

RF Test Data for BT(BLE) (Conducted Measurement)

Product Name: Remote control

Trade Mark: N/A

Test Model: Q09

FCC ID: 2ASXW-Q09

Environmental Conditions

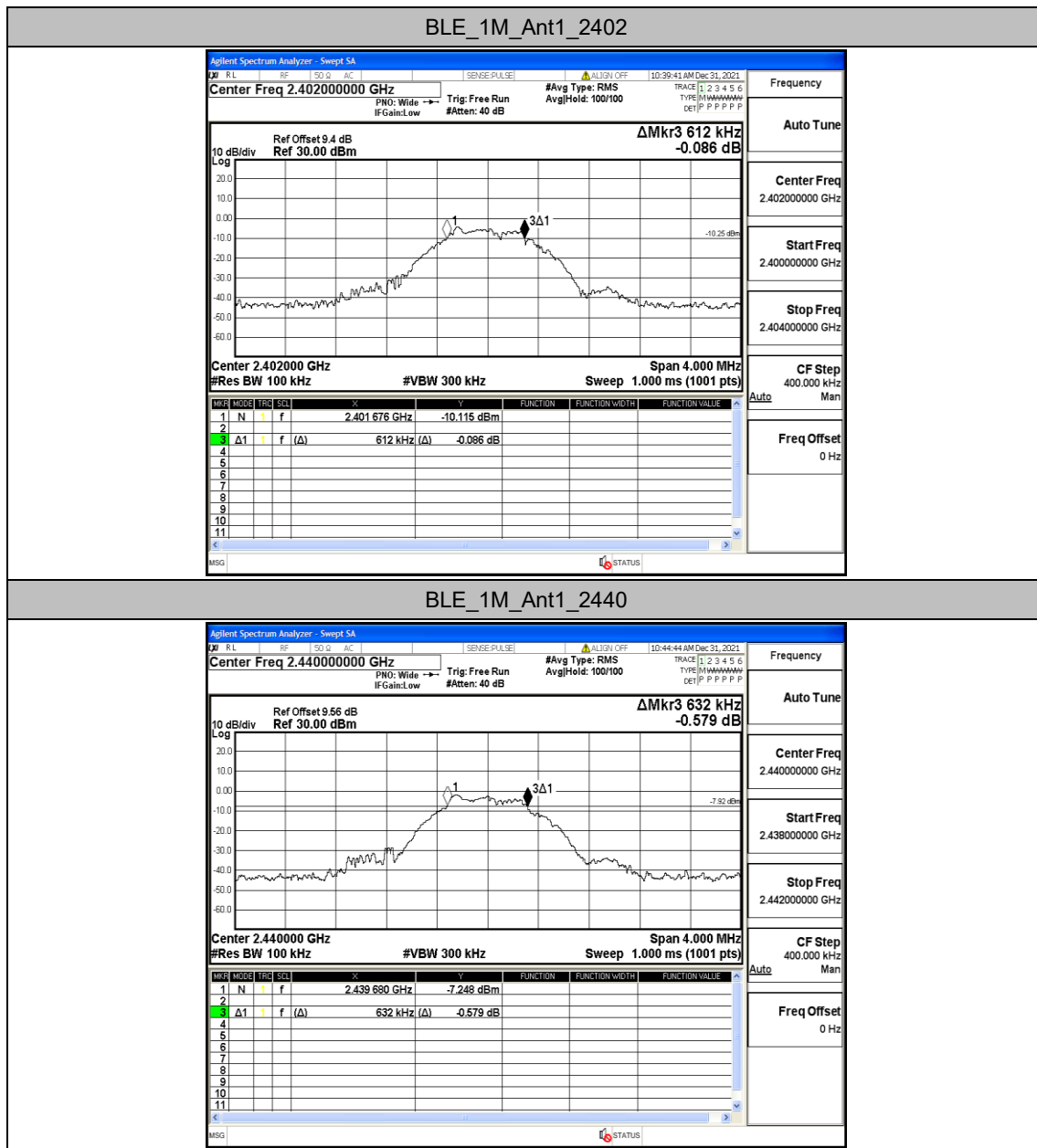
Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

Appendix A: DTS Bandwidth

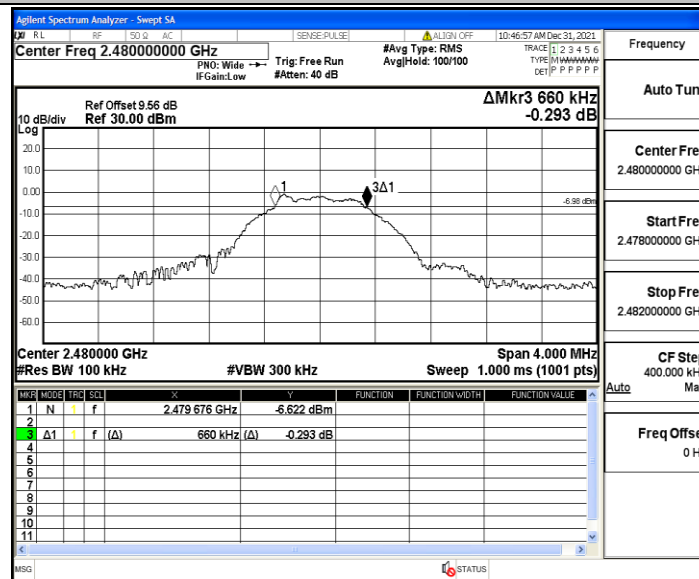
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.612	2401.676	2402.288	0.5	PASS
		2440	0.632	2439.680	2440.312	0.5	PASS
		2480	0.660	2479.676	2480.336	0.5	PASS

Test Graphs



BLE_1M_Ant1_2480

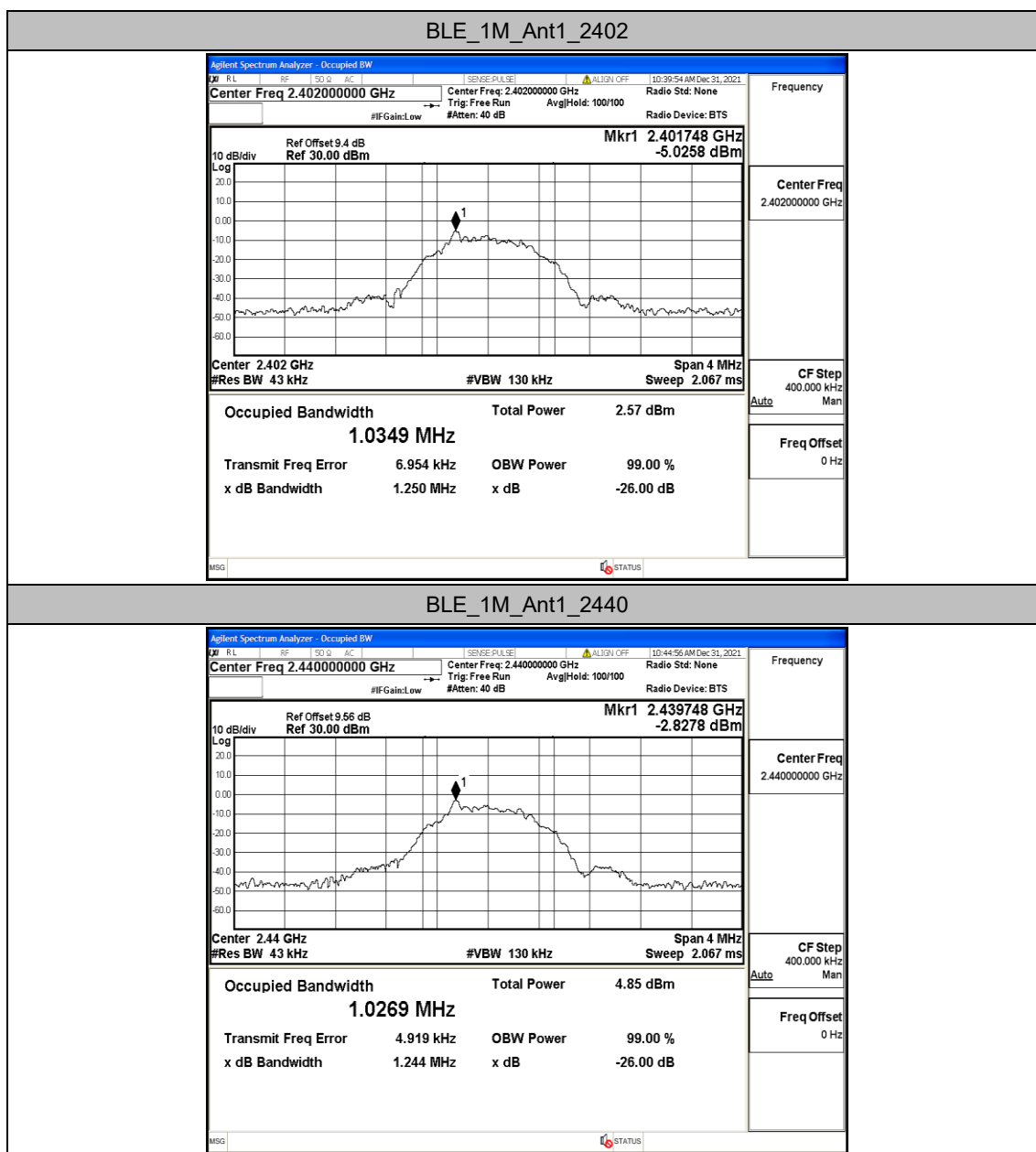


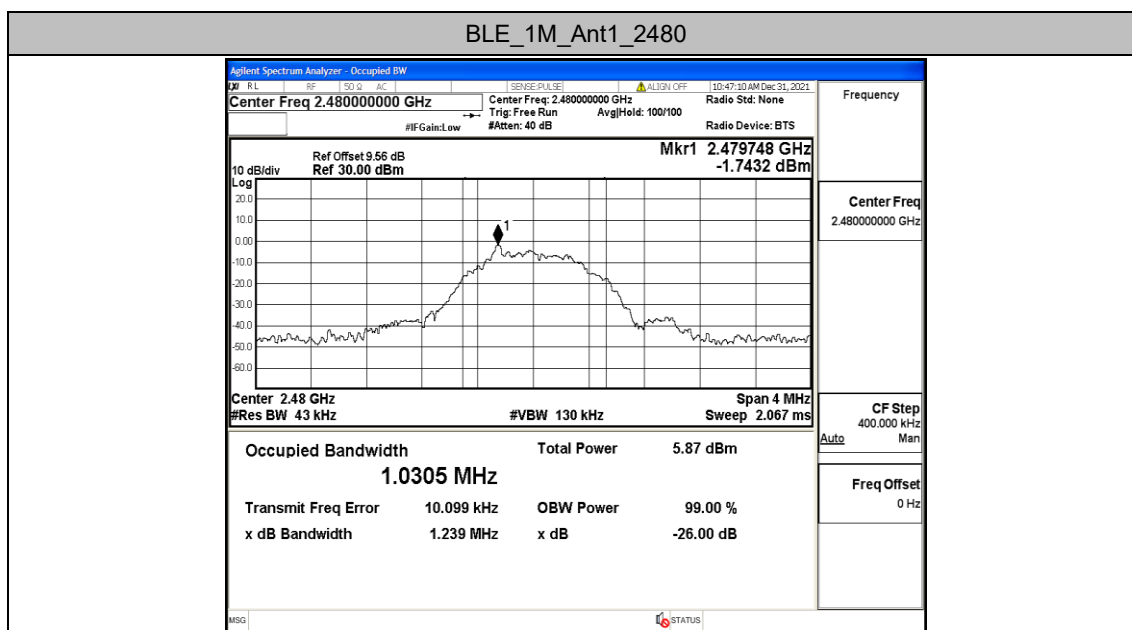
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0349	2401.490	2402.524	---	PASS
		2440	1.0269	2439.491	2440.518	---	PASS
		2480	1.0305	2479.495	2480.525	---	PASS

Test Graphs



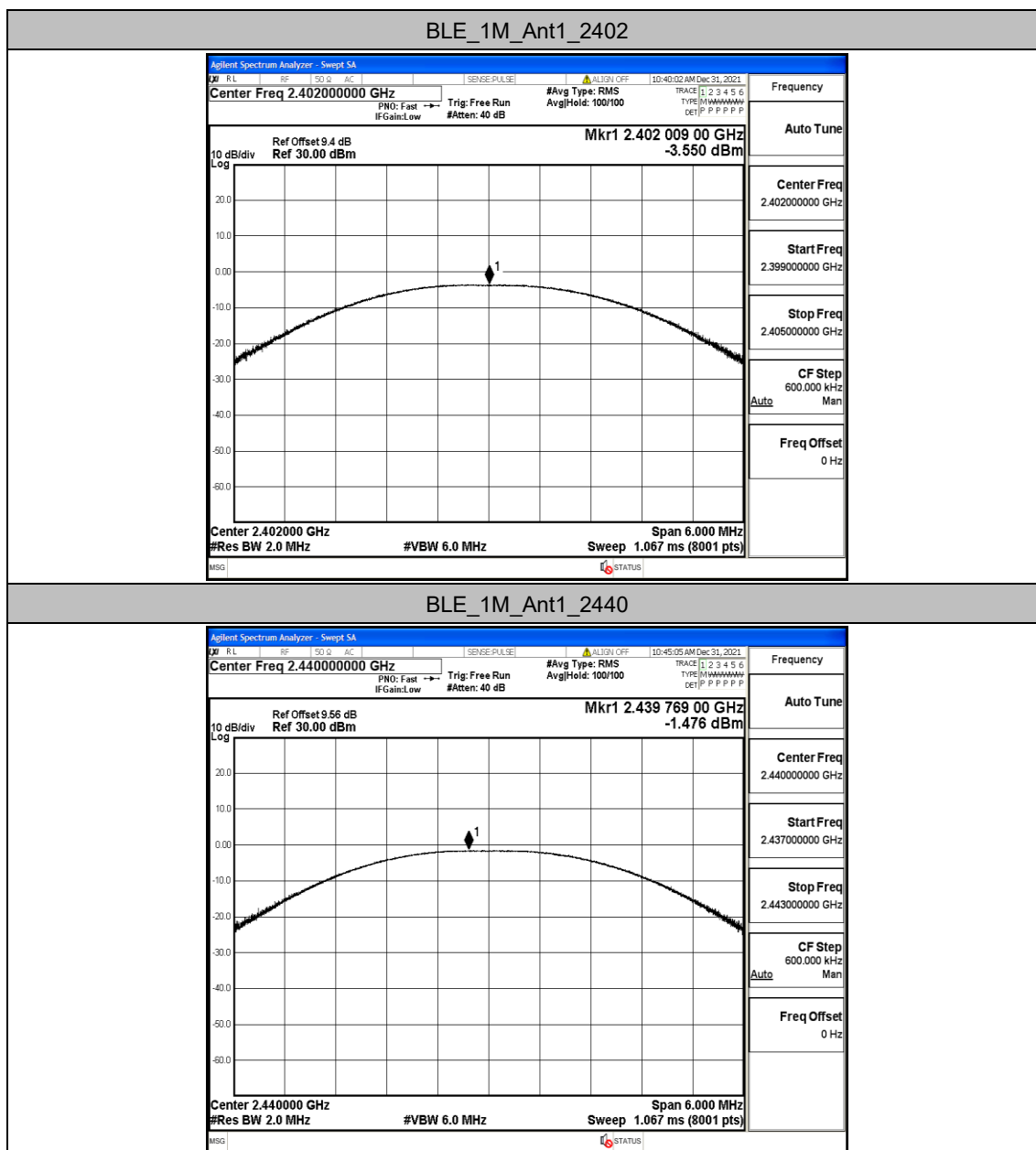


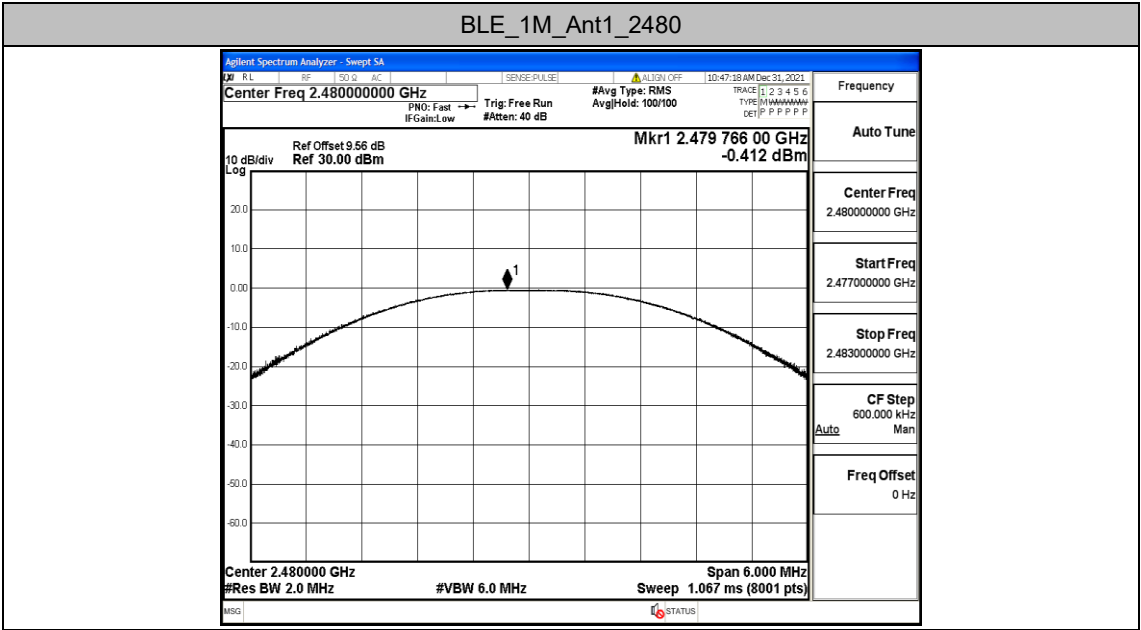
Appendix C: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.55	≤30	PASS
		2440	-1.48	≤30	PASS
		2480	-0.41	≤30	PASS

Test Graphs



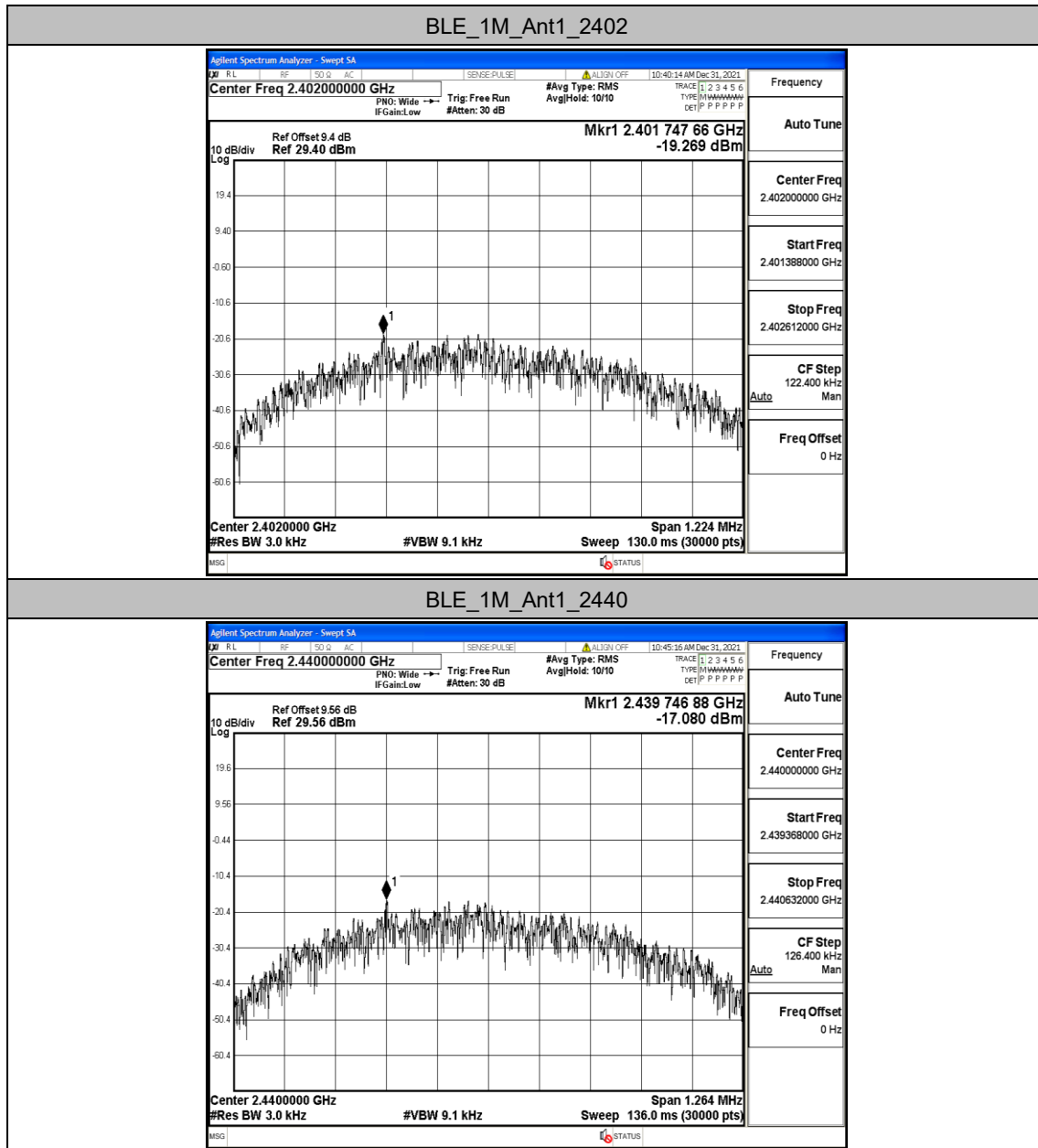


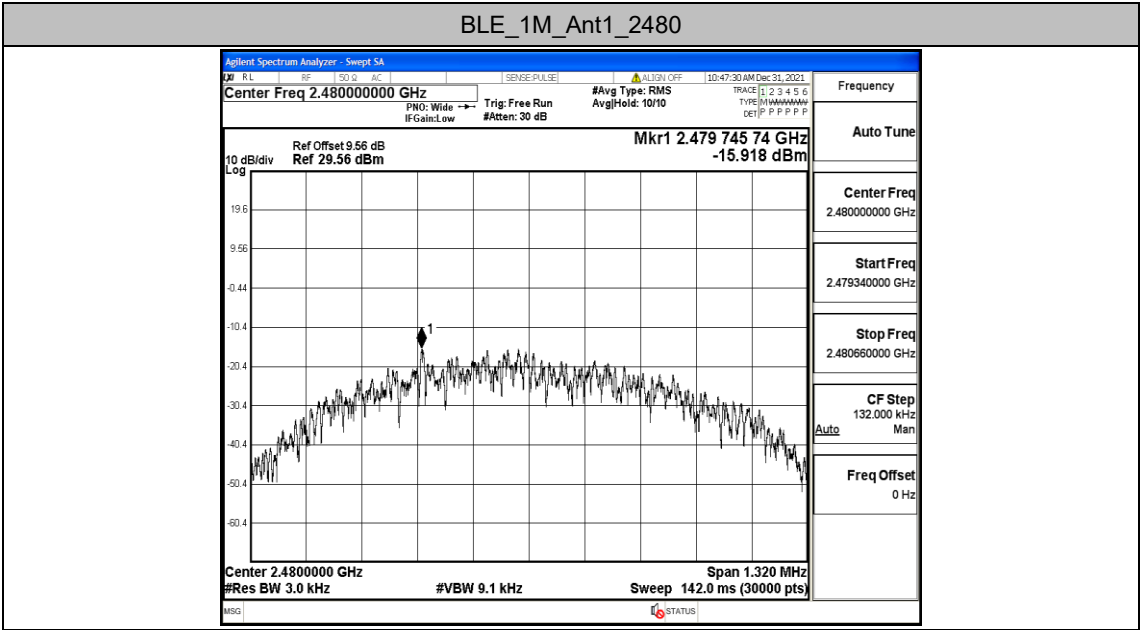
Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.27	≤8	PASS
		2440	-17.08	≤8	PASS
		2480	-15.92	≤8	PASS

Test Graphs



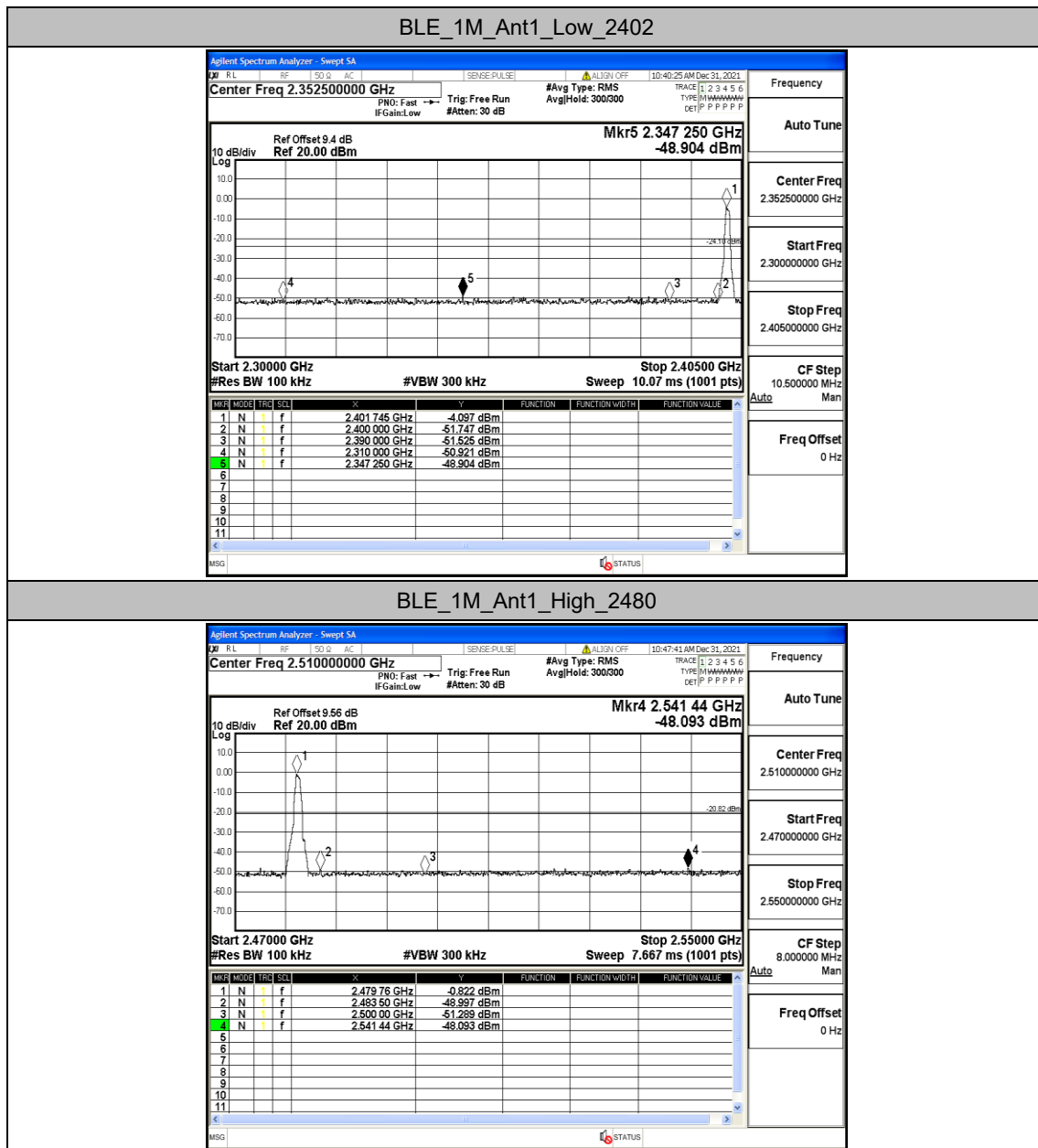


Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-4.10	-48.9	≤-24.1	PASS
		High	2480	-0.82	-48.09	≤-20.82	PASS

Test Graphs



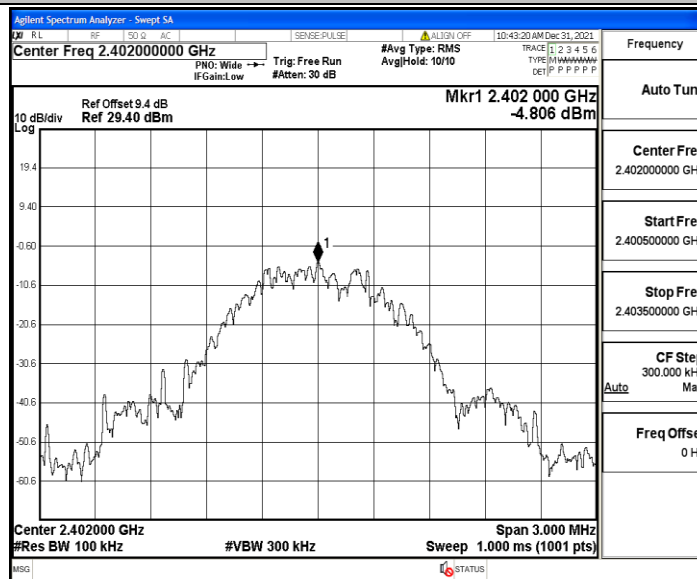
Appendix F: Conducted Spurious Emission

Test Result

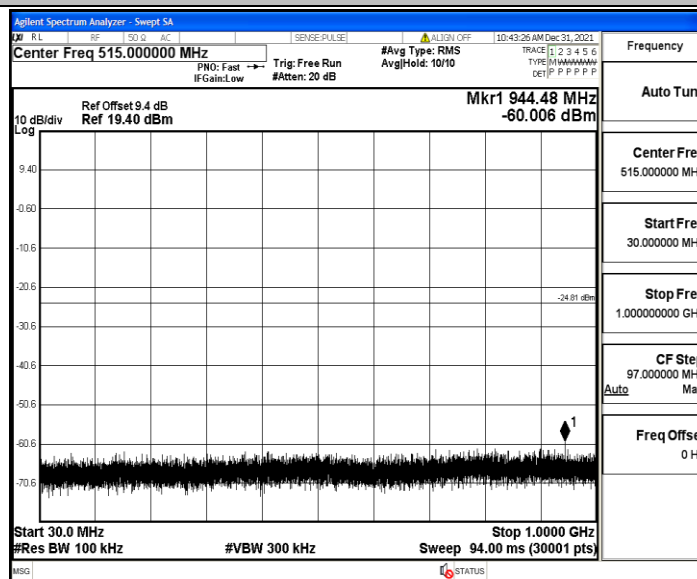
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-4.81	-4.81	---	PASS
			30~1000	-4.81	-60.01	≤-24.81	PASS
			1000~26500	-4.81	-51.59	≤-24.81	PASS
		2440	Reference	-2.00	-2.00	---	PASS
			30~1000	-2.00	-61.36	≤-22	PASS
			1000~26500	-2.00	-52.2	≤-22	PASS
		2480	Reference	-1.35	-1.35	---	PASS
			30~1000	-1.35	-60.29	≤-21.35	PASS
			1000~26500	-1.35	-52.57	≤-21.35	PASS

Test Graphs

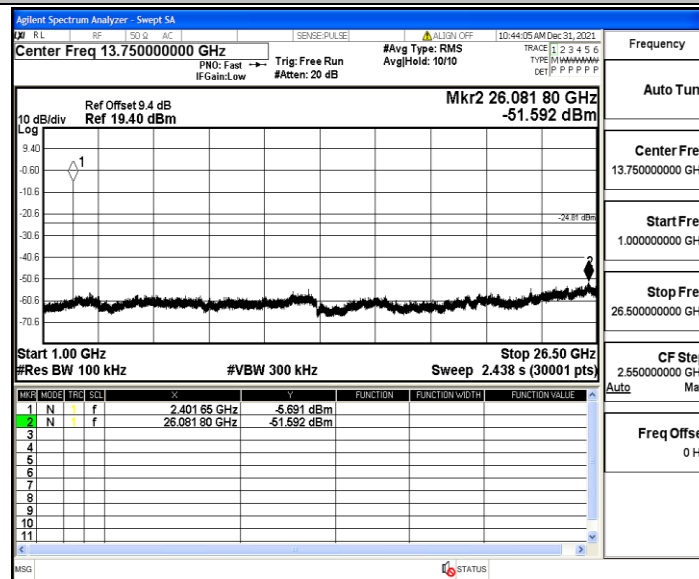
BLE_1M_Ant1_2402_0~Reference



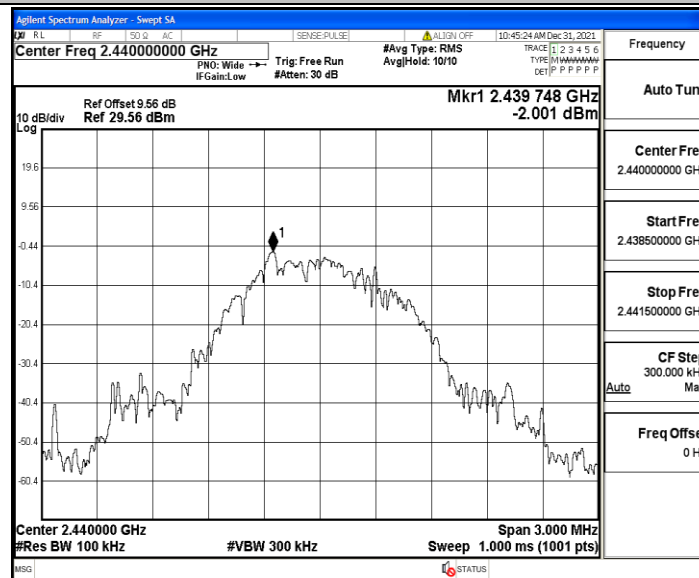
BLE_1M_Ant1_2402_30~1000



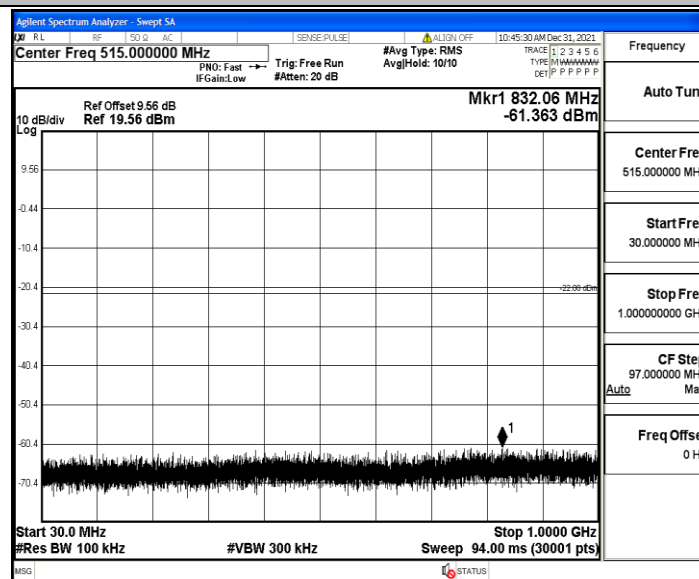
BLE_1M_Ant1_2402_1000~26500



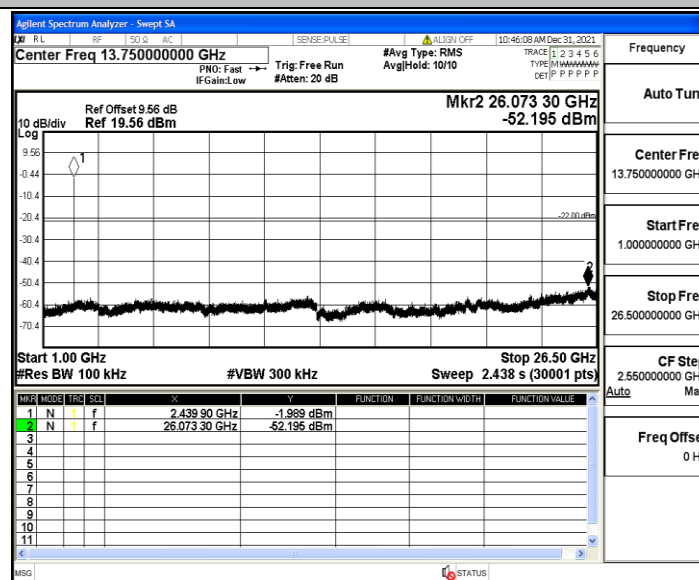
BLE_1M_Ant1_2440_0~Reference



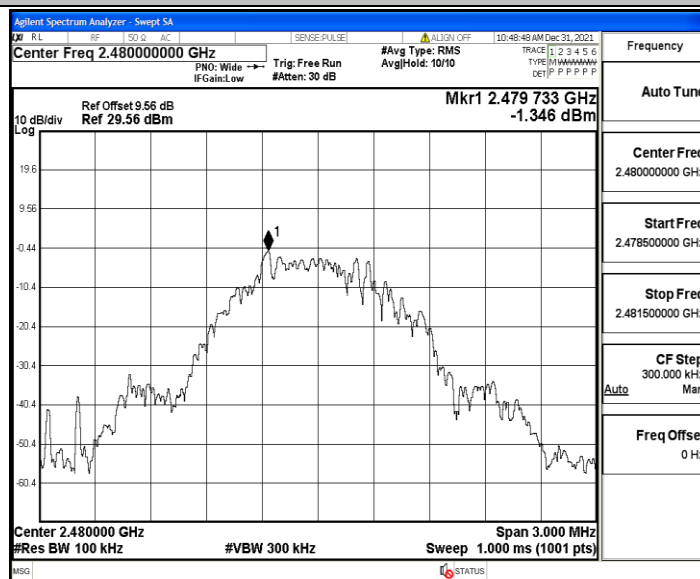
BLE_1M_Ant1_2440_30~1000



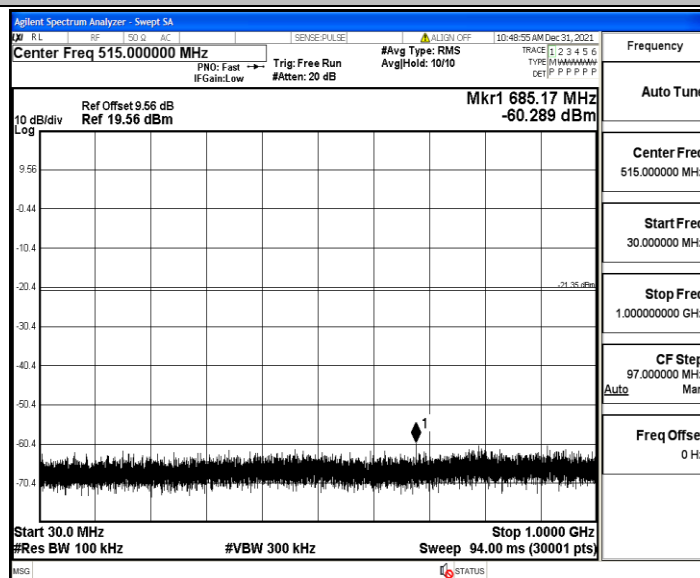
BLE_1M_Ant1_2440_1000~26500



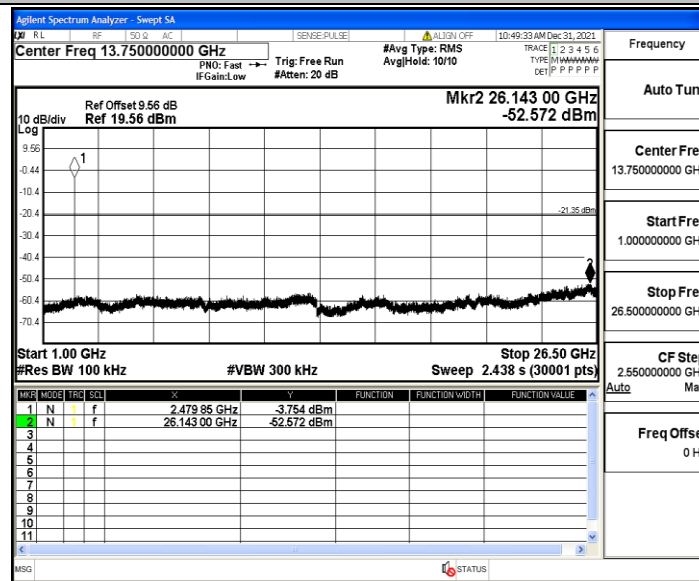
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
BLE_1M	Ant1	2402	0.40	0.63	63.49	2.50
		2440	0.39	0.62	62.90	2.56
		2480	0.39	0.63	61.90	2.56

BLE_1M_Ant1_2402

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.402000000 GHz

Ref Offset 9.4 dB

Ref 20.00 dBm

ΔMkr3 630.0 μs

25.99 dB

Span 0 Hz

Res BW 8 MHz

#VBW 8.0 MHz

Sweep 10.13 ms (8000 pts)

Mkrs	Mkrs	Freq	Level	Function	Function Width	Function Value
1	N	t	820.0 μs	-29.92 dBm		
2	Δ1	t (Δ)	400.0 μs (Δ)	-5.81 dB		
3	Δ1	t (Δ)	630.0 μs (Δ)	25.99 dB		

Frequency

Auto Tune

Center Freq 2.402000000 GHz

Start Freq 2.402000000 GHz

Stop Freq 2.402000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

BLE_1M_Ant1_2440

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.440000000 GHz

Ref Offset 9.56 dB

Ref 20.00 dBm

ΔMkr3 620.0 μs

-27.21 dB

Span 0 Hz

Res BW 8 MHz

#VBW 8.0 MHz

Sweep 10.13 ms (8000 pts)

Mkrs	Mkrs	Freq	Level	Function	Function Width	Function Value
1	N	t	8.950 ms	-1.62 dBm		
2	Δ1	t (Δ)	390.0 μs (Δ)	0.20 dB		
3	Δ1	t (Δ)	620.0 μs (Δ)	-27.21 dB		

Frequency

Auto Tune

Center Freq 2.440000000 GHz

Start Freq 2.440000000 GHz

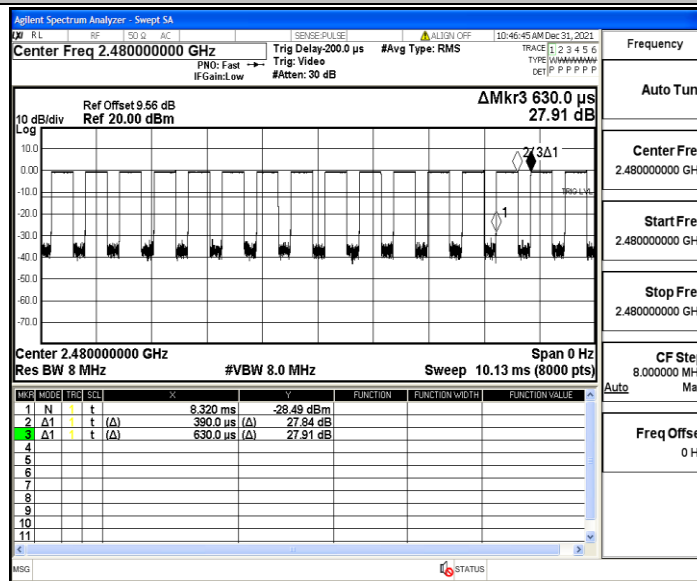
Stop Freq 2.440000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

BLE_1M_Ant1_2480



Appendix H: Emissions in Restricted Bands

Test Result

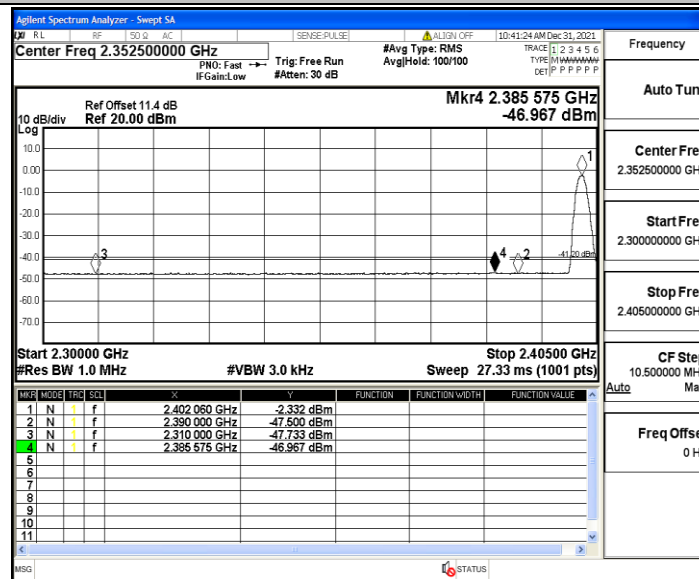
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-47.73	≤-41.20	PASS
				AV	2385.575	-46.97	≤-41.20	PASS
				AV	2390.000	-47.5	≤-41.20	PASS
				Peak	2310.000	-41.69	≤-21.20	PASS
				Peak	2361.845	-37.8	≤-21.20	PASS
				Peak	2390.000	-40.85	≤-21.20	PASS
		High	2480	AV	2483.500	-46.58	≤-41.20	PASS
				AV	2495.360	-46.25	≤-41.20	PASS
				AV	2500.000	-46.71	≤-41.20	PASS
				Peak	2483.500	-40.21	≤-21.20	PASS
				Peak	2487.520	-37.58	≤-21.20	PASS
				Peak	2500.000	-40.73	≤-21.20	PASS

Note:

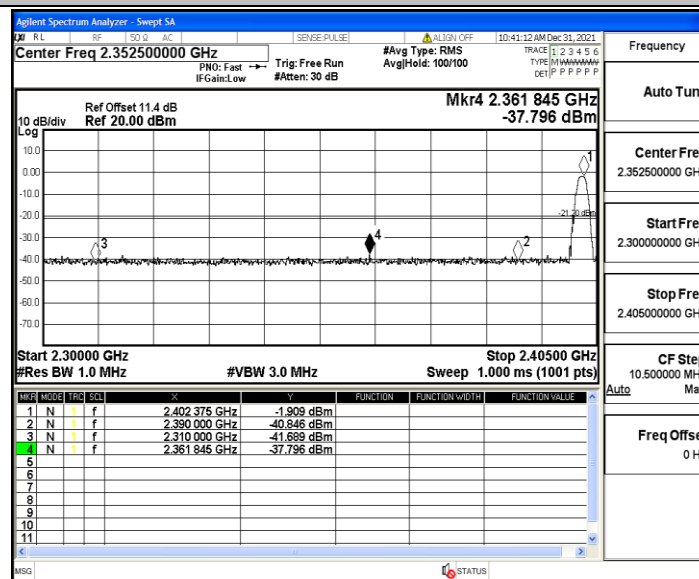
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

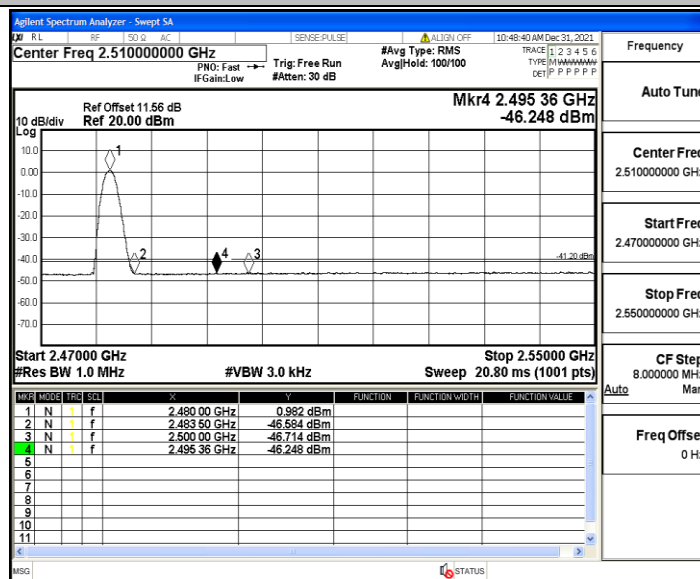
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

