

Appendix Test Data for BT(BLE) (Conducted Measurement)

Product Name: Tire Pressure Monitoring System

Trade Mark: STEEL MATE

Test Model: TB1

FCC ID: 2A9JUBSE139

Environmental Conditions

Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

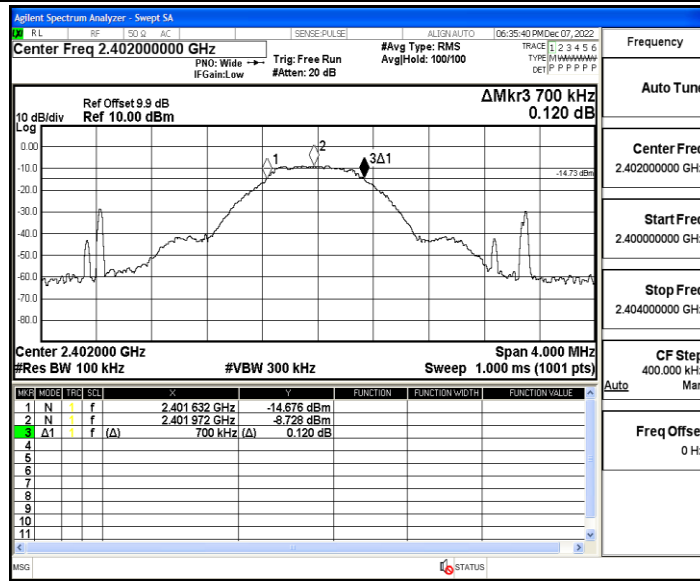
Appendix A: DTS Bandwidth

Test Result

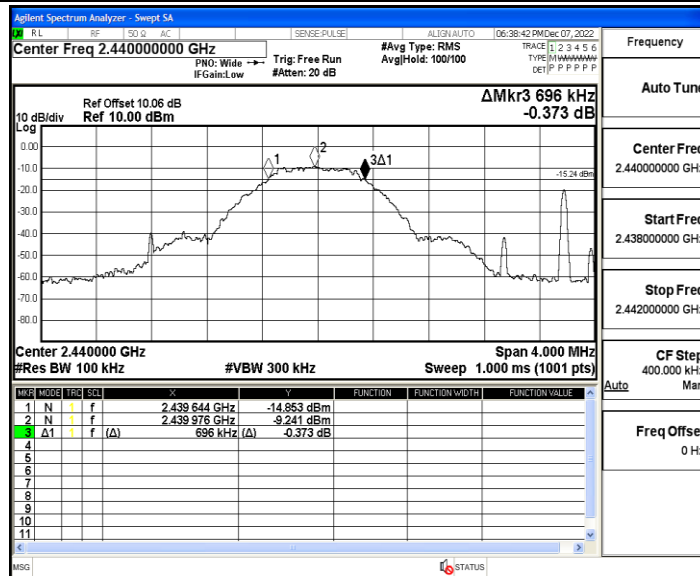
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.700	2401.632	2402.332	0.5	PASS
		2440	0.696	2439.644	2440.340	0.5	PASS
		2480	0.716	2479.628	2480.344	0.5	PASS

Test Graphs

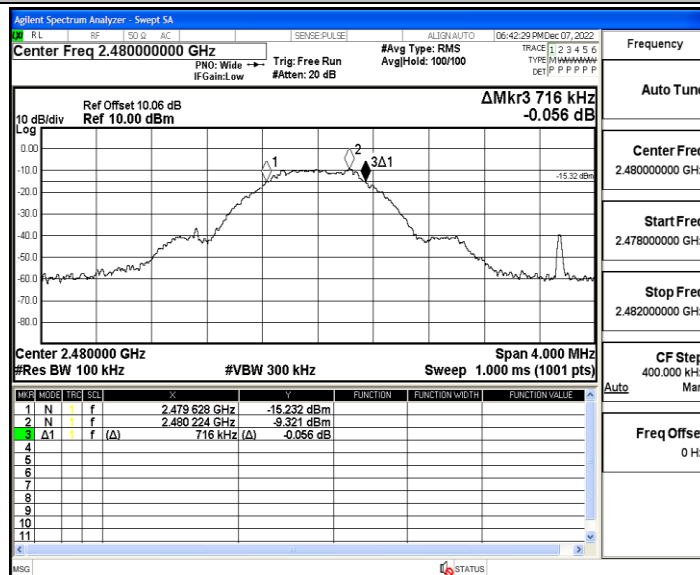
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



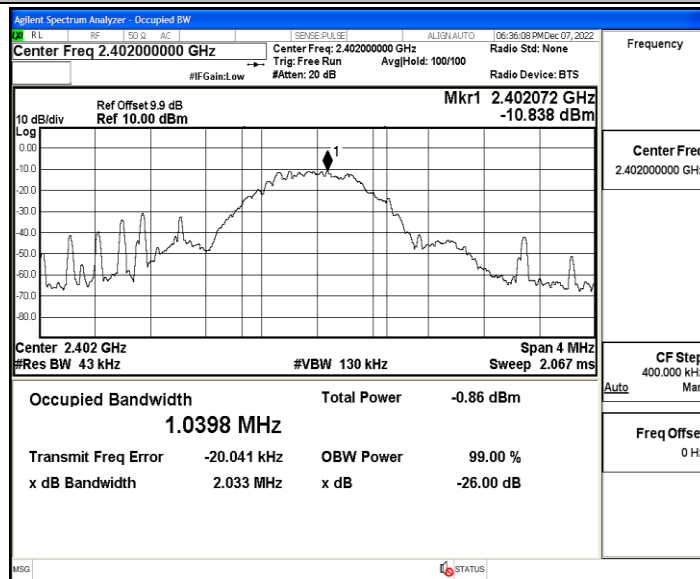
Appendix B: Occupied Channel Bandwidth

Test Result

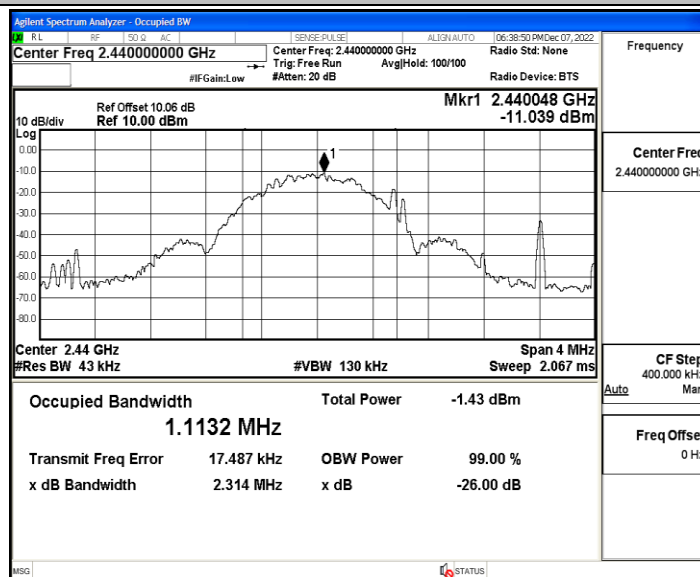
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0398	2401.4601	2402.4999	---	---
		2440	1.1132	2439.4609	2440.5741	---	---
		2480	1.1376	2479.4656	2480.6032	---	---

Test Graphs

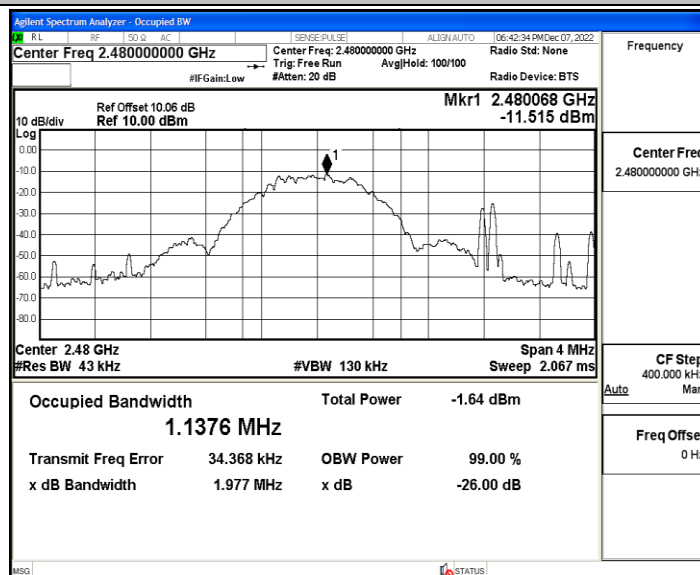
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

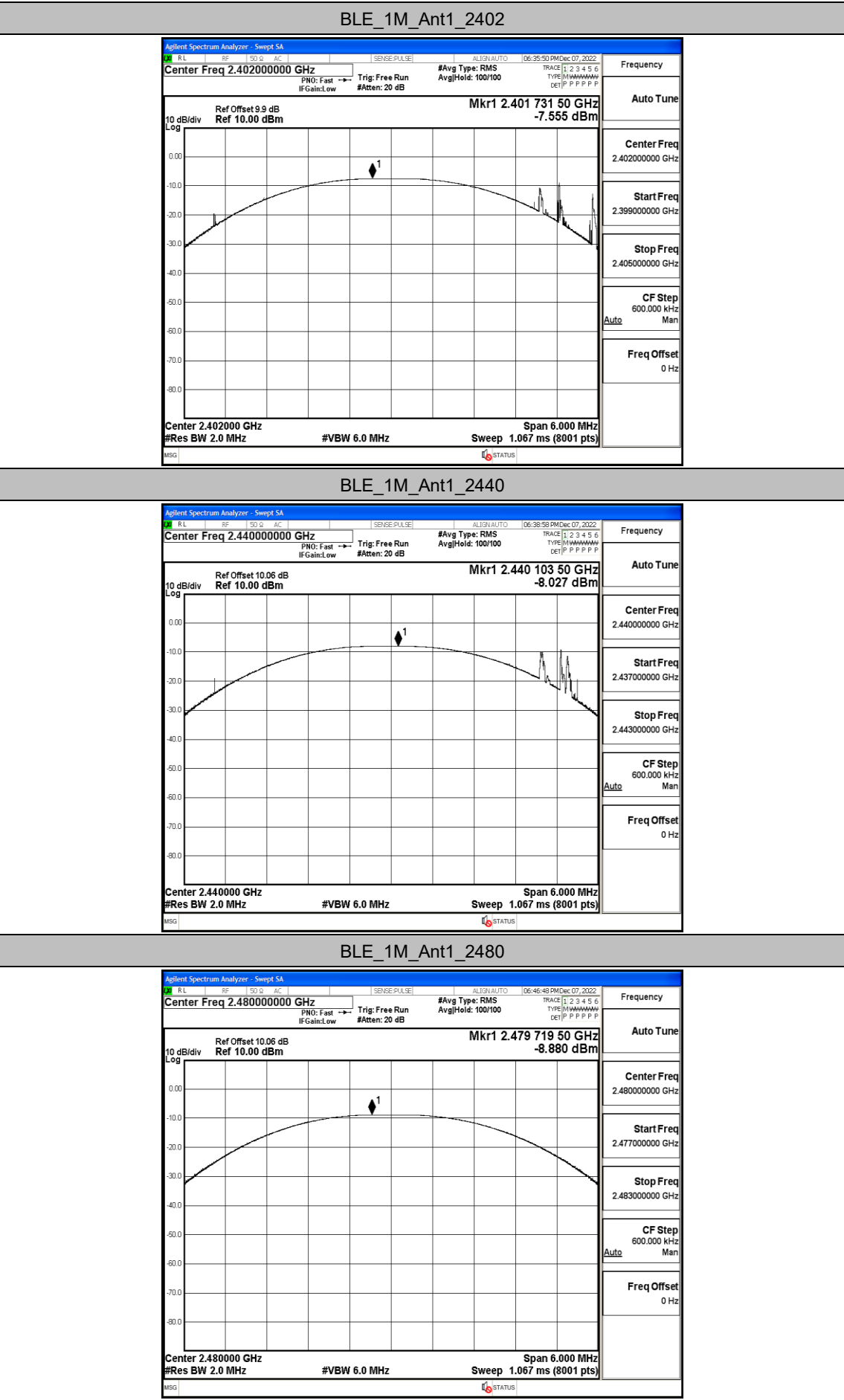


Appendix C: Maximum Peak conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-7.56	≤30	PASS
		2440	-8.03	≤30	PASS
		2480	-8.88	≤30	PASS

Test Graphs

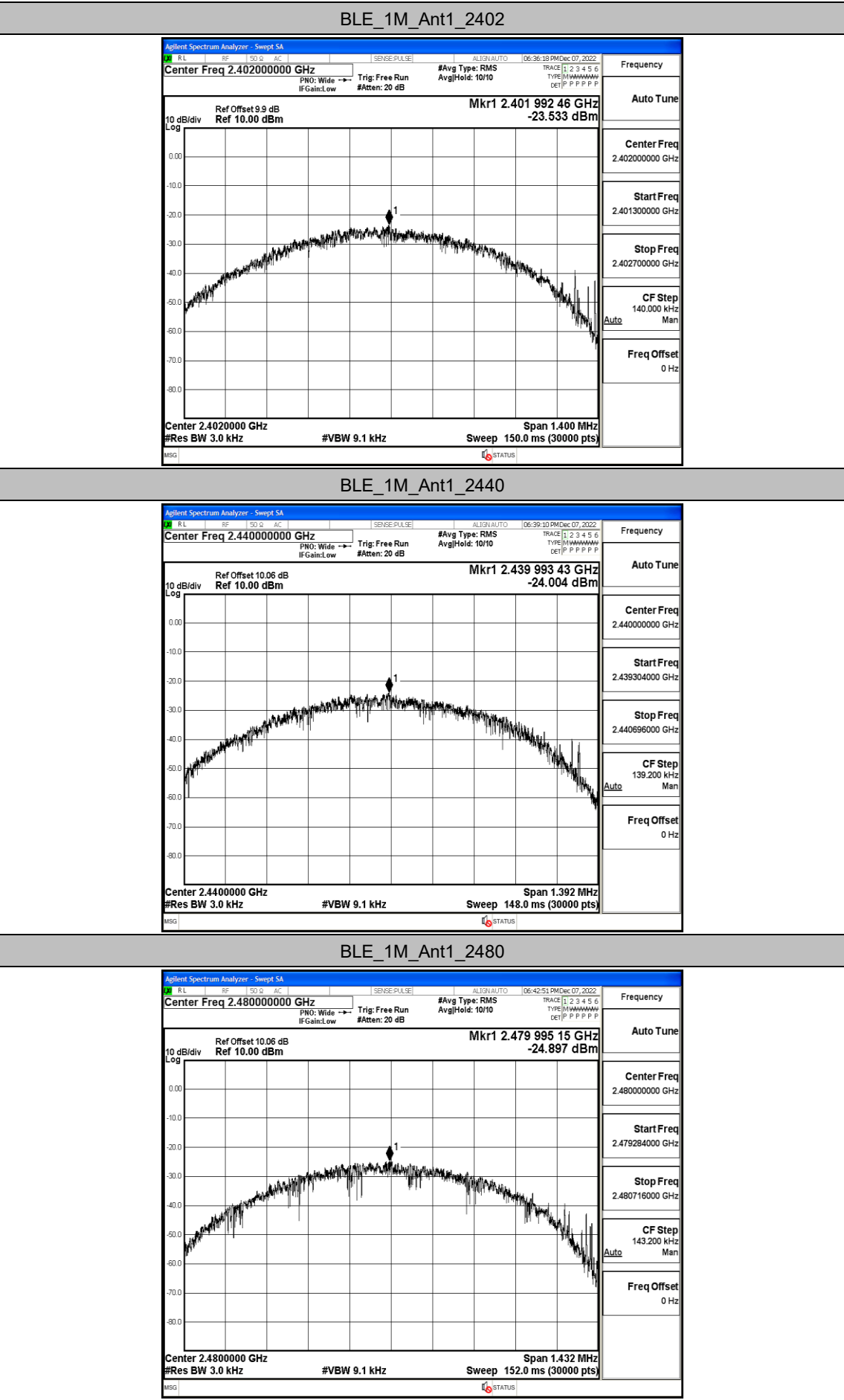


Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-23.53	≤8.00	PASS
		2440	-24	≤8.00	PASS
		2480	-24.9	≤8.00	PASS

Test Graphs

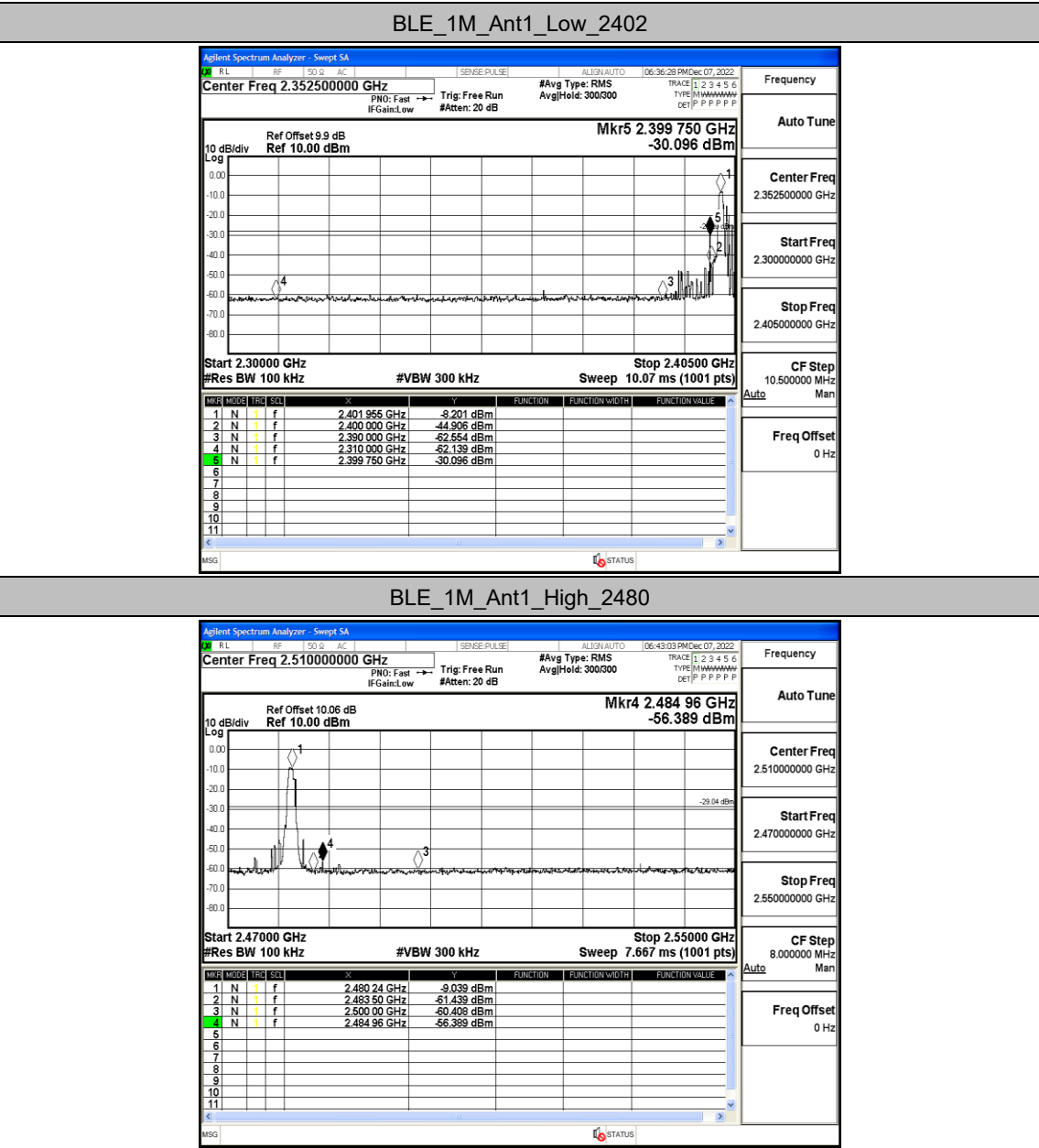


Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-8.20	-30.1	≤-28.2	PASS
		High	2480	-9.04	-56.39	≤-29.04	PASS

Test Graphs



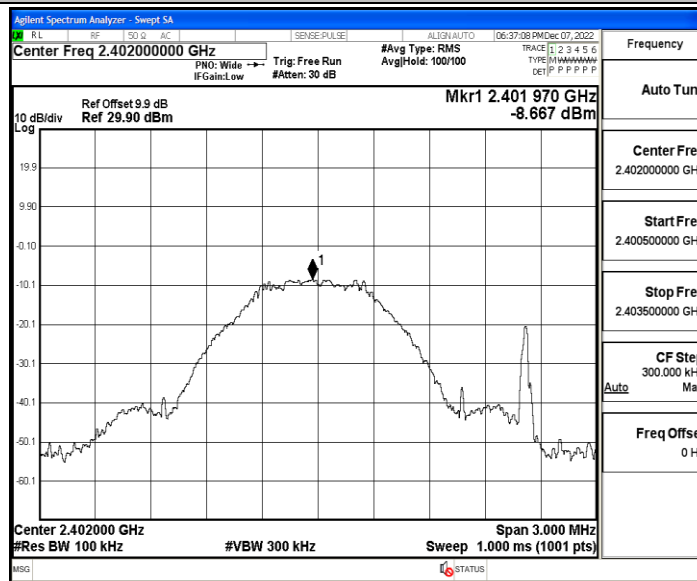
Appendix F: Conducted Spurious Emission

Test Result

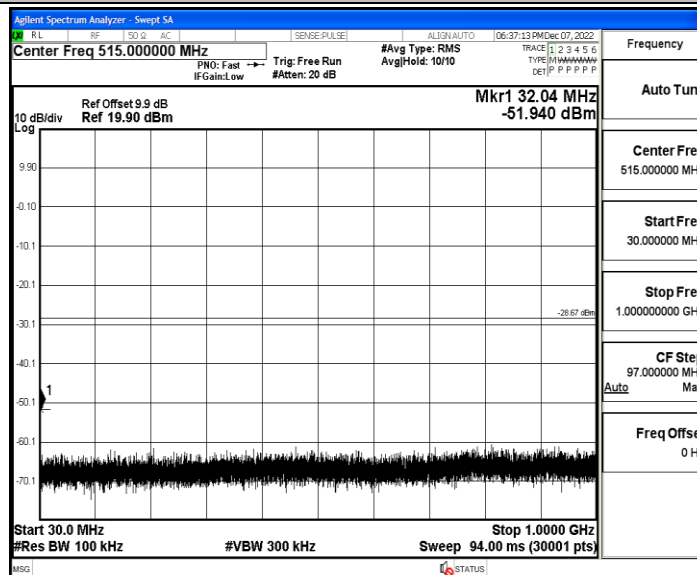
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-8.67	-8.67	---	PASS
			30~1000	-8.67	-51.94	≤-28.67	PASS
			1000~26500	-8.67	-50.7	≤-28.67	PASS
		2440	Reference	-9.11	-9.11	---	PASS
			30~1000	-9.11	-50.61	≤-29.11	PASS
			1000~26500	-9.11	-50.17	≤-29.11	PASS
		2480	Reference	-9.49	-9.49	---	PASS
			30~1000	-9.49	-51.13	≤-29.49	PASS
			1000~26500	-9.49	-50.16	≤-29.49	PASS

Test Graphs

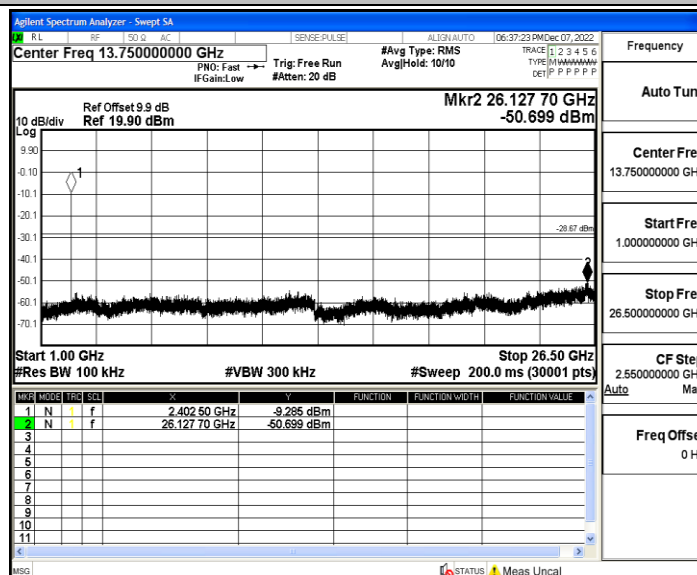
BLE_1M_Ant1_2402_0~Reference



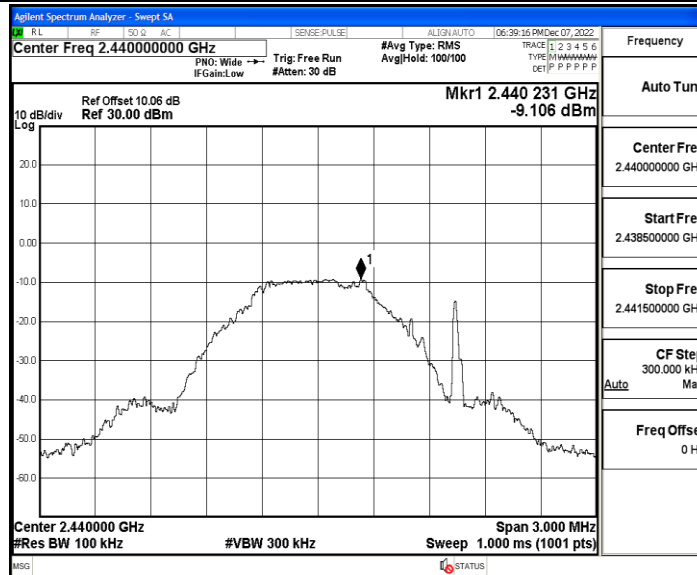
BLE_1M_Ant1_2402_30~1000



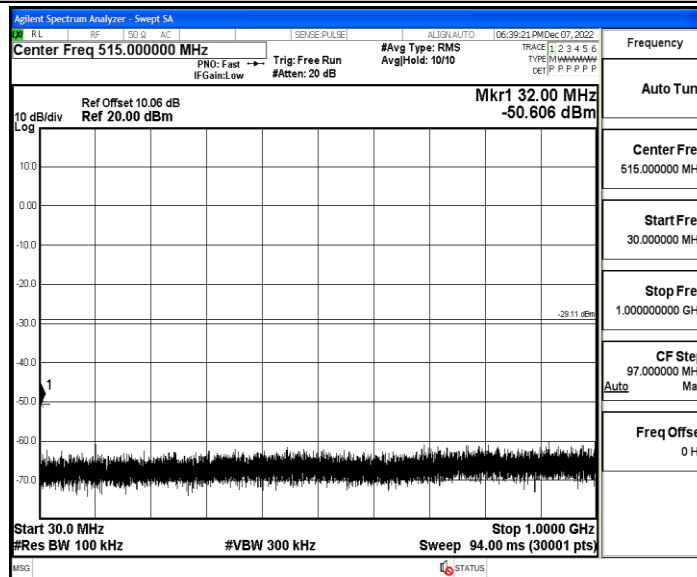
BLE_1M_Ant1_2402_1000~26500



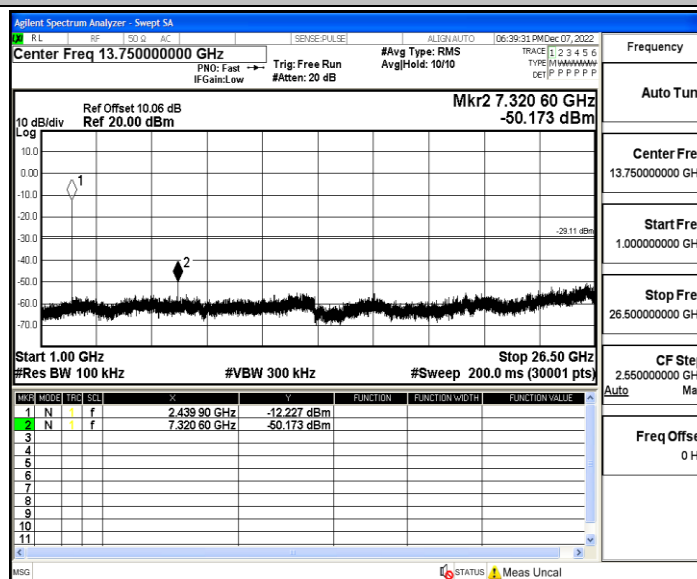
BLE_1M_Ant1_2440_0~Reference



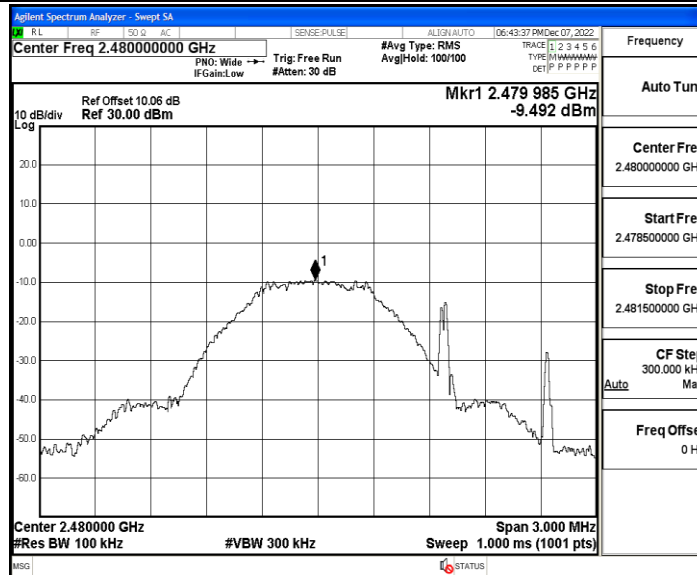
BLE_1M_Ant1_2440_30~1000



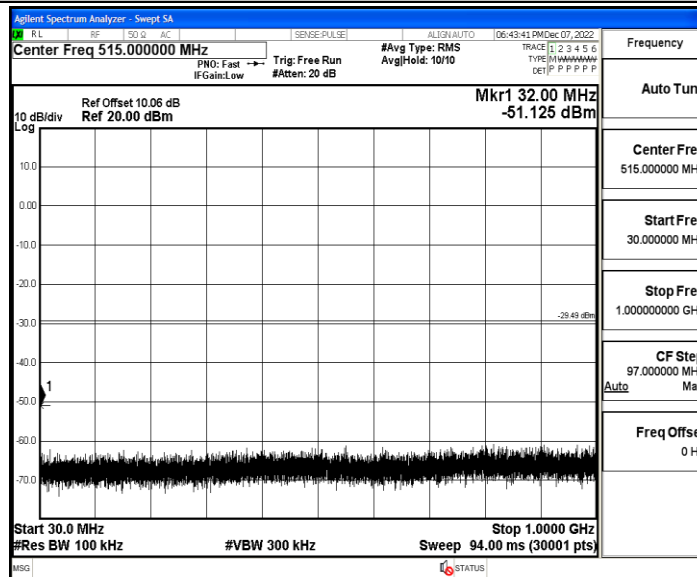
BLE_1M_Ant1_2440_1000~26500



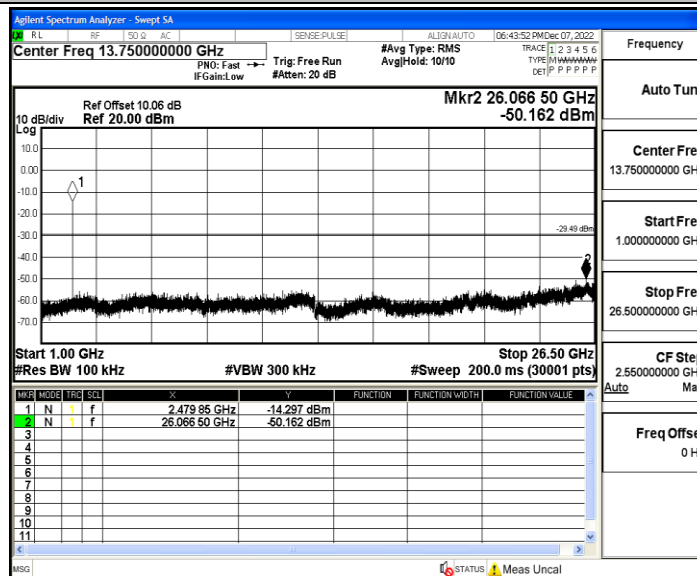
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



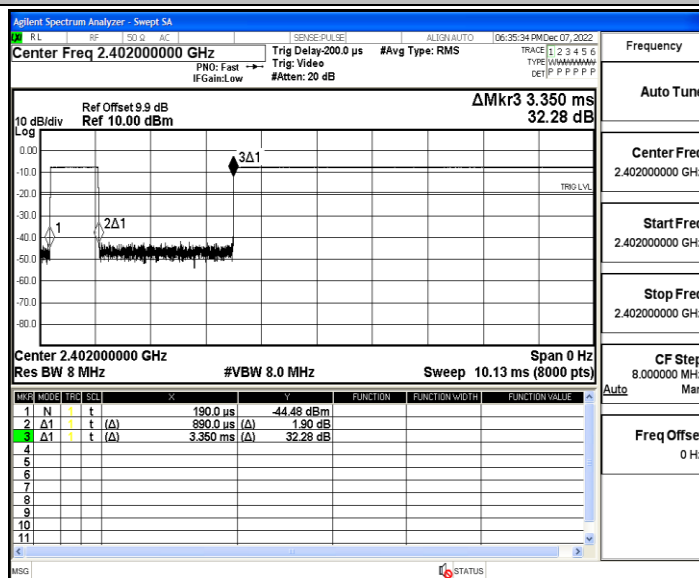
Appendix G: Duty Cycle

Test Result

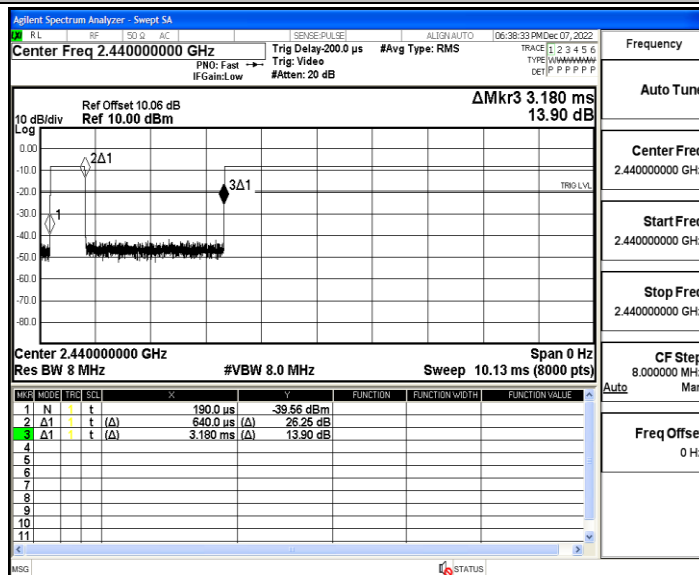
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
BLE_1M	Ant1	2402	0.89	3.35	26.57	1.12
		2440	0.64	3.18	20.13	1.56
		2480	0.58	3.08	18.83	1.72

Test Graphs

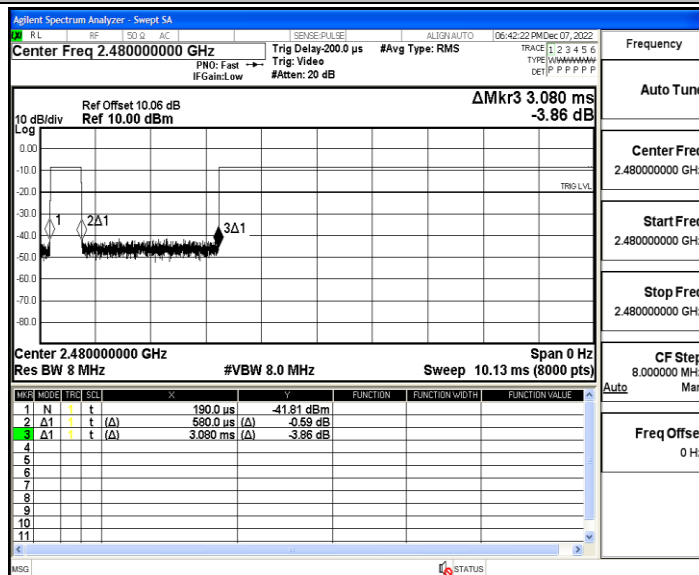
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



Appendix H: Emissions in Restricted Bands

Test Result

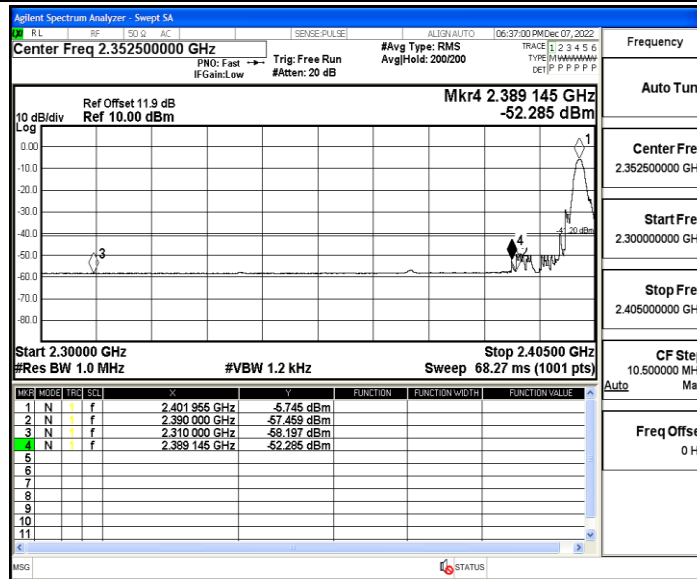
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.2	≤-41.20	PASS
				AV	2389.145	-52.29	≤-41.20	PASS
				AV	2390.000	-57.46	≤-41.20	PASS
				Peak	2310.000	-50.17	≤-21.20	PASS
				Peak	2375.915	-46.84	≤-21.20	PASS
				Peak	2390.000	-48.91	≤-21.20	PASS
		High	2480	AV	2483.500	-49.34	≤-41.20	PASS
				AV	2483.680	-48.91	≤-41.20	PASS
				AV	2500.000	-57.17	≤-41.20	PASS
				Peak	2483.500	-50.08	≤-21.20	PASS
				Peak	2490.320	-38.88	≤-21.20	PASS
				Peak	2500.000	-50.93	≤-21.20	PASS

Note:

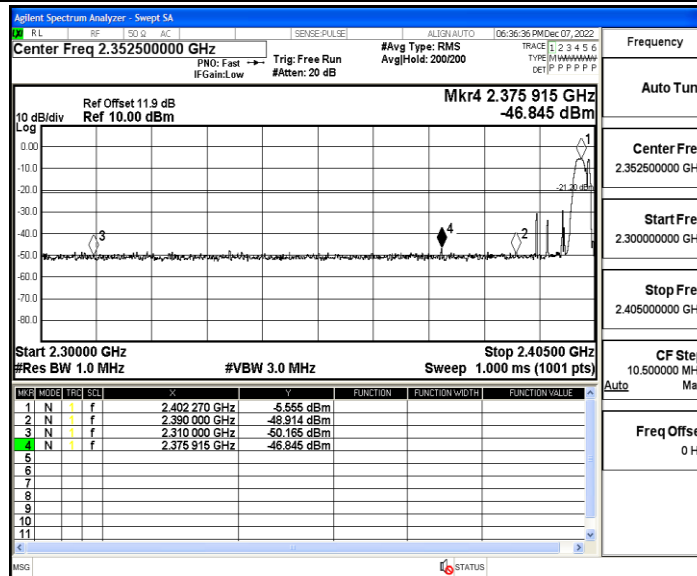
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

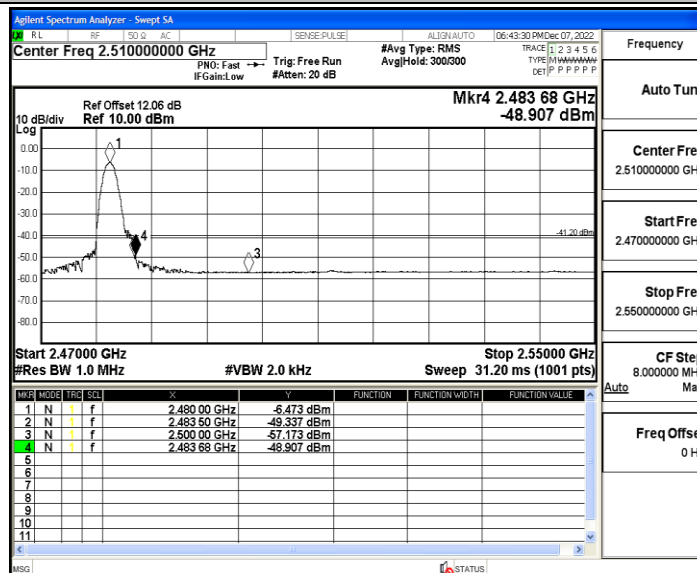
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

