FCC Appendix RF Test Data for BLE

FCC ID	**:**	**2BCAH-ZW90**
Company	**:**	**Shenzhen Zhiweide Technology Co., Ltd**
EUT	**:**	**Smart watch**
Model Number	**:**	**ZW90**
Report No.	**:**	**CTA25120401401**
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	0.640	2401.696	2402.336	0.5	PASS
		2440	0.628	2439.708	2440.336	0.5	PASS
		2480	0.640	2479.696	2480.336	0.5	PASS

Test Graphs

BLE_1M_Ant1_2402
BLE_1M_Ant1_2440
BLE_1M_Ant1_2480

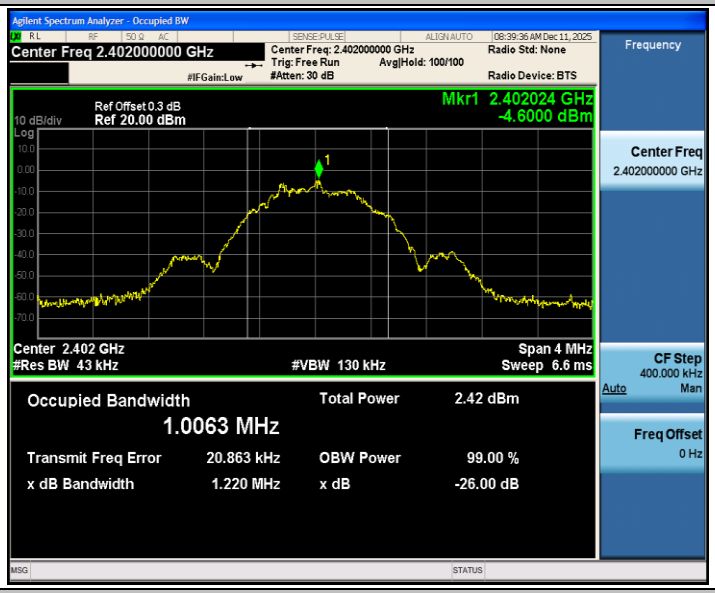
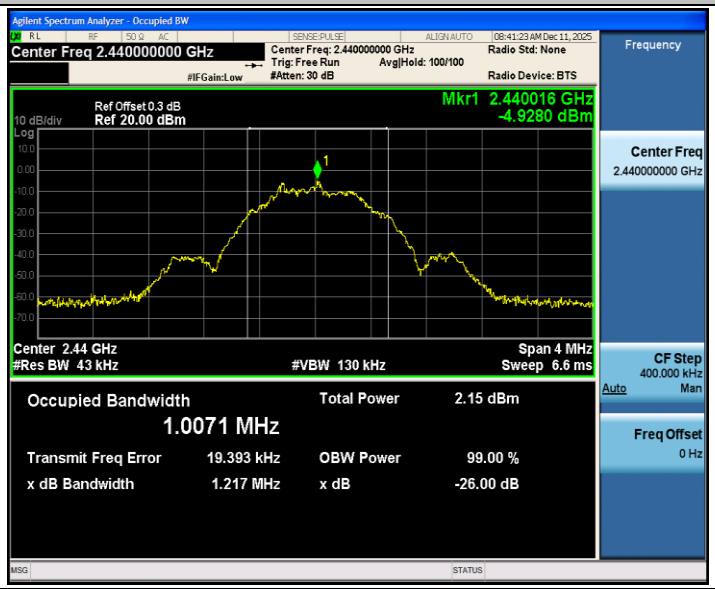
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
08:42:57 AM Dec 11, 2025
Ref Offset 0.3 dB
10 dB/div
Ref 20.00 dBm
ΔMkr3 640 kHz
-0.328 dB
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
Sweep (#Swp) 1.000 ms (1001 pts)
1 N 1 f 2.479 696 GHz -9.439 dBm
2 N 1 f 2.480 024 GHz -4.049 dBm
3 Δ1 1 f (Δ) 640 kHz (Δ) -0.328 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

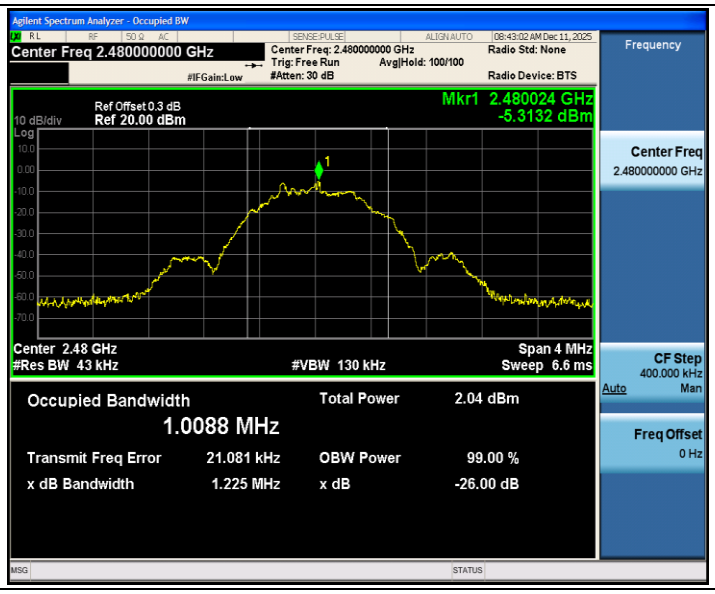
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0063	2401.5177	2402.5240	---	---
		2440	1.0071	2439.5158	2440.5229	---	---
		2480	1.0088	2479.5167	2480.5255	---	---

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 0.3 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480024 GHz
-5.3132 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 130 kHz
Span 4 MHz
Sweep 6.6 ms
Occupied Bandwidth
1.0088 MHz
Total Power 2.04 dBm
Transmit Freq Error 21.081 kHz
OBW Power 99.00 %
x dB Bandwidth 1.225 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	-3.49	≤30	PASS
		2440	-3.85	≤30	PASS
		2480	-3.87	≤30	PASS

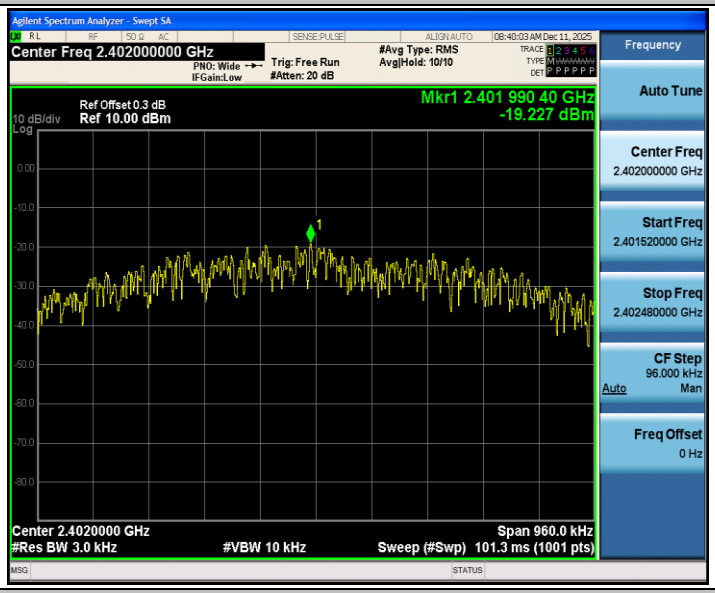
Appendix D: Maximum power spectral density

Test Result

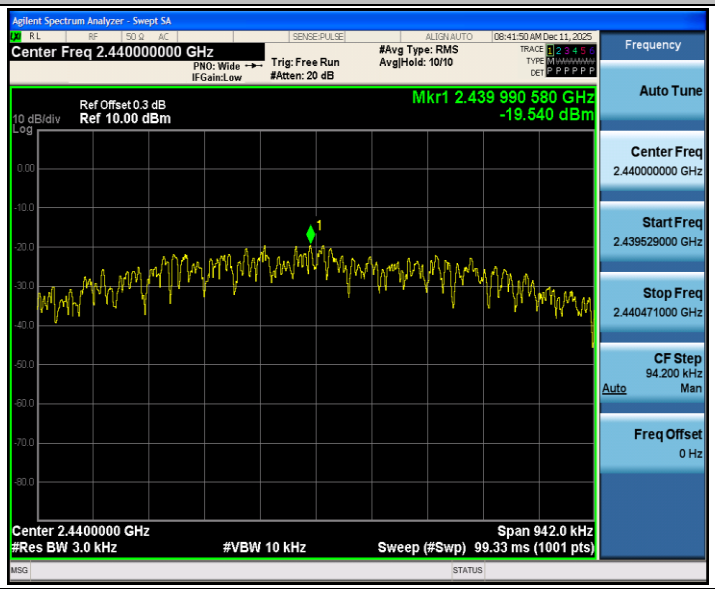
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.23	≤8.00	PASS
		2440	-19.54	≤8.00	PASS
		2480	-19.67	≤8.00	PASS

Test Graphs

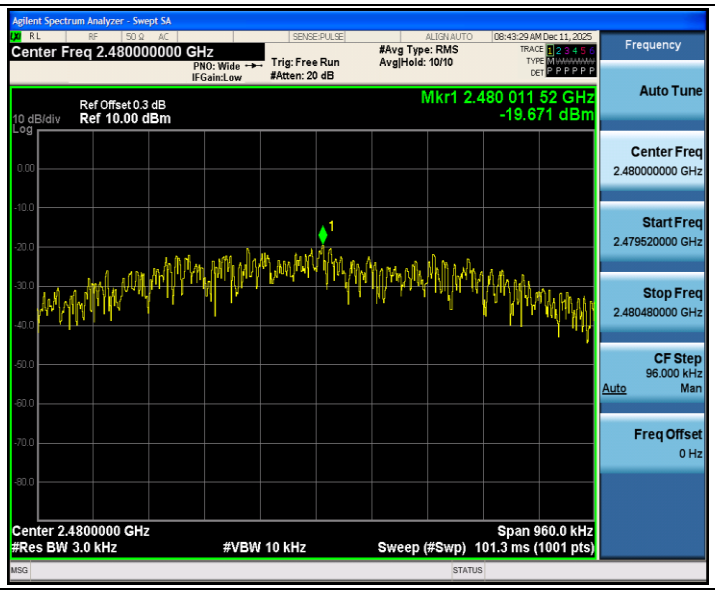
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

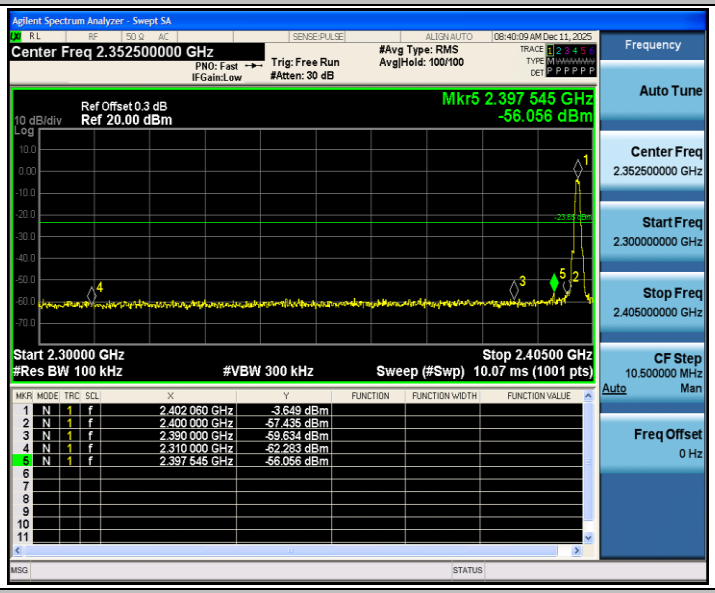
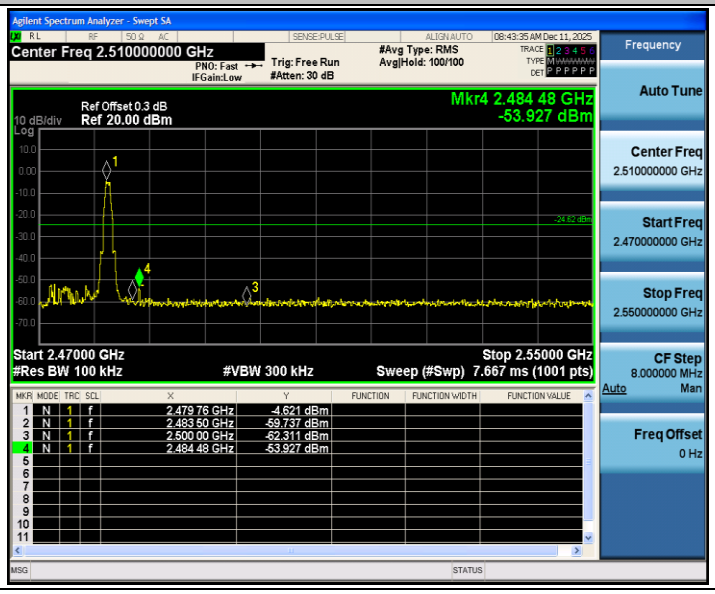

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 10/10
08:43:29 AM Dec 11, 2025
Ref Offset 0.3 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.480 011 52 GHz
-19.671 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 960.0 kHz
Sweep (#Swp) 101.3 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479520000 GHz
Stop Freq
2.480480000 GHz
CF Step
96.000 kHz
Auto
Man
Freq Offset
0 Hz

Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-3.65	-56.06	≤-23.65	PASS
		High	2480	-4.62	-53.93	≤-24.62	PASS

Test Graphs

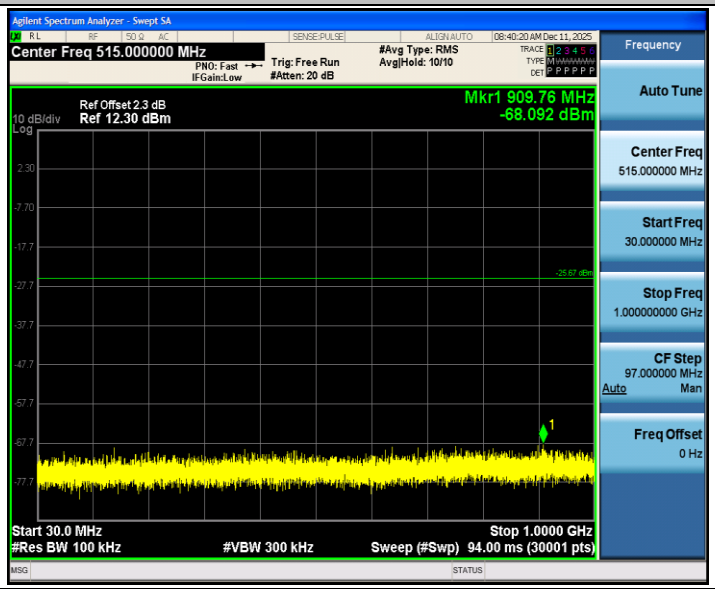
BLE_1M_Ant1_Low_2402

BLE_1M_Ant1_High_2480


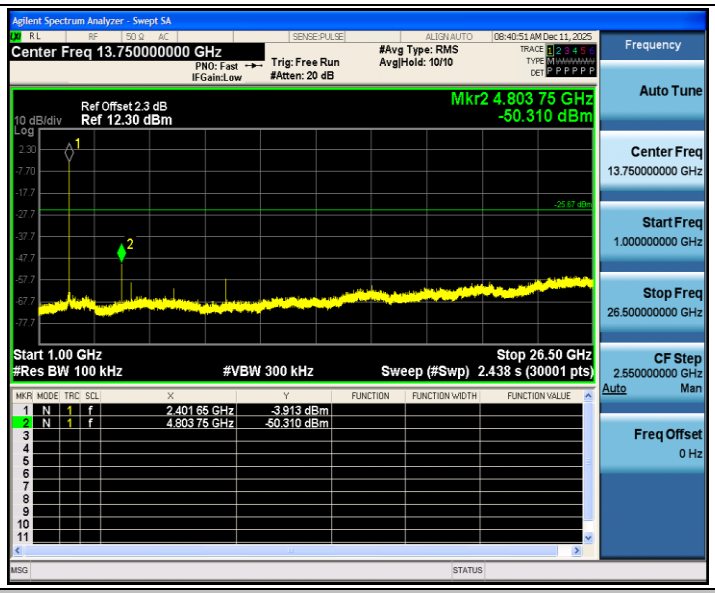
Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-5.67	-5.67	---	PASS
			30~1000	-5.67	-68.09	≤-25.67	PASS
			1000~26500	-5.67	-50.31	≤-25.67	PASS
		2440	Reference	-4.66	-4.66	---	PASS
			30~1000	-4.66	-66.74	≤-24.66	PASS
			1000~26500	-4.66	-47.29	≤-24.66	PASS
		2480	Reference	-4.87	-4.87	---	PASS
			30~1000	-4.87	-61.15	≤-24.87	PASS
			1000~26500	-4.87	-46.92	≤-24.87	PASS

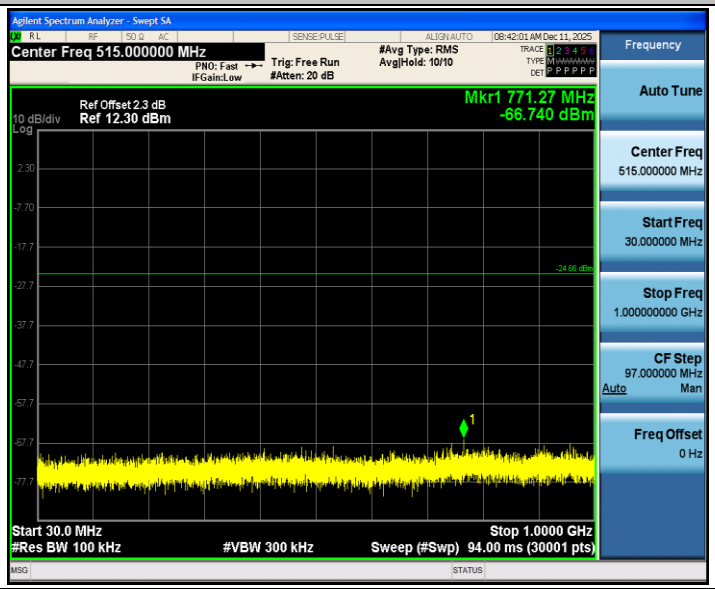
Test Graphs

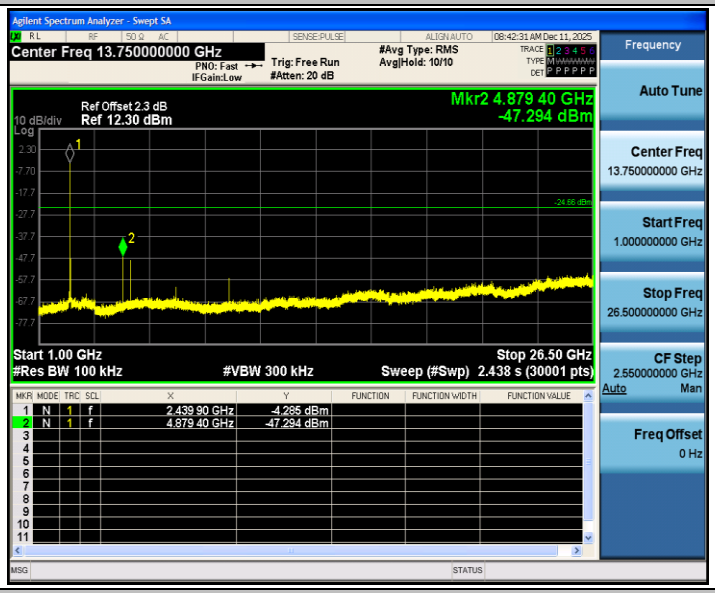
BLE_1M_Ant1_2402_0~Reference
BLE_1M_Ant1_2402_30~1000

BLE_1M_Ant1_2402_1000~26500

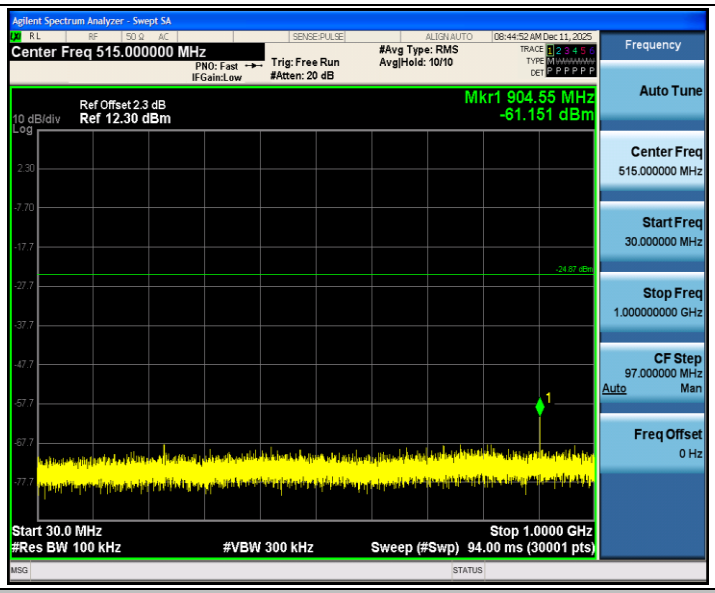


BLE_1M_Ant1_2440_0~Reference

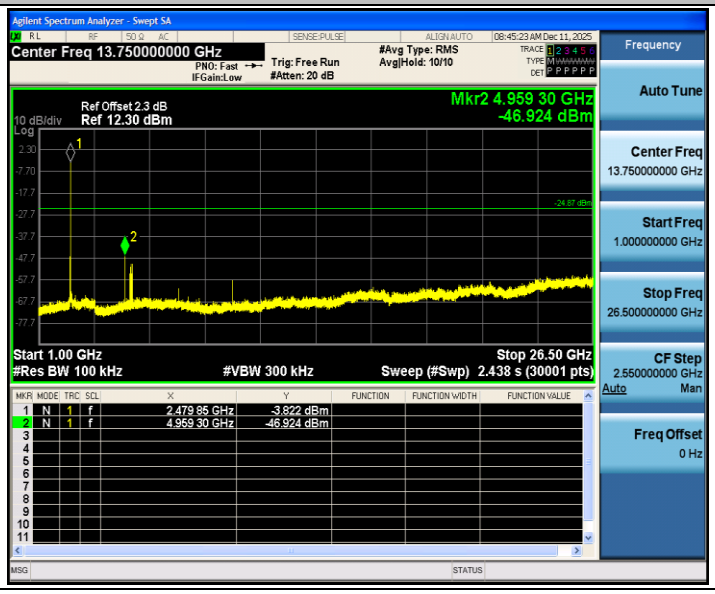
BLE_1M_Ant1_2440_30~1000



BLE_1M_Ant1_2440_1000~26500

BLE_1M_Ant1_2480_0~Reference
BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



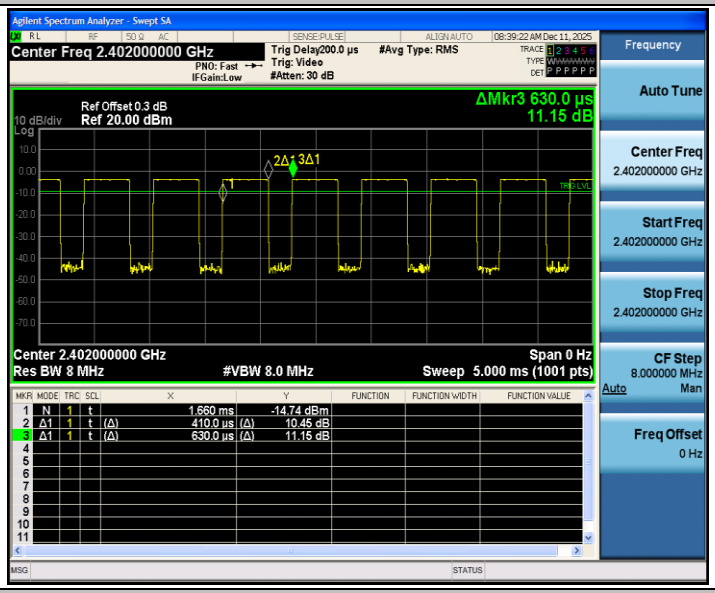
Appendix G: Duty Cycle

Test Result

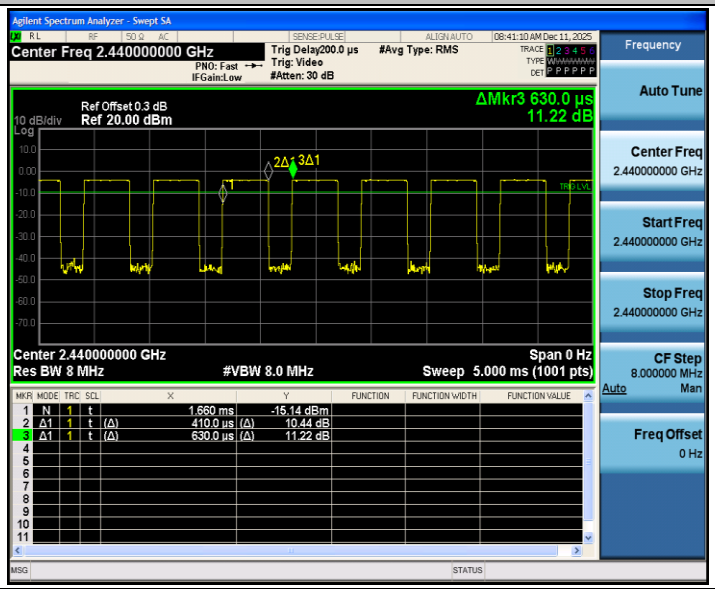
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.41	0.63	0.6508	65.08	1.87	---	---
		2440	0.41	0.63	0.6508	65.08	1.87	---	---
		2480	0.41	0.63	0.6508	65.08	1.87	---	---

Test Graphs

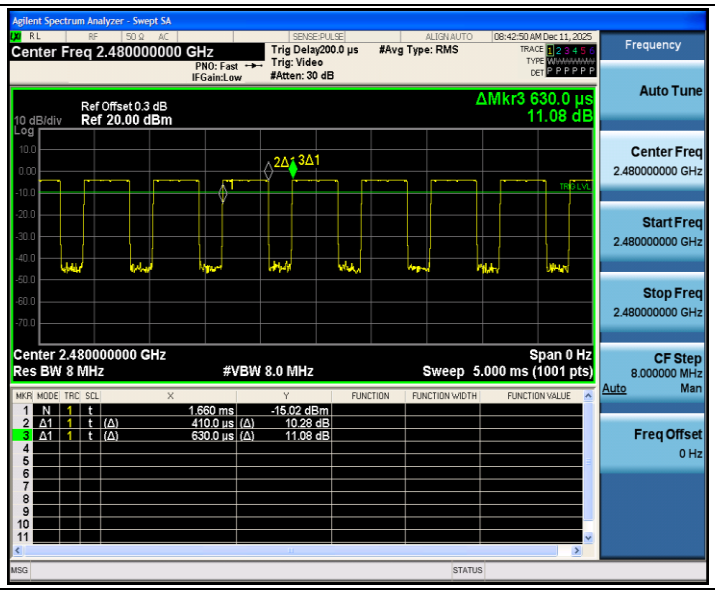
BLE_1M_Ant1_2402



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
08:42:50 AM Dec 11, 2025
Ref Offset 0.3 dB
10 dB/div
Ref 20.00 dBm
ΔMkr3 630.0 µs
11.08 dB
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)
1 N 1 t 1.660 ms -15.02 dBm
2 Δ1 1 t (Δ) 410.0 µs (Δ) 10.28 dB
3 Δ1 1 t (Δ) 630.0 µs (Δ) 11.08 dB
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