



RF Test Report

For



Applicant Name: **Outform Science & Technology (Shenzhen) Co., Ltd.**
Unit 3, 1st Floor, Huada Building, Gongye 3rd Road Yanshan
Address: Community, Zhaoshang Subdistrict, Nanshan District, Shenzhen,
518067, China
EUT Name: 13.3" TABLET
Brand Name: N/A
Model Number: UIT513A-B01
Series Model Number: Refer to section 2

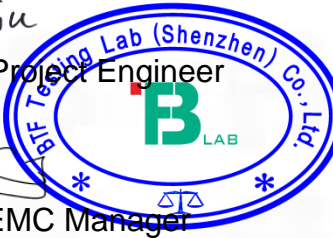
Issued By

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

Report Number: BTF230831R00102
Test Standards: 47 CFR Part 15.247

Test Conclusion: Pass
FCC ID: 2A09X-T513
Test Date: 2023-08-31 to 2023-09-09
Date of Issue: 2023-09-09

Prepared By: 
Chris Liu / Project Engineer
Date: 2023-09-09
Approved By: 
Ryan.CJ / EMC Manager
Date: 2023-09-09



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Revision History		
Version	Issue Date	Revisions Content
R_V0	2023-09-09	Original

Note: Once the revision has been made, then previous versions reports are invalid.

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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:	Outform Science & Technology (Shenzhen) Co., Ltd.
Address:	Unit 3, 1st Floor, Huada Building, Gongye 3rd Road Yanshan Community, Zhaoshang Subdistrict, Nanshan District, Shenzhen, 518067, China

2.2 Manufacturer Information

Company Name:	Shenzhen Sunchip Technology Co.,Ltd
Address:	2nd-3rd Floor, Building 4, Fuan Industry Area Phase 2,Dayang Development Zone, Fuyong, Baoan, Shenzhen, China

2.3 Factory Information

Company Name:	Shenzhen Sunchip Technology Co.,Ltd
Address:	2nd-3rd Floor, Building 4, Fuan Industry Area Phase 2,Dayang Development Zone, Fuyong, Baoan, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT Name:	13.3" TABLET
Test Model Number:	UIT513A-B01
Series Model Number:	UIT513X-XYX
Description of Model name differentiation:	The 1st X is "A" or "B" represents the agent or the client; The 2th X is A-Z represents the color; YY is client number from "01" to "90"

2.5 Technical Information

Power Supply:	AC 120 60Hz
Power Adaptor:	MODEL:FJ-SW1202000N INPUT:100-240V~50/60Hz 0.6A Max OUTPUT:12.0V--2.0A, 24.0W
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
Number of Channels:	802.11b/g/n(HT20): 11 Channels; 802.11n(HT40): 7 Channels
Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK); 802.11g: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n(HT20 and HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type:	PIFA ANT
Antenna Gain [#] :	3dBi
Note:	<p>#: The antenna gain provided by the applicant, and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.</p>
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

Item	Measurement Uncertainty
Conducted Emission (150 kHz-30 MHz)	±2.64dB
Occupied Bandwidth	±69kHz
Transmitter Power, Conducted	±0.87dB
Power Spectral Density	±0.69dB
Conducted Spurious Emissions	±0.95dB
Radiated Spurious Emissions (above 1GHz)	1-6GHz: ±3.94dB 6-18GHz: ±4.16dB
Radiated Spurious Emissions (30M - 1GHz)	±4.12dB

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.247	47 CFR 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 frequency bands (below 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in 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

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

Band edge emissions (Radiated) Emissions in frequency bands (below 1GHz) Emissions in 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	2023-03-24	2024-03-23
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	2023-03-24	2024-03-23
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

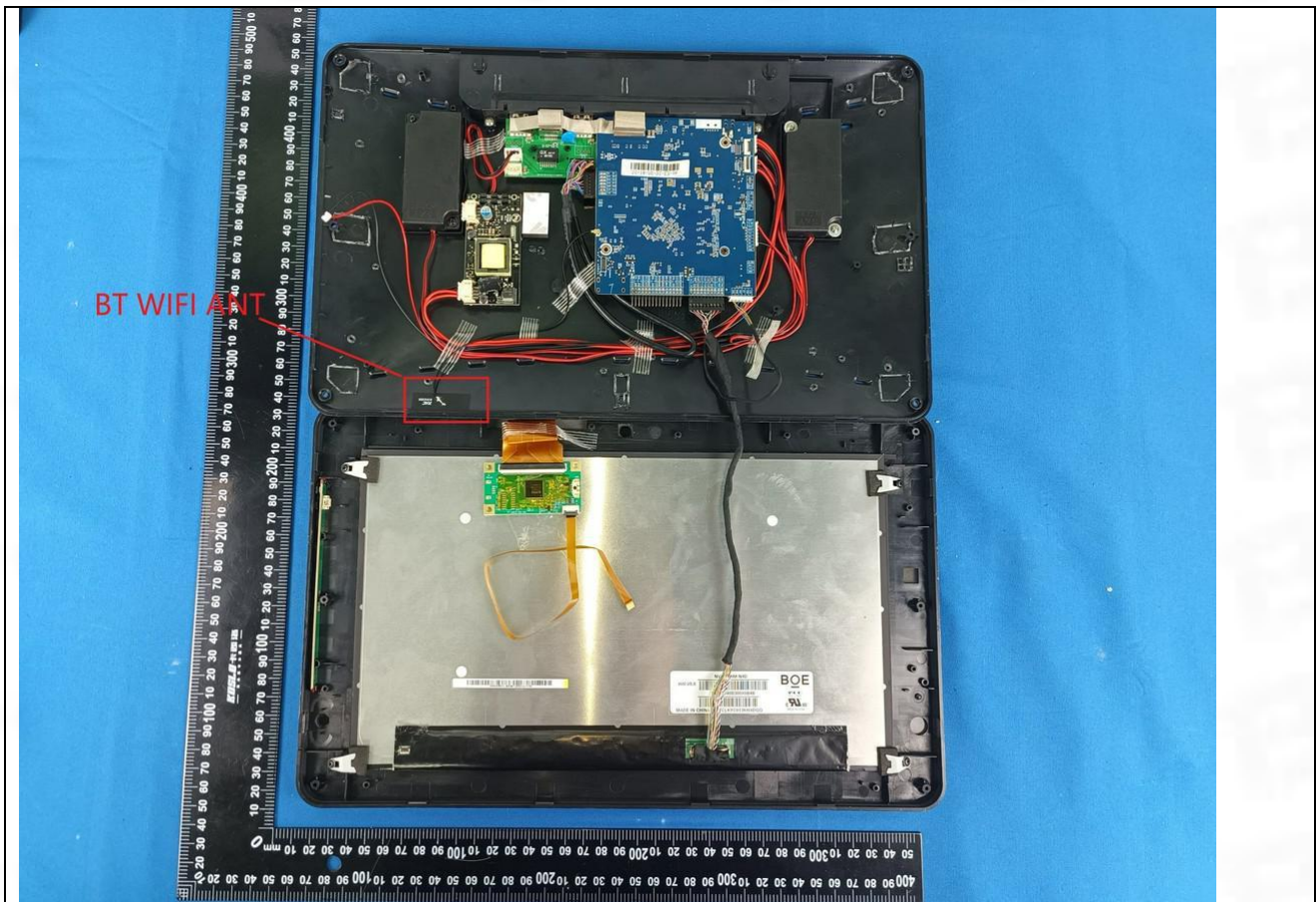
No.	Test Modes	Description
TM1	802.11b mode	Keep the EUT in 802.11b transmitting mode.
TM2	802.11g mode	Keep the EUT in 802.11g transmitting mode.
TM3	802.11n(HT20) mode	Keep the EUT in 802.11n(HT20) transmitting mode.
TM4	802.11n(HT40) mode	Keep the EUT in 802.11n(HT40) transmitting mode.

5 Evaluation Results (Evaluation)

5.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 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.
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5.1.1 Conclusion:



6 Radio Spectrum Matter Test Results (RF)

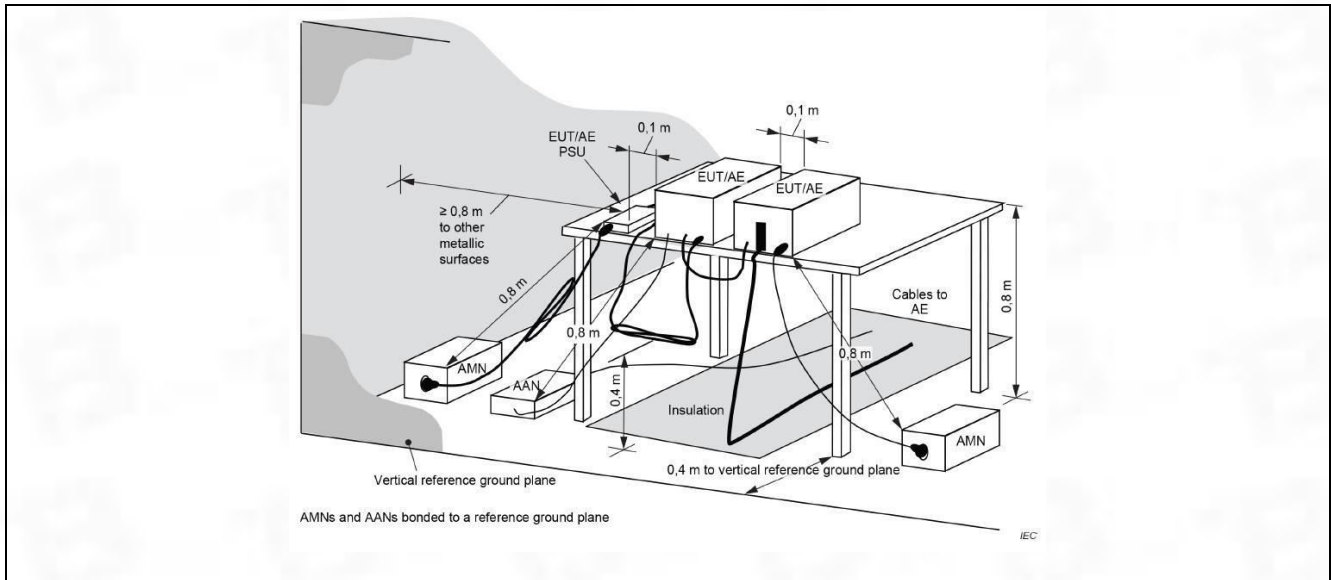
6.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), 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:	ANSI C63.10-2013 section 6.2		
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.			
Procedure:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		

6.1.1 E.U.T. Operation:

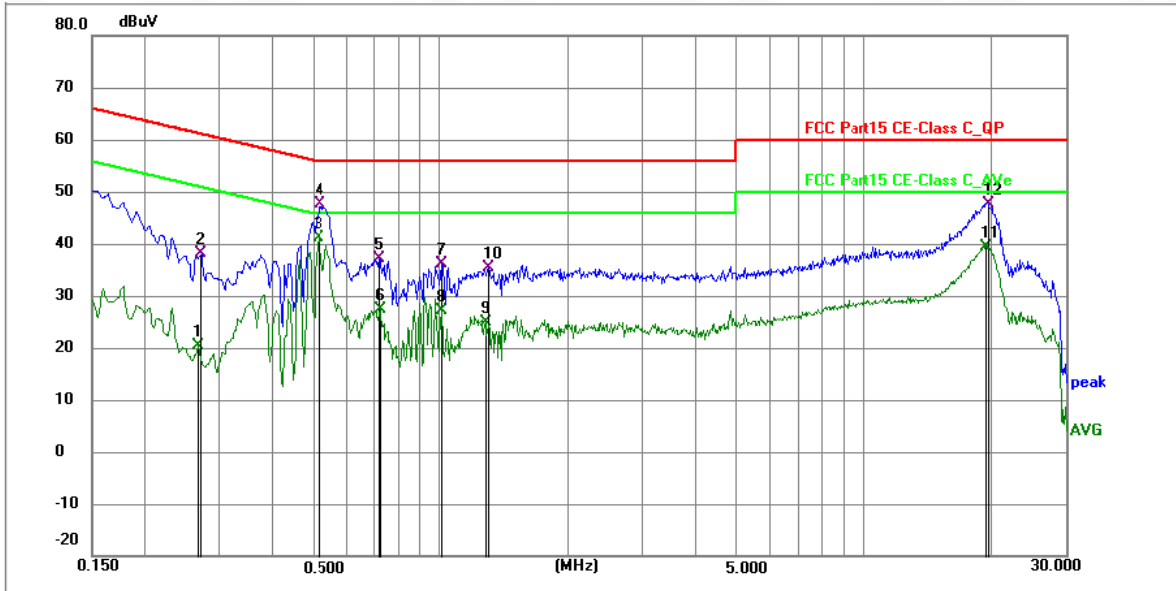
Operating Environment:	
Temperature:	25.7 °C
Humidity:	46.5 %
Atmospheric Pressure:	1010 mbar

6.1.2 Test Setup Diagram:



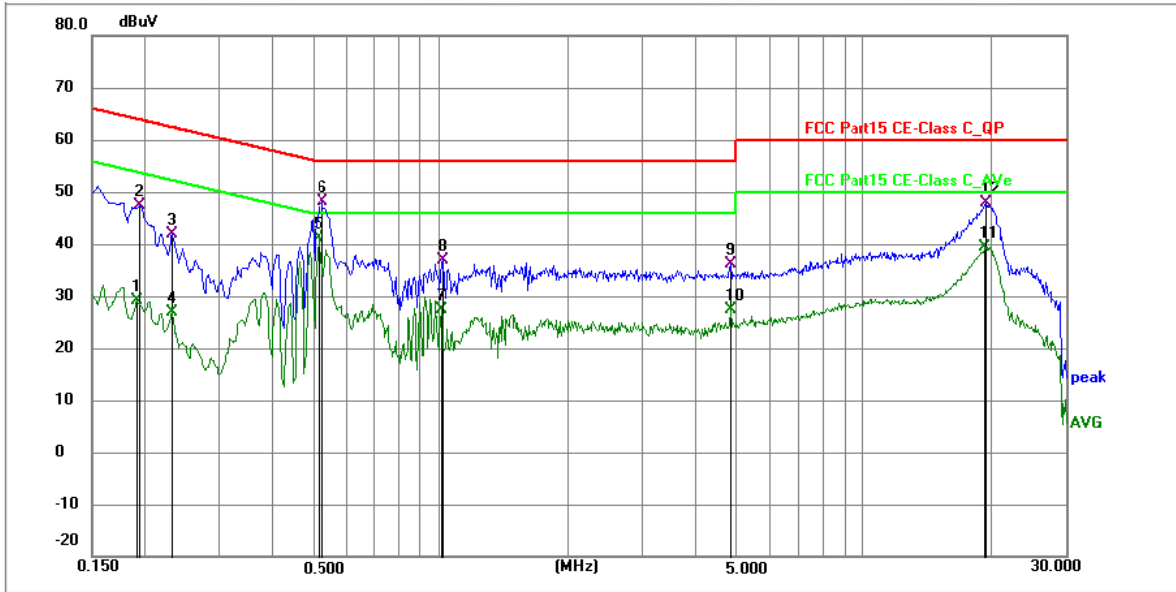
6.1.3 Test Data:

TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2670	9.71	10.77	20.48	51.21	-30.73	AVG	P	
2	0.2714	27.27	10.79	38.06	61.07	-23.01	QP	P	
3 *	0.5144	30.03	11.21	41.24	46.00	-4.76	AVG	P	
4	0.5190	36.38	11.21	47.59	56.00	-8.41	QP	P	
5	0.7170	26.25	10.94	37.19	56.00	-18.81	QP	P	
6	0.7215	16.35	10.93	27.28	46.00	-18.72	AVG	P	
7	1.0050	25.53	10.66	36.19	56.00	-19.81	QP	P	
8	1.0050	16.48	10.66	27.14	46.00	-18.86	AVG	P	
9	1.2795	14.23	10.66	24.89	46.00	-21.11	AVG	P	
10	1.3020	24.82	10.66	35.48	56.00	-20.52	QP	P	
11	19.5135	28.36	11.04	39.40	50.00	-10.60	AVG	P	
12	19.6935	36.48	11.04	47.52	60.00	-12.48	QP	P	

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1905	18.54	10.54	29.08	54.01	-24.93	AVG	P	
2	0.1949	36.88	10.55	47.43	63.83	-16.40	QP	P	
3	0.2310	31.21	10.66	41.87	62.41	-20.54	QP	P	
4	0.2310	16.27	10.66	26.93	52.41	-25.48	AVG	P	
5 *	0.5144	30.03	11.21	41.24	46.00	-4.76	AVG	P	
6	0.5235	36.96	11.21	48.17	56.00	-7.83	QP	P	
7	1.0050	16.79	10.66	27.45	46.00	-18.55	AVG	P	
8	1.0140	26.12	10.66	36.78	56.00	-19.22	QP	P	
9	4.8254	25.30	10.72	36.02	56.00	-19.98	QP	P	
10	4.8254	16.56	10.72	27.28	46.00	-18.72	AVG	P	
11	19.3290	28.43	11.02	39.45	50.00	-10.55	AVG	P	
12	19.4774	36.77	11.02	47.79	60.00	-12.21	QP	P	

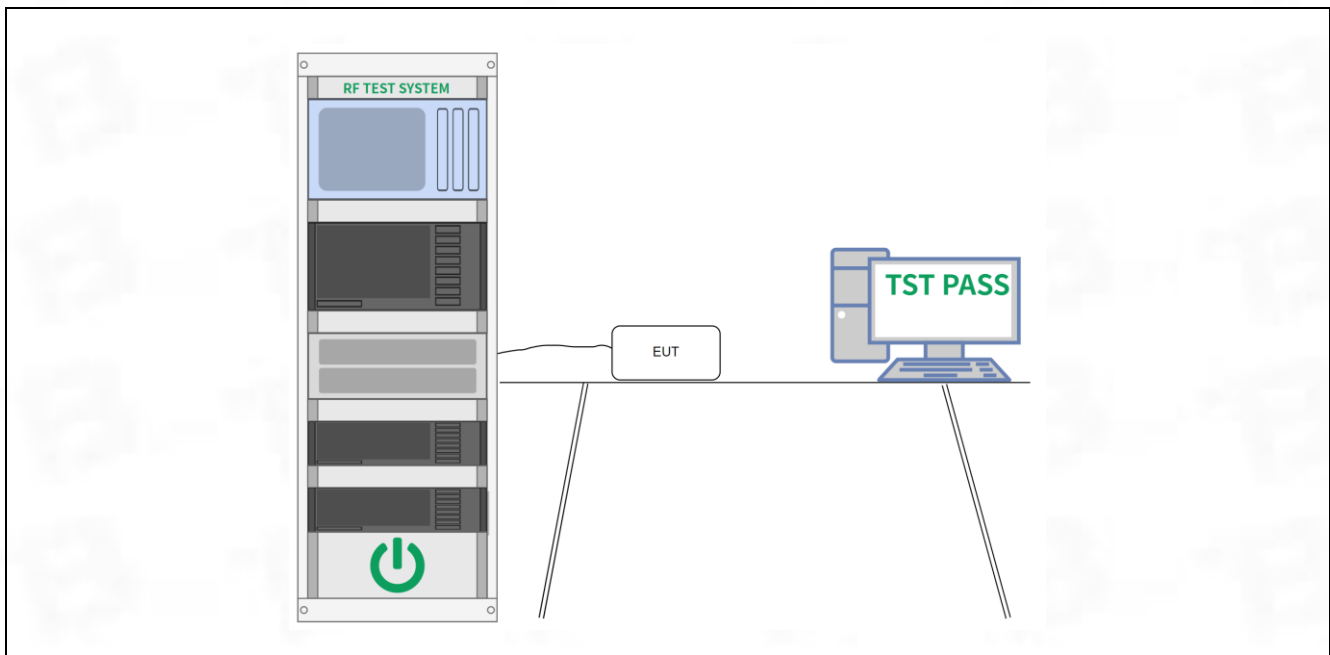
6.2 Occupied Bandwidth

Test Requirement:	47 CFR 15.247(a)(2)
Test Method:	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.247(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:	<ul style="list-style-type: none"> a) Set RBW = 100 kHz. b) Set the VBW \geq [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.

6.2.1 E.U.T. Operation:

Operating Environment:	
Temperature:	23.6 °C
Humidity:	51.2 %
Atmospheric Pressure:	1010 mbar

6.2.2 Test Setup Diagram:



6.2.3 Test Data:

Please Refer to Appendix for Details.

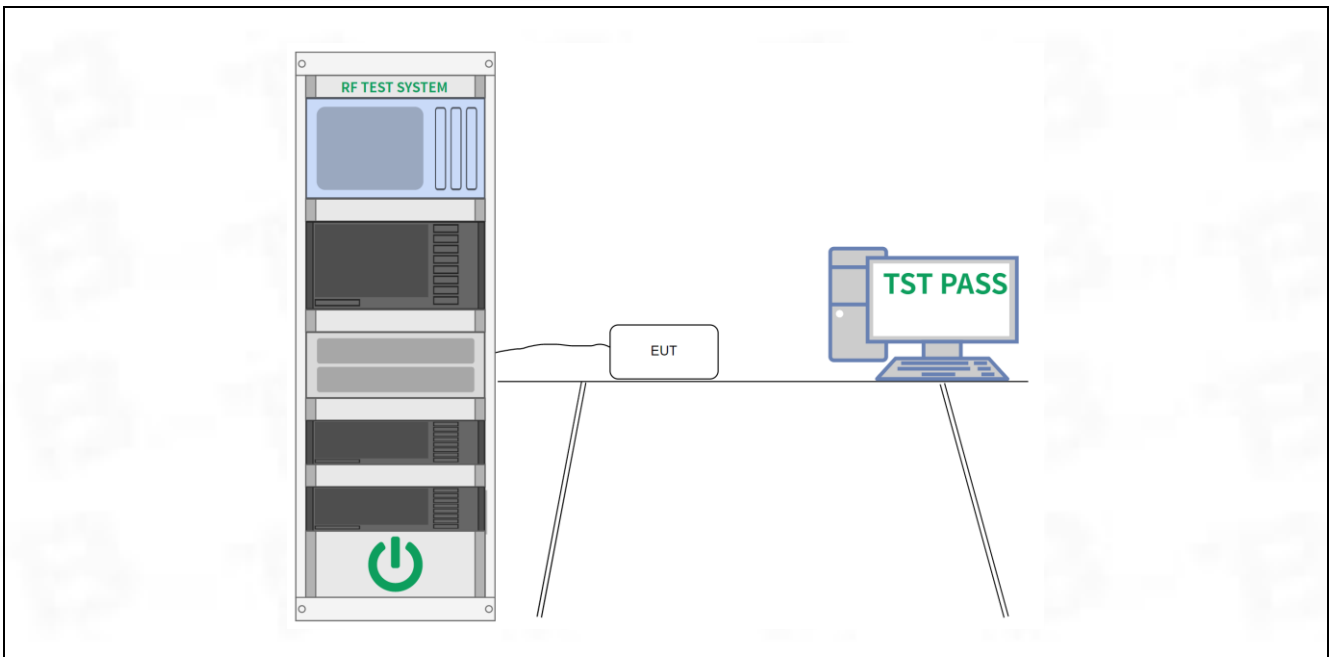
6.3 Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(3)
Test Method:	ANSI C63.10-2013, section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.247(b)(3), 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:	23.6 °C
Humidity:	51.2 %
Atmospheric Pressure:	1010 mbar

6.3.2 Test Setup Diagram:



6.3.3 Test Data:

Please Refer to Appendix for Details.

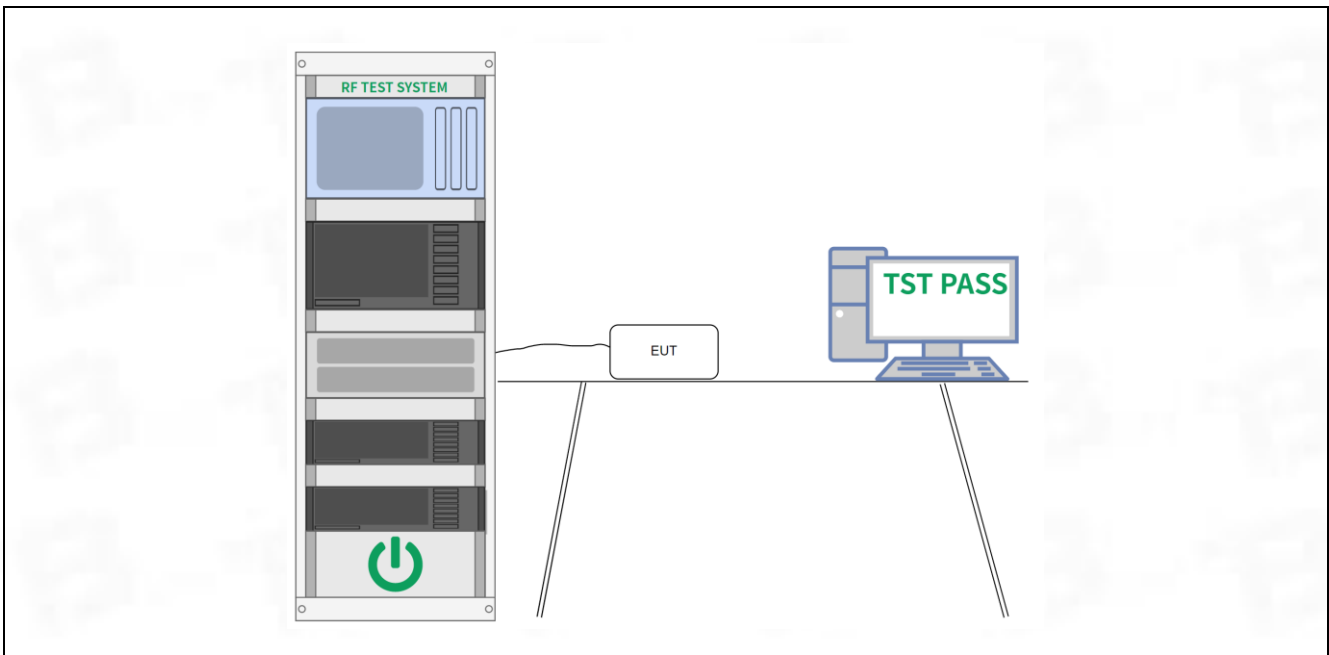
6.4 Power Spectral Density

Test Requirement:	47 CFR 15.247(e)
Test Method:	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 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.
Procedure:	ANSI C63.10-2013, section 11.10, Maximum power spectral density level in the fundamental emission

6.4.1 E.U.T. Operation:

Operating Environment:	
Temperature:	23.6 °C
Humidity:	51.2 %
Atmospheric Pressure:	1010 mbar

6.4.2 Test Setup Diagram:



6.4.3 Test Data:

Please Refer to Appendix for Details.

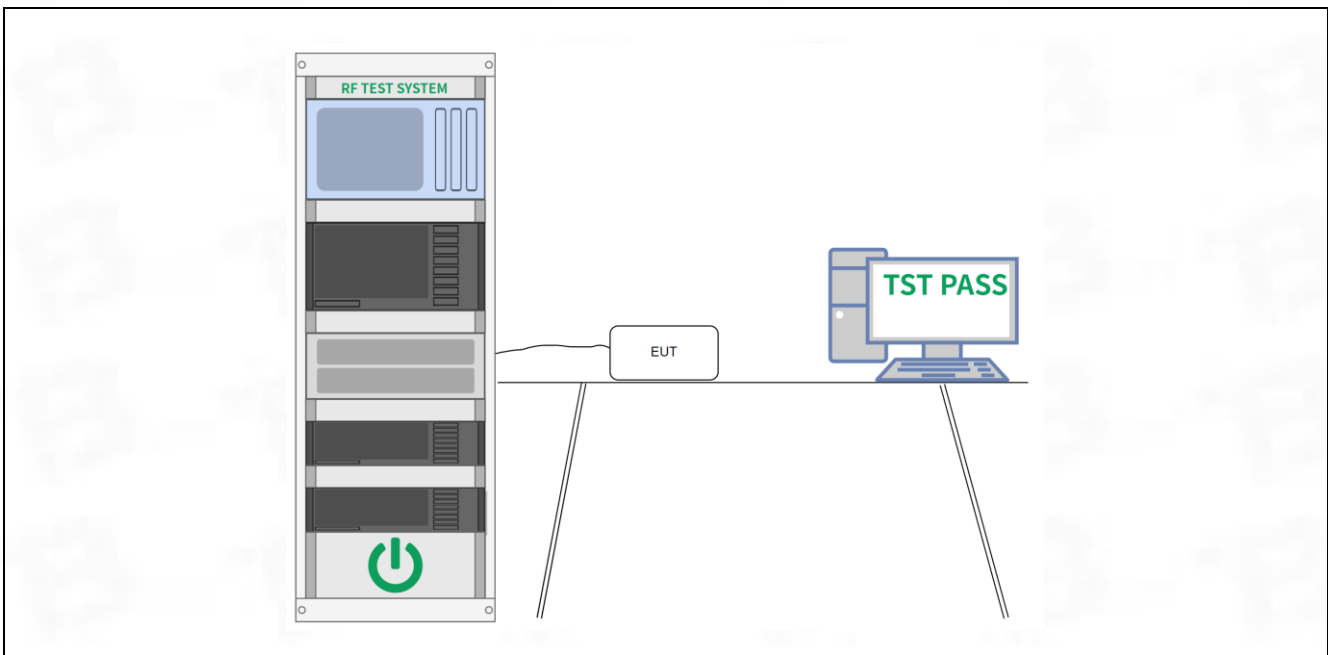
6.5 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d)
Test Method:	ANSI C63.10-2013 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 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.
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:	23.6 °C
Humidity:	51.2 %
Atmospheric Pressure:	1010 mbar

6.5.2 Test Setup Diagram:



6.5.3 Test Data:

Please Refer to Appendix for Details.

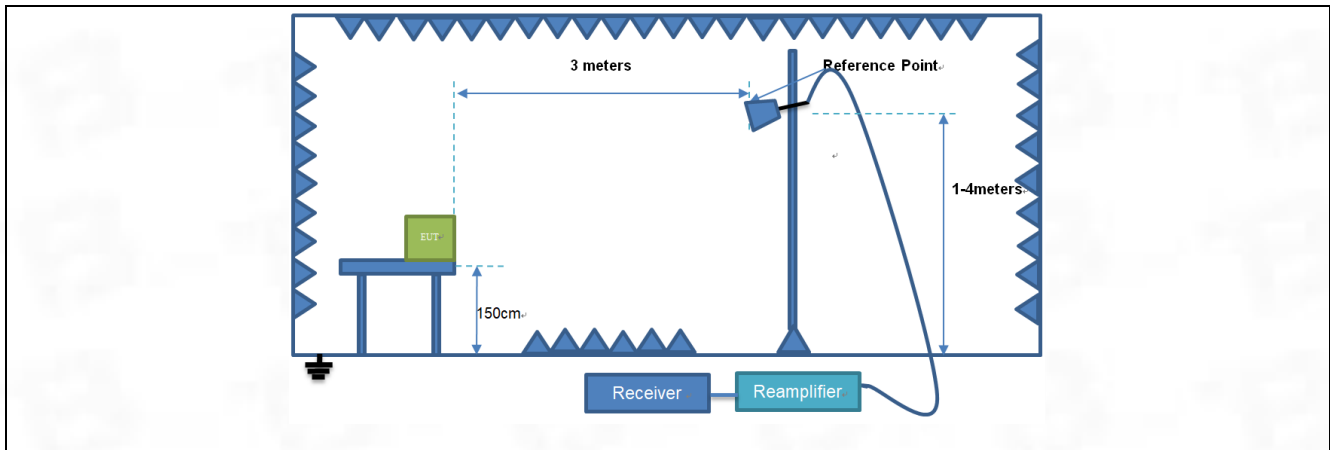
6.6 Band edge emissions (Radiated)

Test Requirement:	Refer to 47 CFR 15.247(d), 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:	ANSI C63.10-2013 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02		
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 6.10.5.2		

6.6.1 E.U.T. Operation:

Operating Environment:	
Temperature:	23.6 °C
Humidity:	51.2 %
Atmospheric Pressure:	1010 mbar

6.6.2 Test Setup Diagram:



6.6.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	67.19	-30.59	36.60	74.00	-37.40	peak	P
2	2390.000	72.27	-30.49	41.78	74.00	-32.22	peak	P
3 *	2400.000	84.11	-30.48	53.63	74.00	-20.37	peak	P

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	66.15	-30.59	35.56	74.00	-38.44	peak	P
2	2390.000	67.88	-30.49	37.39	74.00	-36.61	peak	P
3 *	2400.000	80.86	-30.48	50.38	74.00	-23.62	peak	P

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	72.85	-30.39	42.46	74.00	-31.54	peak	P
2	2500.000	66.60	-30.37	36.23	74.00	-37.77	peak	P

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	67.88	-30.39	37.49	74.00	-36.51	peak	P
2	2500.000	66.47	-30.37	36.10	74.00	-37.90	peak	P

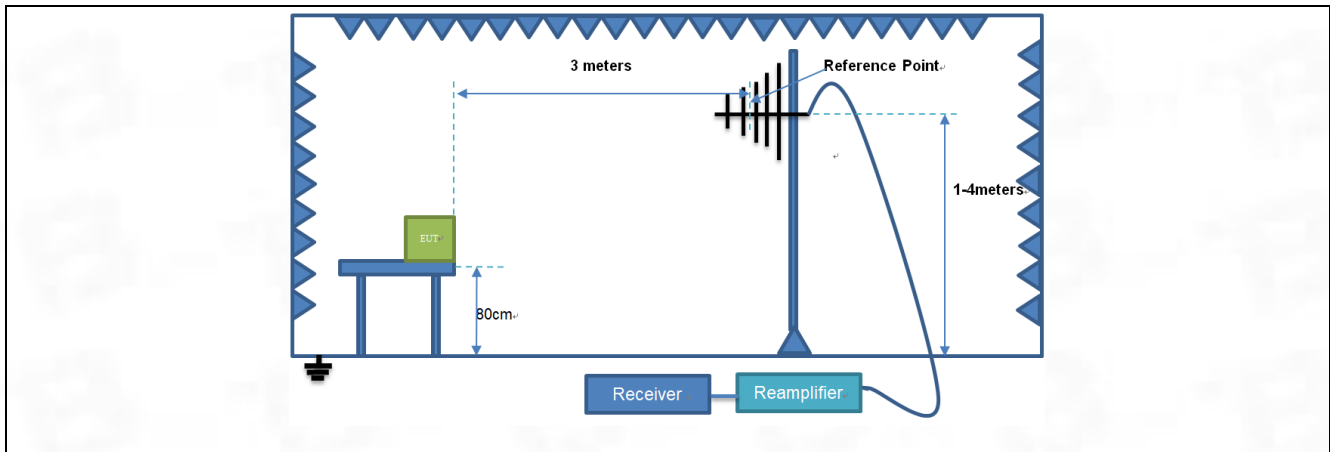
6.7 Emissions in frequency bands (below 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), 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:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
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:

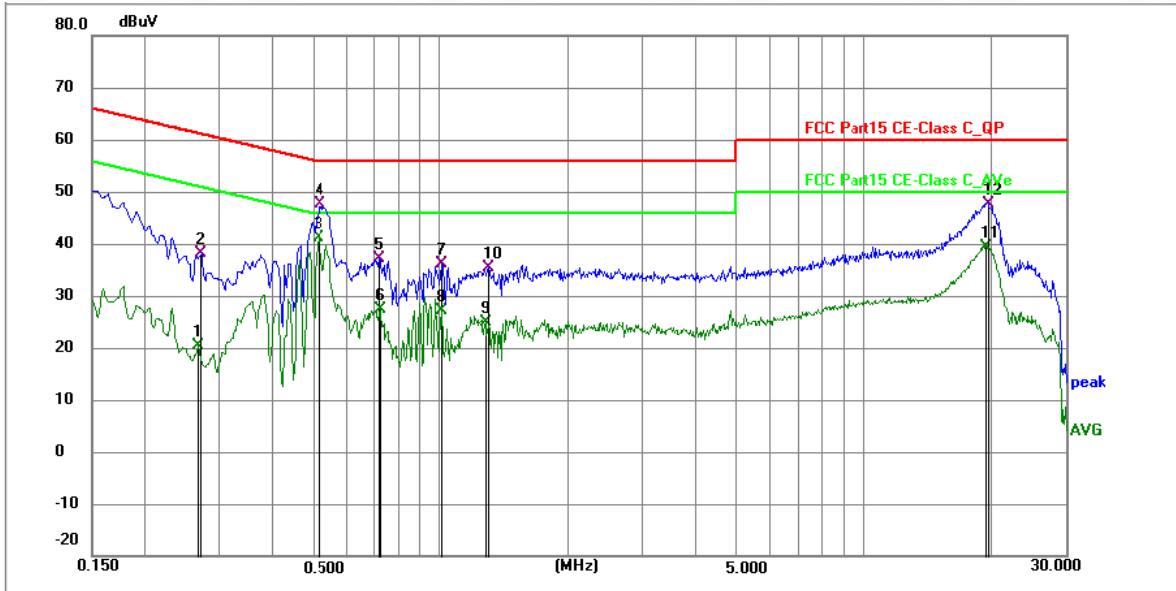
Operating Environment:	
Temperature:	23.1 °C
Humidity:	50.2 %
Atmospheric Pressure:	1010 mbar

6.7.2 Test Setup Diagram:



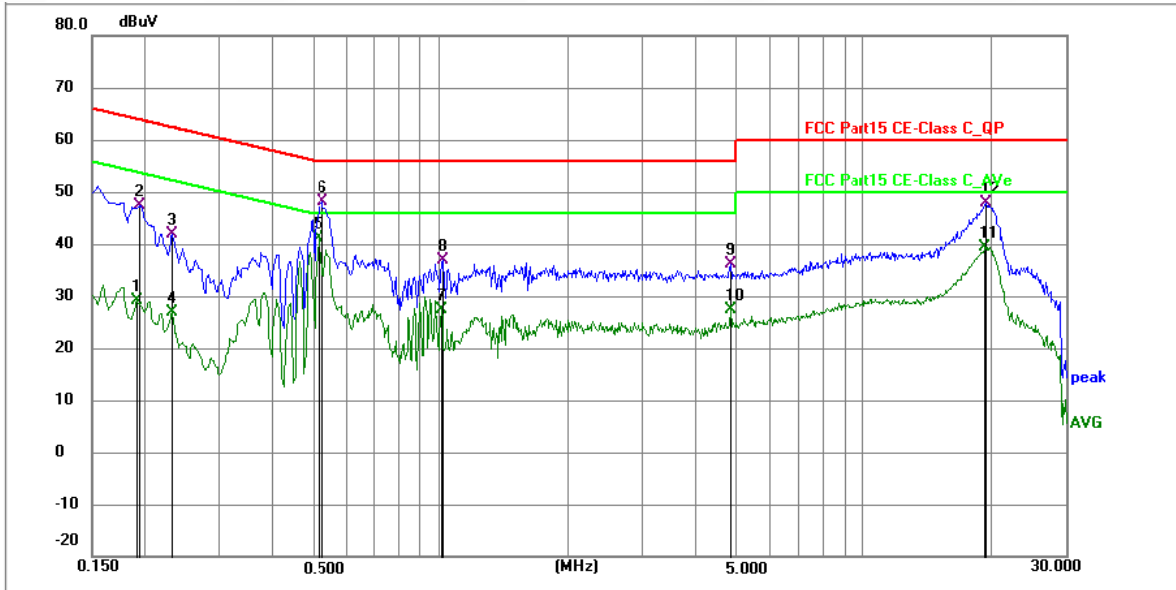
6.7.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2670	9.71	10.77	20.48	51.21	-30.73	AVG	P	
2	0.2714	27.27	10.79	38.06	61.07	-23.01	QP	P	
3 *	0.5144	30.03	11.21	41.24	46.00	-4.76	AVG	P	
4	0.5190	36.38	11.21	47.59	56.00	-8.41	QP	P	
5	0.7170	26.25	10.94	37.19	56.00	-18.81	QP	P	
6	0.7215	16.35	10.93	27.28	46.00	-18.72	AVG	P	
7	1.0050	25.53	10.66	36.19	56.00	-19.81	QP	P	
8	1.0050	16.48	10.66	27.14	46.00	-18.86	AVG	P	
9	1.2795	14.23	10.66	24.89	46.00	-21.11	AVG	P	
10	1.3020	24.82	10.66	35.48	56.00	-20.52	QP	P	
11	19.5135	28.36	11.04	39.40	50.00	-10.60	AVG	P	
12	19.6935	36.48	11.04	47.52	60.00	-12.48	QP	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1905	18.54	10.54	29.08	54.01	-24.93	AVG	P	
2	0.1949	36.88	10.55	47.43	63.83	-16.40	QP	P	
3	0.2310	31.21	10.66	41.87	62.41	-20.54	QP	P	
4	0.2310	16.27	10.66	26.93	52.41	-25.48	AVG	P	
5 *	0.5144	30.03	11.21	41.24	46.00	-4.76	AVG	P	
6	0.5235	36.96	11.21	48.17	56.00	-7.83	QP	P	
7	1.0050	16.79	10.66	27.45	46.00	-18.55	AVG	P	
8	1.0140	26.12	10.66	36.78	56.00	-19.22	QP	P	
9	4.8254	25.30	10.72	36.02	56.00	-19.98	QP	P	
10	4.8254	16.56	10.72	27.28	46.00	-18.72	AVG	P	
11	19.3290	28.43	11.02	39.45	50.00	-10.55	AVG	P	
12	19.4774	36.77	11.02	47.79	60.00	-12.21	QP	P	

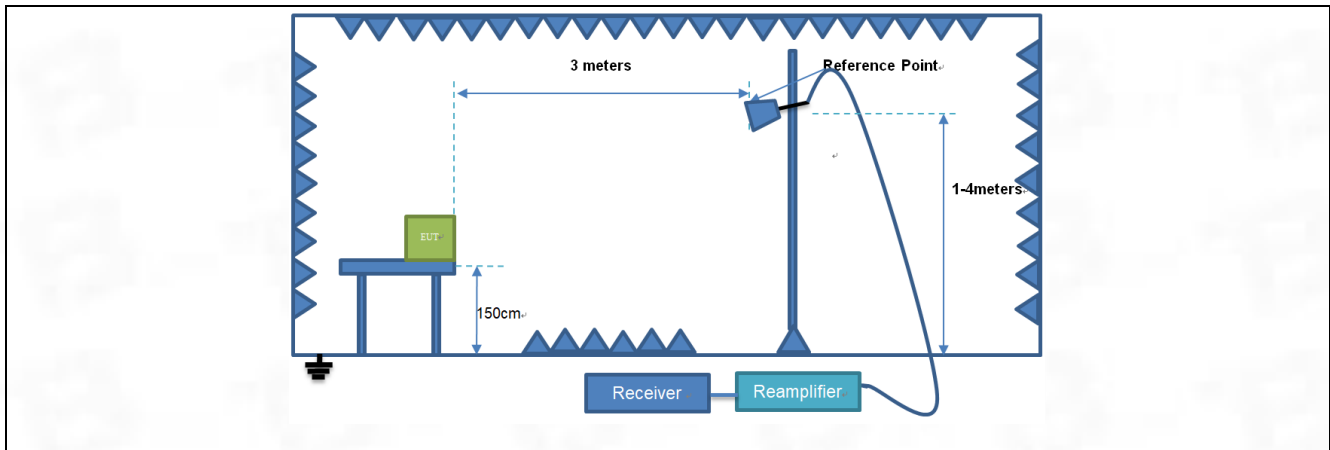
6.8 Emissions in frequency bands (above 1GHz)

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:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
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:	23.1 °C
Humidity:	50.2 %
Atmospheric Pressure:	1010 mbar

6.8.2 Test Setup Diagram:



6.8.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3661.148	70.64	-29.04	41.60	74.00	-32.40	peak	P
2	5672.717	66.26	-26.39	39.87	74.00	-34.13	peak	P
3	8094.493	73.15	-25.49	47.66	74.00	-26.34	peak	P
4	10126.824	73.47	-24.35	49.12	74.00	-24.88	peak	P
5	13559.879	72.61	-20.98	51.63	74.00	-22.37	peak	P
6 *	16081.142	75.01	-21.20	53.81	74.00	-20.19	peak	P

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3709.079	69.42	-29.04	40.38	74.00	-33.62	peak	P
2	4721.515	70.86	-28.16	42.70	74.00	-31.30	peak	P
3	6498.138	68.94	-25.38	43.56	74.00	-30.44	peak	P
4	9139.261	71.67	-24.00	47.67	74.00	-26.33	peak	P
5	11957.804	72.15	-22.26	49.89	74.00	-24.11	peak	P
6 *	15781.839	73.78	-21.55	52.23	74.00	-21.77	peak	P

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: M

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	4068.505	71.45	-28.97	42.48	74.00	-31.52	peak	P
2	5392.919	70.07	-27.04	43.03	74.00	-30.97	peak	P
3	6168.706	69.95	-25.35	44.60	74.00	-29.40	peak	P
4	8368.070	70.34	-25.38	44.96	74.00	-29.04	peak	P
5	9139.261	72.17	-24.00	48.17	74.00	-25.83	peak	P
6 *	15443.405	73.37	-21.37	52.00	74.00	-22.00	peak	P

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: M

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3851.098	69.47	-29.02	40.45	74.00	-33.55	peak	P
2	5024.232	70.05	-27.35	42.70	74.00	-31.30	peak	P
3	7432.914	71.65	-24.80	46.85	74.00	-27.15	peak	P
4	9585.684	71.66	-23.38	48.28	74.00	-25.72	peak	P
5	11500.197	73.85	-23.06	50.79	74.00	-23.21	peak	P
6 *	14512.917	72.78	-21.17	51.61	74.00	-22.39	peak	P

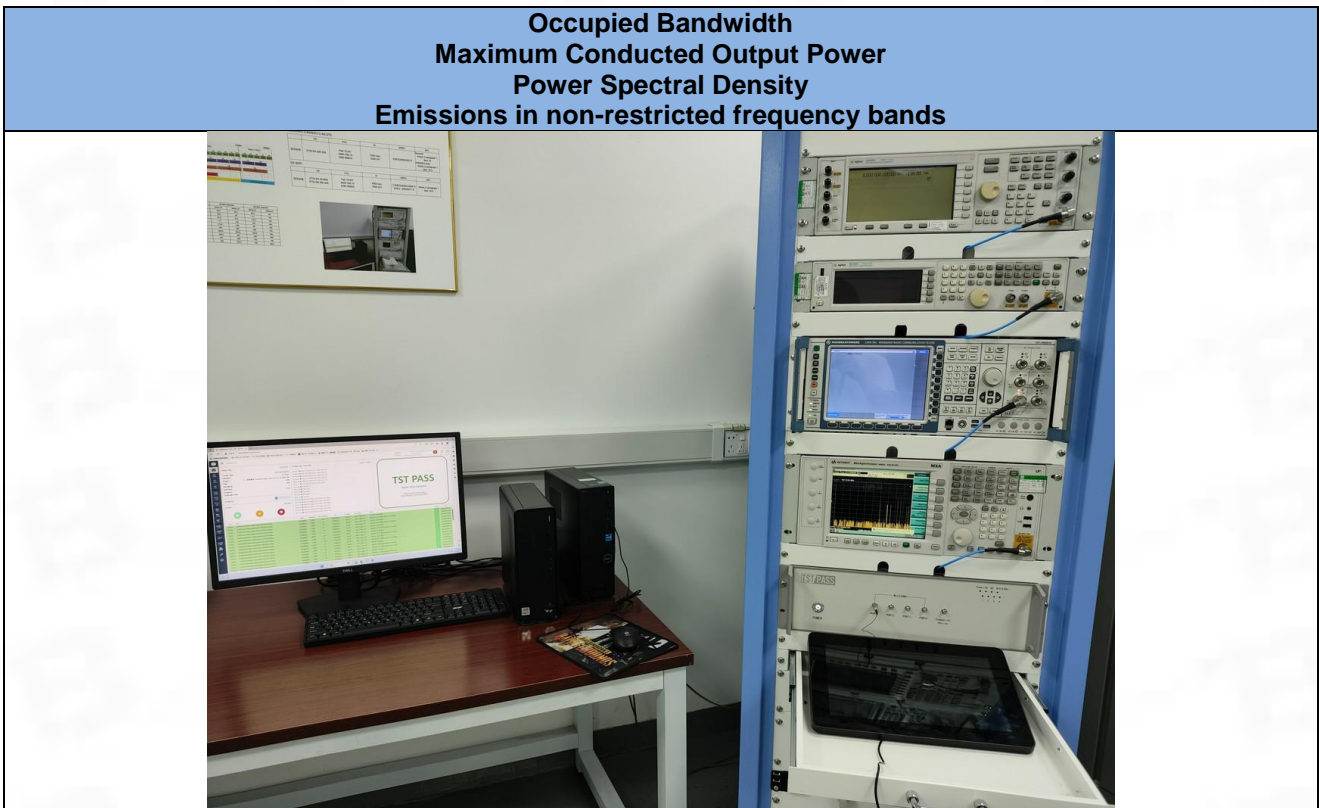
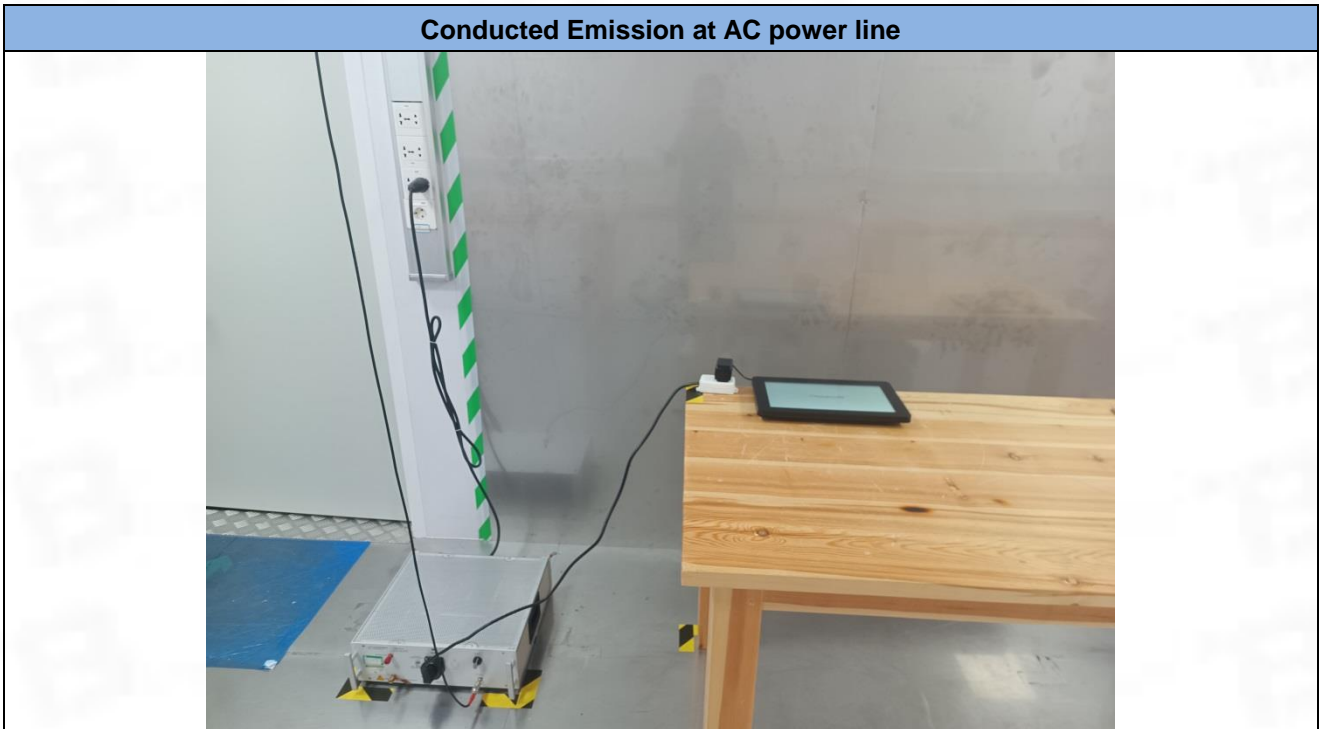
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3862.246	71.80	-29.02	42.78	74.00	-31.22	peak	P
2	5075.317	70.38	-27.30	43.08	74.00	-30.92	peak	P
3	6535.811	72.62	-25.35	47.27	74.00	-26.73	peak	P
4	8271.879	73.81	-25.42	48.39	74.00	-25.61	peak	P
5	10838.575	74.74	-23.79	50.95	74.00	-23.05	peak	P
6 *	14873.888	73.19	-20.60	52.59	74.00	-21.41	peak	P

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3228.591	72.81	-29.30	43.51	74.00	-30.49	peak	P
2	3661.149	72.14	-29.04	43.10	74.00	-30.90	peak	P
3	4606.929	74.00	-28.48	45.52	74.00	-28.48	peak	P
4	6168.706	73.45	-25.35	48.10	74.00	-25.90	peak	P
5	8094.493	73.65	-25.49	48.16	74.00	-25.84	peak	P
6 *	14366.840	74.04	-21.17	52.87	74.00	-21.13	peak	P

7 Test Setup Photos



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



Emissions in frequency bands (below 1GHz)



8 EUT Constructional Details (EUT Photos)

Please refer to the test report No. BTF230831R00101

Appendix

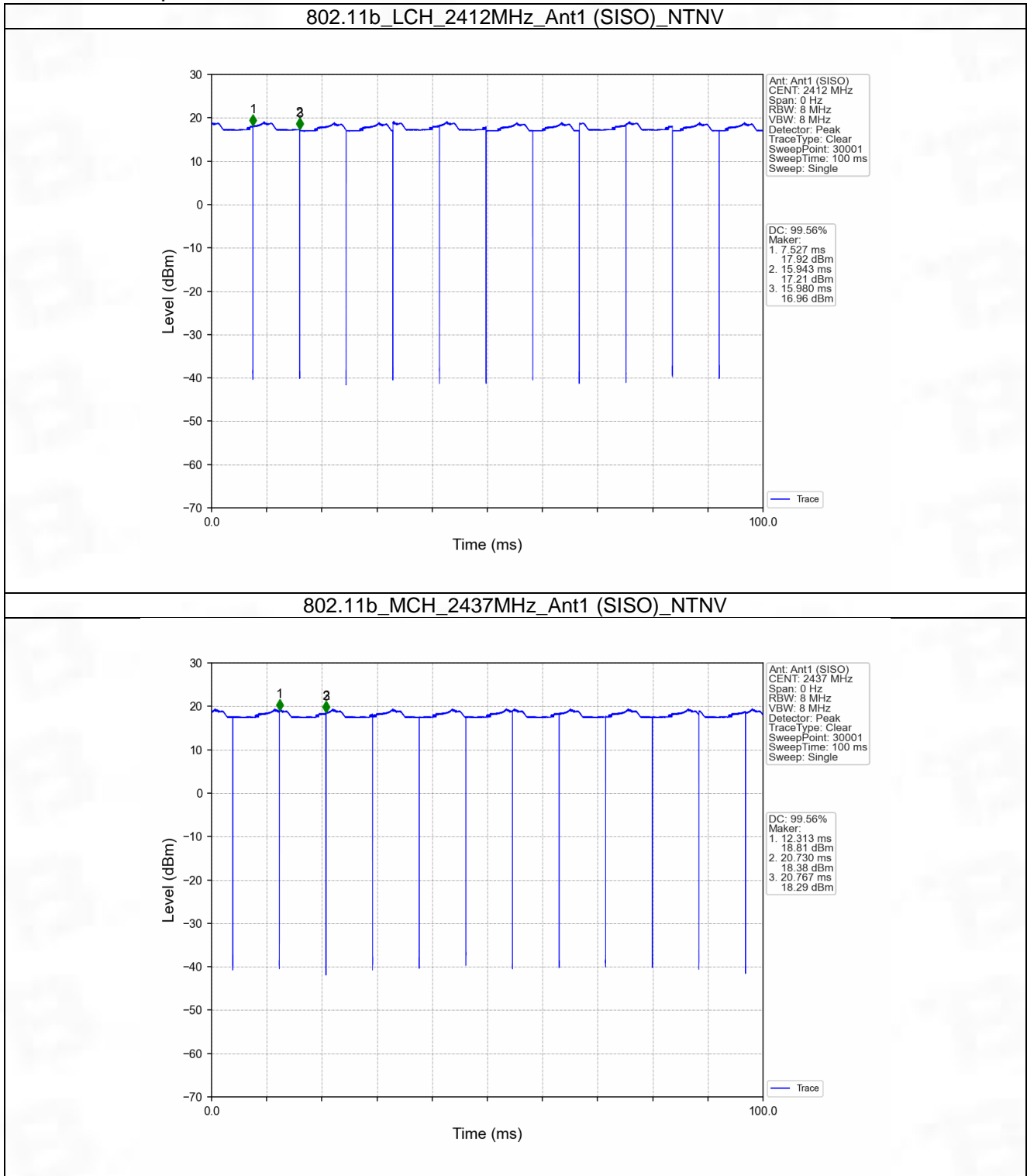
1. Duty Cycle

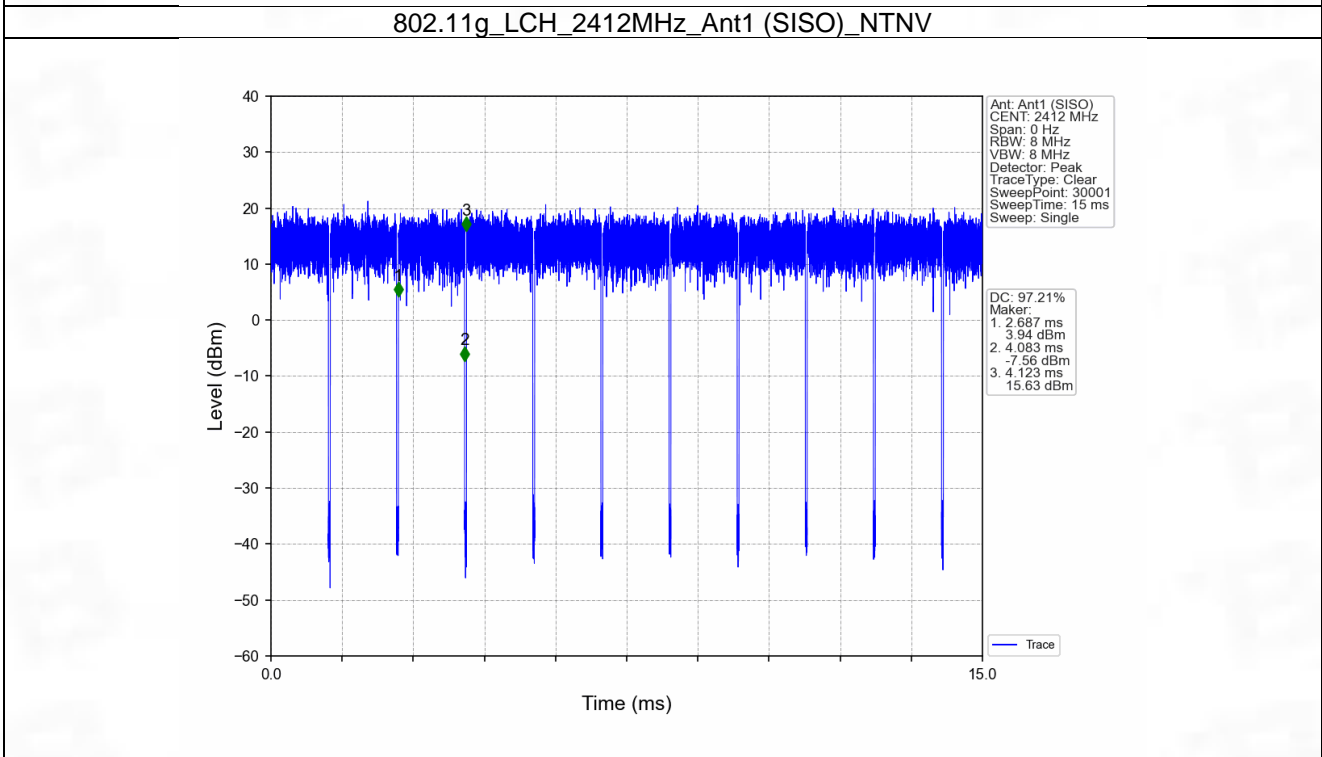
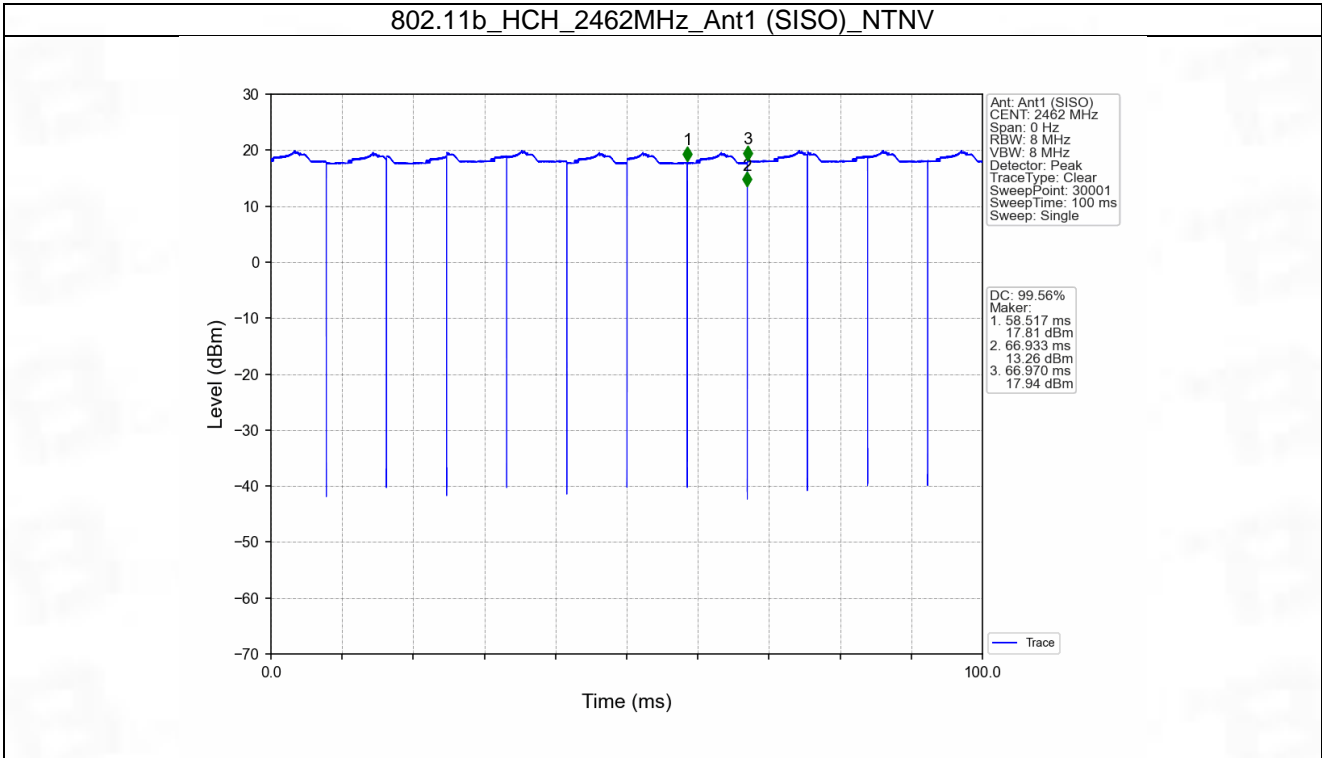
1.1 Ant1

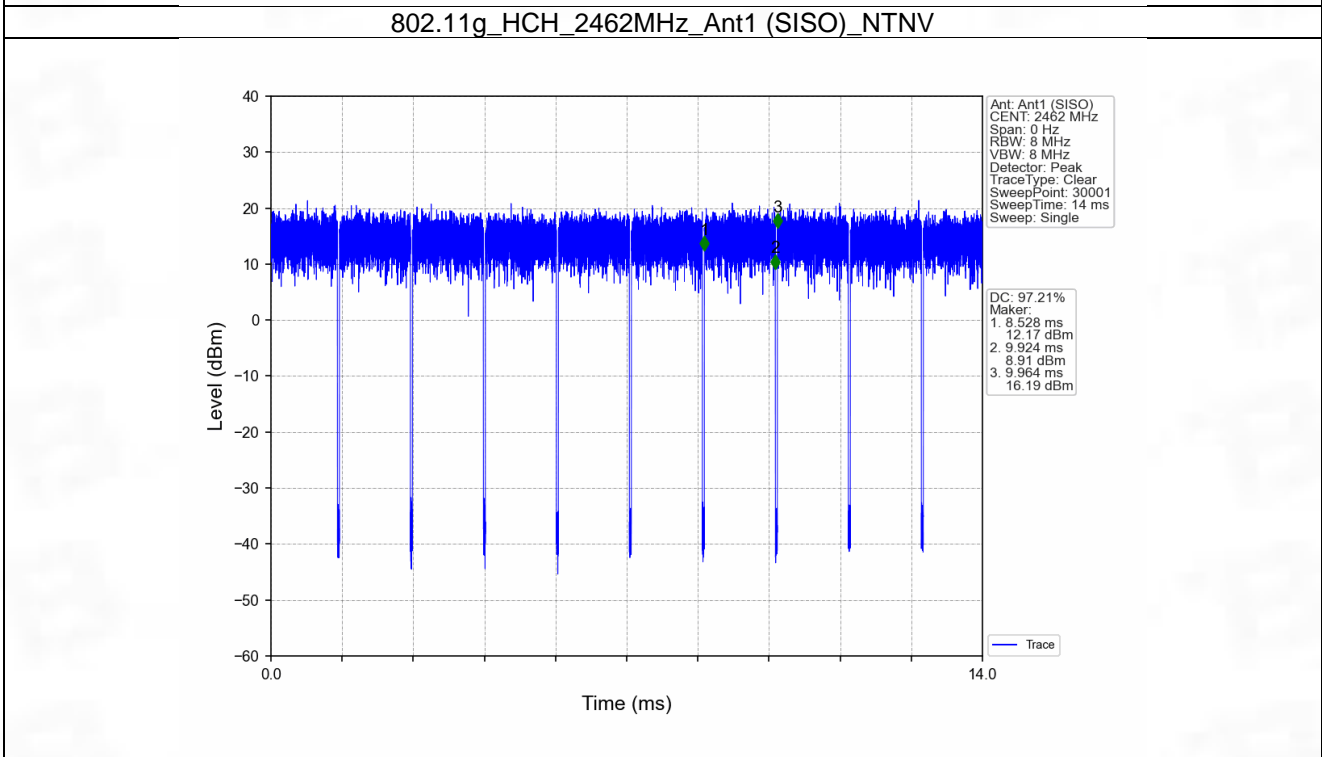
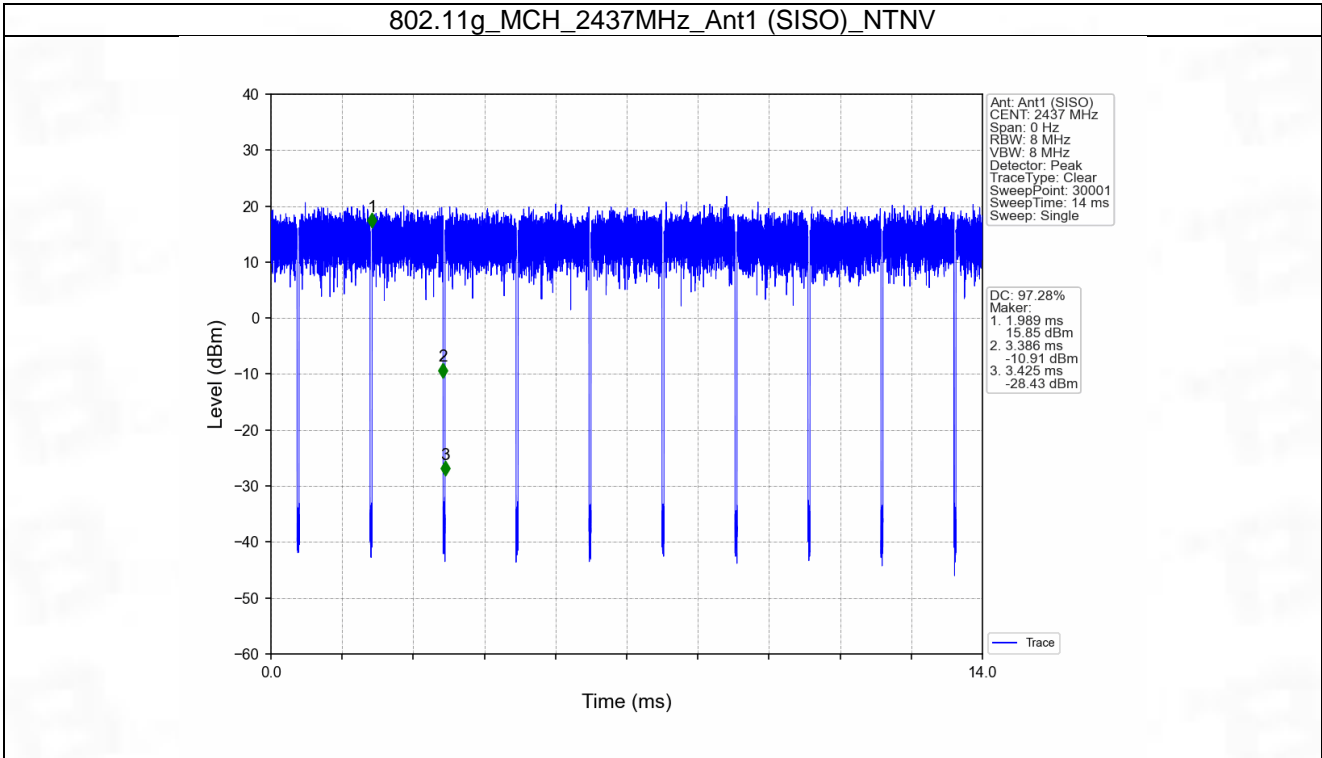
1.1.1 Test Result

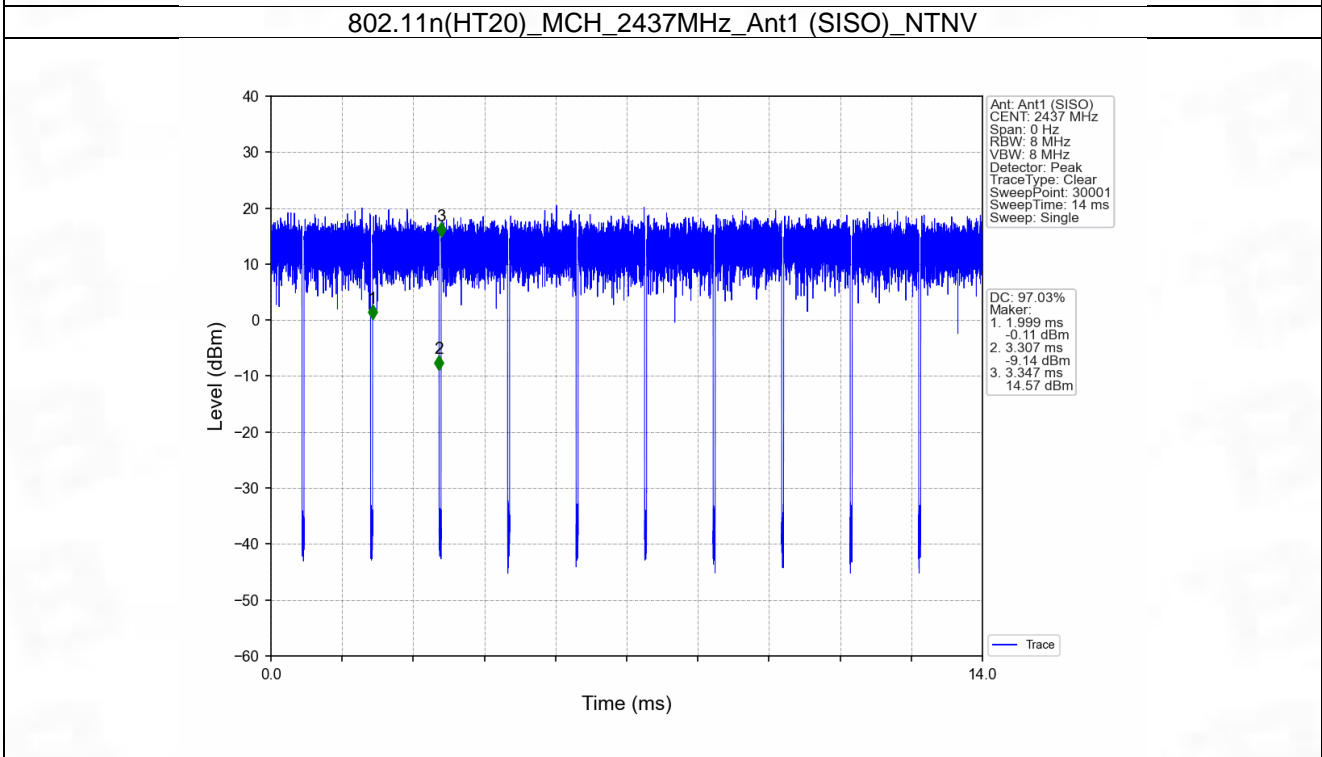
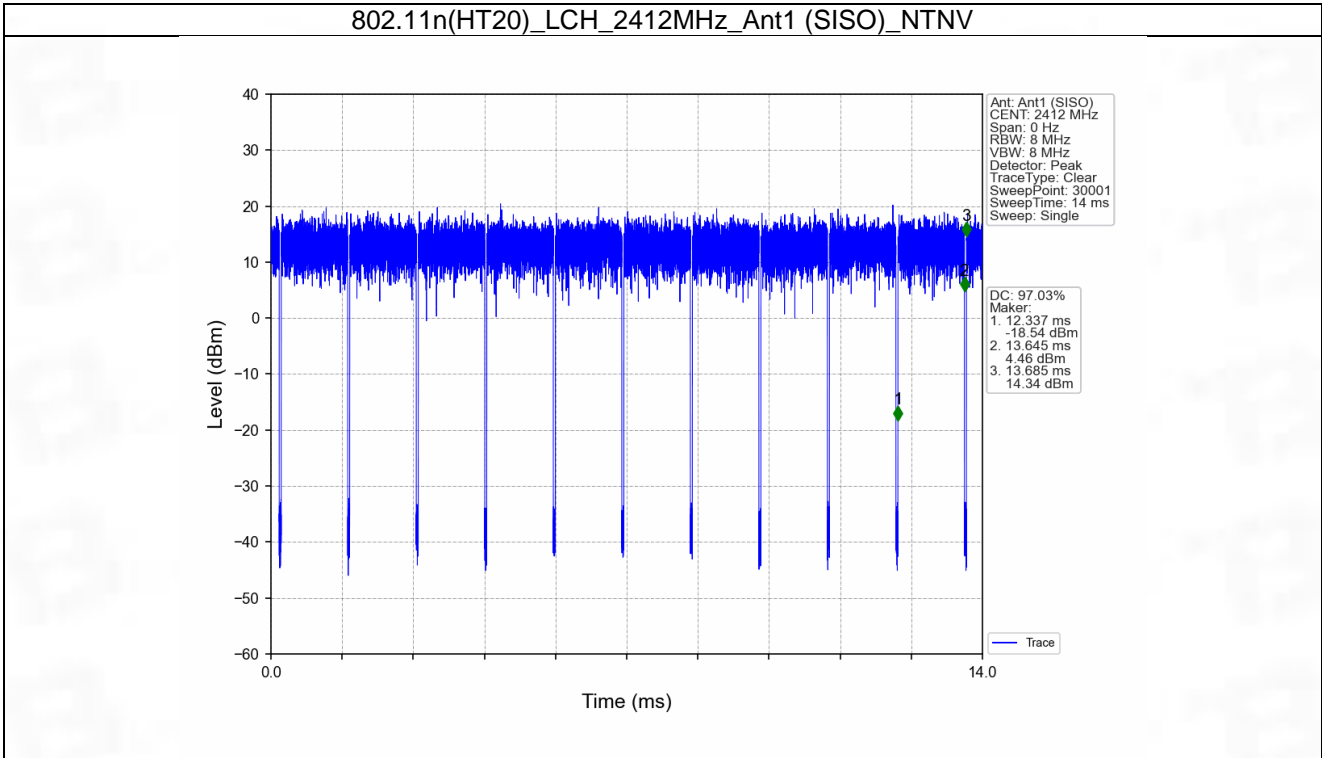
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	8.416	8.453	99.56	0.02	0.00
		2437	8.417	8.454	99.56	0.02	0.08
		2462	8.416	8.453	99.56	0.02	0.04
802.11g	SISO	2412	1.396	1.436	97.21	0.12	0.03
		2437	1.397	1.436	97.28	0.12	0.00
		2462	1.396	1.436	97.21	0.12	0.03
802.11n (HT20)	SISO	2412	1.308	1.348	97.03	0.13	0.03
		2437	1.308	1.348	97.03	0.13	0.03
		2462	1.308	1.348	97.03	0.13	0.03

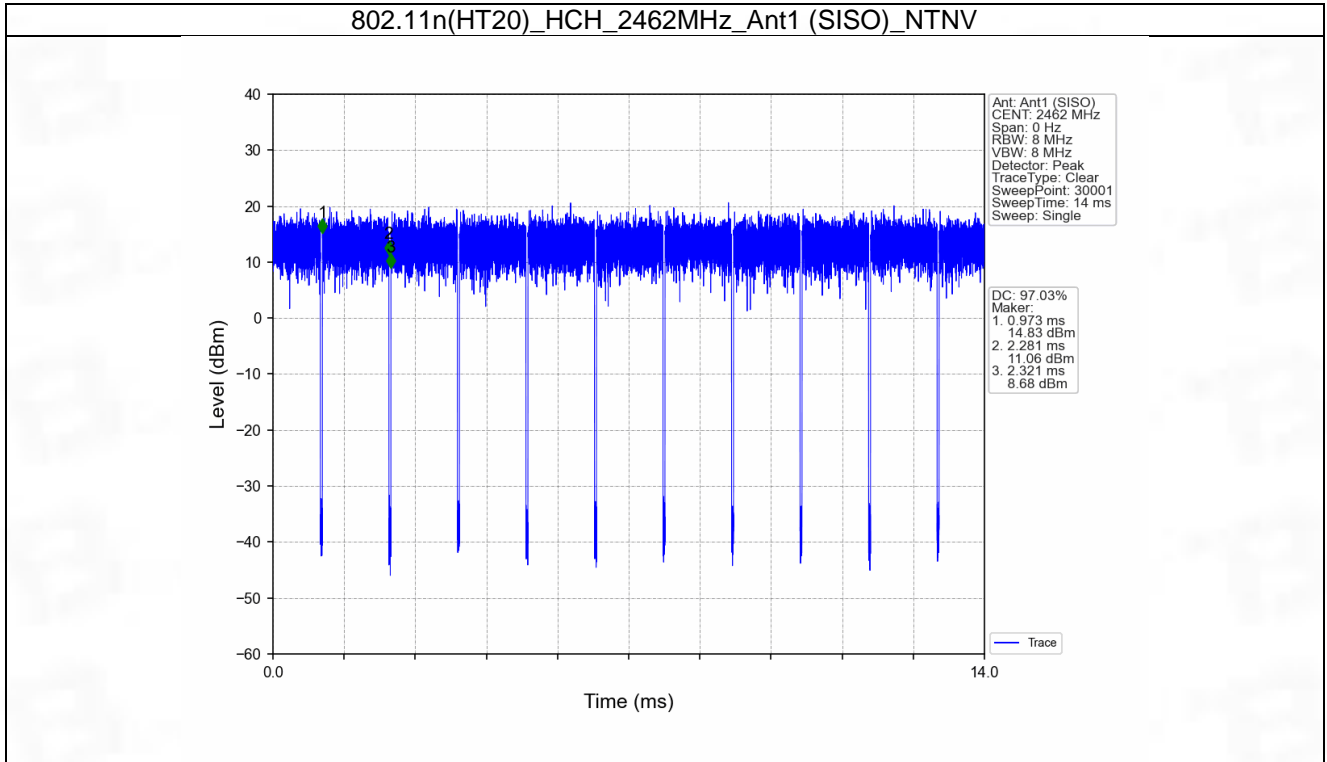
1.1.2 Test Graph











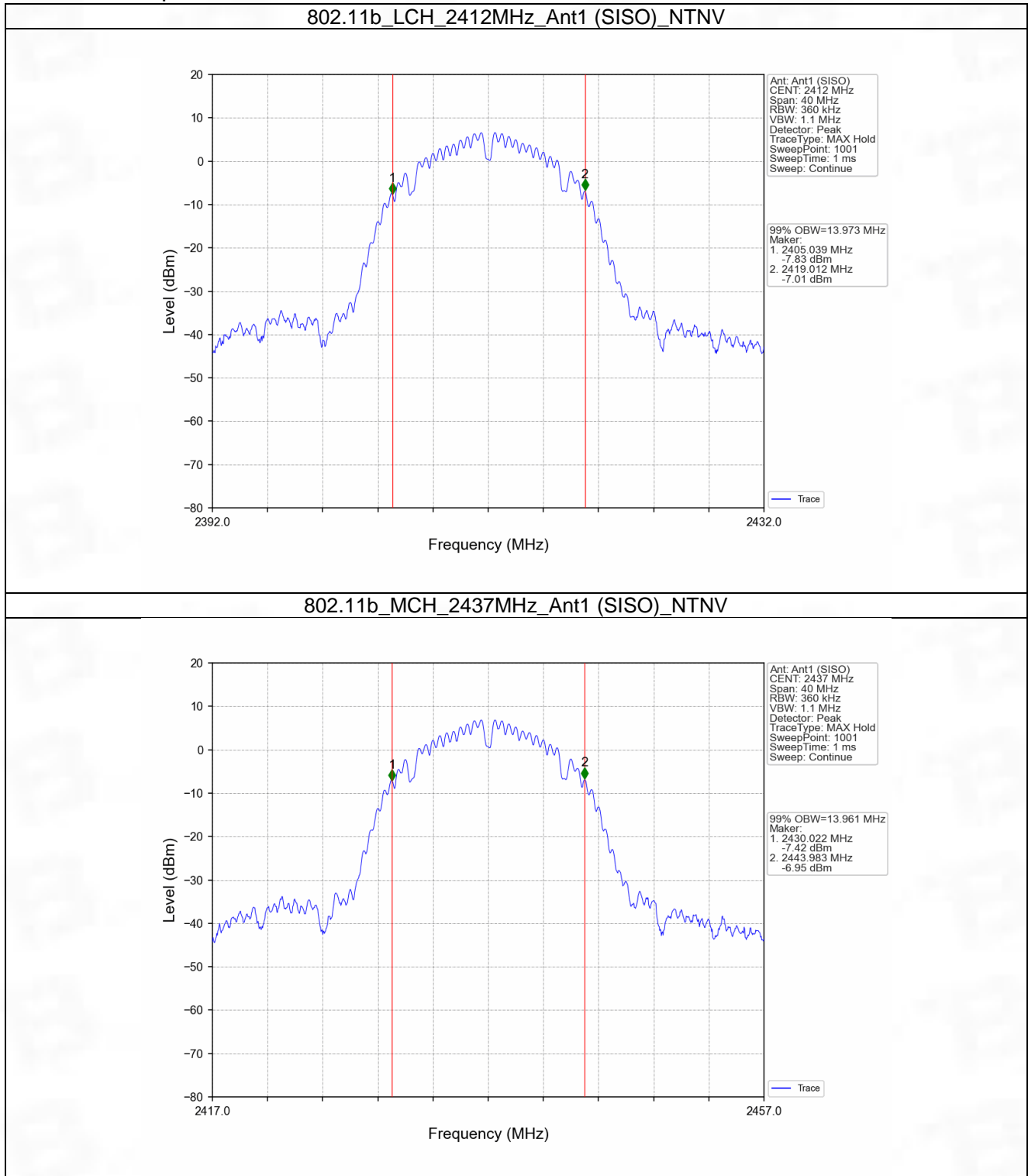
2. Bandwidth

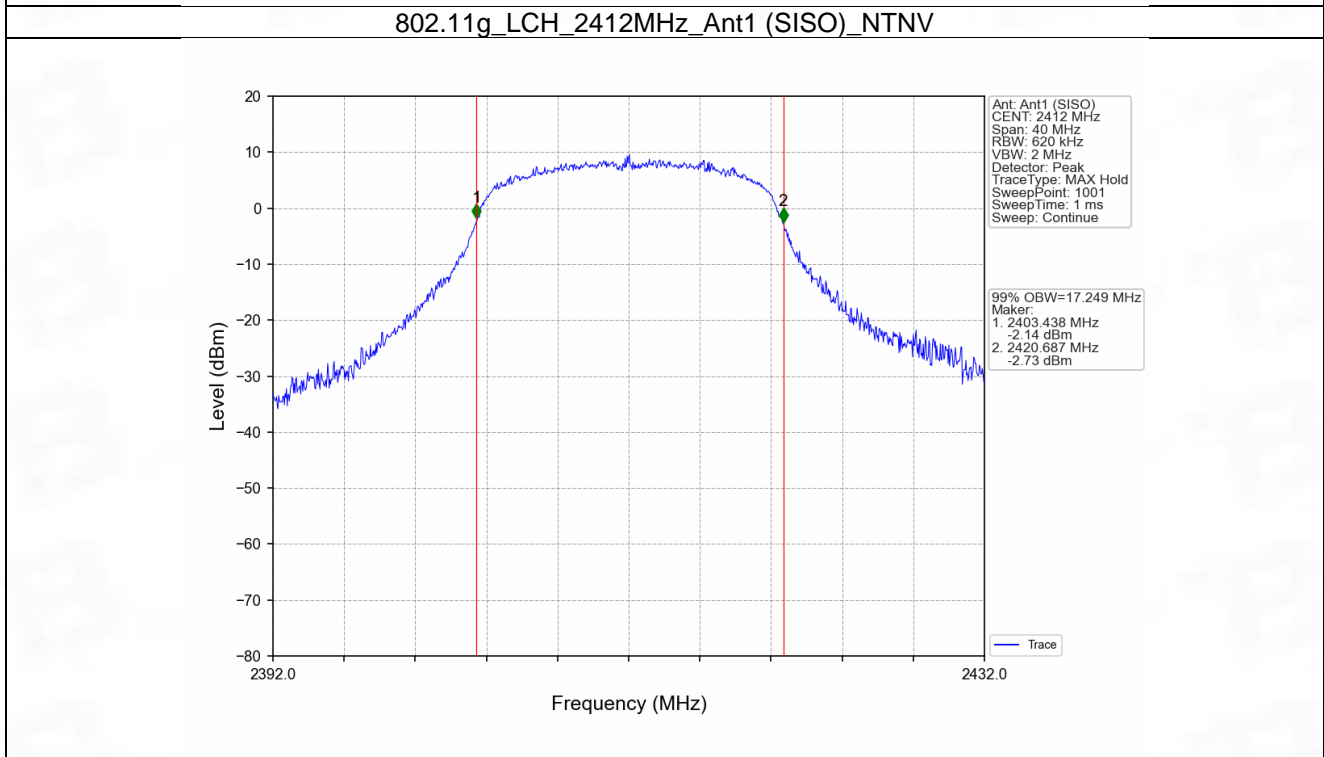
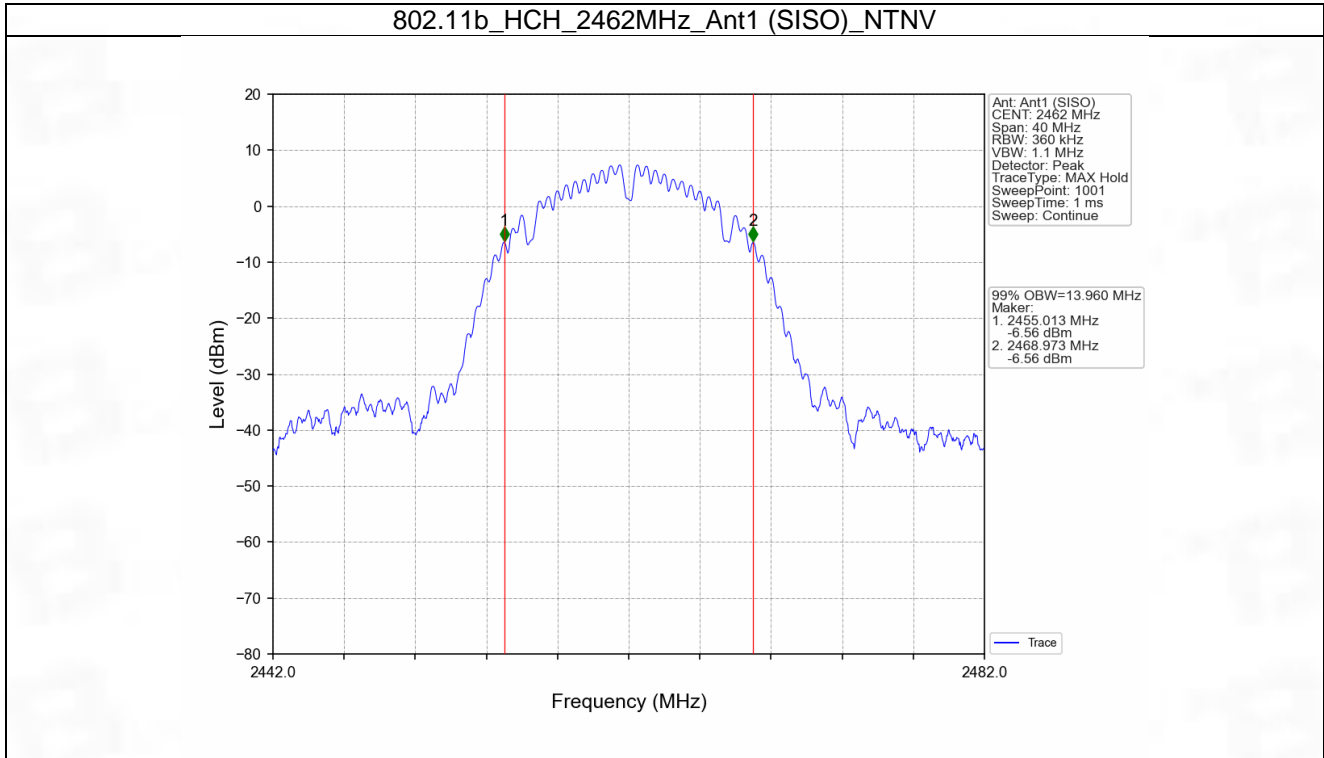
2.1 OBW

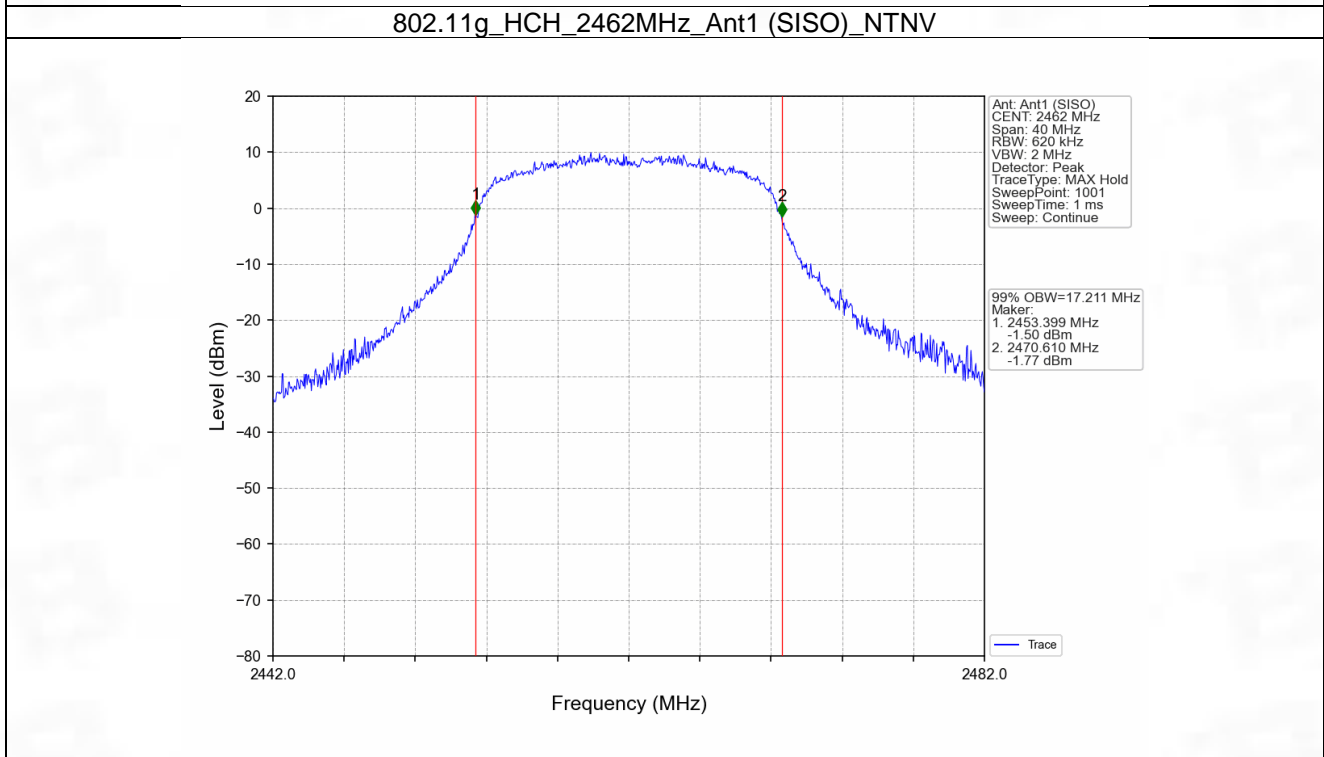
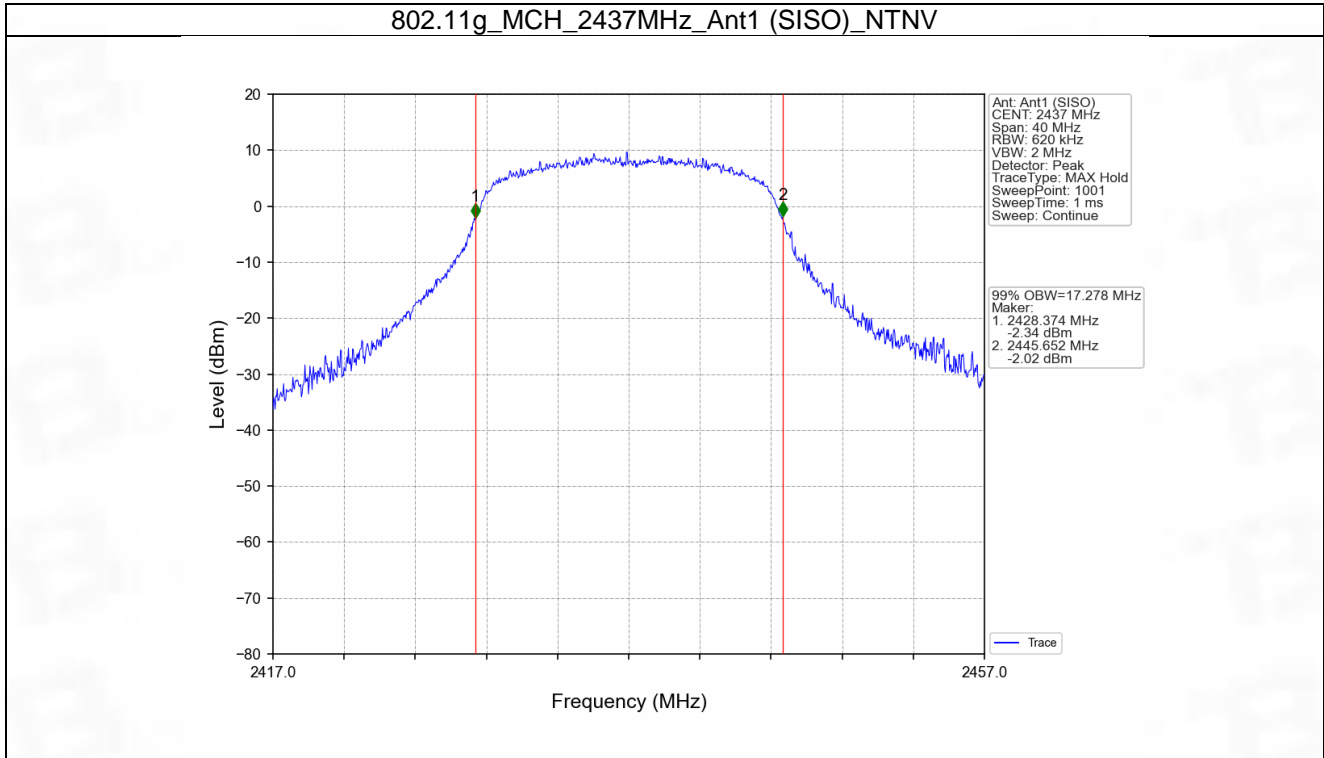
2.1.1 Test Result

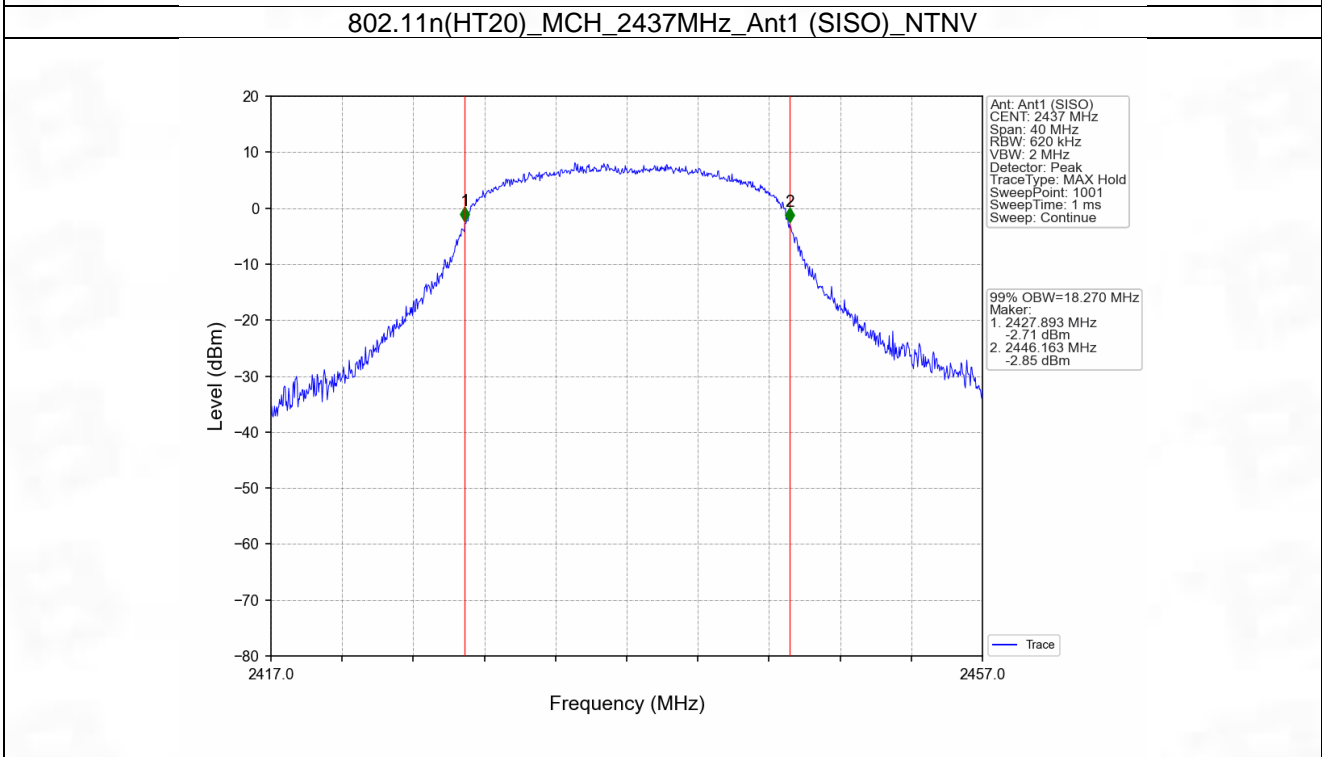
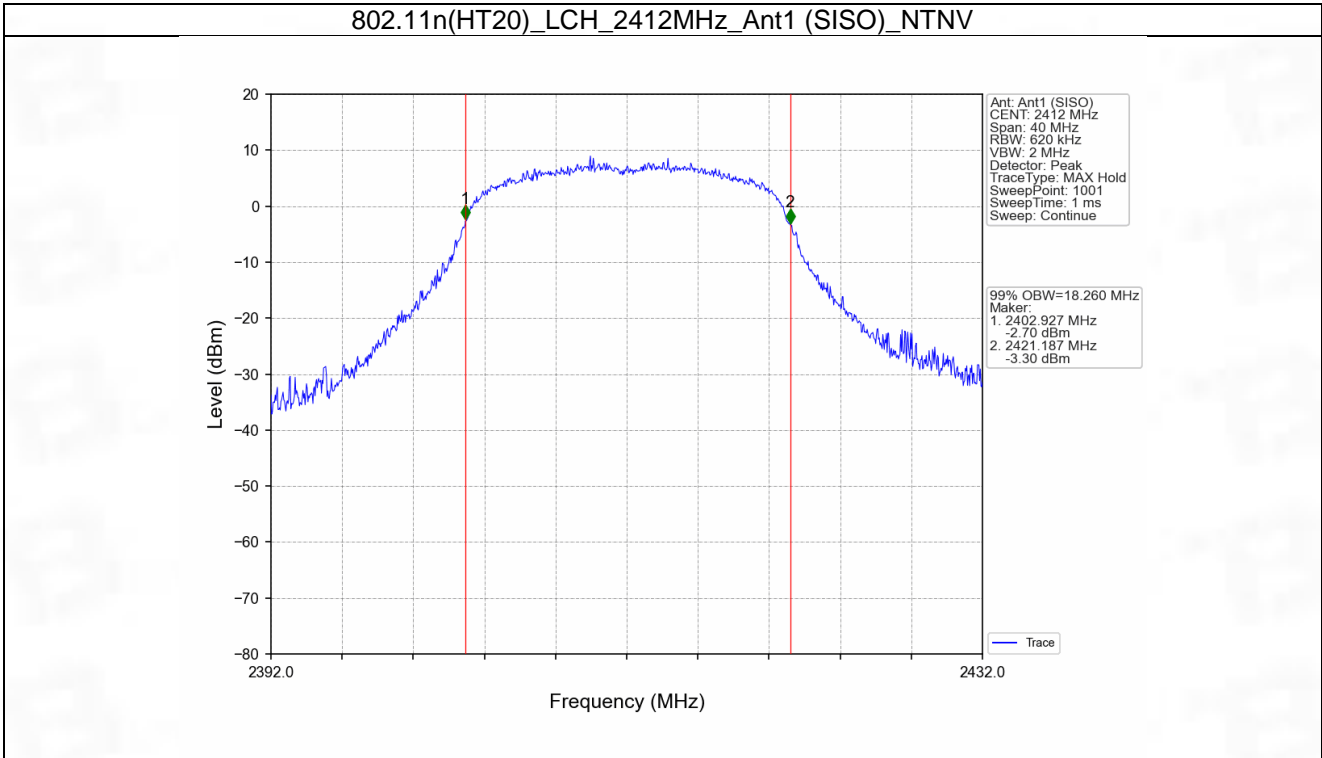
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	Verdict
				Result	
802.11b	SISO	2412	1	13.973	Pass
		2437	1	13.961	Pass
		2462	1	13.960	Pass
802.11g	SISO	2412	1	17.249	Pass
		2437	1	17.278	Pass
		2462	1	17.211	Pass
802.11n (HT20)	SISO	2412	1	18.260	Pass
		2437	1	18.270	Pass
		2462	1	18.200	Pass

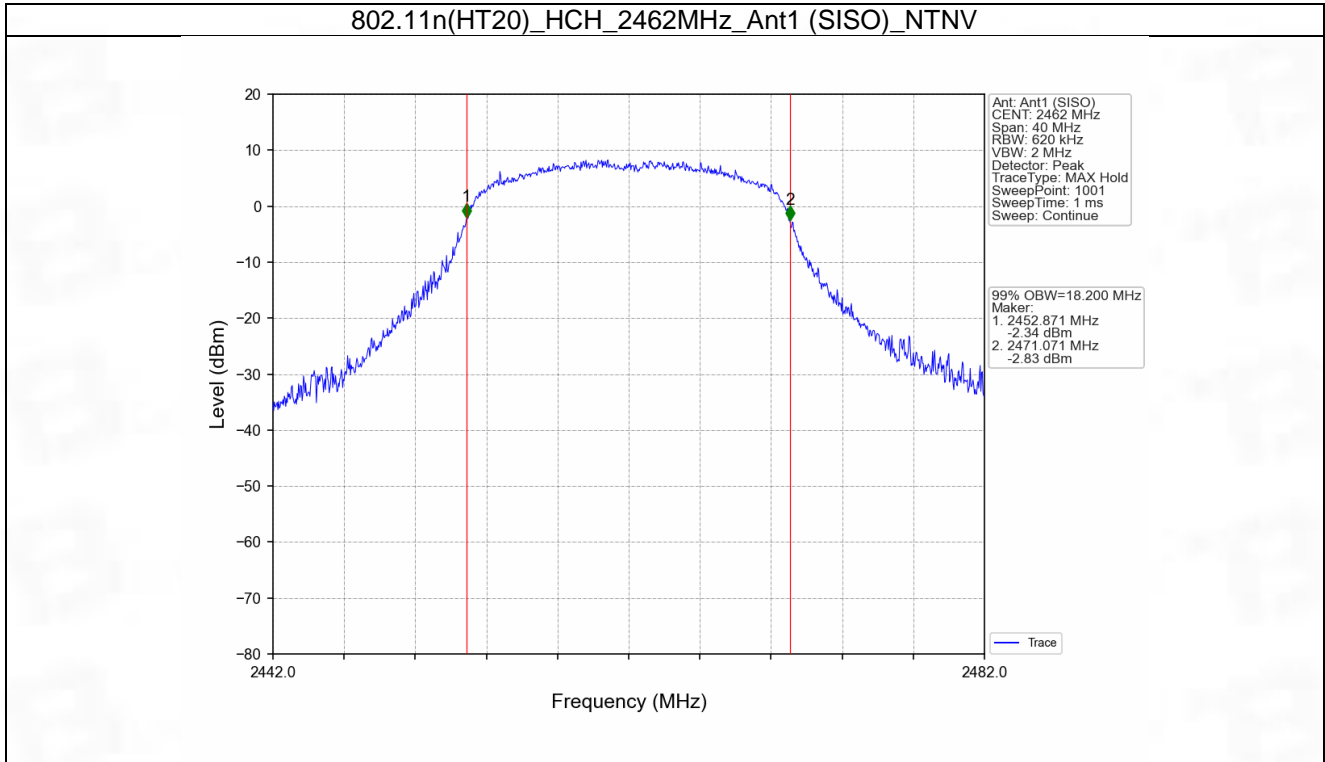
2.1.2 Test Graph









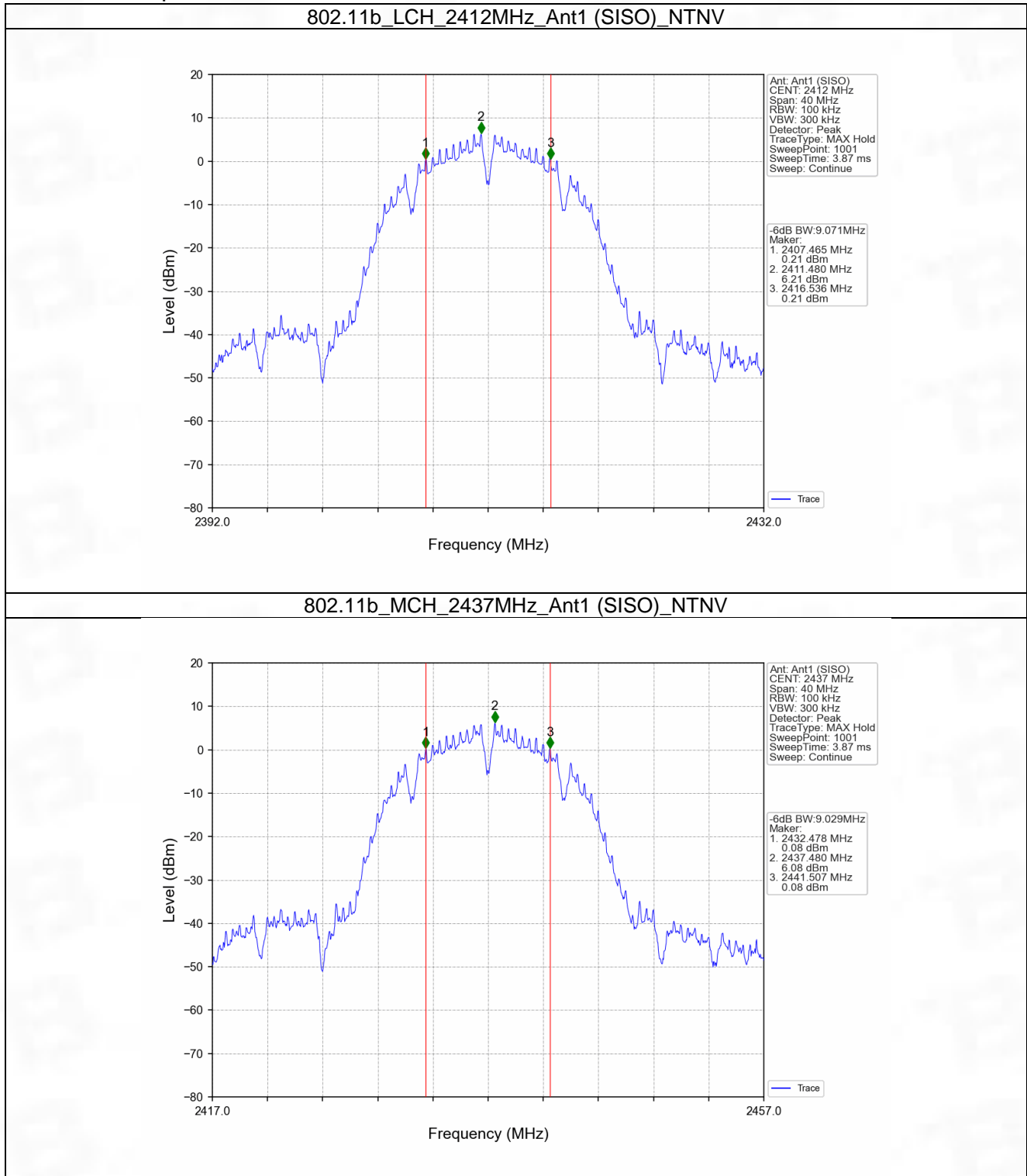


2.2 6dB BW

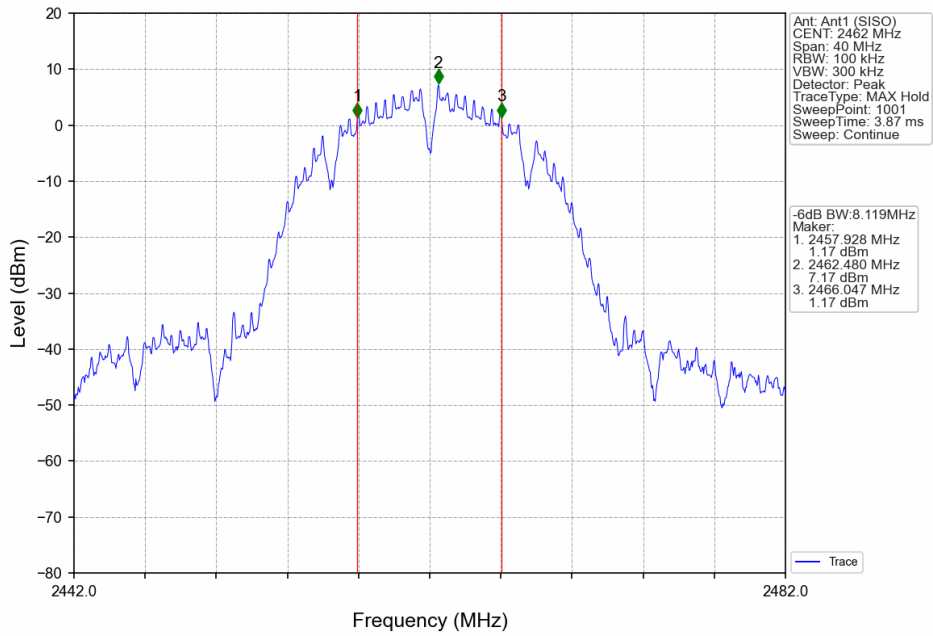
2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.071	≥ 0.5	Pass
		2437	1	9.029	≥ 0.5	Pass
		2462	1	8.119	≥ 0.5	Pass
802.11g	SISO	2412	1	15.145	≥ 0.5	Pass
		2437	1	15.154	≥ 0.5	Pass
		2462	1	15.167	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	15.150	≥ 0.5	Pass
		2437	1	15.155	≥ 0.5	Pass
		2462	1	15.141	≥ 0.5	Pass

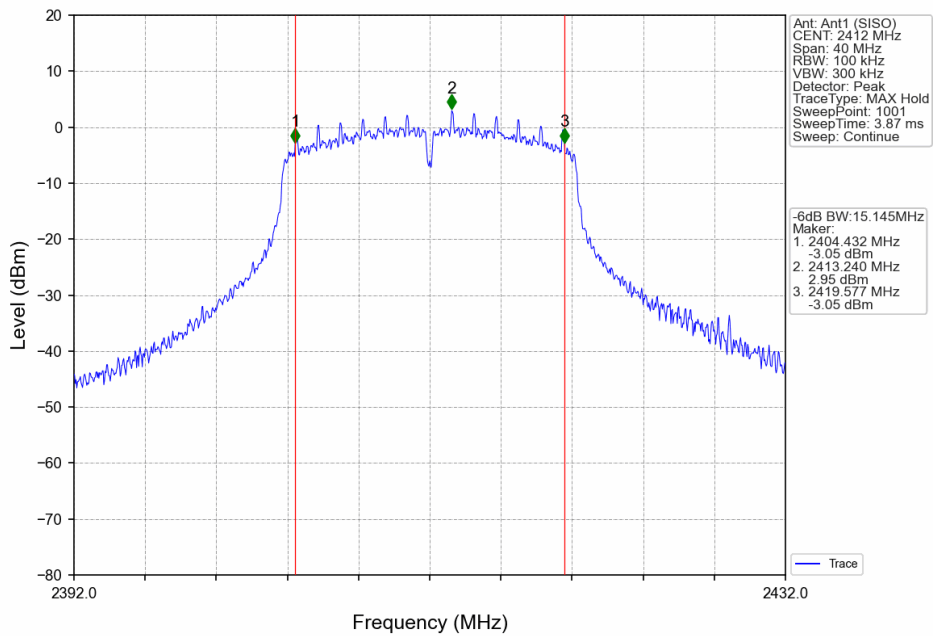
2.2.2 Test Graph

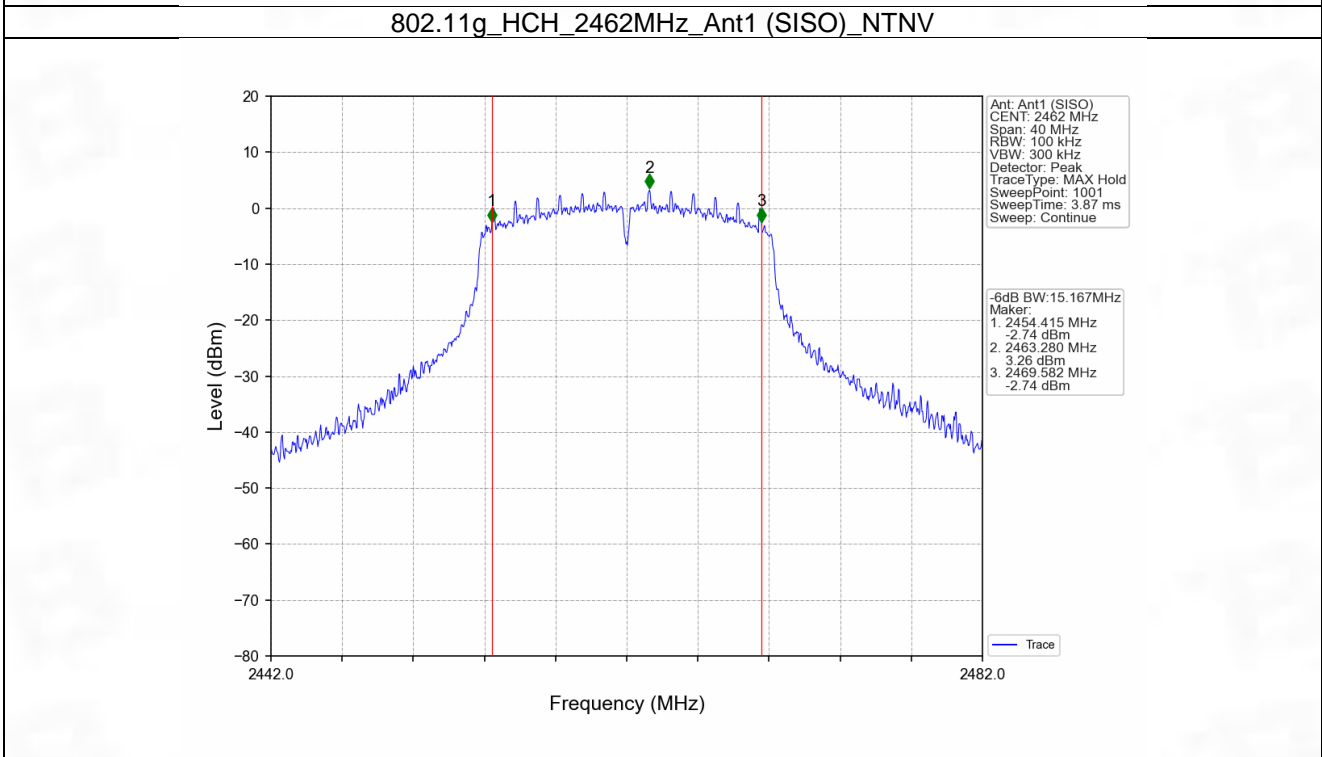
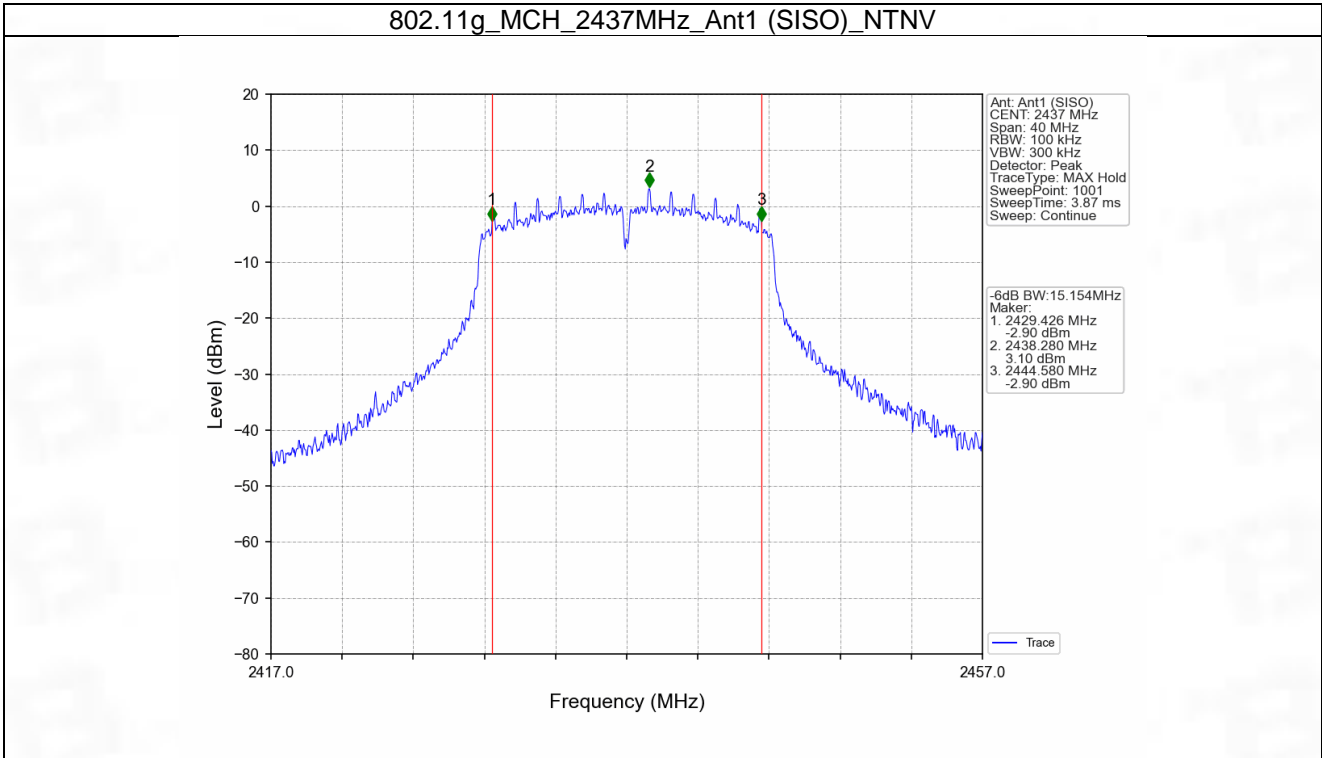


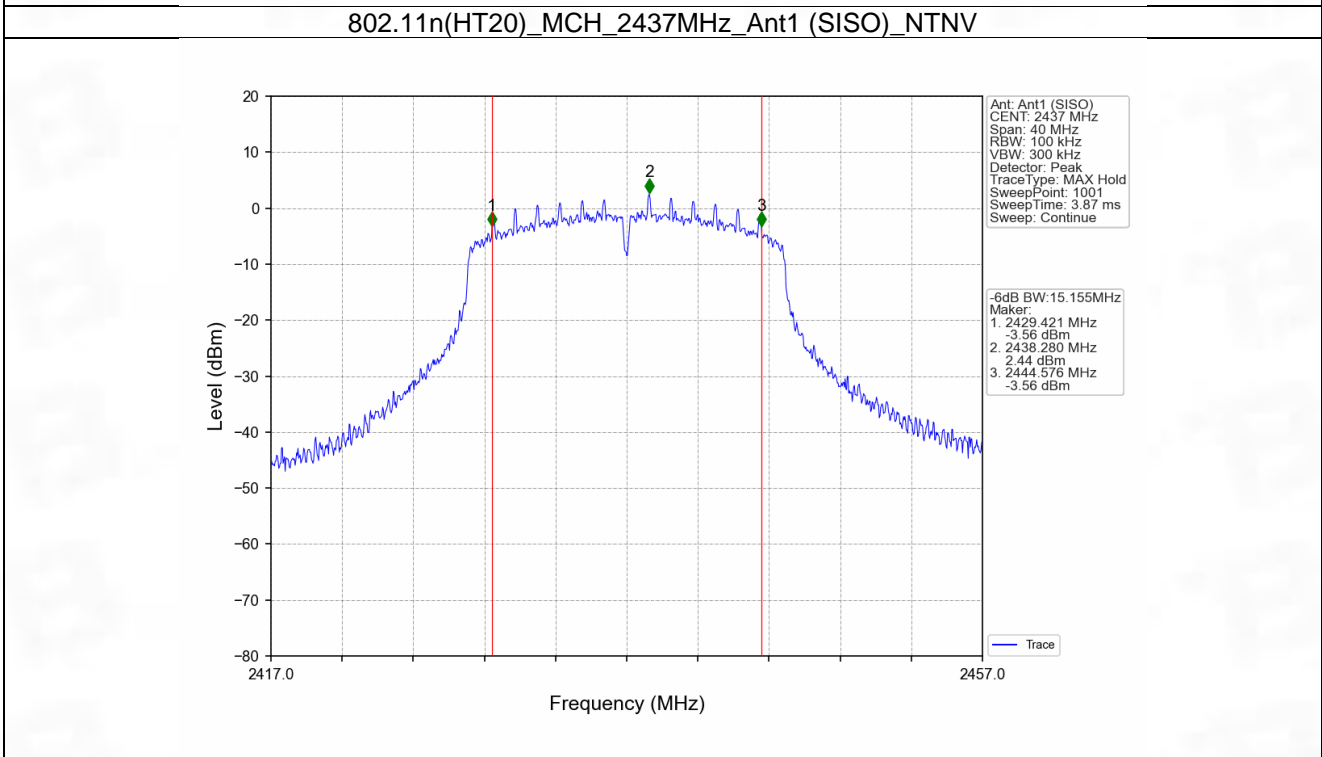
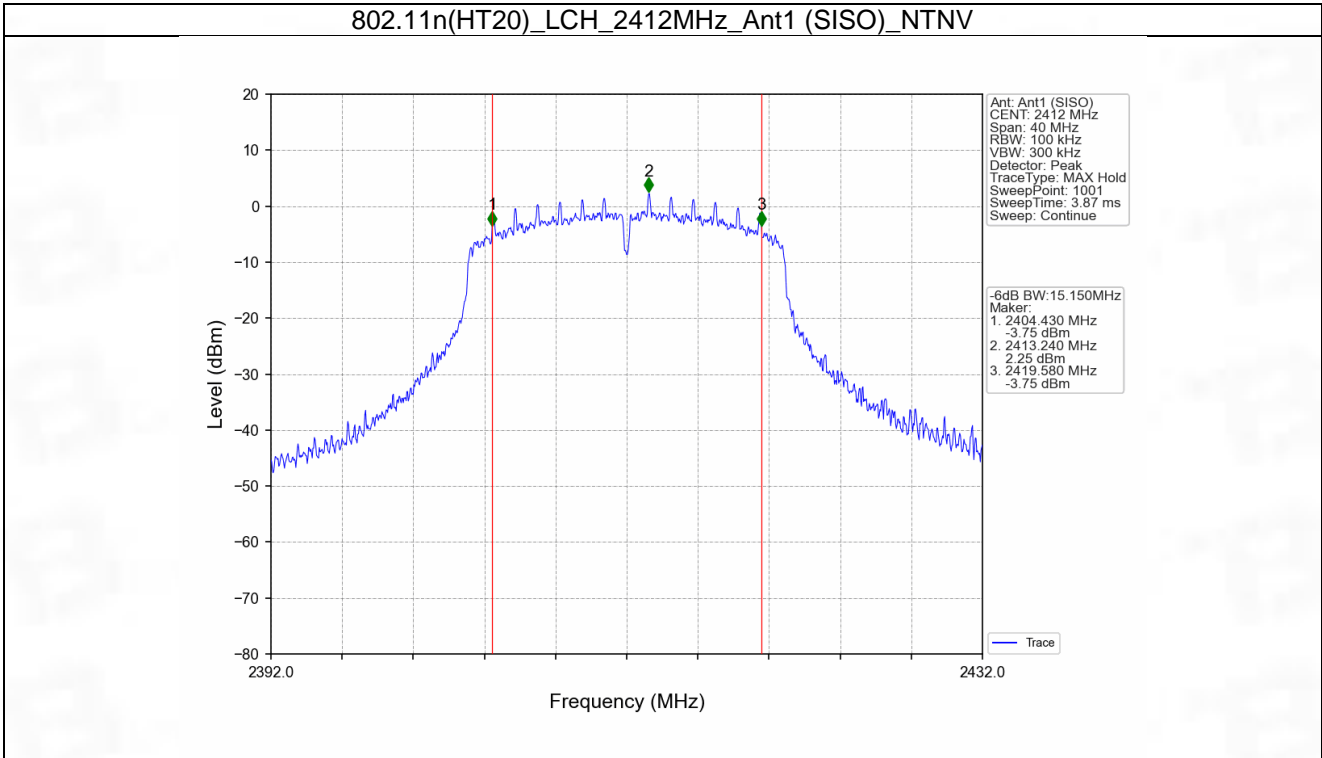
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

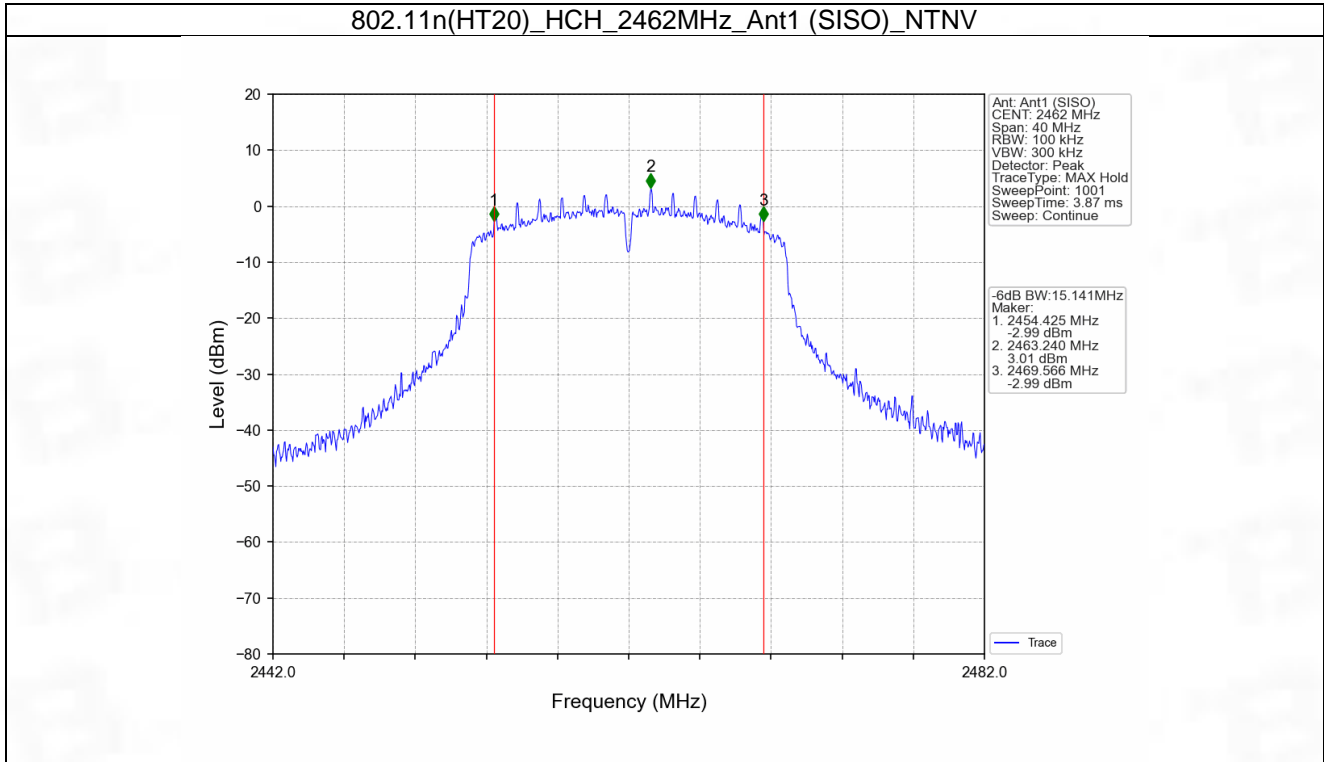


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV









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	
802.11b	SISO	2412	16.71	<=30	Pass
		2437	16.69	<=30	Pass
		2462	17.29	<=30	Pass
802.11g	SISO	2412	20.68	<=30	Pass
		2437	20.95	<=30	Pass
		2462	21.39	<=30	Pass
802.11n (HT20)	SISO	2412	19.73	<=30	Pass
		2437	19.84	<=30	Pass
		2462	20.33	<=30	Pass

Note1: Antenna Gain: Ant1: 0.00dBi;

4. Maximum Power Spectral Density

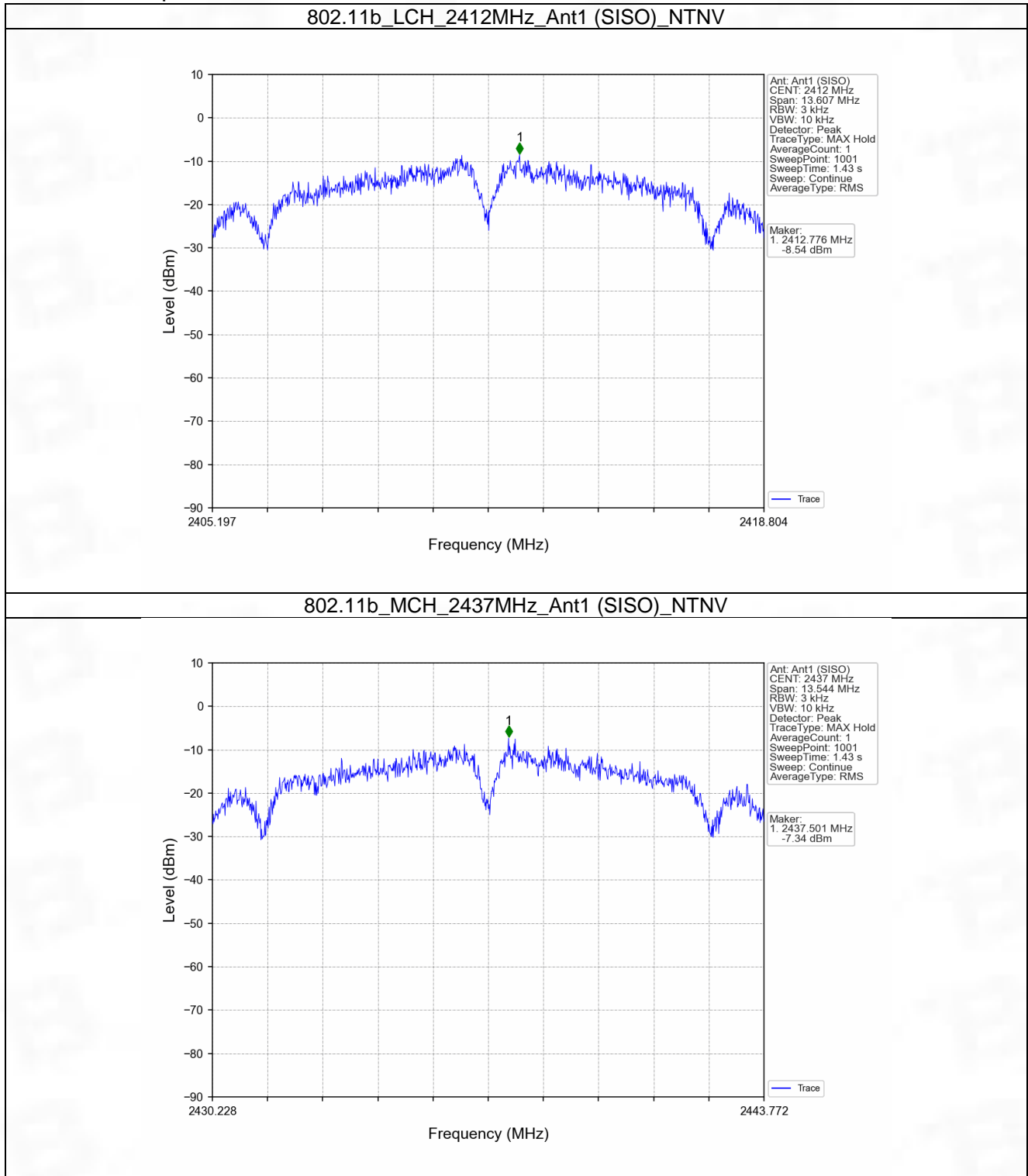
4.1 PSD

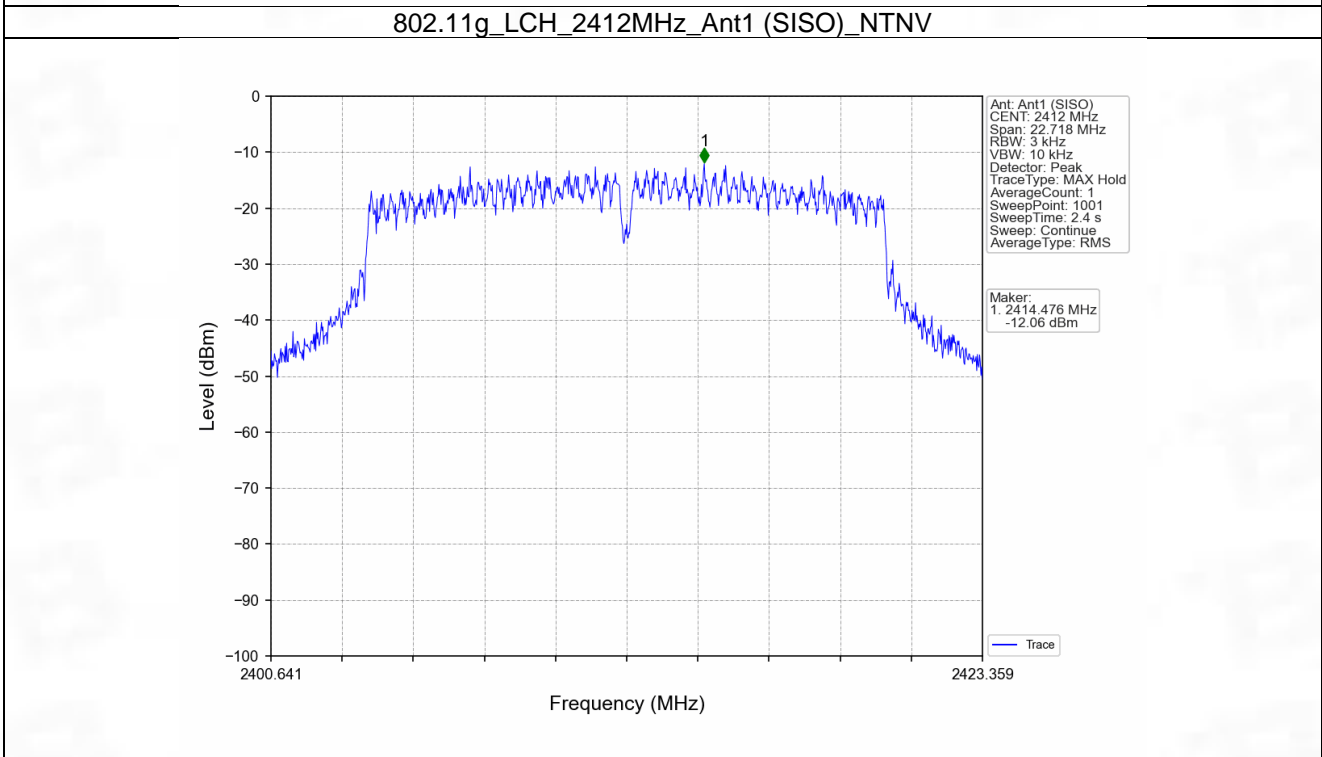
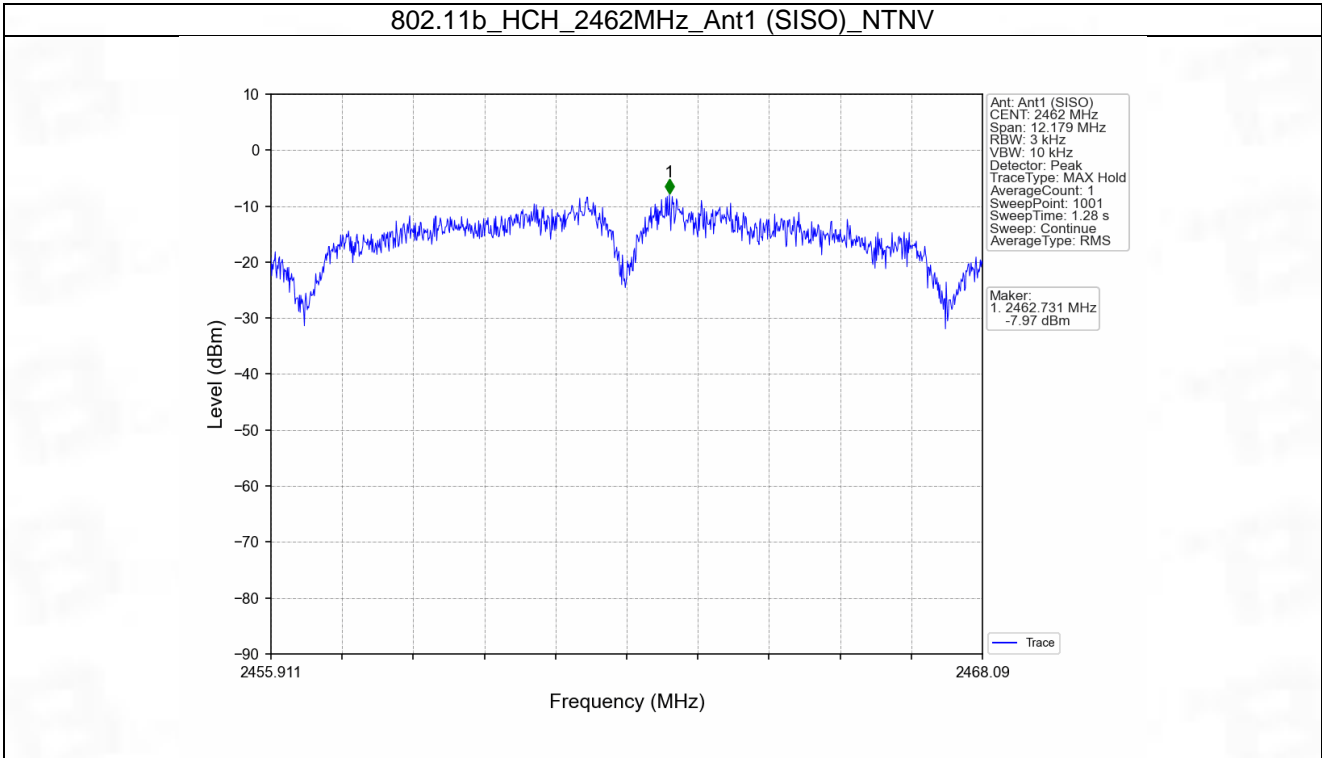
4.1.1 Test Result

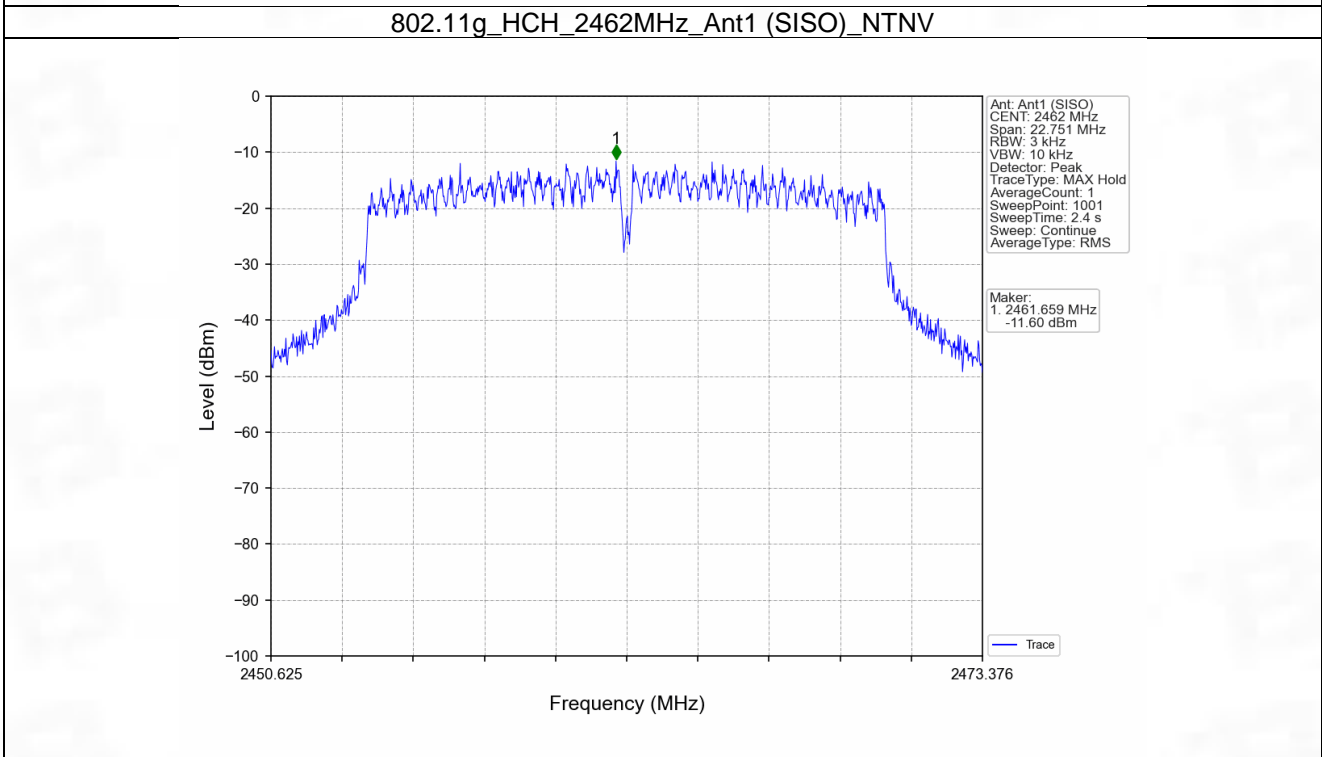
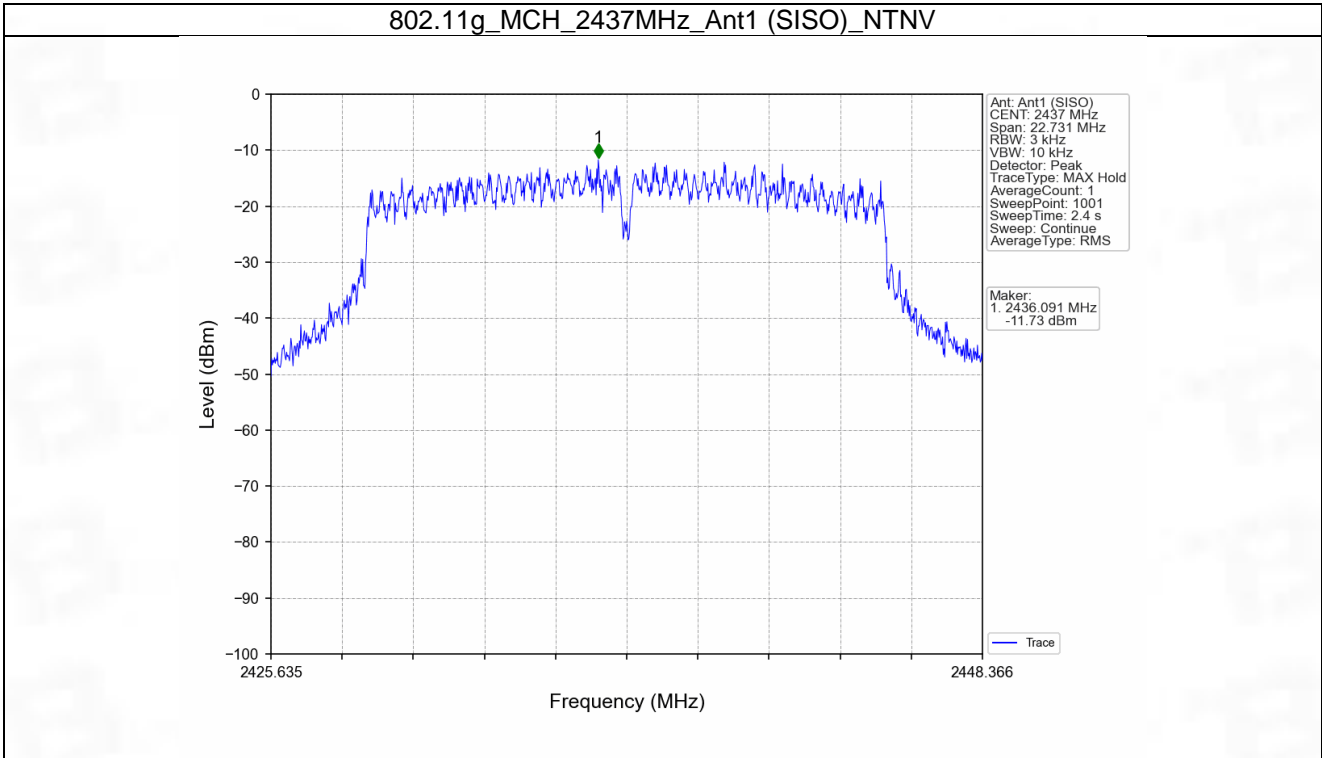
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-8.54	<=8	Pass
		2437	-7.34	<=8	Pass
		2462	-7.97	<=8	Pass
802.11g	SISO	2412	-12.06	<=8	Pass
		2437	-11.73	<=8	Pass
		2462	-11.60	<=8	Pass
802.11n (HT20)	SISO	2412	-13.09	<=8	Pass
		2437	-11.90	<=8	Pass
		2462	-12.61	<=8	Pass

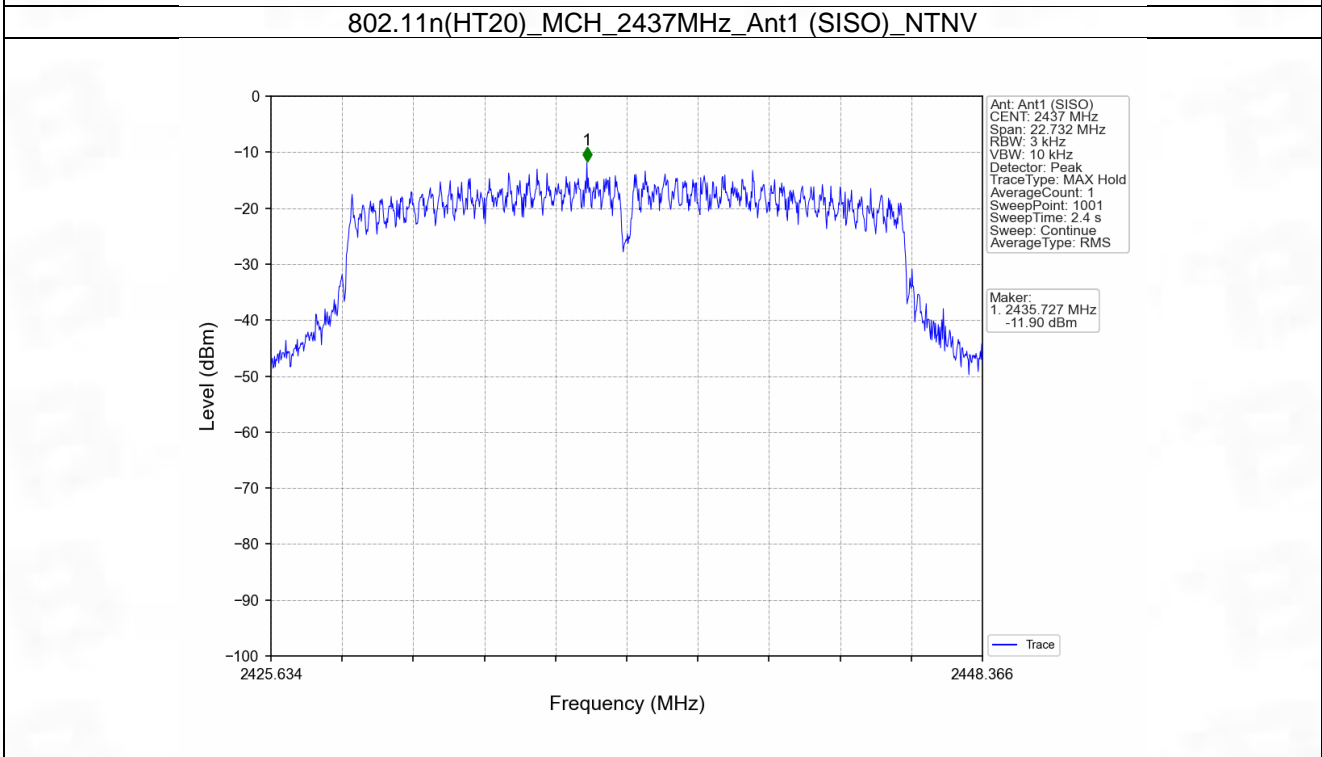
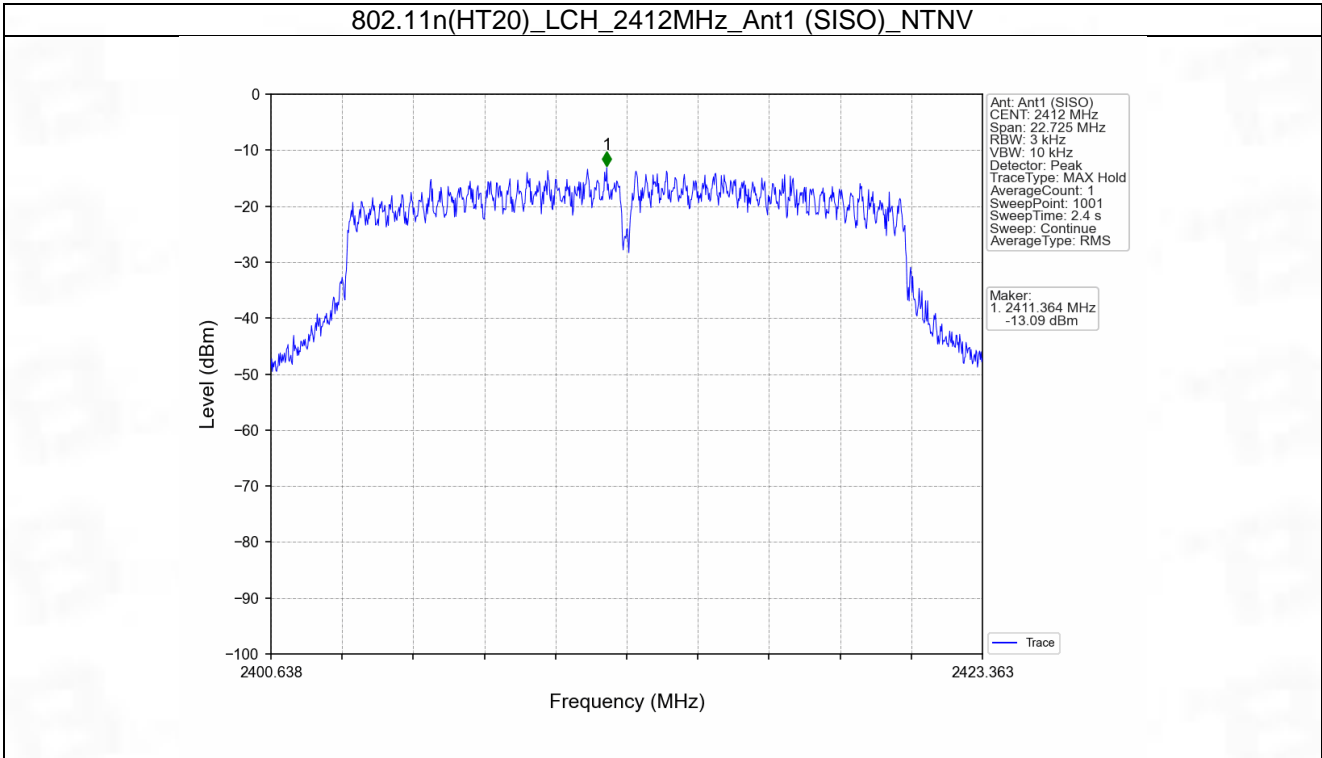
Note1: Antenna Gain: Ant1: 0.00dBi;

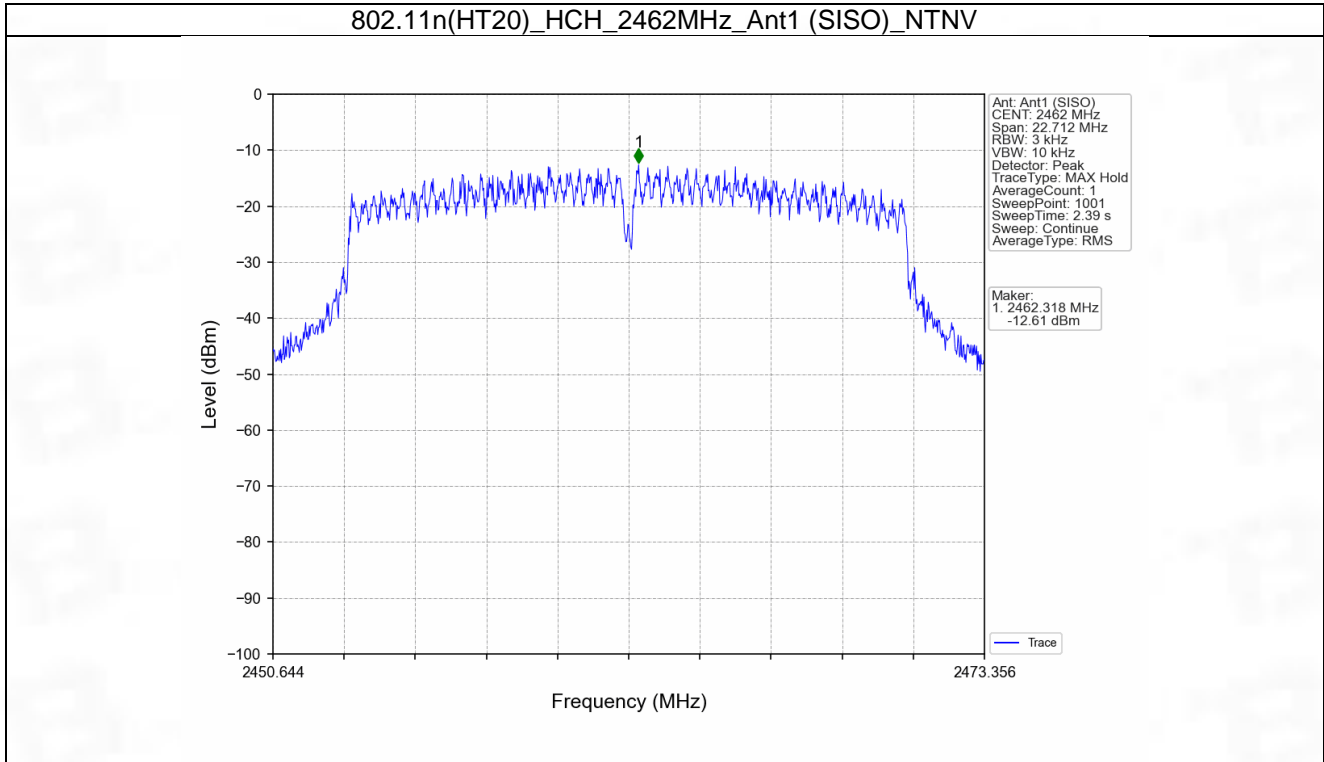
4.1.2 Test Graph











5. Unwanted Emissions In Non-restricted Frequency Bands

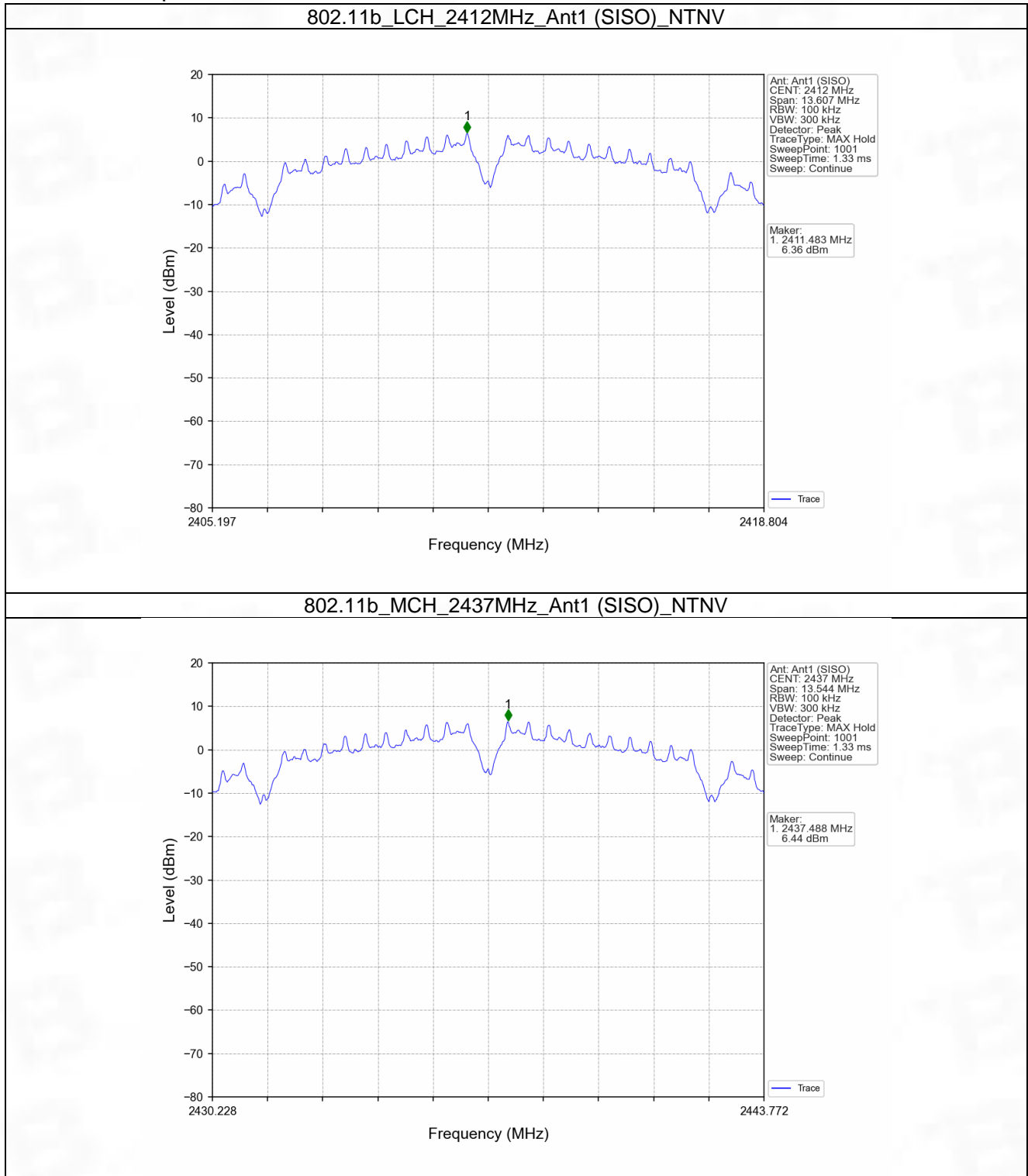
5.1 Ref

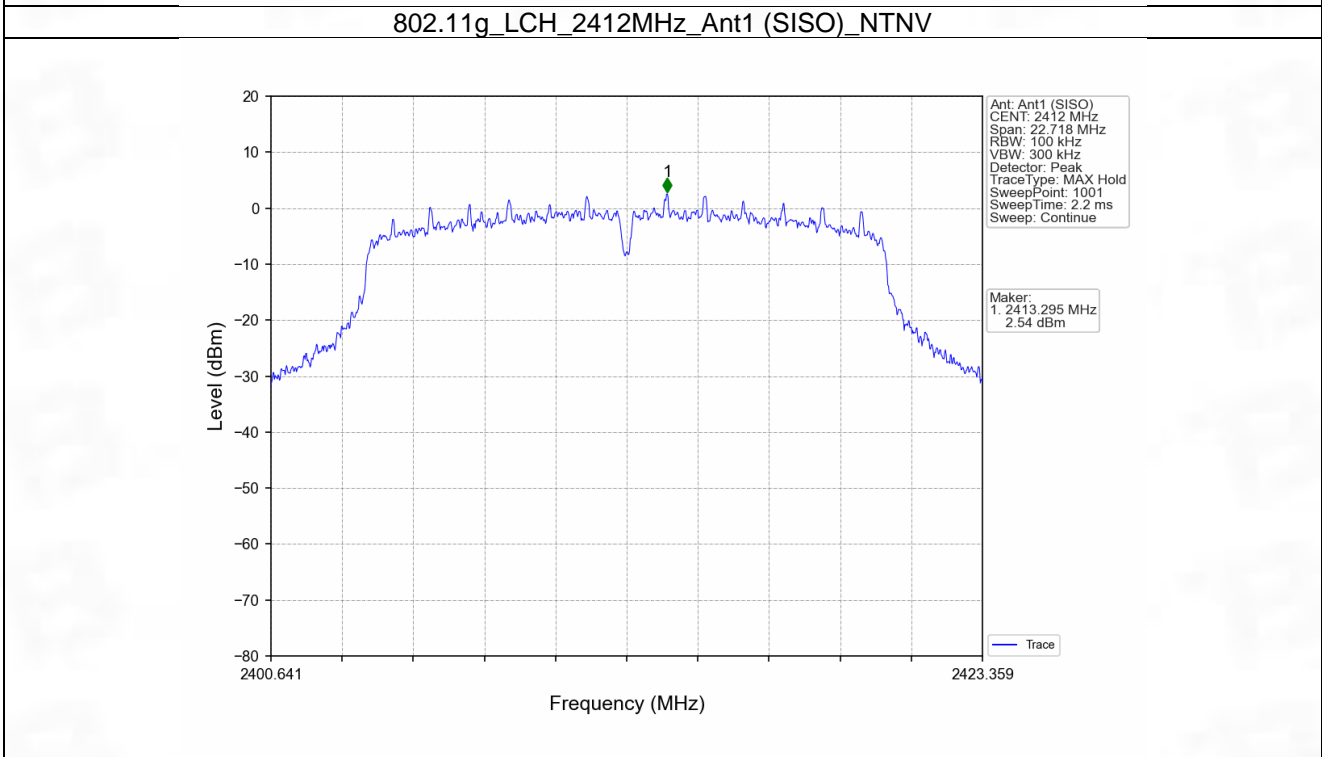
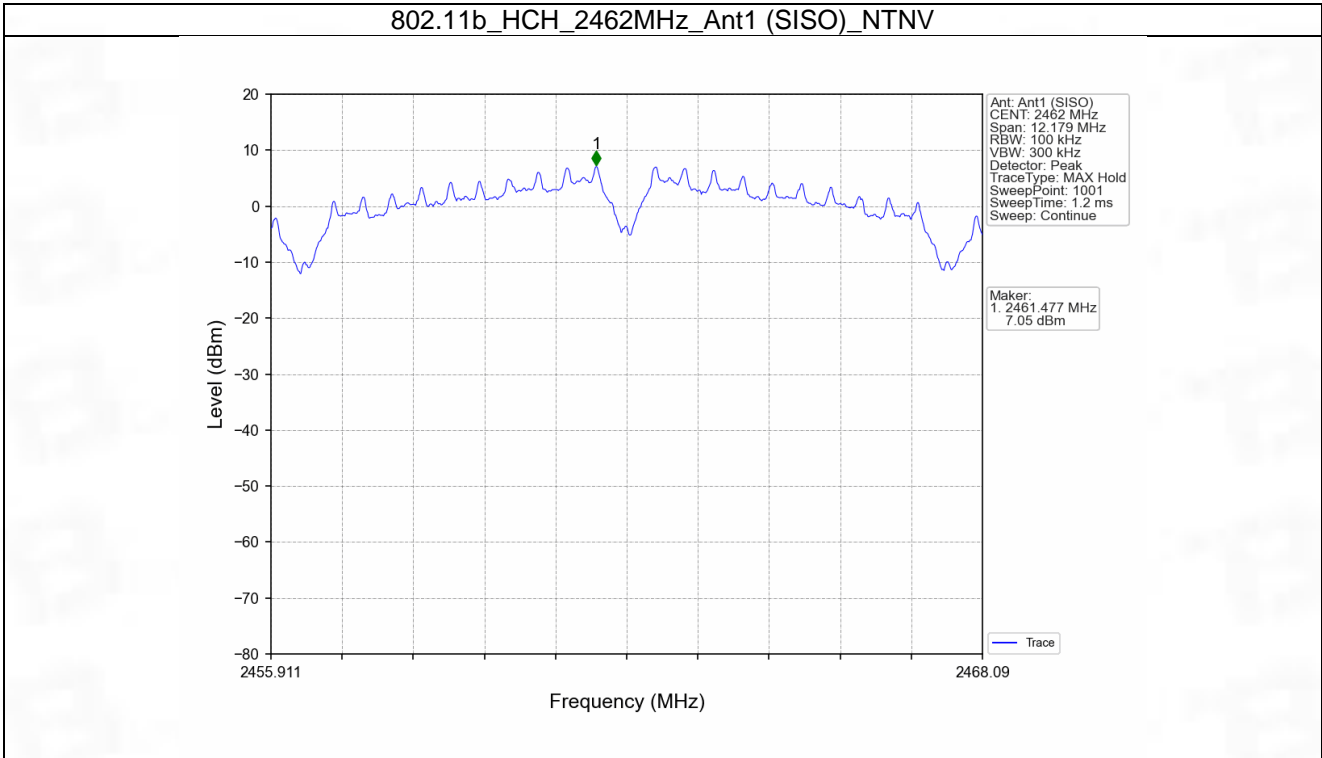
5.1.1 Test Result

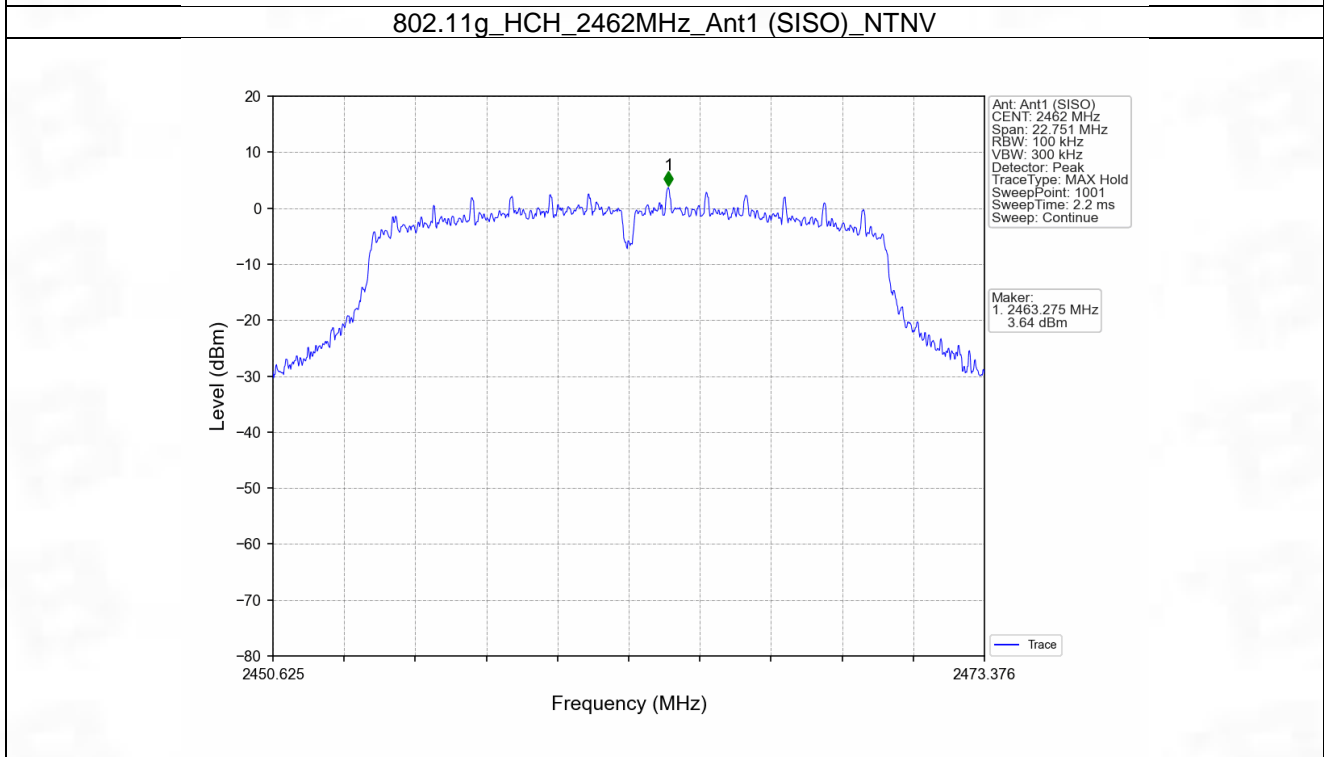
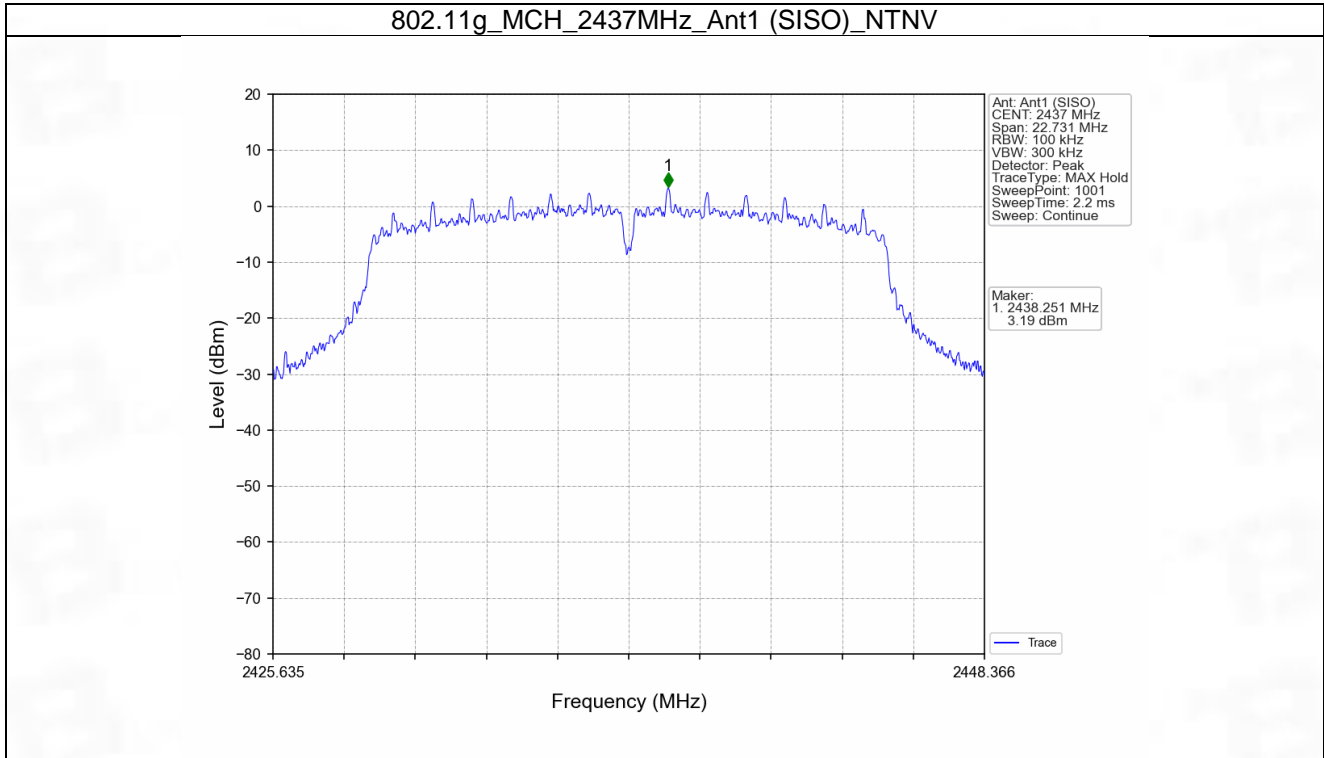
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	6.36
		2437	1	6.44
		2462	1	7.05
802.11g	SISO	2412	1	2.54
		2437	1	3.19
		2462	1	3.64
802.11n (HT20)	SISO	2412	1	2.11
		2437	1	2.36
		2462	1	2.92

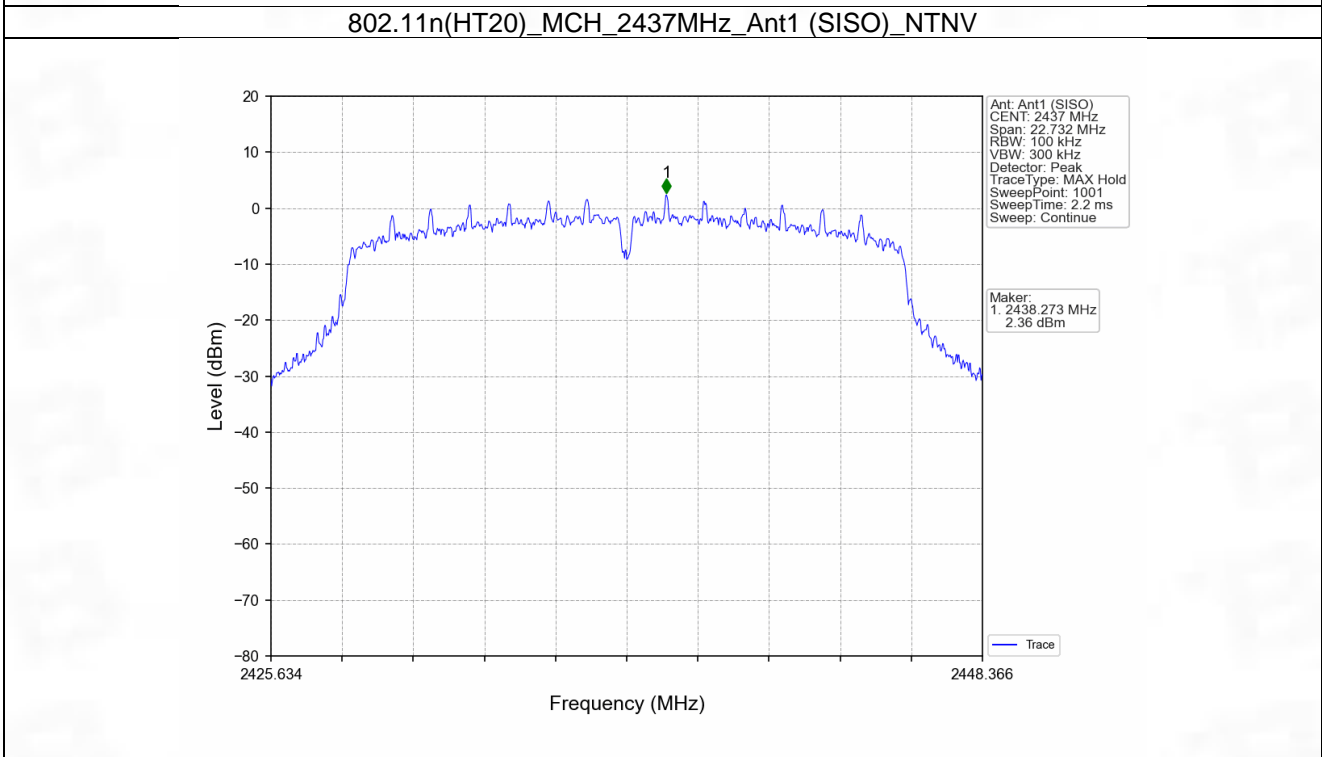
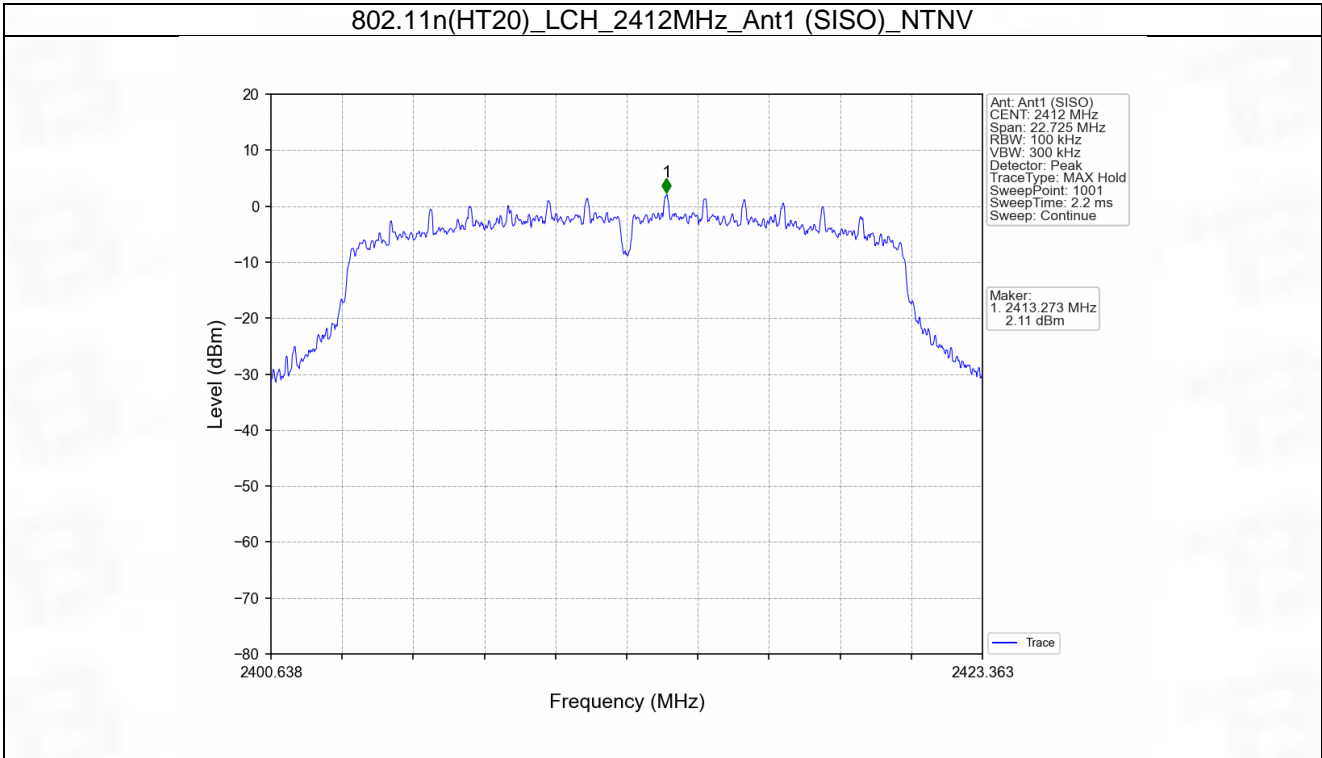
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

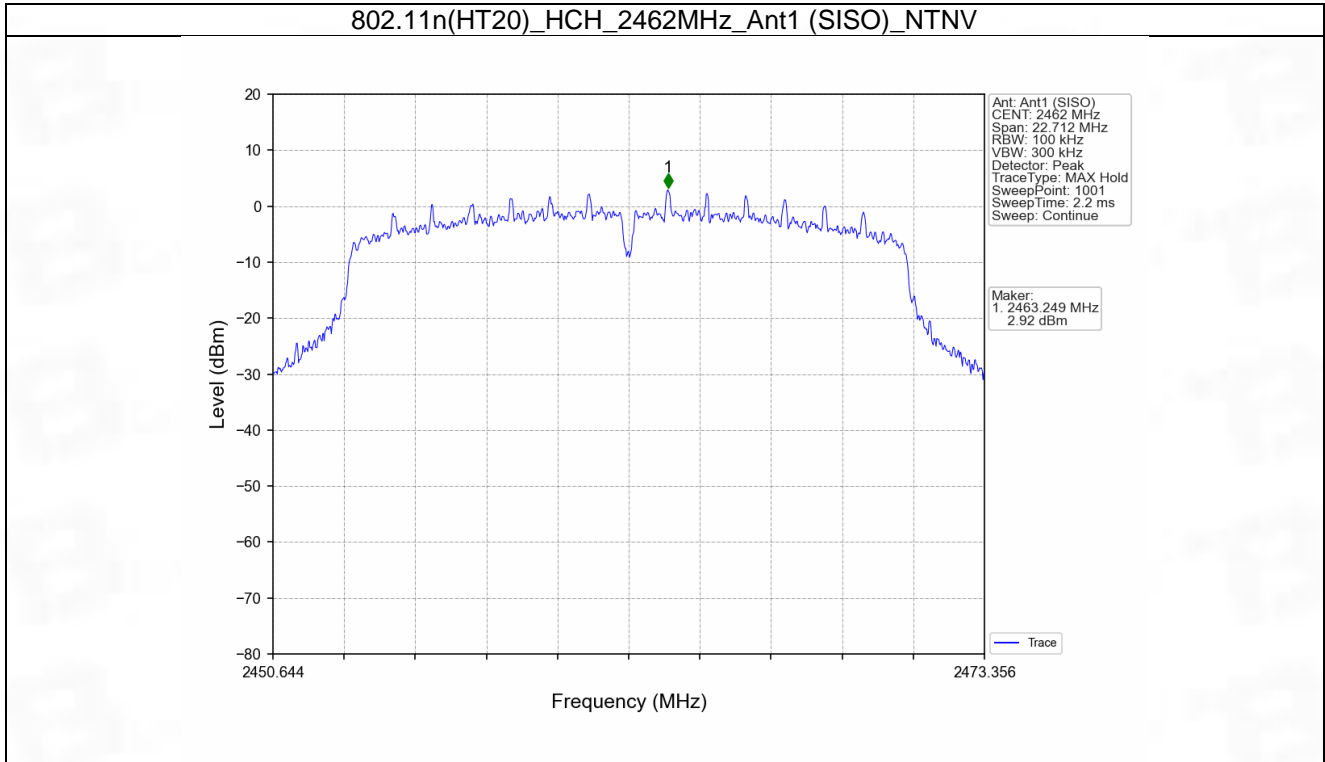
5.1.2 Test Graph











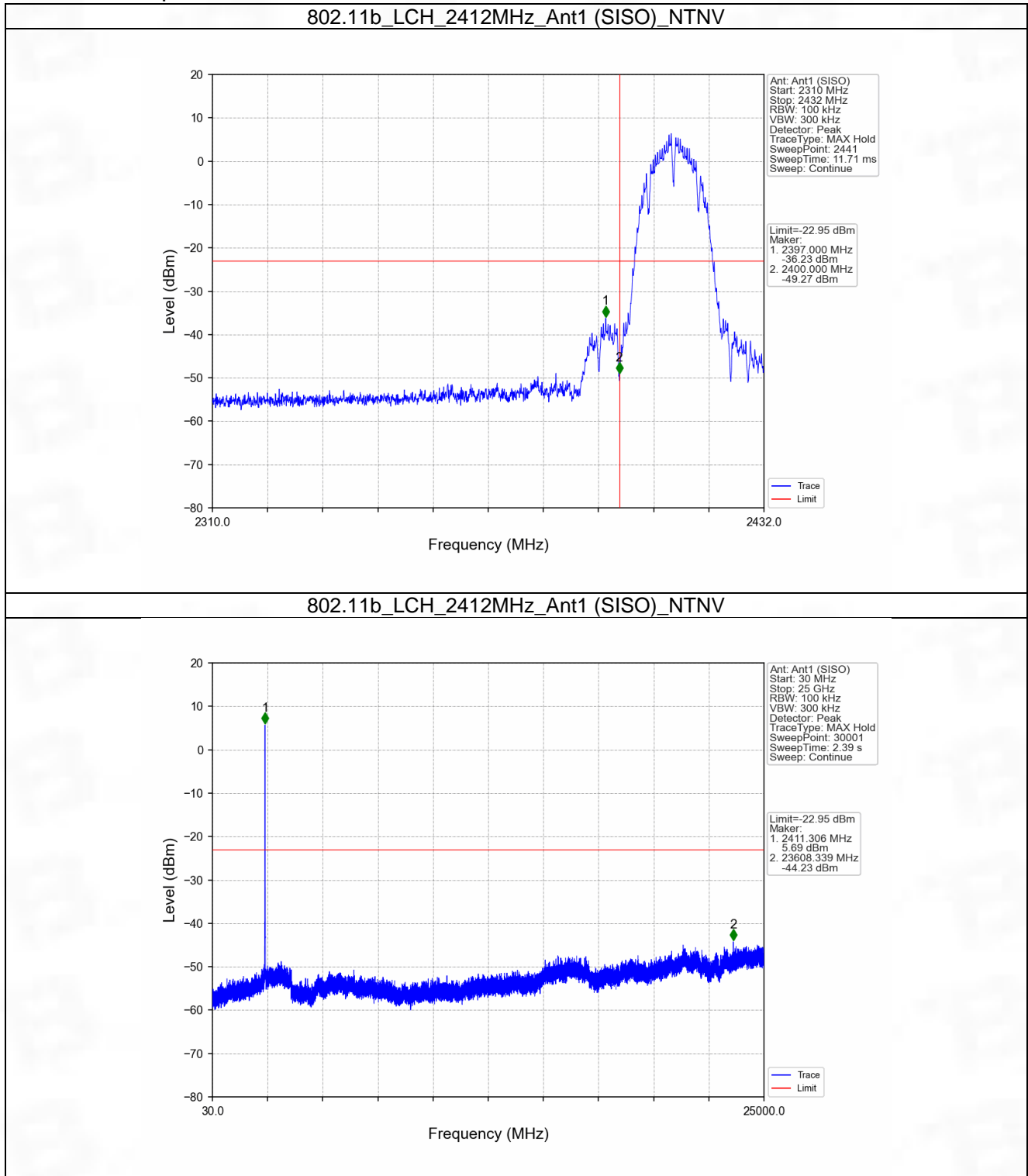
5.2 CSE

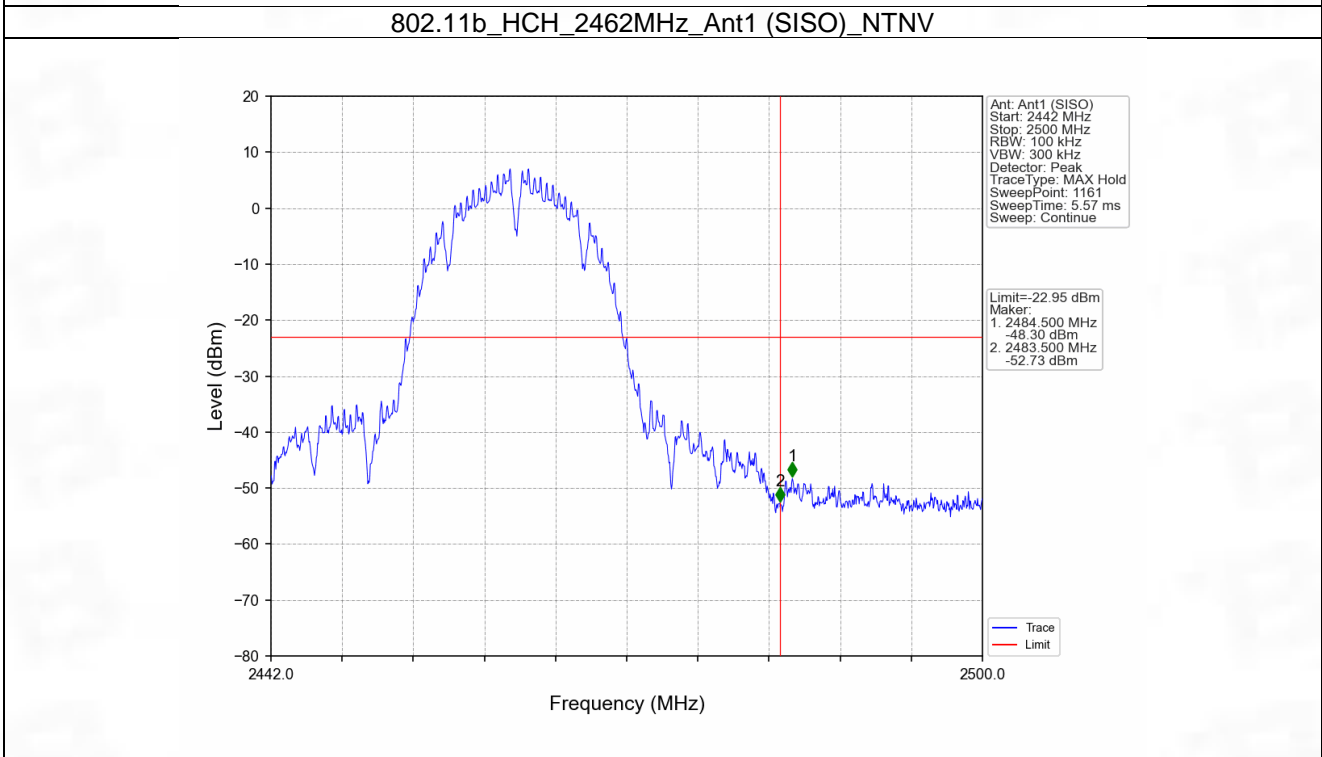
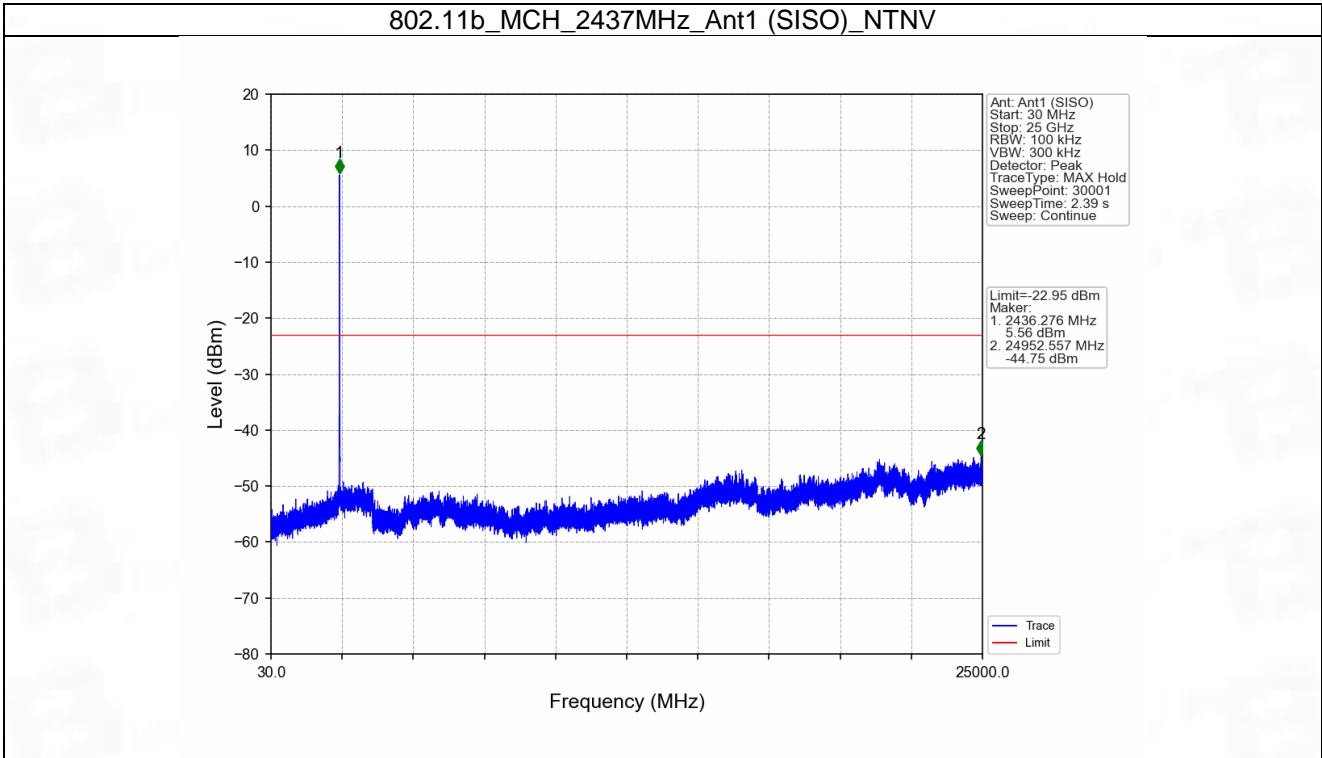
5.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	7.05	-22.95	Pass
		2437	1	7.05	-22.95	Pass
		2462	1	7.05	-22.95	Pass
802.11g	SISO	2412	1	3.64	-26.36	Pass
		2437	1	3.64	-26.36	Pass
		2462	1	3.64	-26.36	Pass
802.11n (HT20)	SISO	2412	1	2.92	-27.08	Pass
		2437	1	2.92	-27.08	Pass
		2462	1	2.92	-27.08	Pass

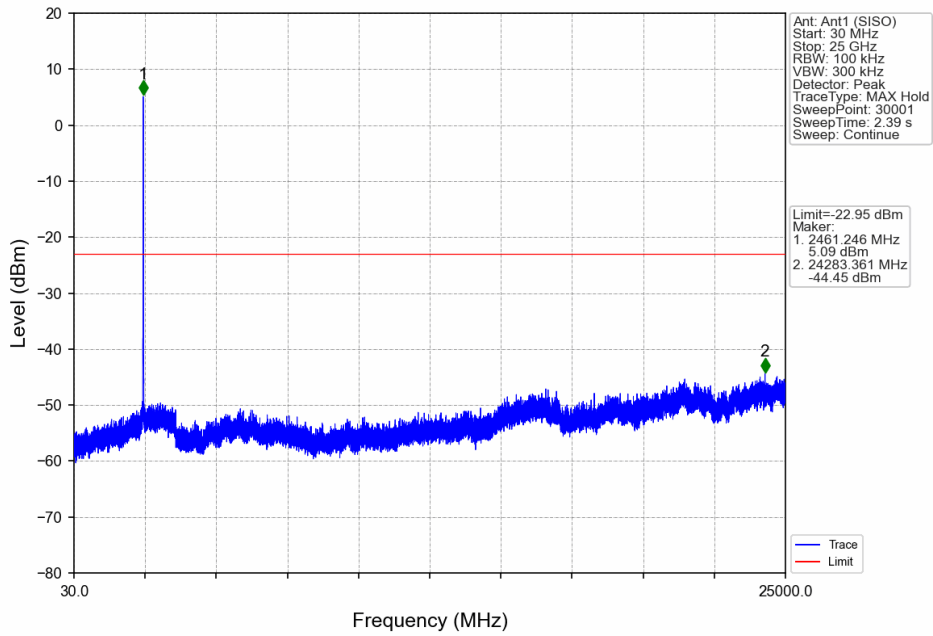
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

5.2.2 Test Graph

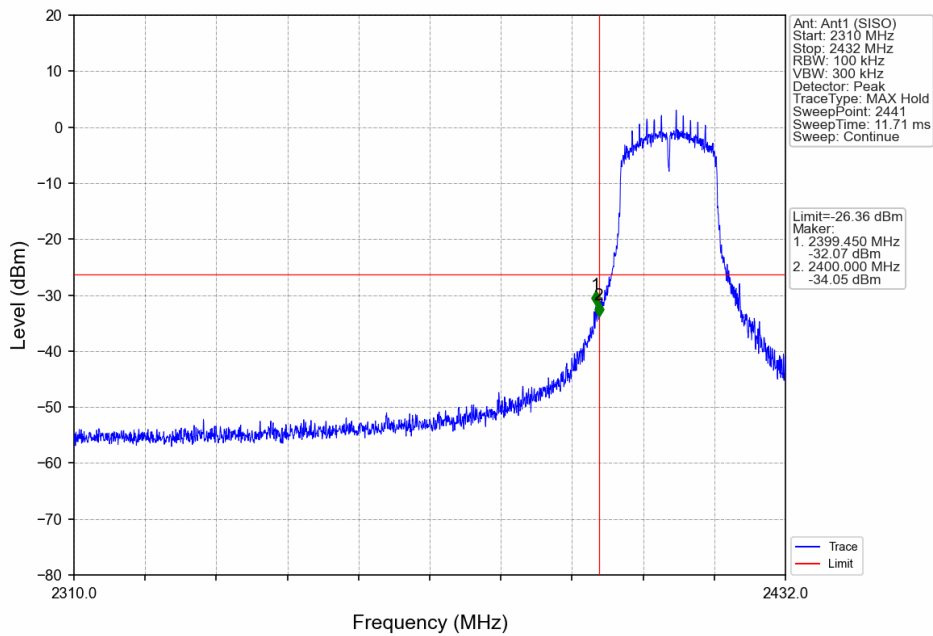


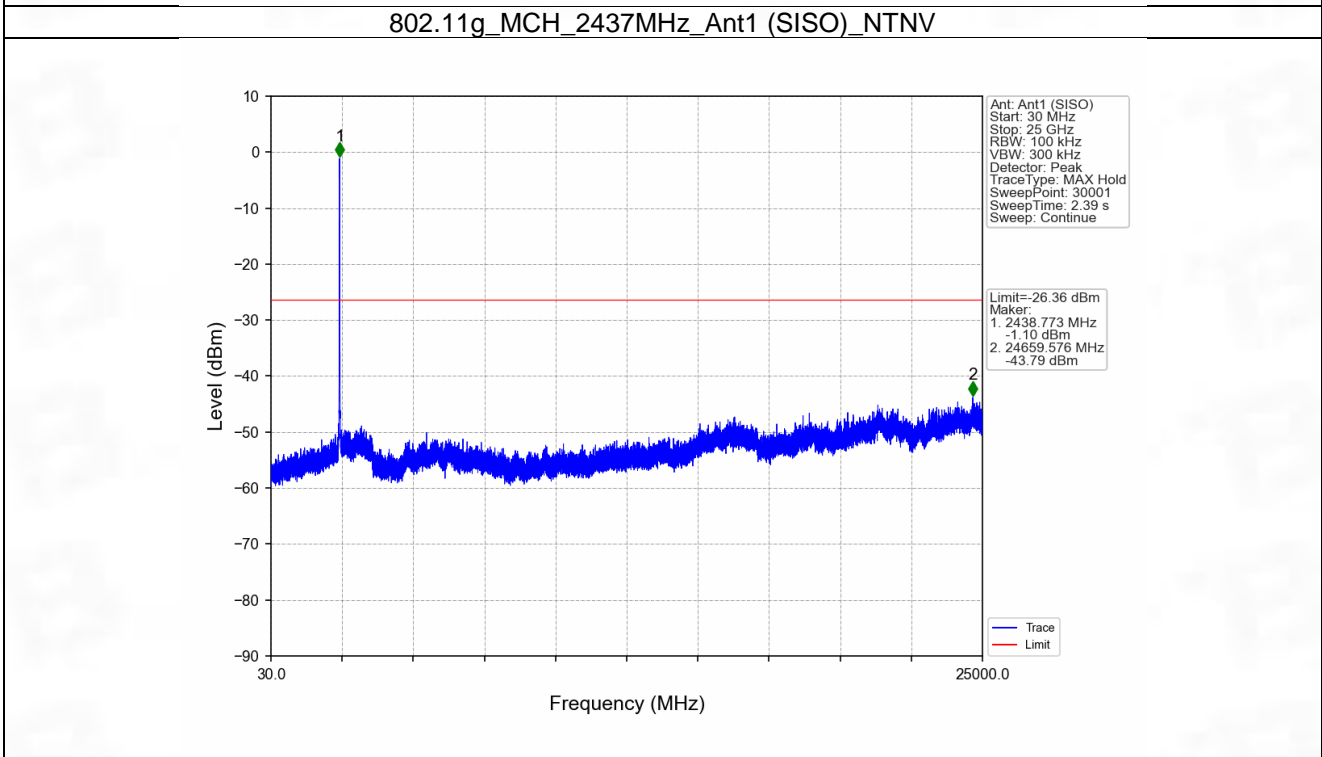
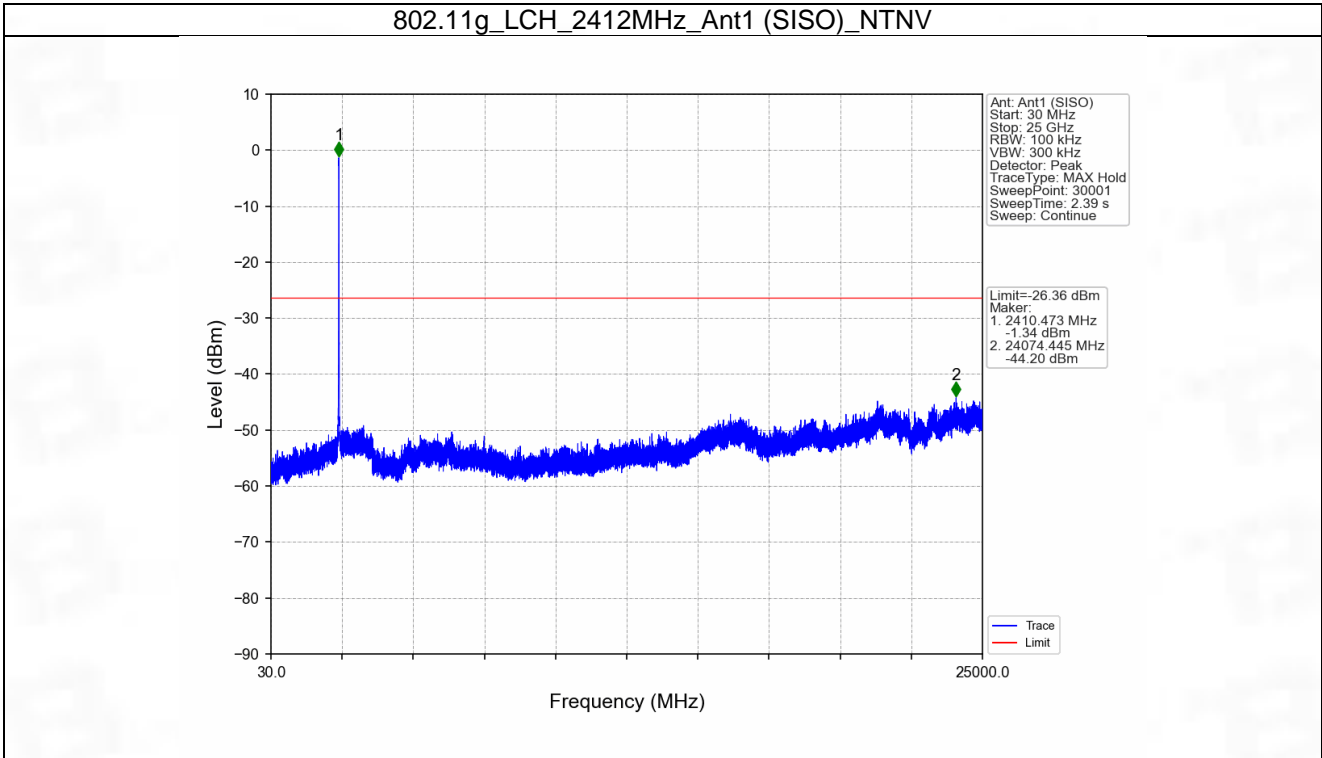


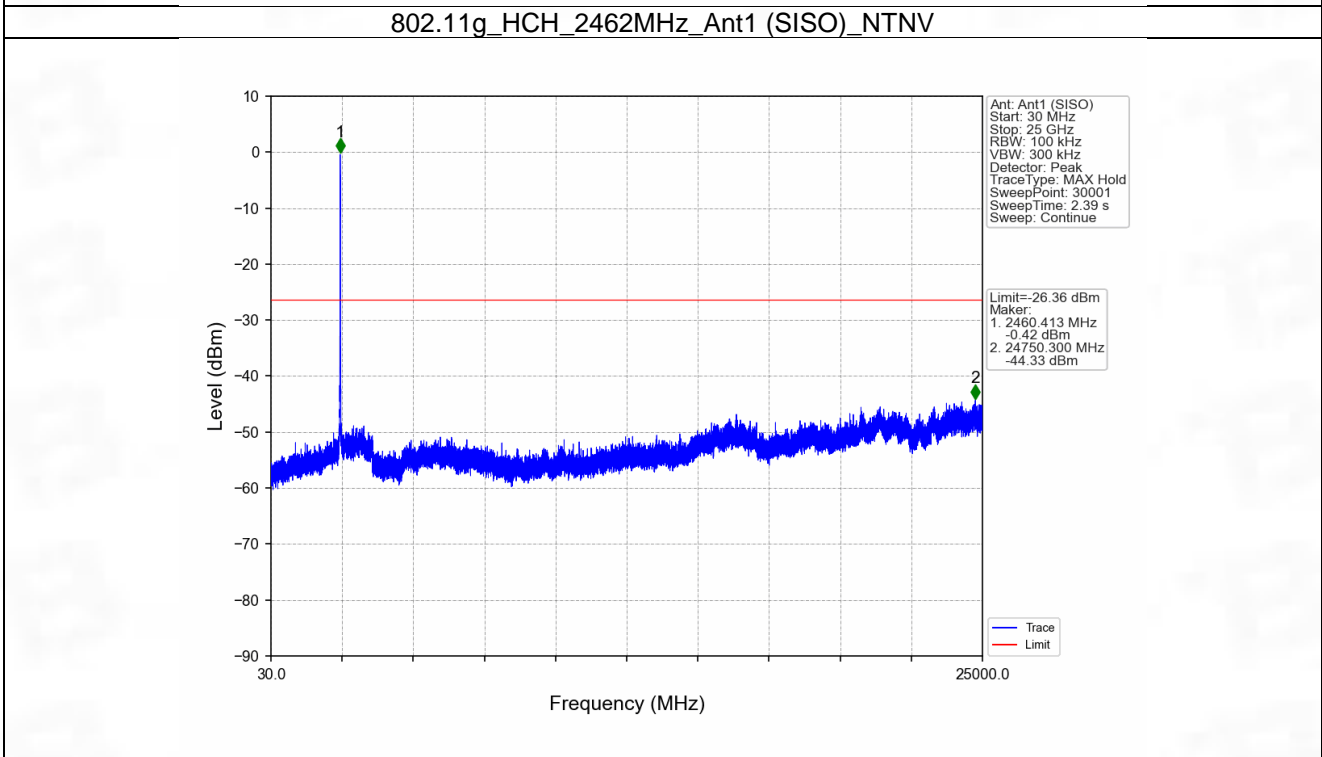
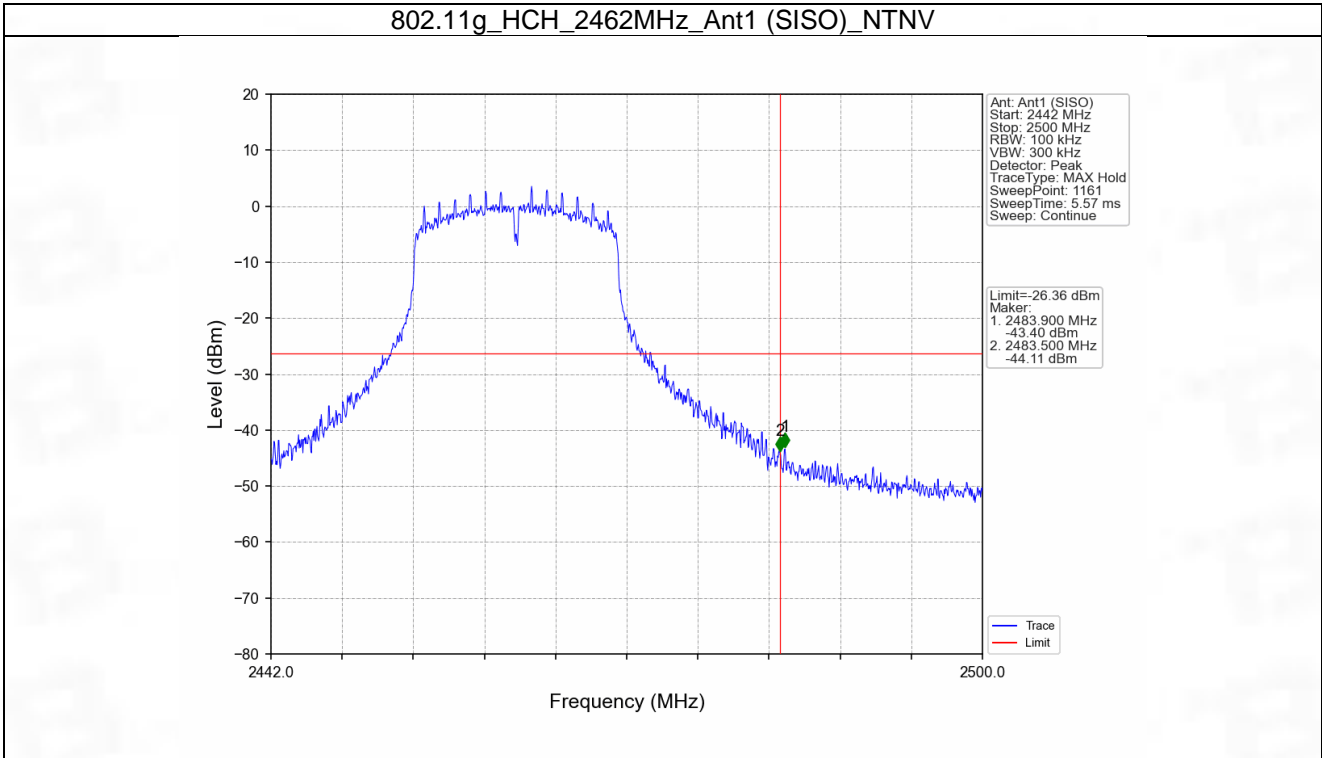
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

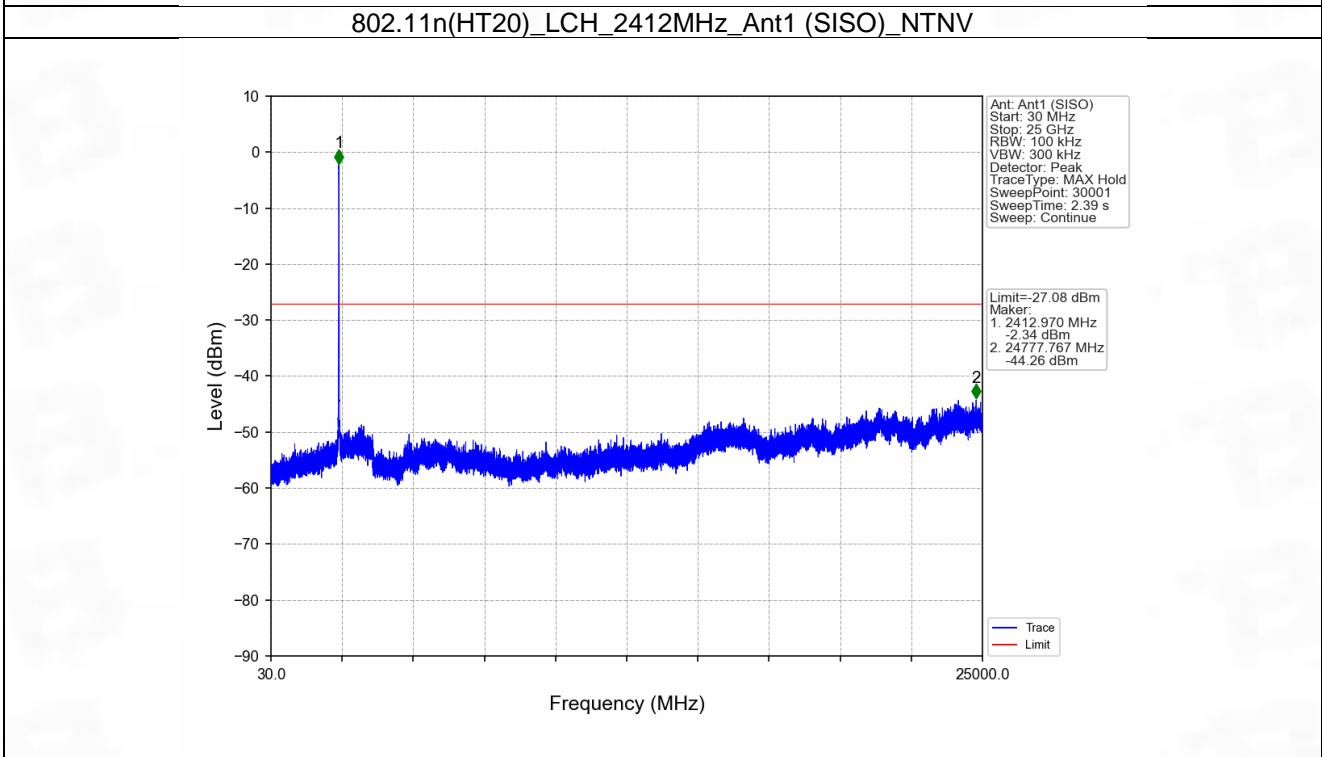
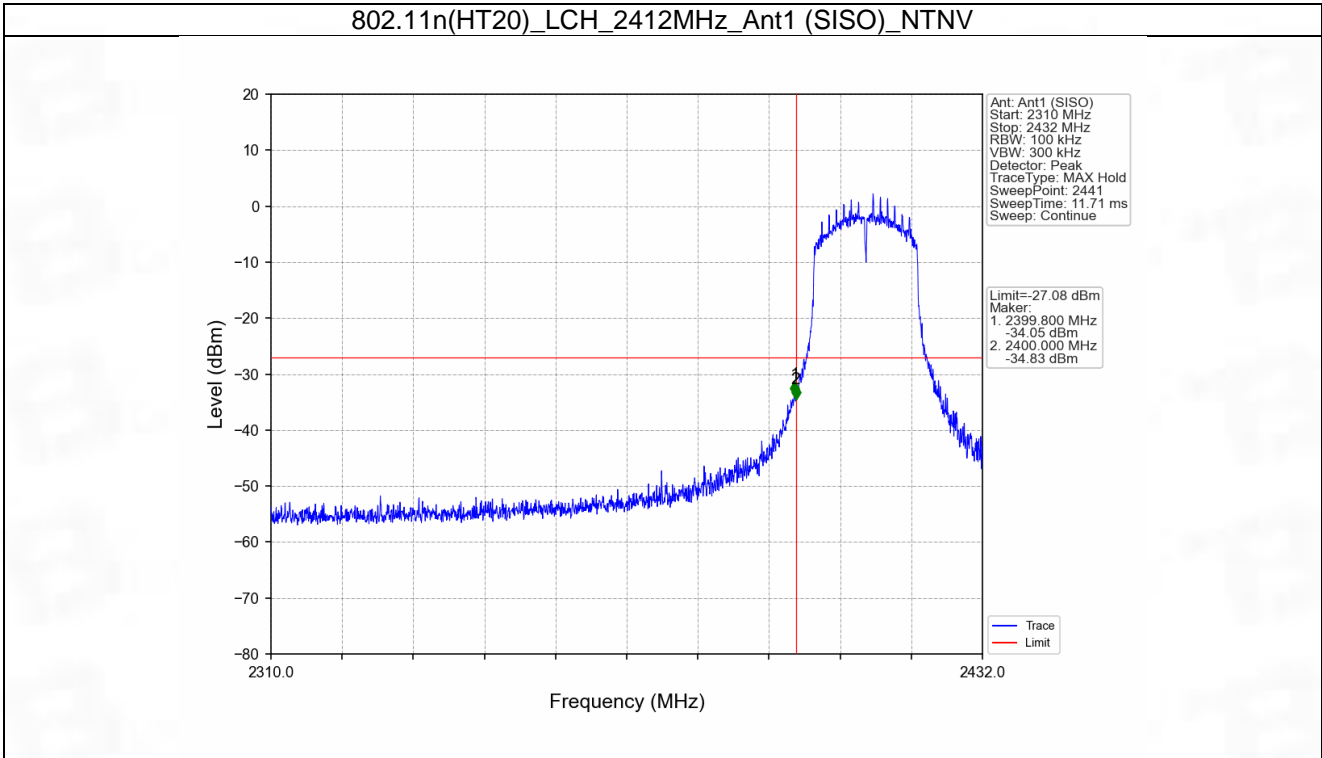


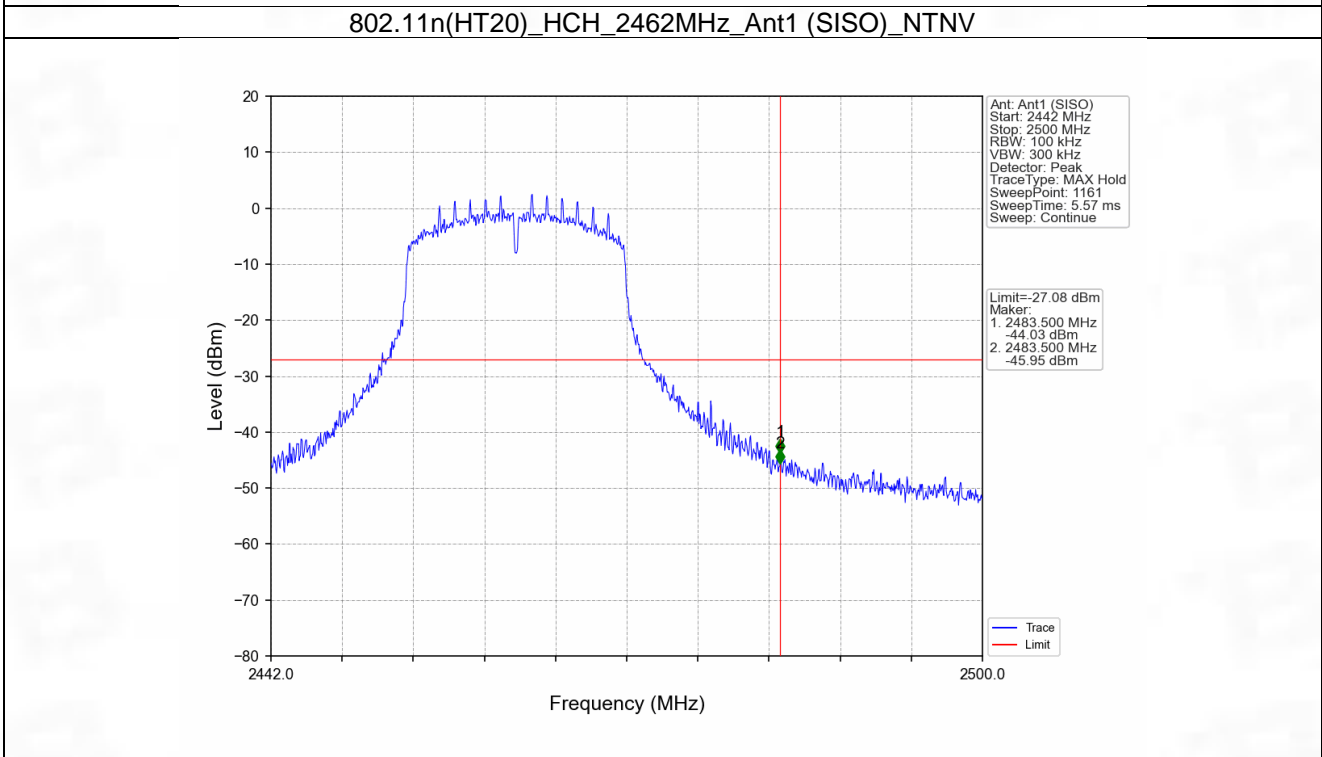
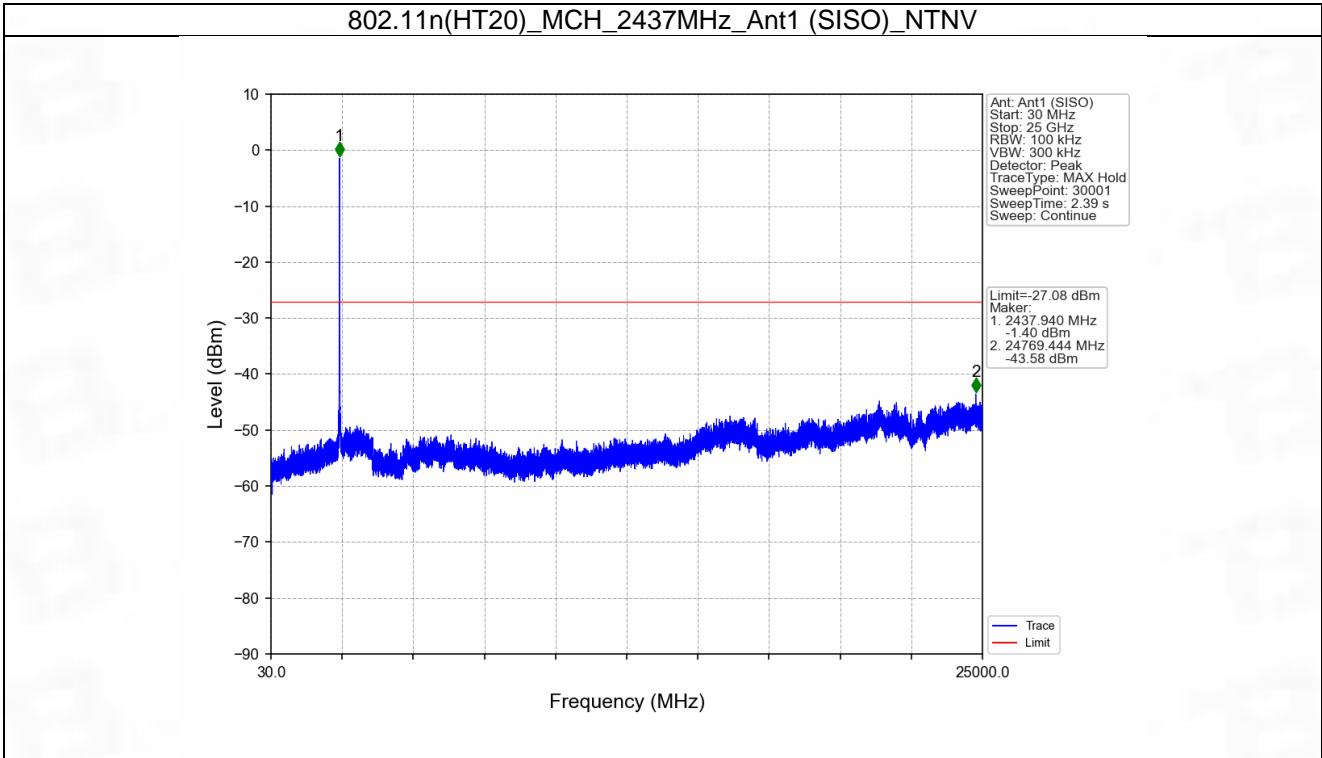
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

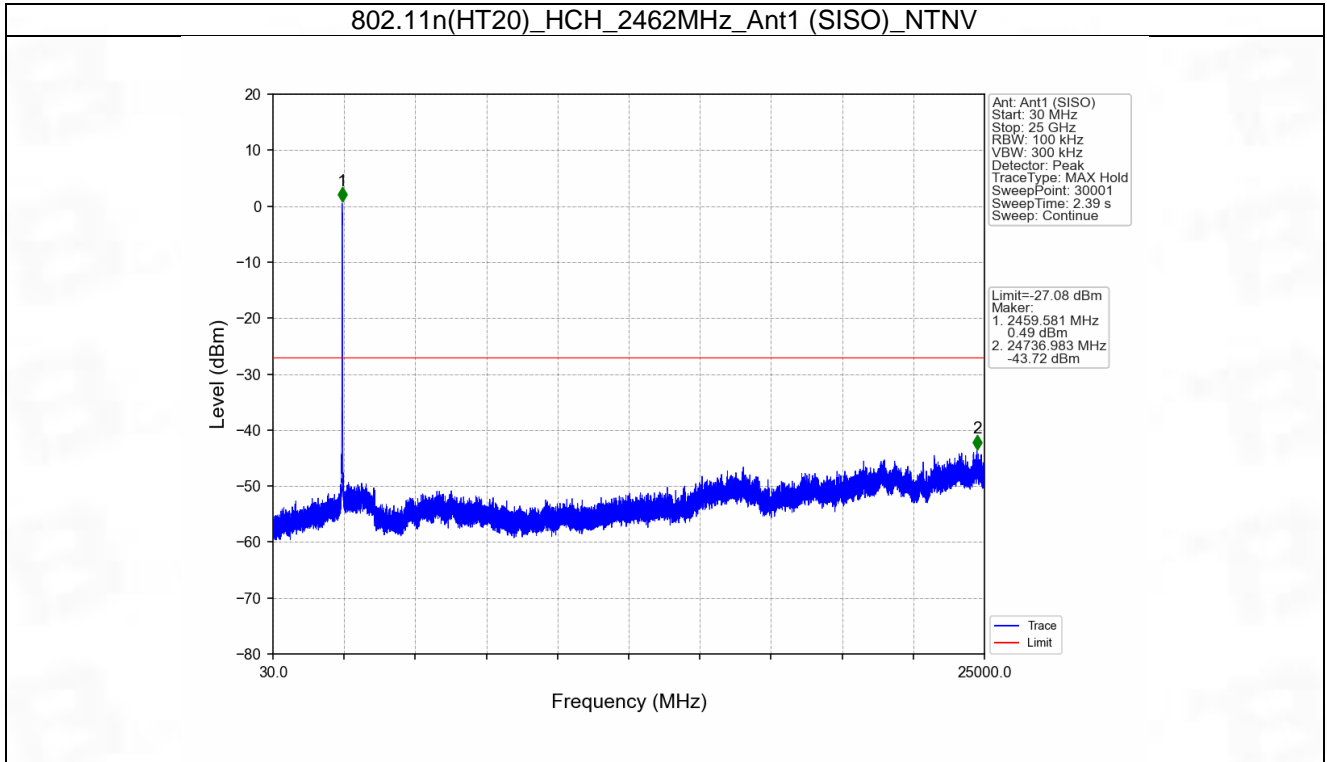












6. Form731

6.1 Form731

6.1.1 Test Result

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2412	2462	0.1377	21.39



Test Report Number: BTF230831R00102



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-- END OF REPORT --