Case No. : CTA24050902401	
Ambient Condition: 25 ℃, 51 %RH	
According Standard: ■Part15C	
Test Date: 2024.4.3	**Test Engineer:** Evan ouyang

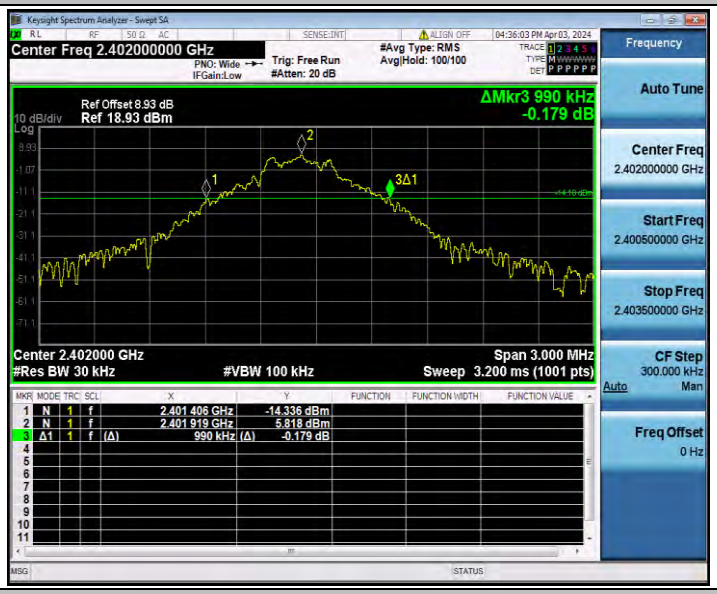
Appendix A.1: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.990	2401.406	2402.396	---	---
		2441	0.993	2440.400	2441.393	---	---
		2480	0.906	2479.424	2480.330	---	---
2DH1	Ant1	2402	1.290	2401.277	2402.567	---	---
		2441	1.263	2440.271	2441.534	---	---
		2480	1.272	2479.265	2480.537	---	---
3DH1	Ant1	2402	1.254	2401.274	2402.528	---	---
		2441	1.248	2440.283	2441.531	---	---
		2480	1.293	2479.265	2480.558	---	---

Test Graphs

DH1_Ant1_2402



DH1_Ant1_2441

DH1_Ant1_2480

2DH1_Ant1_2402

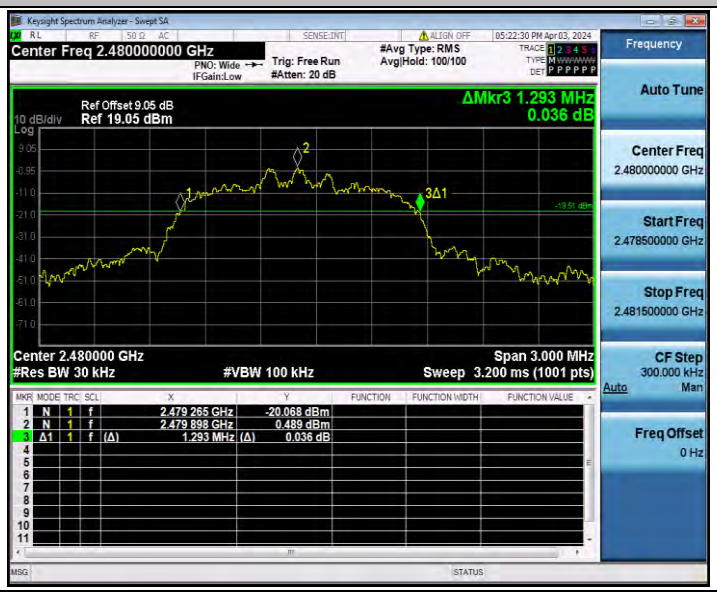
2DH1_Ant1_2441

2DH1_Ant1_2480

3DH1_Ant1_2402

3DH1_Ant1_2441

3DH1_Ant1_2480



Appendix A.2: Occupied Channel Bandwidth

Test Result

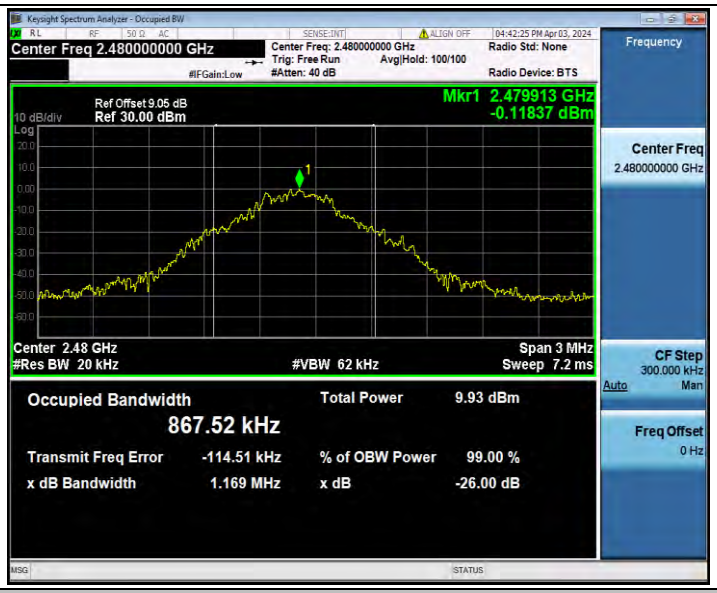
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.86059	2401.4777	2402.3383	---	---
		2441	0.85506	2440.4830	2441.3380	---	---
		2480	0.86752	2479.4517	2480.3193	---	---
2DH1	Ant1	2402	1.1674	2401.3230	2402.4904	---	---
		2441	1.1695	2440.3234	2441.4929	---	---
		2480	1.1630	2479.3123	2480.4753	---	---
3DH1	Ant1	2402	1.1747	2401.3188	2402.4935	---	---
		2441	1.1703	2440.3178	2441.4881	---	---
		2480	1.1651	2479.3152	2480.4803	---	---

Test Graphs

DH1_Ant1_2402

DH1_Ant1_2441

DH1_Ant1_2480



2DH1_Ant1_2402

2DH1_Ant1_2441

2DH1_Ant1_2480

3DH1_Ant1_2402

3DH1_Ant1_2441

3DH1_Ant1_2480

Appendix A.3: Maximum conducted output power

Test Result Peak

Test Mode	Antenna	Freq(MHz)	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
DH1	Ant1	2402	8.22	≤30.00	PASS
		2441	6.86	≤30.00	PASS
		2480	3.75	≤30.00	PASS
2DH1	Ant1	2402	8.37	≤20.97	PASS
		2441	6.97	≤20.97	PASS
		2480	3.82	≤20.97	PASS
3DH1	Ant1	2402	8.46	≤20.97	PASS
		2441	7.16	≤20.97	PASS
		2480	4.16	≤20.97	PASS

Note：

1.The Duty Cycle Factor and RBW Factor is compensated in the data.

Appendix A.4: Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	1.016	≥0.993	PASS
		Hop_2441	1.166	≥0.993	PASS
		Hop_2480	1.004	≥0.993	PASS
2DH1	Ant1	Hop_2402	0.984	≥0.860	PASS
		Hop_2441	1.002	≥0.860	PASS
		Hop_2480	1.156	≥0.860	PASS
3DH1	Ant1	Hop_2402	1.004	≥0.862	PASS
		Hop_2441	1.002	≥0.862	PASS
		Hop_2480	0.994	≥0.862	PASS

Test Graphs

DH1_Ant1_Hop_2402

DH1_Ant1_Hop_2441

DH1_Ant1_Hop_2480

2DH1_Ant1_Hop_2402

2DH1_Ant1_Hop_2441

2DH1_Ant1_Hop_2480

3DH1_Ant1_Hop_2402

3DH1_Ant1_Hop_2441

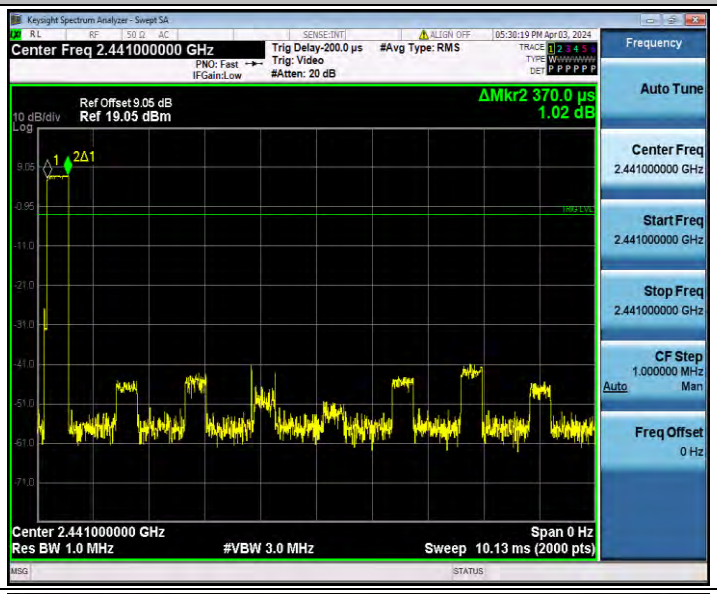
3DH1_Ant1_Hop_2480

Appendix A.5: Time of occupancy

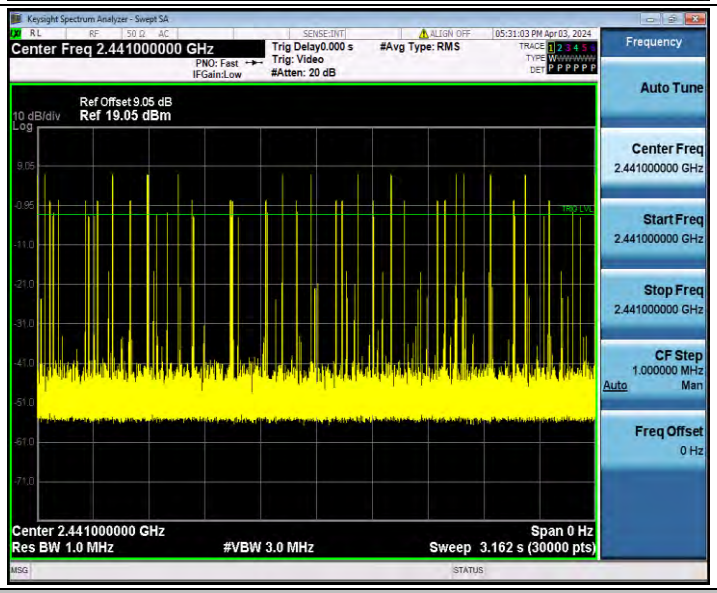
Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.370	330	0.122	≤0.4	PASS
DH3	Ant1	Hop	1.631	140	0.228	≤0.4	PASS
DH5	Ant1	Hop	2.883	130	0.375	≤0.4	PASS
2DH1	Ant1	Hop	0.375	620	0.233	≤0.4	PASS
2DH3	Ant1	Hop	1.631	170	0.277	≤0.4	PASS
2DH5	Ant1	Hop	2.883	70	0.202	≤0.4	PASS
3DH1	Ant1	Hop	0.380	580	0.22	≤0.4	PASS
3DH3	Ant1	Hop	1.637	160	0.262	≤0.4	PASS
3DH5	Ant1	Hop	2.883	130	0.375	≤0.4	PASS

Test Graphs

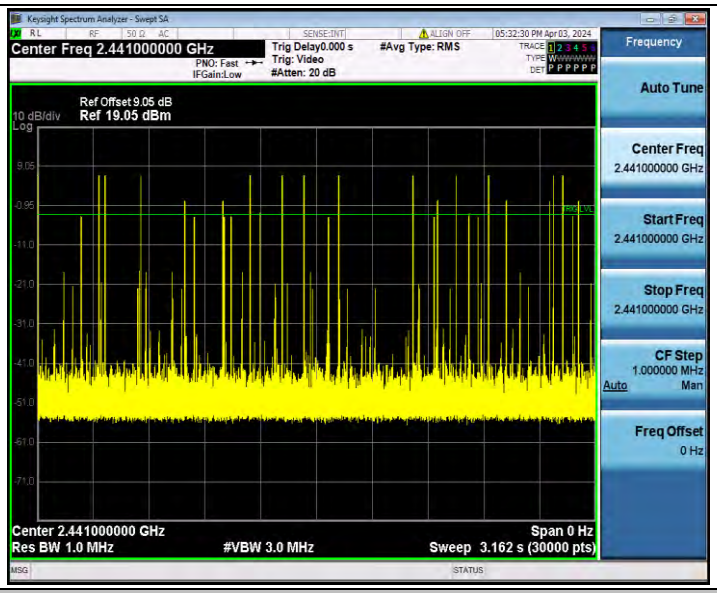
DH1_Ant1_Hop

DH3_Ant1_Hop

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-200.0 µs
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
PNO: Fast
IFGain:Low
Ref Offset 9.05 dB
10 dB/div
Ref 19.05 dBm
ΔMkr2 1.631 ms
0.29 dB
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 10.13 ms (2000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

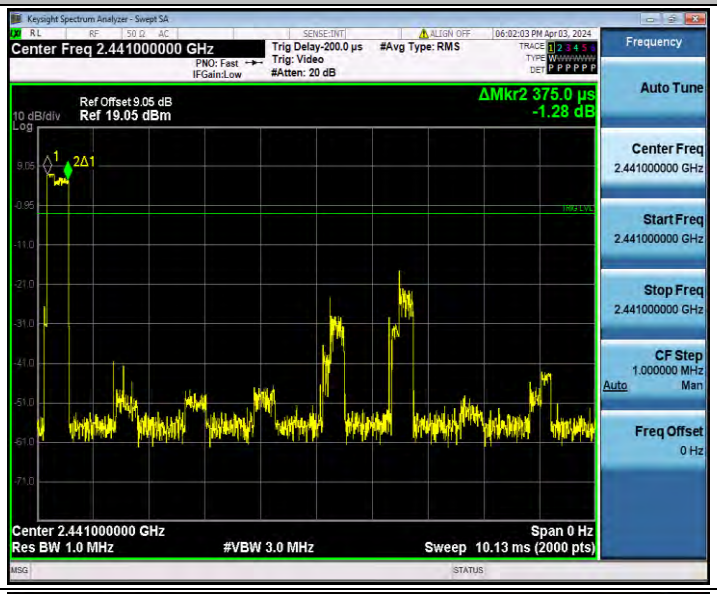

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
PNO: Fast
IFGain:Low
Ref Offset 9.05 dB
10 dB/div
Ref 19.05 dBm
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 3.162 s (30000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

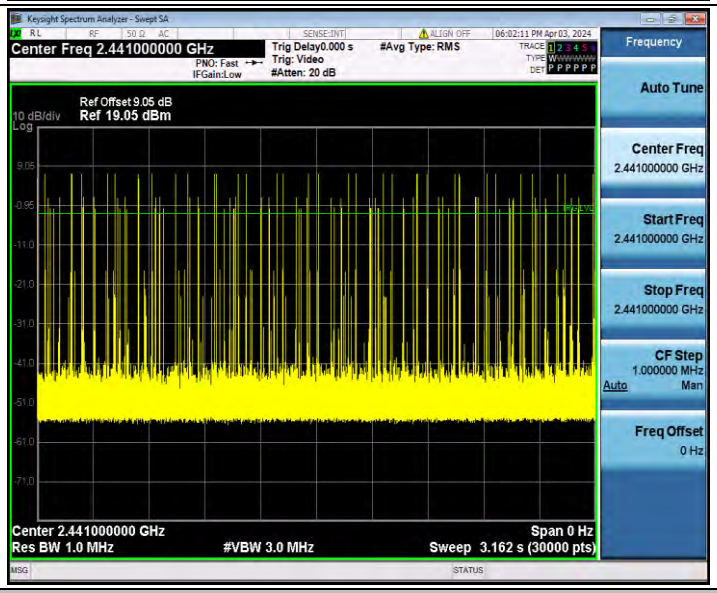
DH5_Ant1_Hop

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-200.0 µs
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
PNO: Fast
IFGain:Low
Ref Offset 9.05 dB
10 dB/div
Ref 19.05 dBm
ΔMkr2 2.883 ms
3.25 dB
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 10.13 ms (2000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

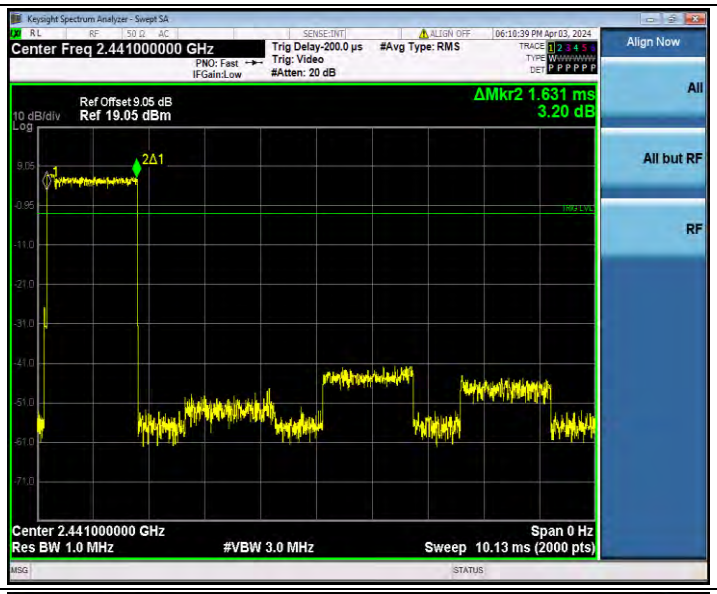


2DH1_Ant1_Hop



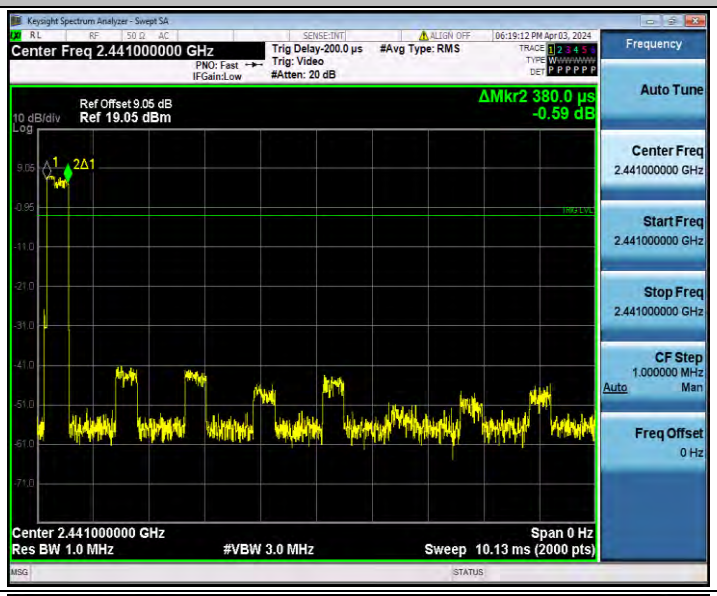


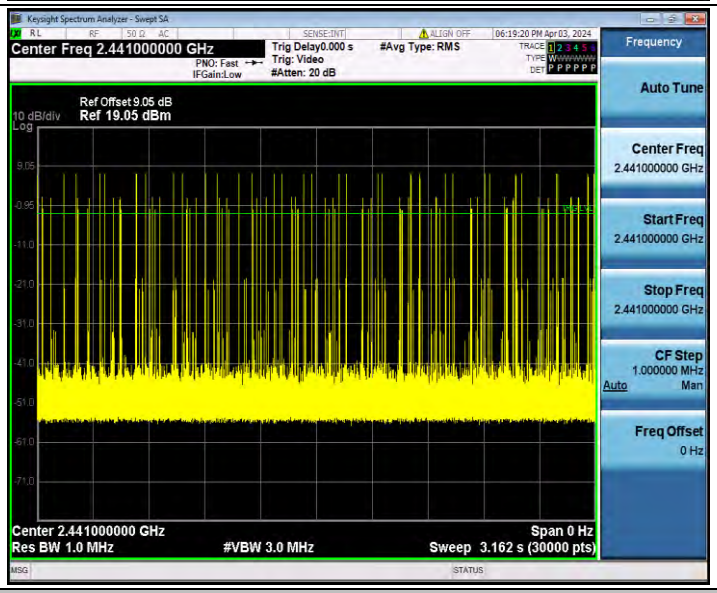
2DH3_Ant1_Hop



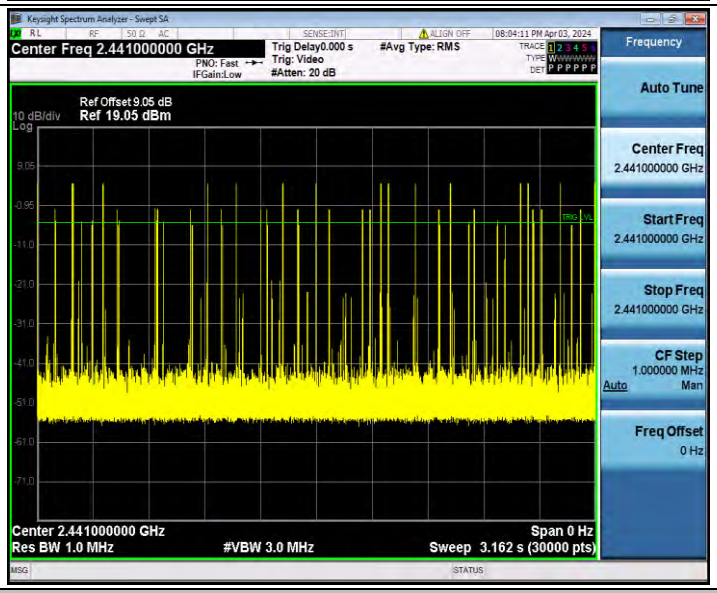
2DH5_Ant1_Hop

3DH1_Ant1_Hop

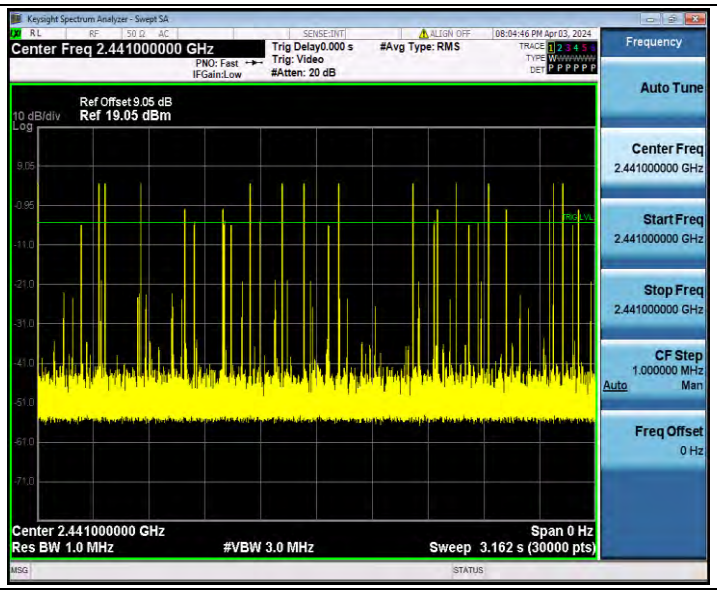




3DH3_Ant1_Hop



3DH5_Ant1_Hop

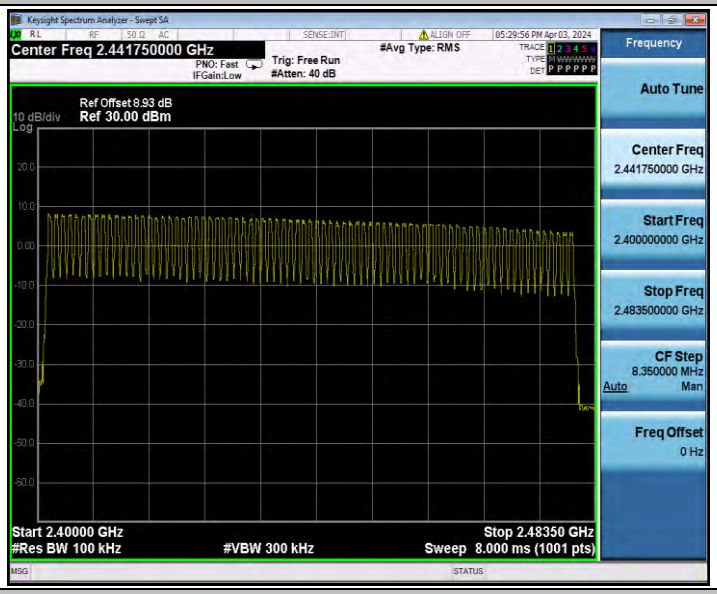

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
Ref Offset 9.05 dB
10 dB/div
Ref 19.05 dBm
Log
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 3.162 s (30000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

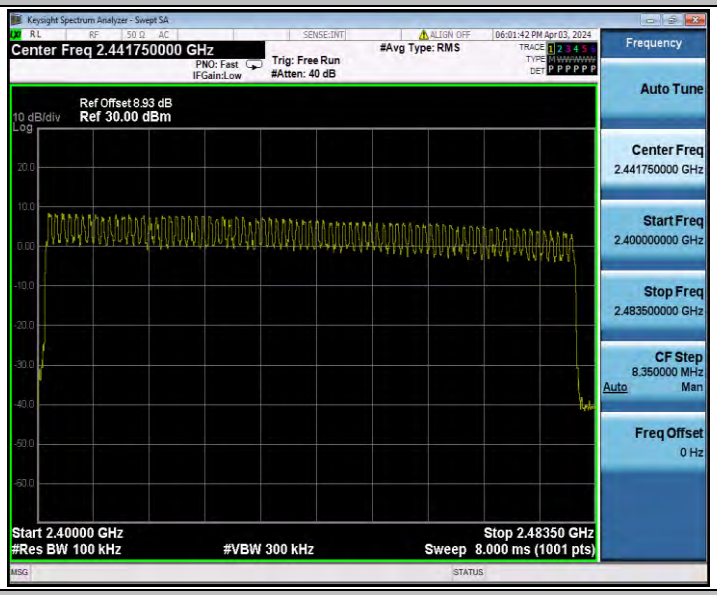
Appendix A.6: Number of hopping channels

Test Result

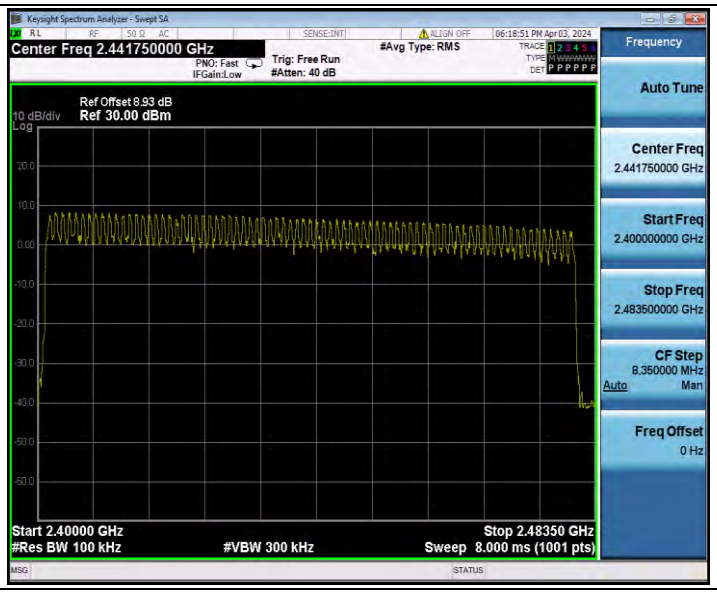
TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Hop	79	≥15	PASS
2DH1	Ant1	Hop	79	≥15	PASS
3DH1	Ant1	Hop	79	≥15	PASS

Test Graphs

DH1_Ant1_Hop


2DH1_Ant1_Hop


3DH1_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
06:18:51 PM Apr 03, 2024
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto
Man
Freq Offset
0 Hz
Ref Offset 8.93 dB
10 dB/div
Ref 30.00 dBm
Log
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)

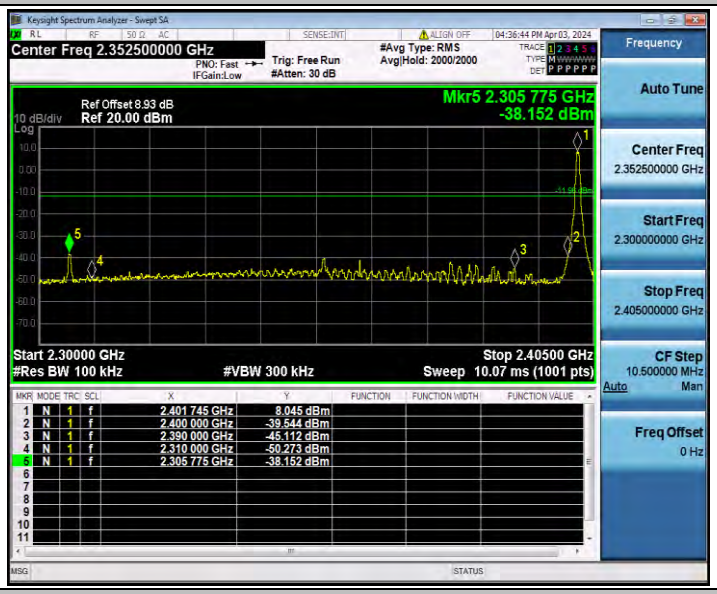
Appendix A.7: Band edge measurements

Test Result

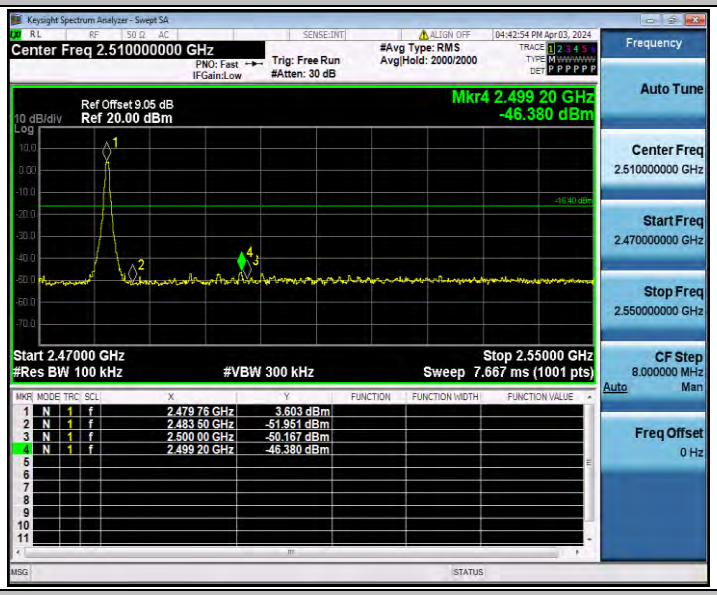
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	8.05	-38.15	≤-11.96	PASS
		High	2480	3.60	-46.38	≤-16.4	PASS
		Low	Hop_2402	7.83	-36.07	≤-12.17	PASS
		High	Hop_2480	4.36	-43.95	≤-15.64	PASS
2DH1	Ant1	Low	2402	8.15	-36.7	≤-11.85	PASS
		High	2480	3.62	-46.7	≤-16.39	PASS
		Low	Hop_2402	7.78	-36.31	≤-12.22	PASS
		High	Hop_2480	4.46	-43.41	≤-15.54	PASS
3DH1	Ant1	Low	2402	8.14	-37.04	≤-11.86	PASS
		High	2480	3.62	-46.63	≤-16.38	PASS
		Low	Hop_2402	8.14	-35.52	≤-11.86	PASS
		High	Hop_2480	4.29	-44.61	≤-15.72	PASS

Test Graphs

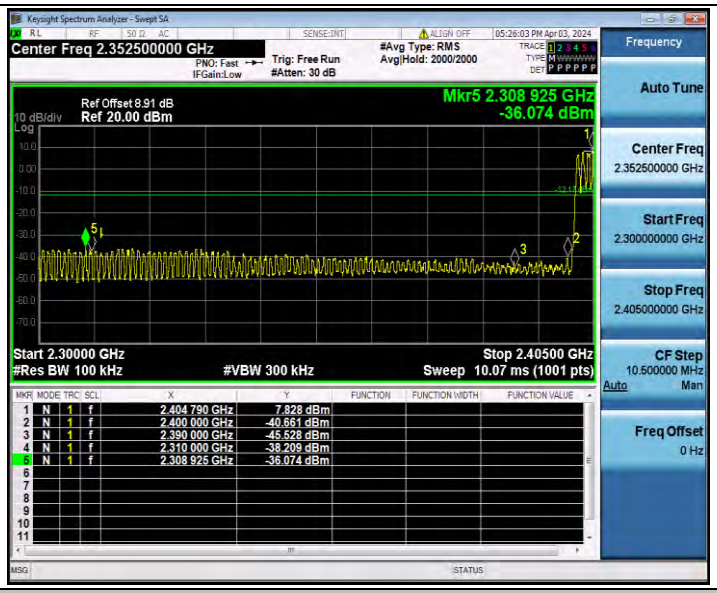
DH1_Ant1_Low_2402



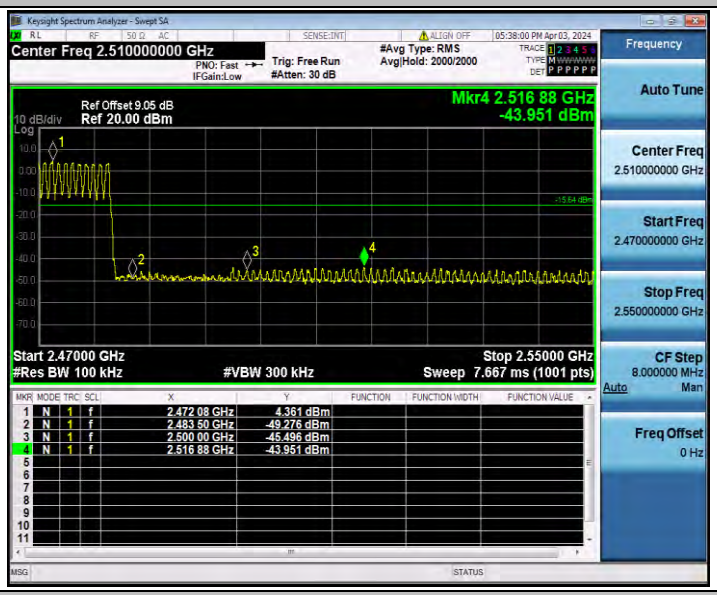
DH1_Ant1_High_2480



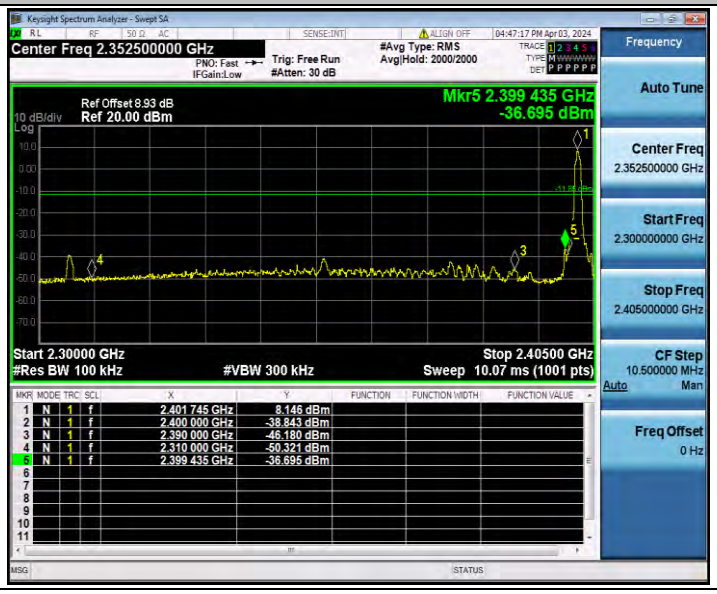
DH1_Ant1_Low_Hop_2402



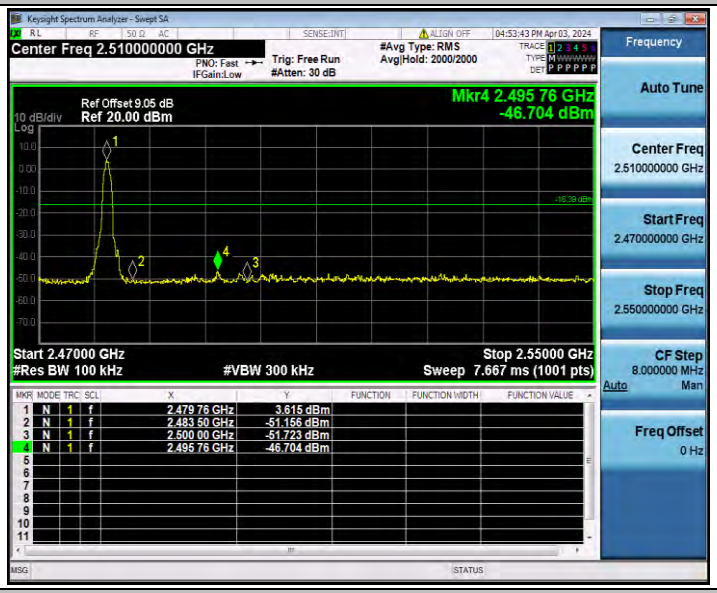
DH1_Ant1_High_Hop_2480



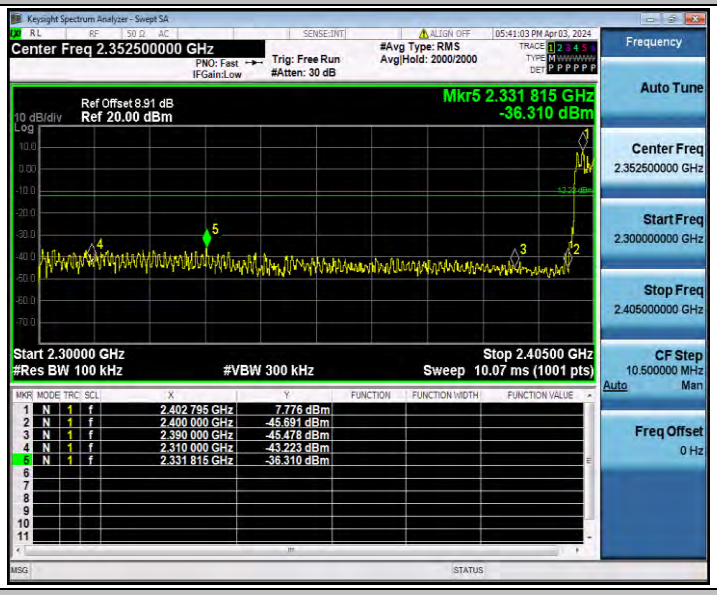
2DH1_Ant1_Low_2402



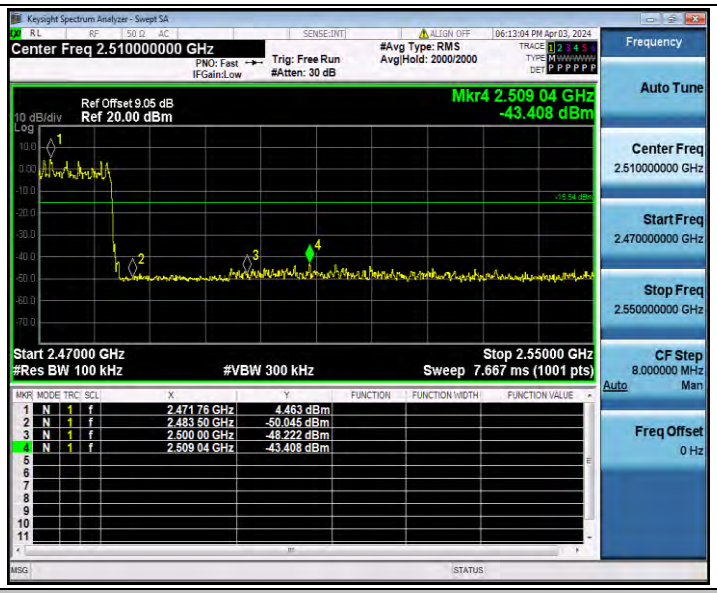
2DH1_Ant1_High_2480



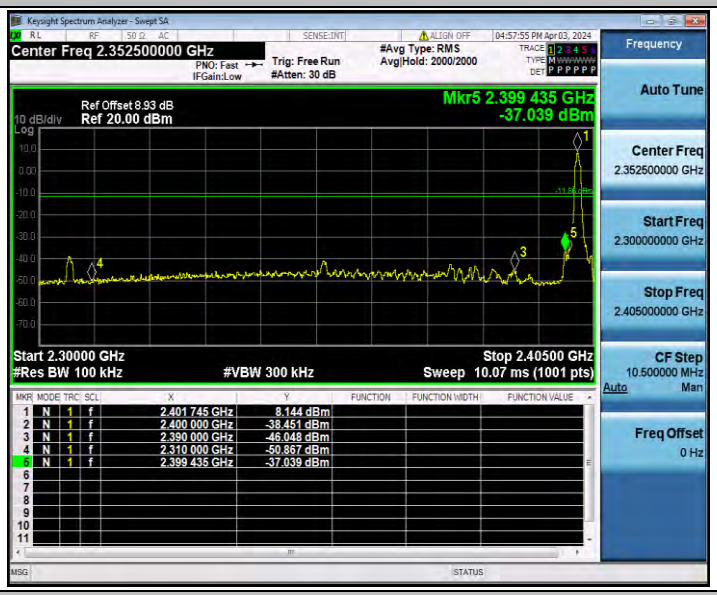
2DH1_Ant1_Low_Hop_2402



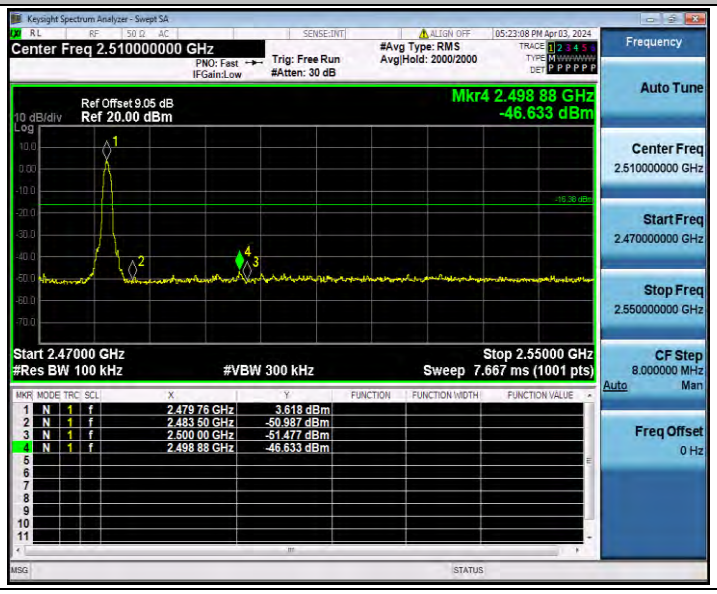
2DH1_Ant1_High_Hop_2480



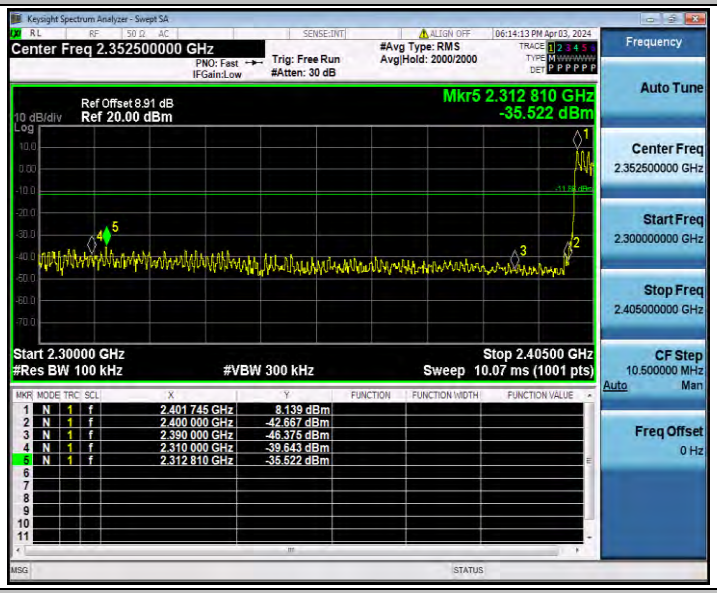
3DH1_Ant1_Low_2402



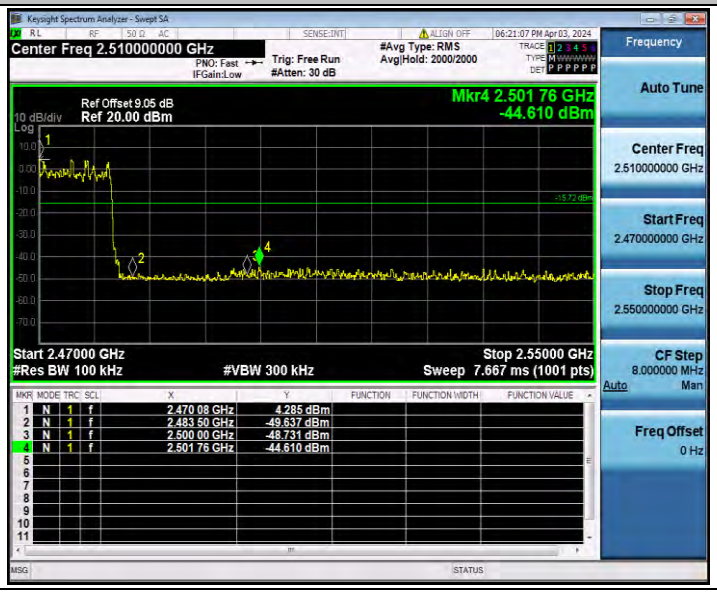
3DH1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_Hop_2480



Appendix A.8: Conducted Spurious Emission

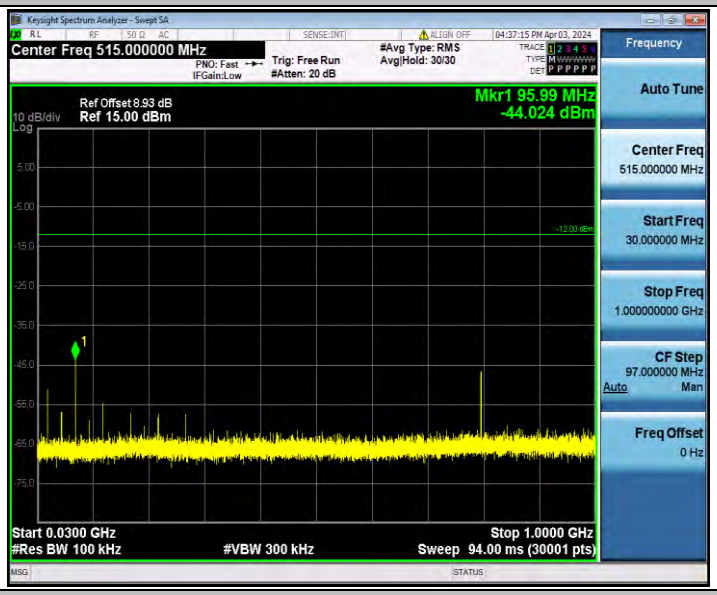
Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	8.00	8.00	---	PASS
			30~1000	8.00	-44.02	≤-12	PASS
			1000~26500	8.00	-23.88	≤-12	PASS
		2441	Reference	6.48	6.48	---	PASS
			30~1000	6.48	-44.14	≤-13.52	PASS
			1000~26500	6.48	-31.15	≤-13.52	PASS
		2480	Reference	3.40	3.40	---	PASS
			30~1000	3.40	-43.55	≤-16.6	PASS
			1000~26500	3.40	-37.44	≤-16.6	PASS
2DH1	Ant1	2402	Reference	7.83	7.83	---	PASS
			30~1000	7.83	-44.11	≤-12.17	PASS
			1000~26500	7.83	-21.99	≤-12.17	PASS
		2441	Reference	5.98	5.98	---	PASS
			30~1000	5.98	-44.18	≤-14.02	PASS
			1000~26500	5.98	-32.11	≤-14.02	PASS
		2480	Reference	3.51	3.51	---	PASS
			30~1000	3.51	-43.84	≤-16.49	PASS
			1000~26500	3.51	-39.35	≤-16.49	PASS
3DH1	Ant1	2402	Reference	7.85	7.85	---	PASS
			30~1000	7.85	-44.43	≤-12.15	PASS
			1000~26500	7.85	-24.66	≤-12.15	PASS
		2441	Reference	6.61	6.61	---	PASS
			30~1000	6.61	-44.11	≤-13.39	PASS
			1000~26500	6.61	-31.7	≤-13.39	PASS
		2480	Reference	3.35	3.35	---	PASS
			30~1000	3.35	-43.92	≤-16.65	PASS
			1000~26500	3.35	-38.27	≤-16.65	PASS

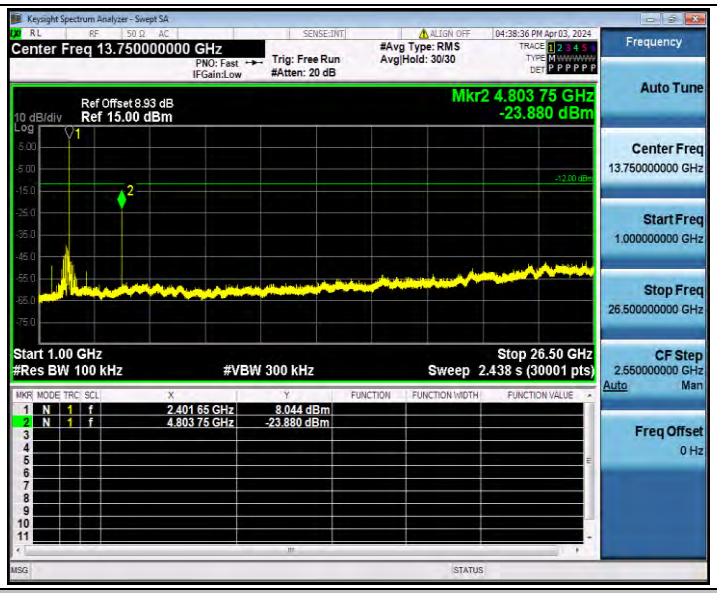
Test Graphs

DH1_Ant1_2402_0~Reference

DH1_Ant1_2402_30~1000

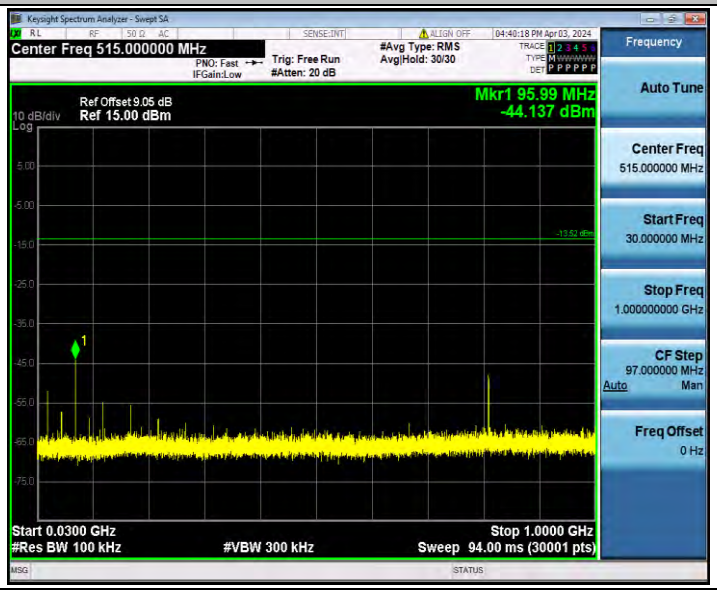


DH1_Ant1_2402_1000~26500

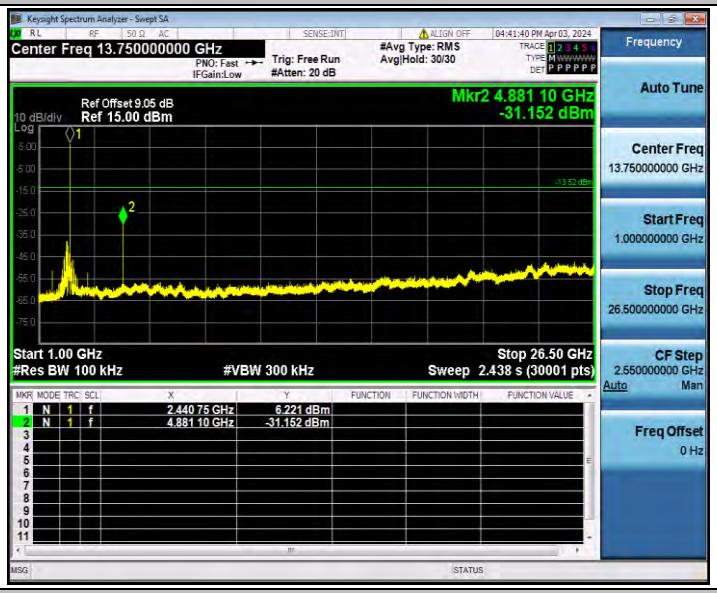


DH1_Ant1_2441_0~Reference

DH1_Ant1_2441_30~1000



DH1_Ant1_2441_1000~26500



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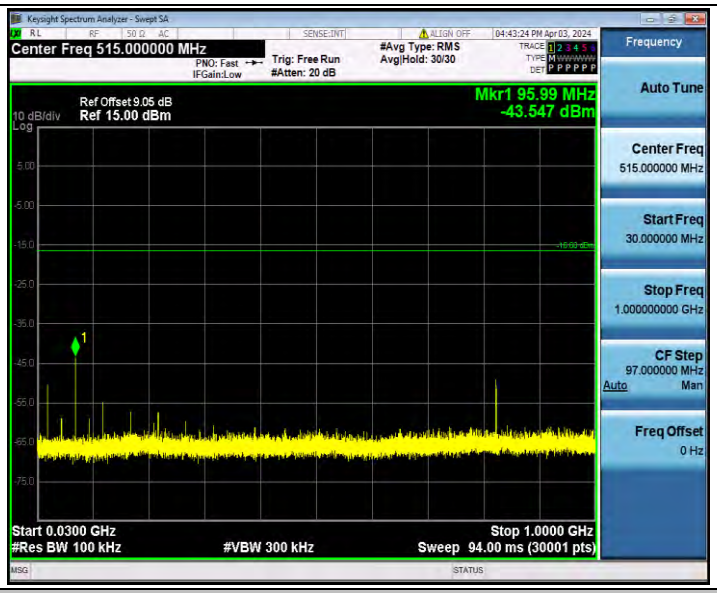
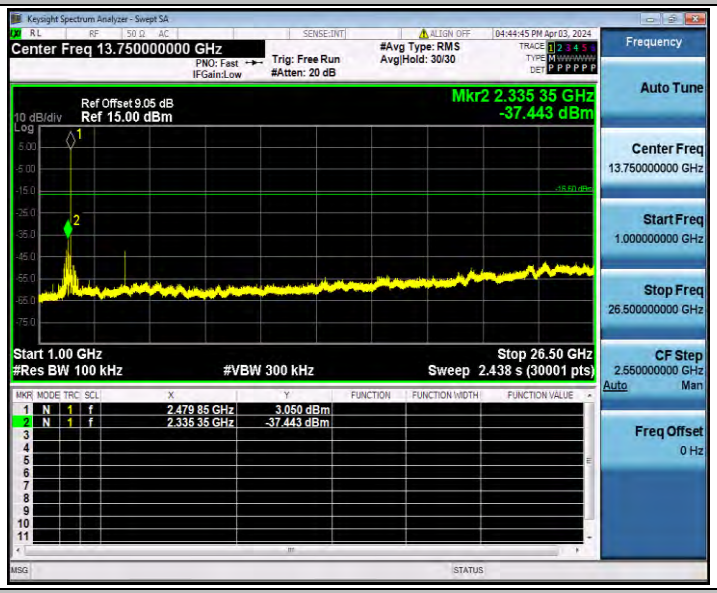


DH1_Ant1_2480_1000~26500



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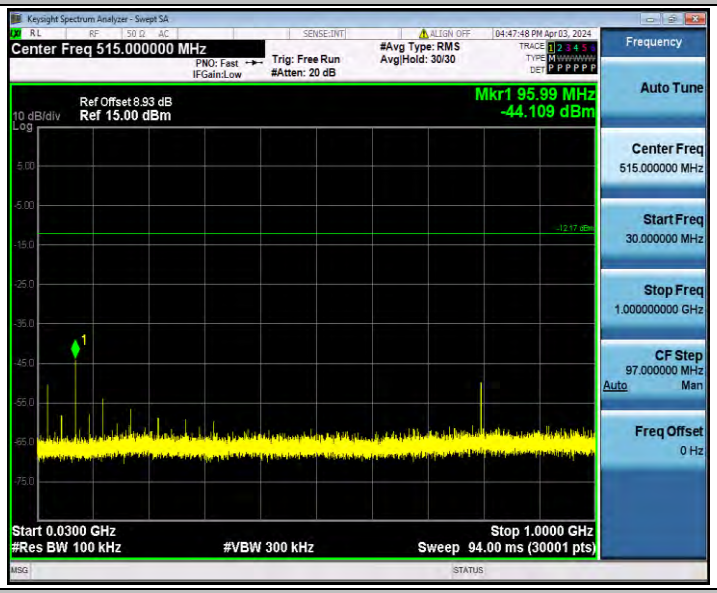
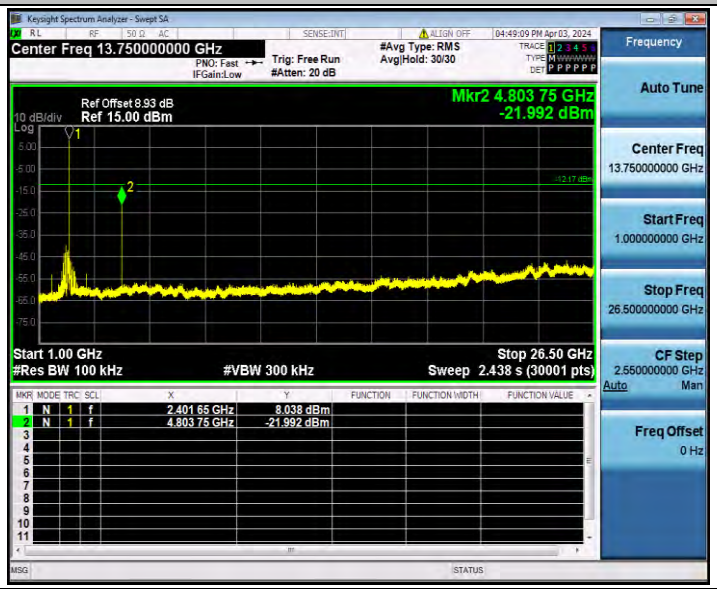
2DH1_Ant1_2402_30~1000



2DH1_Ant1_2402_1000~26500



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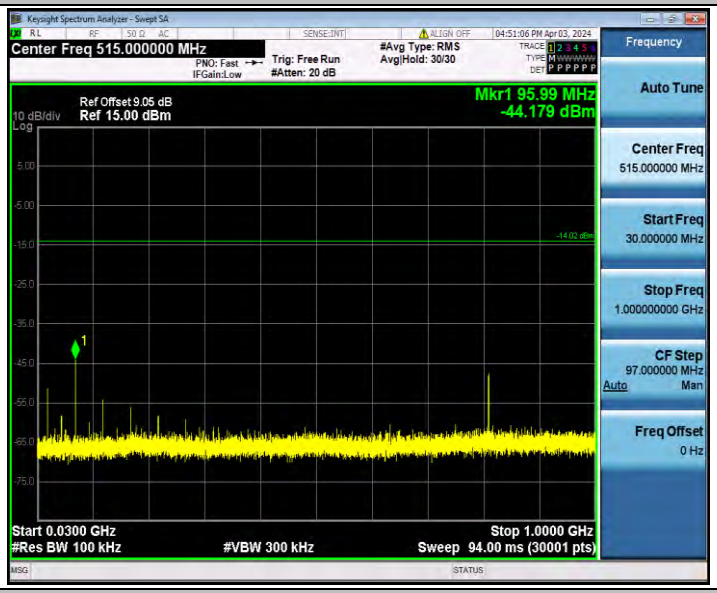

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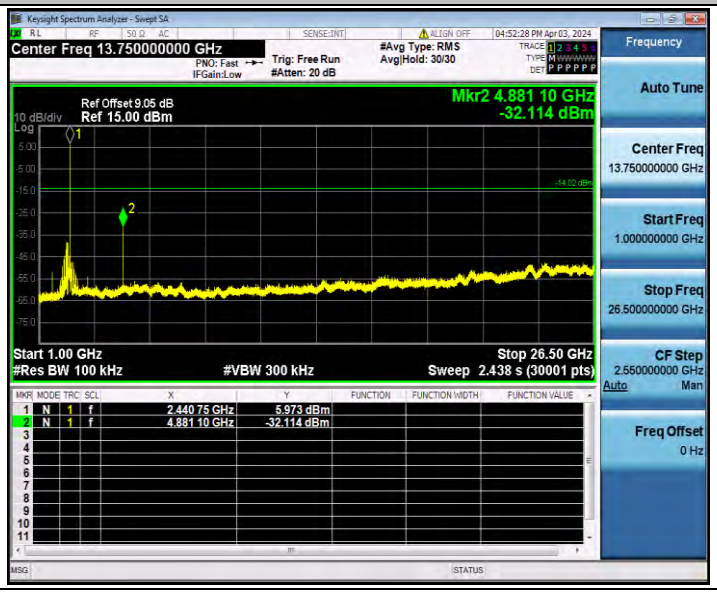

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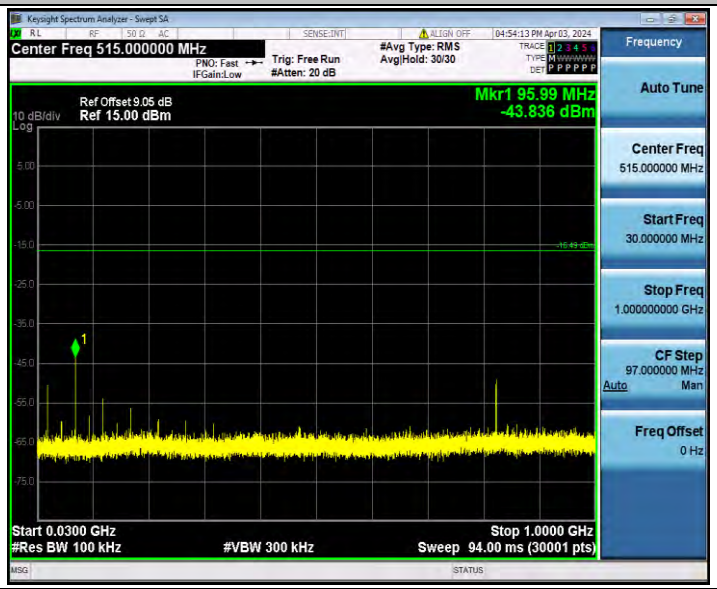
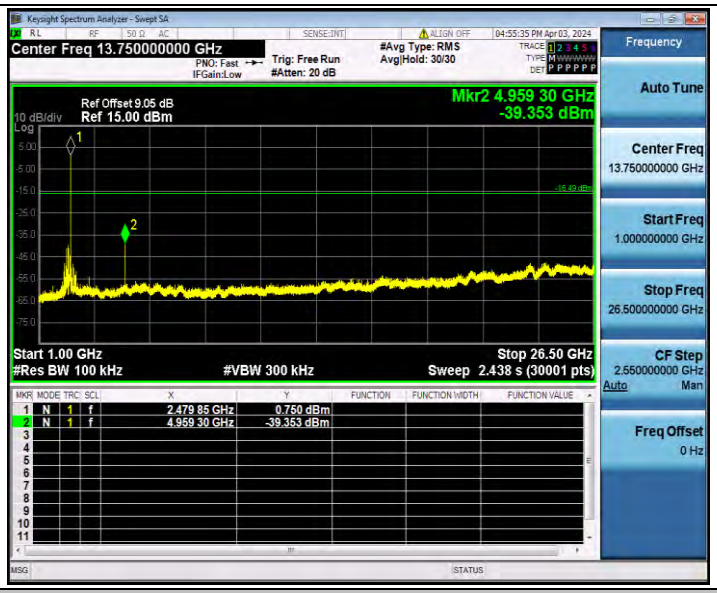


2DH1_Ant1_2480_1000~26500



3DH1_Ant1_2402_0~Reference

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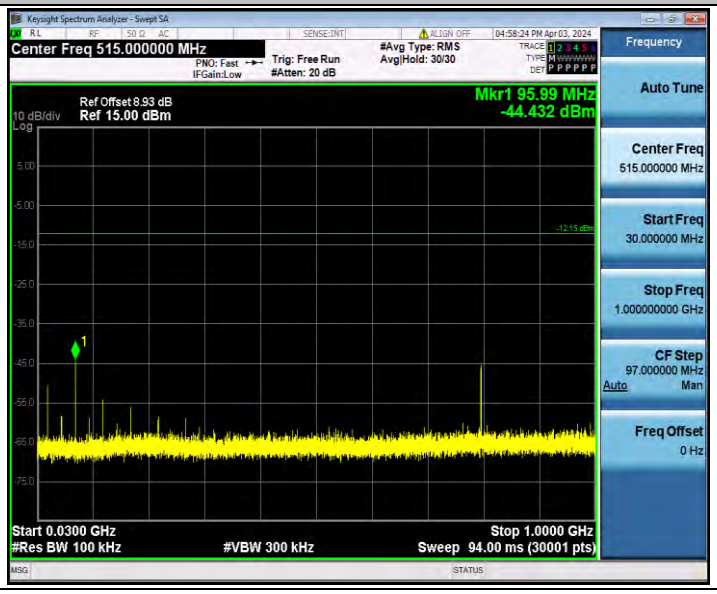
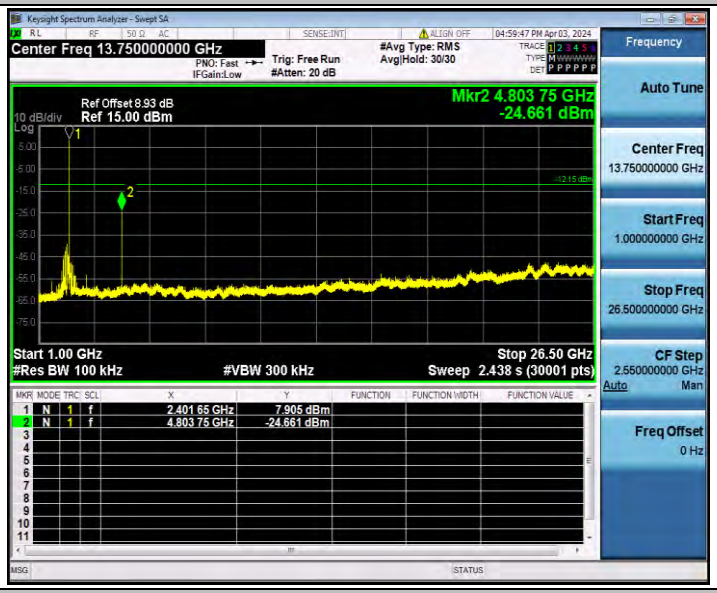


3DH1_Ant1_2402_1000~26500



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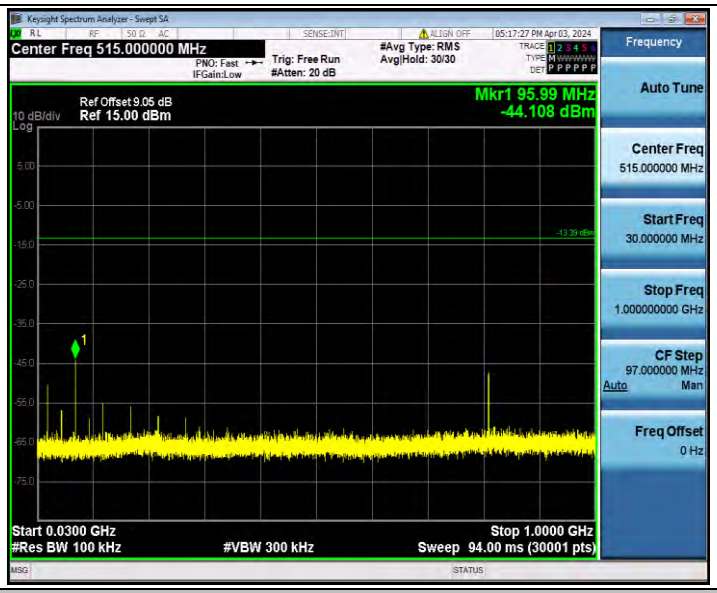
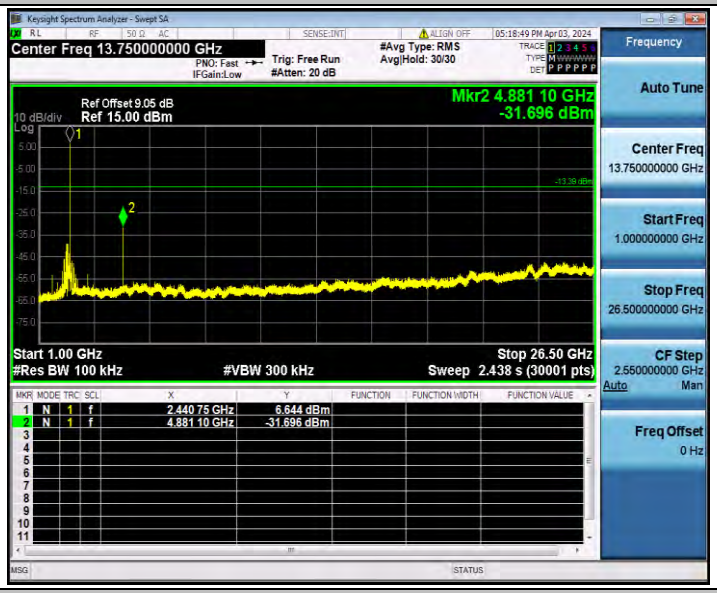


3DH1_Ant1_2441_1000~26500



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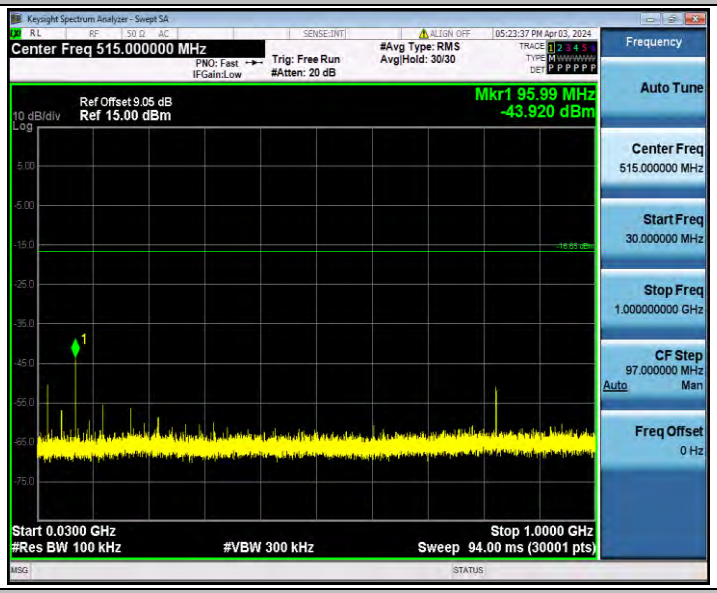
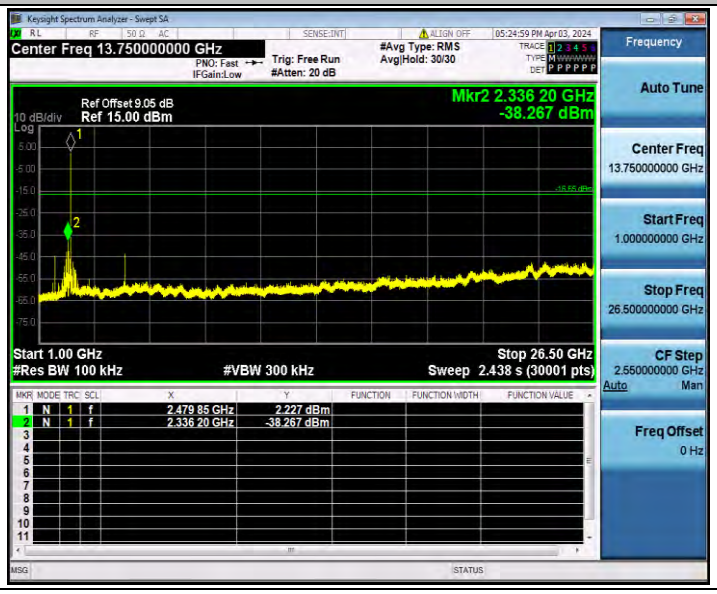


3DH1_Ant1_2480_1000~26500



Appendix A.9: Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH1	Ant1	Low	2402	AV	2310.000	-47.9	≤-41.20	47.30	≤54	PASS
				AV	2353.445	-41.49	≤-41.20	53.71	≤54	PASS
				AV	2390.000	-47	≤-41.20	48.20	≤54	PASS
				Peak	2310.000	-40.79	≤-21.20	54.41	≤74	PASS
				Peak	2353.865	-34.01	≤-21.20	61.19	≤74	PASS
				Peak	2390.000	-40.26	≤-21.20	54.94	≤74	PASS
		High	2480	AV	2483.500	-48.58	≤-41.20	46.62	≤54	PASS
				AV	2499.040	-46.58	≤-41.20	48.62	≤54	PASS
				AV	2500.000	-48.09	≤-41.20	47.11	≤54	PASS
				Peak	2483.500	-40.97	≤-21.20	54.23	≤74	PASS
				Peak	2499.360	-37.28	≤-21.20	57.92	≤74	PASS
				Peak	2500.000	-38.6	≤-21.20	56.60	≤74	PASS
2DH1	Ant1	Low	2402	AV	2310.000	-47.94	≤-41.20	47.26	≤54	PASS
				AV	2353.655	-41.73	≤-41.20	53.47	≤54	PASS
				AV	2390.000	-47.79	≤-41.20	47.41	≤54	PASS
				Peak	2310.000	-40.77	≤-21.20	54.43	≤74	PASS
				Peak	2353.445	-33.53	≤-21.20	61.67	≤74	PASS
				Peak	2390.000	-38.05	≤-21.20	57.15	≤74	PASS
		High	2480	AV	2483.500	-48.64	≤-41.20	46.56	≤54	PASS
				AV	2499.280	-47.11	≤-41.20	48.09	≤54	PASS
				AV	2500.000	-48.29	≤-41.20	46.91	≤54	PASS
				Peak	2483.500	-38.96	≤-21.20	56.24	≤74	PASS
				Peak	2499.200	-38.02	≤-21.20	57.18	≤74	PASS
				Peak	2500.000	-39.41	≤-21.20	55.79	≤74	PASS
3DH1	Ant1	Low	2402	AV	2310.000	-48.18	≤-41.20	47.02	≤54	PASS
				AV	2353.970	-41.73	≤-41.20	53.47	≤54	PASS
				AV	2390.000	-47.84	≤-41.20	47.36	≤54	PASS
				Peak	2310.000	-40.87	≤-21.20	54.33	≤74	PASS
				Peak	2354.180	-33.36	≤-21.20	61.84	≤74	PASS
				Peak	2390.000	-40.32	≤-21.20	54.88	≤74	PASS
		High	2480	AV	2483.500	-48.5	≤-41.20	46.70	≤54	PASS
				AV	2498.800	-47.17	≤-41.20	48.03	≤54	PASS
				AV	2500.000	-48.23	≤-41.20	46.97	≤54	PASS
				Peak	2483.500	-41.92	≤-21.20	53.28	≤74	PASS
				Peak	2499.120	-37.78	≤-21.20	57.42	≤74	PASS

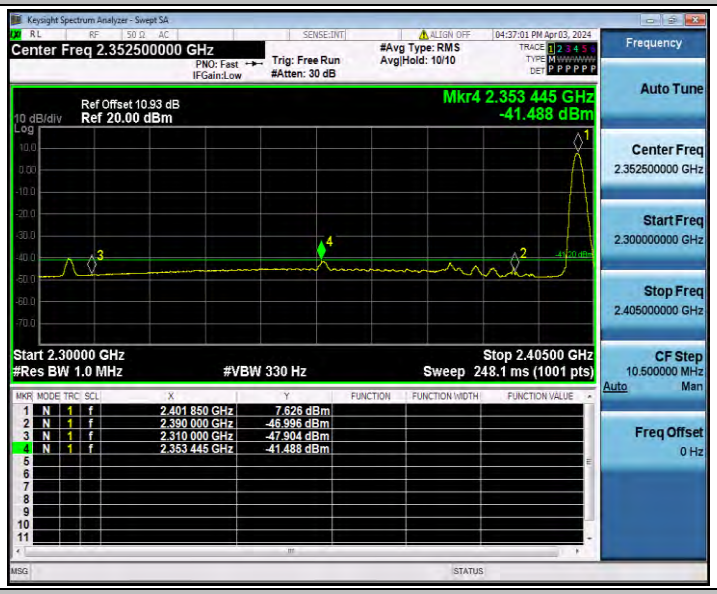
				Peak	2500.000	-39.83	≤-21.20	55.37	≤74	PASS

Note：

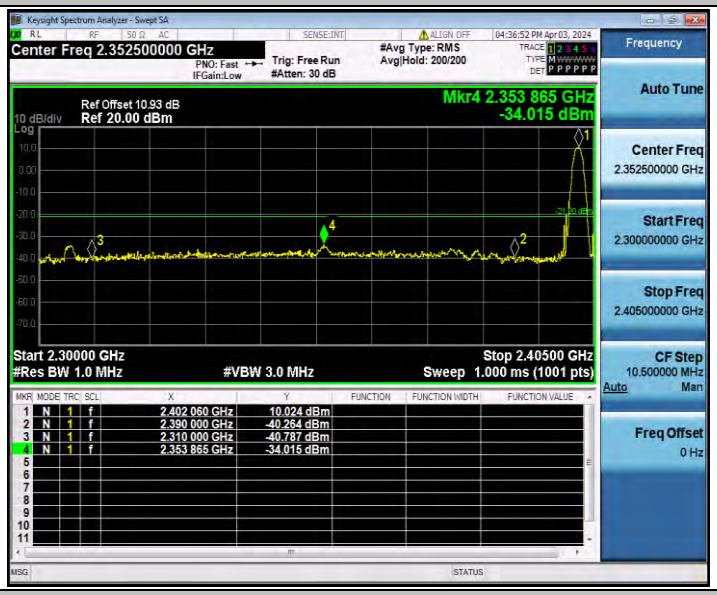
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

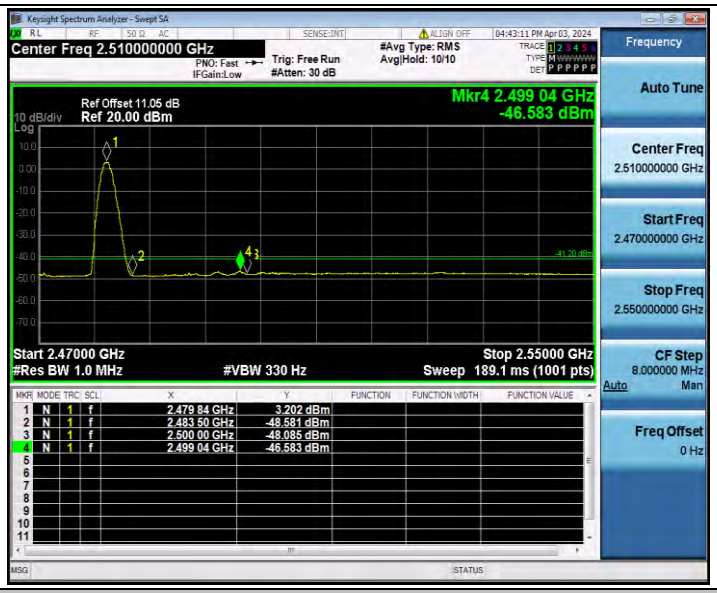
DH1_Ant1_Low_2402_AV



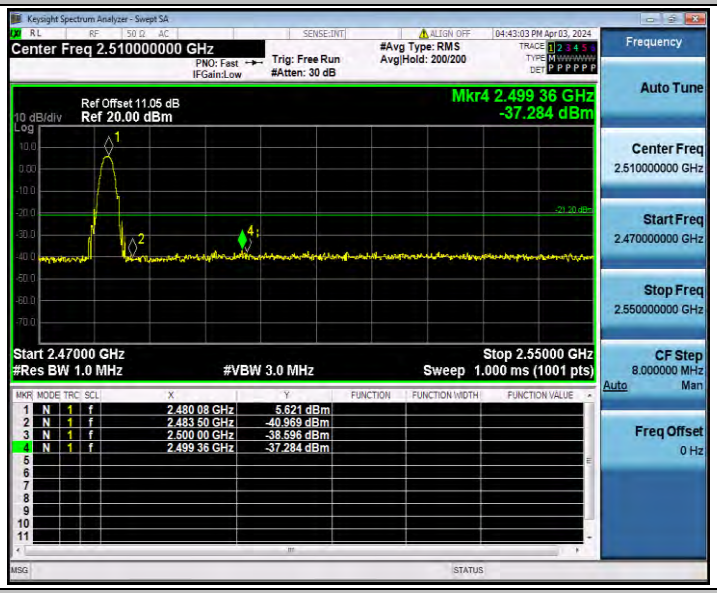
DH1_Ant1_Low_2402_Peak



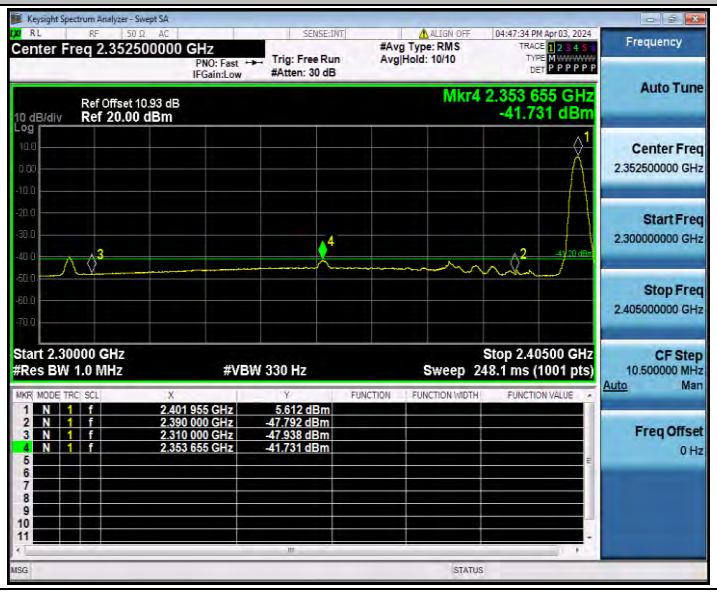
DH1_Ant1_High_2480_AV



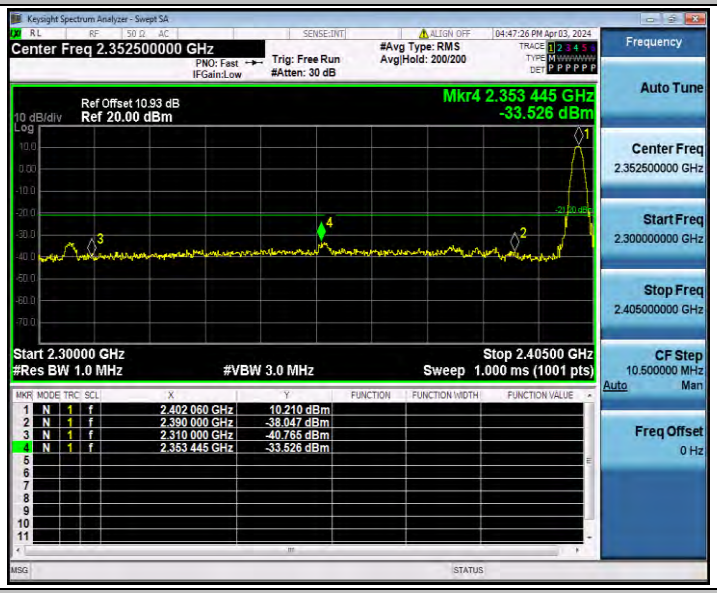
DH1_Ant1_High_2480_Peak



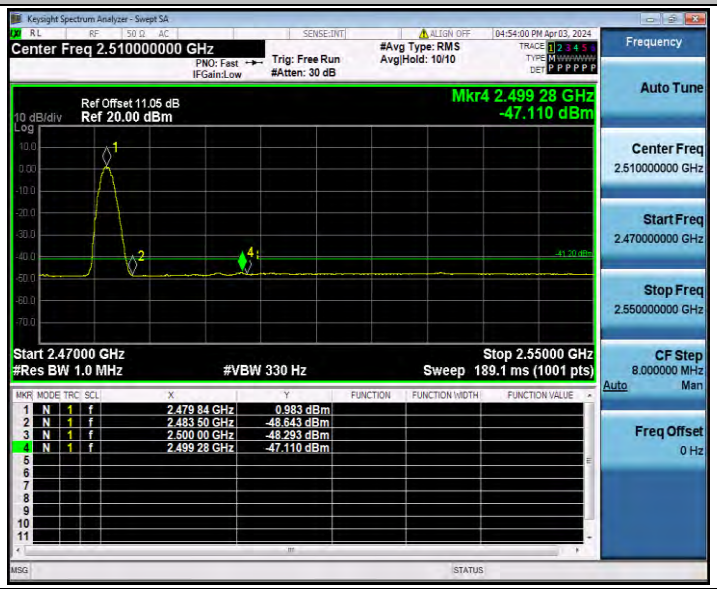
2DH1_Ant1_Low_2402_AV



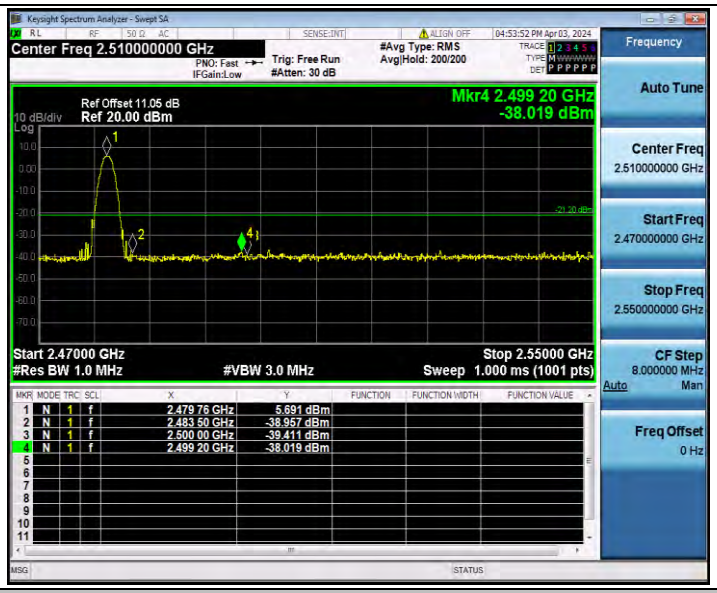
2DH1_Ant1_Low_2402_Peak



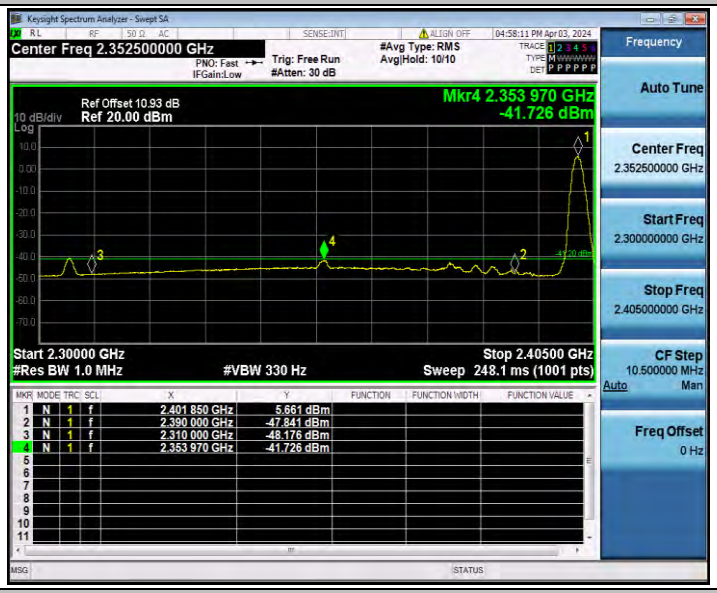
2DH1_Ant1_High_2480_AV



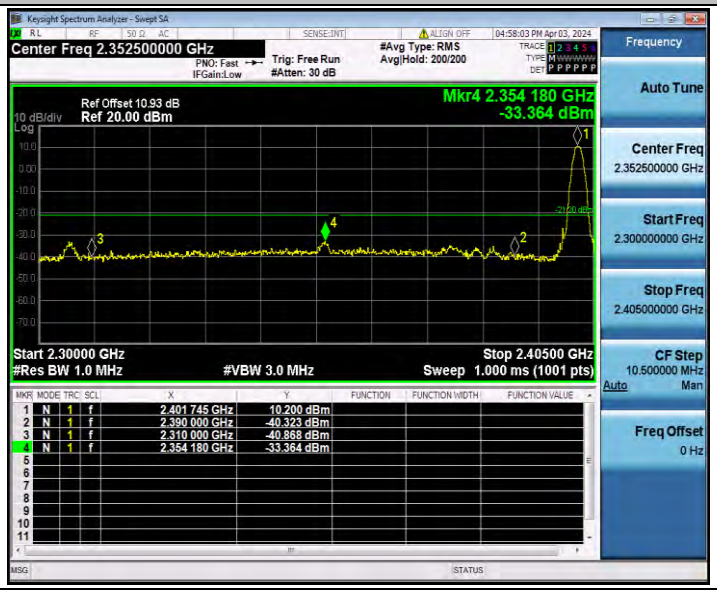
2DH1_Ant1_High_2480_Peak



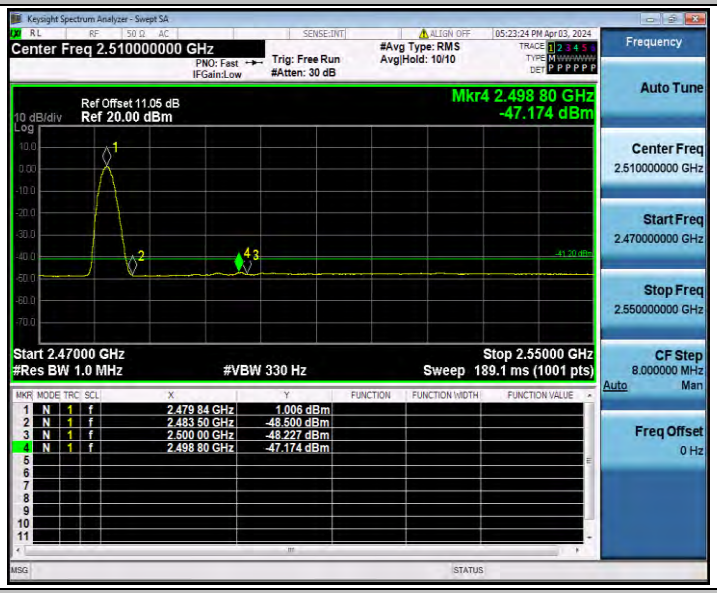
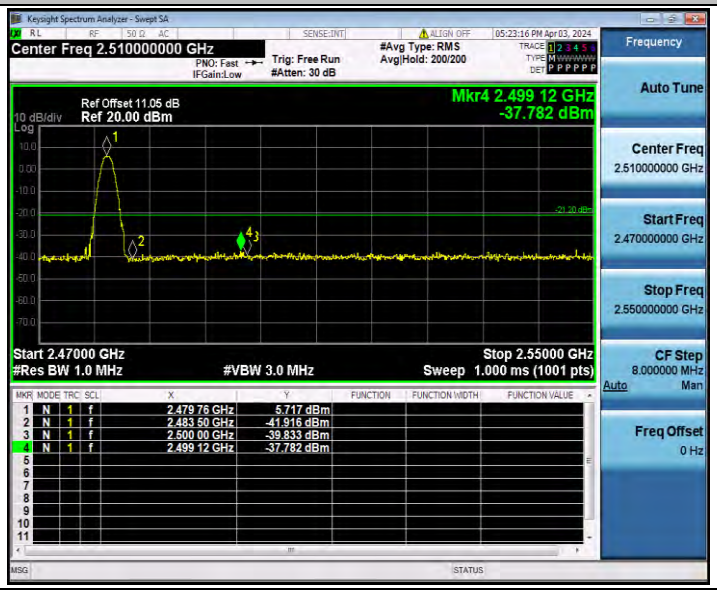
3DH1_Ant1_Low_2402_AV



3DH1_Ant1_Low_2402_Peak



3DH1_Ant1_High_2480_AV



3DH1_Ant1_High_2480_Peak