FCC Appendix RF Test Data for BLE

FCC ID	**:**	**2A5ZU-BTL306**
Company	**:**	**Shenzhen Baojia Battery Technology Co.,Ltd.**
EUT	**:**	**PLAYBULB OVAL**
Model Number	**:**	**BTL306**
Report No.	**:**	**CTA25090200301**
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	0.664	2401.648	2402.312	0.5	PASS
		2440	0.664	2439.648	2440.312	0.5	PASS
		2480	0.680	2479.640	2480.320	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
11:13:42 AM Sep 03, 2025
Ref Offset 0.7 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr3 680 kHz
0.048 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 2.479 640 GHz -2.181 dBm
2 N 1 f 2.479 984 GHz 3.810 dBm
3 Δ1 1 f (Δ) 680 kHz (Δ) 0.048 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

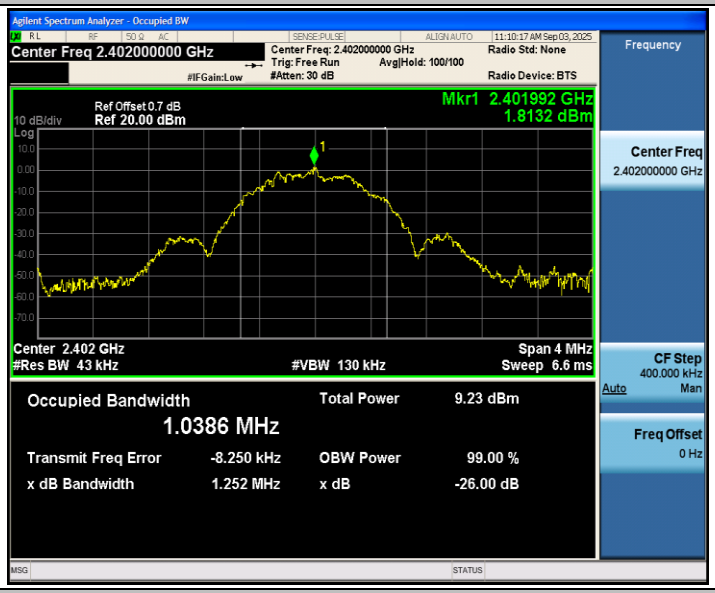
Appendix B: Occupied Channel Bandwidth

Test Result

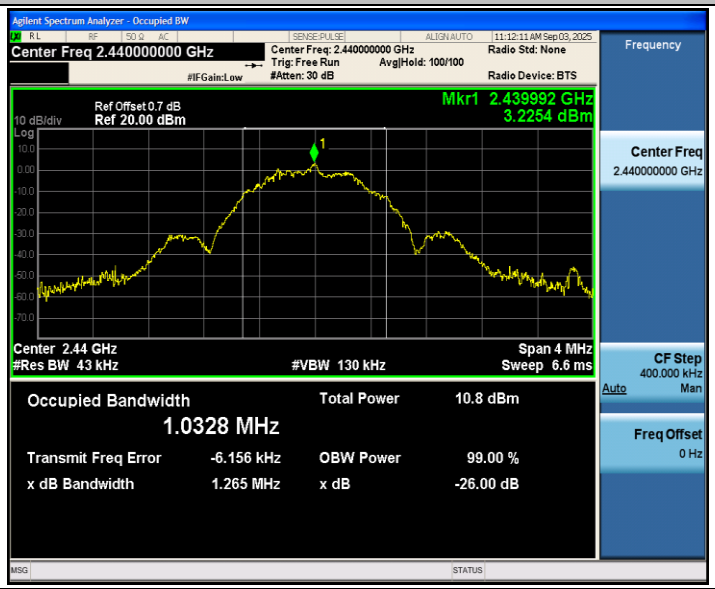
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0386	2401.4725	2402.5111	---	---
		2440	1.0328	2439.4774	2440.5102	---	---
		2480	1.0346	2479.4736	2480.5082	---	---

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
11:13:49 AM Sep 03, 2025
Frequency
Ref Offset 0.7 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.479988 GHz
2.6129 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 130 kHz
Span 4 MHz
Sweep 6.6 ms
Occupied Bandwidth
1.0346 MHz
Total Power 10.2 dBm
Transmit Freq Error -9.147 kHz
OBW Power 99.00 %
x dB Bandwidth 1.269 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

TestMode	Antenna	Freq(MHz)	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	3.10	≤30	PASS
		2440	4.50	≤30	PASS
		2480	3.97	≤30	PASS

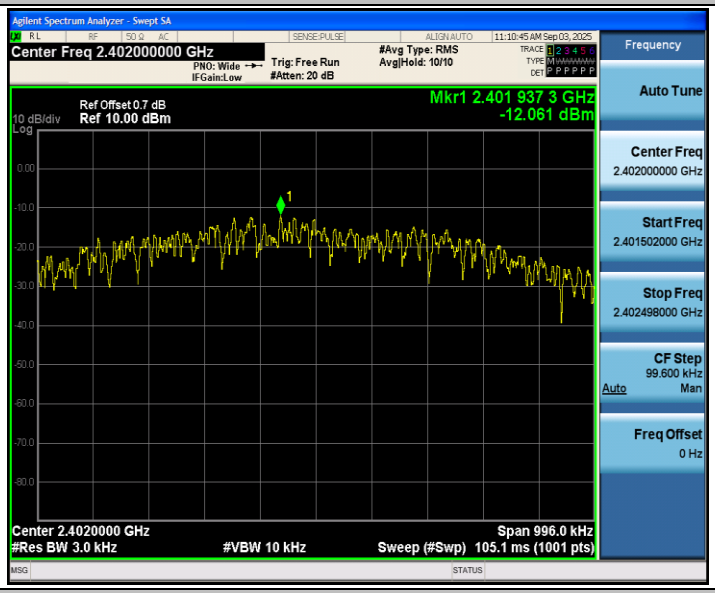
Appendix D: Maximum power spectral density

Test Result

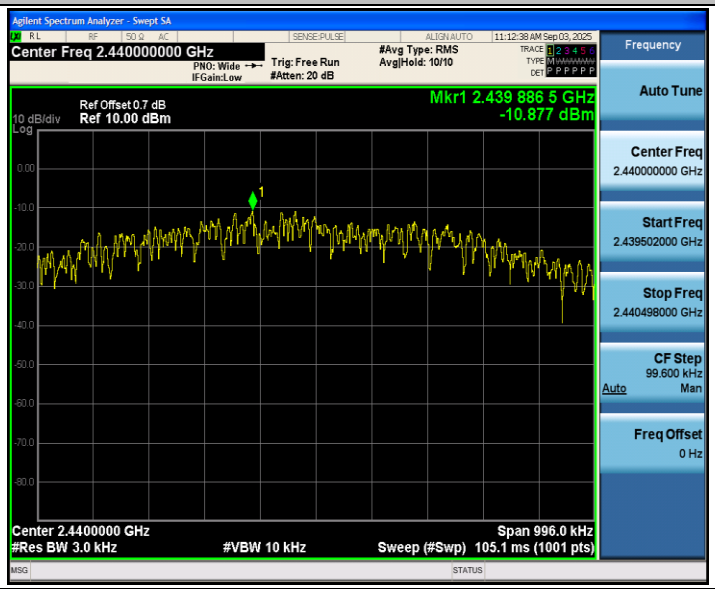
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-12.06	≤8.00	PASS
		2440	-10.88	≤8.00	PASS
		2480	-11.81	≤8.00	PASS

Test Graphs

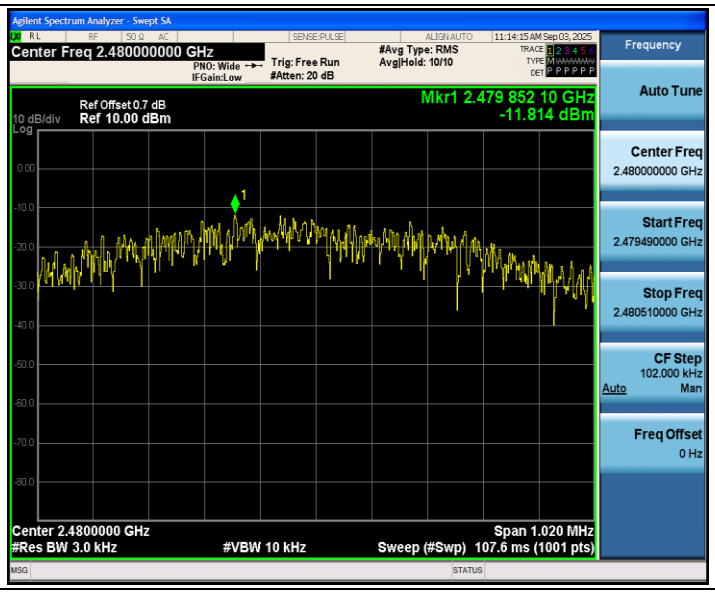
BLE_1M_Ant1_2402



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
11:14:15 AM Sep 03, 2025
Ref Offset 0.7 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.479 852 10 GHz
-11.814 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.020 MHz
Sweep (#Swp) 107.6 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479490000 GHz
Stop Freq
2.480510000 GHz
CF Step
102.000 kHz
Auto
Man
Freq Offset
0 Hz

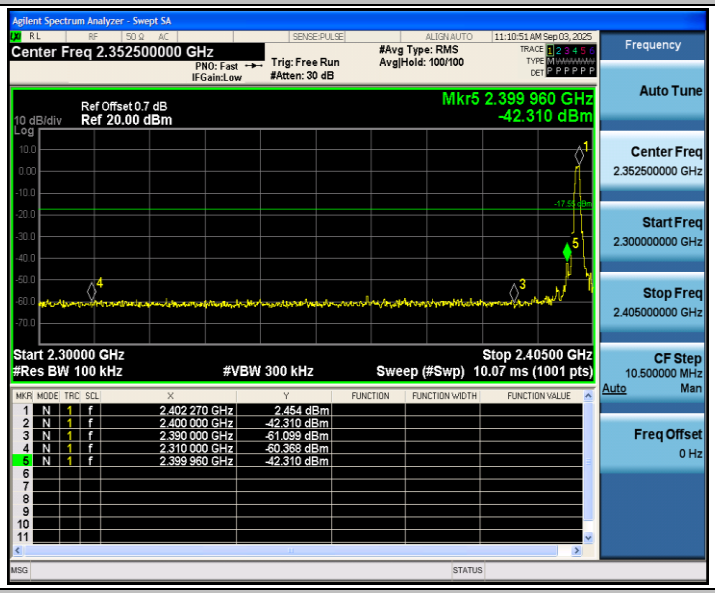
Appendix E: Band edge measurements

Test Result

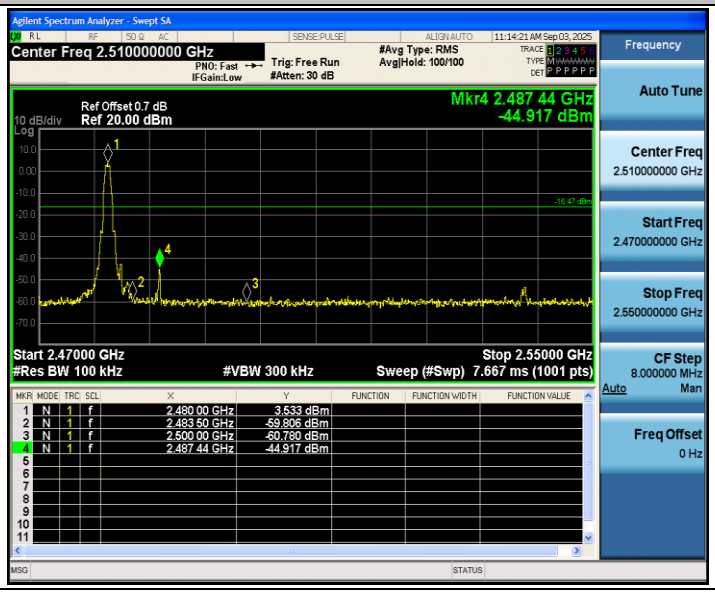
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	2.45	-42.31	≤-17.55	PASS
		High	2480	3.53	-44.92	≤-16.47	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

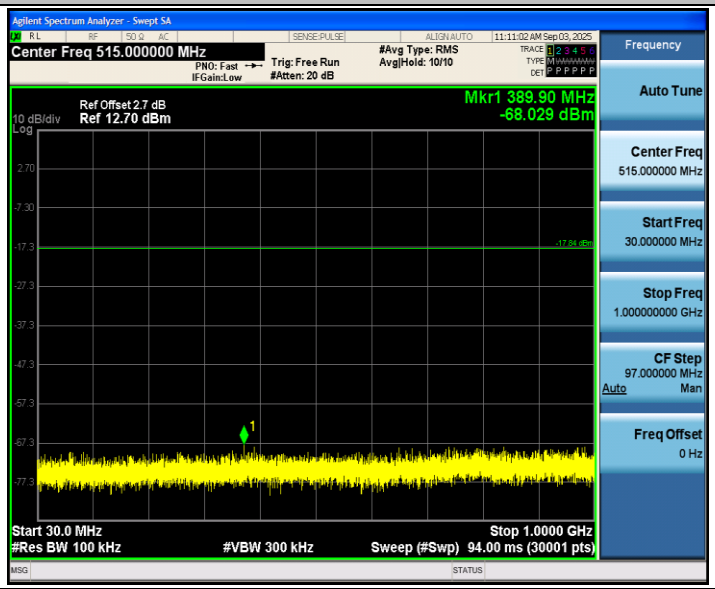
Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	2.16	2.16	---	PASS
			30~1000	2.16	-68.03	≤-17.84	PASS
			1000~26500	2.16	-54.3	≤-17.84	PASS
		2440	Reference	4.27	4.27	---	PASS
			30~1000	4.27	-65.85	≤-15.73	PASS
			1000~26500	4.27	-54.3	≤-15.73	PASS
		2480	Reference	2.95	2.95	---	PASS
			30~1000	2.95	-67.75	≤-17.05	PASS
			1000~26500	2.95	-54.41	≤-17.05	PASS

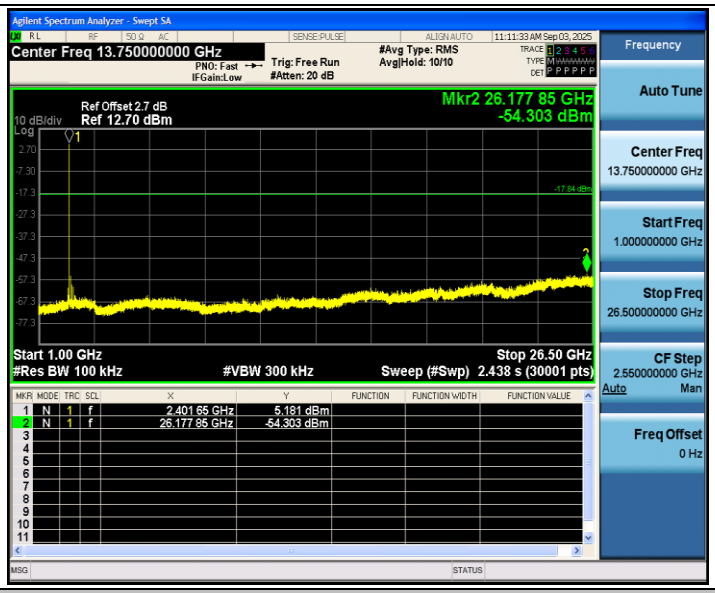
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

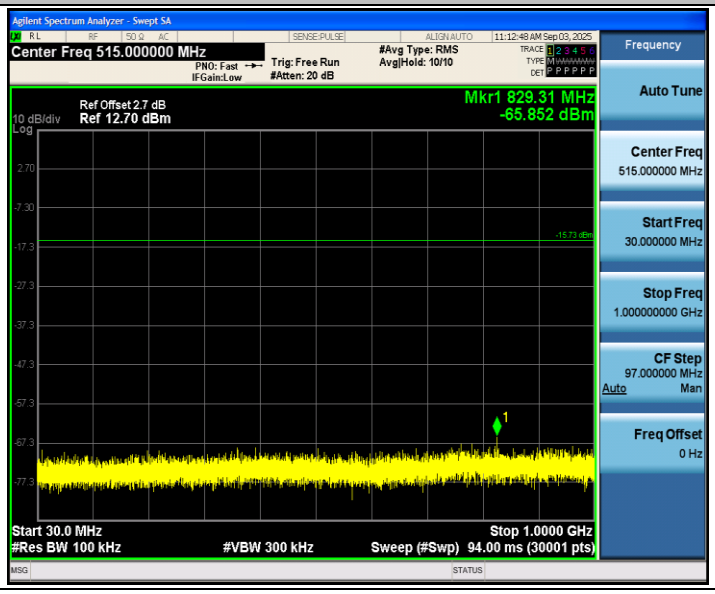


BLE_1M_Ant1_2402_1000~26500

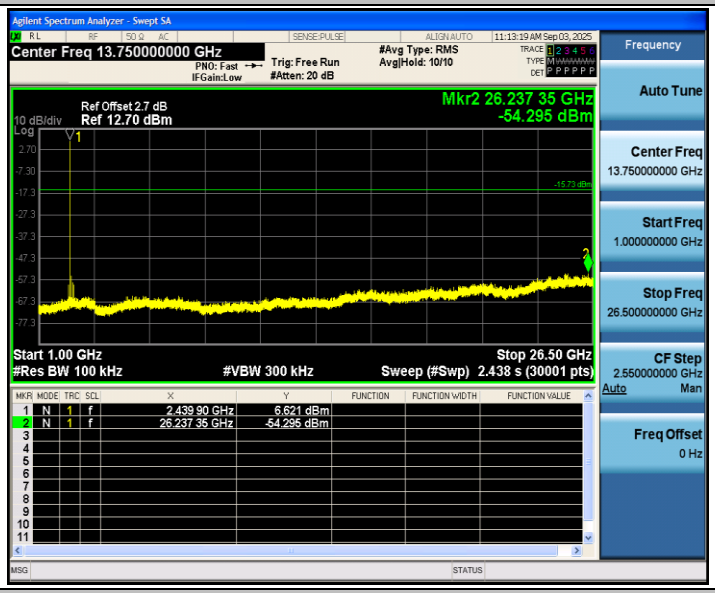


BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

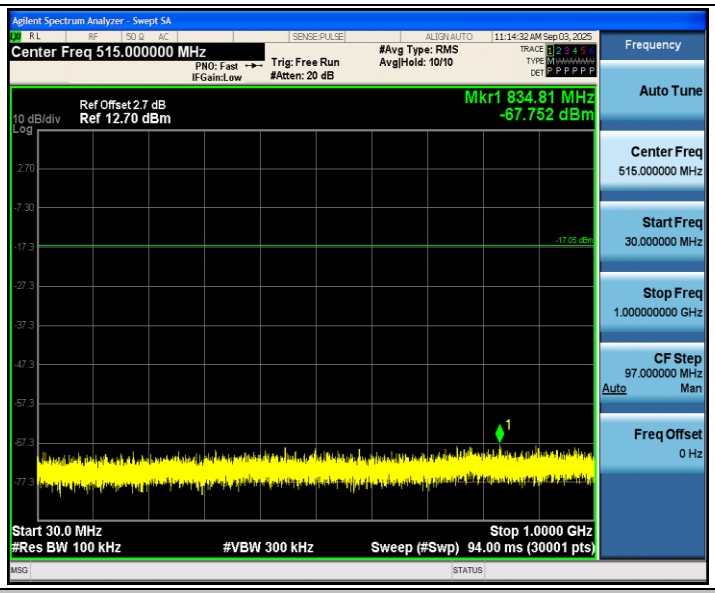


BLE_1M_Ant1_2440_1000~26500

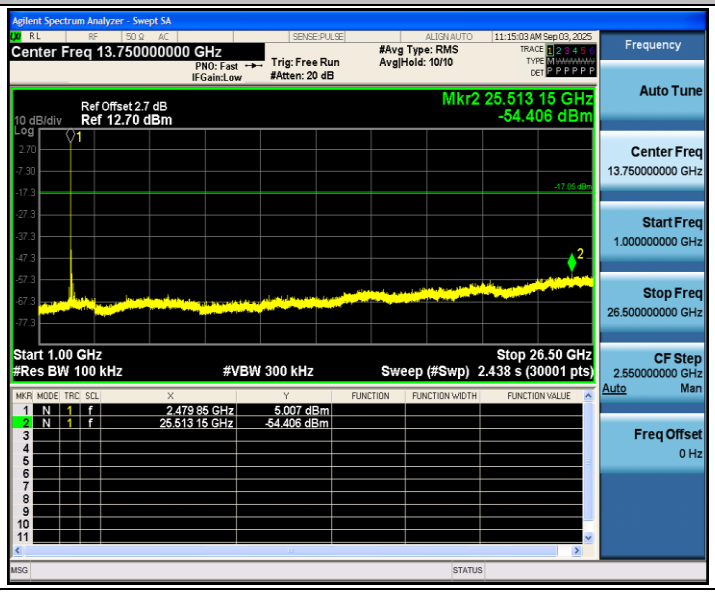


BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



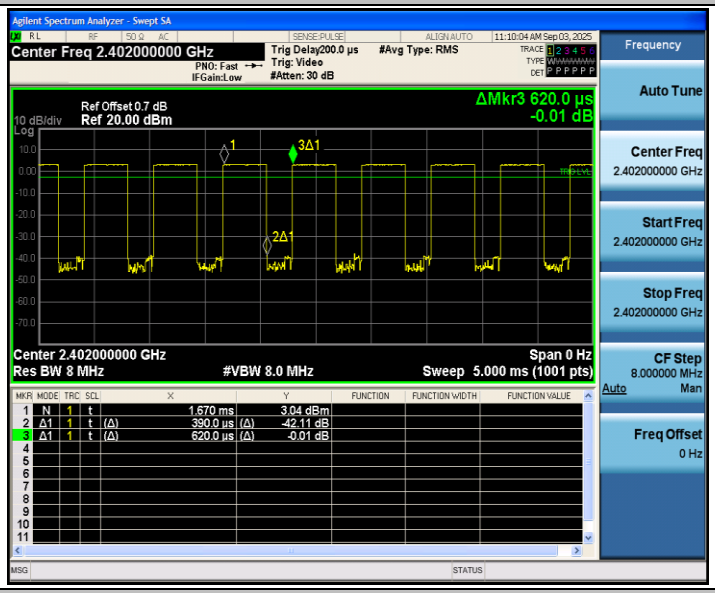
Appendix G: Duty Cycle

Test Result

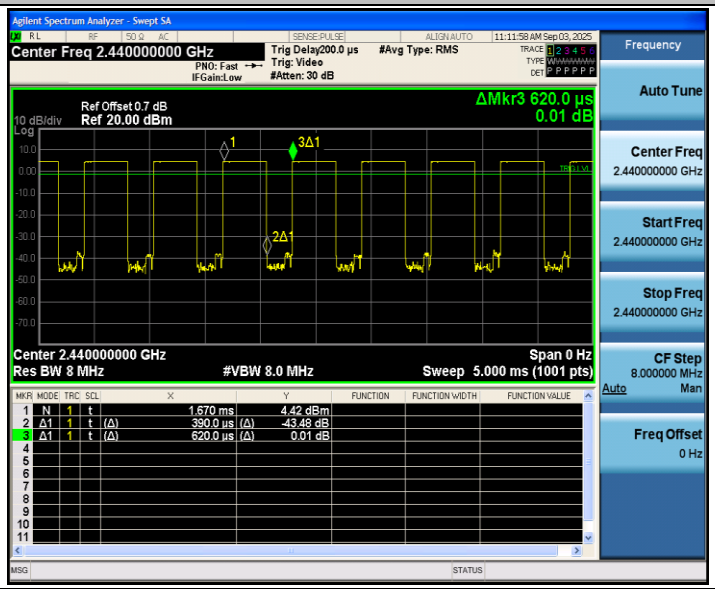
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.39	0.62	0.6290	62.90	2.01	---	---
		2440	0.39	0.62	0.6290	62.90	2.01	---	---
		2480	0.39	0.62	0.6290	62.90	2.01	---	---

Test Graphs

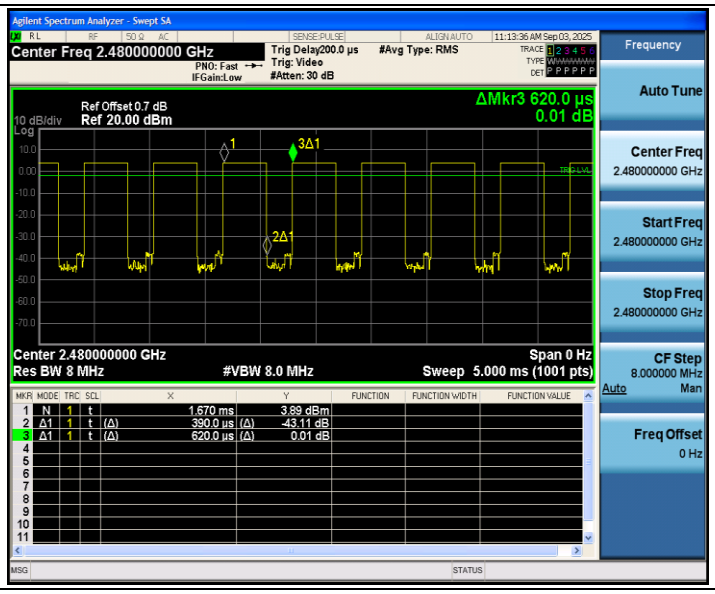
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
Trig Delay200.0 µs
#Avg Type: RMS
Trig: Video
PNO: Fast
IFGain:Low
#Atten: 30 dB
11:13:36 AM Sep 03, 2025
Ref Offset 0.7 dB
10 dB/div
Ref 20.00 dBm
Log
ΔMkr3 620.0 µs
0.01 dB
Center 2.480000000 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8.0 MHz
Sweep 5.000 ms (1001 pts)
1 N 1 t 1.670 ms 3.89 dBm
2 Δ1 1 t (Δ) 390.0 µs (Δ) -43.11 dB
3 Δ1 1 t (Δ) 620.0 µs (Δ) 0.01 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