



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Water quality detector

Test Model: WQM01H-3

Environmental Conditions

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





A.1 DTS Bandwidth

Test Result

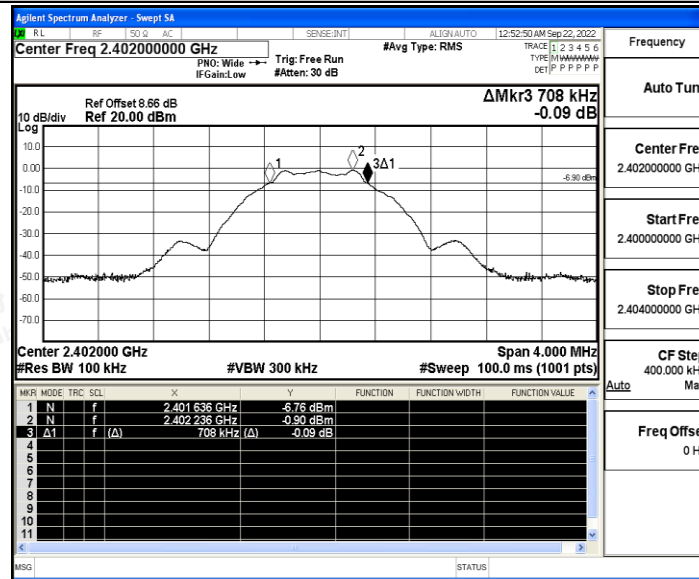
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.708	2401.636	2402.344	0.5	PASS
		2440	0.712	2439.636	2440.348	0.5	PASS
		2480	0.716	2479.632	2480.348	0.5	PASS



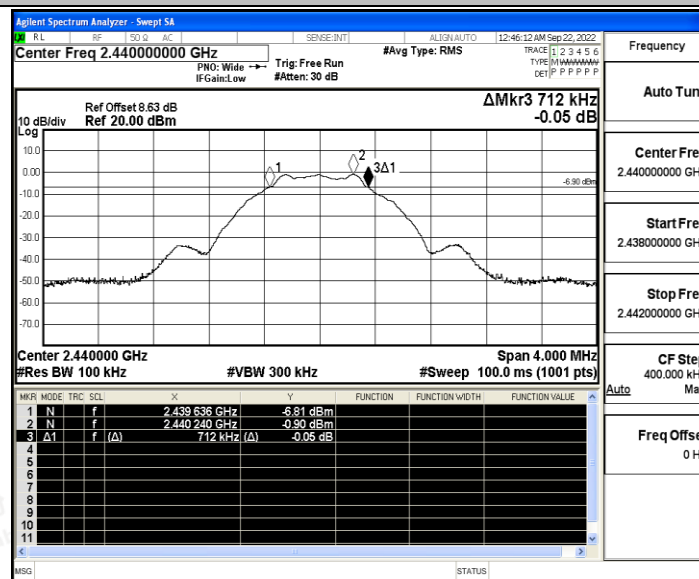


Test Graphs

BLE_1M_Ant1_2402

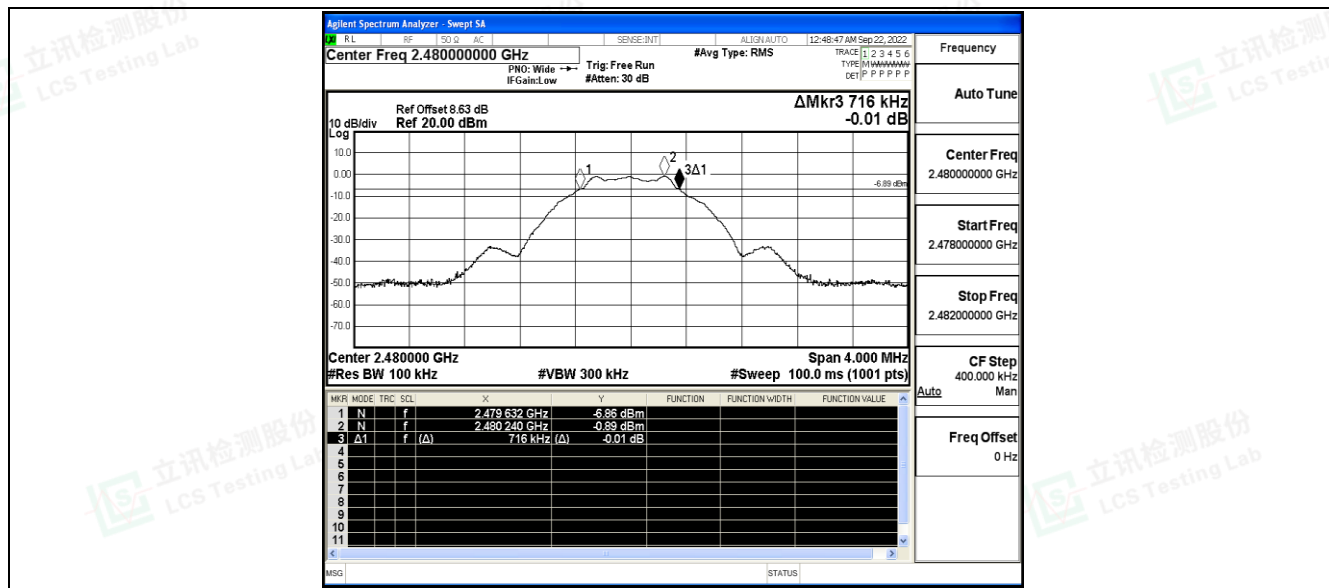


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480







A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.16	≤30	PASS
		2440	0.06	≤30	PASS
		2480	0.08	≤30	PASS

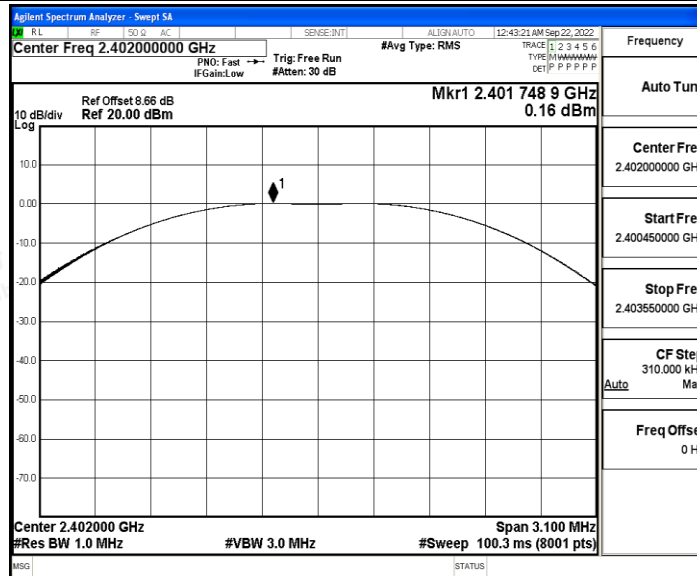


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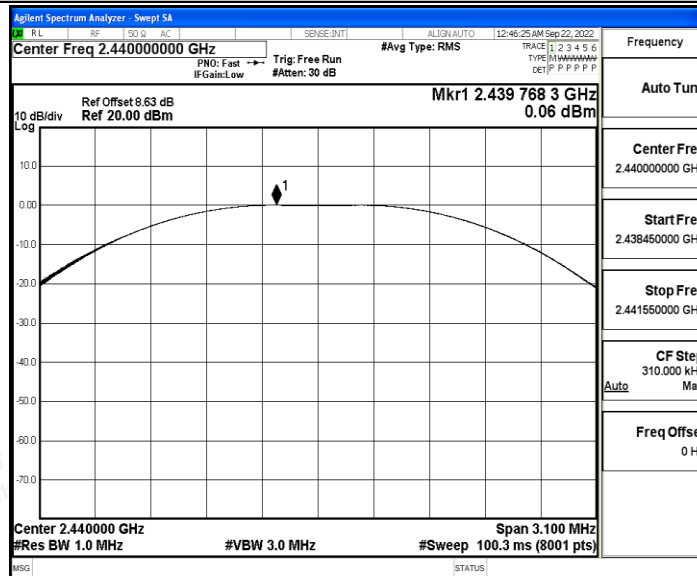


Test Graphs

BLE_1M_Ant1_2402

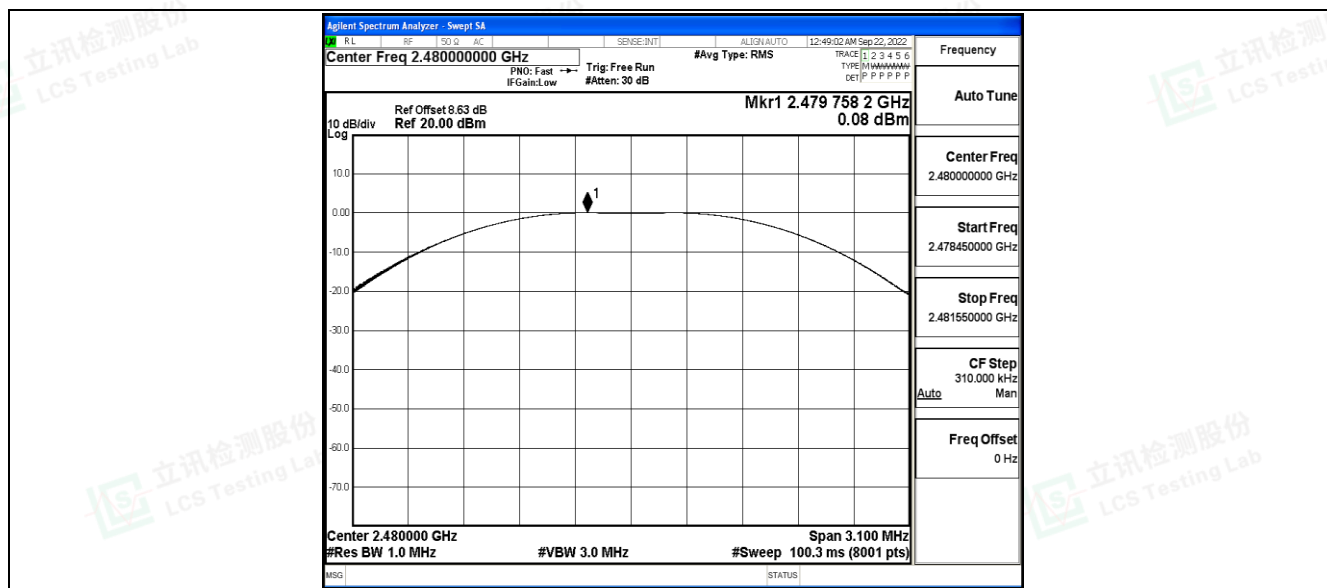


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480







A.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.05	≤8.00	PASS
		2440	-14.98	≤8.00	PASS
		2480	-15.06	≤8.00	PASS

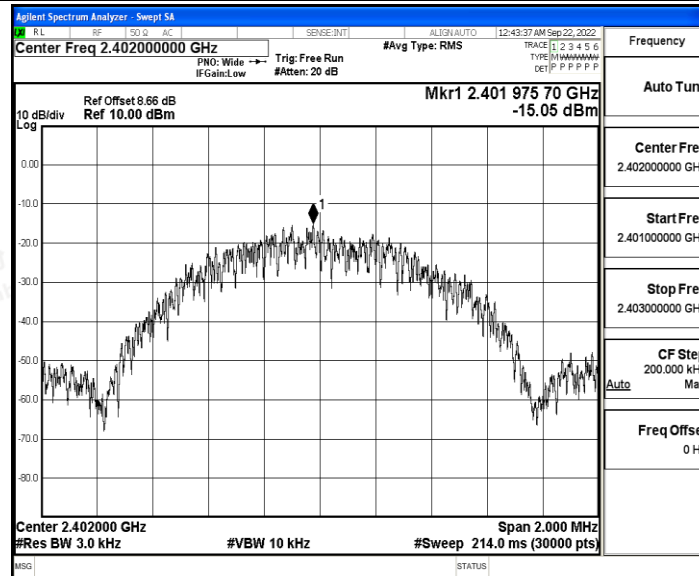


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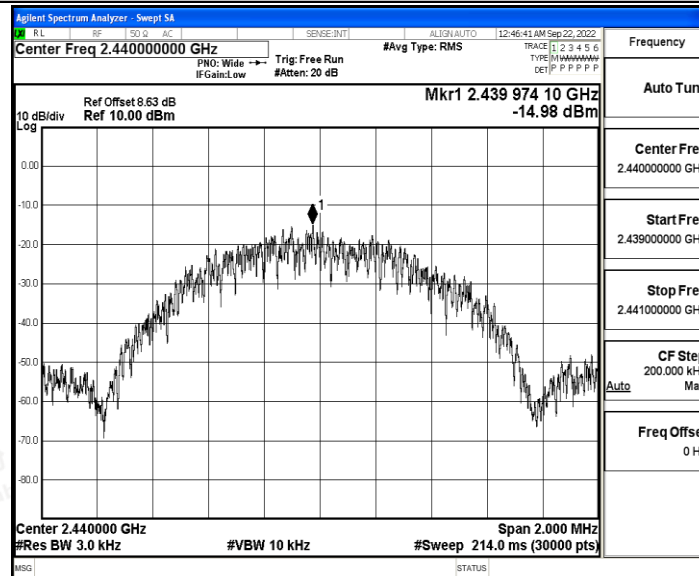


Test Graphs

BLE_1M_Ant1_2402

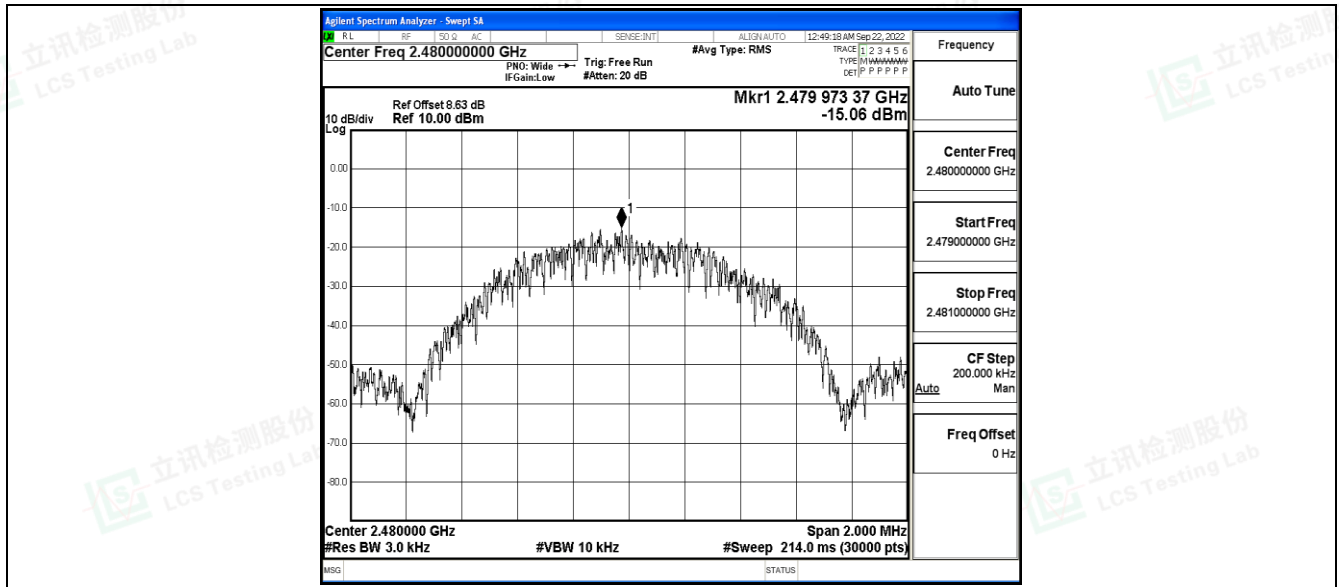


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480







A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.63	-58.82	≤-20.63	PASS
		High	2480	-0.75	-58.23	≤-20.75	PASS

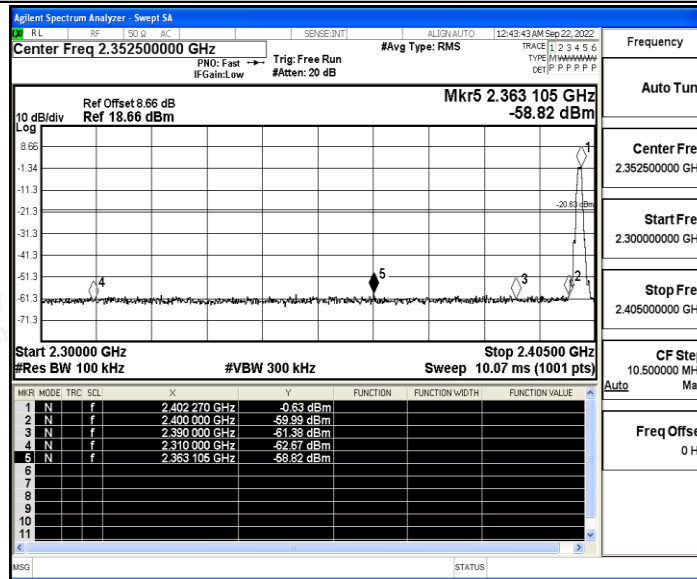


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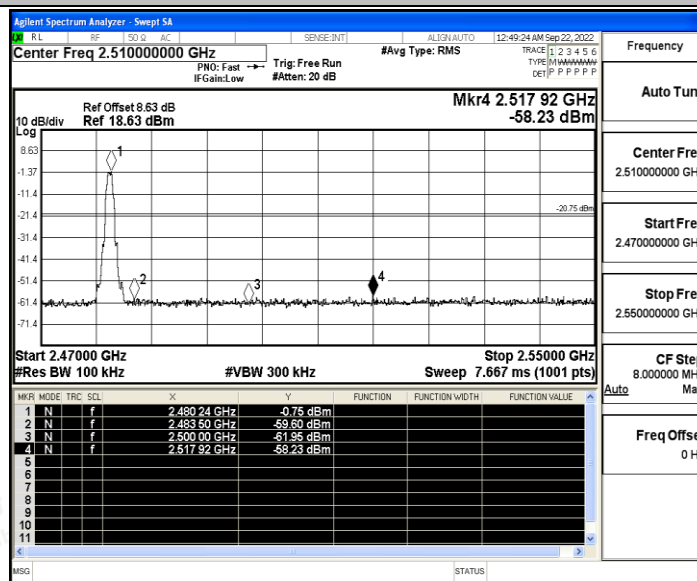


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480





A.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.02	-1.02	---	PASS
			30~1000	-1.02	-59.98	≤-21.02	PASS
			1000~26500	-1.02	-45.01	≤-21.02	PASS
		2440	Reference	-1.48	-1.48	---	PASS
			30~1000	-1.48	-60.1	≤-21.48	PASS
			1000~26500	-1.48	-46.24	≤-21.48	PASS
		2480	Reference	-1.18	-1.18	---	PASS
			30~1000	-1.18	-60.17	≤-21.18	PASS
			1000~26500	-1.18	-46.45	≤-21.18	PASS

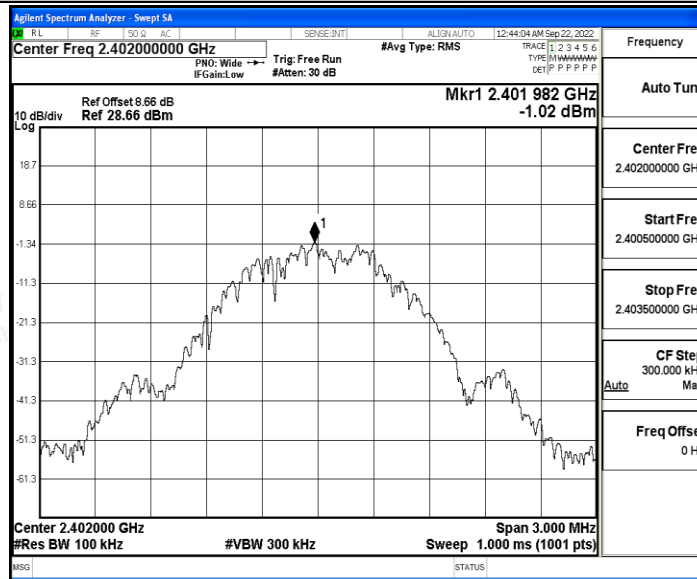


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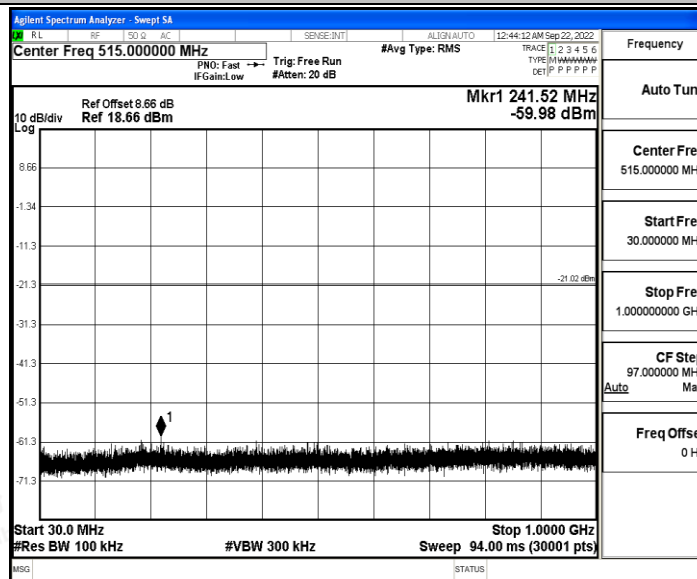


Test Graphs

BLE_1M_Ant1_2402_0~Reference

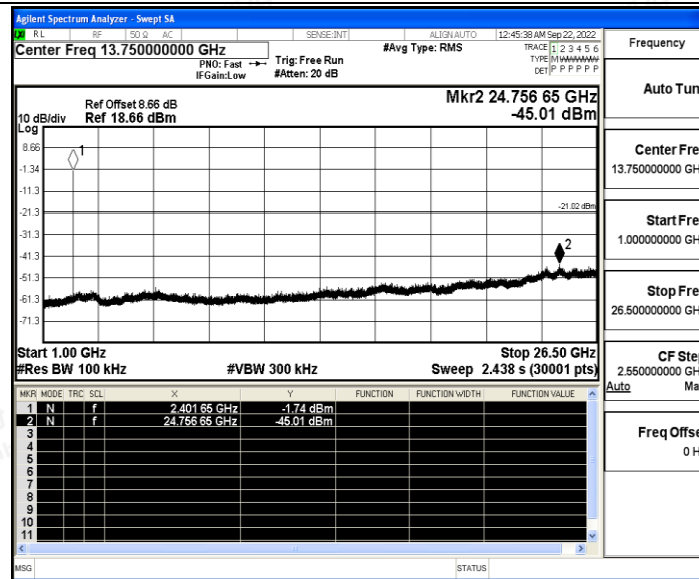


BLE_1M_Ant1_2402_30~1000

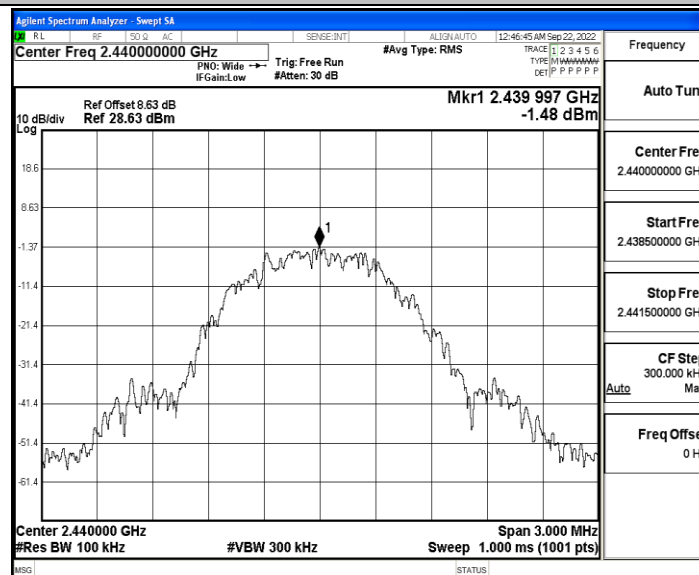


BLE_1M_Ant1_2402_1000~26500



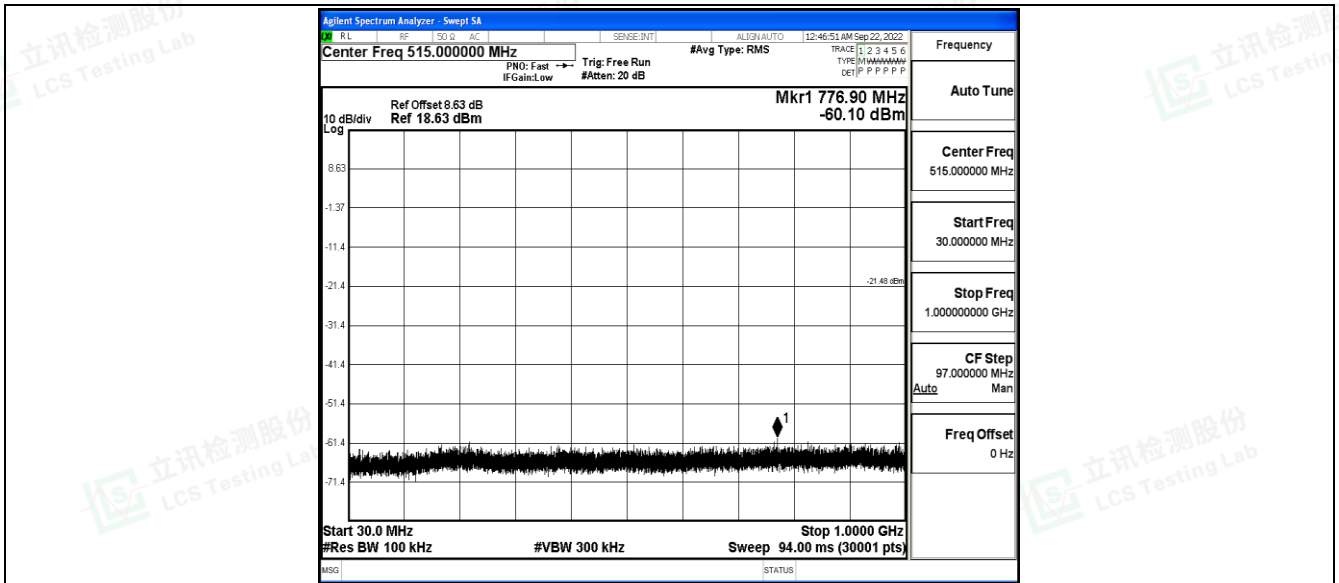


BLE_1M_Ant1_2440_0~Reference

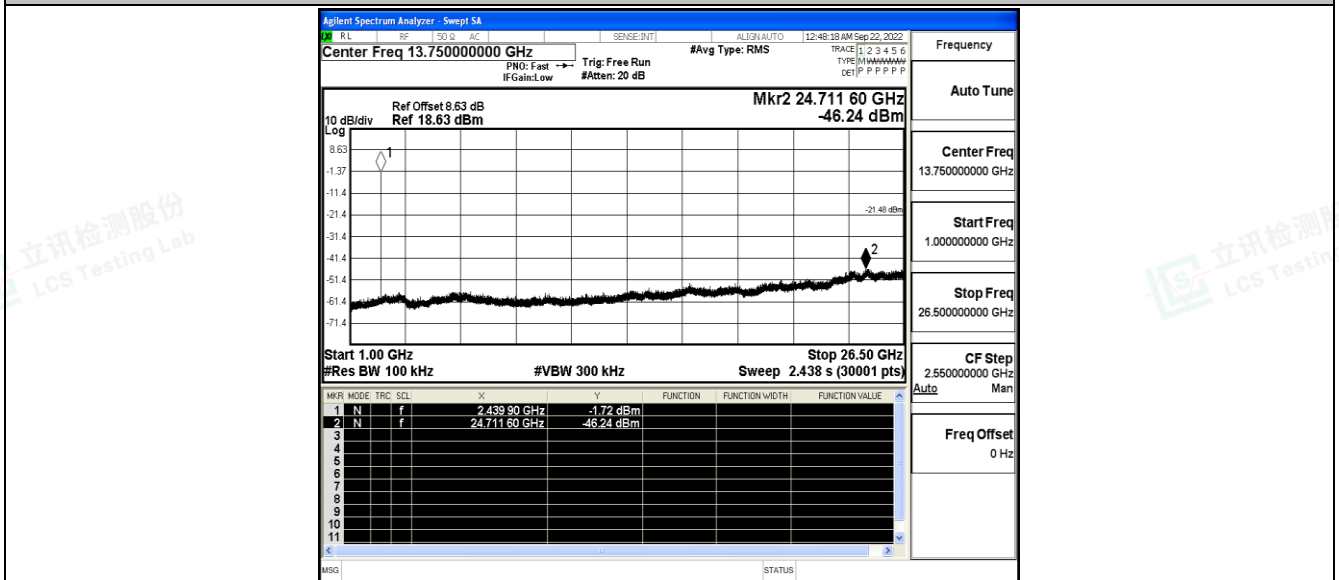


BLE_1M_Ant1_2440_30~1000



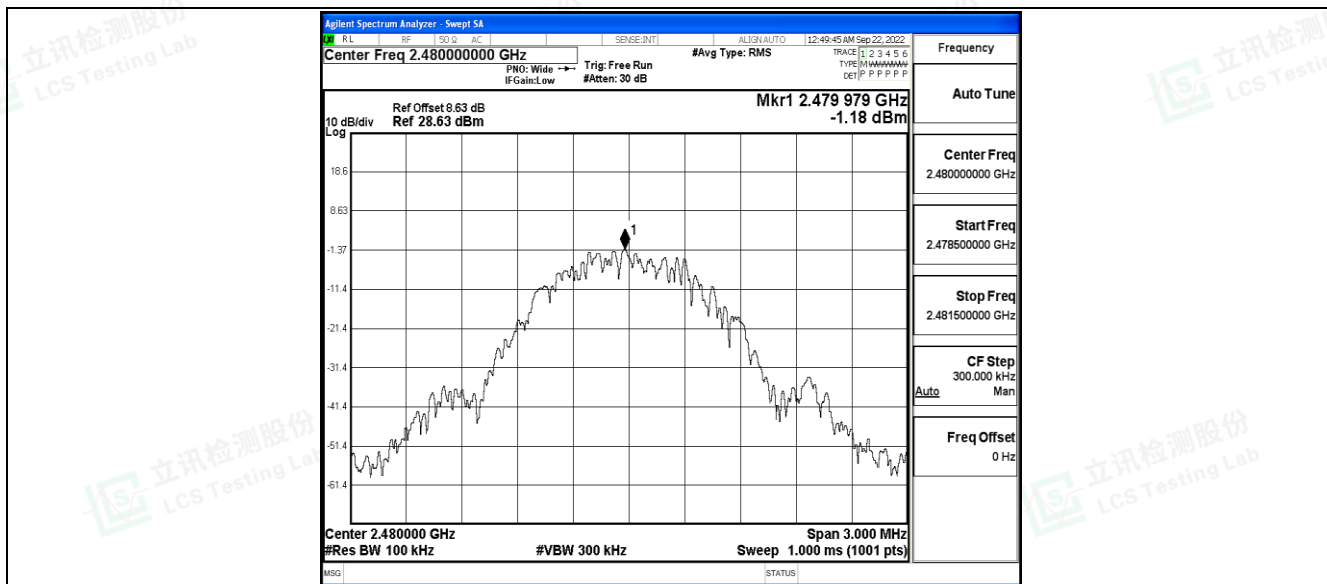


BLE_1M_Ant1_2440_1000~26500

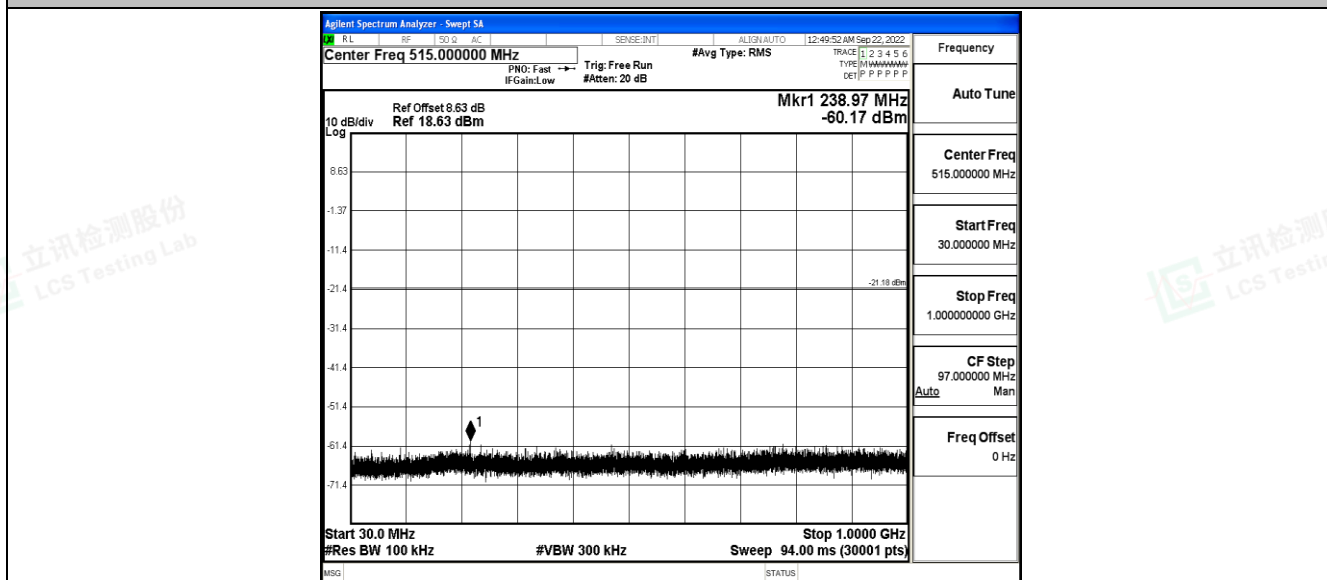


BLE_1M_Ant1_2480_0~Reference



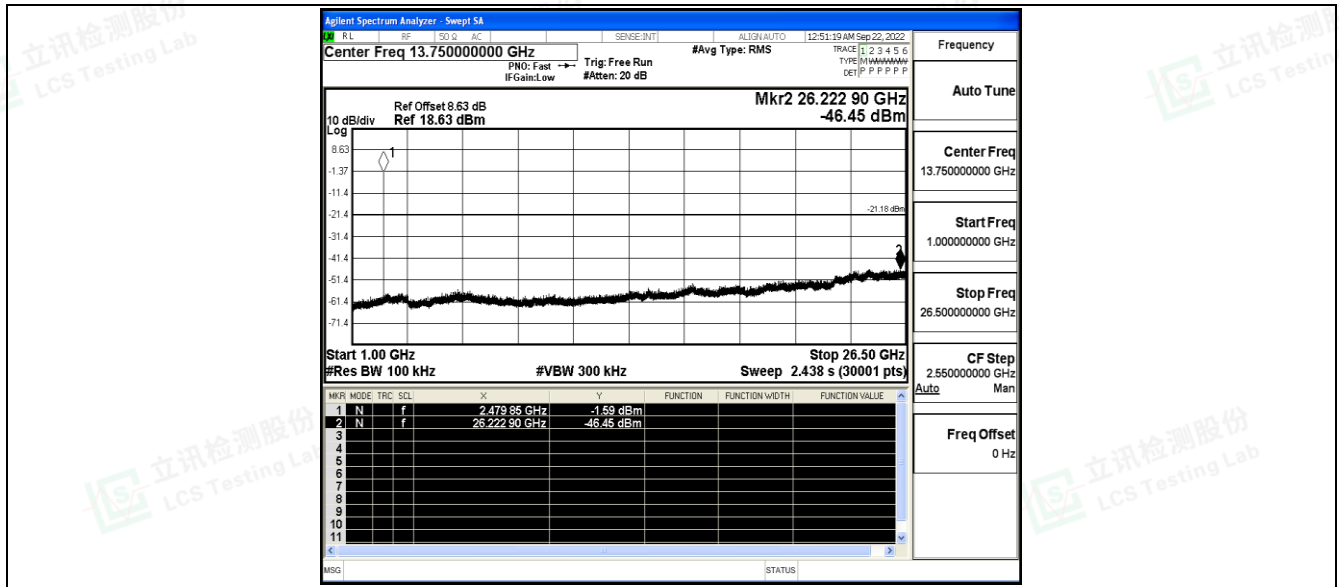


BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500







A.6 Duty Cycle

Test Result

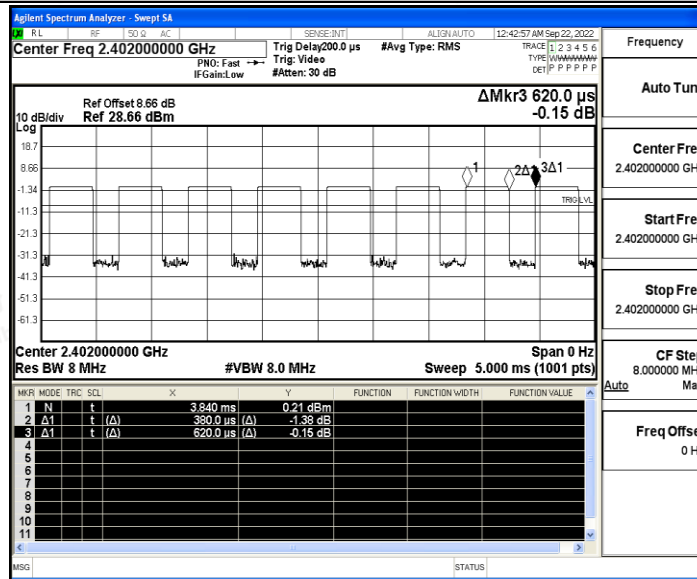
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.62	0.6129	61.29	2.13	2.63	---	---
		2440	0.39	0.63	0.6190	61.90	2.08	2.56	---	---
		2480	0.38	0.62	0.6129	61.29	2.13	2.63	---	---



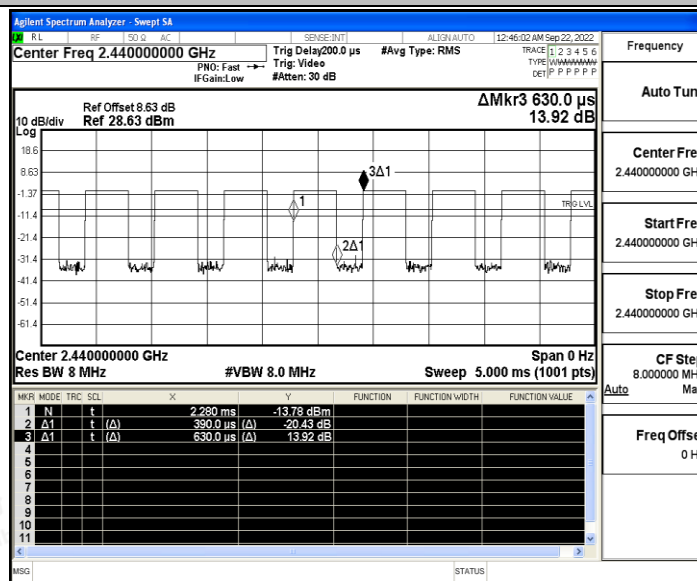


Test Graphs

BLE_1M_Ant1_2402

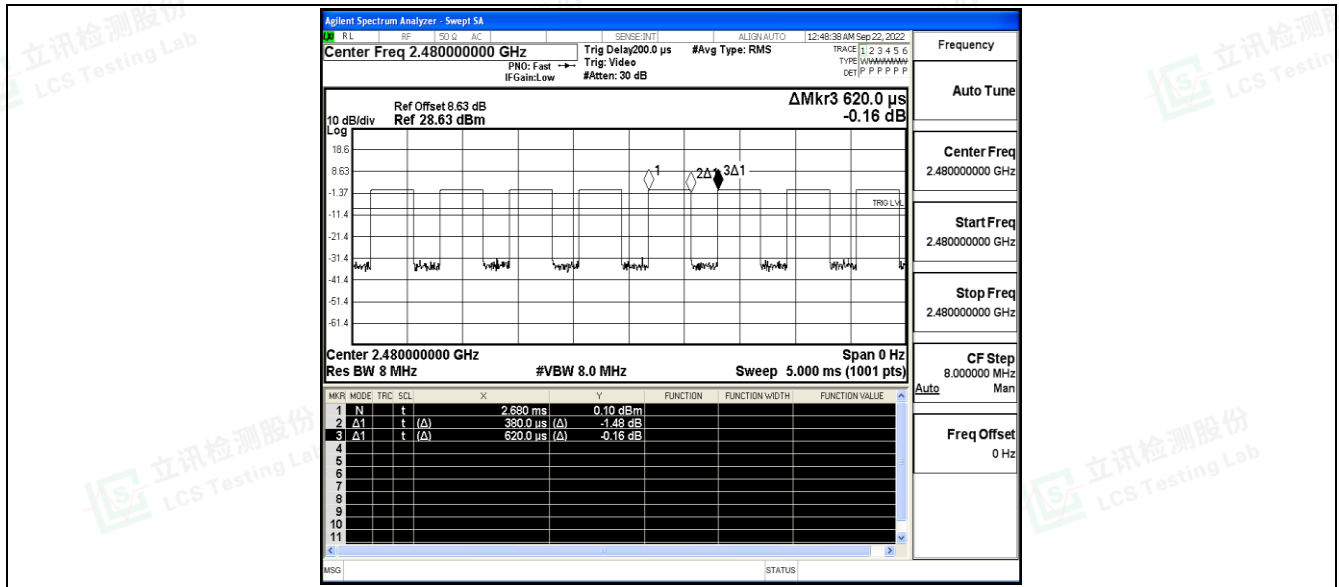


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480







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	-57.43	≤-41.20	37.77	≤54	PASS
				AV	2389.775	-56.72	≤-41.20	38.48	≤54	PASS
				AV	2390.000	-57.07	≤-41.20	38.13	≤54	PASS
				Peak	2310.000	-51.23	≤-21.20	43.97	≤74	PASS
				Peak	2388.515	-47.33	≤-21.20	47.87	≤74	PASS
				Peak	2390.000	-49.36	≤-21.20	45.84	≤74	PASS
		High	2480	AV	2483.500	-53.56	≤-41.20	41.64	≤54	PASS
				AV	2483.520	-53.56	≤-41.20	41.64	≤54	PASS
				AV	2500.000	-56.38	≤-41.20	38.82	≤54	PASS
				Peak	2483.500	-49.04	≤-21.20	46.16	≤74	PASS
				Peak	2499.760	-47.3	≤-21.20	47.90	≤74	PASS
				Peak	2500.000	-49.02	≤-21.20	46.18	≤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.

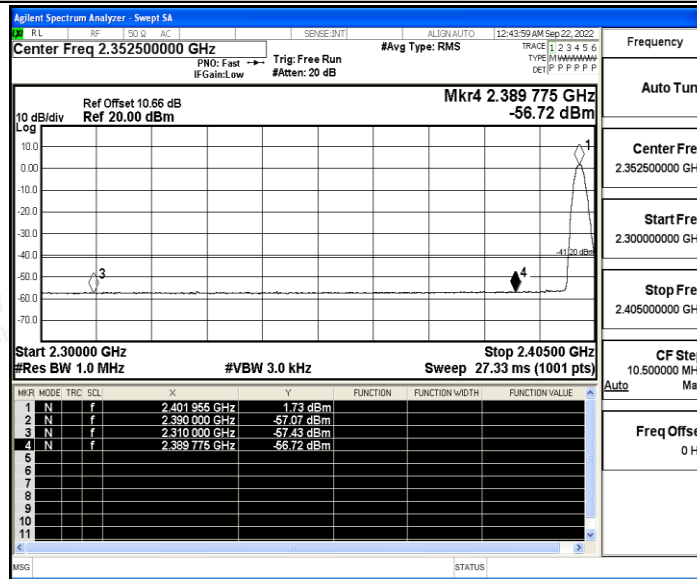


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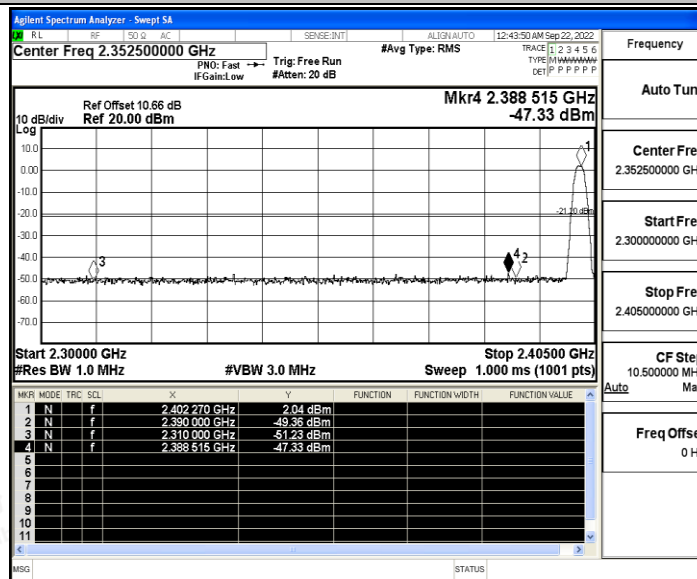


Test Graphs

BLE_1M_Ant1_Low_2402_AV

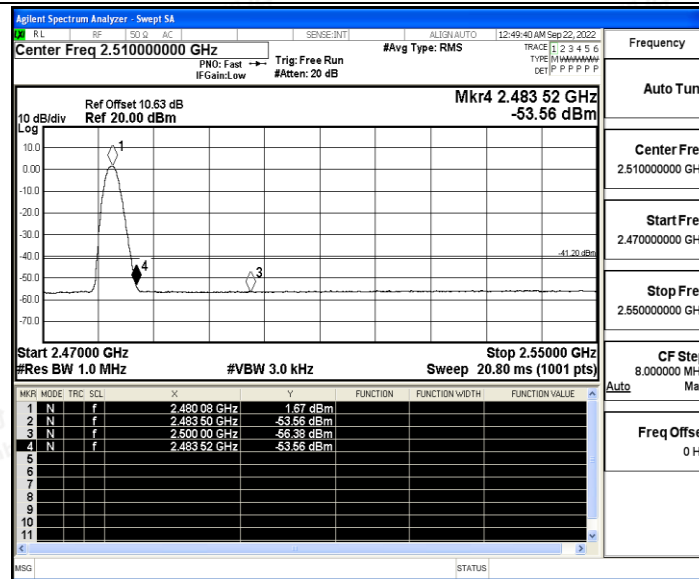


BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV





BLE_1M_Ant1_High_2480_Peak

