Appendix Test Data

Report No.:	18220WC20161302	Test Sample No.:	1-2-2
Start Test Date:	2022.7.19	Finish Test Date:	2022.7.30
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	25.3℃	Relative Humidity:	56.5 %
Pressure:	1012 hPa		

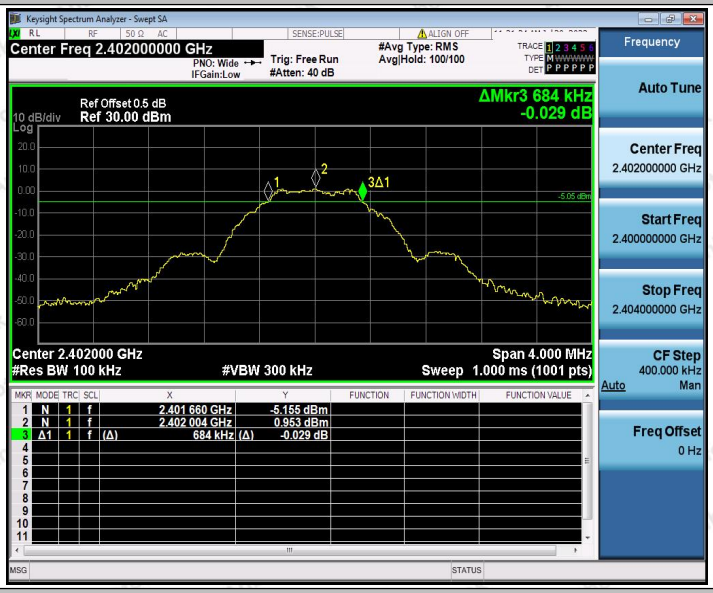
Appendix A: DTS Bandwidth

Test Result

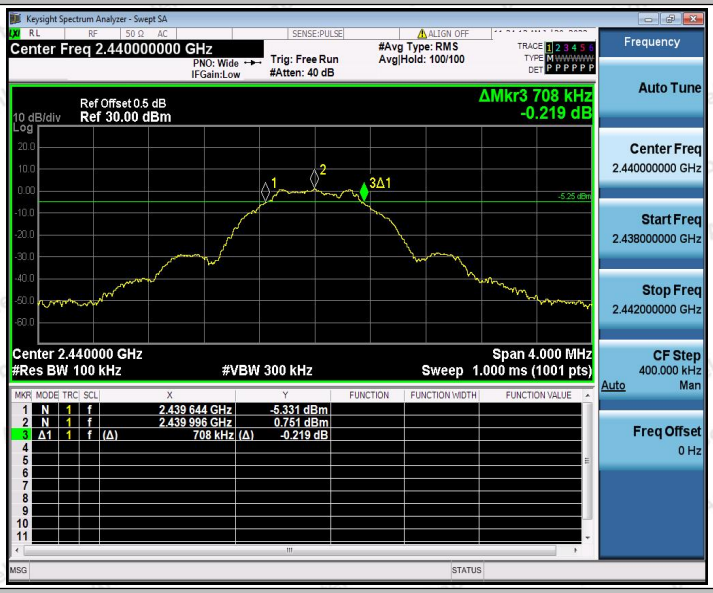
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.684	2401.660	2402.344	≥0.5	PASS
		2440	0.708	2439.644	2440.352	≥0.5	PASS
		2480	0.700	2479.648	2480.348	≥0.5	PASS

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 700 kHz
0.183 dB
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 2.479 648 GHz -8.958 dBm
2 N 1 f 2.479 764 GHz -0.569 dBm
3 Δ1 1 f (Δ) 700 kHz (Δ) 0.183 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
MSG
STATUS

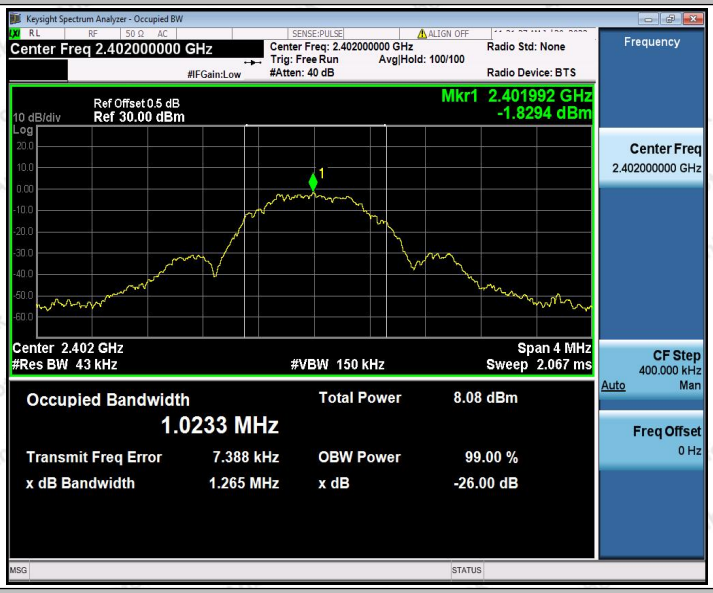
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0233	2401.496	2402.519	---	PASS
		2440	1.0282	2439.493	2440.522	---	PASS
		2480	1.0293	2479.499	2480.528	---	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
#IFGain:Low
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
Log
Mkr1 2.479972 GHz
-2.7647 dBm
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 43 kHz
#VBW 150 kHz
Span 4 MHz
Sweep 2.067 ms
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz
Occupied Bandwidth
1.0293 MHz
Total Power
6.76 dBm
Transmit Freq Error
13.751 kHz
OBW Power
99.00 %
x dB Bandwidth
1.268 MHz
x dB
-26.00 dB
MSG
STATUS

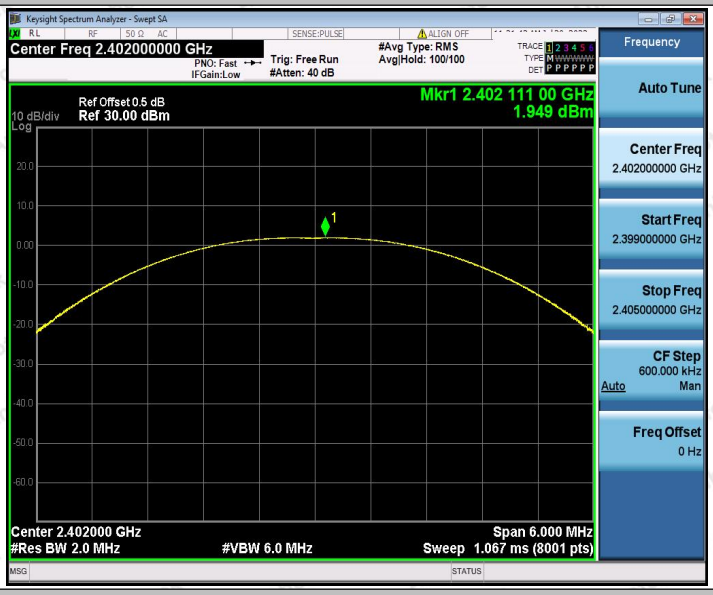
Appendix C: Maximum conducted output power

Test Result

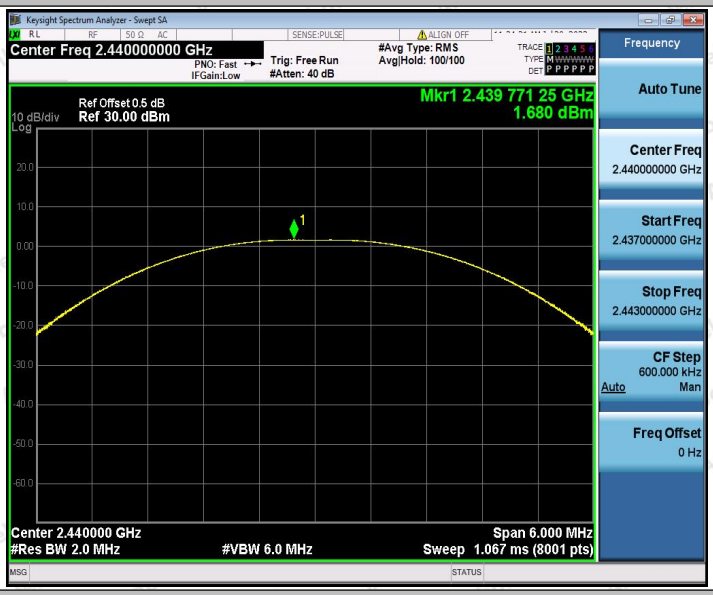
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.95	≤30	PASS
		2440	1.68	≤30	PASS
		2480	0.52	≤30	PASS

Test Graphs

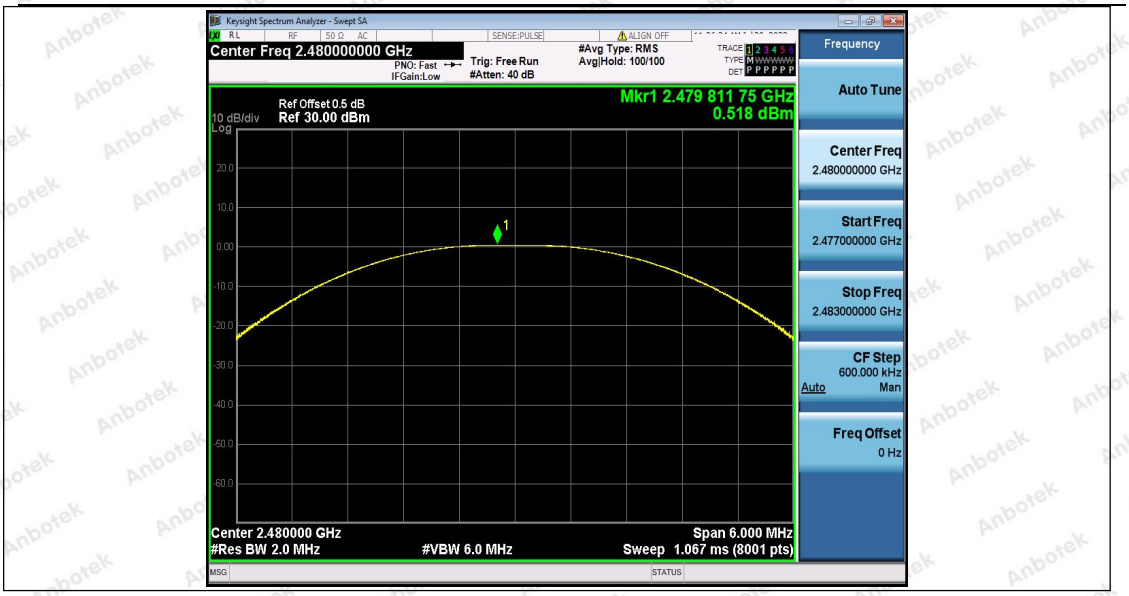
BLE_1M_Ant1_2402



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
Mkr1 2.479 811 75 GHz
0.518 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

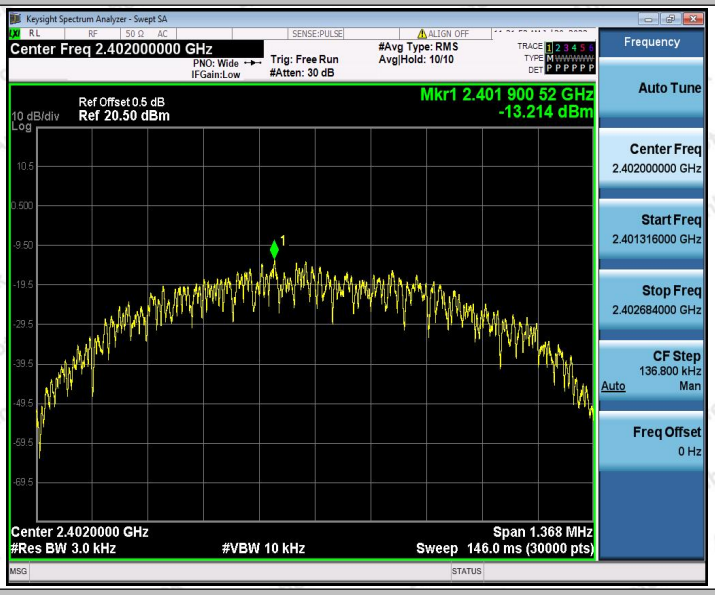
Appendix D: Maximum power spectral density

Test Result

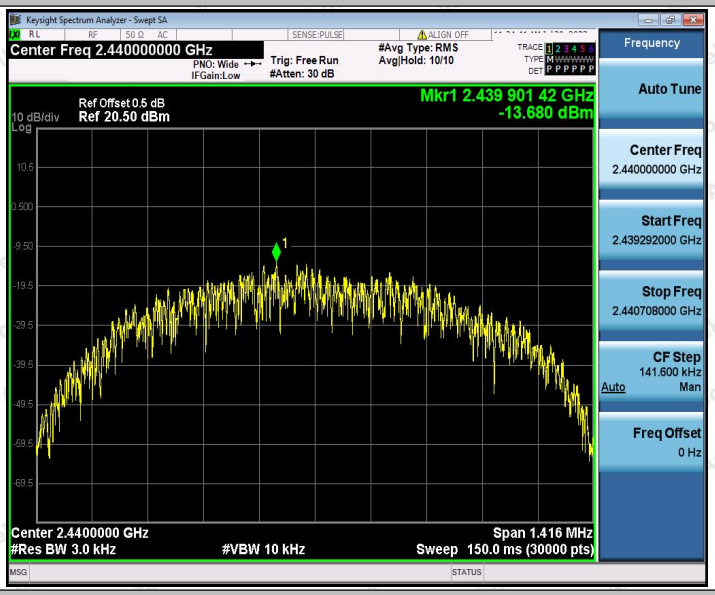
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.21	≤8	PASS
		2440	-13.68	≤8	PASS
		2480	-14.61	≤8	PASS

Test Graphs

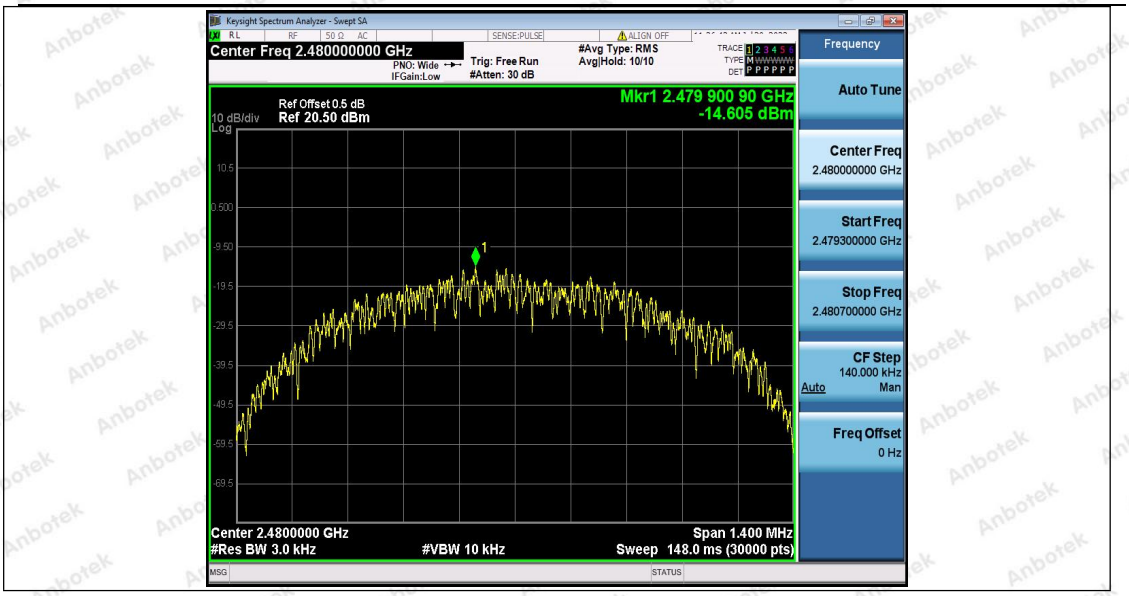
BLE_1M_Ant1_2402



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
Mkr1 2.479 900 90 GHz
-14.605 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.400 MHz
Sweep 148.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479300000 GHz
Stop Freq
2.480700000 GHz
CF Step
140.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

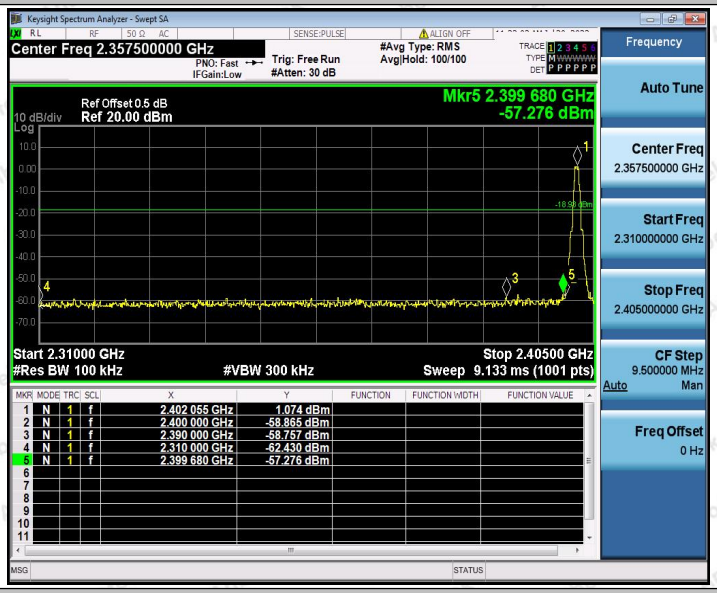
Appendix E: Band edge measurements

Test Result

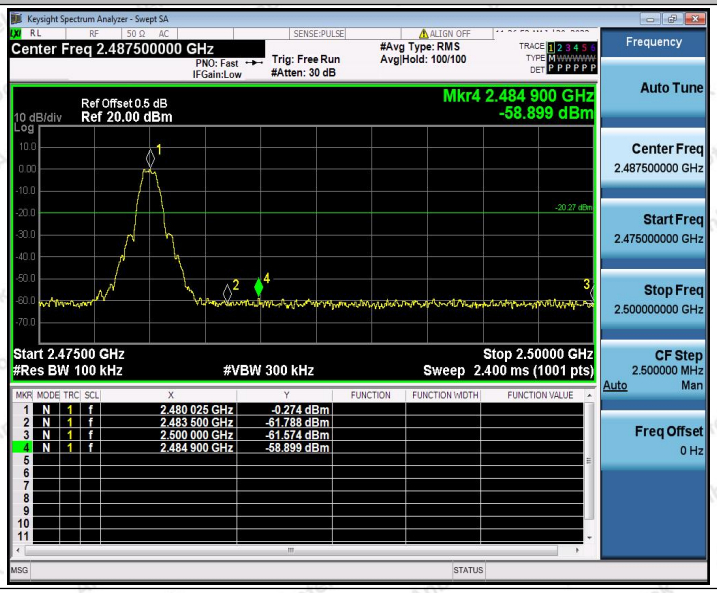
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	1.07	-57.28	≤-18.93	PASS
		High	2480	-0.27	-58.9	≤-20.27	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

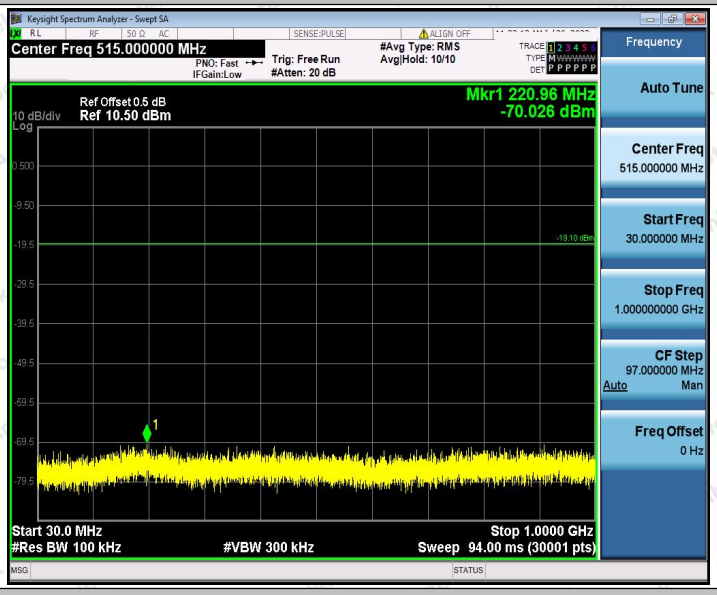
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.90	0.90	---	PASS
			30~1000	0.90	-70.03	≤-19.1	PASS
			1000~26500	0.90	-54.23	≤-19.1	PASS
		2440	Reference	0.61	0.61	---	PASS
			30~1000	0.61	-68.61	≤-19.39	PASS
			1000~26500	0.61	-53.39	≤-19.39	PASS
		2480	Reference	-0.44	-0.44	---	PASS
			30~1000	-0.44	-69.83	≤-20.44	PASS
			1000~26500	-0.44	-54.08	≤-20.44	PASS

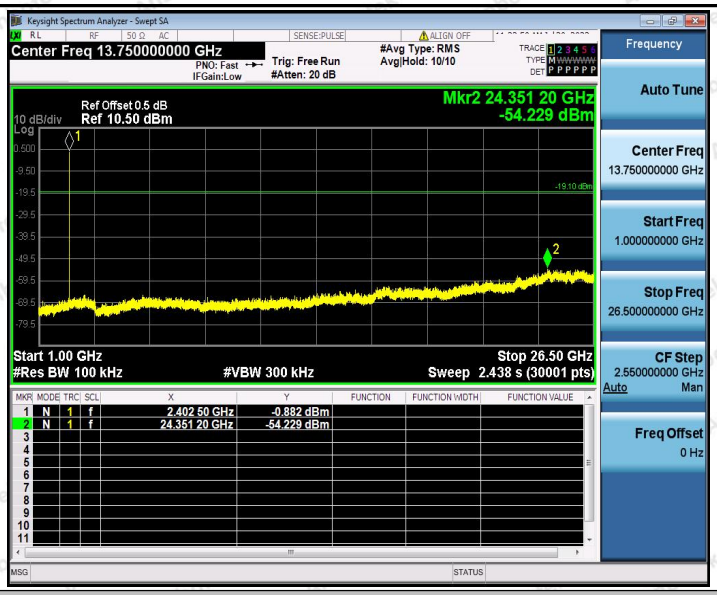
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

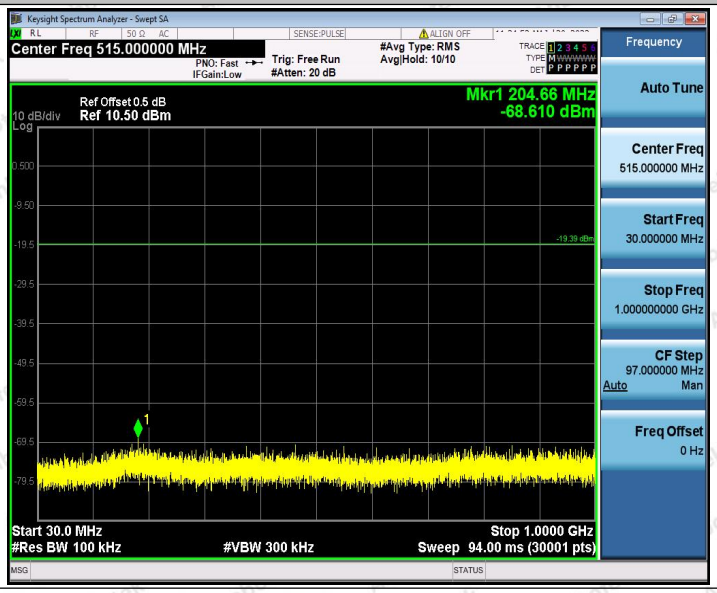


BLE_1M_Ant1_2402_1000~26500

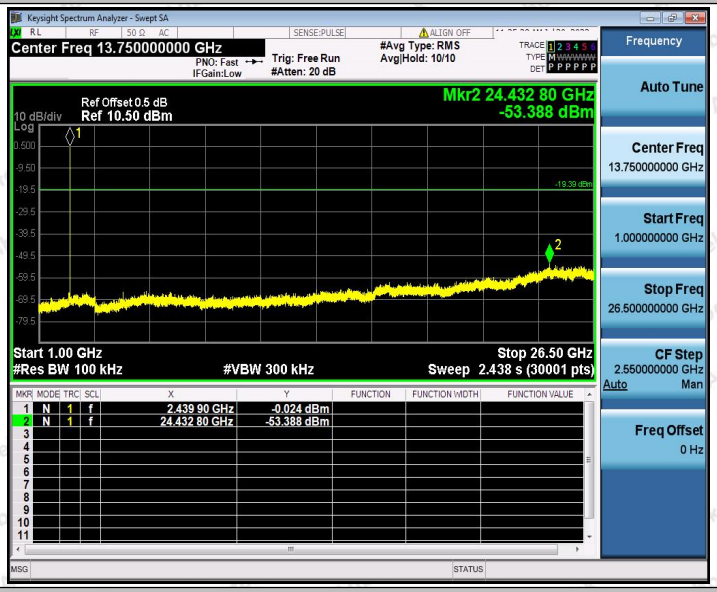


BLE_1M_Ant1_2440_0~Reference

BLE_1M_Ant1_2440_30~1000

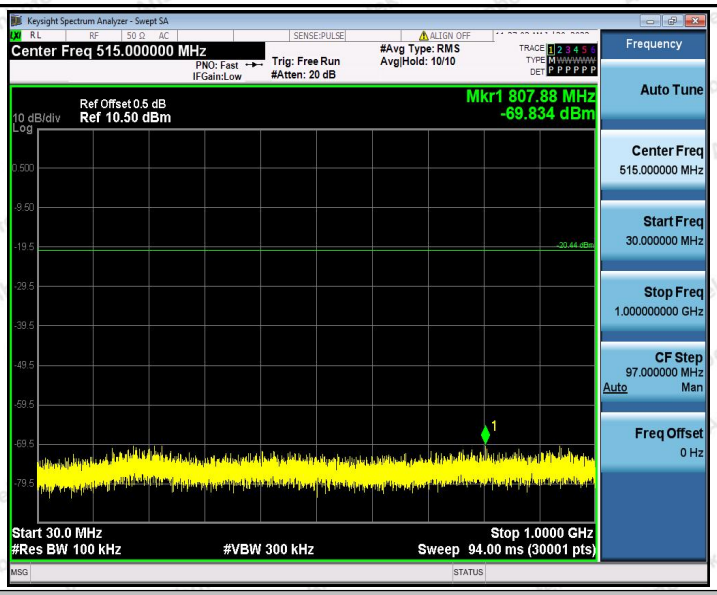


BLE_1M_Ant1_2440_1000~26500

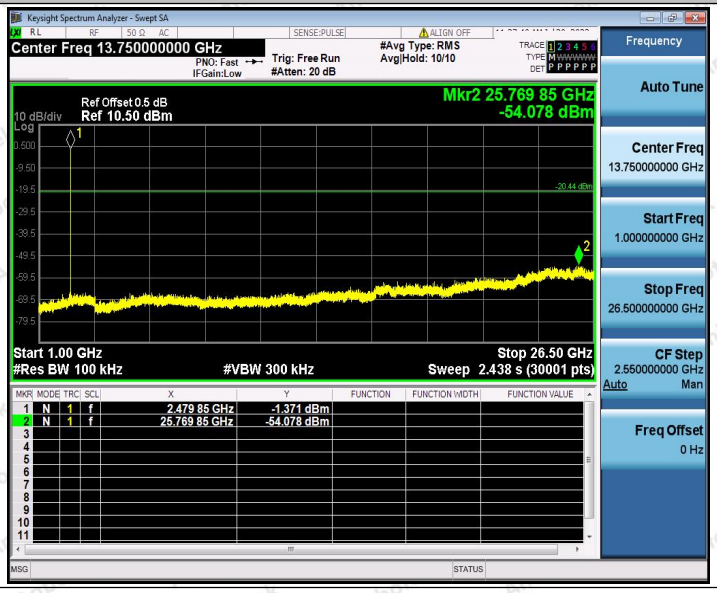


BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



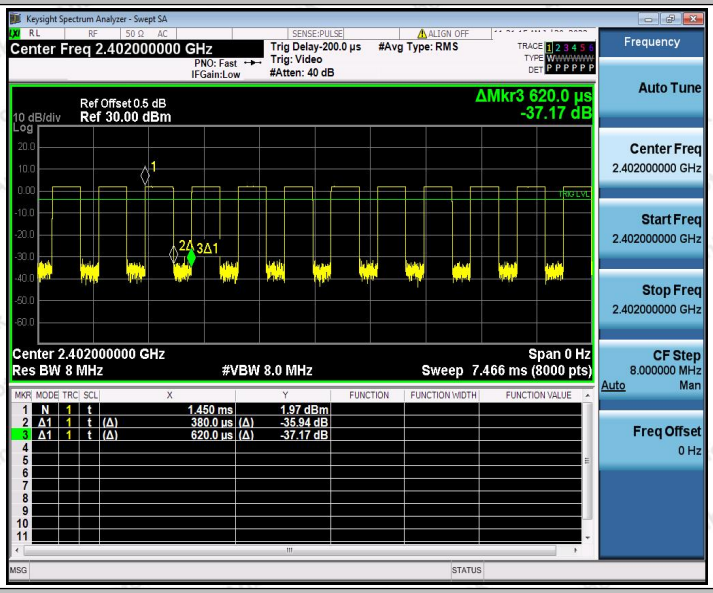
Appendix G: Duty Cycle

Test Result

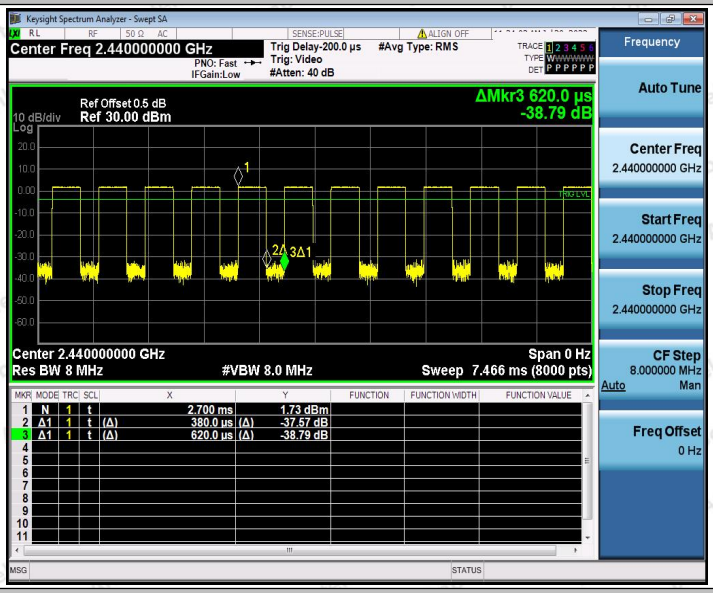
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.62	0.6129	61.29	2.13	---	PASS
		2440	0.38	0.62	0.6129	61.29	2.13	---	PASS
		2480	0.38	0.63	0.6032	60.32	2.20	---	PASS

Test Graphs

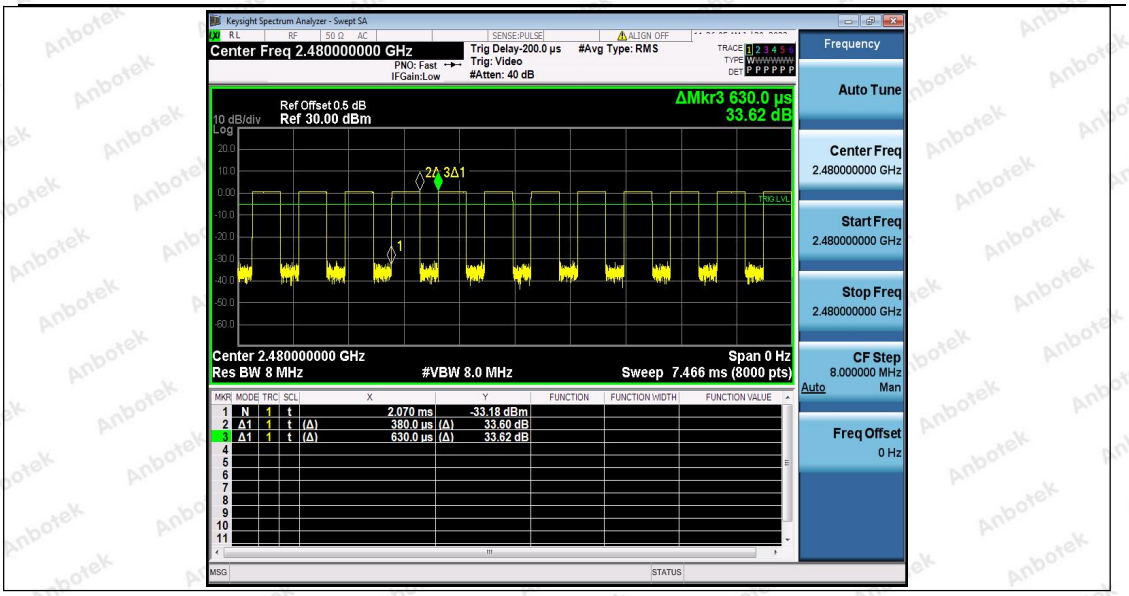
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-200.0 µs
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 630.0 µs
33.62 dB
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 2.070 ms -33.18 dBm
2 Δ1 1 t (Δ) 380.0 µs (Δ) 33.60 dB
3 Δ1 1 t (Δ) 630.0 µs (Δ) 33.62 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---