

Appendix Test Data for Zigbee (Conducted Measurement)

Product Name: EFR32 ZigBee Module

Trade Mark: N/A

Test Model: MSWUP-310A

FCC ID: 2AV5NMSWUP-310A

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

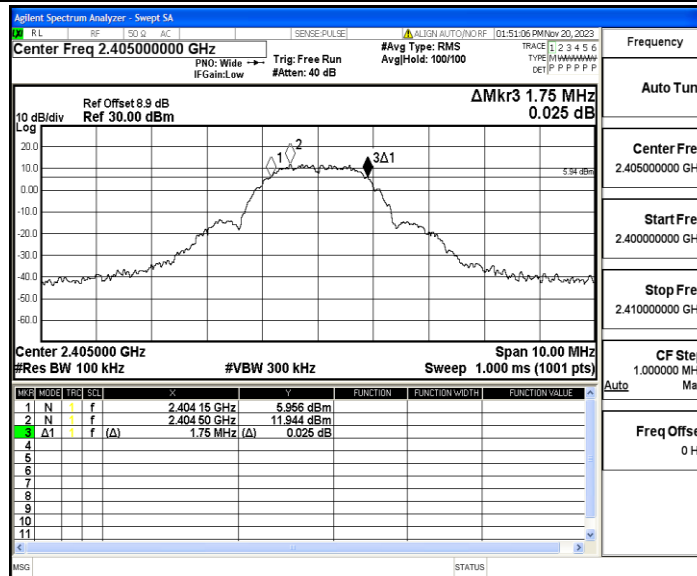
Appendix A: DTS Bandwidth

Test Result

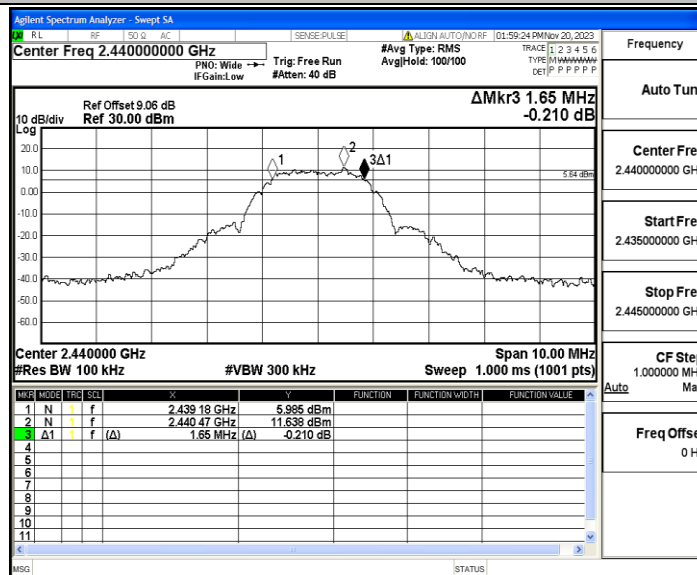
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
ZIGB	Ant1	2405	1.750	2404.150	2405.900	0.5	PASS
		2440	1.650	2439.180	2440.830	0.5	PASS
		2480	1.800	2479.090	2480.890	0.5	PASS

Test Graphs

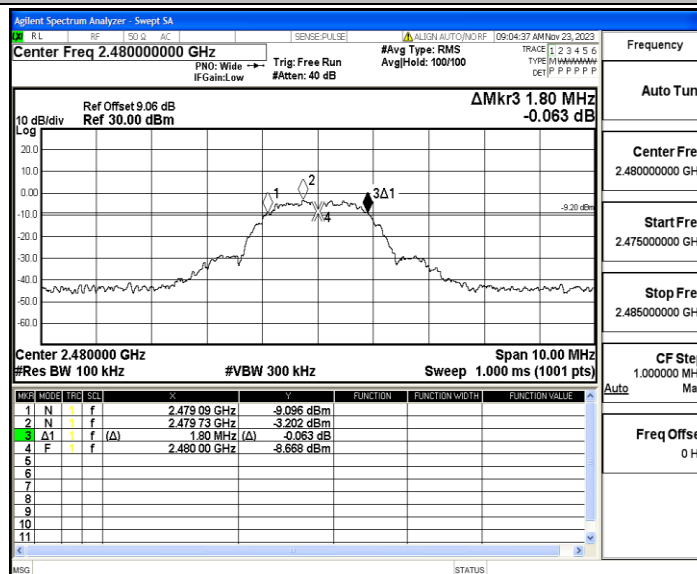
ZIGB_Ant1_2405



ZIGB_Ant1_2440



ZIGB_Ant1_2480



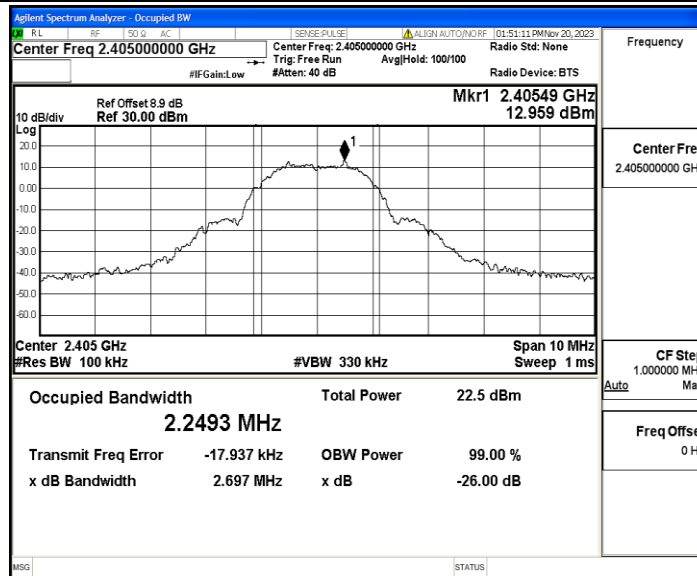
Appendix B: Occupied Channel Bandwidth

Test Result

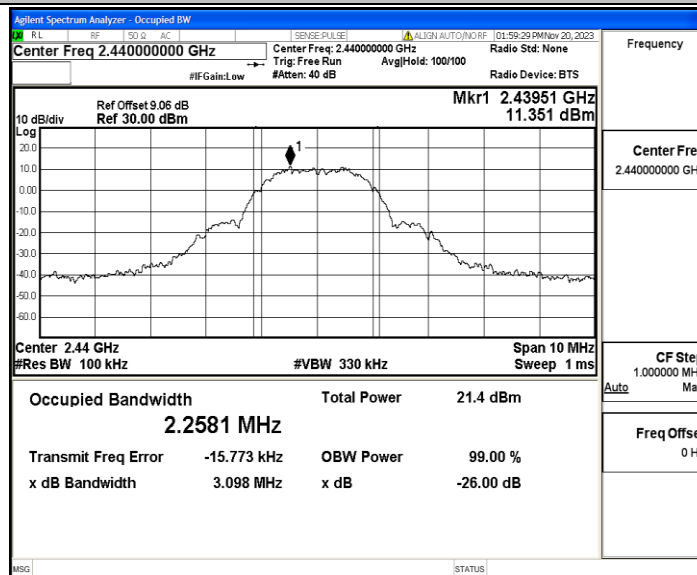
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
ZIGB	Ant1	2405	2.2493	2403.8574	2406.1067	---	---
		2440	2.2581	2438.8552	2441.1133	---	---
		2480	2.2773	2478.8507	2481.1280	---	---

Test Graphs

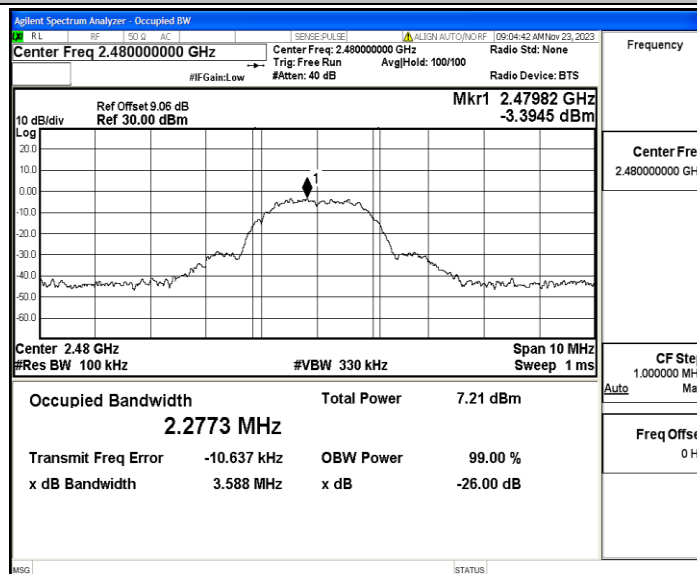
ZIGB_Ant1_2405



ZIGB_Ant1_2440



ZIGB_Ant1_2480



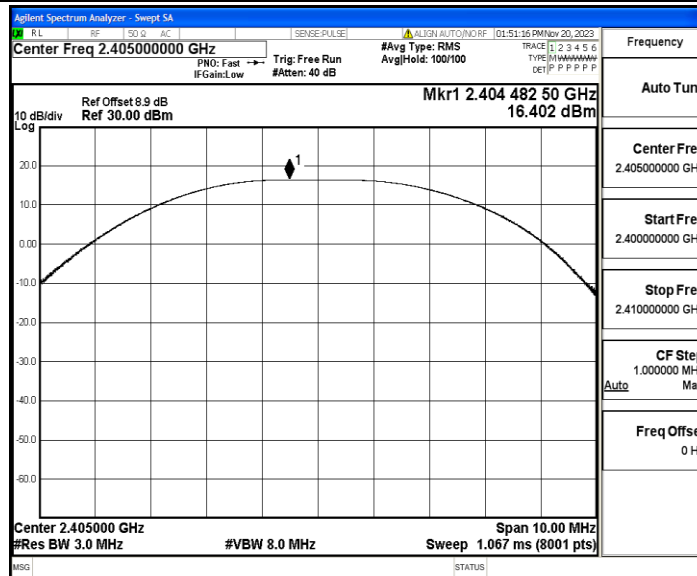
Appendix C: Maximum conducted output power

Test Result

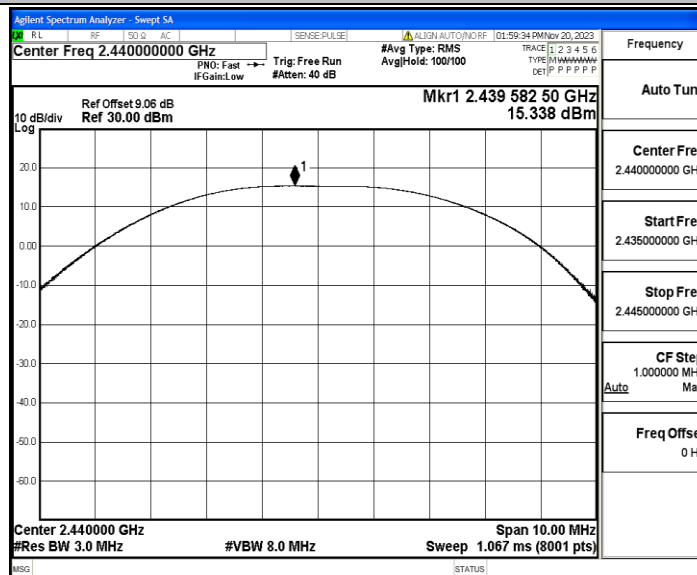
TestMode	Antenna	Freq(MHz)	Result[dBm]	Limit[dBm]	Verdict
ZIGB	Ant1	2405	16.4	≤30	PASS
		2440	15.34	≤30	PASS
		2480	1.49	≤30	PASS

Test Graphs

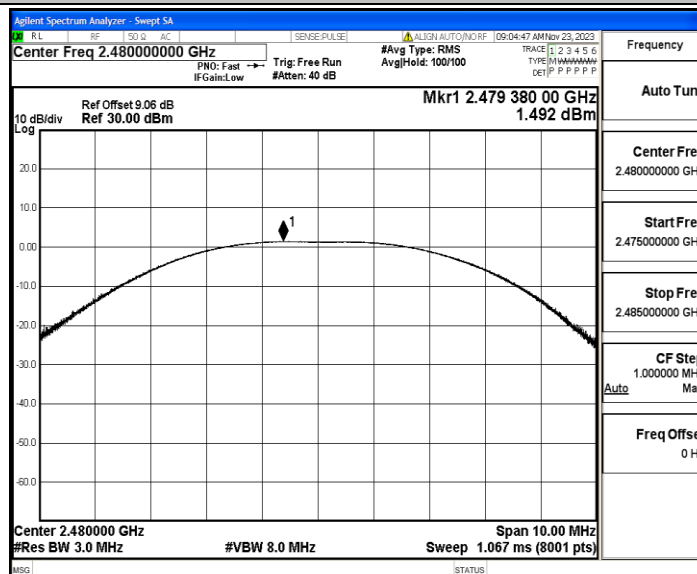
ZIGB_Ant1_2405



ZIGB_Ant1_2440



ZIGB_Ant1_2480

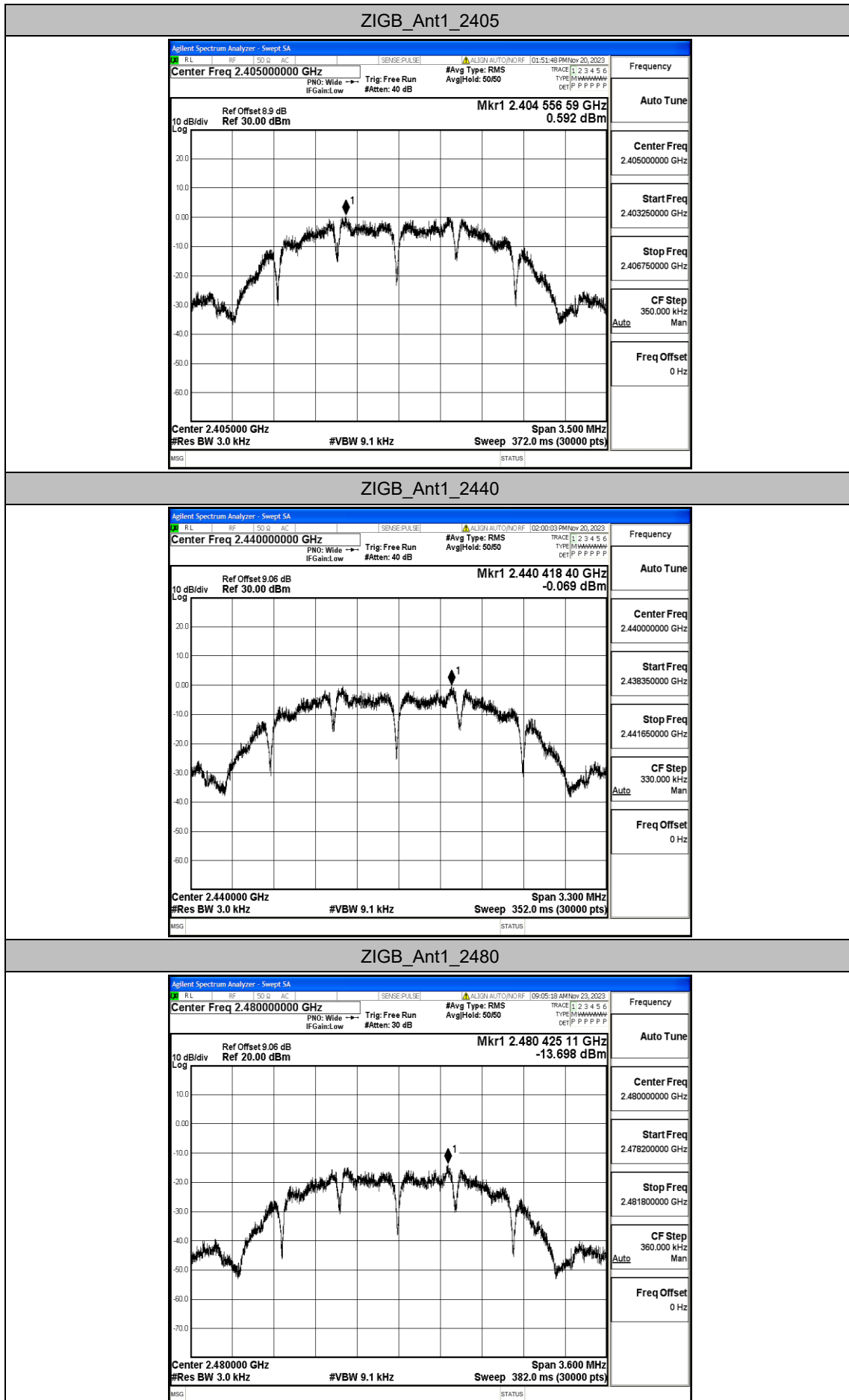


Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Freq(MHz)	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
ZIGB	Ant1	2405	0.59	≤8.00	PASS
		2440	-0.07	≤8.00	PASS
		2480	-13.7	≤8.00	PASS

Test Graphs



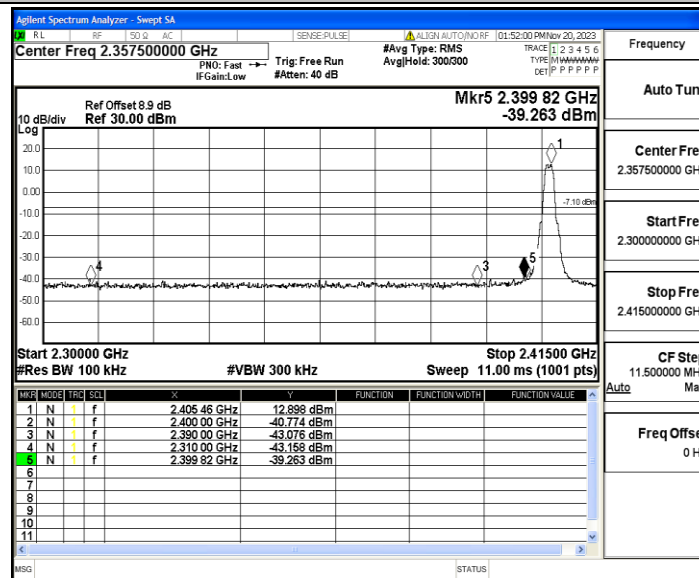
Appendix E: Band edge measurements

Test Result

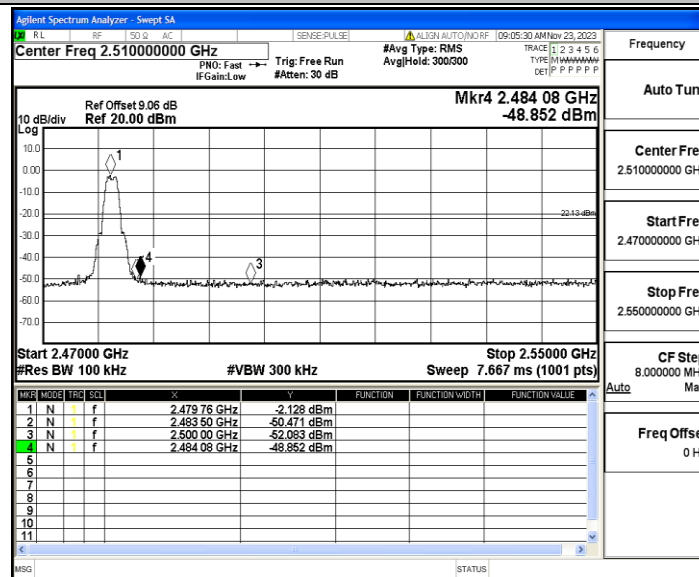
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
ZIGB	Ant1	Low	2405	12.90	-39.26	≤ -7.1	PASS
		High	2480	-2.13	-48.85	≤ -22.13	PASS

Test Graphs

ZIGB_Ant1_Low_2405



ZIGB_Ant1_High_2480



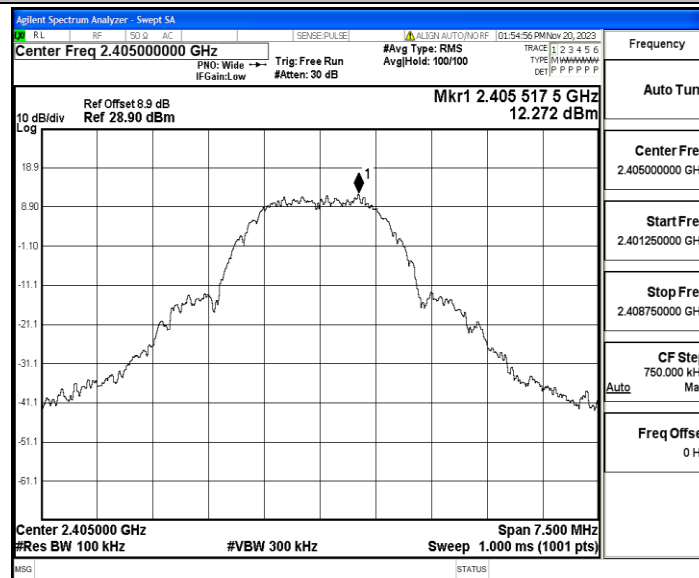
Appendix F: Conducted Spurious Emission

Test Result

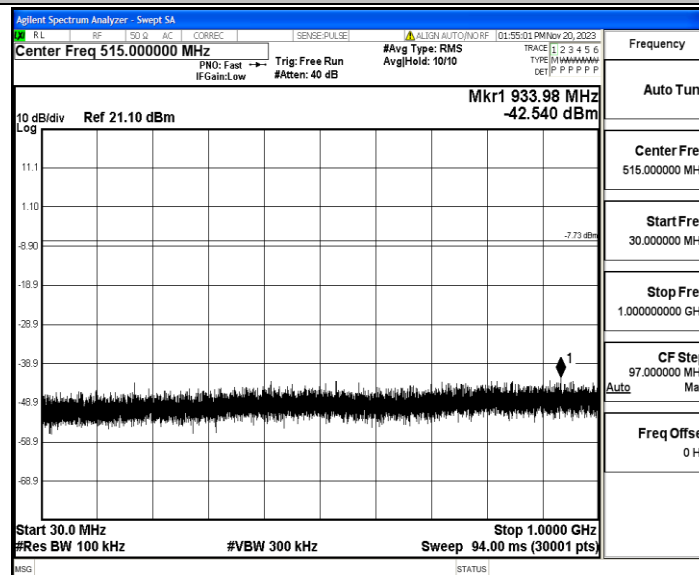
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
ZIGB	Ant1	2405	Reference	12.27	12.27	---	PASS
			30~1000	12.27	-42.54	≤-7.73	PASS
			1000~26500	12.27	-29.52	≤-7.73	PASS
		2440	Reference	11.06	11.06	---	PASS
			30~1000	11.06	-42.17	≤-8.94	PASS
			1000~26500	11.06	-29.92	≤-8.94	PASS
		2480	Reference	-2.93	-2.93	---	PASS
			30~1000	-2.93	-62.61	≤-22.93	PASS
			1000~26500	-2.93	-50.48	≤-22.93	PASS

Test Graphs

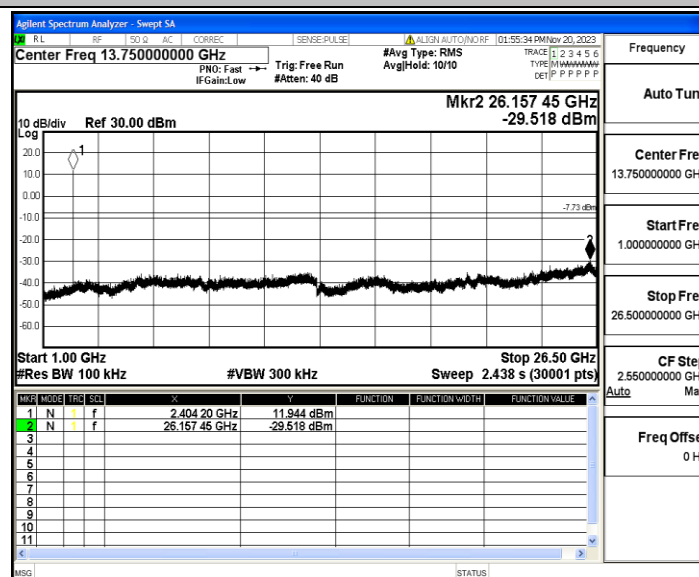
ZIGB_Ant1_2405_0~Reference



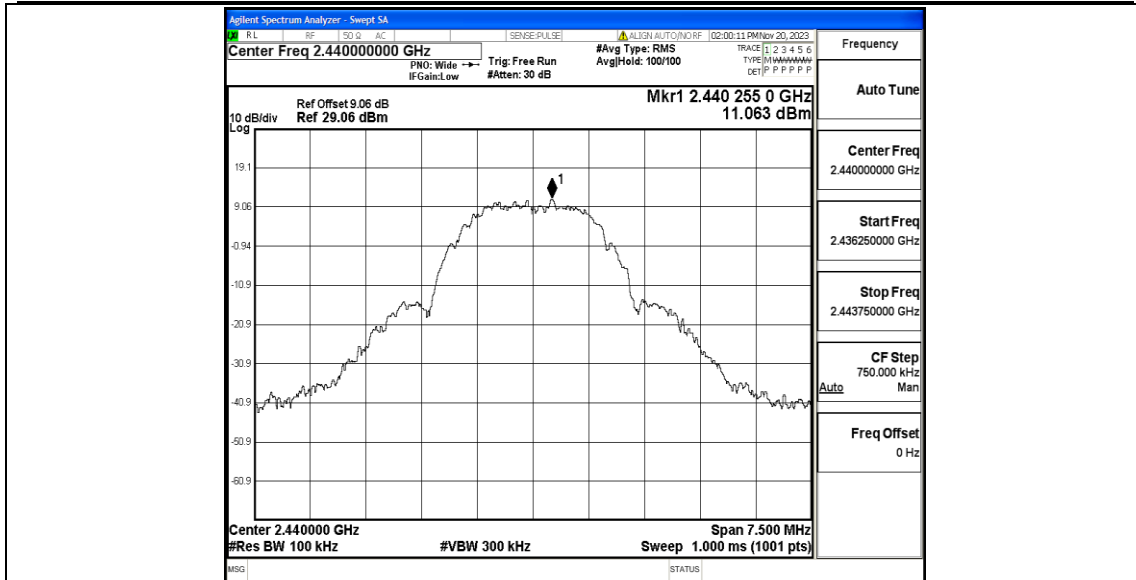
ZIGB_Ant1_2405_30~1000



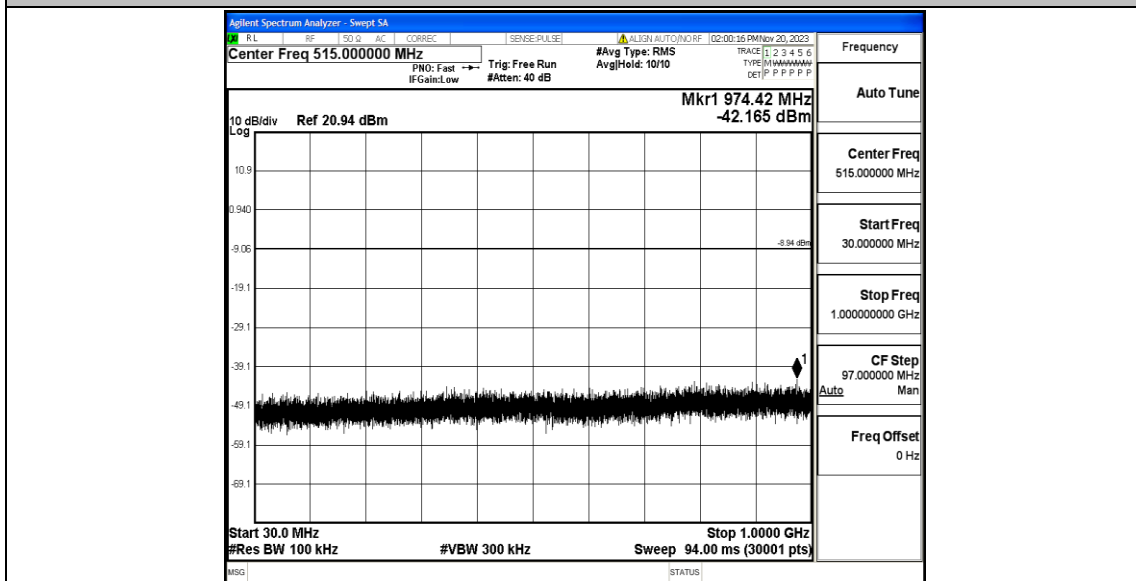
ZIGB_Ant1_2405_1000~26500



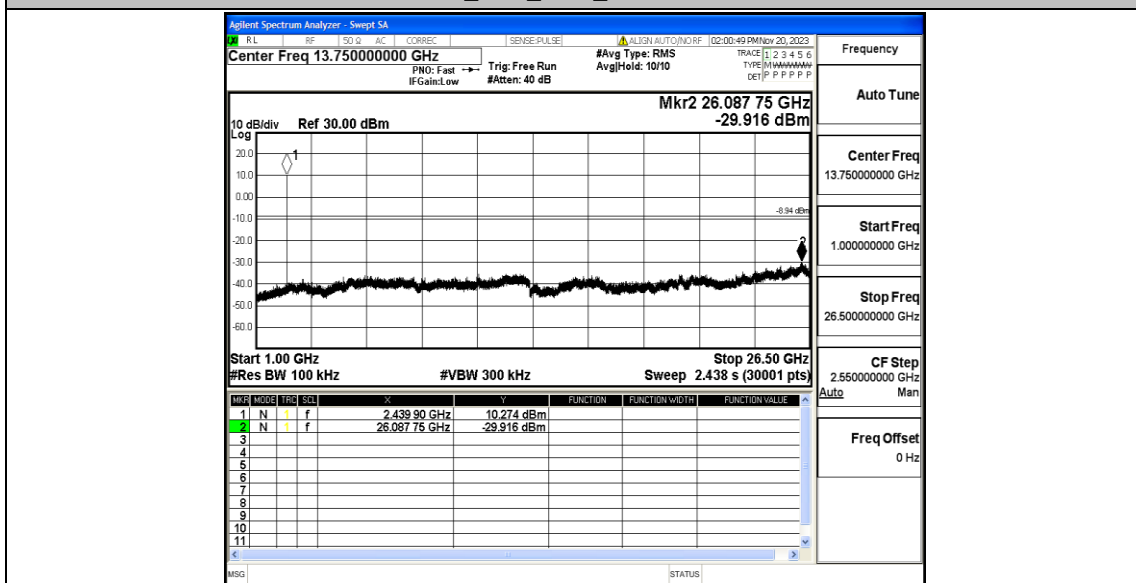
ZIGB_Ant1_2440_0~Reference



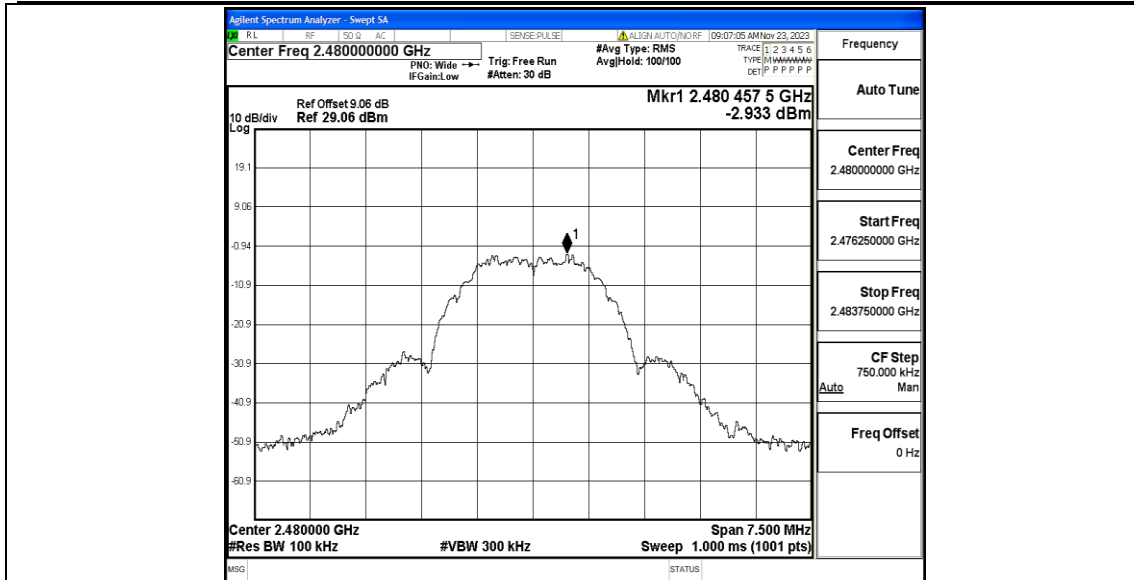
ZIGB_Ant1_2440_30~1000



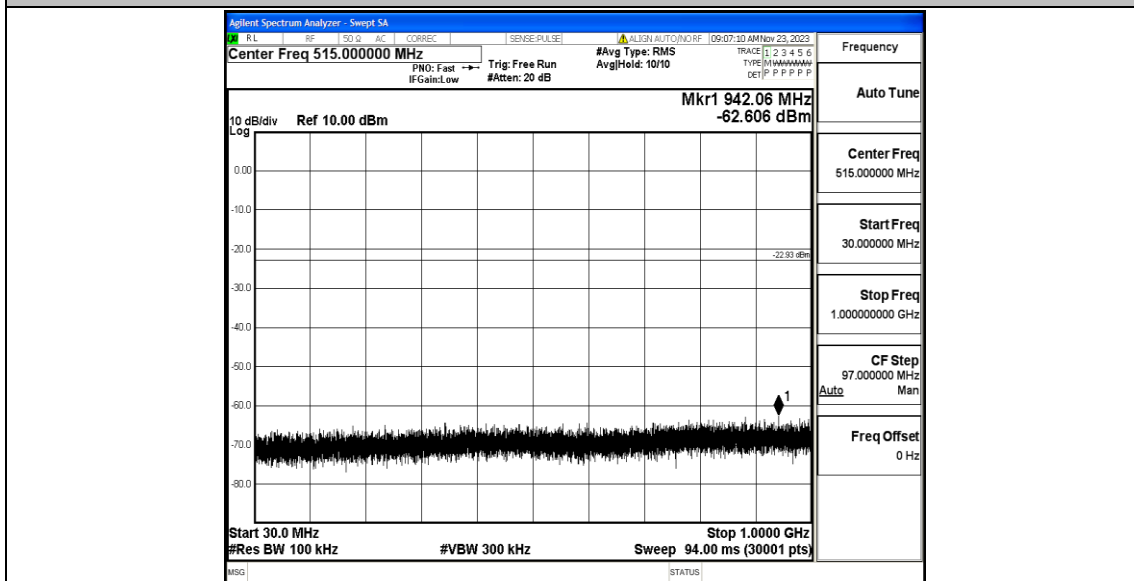
ZIGB_Ant1_2440_1000~26500



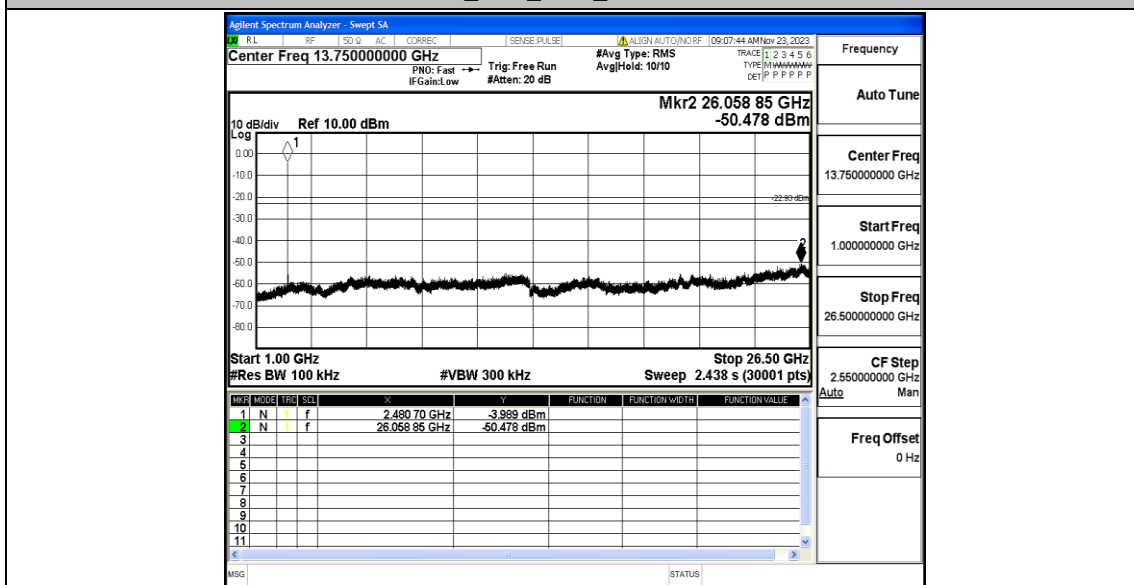
ZIGB_Ant1_2480_0~Reference



ZIGB_Ant1_2480_30~1000



ZIGB_Ant1_2480_1000~26500



Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
ZIGB	Ant1	2405	0.00	0.00	100	---	---
		2440	0.00	0.00	100	---	---
		2480	0.00	0.00	100	---	---

Test Graphs



Appendix H: Emissions in Restricted Bands

Test Result

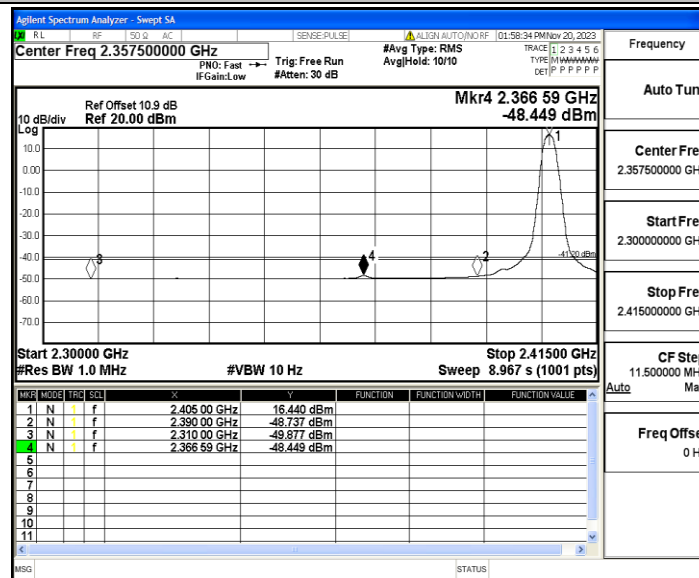
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
ZIGB	Ant1	Low	2405	AV	2310.000	-49.88	≤-41.20	PASS
				AV	2366.585	-48.45	≤-41.20	PASS
				AV	2390.000	-48.74	≤-41.20	PASS
				Peak	2310.000	-45.77	≤-21.20	PASS
				Peak	2311.500	-40.04	≤-21.20	PASS
				Peak	2390.000	-43.79	≤-21.20	PASS
		High	2480	AV	2483.500	-43.89	≤-41.20	PASS
				AV	2483.520	-43.89	≤-41.20	PASS
				AV	2500.000	-58.88	≤-41.20	PASS
				Peak	2483.500	-41.34	≤-21.20	PASS
				Peak	2483.520	-41.34	≤-21.20	PASS
				Peak	2500.000	-52.15	≤-21.20	PASS

Note:

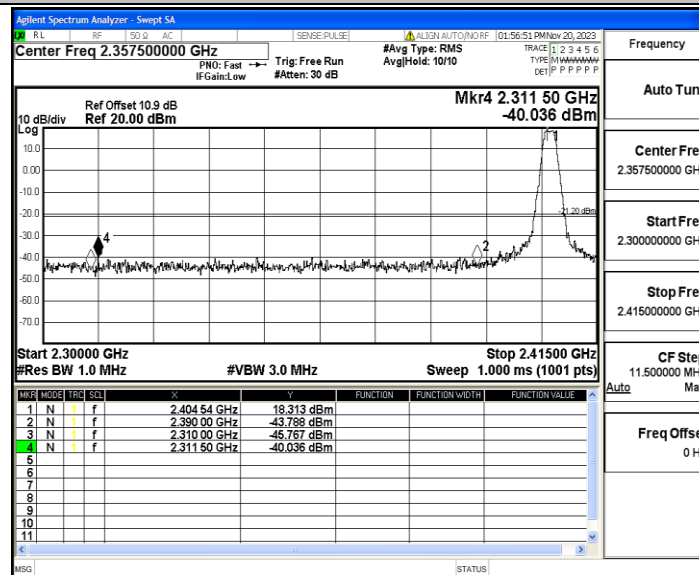
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

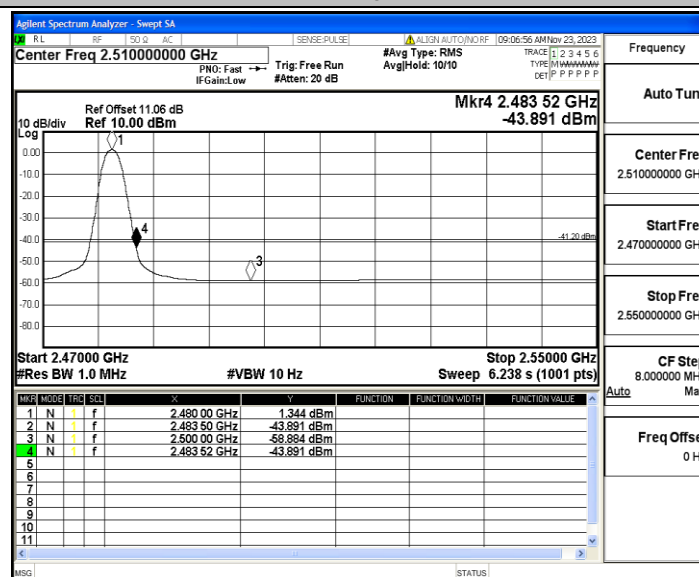
ZIGB_Ant1_Low_2405_AV



ZIGB_Ant1_Low_2405_Peak



ZIGB_Ant1_High_2480_AV



ZIGB_Ant1_High_2480_Peak

