Appendix Test Data

Report No.:	18220WC30257701	Test Sample No.:	1-2-2
Start Test Date:	2023.12.11	Finish Test Date:	2023.12.13
Test Engineer:	Hayman Chen	Auditor:	Rick Luo
Temperature:	25.3℃	Relative Humidity:	48%
Pressure:	101kPa		

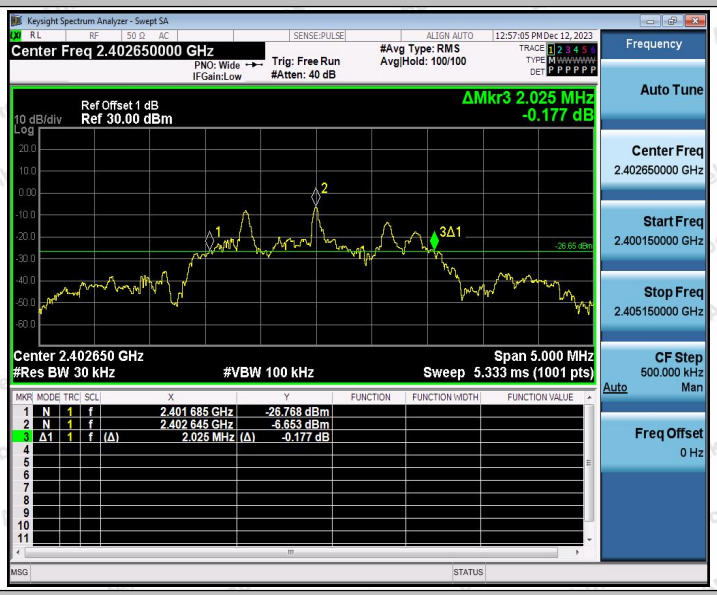
Appendix A: 20dB Emission Bandwidth

Test Result

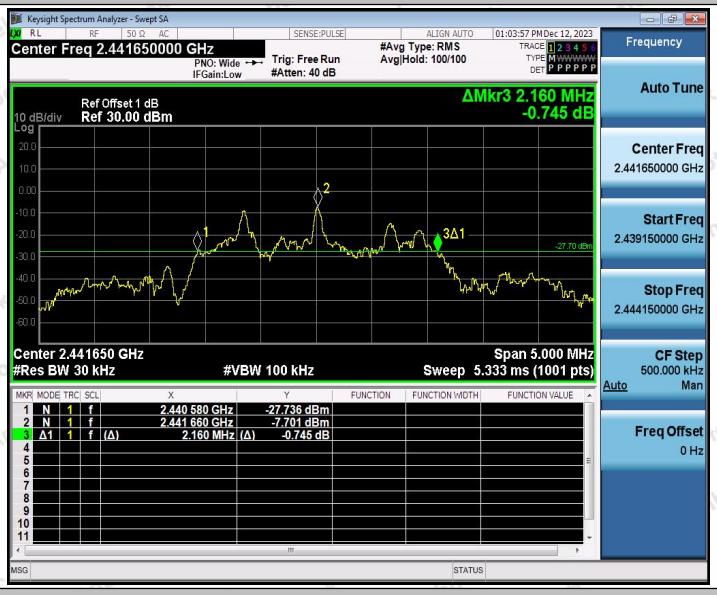
TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	2402.65	2.025	2401.685	2403.710	---	---
		2441.65	2.160	2440.580	2442.740	---	---
		2480.65	2.175	2479.590	2481.765	---	---

Test Graphs

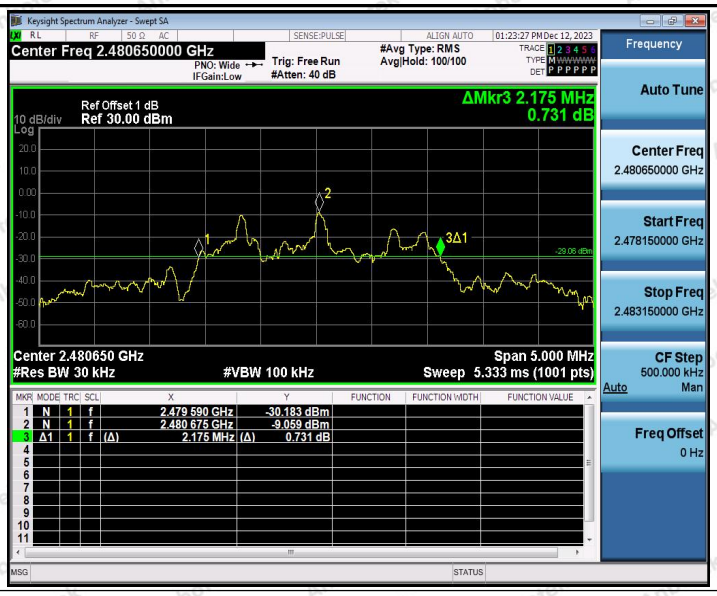
2.4G_Ant1_2402.65



2.4G_Ant1_2441.65



2.4G_Ant1_2480.65


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480650000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
01:23:27 PM Dec 12, 2023
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 2.175 MHz
0.731 dB
Center 2.480650 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 5.000 MHz
Sweep 5.333 ms (1001 pts)
1 N 1 f 2.479 590 GHz -30.183 dBm
2 N 1 f 2.480 675 GHz -9.059 dBm
3 Δ1 1 f (Δ) 2.175 MHz (Δ) 0.731 dB
Frequency
Auto Tune
Center Freq
2.480650000 GHz
Start Freq
2.478150000 GHz
Stop Freq
2.483150000 GHz
CF Step
500.000 kHz
Auto Man
Freq Offset
0 Hz

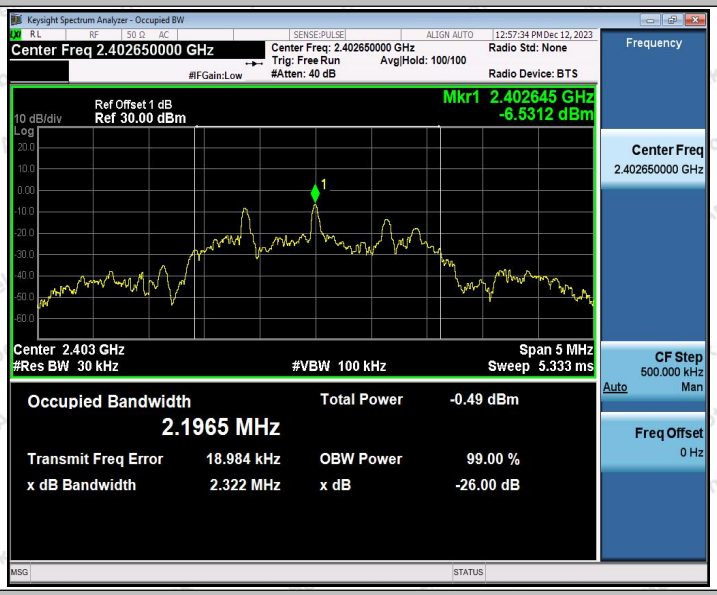
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	2402.65	2.1965	2401.5707	2403.7672	---	---
		2441.65	2.2026	2440.5829	2442.7855	---	---
		2480.65	2.2152	2479.5940	2481.8092	---	---

Test Graphs

2.4G_Ant1_2402.65



2.4G_Ant1_2441.65

2.4G_Ant1_2480.65

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.480650000 GHz
Center Freq: 2.480650000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
01:24:09 PM Dec 12, 2023
Frequency
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Mkr1 2.480675 GHz
-9.0648 dBm
Center 2.481 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 5 MHz
Sweep 5.333 ms
Occupied Bandwidth
2.2152 MHz
Total Power -1.86 dBm
Transmit Freq Error 51.568 kHz
OBW Power 99.00 %
x dB Bandwidth 2.538 MHz
x dB -26.00 dB
Center Freq
2.480650000 GHz
CF Step
500.000 kHz
Auto Man
Freq Offset
0 Hz

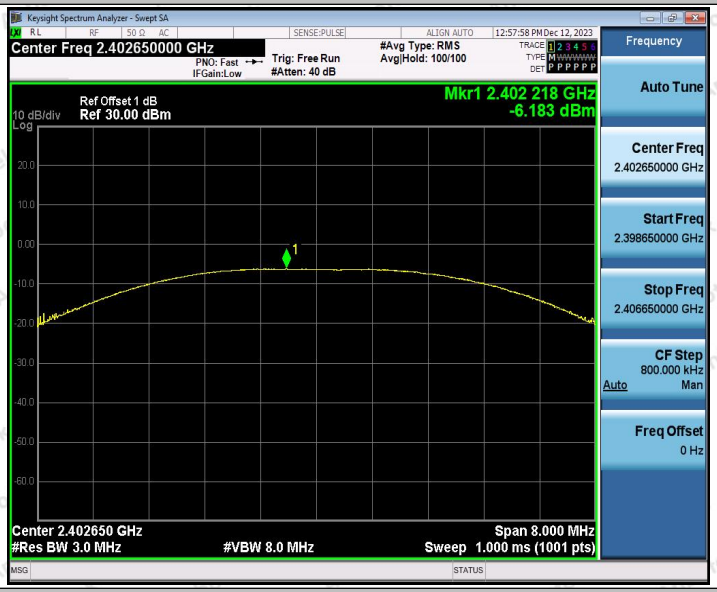
Appendix C: Maximum conducted output power

Test Result Peak

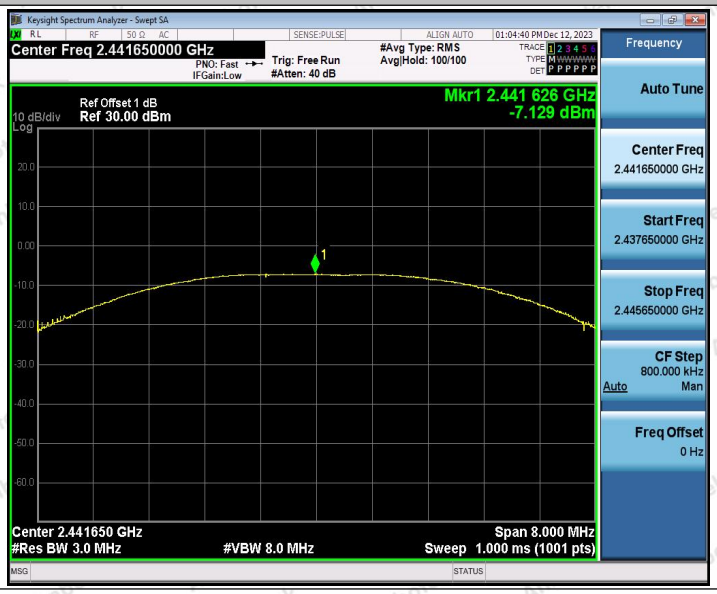
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4G	Ant1	2402.65	-6.18	≤20.97	PASS
		2441.65	-7.13	≤20.97	PASS
		2480.65	-8.07	≤20.97	PASS

Test Graphs

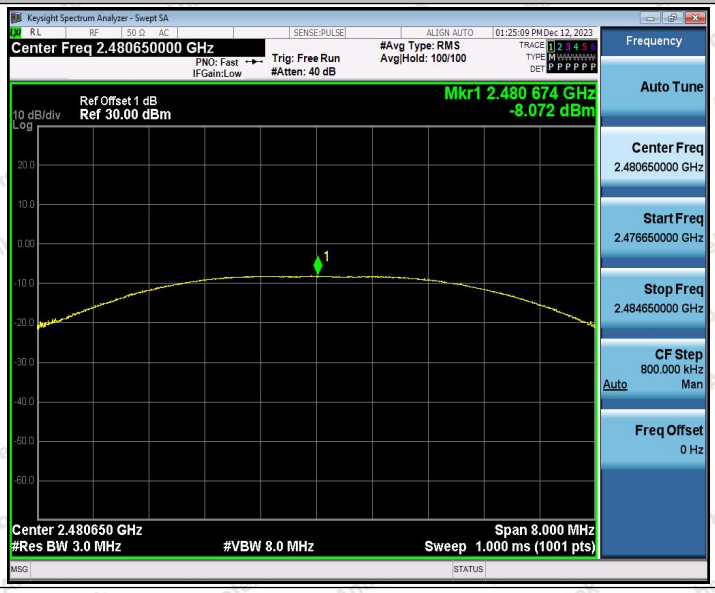
2.4G_Ant1_2402.65



2.4G_Ant1_2441.65



2.4G_Ant1_2480.65



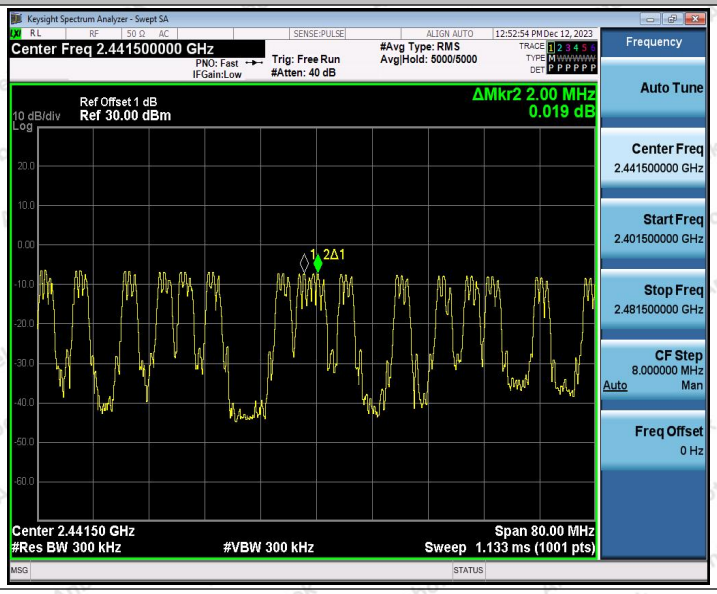
Appendix D: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	Hop	2.000	≥1.450	PASS

Test Graphs

2.4G_Ant1_Hop



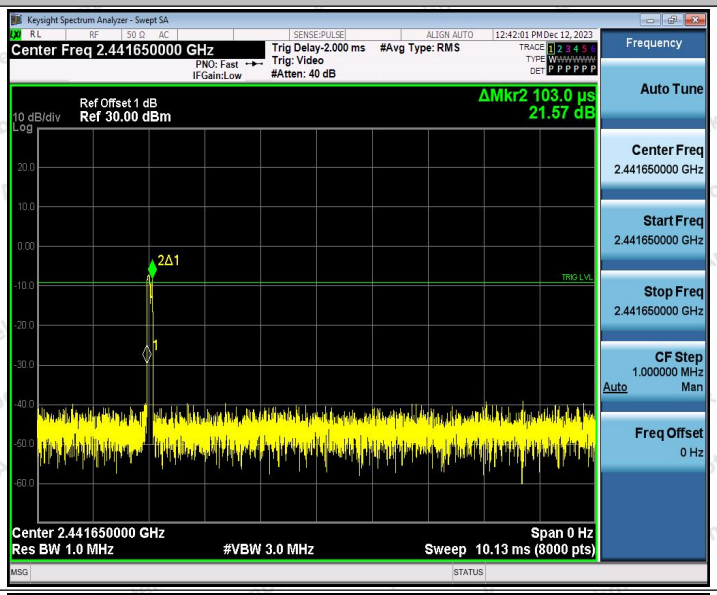
Appendix E: Time of occupancy

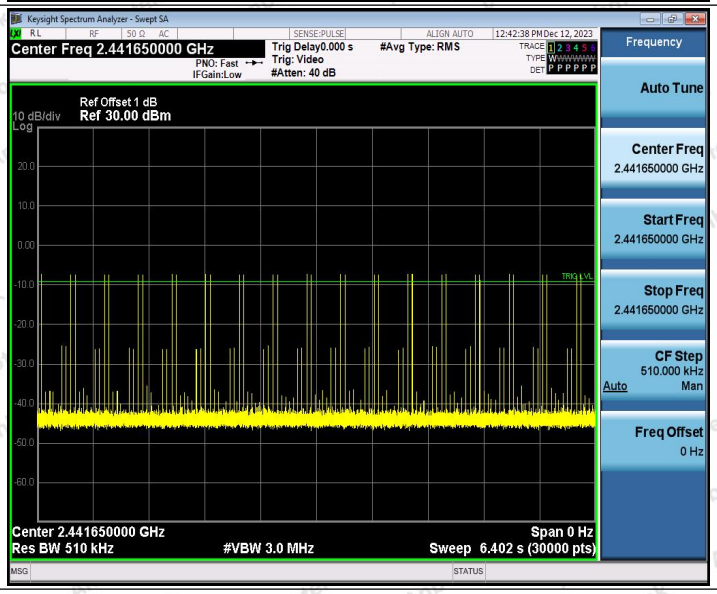
Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
2.4G	Ant1	Hop	0.103	33	0.003	≤0.4	PASS

Test Graphs

2.4G_Ant1_Hop





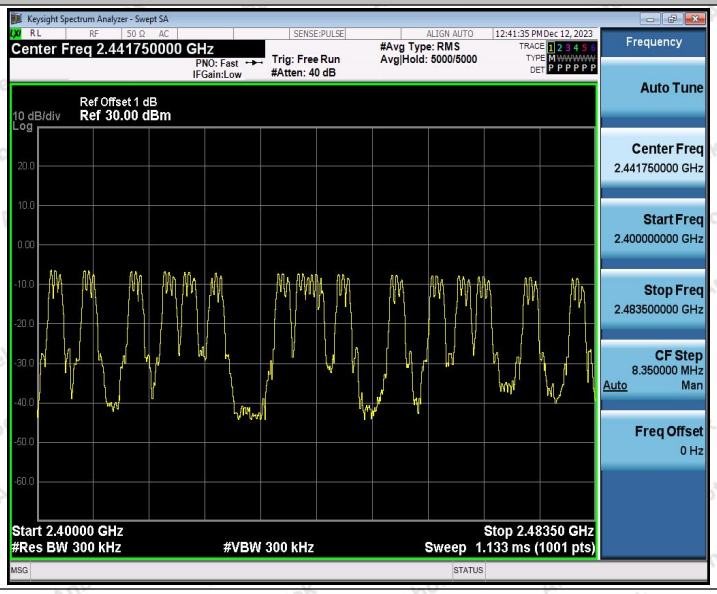
Appendix F: Number of hopping channels

Test Result

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
2.4G	Ant1	Hop	16	≥15	PASS

Test Graphs

2.4G_Ant1_Hop



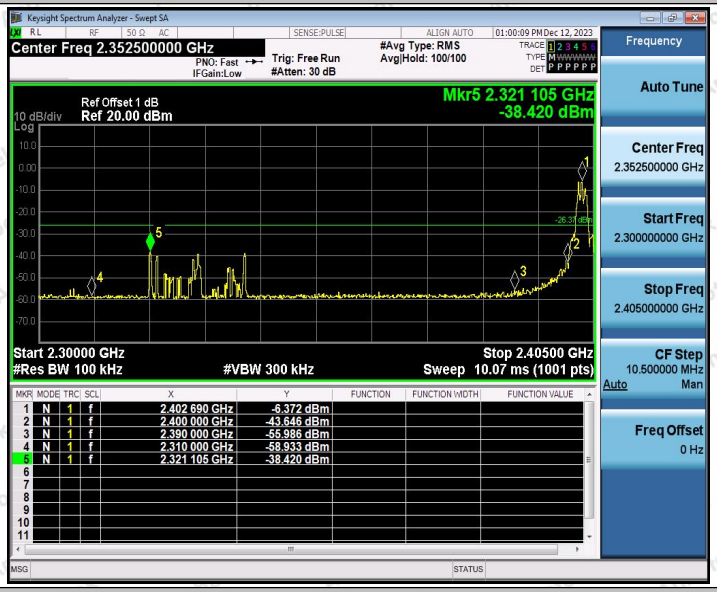
Appendix G: Band edge measurements

Test Result

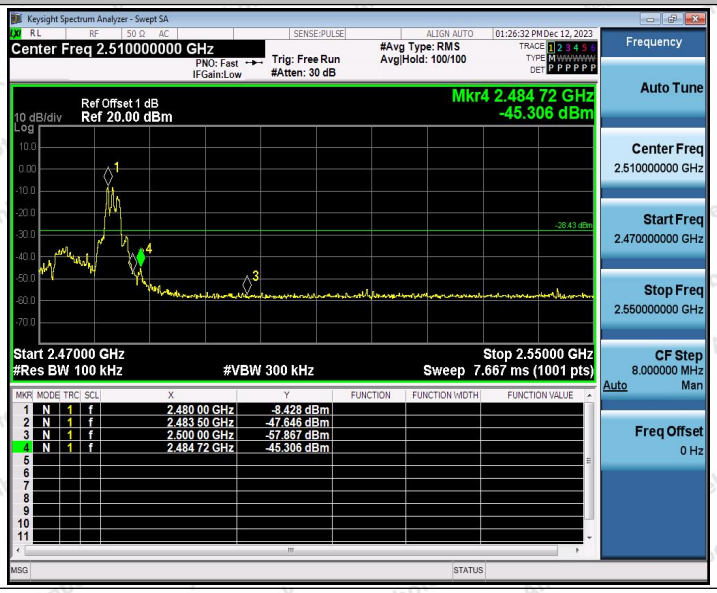
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
2.4G	Ant1	Low	2402.65	-6.37	-38.42	≤-26.37	PASS
		High	2480.65	-8.43	-45.31	≤-28.43	PASS
		Low	Hop_2402.65	-6.53	-53.21	≤-26.53	PASS
		High	Hop_2480.65	-8.13	-54.5	≤-28.13	PASS

Test Graphs

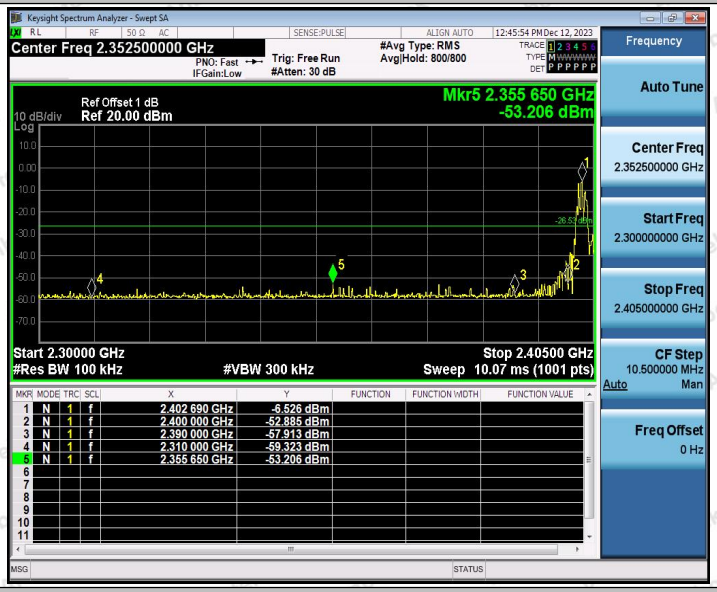
2.4G_Ant1_Low_2402.65



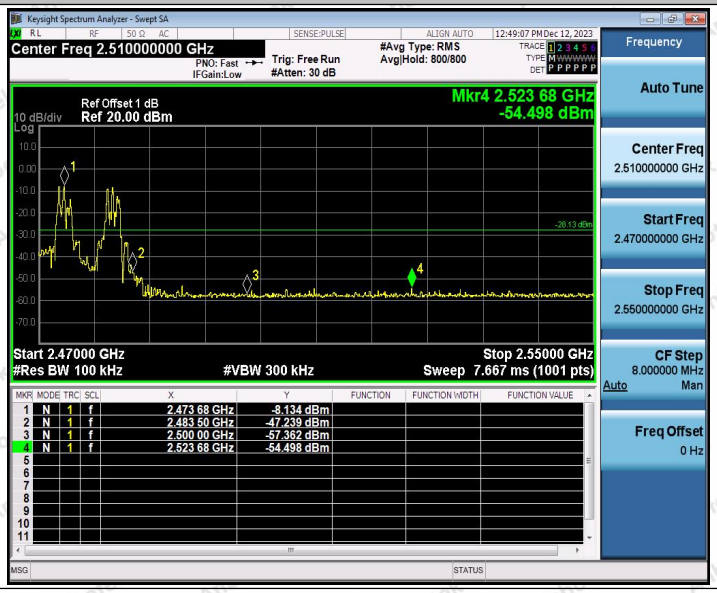
2.4G_Ant1_High_2480.65



2.4G_Ant1_Low_Hop_2402.65



2.4G_Ant1_High_Hop_2480.65



Appendix H: Conducted Spurious Emission

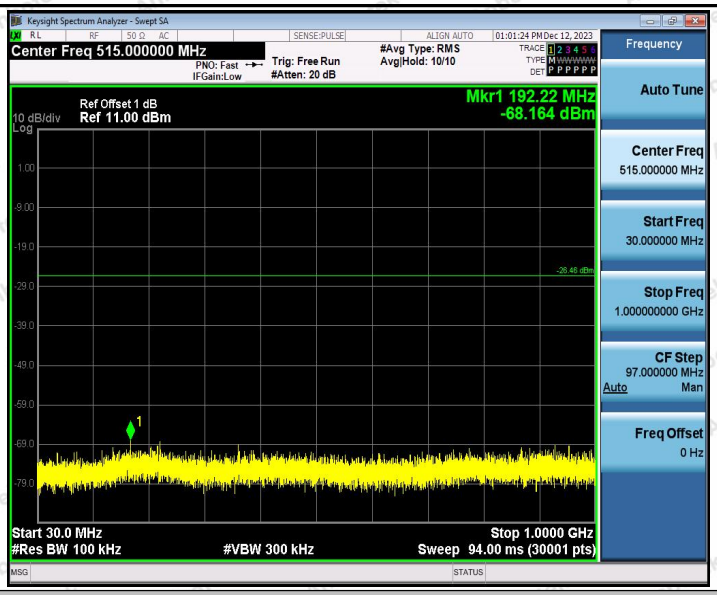
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
2.4G	Ant1	2402.65	Reference	-6.46	-6.46	---	PASS
			30~1000	-6.46	-68.16	≤-26.46	PASS
			1000~26500	-6.46	-53.55	≤-26.46	PASS
		2441.65	Reference	-7.40	-7.40	---	PASS
			30~1000	-7.40	-69.34	≤-27.4	PASS
			1000~26500	-7.40	-53.52	≤-27.4	PASS
		2480.65	Reference	-8.49	-8.49	---	PASS
			30~1000	-8.49	-69.16	≤-28.49	PASS
			1000~26500	-8.49	-53.61	≤-28.49	PASS

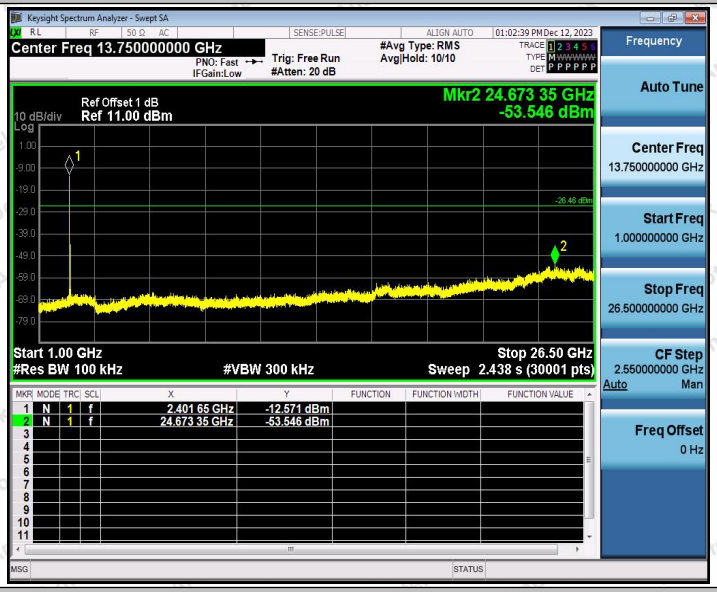
Test Graphs

2.4G_Ant1_2402.65_0~Reference

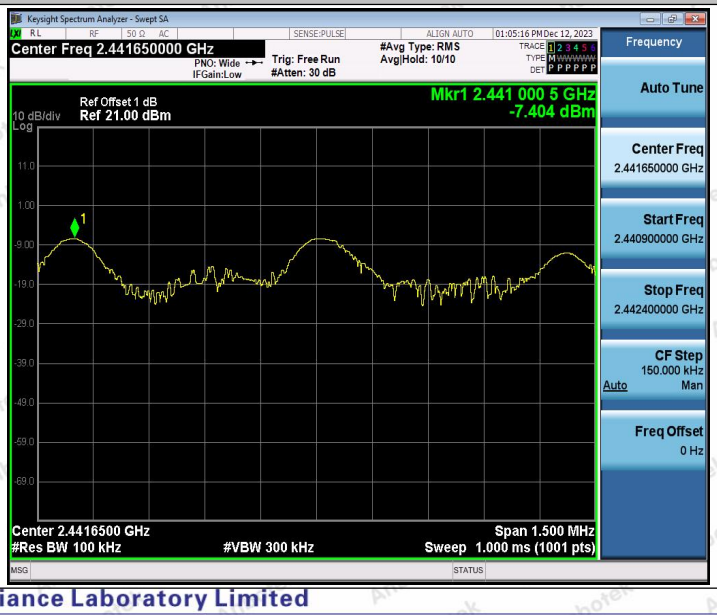
2.4G_Ant1_2402.65_30~1000



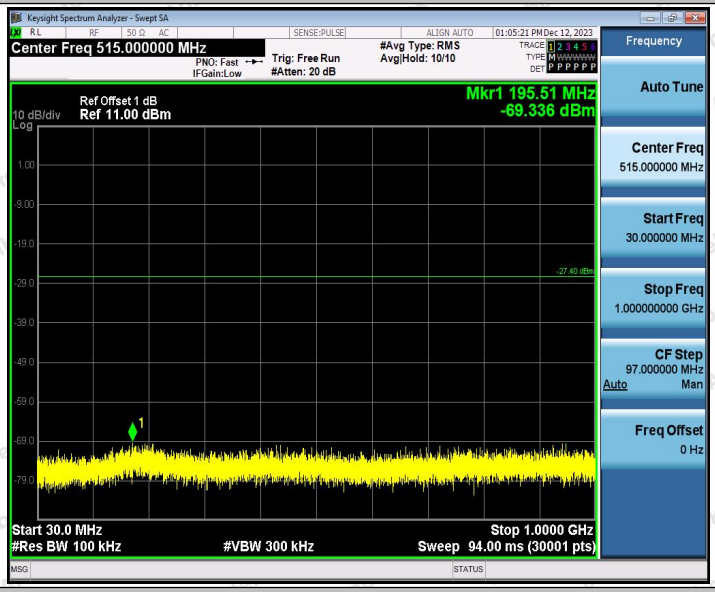
2.4G_Ant1_2402.65_1000~26500



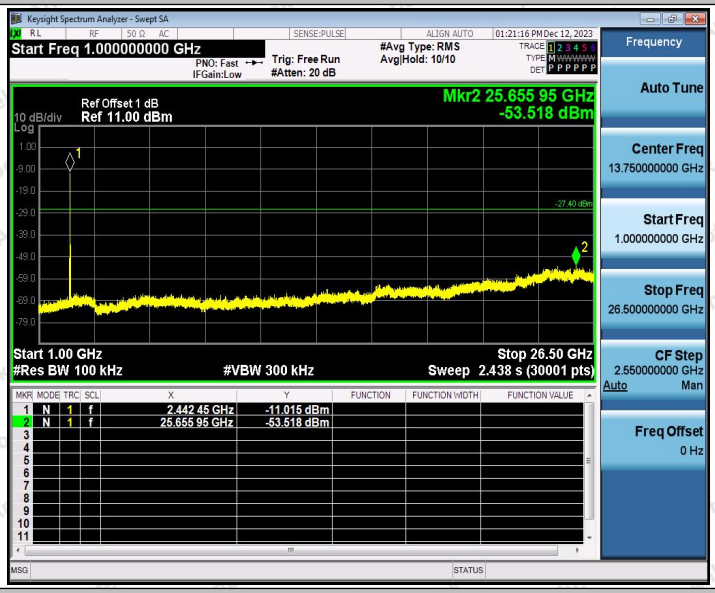
2.4G_Ant1_2441.65_0~Reference



2.4G_Ant1_2441.65_30~1000

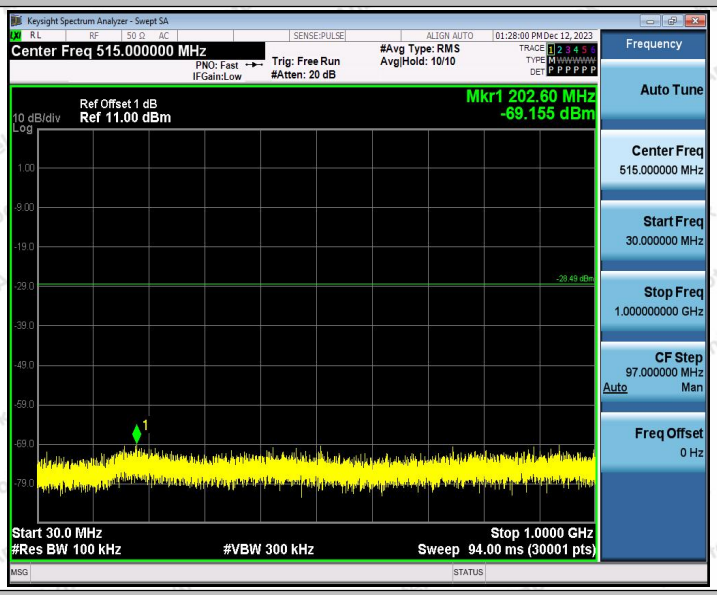


2.4G_Ant1_2441.65_1000~26500

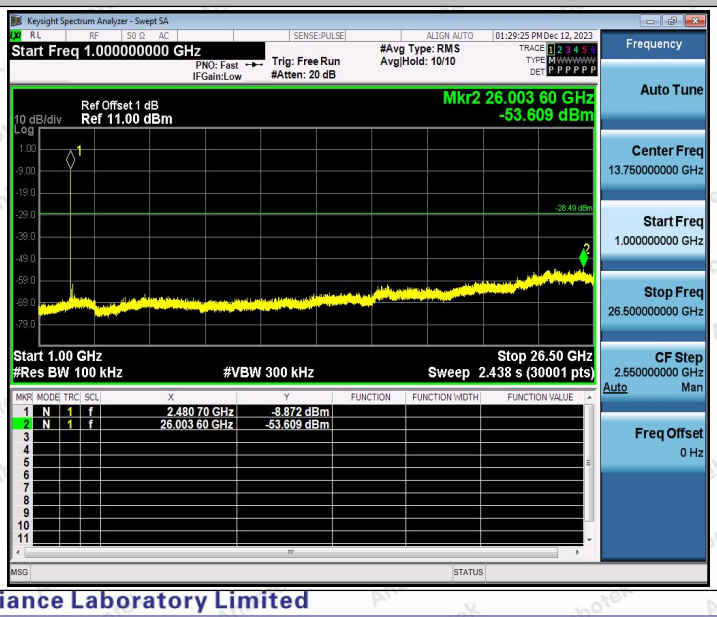


2.4G_Ant1_2480.65_0~Reference

2.4G_Ant1_2480.65_30~1000



2.4G_Ant1_2480.65_1000~26500



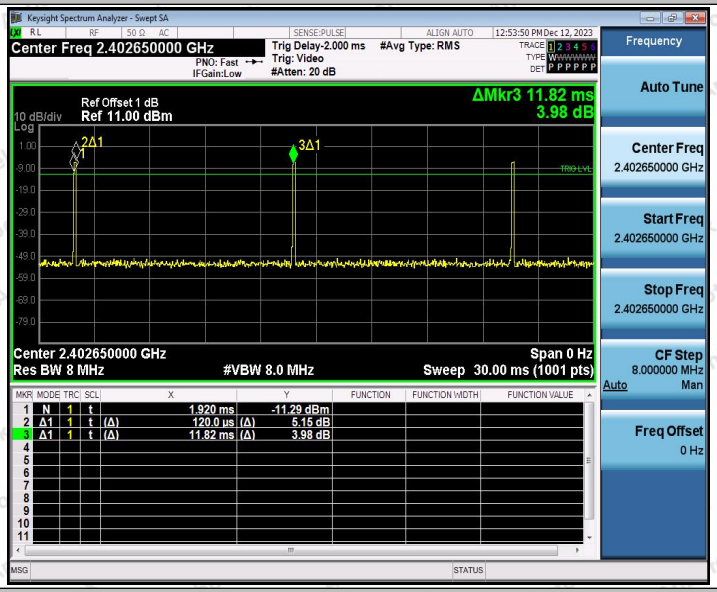
Appendix I: Duty Cycle

Test Result

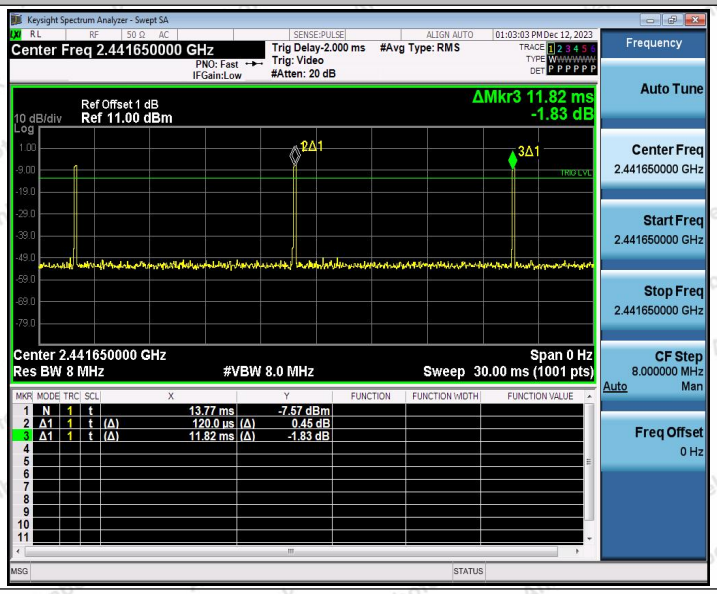
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
2.4G	Ant1	2402.65	0.12	11.82	1.02	19.91
		2441.65	0.12	11.82	1.02	19.91
		2480.65	0.09	11.82	0.76	21.19

Test Graphs

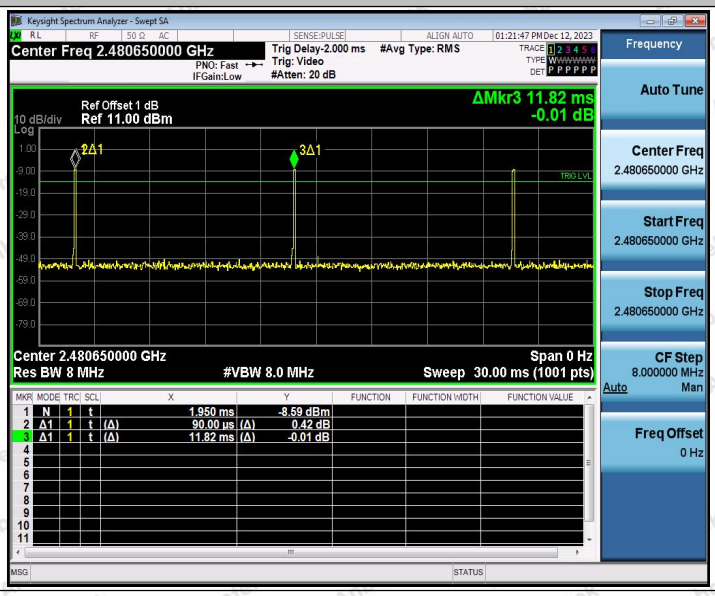
2.4G_Ant1_2402.65



2.4G_Ant1_2441.65



2.4G_Ant1_2480.65



---End---