



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Klatre K Series KS1

Test Model: KS1

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Bill Zhu
Supervised by:	Li Huan





A.1 6dB Bandwidth

Test Result

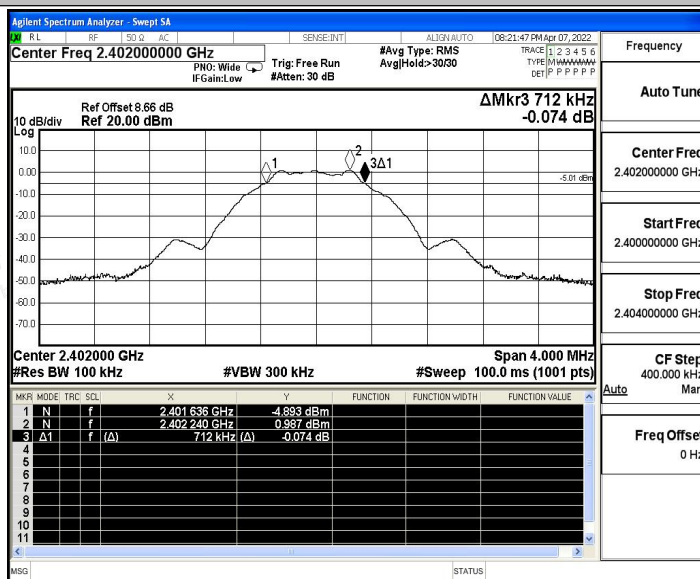
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.712	2401.636	2402.348	0.5	PASS
		2440	0.708	2439.640	2440.348	0.5	PASS
		2480	0.716	2479.636	2480.352	0.5	PASS



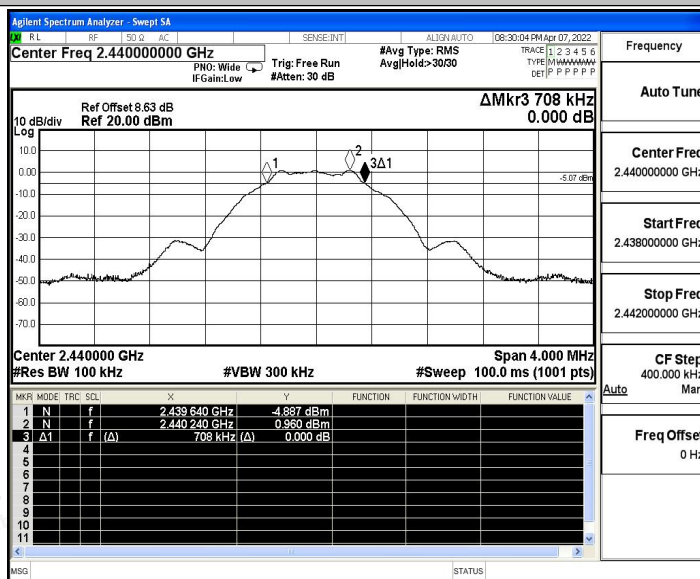


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

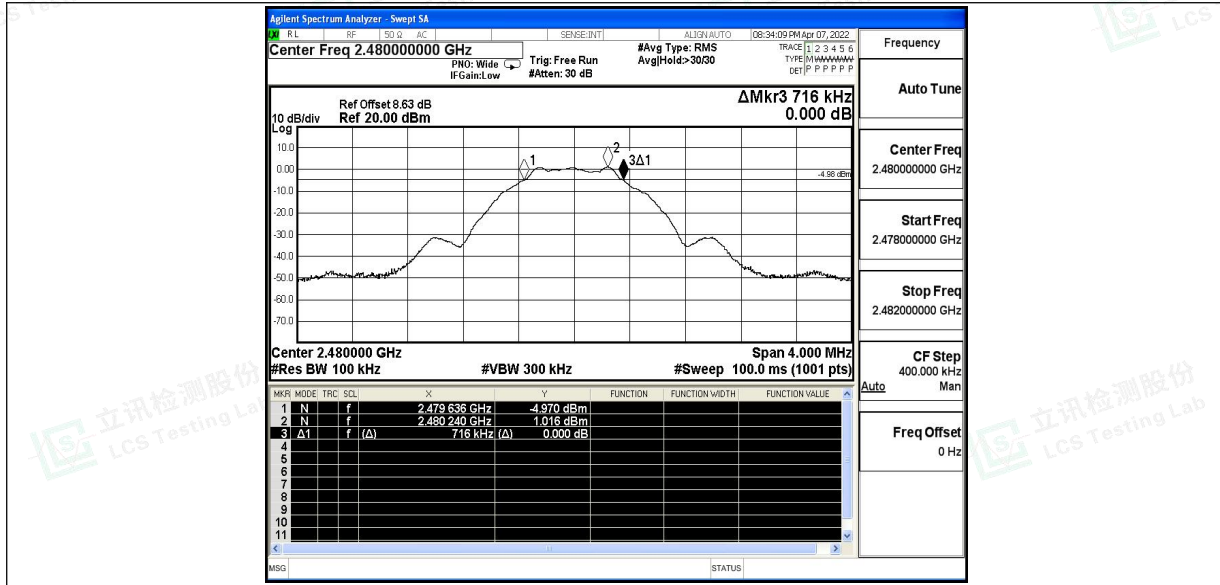


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A.2 Maximum conducted output power

Test Result Peak

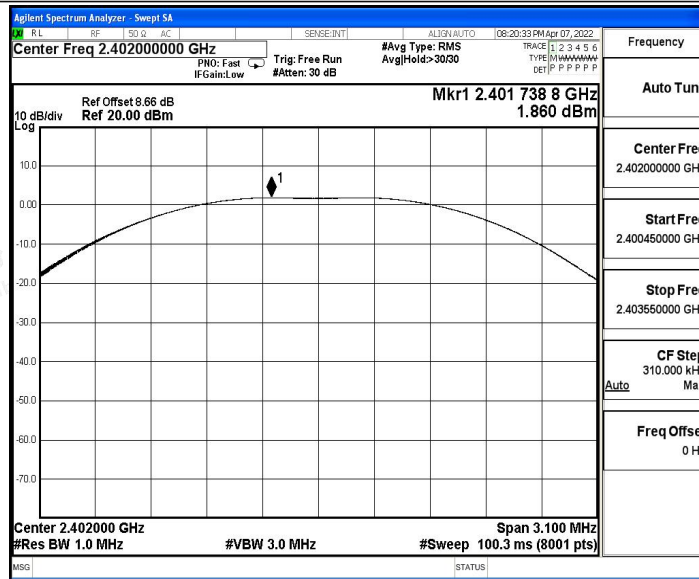
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.86	≤30	1.86	≤36	PASS
		2440	1.87	≤30	1.87	≤36	PASS
		2480	1.9	≤30	1.9	≤36	PASS



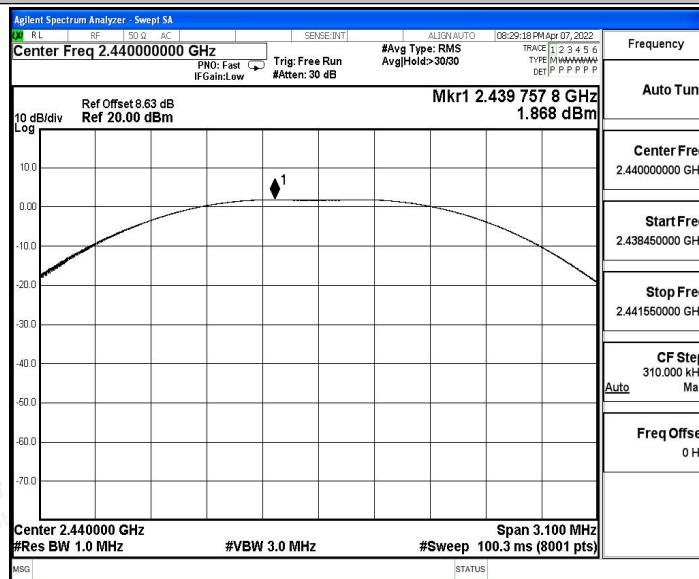


Test Graphs Peak

BLE_1M_Ant1_2402

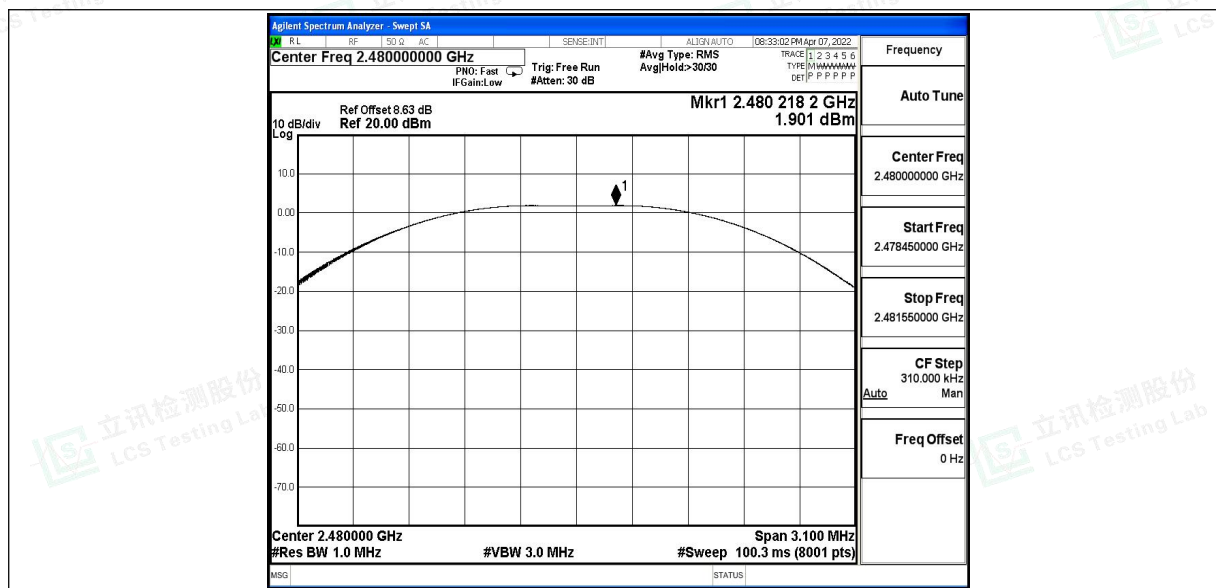


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480







A.3 Maximum power spectral density

Test Result

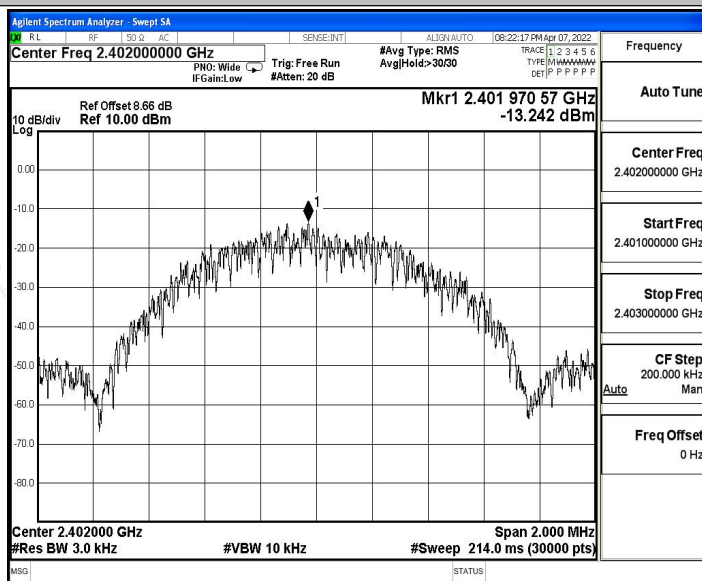
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.24	≤8.00	PASS
		2440	-13.18	≤8.00	PASS
		2480	-13.19	≤8.00	PASS



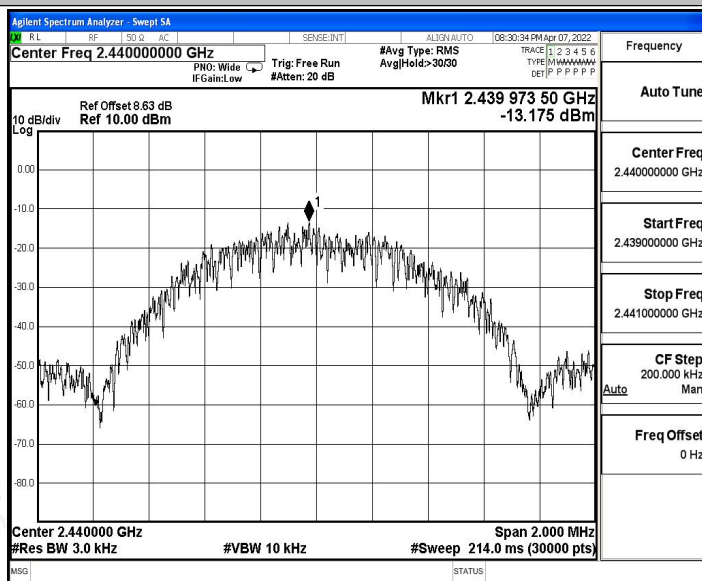


Test Graphs

BLE_1M_Ant1_2402

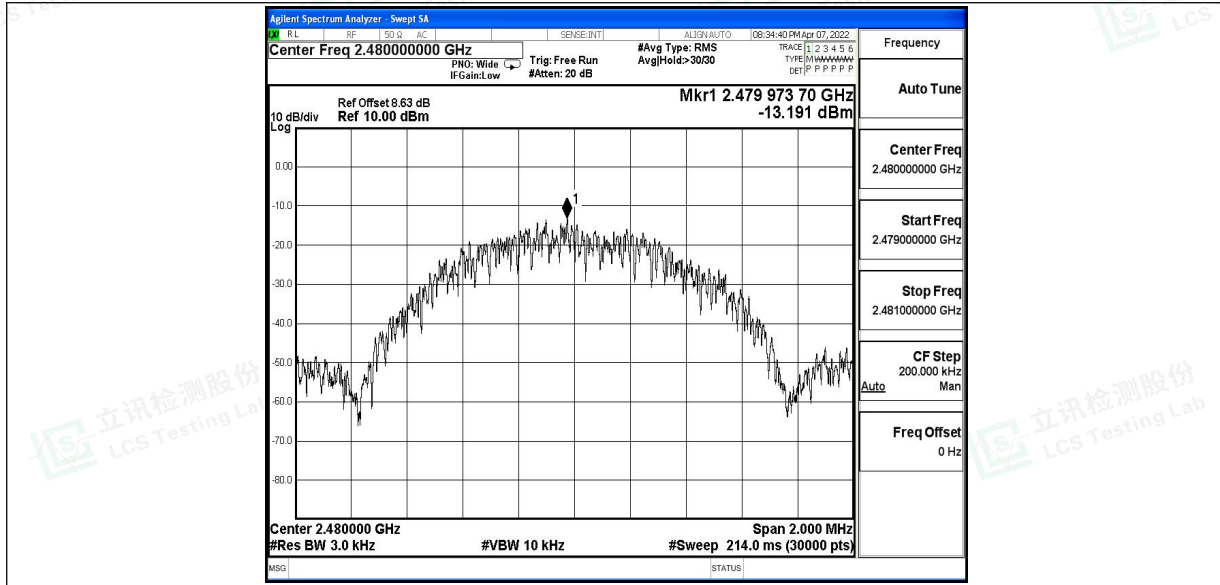


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480







A.4 Band edge measurements

Test Result

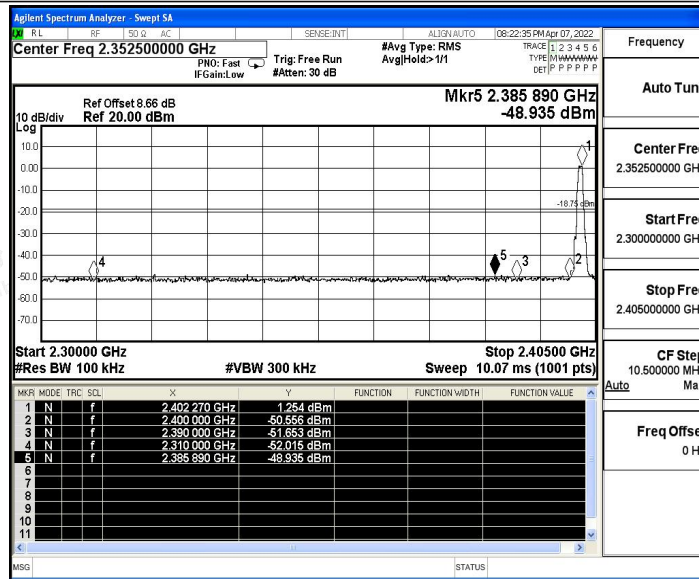
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	1.25	-48.94	≤ -18.75	PASS
		High	2480	1.26	-47.73	≤ -18.74	PASS



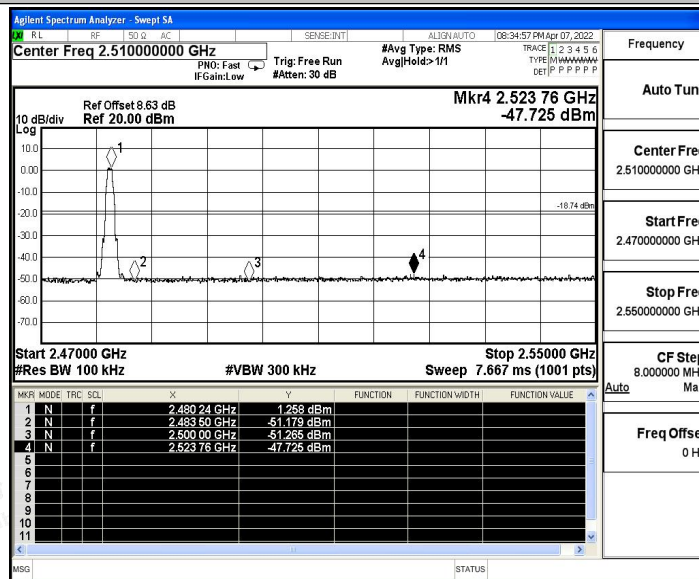


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480





A.5 Conducted Spurious Emission

Test Result

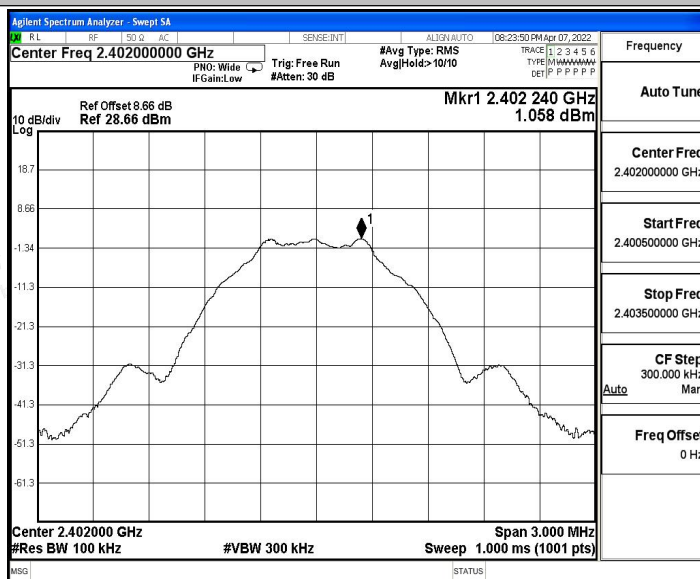
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	1.06	1.06	---	PASS
			30~1000	1.06	-60.49	≤-18.94	PASS
			1000~26500	1.06	-46.15	≤-18.94	PASS
		2440	Reference	1.06	1.06	---	PASS
			30~1000	1.06	-60.39	≤-18.94	PASS
			1000~26500	1.06	-46.46	≤-18.94	PASS
		2480	Reference	1.06	1.06	---	PASS
			30~1000	1.06	-42.13	≤-18.94	PASS
			1000~26500	1.06	-46.66	≤-18.94	PASS



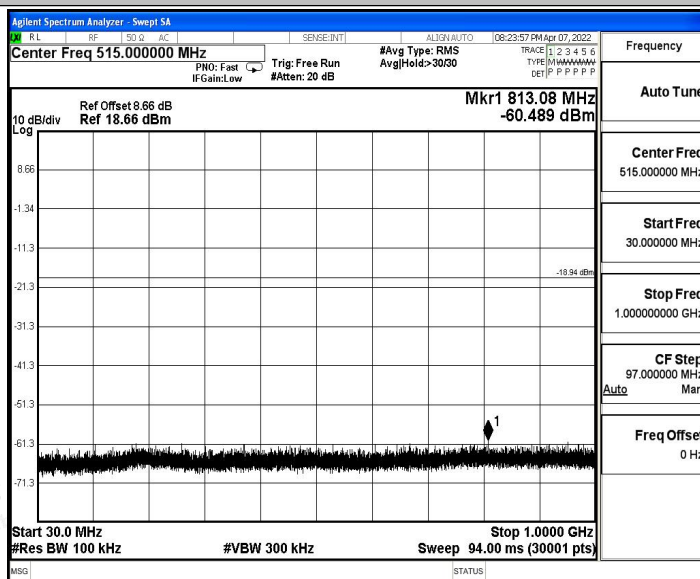


Test Graphs

BLE_1M_Ant1_2402_0~Reference



BLE_1M_Ant1_2402_30~1000



BLE_1M_Ant1_2402_1000~26500

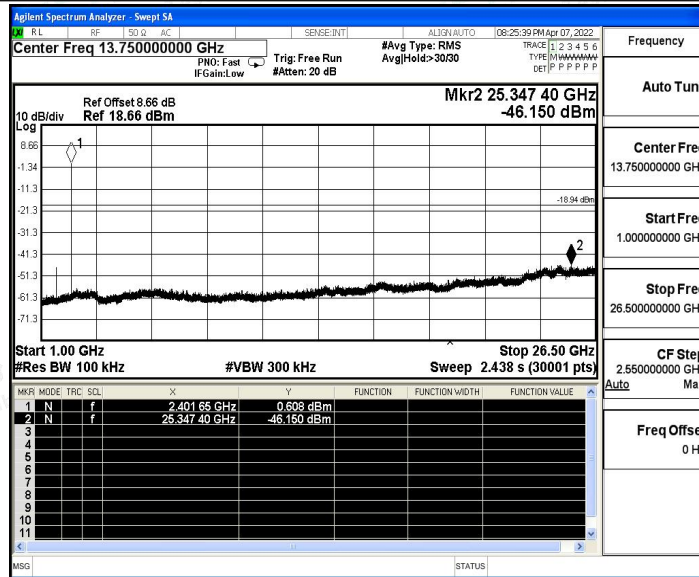


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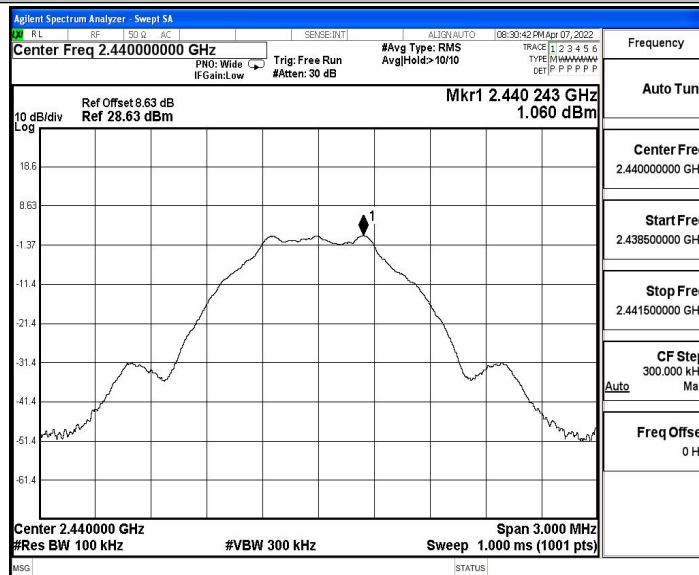
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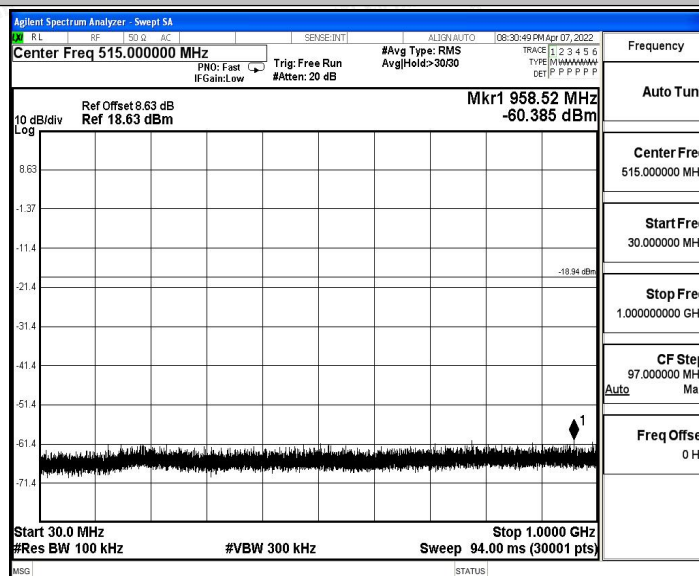
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BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



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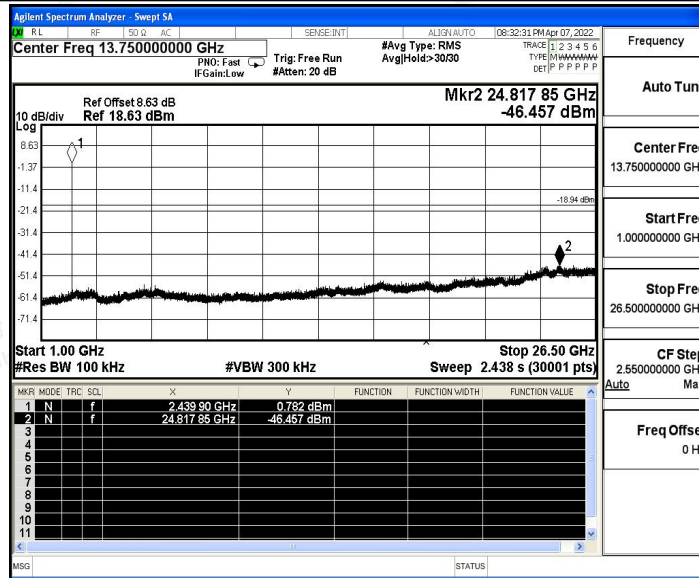
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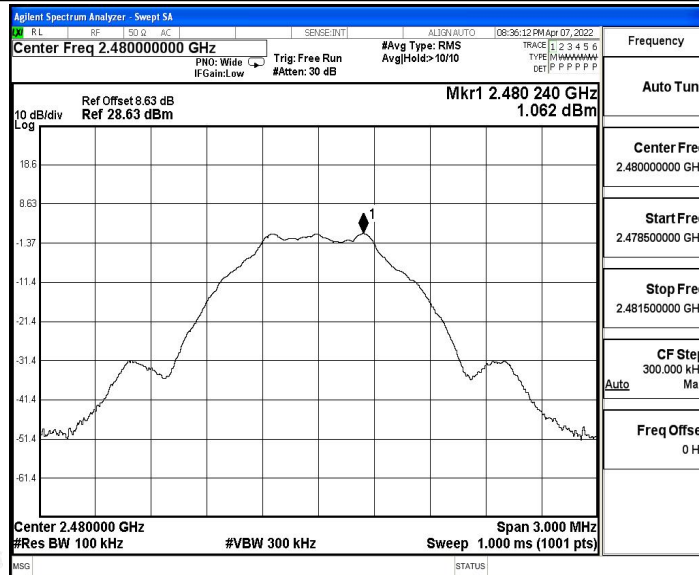
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BLE_1M_Ant1_2440_1000~26500

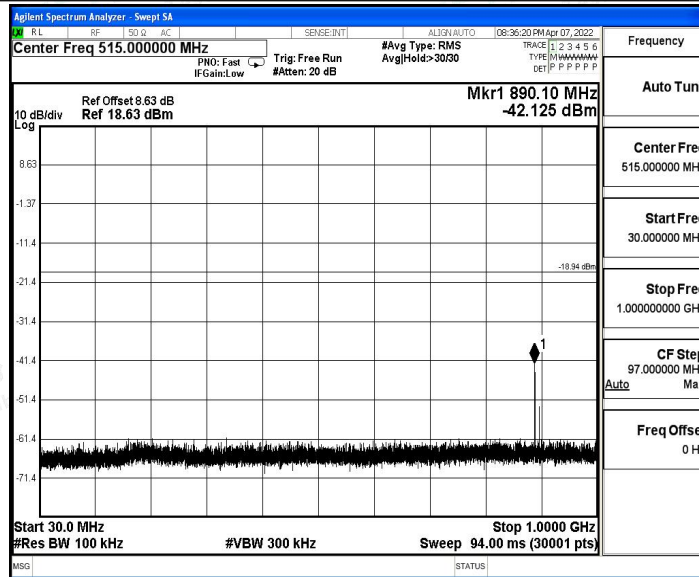


BLE_1M_Ant1_2480_0~Reference

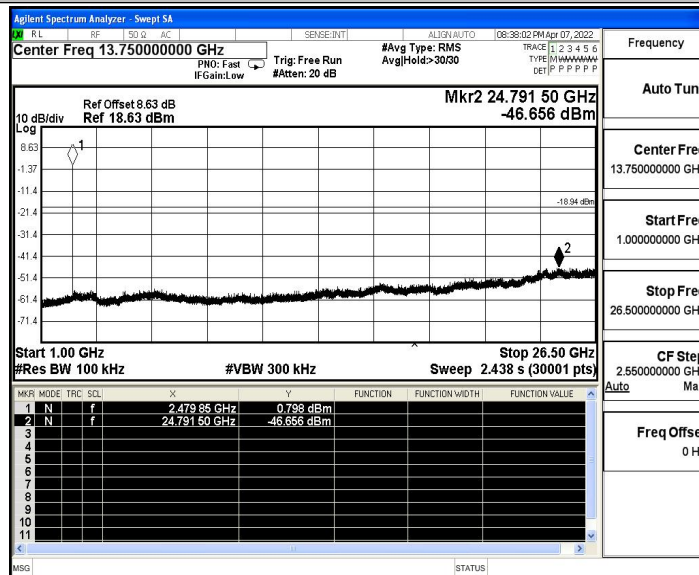


BLE_1M_Ant1_2480_30~1000





BLE_1M_Ant1_2480_1000~26500



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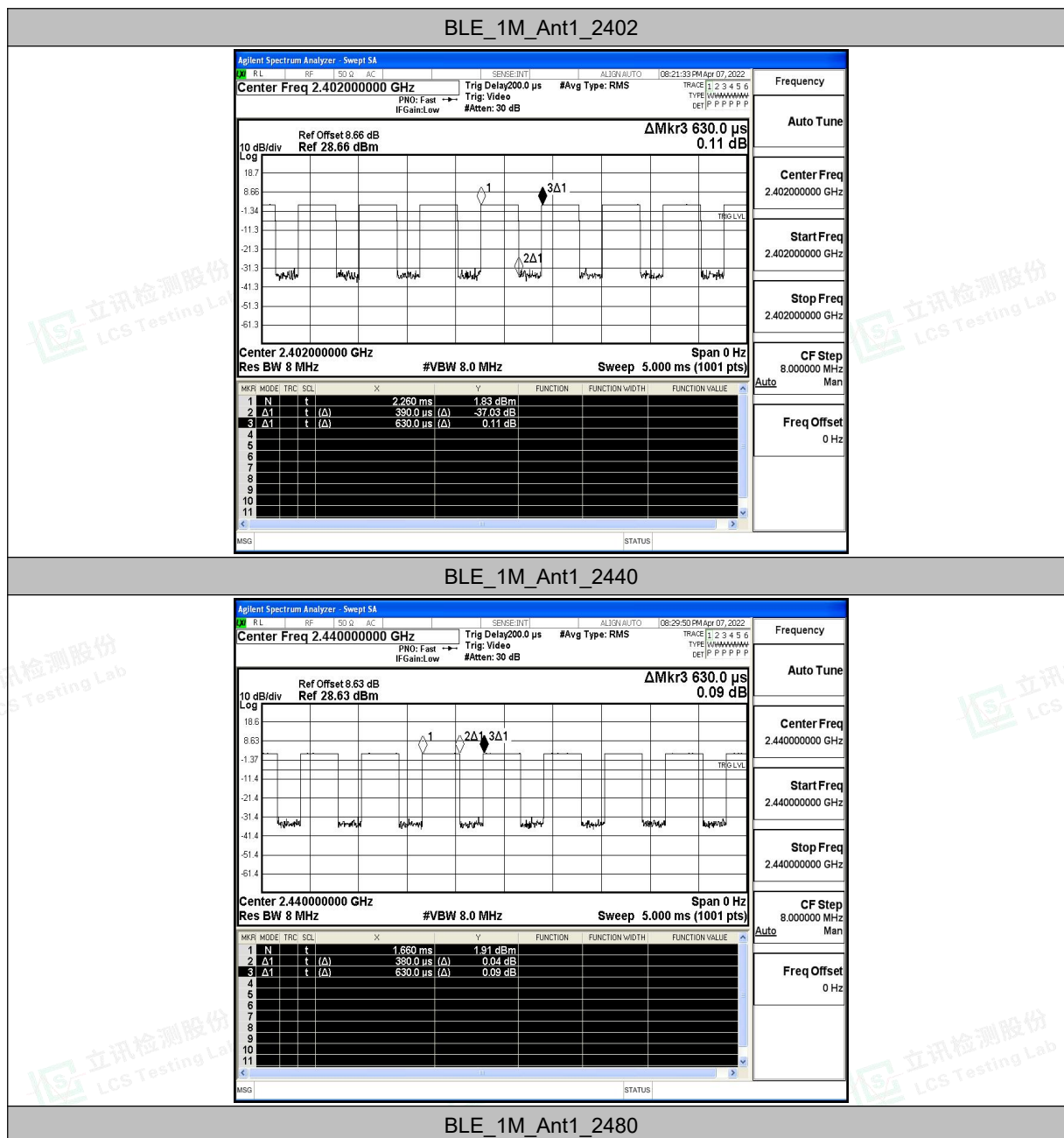
A.6 Duty Cycle

Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T
BLE_1M	Ant1	2402	0.39	0.63	61.90	2.08	2.56
		2440	0.38	0.63	60.32	2.20	2.63
		2480	0.38	0.63	60.32	2.20	2.63



Test Graphs

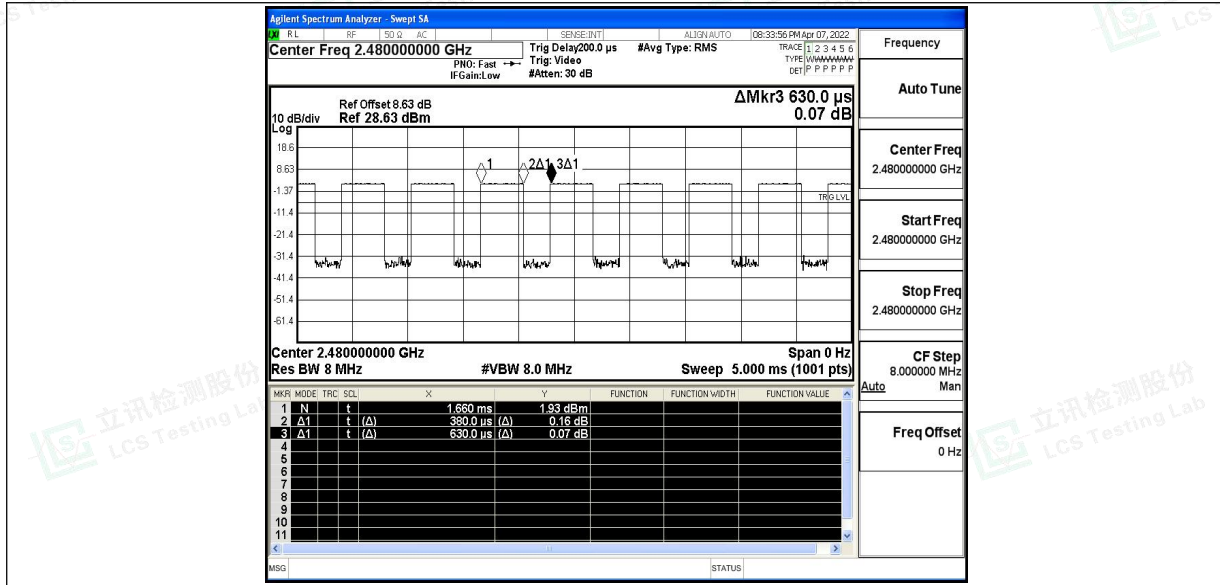


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A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency[MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-47.63	≤-41.20	47.57	≤54	PASS
				AV	2383.685	-46.79	≤-41.20	48.41	≤54	PASS
				AV	2390.000	-46.96	≤-41.20	48.24	≤54	PASS
				Peak	2310.000	-38.47	≤-21.20	56.73	≤74	PASS
				Peak	2365.520	-36.53	≤-21.20	58.67	≤74	PASS
				Peak	2390.000	-38.33	≤-21.20	56.87	≤74	PASS
		High	2480	AV	2483.500	-46.38	≤-41.20	48.82	≤54	PASS
				AV	2490.240	-46.18	≤-41.20	49.02	≤54	PASS
				AV	2500.000	-46.55	≤-41.20	48.65	≤54	PASS
				Peak	2483.500	-37.59	≤-21.20	57.61	≤74	PASS
				Peak	2499.440	-36.17	≤-21.20	59.03	≤74	PASS
				Peak	2500.000	-38.36	≤-21.20	56.84	≤74	PASS

Note:

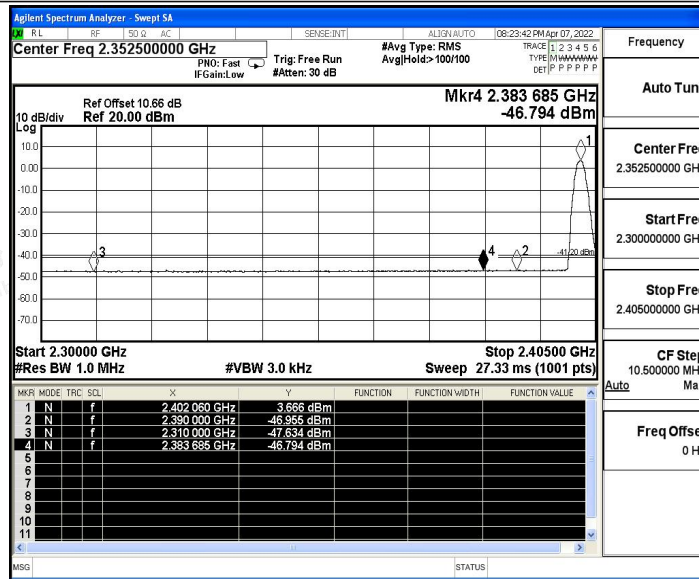
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



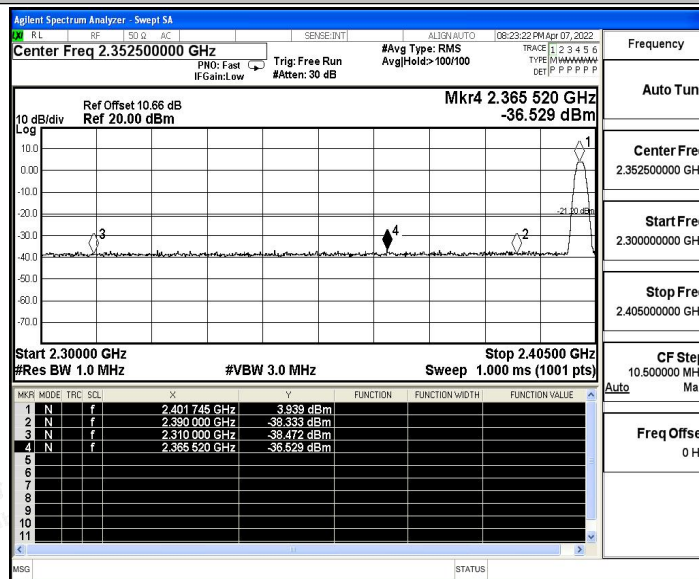


Test Graphs

BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV

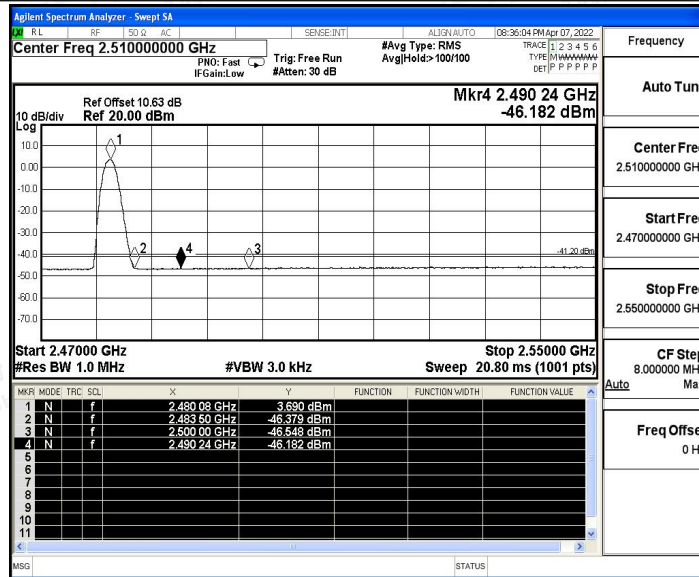


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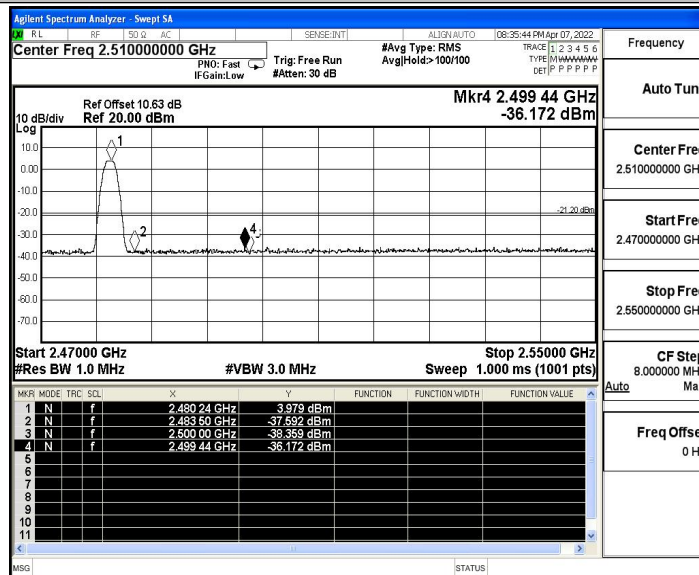
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BLE_1M_Ant1_High_2480_Peak



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