



Appendix B

RF Test Data for 2.4G BLE (Conducted Measurement)

Product Name: MCMP1021

Trade Mark: N/A

Test Model: MCMP1021

Environmental Conditions

Temperature:	23.6 ° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan



B.1 DTS Bandwidth

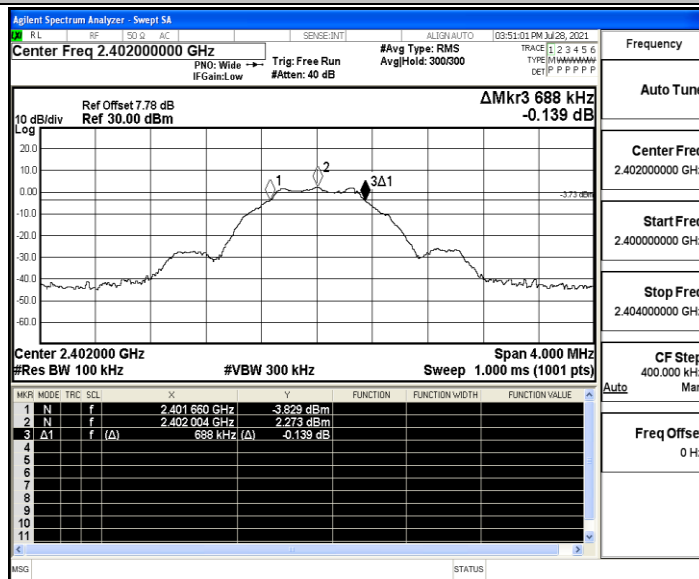
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.688	2401.660	2402.348	≥0.5	PASS
		2440	0.668	2439.668	2440.336	≥0.5	PASS
		2480	0.676	2479.660	2480.336	≥0.5	PASS

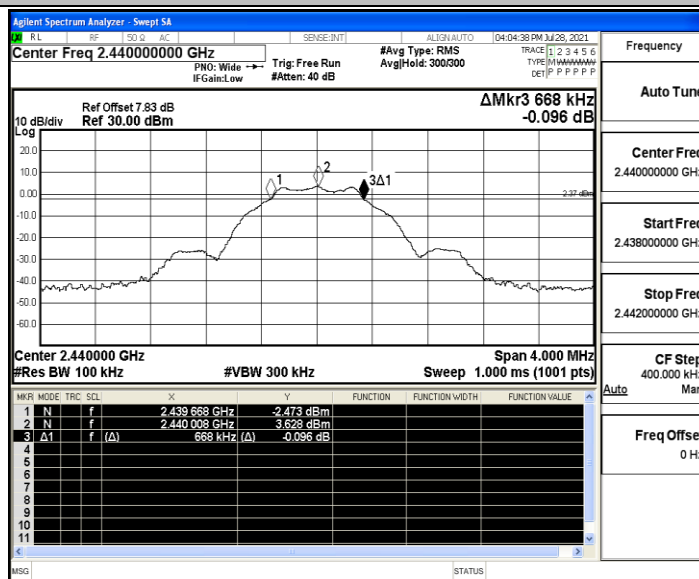


Test Graphs

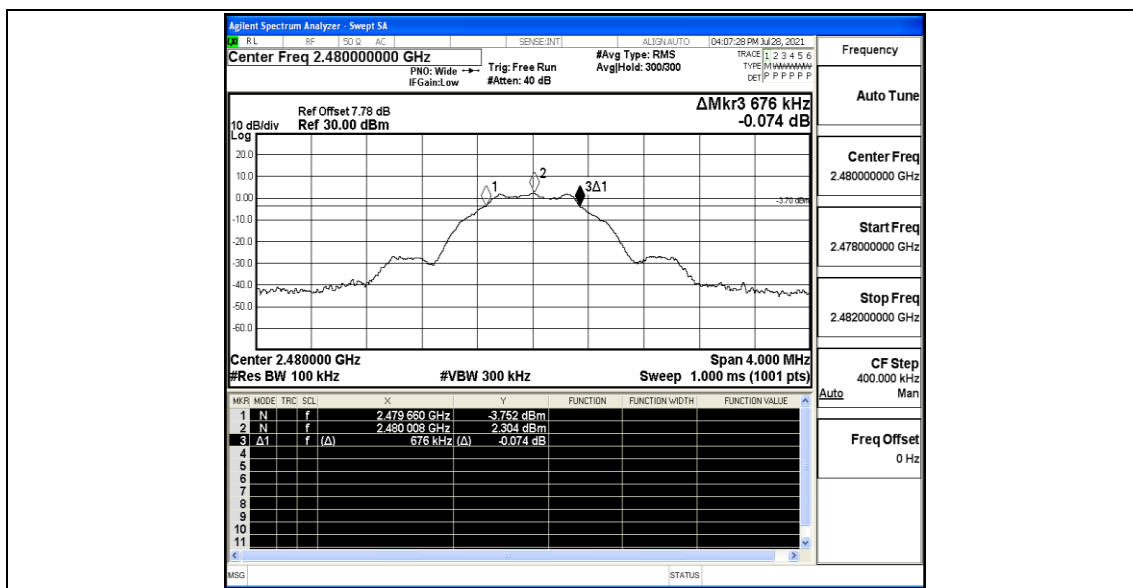
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





B.2 Occupied Channel Bandwidth

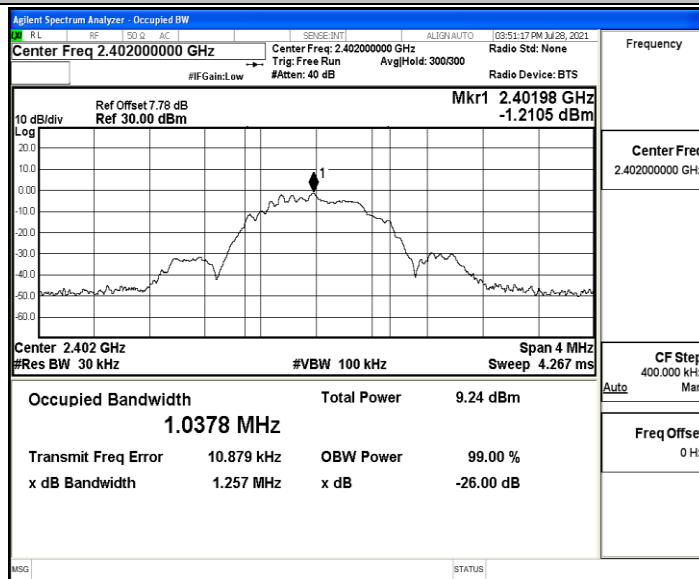
Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0378	2401.492	2402.530	---	PASS
		2440	1.0354	2439.493	2440.528	---	PASS
		2480	1.0372	2479.491	2480.528	---	PASS

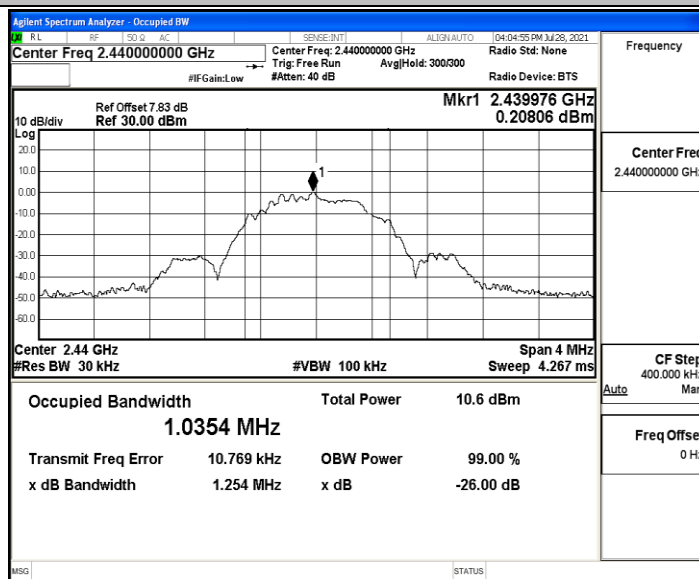


Test Graphs

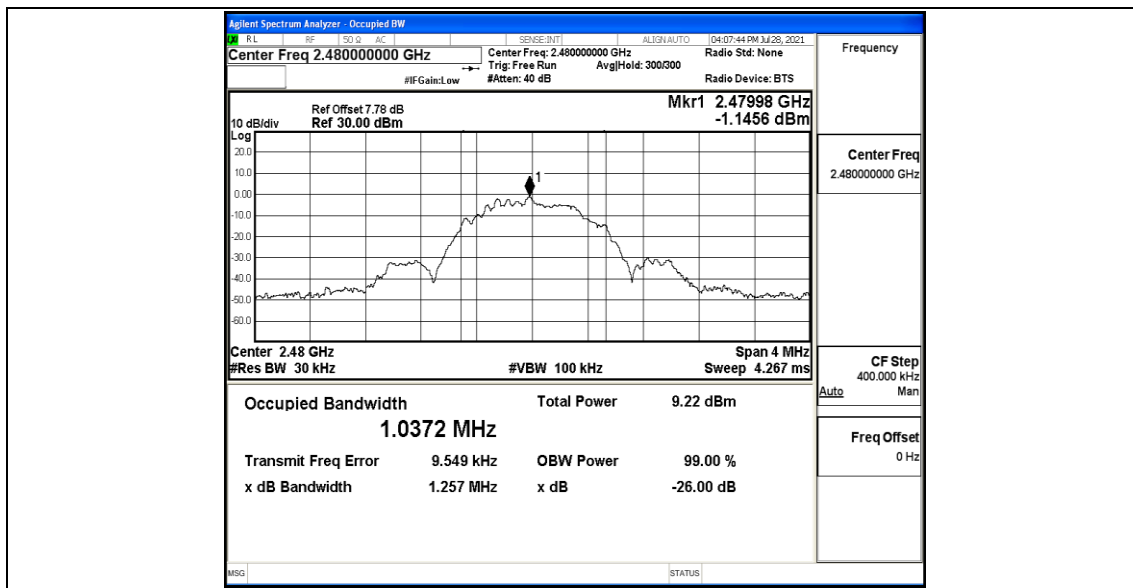
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





B.3 Maximum conducted output power

Test Result

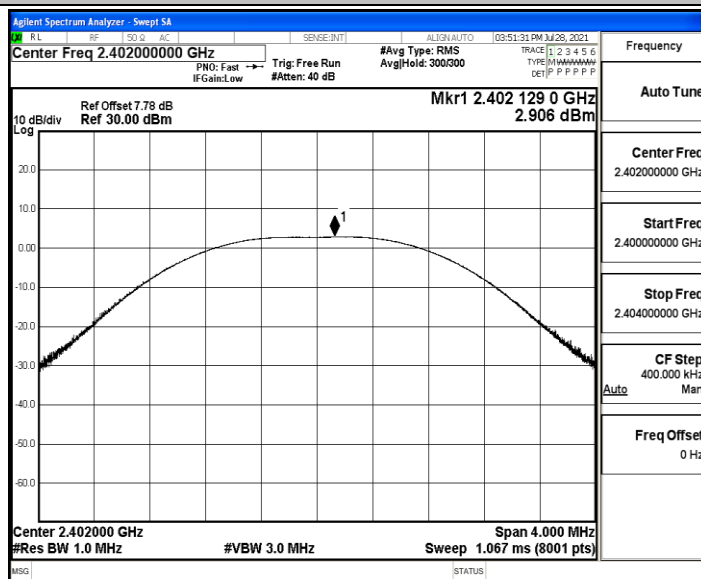
TestMode	Antenna	Channel	Meas.Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	2.91	2.91	≤30	PASS
		2440	4.19	4.19	≤30	PASS
		2480	2.86	2.86	≤30	PASS

Note: The Duty Cycle Factor is compensated in the graph.

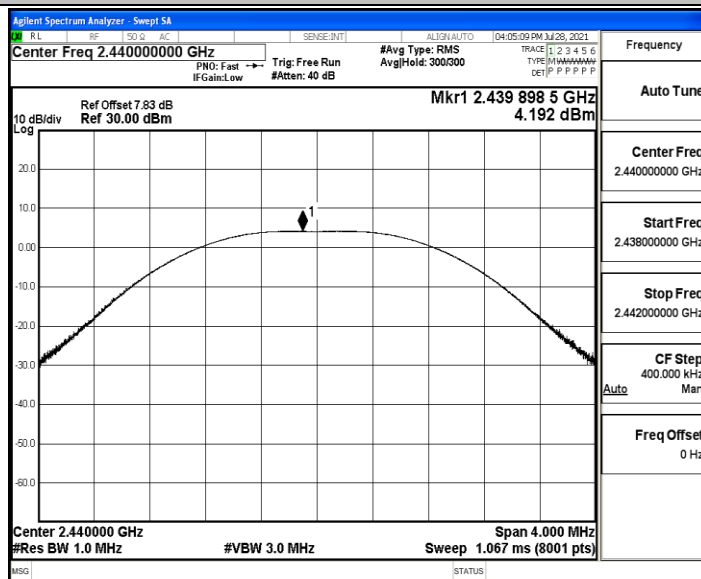


Test Graphs

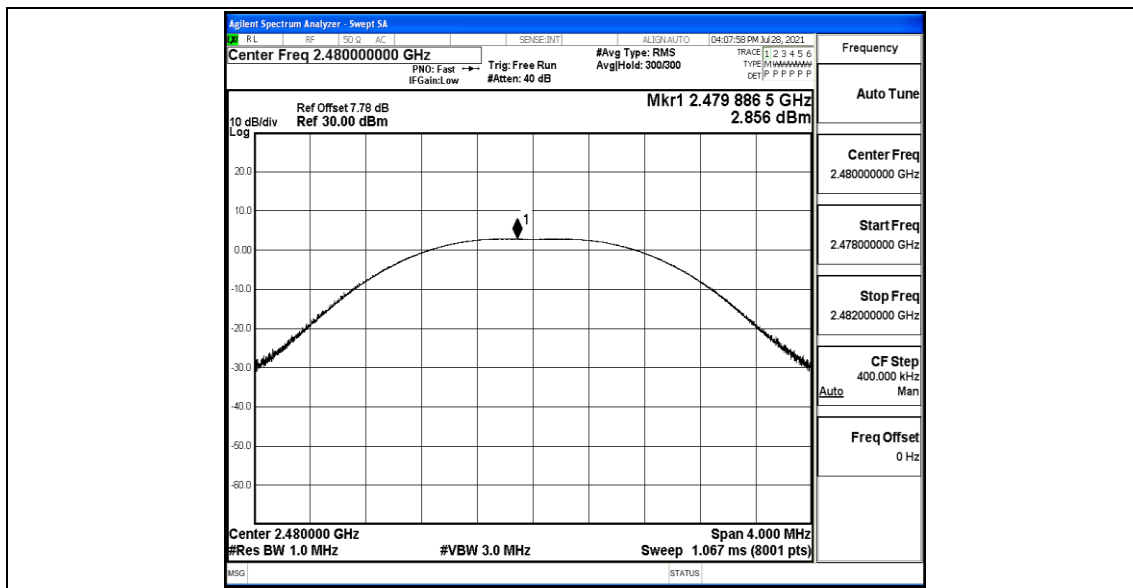
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





B.4 Maximum power spectral density

Test Result

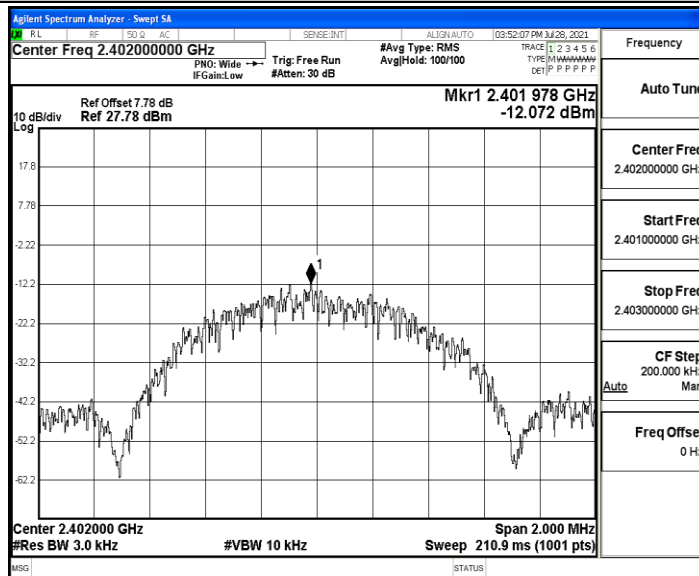
TestMode	Antenna	Channel	Meas.Level [dBm/3-100kHz]	Result [dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-12.07	-12.07	≤8	PASS
		2440	-10.57	-10.57	≤8	PASS
		2480	-11.9	-11.9	≤8	PASS

Note: The Duty Cycle Factor is compensated in the graph.

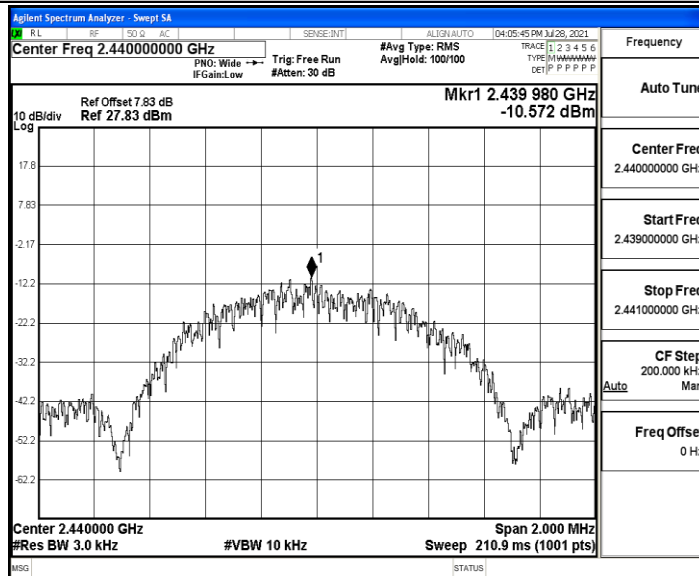


Test Graphs

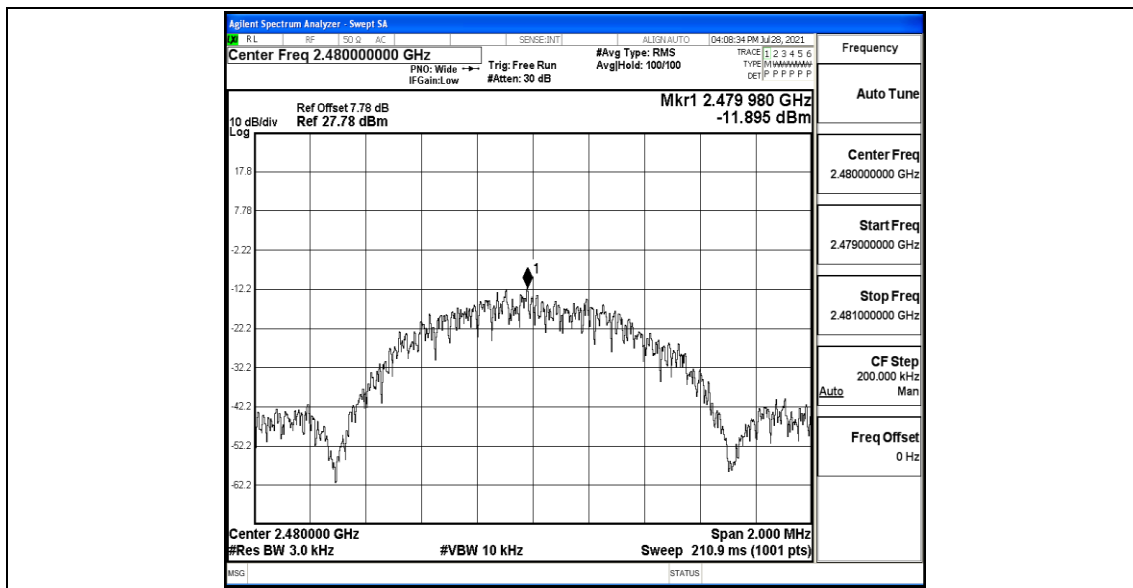
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





B.5 Band edge measurements

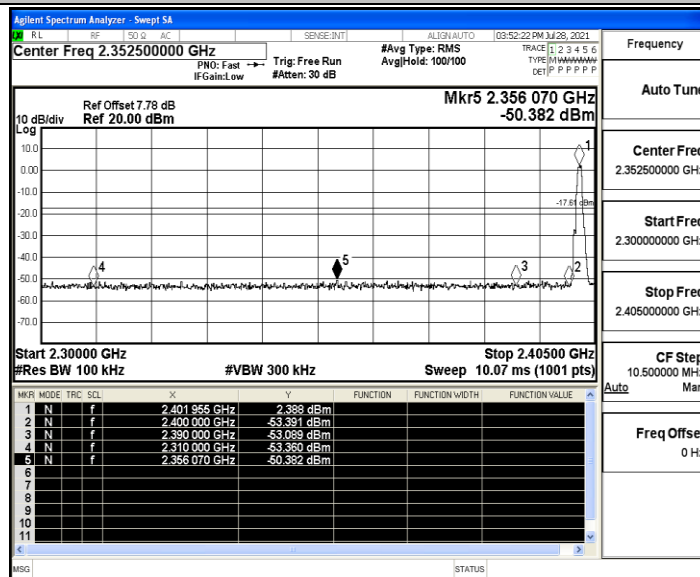
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	2.39	-50.38	≤-17.61	PASS
		High	2480	2.12	-49.61	≤-17.88	PASS

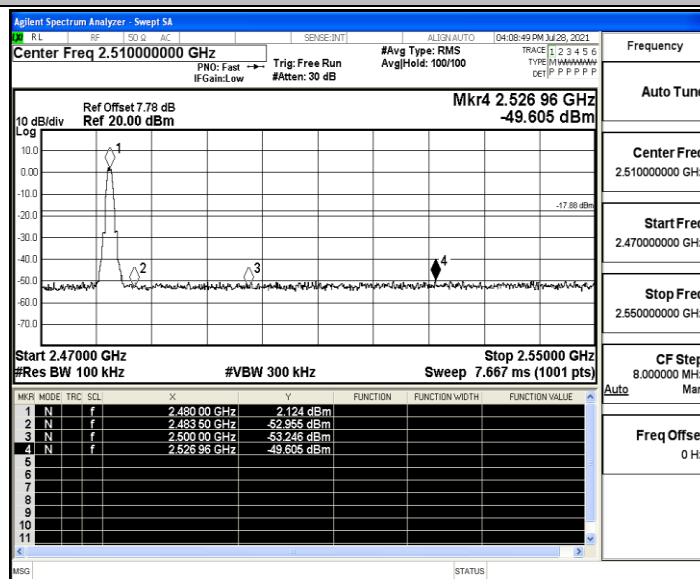


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480





B.6 Conducted Spurious Emission

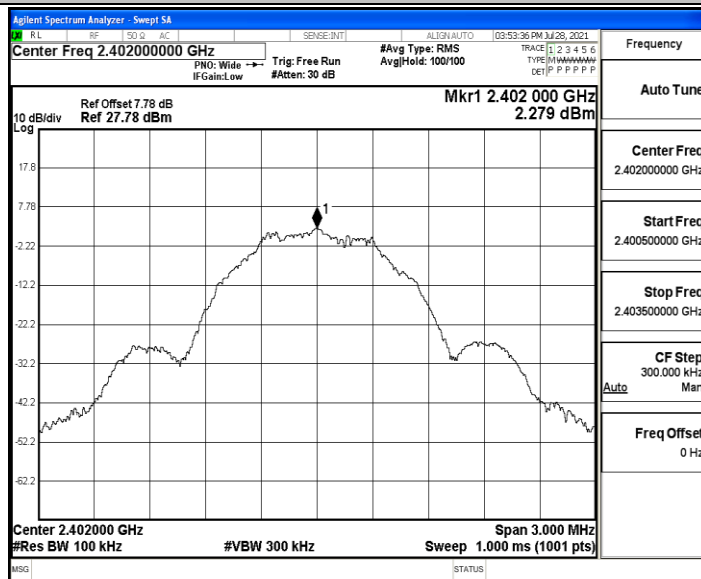
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	2.28	2.28	---	PASS
			30~1000	2.28	-59.47	≤ -17.72	PASS
			1000~26500	2.28	-48.03	≤ -17.72	PASS
		2440	Reference	3.10	3.10	---	PASS
			30~1000	3.10	-60.41	≤ -16.9	PASS
			1000~26500	3.10	-46.96	≤ -16.9	PASS
		2480	Reference	1.78	1.78	---	PASS
			30~1000	1.78	-61.38	≤ -18.23	PASS
			1000~26500	1.78	-47.81	≤ -18.23	PASS

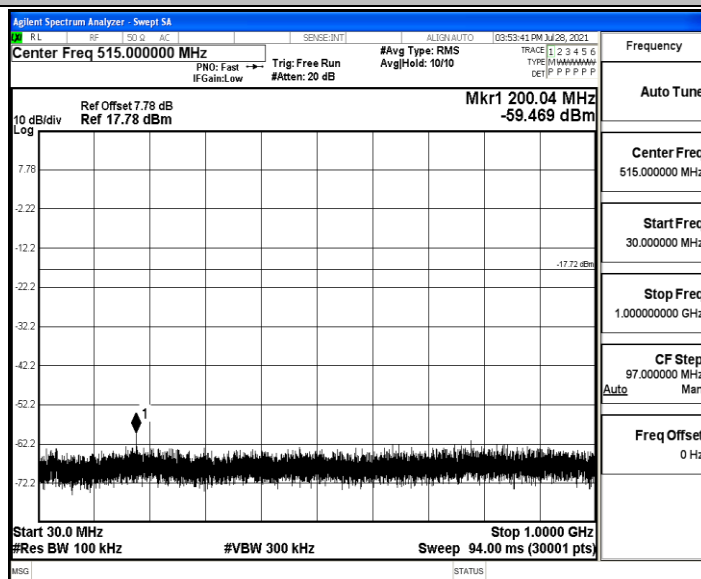


Test Graphs

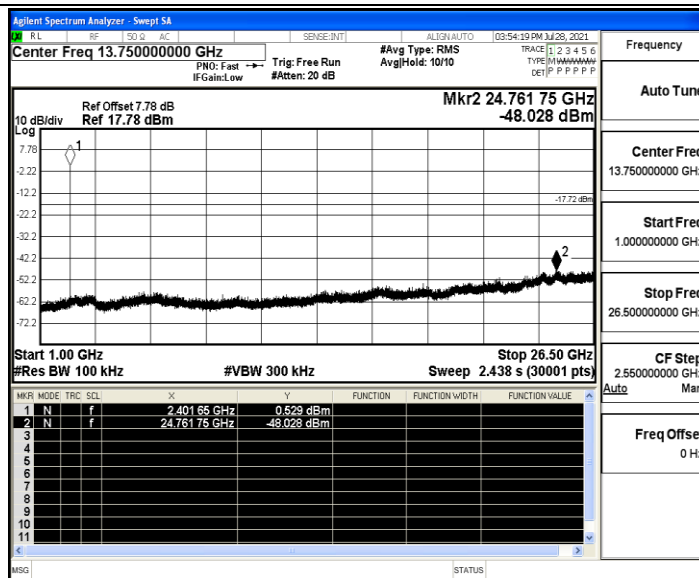
BLE_1M_Ant1_2402_0~Reference



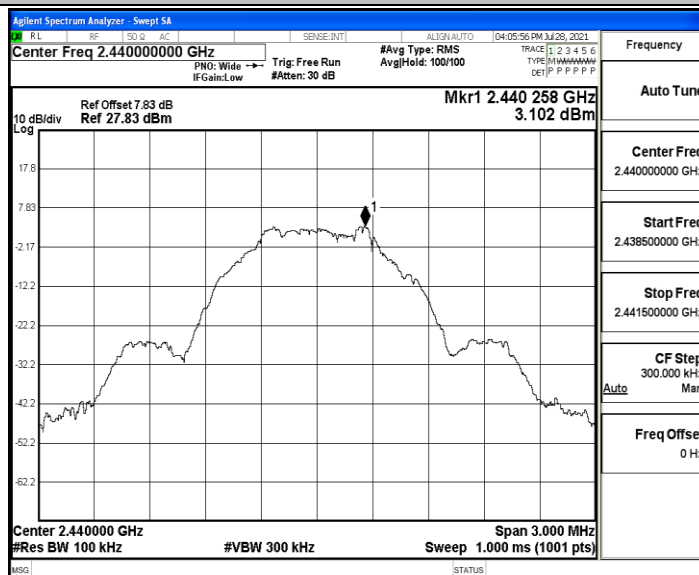
BLE_1M_Ant1_2402_30~1000



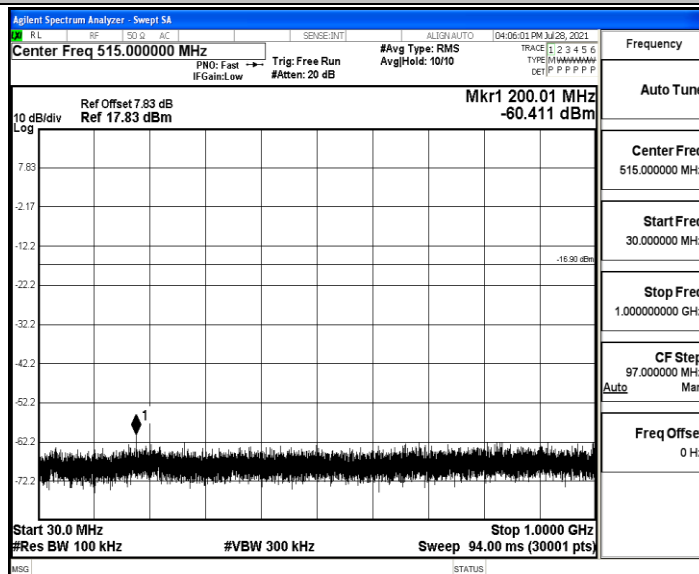
BLE_1M_Ant1_2402_1000~26500



BLE_1M_Ant1_2440_0~Reference

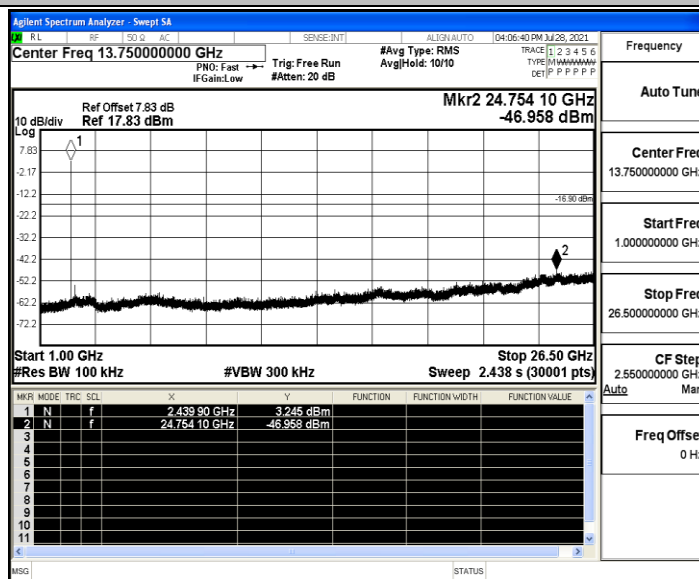


BLE_1M_Ant1_2440_30~1000

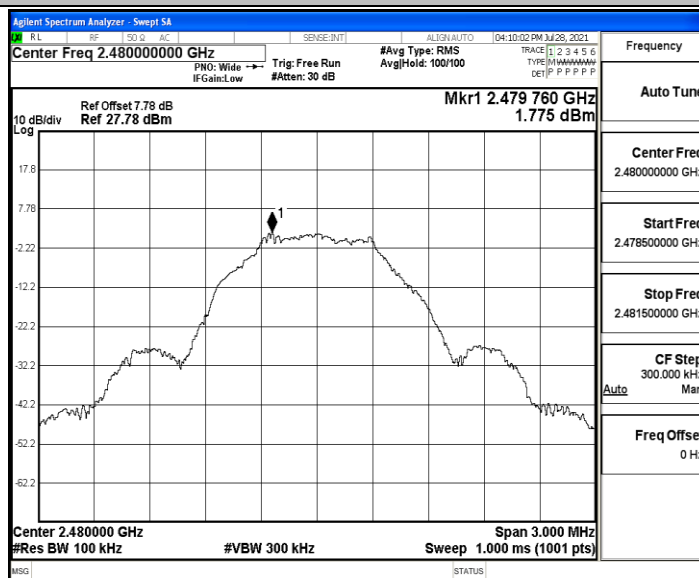




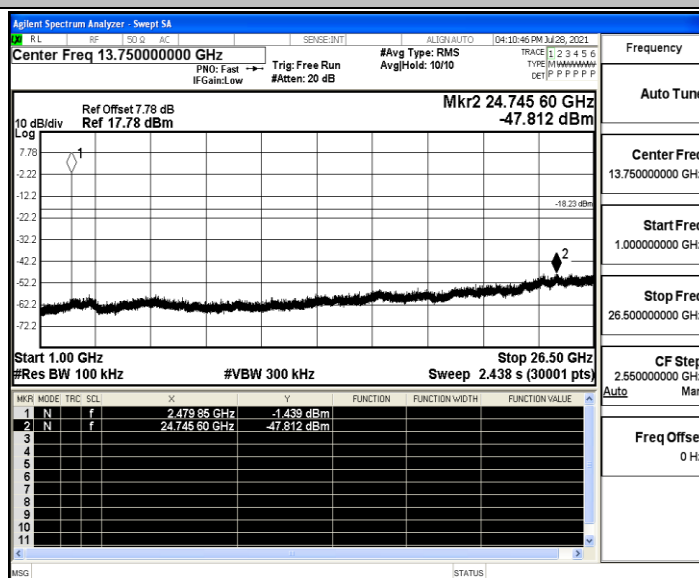
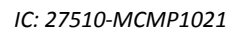
BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000





B.7 Duty Cycle

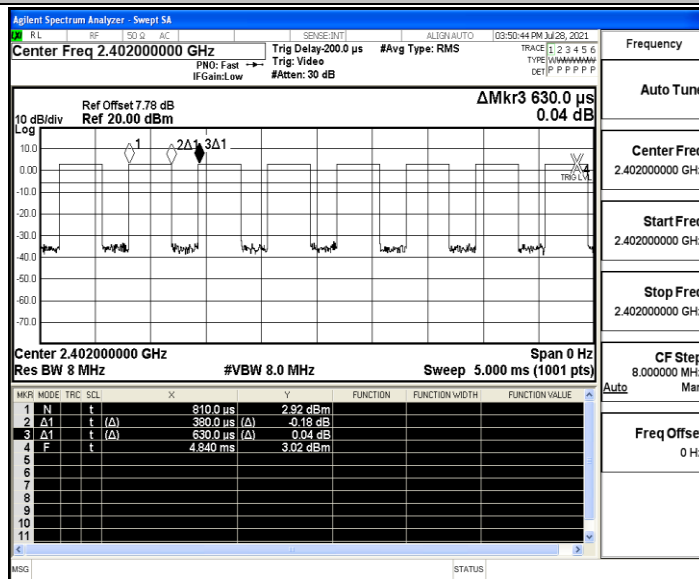
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	---	PASS
		2440	0.38	0.63	0.6032	60.32	2.20	---	PASS
		2480	0.38	0.62	0.6129	61.29	2.13	---	PASS

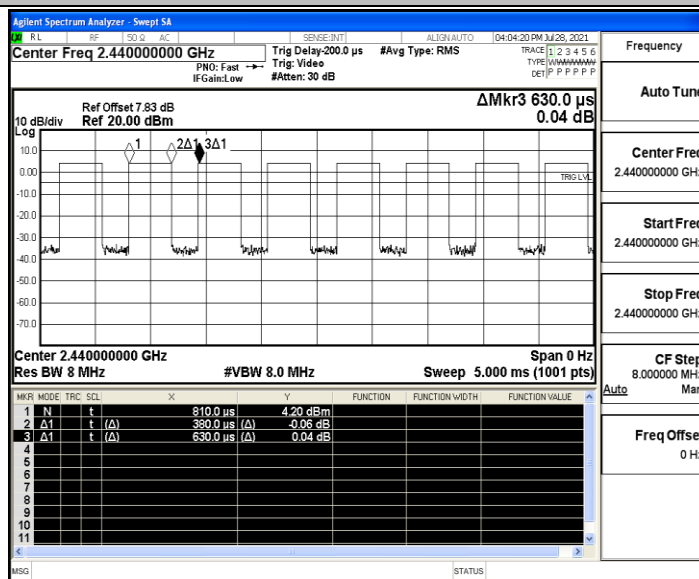


Test Graphs

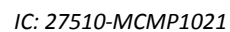
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





B.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	-48.46	≤-41.20	46.74	≤54	PASS
				AV	2388.830	-47.65	≤-41.20	47.55	≤54	PASS
				AV	2390.000	-48.14	≤-41.20	47.06	≤54	PASS
				Peak	2310.000	-40.72	≤-21.20	54.48	≤74	PASS
				Peak	2383.370	-39.29	≤-21.20	55.91	≤74	PASS
				Peak	2390.000	-41.98	≤-21.20	53.22	≤74	PASS
		High	2480	AV	2483.500	-46.73	≤-41.20	48.47	≤54	PASS
				AV	2483.520	-46.73	≤-41.20	48.47	≤54	PASS
				AV	2500.000	-47.57	≤-41.20	47.63	≤54	PASS
				Peak	2483.500	-40.98	≤-21.20	54.22	≤74	PASS
				Peak	2493.600	-38.59	≤-21.20	56.61	≤74	PASS
				Peak	2500.000	-40.58	≤-21.20	54.62	≤74	PASS

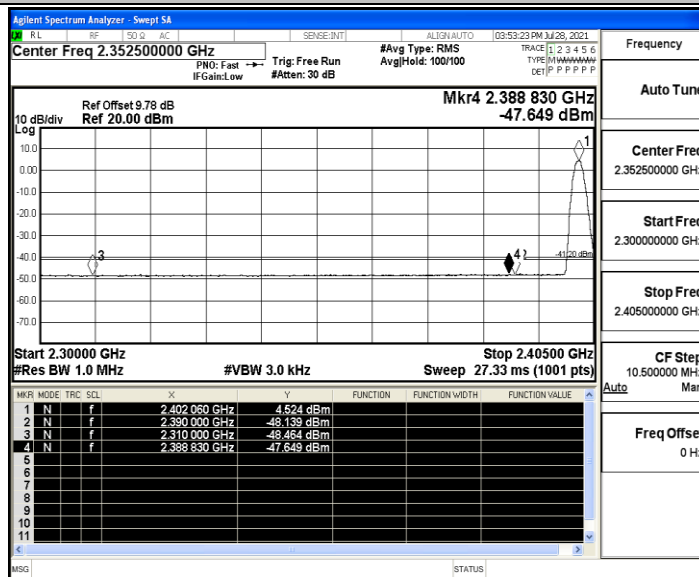
Note:

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.

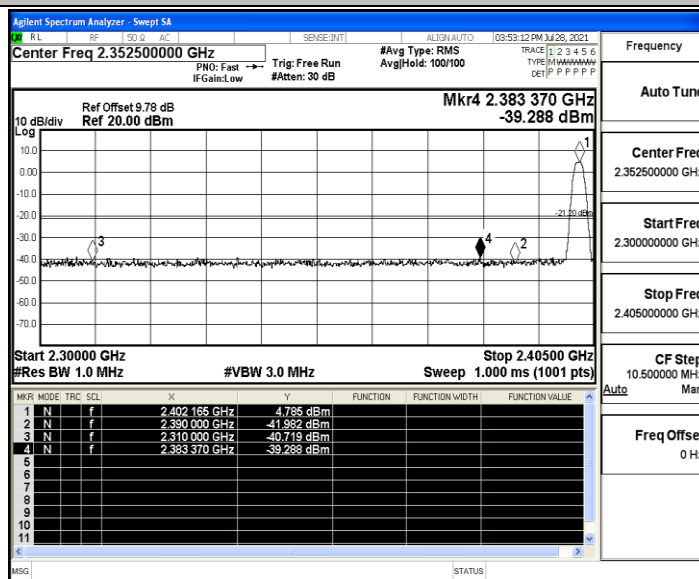


Test Graphs

BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV

