



RF Test Report

For

Applicant Name: Xwireless LLC
Address: 11565 Old Georgetown Road, Rockville, MD, USA
EUT Name: Tablet PC
Brand Name: N/A
Model Number: T10M

Issued By

Company Name: BTF Testing Lab (Shenzhen) Co., Ltd.
Address: F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park,
Tantou Community, Songgang Street, Bao'an District, Shenzhen,
China

Report Number: BTF-SZ230303R-021
Test Standards: 47 CFR Part 15.247
Test Conclusion: Pass
FCC ID: 2ADLJ-T10M
Test Date: 2023-03-18 to 2023-03-20
Date of Issue: 2023-03-20

Prepared By:

Chris Liu

Date:

Chris Liu / Project Engineer
2023-03-20

Approved By:

Ryan.CJ

Date:

Ryan.CJ / EMC Manager
2023-03-20

Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.



Test Report Number: BTF-SZ230303R-021

Revision History		
Version	Issue Date	Revisions Content
R_V0	2023-03-20	Original
<i>Note: Once the revision has been made, then previous versions reports are invalid.</i>		

Table of Contents

1	INTRODUCTION.....	5
1.1	Identification of Testing Laboratory	5
1.2	Identification of the Responsible Testing Location	5
1.3	Announcement.....	5
2	PRODUCT INFORMATION.....	6
2.1	Application Information	6
2.2	Manufacturer Information.....	6
2.3	Factory Information	6
2.4	General Description of Equipment under Test (EUT)	6
2.5	Technical Information	6
3	SUMMARY OF TEST RESULTS.....	7
3.1	Test Standards	7
3.2	Uncertainty of Test.....	7
3.3	Summary of Test Result	7
4	TEST CONFIGURATION	8
4.1	Test Equipment List	8
4.2	Test Auxiliary Equipment.....	12
4.3	Test Modes	12
5	EVALUATION RESULTS (EVALUATION)	13
5.1	Antenna requirement	13
5.1.1	Conclusion:.....	13
6	RADIO SPECTRUM MATTER TEST RESULTS (RF).....	14
6.1	Conducted Emission at AC power line	14
6.1.1	E.U.T. Operation:	14
6.1.2	Test Setup Diagram:	14
6.1.3	Test Data:	15
6.2	Occupied Bandwidth.....	17
6.2.1	E.U.T. Operation:	17
6.2.2	Test Setup Diagram:	17
6.2.3	Test Data:	17
6.3	Maximum Conducted Output Power.....	18
6.3.1	E.U.T. Operation:	18
6.3.2	Test Setup Diagram:	19
6.3.3	Test Data:	19
6.4	Power Spectral Density	20
6.4.1	E.U.T. Operation:	20
6.4.2	Test Setup Diagram:	20
6.4.3	Test Data:	20
6.5	Emissions in non-restricted frequency bands	21
6.5.1	E.U.T. Operation:	21
6.5.2	Test Setup Diagram:	22
6.5.3	Test Data:	22
6.6	Band edge emissions (Radiated)	23
6.6.1	E.U.T. Operation:	23
6.6.2	Test Data:	24
6.7	Emissions in restricted frequency bands (below 1GHz)	26
6.7.1	E.U.T. Operation:	26

6.7.2	Test Data:	27
6.8	Emissions in restricted frequency bands (above 1GHz)	33
6.8.1	E.U.T. Operation:	33
6.8.2	Test Data:	34
7	TEST SETUP PHOTOS	37
8	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS).....	39
APPENDIX.....		40

1 Introduction

1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

1.2 Identification of the Responsible Testing Location

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130
FCC Registration Number:	518915
Designation Number:	CN1330

1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 Product Information

2.1 Application Information

Company Name:	Xwireless LLC
Address:	11565 Old Georgetown Road, Rockville, MD, USA

2.2 Manufacturer Information

Company Name:	Xwireless LLC
Address:	11565 Old Georgetown Road, Rockville, MD, USA

2.3 Factory Information

Company Name:	ZTECH COMMUNICATION(SZ) CO LTD
Address:	FL 7 BLOCK D BAO'AN ZHIGU INNOVATION PARK YIN'TIAN ROAD NO. 4 XI'XIANG STR' BAO'AN DISTRICT SZ CHINA

2.4 General Description of Equipment under Test (EUT)

EUT Name:	Tablet PC
Test Model Number:	T10M

2.5 Technical Information

Power Supply:	DC 3.8V from battery
Power Adaptor:	Model:T10 Input:100-240V, 50/60Hz 0.3A Output:5.0V==2.0A 10.0W
Operation Frequency:	2402MHz to 2480MHz
Number of Channels:	40
Modulation Type:	GFSK
Antenna Type:	PIFA ANT
Antenna Gain:	1.09dBi
Bluetooth Version:	5.0

3 Summary of Test Results

3.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

3.2 Uncertainty of Test

Measurement	Value
Occupied Channel Bandwidth	69 KHz
RF output power, conducted	0.87 dB
Power Spectral Density, conducted	0.69 dB
Unwanted Emissions, conducted	0.94 dB
All emissions, radiated(<1GHz)	4.12 dB
All emissions, radiated(>1GHz)	4.16 dB
Temperature	0.82 °C
Humidity	4.1 %

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.247	Part 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	47 CFR 15.207(a)	Pass
Occupied Bandwidth	47 CFR Part 15.247	47 CFR 15.247(a)(2)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	47 CFR 15.247(b)(3)	Pass
Power Spectral Density	47 CFR Part 15.247	47 CFR 15.247(e)	Pass
Emissions in non-restricted frequency bands	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in restricted frequency bands (below 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in restricted frequency bands (above 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass

4 Test Configuration

4.1 Test Equipment List

Conducted Emission at AC power line					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Pulse Limiter	SCHWARZBECK	VTSD 9561-F	00953	2022-11-24	2023-11-23
Coaxial Switcher	SCHWARZBECK	CX210	CX210	2022-11-24	2023-11-23
V-LISN	SCHWARZBECK	NSLK 8127	01073	2022-11-24	2023-11-23
LISN	AFJ	LS16/110VAC	16010020076	2023-02-23	2024-02-22
EMI Receiver	ROHDE&SCHWARZ	ESCI3	101422	2022-11-24	2023-11-23

Occupied Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RFTest software	/	V1.00	/	/	/
RF Control Unit	Techy	TR1029-1	/	2022-11-24	2023-11-23
RF Sensor Unit	Techy	TR1029-2	/	2022-11-24	2023-11-23
Programmable constant temperature and humidity box	ZZCKONG	ZZ-K02A	20210928007	2022-11-24	2023-11-23
Adjustable Direct Current Regulated Power Supply	Dongguan Tongmen Electronic Technology Co., LTD	etm-6050c	20211026123	2022-11-24	2023-11-23
WIDEBAND RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMW500	161997	2022-11-24	2023-11-23
MXA Signal Analyzer	KEYSIGHT	N9020A	MY50410020	2022-11-24	2023-11-23

Maximum Conducted Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RFTest software	/	V1.00	/	/	/
RF Control Unit	Techy	TR1029-1	/	2022-11-24	2023-11-23
RF Sensor Unit	Techy	TR1029-2	/	2022-11-24	2023-11-23
Programmable constant temperature and humidity box	ZZCKONG	ZZ-K02A	20210928007	2022-11-24	2023-11-23
Adjustable Direct Current Regulated Power Supply	Dongguan Tongmen Electronic Technology Co., LTD	etm-6050c	20211026123	2022-11-24	2023-11-23
WIDEBAND RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMW500	161997	2022-11-24	2023-11-23
MXA Signal Analyzer	KEYSIGHT	N9020A	MY50410020	2022-11-24	2023-11-23

Power Spectral Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RFTest software	/	V1.00	/	/	/

RF Control Unit	Techy	TR1029-1	/	2022-11-24	2023-11-23
RF Sensor Unit	Techy	TR1029-2	/	2022-11-24	2023-11-23
Programmable constant temperature and humidity box	ZZCKONG	ZZ-K02A	20210928007	2022-11-24	2023-11-23
Adjustable Direct Current Regulated Power Supply	Dongguan Tongmen Electronic Technology Co., LTD	etm-6050c	20211026123	2022-11-24	2023-11-23
WIDEBAND RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMW500	161997	2022-11-24	2023-11-23
MXA Signal Analyzer	KEYSIGHT	N9020A	MY50410020	2022-11-24	2023-11-23

Emissions in non-restricted frequency bands

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RFTest software	/	V1.00	/	/	/
RF Control Unit	Techy	TR1029-1	/	2022-11-24	2023-11-23
RF Sensor Unit	Techy	TR1029-2	/	2022-11-24	2023-11-23
Programmable constant temperature and humidity box	ZZCKONG	ZZ-K02A	20210928007	2022-11-24	2023-11-23
Adjustable Direct Current Regulated Power Supply	Dongguan Tongmen Electronic Technology Co., LTD	etm-6050c	20211026123	2022-11-24	2023-11-23
WIDEBAND RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMW500	161997	2022-11-24	2023-11-23
MXA Signal Analyzer	KEYSIGHT	N9020A	MY50410020	2022-11-24	2023-11-23

Band edge emissions (Radiated)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2022-03-26	2023-03-25
Preamplifier	SCHWARZBECK	BBV9744	00246	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMAM-10m	21101566	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-10m	21101570	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMAM-1m	21101568	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-1m	21101576	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-2.5m	21101573	2022-11-24	2023-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Horn Antenna	SCHWARZBECK	BBHA9170	01157	2021-11-28	2023-11-27
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI7	101032	2022-11-24	2023-11-23
SIGNAL ANALYZER	ROHDE&SCHWARZ	FSQ40	100010	2022-11-24	2023-11-23

POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Broadband Preamplifier	SCHWARZBECK	BBV9718D	00008	2022-03-26	2023-03-25
Horn Antenna	SCHWARZBECK	BBHA9120D	2597	2022-05-22	2024-05-21
EZ EMC	Frad	FA-03A2 RE+	/	/	/
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2021-11-28	2023-11-27

Emissions in restricted frequency bands (below 1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2022-03-26	2023-03-25
Preamplifier	SCHWARZBECK	BBV9744	00246	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMASMAM-10m	21101566	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-10m	21101570	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMASMAM-1m	21101568	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-1m	21101576	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-2.5m	21101573	2022-11-24	2023-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Horn Antenna	SCHWARZBECK	BBHA9170	01157	2021-11-28	2023-11-27
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI7	101032	2022-11-24	2023-11-23
SIGNAL ANALYZER	ROHDE&SCHWARZ	FSQ40	100010	2022-11-24	2023-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Broadband Preamplifier	SCHWARZBECK	BBV9718D	00008	2022-03-26	2023-03-25
Horn Antenna	SCHWARZBECK	BBHA9120D	2597	2022-05-22	2024-05-21
EZ EMC	Frad	FA-03A2 RE+	/	/	/
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2021-11-28	2023-11-27

Emissions in restricted frequency bands (above 1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2022-03-26	2023-03-25
Preamplifier	SCHWARZBECK	BBV9744	00246	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMASMAM-10m	21101566	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-10m	21101570	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMASMAM-1m	21101568	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-1m	21101576	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-2.5m	21101573	2022-11-24	2023-11-23

POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Horn Antenna	SCHWARZBECK	BBHA9170	01157	2021-11-28	2023-11-27
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI7	101032	2022-11-24	2023-11-23
SIGNAL ANALYZER	ROHDE&SCHWARZ	FSQ40	100010	2022-11-24	2023-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Broadband Preamplifier	SCHWARZBECK	BBV9718D	00008	2022-03-26	2023-03-25
Horn Antenna	SCHWARZBECK	BBHA9120D	2597	2022-05-22	2024-05-21
EZ EMC	Frad	FA-03A2 RE+	/	/	/
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2021-11-28	2023-11-27

4.2 Test Auxiliary Equipment

The EUT was tested as an independent device.

4.3 Test Modes

No.	Test Modes	Description
TM1	TX mode	Keep the EUT connect to AC power line and works in continuously transmitting mode with GFSK modulation.

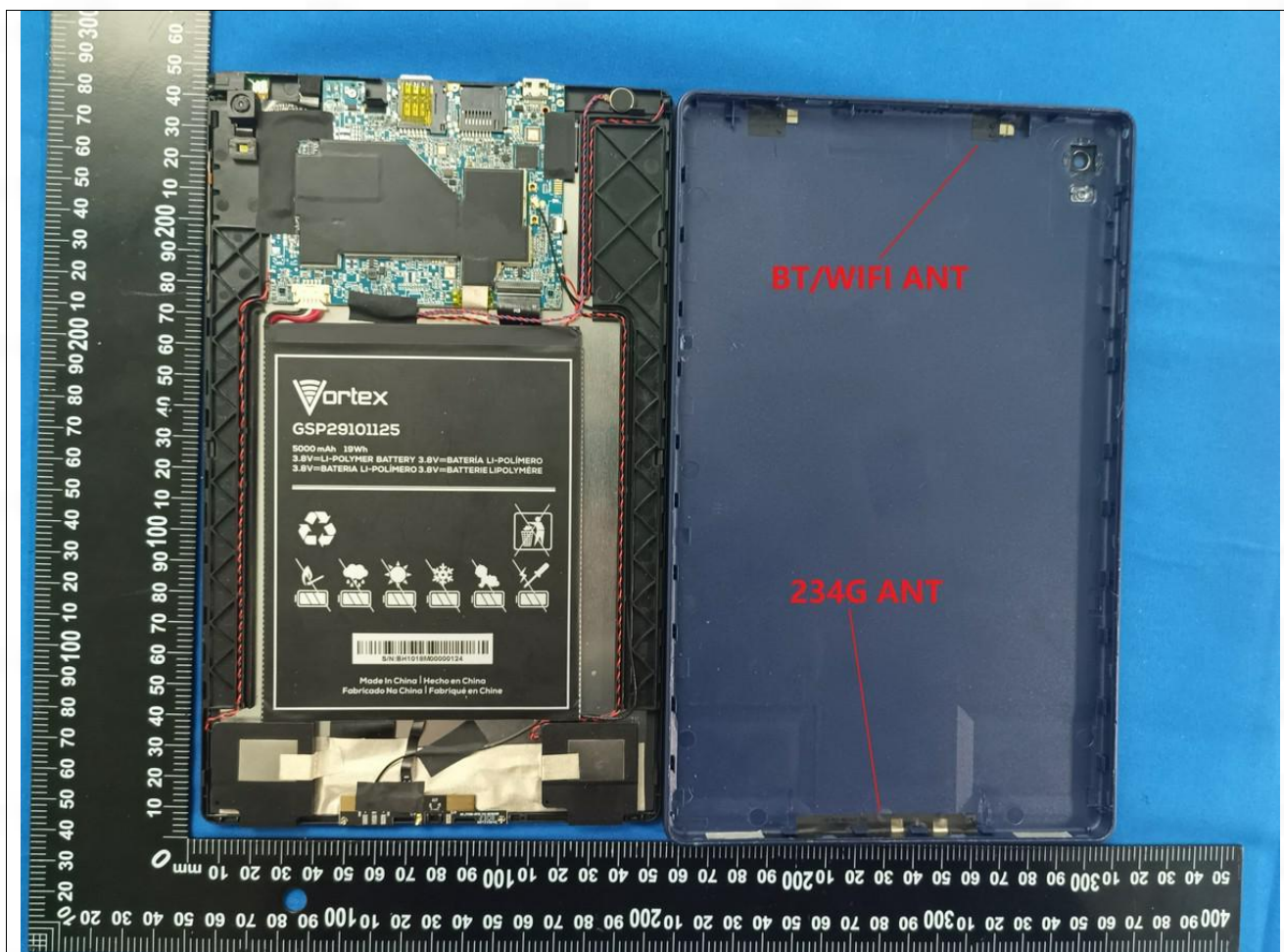
5 Evaluation Results (Evaluation)

5.1 Antenna requirement

Test Requirement:

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.

5.1.1 Conclusion:



6 Radio Spectrum Matter Test Results (RF)

6.1 Conducted Emission at AC power line

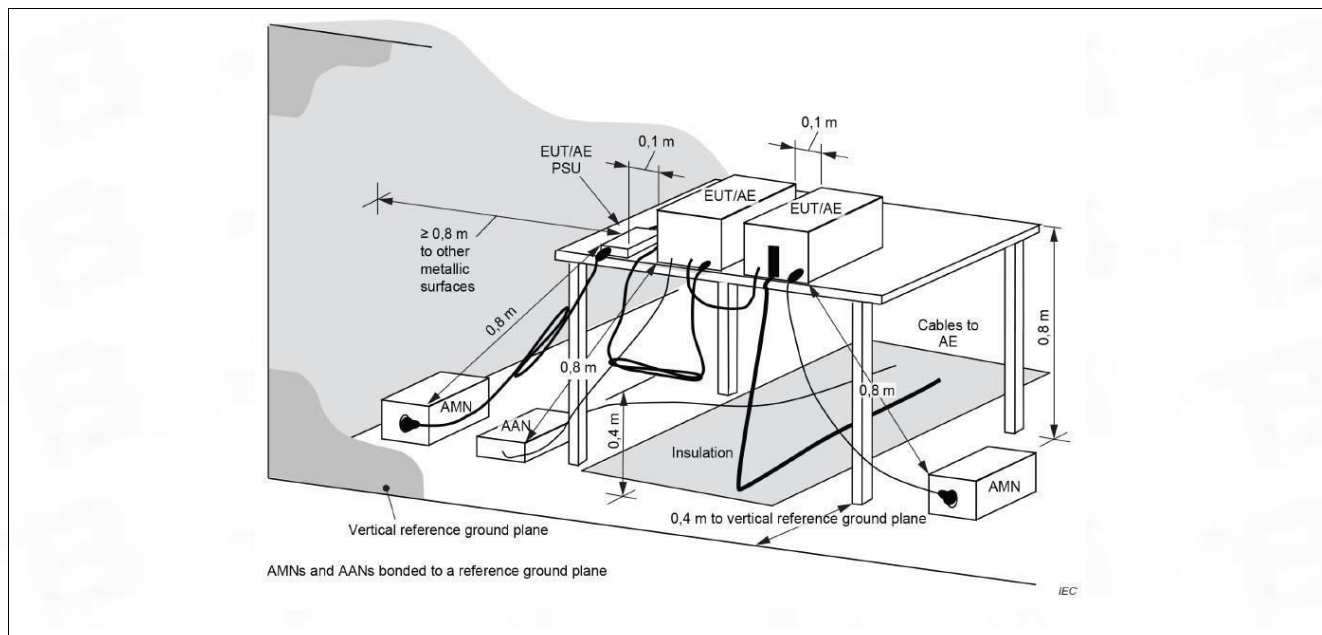
Test Requirement:	Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).		
Test Method:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50

*Decreases with the logarithm of the frequency.

6.1.1 E.U.T. Operation:

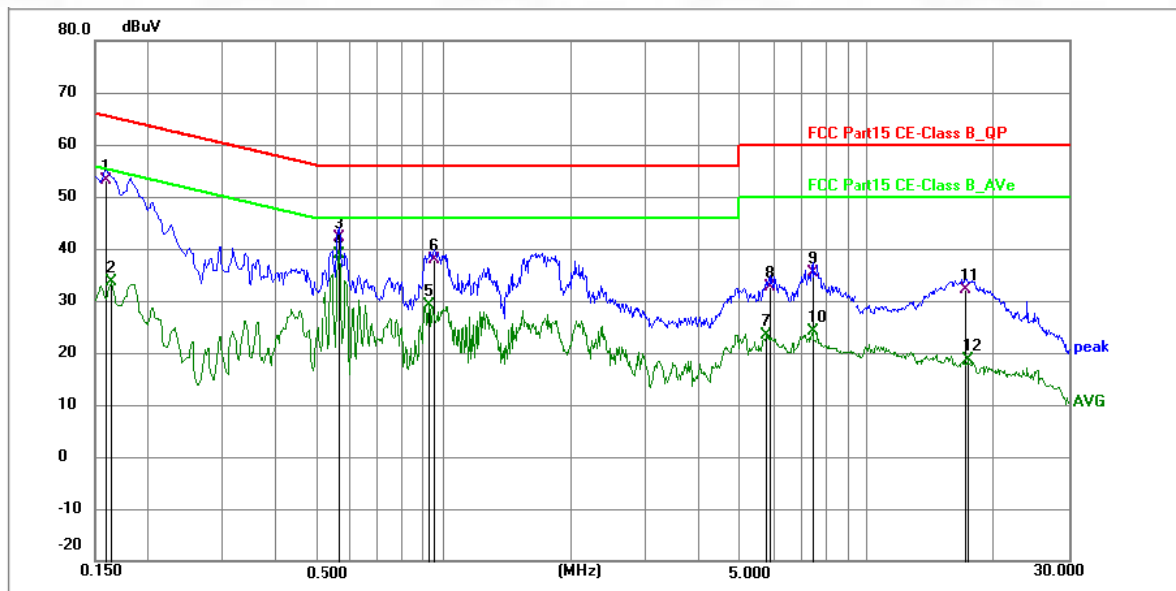
Operating Environment:	
Temperature:	22.6 °C
Humidity:	47.9 %
Atmospheric Pressure:	1010 mbar

6.1.2 Test Setup Diagram:



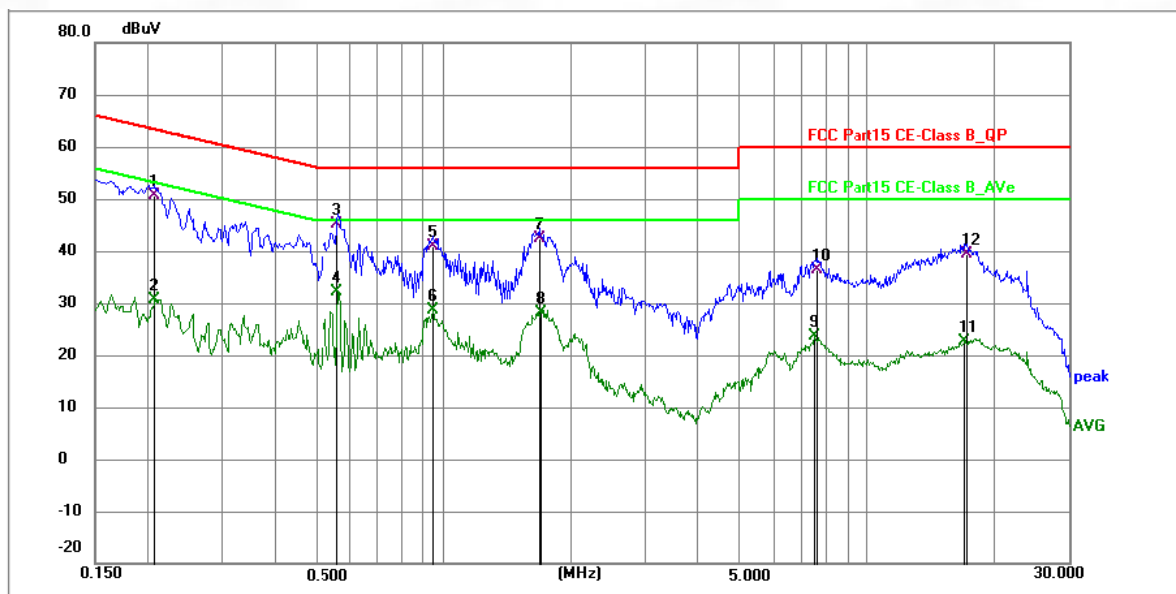
6.1.3 Test Data:

TM1 / Line: Line / Band: 2.4G / BW: 2 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	42.69	10.53	53.22	65.52	-12.30	QP	P	
2	0.1635	23.15	10.54	33.69	55.28	-21.59	AVG	P	
3	0.5685	31.37	10.65	42.02	56.00	-13.98	QP	P	
4 *	0.5685	28.34	10.65	38.99	46.00	-7.01	AVG	P	
5	0.9240	18.31	10.77	29.08	46.00	-16.92	AVG	P	
6	0.9555	27.15	10.77	37.92	56.00	-18.08	QP	P	
7	5.7750	12.58	10.71	23.29	50.00	-26.71	AVG	P	
8	5.9054	21.95	10.71	32.66	60.00	-27.34	QP	P	
9	7.4175	24.55	10.77	35.32	60.00	-24.68	QP	P	
10	7.4175	13.28	10.77	24.05	50.00	-25.95	AVG	P	
11	17.1780	21.20	10.96	32.16	60.00	-27.84	QP	P	
12	17.3580	7.65	10.97	18.62	50.00	-31.38	AVG	P	

TM1 / Line: Neutral / Band: 2.4G / BW: 2 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2071	39.92	10.63	50.55	63.32	-12.77	QP	P	
2	0.2071	19.93	10.63	30.56	53.32	-22.76	AVG	P	
3 *	0.5639	34.42	10.65	45.07	56.00	-10.93	QP	P	
4	0.5639	21.56	10.65	32.21	46.00	-13.79	AVG	P	
5	0.9465	30.12	10.77	40.89	56.00	-15.11	QP	P	
6	0.9465	17.79	10.77	28.56	46.00	-17.44	AVG	P	
7	1.6845	31.71	10.72	42.43	56.00	-13.57	QP	P	
8	1.7020	17.30	10.72	28.02	46.00	-17.98	AVG	P	
9	7.5075	12.77	10.78	23.55	50.00	-26.45	AVG	P	
10	7.6154	25.72	10.78	36.50	60.00	-23.50	QP	P	
11	17.1015	11.84	10.90	22.74	50.00	-27.26	AVG	P	
12	17.2905	28.46	10.92	39.38	60.00	-20.62	QP	P	

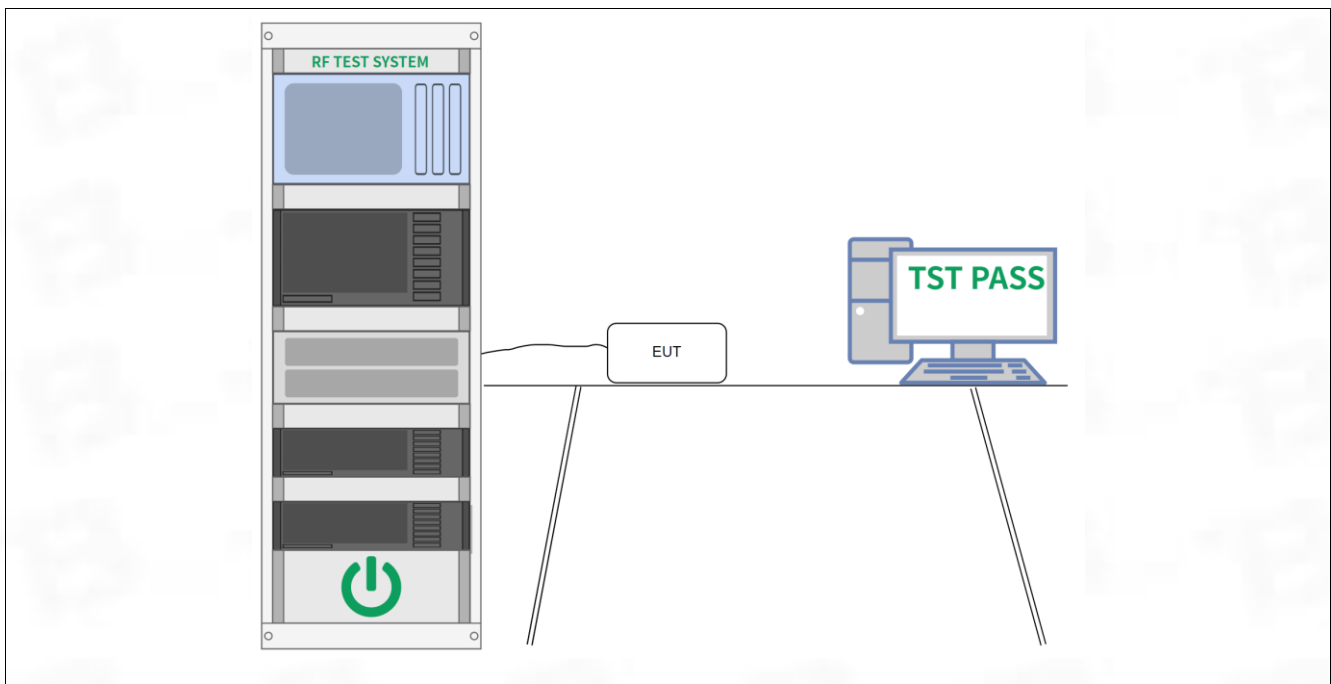
6.2 Occupied Bandwidth

Test Requirement:	Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	DTS bandwidth
Test Limit:	Section (a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Procedure:	a) Set RBW = 100 kHz. b) Set the VBW $\geq [3 \times \text{RBW}]$. 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.

6.2.1 E.U.T. Operation:

Operating Environment:	
Temperature:	24.9 °C
Humidity:	51 %
Atmospheric Pressure:	1010 mbar

6.2.2 Test Setup Diagram:



6.2.3 Test Data:

Please Refer to Appendix for Details.

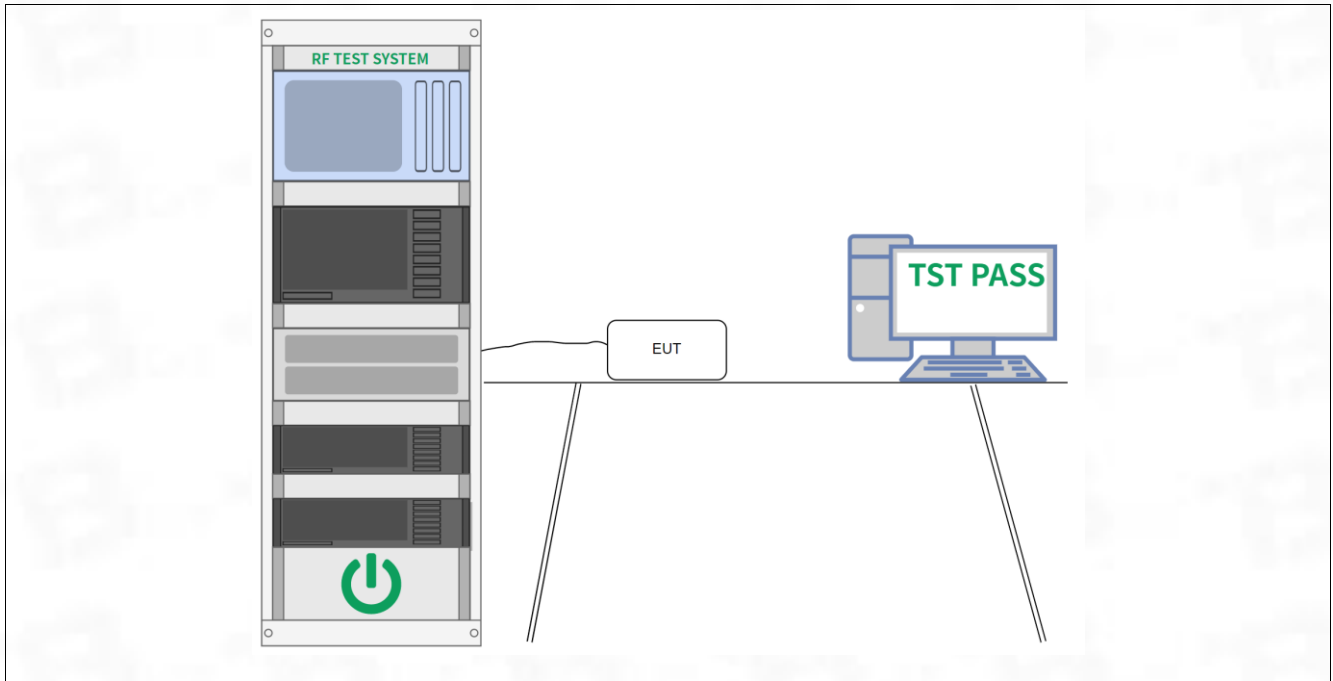
6.3 Maximum Conducted Output Power

Test Requirement:	For 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.
Test Method:	Maximum peak conducted output power
Test Limit:	For 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.
Procedure:	ANSI C63.10-2013, section 11.9.1 Maximum peak conducted output power

6.3.1 E.U.T. Operation:

Operating Environment:	
Temperature:	24.9 °C
Humidity:	51 %
Atmospheric Pressure:	1010 mbar

6.3.2 Test Setup Diagram:



6.3.3 Test Data:

Please Refer to Appendix for Details.

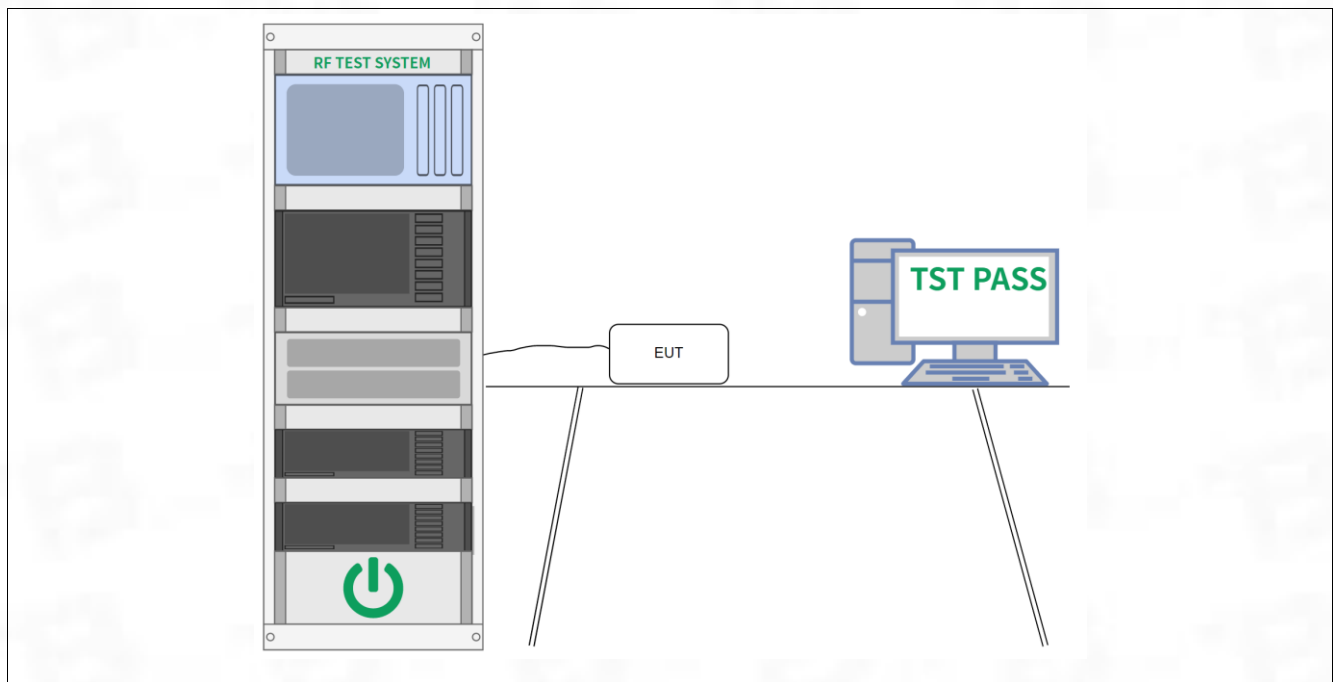
6.4 Power Spectral Density

Test Requirement:	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.
Test Method:	Maximum power spectral density level in the fundamental emission
Test Limit:	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.

6.4.1 E.U.T. Operation:

Operating Environment:	
Temperature:	24.9 °C
Humidity:	51 %
Atmospheric Pressure:	1010 mbar

6.4.2 Test Setup Diagram:



6.4.3 Test Data:

Please Refer to Appendix for Details.

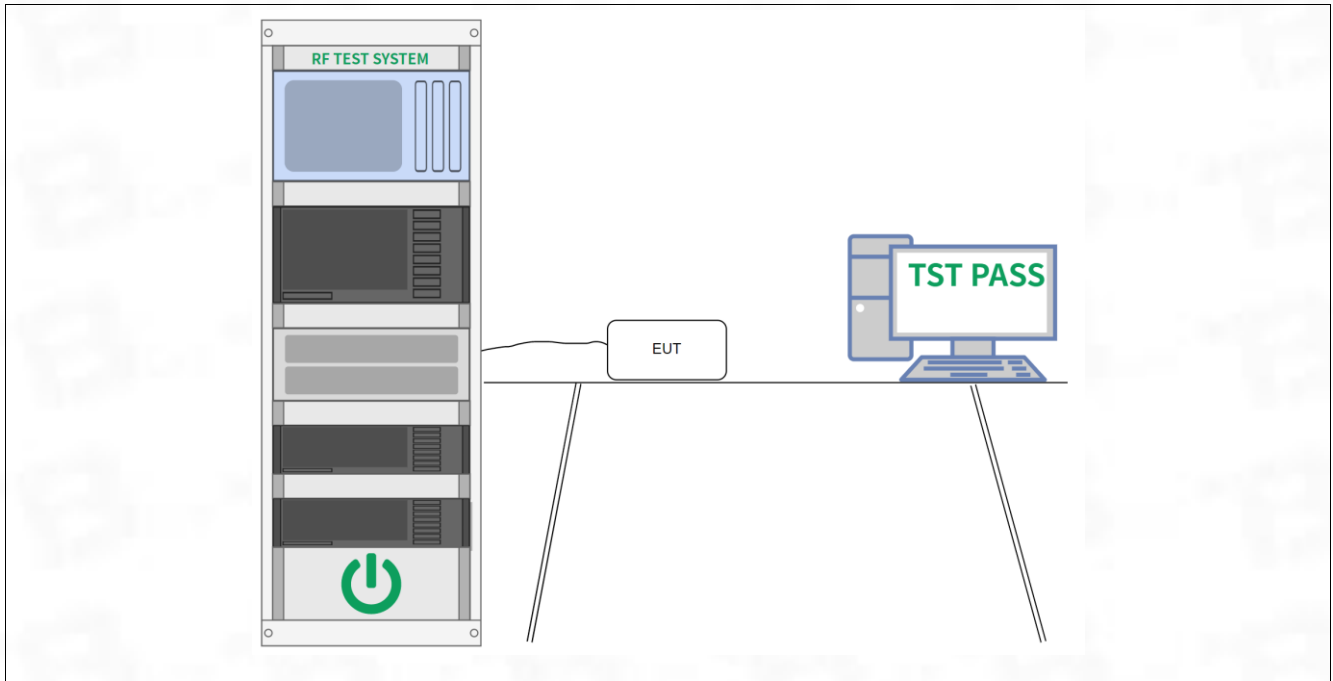
6.5 Emissions in non-restricted frequency bands

Test Requirement:	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.
Test Method:	Emissions in nonrestricted frequency bands
Test Limit:	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.
Procedure:	ANSI C63.10-2013 Section 11.11.1, Section 11.11.2, Section 11.11.3

6.5.1 E.U.T. Operation:

Operating Environment:	
Temperature:	24.9 °C
Humidity:	51 %
Atmospheric Pressure:	1010 mbar

6.5.2 Test Setup Diagram:



6.5.3 Test Data:

Please Refer to Appendix for Details.

6.6 Band edge emissions (Radiated)

Test Requirement:	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)).`		
Test Method:	Radiated emissions tests		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** 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., §§ 15.231 and 15.241.			
Procedure:	ANSI C63.10-2013 section 6.6.4		

6.6.1 E.U.T. Operation:

Operating Environment:	
Temperature:	24.7 °C
Humidity:	48.1 %
Atmospheric Pressure:	1010 mbar

6.6.2 Test Data:

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	68.39	-30.59	37.80	74.00	-36.20	peak	P
2	2390.000	68.56	-30.49	38.07	74.00	-35.93	peak	P
3 *	2400.000	79.42	-30.48	48.94	74.00	-25.06	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	66.39	-30.59	35.80	74.00	-38.20	peak	P
2	2390.000	66.56	-30.49	36.07	74.00	-37.93	peak	P
3 *	2400.000	71.42	-30.48	40.94	74.00	-33.06	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	70.68	-30.39	40.29	74.00	-33.71	peak	P
2	2500.000	68.22	-30.37	37.85	74.00	-36.15	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	72.18	-30.39	41.79	74.00	-32.21	peak	P
2	2500.000	67.22	-30.37	36.85	74.00	-37.15	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	68.11	-30.59	37.52	74.00	-36.48	peak	P
2	2390.000	68.02	-30.49	37.53	74.00	-36.47	peak	P
3 *	2400.000	80.57	-30.48	50.09	74.00	-23.91	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	68.04	-30.59	37.45	74.00	-36.55	peak	P
2	2390.000	68.72	-30.49	38.23	74.00	-35.77	peak	P
3 *	2400.000	82.41	-30.48	51.93	74.00	-22.07	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	75.38	-30.39	44.99	74.00	-29.01	peak	P
2	2500.000	68.62	-30.37	38.25	74.00	-35.75	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	74.88	-30.39	44.49	74.00	-29.51	peak	P
2	2500.000	67.62	-30.37	37.25	74.00	-36.75	peak	P

6.7 Emissions in restricted frequency bands (below 1GHz)

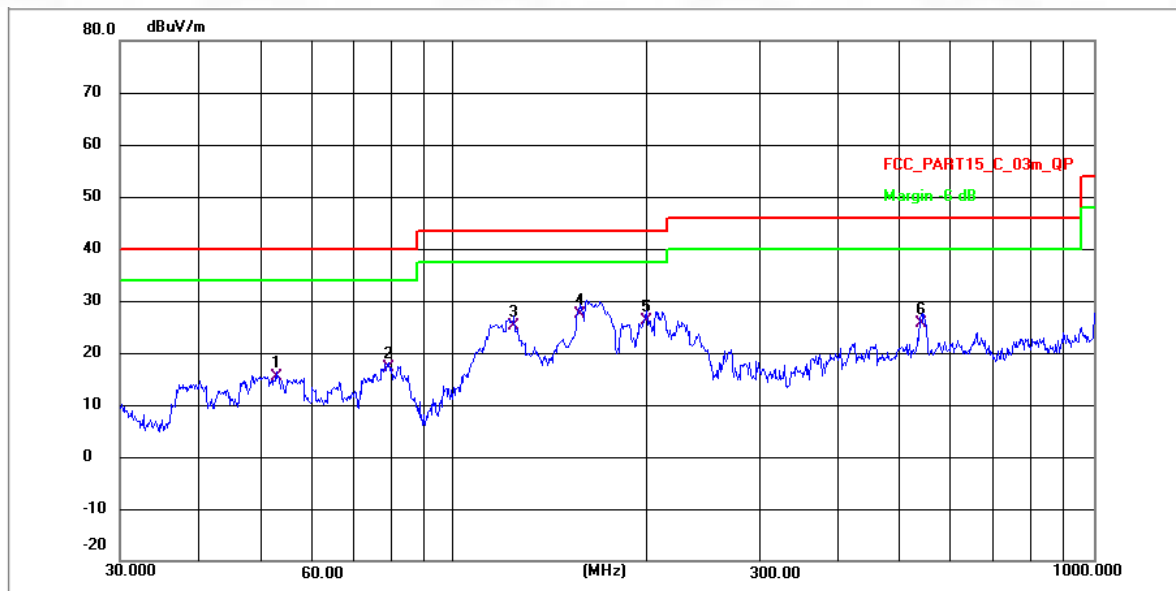
Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Method:	Radiated emissions tests		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** 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., §§ 15.231 and 15.241.			
Procedure:	ANSI C63.10-2013 section 6.6.4		

6.7.1 E.U.T. Operation:

Operating Environment:	
Temperature:	25 °C
Humidity:	51.6 %
Atmospheric Pressure:	1010 mbar

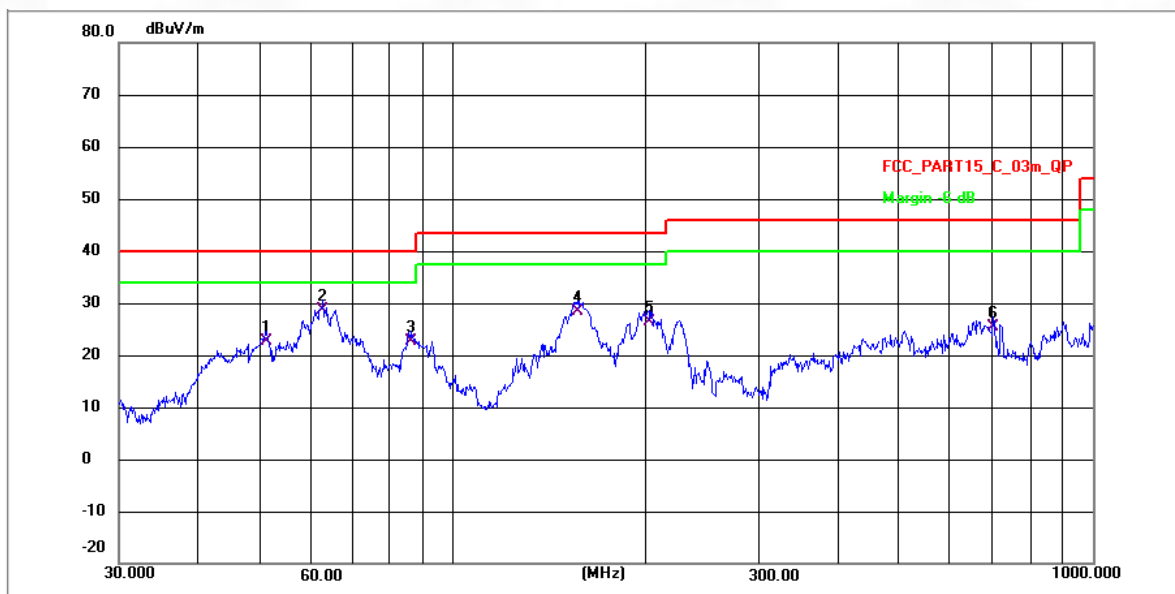
6.7.2 Test Data:

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: L



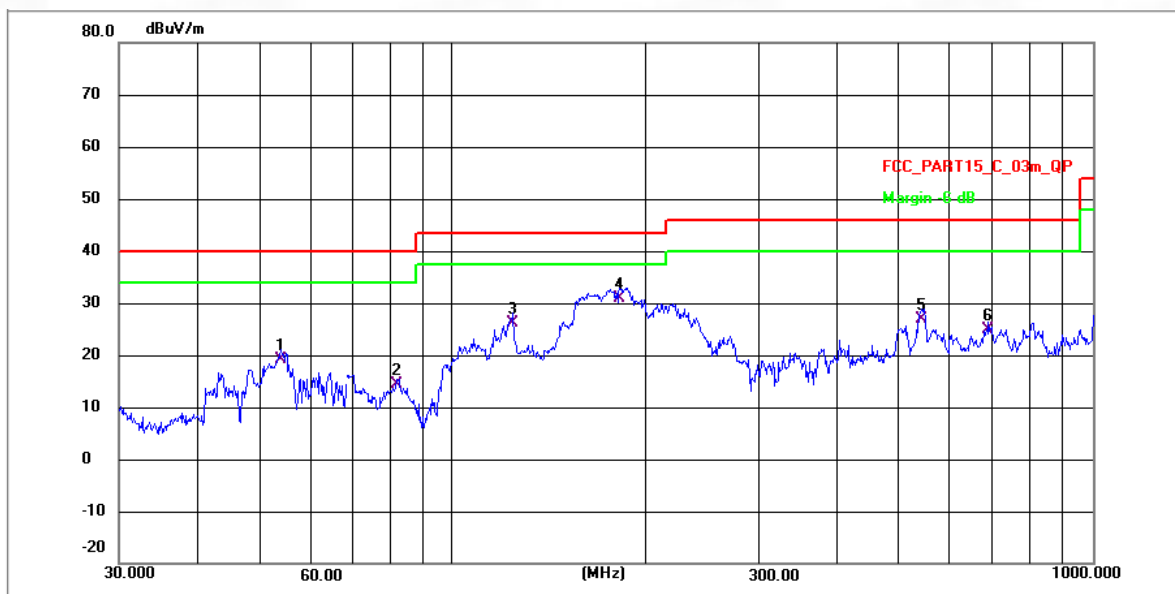
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	52.5752	33.33	-17.95	15.38	40.00	-24.62	QP	P
2	79.3816	35.09	-17.97	17.12	40.00	-22.88	QP	P
3	124.5690	53.08	-28.00	25.08	43.50	-18.42	QP	P
4 *	157.5586	54.99	-27.69	27.30	43.50	-16.20	QP	P
5	200.6880	53.50	-27.36	26.14	43.50	-17.36	QP	P
6	541.3721	48.10	-22.45	25.65	46.00	-20.35	QP	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: L



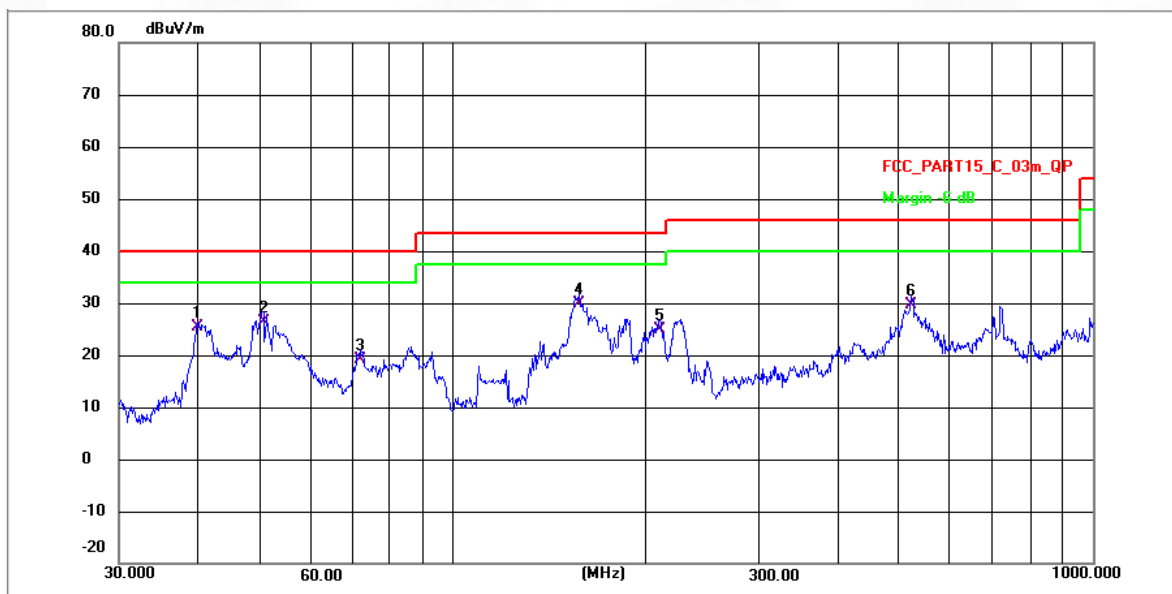
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	51.0313	42.62	-20.00	22.62	40.00	-17.38	QP	P
2 *	62.6505	48.54	-19.87	28.67	40.00	-11.33	QP	P
3	86.2000	53.24	-30.52	22.72	40.00	-17.28	QP	P
4	156.7323	56.09	-27.71	28.38	43.50	-15.12	QP	P
5	202.8103	53.78	-27.28	26.50	43.50	-17.00	QP	P
6	700.5317	49.88	-24.48	25.40	46.00	-20.60	QP	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: M



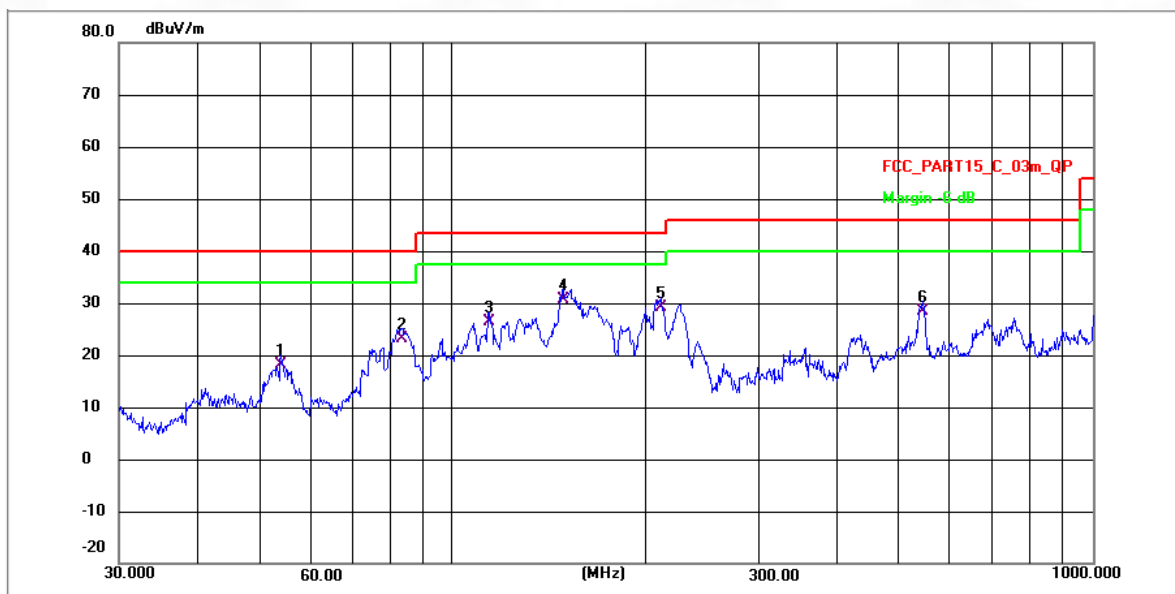
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	53.8817	37.04	-17.94	19.10	40.00	-20.90	QP	P
2	81.9268	32.27	-17.77	14.50	40.00	-25.50	QP	P
3	124.5690	54.08	-28.00	26.08	43.50	-17.42	QP	P
4 *	182.5592	58.52	-27.55	30.97	43.50	-12.53	QP	P
5	542.3224	49.35	-22.45	26.90	46.00	-19.10	QP	P
6	687.1506	49.26	-24.31	24.95	46.00	-21.05	QP	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: M



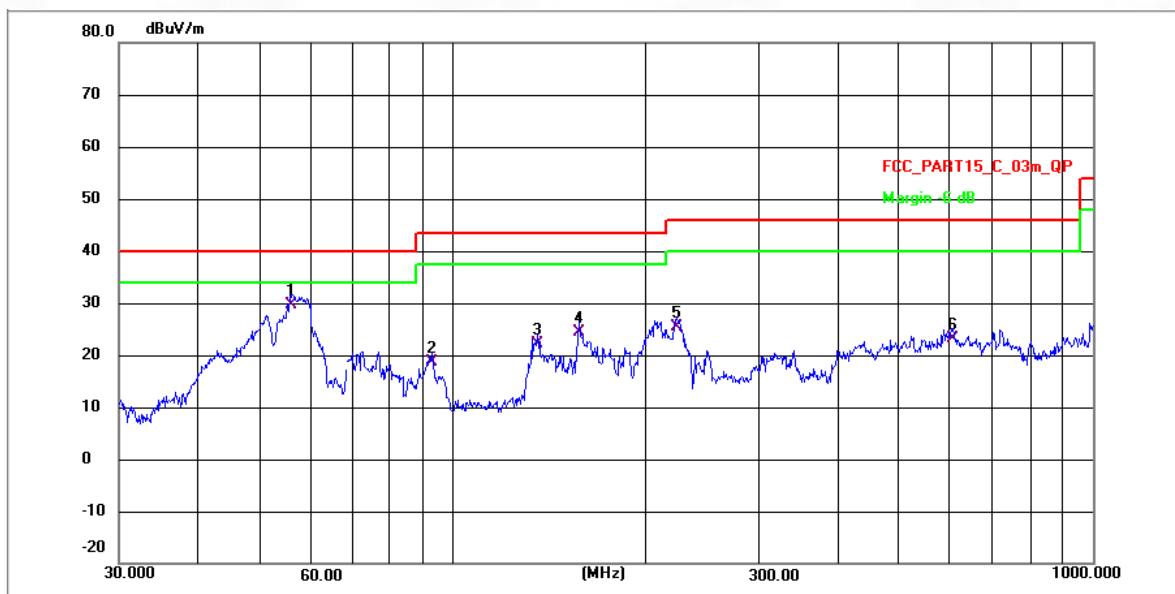
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	39.9941	45.49	-20.12	25.37	40.00	-14.63	QP	P
2	50.5860	46.34	-20.00	26.34	40.00	-13.66	QP	P
3	71.7061	39.02	-19.83	19.19	40.00	-20.81	QP	P
4 *	157.8352	57.55	-27.69	29.86	43.50	-13.64	QP	P
5	210.4166	51.82	-26.96	24.86	43.50	-18.64	QP	P
6	520.8881	51.77	-22.20	29.57	46.00	-16.43	QP	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	53.8817	36.04	-17.94	18.10	40.00	-21.90	QP	P
2	83.3756	54.20	-30.95	23.25	40.00	-16.75	QP	P
3	114.5146	54.57	-28.14	26.43	43.50	-17.07	QP	P
4 *	148.7015	58.39	-27.76	30.63	43.50	-12.87	QP	P
5	210.7860	56.09	-26.94	29.15	43.50	-14.35	QP	P
6	544.2273	50.91	-22.48	28.43	46.00	-17.57	QP	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	55.6092	49.66	-19.93	29.73	40.00	-10.27	QP	P
2	92.7871	48.24	-29.49	18.75	43.50	-24.75	QP	P
3	135.7440	49.93	-27.87	22.06	43.50	-21.44	QP	P
4	157.8352	52.05	-27.69	24.36	43.50	-19.14	QP	P
5	224.5192	51.76	-26.36	25.40	46.00	-20.60	QP	P
6	604.5982	46.32	-23.20	23.12	46.00	-22.88	QP	P

6.8 Emissions in restricted frequency bands (above 1GHz)

Test Requirement:	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)).`		
Test Method:	Radiated emissions tests		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** 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., §§ 15.231 and 15.241.			
Procedure:	ANSI C63.10-2013 section 6.6.4		

6.8.1 E.U.T. Operation:

Operating Environment:	
Temperature:	25 °C
Humidity:	51.6 %
Atmospheric Pressure:	1010 mbar

6.8.2 Test Data:

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2107.341	68.50	-30.81	37.69	74.00	-36.31	peak	P
2	2929.786	70.14	-29.63	40.51	74.00	-33.49	peak	P
3	3571.264	68.46	-29.04	39.42	74.00	-34.58	peak	P
4	6752.803	71.91	-25.15	46.76	74.00	-27.24	peak	P
5	9646.832	72.27	-23.52	48.75	74.00	-25.25	peak	P
6 *	11460.378	74.99	-23.10	51.89	74.00	-22.11	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2049.079	68.38	-30.87	37.51	74.00	-36.49	peak	P
2	2866.129	65.92	-29.74	36.18	74.00	-37.82	peak	P
3	4235.289	64.67	-28.90	35.77	74.00	-38.23	peak	P
4	7558.571	70.59	-24.87	45.72	74.00	-28.28	peak	P
5	10826.051	68.45	-23.82	44.63	74.00	-29.37	peak	P
6 *	15164.736	71.08	-20.76	50.32	74.00	-23.68	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: M

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2073.506	68.24	-30.85	37.39	74.00	-36.61	peak	P
2	2660.941	63.46	-30.09	33.37	74.00	-40.63	peak	P
3	4636.317	69.43	-28.40	41.03	74.00	-32.97	peak	P
4	6528.259	68.88	-25.35	43.53	74.00	-30.47	peak	P
5	10103.435	73.58	-24.33	49.25	74.00	-24.75	peak	P
6 *	15523.961	70.91	-21.50	49.41	74.00	-24.59	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: M

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2198.172	69.97	-30.71	39.26	74.00	-34.74	peak	P
2	3342.537	64.43	-29.20	35.23	74.00	-38.77	peak	P
3	5263.560	61.83	-27.15	34.68	74.00	-39.32	peak	P
4	7946.135	66.67	-25.45	41.22	74.00	-32.78	peak	P
5	11982.023	72.08	-22.22	49.86	74.00	-24.14	peak	P
6 *	15029.464	71.62	-20.47	51.15	74.00	-22.85	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2107.341	70.00	-30.81	39.19	74.00	-34.81	peak	P
2	2735.019	66.01	-29.96	36.05	74.00	-37.95	peak	P
3	3919.600	68.50	-29.01	39.49	74.00	-34.51	peak	P
4	6677.110	69.40	-25.22	44.18	74.00	-29.82	peak	P
5 *	9736.471	72.17	-23.71	48.46	74.00	-25.54	peak	P
6	13599.128	66.23	-20.99	45.24	74.00	-28.76	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2107.950	67.27	-30.81	36.46	74.00	-37.54	peak	P
2	3525.115	70.11	-29.05	41.06	74.00	-32.94	peak	P
3	5998.158	64.97	-25.33	39.64	74.00	-34.36	peak	P
4	7322.033	68.85	-24.83	44.02	74.00	-29.98	peak	P
5 *	10447.929	75.79	-24.49	51.30	74.00	-22.70	peak	P
6	13427.275	67.26	-21.02	46.24	74.00	-27.76	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2091.564	65.05	-30.82	34.23	74.00	-39.77	peak	P
2	2943.366	61.87	-29.61	32.26	74.00	-41.74	peak	P
3	4398.729	66.08	-28.83	37.25	74.00	-36.75	peak	P
4 *	7558.571	74.09	-24.87	49.22	74.00	-24.78	peak	P
5	12376.253	65.78	-21.75	44.03	74.00	-29.97	peak	P
6	15713.564	64.22	-21.54	42.68	74.00	-31.32	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2130.614	70.23	-30.79	39.44	74.00	-34.56	peak	P
2	2838.101	66.28	-29.79	36.49	74.00	-37.51	peak	P
3	3589.893	66.23	-29.04	37.19	74.00	-36.81	peak	P
4	6778.224	67.82	-25.13	42.69	74.00	-31.31	peak	P
5 *	10983.644	73.98	-23.48	50.50	74.00	-23.50	peak	P
6	14079.082	69.08	-21.11	47.97	74.00	-26.03	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: M

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2264.598	69.43	-30.63	38.80	74.00	-35.20	peak	P
2	2882.746	68.56	-29.71	38.85	74.00	-35.15	peak	P
3	4955.008	63.29	-27.50	35.79	74.00	-38.21	peak	P
4	8120.270	71.35	-25.48	45.87	74.00	-28.13	peak	P
5 *	11769.214	74.17	-22.60	51.57	74.00	-22.43	peak	P
6	15546.413	68.46	-21.51	46.95	74.00	-27.05	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: M

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2107.950	68.27	-30.81	37.46	74.00	-36.54	peak	P
2	3975.508	66.10	-29.01	37.09	74.00	-36.91	peak	P
3	6686.766	72.47	-25.21	47.26	74.00	-26.74	peak	P
4	9555.255	72.30	-23.32	48.98	74.00	-25.02	peak	P
5 *	14362.688	72.57	-21.17	51.40	74.00	-22.60	peak	P
6	17018.458	69.01	-18.21	50.80	74.00	-23.20	peak	P

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 2 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2103.081	68.06	-30.82	37.24	74.00	-36.76	peak	P
2	2890.254	70.68	-29.70	40.98	74.00	-33.02	peak	P
3	5116.558	67.16	-27.28	39.88	74.00	-34.12	peak	P
4	7639.839	74.10	-24.99	49.11	74.00	-24.89	peak	P
5	12484.036	73.12	-21.64	51.48	74.00	-22.52	peak	P
6 *	17680.308	69.50	-16.52	52.98	74.00	-21.02	peak	P

TM1 / Polarization: Vertical / Band: 2.4G / BW: 2 / CH: H

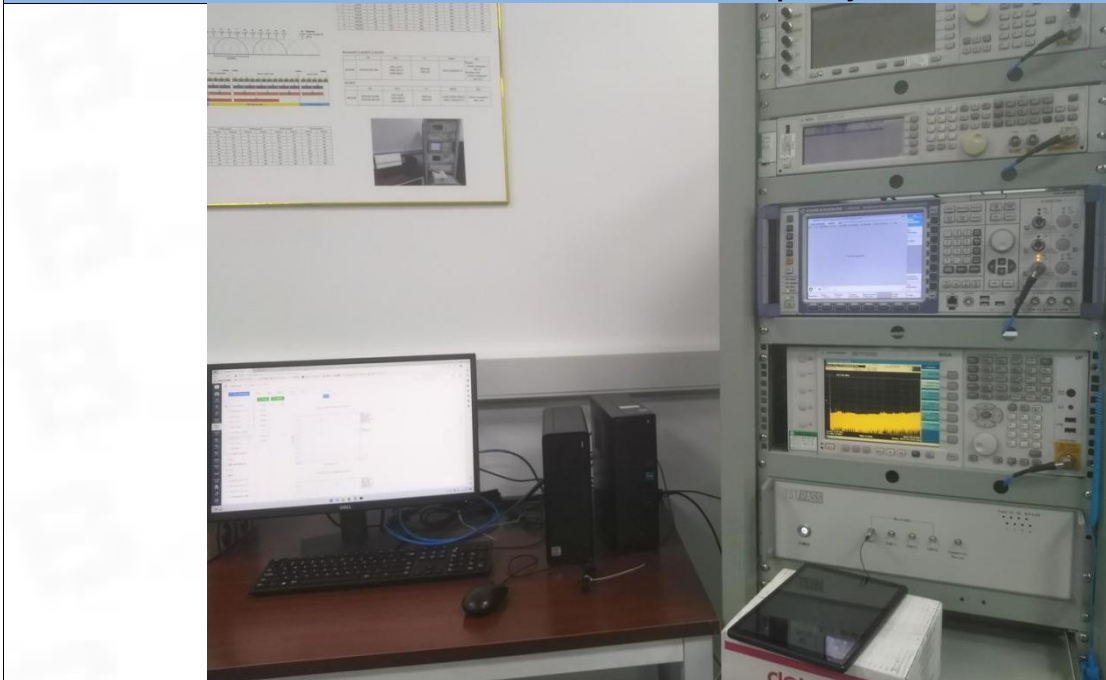
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2134.929	67.43	-30.78	36.65	74.00	-37.35	peak	P
2	4518.572	62.89	-28.73	34.16	74.00	-39.84	peak	P
3	6650.145	68.94	-25.25	43.69	74.00	-30.31	peak	P
4	9574.608	70.82	-23.36	47.46	74.00	-26.54	peak	P
5 *	11975.098	73.52	-22.23	51.29	74.00	-22.71	peak	P
6	15274.712	68.12	-21.00	47.12	74.00	-26.88	peak	P

7 Test Setup Photos

Conducted Emission at AC power line



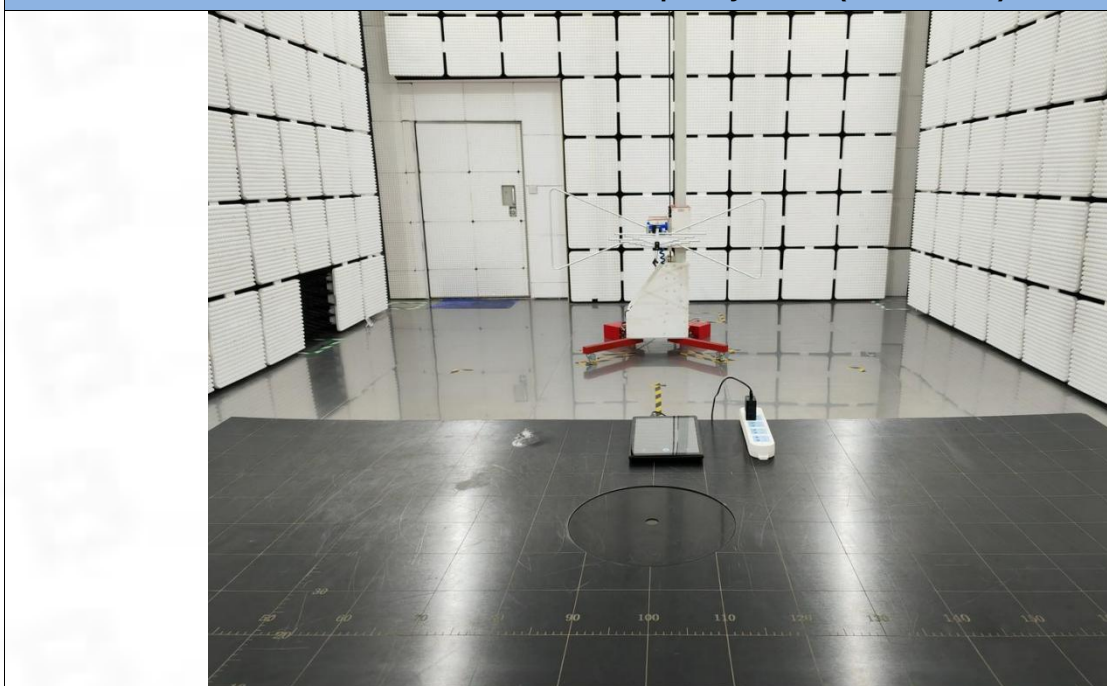
Occupied Bandwidth
Maximum Conducted Output Power
Power Spectral Density
Emissions in non-restricted frequency bands



Band edge emissions (Radiated)
Emissions in restricted frequency bands (above 1GHz)



Emissions in restricted frequency bands (below 1GHz)



8 EUT Constructional Details (EUT Photos)

Please refer to the report No.BTF-SZ230303R-020.

Appendix

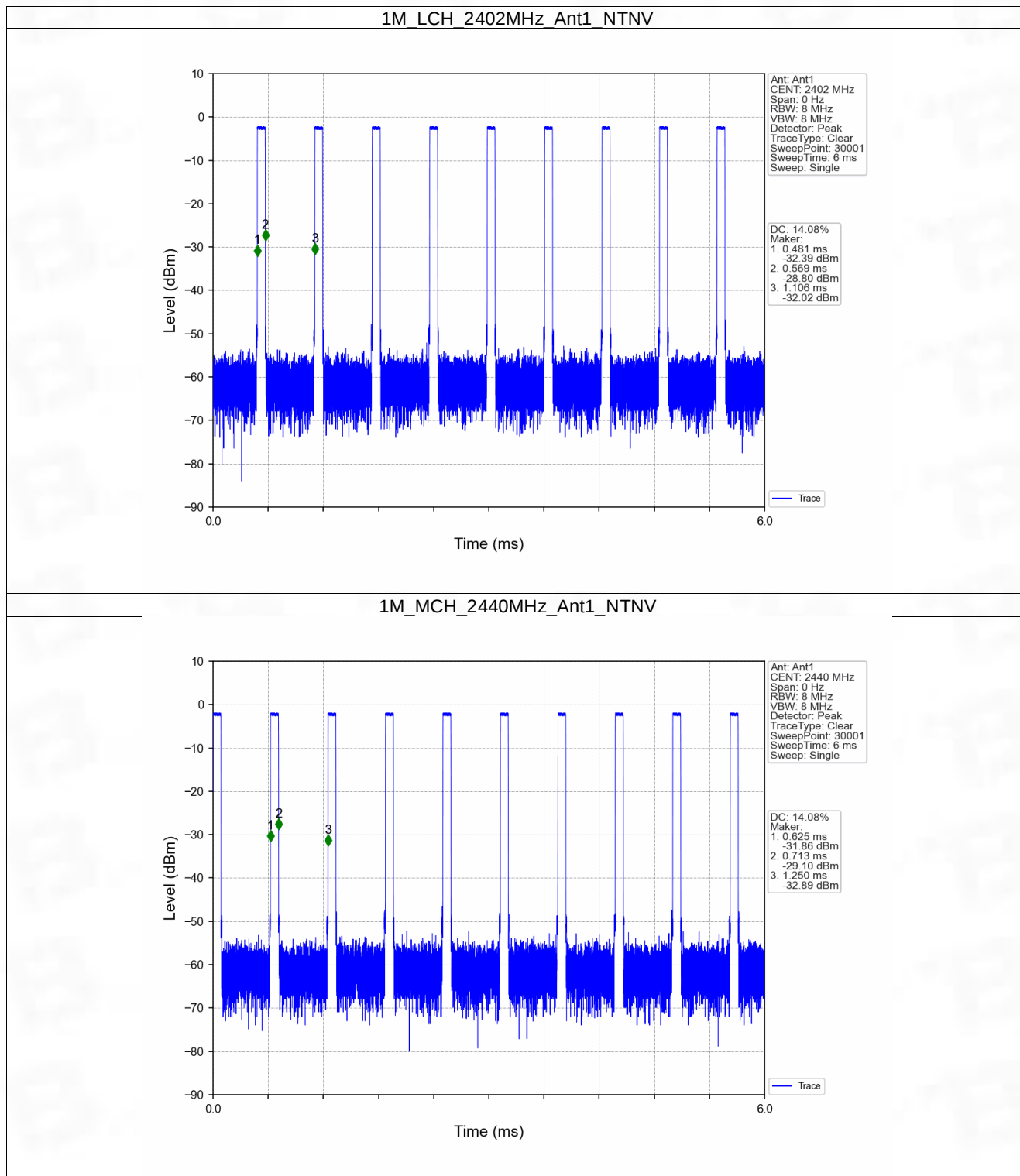
1. Duty Cycle

1.1 Ant1

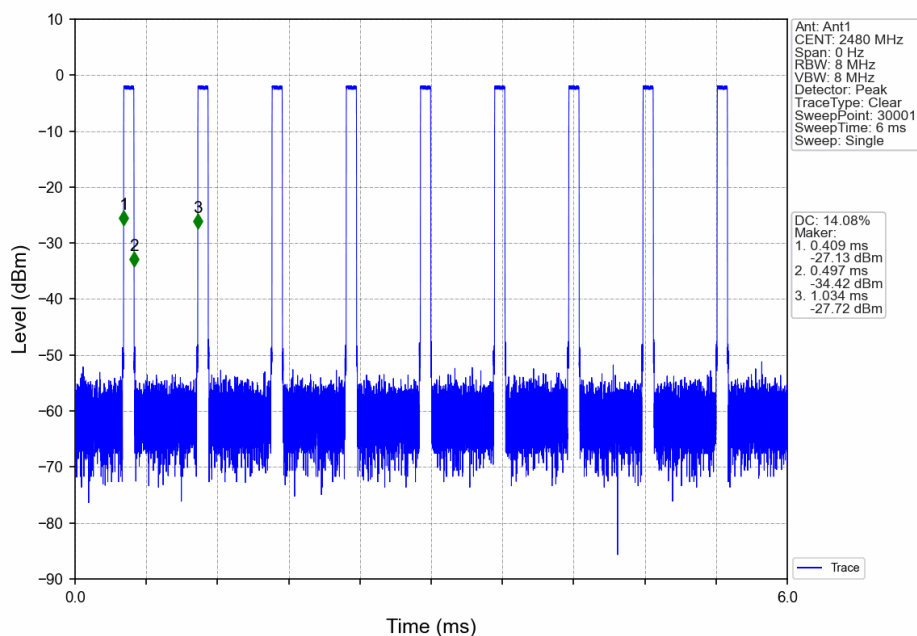
1.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.088	0.625	14.08	8.51	0.00
		2440	0.088	0.625	14.08	8.51	0.00
		2480	0.088	0.625	14.08	8.51	0.03
2M	SISO	2402	0.052	0.625	8.32	10.80	0.03
		2440	0.052	0.625	8.32	10.80	0.00
		2480	0.051	0.625	8.16	10.88	0.03

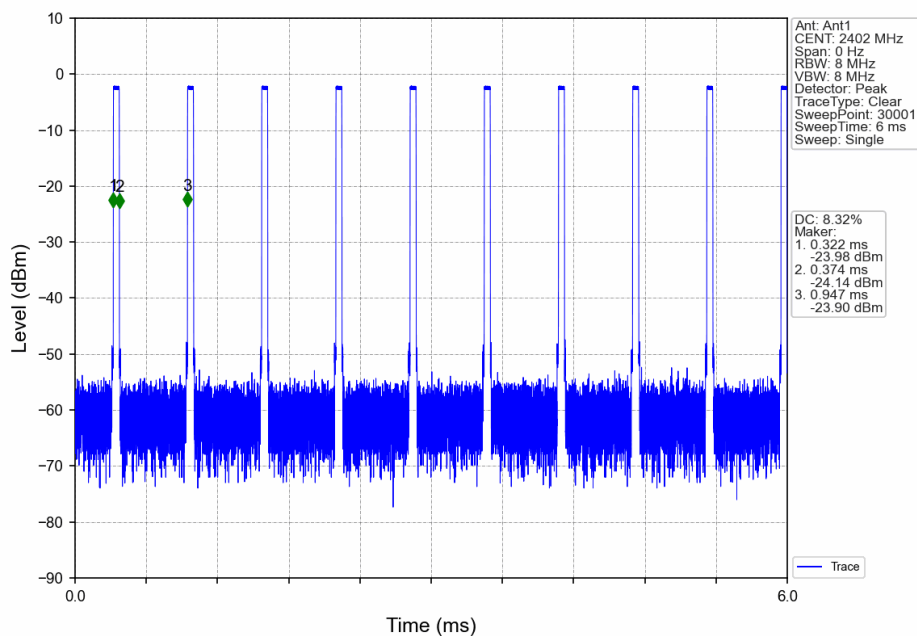
1.1.2 Test Graph



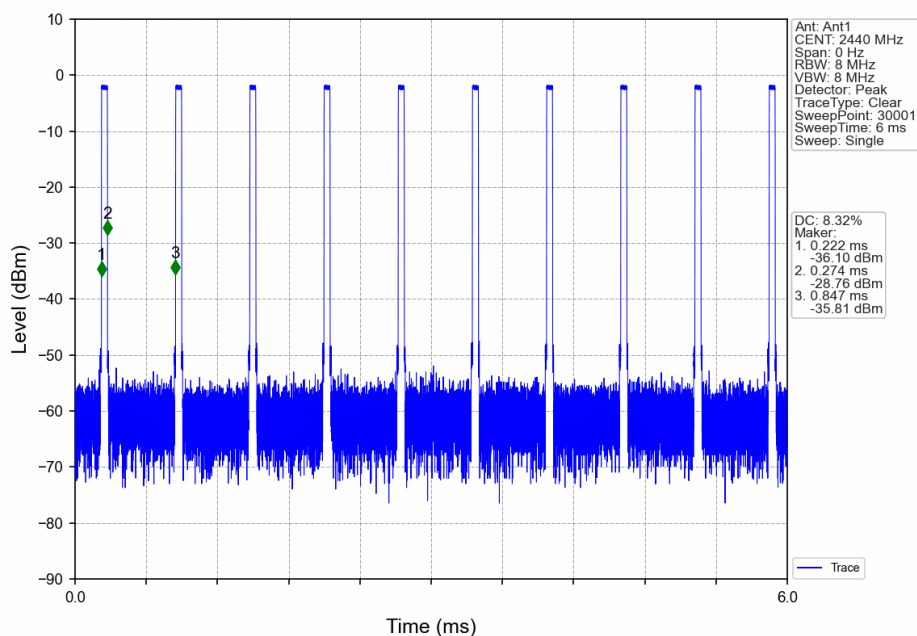
1M_HCH_2480MHz_Ant1_NTNV



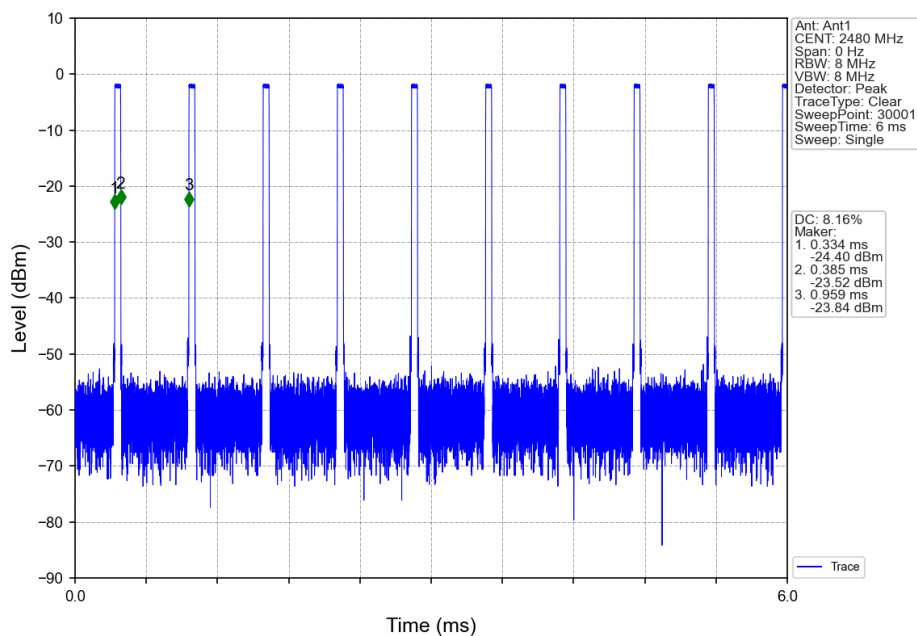
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



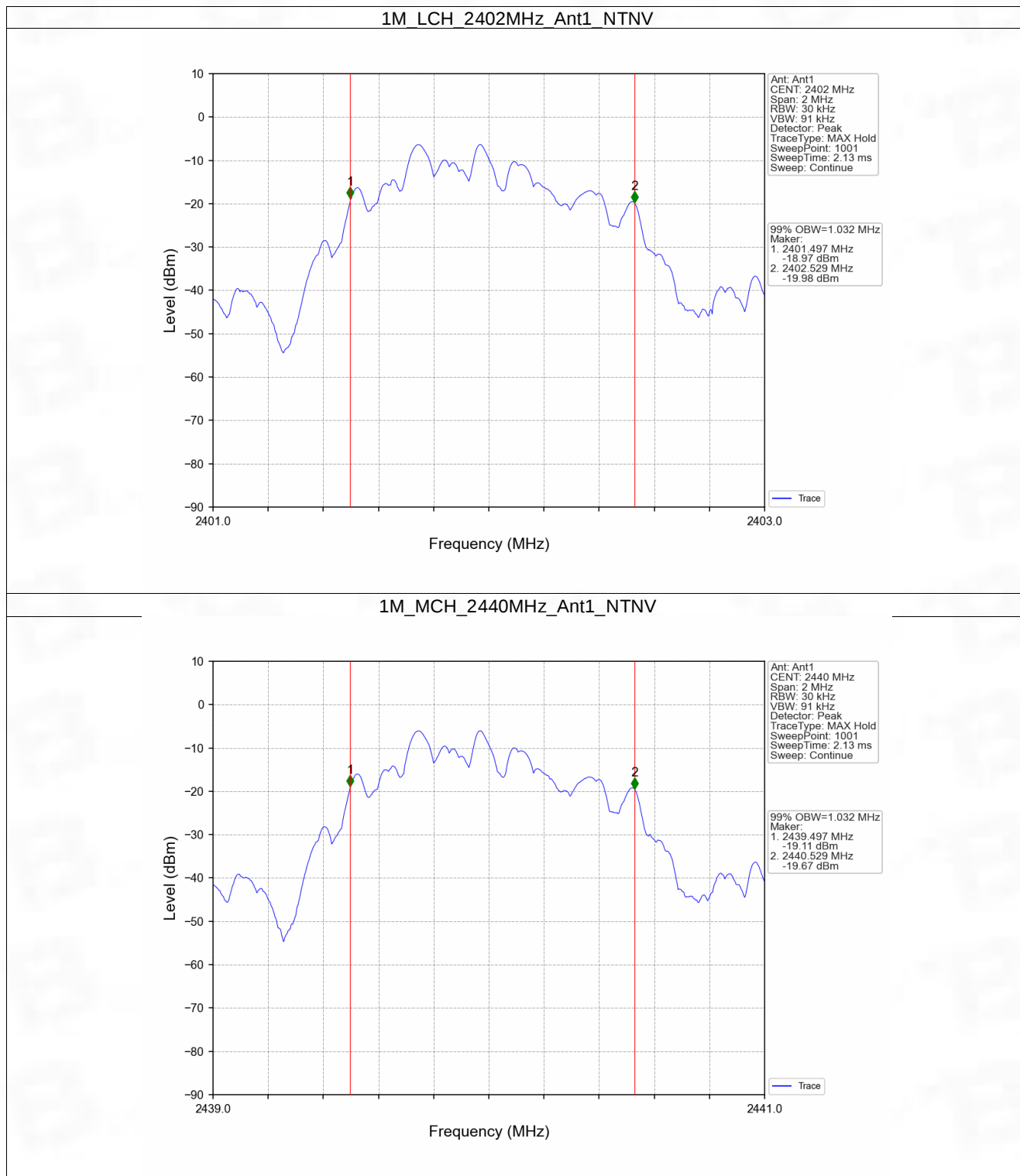
2. Bandwidth

2.1 OBW

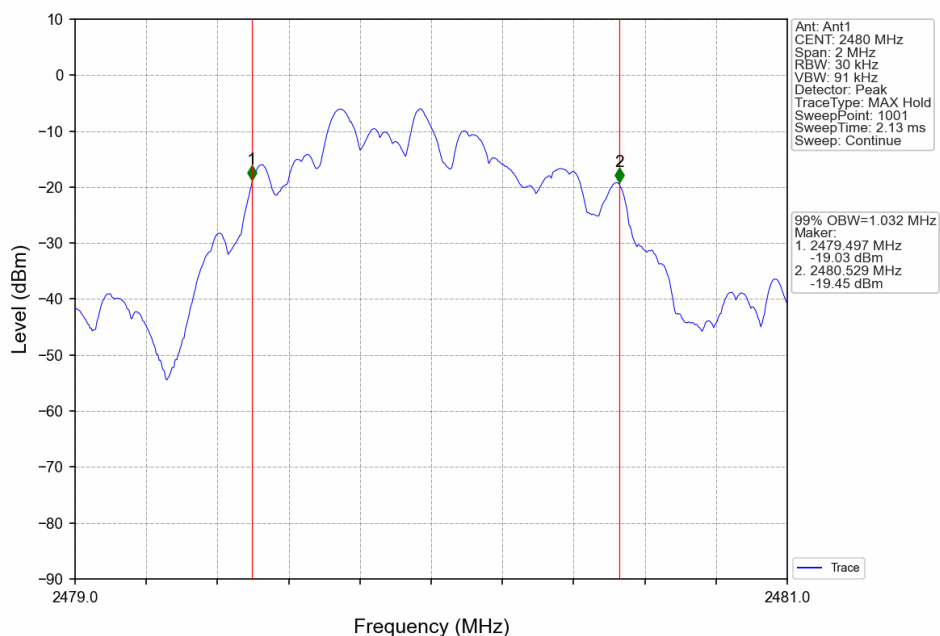
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	Verdict
				Result	
1M	SISO	2402	1	1.032	Pass
		2440	1	1.032	Pass
		2480	1	1.032	Pass
2M	SISO	2402	1	2.065	Pass
		2440	1	2.066	Pass
		2480	1	2.065	Pass

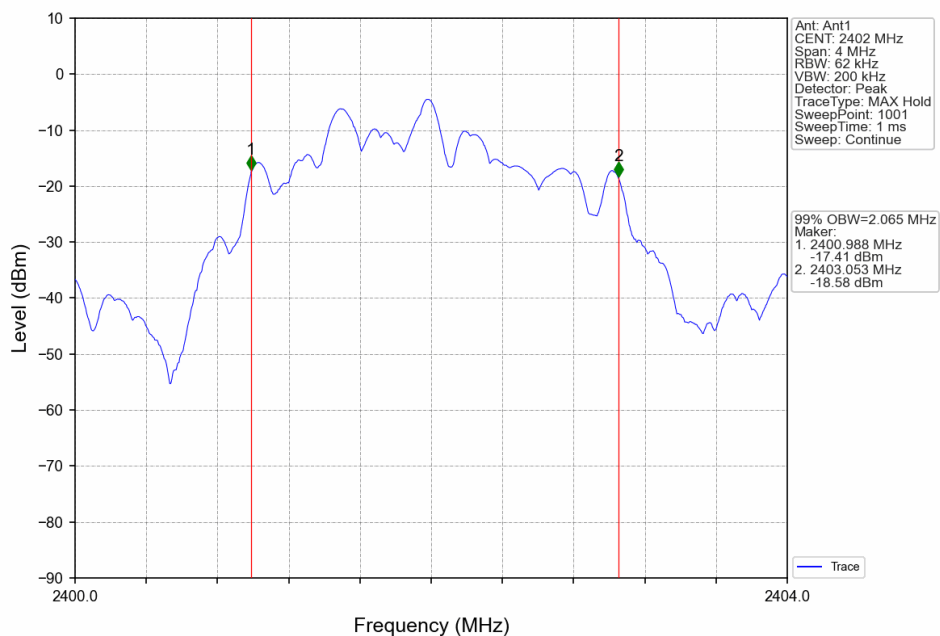
2.1.2 Test Graph



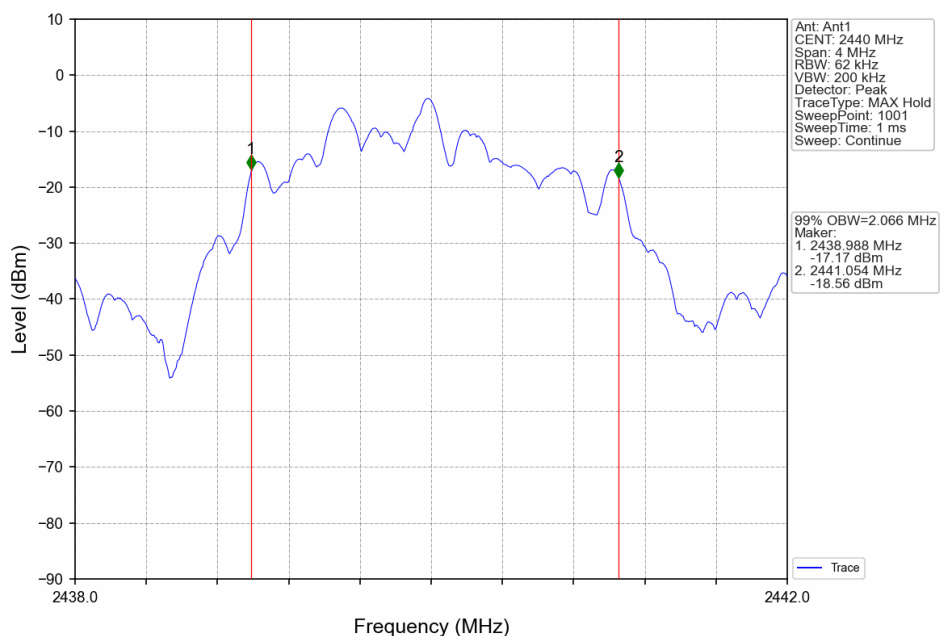
1M_HCH_2480MHz_Ant1_NTNV



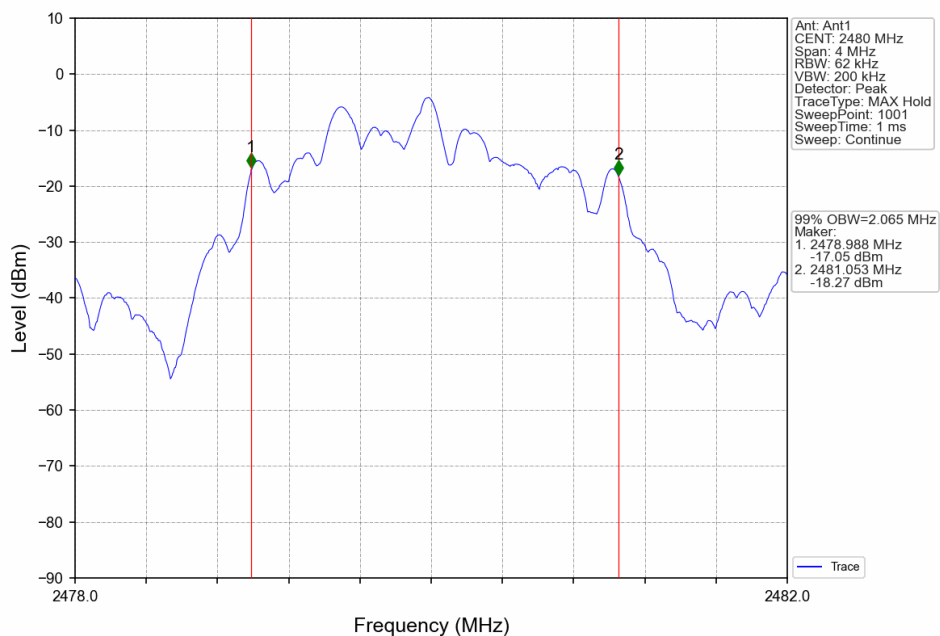
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV

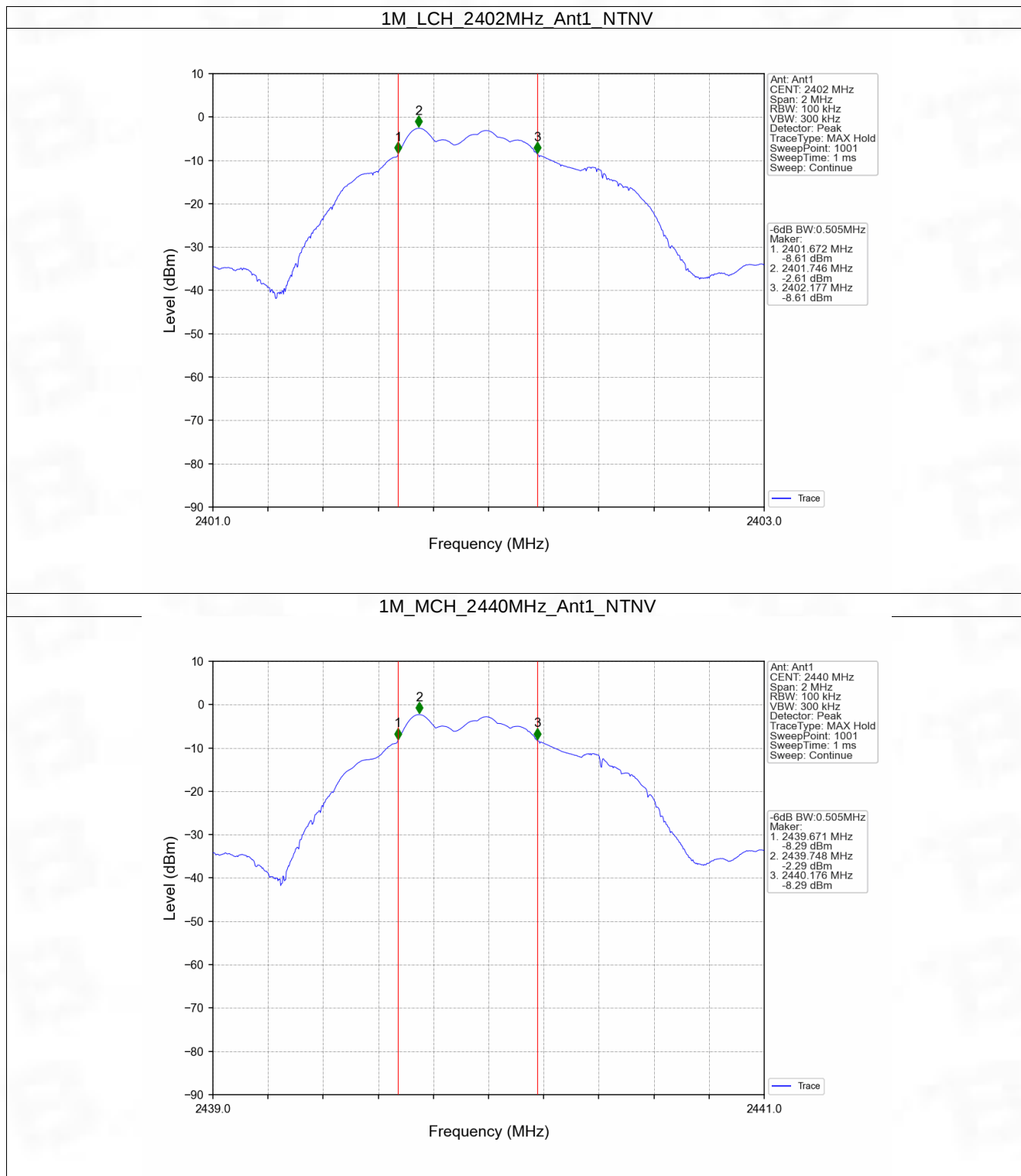


2.2 6dB BW

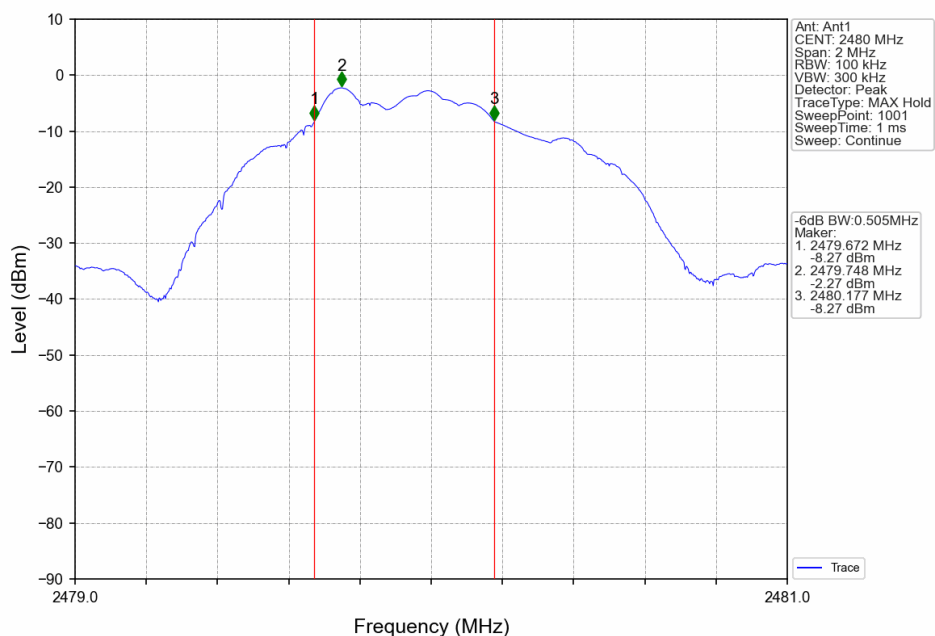
2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.505	≥ 0.5	Pass
		2440	1	0.505	≥ 0.5	Pass
		2480	1	0.505	≥ 0.5	Pass
2M	SISO	2402	1	0.878	≥ 0.5	Pass
		2440	1	0.879	≥ 0.5	Pass
		2480	1	0.868	≥ 0.5	Pass

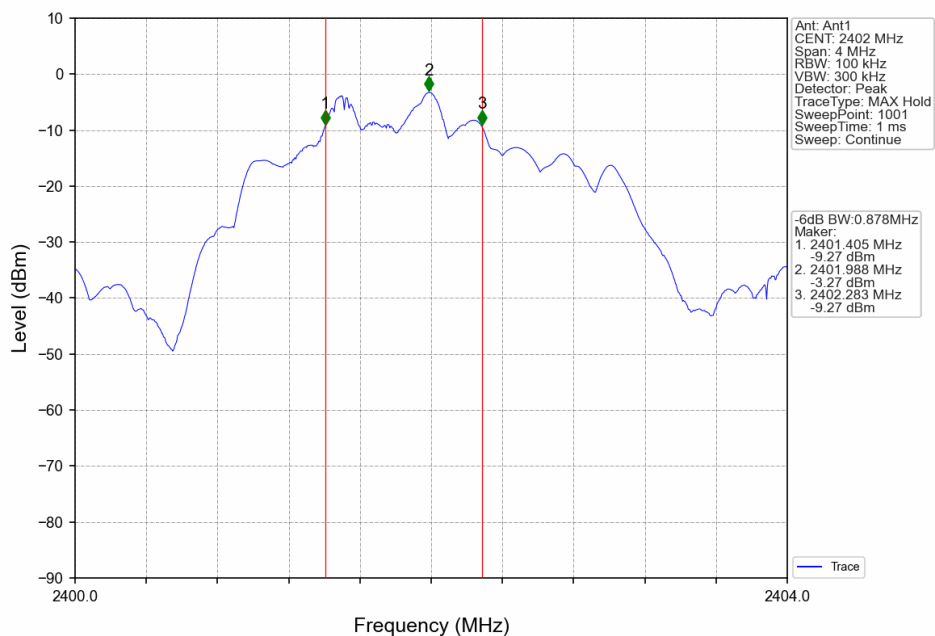
2.2.2 Test Graph



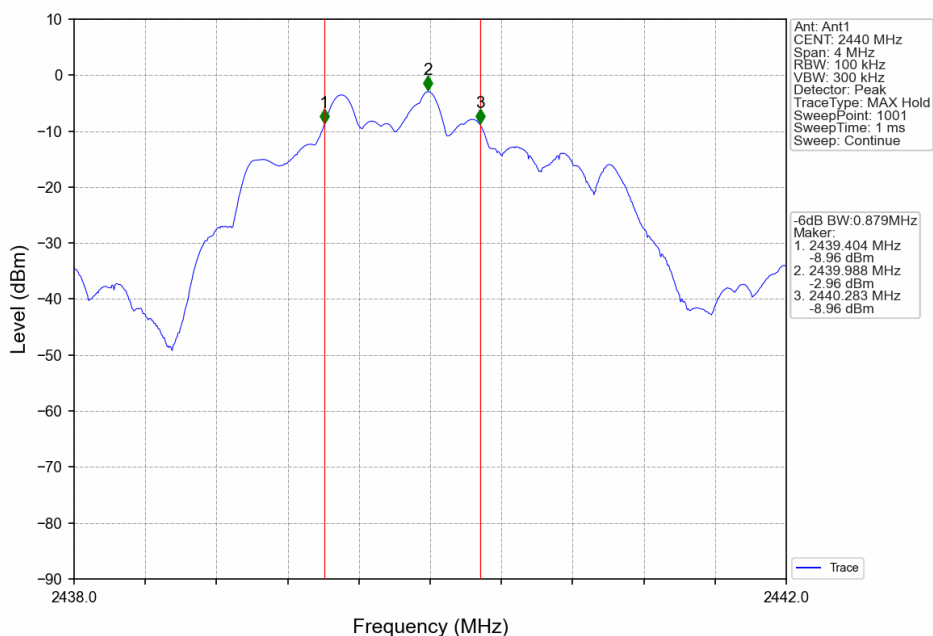
1M_HCH_2480MHz_Ant1_NTNV



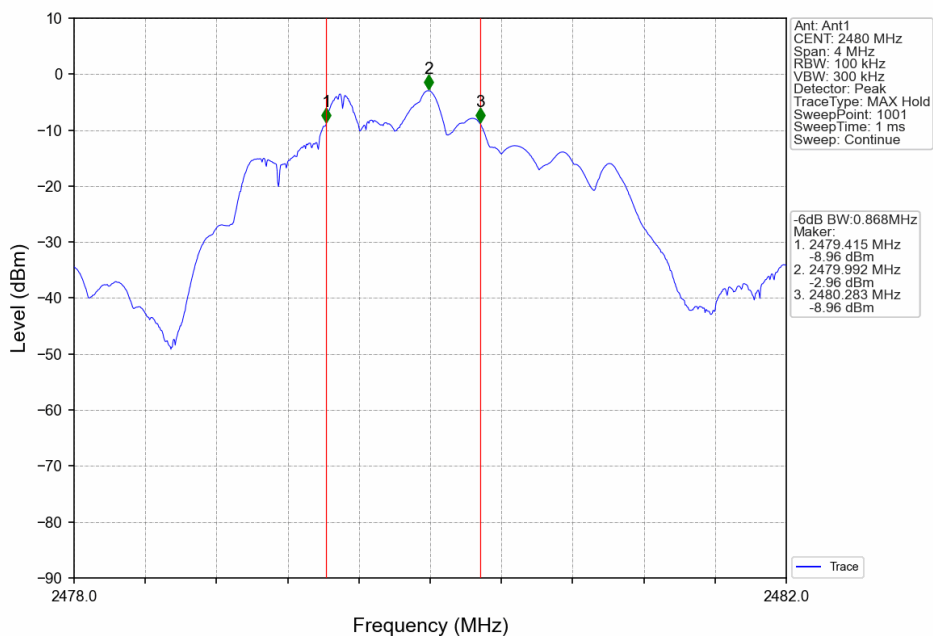
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

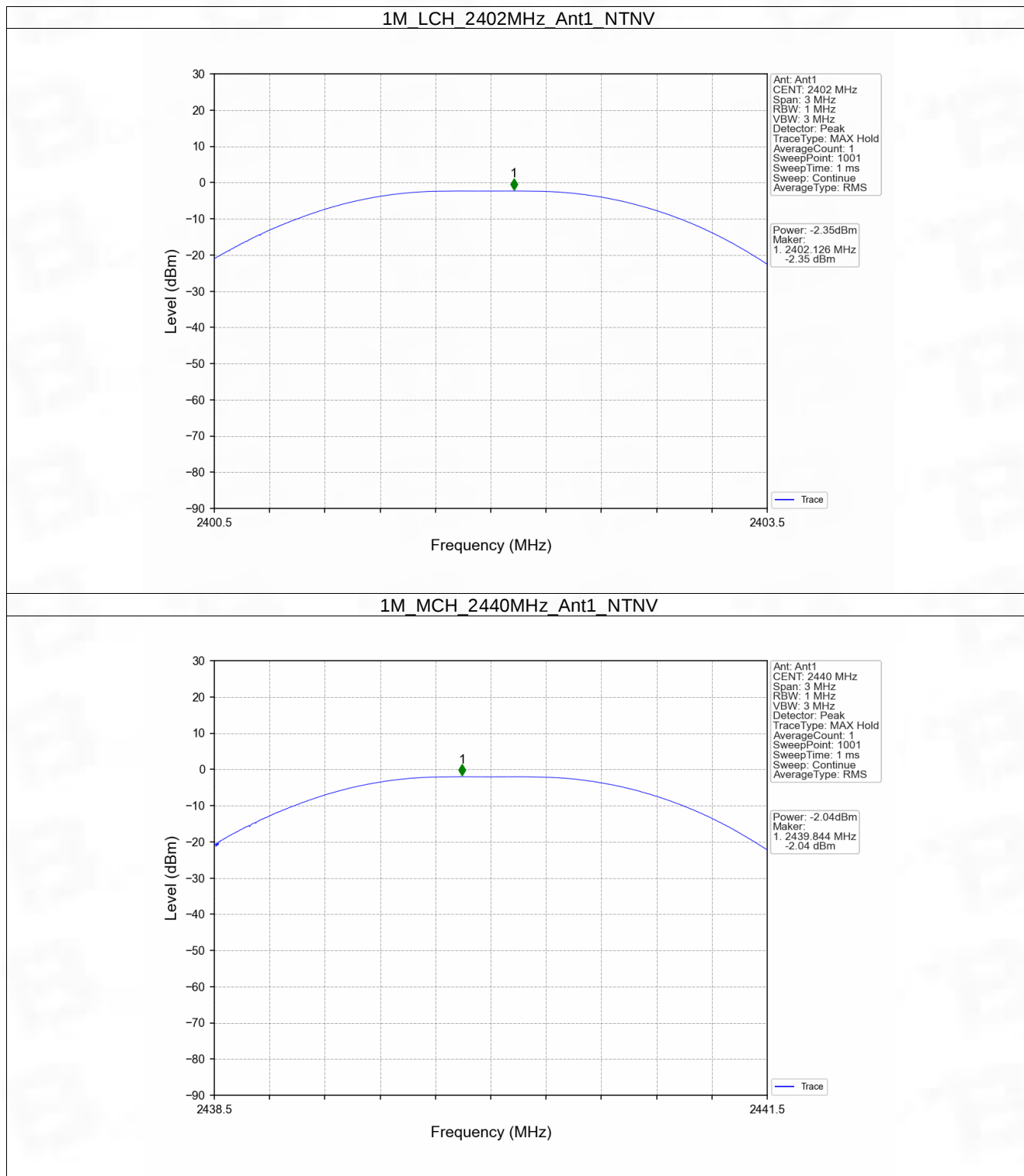
3.1 Power

3.1.1 Test Result

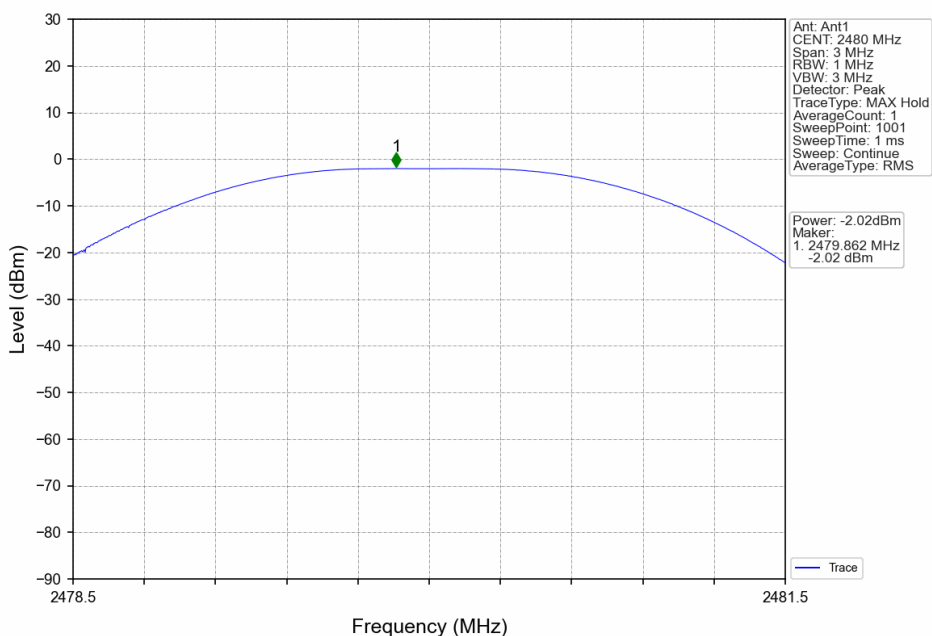
Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-2.35	≤ 30	Pass
		2440	-2.04	≤ 30	Pass
		2480	-2.02	≤ 30	Pass
2M	SISO	2402	-2.51	≤ 30	Pass
		2440	-2.21	≤ 30	Pass
		2480	-2.19	≤ 30	Pass

Note1: Antenna Gain: Ant1: 1.09dBi;

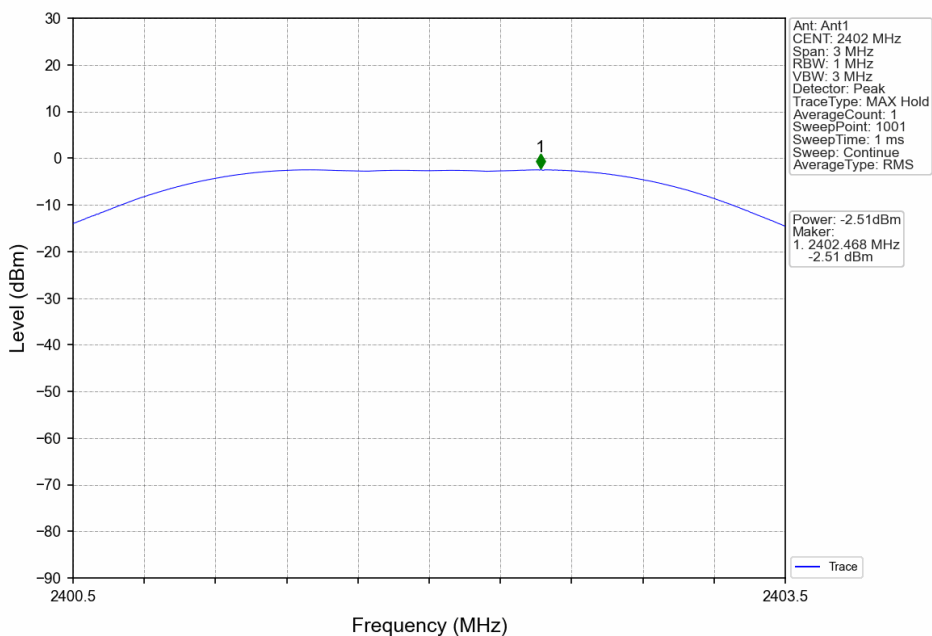
3.1.2 Test Graph



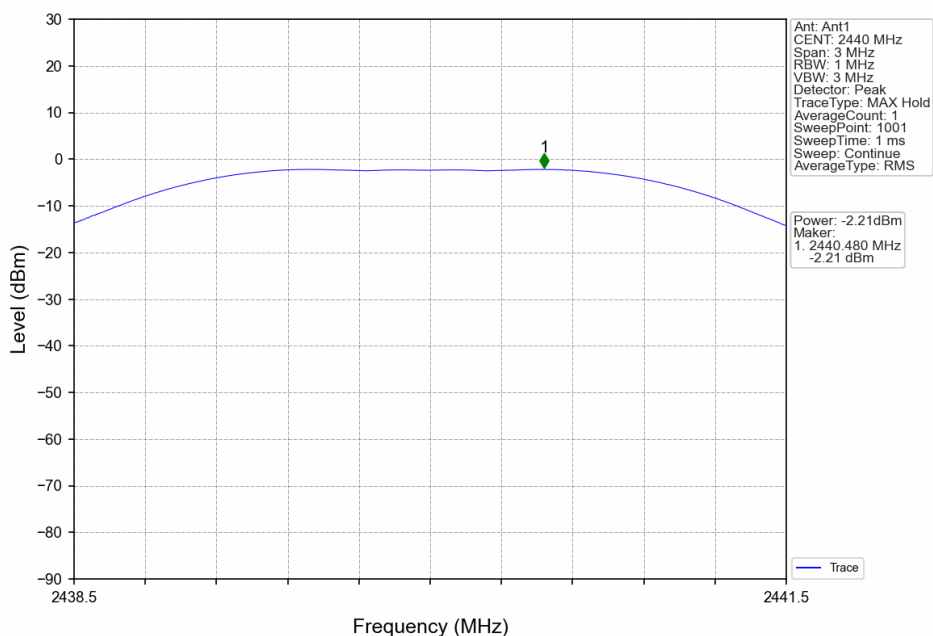
1M_HCH_2480MHz_Ant1_NTNV



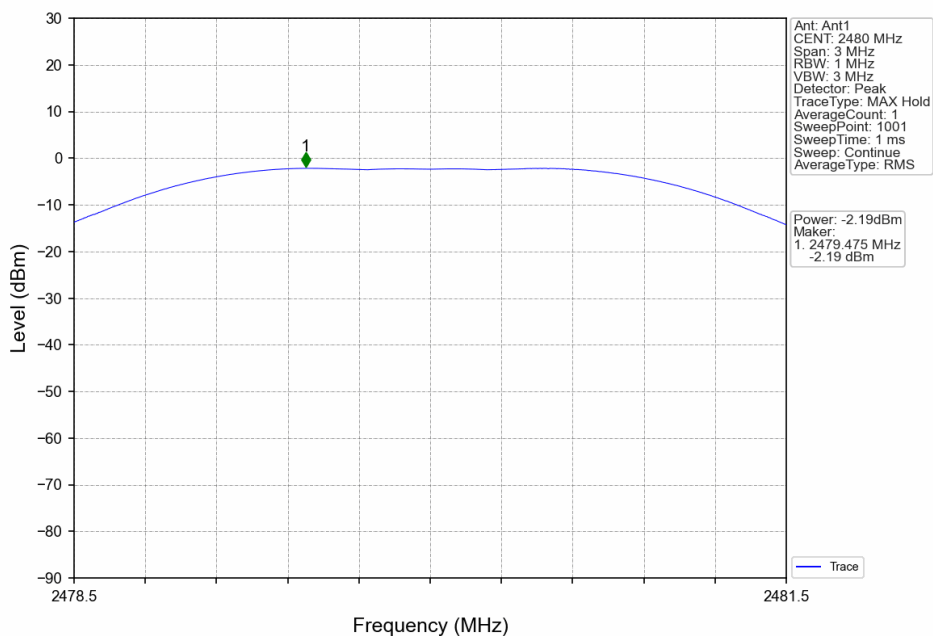
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



4. Maximum Power Spectral Density

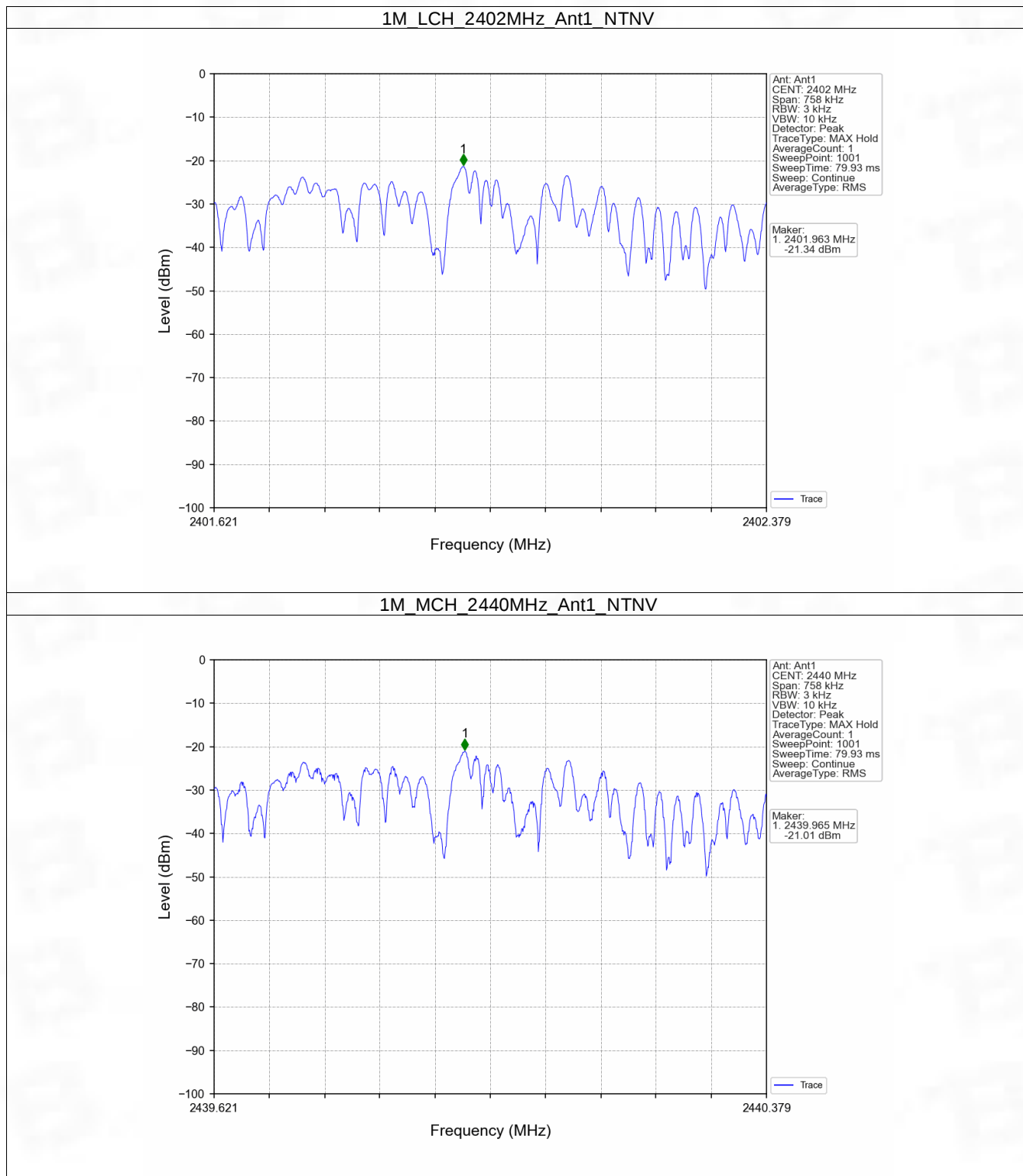
4.1 PSD

4.1.1 Test Result

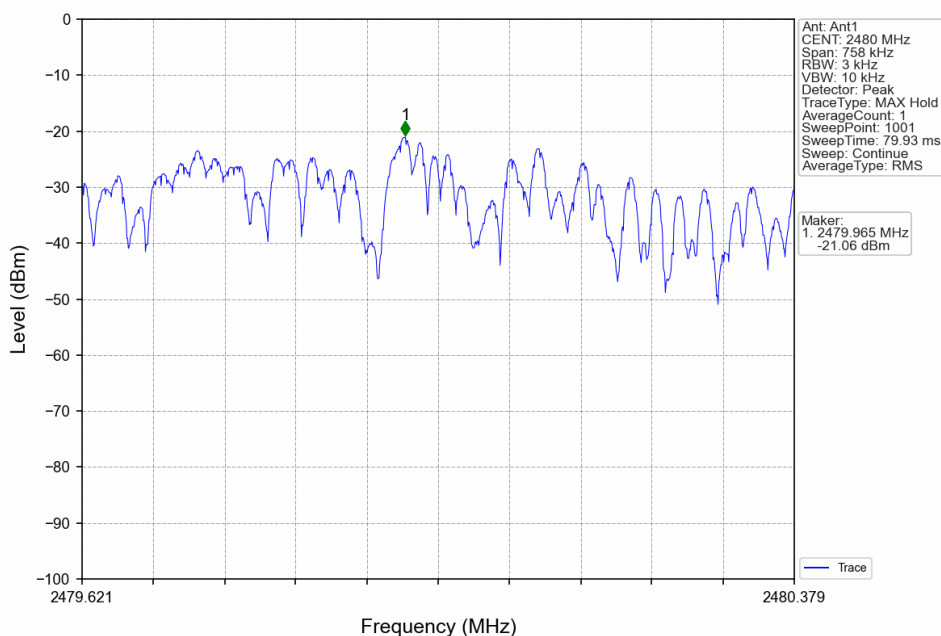
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-21.34	<=8	Pass
		2440	-21.01	<=8	Pass
		2480	-21.06	<=8	Pass
2M	SISO	2402	-24.87	<=8	Pass
		2440	-24.71	<=8	Pass
		2480	-24.67	<=8	Pass

Note1: Antenna Gain: Ant1: 1.09dBi;

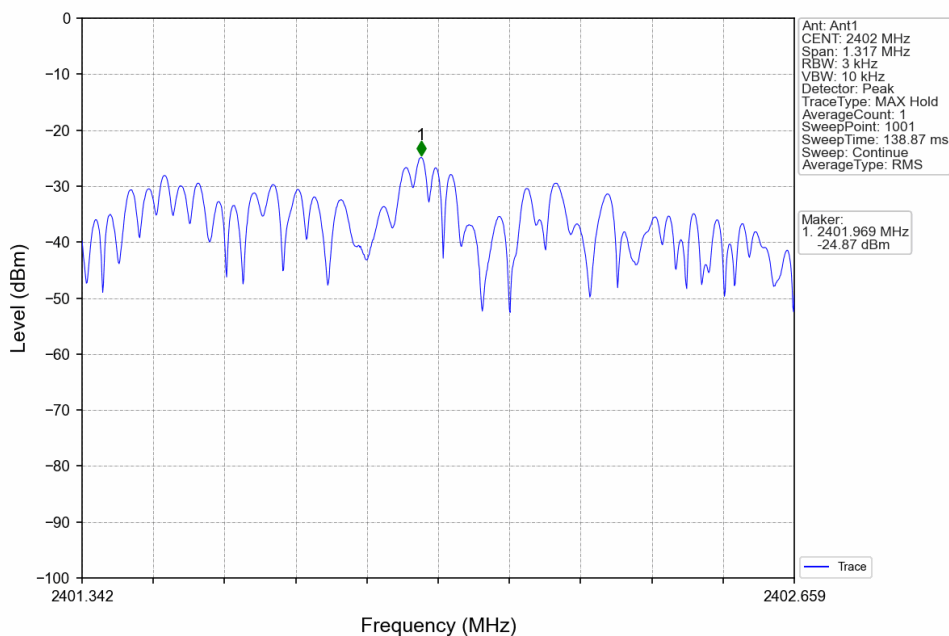
4.1.2 Test Graph



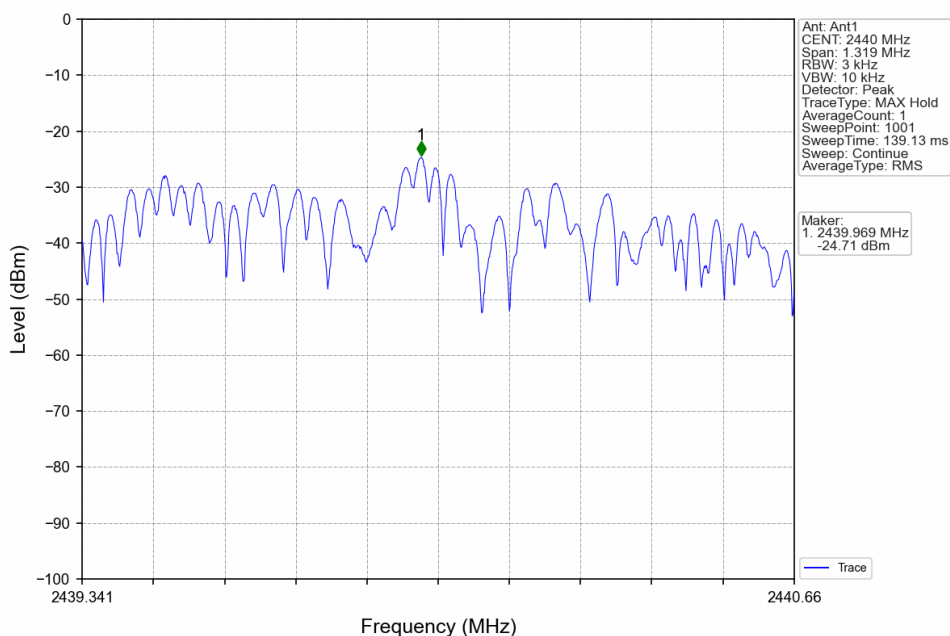
1M_HCH_2480MHz_Ant1_NTNV



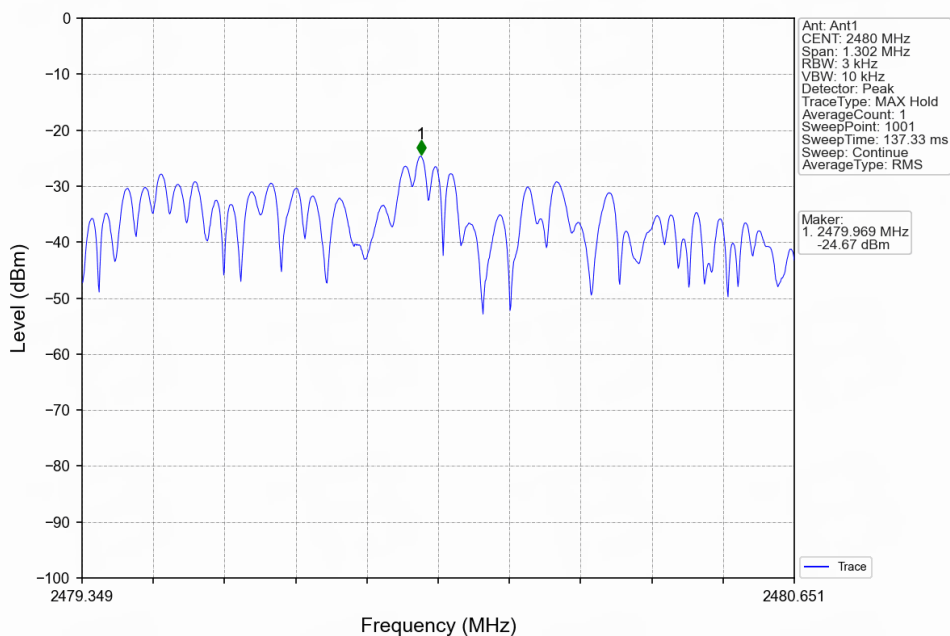
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

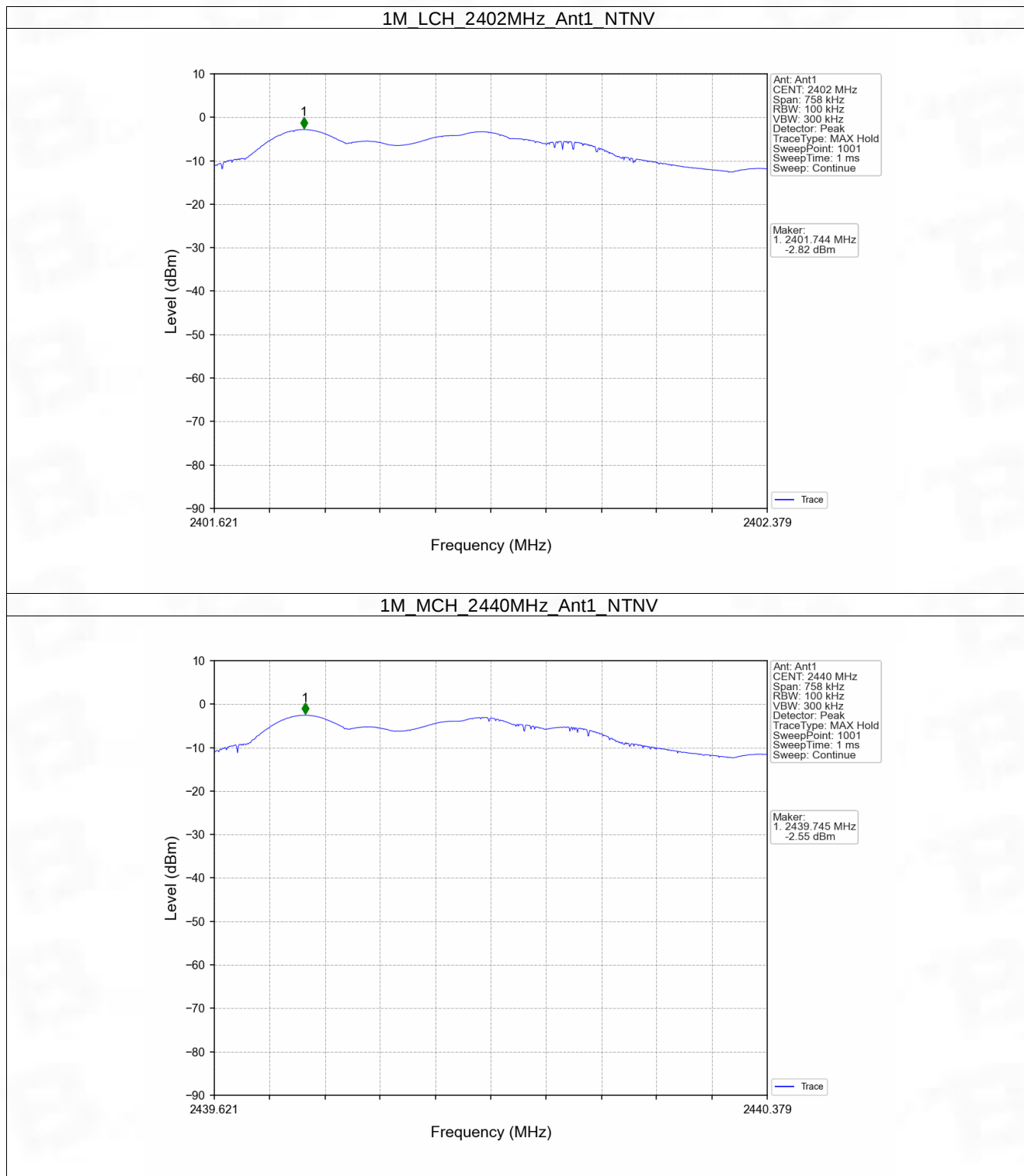
5.1 Ref

5.1.1 Test Result

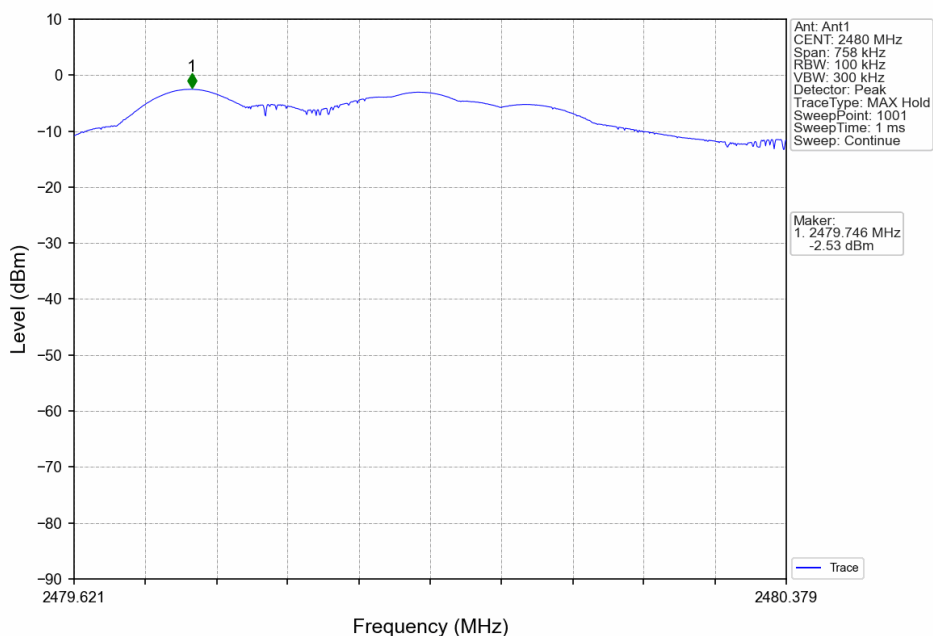
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	1	-2.82
		2440	1	-2.55
		2480	1	-2.53
2M	SISO	2402	1	-3.47
		2440	1	-3.28
		2480	1	-3.24

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

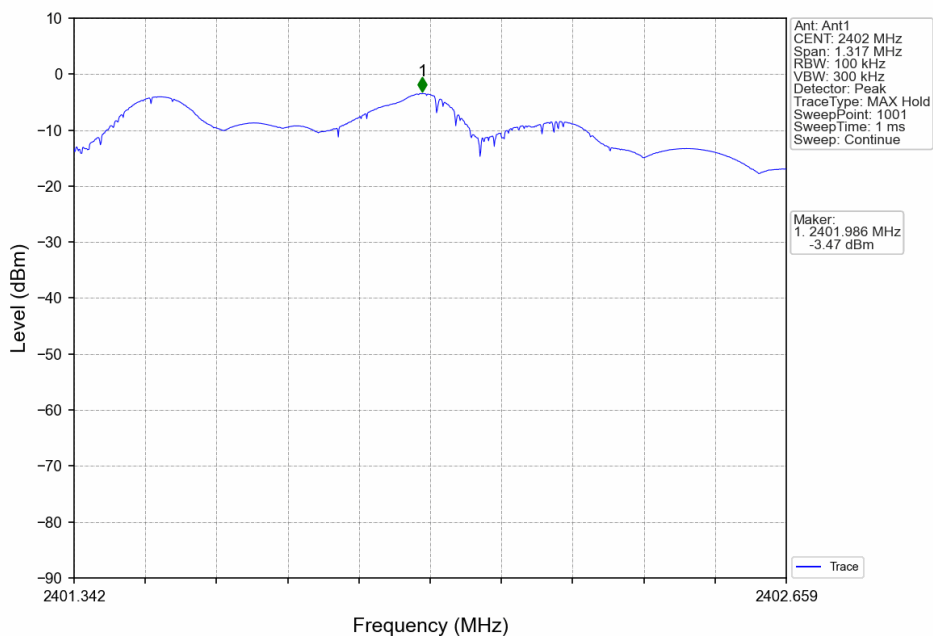
5.1.2 Test Graph



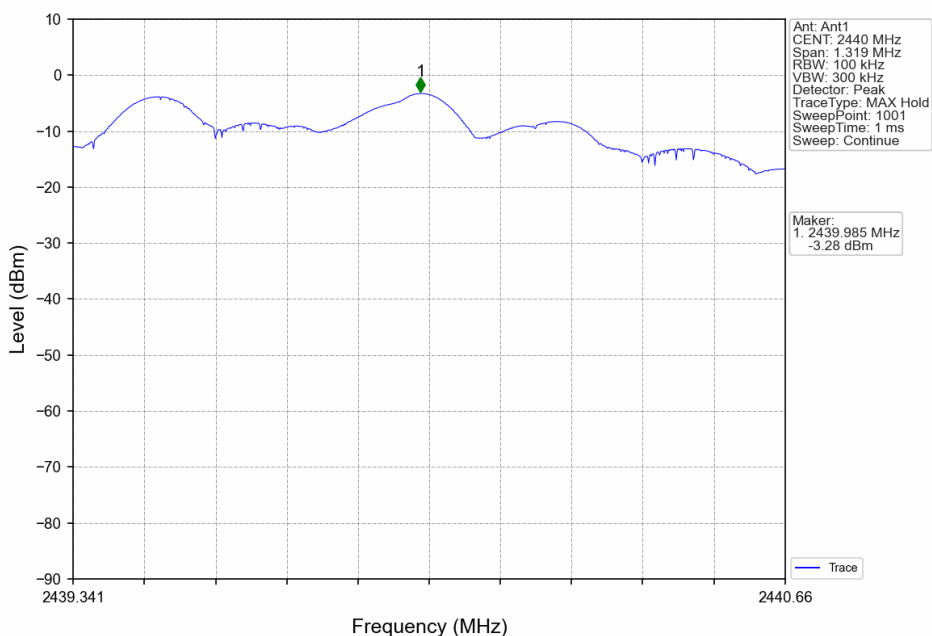
1M_HCH_2480MHz_Ant1_NTNV



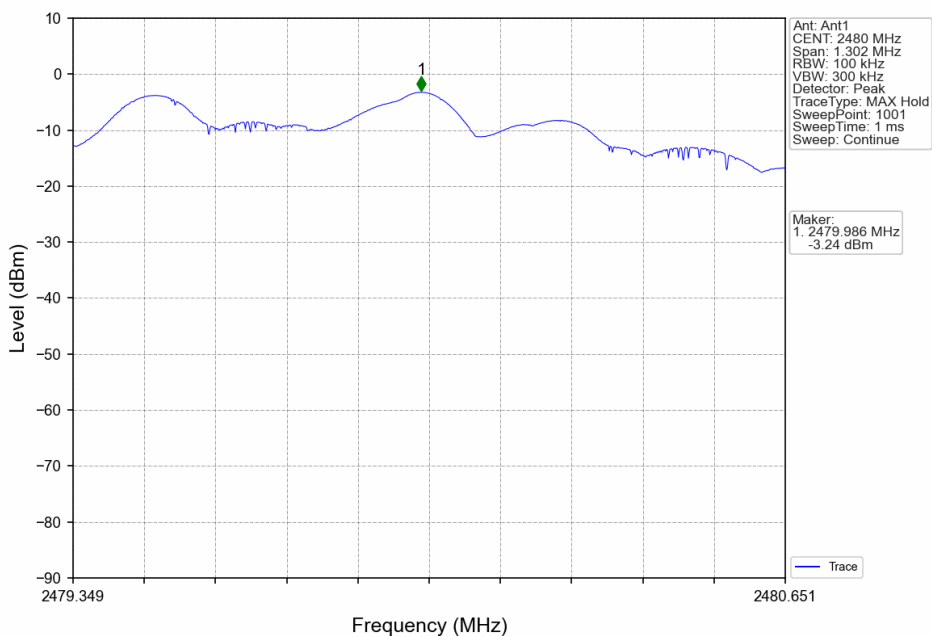
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



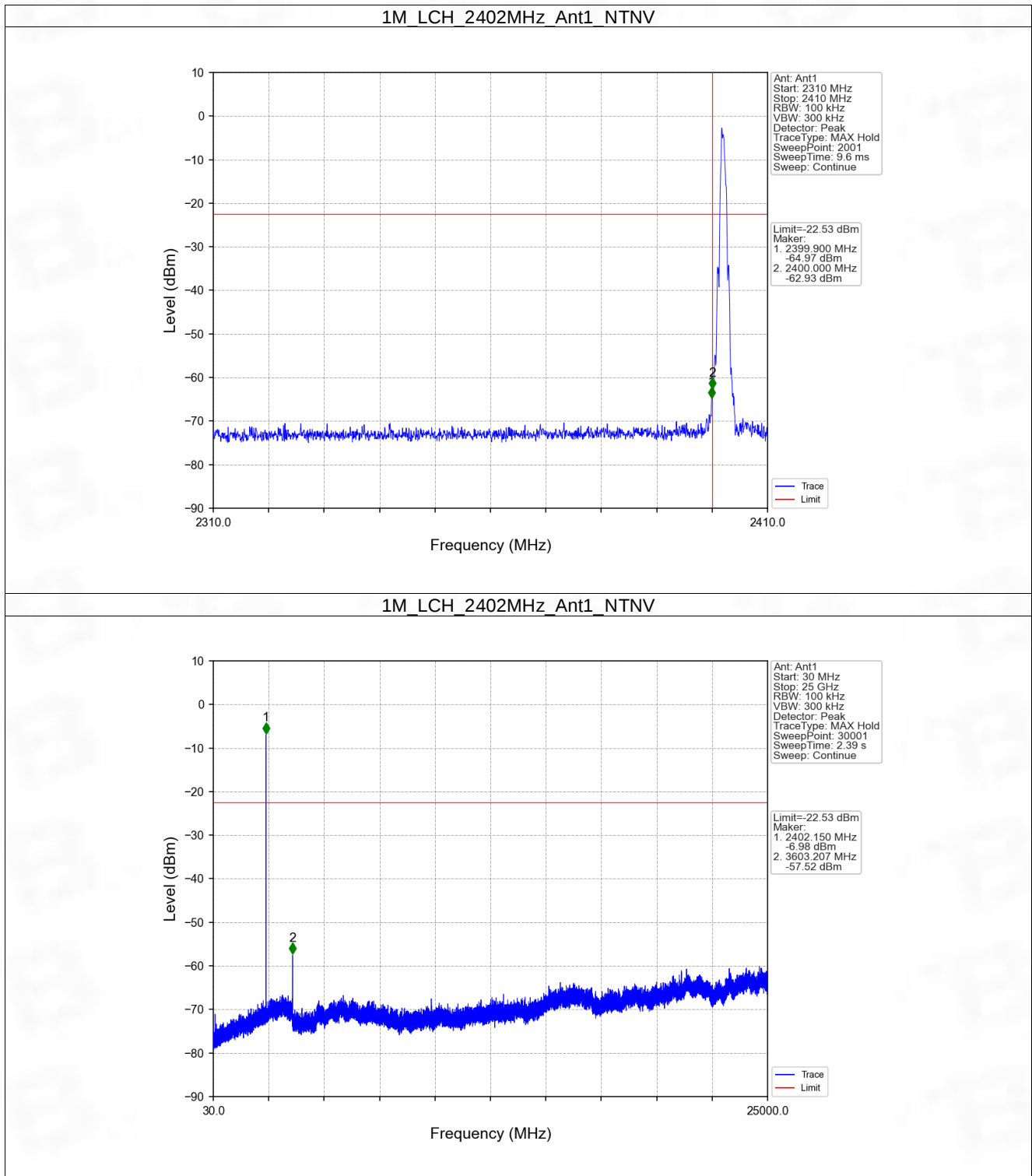
5.2 CSE

5.2.1 Test Result

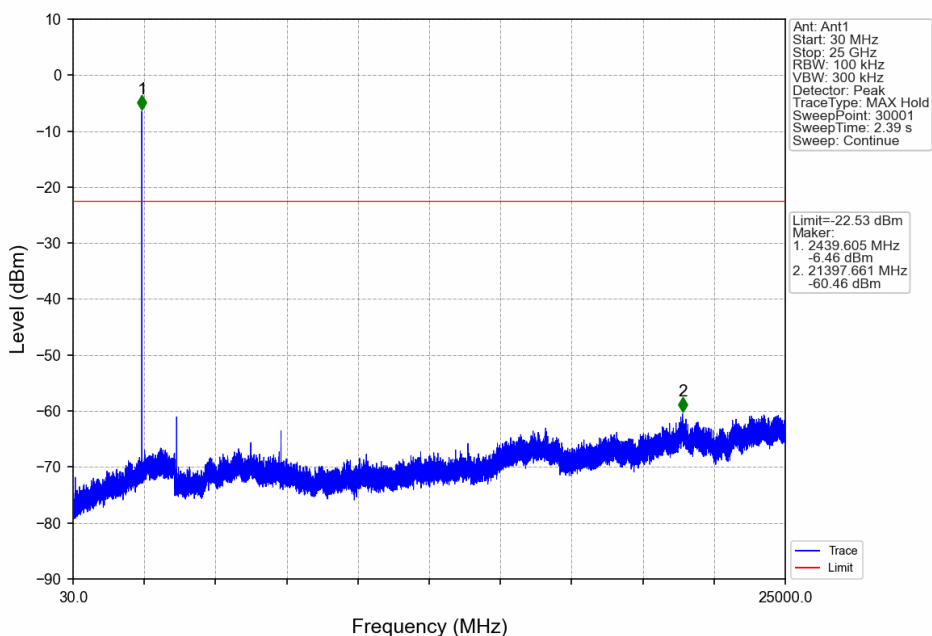
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-2.53	-22.53	Pass
		2440	1	-2.53	-22.53	Pass
		2480	1	-2.53	-22.53	Pass
2M	SISO	2402	1	-3.24	-23.24	Pass
		2440	1	-3.24	-23.24	Pass
		2480	1	-3.24	-23.24	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

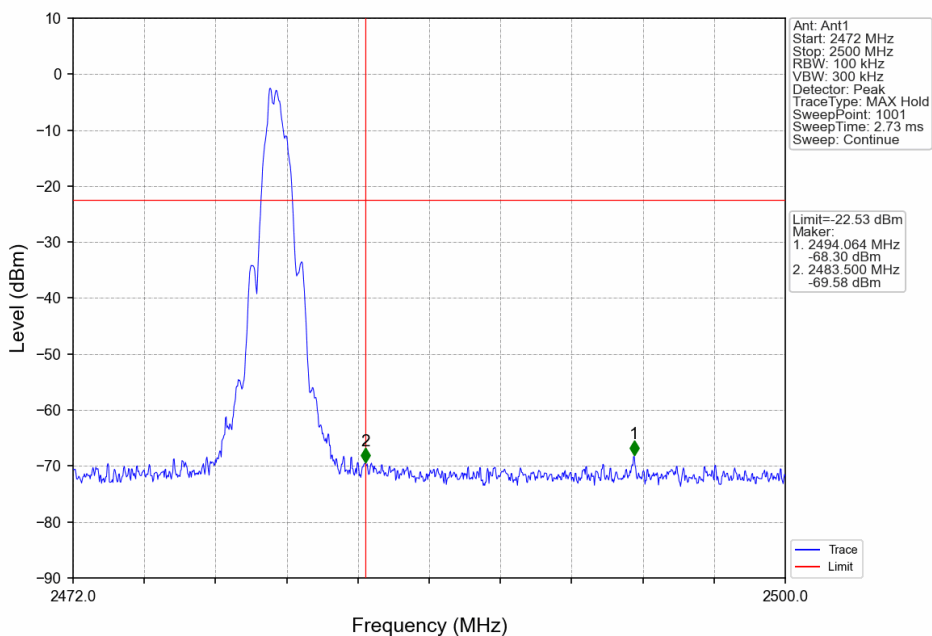
5.2.2 Test Graph



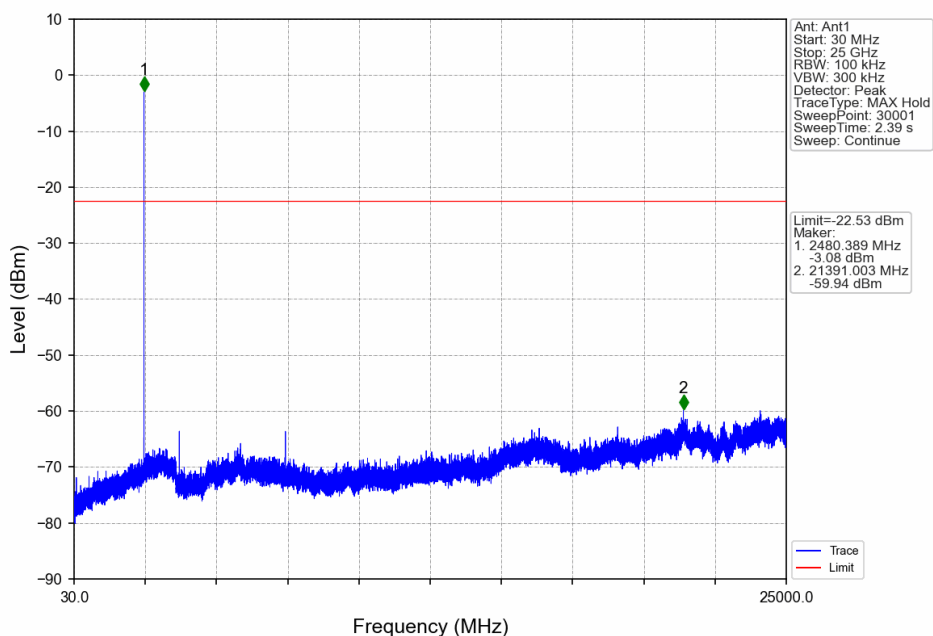
1M_MCH_2440MHz_Ant1_NTNV



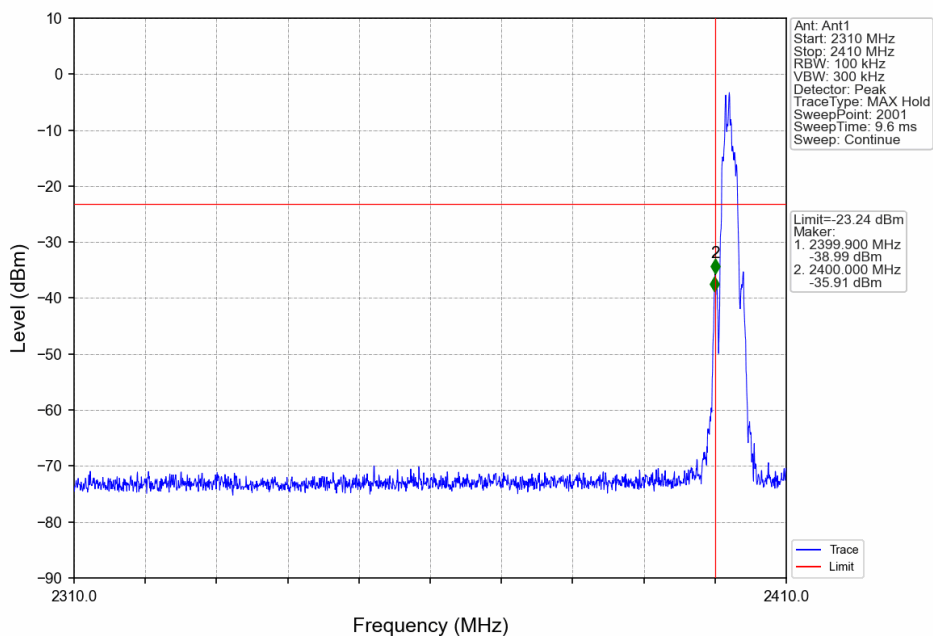
1M_HCH_2480MHz_Ant1_NTNV



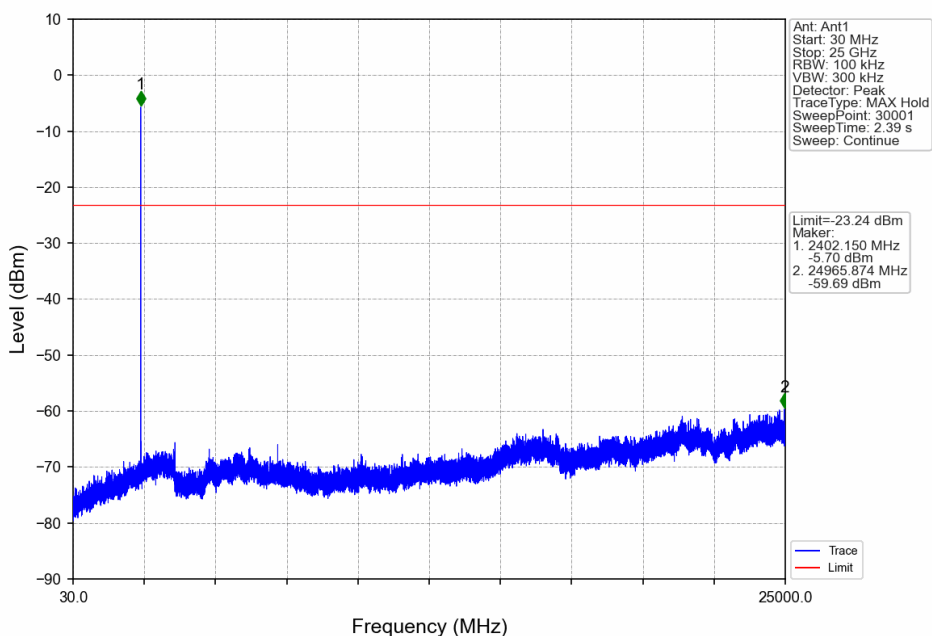
1M_HCH_2480MHz_Ant1_NTNV



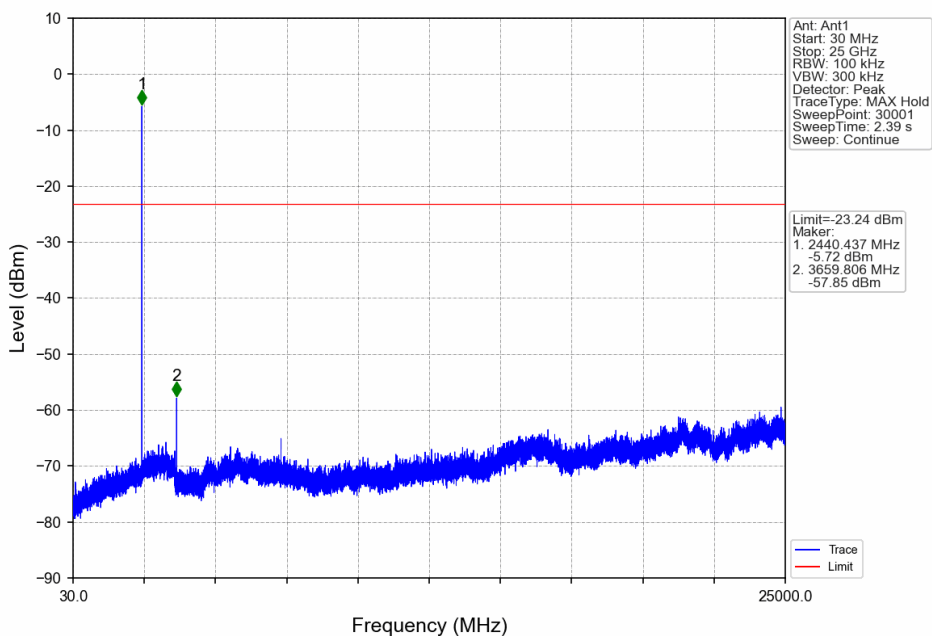
2M_LCH_2402MHz_Ant1_NTNV



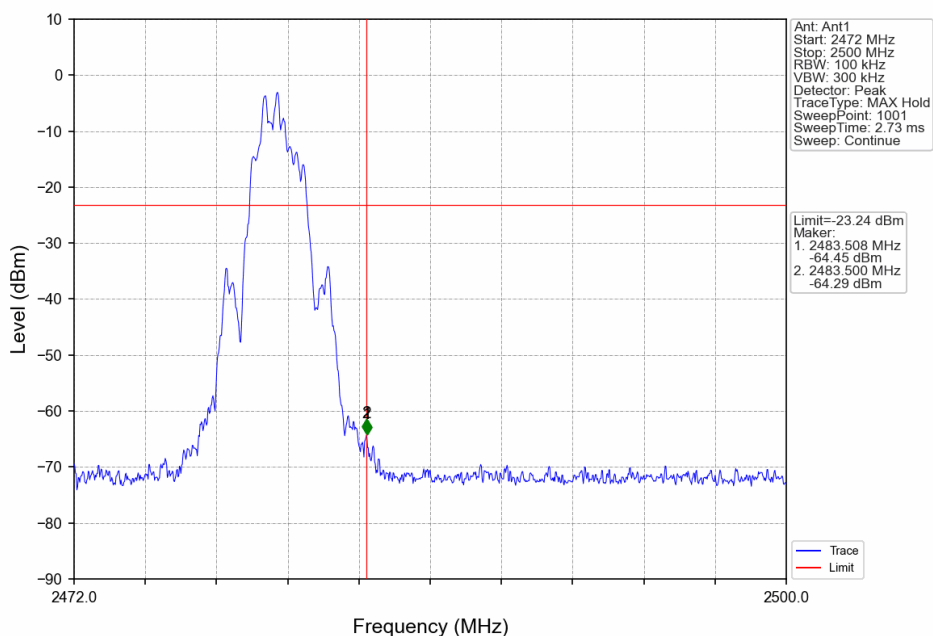
2M_LCH_2402MHz_Ant1_NTNV



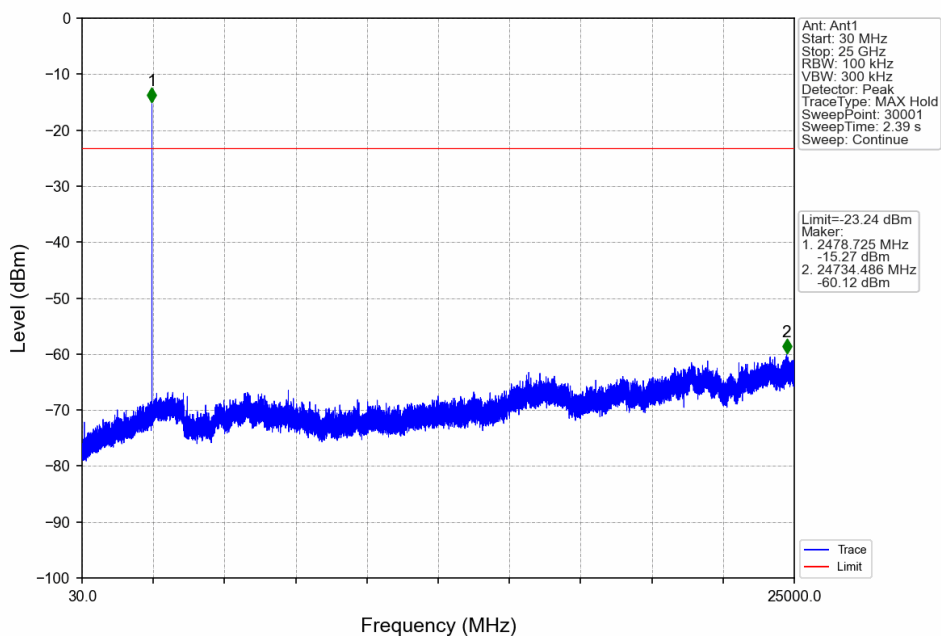
2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



6. Form731

6.1 Form731

6.1.1 Test Result

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2402	2480	0.0006	-2.02



Test Report Number: BTF-SZ230303R-021



BTF Testing Lab (Shenzhen) Co., Ltd.

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street,
Bao'an District, Shenzhen, China

www.btf-lab.com

-- END OF REPORT --