

FCC Appendix RF Test Data for BLE

FCC ID : 2BNWA-LLF253SOS

Company : LOLIFONG TECHNOLOGY (HUIZHOU) CO.,LTD

EUT : personal alarm

Model Number : LLF-253SOS

Report No. : CTA26062500801

Reviewed By : Eric Wang

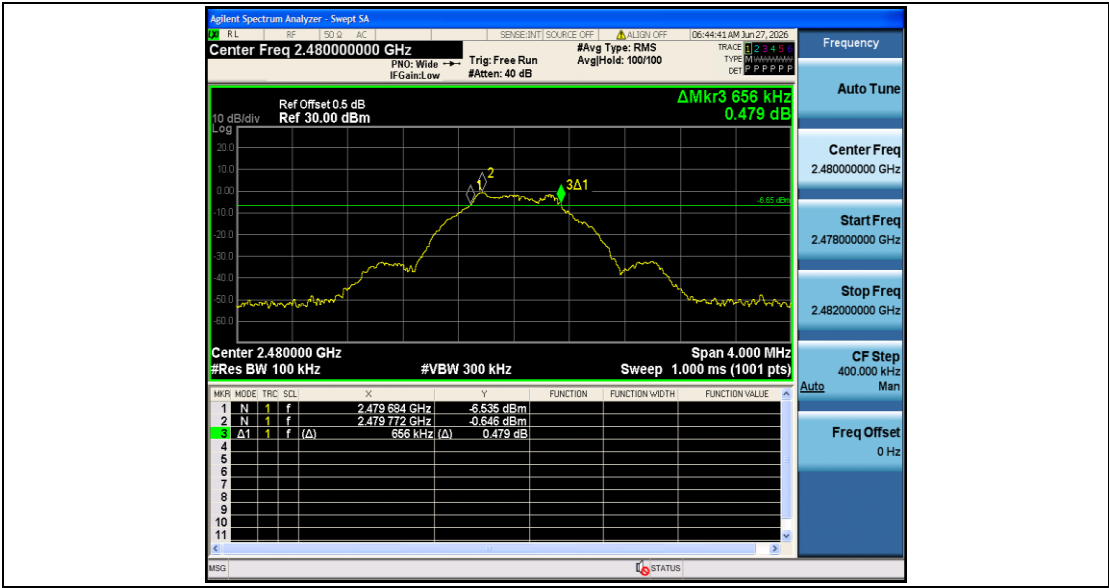
Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.632	2401.692	2402.324	0.5	PASS
		2440	0.652	2439.684	2440.336	0.5	PASS
		2480	0.656	2479.684	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	1.0083	2401.5183	2402.5266	---	---
		2440	1.0107	2439.5161	2440.5268	---	---
		2480	1.0077	2479.5176	2480.5253	---	---

Test Graphs

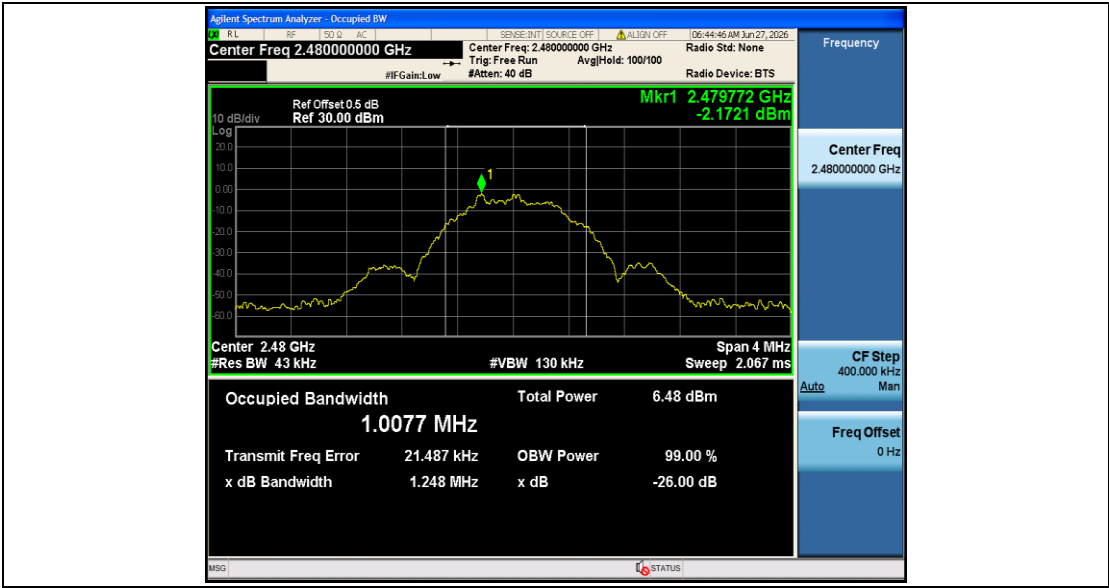
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



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	0.25	≤30	PASS
		2440	0.16	≤30	PASS
		2480	-0.10	≤30	PASS

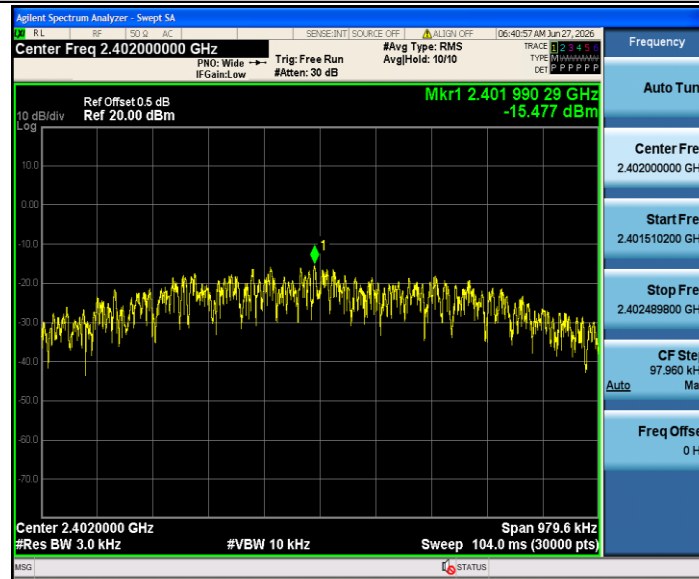
Appendix D: Maximum power spectral density

Test Result

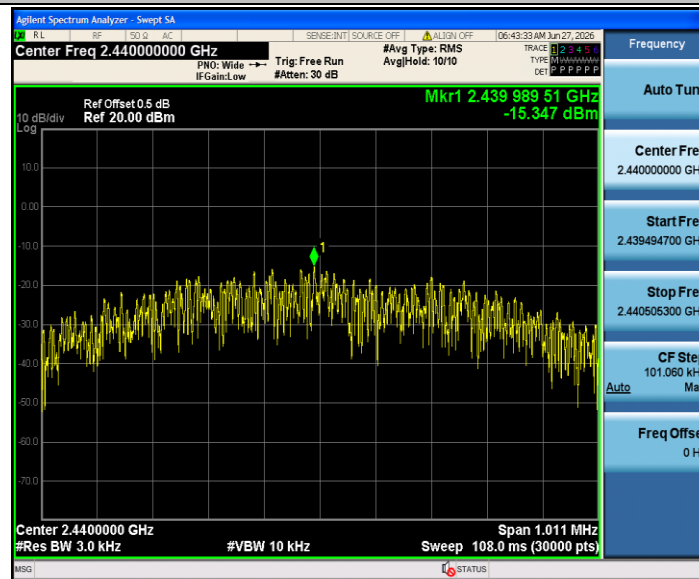
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.48	≤8.00	PASS
		2440	-15.35	≤8.00	PASS
		2480	-15.81	≤8.00	PASS

Test Graphs

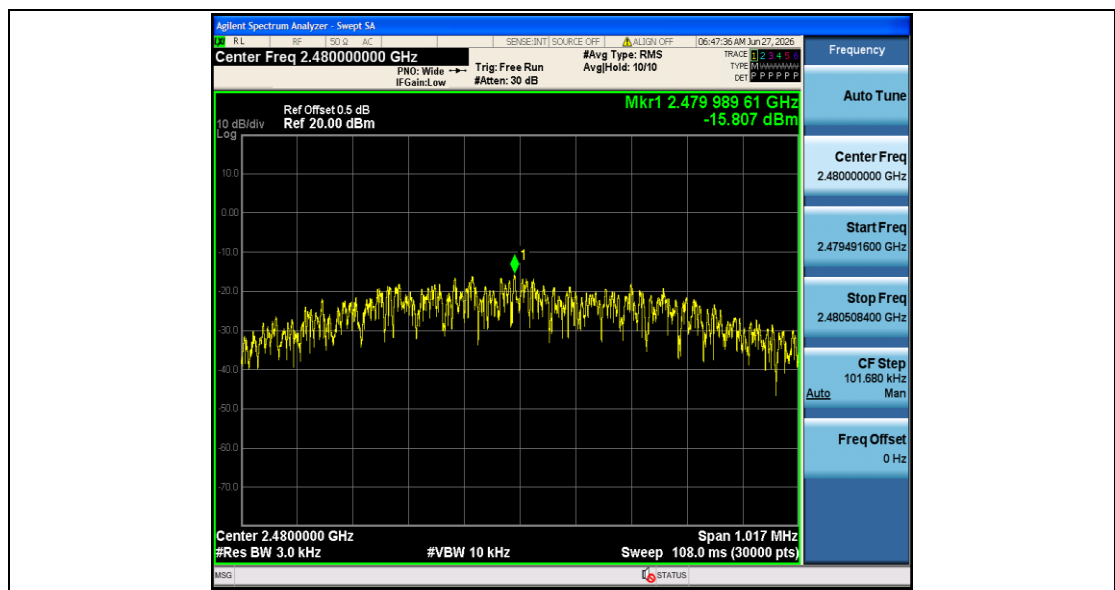
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

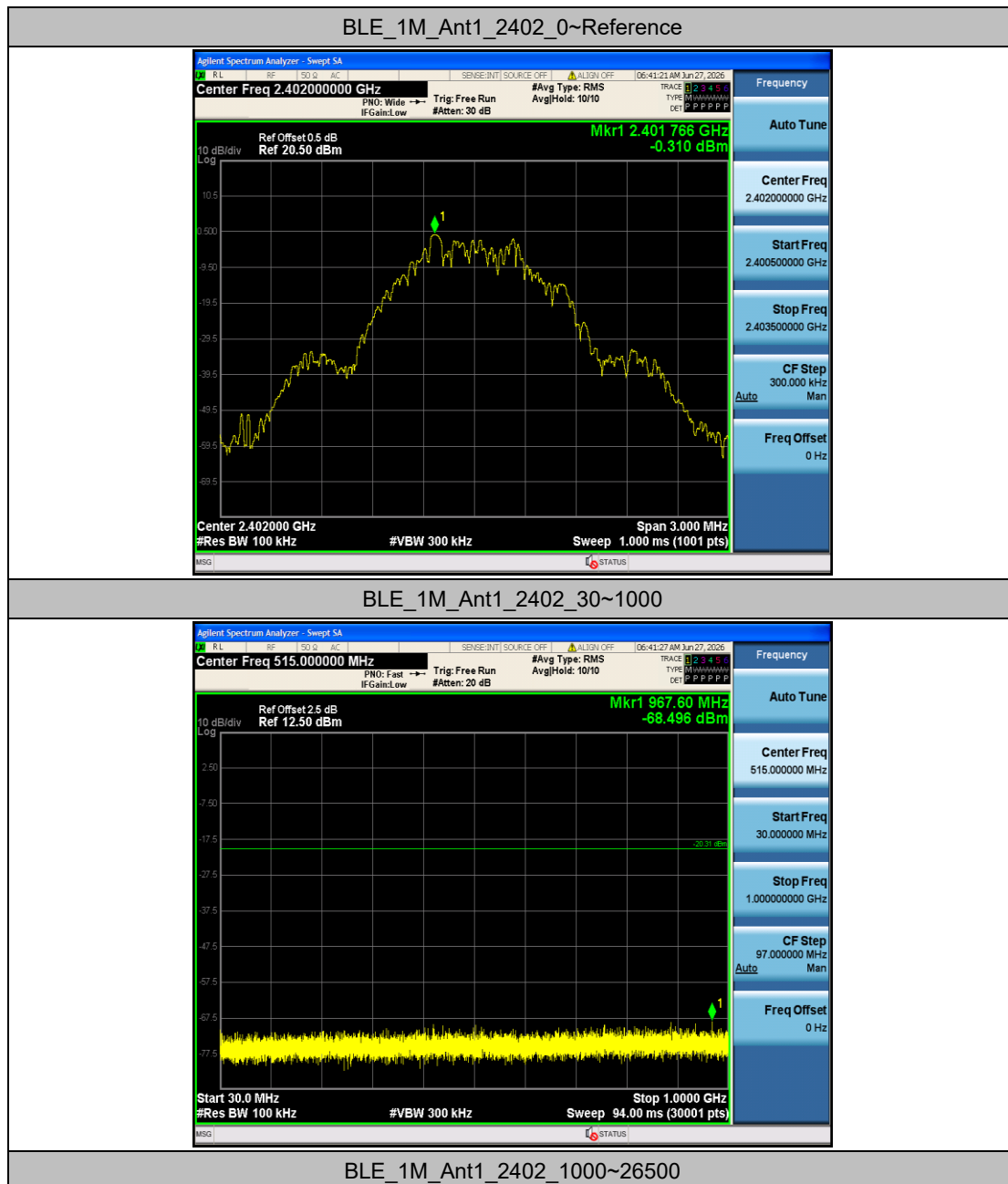


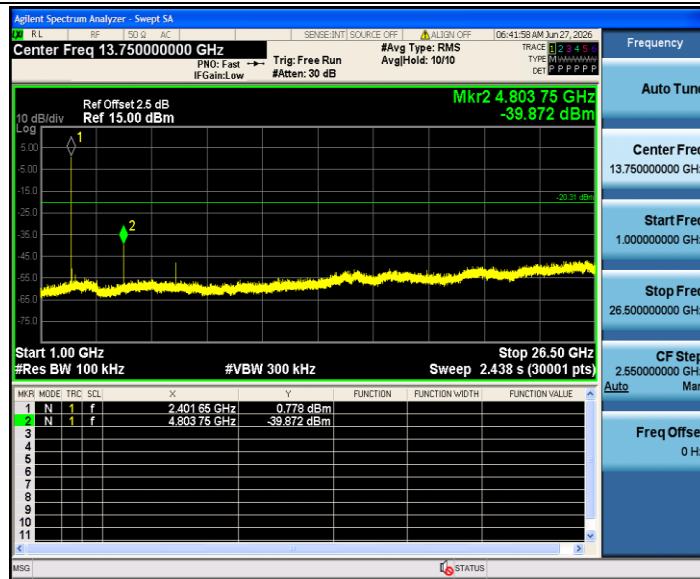
Appendix E: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.31	-0.31	---	PASS
			30~1000	-0.31	-68.5	≤-20.31	PASS
			1000~26500	-0.31	-39.87	≤-20.31	PASS
		2440	Reference	-0.12	-0.12	---	PASS
			30~1000	-0.12	-68.65	≤-20.12	PASS
			1000~26500	-0.12	-41.07	≤-20.12	PASS
		2480	Reference	-1.16	-1.16	---	PASS
			30~1000	-1.16	-68.81	≤-21.16	PASS
			1000~26500	-1.16	-43.41	≤-21.16	PASS

Test Graphs

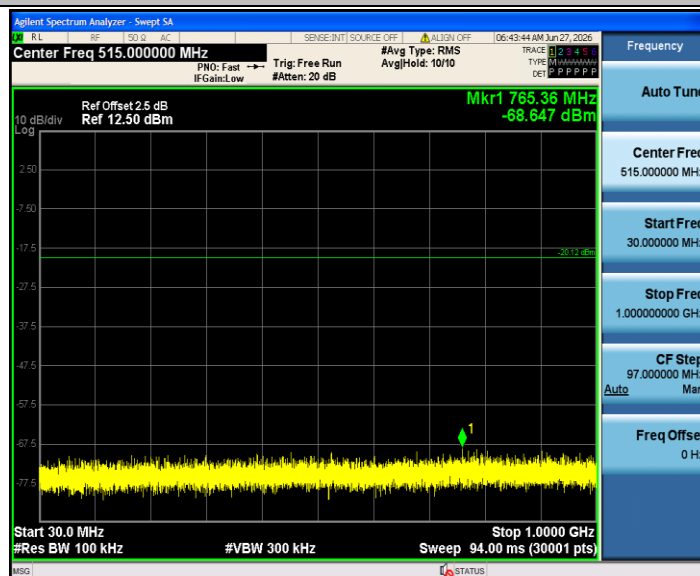




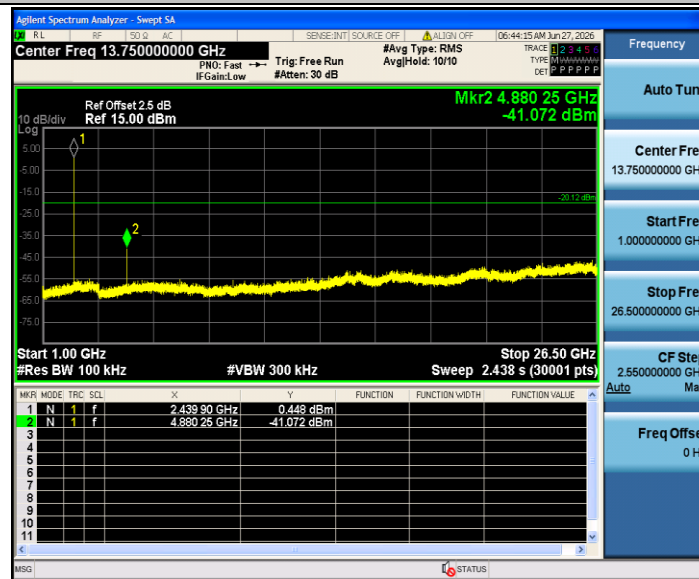
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



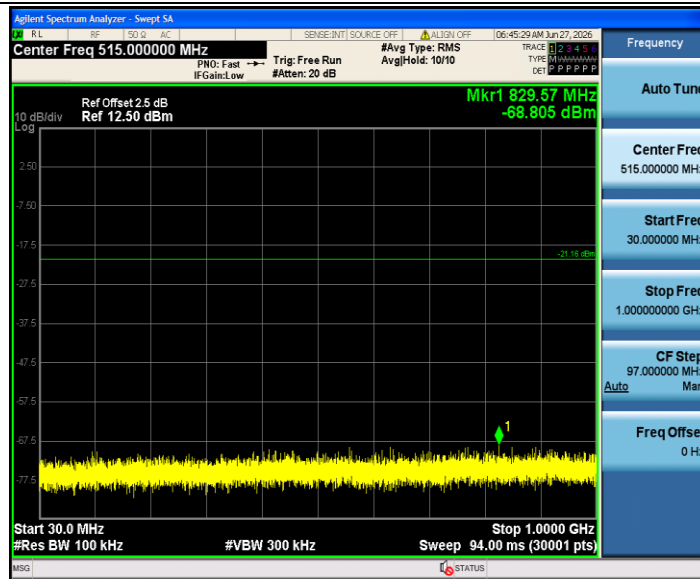
BLE_1M_Ant1_2440_1000~26500



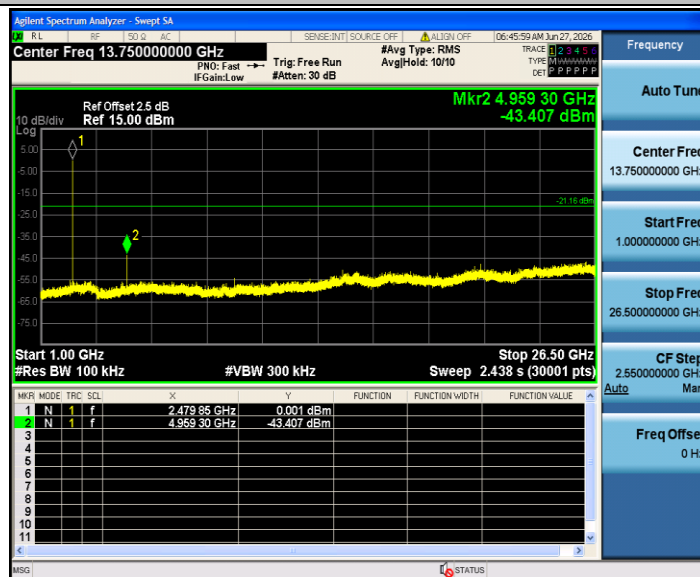
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



Appendix F: 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	0.42	0.63	0.6667	66.67	1.76	---	---

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.402000000 GHz

Ref Offset 0.5 dB
Ref 20.50 dBm

Trig Delay: 2.000 ms
Trig: Video
#Avg Type: RMS
#Atten: 30 dB

Frequency

Auto Tune

Center Freq 2.402000000 GHz

Start Freq 2.402000000 GHz

Stop Freq 2.402000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

Span 0 Hz

Res BW 8 MHz

#VBW 8.0 MHz

Sweep 1.000 ms (1001 pts)

ΔMkr3 620.0 μs
-11.36 dB

2Δ1

3Δ1

MKR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	120.0 μs	-11.88 dBm			
2	Δ1	1	t	(Δ)	410.0 μs (Δ)	-21.53 dB		
3	Δ1	1	t	(Δ)	620.0 μs (Δ)	-11.36 dB		

BLE_1M_Ant1_2402

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.440000000 GHz

Ref Offset 0.5 dB
Ref 20.50 dBm

Trig Delay: 2.000 ms
Trig: Video
#Avg Type: RMS
#Atten: 30 dB

Frequency

Auto Tune

Center Freq 2.440000000 GHz

Start Freq 2.440000000 GHz

Stop Freq 2.440000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

Span 0 Hz

Res BW 8 MHz

#VBW 8.0 MHz

Sweep 1.000 ms (1001 pts)

ΔMkr3 620.0 μs
-10.76 dB

2Δ1

3Δ1

MKR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	120.0 μs	-11.88 dBm			
2	Δ1	1	t	(Δ)	410.0 μs (Δ)	-22.05 dB		
3	Δ1	1	t	(Δ)	620.0 μs (Δ)	-10.76 dB		

BLE_1M_Ant1_2440

Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.480000000 GHz

Ref Offset 0.5 dB
Ref 20.50 dBm

Trig Delay: 2.000 ms
Trig: Video
#Avg Type: RMS
#Atten: 30 dB

Frequency

Auto Tune

Center Freq 2.480000000 GHz

Start Freq 2.480000000 GHz

Stop Freq 2.480000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

Span 0 Hz

Res BW 8 MHz

#VBW 8.0 MHz

Sweep 1.000 ms (1001 pts)

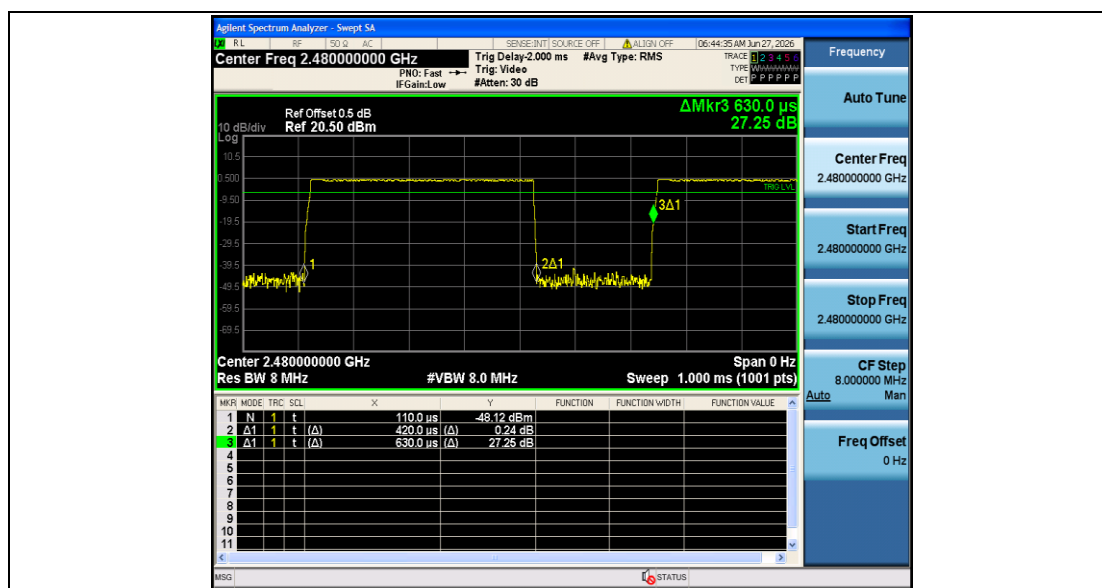
ΔMkr3 620.0 μs
-10.76 dB

2Δ1

3Δ1

MKR	MODE	TRIG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	120.0 μs	-11.88 dBm			
2	Δ1	1	t	(Δ)	410.0 μs (Δ)	-22.05 dB		
3	Δ1	1	t	(Δ)	620.0 μs (Δ)	-10.76 dB		

BLE_1M_Ant1_2480



Appendix G: Emissions in Restricted Bands

Test Result

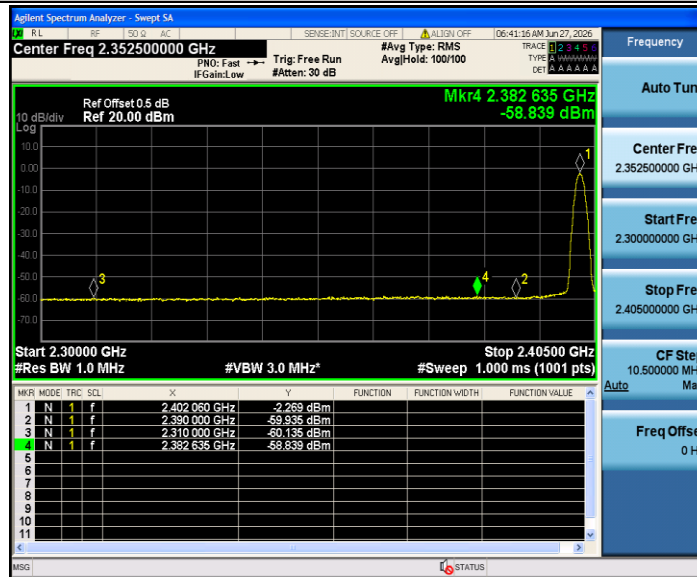
TestMode	Antenna	Channel Name	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Gain [dB]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-60.14	2.00	1.80	38.86	≤54	PASS
				AV	2382.635	-58.84	2.00	1.80	40.16	≤54	PASS
				AV	2390.000	-59.94	2.00	1.80	39.06	≤54	PASS
				Peak	2310.000	-52.89	2.00	0.00	44.31	≤74	PASS
				Peak	2389.460	-48.75	2.00	0.00	48.45	≤74	PASS
				Peak	2390.000	-50.62	2.00	0.00	46.58	≤74	PASS
		High	2480	AV	2483.500	-57.9	2.00	1.76	41.06	≤54	PASS
				AV	2484.080	-56.54	2.00	1.76	42.42	≤54	PASS
				AV	2500.000	-59.62	2.00	1.76	39.34	≤54	PASS
				Peak	2483.500	-48.49	2.00	0.00	48.71	≤74	PASS
				Peak	2484.480	-44.31	2.00	0.00	52.89	≤74	PASS
				Peak	2500.000	-50.48	2.00	0.00	46.72	≤74	PASS

Note:

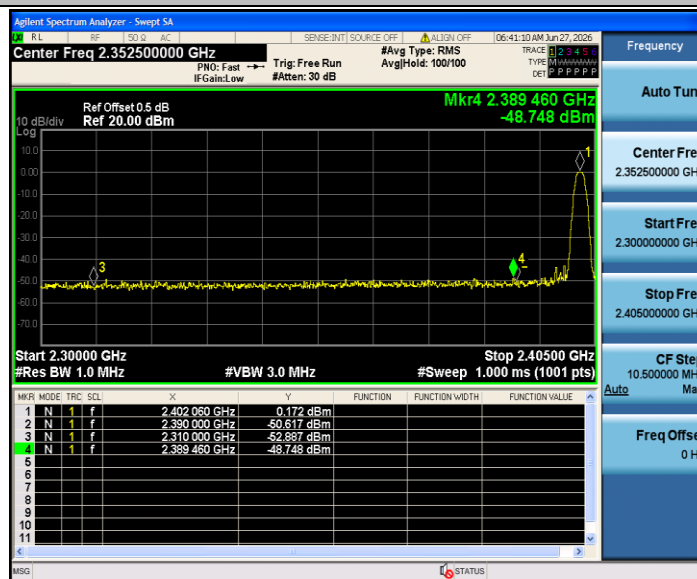
1. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

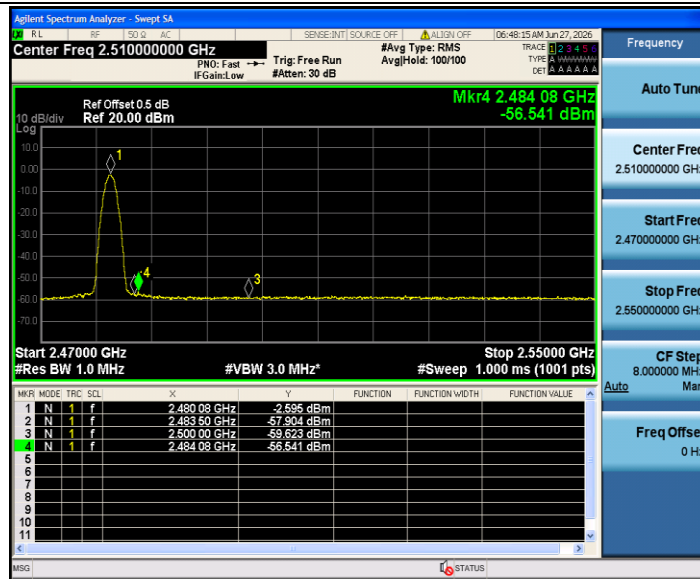
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

