RF Test Report

For

Project No.:	ZKT-240822L10327E-3
Client:	Xuzhou Huiniao Technology Consulting Services Co., Ltd
Manufacturer:	Xuzhou Huiniao Technology Consulting Services Co., Ltd
Product Description:	Smart display
Model :	HN-962
Test Engineer:	Jim Liu
Test Date:	2024-08-25

Test Summary

Item	**Result**
Duty Cycle	Pass
Bandwidth	Pass
Maximum Conducted Output Power	Pass
Maximum Power Spectral Density	Pass
Unwanted Emissions In Non-restricted Frequency Bands	Pass
Frequency Error	Pass
Form731	Pass

1. Duty Cycle

1.1 Test Result

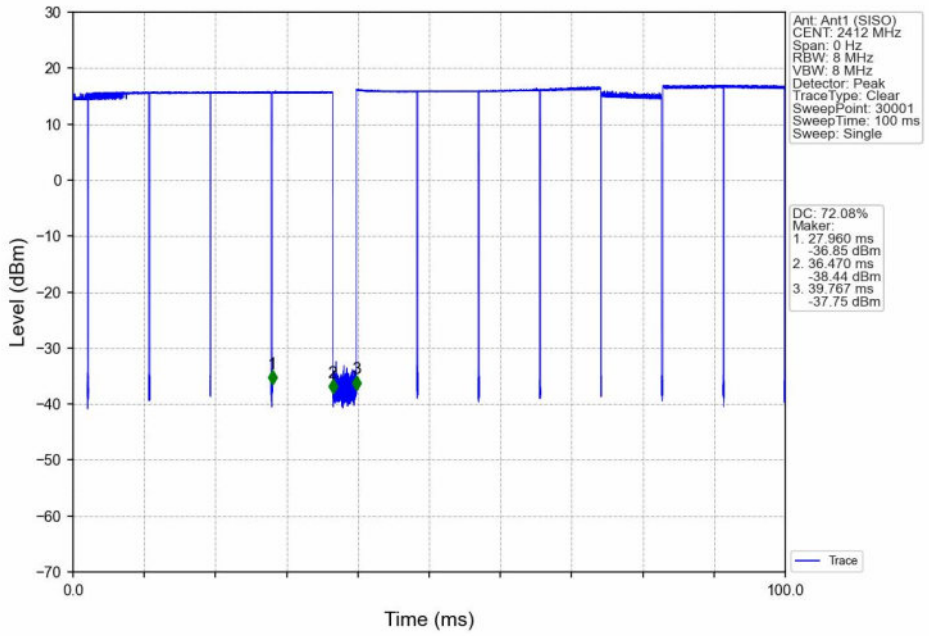
1.1.1 Ant1

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	8.510	11.807	72.08	1.42	27.62
		2437	8.484	9.127	92.95	0.32	6.43
		2462	8.510	8.637	98.53	0.06	1.13
802.11g	SISO	2412	1.409	1.578	89.29	0.49	7.75
		2437	1.409	2.443	57.67	2.39	40.01
		2462	1.417	1.578	89.80	0.47	7.75
802.11n (HT20)	SISO	2412	1.324	1.486	89.10	0.50	8.25
		2437	1.325	1.728	76.68	1.15	20.12
		2462	1.321	1.477	89.44	0.48	8.33
802.11n (HT40)	SISO	2422	0.653	1.618	40.36	3.94	49.97
		2437	0.652	0.804	81.09	0.91	9.15
		2452	0.653	0.921	70.90	1.49	22.89

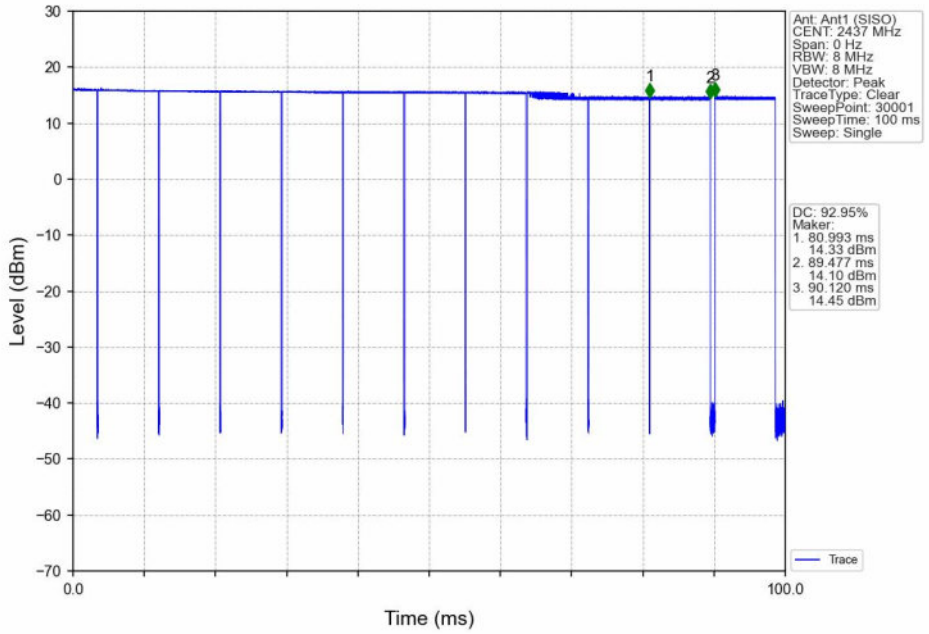
1.2 Test Graph

1.2.1 Ant1

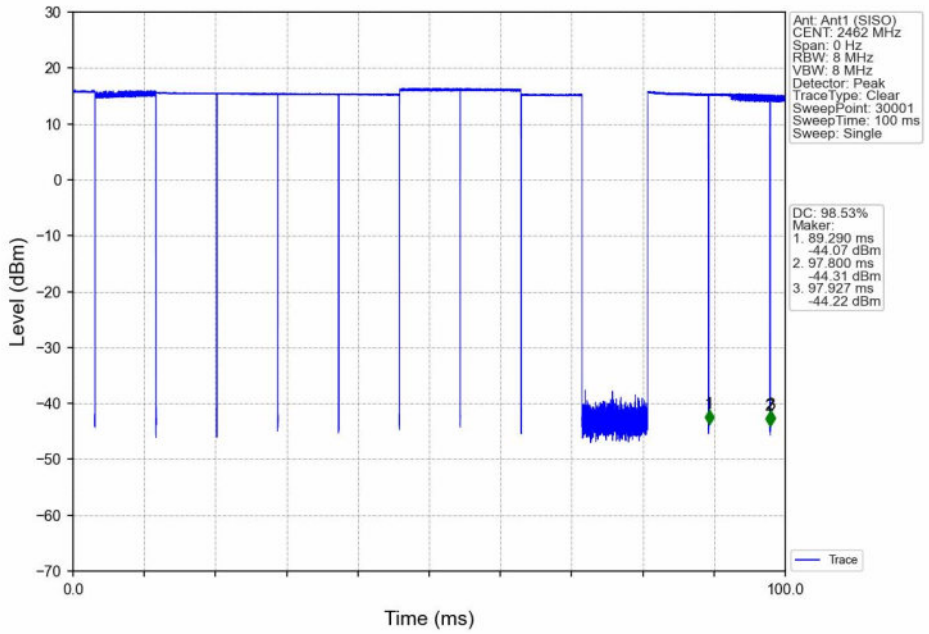
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



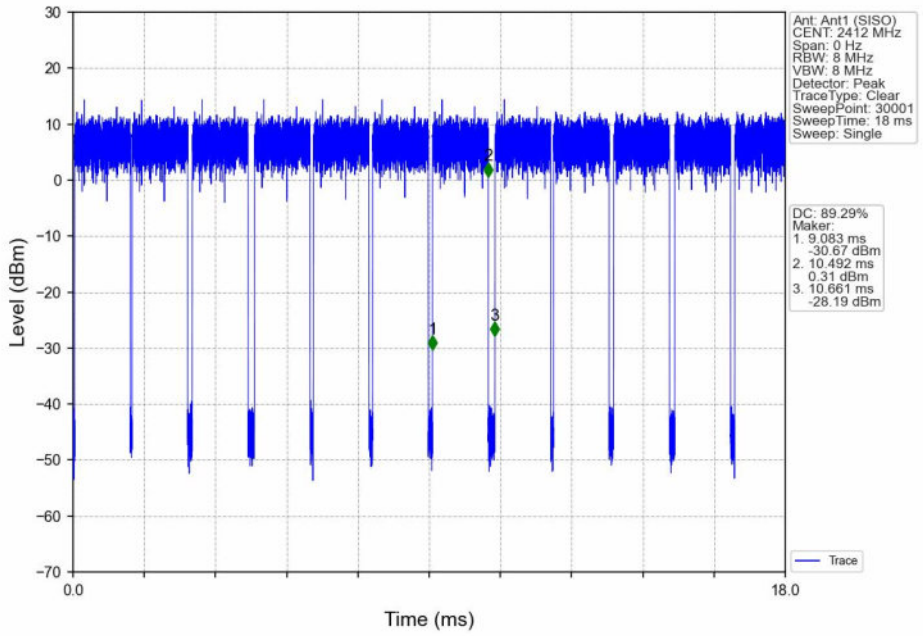
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



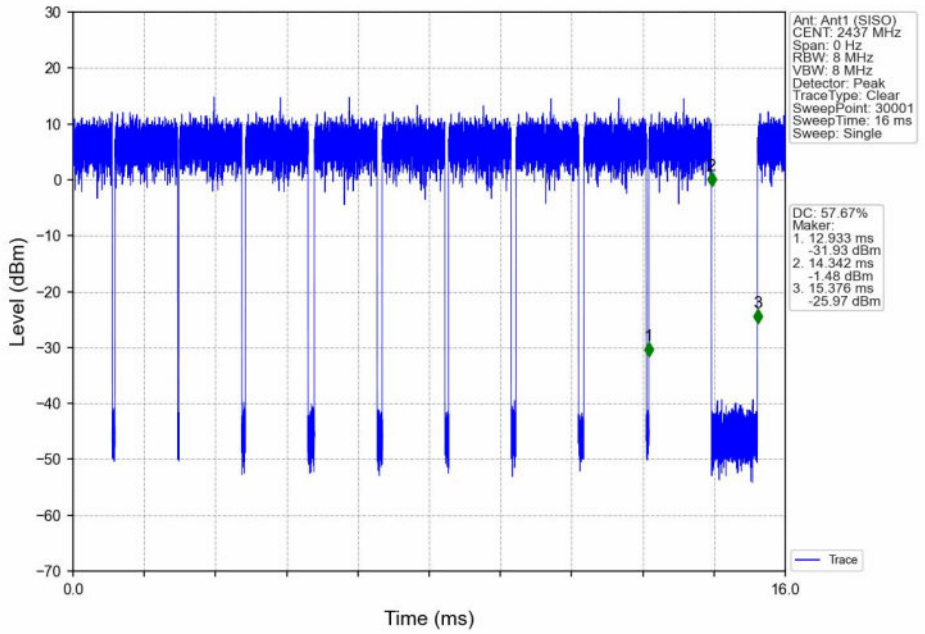
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



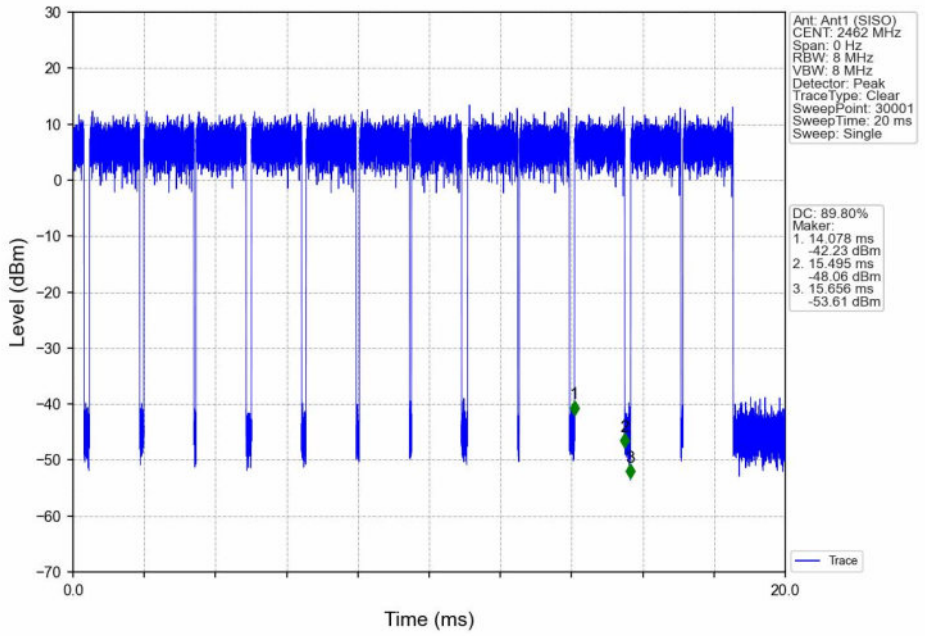
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



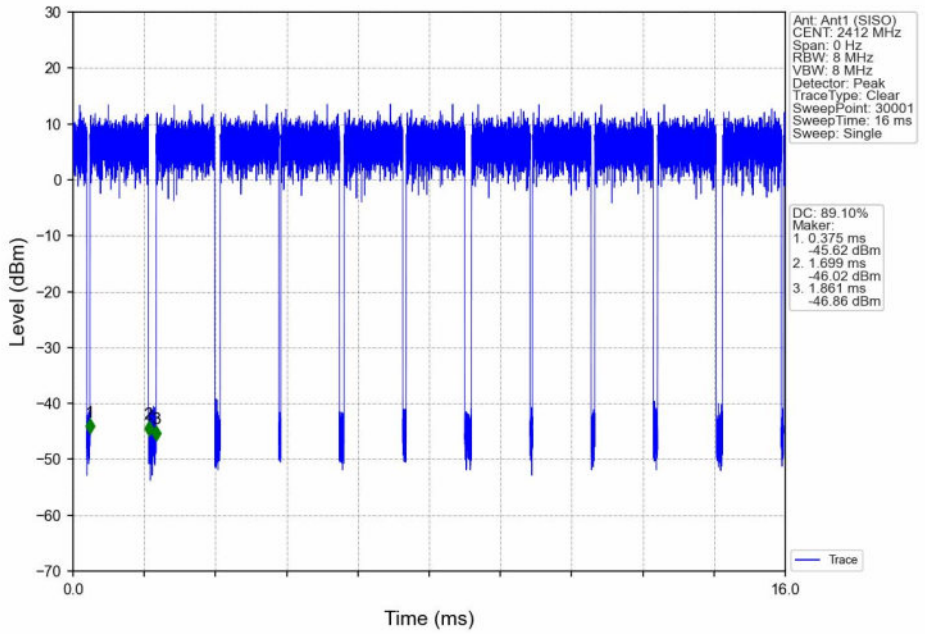
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



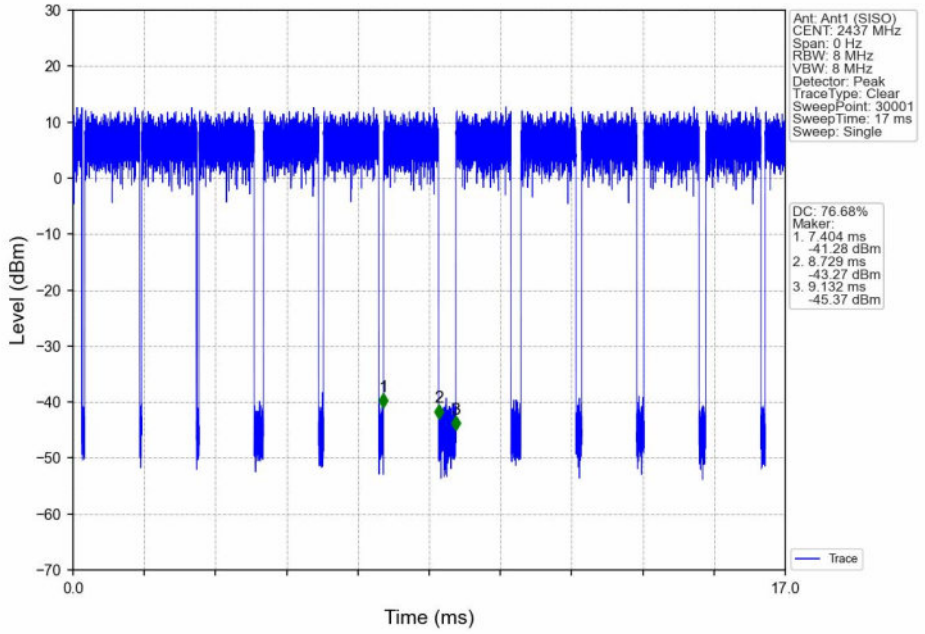
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



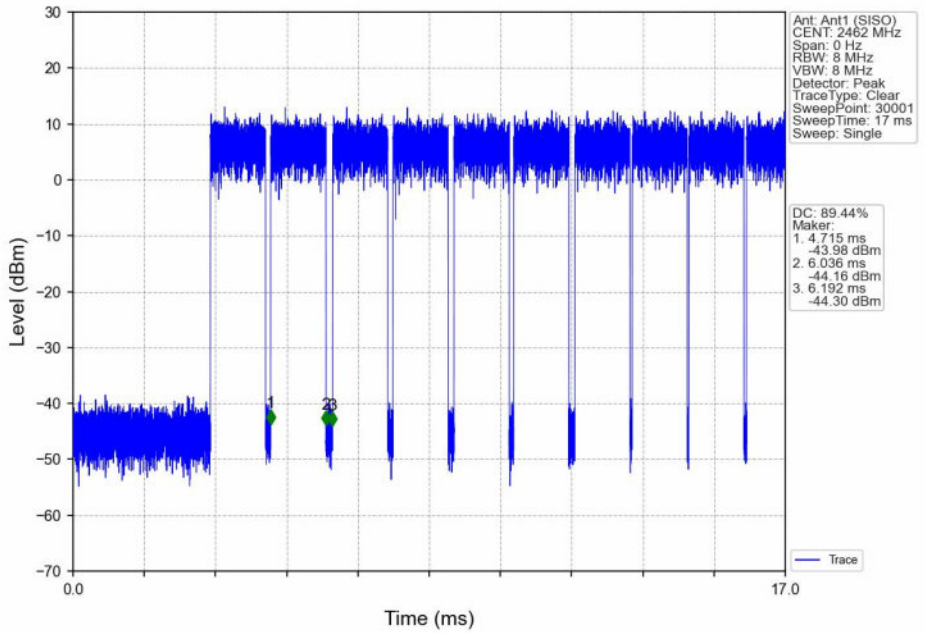
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



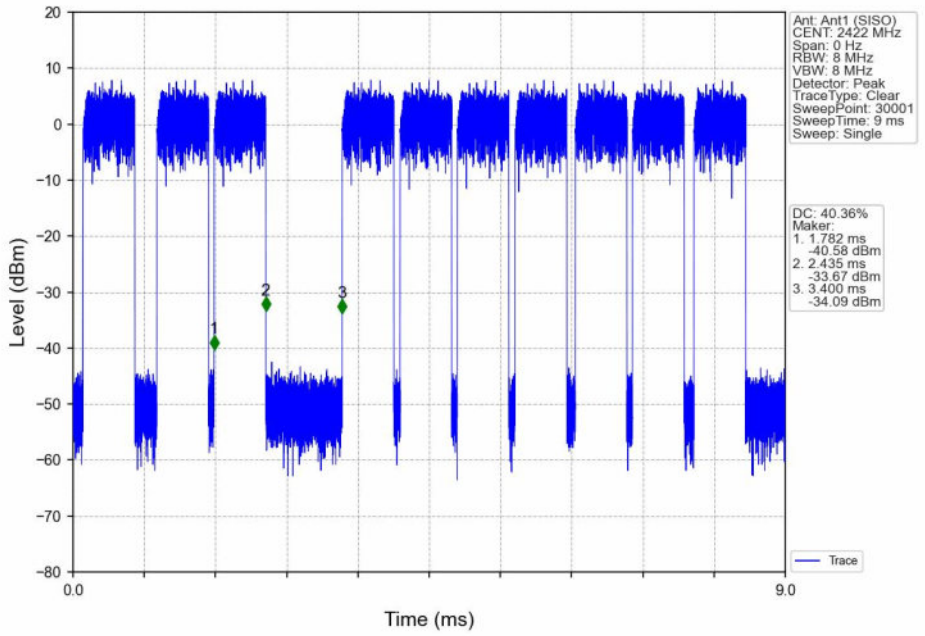
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



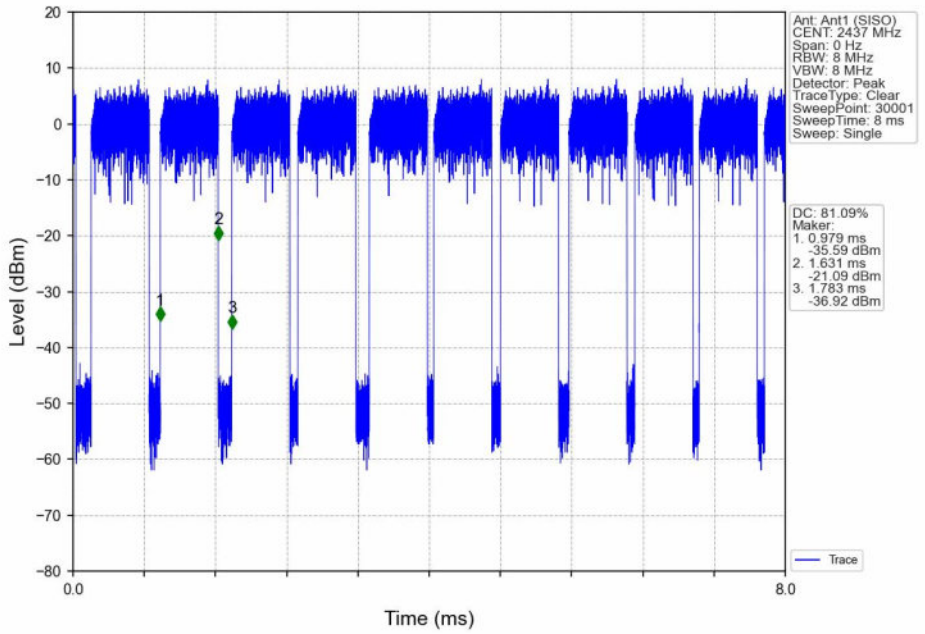
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



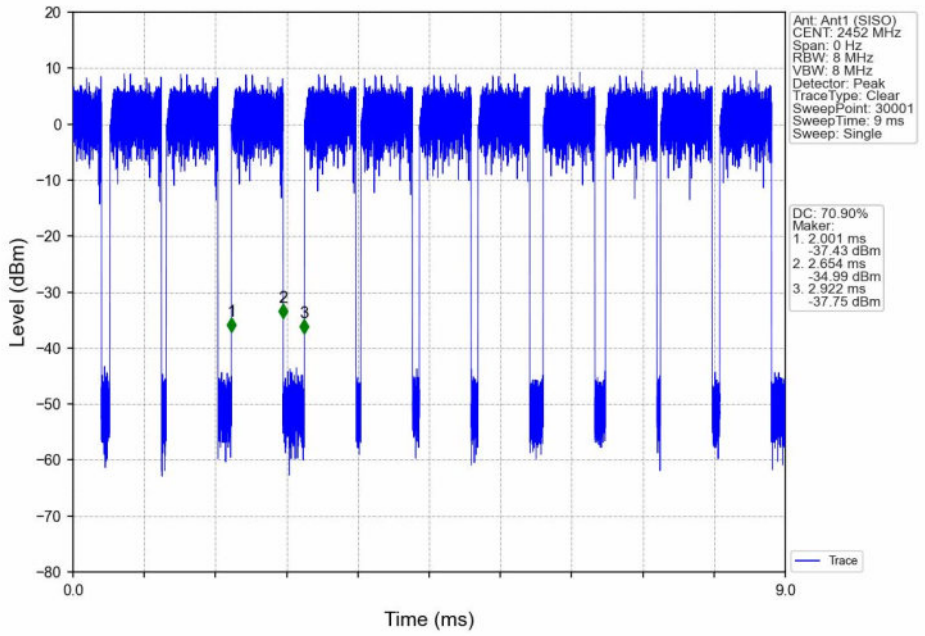
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	14.892	/	Pass
		2437	1	14.920	/	Pass
		2462	1	14.895	/	Pass
802.11g	SISO	2412	1	17.699	/	Pass
		2437	1	17.759	/	Pass
		2462	1	17.686	/	Pass
802.11n (HT20)	SISO	2412	1	18.552	/	Pass
		2437	1	18.580	/	Pass
		2462	1	18.573	/	Pass
802.11n (HT40)	SISO	2422	1	35.988	/	Pass
		2437	1	36.011	/	Pass
		2452	1	36.016	/	Pass

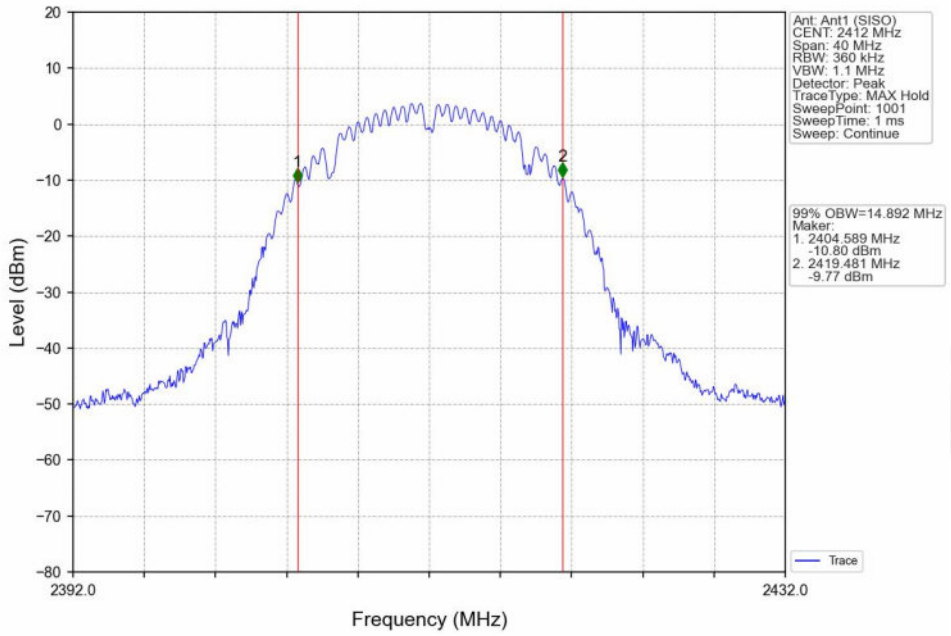
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	10.097	>=0.5	Pass
		2437	1	10.098	>=0.5	Pass
		2462	1	10.087	>=0.5	Pass
802.11g	SISO	2412	1	16.391	>=0.5	Pass
		2437	1	16.387	>=0.5	Pass
		2462	1	16.380	>=0.5	Pass
802.11n (HT20)	SISO	2412	1	17.587	>=0.5	Pass
		2437	1	17.583	>=0.5	Pass
		2462	1	17.561	>=0.5	Pass
802.11n (HT40)	SISO	2422	1	35.550	>=0.5	Pass
		2437	1	35.637	>=0.5	Pass
		2452	1	35.551	>=0.5	Pass

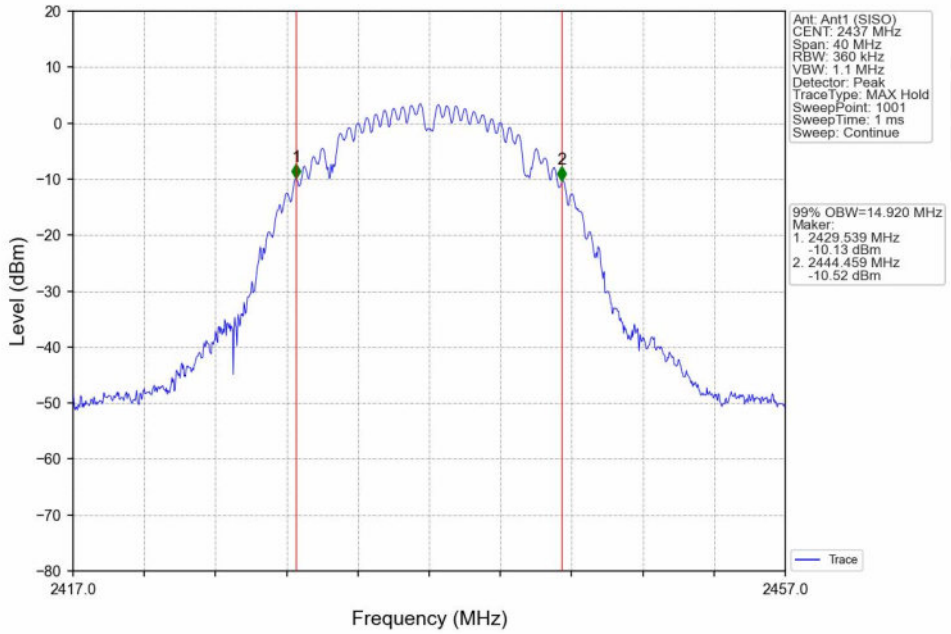
2.2 Test Graph

2.2.1 OBW

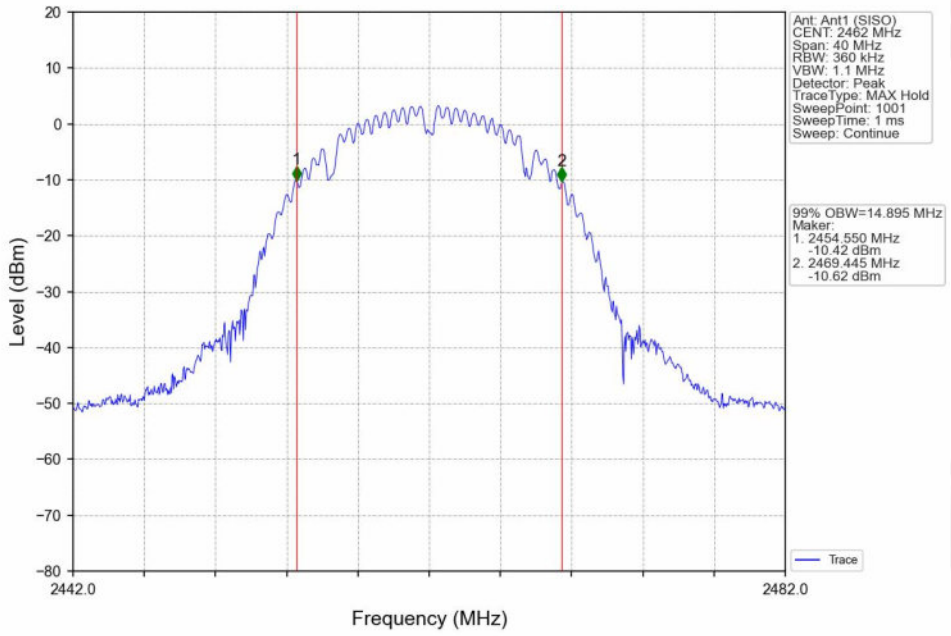
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



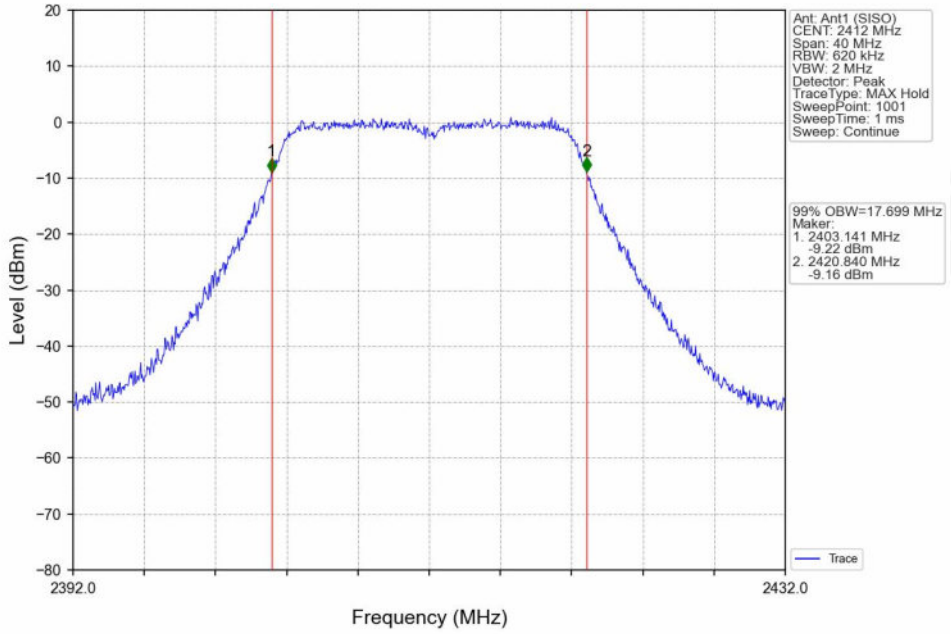
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



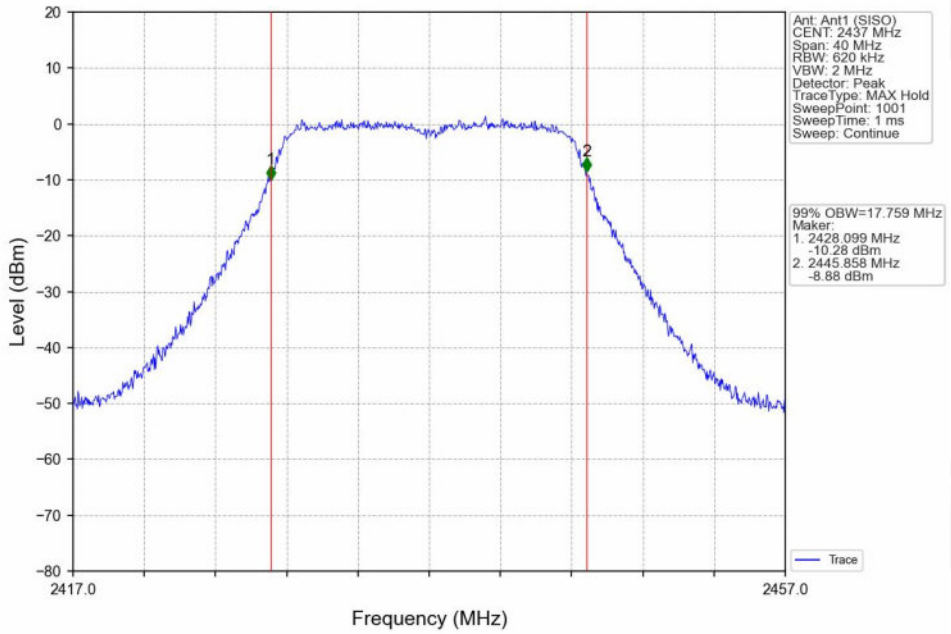
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



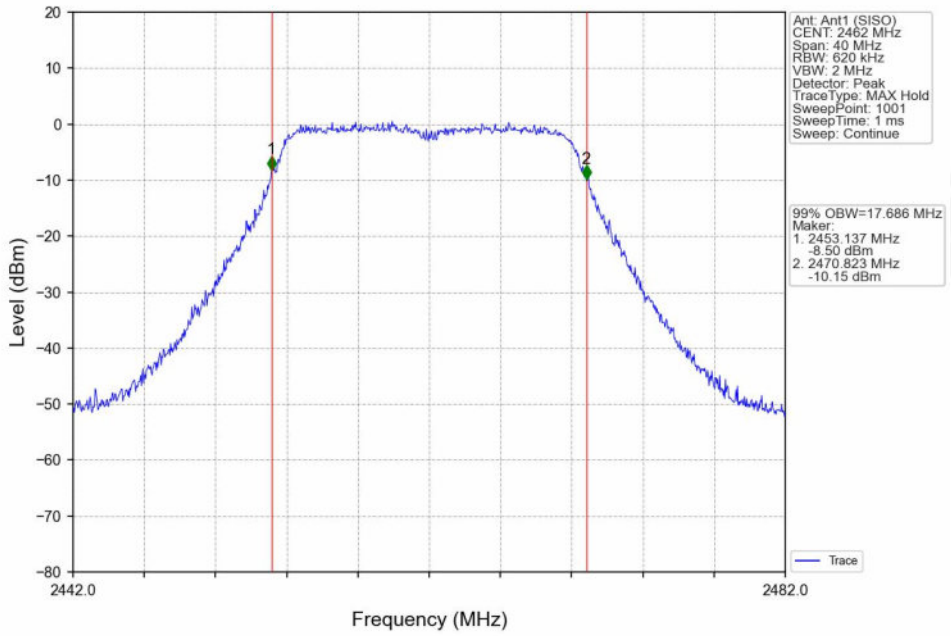
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



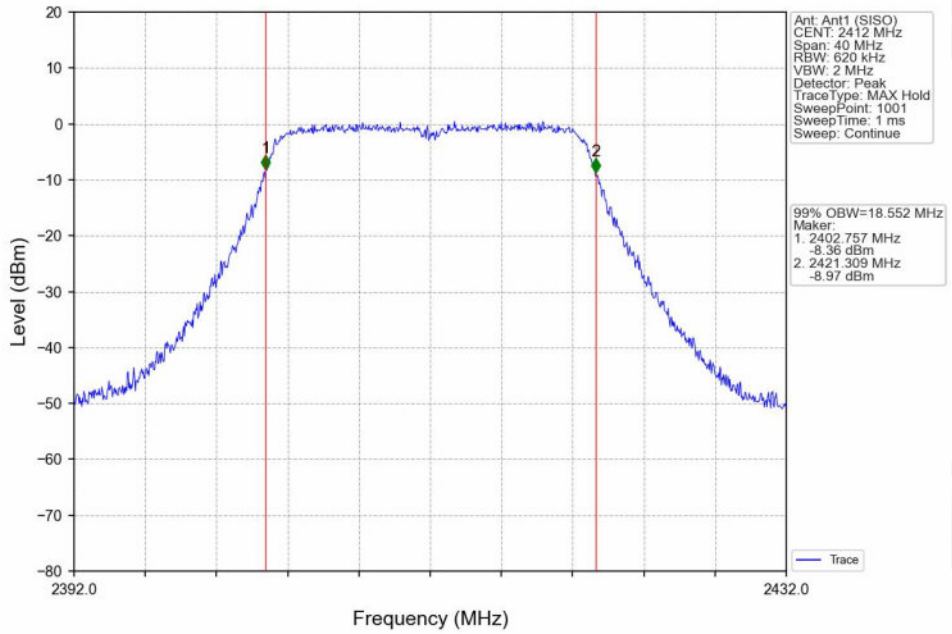
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



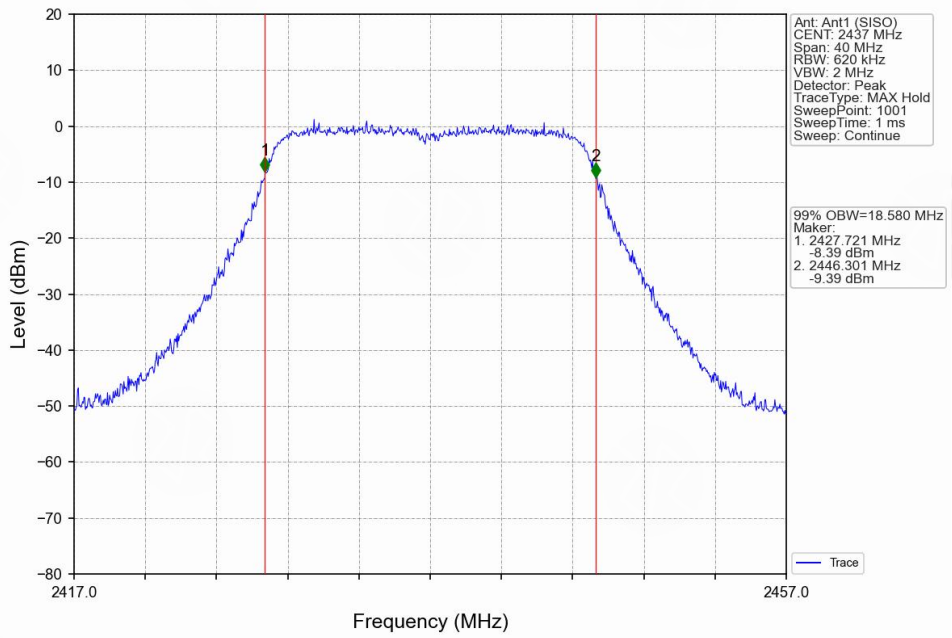
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



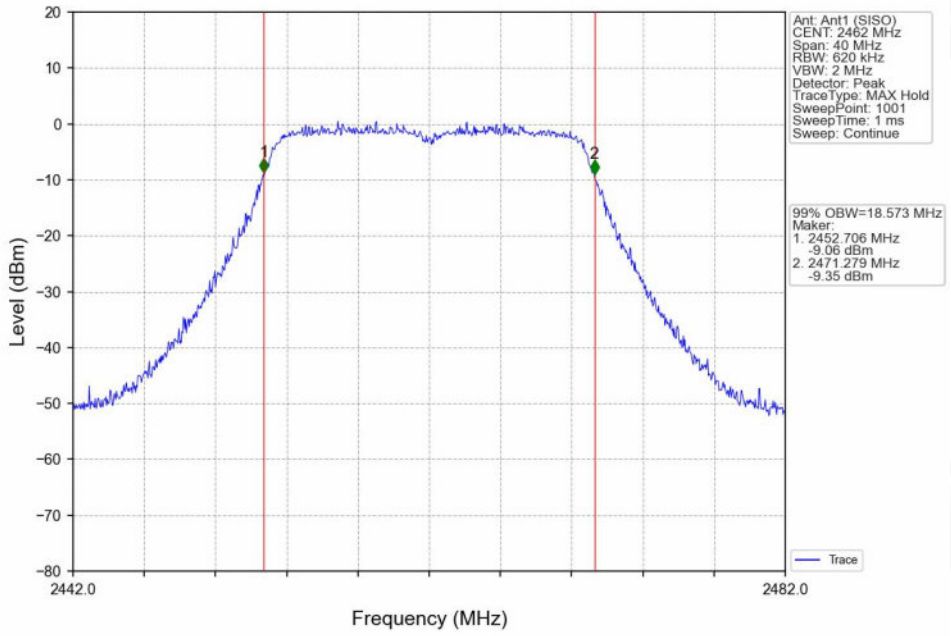
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



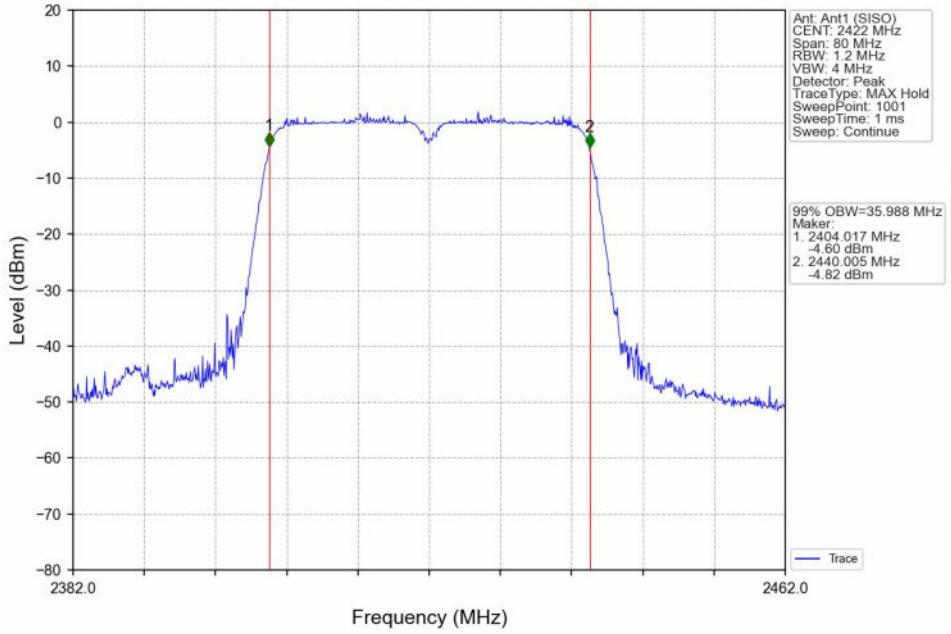
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



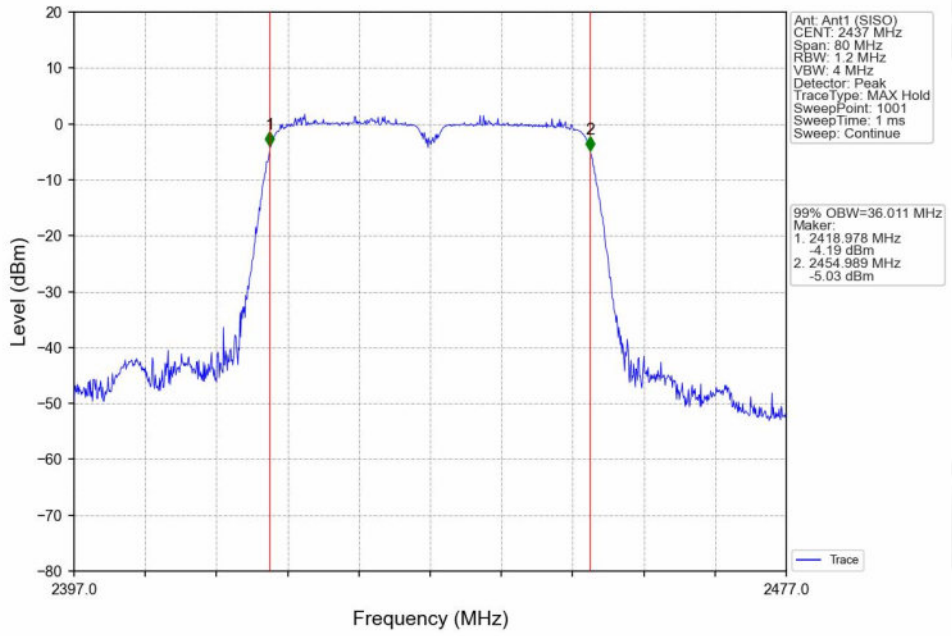
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



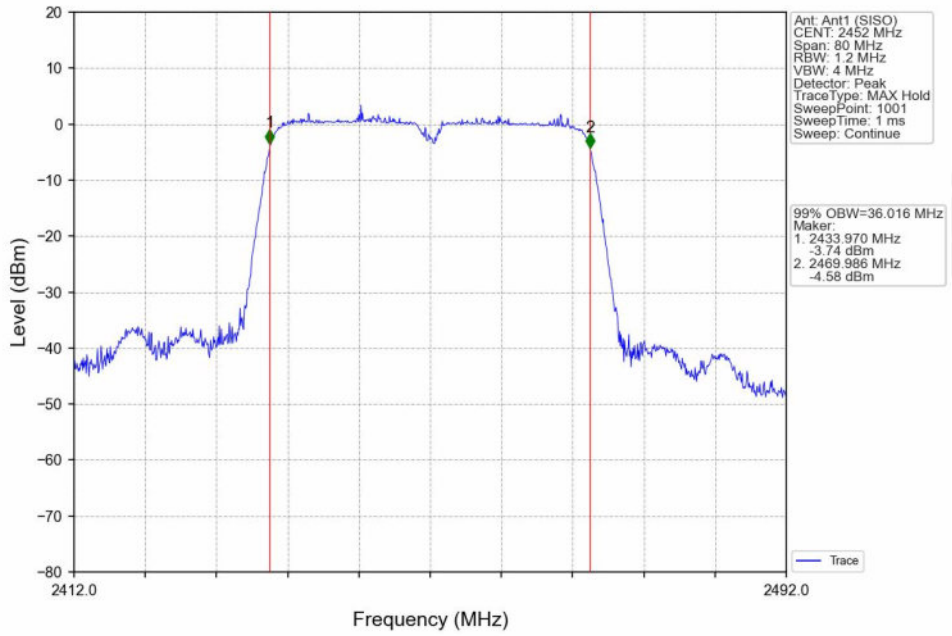
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

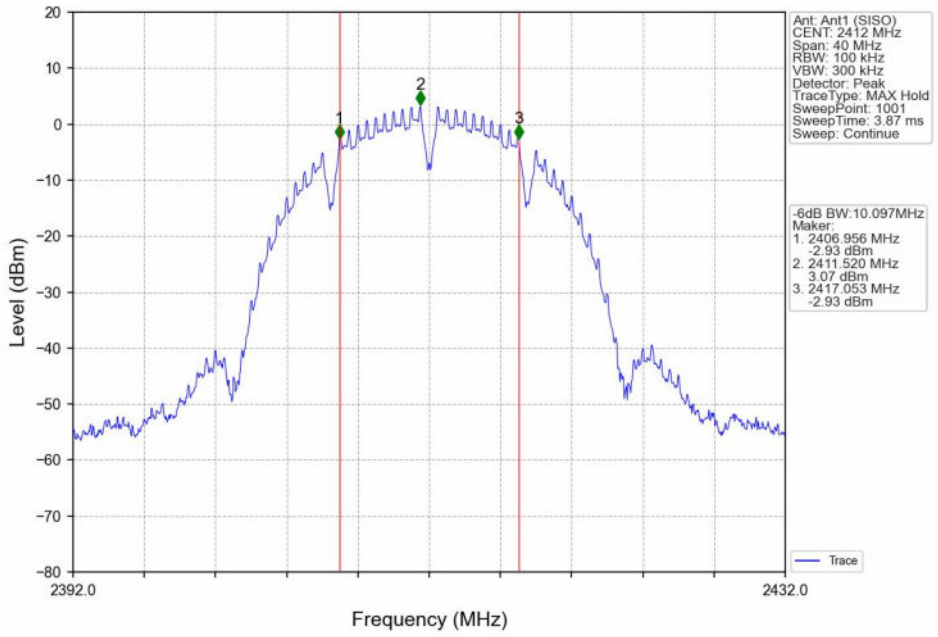


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

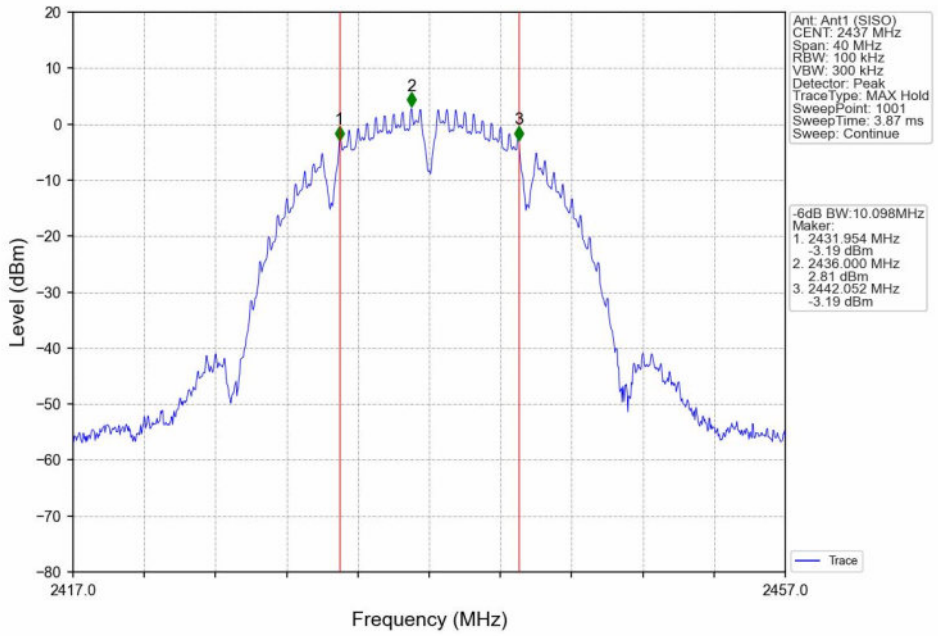


2.2.2 6dB BW

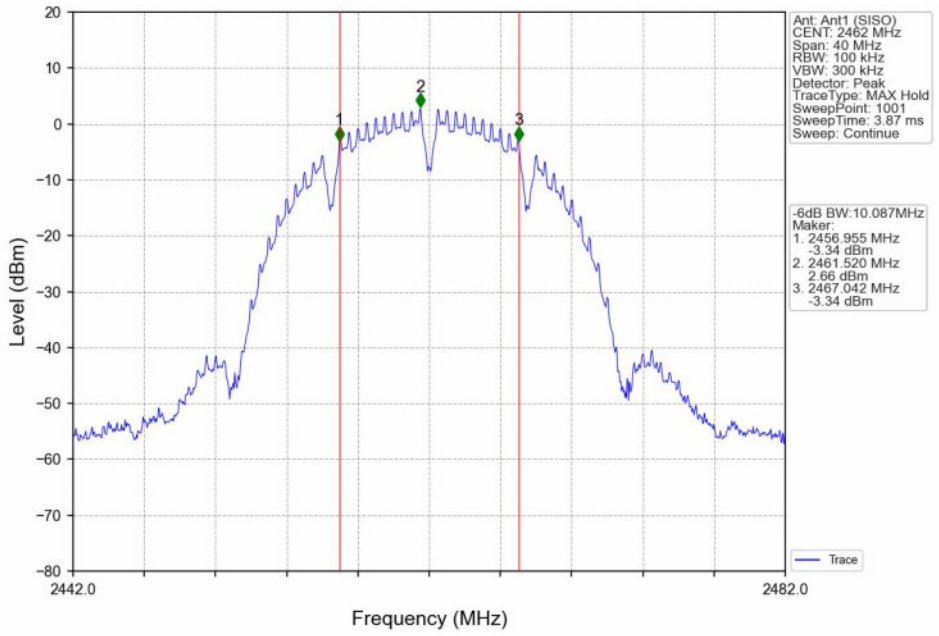
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



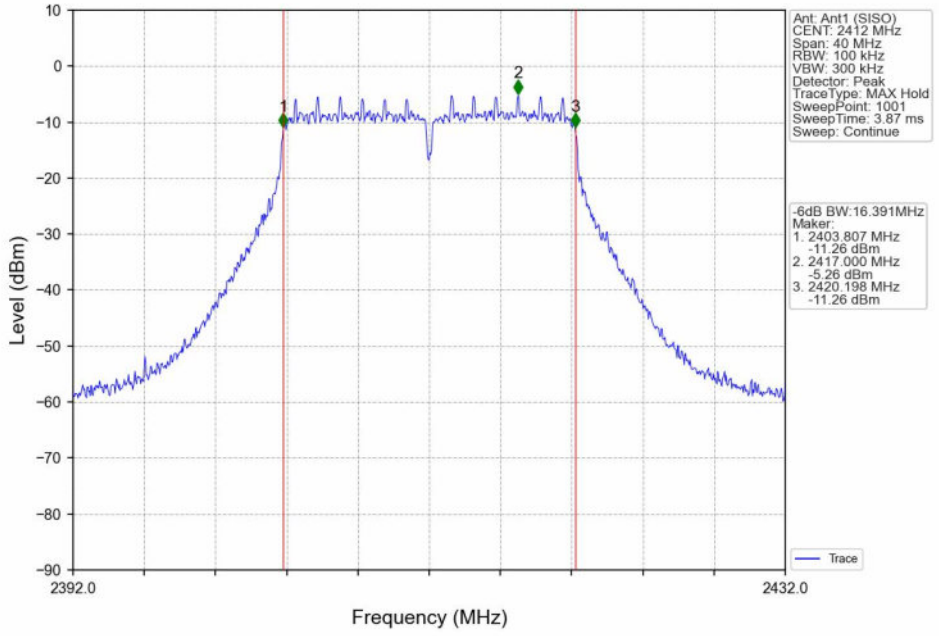
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



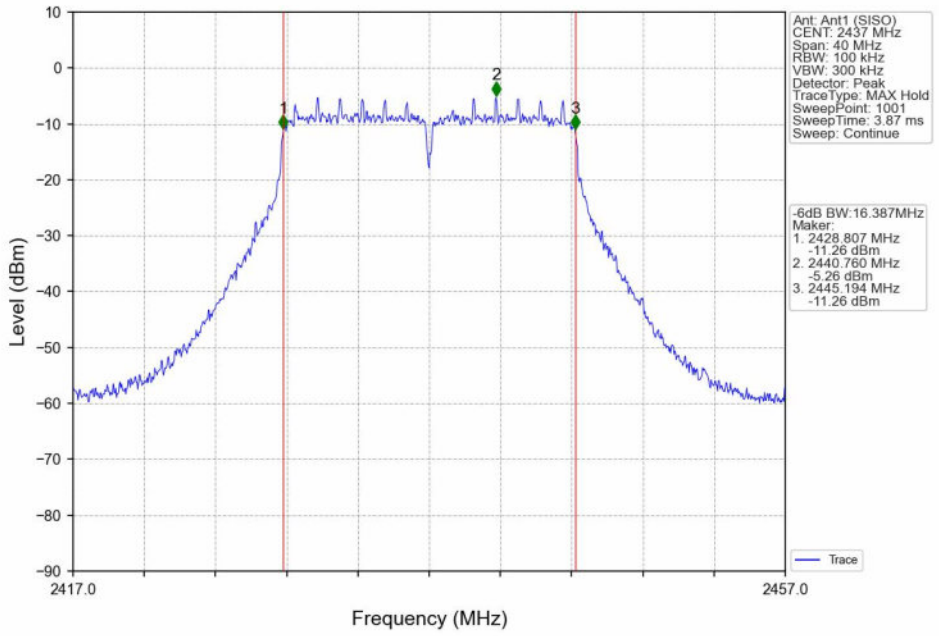
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



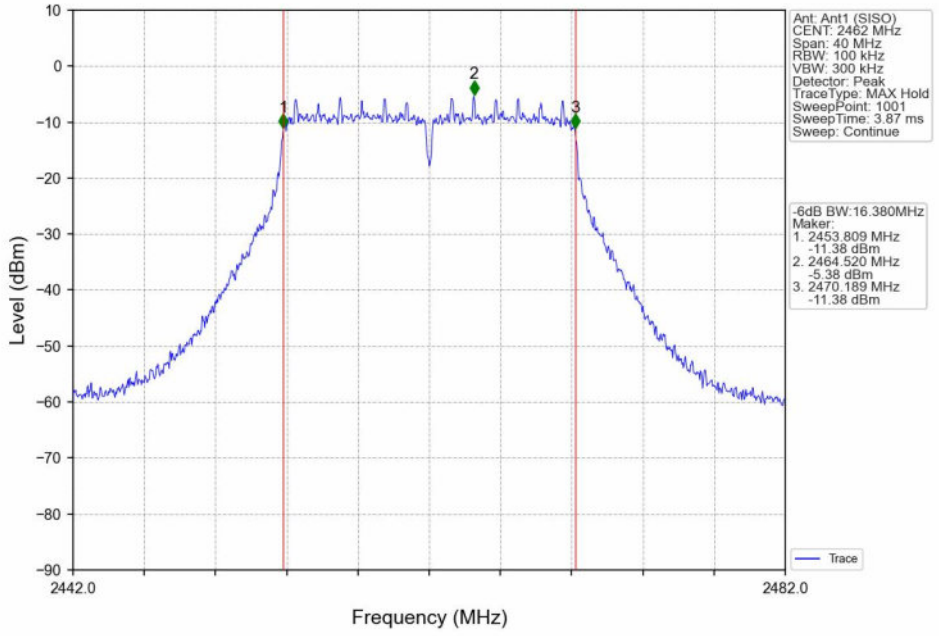
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



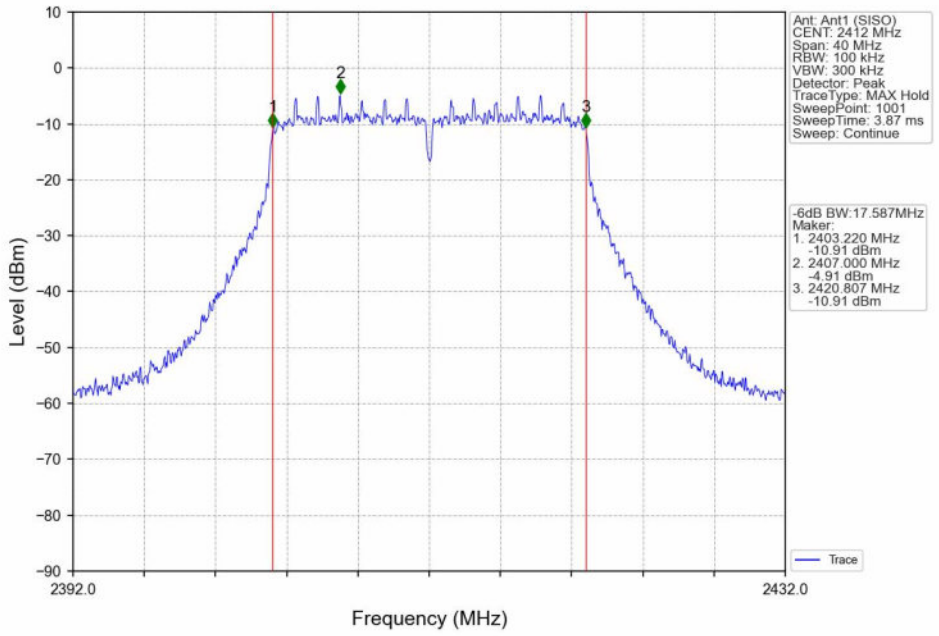
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



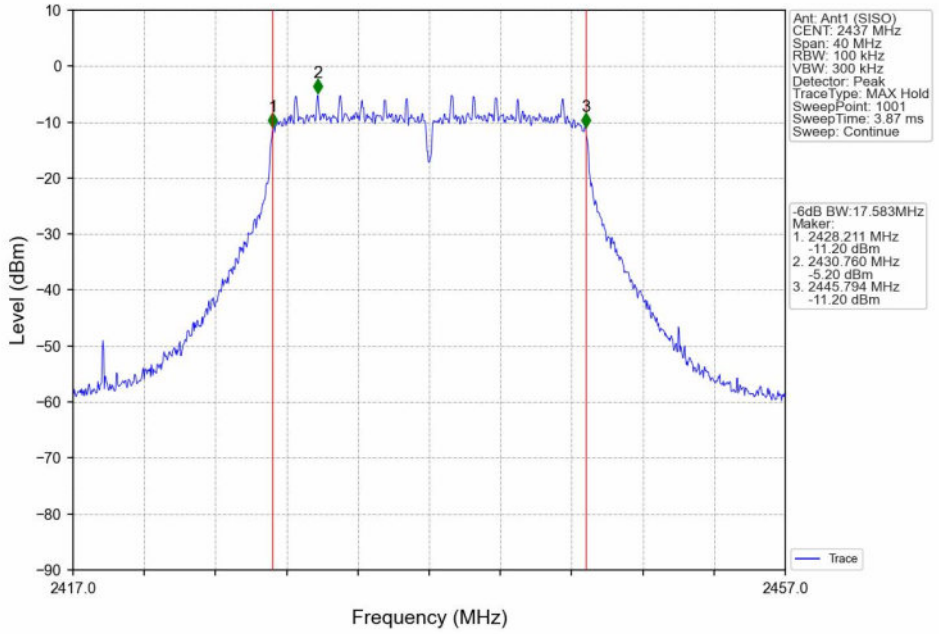
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



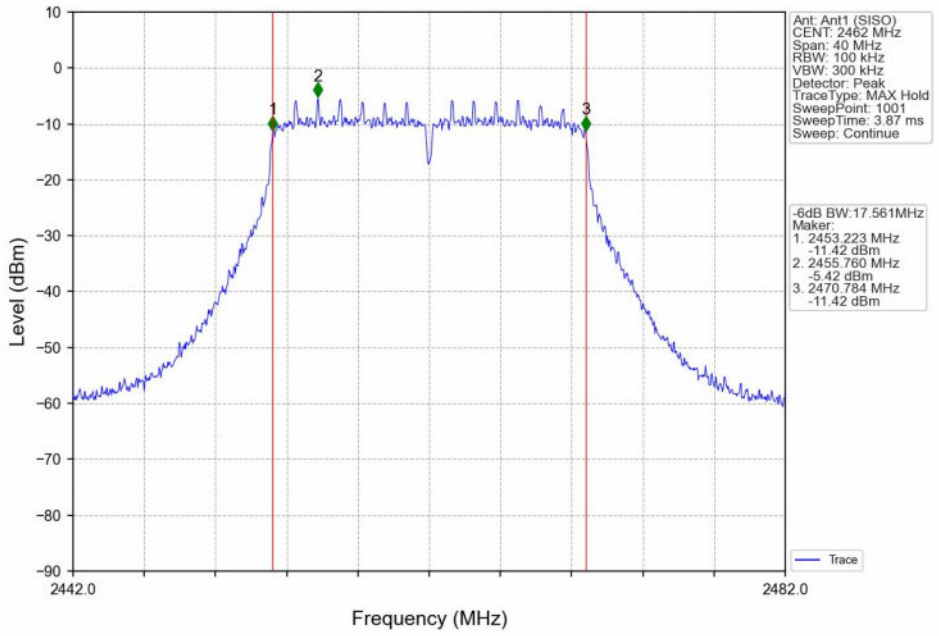
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



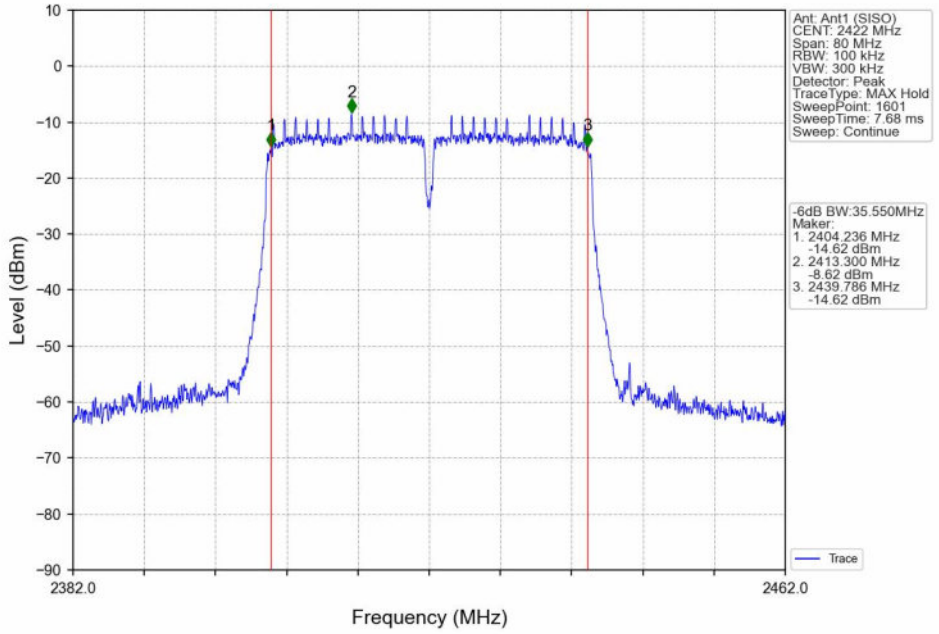
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



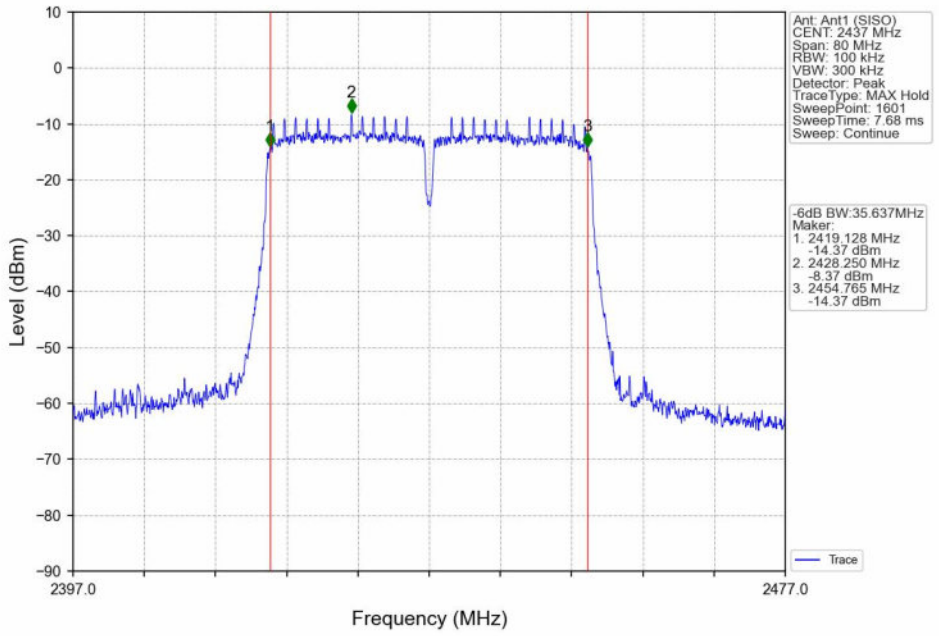
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



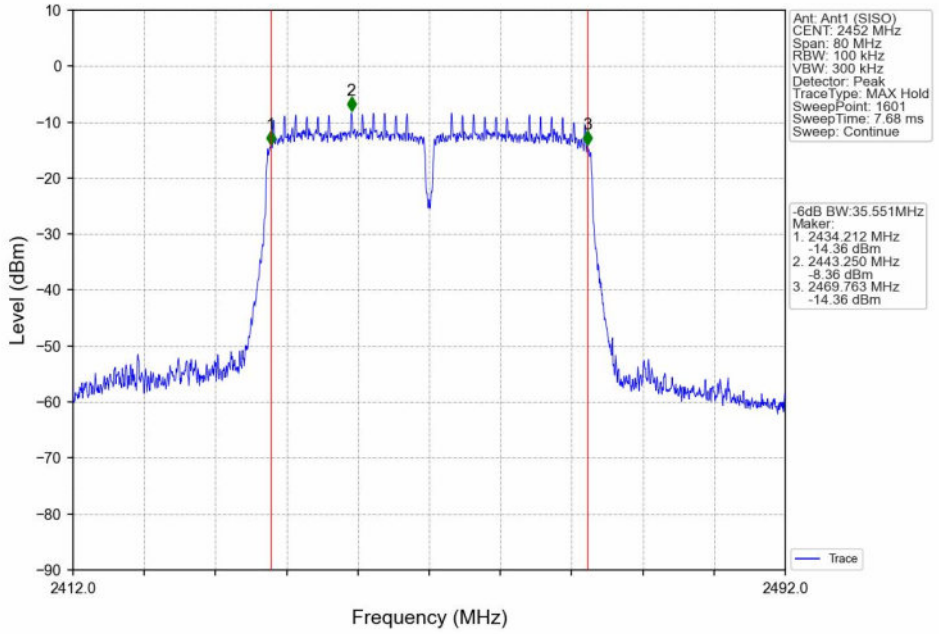
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	14.67	<=30	Pass
		2437	14.49	<=30	Pass
		2462	14.28	<=30	Pass
802.11g	SISO	2412	13.79	<=30	Pass
		2437	13.83	<=30	Pass
		2462	13.52	<=30	Pass
802.11n (HT20)	SISO	2412	13.97	<=30	Pass
		2437	13.74	<=30	Pass
		2462	13.36	<=30	Pass
802.11n (HT40)	SISO	2422	13.36	<=30	Pass
		2437	13.82	<=30	Pass
		2452	13.74	<=30	Pass
Note1: Antenna Gain: Ant1: 2.78dBi;					

4. Maximum Power Spectral Density

4.1 Test Result

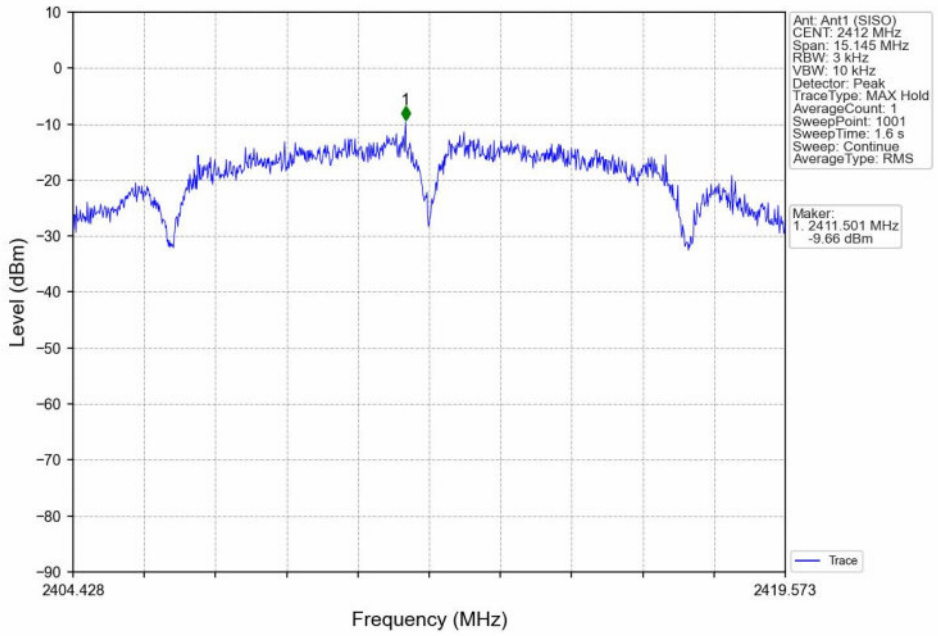
4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-9.66	<=8	Pass
		2437	-11.41	<=8	Pass
		2462	-10.34	<=8	Pass
802.11g	SISO	2412	-19.32	<=8	Pass
		2437	-19.10	<=8	Pass
		2462	-19.60	<=8	Pass
802.11n (HT20)	SISO	2412	-19.61	<=8	Pass
		2437	-19.84	<=8	Pass
		2462	-19.45	<=8	Pass
802.11n (HT40)	SISO	2422	-22.00	<=8	Pass
		2437	-21.84	<=8	Pass
		2452	-22.31	<=8	Pass
Note1: Antenna Gain: Ant1: 2.78dBi;					

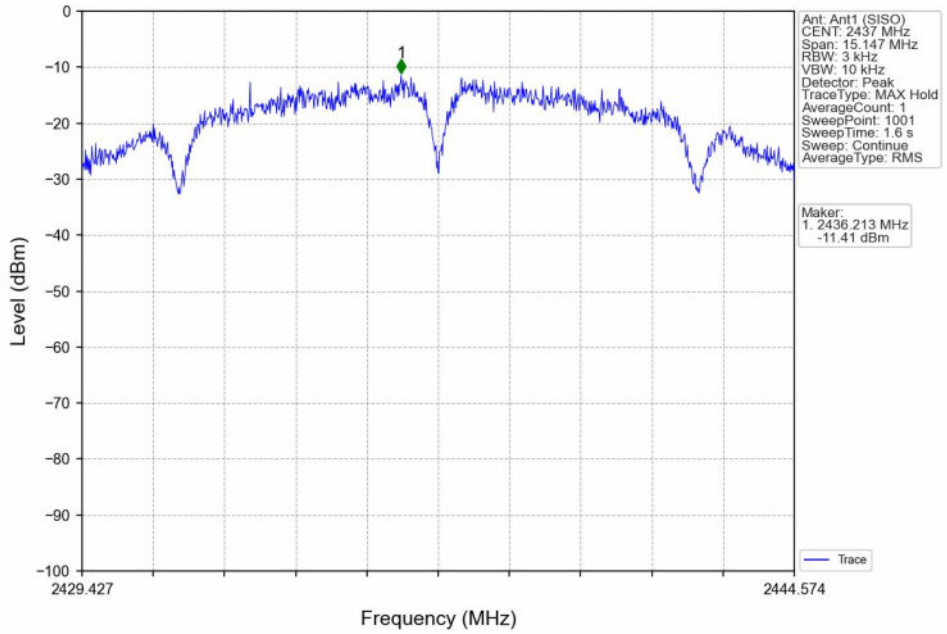
4.2 Test Graph

4.2.1 PSD

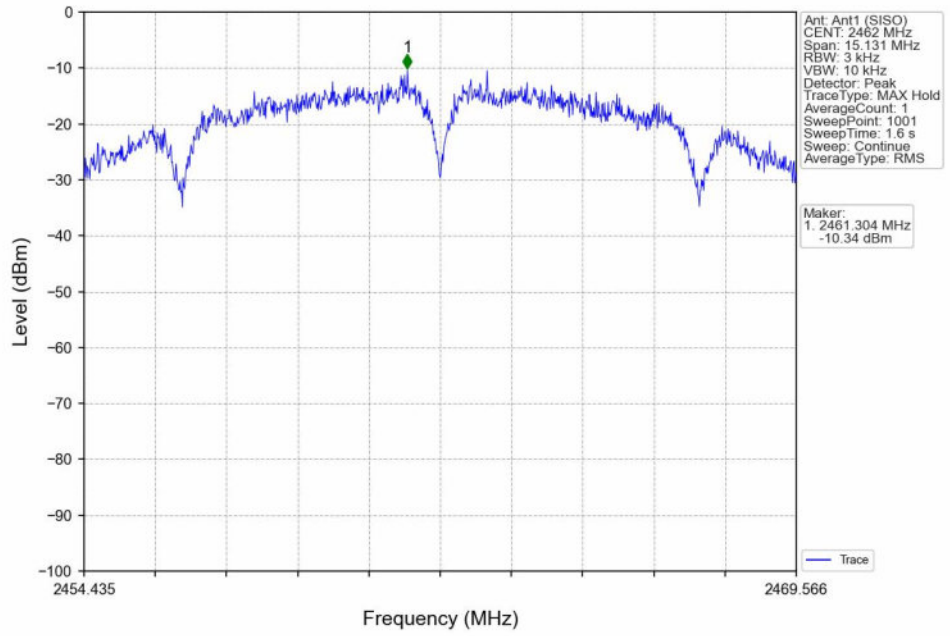
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



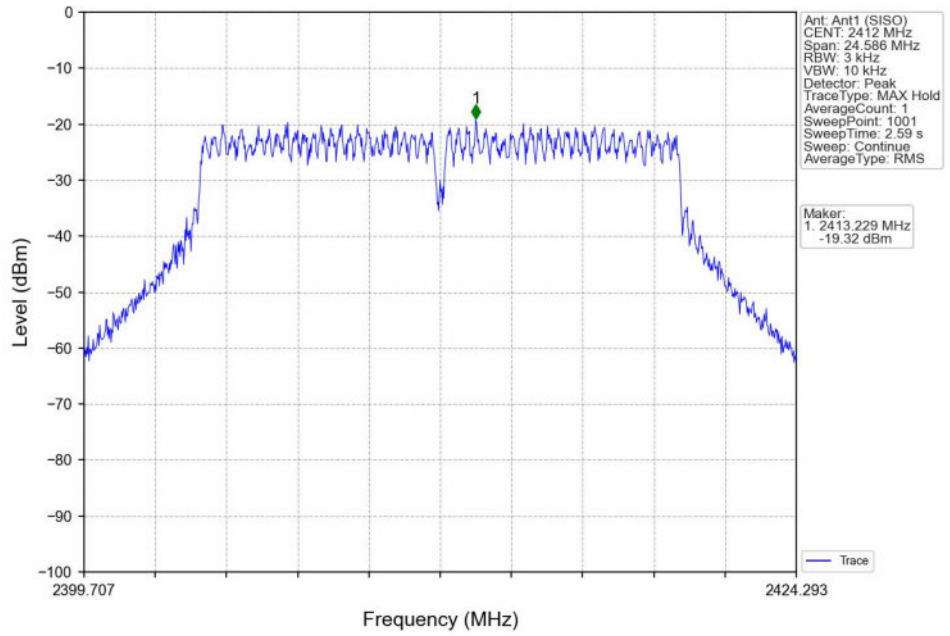
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



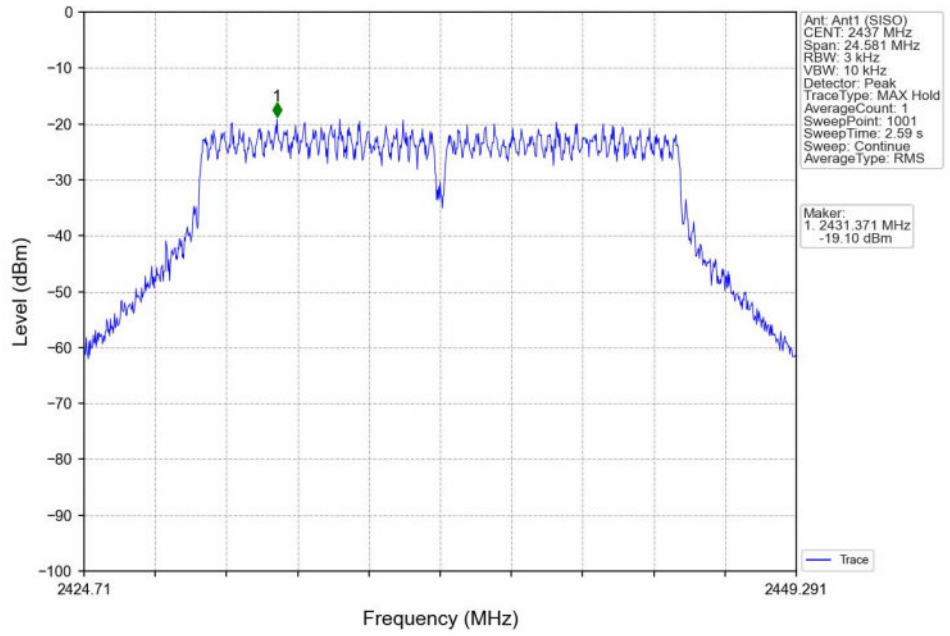
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



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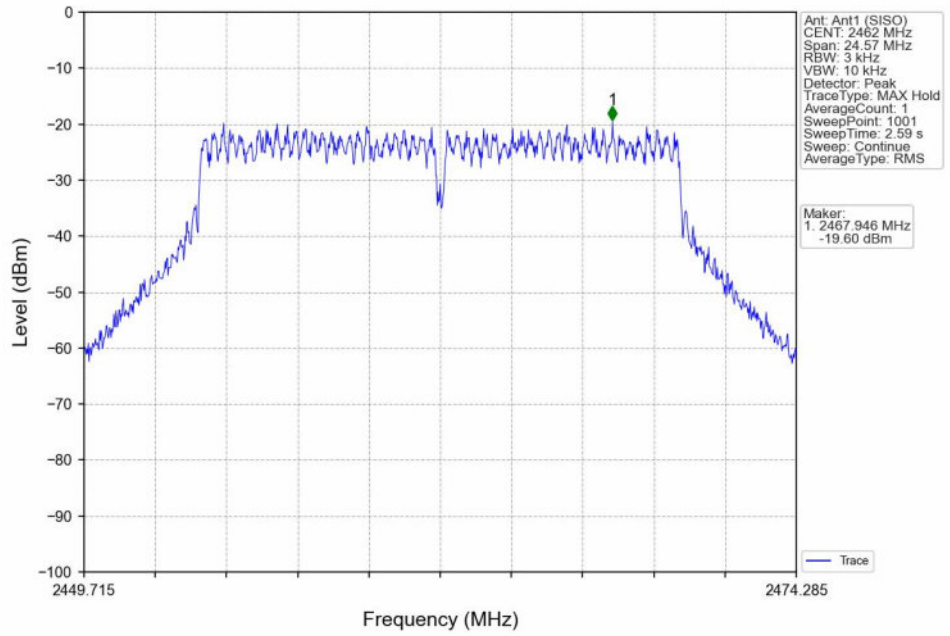
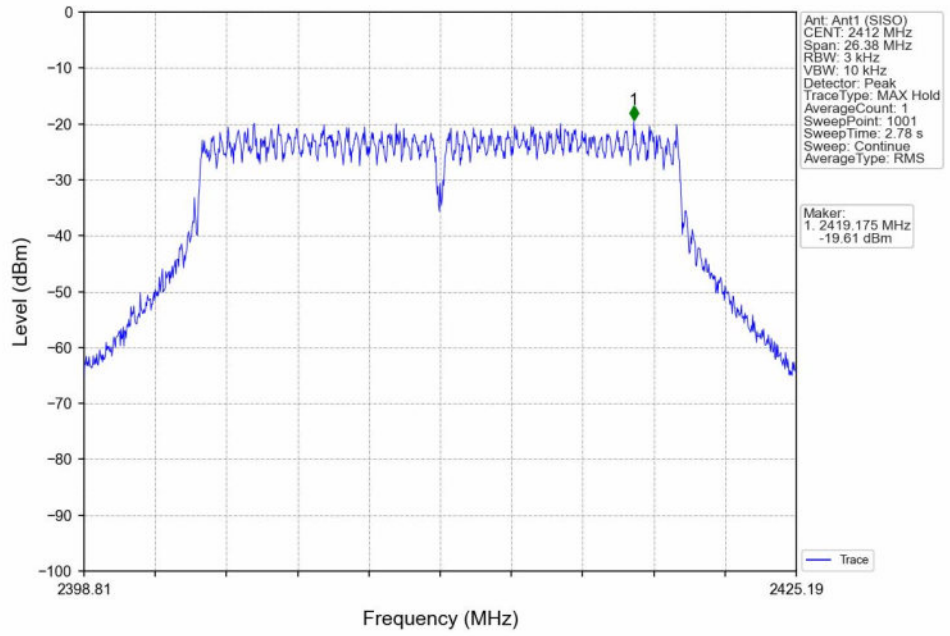
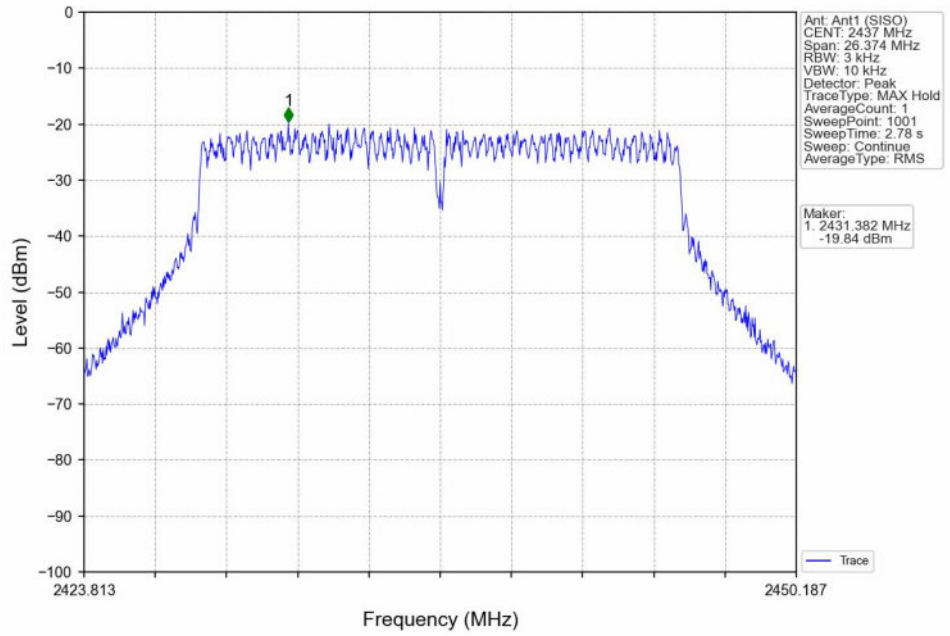


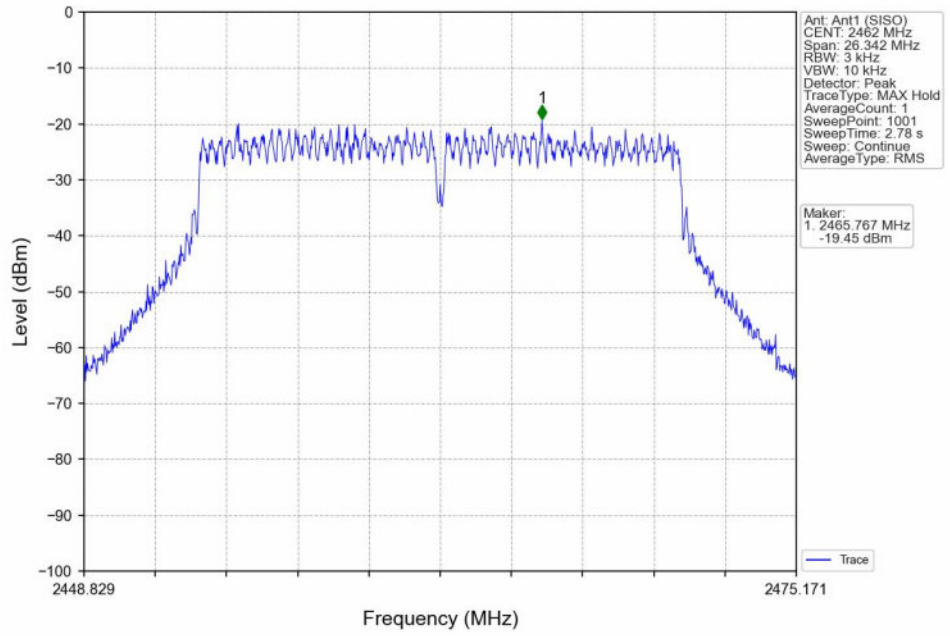
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



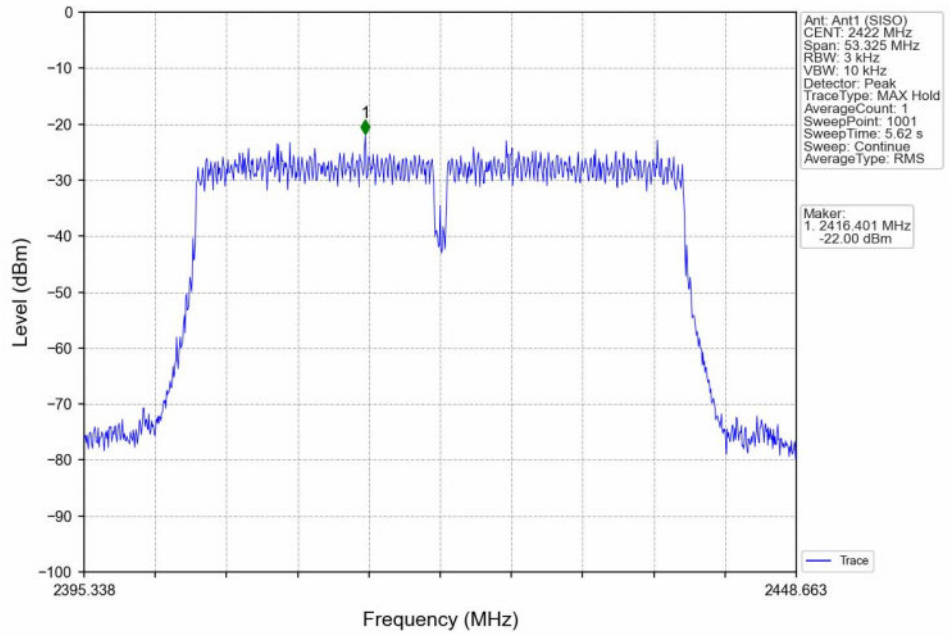
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



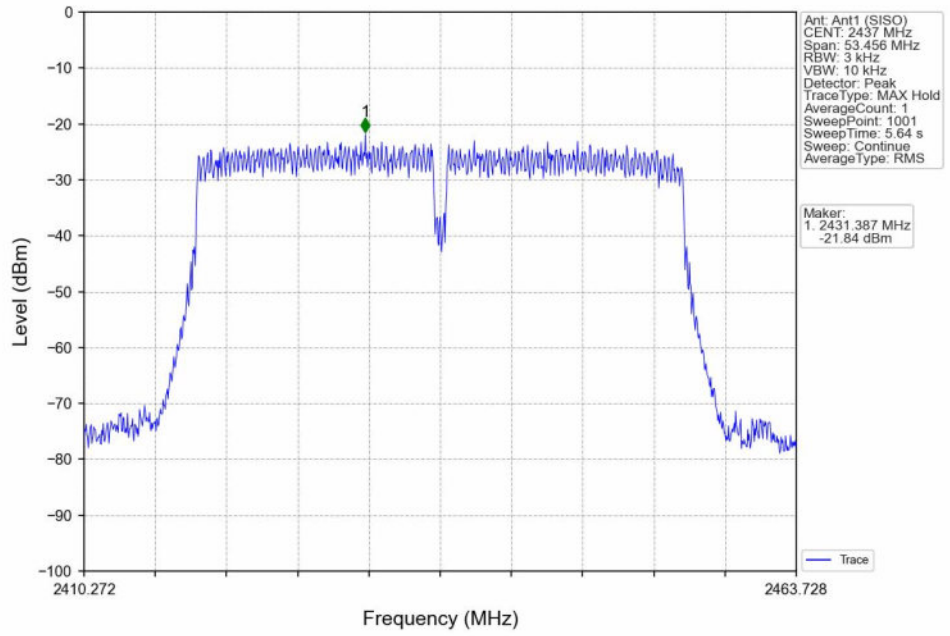
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



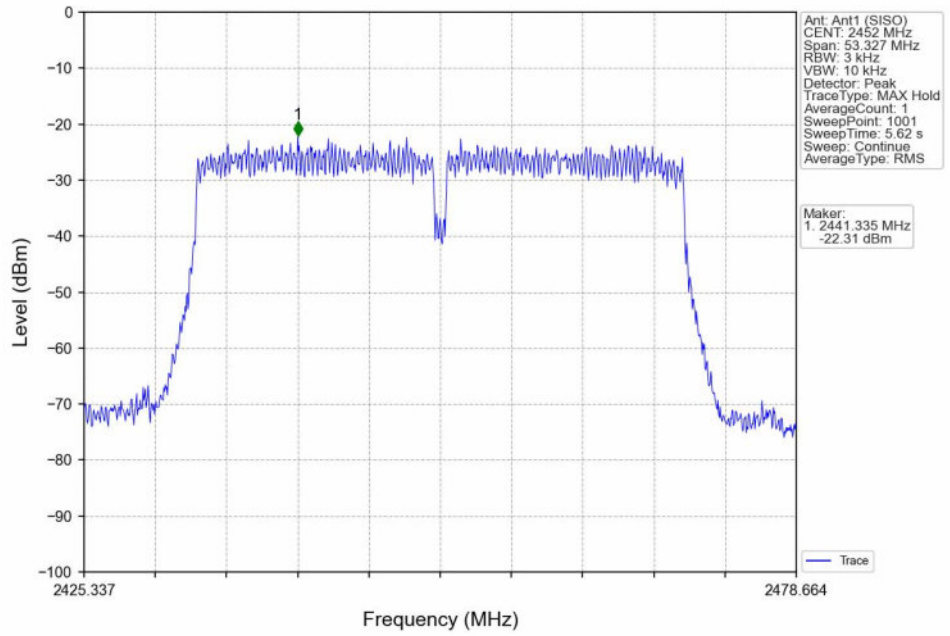
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	2.96
		2437	1	2.84
		2462	1	2.59
802.11g	SISO	2412	1	-5.21
		2437	1	-5.21
		2462	1	-5.64
802.11n (HT20)	SISO	2412	1	-5.01
		2437	1	-5.27
		2462	1	-5.63
802.11n (HT40)	SISO	2422	1	-8.46
		2437	1	-8.26
		2452	1	-8.50
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.				

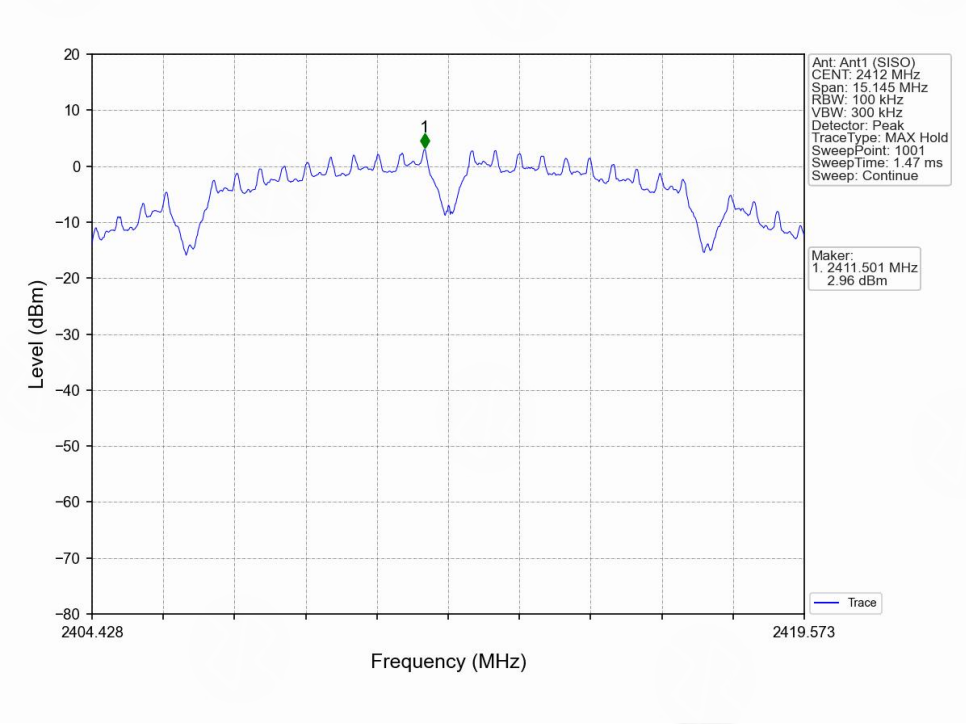
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	2.96	-17.04	Pass
		2437	1	2.84	-17.16	Pass
		2462	1	2.59	-17.41	Pass
802.11g	SISO	2412	1	-5.21	-25.21	Pass
		2437	1	-5.21	-25.21	Pass
		2462	1	-5.64	-25.64	Pass
802.11n (HT20)	SISO	2412	1	-5.01	-25.01	Pass
		2437	1	-5.27	-25.27	Pass
		2462	1	-5.63	-25.63	Pass
802.11n (HT40)	SISO	2422	1	-8.46	-28.46	Pass
		2437	1	-8.26	-28.26	Pass
		2452	1	-8.50	-28.50	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.						

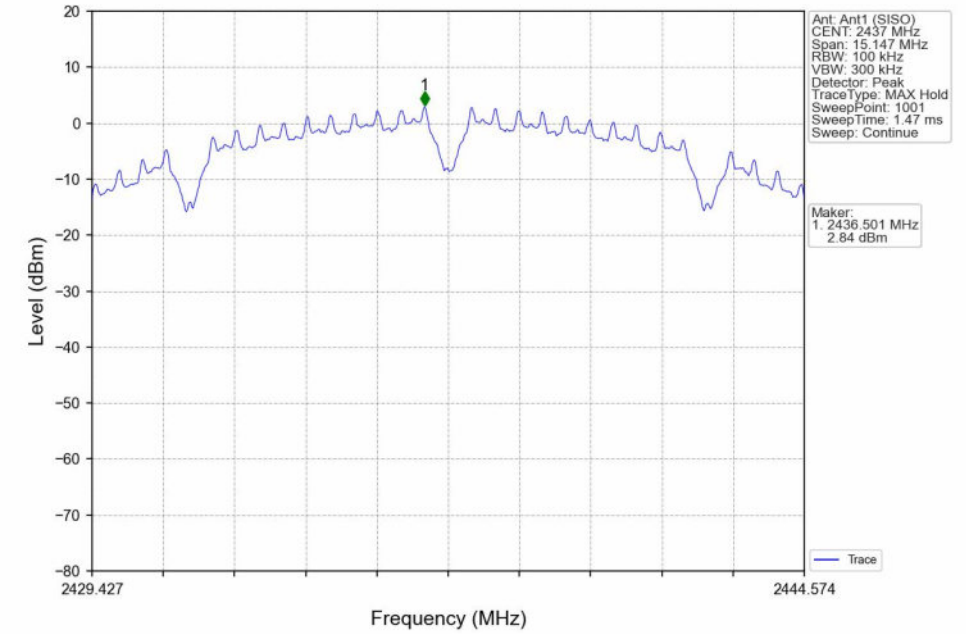
5.2 Test Graph

5.2.1 Ref

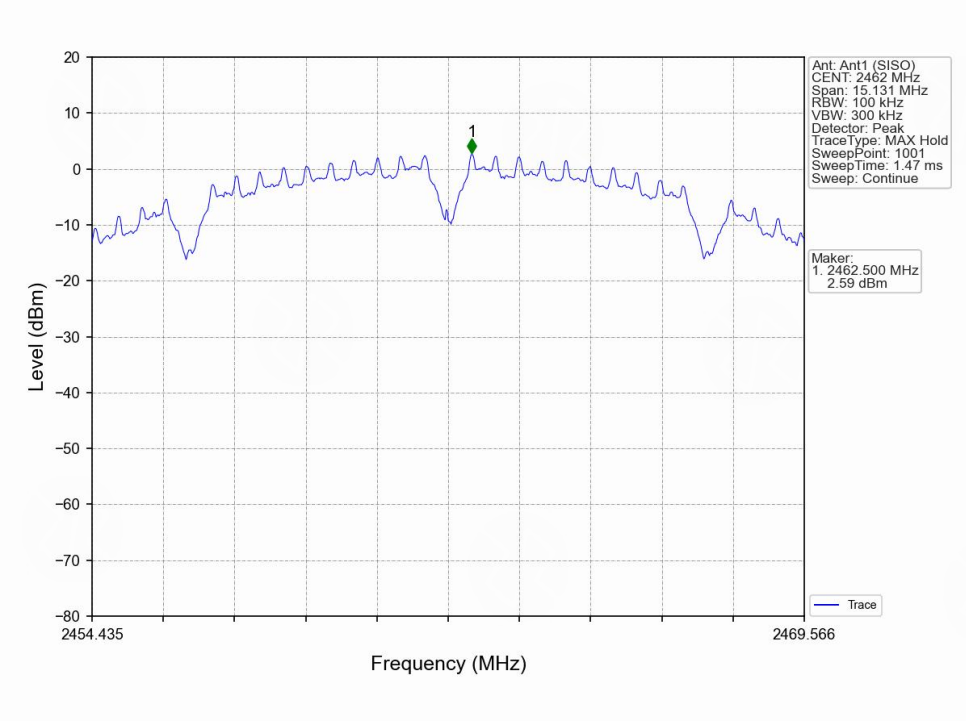
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



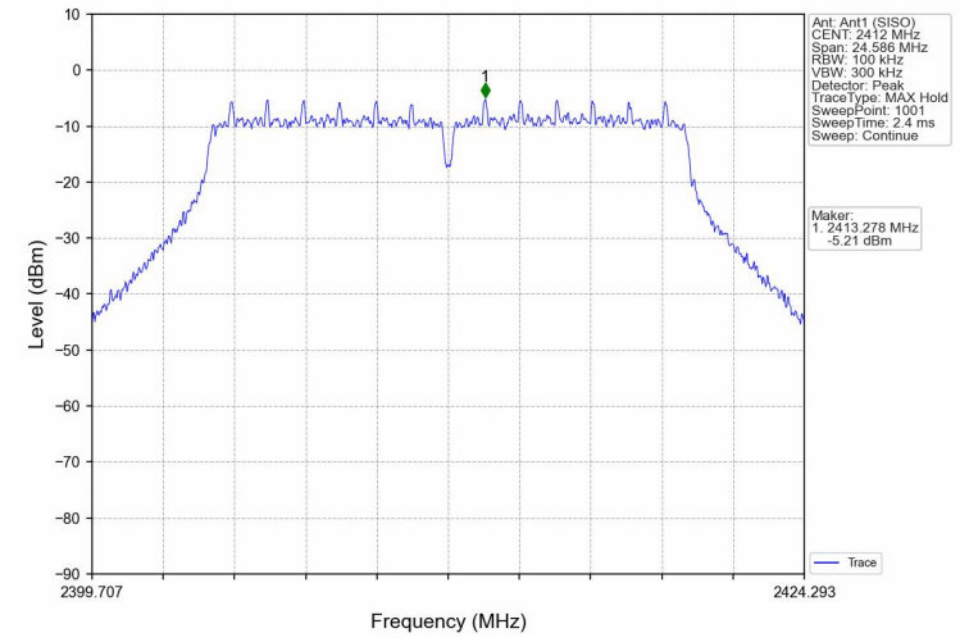
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



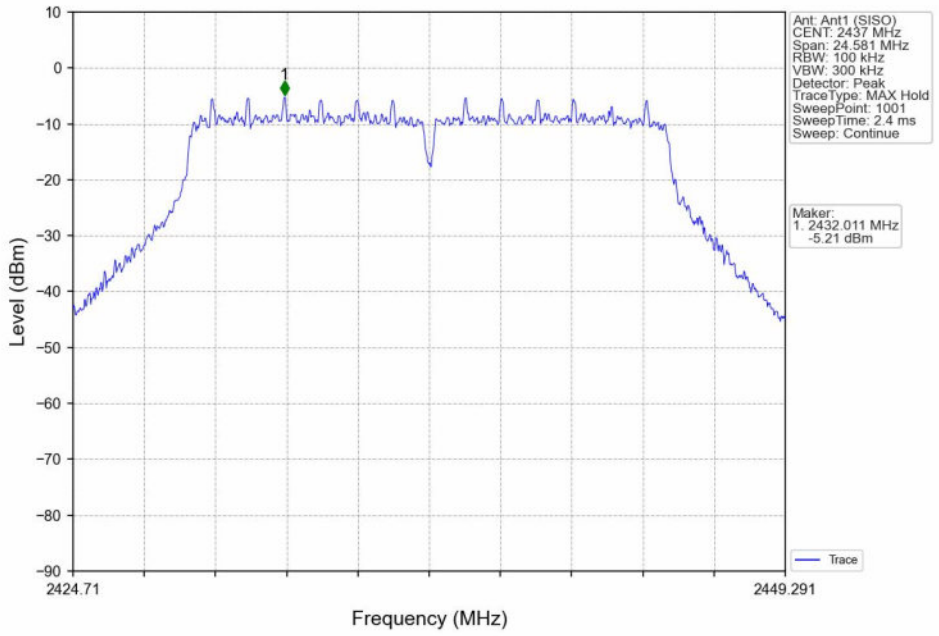
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



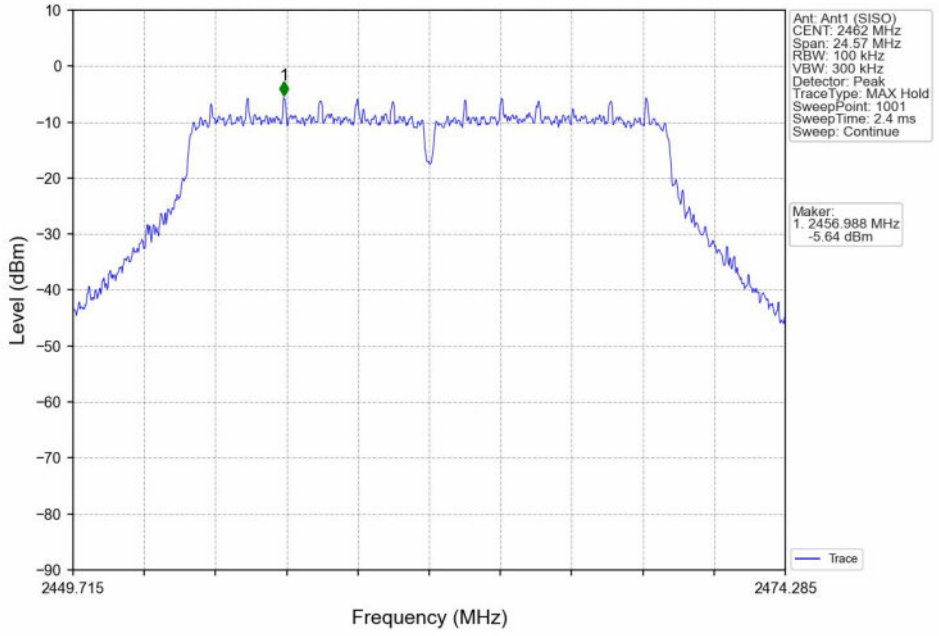
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



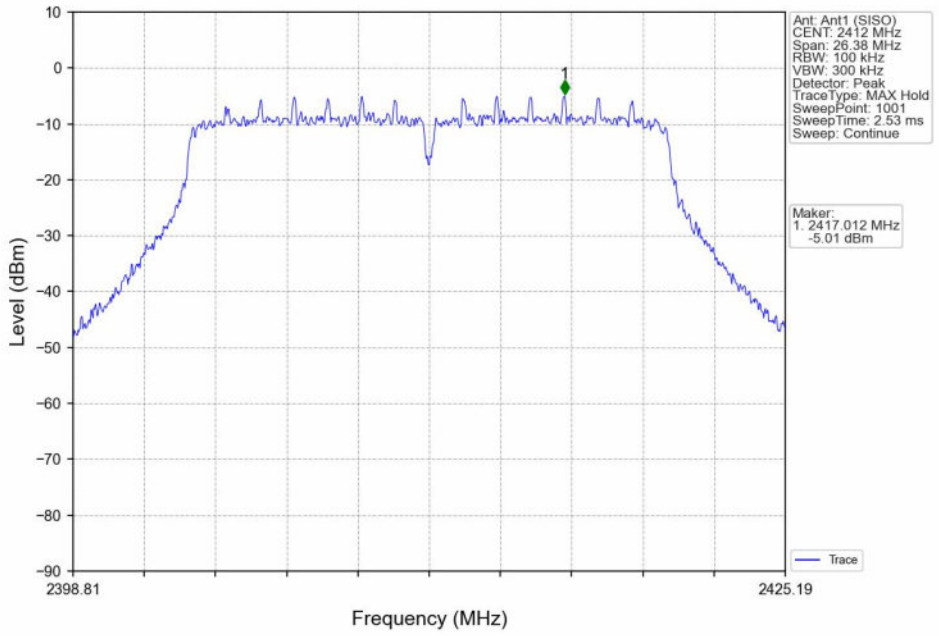
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



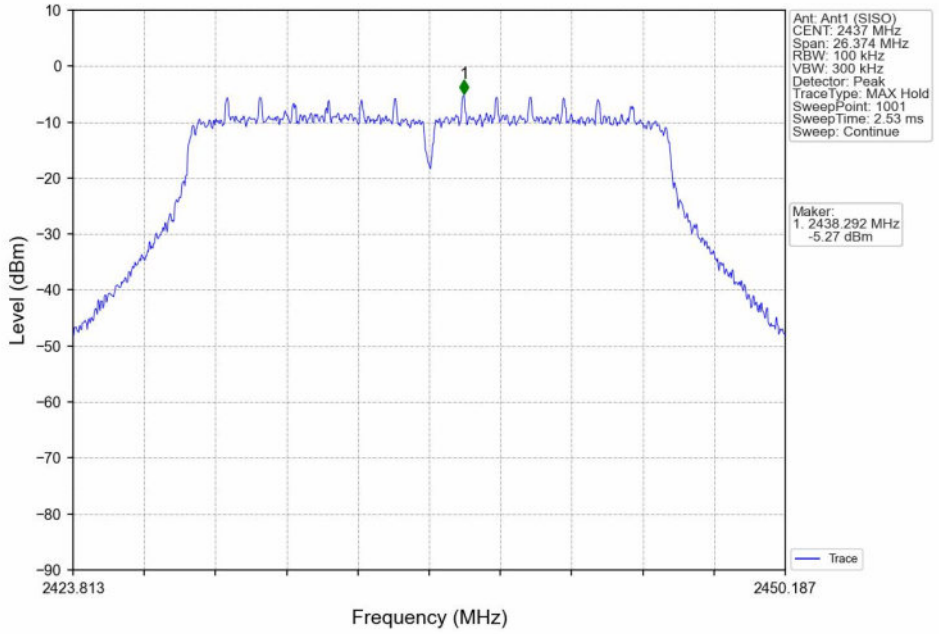
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



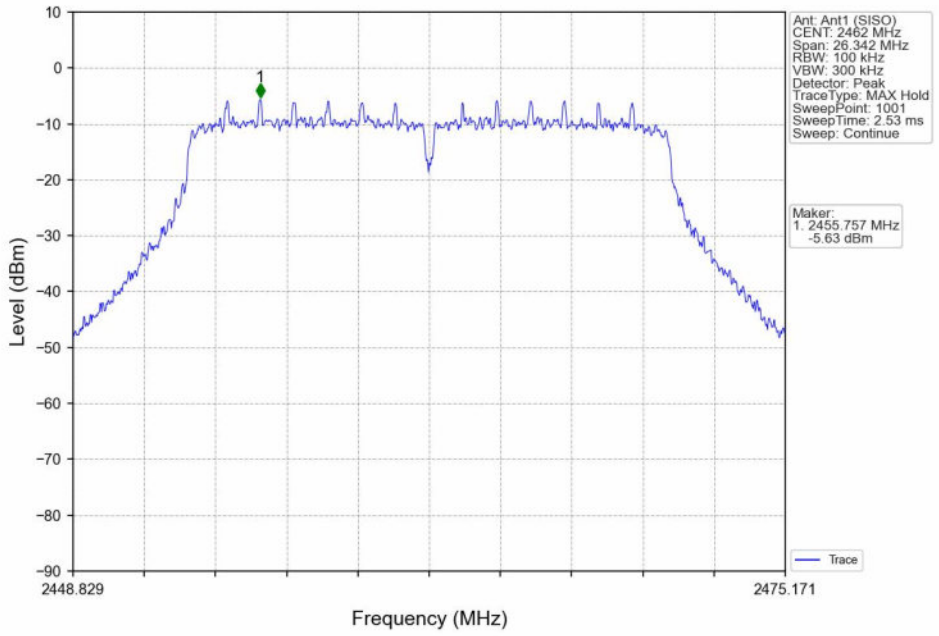
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



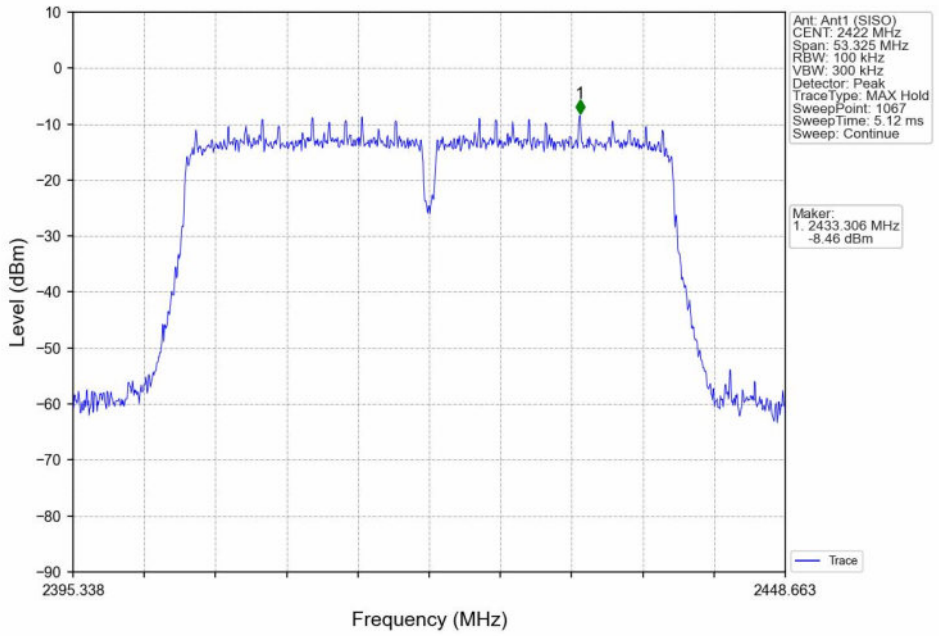
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



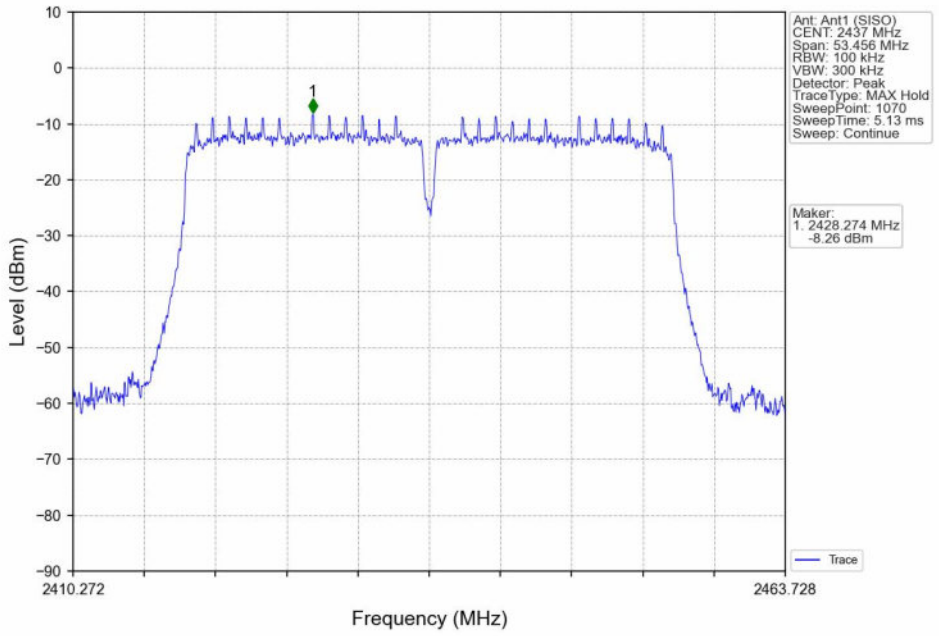
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



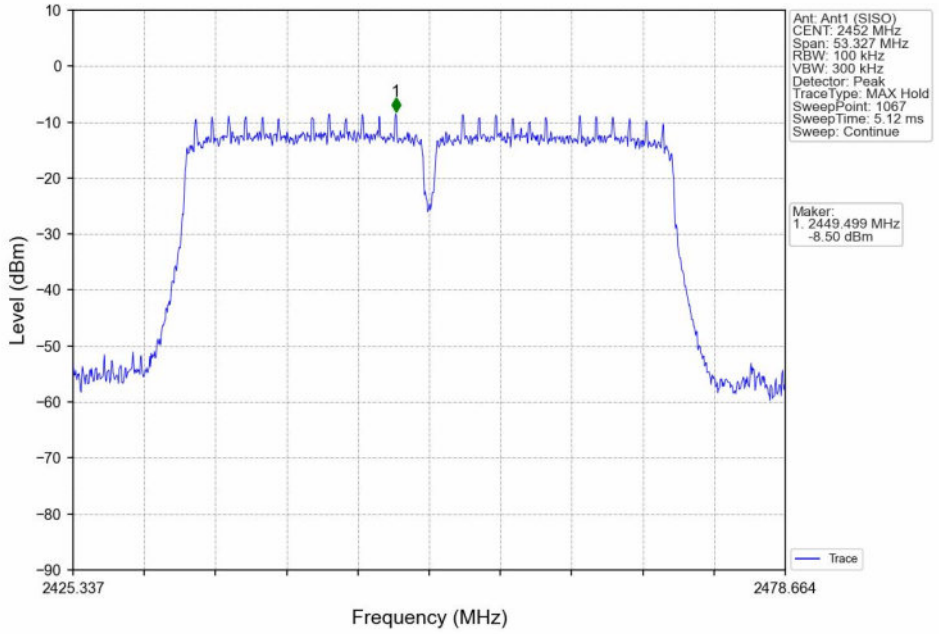
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

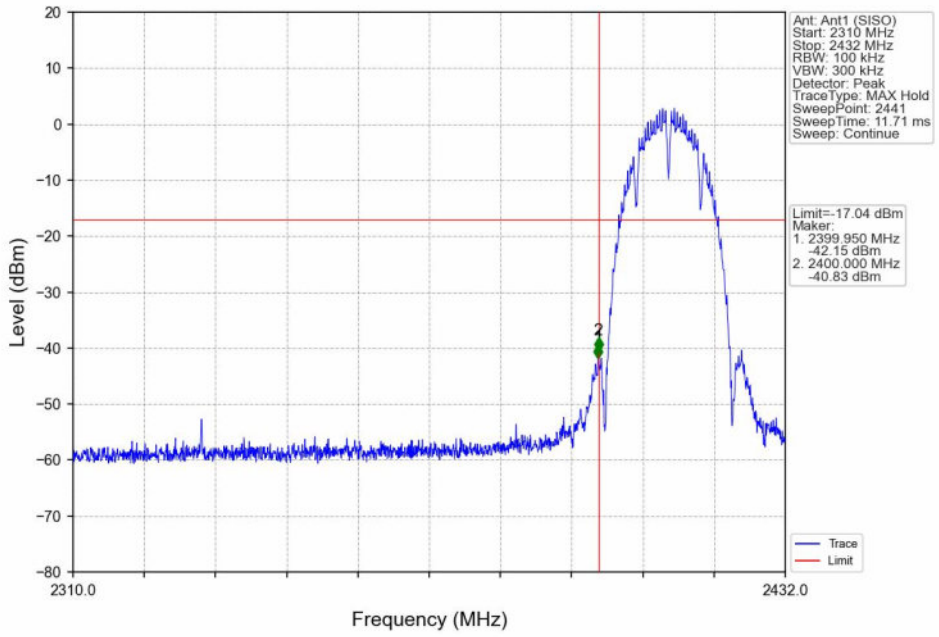


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

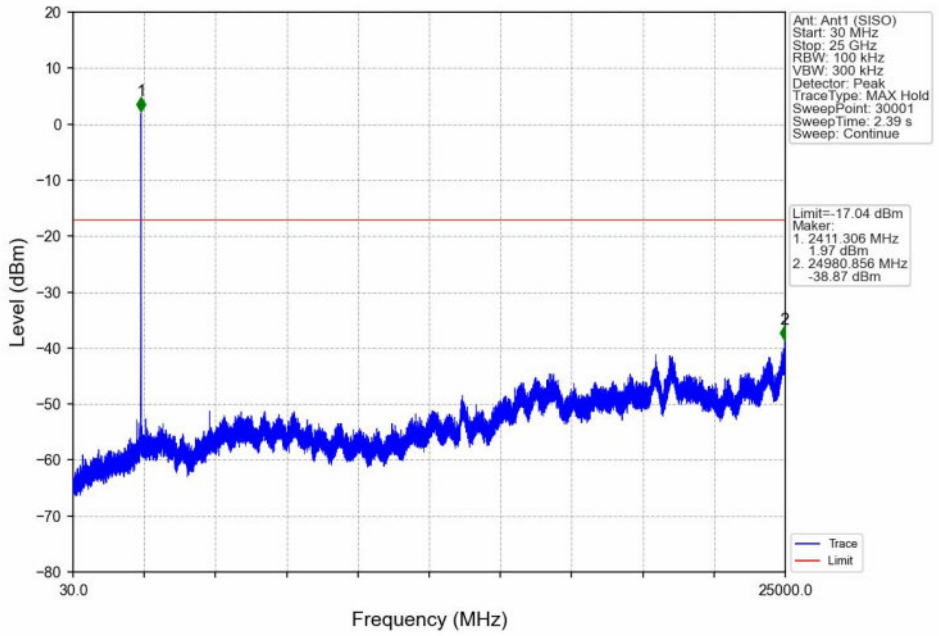


5.2.2 CSE

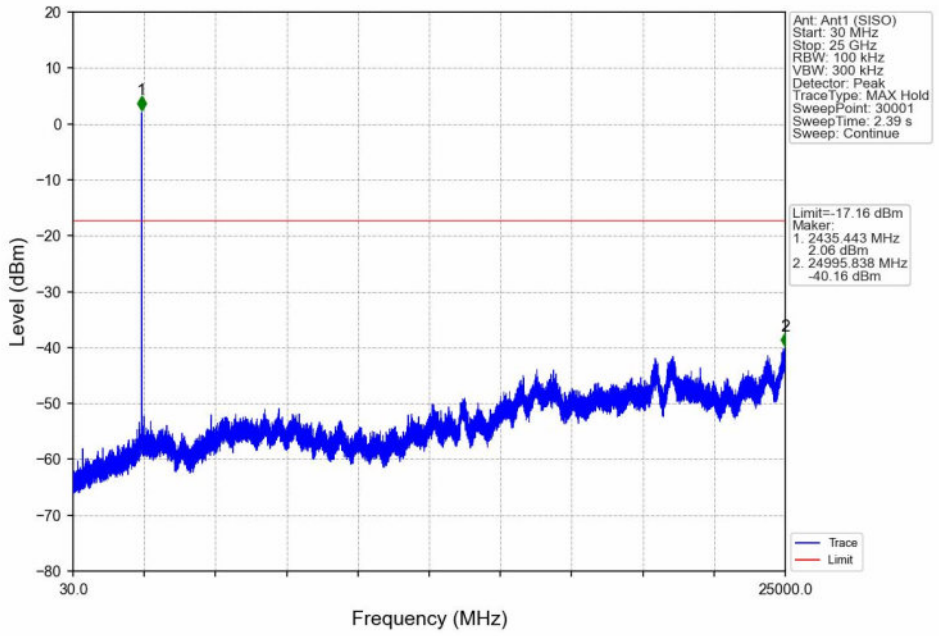
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



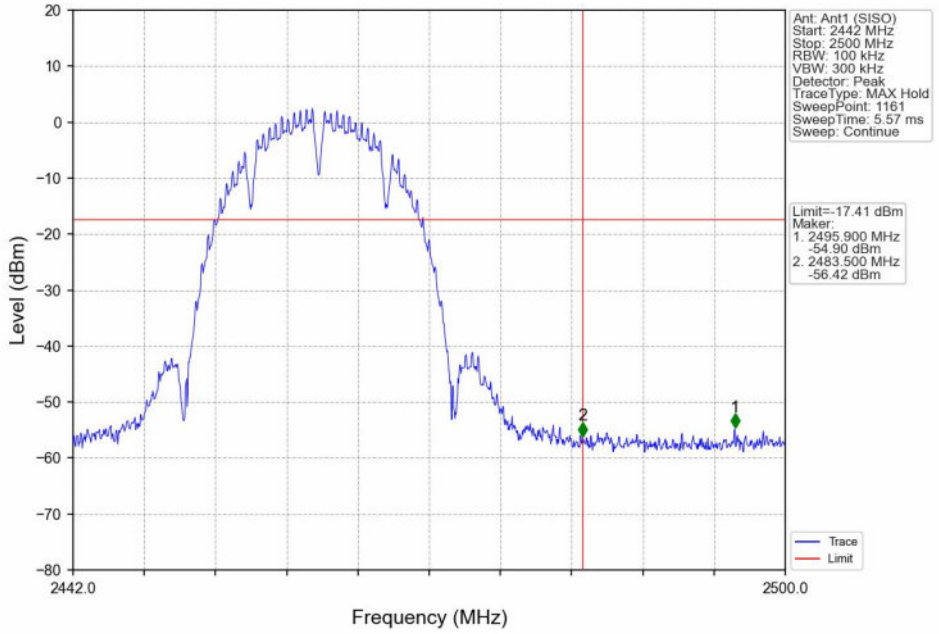
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



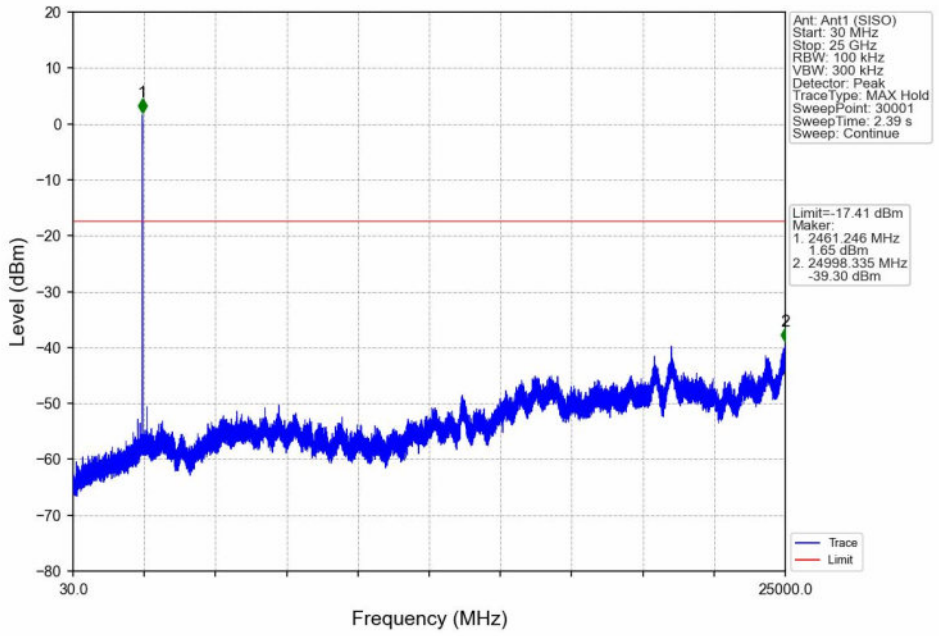
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



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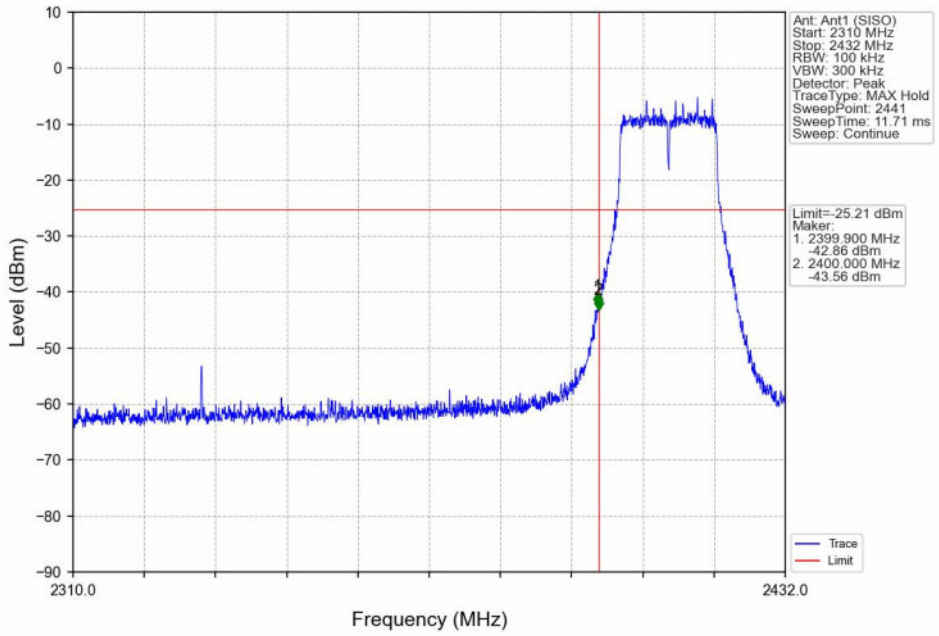

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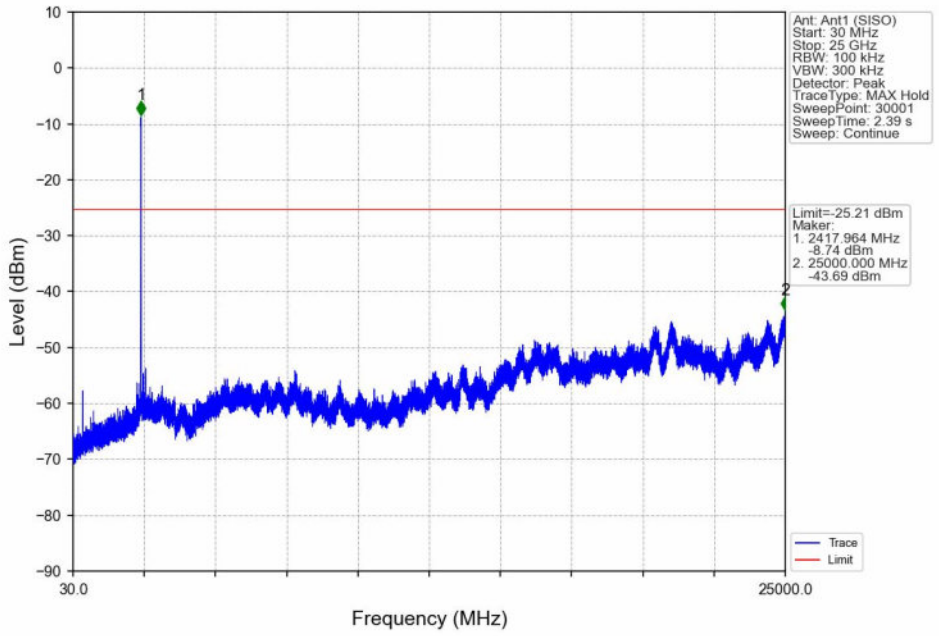
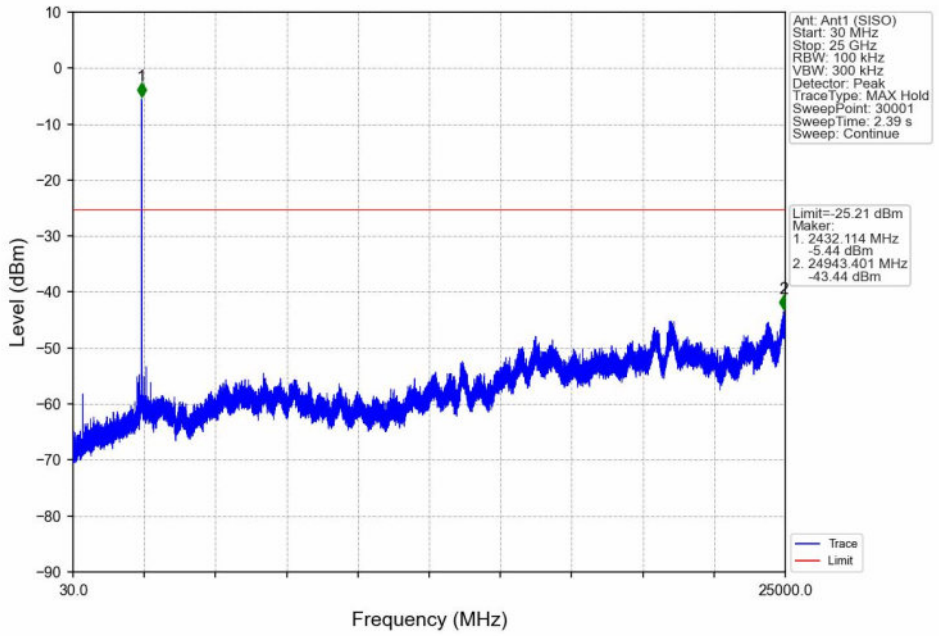


802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



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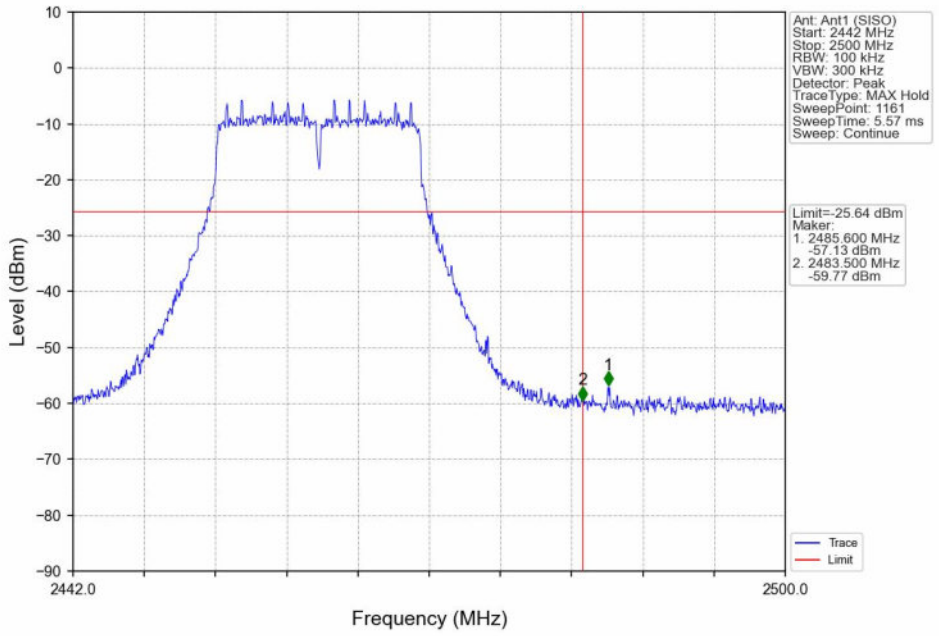

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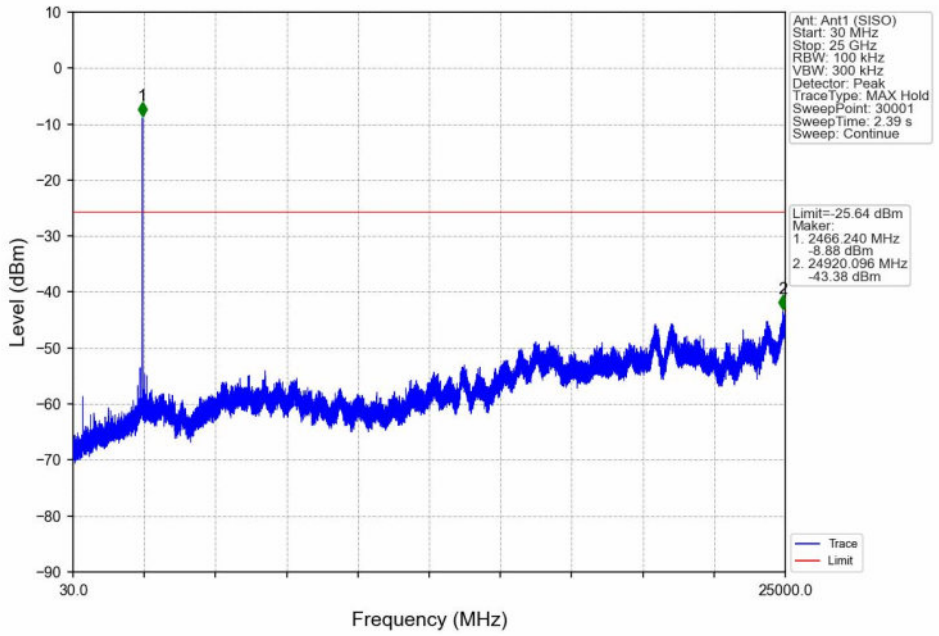
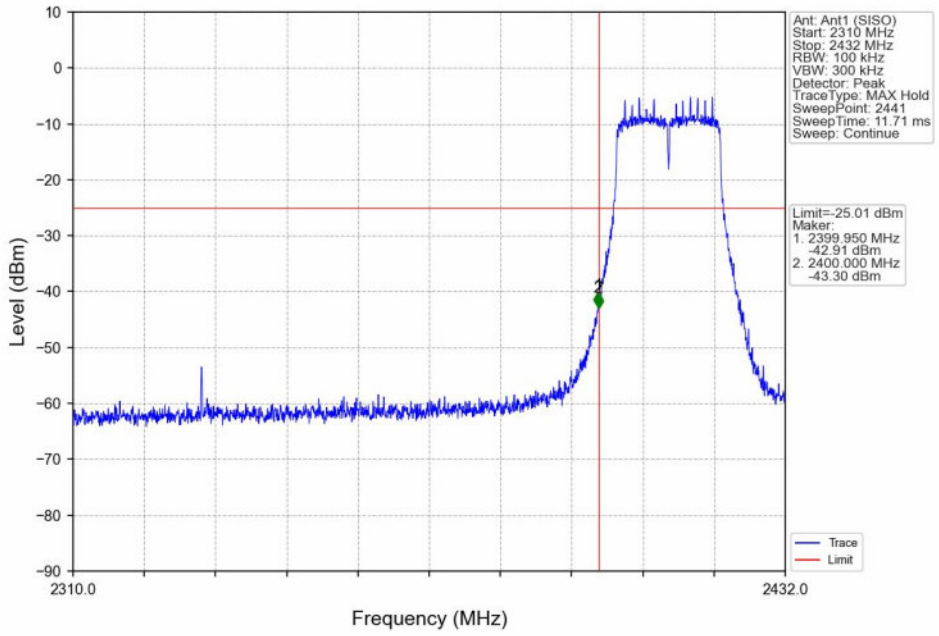
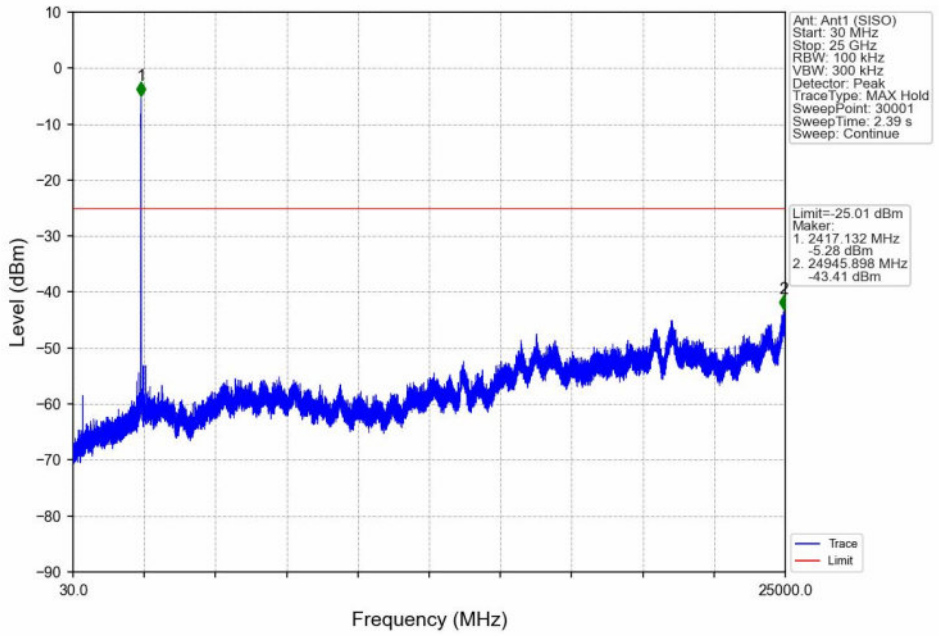


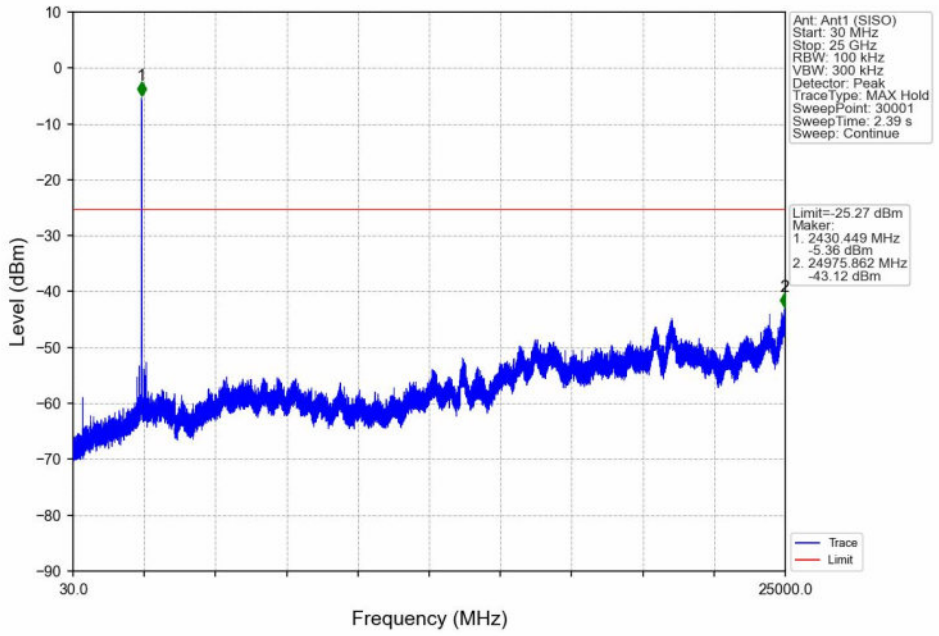
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



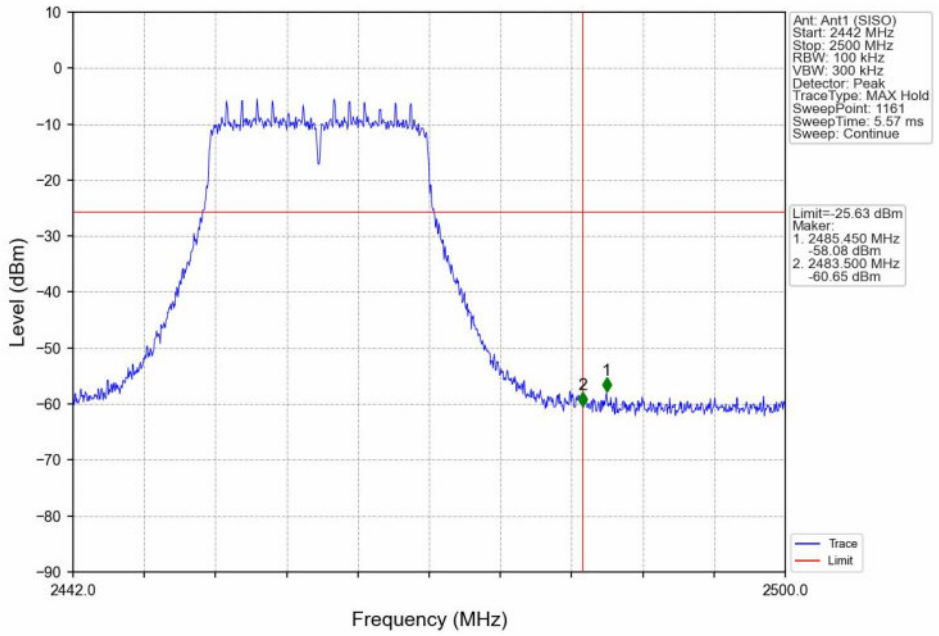
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



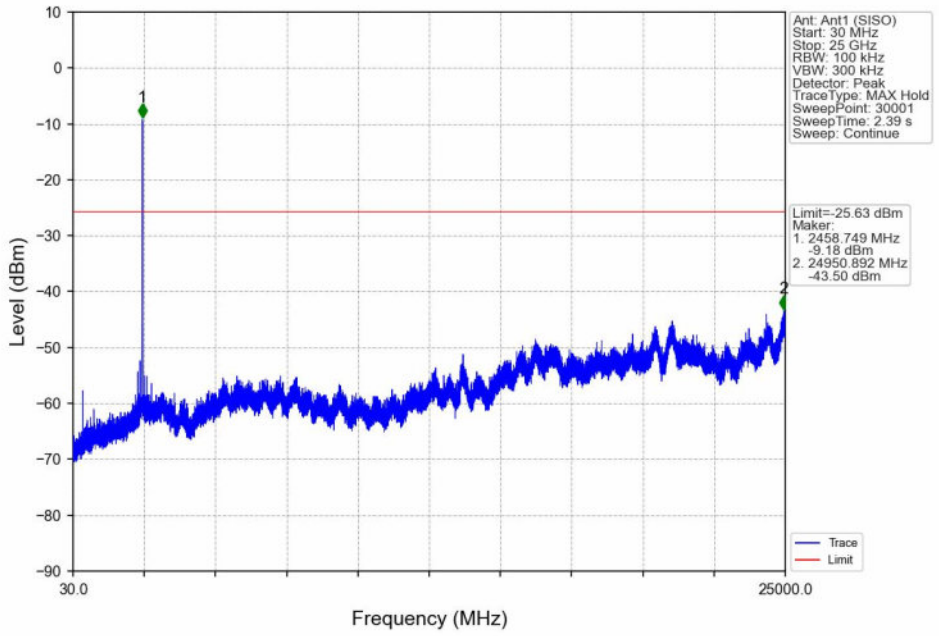
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



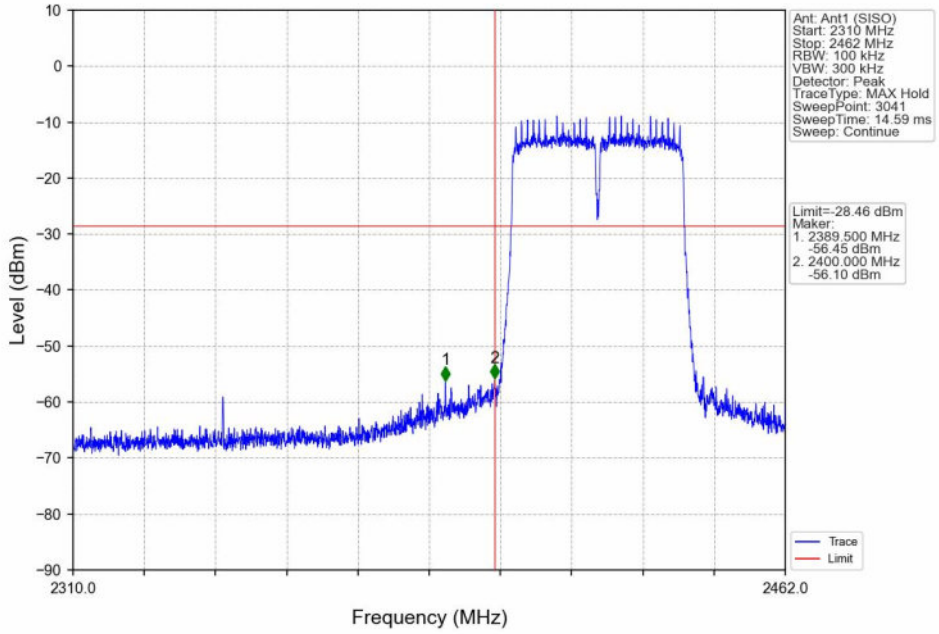
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



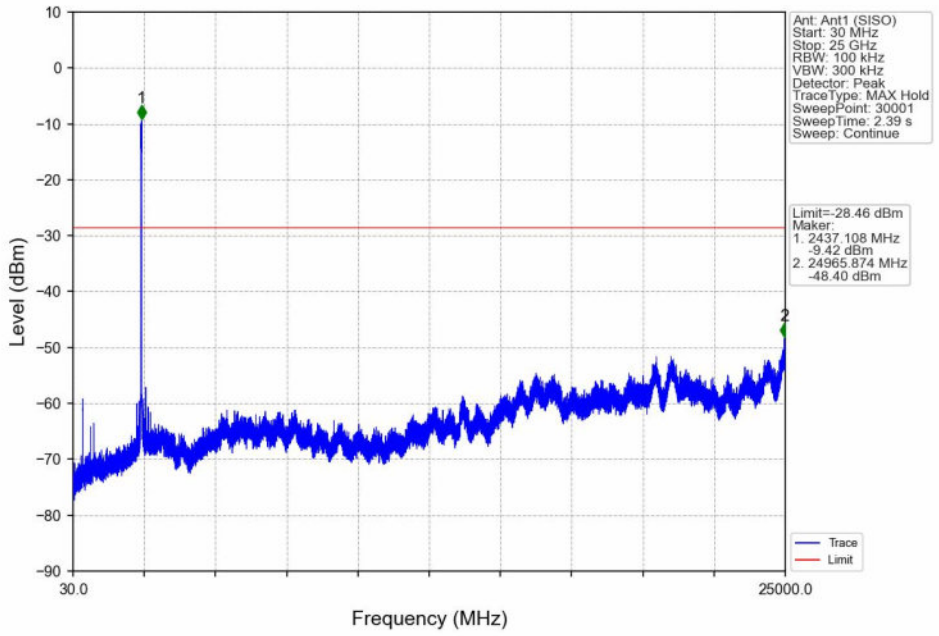
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



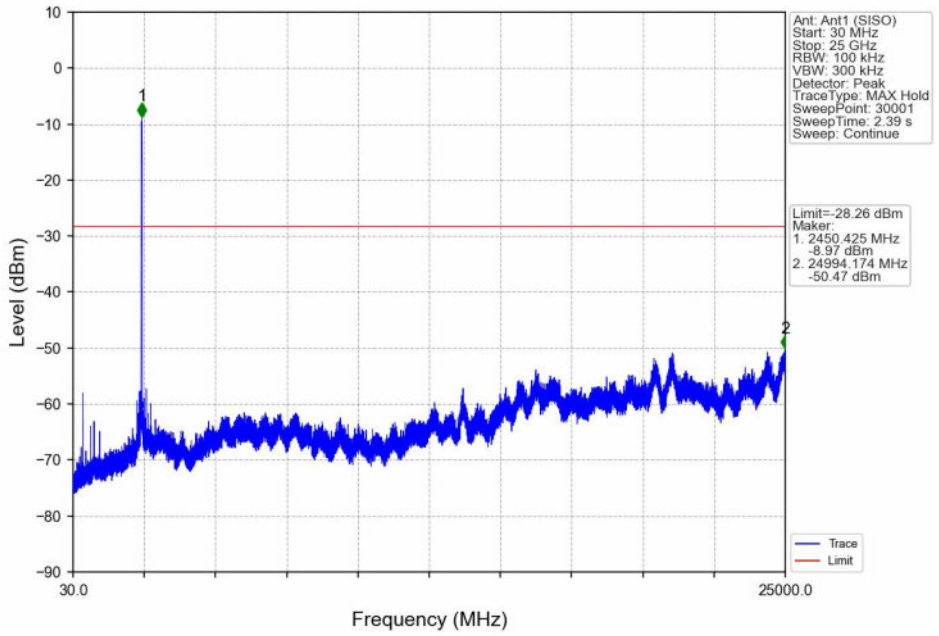
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



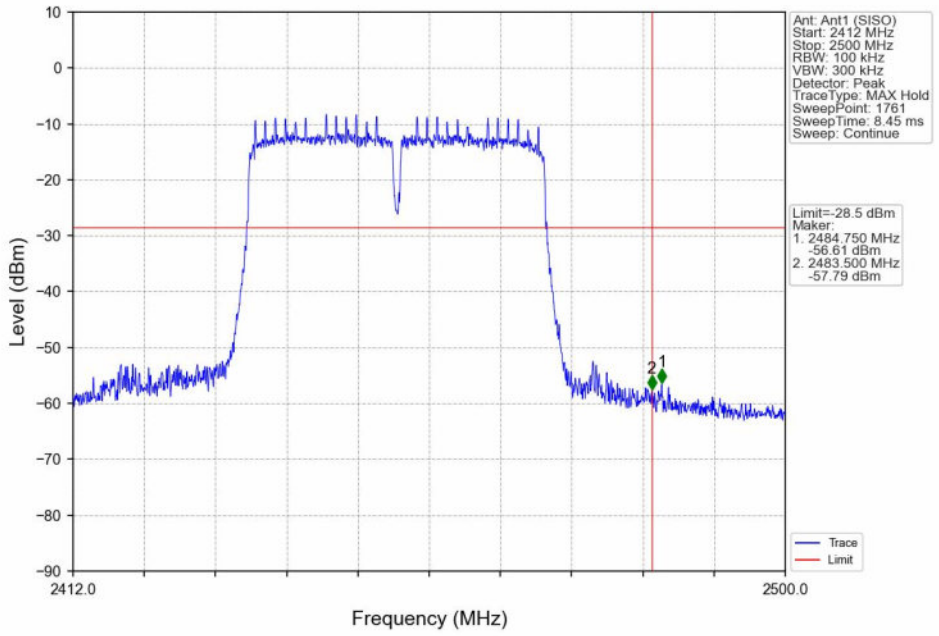
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



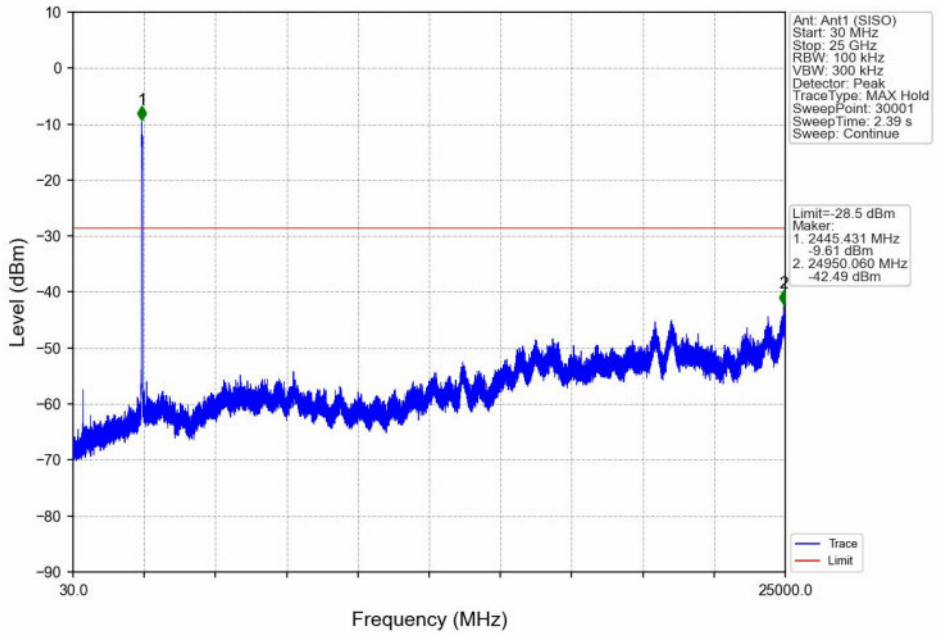
802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



6. Form731

6.1 Test Result

6.1.1 Form731

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2412	2462	0.0293	14.67
2422	2452	0.0241	13.82