Appendix Test Data

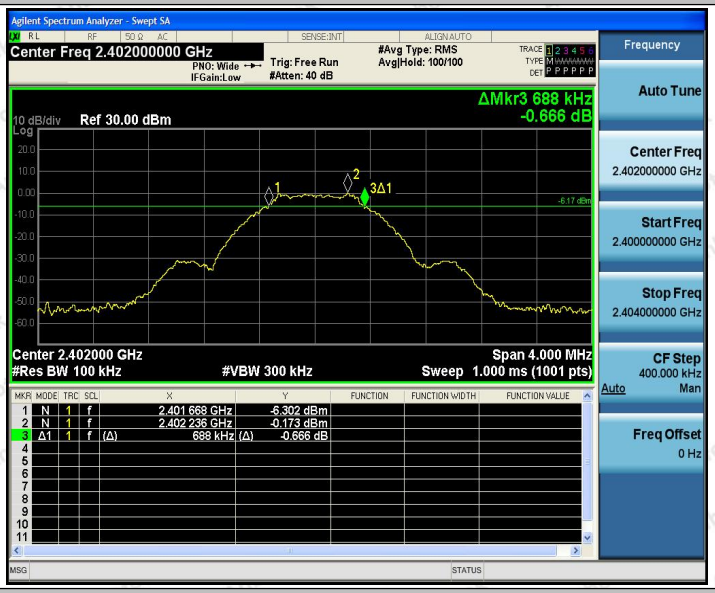
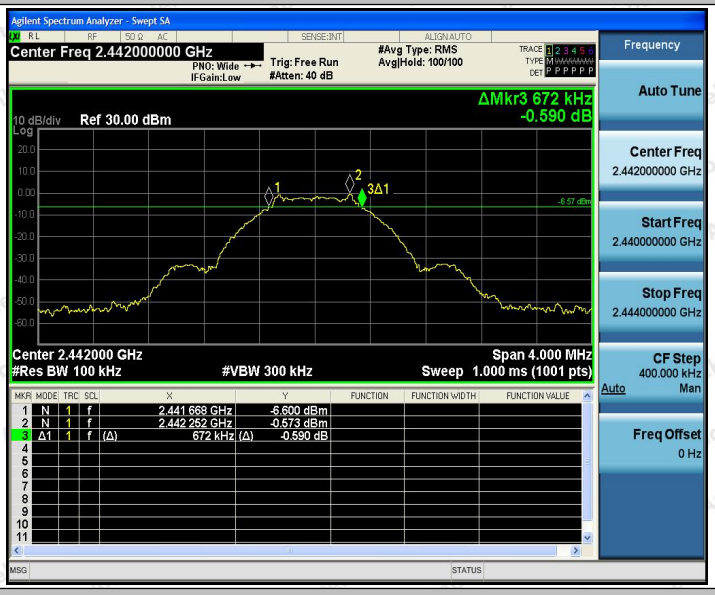
Report No.:	18220WC20068001	Test Sample No.:	1-2-2
Start Test Date:	2022.4.1	Finish Test Date:	2022.4.14
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	23.6℃	Relative Humidity:	55.9%
Pressure:	1012 hPa		

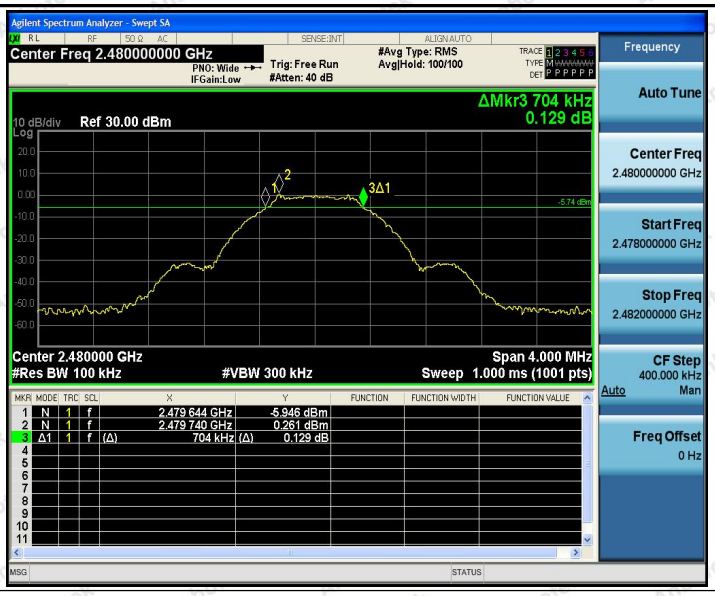
Appendix A: DTS Bandwidth

Test Result

Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.688	2401.668	2402.356	≥0.5	PASS
		2442	0.672	2441.668	2442.340	≥0.5	PASS
		2480	0.704	2479.644	2480.348	≥0.5	PASS

Test Graphs

BLE_1M_Ant1_2402

BLE_1M_Ant1_2442

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 704 kHz
0.129 dB
10 dB/div
Ref 30.00 dBm
Log
-5.74 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 2.479 644 GHz -5.946 dBm
2 N 1 f 2.479 740 GHz 0.261 dBm
3 Δ1 1 f (Δ) 704 kHz (Δ) 0.129 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

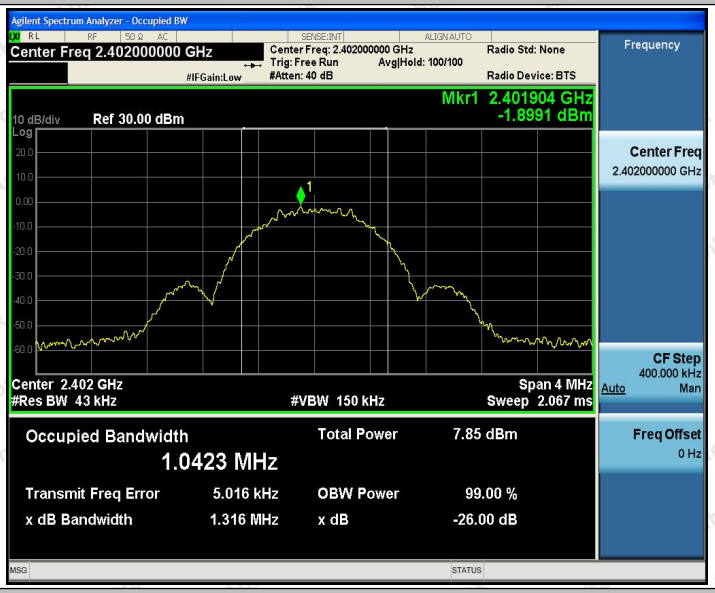
Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0423	2401.484	2402.526	---	PASS
		2442	1.0230	2441.490	2442.513	---	PASS
		2480	1.0221	2479.490	2480.513	---	PASS

Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2442

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
#IFGain:Low
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Mkr1 2.480044 GHz
-1.5502 dBm
10 dB/div
Log
Ref 30.00 dBm
Center 2.48 GHz
#Res BW 43 kHz
#VBW 150 kHz
Span 4 MHz
Sweep 2.067 ms
Occupied Bandwidth
1.0221 MHz
Total Power
8.36 dBm
Transmit Freq Error
1.501 kHz
OBW Power
99.00 %
x dB Bandwidth
1.323 MHz
x dB
-26.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

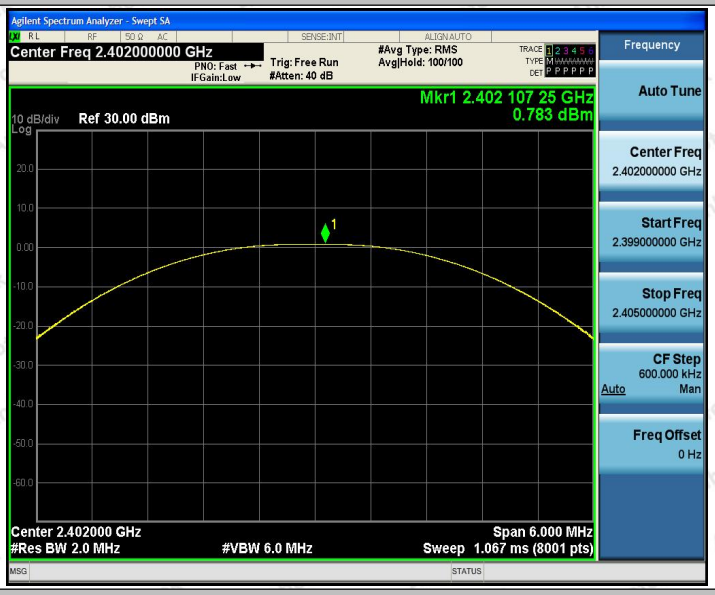
Appendix C: Maximum conducted output power

Test Result

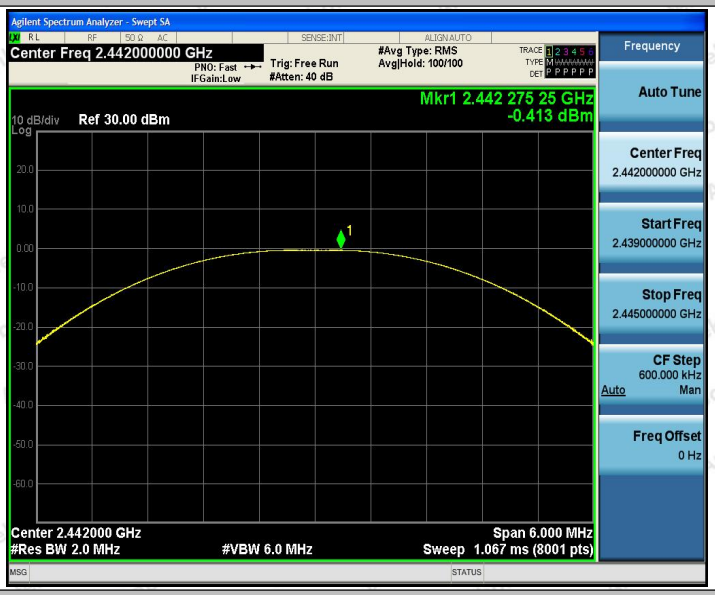
Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.78	≤30	PASS
		2442	-0.41	≤30	PASS
		2480	1.09	≤30	PASS

Test Graphs

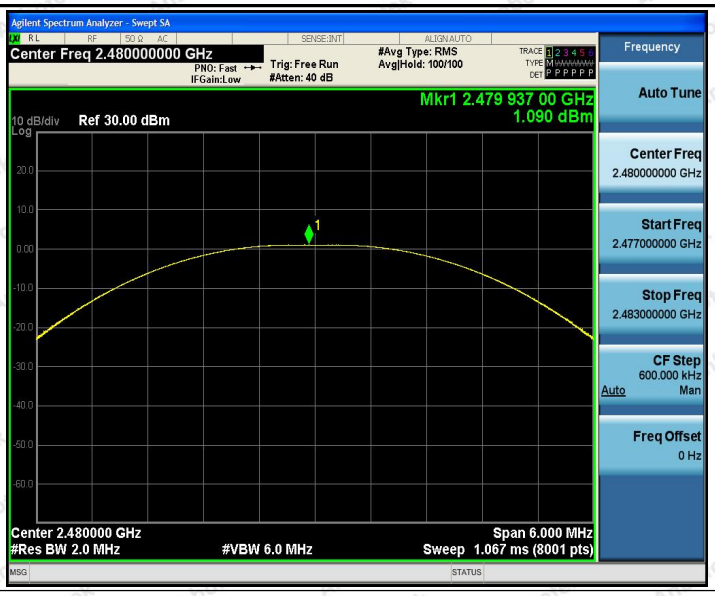
BLE_1M_Ant1_2402



BLE_1M_Ant1_2442



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 2.479 937 00 GHz
1.090 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

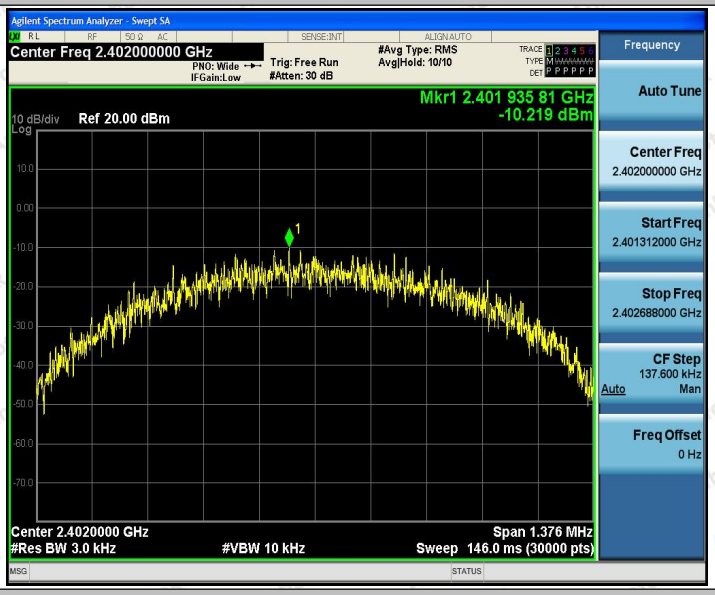
Appendix D: Maximum power spectral density

Test Result

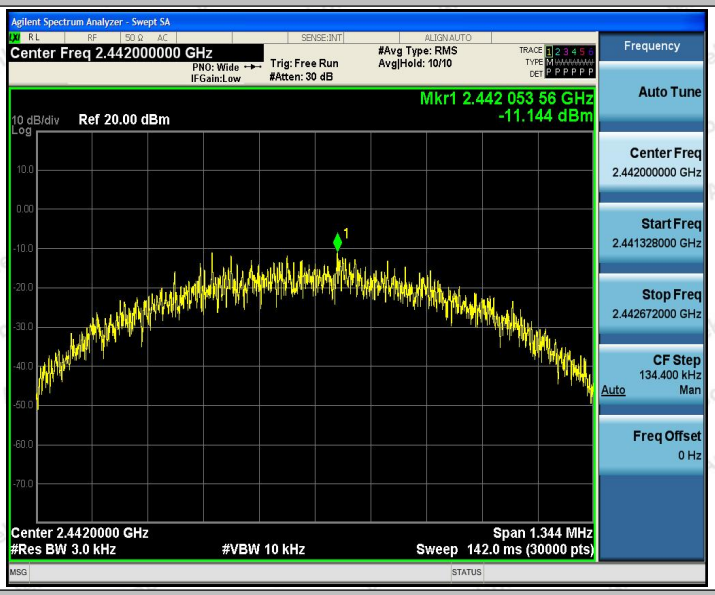
Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-10.22	≤8	PASS
		2442	-11.14	≤8	PASS
		2480	-9.38	≤8	PASS

Test Graphs

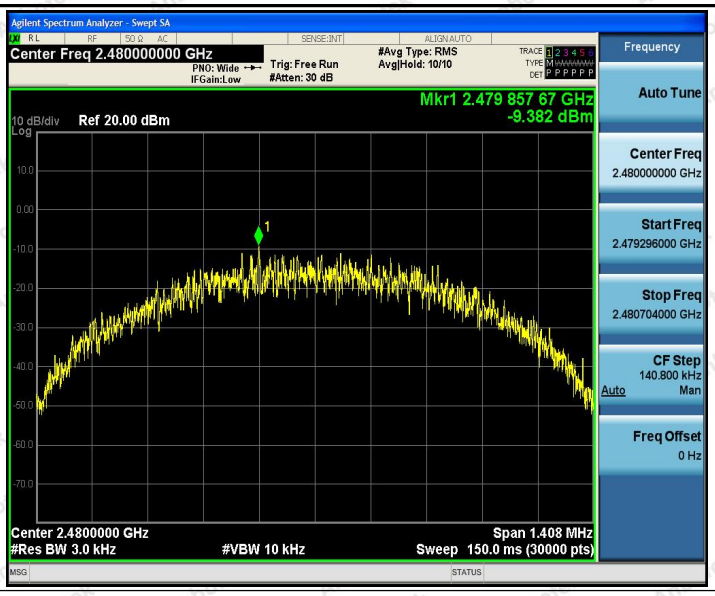
BLE_1M_Ant1_2402



BLE_1M_Ant1_2442



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 2.479 857 67 GHz
-9.382 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.408 MHz
Sweep 150.0 ms (30000 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479296000 GHz
Stop Freq
2.480704000 GHz
CF Step
140.800 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

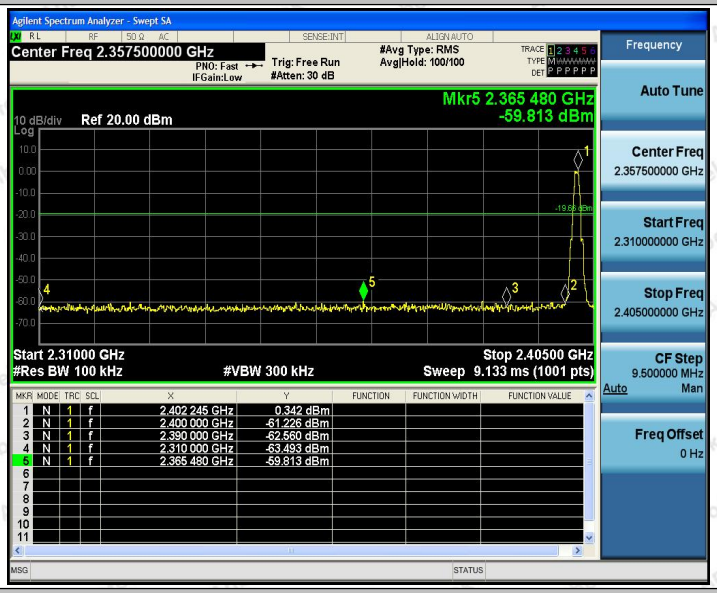
Appendix E: Band edge measurements

Test Result

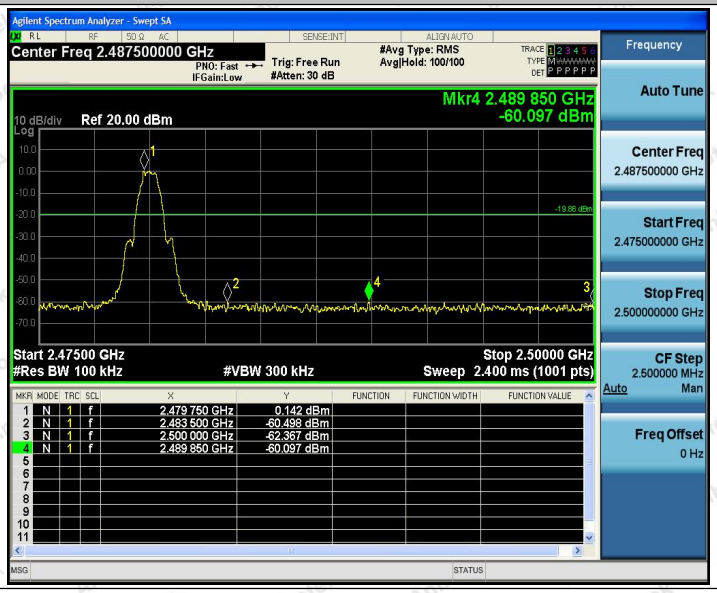
Test Mode	Antenna	Ch Name	Channel	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.34	-59.81	≤-19.66	PASS
		High	2480	0.14	-60.1	≤-19.86	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

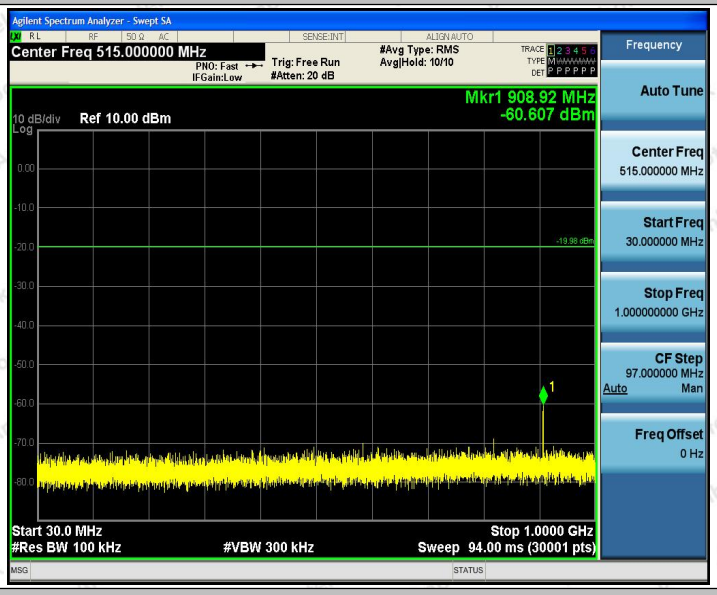
Test Result

Test Mode	Antenna	Channel	Freq Range [MHz]	Ref Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.02	0.02	---	PASS
			30~1000	0.02	-60.61	≤-19.98	PASS
			1000~26500	0.02	-52.99	≤-19.98	PASS
		2442	Reference	-0.93	-0.93	---	PASS
			30~1000	-0.93	-70.73	≤-20.93	PASS
			1000~26500	-0.93	-55.28	≤-20.93	PASS
		2480	Reference	0.41	0.41	---	PASS
			30~1000	0.41	-69.8	≤-19.59	PASS
			1000~26500	0.41	-54.39	≤-19.59	PASS

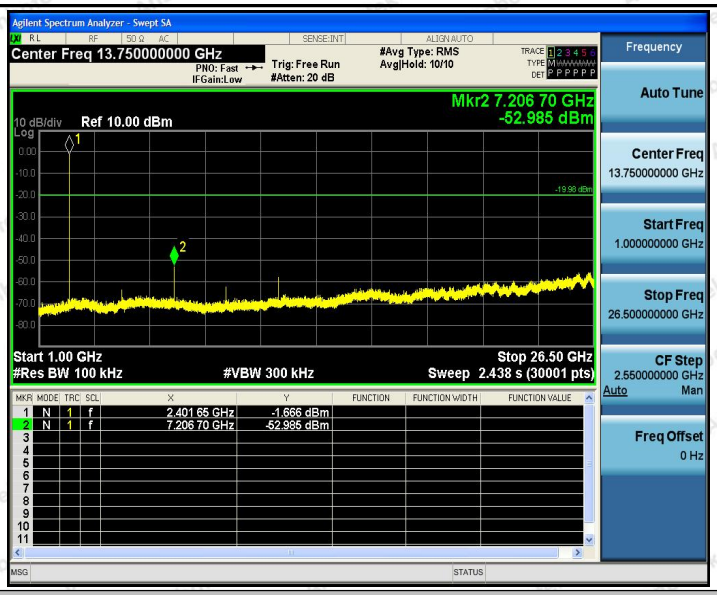
Test Graphs

BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

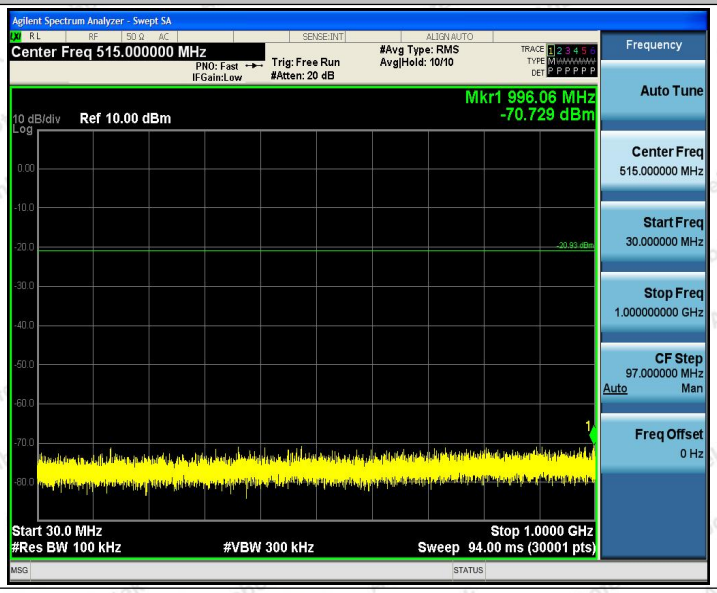


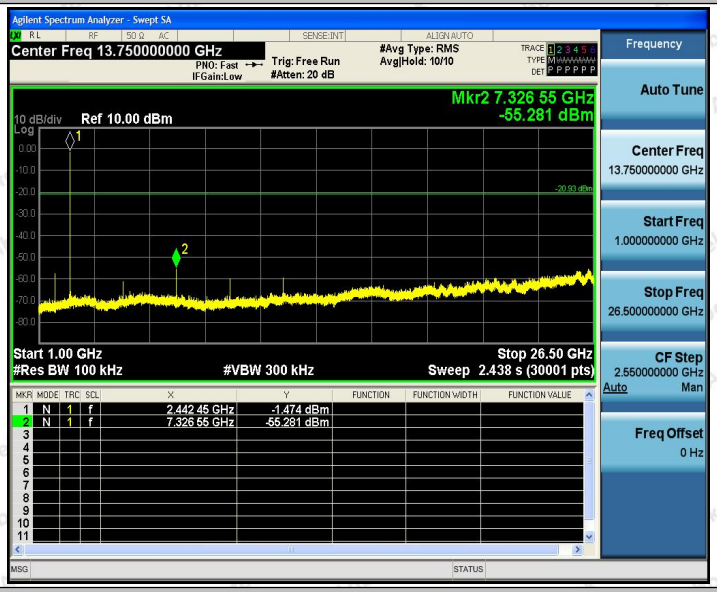
BLE_1M_Ant1_2402_1000~26500

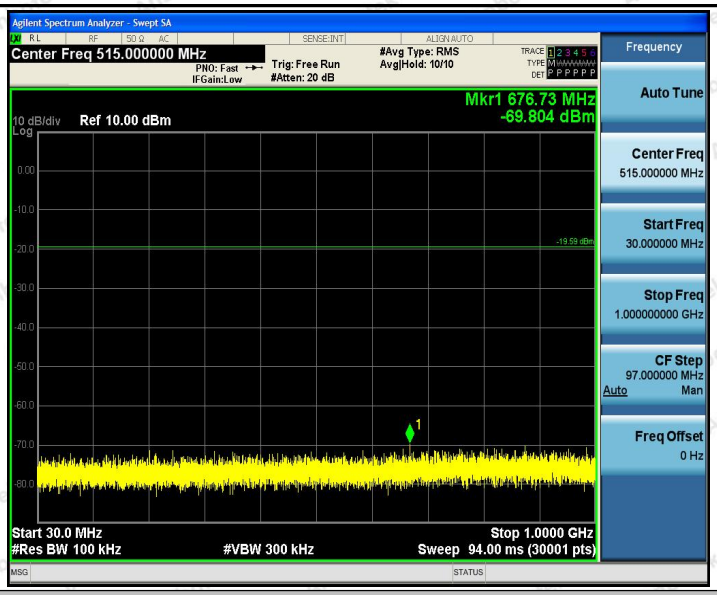


BLE_1M_Ant1_2442_0~Reference

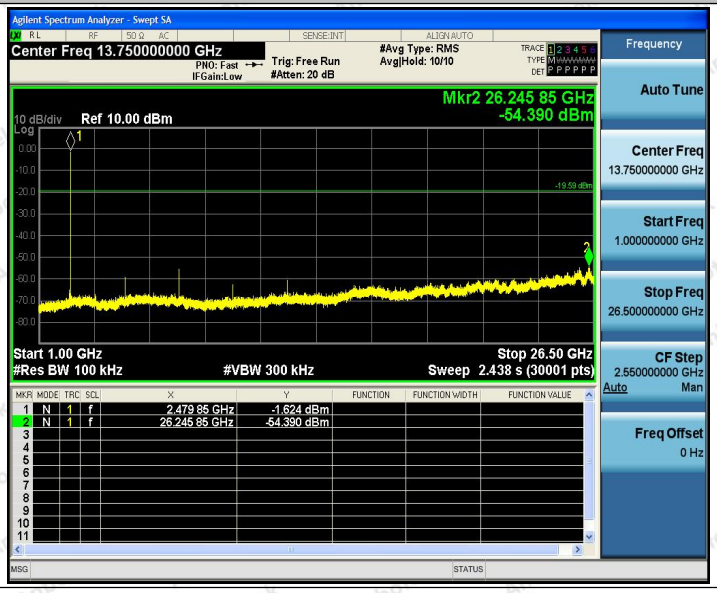
BLE_1M_Ant1_2442_30~1000



BLE_1M_Ant1_2442_1000~26500

BLE_1M_Ant1_2480_0~Reference
BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



Appendix G: Duty Cycle

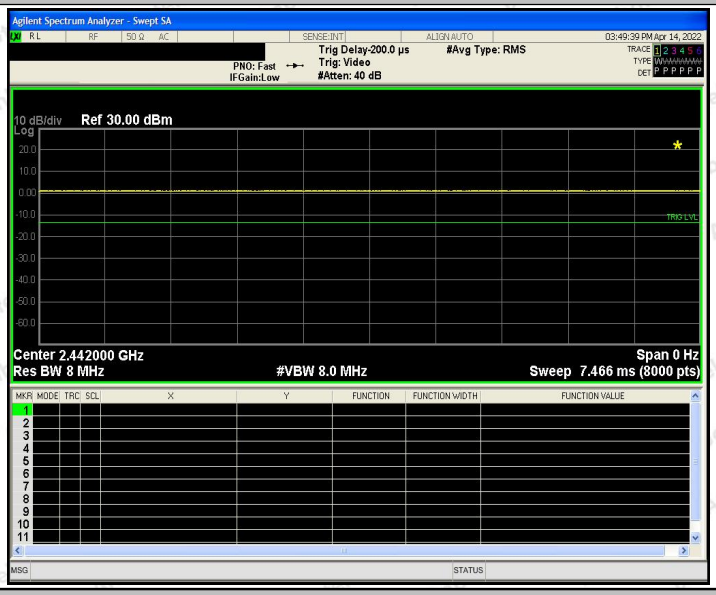
Test Result

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
		2442	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_2442



BLE_1M_Ant1_2480

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:49:01 PM Apr 14, 2022
Trig Delay-200.0 µs
Trig: Video
#Avg Type: RMS
PNO: Fast
IFGain:Low
#Atten: 40 dB
TRACE 1 2 3 4 5
TYPE A WWWWW
DET P P P P P
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
TRG LVL
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 7.466 ms (8000 pts)
MKR MODE TRC SCL
X
Y
FUNCTION
FUNCTION WIDTH
FUNCTION VALUE
1
2
3
4
5
6
7
8
9
10
11
MSG
STATUS

---End---