Appendix Test Data

Report No.:	18220WC40027201	Test Sample No.:	1-2-2
Start Test Date:	2024.2.27	Finish Test Date:	2024.2.27
Test Engineer:	Jokes Huang	Auditor:	Justin Feng
Temperature:	25.3℃	Relative Humidity:	48%
Pressure:	101kPa		

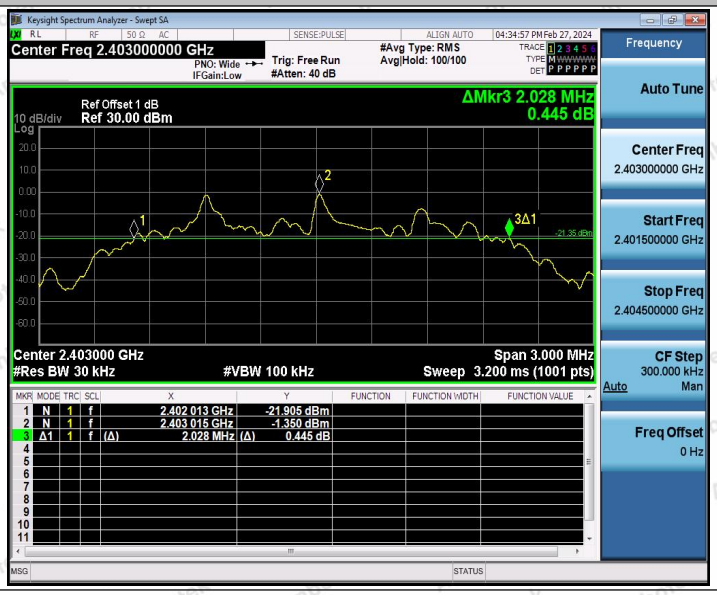
Appendix A: 20dB Emission Bandwidth

Test Result

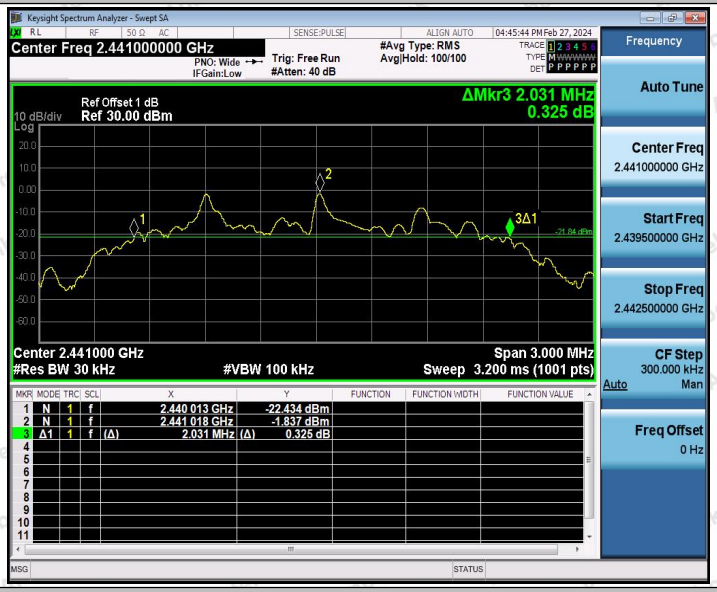
TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	2403	2.028	2402.013	2404.041	---	---
		2441	2.031	2440.013	2442.044	---	---
		2479	2.031	2478.019	2480.050	---	---

Test Graphs

2.4G_Ant1_2403



2.4G_Ant1_2441



2.4G_Ant1_2479

Appendix B: Occupied Channel Bandwidth

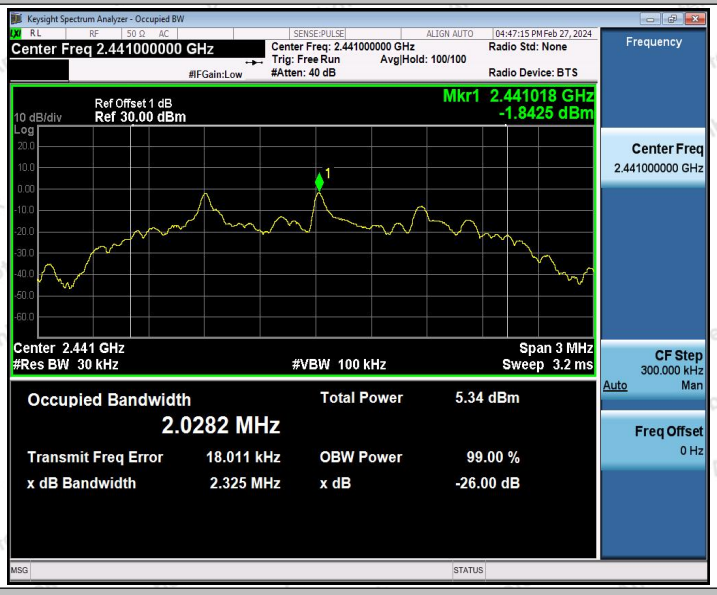
Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	2403	2.0211	2402.0080	2404.0291	---	---
		2441	2.0282	2440.0039	2442.0321	---	---
		2479	2.0336	2478.0020	2480.0356	---	---

Test Graphs

2.4G_Ant1_2403

2.4G_Ant1_2441



2.4G_Ant1_2479

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.479000000 GHz
Center Freq: 2.479000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Mkr1 2.479018 GHz
-1.9513 dBm
Center 2.479 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
2.0336 MHz
Total Power 5.26 dBm
Transmit Freq Error 18.786 kHz
OBW Power 99.00 %
x dB Bandwidth 2.319 MHz
x dB -26.00 dB
Frequency
Center Freq
2.479000000 GHz
CF Step
300.000 kHz
Auto Man
Freq Offset
0 Hz

Appendix C: Maximum conducted output power

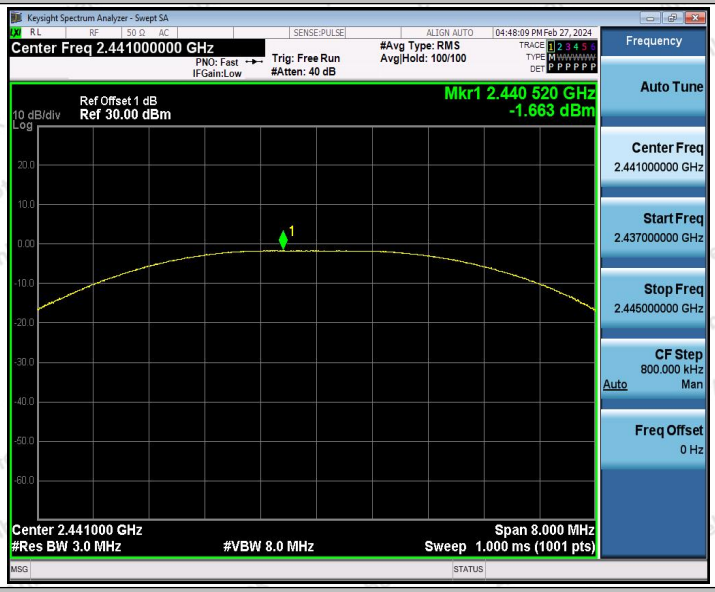
Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4G	Ant1	2403	-1.14	≤20.97	PASS
		2441	-1.66	≤20.97	PASS
		2479	-1.75	≤20.97	PASS

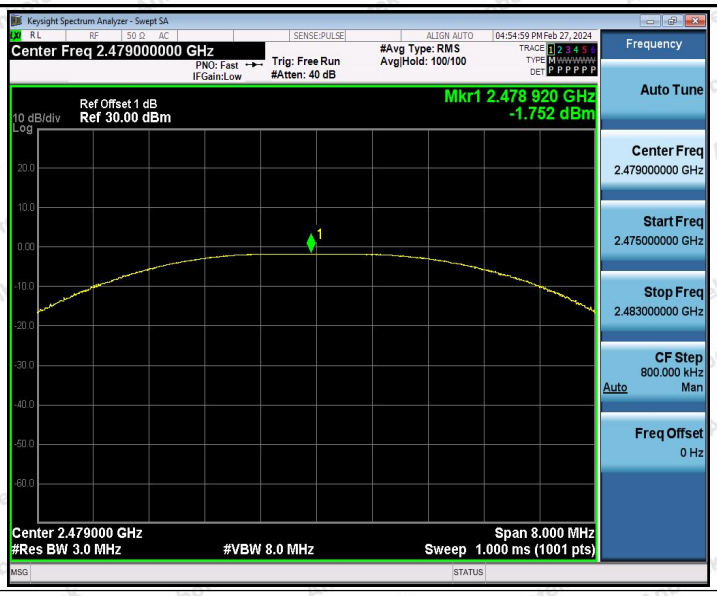
Test Graphs

2.4G_Ant1_2403

2.4G_Ant1_2441



2.4G_Ant1_2479


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.479000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
04:54:59 PM Feb 27, 2024
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.478 920 GHz
-1.752 dBm
Center 2.479000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.479000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.483000000 GHz
CF Step
800.000 kHz
Auto
Man
Freq Offset
0 Hz

Appendix D: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	Hop	2.00	≥1.354	PASS

Test Graphs

2.4G_Ant1_Hop

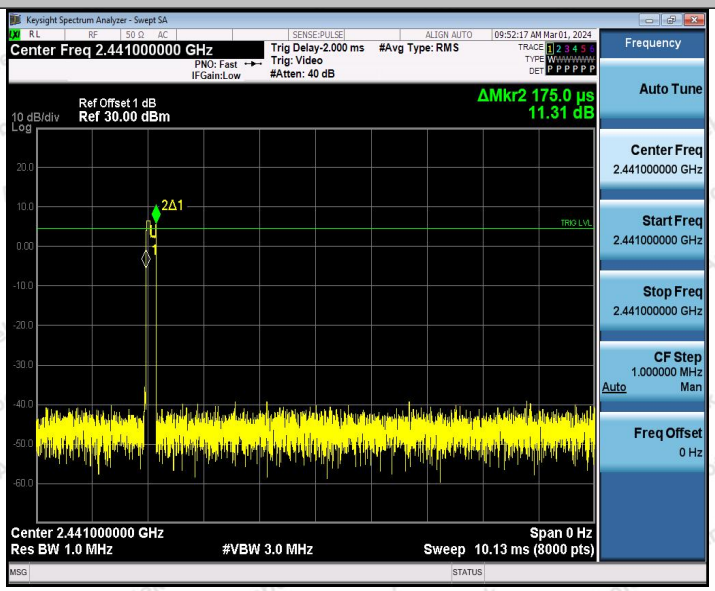
Appendix E: Time of occupancy

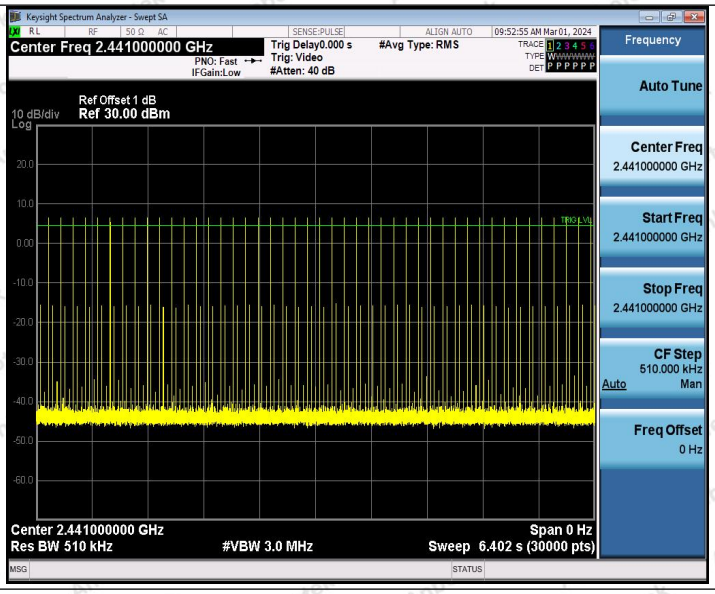
Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
2.4G	Ant1	Hop	0.175	45	0.008	≤0.4	PASS

Test Graphs

2.4G_Ant1_Hop





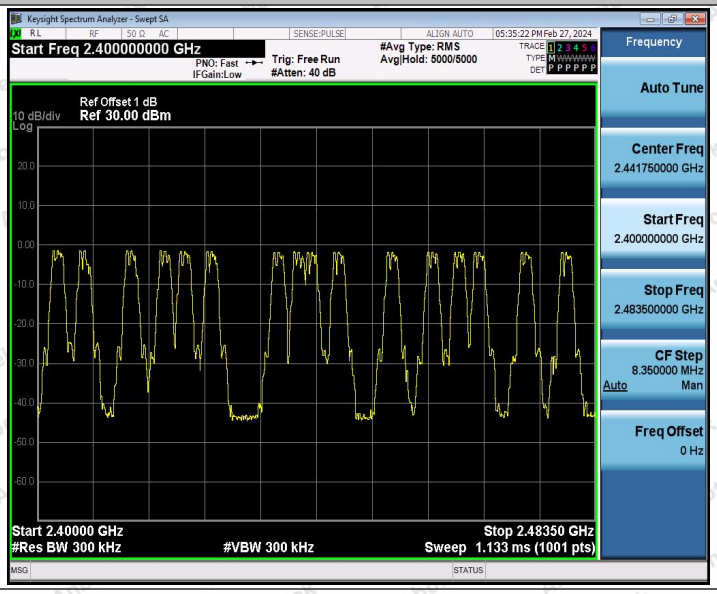
Appendix F: Number of hopping channels

Test Result

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

Test Graphs

2.4G_Ant1_Hop



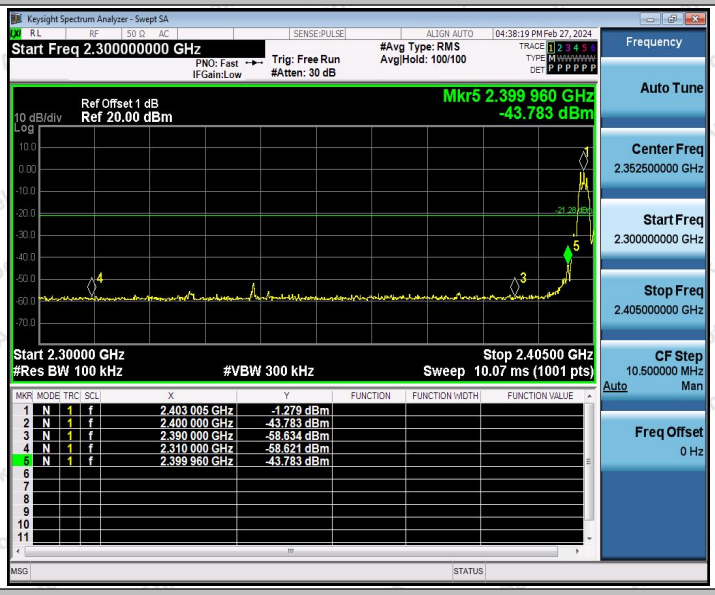
Appendix G: Band edge measurements

Test Result

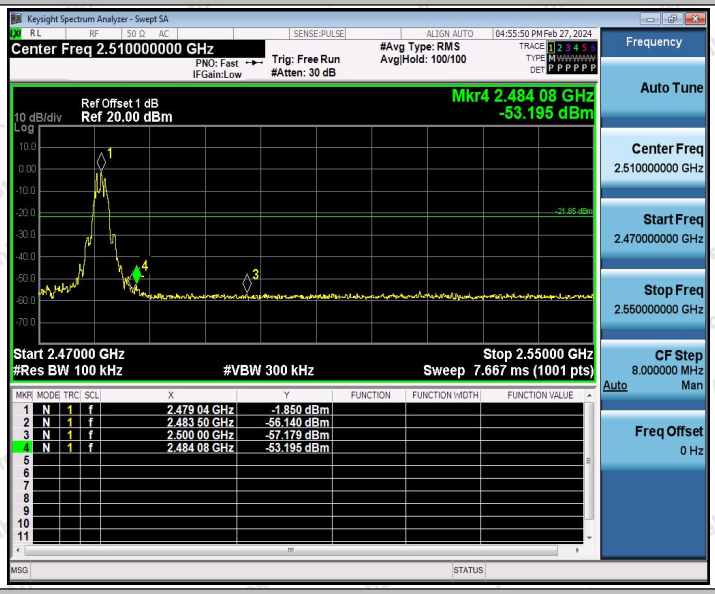
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
2.4G	Ant1	Low	2403	-1.28	-43.78	≤-21.28	PASS
		High	2479	-1.85	-53.2	≤-21.85	PASS
		Low	Hop_2402	-1.46	-52.6	≤-21.46	PASS
		High	Hop_2480	-1.89	-55.57	≤-21.89	PASS

Test Graphs

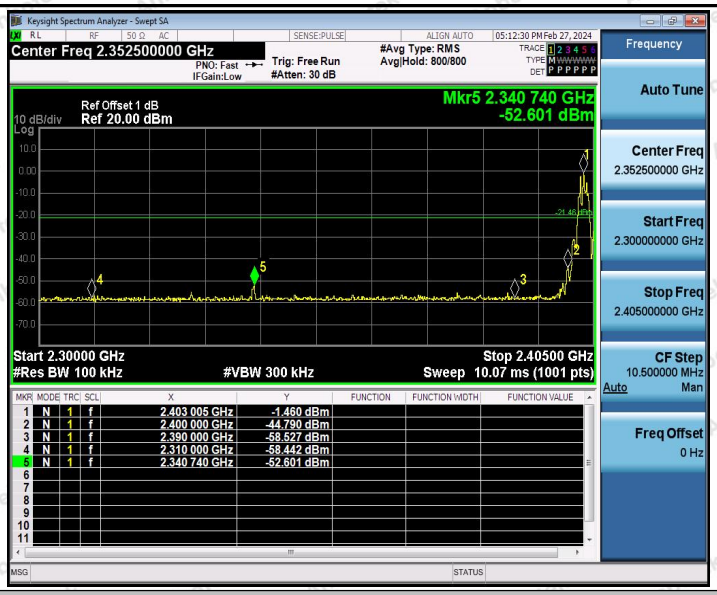
2.4G_Ant1_Low_2403



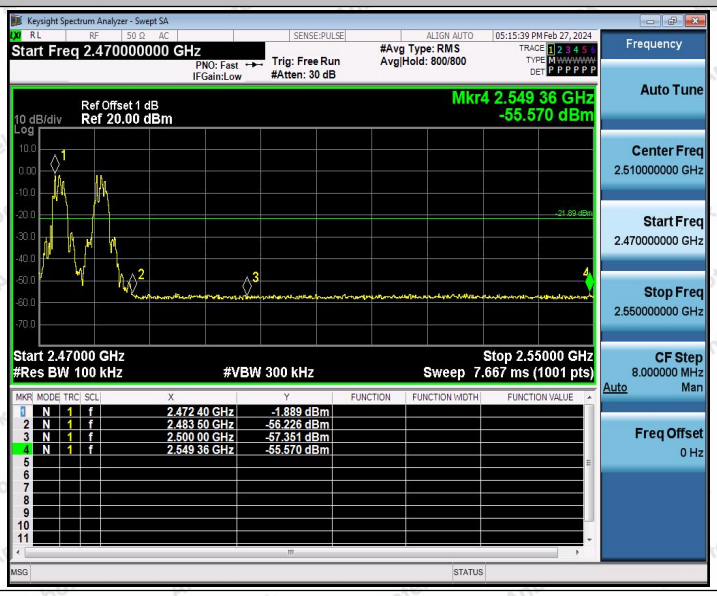
2.4G_Ant1_High_2479



2.4G_Ant1_Low_Hop_2402



2.4G_Ant1_High_Hop_2480



Appendix H: Conducted Spurious Emission

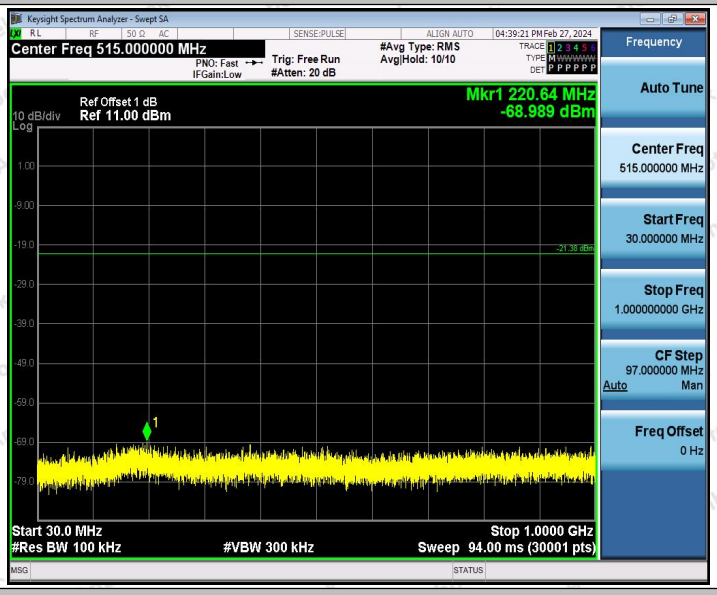
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
2.4G	Ant1	2403	Reference	-1.38	-1.38	---	PASS
			30~1000	-1.38	-68.99	≤-21.38	PASS
			1000~26500	-1.38	-25.3	≤-21.38	PASS
		2441	Reference	-1.88	-1.88	---	PASS
			30~1000	-1.88	-69.22	≤-21.88	PASS
			1000~26500	-1.88	-27.02	≤-21.88	PASS
		2479	Reference	-1.94	-1.94	---	PASS
			30~1000	-1.94	-69.05	≤-21.94	PASS
			1000~26500	-1.94	-27.44	≤-21.94	PASS

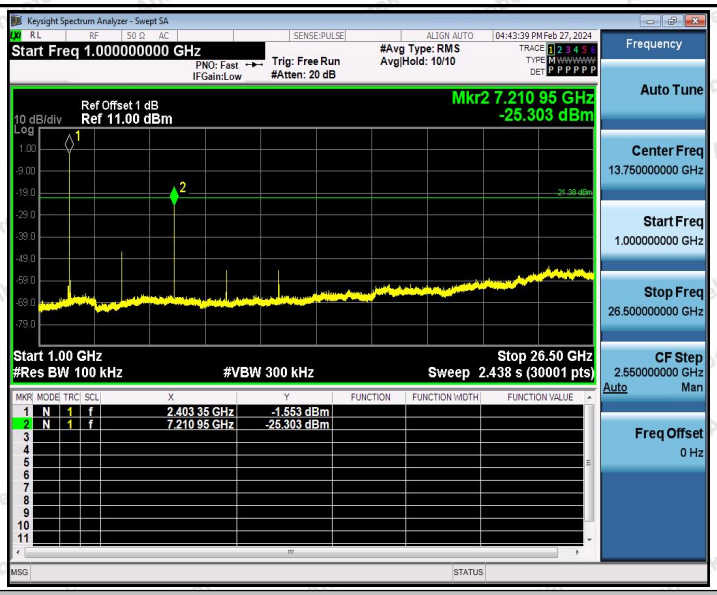
Test Graphs

2.4G_Ant1_2403_0~Reference

2.4G_Ant1_2403_30~1000

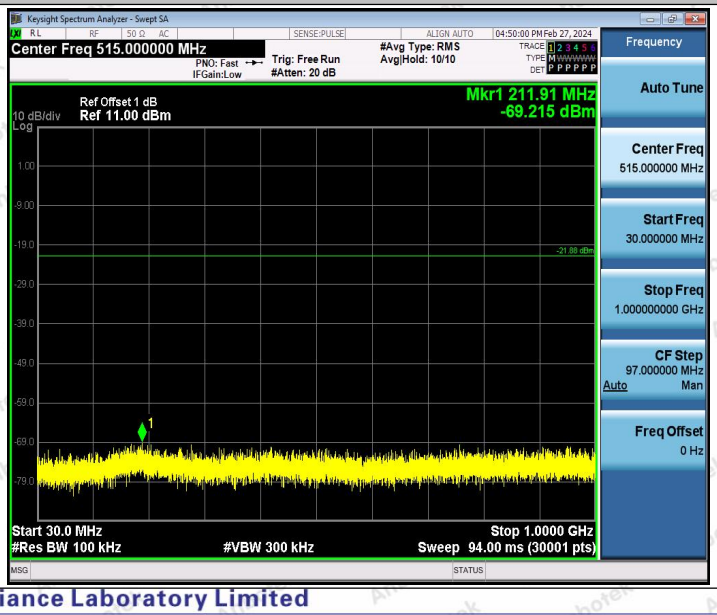


2.4G_Ant1_2403_1000~26500

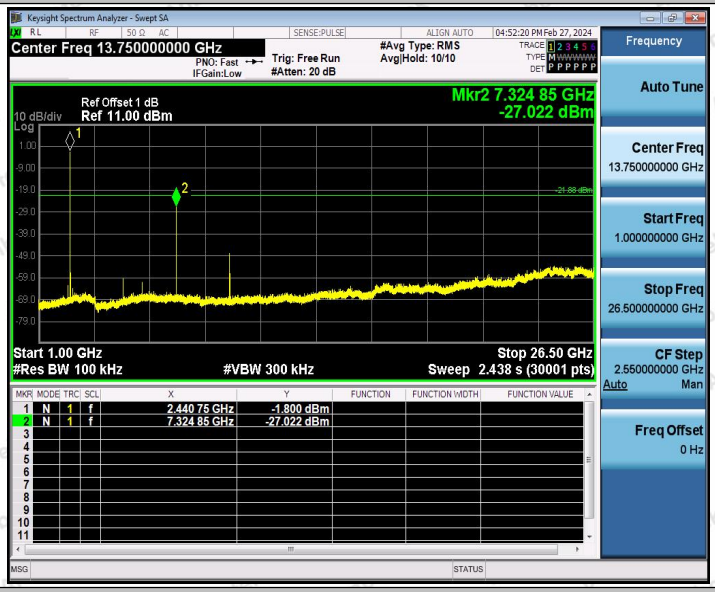


2.4G_Ant1_2441_0~Reference

2.4G_Ant1_2441_30~1000

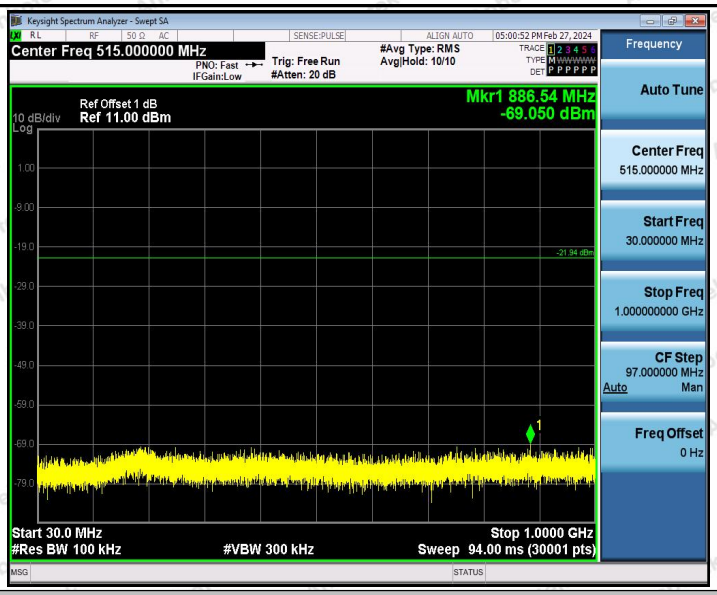


2.4G_Ant1_2441_1000~26500

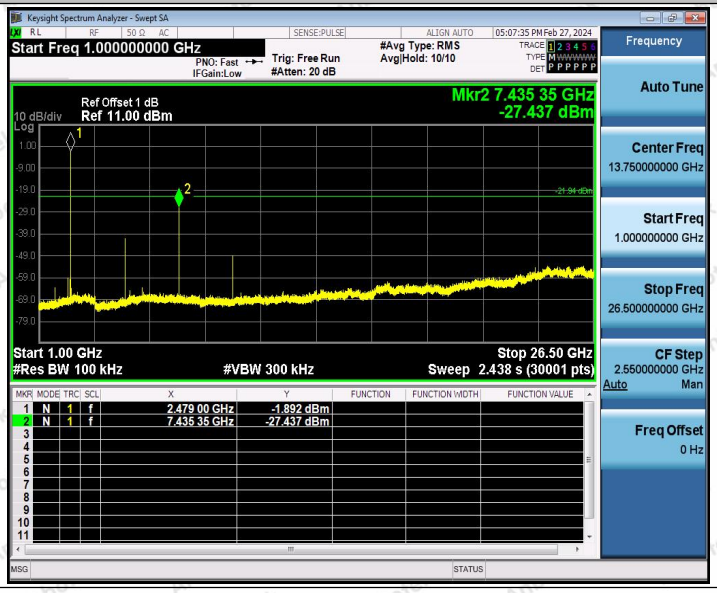


2.4G_Ant1_2479_0~Reference

2.4G_Ant1_2479_30~1000



2.4G_Ant1_2479_1000~26500



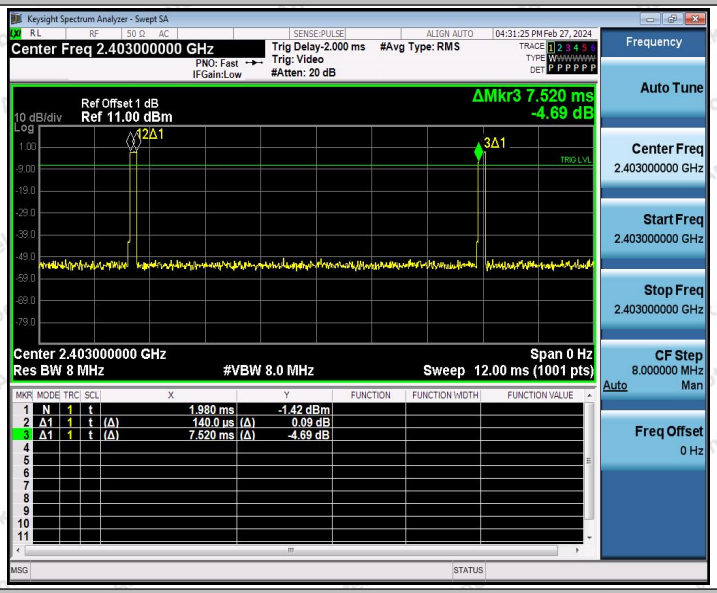
Appendix I: Duty Cycle

Test Result

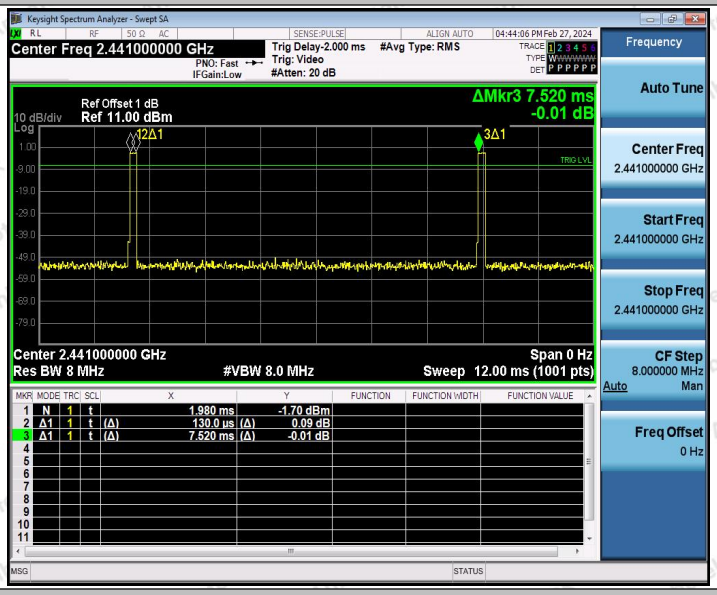
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
2.4G	Ant1	2403	0.14	7.52	1.86	17.30
		2441	0.13	7.52	1.73	17.62
		2479	0.14	7.52	1.86	17.30

Test Graphs

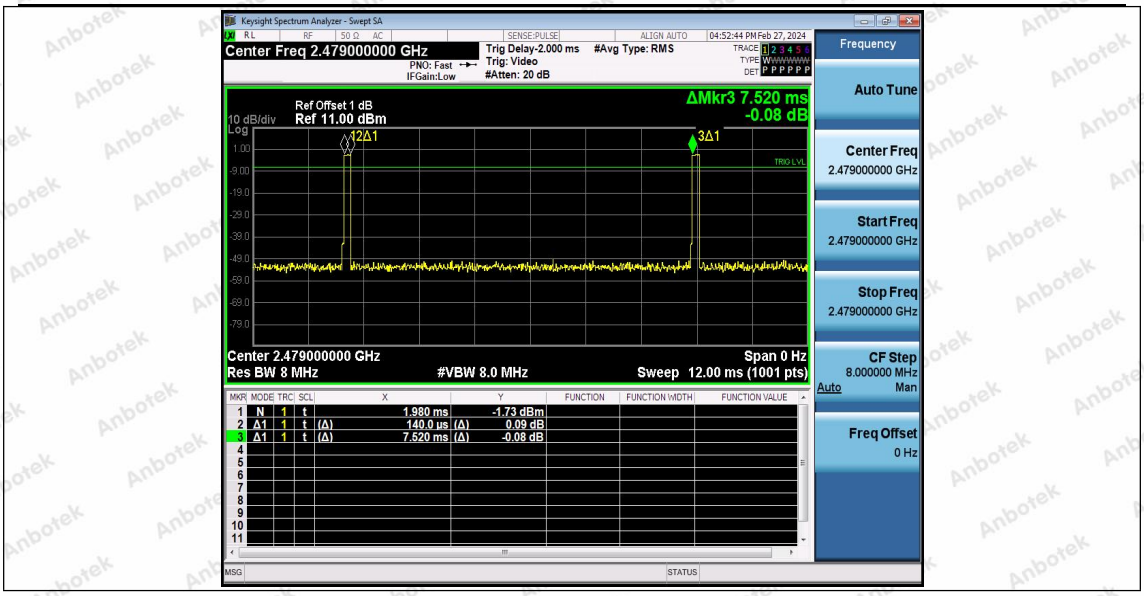
2.4G_Ant1_2403



2.4G_Ant1_2441



2.4G_Ant1_2479


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.479000000 GHz
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
#Avg Type: RMS
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
ΔMkr3 7.520 ms
-0.08 dB
Center 2.479000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 12.00 ms (1001 pts)
1 N 1 t 1.980 ms -1.73 dBm
2 Δ1 1 t (Δ) 140.0 µs (Δ) 0.09 dB
3 Δ1 1 t (Δ) 7.520 ms (Δ) -0.08 dB
Frequency
Auto Tune
Center Freq 2.479000000 GHz
Start Freq 2.479000000 GHz
Stop Freq 2.479000000 GHz
CF Step 8.000000 MHz
Freq Offset 0 Hz

---end---