



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Khamsin M2 RADIO (TL)

Test Model: T4HU2127/38k

Environmental Conditions

Temperature:	21.1 ° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Mark Chen
Supervised by:	Libin

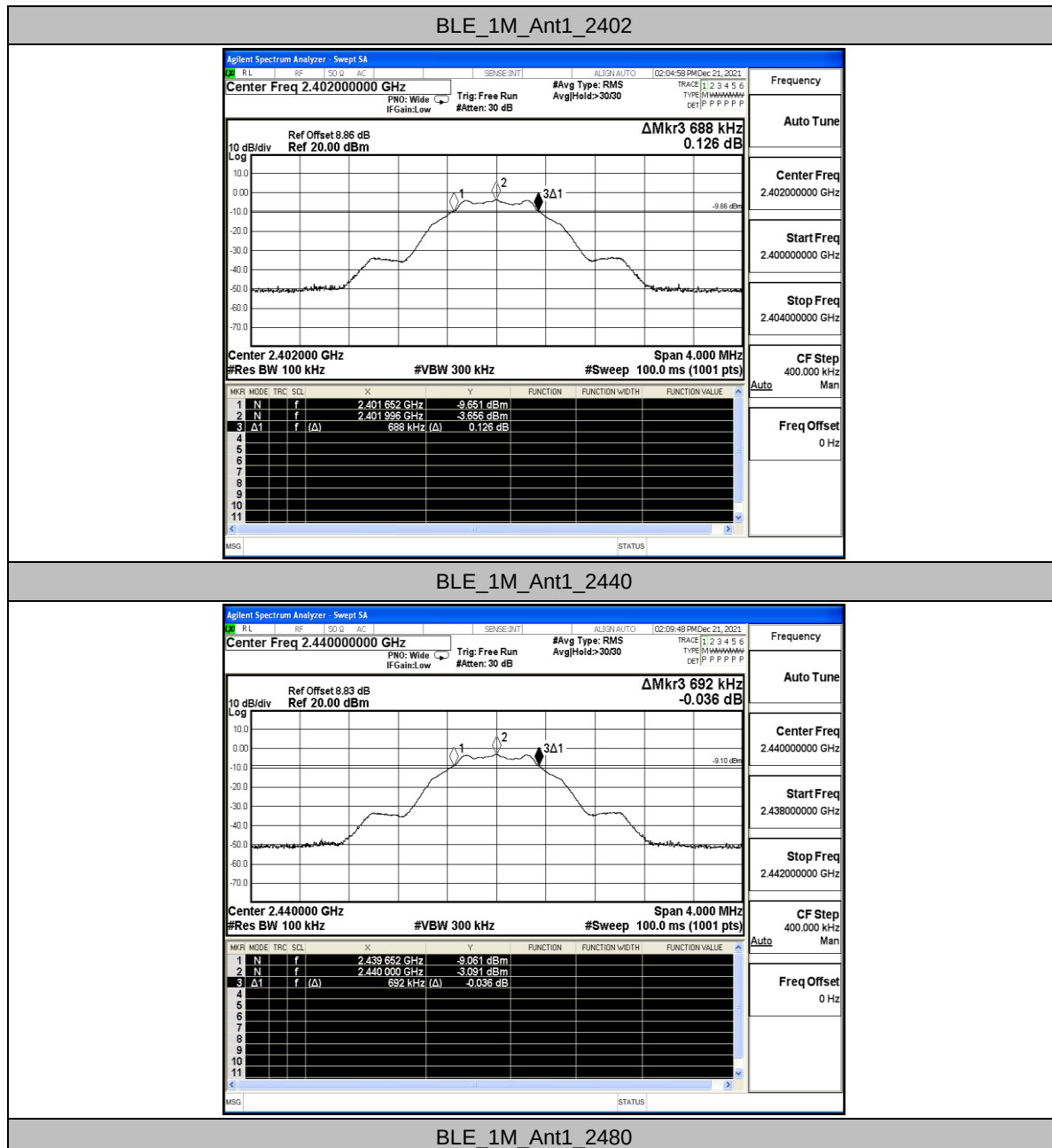


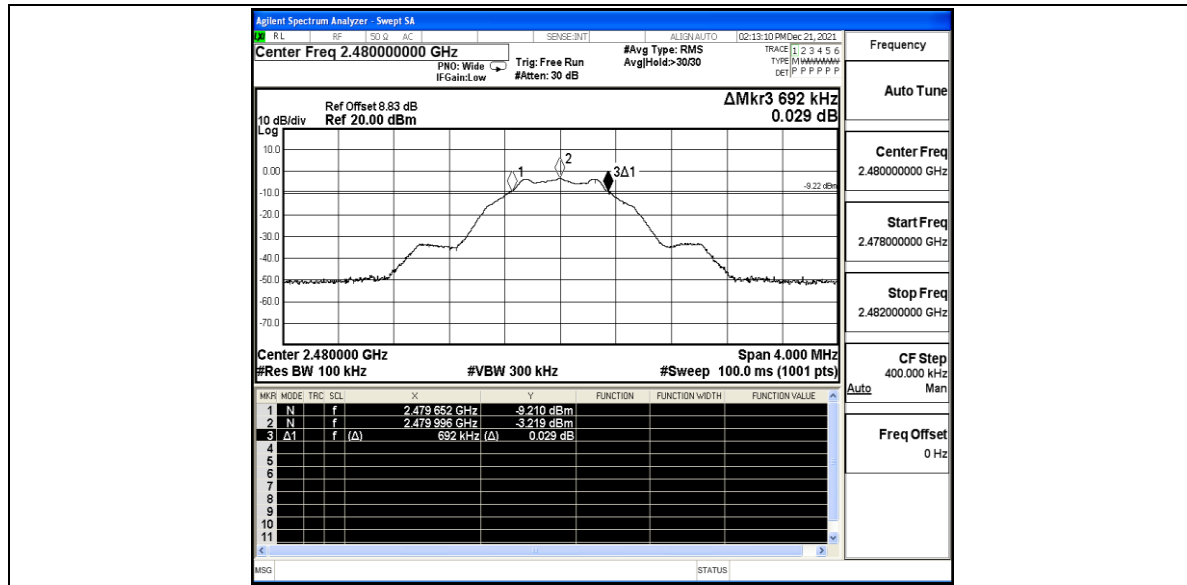
A.1 6dB Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.688	2401.652	2402.340	0.5	PASS
		2440	0.692	2439.652	2440.344	0.5	PASS
		2480	0.692	2479.652	2480.344	0.5	PASS

Test Graphs





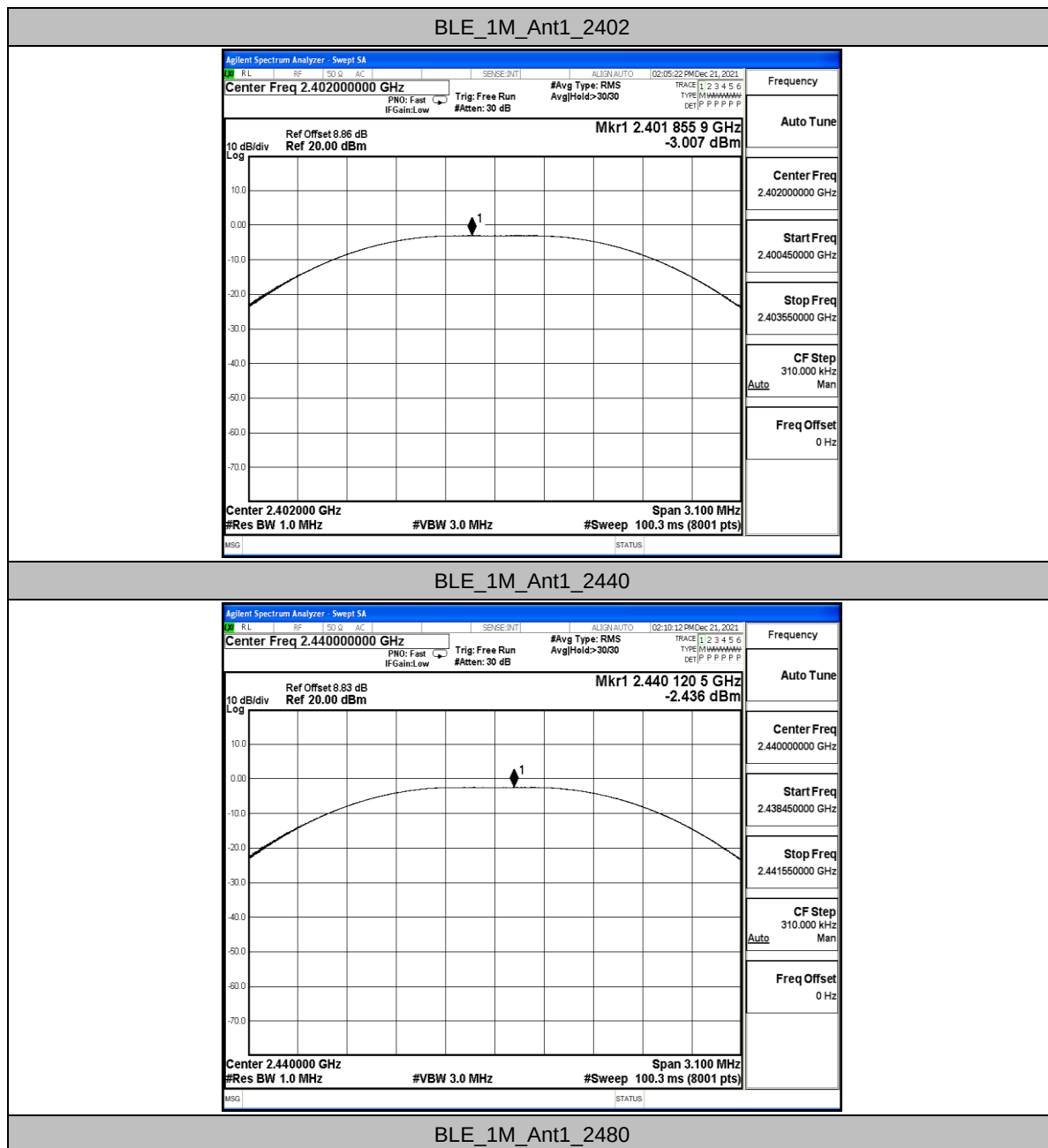


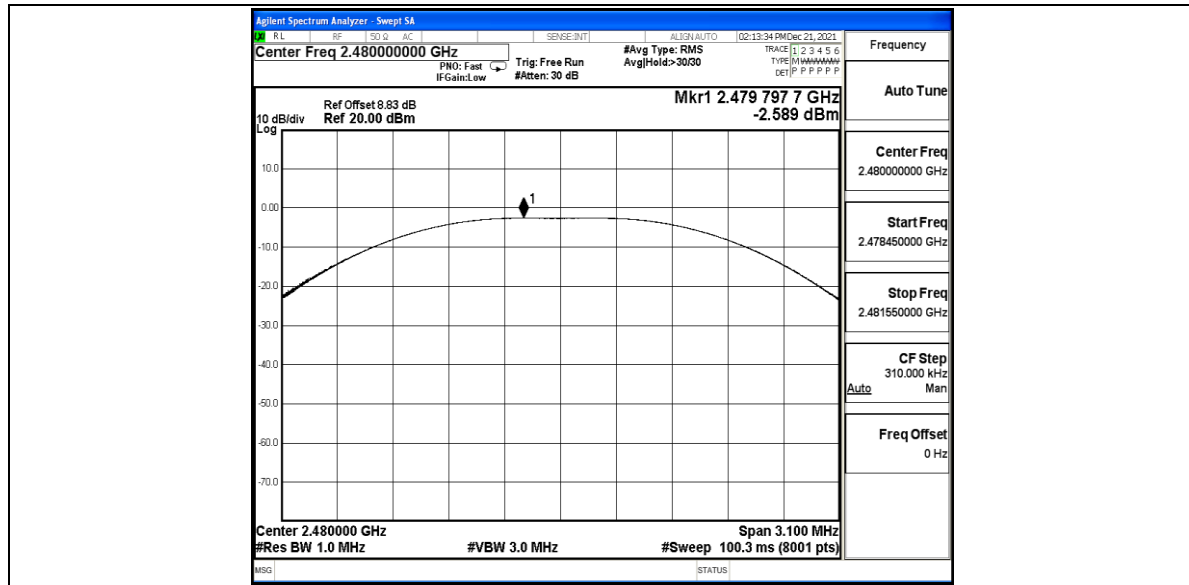
A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.01	≤30	PASS
		2440	-2.44	≤30	PASS
		2480	-2.59	≤30	PASS

Test Graphs





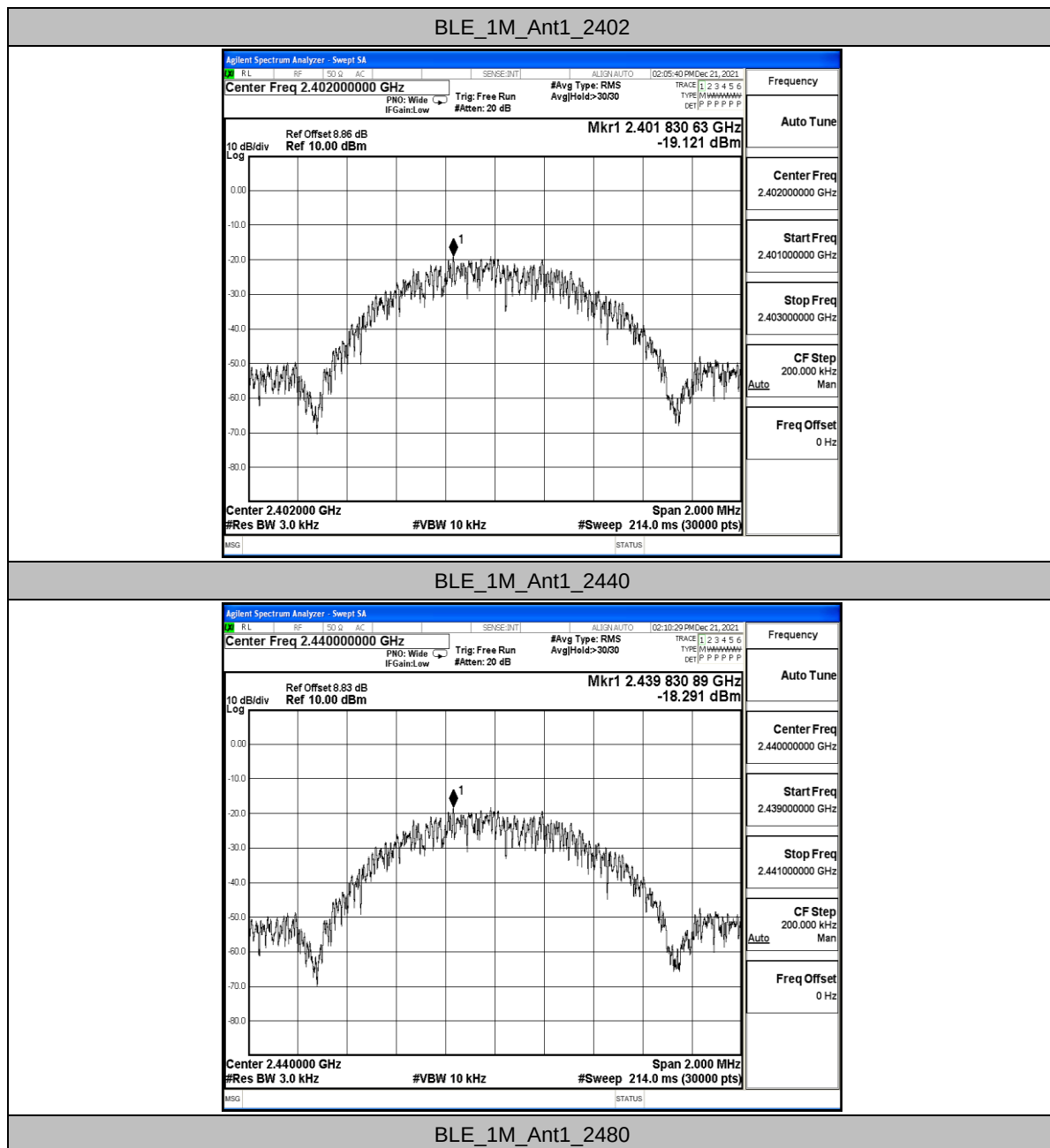


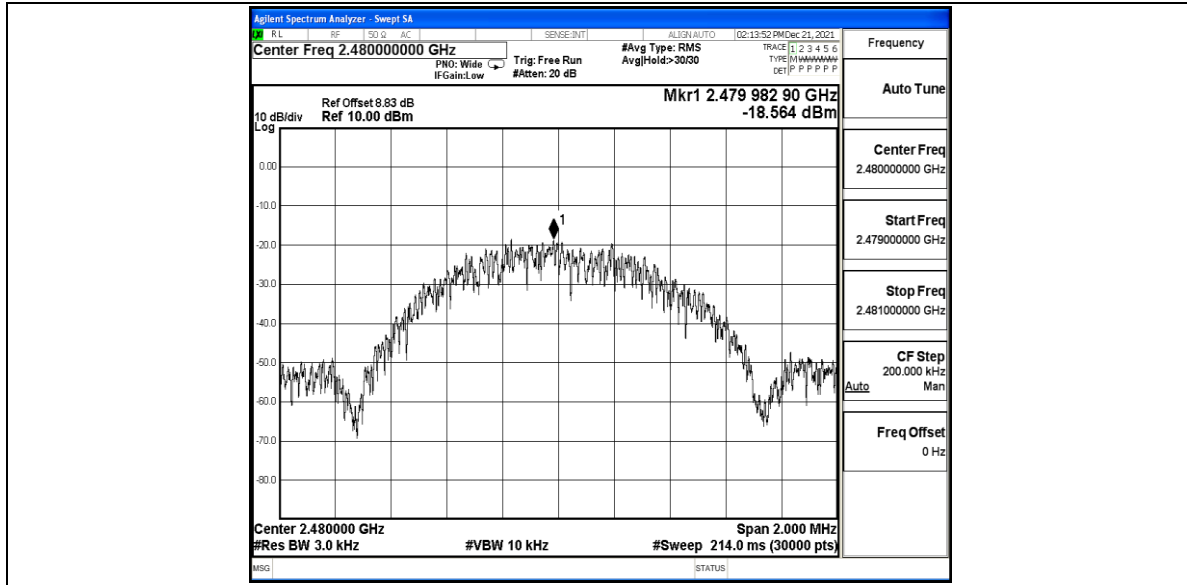
A.3 power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.12	≤8.00	PASS
		2440	-18.29	≤8.00	PASS
		2480	-18.56	≤8.00	PASS

Test Graphs





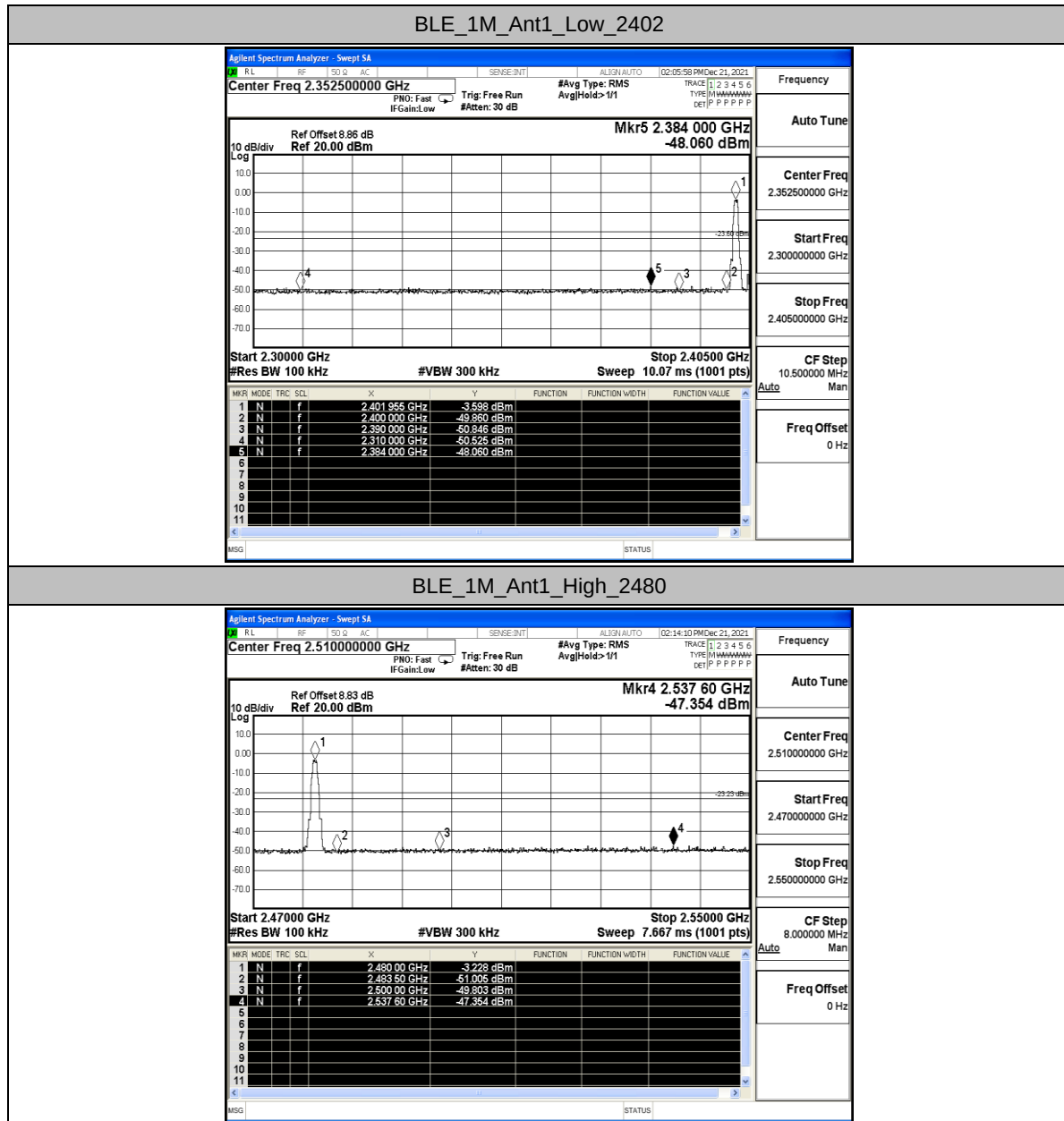


A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-3.60	-48.06	≤-23.6	PASS
		High	2480	-3.23	-47.35	≤-23.23	PASS

Test Graphs



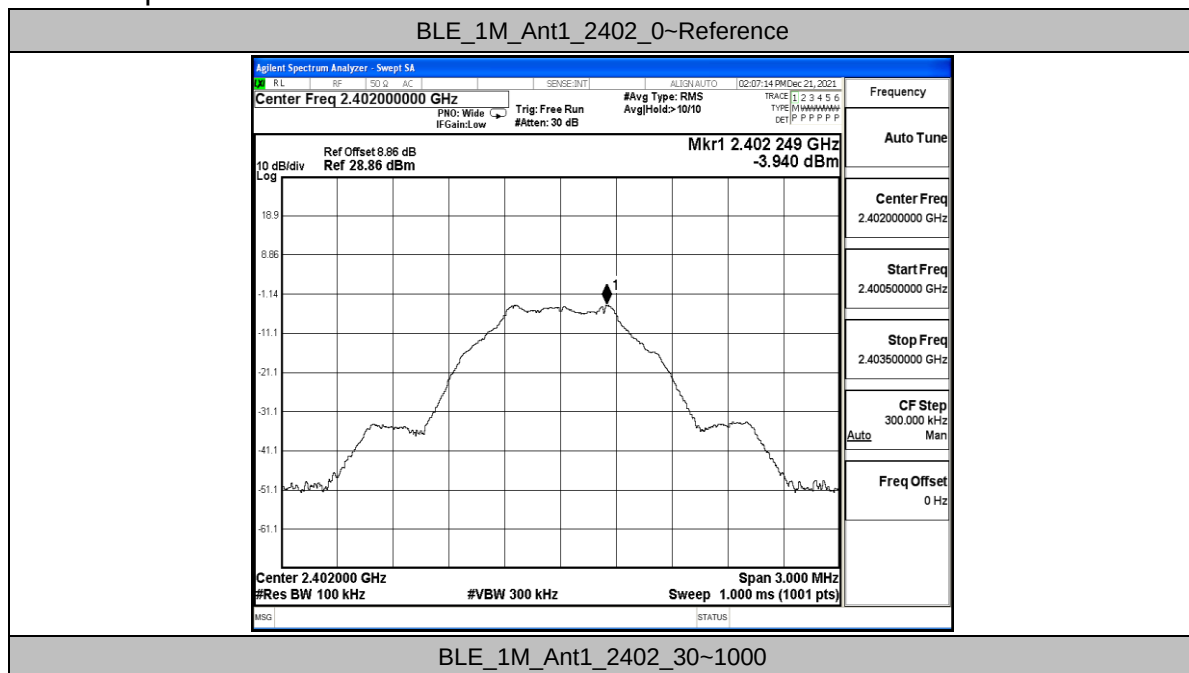


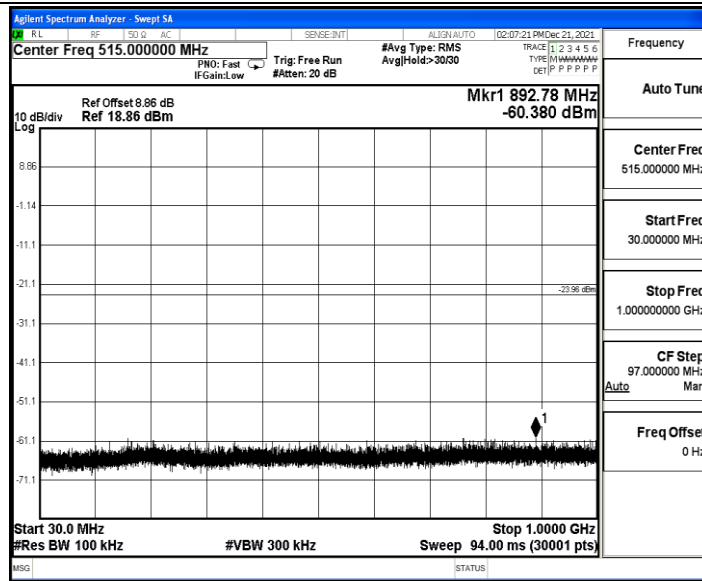
A.5 Conducted Spurious Emission

Test Result

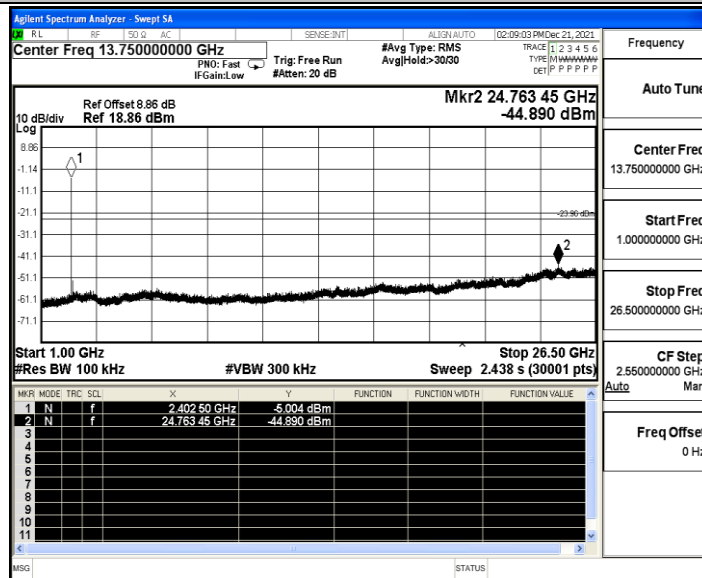
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-3.96	-3.96	---	PASS
			30~1000	-3.96	-60.38	≤-23.96	PASS
			1000~26500	-3.96	-44.89	≤-23.96	PASS
		2440	Reference	-3.11	-3.11	---	PASS
			30~1000	-3.11	-59.81	≤-23.11	PASS
			1000~26500	-3.11	-45.55	≤-23.11	PASS
		2480	Reference	-3.12	-3.12	---	PASS
			30~1000	-3.12	-60.05	≤-23.12	PASS
			1000~26500	-3.12	-45.47	≤-23.12	PASS

Test Graphs

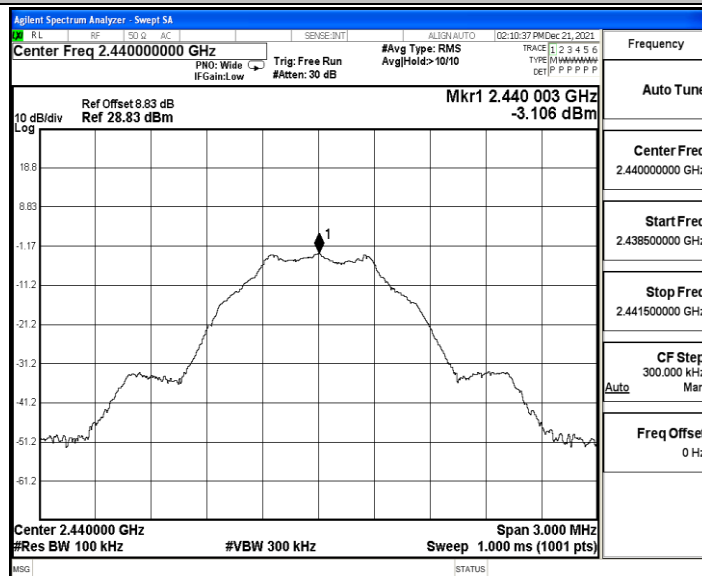




BLE_1M_Ant1_2402_1000~26500

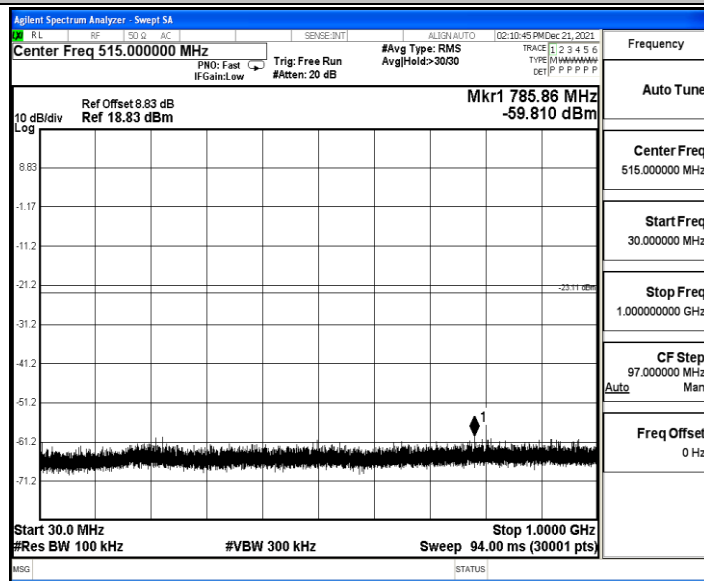


BLE_1M_Ant1_2440_0~Reference

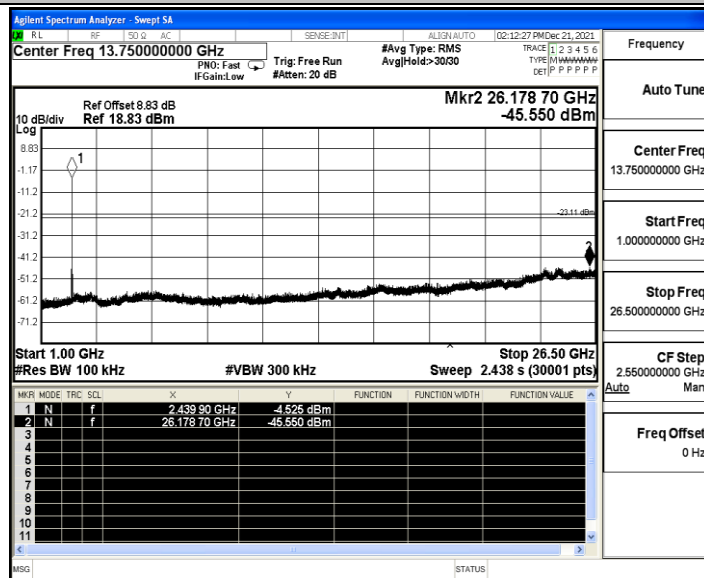




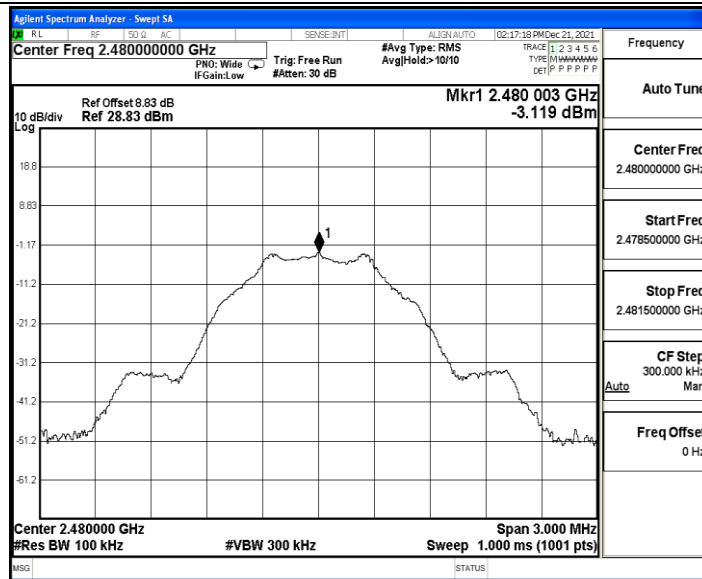
BLE_1M_Ant1_2440_30~1000



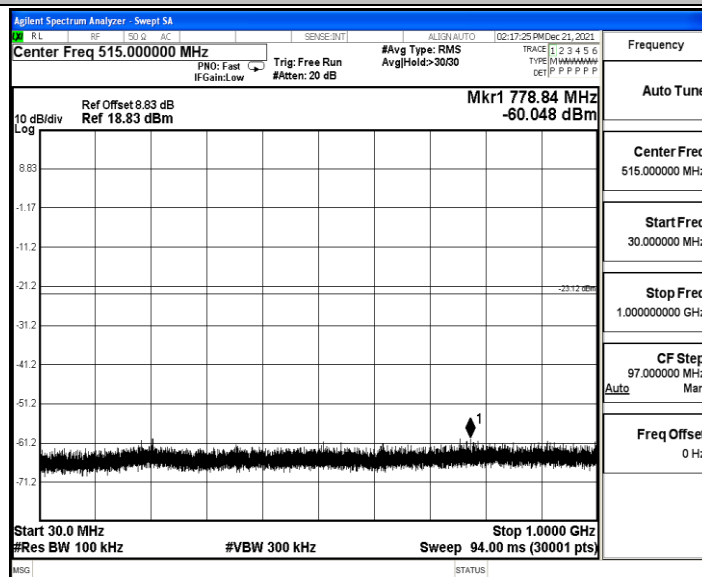
BLE_1M_Ant1_2440_1000~26500



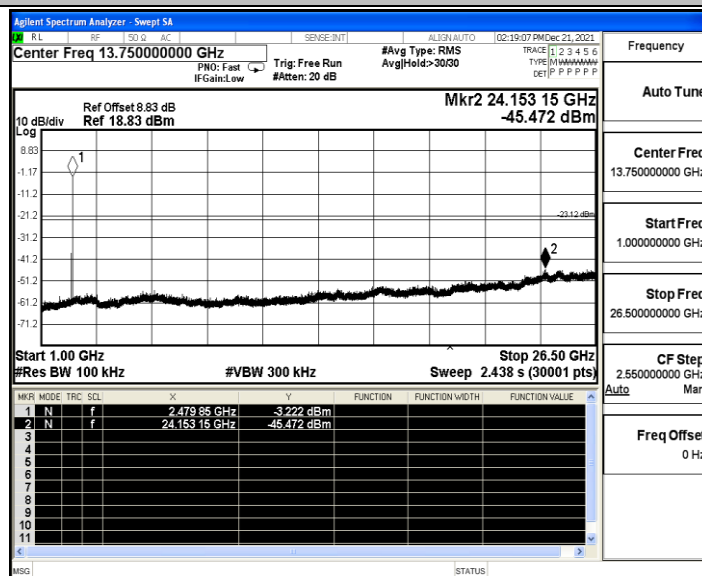
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500





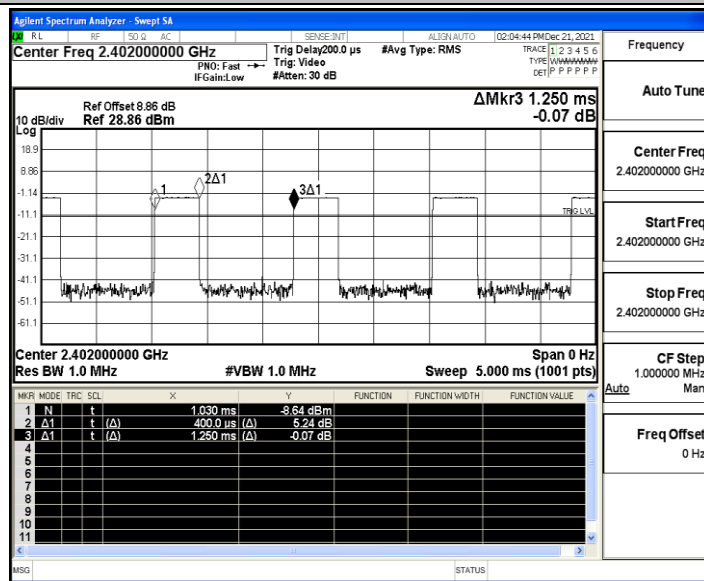
A.6 Duty Cycle

Test Result

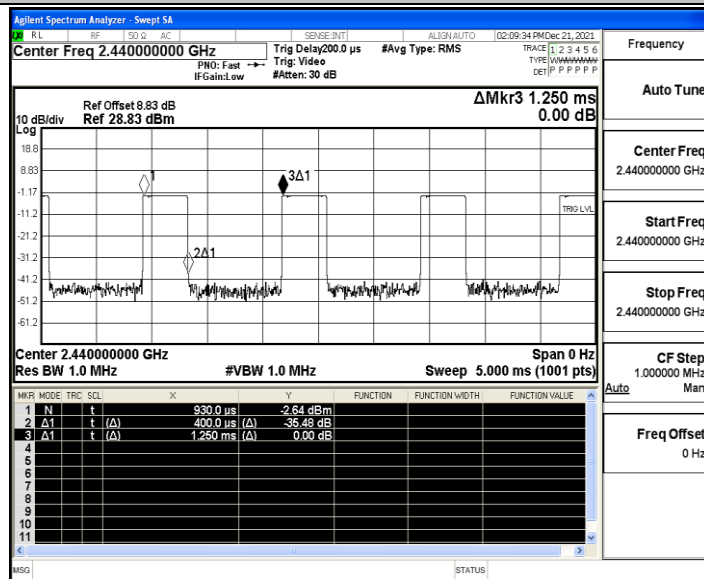
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.40	1.25	0.3200	32.00	4.95	---	---
		2440	0.40	1.25	0.3200	32.00	4.95	---	---
		2480	0.40	1.25	0.3200	32.00	4.95	---	---

Test Graphs

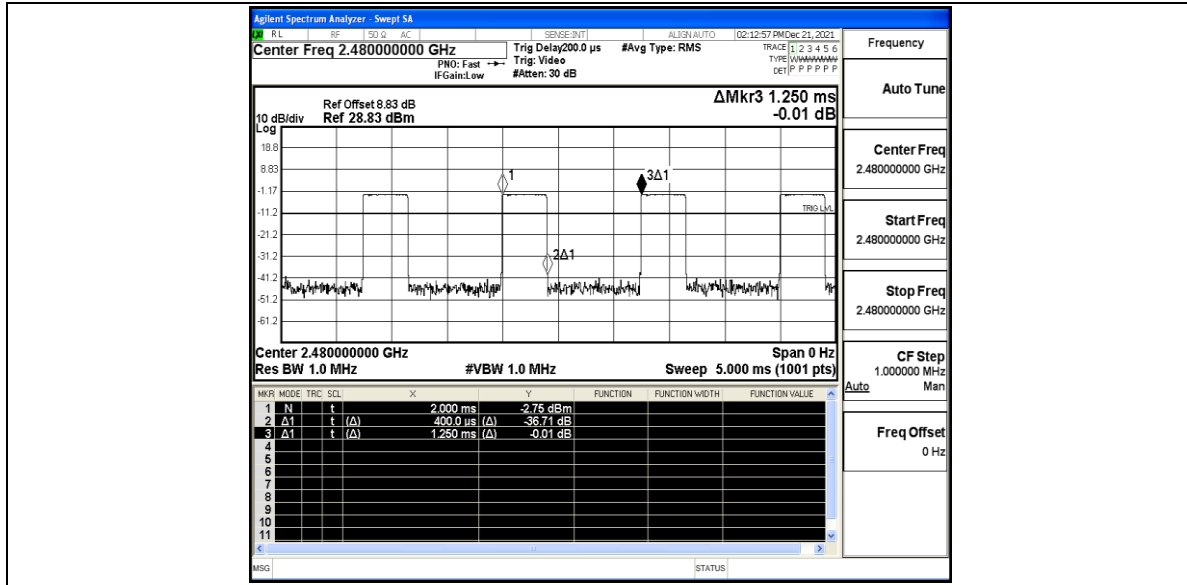
BLE_1M_Ant1_2402



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	-47.23	≤-41.20	47.97	≤54	PASS
				AV	2387.150	-46.46	≤-41.20	48.74	≤54	PASS
				AV	2390.000	-46.71	≤-41.20	48.49	≤54	PASS
				Peak	2310.000	-38.23	≤-21.20	56.97	≤74	PASS
				Peak	2366.045	-36.35	≤-21.20	58.85	≤74	PASS
				Peak	2390.000	-38.28	≤-21.20	56.92	≤74	PASS
		High	2480	AV	2483.500	-46.46	≤-41.20	48.74	≤54	PASS
				AV	2492.160	-46.01	≤-41.20	49.19	≤54	PASS
				AV	2500.000	-46.42	≤-41.20	48.78	≤54	PASS
				Peak	2483.500	-38.27	≤-21.20	56.93	≤74	PASS
				Peak	2490.480	-35.72	≤-21.20	59.48	≤74	PASS
				Peak	2500.000	-37.93	≤-21.20	57.27	≤74	PASS

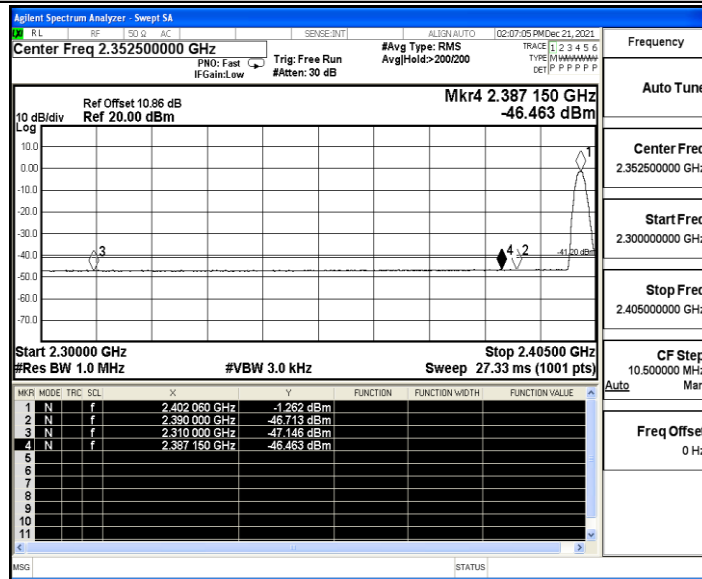
Note:

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.

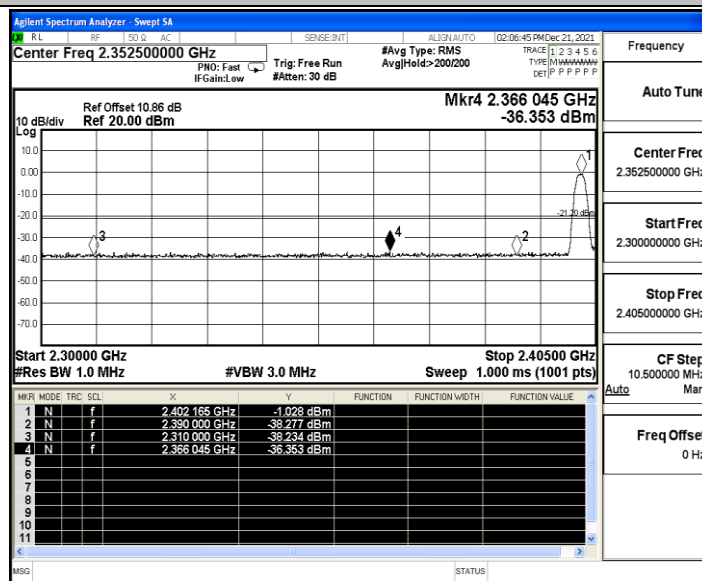


Test Graphs

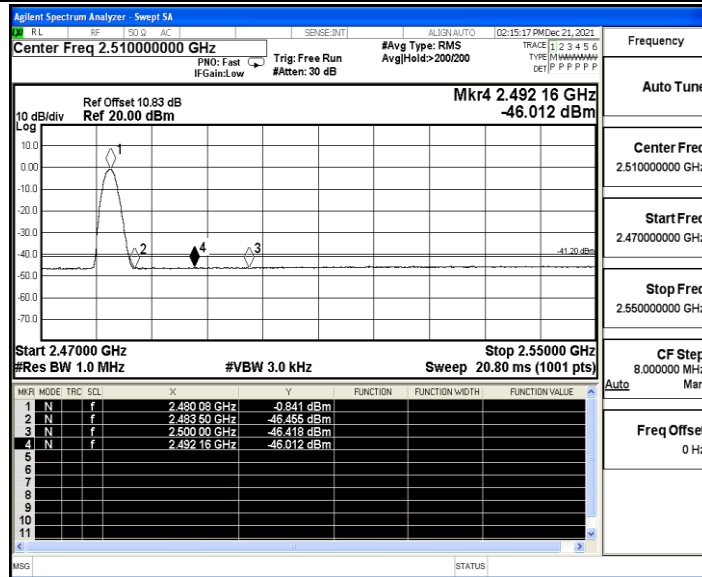
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

