FCC Appendix RF Test Data

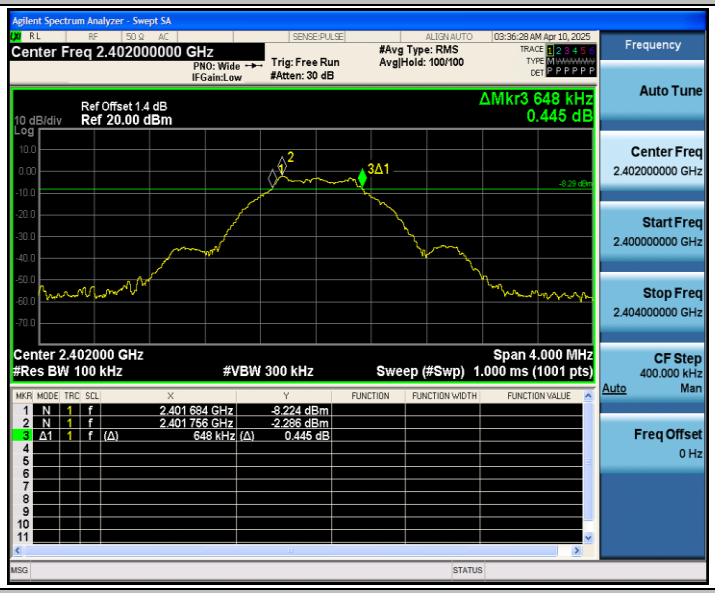
FCC ID	**:**	**2BOU9-R89**
Company:	**:**	**Shenzhen Yuntian Intelligent Terminal Co.,LTD.**
EUT	**:**	**SMART LOCK**
Model Number	**:**	**R89**
Reviewed By	**:**	**Eric Wang**

Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.648	2401.684	2402.332	0.5	PASS
		2440	0.684	2439.664	2440.348	0.5	PASS
		2480	0.656	2479.680	2480.336	0.5	PASS

Test Graphs

BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480


Agilent 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
03:40:02 AM Apr 10, 2025
Ref Offset 1.4 dB
10 dB/div
Ref 20.00 dBm
ΔMkr3 656 kHz
-0.257 dB
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
Sweep (#Swp) 1.000 ms (1001 pts)
1 N 1 f 2.479 680 GHz -8.683 dBm
2 N 1 f 2.480 012 GHz -2.975 dBm
3 Δ1 1 f (Δ) 656 kHz (Δ) -0.257 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

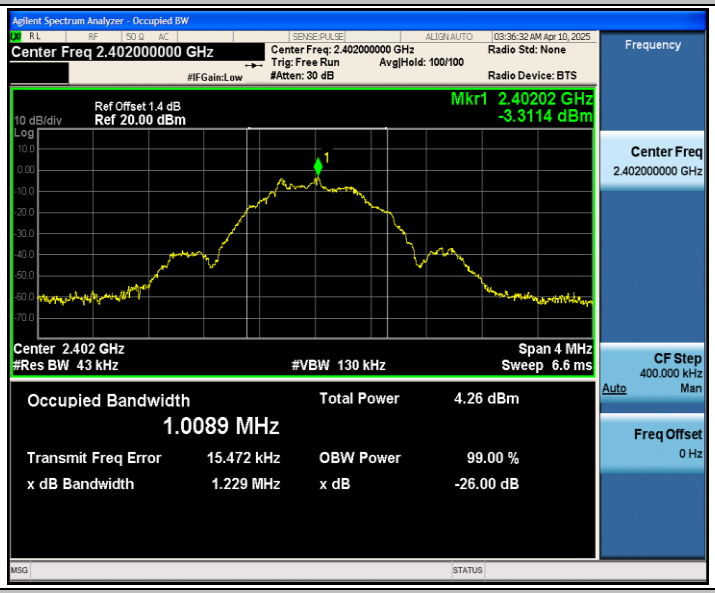
Appendix B: Occupied Channel Bandwidth

Test Result

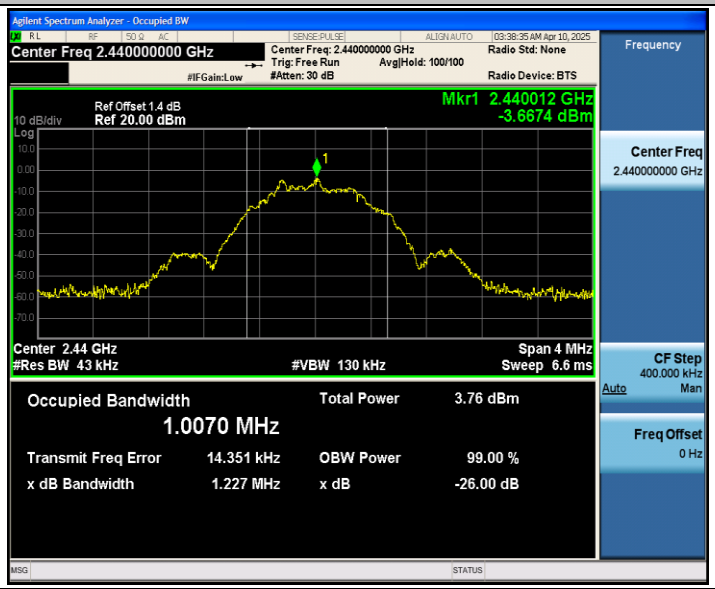
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0089	2401.5110	2402.5199	---	---
		2440	1.0070	2439.5109	2440.5179	---	---
		2480	1.0103	2479.5099	2480.5202	---	---

Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1.4 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.480004 GHz
-4.3775 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 130 kHz
Span 4 MHz
Sweep 6.6 ms
Occupied Bandwidth
1.0103 MHz
Total Power 3.37 dBm
Transmit Freq Error 15.077 kHz
OBW Power 99.00 %
x dB Bandwidth 1.247 MHz
x dB -26.00 dB
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

Appendix C: Maximum conducted output power

Test Result Peak

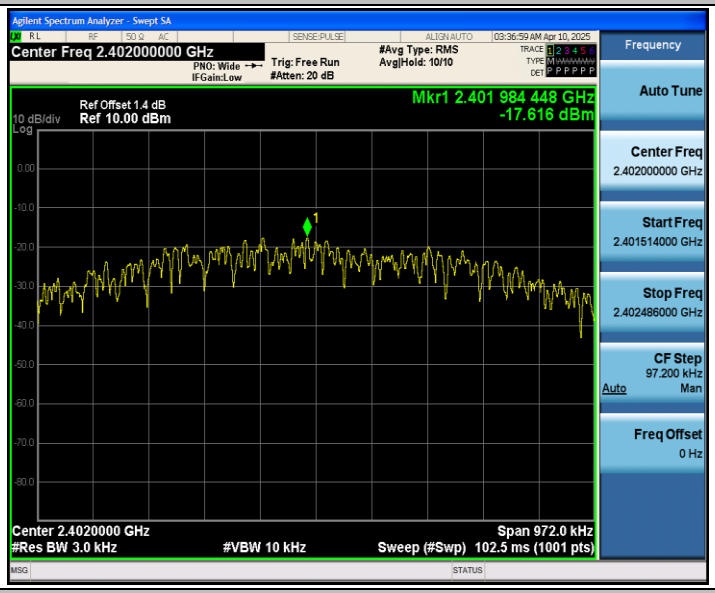
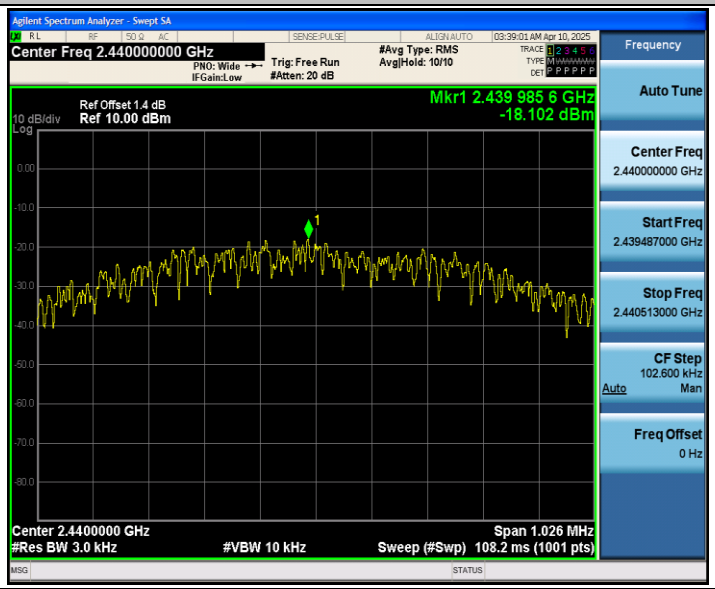
TestMode	Antenna	Freq(MHz)	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-1.88	≤30	PASS
		2440	-2.45	≤30	PASS
		2480	-2.69	≤30	PASS

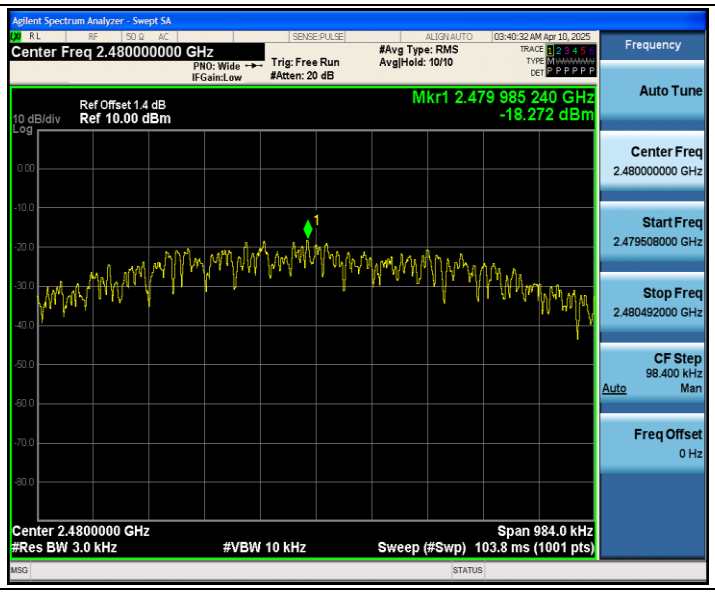
Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-17.62	≤8.00	PASS
		2440	-18.10	≤8.00	PASS
		2480	-18.27	≤8.00	PASS

Test Graphs

BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480

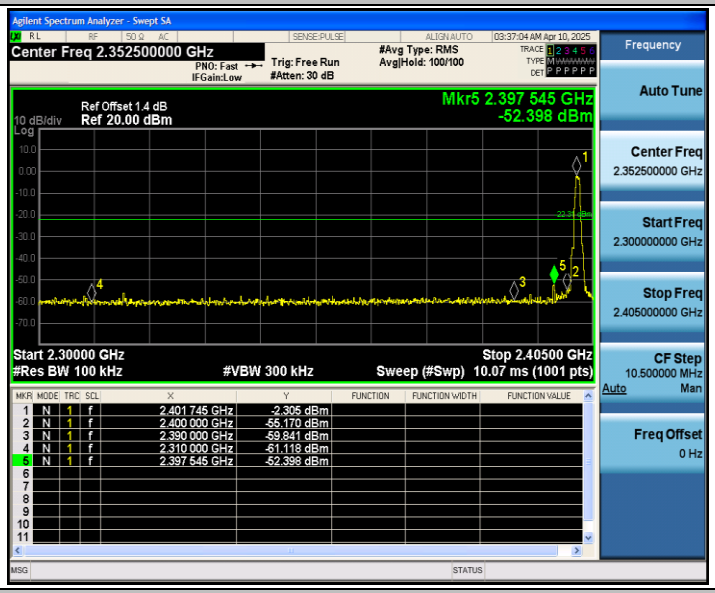
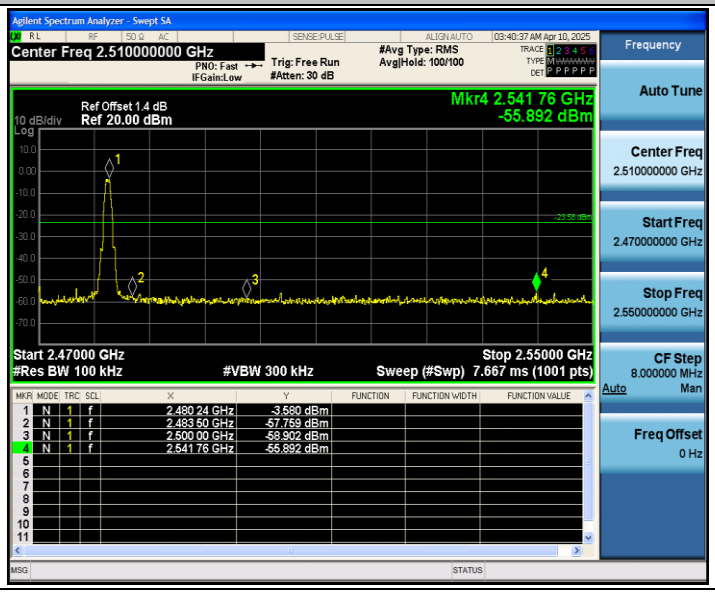

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 10/10
03:40:32 AM Apr 10, 2025
Ref Offset 1.4 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.479 985 240 GHz
-18.272 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 984.0 kHz
Sweep (#Swp) 103.8 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479508000 GHz
Stop Freq
2.480492000 GHz
CF Step
98.400 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-2.31	-52.4	≤-22.31	PASS
		High	2480	-3.58	-55.89	≤-23.58	PASS

Test Graphs

BLE_1M_Ant1_Low_2402

BLE_1M_Ant1_High_2480


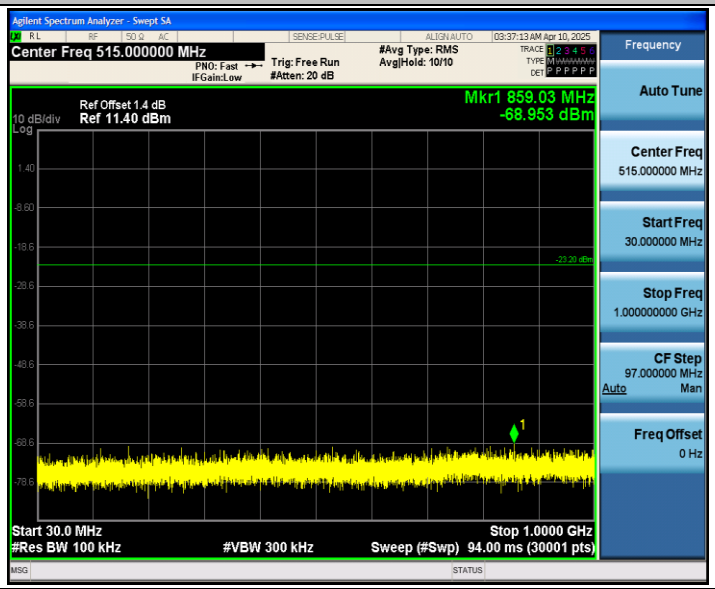
Appendix F: Conducted Spurious Emission

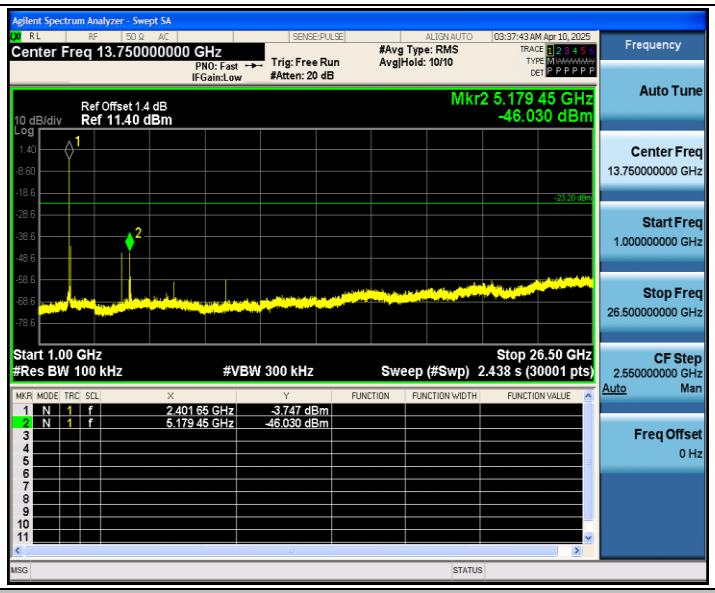
Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-3.20	-3.20	---	PASS
			30~1000	-3.20	-68.95	≤-23.2	PASS
			1000~26500	-3.20	-46.03	≤-23.2	PASS
		2440	Reference	-4.02	-4.02	---	PASS
			30~1000	-4.02	-68.88	≤-24.02	PASS
			1000~26500	-4.02	-45.52	≤-24.02	PASS
		2480	Reference	-4.03	-4.03	---	PASS
			30~1000	-4.03	-68.89	≤-24.03	PASS
			1000~26500	-4.03	-46.63	≤-24.03	PASS

Test Graphs

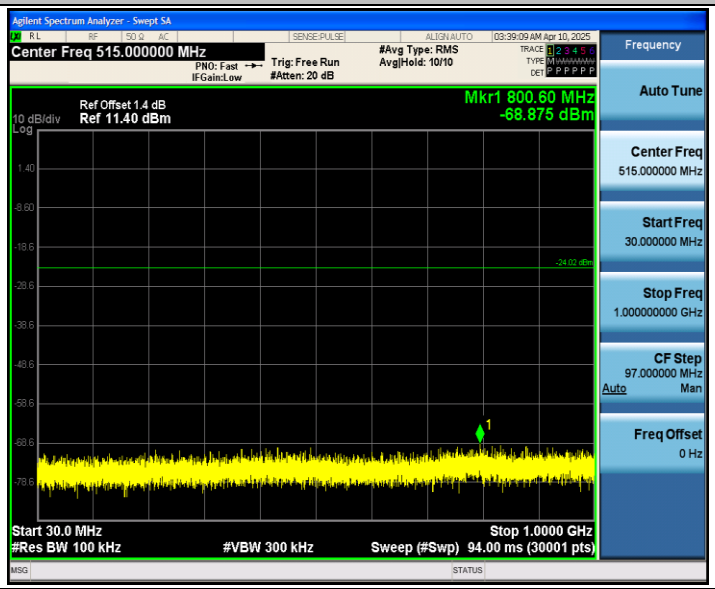
BLE_1M_Ant1_2402_0~Reference

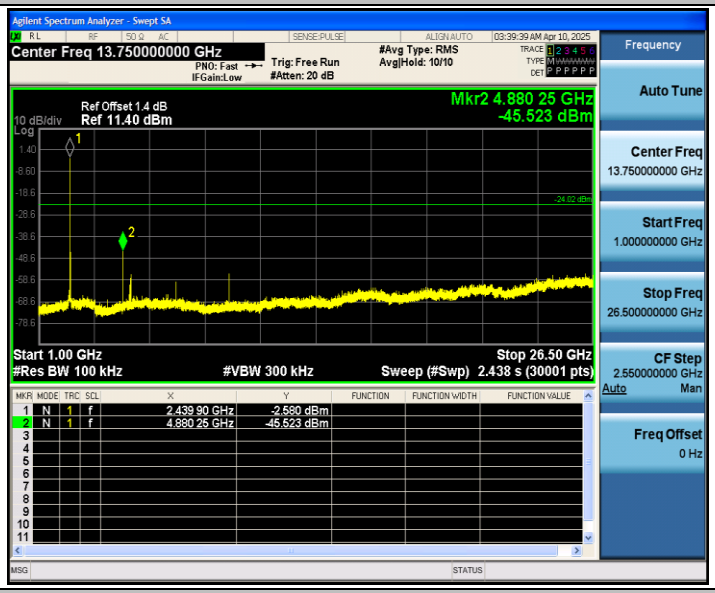
BLE_1M_Ant1_2402_30~1000

BLE_1M_Ant1_2402_1000~26500



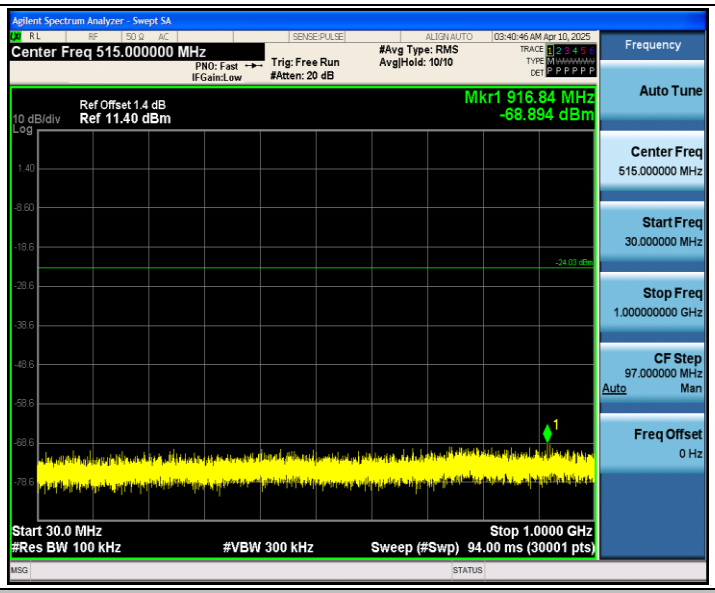
BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

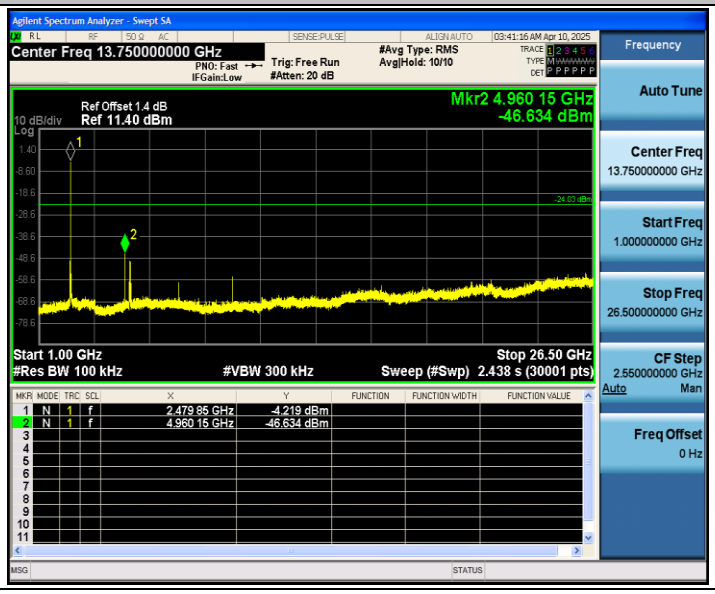


BLE_1M_Ant1_2440_1000~26500

BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

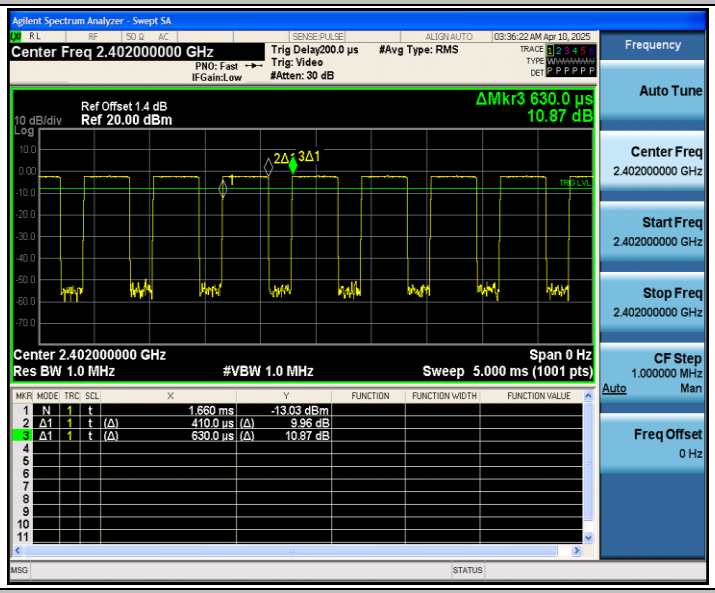
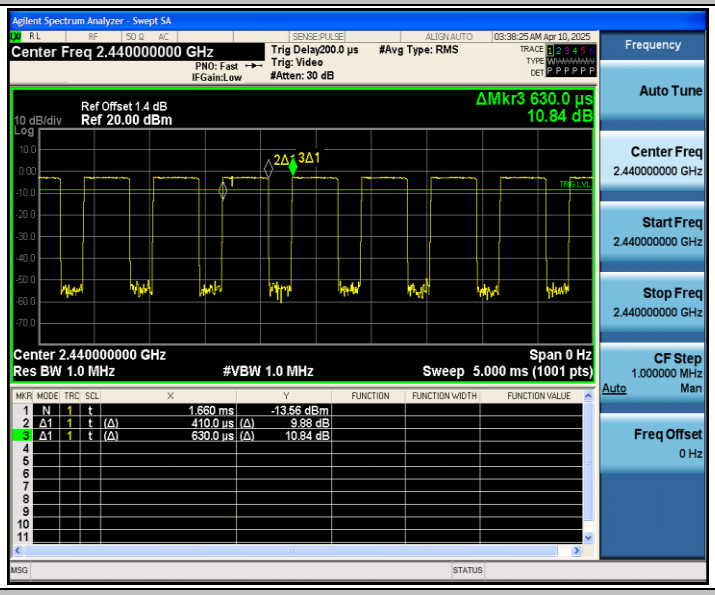


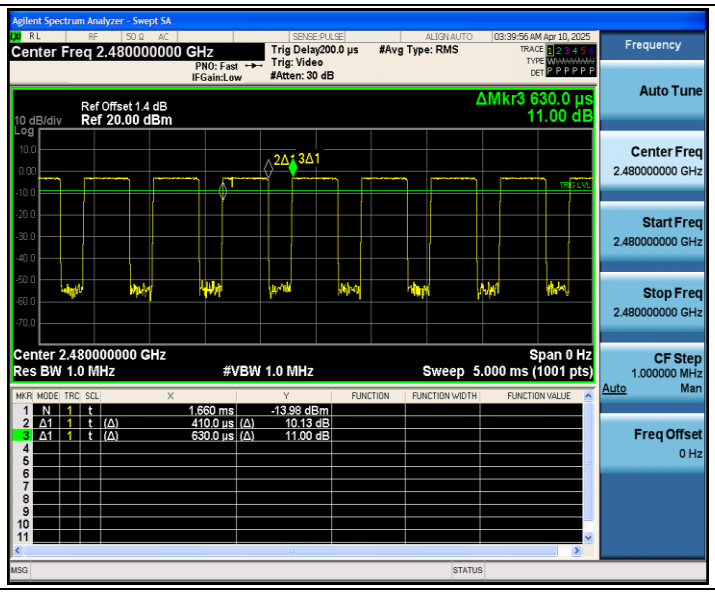
Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.41	0.63	0.6508	65.08	1.87	---	---
		2440	0.41	0.63	0.6508	65.08	1.87	---	---
		2480	0.41	0.63	0.6508	65.08	1.87	---	---

Test Graphs

BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig Delay 200.0 µs
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
03:39:56 AM Apr 10, 2025
Ref Offset 1.4 dB
10 dB/div
Ref 20.00 dBm
ΔMkr3 630.0 µs
11.00 dB
Center 2.480000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)
1 N 1 t 1.660 ms -13.98 dBm
2 Δ1 1 t (Δ) 410.0 µs (Δ) 10.13 dB
3 Δ1 1 t (Δ) 630.0 µs (Δ) 11.00 dB
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz