

FCC Appendix RF Test Data for BLE

FCC ID : 2BXSK-H1PRO

Company : Shenzhen Zontek IoT Co., Ltd.

EUT : Smart Lock

Model Number : H1 Pro

Report No. : CTA26081700701

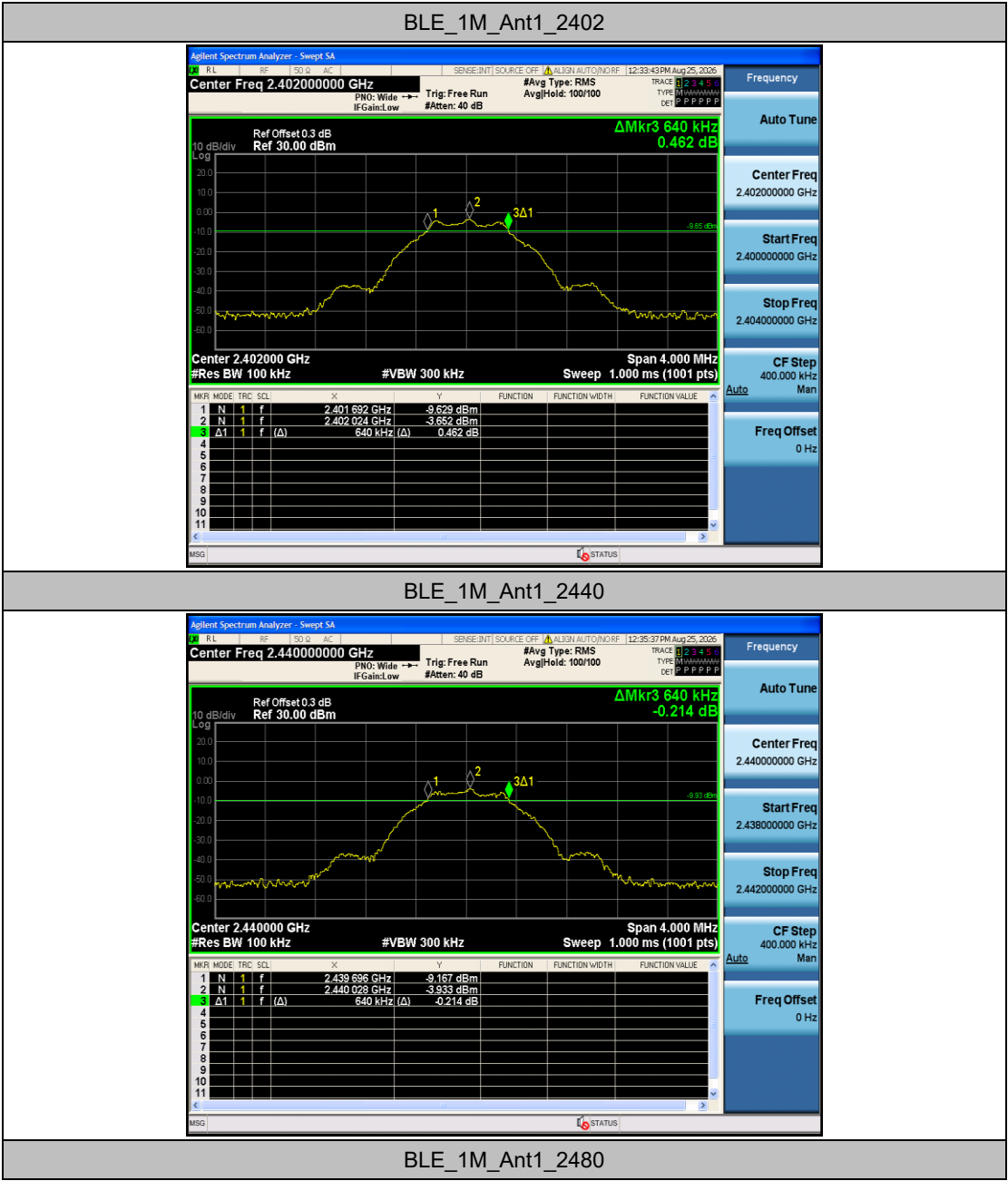
Reviewed By : Eric Wang

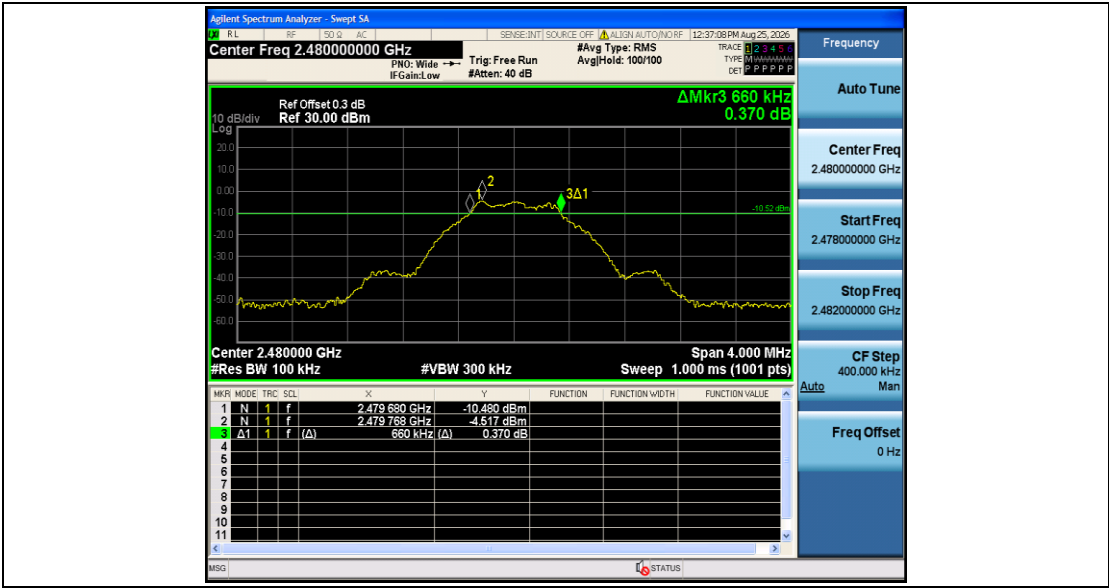
Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.640	2401.692	2402.332	0.5	PASS
		2440	0.640	2439.696	2440.336	0.5	PASS
		2480	0.660	2479.680	2480.340	0.5	PASS

Test Graphs



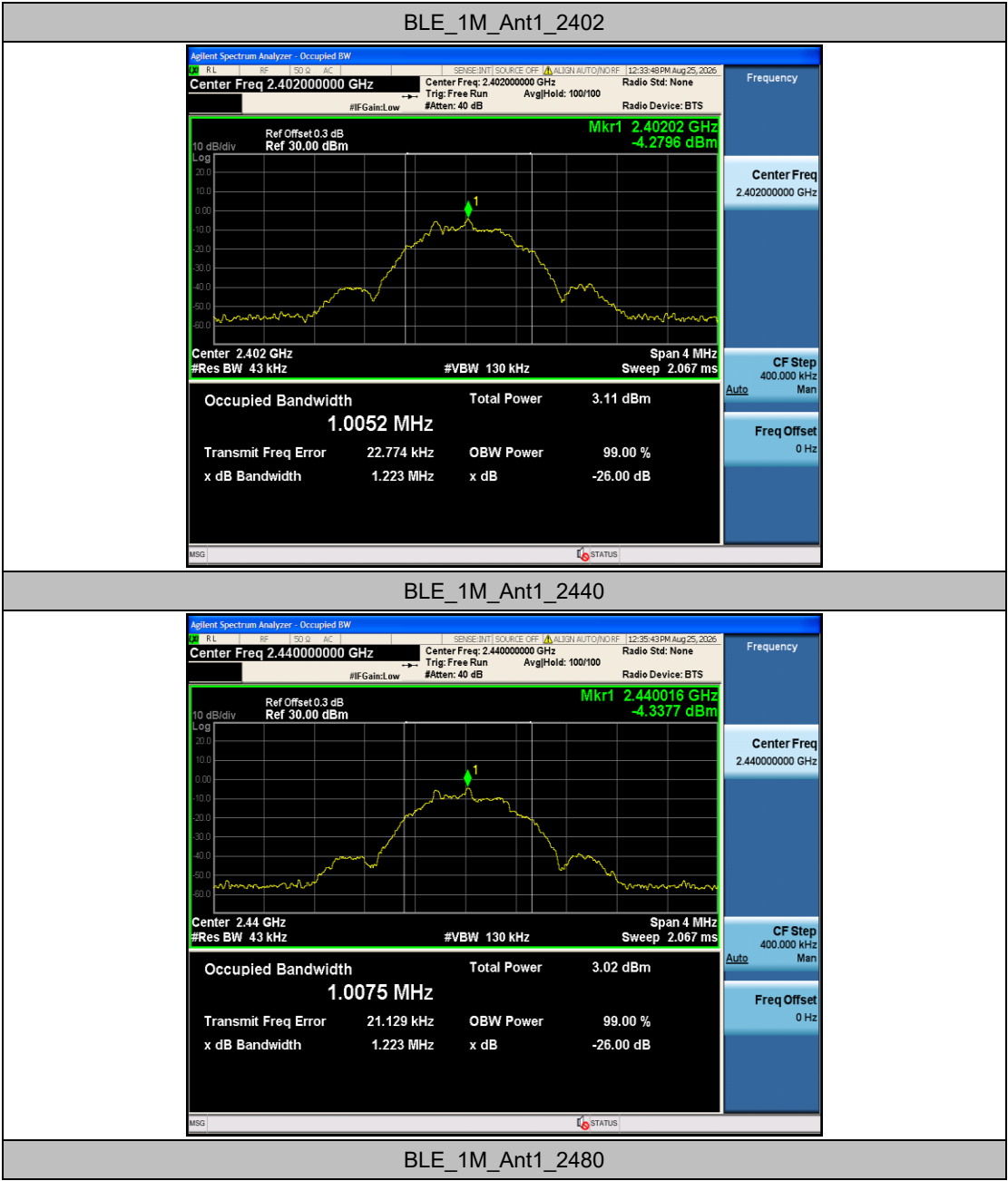


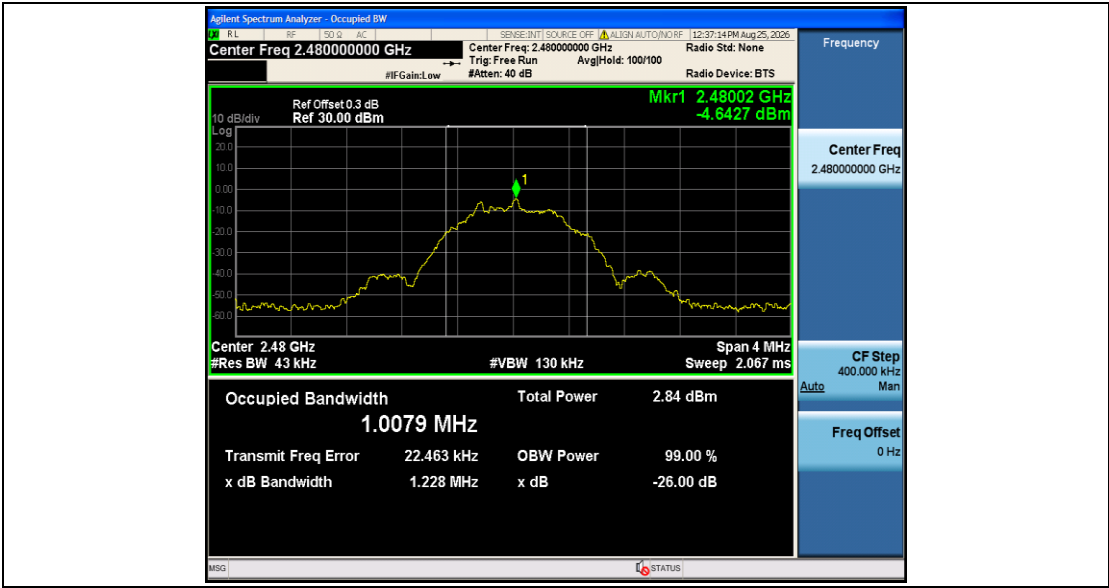
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0052	2401.5202	2402.5254	---	---
		2440	1.0075	2439.5174	2440.5249	---	---
		2480	1.0079	2479.5185	2480.5264	---	---

Test Graphs





Appendix C: Maximum conducted output power

Test Result Peak

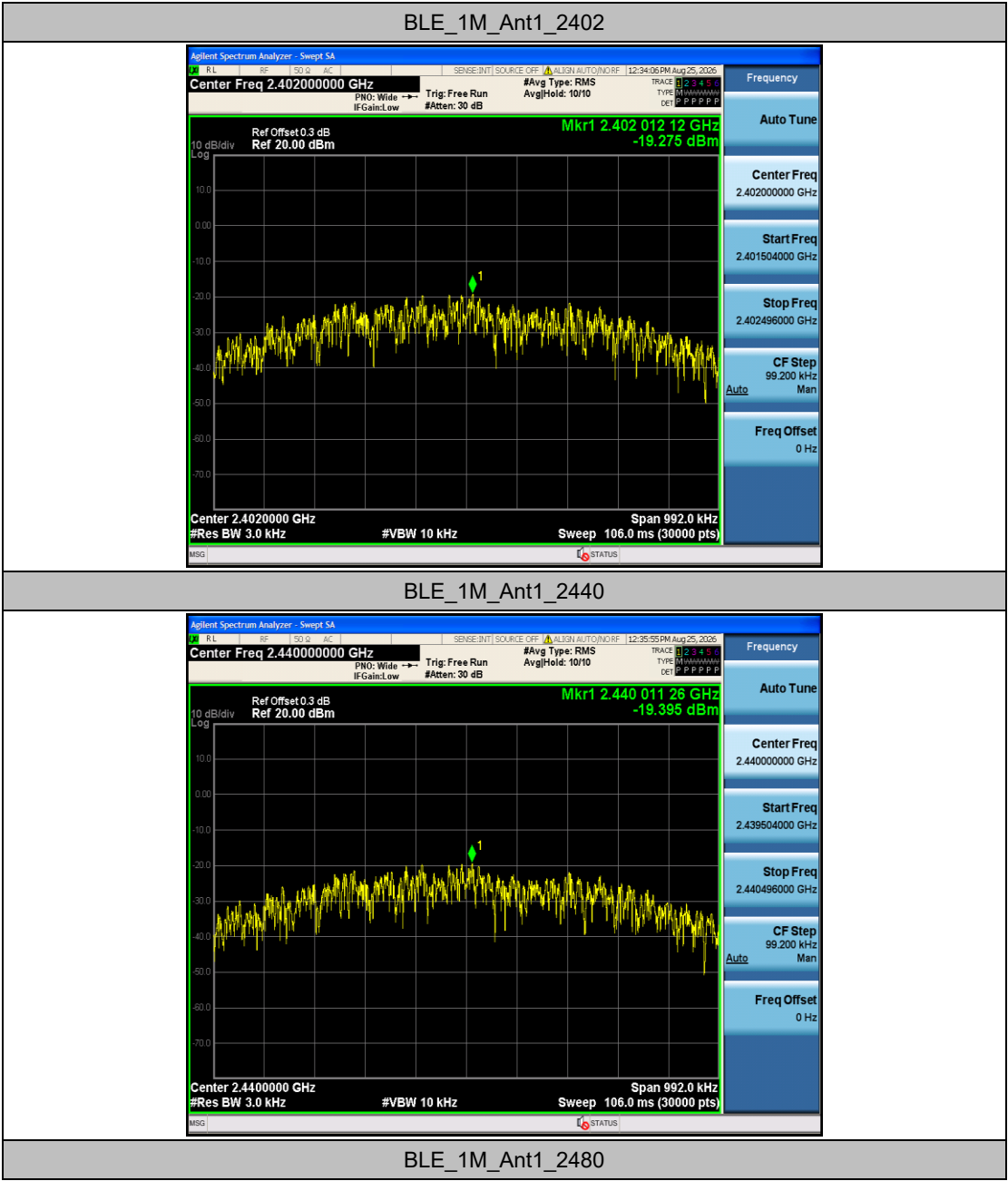
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.49	≤30	PASS
		2440	-3.57	≤30	PASS
		2480	-3.81	≤30	PASS

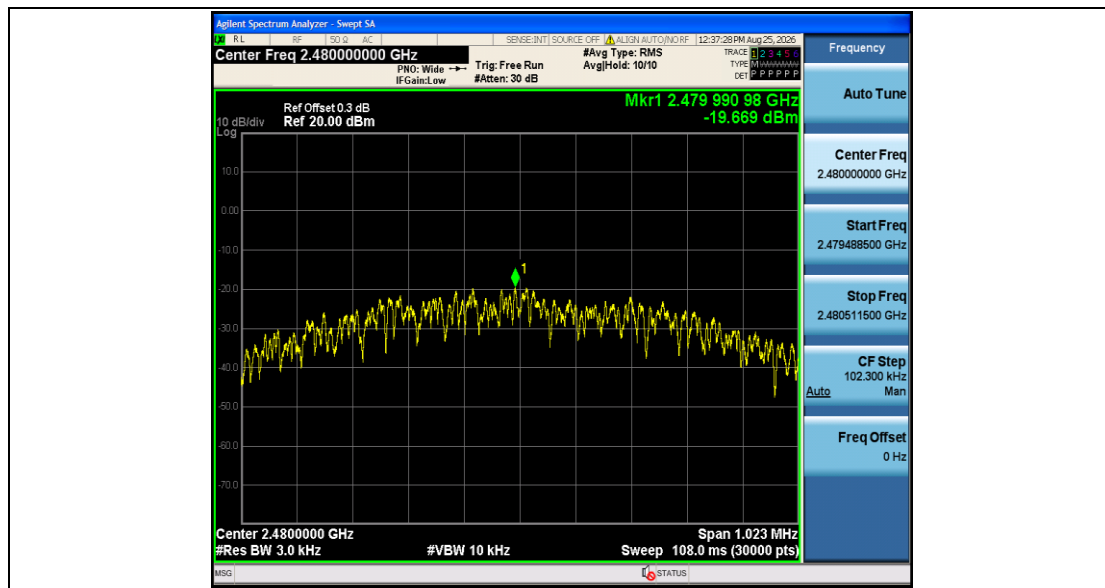
Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.28	≤8.00	PASS
		2440	-19.40	≤8.00	PASS
		2480	-19.67	≤8.00	PASS

Test Graphs



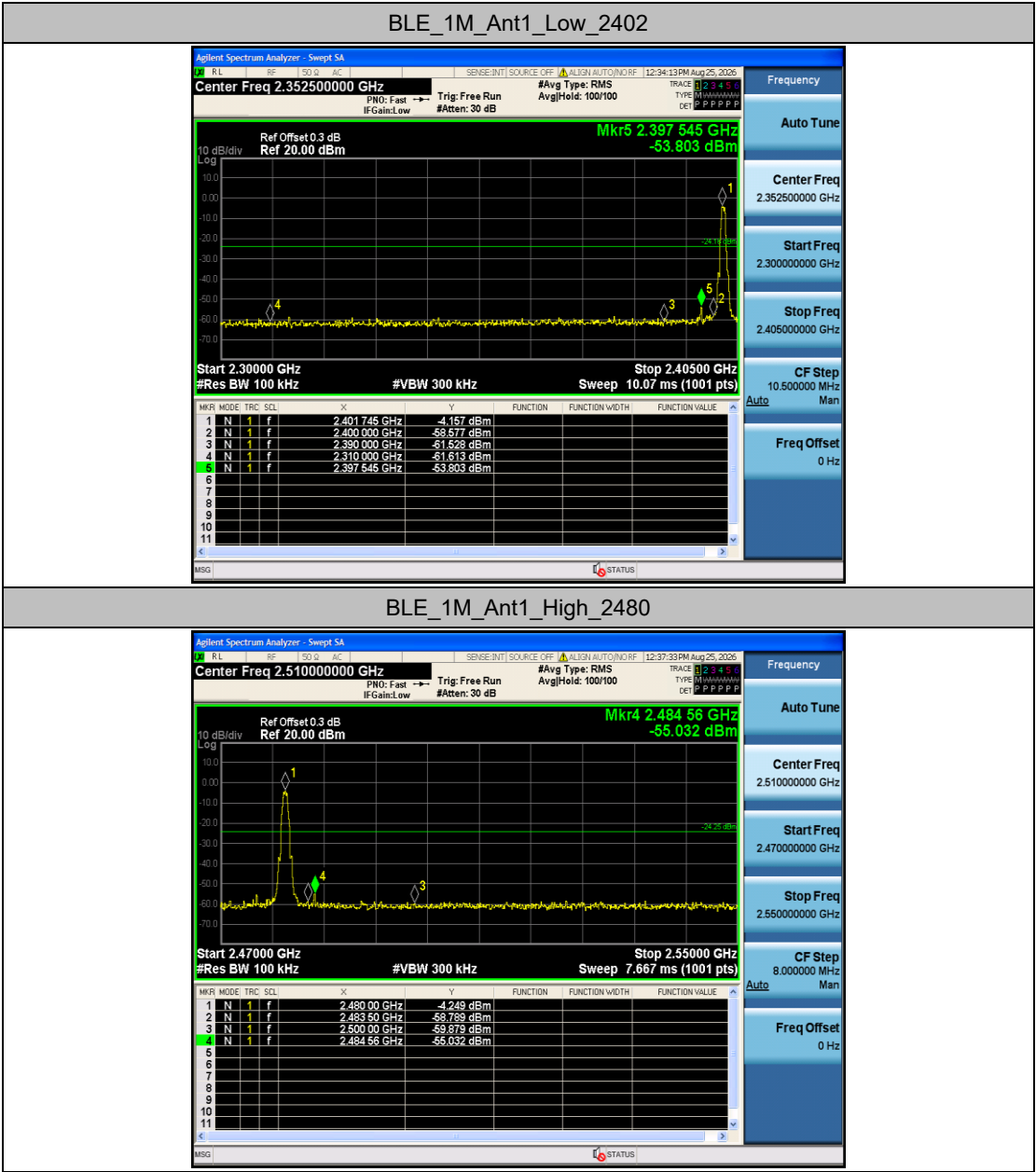


Appendix E: Band edge measurements

Test Result

TestMode	Antenna	Channel	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-4.16	-53.8	≤-24.16	PASS
		High	2480	-4.25	-55.03	≤-24.25	PASS

Test Graphs

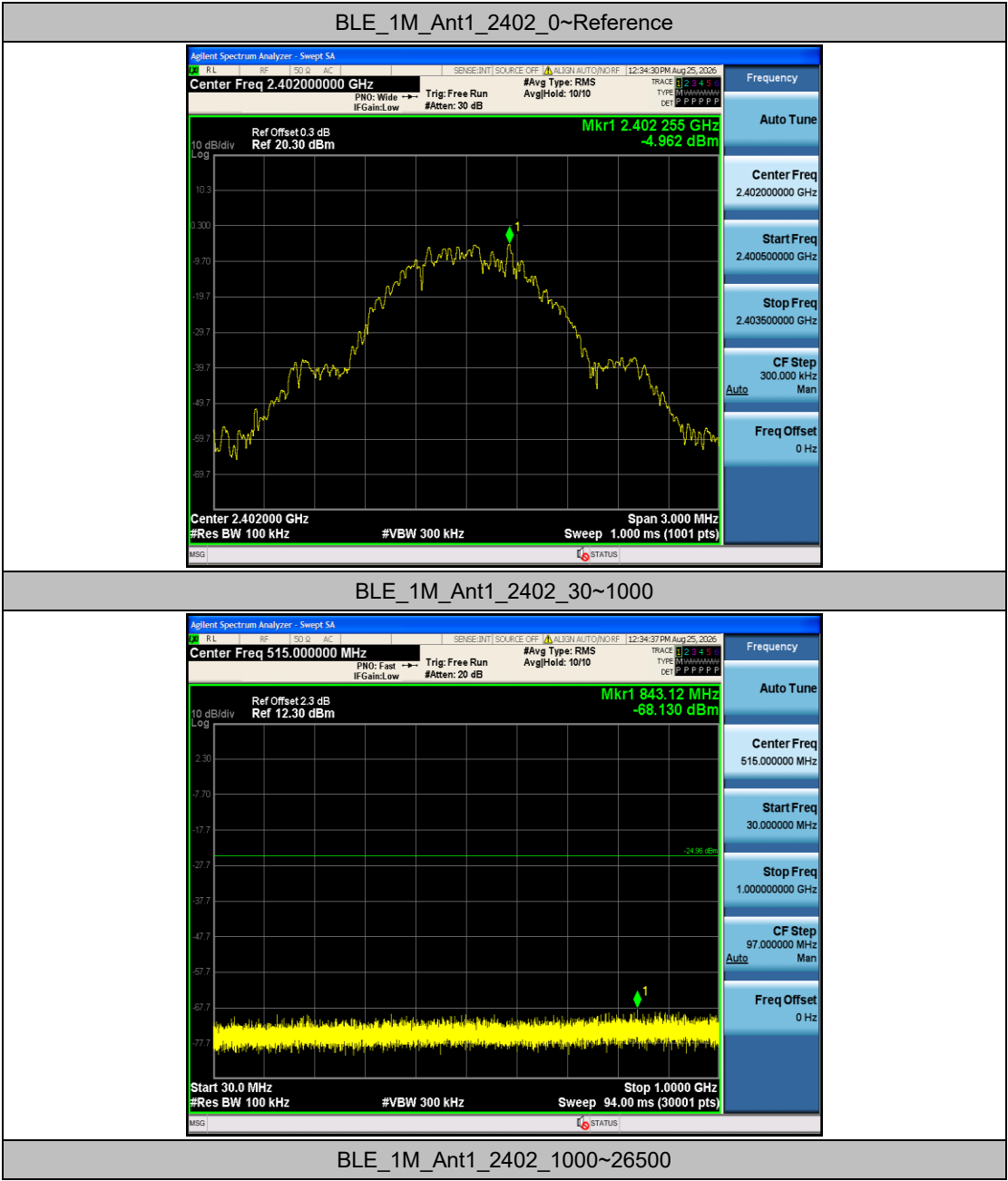


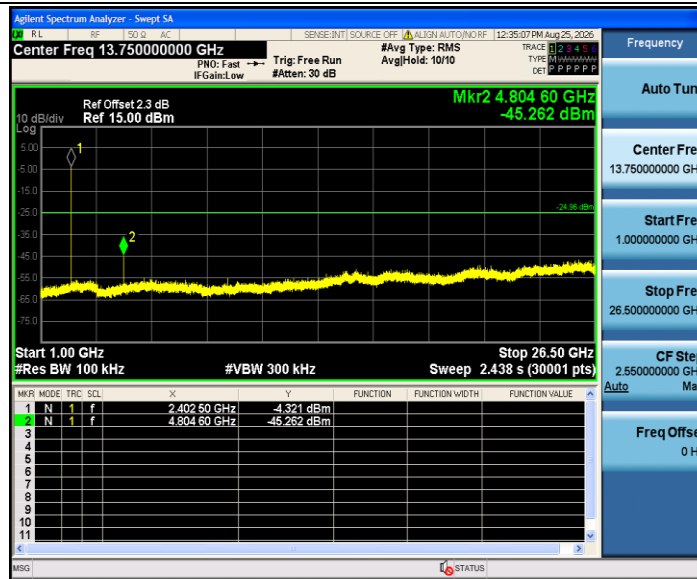
Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-4.96	-4.96	---	PASS
			30~1000	-4.96	-68.13	≤-24.96	PASS
			1000~26500	-4.96	-45.26	≤-24.96	PASS
		2440	Reference	-5.19	-5.19	---	PASS
			30~1000	-5.19	-67.95	≤-25.19	PASS
			1000~26500	-5.19	-45.46	≤-25.19	PASS
		2480	Reference	-4.60	-4.60	---	PASS
			30~1000	-4.60	-67.7	≤-24.6	PASS
			1000~26500	-4.60	-46.35	≤-24.6	PASS

Test Graphs

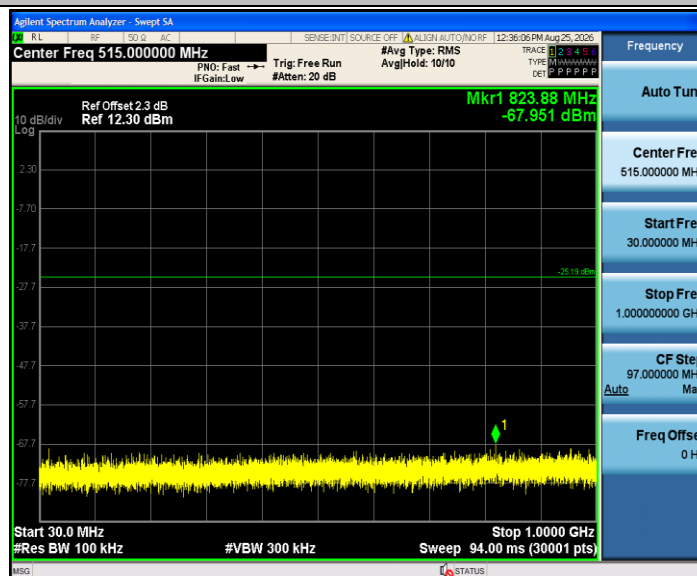




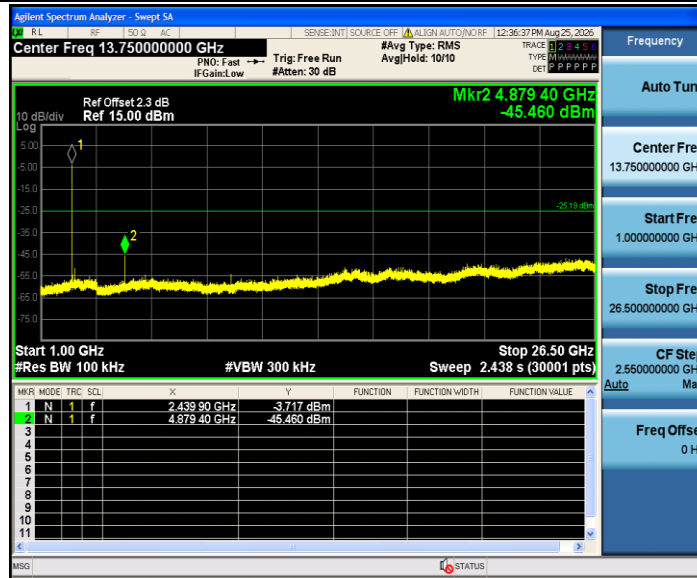
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



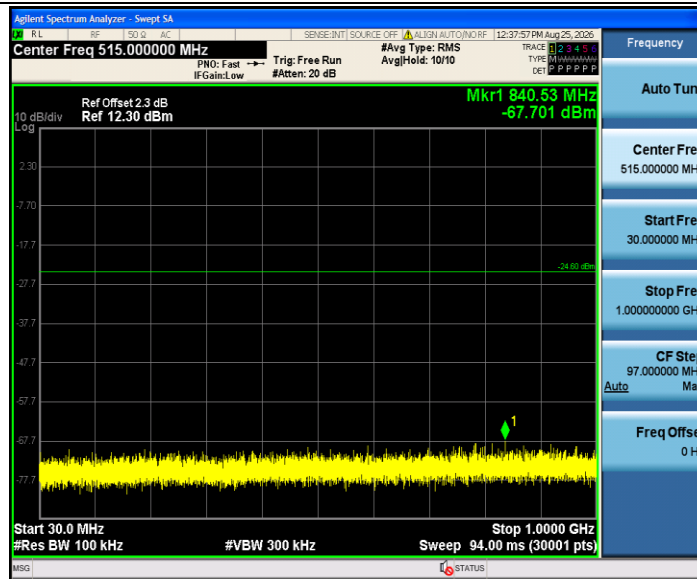
BLE_1M_Ant1_2440_1000~26500



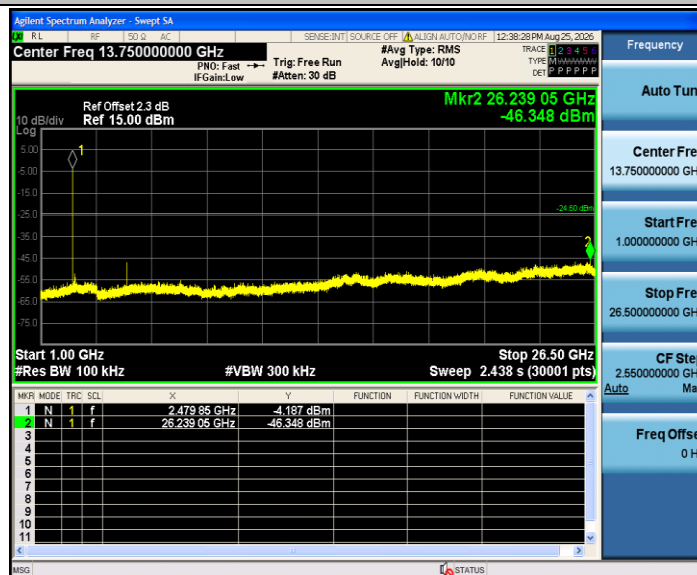
BLE_1M_Ant1_2480_0~Reference



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	0.41	0.62	0.6613	66.13	1.80	---	---
		2480	0.41	0.62	0.6613	66.13	1.80	---	---

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.402000000 GHz

Trig Delay: 2.000 ms #Avg Type: RMS

Ref Offset 0.3 dB Ref 20.30 dBm

ΔMkr3 620.0 μs -12.75 dB

Center 2.402000000 GHz Res BW 8 MHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)

MKR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t		120.0 μs	-13.51 dBm		
2	Δ1	1	t	(Δ)	410.0 μs (Δ)	-19.80 dB		
3	Δ1	1	t	(Δ)	620.0 μs (Δ)	-12.75 dB		

Frequency

Auto Tune

Center Freq 2.402000000 GHz

Start Freq 2.402000000 GHz

Stop Freq 2.402000000 GHz

CF Step 8.000000 MHz Man

Freq Offset 0 Hz

BLE_1M_Ant1_2402

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.440000000 GHz

Trig Delay: 2.000 ms #Avg Type: RMS

Ref Offset 0.3 dB Ref 20.30 dBm

ΔMkr3 620.0 μs -26.90 dB

Center 2.440000000 GHz Res BW 8 MHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)

MKR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t		120.0 μs	-15.53 dBm		
2	Δ1	1	t	(Δ)	410.0 μs (Δ)	-11.20 dB		
3	Δ1	1	t	(Δ)	620.0 μs (Δ)	-26.90 dB		

Frequency

Auto Tune

Center Freq 2.440000000 GHz

Start Freq 2.440000000 GHz

Stop Freq 2.440000000 GHz

CF Step 8.000000 MHz Man

Freq Offset 0 Hz

BLE_1M_Ant1_2440

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.480000000 GHz

Trig Delay: 2.000 ms #Avg Type: RMS

Ref Offset 0.3 dB Ref 20.30 dBm

ΔMkr3 620.0 μs -26.90 dB

Center 2.480000000 GHz Res BW 8 MHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)

MKR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t		120.0 μs	-15.53 dBm		
2	Δ1	1	t	(Δ)	410.0 μs (Δ)	-11.20 dB		
3	Δ1	1	t	(Δ)	620.0 μs (Δ)	-26.90 dB		

Frequency

Auto Tune

Center Freq 2.480000000 GHz

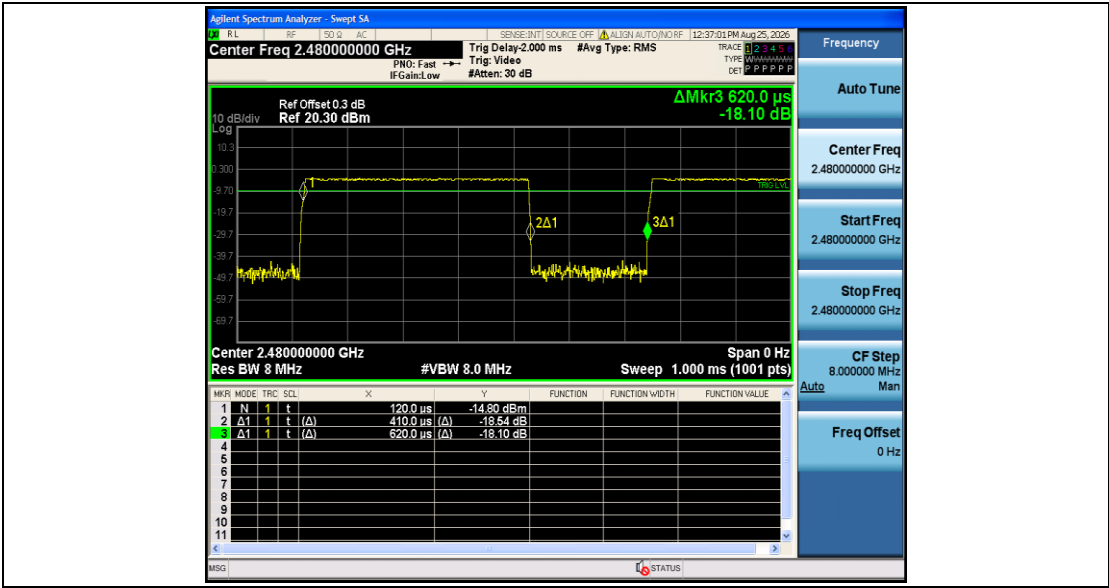
Start Freq 2.480000000 GHz

Stop Freq 2.480000000 GHz

CF Step 8.000000 MHz Man

Freq Offset 0 Hz

BLE_1M_Ant1_2480



Appendix H: Emissions in Restricted Bands

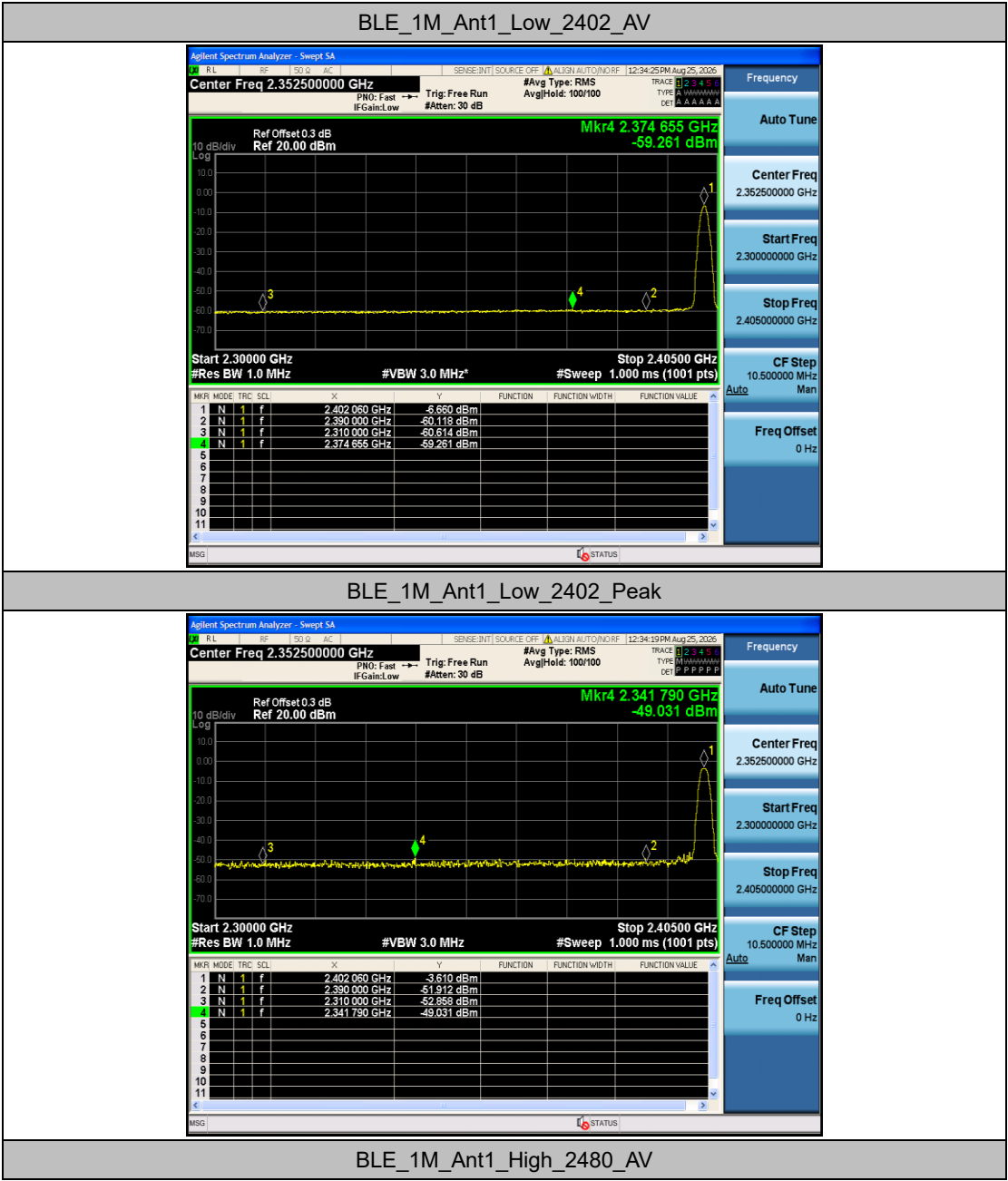
Test Result

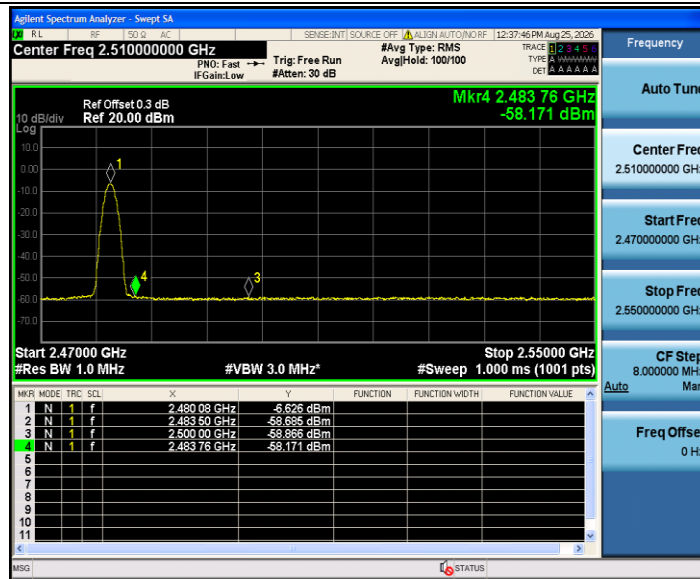
TestMode	Antenna	Channel Name	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Gain [dB]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-60.61	2.00	1.80	38.39	≤54	PASS
				AV	2374.655	-59.26	2.00	1.80	39.74	≤54	PASS
				AV	2390.000	-60.12	2.00	1.80	38.88	≤54	PASS
				Peak	2310.000	-52.86	2.00	0.00	44.34	≤74	PASS
				Peak	2341.790	-49.03	2.00	0.00	48.17	≤74	PASS
				Peak	2390.000	-51.91	2.00	0.00	45.29	≤74	PASS
		High	2480	AV	2483.500	-58.69	2.00	1.80	40.31	≤54	PASS
				AV	2483.760	-58.17	2.00	1.80	40.83	≤54	PASS
				AV	2500.000	-58.87	2.00	1.80	40.13	≤54	PASS
				Peak	2483.500	-51.1	2.00	0.00	46.10	≤74	PASS
				Peak	2485.040	-48.87	2.00	0.00	48.33	≤74	PASS
				Peak	2500.000	-52.22	2.00	0.00	44.98	≤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

