Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Stents Speaker

Test Model: AJ221

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Joker Hu
Supervised by:	Jack Cheng

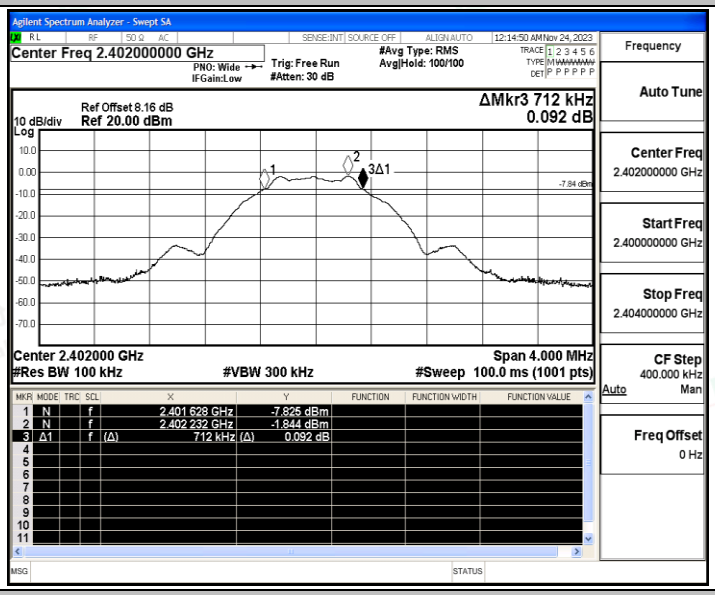
B.1 DTS Bandwidth

Test Result

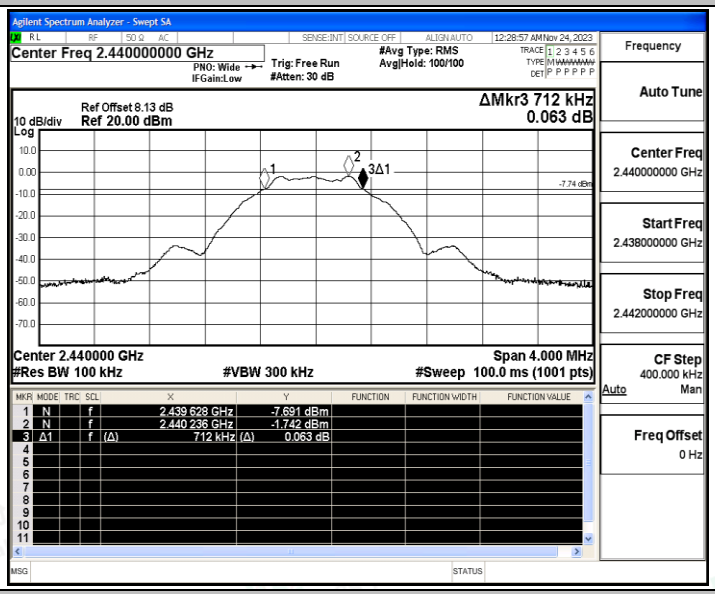
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.712	2401.628	2402.340	0.5	PASS
		2440	0.712	2439.628	2440.340	0.5	PASS
		2480	0.716	2479.628	2480.344	0.5	PASS

Test Graphs

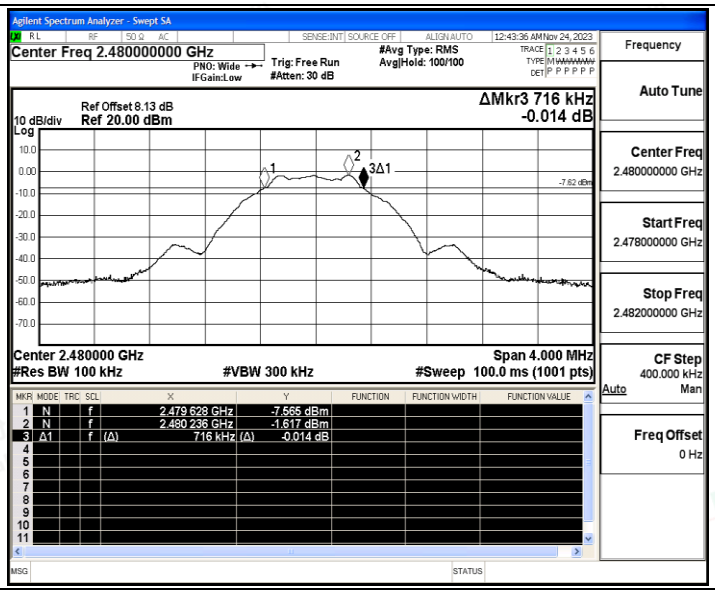
BLE_1M_Ant1_2402



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
12:43:36 AM Nov 24, 2023
Ref Offset 8.13 dB
10 dB/div Ref 20.00 dBm
ΔMkr3 716 kHz
-0.014 dB
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
#Sweep 100.0 ms (1001 pts)
1 N f 2.479 628 GHz -7.565 dBm
2 N f 2.480 236 GHz -1.617 dBm
3 Δ1 f (Δ) 716 kHz (Δ) -0.014 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

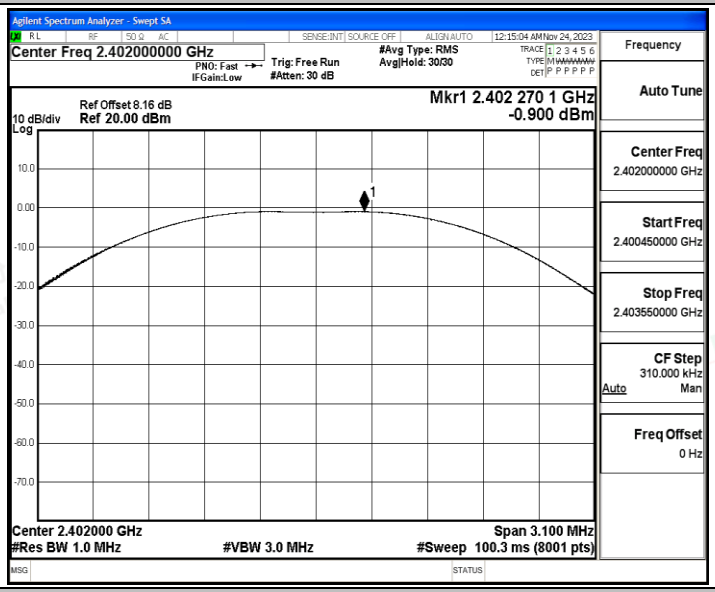
B.2 Maximum conducted output power

Test Result

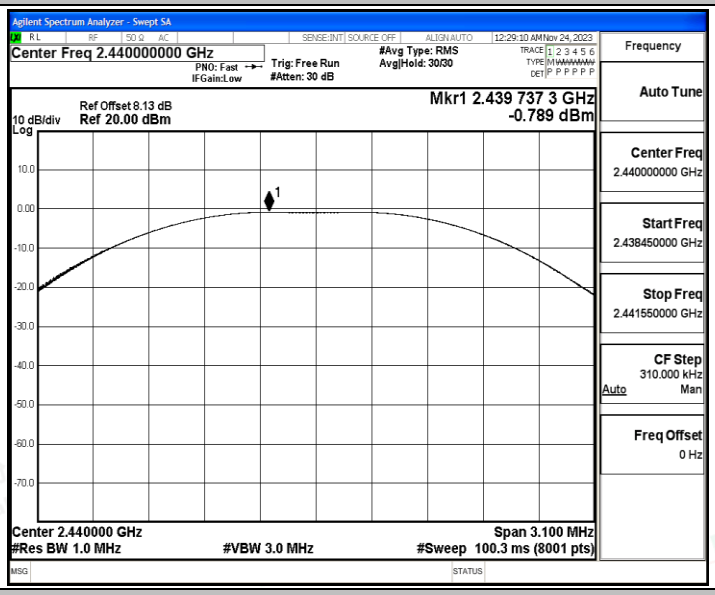
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-0.9	≤30	PASS
		2440	-0.79	≤30	PASS
		2480	-0.69	≤30	PASS

Test Graphs

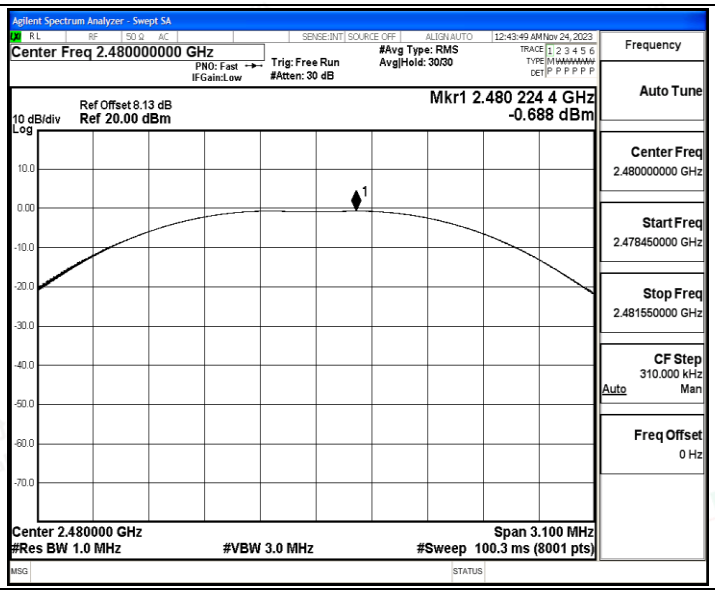
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 30/30
12:43:49 AM Nov 24, 2023
Frequency
Auto Tune
Ref Offset 8.13 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 224 4 GHz
-0.688 dBm
Center Freq
2.480000000 GHz
Start Freq
2.478450000 GHz
Stop Freq
2.481550000 GHz
CF Step
310.000 kHz
Auto
Man
Freq Offset
0 Hz
Center 2.480000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.100 MHz
#Sweep 100.3 ms (8001 pts)

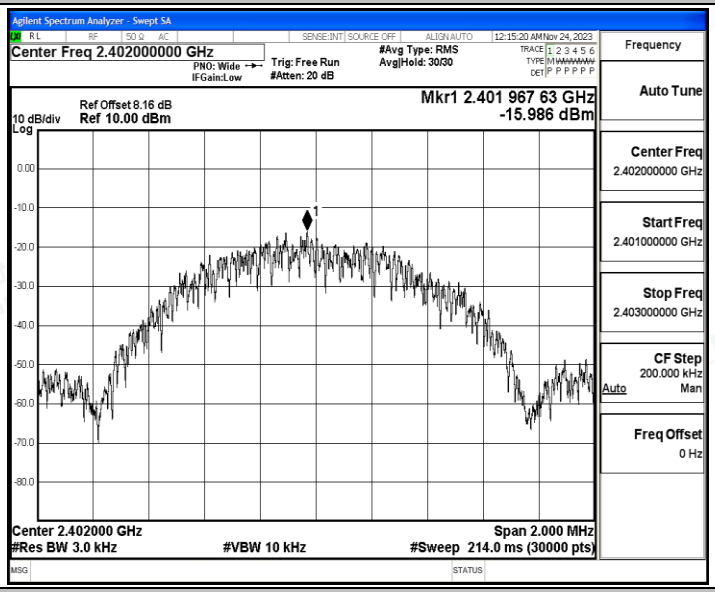
B.3 Maximum power spectral density

Test Result

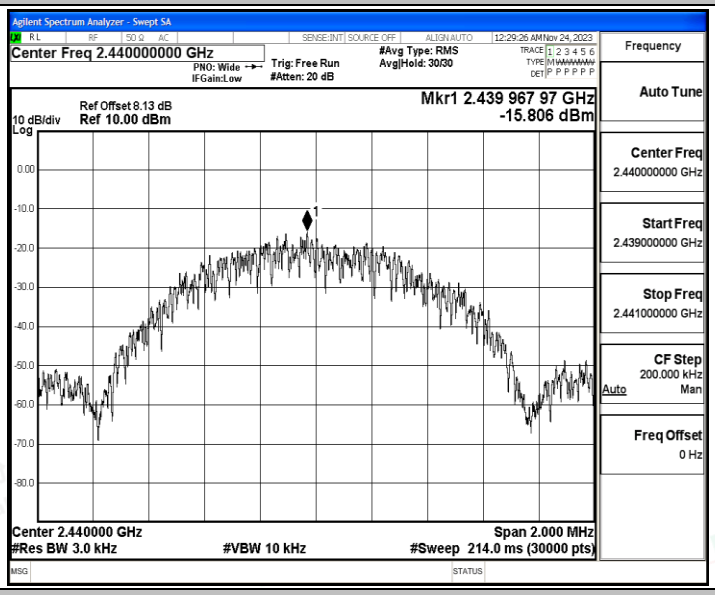
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.99	≤8.00	PASS
		2440	-15.81	≤8.00	PASS
		2480	-15.76	≤8.00	PASS

Test Graphs

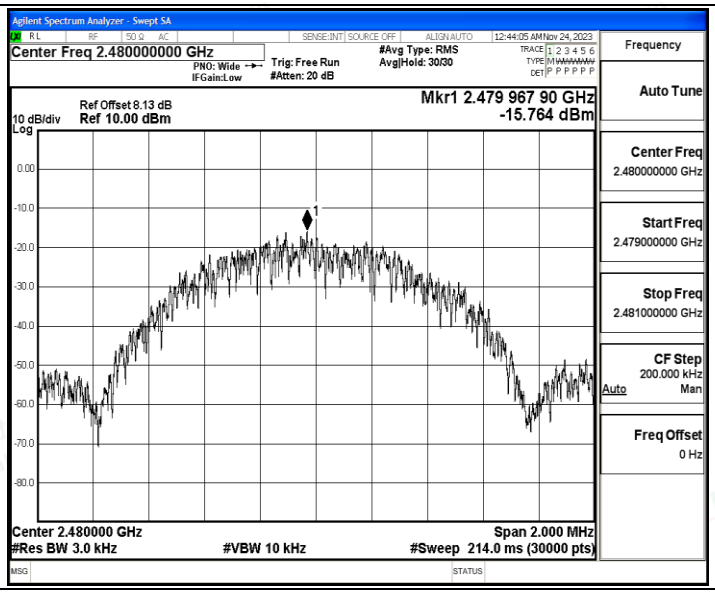
BLE_1M_Ant1_2402



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: 30/30
12:44:05 AM Nov 24, 2023
Ref Offset 8.13 dB
10 dB/div
Ref 10.00 dBm
Mkr1 2.479 967 90 GHz
-15.764 dBm
Center 2.480000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 2.000 MHz
#Sweep 214.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479000000 GHz
Stop Freq
2.481000000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

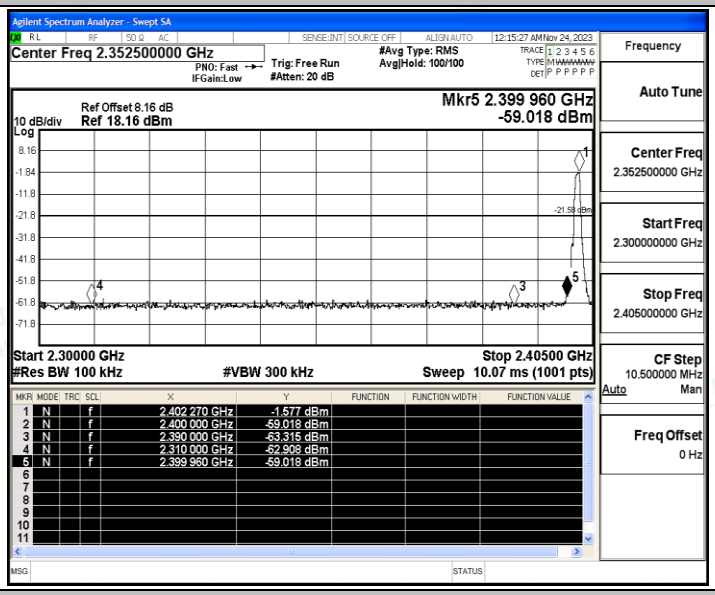
B.4 Band edge measurements

Test Result

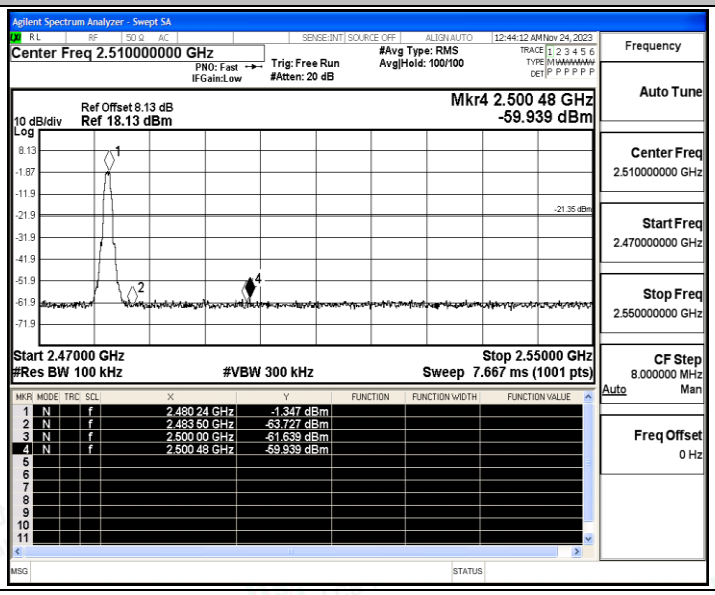
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.58	-59.02	≤-21.58	PASS
		High	2480	-1.35	-59.94	≤-21.35	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



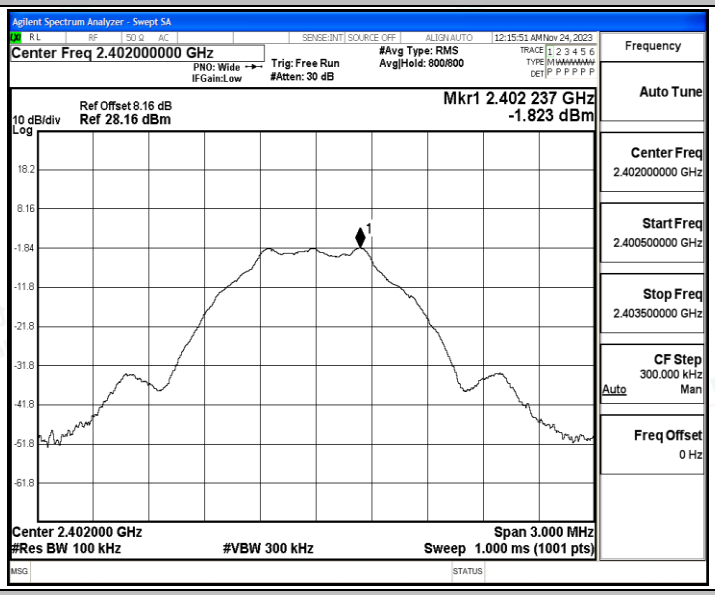
B.5 Conducted Spurious Emission

Test Result

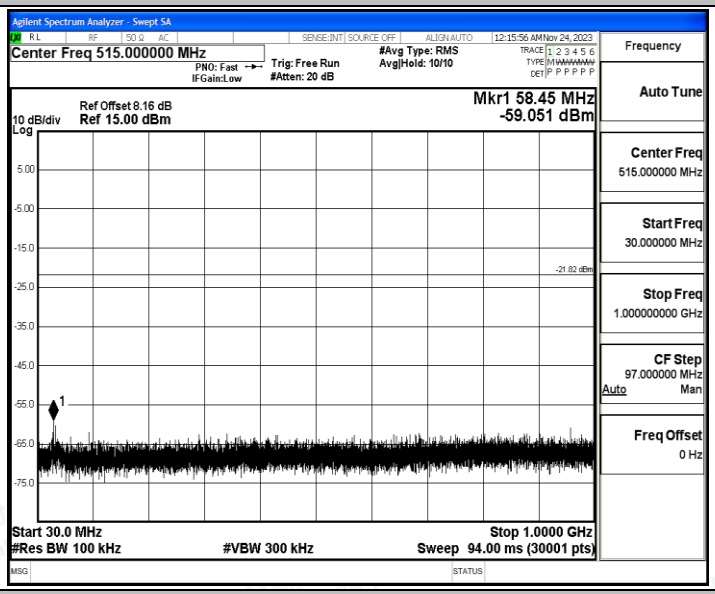
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.82	-1.82	---	PASS
			30~1000	-1.82	-59.05	≤-21.82	PASS
			1000~26500	-1.82	-49.36	≤-21.82	PASS
		2440	Reference	-1.73	-1.73	---	PASS
			30~1000	-1.73	-61.4	≤-21.73	PASS
			1000~26500	-1.73	-48.93	≤-21.73	PASS
		2480	Reference	-1.61	-1.61	---	PASS
			30~1000	-1.61	-61.51	≤-21.61	PASS
			1000~26500	-1.61	-49.47	≤-21.61	PASS

Test Graphs

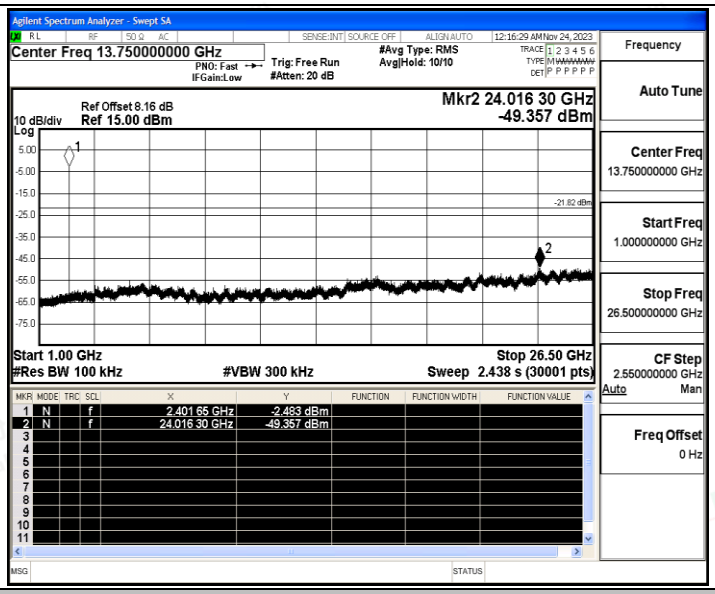
BLE_1M_Ant1_2402_0~Reference



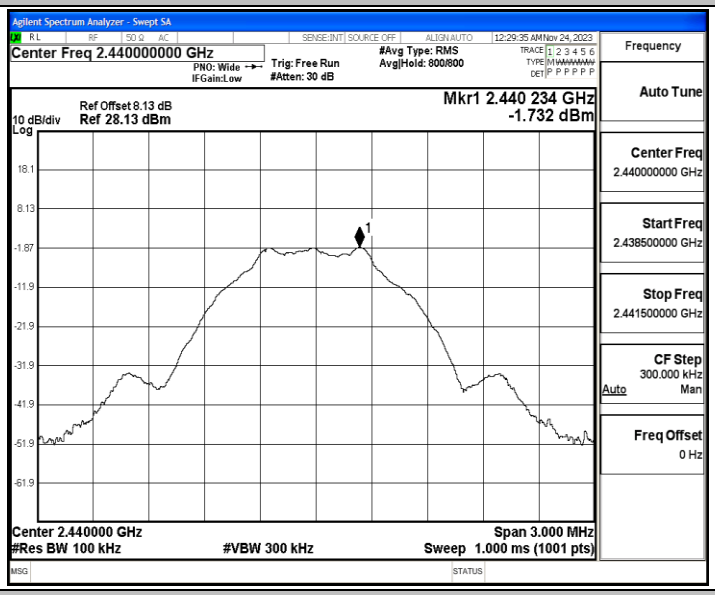
BLE_1M_Ant1_2402_30~1000



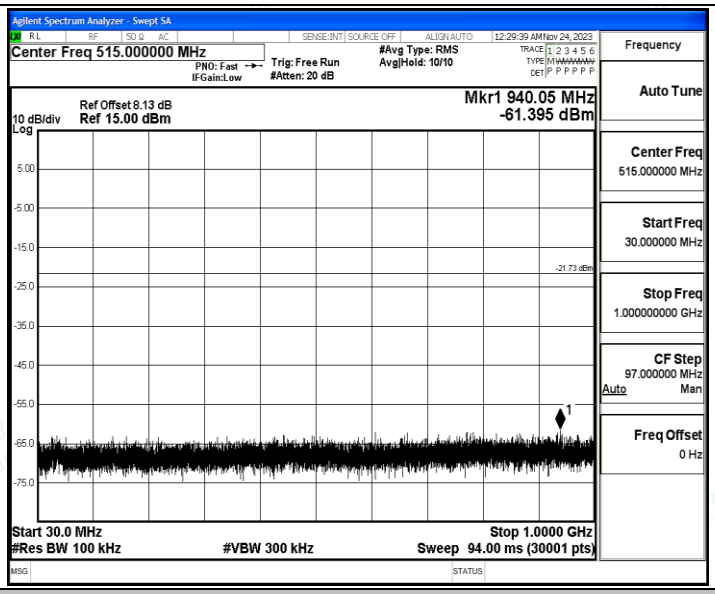
BLE_1M_Ant1_2402_1000~26500



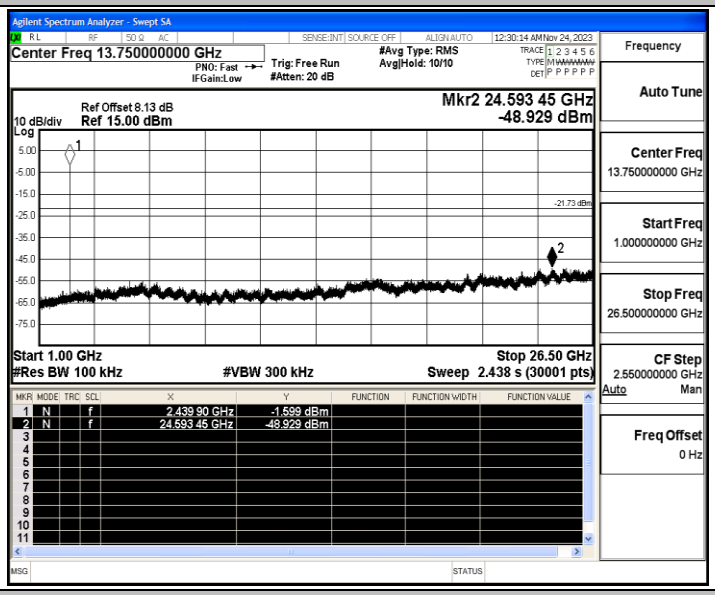
BLE_1M_Ant1_2440_0~Reference



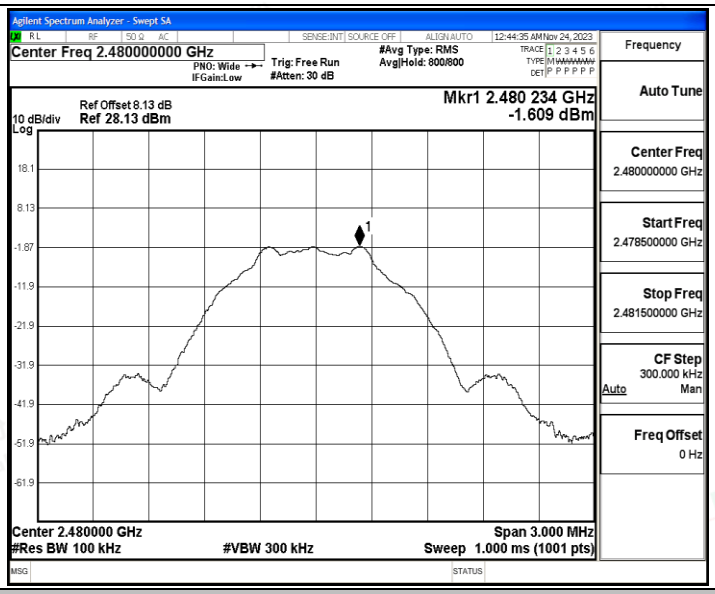
BLE_1M_Ant1_2440_30~1000



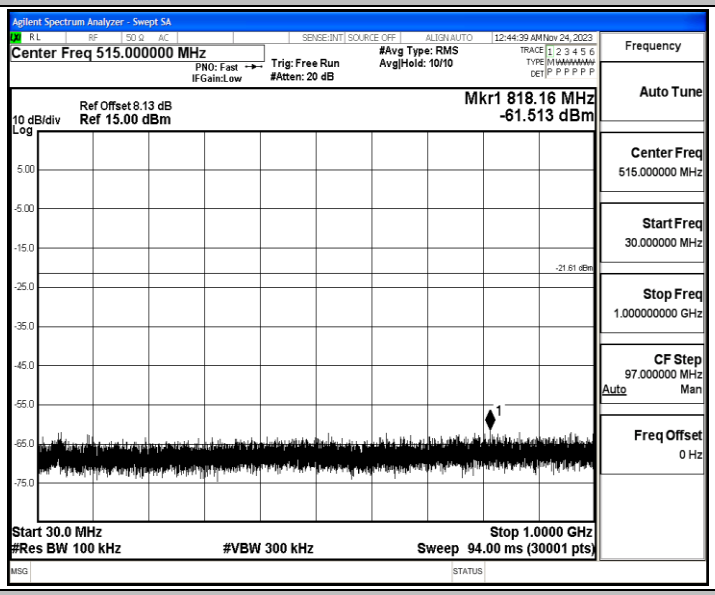
BLE_1M_Ant1_2440_1000~26500



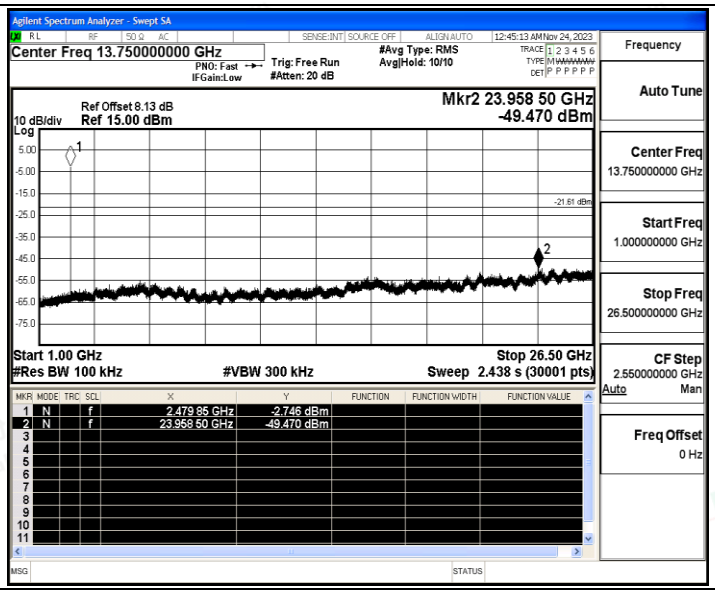
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 10/10
12:45:13 AM Nov 24, 2023
Ref Offset 8.13 dB
10 dB/div Ref 15.00 dBm
Log
Mkr2 23.958 50 GHz
-49.470 dBm
-21.61 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N f 2.479 85 GHz -2.746 dBm
2 N f 23.958 50 GHz -49.470 dBm
Frequency
Auto Tune
Center Freq
13.750000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
2.550000000 GHz
Auto Man
Freq Offset
0 Hz

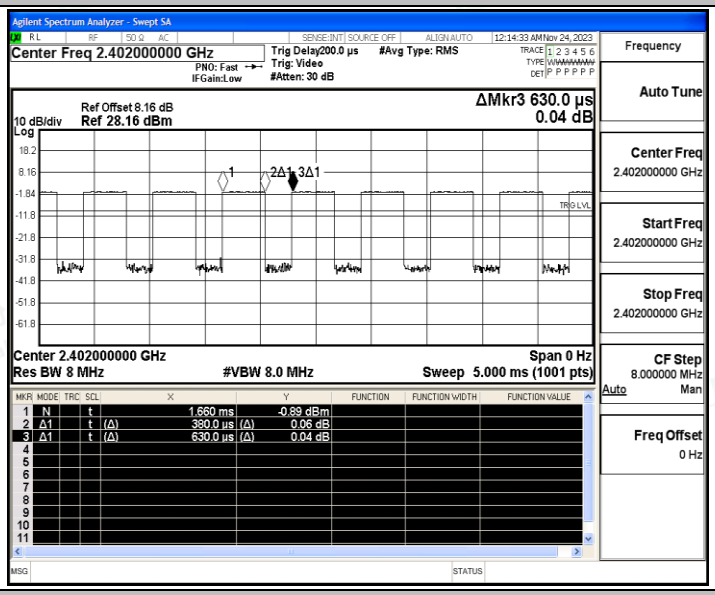
B.6 Duty Cycle

Test Result

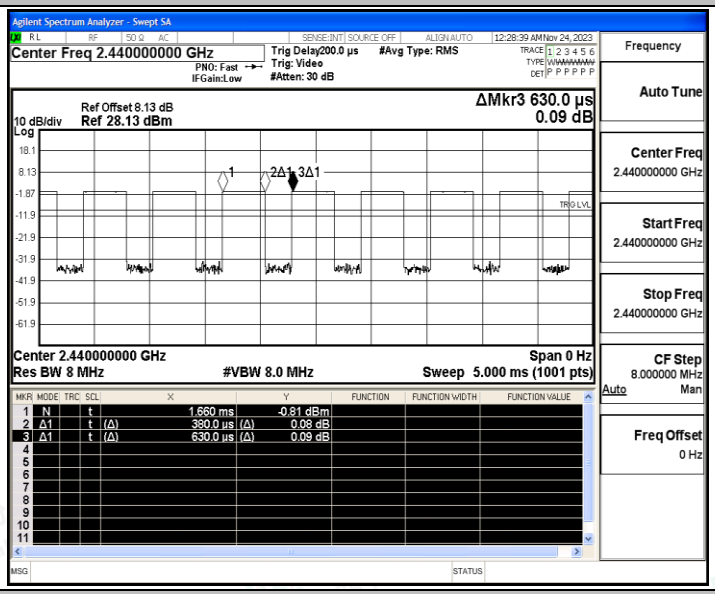
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2440	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2480	0.38	0.63	0.6032	60.32	2.20	2.63	---	---

Test Graphs

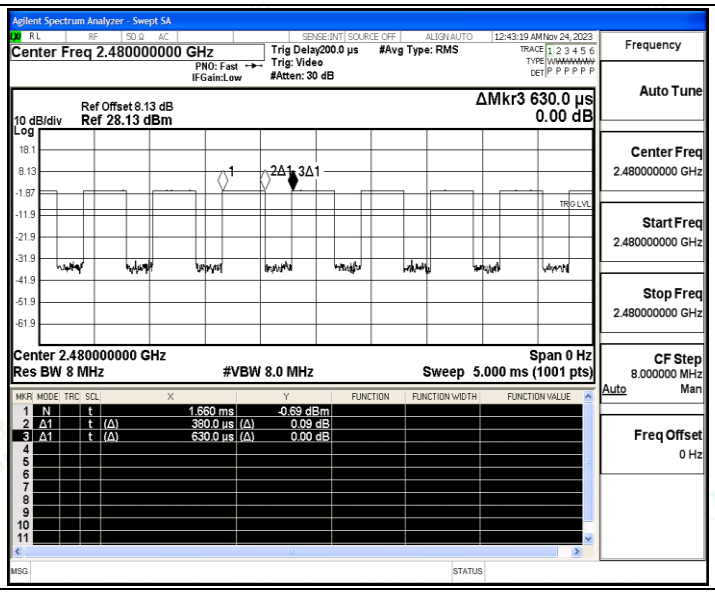
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig Delay200.0 µs
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
12:43:19 AM Nov 24, 2023
Frequency
Auto Tune
Ref Offset 8.13 dB
10 dB/div
Ref 28.13 dBm
ΔMkr3 630.0 µs
0.00 dB
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 N t 1.660 ms -0.69 dBm
2 Δ1 t (Δ) 380.0 µs (Δ) 0.09 dB
3 Δ1 t (Δ) 630.0 µs (Δ) 0.00 dB

B.7 Emissions in Restricted Bands

Test Result

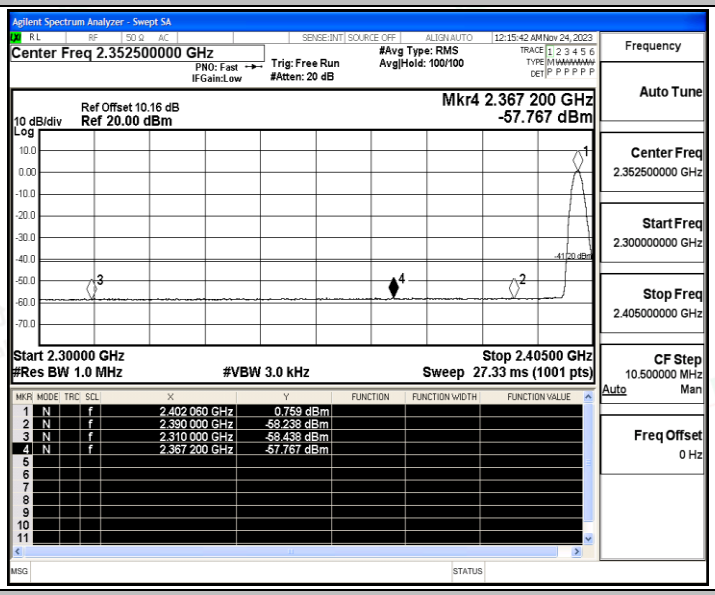
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.44	≤-41.20	36.76	≤54	PASS
				AV	2367.200	-57.77	≤-41.20	37.43	≤54	PASS
				AV	2390.000	-58.24	≤-41.20	36.96	≤54	PASS
				Peak	2310.000	-53.3	≤-21.20	41.90	≤74	PASS
				Peak	2348.510	-48.95	≤-21.20	46.25	≤74	PASS
				Peak	2390.000	-51.25	≤-21.20	43.95	≤74	PASS
		High	2480	AV	2483.500	-54.25	≤-41.20	40.95	≤54	PASS
				AV	2483.520	-54.25	≤-41.20	40.95	≤54	PASS
				AV	2500.000	-58.13	≤-41.20	37.07	≤54	PASS
				Peak	2483.500	-50.7	≤-21.20	44.50	≤74	PASS
				Peak	2484.560	-49.15	≤-21.20	46.05	≤74	PASS
				Peak	2500.000	-51.6	≤-21.20	43.60	≤74	PASS

Note：

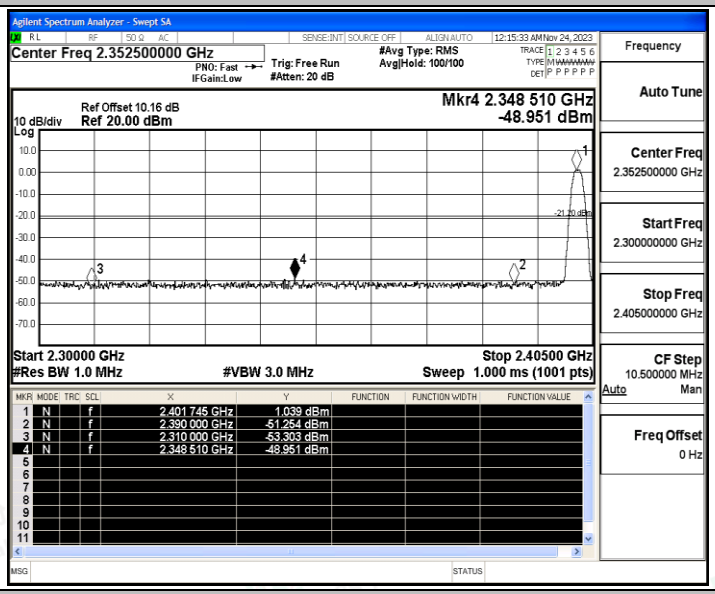
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

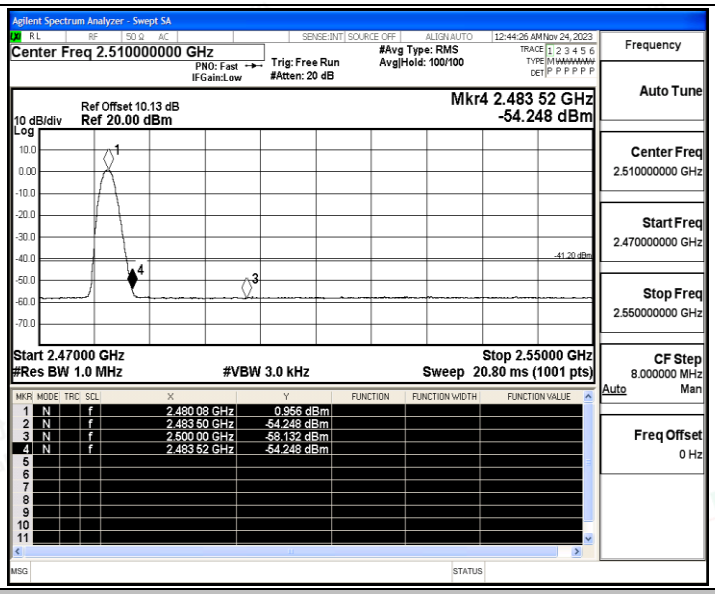
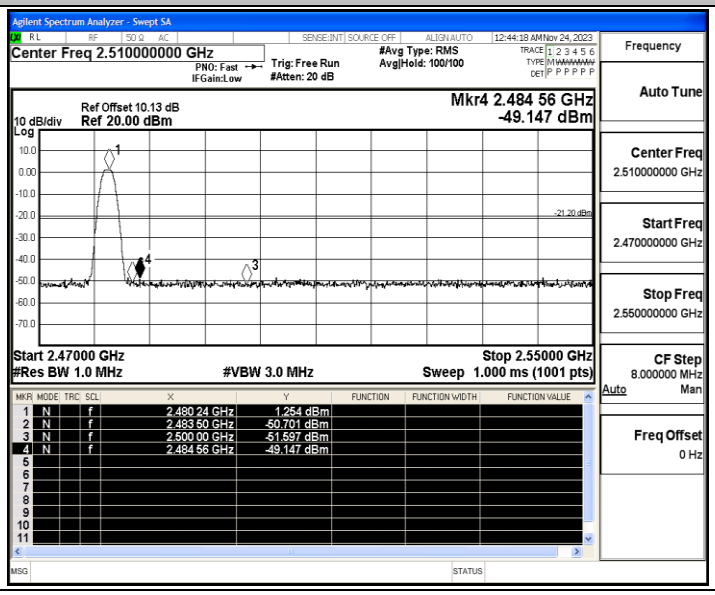
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak