Appendix Test Data

Report No.:	18220WC30246501	Test Sample No.:	1-2-2
Start Test Date:	2023.11.23	Finish Test Date:	2023.11.27
Test Engineer:	Hayman Chen	Auditor:	Rock Luo
Temperature:	25.8℃	Relative Humidity:	44%
Pressure:	101kPa		

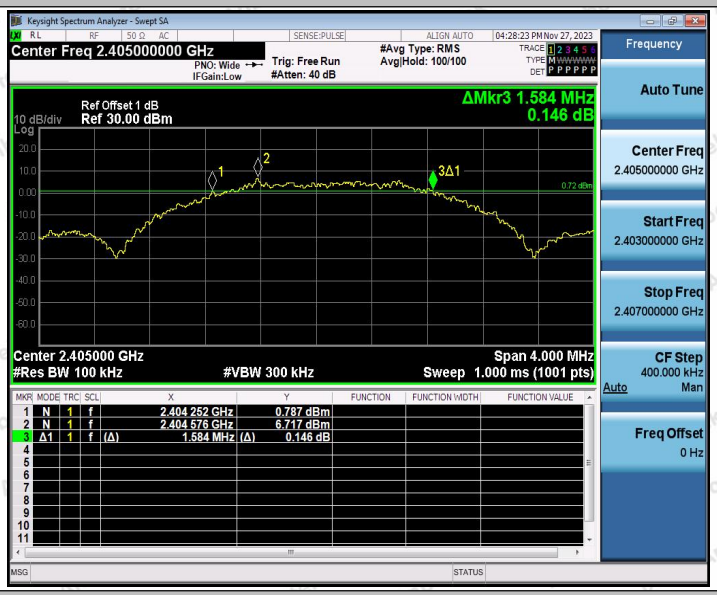
Appendix A: DTS Bandwidth

Test Result

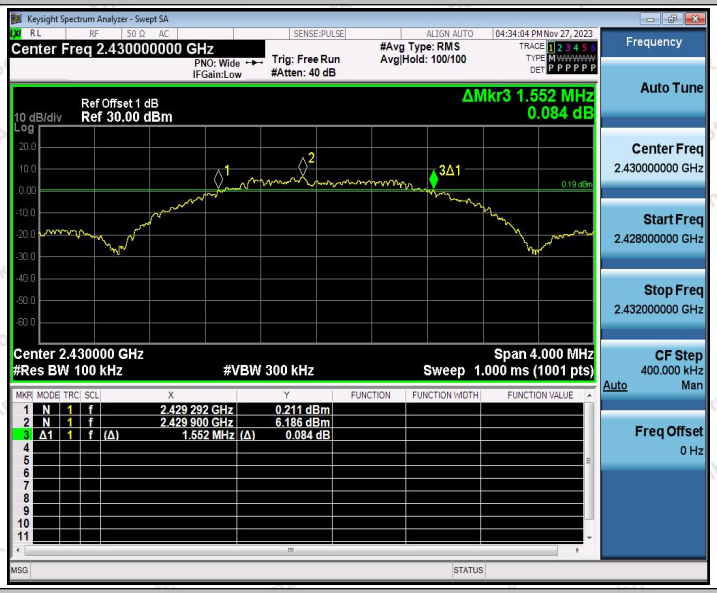
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4G	Ant1	2405	1.584	2404.252	2405.836	0.5	PASS
		2430	1.552	2429.292	2430.844	0.5	PASS
		2470	1.428	2469.364	2470.792	0.5	PASS

Test Graphs

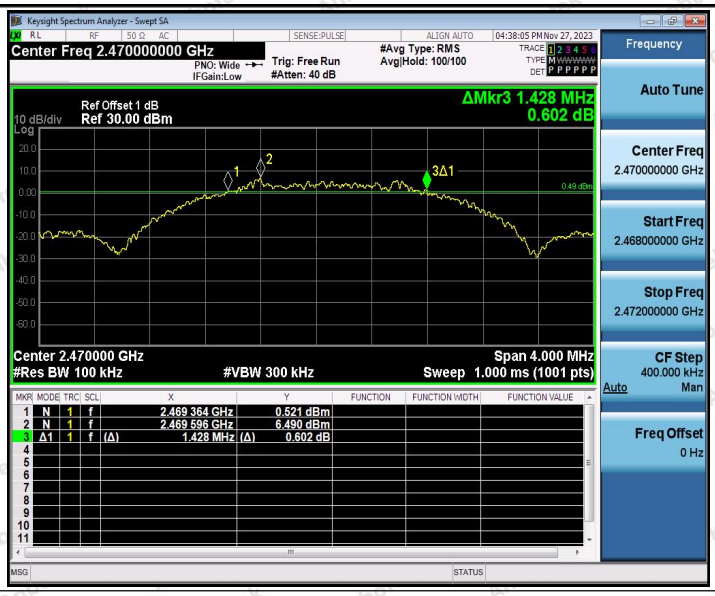
2.4G_Ant1_2405



2.4G_Ant1_2430



2.4G_Ant1_2470


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.470000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
04:38:05 PM Nov 27, 2023
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 1.428 MHz
0.602 dB
Center 2.470000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.469 364 GHz 0.521 dBm
2 N 1 f 2.469 596 GHz 6.490 dBm
3 Δ1 1 f (Δ) 1.428 MHz (Δ) 0.602 dB
Frequency
Auto Tune
Center Freq
2.470000000 GHz
Start Freq
2.468000000 GHz
Stop Freq
2.472000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
2.4G	Ant1	2405	2.3021	2403.9172	2406.2193
		2430	2.2787	2428.9399	2431.2186
		2470	2.3051	2468.8983	2471.2034

Test Graphs

2.4G_Ant1_2405

2.4G_Ant1_2430

2.4G_Ant1_2470

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.470000000 GHz
Center Freq: 2.470000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Mkr1 2.469908 GHz
3.3988 dBm
Center 2.47 GHz
#Res BW 43 kHz
#VBW 130 kHz
Span 4 MHz
Sweep 2.067 ms
Occupied Bandwidth
2.3051 MHz
Total Power 15.9 dBm
Transmit Freq Error 50.828 kHz
OBW Power 99.00 %
x dB Bandwidth 4.000 MHz
x dB -26.00 dB
Center Freq
2.470000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

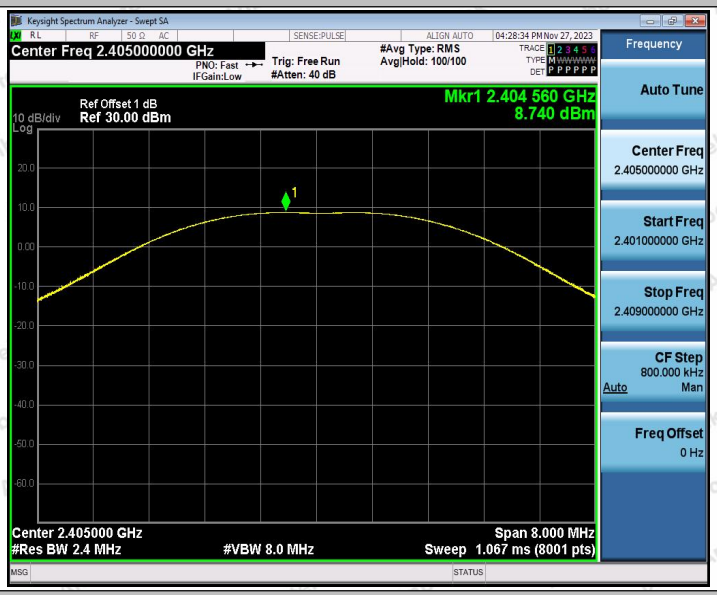
Appendix C: Maximum conducted output power

Test Result Peak

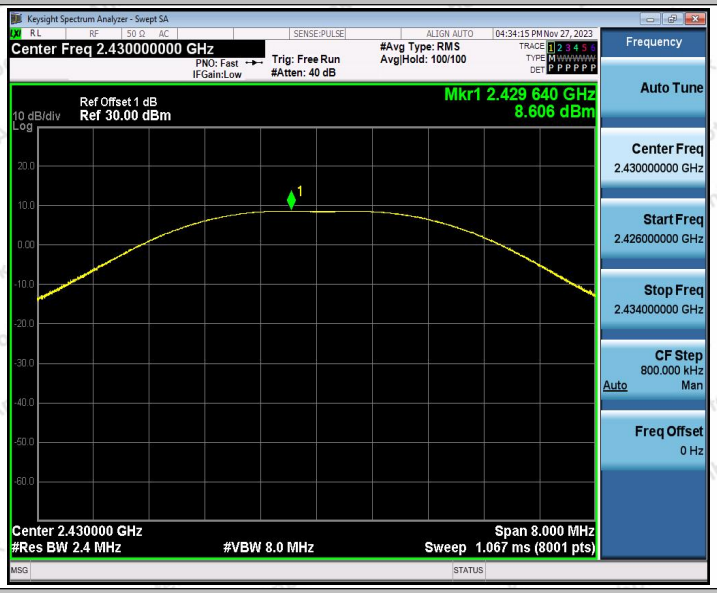
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4G	Ant1	2405	8.74	≤30	PASS
		2430	8.61	≤30	PASS
		2470	8.33	≤30	PASS

Test Graphs Peak

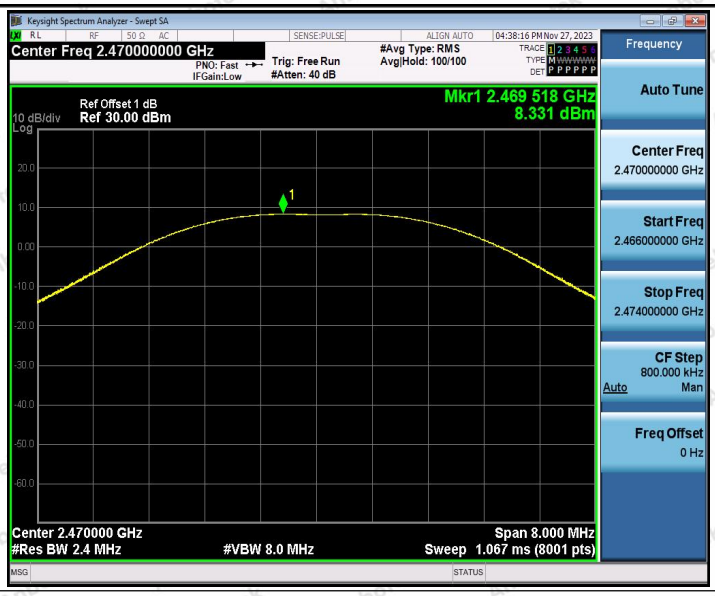
2.4G_Ant1_2405



2.4G_Ant1_2430



2.4G_Ant1_2470


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.470000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
04:38:16 PM Nov 27, 2023
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.469 518 GHz
8.331 dBm
Center 2.470000 GHz
#Res BW 2.4 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.470000000 GHz
Start Freq
2.466000000 GHz
Stop Freq
2.474000000 GHz
CF Step
800.000 kHz
Auto
Man
Freq Offset
0 Hz

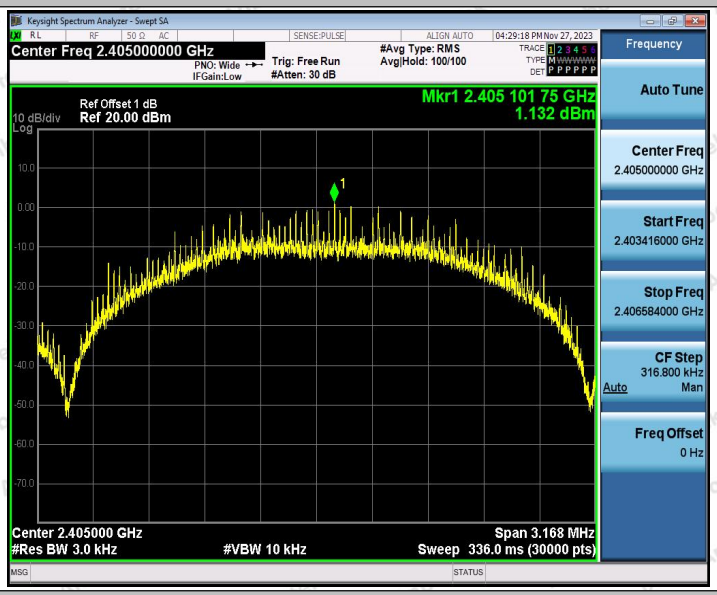
Appendix D: Maximum power spectral density

Test Result

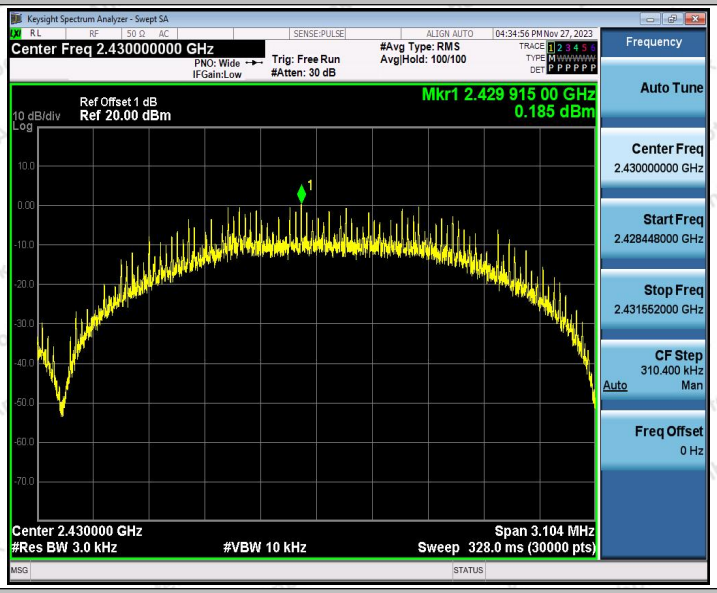
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
2.4G	Ant1	2405	1.13	≤8.00	PASS
		2430	0.19	≤8.00	PASS
		2470	1.97	≤8.00	PASS

Test Graphs

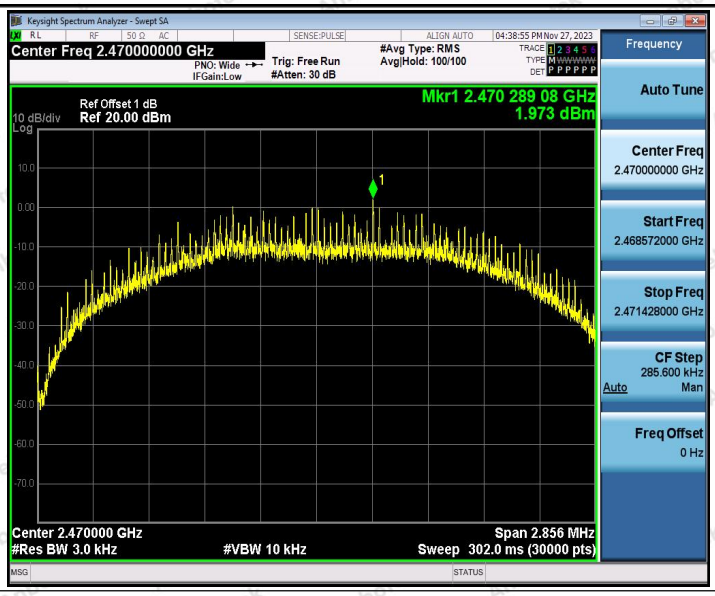
2.4G_Ant1_2405



2.4G_Ant1_2430



2.4G_Ant1_2470


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.470000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
04:38:55 PM Nov 27, 2023
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.470 289 08 GHz
1.973 dBm
Center 2.470000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 2.856 MHz
Sweep 302.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.470000000 GHz
Start Freq
2.468572000 GHz
Stop Freq
2.471428000 GHz
CF Step
285.600 kHz
Auto
Man
Freq Offset
0 Hz

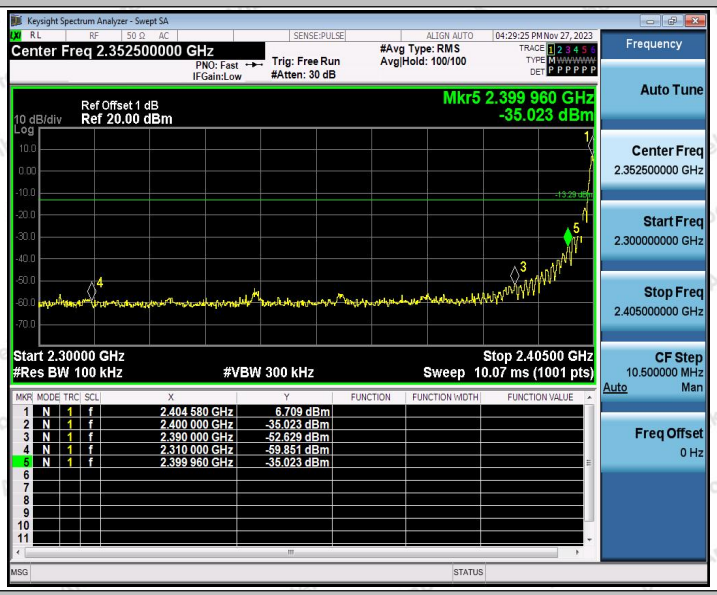
Appendix E: Band edge measurements

Test Result

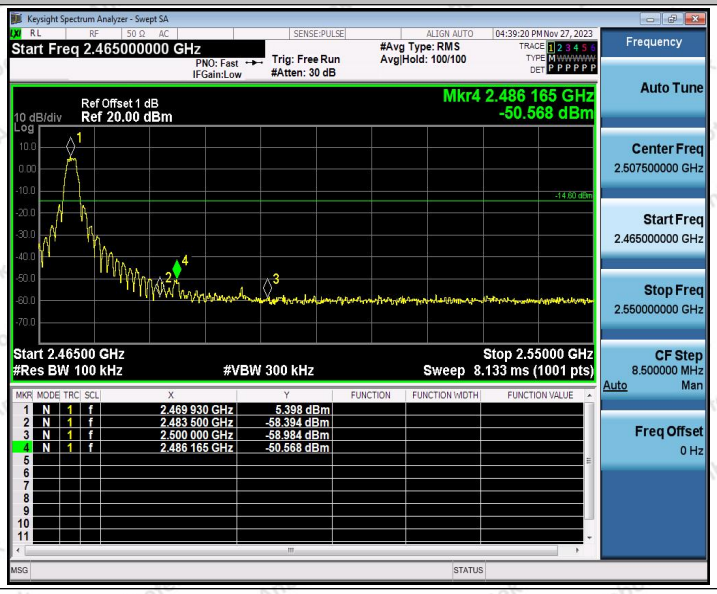
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4G	Ant1	Low	2405	6.71	-35.02	≤-13.29	PASS
		High	2470	5.40	-50.57	≤-14.6	PASS

Test Graphs

2.4G_Ant1_Low_2405



2.4G_Ant1_High_2470



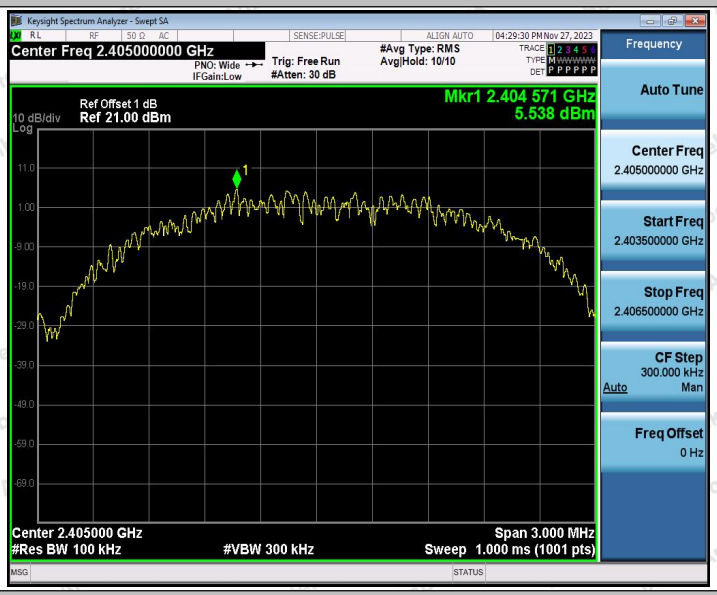
Appendix F: Conducted Spurious Emission

Test Result

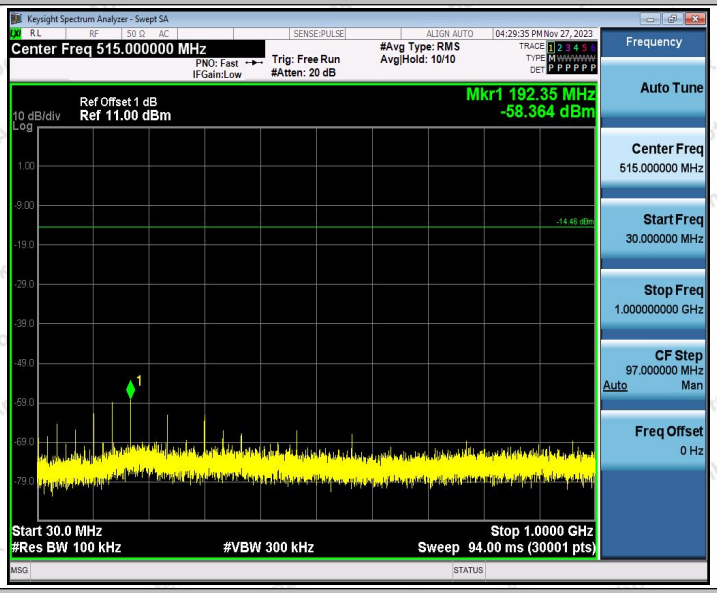
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4G	Ant1	2405	Reference	5.54	5.54	---	PASS
			30~1000	5.54	-58.36	≤-14.46	PASS
			1000~26500	5.54	-30.58	≤-14.46	PASS
		2430	Reference	4.87	4.87	---	PASS
			30~1000	4.87	-57.4	≤-15.13	PASS
			1000~26500	4.87	-28.19	≤-15.13	PASS
		2470	Reference	4.23	4.23	---	PASS
			30~1000	4.23	-57.4	≤-15.77	PASS
			1000~26500	4.23	-31.33	≤-15.77	PASS

Test Graphs

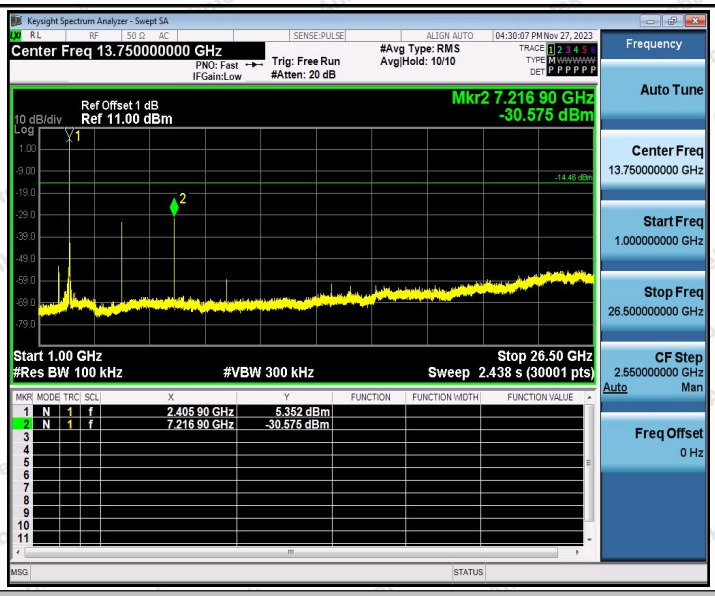
2.4G_Ant1_2405_0~Reference



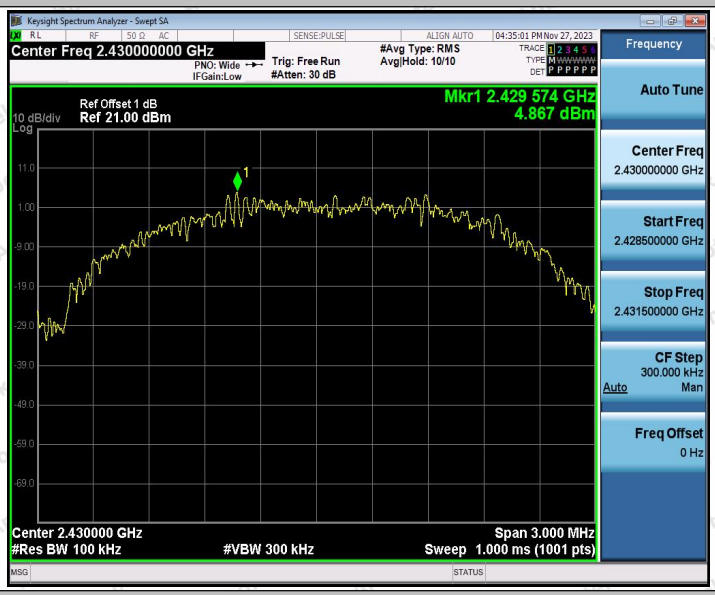
2.4G_Ant1_2405_30~1000



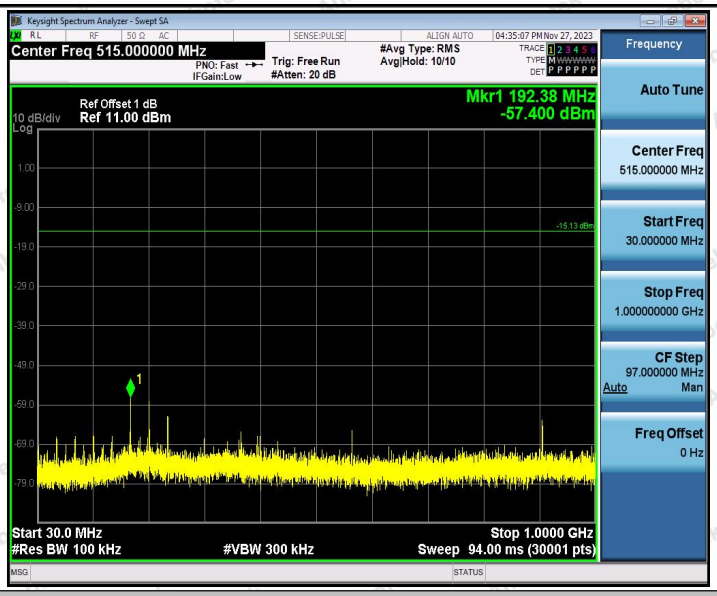
2.4G_Ant1_2405_1000~26500



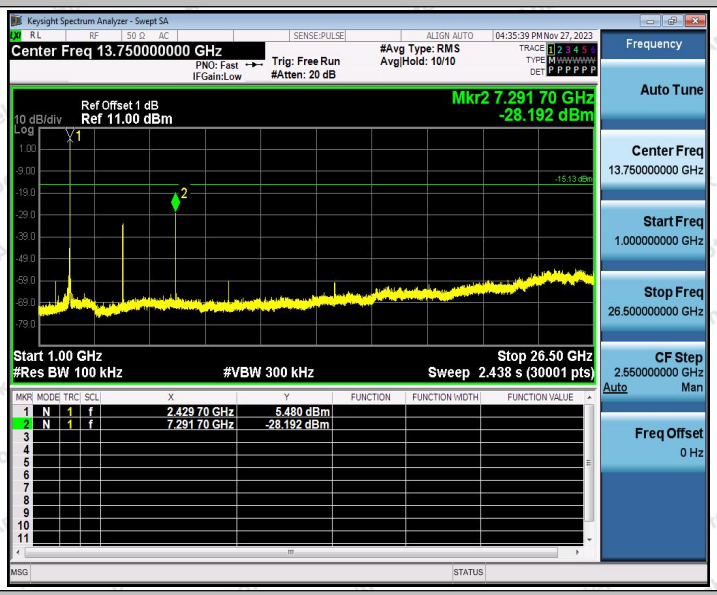
2.4G_Ant1_2430_0~Reference



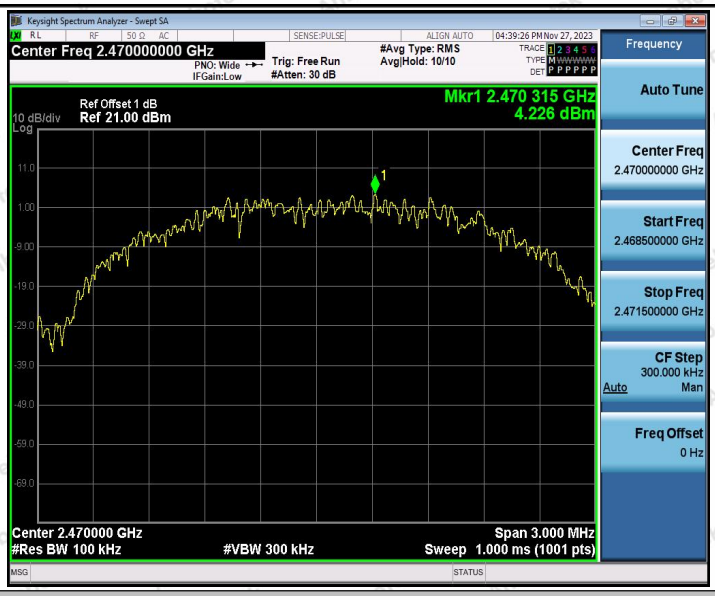
2.4G_Ant1_2430_30~1000



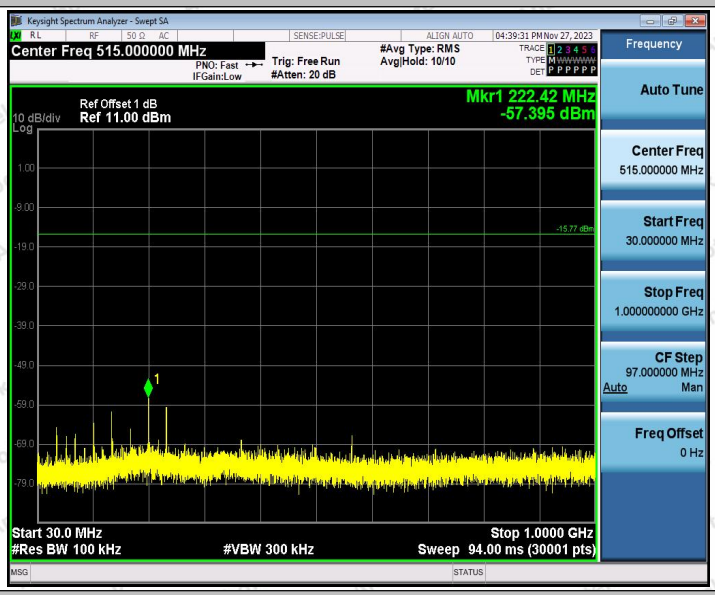
2.4G_Ant1_2430_1000~26500



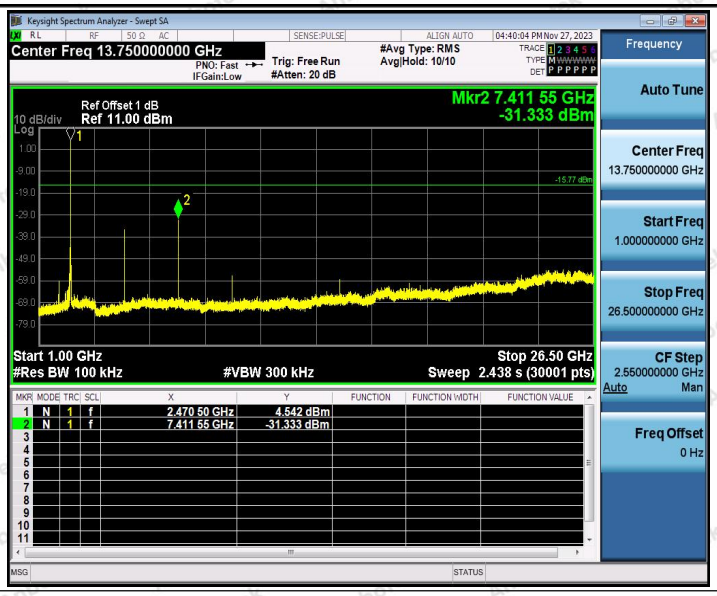
2.4G_Ant1_2470_0~Reference



2.4G_Ant1_2470_30~1000



2.4G_Ant1_2470_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
04:40:04 PM Nov 27, 2023
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
Mkr2 7.411 55 GHz
-31.333 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 2.470 50 GHz 4.542 dBm
2 N 1 f 7.411 55 GHz -31.333 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

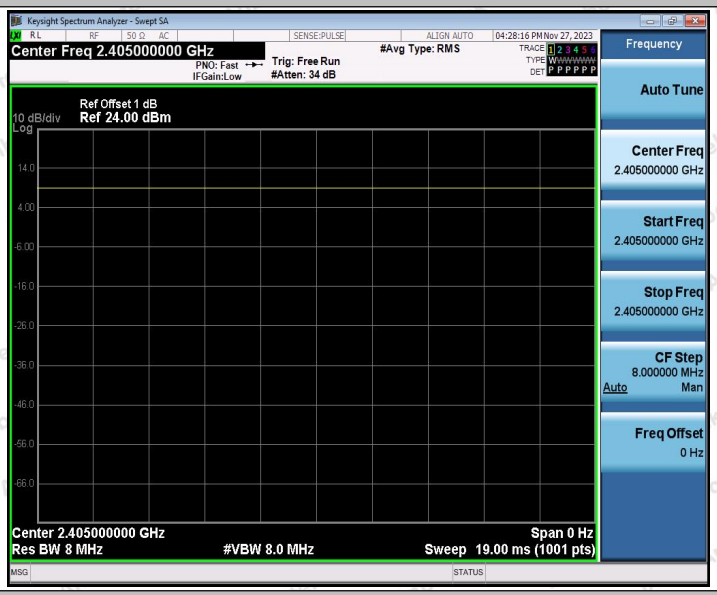
Appendix G: Duty Cycle

Test Result

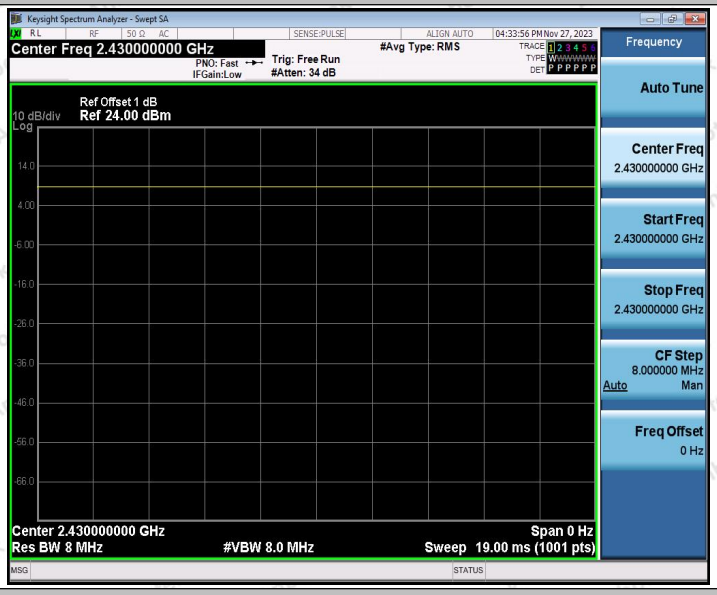
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
2.4G	Ant1	2405	19.00	19.00	100	0.00
		2430	19.00	19.00	100	0.00
		2470	19.00	19.00	100	0.00

Test Graphs

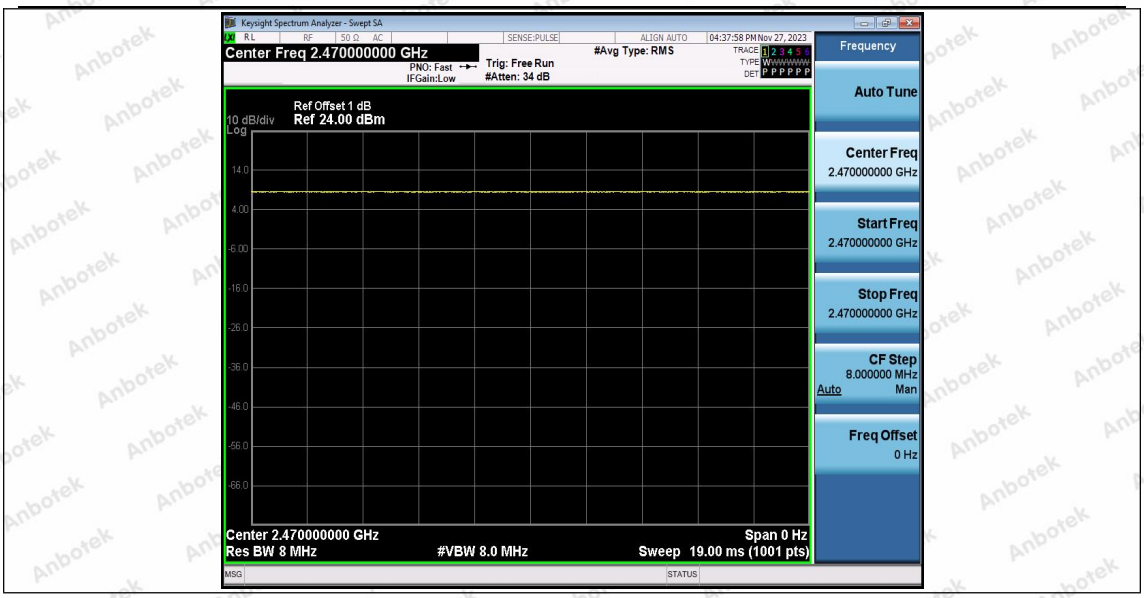
2.4G_Ant1_2405



2.4G_Ant1_2430



2.4G_Ant1_2470


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.470000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 34 dB
#Avg Type: RMS
04:37:58 PM Nov 27, 2023
Ref Offset 1 dB
10 dB/div
Ref 24.00 dBm
Log
Center 2.470000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 19.00 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.470000000 GHz
Start Freq
2.470000000 GHz
Stop Freq
2.470000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz

---End---