RF Test Data for BLE
(Conducted Measurements)

General Description of EUT	
EUT Name:	Multimode Engineering Gateway
Model:	UX18
Sample ID:	HC-C-202411-0044-02-02-2#
Environmental Conditions	
Ambient Temperature:	25.6℃
Ambient Humidity:	44%RH
Test Power Supply:	DC 5V
Test Engineer:	Jolin Lee
Note: For a more detailed features description, please refer to the report TBR-C-202411-0044-51	

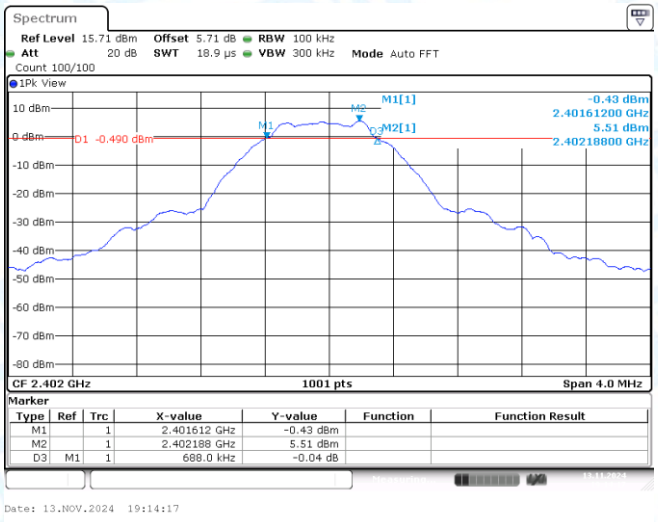
Contents

1: DTS Bandwidth

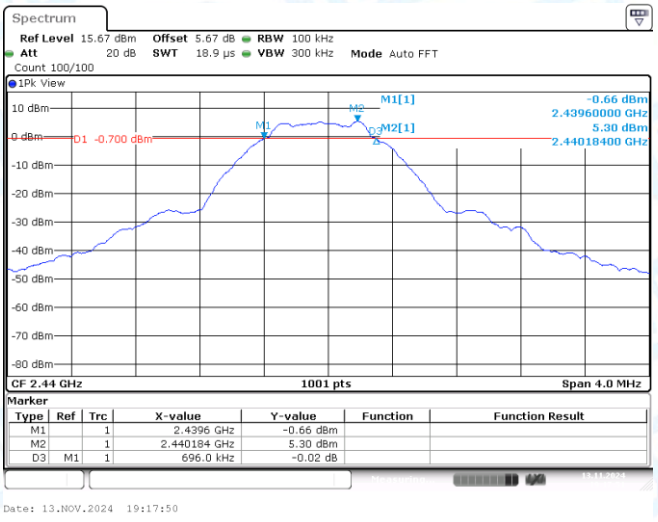
1.1 Test Result

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.69	2401.61	2402.30	0.5	PASS
BLE_1M	Ant1	2440	0.70	2439.60	2440.30	0.5	PASS
BLE_1M	Ant1	2480	0.68	2479.61	2480.29	0.5	PASS

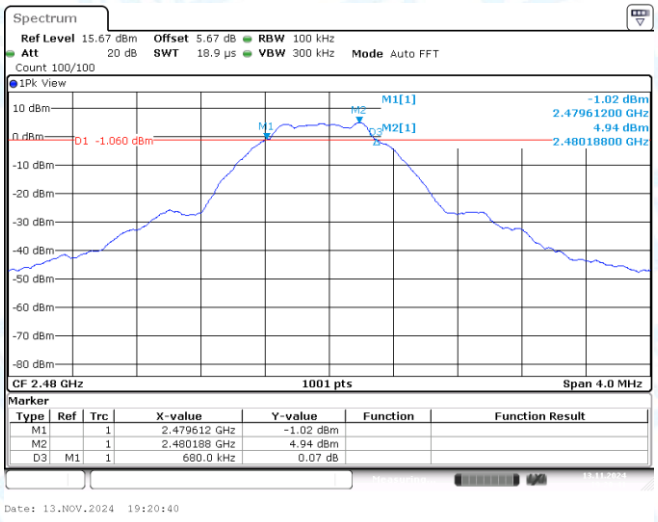
1.2 Test Graphs



BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2440-PASS



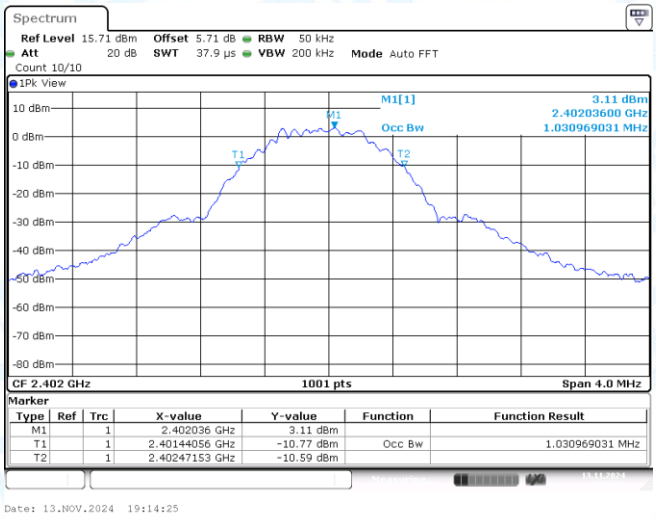
BLE_1M-Ant1-2480-PASS

2: Occupied Channel Bandwidth

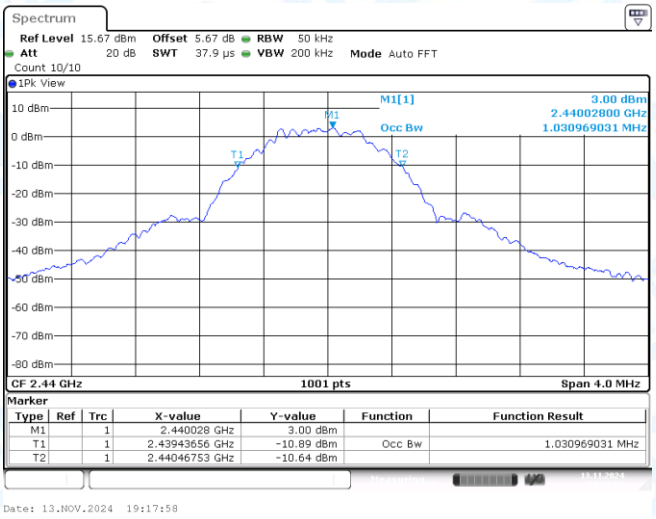
2.1 Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.031	2401.4406	2402.4715	---	---
BLE_1M	Ant1	2440	1.031	2439.4366	2440.4675	---	---
BLE_1M	Ant1	2480	1.035	2479.4366	2480.4715	---	---

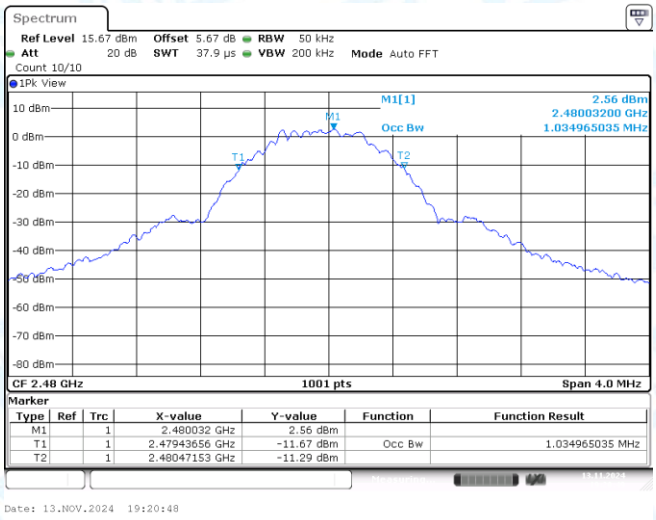
2.2 Test Graphs



BLE_1M-Ant1-2402



BLE_1M-Ant1-2440



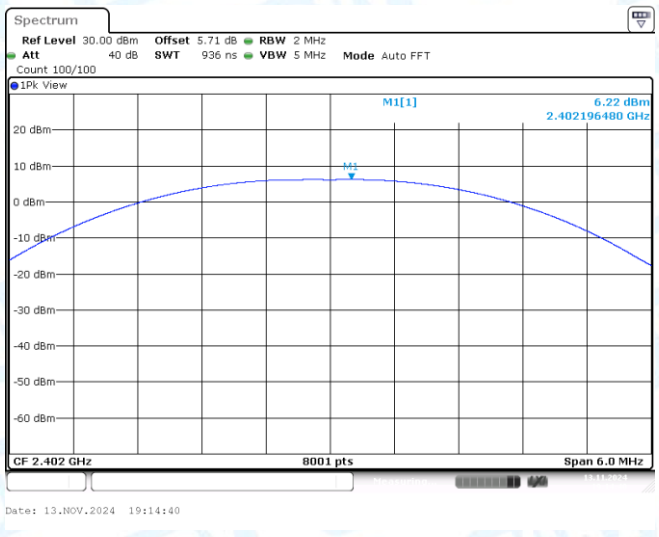
BLE_1M-Ant1-2480

3: Maximum conducted peak output power

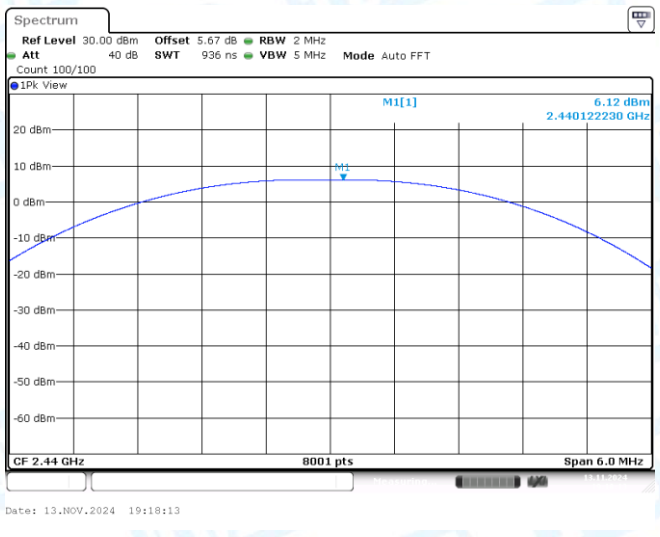
3.1 Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	6.22	≤30	PASS
BLE_1M	Ant1	2440	6.12	≤30	PASS
BLE_1M	Ant1	2480	5.69	≤30	PASS

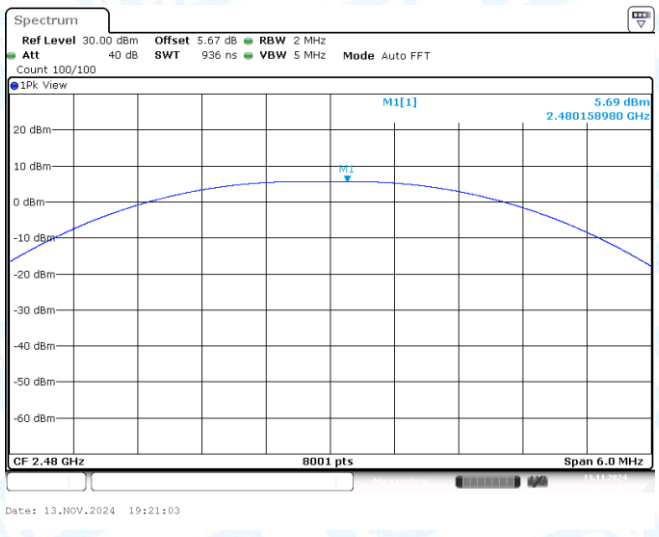
3.2 Test Graphs Peak



BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2440-PASS



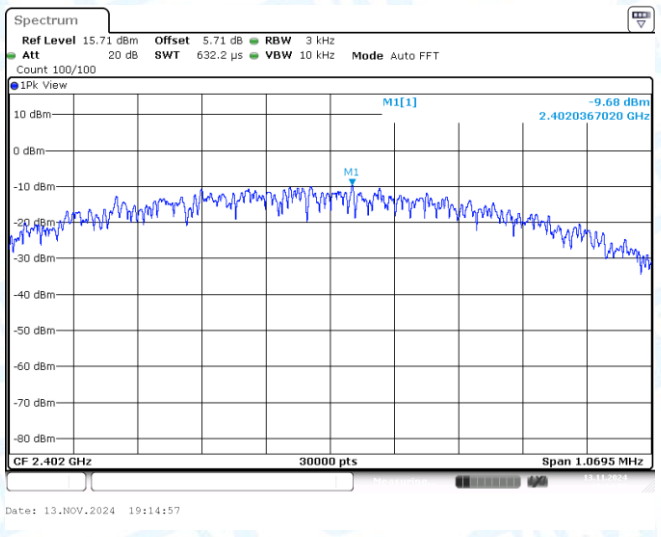
BLE_1M-Ant1-2480-PASS

4: Maximum power spectral density

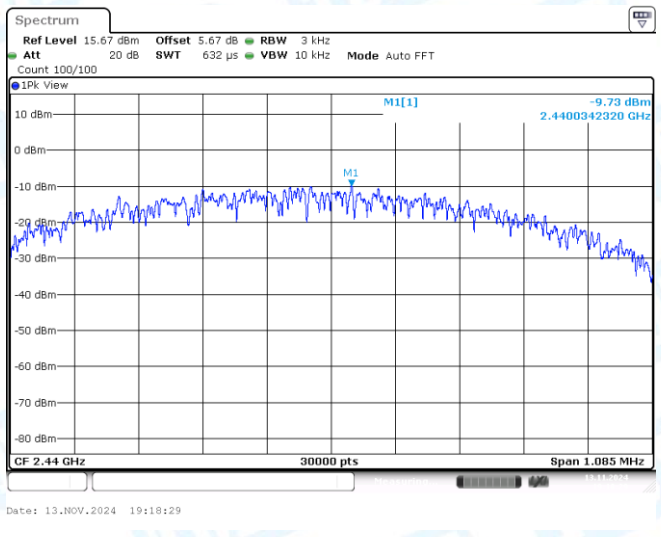
4.1 Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-9.68	≤8.00	PASS
BLE_1M	Ant1	2440	-9.73	≤8.00	PASS
BLE_1M	Ant1	2480	-10.19	≤8.00	PASS

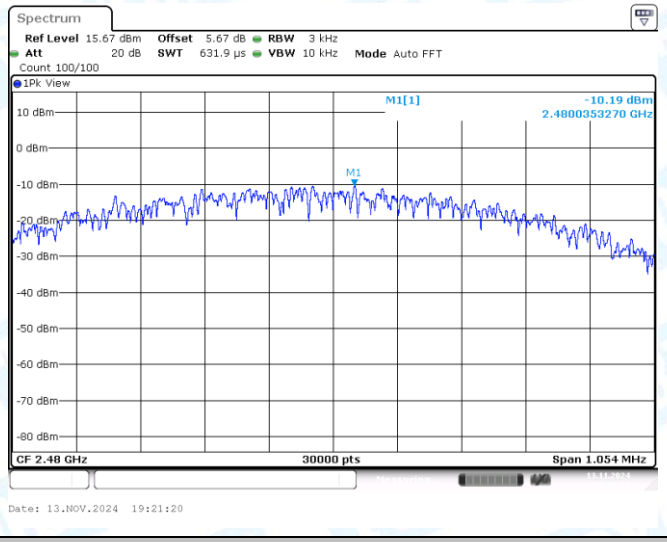
4.2 Test Graphs



BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2440-PASS



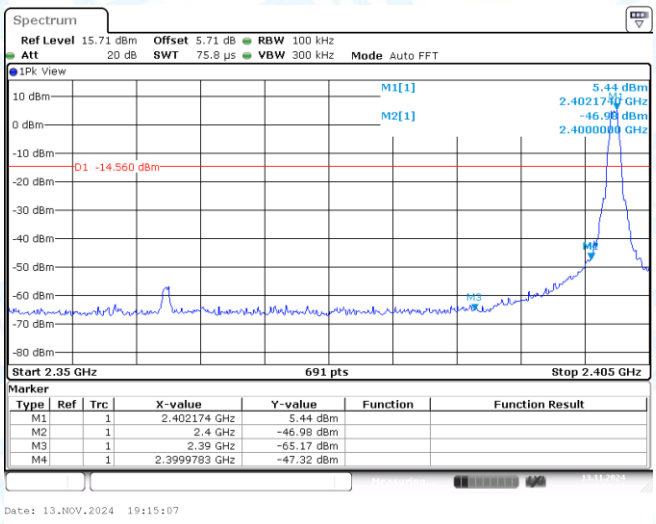
BLE_1M-Ant1-2480-PASS

5: Band edge measurements

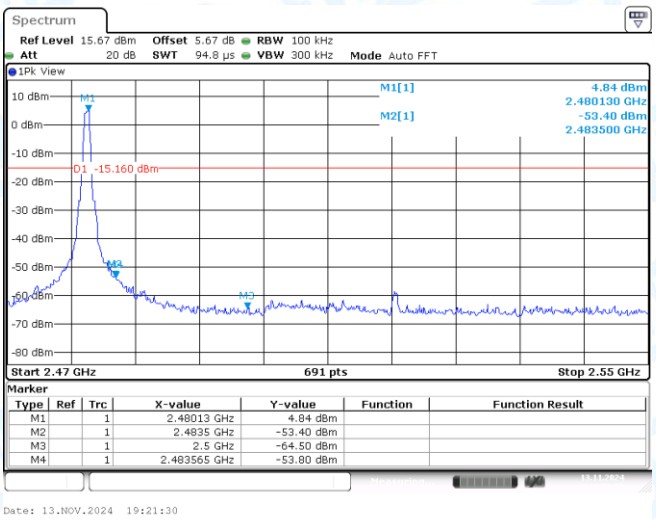
5.1 Test Result

Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	5.44	-47.32	≤-14.56	PASS
BLE_1M	Ant1	High	2480	4.84	-53.8	≤-15.16	PASS

5.2 Test Graphs



BLE_1M-Ant1-2402-PASS



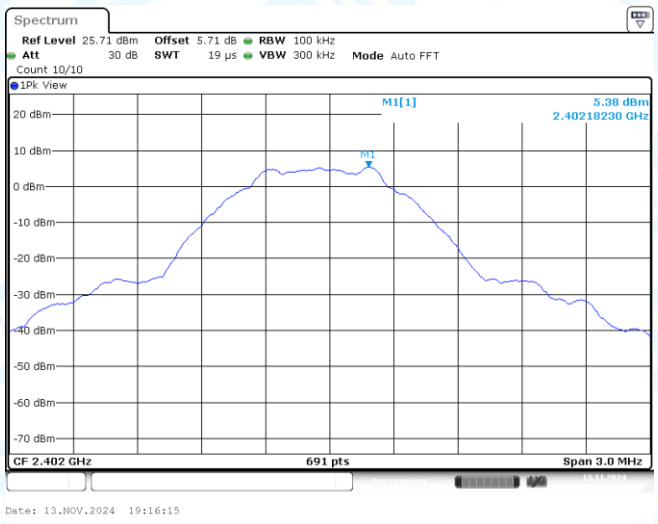
BLE_1M-Ant1-2480-PASS

6: Conducted Spurious Emission

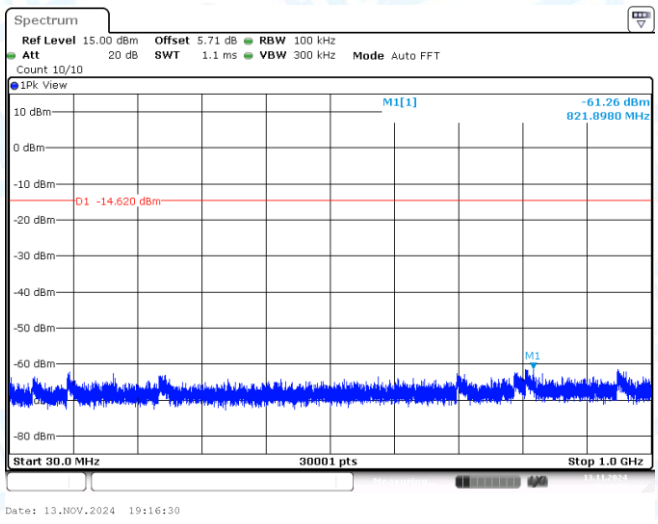
6.1 Test Result

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	5.38	5.38	---	PASS
BLE_1M	Ant1	2402	30~1000	5.38	-61.26	≤-14.62	PASS
BLE_1M	Ant1	2402	1000~26500	5.38	-55.57	≤-14.62	PASS
BLE_1M	Ant1	2440	0~Reference	5.32	5.32	---	PASS
BLE_1M	Ant1	2440	30~1000	5.32	-60.48	≤-14.68	PASS
BLE_1M	Ant1	2440	1000~26500	5.32	-54.94	≤-14.68	PASS
BLE_1M	Ant1	2480	0~Reference	4.78	4.78	---	PASS
BLE_1M	Ant1	2480	30~1000	4.78	-61.15	≤-15.22	PASS
BLE_1M	Ant1	2480	1000~26500	4.78	-55.31	≤-15.22	PASS

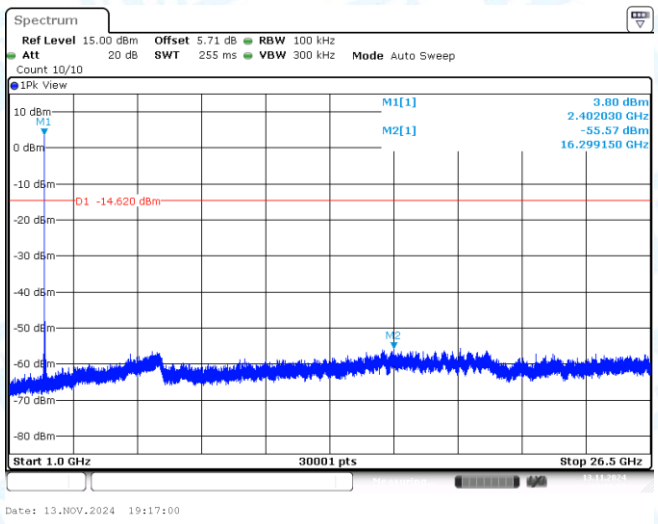
6.2 Test Graphs



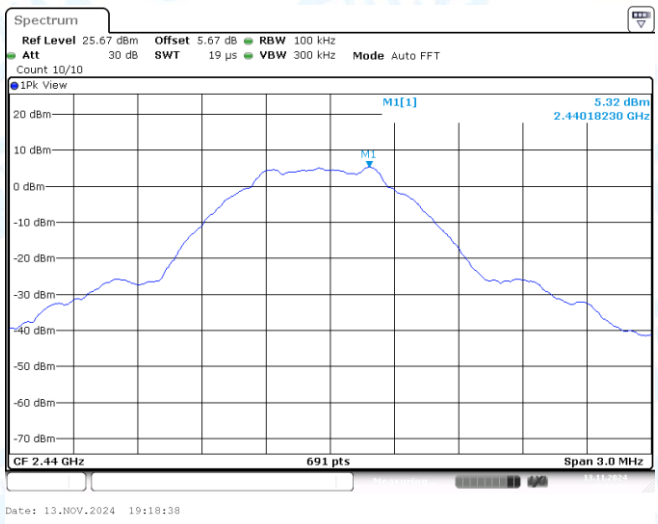
BLE_1M-Ant1-2402-0~Reference-PASS



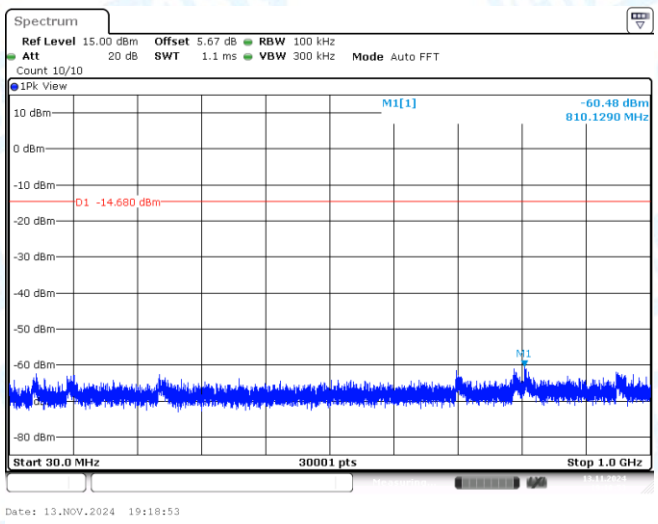
BLE_1M-Ant1-2402-30~1000-PASS



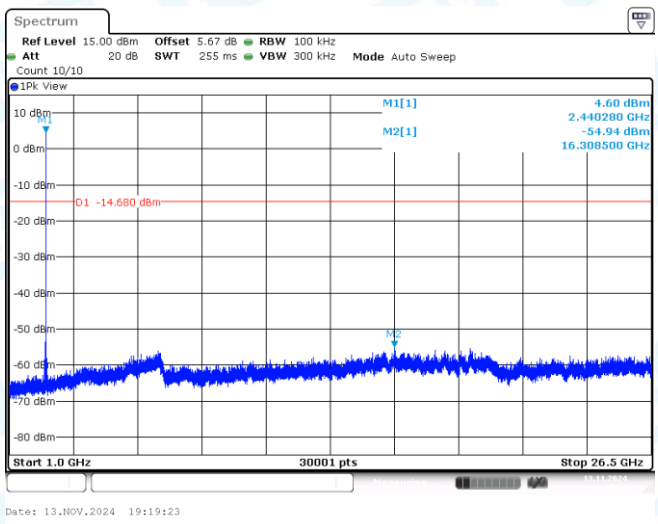
BLE_1M-Ant1-2402-1000~26500-PASS



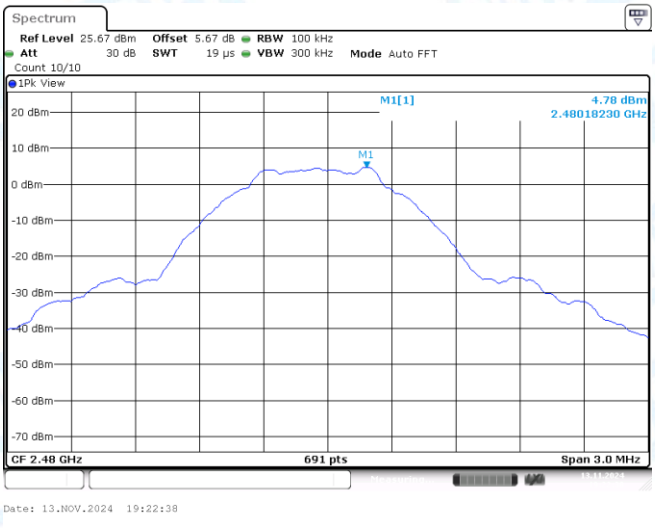
BLE_1M-Ant1-2440-0~Reference-PASS



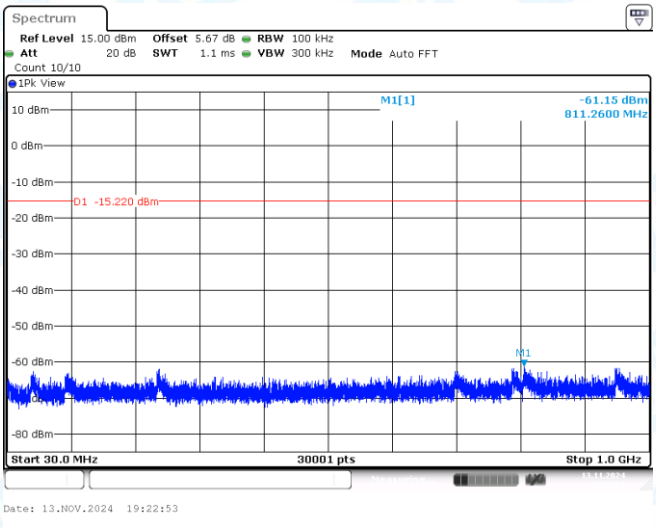
BLE_1M-Ant1-2440-30~1000-PASS



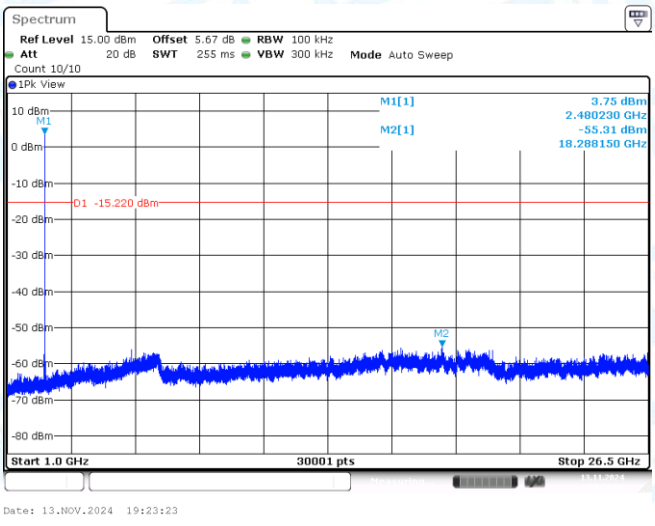
BLE_1M-Ant1-2440-1000~26500-PASS



BLE_1M-Ant1-2480-0~Reference-PASS



BLE_1M-Ant1-2480-30~1000-PASS



BLE_1M-Ant1-2480-1000~26500-PASS

7: Duty Cycle

7.1 Test Result

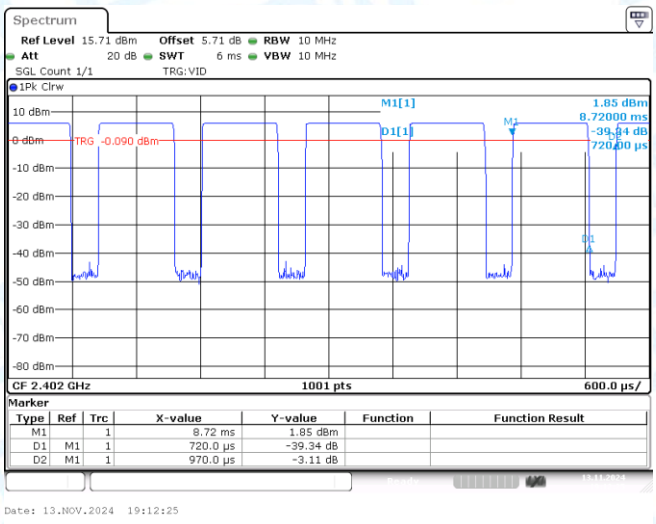
TestMode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factory	1/T [kHz]
BLE_1M	Ant1	2402	0.72	0.97	74.23	1.29	1.39
BLE_1M	Ant1	2440	0.72	0.97	74.23	1.29	1.39
BLE_1M	Ant1	2480	0.72	0.97	74.23	1.29	1.39

Note: 1, Duty Cycle= Transmission Duration/ Transmission Period

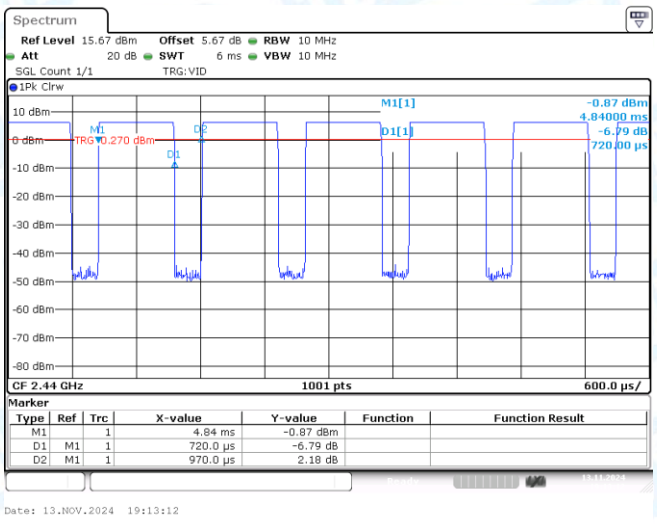
2, DC Factory=$10*Log_{10}(1/\text{Duty Cycle})$

3, 1/T=1/ Transmission Duration

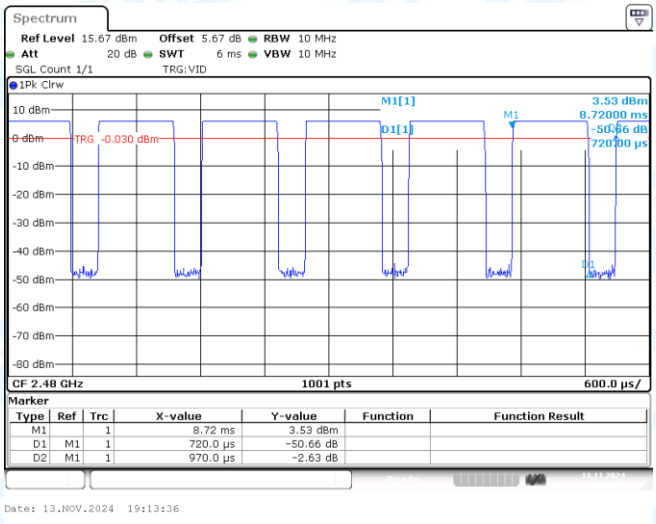
7.2 Test Graphs



NTNV-BLE_1M-Ant1-2402



NTNV-BLE_1M-Ant1-2440



NTNV-BLE_1M-Ant1-2480

8: Emissions in Restricted Bands

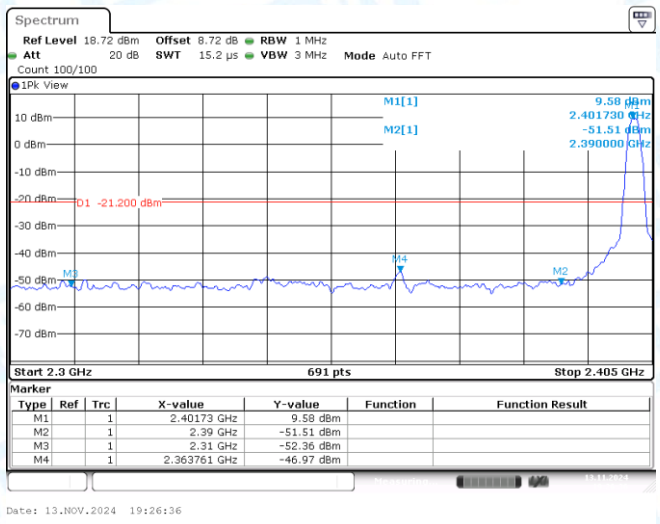
8.1 Test Result

Test Mode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	Peak	2390.000	-51.51	≤-21.20	43.69	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2310.000	-52.36	≤-21.20	42.84	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2363.761	-46.97	≤-21.20	48.23	≤74	PASS
BLE_1M	Ant1	Low	2402	AV	2390.000	-59.44	≤-41.20	35.76	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2310.000	-61.5	≤-41.20	33.70	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2363.457	-52.68	≤-41.20	42.52	≤54	PASS
BLE_1M	Ant1	High	2480	Peak	2483.500	-40.91	≤-21.20	54.29	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2500.000	-51.1	≤-21.20	44.10	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2483.565	-40.93	≤-21.20	54.27	≤74	PASS
BLE_1M	Ant1	High	2480	AV	2483.500	-49.19	≤-41.20	46.01	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2500.000	-61.66	≤-41.20	33.54	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2483.565	-49.3	≤-41.20	45.90	≤54	PASS

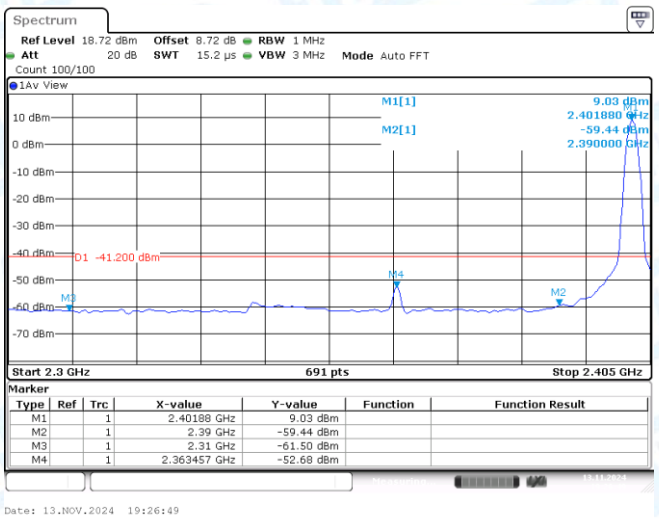
Note：

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.

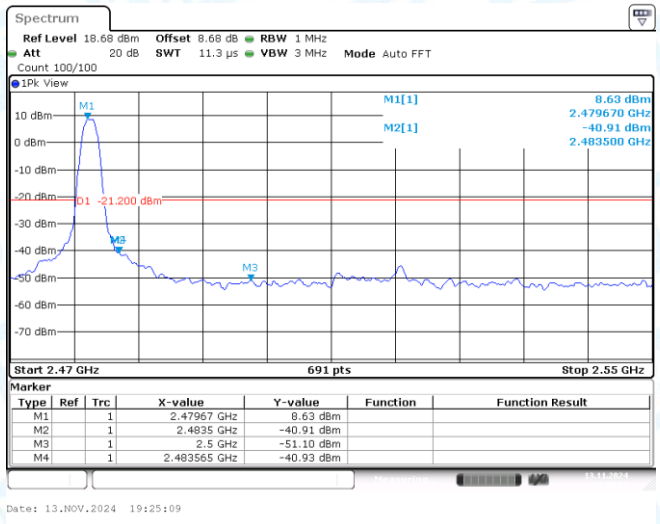
8.2 Test Graphs



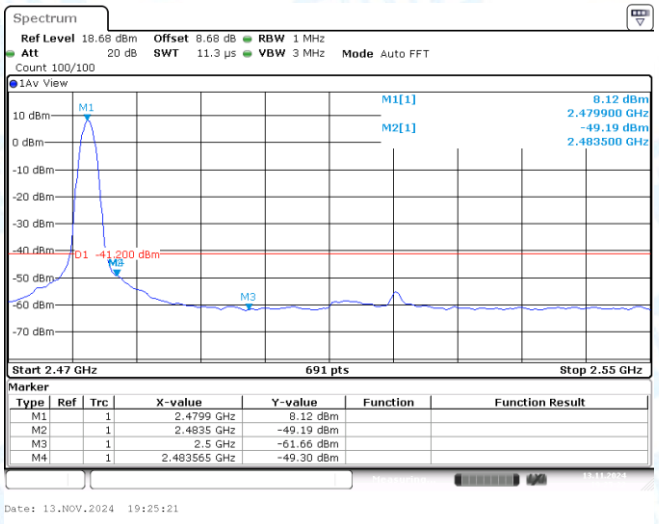
BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2480-PASS



BLE_1M-Ant1-2480-PASS

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