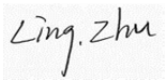
Appendix B

RF Test Data for BT LE V5.0 (DTS) (Conducted Measurement)

Product Name: Remote control

Test Model: RM-RX1

Environmental Conditions

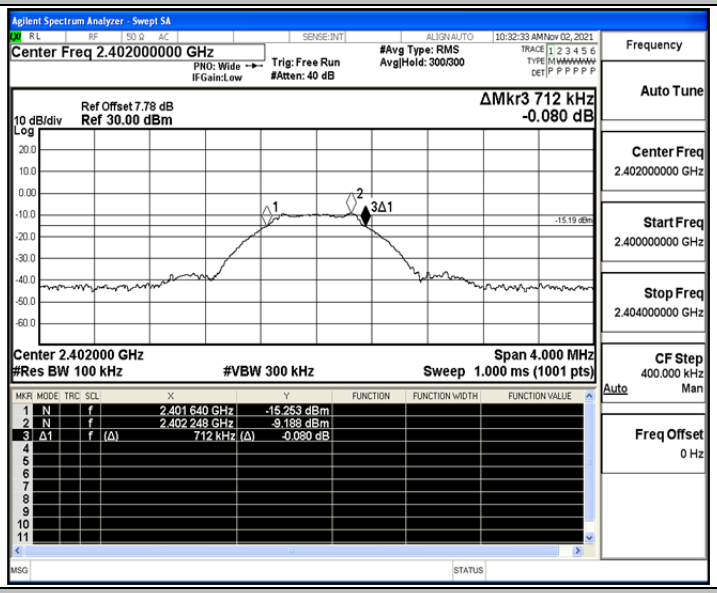
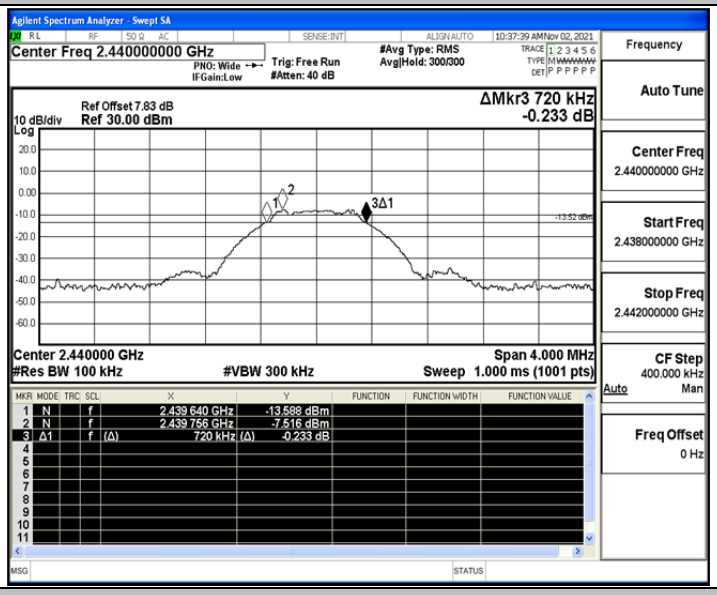
Temperature:	23.7℃
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	 Ling Zhu
Supervised by:	 Li Huan

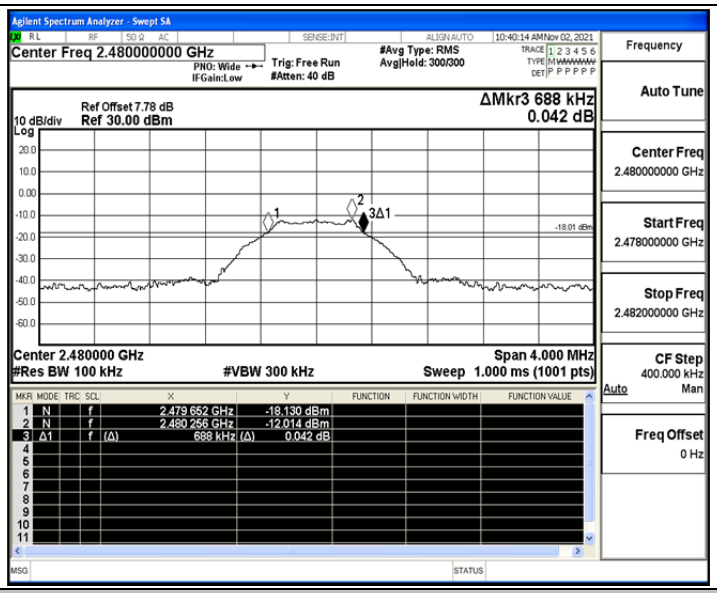
B.1 DTS Bandwidth

Test Result

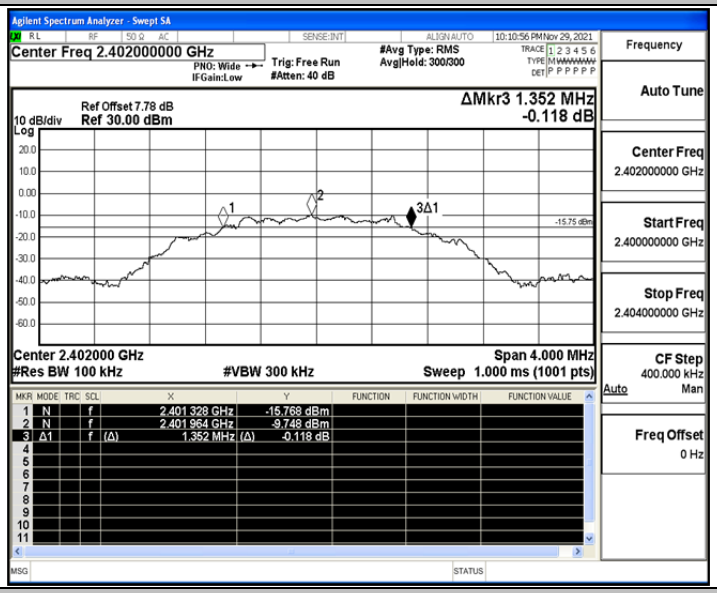
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.712	2401.640	2402.352	≥0.5	PASS
		2440	0.720	2439.640	2440.360	≥0.5	PASS
		2480	0.688	2479.652	2480.340	≥0.5	PASS
BLE_2M	Ant1	2402	1.352	2401.328	2402.680	≥0.5	PASS
		2440	1.264	2439.348	2440.612	≥0.5	PASS
		2480	1.232	2479.368	2480.600	≥0.5	PASS

Test Graphs

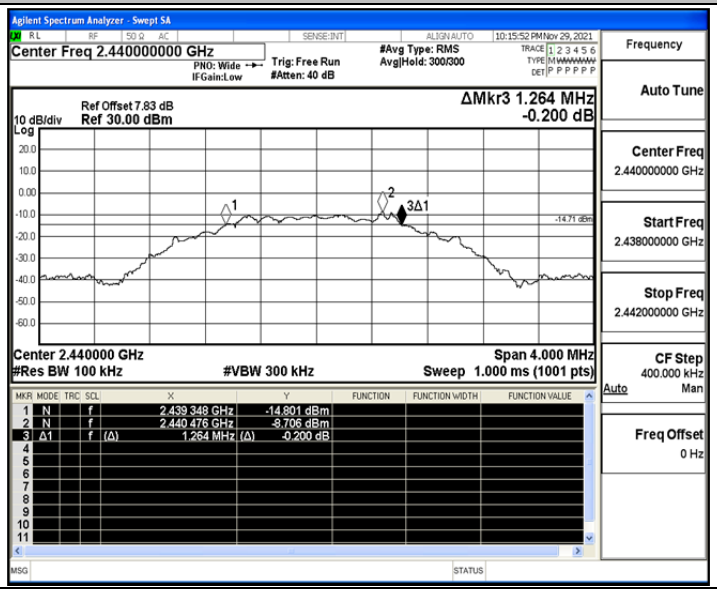
BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480

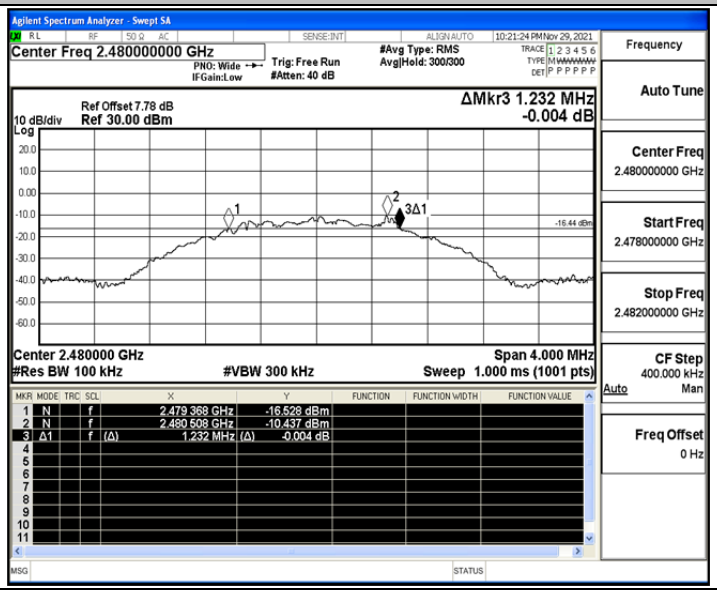


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



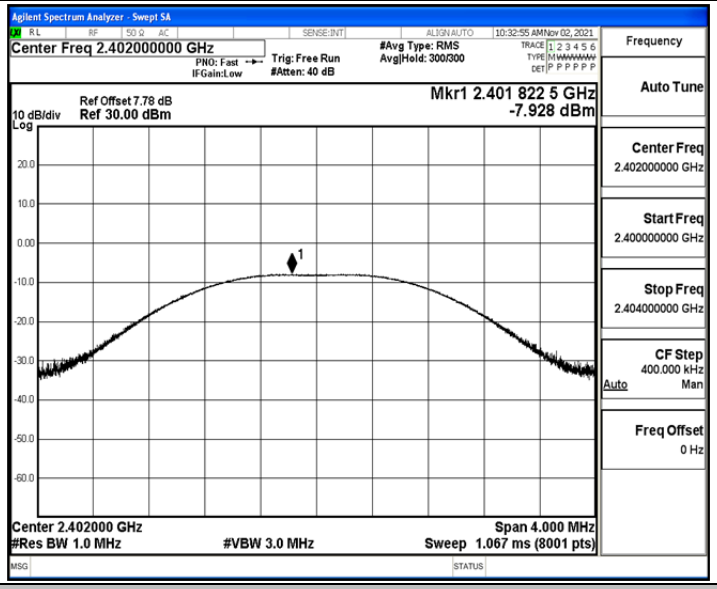
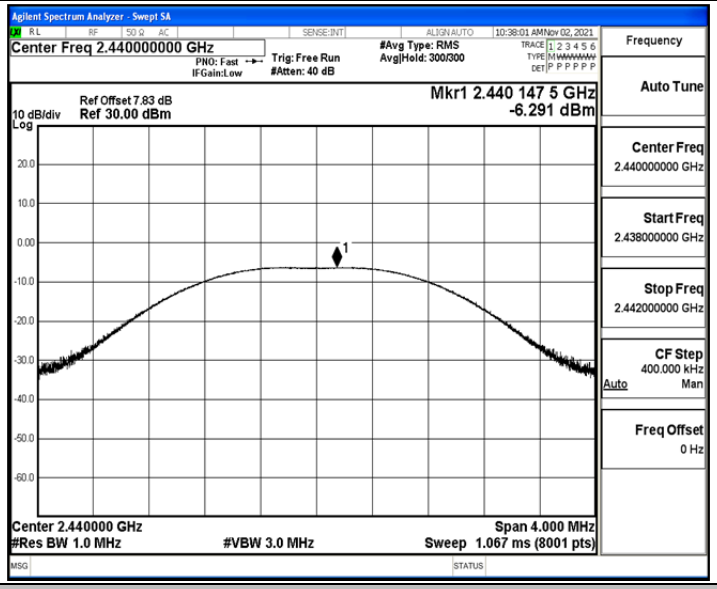
BLE_2M_Ant1_2480


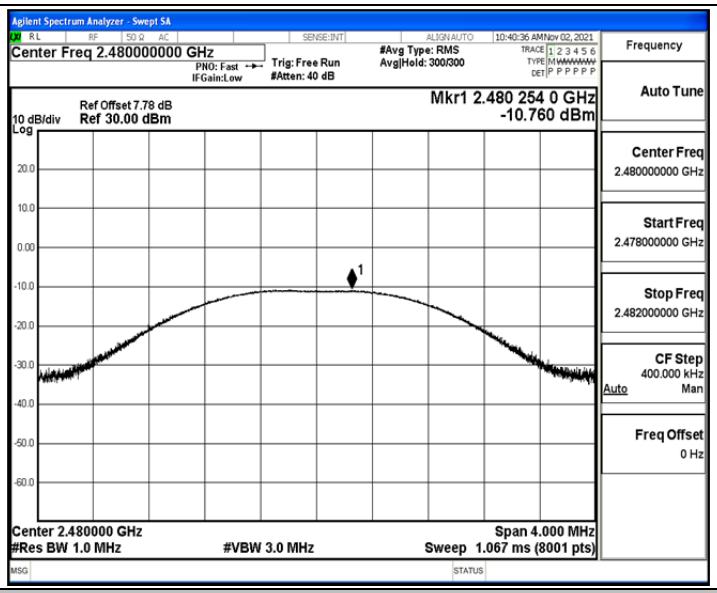
B.2 Maximum peak conducted output power

Test Result

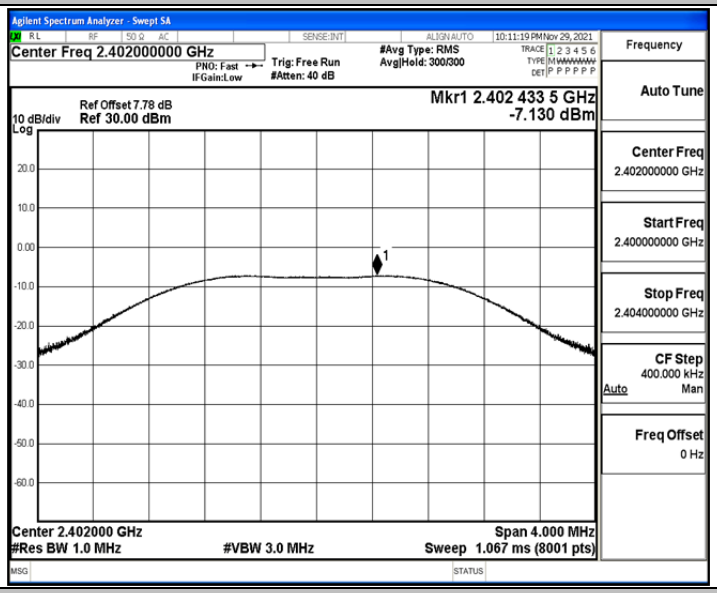
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-7.93	≤30	PASS
		2440	-6.29	≤30	PASS
		2480	-10.76	≤30	PASS
BLE_2M	Ant1	2402	-7.13	≤30	PASS
		2440	-6.72	≤30	PASS
		2480	-8.75	≤30	PASS

Test Graphs

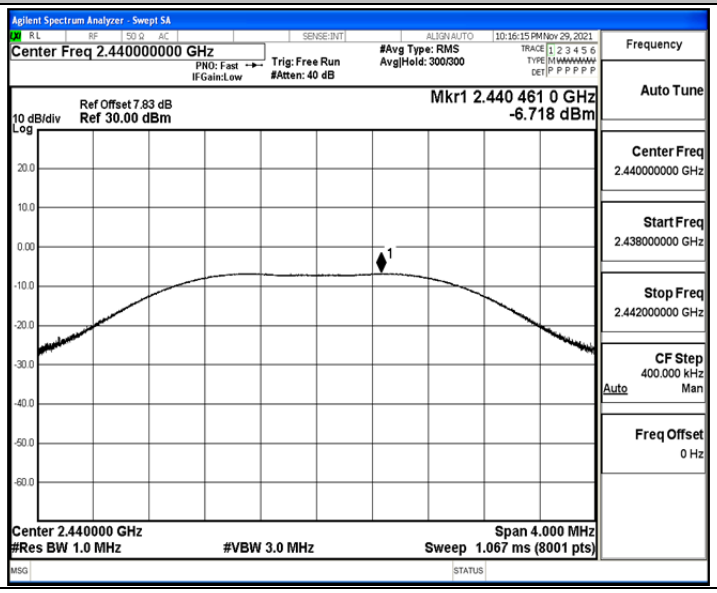
BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480

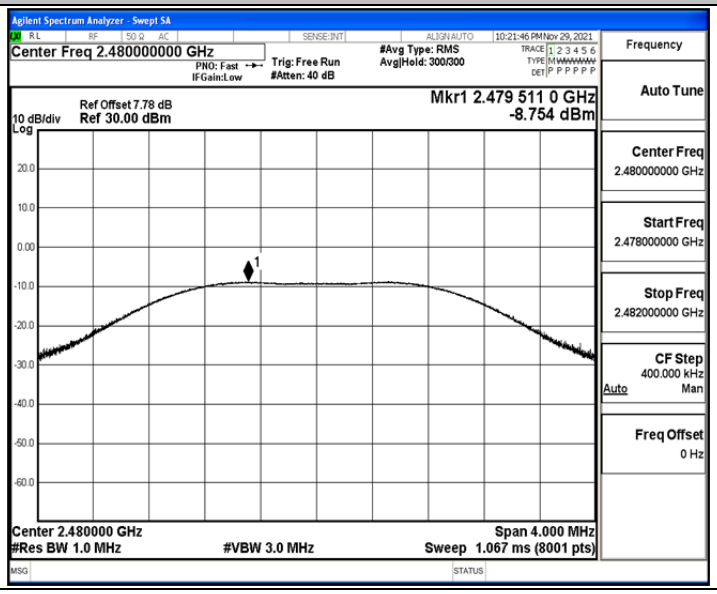


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480


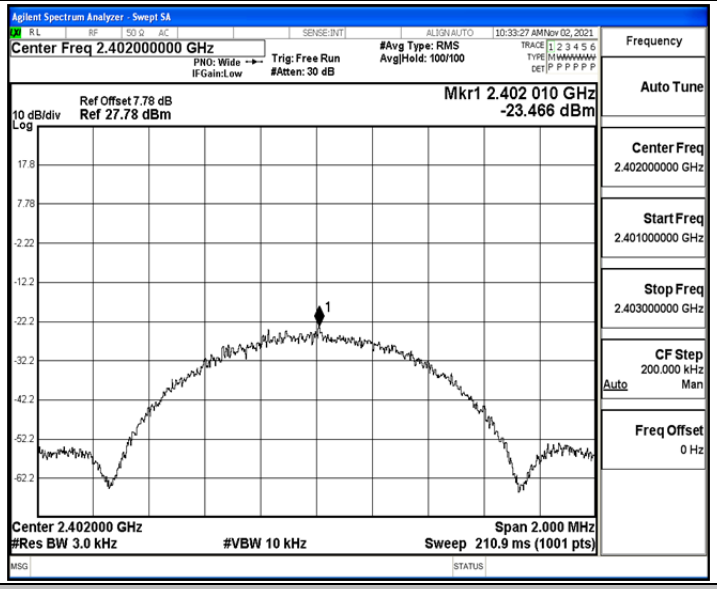
B.3 Maximum power spectral density

Test Result

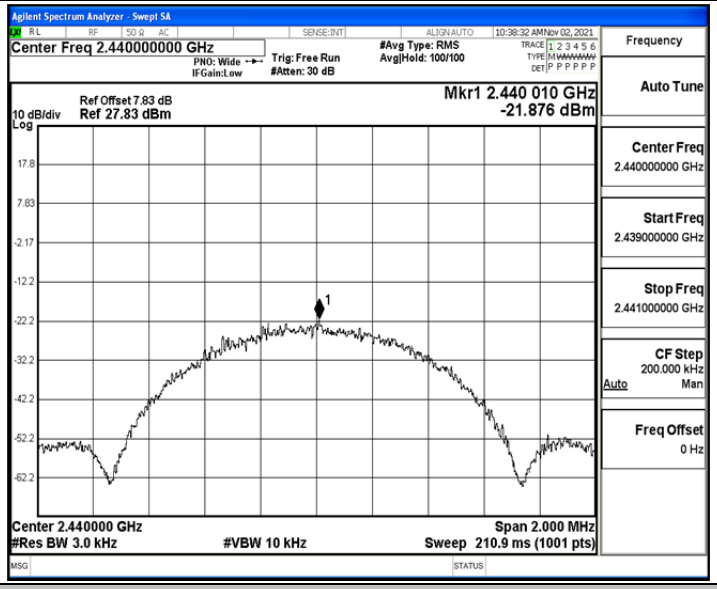
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-23.47	≤8	PASS
		2440	-21.88	≤8	PASS
		2480	-26.66	≤8	PASS
BLE_2M	Ant1	2402	-26	≤8	PASS
		2440	-25.64	≤8	PASS
		2480	-27.81	≤8	PASS

Test Graphs

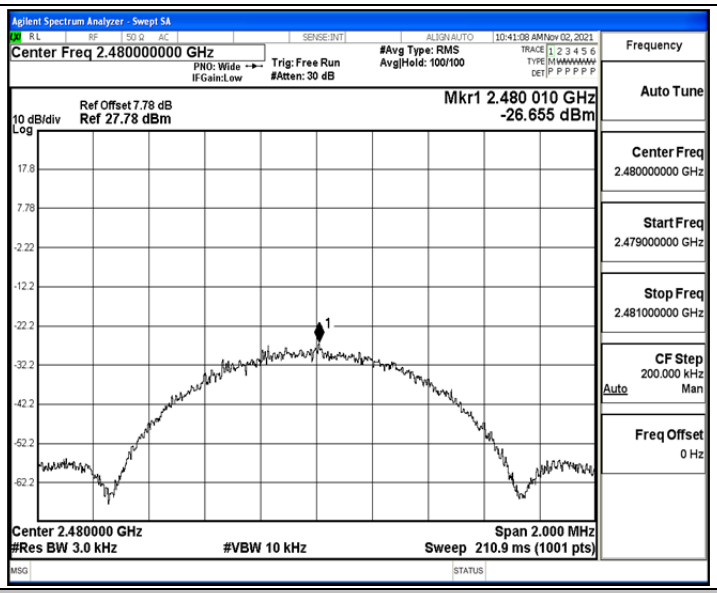
BLE_1M_Ant1_2402



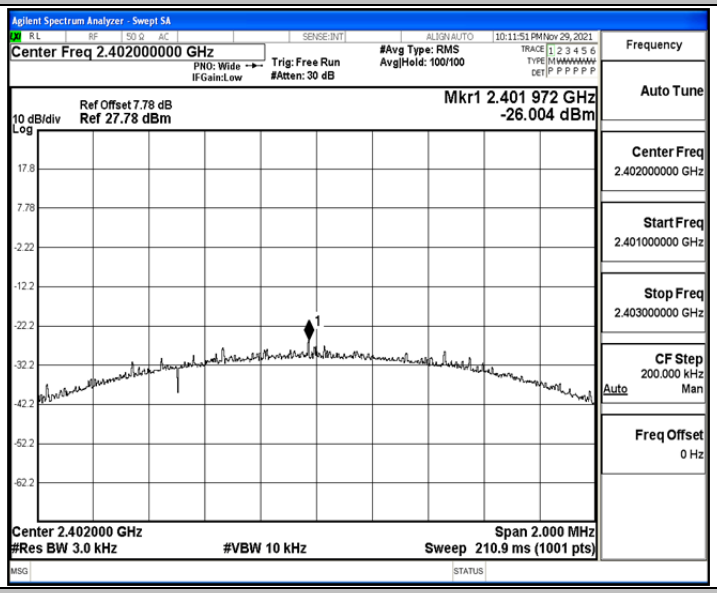
BLE_1M_Ant1_2440



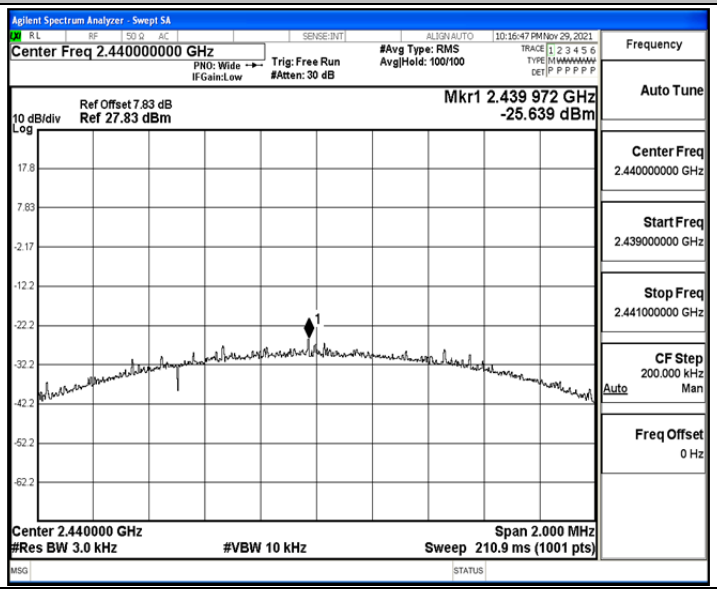
BLE_1M_Ant1_2480

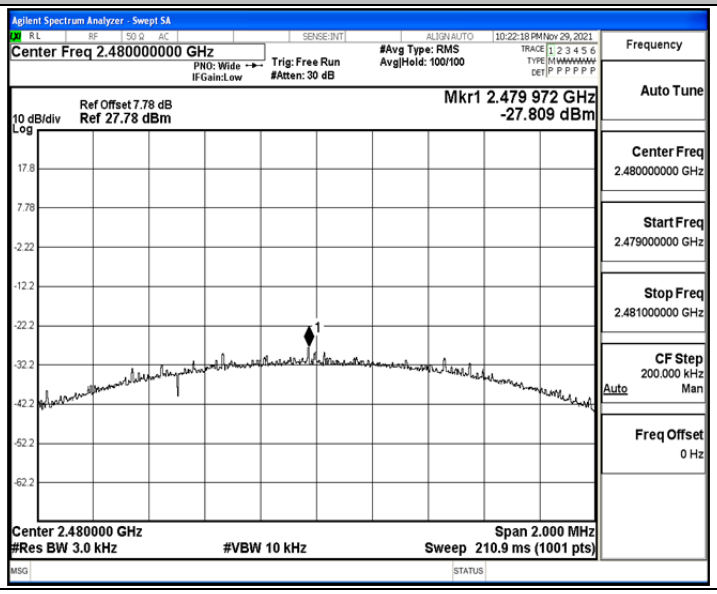


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480


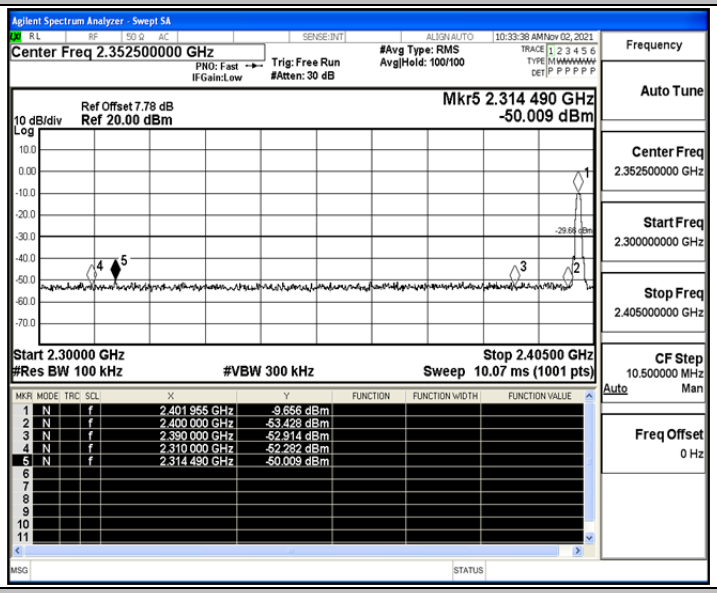
B.4 Band edge measurements

Test Result

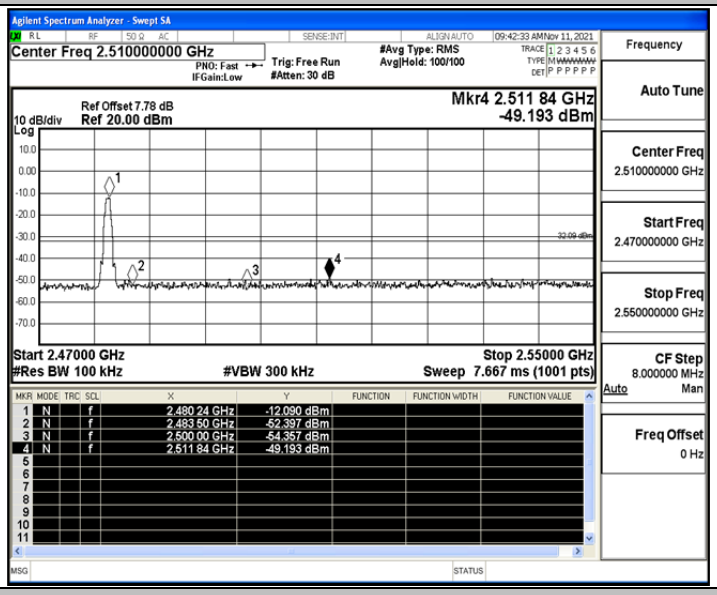
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-9.66	-50.01	≤-29.66	PASS
		High	2480	-12.09	-49.19	≤-32.09	PASS
BLE_2M	Ant1	Low	2402	-9.84	-42.77	≤-29.84	PASS
		High	2480	-9.80	-49.6	≤-29.8	PASS

Test Graphs

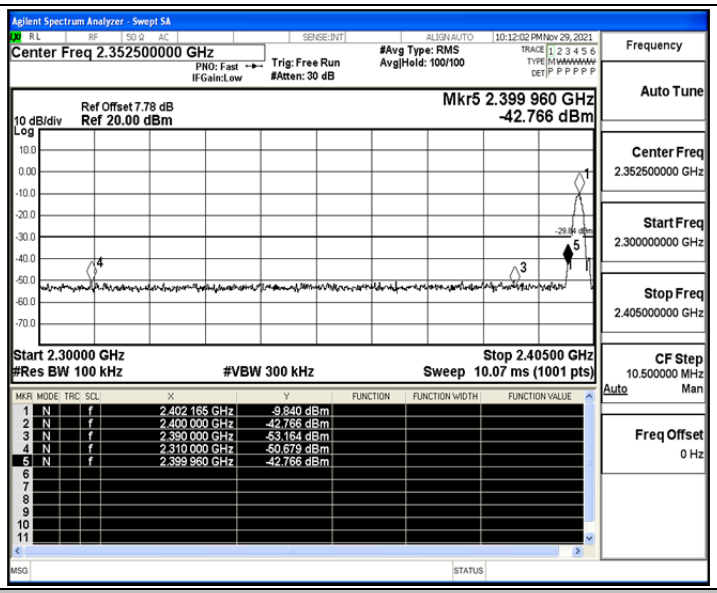
BLE_1M_Ant1_Low_2402



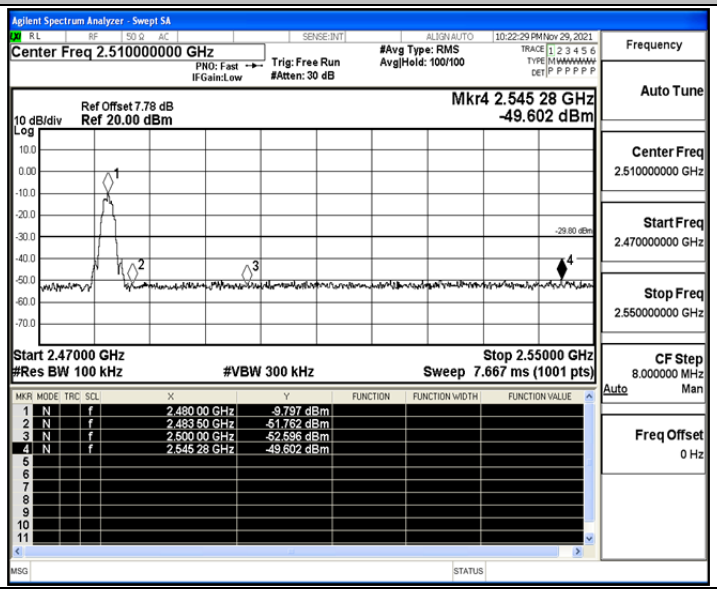
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480

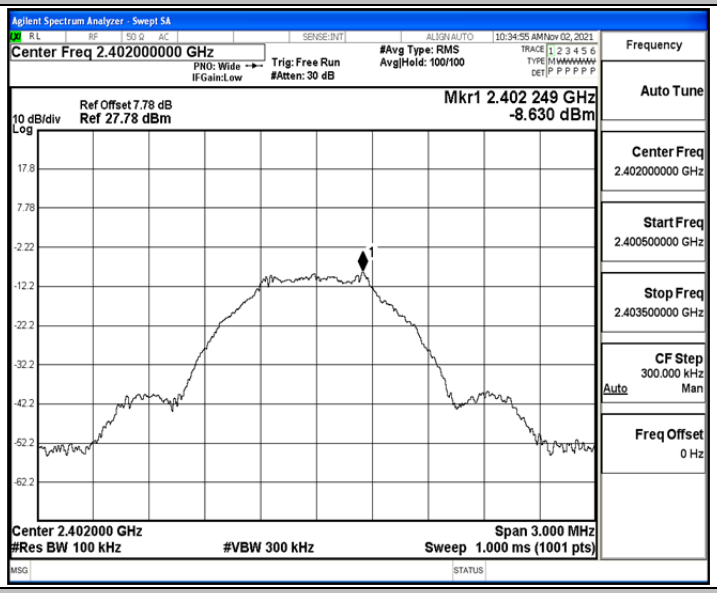
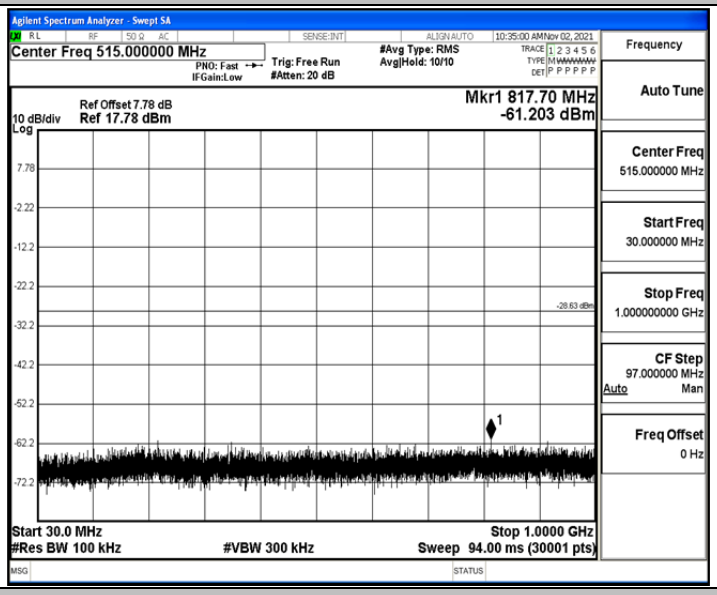


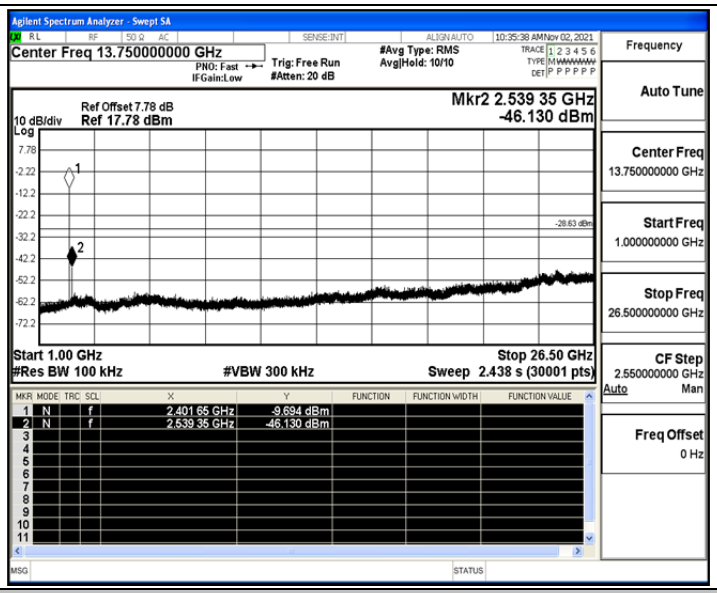
B.5 Conducted Spurious Emission

Test Result

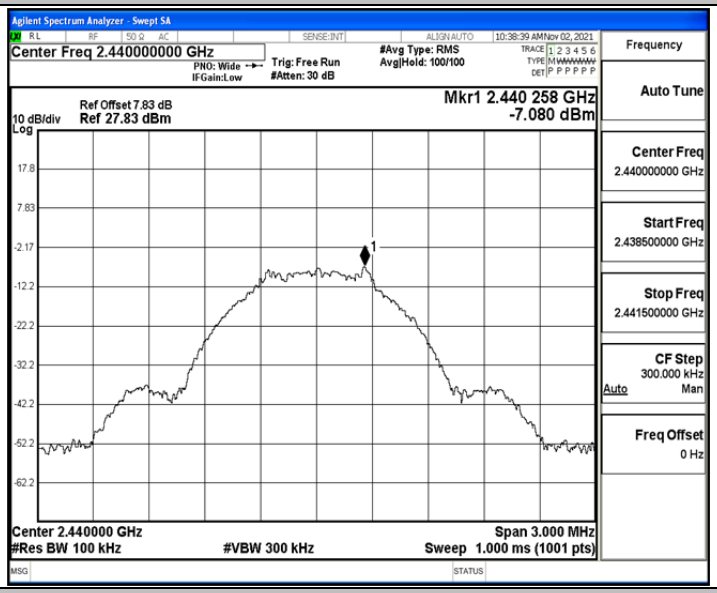
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-8.63	-8.63	---	PASS
			30~1000	-8.63	-61.2	≤-28.63	PASS
			1000~26500	-8.63	-46.13	≤-28.63	PASS
		2440	Reference	-7.08	-7.08	---	PASS
			30~1000	-7.08	-60.91	≤-27.08	PASS
			1000~26500	-7.08	-39.98	≤-27.08	PASS
		2480	Reference	-12.48	-12.48	---	PASS
			30~1000	-12.48	-60.72	≤-32.48	PASS
			1000~26500	-12.48	-47.27	≤-32.48	PASS
BLE_2M	Ant1	2402	Reference	-8.64	-8.64	---	PASS
			30~1000	-8.64	-62.23	≤-28.64	PASS
			1000~26500	-8.64	-47.61	≤-28.64	PASS
		2440	Reference	-8.25	-8.25	---	PASS
			30~1000	-8.25	-61.93	≤-28.25	PASS
			1000~26500	-8.25	-47.06	≤-28.25	PASS
		2480	Reference	-9.91	-9.91	---	PASS
			30~1000	-9.91	-60.93	≤-29.91	PASS
			1000~26500	-9.91	-47.23	≤-29.91	PASS

Test Graphs

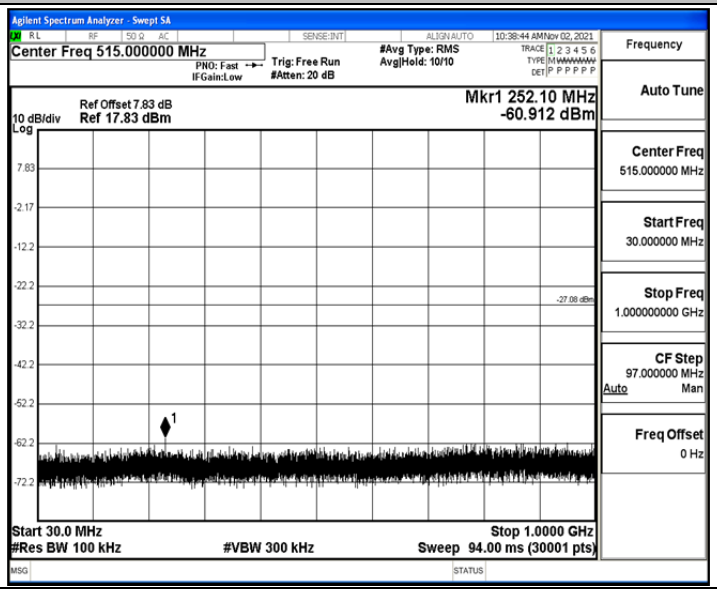
BLE_1M_Ant1_2402_0~Reference

BLE_1M_Ant1_2402_30~1000

BLE_1M_Ant1_2402_1000~26500

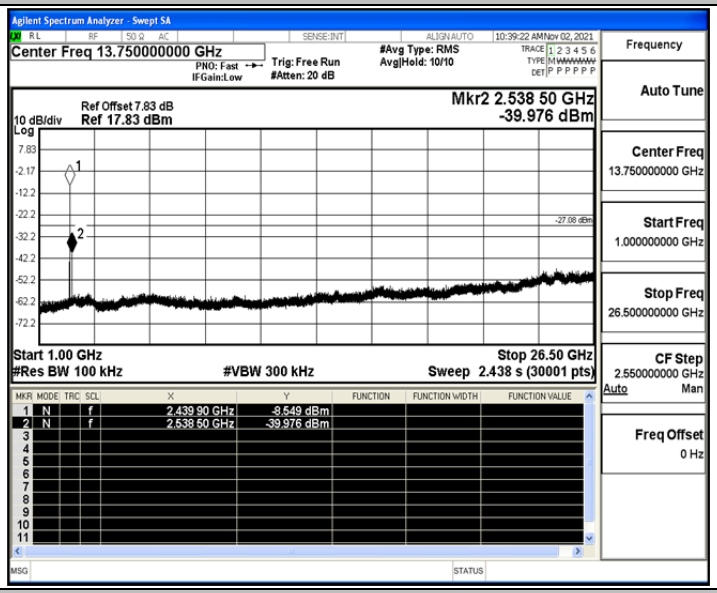
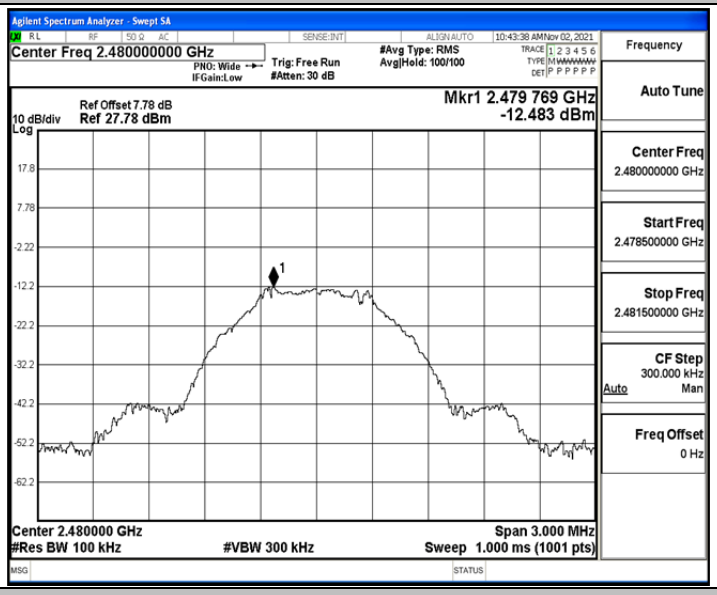


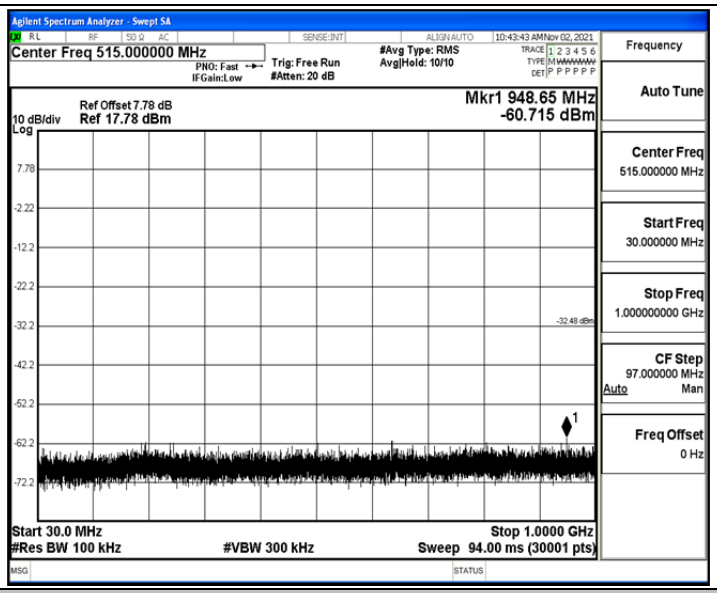
BLE_1M_Ant1_2440_0~Reference



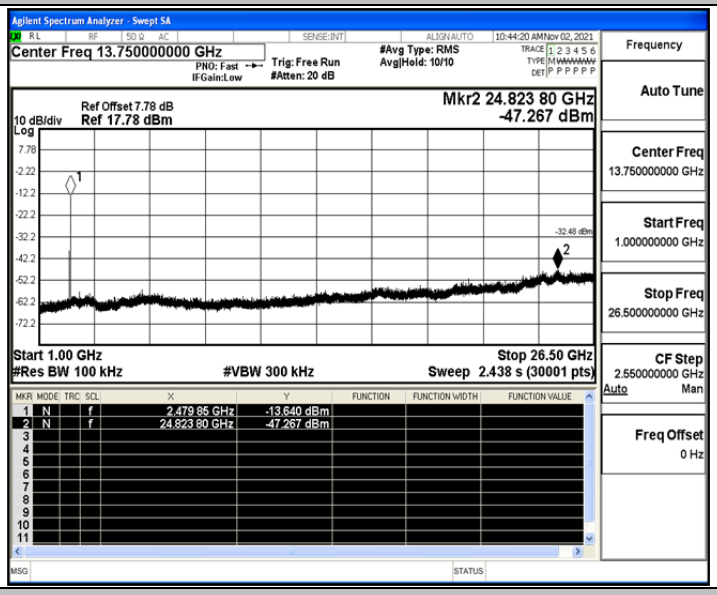
BLE_1M_Ant1_2440_30~1000



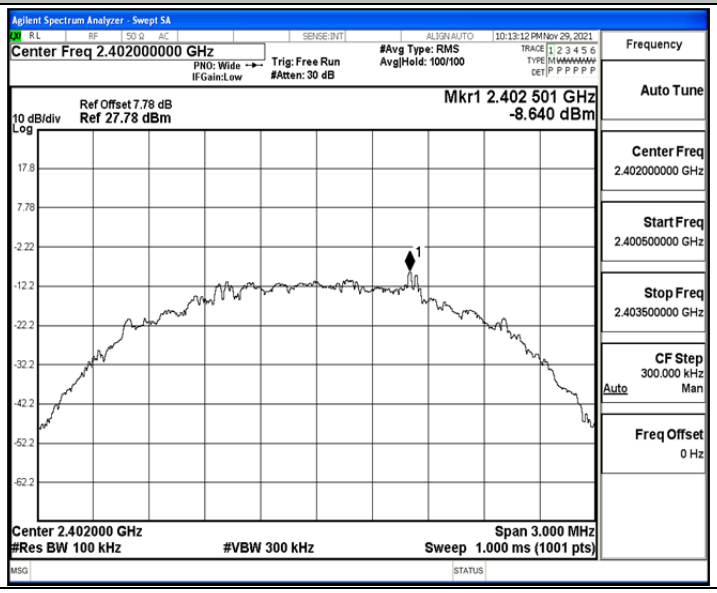
BLE_1M_Ant1_2440_1000~26500

BLE_1M_Ant1_2480_0~Reference

BLE_1M_Ant1_2480_30~1000

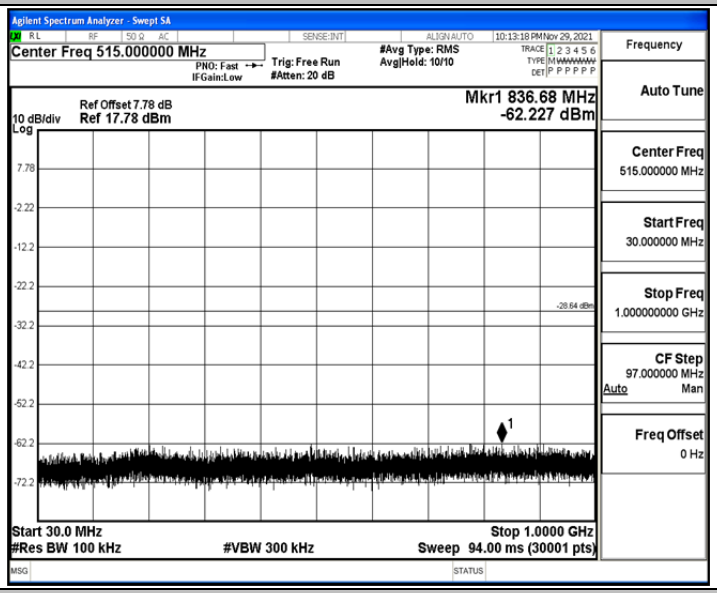
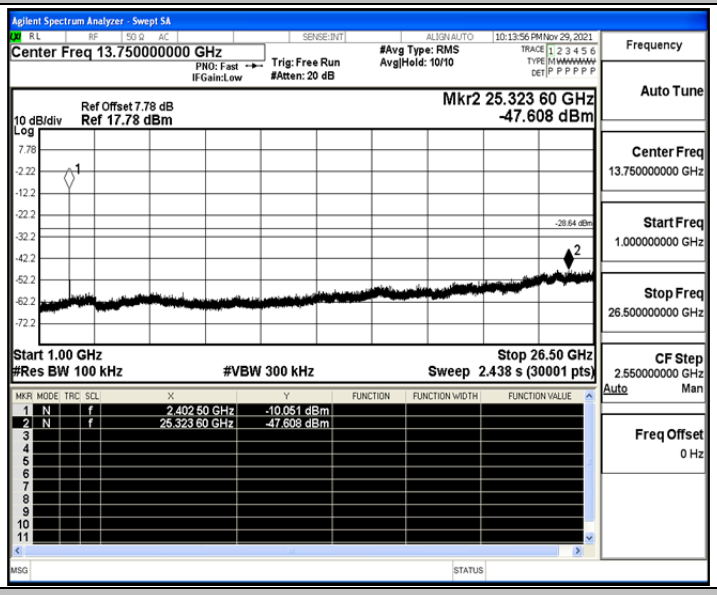


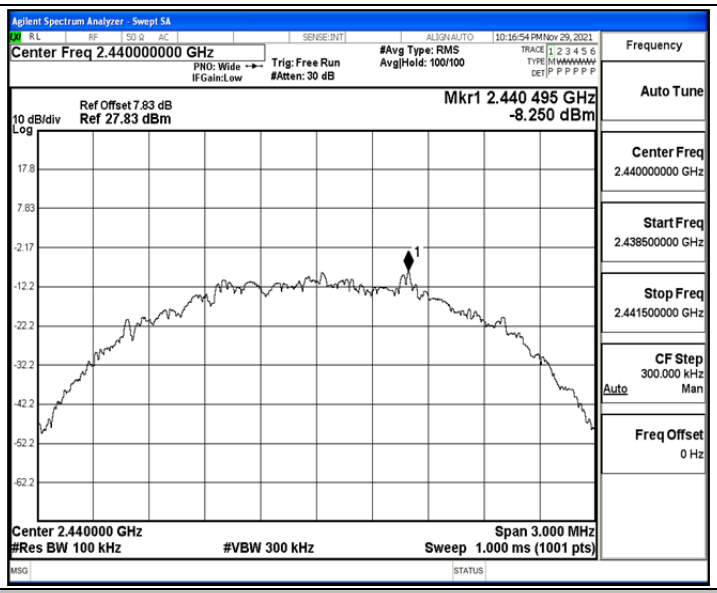
BLE_1M_Ant1_2480_1000~26500



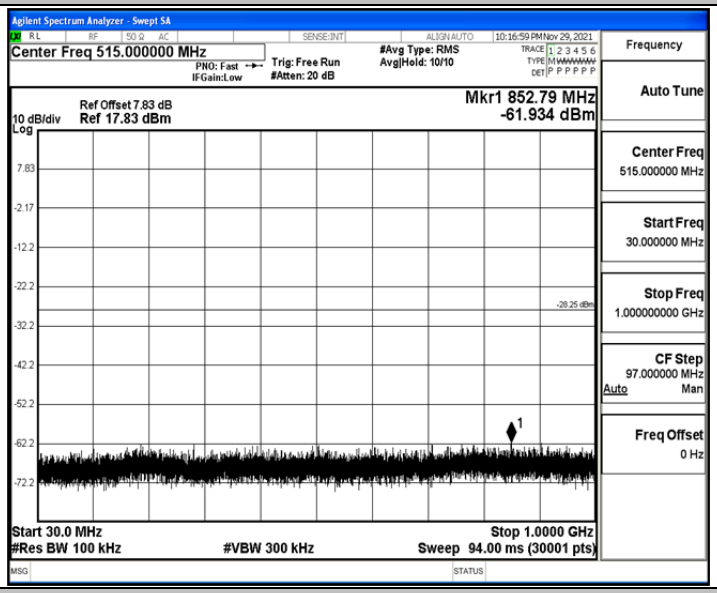
BLE_2M_Ant1_2402_0~Reference



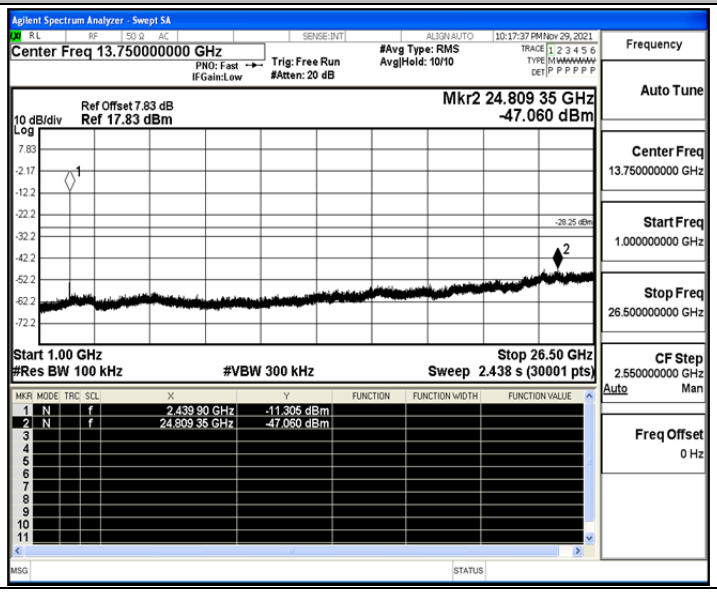
BLE_2M_Ant1_2402_30~1000

BLE_2M_Ant1_2402_1000~26500

BLE_2M_Ant1_2440_0~Reference



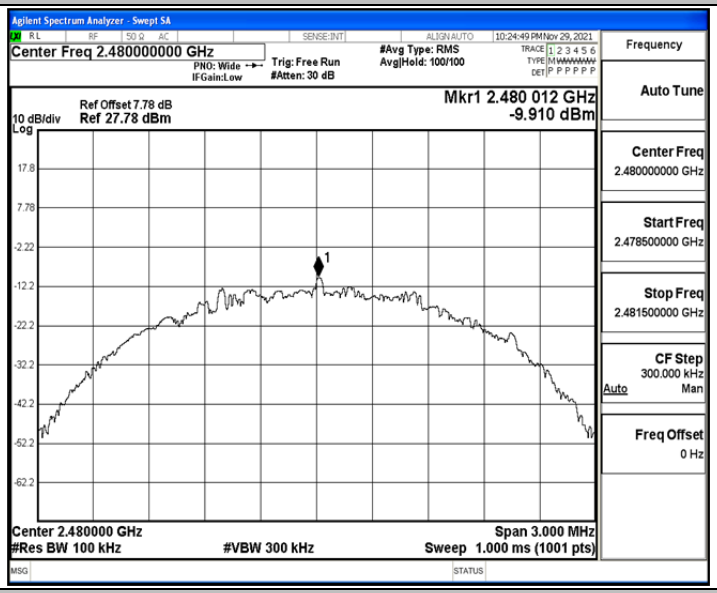
BLE_2M_Ant1_2440_30~1000



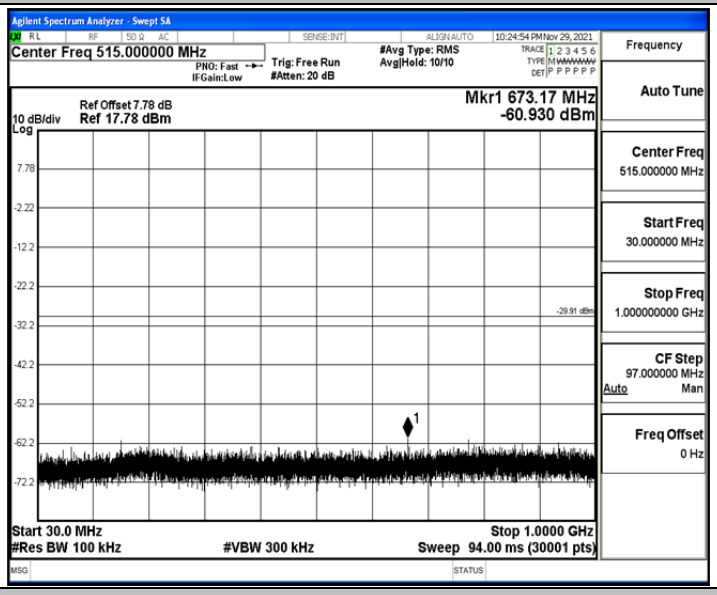
BLE_2M_Ant1_2440_1000~26500



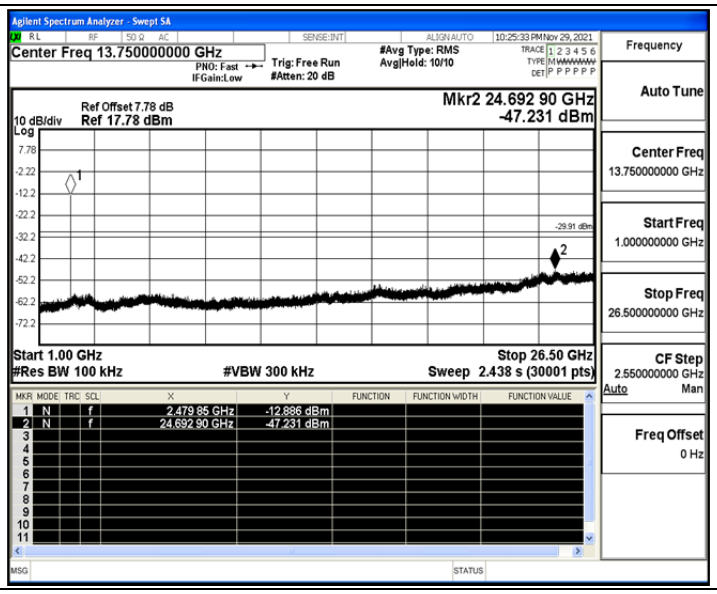
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

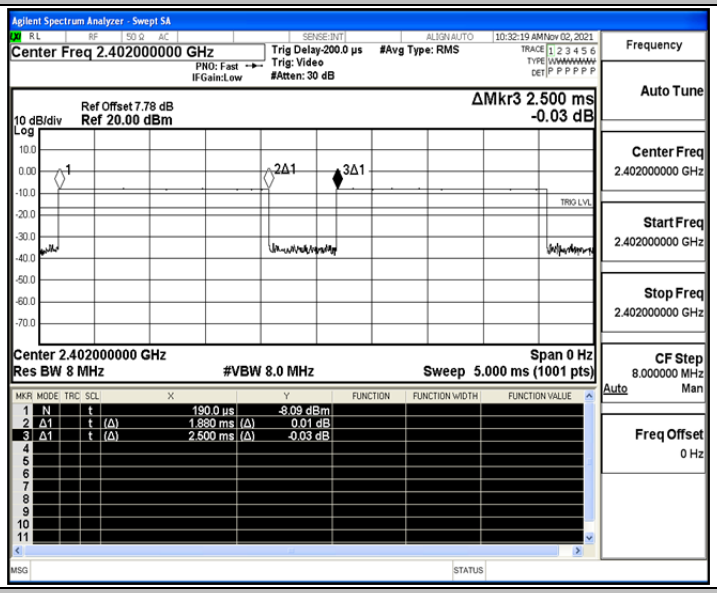
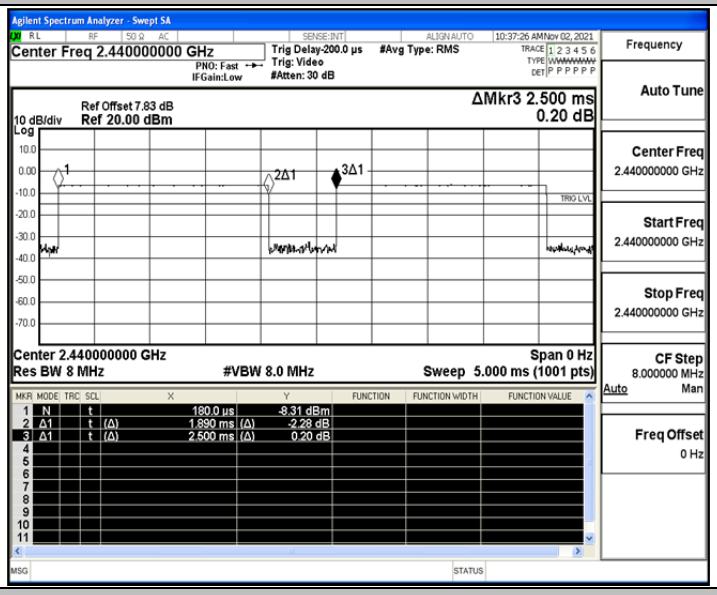

Agilent Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 10/10
10:25:33 PM Nov 29, 2021
Ref Offset 7.78 dB
10 dB/div
Log
Ref 17.78 dBm
Mkr2 24.692 90 GHz
-47.231 dBm
-29.91 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N 1 f 2.479 85 GHz -12.886 dBm
2 N 1 f 24.692 90 GHz -47.231 dBm
Frequency
Auto Tune
Center Freq
13.750000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
2.550000000 GHz
Auto
Man
Freq Offset
0 Hz

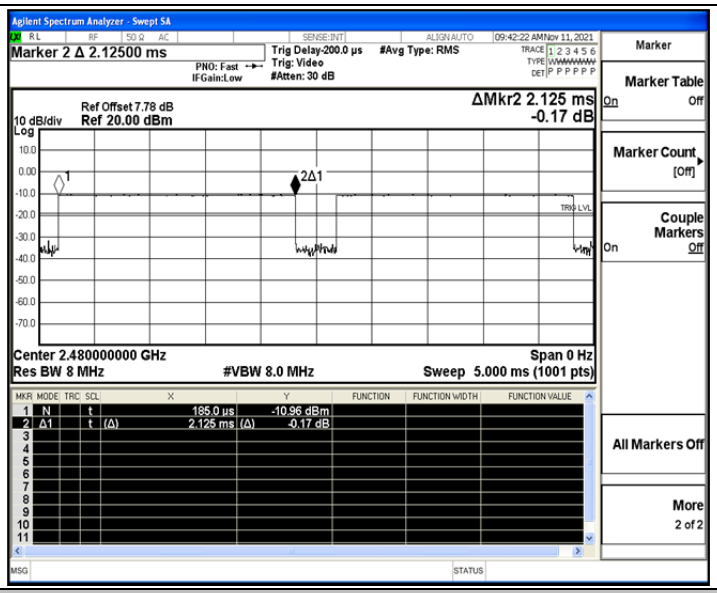
B.6 Duty Cycle

Test Result

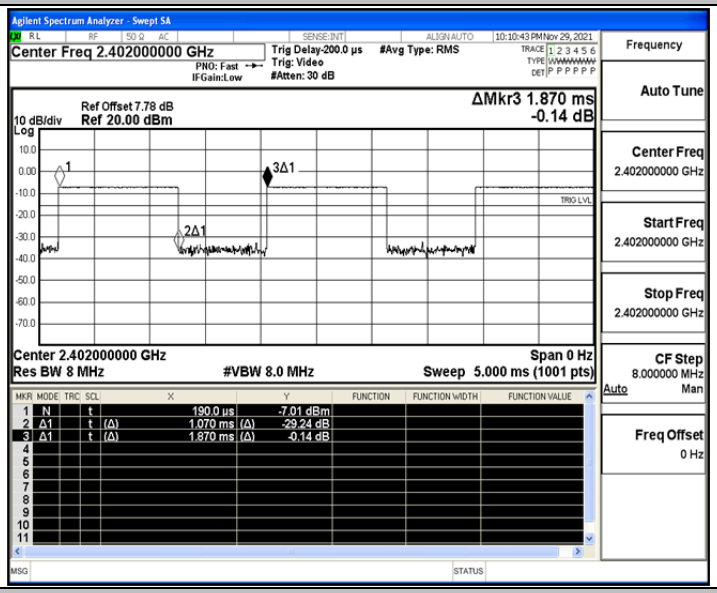
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	1.88	2.50	0.7520	75.20	1.24	---	PASS
		2440	1.89	2.50	0.7560	75.60	1.21	---	PASS
		2480	0.00	0.04	0.0000	100	+∞	---	PASS
BLE_2M	Ant1	2402	1.07	1.87	0.5722	57.22	2.42	---	PASS
		2440	1.07	1.88	0.5691	56.91	2.45	---	PASS
		2480	1.07	1.88	0.5691	56.91	2.45	---	PASS

Test Graphs

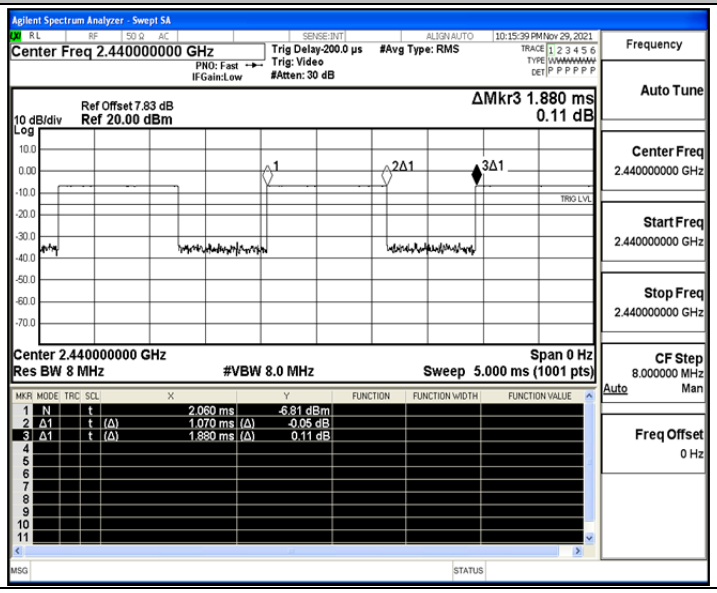
BLE_1M_Ant1_2402

BLE_1M_Ant1_2440

BLE_1M_Ant1_2480

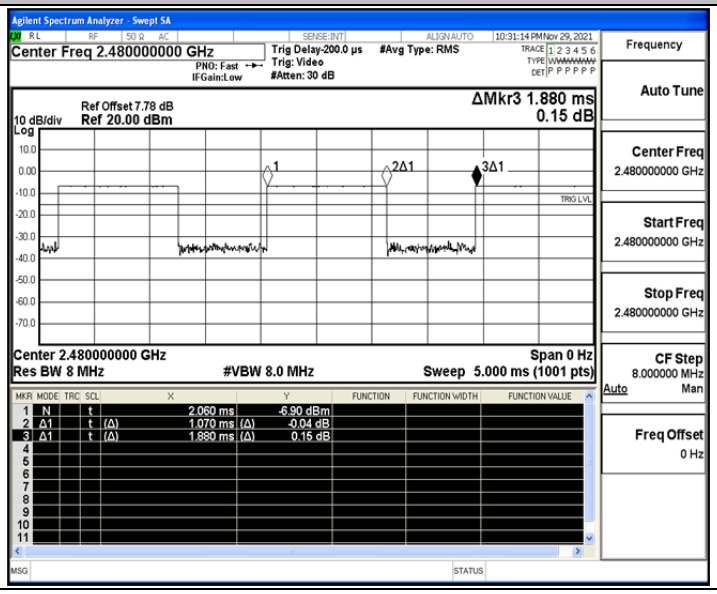


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480


B.7 Emissions in Restricted Bands

Test Result

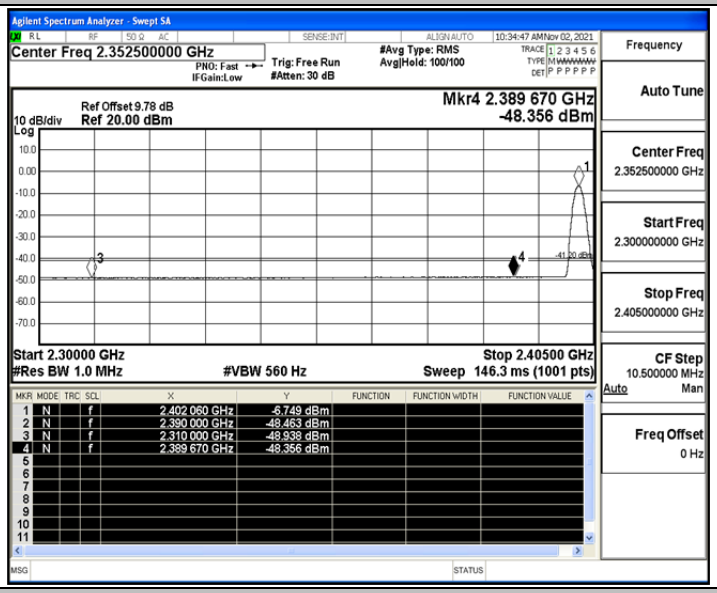
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.94	≤-41.20	46.26	≤54	PASS
				AV	2389.670	-48.36	≤-41.20	46.84	≤54	PASS
				AV	2390.000	-48.46	≤-41.20	46.74	≤54	PASS
				Peak	2310.000	-42.67	≤-21.20	52.53	≤74	PASS
				Peak	2347.460	-38.39	≤-21.20	56.81	≤74	PASS
				Peak	2390.000	-41.17	≤-21.20	54.03	≤74	PASS
		High	2480	AV	2483.500	-48.64	≤-41.20	46.56	≤54	PASS
				AV	2499.840	-48.47	≤-41.20	46.73	≤54	PASS
				AV	2500.000	-48.48	≤-41.20	46.72	≤54	PASS
				Peak	2483.500	-41.33	≤-21.20	53.87	≤74	PASS
				Peak	2494.320	-40.22	≤-21.20	54.98	≤74	PASS
				Peak	2500.000	-43.78	≤-21.20	51.42	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.89	≤-41.20	46.31	≤54	PASS
				AV	2374.865	-48.26	≤-41.20	46.94	≤54	PASS
				AV	2390.000	-48.45	≤-41.20	46.75	≤54	PASS
				Peak	2310.000	-41.7	≤-21.20	53.50	≤74	PASS
				Peak	2378.645	-39.1	≤-21.20	56.10	≤74	PASS
				Peak	2390.000	-42.25	≤-21.20	52.95	≤74	PASS
		High	2480	AV	2483.500	-48.39	≤-41.20	46.81	≤54	PASS
				AV	2483.520	-48.39	≤-41.20	46.81	≤54	PASS
				AV	2500.000	-48.53	≤-41.20	46.67	≤54	PASS
				Peak	2483.500	-43.68	≤-21.20	51.52	≤74	PASS
				Peak	2486.720	-39.62	≤-21.20	55.58	≤74	PASS
				Peak	2500.000	-41.92	≤-21.20	53.28	≤74	PASS

Note：

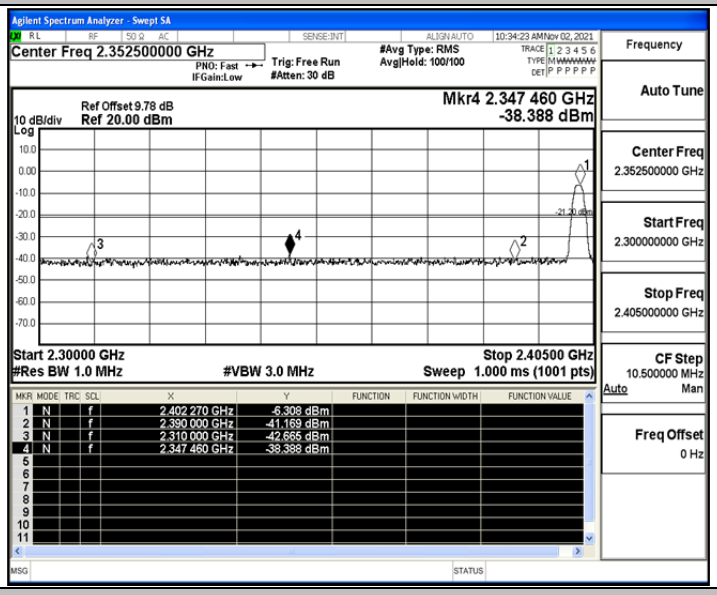
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

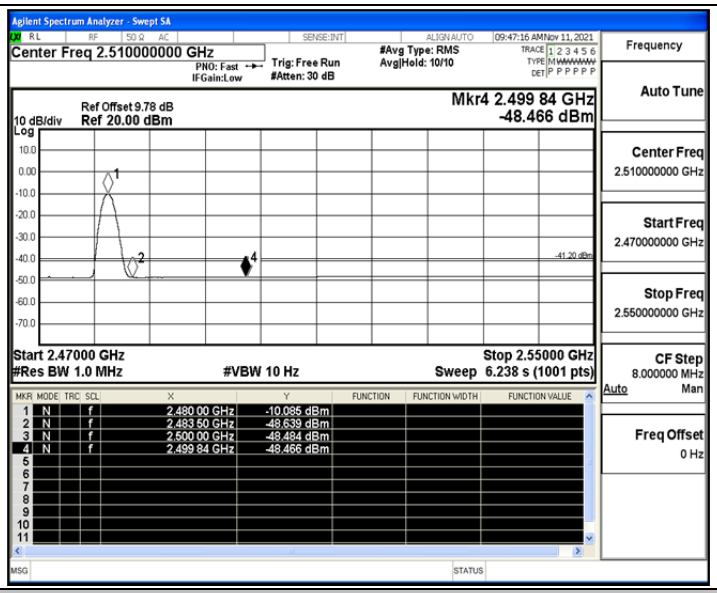
BLE_1M_Ant1_Low_2402_AV



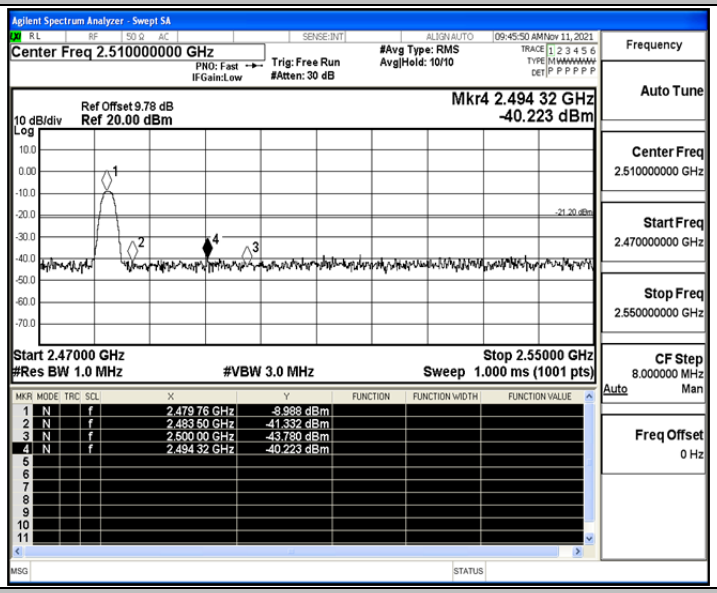
BLE_1M_Ant1_Low_2402_Peak



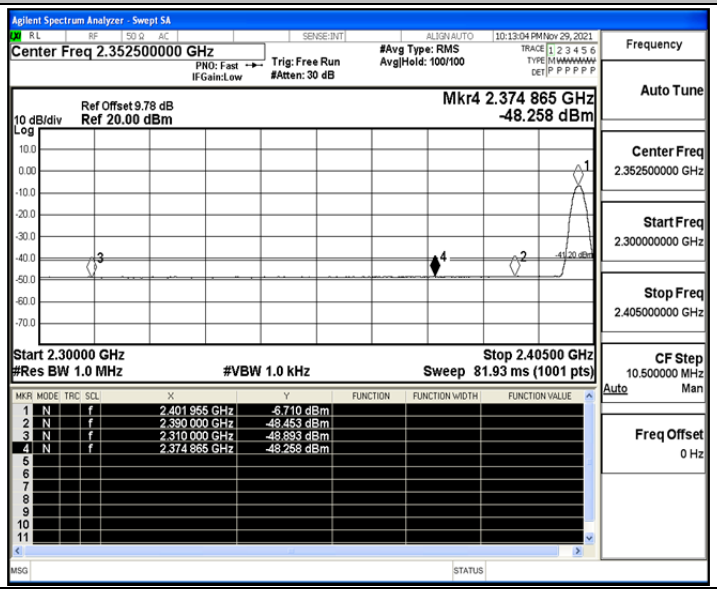
BLE_1M_Ant1_High_2480_AV



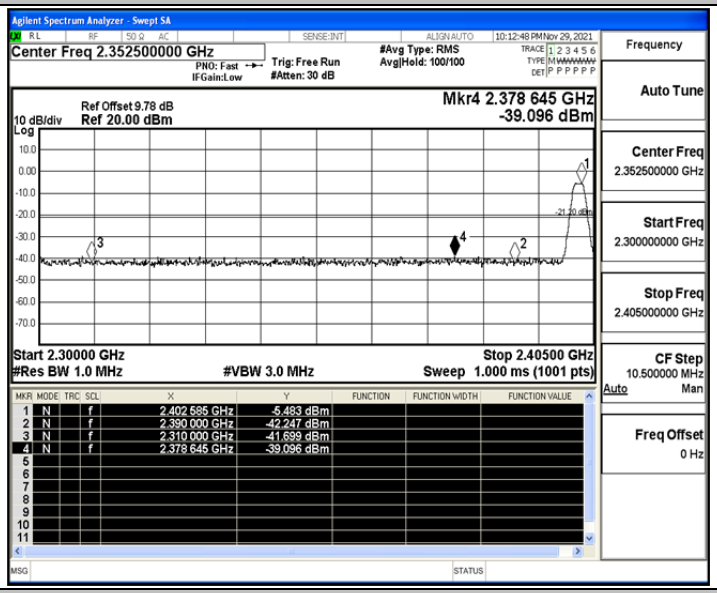
BLE_1M_Ant1_High_2480_Peak



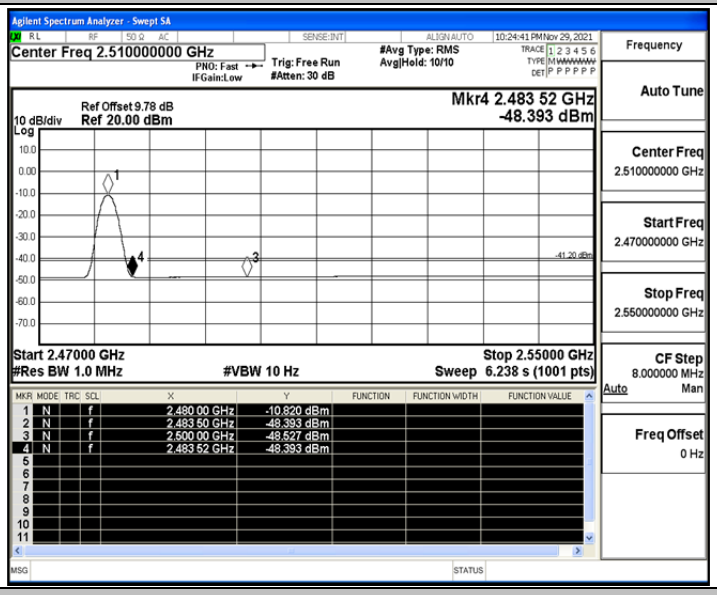
BLE_2M_Ant1_Low_2402_AV



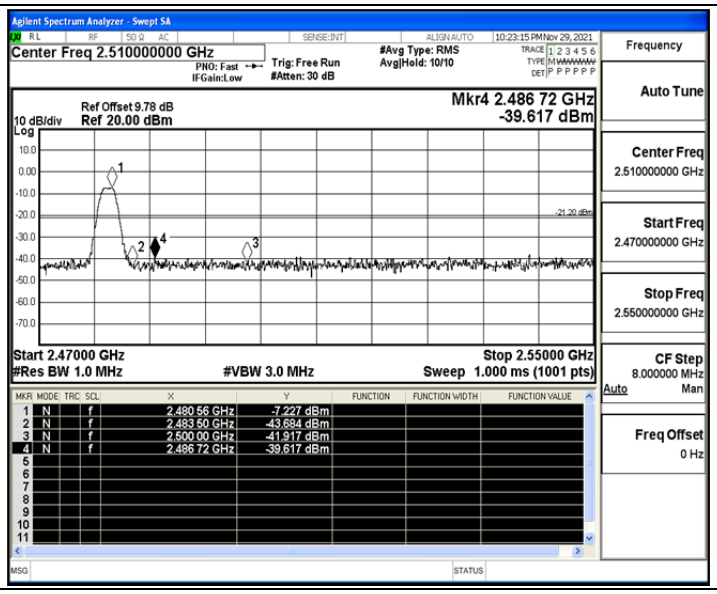
BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.510000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
10:23:15 PM Nov 29, 2021
Ref Offset 9.78 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr4 2.486 72 GHz
-39.617 dBm
-21.20 dBm
Start 2.47000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.55000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.480 56 GHz -7.227 dBm
2 N 1 f 2.483 50 GHz -43.684 dBm
3 N 1 f 2.500 00 GHz -41.917 dBm
4 N 1 f 2.486 72 GHz -39.617 dBm
Frequency
Auto Tune
Center Freq
2.510000000 GHz
Start Freq
2.470000000 GHz
Stop Freq
2.550000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz