Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: LED strip

Test Model: AC107

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Min Zhu
Supervised by:	Lihu

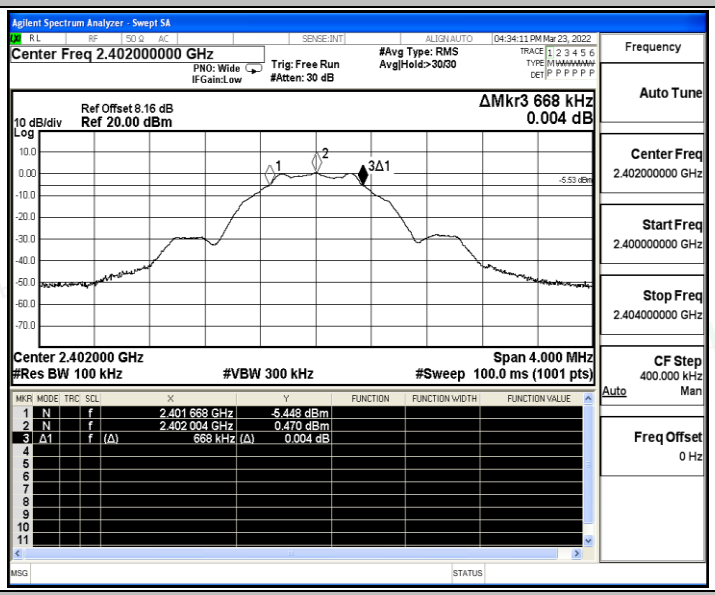
A.1 DTS Bandwidth

Test Result

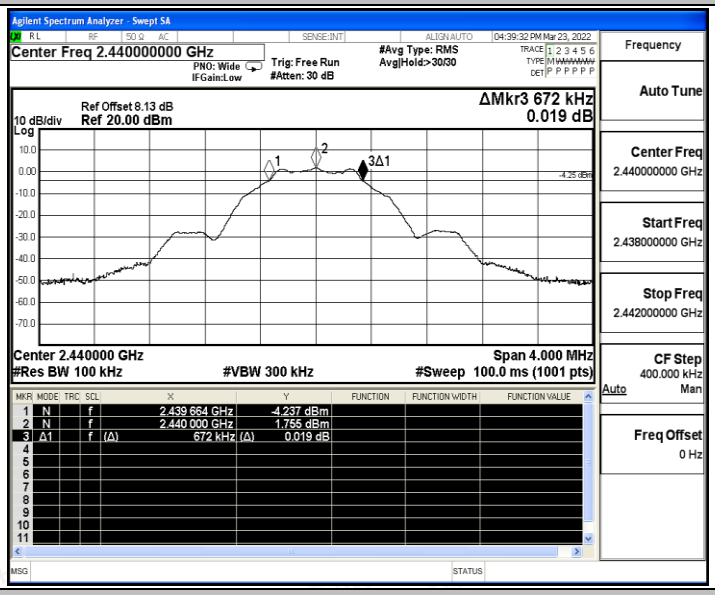
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.668	2401.668	2402.336	0.5	PASS
		2440	0.672	2439.664	2440.336	0.5	PASS
		2480	0.668	2479.664	2480.332	0.5	PASS

Test Graphs

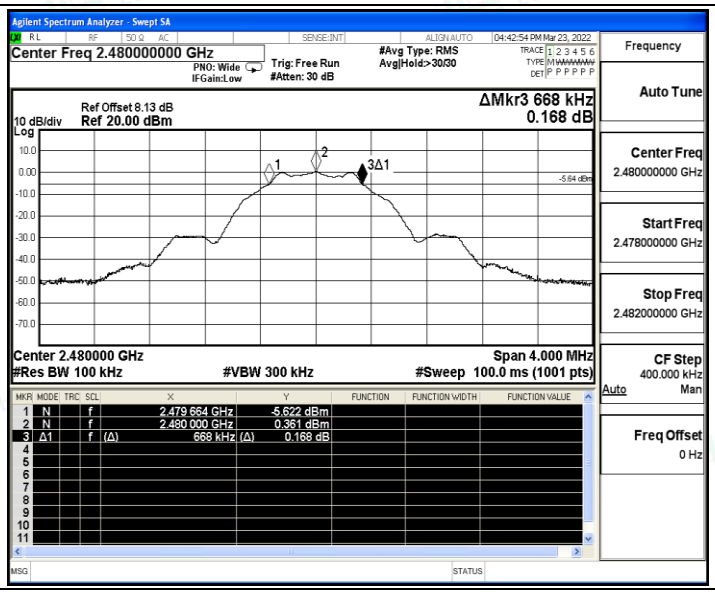
BLE_1M_Ant1_2402



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:>30/30
04:42:54 PM Mar 23, 2022
Ref Offset 8.13 dB
10 dB/div Ref 20.00 dBm
Log
ΔMkr3 668 kHz
0.168 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 2.479 664 GHz -5.622 dBm
2 N f 2.480 000 GHz 0.361 dBm
3 Δ1 f (Δ) 668 kHz (Δ) 0.168 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

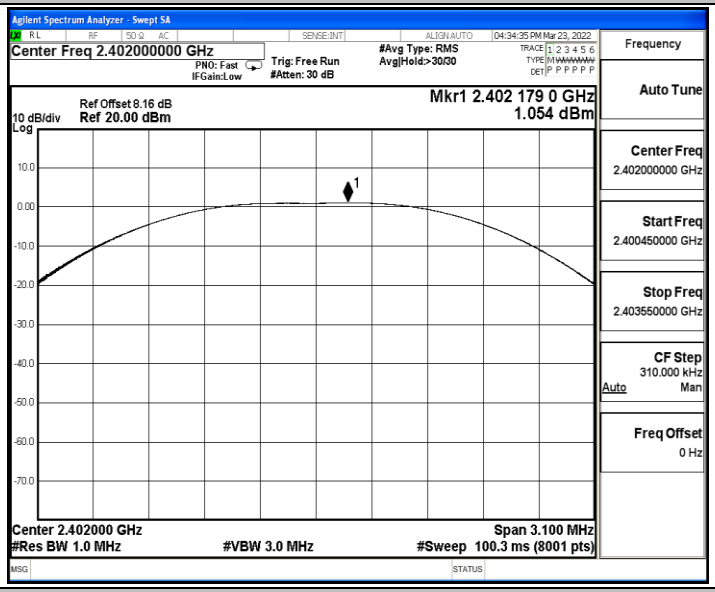
A.2 Maximum conducted output power

Test Result

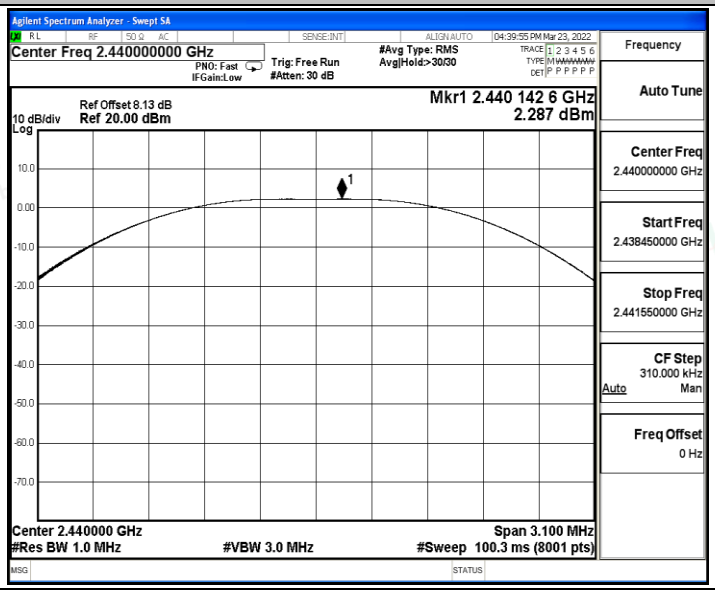
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.05	≤30	PASS
		2440	2.29	≤30	PASS
		2480	0.91	≤30	PASS

Test Graphs

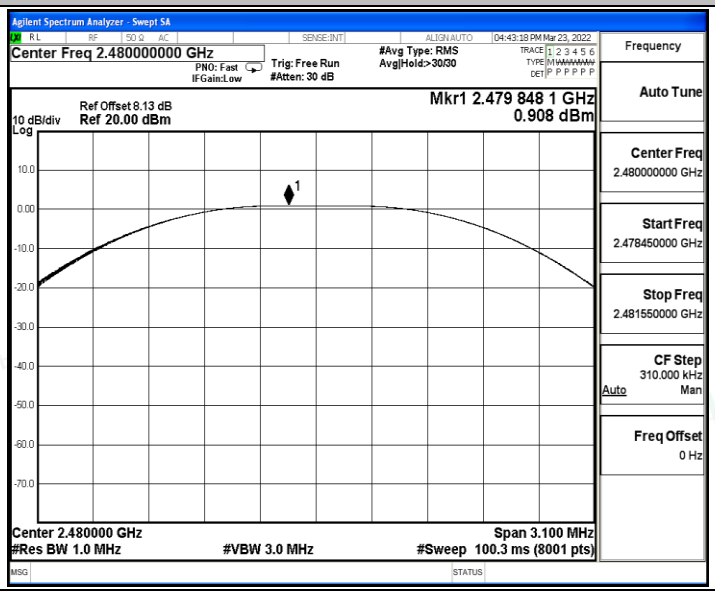
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



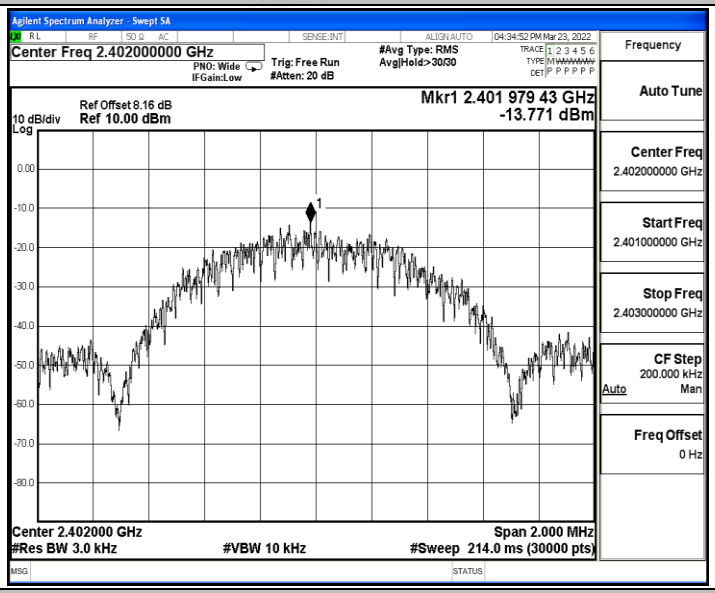
A.3 Maximum power spectral density

Test Result

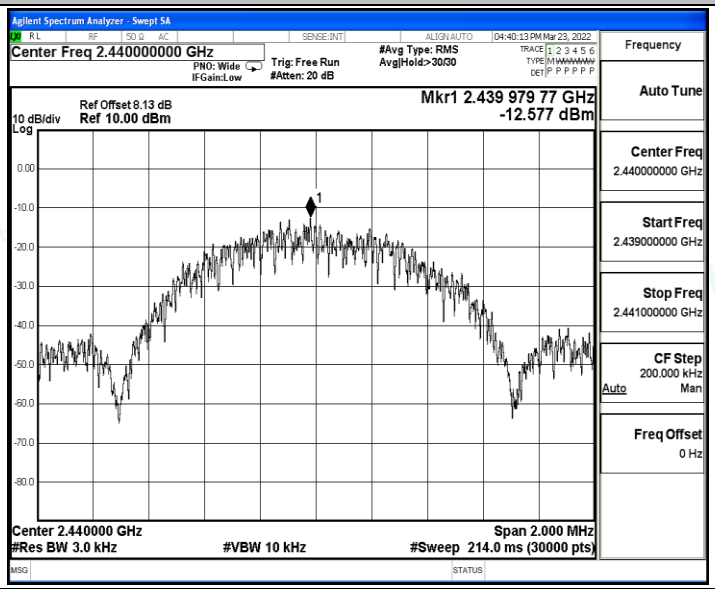
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.77	≤8.00	PASS
		2440	-12.58	≤8.00	PASS
		2480	-13.84	≤8.00	PASS

Test Graphs

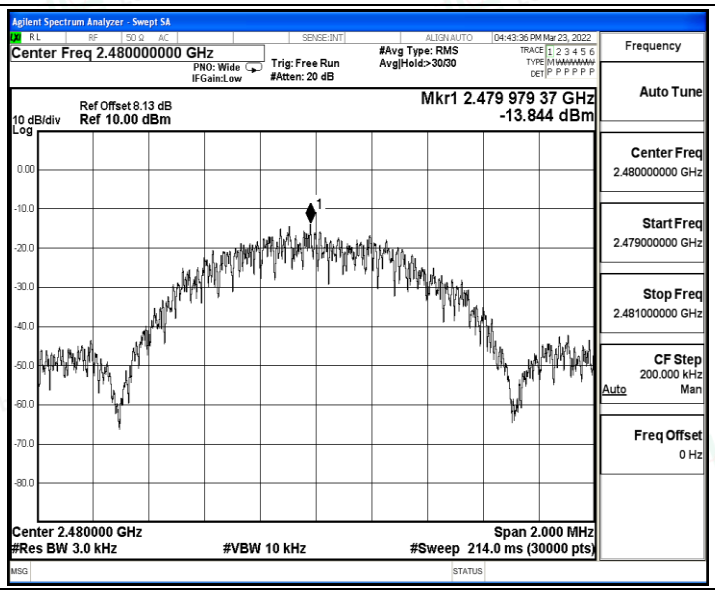
BLE_1M_Ant1_2402



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
04:43:36 PM Mar 23, 2022
Frequency
Auto Tune
Ref Offset 8.13 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 2.479 979 37 GHz
-13.844 dBm
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
Center 2.480000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 2.000 MHz
#Sweep 214.0 ms (30000 pts)

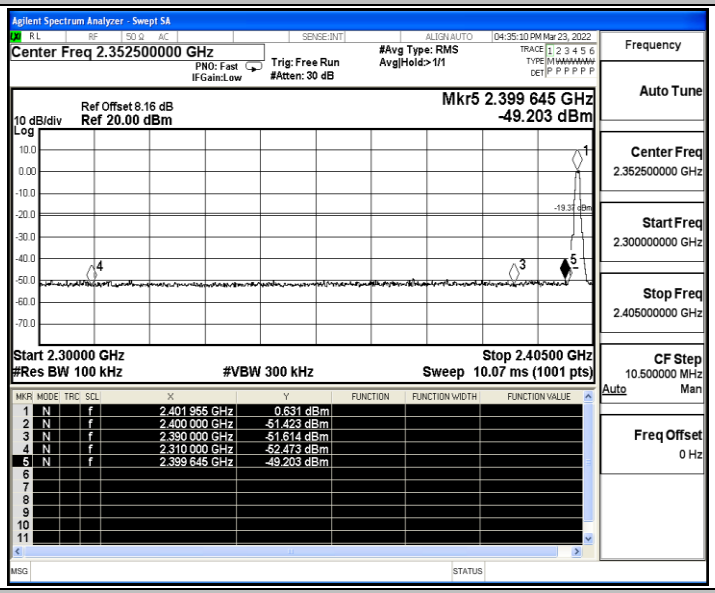
A.4 Band edge measurements

Test Result

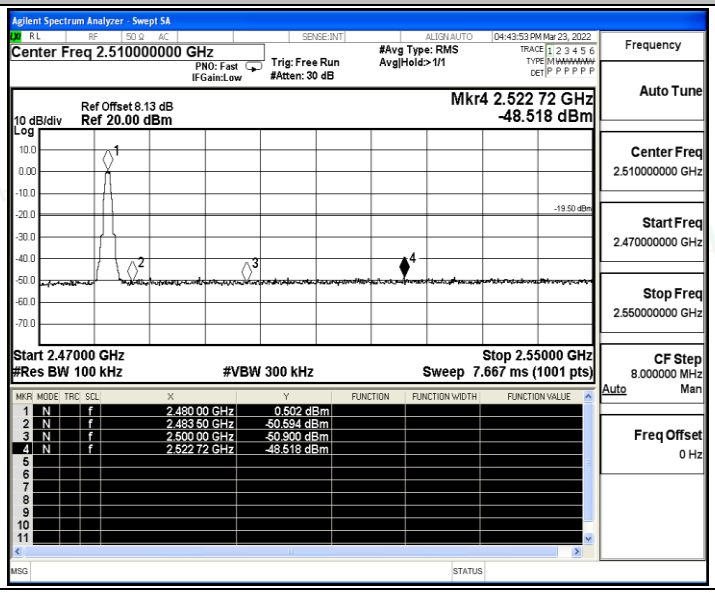
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.63	-49.2	≤-19.37	PASS
		High	2480	0.50	-48.52	≤-19.5	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



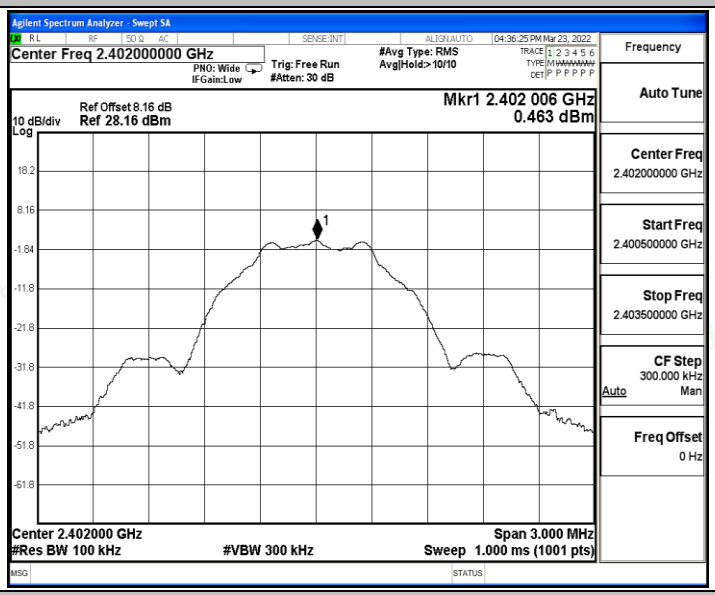
A.5 Conducted Spurious Emission

Test Result

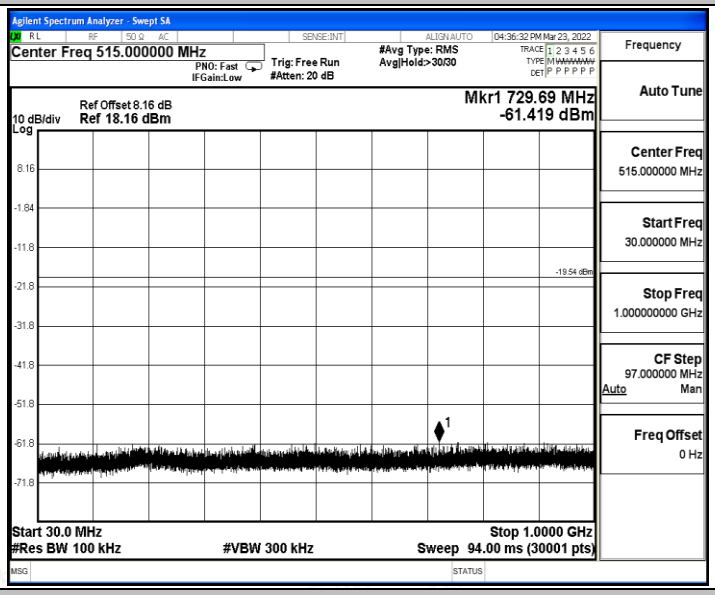
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.46	0.46	---	PASS
			30~1000	0.46	-61.42	≤-19.54	PASS
			1000~26500	0.46	-47.27	≤-19.54	PASS
		2440	Reference	1.76	1.76	---	PASS
			30~1000	1.76	-60.82	≤-18.24	PASS
			1000~26500	1.76	-46.95	≤-18.24	PASS
		2480	Reference	0.38	0.38	---	PASS
			30~1000	0.38	-61.22	≤-19.62	PASS
			1000~26500	0.38	-47.88	≤-19.62	PASS

Test Graphs

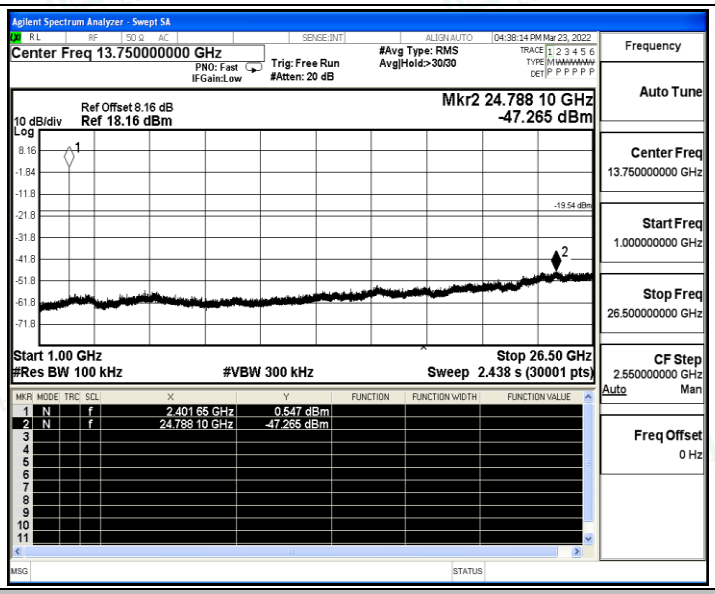
BLE_1M_Ant1_2402_0~Reference



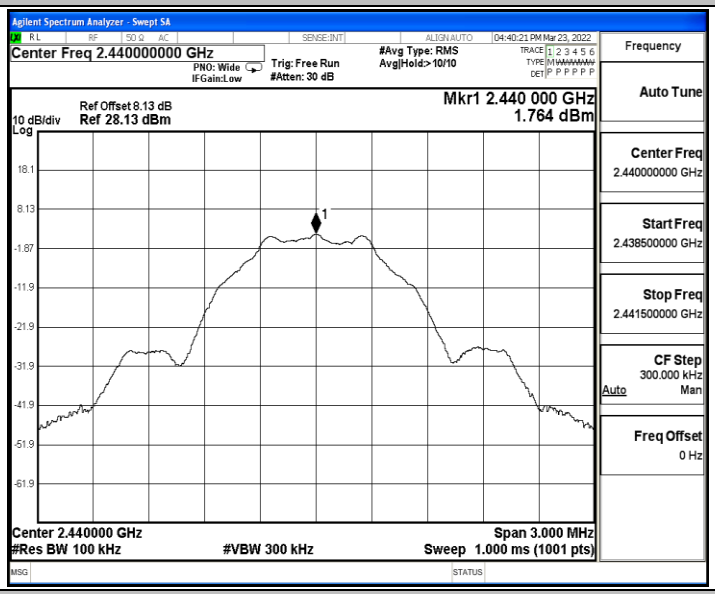
BLE_1M_Ant1_2402_30~1000



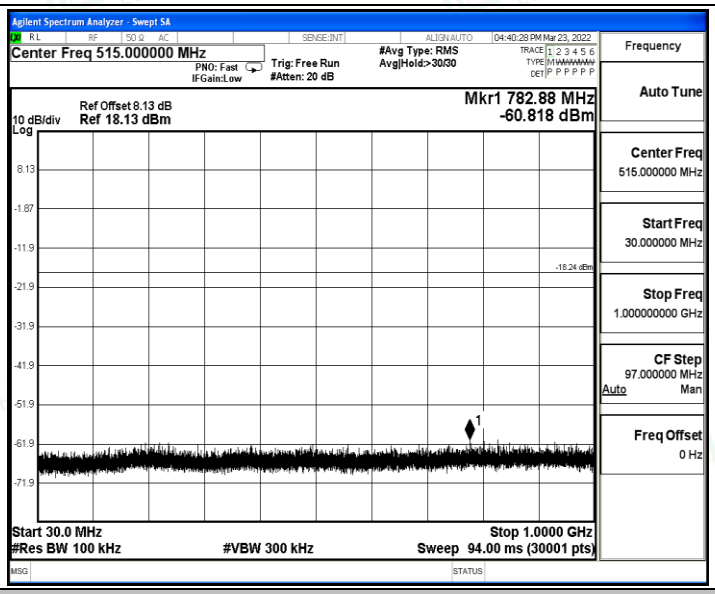
BLE_1M_Ant1_2402_1000~26500



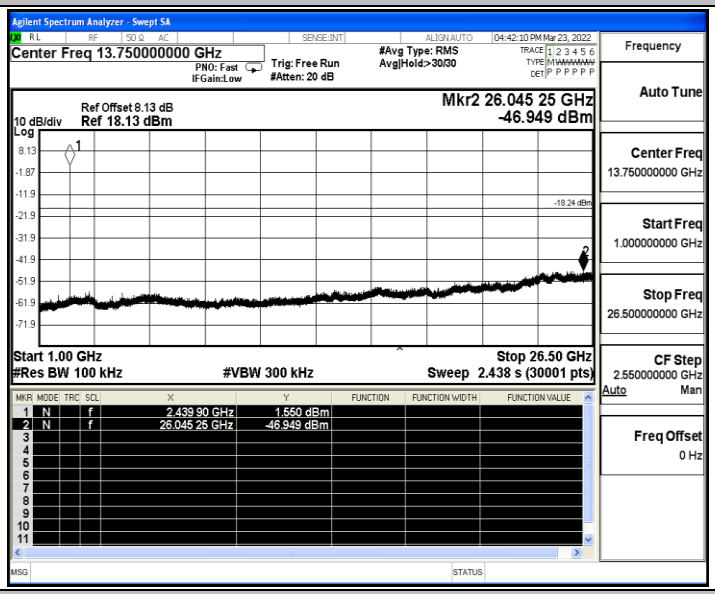
BLE_1M_Ant1_2440_0~Reference



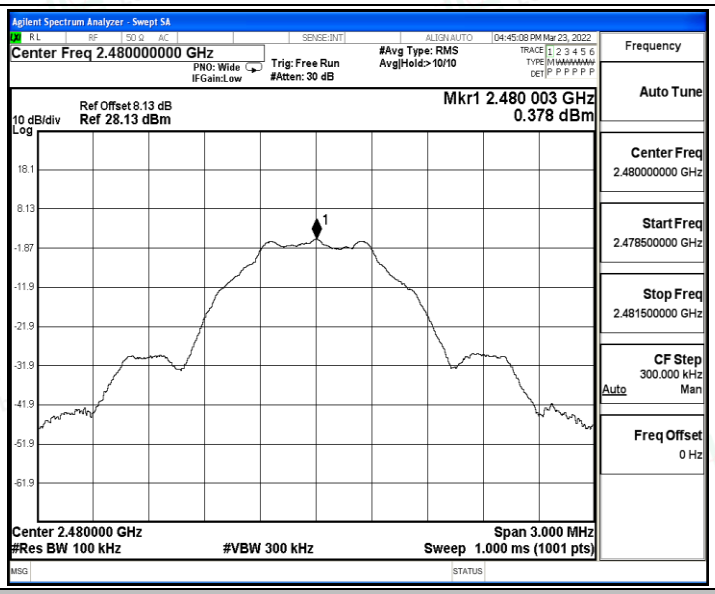
BLE_1M_Ant1_2440_30~1000



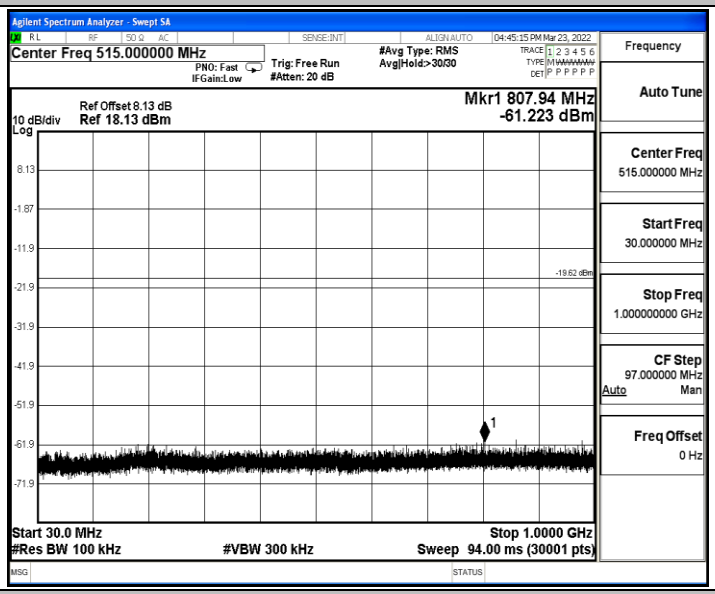
BLE_1M_Ant1_2440_1000~26500



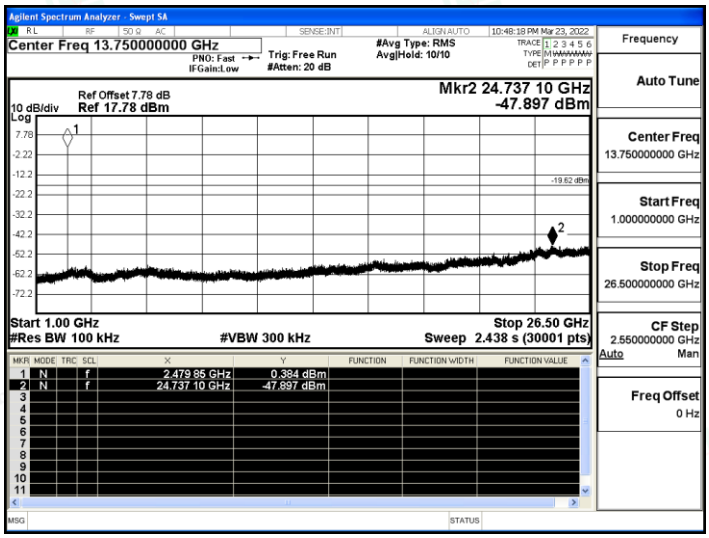
BLE_1M_Ant1_2480_0~Reference



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
10:48:18 PM Mar 23, 2022
Ref Offset 7.78 dB
10 dB/div Ref 17.78 dBm
Log
Mkr2 24.737 10 GHz
-47.897 dBm
-19.62 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 0.384 dBm
2 N f 24.737 10 GHz -47.897 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

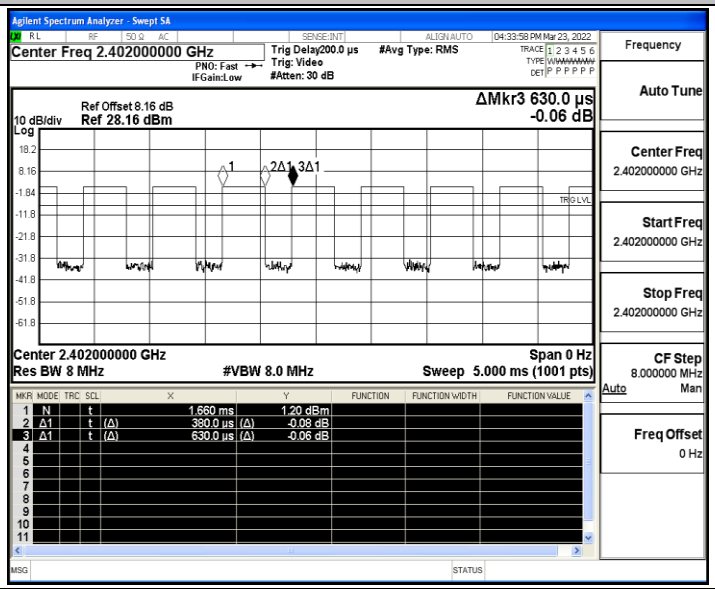
A.6 Duty Cycle

Test Result

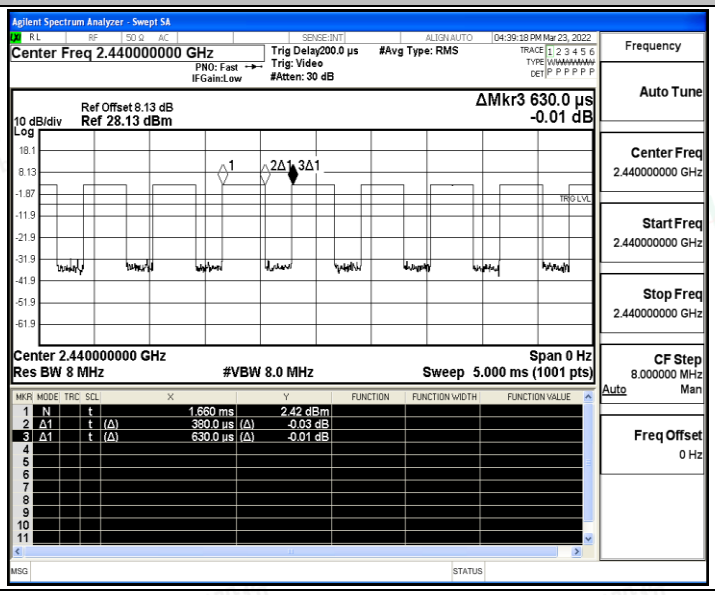
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	1/T [kHz]	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.63	---	---
		2440	0.38	0.63	0.6032	60.32	2.63	---	---
		2480	0.38	0.63	0.6032	60.32	2.63	---	---

Test Graphs

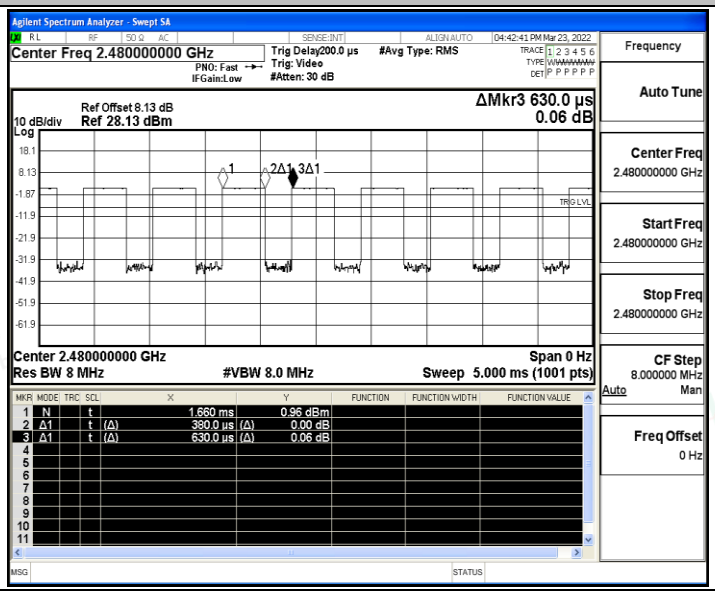
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



A.7 Emissions in Restricted Bands

Test Result

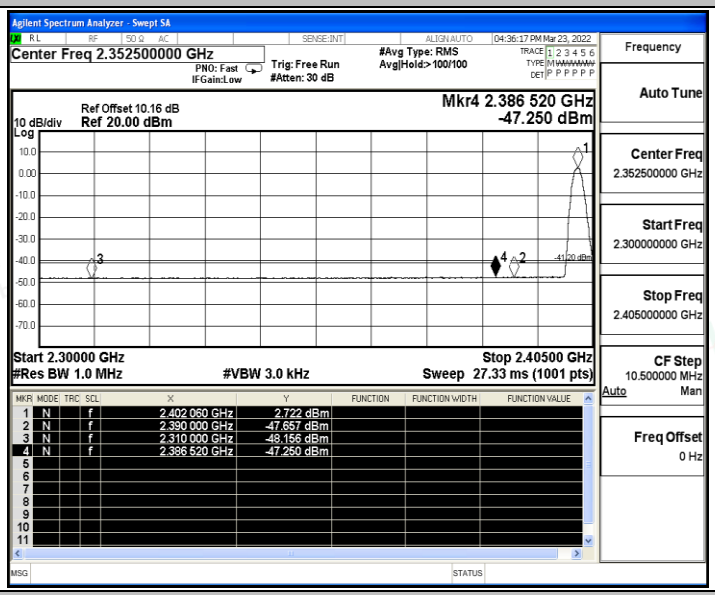
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.23	≤-41.20	46.97	≤54	PASS
				AV	2386.520	-47.25	≤-41.20	47.95	≤54	PASS
				AV	2390.000	-47.81	≤-41.20	47.39	≤54	PASS
				Peak	2310.000	-40.05	≤-21.20	55.15	≤74	PASS
				Peak	2345.990	-37.43	≤-21.20	57.77	≤74	PASS
				Peak	2390.000	-38.5	≤-21.20	56.70	≤74	PASS
		High	2480	AV	2483.500	-46.7	≤-41.20	48.50	≤54	PASS
				AV	2497.920	-46.7	≤-41.20	48.50	≤54	PASS
				AV	2500.000	-47.1	≤-41.20	48.10	≤54	PASS
				Peak	2483.500	-38.4	≤-21.20	56.80	≤74	PASS
				Peak	2488.400	-36.97	≤-21.20	58.23	≤74	PASS
				Peak	2500.000	-38.44	≤-21.20	56.76	≤74	PASS

Note：

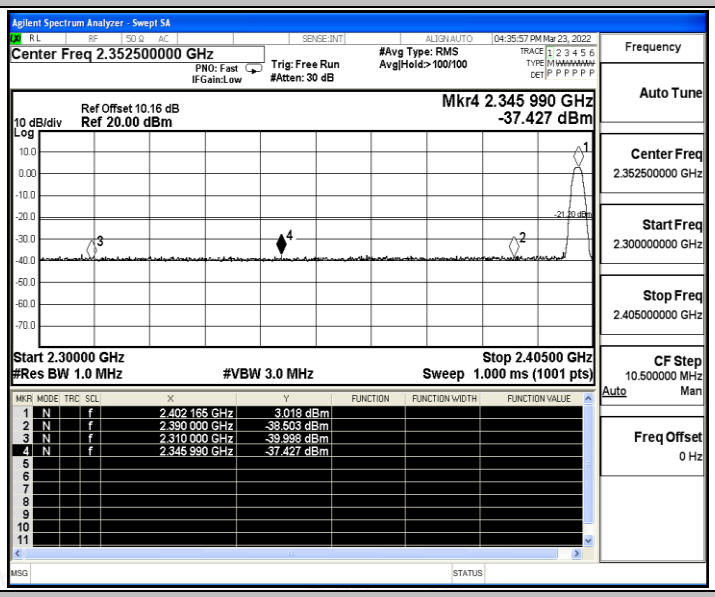
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

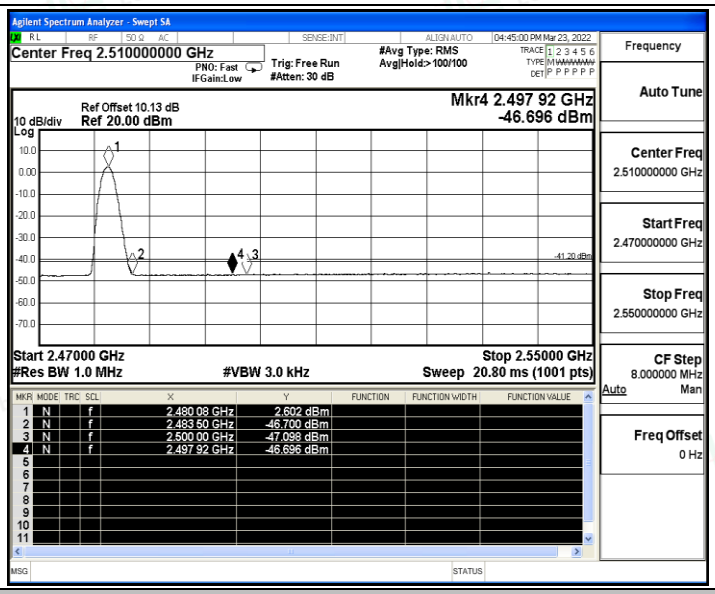
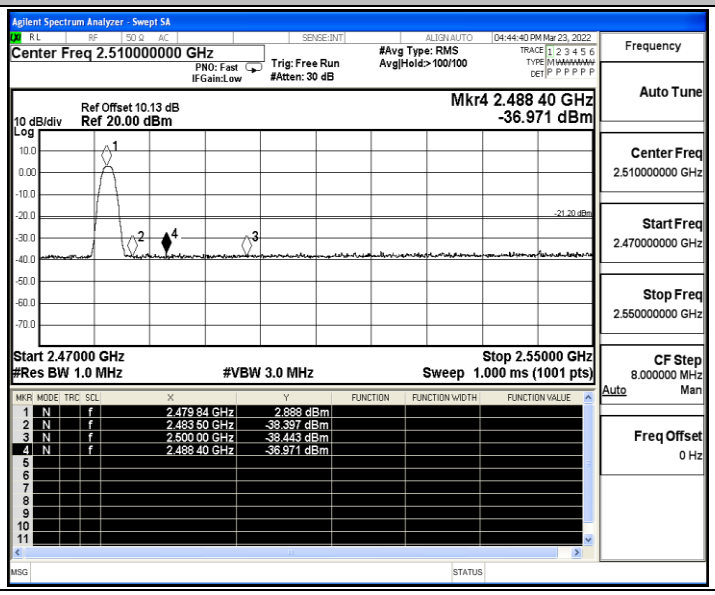
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak