Appendix Test Data

Report No.:	18220WC20168201	Test Sample No.:	1-2-2
Start Test Date:	2022.7.26	Finish Test Date:	2022.7.30
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	25.3℃	Relative Humidity:	56 %
Pressure:	1012 hPa		

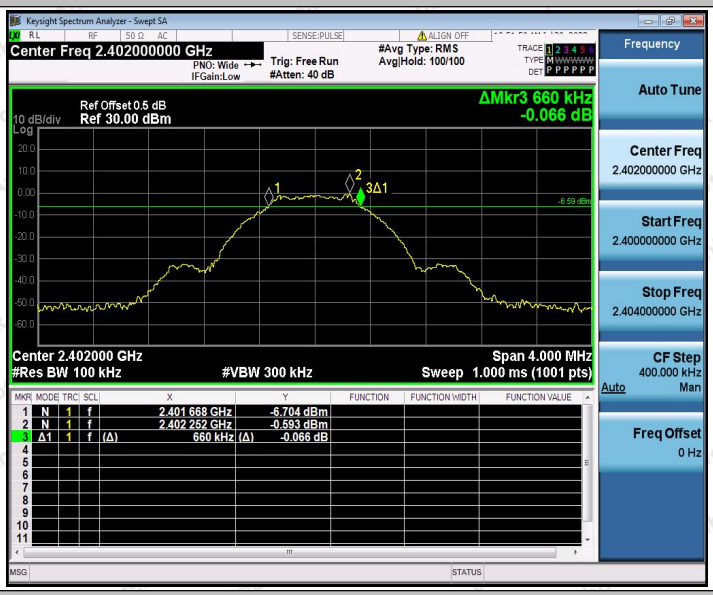
Appendix A: DTS Bandwidth

Test Result

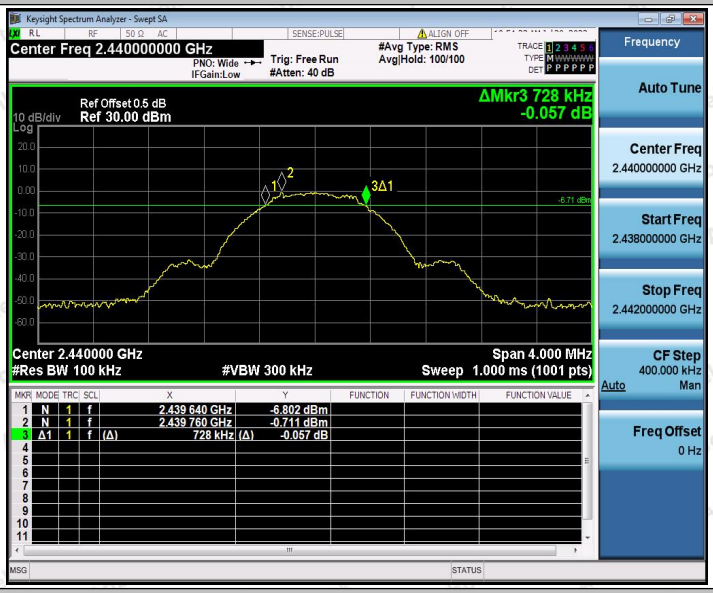
Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.668	2402.328	≥0.5	PASS
		2440	0.728	2439.640	2440.368	≥0.5	PASS
		2480	0.684	2479.652	2480.336	≥0.5	PASS

Test Graphs

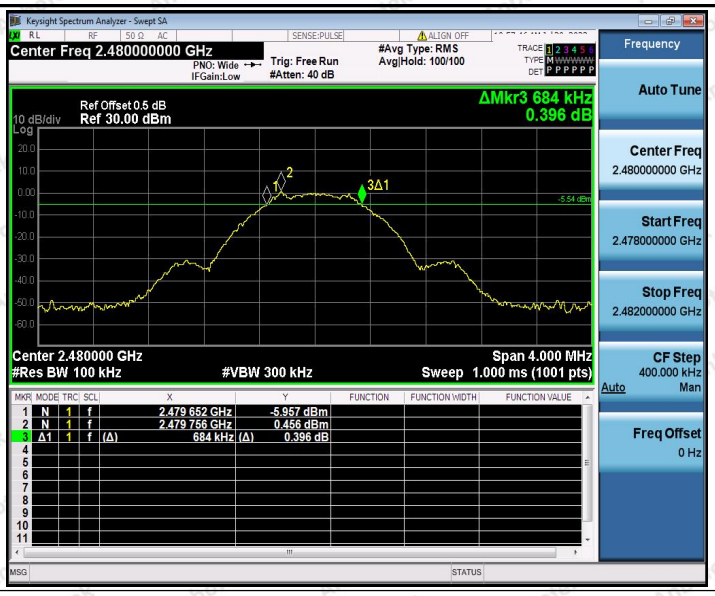
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 684 kHz
0.396 dB
-5.54 dBm
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4.000 MHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.479 652 GHz -5.957 dBm
2 N 1 f 2.479 756 GHz 0.456 dBm
3 Δ1 1 f (Δ) 684 kHz (Δ) 0.396 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

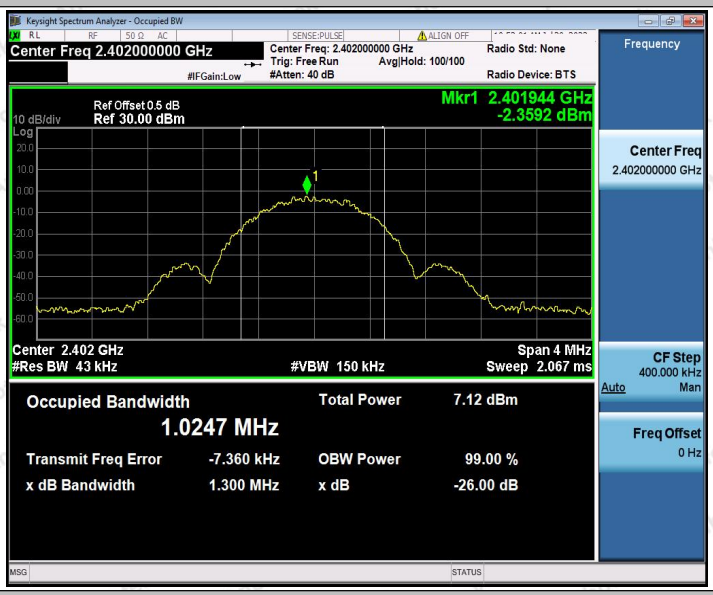
Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0247	2401.480	2402.505	---	PASS
		2440	1.0235	2439.483	2440.506	---	PASS
		2480	1.0279	2479.479	2480.507	---	PASS

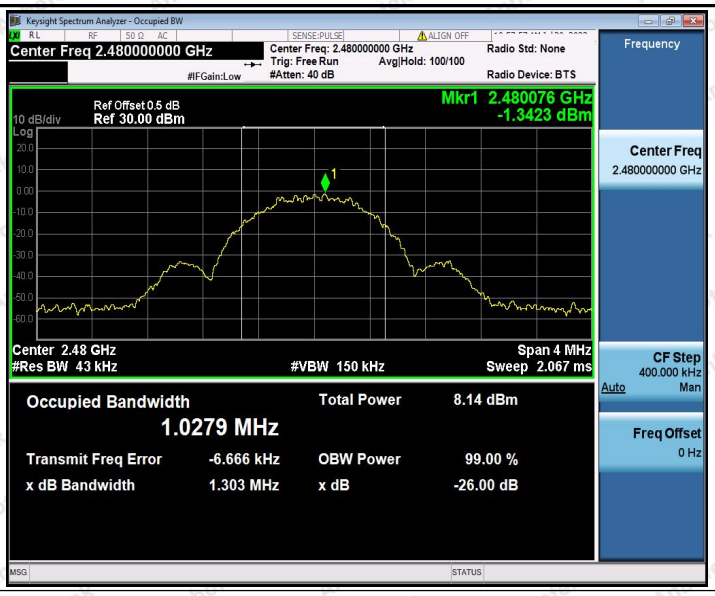
Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440

BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
Mkr1 2.480076 GHz
-1.3423 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 150 kHz
Span 4 MHz
Sweep 2.067 ms
Occupied Bandwidth
1.0279 MHz
Total Power 8.14 dBm
Transmit Freq Error -6.666 kHz
OBW Power 99.00 %
x dB Bandwidth 1.303 MHz
x dB -26.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

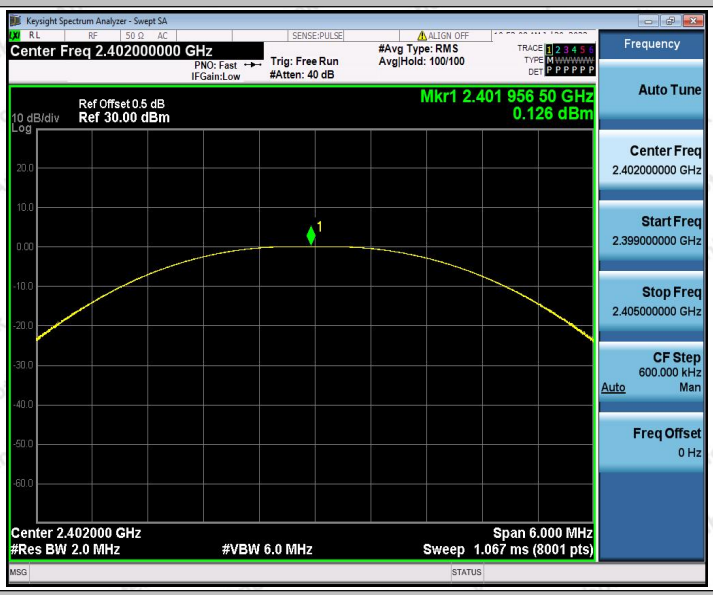
Appendix C: Maximum conducted output power

Test Result

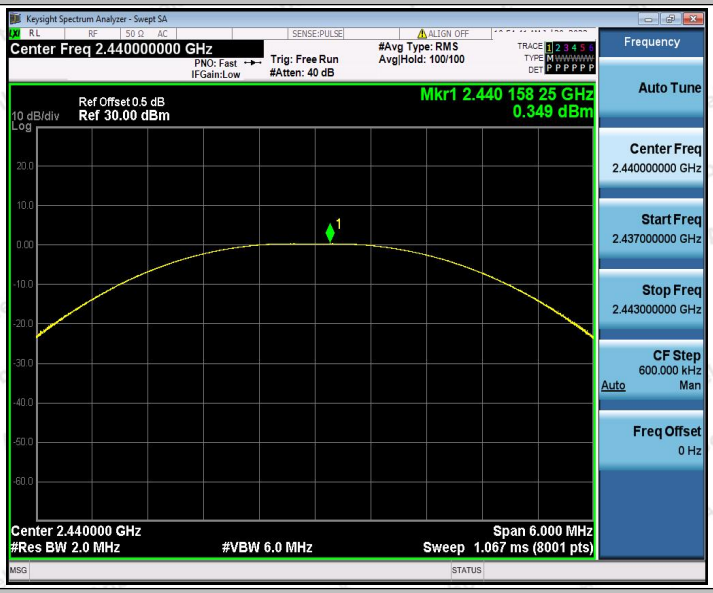
Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.13	≤30	PASS
		2440	0.35	≤30	PASS
		2480	0.8	≤30	PASS

Test Graphs

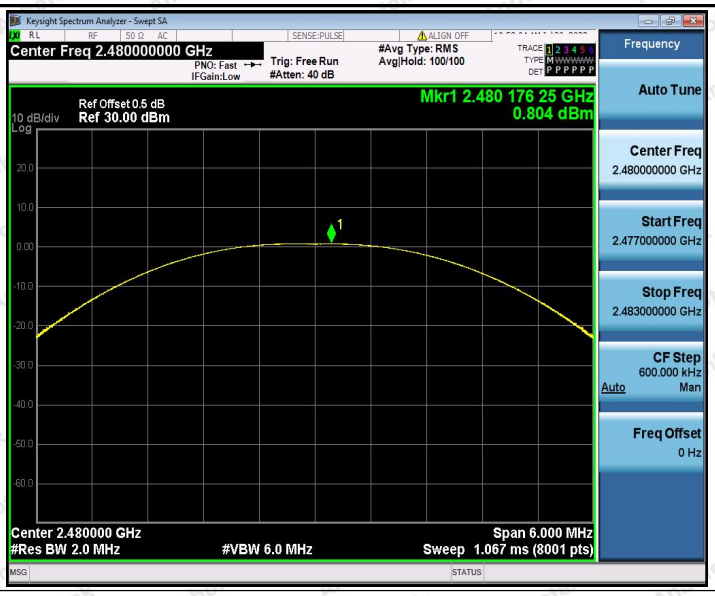
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.480 176 25 GHz
0.804 dBm
Center 2.480000 GHz
#Res BW 2.0 MHz
#VBW 6.0 MHz
Span 6.000 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477000000 GHz
Stop Freq
2.483000000 GHz
CF Step
600.000 kHz
Auto
Man
Freq Offset
0 Hz

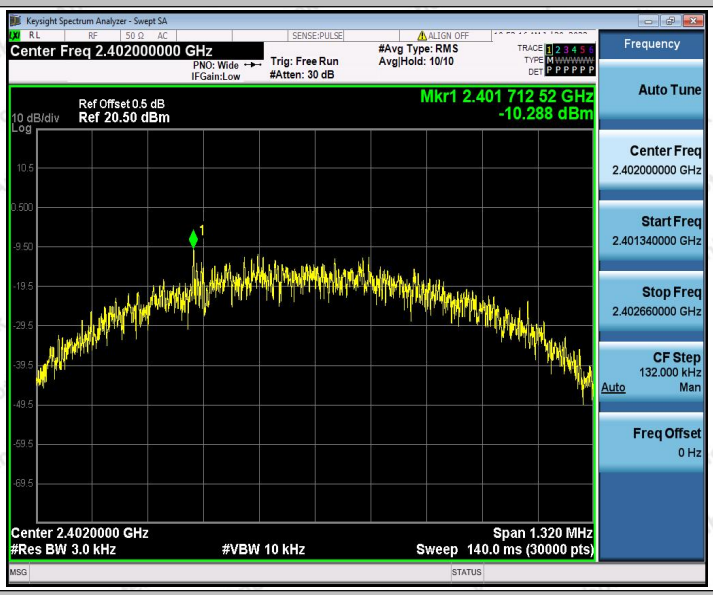
Appendix D: Maximum power spectral density

Test Result

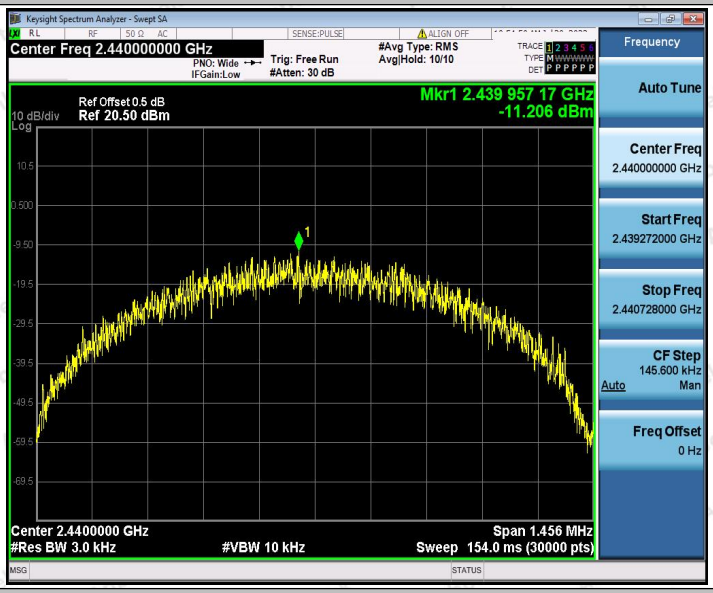
Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-10.29	≤8	PASS
		2440	-11.21	≤8	PASS
		2480	-10.04	≤8	PASS

Test Graphs

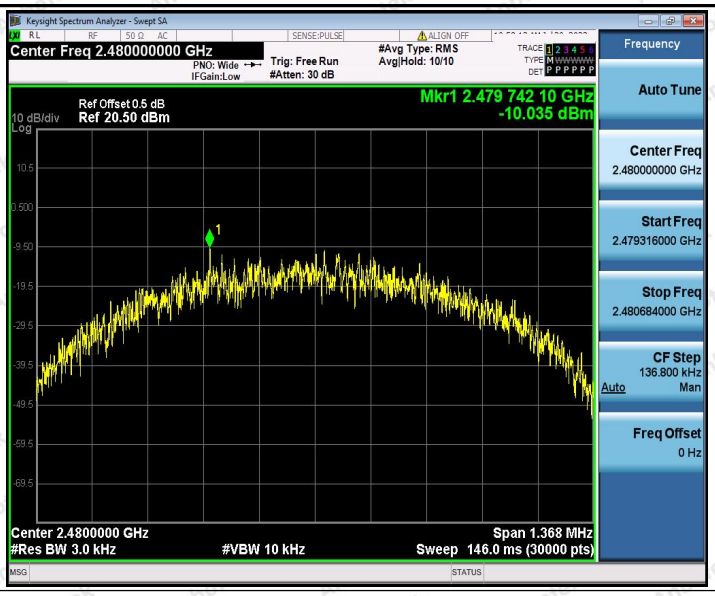
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
Ref Offset 0.5 dB
10 dB/div
Ref 20.50 dBm
Log
Mkr1 2.479 742 10 GHz
-10.035 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.368 MHz
Sweep 146.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479316000 GHz
Stop Freq
2.480684000 GHz
CF Step
136.800 kHz
Auto
Man
Freq Offset
0 Hz

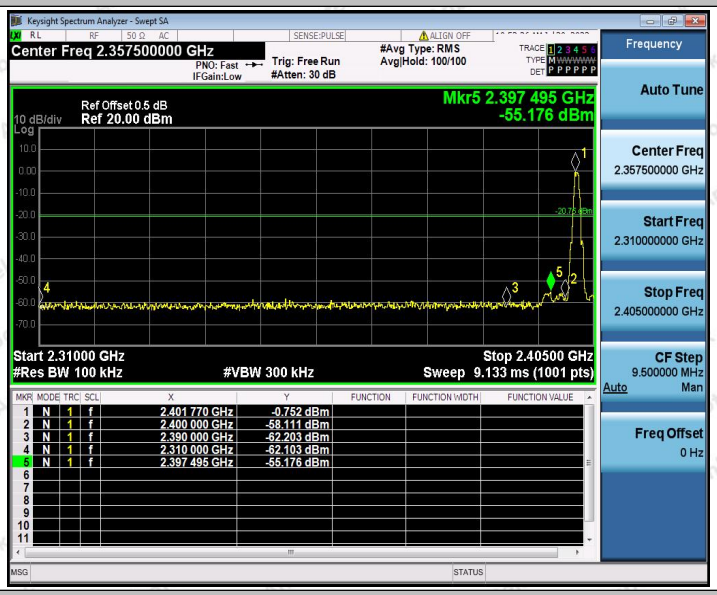
Appendix E: Band edge measurements

Test Result

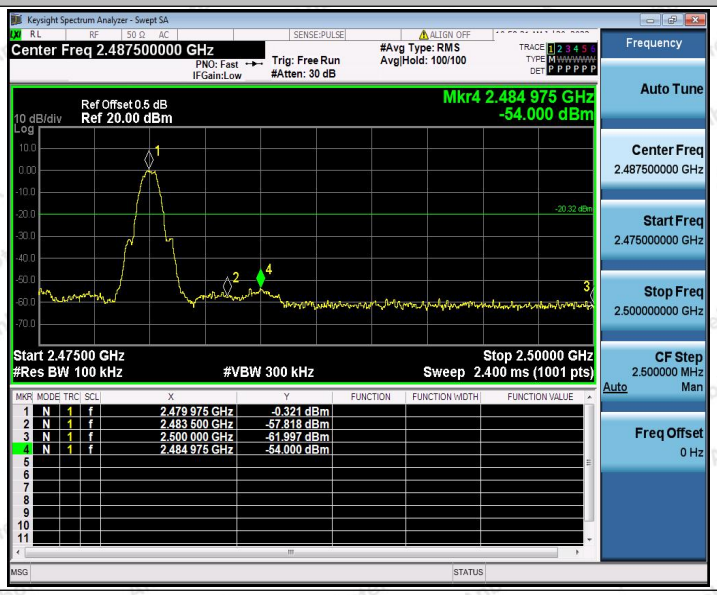
Test Mode	Antenna	Ch Name	Channel	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.75	-55.18	≤-20.75	PASS
		High	2480	-0.32	-54	≤-20.32	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

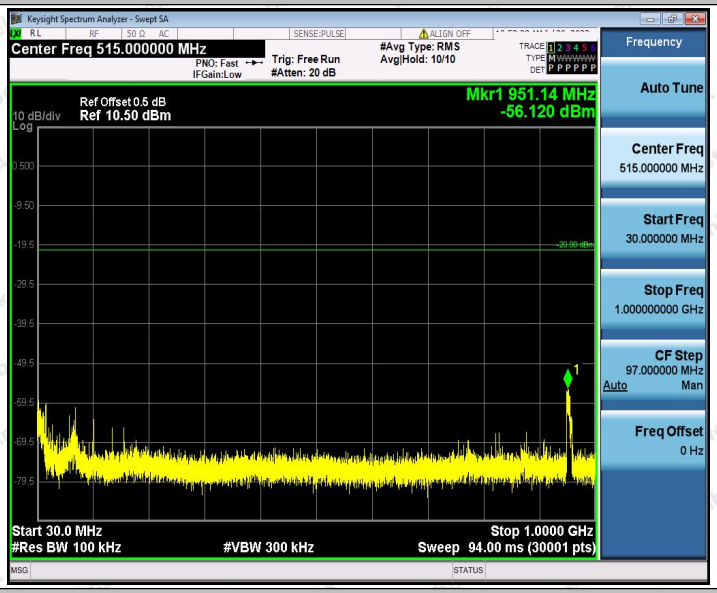
Test Result

Test Mode	Antenna	Channel	Freq Range [MHz]	Ref Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.90	-0.90	---	PASS
			30~1000	-0.90	-56.12	≤-20.9	PASS
			1000~26500	-0.90	-54.13	≤-20.9	PASS
		2440	Reference	-0.01	-0.01	---	PASS
			30~1000	-0.01	-56.86	≤-20.01	PASS
			1000~26500	-0.01	-54.08	≤-20.01	PASS
		2480	Reference	0.38	0.38	---	PASS
			30~1000	0.38	-51.98	≤-19.62	PASS
			1000~26500	0.38	-54.21	≤-19.62	PASS

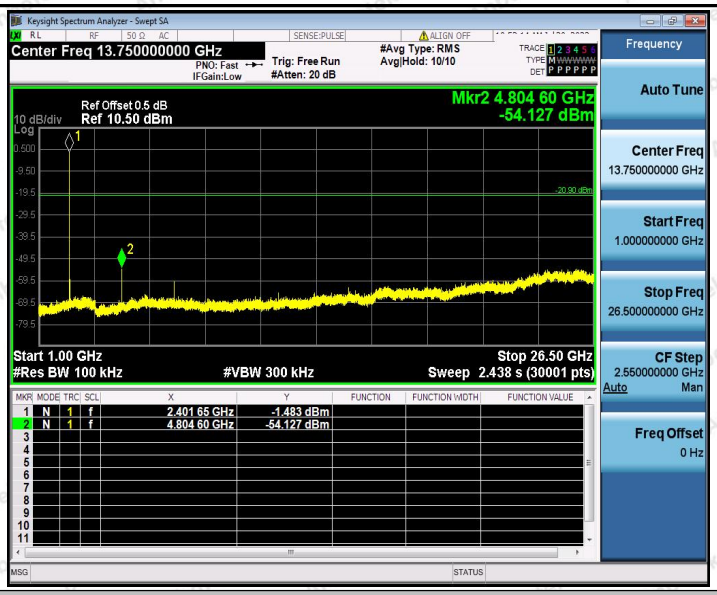
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

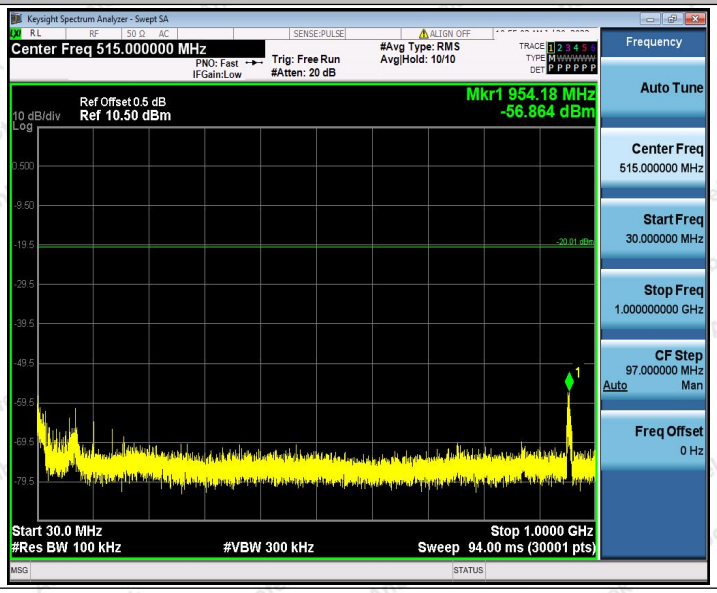


BLE_1M_Ant1_2402_1000~26500

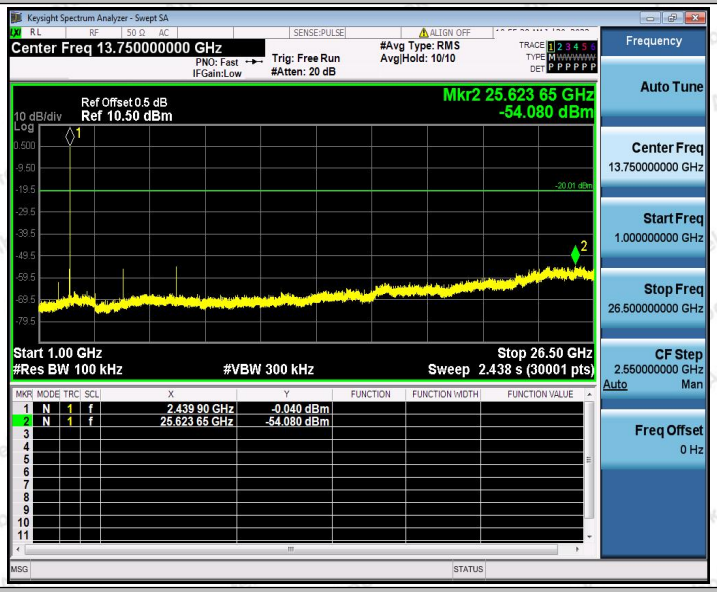


BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

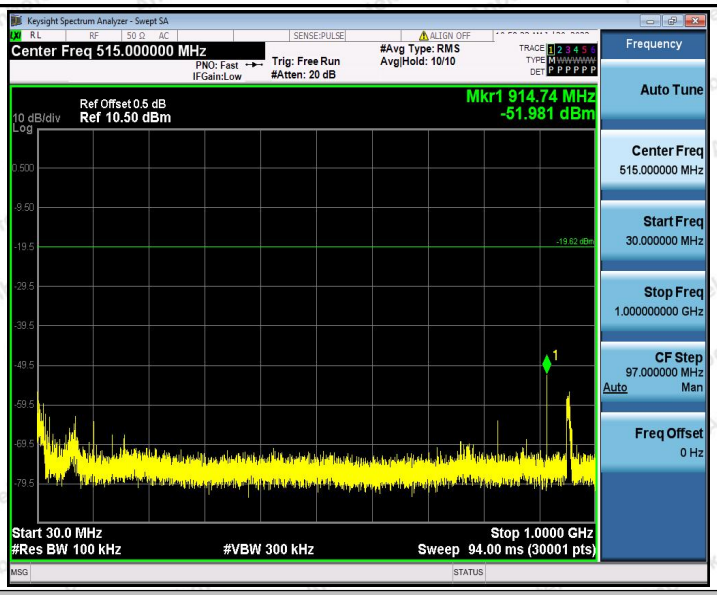


BLE_1M_Ant1_2440_1000~26500

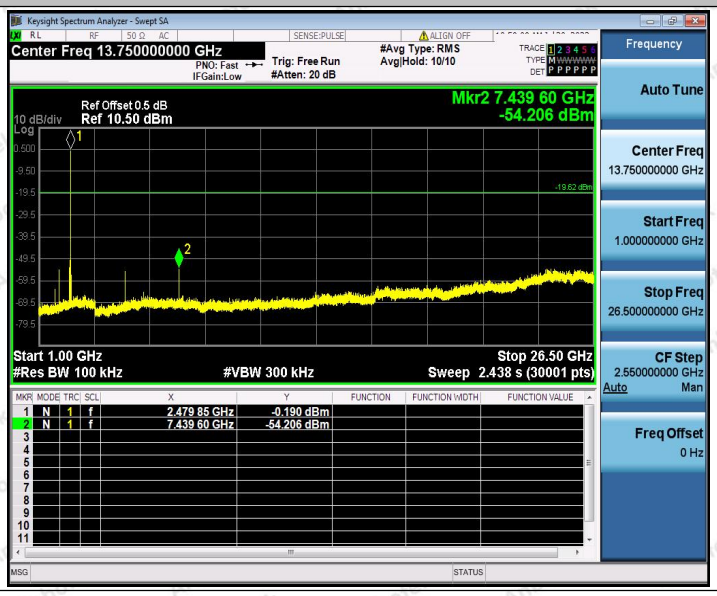


BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



Appendix G: Duty Cycle

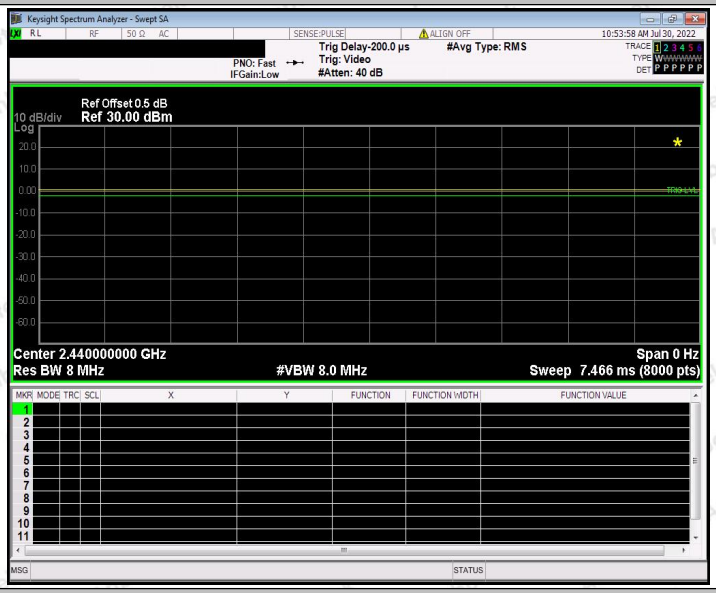
Test Result

Test Mode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	X Factor	Limit	Verdict
BLE_1M	Ant1	2402	7.466	7.466	1	100	0	---	PASS
		2440	7.466	7.466	1	100	0	---	PASS
		2480	7.466	7.466	1	100	0	---	PASS

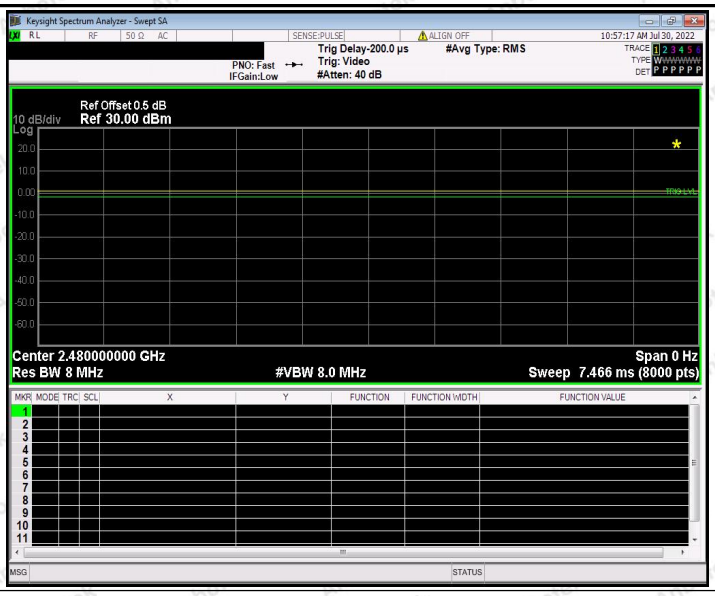
Test Graphs

BLE_1M_Ant1_2402

BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Trig Delay-200.0 µs
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
PNO: Fast
IFGain:Low
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
Log
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 7.466 ms (8000 pts)

---End---