Appendix Test Data

Report No:	18220WC20167302	Test Sample NO:	1-2-2
Start Test Date：	2022.7.26	Finish Test Date:	2022.8.16
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	27.3C°	Relative Humidity:	48%
Pressure:	1012 hPa		

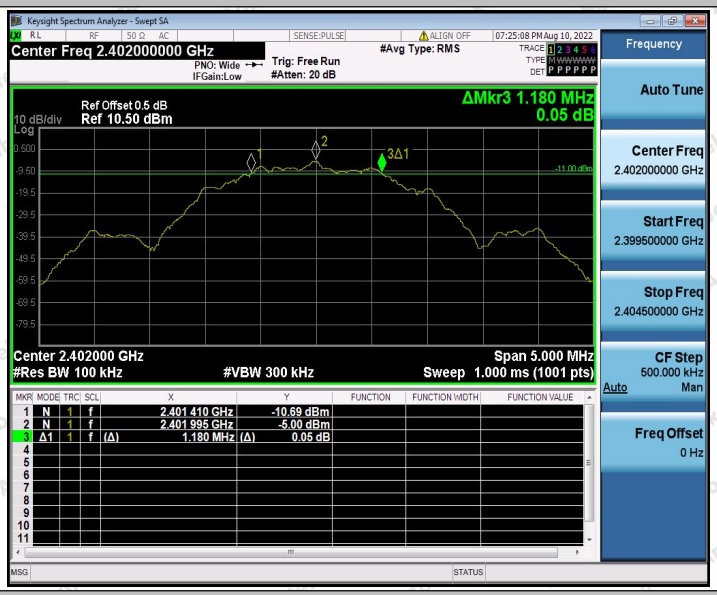
Appendix A: DTS Bandwidth

Test Result

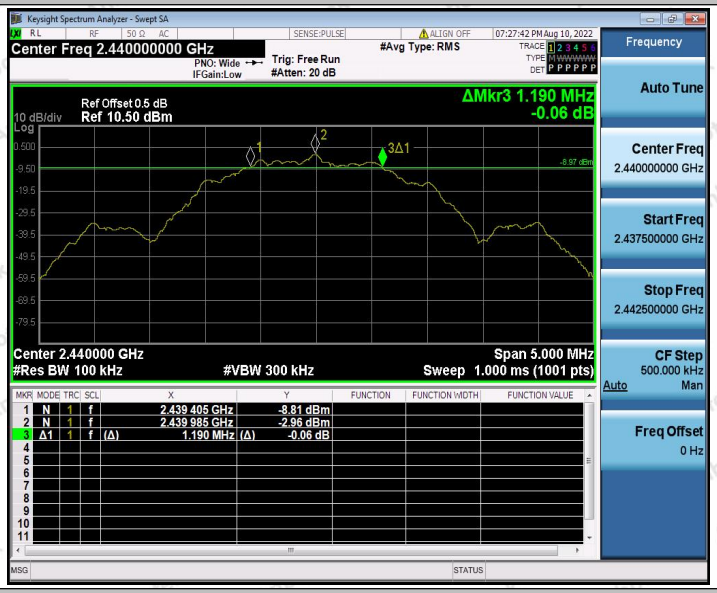
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant1	2402	1.180	2401.410	2402.590	≥0.5	PASS
	Ant1	2440	1.190	2439.405	2440.595	≥0.5	PASS
		2480	1.185	2479.400	2480.585	≥0.5	PASS

Test Graphs

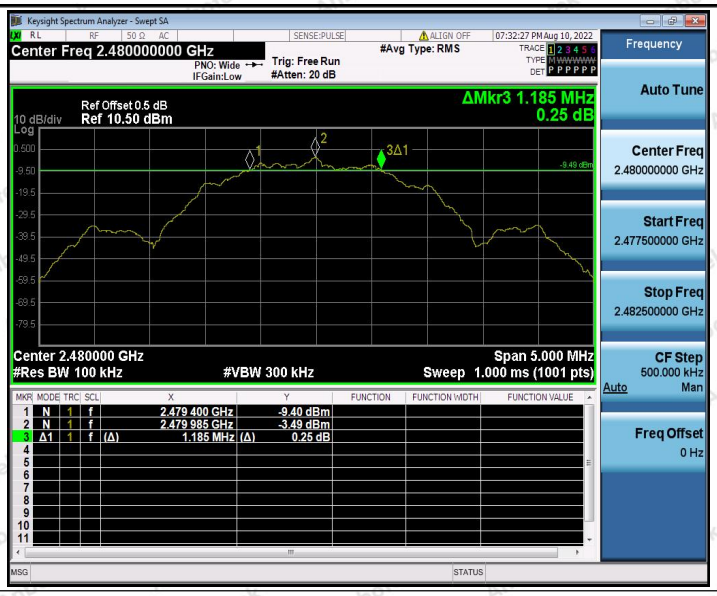
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
07:32:27 PM Aug 10, 2022
Ref Offset 0.5 dB
10 dB/div
Ref 10.50 dBm
ΔMkr3 1.185 MHz
0.25 dB
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.479 400 GHz -9.40 dBm
2 N 1 f 2.479 985 GHz -3.49 dBm
3 Δ1 1 f (Δ) 1.185 MHz (Δ) 0.25 dB
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto Man
Freq Offset
0 Hz

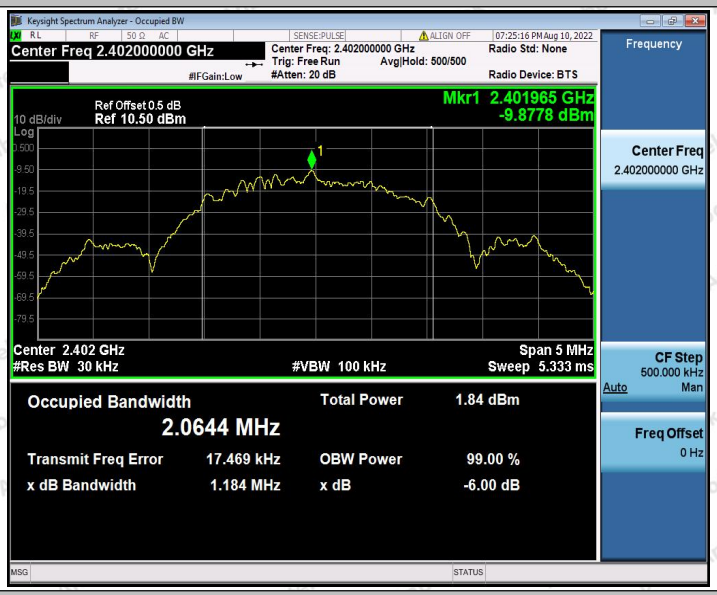
Appendix B: Occupied Channel Bandwidth

Test Result

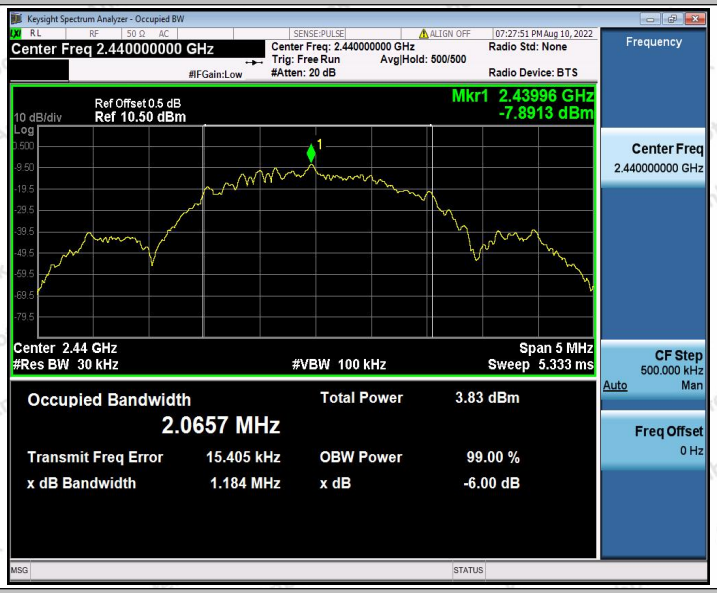
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant1	2402	2.0644	2400.9853	2403.0497	---	---
	Ant1	2440	2.0657	2438.9826	2441.0483	---	---
		2480	2.0678	2478.9797	2481.0475	---	---

Test Graphs

BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
07:32:35 PM Aug 10, 2022
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 10.50 dBm
Mkr1 2.479965 GHz
-8.4512 dBm
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 5 MHz
Sweep 5.333 ms
CF Step
500.000 kHz
Auto
Man
Occupied Bandwidth
2.0678 MHz
Total Power
3.34 dBm
Transmit Freq Error
13.615 kHz
OBW Power
99.00 %
x dB Bandwidth
1.185 MHz
x dB
-6.00 dB
Freq Offset
0 Hz
MSG
STATUS

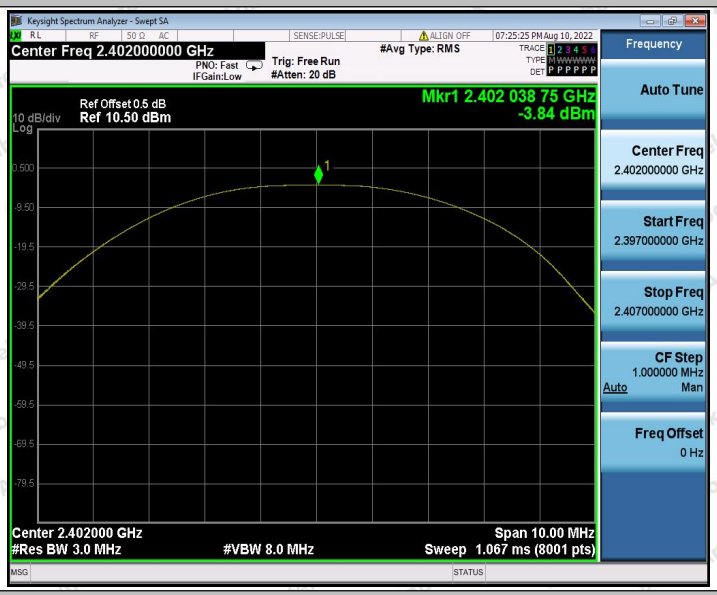
Appendix C: Maximum conducted output power

Test Result Peak

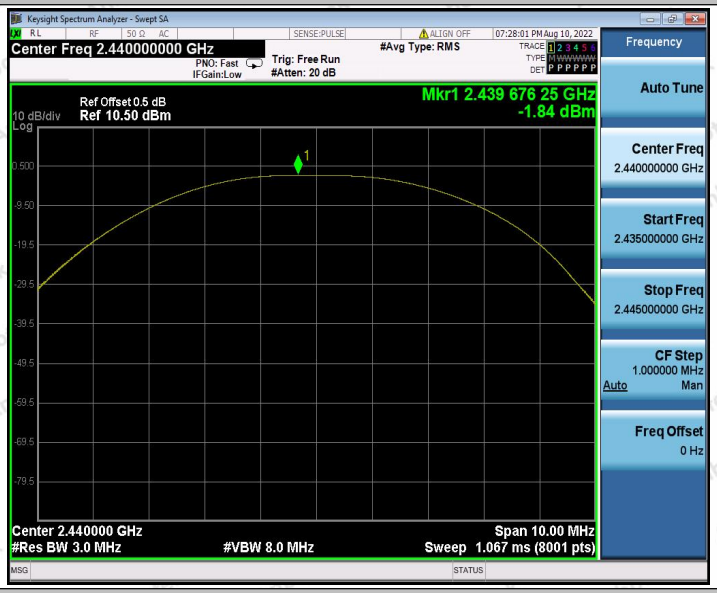
TestMode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
BLE	Ant1	2402	-3.84	≤30	PASS
	Ant1	2440	-1.84	≤30	PASS
		2480	-2.33	≤30	PASS

Test Graphs Peak

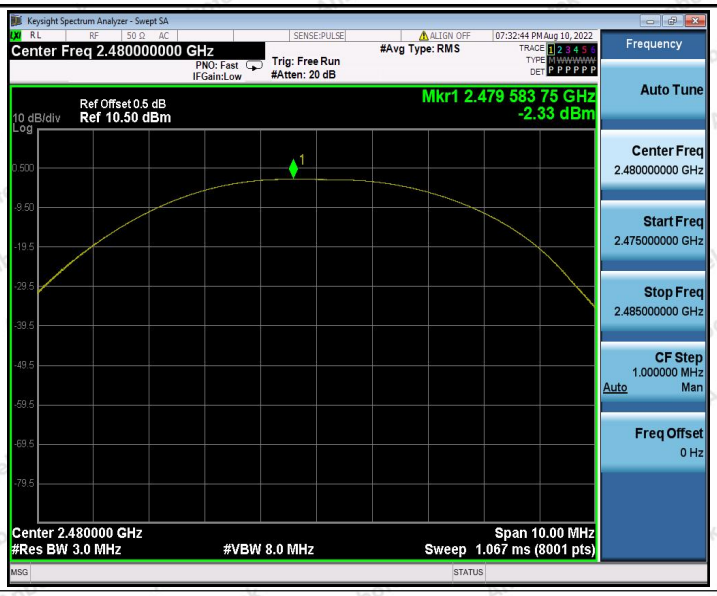
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
07:32:44 PM Aug 10, 2022
Frequency
Auto Tune
Mkr1 2.479 583 75 GHz
-2.33 dBm
Ref Offset 0.5 dB
10 dB/div
Ref 10.50 dBm
Log
0.500
-9.50
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
Center Freq
2.480000000 GHz
Start Freq
2.475000000 GHz
Stop Freq
2.485000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 10.00 MHz
Sweep 1.067 ms (8001 pts)
MSG
STATUS

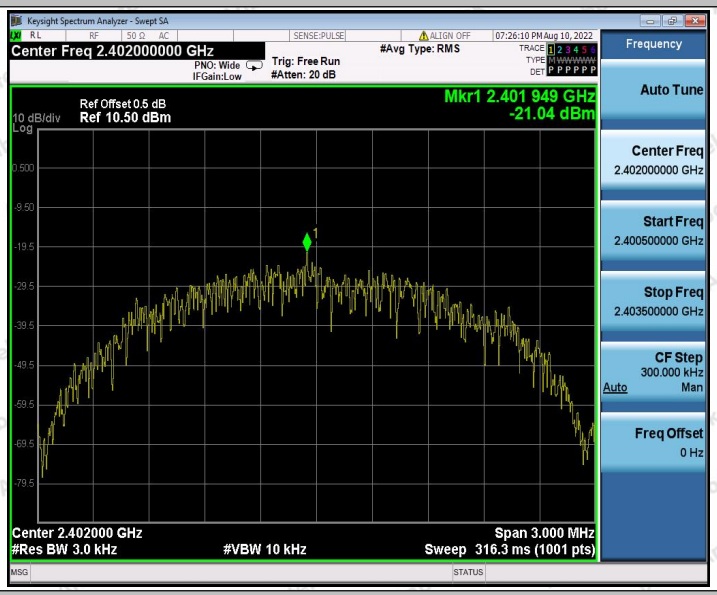
Appendix D: Maximum power spectral density

Test Result

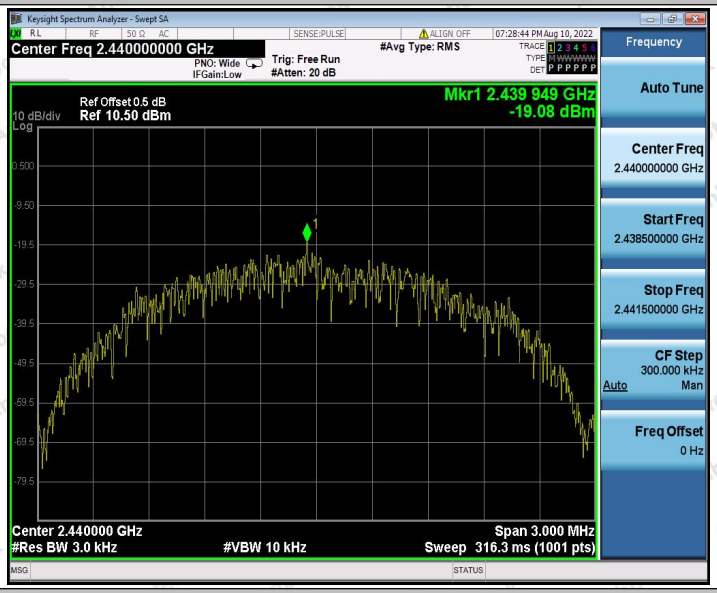
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant1	2402	-21.04	≤8	PASS
		2440	-19.09	≤8	PASS
		2480	-19.6	≤8	PASS

Test Graphs

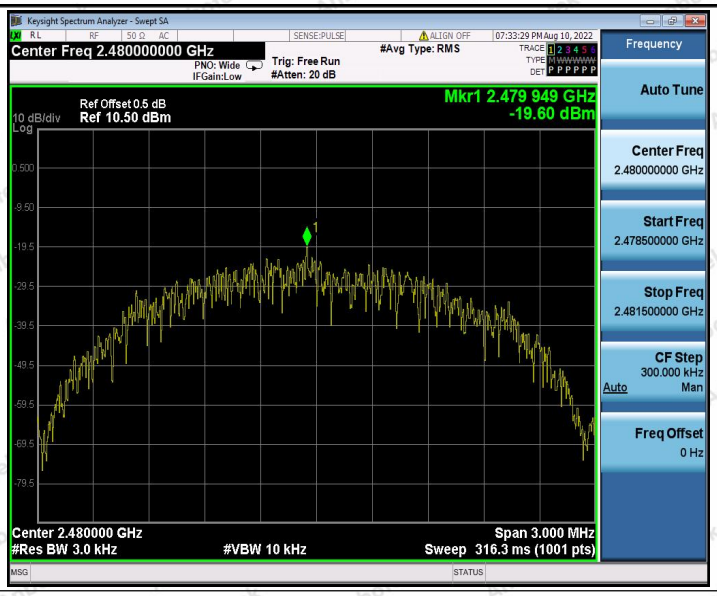
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
07:33:29 PM Aug 10, 2022
Ref Offset 0.5 dB
10 dB/div
Ref 10.50 dBm
Log
Mkr1 2.479 949 GHz
-19.60 dBm
Center 2.480000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 3.000 MHz
Sweep 316.3 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.481500000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

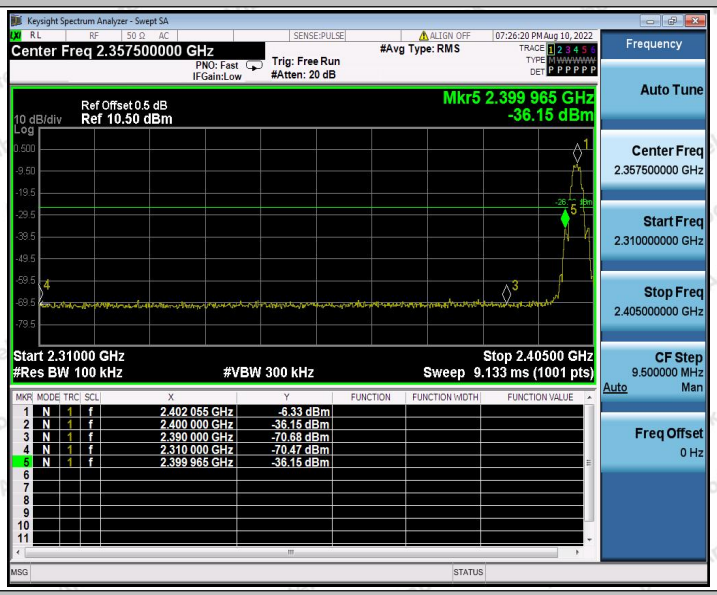
Appendix E: Band edge measurements

Test Result

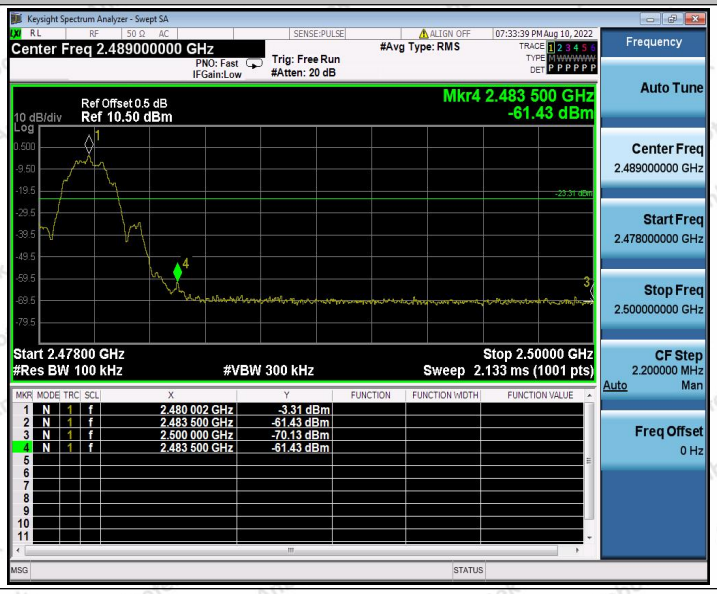
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	Low	2402	-6.33	-36.15	≤-26.33	PASS
		High	2480	-3.31	-61.43	≤-23.31	PASS

Test Graphs

BLE_Ant1_Low_2402



BLE_Ant1_High_2480



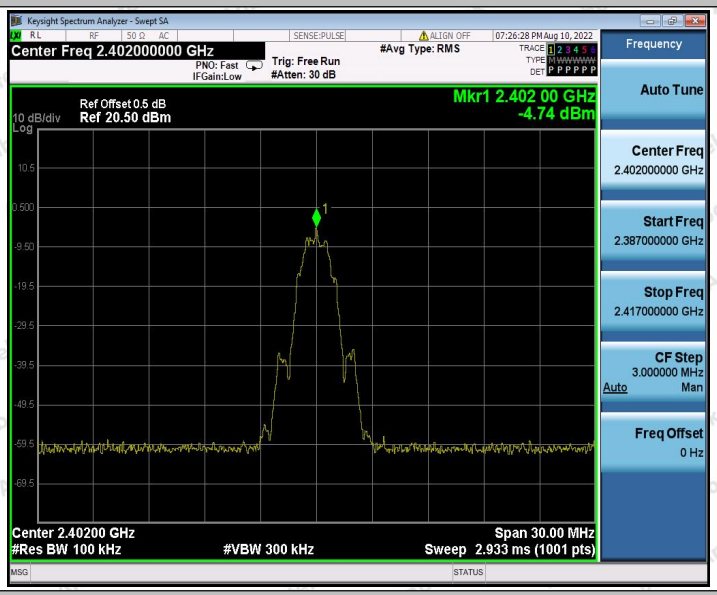
Appendix F: Conducted Spurious Emission

Test Result

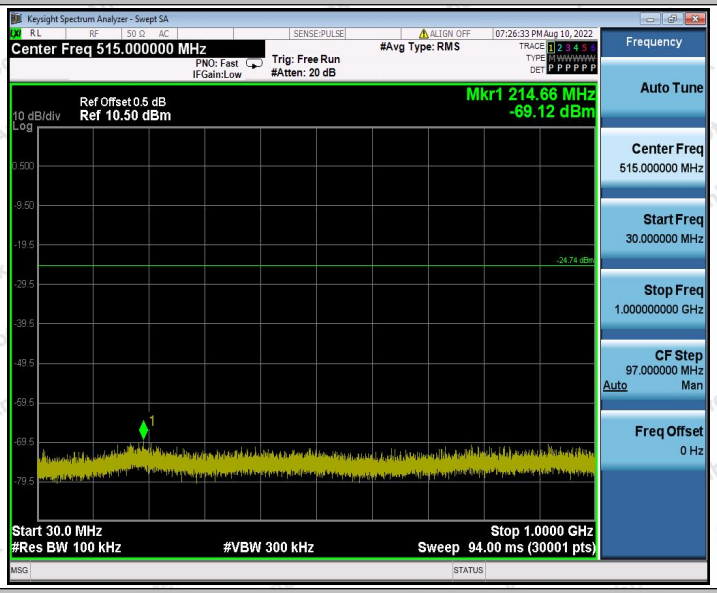
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	2402	Reference	-4.74	-4.74	---	PASS
			30~1000	-4.74	-69.12	≤-24.74	PASS
			1000~26500	-4.74	-53.74	≤-24.74	PASS
		2440	Reference	-2.93	-2.93	---	PASS
			30~1000	-2.93	-69.69	≤-22.93	PASS
			1000~26500	-2.93	-53.62	≤-22.93	PASS
		2480	Reference	-3.27	-3.27	---	PASS
			30~1000	-3.27	-69.36	≤-23.27	PASS
			1000~26500	-3.27	-54.14	≤-23.27	PASS

Test Graphs

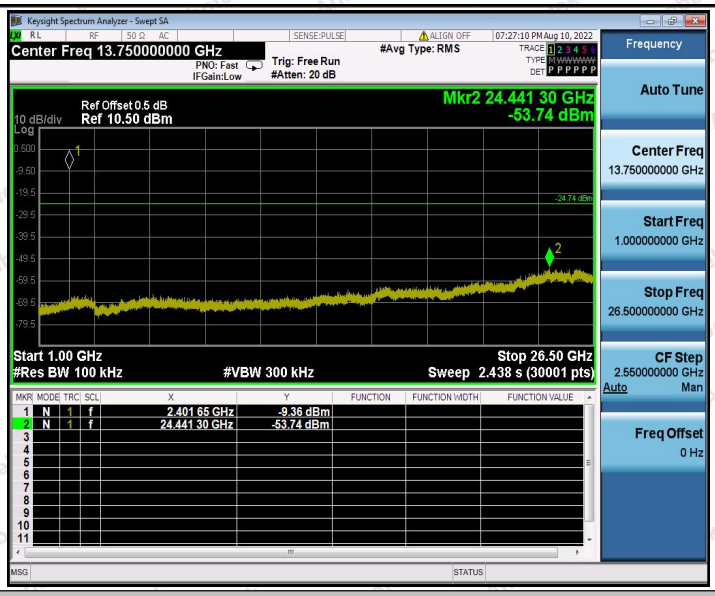
BLE_Ant1_2402_0~Reference



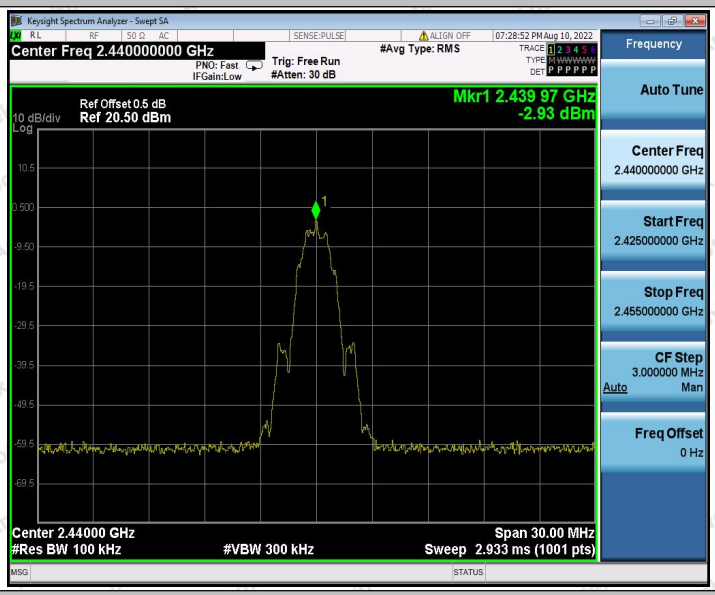
BLE_Ant1_2402_30~1000



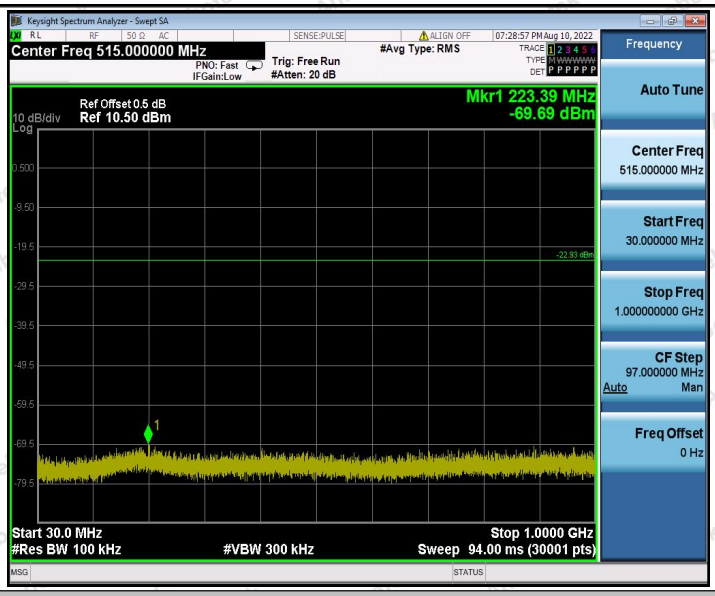
BLE_Ant1_2402_1000~26500



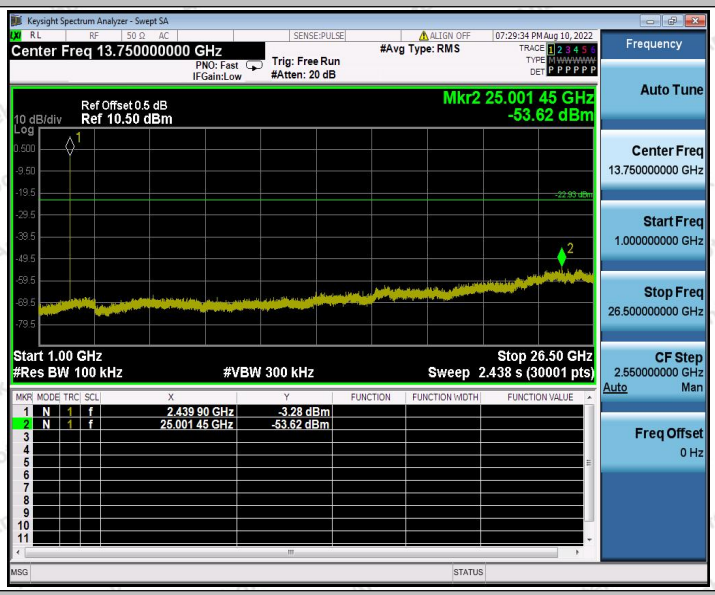
BLE_Ant1_2440_0~Reference



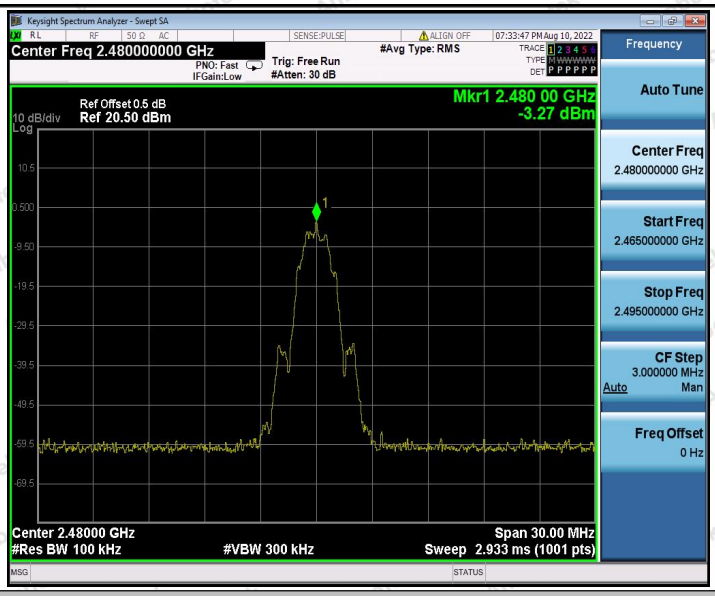
BLE_Ant1_2440_30~1000



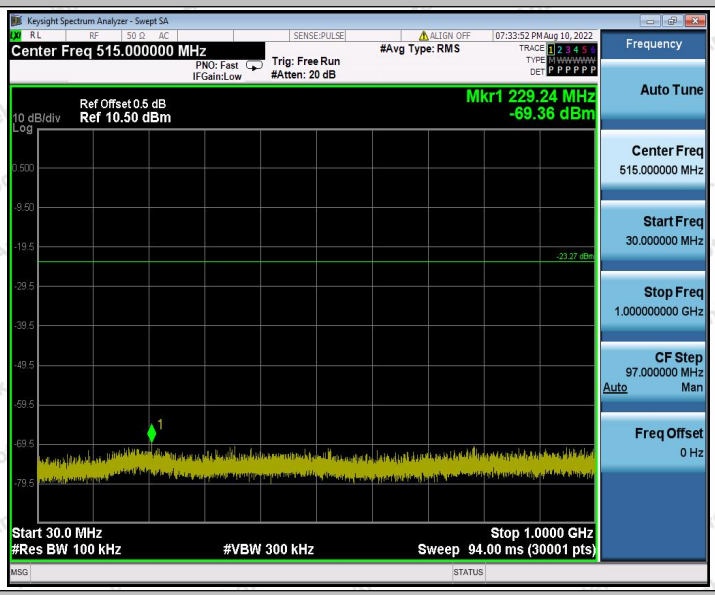
BLE_Ant1_2440_1000~26500



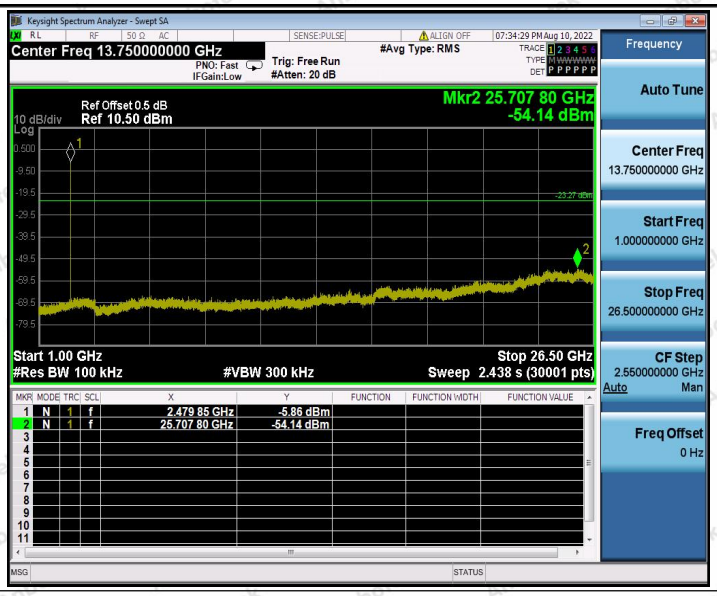
BLE_Ant1_2480_0~Reference



BLE_Ant1_2480_30~1000



BLE_Ant1_2480_1000~26500


Keysight Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
07:34:29 PM Aug 10, 2022
Ref Offset 0.5 dB
10 dB/div
Ref 10.50 dBm
Log
Mkr2 25.707 80 GHz
-54.14 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 -5.86 dBm
2 N 1 f 25.707 80 GHz -54.14 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

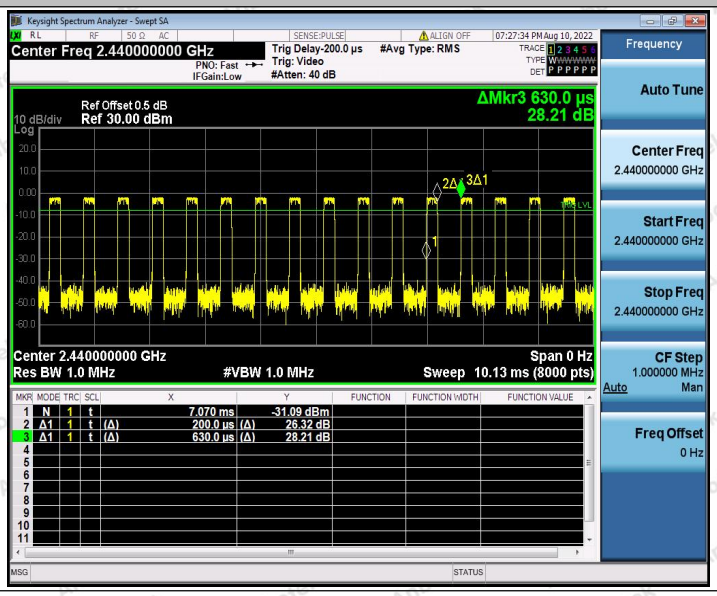
Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE	Ant1	2440	0.20	0.63	31.75	4.98

Test Graphs

BLE_Ant1_2440



---End---