Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: 4G Phone

Test Model: mindphone 1

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ling Zhu
Supervised by:	Li Huan

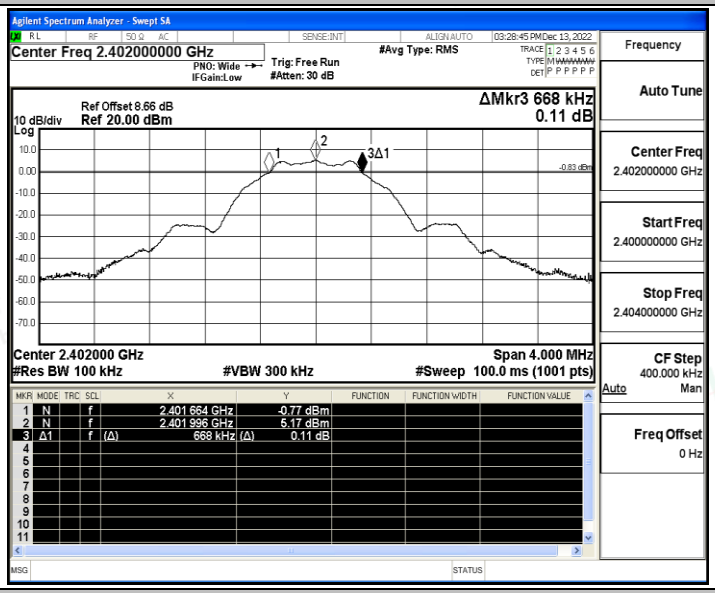
B.1 DTS Bandwidth

Test Result

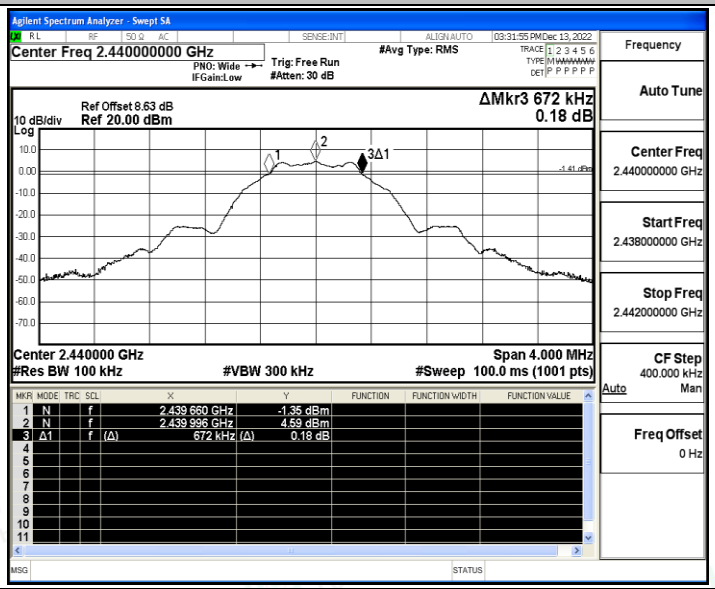
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.668	2401.664	2402.332	0.5	PASS
		2440	0.672	2439.660	2440.332	0.5	PASS
		2480	0.676	2479.656	2480.332	0.5	PASS

Test Graphs

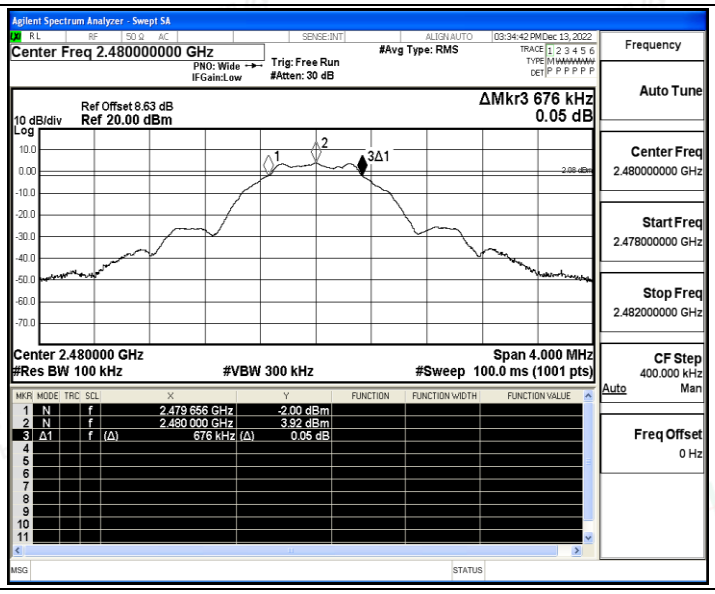
BLE_1M_Ant1_2402



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
03:34:42 PM Dec 13, 2022
Frequency
Auto Tune
Ref Offset 8.63 dB
10 dB/div Ref 20.00 dBm
ΔMkr3 676 kHz
0.05 dB
Center Freq
2.480000000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.482000000 GHz
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
#Sweep 100.0 ms (1001 pts)
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz
1 N 1 f 2.479 656 GHz -2.00 dBm
2 N 1 f 2.480 000 GHz 3.92 dBm
3 Δ1 f (Δ) 676 kHz (Δ) 0.05 dB
MSG
STATUS

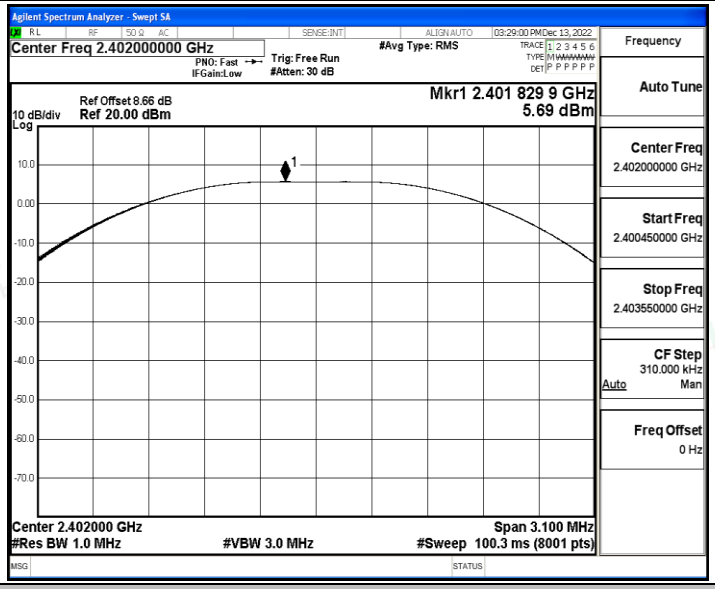
B.2 Maximum conducted output power

Test Result

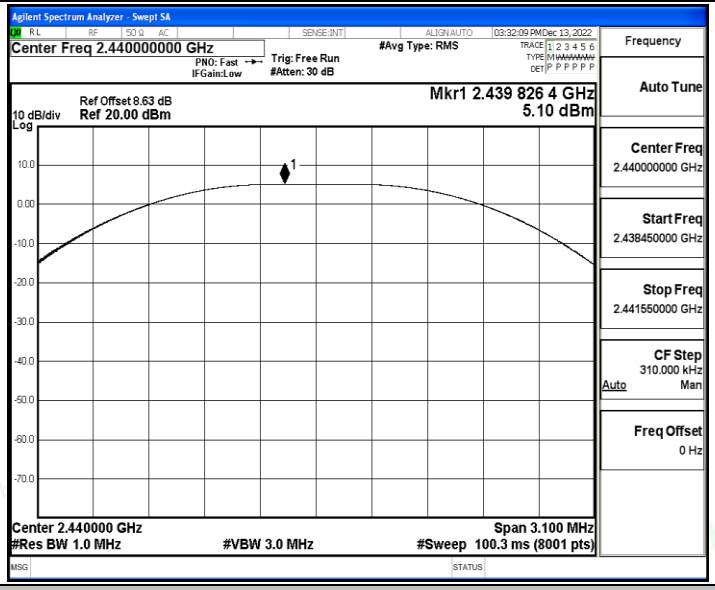
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	5.69	≤30	PASS
		2440	5.1	≤30	PASS
		2480	4.43	≤30	PASS

Test Graphs

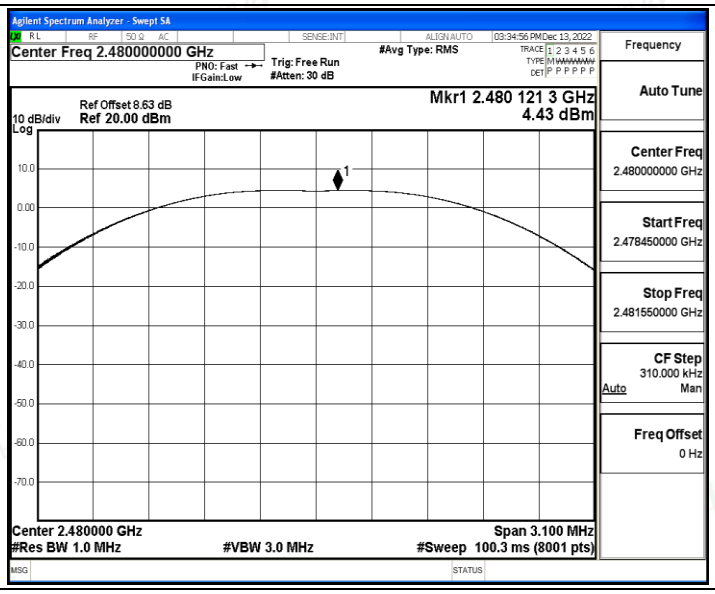
BLE_1M_Ant1_2402



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
03:34:56 PM Dec 13, 2022
Ref Offset 8.63 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.480 121 3 GHz
4.43 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

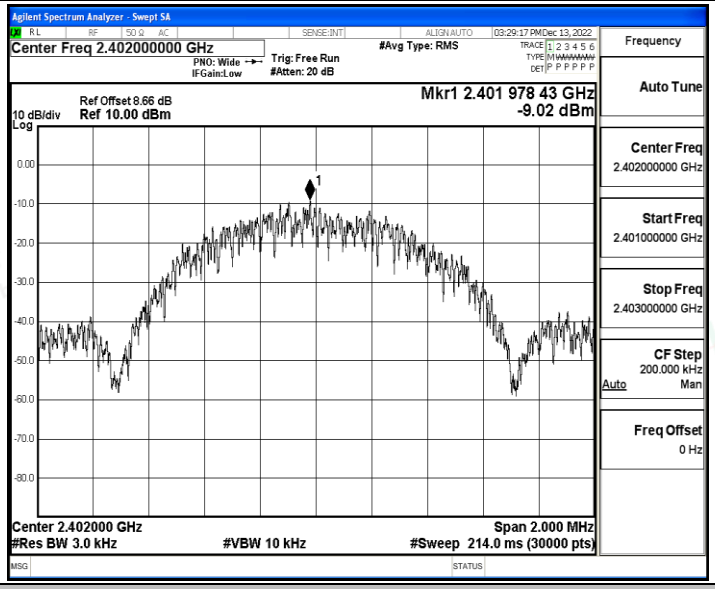
B.3 Maximum power spectral density

Test Result

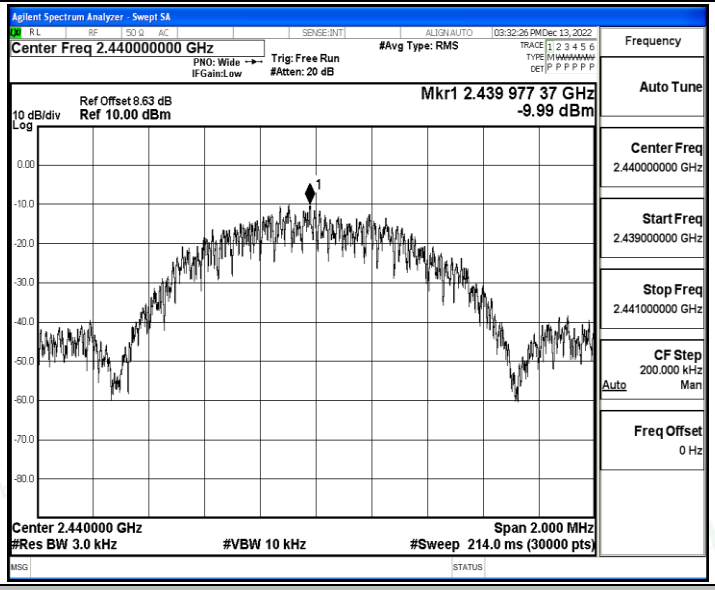
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-9.02	≤8.00	PASS
		2440	-9.99	≤8.00	PASS
		2480	-10.31	≤8.00	PASS

Test Graphs

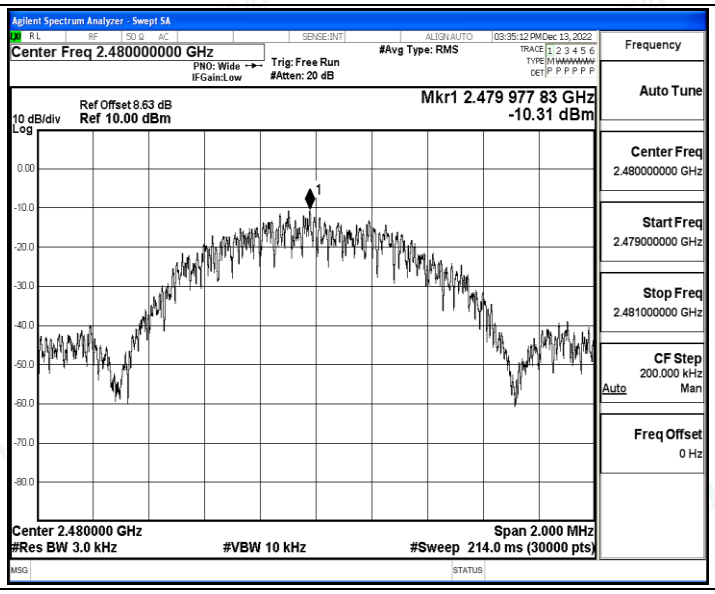
BLE_1M_Ant1_2402



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
03:35:12 PM Dec 13, 2022
Frequency
Auto Tune
Ref Offset 8.63 dB
10 dB/div Ref 10.00 dBm
Log
Mkr1 2.479 977 83 GHz
-10.31 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)

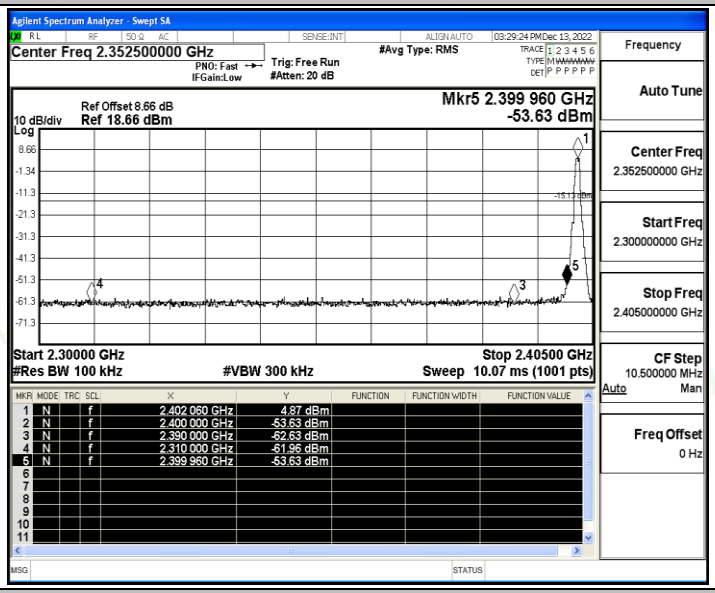
B.4 Band edge measurements

Test Result

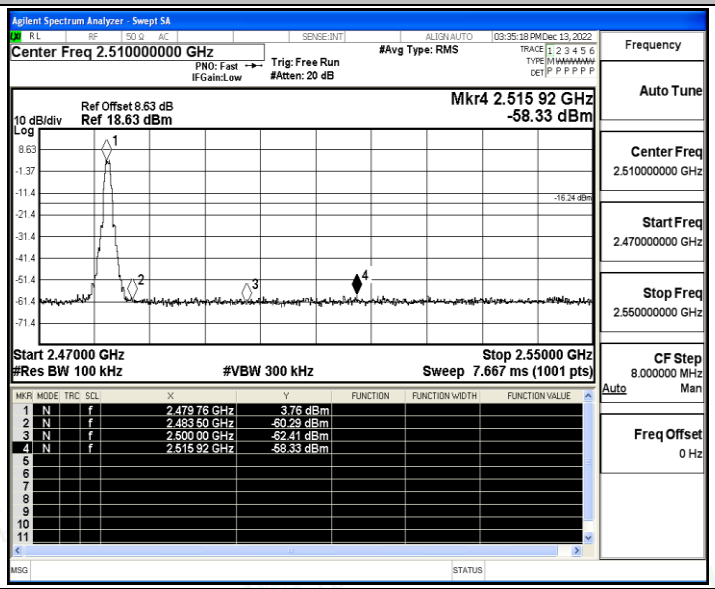
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	4.87	-53.64	≤-15.13	PASS
		High	2480	3.76	-58.34	≤-16.24	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



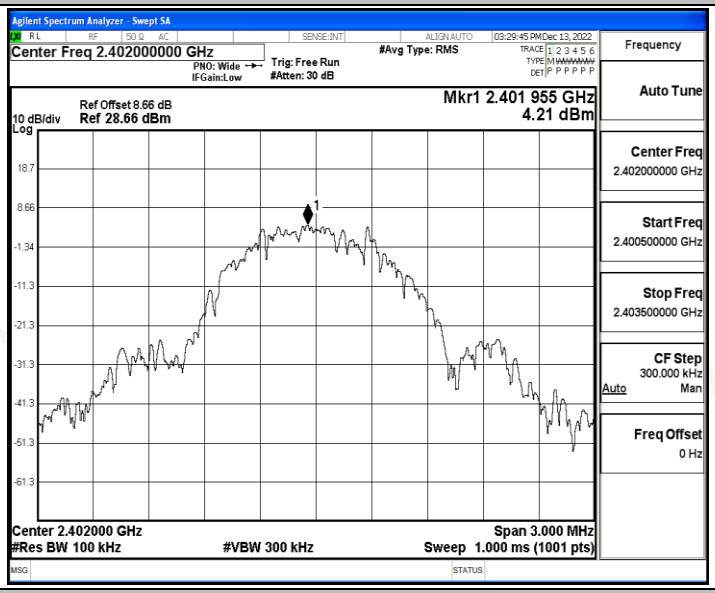
B.5 Conducted Spurious Emission

Test Result

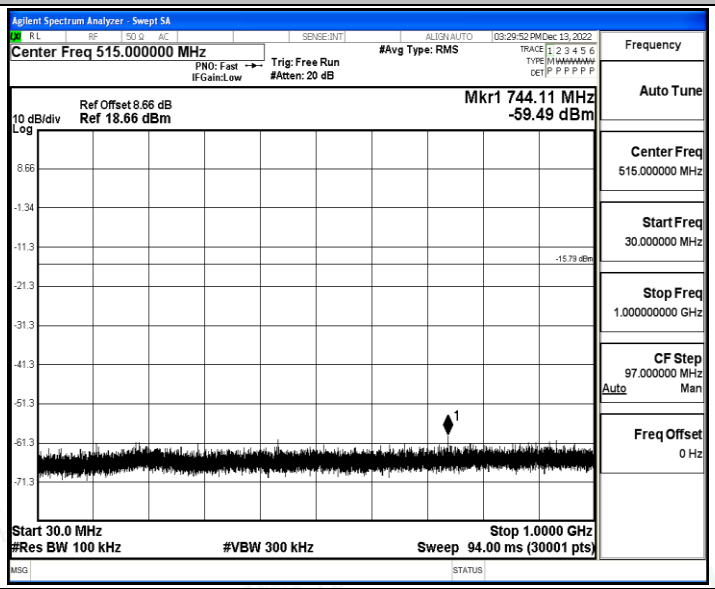
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	4.21	4.21	---	PASS
			30~1000	4.21	-59.49	≤-15.79	PASS
			1000~26500	4.21	-45.47	≤-15.79	PASS
		2440	Reference	3.68	3.68	---	PASS
			30~1000	3.68	-60.19	≤-16.32	PASS
			1000~26500	3.68	-45.71	≤-16.32	PASS
		2480	Reference	2.92	2.92	---	PASS
			30~1000	2.92	-60.86	≤-17.08	PASS
			1000~26500	2.92	-45.7	≤-17.08	PASS

Test Graphs

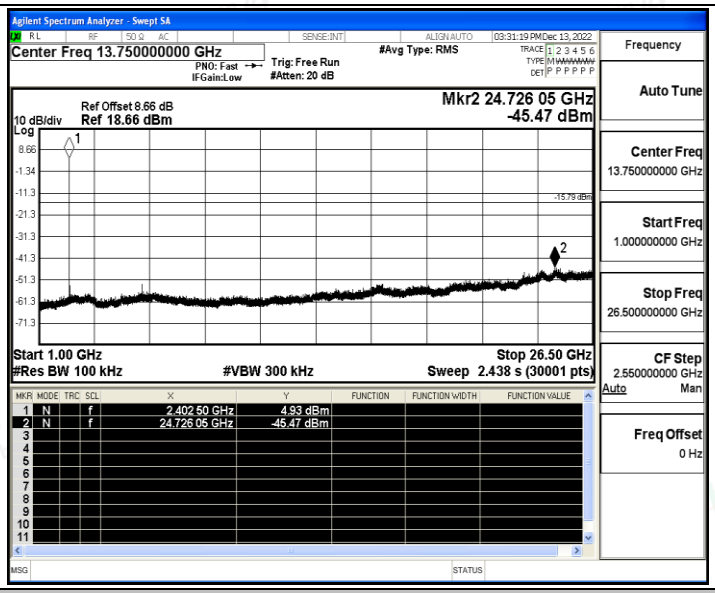
BLE_1M_Ant1_2402_0~Reference



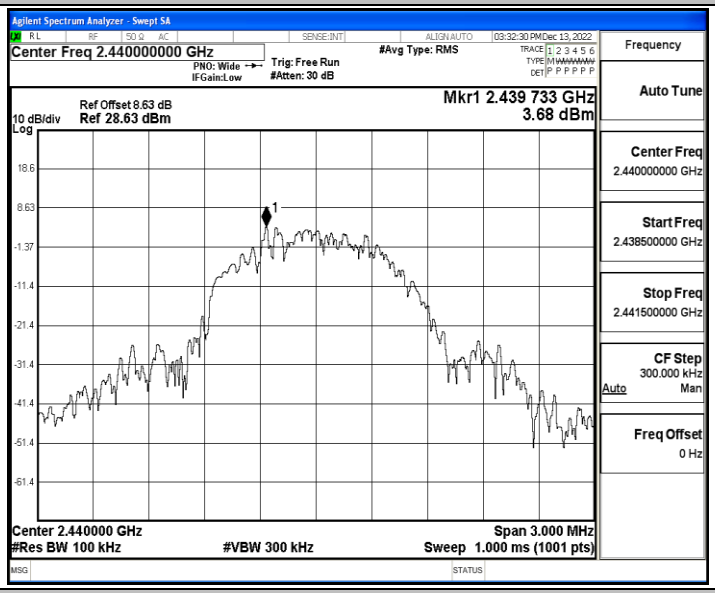
BLE_1M_Ant1_2402_30~1000



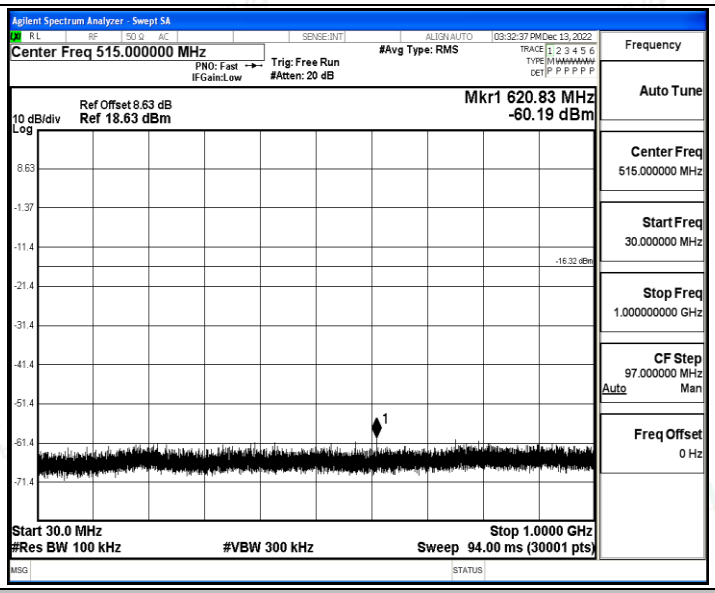
BLE_1M_Ant1_2402_1000~26500



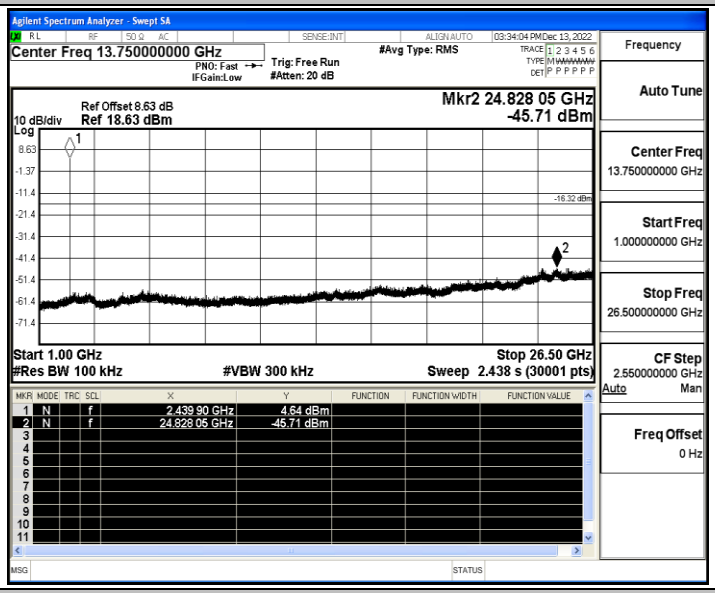
BLE_1M_Ant1_2440_0~Reference



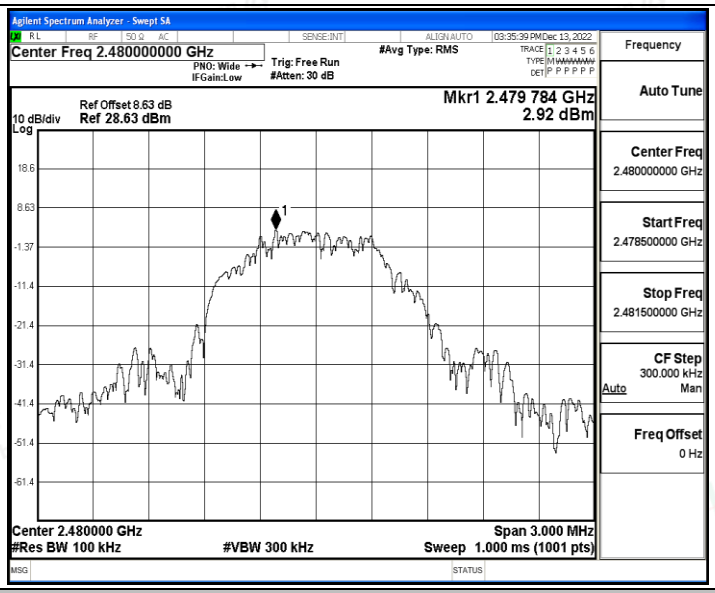
BLE_1M_Ant1_2440_30~1000



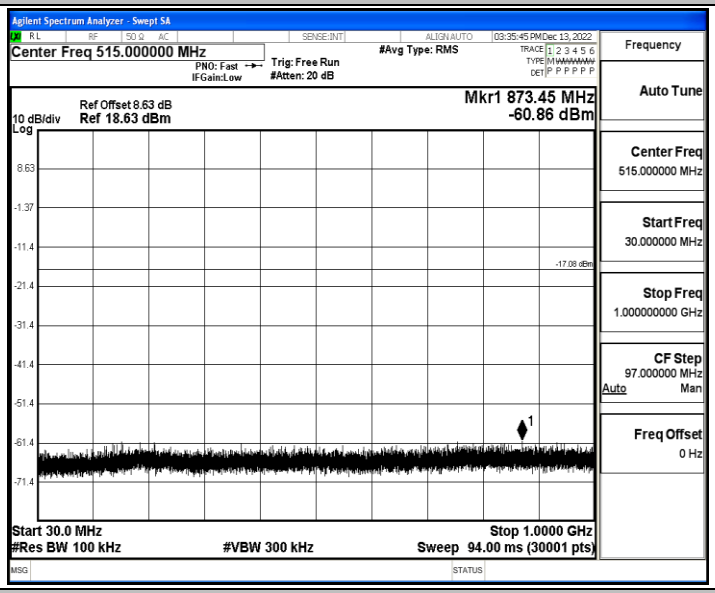
BLE_1M_Ant1_2440_1000~26500



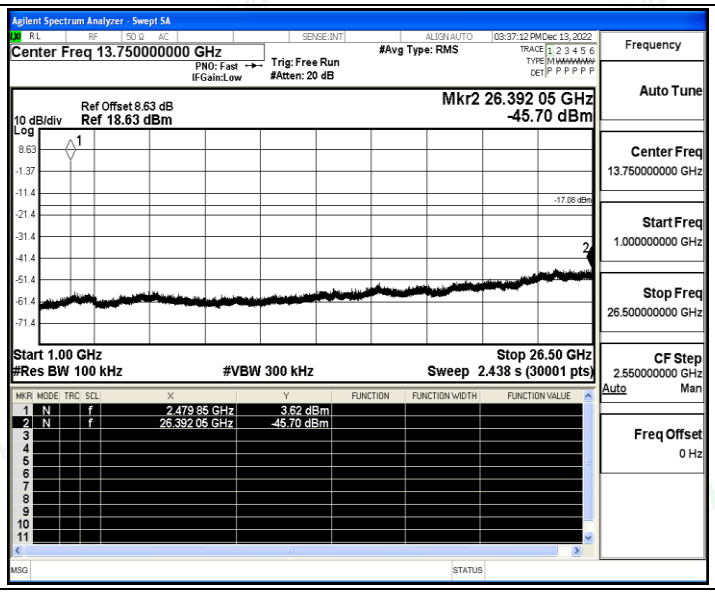
BLE_1M_Ant1_2480_0~Reference



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
03:37:12 PM Dec 13, 2022
Ref Offset 8.63 dB
10 dB/div
Log
Ref 18.63 dBm
Mkr2 26.392 05 GHz
-45.70 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 3.62 dBm
2 N 1 f 26.392 05 GHz -45.70 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

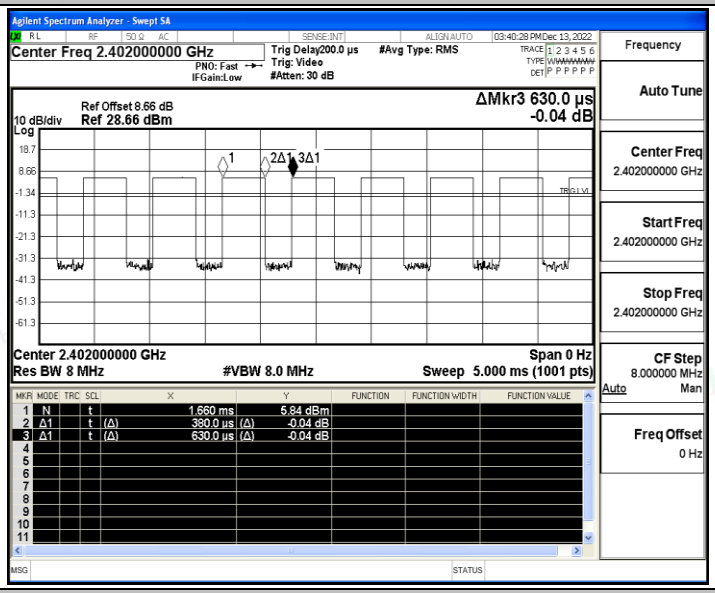
B.6 Duty Cycle

Test Result

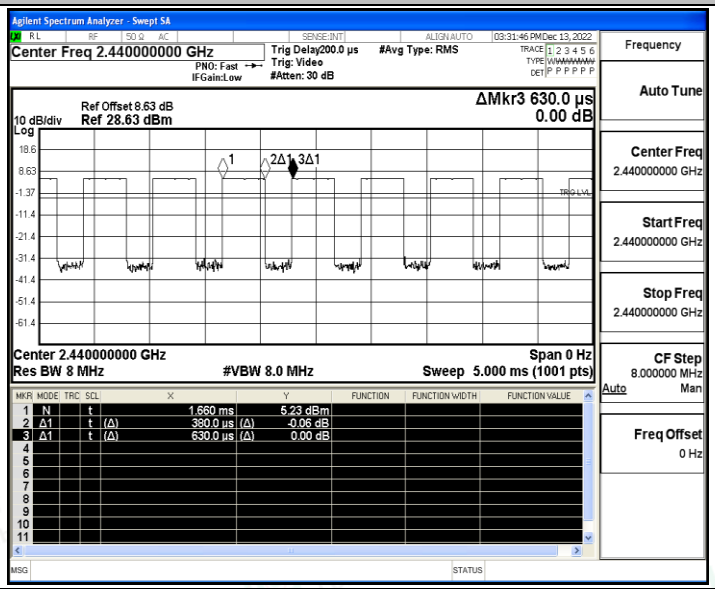
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	2.63
		2440	0.38	0.63	0.6032	60.32	2.20	2.63
		2480	0.38	0.63	0.6032	60.32	2.20	2.63

Test Graphs

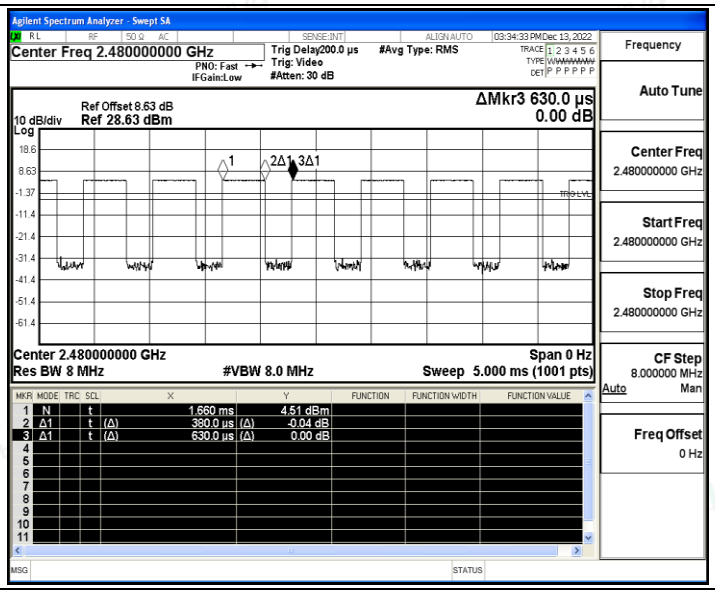
BLE_1M_Ant1_2402



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
#Avg Type: RMS
#Atten: 30 dB
03:34:33 PM Dec 13, 2022
Ref Offset 8.63 dB
10 dB/div Ref 28.63 dBm
Log
ΔMkr3 630.0 µs
0.00 dB
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)
1 N 1 t 1.660 ms 4.51 dBm
2 Δ1 t (Δ) 380.0 µs (Δ) -0.04 dB
3 Δ1 t (Δ) 630.0 µs (Δ) 0.00 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

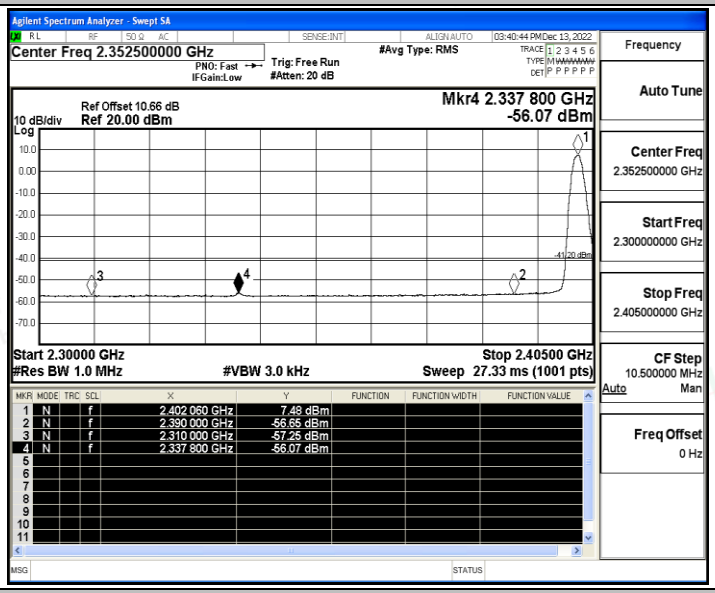
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.25	≤-41.20	37.95	≤54	PASS
				AV	2337.800	-56.07	≤-41.20	39.13	≤54	PASS
				AV	2390.000	-56.65	≤-41.20	38.55	≤54	PASS
				Peak	2310.000	-50.48	≤-21.20	44.72	≤74	PASS
				Peak	2389.460	-47.71	≤-21.20	47.49	≤74	PASS
				Peak	2390.000	-48.8	≤-21.20	46.40	≤74	PASS
		High	2480	AV	2483.500	-50.18	≤-41.20	45.02	≤54	PASS
				AV	2483.520	-50.18	≤-41.20	45.02	≤54	PASS
				AV	2500.000	-56.4	≤-41.20	38.80	≤54	PASS
				Peak	2483.500	-49.3	≤-21.20	45.90	≤74	PASS
				Peak	2484.240	-46.47	≤-21.20	48.73	≤74	PASS
				Peak	2500.000	-49.77	≤-21.20	45.43	≤74	PASS

Note：

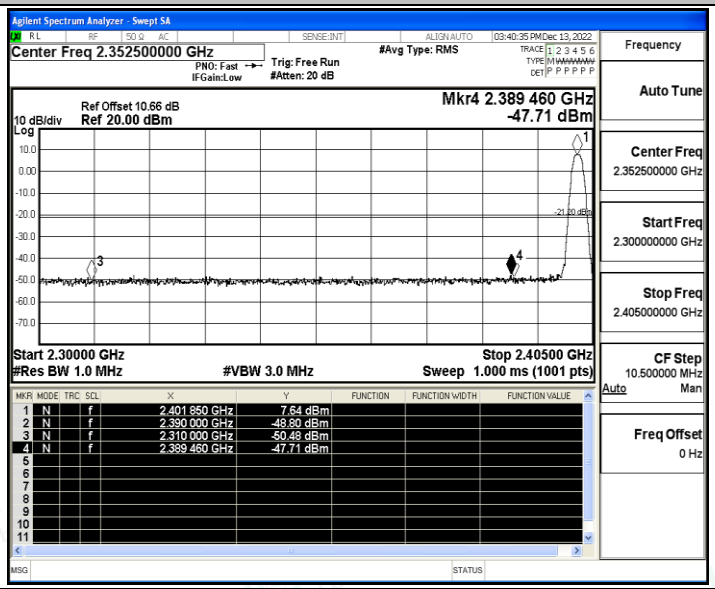
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

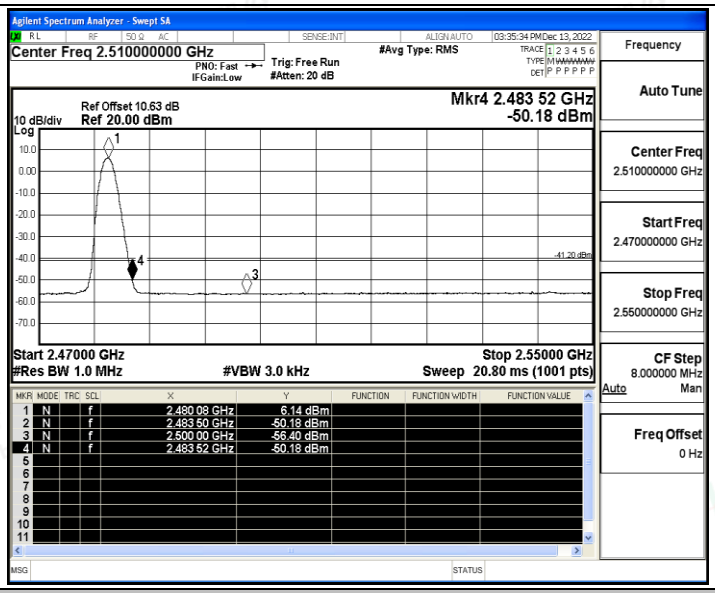
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak