Appendix Test Data

Report No.:	18220WC30204501	Test Sample No.:	1-2-2
Start Test Date:	2023.09.19	Finish Test Date:	2023.09.20
Test Engineer:	Hayman Chen	Auditor:	Rick Luo
Temperature:	25.2℃	Relative Humidity:	48.3%
Pressure:	102 kPa		

Appendix A: 20dB Emission Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.948	2401.520	2402.468	---	---
		2441	0.957	2440.514	2441.471	---	---
		2480	0.957	2479.517	2480.474	---	---
2DH5	Ant1	2402	1.320	2401.316	2402.636	---	---
		2441	1.344	2440.307	2441.651	---	---
		2480	1.275	2479.358	2480.633	---	---

Test Graphs

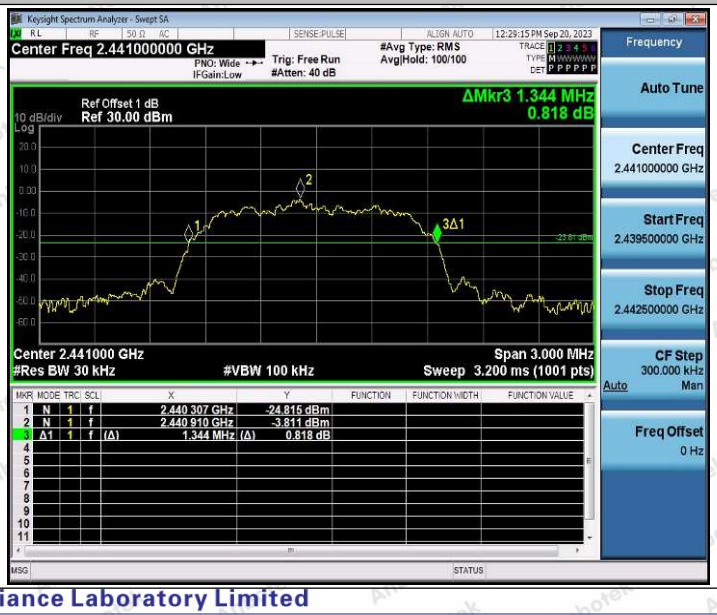
DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

2DH5_Ant1_2402

2DH5_Ant1_2441



2DH5_Ant1_2480

Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.85907	2401.5489	2402.4080	---	---
		2441	0.86142	2440.5477	2441.4092	---	---
		2480	0.84883	2479.5554	2480.4043	---	---
2DH5	Ant1	2402	1.1808	2401.3886	2402.5694	---	---
		2441	1.1645	2440.3977	2441.5622	---	---
		2480	1.1769	2479.3890	2480.5659	---	---

Test Graphs

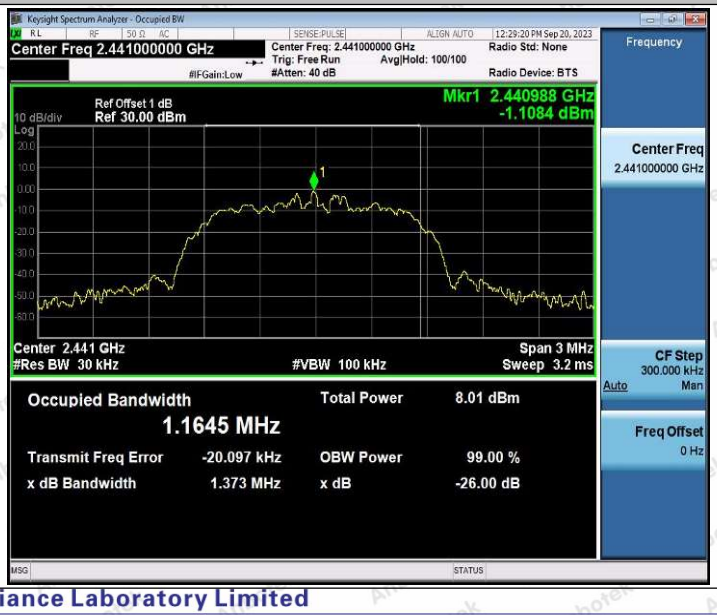
DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

2DH5_Ant1_2402

2DH5_Ant1_2441



2DH5_Ant1_2480

Appendix C: Maximum conducted output power

Test Result Peak

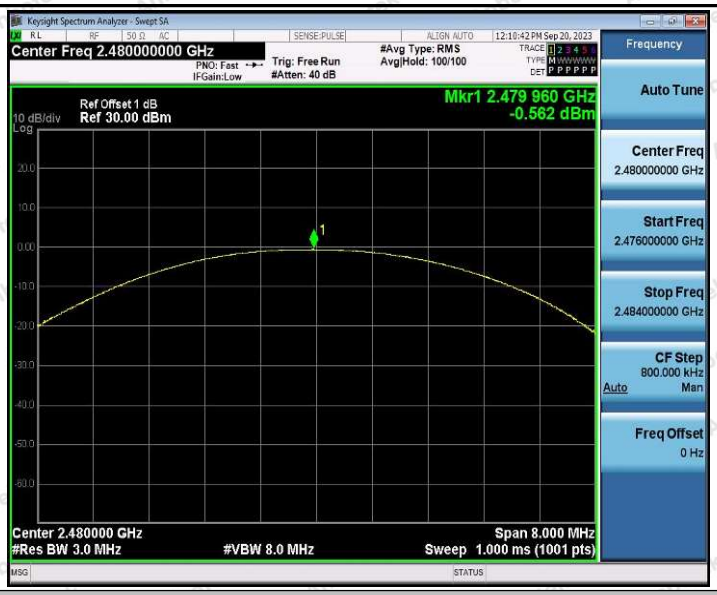
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	1.19	≤30	PASS
		2441	0.65	≤30	PASS
		2480	-0.56	≤30	PASS
2DH5	Ant1	2402	3.40	≤30	PASS
		2441	2.87	≤30	PASS
		2480	1.51	≤30	PASS

Test Graphs

DH5_Ant1_2402

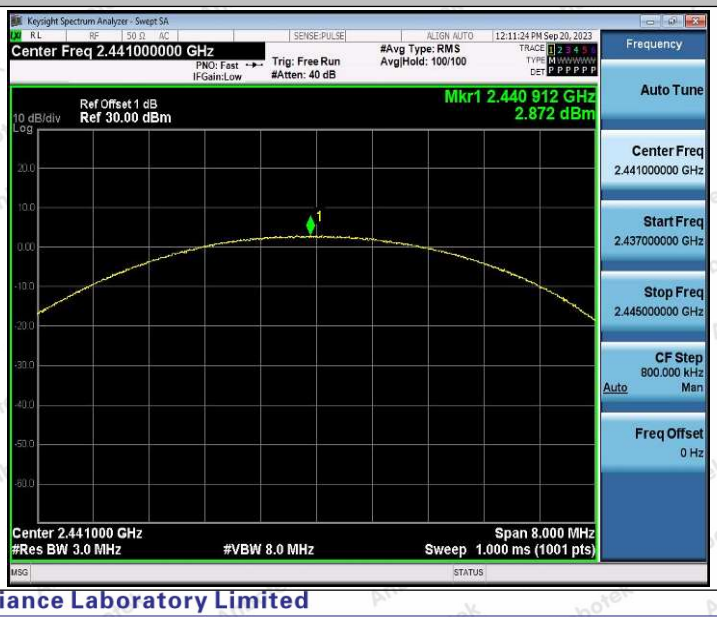
DH5_Ant1_2441

DH5_Ant1_2480

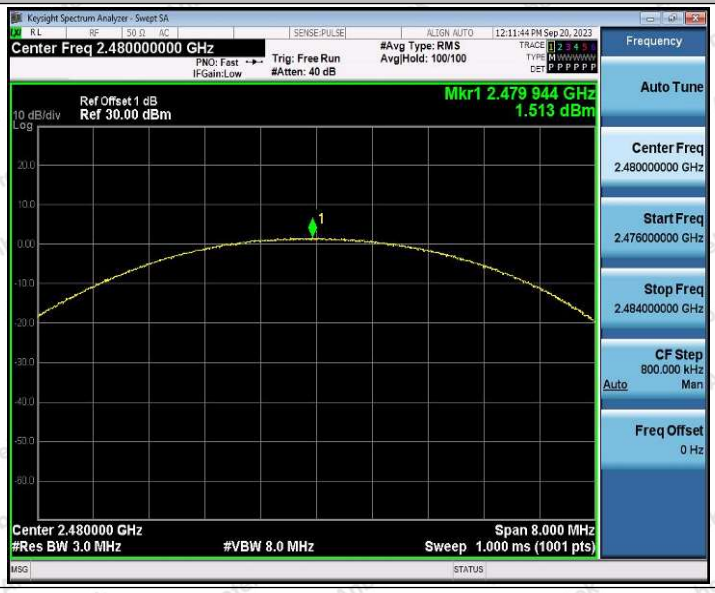


2DH5_Ant1_2402

2DH5_Ant1_2441



2DH5_Ant1_2480



Appendix D: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.980	≥0.957	PASS
2DH5	Ant1	Hop	0.990	≥0.896	PASS

Test Graphs

DH5_Ant1_Hop

2DH5_Ant1_Hop

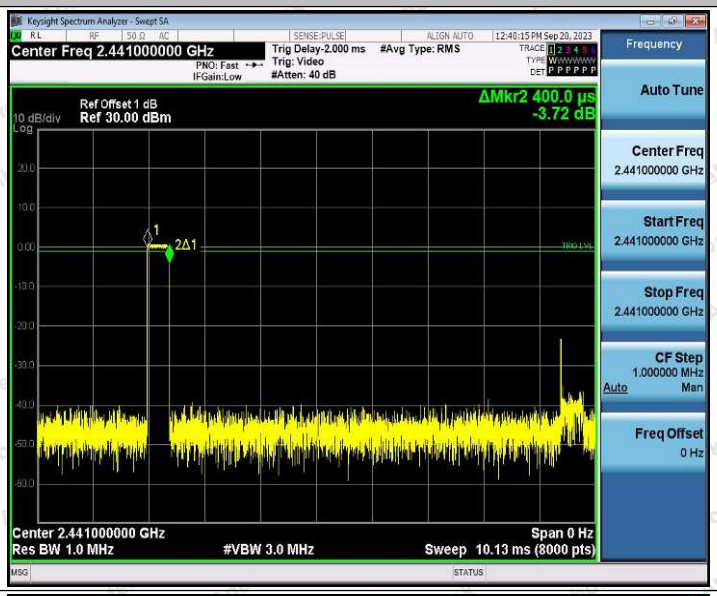
Appendix E: Time of occupancy

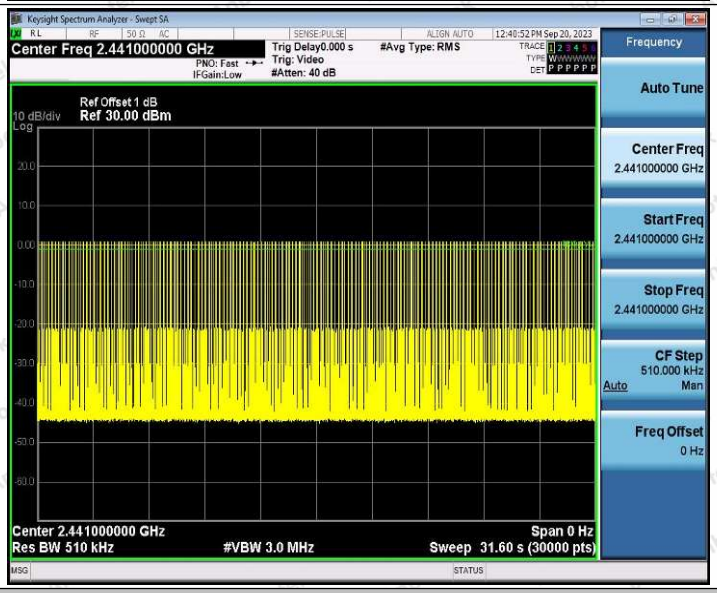
Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.400	317	0.127	≤0.4	PASS
DH3	Ant1	Hop	1.657	160	0.265	≤0.4	PASS
DH5	Ant1	Hop	2.906	110	0.32	≤0.4	PASS
2DH1	Ant1	Hop	0.412	317	0.131	≤0.4	PASS
2DH3	Ant1	Hop	1.663	161	0.268	≤0.4	PASS
2DH5	Ant1	Hop	2.911	110	0.32	≤0.4	PASS

Test Graphs

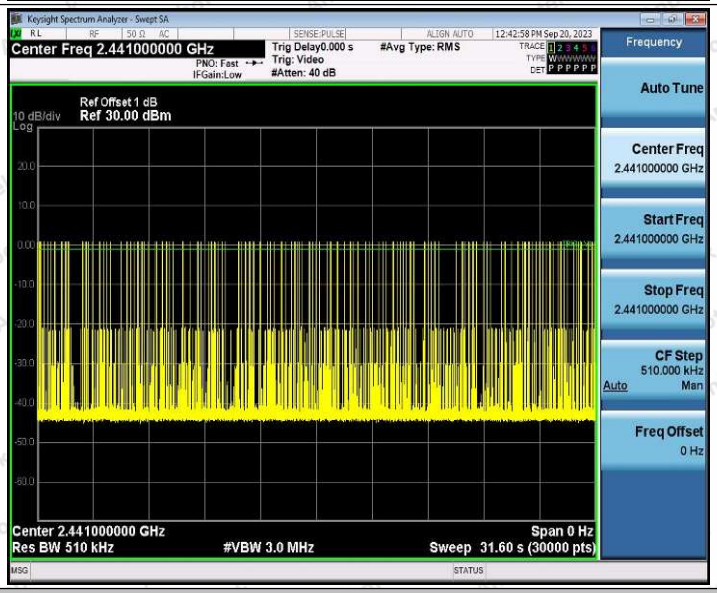
DH1_Ant1_Hop



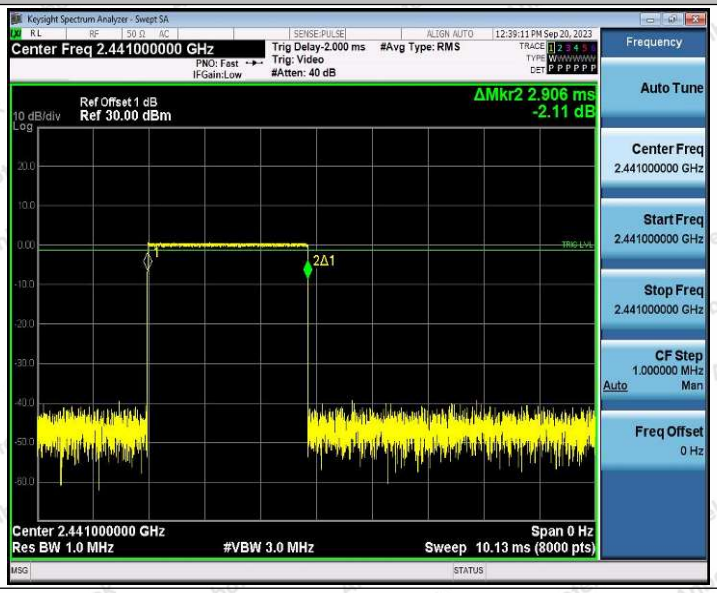


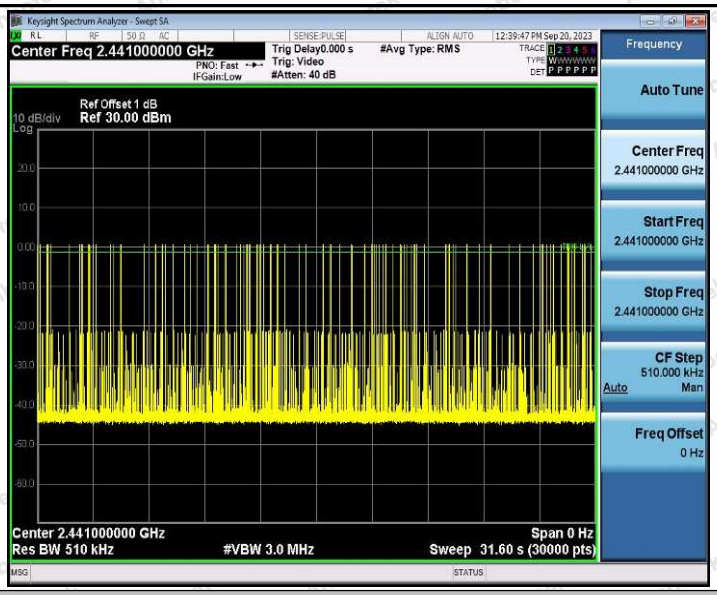
DH3_Ant1_Hop

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 1.657 ms
0.97 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

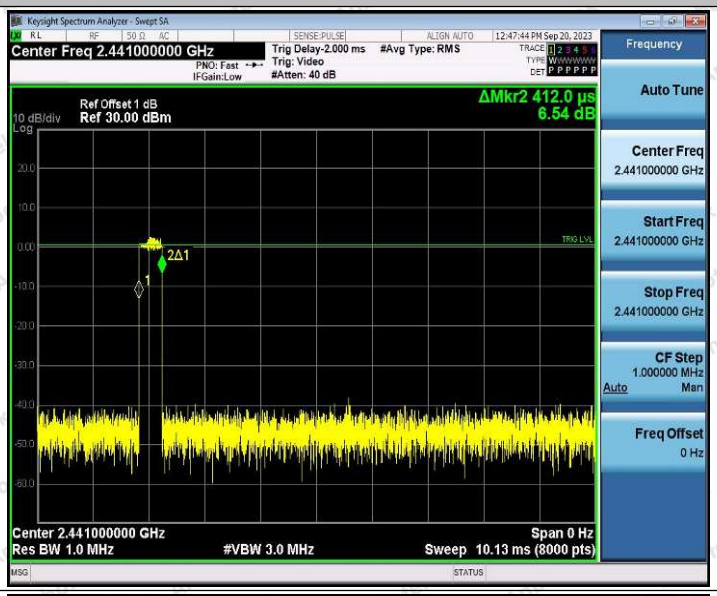

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
PNO: Fast
IFGain:Low
Ref Offset 1 dB
10 dB/div Ref 30.00 dBm
Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 31.60 s (30000 pts)
Frequency
Auto Tune
Center Freq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

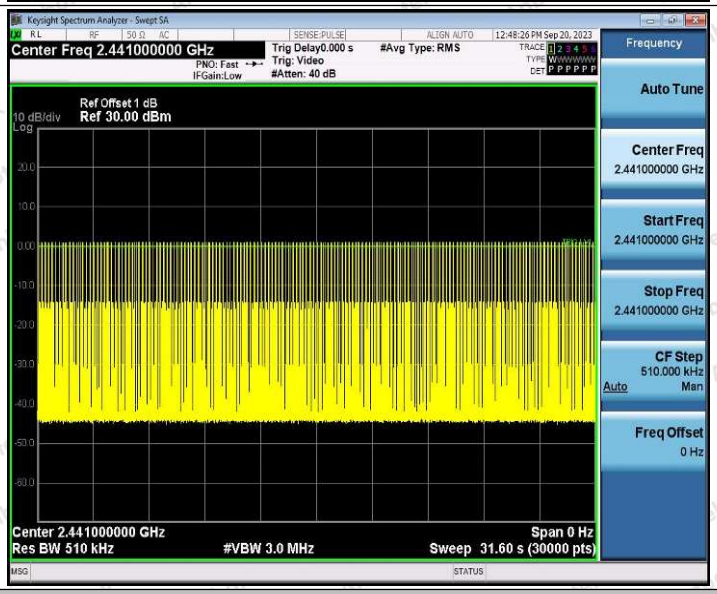
DH5_Ant1_Hop


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 2.906 ms
-2.11 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

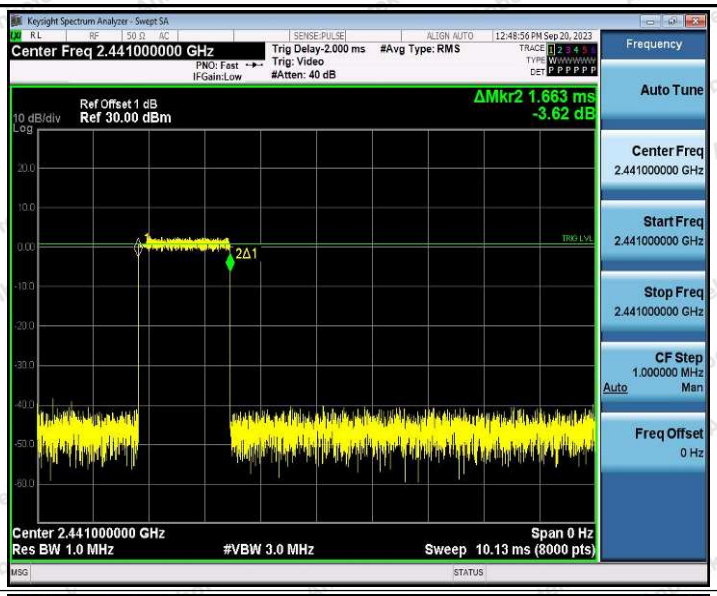


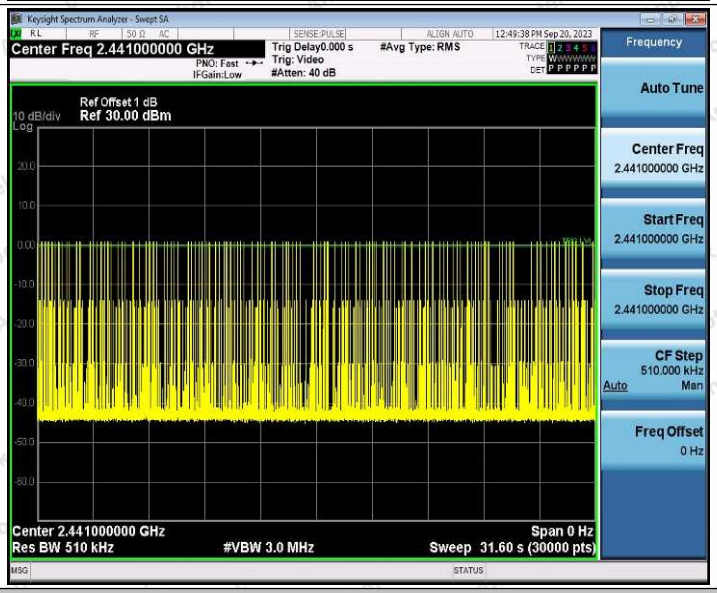
2DH1_Ant1_Hop



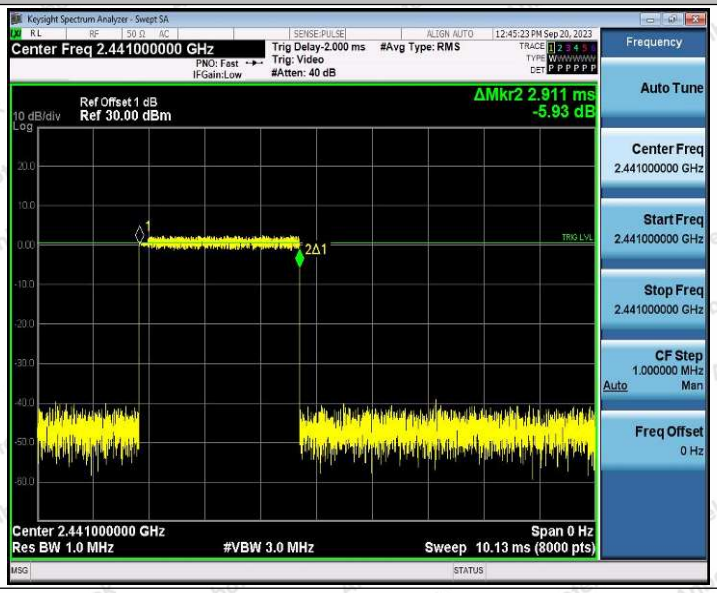


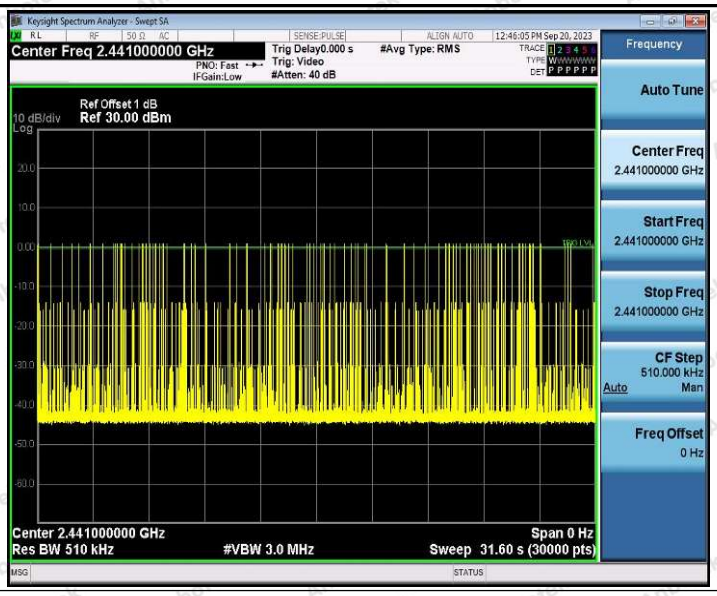
2DH3_Ant1_Hop





2DH5_Ant1_Hop




Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 40 dB
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 channels

Test Result

TestMode	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

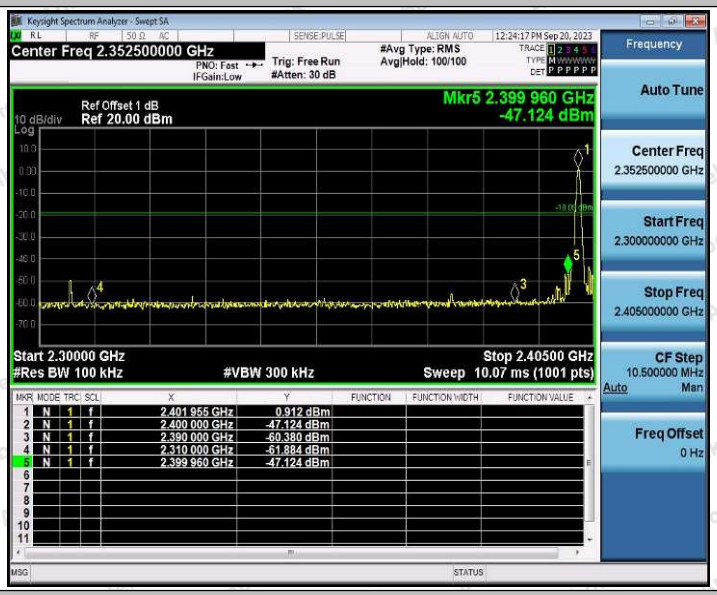
Appendix G: Band edge measurements

Test Result

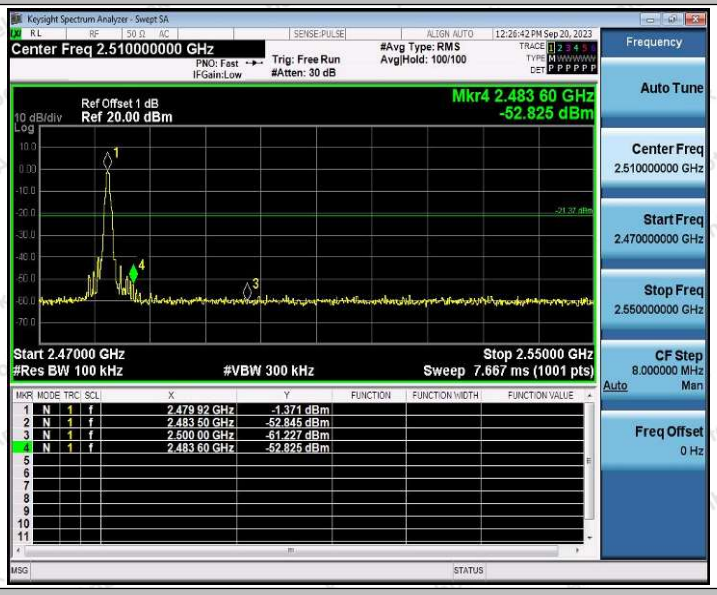
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	0.91	-47.12	≤-19.09	PASS
		High	2480	-1.37	-52.83	≤-21.37	PASS
		Low	Hop_2402	0.68	-49.61	≤-19.33	PASS
		High	Hop_2480	-1.11	-45.36	≤-21.11	PASS
2DH5	Ant1	Low	2402	0.55	-44.82	≤-19.45	PASS
		High	2480	-0.67	-56.7	≤-20.67	PASS
		Low	Hop_2402	0.73	-49.37	≤-19.28	PASS
		High	Hop_2480	-2.54	-48.43	≤-22.54	PASS

Test Graphs

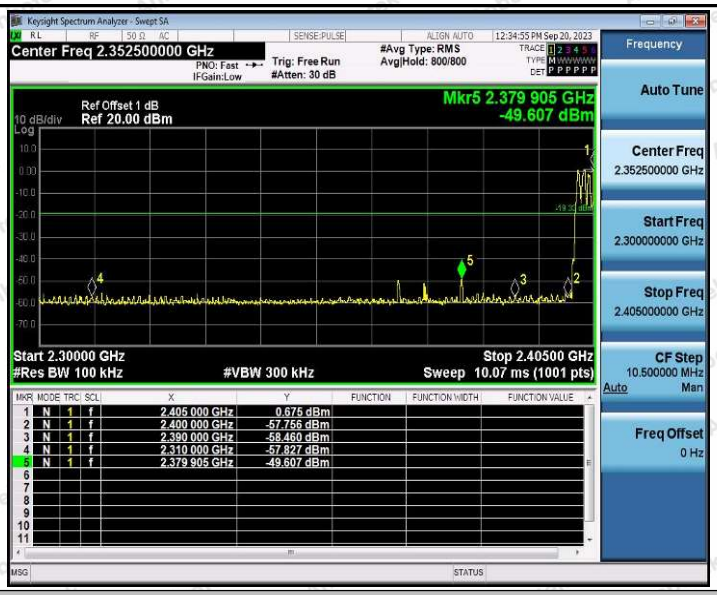
DH5_Ant1_Low_2402



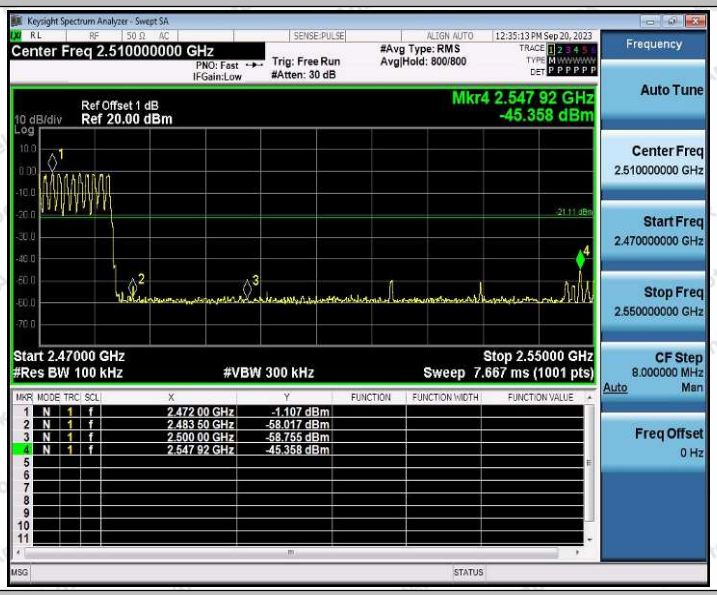
DH5_Ant1_High_2480



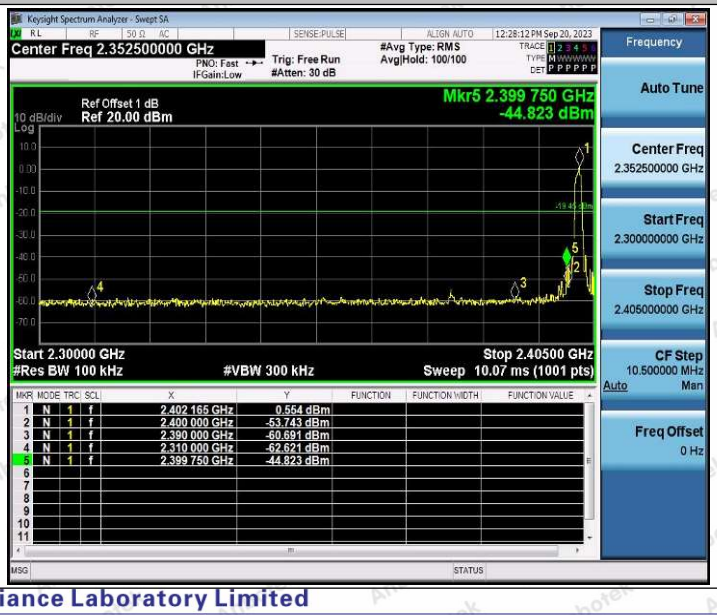
DH5_Ant1_Low_Hop_2402



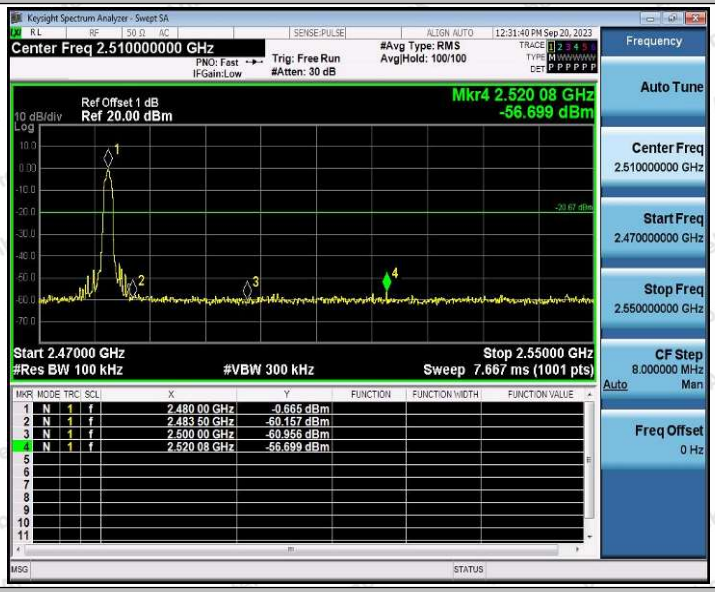
DH5_Ant1_High_Hop_2480



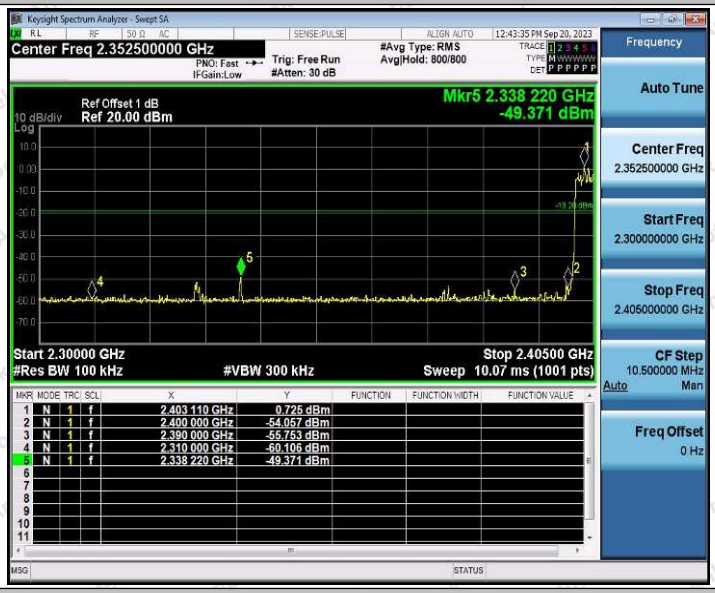
2DH5_Ant1_Low_2402



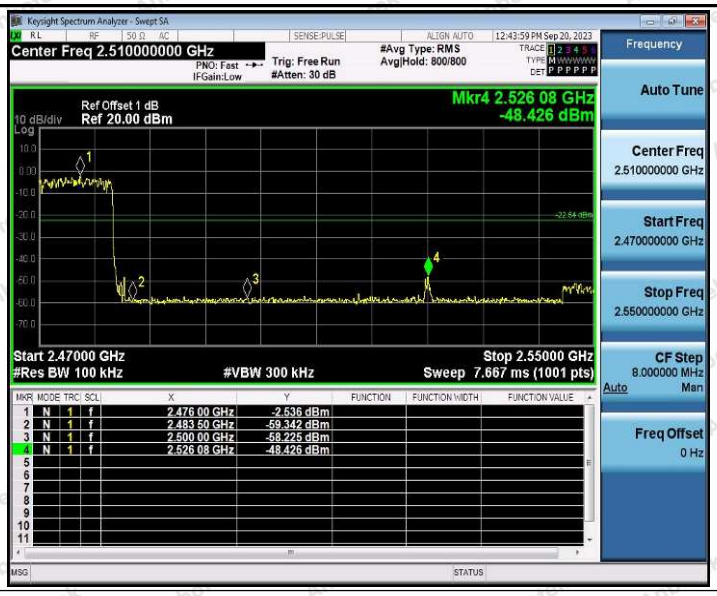
2DH5_Ant1_High_2480



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
12:43:59 PM Sep 20, 2023
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr4 2.526 08 GHz
-48.426 dBm
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 2.476 00 GHz -2.536 dBm
2 N 1 f 2.483 50 GHz -59.342 dBm
3 N 1 f 2.500 00 GHz -58.225 dBm
4 N 1 f 2.526 08 GHz -48.426 dBm
Frequency
Auto Tune
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

Appendix H: Conducted Spurious Emission

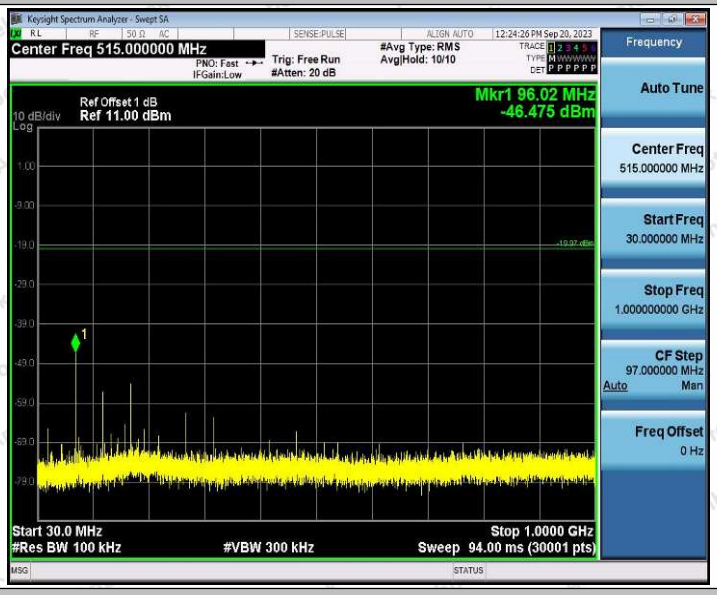
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	0.03	0.03	---	PASS
			30~1000	0.03	-46.48	≤-19.97	PASS
			1000~26500	0.03	-36.43	≤-19.97	PASS
		2441	Reference	-0.49	-0.49	---	PASS
			30~1000	-0.49	-53.65	≤-20.49	PASS
			1000~26500	-0.49	-38.89	≤-20.49	PASS
		2480	Reference	-1.72	-1.72	---	PASS
			30~1000	-1.72	-53.22	≤-21.72	PASS
			1000~26500	-1.72	-38.32	≤-21.72	PASS
2DH5	Ant1	2402	Reference	-2.31	-2.31	---	PASS
			30~1000	-2.31	-53.42	≤-22.31	PASS
			1000~26500	-2.31	-37.75	≤-22.31	PASS
		2441	Reference	-0.94	-0.94	---	PASS
			30~1000	-0.94	-53.37	≤-20.94	PASS
			1000~26500	-0.94	-40.32	≤-20.94	PASS
		2480	Reference	-2.11	-2.11	---	PASS
			30~1000	-2.11	-53.16	≤-22.11	PASS
			1000~26500	-2.11	-43.22	≤-22.11	PASS

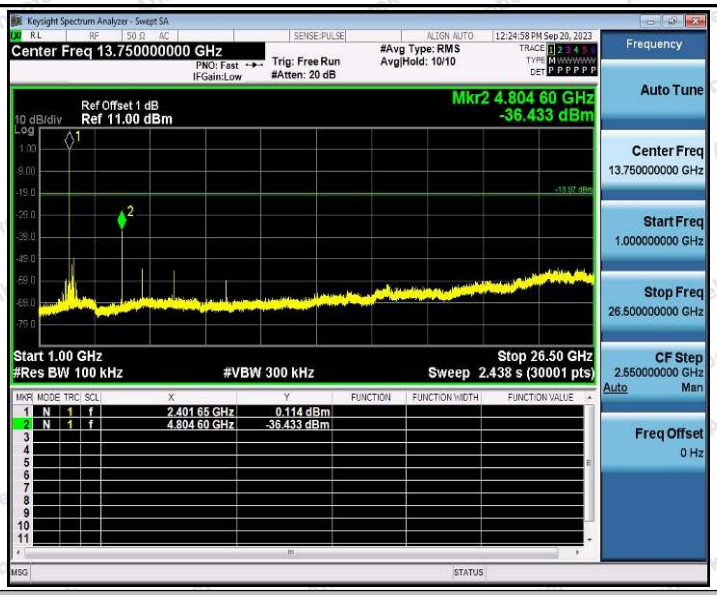
Test Graphs

DH5_Ant1_2402_0~Reference

DH5_Ant1_2402_30~1000

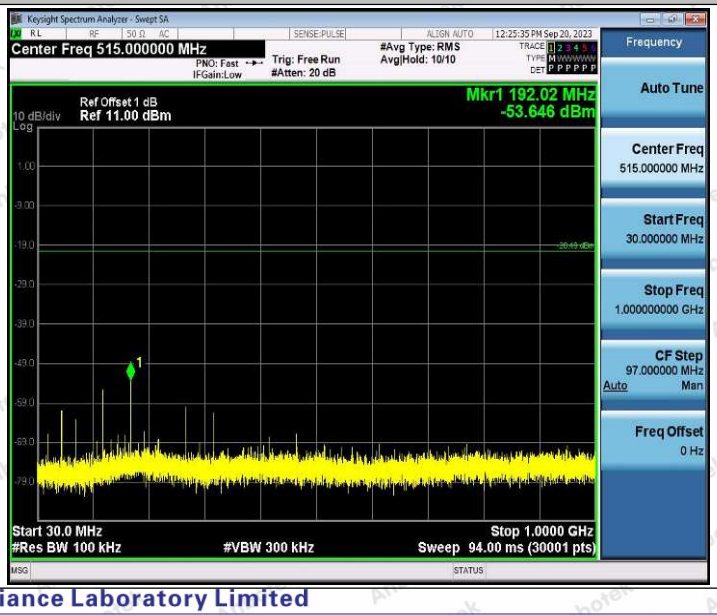


DH5_Ant1_2402_1000~26500

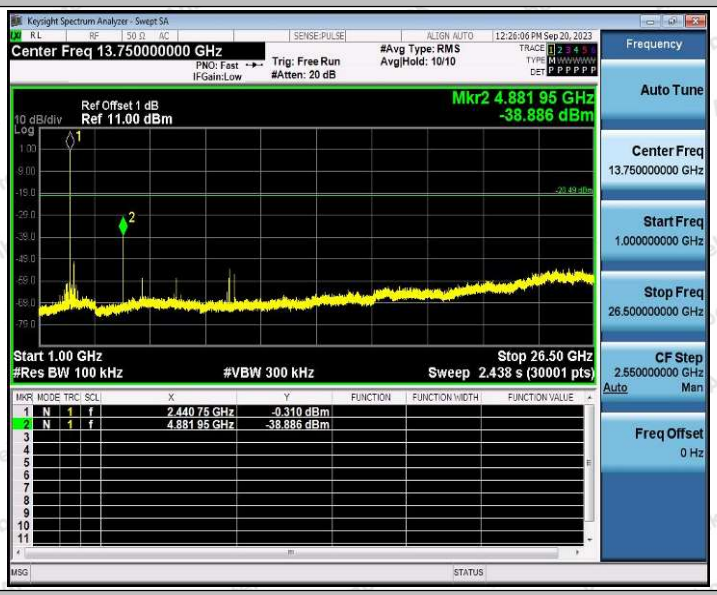


DH5_Ant1_2441_0~Reference

DH5_Ant1_2441_30~1000

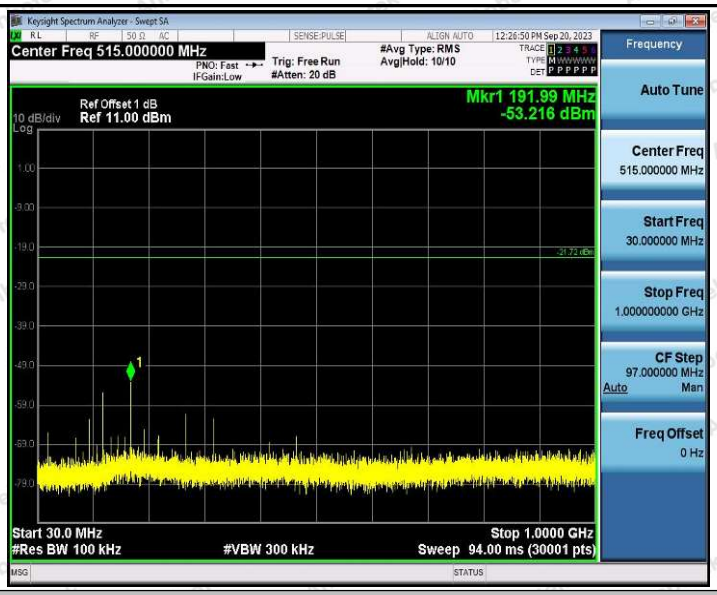


DH5_Ant1_2441_1000~26500

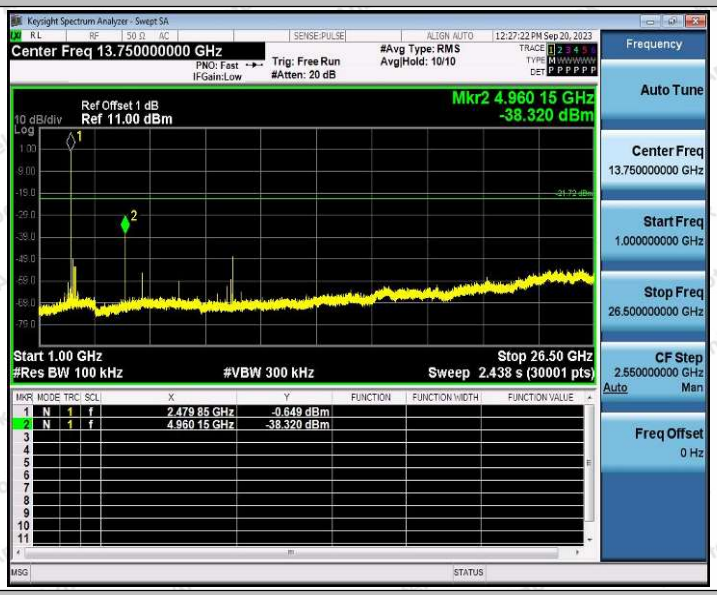


DH5_Ant1_2480_0~Reference

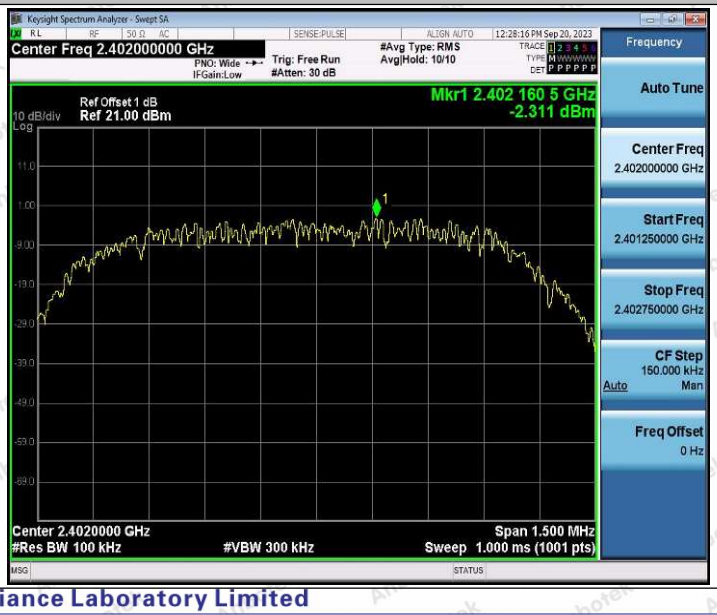
DH5_Ant1_2480_30~1000



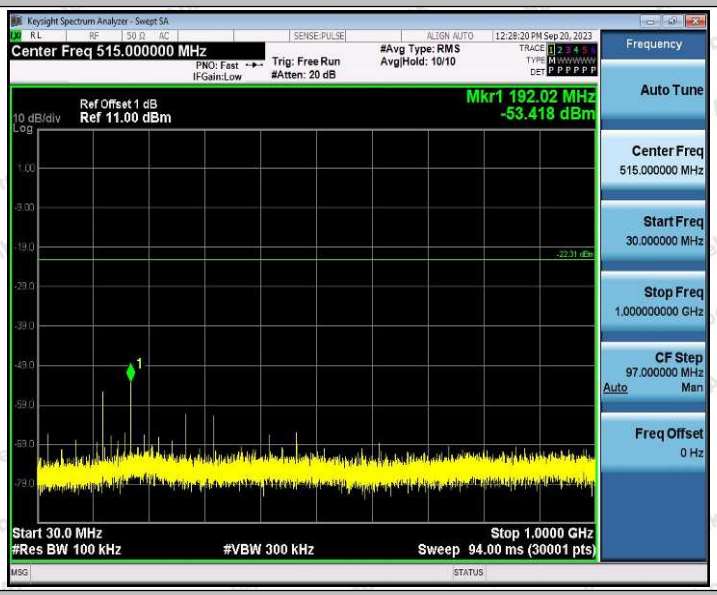
DH5_Ant1_2480_1000~26500



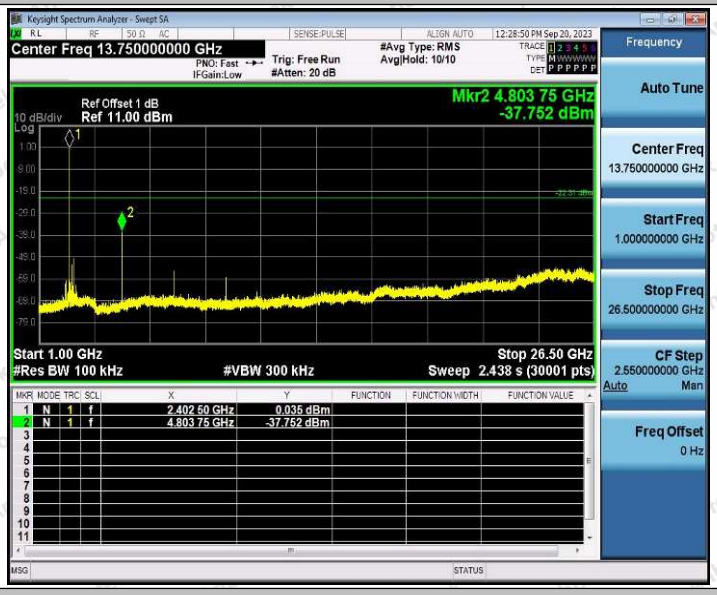
2DH5_Ant1_2402_0~Reference



2DH5_Ant1_2402_30~1000

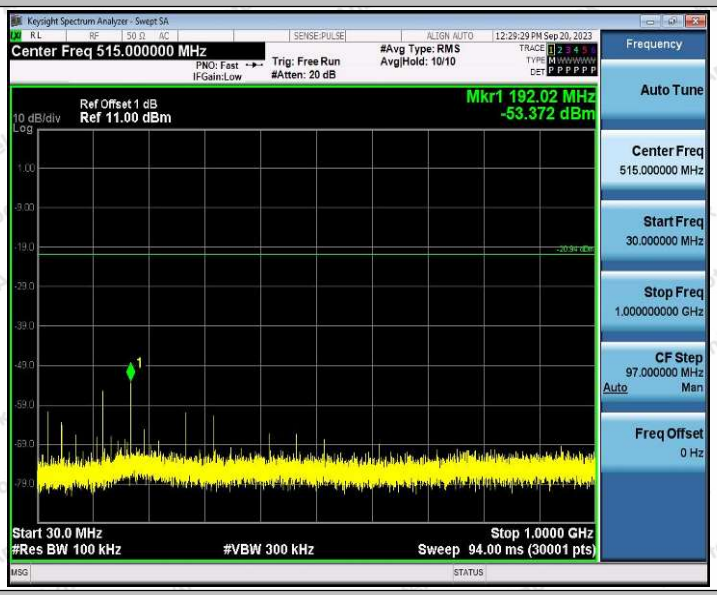


2DH5_Ant1_2402_1000~26500

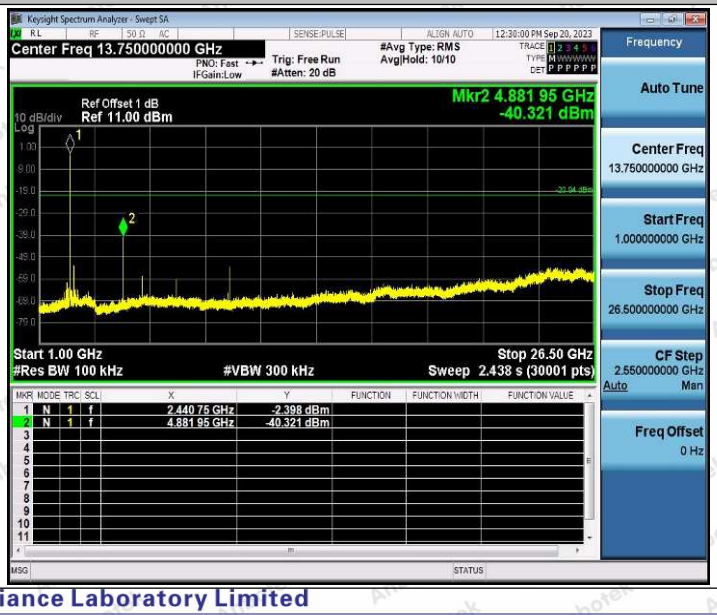


2DH5_Ant1_2441_0~Reference

2DH5_Ant1_2441_30~1000

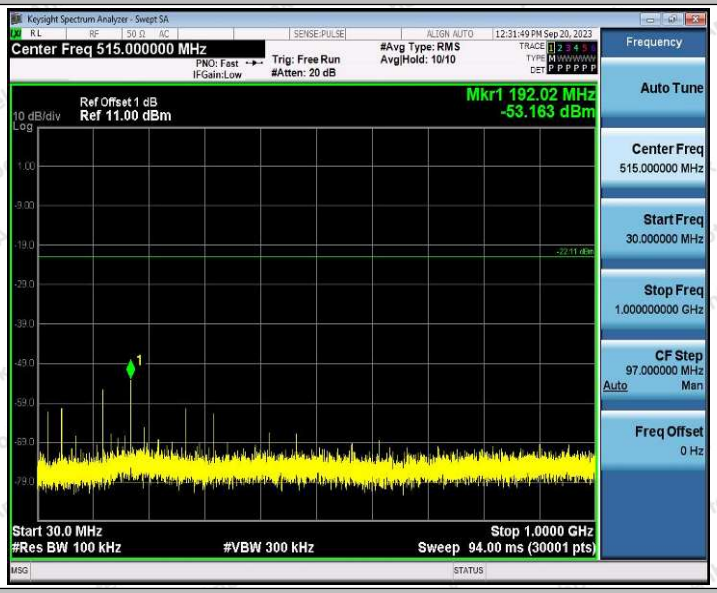


2DH5_Ant1_2441_1000~26500

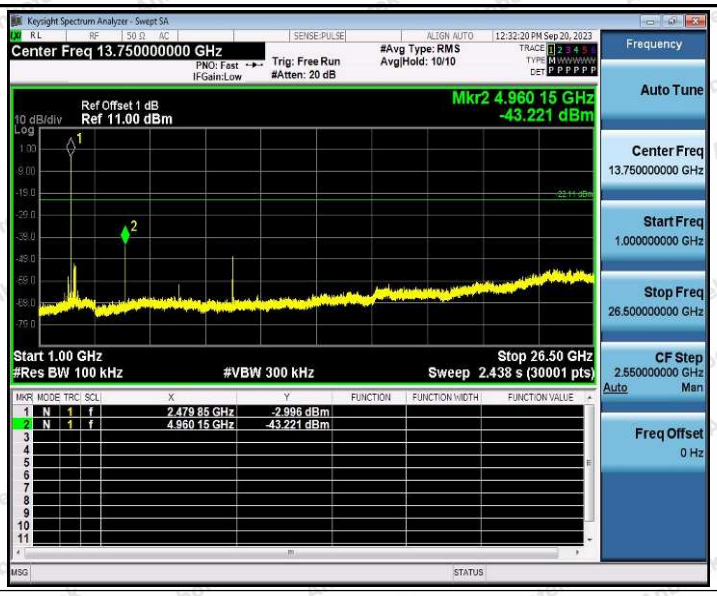


2DH5_Ant1_2480_0~Reference

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
12:32:20 PM Sep 20, 2023
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
Mkr2 4.960 15 GHz
-43.221 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 -2.996 dBm
2 N 1 f 4.960 15 GHz -43.221 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

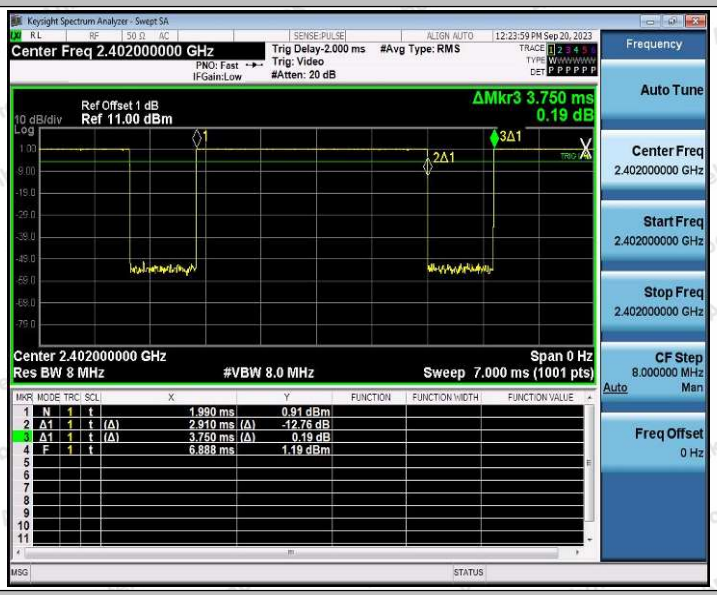
Appendix I: Duty Cycle

Test Result

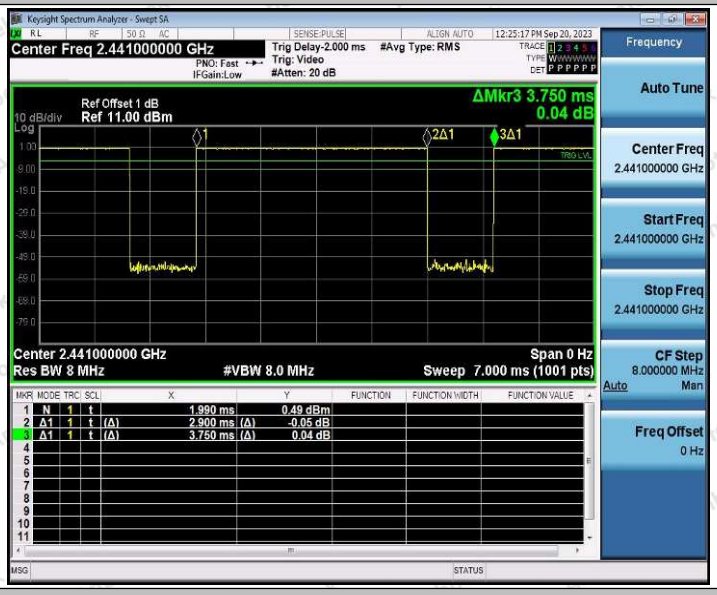
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
DH5	Ant1	2402	2.91	3.75	77.60	1.10
		2441	2.90	3.75	77.33	1.12
		2480	2.91	3.75	77.60	1.10
2DH5	Ant1	2402	2.91	3.74	77.81	1.09
		2441	2.91	3.75	77.60	1.10
		2480	2.92	3.76	77.66	1.10

Test Graphs

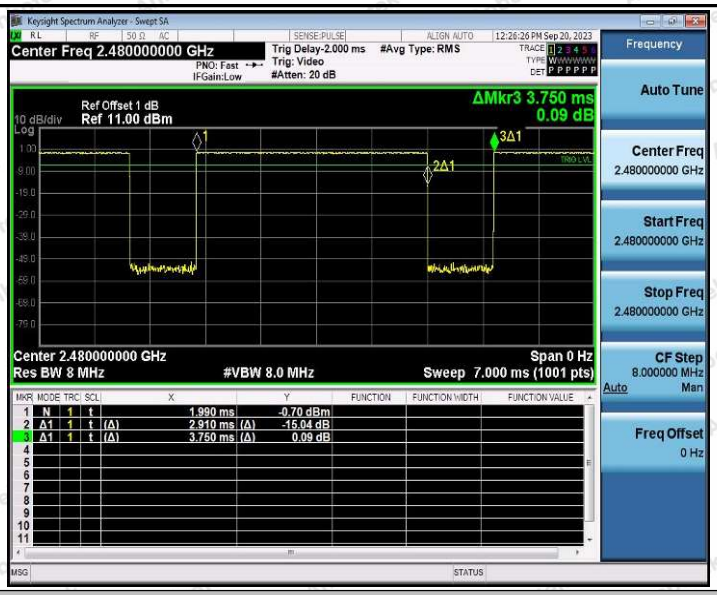
DH5_Ant1_2402



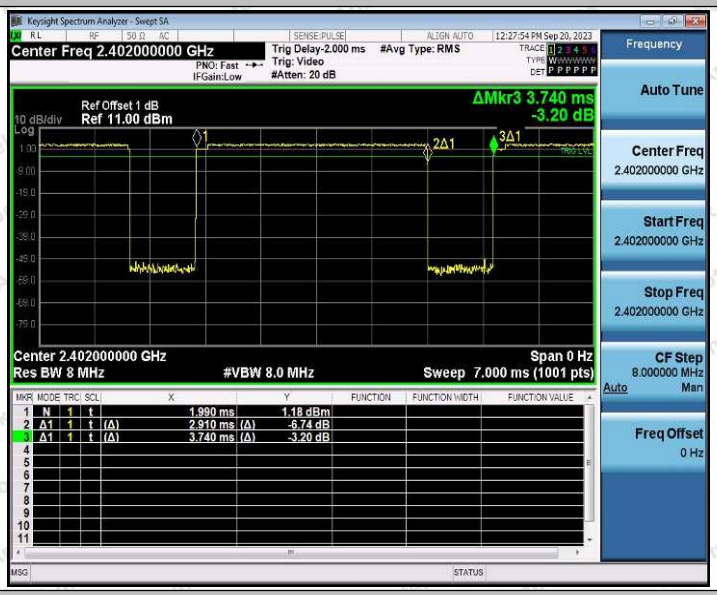
DH5_Ant1_2441



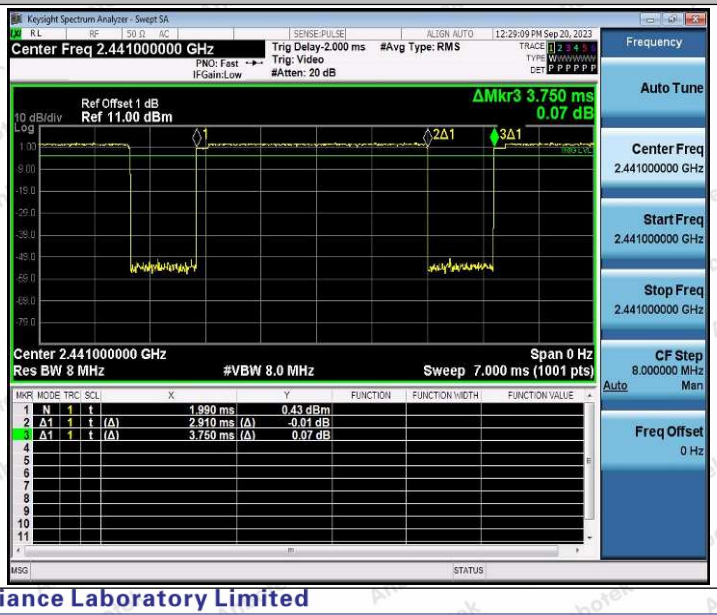
DH5_Ant1_2480



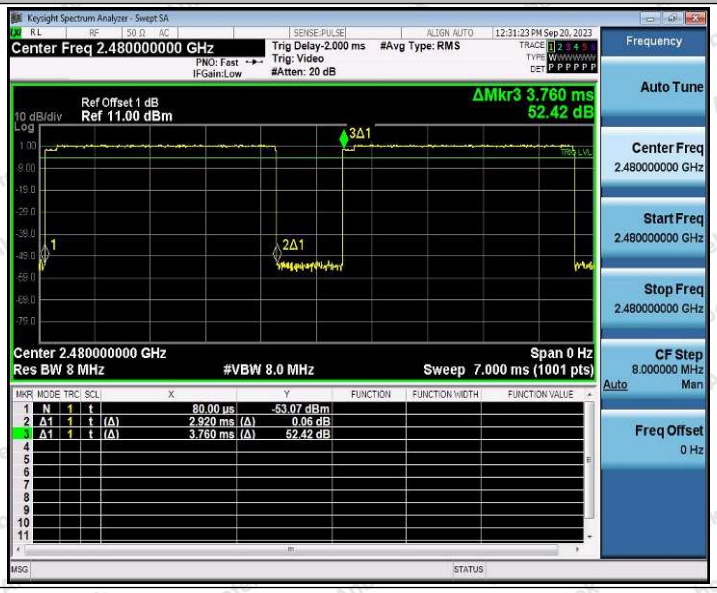
2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



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