



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: WiFi+BT+IR deram color music LED neon light kit

Test Model: NHWSC6-37T5

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
	<i>Nick Peng</i>
Supervised by:	Ling Zhu
	<i>Ling Zhu</i>



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A.1 DTS Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.672	2402.332	0.5	PASS
		2440	0.660	2439.672	2440.332	0.5	PASS
		2480	0.664	2479.668	2480.332	0.5	PASS
BLE_2M	Ant1	2402	1.164	2401.412	2402.576	0.5	PASS
		2440	1.156	2439.416	2440.572	0.5	PASS
		2480	1.156	2479.416	2480.572	0.5	PASS



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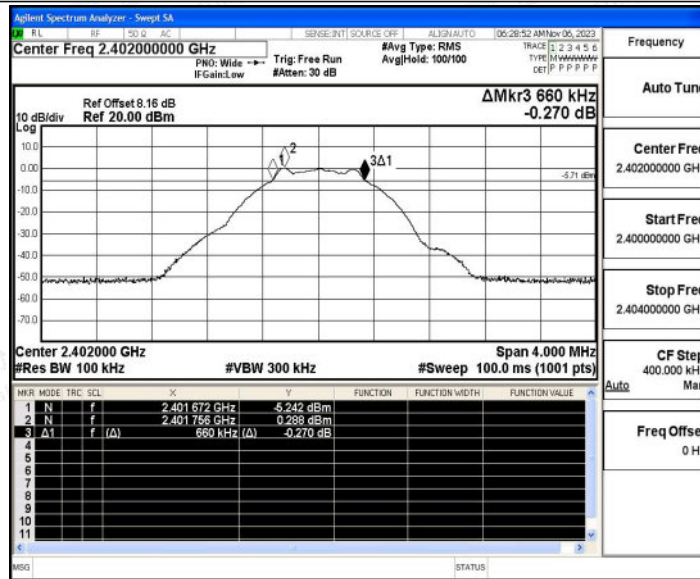
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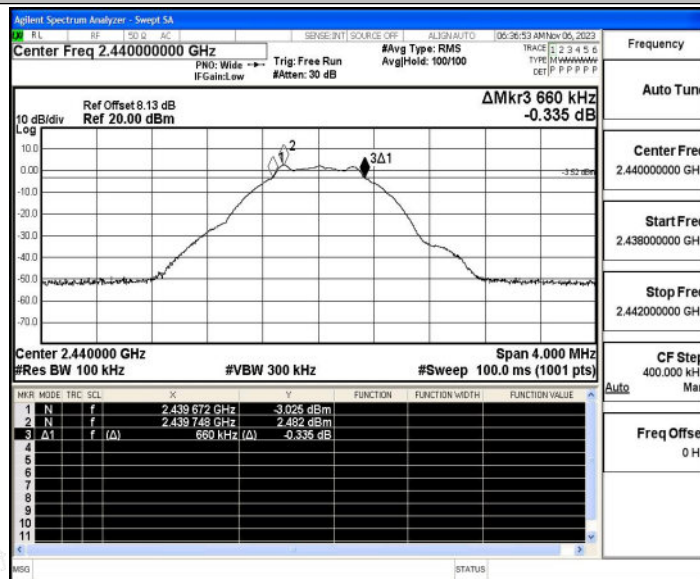


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

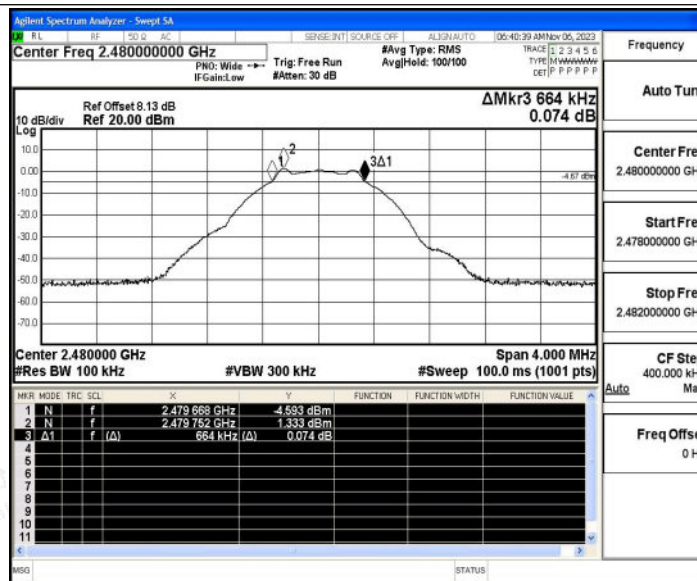


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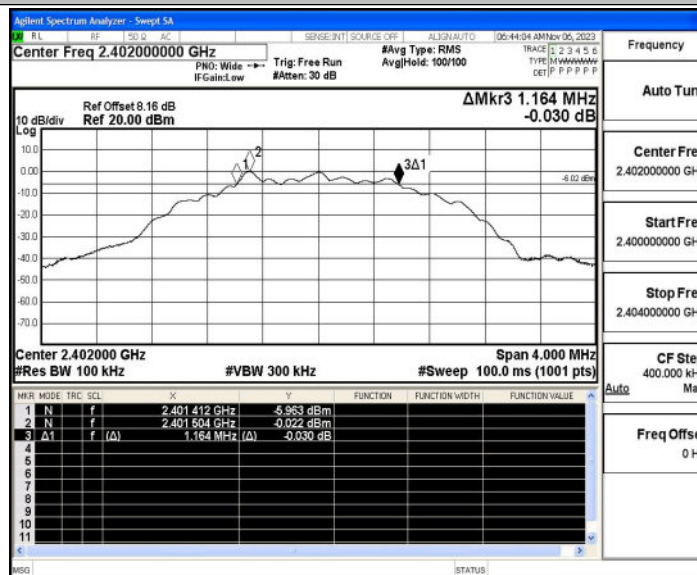
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BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

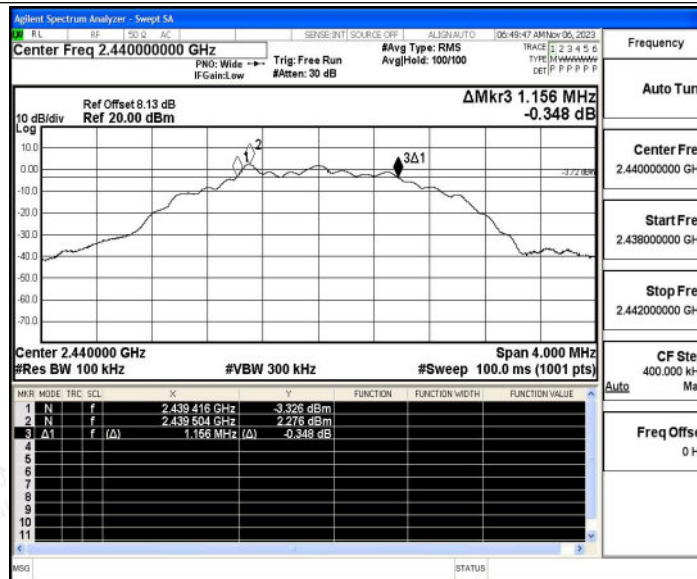


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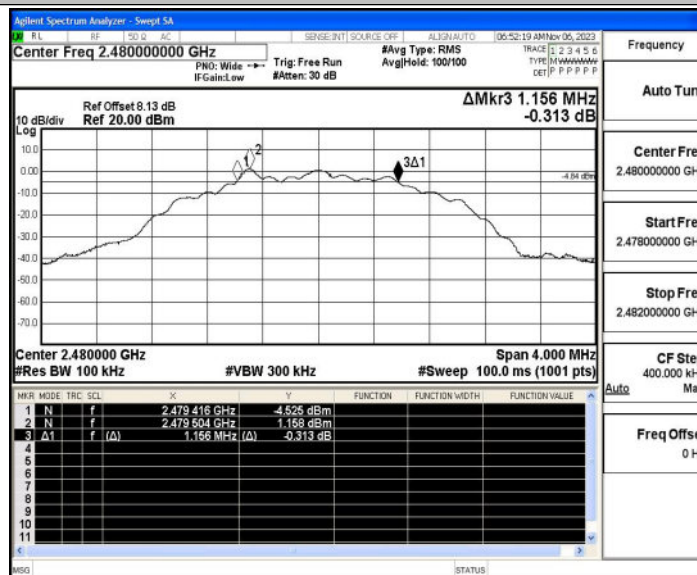
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BLE_2M_Ant1_2480



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A.2 Maximum Peak Conducted Output Power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.58	≤30	PASS
		2440	2.72	≤30	PASS
		2480	1.56	≤30	PASS
BLE_2M	Ant1	2402	0.66	≤30	PASS
		2440	2.79	≤30	PASS
		2480	1.66	≤30	PASS



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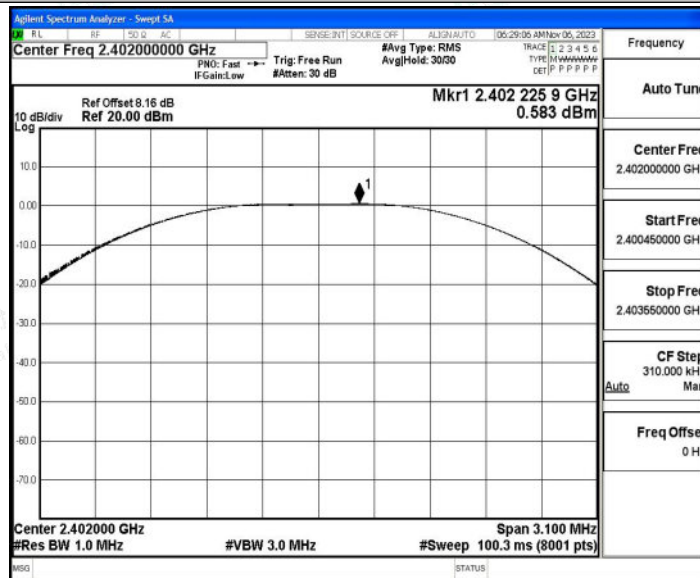
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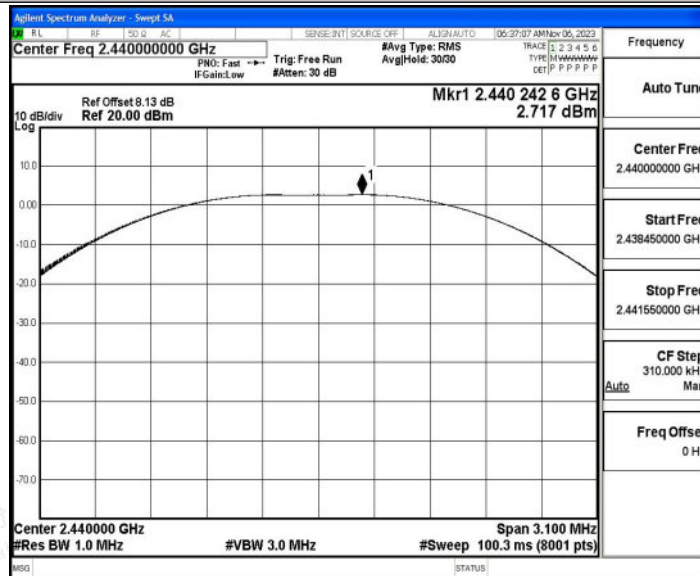


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

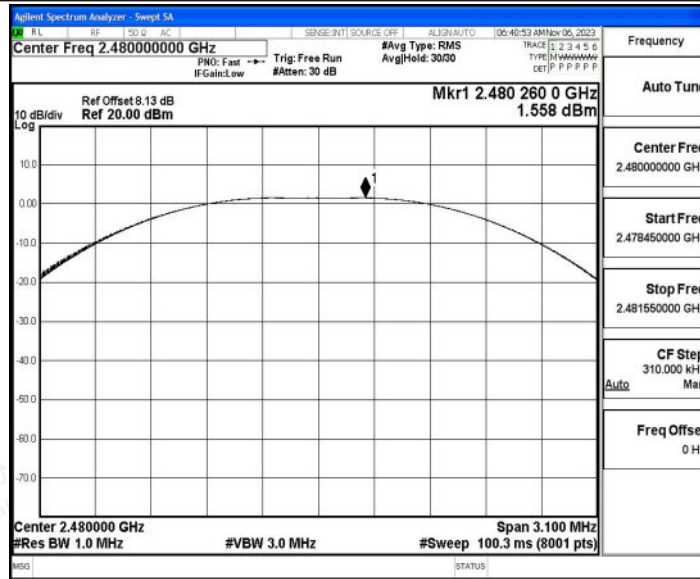


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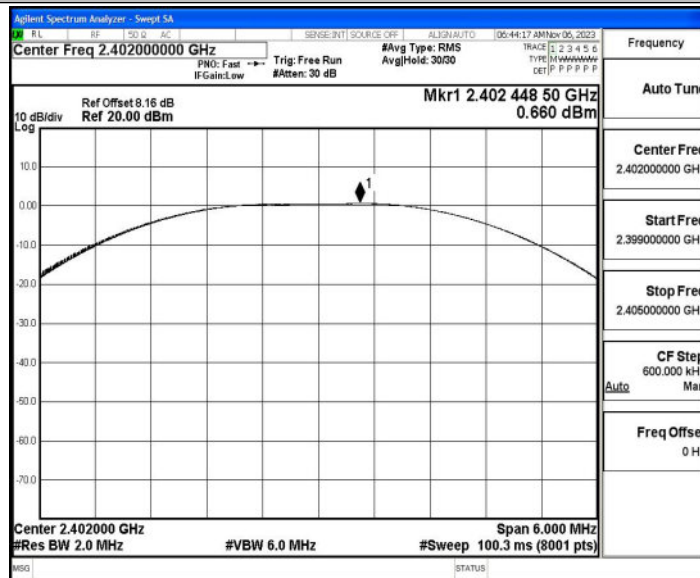
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BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

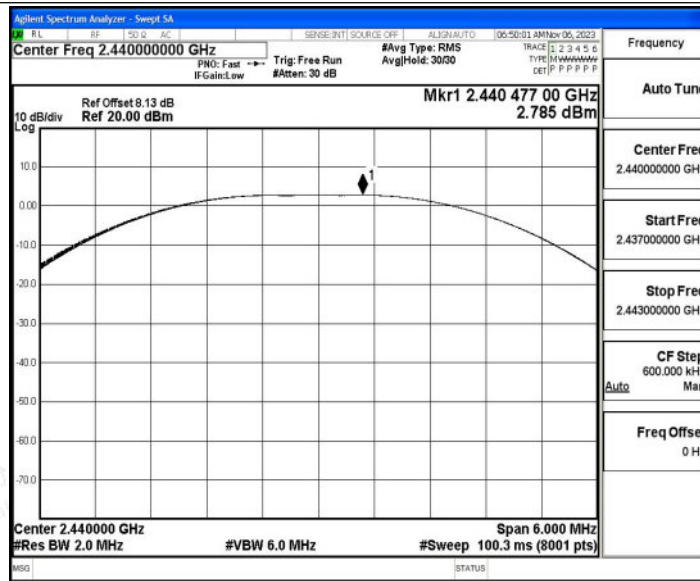


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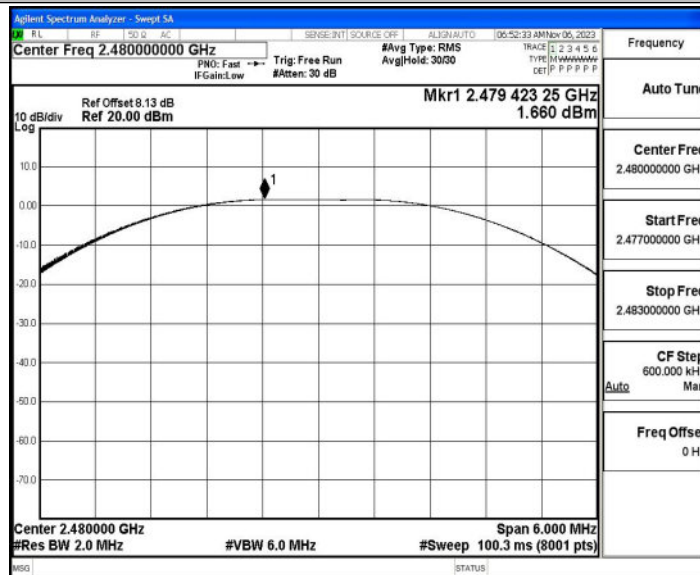
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BLE_2M_Ant1_2480



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A.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.86	≤8.00	PASS
		2440	-13.69	≤8.00	PASS
		2480	-14.83	≤8.00	PASS
BLE_2M	Ant1	2402	-19.14	≤8.00	PASS
		2440	-16.77	≤8.00	PASS
		2480	-18.53	≤8.00	PASS



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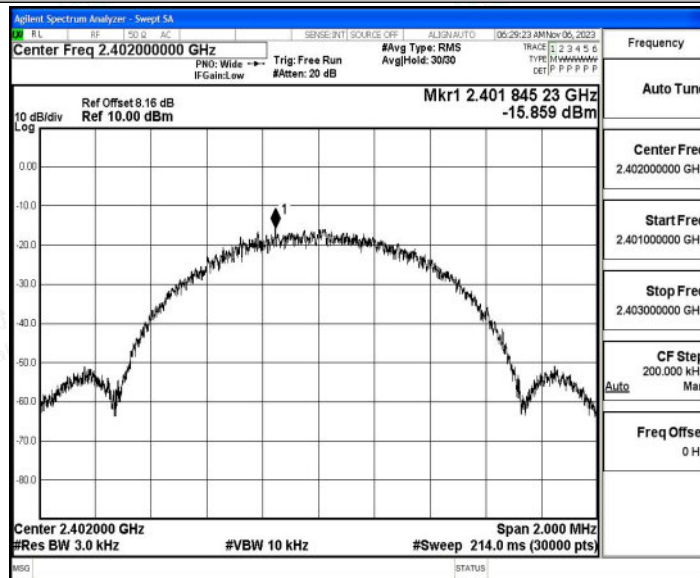
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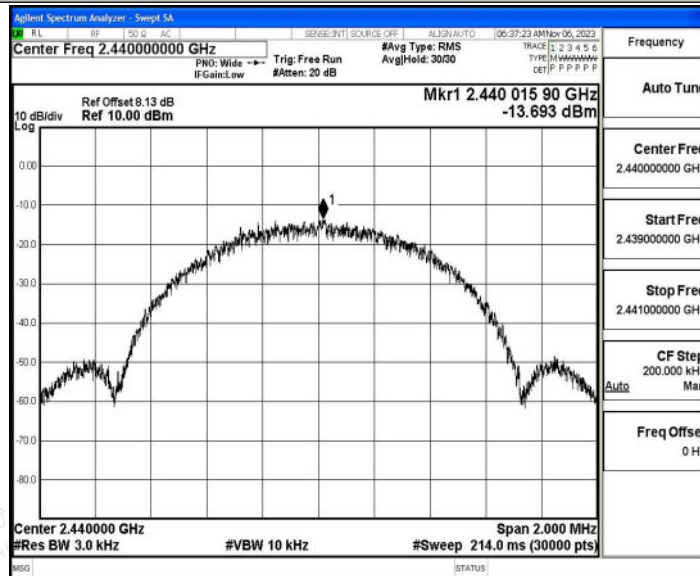


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

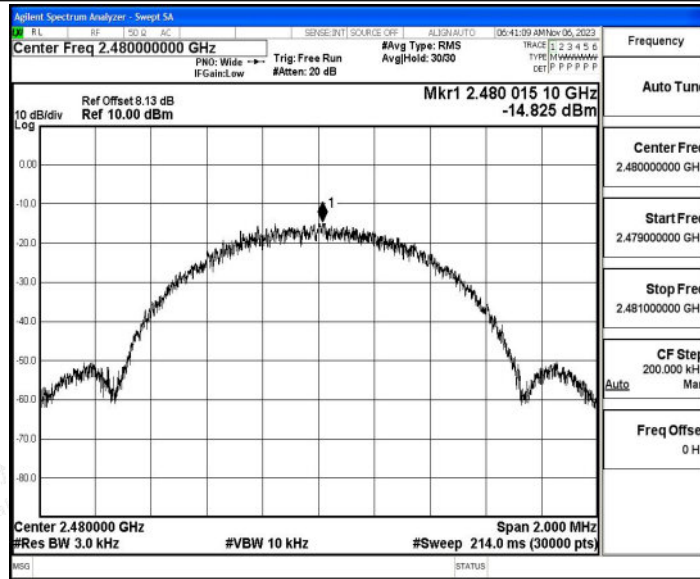


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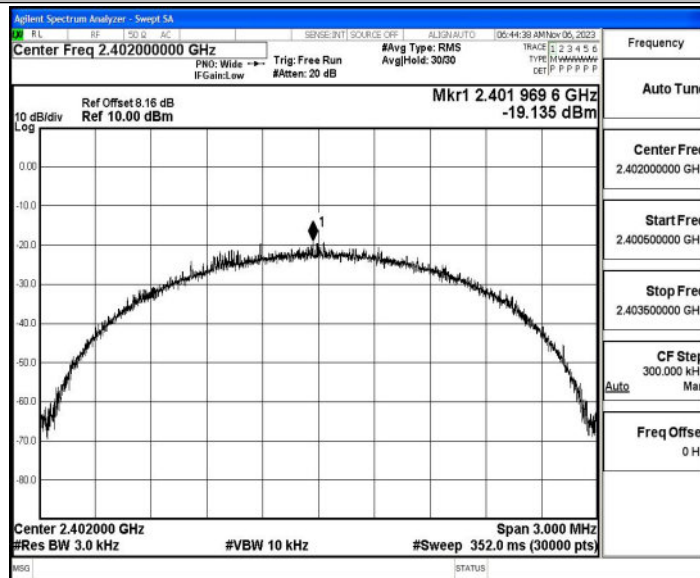
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BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

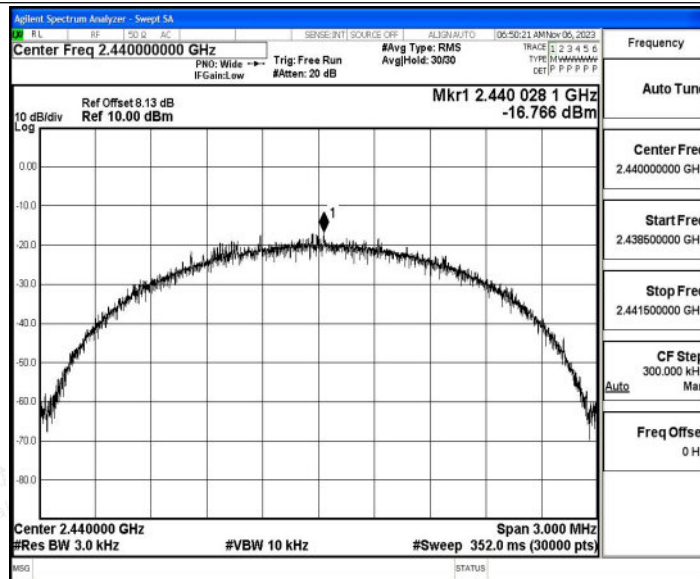


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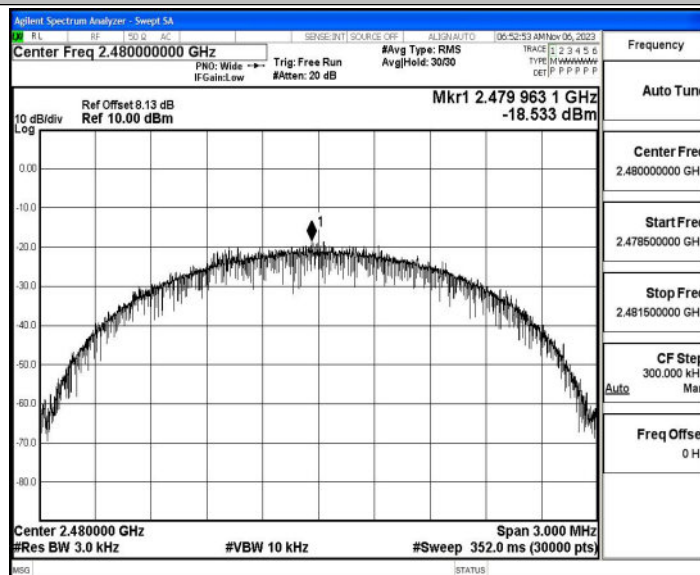
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BLE_2M_Ant1_2480



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A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.56	-49.59	≤ -20.56	PASS
		High	2480	1.25	-50.26	≤ -18.75	PASS
BLE_2M	Ant1	Low	2402	-1.81	-46.24	≤ -21.81	PASS
		High	2480	1.04	-49.59	≤ -18.96	PASS



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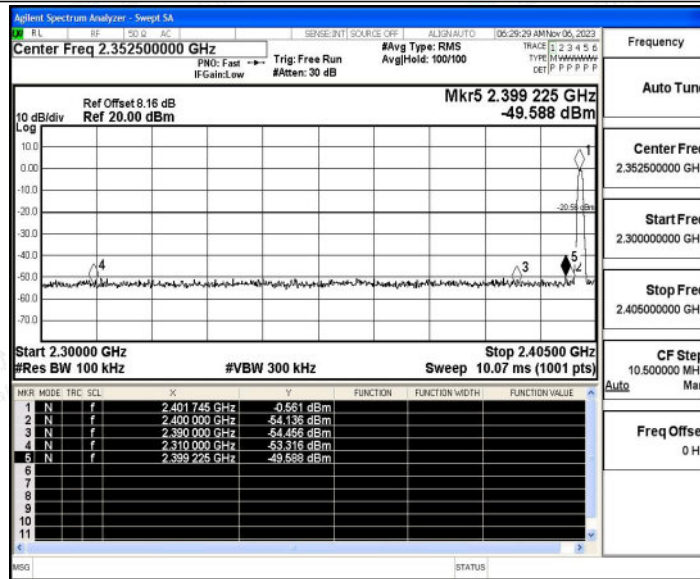
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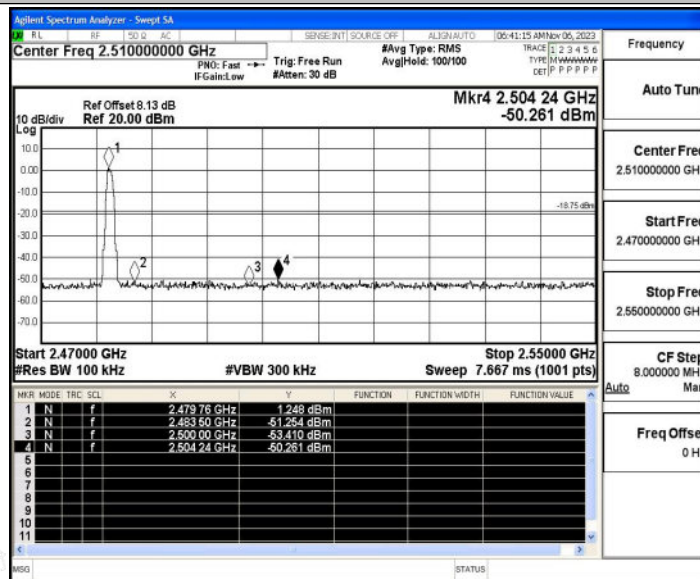


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402

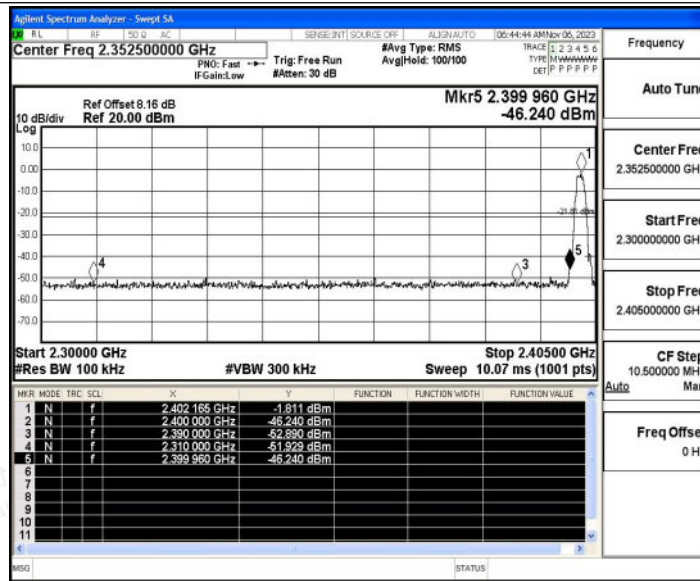


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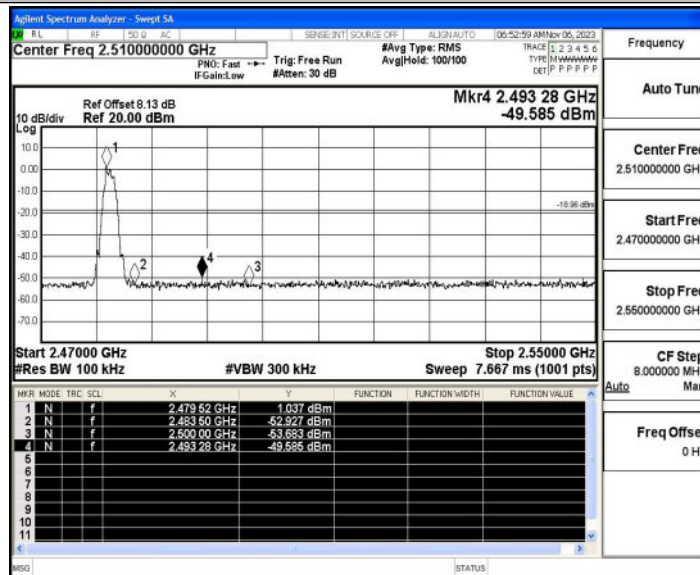
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BLE_2M_Ant1_High_2480



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A.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.29	0.29	---	PASS
			30~1000	0.29	-61.19	≤-19.71	PASS
			1000~26500	0.29	-48.79	≤-19.71	PASS
		2440	Reference	2.45	2.45	---	PASS
			30~1000	2.45	-61.24	≤-17.55	PASS
			1000~26500	2.45	-49.18	≤-17.55	PASS
		2480	Reference	1.34	1.34	---	PASS
			30~1000	1.34	-62.1	≤-18.66	PASS
			1000~26500	1.34	-49.25	≤-18.66	PASS
BLE_2M	Ant1	2402	Reference	-0.18	-0.18	---	PASS
			30~1000	-0.18	-61.36	≤-20.18	PASS
			1000~26500	-0.18	-49.17	≤-20.18	PASS
		2440	Reference	2.28	2.28	---	PASS
			30~1000	2.28	-61.73	≤-17.72	PASS
			1000~26500	2.28	-49.64	≤-17.72	PASS
		2480	Reference	1.17	1.17	---	PASS
			30~1000	1.17	-62.2	≤-18.83	PASS
			1000~26500	1.17	-49.03	≤-18.83	PASS



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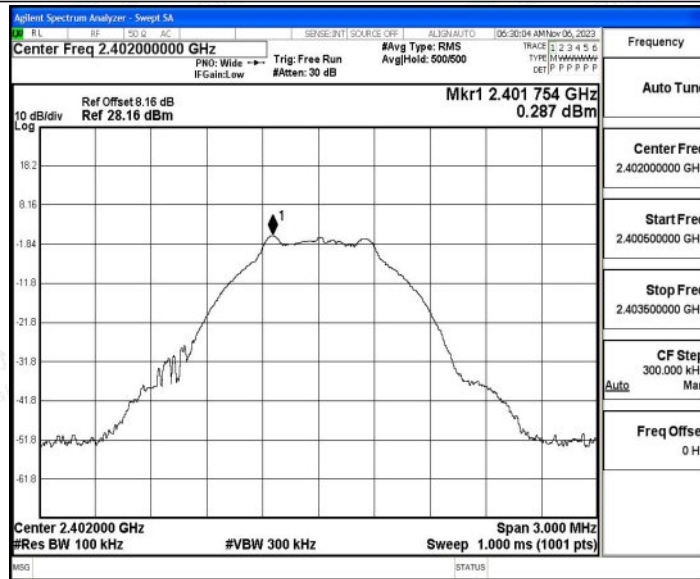
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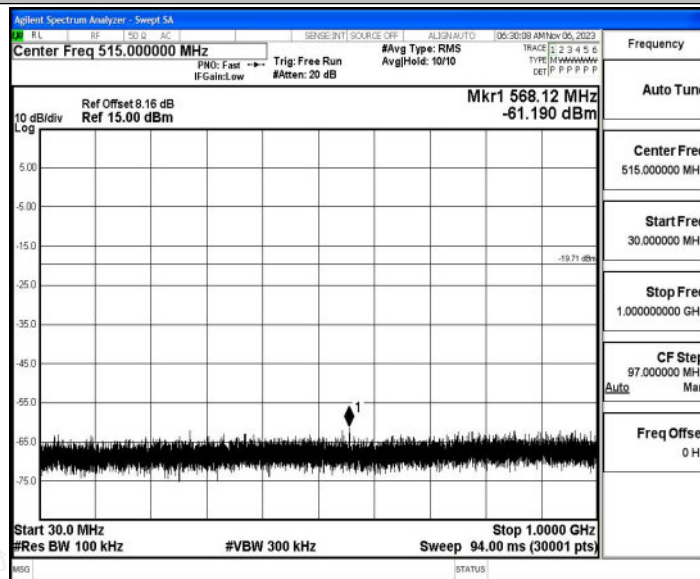


Test Graphs

BLE_1M_Ant1_2402_0~Reference



BLE_1M_Ant1_2402_30~1000



BLE_1M_Ant1_2402_1000~26500

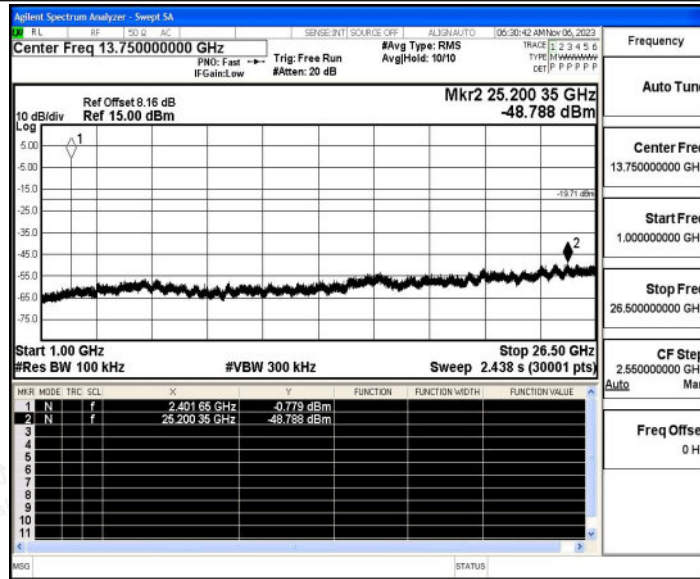


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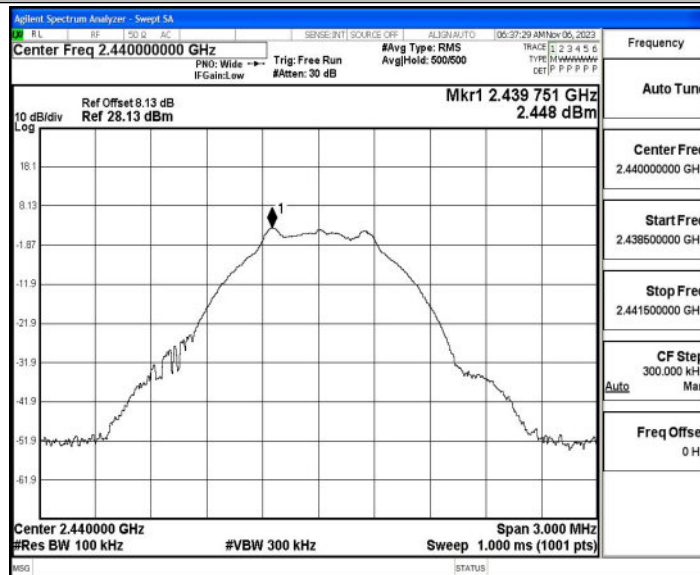
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BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000

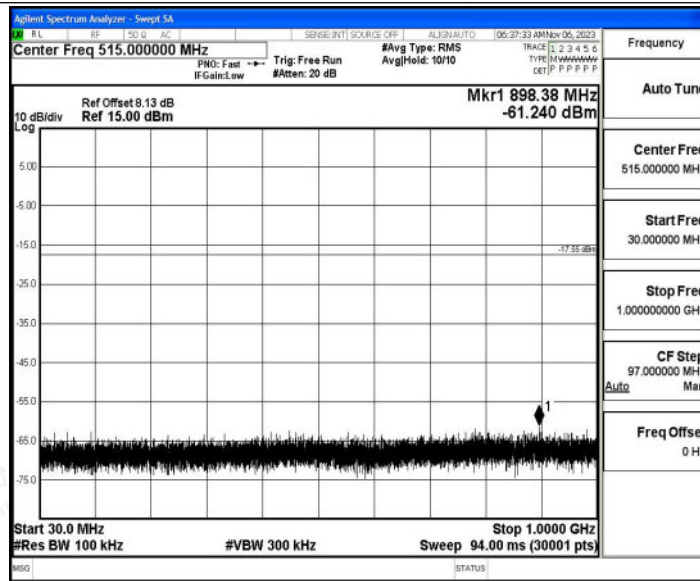


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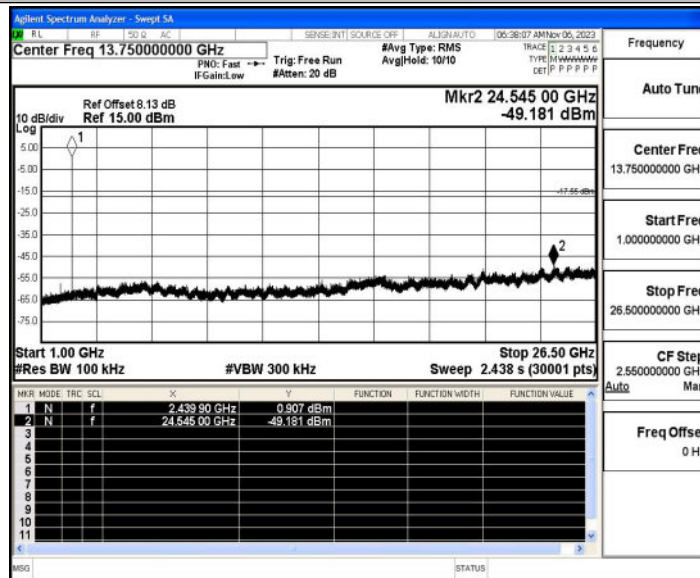
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BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_0~Reference

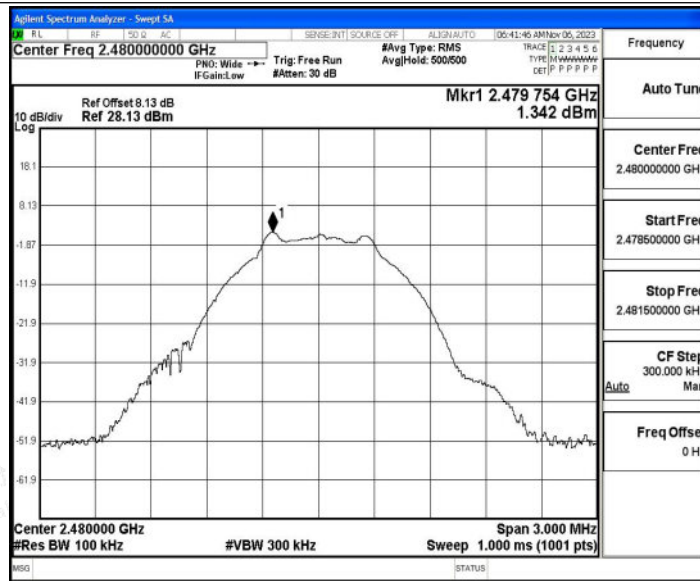


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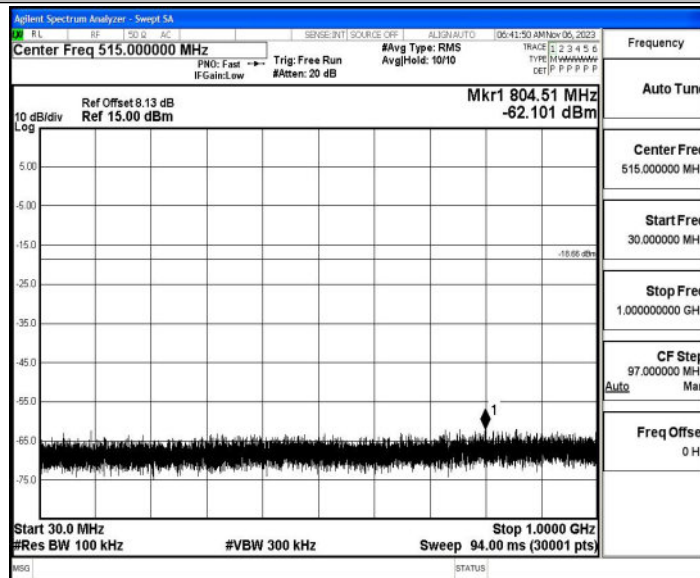
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BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

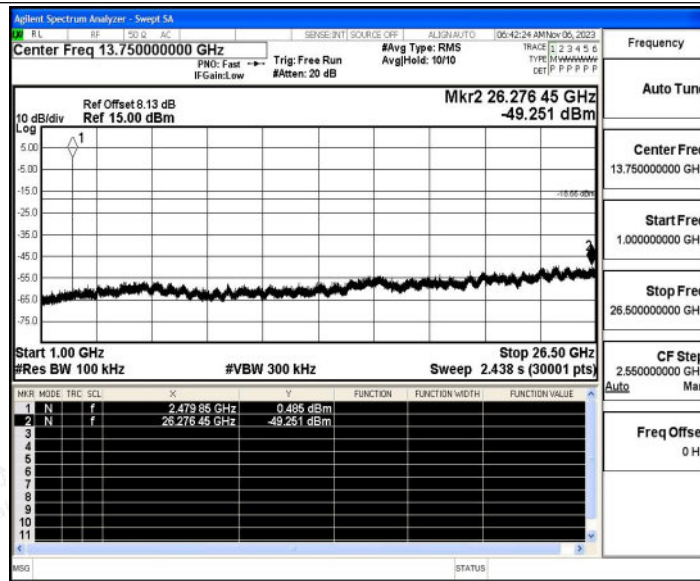


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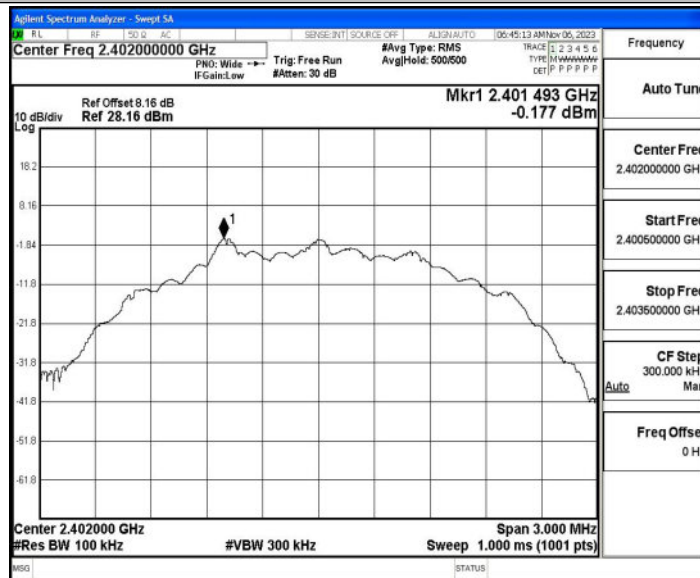
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BLE_2M_Ant1_2402_0~Reference



BLE_2M_Ant1_2402_30~1000

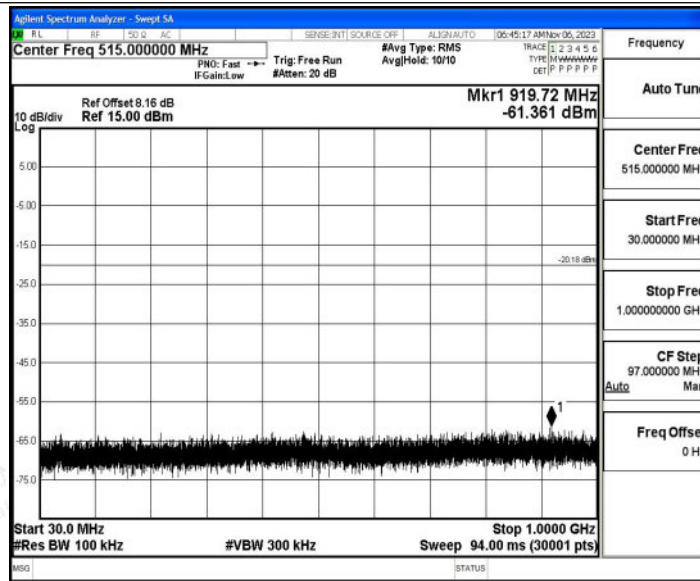


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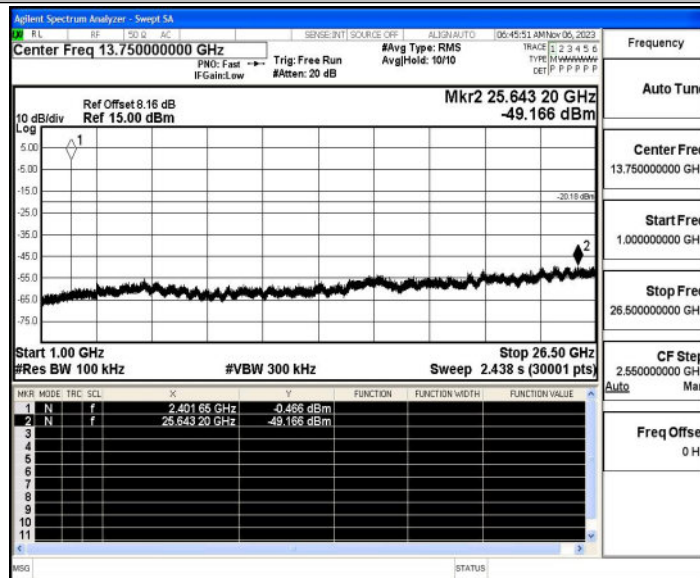
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BLE_2M_Ant1_2402_1000~26500



BLE_2M_Ant1_2440_0~Reference

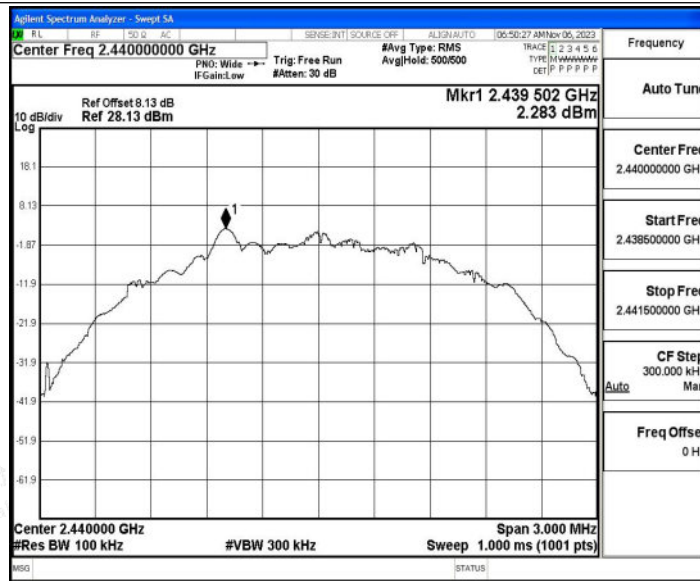


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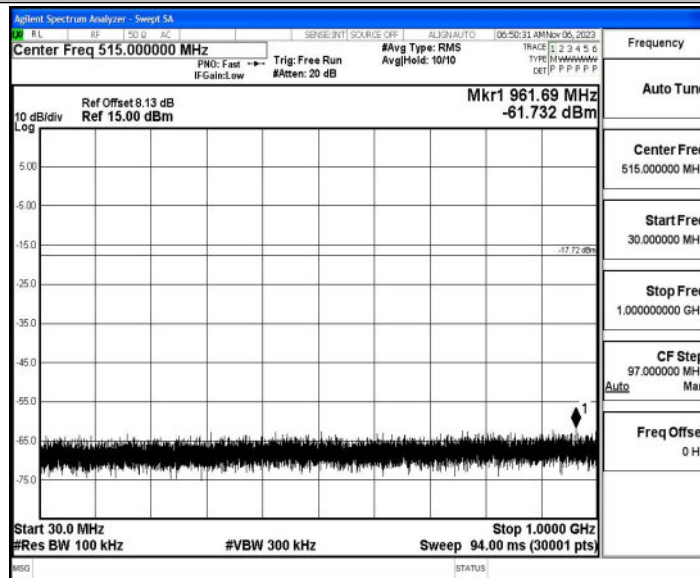
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BLE_2M_Ant1_2440_30~1000



BLE_2M_Ant1_2440_1000~26500

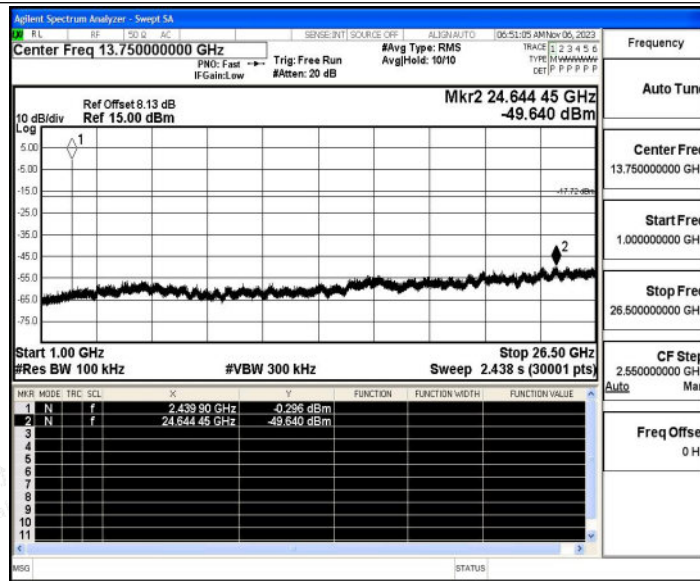


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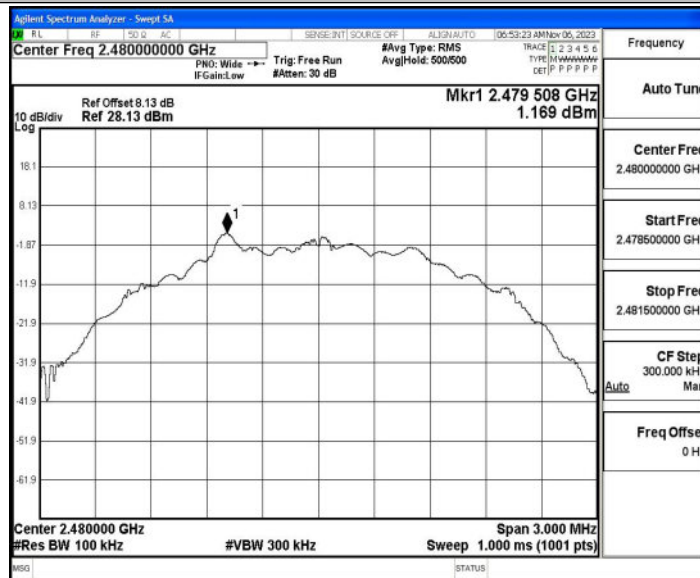
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BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000

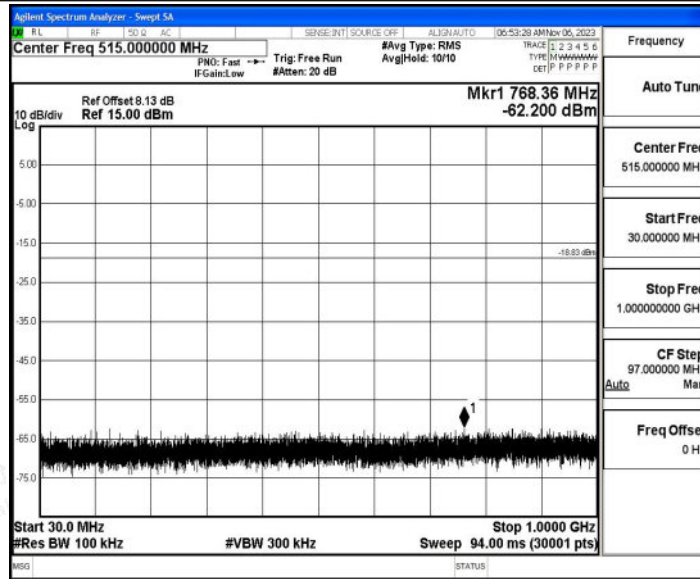


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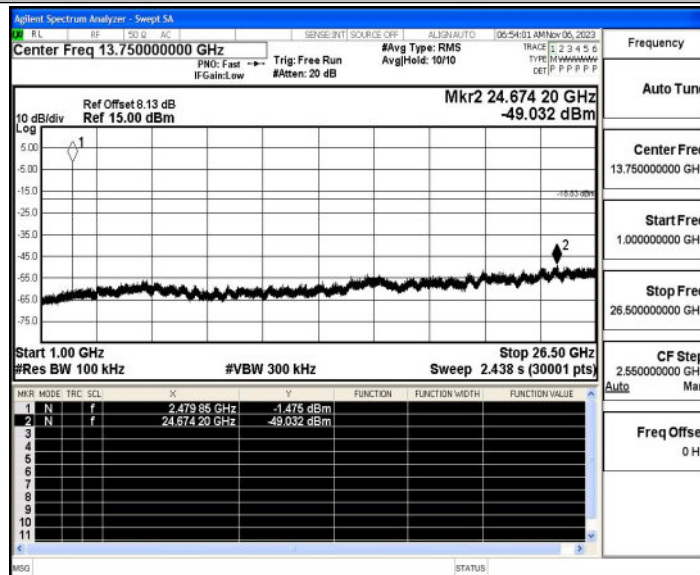
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BLE_2M_Ant1_2480_1000~26500



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A.6 Duty Cycle

Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	1.64	1.88	0.8723	87.23	0.59	0.61	---	---
		2440	1.64	1.88	0.8723	87.23	0.59	0.61	---	---
		2480	1.64	1.88	0.8723	87.23	0.59	0.61	---	---
BLE_2M	Ant1	2402	0.83	1.25	0.6640	66.40	1.78	1.20	---	---
		2440	0.83	1.25	0.6640	66.40	1.78	1.20	---	---
		2480	0.83	1.25	0.6640	66.40	1.78	1.20	---	---



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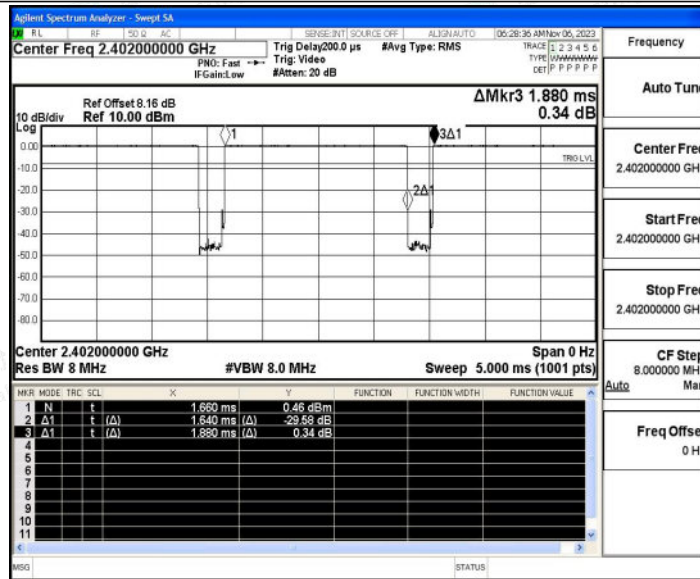
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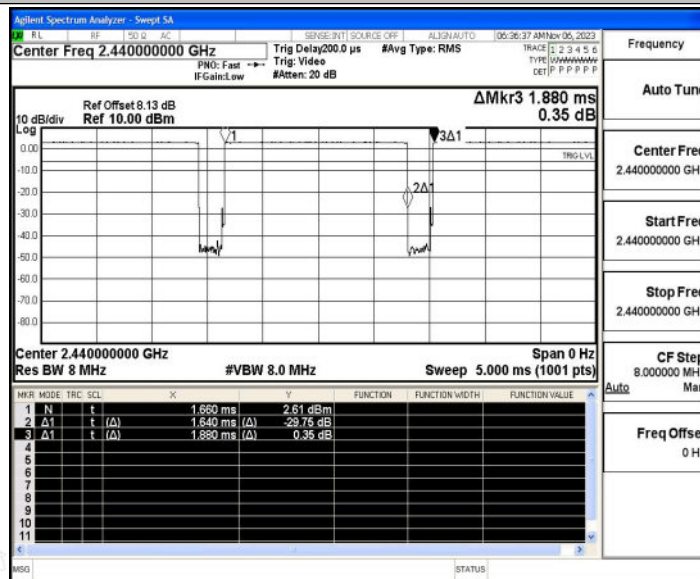


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

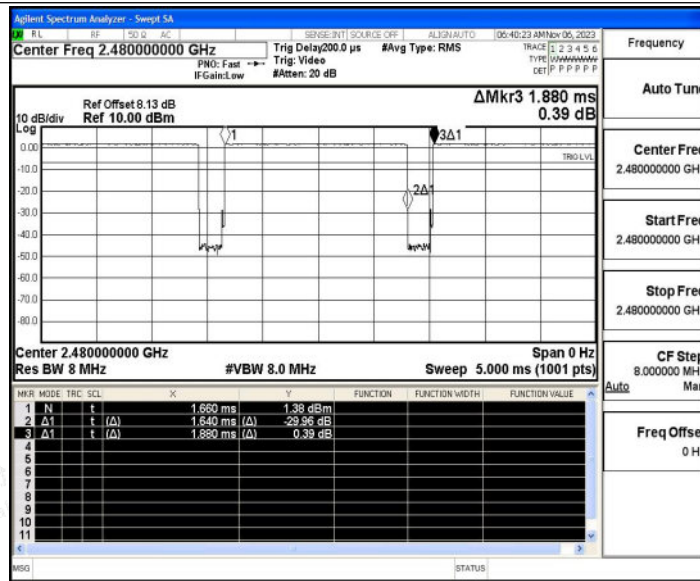


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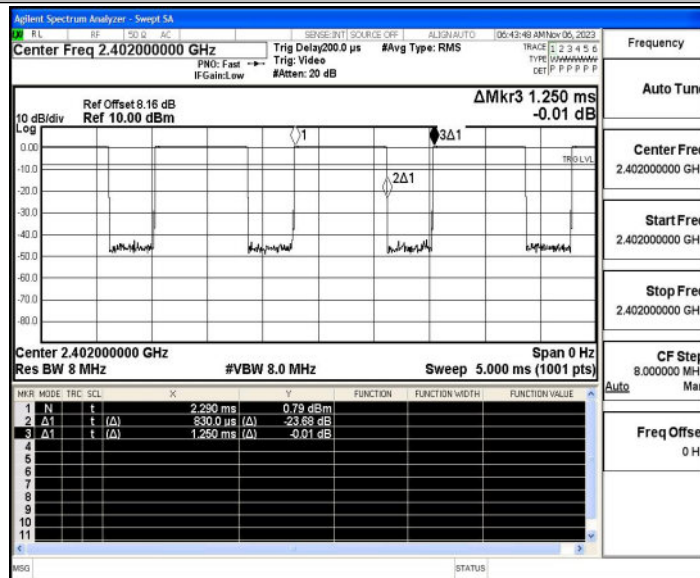
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BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

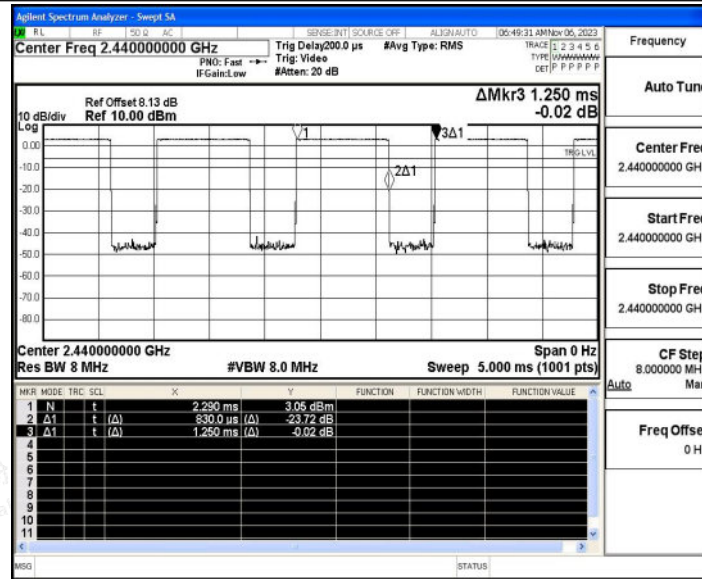


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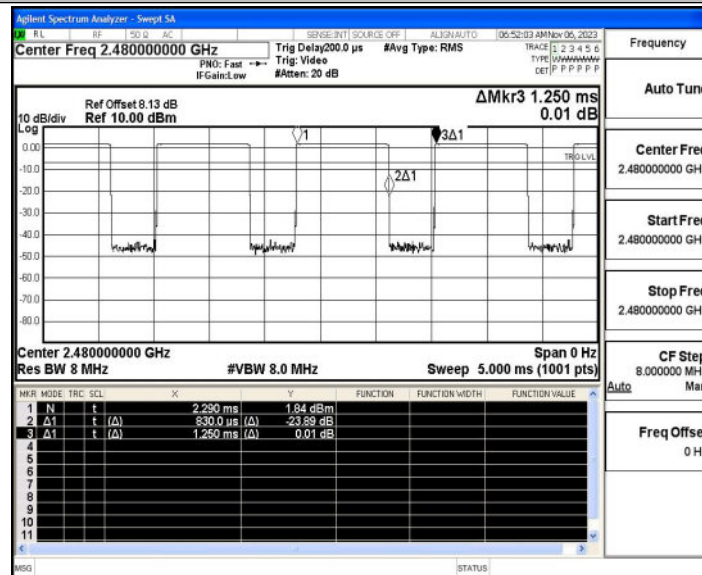
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BLE_2M_Ant1_2480



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A.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	-48.96	≤-41.20	46.24	≤54	PASS
				AV	2386.940	-48.49	≤-41.20	46.71	≤54	PASS
				AV	2390.000	-48.66	≤-41.20	46.54	≤54	PASS
				Peak	2310.000	-40.26	≤-21.20	54.94	≤74	PASS
				Peak	2380.325	-38.76	≤-21.20	56.44	≤74	PASS
				Peak	2390.000	-40.74	≤-21.20	54.46	≤74	PASS
		High	2480	AV	2483.500	-47.55	≤-41.20	47.65	≤54	PASS
				AV	2483.520	-47.54	≤-41.20	47.66	≤54	PASS
				AV	2500.000	-48.55	≤-41.20	46.65	≤54	PASS
				Peak	2483.500	-41.46	≤-21.20	53.74	≤74	PASS
				Peak	2496.400	-39.34	≤-21.20	55.86	≤74	PASS
				Peak	2500.000	-41.68	≤-21.20	53.52	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.64	≤-41.20	46.56	≤54	PASS
				AV	2383.055	-48.18	≤-41.20	47.02	≤54	PASS
				AV	2390.000	-48.37	≤-41.20	46.83	≤54	PASS
				Peak	2310.000	-41.19	≤-21.20	54.01	≤74	PASS
				Peak	2373.710	-38.11	≤-21.20	57.09	≤74	PASS
				Peak	2390.000	-41.41	≤-21.20	53.79	≤74	PASS
		High	2480	AV	2483.500	-46.33	≤-41.20	48.87	≤54	PASS
				AV	2483.520	-46.33	≤-41.20	48.87	≤54	PASS
				AV	2500.000	-48.4	≤-41.20	46.80	≤54	PASS
				Peak	2483.500	-42.52	≤-21.20	52.68	≤74	PASS
				Peak	2499.440	-38.95	≤-21.20	56.25	≤74	PASS
				Peak	2500.000	-41.54	≤-21.20	53.66	≤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.



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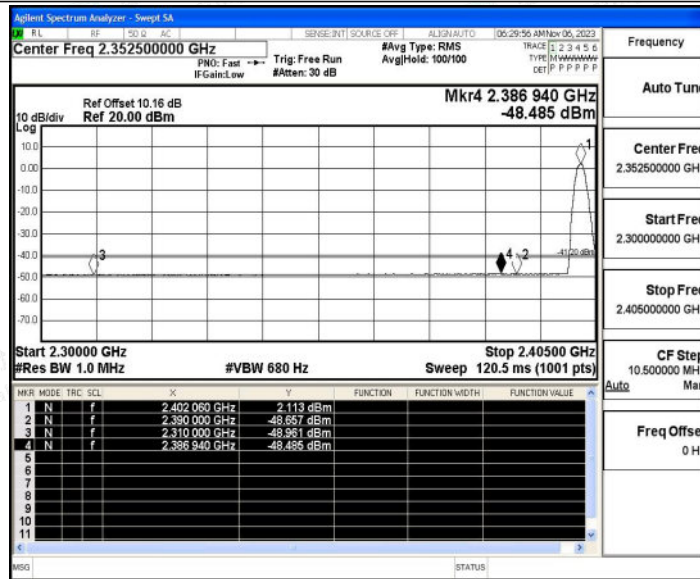
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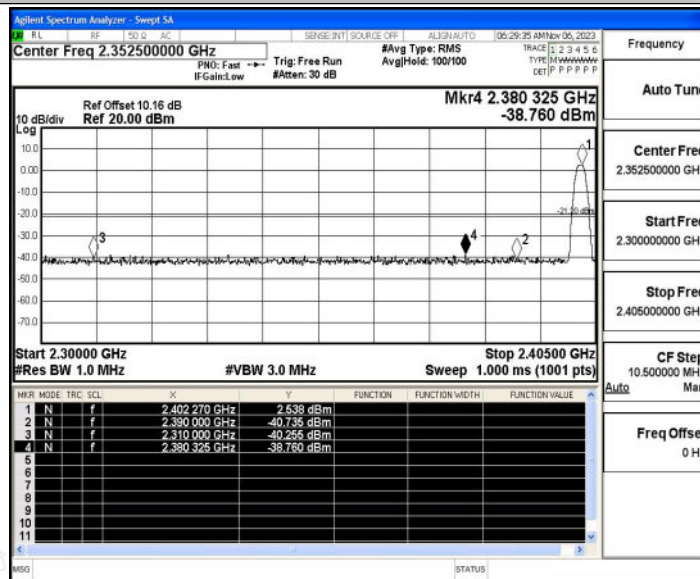


Test Graphs

BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV

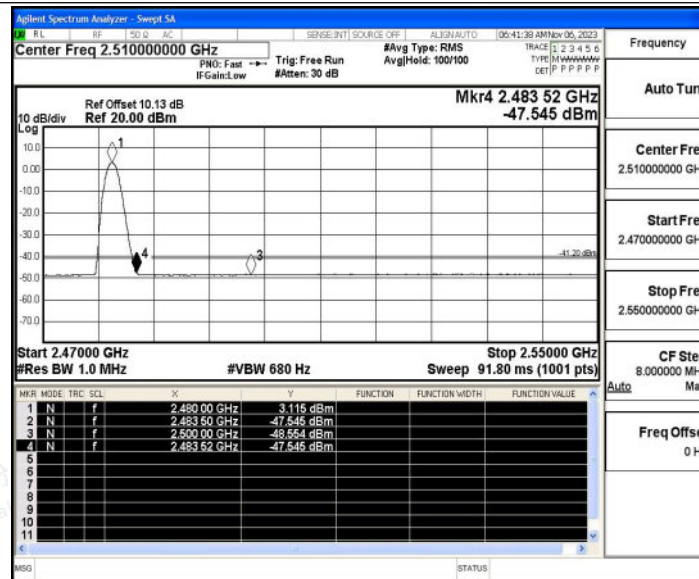


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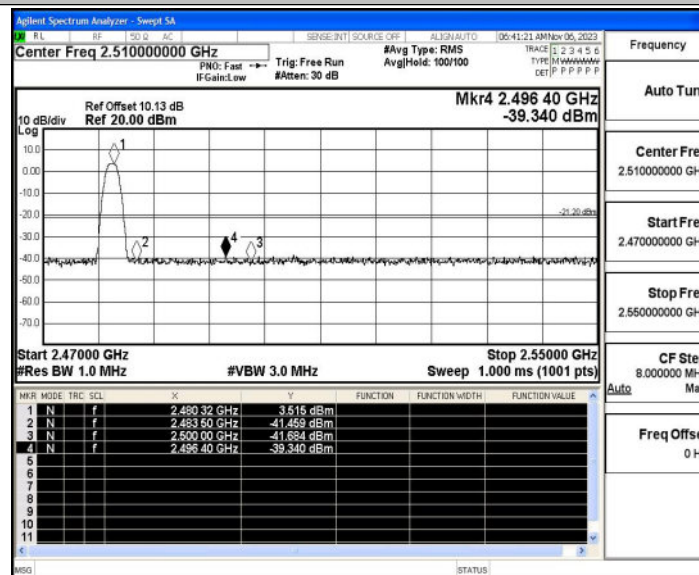
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BLE_1M_Ant1_High_2480_Peak



BLE_2M_Ant1_Low_2402_AV

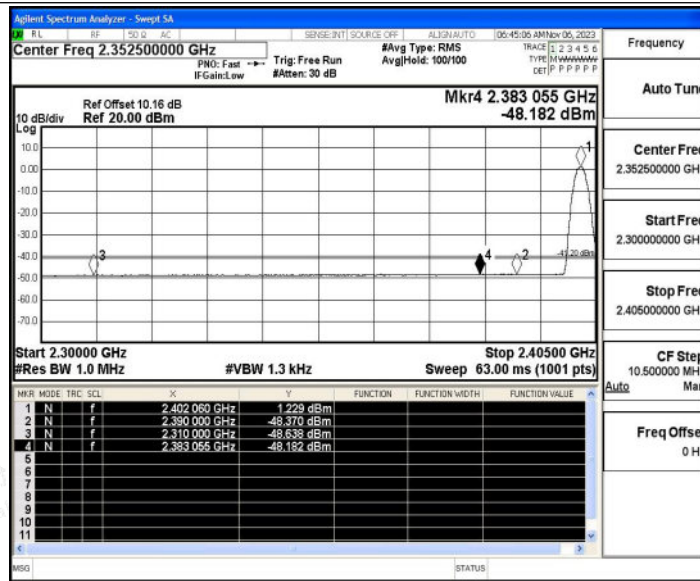


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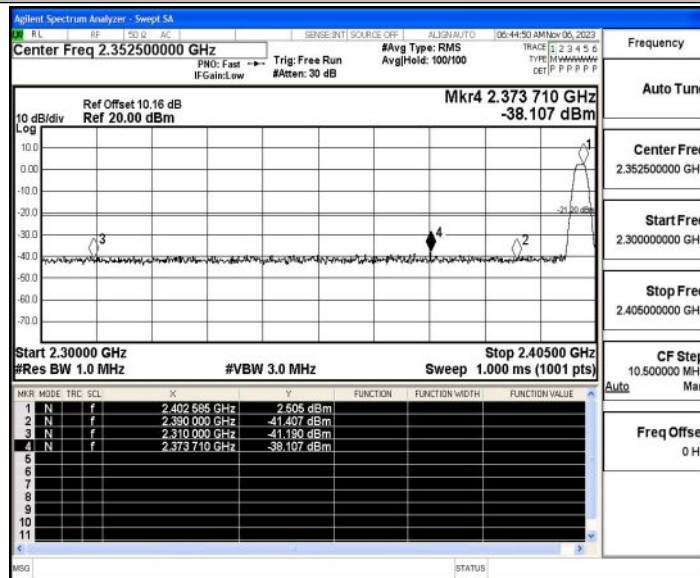
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BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV

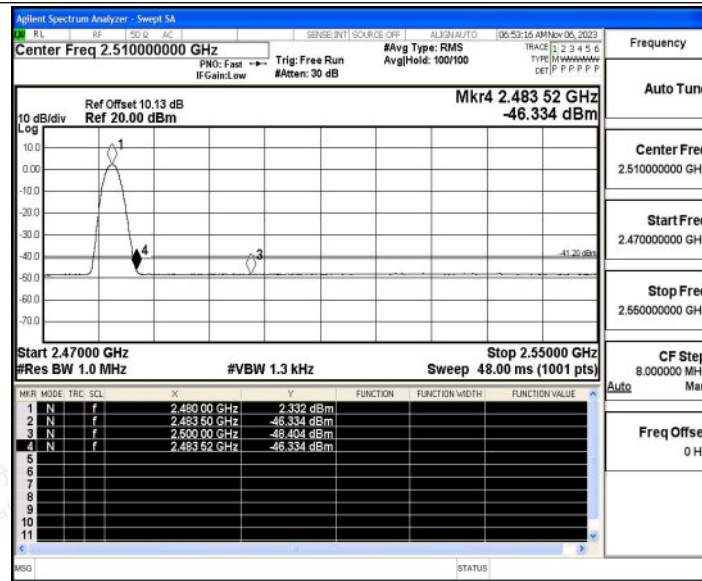


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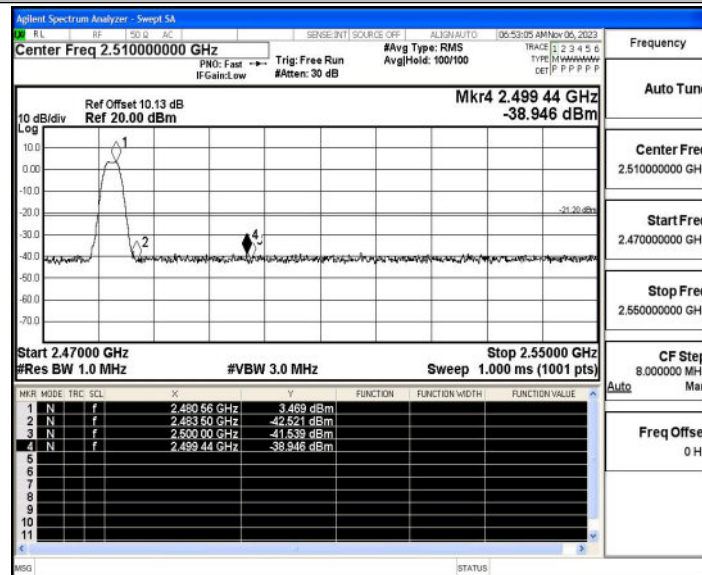
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BLE_2M_Ant1_High_2480_Peak



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