

RF Test Data for ZigBee (Conducted Measurements)

General Description of EUT	
Product Name:	Multimode Engineering Gateway
Test Model:	UX18
Sample ID:	HC-C-202411-0044-02-02-2#
Environmental Conditions	
Temperature:	25.6℃
Relative Humidity:	44%RH
Test Voltage:	DC 5V
Test Engineer:	Jolin Lee
Note: For a more detailed features description, please refer to the report TBR-C-202411-0044-5	

Contents

1: DTS Bandwidth.....	3
1.1 Test Result.....	3
1.2 Test Graphs	4
2: Occupied Channel Bandwidth	5
2.1 Test Result.....	5
2.2 Test Graphs	6
3: Maximum conducted peak output power	7
3.1 Test Result.....	7
3.2 Test Graphs	8
4: Maximum power spectral density	9
4.1 Test Result.....	9
4.2 Test Graphs	10
5: Band edge measurements	11
5.1 Test Result.....	11
5.2 Test Graphs	12
6: Conducted Spurious Emission.....	13
6.1 Test Result.....	13
6.2 Test Graphs	14
7: Duty Cycle	17
7.1 Test Result.....	17
7.2 Test Graphs	18
8: Emissions in Restricted Bands.....	19
8.1 Test Result.....	19
8.2 Test Graphs	20

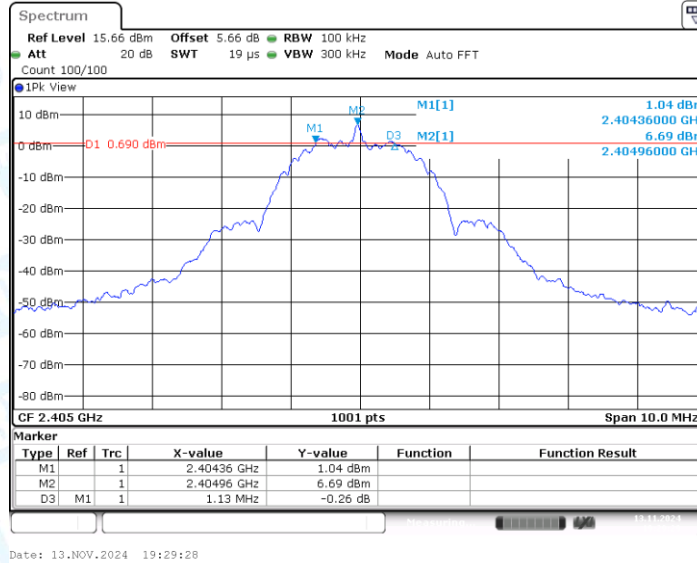
1: DTS Bandwidth

1.1 Test Result

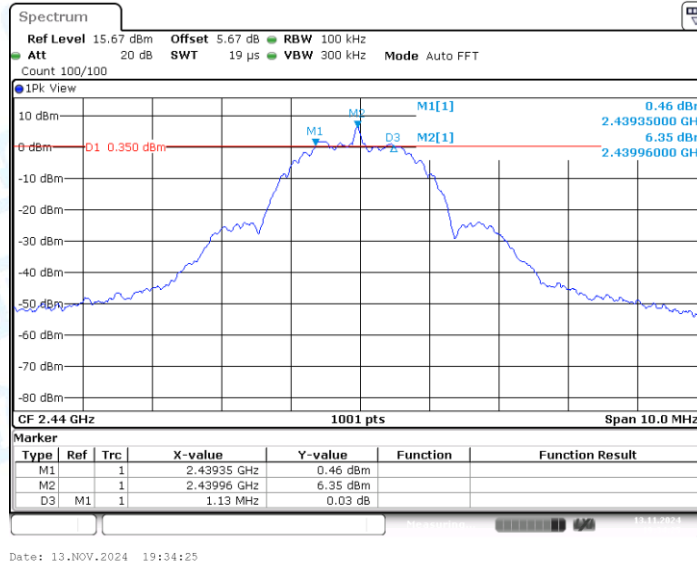
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
ZigBee	Ant1	2405	1.13	2404.36	2405.49	0.5	PASS
		2440	1.13	2439.35	2440.48	0.5	PASS
		2480	1.13	2479.35	2480.48	0.5	PASS

1.2 Test Graphs

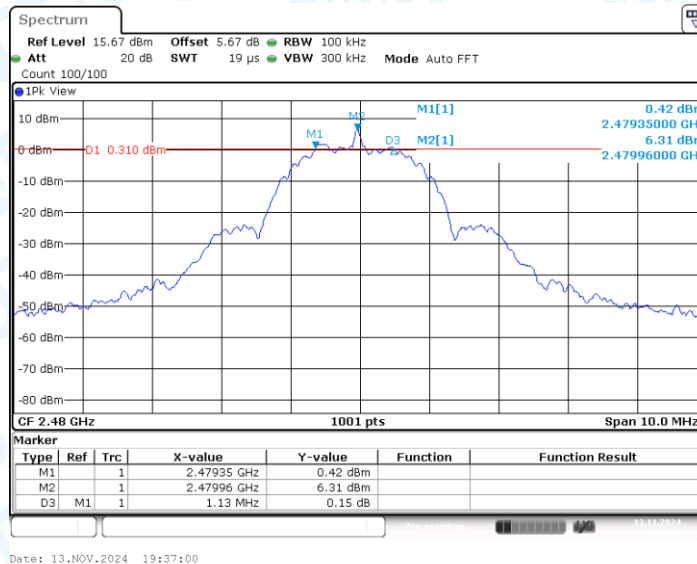
ZigBee_Ant1_2405



ZigBee_Ant1_2440



ZigBee_Ant1_2480



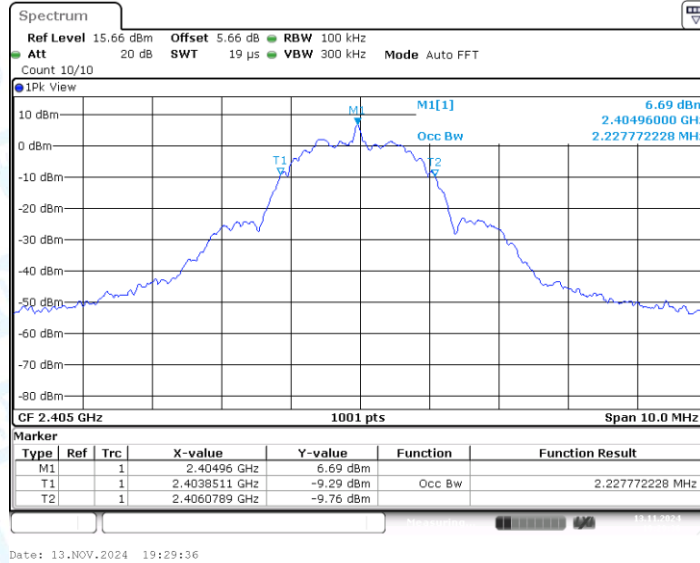
2: Occupied Channel Bandwidth

2.1 Test Result

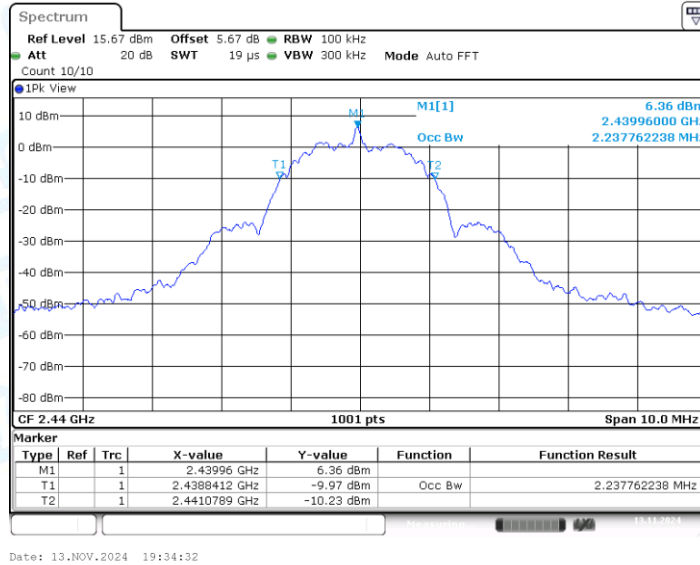
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
ZigBee	Ant1	2405	2.228	2403.8511	2406.0789	---	---
		2440	2.238	2438.8412	2441.0789	---	---
		2480	2.238	2478.8412	2481.0789	---	---

2.2 Test Graphs

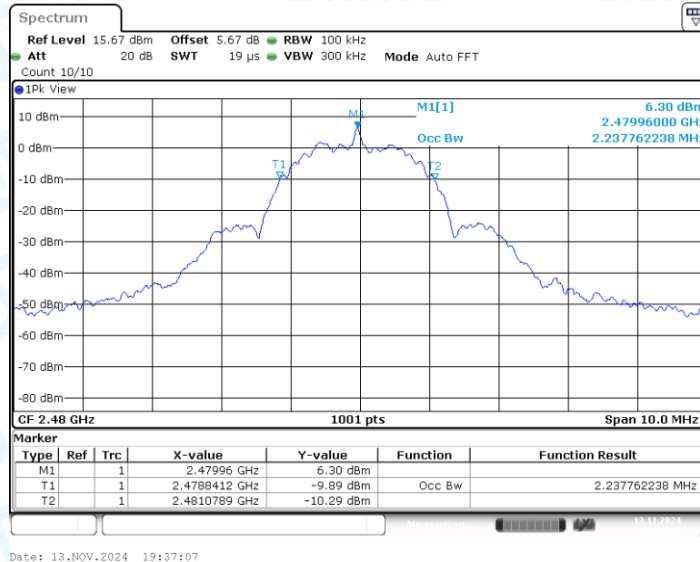
ZigBee_Ant1_2405



ZigBee_Ant1_2440



ZigBee_Ant1_2480



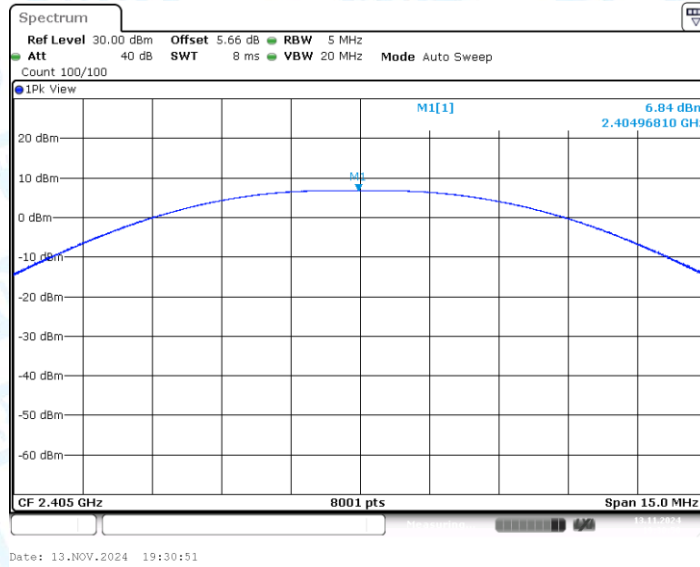
3: Maximum conducted peak output power

3.1 Test Result

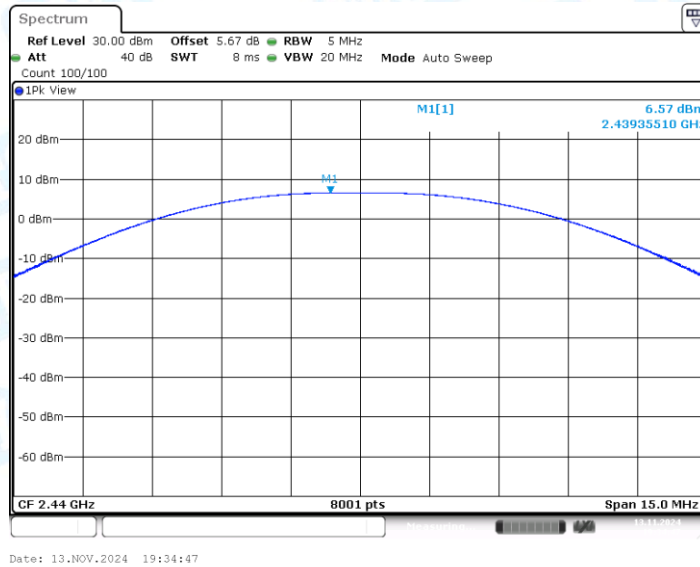
TestMode	Antenna	Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
ZigBee	Ant1	2405	6.84	≤30	PASS
		2440	6.57	≤30	PASS
		2480	6.54	≤30	PASS

3.2 Test Graphs

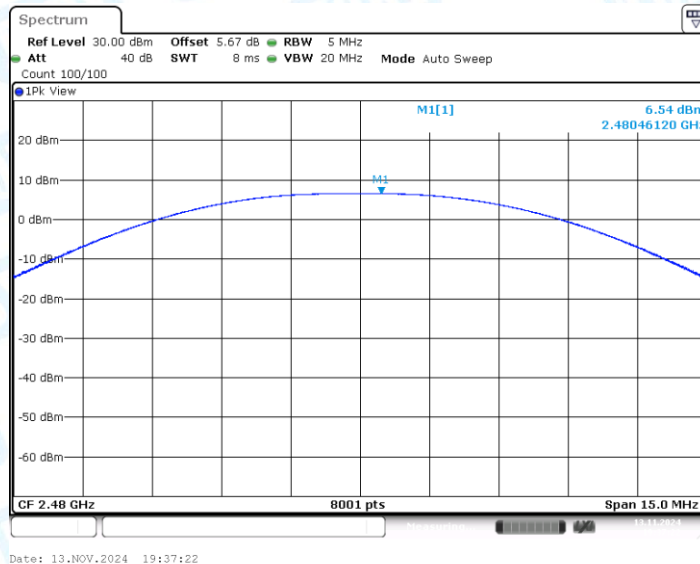
ZigBee_Ant1_2405



ZigBee_Ant1_2440



ZigBee_Ant1_2480



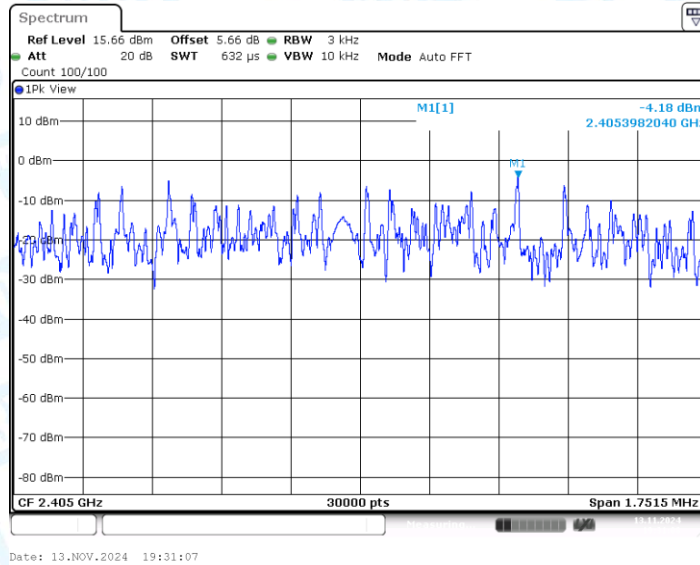
4: Maximum power spectral density

4.1 Test Result

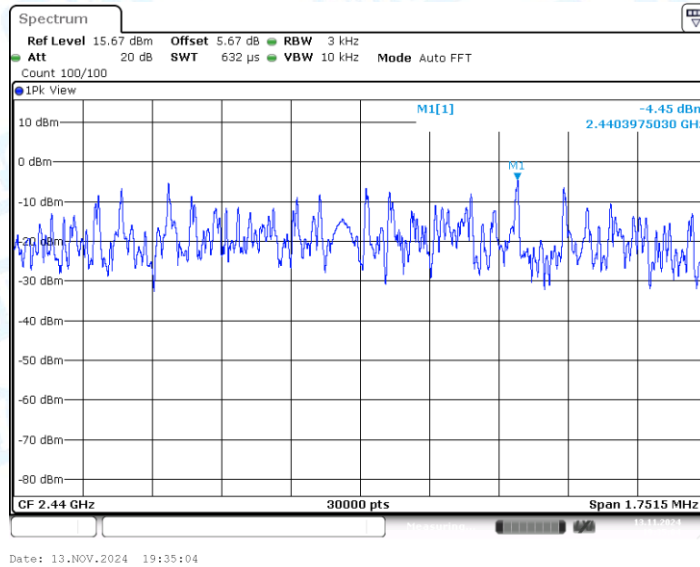
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
ZigBee	Ant1	2405	-4.18	≤8.00	PASS
		2440	-4.45	≤8.00	PASS
		2480	-4.54	≤8.00	PASS

4.2 Test Graphs

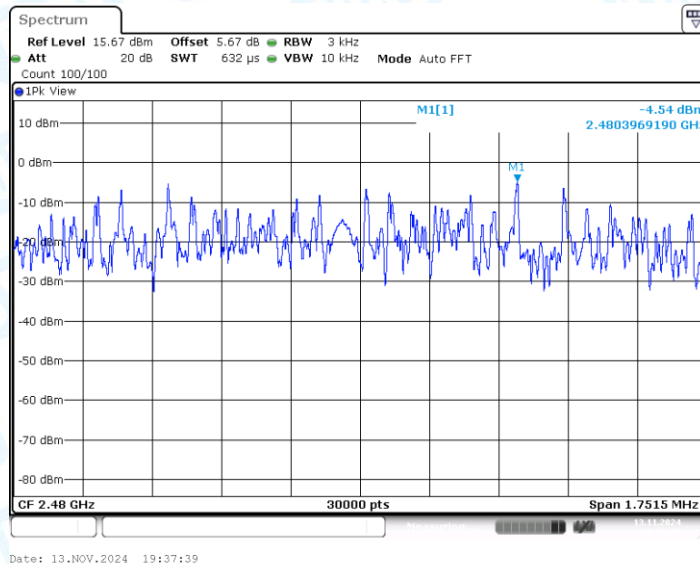
ZigBee_Ant1_2405



ZigBee_Ant1_2440



ZigBee_Ant1_2480



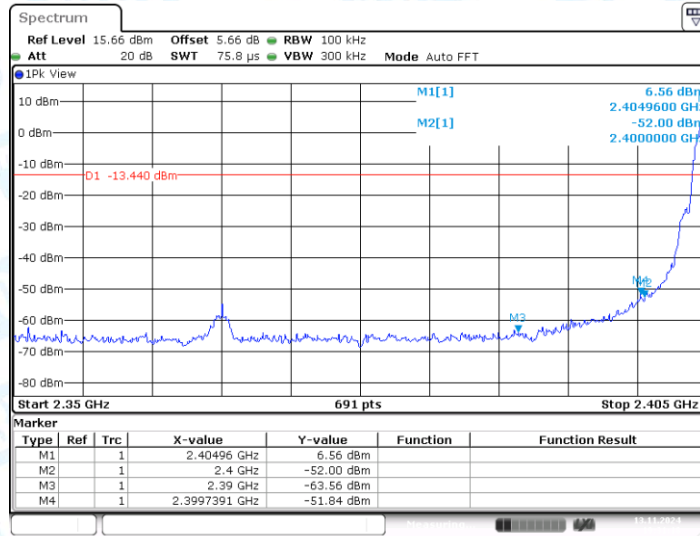
5: Band edge measurements

5.1 Test Result

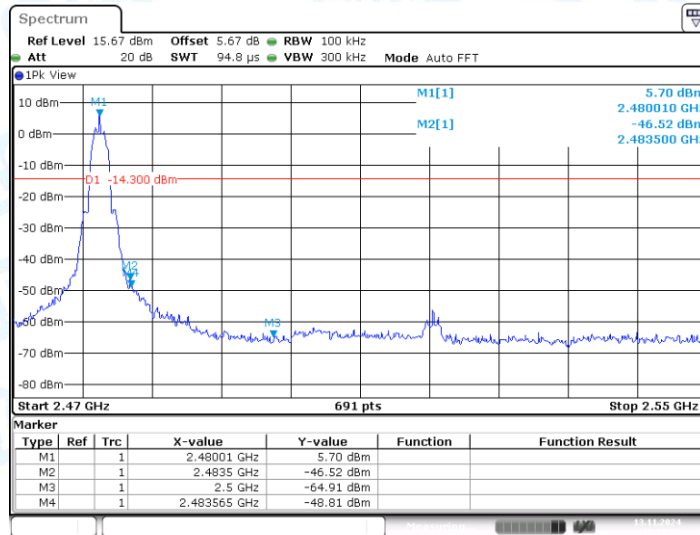
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
ZigBee	Ant1	Low	2405	6.56	-51.84	≤-13.44	PASS
		High	2480	5.70	-48.81	≤-14.3	PASS

5.2 Test Graphs

ZigBee_Ant1_Low_2405



ZigBee_Ant1_High_2480



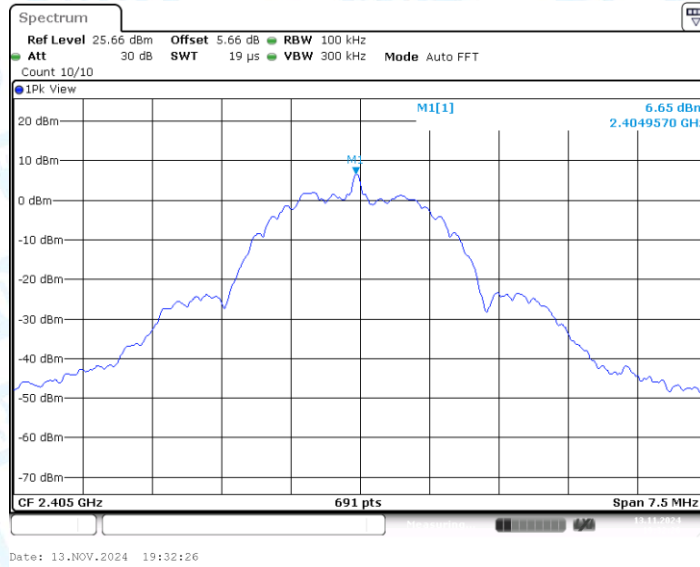
6: Conducted Spurious Emission

6.1 Test Result

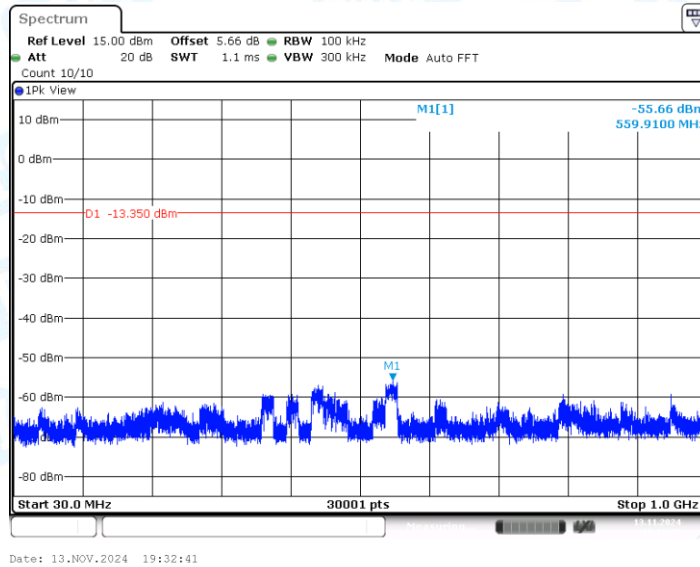
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
ZigBee	Ant1	2405	Reference	6.65	6.65	---	PASS
			30~1000	6.65	-55.66	≤-13.35	PASS
			1000~26500	6.65	-55.79	≤-13.35	PASS
		2440	Reference	6.35	6.35	---	PASS
			30~1000	6.35	-58.56	≤-13.65	PASS
			1000~26500	6.35	-55.42	≤-13.65	PASS
		2480	Reference	6.26	6.26	---	PASS
			30~1000	6.26	-57.52	≤-13.74	PASS
			1000~26500	6.26	-54.88	≤-13.74	PASS

6.2 Test Graphs

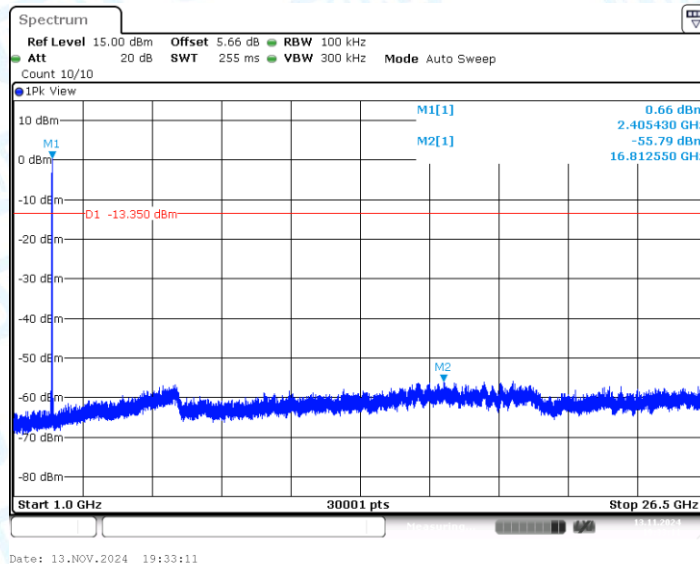
ZigBee_Ant1_2405_0~Reference



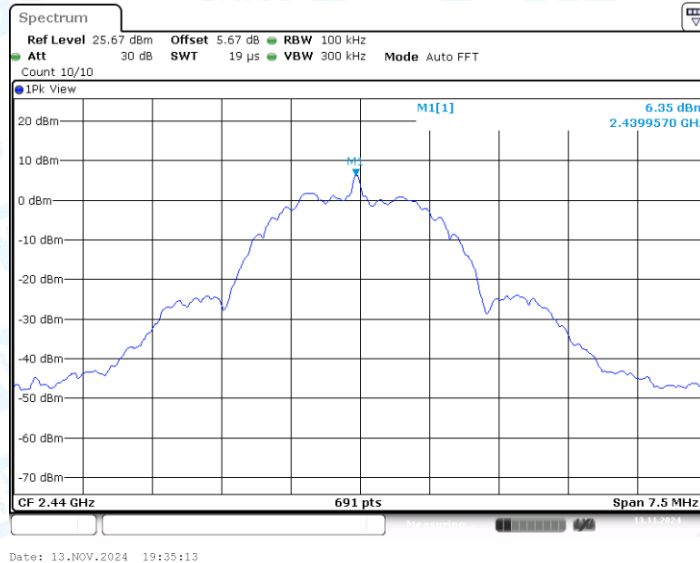
ZigBee_Ant1_2405_30~1000



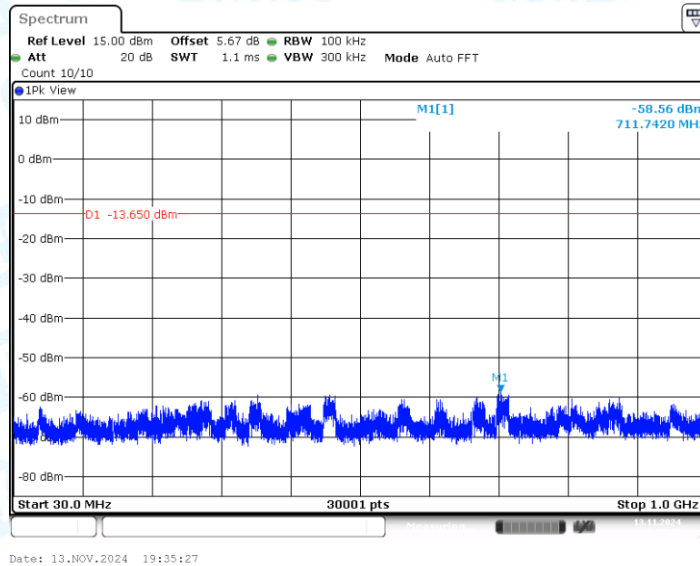
ZigBee_Ant1_2405_1000~26500



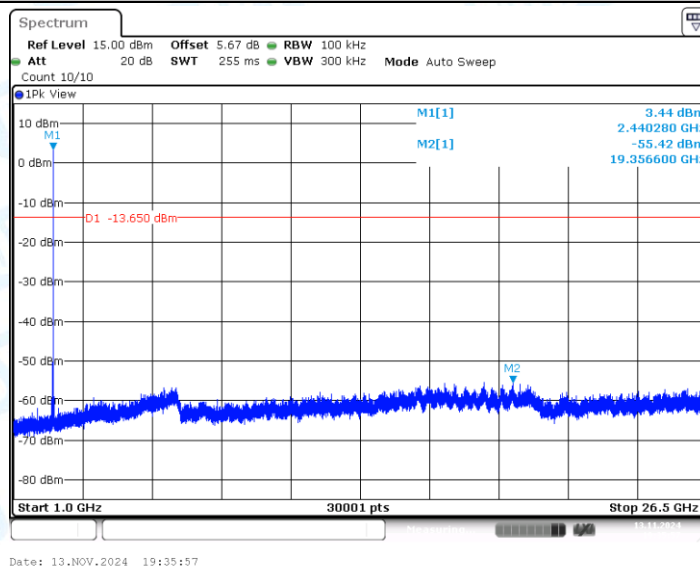
ZigBee_Ant1_2440_0~Reference



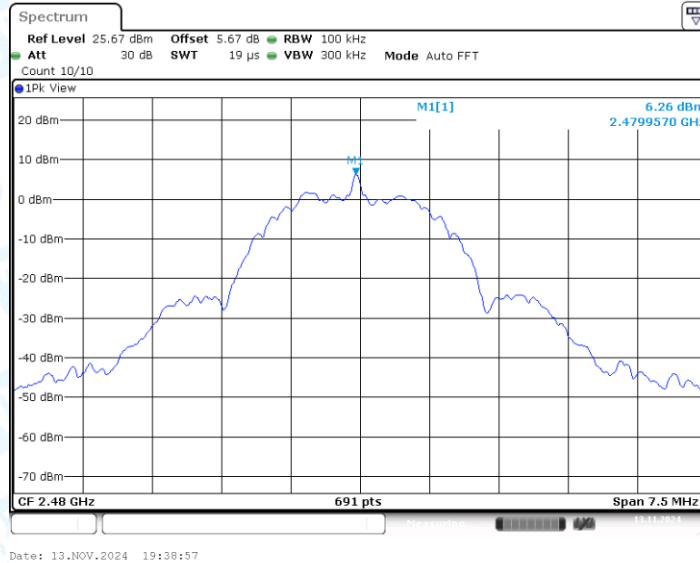
ZigBee_Ant1_2440_30~1000



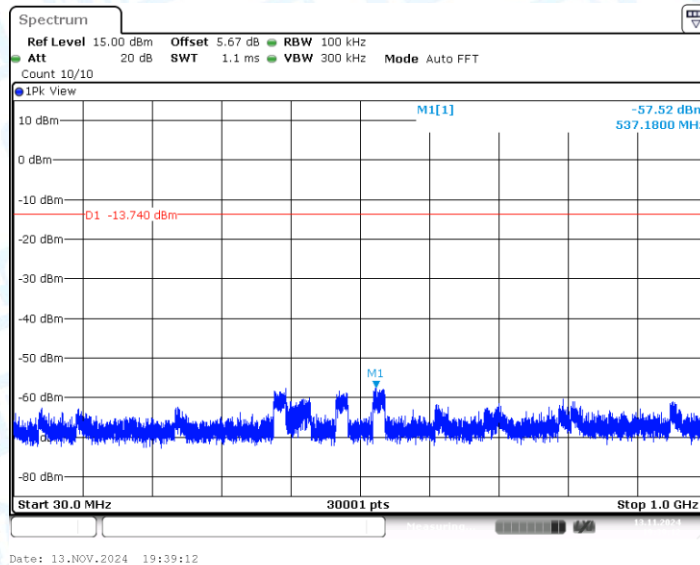
ZigBee_Ant1_2440_1000~26500



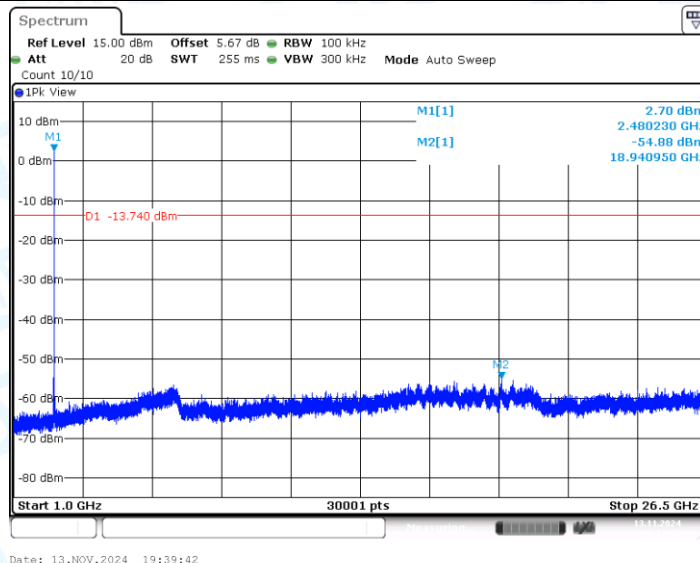
ZigBee_Ant1_2480_0~Reference



ZigBee_Ant1_2480_30~1000



ZigBee_Ant1_2480_1000~26500



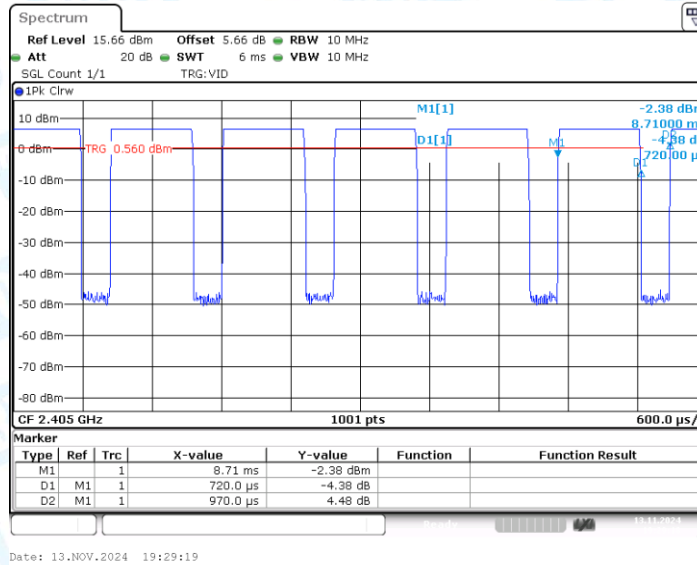
7: Duty Cycle

7.1 Test Result

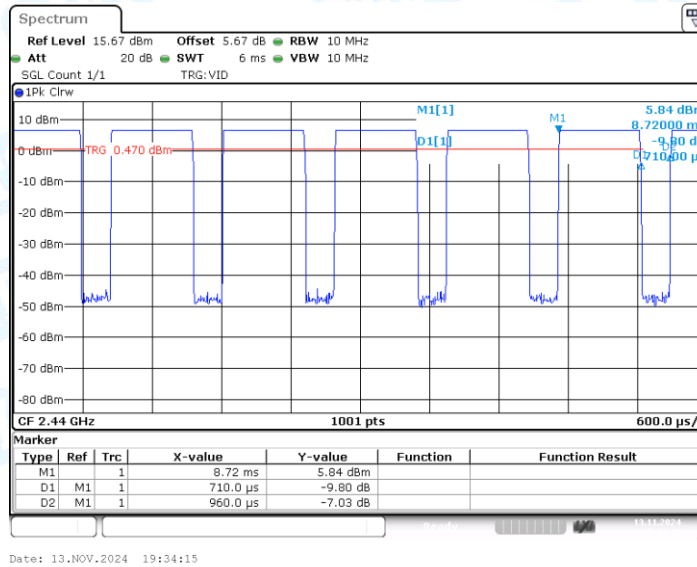
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
ZigBee	Ant1	2405	0.72	0.97	74.23	---	---
		2440	0.71	0.96	73.96	---	---
		2480	0.71	0.96	73.96	---	---

7.2 Test Graphs

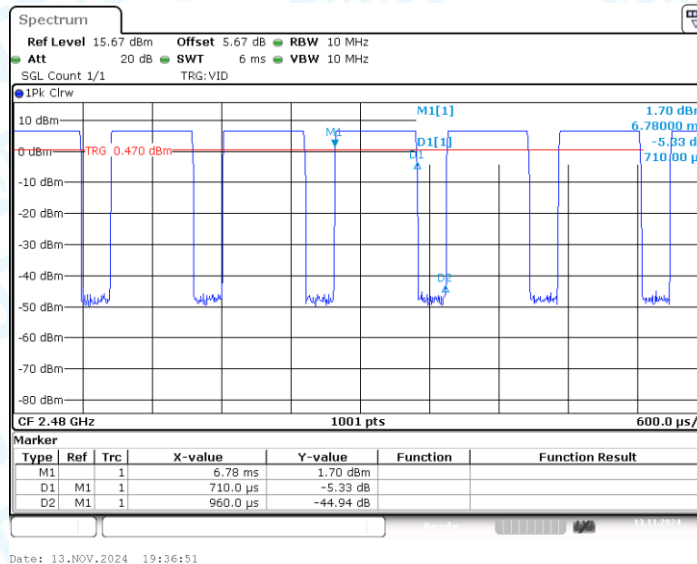
ZigBee_Ant1_2405



ZigBee_Ant1_2440



ZigBee_Ant1_2480



8: Emissions in Restricted Bands

8.1 Test Result

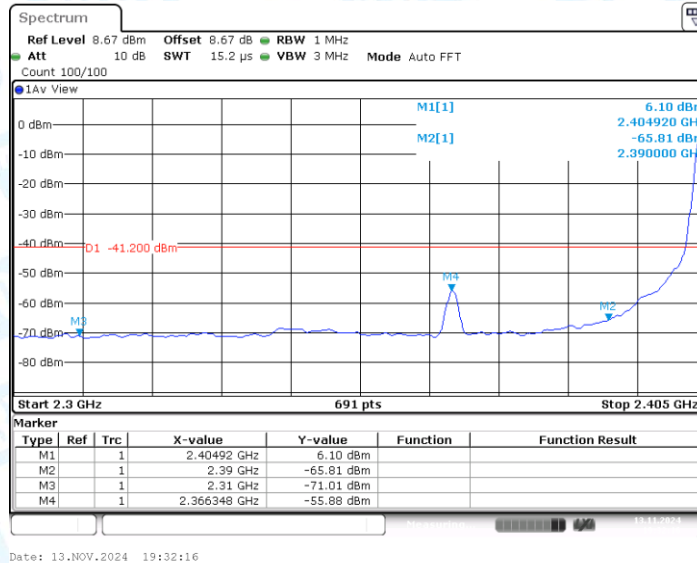
TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
ZigBee	Ant1	Low	2405	AV	2310.000	-71.01	≤-41.20	PASS
				AV	2366.348	-55.88	≤-41.20	PASS
				AV	2390.000	-65.81	≤-41.20	PASS
				Peak	2310.000	-43.21	≤-21.20	PASS
				Peak	2340.326	-38.41	≤-21.20	PASS
				Peak	2390.000	-42.75	≤-21.20	PASS
		High	2480	AV	2483.500	-44.92	≤-41.20	PASS
				AV	2483.565	-45.5	≤-41.20	PASS
				AV	2500.000	-68.46	≤-41.20	PASS
				Peak	2483.500	-33.87	≤-21.20	PASS
				Peak	2483.565	-34.18	≤-21.20	PASS
				Peak	2500.000	-42.31	≤-21.20	PASS

Note:

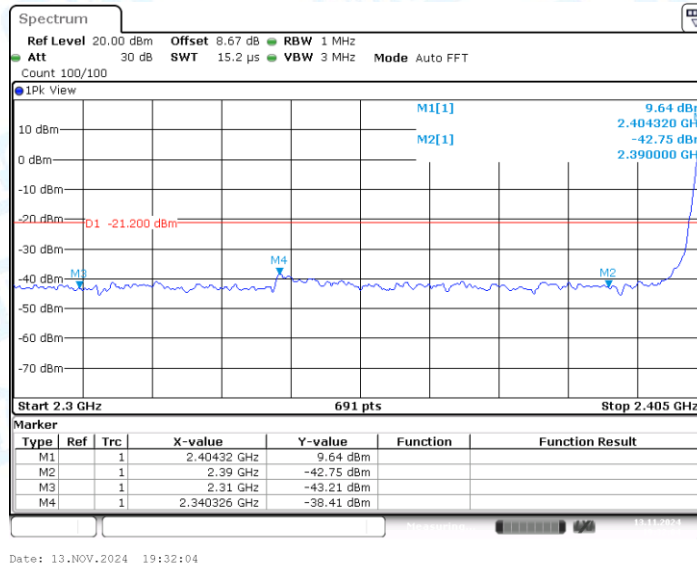
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

8.2 Test Graphs

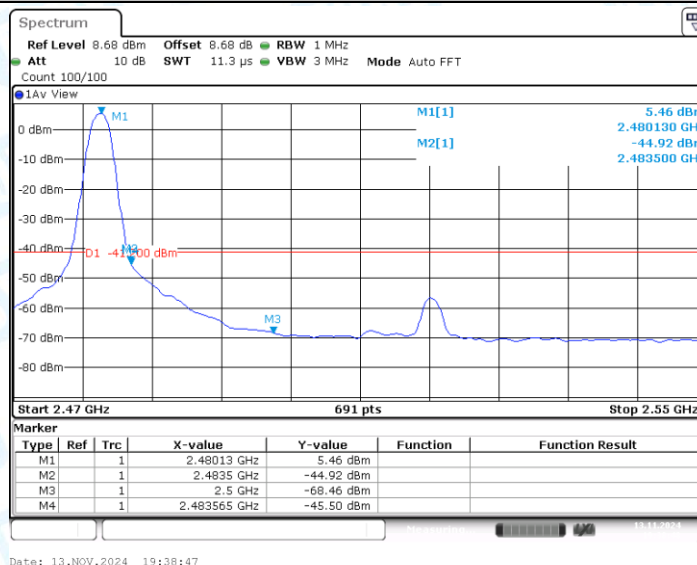
ZigBee_Ant1_Low_2405_AV

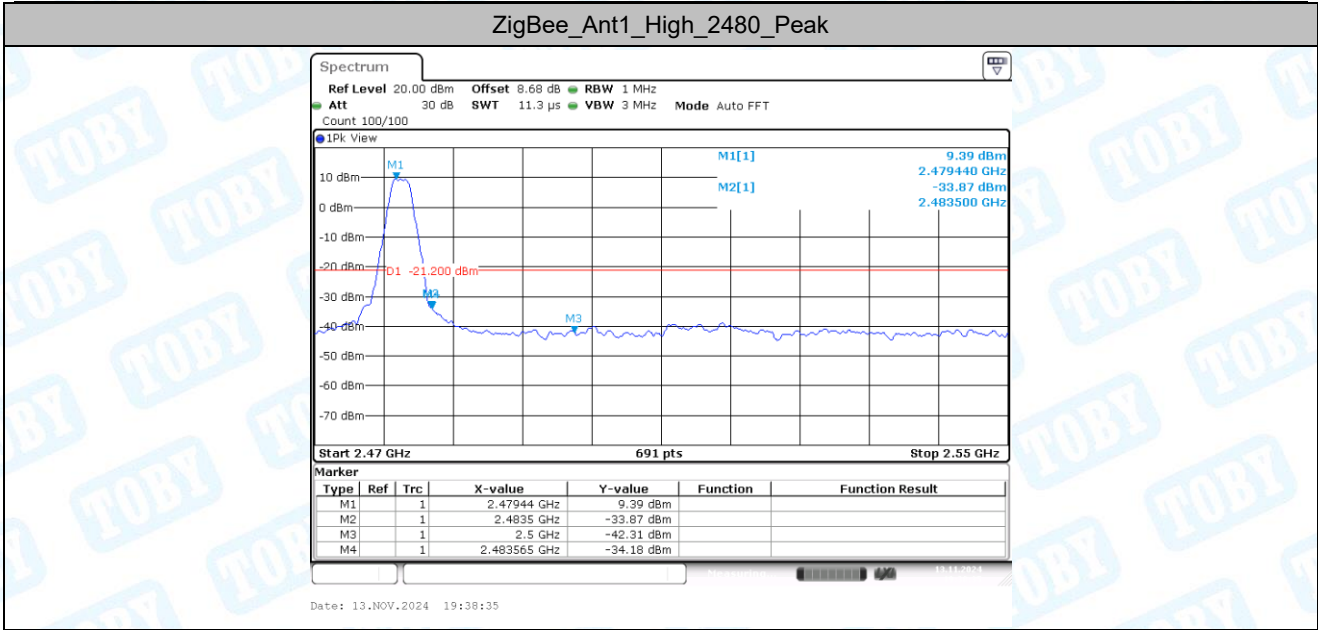


ZigBee_Ant1_Low_2405_Peak



ZigBee_Ant1_High_2480_AV





-----END OF THE REPORT-----