FCC - TEST REPORT

Report Number	:	**68.950.24.1412.01**	Date of Issue:	**2025-03-28**
Model	:	**P1**		
Product Type	:	Art Projector		
Applicant	:	SKRIVER INTERNATIONAL TRADLING LIMIED		
Address	:	19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO Kong KL, Hong Kong, China		
Manufacturer	:	SKRIVER INTERNATIONAL TRADLING LIMIED		
Address	:	19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO Kong KL, Hong Kong, China		
Factory	:	SKRIVER INTERNATIONAL TRADLING LIMIED		
Address	:	19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO Kong KL, Hong Kong, China		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	**105**		

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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
Fax:	+86 755 8828 5299
FCC Registration No.:	514049
FCC Designation Number:	CN5009

3 Description of the Equipment under Test

Product:	Art Projector
Model no.:	P1
Brand Name:	Caydo
FCC ID:	2BKPL-P1
Ratings:	Powered by external adaptor: Adaptor Input: 100-240V~50/60Hz, 1.5A Max Output: 19V⎓2.5A
RF Transmission Frequency:	2412MHz-2462MHz
No. of Operated Channel:	11 for 802.11b/g/n20/ax20 (Wi-Fi) 7 for 802.11n40/ax40 (Wi-Fi)
Modulation:	802.11b: CCK, DSSS 802.11g/n20/n40: BPSK, QPSK, 16-QAM, 64-QAM 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
Antenna Type:	FPC antenna
Antenna Gain:	1.88 dBi
Description of the EUT:	EUT is an Art Projector which support Bluetooth (BR+EDR+BLE), Wi-Fi operated at 2.4GHz and 5GHz. Only 2.4GWIFi 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.

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 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.

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5 Summary of Test Results

Technical Requirements			
FCC Part 15 Subpart C 10-1-2023 Edition			
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)(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 1	--

Remark 1: N/A – Not Applicable.
Note 1: The EUT uses a FPC antenna, which gain is 1.88dBi. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2BKPL-P1, complies with Section 15.207, 15.209, 15.205, 15.247 of the FCC Part 15 Subpart C rules.

SUMMARY:

All tests according to the regulations cited on page 6 were

■ - Performed

☐ - **Not** Performed

The Equipment under Test

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

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

Sample Received Date:	2024-10-21
Testing Start Date:	2024-10-21
Testing End Date:	2025-03-24

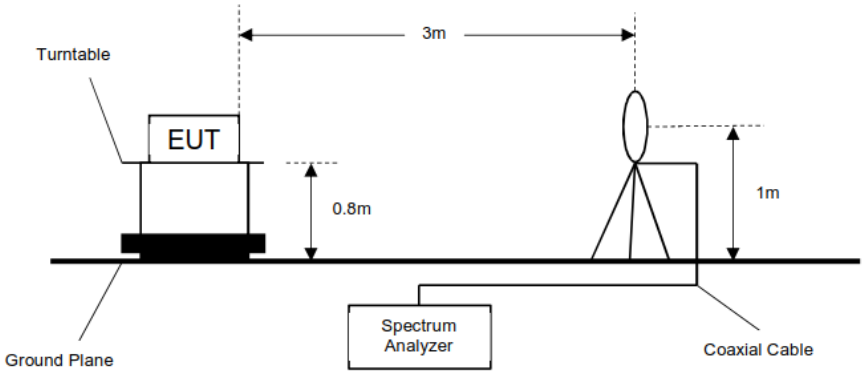
- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch –

Reviewed by:	Prepared by:	Tested by:
John Zhi Project Manager	Hayden Hu Project Engineer	Carry Cai Test Engineer

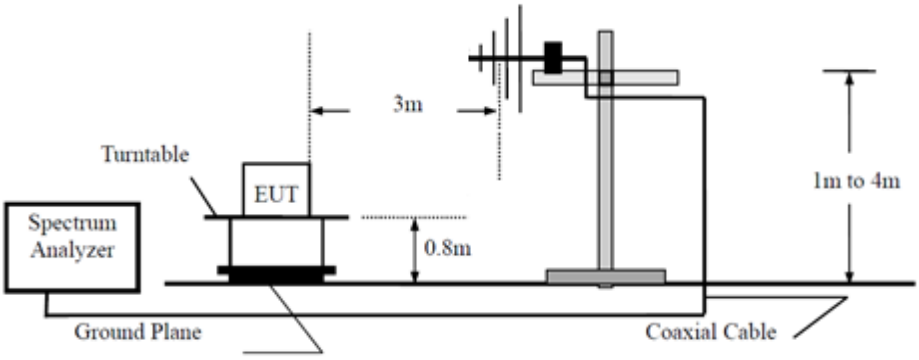
7 Test Setups

7.1 Radiated test setups

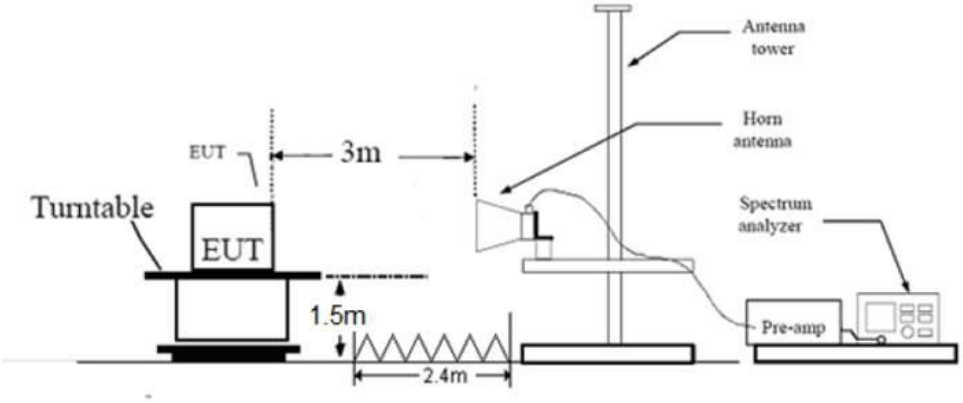
9kHz - 30MHz



Below 1GHz



Above 1GHz



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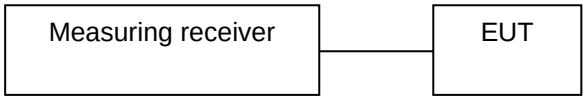
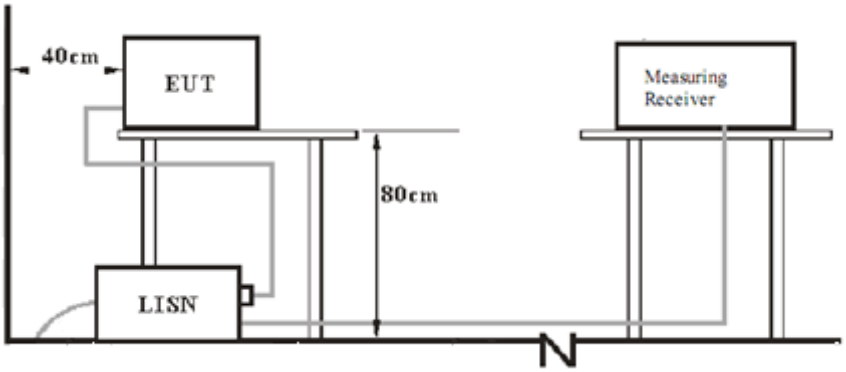
7.2 Conducted RF test setups



7.3 AC Power Line Conducted Emission test setups



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8 Systems test configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Computer	HP	TPN-CA16	L25298-002
Adaptor	Dong Guan City GangQi Electronic Co.,Ltd	GQ48-190250-AU	---
Serial port board	---	---	---

The system was configured to channel 1, 6, and 11 for the test.

Test Software Information:

Test Software Version	SecureCRT	
Mode	Setting TX Power	Packet Type
802.11b	14	11b 1 Mbps
802.11g	14	11g 6 Mbps
802.11n HT20	14	MCS0 6.5 Mbps
802.11n HT40	14	MCS0 13.5 Mbps
802.11AX20	14	MCS0 8 Mbps
802. 11AX40	14	MCS0 16 Mbps

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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 dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

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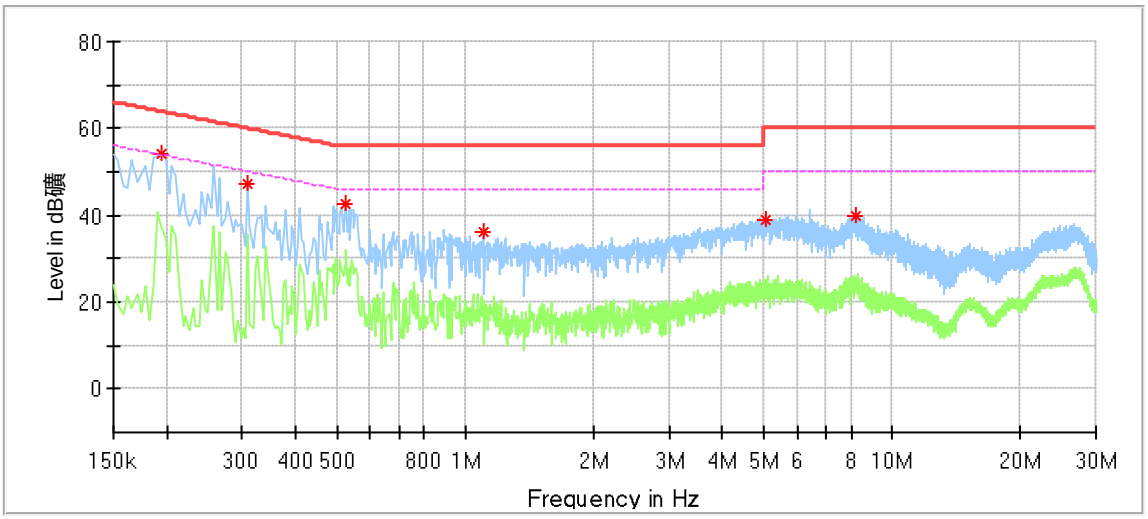
Conducted Emission

Product Type	:	Art Projector
M/N	:	P1
Operating Condition	:	Transmitting
Test Specification	:	Line
Comment	:	AC 120V/60Hz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.194000	54.23	---	63.86	9.63	L1	9.67
0.310000	47.15	---	59.97	12.82	L1	9.67
0.526000	42.63	---	56.00	13.37	L1	9.69
1.102000	36.02	---	56.00	19.98	L1	9.70
5.034000	38.73	---	60.00	21.27	L1	9.82
8.206000	39.90	---	60.00	20.10	L1	9.90

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
---	---	---	---	---		---

Remark:
Max Peak= Read level + Corrector factor
Correct factor=cable loss + LISN factor
EUT has more than one typical operation, only the worst test mode will be recorded in this report.

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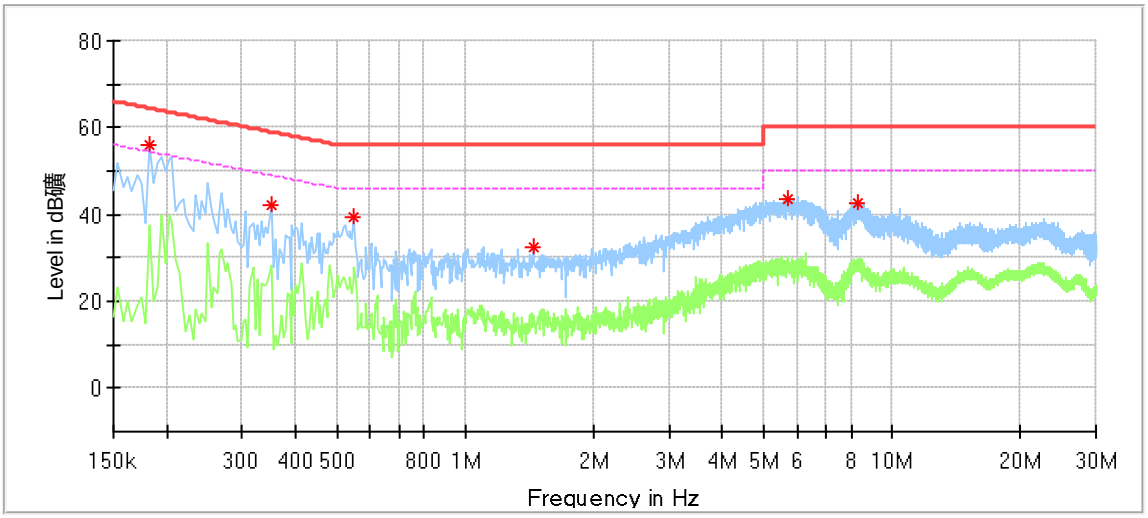
Conducted Emission

Product Type	:	Art Projector
M/N	:	P1
Operating Condition	:	Transmitting
Test Specification	:	Power Line, Neutral
Comment	:	AC 120V/60Hz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.182000	56.12	---	64.39	8.27	N	9.67
0.350000	42.26	---	58.96	16.71	N	9.67
0.550000	39.48	---	56.00	16.52	N	9.68
1.442000	32.40	---	56.00	23.60	N	9.70
5.674000	43.50	---	60.00	16.50	N	9.82
8.266000	42.77	---	60.00	17.23	N	9.89

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
---	---	---	---	---		---

Remark:
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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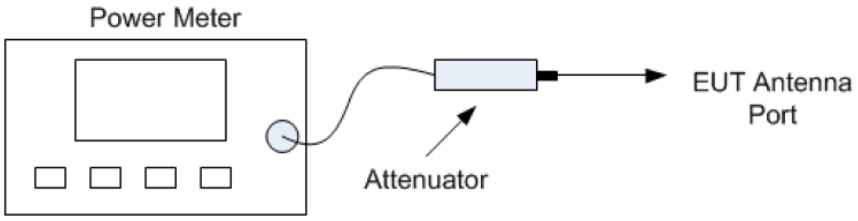
9.2 Conducted output power

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 results

ENV	Mode	TX Type	Frequency (MHz)	ANT	Power (dBm)	Limit (dBm)	Verdict
NTNV	11B	SISO	2412	1	16.50	<=30	Pass
			2437	1	15.50	<=30	Pass
			2462	1	15.66	<=30	Pass
	11G	SISO	2412	1	12.78	<=30	Pass
			2437	1	12.43	<=30	Pass
			2462	1	12.20	<=30	Pass
	11N20	SISO	2412	1	12.78	<=30	Pass
			2437	1	12.30	<=30	Pass
			2462	1	12.04	<=30	Pass
	11N40	SISO	2422	1	11.98	<=30	Pass
			2437	1	12.35	<=30	Pass
			2452	1	11.95	<=30	Pass
	11AX20	SISO	2412	1	14.60	<=30	Pass
			2437	1	14.29	<=30	Pass
			2462	1	13.97	<=30	Pass
	11AX40	SISO	2422	1	13.98	<=30	Pass
			2437	1	14.30	<=30	Pass
			2452	1	13.97	<=30	Pass

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9.3 6dB bandwidth

Test Method

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=1% to 5% of the occupied bandwidth but not less than 100kHz, VBW≥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.

Limit

Limit [kHz]
≥500

Test results

Mode	TX Type	Frequency (MHz)	RU	ANT	6dB Bandwidth (MHz)		Verdict
					Result	Limit	
802.11b	SISO	2412	/	1	10.307	>=0.5	Pass
		2437	/	1	10.294	>=0.5	Pass
		2462	/	1	10.291	>=0.5	Pass
802.11g	SISO	2412	/	1	16.540	>=0.5	Pass
		2437	/	1	16.318	>=0.5	Pass
		2462	/	1	16.377	>=0.5	Pass
802.11n (HT20)	SISO	2412	/	1	17.686	>=0.5	Pass
		2437	/	1	17.502	>=0.5	Pass
		2462	/	1	17.580	>=0.5	Pass
802.11n (HT40)	SISO	2422	/	1	36.386	>=0.5	Pass
		2437	/	1	36.068	>=0.5	Pass
		2452	/	1	36.301	>=0.5	Pass
802.11ax (HEW20)	SISO	2412	/	1	18.779	>=0.5	Pass
		2437	/	1	18.866	>=0.5	Pass
		2462	/	1	18.887	>=0.5	Pass
802.11ax (HEW40)	SISO	2422	/	1	37.482	>=0.5	Pass
		2437	/	1	37.571	>=0.5	Pass
		2452	/	1	37.826	>=0.5	Pass

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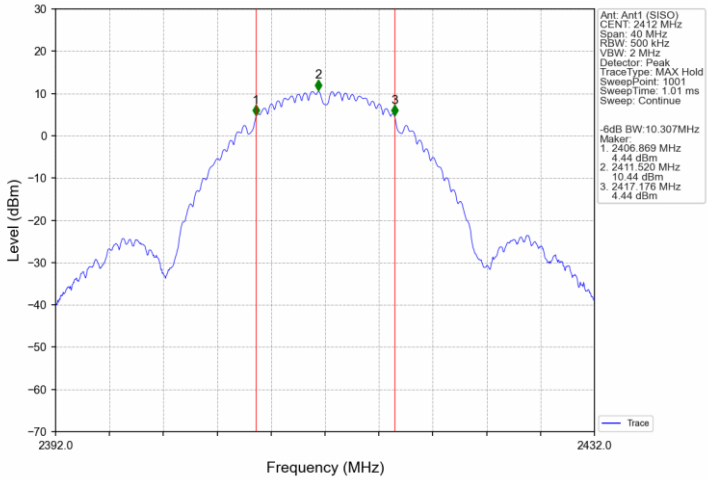
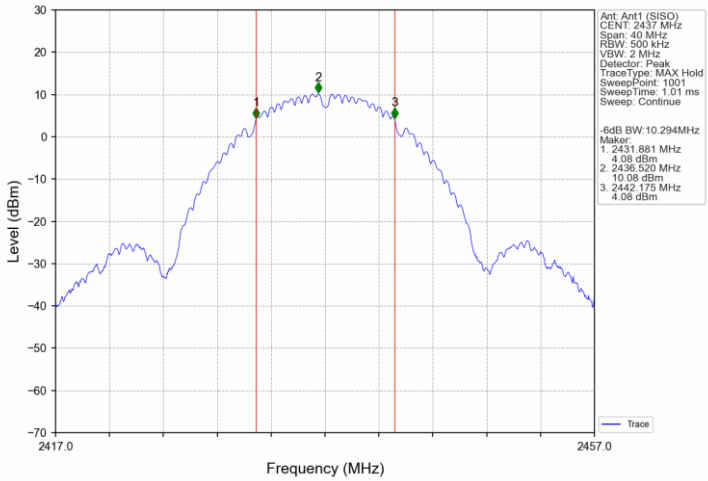
Test Graphs

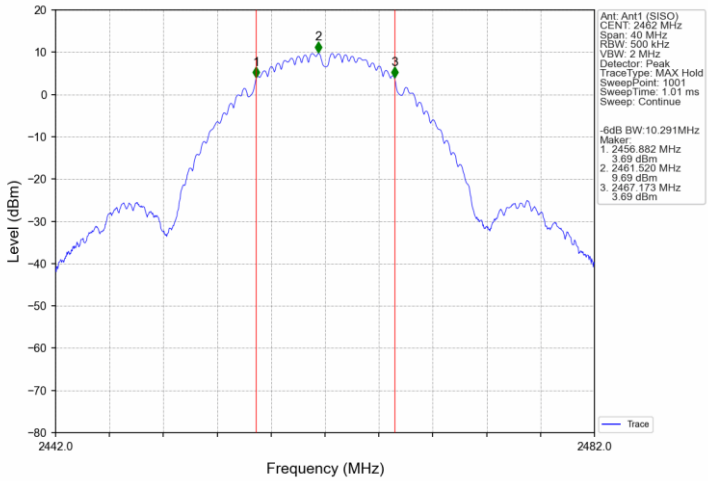
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



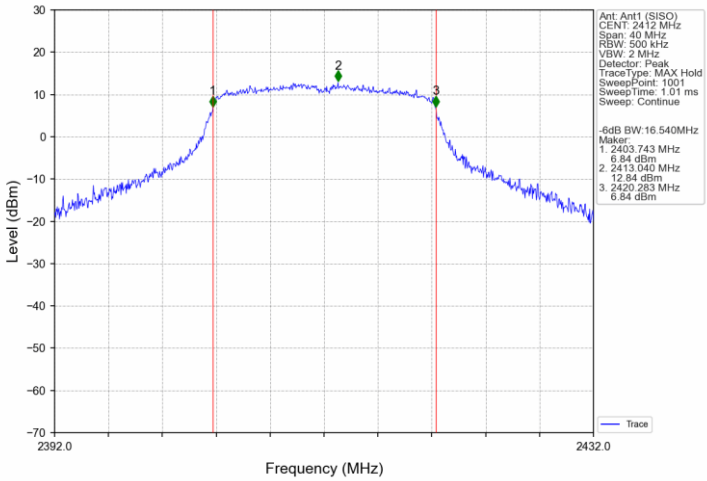
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



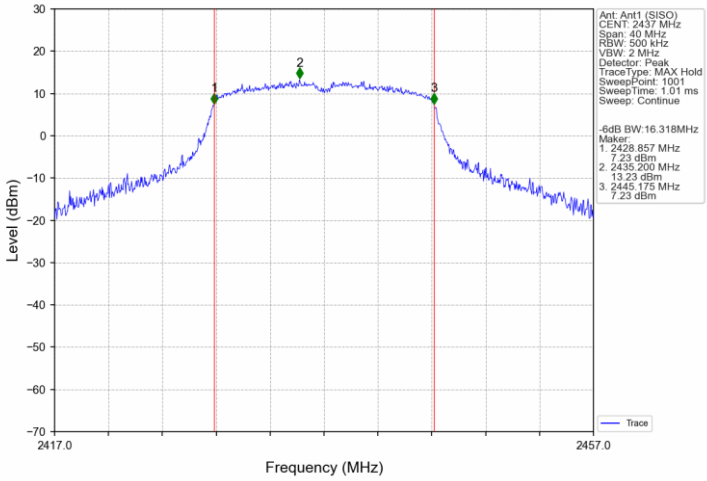
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



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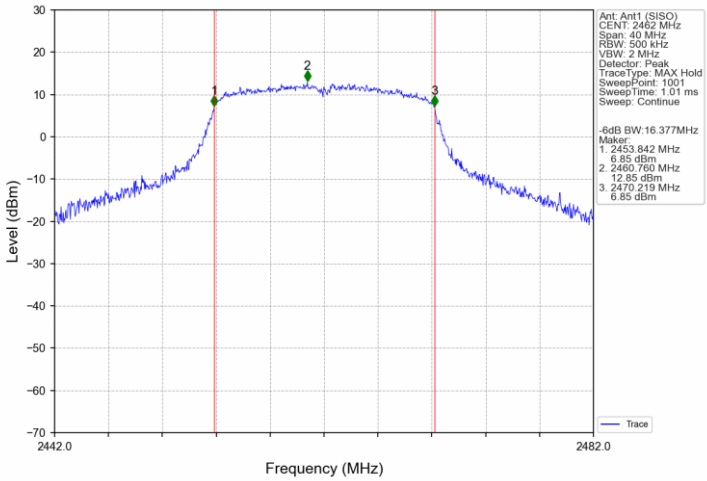

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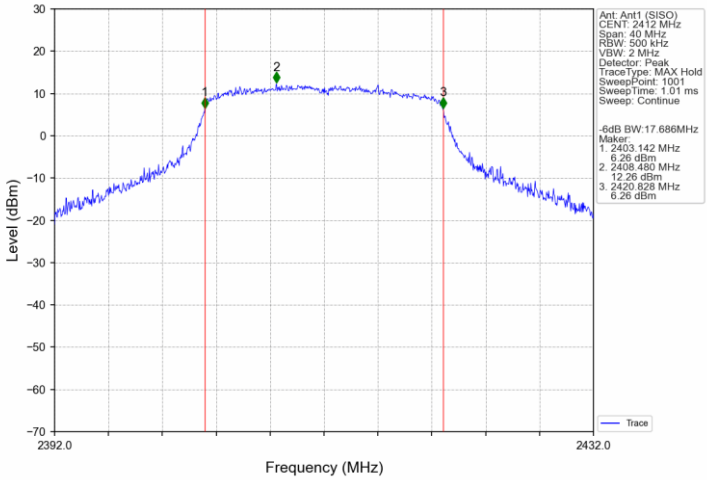
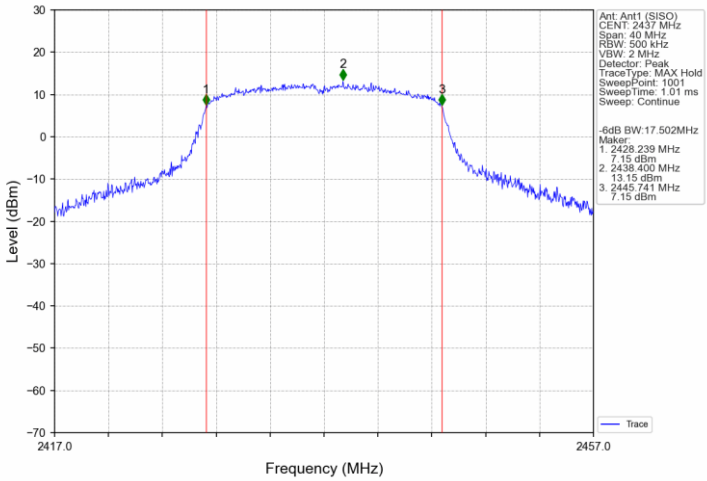
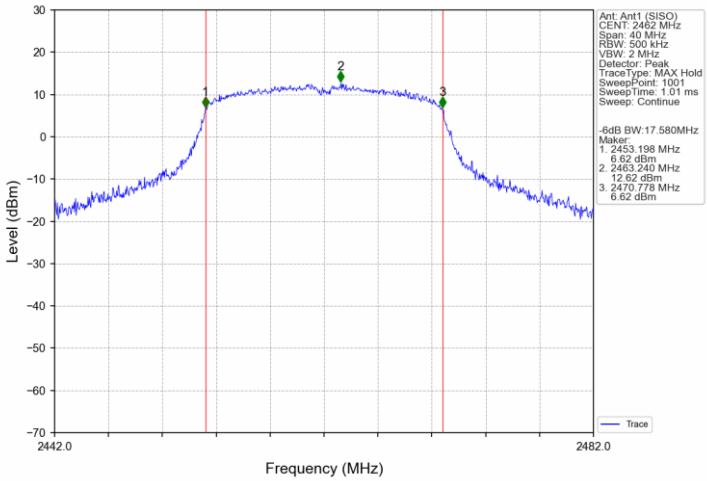
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



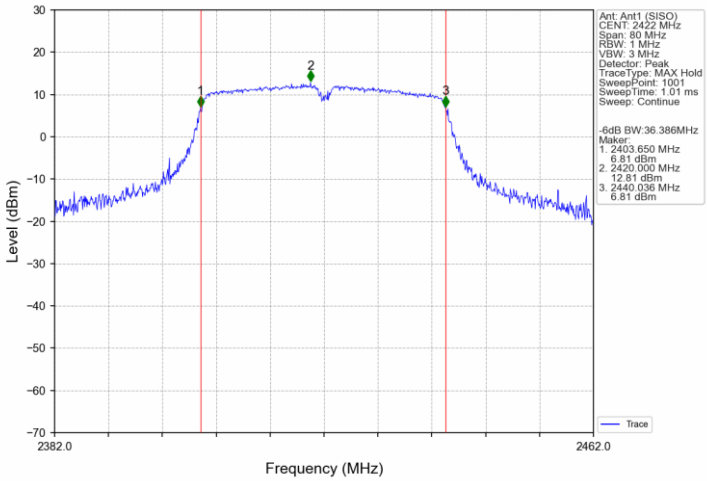
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



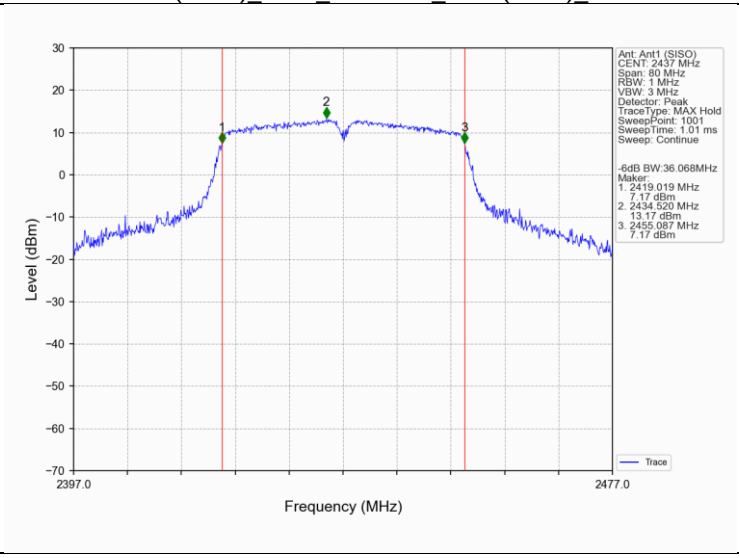
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



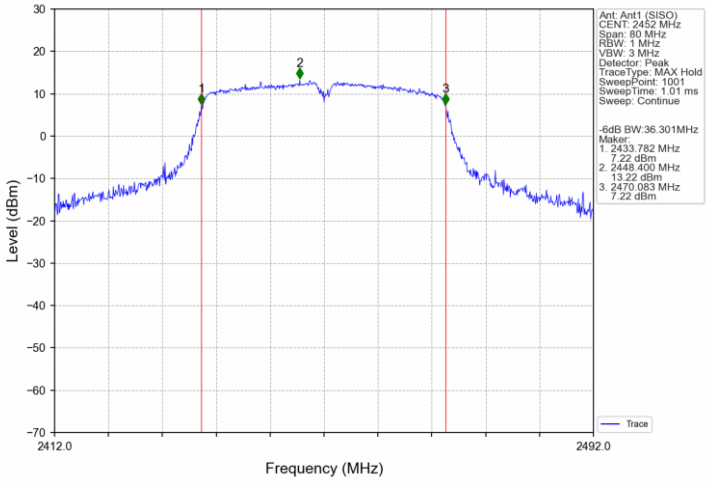
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



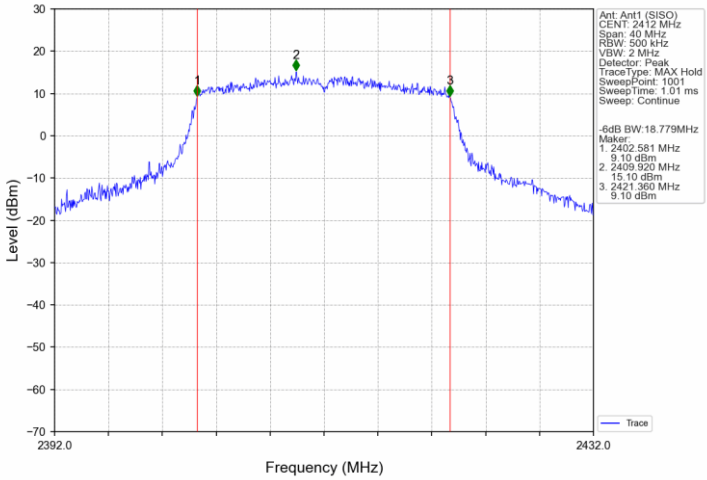
802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



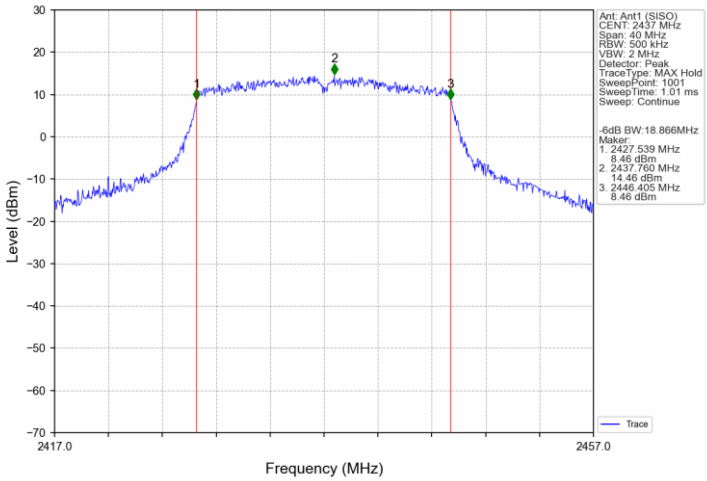
802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



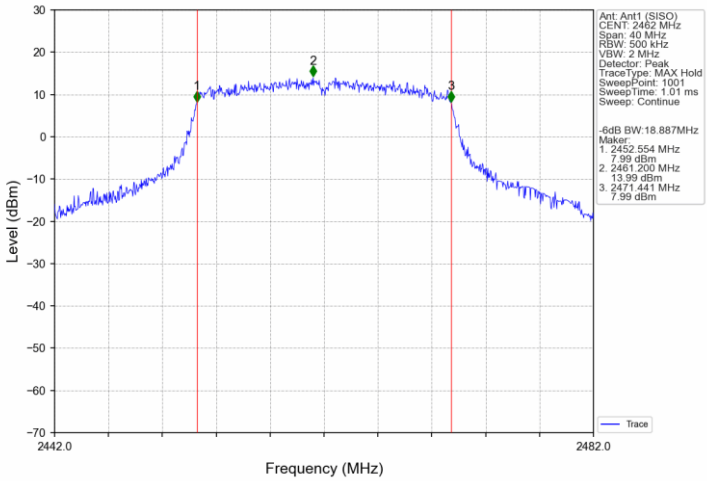
802.11ax(HEW20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11ax(HEW20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11ax(HEW20)_HCH_2462MHz_Ant1 (SISO)_NTNV



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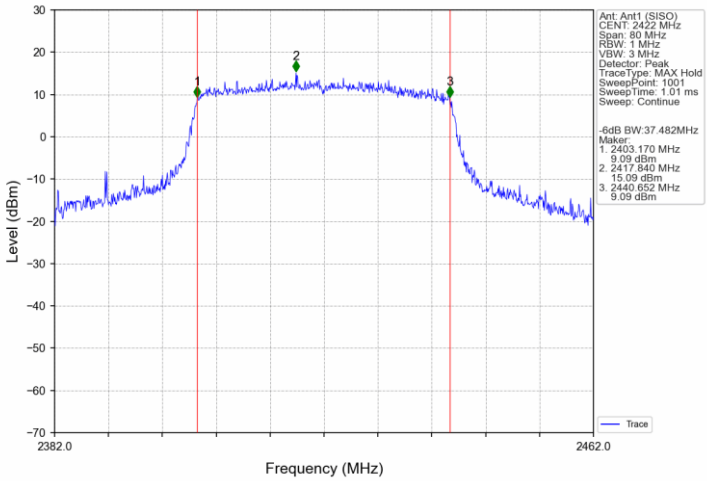
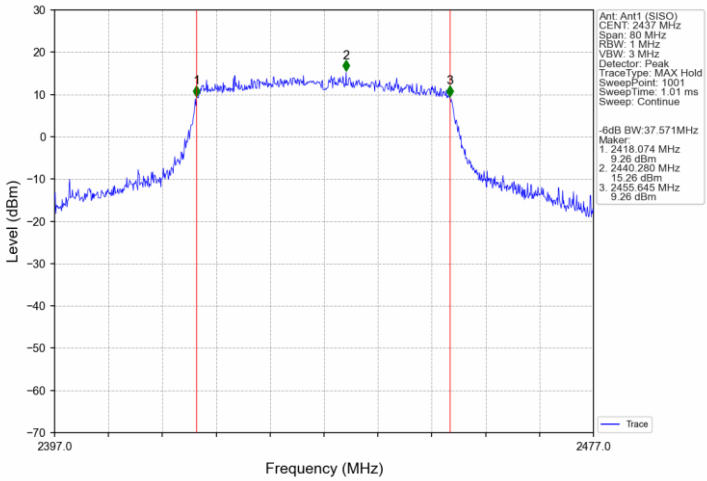
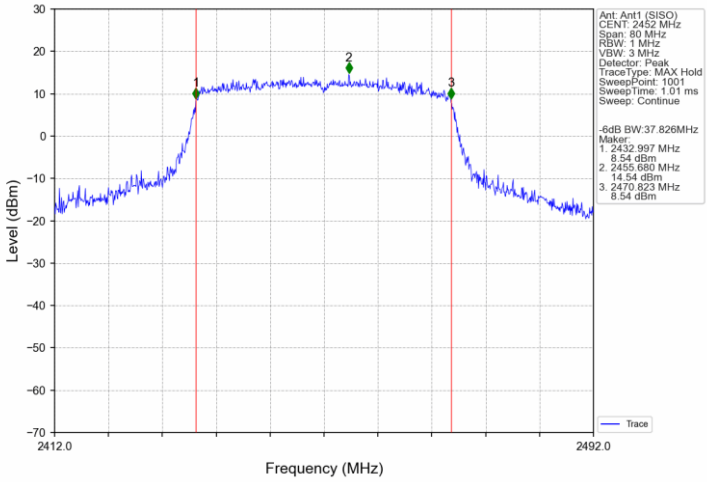
802.11ax(HEW40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11ax(HEW40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11ax(HEW40)_HCH_2452MHz_Ant1 (SISO)_NTNV



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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≥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

Limit [dBm/3kHz]
≤8

Test results

Mode	TX Type	Frequency (MHz)	RU	Maximum PSD (dBm/3kHz)		Verdict
				ANT1	Limit	
802.11b	SISO	2412	/	-8.24	<=8	Pass
		2437	/	-8.48	<=8	Pass
		2462	/	-8.75	<=8	Pass
802.11g	SISO	2412	/	-14.17	<=8	Pass
		2437	/	-13.83	<=8	Pass
		2462	/	-13.74	<=8	Pass
802.11n (HT20)	SISO	2412	/	-14.21	<=8	Pass
		2437	/	-13.84	<=8	Pass
		2462	/	-13.88	<=8	Pass
802.11n (HT40)	SISO	2422	/	-16.55	<=8	Pass
		2437	/	-16.78	<=8	Pass
		2452	/	-17.53	<=8	Pass
802.11ax (HEW20)	SISO	2412	/	-13.45	<=8	Pass
		2437	/	-12.24	<=8	Pass
		2462	/	-13.31	<=8	Pass
802.11ax (HEW40)	SISO	2422	/	-16.41	<=8	Pass
		2437	/	-15.86	<=8	Pass
		2452	/	-16.27	<=8	Pass

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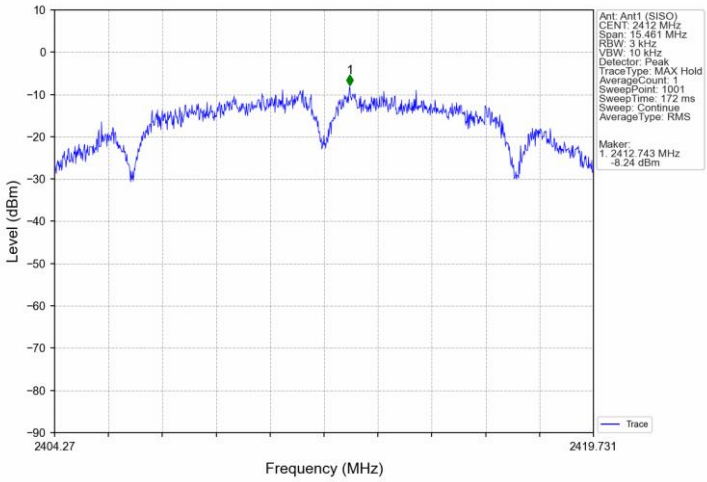
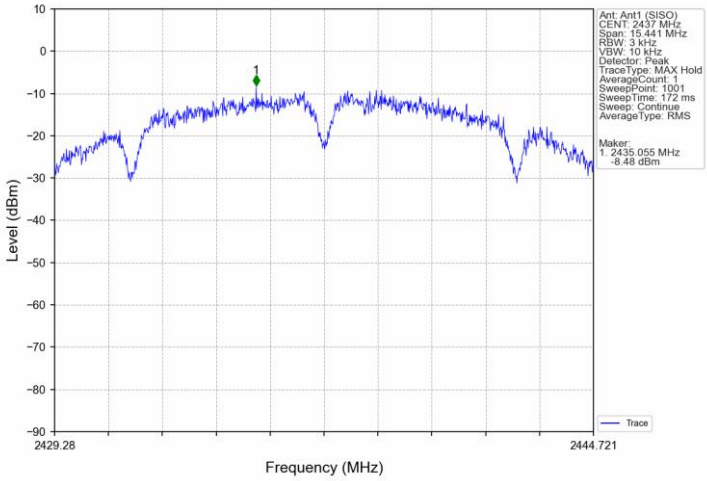
Test Graphs

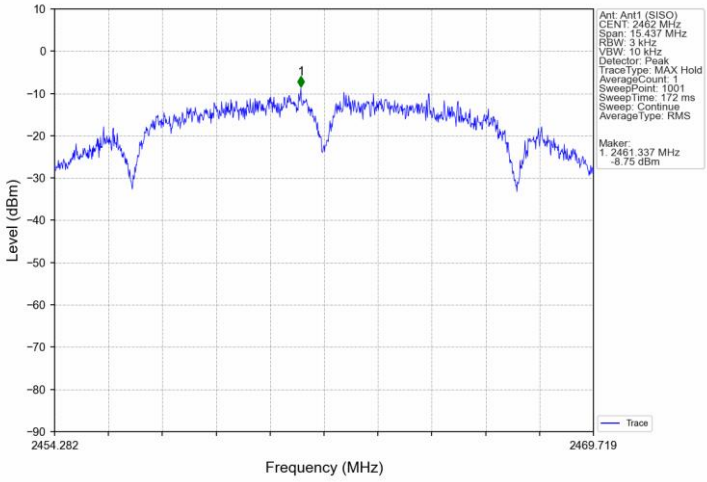
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



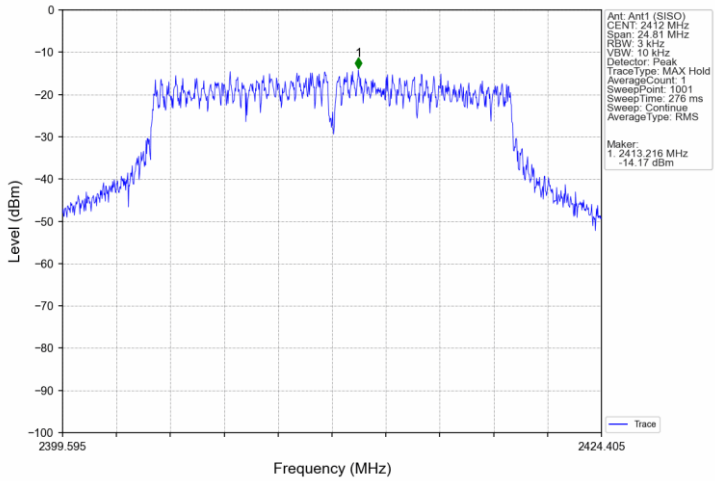
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



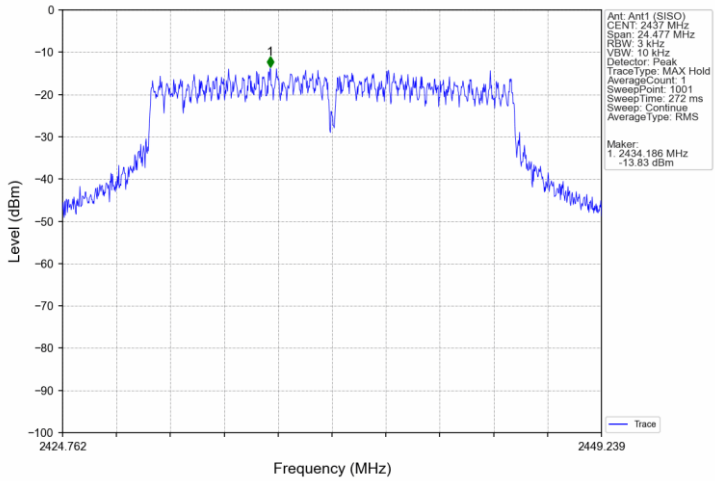
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



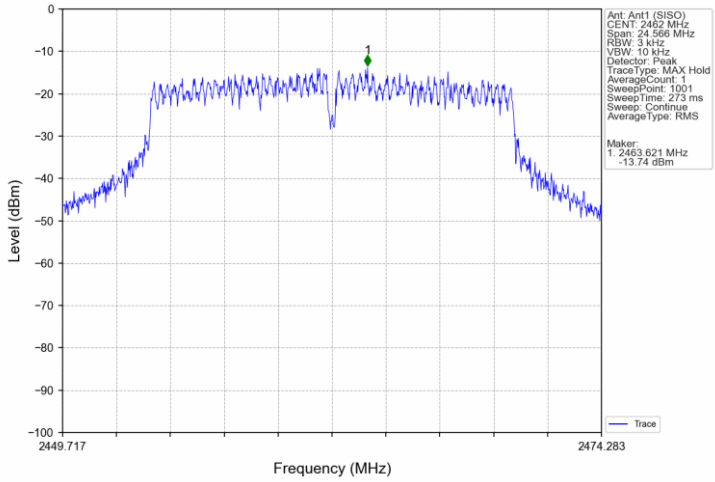
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



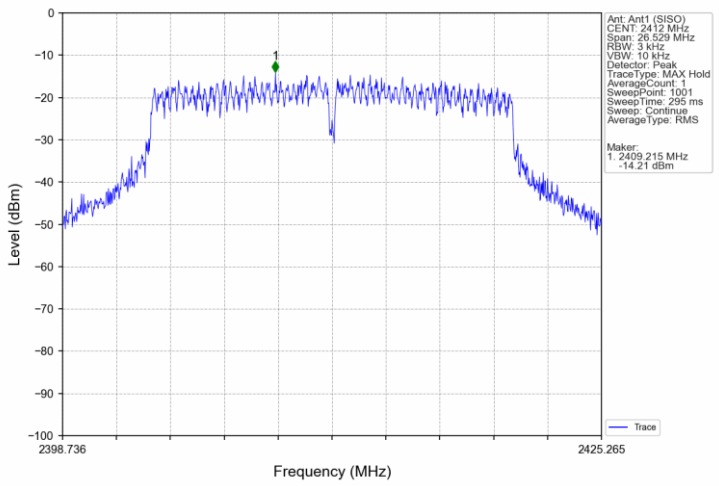
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



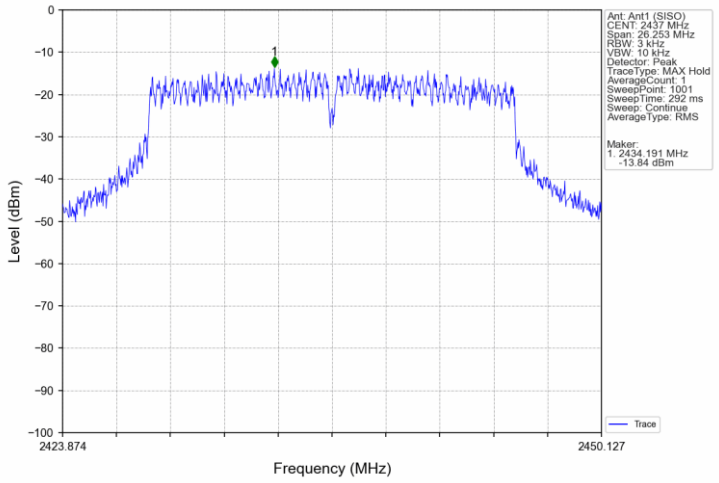
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



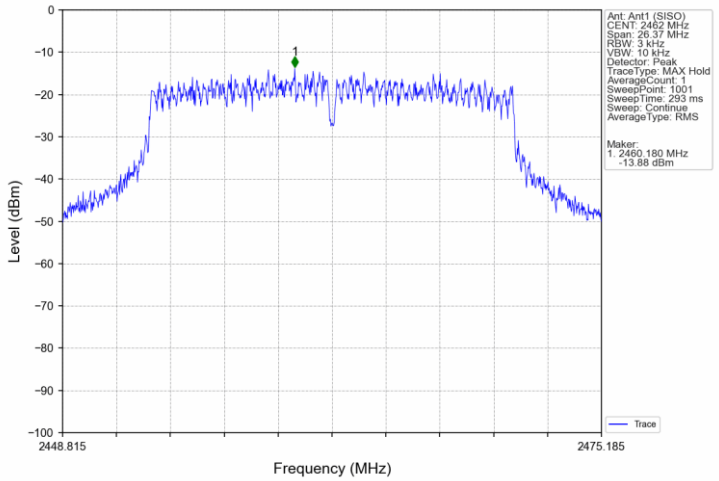
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



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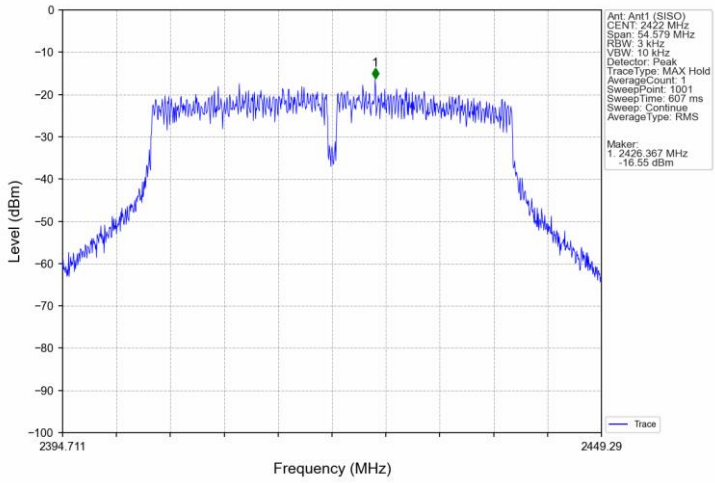
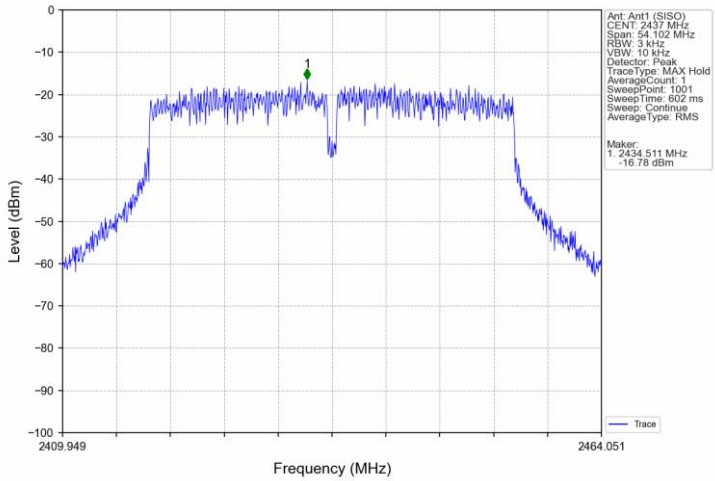
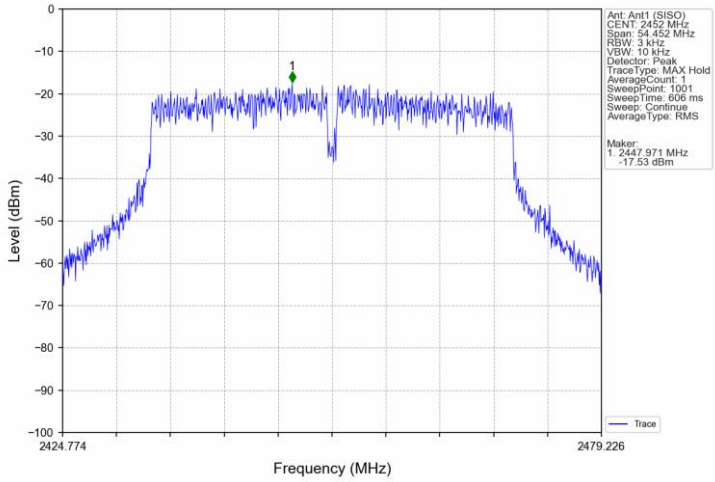
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



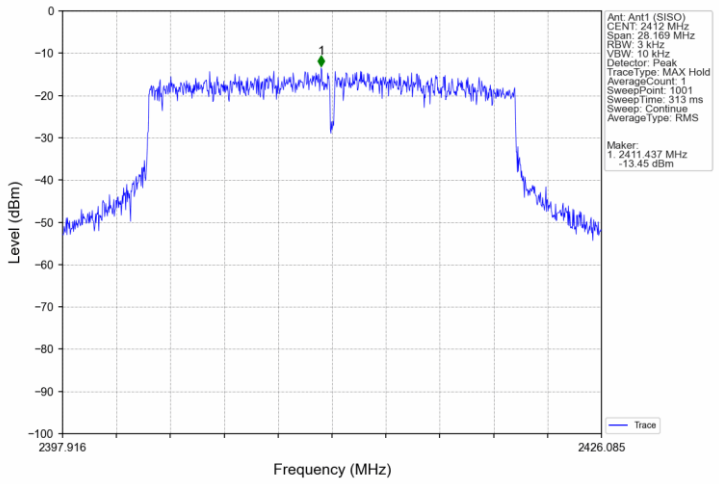
802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



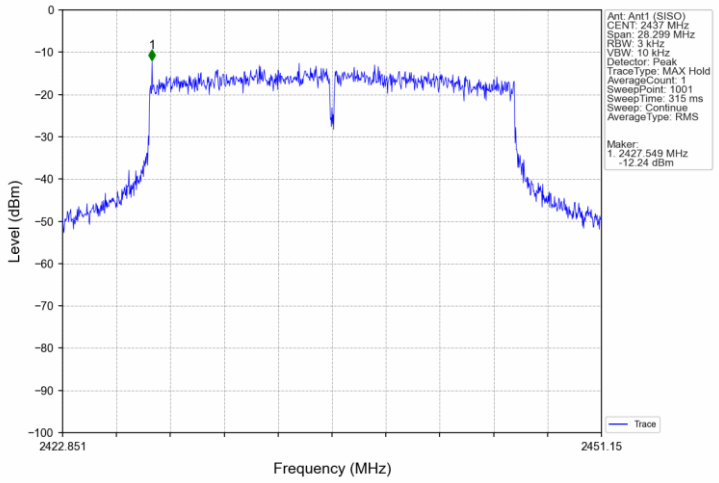
802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



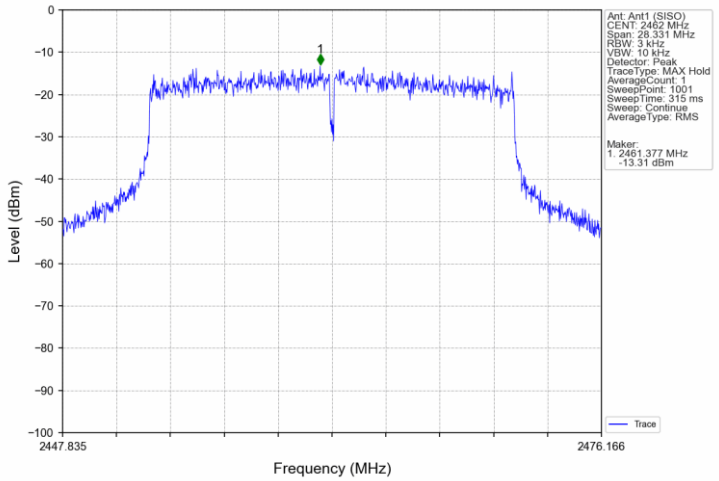
802.11ax(HEW20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11ax(HEW20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11ax(HEW20)_HCH_2462MHz_Ant1 (SISO)_NTNV



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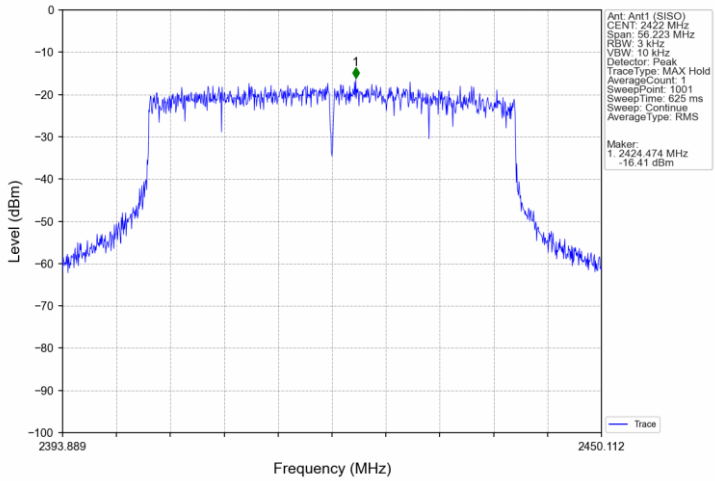
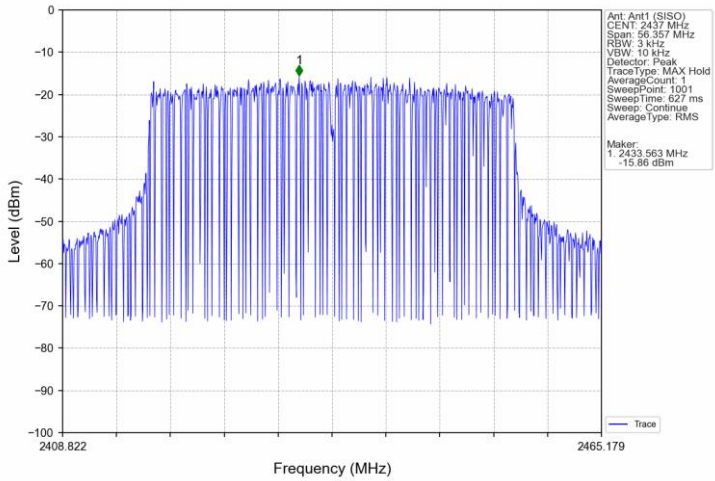
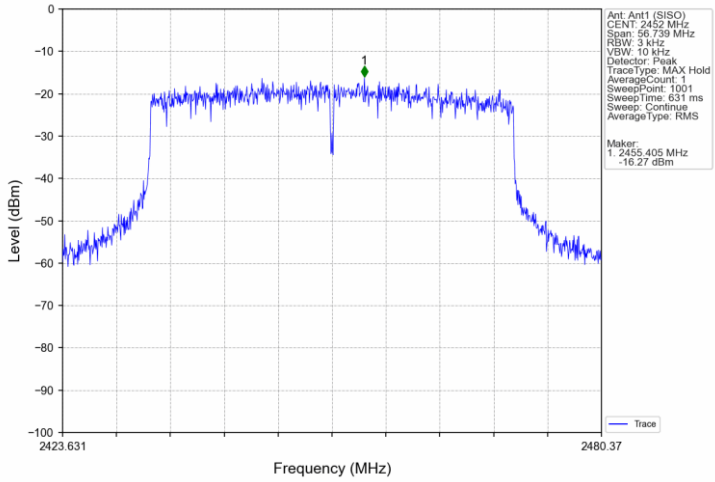
802.11ax(HEW40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11ax(HEW40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11ax(HEW40)_HCH_2452MHz_Ant1 (SISO)_NTNV



9.5 Spurious RF conducted emissions

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. 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:
   Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
   RBW = 100 kHz, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
5. The level displayed must comply with the limit specified in this Section. Submit these plots.
6. Repeat above procedures until all frequencies measured were complete.

Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

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Test results

Reference:

Mode	TX Type	Frequency (MHz)	RU	ANT	Level of Reference (dBm)
802.11b	SISO	2412	/	1	5.76
		2437	/	1	5.61
		2462	/	1	5.26
802.11g	SISO	2412	/	1	-0.19
		2437	/	1	0.98
		2462	/	1	0.33
802.11n (HT20)	SISO	2412	/	1	0.54
		2437	/	1	-0.45
		2462	/	1	0.82
802.11n (HT40)	SISO	2422	/	1	-1.99
		2437	/	1	-1.95
		2452	/	1	-1.80
802.11ax (HEW20)	SISO	2412	/	1	2.91
		2437	/	1	2.30
		2462	/	1	1.68
802.11ax (HEW40)	SISO	2422	/	1	0.10
		2437	/	1	0.61
		2452	/	1	0.72
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.					

Conducted spurious emission:

Mode	TX Type	Frequency (MHz)	RU	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	/	1	5.76	-14.24	Pass
		2437	/	1	5.61	-14.39	Pass
		2462	/	1	5.26	-14.74	Pass
802.11g	SISO	2412	/	1	-0.19	-20.19	Pass
		2437	/	1	0.98	-19.02	Pass
		2462	/	1	0.33	-19.67	Pass
802.11n (HT20)	SISO	2412	/	1	0.54	-19.46	Pass
		2437	/	1	-0.45	-20.45	Pass
		2462	/	1	0.82	-19.18	Pass
802.11n (HT40)	SISO	2422	/	1	-1.99	-21.99	Pass
		2437	/	1	-1.95	-21.95	Pass
		2452	/	1	-1.80	-21.80	Pass
802.11ax (HEW20)	SISO	2412	/	1	2.91	-17.09	Pass
		2437	/	1	2.30	-17.70	Pass
		2462	/	1	1.68	-18.32	Pass
802.11ax (HEW40)	SISO	2422	/	1	0.10	-19.90	Pass
		2437	/	1	0.61	-19.39	Pass
		2452	/	1	0.72	-19.28	Pass
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.							

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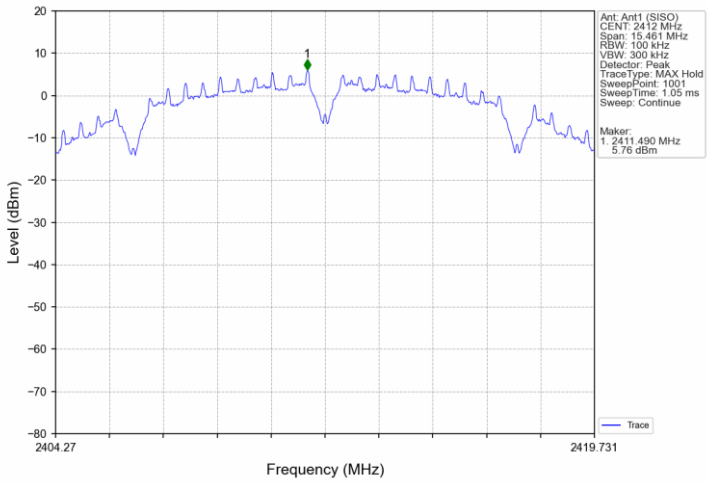
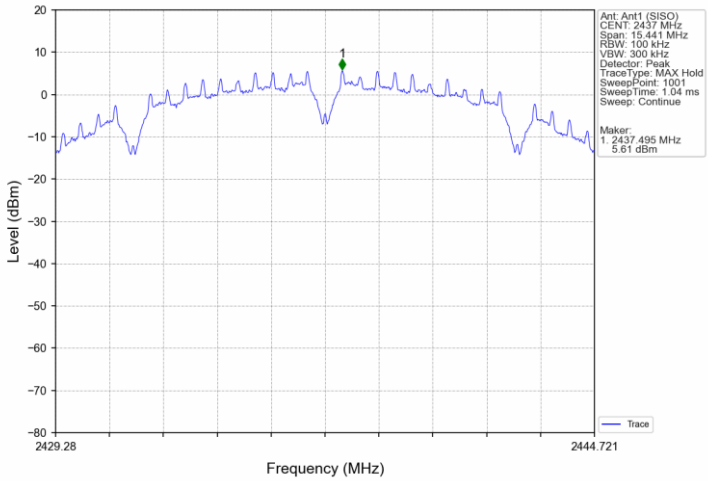
Test Graphs

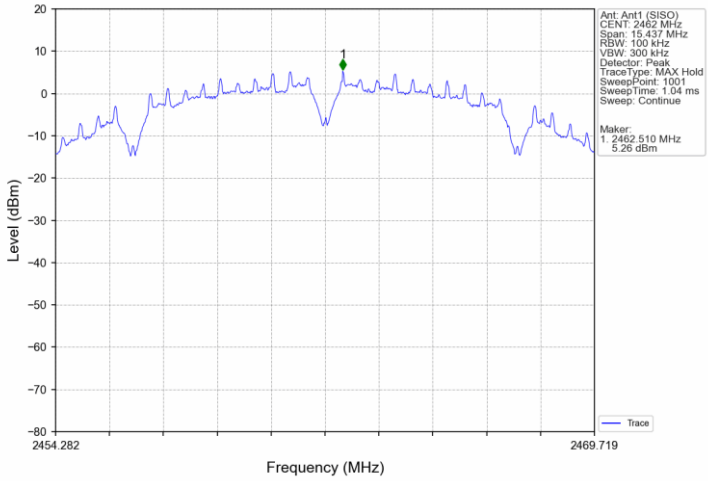
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



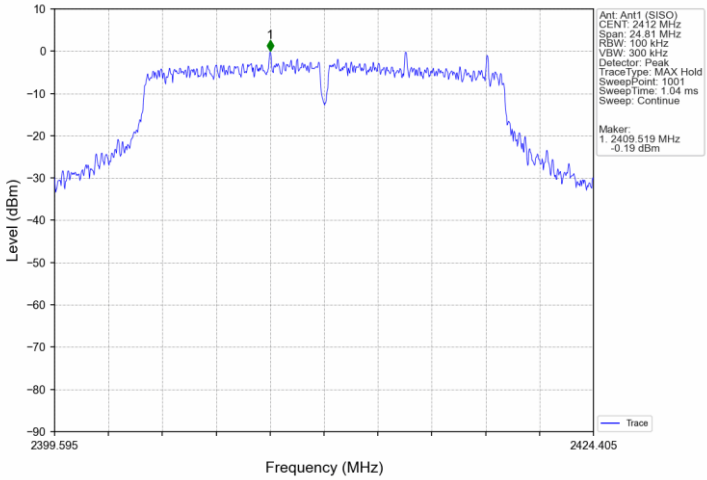
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



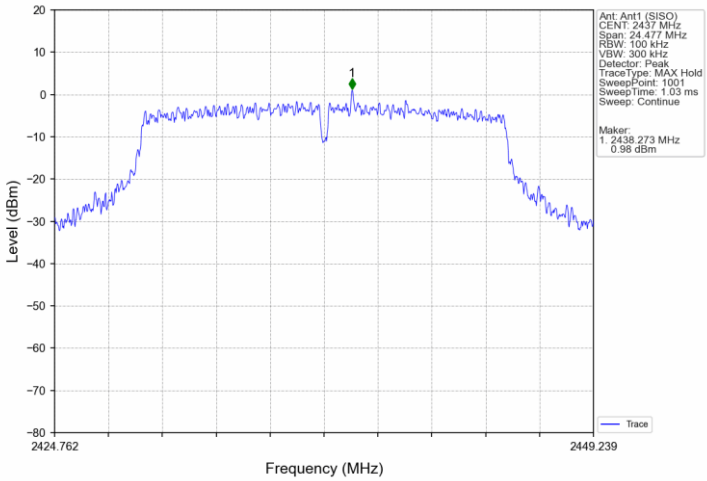
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



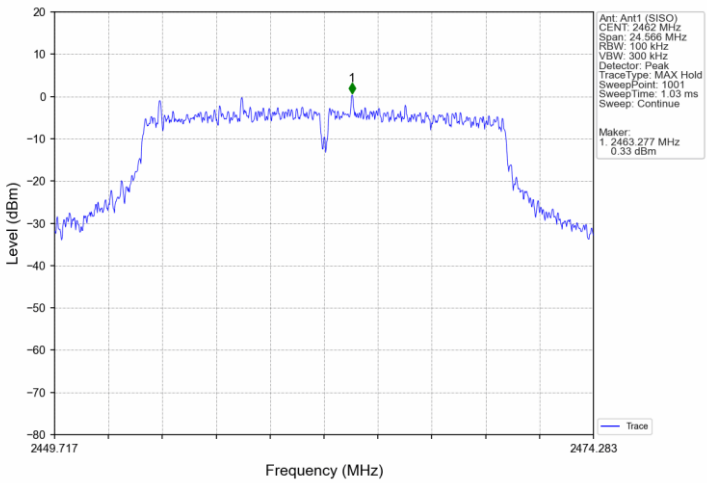
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



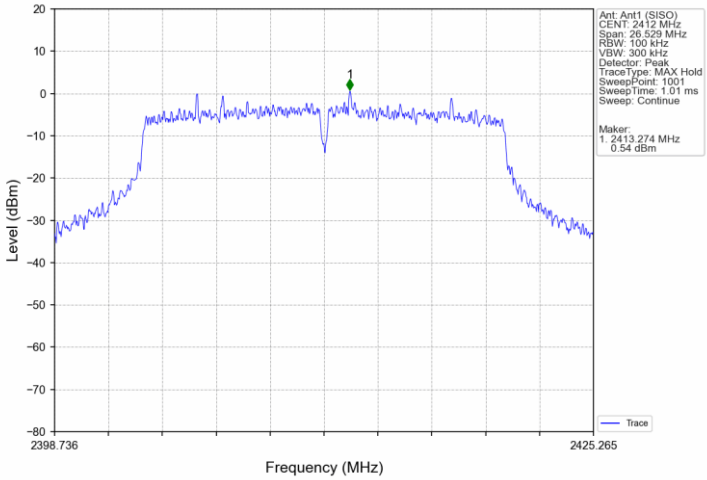
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



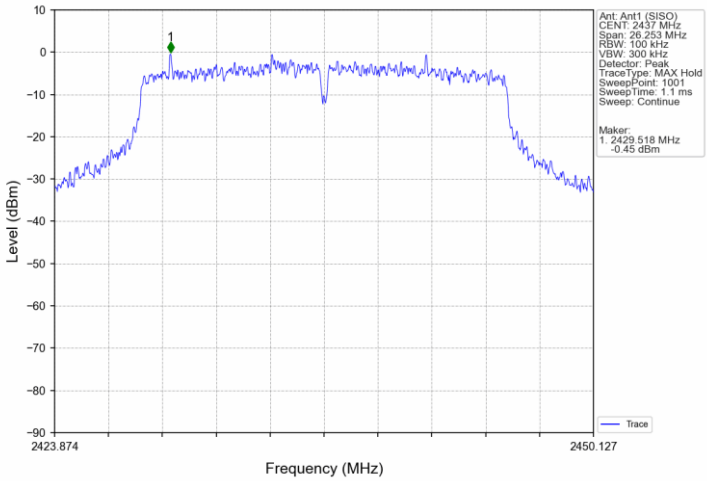
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



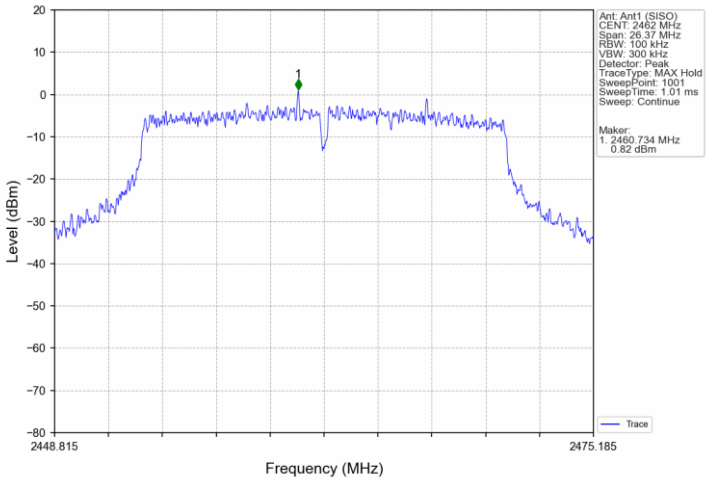
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



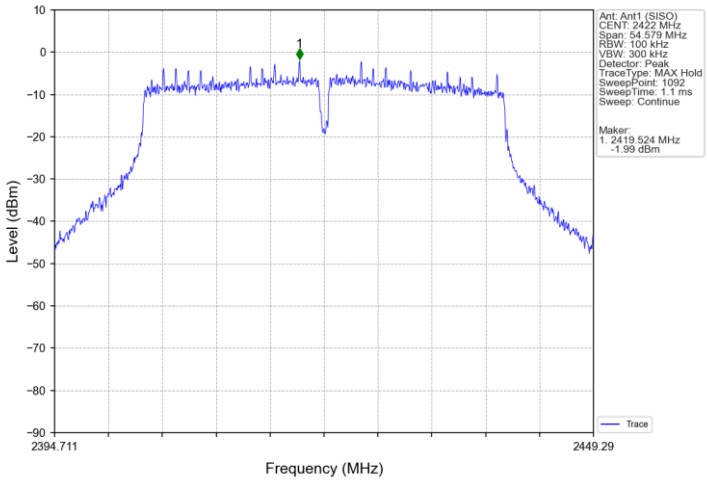
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



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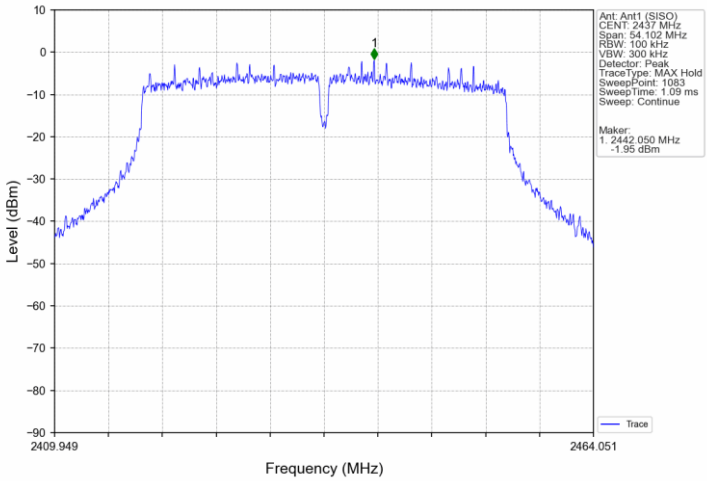

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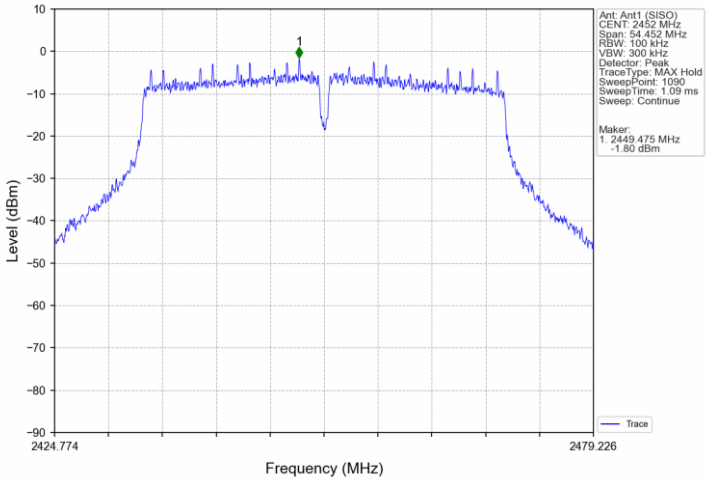

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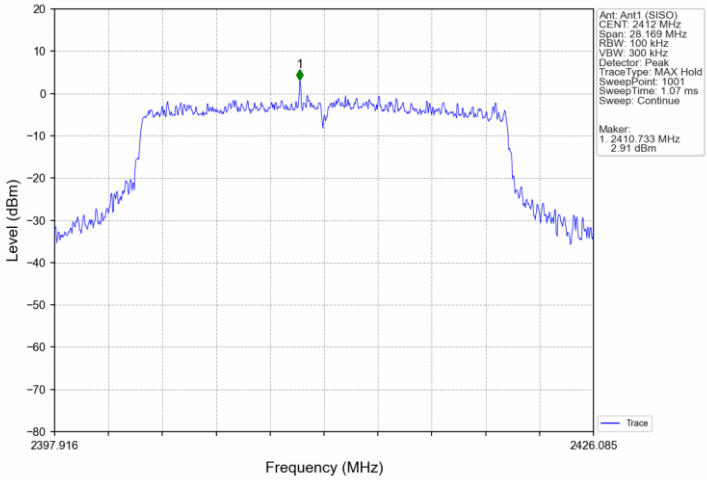

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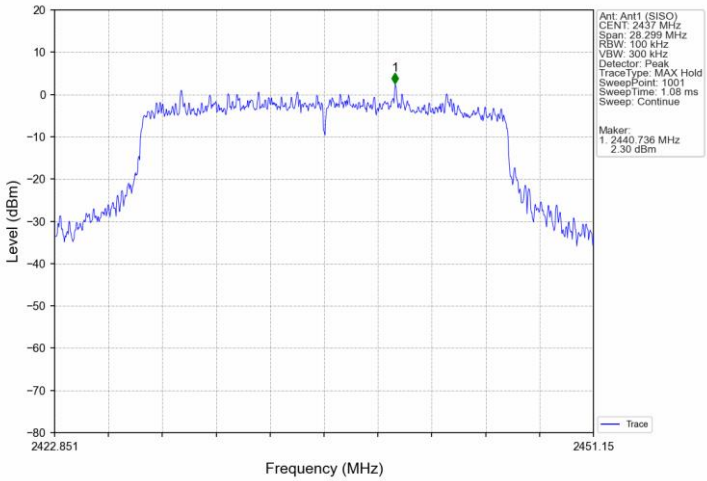

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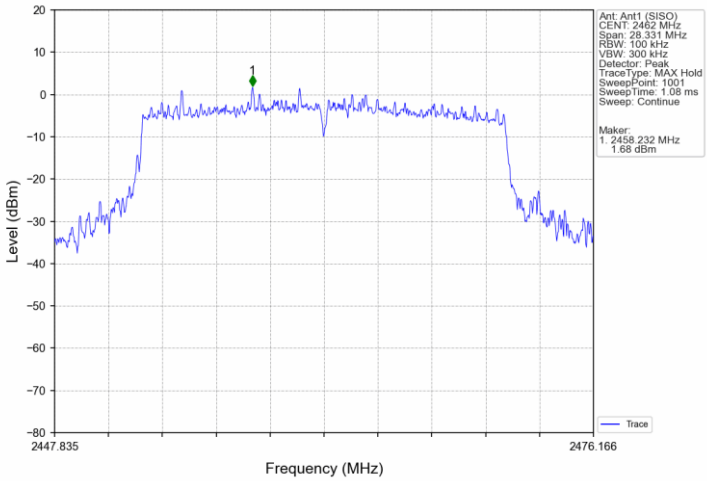

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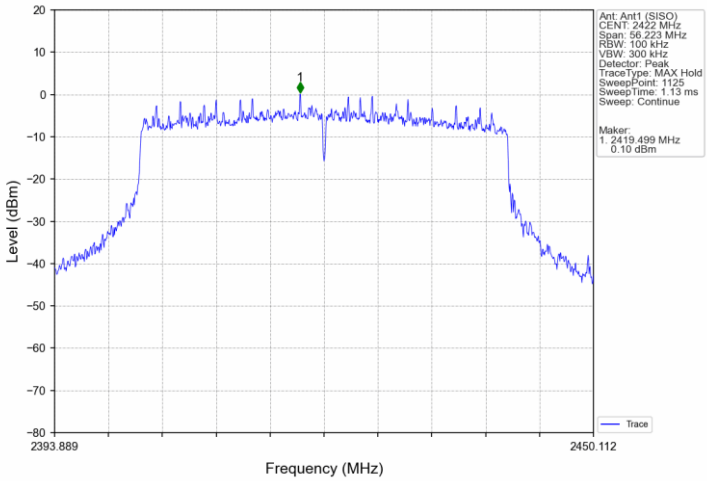

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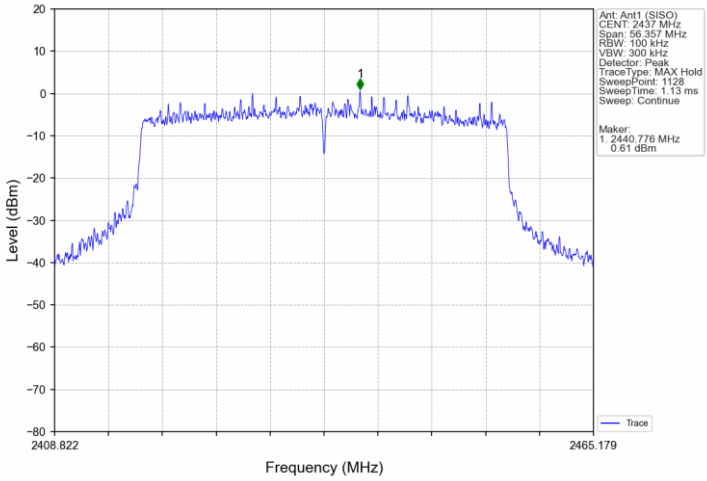

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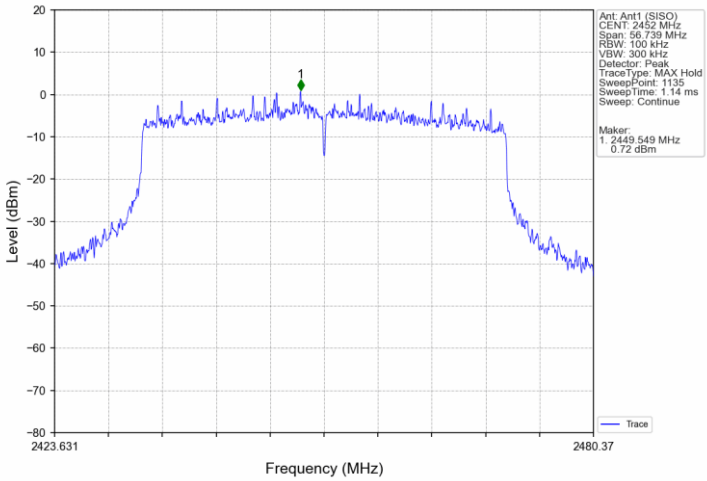
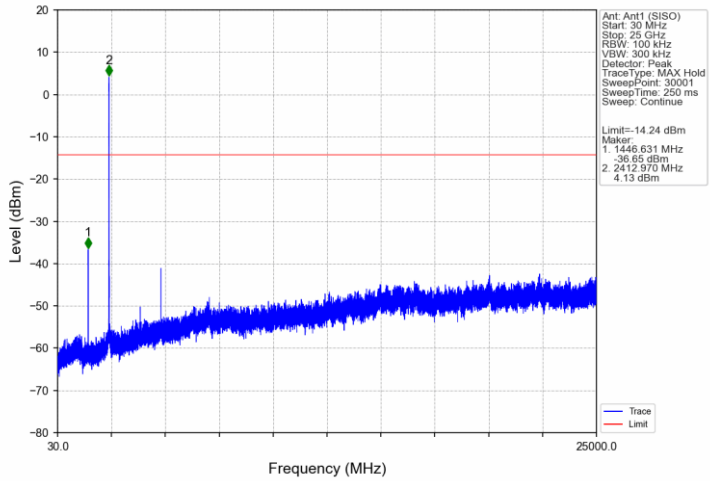


CSE:

802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



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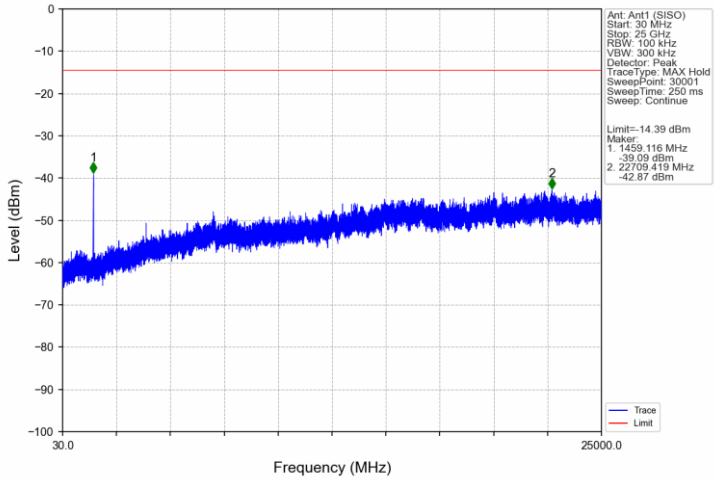
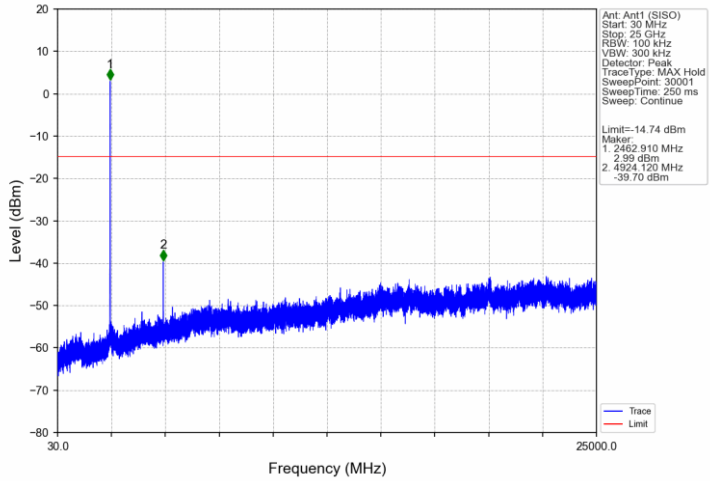


802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



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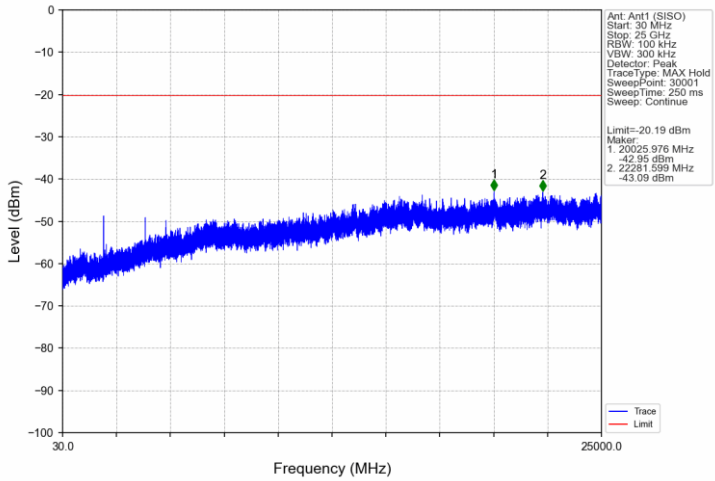

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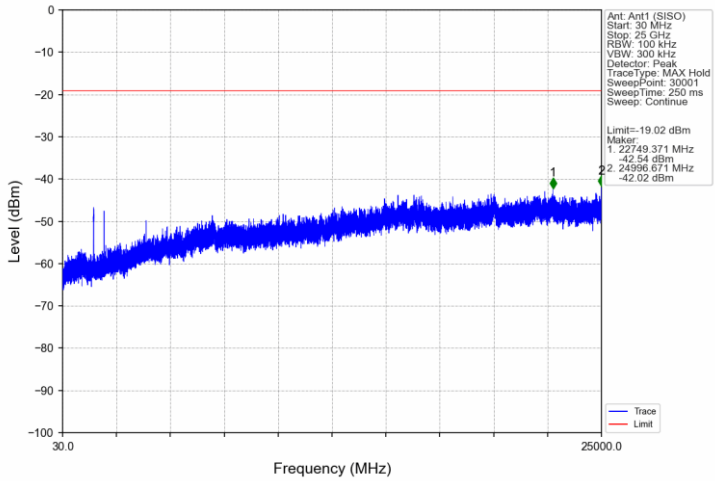
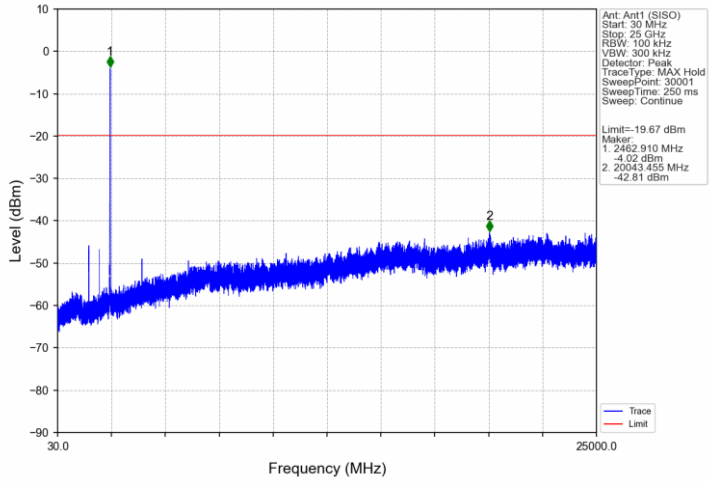


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



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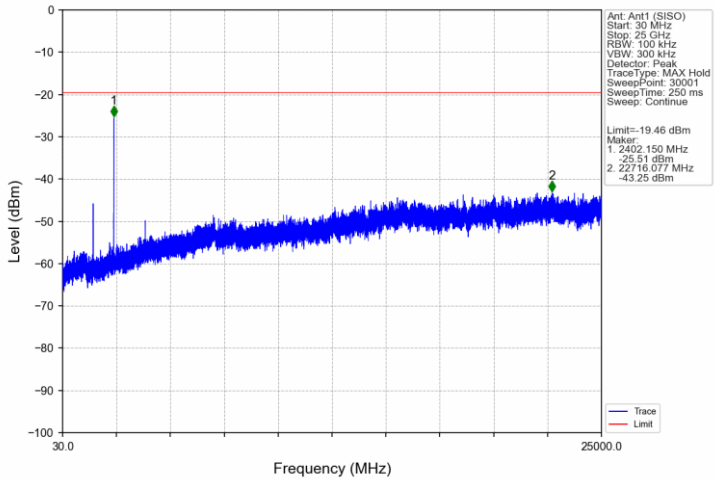
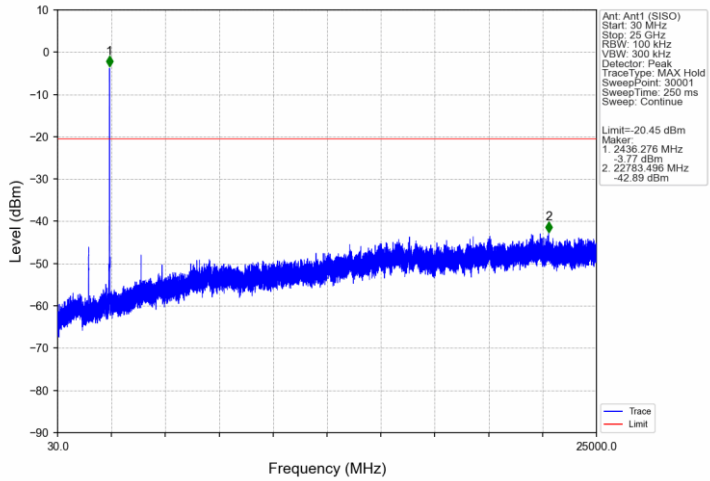
Shenzhen, Guangdong, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

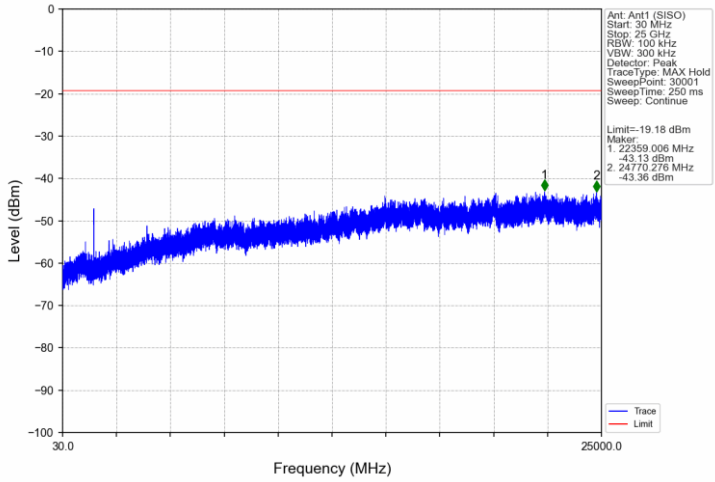
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



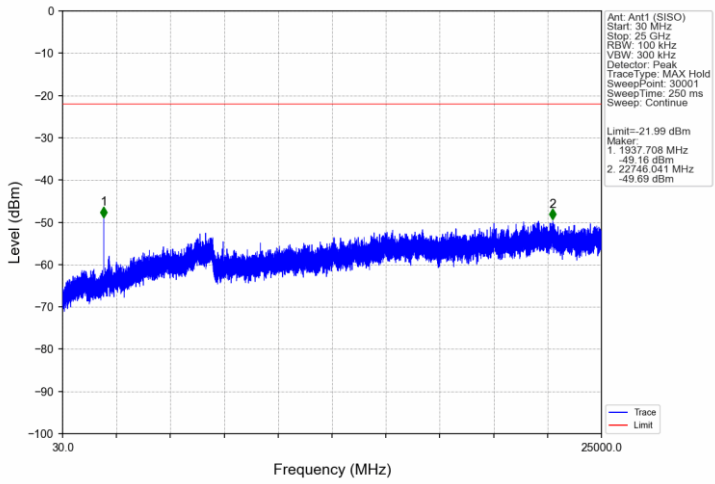
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



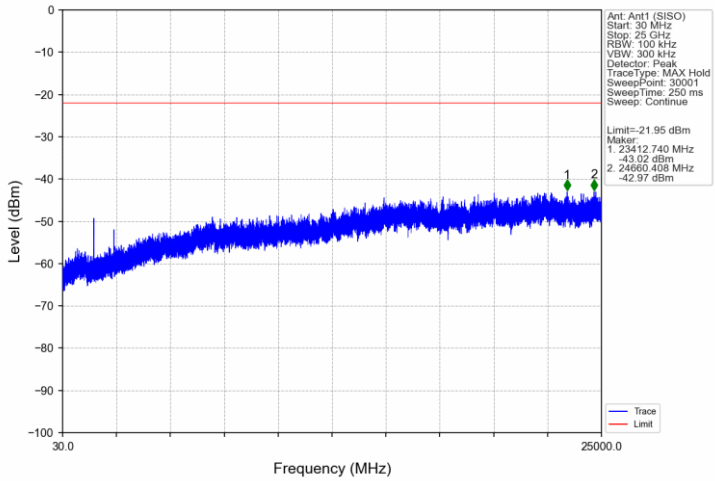
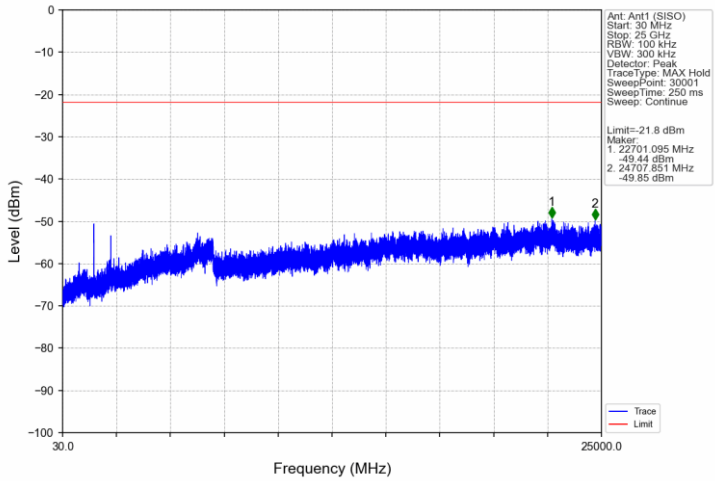
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV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