Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: The tablet

Test Model: DS808

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Ling Zhu
Supervised by:	Li Huan

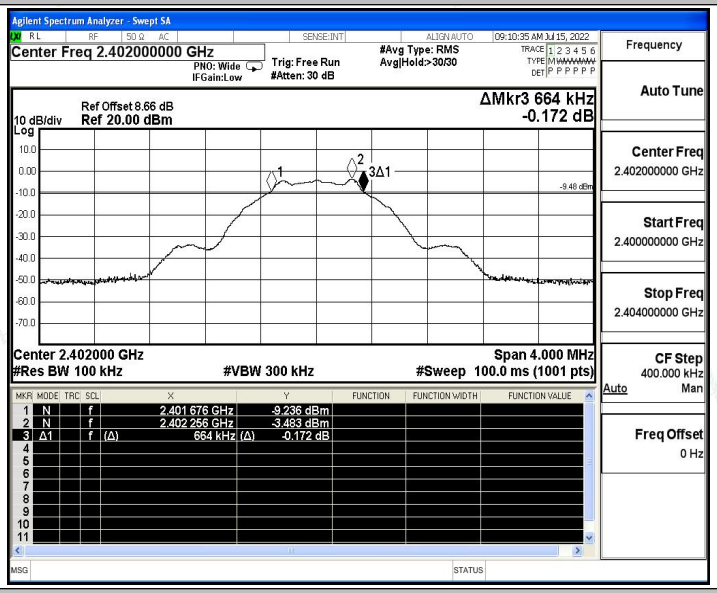
B.1 6dB Bandwidth

Test Result

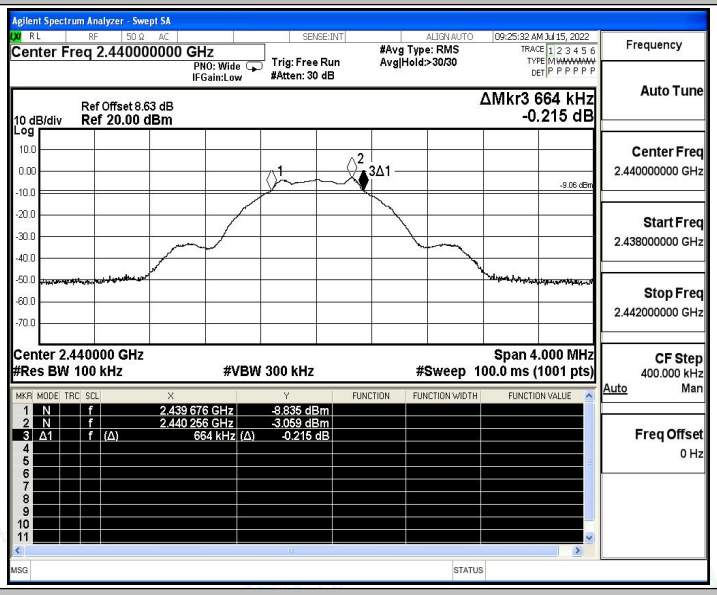
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.664	2401.676	2402.340	0.5	PASS
		2440	0.664	2439.676	2440.340	0.5	PASS
		2480	0.660	2479.676	2480.336	0.5	PASS

Test Graphs

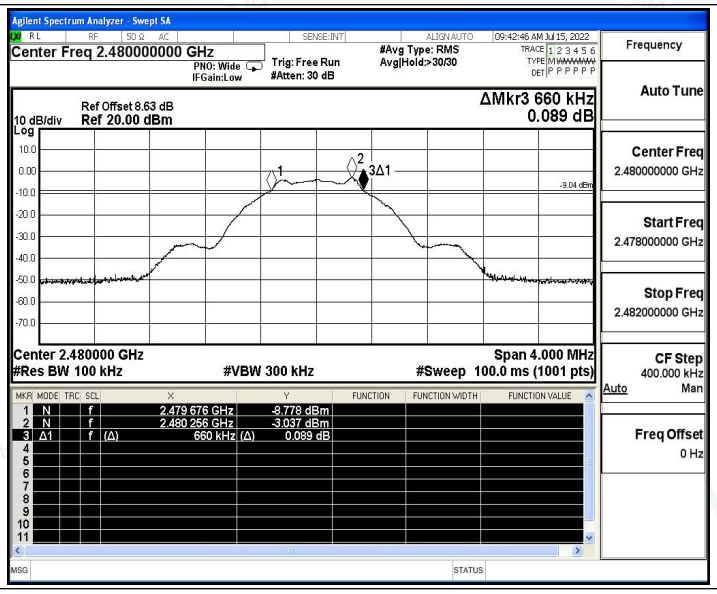
BLE_1M_Ant1_2402



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
09:42:46 AM Jul 15, 2022
Frequency
Auto Tune
Ref Offset 8.63 dB
10 dB/div
Ref 20.00 dBm
ΔMkr3 660 kHz
0.089 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 2.479 676 GHz -8.778 dBm
2 N 1 f 2.480 256 GHz -3.037 dBm
3 Δ1 f (Δ) 660 kHz (Δ) 0.089 dB

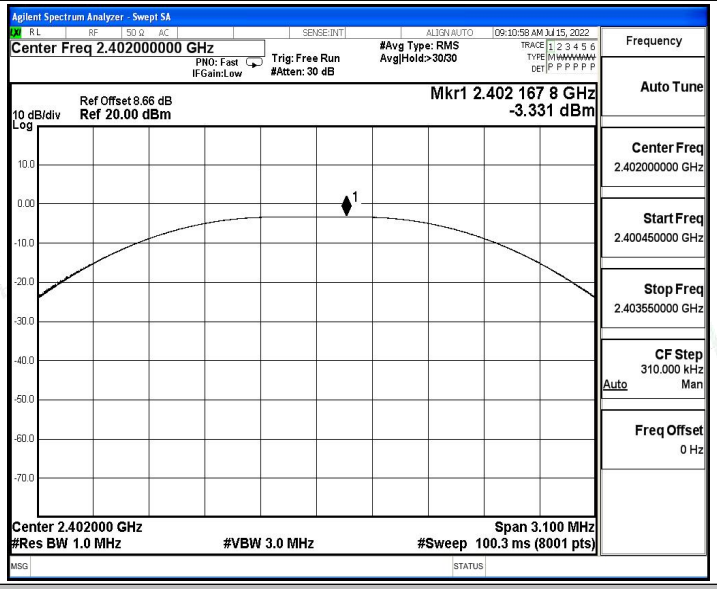
B.2 Maximum conducted output power

Test Result

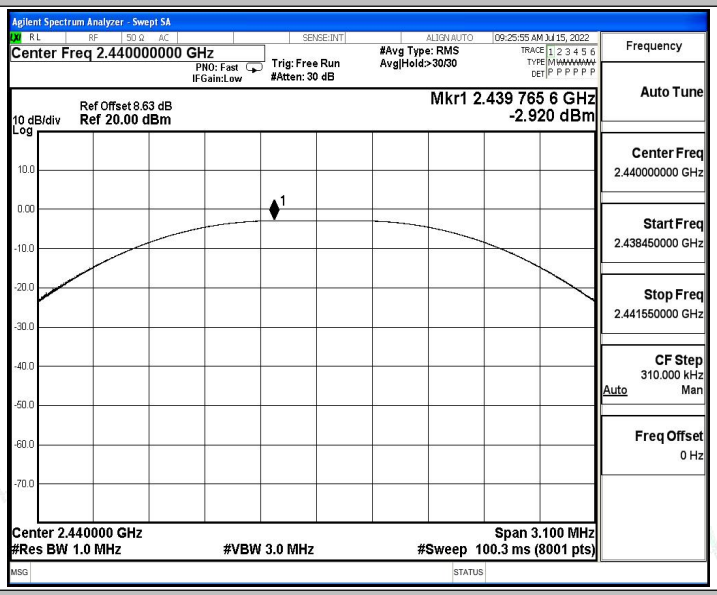
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.33	≤30	PASS
		2440	-2.92	≤30	PASS
		2480	-2.6	≤30	PASS

Test Graphs

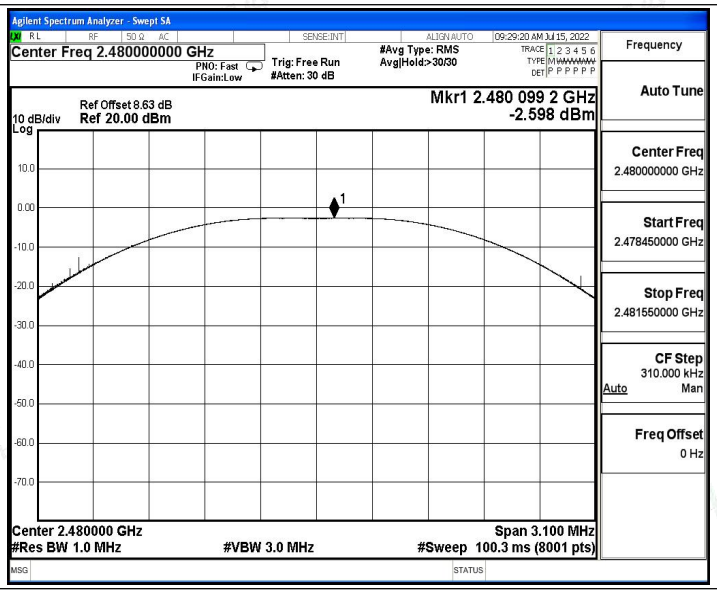
BLE_1M_Ant1_2402



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
09:29:20 AM Jul 15, 2022
Frequency
Auto Tune
Ref Offset 8.63 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 2.480 099 2 GHz
-2.598 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
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)
MSG
STATUS

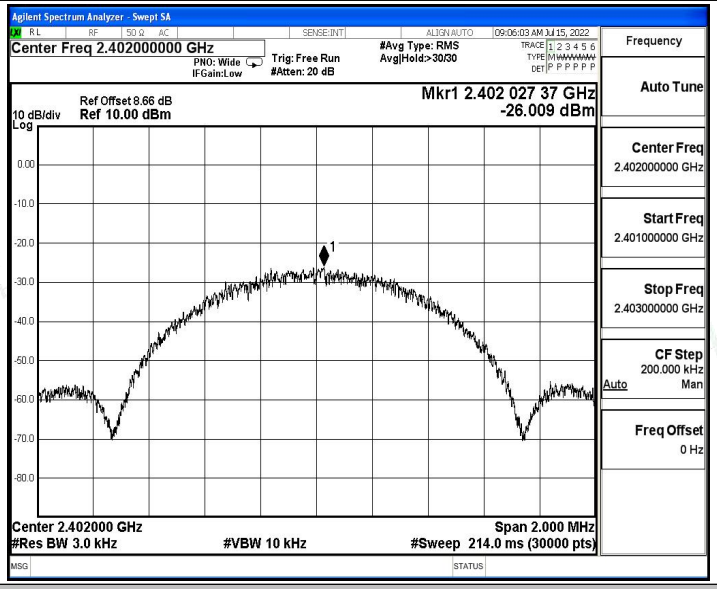
B.3 Maximum power spectral density

Test Result

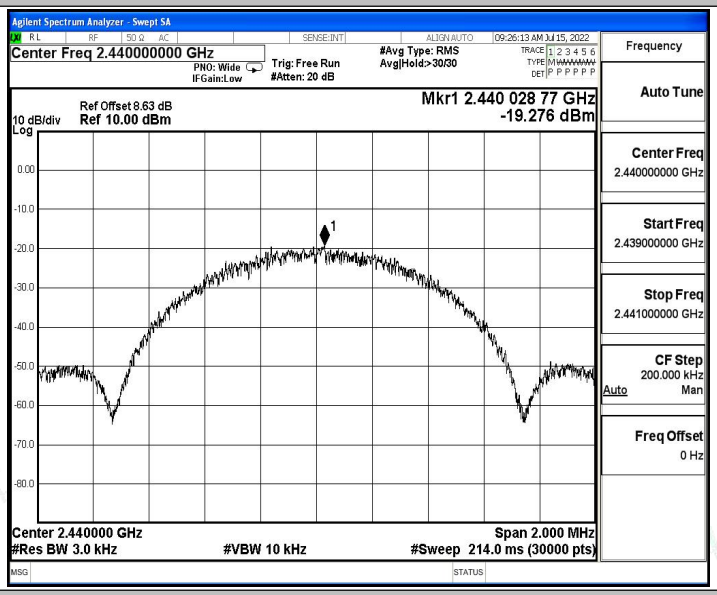
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-26.01	≤8.00	PASS
		2440	-19.28	≤8.00	PASS
		2480	-18.94	≤8.00	PASS

Test Graphs

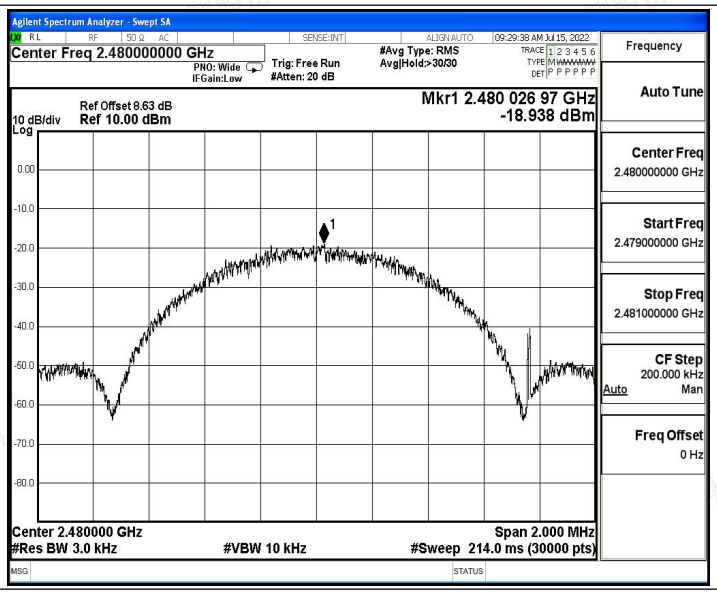
BLE_1M_Ant1_2402



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
09:29:38 AM Jul 15, 2022
Frequency
Auto Tune
Ref Offset 8.63 dB
10 dB/div Ref 10.00 dBm
Log
Mkr1 2.480 026 97 GHz
-18.938 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)

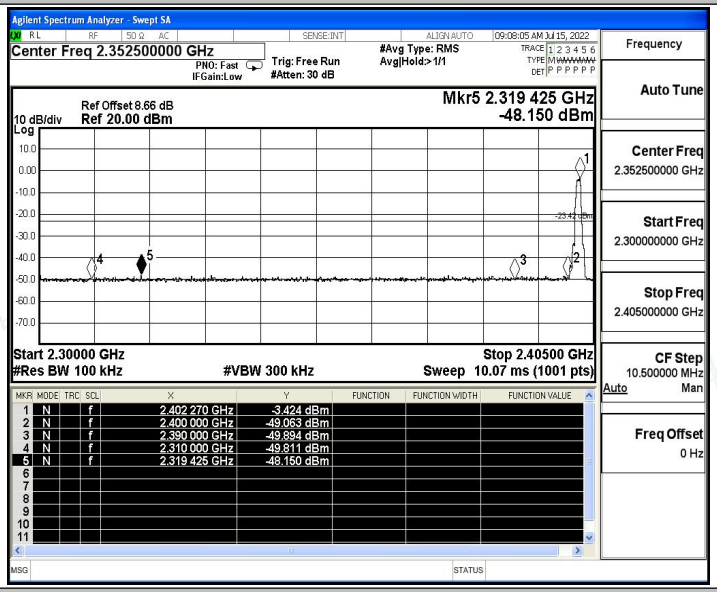
B.4 Band edge measurements

Test Result

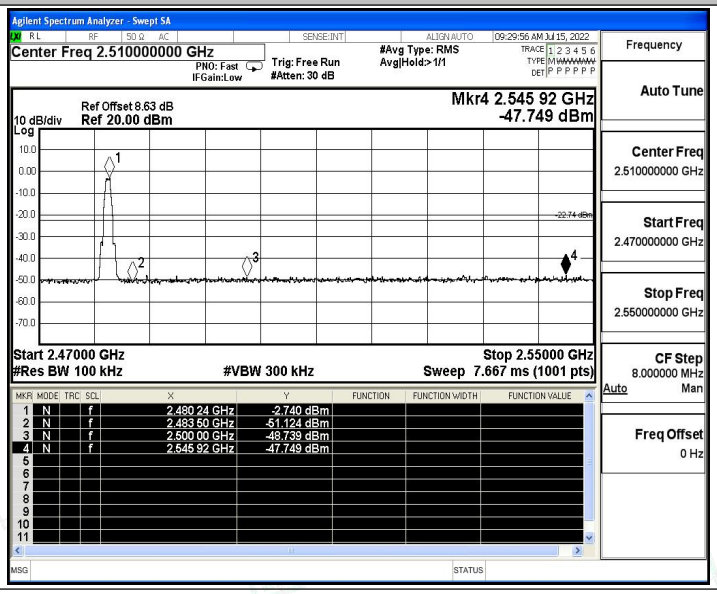
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-3.42	-48.15	≤-23.42	PASS
		High	2480	-2.74	-47.75	≤-22.74	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



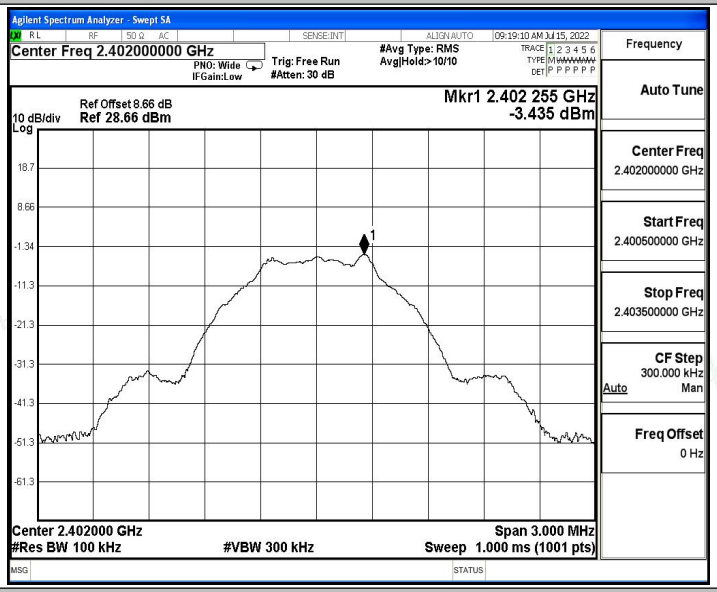
B.5 Conducted Spurious Emission

Test Result

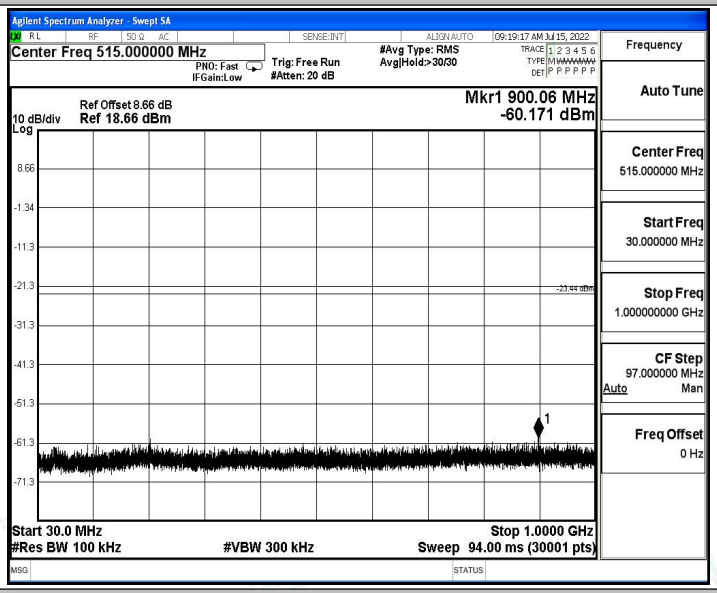
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-3.44	-3.44	---	PASS
			30~1000	-3.44	-60.17	≤-23.44	PASS
			1000~26500	-3.44	-45.85	≤-23.44	PASS
		2440	Reference	-3.45	-3.45	---	PASS
			30~1000	-3.45	-60.7	≤-23.45	PASS
			1000~26500	-3.45	-45.48	≤-23.45	PASS
		2480	Reference	-2.74	-2.74	---	PASS
			30~1000	-2.74	-34.92	≤-22.74	PASS
			1000~26500	-2.74	-46.37	≤-22.74	PASS

Test Graphs

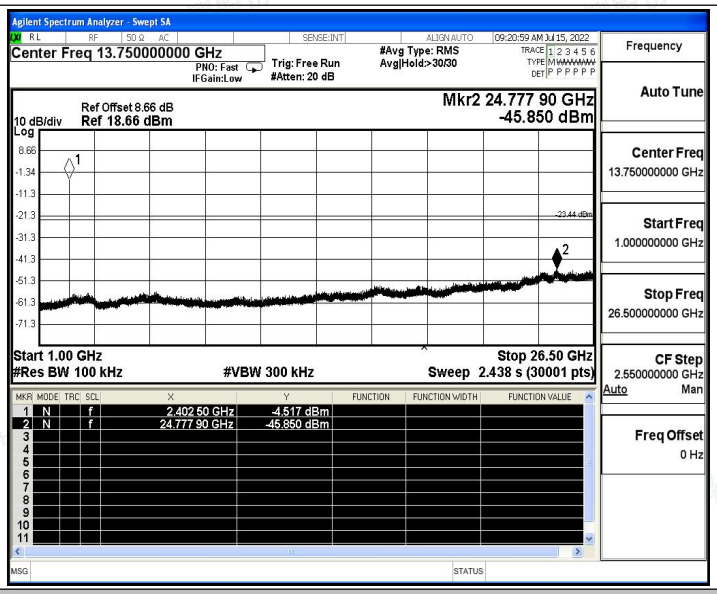
BLE_1M_Ant1_2402_0~Reference



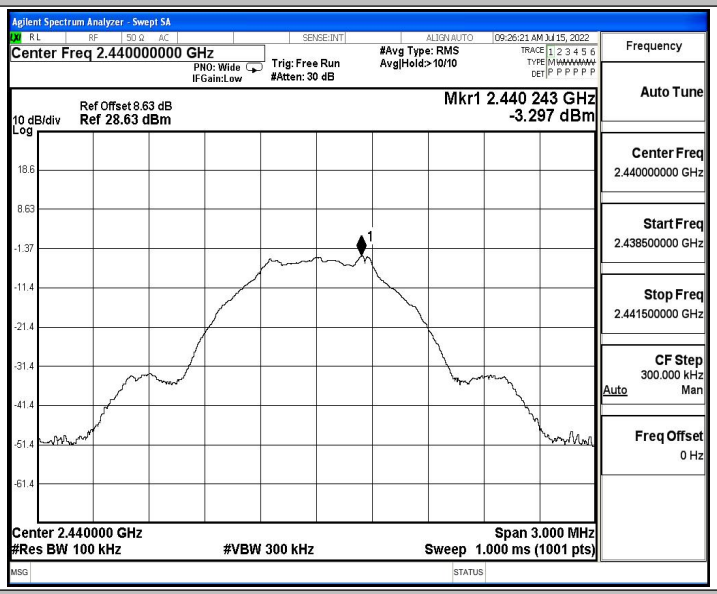
BLE_1M_Ant1_2402_30~1000



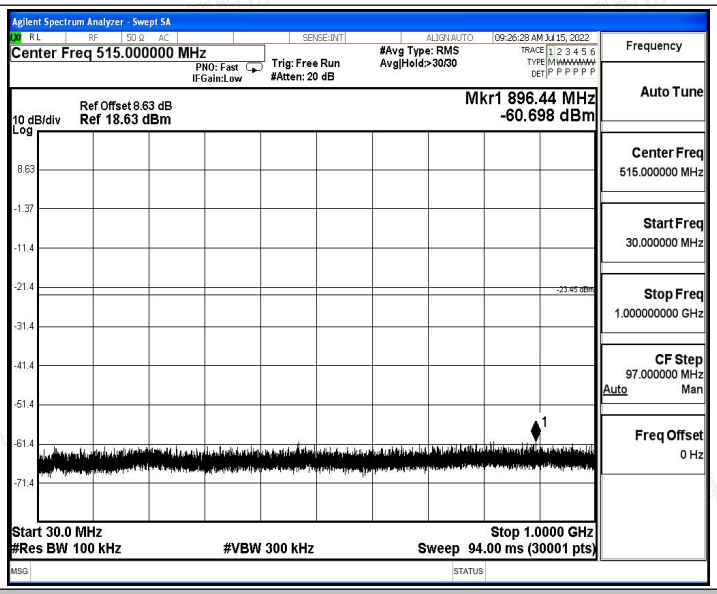
BLE_1M_Ant1_2402_1000~26500



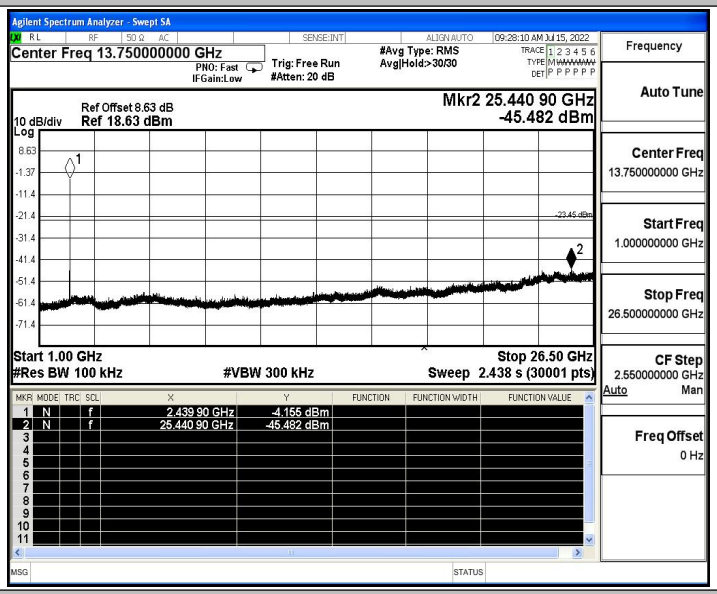
BLE_1M_Ant1_2440_0~Reference



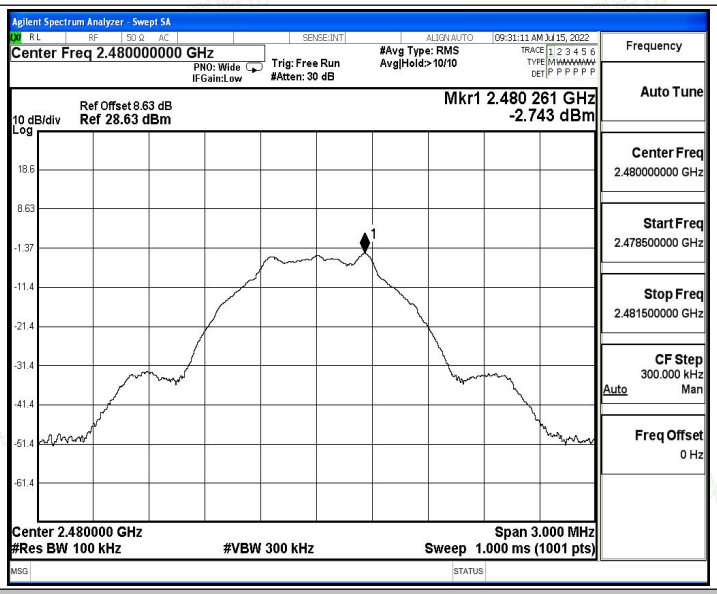
BLE_1M_Ant1_2440_30~1000



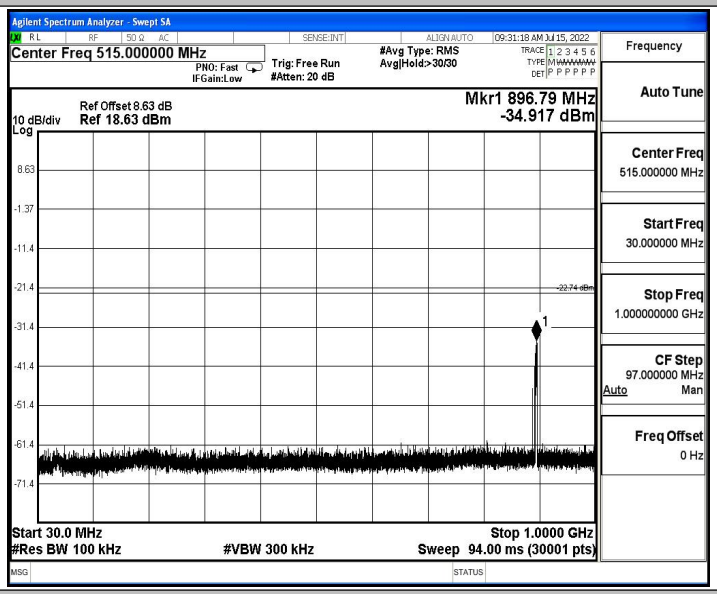
BLE_1M_Ant1_2440_1000~26500



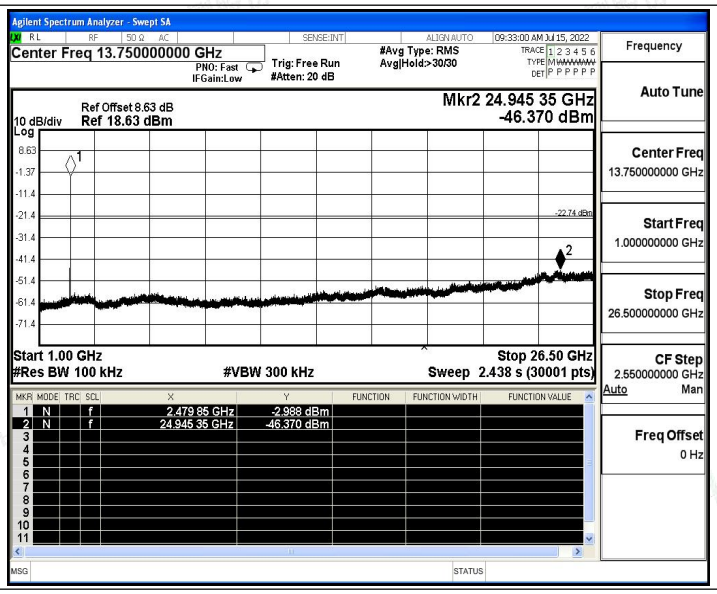
BLE_1M_Ant1_2480_0~Reference



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
09:33:00 AM Jul 15, 2022
Ref Offset 8.63 dB
10 dB/div Ref 18.63 dBm
Log
Mkr2 24.945 35 GHz
-46.370 dBm
-22.74 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 -2.988 dBm
2 N 1 f 24.945 35 GHz -46.370 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
MSG
STATUS

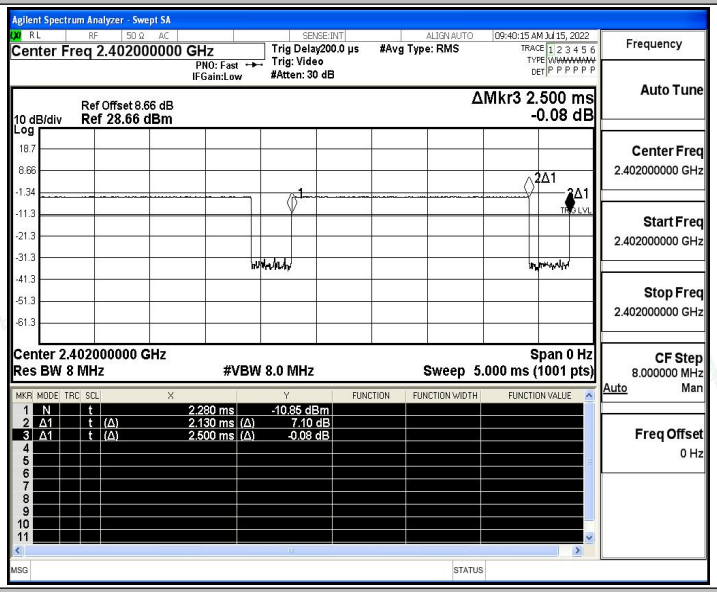
B.6 Duty Cycle

Test Result

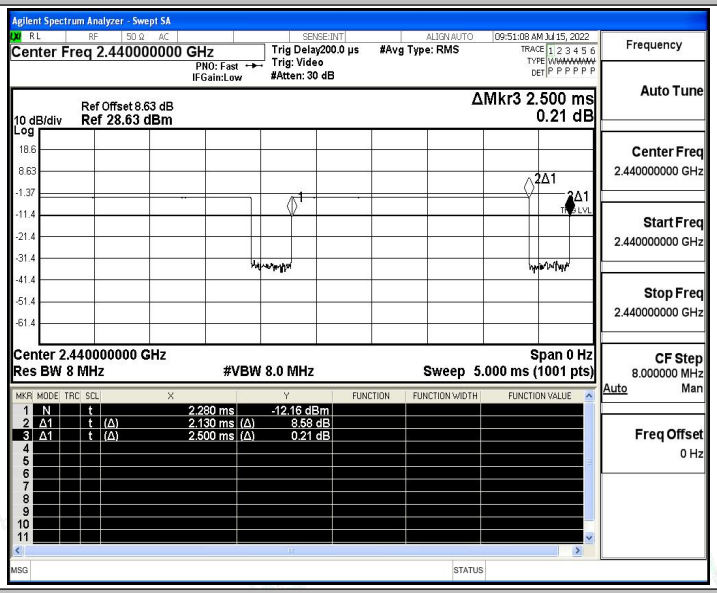
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	2.13	2.50	0.8520	85.20	0.70	0.47	---	---
		2440	2.13	2.50	0.8520	85.20	0.70	0.47	---	---
		2480	2.13	2.50	0.8520	85.20	0.70	0.47	---	---

Test Graphs

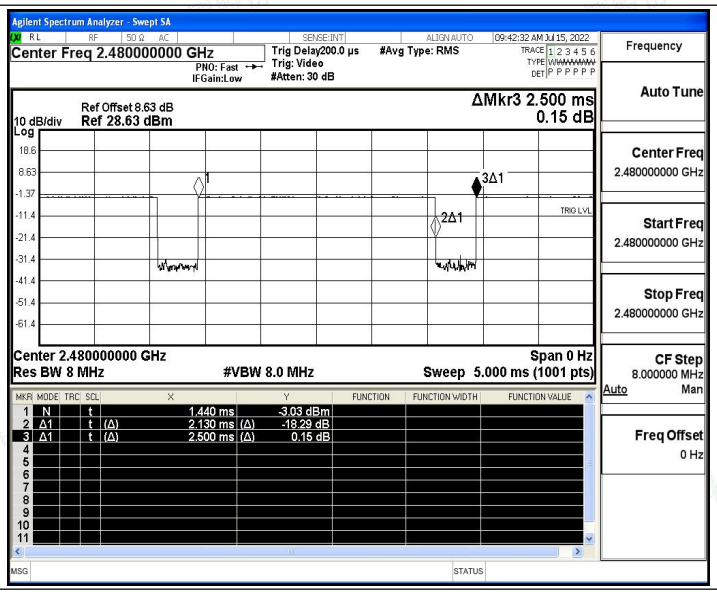
BLE_1M_Ant1_2402



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
09:42:32 AM Jul 15, 2022
Ref Offset 8.63 dB
10 dB/div Ref 28.63 dBm
Log
ΔMkr3 2.500 ms
0.15 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 1.440 ms -3.03 dBm
2 Δ1 1 t (Δ) 2.130 ms (Δ) -18.29 dB
3 Δ1 1 t (Δ) 2.500 ms (Δ) 0.15 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

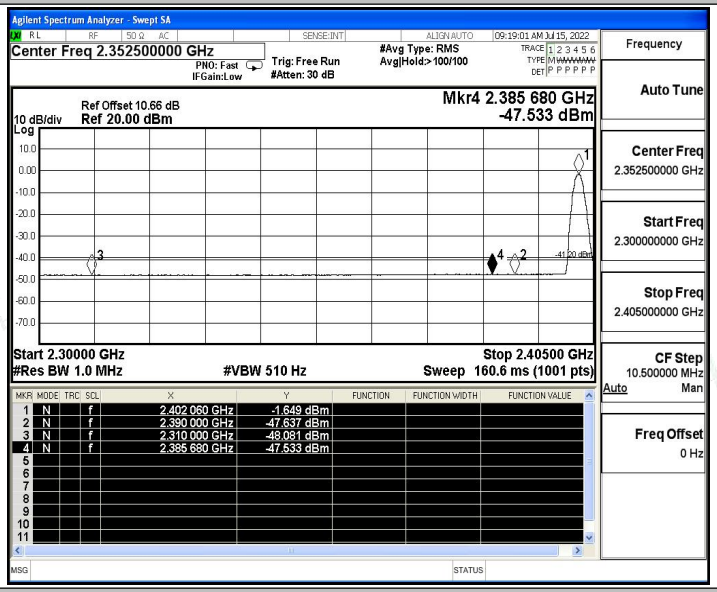
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.08	≤-41.20	47.12	≤54	PASS
				AV	2385.680	-47.53	≤-41.20	47.67	≤54	PASS
				AV	2390.000	-47.72	≤-41.20	47.48	≤54	PASS
				Peak	2310.000	-38.7	≤-21.20	56.50	≤74	PASS
				Peak	2368.250	-36.84	≤-21.20	58.36	≤74	PASS
				Peak	2390.000	-38.9	≤-21.20	56.30	≤74	PASS
		High	2480	AV	2483.500	-47.11	≤-41.20	48.09	≤54	PASS
				AV	2496.960	-46.96	≤-41.20	48.24	≤54	PASS
				AV	2500.000	-47.04	≤-41.20	48.16	≤54	PASS
				Peak	2483.500	-37.59	≤-21.20	57.61	≤74	PASS
				Peak	2488.400	-36.18	≤-21.20	59.02	≤74	PASS
				Peak	2500.000	-38.27	≤-21.20	56.93	≤74	PASS

Note:

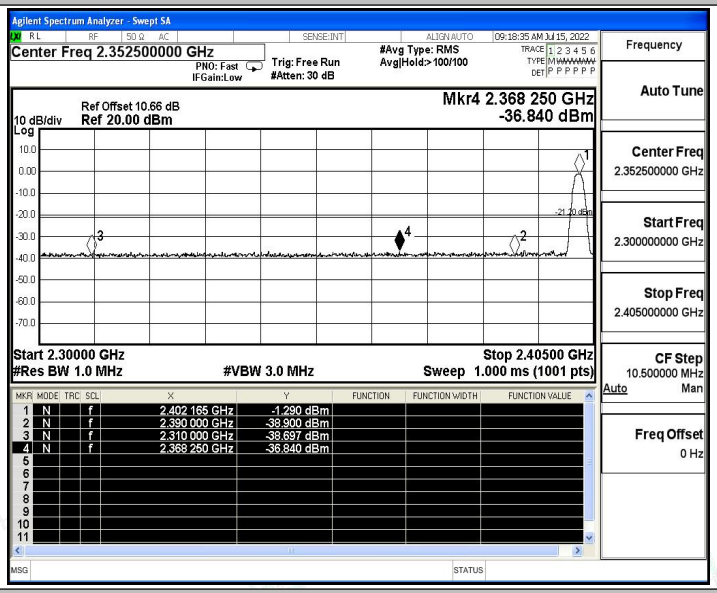
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

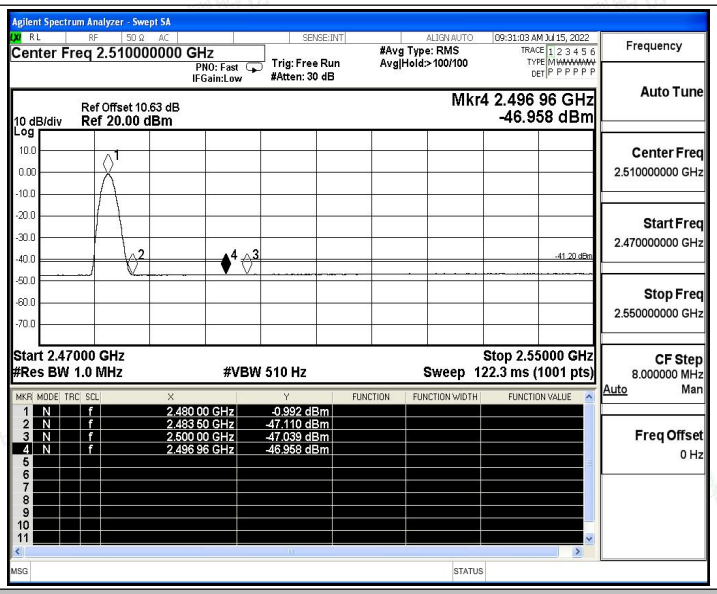
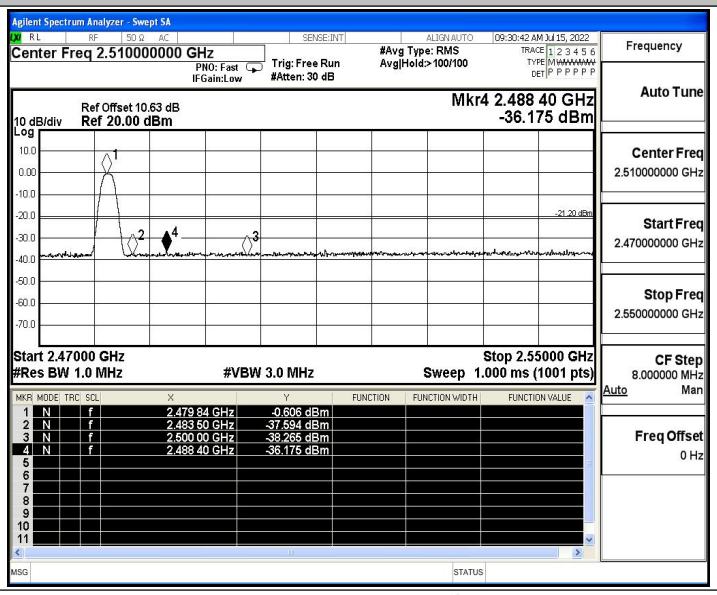
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak