Appendix Test Data

Report No.:	18220WC30103001	Test Sample No.:	1-2-2
Start Test Date:	2023.05.27	Finish Test Date:	2023.05.29
Test Engineer:	Rick Luo	Auditor:	Edward. Pan
Temperature:	24.3℃	Relative Humidity:	41%
Pressure:	1012 hPa		

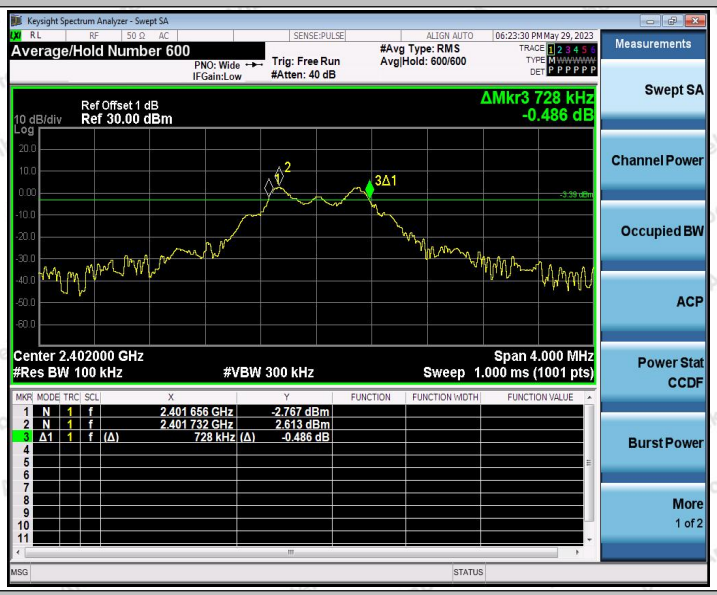
Appendix A: DTS Bandwidth

Test Result

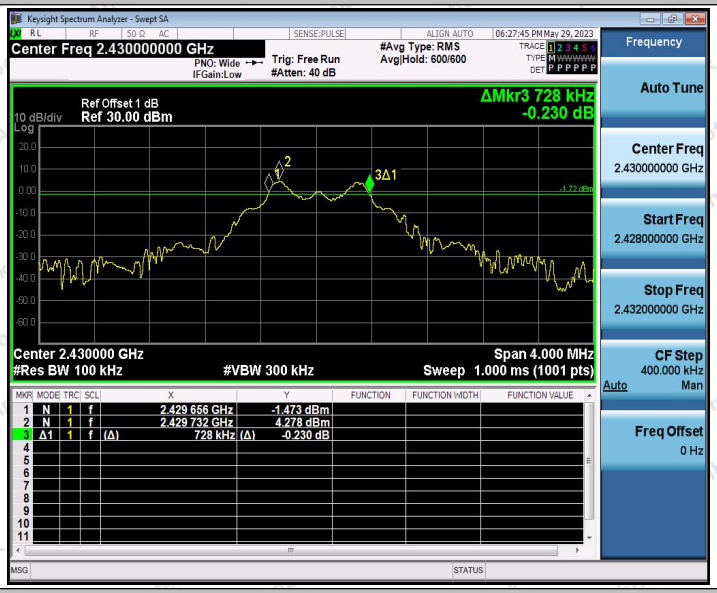
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	2402	0.728	2401.656	2402.384	0.5	PASS
		2430	0.728	2429.656	2430.384	0.5	PASS
		2480	0.732	2479.652	2480.384	0.5	PASS

Test Graphs

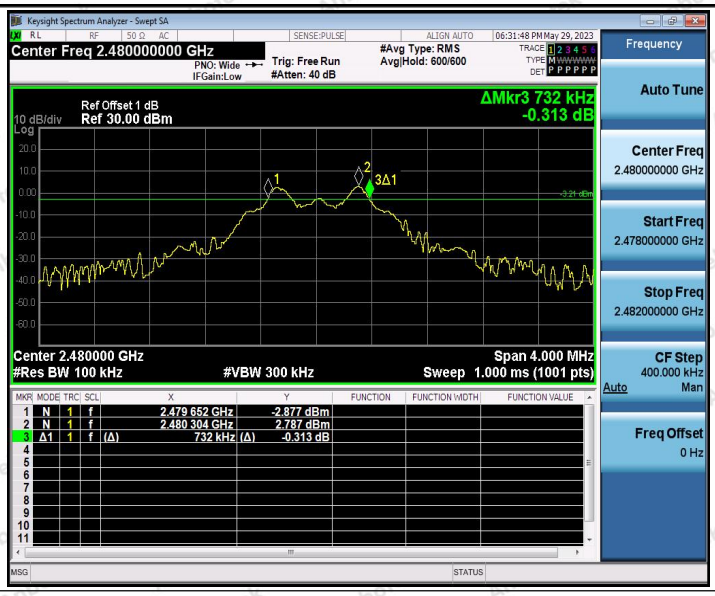
2.4G_Ant1_2402



2.4G_Ant1_2430



2.4G_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 600/600
06:31:48 PM May 29, 2023
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 732 kHz
-0.313 dB
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.479 652 GHz -2.877 dBm
2 N 1 f 2.480 304 GHz 2.787 dBm
3 Δ1 1 f (Δ) 732 kHz (Δ) -0.313 dB
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.482000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

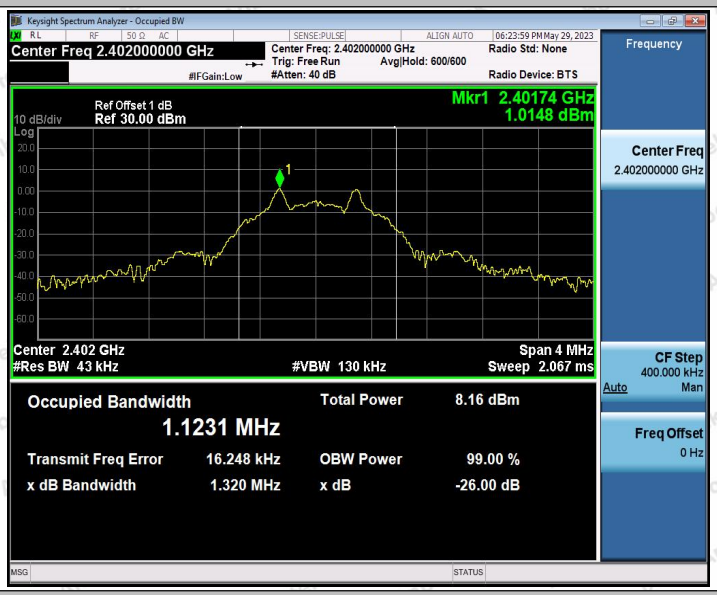
Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
2.4G	Ant1	2402	1.1231	2401.4547	2402.5778
		2430	1.1350	2429.4539	2430.5889
		2480	1.1517	2479.4444	2480.5961

Test Graphs

2.4G_Ant1_2402



2.4G_Ant1_2430

2.4G_Ant1_2480

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 600/600
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
06:32:04 PM May 29, 2023
Frequency
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.480288 GHz
1.0666 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 130 kHz
Span 4 MHz
Sweep 2.067 ms
Occupied Bandwidth
1.1517 MHz
Total Power 8.27 dBm
Transmit Freq Error 20.225 kHz
OBW Power 99.00 %
x dB Bandwidth 1.307 MHz
x dB -26.00 dB
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

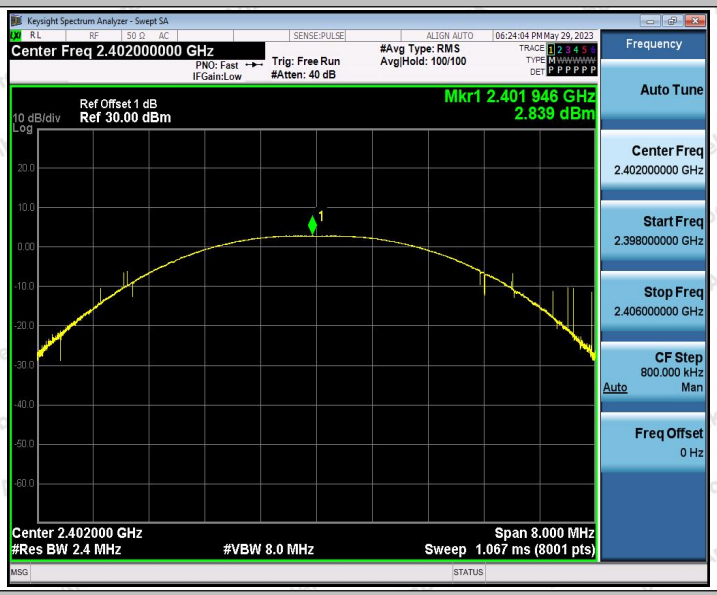
Appendix C: Maximum conducted output power

Test Result Peak

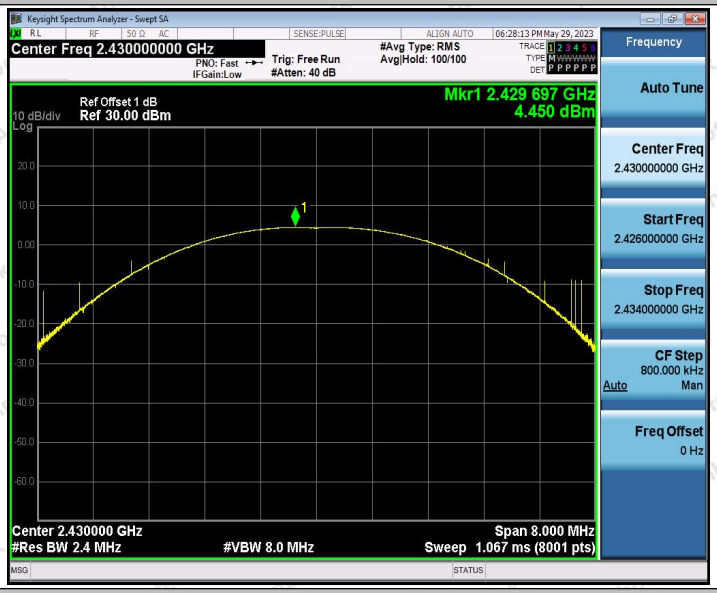
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4G	Ant1	2402	2.84	≤30	PASS
		2430	**4.45**	≤30	PASS
		2480	3.06	≤30	PASS

Test Graphs Peak

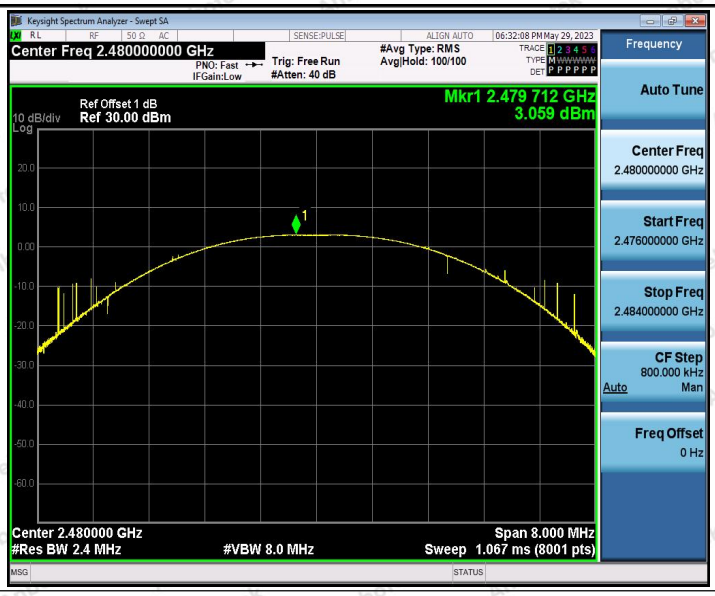
2.4G_Ant1_2402



2.4G_Ant1_2430



2.4G_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
06:32:08 PM May 29, 2023
Frequency
Auto Tune
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.479 712 GHz
3.059 dBm
Center Freq
2.480000000 GHz
Start Freq
2.476000000 GHz
Stop Freq
2.484000000 GHz
CF Step
800.000 kHz
Auto
Man
Freq Offset
0 Hz
Center 2.480000 GHz
#Res BW 2.4 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.067 ms (8001 pts)

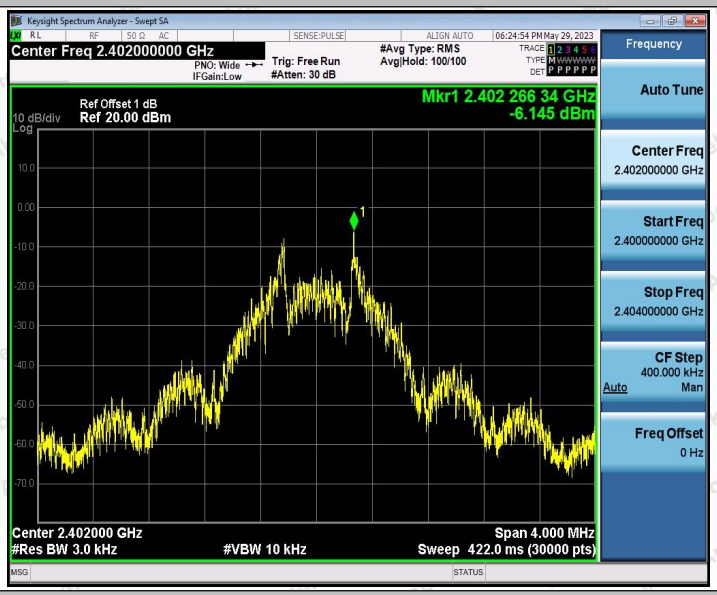
Appendix D: Maximum power spectral density

Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
2.4G	Ant1	2402	-6.15	≤8.00	PASS
		2430	-4.32	≤8.00	PASS
		2480	-5.69	≤8.00	PASS

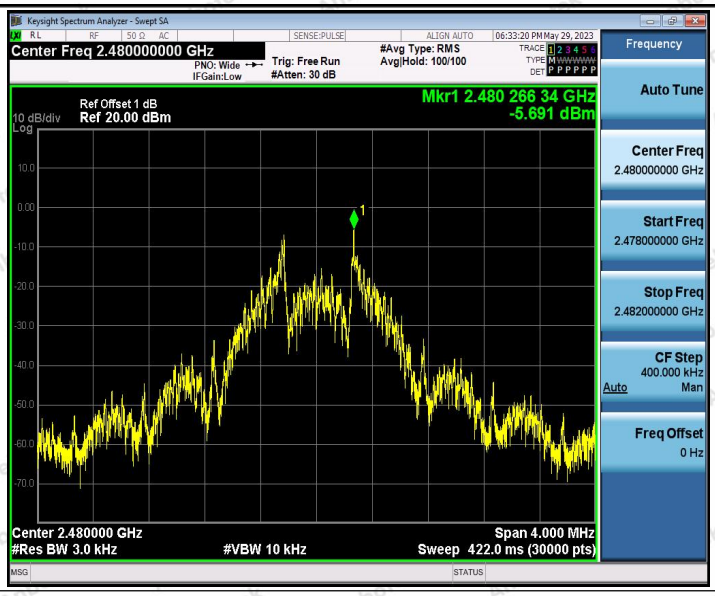
Test Graphs

2.4G_Ant1_2402



2.4G_Ant1_2430

2.4G_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
06:33:20 PM May 29, 2023
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 266 34 GHz
-5.691 dBm
Center 2.480000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 4.000 MHz
Sweep 422.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.482000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz

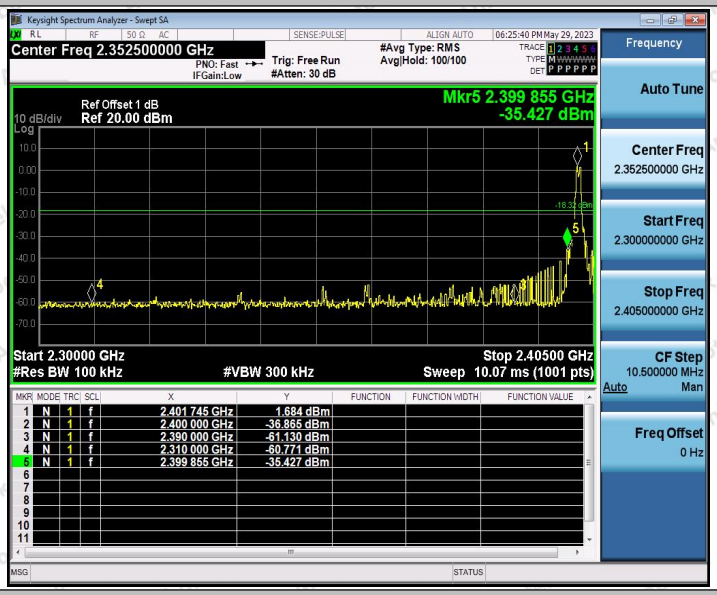
Appendix E: Band edge measurements

Test Result

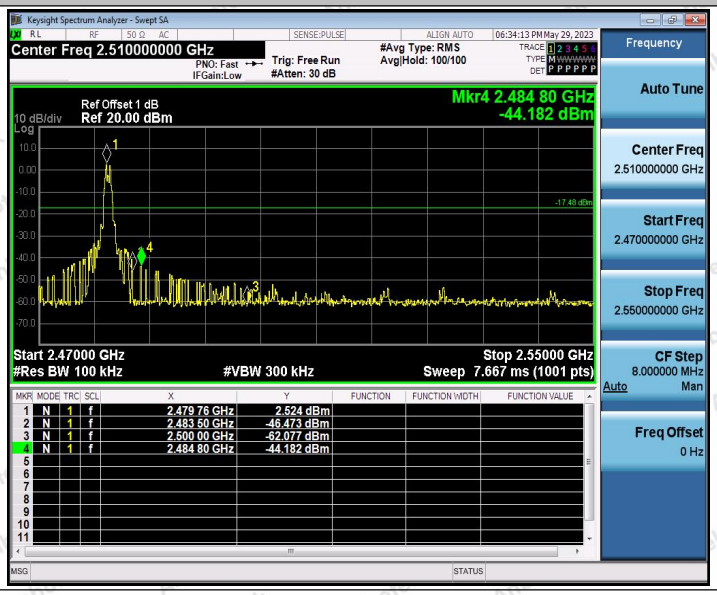
TestMode	Antenna	ChName	Frequency [MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4G	Ant1	Low	2402	1.68	-35.43	≤-18.32	PASS
		High	2480	2.52	-44.18	≤-17.48	PASS

Test Graphs

2.4G_Ant1_Low_2402



2.4G_Ant1_High_2480



Appendix F: Conducted Spurious Emission

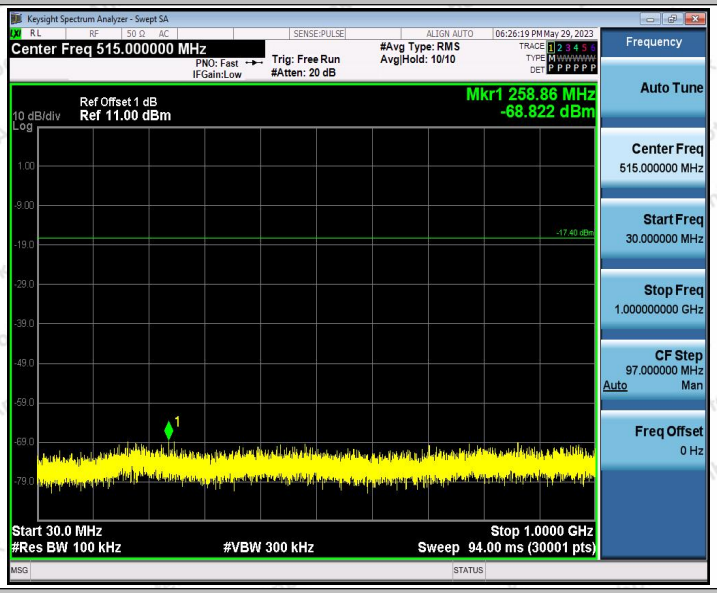
Test Result

TestMode	Antenna	Frequency [MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4G	Ant1	2402	Reference	2.60	2.60	---	PASS
			30~1000	2.60	-68.82	≤-17.4	PASS
			1000~26500	2.60	-42.82	≤-17.4	PASS
		2430	Reference	4.26	4.26	---	PASS
			30~1000	4.26	-61.00	≤-15.74	PASS
			1000~26500	4.26	-40.89	≤-15.74	PASS
		2480	Reference	2.86	2.86	---	PASS
			30~1000	2.86	-68.14	≤-17.14	PASS
			1000~26500	2.86	-44.28	≤-17.14	PASS

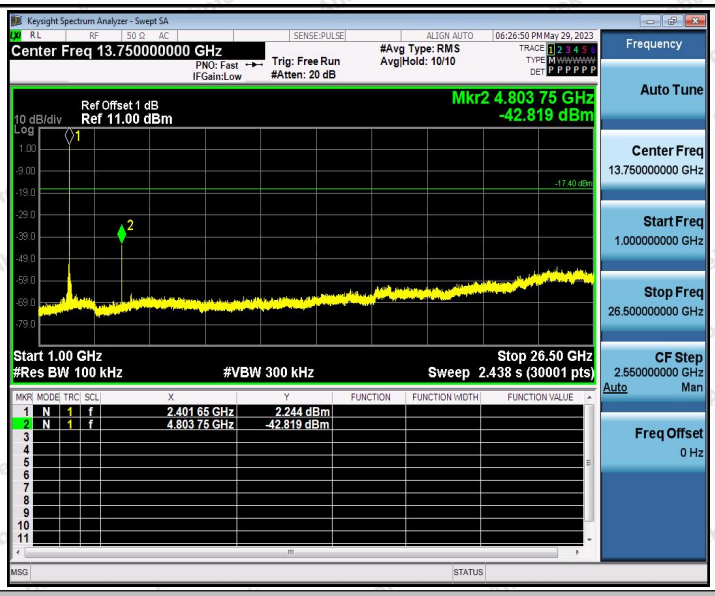
Test Graphs

2.4G_Ant1_2402_0~Reference

2.4G_Ant1_2402_30~1000

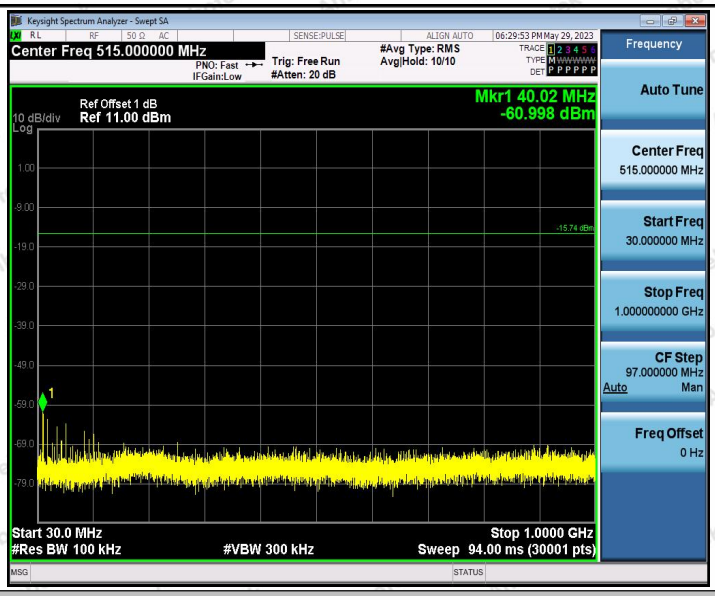


2.4G_Ant1_2402_1000~26500

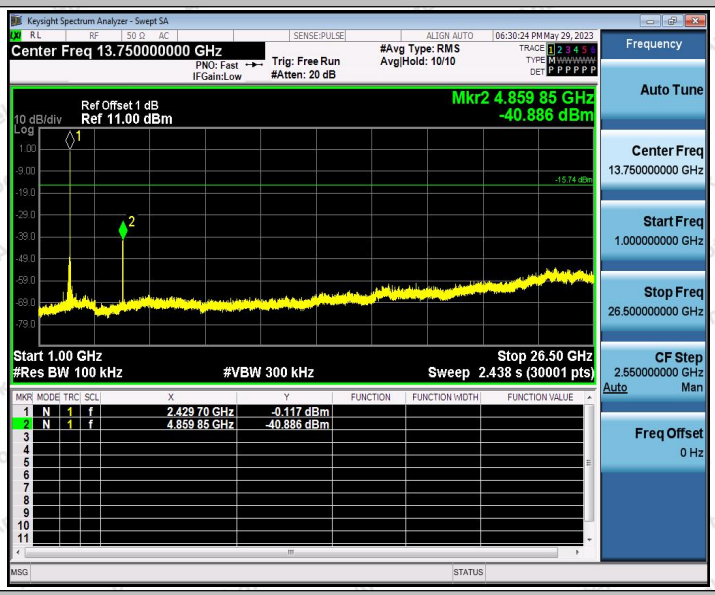


2.4G_Ant1_2430_0~Reference

2.4G_Ant1_2430_30~1000

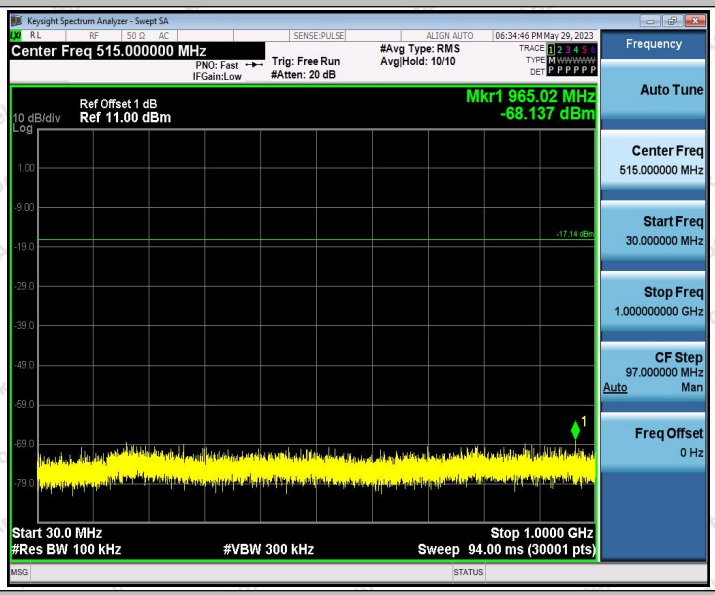


2.4G_Ant1_2430_1000~26500

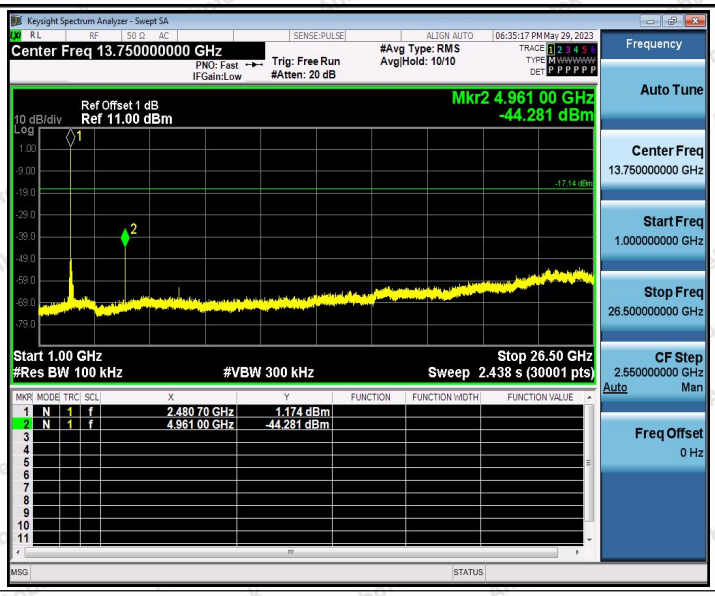


2.4G_Ant1_2480_0~Reference

2.4G_Ant1_2480_30~1000



2.4G_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
06:35:17 PM May 29, 2023
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
Mkr2 4.961 00 GHz
-44.281 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 2.480 70 GHz 1.174 dBm
2 N 1 f 4.961 00 GHz -44.281 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

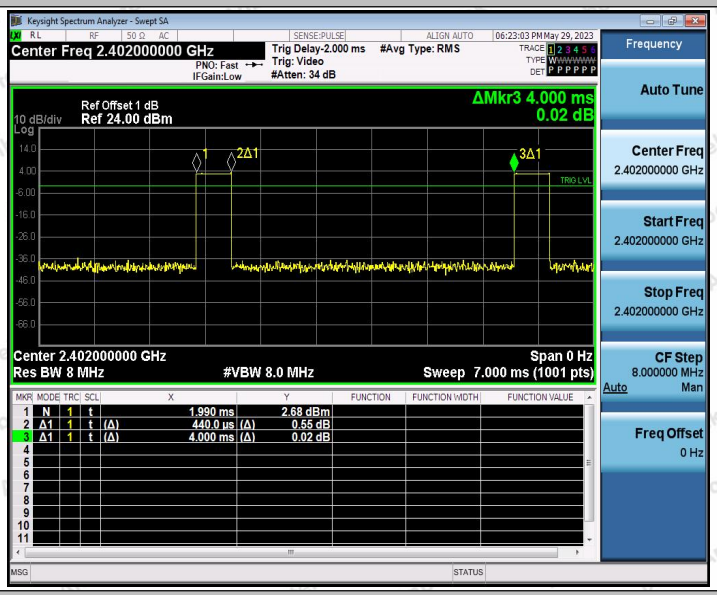
Appendix G: Duty Cycle

Test Result

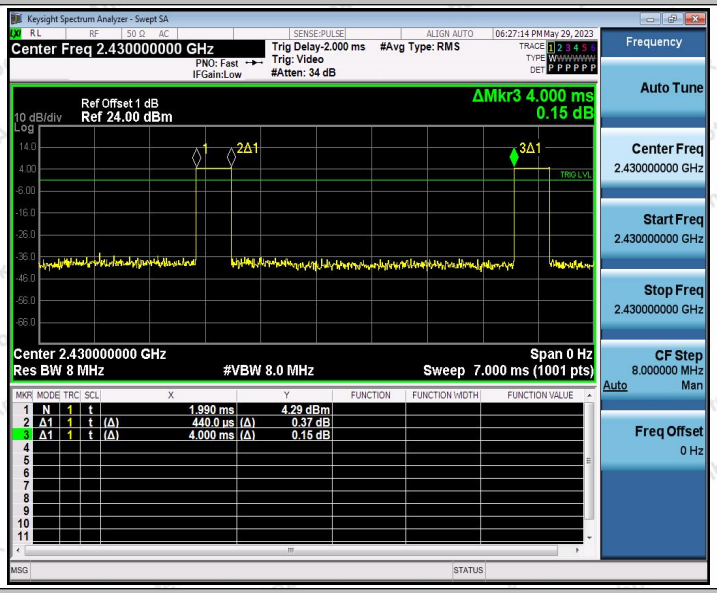
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
2.4G	Ant1	2402	0.44	4.00	11.00	9.59
		2430	0.44	4.00	11.00	9.59
		2480	0.44	4.00	11.00	9.59

Test Graphs

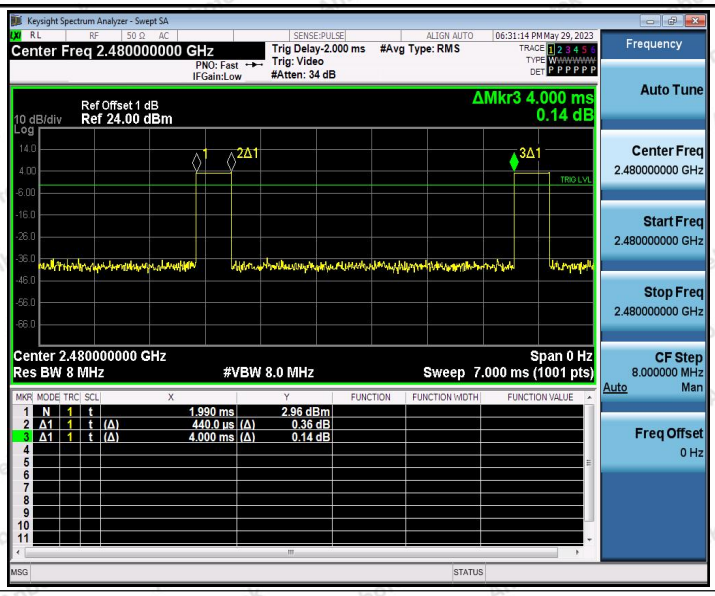
2.4G_Ant1_2402



2.4G_Ant1_2430



2.4G_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 34 dB
#Avg Type: RMS
06:31:14 PM May 29, 2023
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
CF Step
8.000000 MHz
Auto Man
Freq Offset
0 Hz
Ref Offset 1 dB
10 dB/div Ref 24.00 dBm
ΔMkr3 4.000 ms
0.14 dB
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 7.000 ms (1001 pts)
1 N 1 t 1.990 ms 2.96 dBm
2 Δ1 1 t (Δ) 440.0 us (Δ) 0.36 dB
3 Δ1 1 t (Δ) 4.000 ms (Δ) 0.14 dB

---End---