

FCC Appendix RF Test Data for BLE

FCC ID : 2AZW2-MP50MPRO

Company : Beijing Supvan Information Technology Co., Ltd.

EUT : Label Printer

Model Number : MP50M Pro

Report No. : CTA26041603701

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	2401.692	2402.340	0.5	PASS
		2440	0.652	2439.688	2440.340	0.5	PASS
		2480	0.676	2479.676	2480.352	0.5	PASS

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.402000000 GHz

Ref Offset 0.5 dB
Ref 30.00 dBm

Trig: Free Run
#Atten: 40 dB

#Avg Type: RMS
Avg/Hold: 100/100

Span 4.000 MHz
Sweep 1.000 ms (1001 pts)

ΔMkr3 648 kHz
0.204 dB

10 dB/div
Log

Center 2.402000 GHz
#Res BW 100 kHz
#VBW 300 kHz

MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401692 GHz	-5.800 dBm			
2	N	1	f	2.402032 GHz	-0.035 dBm			
3	Δ	1	f (Δ)	648 kHz (Δ)	0.204 dB			

Frequency

Auto Tune

Center Freq
2.402000000 GHz

Start Freq
2.400000000 GHz

Stop Freq
2.404000000 GHz

CF Step
400.000 kHz
Man

Freq Offset
0 Hz

BLE_1M_Ant1_2402

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.440000000 GHz

Ref Offset 0.5 dB
Ref 30.00 dBm

Trig: Free Run
#Atten: 40 dB

#Avg Type: RMS
Avg/Hold: 100/100

Span 4.000 MHz
Sweep 1.000 ms (1001 pts)

ΔMkr3 652 kHz
0.157 dB

10 dB/div
Log

Center 2.440000 GHz
#Res BW 100 kHz
#VBW 300 kHz

MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.439688 GHz	-0.037 dBm			
2	N	1	f	2.440032 GHz	-0.161 dBm			
3	Δ	1	f (Δ)	652 kHz (Δ)	0.157 dB			

Frequency

Auto Tune

Center Freq
2.440000000 GHz

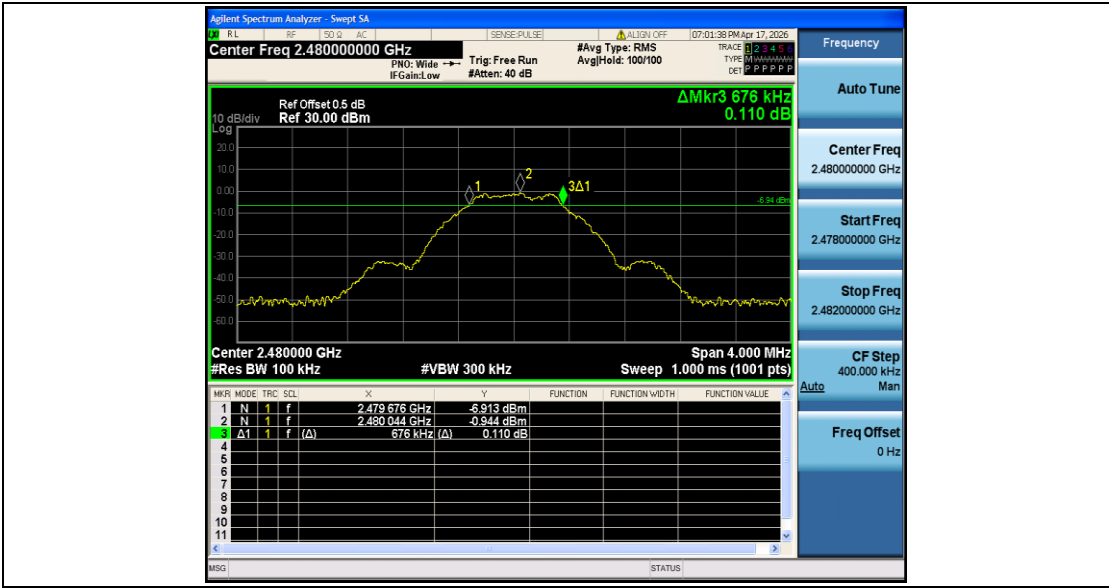
Start Freq
2.438000000 GHz

Stop Freq
2.442000000 GHz

CF Step
400.000 kHz
Man

Freq Offset
0 Hz

BLE_1M_Ant1_2440

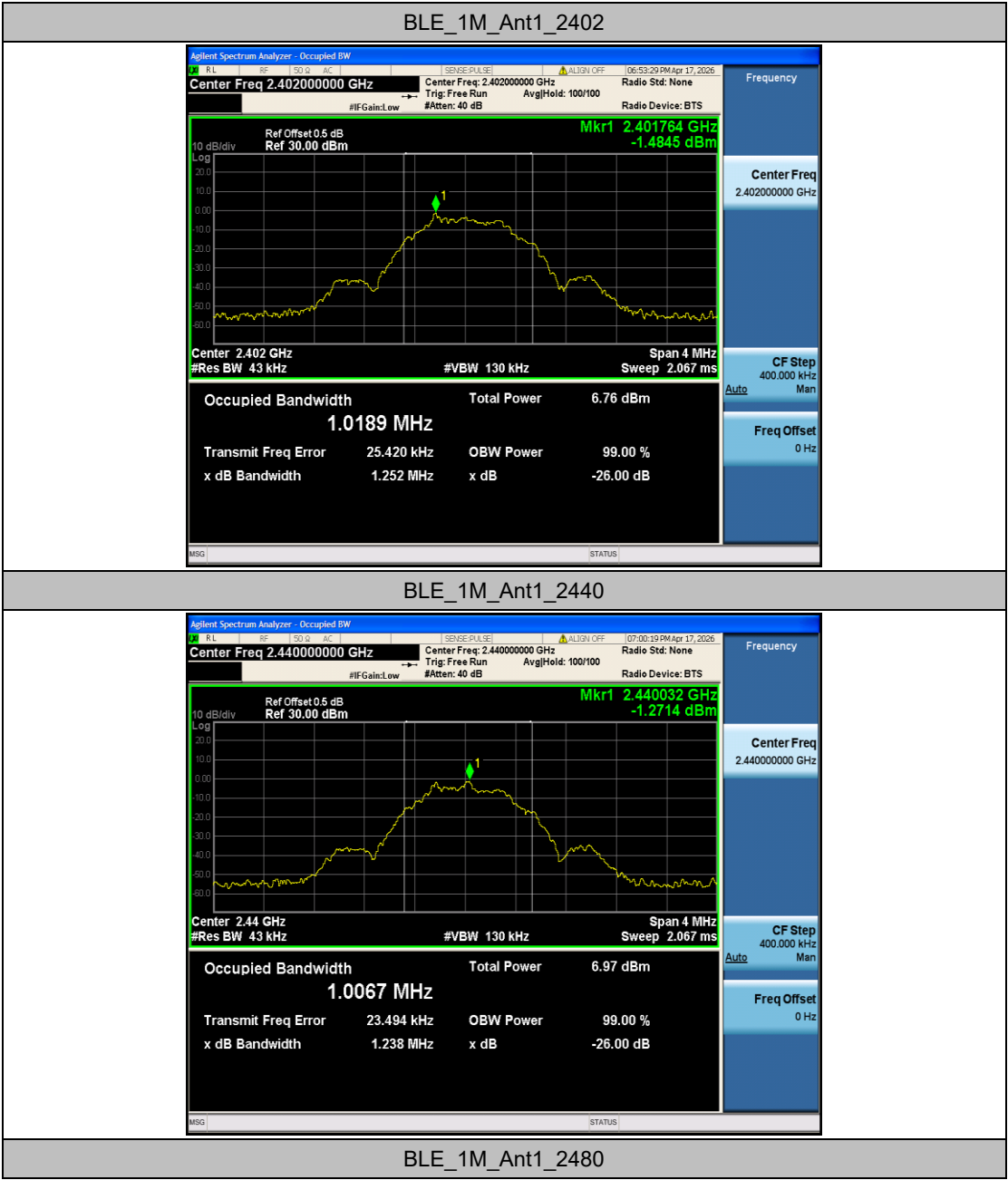


Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0189	2401.5160	2402.5349	---	---
		2440	1.0067	2439.5201	2440.5268	---	---
		2480	1.0075	2479.5209	2480.5284	---	---

Test Graphs





Appendix C: Maximum conducted output power

Test Result Peak

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.42	≤30	PASS
		2440	0.14	≤30	PASS
		2480	0.19	≤30	PASS

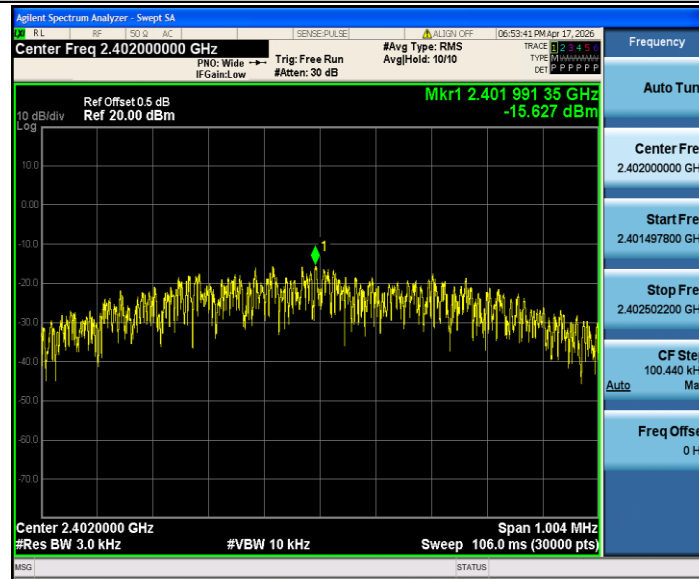
Appendix D: Maximum power spectral density

Test Result

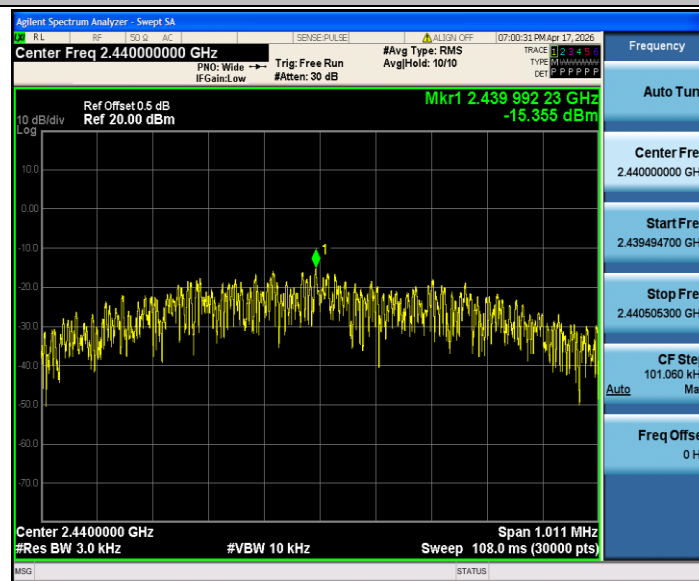
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.63	≤8.00	PASS
		2440	-15.36	≤8.00	PASS
		2480	-15.41	≤8.00	PASS

Test Graphs

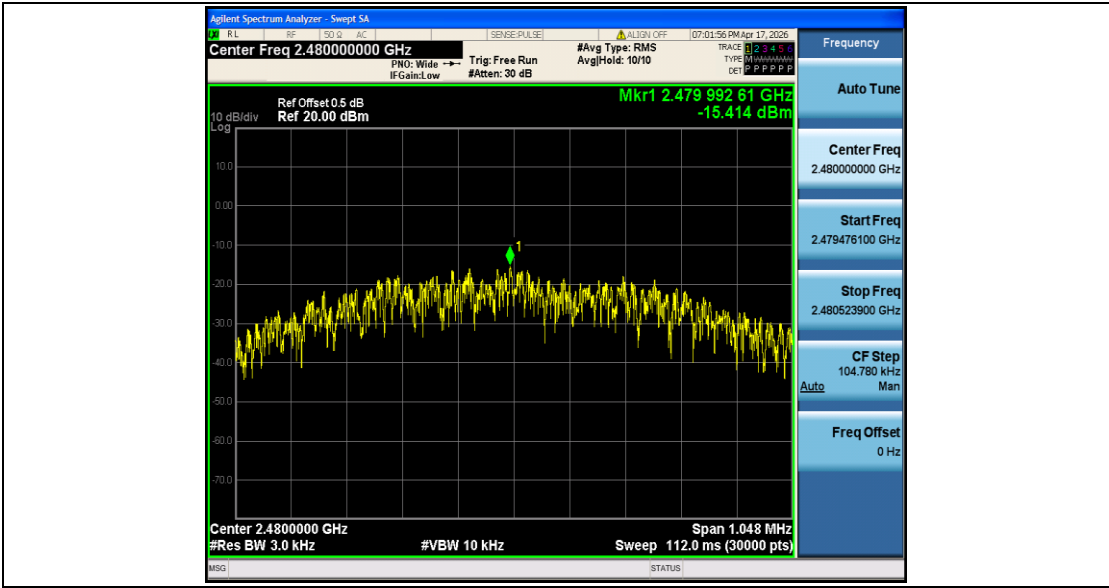
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

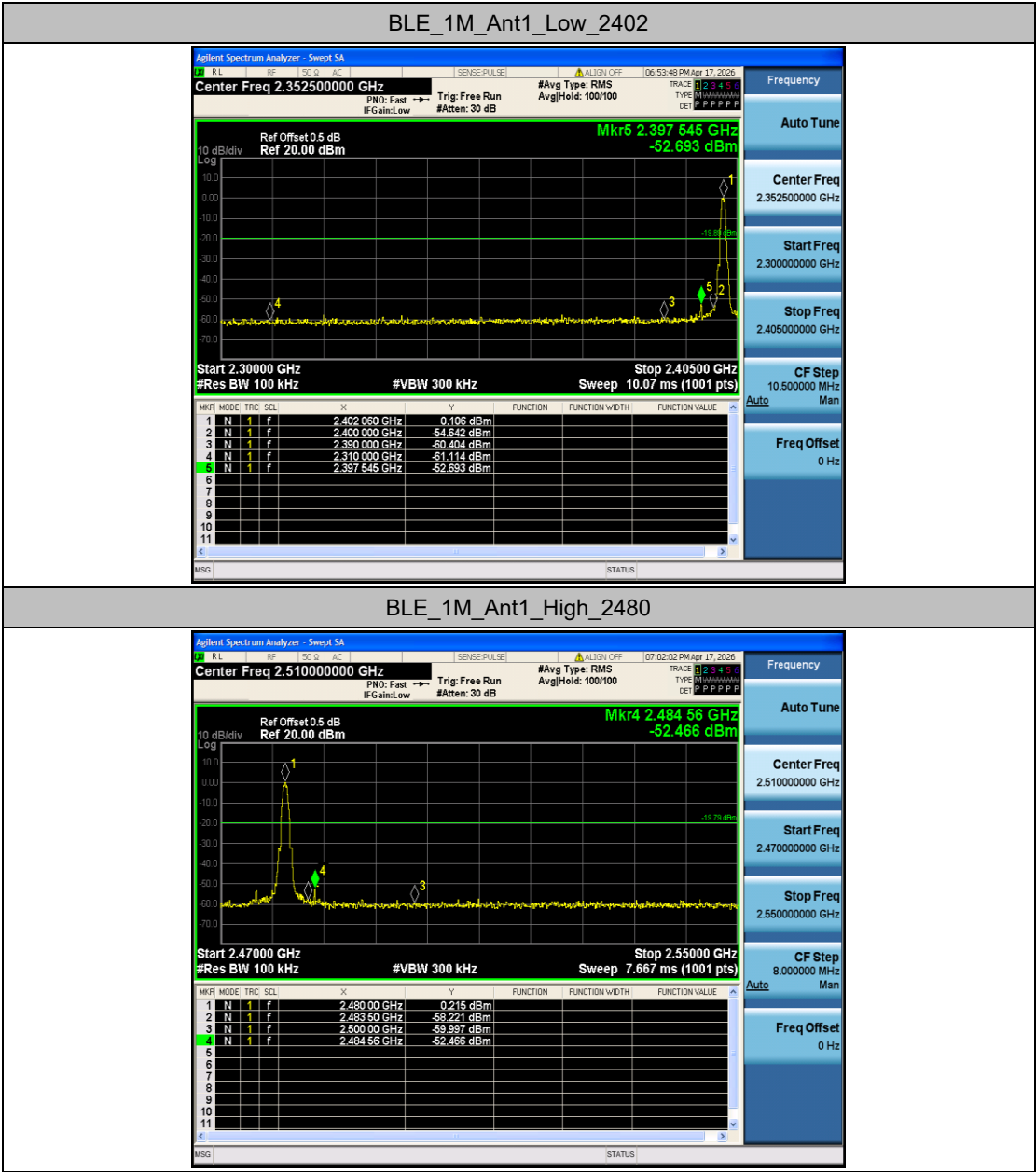


Appendix E: Band edge measurements

Test Result

TestMode	Antenna	Channel	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.11	-52.69	≤-19.89	PASS
		High	2480	0.22	-52.47	≤-19.79	PASS

Test Graphs

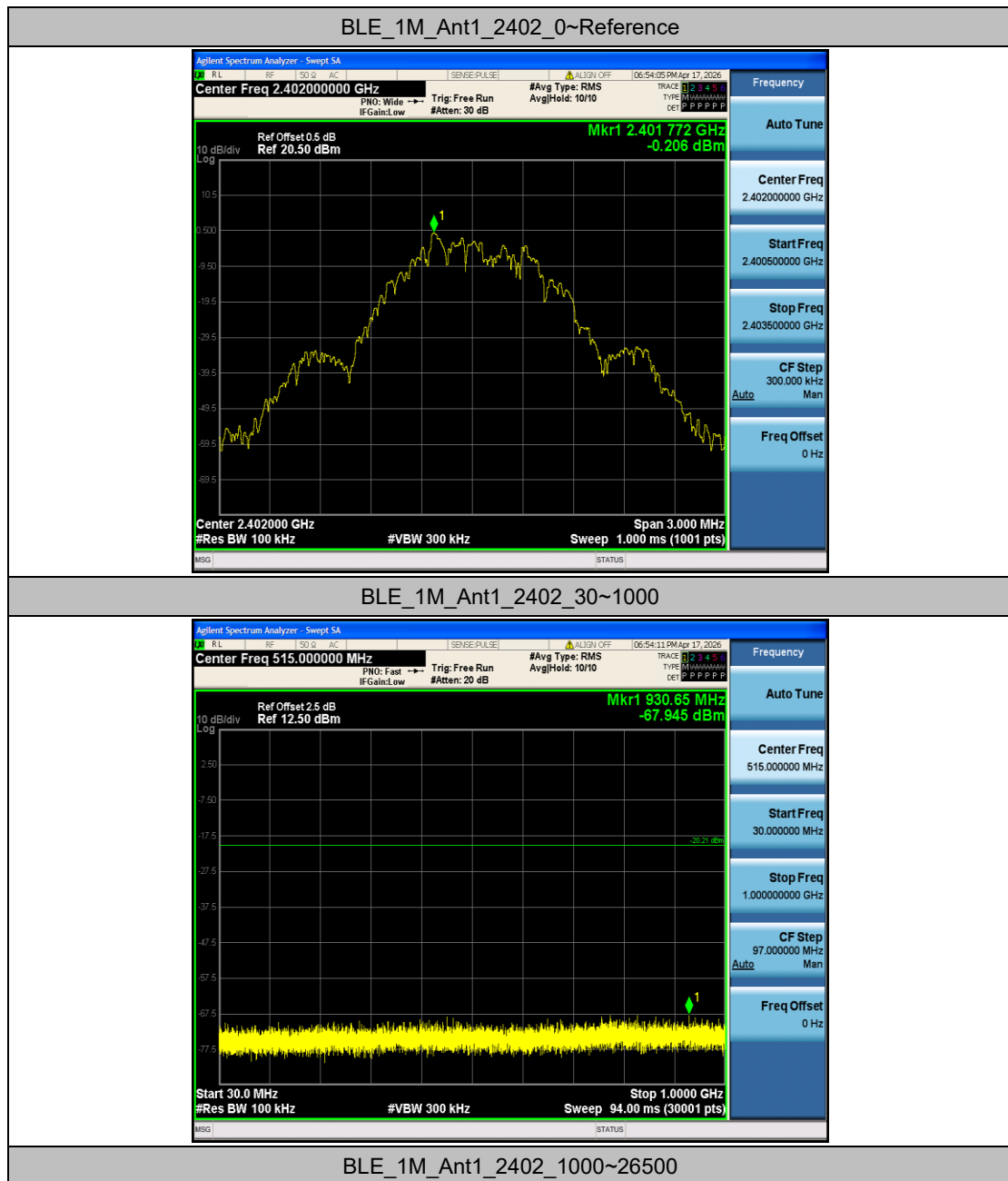


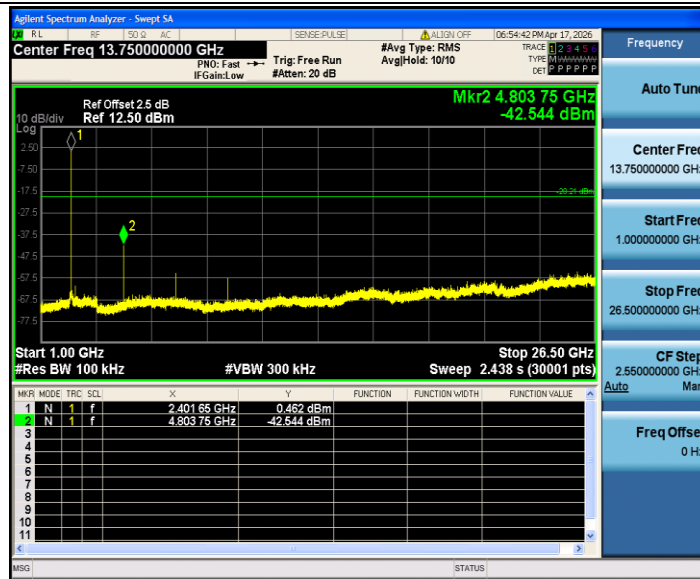
Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.21	-0.21	---	PASS
			30~1000	-0.21	-67.95	≤-20.21	PASS
			1000~26500	-0.21	-42.54	≤-20.21	PASS
		2440	Reference	-1.21	-1.21	---	PASS
			30~1000	-1.21	-67.92	≤-21.21	PASS
			1000~26500	-1.21	-43.94	≤-21.21	PASS
		2480	Reference	-1.12	-1.12	---	PASS
			30~1000	-1.12	-68.15	≤-21.12	PASS
			1000~26500	-1.12	-43.89	≤-21.12	PASS

Test Graphs

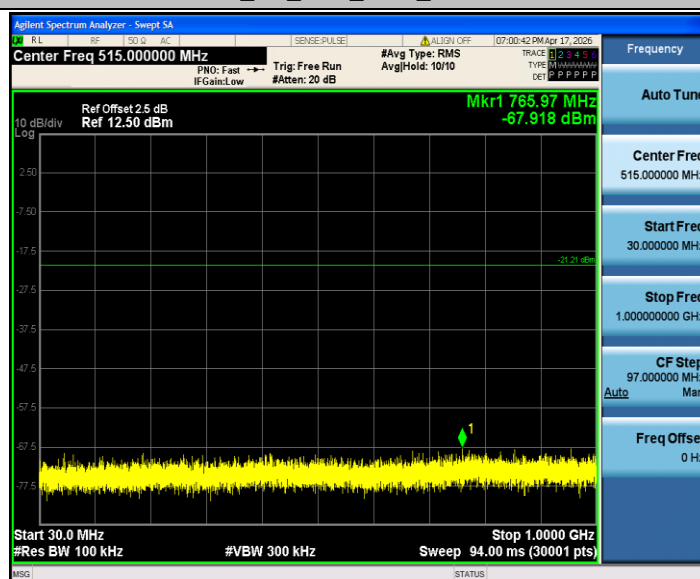




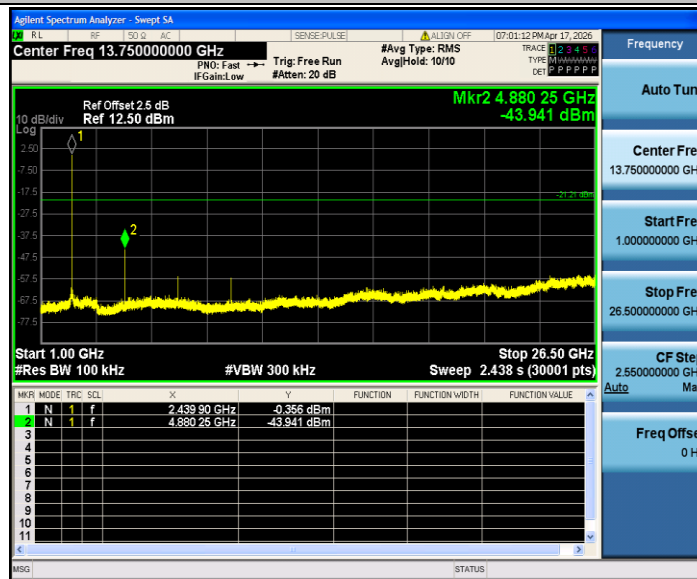
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



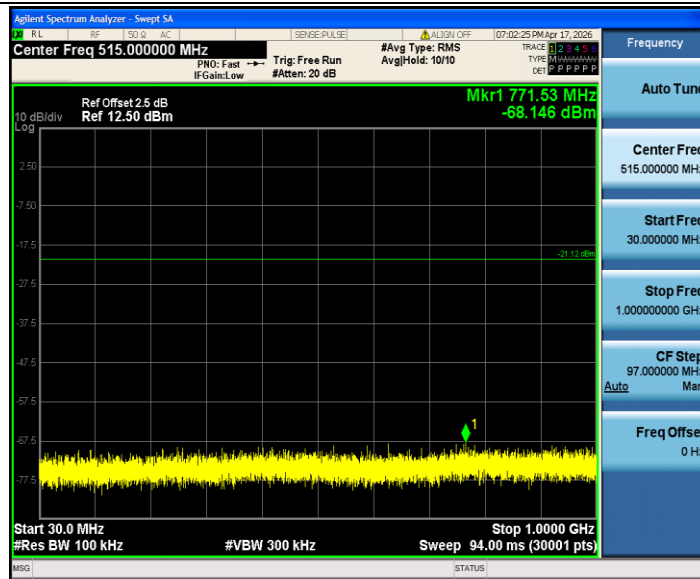
BLE_1M_Ant1_2440_1000~26500



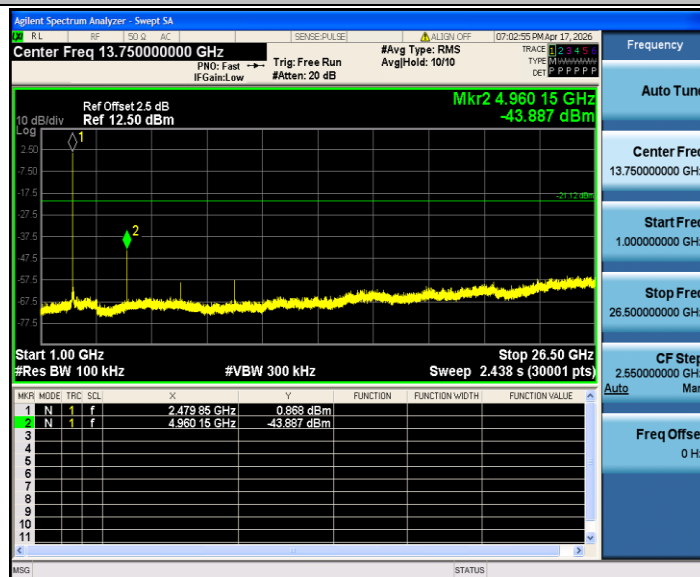
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

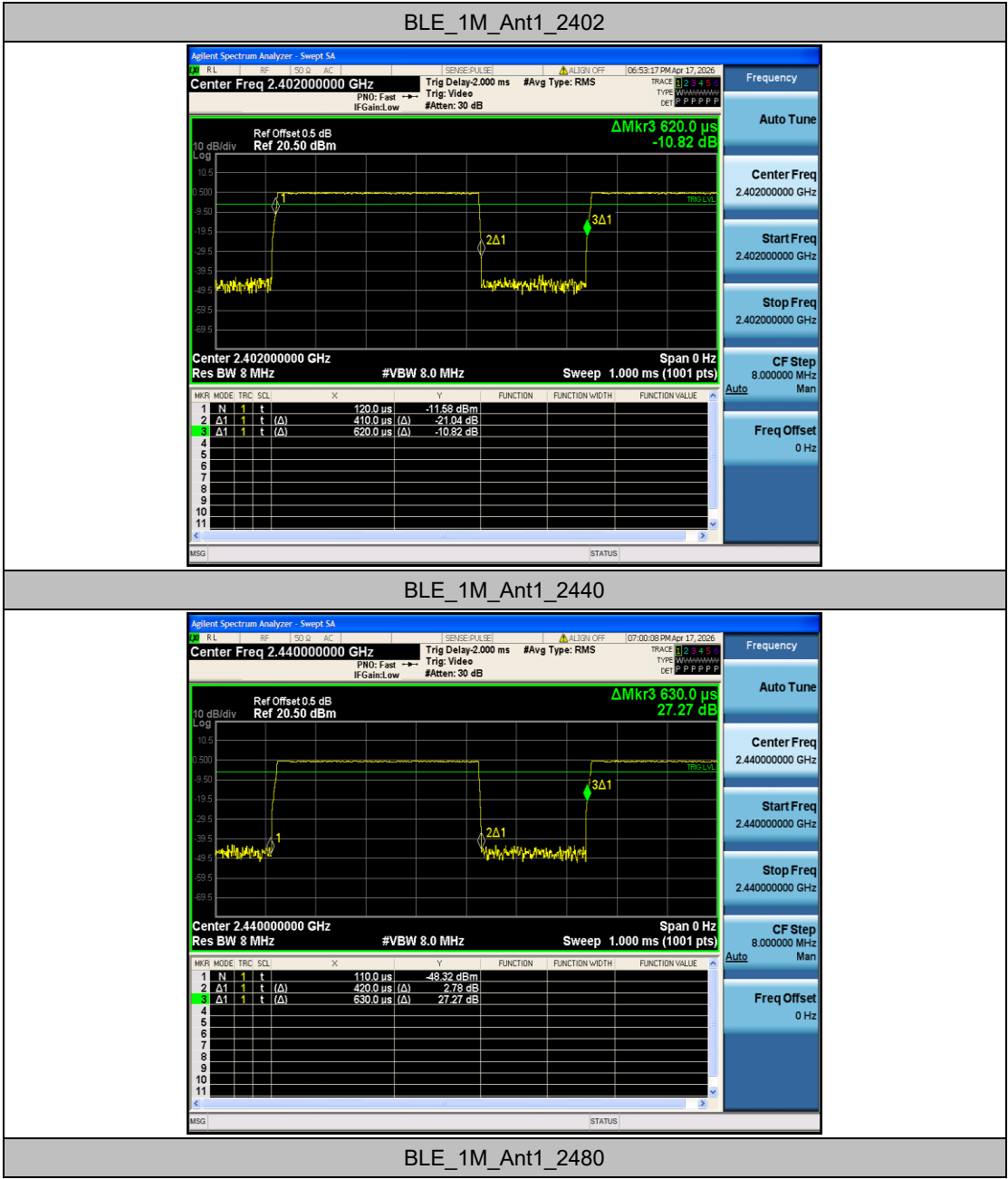


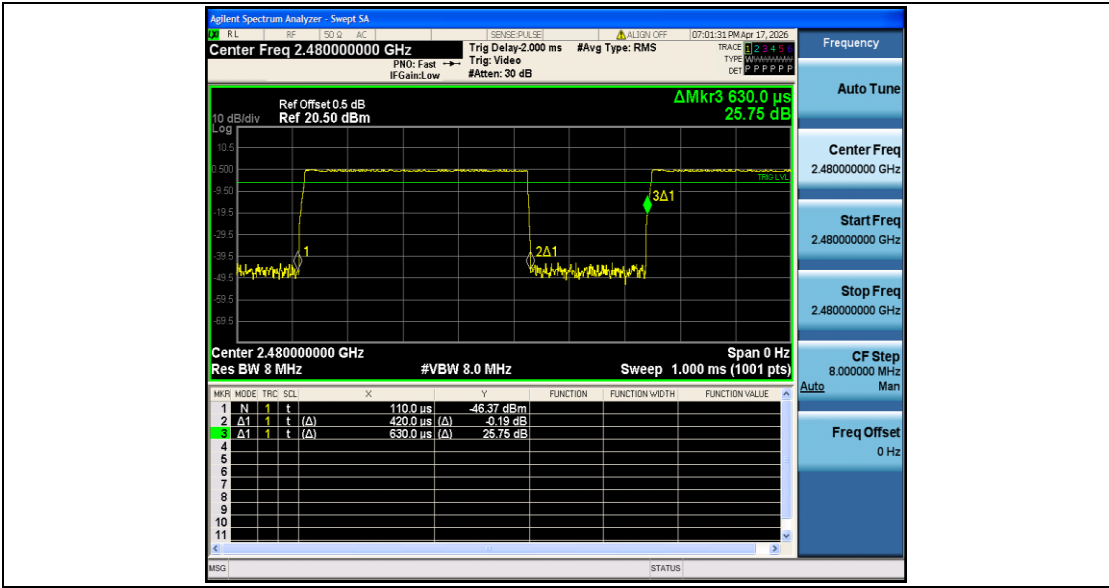
Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.41	0.62	0.6613	66.13	1.80	---	---
		2440	0.42	0.63	0.6667	66.67	1.76	---	---
		2480	0.42	0.63	0.6667	66.67	1.76	---	---

Test Graphs





Appendix H: Emissions in Restricted Bands

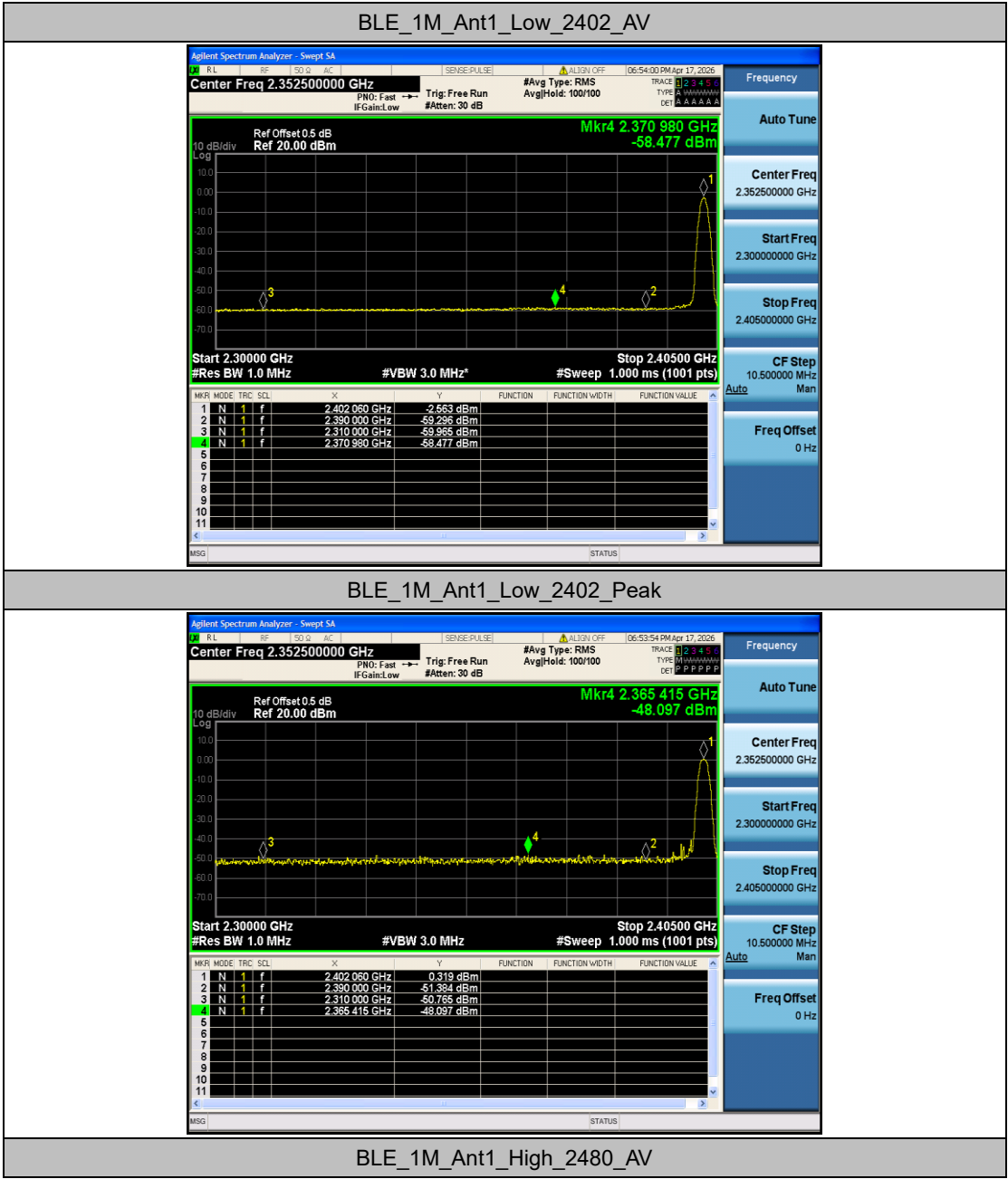
Test Result

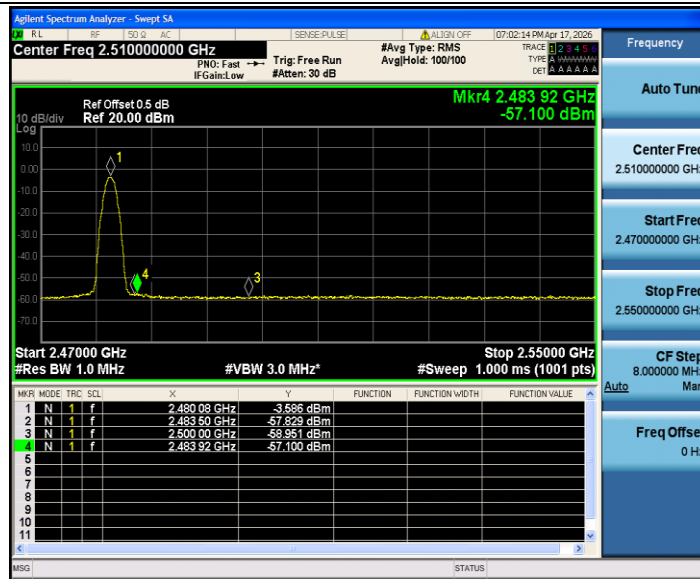
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Gain [dB]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-59.97	2.00	1.80	39.03	≤54	PASS
				AV	2370.980	-58.48	2.00	1.80	40.52	≤54	PASS
				AV	2390.000	-59.3	2.00	1.80	39.70	≤54	PASS
				Peak	2310.000	-50.77	2.00	0.00	46.43	≤74	PASS
				Peak	2365.415	-48.1	2.00	0.00	49.10	≤74	PASS
				Peak	2390.000	-51.38	2.00	0.00	45.82	≤74	PASS
		High	2480	AV	2483.500	-57.83	2.00	1.76	41.13	≤54	PASS
				AV	2483.920	-57.1	2.00	1.76	41.86	≤54	PASS
				AV	2500.000	-58.95	2.00	1.76	40.01	≤54	PASS
				Peak	2483.500	-46.77	2.00	0.00	50.43	≤74	PASS
				Peak	2484.160	-43.37	2.00	0.00	53.83	≤74	PASS
				Peak	2500.000	-51.56	2.00	0.00	45.64	≤74	PASS

Note:

The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs





BLE_1M_Ant1_High_2480_Peak

