Appendix Test Data

Report No.:	18220WC10157802	Test Date:	2021.7.16
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	24.3℃	Relative Humidity:	57 %
Pressure:	1012 hPa		

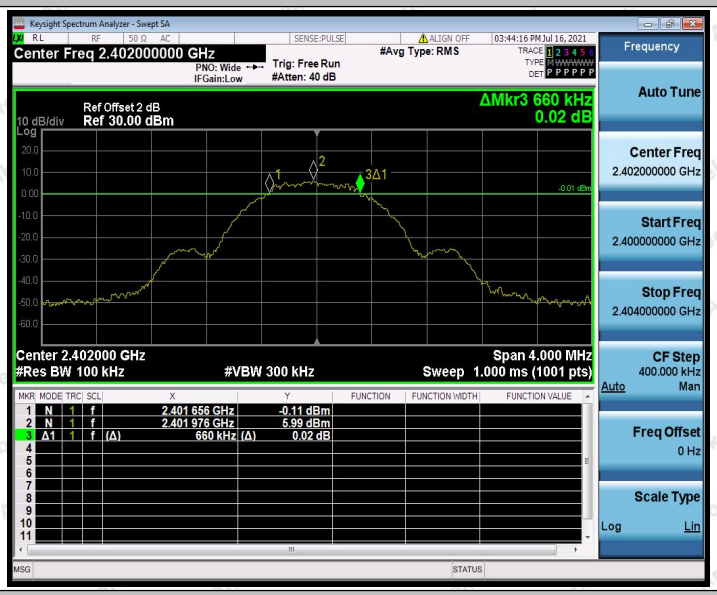
Appendix A: DTS Bandwidth

Test Result

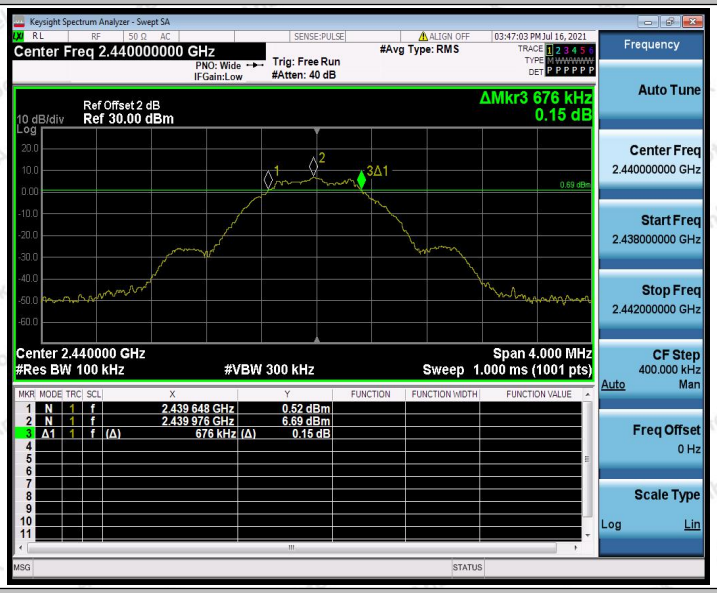
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.656	2402.316	>=0.5	PASS
		2440	0.676	2439.648	2440.324	>=0.5	PASS
		2480	0.656	2479.660	2480.316	>=0.5	PASS

Test Graphs

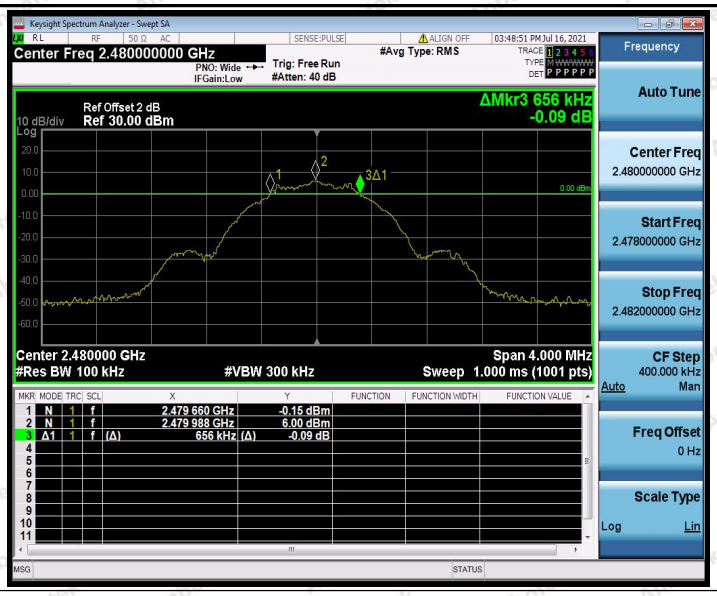
BLE_1M_Ant1_2402



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
03:48:51 PM Jul 16, 2021
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
Scale Type
Log
Lin
ΔMkr3 656 kHz
-0.09 dB
Ref Offset 2 dB
10 dB/div
Ref 30.00 dBm
Log
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 2.479 660 GHz -0.15 dBm
2 N 1 f 2.479 988 GHz 6.00 dBm
3 Δ1 1 f (Δ) 656 kHz (Δ) -0.09 dB
MSG
STATUS

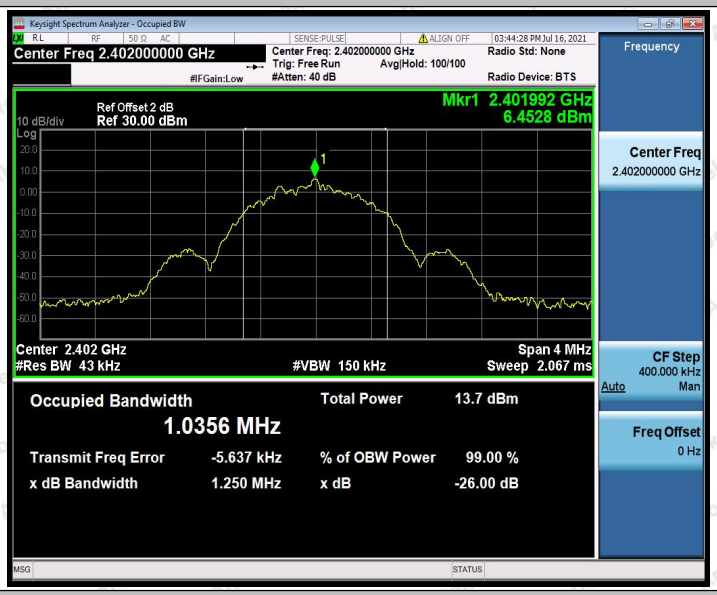
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0356	2401.477	2402.512	---	PASS
		2440	1.0240	2439.487	2440.511	---	PASS
		2480	1.0208	2479.484	2480.505	---	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
03:49:02 PM Jul 16, 2021
Frequency
Ref Offset 2 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.479996 GHz
5.4227 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 150 kHz
Span 4 MHz
Sweep 2.067 ms
Occupied Bandwidth
1.0208 MHz
Total Power 12.8 dBm
Transmit Freq Error -5.509 kHz
% of OBW Power 99.00 %
x dB Bandwidth 1.238 MHz
x dB -26.00 dB
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

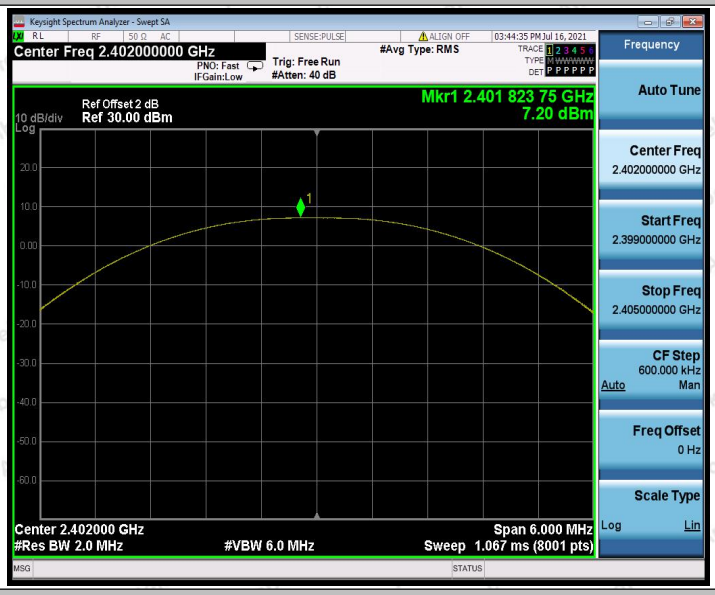
Appendix C: Maximum conducted output power

Test Result

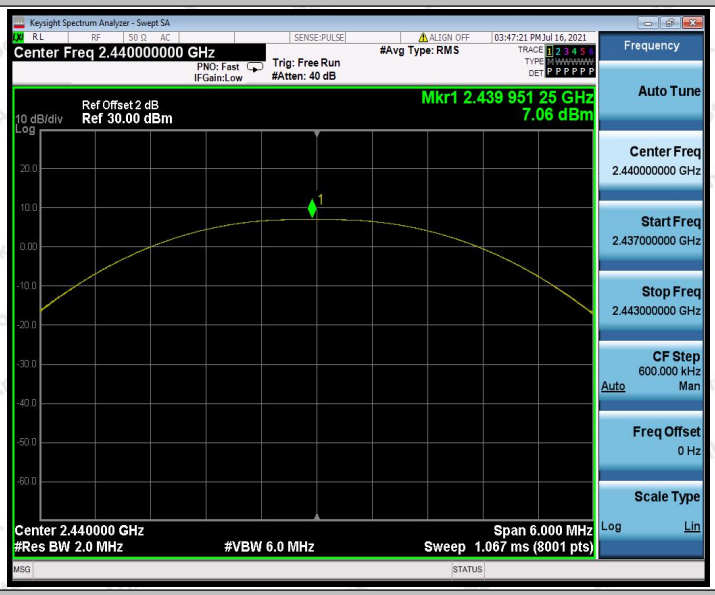
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	7.2	<=30	PASS
		2440	7.06	<=30	PASS
		2480	6.16	<=30	PASS

Test Graphs

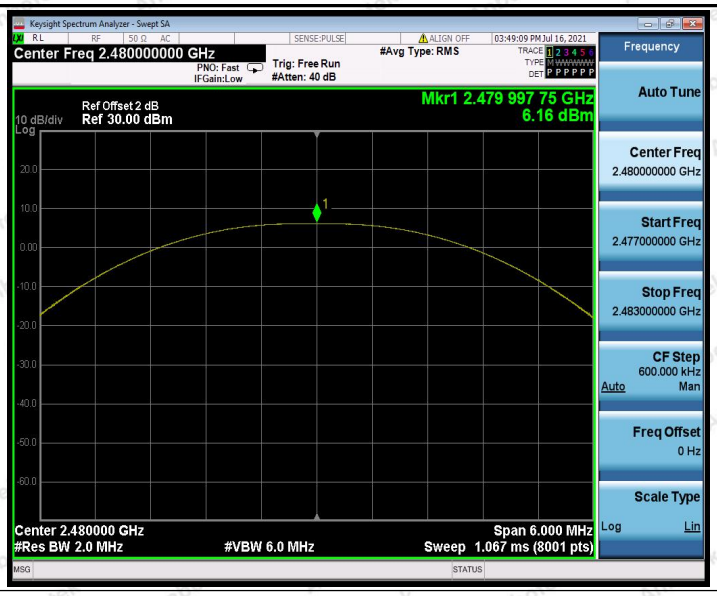
BLE_1M_Ant1_2402



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
03:49:09 PM Jul 16, 2021
Ref Offset 2 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr1 2.479 997 75 GHz
6.16 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
Scale Type
Log
Lin

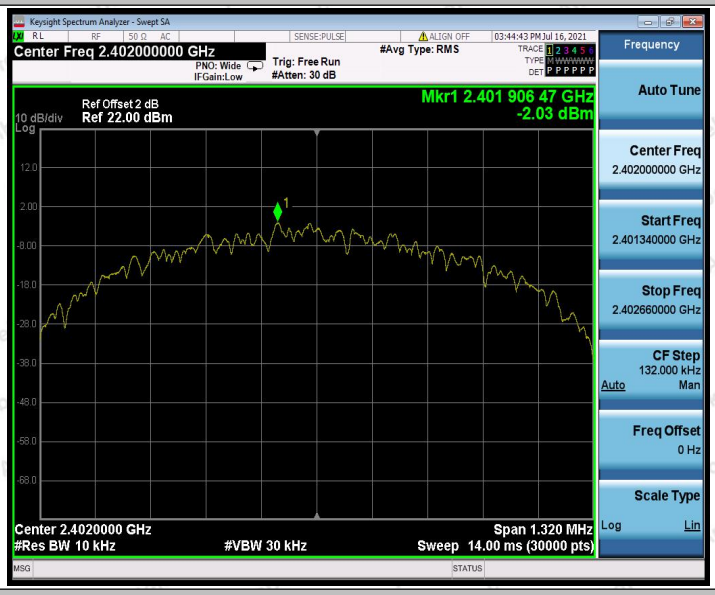
Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-2.03	<=8	PASS
		2440	-2.42	<=8	PASS
		2480	-3.23	<=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
Ref Offset 2 dB
10 dB/div
Ref 22.00 dBm
Mkr1 2.479 981 87 GHz
-3.23 dBm
Center 2.4800000 GHz
#Res BW 10 kHz
#VBW 30 kHz
Span 1.312 MHz
Sweep 14.00 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479344000 GHz
Stop Freq
2.480656000 GHz
CF Step
131.200 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

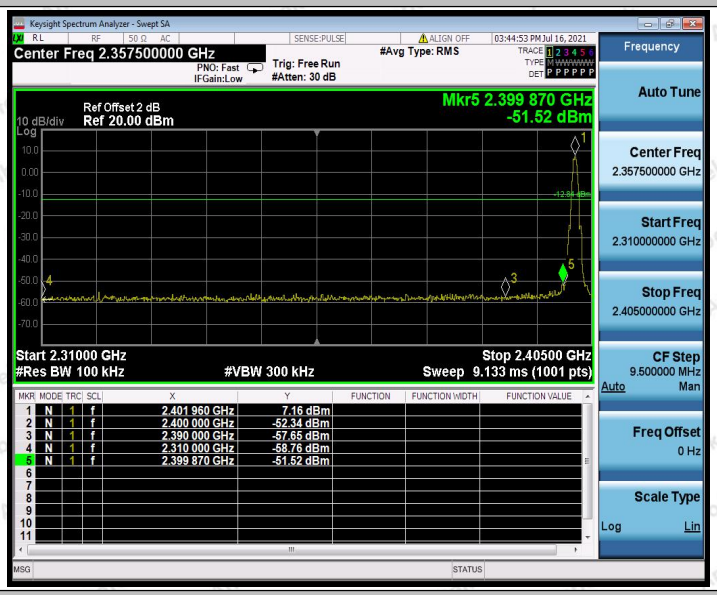
Appendix E: Band edge measurements

Test Result

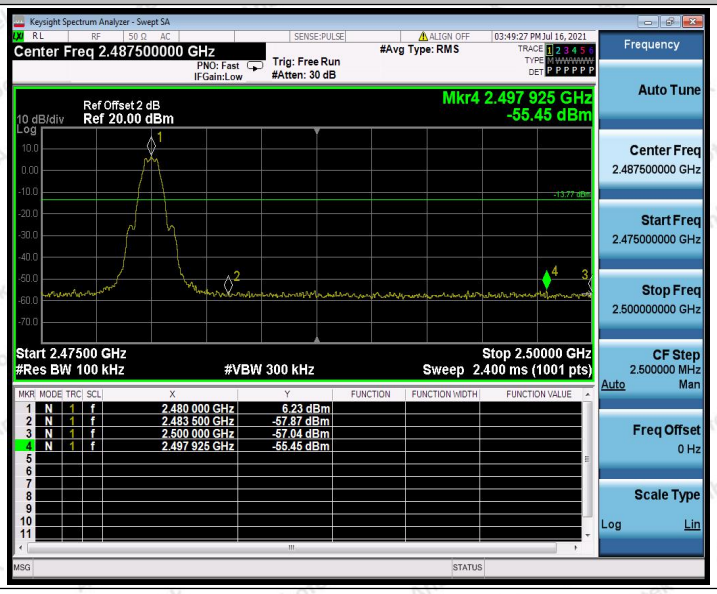
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	7.16	-51.52	<=-12.84	PASS
		High	2480	6.23	-55.45	<=-13.77	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

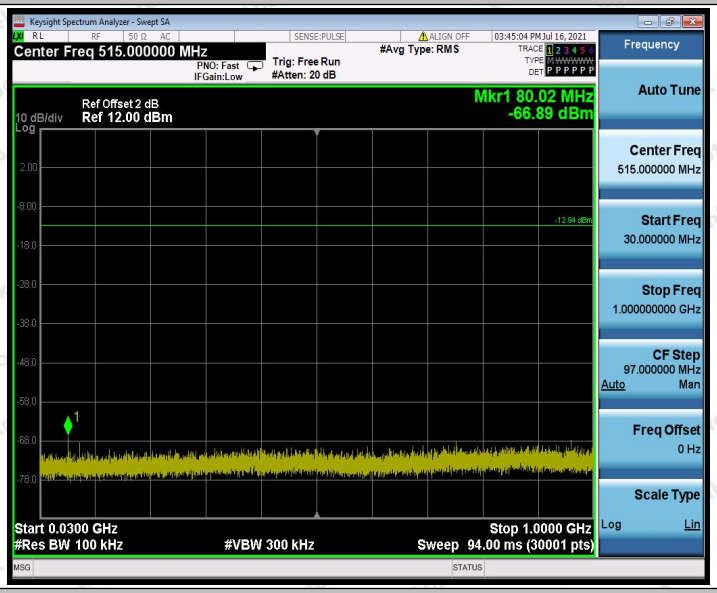
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	7.06	7.06	---	PASS
			30~1000	7.06	-66.89	<=-12.94	PASS
			1000~26500	7.06	-53.34	<=-12.94	PASS
		2440	Reference	6.96	6.96	---	PASS
			30~1000	6.96	-65.94	<=-13.04	PASS
			1000~26500	6.96	-52.74	<=-13.04	PASS
		2480	Reference	6.03	6.03	---	PASS
			30~1000	6.03	-66.66	<=-13.97	PASS
			1000~26500	6.03	-52.94	<=-13.97	PASS

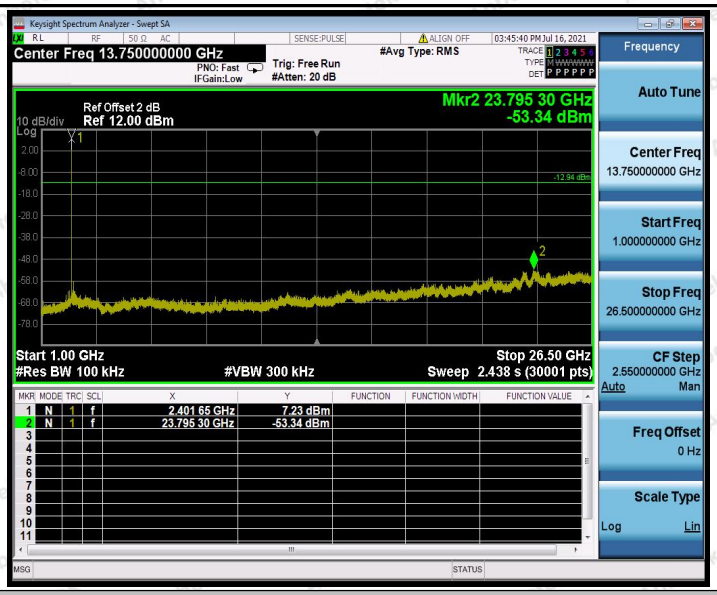
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

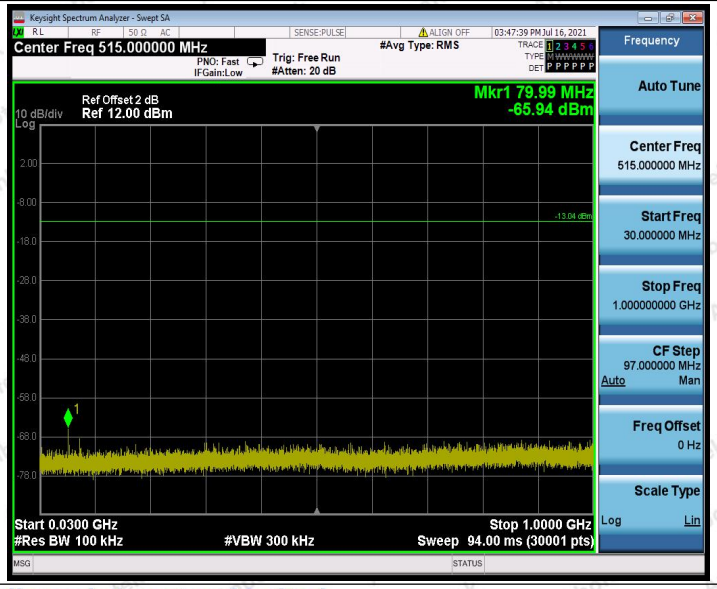


BLE_1M_Ant1_2402_1000~26500

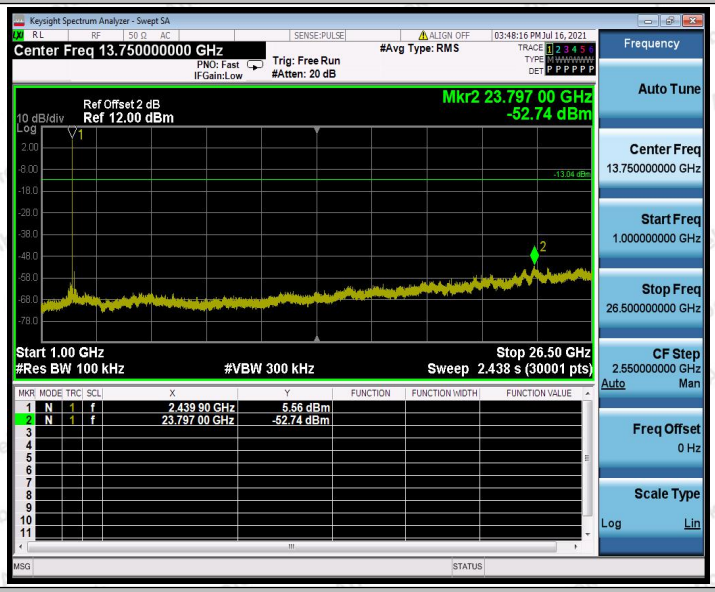


BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

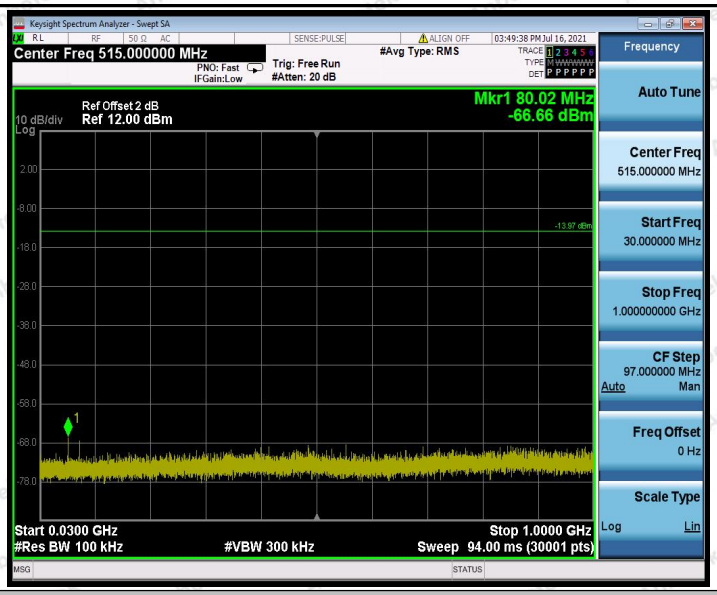


BLE_1M_Ant1_2440_1000~26500

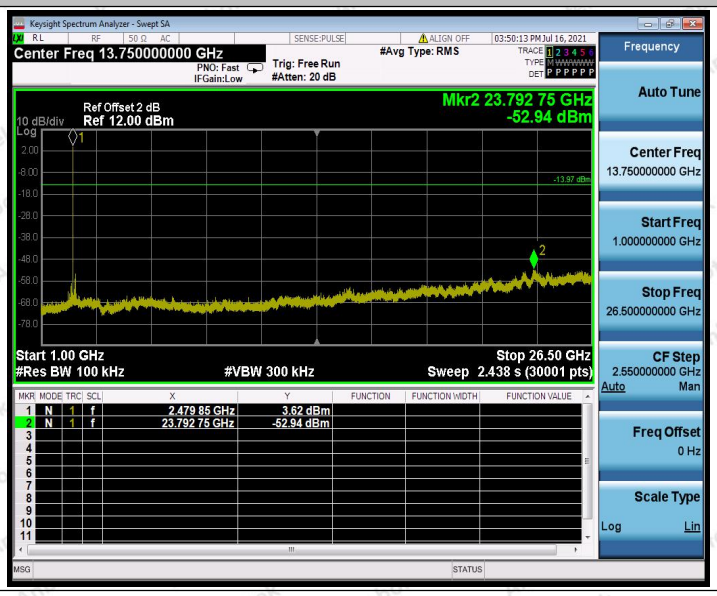


BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



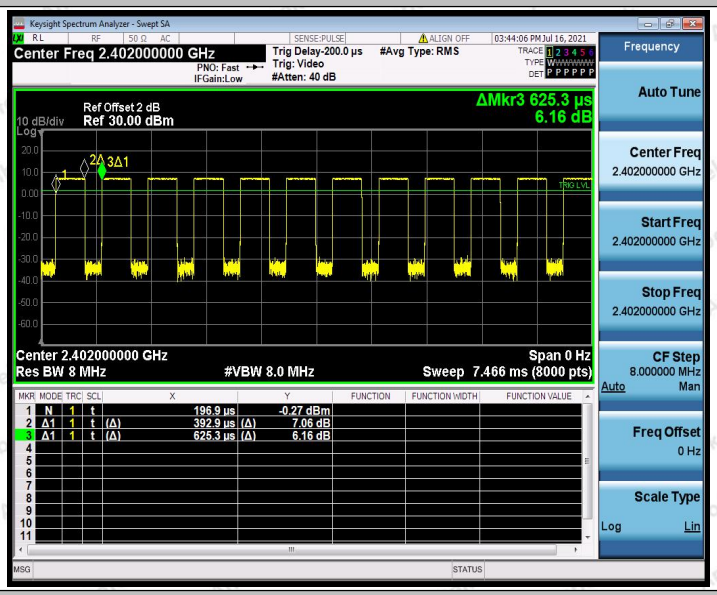
Appendix G: Duty Cycle

Test Result

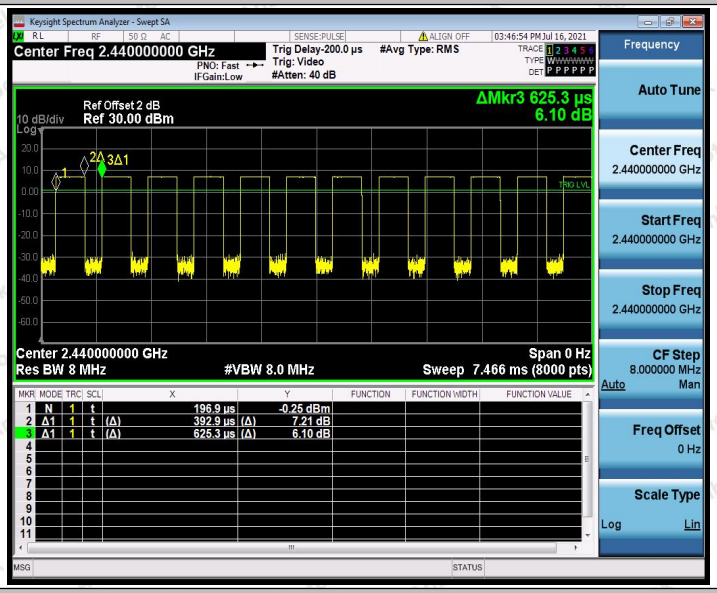
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.39	0.63	0.6190	61.90	2.08	---	PASS
		2440	0.39	0.63	0.6190	61.90	2.08	---	PASS
		2480	0.39	0.63	0.6190	61.90	2.08	---	PASS

Test Graphs

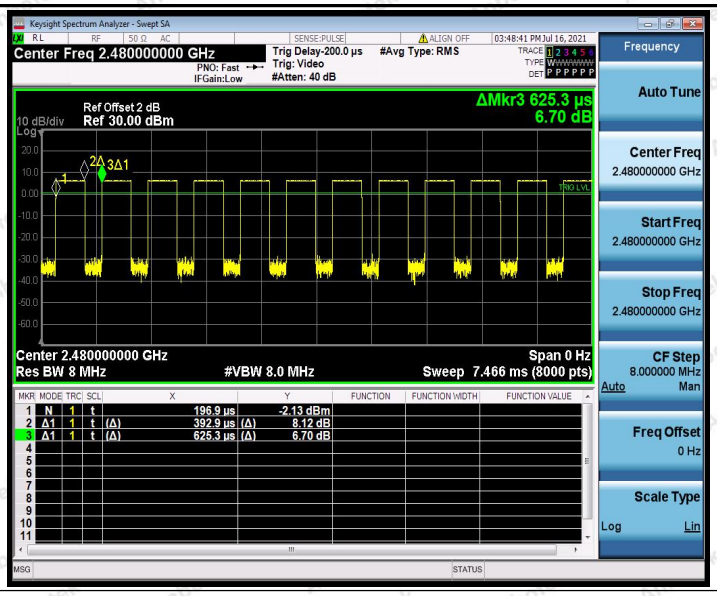
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
Trig Delay-200.0 µs
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
03:48:41 PM Jul 16, 2021
Ref Offset 2 dB
10 dB/div Ref 30.00 dBm
ΔMkr3 625.3 µs
6.70 dB
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 196.9 µs -2.13 dBm
2 Δ1 1 t (Δ) 392.9 µs (Δ) 8.12 dB
3 Δ1 1 t (Δ) 625.3 µs (Δ) 6.70 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
Scale Type
Log Lin

---End---