Appendix Test Data

Report No.:	18220WC20039101	Test Sample No.:	1-2-2
Start Test Date:	2022.3.1	Finish Test Date:	2022.3..8
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	24.3℃	Relative Humidity:	56 %
Pressure:	1012 hPa		

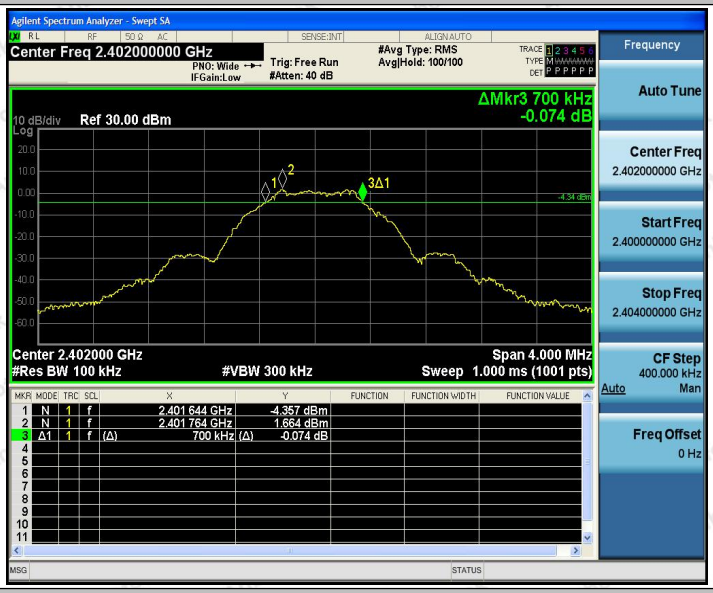
Appendix A: DTS Bandwidth

Test Result

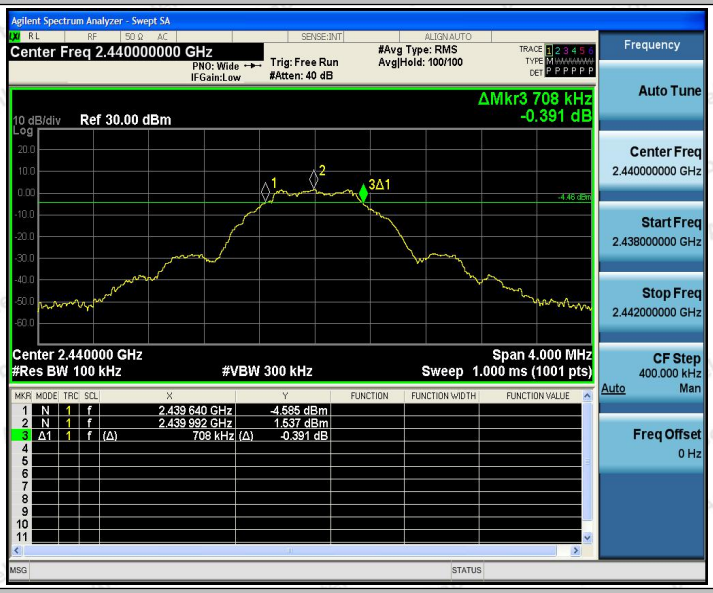
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.700	2401.644	2401.764	≥0.5	PASS
		2440	0.708	2439.640	2439.992	≥0.5	PASS
		2480	0.692	2479.652	2480.004	≥0.5	PASS

Test Graphs

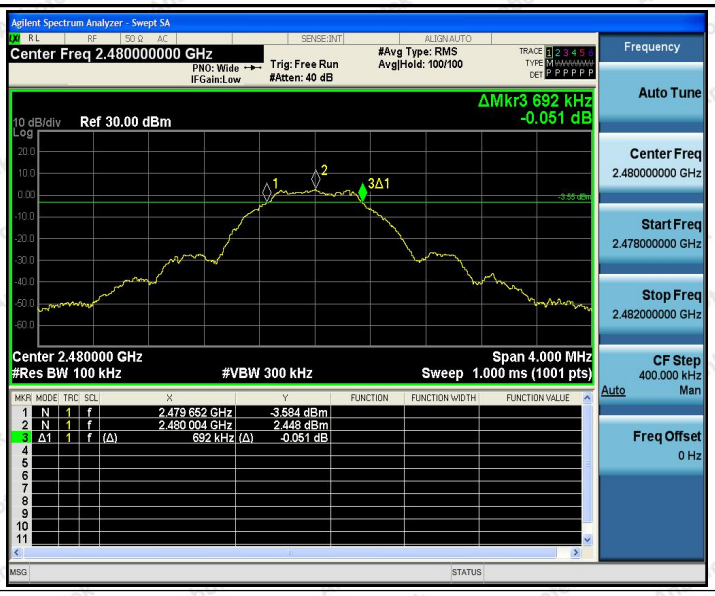
BLE_1M_Ant1_2402



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 692 kHz
-0.051 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 2.479 652 GHz -3.584 dBm
2 N 1 f 2.480 004 GHz 2.448 dBm
3 Δ1 1 f (Δ) 692 kHz (Δ) -0.051 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

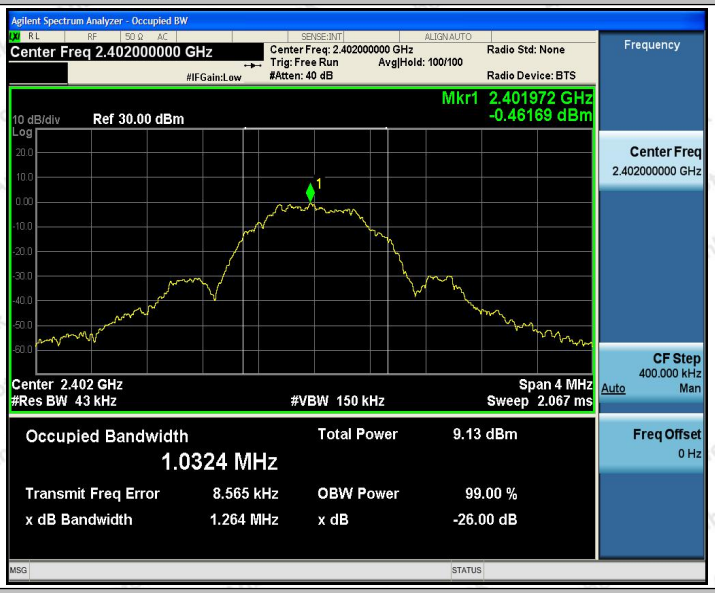
Appendix B: Occupied Channel Bandwidth

Test Result

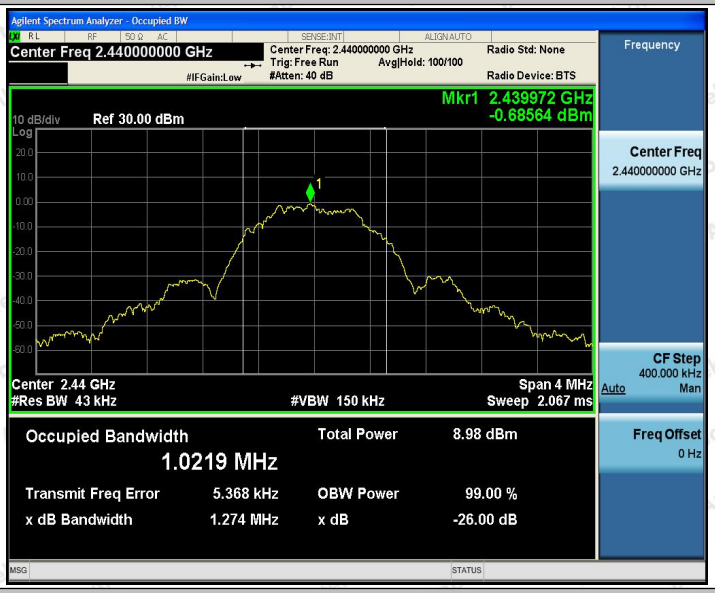
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0324	2401.492	2402.525	---	PASS
		2440	1.0219	2439.494	2440.516	---	PASS
		2480	1.0262	2479.498	2480.524	---	PASS

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 2.479964 GHz
0.065427 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
1.0262 MHz
Total Power 9.76 dBm
Transmit Freq Error 11.371 kHz
OBW Power 99.00 %
x dB Bandwidth 1.266 MHz
x dB -26.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz

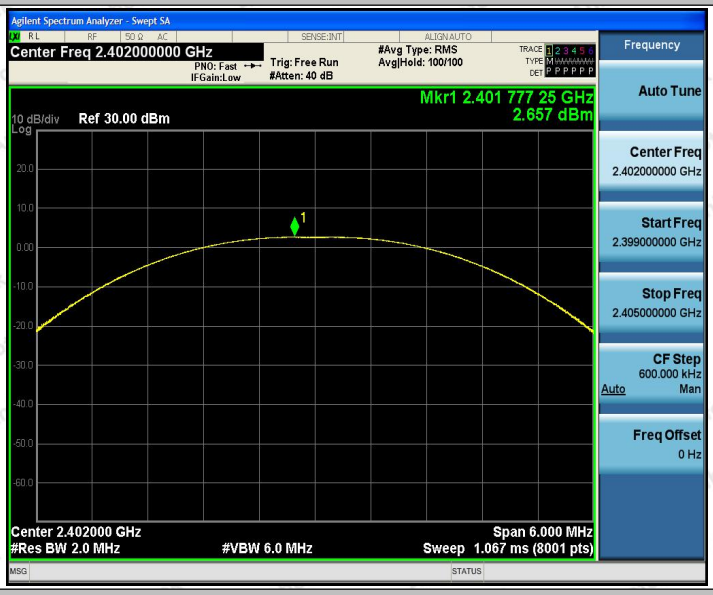
Appendix C: Maximum conducted output power

Test Result

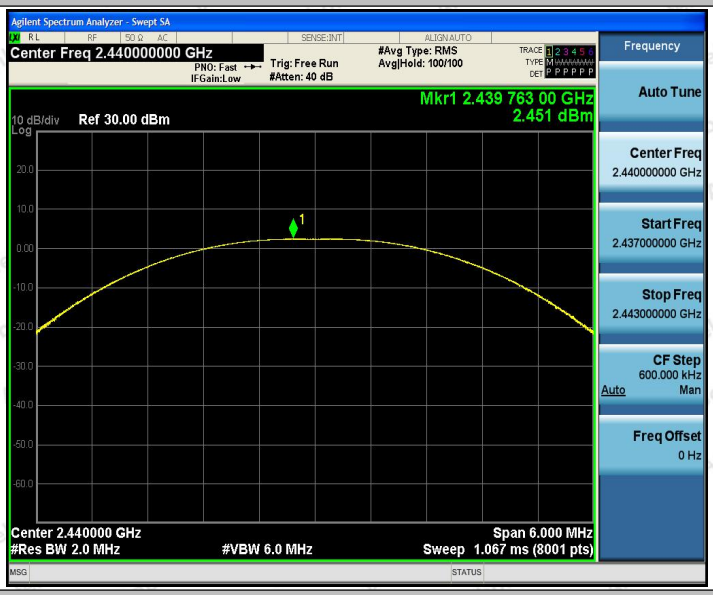
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	2.66	≤30	PASS
		2440	2.45	≤30	PASS
		2480	3.37	≤30	PASS

Test Graphs

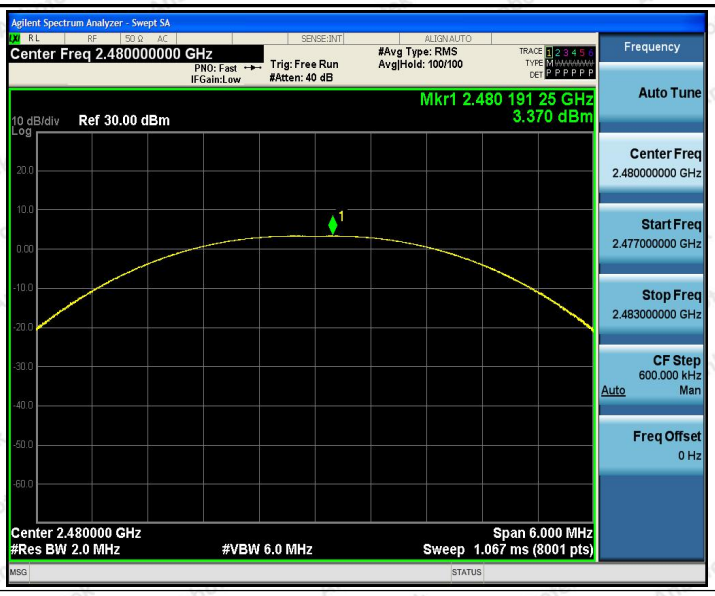
BLE_1M_Ant1_2402



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 2.480 191 25 GHz
3.370 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

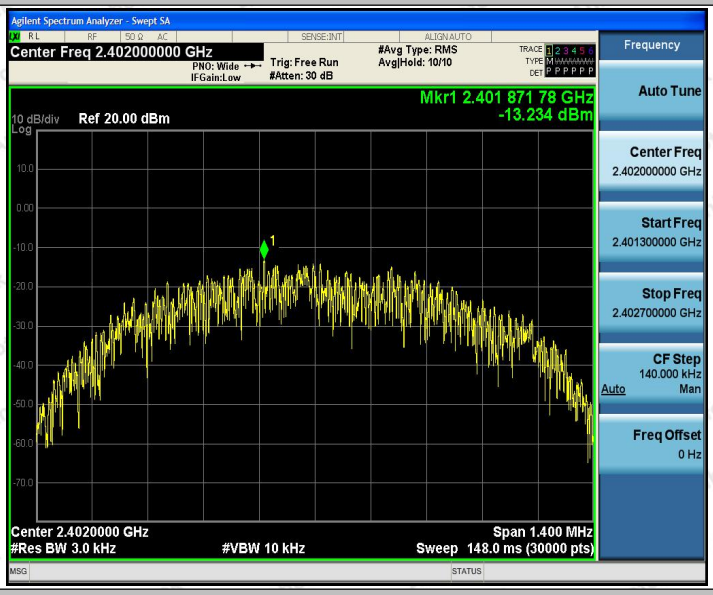
Appendix D: Maximum power spectral density

Test Result

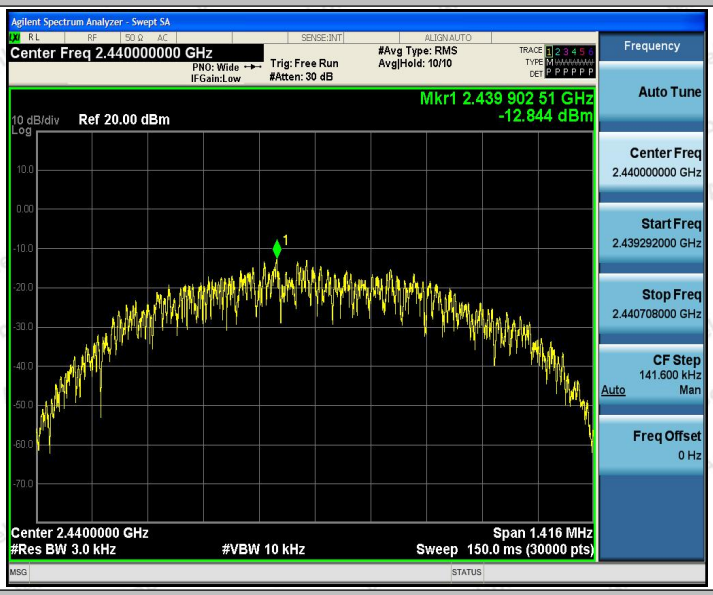
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.23	≤8	PASS
		2440	-12.84	≤8	PASS
		2480	-11.75	≤8	PASS

Test Graphs

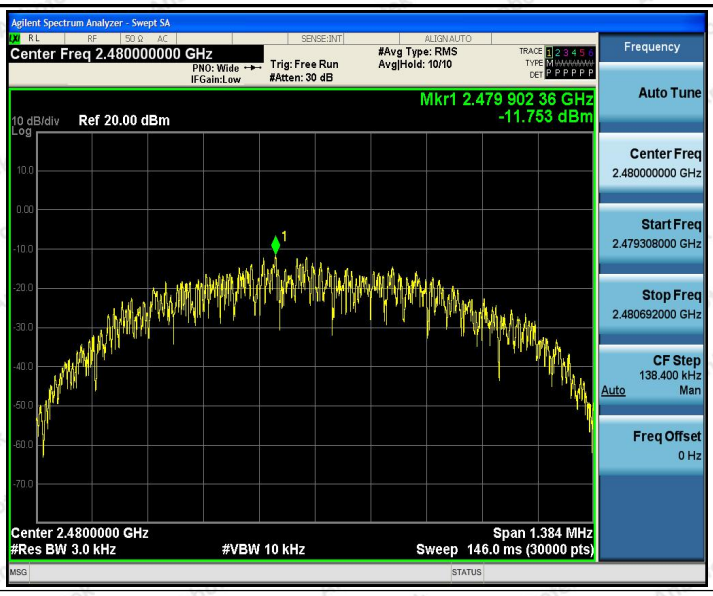
BLE_1M_Ant1_2402



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 2.479 902 36 GHz
-11.753 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.384 MHz
Sweep 146.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479308000 GHz
Stop Freq
2.480692000 GHz
CF Step
138.400 kHz
Auto
Man
Freq Offset
0 Hz

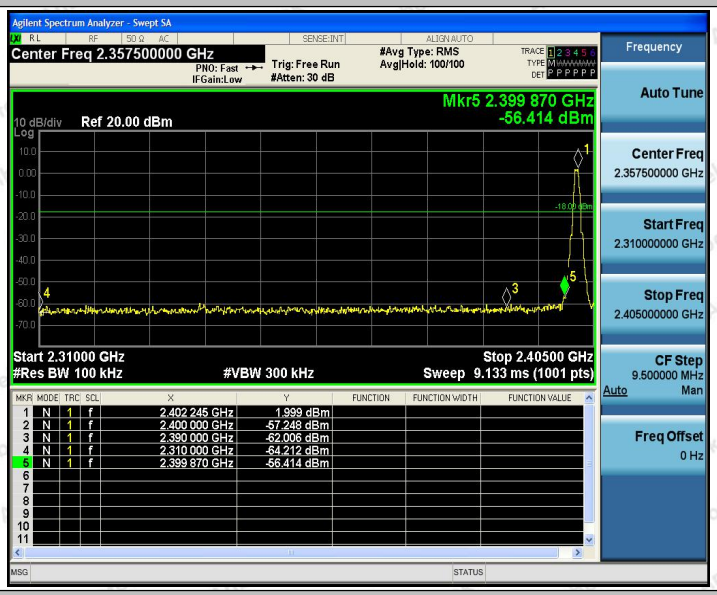
Appendix E: Band edge measurements

Test Result

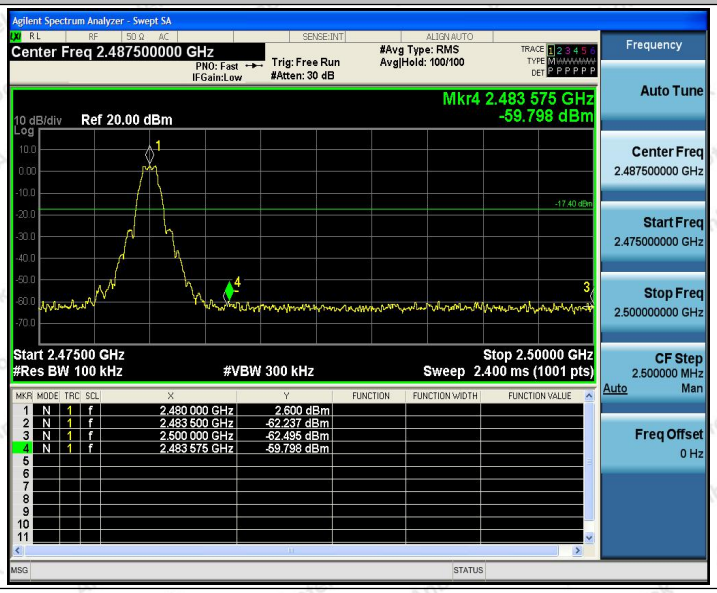
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	2.00	-56.41	≤-18	PASS
		High	2480	2.60	-59.8	≤-17.4	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

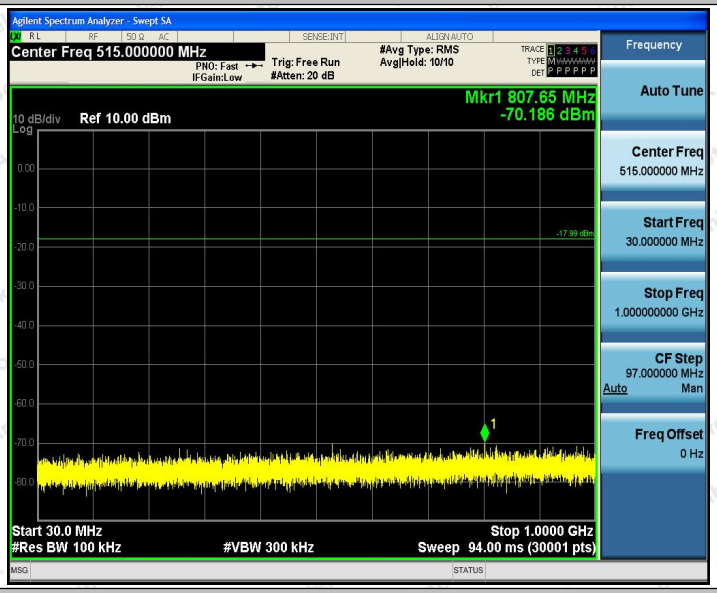
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	2.01	2.01	---	PASS
			30~1000	2.01	-70.19	≤-17.99	PASS
			1000~26500	2.01	-55.47	≤-17.99	PASS
		2440	Reference	1.53	1.53	---	PASS
			30~1000	1.53	-70.95	≤-18.48	PASS
			1000~26500	1.53	-55.68	≤-18.48	PASS
		2480	Reference	2.43	2.43	---	PASS
			30~1000	2.43	-70.17	≤-17.57	PASS
			1000~26500	2.43	-55.51	≤-17.57	PASS

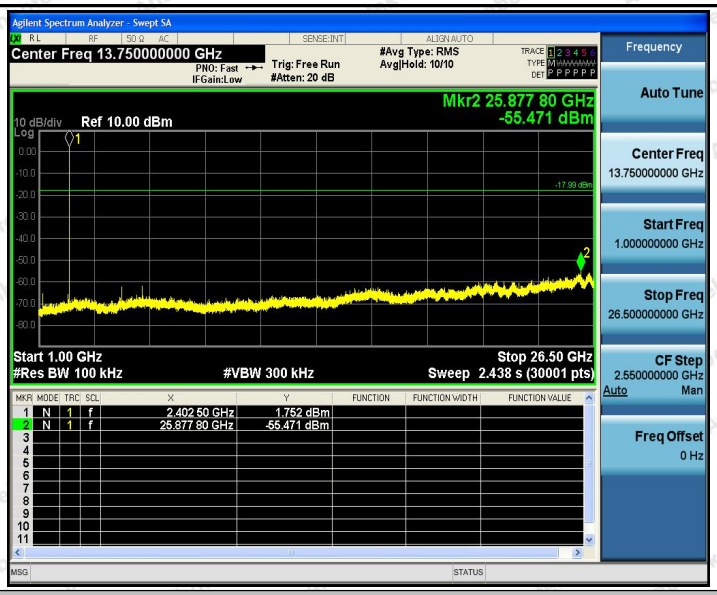
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

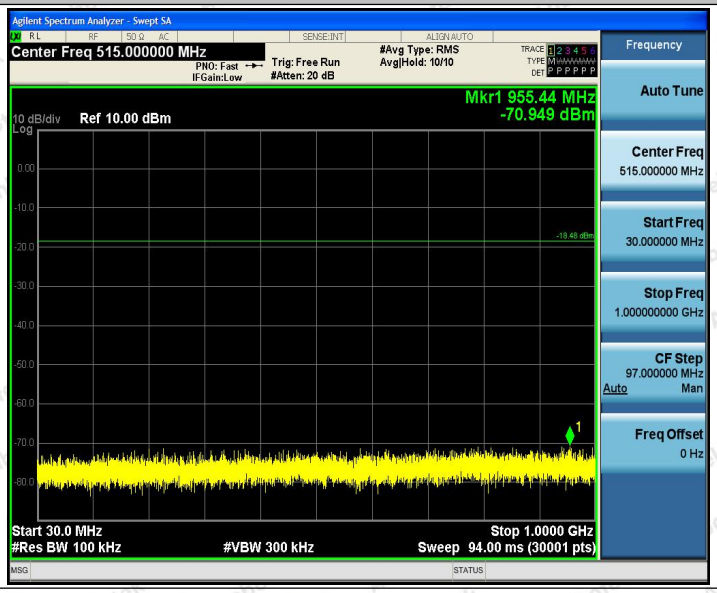


BLE_1M_Ant1_2402_1000~26500

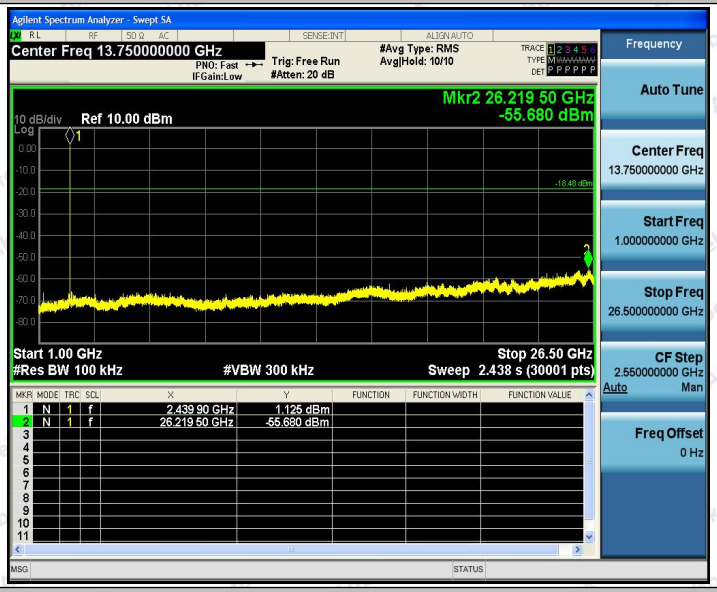


BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

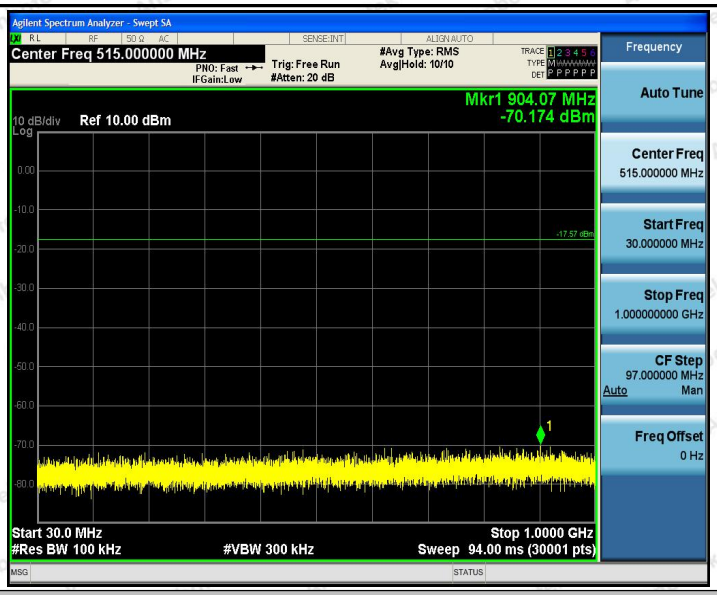


BLE_1M_Ant1_2440_1000~26500

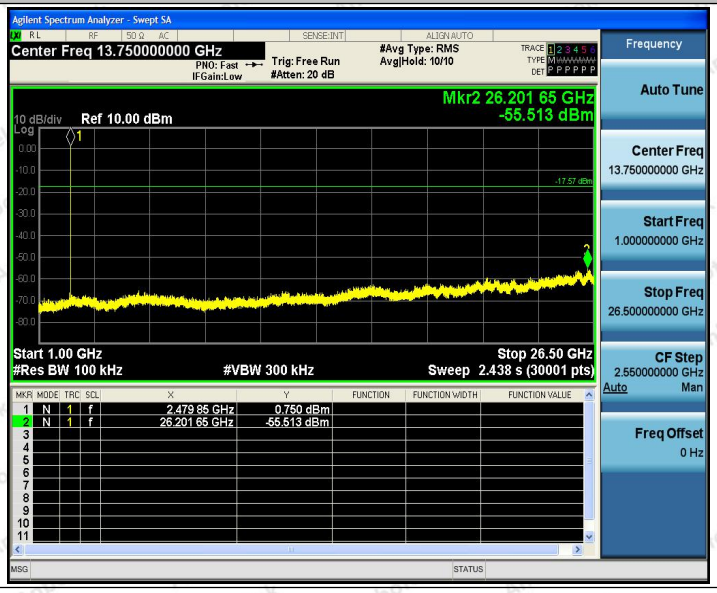


BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



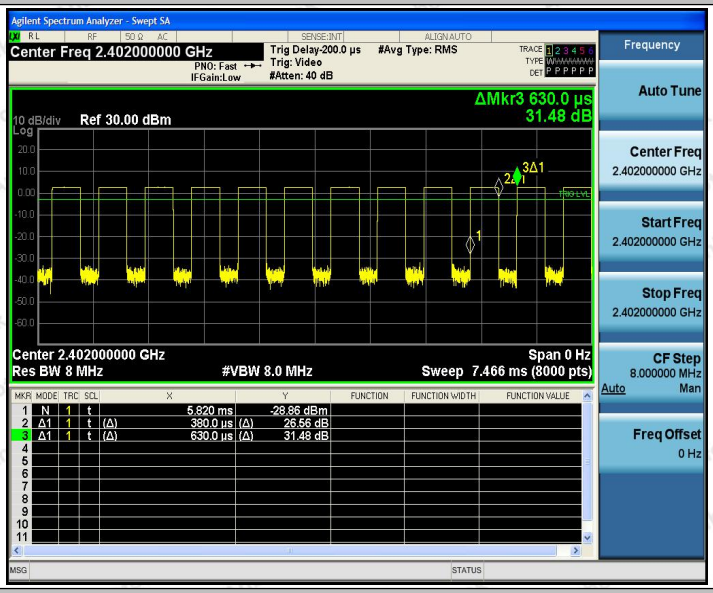
Appendix G: Duty Cycle

Test Result

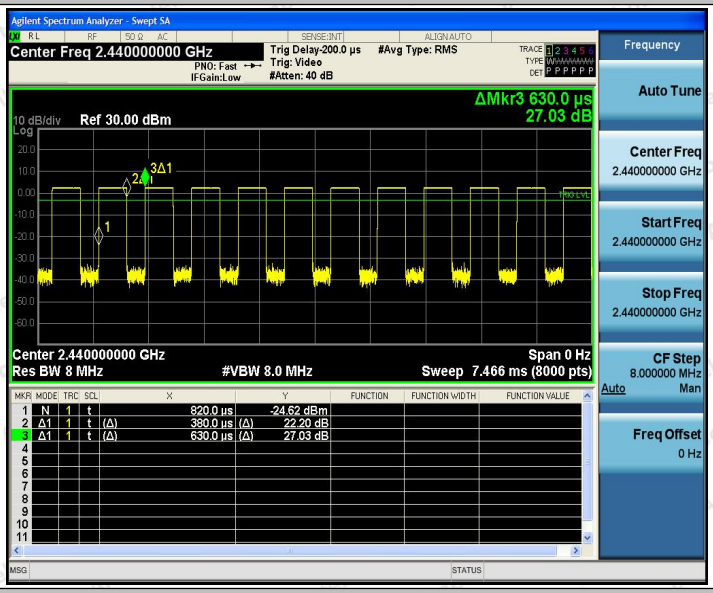
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	---	PASS
		2440	0.38	0.63	0.6032	60.32	2.20	---	PASS
		2480	0.38	0.62	0.6129	61.29	2.13	---	PASS

Test Graphs

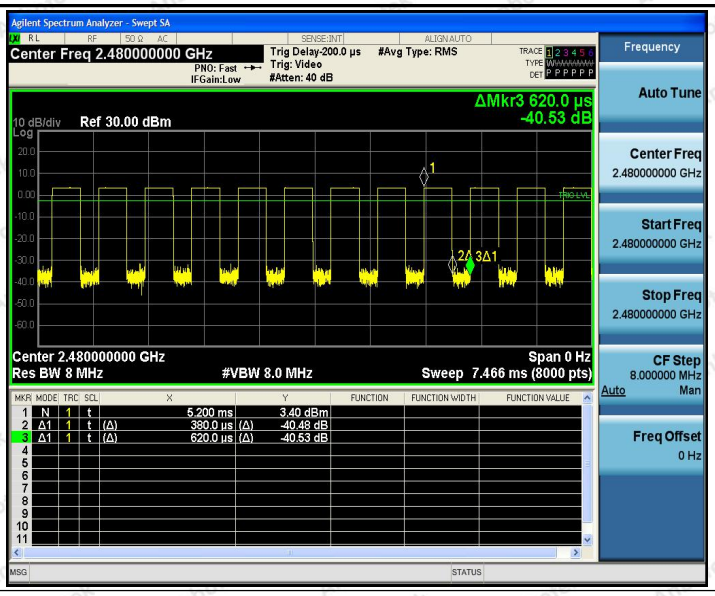
BLE_1M_Ant1_2402



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 620.0 µs
-40.53 dB
10 dB/div
Ref 30.00 dBm
Center 2.480000000 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8.0 MHz
Sweep 7.466 ms (8000 pts)
1 N 1 t 5.200 ms 3.40 dBm
2 Δ1 1 t (Δ) 380.0 µs (Δ) -40.48 dB
3 Δ1 1 t (Δ) 620.0 µs (Δ) -40.53 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---