FCC Part 15.247

TEST REPORT

For

TRANSCEND INFORMATION INC.

No.70, Xingzhong Rd., Neihu Dist., Taipei City 114, Taiwan, R.O.C.

FCC ID: A4Z-B0046

Report Type:	**Product Type:**
Original Report	Body Camera

Report Producer : Jojo Lu

Report Number : RXZ221220003RF05

Report Date : 2023-05-04

Reviewed By: David Hsu David.Hsu

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ221220003	RXZ221220003RF05	2023-05-04	Original Report	Jojo Lu

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Manufacturer	TRANSCEND INFORMATION INC.
	No.70, Xingzhong Rd., Neihu Dist., Taipei City 114, Taiwan, R.O.C.
Brand(Trade) Name	Transcend®
Product (Equipment)	Body Camera
Main Model Name	DrivePro Body 70
Series Model Name	DPB70, DrivePro Body 7XXXXX, DPB7XXXXX, TSXXXXDPB7XXXXX, DrivePro Body 60, DPB60, DrivePro Body 6XXXXX, DPB6XXXXX, TSXXXXDPB6XXXXX (Multiple Listing: The "X" in the Model Number could be defined as AZ, 0-9, -, _, or blank for marketing differentiation.)
Model Discrepancy	Reference below ** Model Discrepancy statement:
Frequency Range	IEEE 802.11b/g/n HT20 Mode: 2412 ~ 2462 MHz IEEE 802.11n HT40 Mode: 2422 ~ 2452 MHz BLE(1M): 2402 ~ 2480 MHz
Conducted Average Output Power	IEEE 802.11b Mode: 13.42 dBm IEEE 802.11g Mode: 5.83 dBm IEEE 802.11n HT20 Mode: 5.25 dBm IEEE 802.11n HT40 Mode: 6.09 dBm BLE(1M) Mode : 2.87 dBm
Modulation Technique	IEEE 802.11b Mode: DSSS IEEE 802.11g/n HT20/n HT40 Mode: OFDM BLE(1M) Mode: GFSK
Power Operation (Voltage Range)	☒ AC ☒ Adapter Brand Name: APD Model:WB-10G05R I/P:AC 100V~240V~50-60Hz O/P:DC 5V/2A ☐ By AC Power Cord
	☒ DC Type ☒ Battery 3.6V li-polymer battery pack Model:DPB30 ☐ DC Power Supply ☐ External from USB Cable
	☐ Host System
Received Date	2022-12-20
Date of Test	2022-12-23~2023-05-03

*All measurement and test data in this report was gathered from production sample serial number: RXZ221220003-1-1&RXZ221220003-1-2 (Assigned by BACL (New Taipei Laboratory)).

** Model Discrepancy statement:

A description of the differences between the tested model and those that are declared similar are as follows:

Model Name	DrivePro Body 70	
Serial Model Name	DPB70, DrivePro Body 7XXXXX, DPB7XXXXX, TSXXXXDPB7XXXXX, (Multiple Listing: The "X" in the Model Number could be defined as A-Z, 0-9, -, _, or blank for marketing differentiation.)	DrivePro Body 60, DPB60, DrivePro Body 6XXXXX, DPB6XXXXX, TSXXXXDPB6XXXXX (Multiple Listing: The "X" in the Model Number could be defined as A-Z, 0-9, -, _, or blank for marketing differentiation.)
Difference Description	F/W version is 0.9.12, camera outlook is round 	F/W version is 0.9.7 , camera outlook is square 

1.2 Objective

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

The objective is to determine compliance with FCC Part 15.247 rules for Output Power, Antenna Requirements, 6 dB Bandwidth, Power Spectral Density, 100 kHz Bandwidth of Band Edges Measurement, Conducted and Radiated Spurious Emissions.

1.3 Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS submissions with FCC ID: A4Z-B0046

1.4 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

1.5 Statement of Compliance

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

It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (New Taipei Laboratory)

Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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.

1.6 Measurement Uncertainty

Parameter		**Uncertainty**
AC Mains		±2.36 (dB)
RF output power, conducted		±0.93 (dB)
Power Spectral Density, conducted		±0.92 (dBm/kHz)
Occupied Bandwidth		±0.35 (MHz)
Unwanted Emissions, conducted		±1.69 (dB)
Emissions, radiated	30 MHz~1GHz	±5.22(dB)
	1 GHz~6 GHz	±6.12(dB)
	6 GHz~18 GHz	±6.12(dB)
	18 GHz~40 GHz	±4.99(dB)
Temperature		+/- 1.27 ℃
Humidity		+/- 3 %

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

1.7 Environmental Conditions

Test Site	Test Date	Temperature (℃)	Relative Humidity (%)	ATM Pressure (hPa)	Test Engineer
AC Line Conducted Emissions	2022-12-28	20.6	70	1010	Andy Cheng
Radiation Spurious Emissions	2022-12-23~2022-12-30	16.8~19.8	50~74	1010	Aaron Pan Jim Chen
Conducted Spurious Emissions	2023-04-14	23.1	61	1010	Andy Cheng
6 dB Emission Bandwidth	2022-12-29	24.2	47	1010	Andy Cheng
Maximum Output Power	2023-04-14	23.1	61	1010	Andy Cheng
100 kHz Bandwidth of Frequency Band Edge	2023-04-14	23.1	61	1010	Andy Cheng
Power Spectral Density	2023-04-19~2023-05-03	24.4~24.8	55~60	1010	Aaron Pan

1.8 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 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/n20 Modes were tested with channel 1, 6 and 11.

For 802.11n40 Mode were tested with channel 3, 6 and 9.

For BLE mode, there are totally 40 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	--	--
2	2406	--	--
3	2408	37	2476
--	--	38	2478
19	2440	39	2480

For BLE Modes were tested with channel 0, 19 and 39.

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

2.2 Equipment Modifications

No modification was made to the EUT.

2.3 EUT Exercise Software

The test software was used "Putty"

Test Frequency		Low	Mid	High
Power Level Setting	B Mode	35	35	35
	G Mode	30	30	30
	N20 Mode	29	29	29
	N40 Mode	31	31	31
	BLE 1M	0x1C	0x1C	0x1C

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

802.11b: 1Mbps

802.11g: 6Mbps

802.11n HT20: MCS0

802.11n HT40: MCS0

BLE 1M: 1 Mbps

2.4 Test Mode

There are two modes:

MODE1: **DrivePro Body 70** (Sample serial number: RXZ221220003-1-1).

MODE2: **DrivePro Body 60** (Sample serial number: RXZ221220003-1-2).

After pre scan, mode1 was the worst case which was used for all the test items.

Full System (model: **DrivePro Body 70**) for all test item.

2.5 Support Equipment List and Details

Description	Manufacturer	Model Number	S/N
Adapter	Asian Power Devices	WB-10G05R	Y17310056692

2.6 External Cable List and Details

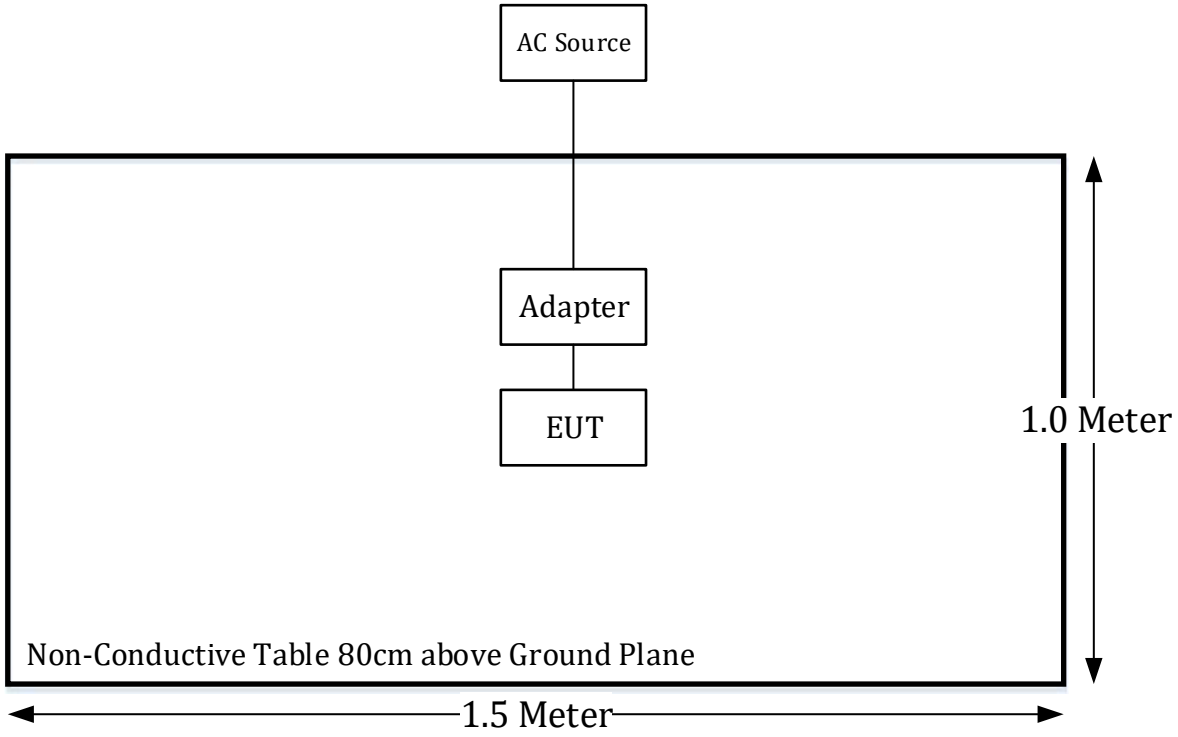
Cable Description	Length (m)	From	To
USB to 3.5mm Cable	1m	Adapter	EUT

2.7 Block Diagram of Test Setup

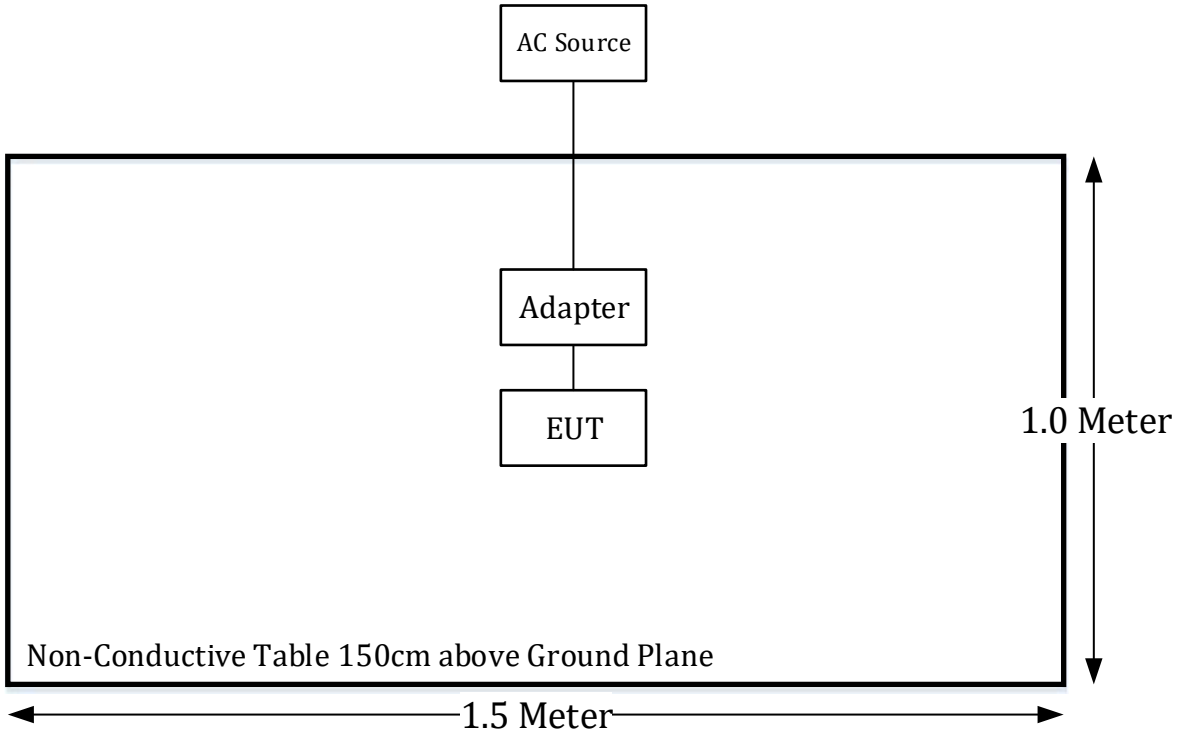
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:

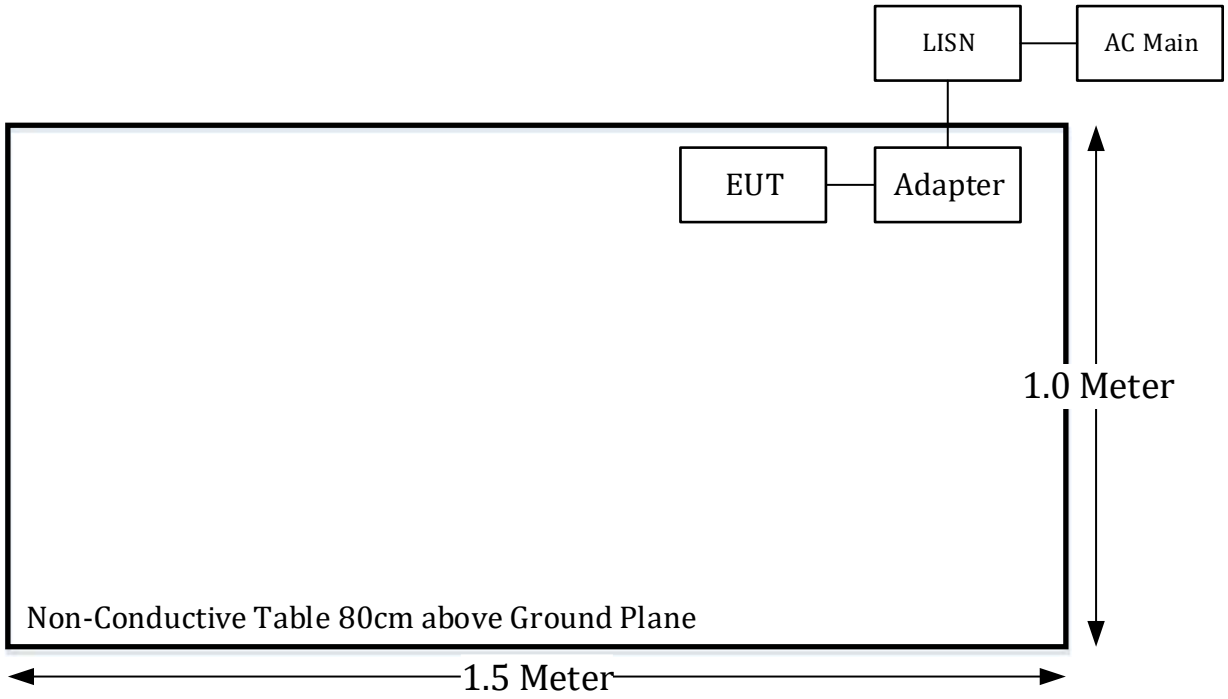
Below 1GHz:



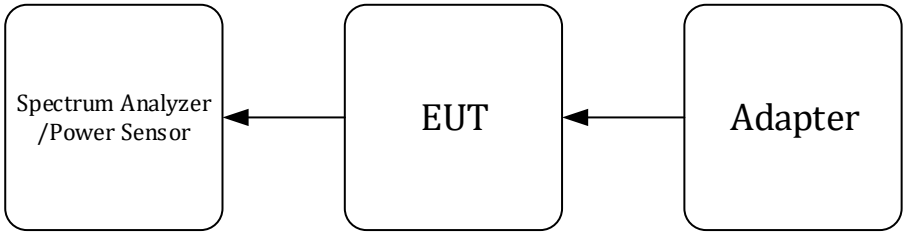
Above 1GHz:



Conduction:



Conducted:



2.8 Duty Cycle

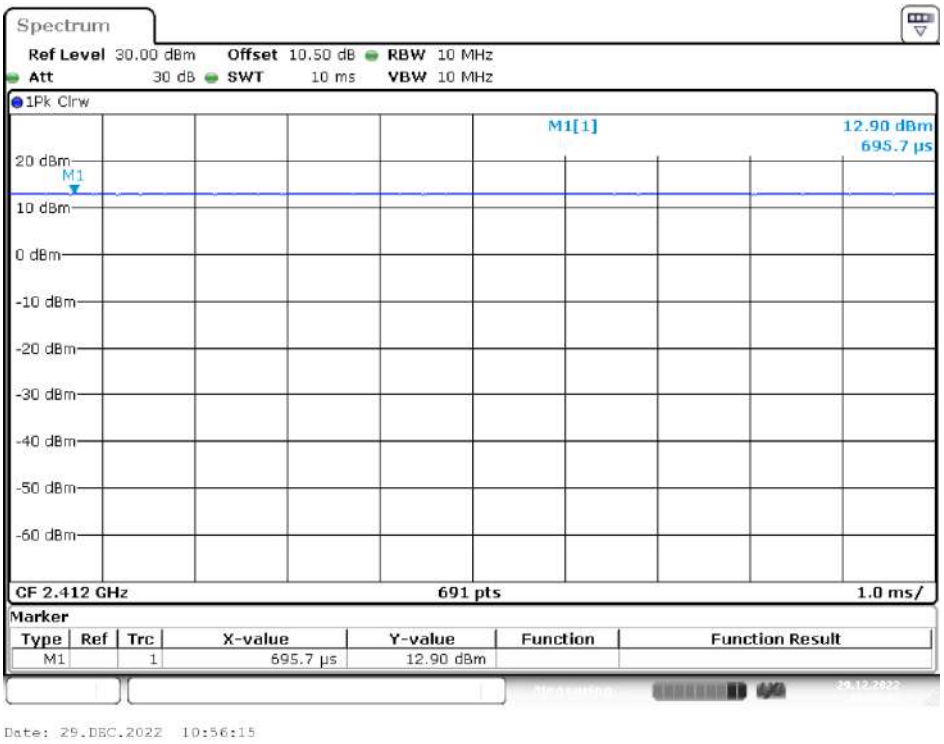
The duty cycle as below:

Radio Mode	On Time (ms)	Off Time (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11b	1	0	100	0
802.11g	1	0	100	0
802.11n20	1	0	100	0
802.11n40	1	0	100	0
BLE(1M)	1	0	100	0

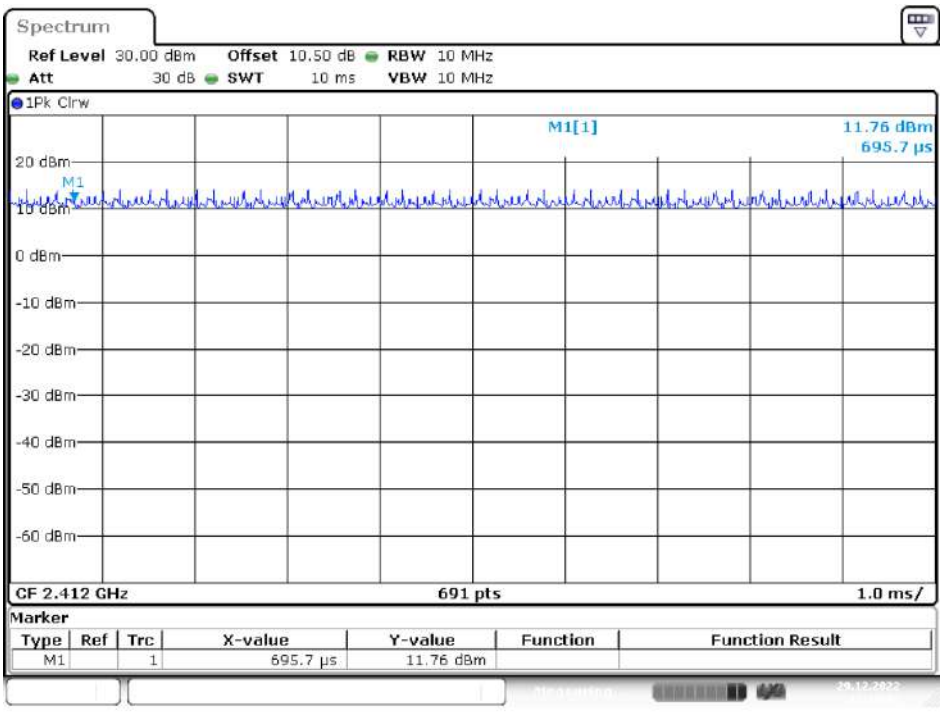
Note: Duty Cycle Correction Factor = 10*log (1/duty cycle)

Please refer to the following plots.

B Mode



G Mode



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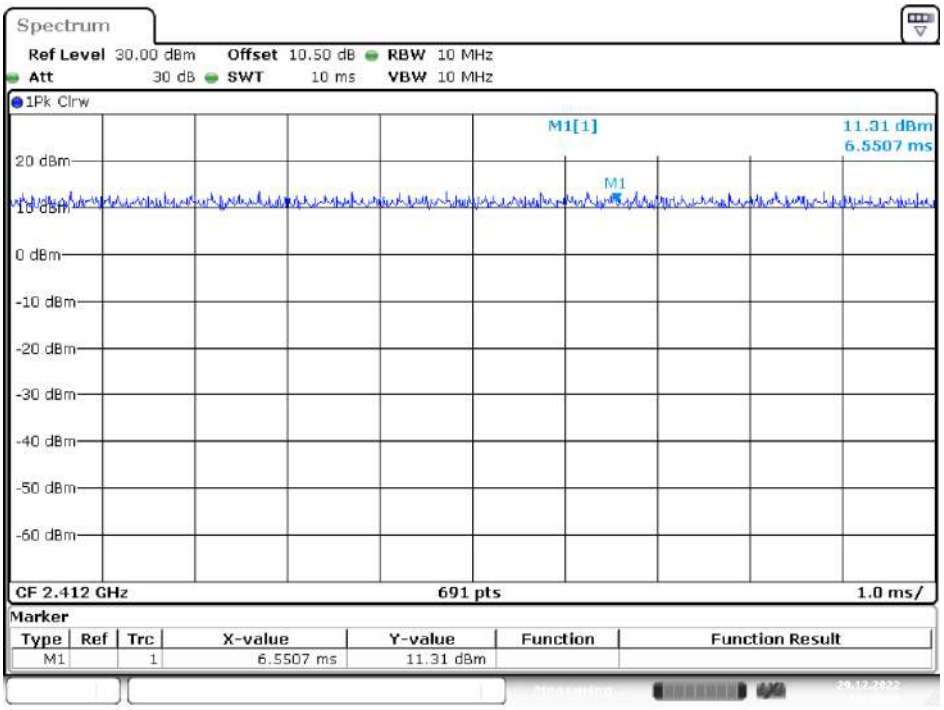
N20 Mode



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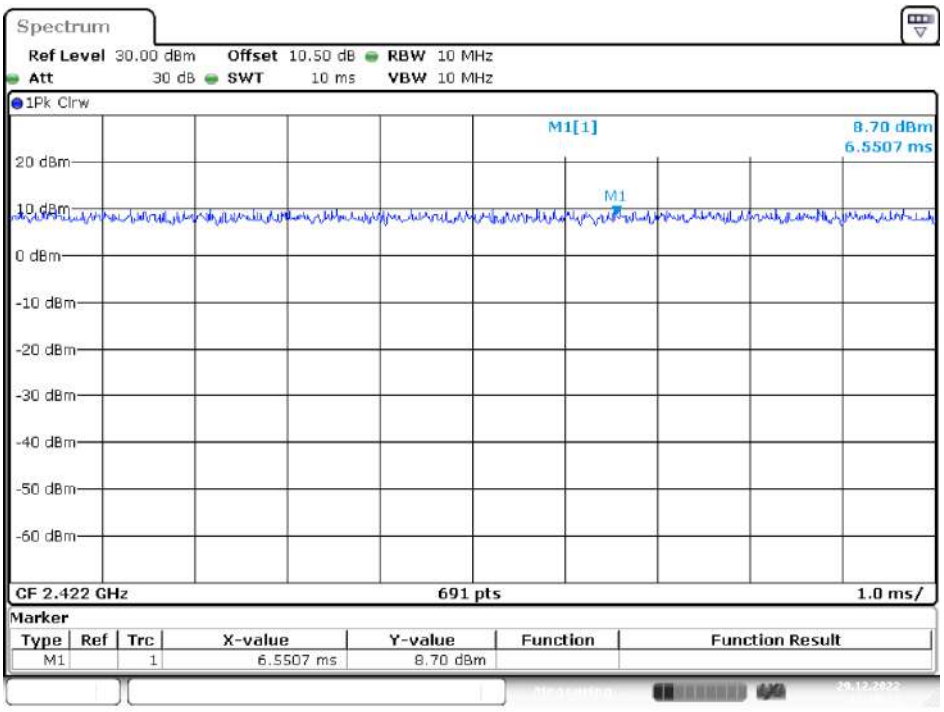
N40 Mode



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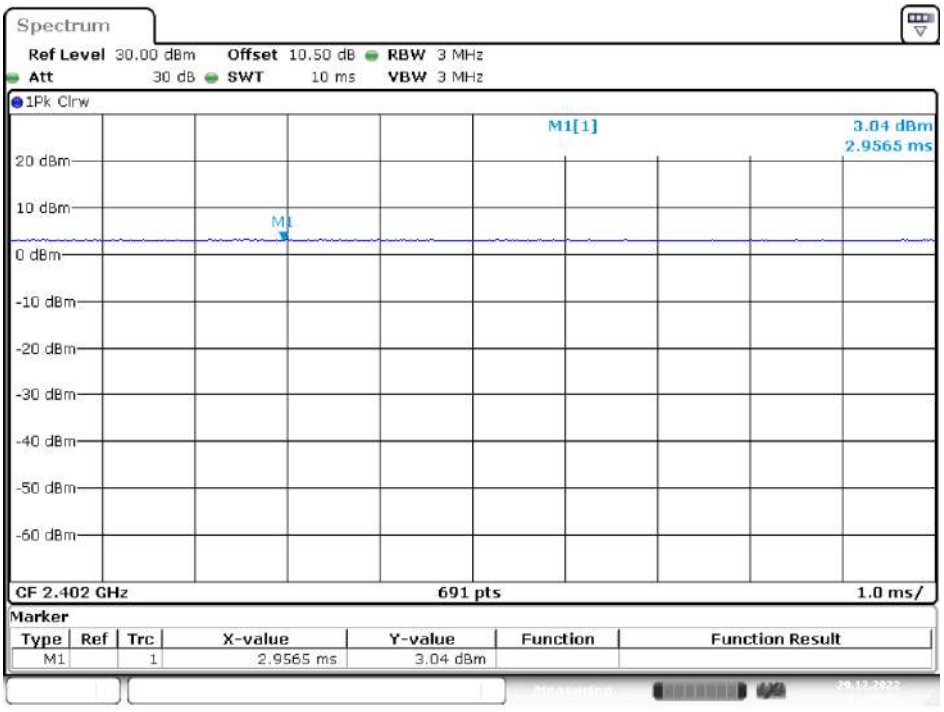
BLE (1M) Mode



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3 Summary of Test Results

FCC Rules	Description of Test	Results
§15.247(i), §1.1307(b)(3)(i)	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247(a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§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	101248	2022/6/22	2023/6/21
EMI Test Receiver	Rohde & Schwarz	ESR3	102099	2022/6/16	2023/6/15
Pulse Limiter	Rohde & Schwarz	ESH3Z2	TXZEM104	2022/7/19	2023/7/18
RF Cable	EMEC	EM-CB5D	1	2022/6/7	2023/6/6
Software	AUDIX	E3	V9.150826k	N.C.R	N.C.R
Radiation 3M Room (966-A)					
Active Loop Antenna	ETS-Lindgren	6502	35796	2022/3/25	2023/3/24
Bilog Antenna with 6 dB Attenuator	SUNOL SCIENCES & MINI-CIRCUITS	JB6/UNAT-6+	A050115/15542_01	2022/2/14	2023/2/13
EMI Test Receiver	Rohde & Schwarz	ESR7	101419	2022/11/2	2023/11/1
Horn Antenna	EMCO	SAS-571	1020	2022/5/25	2023/5/24
Horn Antenna	ETS-Lindgren	3116	62638	2022/8/18	2023/8/17
Preamplifier	Sonoma	310N	130602	2022/6/16	2023/6/15
Microware Preamplifier	EM Electronics Corporation	EM18G40G	60656	2023/1/6	2024/1/5
Spectrum Analyzer	Rohde & Schwarz	FSV40	101435	2023/2/1	2024/1/31
Coaxial Cable	COMMATE	PEWC	8Dr	2022/12/24	2023/12/23
Coaxial Cable	JUNFLON	J12J102248-00-B-5	AUG-07-15-044	2022/12/24	2023/12/23
Preamplifier	A.H. system Inc.	PAM-0118P	470	2022/3/28	2023/3/27
Software	AUDIX	E3	18621a	N.C.R	N.C.R
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz	FSV40	101204	2022/6/16	2023/6/15
Cable	UTIFLEX	UFA210A	9435	2022/10/3	2023/10/2
Attenuator	MINI-CIRCUITS	BW-S10W5+	1419	2022/2/11	2023/2/10
				2023/2/2	2024/2/1
OSP	Rohde & Schwarz	OSP-B157W8	1A322C4	2022/5/13	2023/5/12

***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)(i) - RF Exposure

5.1 Applicable Standard

According to subpart 15.247(i) and subpart §1.1307(b)(3)(i), 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

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

(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

Band	Freq (MHz)	Turn-up Average Power (dBm)	Ant Gain (dBi)	Distances (mm)	Turn-up (mW)	ERP (dBm)	ERP (mW)
BLE	2480	3	2.64	5	2.00	3.49	2.23

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

§ 1.1307(b)(3)(i)(B)

Band	Freq (MHz)	Pth (mW)	X	ERP 20cm (mW)	Result Option B
BLE	2480	2.72	1.905	3060	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).

Note: For Wi-Fi 2.4G compliance assessment, please refer to SAR report: RXZ22122003SA01.

Result: The device meets the exemption requirement.

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.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna does not exceed 6dBi.

6.2 Antenna List and Details

Manufacturer	Model	Antenna Type	Antenna Gain
Walsin Technology Corporation	RFECA3216060A1T	Chip	2.64 dBi

Result: Compliance

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

7.1 Applicable Standard

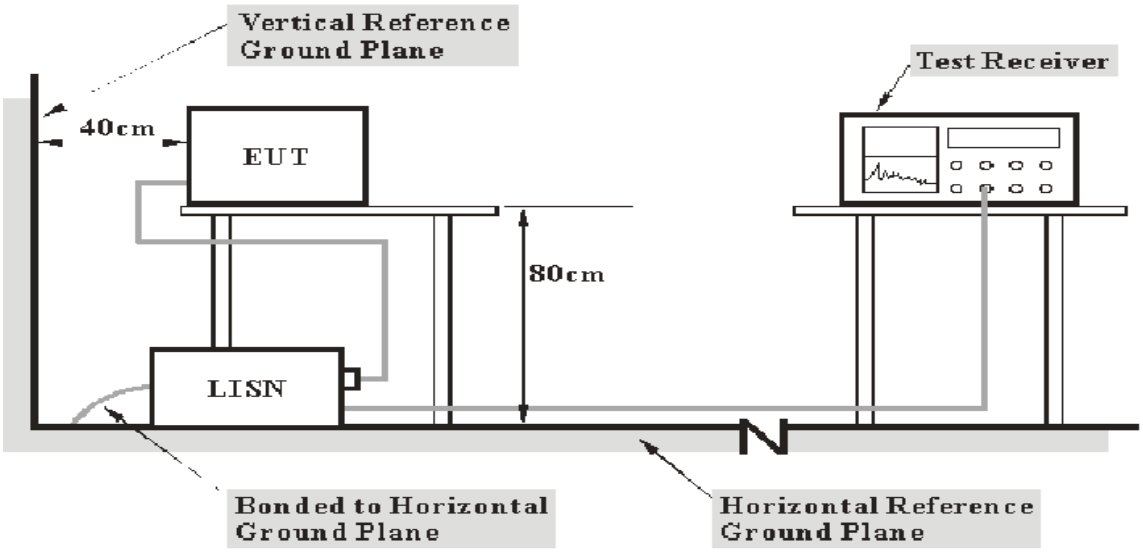
According to §15.207

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 & Margin 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 = Level – Limit Line

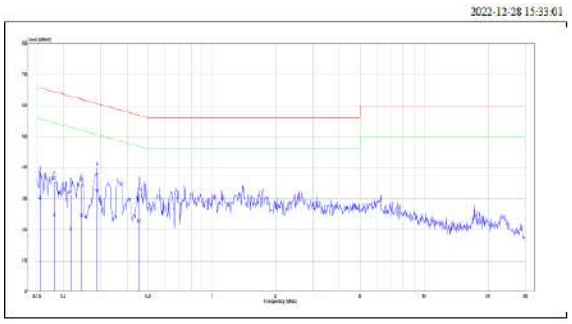
7.6 Test Results

Test Mode: Transmitting

Power: AC120V/60Hz

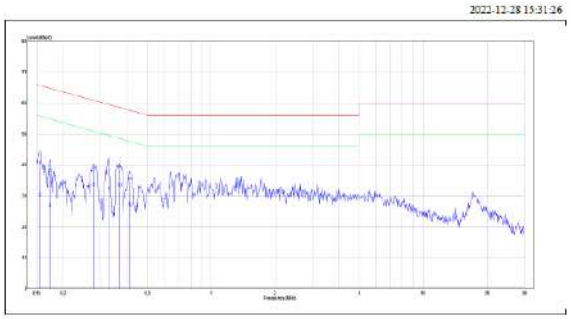
WIFI Mode (Worst case is 802.11b mode, Middle Channel)

Line



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.155	19.22	19.51	38.73	65.74	-27.01	QP	Line
2	0.155	9.93	19.51	29.44	55.74	-26.30	Average	Line
3	0.181	16.19	19.51	35.70	64.46	-28.76	QP	Line
4	0.181	4.10	19.51	23.61	54.46	-30.85	Average	Line
5	0.217	11.80	19.51	31.31	62.92	-31.61	QP	Line
6	0.217	-0.26	19.51	19.25	52.92	-33.67	Average	Line
7	0.243	15.29	19.51	34.81	62.00	-27.19	QP	Line
8	0.243	4.05	19.51	23.56	52.00	-28.43	Average	Line
9	0.288	20.66	19.51	40.17	60.59	-20.42	QP	Line
10	0.288	11.87	19.51	31.39	50.59	-19.20	Average	Line
11	0.454	12.19	19.52	31.71	56.80	-25.09	QP	Line
12	0.454	2.21	19.52	21.73	46.80	-25.07	Average	Line

Neutral



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.156	19.92	19.51	39.43	65.69	-26.26	QP	Neutral
2	0.156	9.95	19.51	29.46	55.69	-26.23	Average	Neutral
3	0.179	17.79	19.51	37.30	64.81	-27.51	QP	Neutral
4	0.179	6.31	19.51	25.82	54.81	-28.99	Average	Neutral
5	0.277	19.13	19.51	38.64	60.90	-22.25	QP	Neutral
6	0.277	13.17	19.51	32.67	50.90	-18.22	Average	Neutral
7	0.329	19.74	19.51	39.26	59.49	-20.23	QP	Neutral
8	0.329	11.96	19.51	31.47	49.49	-18.02	Average	Neutral
9	0.367	18.83	19.51	38.35	58.56	-20.22	QP	Neutral
10	0.367	13.06	19.51	32.57	48.56	-15.99	Average	Neutral
11	0.413	14.89	19.52	34.40	57.59	-23.19	QP	Neutral
12	0.413	6.56	19.52	26.08	47.59	-21.52	Average	Neutral

Note:

Result = Reading +Correct Factor

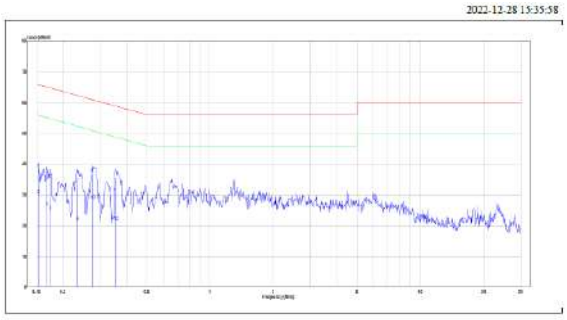
Over Limit = Result– Limit Line

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

Power: AC120V/60Hz

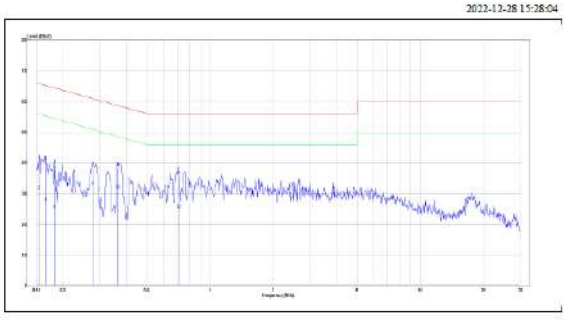
BLE Mode (Worst case is BLE (1M) mode Middle Channel)

Line



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.158	19.05	19.51	38.56	65.82	-27.27	QP	Line
2	0.158	10.49	19.51	30.00	55.82	-25.82	Average	Line
3	0.168	17.32	19.51	36.83	65.08	-28.25	QP	Line
4	0.168	6.67	19.51	26.18	55.08	-28.90	Average	Line
5	0.175	15.91	19.51	35.42	64.72	-29.30	QP	Line
6	0.175	5.19	19.51	24.70	54.72	-30.03	Average	Line
7	0.234	14.05	19.51	33.57	62.30	-28.74	QP	Line
8	0.234	1.75	19.51	21.26	52.30	-31.04	Average	Line
9	0.276	17.28	19.51	36.79	60.94	-24.15	QP	Line
10	0.276	8.85	19.51	28.37	50.94	-22.57	Average	Line
11	0.356	16.25	19.52	35.76	58.85	-23.06	QP	Line
12	0.356	1.84	19.52	21.36	48.85	-27.47	Average	Line

Neutral



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.154	21.07	19.51	40.58	65.78	-25.20	QP	Neutral
2	0.154	11.52	19.51	31.03	55.78	-24.75	Average	Neutral
3	0.165	20.94	19.51	40.45	65.21	-24.76	QP	Neutral
4	0.165	7.63	19.51	27.13	55.21	-28.07	Average	Neutral
5	0.182	18.16	19.50	37.67	64.37	-26.70	QP	Neutral
6	0.182	5.28	19.50	24.78	54.37	-29.59	Average	Neutral
7	0.277	19.05	19.51	38.56	60.90	-22.34	QP	Neutral
8	0.277	12.99	19.51	32.49	50.90	-18.40	Average	Neutral
9	0.363	19.02	19.51	38.54	58.65	-20.11	QP	Neutral
10	0.363	11.64	19.51	31.16	48.65	-17.49	Average	Neutral
11	0.708	16.10	19.52	35.62	56.00	-20.38	QP	Neutral
12	0.708	5.20	19.52	24.72	46.00	-21.28	Average	Neutral

Note:

Result = Reading +Correct Factor

Over Limit = Result– Limit Line

Correct 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:

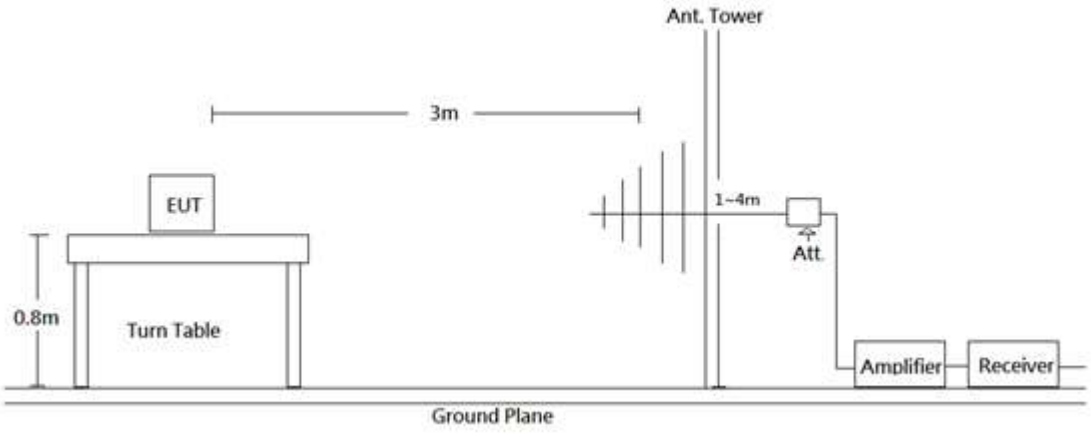
Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** 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.

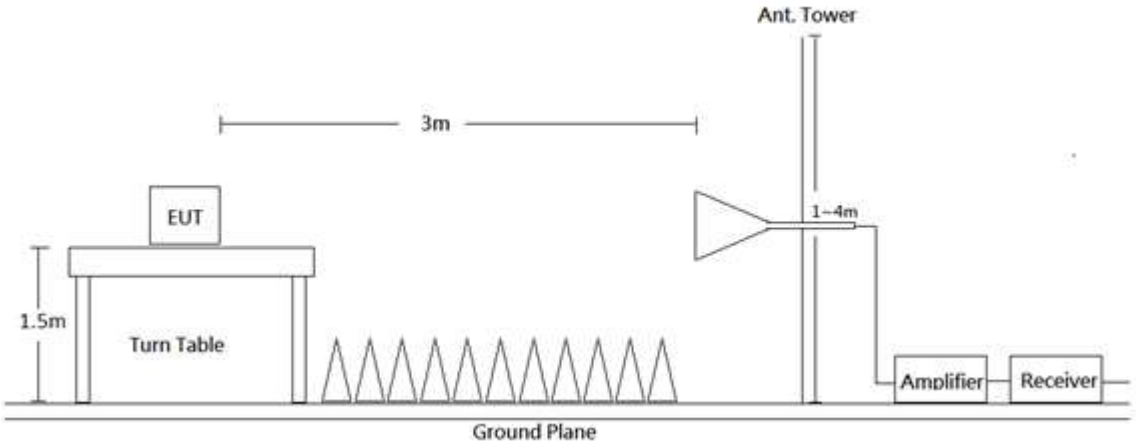
As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the 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

Below 1 GHz:



Above 1 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 and FCC 15.247 Limits.

8.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz 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
30-1000 MHz	120 kHz	/	/	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	>98%	Ave
	1 MHz	1/T	<98%	Ave

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 the 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 = Result – Limit

8.6 Test Results

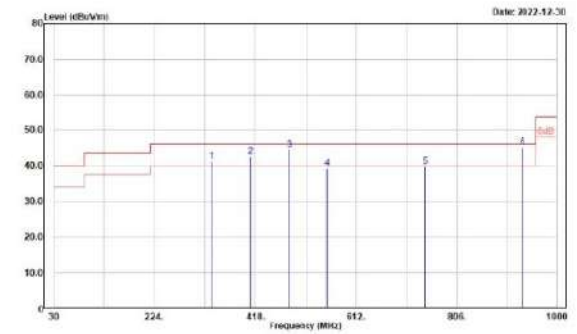
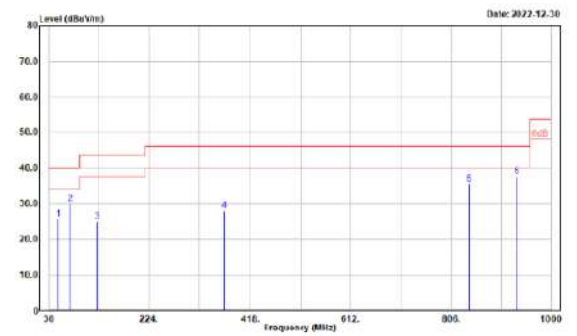
Test Mode: Transmitting

WIFI Mode (Pre-scan with three orthogonal axis, and worse case as Y axis.)

(Worst case is 802.11b mode Middle channel)

30MHz-1GHz

Power: AC120V/60Hz

Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
333.914	47.54	-6.27	41.27	46.00	-4.73	100	253	QP
408.679	46.42	-3.96	42.46	46.00	-3.54	100	201	QP
482.473	46.41	-2.07	44.34	46.00	-1.66	100	300	QP
557.237	40.58	-1.27	39.31	46.00	-6.69	100	234	QP
745.606	37.34	2.38	39.72	46.00	-6.28	100	120	QP
933.003	38.95	6.20	45.15	46.00	-0.85	100	178	QP

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
47.477	39.17	-13.56	25.61	40.00	-14.39	100	96	QP
59.810	44.14	-14.27	29.87	40.00	-10.13	100	80	QP
123.213	32.76	-7.80	24.96	43.50	-18.54	100	100	QP
368.869	33.38	-5.33	28.05	46.00	-17.95	100	1	QP
840.761	31.11	4.22	35.33	46.00	-10.67	100	23	QP
933.003	31.34	6.20	37.54	46.00	-8.46	100	131	QP

Level = Reading + Factor.

Margin = Level – Limit.

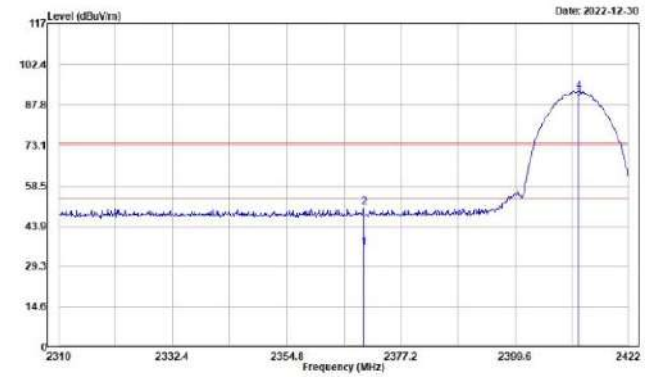
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

Fundamental:

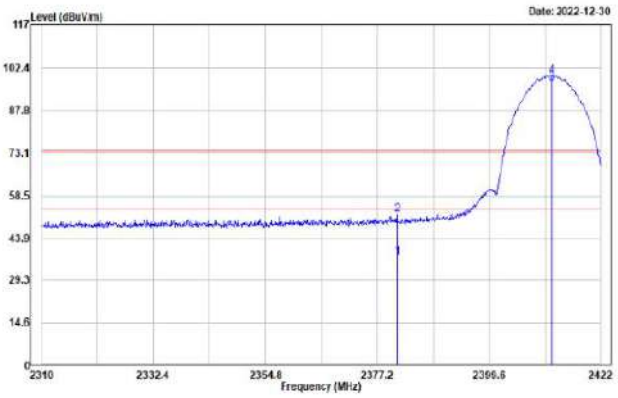
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	(cm)	(°)	
2369.980	40.80	-4.77	36.03	54.00	-17.97	129	227	Average
2369.980	55.41	-4.77	50.64	74.00	-23.36	129	227	Peak
2412.000	94.37	-4.41	89.96			129	227	Average
2412.000	97.06	-4.41	92.65			129	227	Peak

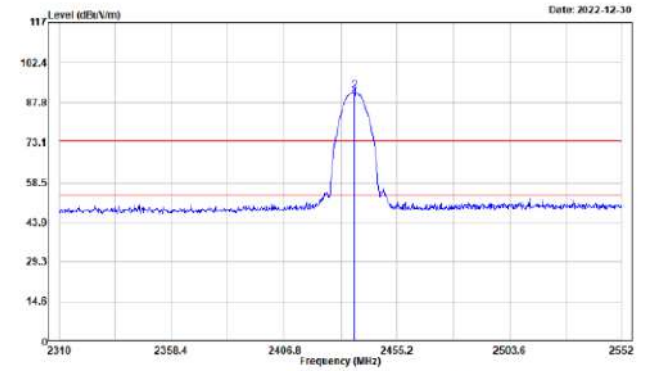
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	(cm)	(°)	
2381.191	42.07	-4.67	37.40	54.00	-16.60	137	340	Average
2381.191	56.56	-4.67	51.89	74.00	-22.11	137	340	Peak
2412.000	101.40	-4.41	96.99			137	340	Average
2412.000	104.08	-4.41	99.67			137	340	Peak

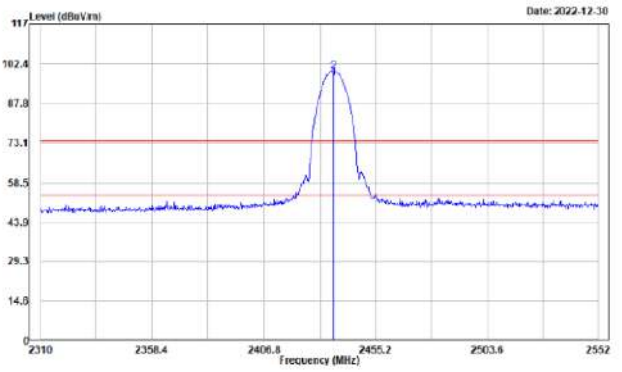
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	(cm)	(°)	
2437.000	93.31	-4.22	89.09			119	230	Average
2437.000	96.02	-4.22	91.80			119	230	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	(cm)	(°)	
2437.000	101.19	-4.22	96.97			138	342	Average
2437.000	103.86	-4.22	99.64			138	342	Peak

Level = Reading + Factor.

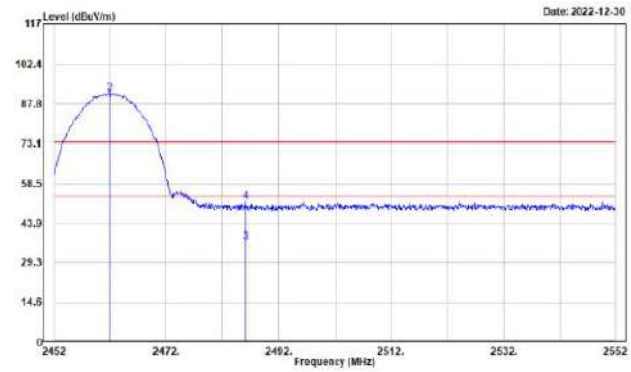
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

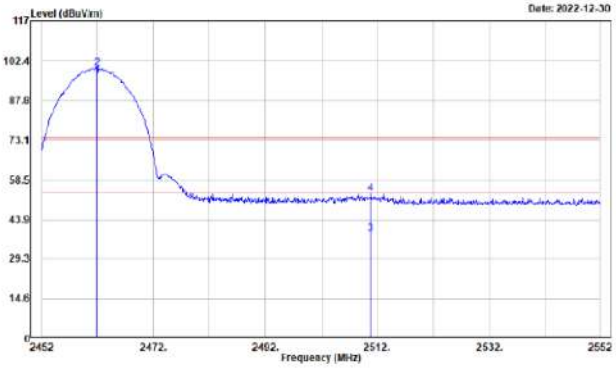
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	(cm)	(°)	
2462.000	92.95	-3.97	88.98			113	229	Average
2462.000	95.68	-3.97	91.71			113	229	Peak
2486.034	40.78	-3.64	37.14	54.00	-16.86	113	229	Average
2486.034	55.50	-3.64	51.86	74.00	-22.14	113	229	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	(cm)	(°)	
2462.000	100.83	-3.97	96.86			117	340	Average
2462.000	103.48	-3.97	99.51			117	340	Peak
2510.859	41.96	-3.36	38.60	54.00	-15.40	117	340	Average
2510.859	56.94	-3.36	53.58	74.00	-20.42	117	340	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

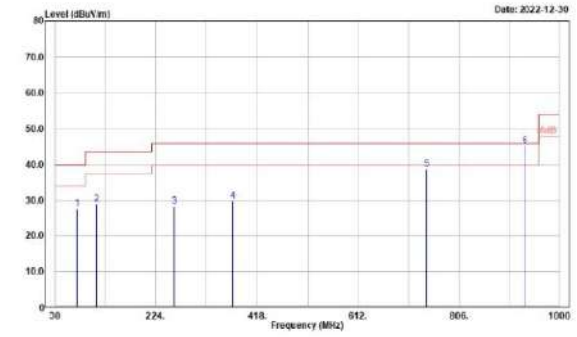
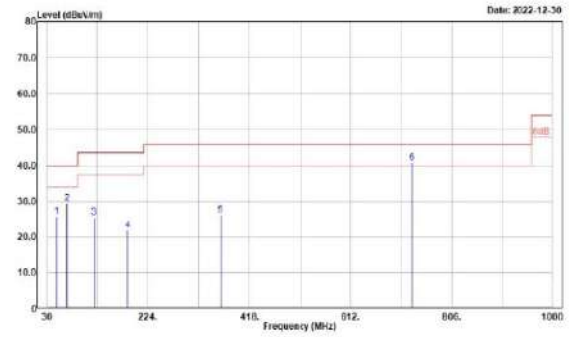
Spurious emissions more than 20 dB below the limit were not reported.

BLE (1M) Mode (Pre-scan with three orthogonal axis, and worse case as Y axis.)

(Worst case is BLE (1M) mode Middle channel)

Power: AC120V/60Hz

30MHz-1GHz

Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
71.752	41.87	-14.04	27.83	40.00	-12.17	100	6	QP
110.591	38.44	-9.46	28.98	43.50	-14.52	100	346	QP
259.149	37.43	-8.94	28.49	46.00	-17.51	100	32	QP
370.811	35.31	-5.30	30.01	46.00	-15.99	100	195	QP
743.664	36.38	2.36	38.74	46.00	-7.26	100	21	QP
933.003	39.15	6.20	45.35	46.00	-0.65	100	176	QP

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
47.477	39.30	-13.56	25.74	40.00	-14.26	100	189	QP
67.868	43.56	-14.13	29.43	40.00	-10.57	100	255	QP
121.271	33.44	-7.89	25.55	43.50	-17.95	100	165	QP
185.355	32.11	-10.26	21.85	43.50	-21.65	100	112	QP
363.043	31.56	-5.38	26.18	46.00	-19.82	100	2	QP
730.070	38.60	2.23	40.83	46.00	-5.17	100	170	QP

Level = Reading + Factor.

Margin = Level – Limit.

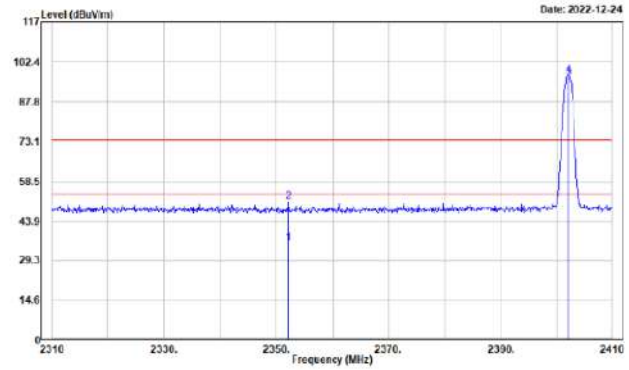
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

Fundamental:

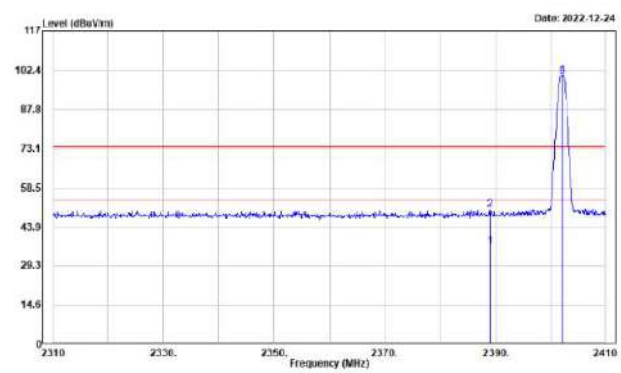
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2352.142	48.65	-4.94	35.71	54.00	-18.29	119	5	Average
2352.142	55.98	-4.94	51.04	74.00	-22.96	119	5	Peak
2402.000	101.12	-4.48	96.64			119	5	Average
2402.000	101.82	-4.48	97.34			119	5	Peak

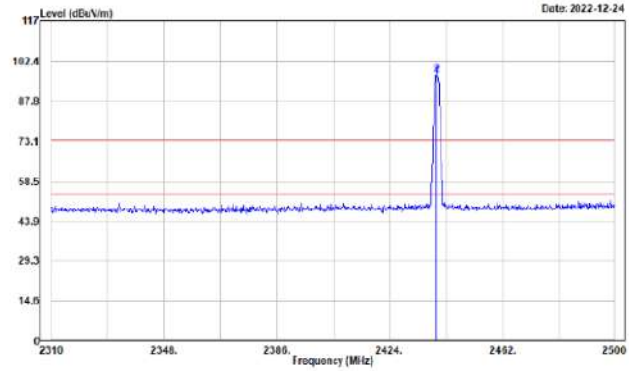
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2388.979	41.31	-4.60	36.71	54.00	-17.29	136	10	Average
2388.979	55.11	-4.60	50.51	74.00	-23.49	136	10	Peak
2402.000	104.37	-4.48	99.89			136	10	Average
2402.000	105.07	-4.48	100.59			136	10	Peak

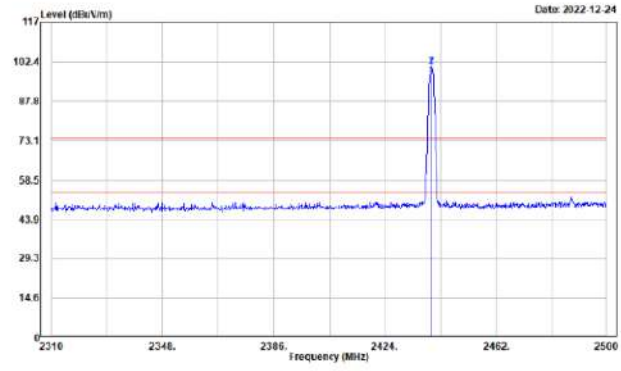
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2440.000	100.79	-4.20	96.59			119	6	Average
2440.000	101.47	-4.20	97.27			119	6	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2440.000	104.17	-4.20	99.97			150	77	Average
2440.000	104.85	-4.20	100.65			150	77	Peak

Level = Reading + Factor.

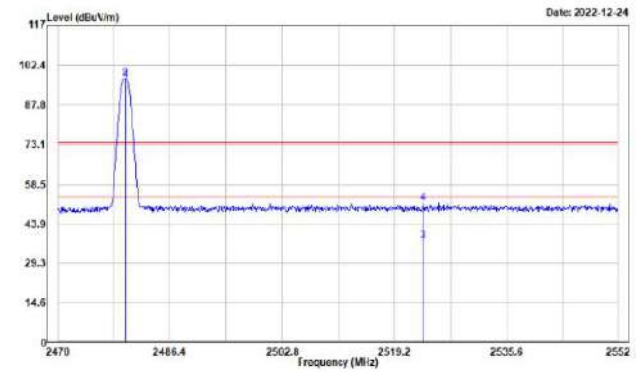
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

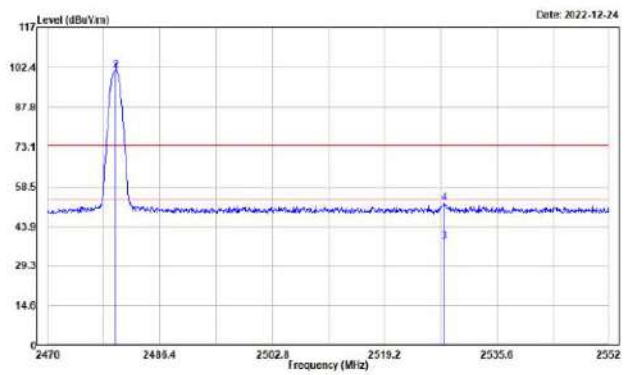
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2480.000	100.36	-3.73	96.63			114	5	Average
2480.000	101.10	-3.73	97.37			114	5	Peak
2523.353	40.89	-3.25	37.64	54.00	-16.36	114	5	Average
2523.353	55.04	-3.25	51.79	74.00	-22.21	114	5	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
2480.000	104.04	-3.73	100.31			144	72	Average
2480.000	104.78	-3.73	101.05			144	72	Peak
2527.950	41.61	-3.21	38.40	54.00	-15.60	144	72	Average
2527.950	55.72	-3.21	52.51	74.00	-21.49	144	72	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

Above 1GHz

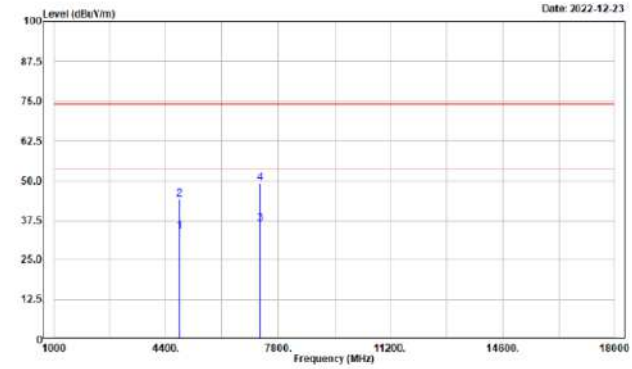
B Mode

Power: AC120V/60Hz

1GHz-18GHz:

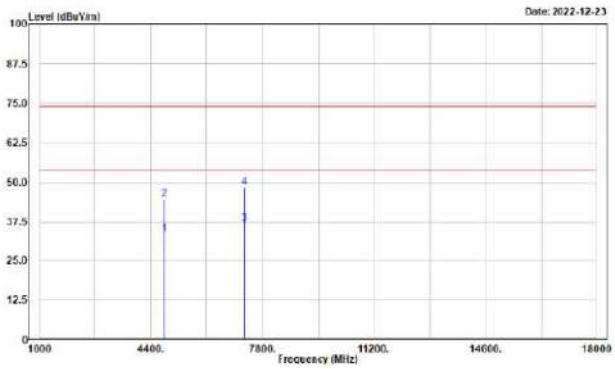
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	30.78	3.43	34.21	54.00	-19.79	145	248	Average
4824.000	40.61	3.43	44.04	74.00	-29.96	145	248	Peak
7236.000	27.51	9.21	36.72	54.00	-17.28	148	267	Average
7236.000	40.11	9.21	49.32	74.00	-24.68	148	267	Peak

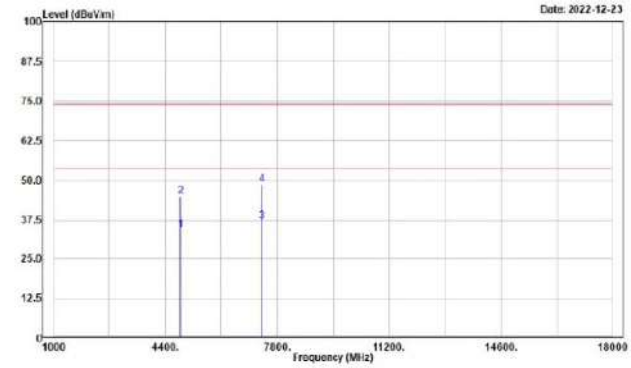
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	30.26	3.43	33.69	54.00	-20.31	147	64	Average
4824.000	41.32	3.43	44.75	74.00	-29.25	147	64	Peak
7236.000	27.58	9.21	36.79	54.00	-17.21	144	129	Average
7236.000	39.30	9.21	48.51	74.00	-25.49	144	129	Peak

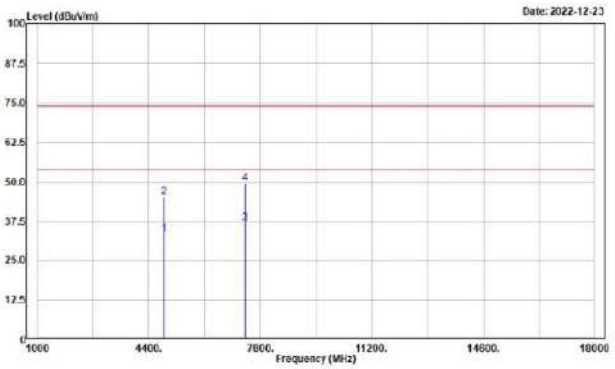
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.75	3.54	34.29	54.00	-19.71	141	52	Average
4874.000	41.43	3.54	44.97	74.00	-29.03	141	52	Peak
7311.000	27.81	9.25	37.06	54.00	-16.94	149	201	Average
7311.000	39.43	9.25	48.68	74.00	-25.32	149	201	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	30.14	3.54	33.68	54.00	-20.32	140	93	Average
4874.000	41.60	3.54	45.14	74.00	-28.86	140	93	Peak
7311.000	27.84	9.25	37.09	54.00	-16.91	145	185	Average
7311.000	40.32	9.25	49.57	74.00	-24.43	145	185	Peak

Level = Reading + Factor.

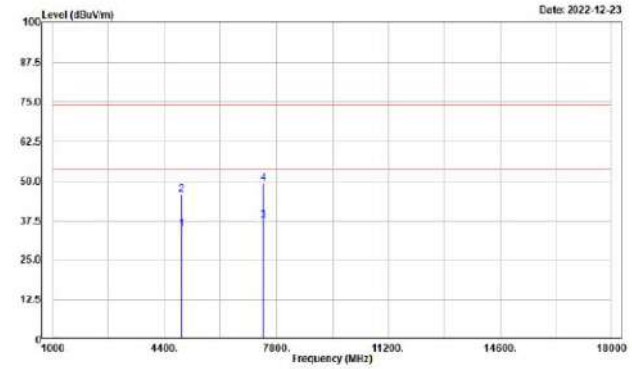
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

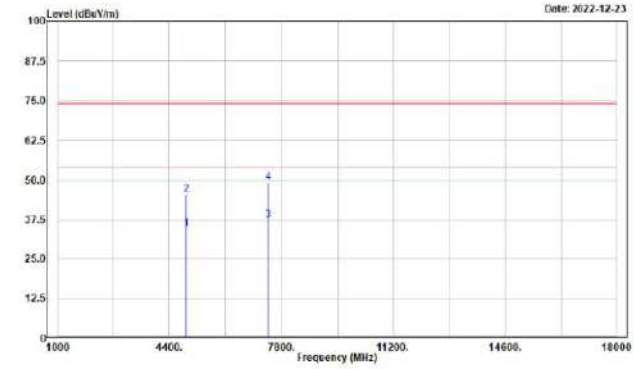
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	31.10	3.77	34.87	54.00	-19.13	150	25	Average
4924.000	41.98	3.77	45.75	74.00	-28.25	150	25	Peak
7386.000	28.39	9.23	37.62	54.00	-16.38	144	129	Average
7386.000	40.17	9.23	49.40	74.00	-24.60	144	129	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	31.00	3.77	34.77	54.00	-19.23	147	229	Average
4924.000	41.89	3.77	45.66	74.00	-28.34	147	229	Peak
7386.000	28.27	9.23	37.50	54.00	-16.50	149	40	Average
7386.000	40.04	9.23	49.27	74.00	-24.73	149	40	Peak

Level = Reading + Factor.

Margin = Level – Limit.

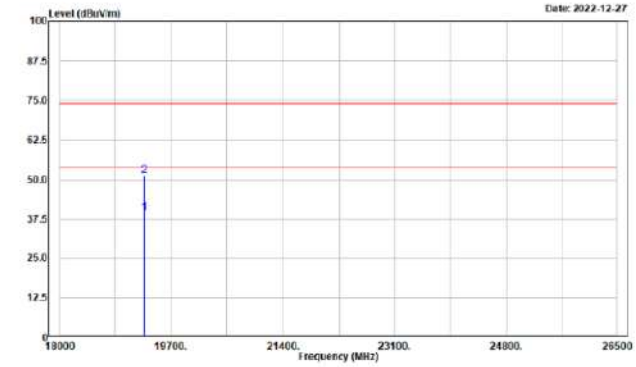
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

18GHz-26.5GHz:

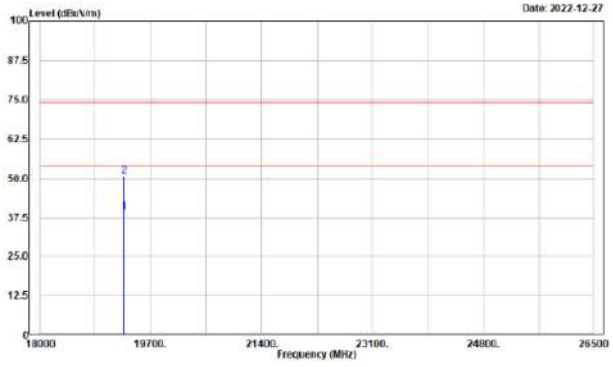
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19296.000	39.68	-0.24	39.44	54.00	-14.56	144	118	Average
19296.000	51.59	-0.24	51.35	74.00	-22.65	144	118	Peak

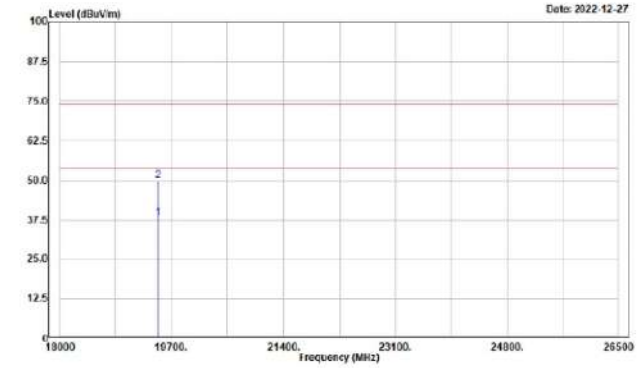
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19296.000	39.60	-0.24	39.36	54.00	-14.64	148	98	Average
19296.000	51.02	-0.24	50.78	74.00	-23.22	148	98	Peak

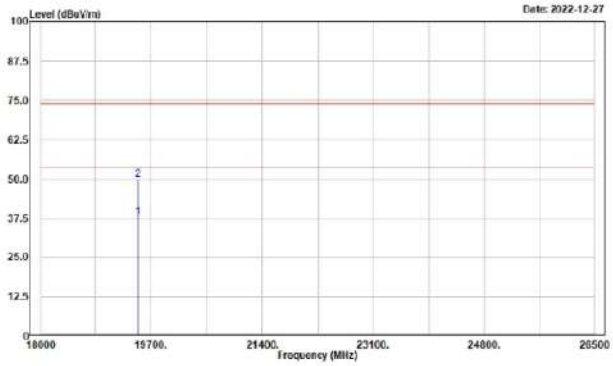
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.88	0.25	38.13	54.00	-15.87	145	360	Average
19496.000	49.48	0.25	49.73	74.00	-24.27	145	360	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.82	0.25	38.07	54.00	-15.93	149	171	Average
19496.000	49.52	0.25	49.77	74.00	-24.23	149	171	Peak

Level = Reading + Factor.

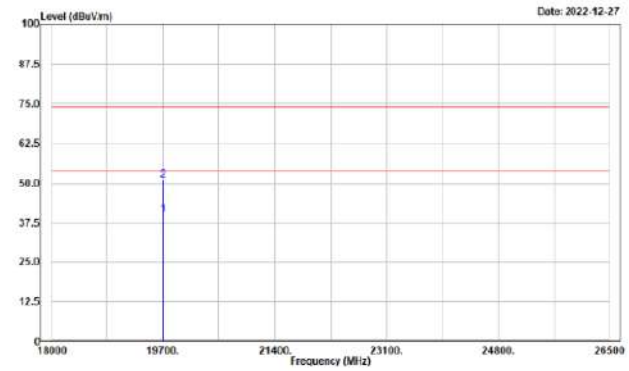
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

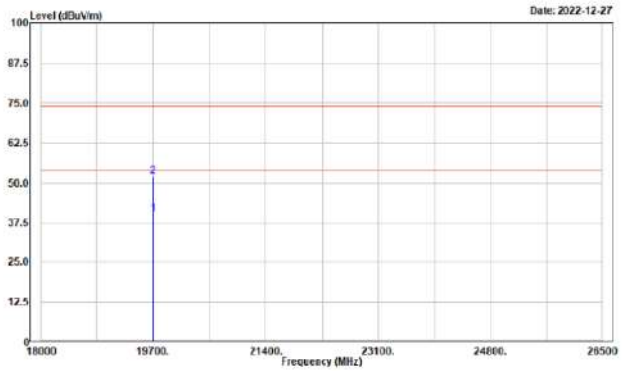
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	39.15	0.98	40.13	54.00	-13.87	148	54	Average
19696.000	50.03	0.98	51.01	74.00	-22.99	148	54	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	39.29	0.98	40.27	54.00	-13.73	141	219	Average
19696.000	51.00	0.98	51.98	74.00	-22.02	141	219	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

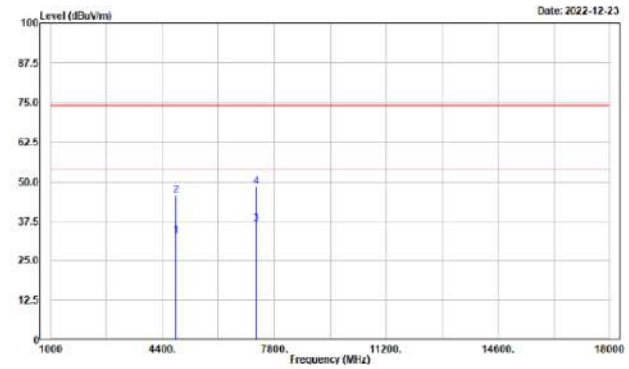
G Mode

Power: AC120V/60Hz

1GHz-18GHz:

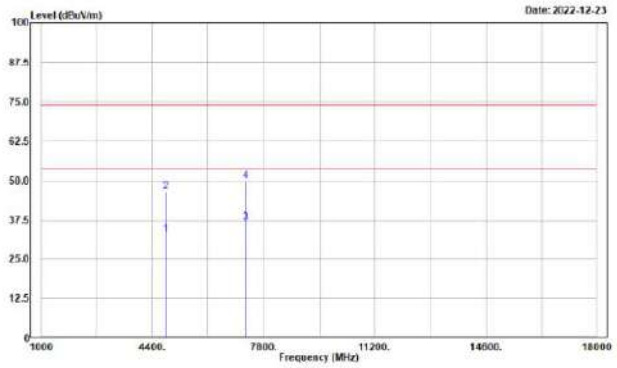
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	29.75	3.43	33.18	54.00	-20.82	147	189	Average
4824.000	42.29	3.43	45.72	74.00	-28.28	147	189	Peak
7236.000	27.71	9.21	36.92	54.00	-17.08	148	271	Average
7236.000	39.29	9.21	48.50	74.00	-25.50	148	271	Peak

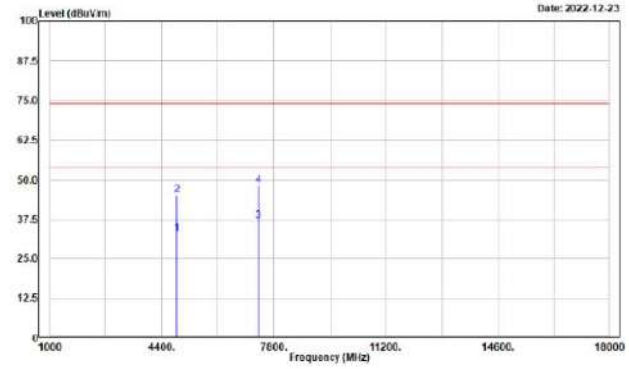
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	29.72	3.43	33.15	54.00	-20.85	149	153	Average
4824.000	43.14	3.43	46.57	74.00	-27.43	149	153	Peak
7236.000	27.59	9.21	36.80	54.00	-17.20	144	89	Average
7236.000	40.64	9.21	49.85	74.00	-24.15	144	89	Peak

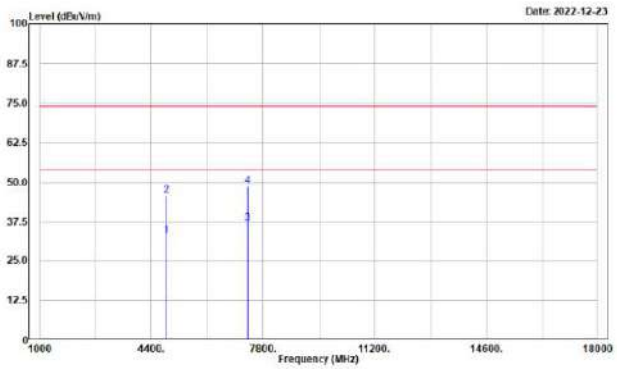
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	29.52	3.54	33.06	54.00	-20.94	151	342	Average
4874.000	41.64	3.54	45.18	74.00	-28.82	151	342	Peak
7311.000	27.82	9.25	37.07	54.00	-16.93	144	346	Average
7311.000	39.12	9.25	48.37	74.00	-25.63	144	346	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	29.58	3.54	33.12	54.00	-20.88	149	151	Average
4874.000	42.16	3.54	45.70	74.00	-28.30	149	151	Peak
7311.000	27.84	9.25	37.09	54.00	-16.91	141	13	Average
7311.000	39.40	9.25	48.65	74.00	-25.35	141	13	Peak

Level = Reading + Factor.

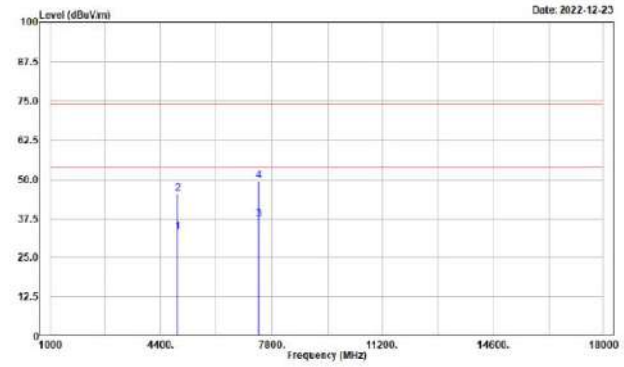
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

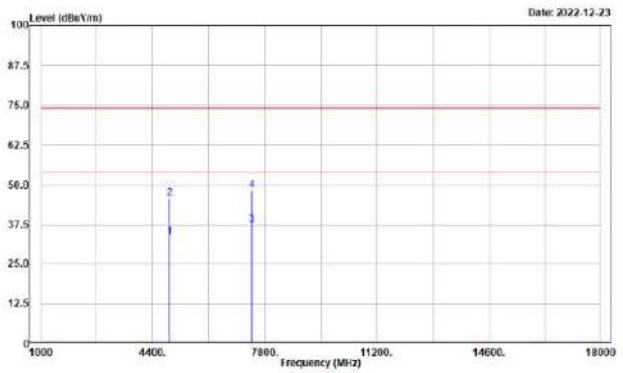
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	29.62	3.77	33.39	54.00	-20.61	145	1	Average
4924.000	41.81	3.77	45.58	74.00	-28.42	145	1	Peak
7386.000	28.30	9.23	37.53	54.00	-16.47	148	274	Average
7386.000	40.30	9.23	49.53	74.00	-24.47	148	274	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	29.70	3.77	33.47	54.00	-20.53	146	64	Average
4924.000	42.07	3.77	45.84	74.00	-28.16	146	64	Peak
7386.000	28.28	9.23	37.51	54.00	-16.49	143	156	Average
7386.000	39.11	9.23	48.34	74.00	-25.66	143	156	Peak

Level = Reading + Factor.

Margin = Level – Limit.

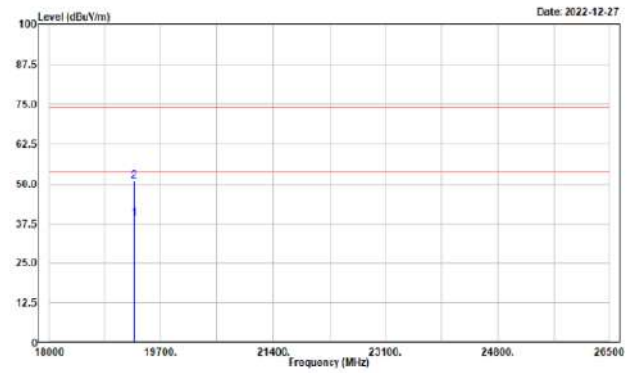
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

18GHz-26.5GHz:

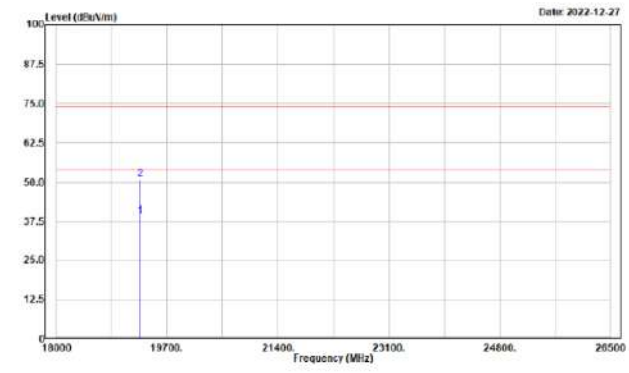
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19296.000	39.55	-0.24	39.31	54.00	-14.69	150	145	Average
19296.000	51.17	-0.24	50.93	74.00	-23.07	150	145	Peak

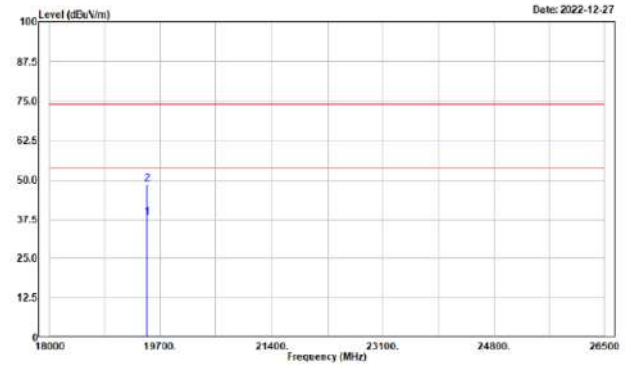
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19296.000	39.47	-0.24	39.23	54.00	-14.77	147	3	Average
19296.000	51.31	-0.24	51.07	74.00	-22.93	147	3	Peak

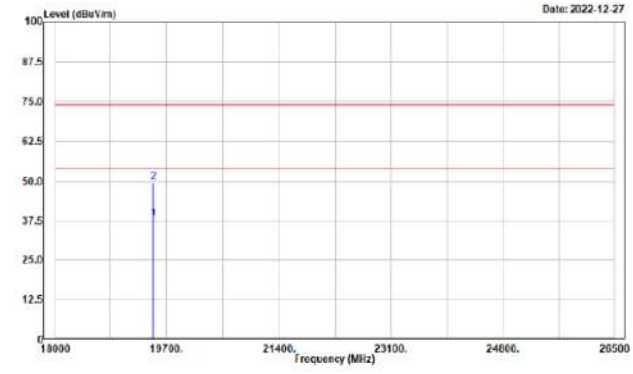
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.88	0.25	38.13	54.00	-15.87	143	360	Average
19496.000	48.54	0.25	48.79	74.00	-25.21	143	360	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.87	0.25	38.12	54.00	-15.88	145	144	Average
19496.000	49.37	0.25	49.62	74.00	-24.38	145	144	Peak

Level = Reading + Factor.

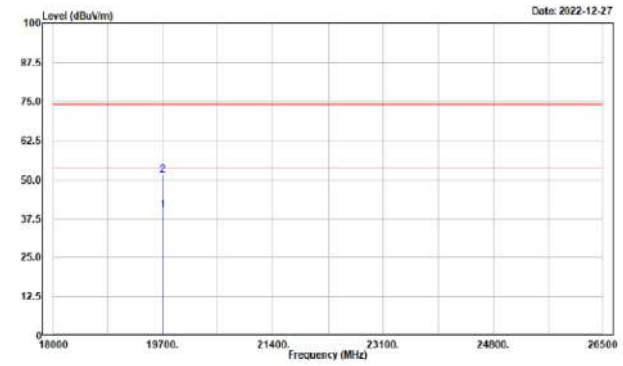
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

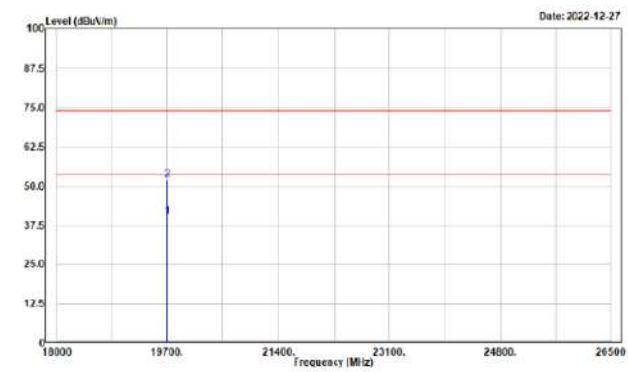
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	39.29	0.98	40.27	54.00	-13.73	146	274	Average
19696.000	50.44	0.98	51.42	74.00	-22.58	146	274	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	39.26	0.98	40.24	54.00	-13.76	147	144	Average
19696.000	51.12	0.98	52.10	74.00	-21.90	147	144	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

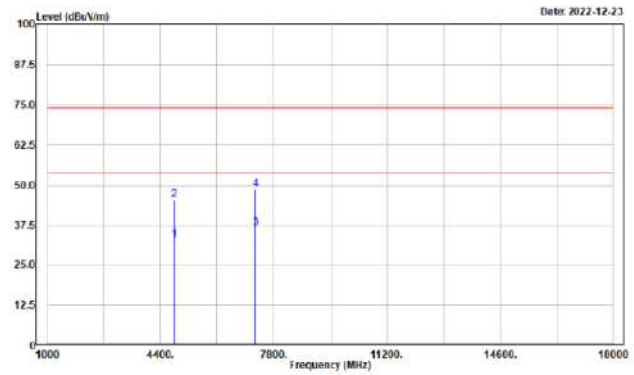
N20 Mode

Power: AC120V/60Hz

1GHz-18GHz:

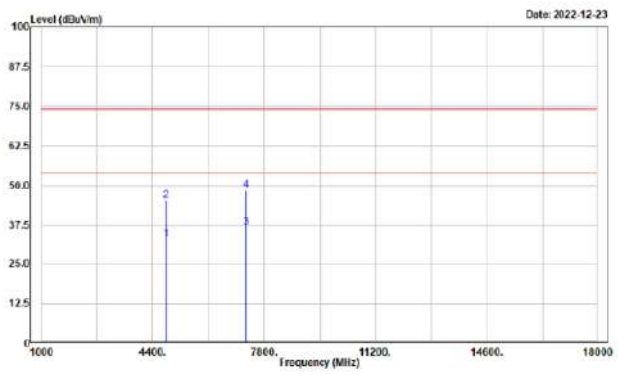
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	29.72	3.43	33.15	54.00	-20.85	147	310	Average
4824.000	42.15	3.43	45.58	74.00	-28.42	147	310	Peak
7236.000	27.57	9.21	36.78	54.00	-17.22	141	40	Average
7236.000	39.50	9.21	48.71	74.00	-25.29	141	40	Peak

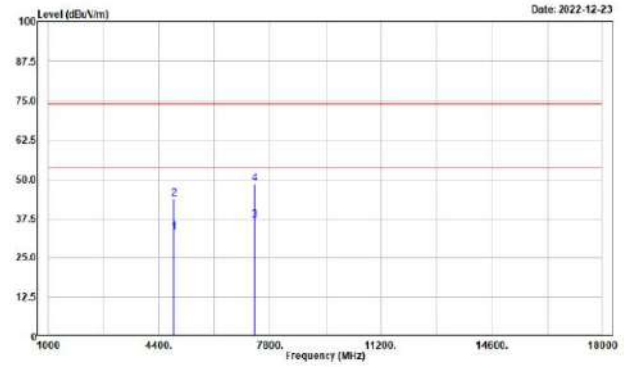
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4824.000	29.69	3.43	33.12	54.00	-20.88	144	262	Average
4824.000	41.87	3.43	45.30	74.00	-28.70	144	262	Peak
7236.000	27.56	9.21	36.77	54.00	-17.23	140	0	Average
7236.000	39.38	9.21	48.59	74.00	-25.41	140	0	Peak

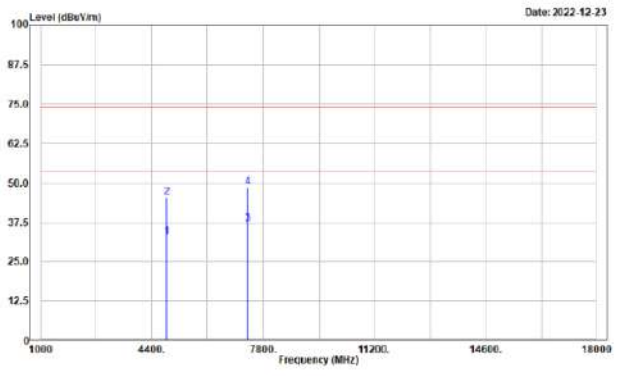
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	29.88	3.54	33.42	54.00	-20.58	149	189	Average
4874.000	40.47	3.54	44.01	74.00	-29.99	149	189	Peak
7311.000	27.96	9.25	37.21	54.00	-16.79	145	14	Average
7311.000	39.57	9.25	48.82	74.00	-25.18	145	14	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	29.64	3.54	33.18	54.00	-20.82	145	235	Average
4874.000	42.11	3.54	45.65	74.00	-28.35	145	235	Peak
7311.000	27.85	9.25	37.10	54.00	-16.90	148	360	Average
7311.000	39.42	9.25	48.67	74.00	-25.33	148	360	Peak

Level = Reading + Factor.

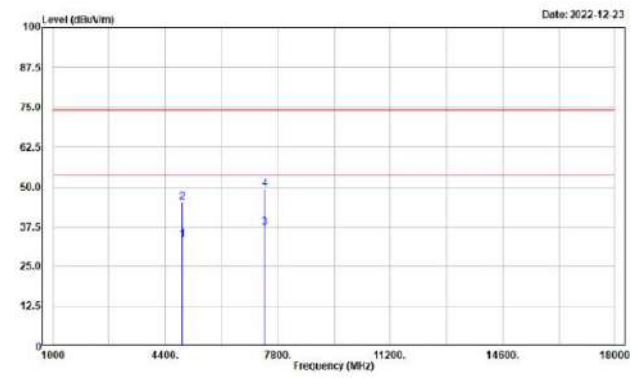
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

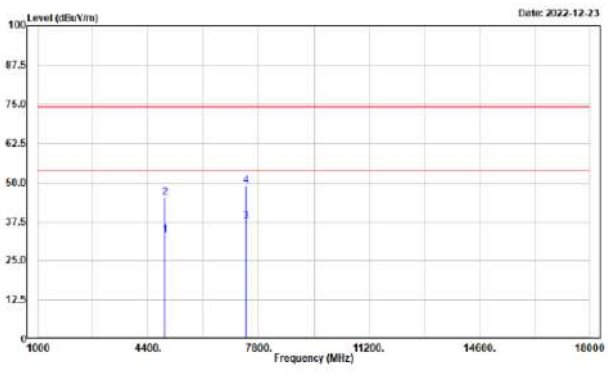
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	29.79	3.77	33.56	54.00	-20.44	150	160	Average
4924.000	41.41	3.77	45.18	74.00	-28.82	150	160	Peak
7386.000	28.28	9.23	37.51	54.00	-16.49	144	279	Average
7386.000	40.04	9.23	49.27	74.00	-24.73	144	279	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4924.000	29.69	3.77	33.46	54.00	-20.54	151	314	Average
4924.000	41.42	3.77	45.19	74.00	-28.81	151	314	Peak
7386.000	28.31	9.23	37.54	54.00	-16.46	146	314	Average
7386.000	39.93	9.23	49.16	74.00	-24.84	146	314	Peak

Level = Reading + Factor.

Margin = Level – Limit.

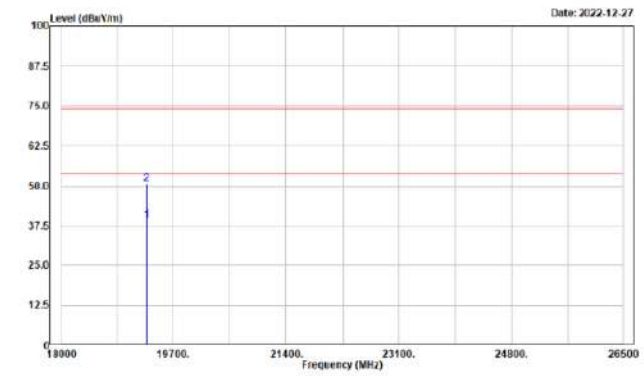
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

18GHz-26.5GHz:

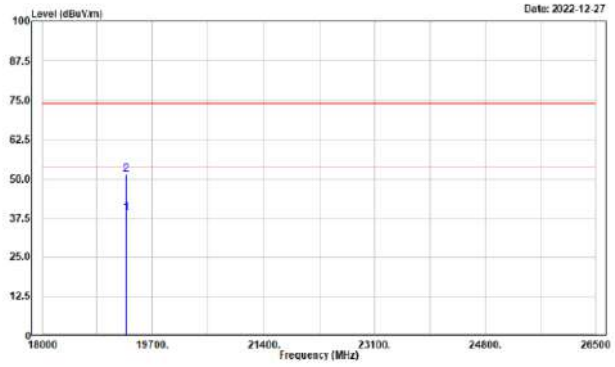
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19296.000	39.57	-0.24	39.33	54.00	-14.67	145	170	Average
19296.000	50.91	-0.24	50.67	74.00	-23.33	145	170	Peak

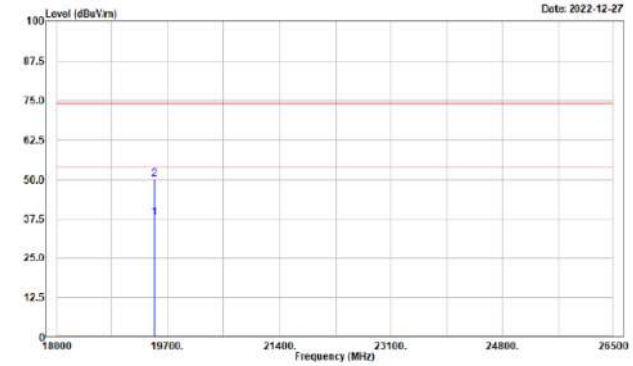
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19296.000	39.57	-0.24	39.33	54.00	-14.67	144	262	Average
19296.000	51.67	-0.24	51.43	74.00	-22.57	144	262	Peak

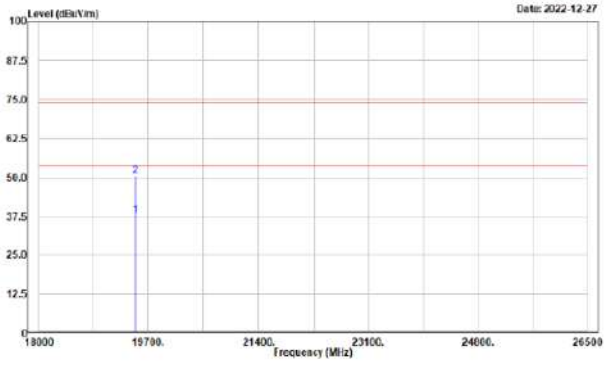
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.81	0.25	38.06	54.00	-15.94	148	40	Average
19496.000	49.90	0.25	50.15	74.00	-23.85	148	40	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.80	0.25	38.05	54.00	-15.95	145	58	Average
19496.000	50.43	0.25	50.68	74.00	-23.32	145	58	Peak

Level = Reading + Factor.

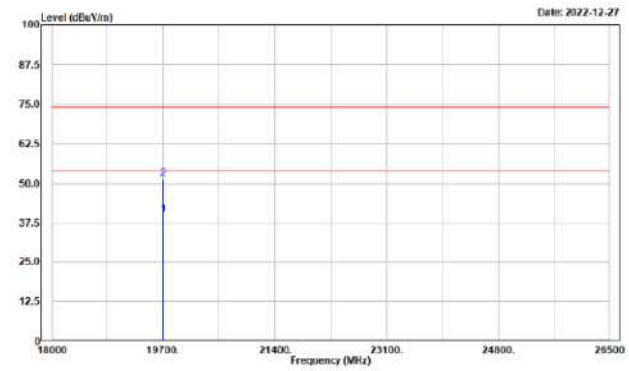
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

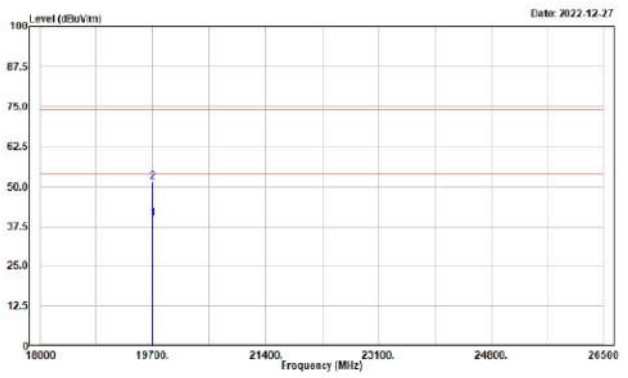
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	39.09	0.98	40.07	54.00	-13.93	150	169	Average
19696.000	50.45	0.98	51.43	74.00	-22.57	150	169	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19696.000	39.19	0.98	40.17	54.00	-13.83	149	360	Average
19696.000	50.58	0.98	51.56	74.00	-22.44	149	360	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

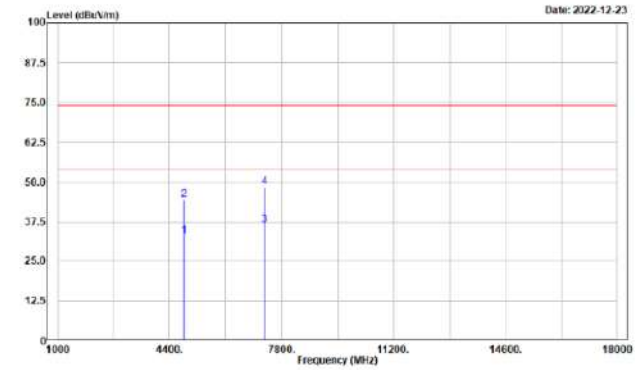
N40 Mode

Power: AC120V/60Hz

1GHz-18GHz:

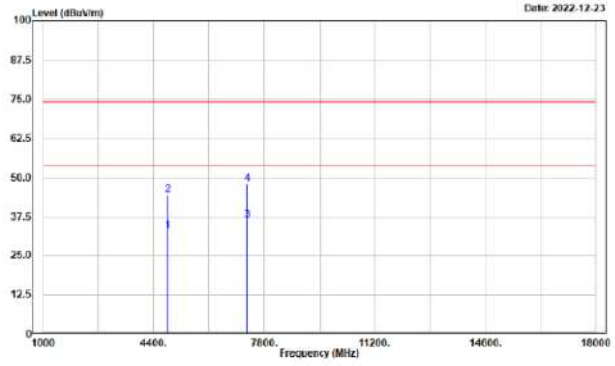
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	29.65	3.42	33.07	54.00	-20.93	151	351	Average
4844.000	40.89	3.42	44.31	74.00	-29.69	151	351	Peak
7266.000	27.44	9.27	36.71	54.00	-17.29	147	163	Average
7266.000	39.11	9.27	48.38	74.00	-25.62	147	163	Peak

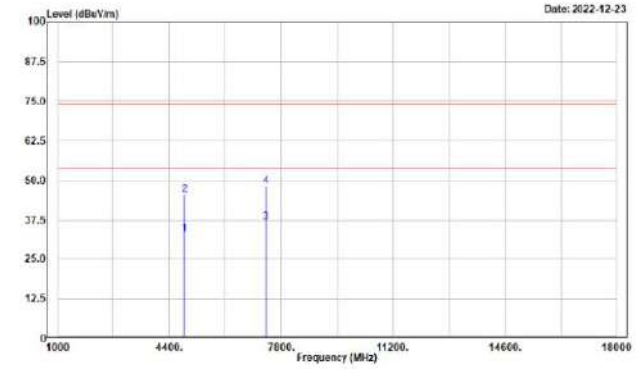
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4844.000	29.75	3.42	33.17	54.00	-20.83	148	296	Average
4844.000	41.02	3.42	44.44	74.00	-29.56	148	296	Peak
7266.000	27.44	9.27	36.71	54.00	-17.29	144	289	Average
7266.000	38.80	9.27	48.07	74.00	-25.93	144	289	Peak

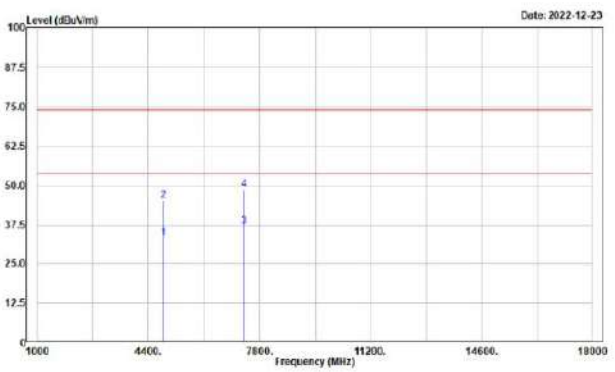
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	29.58	3.54	33.12	54.00	-20.88	144	270	Average
4874.000	41.95	3.54	45.49	74.00	-28.51	144	270	Peak
7311.000	27.70	9.25	36.95	54.00	-17.05	148	312	Average
7311.000	39.01	9.25	48.26	74.00	-25.74	148	312	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4874.000	29.71	3.54	33.25	54.00	-20.75	149	16	Average
4874.000	41.67	3.54	45.21	74.00	-28.79	149	16	Peak
7311.000	27.80	9.25	37.05	54.00	-16.95	141	89	Average
7311.000	39.43	9.25	48.68	74.00	-25.32	141	89	Peak

Level = Reading + Factor.

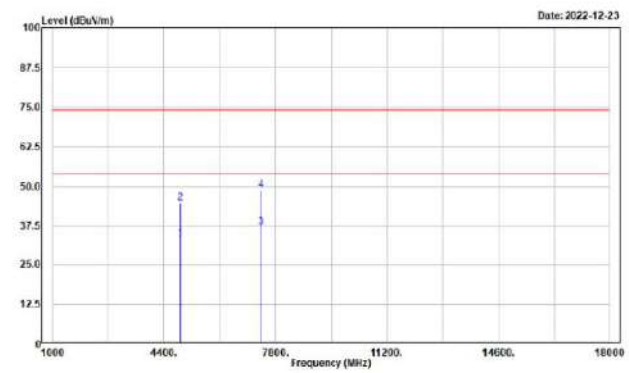
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

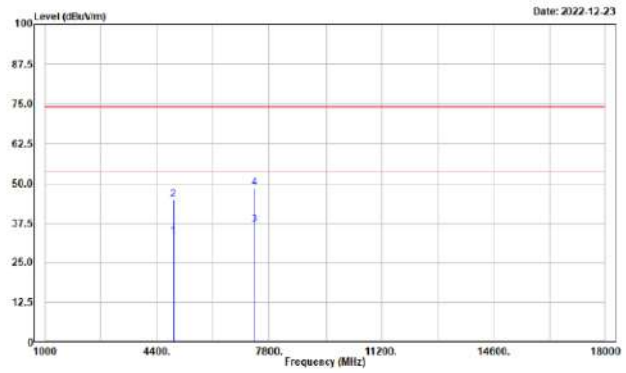
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	29.71	3.69	33.40	54.00	-20.60	147	195	Average
4904.000	41.04	3.69	44.73	74.00	-29.27	147	195	Peak
7356.000	27.90	9.27	37.17	54.00	-16.83	144	160	Average
7356.000	39.38	9.27	48.65	74.00	-25.35	144	160	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4904.000	29.72	3.69	33.41	54.00	-20.59	140	93	Average
4904.000	41.22	3.69	44.91	74.00	-29.09	140	93	Peak
7356.000	27.79	9.27	37.06	54.00	-16.94	145	48	Average
7356.000	39.45	9.27	48.72	74.00	-25.28	145	48	Peak

Level = Reading + Factor.

Margin = Level – Limit.

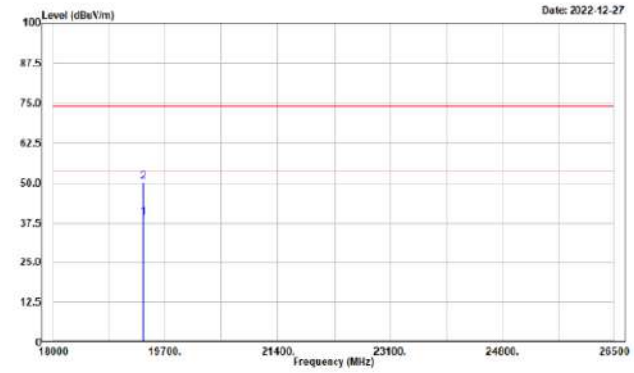
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

18GHz-26.5GHz:

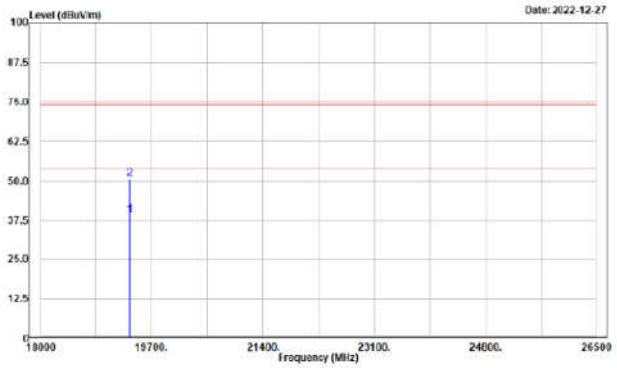
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19376.000	39.27	0.02	39.29	54.00	-14.71	140	237	Average
19376.000	50.28	0.02	50.30	74.00	-23.70	140	237	Peak

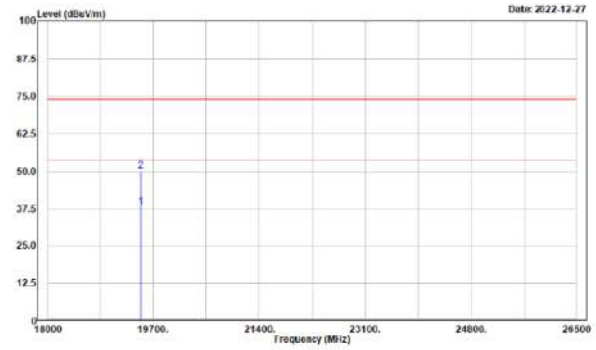
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19376.000	39.34	0.02	39.36	54.00	-14.64	145	74	Average
19376.000	50.67	0.02	50.69	74.00	-23.31	145	74	Peak

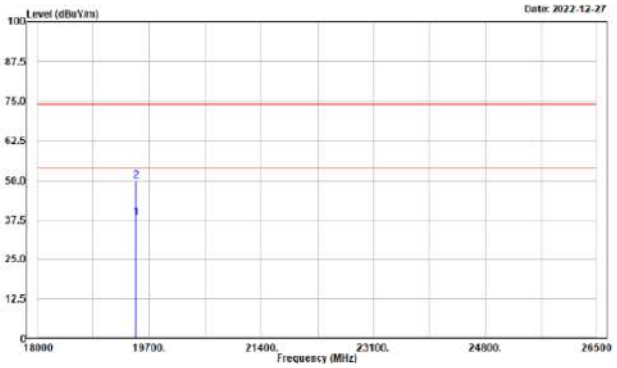
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.89	0.25	38.14	54.00	-15.86	142	83	Average
19496.000	49.84	0.25	50.09	74.00	-23.91	142	83	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19496.000	37.86	0.25	38.11	54.00	-15.89	144	184	Average
19496.000	49.69	0.25	49.94	74.00	-24.06	144	184	Peak

Level = Reading + Factor.

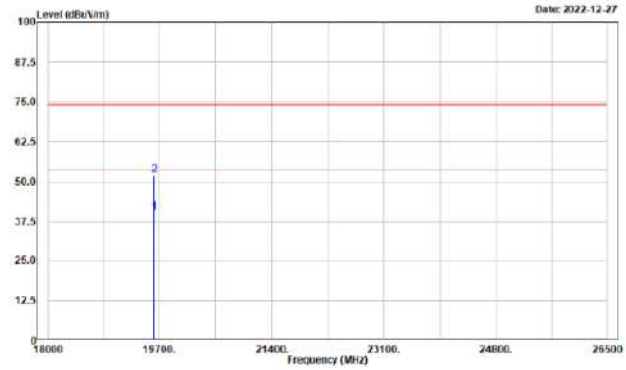
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

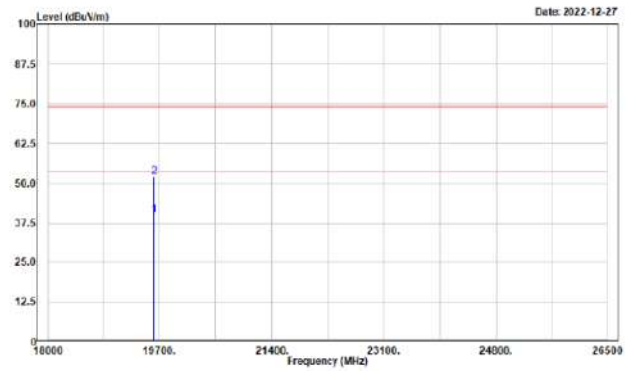
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19616.000	39.61	0.66	40.27	54.00	-13.73	145	345	Average
19616.000	51.47	0.66	52.13	74.00	-21.87	145	345	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19616.000	39.48	0.66	40.14	54.00	-13.86	148	57	Average
19616.000	51.40	0.66	52.06	74.00	-21.94	148	57	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

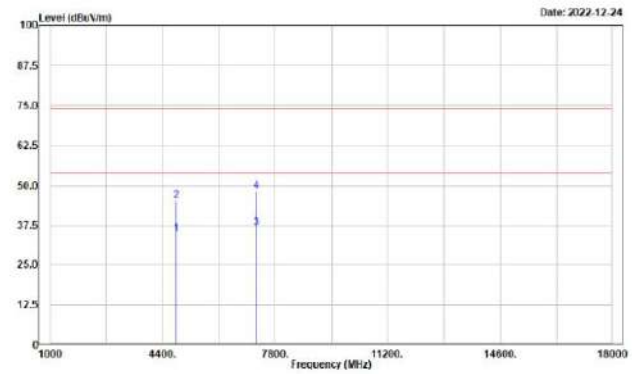
BLE (1M) Mode

Power: AC120V/60Hz

1GHz-18GHz:

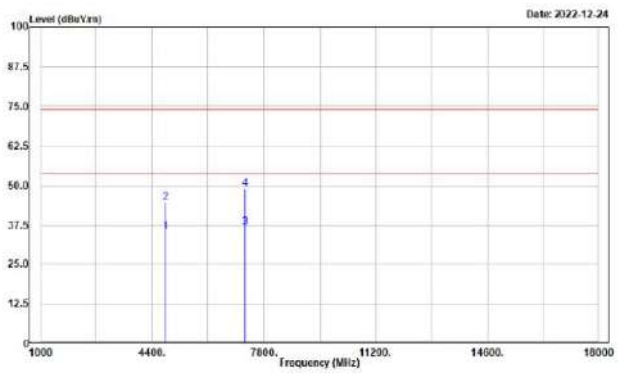
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4804.000	31.50	3.45	34.95	54.00	-19.05	147	249	Average
4804.000	41.92	3.45	45.37	74.00	-28.63	147	249	Peak
7206.000	27.86	9.05	36.91	54.00	-17.09	149	51	Average
7206.000	39.13	9.05	48.18	74.00	-25.82	149	51	Peak

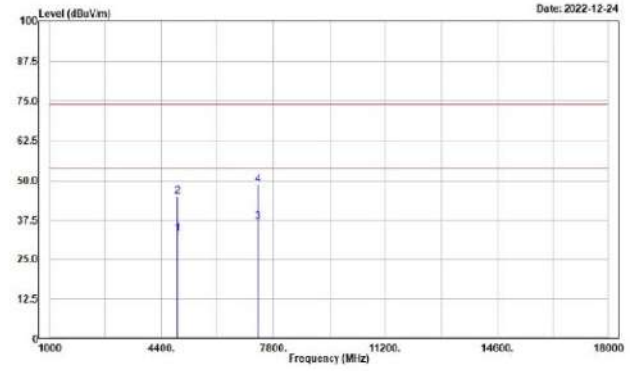
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4804.000	31.95	3.45	35.40	54.00	-18.60	140	82	Average
4804.000	41.24	3.45	44.69	74.00	-29.31	140	82	Peak
7206.000	27.89	9.05	36.94	54.00	-17.06	144	360	Average
7206.000	39.96	9.05	49.01	74.00	-24.99	144	360	Peak

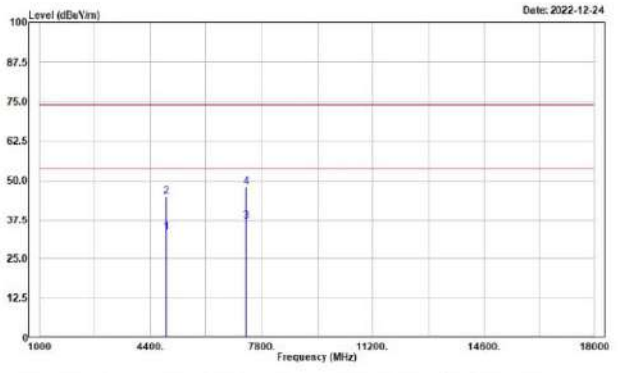
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4880.000	29.85	3.57	33.42	54.00	-20.58	149	205	Average
4880.000	41.44	3.57	45.01	74.00	-28.99	149	205	Peak
7320.000	27.89	9.25	37.14	54.00	-16.86	145	3	Average
7320.000	39.62	9.25	48.87	74.00	-25.13	145	3	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4880.000	30.01	3.57	33.58	54.00	-20.42	141	43	Average
4880.000	41.46	3.57	45.03	74.00	-28.97	141	43	Peak
7320.000	27.86	9.25	37.11	54.00	-16.89	150	59	Average
7320.000	38.64	9.25	47.89	74.00	-26.11	150	59	Peak

Level = Reading + Factor.

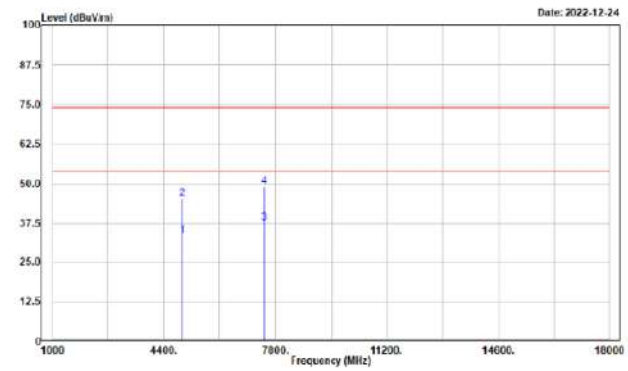
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

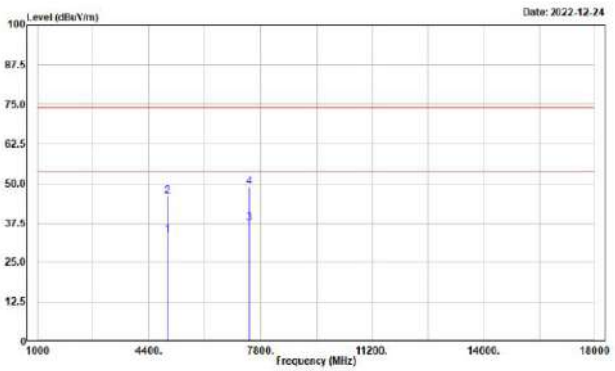
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4960.000	29.74	3.92	33.66	54.00	-20.34	149	322	Average
4960.000	41.23	3.92	45.15	74.00	-28.85	149	322	Peak
7440.000	28.24	9.42	37.66	54.00	-16.34	147	48	Average
7440.000	39.67	9.42	49.09	74.00	-24.91	147	48	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
4960.000	29.83	3.92	33.75	54.00	-20.25	148	116	Average
4960.000	42.16	3.92	46.08	74.00	-27.92	148	116	Peak
7440.000	28.12	9.42	37.54	54.00	-16.46	143	47	Average
7440.000	39.58	9.42	49.00	74.00	-25.00	143	47	Peak

Level = Reading + Factor.

Margin = Level – Limit.

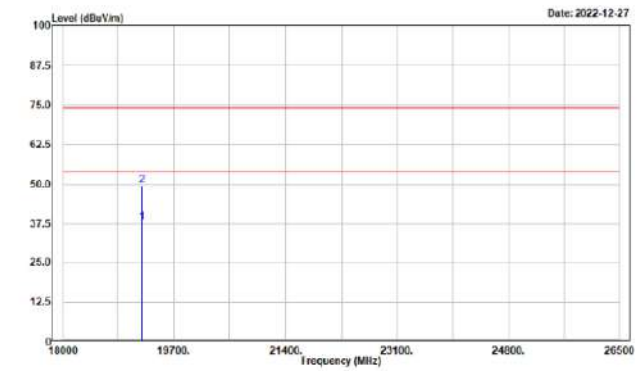
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

18GHz-26.5GHz:

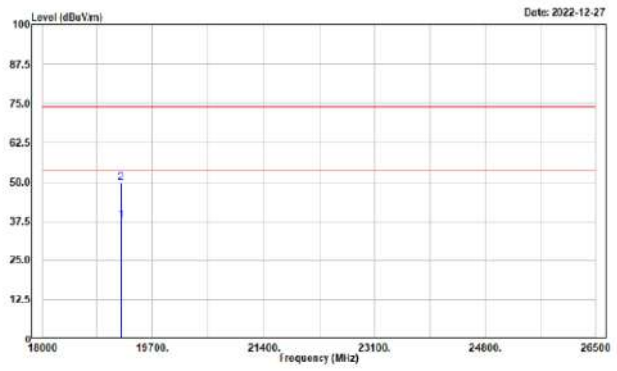
Low channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19216.000	38.39	-0.57	37.82	54.00	-16.18	145	359	Average
19216.000	50.12	-0.57	49.55	74.00	-24.45	145	359	Peak

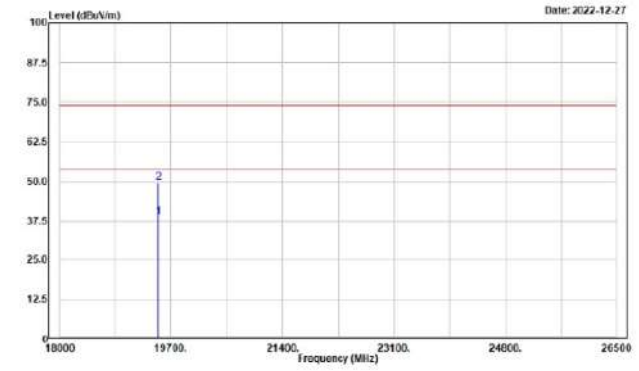
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19216.000	38.45	-0.57	37.88	54.00	-16.12	147	55	Average
19216.000	50.36	-0.57	49.79	74.00	-24.21	147	55	Peak

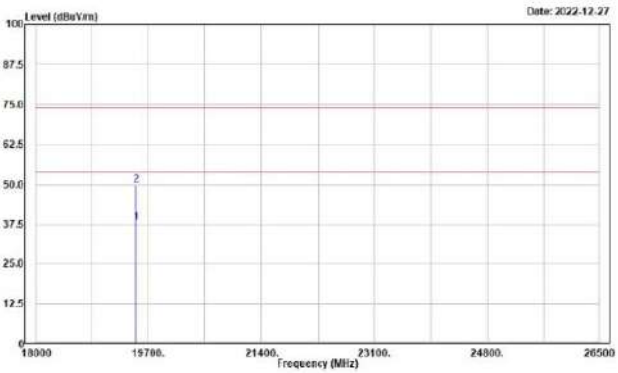
Middle channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19520.000	38.28	0.34	38.62	54.00	-15.38	146	120	Average
19520.000	49.22	0.34	49.56	74.00	-24.44	146	120	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19520.000	37.92	0.34	38.26	54.00	-15.74	144	244	Average
19520.000	49.55	0.34	49.89	74.00	-24.11	144	244	Peak

Level = Reading + Factor.

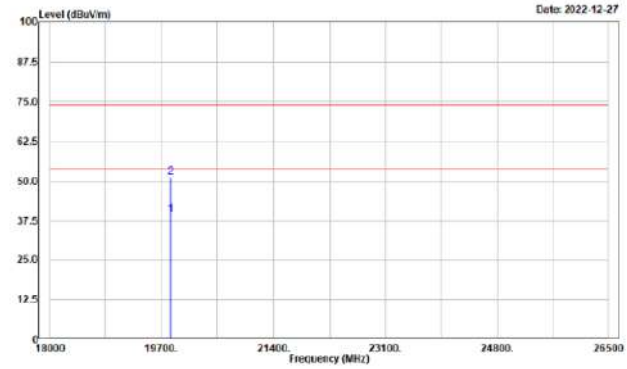
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

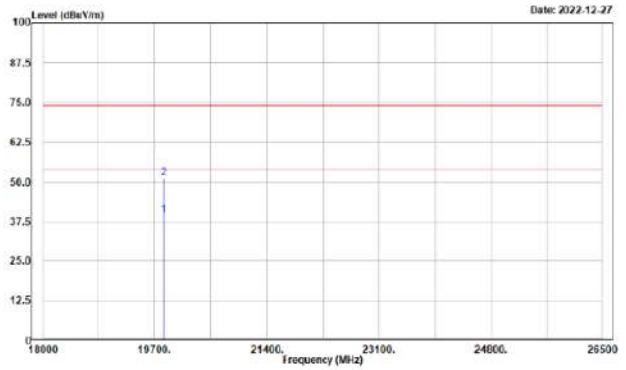
High channel

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19840.000	38.29	1.22	39.51	54.00	-14.49	148	137	Average
19840.000	50.10	1.22	51.32	74.00	-22.68	148	137	Peak

Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
19840.000	38.30	1.22	39.52	54.00	-14.48	149	227	Average
19840.000	50.04	1.22	51.26	74.00	-22.74	149	227	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

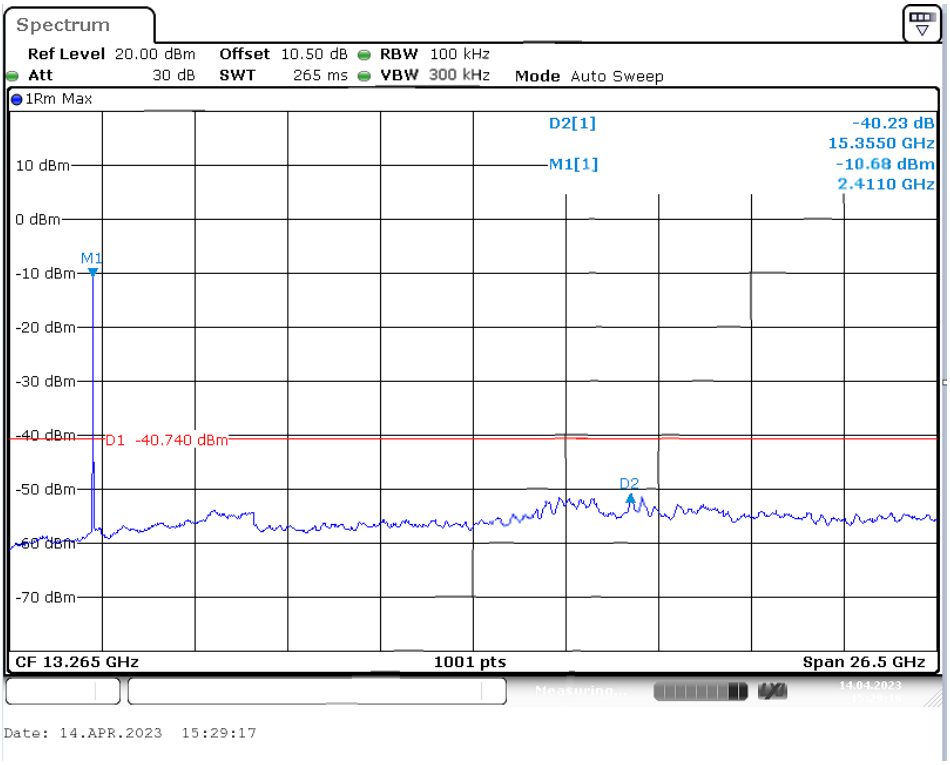
Spurious emissions more than 20 dB below the limit were not reported.

Conducted Spurious Emissions:

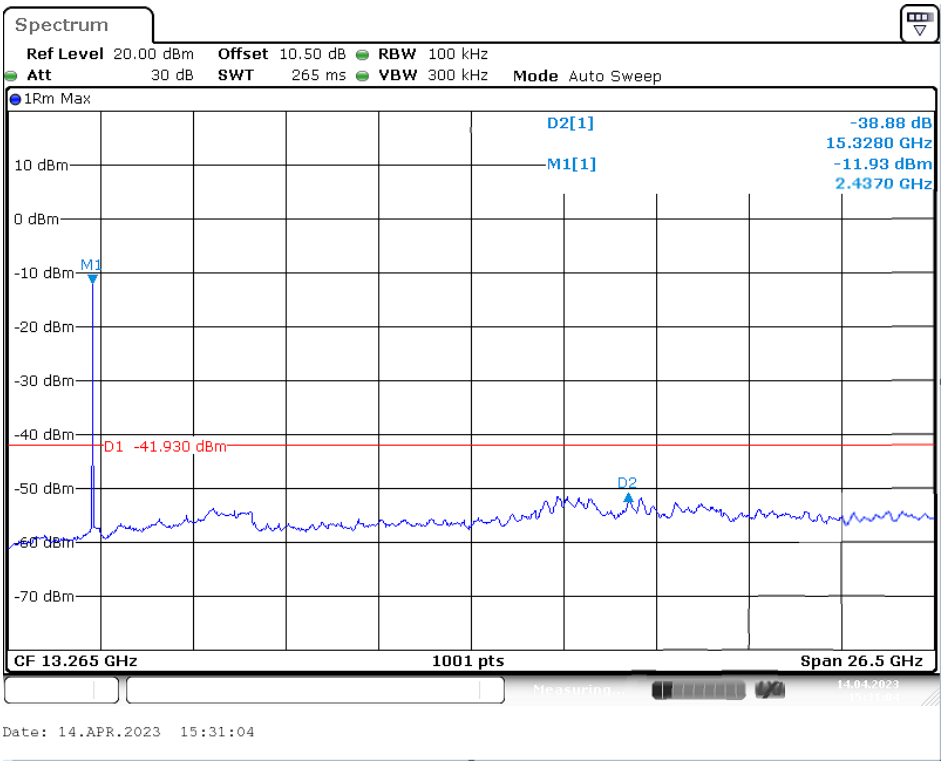
Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
B Mode				
Low	2412	40.23	≥ 30	PASS
Mid	2437	38.88	≥ 30	PASS
High	2462	39.25	≥ 30	PASS
G Mode				
Low	2412	36.90	≥ 30	PASS
Mid	2437	36.79	≥ 30	PASS
High	2462	35.90	≥ 30	PASS
N20 Mode				
Low	2412	37.10	≥ 30	PASS
Mid	2437	36.40	≥ 30	PASS
High	2462	35.56	≥ 30	PASS
N40 Mode				
Low	2422	35.61	≥ 30	PASS
Mid	2437	36.36	≥ 30	PASS
High	2452	34.25	≥ 30	PASS
BLE(1M) Mode				
Low	2402	34.53	≥ 30	PASS
Mid	2440	31.62	≥ 30	PASS
High	2480	31.33	≥ 30	PASS

B Mode

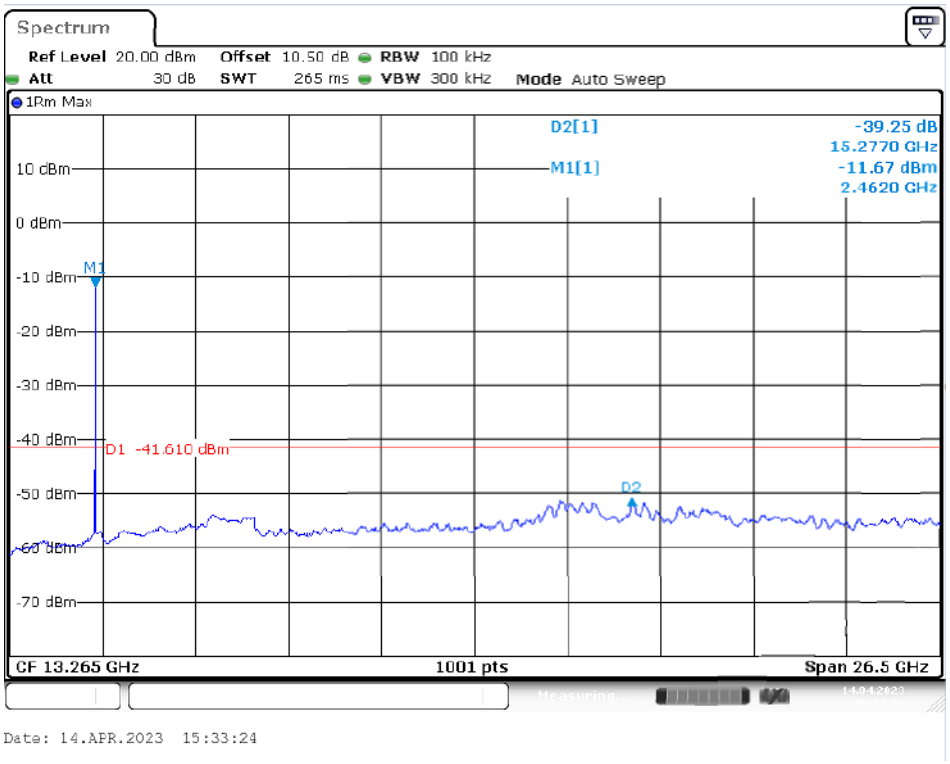
Low Channel



Middle Channel

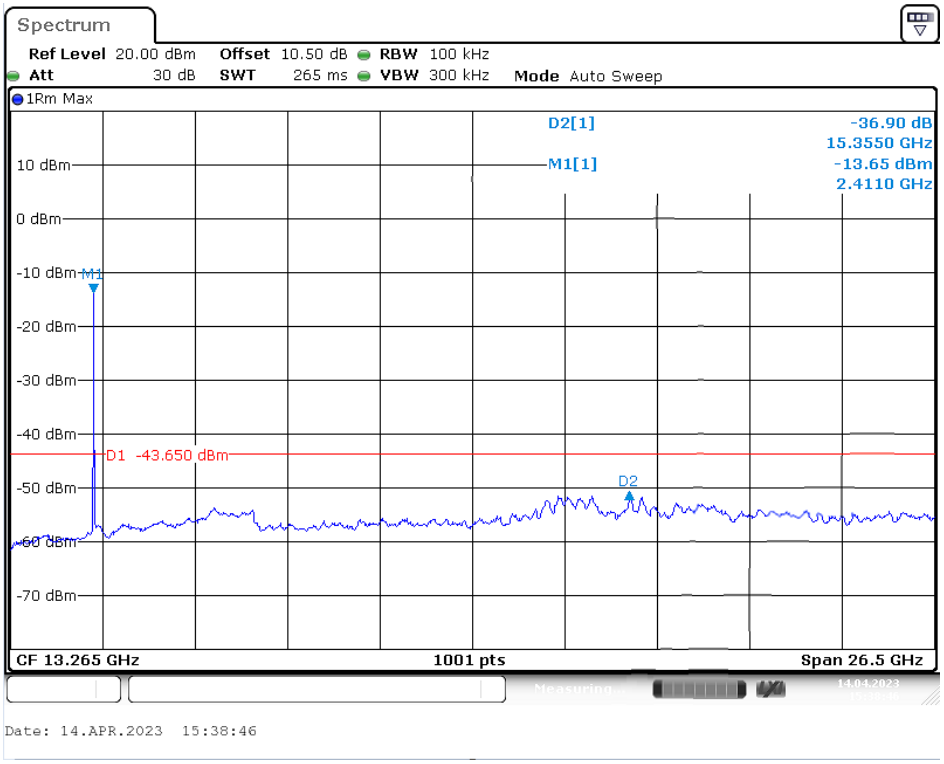


High Channel

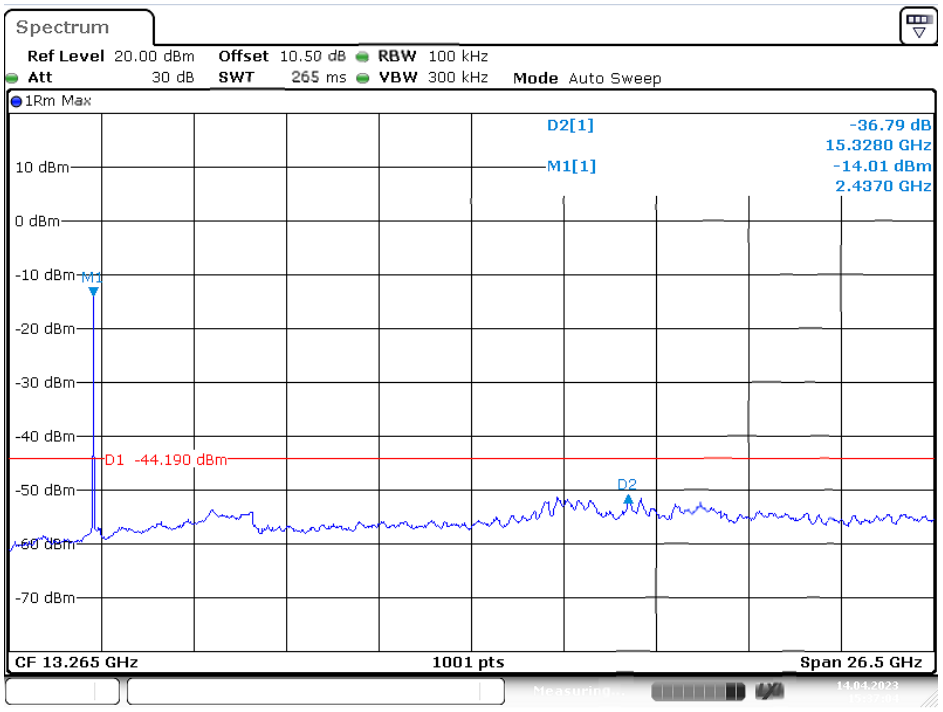


G Mode

Low Channel

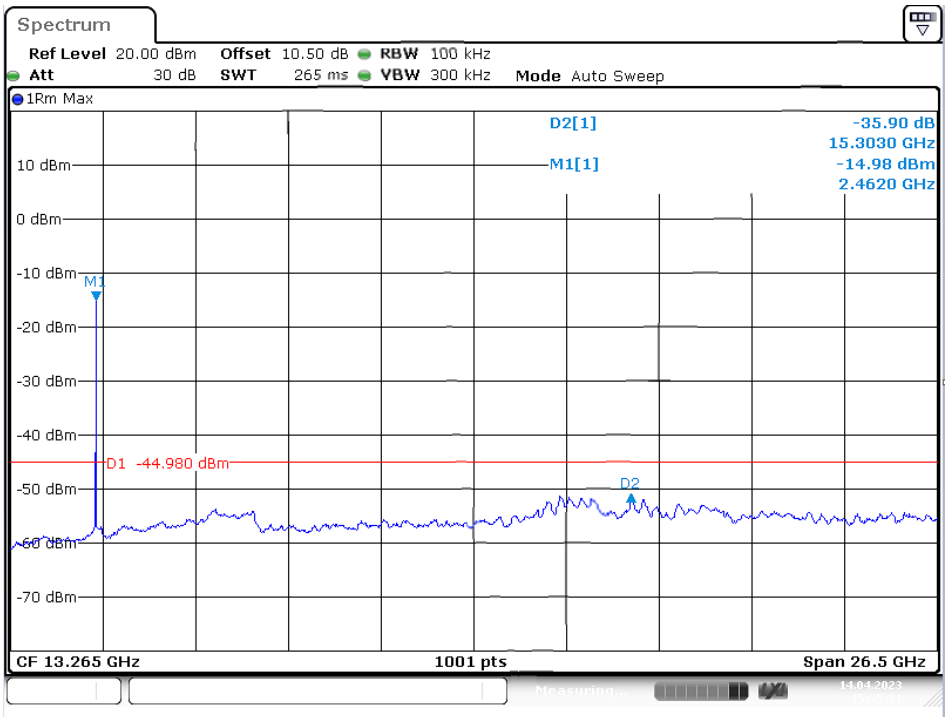


Middle Channel



Date: 14.APR.2023 15:37:04

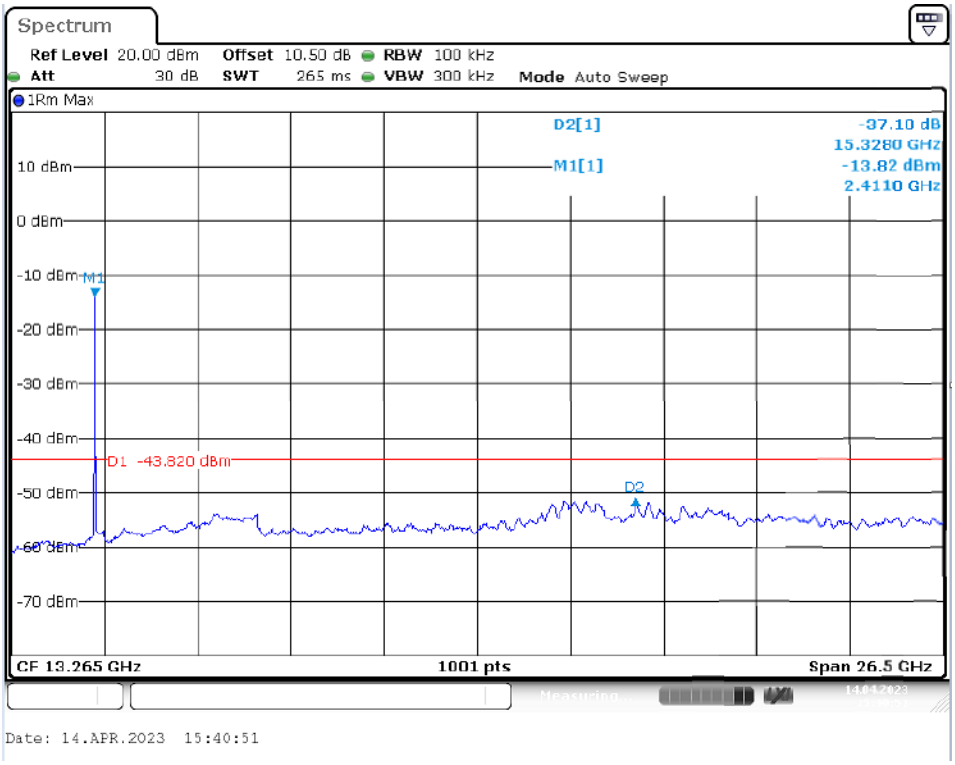
High Channel



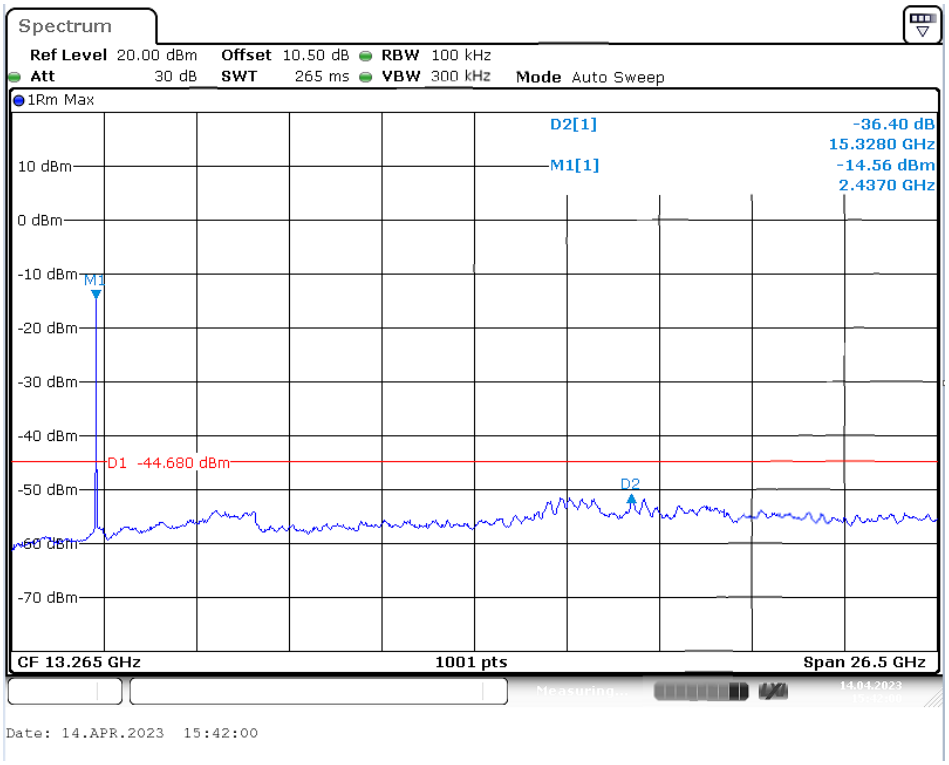
Date: 14.APR.2023 15:35:31

N20 Mode

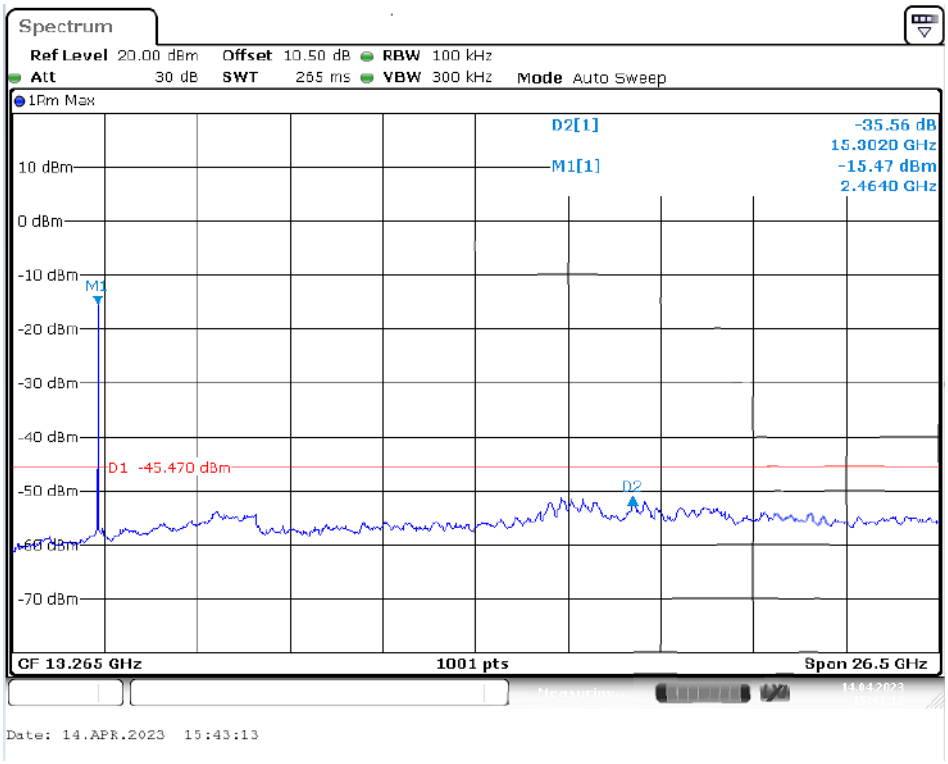
Low Channel



Middle Channel

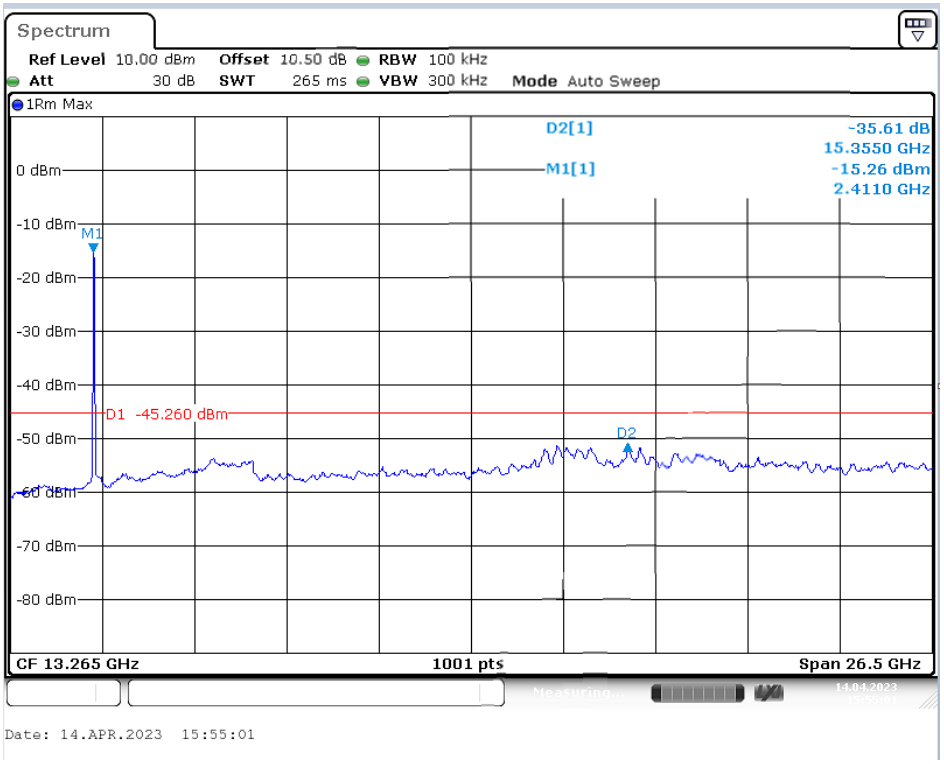


High Channel

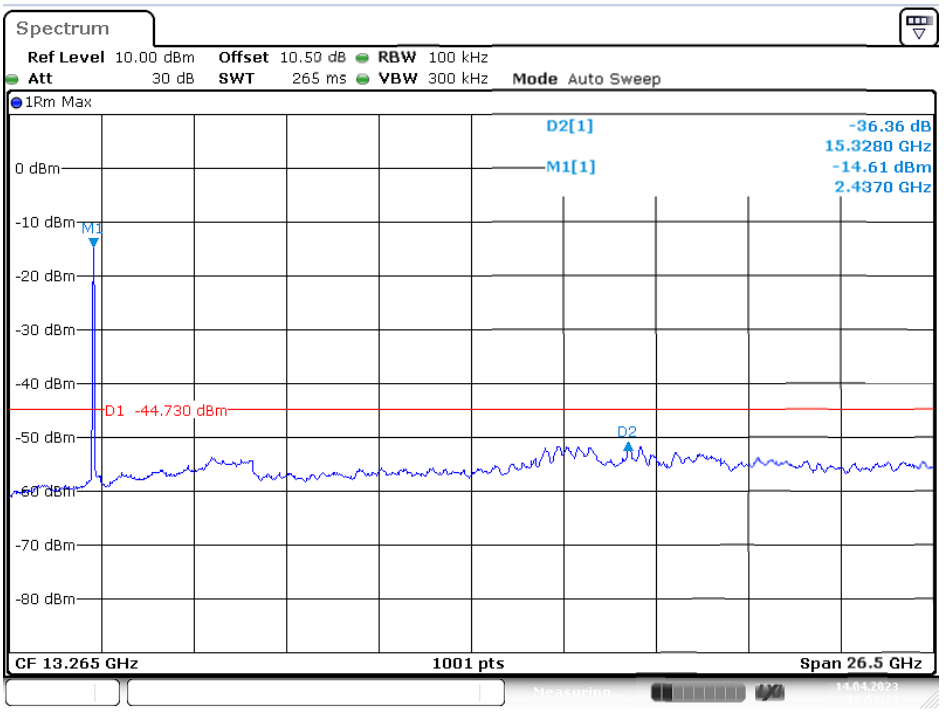


N40 Mode

Low Channel

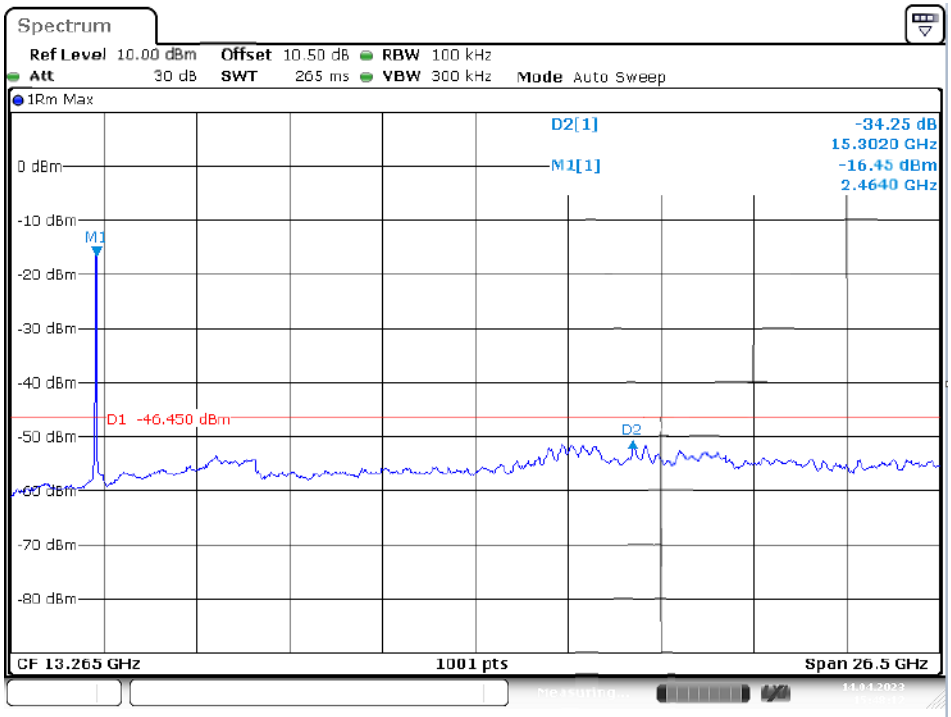


Middle Channel



Date: 14.APR.2023 15:53:23

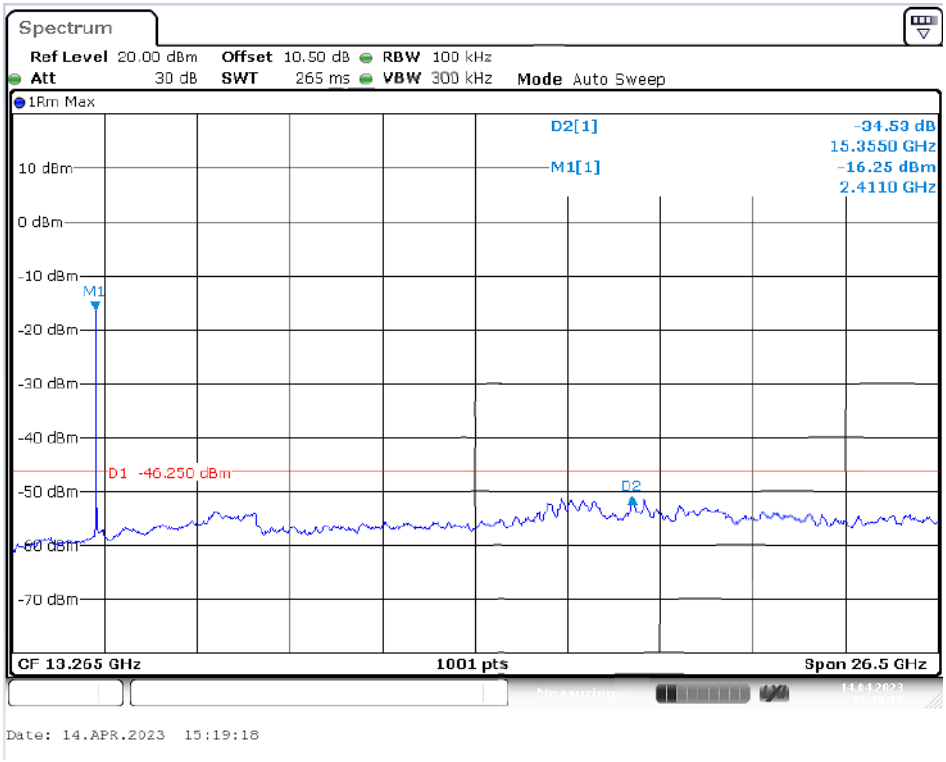
High Channel



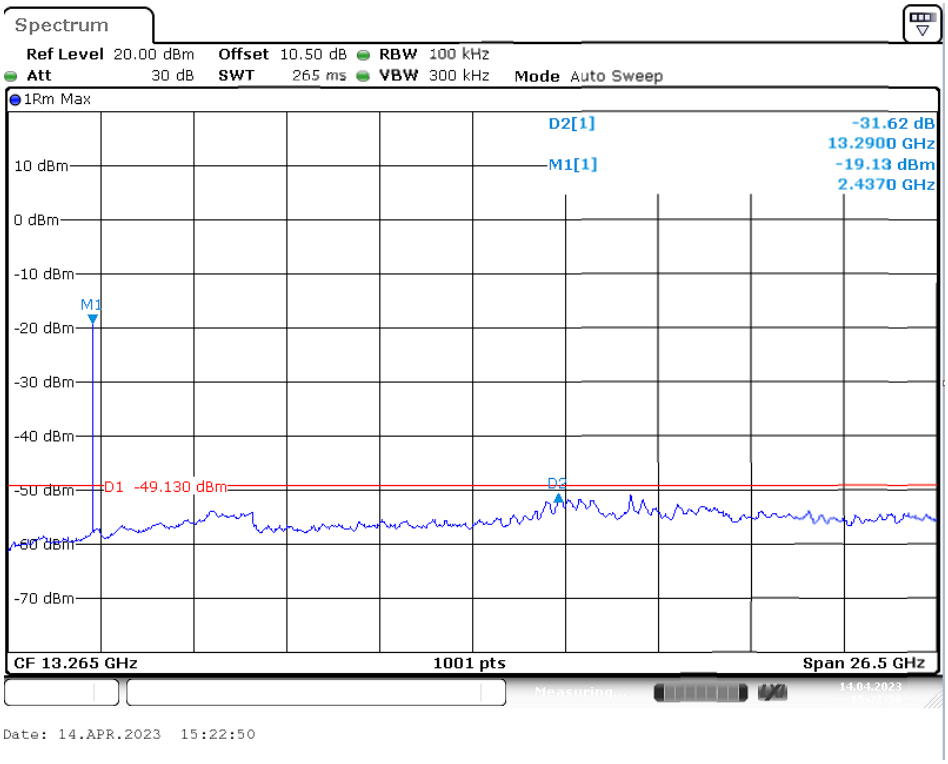
Date: 14.APR.2023 15:48:12

BLE (1M) Mode

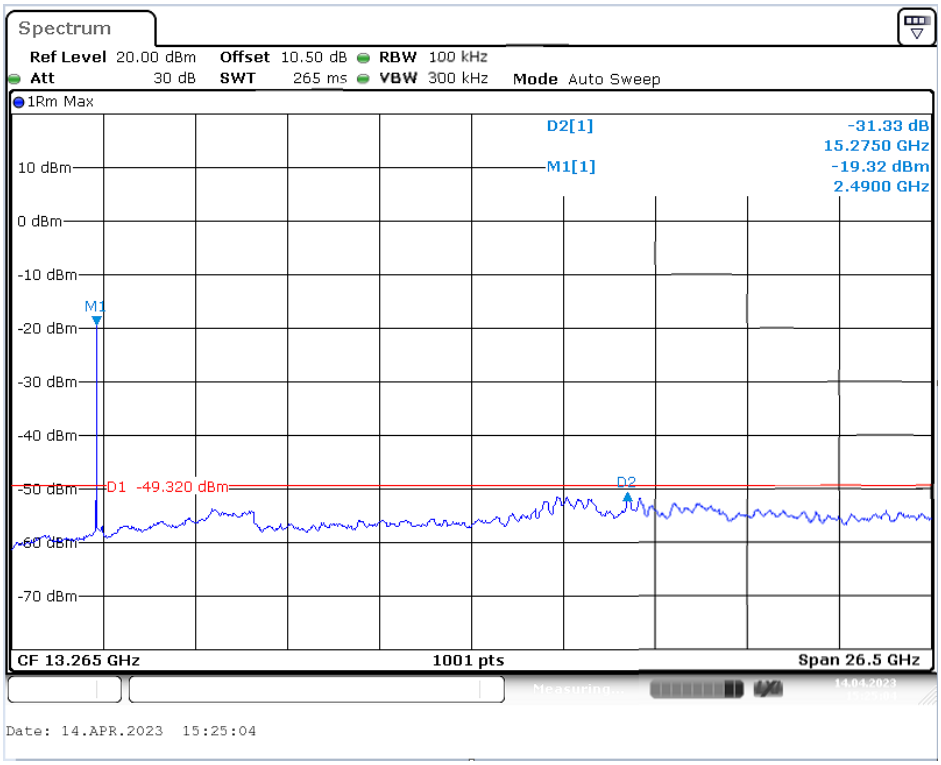
Low Channel



Middle Channel



High Channel



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

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.

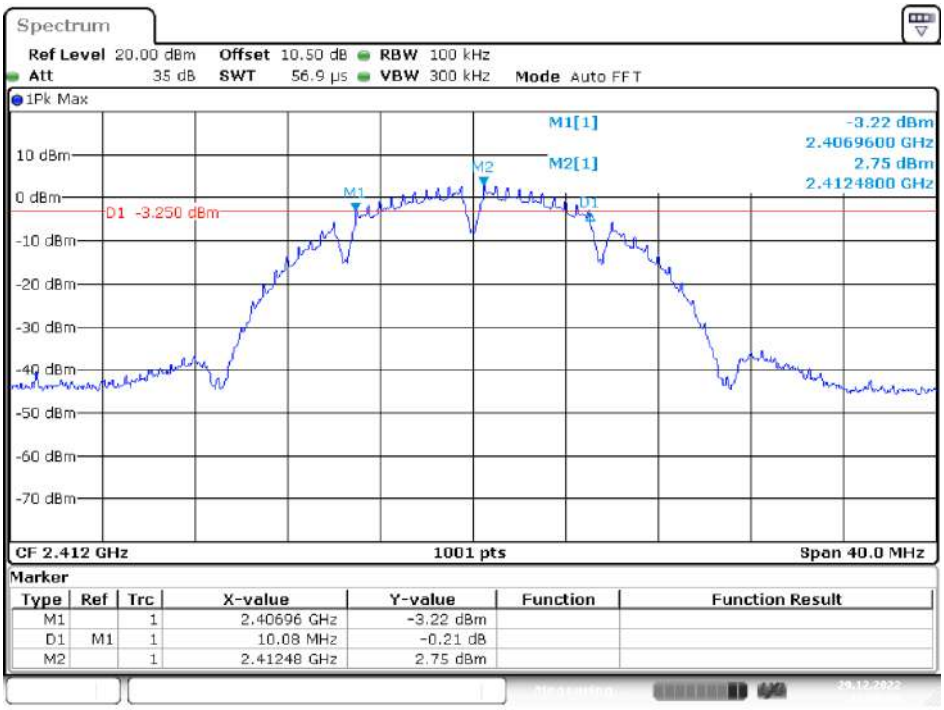
9.3 Test Results

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (kHz)	Result
B Mode				
Low	2412	10.08	> 500	PASS
Middle	2437	10.08	> 500	PASS
High	2462	10.08	> 500	PASS
G Mode				
Low	2412	16.56	> 500	PASS
Middle	2437	16.56	> 500	PASS
High	2462	16.56	> 500	PASS
N20 Mode				
Low	2412	17.76	> 500	PASS
Middle	2437	17.76	> 500	PASS
High	2462	17.76	> 500	PASS
N40 Mode				
Low	2422	36.32	> 500	PASS
Middle	2437	36.32	> 500	PASS
High	2452	36.40	> 500	PASS
BLE(1M) Mode				
Low	2402	0.504	> 500	PASS
Middle	2440	0.501	> 500	PASS
High	2480	0.501	> 500	PASS

Please refer to the following plots

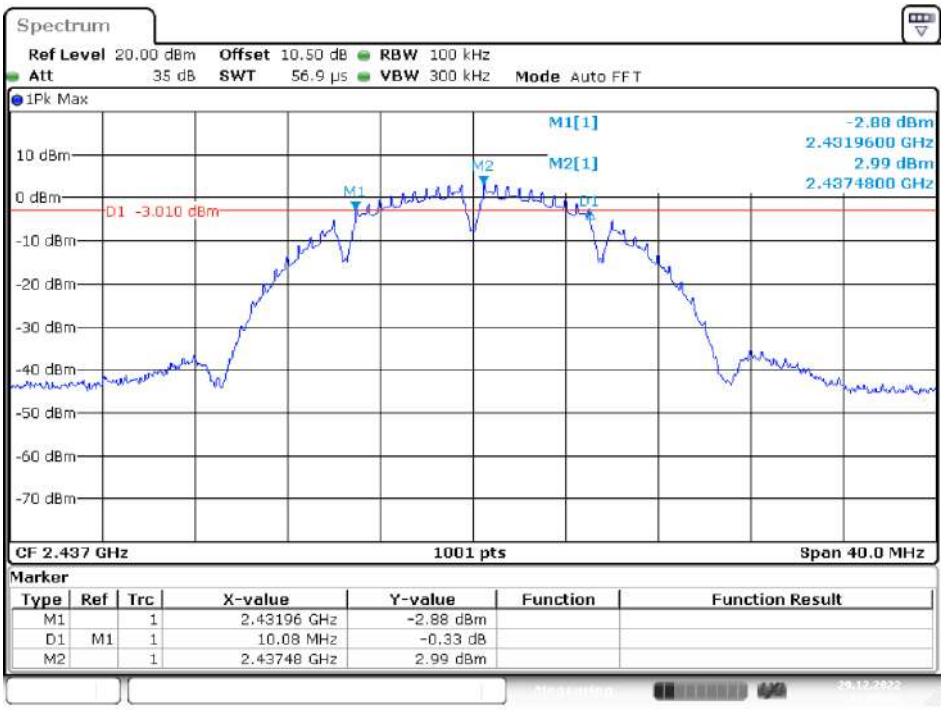
B Mode

Low Channel



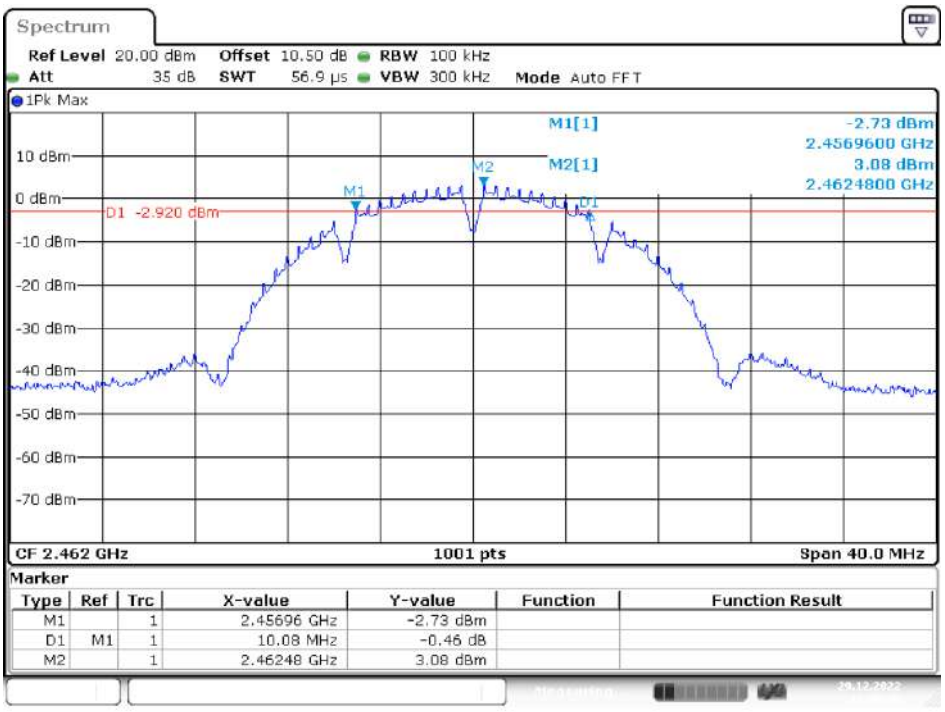
Date: 29.DEC.2022 13:36:19

Middle Channel



Date: 29.DEC.2022 13:39:02

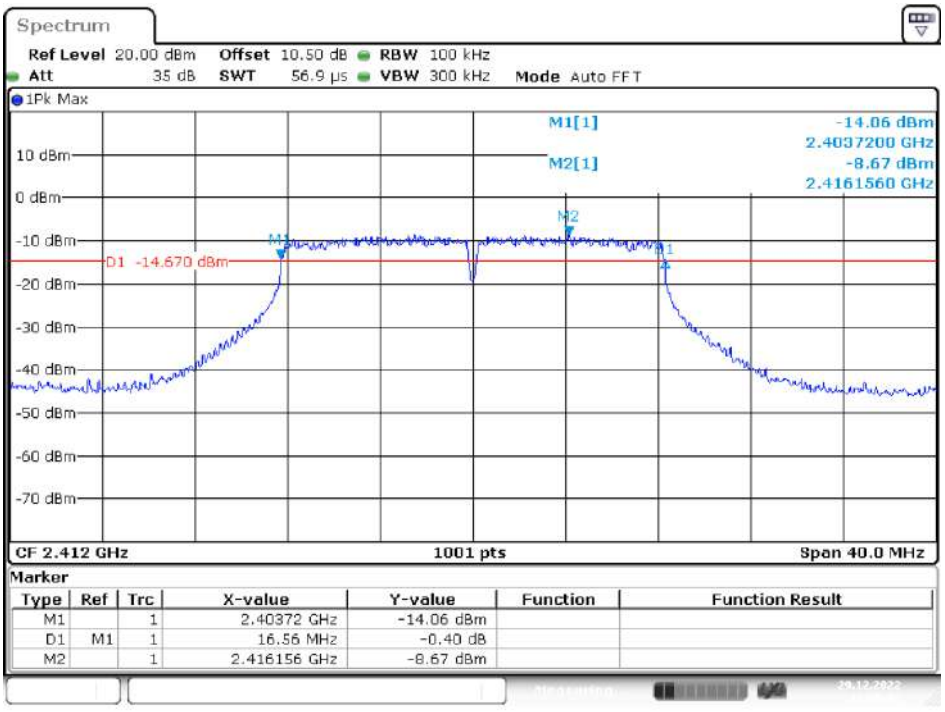
High Channel



Date: 29.DEC.2022 13:40:47

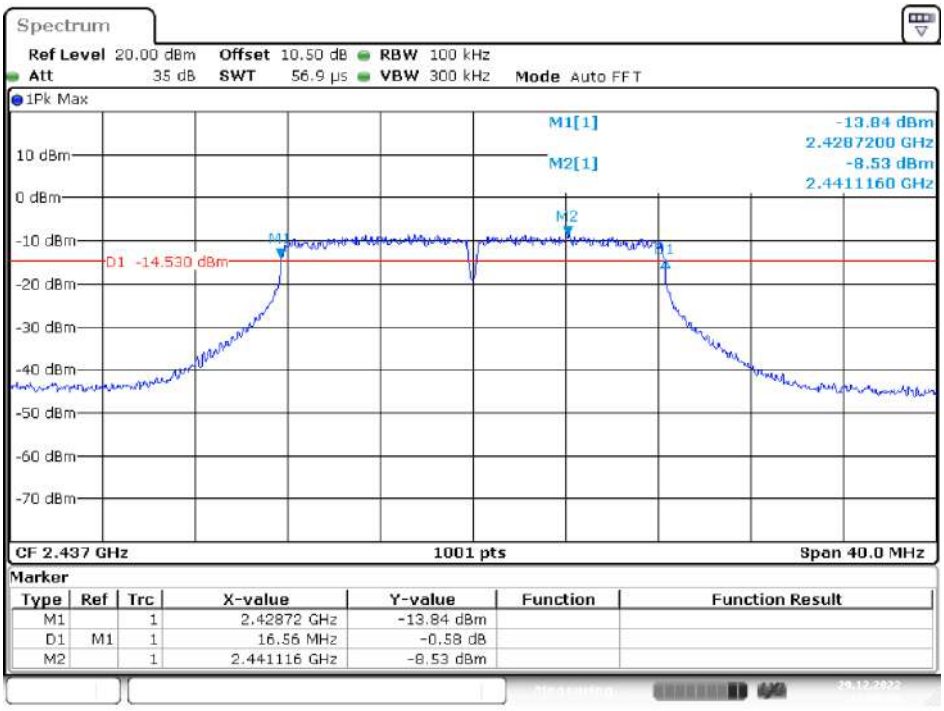
G Mode

Low Channel



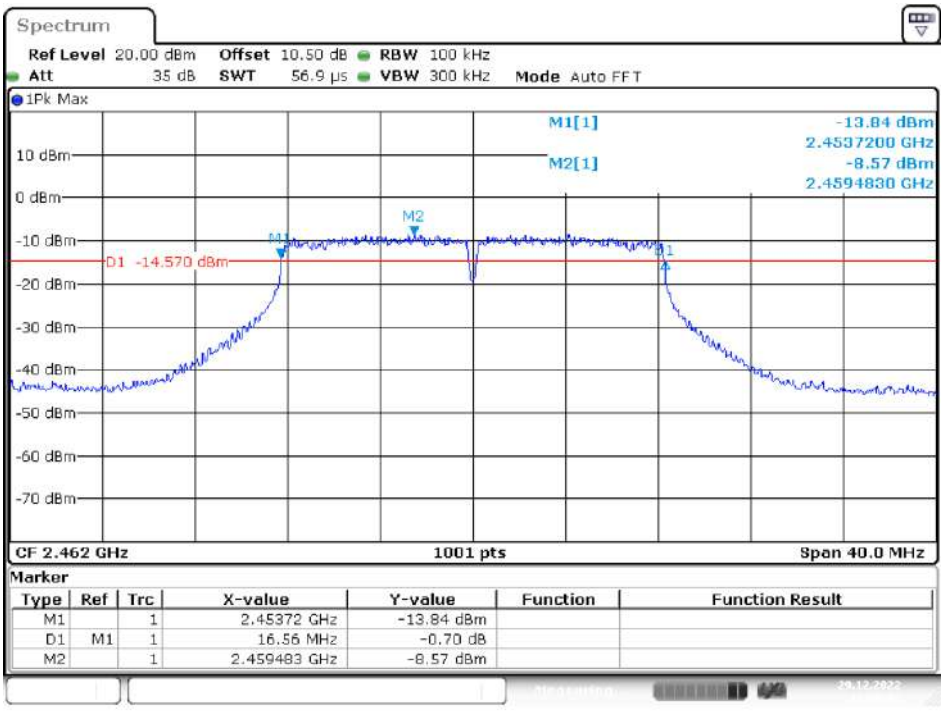
Date: 29.DEC.2022 13:25:31

Middle Channel



Date: 29.DEC.2022 13:28:09

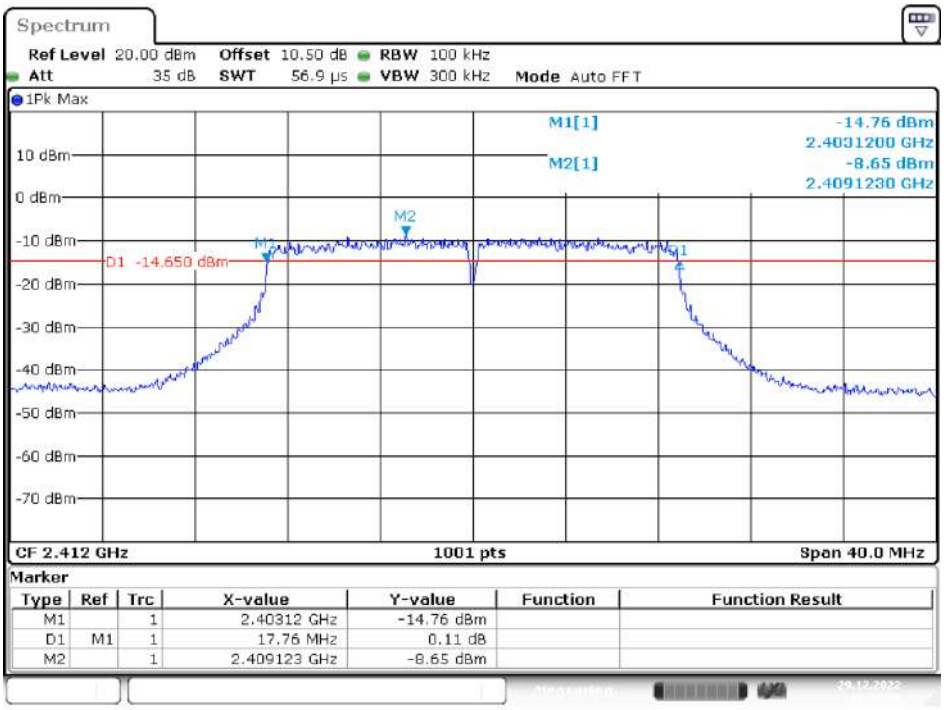
High Channel



Date: 29.DEC.2022 13:29:54

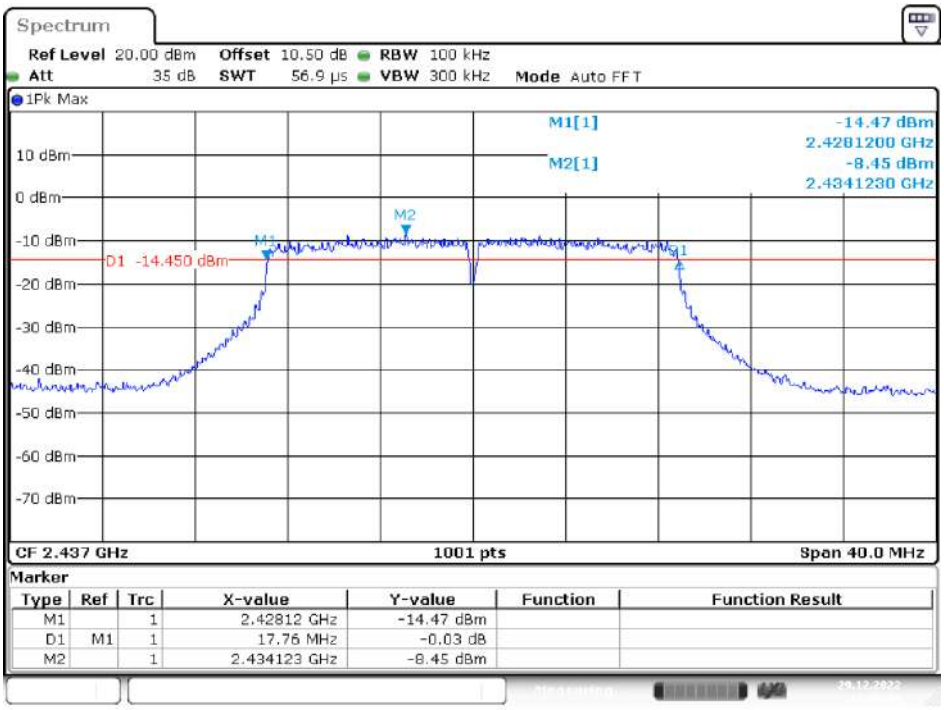
N20 Mode

Low Channel



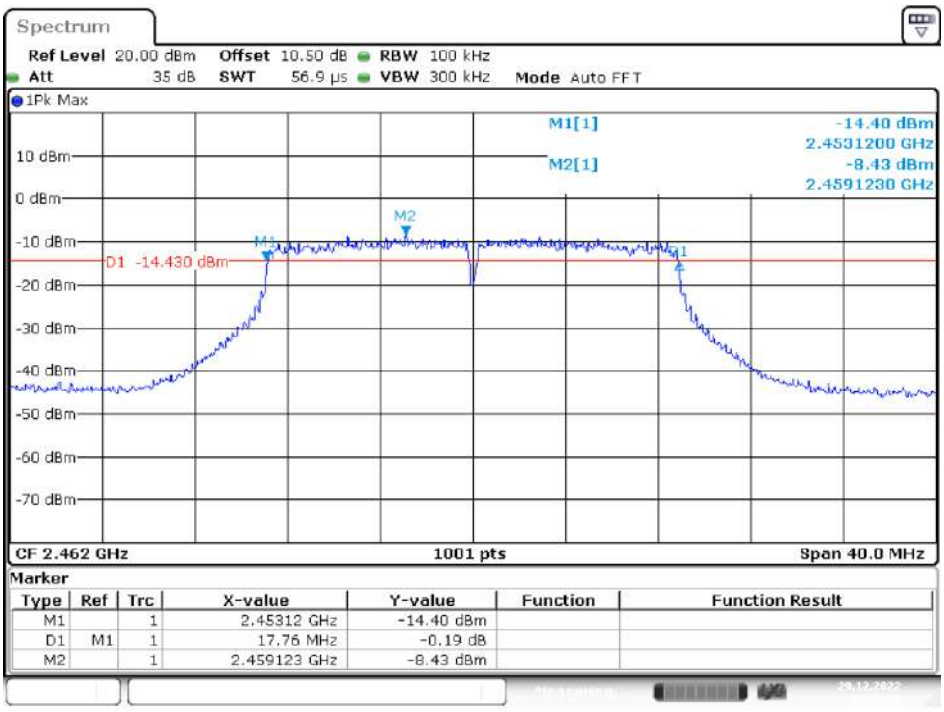
Date: 29.DEC.2022 13:46:11

Middle Channel



Date: 29.DEC.2022 13:48:34

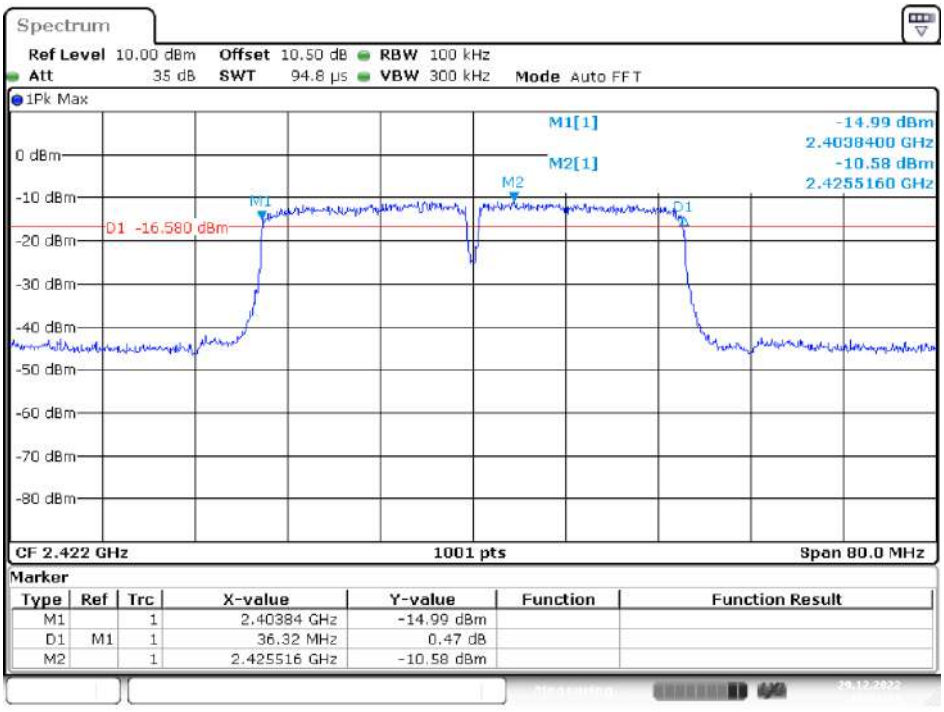
High Channel



Date: 29.DEC.2022 13:50:40

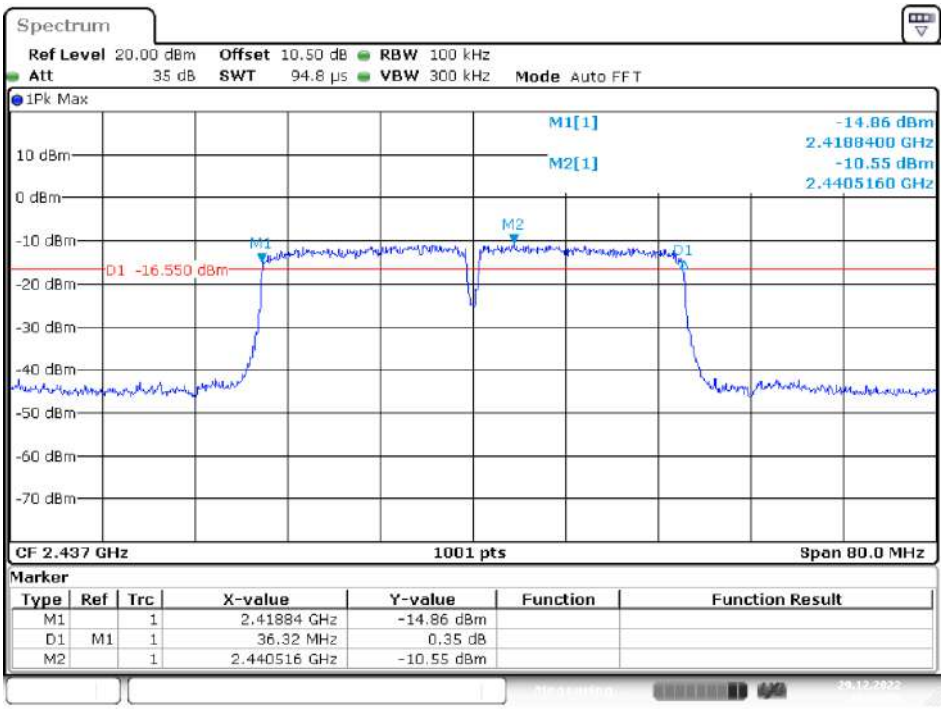
N40 Mode

Low Channel

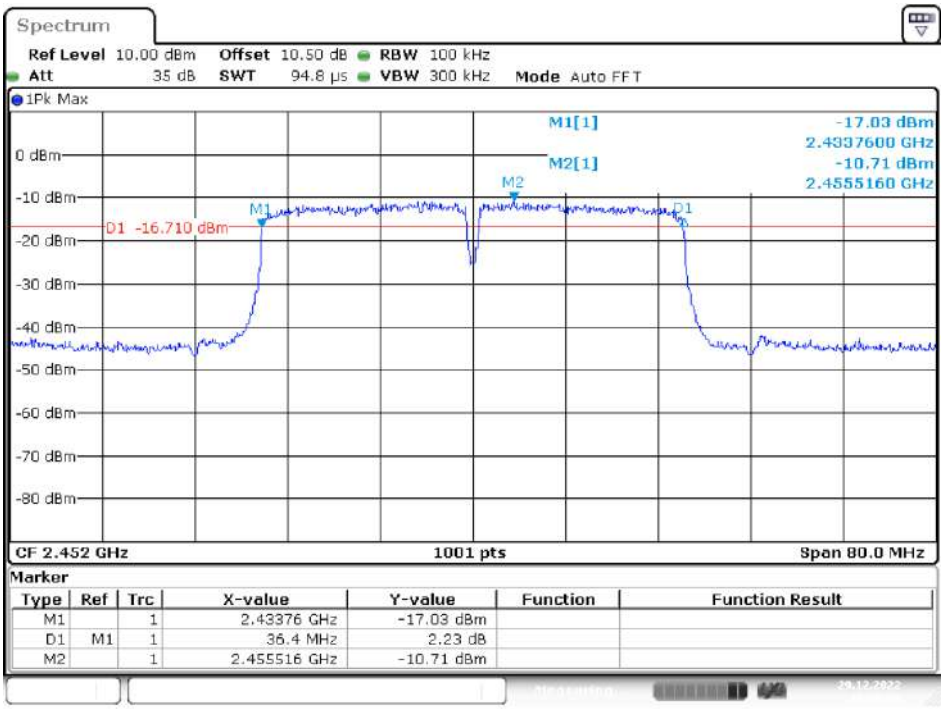


Date: 29.DEC.2022 14:01:15

Middle Channel

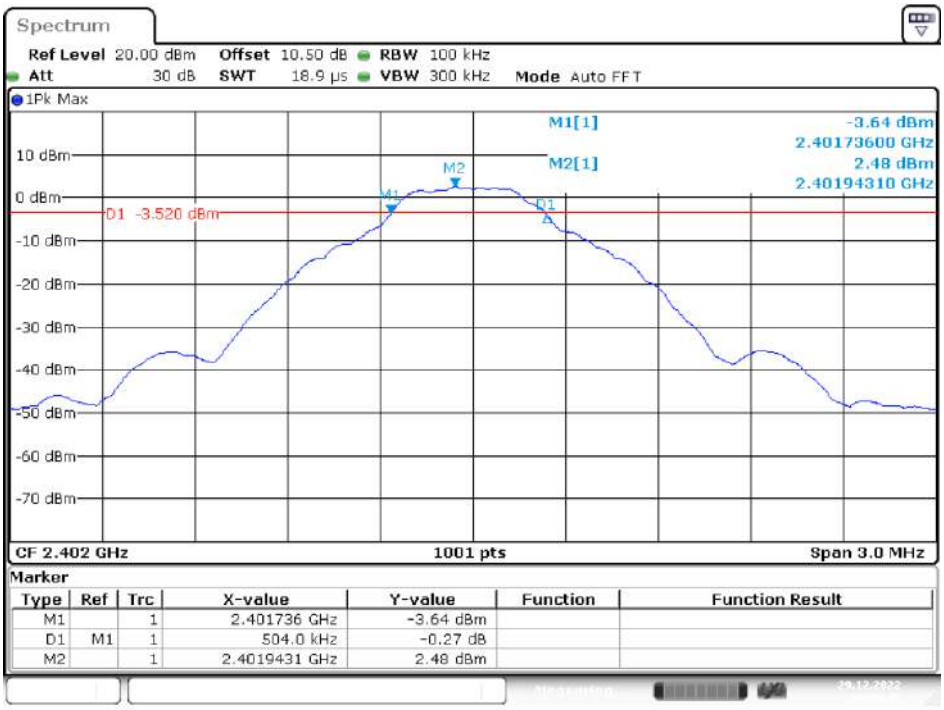


High Channel



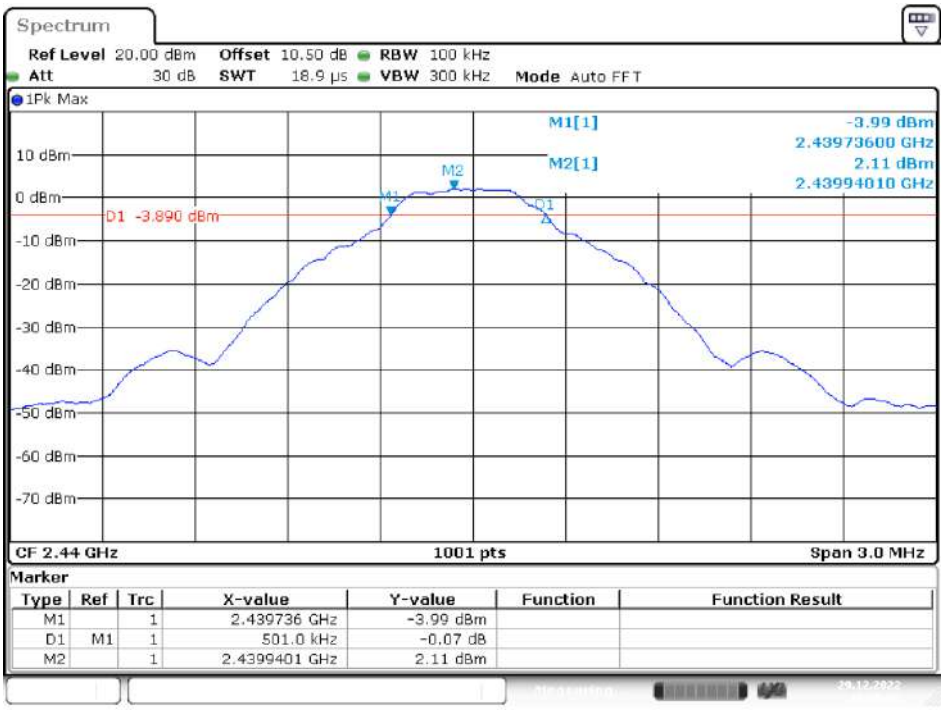
BLE (1M) Mode

Low Channel



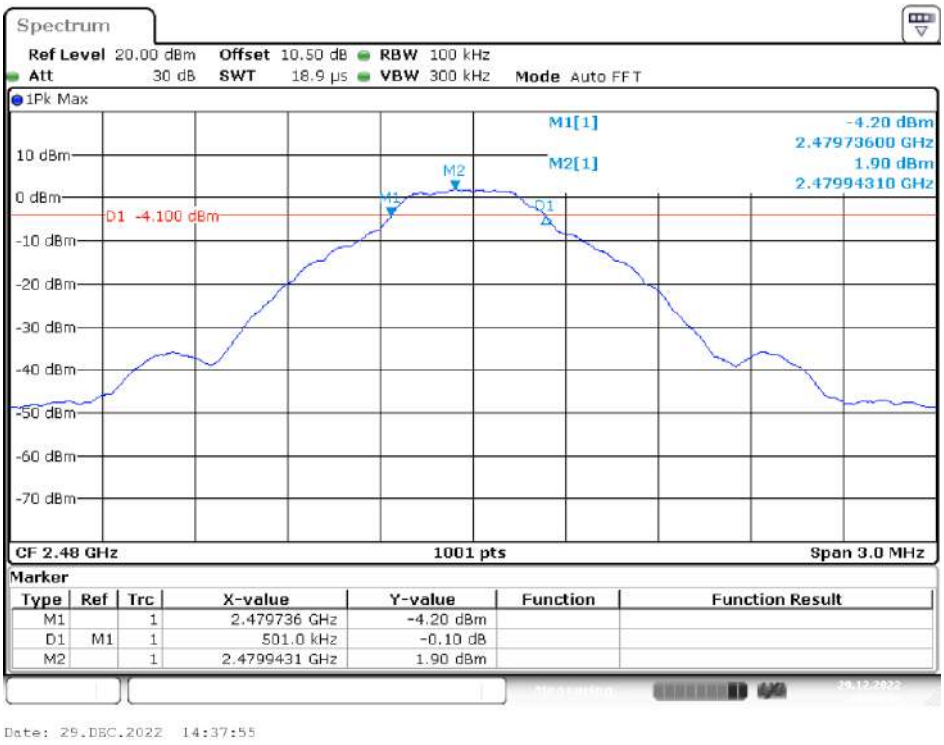
Date: 29.DEC.2022 14:33:46

Middle Channel



Date: 29.DEC.2022 14:35:35

High Channel



10 FCC §15.247(b)(3) – Maximum Output Power

10.1 Applicable Standard

According to FCC §15.247(b) (3).

Systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

10.2 Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to measuring equipment.

10.3 Test Results

Conducted Average Output Power (DrivePro Body 70)

Channel	Frequency (MHz)	Power (dBm)	Power (W)	Limit (W)	Result
802.11b Mode					
Low	2412	12.75	0.036	1	Compliance
Middle	2437	13.42	0.039	1	Compliance
High	2462	12.89	0.037	1	Compliance
802.11g Mode					
Low	2412	5.83	0.030	1	Compliance
Middle	2437	5.81	0.030	1	Compliance
High	2462	5.65	0.029	1	Compliance
802.11n HT20 Mode					
Low	2412	5.15	0.023	1	Compliance
Middle	2437	5.25	0.024	1	Compliance
High	2462	5.01	0.022	1	Compliance
802.11n HT40 Mode					
Low	2422	6.09	0.023	1	Compliance
Middle	2437	6.07	0.021	1	Compliance
High	2452	6.08	0.022	1	Compliance
BLE(1M) Mode					
Low	2402	2.87	0.002	1	Compliance
Middle	2440	2.51	0.002	1	Compliance
High	2480	2.14	0.002	1	Compliance

Conducted Average Output Power (DrivePro Body 60)

Channel	Frequency (MHz)	Power (dBm)	Power (W)	Limit (W)	Result
802.11b Mode					
Low	2412	12.55	0.036	1	Compliance
Middle	2437	13.18	0.039	1	Compliance
High	2462	12.55	0.037	1	Compliance
802.11g Mode					
Low	2412	5.83	0.030	1	Compliance
Middle	2437	5.72	0.030	1	Compliance
High	2462	5.55	0.029	1	Compliance
802.11n HT20 Mode					
Low	2412	4.66	0.023	1	Compliance
Middle	2437	4.59	0.024	1	Compliance
High	2462	4.45	0.022	1	Compliance
802.11n HT40 Mode					
Low	2422	5.45	0.023	1	Compliance
Middle	2437	5.61	0.021	1	Compliance
High	2452	5.46	0.022	1	Compliance
BLE(1M) Mode					
Low	2402	2.61	0.002	1	Compliance
Middle	2440	2.35	0.002	1	Compliance
High	2480	2.01	0.002	1	Compliance

11 FCC§15.247(d) – 100 kHz Bandwidth of Frequency Band Edge

11.1 Applicable Standard

According to FCC §15.247(d).

In any 100kHz 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 20dB below that in the 100kHz 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 30dB instead of 20dB. 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)).

11.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

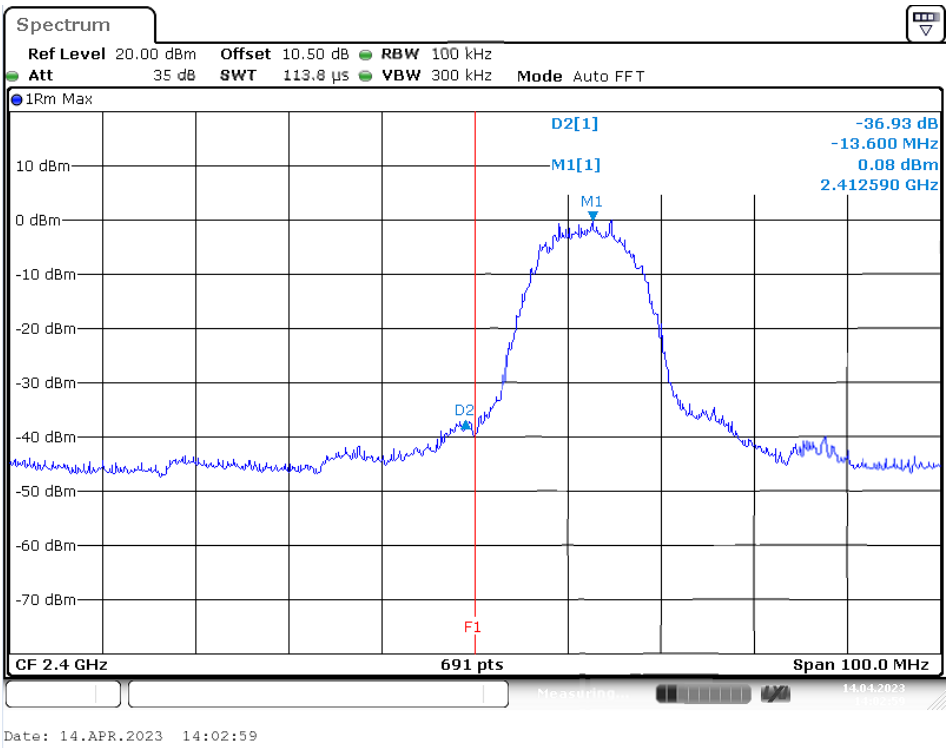
11.3 Test Results

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
B Mode				
Low	2412	36.93	≥ 30	PASS
High	2462	40.38	≥ 30	PASS
G Mode				
Low	2412	30.17	≥ 30	PASS
High	2462	33.05	≥ 30	PASS
N20 Mode				
Low	2412	30.92	≥ 30	PASS
High	2462	34.08	≥ 30	PASS
N40 Mode				
Low	2422	38.45	≥ 30	PASS
High	2452	30.56	≥ 30	PASS
BLE(1M) Mode				
Low	2402	44.49	≥ 30	PASS
High	2480	42.01	≥ 30	PASS

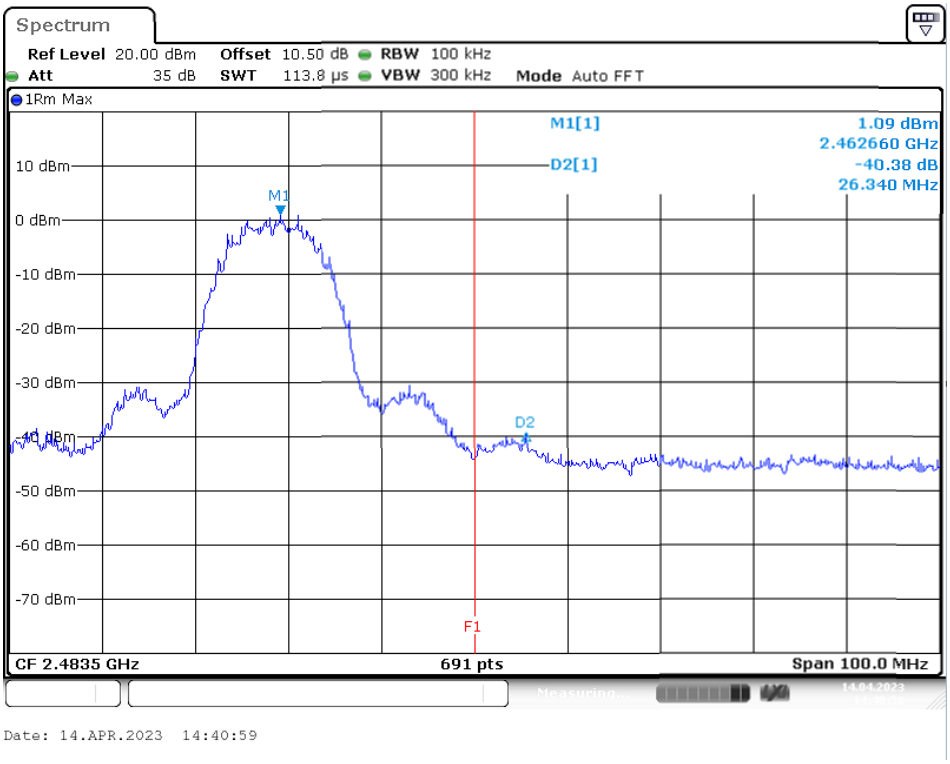
Please refer to the following plots.

B Mode

Band Edge, Left Side

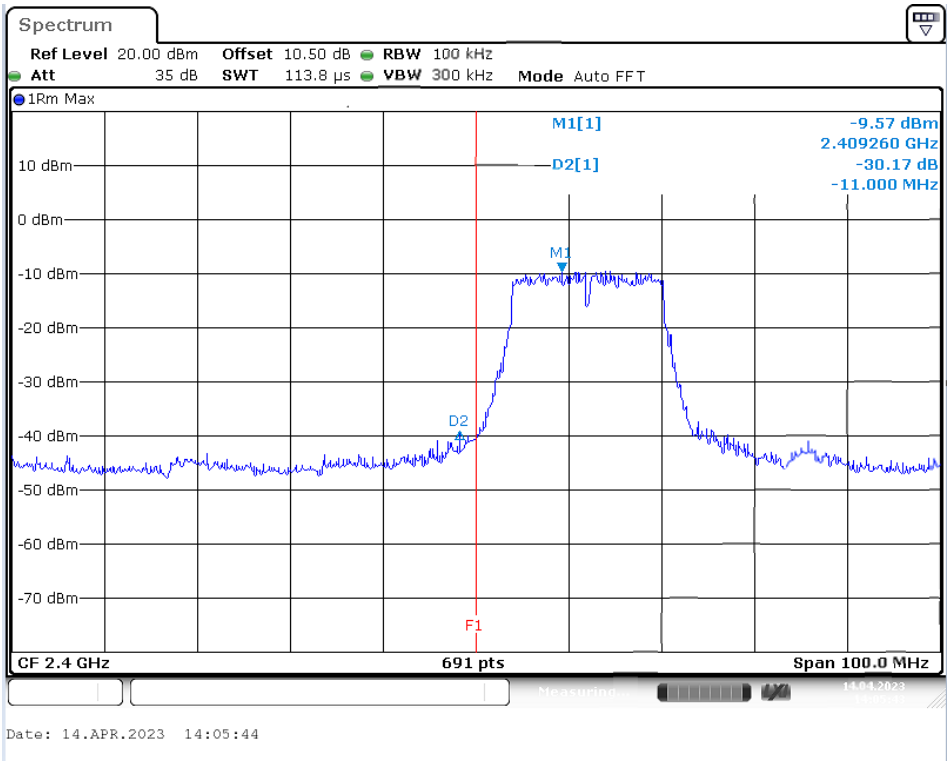


Band Edge, Right Side

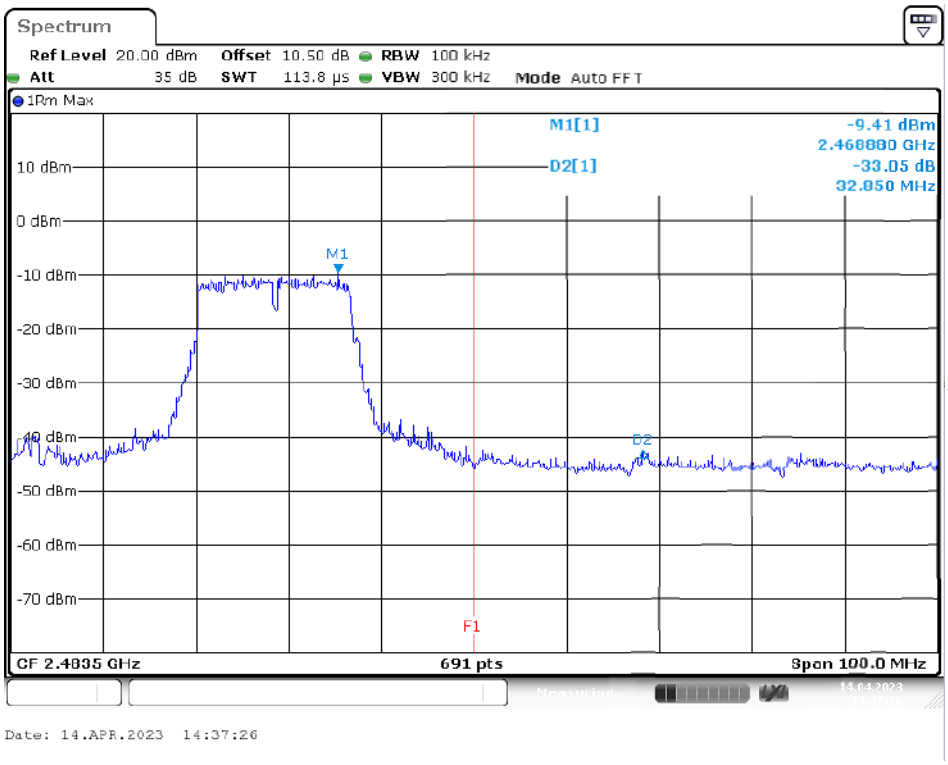


G Mode

Band Edge, Left Side



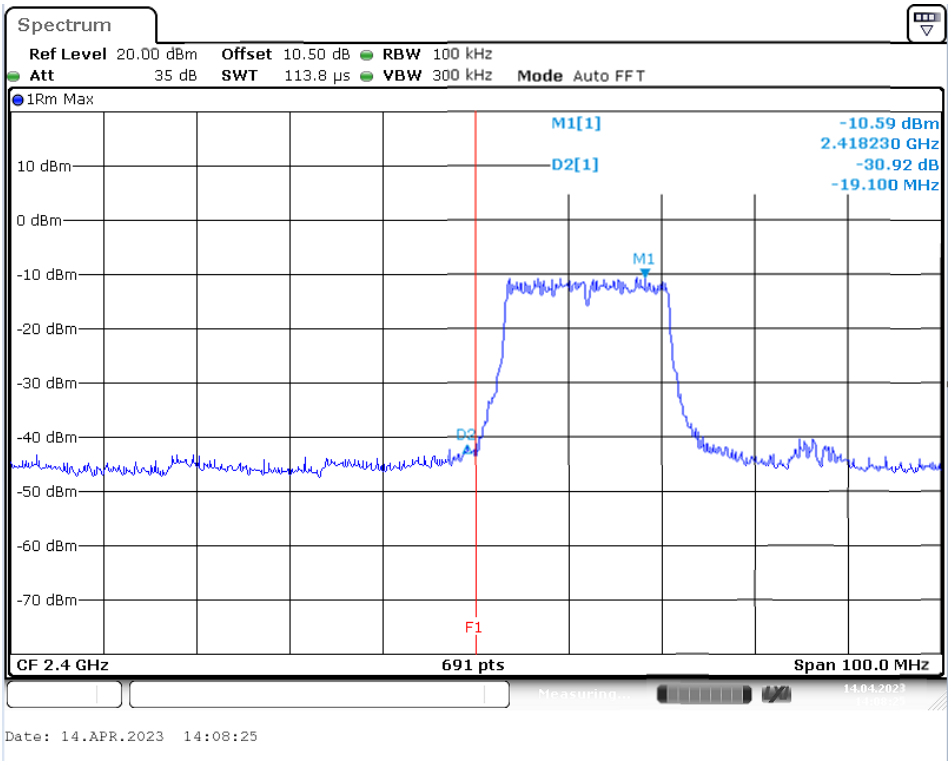
Band Edge, Right Side



Date: 14.APR.2023 14:37:26

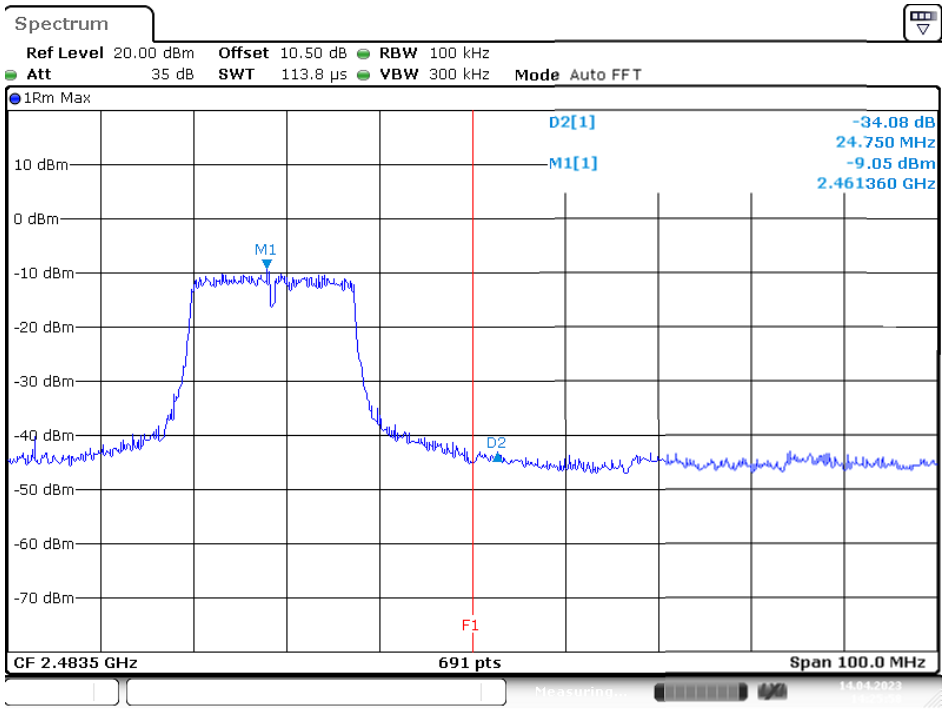
N20 Mode

Band Edge, Left Side



Date: 14.APR.2023 14:08:25

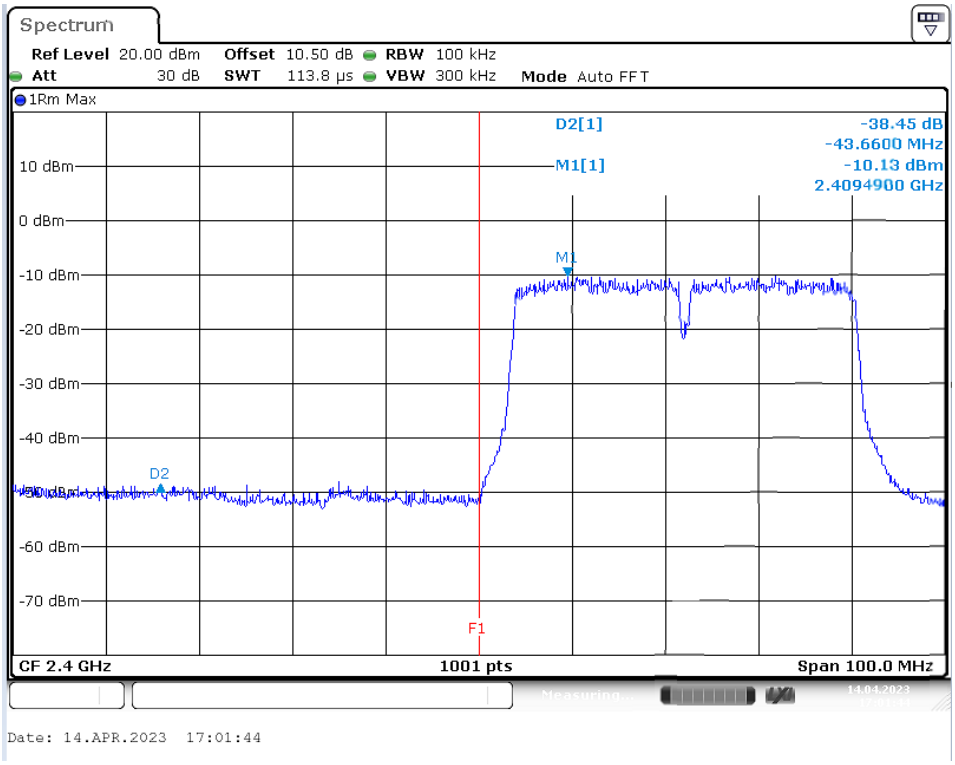
Band Edge, Right Side



Date: 14.APR.2023 14:25:59

N40 Mode

Band Edge, Left Side



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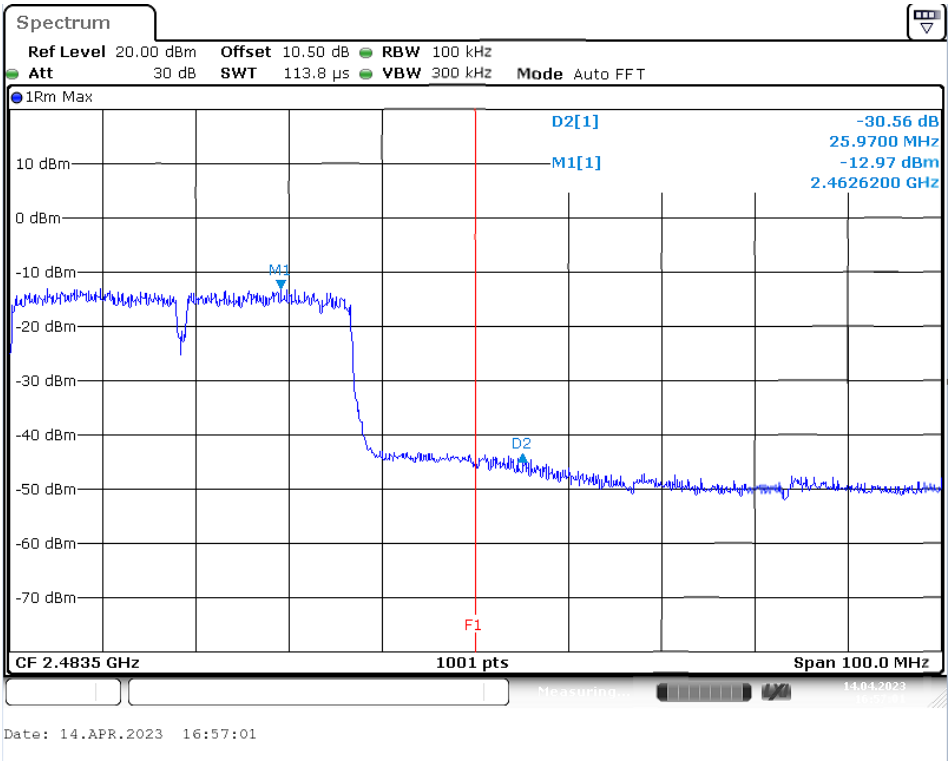
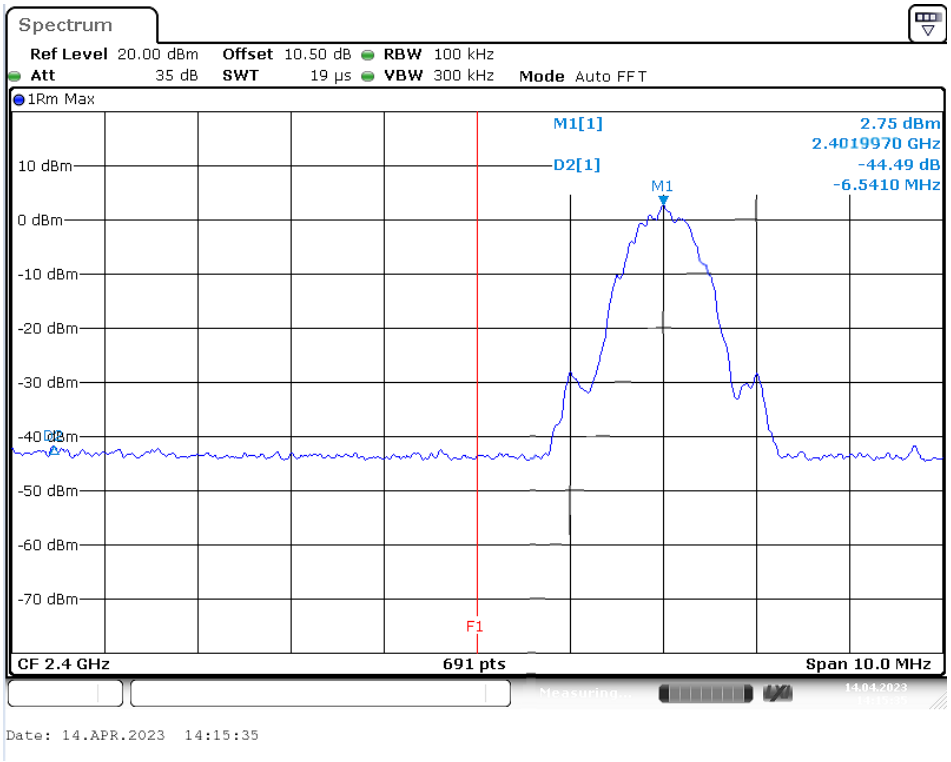
Band Edge, Right Side

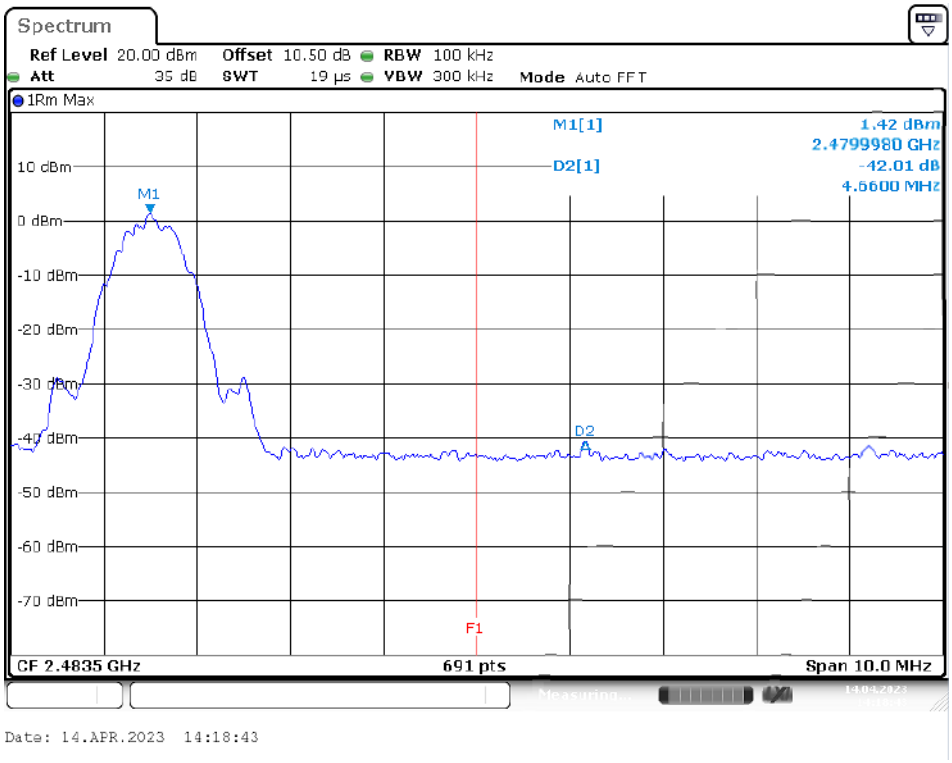


BLE (1M) Mode

Band Edge, Low Channel



Band Edge, High Channel



12 FCC §15.247(e) – Power Spectral Density

12.1 Applicable Standard

According to FCC §15.247(e).

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

12.2 Test Procedure

a) Set instrument center frequency to DTS channel center frequency.

b) Set span to at least 1.5 times the OBW.

c) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.

d) Set VBW ≥ [3 × RBW].

e) Detector = power averaging (rms) or sample detector (when rms not available).

f) Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].

g) Sweep time = auto couple.

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

i) Use the peak marker function to determine the maximum amplitude level.

j) If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

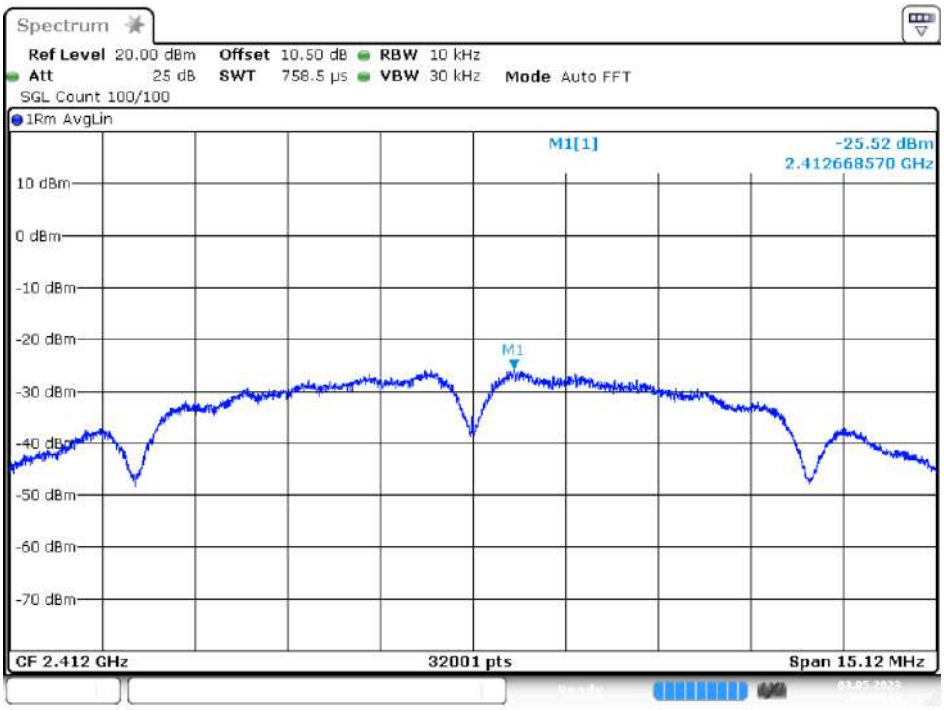
12.3 Test Results

Channel	Frequency (MHz)	Power Spectral Density (dBm/10 kHz)	Limit (dBm/3 kHz)	Result
B Mode				
Low	2412	-25.52	8	PASS
Middle	2437	-25.83	8	PASS
High	2462	-25.59	8	PASS
G Mode				
Low	2412	-26.11	8	PASS
Middle	2437	-26.66	8	PASS
High	2462	-26.84	8	PASS
N20 Mode				
Low	2412	-26.80	8	PASS
Middle	2437	-26.86	8	PASS
High	2462	-26.93	8	PASS
N40 Mode				
Low	2422	-29.42	8	PASS
Middle	2437	-29.32	8	PASS
High	2452	-29.68	8	PASS
Channel	**Frequency (MHz)**	**Power Spectral Density (dBm/3 kHz)**	**Limit (dBm/3 kHz)**	**Result**
BLE(1M) Mode				
Low	2402	-11.42	8	PASS
Middle	2440	-11.22	8	PASS
High	2480	-10.46	8	PASS

Please refer to the following plots

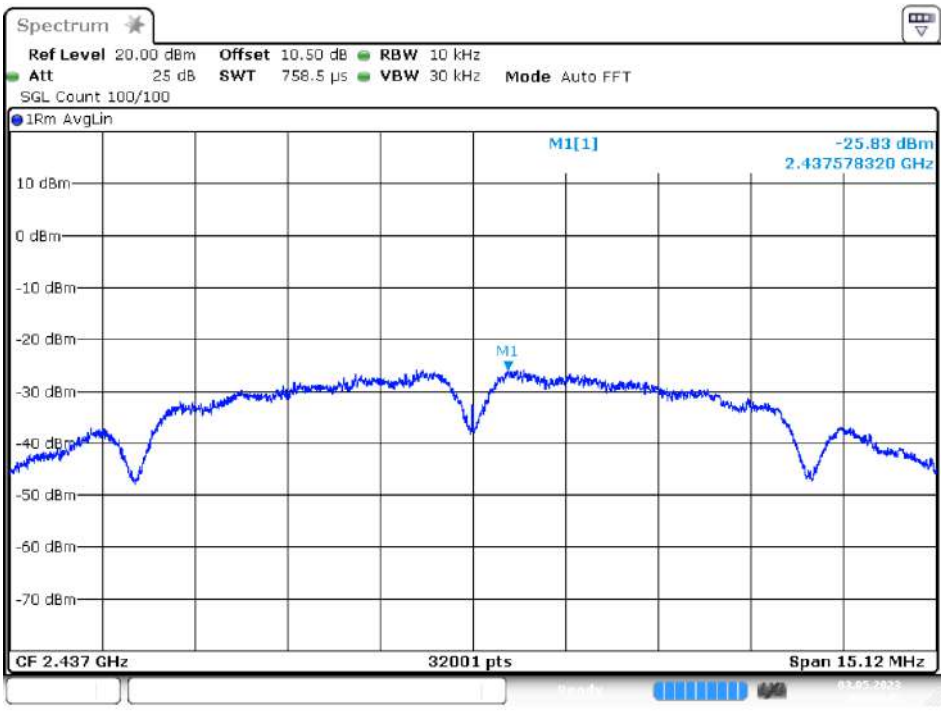
B Mode

Low Channel



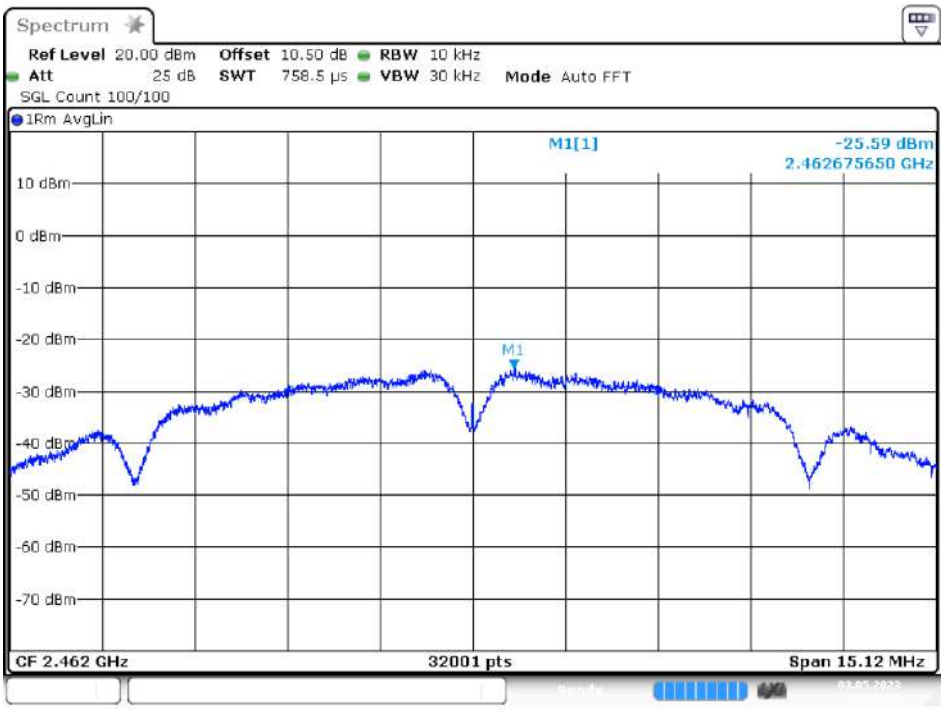
Date: 3.MAY.2023 02:27:14

Middle Channel



Date: 3.MAY.2023 02:27:46

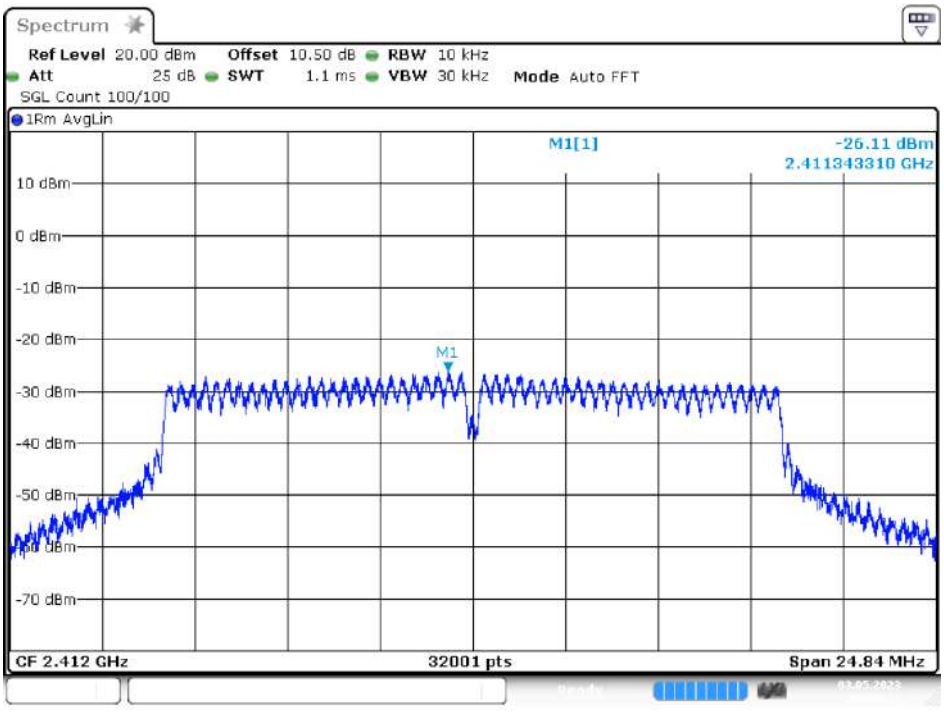
High Channel



Date: 3.MAY.2023 02:28:18

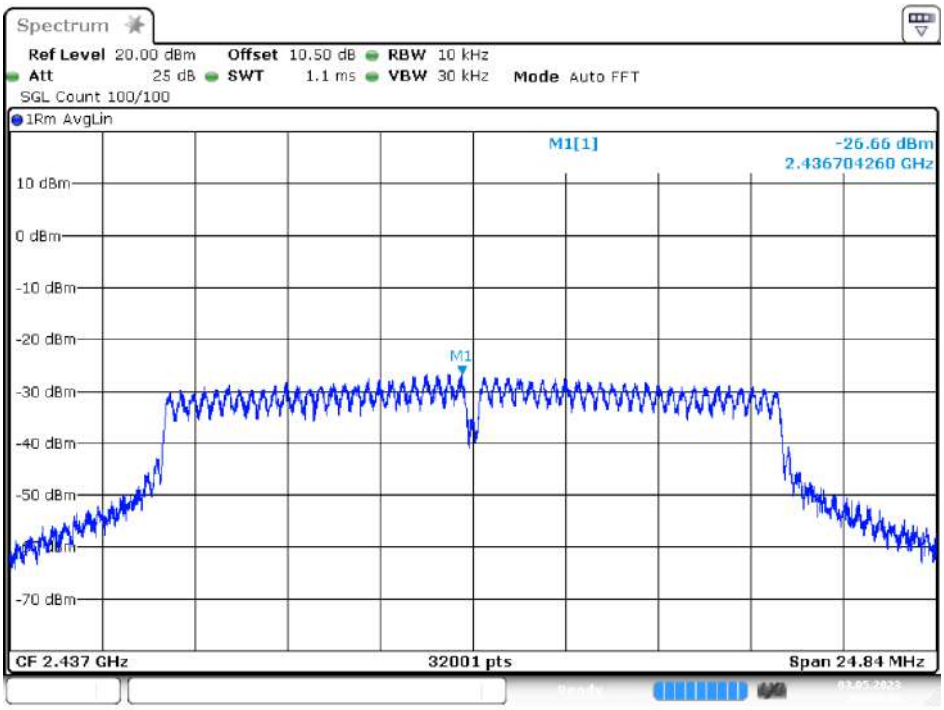
G Mode

Low Channel



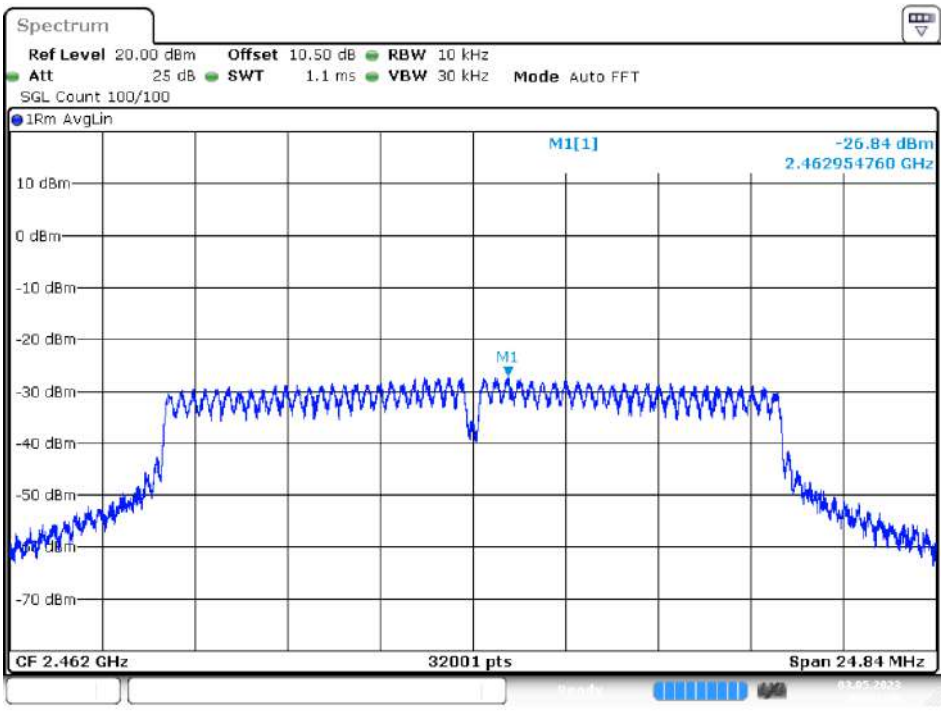
Date: 3.MAY.2023 02:36:21

Middle Channel



Date: 3.MAY.2023 02:34:10

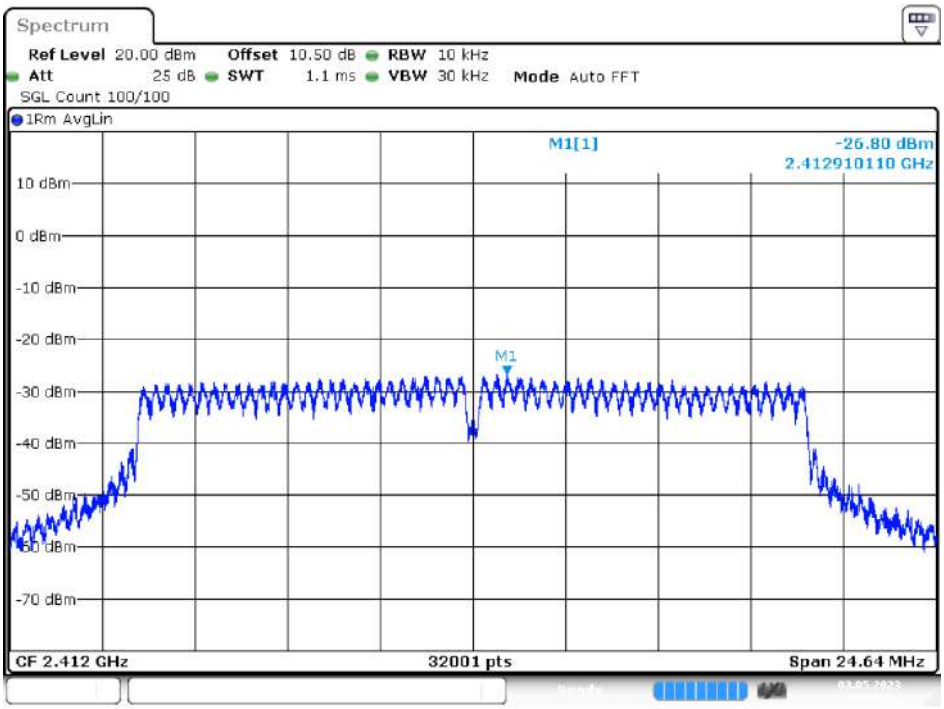
High Channel



Date: 3.MAY.2023 02:31:48

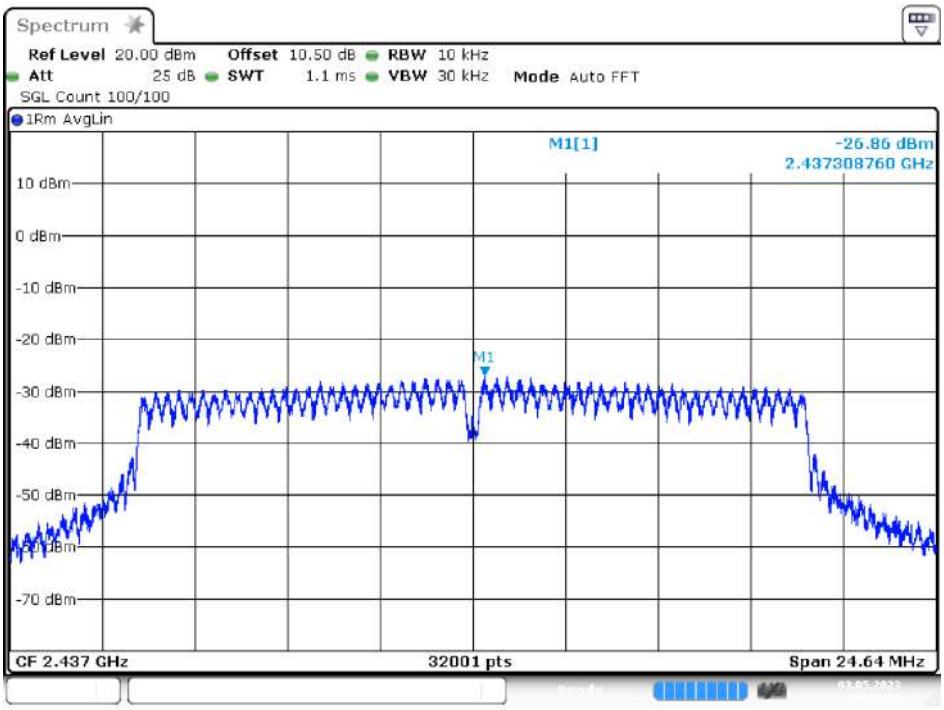
N20 Mode

Low Channel



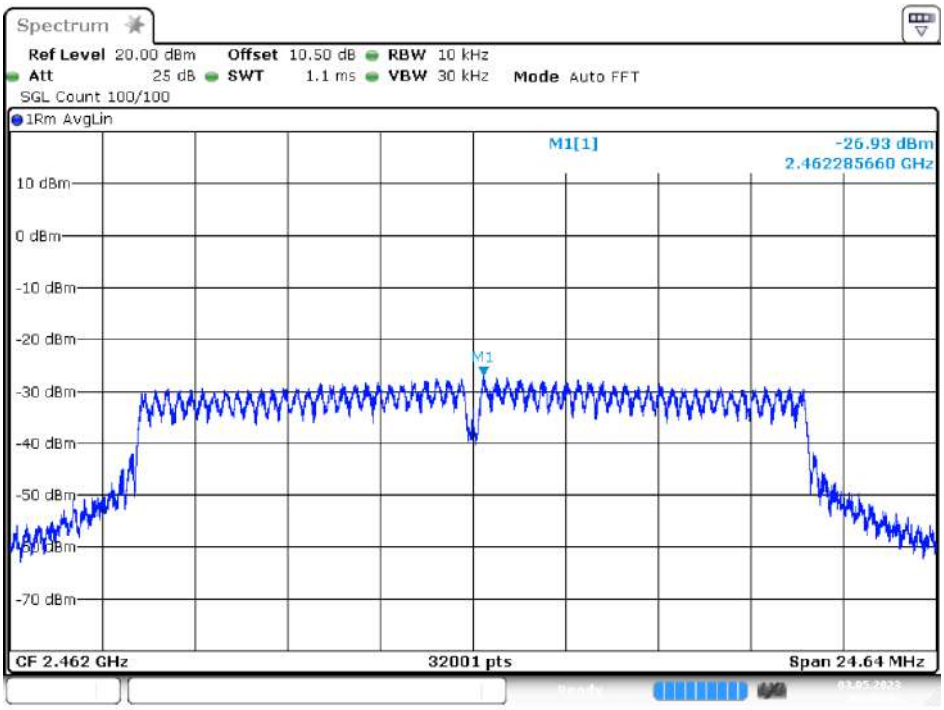
Date: 3.MAY.2023 02:38:43

Middle Channel



Date: 3.MAY.2023 02:41:09

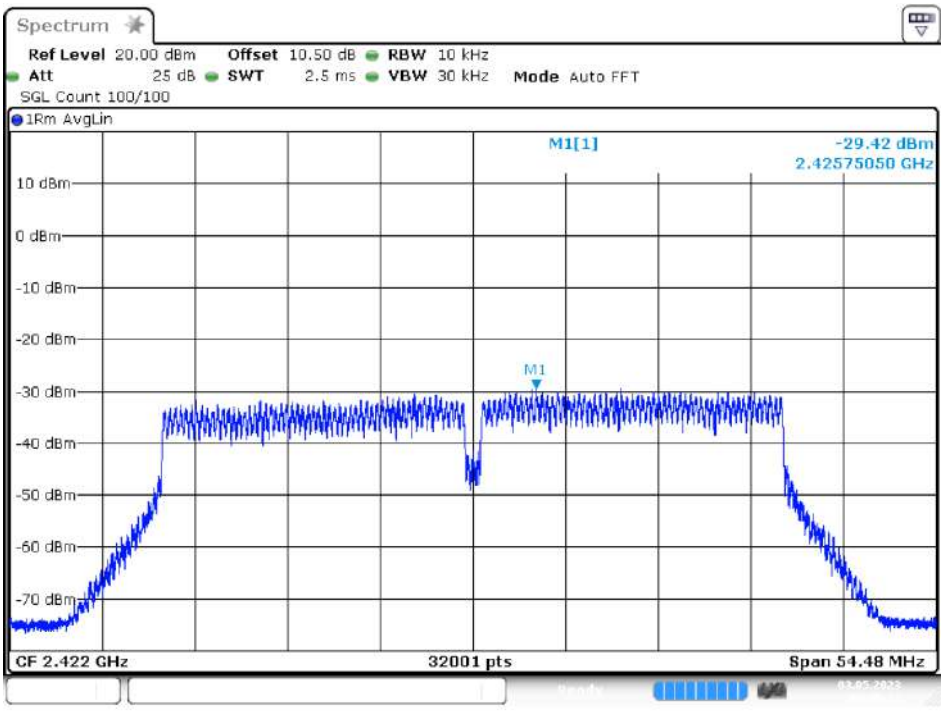
High Channel



Date: 3.MAY.2023 02:42:53

N40 Mode

Low Channel



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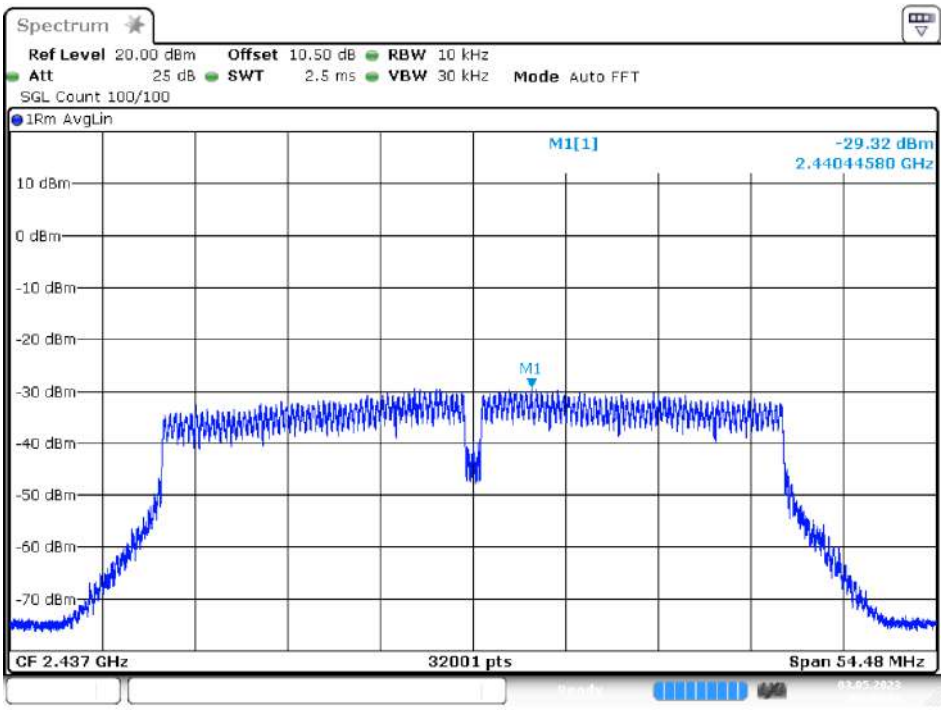
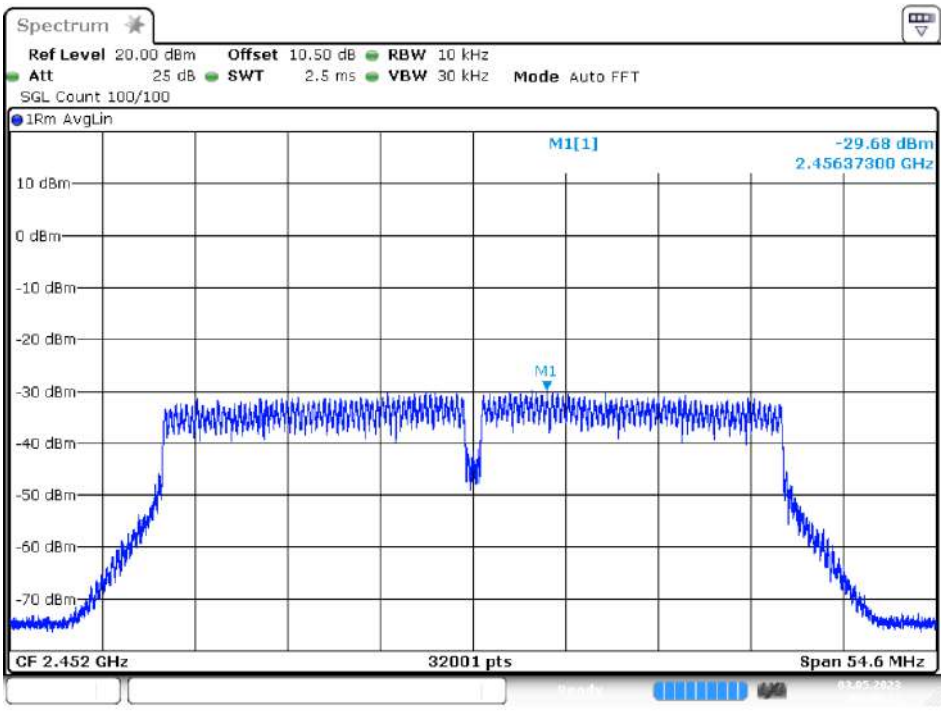
Middle Channel



Date: 3.MAY.2023 02:47:09

High Channel



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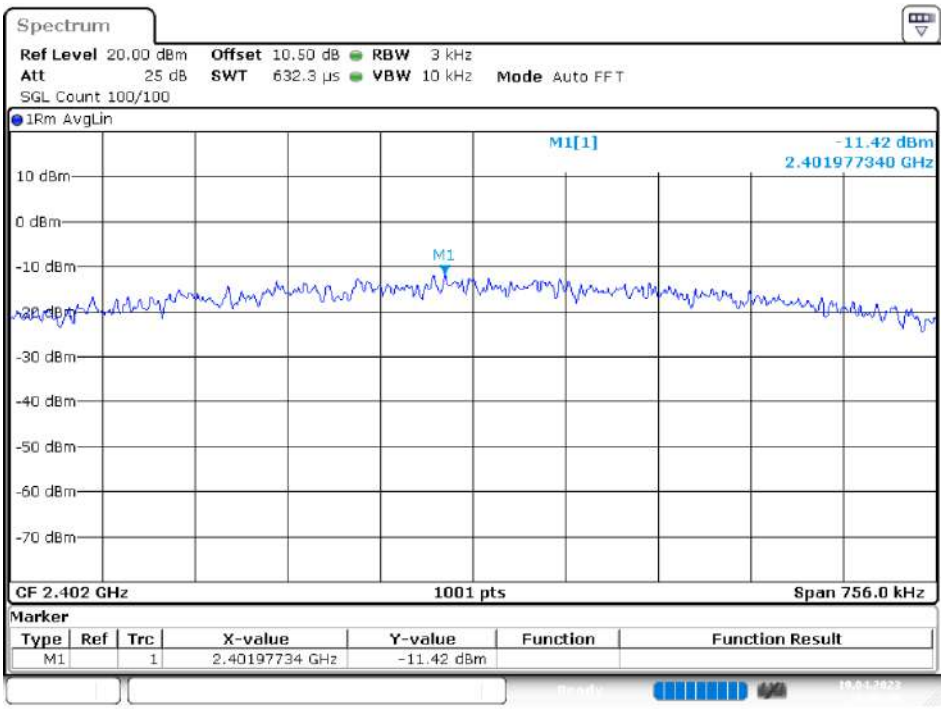
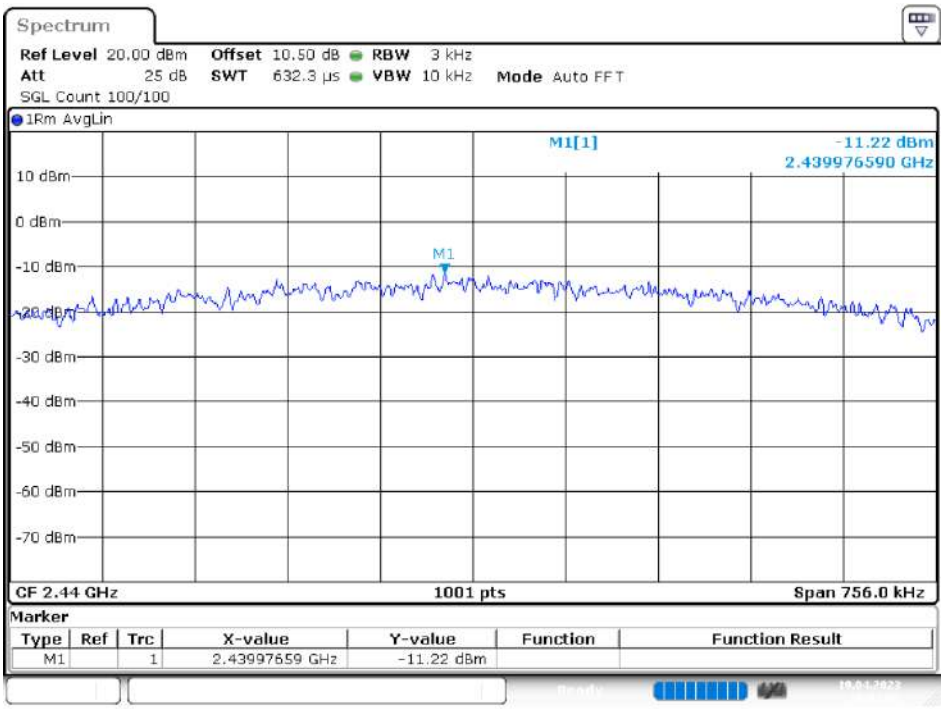
BLE (1M) Mode

Low Channel



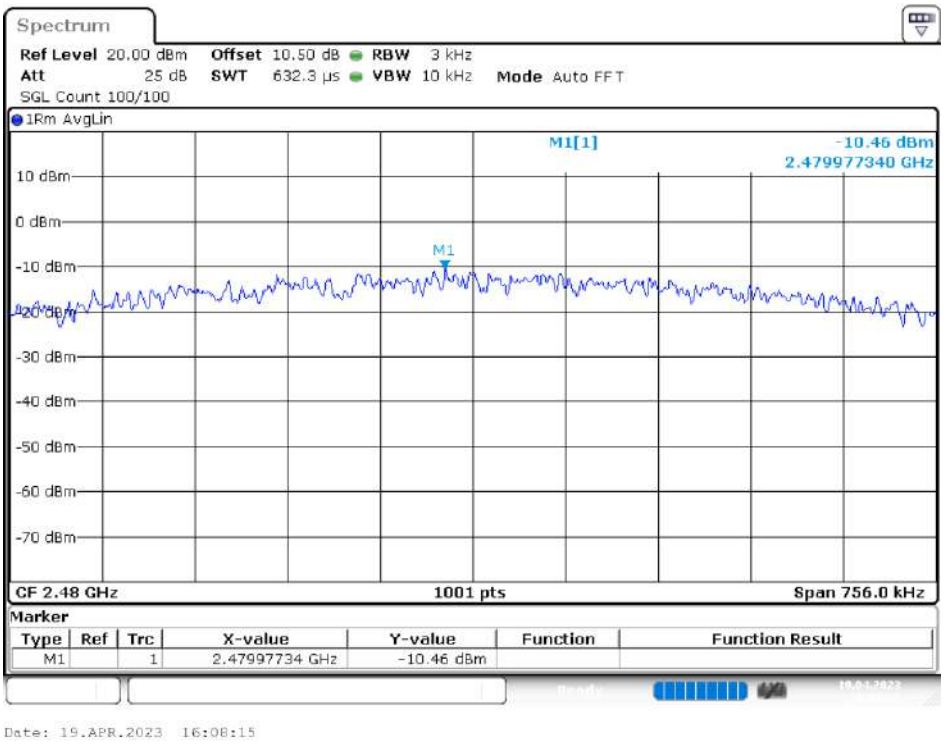
Date: 19.APR.2023 16:06:40

Middle Channel



Date: 19.APR.2023 16:07:37

High Channel



******* END OF REPORT *******