

FCC - TEST REPORT

Report Number : **68.950.23.0961.01** Date of Issue: **2023-12-26**

Model : **TA2C-CS8**

Product Type : **TABLET PC**

Applicant : **ODS Corporation**

Address : **2-5 Kanda suda cho, Chiyoda ku, Tokyo 101-0041, Japan**

Manufacturer : **ODS Corporation**

Address : **2-5 Kanda suda cho, Chiyoda ku, Tokyo 101-0041, Japan**

Test Result : ☒ **Positive** ☐ Negative

Total pages including Appendices : **71**

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1 Table of Contents

1	Table of Contents	2
2	Details about the Test Laboratory	3
3	Description of the Equipment Under Test	4
4	Summary of Test Standards	5
5	Summary of Test Results	6
6	General Remarks	7
7	Test Setups	8
8	Systems Test Configuration	10
9	Technical Requirement	11
9.1	Conducted Emission	11
9.2	Conducted Output Power	14
9.3	6dB Bandwidth and 99% Occupied Bandwidth.....	16
9.4	Power Spectral Density	31
9.5	Spurious RF Conducted Emissions	39
9.6	Band Edge.....	53
9.7	Spurious Radiated Emissions for Transmitter.....	60
10	Test Equipment List.....	70
11	System Measurement Uncertainty	71

2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District, Shenzhen, Guangdong, China

Telephone: 86 755 8828 6998

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FCC Registration No.: 514049

FCC Designation Number: CN5009

3 Description of the Equipment Under Test

Product:	TABLET PC
Model no.:	TA2C-CS8
FCC ID:	2BDQY-TA2C-CS8
Options and accessories:	Adapter Model: ICP30A-050-3000 Input: 100-240VAC 50/60Hz, 0.8A Output: 5VDC, 3A Manufacturer: Shenzhen Shi Ying Yuan Electronics Co., Ltd.
Rating:	3.8VDC, 6000mAh, (Supplied by Rechargeable Li-ion Battery) or 5VDC (Supplied by external adapter for Charging rechargeable battery)
RF Transmission Frequency:	2412MHz-2462MHz for 802.11b/g/n20 (Wi-Fi)
No. of Operated Channel:	11 for 802.11b/g/n20 (Wi-Fi)
Modulation:	DSSS, OFDM
Antenna Type:	Internal antenna
Antenna 1 Gain:	4.1dBi
Antenna 2 Gain:	4.7dBi
Description of the EUT:	EUT is a TABLET PC with Bluetooth Low Energy/Bluetooth BDR+EDR, 2.4GHz Wi-Fi and 5GHz Wi-Fi functions Only 2.4GHz Wi-Fi included in this report.

NOTE 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2021 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10-2020.

5 Summary of Test Results

Technical Requirements			
FCC Part 15 Subpart C			
Test Condition		Test Result	Test Site
§15.207	Conducted emission AC power port	Pass	Site 1
§15.247 (b) (3)	Conducted output power	Pass	Site 1
§15.247(e)	Power spectral density	Pass	Site 1
§15.247(a)(2)	6dB bandwidth	Pass	Site 1
§15.247(a)(1)	20dB Occupied bandwidth	N/A	--
§15.247(a)(2)	99% Occupied Bandwidth	Pass	Site 1
§15.247(a)(1)	Carrier frequency separation	N/A	--
§15.247(a)(1)(iii)	Number of hopping frequencies	N/A	--
§15.247(a)(1)(iii)	Dwell Time	N/A	--
§15.247(d)	Spurious RF conducted emissions	Pass	Site 1
§15.247(d)	Band edge	Pass	Site 1
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	Pass	Site 1
§15.203	Antenna requirement	Pass See note 2	--

Note 1: N/A=Not Applicable.

Note 2: The EUT use an Internal antenna, which gain is 4.1dBi for ANT1, 4.7dBi for ANT2. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2BDQY-TA2C-CS8, complies with Section 15.205, 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2023-11-17

Testing Start Date: 2023-11-17

Testing End Date: 2023-12-26

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:



John Zhi
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Prepared by:



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Project Engineer

Tested by:

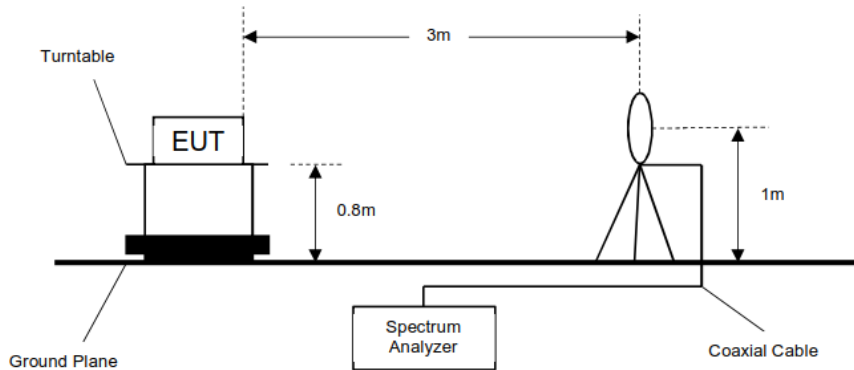


Carry Cai
Test Engineer

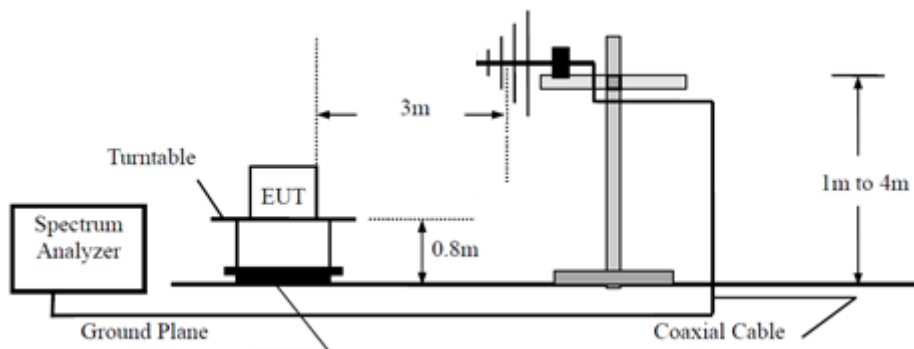
7 Test Setups

7.1 Radiated test setups

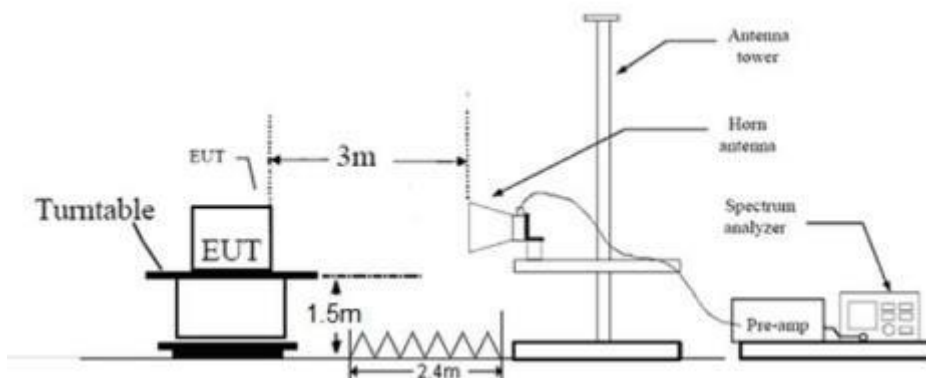
9KHz - 30MHz



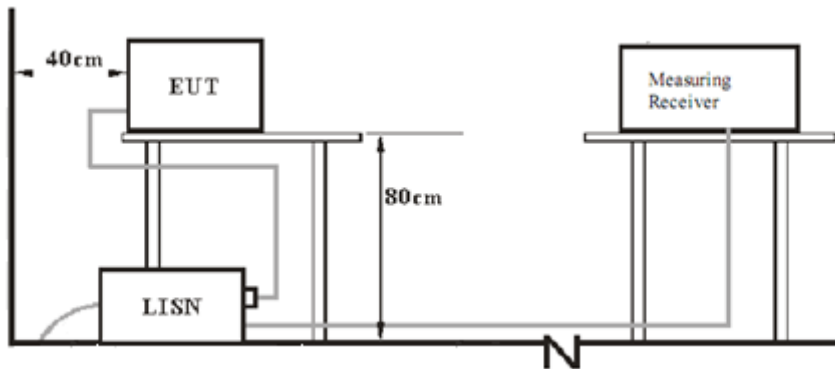
30MHz - 1GHz



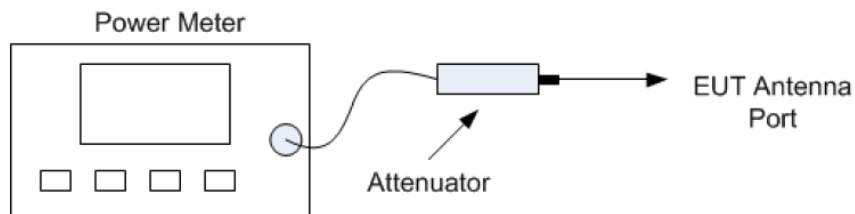
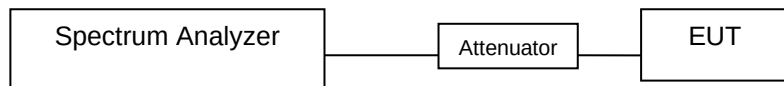
Above 1GHz



7.2 AC Power Line Conducted Emission test setups



7.3 Conducted RF test setups



Power meter conducted test setup

8 Systems Test Configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Notebook	LENOVO	X220	429044C

The system was configured to non-hopping mode.

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

Through pre-scan all kind of modulation and all kind of rates, find the 1Mbps of rate is the worst case of 802.11b; the 6Mbps of rate is the worst case of 802.11g; the 6.5Mbps of rate is the worst case of 802.11n20, only the worst case transmitter rate data mode is recorded in the report.

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

Limit

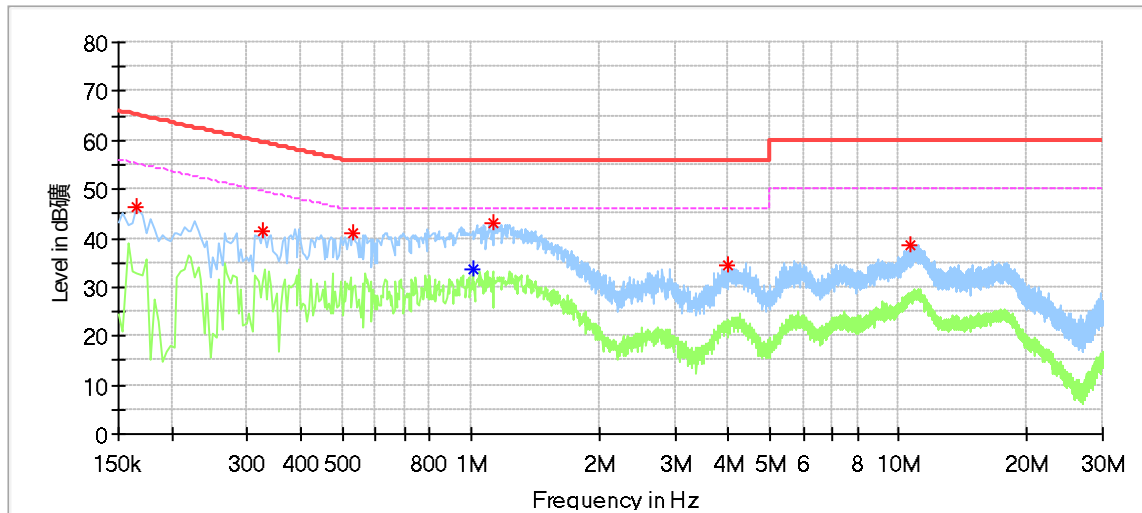
According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Remark: “*” Decreasing linearly with logarithm of the frequency

Conducted Emission

Product Type : TABLET PC
 M/N : TA2C-CS8
 Operating Condition : Transmitting mode
 Test Specification : Line
 Comment : AC 120V/60Hz(External adapter)



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.166000	46.27	---	65.16	18.89	L1	9.54
0.326000	41.58	---	59.55	17.97	L1	9.57
0.530000	41.00	---	56.00	15.00	L1	9.59
1.010000	---	33.61	46.00	12.39	L1	9.60
1.126000	42.91	---	56.00	13.09	L1	9.60
4.006000	34.58	---	56.00	21.42	L1	9.70
10.594000	38.63	---	60.00	21.37	L1	9.96

Remark:

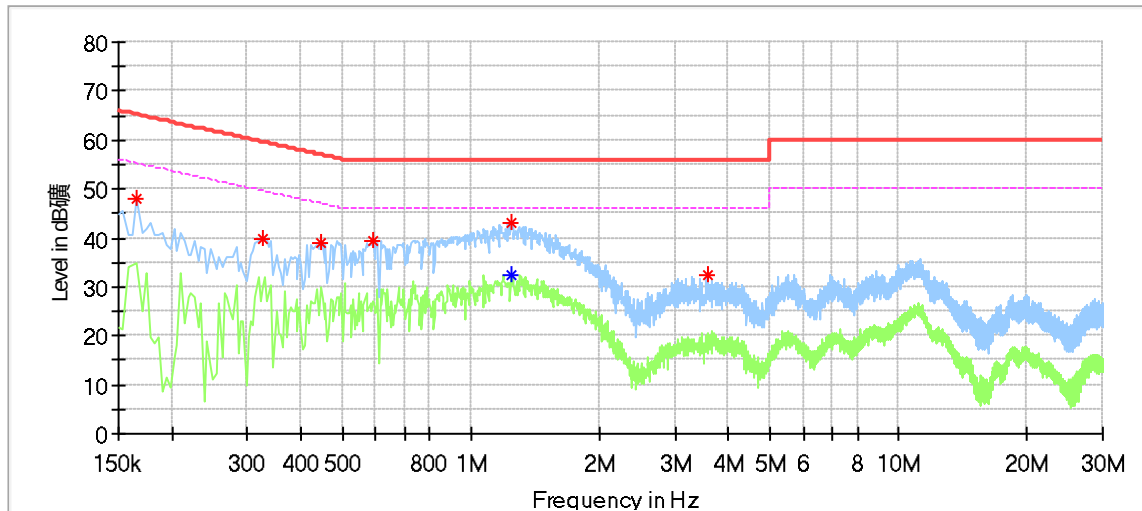
Max Peak/ Average=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Conducted Emission

Product Type : TABLET PC
 M/N : TA2C-CS8
 Operating Condition : Transmitting mode
 Test Specification : Neutral
 Comment : AC 120V/60Hz(External adapter)



Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.166000	48.03	---	65.16	17.13	N	9.57
0.326000	39.63	---	59.55	19.93	N	9.60
0.446000	38.97	---	56.95	17.98	N	9.61
0.590000	39.38	---	56.00	16.62	N	9.63
1.246000	---	32.55	46.00	13.45	N	9.63
1.250000	43.05	---	56.00	12.95	N	9.63
3.586000	32.27	---	56.00	23.73	N	9.71

Remark:

Max Peak/ Average=Reading Level + Correction Factor

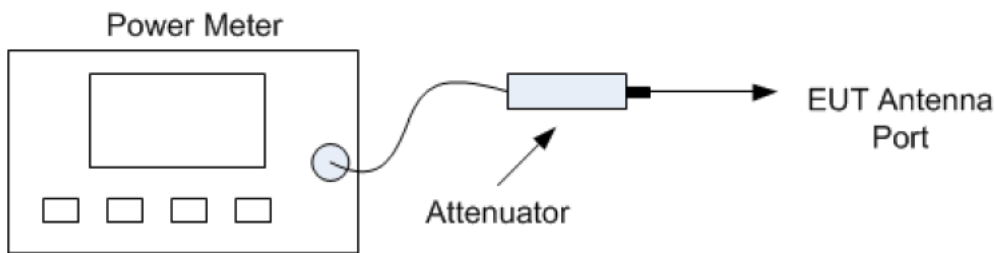
Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

9.2 Conducted Output Power

Test Method

- 1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
- 2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
- 3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- 4) Measure the peak power of the transmitter. This measurement is a peak over both the ON and OFF periods of the transmitter.



Power meter conducted test setup

Limits

According to §15.247 (b) (3), conducted output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

Test result as below table

Test Mode	Test Channel	Ant	Conducted Output Power (dBm)	Limit [dBm]	Verdict
11B	2412	ANT1	16.7	30.0	Pass
11B	2412	ANT2	17.7	30.0	Pass
11B	2437	ANT1	17.0	30.0	Pass
11B	2437	ANT2	17.3	30.0	Pass
11B	2462	ANT1	16.7	30.0	Pass
11B	2462	ANT2	16.8	30.0	Pass
11G	2412	ANT1	15.8	30.0	Pass
11G	2412	ANT2	16.9	30.0	Pass
11G	2437	ANT1	15.9	30.0	Pass
11G	2437	ANT2	17.0	30.0	Pass
11G	2462	ANT1	15.9	30.0	Pass
11G	2462	ANT2	16.4	30.0	Pass
11N20MIMO	2412	ANT1	14.5	30.0	Pass
11N20MIMO	2412	ANT2	15.3	30.0	Pass
11N20MIMO	2412	total	17.9	30.0	Pass
11N20MIMO	2437	ANT1	14.4	30.0	Pass
11N20MIMO	2437	ANT2	15.0	30.0	Pass
11N20MIMO	2437	total	17.7	30.0	Pass
11N20MIMO	2462	ANT1	14.3	30.0	Pass
11N20MIMO	2462	ANT2	15.2	30.0	Pass
11N20MIMO	2462	total	17.8	30.0	Pass

9.3 6dB Bandwidth and 99% Occupied Bandwidth

Test Method for 6 dB Bandwidth

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
RBW=100KHz, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Use the automatic bandwidth measurement capability of an instrument, use the X dB bandwidth mode with X set to 6 dB.
5. Allow the trace to stabilize, record the 6 dB Bandwidth value.

Test Method for 99 % Bandwidth

1. Connect EUT test port to spectrum analyzer.
Use the following spectrum analyzer settings:
RBW=1% to 5% of the actual occupied, VBW $\geq$ 3RBW, Sweep = auto,
Detector function = peak, Trace = max hold
2. Use the occupied bandwidth measurement capability of test receiver.
3. Allow the trace to stabilize, record the occupied bandwidth value.

Limit

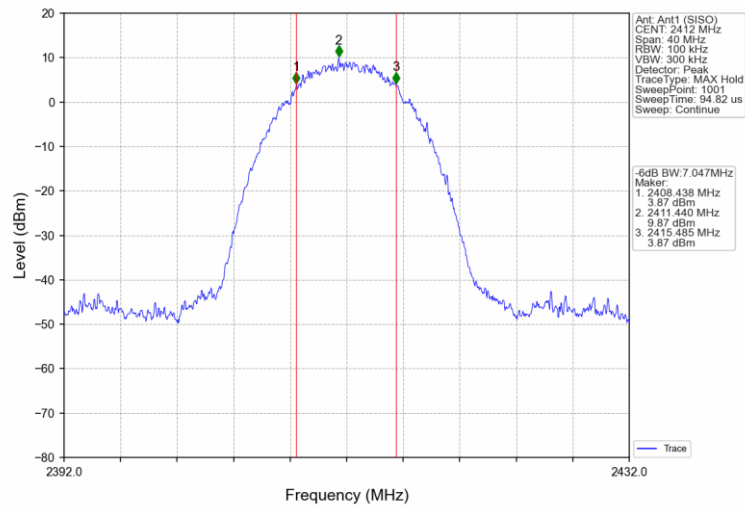
According to §15.247(a)(2), 6dB Bandwidth and 99% Occupied Bandwidth limit as below:

6dB bandwidth Limit [kHz]	99% bandwidth Limit [kHz]
≥ 500	--

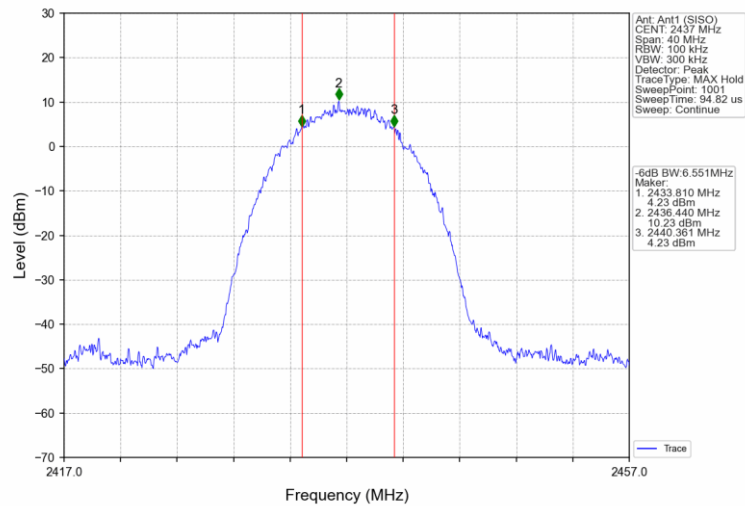
Mode	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	6dB bandwidth (MHz)	Limit (MHz)	Verdict
			Result	Result		
802.11b	2412	1	11.001	7.047	≥0.5	Pass
	2437	1	11.005	6.551	≥0.5	Pass
	2462	1	10.993	7.047	≥0.5	Pass
802.11g	2412	1	17.631	16.393	≥0.5	Pass
	2437	1	17.642	16.404	≥0.5	Pass
	2462	1	17.682	16.416	≥0.5	Pass
802.11n (HT20)	2412	1	19.172	17.734	≥0.5	Pass
	2437	1	19.171	17.771	≥0.5	Pass
	2462	1	19.162	17.754	≥0.5	Pass
802.11b	2412	2	11.307	6.670	≥0.5	Pass
	2437	2	11.292	7.380	≥0.5	Pass
	2462	2	11.252	7.185	≥0.5	Pass
802.11g	2412	2	18.546	16.344	≥0.5	Pass
	2437	2	18.539	16.341	≥0.5	Pass
	2462	2	18.487	16.351	≥0.5	Pass
802.11n (HT20)	2412	2	19.554	17.606	≥0.5	Pass
	2437	2	19.502	17.612	≥0.5	Pass
	2462	2	19.515	17.567	≥0.5	Pass

6 dB Bandwidth

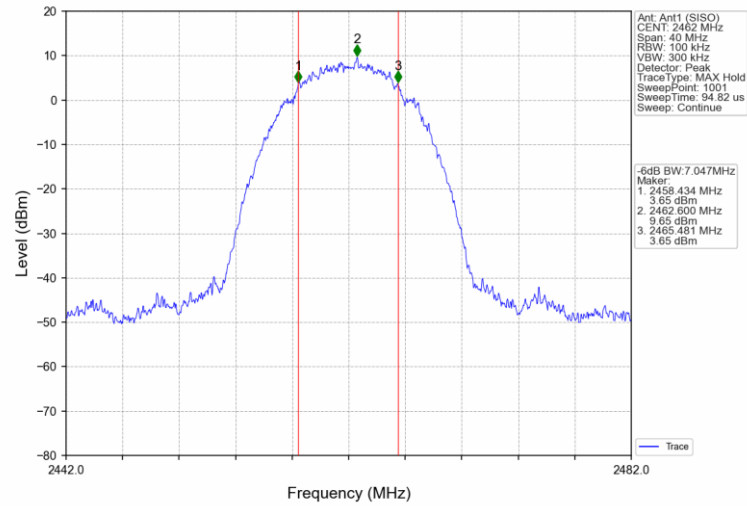
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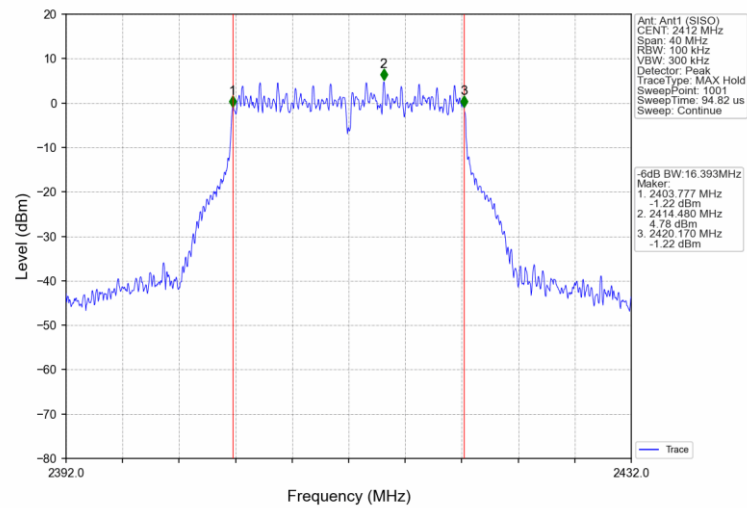
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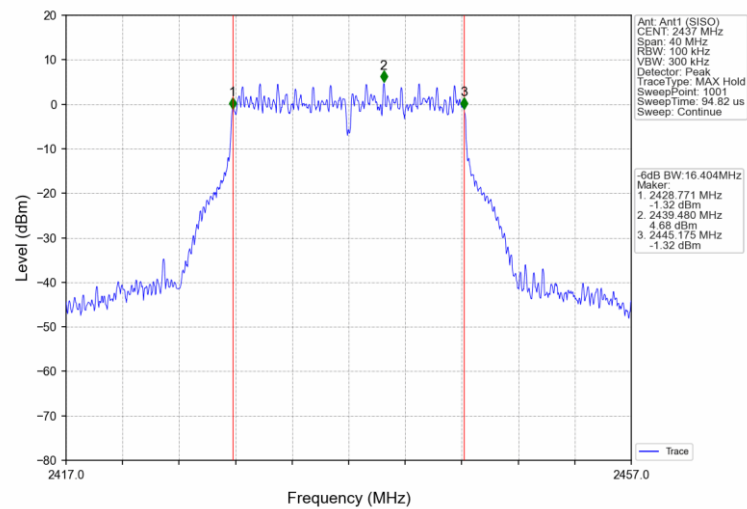
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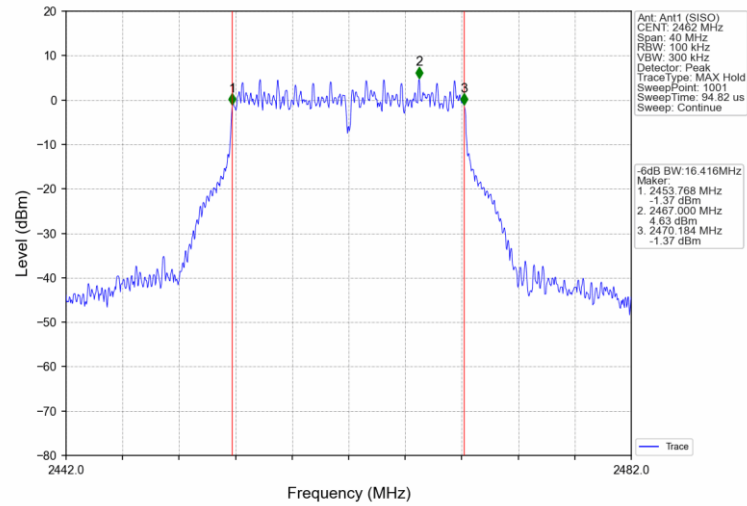
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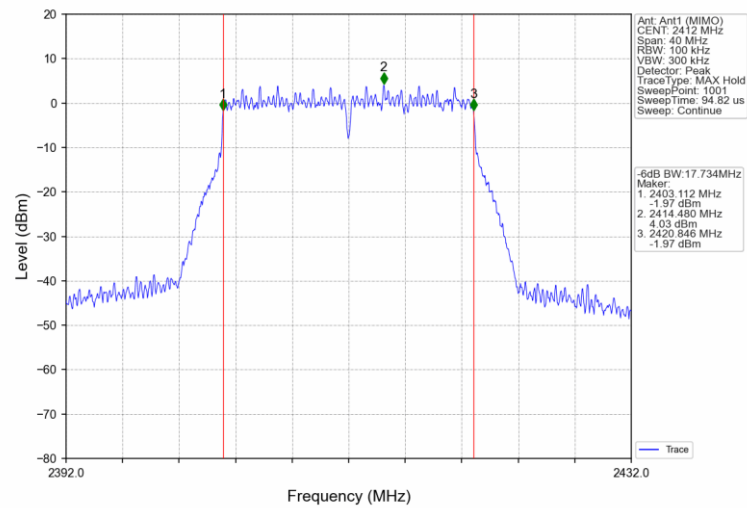
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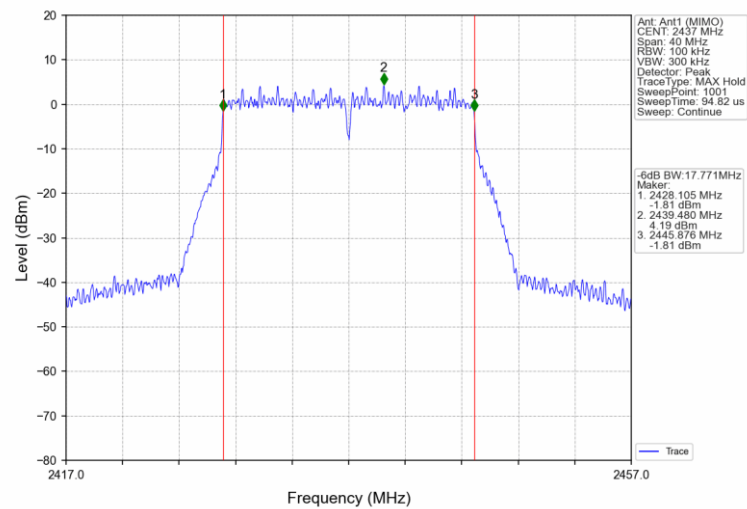
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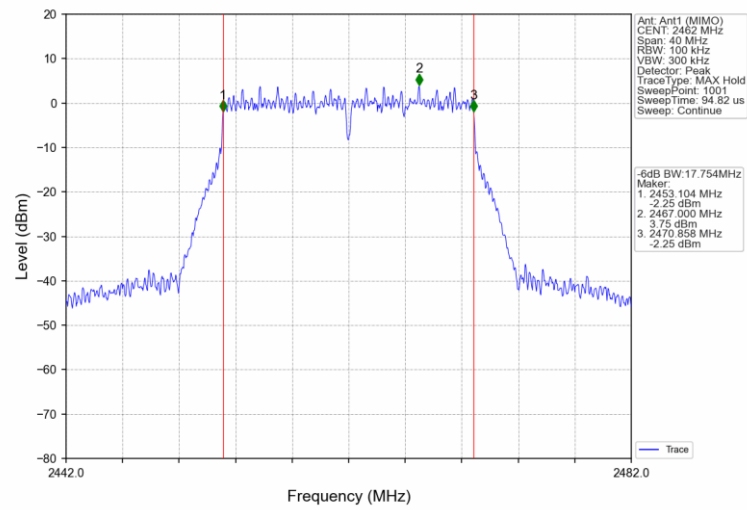
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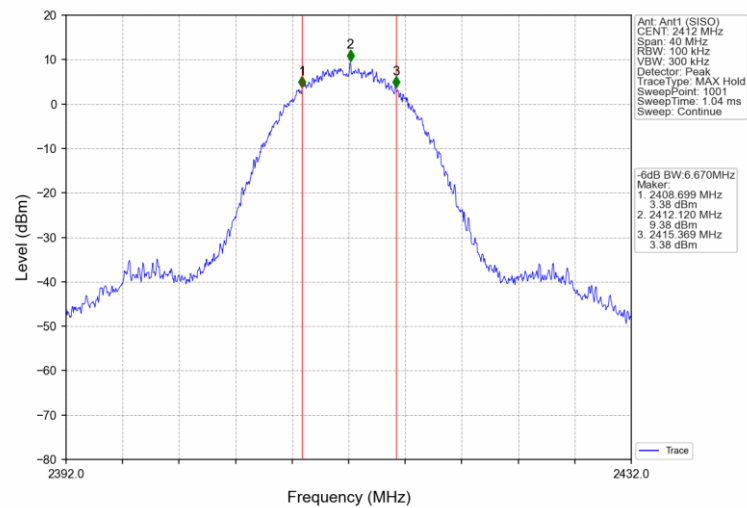
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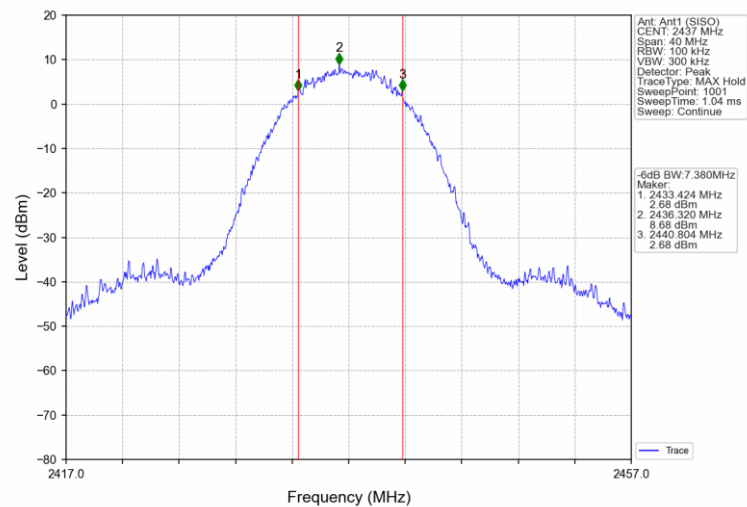
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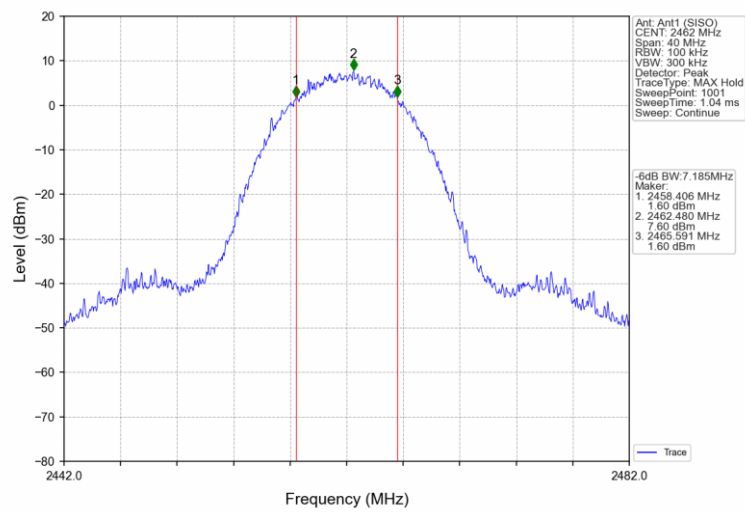
802.11b LCH 2412MHz Ant2 (SISO) NTVN



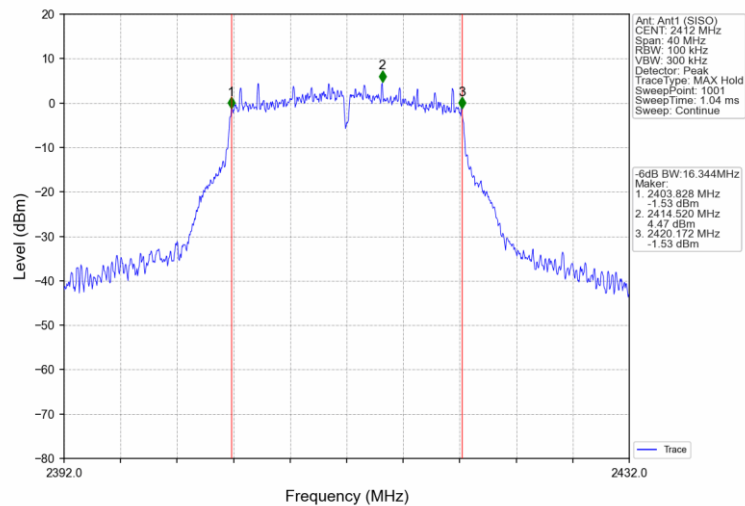
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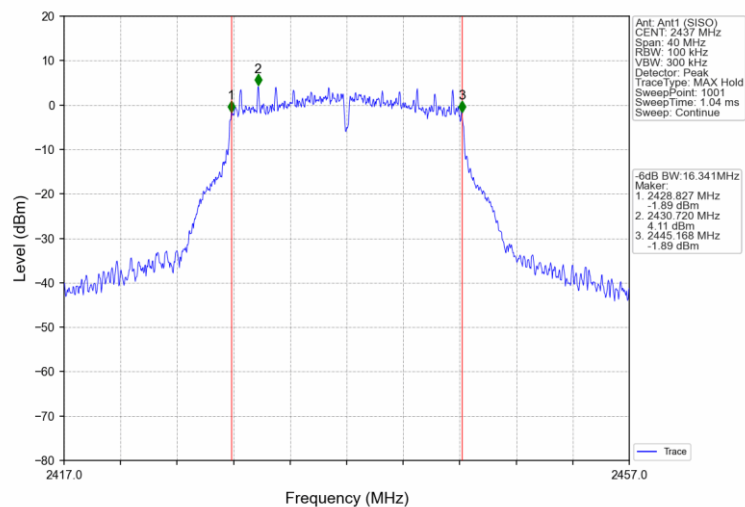
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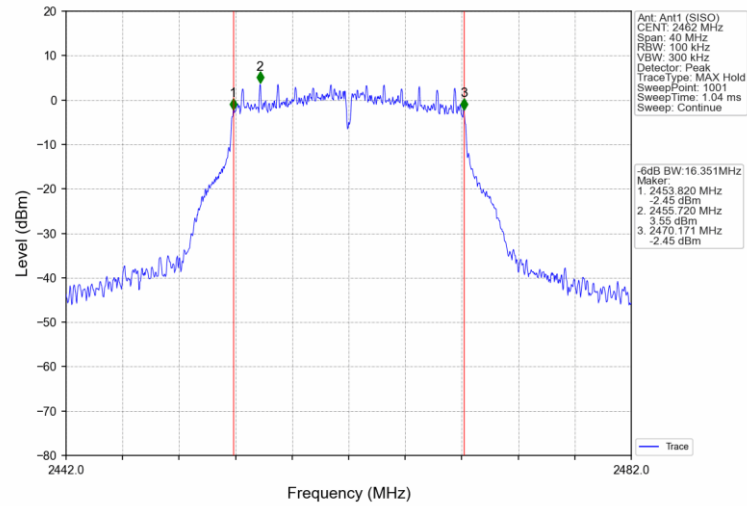
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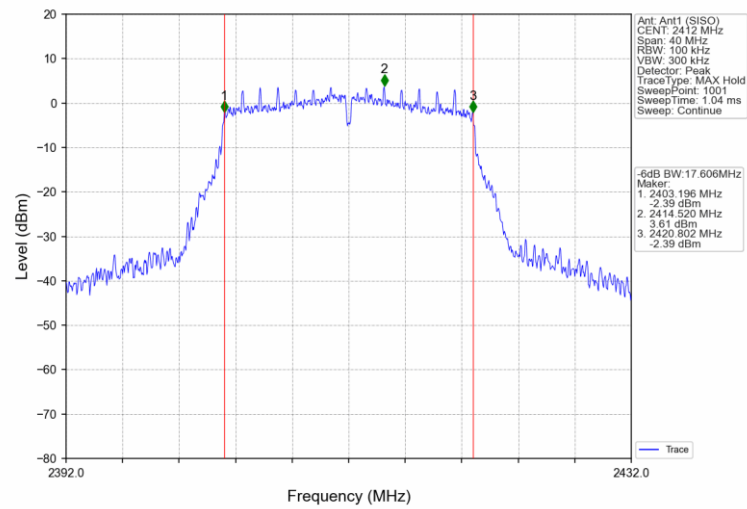
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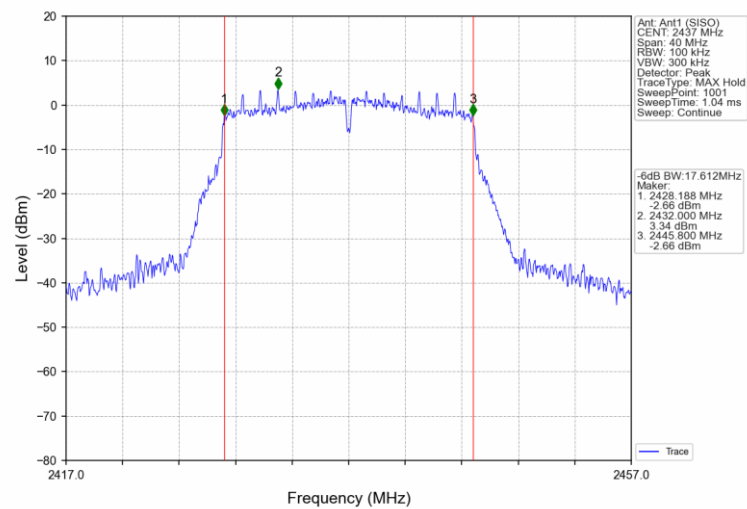
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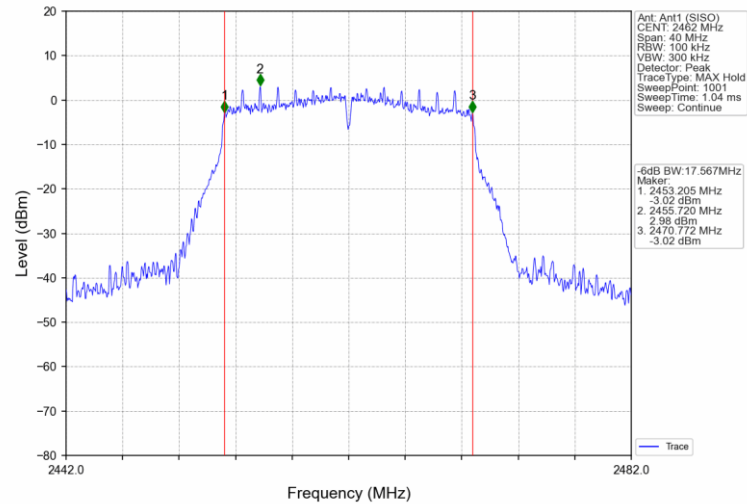
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802.11n(HT20) MCH 2437MHz Ant2 (SISO) NTNv

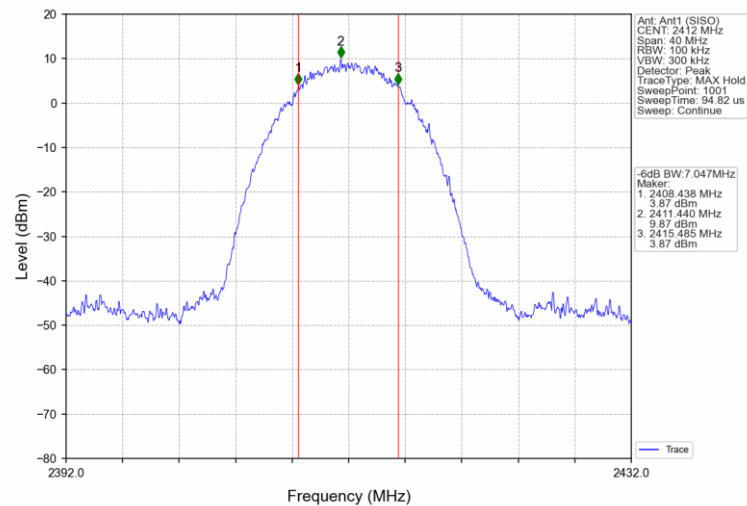


802.11n(HT20) HCH 2462MHz Ant2 (SISO) NTNv

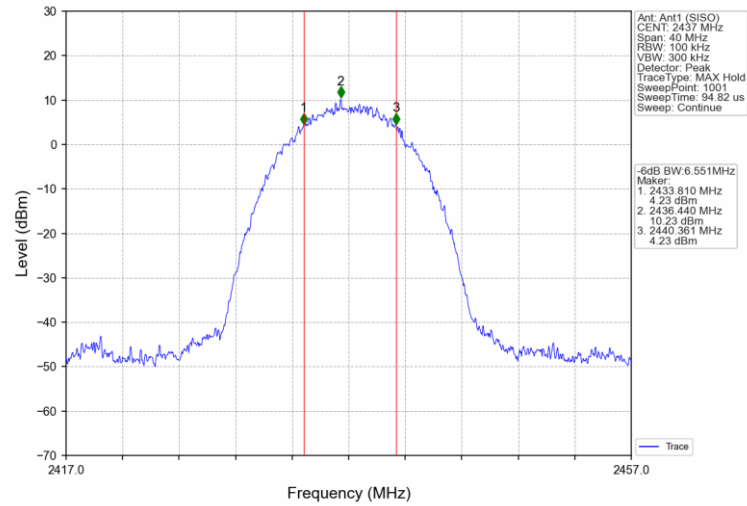


99% Bandwidth

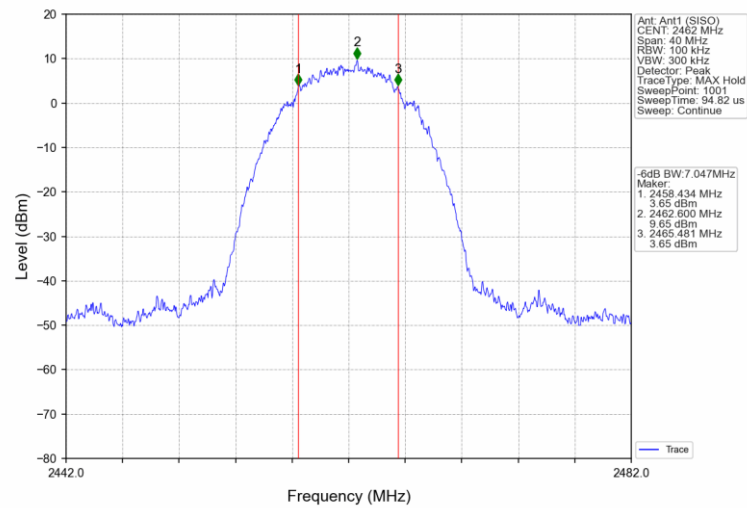
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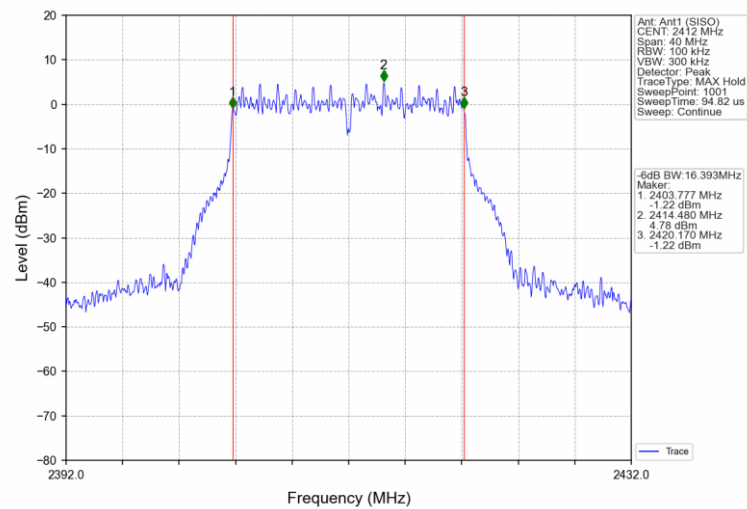
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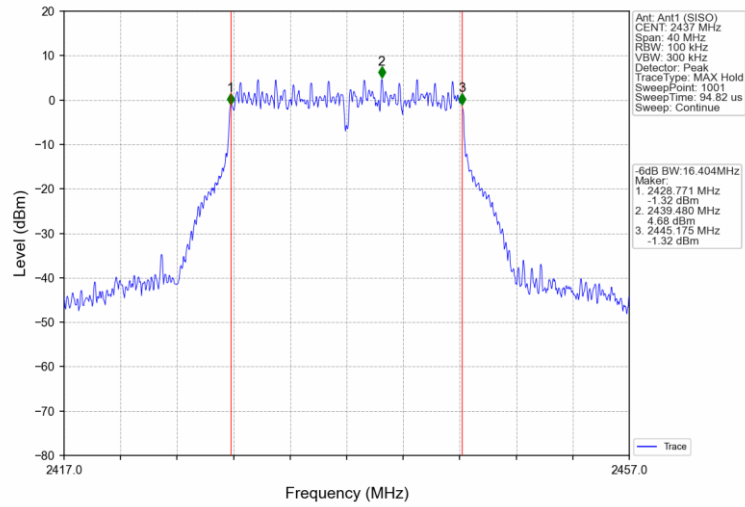
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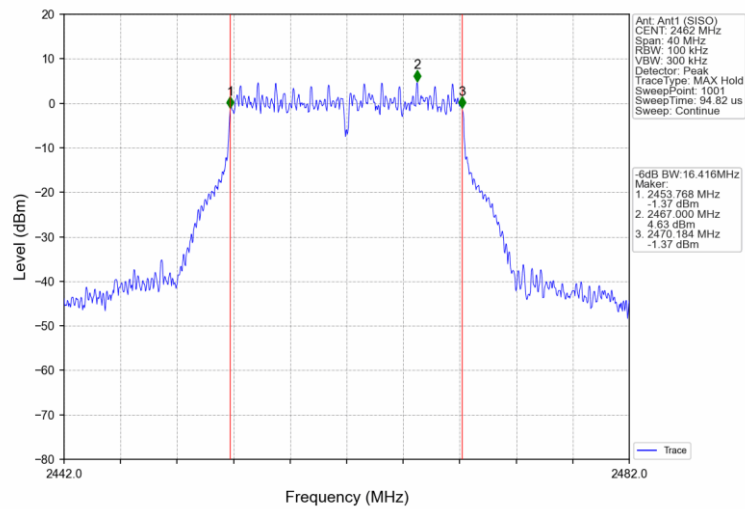
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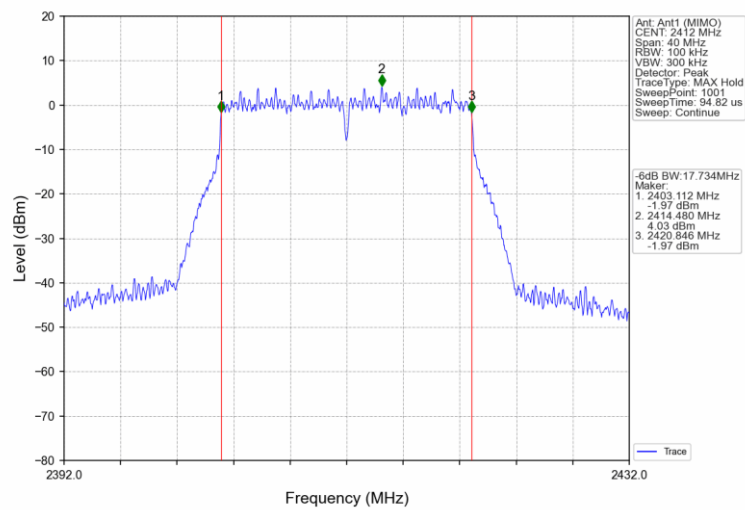
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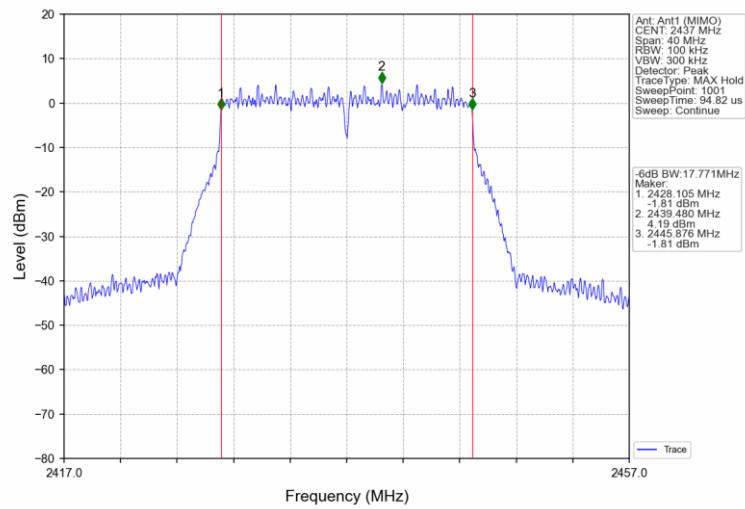
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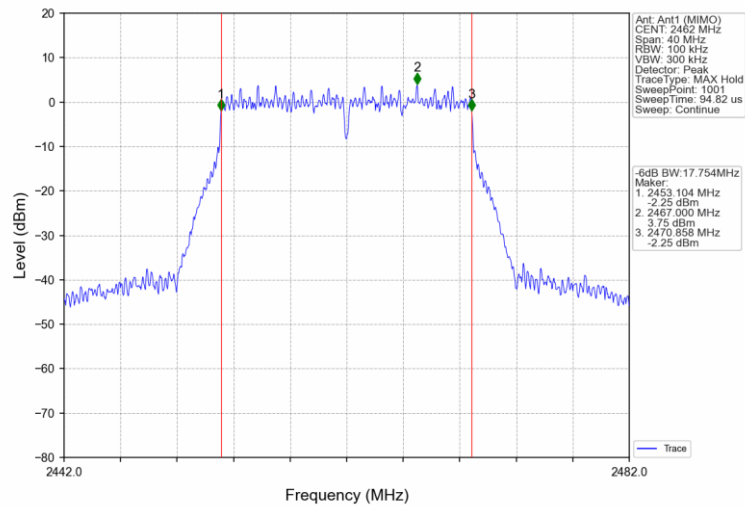
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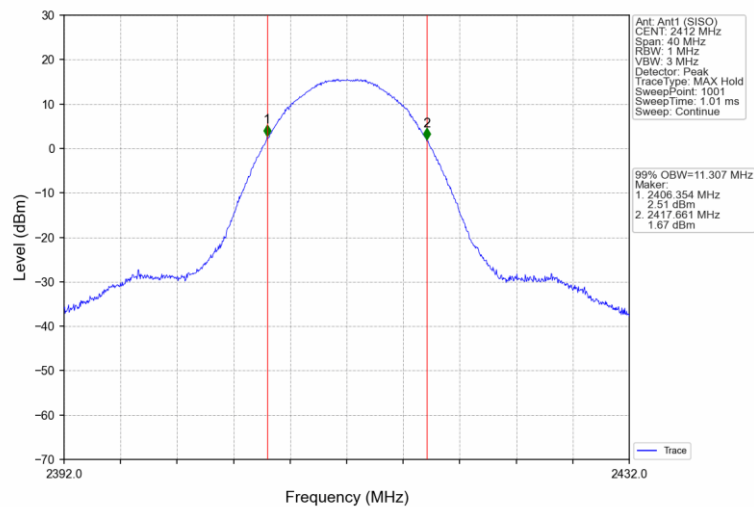
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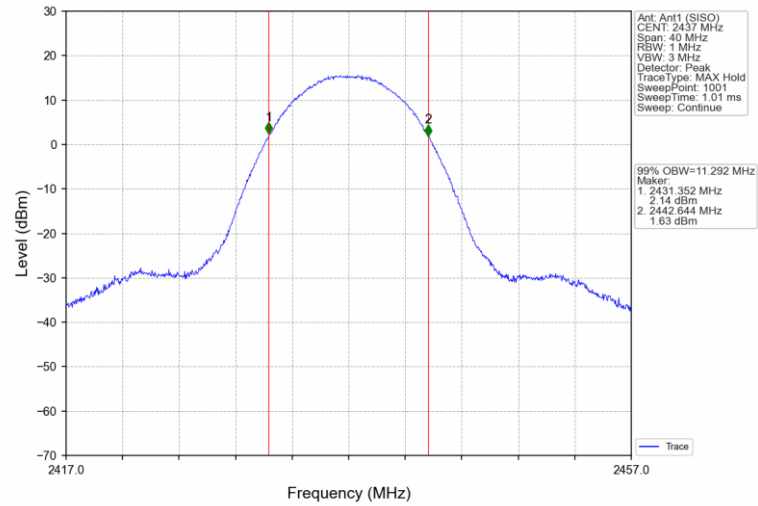
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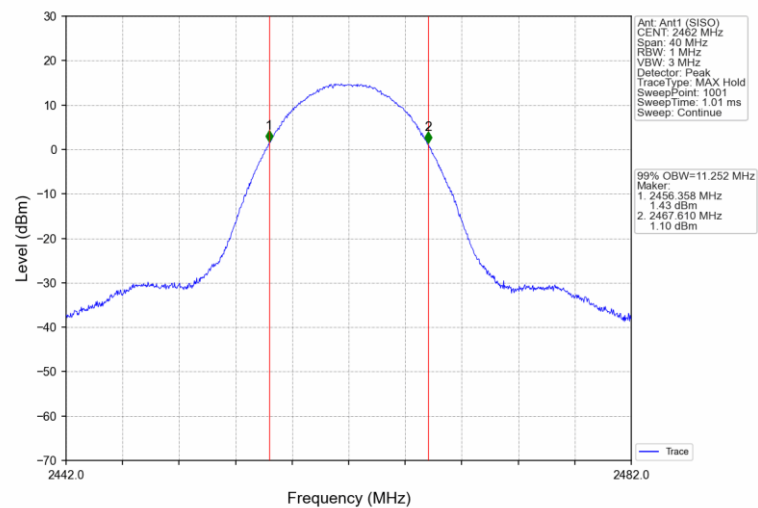
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



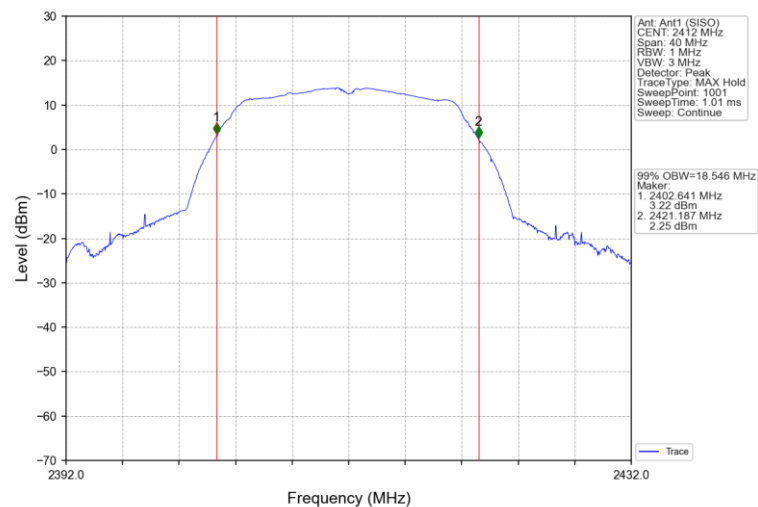
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



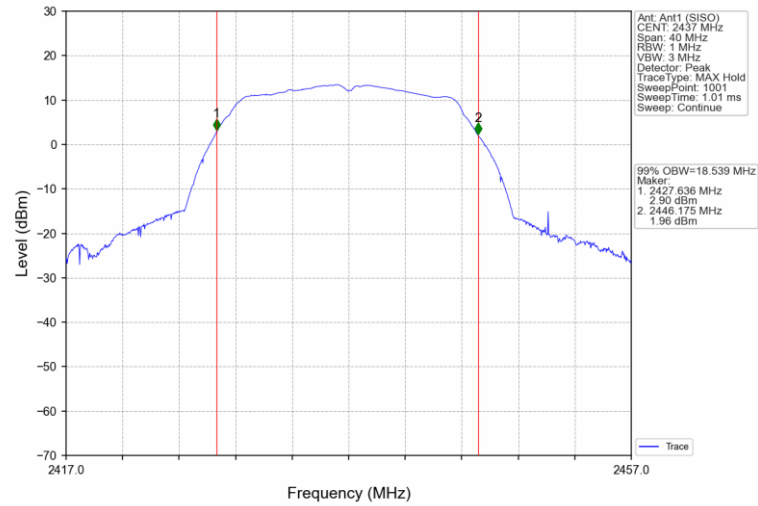
802.11b HCH 2462MHz Ant2 (SISO) NTNv



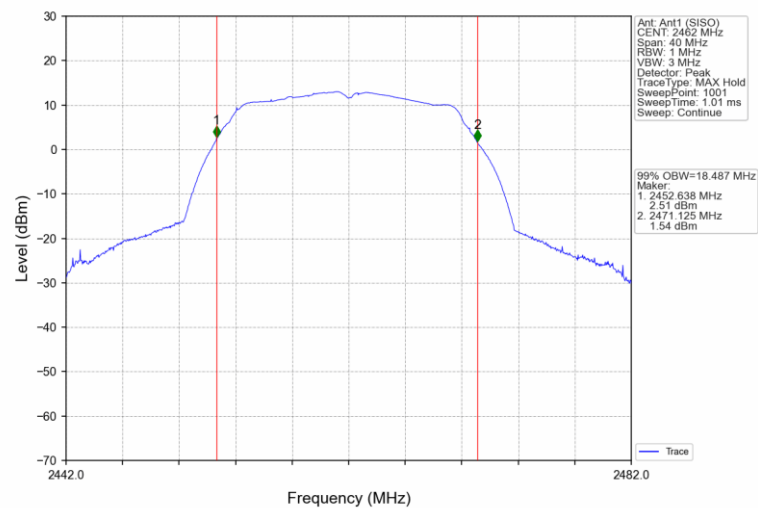
802.11g LCH 2412MHz Ant2 (SISO) NTNv



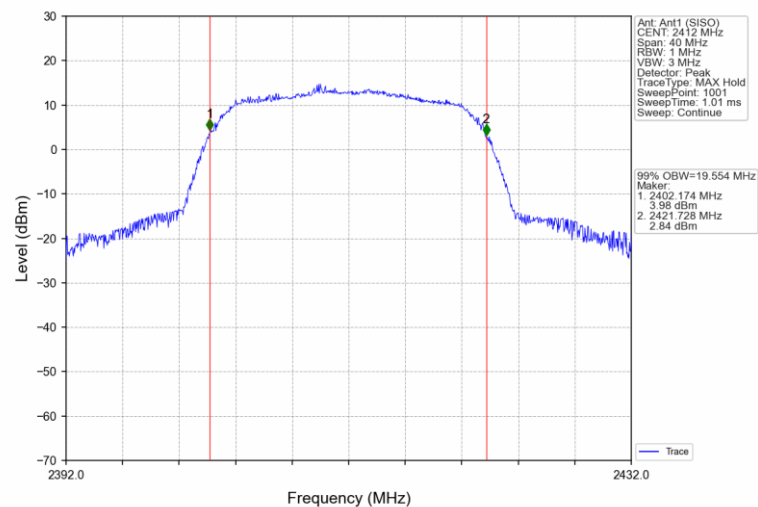
802.11g MCH 2437MHz Ant2 (SISO) NTNv



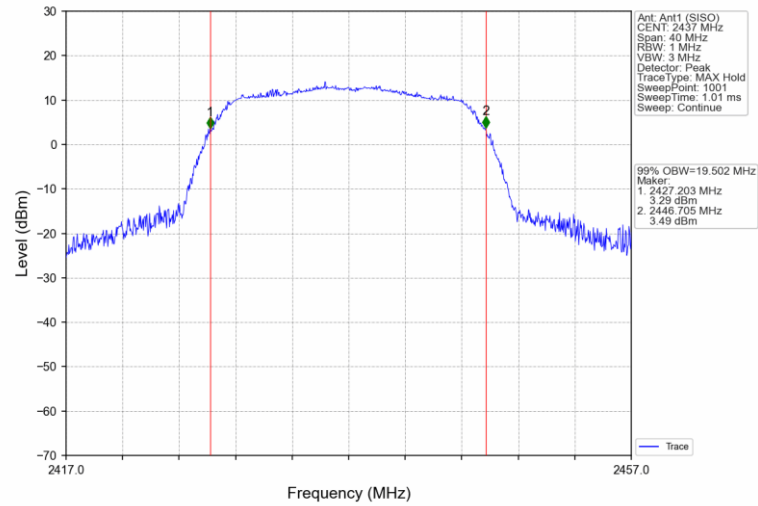
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



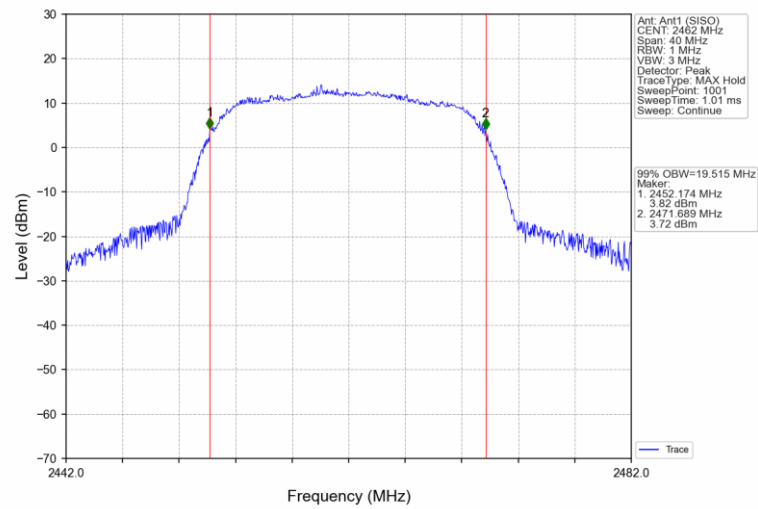
802.11n(HT20)_LCH_2412MHz_Ant2 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant2 (SISO)_NTNV



802.11n(HT20) HCH_2462MHz_Ant2 (SISO)_NTNV



9.4 Power Spectral Density

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
4. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
5. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
6. Repeat above procedures until other frequencies measured were completed.

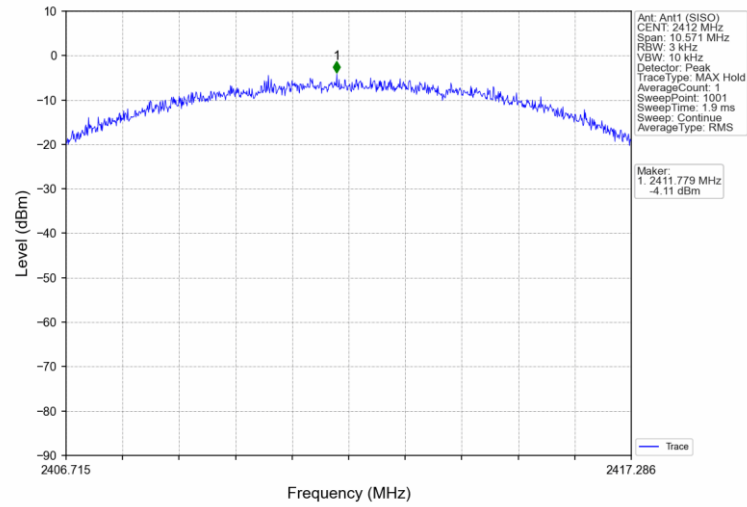
Limit

According to §15.247(e), Power Spectral Density limit as below:

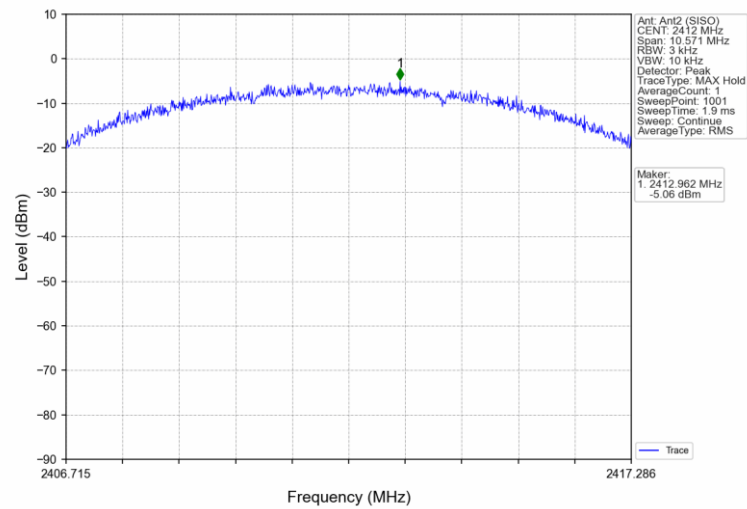
Limit [dBm/3kHz]
 ≤ 8

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)				Verdict
			ANT1	ANT2	MIMO	Limit	
802.11b	SISO	2412	-4.11	-5.06	/	≤ 8	Pass
		2437	-3.96	-4.55	/	≤ 8	Pass
		2462	-5.32	-6.44	/	≤ 8	Pass
802.11g	SISO	2412	-10.42	-10.30	/	≤ 8	Pass
		2437	-10.32	-10.36	/	≤ 8	Pass
		2462	-10.40	-10.85	/	≤ 8	Pass
802.11n (HT20)	MIMO	2412	-9.58	-9.52	-6.73	≤ 8	Pass
		2437	-9.63	-10.28	-7.04	≤ 8	Pass
		2462	-10.02	-10.69	-7.39	≤ 8	Pass

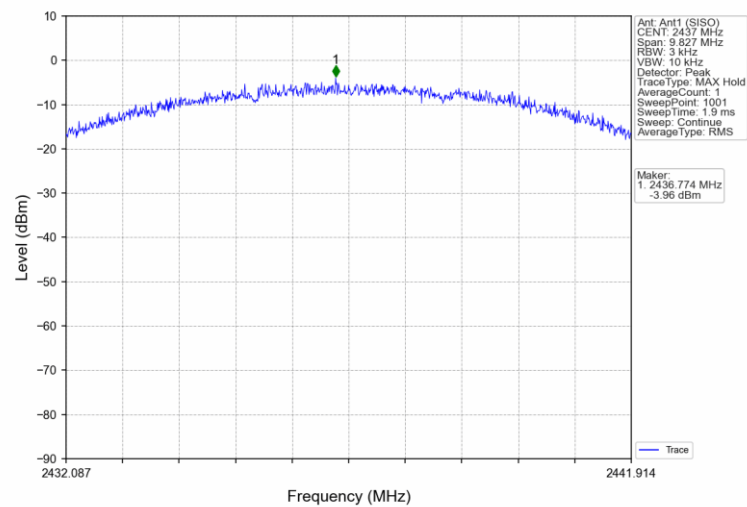
802.11b LCH 2412MHz Ant1 (SISO) NTNV



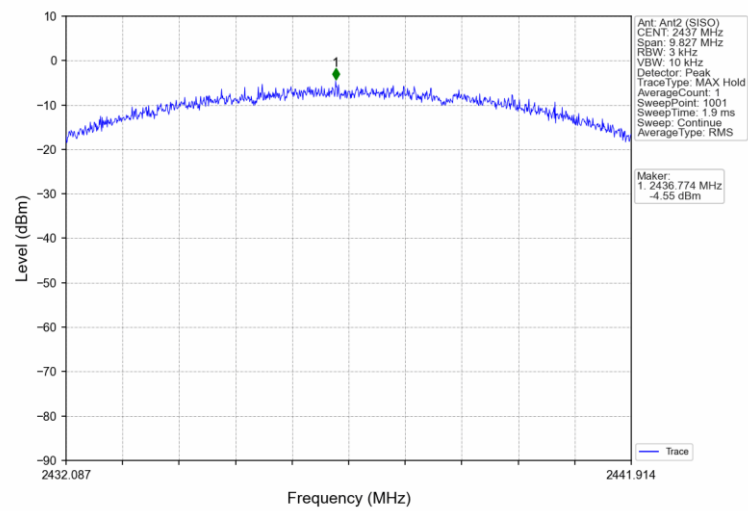
802.11b LCH 2412MHz Ant2 (SISO) NTNV



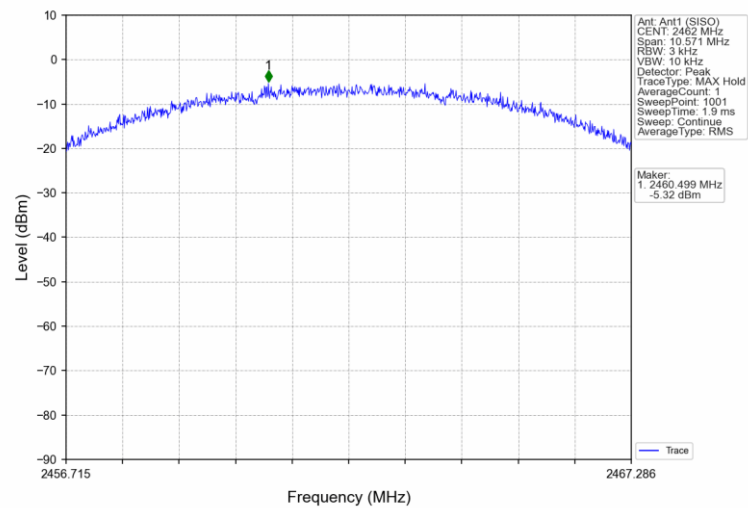
802.11b MCH 2437MHz Ant1 (SISO) NTNV



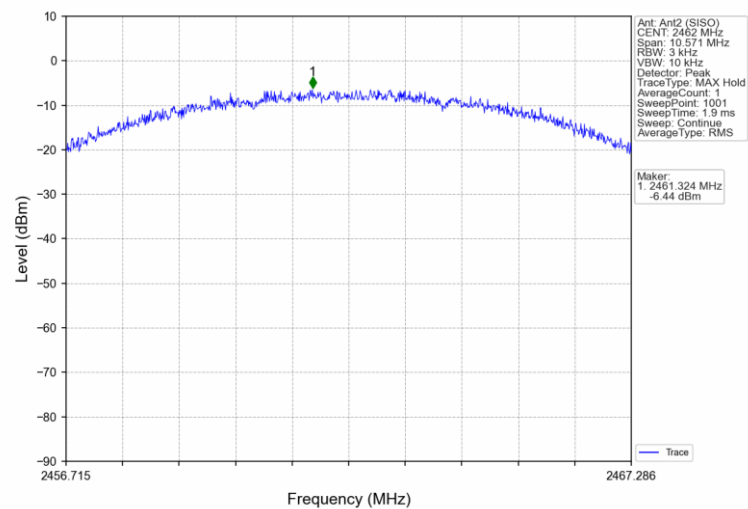
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



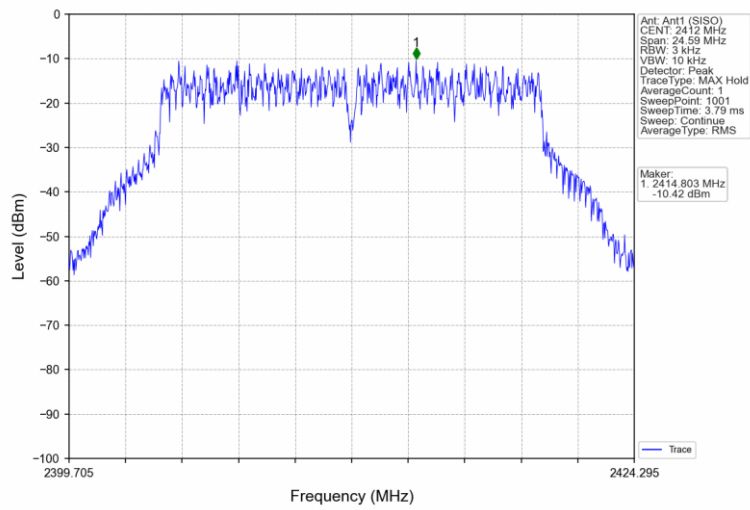
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



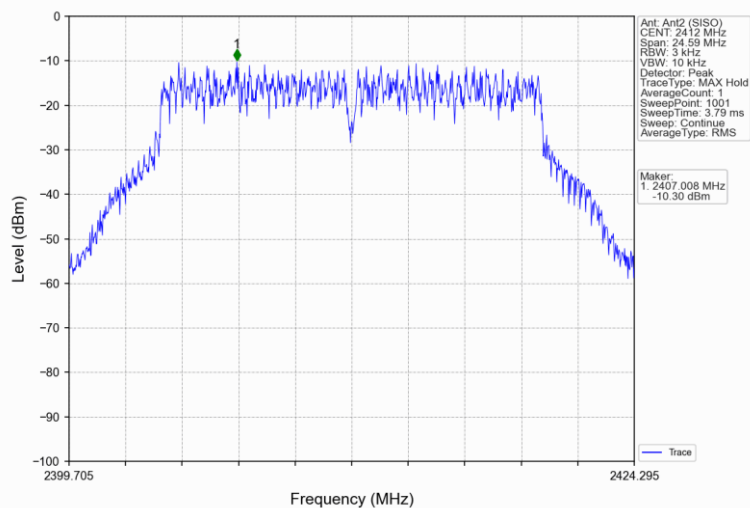
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



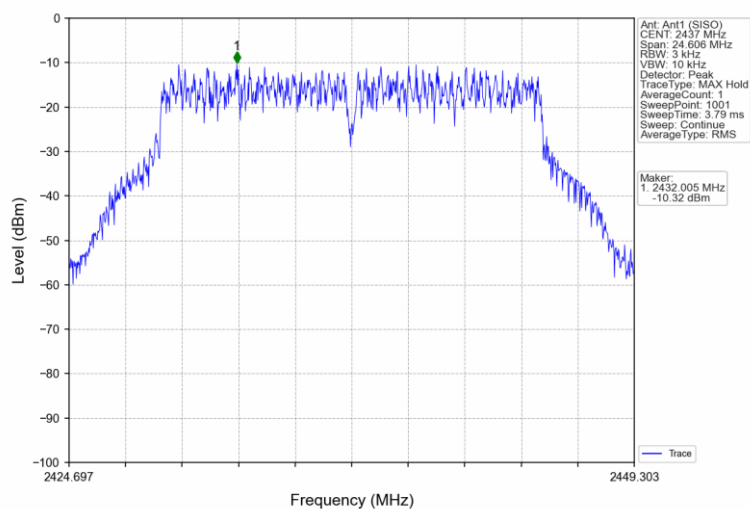
802.11g_LCH_2412MHz_Ant1 (SISO) NTN



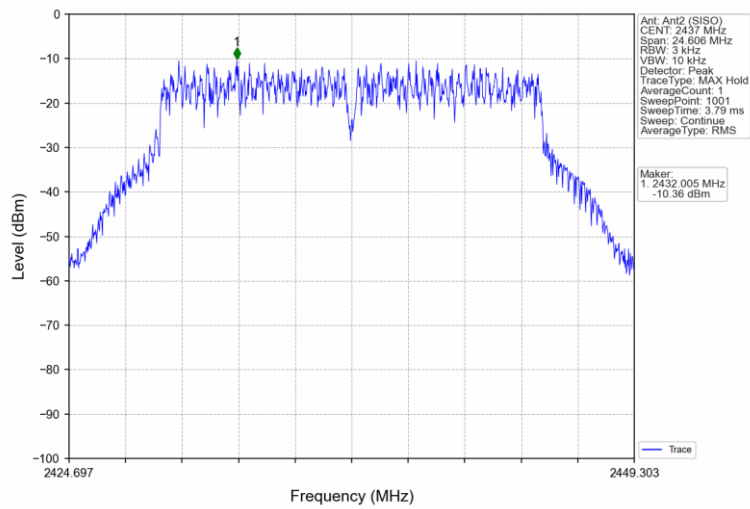
802.11g_LCH_2412MHz_Ant2 (SISO) NTN



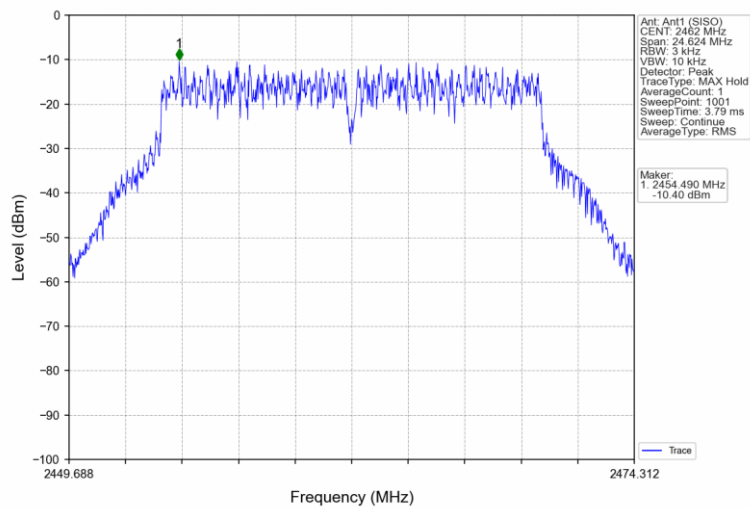
802.11g_MCH_2437MHz_Ant1 (SISO) NTN



802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV

