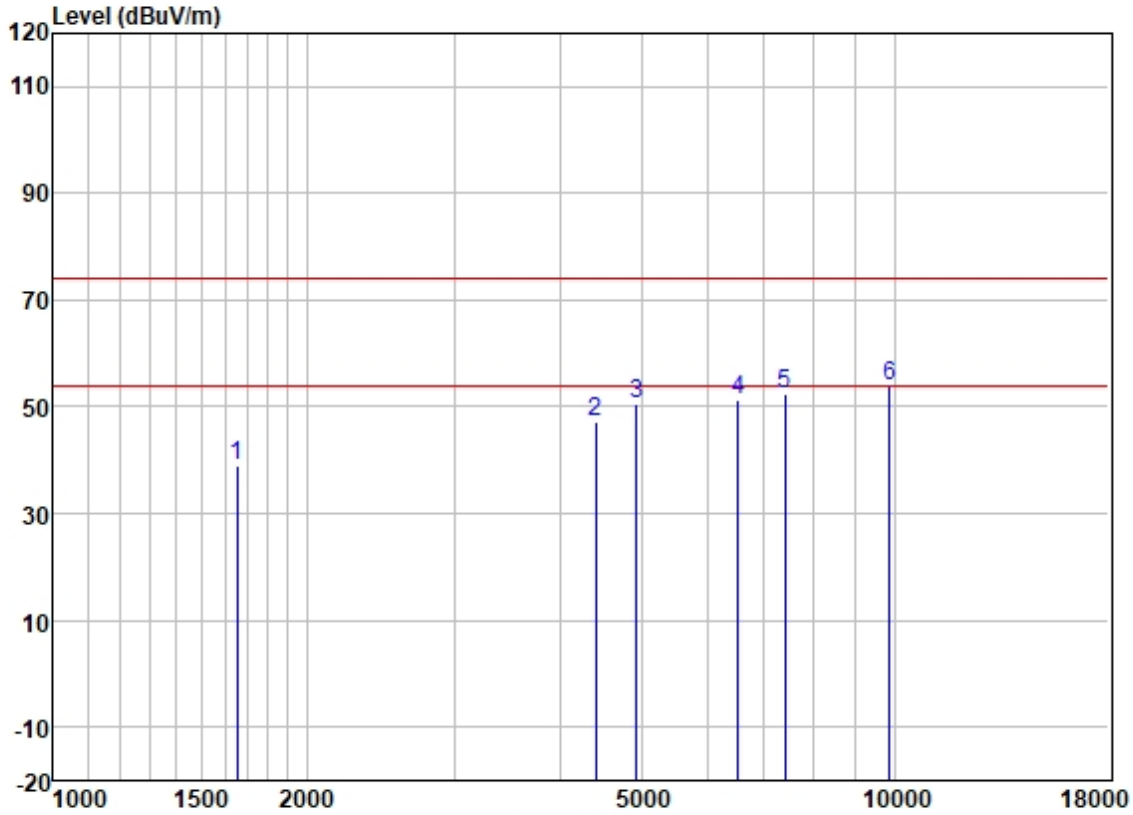
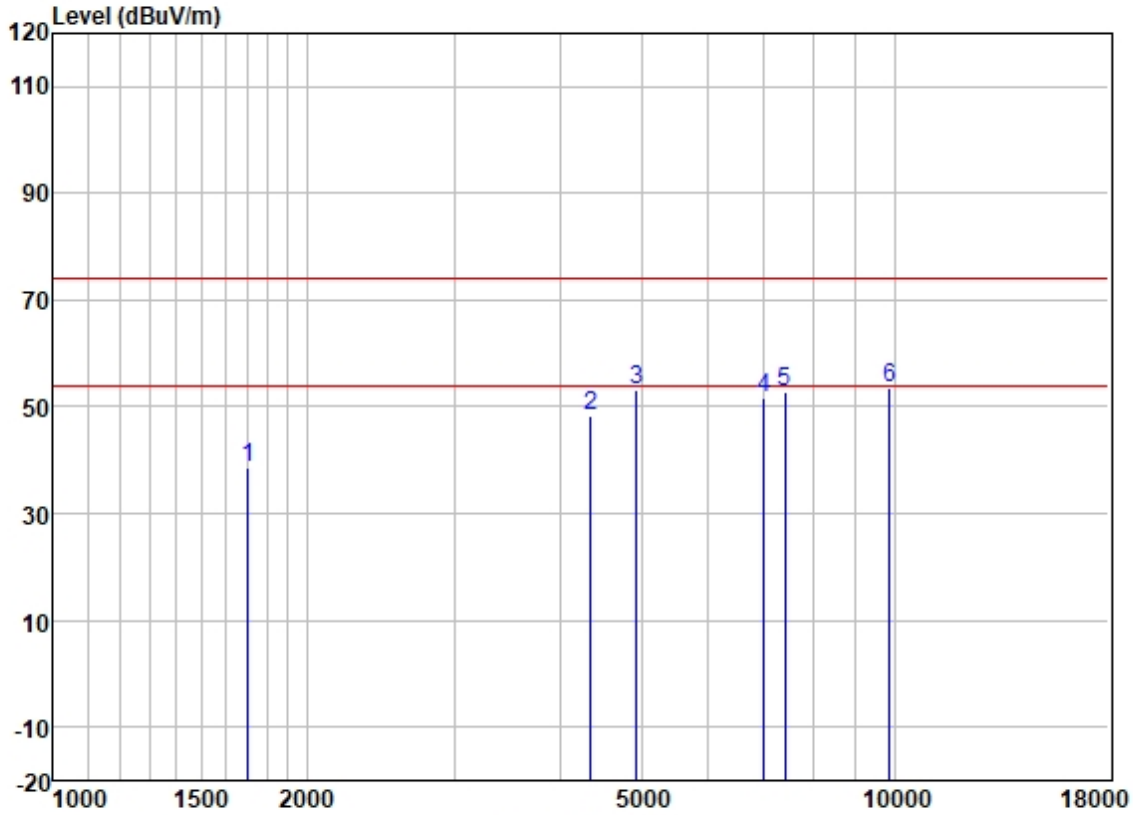
Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:12



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1653.550	48.52	25.64	2.80	37.93	39.03	74.00	-34.97	HORIZONTAL	Peak
2	4417.841	48.71	30.70	4.74	36.81	47.34	74.00	-26.66	HORIZONTAL	Peak
3	4934.000	50.08	31.62	5.60	36.84	50.46	74.00	-23.54	HORIZONTAL	Peak
4	6526.373	48.45	34.03	5.84	37.02	51.30	74.00	-22.70	HORIZONTAL	Peak
5	7401.000	47.63	36.22	6.20	37.46	52.59	74.00	-21.41	HORIZONTAL	Peak
6	9868.000	45.60	38.60	6.98	37.41	53.77	74.00	-20.23	HORIZONTAL	Peak

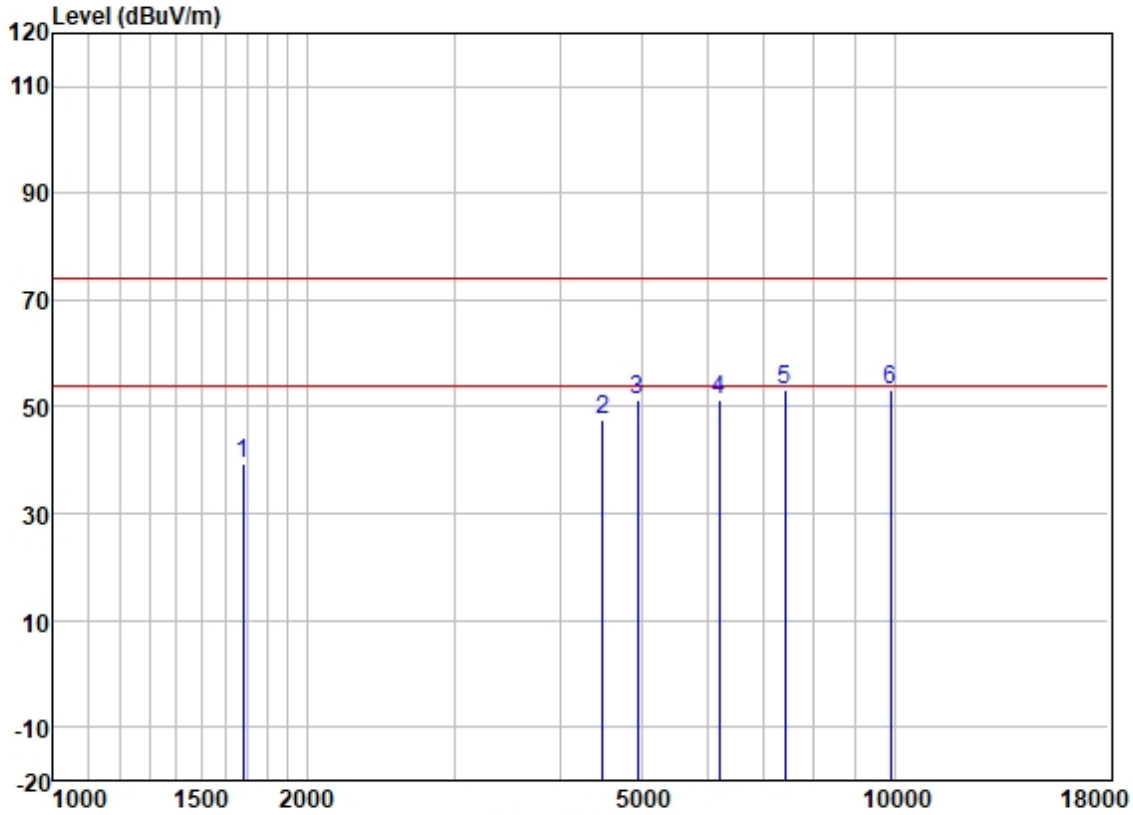
Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:12



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1702.042	48.05	25.72	2.80	37.89	38.68	74.00	-35.32	VERTICAL	Peak
2	4354.454	49.84	30.59	4.68	36.81	48.30	74.00	-25.70	VERTICAL	Peak
3	4934.000	52.75	31.62	5.60	36.84	53.13	74.00	-20.87	VERTICAL	Peak
4	6995.172	48.16	35.00	5.81	37.25	51.72	74.00	-22.28	VERTICAL	Peak
5	7401.000	47.67	36.22	6.20	37.46	52.63	74.00	-21.37	VERTICAL	Peak
6	9868.000	45.31	38.60	6.98	37.41	53.48	74.00	-20.52	VERTICAL	Peak

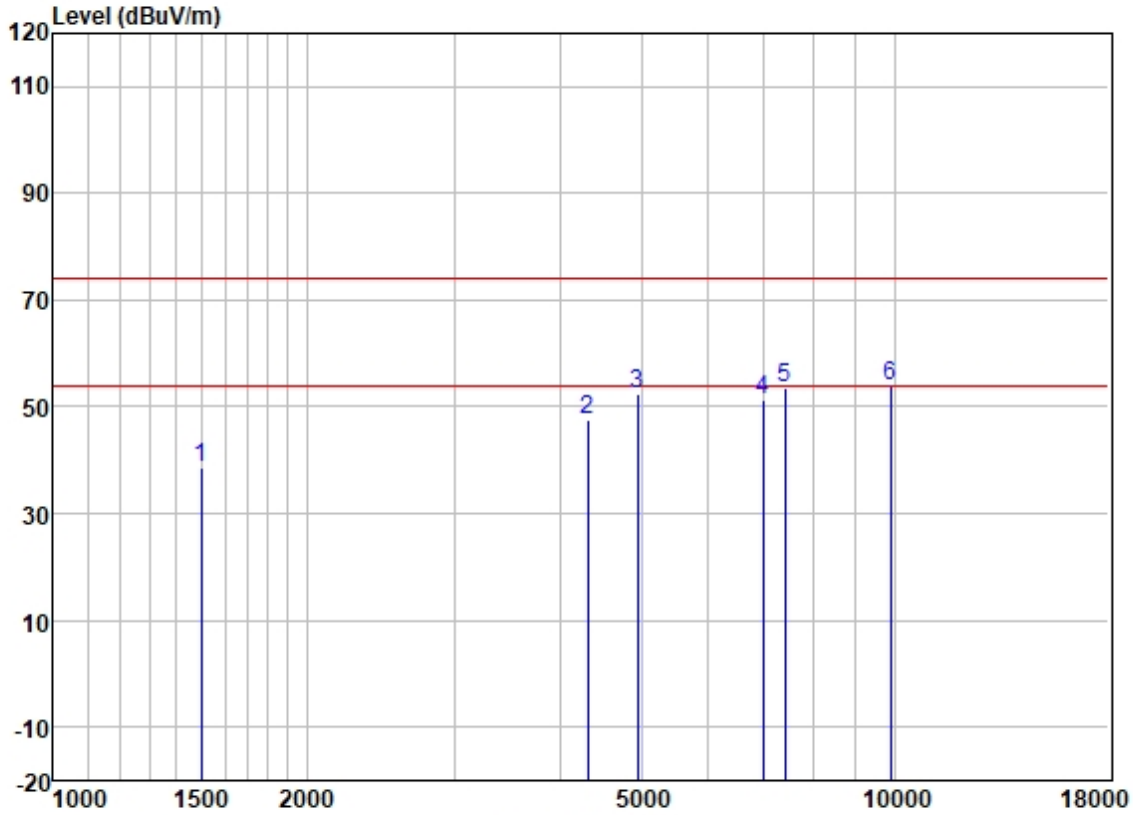
Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:13



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1682.477	48.74	25.68	2.80	37.91	39.31	74.00	-34.69	HORIZONTAL	Peak
2	4495.125	48.51	30.80	5.05	36.82	47.54	74.00	-26.46	HORIZONTAL	Peak
3	4944.000	50.93	31.64	5.62	36.84	51.35	74.00	-22.65	HORIZONTAL	Peak
4	6195.508	49.32	32.96	6.07	36.94	51.41	74.00	-22.59	HORIZONTAL	Peak
5	7416.000	48.20	36.22	6.20	37.47	53.15	74.00	-20.85	HORIZONTAL	Peak
6	9888.000	44.89	38.63	6.97	37.41	53.08	74.00	-20.92	HORIZONTAL	Peak

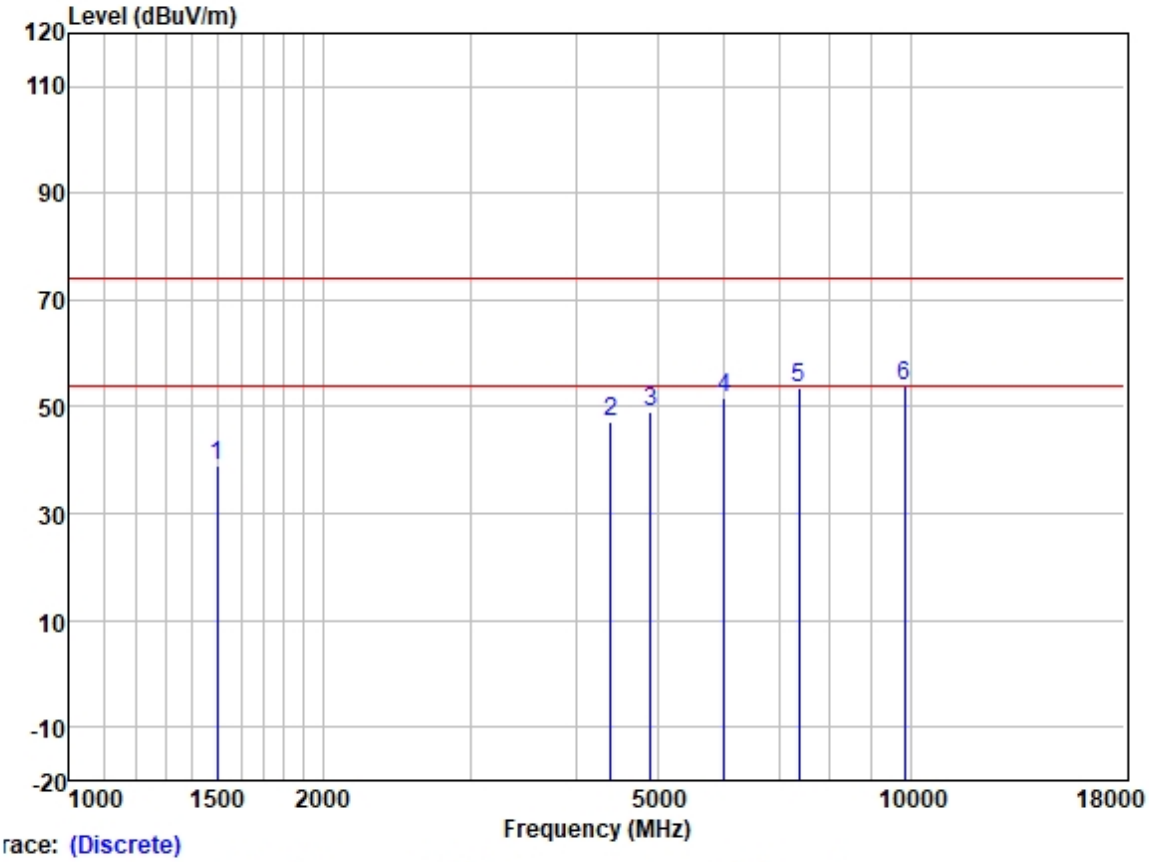
Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:13



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1498.781	48.56	25.50	2.80	38.10	38.76	74.00	-35.24	VERTICAL	Peak
2	4316.859	49.14	30.51	4.66	36.81	47.50	74.00	-26.50	VERTICAL	Peak
3	4944.000	52.07	31.64	5.62	36.84	52.49	74.00	-21.51	VERTICAL	Peak
4	6974.982	47.67	34.97	5.81	37.23	51.22	74.00	-22.78	VERTICAL	Peak
5	7416.000	48.66	36.22	6.20	37.47	53.61	74.00	-20.39	VERTICAL	Peak
6	9888.000	45.56	38.63	6.97	37.41	53.75	74.00	-20.25	VERTICAL	Peak

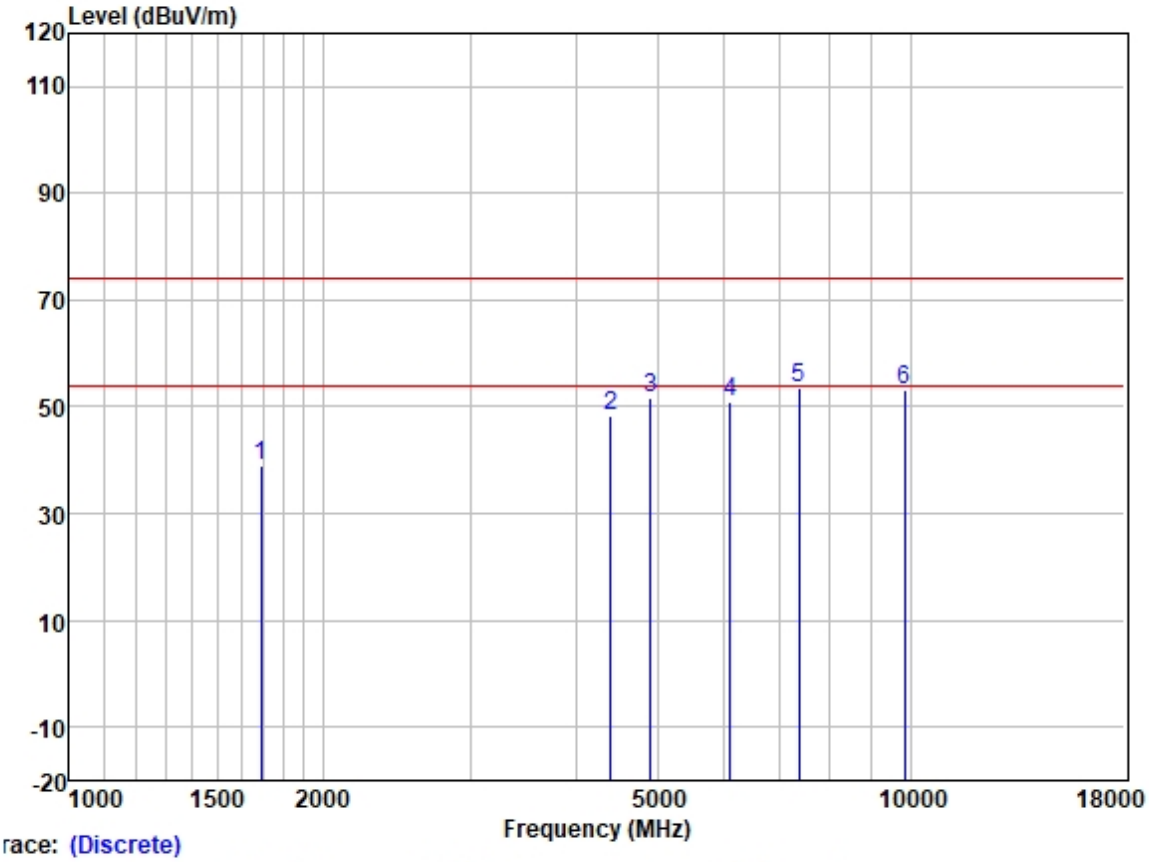
Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:10



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1498.781	48.83	25.50	2.80	38.10	39.03	74.00	-34.97	HORIZONTAL	Peak
2	4405.090	48.75	30.68	4.70	36.81	47.32	74.00	-26.68	HORIZONTAL	Peak
3	4914.000	48.65	31.60	5.58	36.84	48.99	74.00	-25.01	HORIZONTAL	Peak
4	6001.626	49.99	32.40	6.20	36.90	51.69	74.00	-22.31	HORIZONTAL	Peak
5	7371.000	48.75	36.12	6.17	37.45	53.59	74.00	-20.41	HORIZONTAL	Peak
6	9828.000	45.70	38.58	6.99	37.41	53.86	74.00	-20.14	HORIZONTAL	Peak

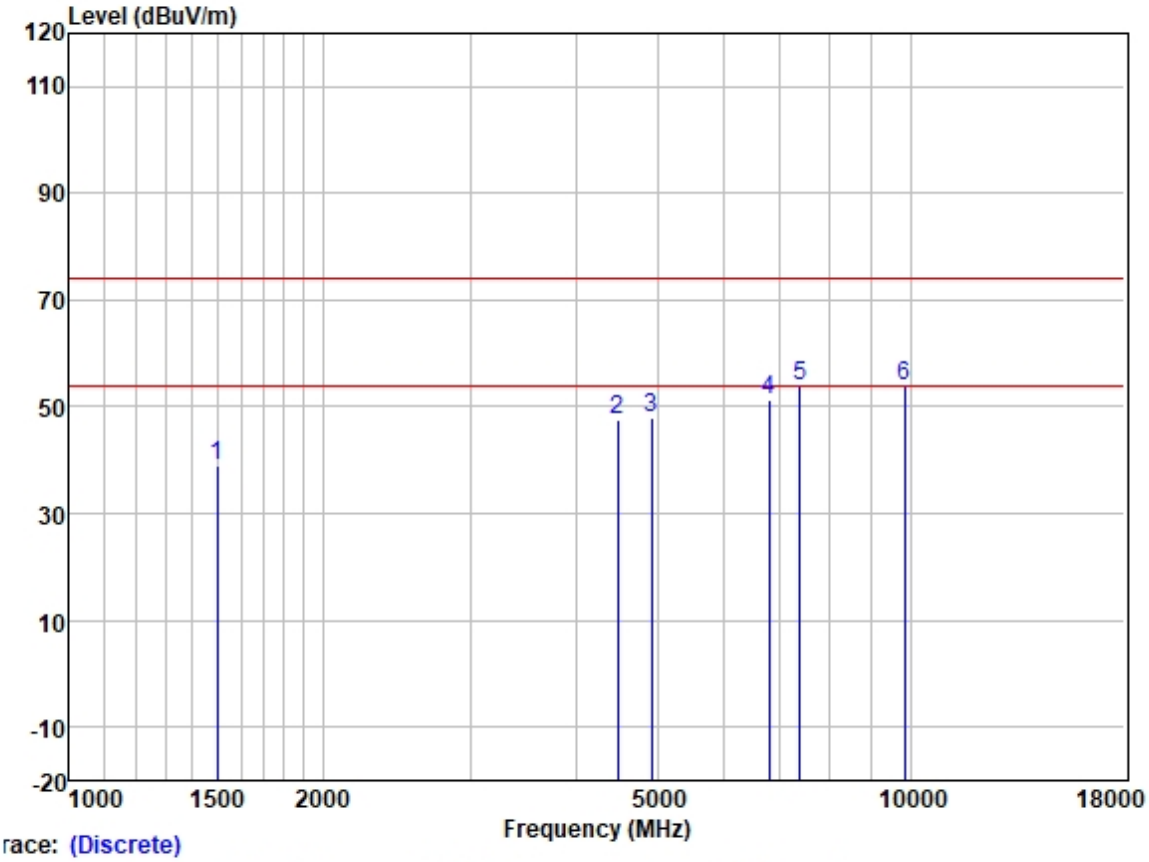
Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:10



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1692.231	48.49	25.70	2.80	37.89	39.10	74.00	-34.90	VERTICAL	Peak
2	4405.090	49.64	30.68	4.70	36.81	48.21	74.00	-25.79	VERTICAL	Peak
3	4914.000	51.31	31.60	5.58	36.84	51.65	74.00	-22.35	VERTICAL	Peak
4	6106.616	49.15	32.66	6.14	36.92	51.03	74.00	-22.97	VERTICAL	Peak
5	7371.000	48.89	36.12	6.17	37.45	53.73	74.00	-20.27	VERTICAL	Peak
6	9828.000	45.02	38.58	6.99	37.41	53.18	74.00	-20.82	VERTICAL	Peak

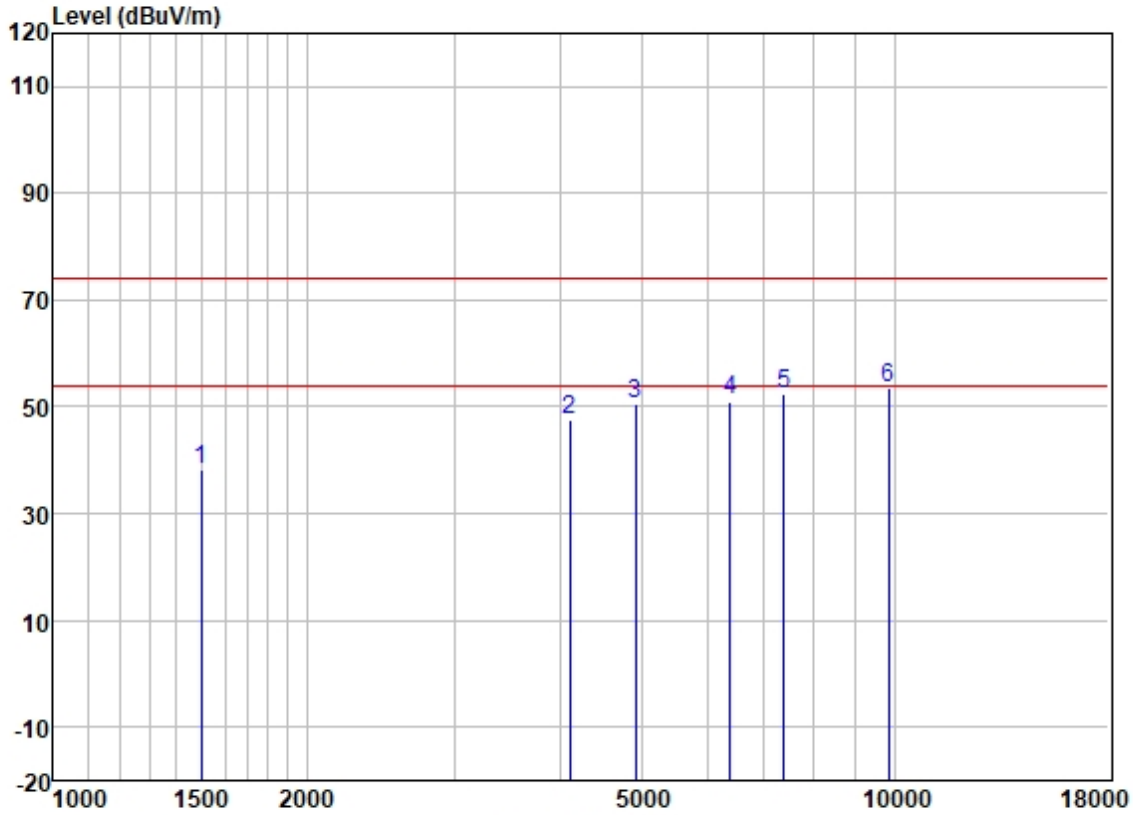
Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:11



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1498.781	48.85	25.50	2.80	38.10	39.05	74.00	-34.95	HORIZONTAL	Peak
2	4482.150	48.62	30.78	4.99	36.81	47.58	74.00	-26.42	HORIZONTAL	Peak
3	4924.000	47.71	31.62	5.60	36.84	48.09	74.00	-25.91	HORIZONTAL	Peak
4	6795.879	48.10	34.66	5.82	37.12	51.46	74.00	-22.54	HORIZONTAL	Peak
5	7386.000	48.93	36.17	6.19	37.45	53.84	74.00	-20.16	HORIZONTAL	Peak
6	9848.000	45.59	38.58	6.99	37.41	53.75	74.00	-20.25	HORIZONTAL	Peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:11



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1498.781	48.03	25.50	2.80	38.10	38.23	74.00	-35.77	VERTICAL	Peak
2	4109.872	49.66	29.96	4.60	36.80	47.42	74.00	-26.58	VERTICAL	Peak
3	4924.000	50.15	31.62	5.60	36.84	50.53	74.00	-23.47	VERTICAL	Peak
4	6377.195	48.51	33.68	5.91	36.98	51.12	74.00	-22.88	VERTICAL	Peak
5	7386.000	47.67	36.17	6.19	37.45	52.58	74.00	-21.42	VERTICAL	Peak
6	9848.000	45.44	38.58	6.99	37.41	53.60	74.00	-20.40	VERTICAL	Peak

8 Test Setup Photo

Refer to appendix – Test Setup Photos for GZCR211021432AT

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center EEC Laboratory.
No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86–20) 82155555 f (86–20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86–20) 82155555 f (86–20) 82075058 sgs.china@sgs.com

9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR211021432AT

10 Appendix

1. Duty Cycle

1.1 Ant1

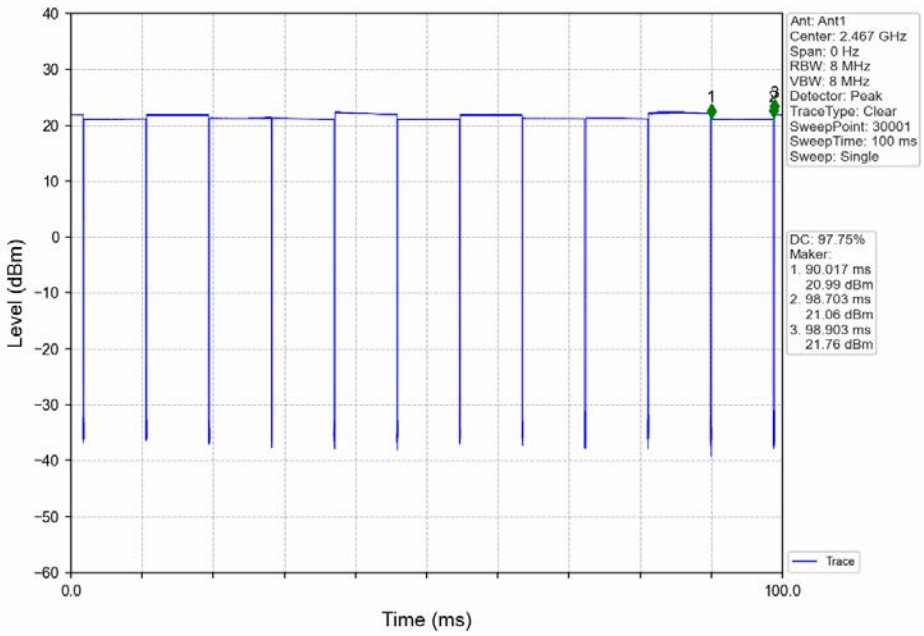
1.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
11B	SISO	2467	8.686	8.886	97.75	0.10	1.41
		2472	8.690	8.870	97.97	0.09	1.19
11G	SISO	2467	1.440	1.646	87.48	0.58	7.25
		2472	1.440	1.655	87.01	0.60	7.73
11N20	MIMO	2467	1.336	1.551	86.14	0.65	7.66
		2472	1.335	1.542	86.58	0.63	6.53
11N40	MIMO	2457	0.656	0.844	77.73	1.09	11.46
		2462	0.656	0.861	76.19	1.18	10.93

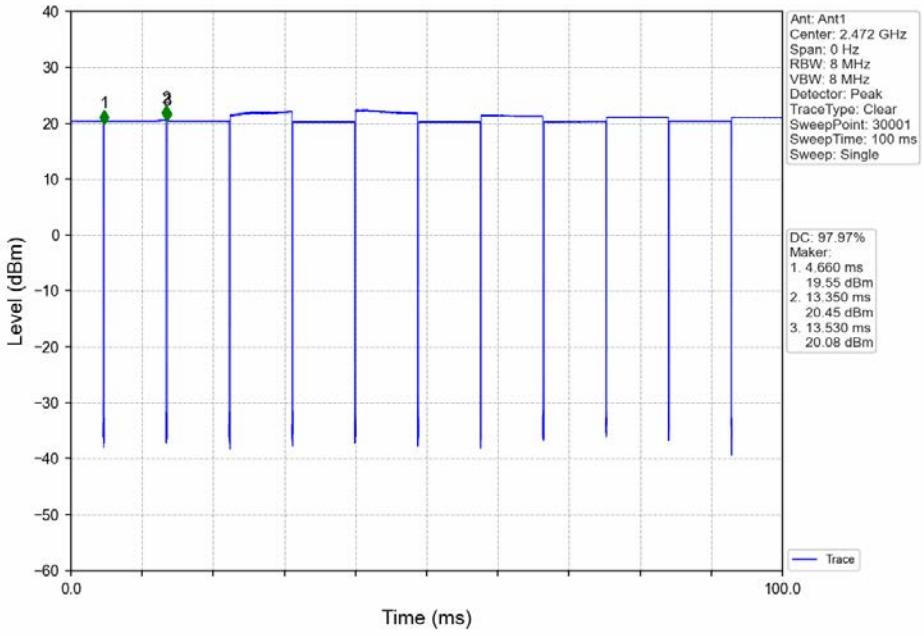
Note: Both antennas have been tested, only recorded the worst test data in this report.

1.1.2 Test Graph

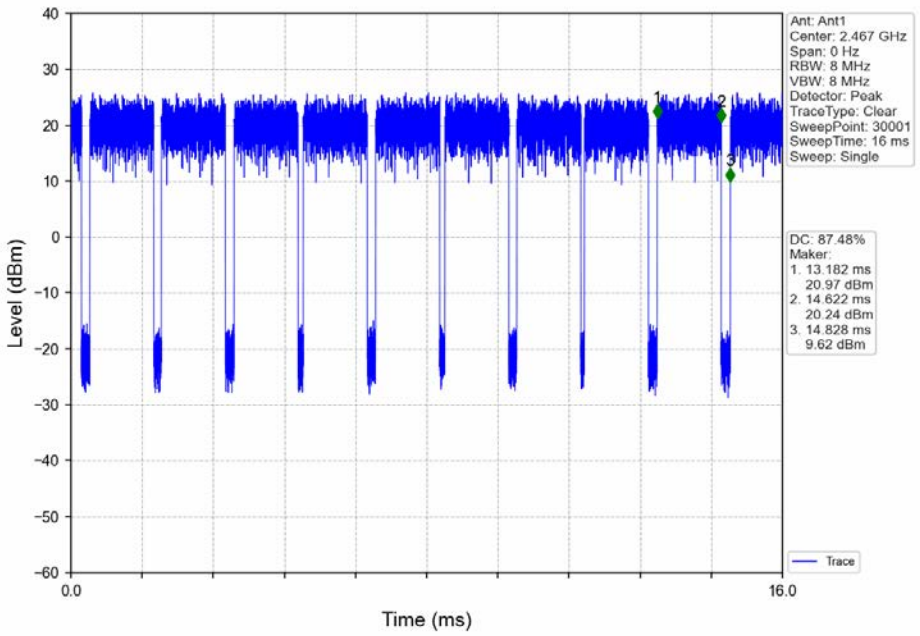
11B_MCH_2467MHz_Ant1_NTNV



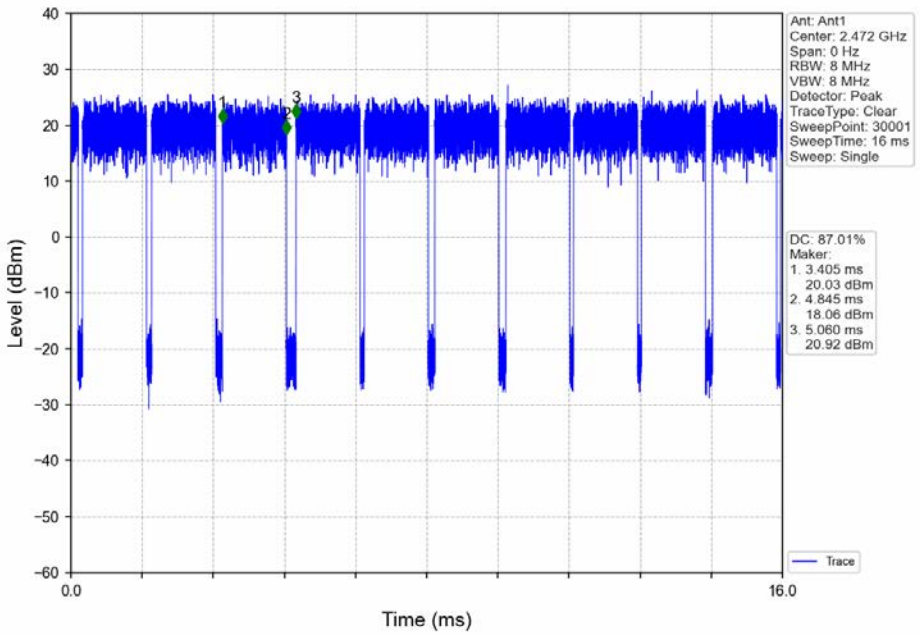
11B_HCH_2472MHz_Ant1_NTNV



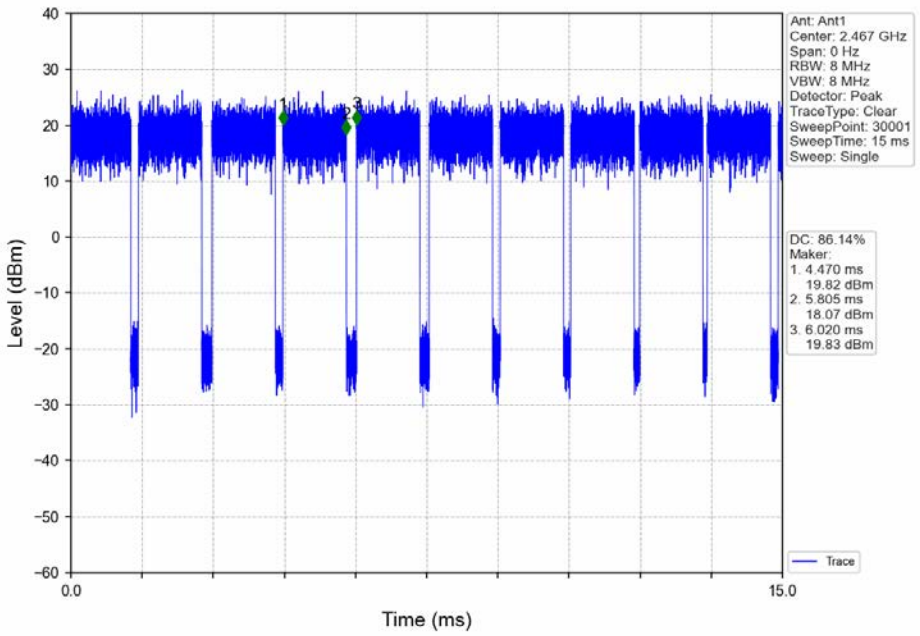
11G_MCH_2467MHz_Ant1_NTNV



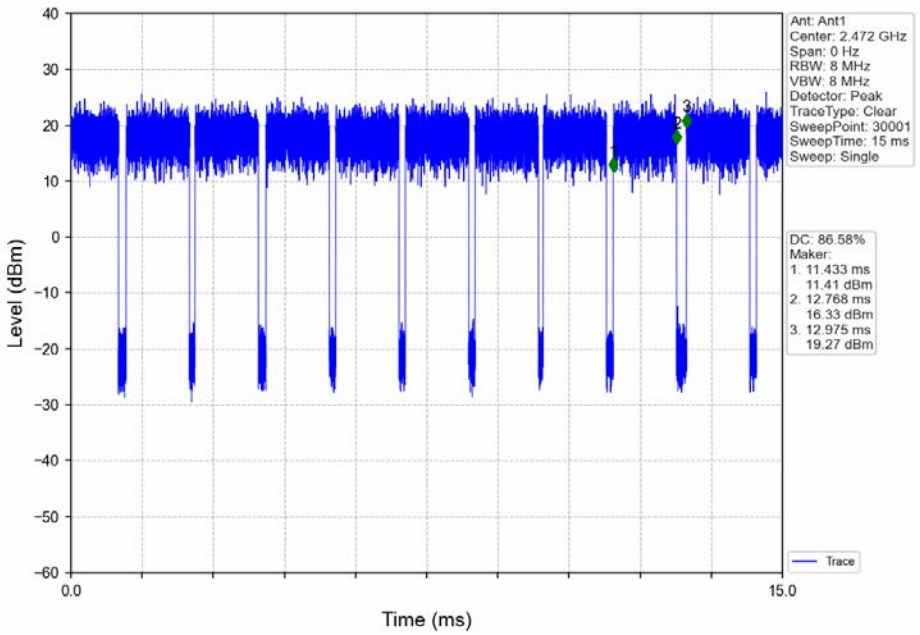
11G_HCH_2472MHz_Ant1_NTNV



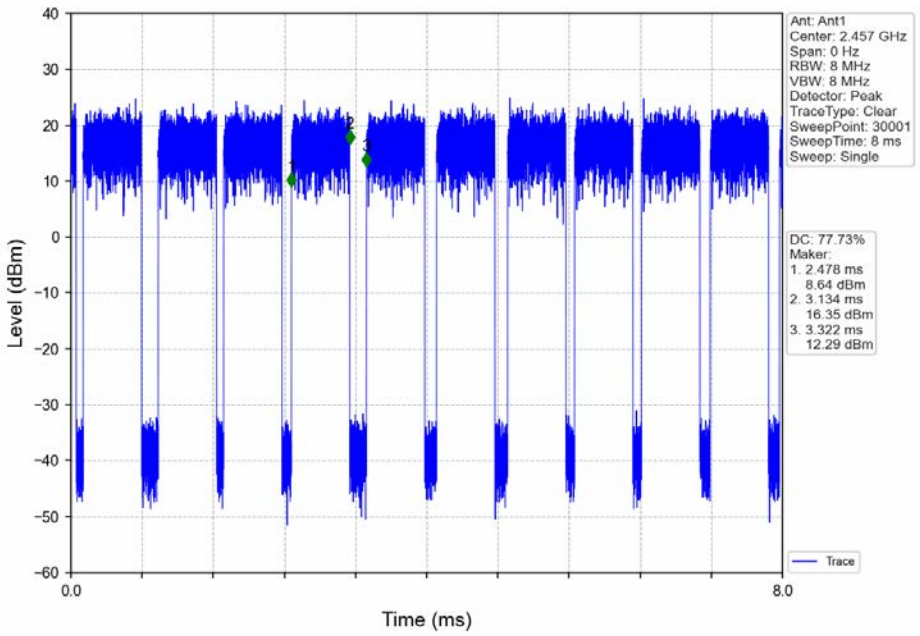
11N20_MCH_2467MHz_Ant1_NTNV



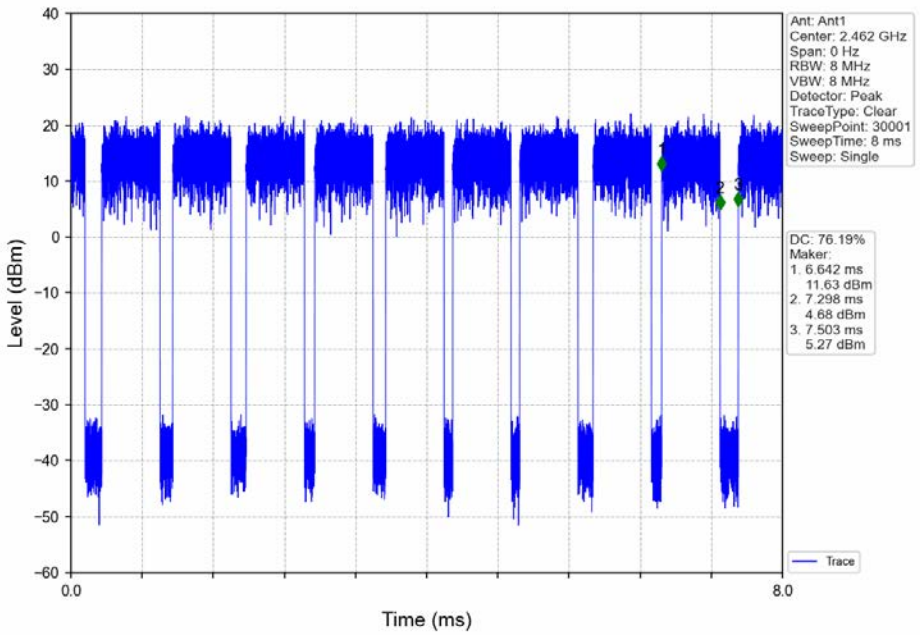
11N20_HCH_2472MHz_Ant1_NTNV



11N40_MCH_2457MHz_Ant1_NTNV



11N40_HCH_2462MHz_Ant1_NTNV



2. Bandwidth

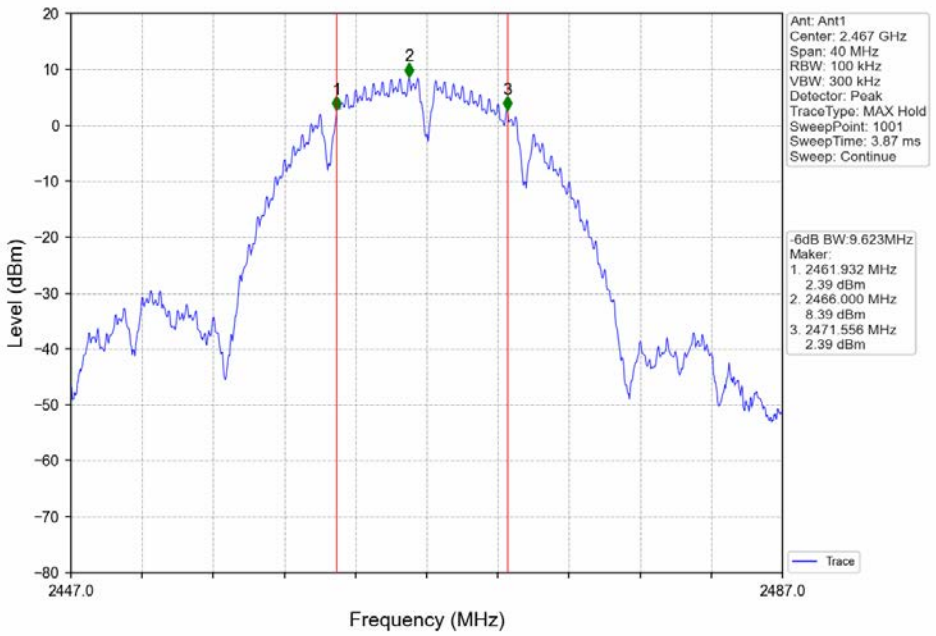
2.1 6dB BW

2.1.1 Test Result

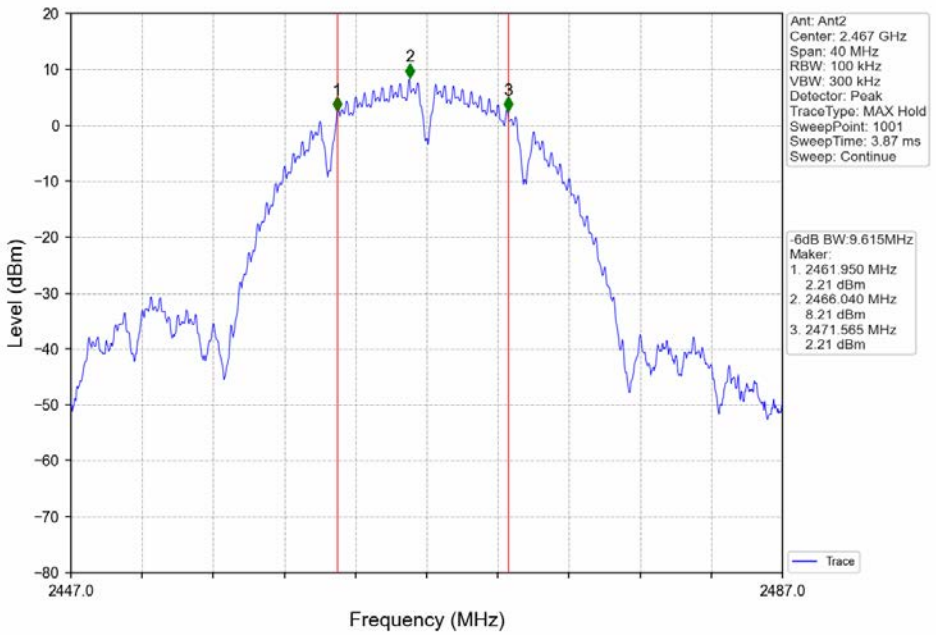
Mode	TX Type	Frequency (MHz)	Ant	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
11B	SISO	2467	1	9.623	>=0.5	Pass
			2	9.615	>=0.5	Pass
		2472	1	10.089	>=0.5	Pass
			2	9.616	>=0.5	Pass
11G	SISO	2467	1	15.445	>=0.5	Pass
			2	15.776	>=0.5	Pass
		2472	1	15.161	>=0.5	Pass
			2	15.132	>=0.5	Pass
11N20	MIMO	2467	1	16.104	>=0.5	Pass
			2	17.000	>=0.5	Pass
		2472	1	15.804	>=0.5	Pass
			2	16.349	>=0.5	Pass
11N40	MIMO	2457	1	16.372	>=0.5	Pass
			2	17.634	>=0.5	Pass
		2462	1	20.128	>=0.5	Pass
			2	22.602	>=0.5	Pass

2.1.2 Test Graph

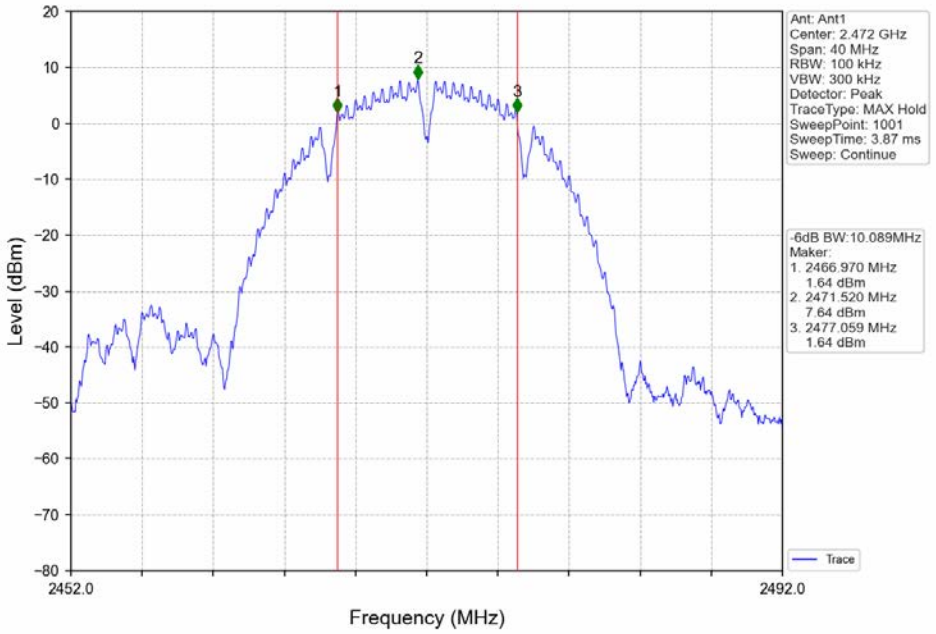
11B_MCH_2467MHz_Ant1_NTNV



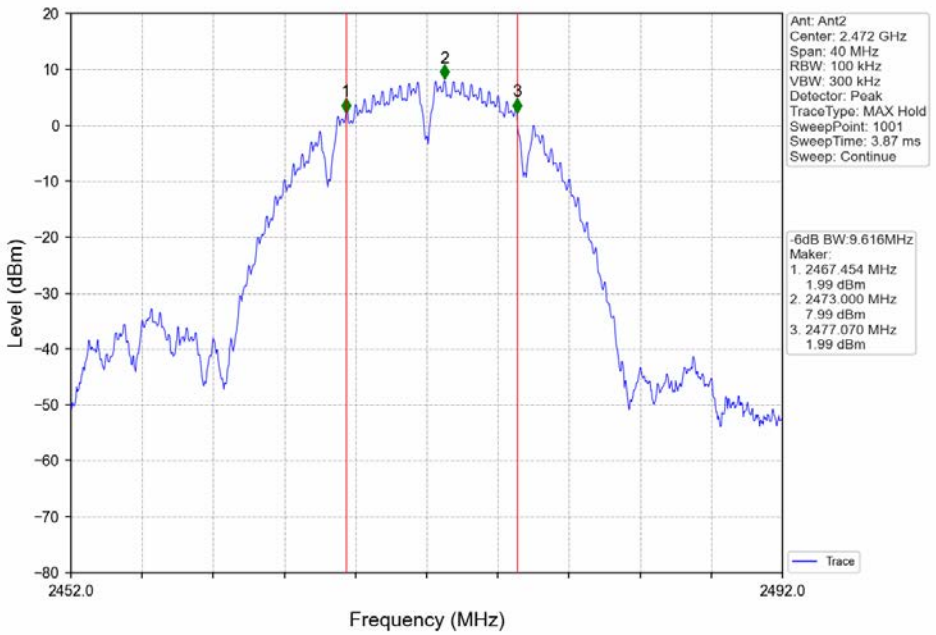
11B_MCH_2467MHz_Ant2_NTNV



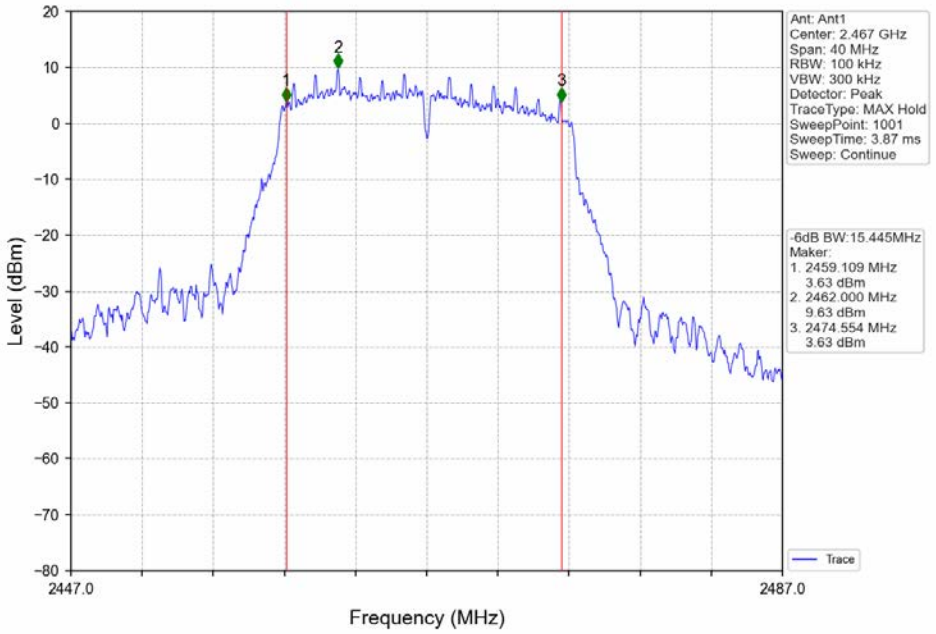
11B_HCH_2472MHz_Ant1_NTNV



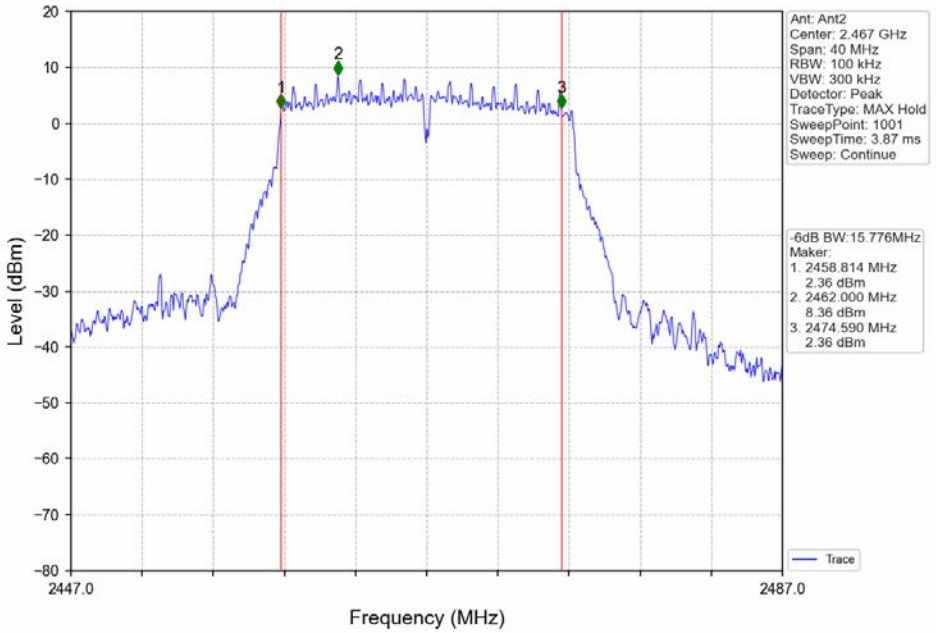
11B_HCH_2472MHz_Ant2_NTNV



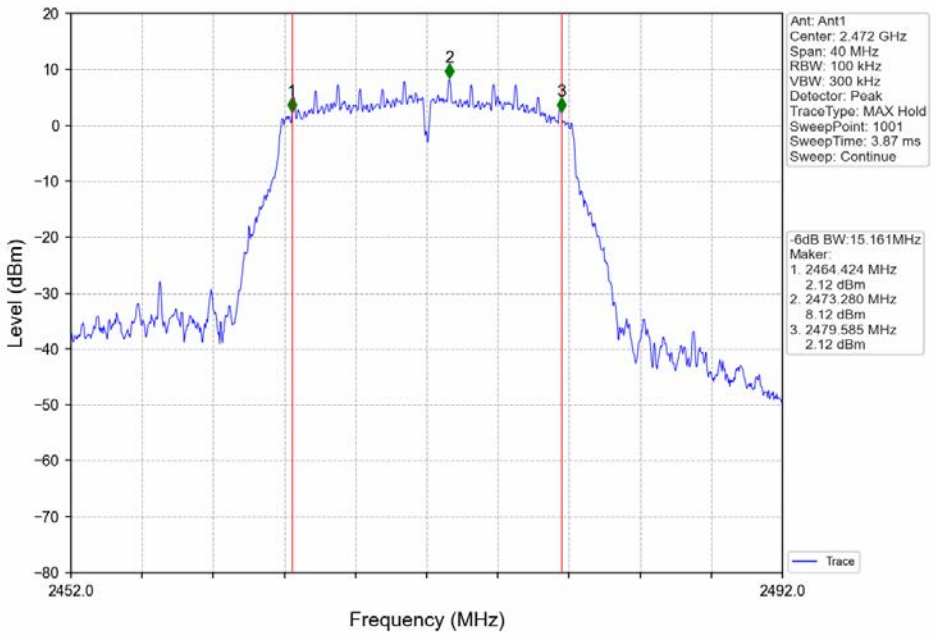
11G_MCH_2467MHz_Ant1_NTNV



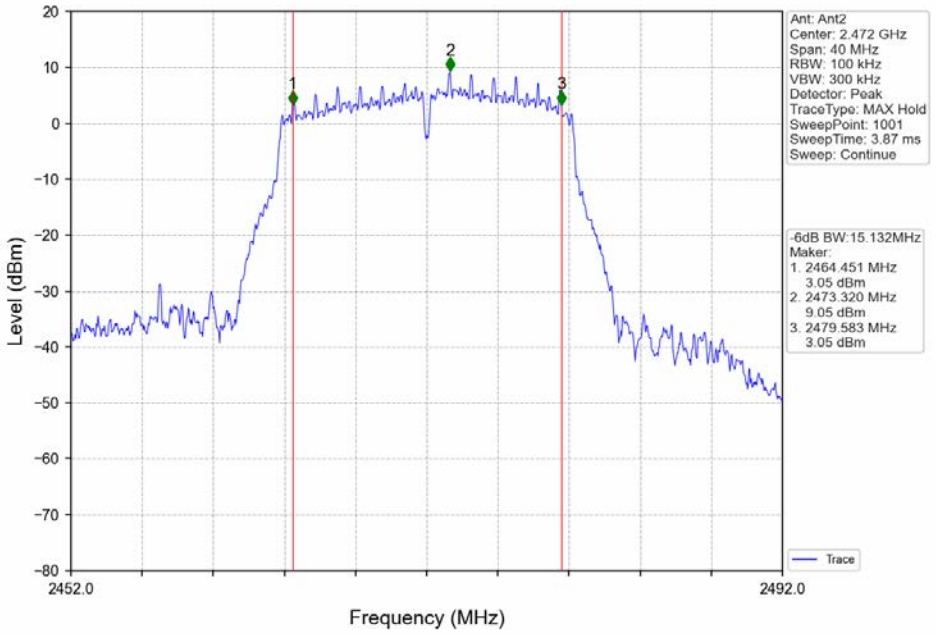
11G_MCH_2467MHz_Ant2_NTNV



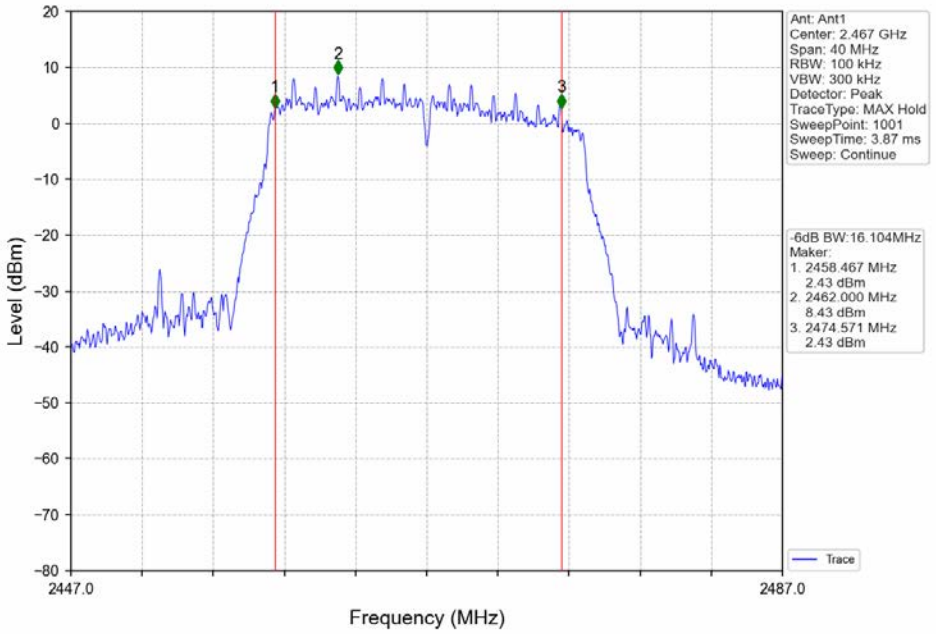
11G_HCH_2472MHz_Ant1_NTNV



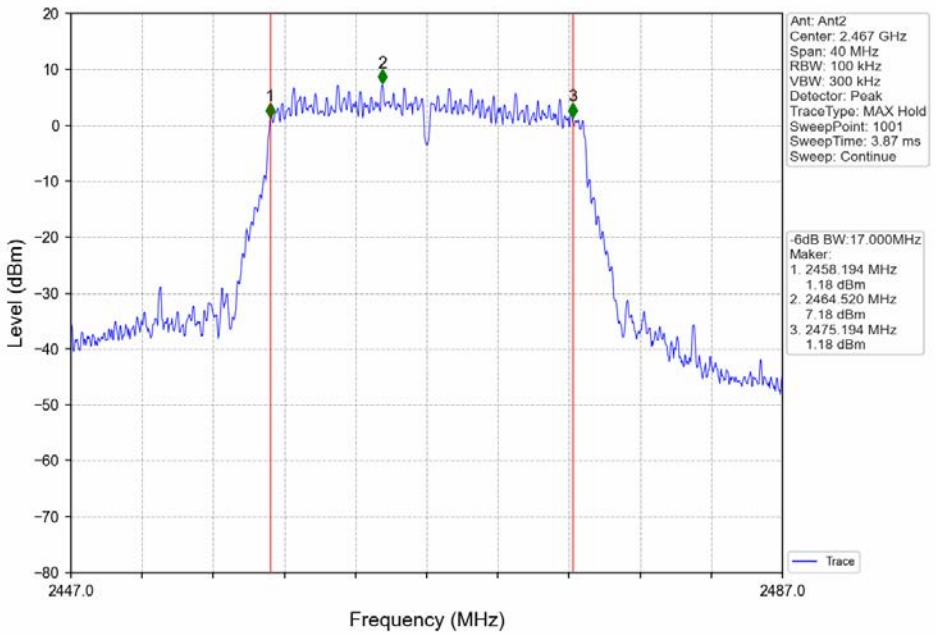
11G_HCH_2472MHz_Ant2_NTNV



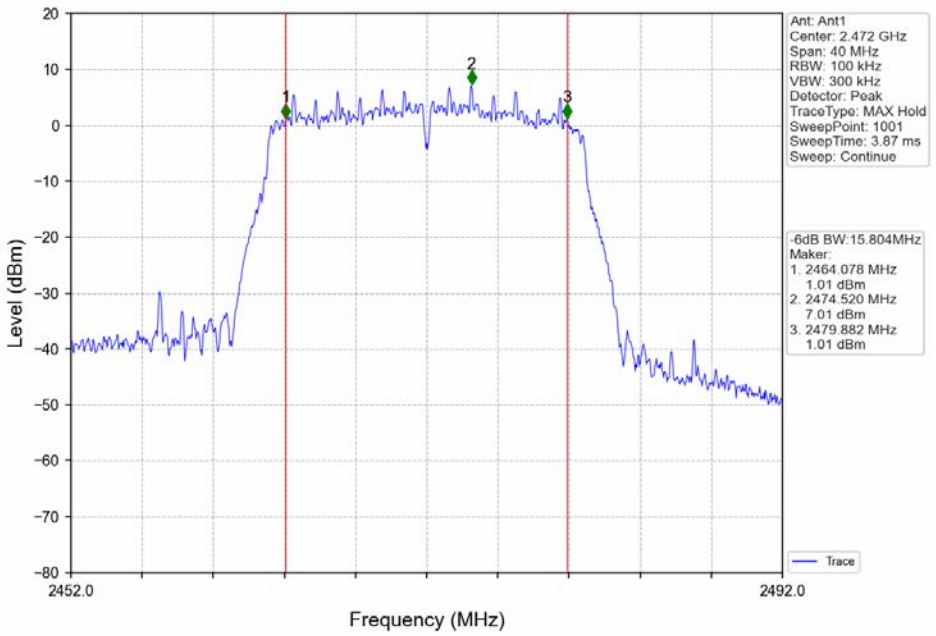
11N20_MCH_2467MHz_Ant1_NTNV



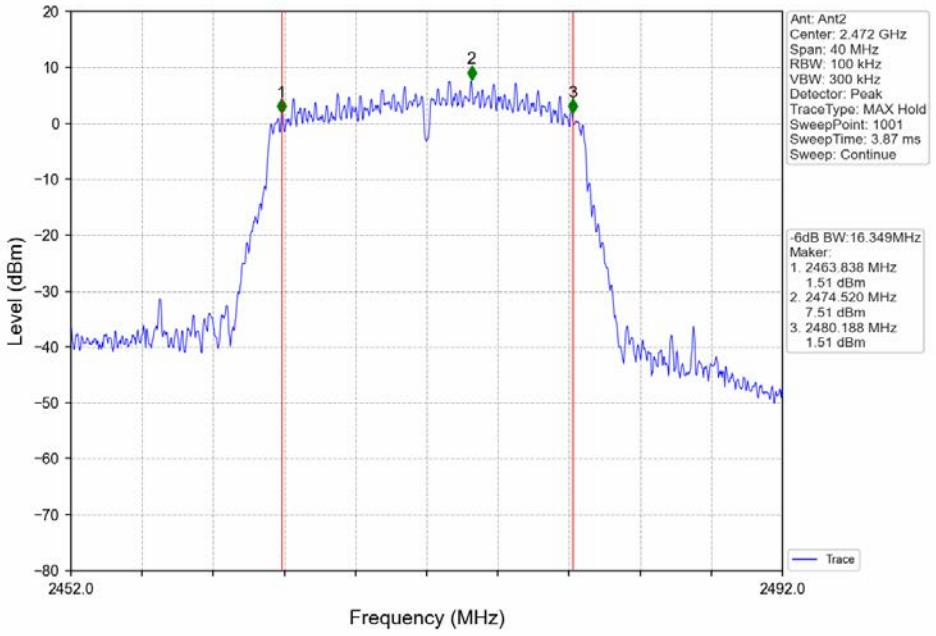
11N20_MCH_2467MHz_Ant2_NTNV



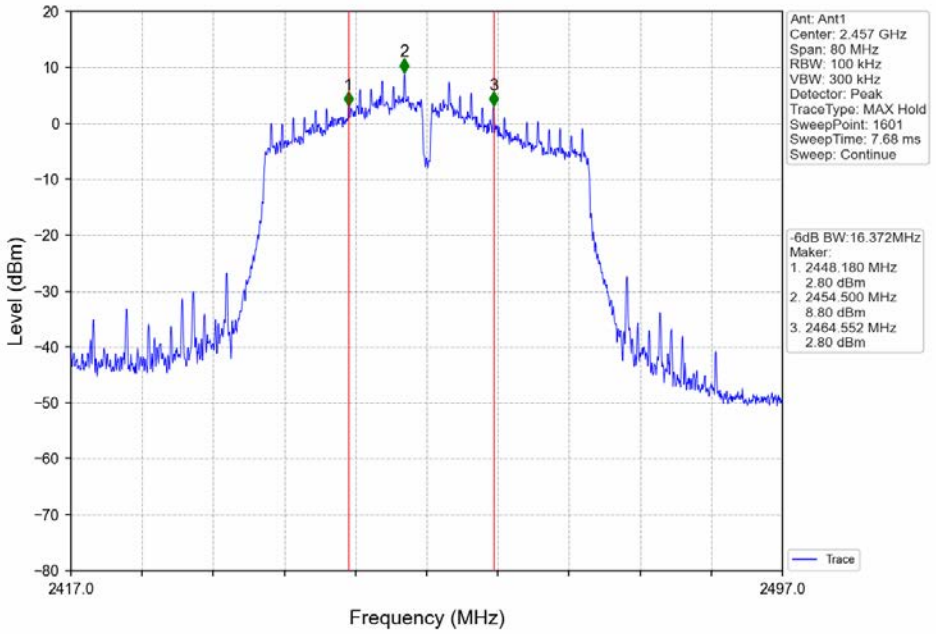
11N20_HCH_2472MHz_Ant1_NTNV



11N20_HCH_2472MHz_Ant2_NTNV



11N40_MCH_2457MHz_Ant1_NTNV



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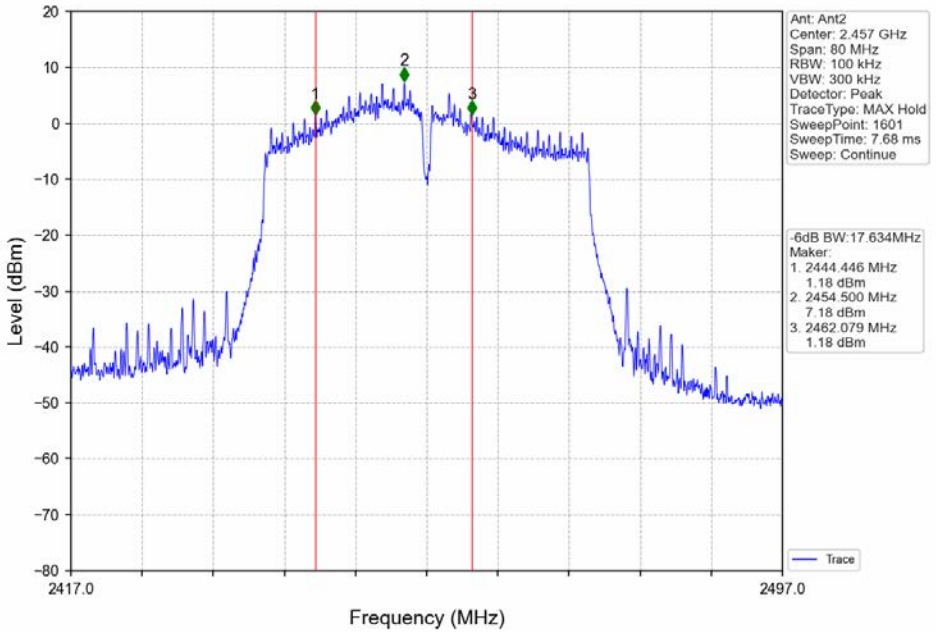
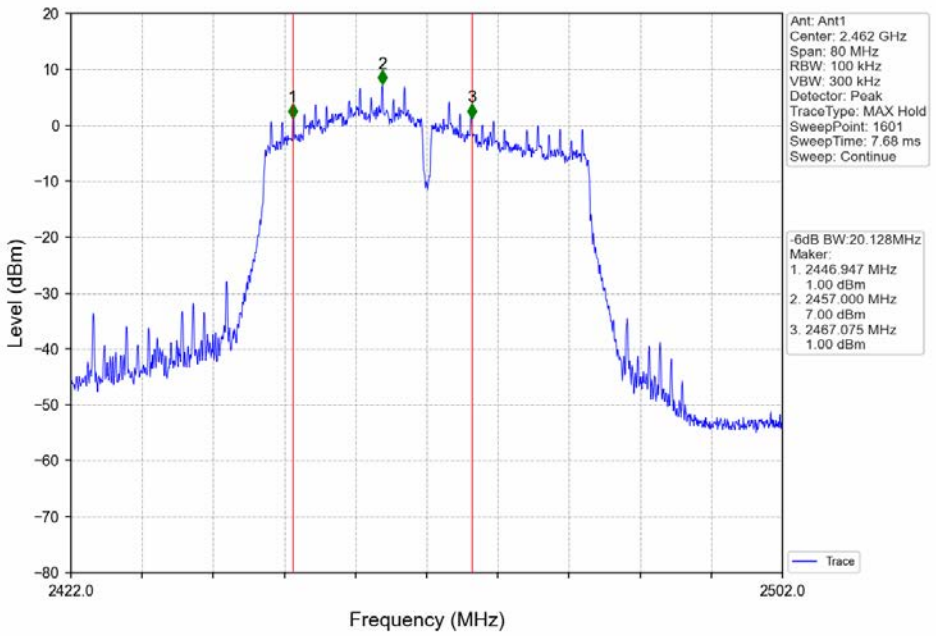
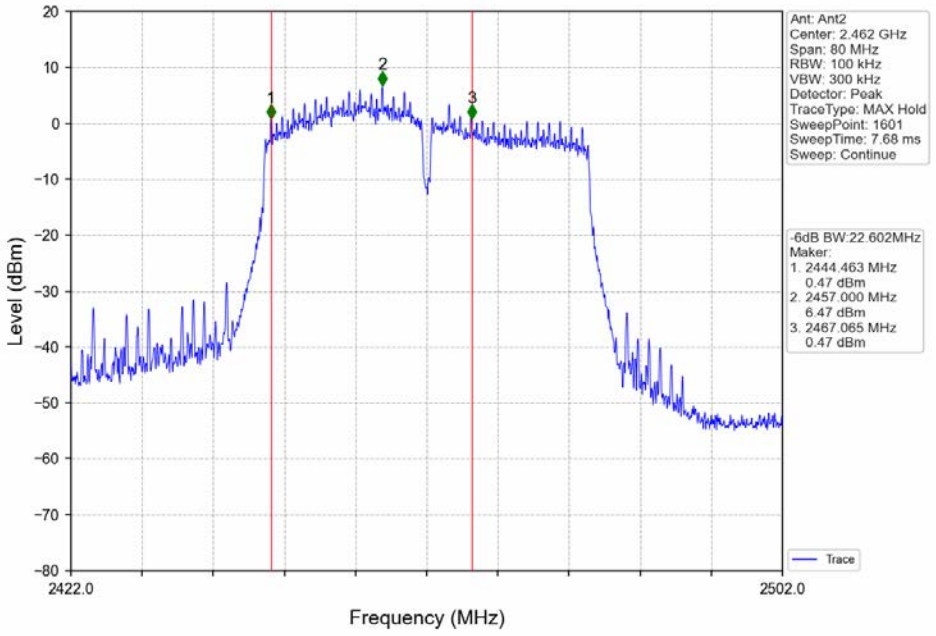


11N40_HCH_2462MHz_Ant1_NTNV



11N40_HCH_2462MHz_Ant2_NTNV



3. Maximum Conducted Output Power

3.1 Power

3.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Power Setting	Maximum Average Conducted Output Power (dBm)				Verdict
				Ant1	Ant2	MIMO	Limit	
11B	SISO	2467	21	18.04	17.55	/	<=30	Pass
		2472	21	17.32	17.59	/	<=30	Pass
11G	SISO	2467	25	19.46	19.11	/	<=30	Pass
		2472	25	18.68	19.14	/	<=30	Pass
11N20	MIMO	2467	23	18.37	18.24	21.32	<=29.79	Pass
		2472	23	17.53	18.16	20.87	<=29.79	Pass
11N40	MIMO	2457	20	19.07	18.08	21.61	<=29.79	Pass
		2462	20	17.99	18.09	21.05	<=29.79	Pass

Note:

Antenna1 Gain: 3.20dBi; Antenna2 Gain: 3.20dBi;

Directional gain=G_{ant} + Array gain= G_{Ant} + 10*log(N_{Ant}/N_{ss}) = 3.2+10*log(2/1) =6.21dBi.

4. Maximum Power Spectral Density

4.1 PSD

4.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)				Verdict
			Ant1	Ant2	MIMO	Limit	
11B	SISO	2467	0.72	-9.22	/	<=8	Pass
		2472	5.42	4.14	/	<=8	Pass
11G	SISO	2467	-6.71	-6.84	/	<=8	Pass
		2472	-8.37	-6.93	/	<=8	Pass
11N20	MIMO	2467	-7.69	-8.74	-6.15	<=8	Pass
		2472	-9.16	-7.46	-6.30	<=8	Pass
11N40	MIMO	2457	-8.63	-9.17	-6.70	<=8	Pass
		2462	-9.82	-10.03	-7.78	<=8	Pass

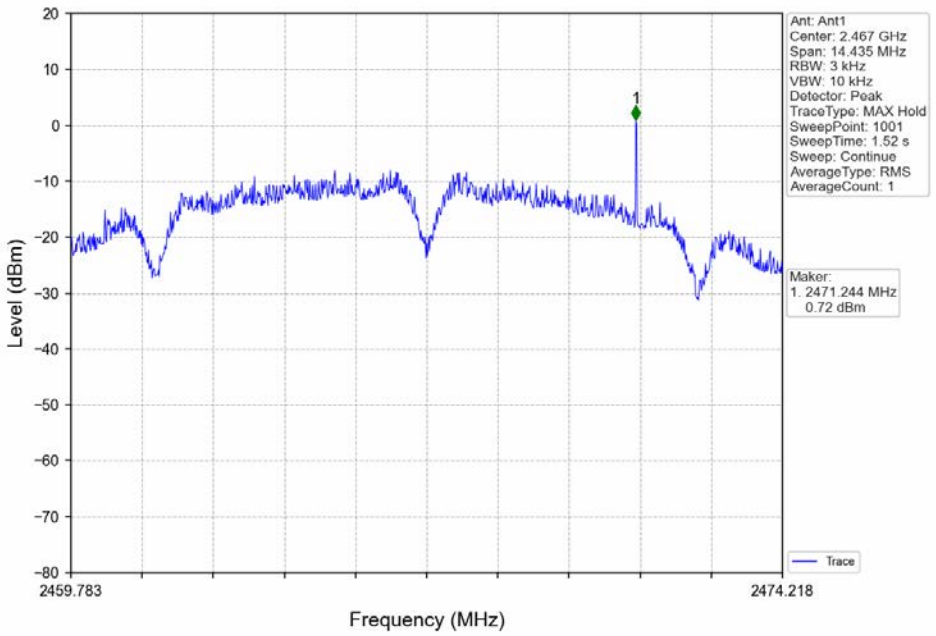
Note:

Antenna1 Gain: 3.20dBi; Antenna2 Gain: 3.20dBi;

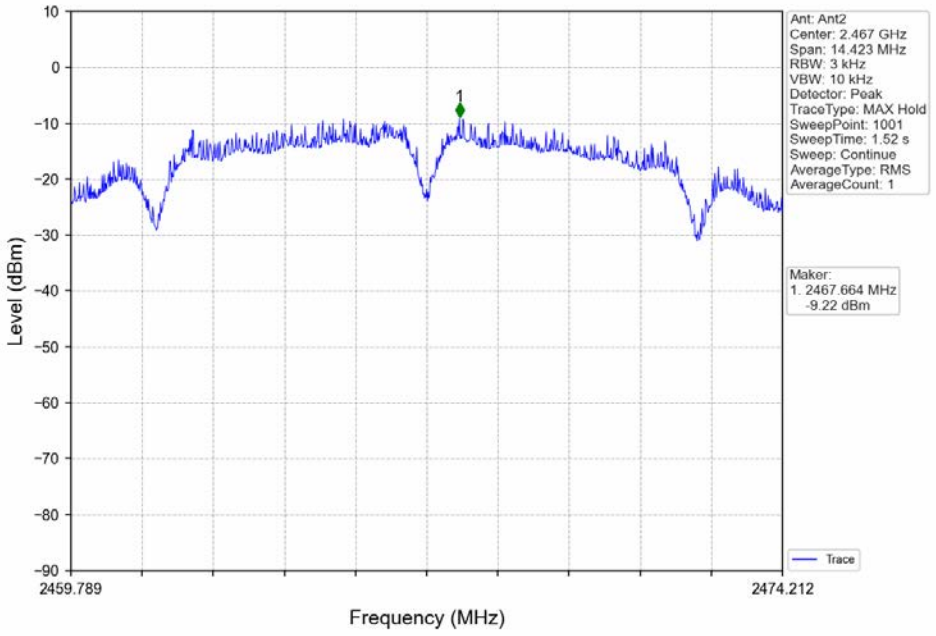
Directional gain=G_{ant} + Array gain= G_{Ant} + 10*log(N_{Ant}/N_{ss}) = 3.2+10*log(2/1) =6.21dBi.

4.1.2 Test Graph

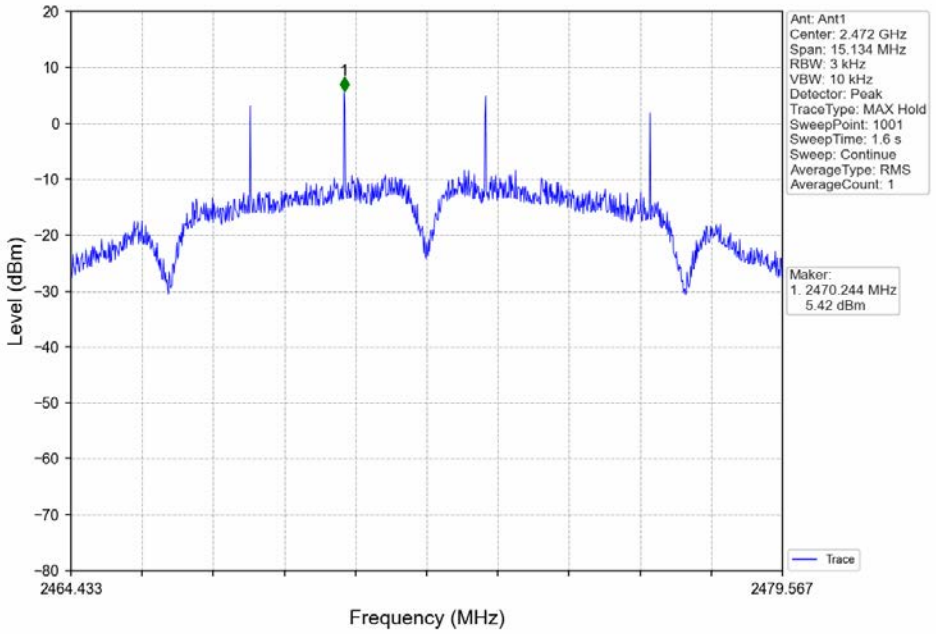
11B_MCH_2467MHz_Ant1_NTNV



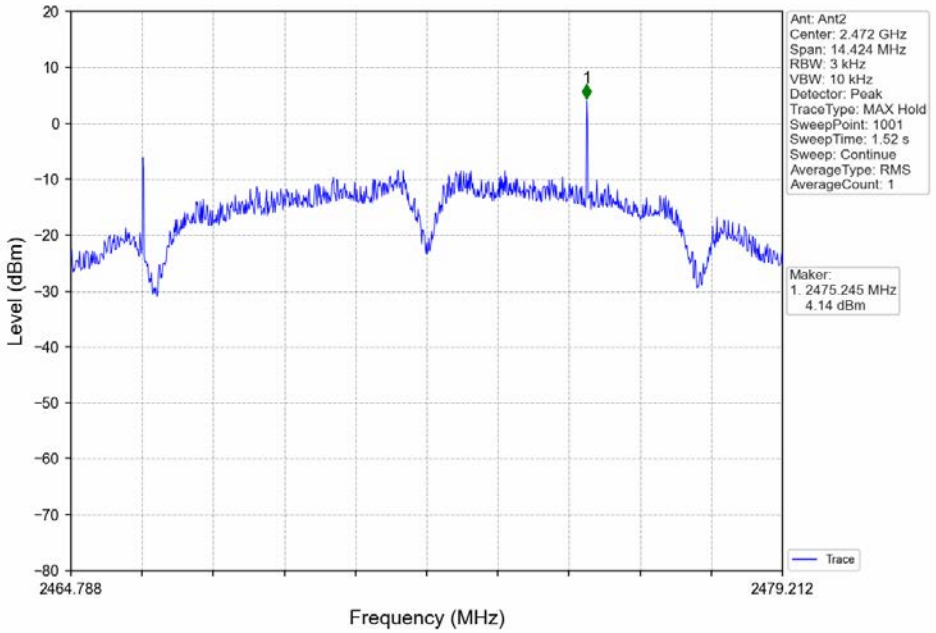
11B_MCH_2467MHz_Ant2_NTNV



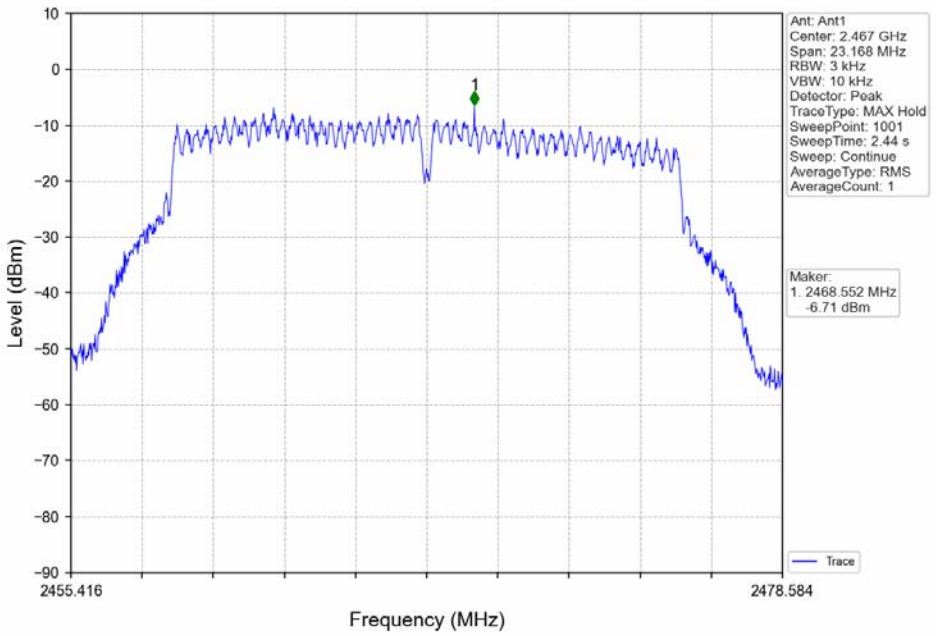
11B_HCH_2472MHz_Ant1_NTNV



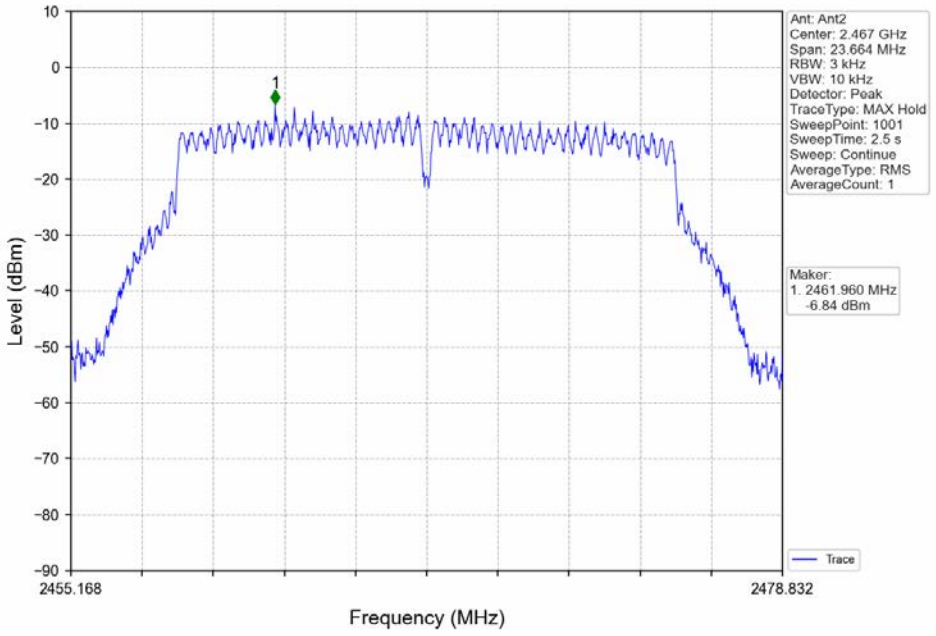
11B_HCH_2472MHz_Ant2_NTNV



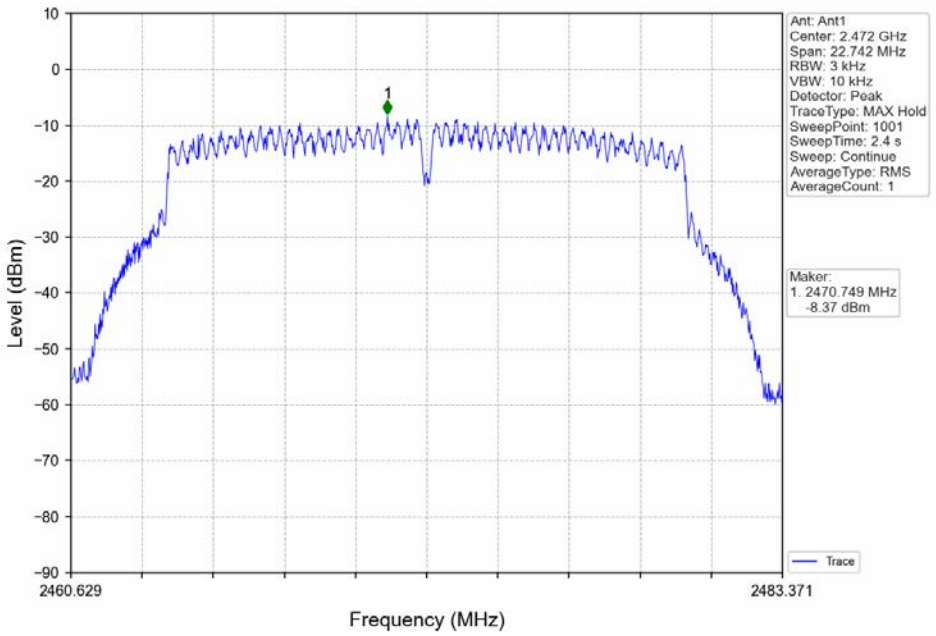
11G_MCH_2467MHz_Ant1_NTNV



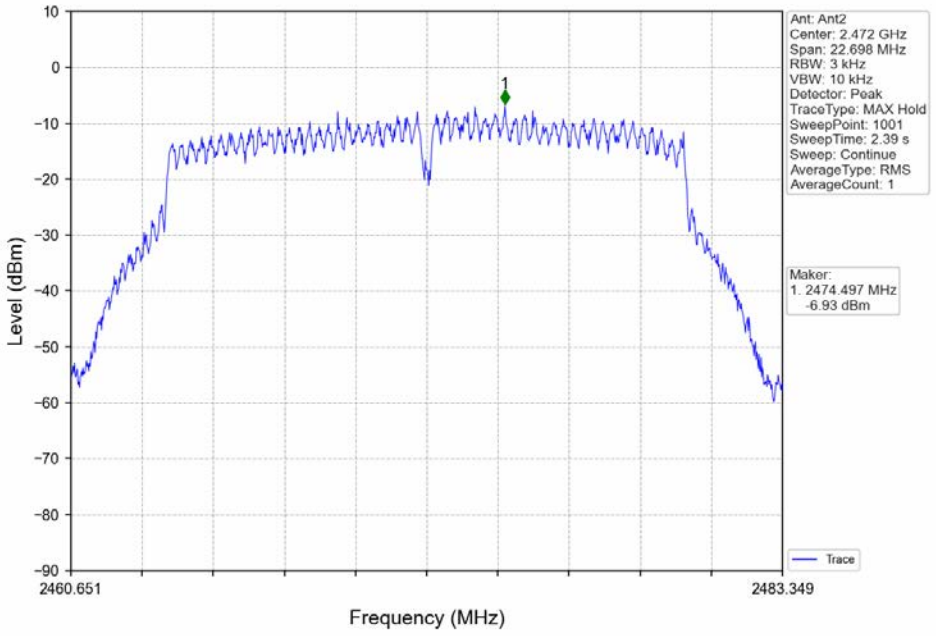
11G_MCH_2467MHz_Ant2_NTNV



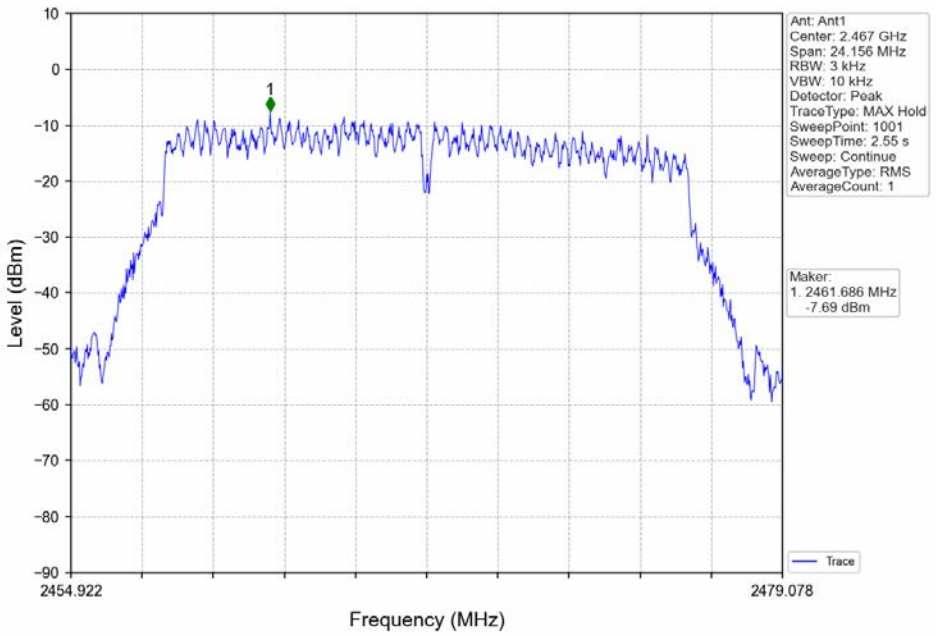
11G_HCH_2472MHz_Ant1_NTNV



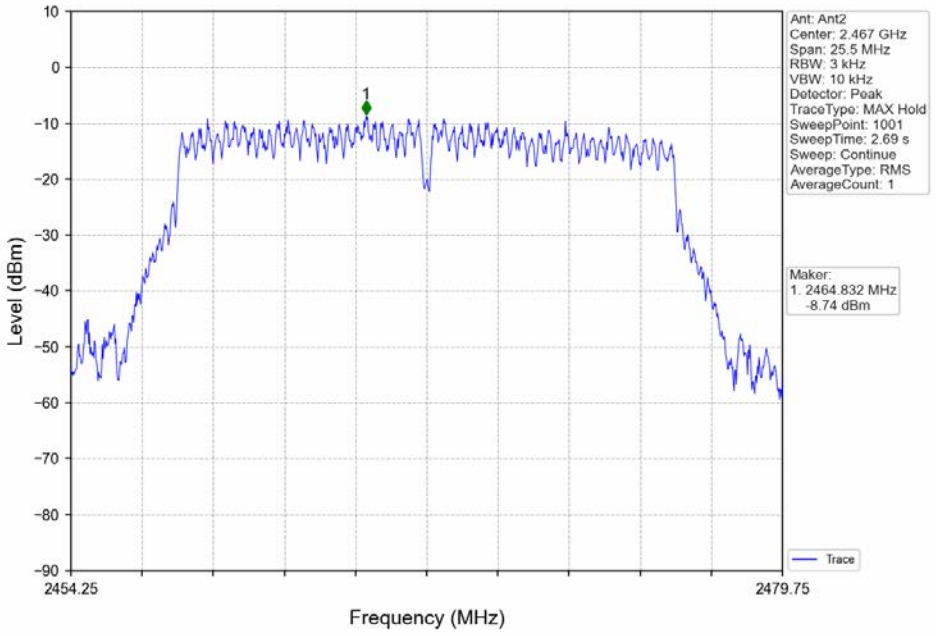
11G_HCH_2472MHz_Ant2_NTNV



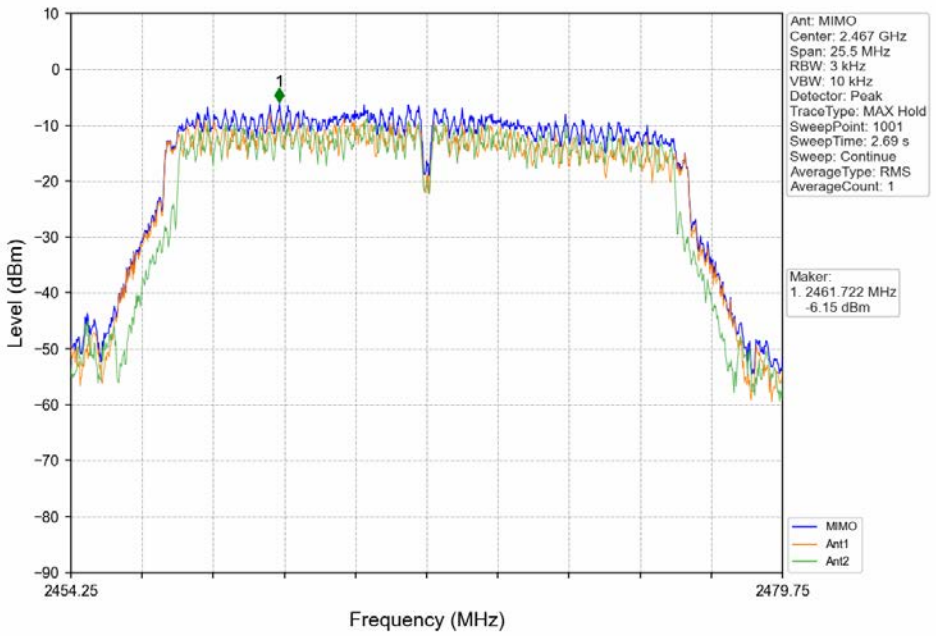
11N20_MCH_2467MHz_Ant1_NTNV



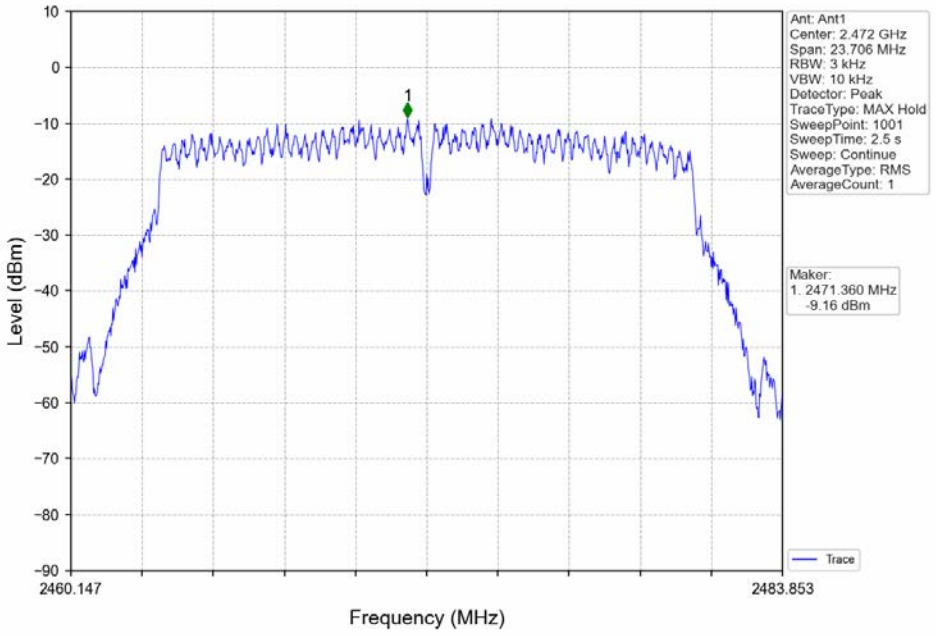
11N20_MCH_2467MHz_Ant2_NTNV



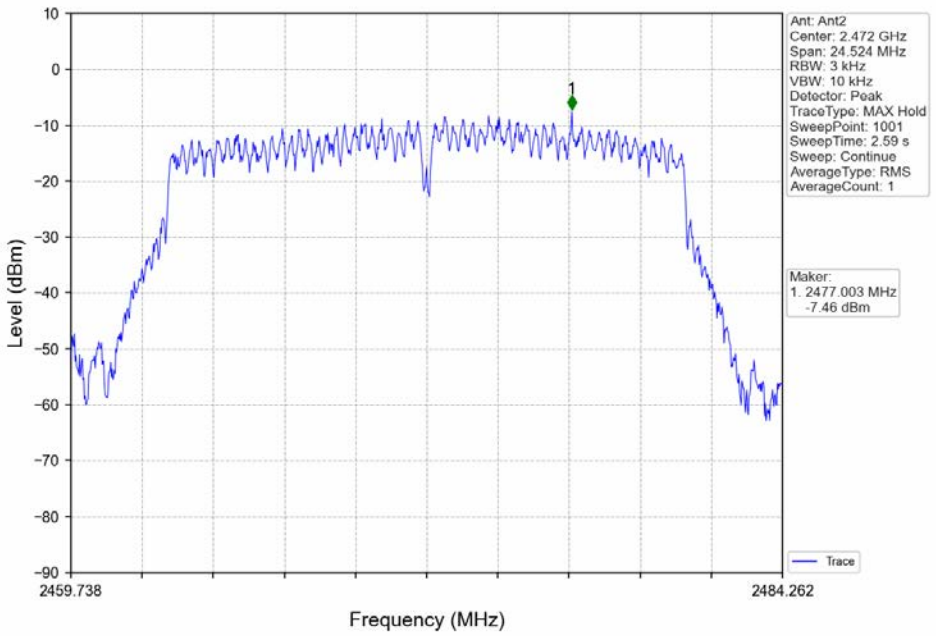
11N20_MCH_2467MHz_MIMO_NTNV



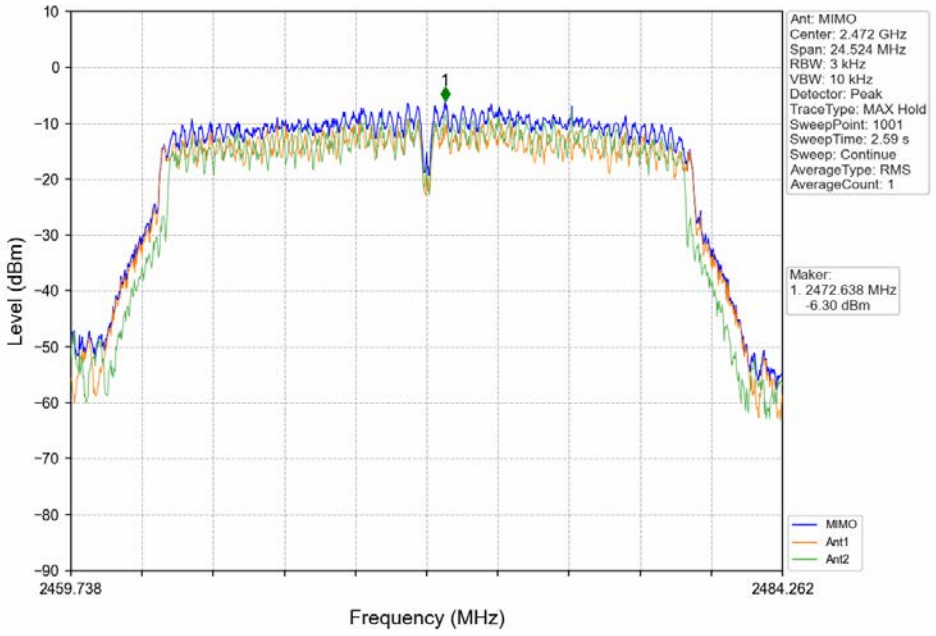
11N20_HCH_2472MHz_Ant1_NTNV



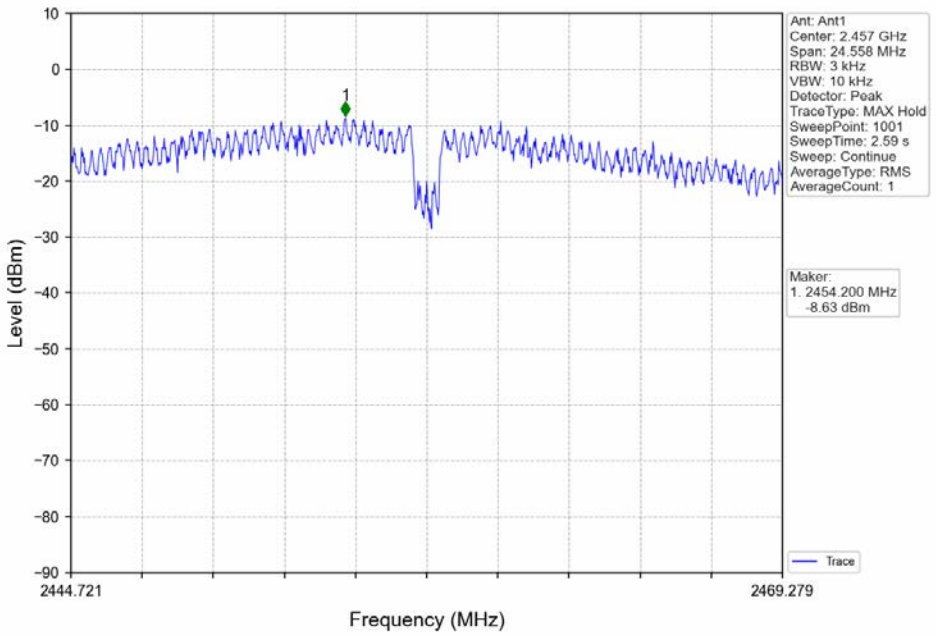
11N20_HCH_2472MHz_Ant2_NTNV



11N20_HCH_2472MHz_MIMO_NTNV



11N40_MCH_2457MHz_Ant1_NTNV



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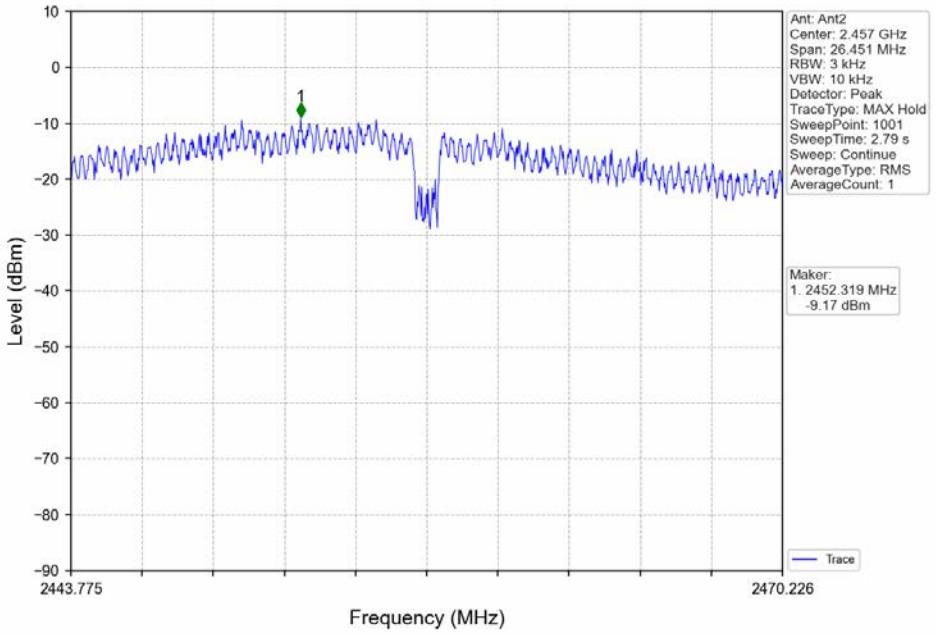

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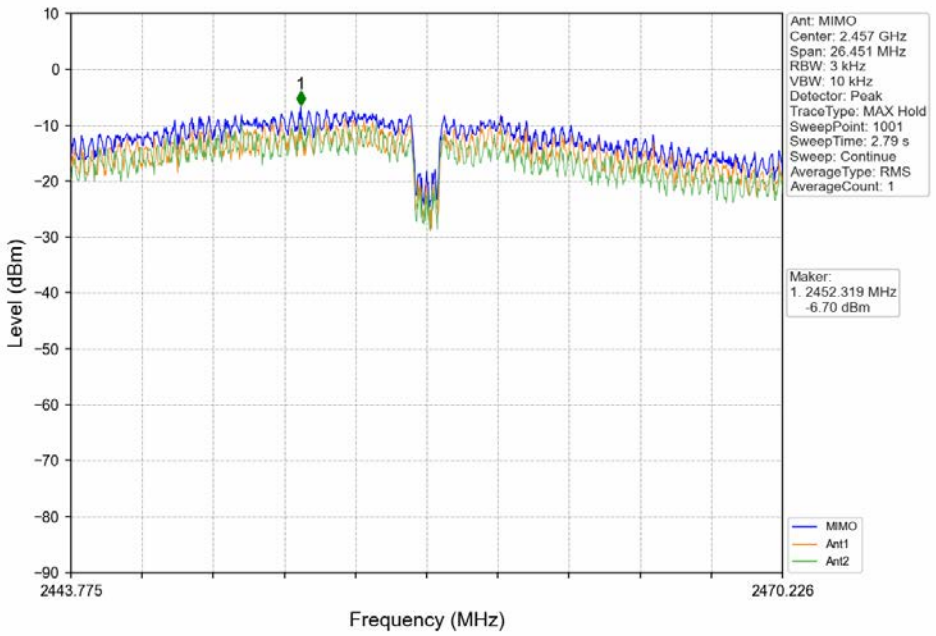
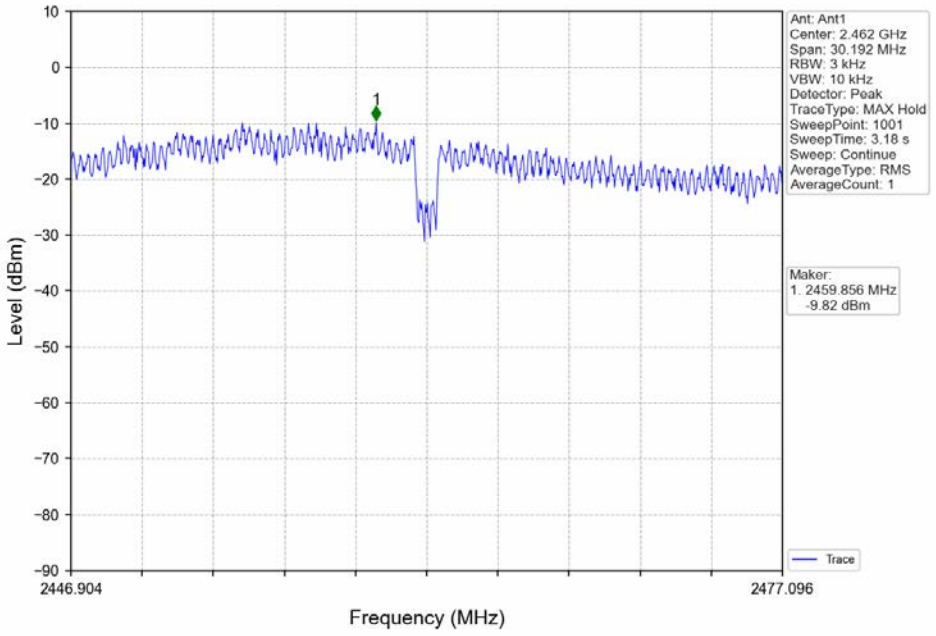
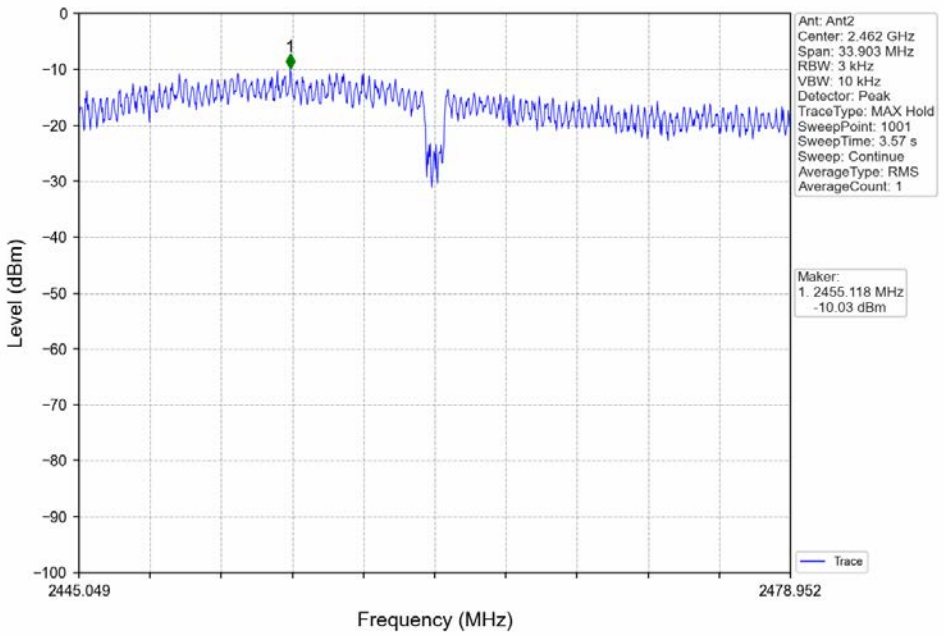


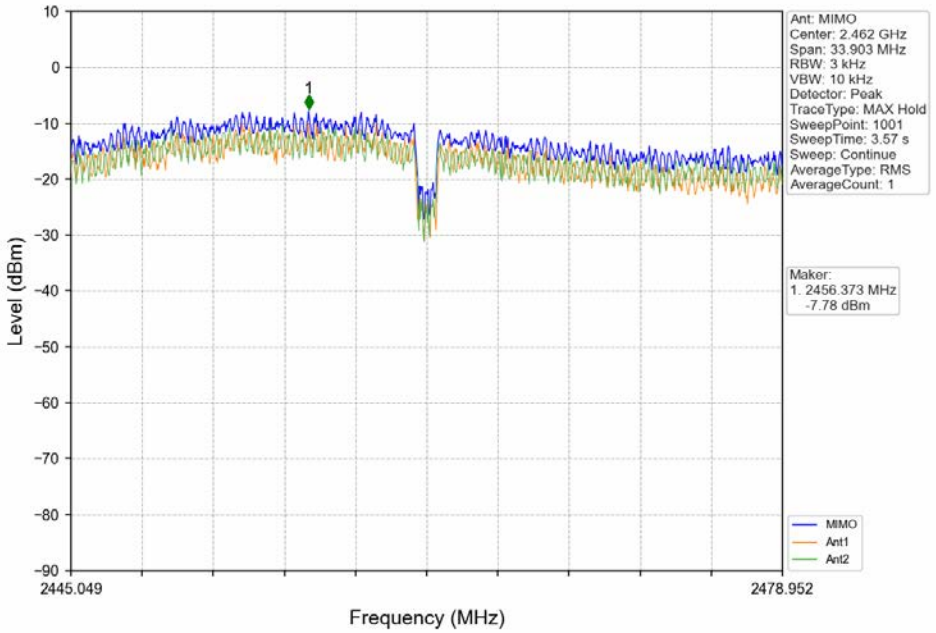
11N40_HCH_2462MHz_Ant1_NTNV



11N40_HCH_2462MHz_Ant2_NTNV



11N40_HCH_2462MHz_MIMO_NTNV



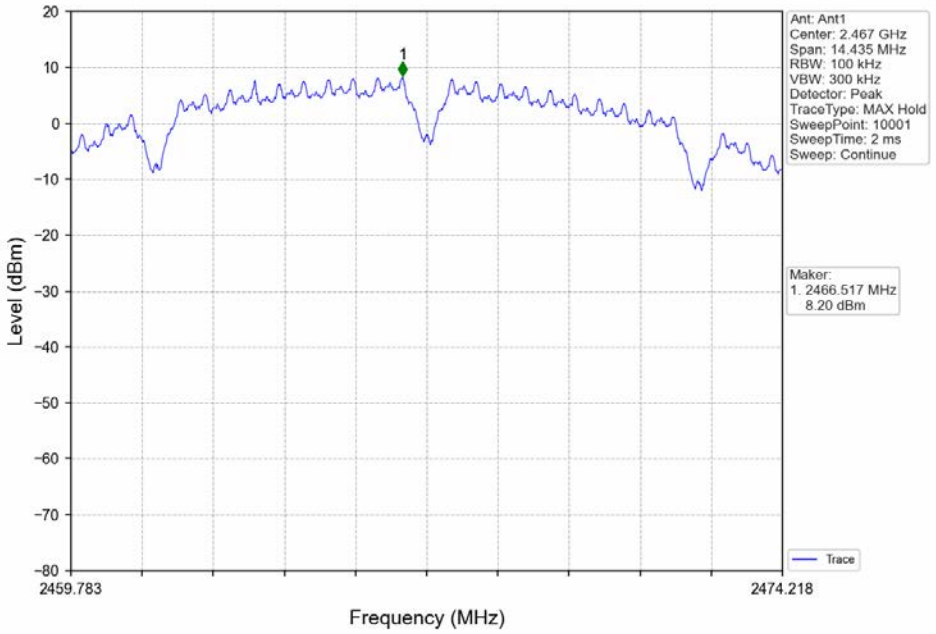
5. Unwanted Emissions In Non-restricted Frequency Bands

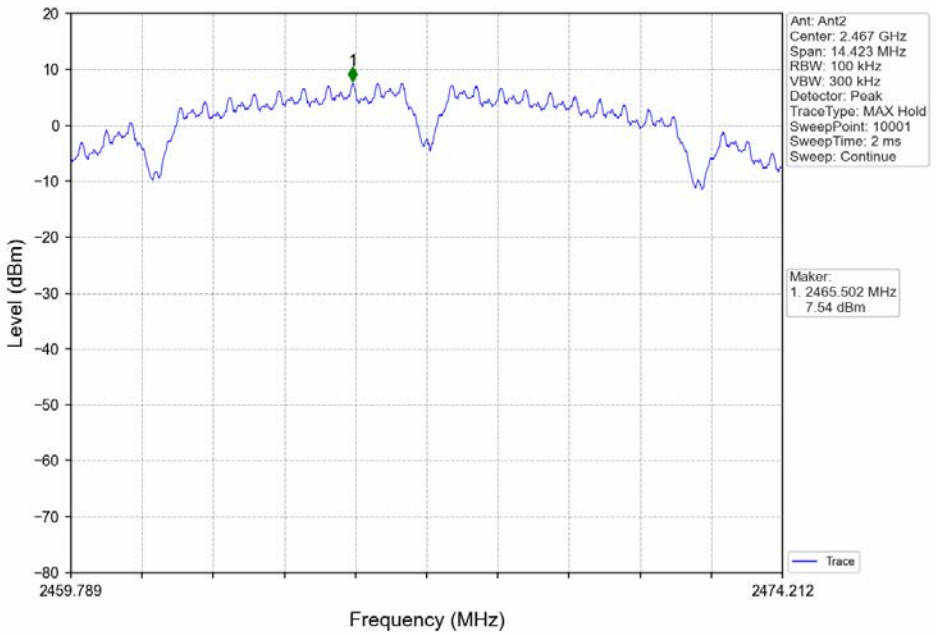
5.1 Ref

5.1.1 Test Result

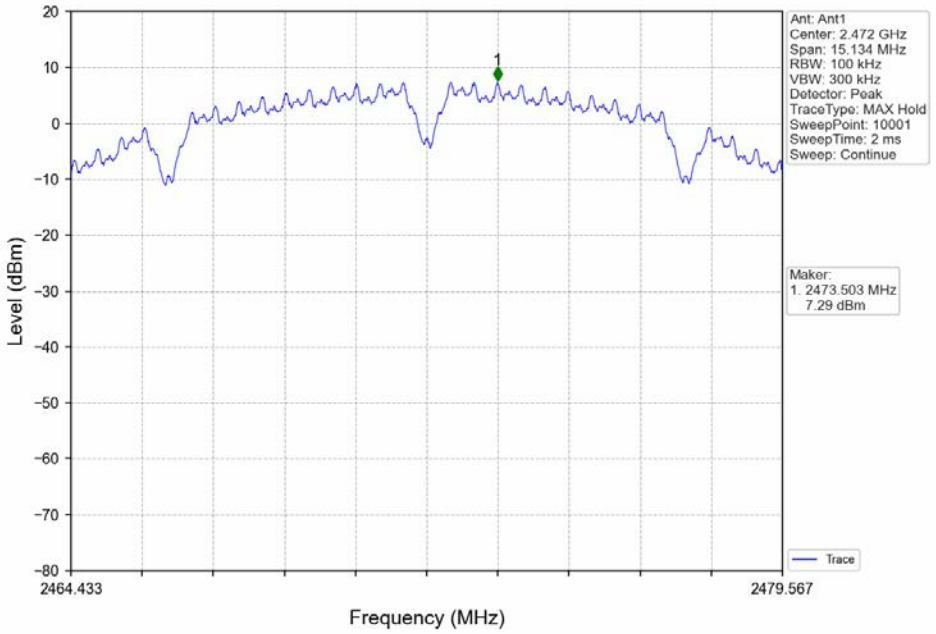
Mode	TX Type	Frequency (MHz)	Ant	Level of Reference (dBm)
11B	SISO	2467	1	8.20
			2	7.54
		2472	1	7.29
			2	7.75
11G	SISO	2467	1	9.54
			2	8.28
		2472	1	7.99
			2	9.15
11N20	MIMO	2467	1	7.82
			2	7.10
		2472	1	6.88
			2	7.71
11N40	MIMO	2457	1	8.73
			2	7.14
		2462	1	6.95
			2	6.15

5.1.2 Test Graph

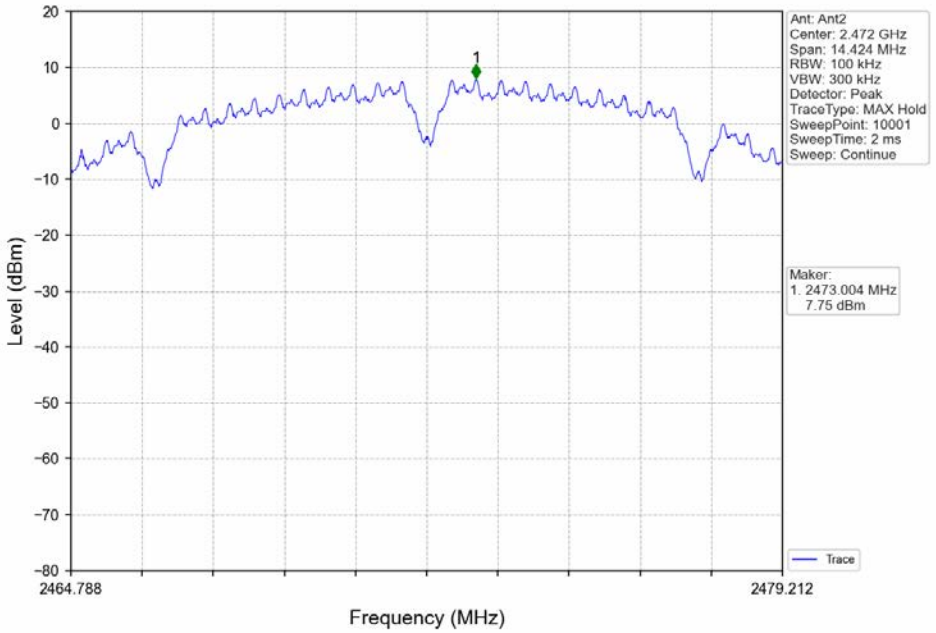
11B_MCH_2467MHz_Ant1_NTNV


11B_MCH_2467MHz_Ant2_NTNV


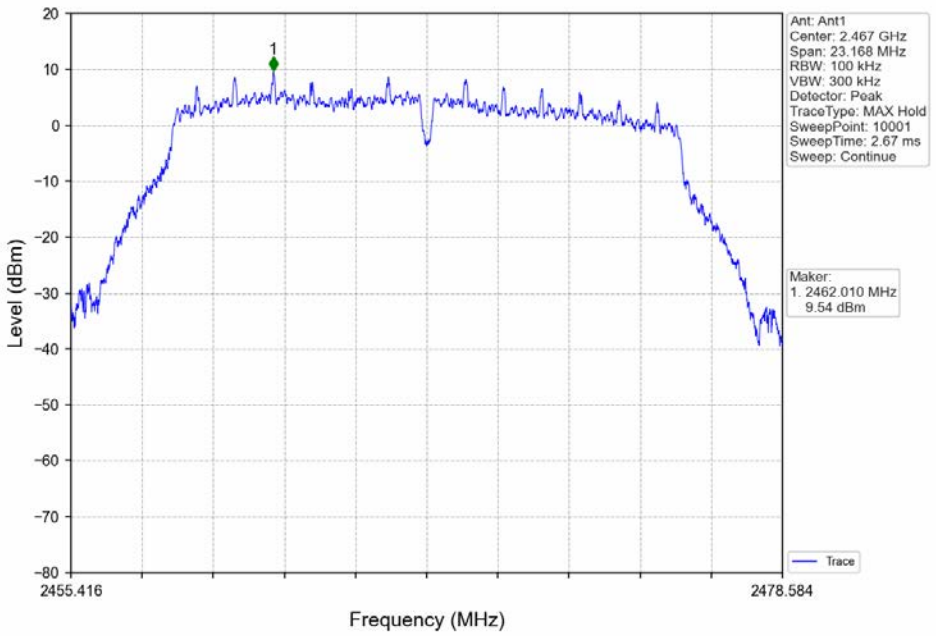
11B_HCH_2472MHz_Ant1_NTNV



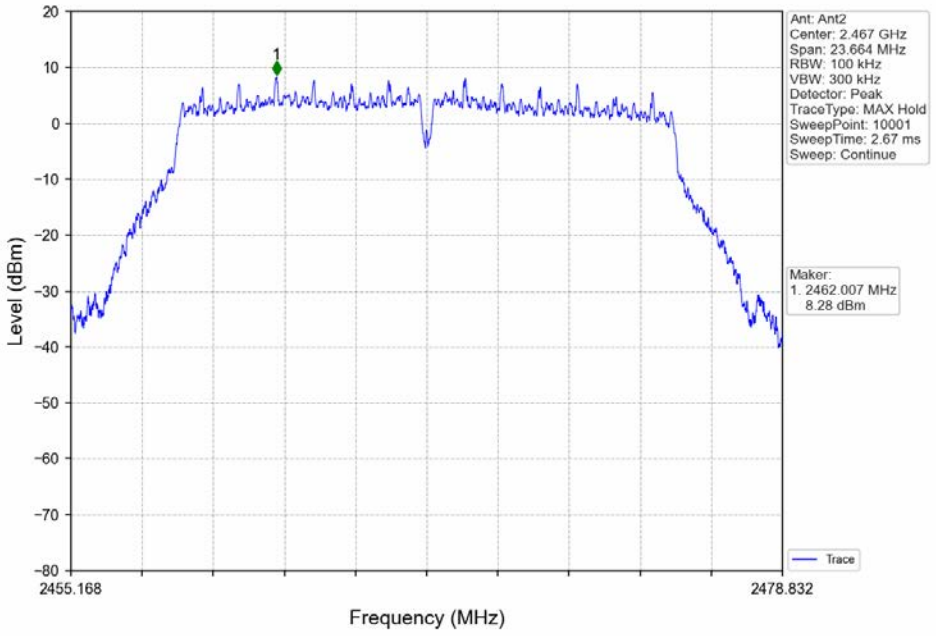
11B_HCH_2472MHz_Ant2_NTNV



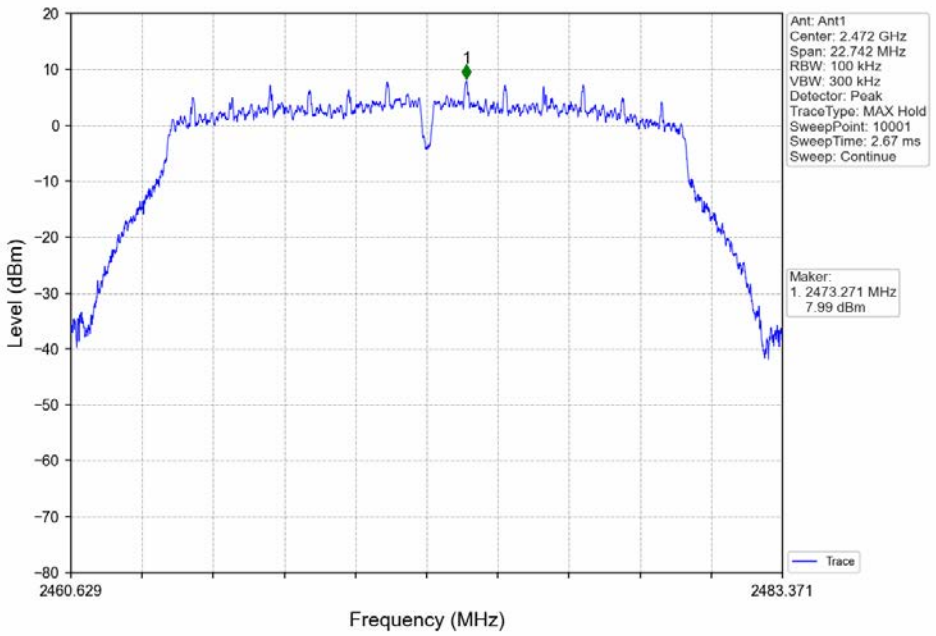
11G_MCH_2467MHz_Ant1_NTNV



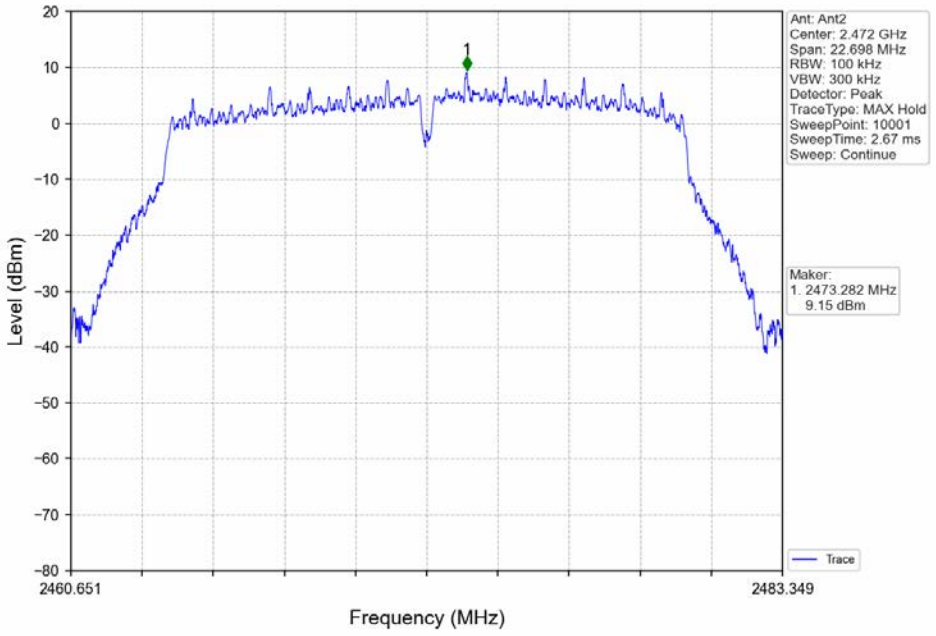
11G_MCH_2467MHz_Ant2_NTNV



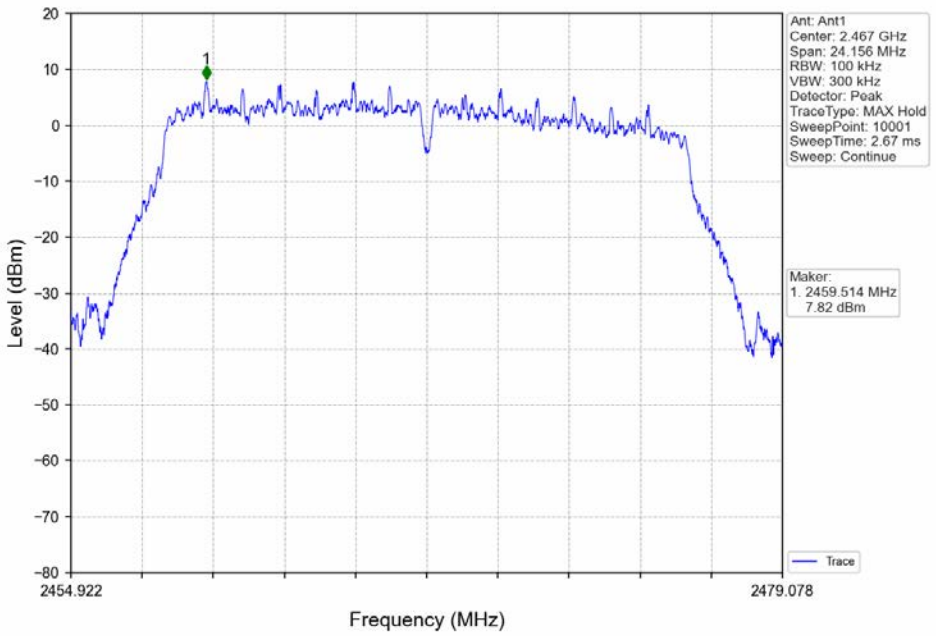
11G_HCH_2472MHz_Ant1_NTNV



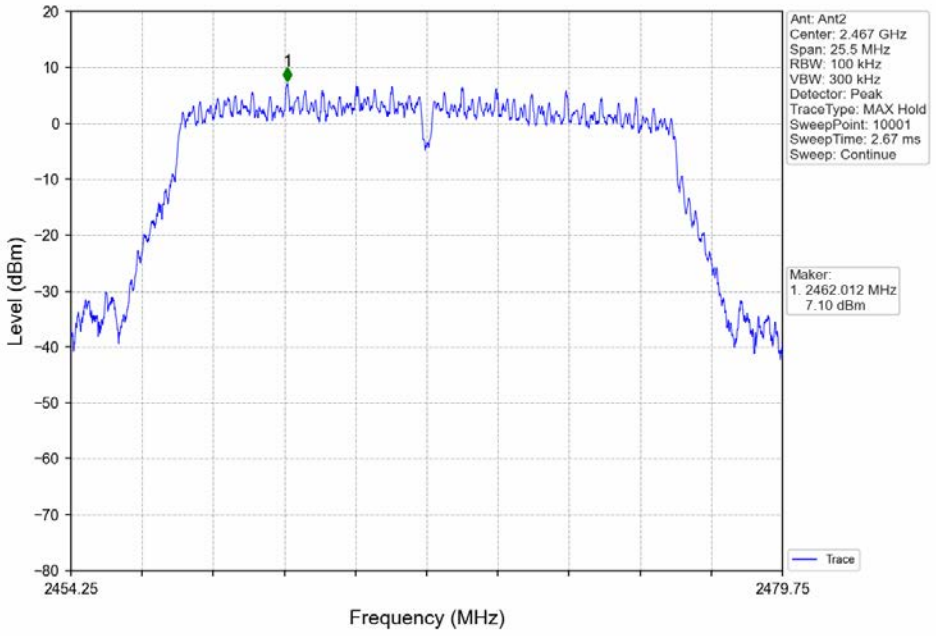
11G_HCH_2472MHz_Ant2_NTNV



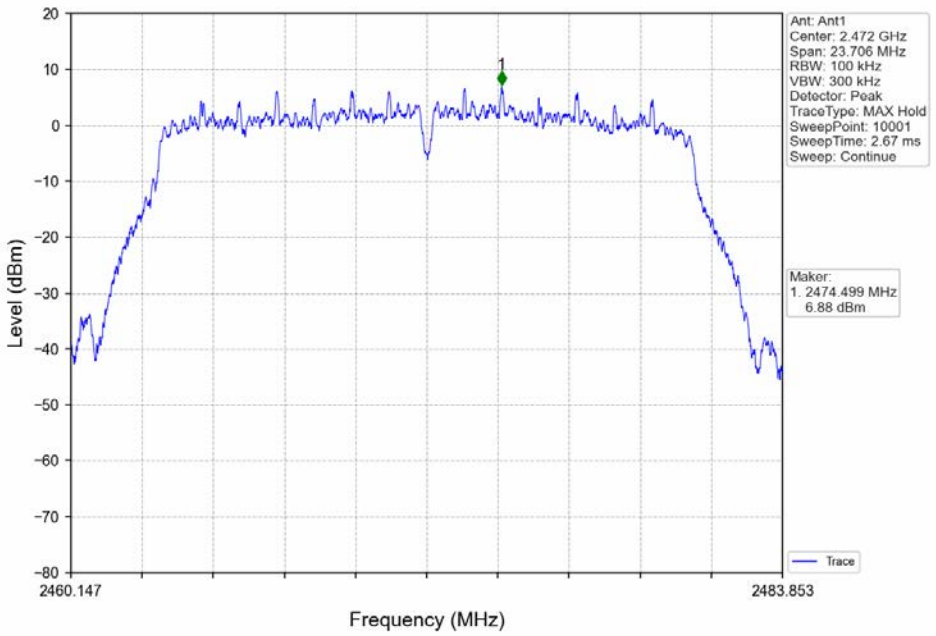
11N20_MCH_2467MHz_Ant1_NTNV



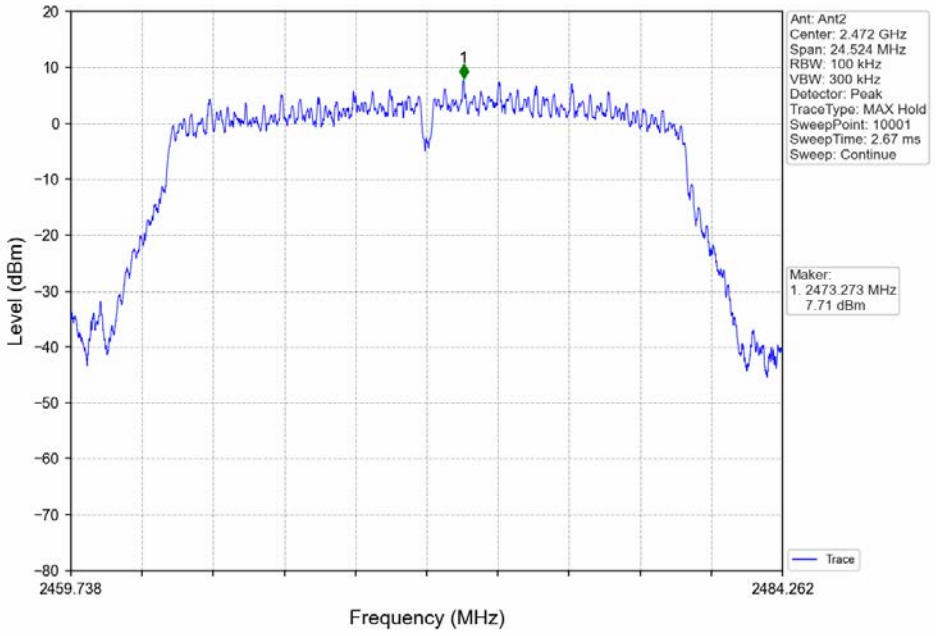
11N20_MCH_2467MHz_Ant2_NTNV



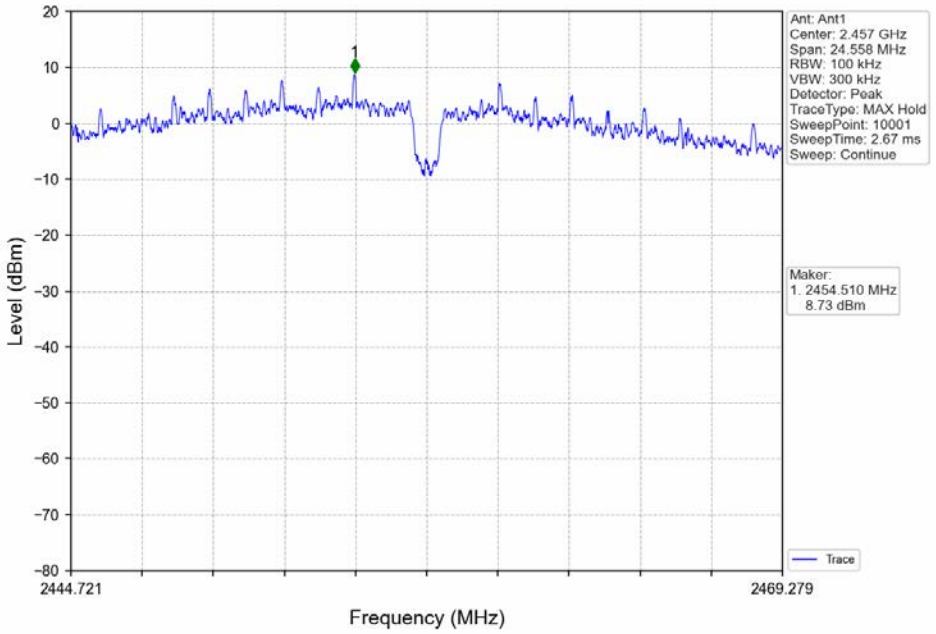
11N20_HCH_2472MHz_Ant1_NTNV



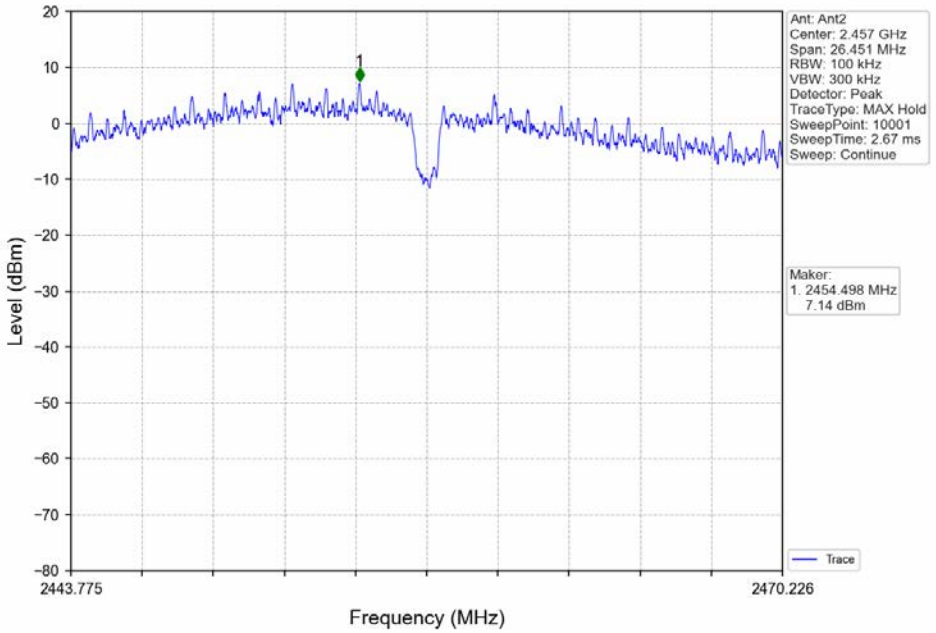
11N20_HCH_2472MHz_Ant2_NTNV



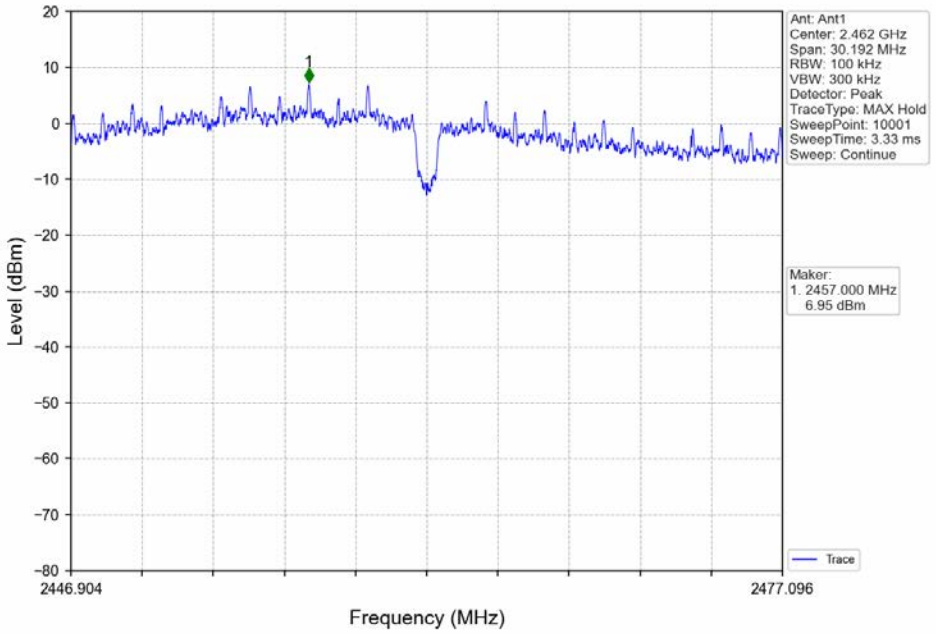
11N40_MCH_2457MHz_Ant1_NTNV



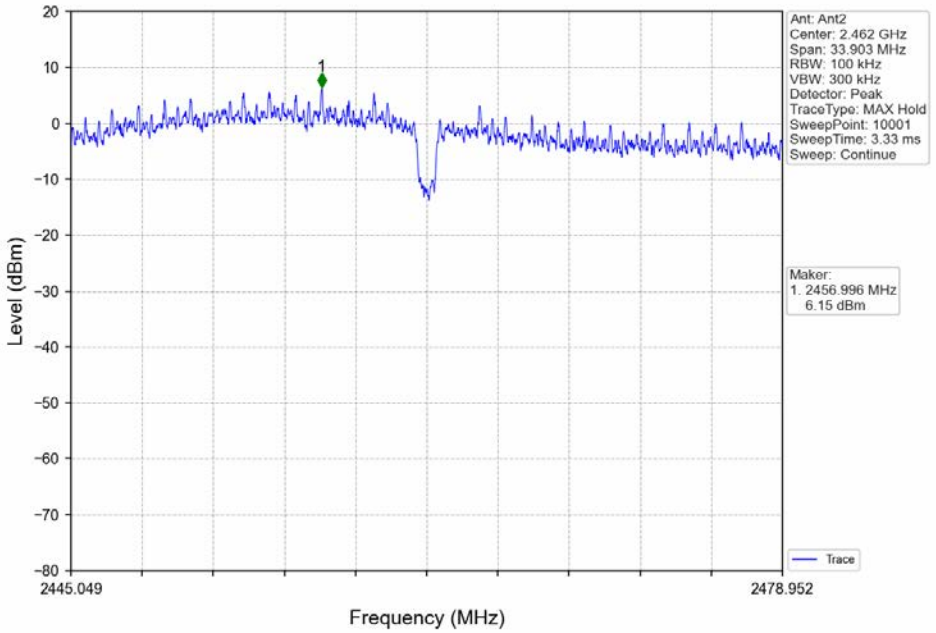
11N40_MCH_2457MHz_Ant2_NTNV



11N40_HCH_2462MHz_Ant1_NTNV



11N40_HCH_2462MHz_Ant2_NTNV



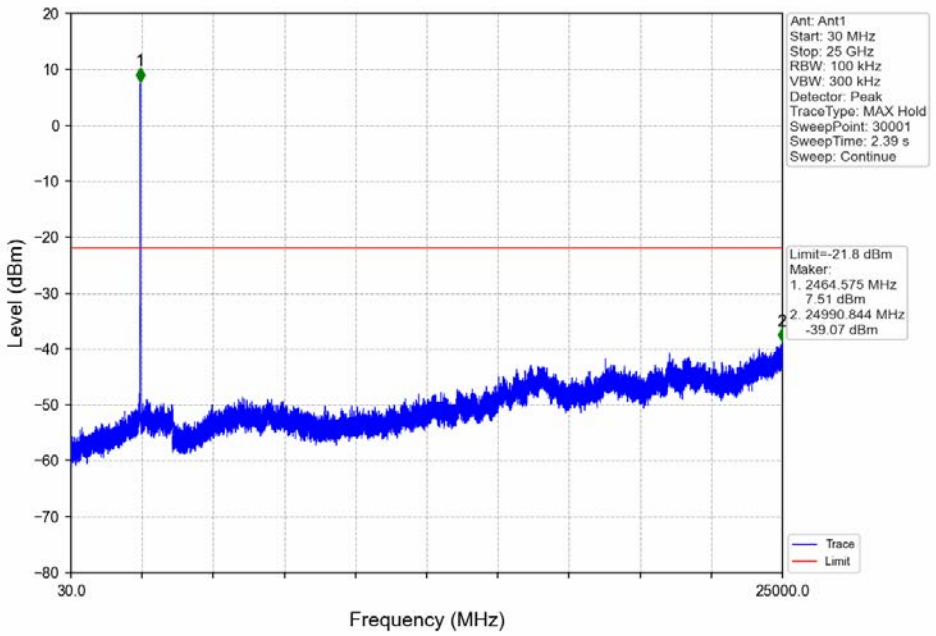
5.2 CSE

5.2.1 Test Result

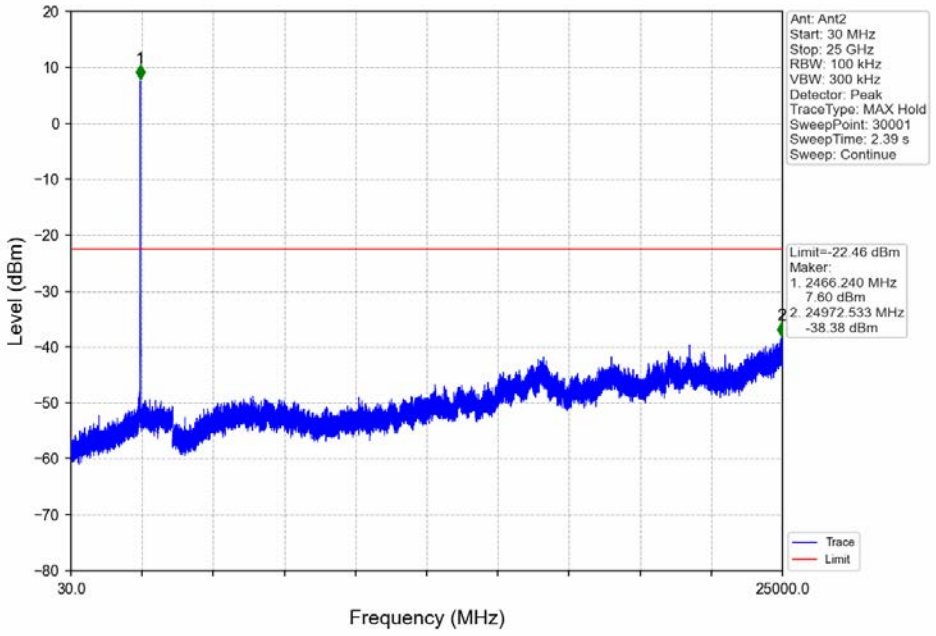
Mode	TX Type	Frequency (MHz)	Ant	Level of Reference (dBm)	Limit (dBm)	Verdict
11B	SISO	2467	1	8.20	-21.80	Pass
			2	7.54	-22.46	Pass
		2472	1	7.29	-22.71	Pass
			2	7.75	-22.25	Pass
11G	SISO	2467	1	9.54	-20.46	Pass
			2	8.28	-21.72	Pass
		2472	1	7.99	-22.01	Pass
			2	9.15	-20.85	Pass
11N20	MIMO	2467	1	7.82	-22.18	Pass
			2	7.10	-22.90	Pass
		2472	1	6.88	-23.12	Pass
			2	7.71	-22.29	Pass
11N40	MIMO	2457	1	8.73	-21.27	Pass
			2	7.14	-22.86	Pass
		2462	1	6.95	-23.05	Pass
			2	6.15	-23.85	Pass

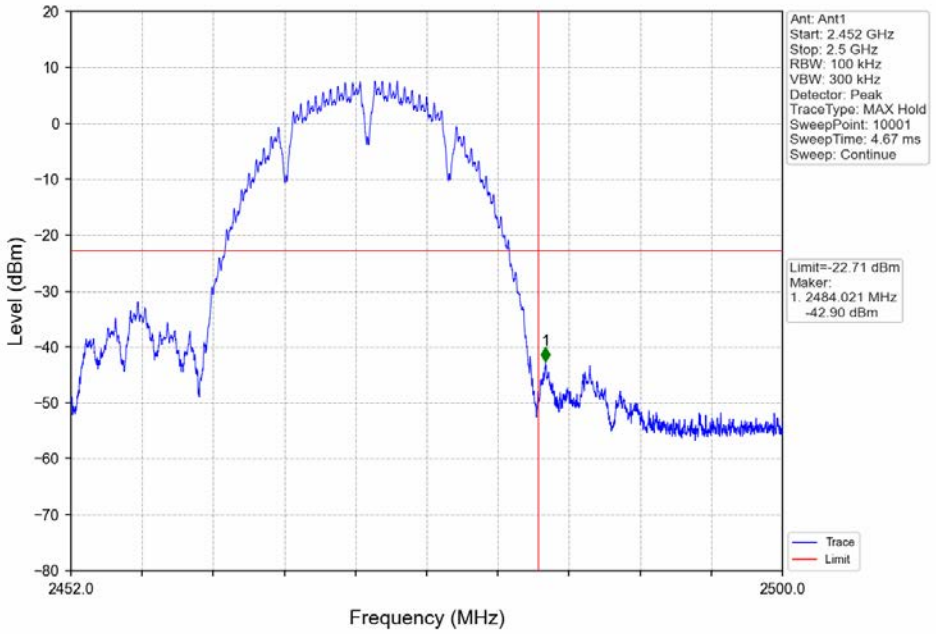
5.2.2 Test Graph

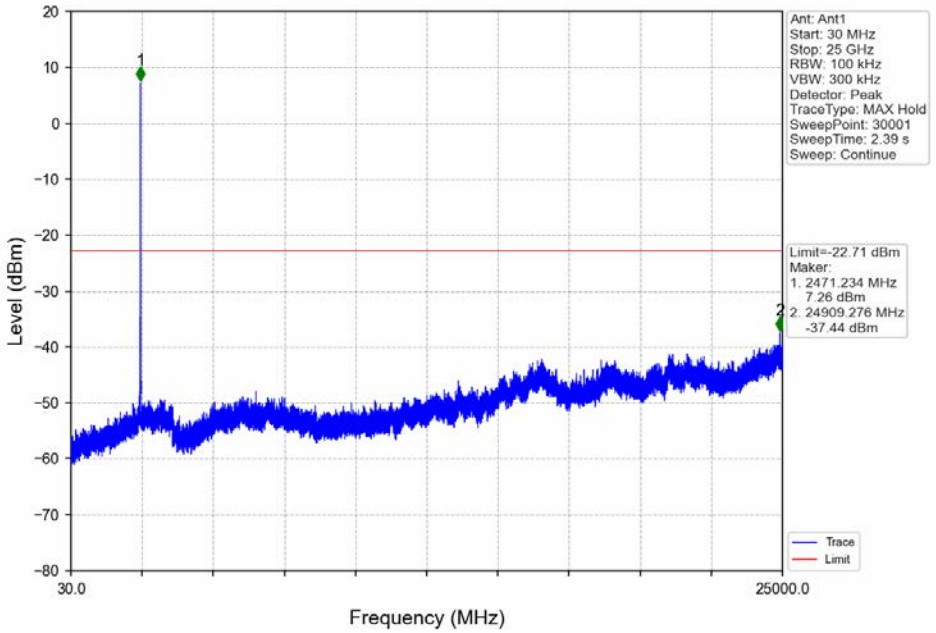
11B_MCH_2467MHz_Ant1_NTNV



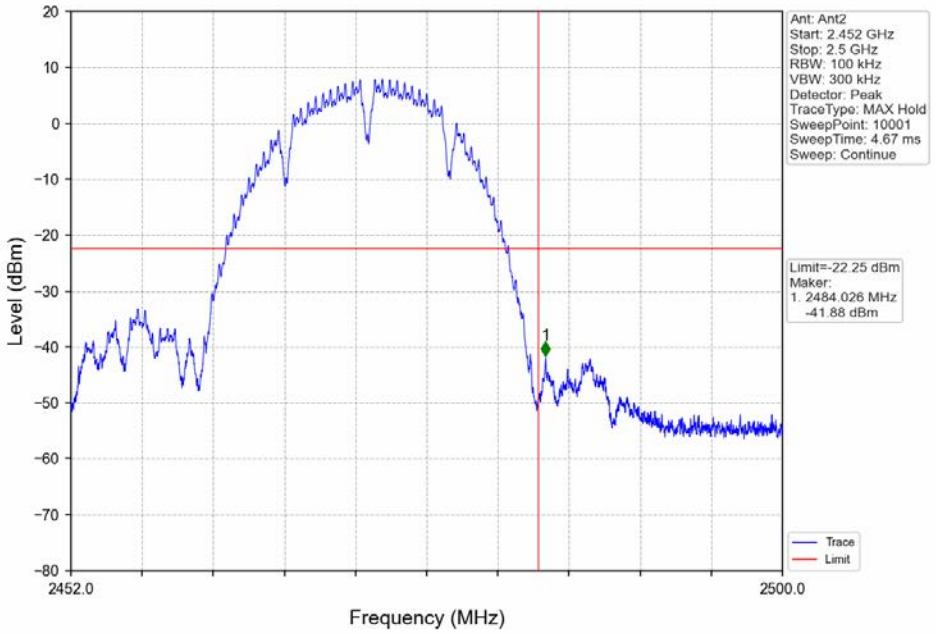
11B_MCH_2467MHz_Ant2_NTNV



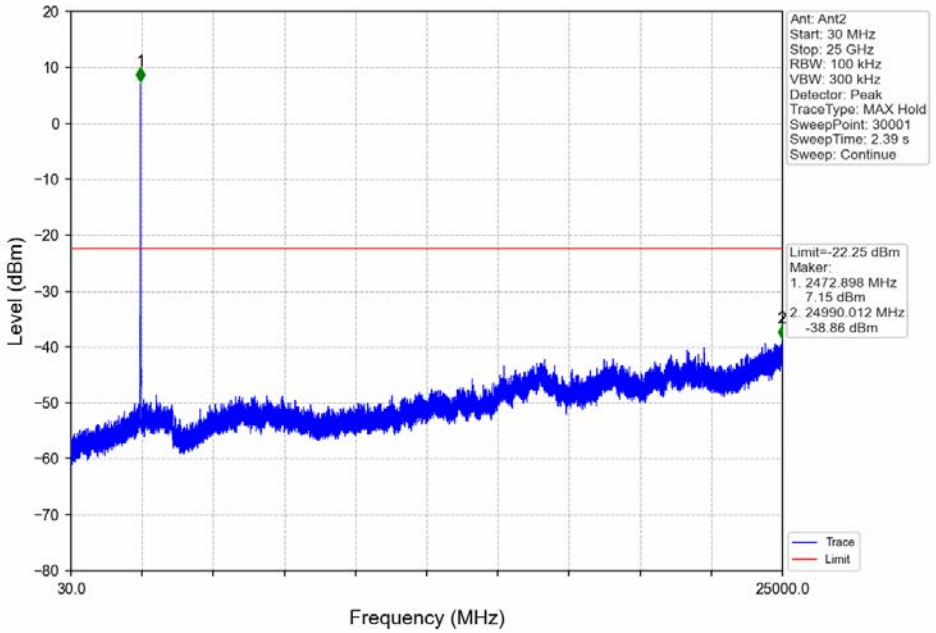
11B_HCH_2472MHz_Ant1_NTNV


11B_HCH_2472MHz_Ant1_NTNV


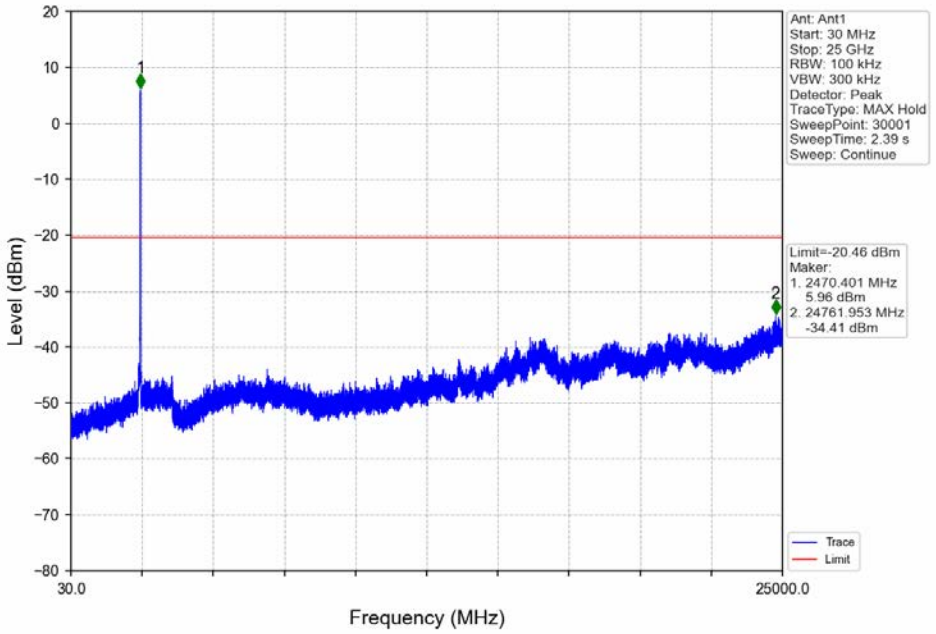
11B_HCH_2472MHz_Ant2_NTNV



11B_HCH_2472MHz_Ant2_NTNV



11G_MCH_2467MHz_Ant1_NTNV



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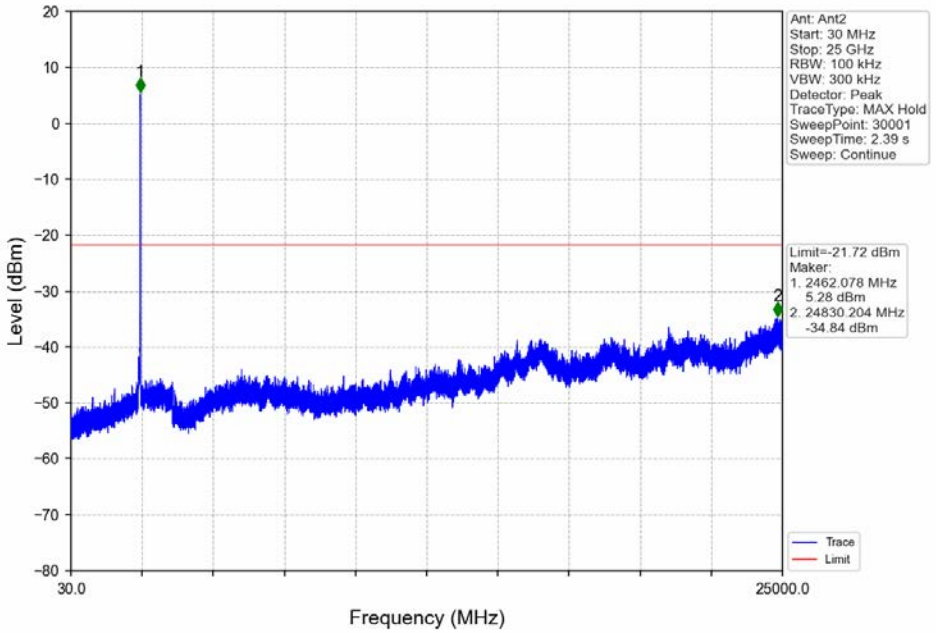
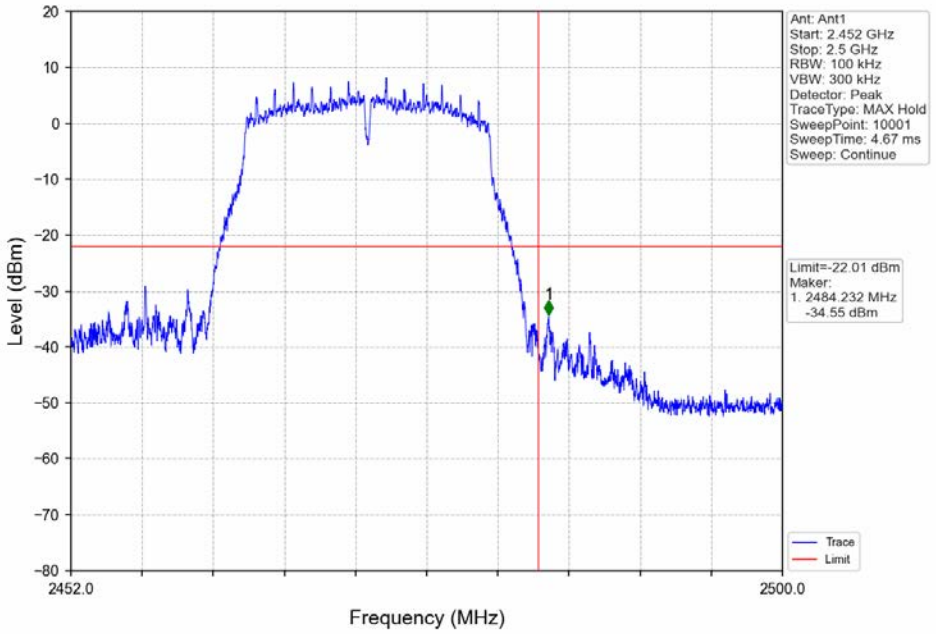


11G_HCH_2472MHz_Ant1_NTNV


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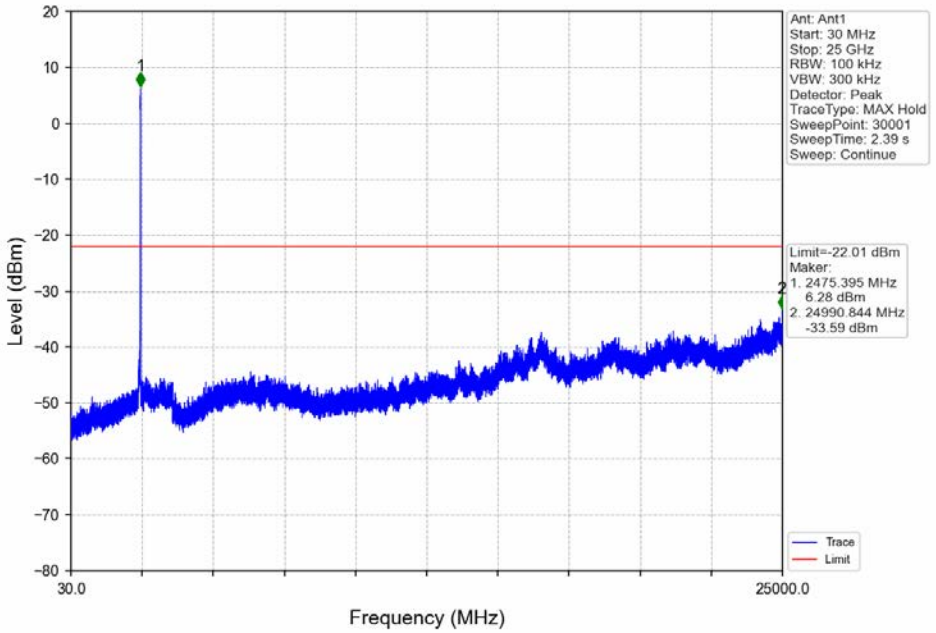

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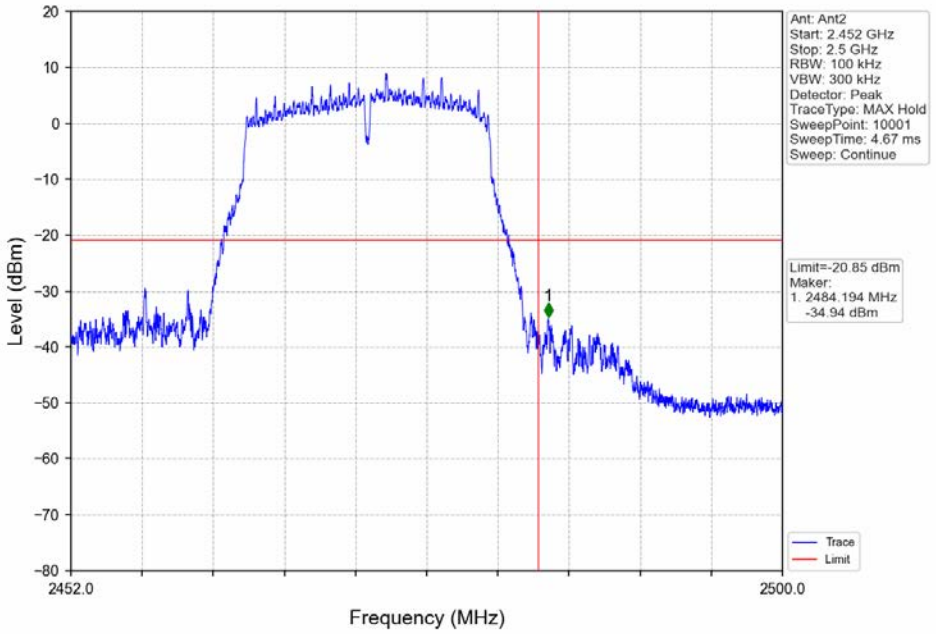

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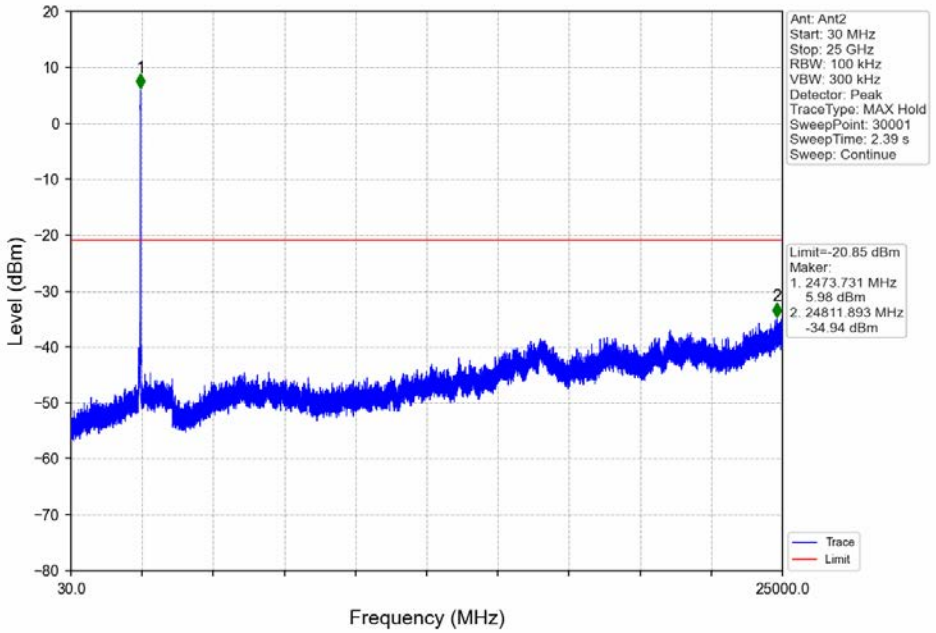
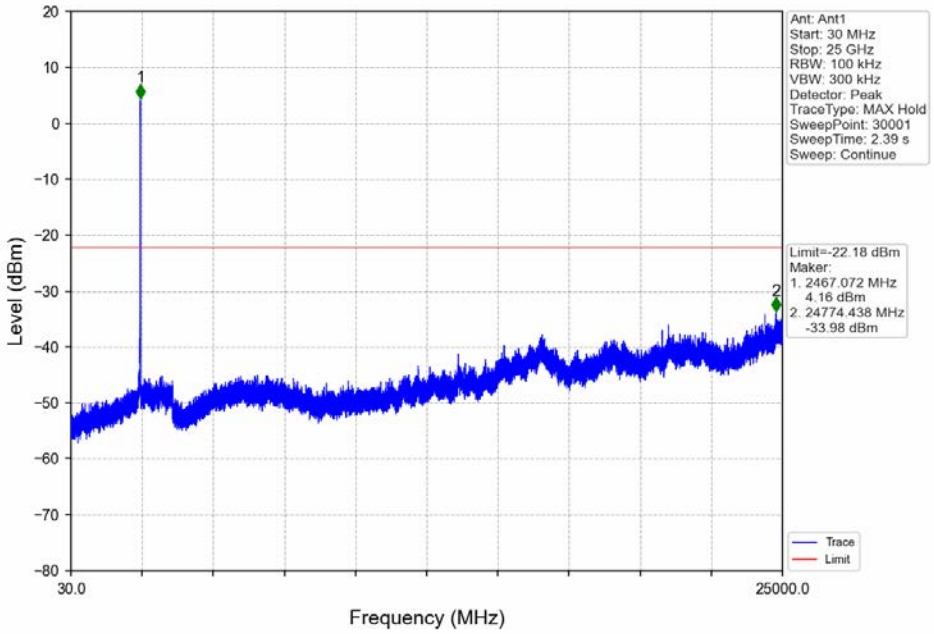


11N20_MCH_2467MHz_Ant1_NTNV



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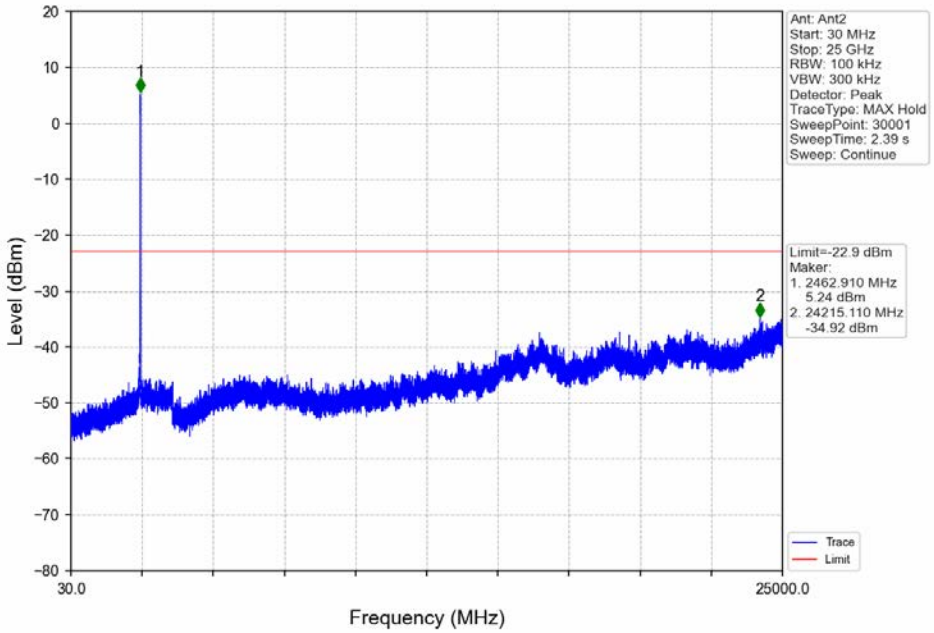

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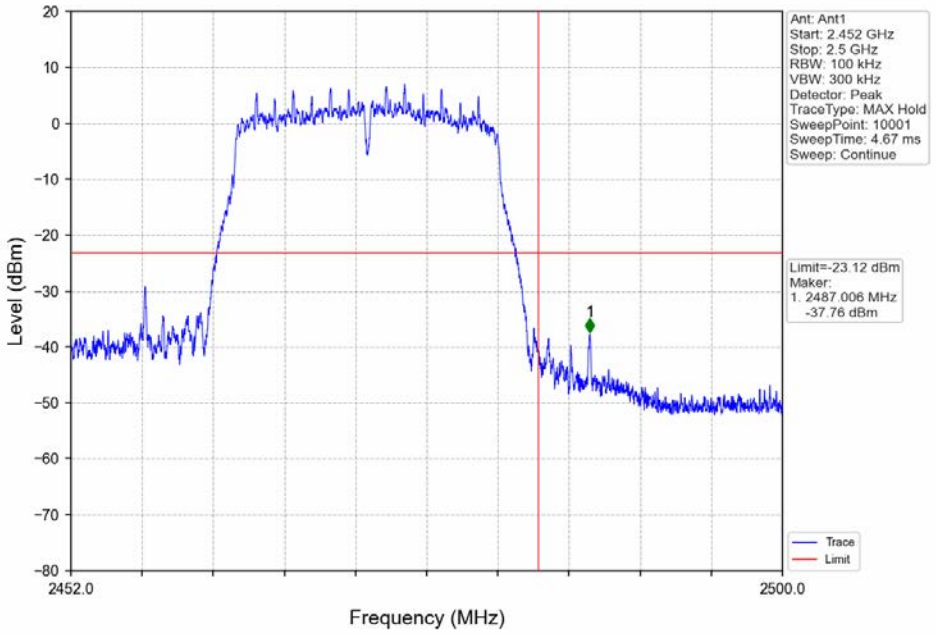

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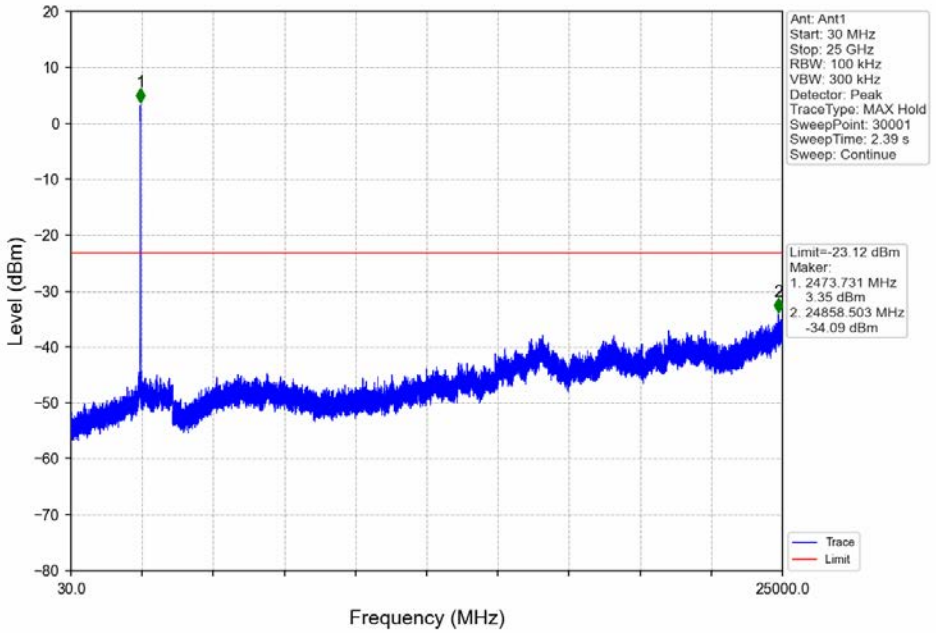

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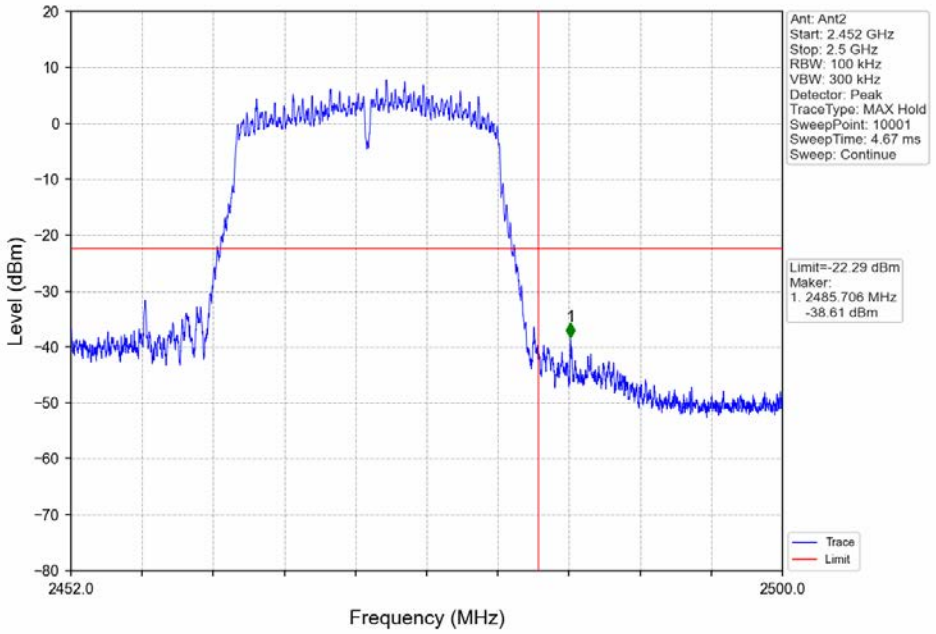

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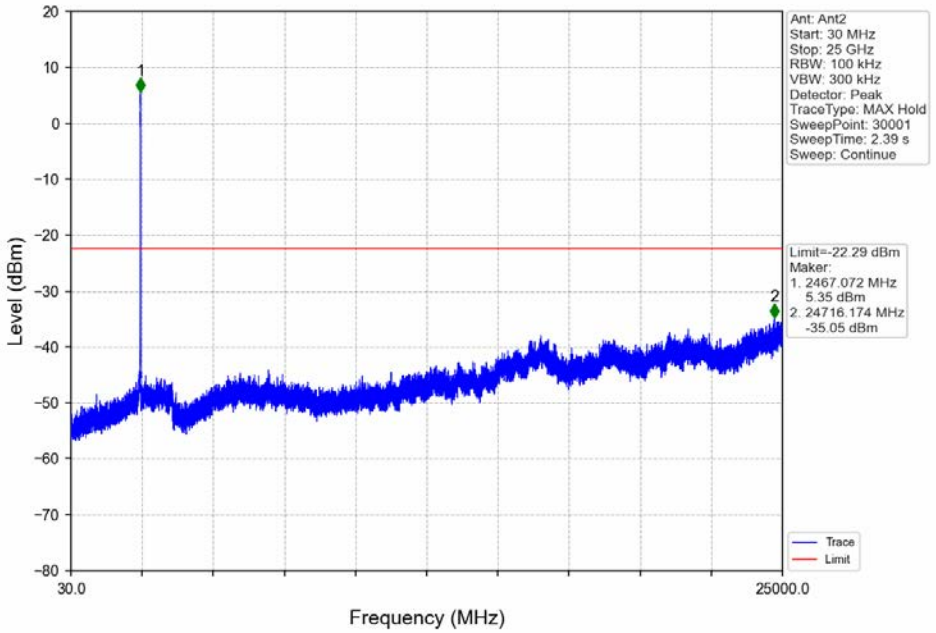

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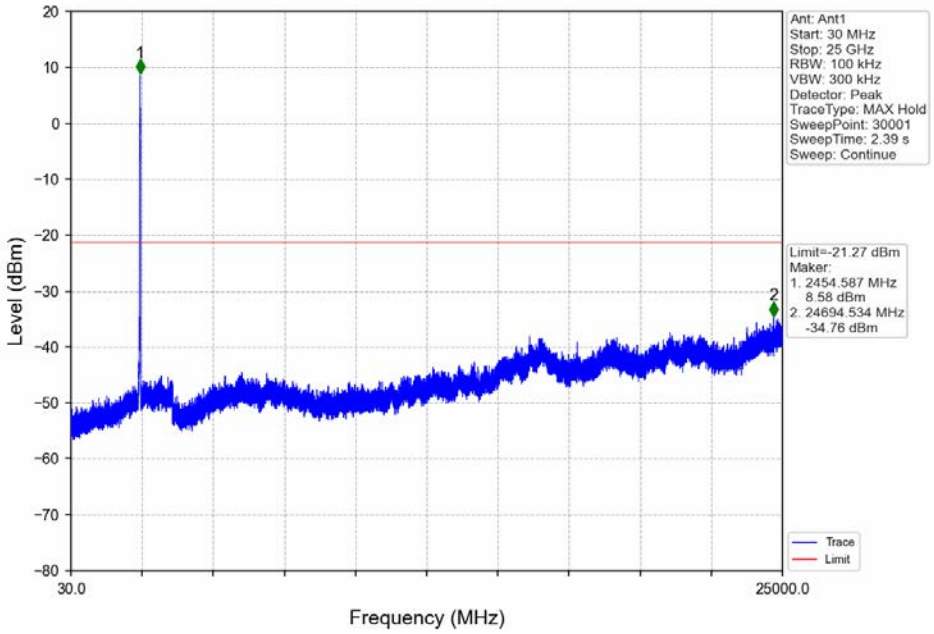

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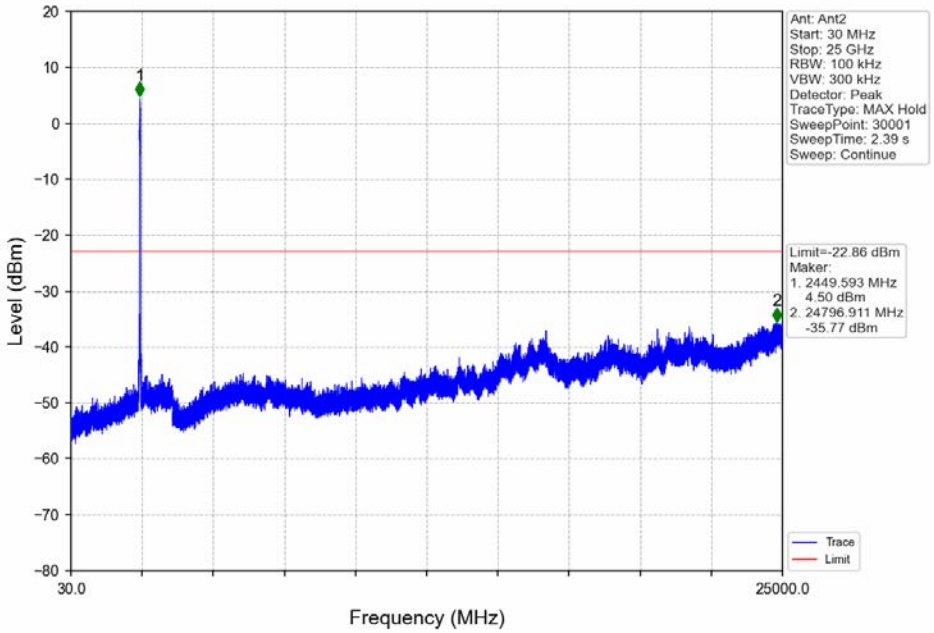

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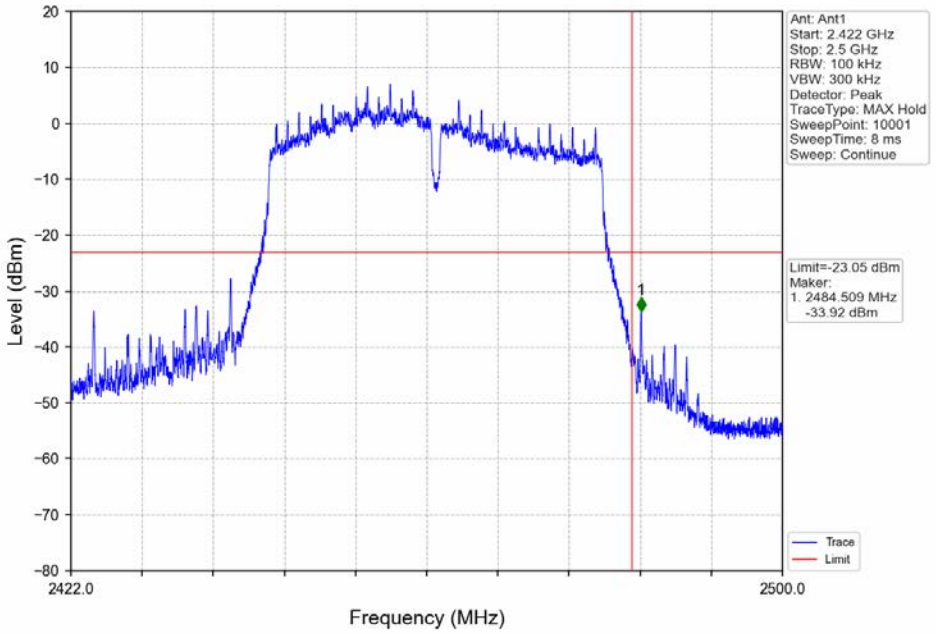

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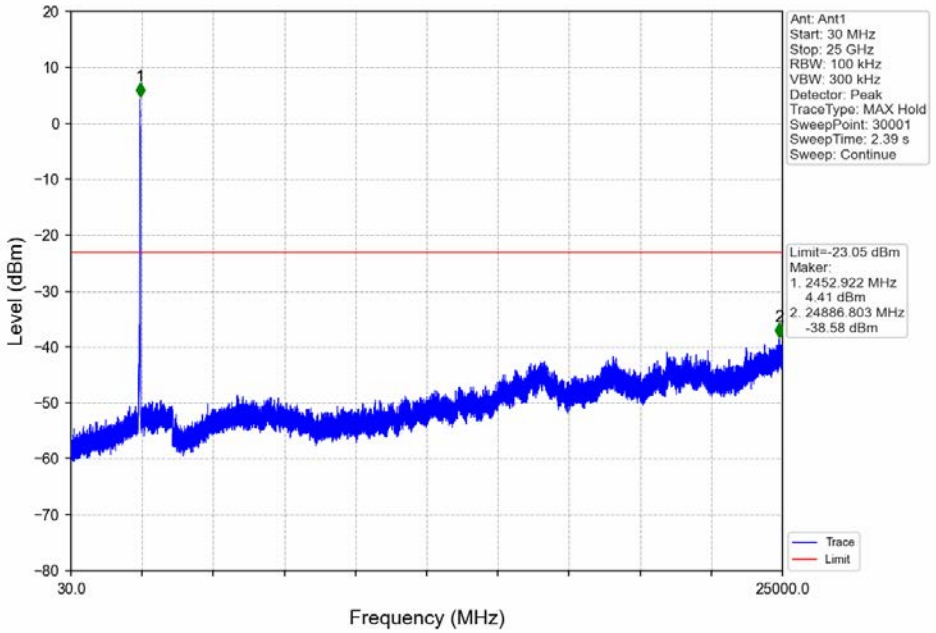

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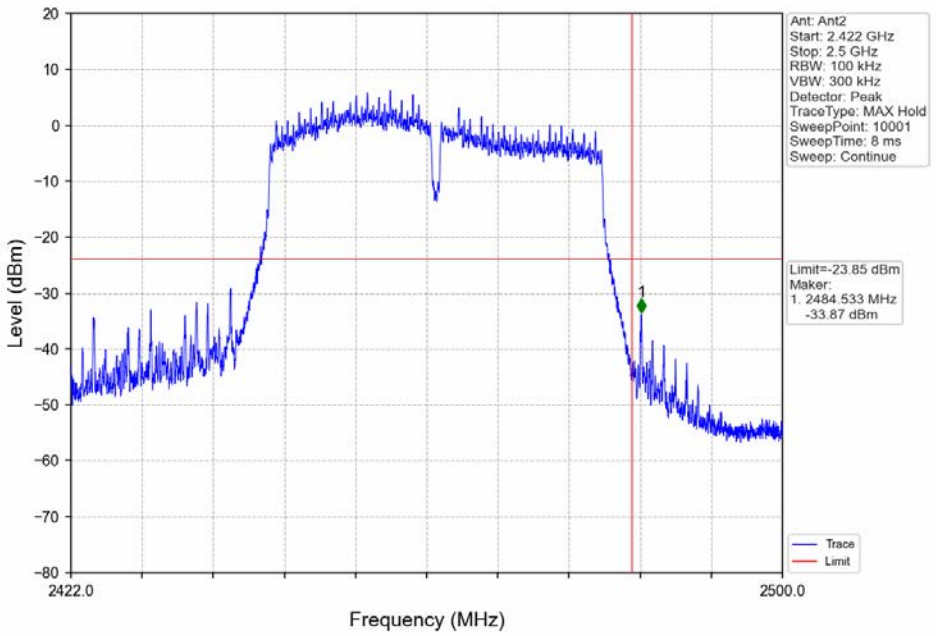
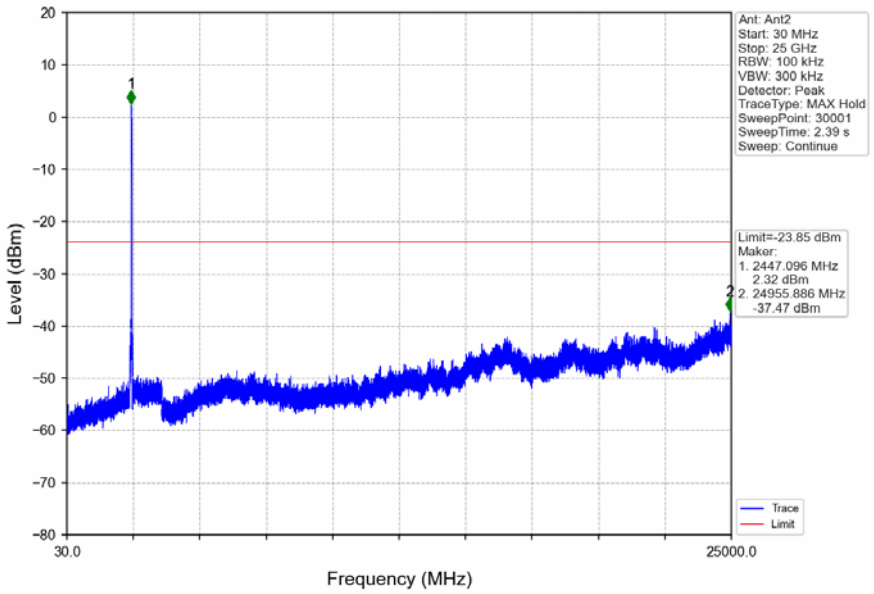


11N40_HCH_2462MHz_Ant2_NTNV



- End of the Report -