Appendix Test Data

Report No.:	18220WC30051001	Test Sample No.:	1-2-2
Start Test Date:	2023.03.28	Finish Test Date:	2023.04.11
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	24.6℃	Relative Humidity:	43%
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	2405	1.032	2404.456	2405.488	0.5	PASS
		2430	1.044	2429.448	2430.492	0.5	PASS
		2470	1.032	2469.456	2470.488	0.5	PASS

Test Graphs

2.4G_Ant1_2405

2.4G_Ant1_2430

2.4G_Ant1_2470

Agilent 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
07:06:11 PM Apr 11, 2023
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 1.032 MHz
-0.099 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 2.469 456 GHz -6.187 dBm
2 N 1 f 2.469 968 GHz -0.305 dBm
3 Δ1 1 f (Δ) 1.032 MHz (Δ) -0.099 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

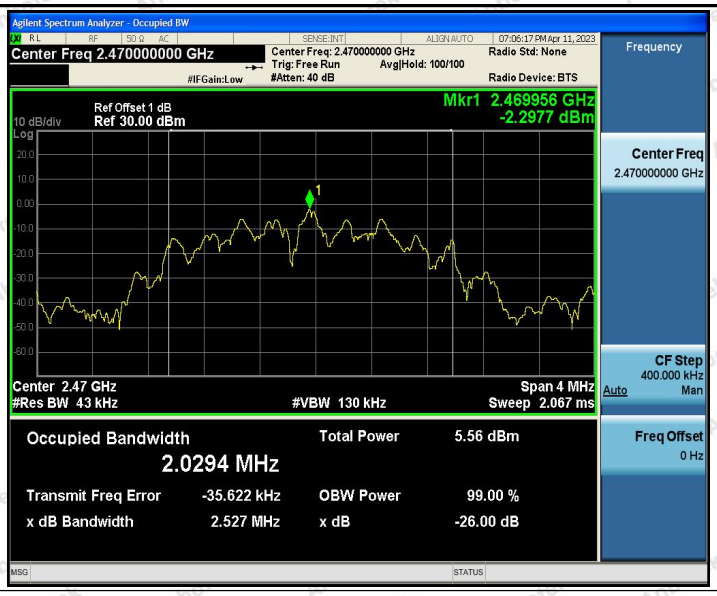
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
2.4G	Ant1	2405	2.0591	2403.9507	2406.0098
		2430	2.0505	2428.9483	2430.9988
		2470	2.0294	2468.9497	2470.9791

Test Graphs

2.4G_Ant1_2405

2.4G_Ant1_2430

2.4G_Ant1_2470


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.470000000 GHz
Center Freq: 2.470000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
07:06:17 PM Apr 11, 2023
Frequency
Ref Offset 1 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.469956 GHz
-2.2977 dBm
Center Freq
2.470000000 GHz
Center 2.47 GHz
#Res BW 43 kHz
#VBW 130 kHz
Span 4 MHz
Sweep 2.067 ms
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz
Occupied Bandwidth
2.0294 MHz
Total Power
5.56 dBm
Transmit Freq Error
-35.622 kHz
OBW Power
99.00 %
x dB Bandwidth
2.527 MHz
x dB
-26.00 dB
MSG
STATUS

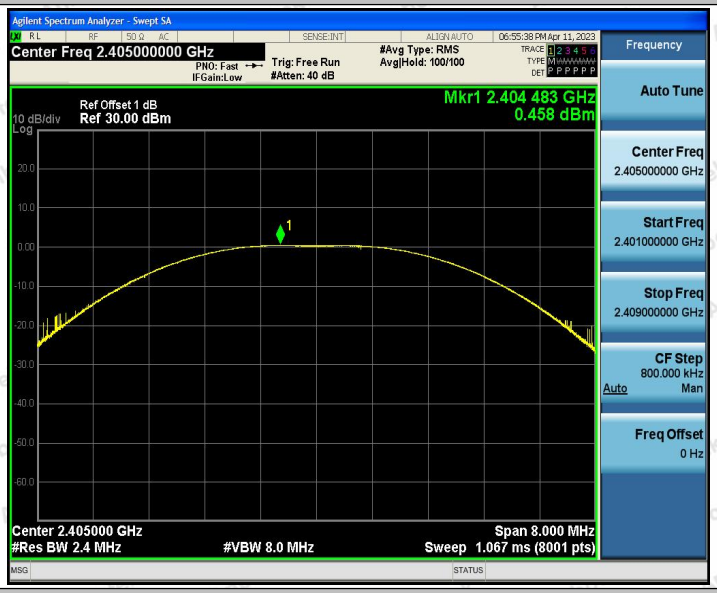
Appendix C: Maximum conducted output power

Test Result Peak

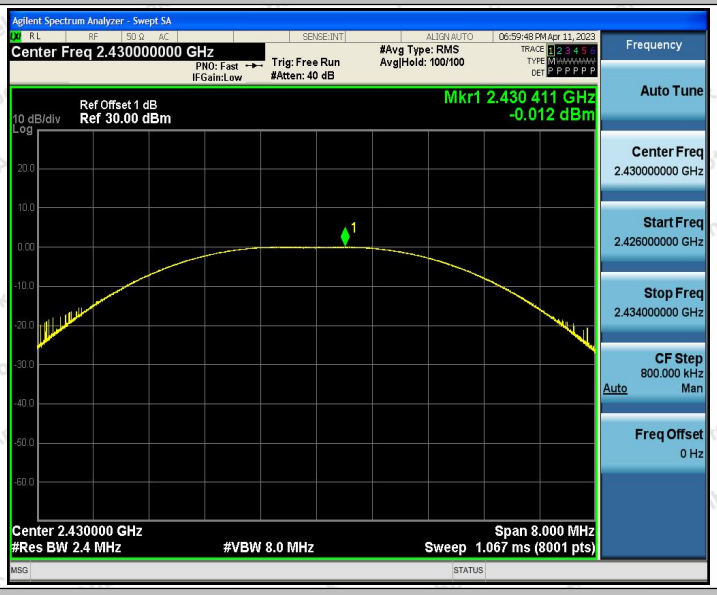
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4G	Ant1	2405	0.46	≤30	PASS
		2430	-0.01	≤30	PASS
		2470	0.30	≤30	PASS

Test Graphs Peak

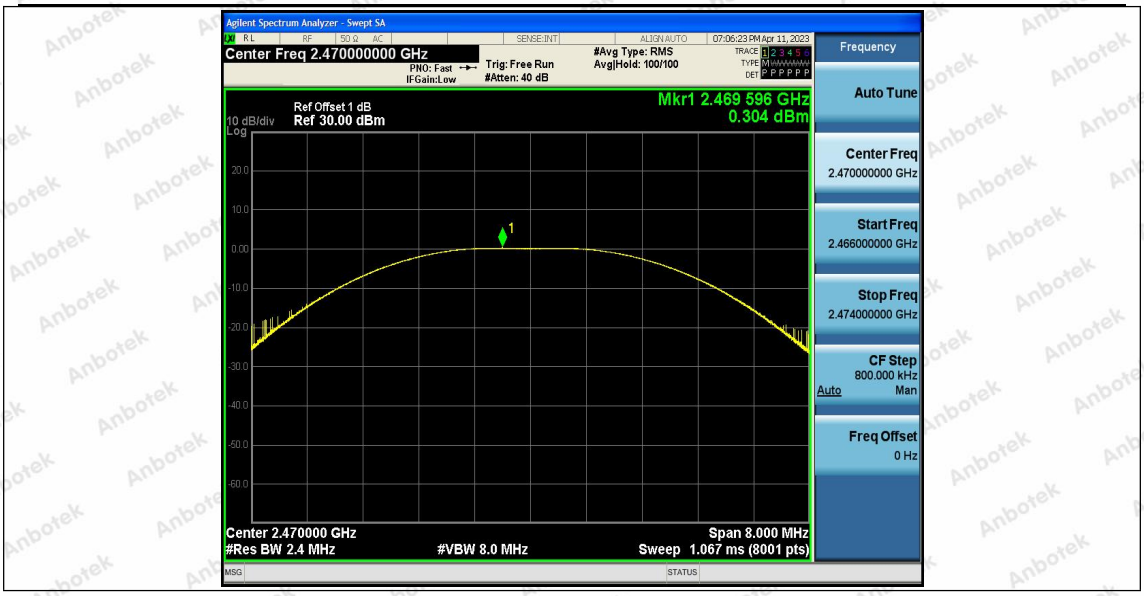
2.4G_Ant1_2405



2.4G_Ant1_2430



2.4G_Ant1_2470


Agilent 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
07:06:23 PM Apr 11, 2023
Frequency
Ref Offset 1 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr1 2.469 596 GHz
0.304 dBm
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
Center 2.470000 GHz
#Res BW 2.4 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.067 ms (8001 pts)
MSG
STATUS

Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
2.4G	Ant1	2405	-11.2	≤8.00	PASS
		2430	-11.64	≤8.00	PASS
		2470	-11.33	≤8.00	PASS

Test Graphs

2.4G_Ant1_2405

2.4G_Ant1_2430

2.4G_Ant1_2470

Agilent 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
07:07:17 PM Apr 11, 2023
Ref Offset 1 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.470 468 75 GHz
-11.330 dBm
Center 2.470000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 4.000 MHz
Sweep 422.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.470000000 GHz
Start Freq
2.468000000 GHz
Stop Freq
2.472000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz

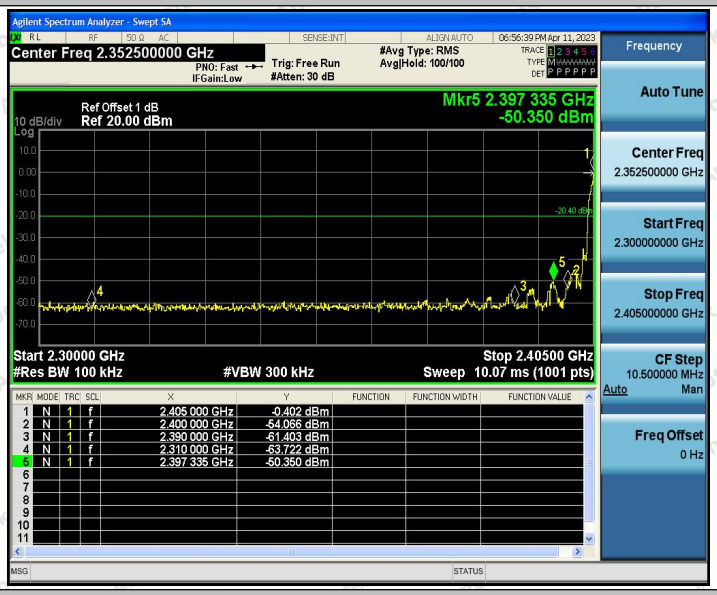
Appendix E: Band edge measurements

Test Result

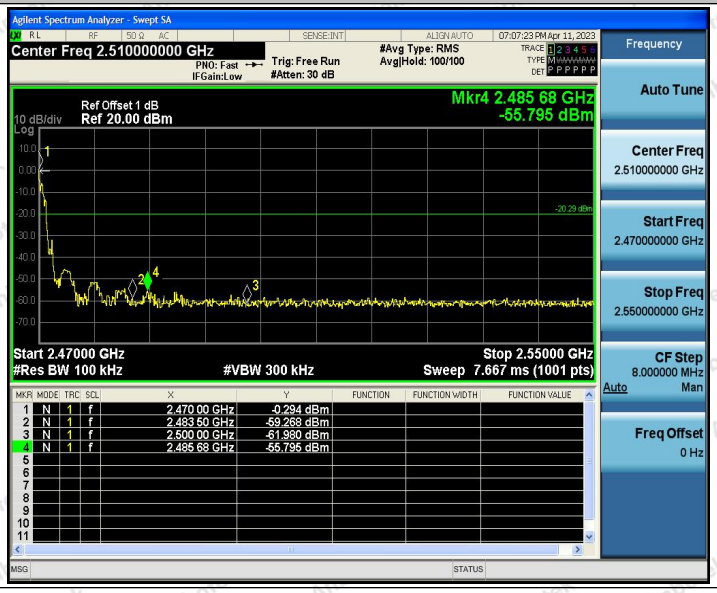
TestMode	Antenna	ChName	Frequency [MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4G	Ant1	Low	2405	-0.40	-50.35	≤-20.4	PASS
		High	2470	-0.29	-55.8	≤-20.29	PASS

Test Graphs

2.4G_Ant1_Low_2405



2.4G_Ant1_High_2470



Appendix F: Conducted Spurious Emission

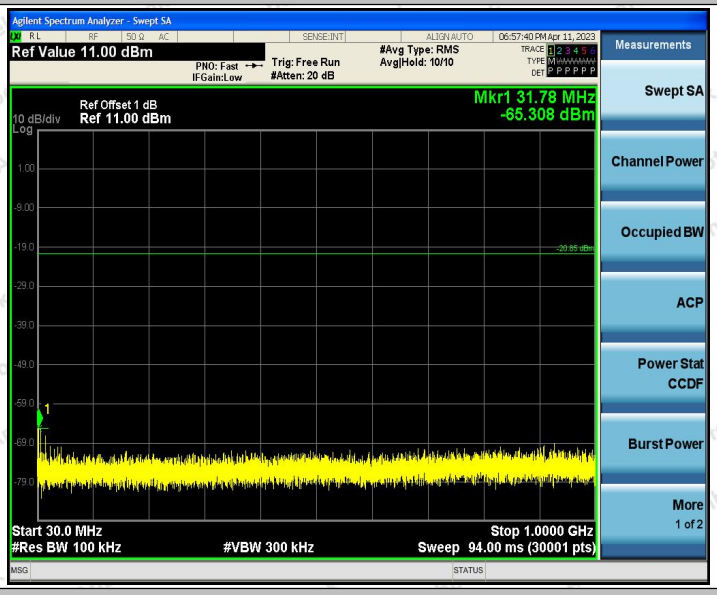
Test Result

TestMode	Antenna	Frequency [MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4G	Ant1	2405	Reference	-0.85	-0.85	---	PASS
			30~1000	-0.85	-65.31	≤-20.85	PASS
			1000~26500	-0.85	-37.64	≤-20.85	PASS
		2430	Reference	-0.66	-0.66	---	PASS
			30~1000	-0.66	-65.03	≤-20.66	PASS
			1000~26500	-0.66	-36.14	≤-20.66	PASS
		2470	Reference	-0.71	-0.71	---	PASS
			30~1000	-1.10	-63.95	≤-21.1	PASS
			1000~26500	-1.10	-36.63	≤-21.1	PASS

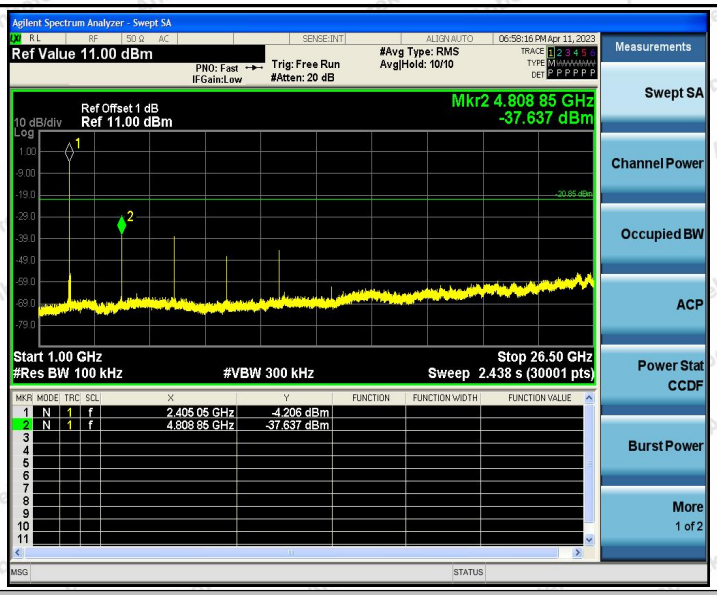
Test Graphs

2.4G_Ant1_2405_0~Reference

2.4G_Ant1_2405_30~1000

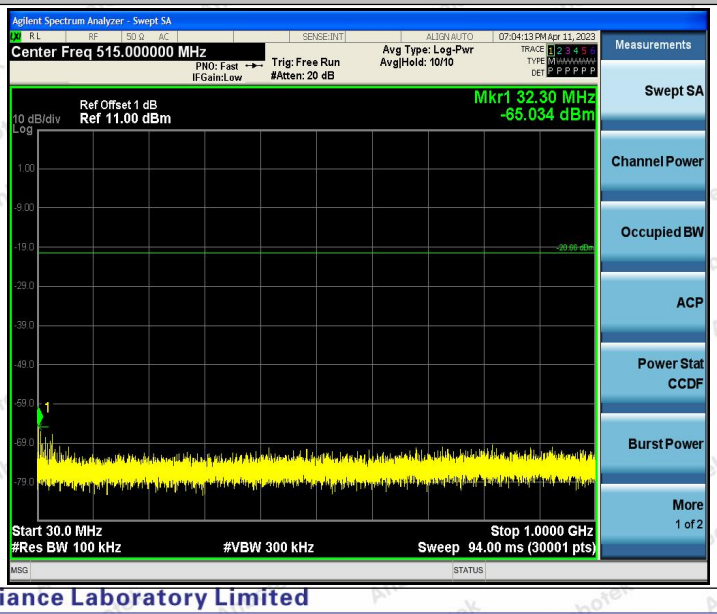


2.4G_Ant1_2405_1000~26500

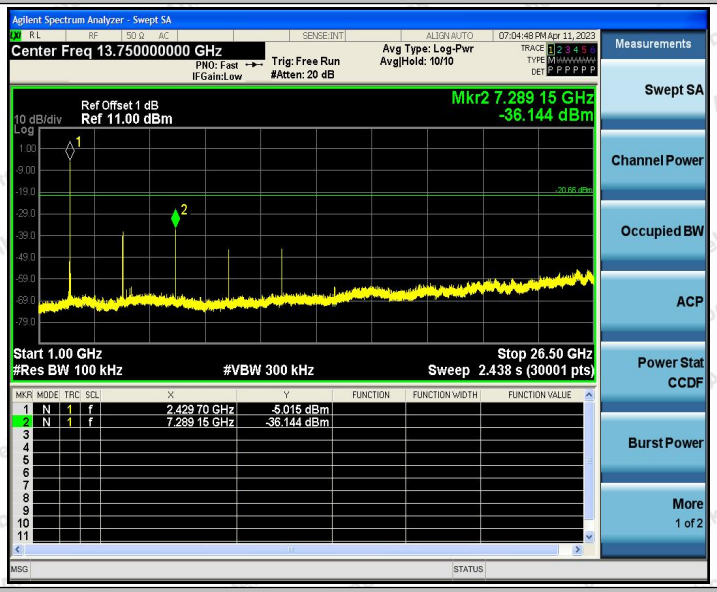


2.4G_Ant1_2430_0~Reference

2.4G_Ant1_2430_30~1000

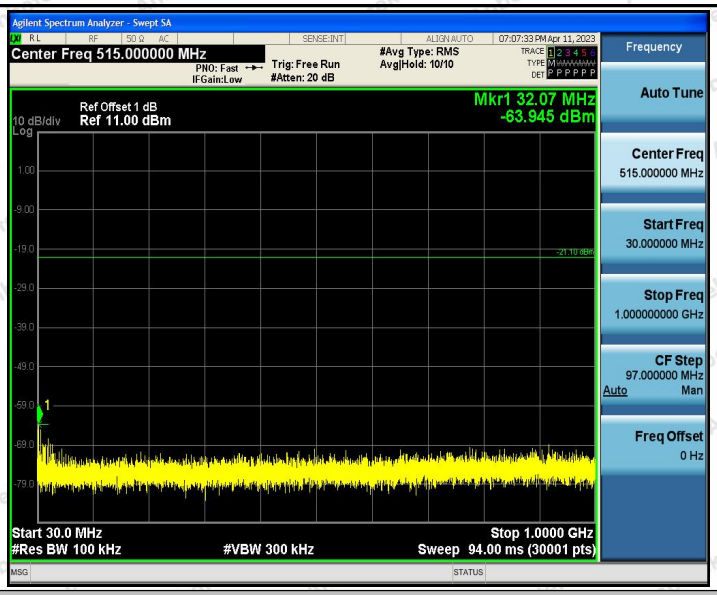


2.4G_Ant1_2430_1000~26500

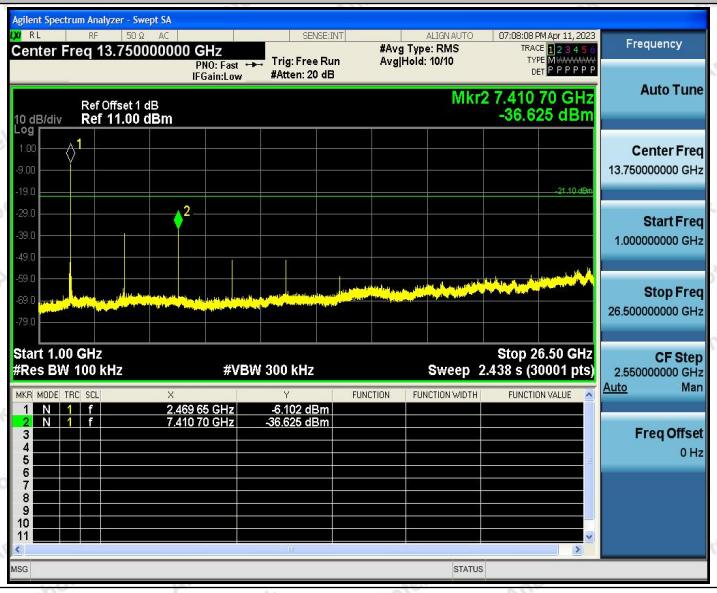


2.4G_Ant1_2470_0~Reference

2.4G_Ant1_2470_30~1000



2.4G_Ant1_2470_1000~26500



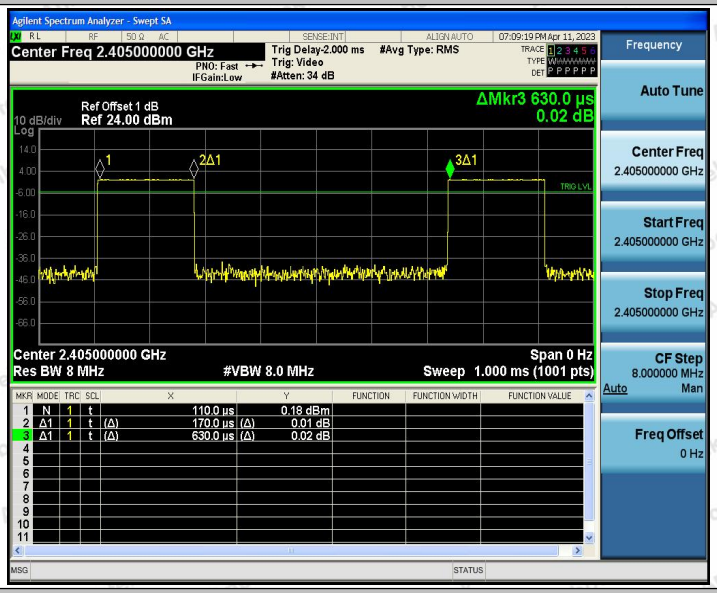
Appendix G: Duty Cycle

Test Result

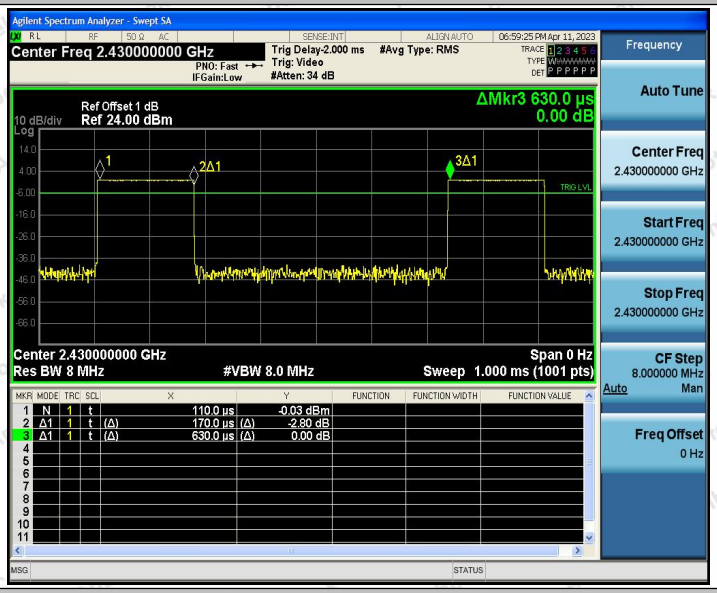
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
2.4G	Ant1	2405	0.17	0.63	26.98	5.69
		2430	0.17	0.63	26.98	5.69
		2470	0.17	0.63	26.98	5.69

Test Graphs

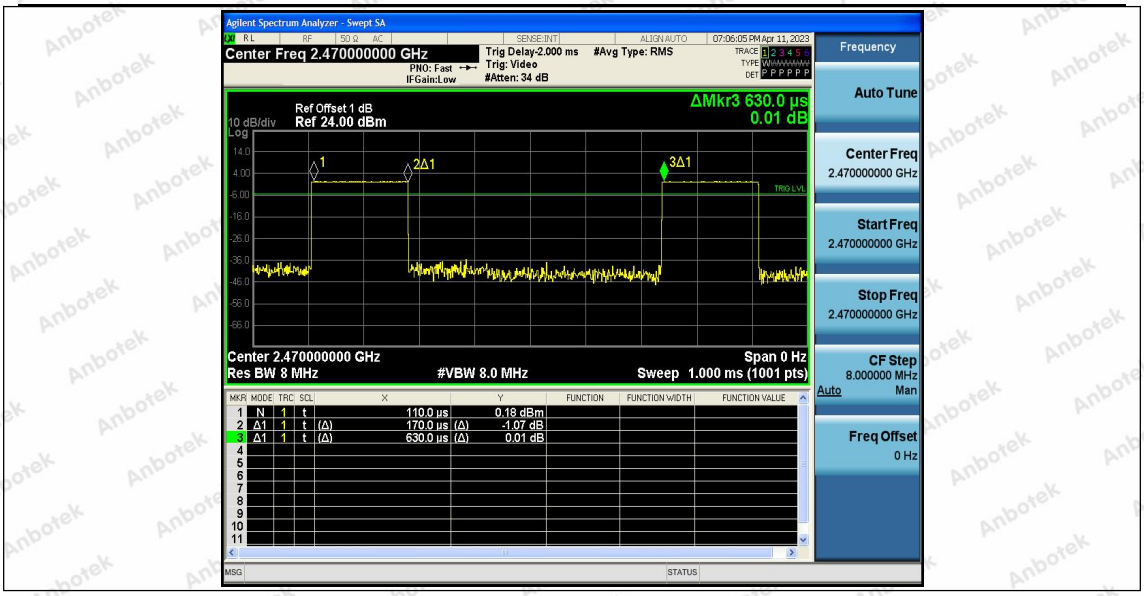
2.4G_Ant1_2405



2.4G_Ant1_2430



2.4G_Ant1_2470


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.470000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 34 dB
#Avg Type: RMS
07:06:05 PM Apr 11, 2023
Ref Offset 1 dB
10 dB/div
Ref 24.00 dBm
ΔMkr3 630.0 µs
0.01 dB
Center 2.470000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 1.000 ms (1001 pts)
1 N 1 t 110.0 µs 0.18 dBm
2 Δ1 1 t (Δ) 170.0 µs (Δ) -1.07 dB
3 Δ1 1 t (Δ) 630.0 µs (Δ) 0.01 dB
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---