Appendix Test Data

Report No.:	CTA23101700501	Test Sample No.:	1-2-2
Start Test Date:	2023.09.18	Finish Test Date:	2023.09.19
Temperature:	25.3℃	Relative Humidity:	48.1%
Pressure:	101 kPa		

Appendix A: 20dB Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]
DH5	Ant1	2402	0.999	2401.472	2402.471
		2441	0.978	2440.481	2441.459
		2480	1.008	2479.460	2480.468
2DH5	Ant1	2402	1.302	2401.337	2402.639
		2441	1.332	2440.313	2441.645
		2480	1.287	2479.343	2480.630

Test Graphs

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
DH5	Ant1	2402	0.88194	2401.5385	2402.4205
		2441	0.89514	2440.5284	2441.4236
		2480	0.89441	2479.5281	2480.4225
2DH5	Ant1	2402	1.2003	2401.3792	2402.5795
		2441	1.1974	2440.3784	2441.5758
		2480	1.1884	2479.3832	2480.5716

Test Graphs

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

Appendix C: Maximum conducted output power

Test Result Peak

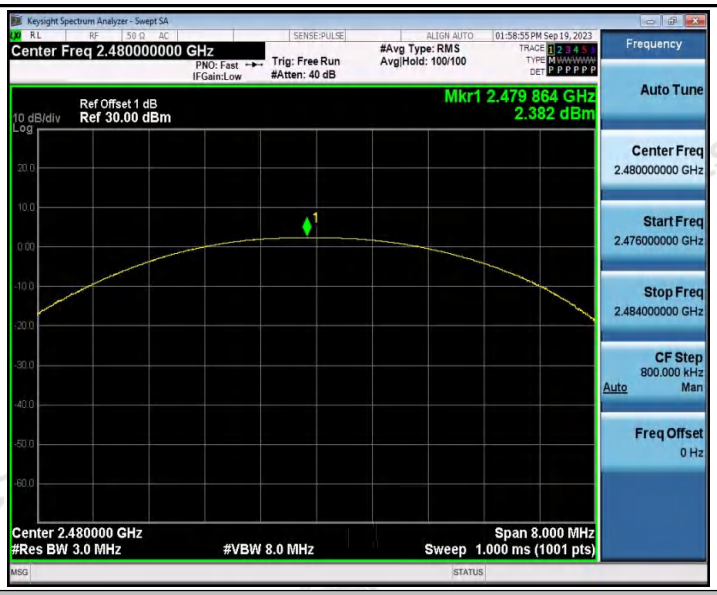
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	3.26	≤20.97	PASS
		2441	3.22	≤20.97	PASS
		2480	2.38	≤20.97	PASS
2DH5	Ant1	2402	**4.04**	≤20.97	PASS
		2441	3.98	≤20.97	PASS
		2480	3.06	≤20.97	PASS

Test Graphs

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480



2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

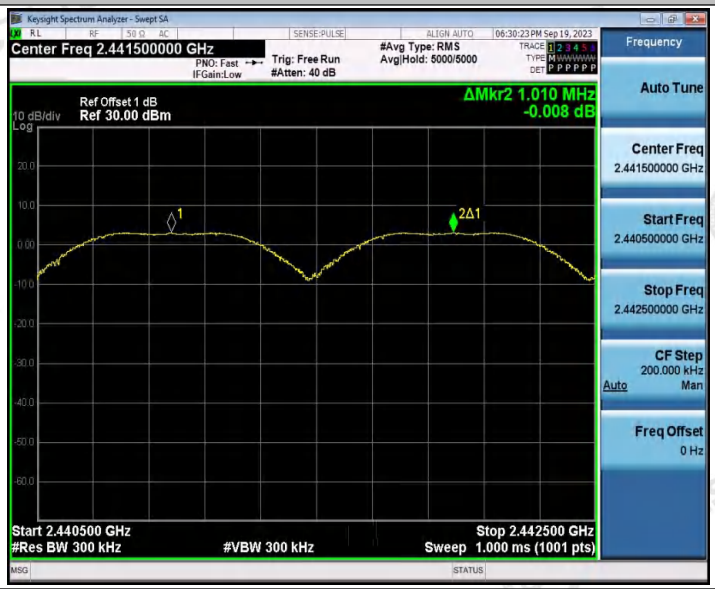
Appendix D: Carrier frequency separation

Test Result

Test Mode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.010	≥1.008	PASS
2DH5	Ant1	Hop	0.980	≥0.888	PASS

Test Graphs

DH5_Ant1_Hop



2DH5_Ant1_Hop

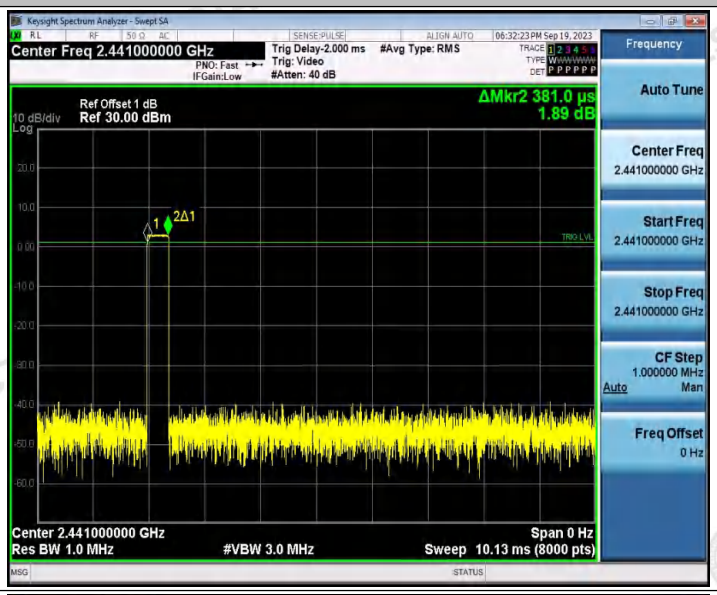
Appendix E: Time of occupancy

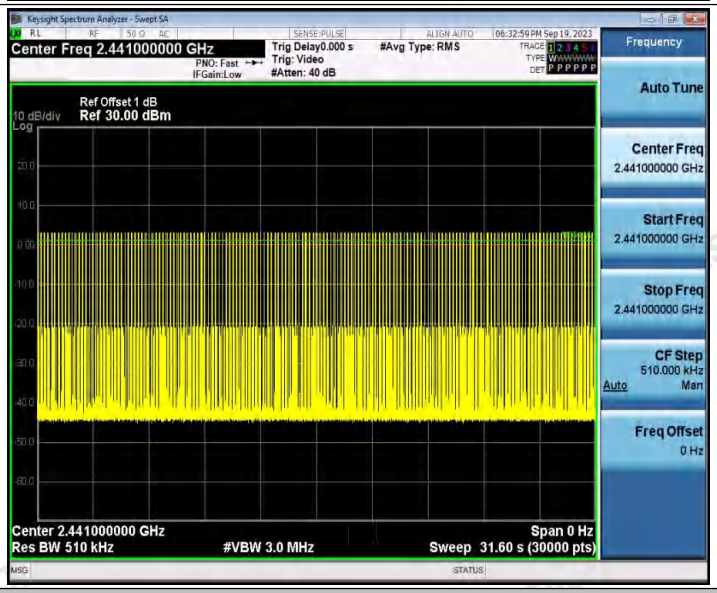
Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.381	318	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.638	159	0.26	≤0.4	PASS
DH5	Ant1	Hop	2.885	125	0.361	≤0.4	PASS
2DH1	Ant1	Hop	0.390	317	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.643	154	0.253	≤0.4	PASS
2DH5	Ant1	Hop	2.891	95	0.275	≤0.4	PASS

Test Graphs

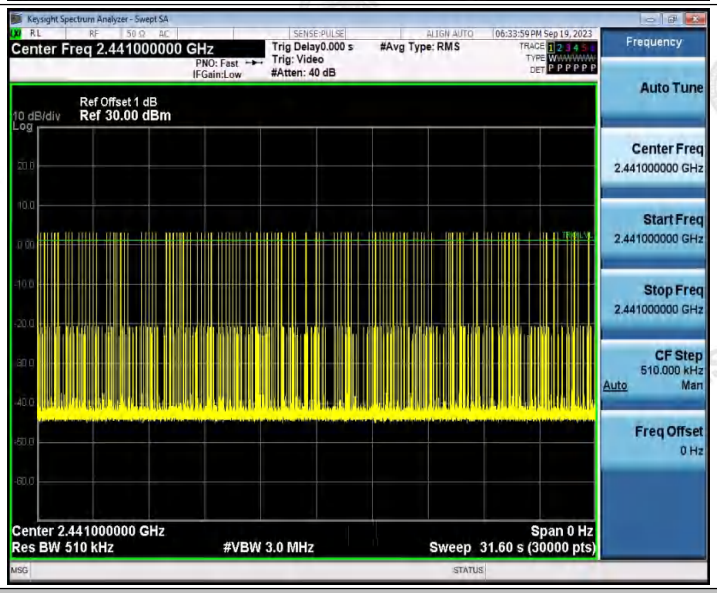
DH1_Ant1_Hop





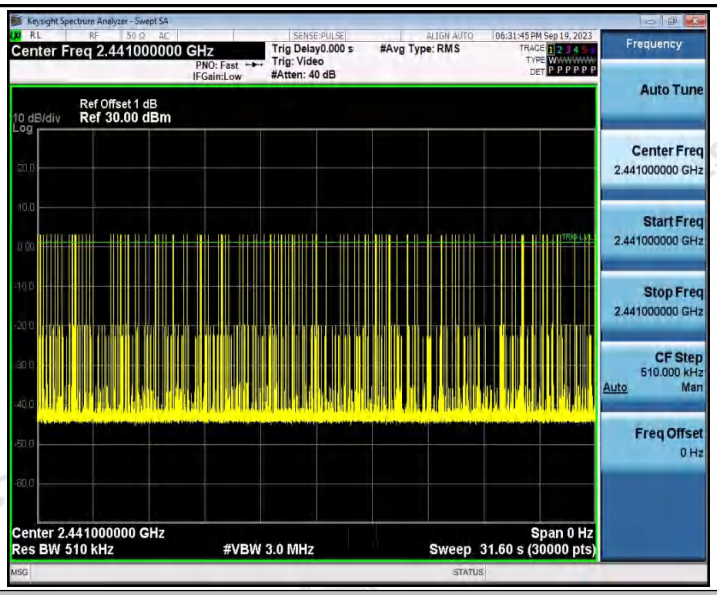
DH3_Ant1_Hop

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
PNO: Fast
IFGain:Low
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
ΔMkr2 1.638 ms
17.10 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
Auto
Man
Freq Offset
0 Hz

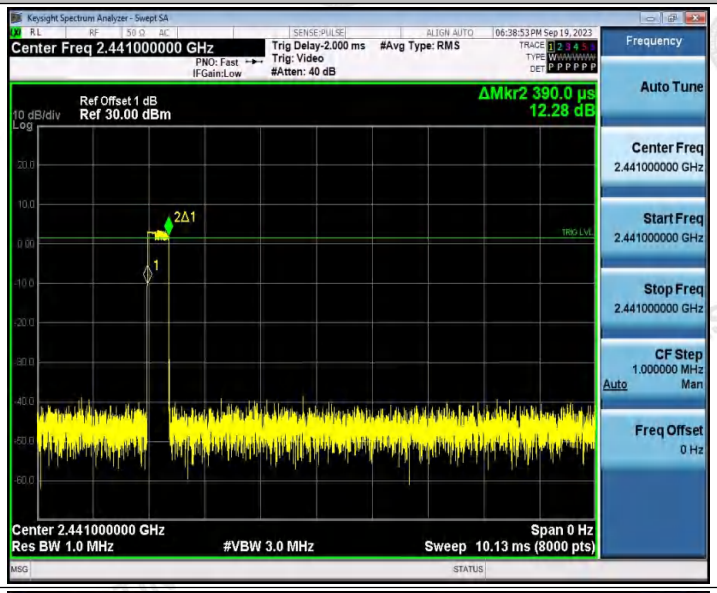

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
PNO: Fast
IFGain:Low
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 31.60 s (30000 pts)
Frequency
Auto Tune
Center Freq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

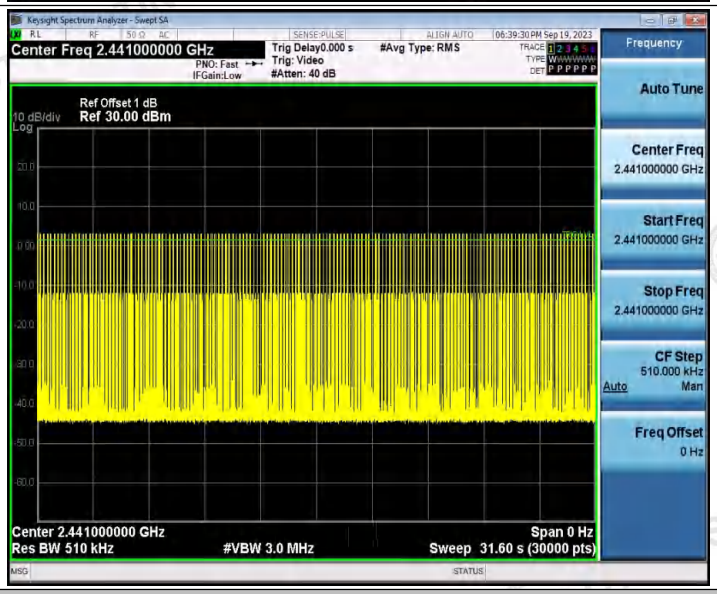
DH5_Ant1_Hop

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
PNO: Fast
IFGain:Low
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
ΔMkr2 2.885 ms
1.48 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
Auto
Man
Freq Offset
0 Hz

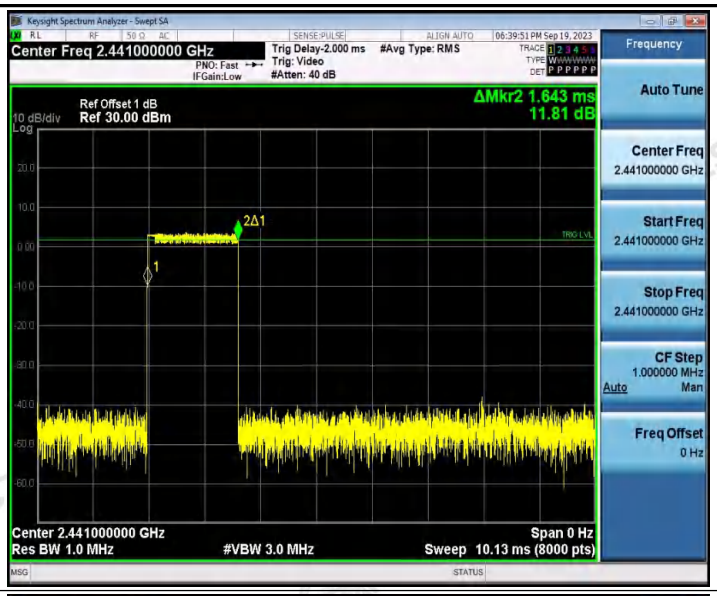


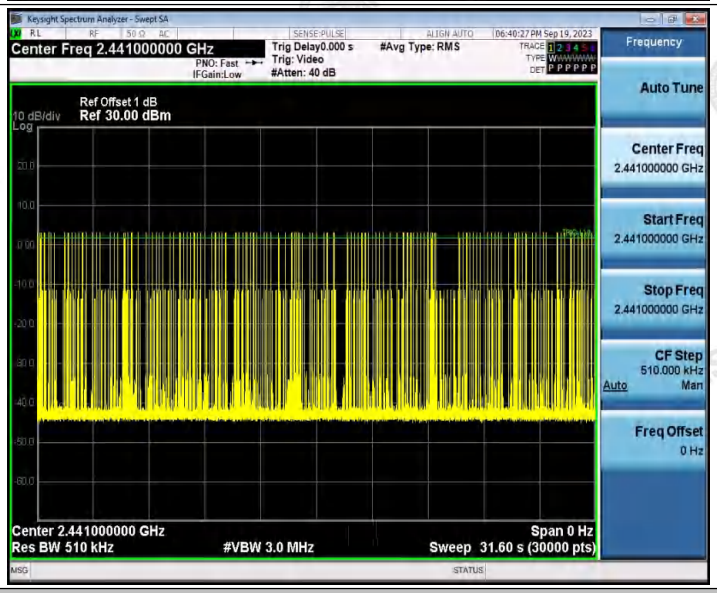
2DH1_Ant1_Hop



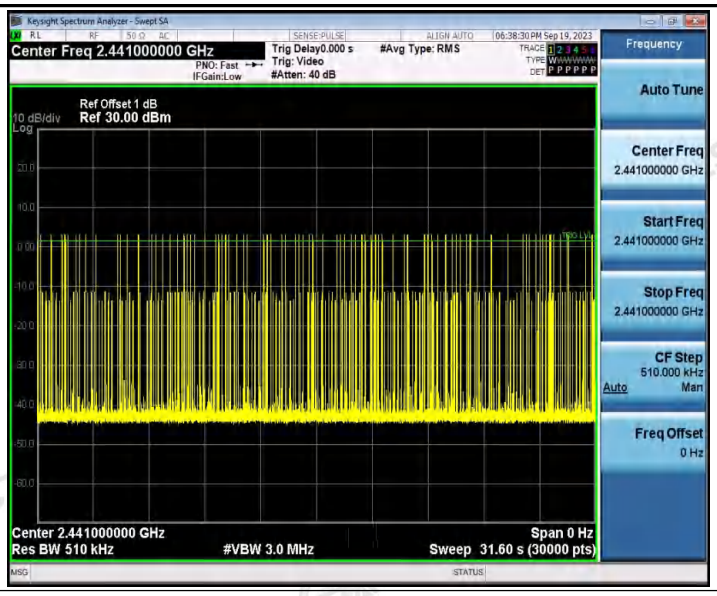


2DH3_Ant1_Hop





2DH5_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
PNO: Fast
IFGain:Low
Trig Delay0.000 s
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
06:38:30 PM Sep 19, 2023
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
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)
MSG
STATUS

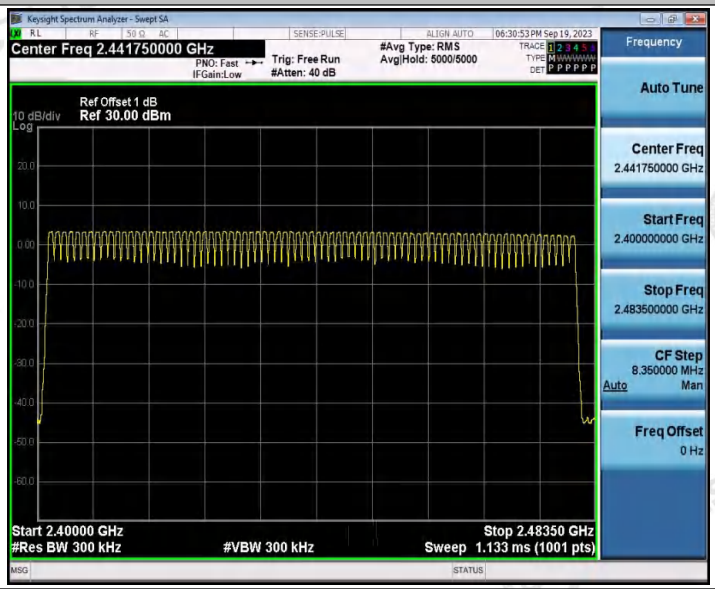
Appendix F: Number of hopping channels

Test Result

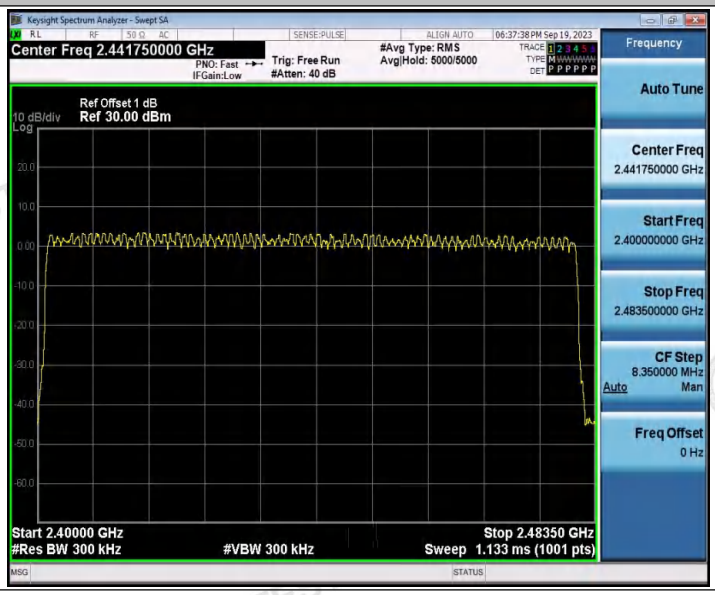
Test Mode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

DH5_Ant1_Hop



2DH5_Ant1_Hop



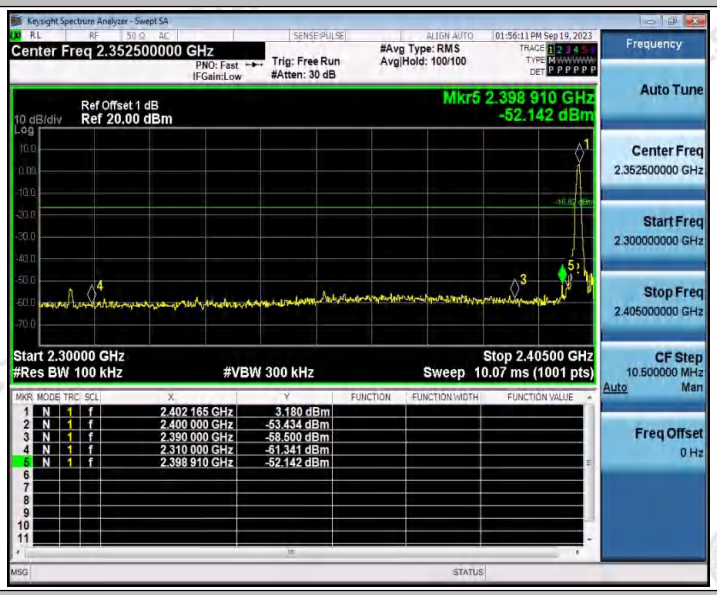
Appendix G: Band edge measurements

Test Result

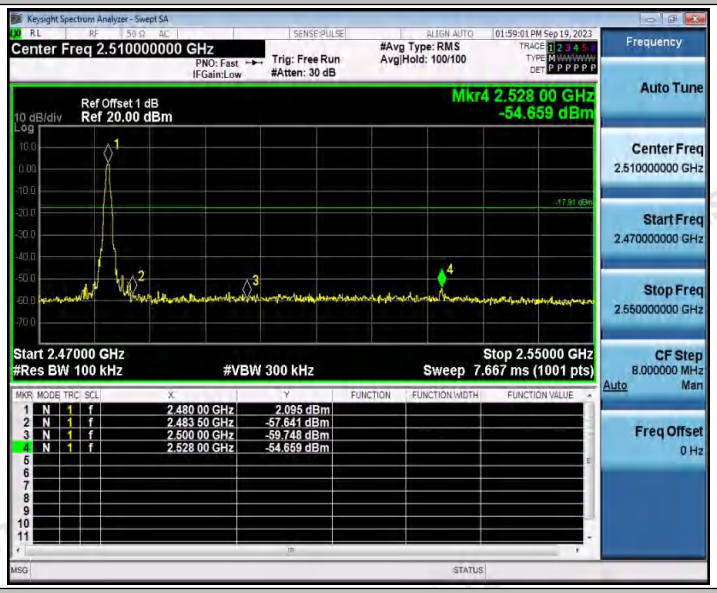
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	3.18	-52.14	≤-16.82	PASS
		High	2480	2.10	-54.66	≤-17.91	PASS
		Low	Hop_2402	2.84	-52.98	≤-17.16	PASS
		High	Hop_2480	2.28	-51.77	≤-17.72	PASS
2DH5	Ant1	Low	2402	2.34	-51.22	≤-17.66	PASS
		High	2480	1.50	-54.89	≤-18.5	PASS
		Low	Hop_2402	1.96	-53.34	≤-18.04	PASS
		High	Hop_2480	2.41	-53.21	≤-17.59	PASS

Test Graphs

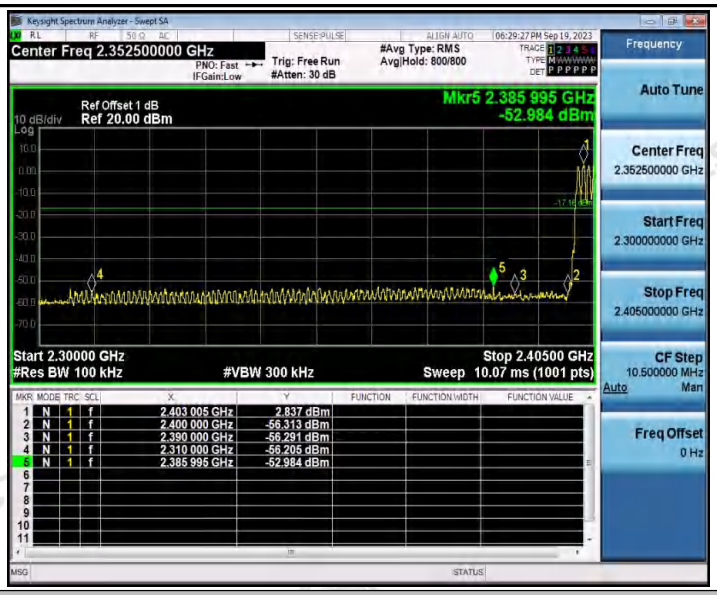
DH5_Ant1_Low_2402



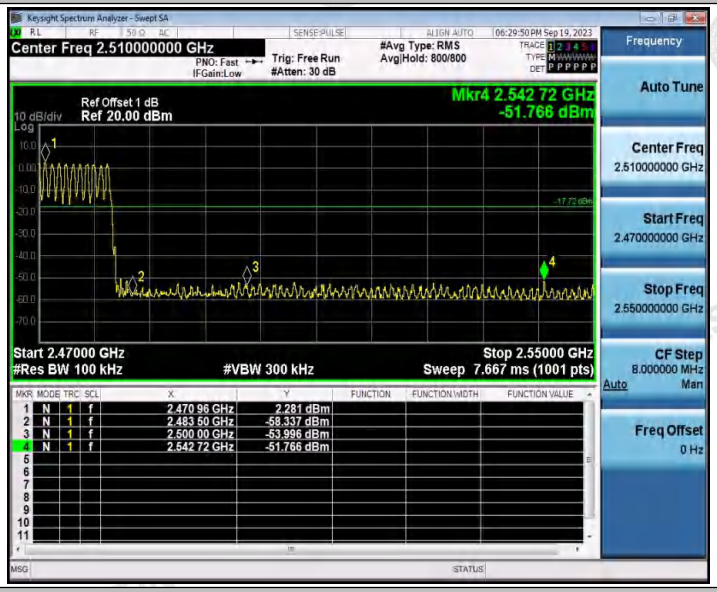
DH5_Ant1_High_2480



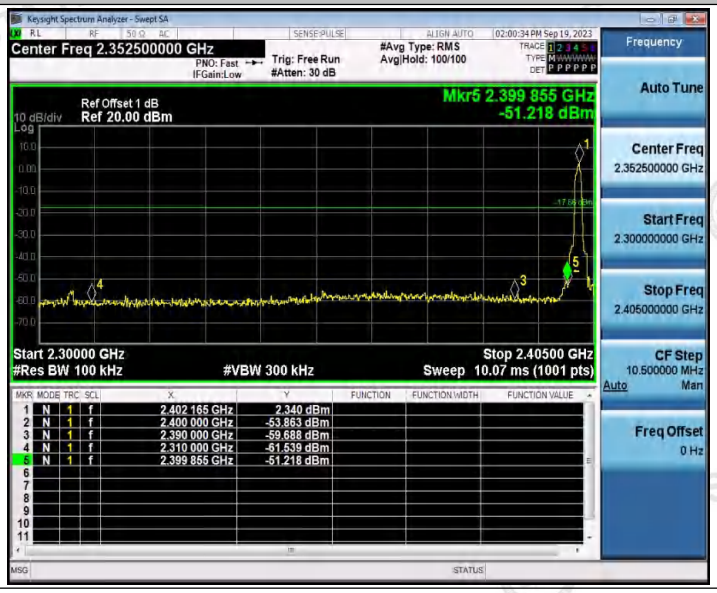
DH5_Ant1_Low_Hop_2402



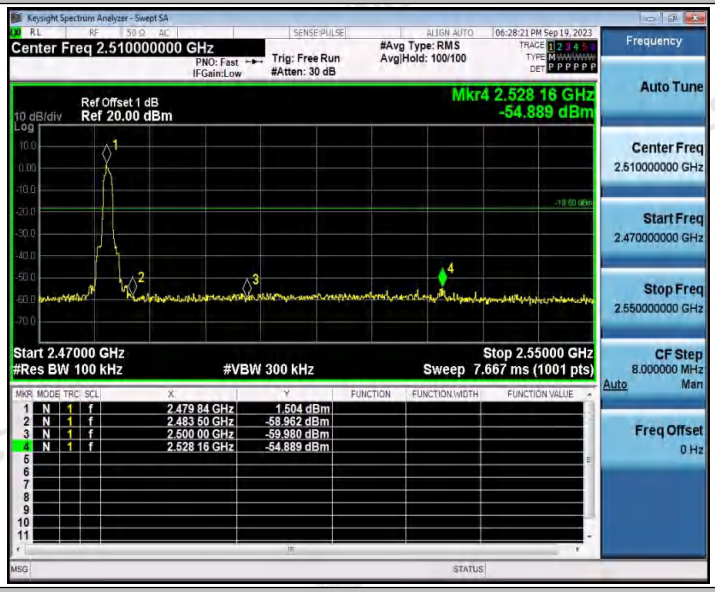
DH5_Ant1_High_Hop_2480



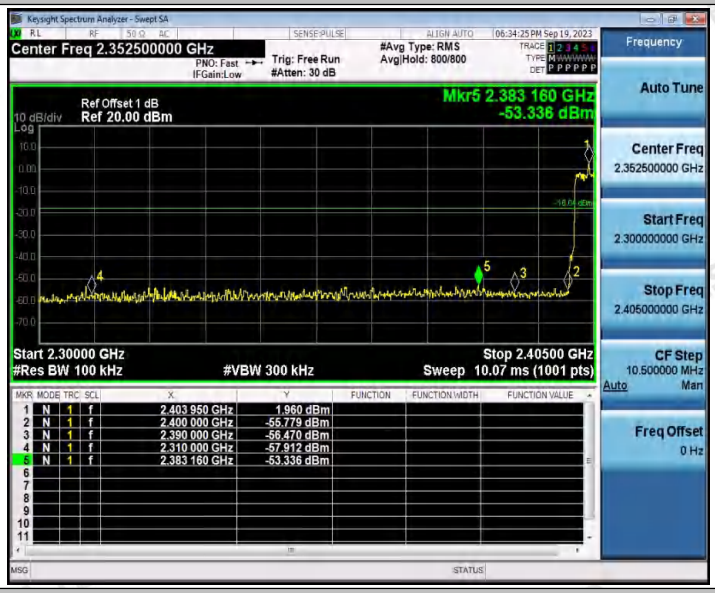
2DH5_Ant1_Low_2402



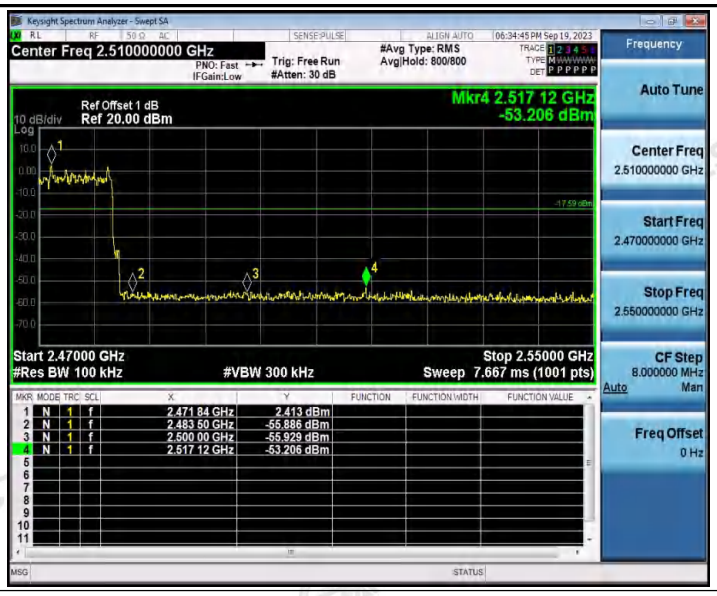
2DH5_Ant1_High_2480



2DH5_Ant1_Low_Hop_2402



2DH5_Ant1_High_Hop_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.510000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 800/800
06:34:45 PM Sep 19, 2023
Frequency
Auto Tune
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr4 2.517 12 GHz
-53.206 dBm
Center Freq
2.510000000 GHz
Start Freq
2.470000000 GHz
Stop Freq
2.550000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 2.47000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.55000 GHz
Sweep 7.667 ms (1001 pts)
1 N 1 f 2.471 84 GHz 2.413 dBm
2 N 1 f 2.483 50 GHz -55.886 dBm
3 N 1 f 2.500 00 GHz -55.929 dBm
4 N 1 f 2.517 12 GHz -53.206 dBm
MSG
STATUS

Appendix H: Conducted Spurious Emission

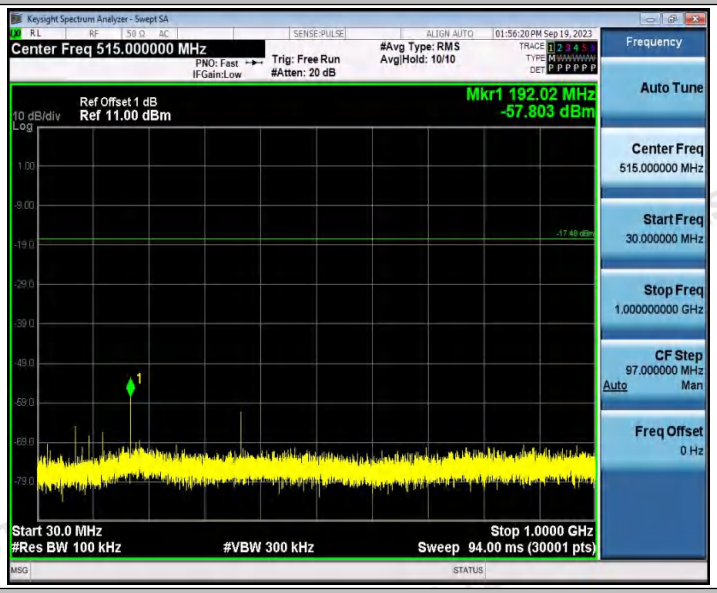
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	2.52	2.52	---	PASS
			30~1000	2.52	-57.8	≤-17.48	PASS
			1000~26500	2.52	-43.06	≤-17.48	PASS
		2441	Reference	2.49	2.49	---	PASS
			30~1000	2.49	-42.44	≤-17.51	PASS
			1000~26500	2.49	-40.78	≤-17.51	PASS
		2480	Reference	1.45	1.45	---	PASS
			30~1000	1.45	-55.33	≤-18.55	PASS
			1000~26500	1.45	-39.94	≤-18.55	PASS
2DH5	Ant1	2402	Reference	1.98	1.98	---	PASS
			30~1000	1.98	-42.54	≤-18.02	PASS
			1000~26500	1.98	-42.11	≤-18.02	PASS
		2441	Reference	-0.69	-0.69	---	PASS
			30~1000	-0.69	-62.29	≤-20.69	PASS
			1000~26500	-0.69	-40.89	≤-20.69	PASS
		2480	Reference	2.02	2.02	---	PASS
			30~1000	2.02	-42.43	≤-17.98	PASS
			1000~26500	2.02	-40.32	≤-17.98	PASS

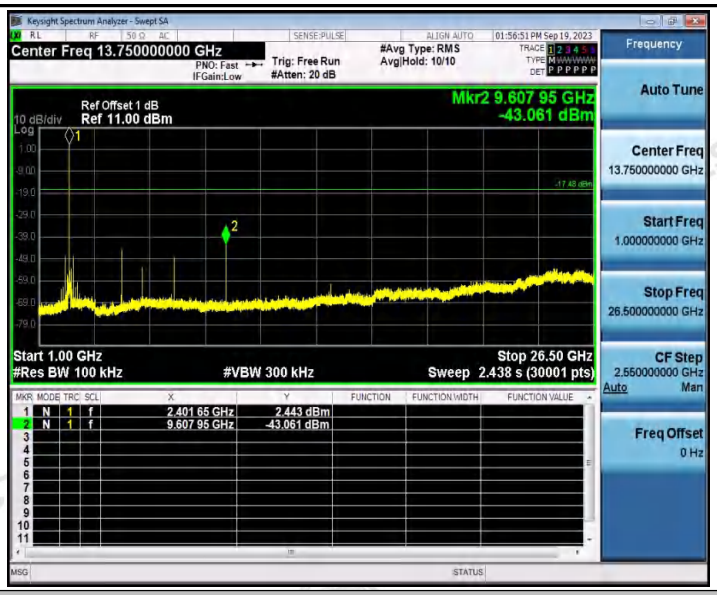
Test Graphs

DH5_Ant1_2402_0~Reference

DH5_Ant1_2402_30~1000

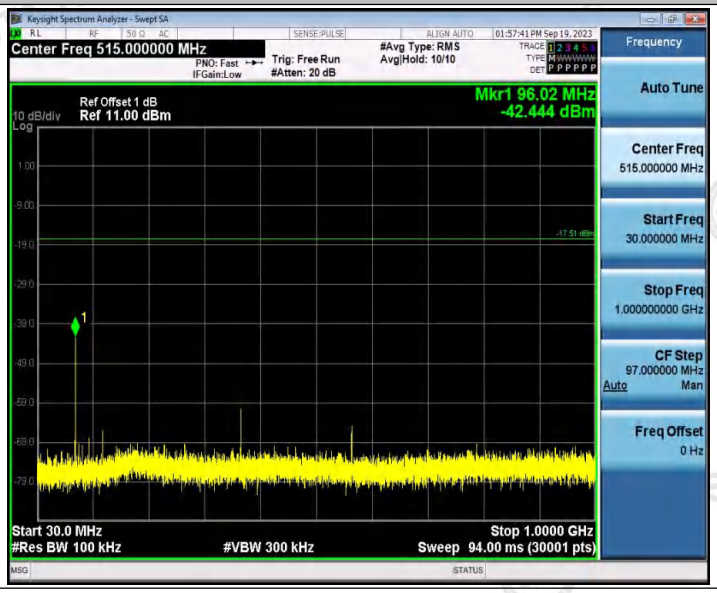


DH5_Ant1_2402_1000~26500

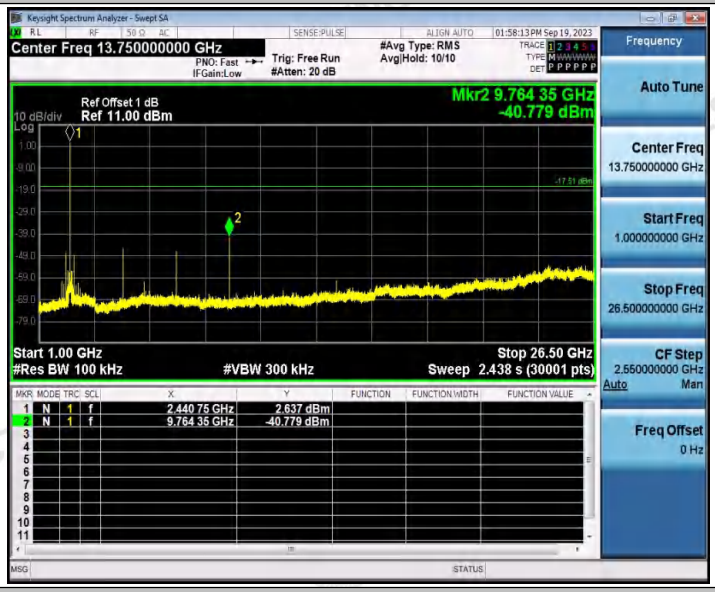


DH5_Ant1_2441_0~Reference

DH5_Ant1_2441_30~1000

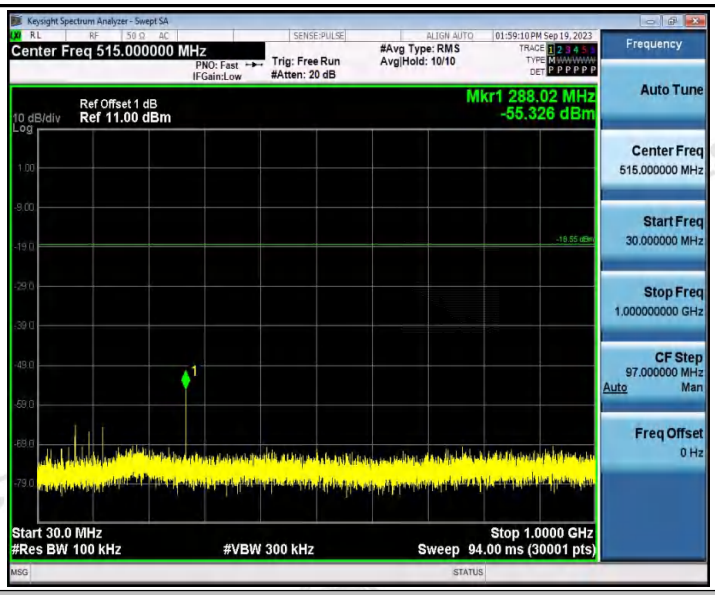


DH5_Ant1_2441_1000~26500

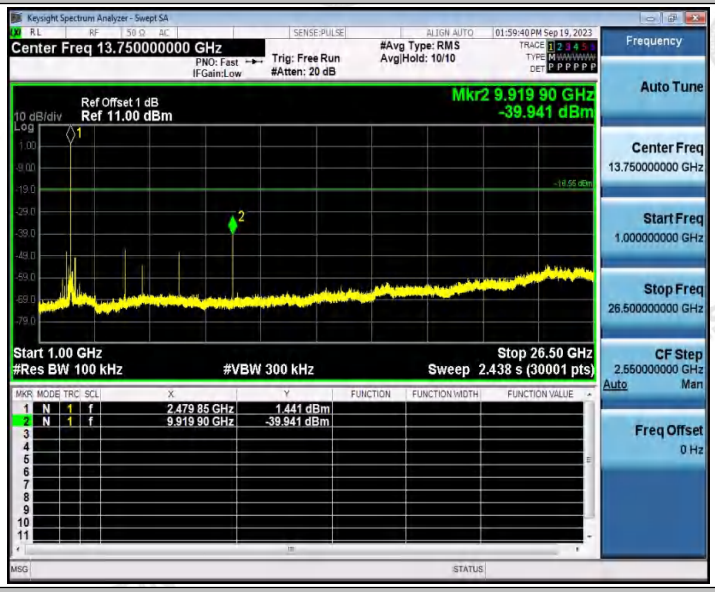


DH5_Ant1_2480_0~Reference

DH5_Ant1_2480_30~1000

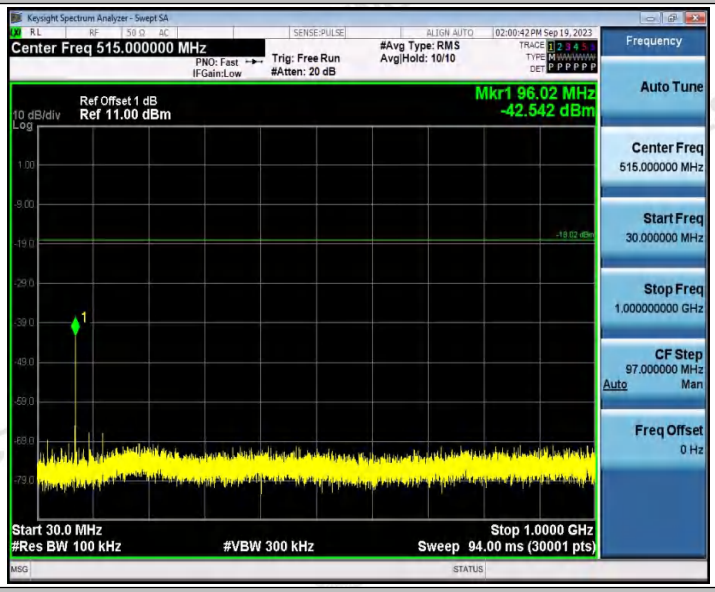


DH5_Ant1_2480_1000~26500

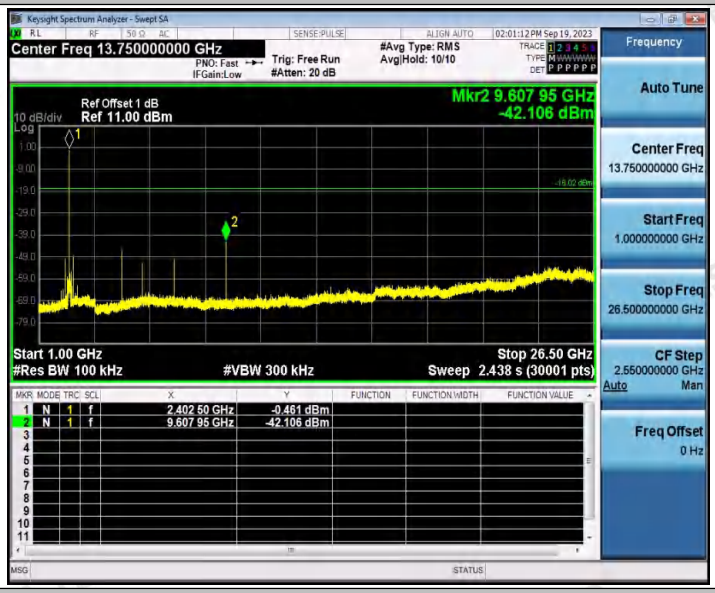


2DH5_Ant1_2402_0~Reference

2DH5_Ant1_2402_30~1000

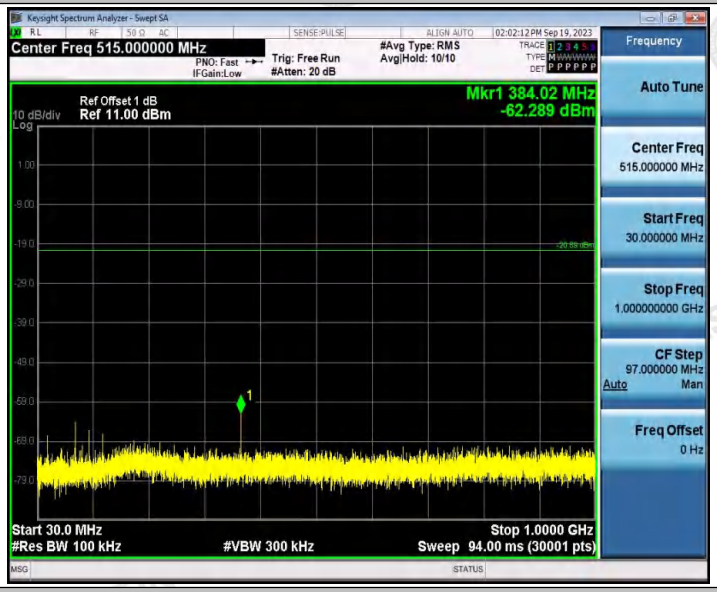


2DH5_Ant1_2402_1000~26500

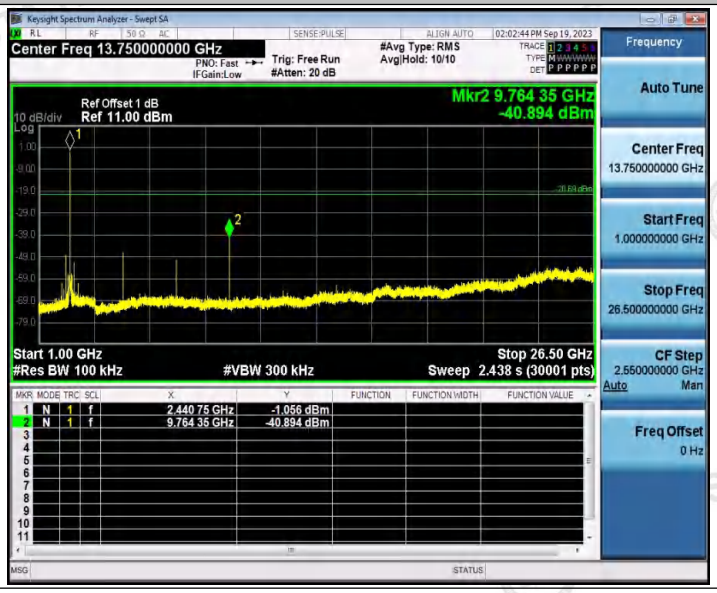


2DH5_Ant1_2441_0~Reference

2DH5_Ant1_2441_30~1000

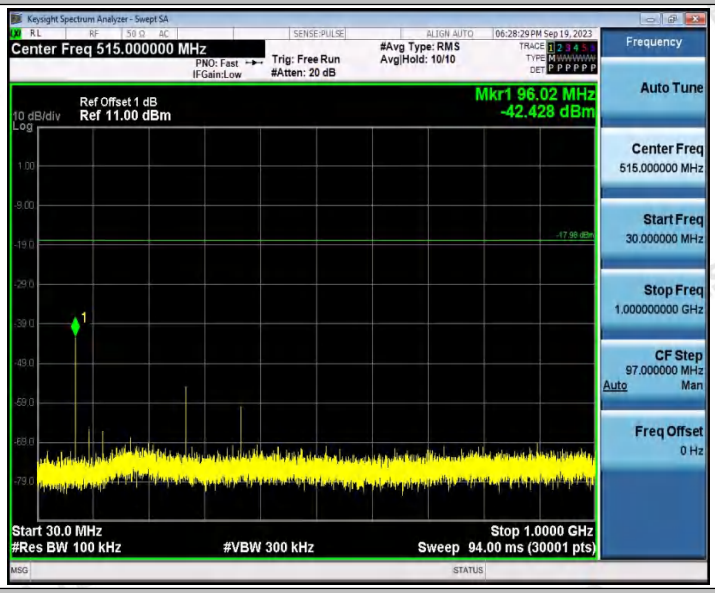


2DH5_Ant1_2441_1000~26500

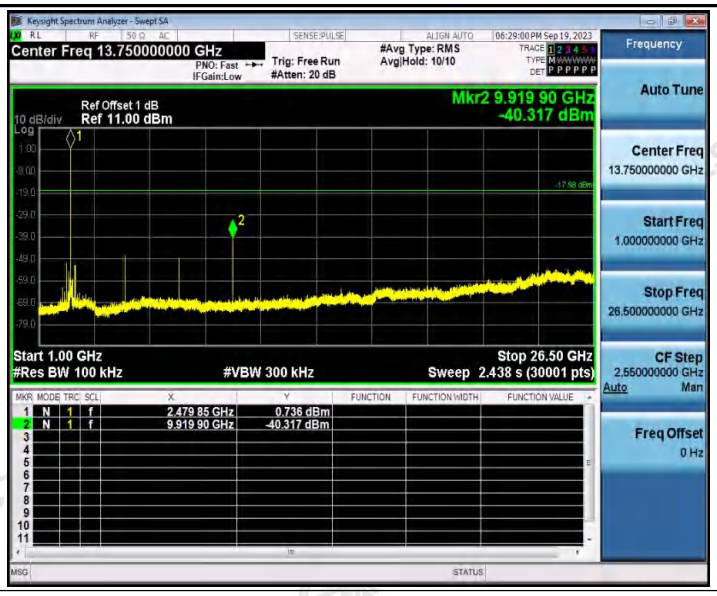


2DH5_Ant1_2480_0~Reference

2DH5_Ant1_2480_30~1000



2DH5_Ant1_2480_1000~26500


Keysight Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 10/10
06:29:00 PM Sep 19, 2023
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
Mkr2 9.919 90 GHz
-40.317 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N 1 f 2.479 85 GHz 0.736 dBm
2 N 1 f 9.919 90 GHz -40.317 dBm
Frequency
Auto Tune
Center Freq
13.750000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
2.550000000 GHz
Auto Man
Freq Offset
0 Hz

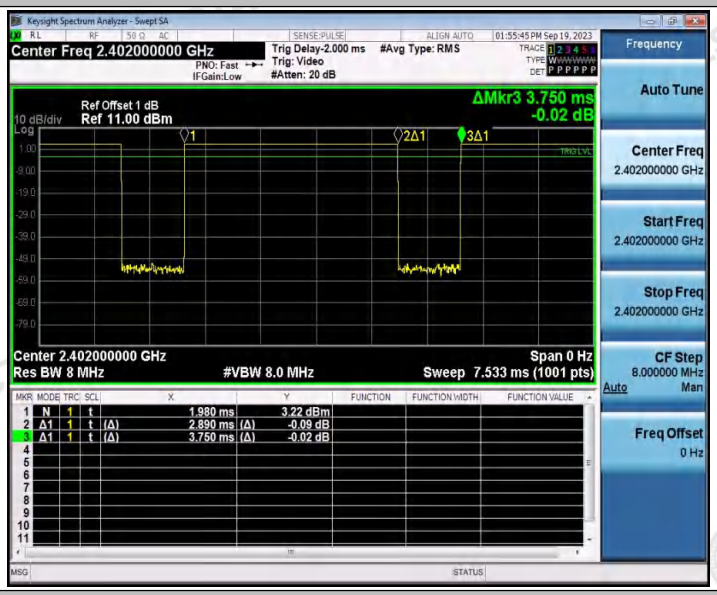
Appendix I: Duty Cycle

Test Result

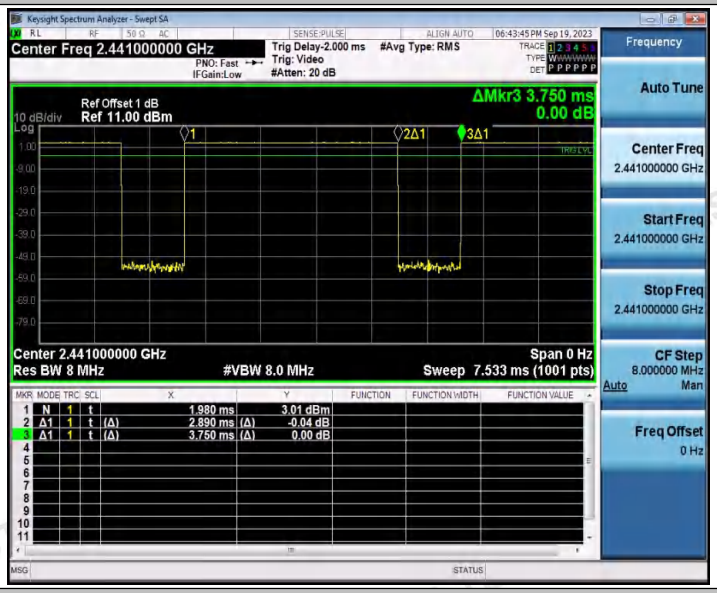
Test Mode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
DH5	Ant1	2402	2.89	3.75	77.07	1.13
		2441	2.89	3.75	77.07	1.13
		2480	2.89	3.75	77.07	1.13
2DH5	Ant1	2402	2.89	3.75	77.07	1.13
		2441	2.89	3.75	77.07	1.13
		2480	2.90	3.75	77.33	1.12

Test Graphs

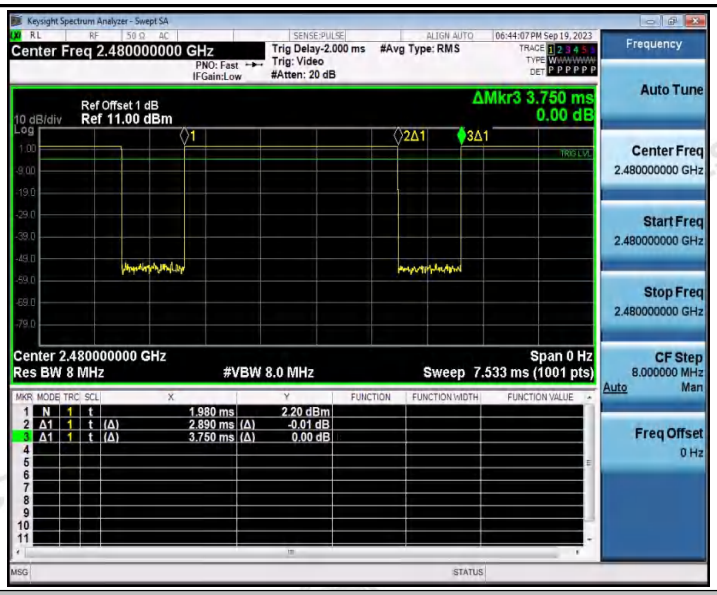
DH5_Ant1_2402



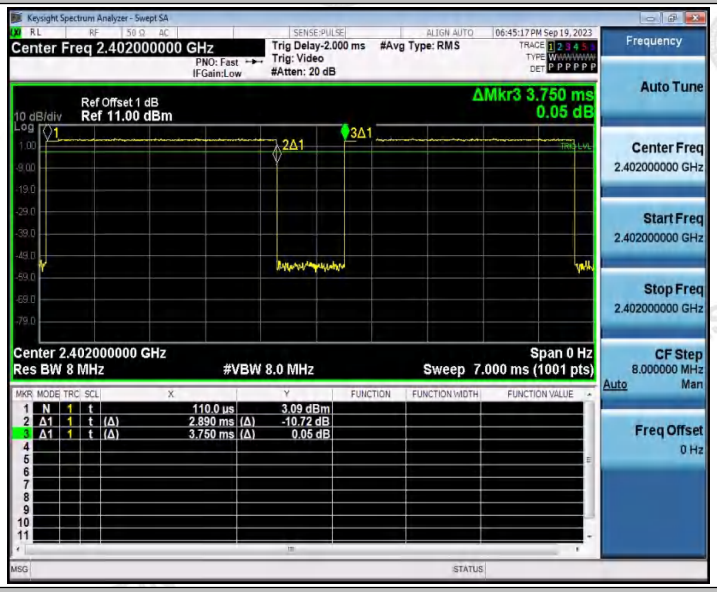
DH5_Ant1_2441



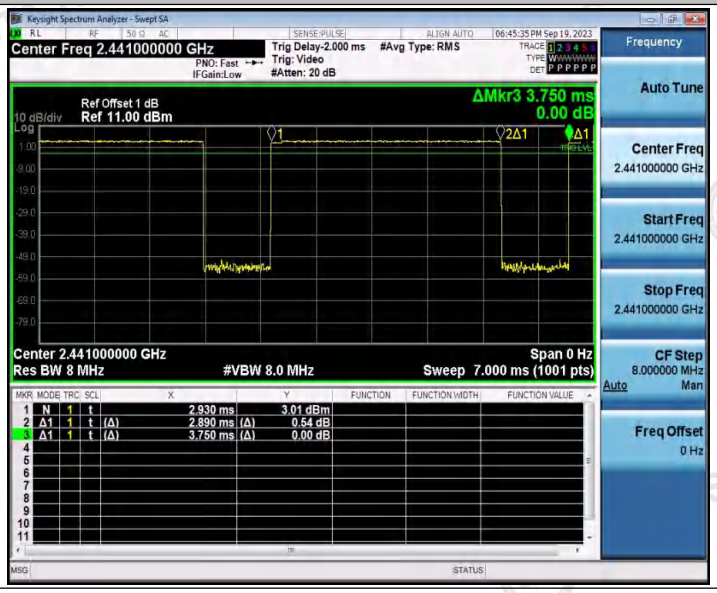
DH5_Ant1_2480



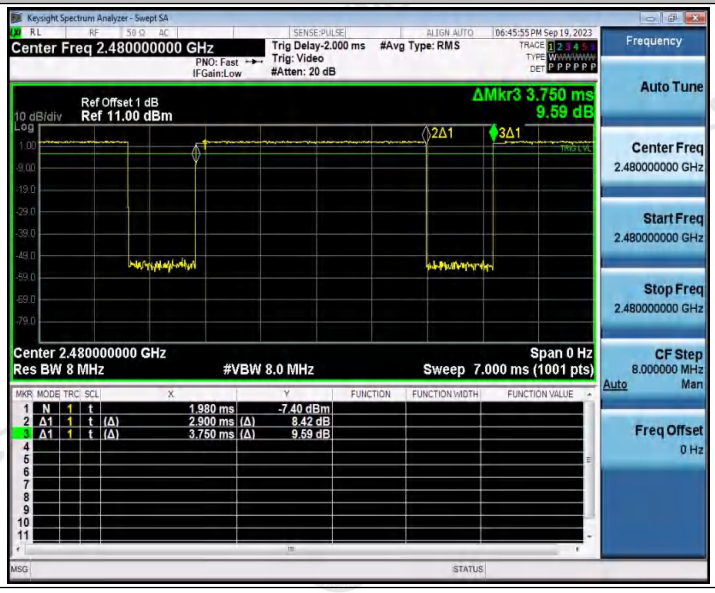
2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



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