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

Product Name: Smart Plug

Trade Mark: ONVIS

Test Model: S4

FCC ID: 2ARJH-S4

Environmental Conditions

Temperature:	23.4℃
Relative Humidity:	51%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

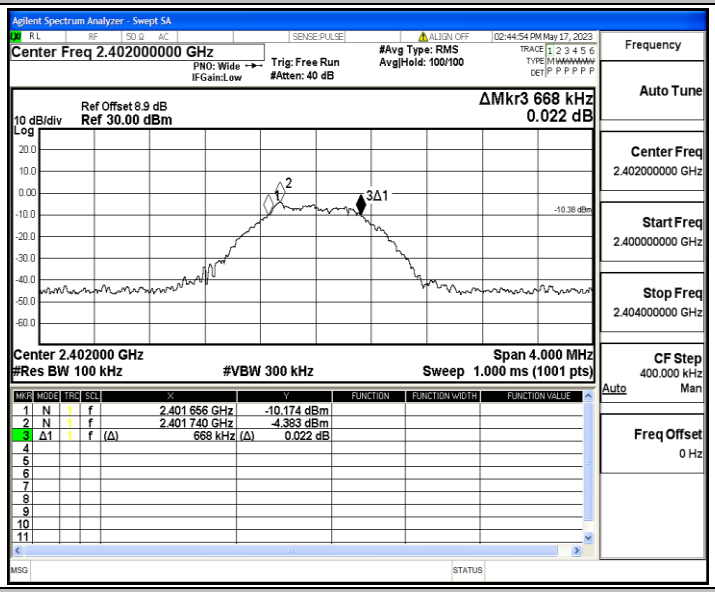
Appendix A: DTS Bandwidth

Test Result

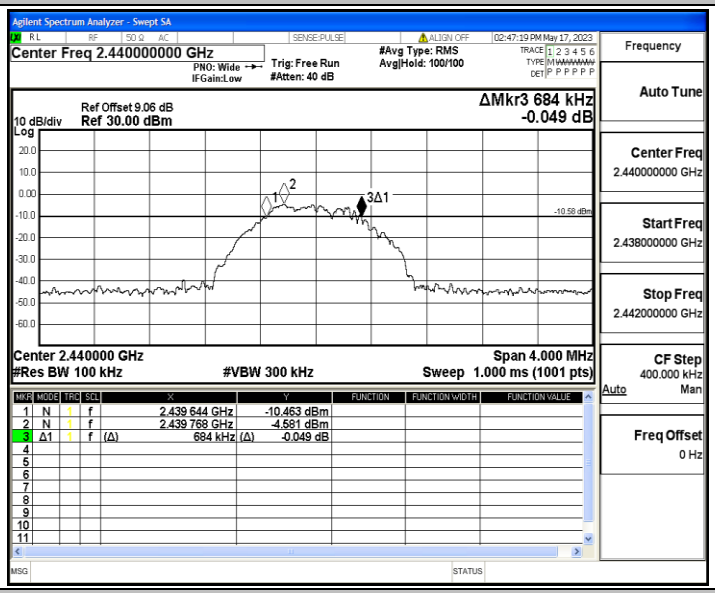
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.668	2401.656	2402.324	0.5	PASS
		2440	0.684	2439.644	2440.328	0.5	PASS
		2480	0.688	2479.648	2480.336	0.5	PASS

Test Graphs

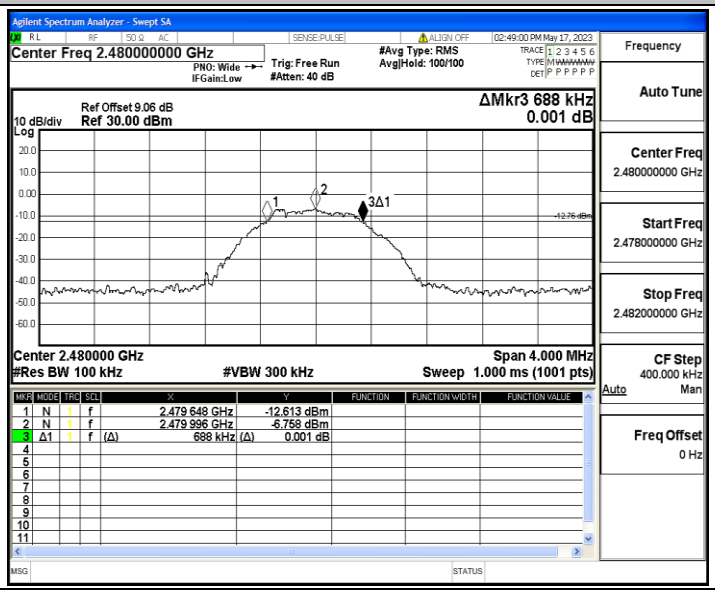
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



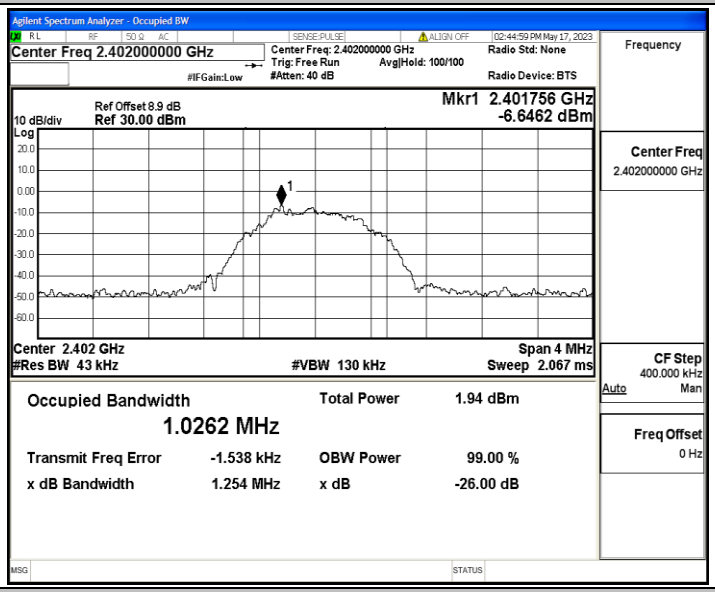
Appendix B: Occupied Channel Bandwidth

Test Result

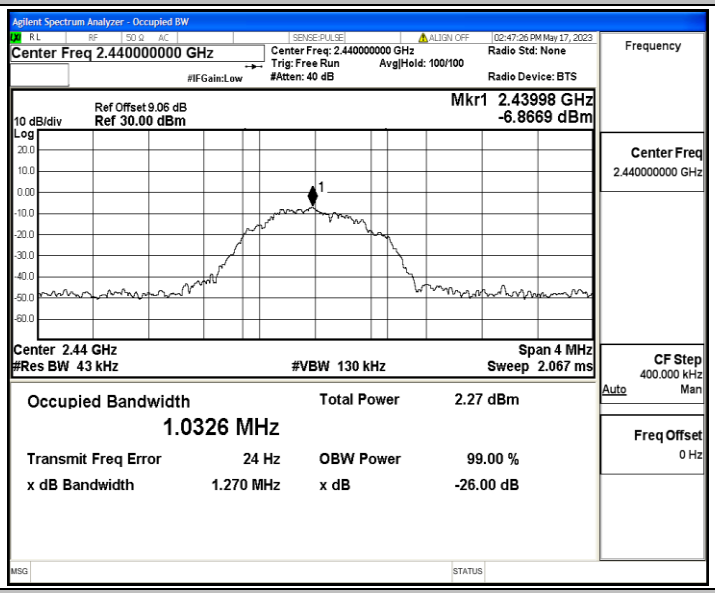
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0262	2401.4854	2402.5116	---	---
		2440	1.0326	2439.4837	2440.5163	---	---
		2480	1.0274	2479.4867	2480.5141	---	---

Test Graphs

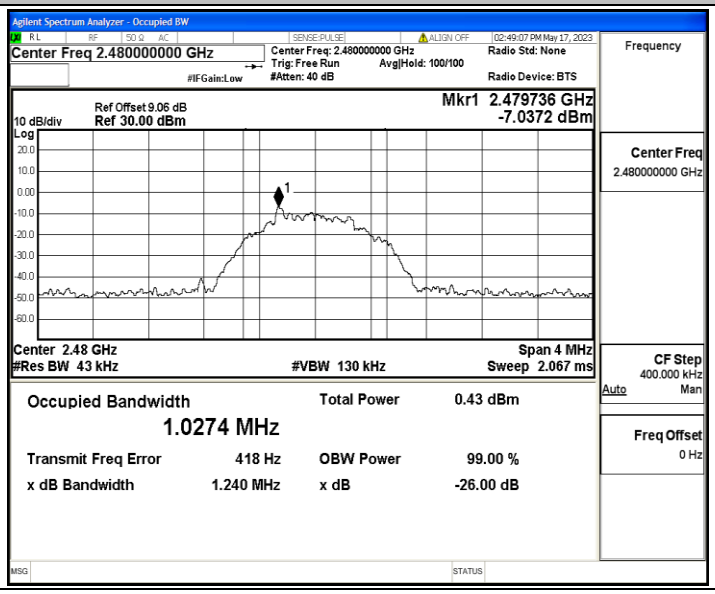
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



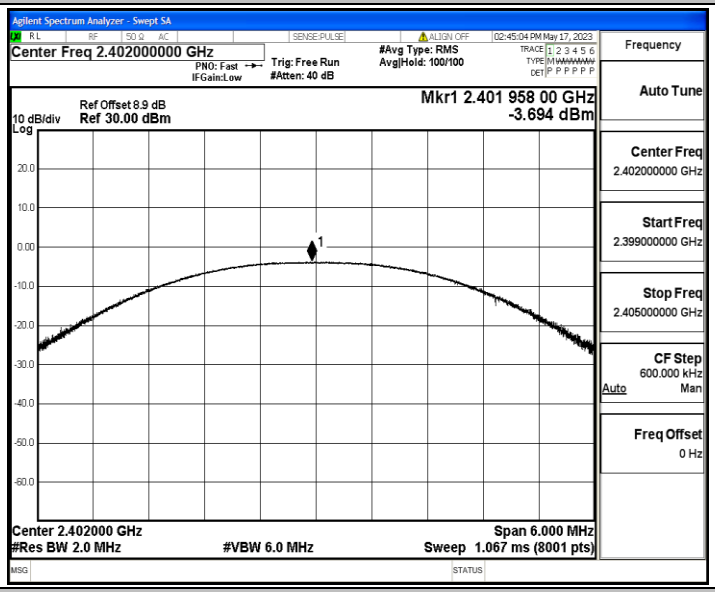
Appendix C: Maximum Peak conducted output power

Test Result

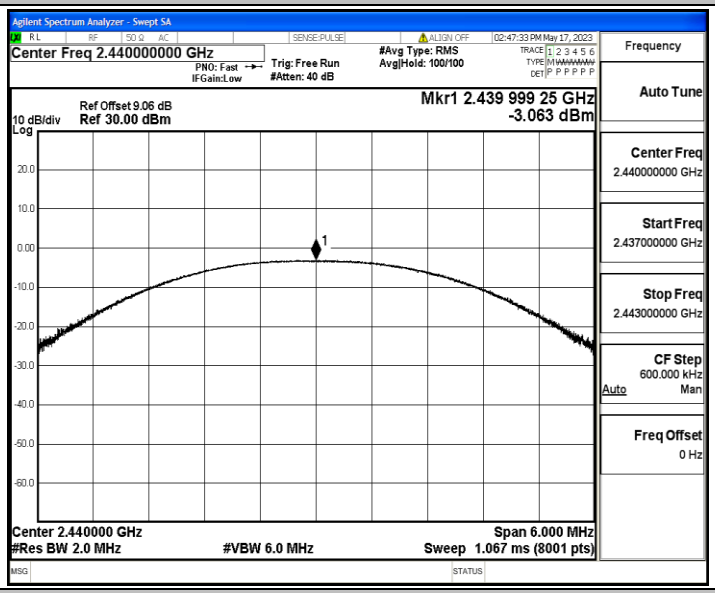
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.69	≤30	PASS
		2440	-3.06	≤30	PASS
		2480	-5.37	≤30	PASS

Test Graphs

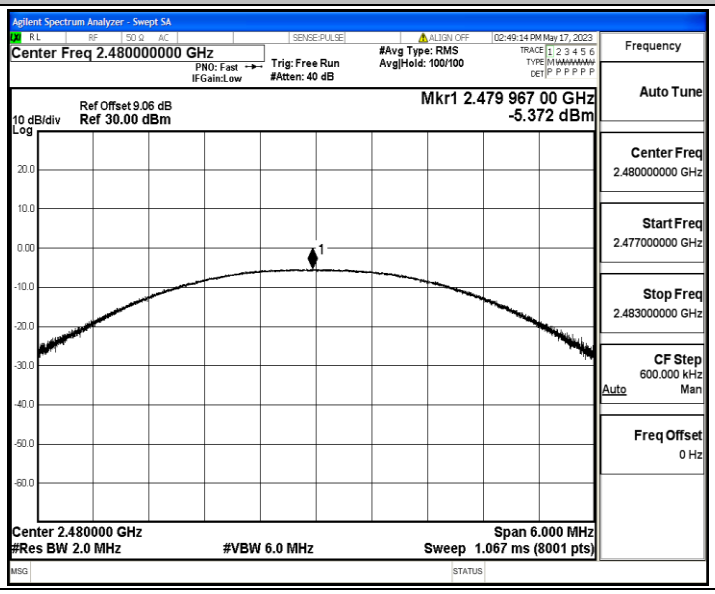
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



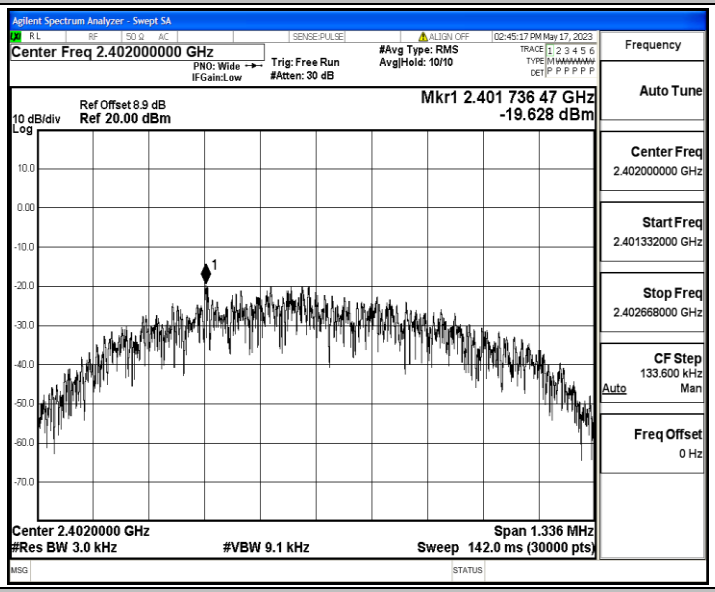
Appendix D: Maximum power spectral density

Test Result

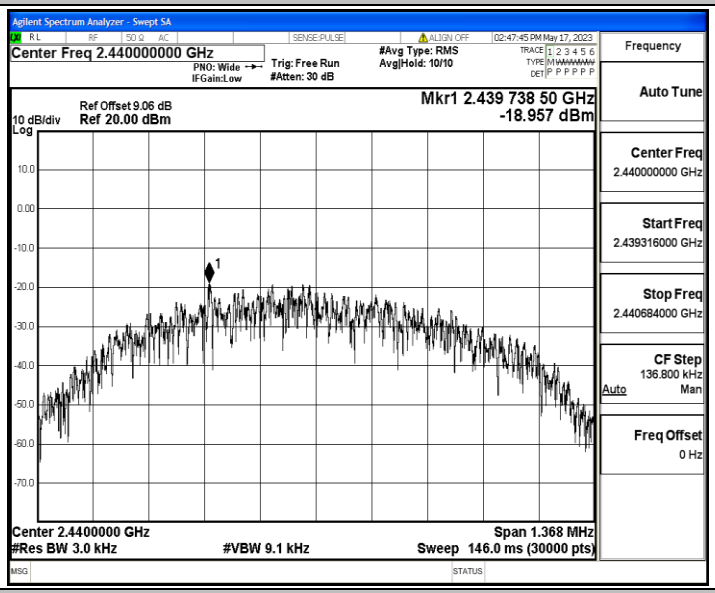
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.63	≤8.00	PASS
		2440	-18.96	≤8.00	PASS
		2480	-20.96	≤8.00	PASS

Test Graphs

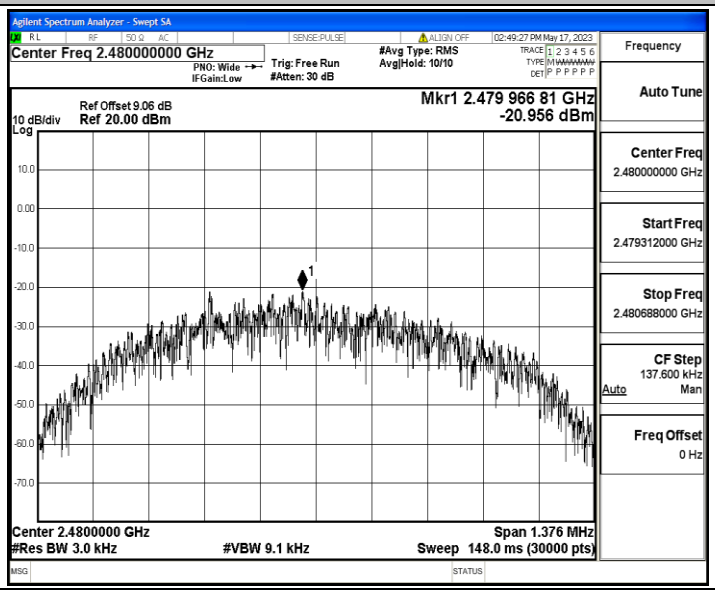
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



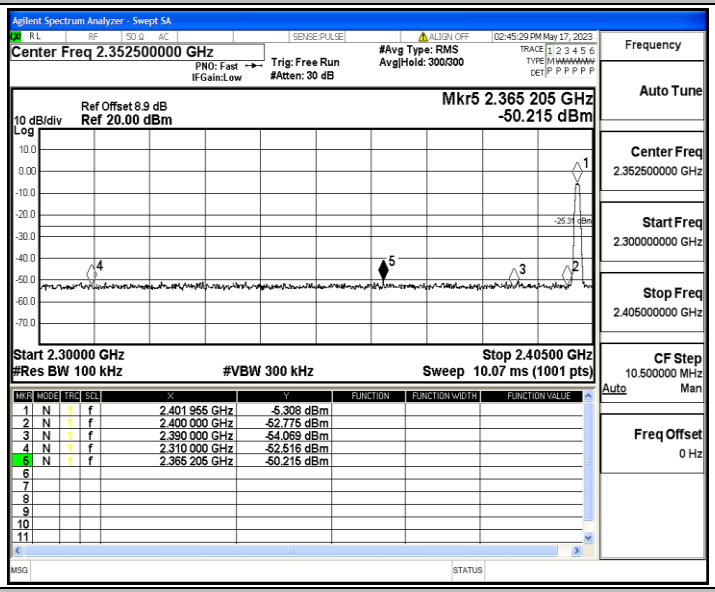
Appendix E: Band edge measurements

Test Result

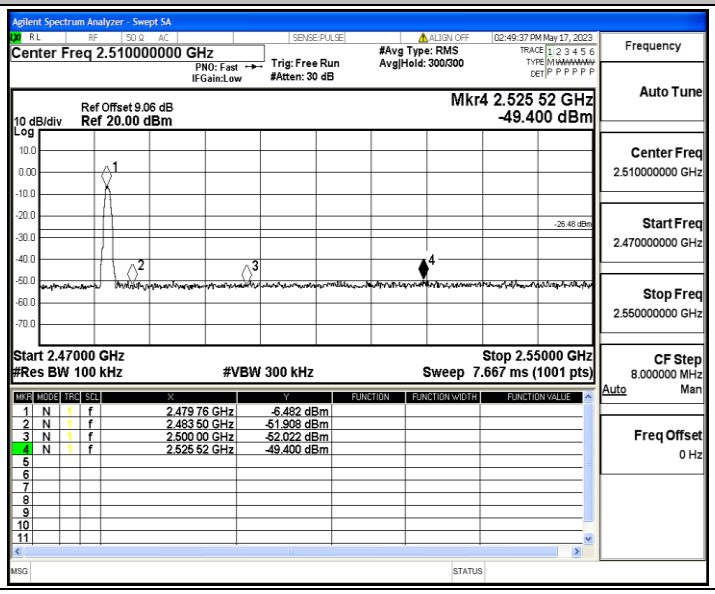
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-5.31	-50.22	≤-25.31	PASS
		High	2480	-6.48	-49.4	≤-26.48	PASS

Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



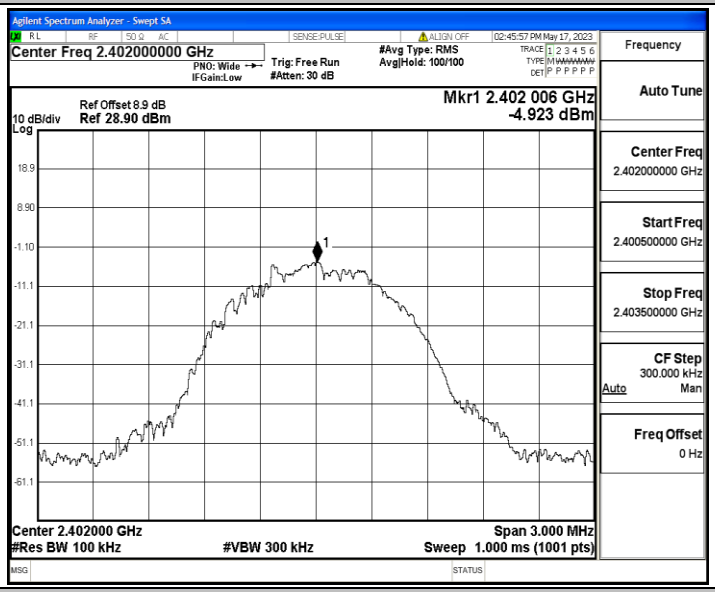
Appendix F: Conducted Spurious Emission

Test Result

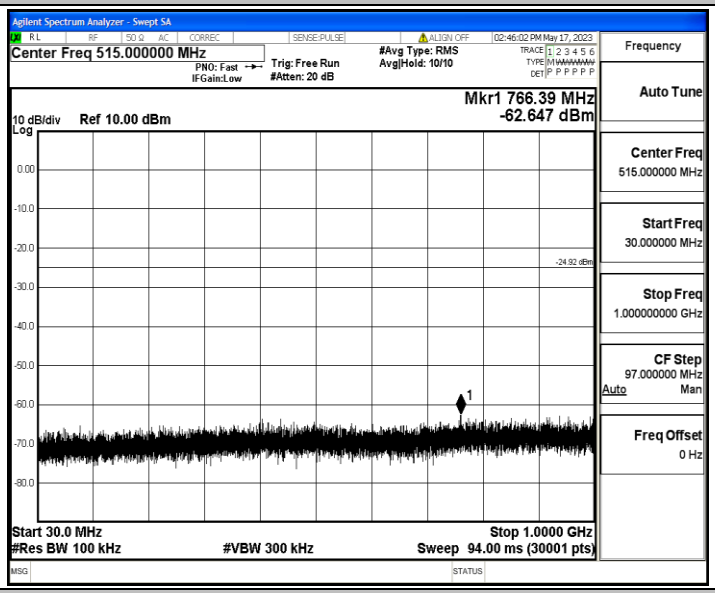
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-4.92	-4.92	---	PASS
			30~1000	-4.92	-62.65	≤-24.92	PASS
			1000~26500	-4.92	-50.6	≤-24.92	PASS
		2440	Reference	-4.56	-4.56	---	PASS
			30~1000	-4.56	-63.01	≤-24.56	PASS
			1000~26500	-4.56	-49.44	≤-24.56	PASS
		2480	Reference	-6.50	-6.50	---	PASS
			30~1000	-6.50	-62.52	≤-26.5	PASS
			1000~26500	-6.50	-50	≤-26.5	PASS

Test Graphs

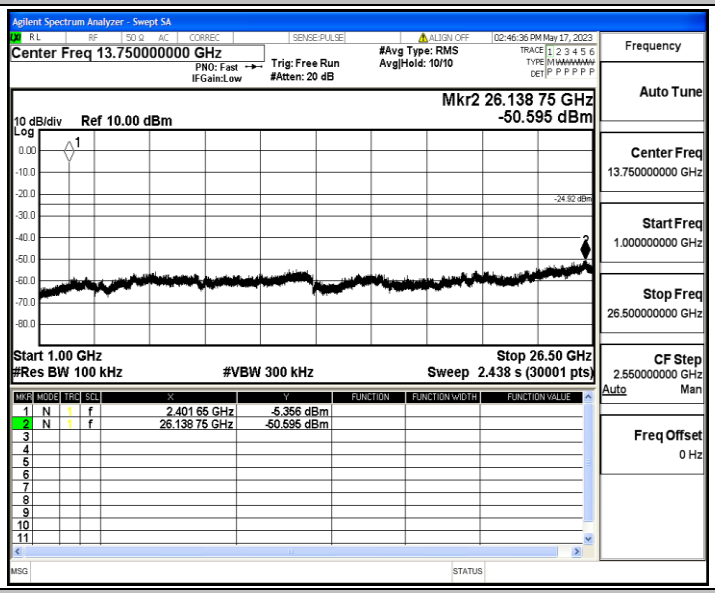
BLE_1M_Ant1_2402_0~Reference



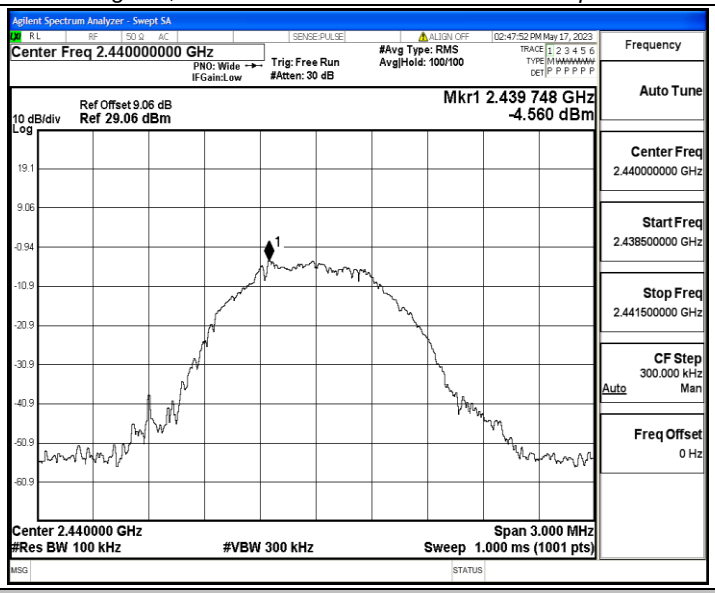
BLE_1M_Ant1_2402_30~1000



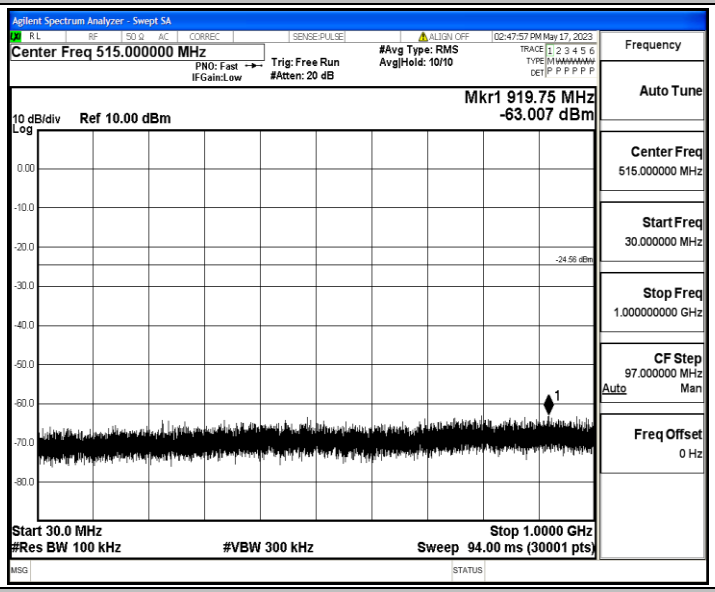
BLE_1M_Ant1_2402_1000~26500



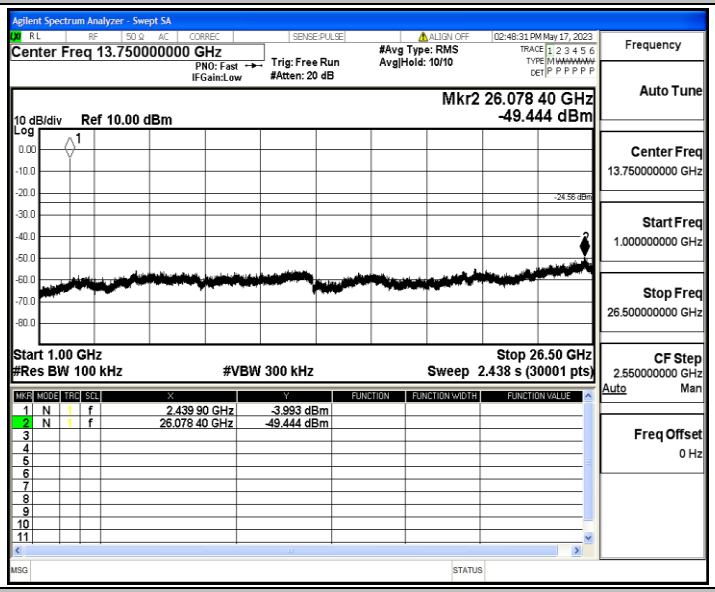
BLE_1M_Ant1_2440_0~Reference



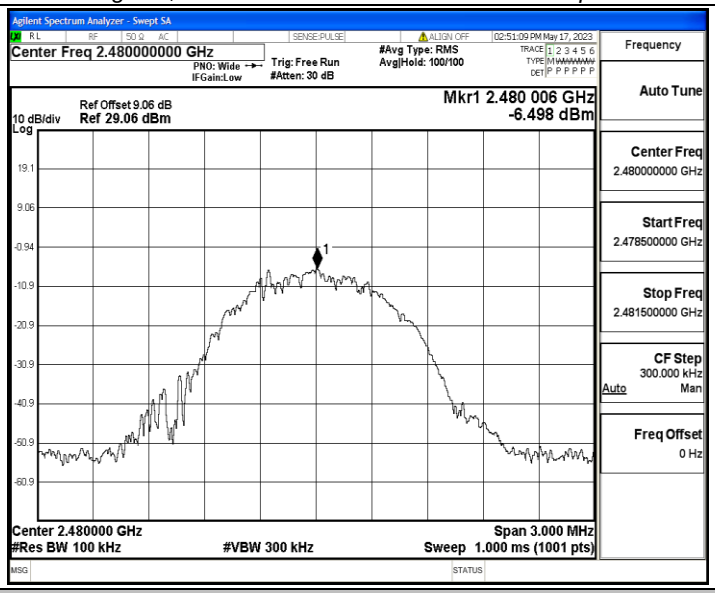
BLE_1M_Ant1_2440_30~1000



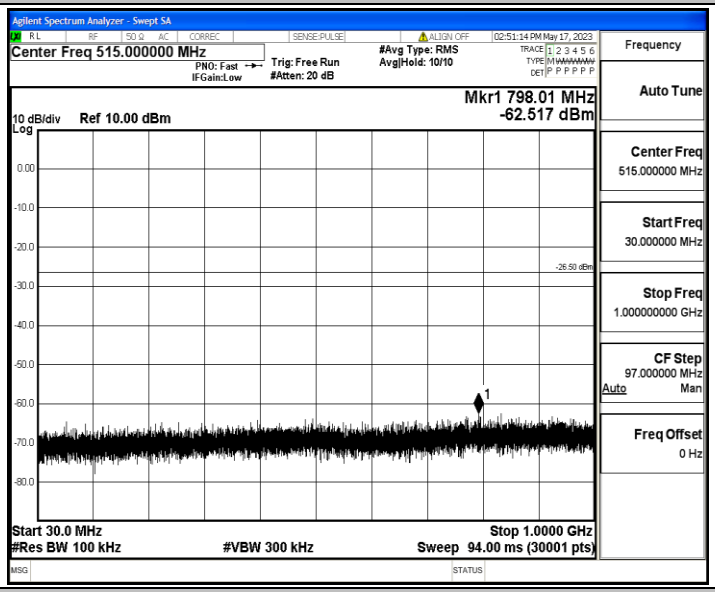
BLE_1M_Ant1_2440_1000~26500



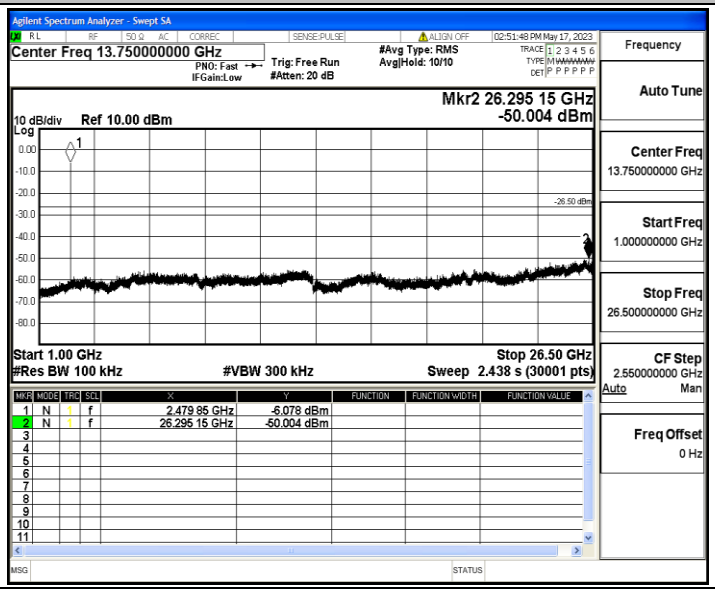
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



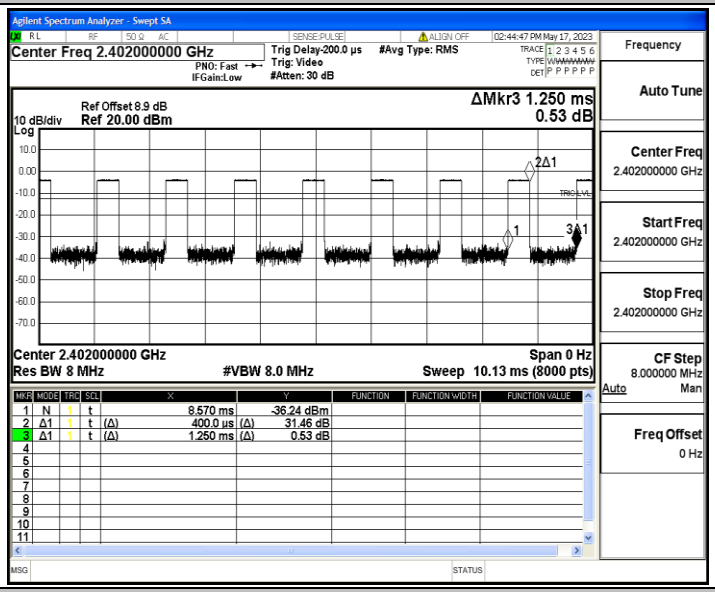
Appendix G: Duty Cycle

Test Result

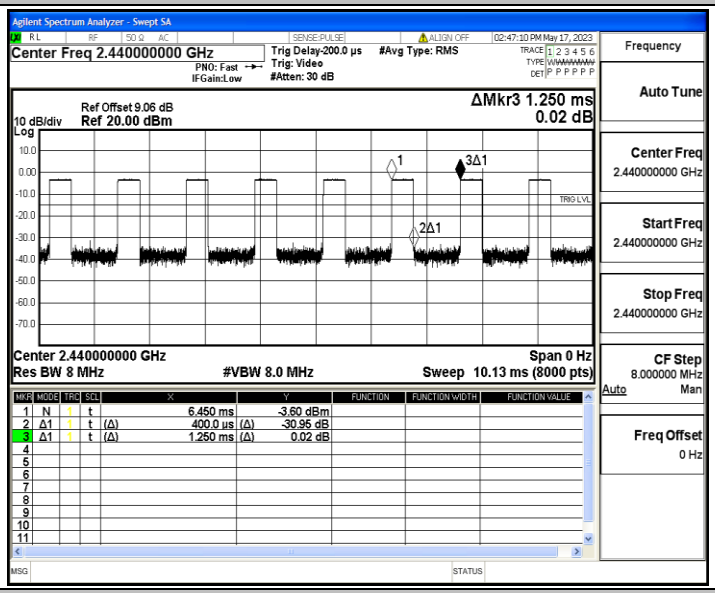
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
BLE_1M	Ant1	2402	0.40	1.25	32.00	2.50
		2440	0.40	1.25	32.00	2.50
		2480	0.40	1.25	32.00	2.50

Test Graphs

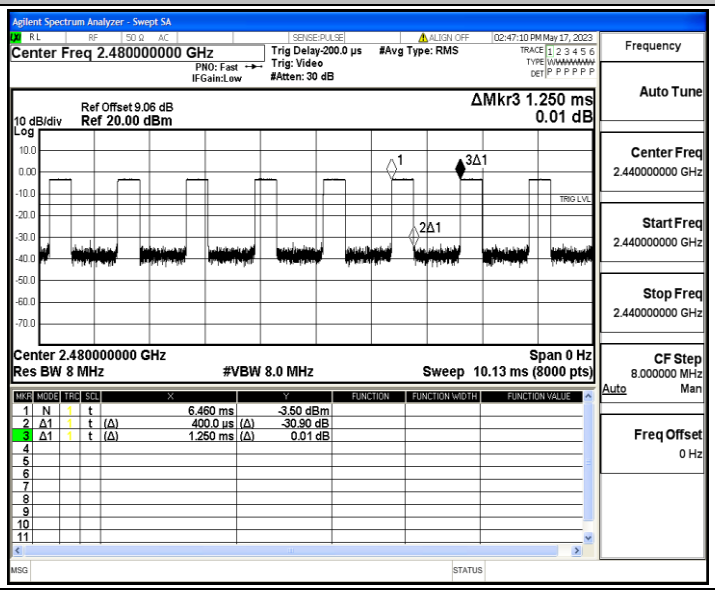
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



Appendix H: Emissions in Restricted Bands

Test Result

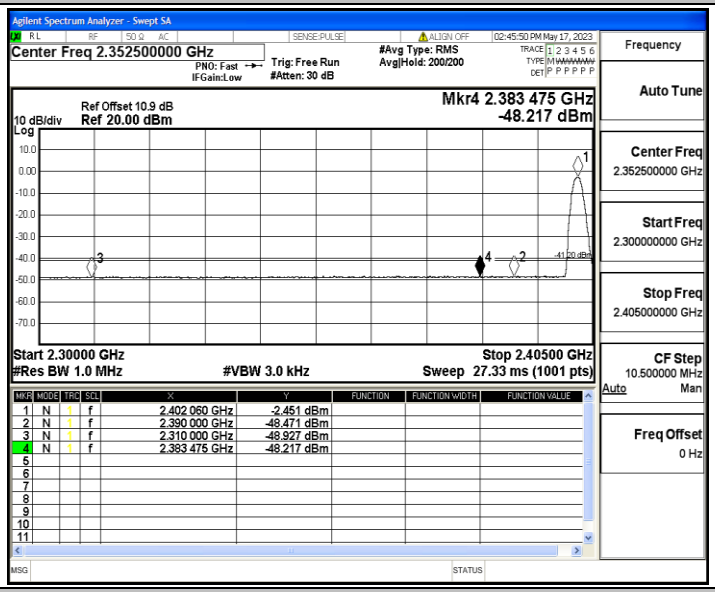
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.93	≤-41.20	PASS
				AV	2383.475	-48.22	≤-41.20	PASS
				AV	2390.000	-48.47	≤-41.20	PASS
				Peak	2310.000	-42.18	≤-21.20	PASS
				Peak	2378.855	-39.28	≤-21.20	PASS
				Peak	2390.000	-41.11	≤-21.20	PASS
		High	2480	AV	2483.500	-49.13	≤-41.20	PASS
				AV	2499.840	-48.9	≤-41.20	PASS
				AV	2500.000	-48.91	≤-41.20	PASS
				Peak	2483.500	-43.95	≤-21.20	PASS
				Peak	2489.920	-39.23	≤-21.20	PASS
				Peak	2500.000	-42.51	≤-21.20	PASS

Note：

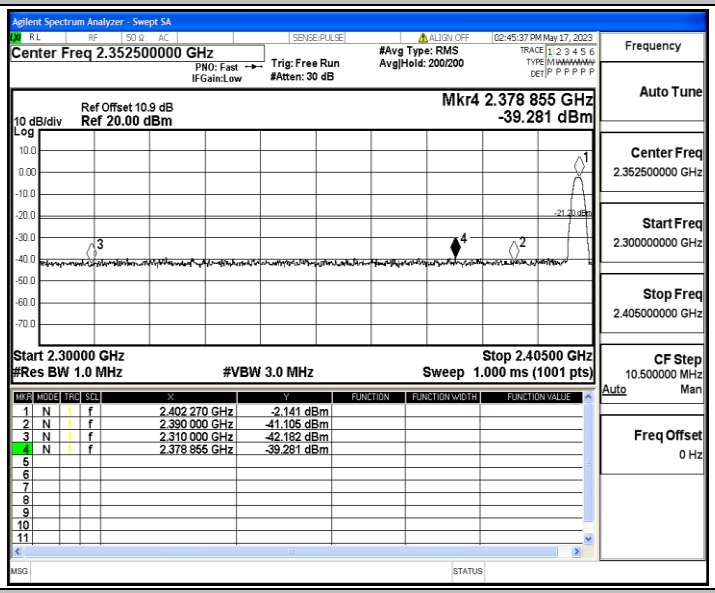
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

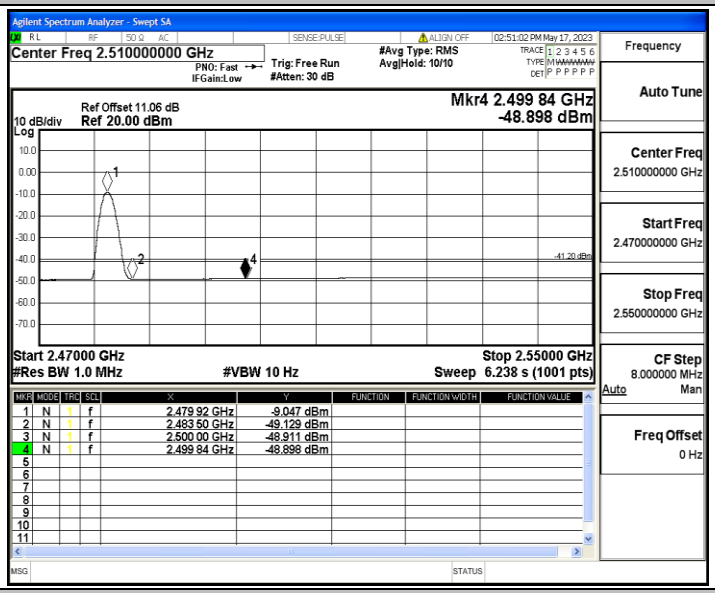
BLE_1M_Ant1_Low_2402_AV



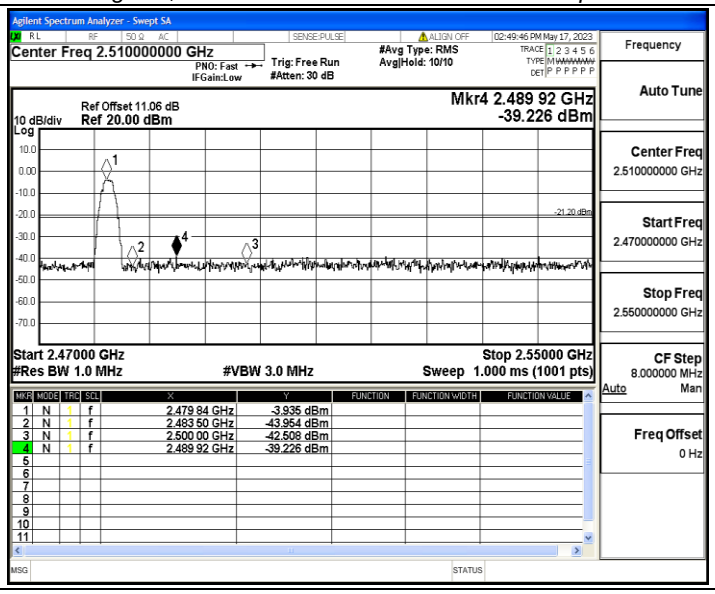
BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.510000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 10/10
02:49:46 PM May 17, 2023
Ref Offset 11.06 dB
10 dB/div Ref 20.00 dBm
Log
Mkr4 2.489 92 GHz
-39.226 dBm
-21.20 dBm
Start 2.47000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.55000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.479 84 GHz -3.935 dBm
2 N 1 f 2.483 50 GHz -43.954 dBm
3 N 1 f 2.500 00 GHz -42.508 dBm
4 N 1 f 2.489 92 GHz -39.226 dBm
Frequency
Auto Tune
Center Freq 2.510000000 GHz
Start Freq 2.470000000 GHz
Stop Freq 2.550000000 GHz
CF Step 8.000000 MHz
Auto Man
Freq Offset 0 Hz