Appendix Test Data

Report No.:	18220WC40038201	Test Sample No.:	1-2-2
Start Test Date:	2024.3.15	Finish Test Date:	2024.3.15
Test Engineer:	Jokes Huang	Auditor:	Justin Feng
Temperature:	25℃	Relative Humidity:	47%
Pressure:	101kPa		

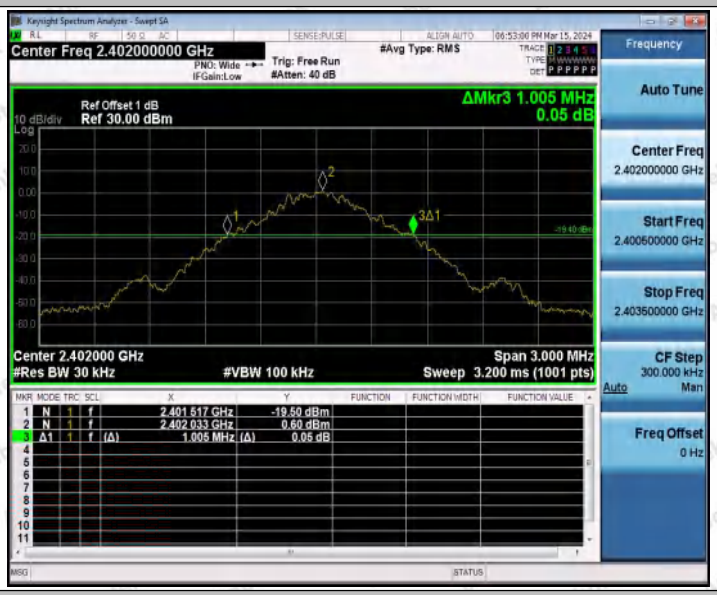
Appendix A: 20dB Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.005	2401.517	2402.522	---	---
		2441	1.035	2440.505	2441.540	---	---
		2480	1.044	2479.499	2480.543	---	---
2DH5	Ant1	2402	1.326	2401.364	2402.690	---	---
		2441	1.344	2440.352	2441.696	---	---
		2480	1.323	2479.376	2480.699	---	---
3DH5	Ant1	2402	1.305	2401.370	2402.675	---	---
		2441	1.305	2440.370	2441.675	---	---
		2480	1.347	2479.352	2480.699	---	---

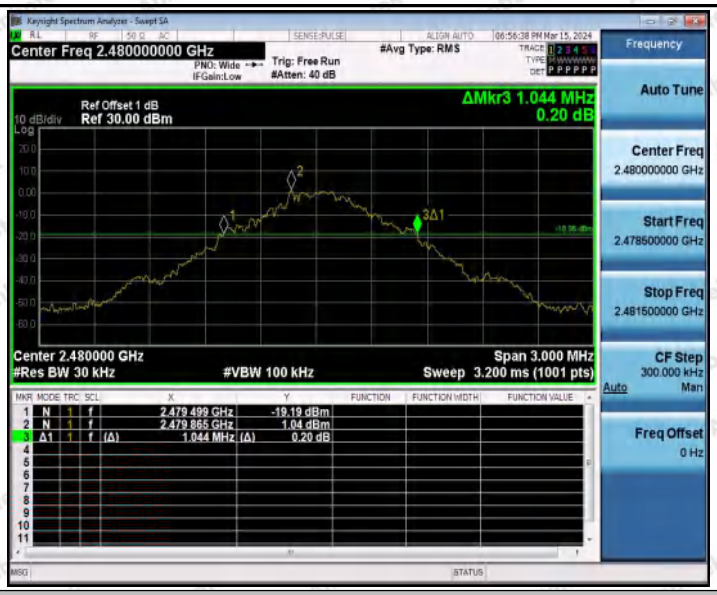
Test Graphs

DH5_Ant1_2402

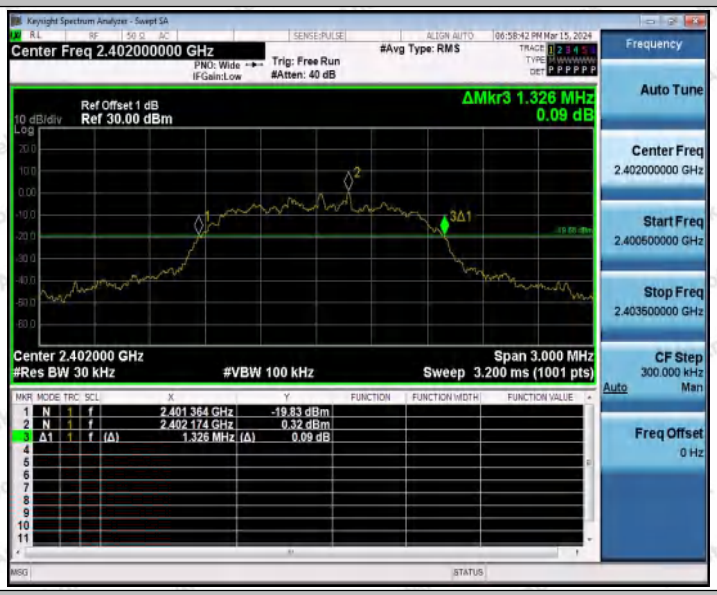


DH5_Ant1_2441

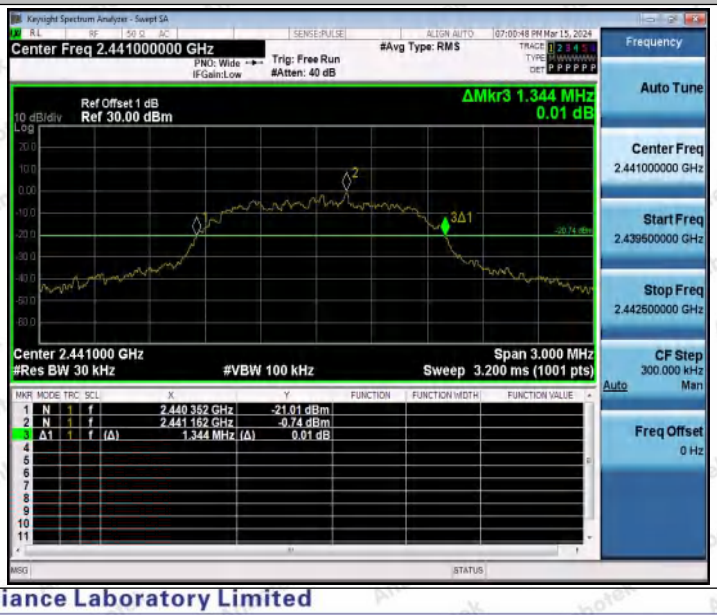
DH5_Ant1_2480



2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480

3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480

Appendix B: 99% Occupied Bandwidth

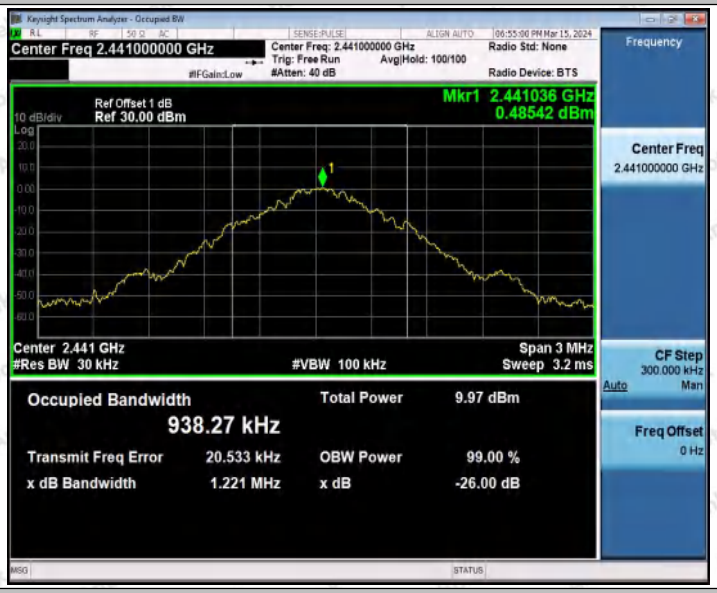
Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.91625	2401.5627	2402.4790	---	---
		2441	0.93827	2440.5514	2441.4897	---	---
		2480	0.94896	2479.5426	2480.4916	---	---
2DH5	Ant1	2402	1.2046	2401.4209	2402.6255	---	---
		2441	1.2132	2440.4171	2441.6303	---	---
		2480	1.2181	2479.4235	2480.6416	---	---
3DH5	Ant1	2402	1.2062	2401.4148	2402.6210	---	---
		2441	1.2136	2440.4147	2441.6283	---	---
		2480	1.2294	2479.4054	2480.6348	---	---

Test Graphs

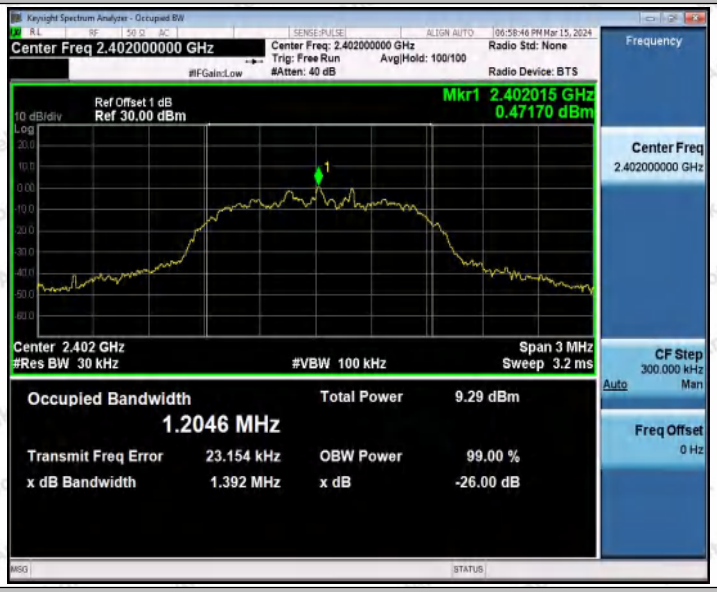
DH5_Ant1_2402

DH5_Ant1_2441

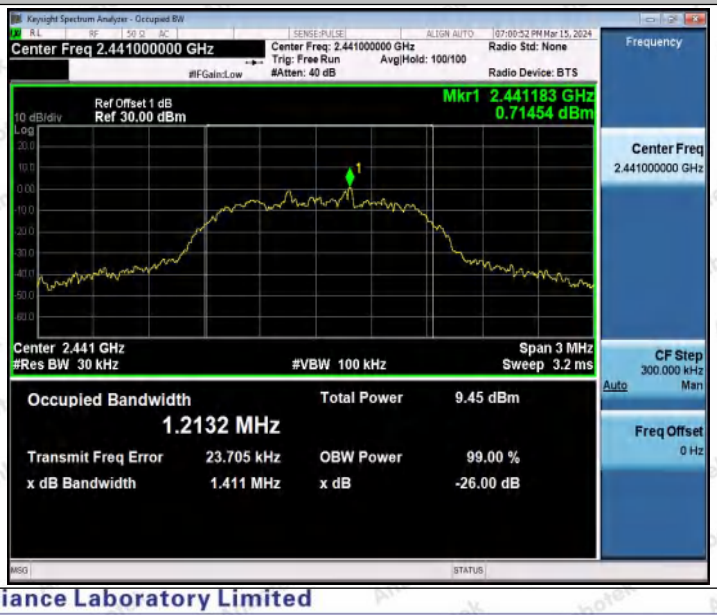


DH5_Ant1_2480

2DH5_Ant1_2402

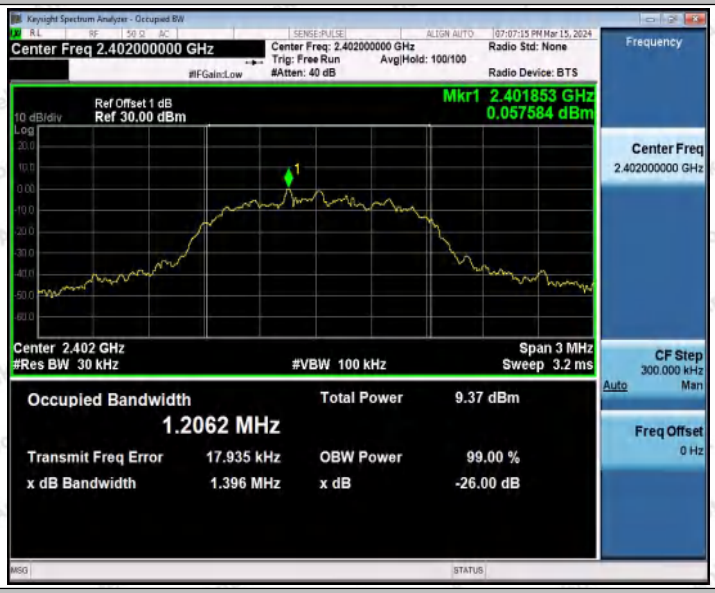


2DH5_Ant1_2441



2DH5_Ant1_2480

3DH5_Ant1_2402



3DH5_Ant1_2441

3DH5_Ant1_2480

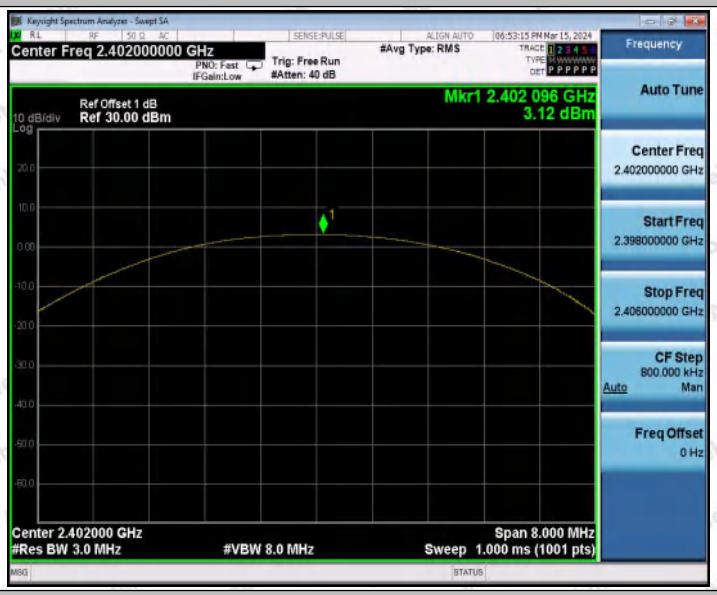
Appendix C: Maximum Conducted Output Power

Test Result Peak

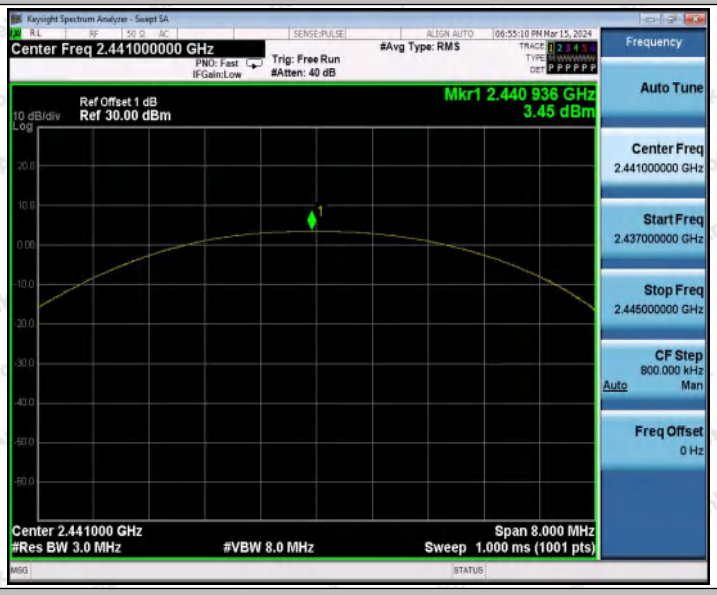
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	3.12	≤20.97	PASS
		2441	3.45	≤20.97	PASS
		2480	3.54	≤20.97	PASS
2DH5	Ant1	2402	3.9	≤20.97	PASS
		2441	4.22	≤20.97	PASS
		2480	4.28	≤20.97	PASS
3DH5	Ant1	2402	4.33	≤20.97	PASS
		2441	4.62	≤20.97	PASS
		2480	4.72	≤20.97	PASS

Test Graphs

DH5_Ant1_2402

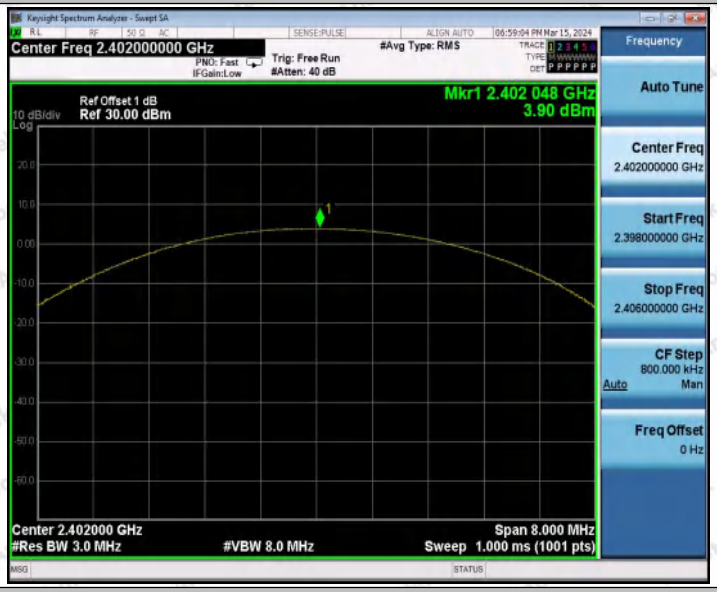


DH5_Ant1_2441

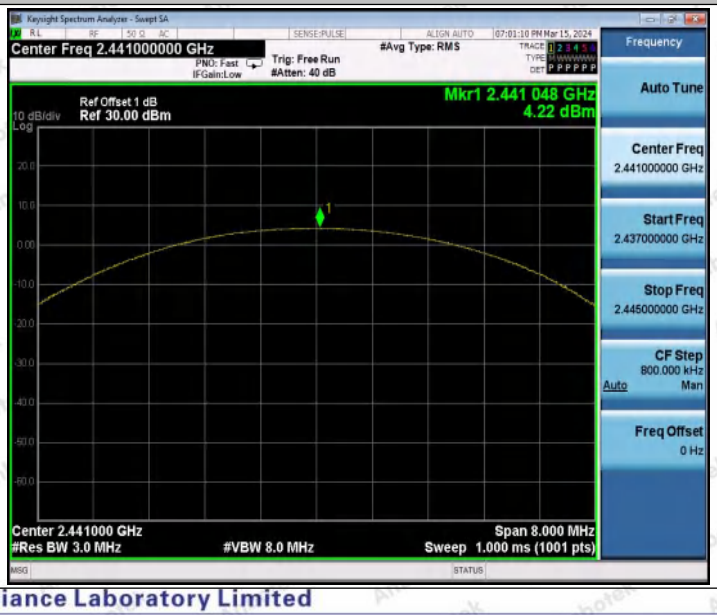


DH5_Ant1_2480

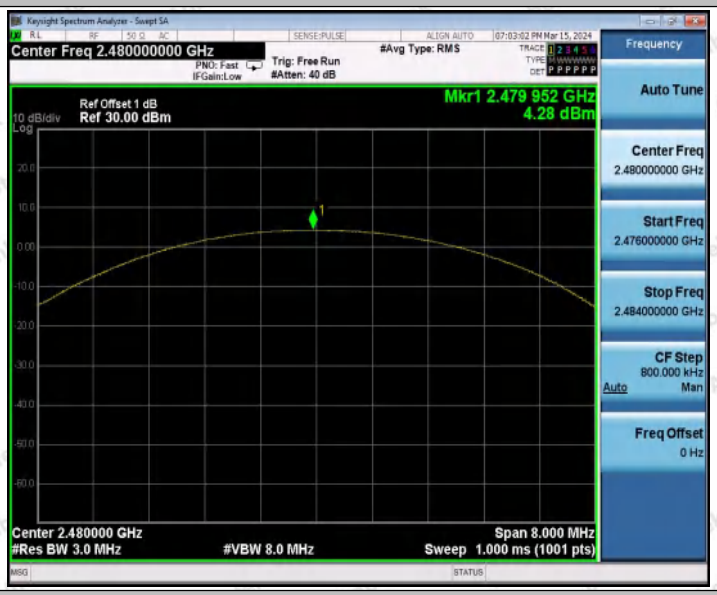
2DH5_Ant1_2402



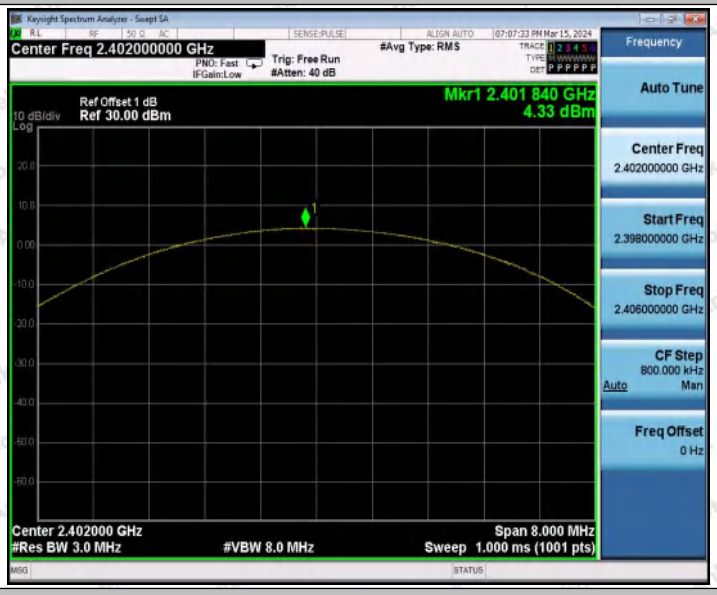
2DH5_Ant1_2441



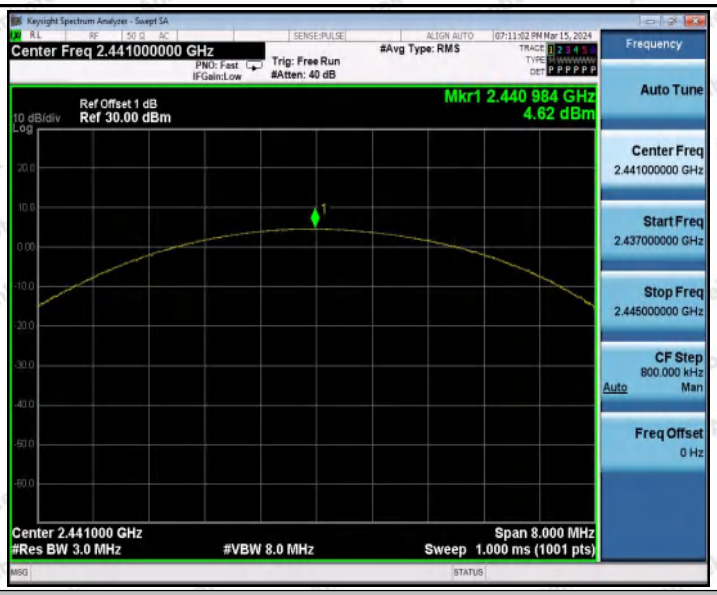
2DH5_Ant1_2480



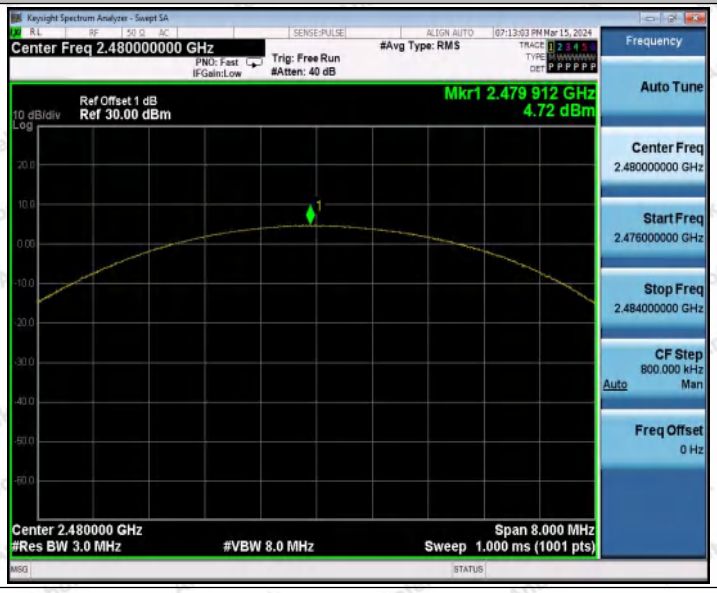
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



Appendix D: Carrier Frequency Separation

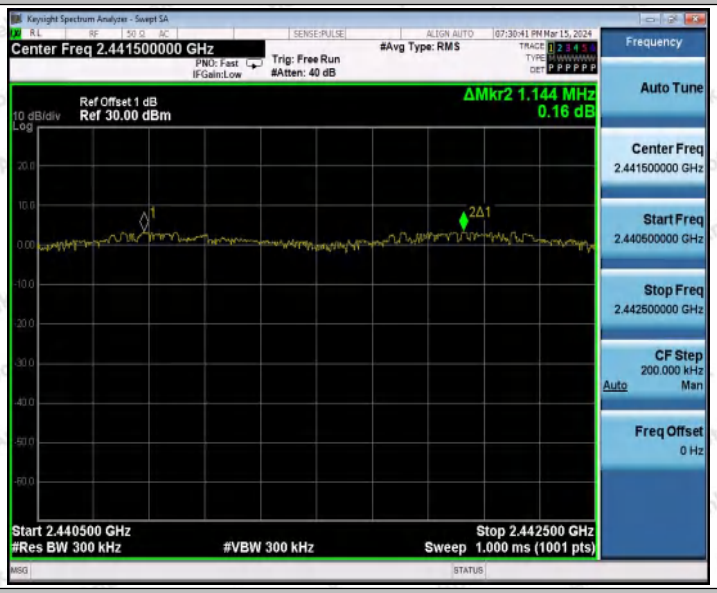
Test Result

Test Mode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.096	≥0.690	PASS
2DH5	Ant1	Hop	1.144	≥0.896	PASS
3DH5	Ant1	Hop	1.174	≥0.898	PASS

Test Graphs

DH5_Ant1_Hop

2DH5_Ant1_Hop



3DH5_Ant1_Hop

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
07:25:59 PM Mar 15, 2024
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
ΔMkr2 1.174 MHz
0.05 dB
Start 2.440500 GHz
#Res BW 300 kHz
#VBW 300 kHz
Stop 2.442500 GHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440500000 GHz
Stop Freq
2.442500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

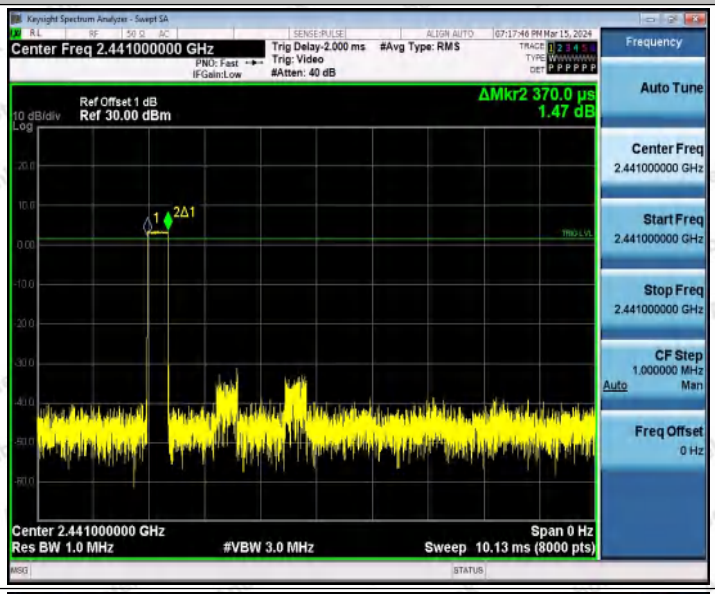
Appendix E: Dwell Time

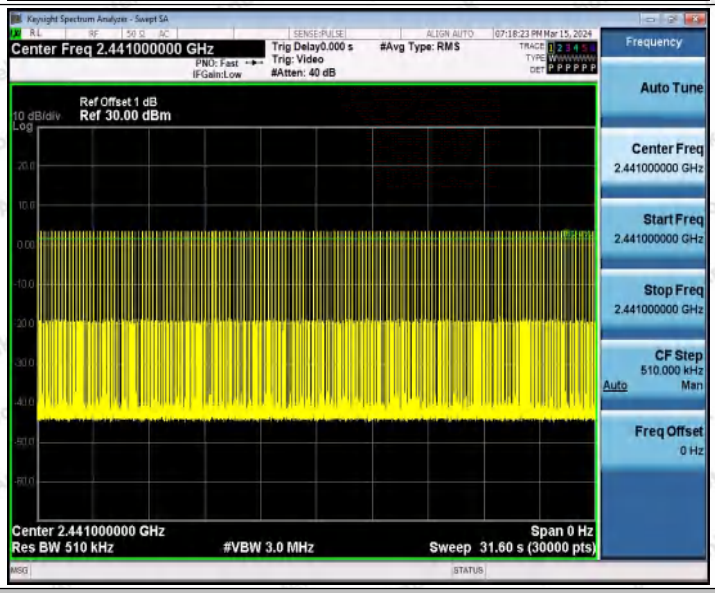
Test Result

Test Mode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.37	315	0.117	≤0.4	PASS
DH3	Ant1	Hop	1.63	161	0.262	≤0.4	PASS
DH5	Ant1	Hop	2.88	121	0.348	≤0.4	PASS
2DH1	Ant1	Hop	0.39	315	0.123	≤0.4	PASS
2DH3	Ant1	Hop	1.64	165	0.271	≤0.4	PASS
2DH5	Ant1	Hop	2.89	112	0.324	≤0.4	PASS
3DH1	Ant1	Hop	0.39	318	0.124	≤0.4	PASS
3DH3	Ant1	Hop	1.64	157	0.257	≤0.4	PASS
3DH5	Ant1	Hop	2.89	109	0.315	≤0.4	PASS

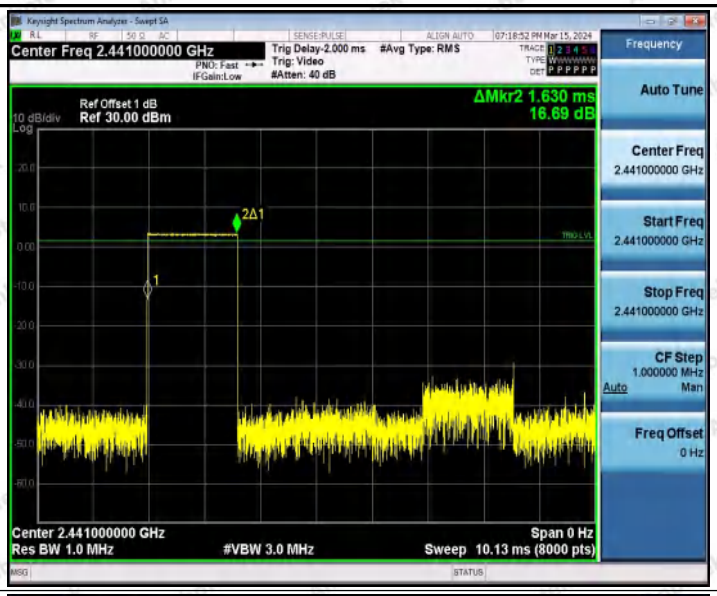
Test Graphs

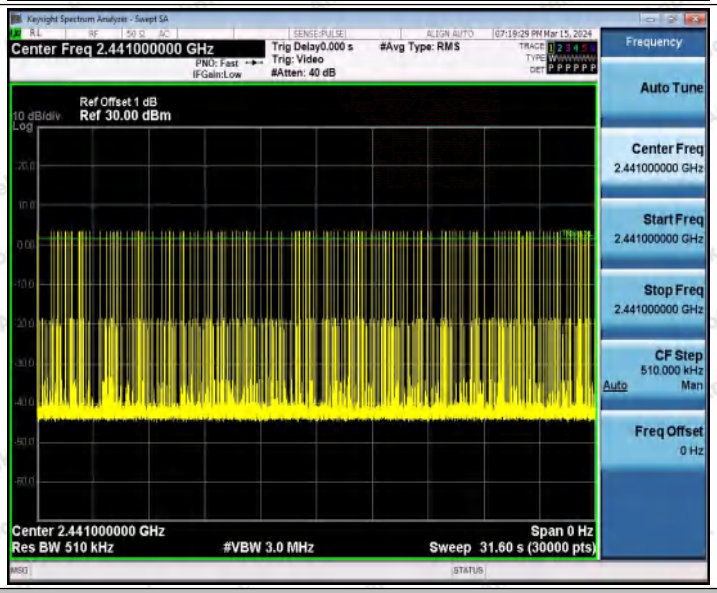
DH1_Ant1_Hop





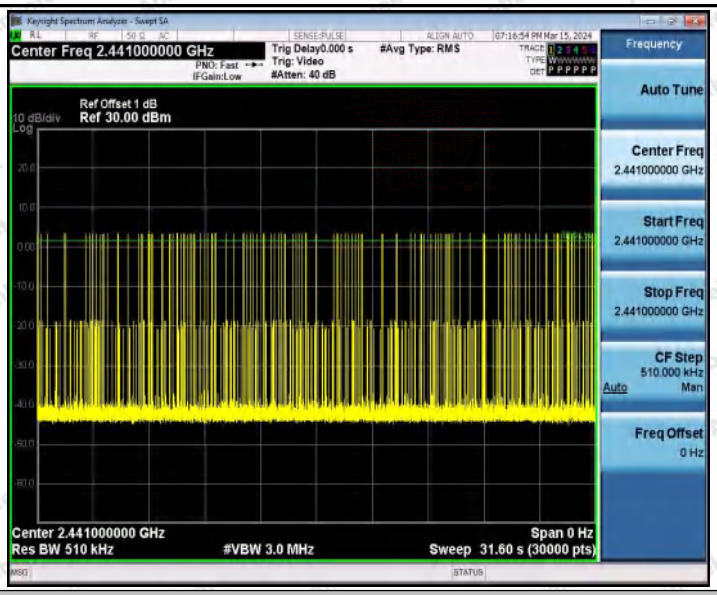
DH3_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
Ref Offset 1 dB
10 dB/div Ref 30.00 dBm
ΔMkr2 1.630 ms
16.69 dB
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz
Freq Offset 0 Hz

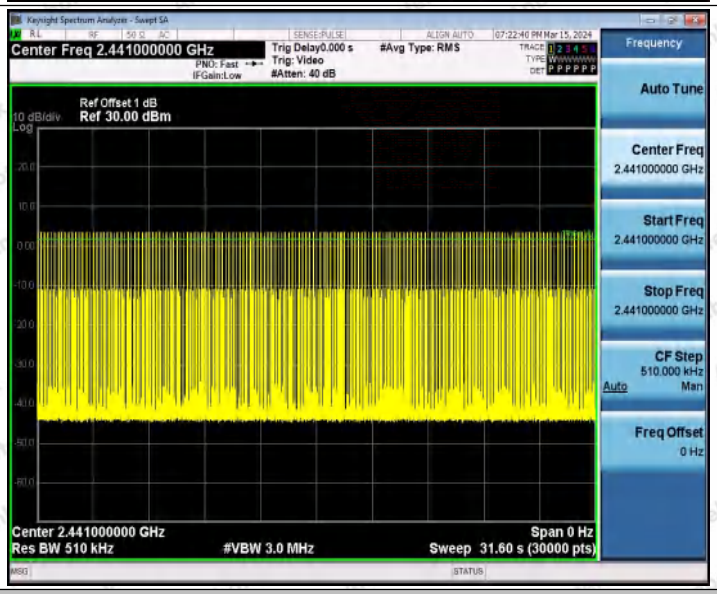

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
Ref Offset 1 dB
10 dB/div Ref 30.00 dBm
Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 31.60 s (30000 pts)
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 510.000 kHz
Freq Offset 0 Hz

DH5_Ant1_Hop

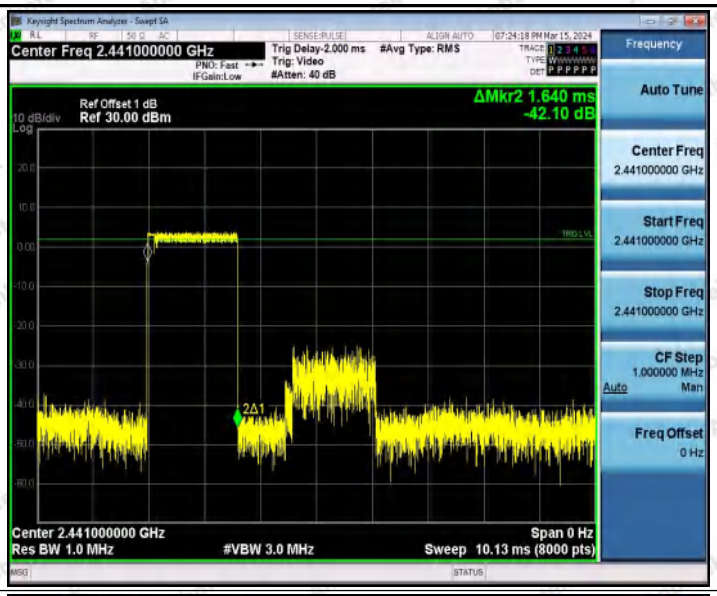
Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
Ref Offset 1 dB
10 dB/div Ref 30.00 dBm
ΔMkr2 2.880 ms
7.60 dB
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz
Freq Offset 0 Hz

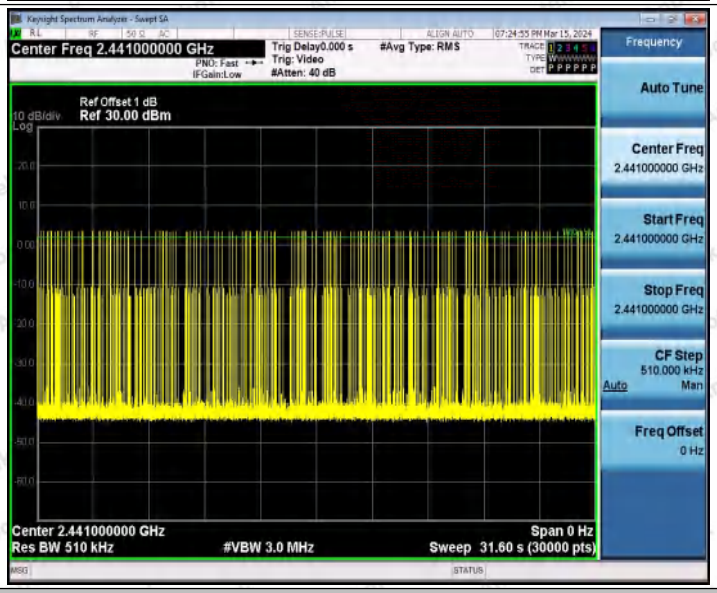


2DH1_Ant1_Hop

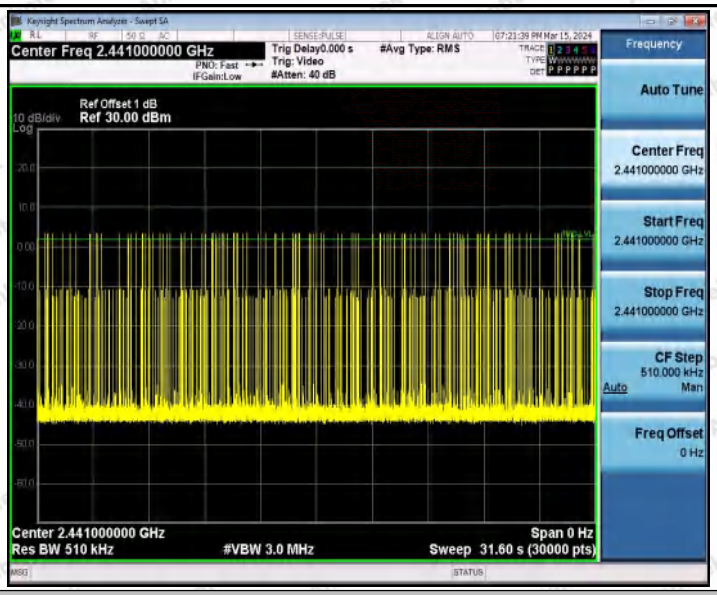


2DH3_Ant1_Hop

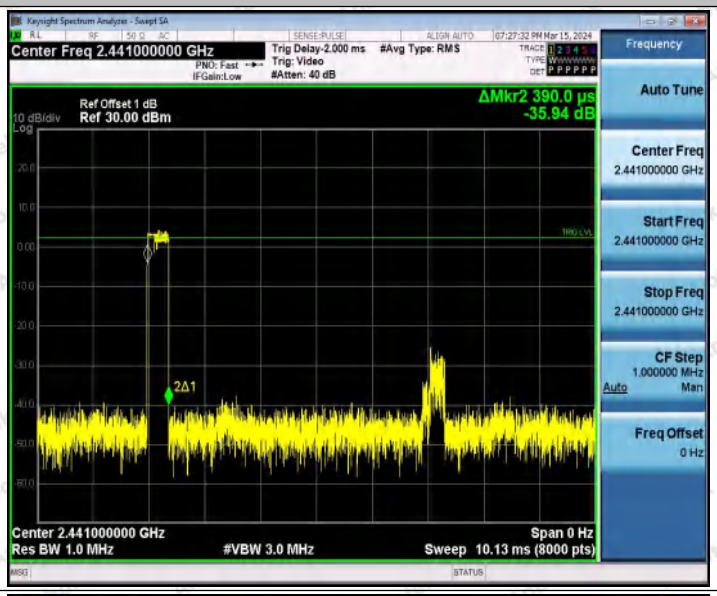


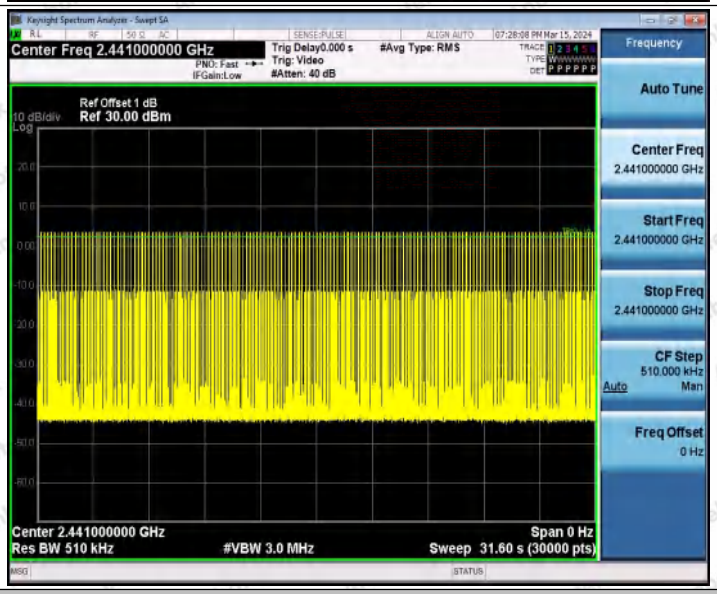


2DH5_Ant1_Hop

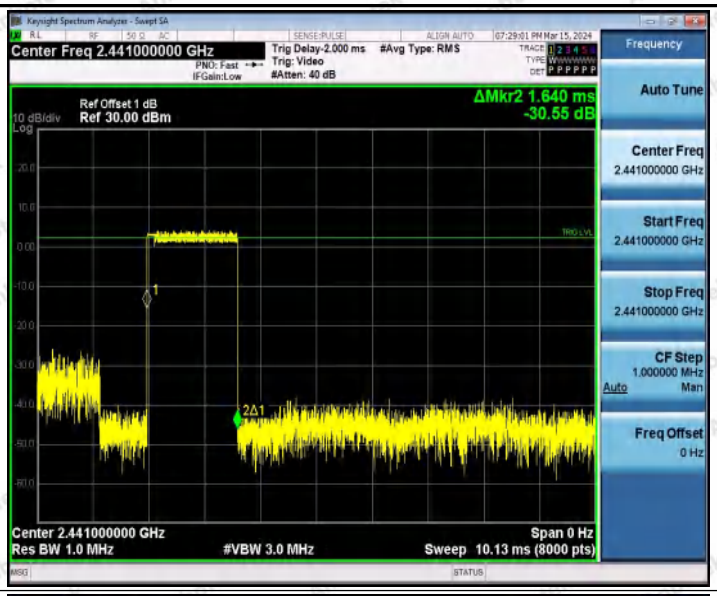


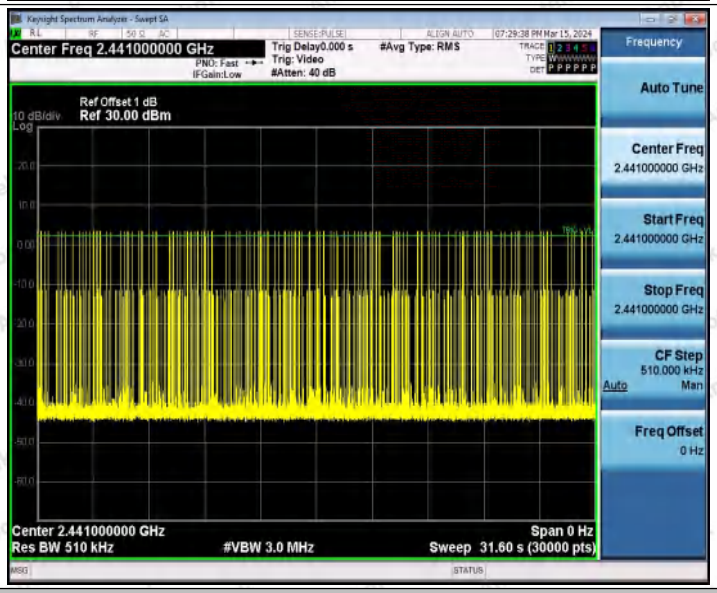
3DH1_Ant1_Hop



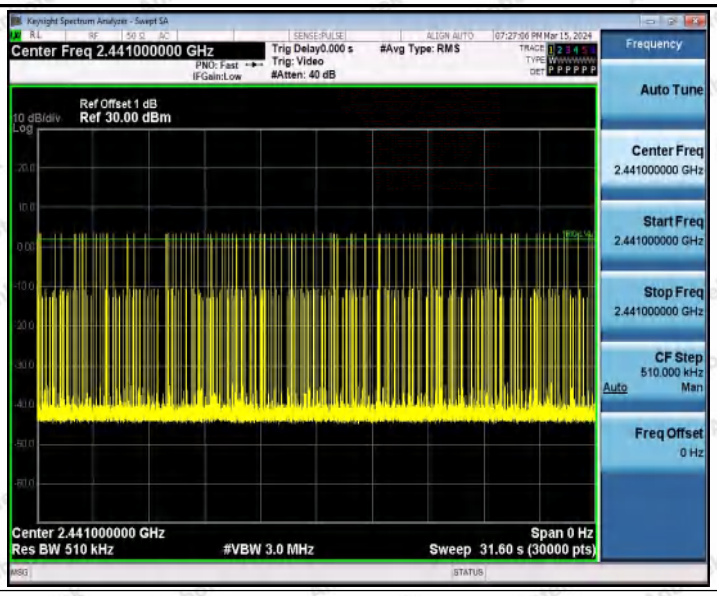


3DH3_Ant1_Hop





3DH5_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
Ref Offset 1 dB
10 dB/div Ref 30.00 dBm
Log
Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 31.60 s (30000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz

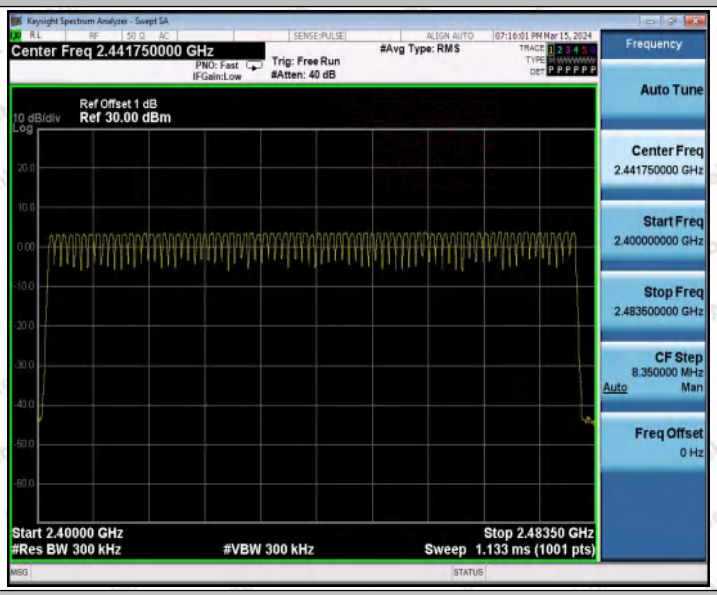
Appendix F: Number of Hopping Channel

Test Result

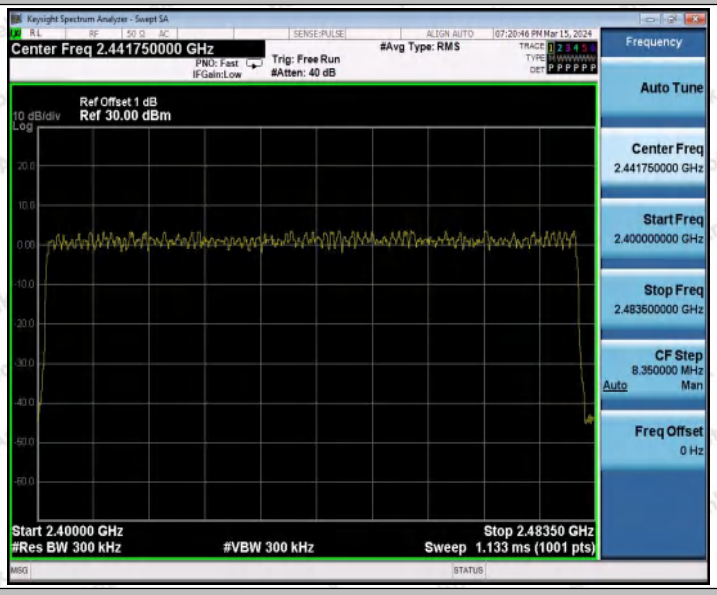
Test Mode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

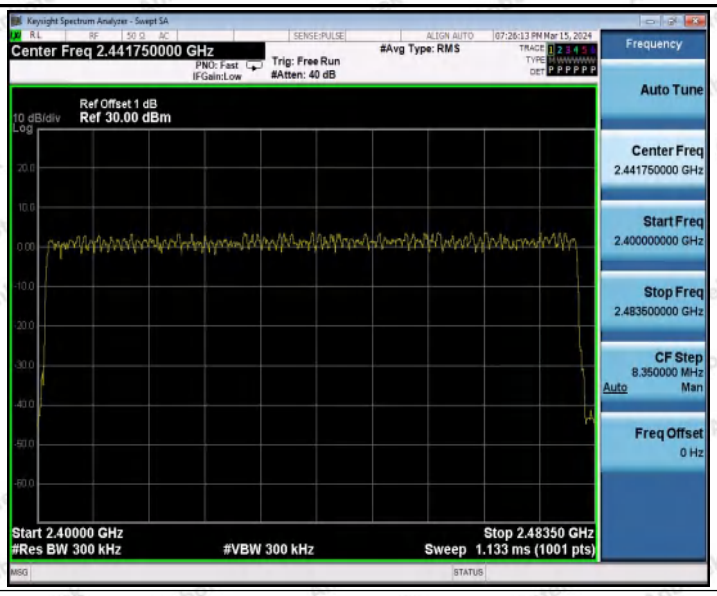
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_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
07:26:13 PM Mar 15, 2024
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
Start 2.40000 GHz
#Res BW 300 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 1.133 ms (1001 pts)
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

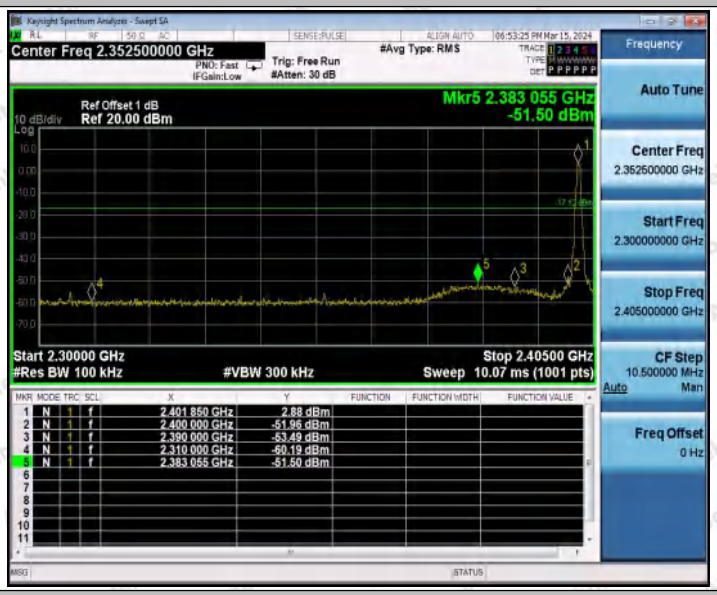
Appendix G: Conducted Band edge

Test Result

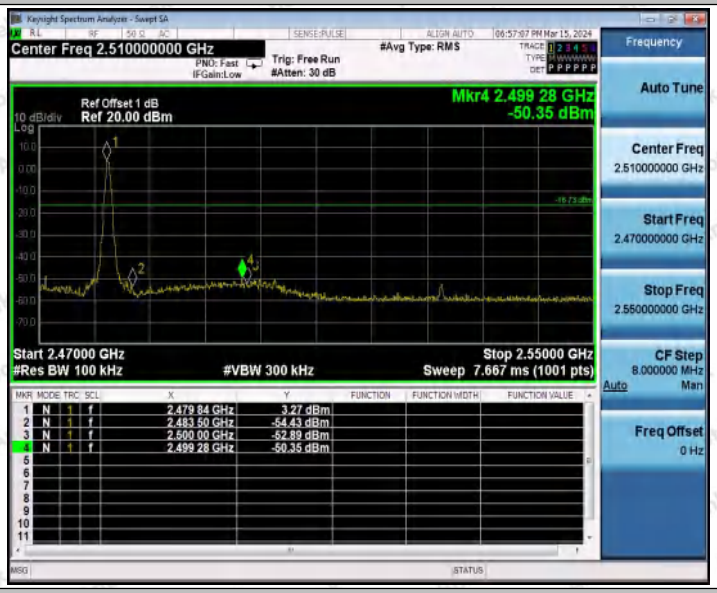
Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	2.88	-51.5	≤-17.12	PASS
		High	2480	3.27	-50.35	≤-16.73	PASS
		Low	Hop_2402	2.03	-51.83	≤-17.97	PASS
		High	Hop_2480	3.11	-51.28	≤-16.89	PASS
2DH5	Ant1	Low	2402	2.86	-48.48	≤-17.14	PASS
		High	2480	3.32	-50.06	≤-16.68	PASS
		Low	Hop_2402	-0.50	-52.06	≤-20.5	PASS
		High	Hop_2480	1.91	-53.49	≤-18.09	PASS
3DH5	Ant1	Low	2402	2.85	-46.96	≤-17.15	PASS
		High	2480	3.18	-50.33	≤-16.82	PASS
		Low	Hop_2402	-1.08	-53.09	≤-21.08	PASS
		High	Hop_2480	3.31	-51.28	≤-16.69	PASS

Test Graphs

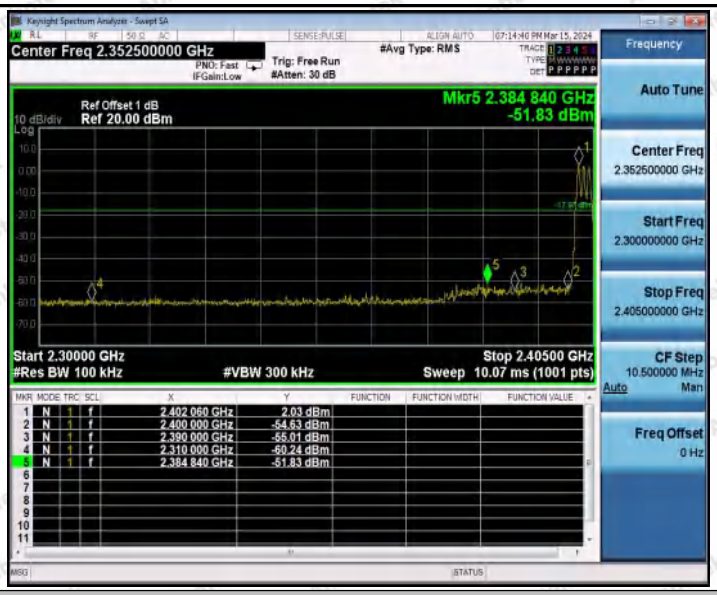
DH5_Ant1_Low_2402



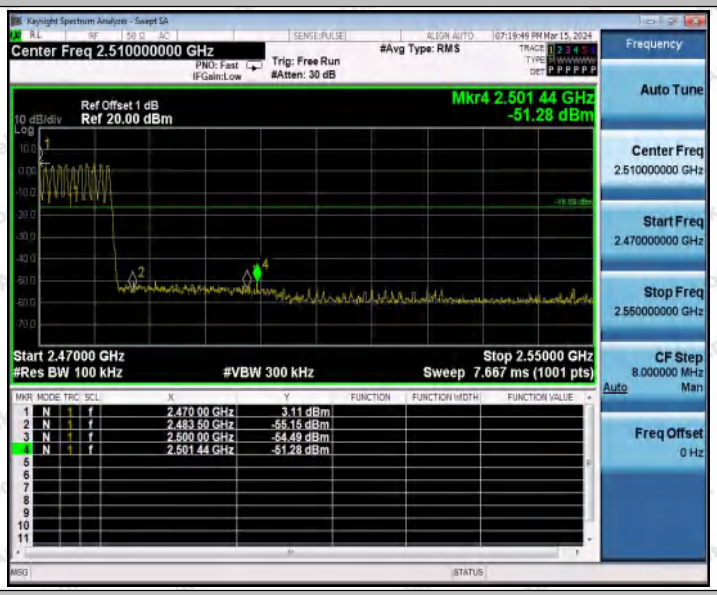
DH5_Ant1_High_2480



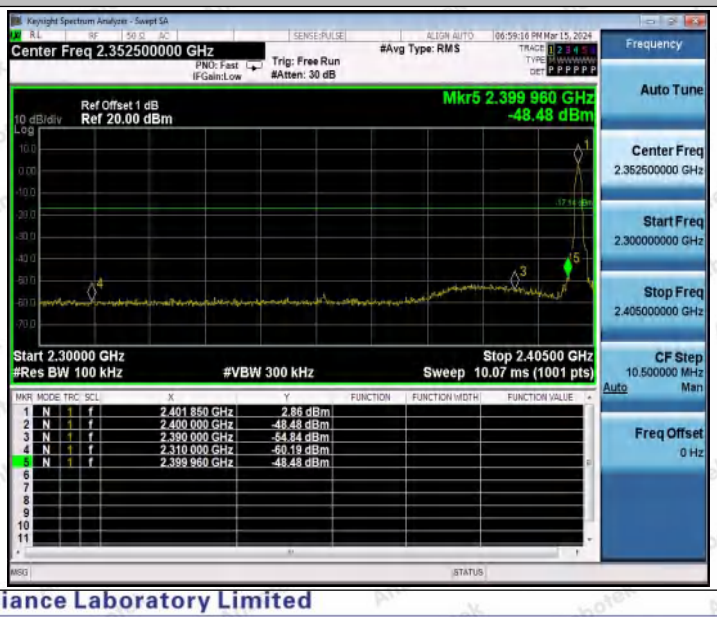
DH5_Ant1_Low_Hop_2402



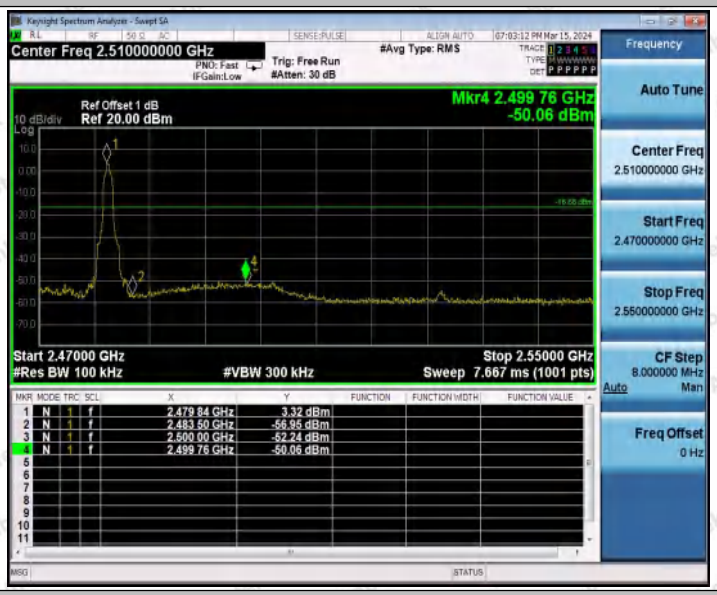
DH5_Ant1_High_Hop_2480



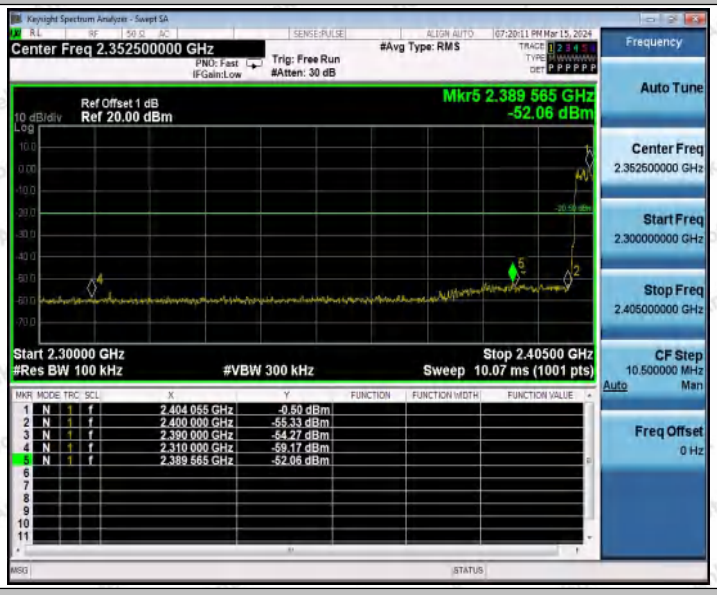
2DH5_Ant1_Low_2402



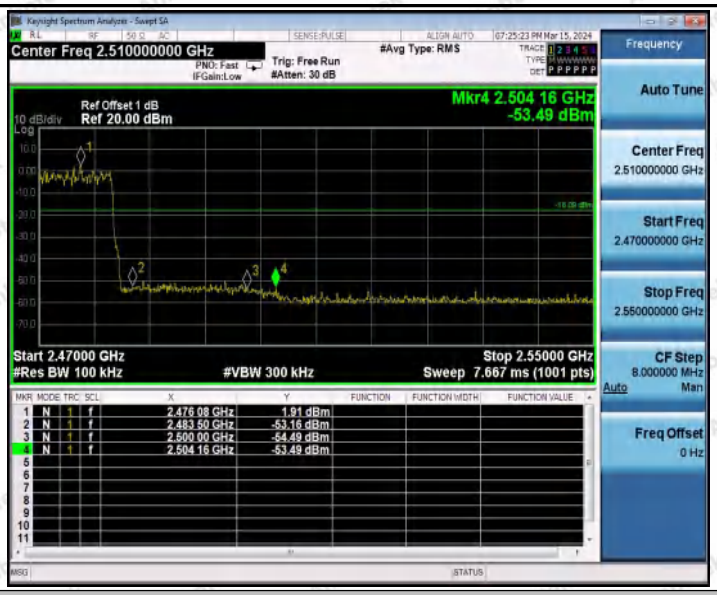
2DH5_Ant1_High_2480



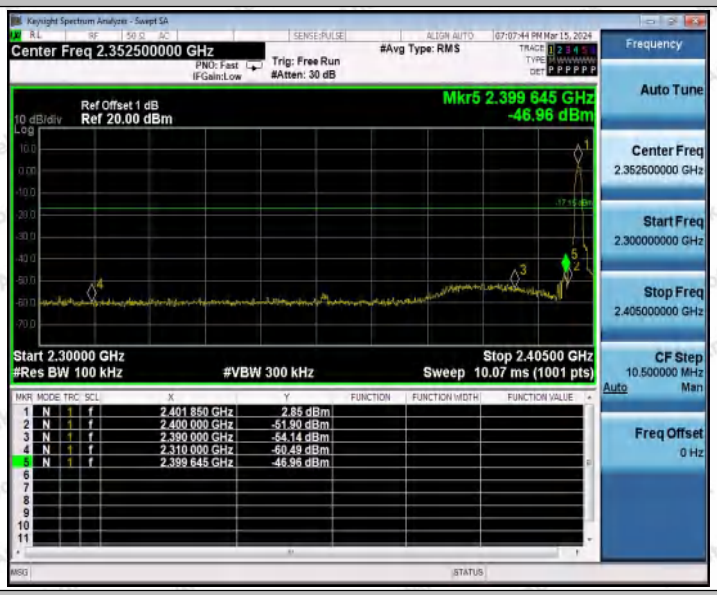
2DH5_Ant1_Low_Hop_2402



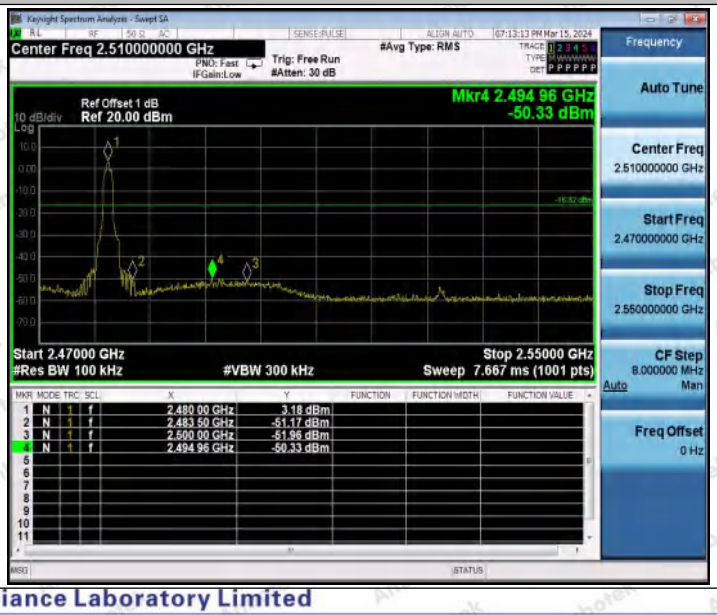
2DH5_Ant1_High_Hop_2480



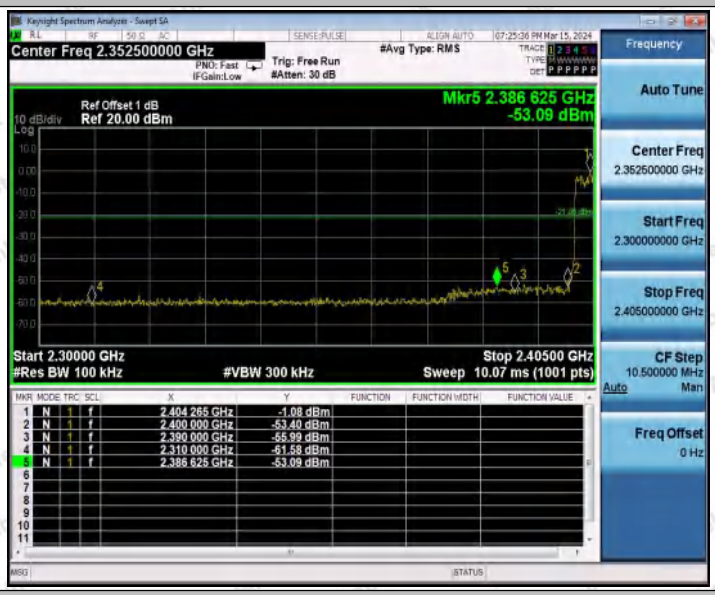
3DH5_Ant1_Low_2402



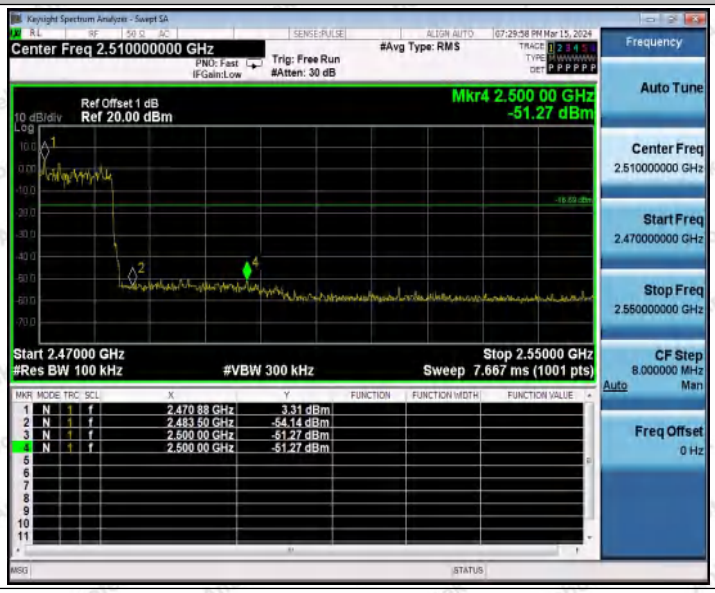
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



Appendix H: Conducted Spurious Emission

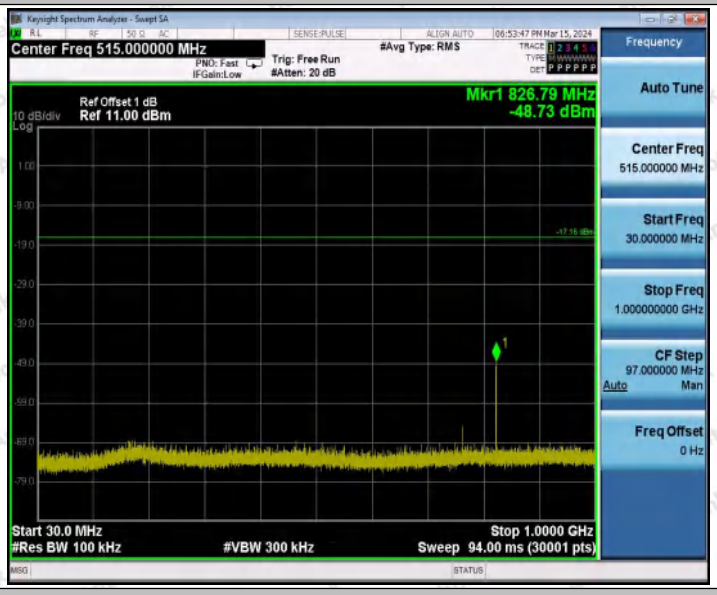
Test Result

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	2.84	2.84	---	PASS
			30~1000	2.84	-48.73	≤-17.16	PASS
			1000~26500	2.84	-46.54	≤-17.16	PASS
		2441	Reference	3.17	3.17	---	PASS
			30~1000	3.17	-65.37	≤-16.83	PASS
			1000~26500	3.17	-44.22	≤-16.83	PASS
		2480	Reference	3.18	3.18	---	PASS
			30~1000	3.18	-64.61	≤-16.82	PASS
			1000~26500	3.18	-47.08	≤-16.82	PASS
2DH5	Ant1	2402	Reference	2.87	2.87	---	PASS
			30~1000	2.87	-49.13	≤-17.13	PASS
			1000~26500	2.87	-49.08	≤-17.13	PASS
		2441	Reference	3.19	3.19	---	PASS
			30~1000	3.19	-64.96	≤-16.81	PASS
			1000~26500	3.19	-48.24	≤-16.81	PASS
		2480	Reference	3.09	3.09	---	PASS
			30~1000	3.09	-65.55	≤-16.91	PASS
			1000~26500	3.09	-49.37	≤-16.91	PASS
3DH5	Ant1	2402	Reference	2.81	2.81	---	PASS
			30~1000	2.81	-65.01	≤-17.19	PASS
			1000~26500	2.81	-50.33	≤-17.19	PASS
		2441	Reference	3.02	3.02	---	PASS
			30~1000	3.02	-65.97	≤-16.98	PASS
			1000~26500	3.02	-47.02	≤-16.98	PASS
		2480	Reference	3.22	3.22	---	PASS
			30~1000	3.22	-67.84	≤-16.78	PASS
			1000~26500	3.22	-45.15	≤-16.78	PASS

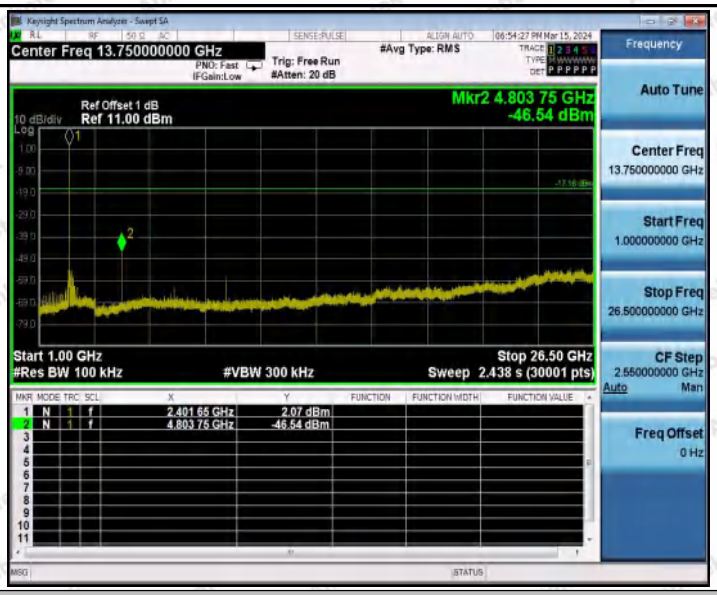
Test Graphs

DH5_Ant1_2402_0~Reference

DH5_Ant1_2402_30~1000

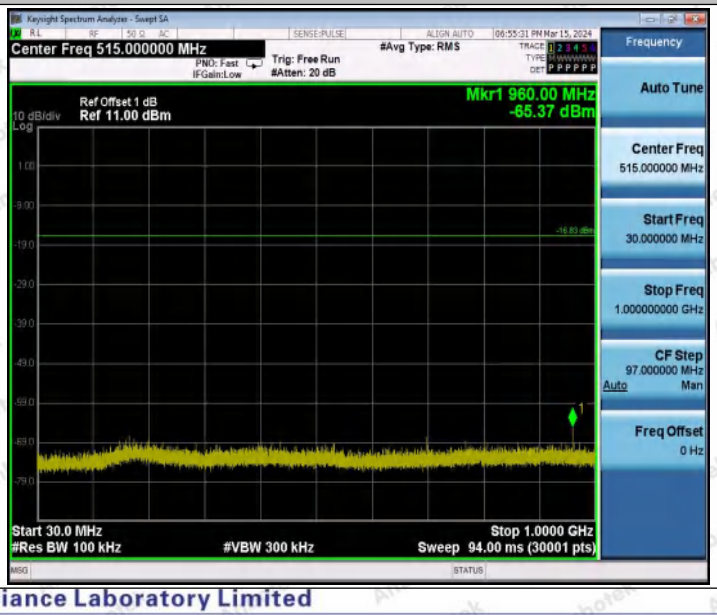


DH5_Ant1_2402_1000~26500

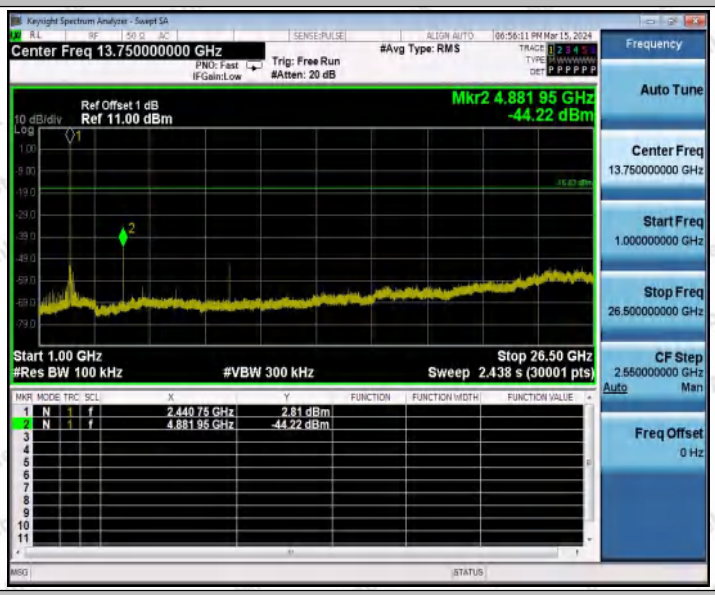


DH5_Ant1_2441_0~Reference

DH5_Ant1_2441_30~1000

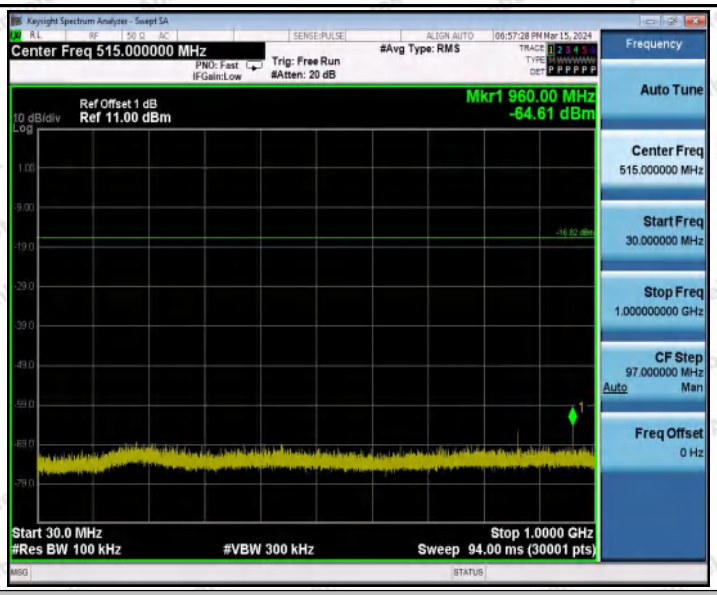


DH5_Ant1_2441_1000~26500

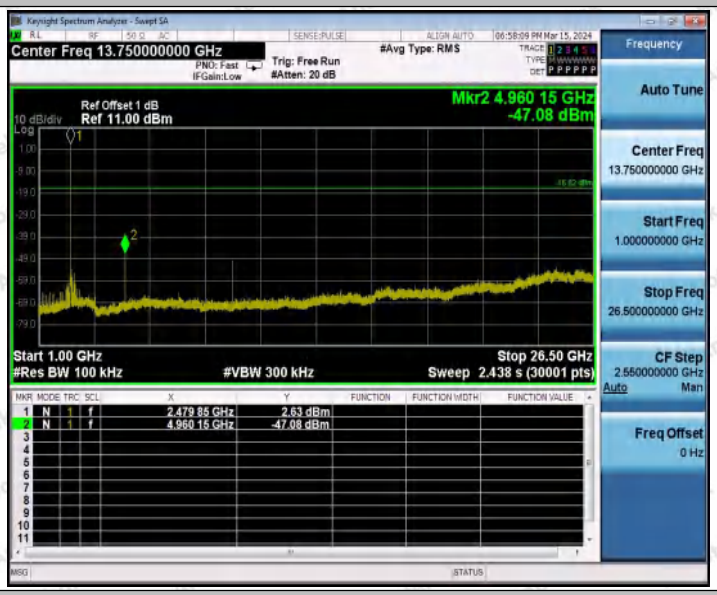


DH5_Ant1_2480_0~Reference

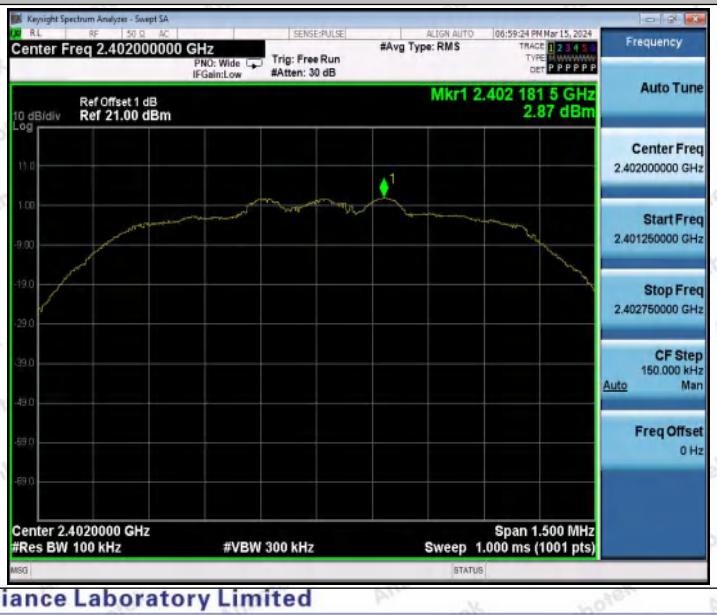
DH5_Ant1_2480_30~1000



DH5_Ant1_2480_1000~26500

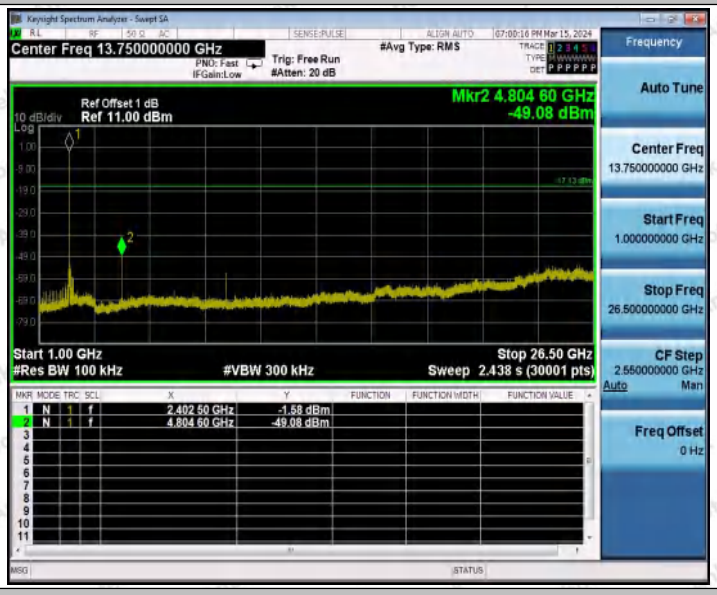


2DH5_Ant1_2402_0~Reference



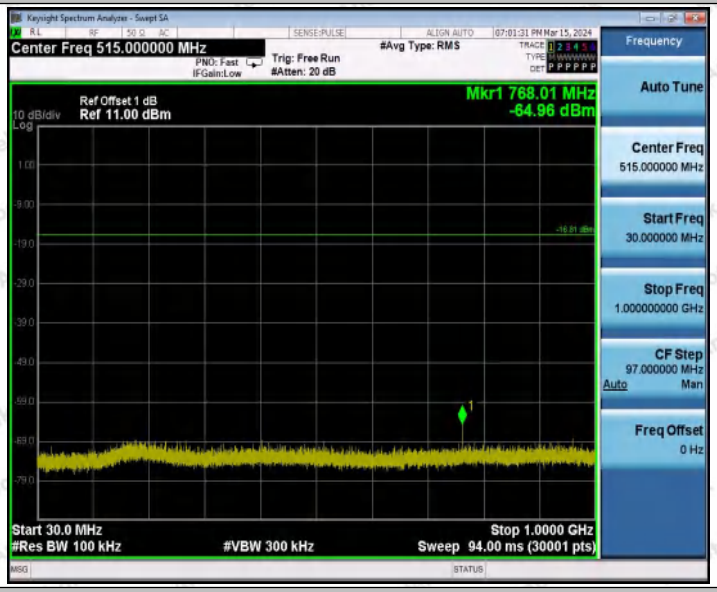
2DH5_Ant1_2402_30~1000

2DH5_Ant1_2402_1000~26500

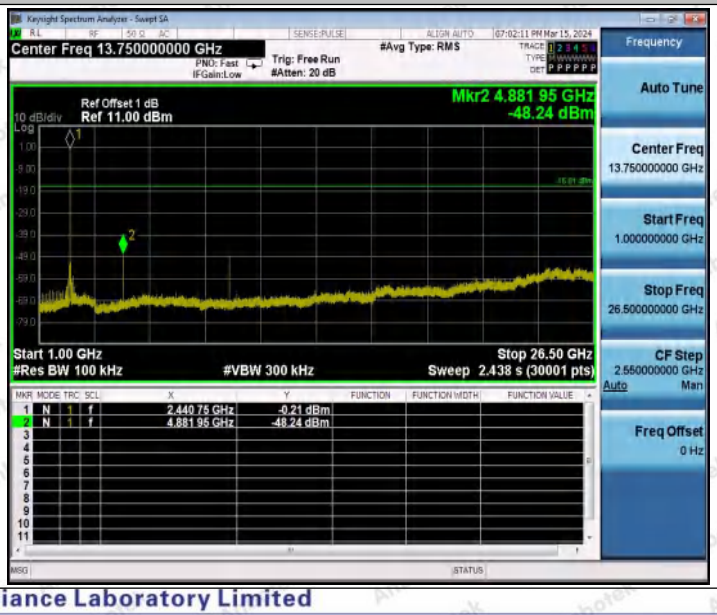


2DH5_Ant1_2441_0~Reference

2DH5_Ant1_2441_30~1000

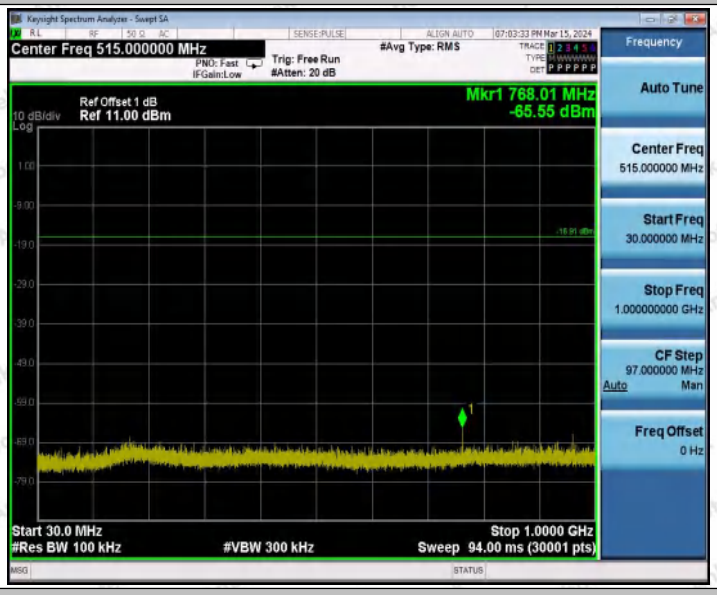


2DH5_Ant1_2441_1000~26500

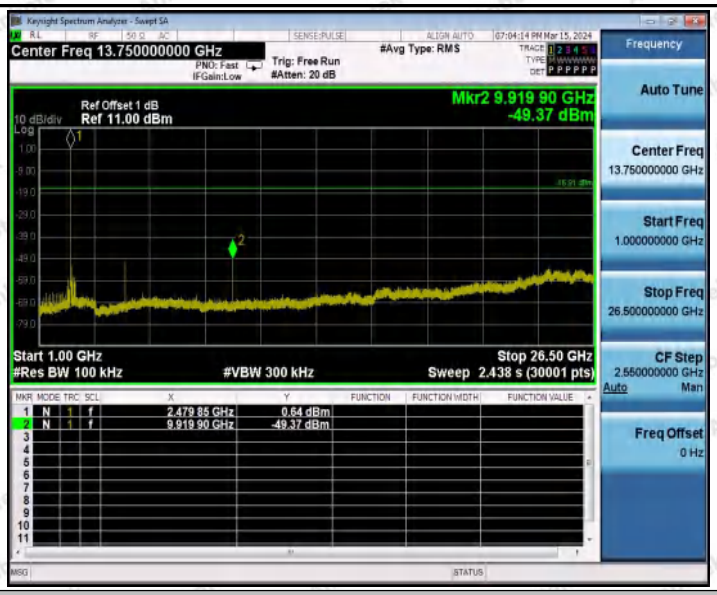


2DH5_Ant1_2480_0~Reference

2DH5_Ant1_2480_30~1000

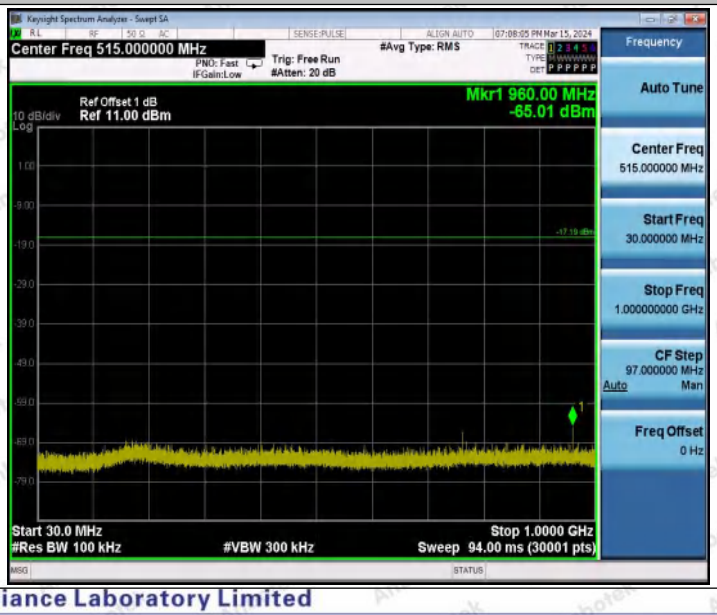


2DH5_Ant1_2480_1000~26500

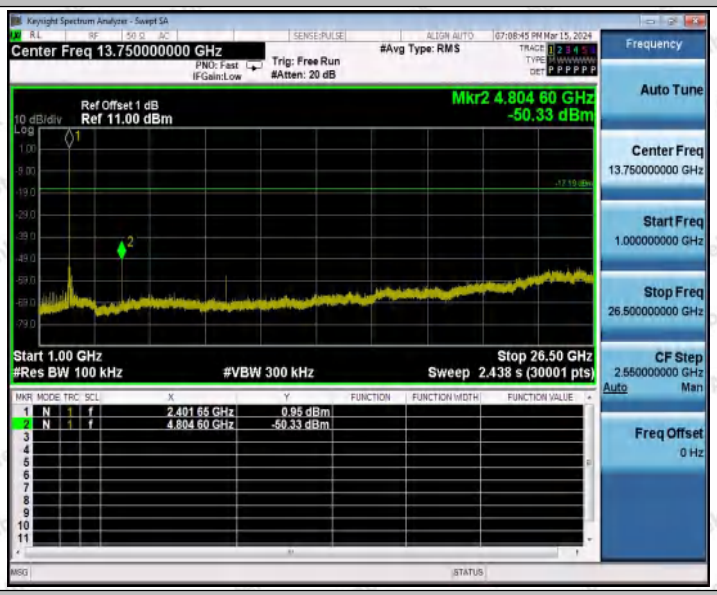


3DH5_Ant1_2402_0~Reference

3DH5_Ant1_2402_30~1000

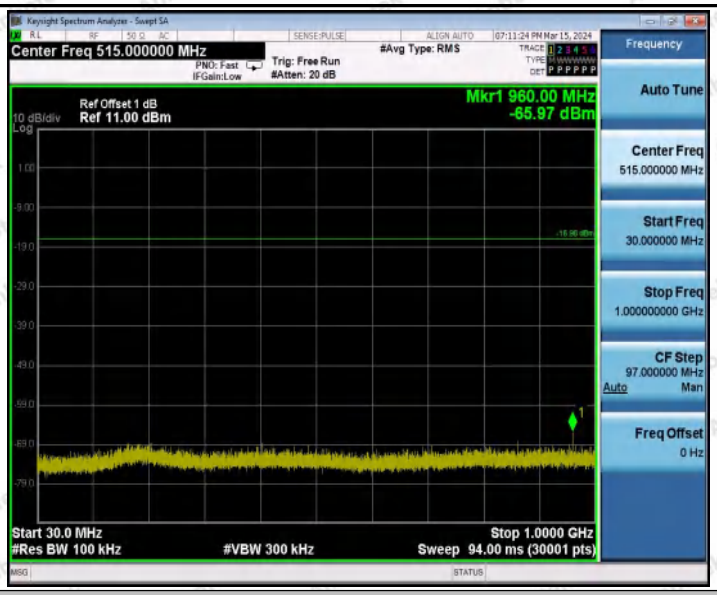


3DH5_Ant1_2402_1000~26500

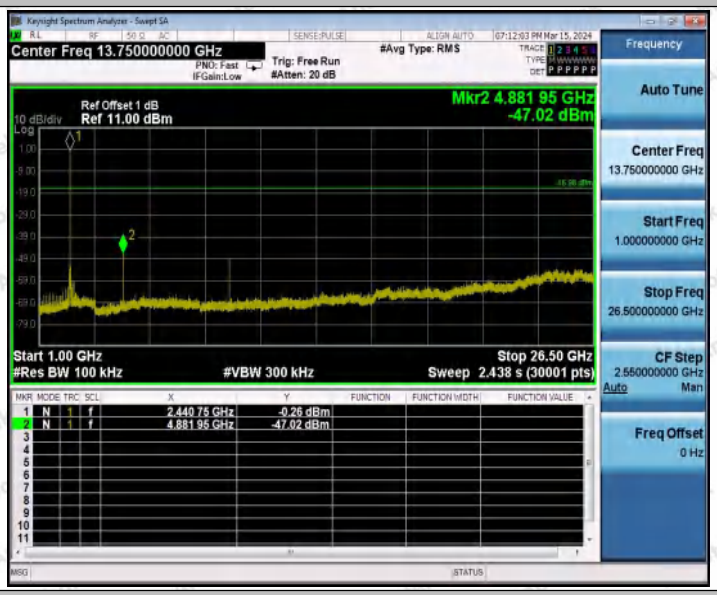


3DH5_Ant1_2441_0~Reference

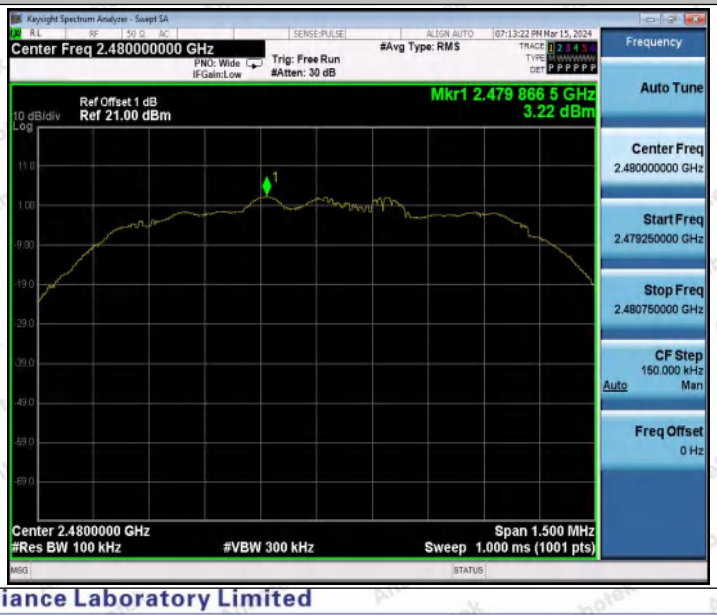
3DH5_Ant1_2441_30~1000



3DH5_Ant1_2441_1000~26500

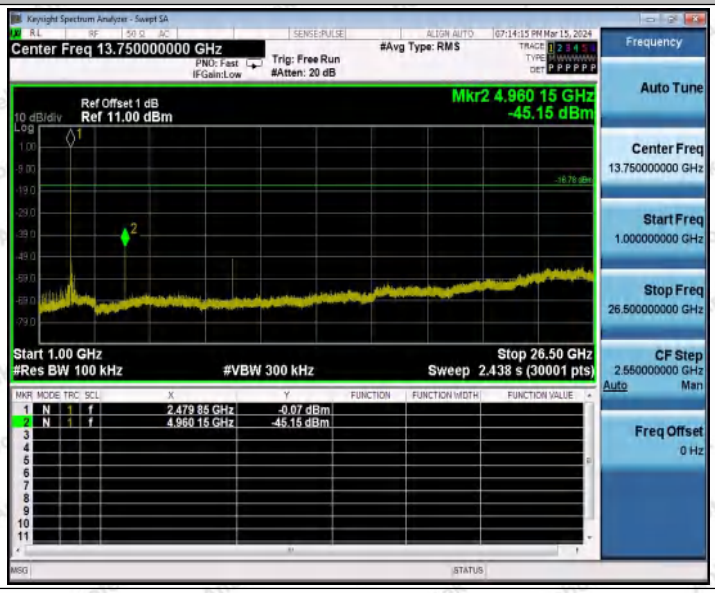


3DH5_Ant1_2480_0~Reference



3DH5_Ant1_2480_30~1000

3DH5_Ant1_2480_1000~26500



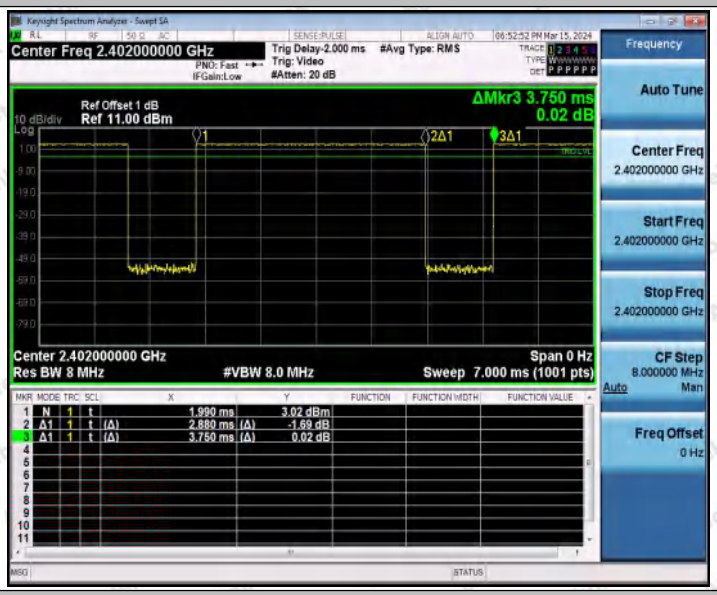
Appendix I: Duty Cycle

Test Result

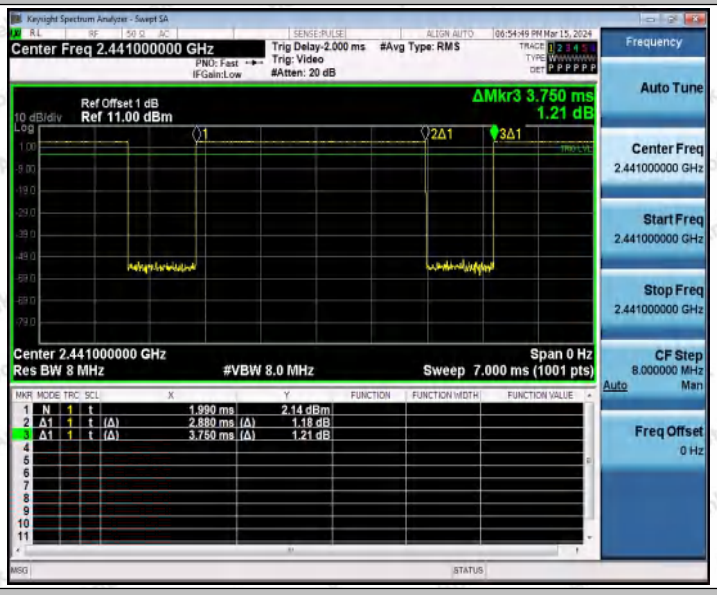
Test Mode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
DH5	Ant1	2402	2.88	3.75	76.80	1.15
		2441	2.88	3.75	76.80	1.15
		2480	2.89	3.75	77.07	1.13
2DH5	Ant1	2402	2.89	3.75	77.07	1.13
		2441	2.88	3.74	77.01	1.13
		2480	2.88	3.74	77.01	1.13
3DH5	Ant1	2402	2.90	3.76	77.13	1.13
		2441	2.89	3.74	77.27	1.12
		2480	2.88	3.74	77.01	1.13

Test Graphs

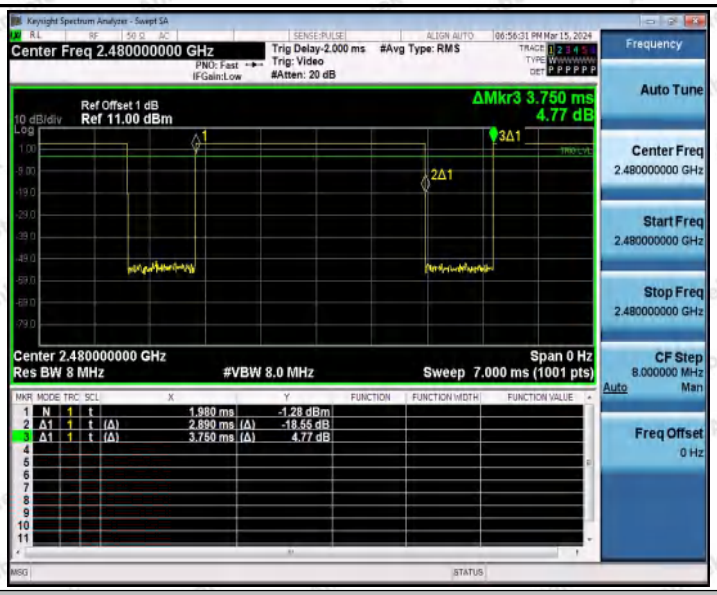
DH5_Ant1_2402



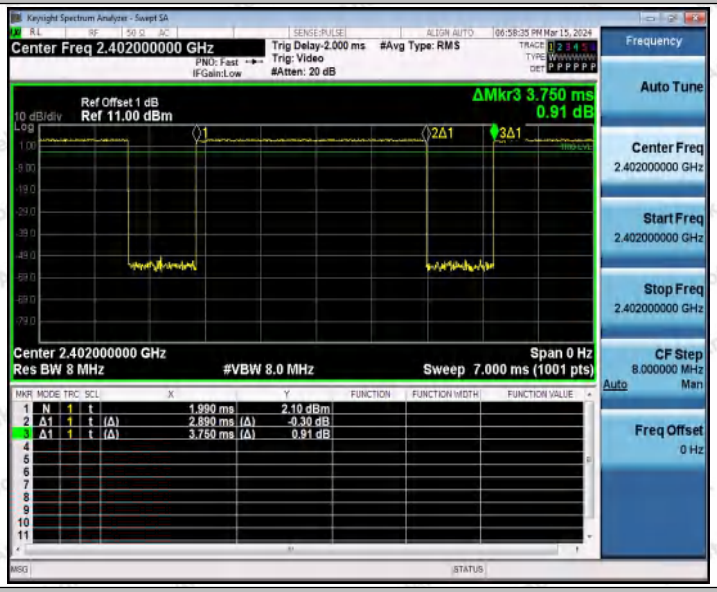
DH5_Ant1_2441



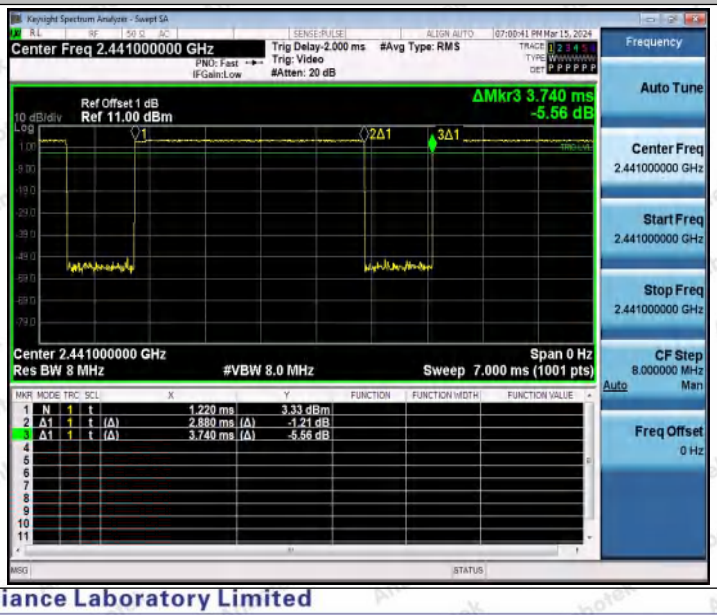
DH5_Ant1_2480



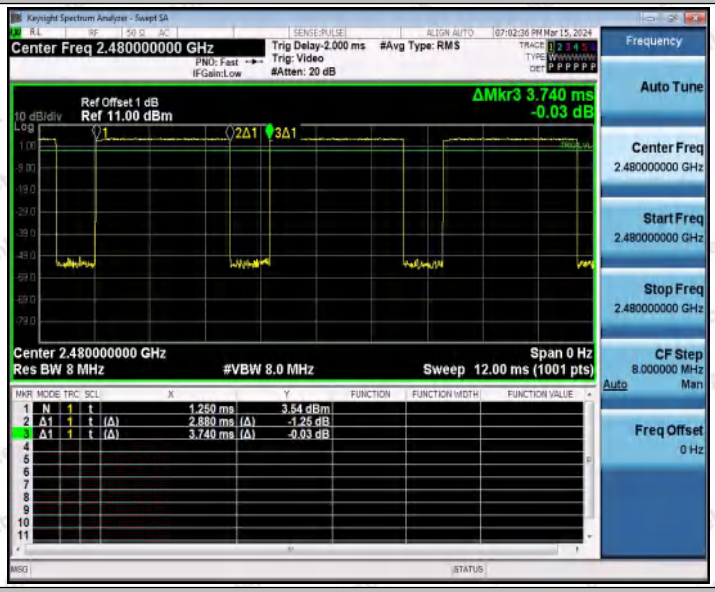
2DH5_Ant1_2402



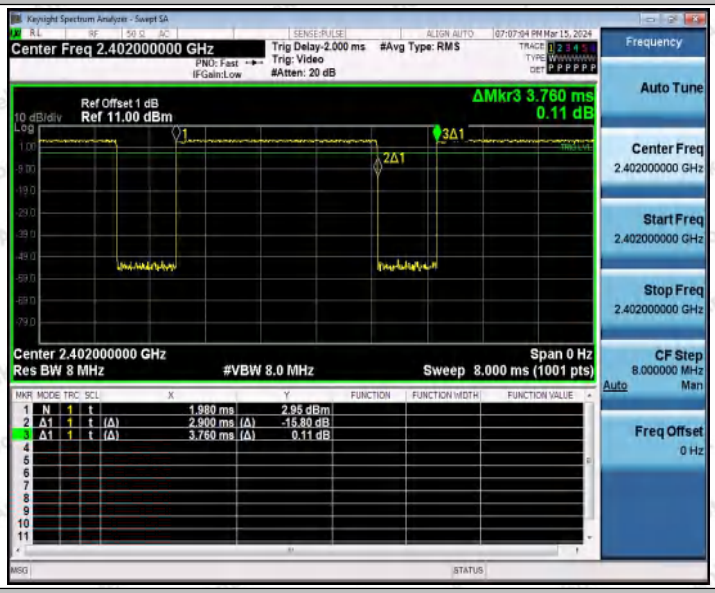
2DH5_Ant1_2441



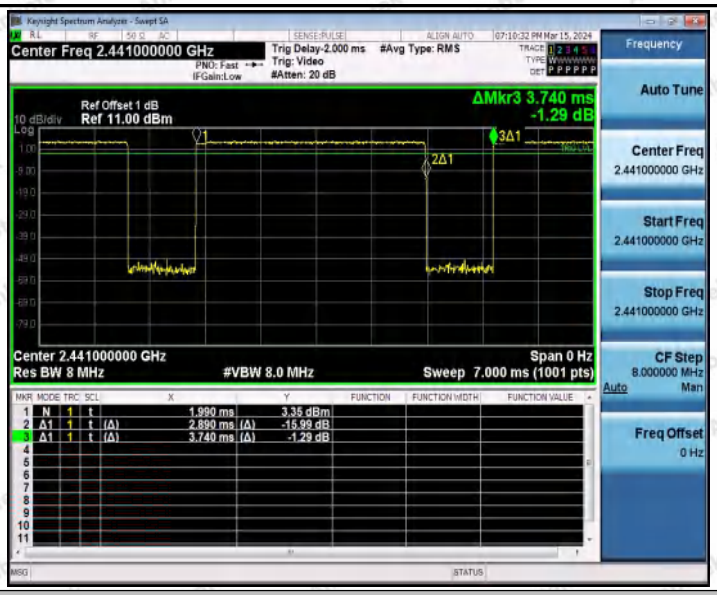
2DH5_Ant1_2480



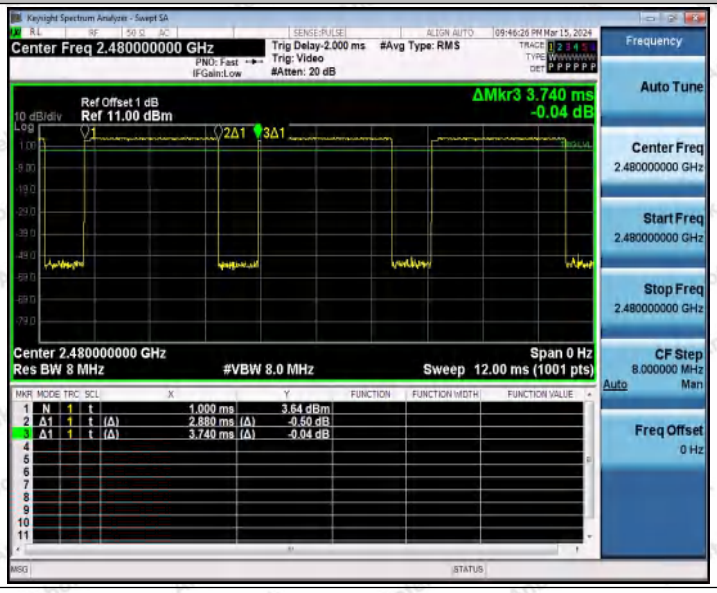
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



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