



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: LED lamp

Test Model: TSZ9BR30-LD011-CEC

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Ling Zhu





A.1 DTS Bandwidth

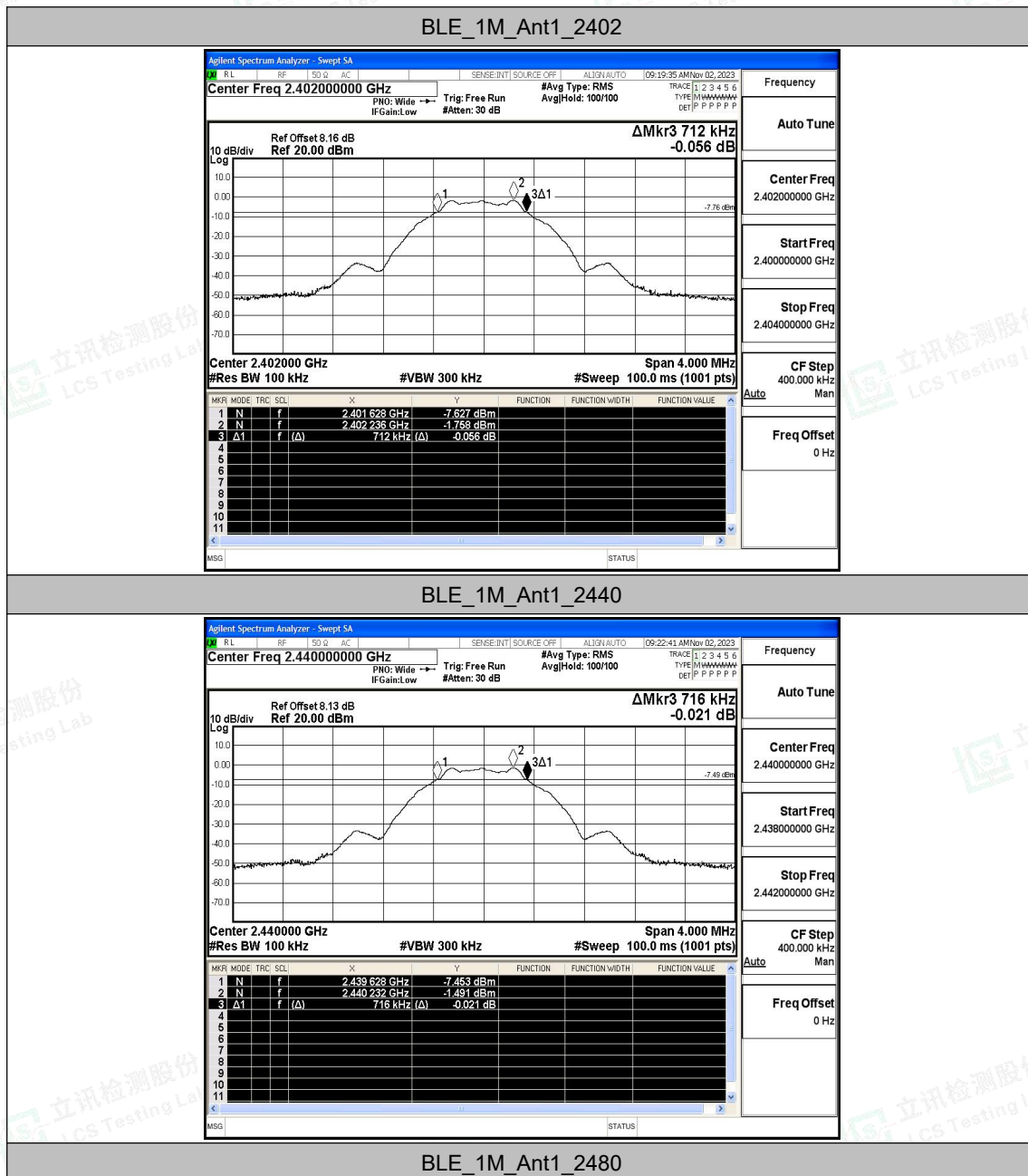
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.712	2401.628	2402.340	0.5	PASS
		2440	0.716	2439.628	2440.344	0.5	PASS
		2480	0.716	2479.628	2480.344	0.5	PASS





Test Graphs

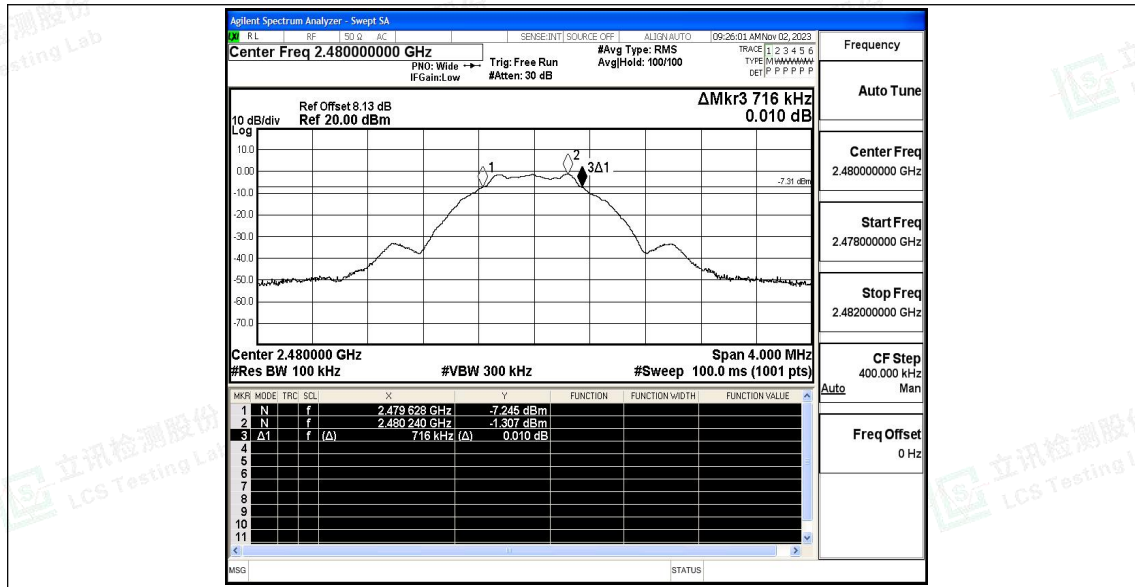


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A.2 Occupied Channel Bandwidth

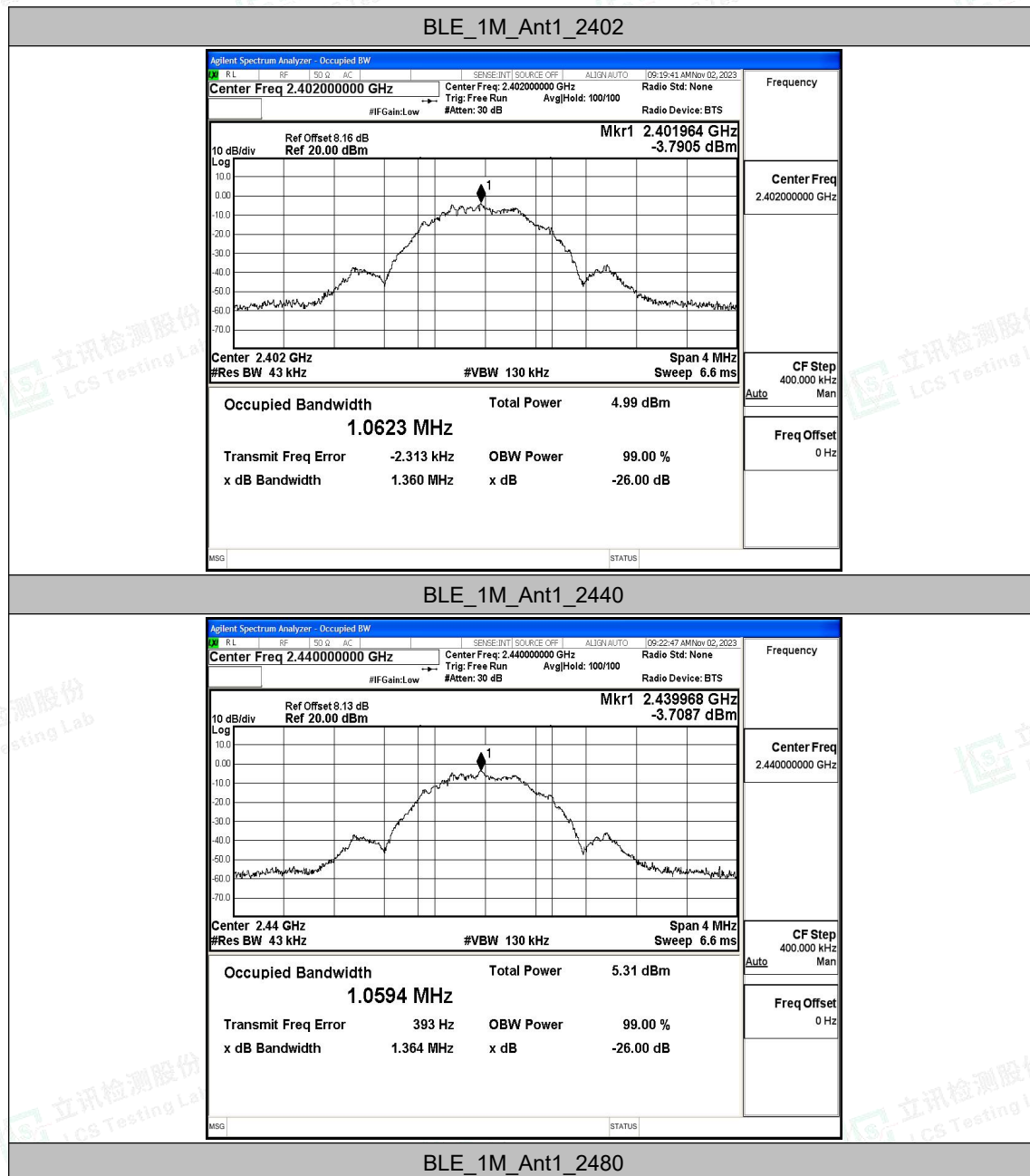
Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0623	2401.4665	2402.5288	---	---
		2440	1.0594	2439.4707	2440.5301	---	---
		2480	1.0610	2479.4703	2480.5313	---	---





Test Graphs

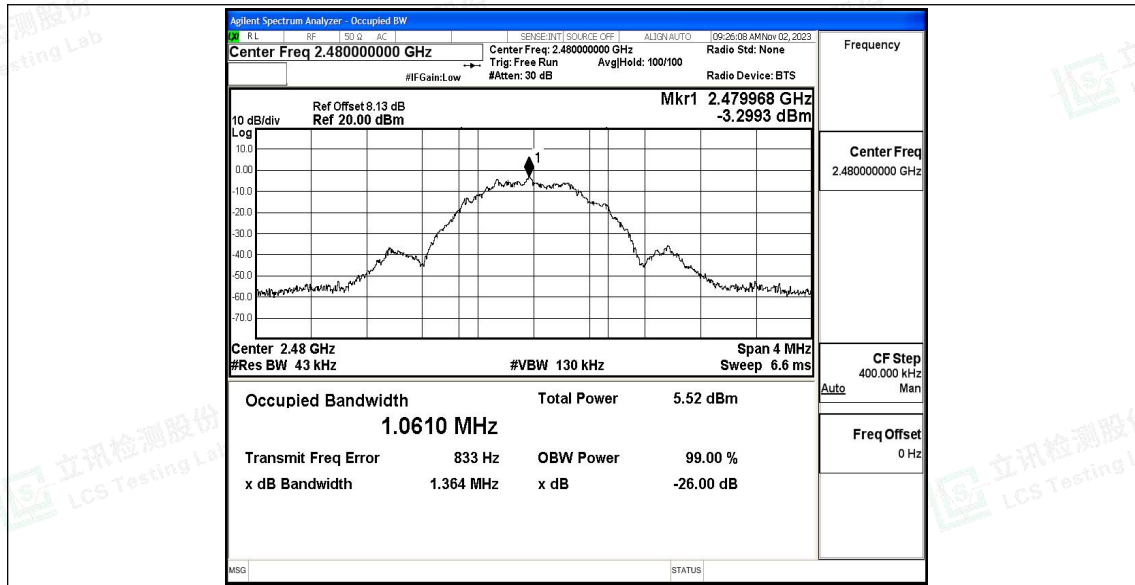


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A.3 Maximum Peak Conducted Output Power and e.i.r.p.

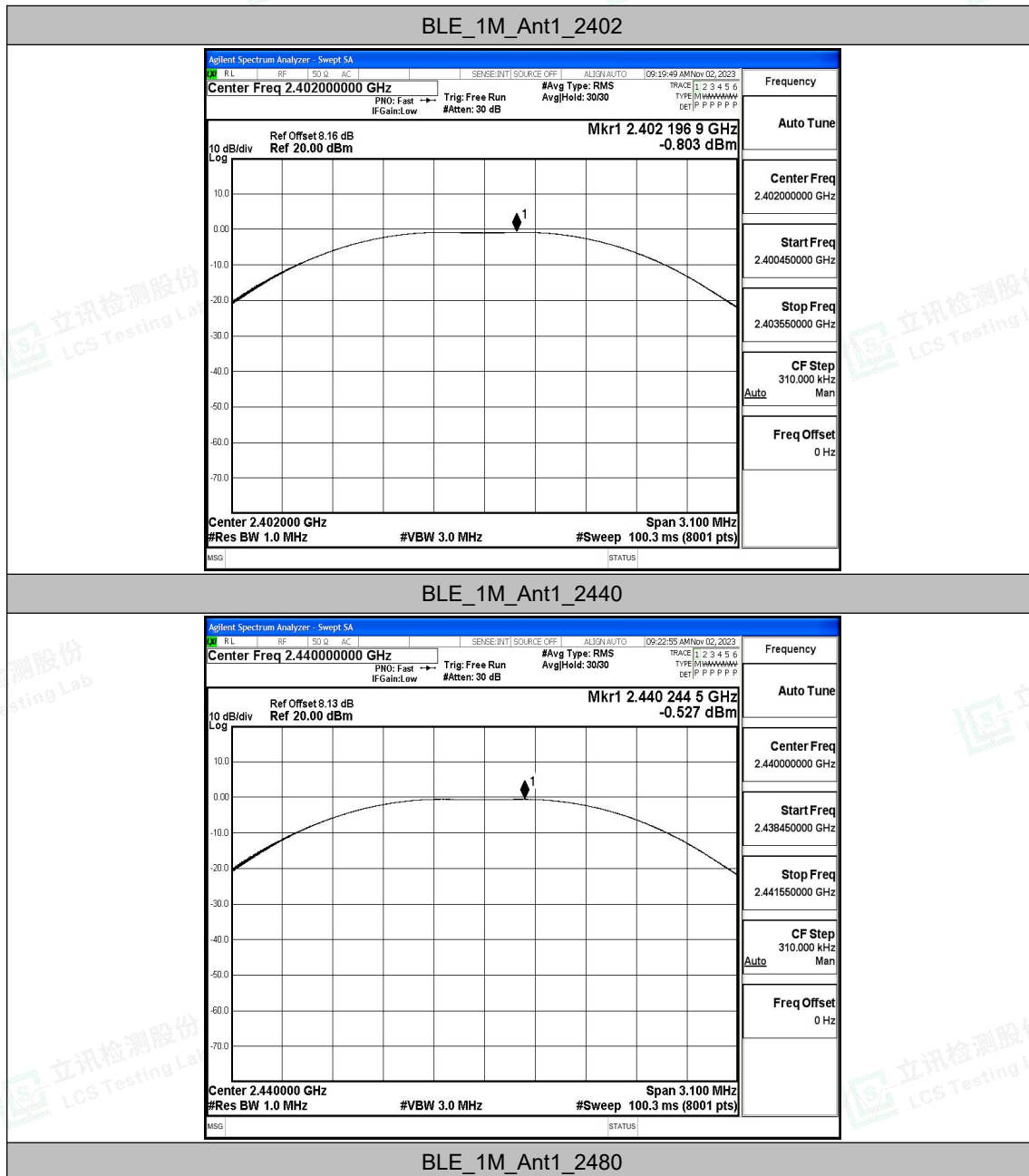
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Antenna gain [dBi]	EIRP [dBm]	EIRP Limit (dBm)	Verdict
BLE_1M	Ant1	2402	-0.80	≤30	1.2	0.40	36	PASS
		2440	-0.53	≤30	1.2	0.67	36	PASS
		2480	-0.36	≤30	1.2	0.84	36	PASS





Test Graphs

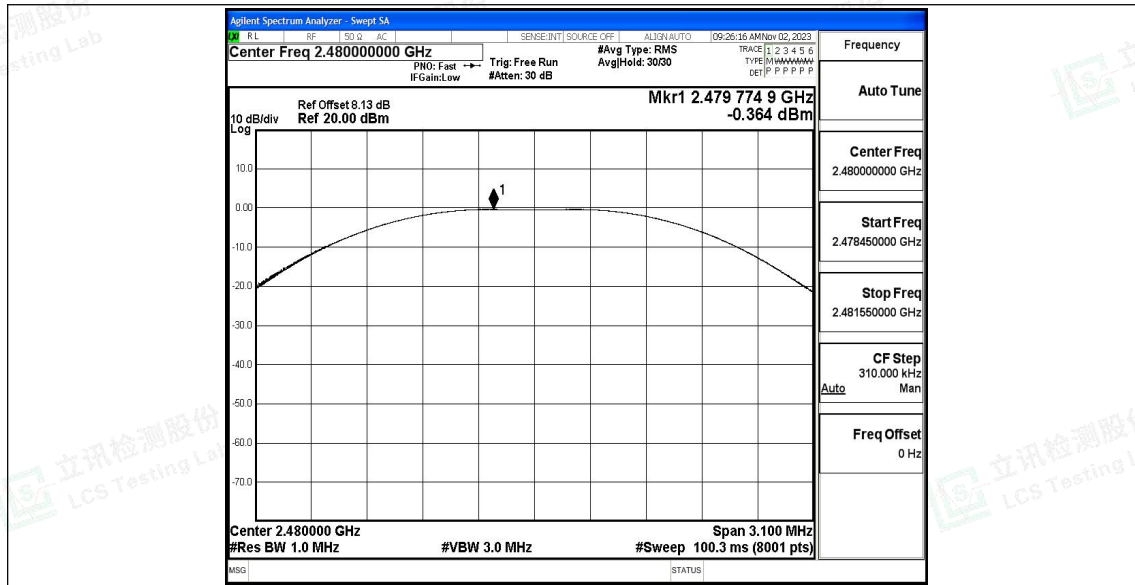


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A.4 Maximum power spectral density

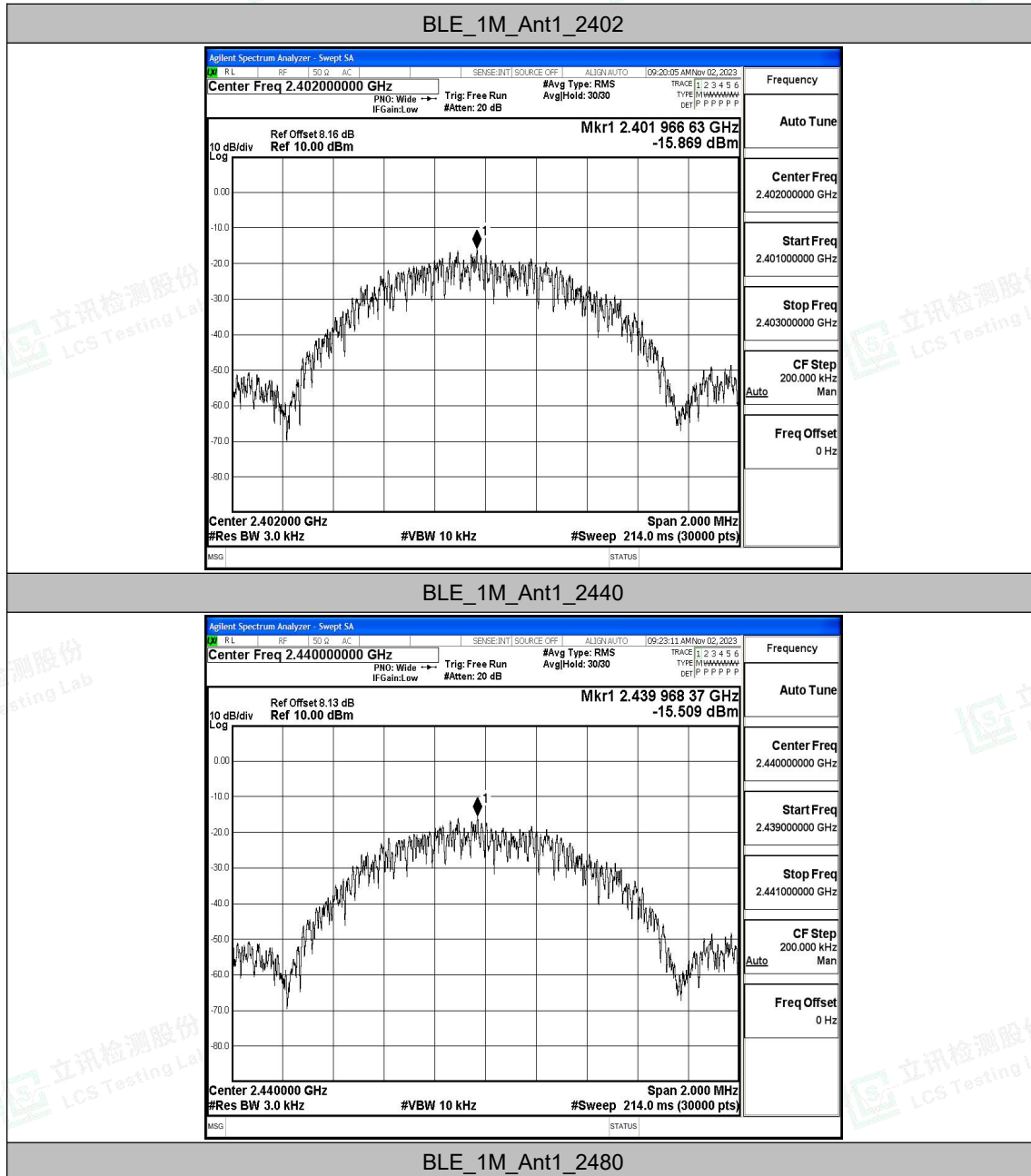
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.87	≤8.00	PASS
		2440	-15.51	≤8.00	PASS
		2480	-15.41	≤8.00	PASS





Test Graphs

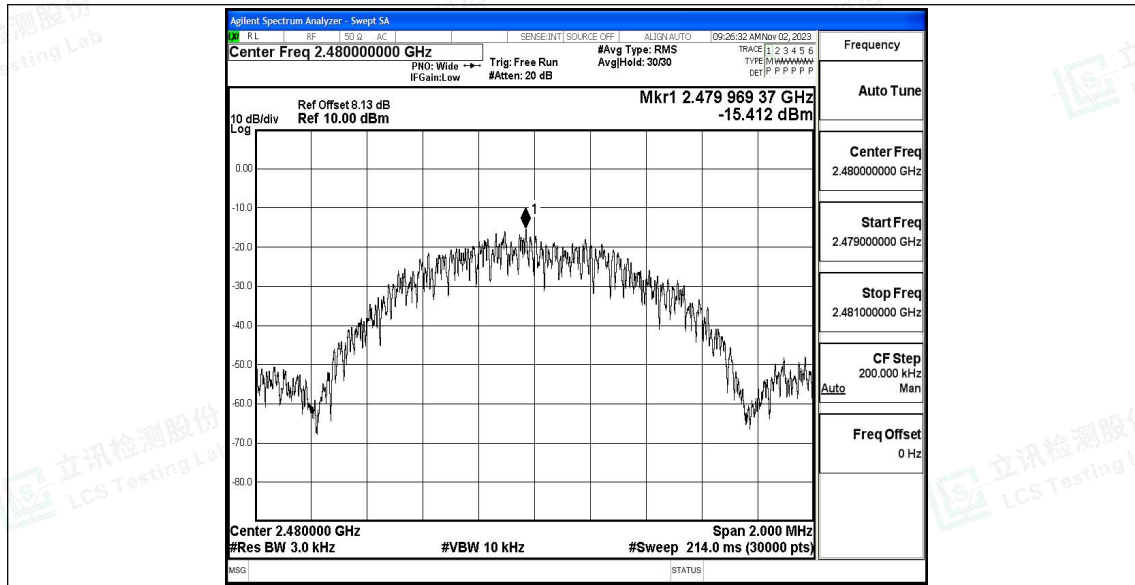


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A.5 Band edge measurements

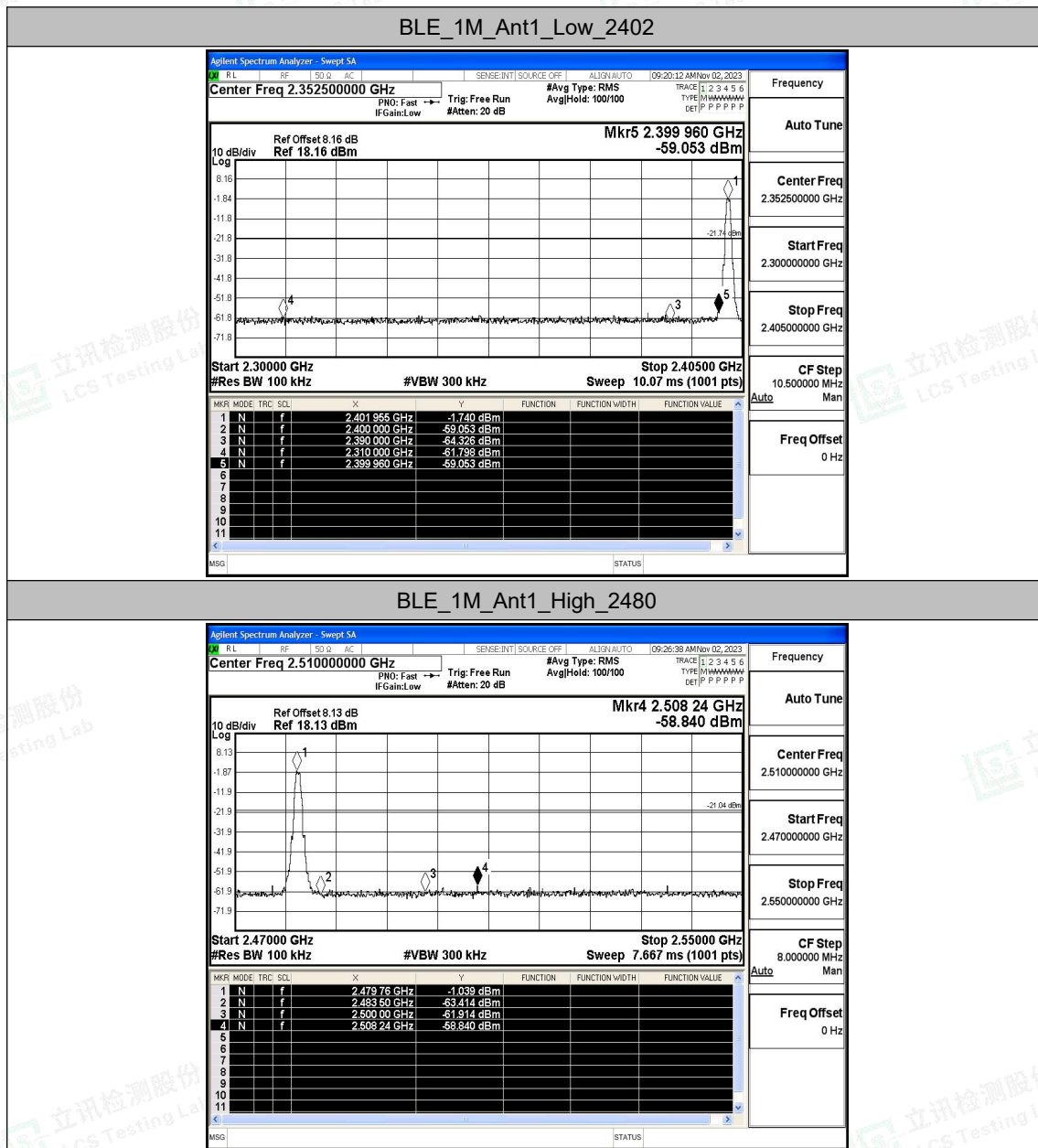
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.74	-59.05	≤ -21.74	PASS
		High	2480	-1.04	-58.84	≤ -21.04	PASS





Test Graphs



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A.6 Conducted Spurious Emission

Test Result

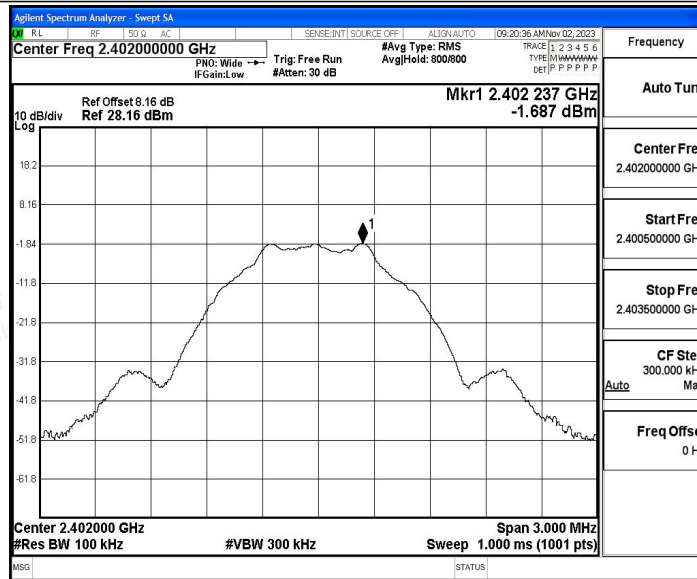
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.69	-1.69	---	PASS
			30~1000	-1.69	-61.56	≤-21.69	PASS
			1000~26500	-1.69	-49.1	≤-21.69	PASS
		2440	Reference	-1.46	-1.46	---	PASS
			30~1000	-1.46	-62.01	≤-21.46	PASS
			1000~26500	-1.46	-48.79	≤-21.46	PASS
		2480	Reference	-1.27	-1.27	---	PASS
			30~1000	-1.27	-61.92	≤-21.27	PASS
			1000~26500	-1.27	-49.17	≤-21.27	PASS



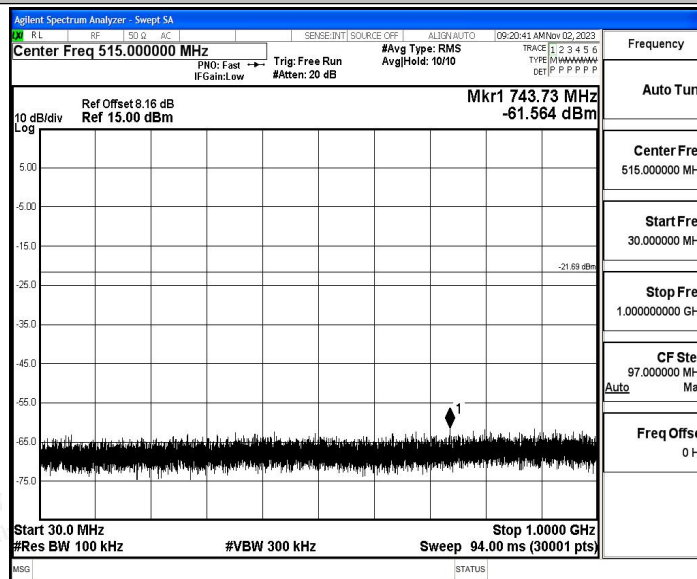


Test Graphs

BLE_1M_Ant1_2402_0~Reference



BLE_1M_Ant1_2402_30~1000



BLE_1M_Ant1_2402_1000~26500

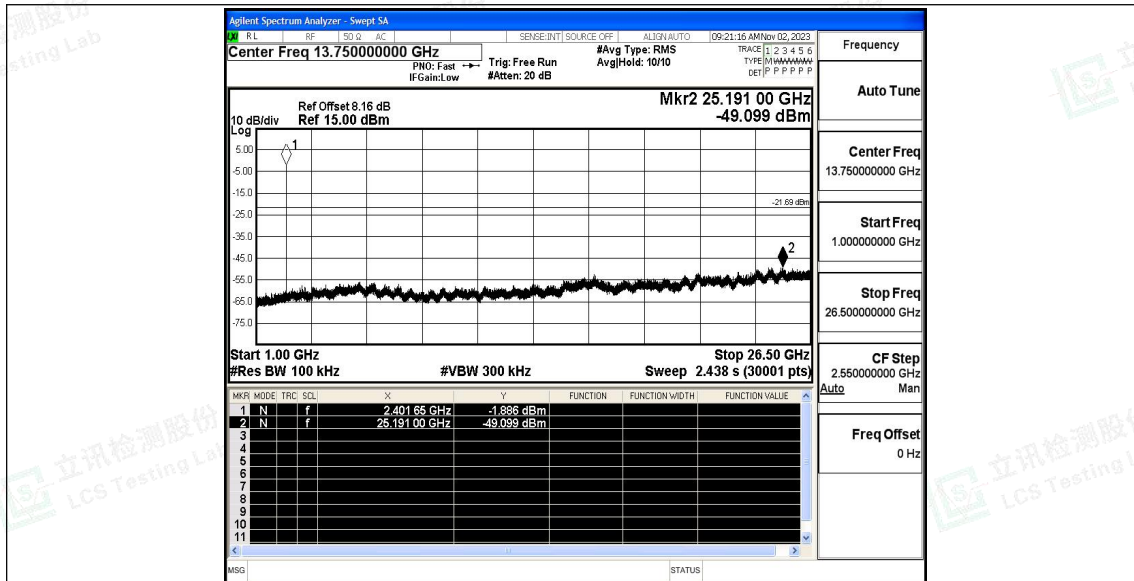


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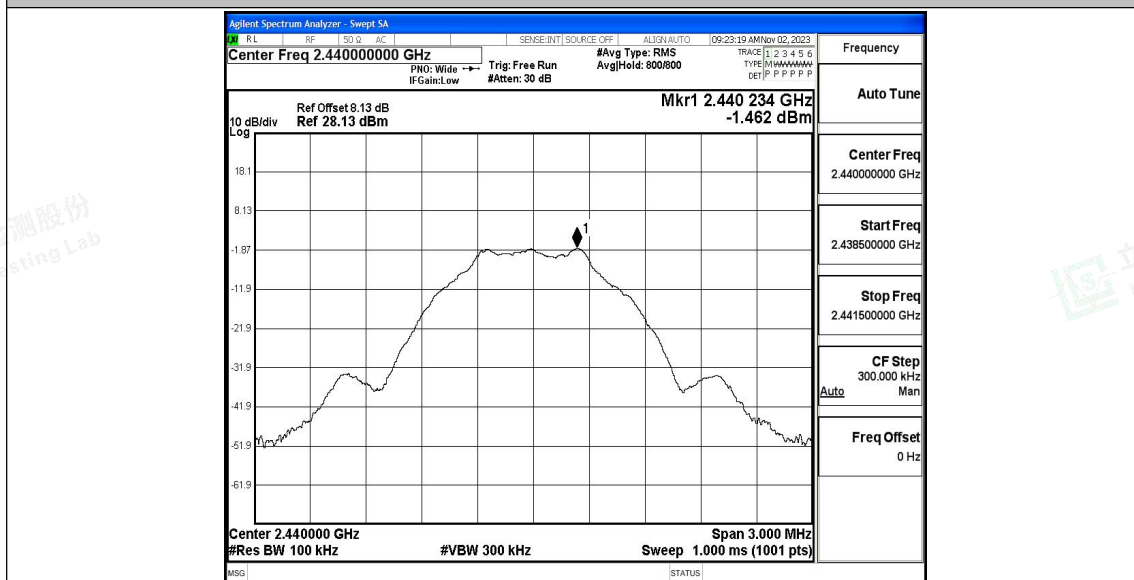
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BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000

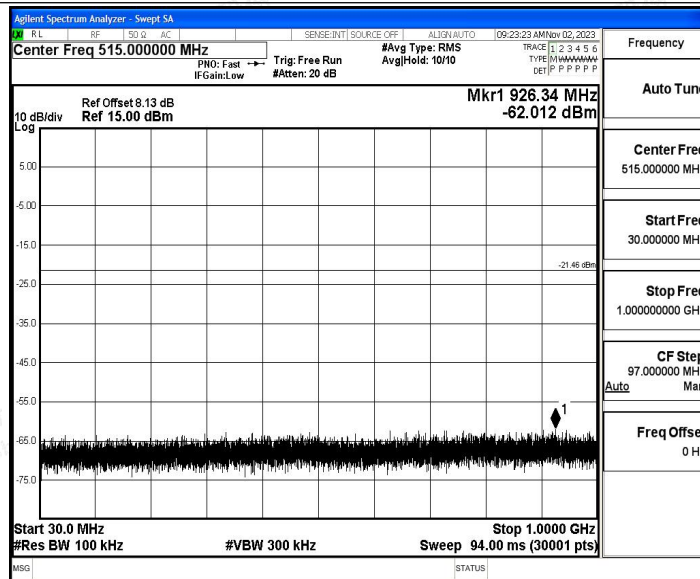


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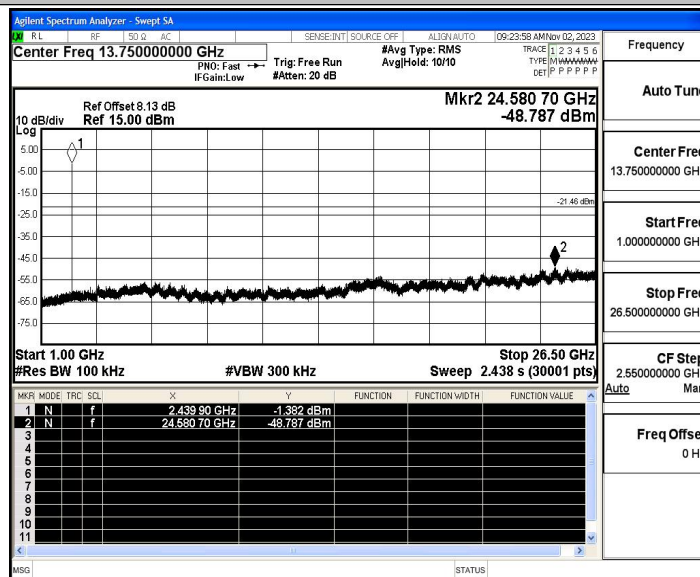
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BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_0~Reference

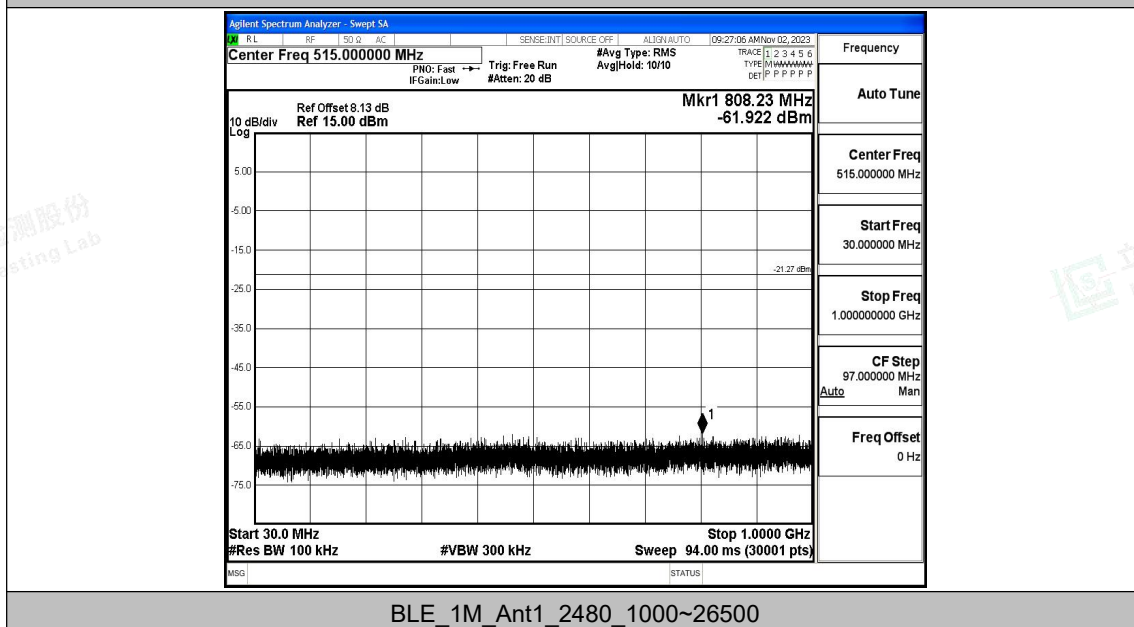
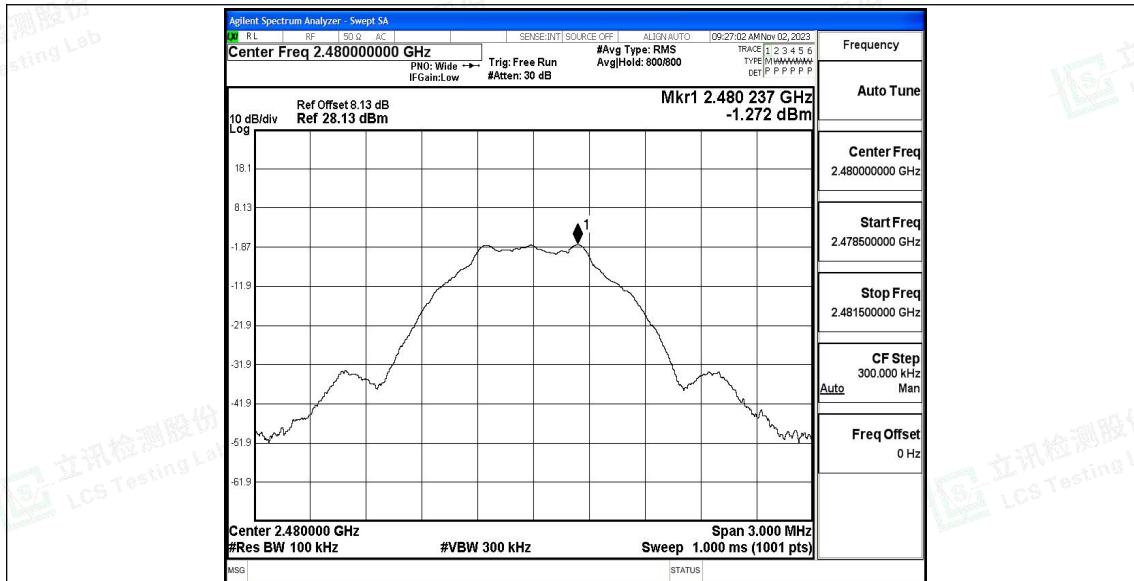


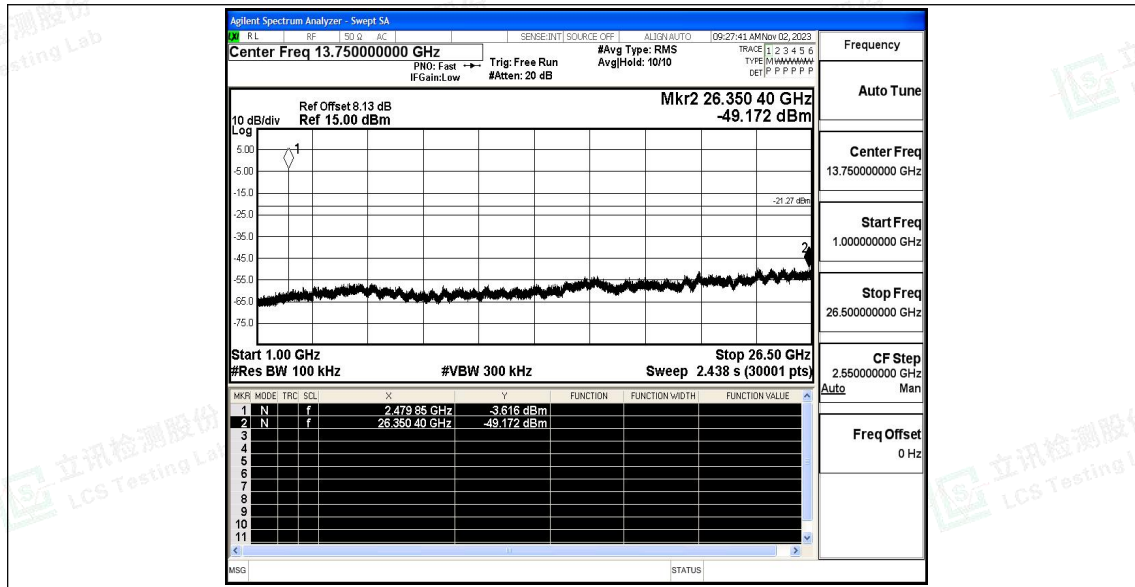
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A.7 Duty Cycle

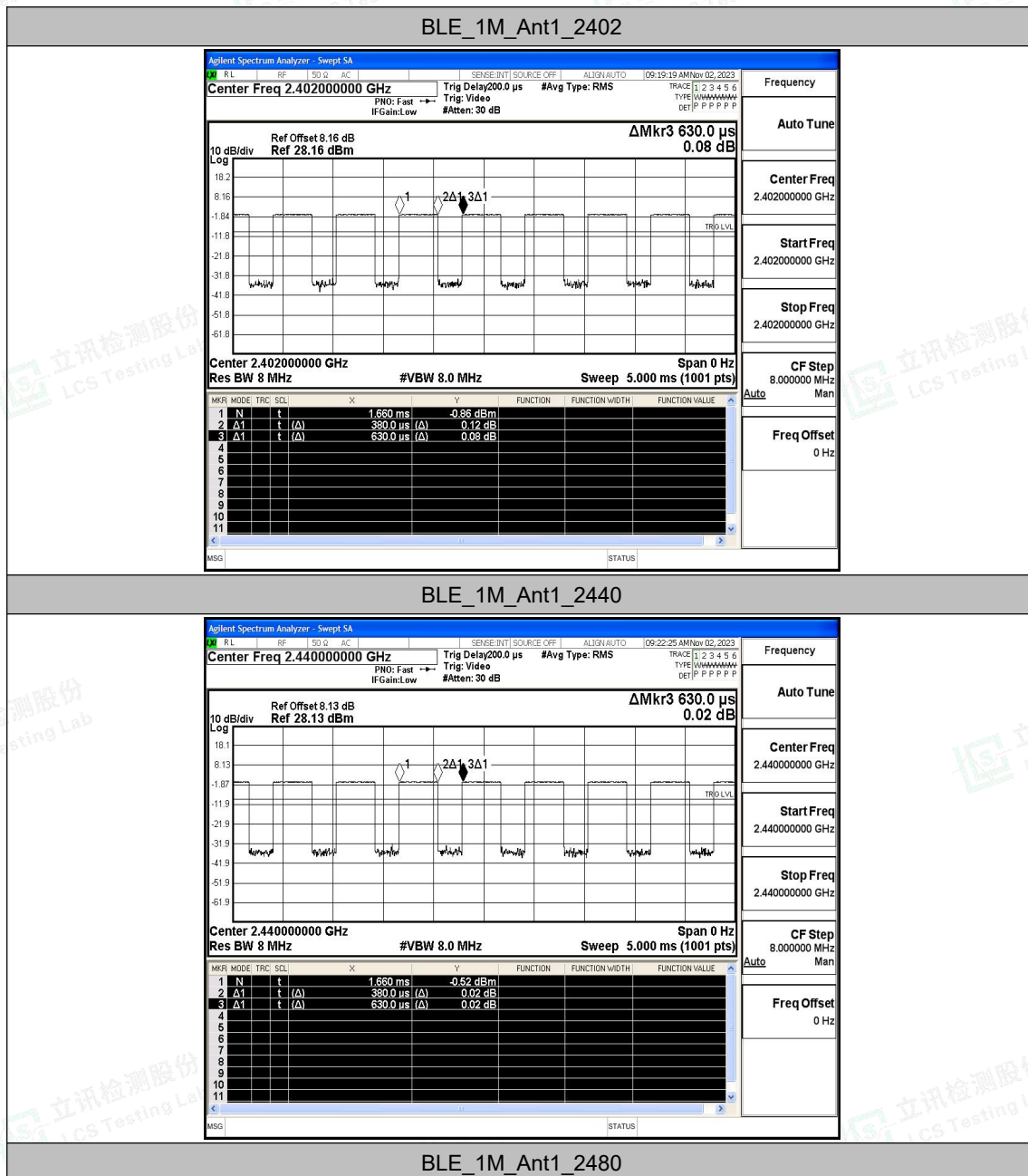
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2440	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2480	0.38	0.63	0.6032	60.32	2.20	2.63	---	---





Test Graphs

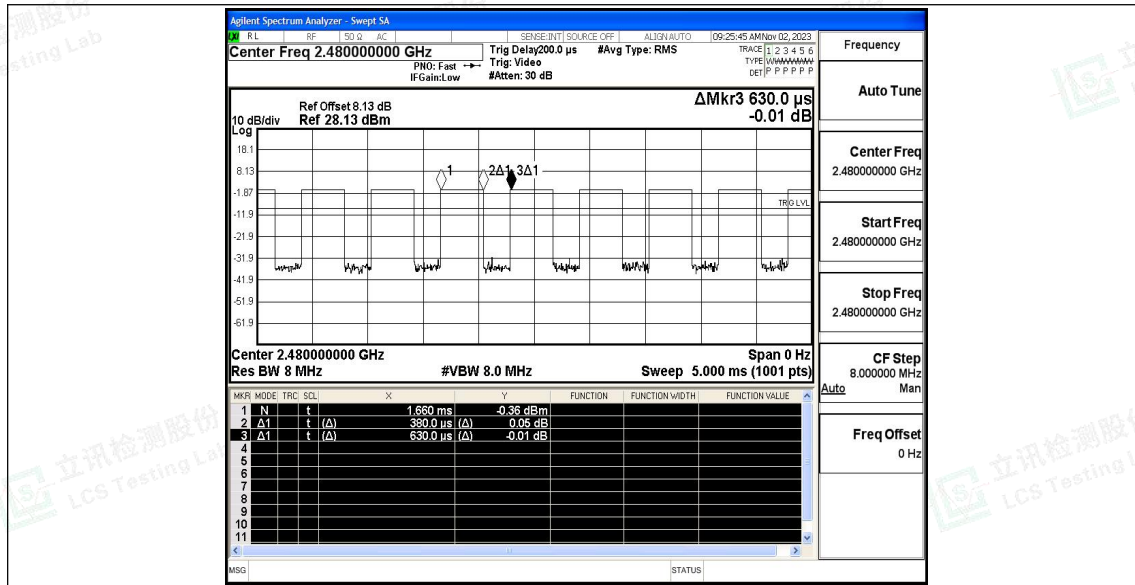


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A.8 Emissions in Restricted Bands

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	-58.75	≤-41.20	36.45	≤54	PASS
				AV	2388.935	-57.48	≤-41.20	37.72	≤54	PASS
				AV	2390.000	-58.26	≤-41.20	36.94	≤54	PASS
				Peak	2310.000	-50.3	≤-21.20	44.90	≤74	PASS
				Peak	2347.985	-48.79	≤-21.20	46.41	≤74	PASS
				Peak	2390.000	-52.78	≤-21.20	42.42	≤74	PASS
		High	2480	AV	2483.500	-54.32	≤-41.20	40.88	≤54	PASS
				AV	2483.520	-54.32	≤-41.20	40.88	≤54	PASS
				AV	2500.000	-58	≤-41.20	37.20	≤54	PASS
				Peak	2483.500	-51.88	≤-21.20	43.32	≤74	PASS
				Peak	2483.920	-49.51	≤-21.20	45.69	≤74	PASS
				Peak	2500.000	-51.39	≤-21.20	43.81	≤74	PASS

Note:

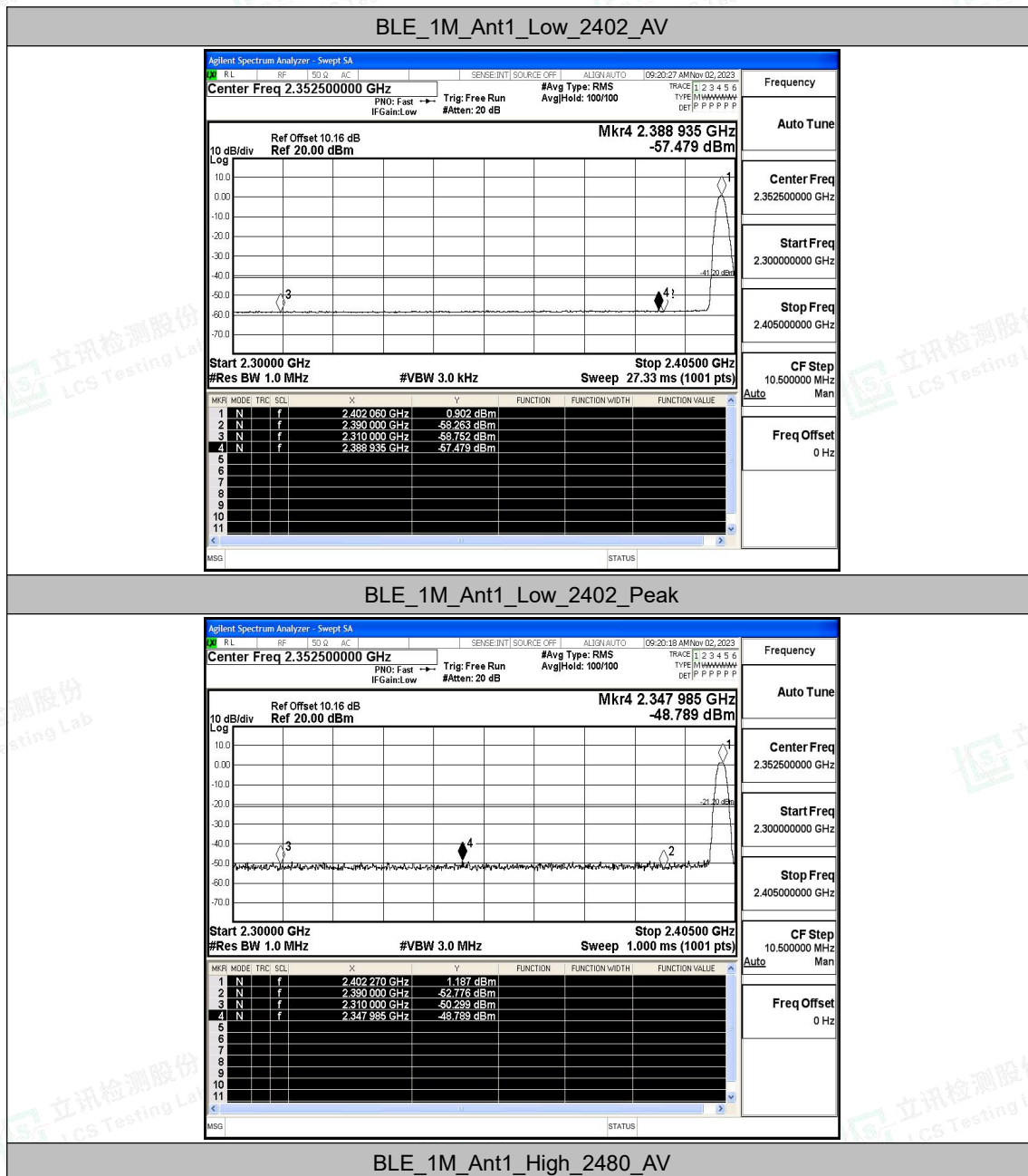
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



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Test Graphs

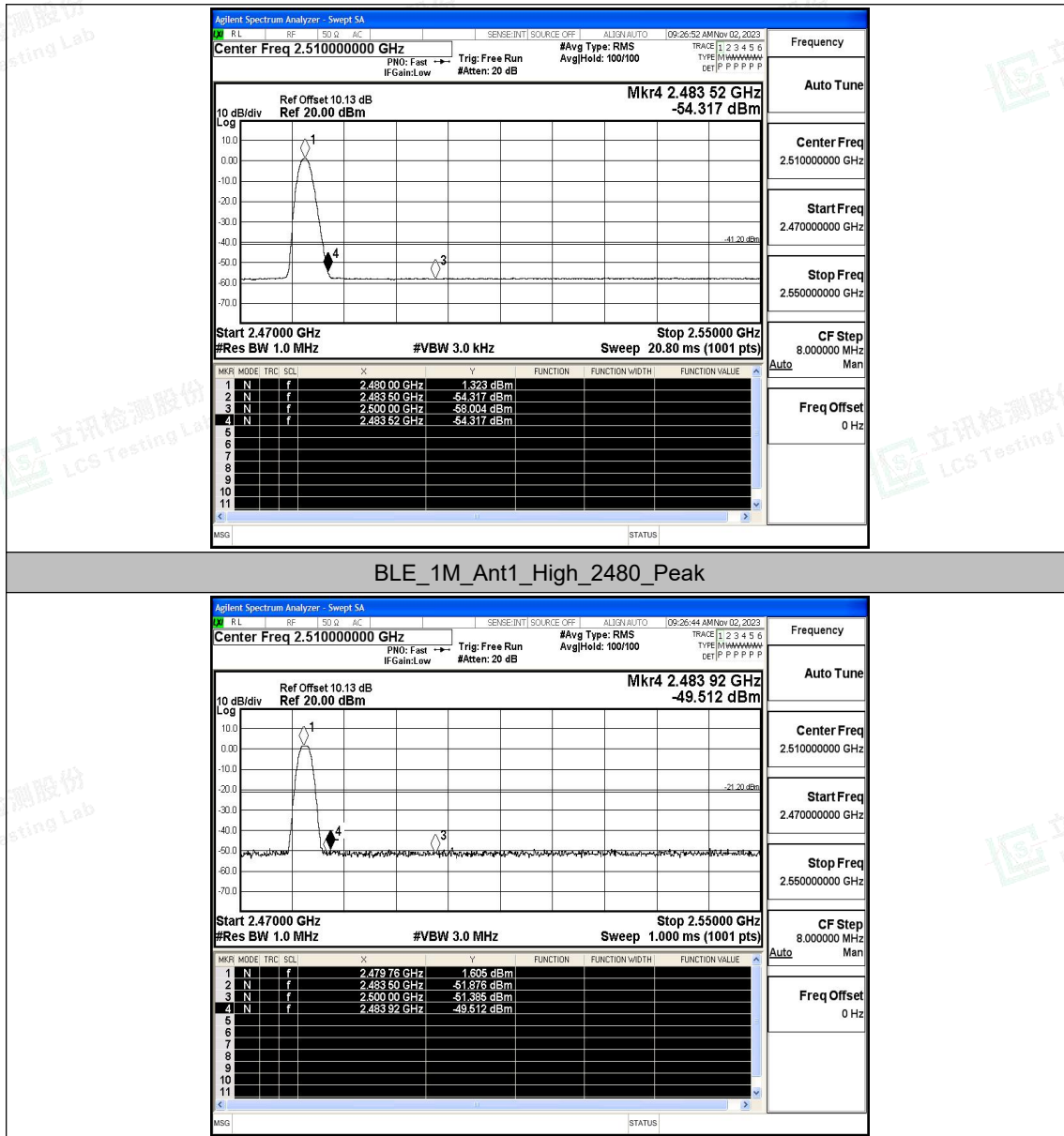


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