Appendix Test Data

Report No.:	18220WC20107101	Test Sample No.:	1-2-2
Start Test Date:	2022.5.18	Finish Test Date:	2022.5.26
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	24.3℃	Relative Humidity:	57.2 %
Pressure:	1012 hPa		

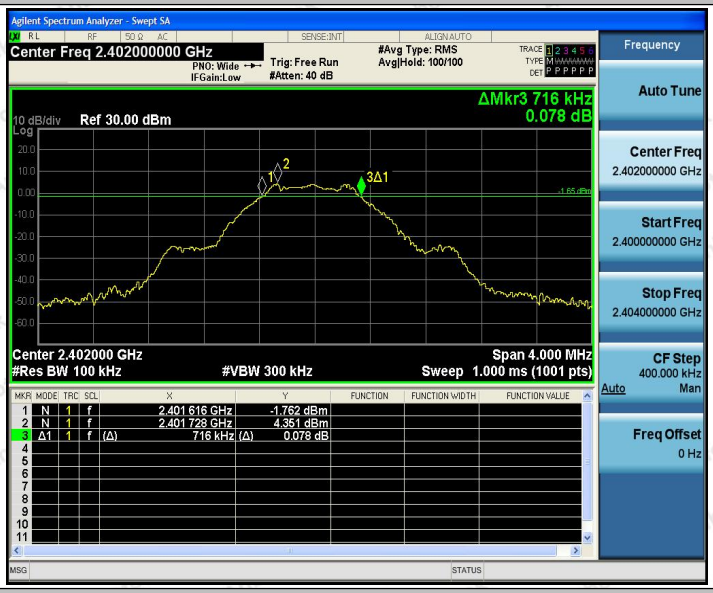
Appendix A: DTS Bandwidth

Test Result

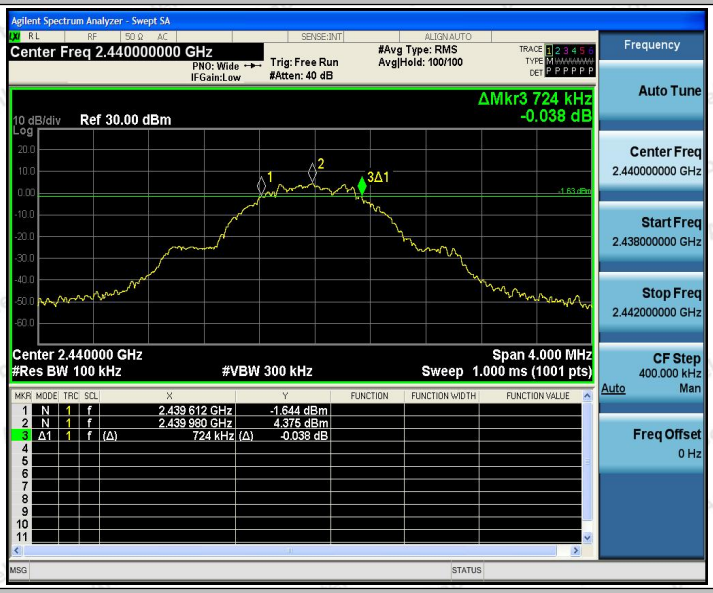
Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.716	2401.616	2402.332	≥0.5	PASS
		2440	0.724	2439.612	2440.336	≥0.5	PASS
		2480	0.672	2479.656	2480.328	≥0.5	PASS

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: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
ΔMkr3 672 kHz
0.479 dB
10 dB/div
Ref 30.00 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 2.479 656 GHz -2.030 dBm
2 N 1 f 2.479 728 GHz 4.509 dBm
3 Δ1 1 f (Δ) 672 kHz (Δ) 0.479 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

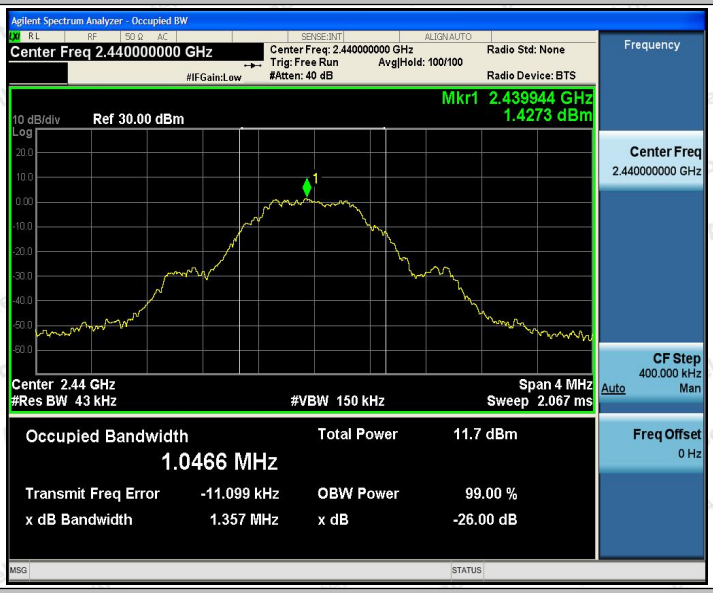
Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0431	2401.465	2402.508	---	PASS
		2440	1.0466	2439.466	2440.512	---	PASS
		2480	1.0326	2479.471	2480.503	---	PASS

Test Graphs

BLE_1M_Ant1_2402

BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

Agilent 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
Mkr1 2.479944 GHz
1.5113 dBm
10 dB/div
Ref 30.00 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 150 kHz
Span 4 MHz
Sweep 2.067 ms
Occupied Bandwidth
1.0326 MHz
Total Power 11.1 dBm
Transmit Freq Error -12.997 kHz
OBW Power 99.00 %
x dB Bandwidth 1.314 MHz
x dB -26.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

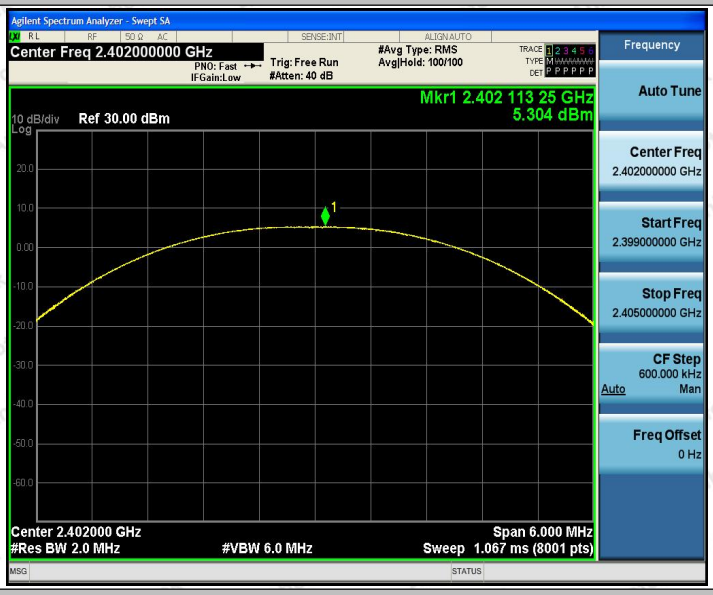
Appendix C: Maximum conducted output power

Test Result

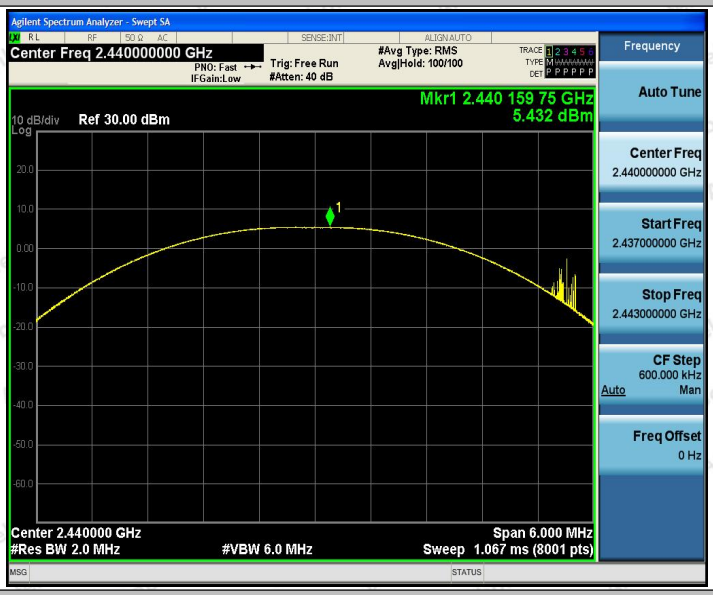
Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	5.3	≤30	PASS
		2440	5.43	≤30	PASS
		2480	5.45	≤30	PASS

Test Graphs

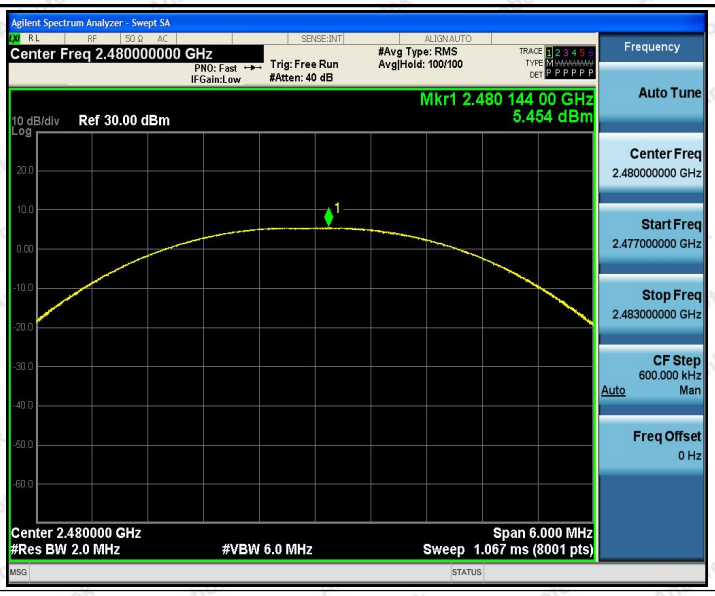
BLE_1M_Ant1_2402



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: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
Mkr1 2.480 144 00 GHz
5.454 dBm
10 dB/div
Log
Ref 30.00 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

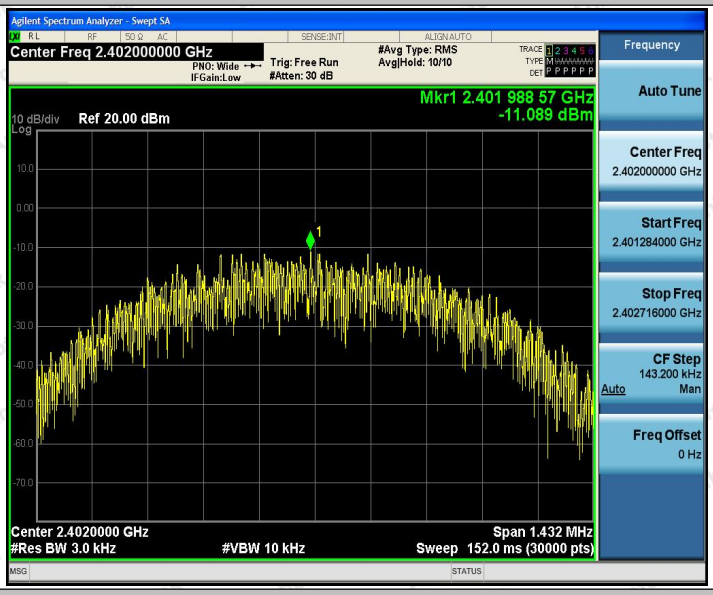
Appendix D: Maximum power spectral density

Test Result

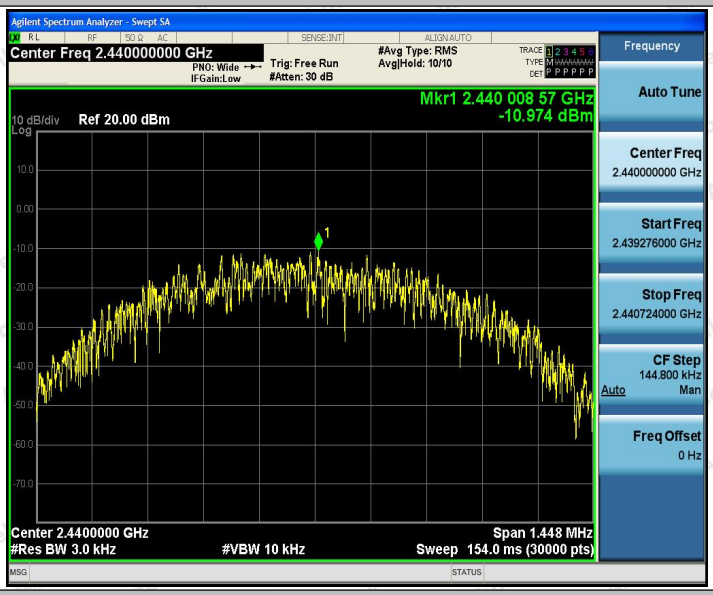
Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-11.09	≤8	PASS
		2440	-10.97	≤8	PASS
		2480	-12.56	≤8	PASS

Test Graphs

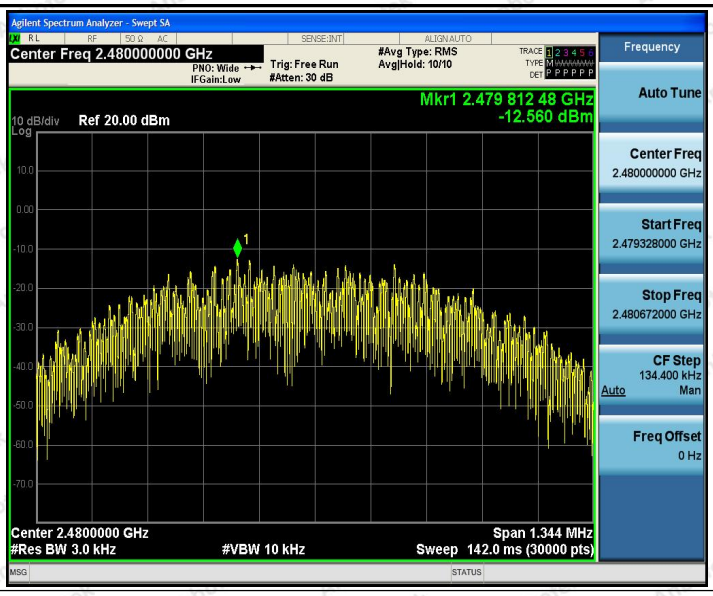
BLE_1M_Ant1_2402



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: 10/10
Mkr1 2.479 812 48 GHz
-12.560 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.344 MHz
Sweep 142.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479328000 GHz
Stop Freq
2.480672000 GHz
CF Step
134.400 kHz
Auto
Man
Freq Offset
0 Hz

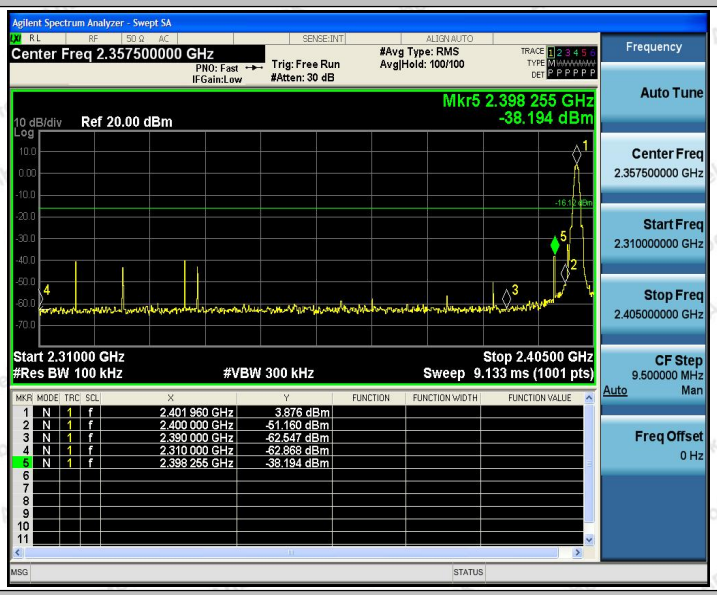
Appendix E: Band edge measurements

Test Result

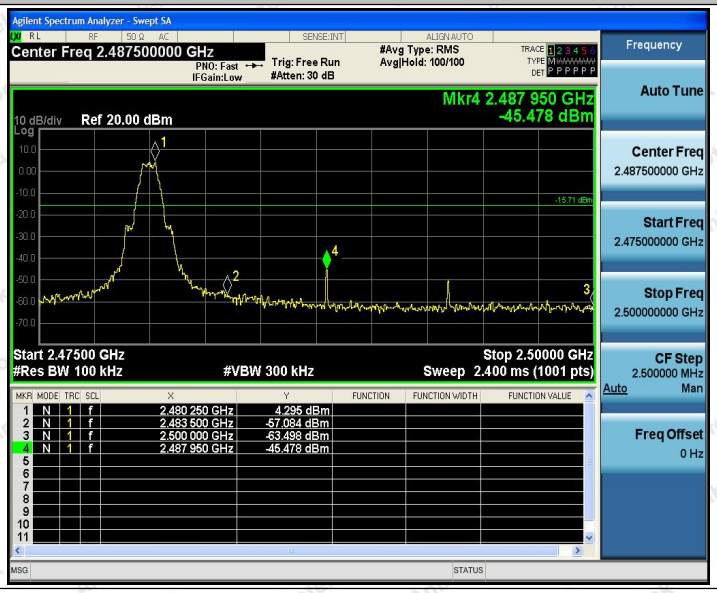
Test Mode	Antenna	Ch Name	Channel	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	3.88	-38.19	≤-16.12	PASS
		High	2480	4.30	-45.48	≤-15.71	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

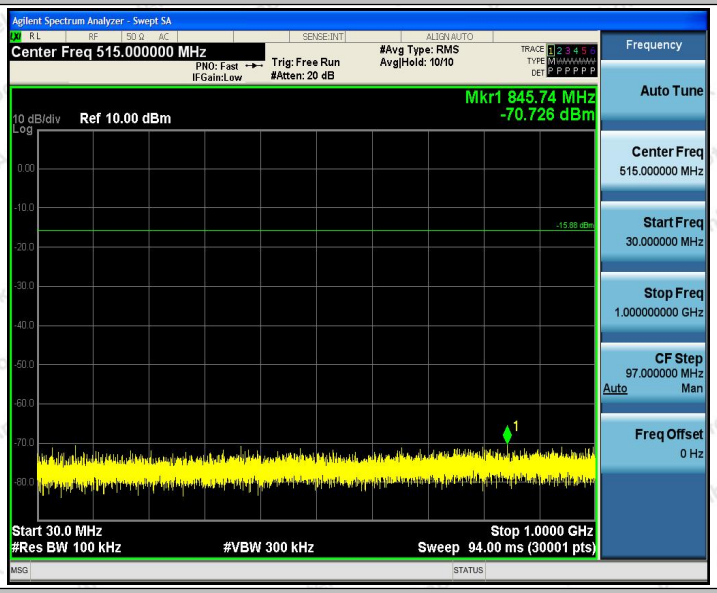
Test Result

Test Mode	Antenna	Channel	Freq Range [MHz]	Ref Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	4.12	4.12	---	PASS
			30~1000	4.12	-70.73	≤-15.88	PASS
			1000~26500	4.12	-37.68	≤-15.88	PASS
		2440	Reference	4.13	4.13	---	PASS
			30~1000	4.13	-69.71	≤-15.87	PASS
			1000~26500	4.13	-37.56	≤-15.87	PASS
		2480	Reference	4.48	4.48	---	PASS
			30~1000	4.48	-70.39	≤-15.53	PASS
			1000~26500	4.48	-39.9	≤-15.53	PASS

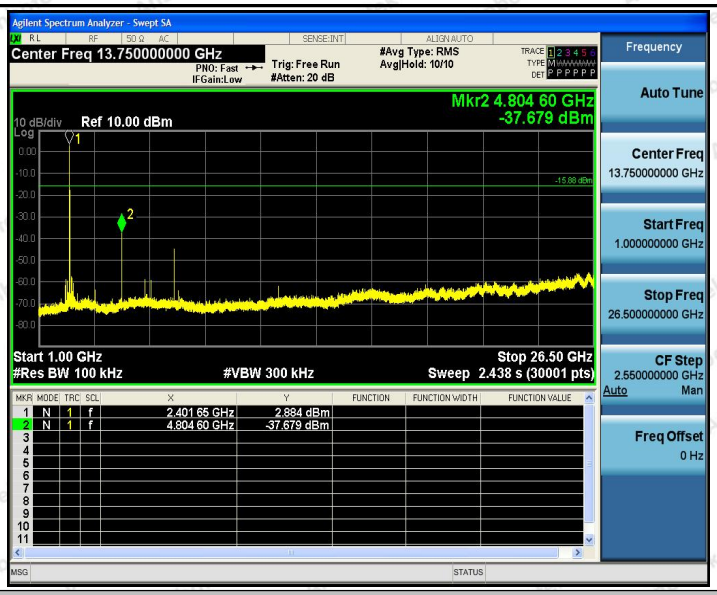
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

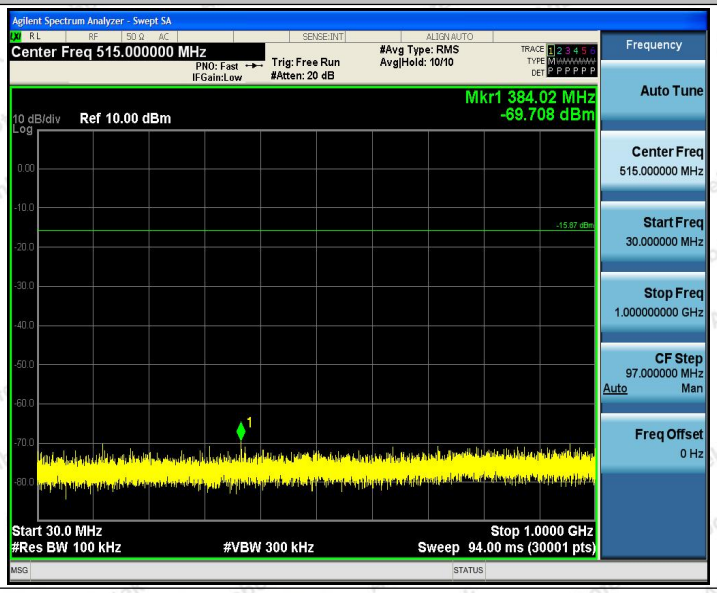


BLE_1M_Ant1_2402_1000~26500

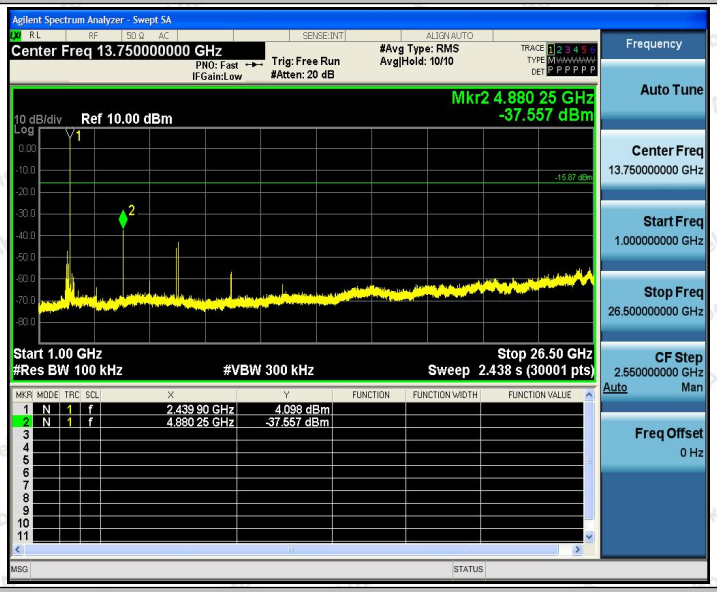


BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

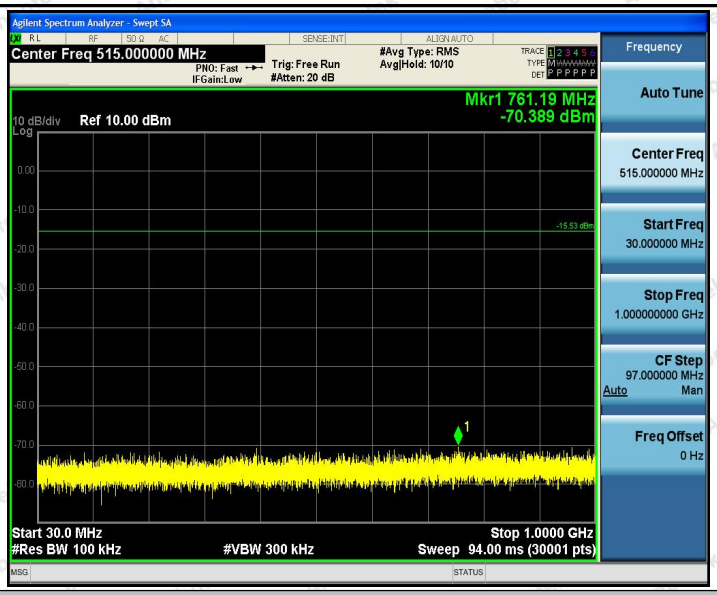


BLE_1M_Ant1_2440_1000~26500

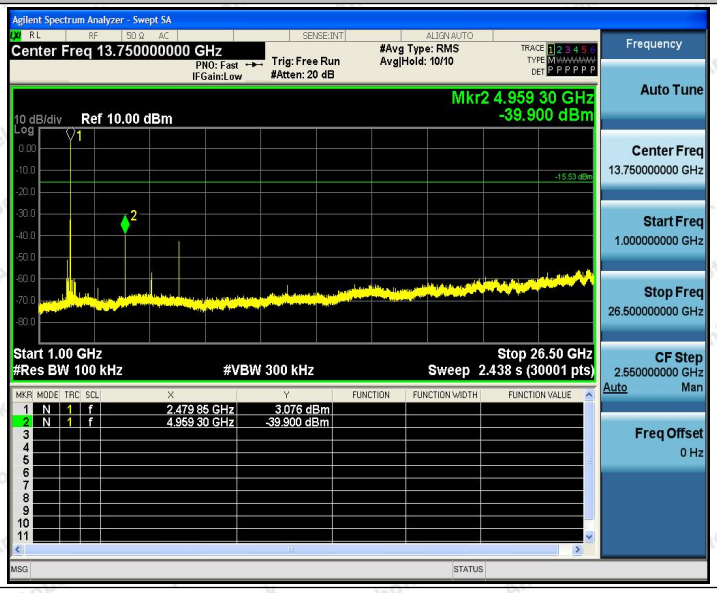


BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



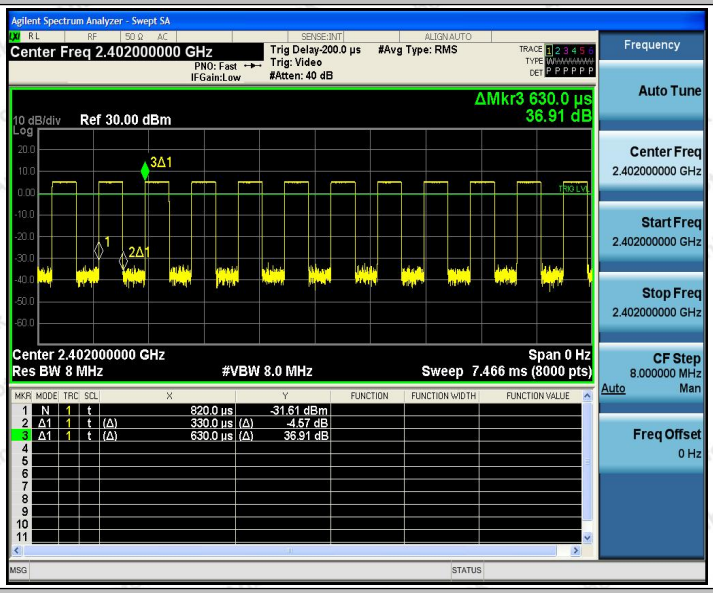
Appendix G: Duty Cycle

Test Result

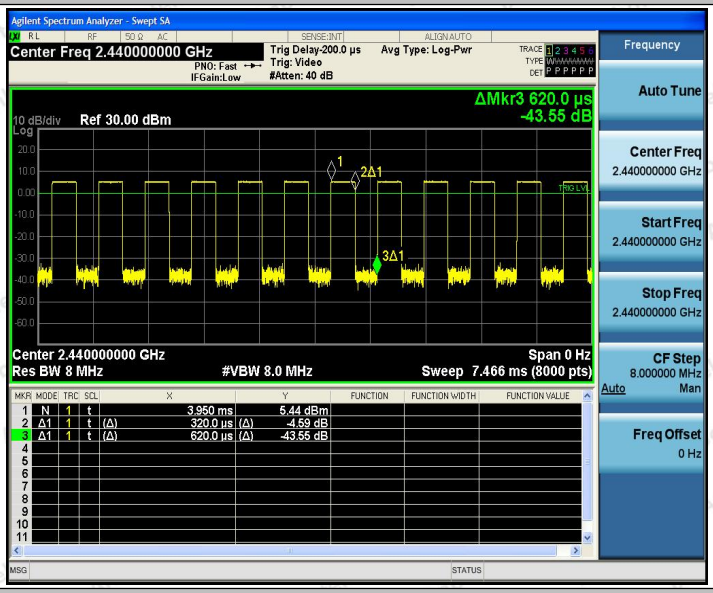
Test Mode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	X Factor	Limit	Verdict
BLE_1M	Ant1	2402	0.33	0.63	0.5238	52.38	2.81	---	PASS
		2440	0.32	0.62	0.5161	51.61	2.87	---	PASS
		2480	0.17	0.63	0.2698	26.98	5.69	---	PASS

Test Graphs

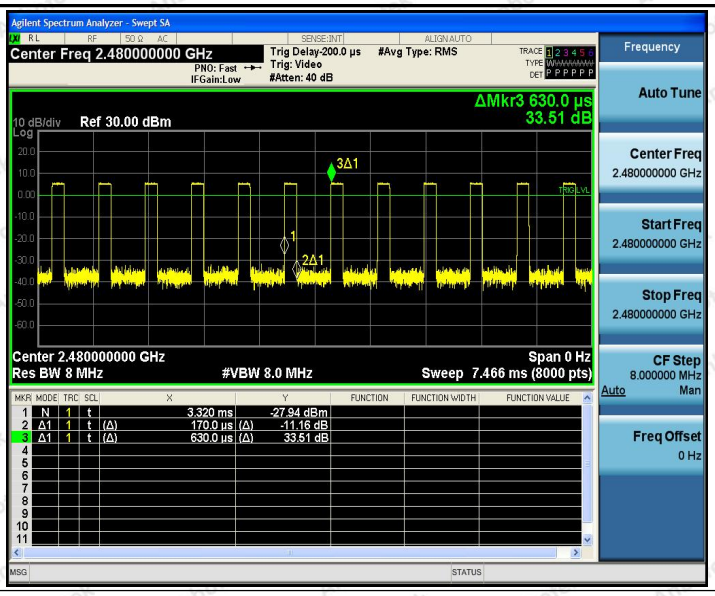
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-200.0 µs
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
ΔMkr3 630.0 µs
33.51 dB
10 dB/div
Ref 30.00 dBm
Log
3Δ1
2Δ1
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 7.466 ms (8000 pts)
1 N 1 t 3.320 ms -27.94 dBm
2 Δ1 1 t (Δ) 170.0 µs (Δ) -11.16 dB
3 Δ1 1 t (Δ) 630.0 µs (Δ) 33.51 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

---End---