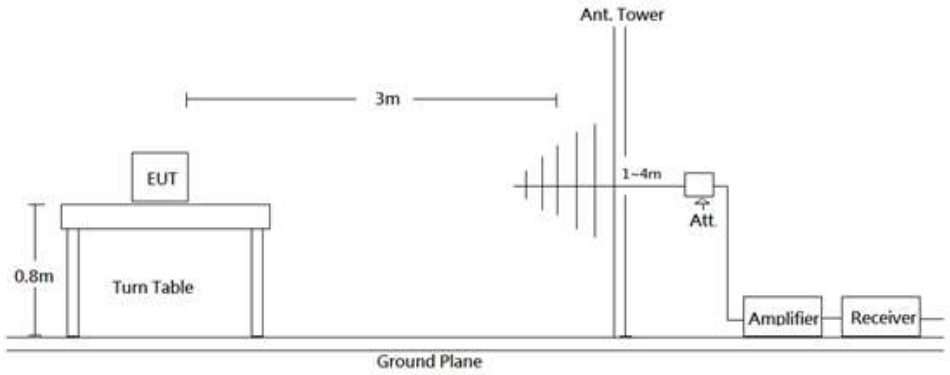
As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

8.2 EUT Setup

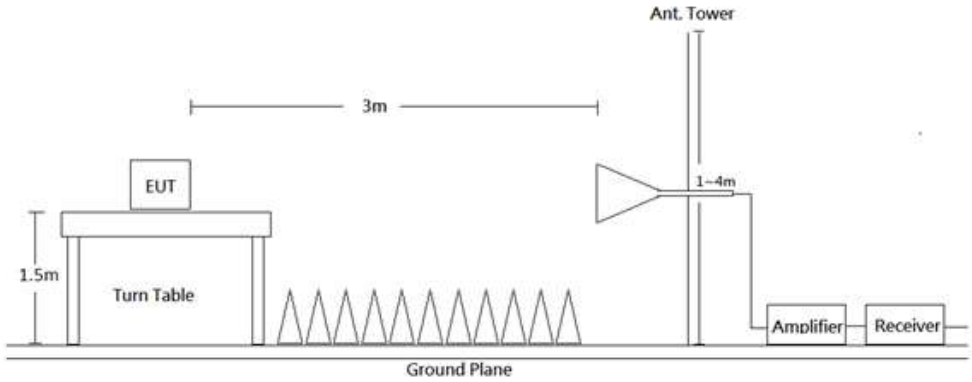
9kHz-30MHz:



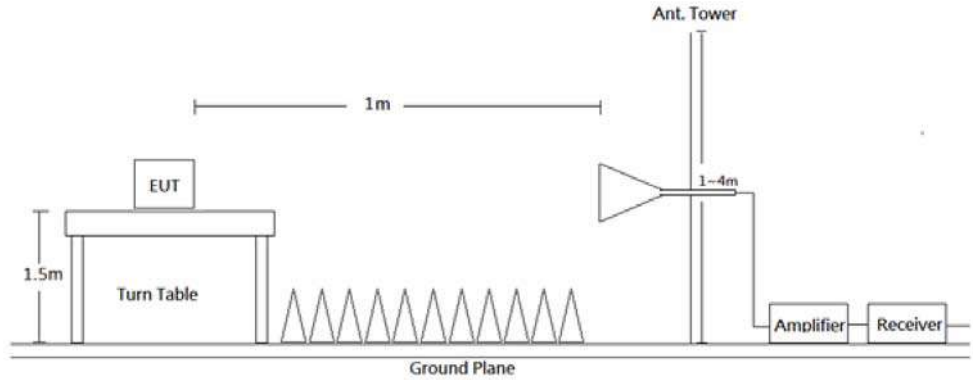
30MHz-1GHz:



1-18 GHz:



18-26.5 GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209, FCC 15.247 Limits.

8.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Duty cycle	Measurement method
9 kHz - 150 kHz	200 Hz/300 Hz	1 kHz	/	QP/AV
150 kHz - 30 MHz	9 kHz/10 kHz	30 kHz	/	QP/AV
30-1000 MHz	120 kHz	300 kHz	/	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	>98%	Ave
	1 MHz	1/T	<98%	Ave

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

8.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in Quasi-peak and average detector mode from 9 kHz to 30 MHz, Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

8.5 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Level – Limit

8.6 Test Results

Test Mode: Transmitting

(Pre-scan with three orthogonal axis, and worse case as Z axis.)

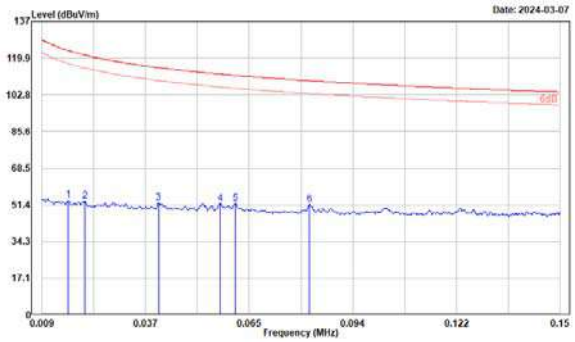
9kHz-30MHz:

(Worst case is 802.11ax HE20 mode, high channel)

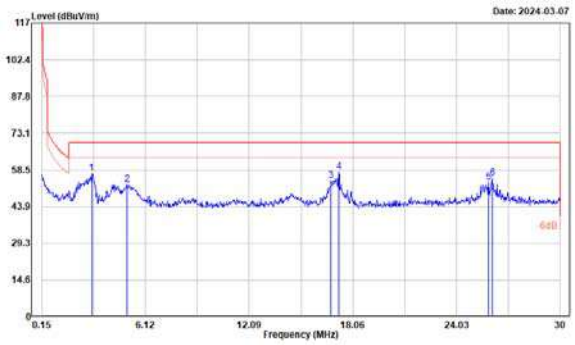
(Pre-scan using three directional polarities, worst case as parallel.)

Non Beamforming:

9kHz-150kHz	150kHz-30MHz



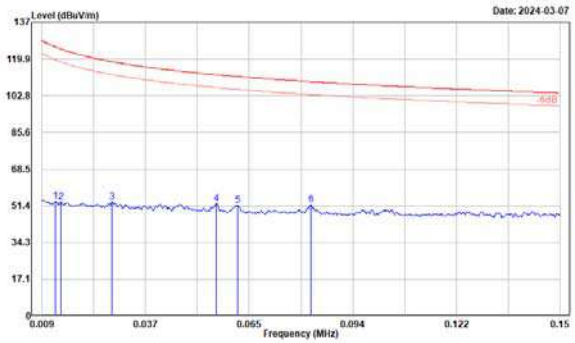
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
0.016	37.74	15.63	53.37	123.42	-70.05	100	152	Average
0.021	38.18	14.83	53.01	121.29	-68.28	100	205	Average
0.041	39.78	12.71	52.49	115.41	-62.92	100	117	Average
0.058	40.26	11.84	52.10	112.41	-60.31	100	39	Average
0.062	40.28	11.58	51.86	111.79	-59.93	100	168	Average
0.082	40.32	11.28	51.60	109.35	-57.75	100	331	Average



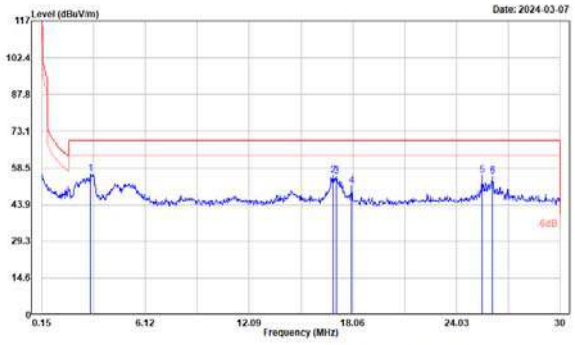
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
3.016	46.53	10.46	56.99	69.54	-12.55	100	154	QP
5.075	41.85	10.78	52.63	69.54	-16.91	100	320	QP
16.806	42.51	11.56	54.07	69.54	-15.47	100	117	QP
17.254	46.10	11.57	57.67	69.54	-11.87	100	100	QP
25.881	42.03	11.71	53.74	69.54	-15.80	100	59	QP
26.120	43.40	11.71	55.11	69.54	-14.43	100	238	QP

Beamforming:

9kHz-150kHz	150kHz-30MHz



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
0.013	37.03	16.30	53.33	125.55	-72.22	100	15	Average
0.014	37.25	16.01	53.26	124.55	-71.29	100	208	Average
0.028	39.15	13.95	53.10	118.65	-65.55	100	66	Average
0.057	40.44	11.95	52.39	112.56	-60.17	100	149	Average
0.062	40.05	11.58	51.63	111.71	-60.08	100	227	Average
0.082	40.53	11.28	51.81	109.31	-57.50	100	238	Average



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2.956	45.62	10.47	56.09	69.54	-13.45	100	310	QP
16.926	43.93	11.56	55.49	69.54	-14.05	100	241	QP
17.135	43.73	11.57	55.30	69.54	-14.24	100	1	QP
18.000	39.78	11.59	51.37	69.54	-18.17	100	117	QP
25.493	43.64	11.70	55.34	69.54	-14.20	100	352	QP
26.120	43.44	11.71	55.15	69.54	-14.39	100	360	QP

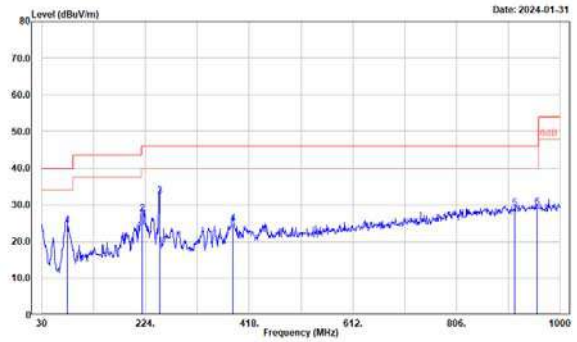
30MHz-1GHz:

Non Beamforming:

(Worst case is 802.11b mode)

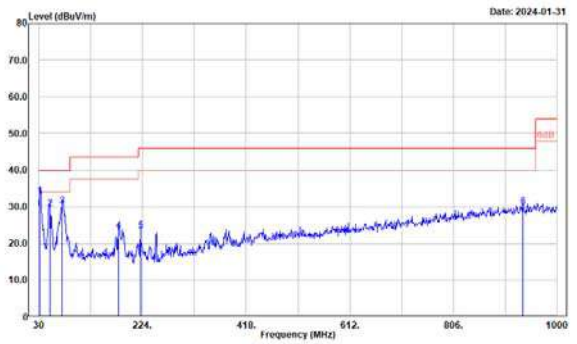
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
77.530	40.18	-15.90	24.28	40.00	-15.72	100	100	QP
218.180	39.72	-12.27	27.45	46.00	-18.55	100	131	QP
250.190	43.53	-11.30	32.23	46.00	-13.77	100	300	QP
386.960	32.22	-7.34	24.88	46.00	-21.12	100	356	QP
915.610	27.15	1.99	29.14	46.00	-16.86	100	185	QP
956.350	26.38	2.80	29.18	46.00	-16.82	100	356	QP

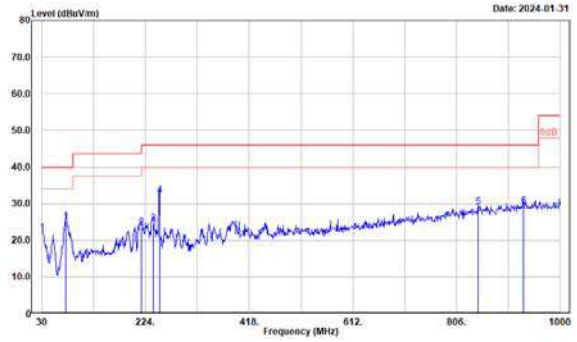
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
31.940	37.09	-4.45	32.64	40.00	-7.36	100	148	QP
51.340	45.37	-15.80	29.57	40.00	-10.43	100	250	QP
73.650	45.89	-15.80	30.09	40.00	-9.91	100	64	QP
179.380	35.47	-12.10	23.37	43.50	-20.13	100	197	QP
220.120	35.67	-12.18	23.49	46.00	-22.51	100	99	QP
935.980	27.38	2.46	29.84	46.00	-16.16	100	211	QP

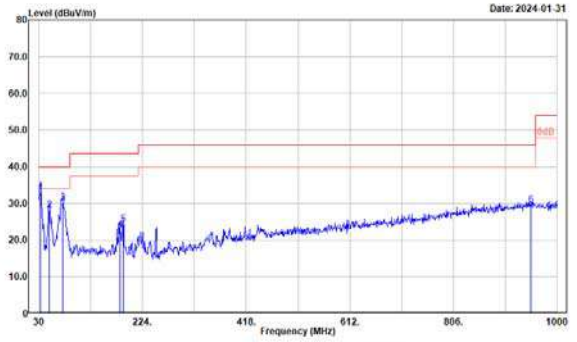
Middle channel

Horizontal



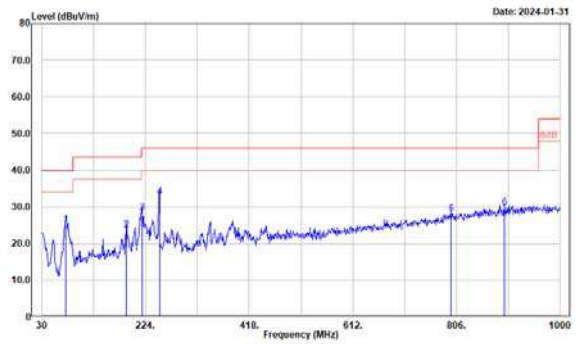
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
74.620	40.86	-15.70	25.16	40.00	-14.84	100	83	QP
216.240	35.80	-12.37	23.43	46.00	-22.57	100	52	QP
238.550	35.87	-11.38	24.49	46.00	-21.51	100	60	QP
250.190	43.58	-11.30	32.28	46.00	-13.72	100	312	QP
846.740	28.07	1.01	29.08	46.00	-16.92	100	194	QP
931.130	26.95	2.42	29.37	46.00	-16.63	100	60	QP

Vertical

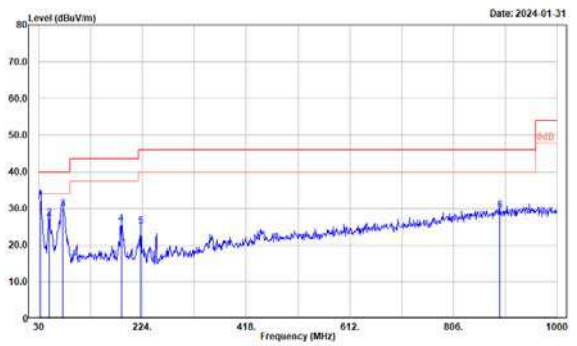


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
32.910	38.46	-5.57	32.89	40.00	-7.11	100	138	QP
49.400	43.51	-15.27	28.24	40.00	-11.76	100	277	QP
74.620	45.84	-15.70	30.14	40.00	-9.86	100	37	QP
181.320	35.06	-12.23	22.83	43.50	-20.67	100	227	QP
188.110	36.30	-12.06	24.24	43.50	-19.26	100	89	QP
951.500	26.77	2.78	29.55	46.00	-16.45	100	4	QP

High channel	
Horizontal	**Vertical**



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
74.620	40.94	-15.70	25.24	40.00	-14.76	100	85	QP
188.110	35.64	-12.06	23.58	43.50	-19.92	100	89	QP
218.180	40.66	-12.27	28.39	46.00	-17.61	100	139	QP
250.190	44.09	-11.30	32.79	46.00	-13.21	100	290	QP
796.300	27.69	0.18	27.87	46.00	-18.13	100	357	QP
895.240	27.93	1.88	29.81	46.00	-16.19	100	0	QP

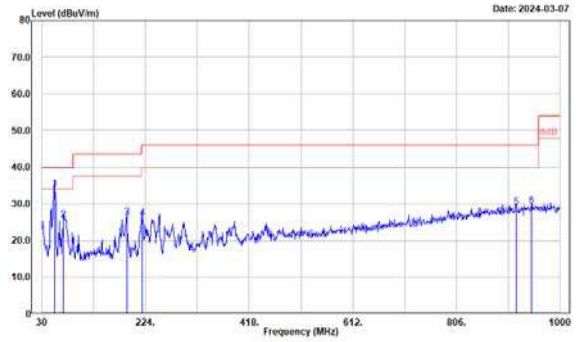


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
32.910	37.65	-5.57	32.08	40.00	-7.92	100	200	QP
49.400	42.57	-15.27	27.30	40.00	-12.70	100	312	QP
74.620	45.54	-15.70	29.84	40.00	-10.16	100	52	QP
184.230	37.94	-12.16	25.78	43.50	-17.72	100	18	QP
221.090	37.31	-12.16	25.15	46.00	-20.85	100	101	QP
892.330	27.83	1.75	29.58	46.00	-16.42	100	6	QP

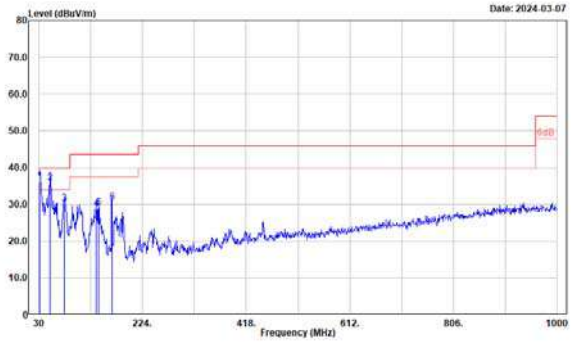
Beamforming:

(Worst case is 802.11ax HE40 mode)

Low channel	
Horizontal	**Vertical**



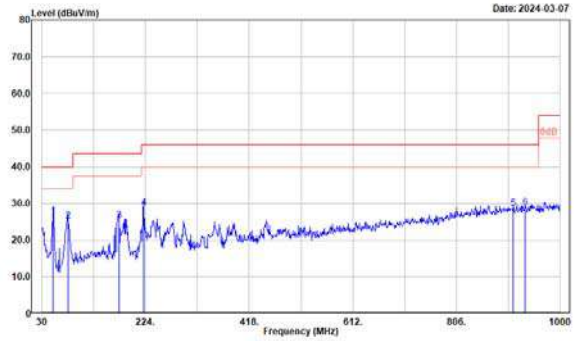
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
53.280	50.11	-16.12	33.99	40.00	-6.01	100	182	QP
70.740	41.23	-15.61	25.62	40.00	-14.38	100	59	QP
189.080	38.21	-11.97	26.24	43.50	-17.26	100	294	QP
217.210	38.41	-12.32	26.09	46.00	-19.91	100	59	QP
917.550	27.01	2.04	29.05	46.00	-16.95	100	163	QP
946.650	26.75	2.69	29.44	46.00	-16.56	100	182	QP



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
30.970	40.04	-3.87	36.17	40.00	-3.83	100	48	QP
51.340	51.53	-15.80	35.73	40.00	-4.27	100	141	QP
77.530	45.95	-15.90	30.05	40.00	-9.95	100	354	QP
137.670	38.89	-10.01	28.88	43.50	-14.62	100	313	QP
141.550	39.24	-10.18	29.06	43.50	-14.44	100	179	QP
166.770	41.76	-11.15	30.61	43.50	-12.89	100	251	QP

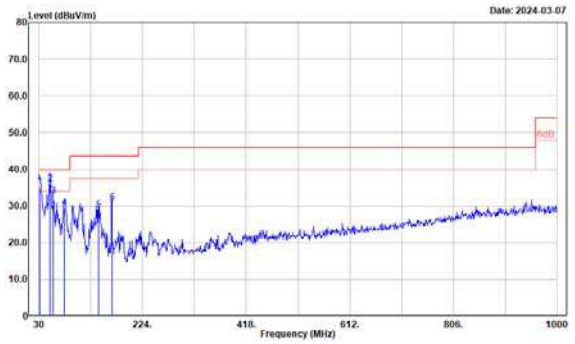
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
51.340	42.34	-15.80	26.54	40.00	-13.46	100	26	QP
78.500	41.17	-15.94	25.23	40.00	-14.77	100	320	QP
174.530	37.16	-11.89	25.27	43.50	-18.23	100	83	QP
220.120	40.99	-12.18	28.81	46.00	-17.19	100	343	QP
912.700	26.71	1.98	28.69	46.00	-17.31	100	12	QP
935.010	26.33	2.43	28.76	46.00	-17.24	100	117	QP

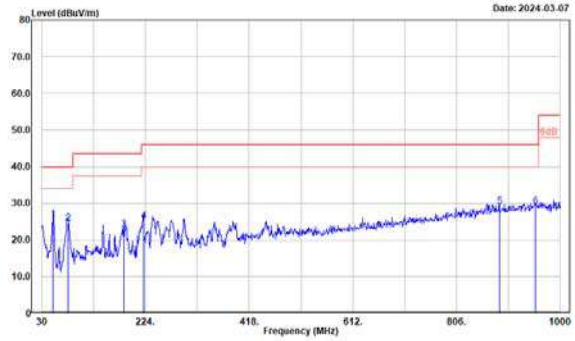
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
31.940	39.66	-4.45	35.21	40.00	-4.79	100	12	QP
51.340	51.82	-15.80	36.02	40.00	-3.98	100	107	QP
57.160	49.16	-16.40	32.76	40.00	-7.24	100	12	QP
77.530	45.49	-15.90	29.59	40.00	-10.41	100	360	QP
141.550	39.01	-10.18	28.83	43.50	-14.67	100	95	QP
166.770	41.96	-11.15	30.81	43.50	-12.69	100	265	QP

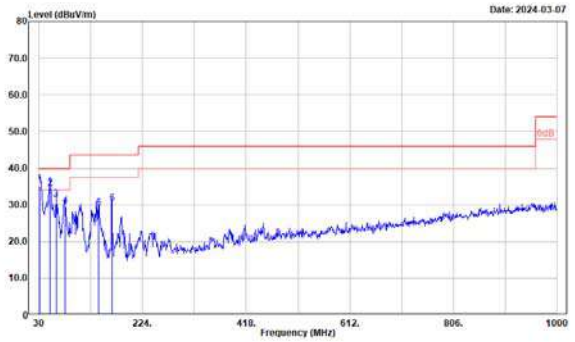
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
51.340	41.43	-15.80	25.63	40.00	-14.37	100	72	QP
79.470	40.38	-15.93	24.45	40.00	-15.55	100	306	QP
183.260	35.03	-12.16	22.87	43.50	-20.63	100	75	QP
220.120	37.41	-12.18	25.23	46.00	-20.77	100	340	QP
886.510	27.32	1.66	28.98	46.00	-17.02	100	325	QP
953.440	26.28	2.79	29.07	46.00	-16.93	100	199	QP

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
30.970	39.05	-3.87	35.18	40.00	-4.82	100	112	QP
50.370	50.04	-15.58	34.46	40.00	-5.54	100	161	QP
62.010	47.71	-16.33	31.38	40.00	-8.62	100	3	QP
78.500	45.62	-15.94	29.68	40.00	-10.32	100	12	QP
141.550	39.31	-10.18	29.13	43.50	-14.37	100	77	QP
166.770	41.47	-11.15	30.32	43.50	-13.18	100	289	QP

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

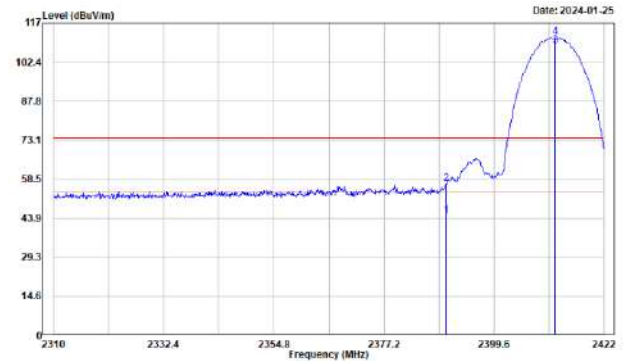
Band-Edge:

Non Beamforming:

802.11b Mode

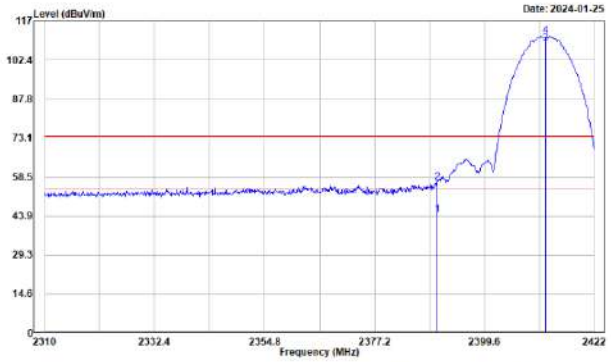
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.856	55.64	-11.02	44.62	54.00	-9.38	295	140	Average
2389.856	67.83	-11.02	56.81	74.00	-17.19	295	140	Peak
2412.000	119.50	-10.94	108.56			295	140	Average
2412.000	122.43	-10.94	111.49			295	140	Peak

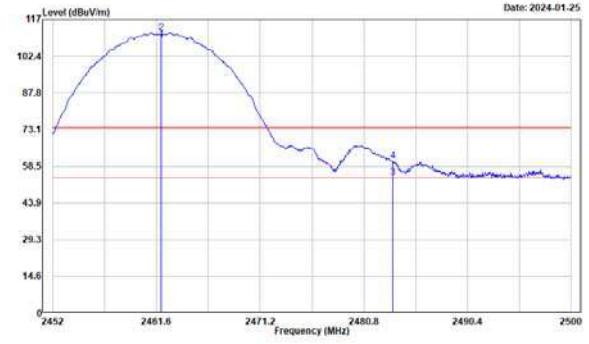
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.968	55.28	-11.02	44.26	54.00	-9.74	113	245	Average
2389.968	67.38	-11.02	56.36	74.00	-17.64	113	245	Peak
2412.000	119.42	-10.94	108.48			113	245	Average
2412.000	122.33	-10.94	111.39			113	245	Peak

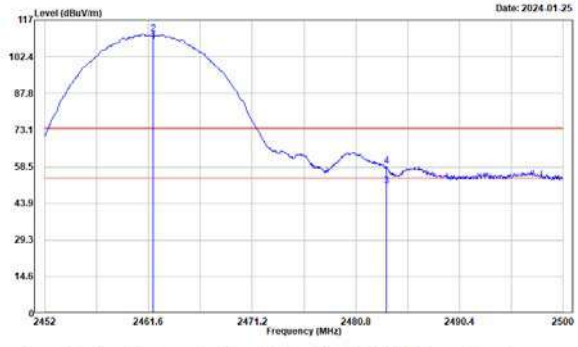
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	119.41	-10.76	108.65			282	134	Average
2462.000	122.25	-10.76	111.49			282	134	Peak
2483.500	64.37	-10.48	53.89	54.00	-0.11	282	134	Average
2483.500	71.17	-10.48	60.69	74.00	-13.31	282	134	Peak

Vertical

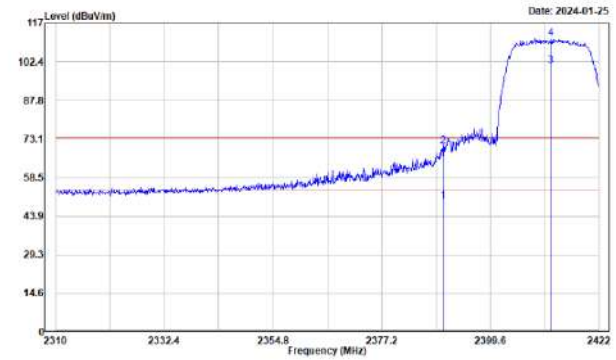


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	119.14	-10.76	108.38			186	138	Average
2462.000	121.99	-10.76	111.23			186	138	Peak
2483.632	61.27	-10.48	50.79	54.00	-3.21	186	138	Average
2483.632	69.18	-10.48	58.70	74.00	-15.30	186	138	Peak

802.11g mode

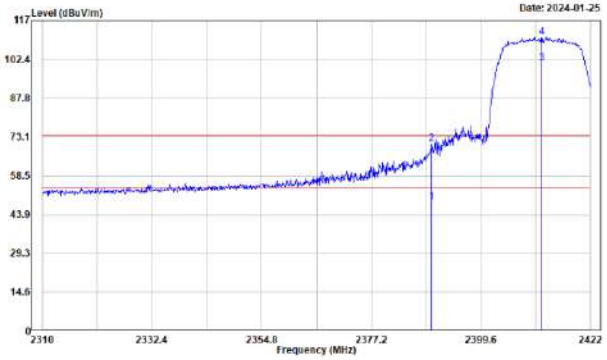
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.856	60.50	-11.02	49.48	54.00	-4.52	229	143	Average
2389.856	81.34	-11.02	70.32	74.00	-3.68	229	143	Peak
2412.000	111.90	-10.94	100.96			229	143	Average
2412.000	122.34	-10.94	111.40			229	143	Peak

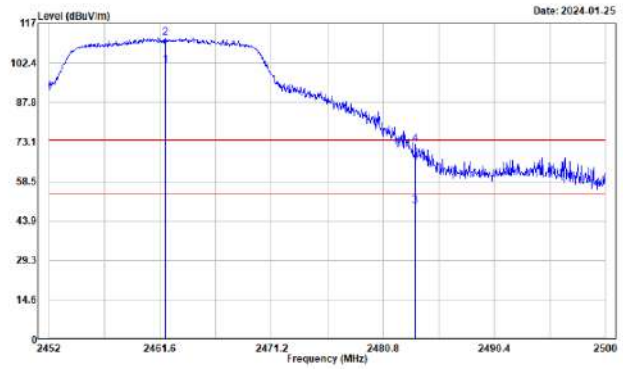
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.520	59.60	-11.03	48.57	54.00	-5.43	297	244	Average
2389.520	81.27	-11.03	70.24	74.00	-3.76	297	244	Peak
2412.000	111.83	-10.94	100.89			297	244	Average
2412.000	121.47	-10.94	110.53			297	244	Peak

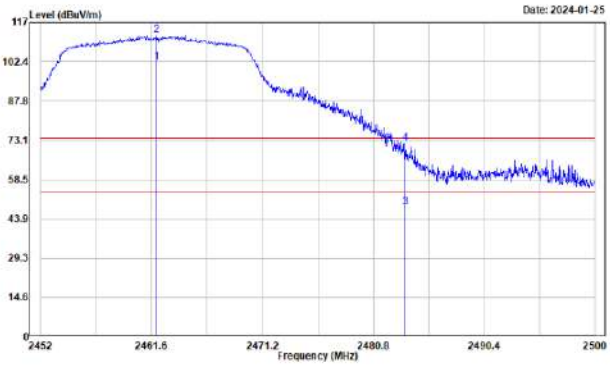
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	112.22	-10.76	101.46			135	131	Average
2462.000	122.42	-10.76	111.66			135	131	Peak
2483.584	60.10	-10.48	49.62	54.00	-4.38	135	131	Average
2483.584	82.87	-10.48	72.39	74.00	-1.61	135	131	Peak

Vertical

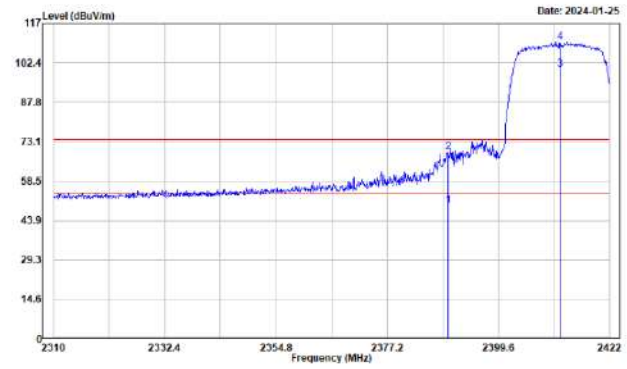


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	112.86	-10.76	102.10			203	123	Average
2462.000	122.94	-10.76	112.18			203	123	Peak
2483.584	58.79	-10.48	48.31	54.00	-5.69	203	123	Average
2483.584	82.51	-10.48	72.03	74.00	-1.97	203	123	Peak

802.11n HT20 Mode

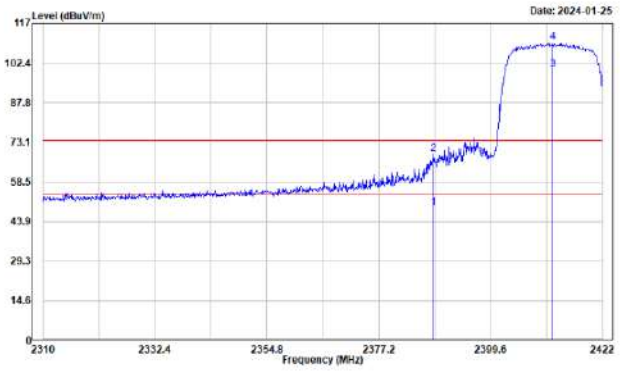
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.520	60.43	-11.03	49.40	54.00	-4.60	225	142	Average
2389.520	80.15	-11.03	69.12	74.00	-4.88	225	142	Peak
2412.000	110.96	-10.94	100.02			225	142	Average
2412.000	121.12	-10.94	110.18			225	142	Peak

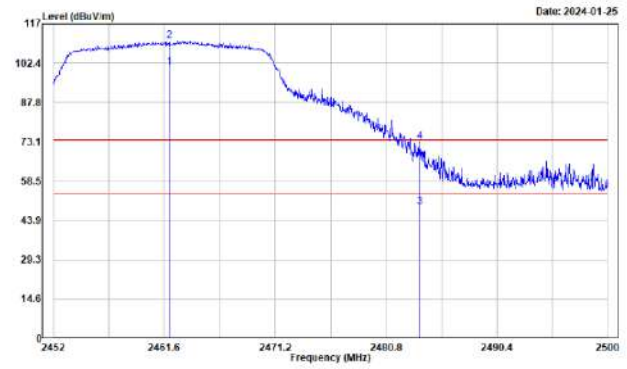
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2388.176	59.95	-11.04	48.91	54.00	-5.09	297	245	Average
2388.176	79.71	-11.04	68.67	74.00	-5.33	297	245	Peak
2412.000	110.78	-10.94	99.84			297	245	Average
2412.000	121.04	-10.94	110.10			297	245	Peak

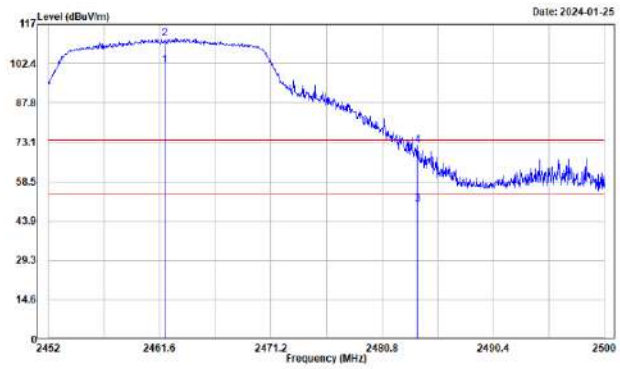
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	111.47	-10.76	100.71			285	132	Average
2462.000	121.50	-10.76	110.74			285	132	Peak
2483.728	59.45	-10.48	48.97	54.00	-5.03	285	132	Average
2483.728	83.57	-10.48	73.09	74.00	-0.91	285	132	Peak

Vertical

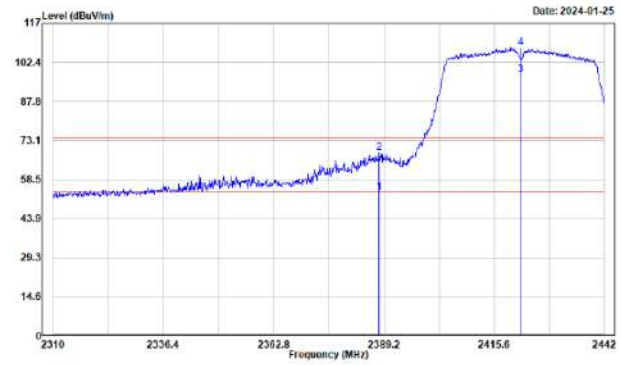


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	112.45	-10.76	101.69			259	234	Average
2462.000	122.47	-10.76	111.71			259	234	Peak
2483.872	60.55	-10.47	50.08	54.00	-3.92	259	234	Average
2483.872	82.39	-10.47	71.92	74.00	-2.08	259	234	Peak

802.11n HT40 Mode

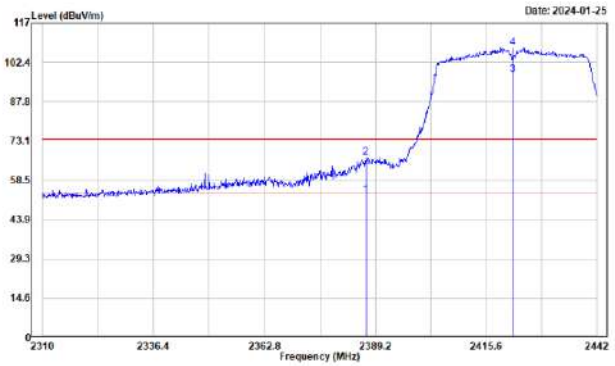
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2388.144	64.52	-11.04	53.48	54.00	-0.52	295	136	Average
2388.144	79.51	-11.04	68.47	74.00	-5.53	295	136	Peak
2422.000	108.69	-10.94	97.75			295	136	Average
2422.000	118.84	-10.94	107.90			295	136	Peak

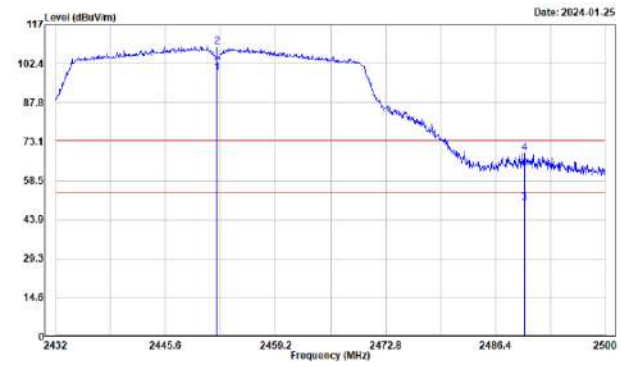
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2386.956	63.90	-11.03	52.87	54.00	-1.13	145	249	Average
2386.956	78.00	-11.03	66.97	74.00	-7.03	145	249	Peak
2422.000	108.74	-10.94	97.80			145	249	Average
2422.000	118.87	-10.94	107.93			145	249	Peak

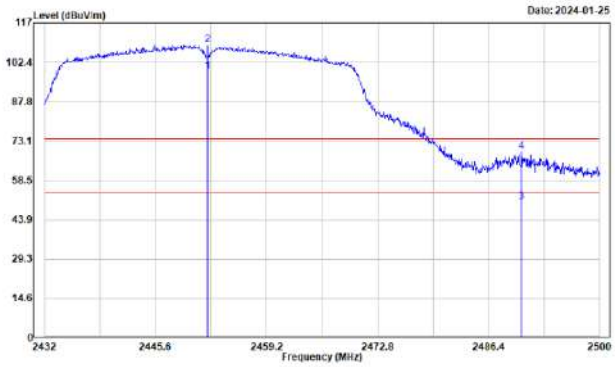
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	109.79	-10.89	98.90			116	136	Average
2452.000	119.74	-10.89	108.85			116	136	Peak
2490.004	60.52	-10.40	50.12	54.00	-3.88	116	136	Average
2490.004	79.09	-10.40	68.69	74.00	-5.31	116	136	Peak

Vertical

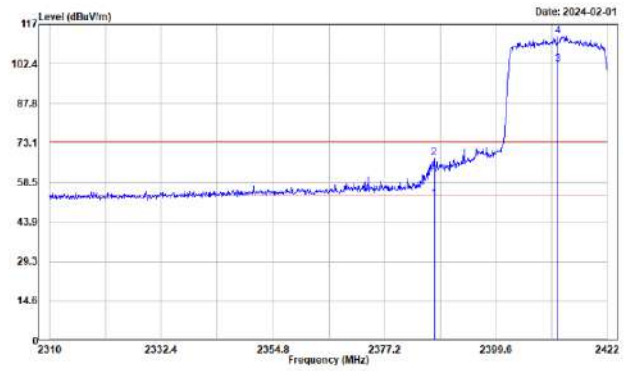


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	109.88	-10.89	98.99			154	138	Average
2452.000	119.79	-10.89	108.90			154	138	Peak
2490.412	60.67	-10.40	50.27	54.00	-3.73	154	138	Average
2490.412	79.37	-10.40	68.97	74.00	-5.03	154	138	Peak

802.11ax HE20 Mode

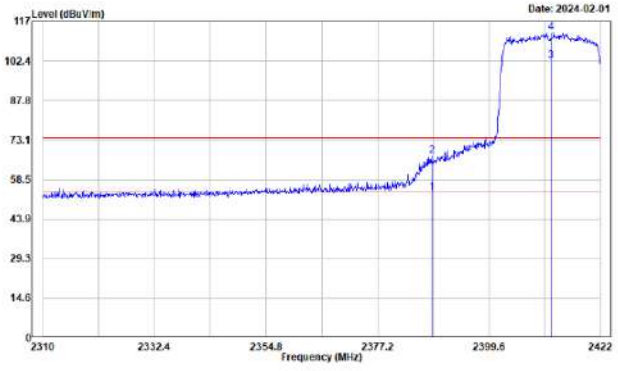
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2387.168	63.24	-11.03	52.21	54.00	-1.79	168	151	Average
2387.168	78.49	-11.03	67.46	74.00	-6.54	168	151	Peak
2412.000	112.93	-10.94	101.99			168	151	Average
2412.000	123.43	-10.94	112.49			168	151	Peak

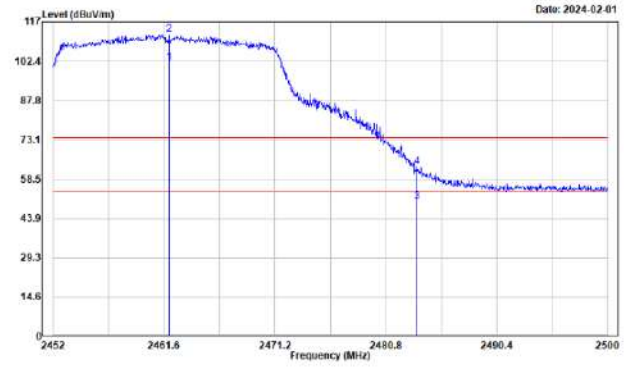
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2388.064	64.61	-11.04	53.57	54.00	-0.43	290	51	Average
2388.064	78.31	-11.04	67.27	74.00	-6.73	290	51	Peak
2412.000	113.34	-10.94	102.40			290	51	Average
2412.000	123.75	-10.94	112.81			290	51	Peak

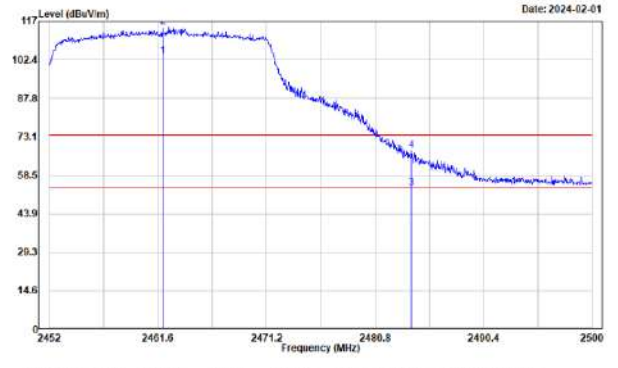
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	112.45	-10.76	101.69			222	150	Average
2462.000	123.13	-10.76	112.37			222	150	Peak
2483.500	60.70	-10.48	50.22	54.00	-3.78	222	150	Average
2483.500	73.45	-10.48	62.97	74.00	-11.03	222	150	Peak

Vertical

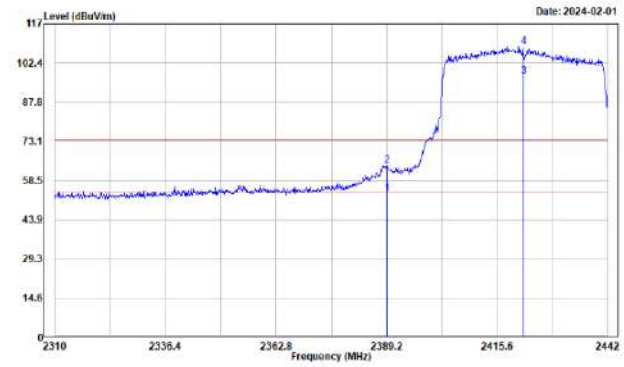


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	114.35	-10.76	103.59			191	55	Average
2462.000	125.65	-10.76	114.89			191	55	Peak
2484.016	64.02	-10.47	53.55	54.00	-0.45	191	55	Average
2484.016	78.24	-10.47	67.77	74.00	-6.23	191	55	Peak

802.11ax HE40 Mode

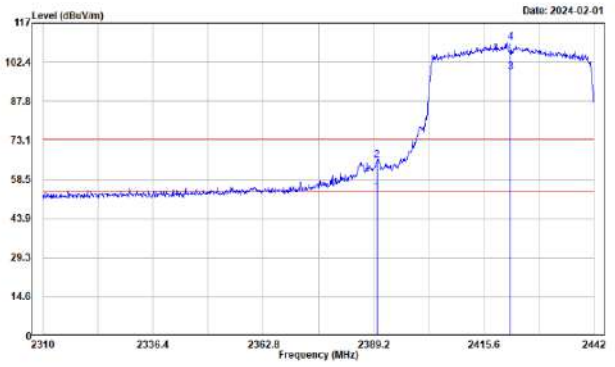
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.200	64.61	-11.03	53.58	54.00	-0.42	168	152	Average
2389.200	75.03	-11.03	64.00	74.00	-10.00	168	152	Peak
2422.000	108.44	-10.94	97.50			168	152	Average
2422.000	119.41	-10.94	108.47			168	152	Peak

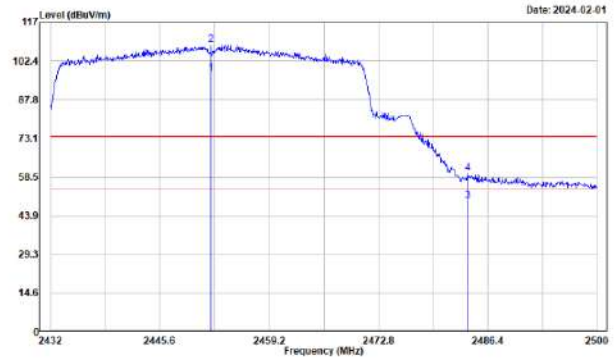
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.992	64.55	-11.02	53.53	54.00	-0.47	291	53	Average
2389.992	76.69	-11.02	65.67	74.00	-8.33	291	53	Peak
2422.000	109.65	-10.94	98.71			291	53	Average
2422.000	120.73	-10.94	109.79			291	53	Peak

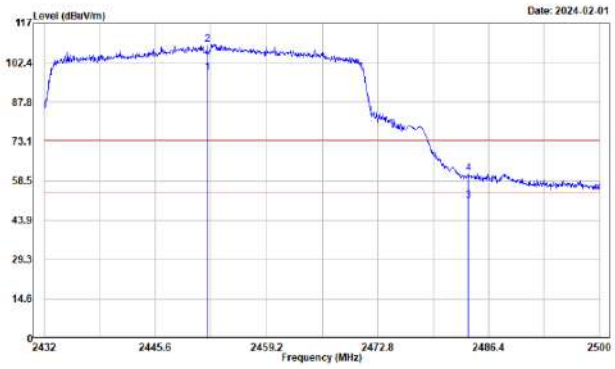
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	108.60	-10.89	97.71			168	149	Average
2452.000	119.36	-10.89	108.47			168	149	Peak
2483.884	60.01	-10.47	49.54	54.00	-4.46	168	149	Average
2483.884	70.26	-10.47	59.79	74.00	-14.21	168	149	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	109.35	-10.89	98.46			286	86	Average
2452.000	120.10	-10.89	109.21			286	86	Peak
2483.952	61.44	-10.47	50.97	54.00	-3.03	286	86	Average
2483.952	71.67	-10.47	61.20	74.00	-12.80	286	86	Peak

Level = Reading + Factor.

Margin = Level – Limit.

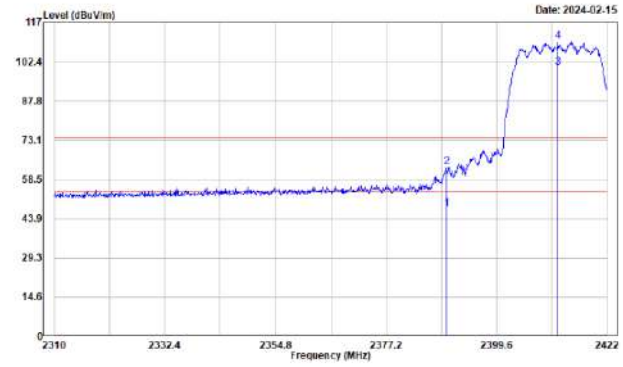
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Beamforming:

802.11n HT20 Mode

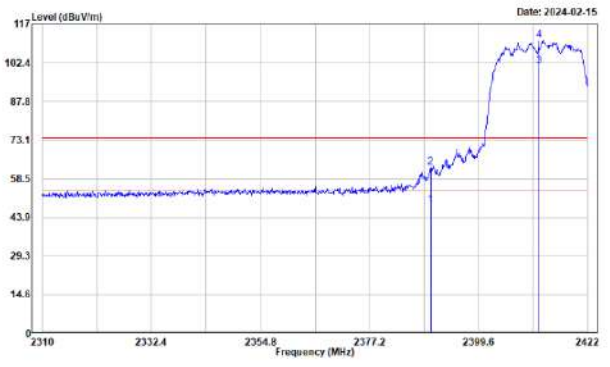
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.408	58.55	-11.03	47.52	54.00	-6.48	171	344	Average
2389.408	74.25	-11.03	63.22	74.00	-10.78	171	344	Peak
2412.000	111.22	-10.94	100.28			171	344	Average
2412.000	121.01	-10.94	110.07			171	344	Peak

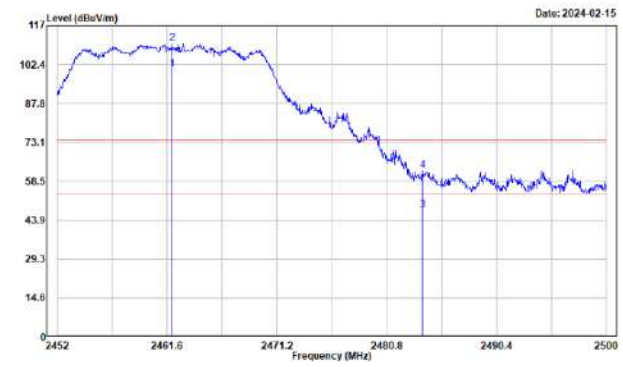
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.744	59.38	-11.02	48.36	54.00	-5.64	191	178	Average
2389.744	73.83	-11.02	62.81	74.00	-11.19	191	178	Peak
2412.000	112.13	-10.94	101.19			191	178	Average
2412.000	121.79	-10.94	110.85			191	178	Peak

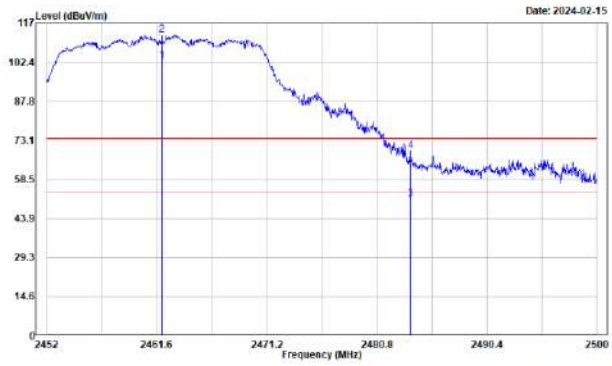
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	111.13	-10.76	100.37			145	344	Average
2462.000	120.95	-10.76	110.19			145	344	Peak
2483.920	58.09	-10.47	47.62	54.00	-6.38	145	344	Average
2483.920	72.94	-10.47	62.47	74.00	-11.53	145	344	Peak

Vertical

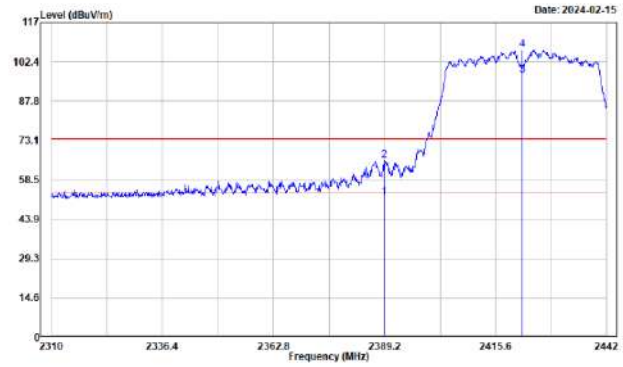


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	113.61	-10.76	102.85			113	145	Average
2462.000	123.43	-10.76	112.67			113	145	Peak
2483.680	61.48	-10.48	51.00	54.00	-3.00	113	145	Average
2483.680	79.60	-10.48	69.12	74.00	-4.88	113	145	Peak

802.11n HT40 Mode

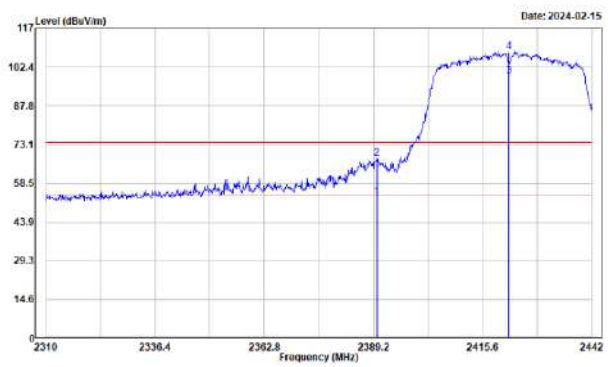
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.068	62.94	-11.03	51.91	54.00	-2.09	141	345	Average
2389.068	76.60	-11.03	65.57	74.00	-8.43	141	345	Peak
2422.000	108.43	-10.94	97.49			141	345	Average
2422.000	117.70	-10.94	106.76			141	345	Peak

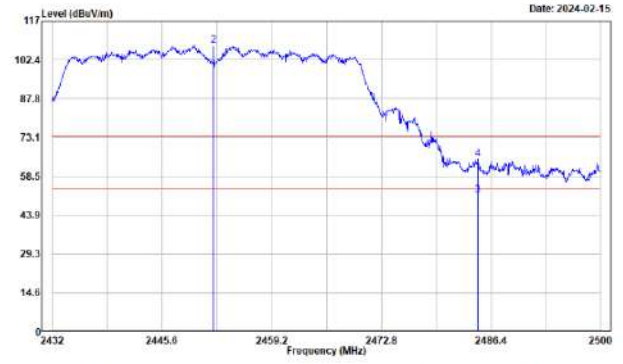
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.992	64.20	-11.02	53.18	54.00	-0.82	192	40	Average
2389.992	78.77	-11.02	67.75	74.00	-6.25	192	40	Peak
2422.000	109.91	-10.94	98.97			192	40	Average
2422.000	119.15	-10.94	108.21			192	40	Peak

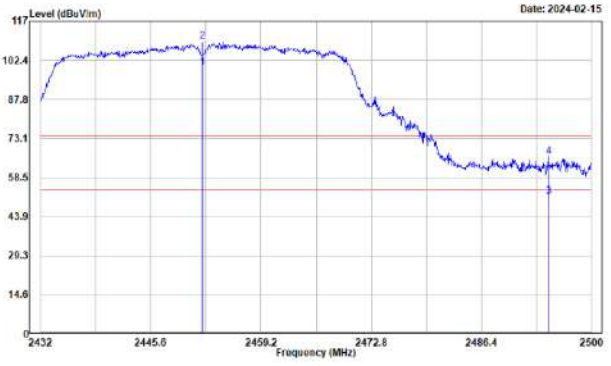
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	109.15	-10.89	98.26			168	347	Average
2452.000	118.72	-10.89	107.83			168	347	Peak
2484.768	61.82	-10.46	51.36	54.00	-2.64	168	347	Average
2484.768	75.61	-10.46	65.15	74.00	-8.85	168	347	Peak

Vertical

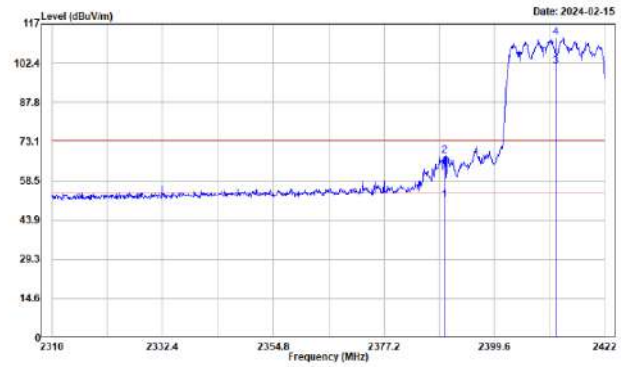


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	110.37	-10.89	99.48			217	44	Average
2452.000	120.13	-10.89	109.24			217	44	Peak
2494.628	61.84	-10.34	51.50	54.00	-2.50	217	44	Average
2494.628	76.60	-10.34	66.26	74.00	-7.74	217	44	Peak

802.11ax HE20 Mode

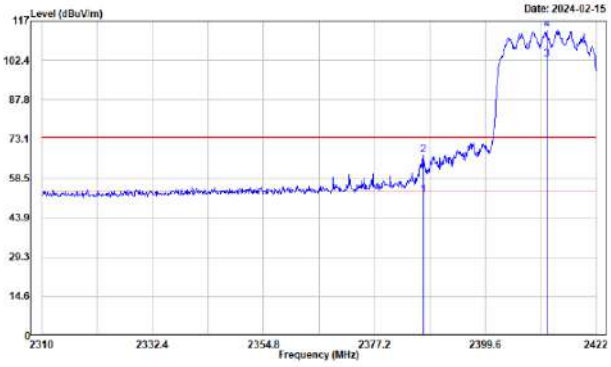
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.408	62.42	-11.03	51.39	54.00	-2.61	148	343	Average
2389.408	78.95	-11.03	67.92	74.00	-6.08	148	343	Peak
2412.000	112.10	-10.94	101.16			148	343	Average
2412.000	122.77	-10.94	111.83			148	343	Peak

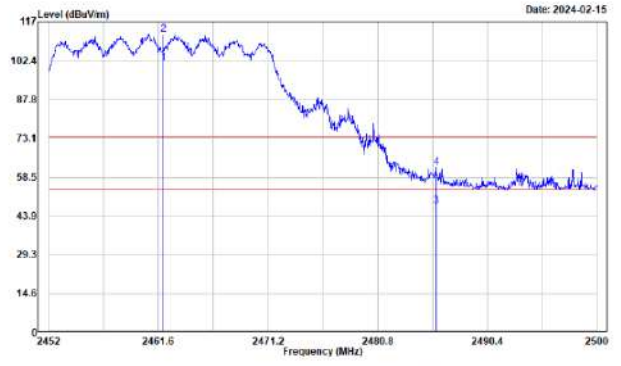
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2387.056	63.41	-11.03	52.38	54.00	-1.62	196	182	Average
2387.056	78.24	-11.03	67.21	74.00	-6.79	196	182	Peak
2412.000	113.73	-10.94	102.79			196	182	Average
2412.000	124.73	-10.94	113.79			196	182	Peak

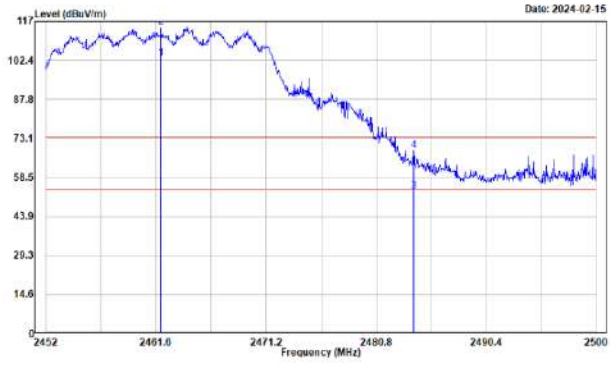
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	112.12	-10.76	101.36			142	344	Average
2462.000	123.01	-10.76	112.25			142	344	Peak
2485.888	58.15	-10.45	47.70	54.00	-6.30	142	344	Average
2485.888	72.46	-10.45	62.01	74.00	-11.99	142	344	Peak

Vertical

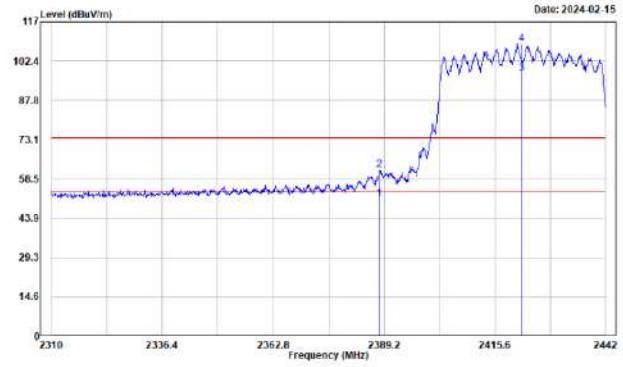


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2462.000	113.69	-10.76	102.93			112	144	Average
2462.000	125.50	-10.76	114.74			112	144	Peak
2484.064	63.82	-10.47	53.35	54.00	-0.65	112	144	Average
2484.064	79.07	-10.47	68.60	74.00	-5.40	112	144	Peak

802.11ax HE40 Mode

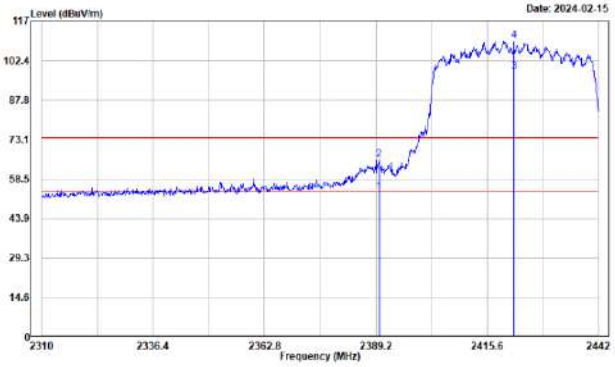
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2388.144	62.22	-11.04	51.18	54.00	-2.82	139	345	Average
2388.144	72.75	-11.04	61.71	74.00	-12.29	139	345	Peak
2422.000	108.73	-10.94	97.79			139	345	Average
2422.000	119.58	-10.94	108.64			139	345	Peak

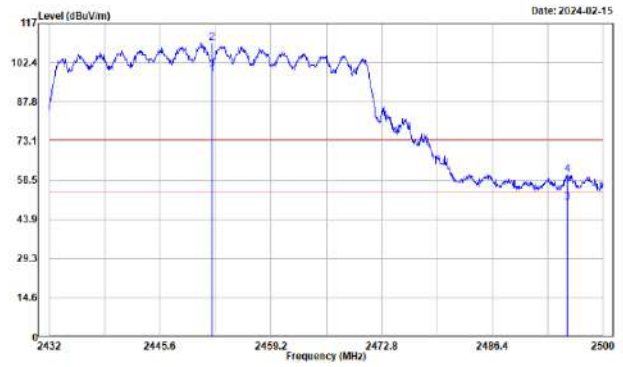
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2389.992	64.48	-11.02	53.46	54.00	-0.54	199	40	Average
2389.992	76.56	-11.02	65.54	74.00	-8.46	199	40	Peak
2422.000	109.29	-10.94	98.35			199	40	Average
2422.000	120.52	-10.94	109.58			199	40	Peak

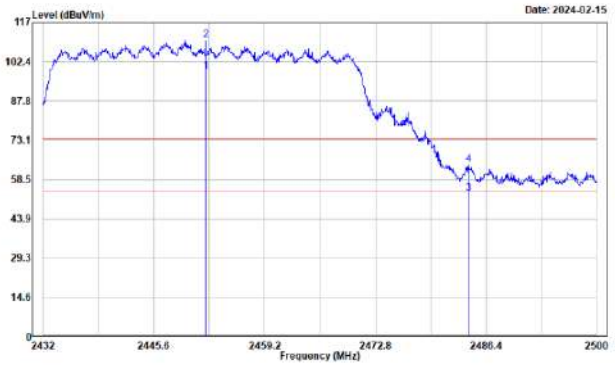
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	108.90	-10.89	98.01			168	345	Average
2452.000	120.54	-10.89	109.65			168	345	Peak
2495.580	60.47	-10.33	50.14	54.00	-3.86	168	345	Average
2495.580	71.00	-10.33	60.67	74.00	-13.33	168	345	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2452.000	109.35	-10.89	98.46			237	43	Average
2452.000	121.30	-10.89	110.41			237	43	Peak
2484.224	63.82	-10.47	53.35	54.00	-0.65	237	43	Average
2484.224	74.67	-10.47	64.20	74.00	-9.80	237	43	Peak

Level = Reading + Factor.

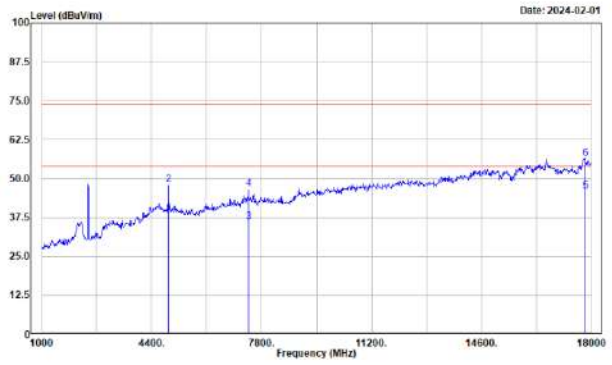
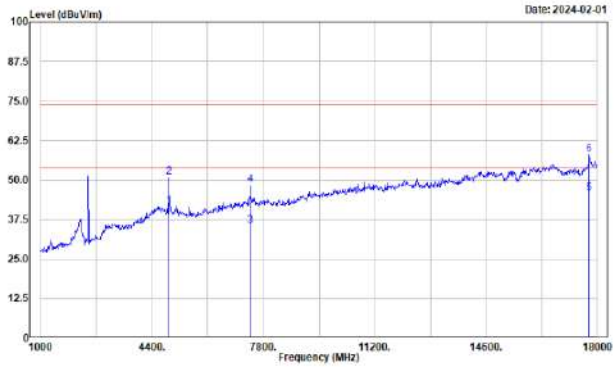
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

1GHz-18GHz:

Non Beamforming:

(worst case is 802.11ax HE20 mode, high channel)

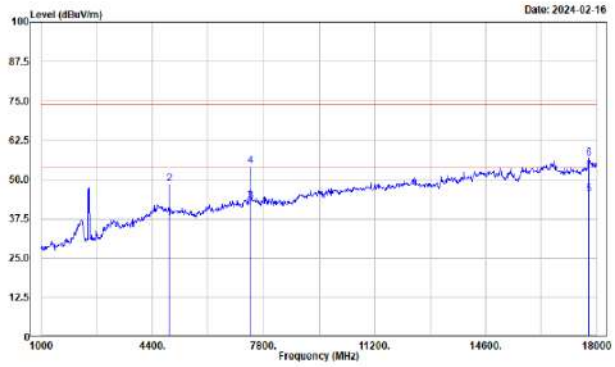
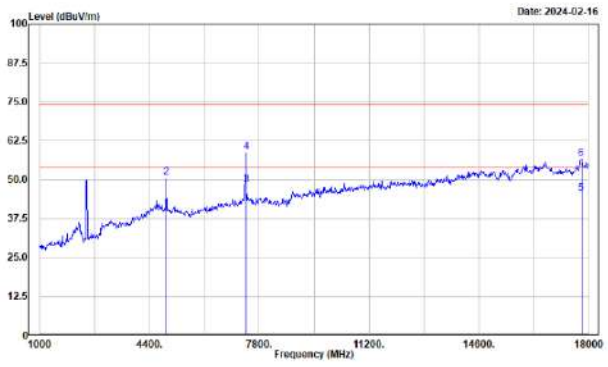
Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	42.47	-3.84	38.63	54.00	-15.37	110	21	Average
4924.000	51.75	-3.84	47.91	74.00	-26.09	110	21	Peak
7386.000	35.72	0.45	36.17	54.00	-17.83	137	312	Average
7386.000	46.11	0.45	46.56	74.00	-27.44	137	312	Peak
17813.000	32.94	12.93	45.87	54.00	-8.13	150	63	Average
17813.000	43.47	12.93	56.40	74.00	-17.60	150	63	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	45.45	-3.84	41.61	54.00	-12.39	100	351	Average
4924.000	54.70	-3.84	50.86	74.00	-23.14	100	351	Peak
7386.000	34.95	0.45	35.40	54.00	-18.60	114	61	Average
7386.000	48.06	0.45	48.51	74.00	-25.49	114	61	Peak
17745.000	33.18	12.64	45.82	54.00	-8.18	150	64	Average
17745.000	45.31	12.64	57.95	74.00	-16.05	150	64	Peak

Beamforming:

(worst case is 802.11ax HE20 mode, high channel)

Horizontal	Vertical
	

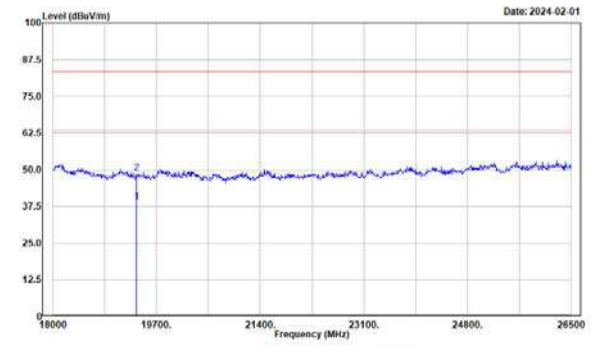
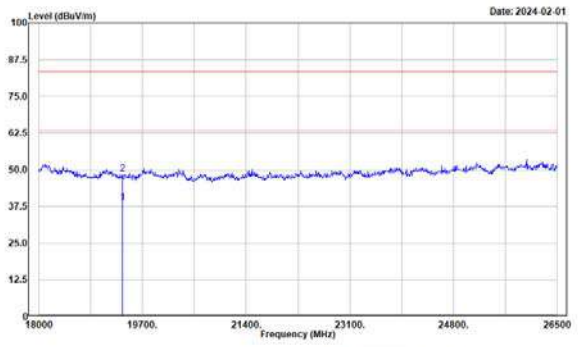
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	41.44	-3.84	37.60	54.00	-16.40	100	23	Average
4924.000	52.44	-3.84	48.60	74.00	-25.40	100	23	Peak
7386.000	42.56	0.45	43.01	54.00	-10.99	108	325	Average
7386.000	53.87	0.45	54.32	74.00	-19.68	108	325	Peak
17762.000	32.48	12.71	45.19	54.00	-8.81	150	357	Average
17762.000	43.80	12.71	56.51	74.00	-17.49	150	357	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	44.44	-3.84	40.60	54.00	-13.40	100	128	Average
4924.000	54.48	-3.84	50.64	74.00	-23.36	100	128	Peak
7386.000	47.79	0.45	48.24	54.00	-5.76	106	17	Average
7386.000	58.25	0.45	58.70	74.00	-15.30	106	17	Peak
17779.000	32.63	12.79	45.42	54.00	-8.58	150	173	Average
17779.000	43.91	12.79	56.70	74.00	-17.30	150	173	Peak

18GHz-26.5GHz:

Non Beamforming:

(worst case is 802.11ax HE40 mode, low channel)

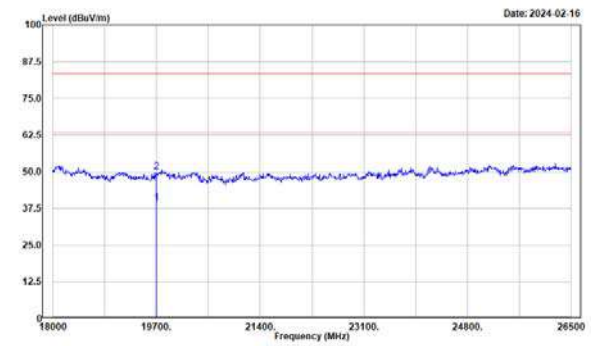
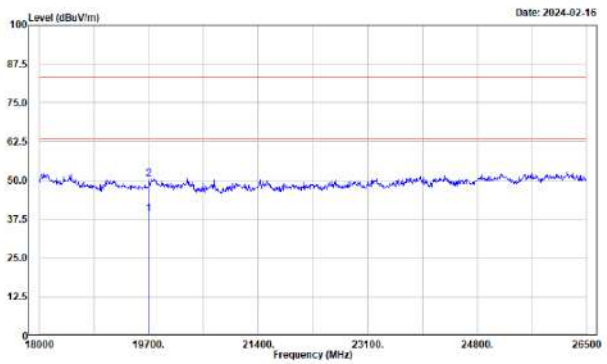
Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19376.000	22.07	16.83	38.90	63.50	-24.60	150	147	Average
19376.000	31.99	16.83	48.82	83.50	-34.68	150	147	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19376.000	21.99	16.83	38.82	63.50	-24.68	150	360	Average
19376.000	31.74	16.83	48.57	83.50	-34.93	150	360	Peak

Beamforming:

(worst case is 802.11ax20 mode, high channel)

Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	21.75	17.55	39.30	63.50	-24.20	150	160	Average
19696.000	32.41	17.55	49.96	83.50	-33.54	150	160	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	21.80	17.55	39.35	63.50	-24.15	150	40	Average
19696.000	32.85	17.55	50.40	83.50	-33.10	150	40	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

For 18-26.5GHz Convert the test distance limit of 3 meters to a limit of 1 meter:

Conversion factor = 20 log (1m/3m) = 9.5 dB , Limit = 54+9.5 = 63.50 dBuV/m @ 1m

Above 1GHz

Non Beamforming:

802.11b Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	34.62	-3.75	30.87	54.00	-23.13	116	22	Average
4824.000	44.47	-3.75	40.72	74.00	-33.28	116	22	Peak
7236.000	30.98	0.29	31.27	54.00	-22.73	150	266	Average
7236.000	40.51	0.29	40.80	74.00	-33.20	150	266	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	34.73	-3.75	30.98	54.00	-23.02	105	342	Average
4824.000	44.15	-3.75	40.40	74.00	-33.60	105	342	Peak
7236.000	35.12	0.29	35.41	54.00	-18.59	100	184	Average
7236.000	43.88	0.29	44.17	74.00	-29.83	100	184	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	35.51	-3.86	31.65	54.00	-22.35	111	23	Average
4874.000	43.87	-3.86	40.01	74.00	-33.99	111	23	Peak
7311.000	34.27	0.18	34.45	54.00	-19.55	112	267	Average
7311.000	43.87	0.18	44.05	74.00	-29.95	112	267	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	35.68	-3.86	31.82	54.00	-22.18	100	128	Average
4874.000	44.56	-3.86	40.70	74.00	-33.30	100	128	Peak
7311.000	35.39	0.18	35.57	54.00	-18.43	152	180	Average
7311.000	44.60	0.18	44.78	74.00	-29.22	152	180	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	34.80	-3.84	30.96	54.00	-23.04	106	20	Average
4924.000	43.81	-3.84	39.97	74.00	-34.03	106	20	Peak
7386.000	31.48	0.45	31.93	54.00	-22.07	103	111	Average
7386.000	42.32	0.45	42.77	74.00	-31.23	103	111	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	35.18	-3.84	31.34	54.00	-22.66	103	344	Average
4924.000	43.91	-3.84	40.07	74.00	-33.93	103	344	Peak
7386.000	34.81	0.45	35.26	54.00	-18.74	100	207	Average
7386.000	44.19	0.45	44.64	74.00	-29.36	100	207	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11g Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	30.30	-3.75	26.55	54.00	-27.45	152	1	Average
4824.000	41.97	-3.75	38.22	74.00	-35.78	152	1	Peak
7236.000	29.15	0.29	29.44	54.00	-24.56	145	238	Average
7236.000	40.76	0.29	41.05	74.00	-32.95	145	238	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	30.35	-3.75	26.60	54.00	-27.40	156	358	Average
4824.000	42.14	-3.75	38.39	74.00	-35.61	156	358	Peak
7236.000	28.92	0.29	29.21	54.00	-24.79	149	334	Average
7236.000	42.84	0.29	43.13	74.00	-30.87	149	334	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.45	-3.86	26.59	54.00	-27.41	152	83	Average
4874.000	41.23	-3.86	37.37	74.00	-36.63	152	83	Peak
7311.000	29.08	0.18	29.26	54.00	-24.74	147	19	Average
7311.000	40.56	0.18	40.74	74.00	-33.26	147	19	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.46	-3.86	26.60	54.00	-27.40	154	312	Average
4874.000	41.95	-3.86	38.09	74.00	-35.91	154	312	Peak
7311.000	29.09	0.18	29.27	54.00	-24.73	148	165	Average
7311.000	42.54	0.18	42.72	74.00	-31.28	148	165	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	30.14	-3.84	26.30	54.00	-27.70	151	233	Average
4924.000	42.46	-3.84	38.62	74.00	-35.38	151	233	Peak
7386.000	29.57	0.45	30.02	54.00	-23.98	148	58	Average
7386.000	41.68	0.45	42.13	74.00	-31.87	148	58	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	30.31	-3.84	26.47	54.00	-27.53	157	29	Average
4924.000	41.37	-3.84	37.53	74.00	-36.47	157	29	Peak
7386.000	29.64	0.45	30.09	54.00	-23.91	147	68	Average
7386.000	41.54	0.45	41.99	74.00	-32.01	147	68	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11n HT20 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	30.36	-3.75	26.61	54.00	-27.39	153	360	Average
4824.000	42.10	-3.75	38.35	74.00	-35.65	153	360	Peak
7236.000	28.84	0.29	29.13	54.00	-24.87	144	353	Average
7236.000	40.48	0.29	40.77	74.00	-33.23	144	353	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	30.25	-3.75	26.50	54.00	-27.50	155	175	Average
4824.000	41.69	-3.75	37.94	74.00	-36.06	155	175	Peak
7236.000	28.98	0.29	29.27	54.00	-24.73	148	210	Average
7236.000	40.90	0.29	41.19	74.00	-32.81	148	210	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.20	-3.86	26.34	54.00	-27.66	152	295	Average
4874.000	41.33	-3.86	37.47	74.00	-36.53	152	295	Peak
7311.000	29.03	0.18	29.21	54.00	-24.79	148	268	Average
7311.000	42.07	0.18	42.25	74.00	-31.75	148	268	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.39	-3.86	26.53	54.00	-27.47	156	51	Average
4874.000	42.55	-3.86	38.69	74.00	-35.31	156	51	Peak
7311.000	28.81	0.18	28.99	54.00	-25.01	151	289	Average
7311.000	40.31	0.18	40.49	74.00	-33.51	151	289	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	30.26	-3.84	26.42	54.00	-27.58	152	175	Average
4924.000	41.71	-3.84	37.87	74.00	-36.13	152	175	Peak
7386.000	29.56	0.45	30.01	54.00	-23.99	144	326	Average
7386.000	41.56	0.45	42.01	74.00	-31.99	144	326	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	30.29	-3.84	26.45	54.00	-27.55	153	272	Average
4924.000	41.52	-3.84	37.68	74.00	-36.32	153	272	Peak
7386.000	29.41	0.45	29.86	54.00	-24.14	145	80	Average
7386.000	41.46	0.45	41.91	74.00	-32.09	145	80	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11n HT40 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	30.91	-3.79	27.12	54.00	-26.88	153	71	Average
4844.000	42.60	-3.79	38.81	74.00	-35.19	153	71	Peak
7266.000	28.90	0.26	29.16	54.00	-24.84	149	145	Average
7266.000	41.09	0.26	41.35	74.00	-32.65	149	145	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	30.73	-3.79	26.94	54.00	-27.06	155	321	Average
4844.000	42.20	-3.79	38.41	74.00	-35.59	155	321	Peak
7266.000	29.49	0.26	29.75	54.00	-24.25	147	269	Average
7266.000	40.44	0.26	40.70	74.00	-33.30	147	269	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.78	-3.86	26.92	54.00	-27.08	152	54	Average
4874.000	42.01	-3.86	38.15	74.00	-35.85	152	54	Peak
7311.000	29.60	0.18	29.78	54.00	-24.22	146	308	Average
7311.000	40.39	0.18	40.57	74.00	-33.43	146	308	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.96	-3.86	27.10	54.00	-26.90	151	0	Average
4874.000	40.99	-3.86	37.13	74.00	-36.87	151	0	Peak
7311.000	29.50	0.18	29.68	54.00	-24.32	145	155	Average
7311.000	40.79	0.18	40.97	74.00	-33.03	145	155	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	30.88	-3.92	26.96	54.00	-27.04	154	18	Average
4904.000	42.31	-3.92	38.39	74.00	-35.61	154	18	Peak
7356.000	29.91	0.37	30.28	54.00	-23.72	145	38	Average
7356.000	41.40	0.37	41.77	74.00	-32.23	145	38	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	30.66	-3.92	26.74	54.00	-27.26	153	256	Average
4904.000	42.31	-3.92	38.39	74.00	-35.61	153	256	Peak
7356.000	29.84	0.37	30.21	54.00	-23.79	148	86	Average
7356.000	41.20	0.37	41.57	74.00	-32.43	148	86	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11ax HE20 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	41.31	-3.75	37.56	54.00	-16.44	100	24	Average
4824.000	51.73	-3.75	47.98	74.00	-26.02	100	24	Peak
7236.000	36.05	0.29	36.34	54.00	-17.66	152	259	Average
7236.000	44.54	0.29	44.83	74.00	-29.17	152	259	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	43.16	-3.75	39.41	54.00	-14.59	100	17	Average
4824.000	54.49	-3.75	50.74	74.00	-23.26	100	17	Peak
7236.000	34.43	0.29	34.72	54.00	-19.28	154	186	Average
7236.000	44.99	0.29	45.28	74.00	-28.72	154	186	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	43.38	-3.86	39.52	54.00	-14.48	114	21	Average
4874.000	52.41	-3.86	48.55	74.00	-25.45	114	21	Peak
7311.000	34.60	0.18	34.78	54.00	-19.22	153	84	Average
7311.000	43.19	0.18	43.37	74.00	-30.63	153	84	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	45.30	-3.86	41.44	54.00	-12.56	100	15	Average
4874.000	54.65	-3.86	50.79	74.00	-23.21	100	15	Peak
7311.000	39.40	0.18	39.58	54.00	-14.42	114	211	Average
7311.000	50.44	0.18	50.62	74.00	-23.38	114	211	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	42.47	-3.84	38.63	54.00	-15.37	110	21	Average
4924.000	51.75	-3.84	47.91	74.00	-26.09	110	21	Peak
7386.000	35.72	0.45	36.17	54.00	-17.83	137	312	Average
7386.000	46.11	0.45	46.56	74.00	-27.44	137	312	Peak
17813.000	32.94	12.93	45.87	54.00	-8.13	150	63	Average
17813.000	43.47	12.93	56.40	74.00	-17.60	150	63	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	45.45	-3.84	41.61	54.00	-12.39	100	351	Average
4924.000	54.70	-3.84	50.86	74.00	-23.14	100	351	Peak
7386.000	34.95	0.45	35.40	54.00	-18.60	114	61	Average
7386.000	48.06	0.45	48.51	74.00	-25.49	114	61	Peak
17745.000	33.18	12.64	45.82	54.00	-8.18	150	64	Average
17745.000	45.31	12.64	57.95	74.00	-16.05	150	64	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11ax HE40 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	38.03	-3.79	34.24	54.00	-19.76	118	21	Average
4844.000	48.43	-3.79	44.64	74.00	-29.36	118	21	Peak
7266.000	33.98	0.26	34.24	54.00	-19.76	153	286	Average
7266.000	42.50	0.26	42.76	74.00	-31.24	153	286	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	38.55	-3.79	34.76	54.00	-19.24	112	24	Average
4844.000	49.03	-3.79	45.24	74.00	-28.76	112	24	Peak
7266.000	33.96	0.26	34.22	54.00	-19.78	155	90	Average
7266.000	42.34	0.26	42.60	74.00	-31.40	155	90	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	36.56	-3.86	32.70	54.00	-21.30	159	349	Average
4874.000	46.56	-3.86	42.70	74.00	-31.30	159	349	Peak
7311.000	33.76	0.18	33.94	54.00	-20.06	148	137	Average
7311.000	43.06	0.18	43.24	74.00	-30.76	148	137	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	39.02	-3.86	35.16	54.00	-18.84	101	18	Average
4874.000	49.79	-3.86	45.93	74.00	-28.07	101	18	Peak
7311.000	33.73	0.18	33.91	54.00	-20.09	155	33	Average
7311.000	43.36	0.18	43.54	74.00	-30.46	155	33	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	38.37	-3.92	34.45	54.00	-19.55	100	21	Average
4904.000	48.31	-3.92	44.39	74.00	-29.61	100	21	Peak
7356.000	33.49	0.37	33.86	54.00	-20.14	151	290	Average
7356.000	41.88	0.37	42.25	74.00	-31.75	151	290	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	39.09	-3.92	35.17	54.00	-18.83	117	22	Average
4904.000	49.81	-3.92	45.89	74.00	-28.11	117	22	Peak
7356.000	33.86	0.37	34.23	54.00	-19.77	156	47	Average
7356.000	43.06	0.37	43.43	74.00	-30.57	156	47	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Beamforming:

802.11n HT20 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	34.32	-3.75	30.57	54.00	-23.43	152	15	Average
4824.000	43.61	-3.75	39.86	74.00	-34.14	152	15	Peak
7236.000	36.67	0.29	36.96	54.00	-17.04	100	327	Average
7236.000	50.57	0.29	50.86	74.00	-23.14	100	327	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	38.07	-3.86	34.21	54.00	-19.79	112	18	Average
4874.000	46.35	-3.86	42.49	74.00	-31.51	112	18	Peak
7311.000	39.92	0.18	40.10	54.00	-13.90	108	329	Average
7311.000	55.30	0.18	55.48	74.00	-18.52	108	329	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	38.07	-3.86	34.21	54.00	-19.79	112	18	Average
4874.000	46.35	-3.86	42.49	74.00	-31.51	112	18	Peak
7311.000	39.92	0.18	40.10	54.00	-13.90	108	329	Average
7311.000	55.30	0.18	55.48	74.00	-18.52	108	329	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	40.57	-3.86	36.71	54.00	-17.29	165	37	Average
4874.000	54.40	-3.86	50.54	74.00	-23.46	165	37	Peak
7311.000	42.98	0.18	43.16	54.00	-10.84	183	34	Average
7311.000	58.51	0.18	58.69	74.00	-15.31	183	34	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	38.65	-3.84	34.81	54.00	-19.19	100	16	Average
4924.000	52.55	-3.84	48.71	74.00	-25.29	100	16	Peak
7386.000	41.06	0.45	41.51	54.00	-12.49	110	328	Average
7386.000	56.62	0.45	57.07	74.00	-16.93	110	328	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	40.96	-3.84	37.12	54.00	-16.88	149	29	Average
4924.000	55.65	-3.84	51.81	74.00	-22.19	149	29	Peak
7386.000	45.90	0.45	46.35	54.00	-7.65	100	17	Average
7386.000	61.47	0.45	61.92	74.00	-12.08	100	17	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11n HT40 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	33.60	-3.79	29.81	54.00	-24.19	153	21	Average
4844.000	43.72	-3.79	39.93	74.00	-34.07	153	21	Peak
7266.000	35.52	0.26	35.78	54.00	-18.22	100	146	Average
7266.000	48.36	0.26	48.62	74.00	-25.38	100	146	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	36.11	-3.79	32.32	54.00	-21.68	149	332	Average
4844.000	48.47	-3.79	44.68	74.00	-29.32	149	332	Peak
7266.000	38.22	0.26	38.48	54.00	-15.52	112	17	Average
7266.000	51.19	0.26	51.45	74.00	-22.55	112	17	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	35.08	-3.86	31.22	54.00	-22.78	151	28	Average
4874.000	43.75	-3.86	39.89	74.00	-34.11	151	28	Peak
7311.000	37.81	0.18	37.99	54.00	-16.01	106	327	Average
7311.000	51.22	0.18	51.40	74.00	-22.60	106	327	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	38.69	-3.86	34.83	54.00	-19.17	116	129	Average
4874.000	51.88	-3.86	48.02	74.00	-25.98	116	129	Peak
7311.000	41.47	0.18	41.65	54.00	-12.35	114	15	Average
7311.000	54.31	0.18	54.49	74.00	-19.51	114	15	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	31.90	-3.92	27.98	54.00	-26.02	148	131	Average
4904.000	44.46	-3.92	40.54	74.00	-33.46	148	131	Peak
7356.000	36.74	0.37	37.11	54.00	-16.89	149	151	Average
7356.000	49.47	0.37	49.84	74.00	-24.16	149	151	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	39.24	-3.92	35.32	54.00	-18.68	160	31	Average
4904.000	51.81	-3.92	47.89	74.00	-26.11	160	31	Peak
7356.000	40.98	0.37	41.35	54.00	-12.65	182	33	Average
7356.000	54.79	0.37	55.16	74.00	-18.84	182	33	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11ax HE20 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	38.68	-3.75	34.93	54.00	-19.07	131	22	Average
4824.000	49.09	-3.75	45.34	74.00	-28.66	131	22	Peak
7236.000	37.53	0.29	37.82	54.00	-16.18	124	171	Average
7236.000	48.84	0.29	49.13	74.00	-24.87	124	171	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	42.51	-3.75	38.76	54.00	-15.24	102	11	Average
4824.000	52.24	-3.75	48.49	74.00	-25.51	102	11	Peak
7236.000	42.62	0.29	42.91	54.00	-11.09	100	31	Average
7236.000	53.74	0.29	54.03	74.00	-19.97	100	31	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	40.89	-3.86	37.03	54.00	-16.97	100	22	Average
4874.000	50.68	-3.86	46.82	74.00	-27.18	100	22	Peak
7311.000	40.80	0.18	40.98	54.00	-13.02	100	324	Average
7311.000	51.62	0.18	51.80	74.00	-22.20	100	324	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	43.70	-3.86	39.84	54.00	-14.16	106	127	Average
4874.000	53.95	-3.86	50.09	74.00	-23.91	106	127	Peak
7311.000	44.57	0.18	44.75	54.00	-9.25	100	30	Average
7311.000	55.43	0.18	55.61	74.00	-18.39	100	30	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	41.44	-3.84	37.60	54.00	-16.40	100	23	Average
4924.000	52.44	-3.84	48.60	74.00	-25.40	100	23	Peak
7386.000	42.56	0.45	43.01	54.00	-10.99	108	325	Average
7386.000	53.87	0.45	54.32	74.00	-19.68	108	325	Peak
17762.000	32.48	12.71	45.19	54.00	-8.81	150	357	Average
17762.000	43.80	12.71	56.51	74.00	-17.49	150	357	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	44.44	-3.84	40.60	54.00	-13.40	100	128	Average
4924.000	54.48	-3.84	50.64	74.00	-23.36	100	128	Peak
7386.000	47.79	0.45	48.24	54.00	-5.76	106	17	Average
7386.000	58.25	0.45	58.70	74.00	-15.30	106	17	Peak
17779.000	32.63	12.79	45.42	54.00	-8.58	150	173	Average
17779.000	43.91	12.79	56.70	74.00	-17.30	150	173	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

802.11ax HE40 Mode:

Low channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	35.92	-3.79	32.13	54.00	-21.87	148	216	Average
4844.000	44.89	-3.79	41.10	74.00	-32.90	148	216	Peak
7266.000	35.45	0.26	35.71	54.00	-18.29	153	333	Average
7266.000	43.61	0.26	43.87	74.00	-30.13	153	333	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	36.69	-3.79	32.90	54.00	-21.10	100	15	Average
4844.000	51.25	-3.79	47.46	74.00	-26.54	100	15	Peak
7266.000	39.21	0.26	39.47	54.00	-14.53	100	28	Average
7266.000	49.64	0.26	49.90	74.00	-24.10	100	28	Peak

Middle channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	35.30	-3.86	31.44	54.00	-22.56	153	149	Average
4874.000	43.79	-3.86	39.93	74.00	-34.07	153	149	Peak
7311.000	35.00	0.18	35.18	54.00	-18.82	147	118	Average
7311.000	43.04	0.18	43.22	74.00	-30.78	147	118	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	38.14	-3.86	34.28	54.00	-19.72	107	128	Average
4874.000	47.93	-3.86	44.07	74.00	-29.93	107	128	Peak
7311.000	40.34	0.18	40.52	54.00	-13.48	104	18	Average
7311.000	49.82	0.18	50.00	74.00	-24.00	104	18	Peak

High channel

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	36.22	-3.92	32.30	54.00	-21.70	148	28	Average
4904.000	43.81	-3.92	39.89	74.00	-34.11	148	28	Peak
7356.000	36.07	0.37	36.44	54.00	-17.56	146	177	Average
7356.000	43.11	0.37	43.48	74.00	-30.52	146	177	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	40.19	-3.92	36.27	54.00	-17.73	109	12	Average
4904.000	51.32	-3.92	47.40	74.00	-26.60	109	12	Peak
7356.000	40.42	0.37	40.79	54.00	-13.21	100	31	Average
7356.000	50.10	0.37	50.47	74.00	-23.53	100	31	Peak

Note:

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Conducted Spurious Emissions:

Non Beamforming:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)		Limit (dBc)	Result
		Chain 0	Chain 1		
B mode					
Low	2412	47.74	47.70	≥ 20	PASS
Mid	2437	47.88	47.36	≥ 20	PASS
High	2462	47.64	47.40	≥ 20	PASS
G mode					
Low	2412	42.12	40.12	≥ 20	PASS
Mid	2437	40.79	41.72	≥ 20	PASS
High	2462	41.42	41.56	≥ 20	PASS
N20 mode					
Low	2412	40.98	38.98	≥ 20	PASS
Mid	2437	43.16	41.02	≥ 20	PASS
High	2462	40.39	40.43	≥ 20	PASS
N40 mode					
Low	2422	38.89	38.23	≥ 20	PASS
Mid	2437	42.53	41.14	≥ 20	PASS
High	2452	40.53	39.31	≥ 20	PASS
AX20 mode					
Low	2412	48.88	51.87	≥ 20	PASS
Mid	2437	49.13	49.92	≥ 20	PASS
High	2462	48.84	50.04	≥ 20	PASS
AX40 mode					
Low	2422	46.43	46.41	≥ 20	PASS
Mid	2437	46.44	46.34	≥ 20	PASS
High	2452	46.87	46.79	≥ 20	PASS

Beamforming:

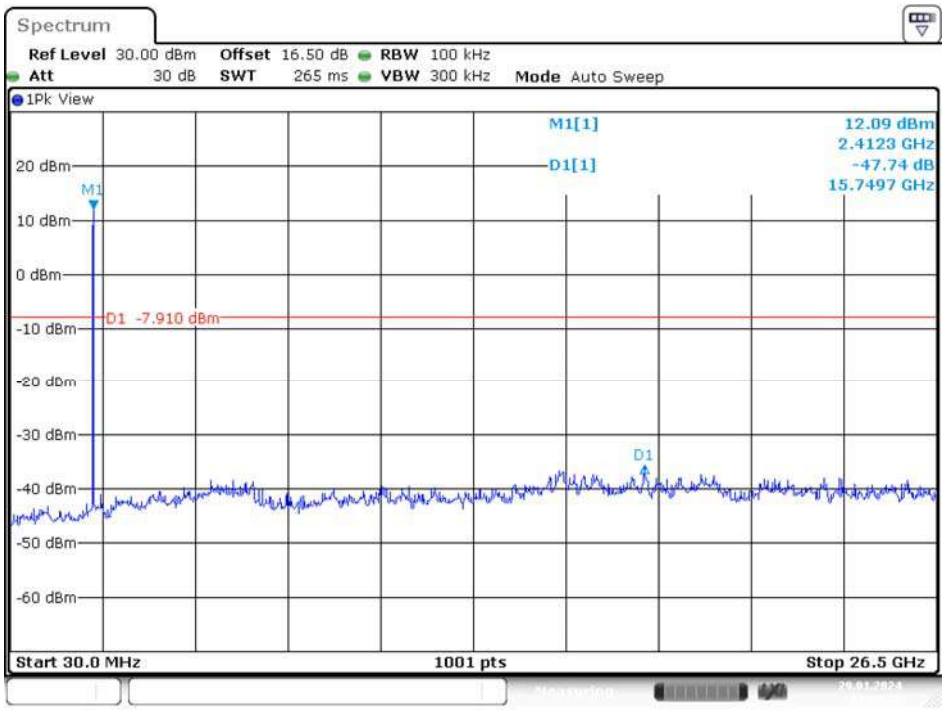
Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)		Limit (dBc)	Result
		Chain 0	Chain 1		
N20 mode					
Low	2412	50.74	50.34	≥ 20	PASS
Mid	2437	51.03	54.29	≥ 20	PASS
High	2462	52.59	52.53	≥ 20	PASS
N40 mode					
Low	2422	47.89	48.61	≥ 20	PASS
Mid	2437	49.87	51.17	≥ 20	PASS
High	2452	51.58	49.60	≥ 20	PASS
AX20 mode					
Low	2412	49.91	48.89	≥ 20	PASS
Mid	2437	48.93	50.45	≥ 20	PASS
High	2462	51.29	49.50	≥ 20	PASS
AX40 mode					
Low	2422	46.05	45.53	≥ 20	PASS
Mid	2437	46.76	47.49	≥ 20	PASS
High	2452	46.52	46.18	≥ 20	PASS

Non Beamforming:

Chain 0

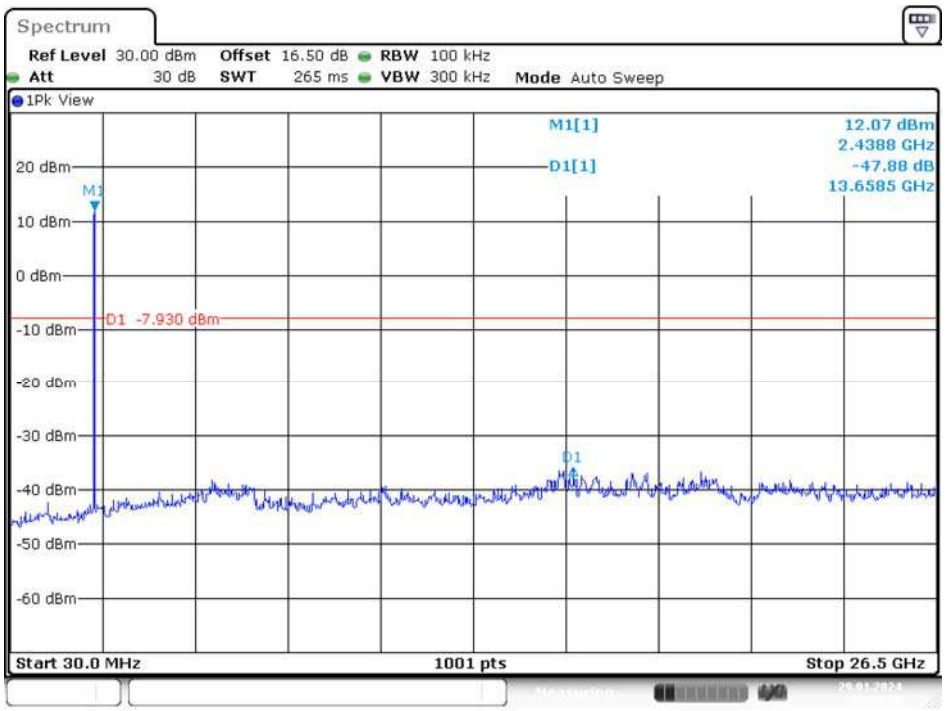
B Mode

Low Channel



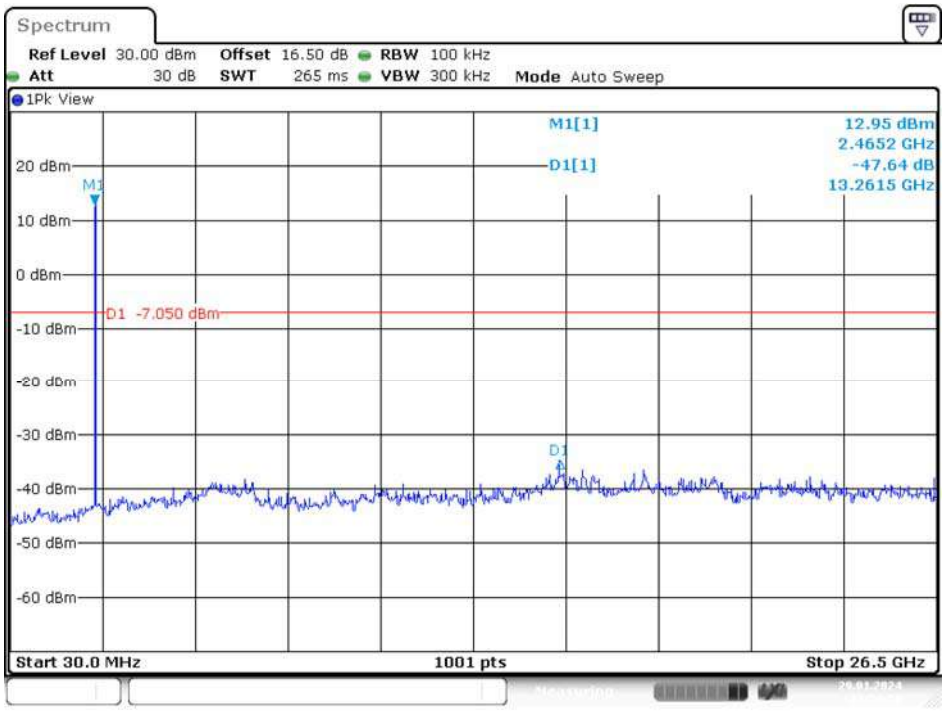
Date: 29.JAN.2024 13:39:25

Middle Channel



Date: 29.JAN.2024 13:51:58

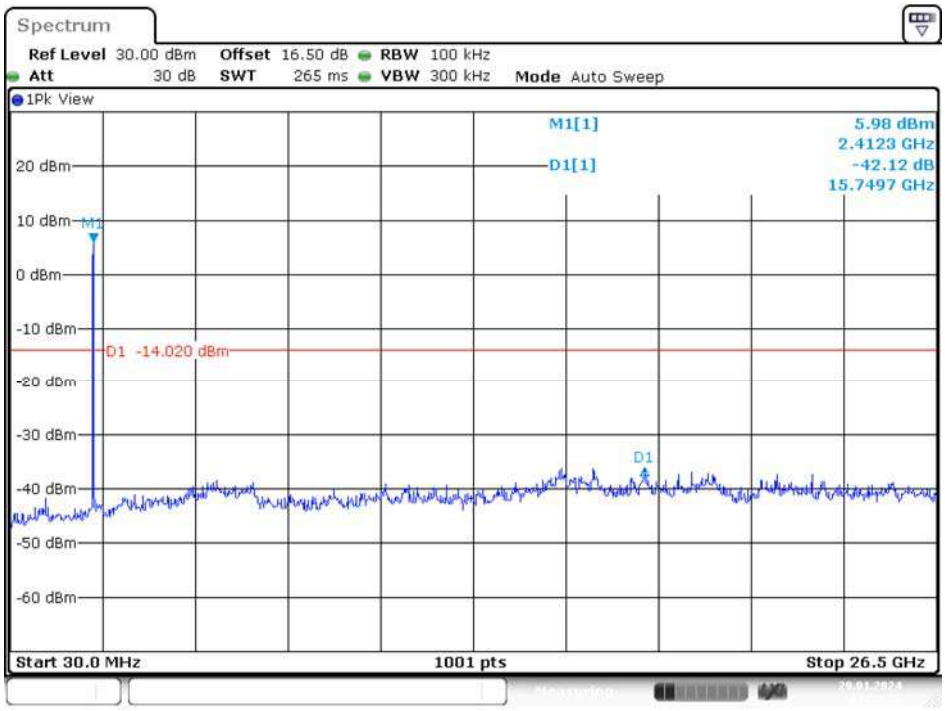
High Channel



Date: 29.JAN.2024 13:54:56

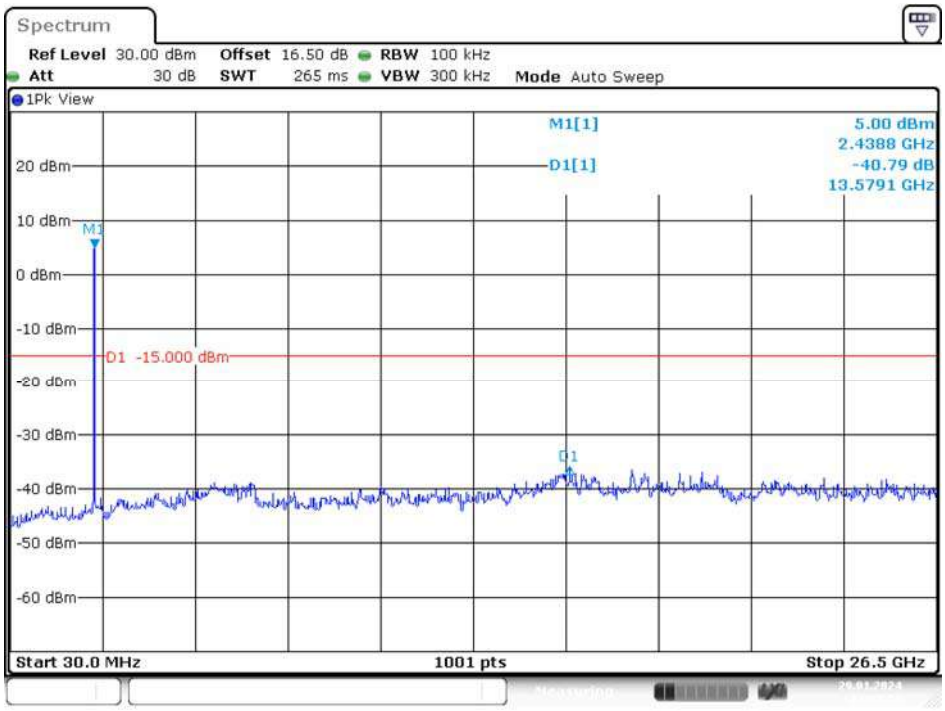
G Mode

Low Channel



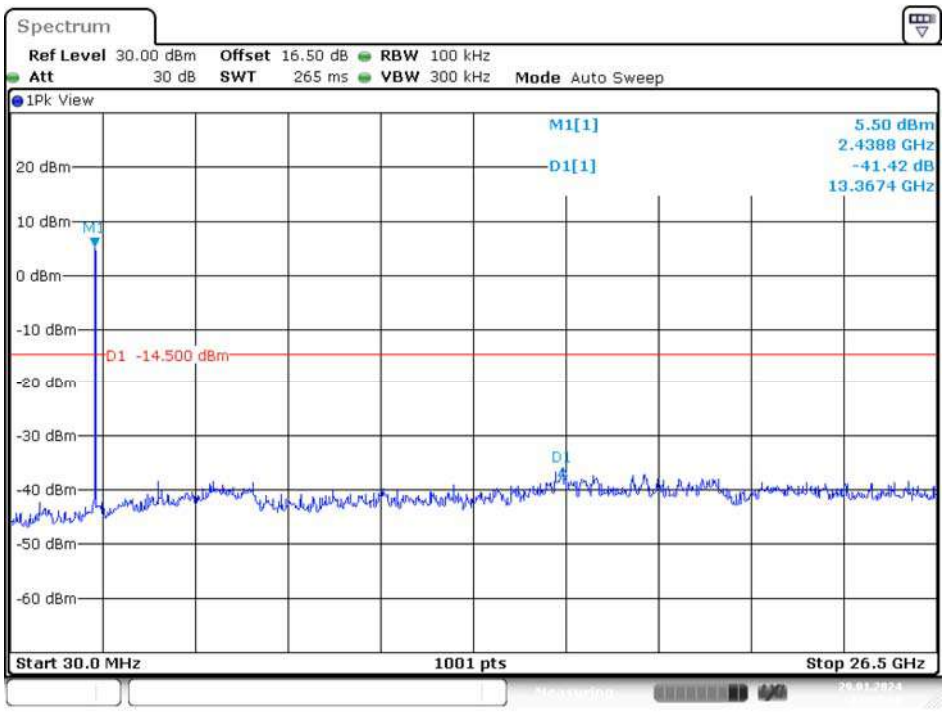
Date: 29.JAN.2024 13:58:23

Middle Channel



Date: 29.JAN.2024 14:02:55

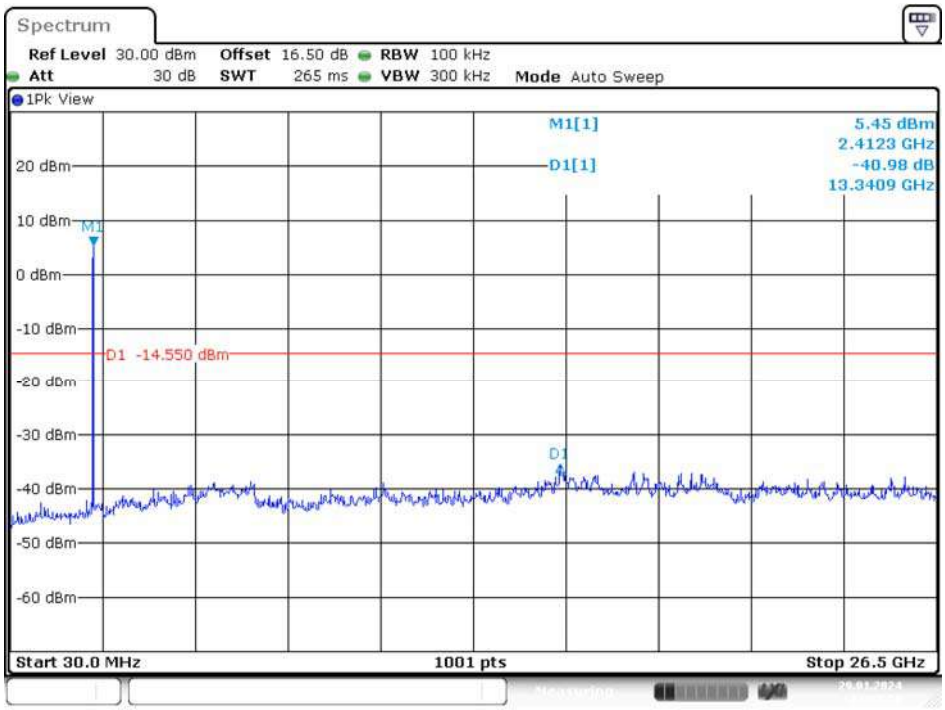
High Channel



Date: 29.JAN.2024 14:07:48

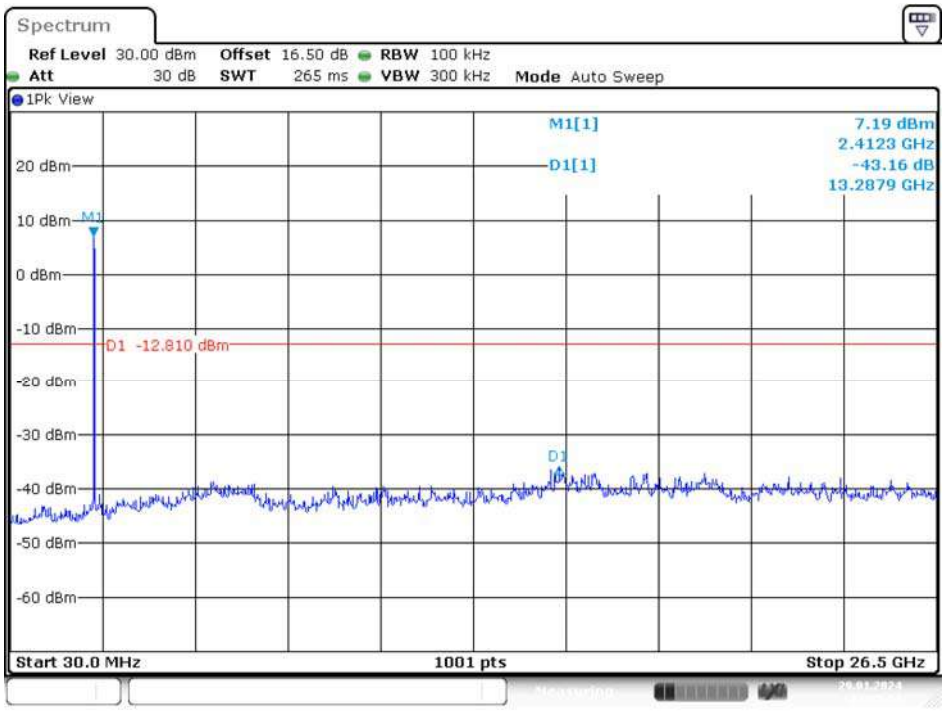
N20 Mode

Low Channel



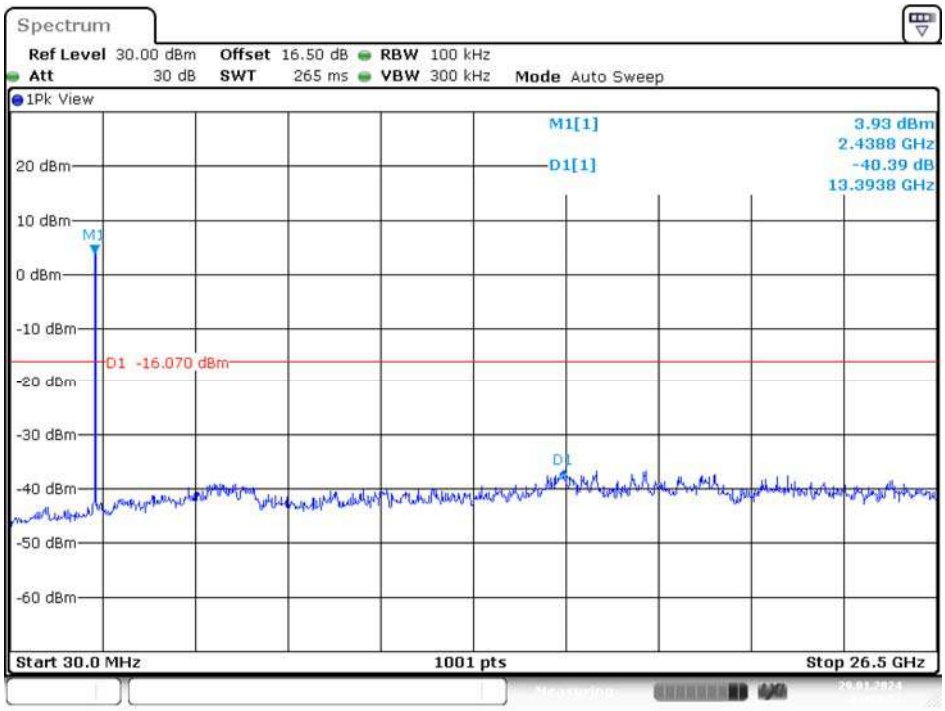
Date: 29.JAN.2024 14:11:56

Middle Channel



Date: 29.JAN.2024 14:15:07

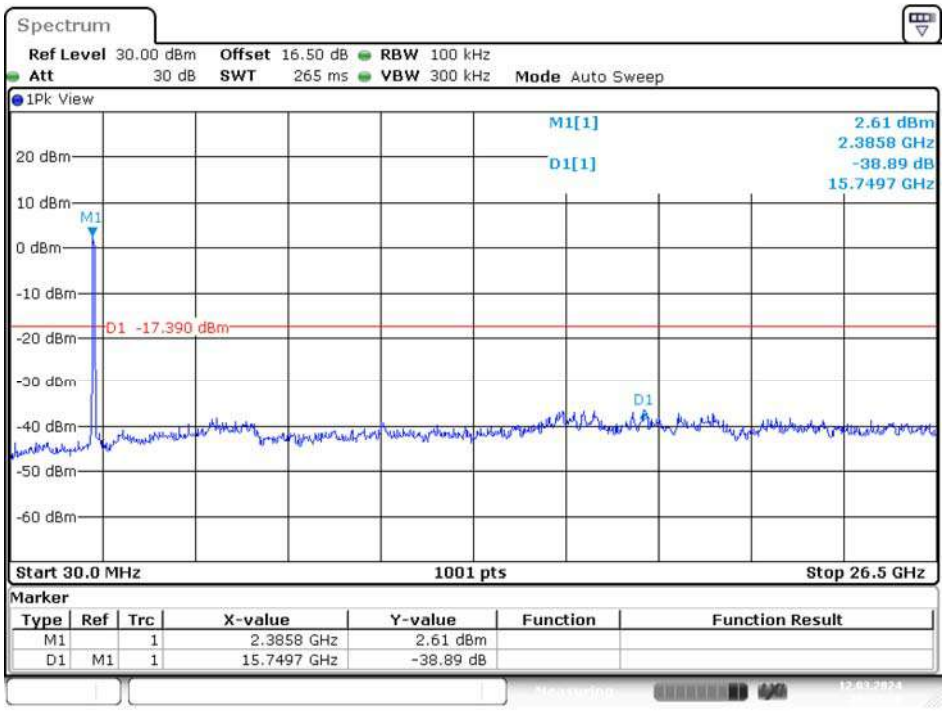
High Channel



Date: 29.JAN.2024 14:18:51

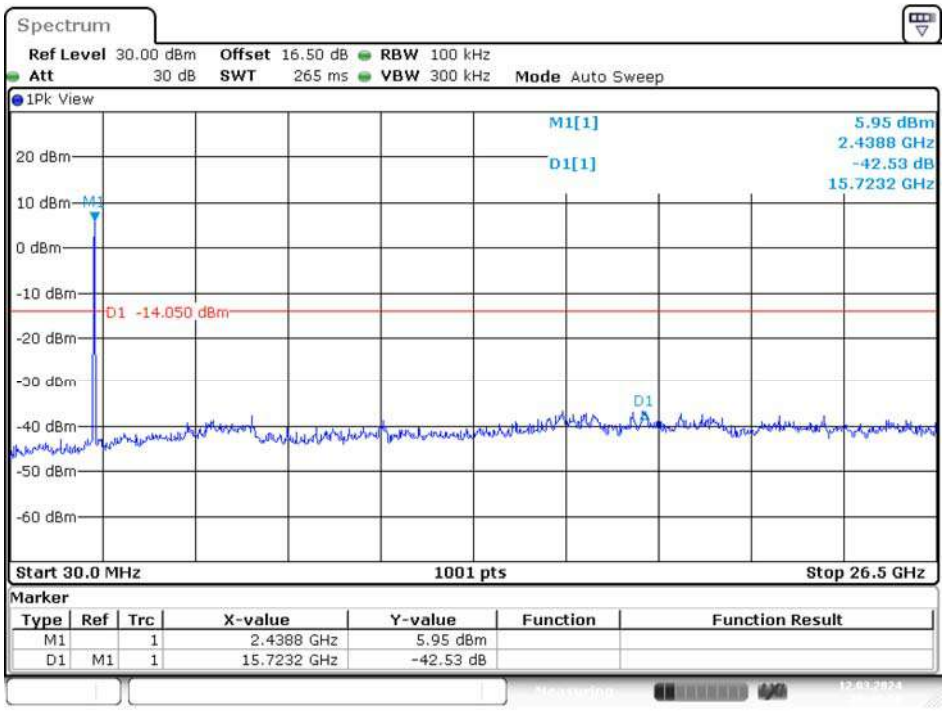
N40 Mode

Low Channel



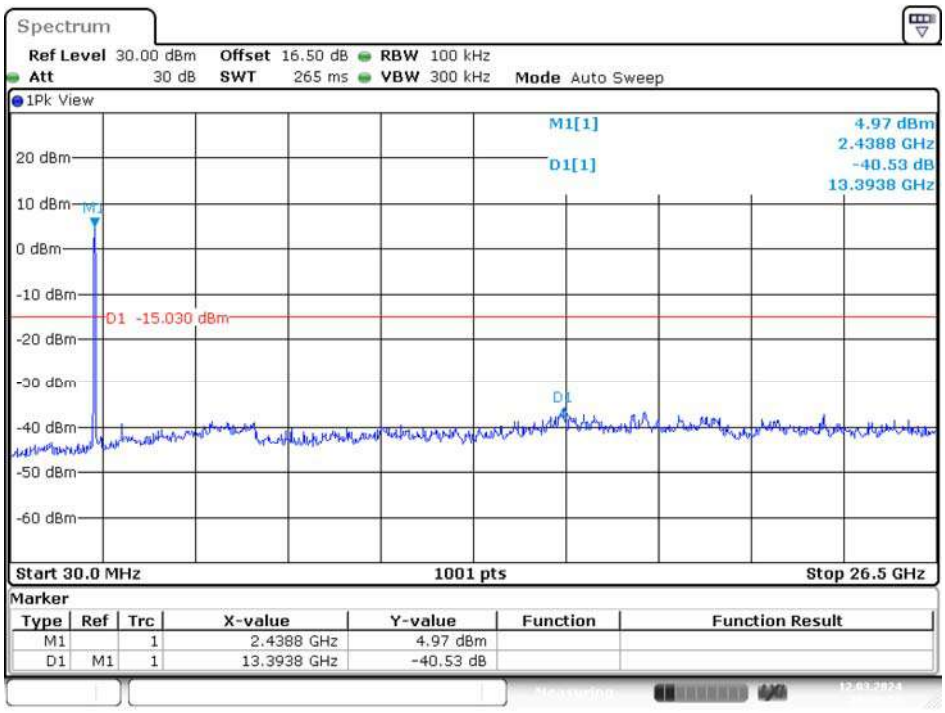
Date: 12.MAR.2024 18:31:30

Middle Channel



Date: 12.MAR.2024 18:40:11

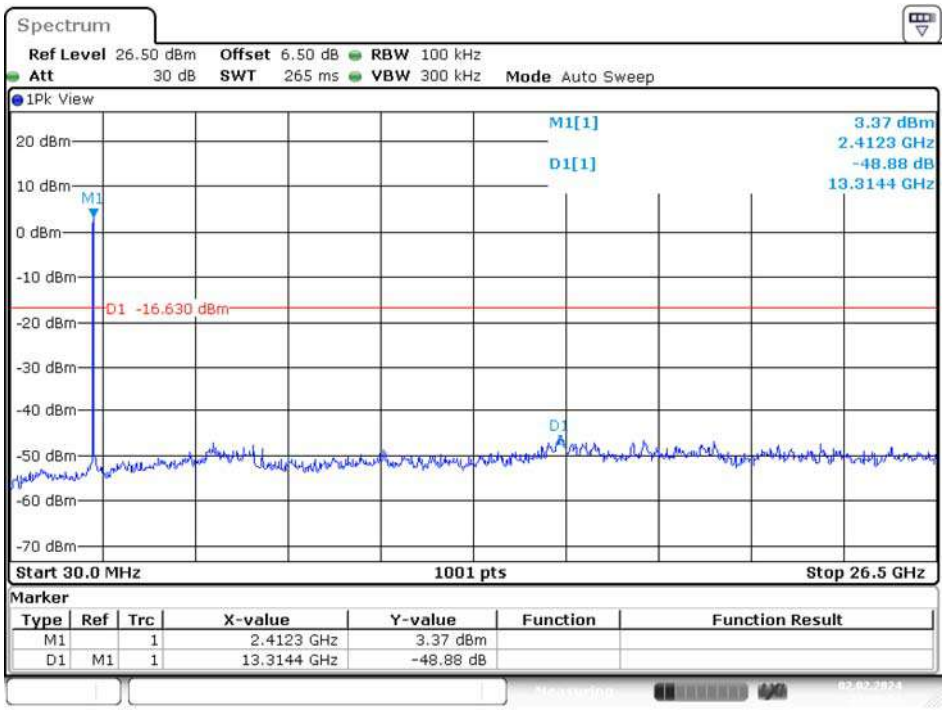
High Channel



Date: 12.MAR.2024 18:36:54

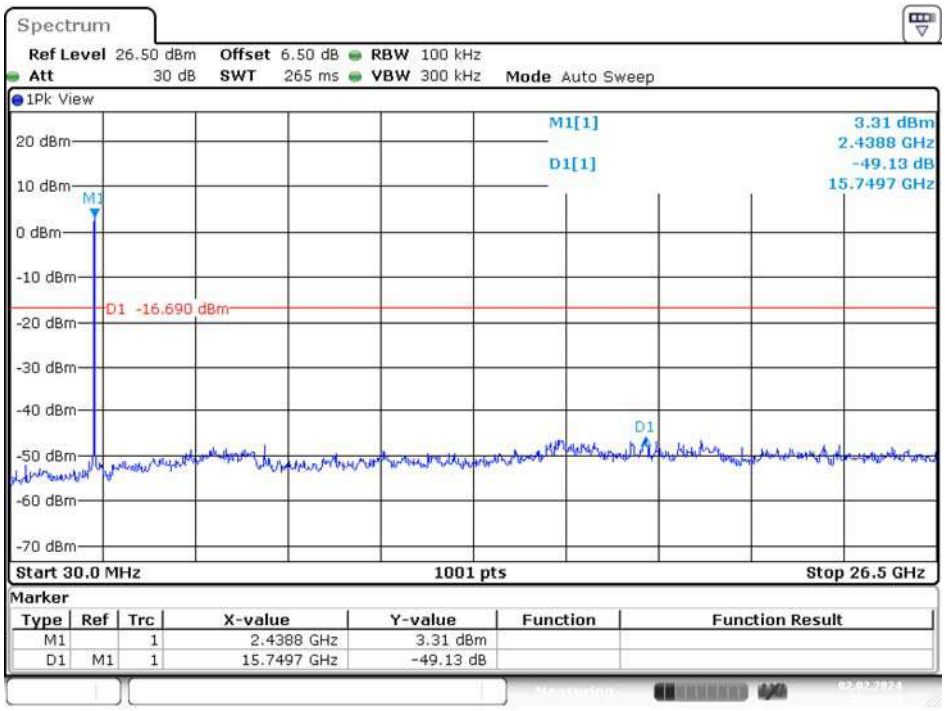
AX20 Mode

Low Channel



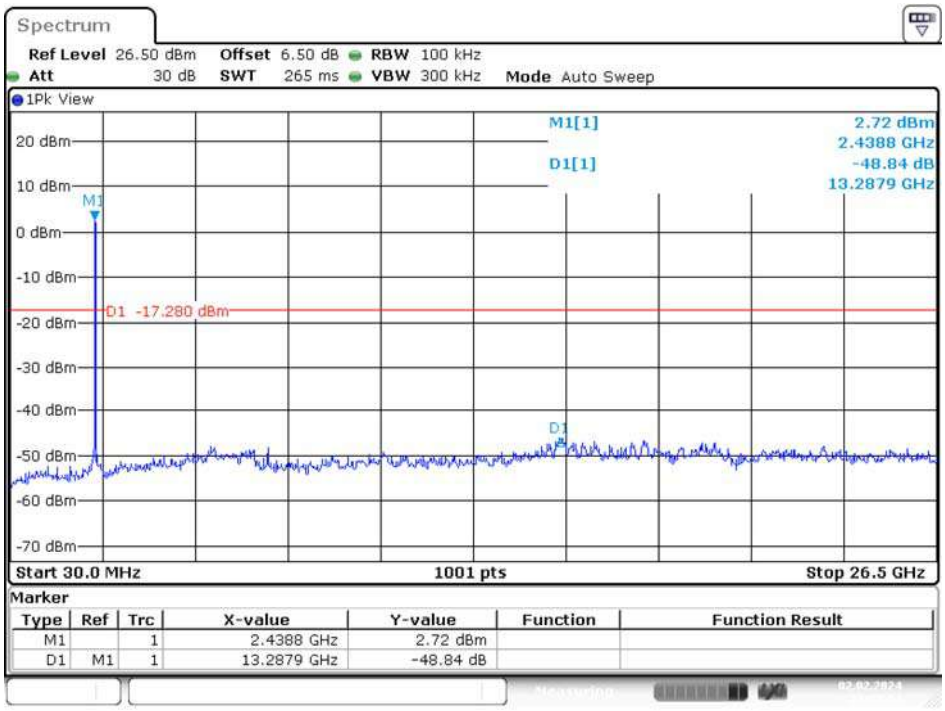
Date: 2.FEB.2024 11:06:21

Middle Channel



Date: 2.FEB.2024 11:08:24

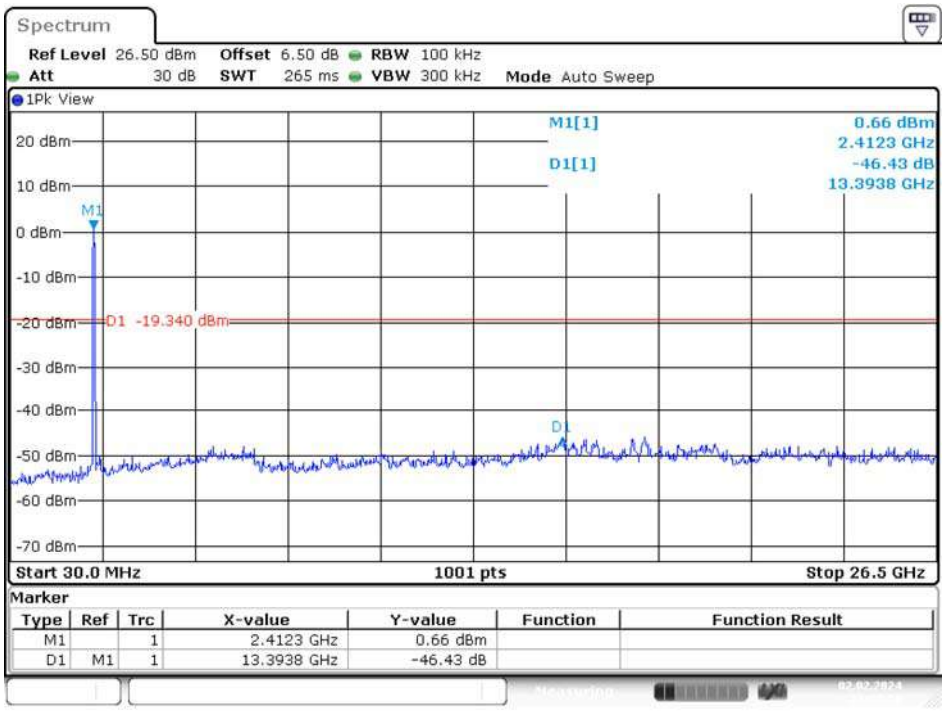
High Channel



Date: 2.FEB.2024 11:13:14

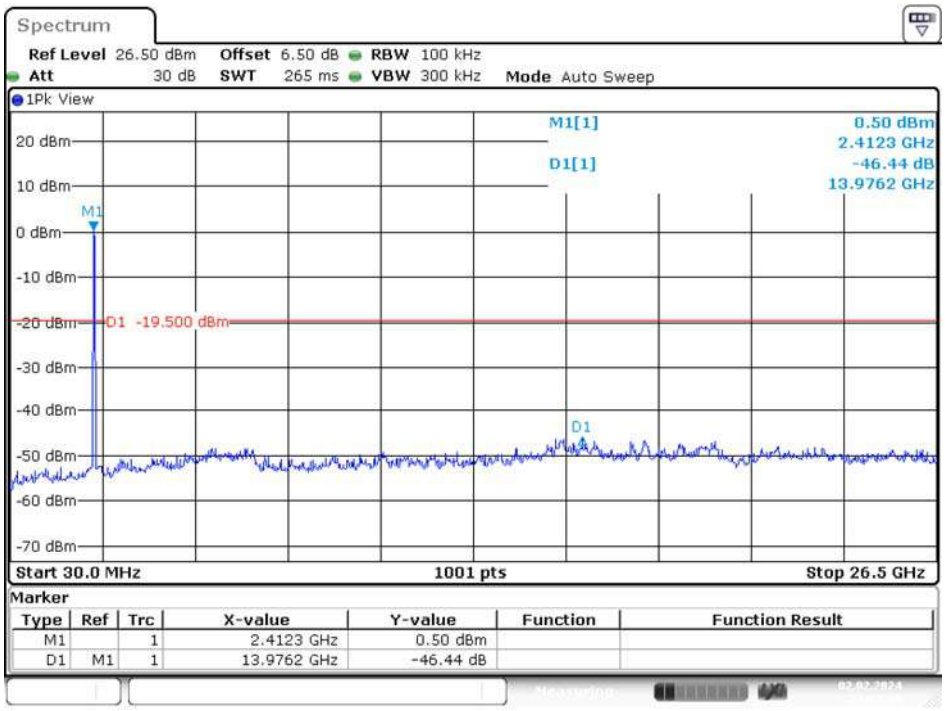
AX40 Mode

Low Channel



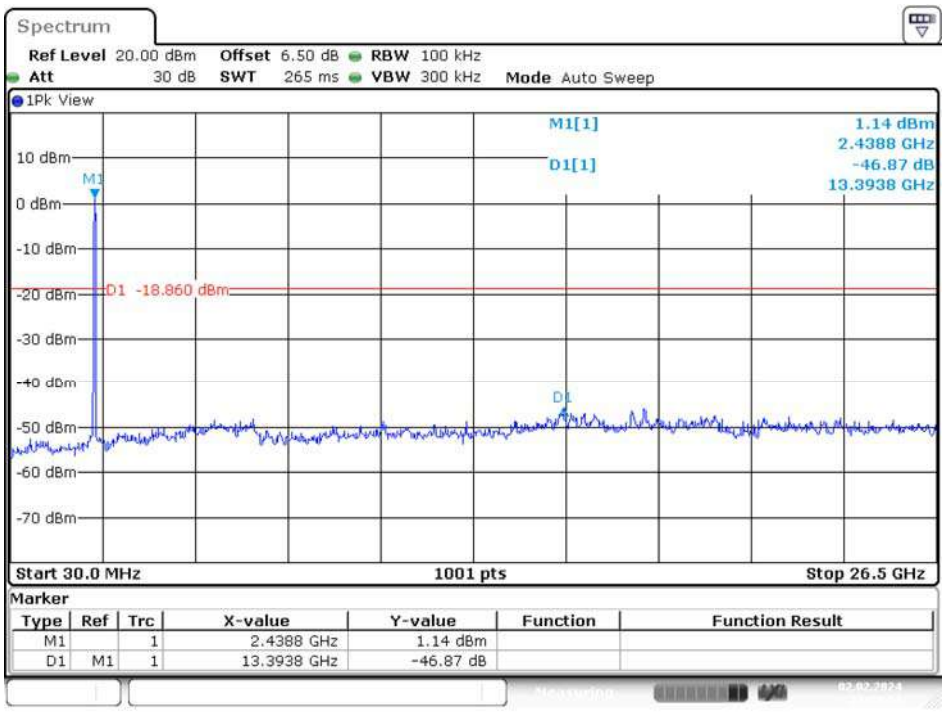
Date: 2.FEB.2024 11:17:58

Middle Channel



Date: 2.FEB.2024 11:23:39

High Channel

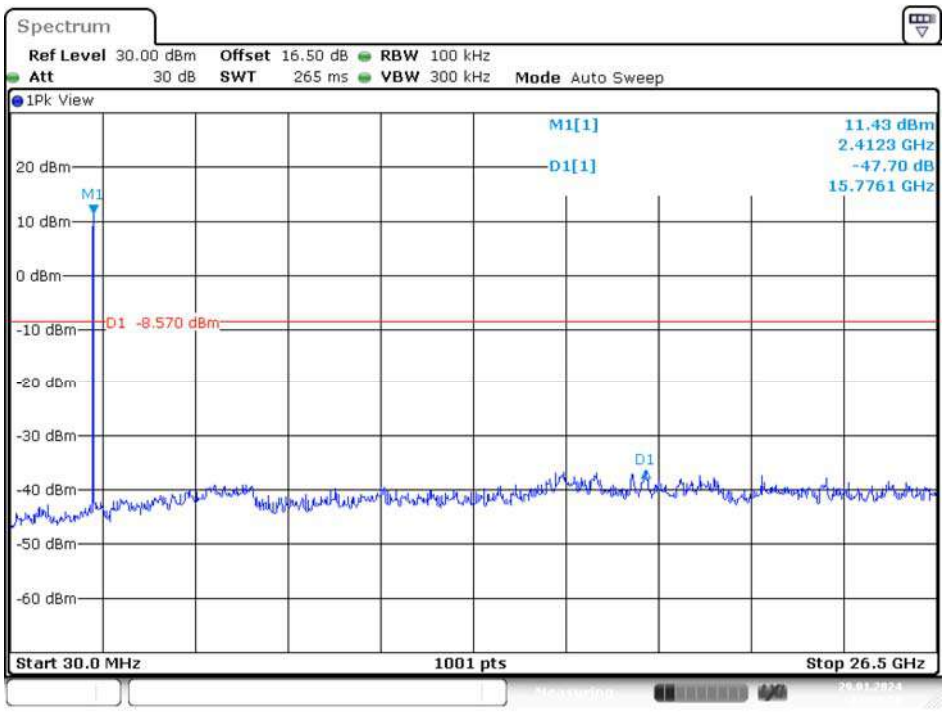


Date: 2.FEB.2024 11:28:17

Chain 1

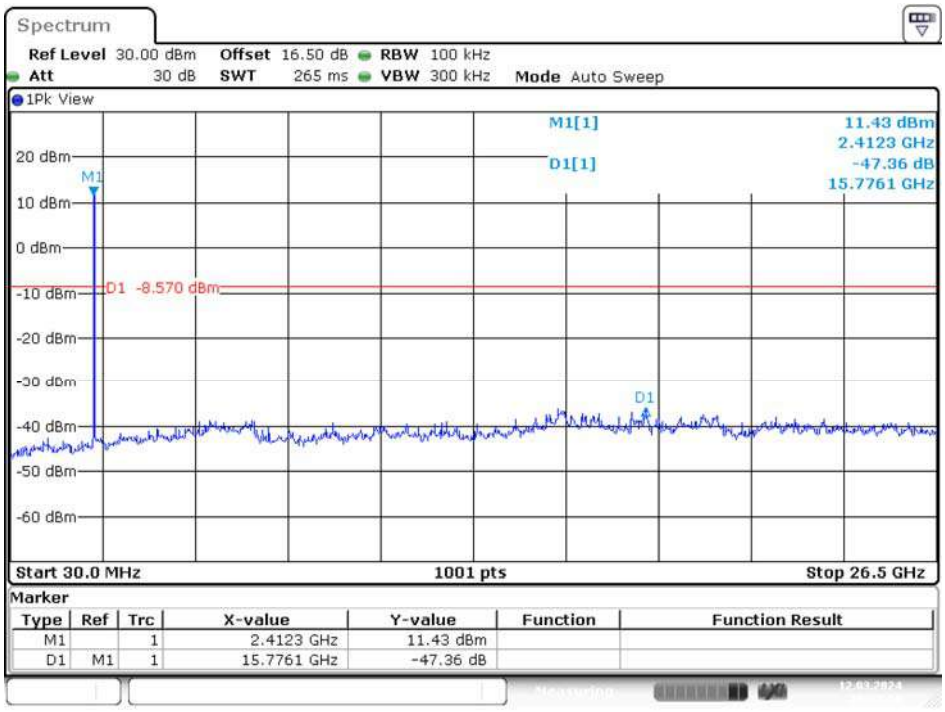
B Mode

Low Channel



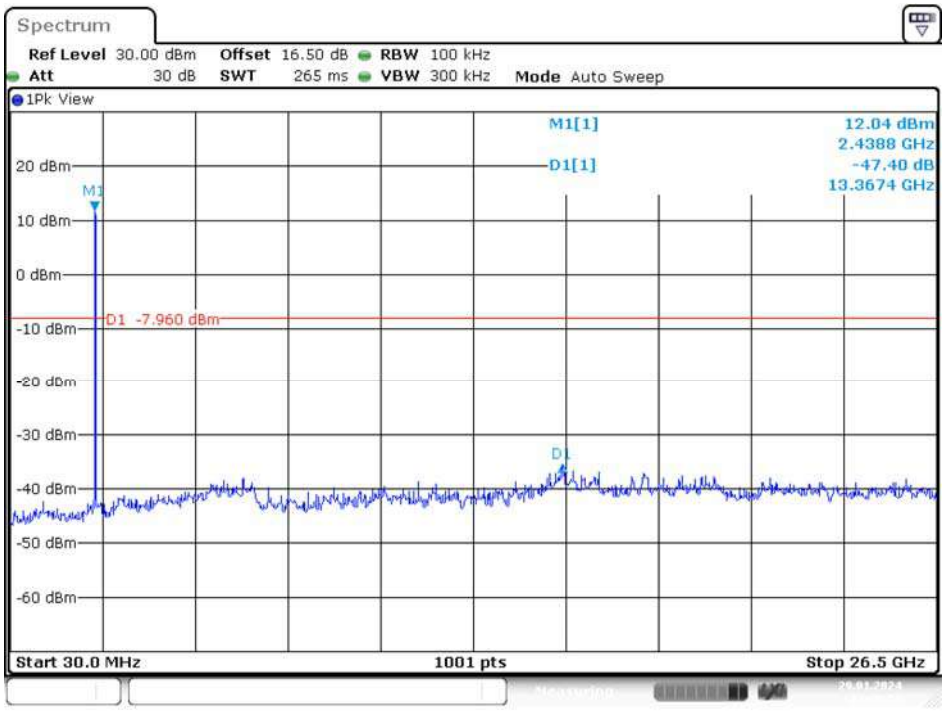
Date: 29.JAN.2024 14:38:50

Middle Channel



Date: 12.MAR.2024 18:13:20

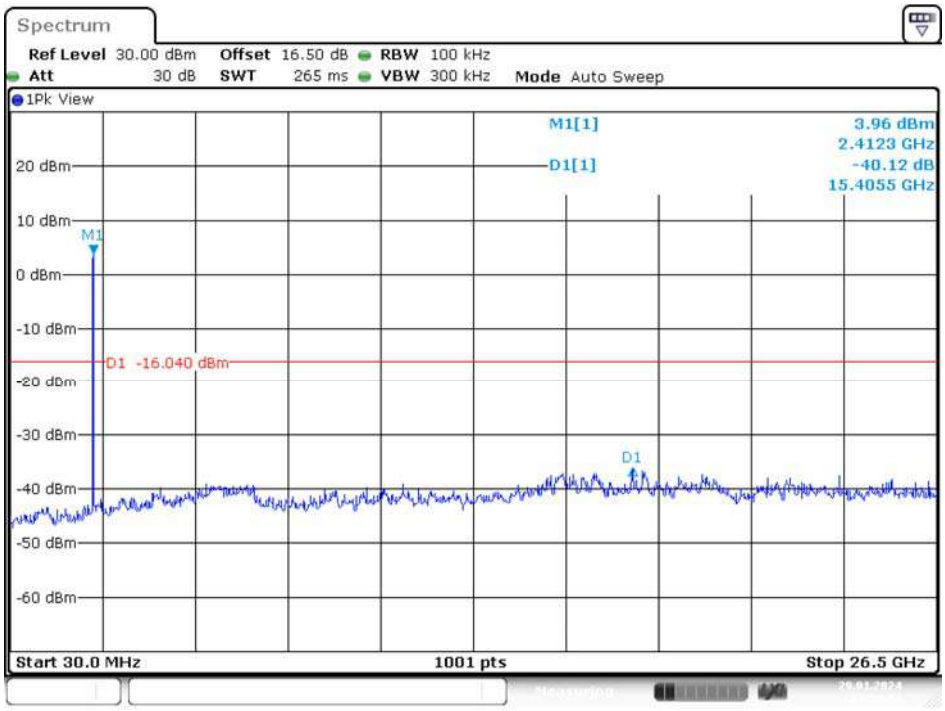
High Channel



Date: 29.JAN.2024 14:46:53

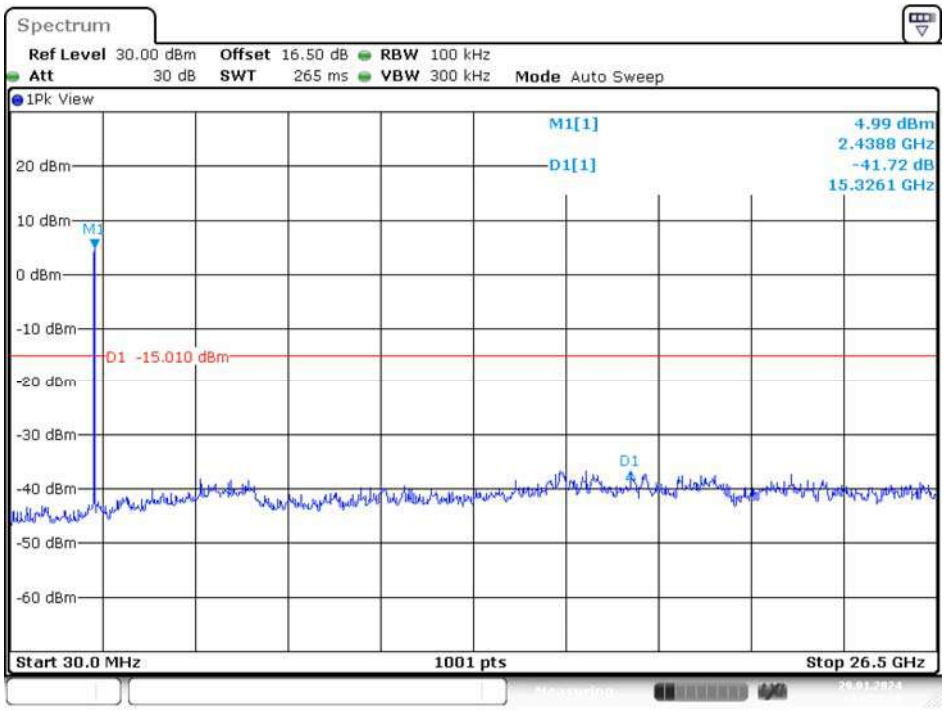
G Mode

Low Channel



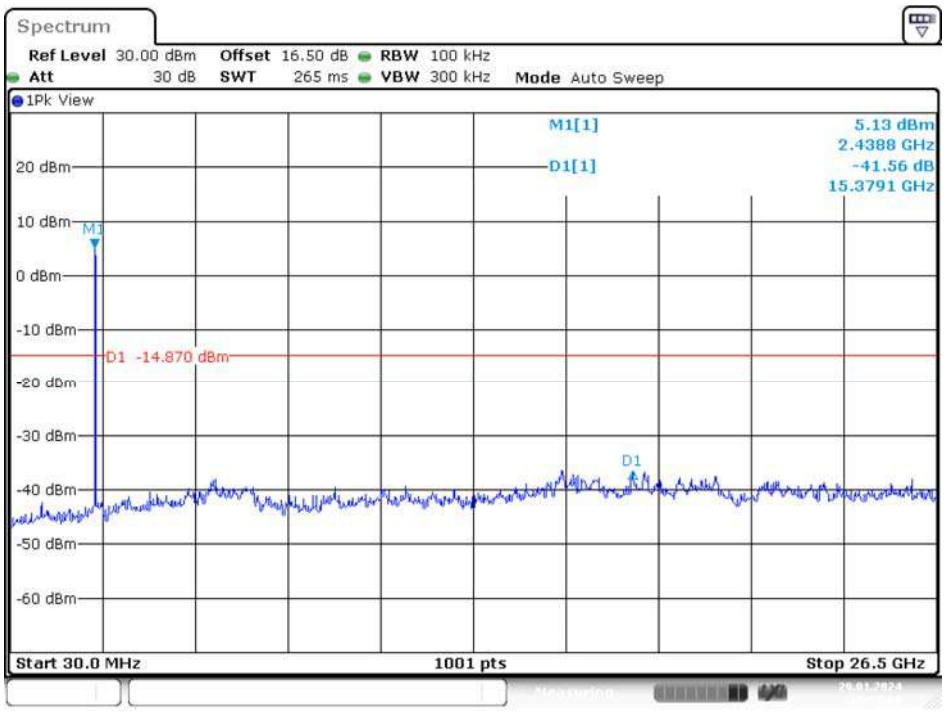
Date: 29.JAN.2024 14:50:31

Middle Channel



Date: 29.JAN.2024 14:55:20

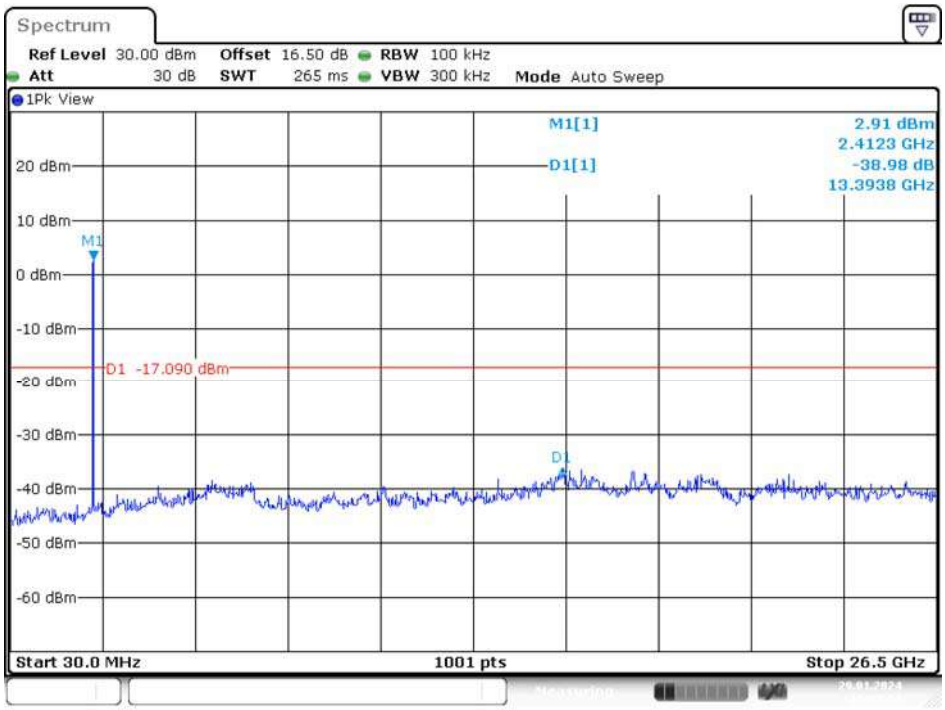
High Channel



Date: 29.JAN.2024 15:27:48

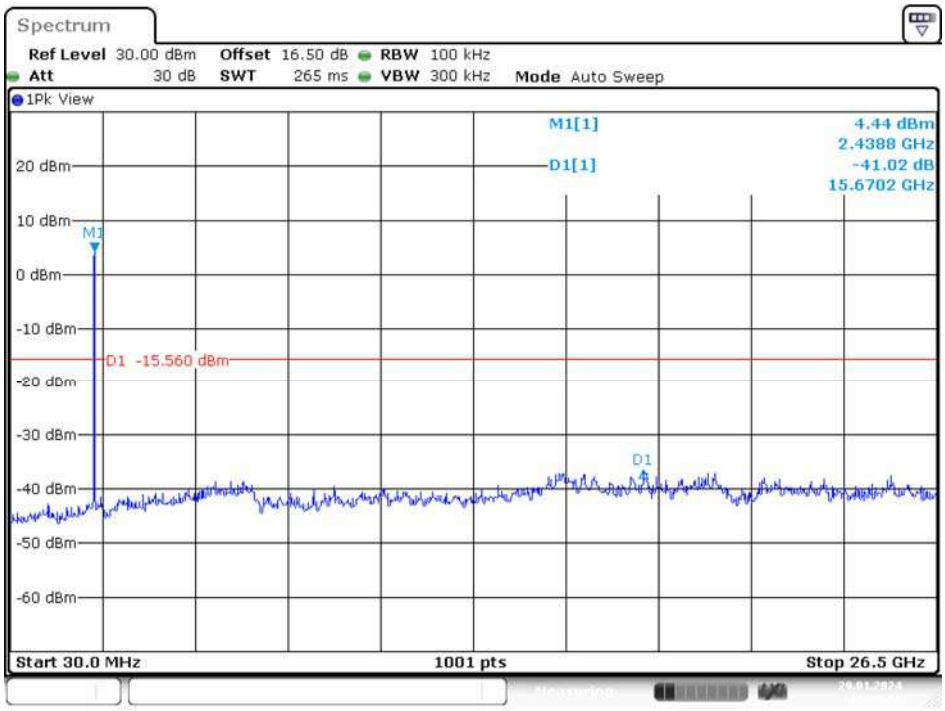
N20 Mode

Low Channel



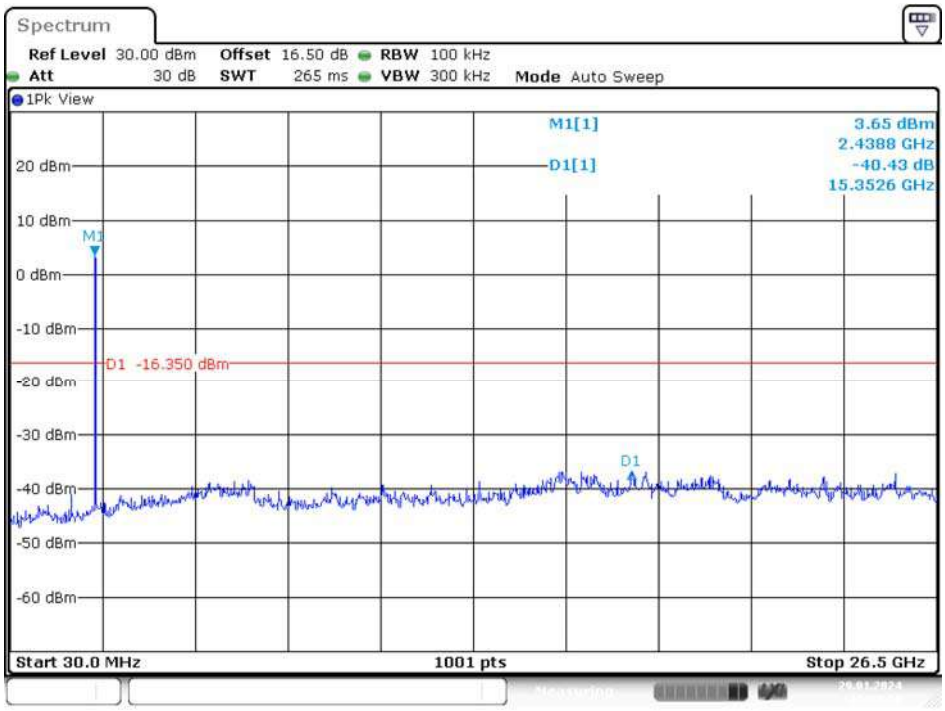
Date: 29.JAN.2024 15:33:18

Middle Channel



Date: 29.JAN.2024 15:36:03

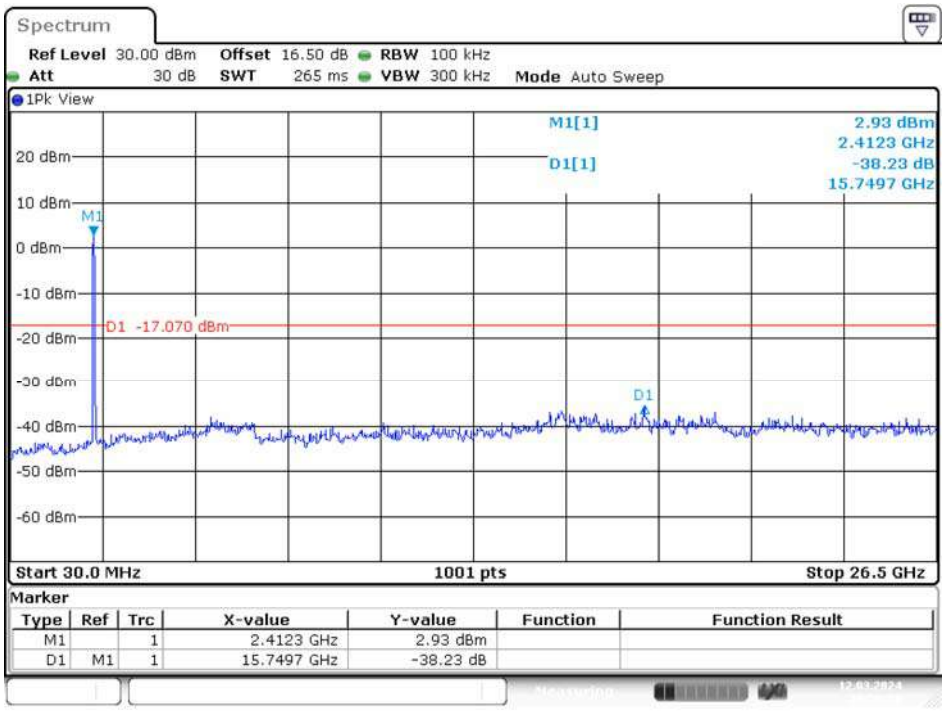
High Channel



Date: 29.JAN.2024 15:38:19

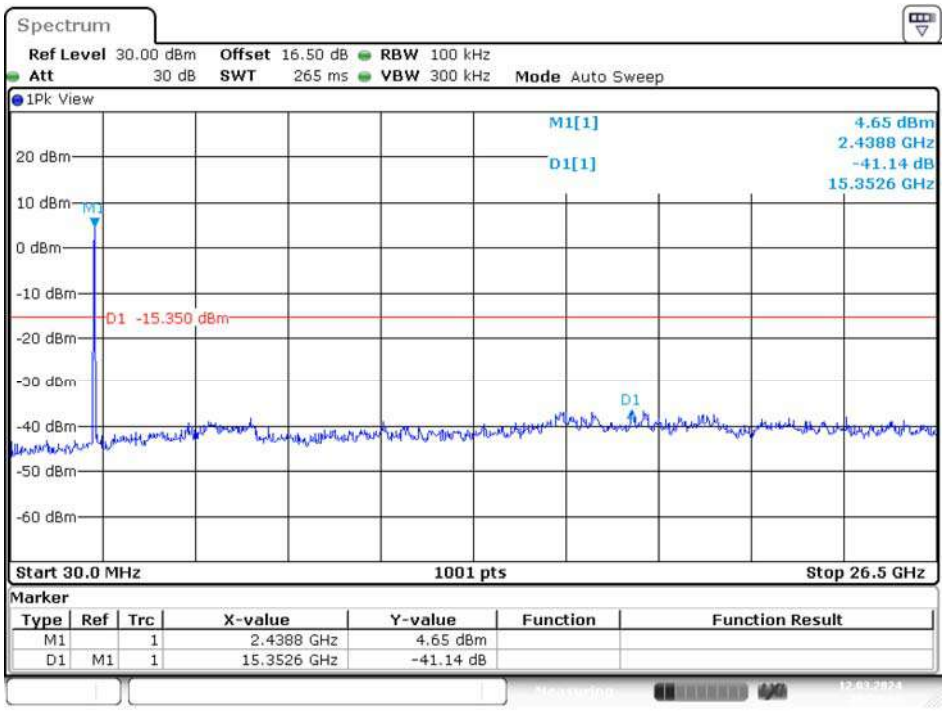
N40 Mode

Low Channel



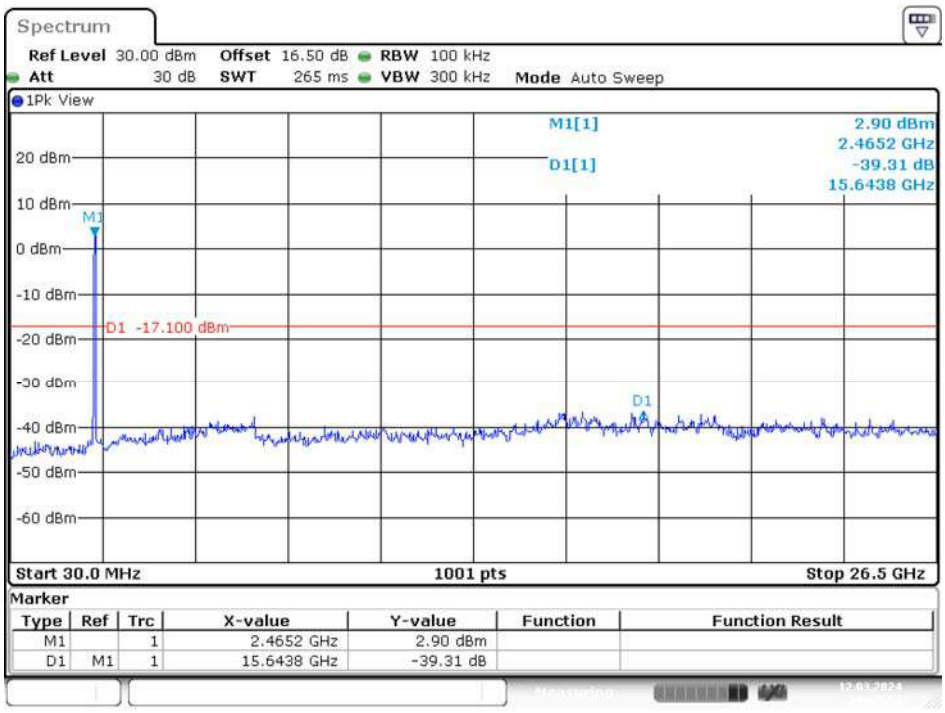
Date: 12.MAR.2024 18:56:29

Middle Channel



Date: 12.MAR.2024 18:58:42

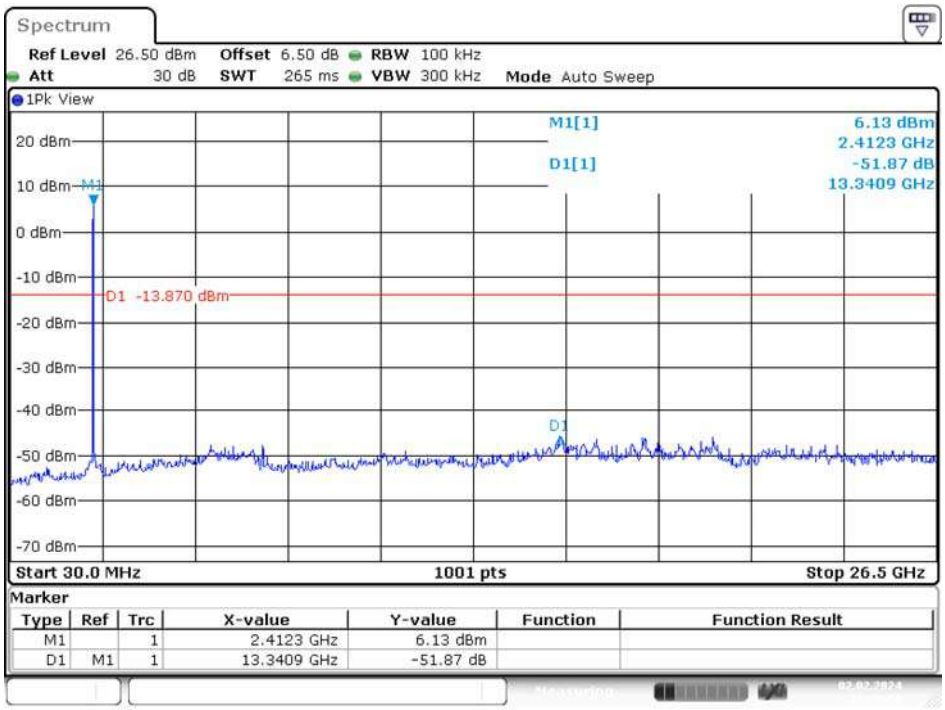
High Channel



Date: 12.MAR.2024 19:01:17

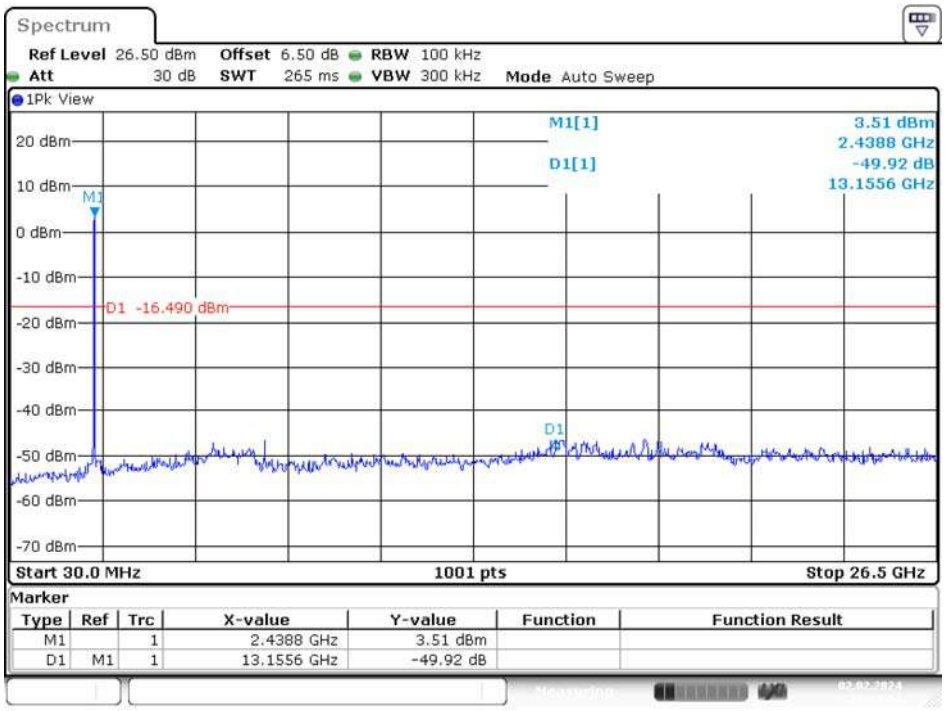
AX20 Mode

Low Channel



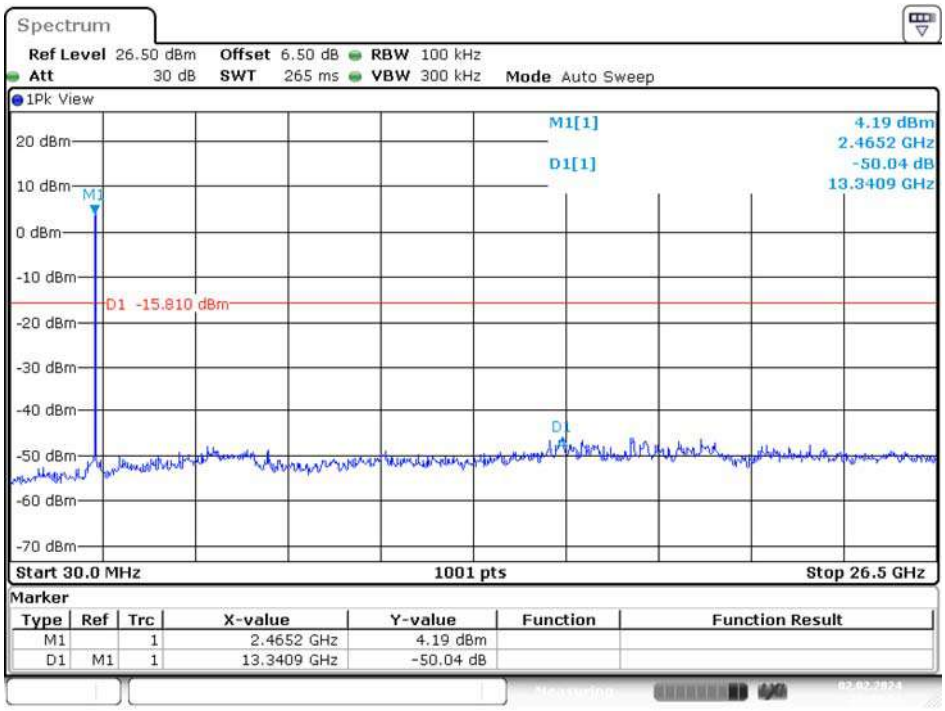
Date: 2.FEB.2024 10:36:00

Middle Channel



Date: 2.FEB.2024 10:38:41

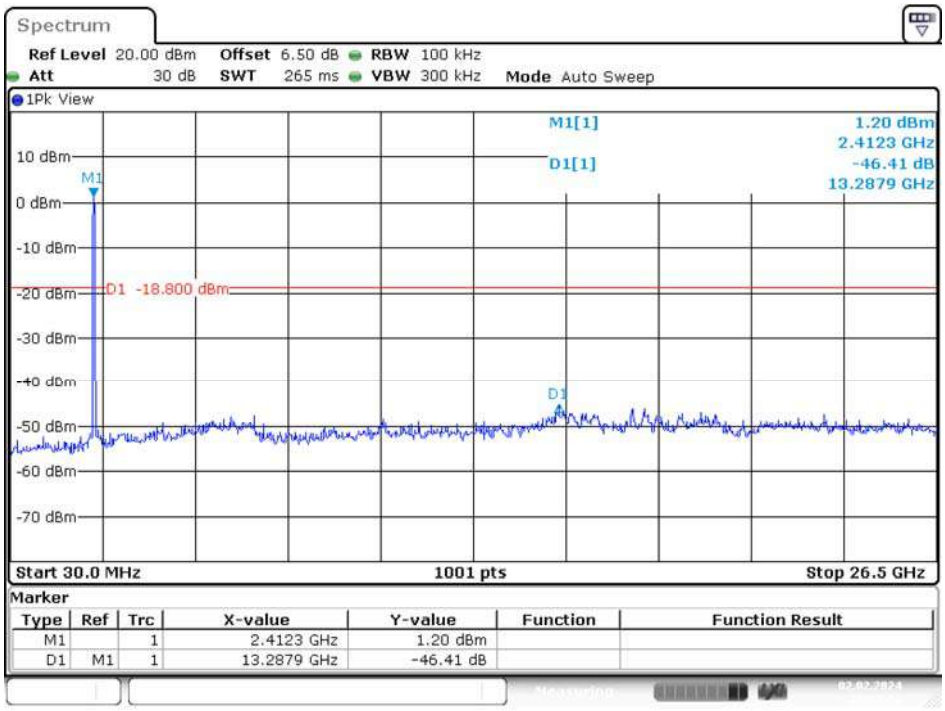
High Channel



Date: 2.FEB.2024 10:41:21

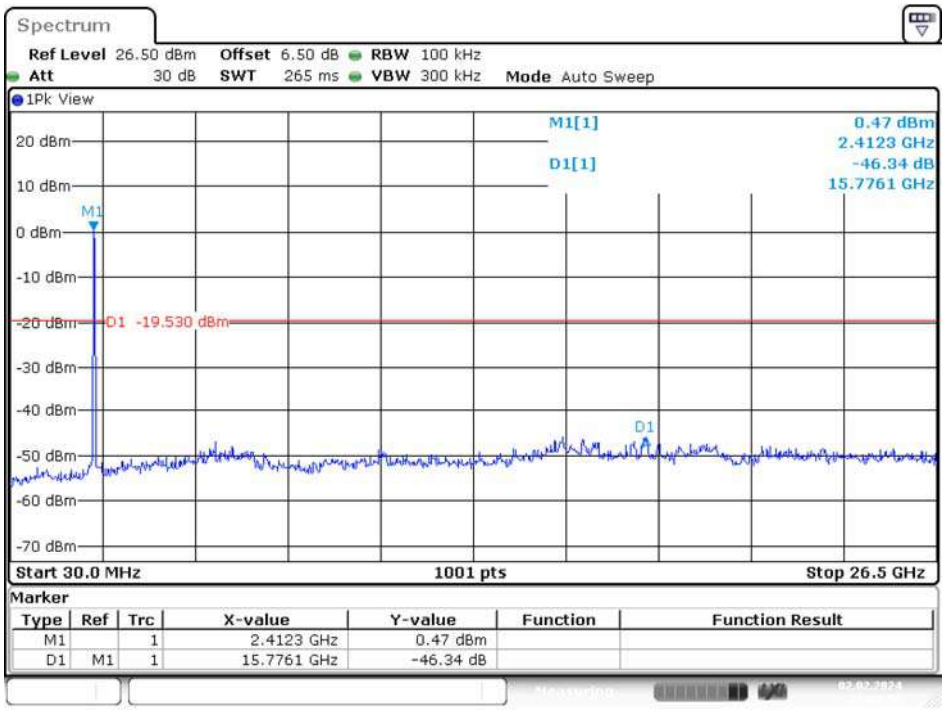
AX40 Mode

Low Channel



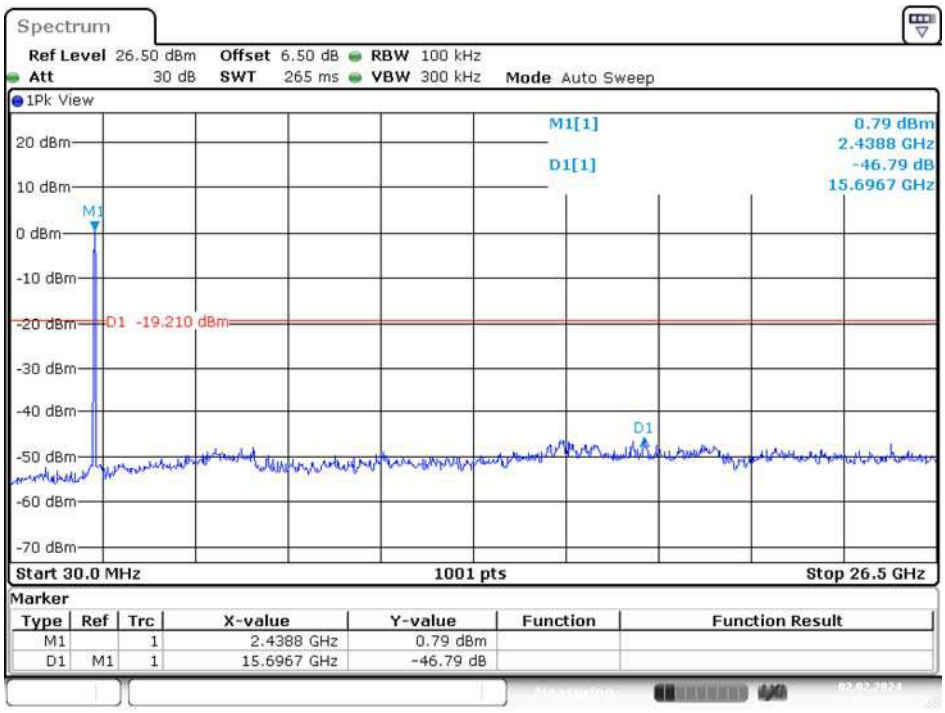
Date: 2.FEB.2024 10:02:01

Middle Channel



Date: 2.FEB.2024 10:08:05

High Channel



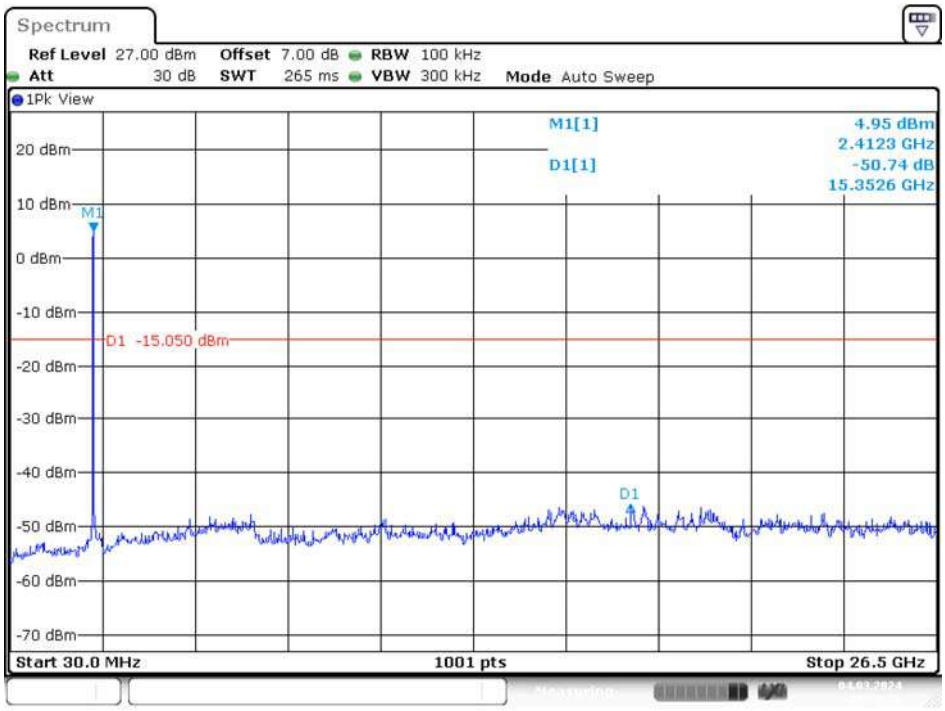
Date: 2.FEB.2024 10:10:53

Beamforming:

Chain 0

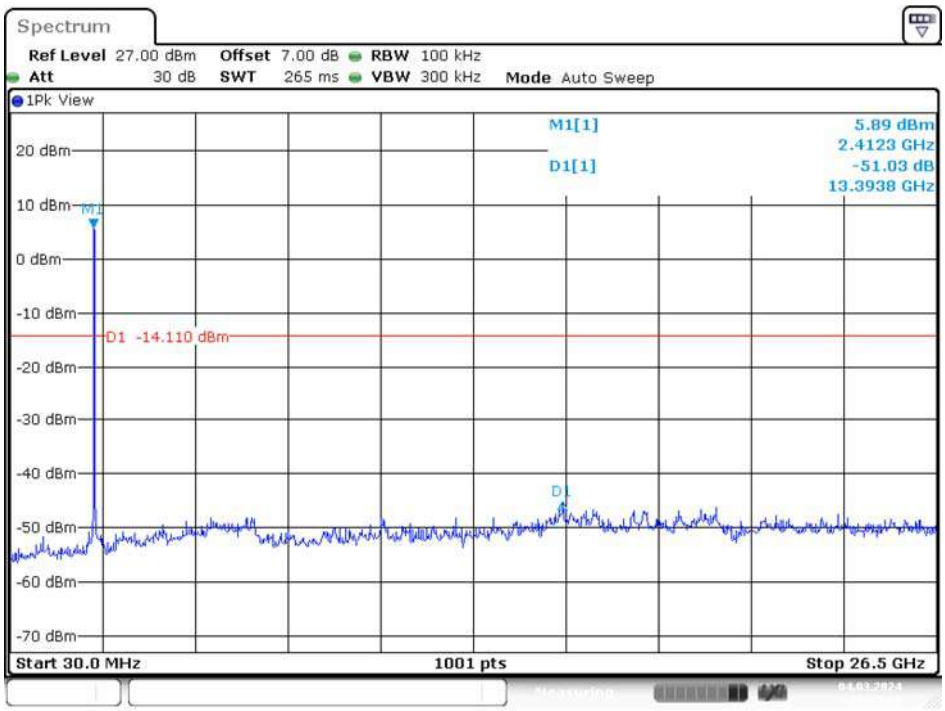
N20 Mode

Low Channel



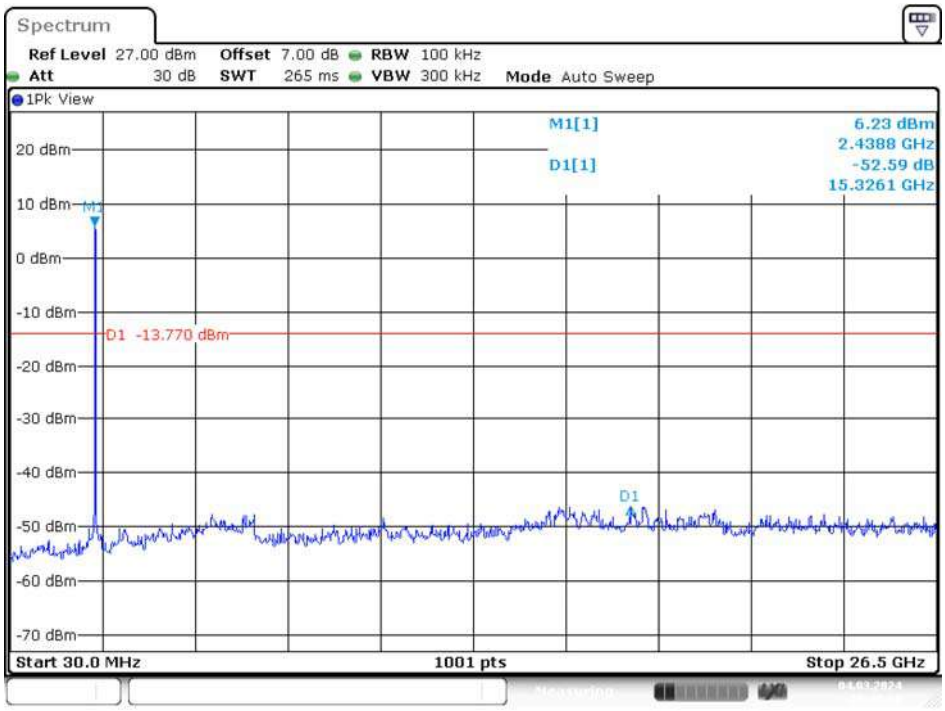
Date: 4.MAR.2024 18:29:23

Middle Channel



Date: 4.MAR.2024 18:35:48

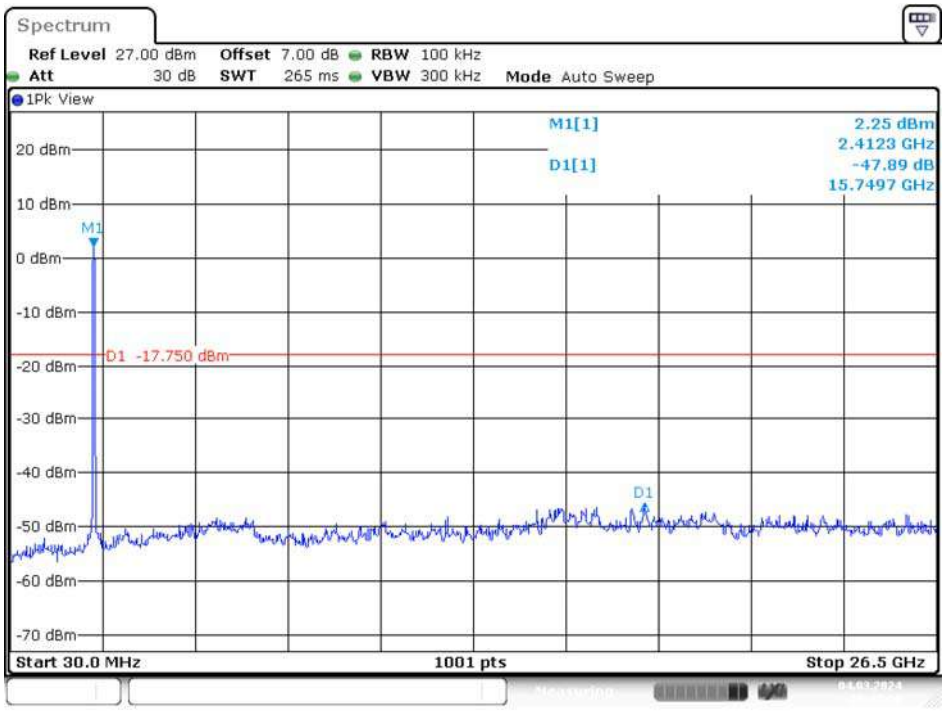
High Channel



Date: 4.MAR.2024 18:40:49

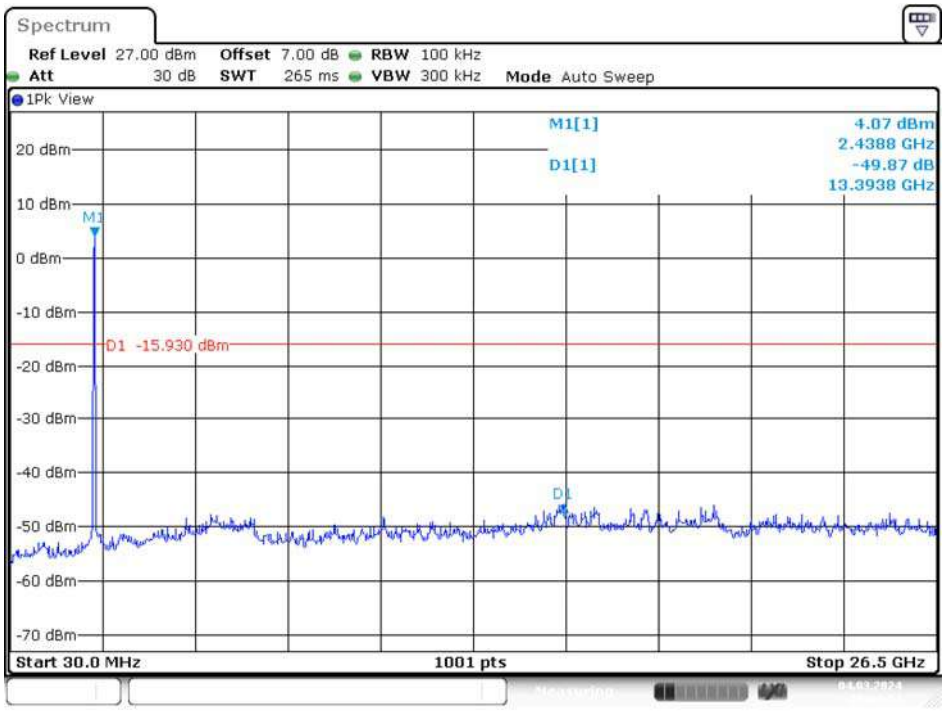
N40 Mode

Low Channel



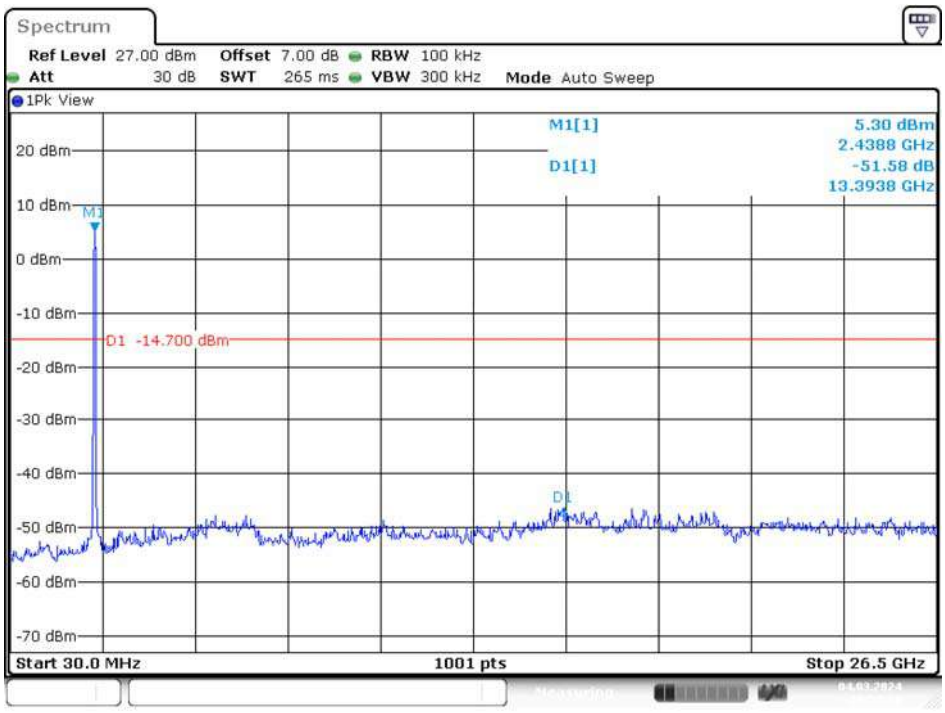
Date: 4.MAR.2024 18:47:47

Middle Channel



Date: 4.MAR.2024 19:04:55

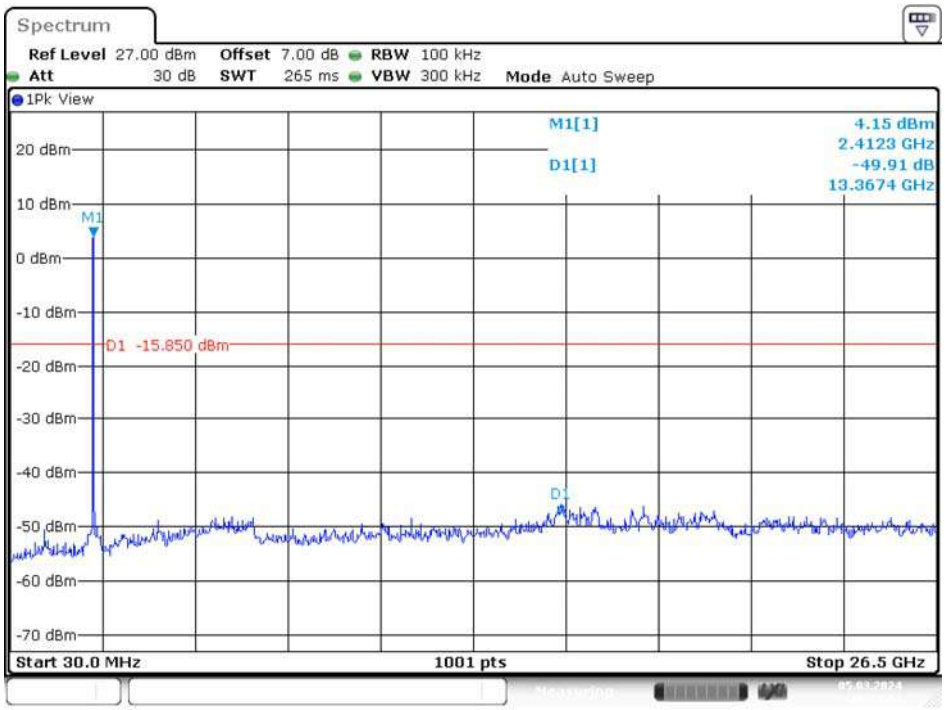
High Channel



Date: 4.MAR.2024 18:57:38

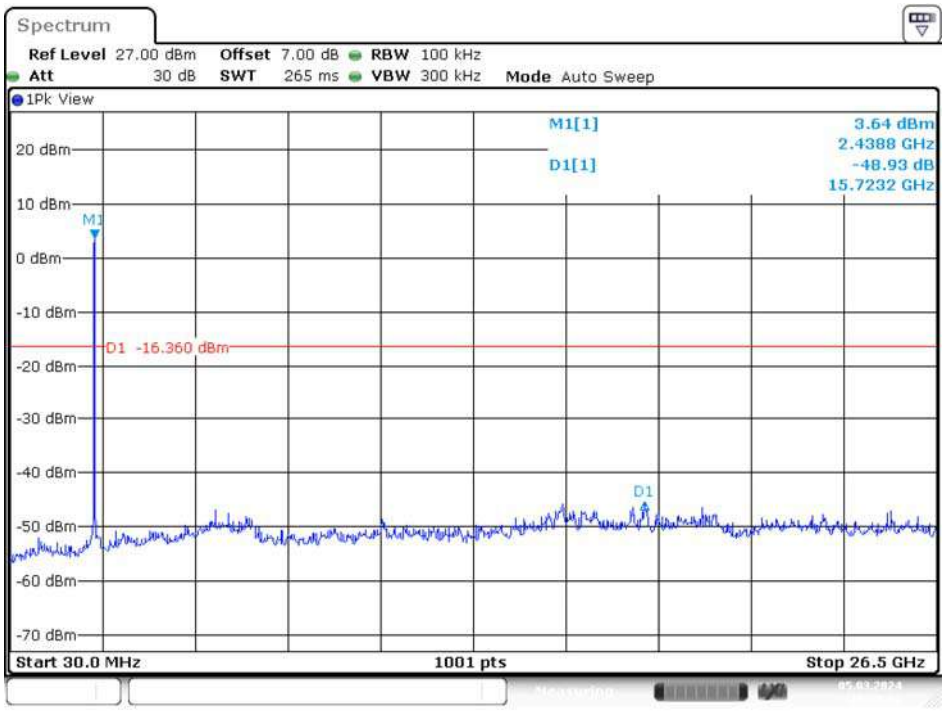
AX20 Mode

Low Channel



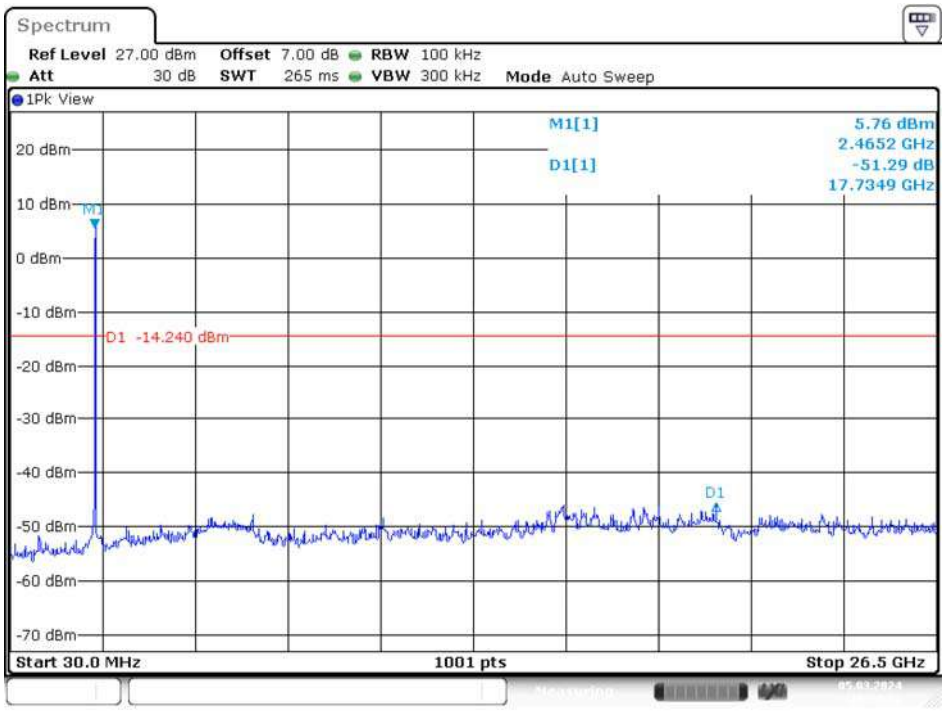
Date: 5.MAR.2024 10:12:34

Middle Channel



Date: 5.MAR.2024 10:16:42

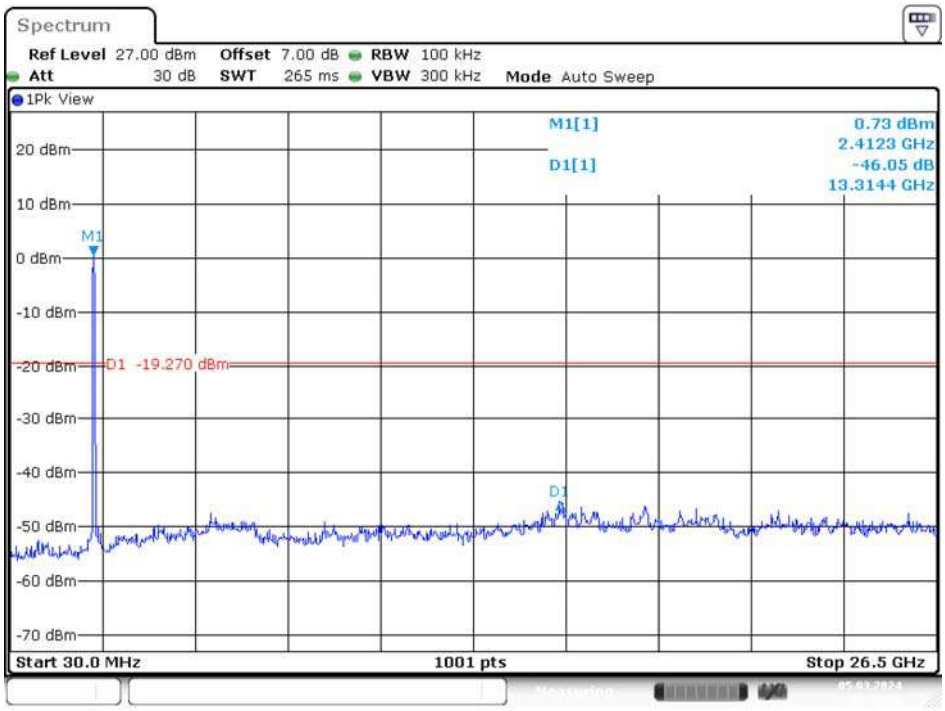
High Channel



Date: 5.MAR.2024 10:20:32

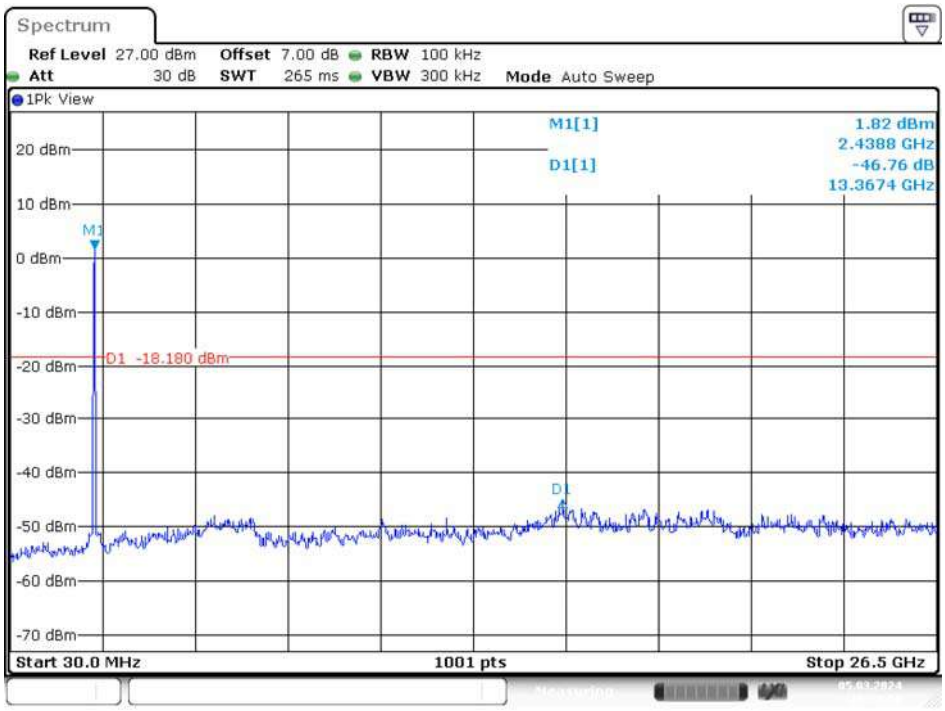
AX40 Mode

Low Channel



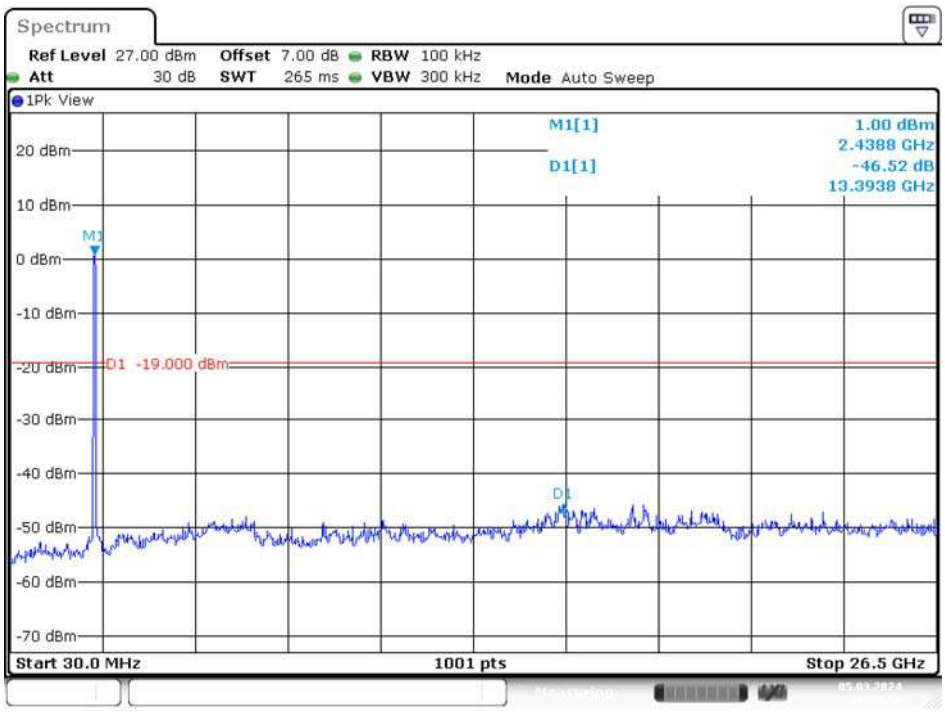
Date: 5.MAR.2024 10:24:22

Middle Channel



Date: 5.MAR.2024 10:28:07

High Channel

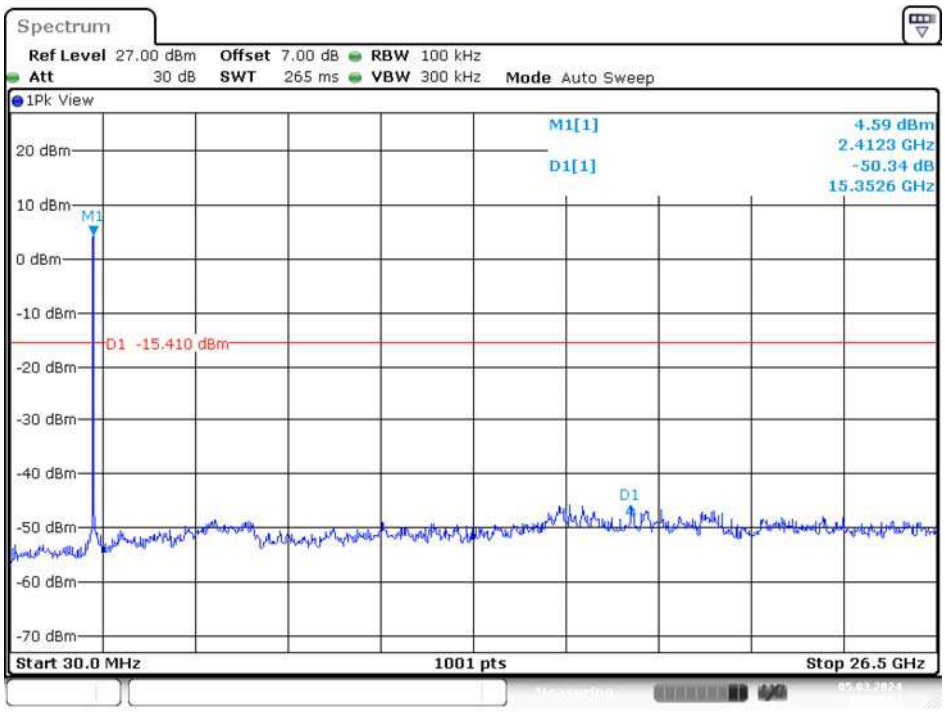


Date: 5.MAR.2024 10:32:10

Chain 1

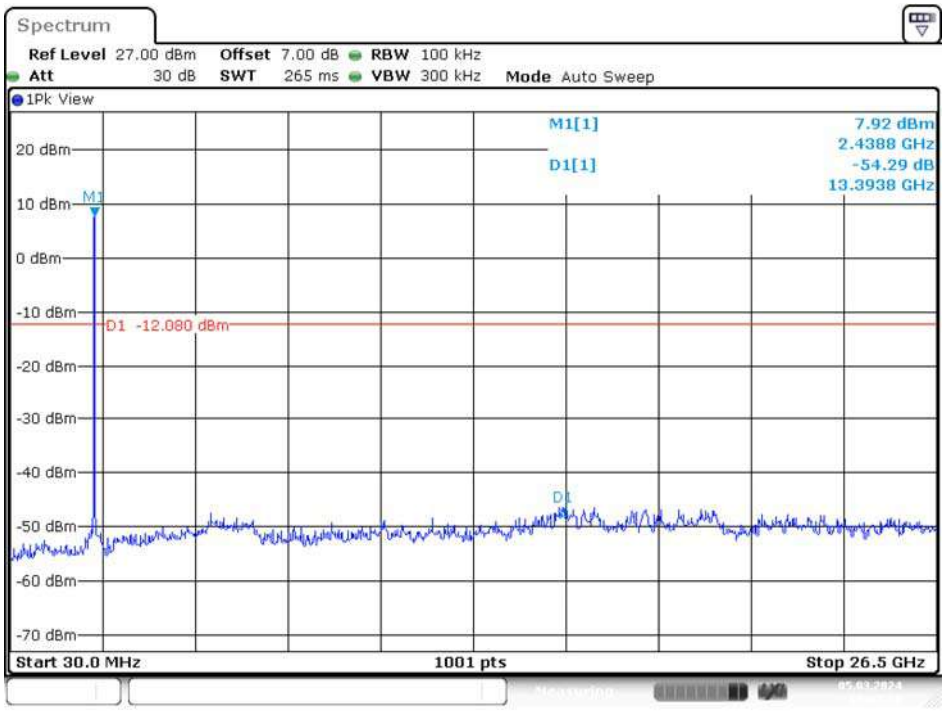
N20 Mode

Low Channel



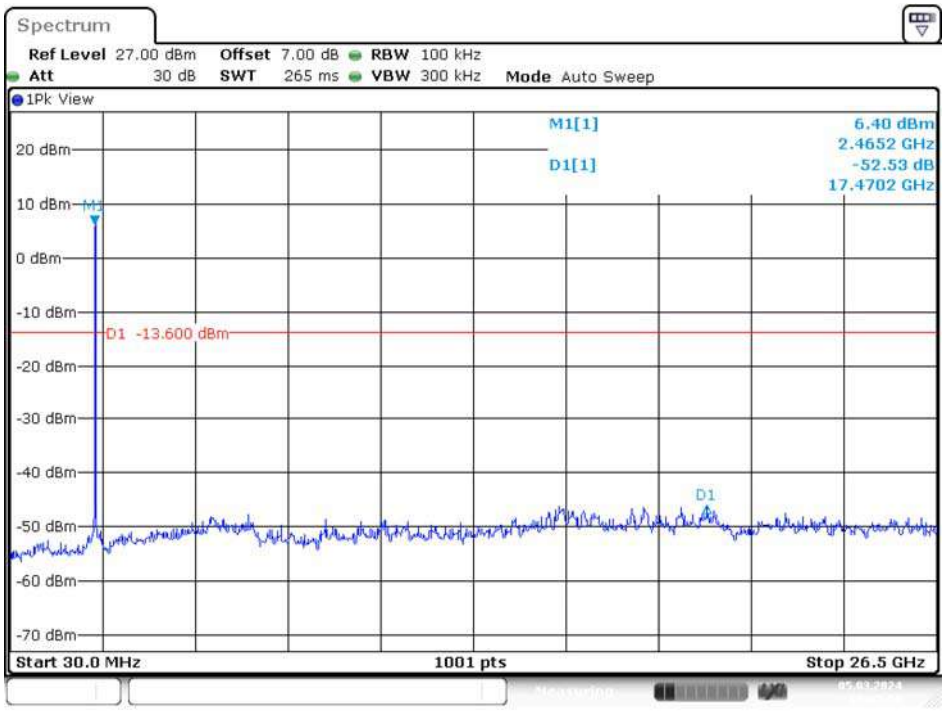
Date: 5.MAR.2024 08:57:55

Middle Channel



Date: 5.MAR.2024 09:01:21

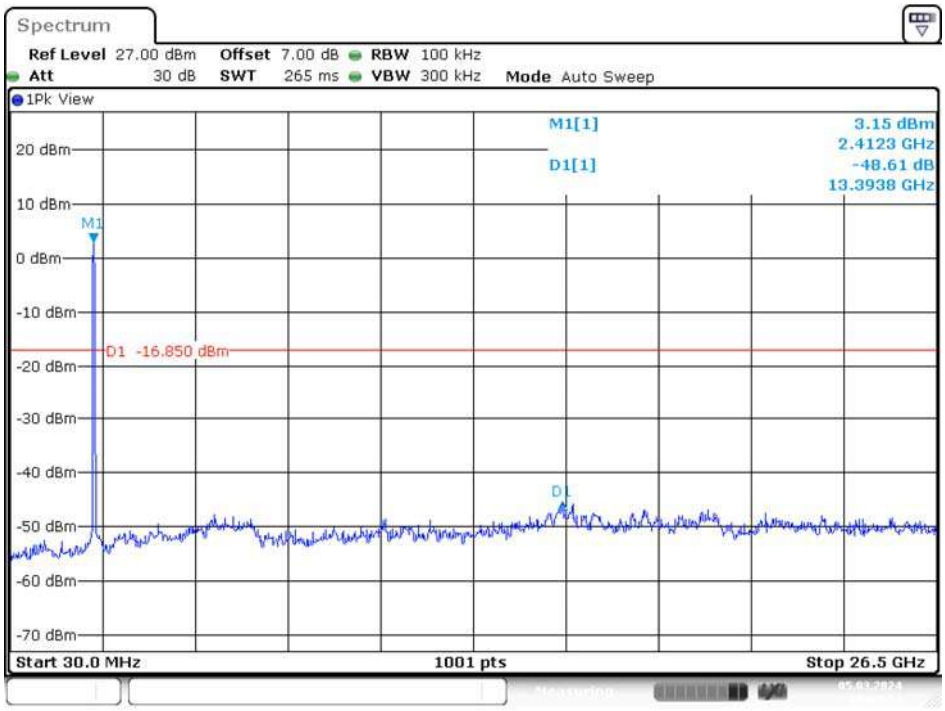
High Channel



Date: 5.MAR.2024 09:05:10

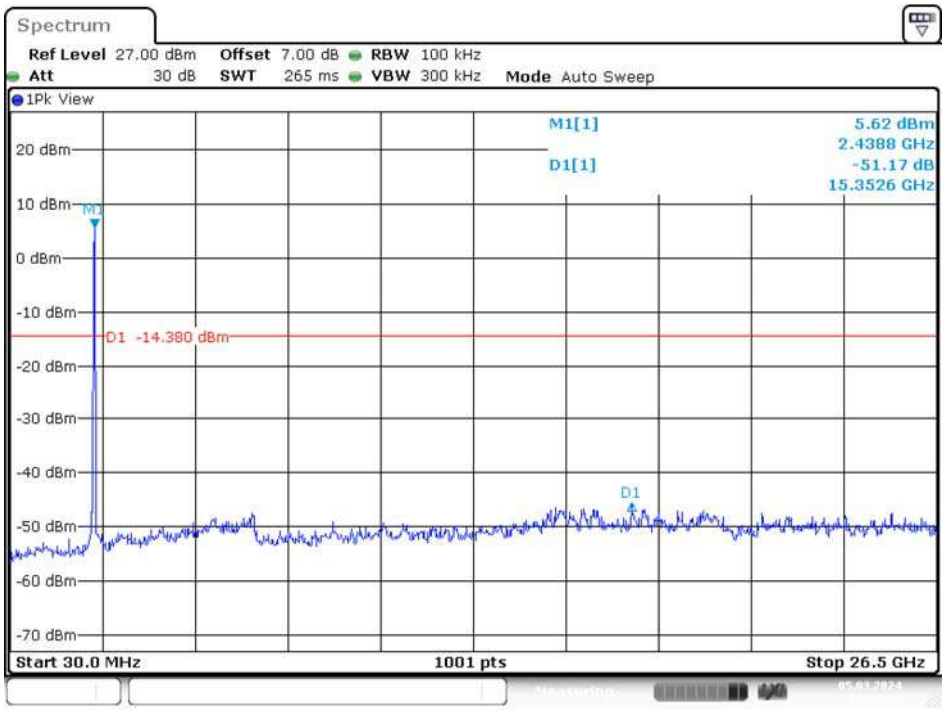
N40 Mode

Low Channel



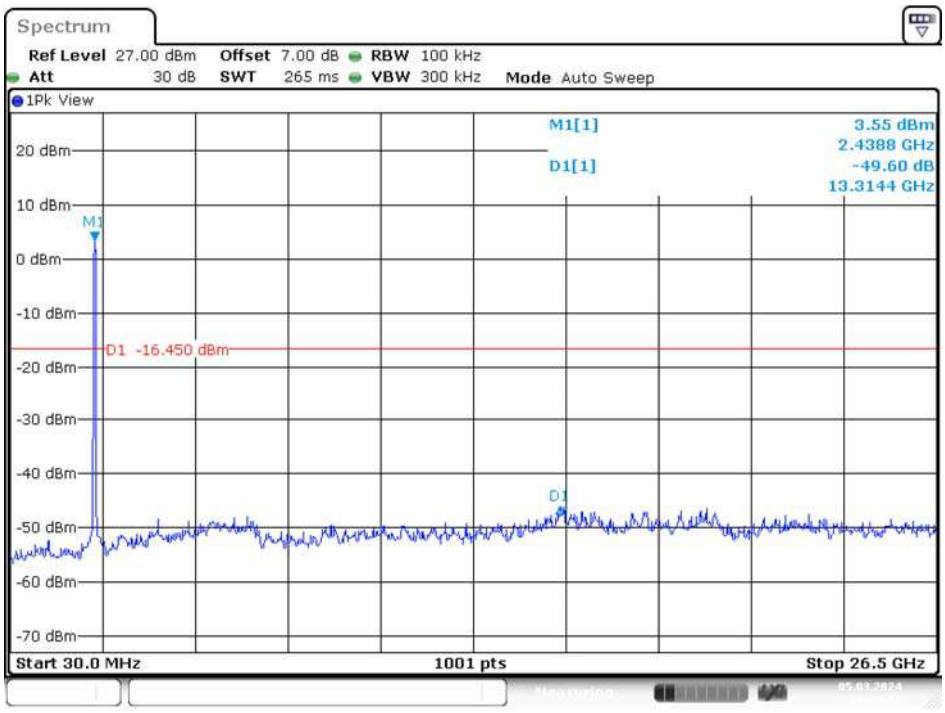
Date: 5.MAR.2024 09:09:34

Middle Channel



Date: 5.MAR.2024 09:13:14

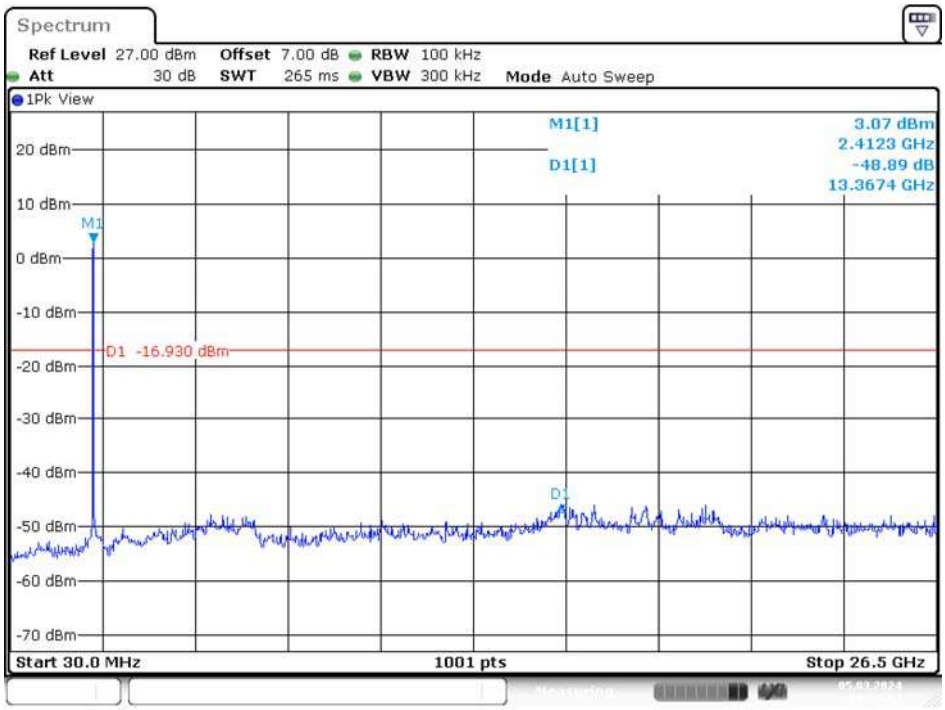
High Channel



Date: 5.MAR.2024 09:18:14

AX20 Mode

Low Channel



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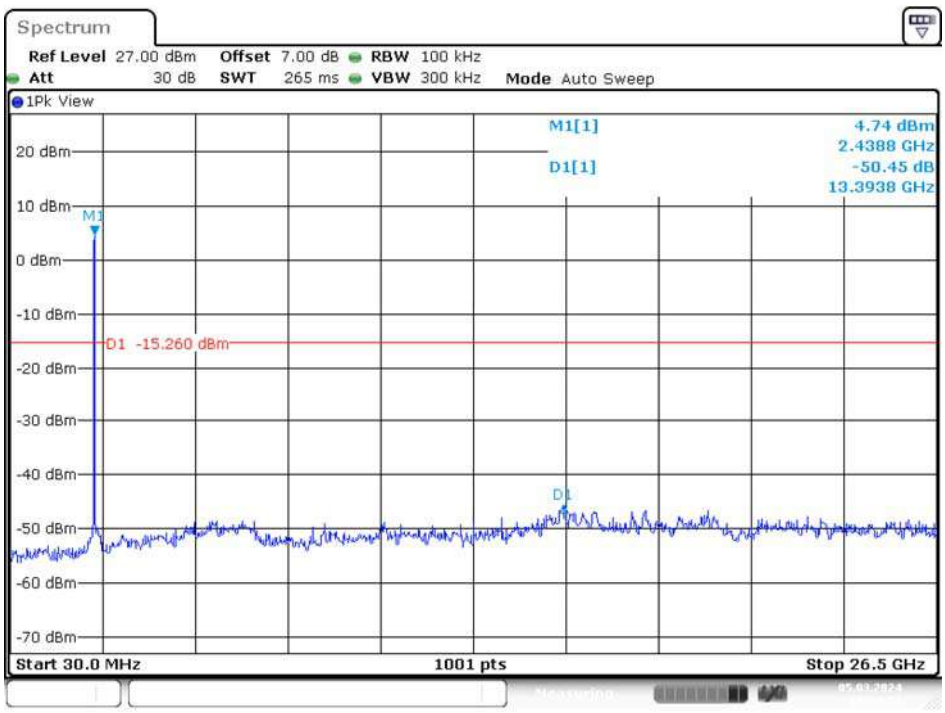
Middle Channel



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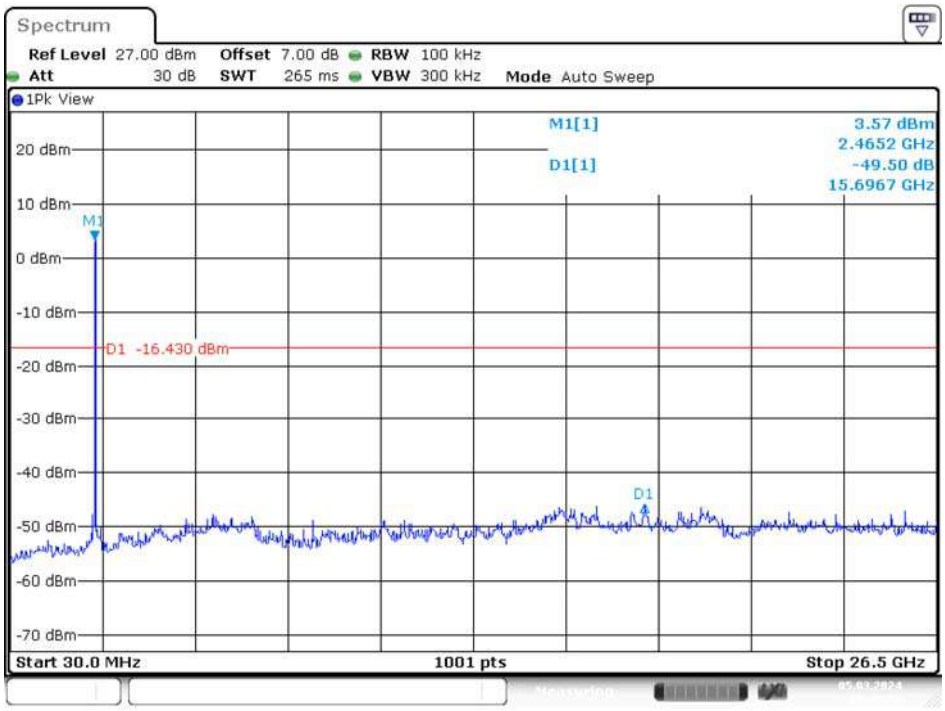
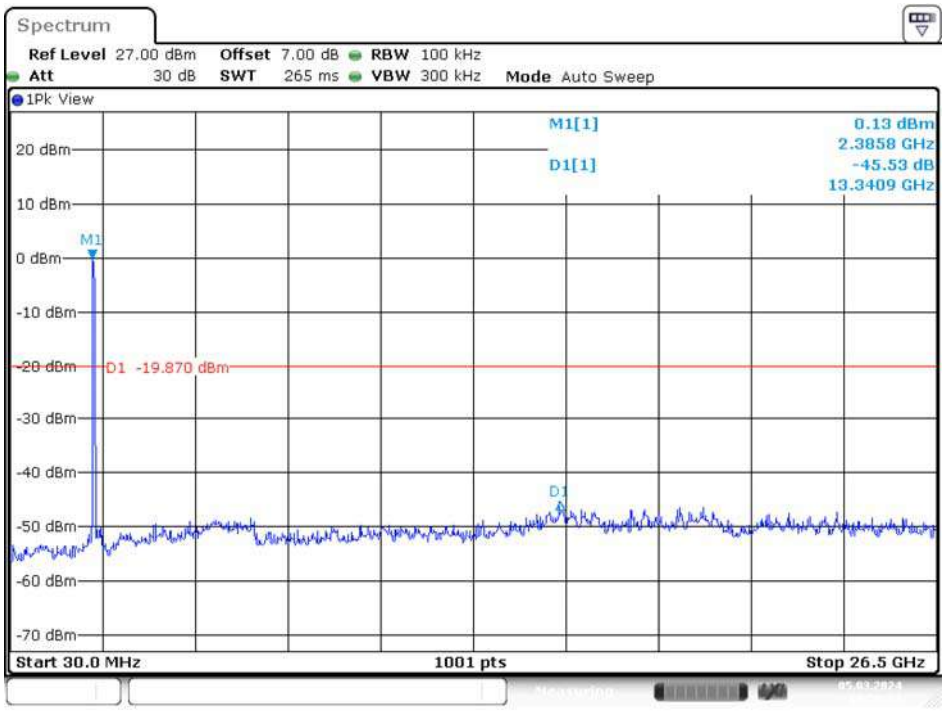
High Channel



Date: 5.MAR.2024 09:46:35

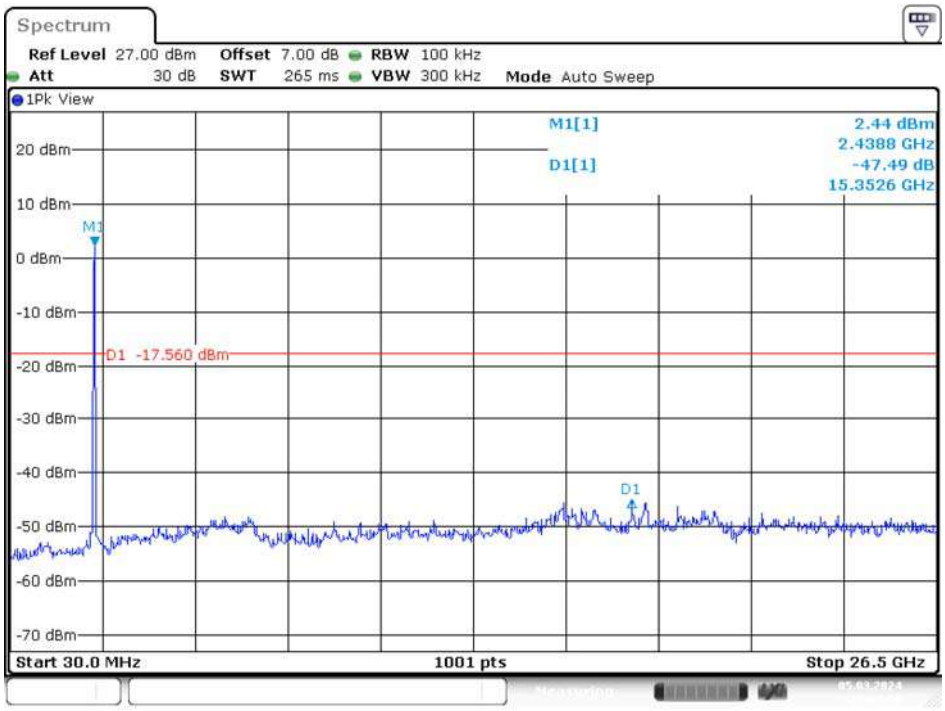
AX40 Mode

Low Channel



Date: 5.MAR.2024 09:56:37

Middle Channel



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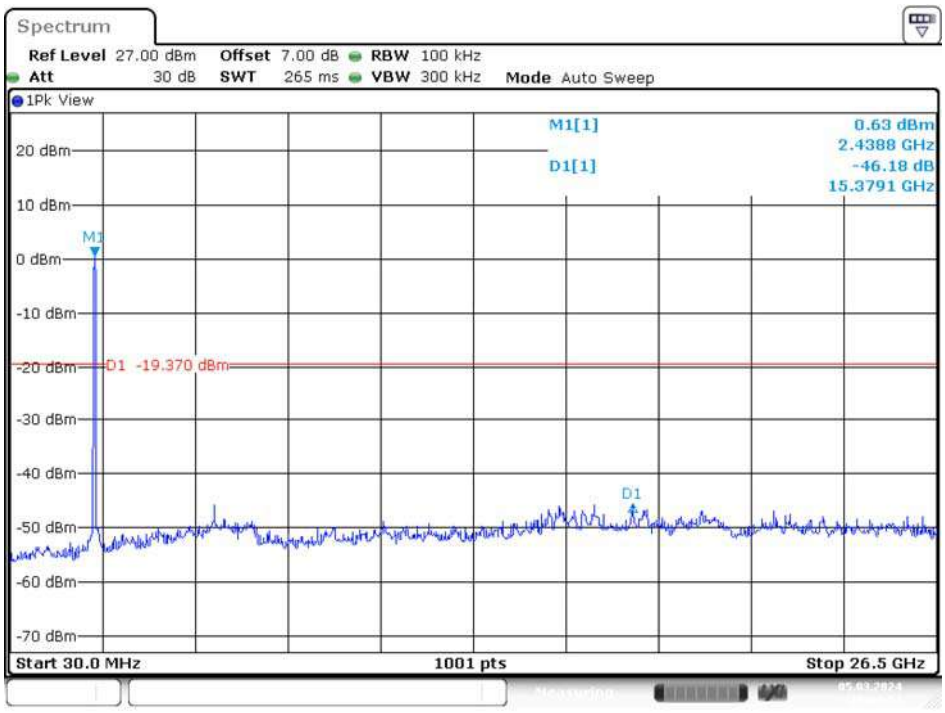
High Channel



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9 FCC §15.247(a)(2) – 6 dB Emission Bandwidth

9.1 Applicable Standard

According to FCC §15.247(a)(2).

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

9.2 Test Procedure

According to ANSI C63.10-2013, section 11.8

The steps for the first option are as follows:

a) Set RBW = 100 kHz.

b) Set the VBW ≥ [3 × RBW].

c) Detector = peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

9.3 Test Results

Non Beamforming:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)		Limit (kHz)	Result
		Chain 0	Chain 1		
B Mode					
Low	2412	8.08	8.08	> 500	PASS
Middle	2437	8.08	8.56	> 500	PASS
High	2462	8.08	8.08	> 500	PASS
G Mode					
Low	2412	16.32	16.32	> 500	PASS
Middle	2437	16.32	16.28	> 500	PASS
High	2462	16.32	16.32	> 500	PASS
N20 Mode					
Low	2412	17.60	17.56	> 500	PASS
Middle	2437	17.52	17.28	> 500	PASS
High	2462	17.56	17.28	> 500	PASS
N40 Mode					
Low	2422	35.20	35.20	> 500	PASS
Middle	2437	35.20	35.20	> 500	PASS
High	2452	35.20	35.36	> 500	PASS
AX20 Mode					
Low	2412	18.76	18.76	> 500	PASS
Middle	2437	18.64	18.44	> 500	PASS
High	2462	18.68	18.72	> 500	PASS
AX40 Mode					
Low	2422	37.04	35.12	> 500	PASS
Middle	2437	37.60	35.12	> 500	PASS
High	2452	37.36	35.84	> 500	PASS

Beamforming:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)		Limit (kHz)	Result
		Chain 0	Chain 1		
N20 Mode					
Low	2412	17.72	17.80	> 500	PASS
Middle	2437	17.68	17.80	> 500	PASS
High	2462	17.72	17.72	> 500	PASS
N40 Mode					
Low	2422	36.32	36.08	> 500	PASS
Middle	2437	36.32	35.76	> 500	PASS
High	2452	35.84	35.76	> 500	PASS
AX20 Mode					
Low	2412	18.88	19.00	> 500	PASS
Middle	2437	18.96	18.76	> 500	PASS
High	2462	18.48	18.60	> 500	PASS
AX40 Mode					
Low	2422	38.00	38.08	> 500	PASS
Middle	2437	38.08	38.08	> 500	PASS
High	2452	37.92	38.08	> 500	PASS

Please refer to the following plots

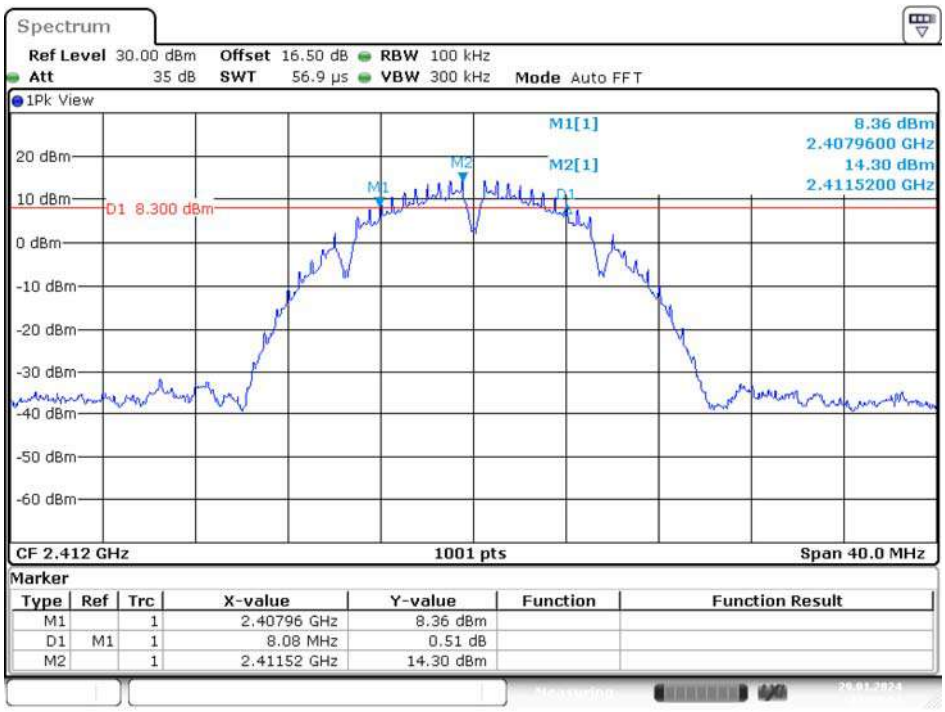
6 dB Emission Bandwidth

Non Beamforming:

Chain 0

B Mode

Low Channel



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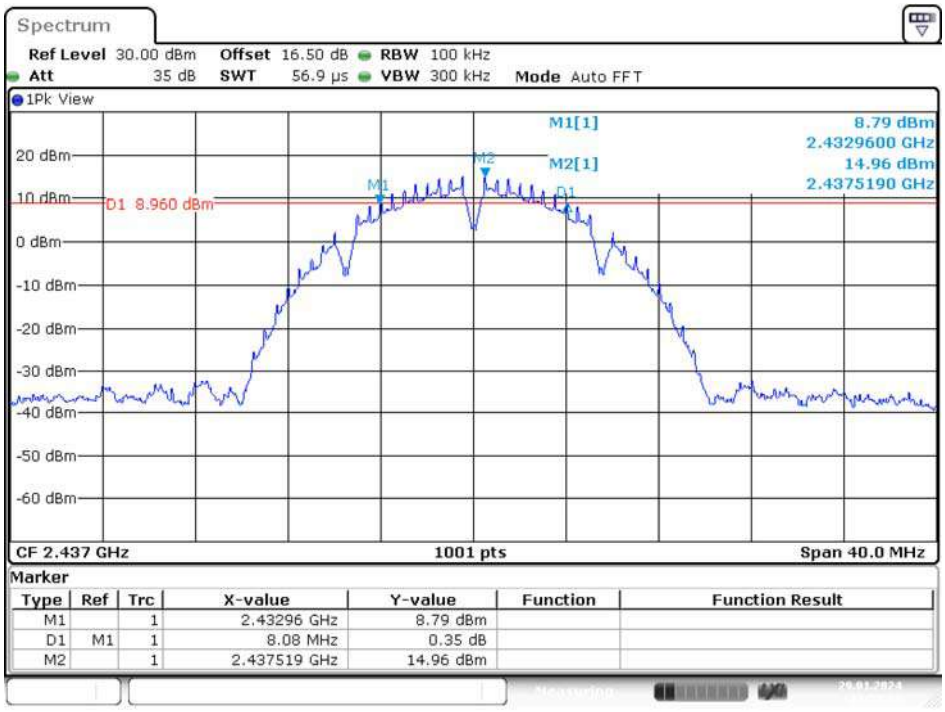
Middle Channel



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