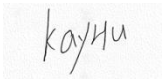
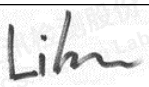
Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: STAGE & STUDIO SPEAKER

Test Model: PADH15BTA

Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	 Kay Hu
Supervised by:	 Li Huan

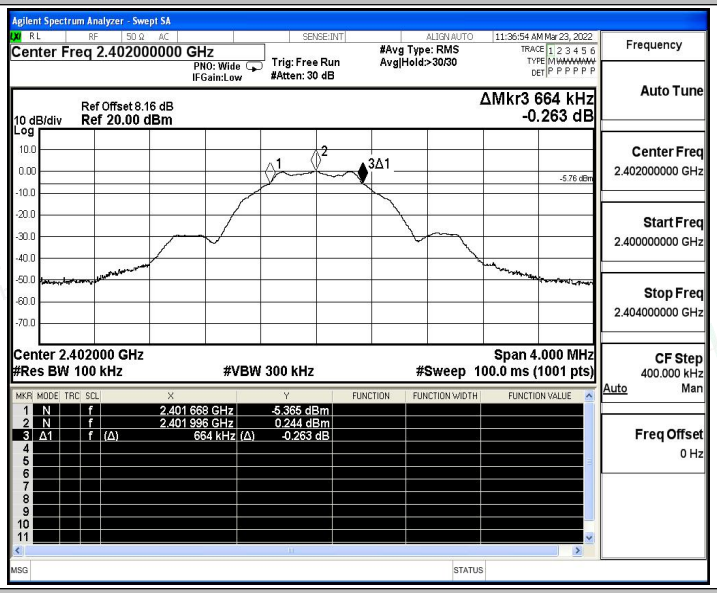
B.1 DTS Bandwidth

Test Result

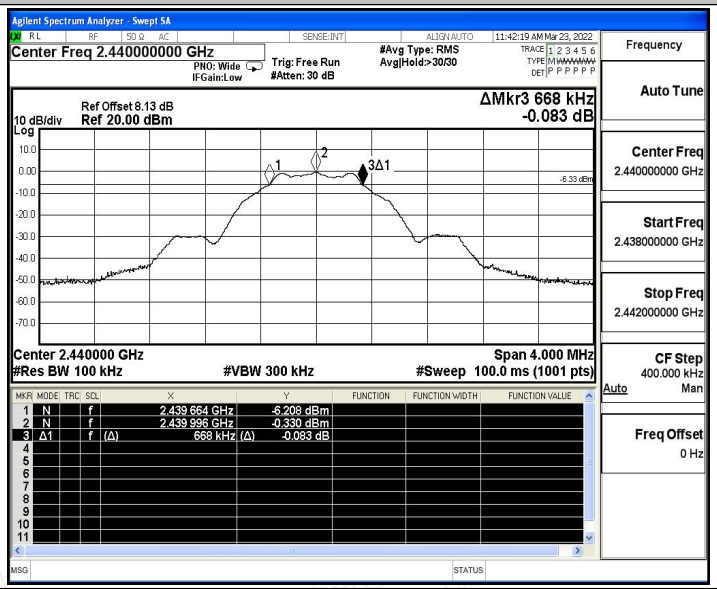
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.664	2401.668	2402.332	0.5	PASS
		2440	0.668	2439.664	2440.332	0.5	PASS
		2480	0.668	2479.664	2480.332	0.5	PASS

Test Graphs

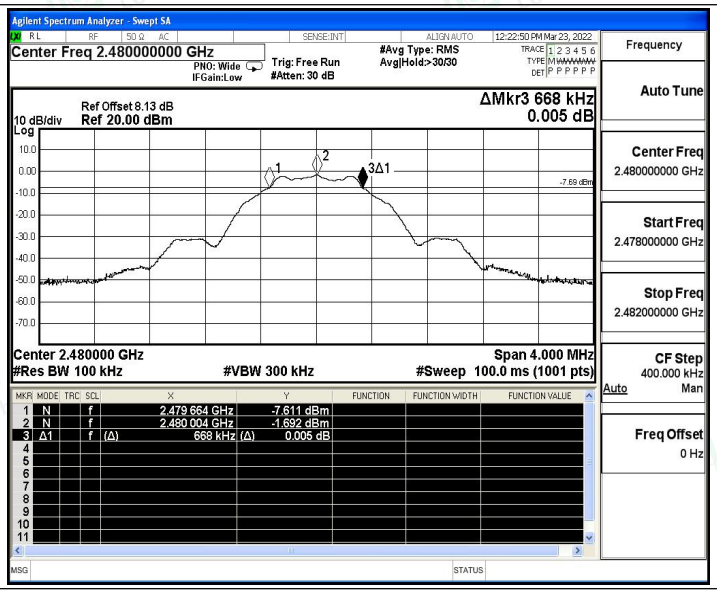
BLE_1M_Ant1_2402



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
12:22:50 PM Mar 23, 2022
Ref Offset 8.13 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr3 668 kHz
0.005 dB
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
#Sweep 100.0 ms (1001 pts)
1 N 1 f 2.479 664 GHz -7.611 dBm
2 N 1 f 2.480 004 GHz -1.692 dBm
3 Δ1 f (Δ) 668 kHz (Δ) 0.005 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

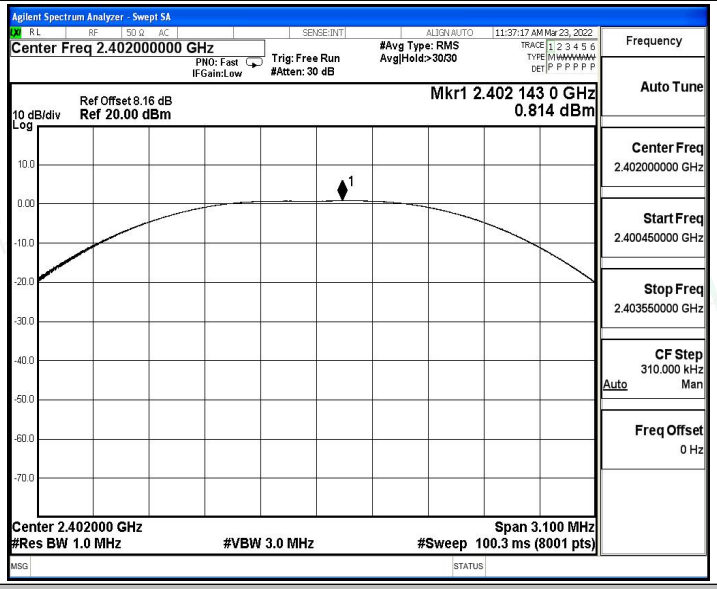
B.2 Maximum peak conducted output power

Test Result

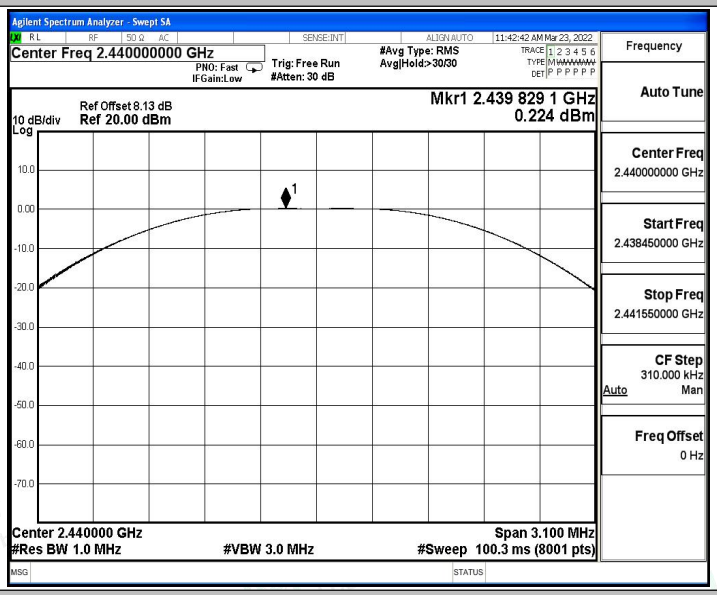
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.81	≤30	PASS
		2440	0.22	≤30	PASS
		2480	-1.12	≤30	PASS

Test Graphs

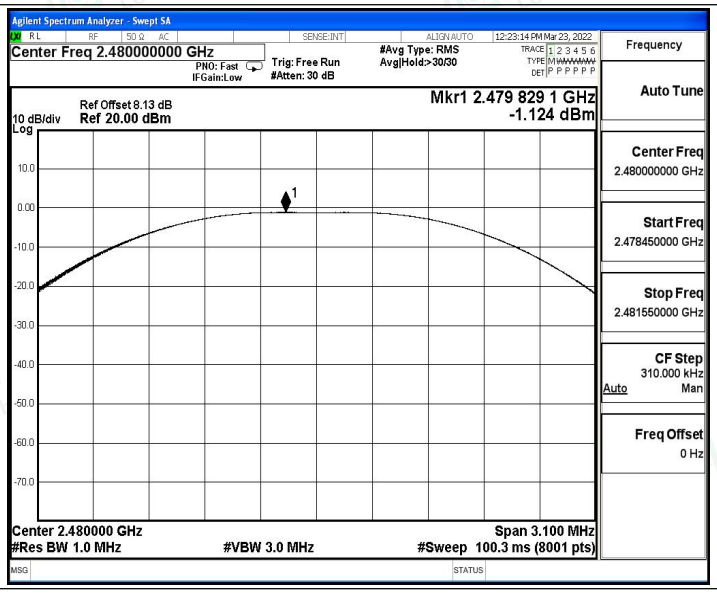
BLE_1M_Ant1_2402



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
12:23:14 PM Mar 23, 2022
Ref Offset 8.13 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 829 1 GHz
-1.124 dBm
Center 2.480000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.100 MHz
#Sweep 100.3 ms (8001 pts)
Frequency
Auto Tune
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

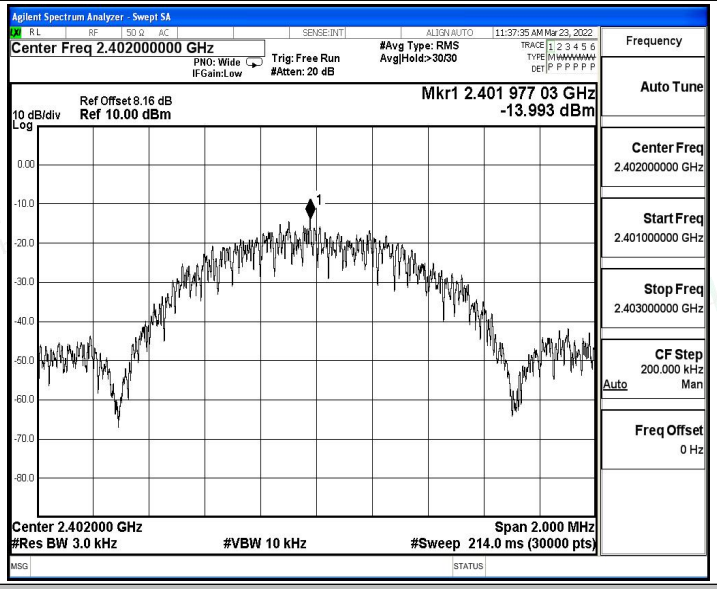
B.3 Maximum power spectral density

Test Result

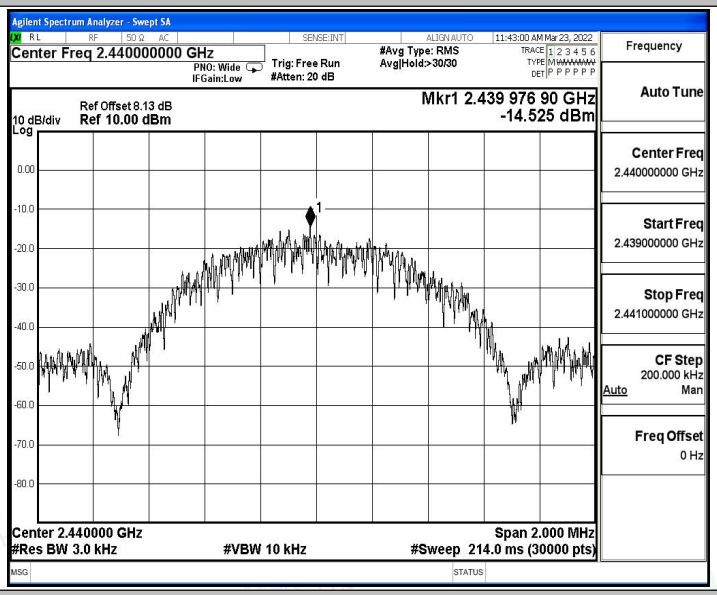
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.99	≤8.00	PASS
		2440	-14.53	≤8.00	PASS
		2480	-15.97	≤8.00	PASS

Test Graphs

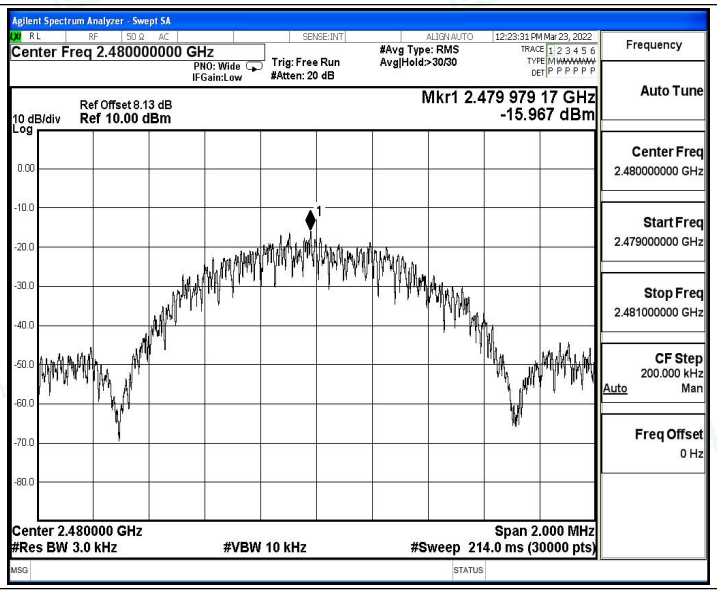
BLE_1M_Ant1_2402



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
12:23:31 PM Mar 23, 2022
Ref Offset 8.13 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.479 979 17 GHz
-15.967 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
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
MSG
STATUS

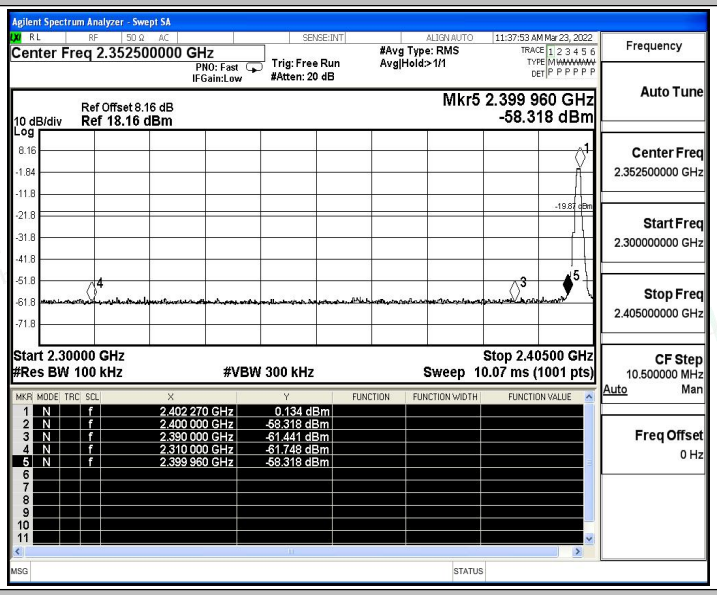
B.4 Band edge measurements

Test Result

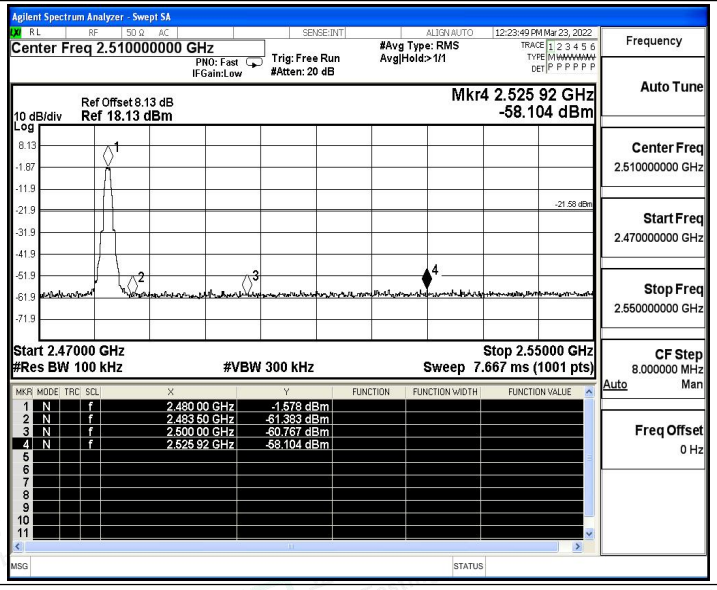
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.13	-58.32	≤-19.87	PASS
		High	2480	-1.58	-58.1	≤-21.58	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



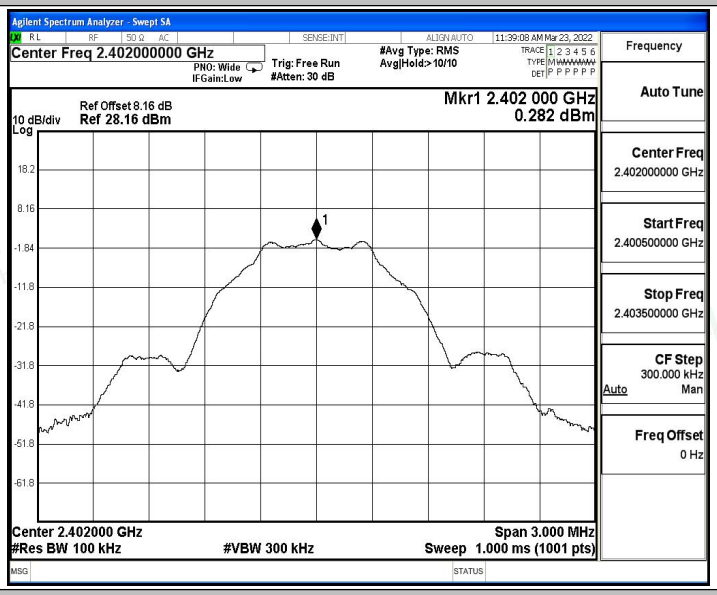
B.5 Conducted Spurious Emission

Test Result

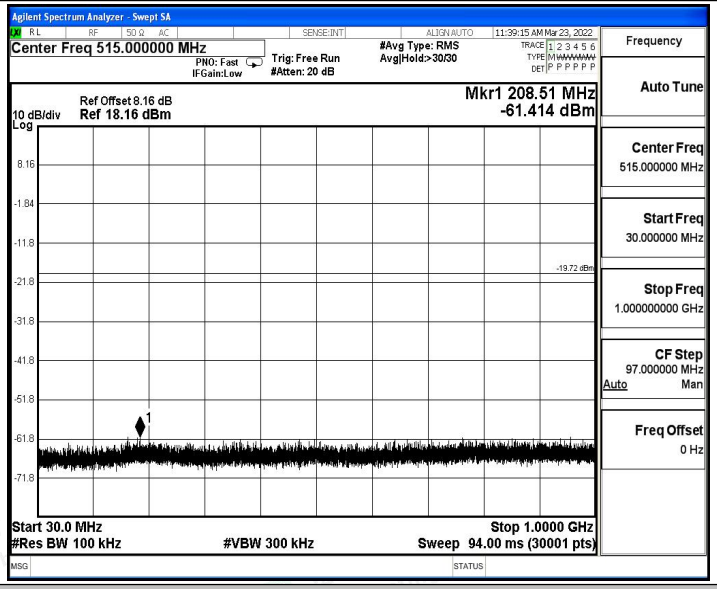
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.28	0.28	---	PASS
			30~1000	0.28	-61.41	≤-19.72	PASS
			1000~26500	0.28	-46.61	≤-19.72	PASS
		2440	Reference	-0.32	-0.32	---	PASS
			30~1000	-0.32	-61.24	≤-20.32	PASS
			1000~26500	-0.32	-46.99	≤-20.32	PASS
		2480	Reference	-1.65	-1.65	---	PASS
			30~1000	-1.65	-60.79	≤-21.65	PASS
			1000~26500	-1.65	-46.97	≤-21.65	PASS

Test Graphs

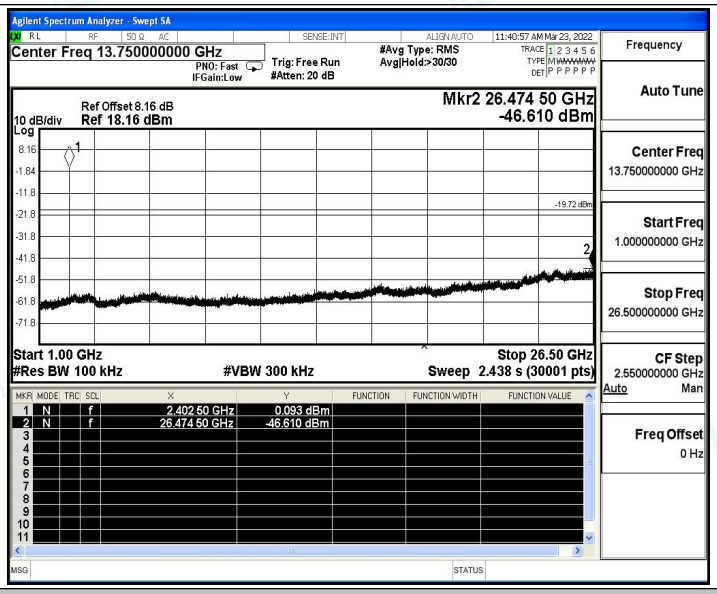
BLE_1M_Ant1_2402_0~Reference



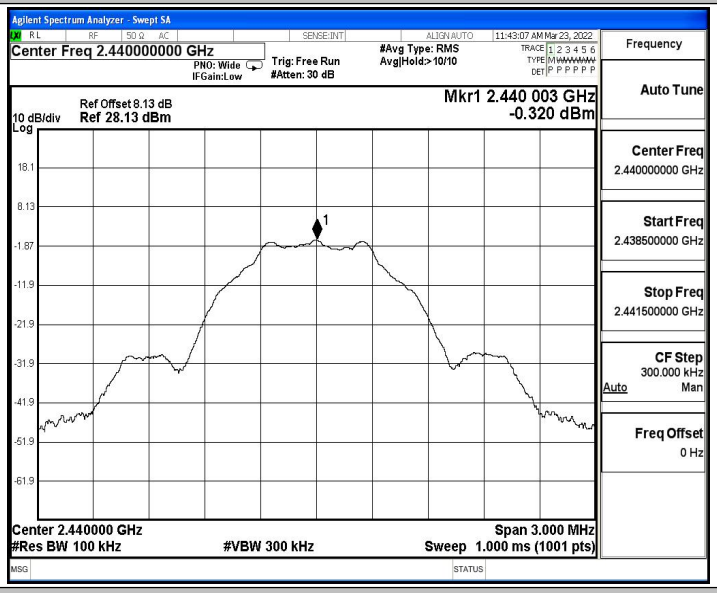
BLE_1M_Ant1_2402_30~1000



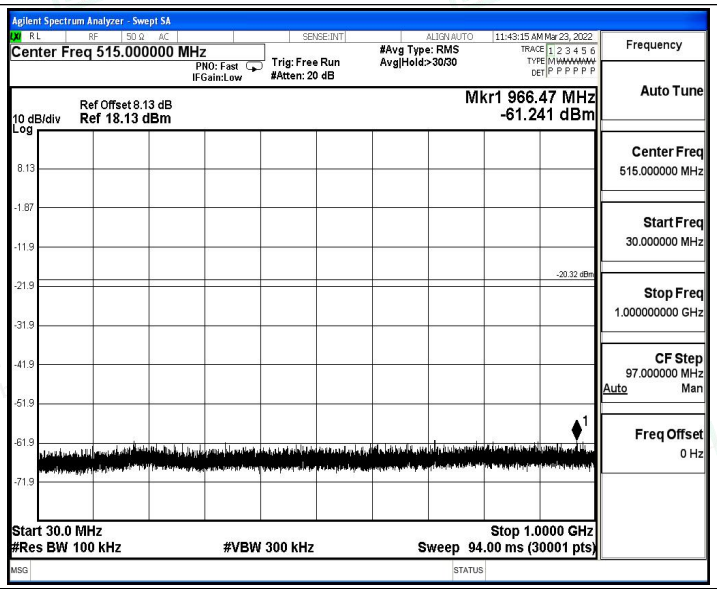
BLE_1M_Ant1_2402_1000~26500



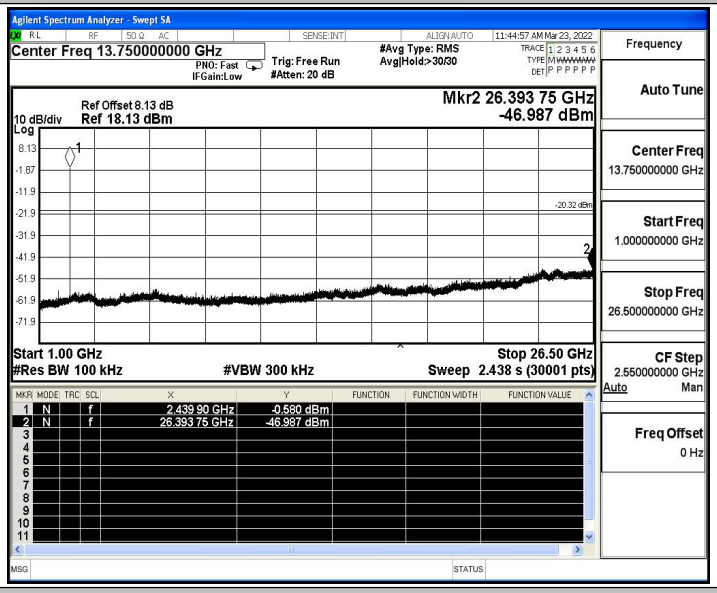
BLE_1M_Ant1_2440_0~Reference



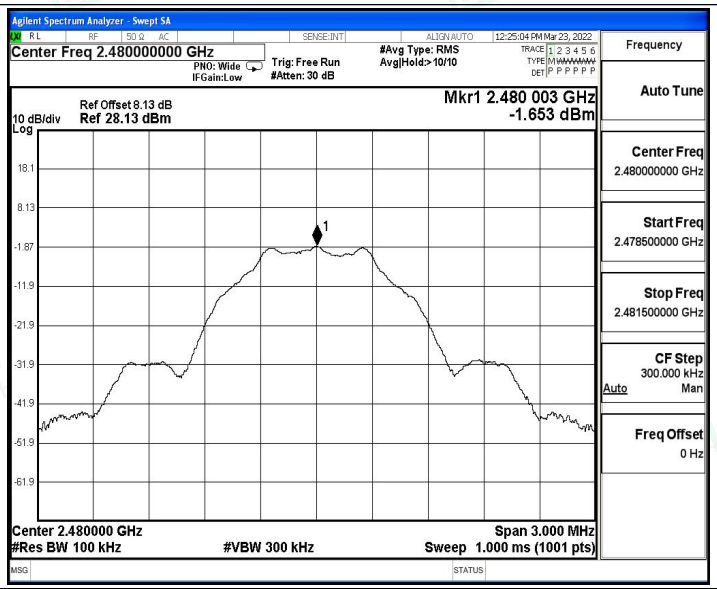
BLE_1M_Ant1_2440_30~1000



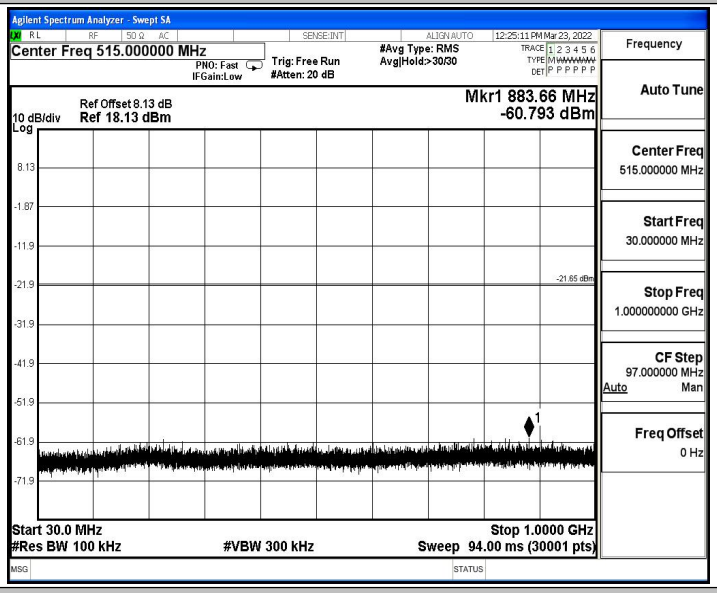
BLE_1M_Ant1_2440_1000~26500



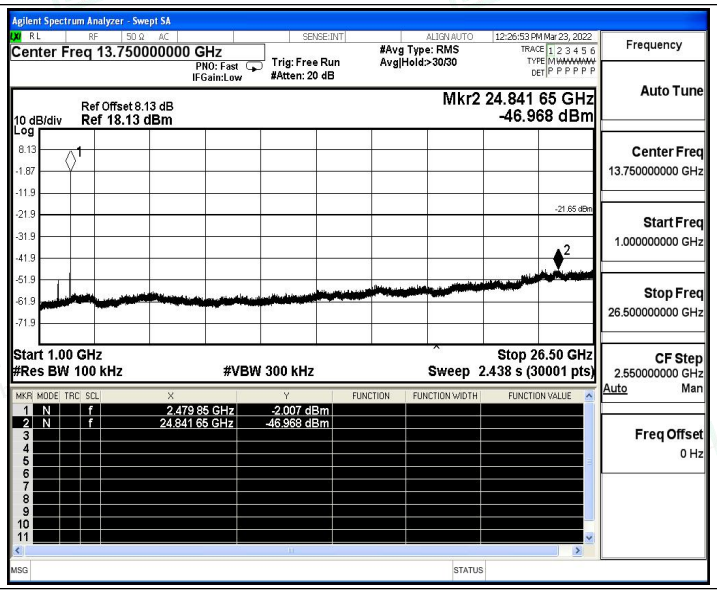
BLE_1M_Ant1_2480_0~Reference



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:>30/30
12:26:53 PM Mar 23, 2022
Ref Offset 8.13 dB
10 dB/div
Log
Ref 18.13 dBm
Mkr2 24.841 65 GHz
-46.968 dBm
-21.65 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N 1 f 2.479 85 GHz -2.007 dBm
2 N 1 f 24.841 65 GHz -46.968 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

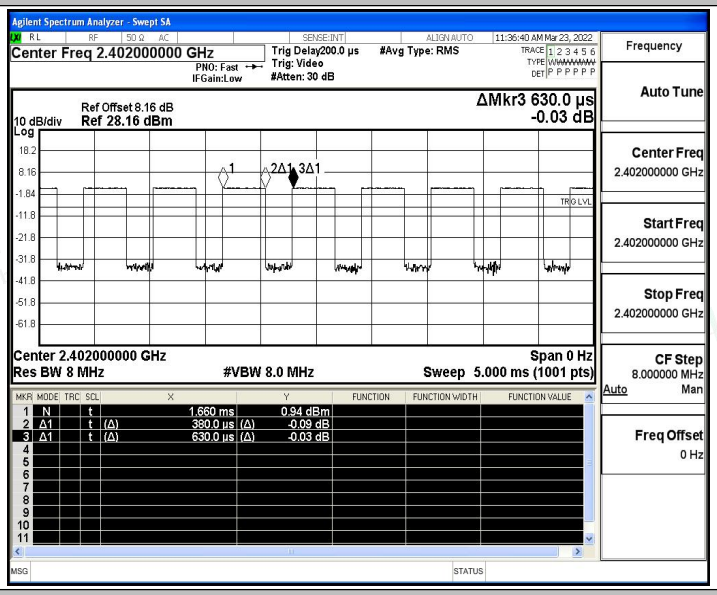
B.6 Duty Cycle

Test Result

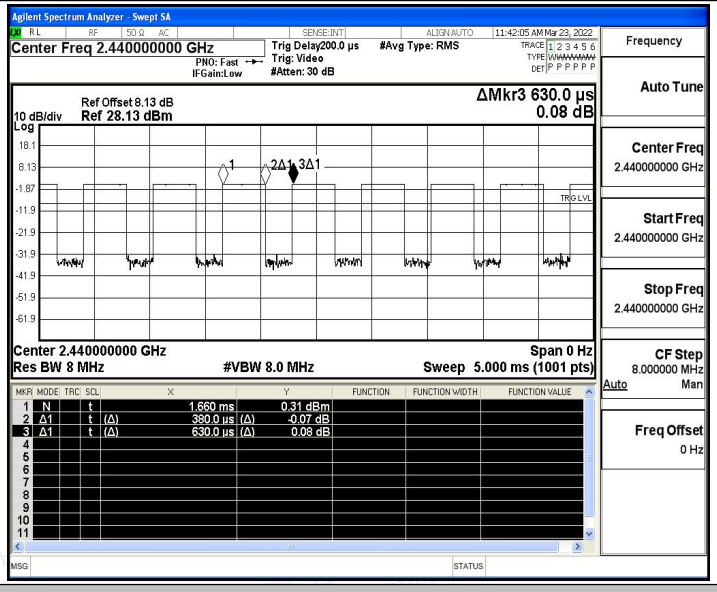
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T[kHz]
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	2.63
		2440	0.38	0.63	0.6032	60.32	2.20	2.63
		2480	0.38	0.63	0.6032	60.32	2.20	2.63

Test Graphs

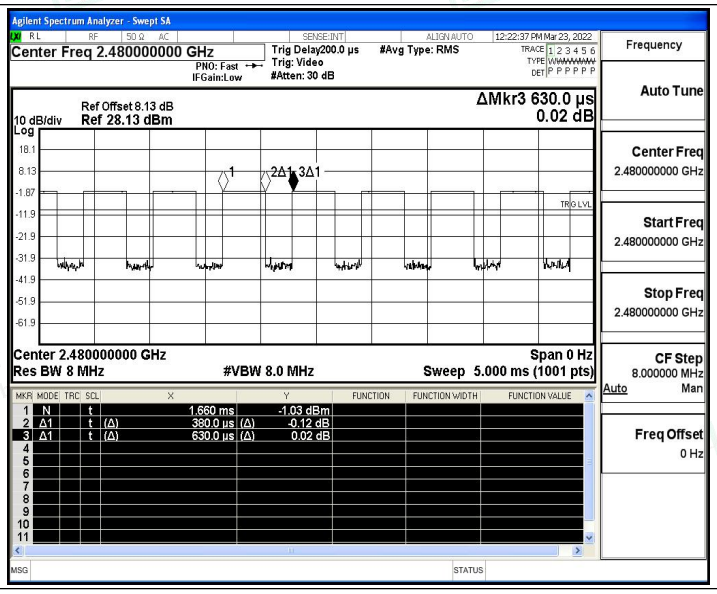
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
Trig Delay200.0 µs
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
12:22:37 PM Mar 23, 2022
Ref Offset 8.13 dB
10 dB/div Ref 28.13 dBm
ΔMkr3 630.0 µs
0.02 dB
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)
1 N t 1.660 ms -1.03 dBm
2 Δ1 t (Δ) 380.0 µs (Δ) -0.12 dB
3 Δ1 t (Δ) 630.0 µs (Δ) 0.02 dB
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.480000000 GHz
Stop Freq 2.480000000 GHz
CF Step 8.000000 MHz
Auto Man
Freq Offset 0 Hz

B.7 Emissions in Restricted Bands

Test Result

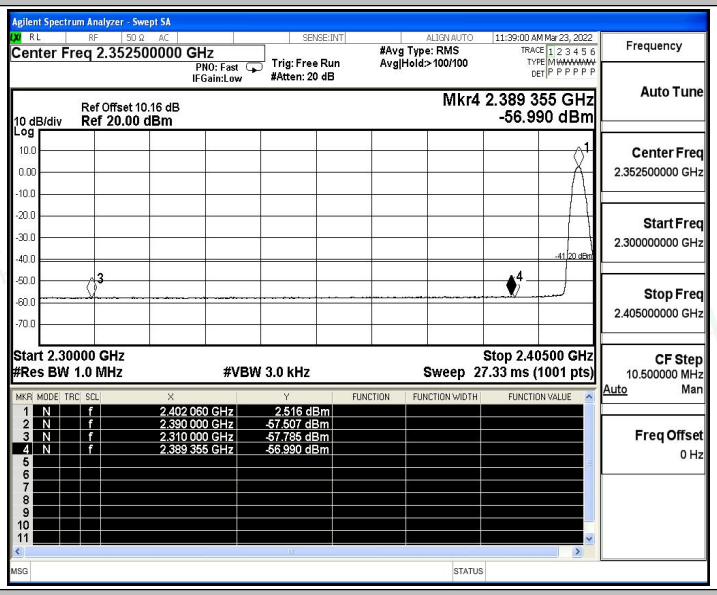
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.91	≤-41.20	37.29	≤54	PASS
				AV	2389.355	-56.99	≤-41.20	38.21	≤54	PASS
				AV	2390.000	-57.51	≤-41.20	37.69	≤54	PASS
				Peak	2310.000	-48.62	≤-21.20	46.58	≤74	PASS
				Peak	2347.775	-47	≤-21.20	48.20	≤74	PASS
				Peak	2390.000	-49.11	≤-21.20	46.09	≤74	PASS
		High	2480	AV	2483.500	-54.06	≤-41.20	41.14	≤54	PASS
				AV	2483.520	-54.06	≤-41.20	41.14	≤54	PASS
				AV	2500.000	-56.62	≤-41.20	38.58	≤54	PASS
				Peak	2483.500	-47.99	≤-21.20	47.21	≤74	PASS
				Peak	2498.080	-46.66	≤-21.20	48.54	≤74	PASS
				Peak	2500.000	-48.51	≤-21.20	46.69	≤74	PASS

Note：

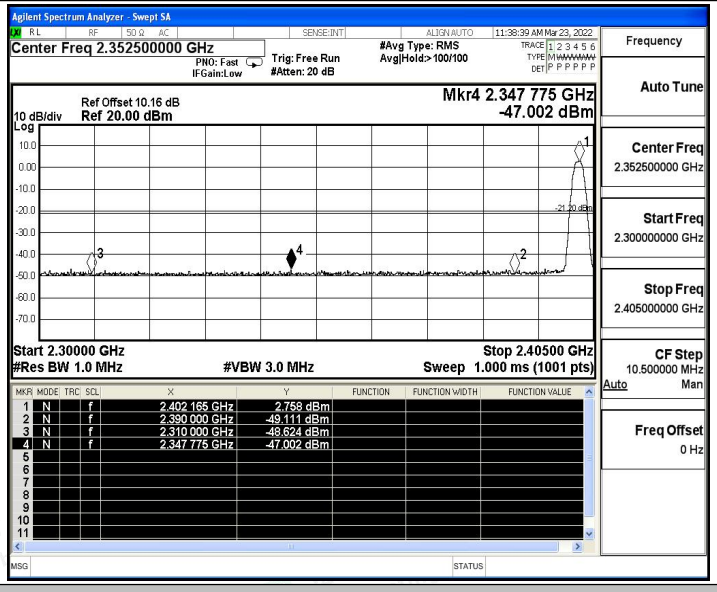
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

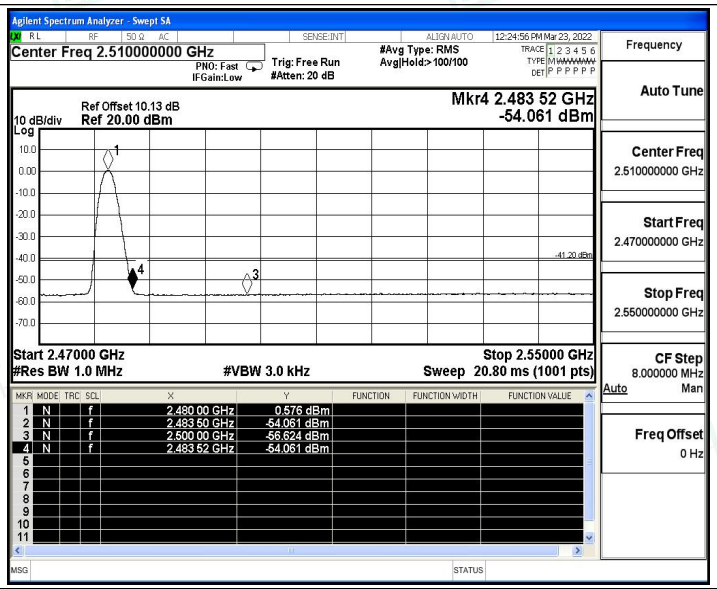
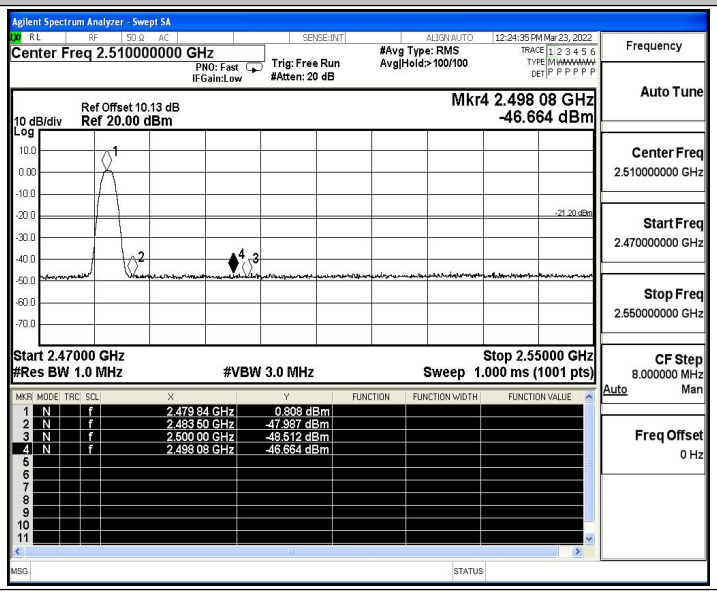
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak