

RF Test Data for BLE

(Conducted Measurements)

General Description of EUT	
EUT Name:	Smart Watch
Model:	LF37
Sample ID:	HC-C-202411-0088-01-01
Test Standard:	FCC Part 15.247
Environmental Conditions	
Ambient Temperature:	24.9℃
Ambient Humidity:	47%RH
Test Power Supply:	DC3.8V
Test Engineer:	jolin.Lee
Note: For a more detailed features description, please refer to the report TBR-C-202411-0088-1	

Contents

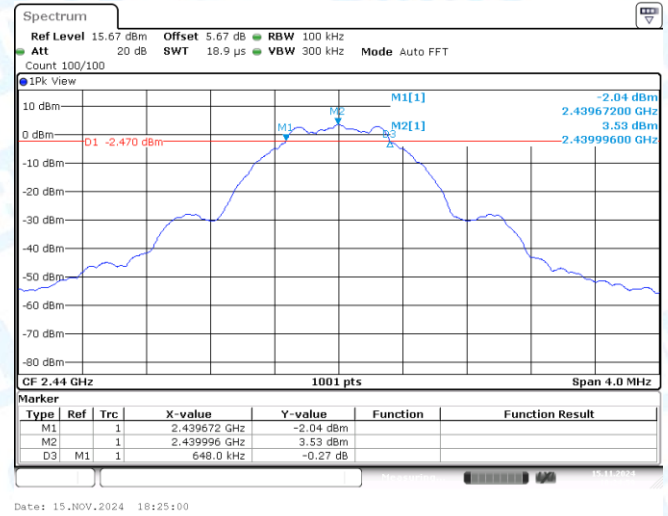
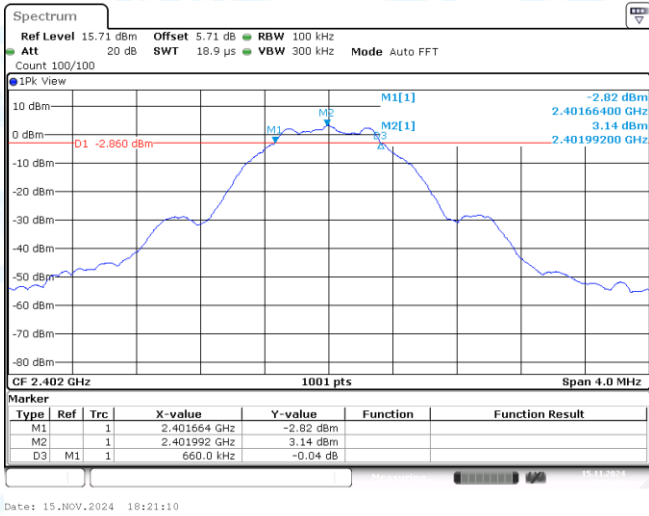
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1: DTS Bandwidth

1.1 Test Result

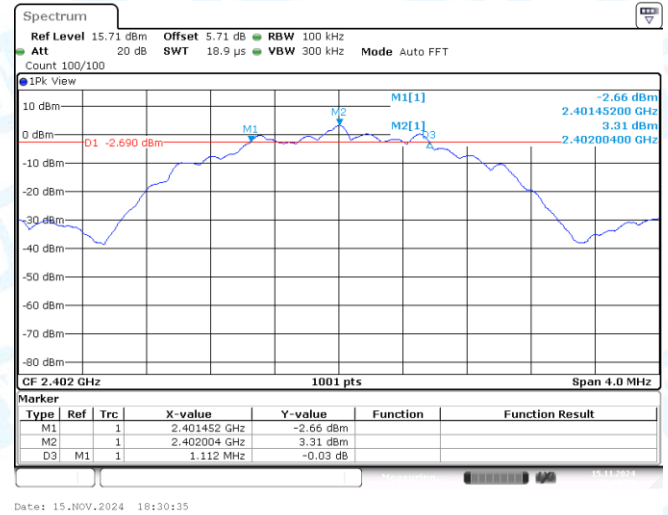
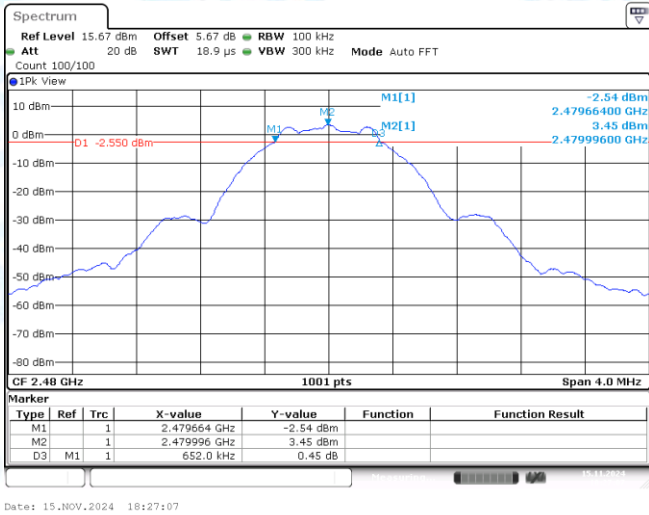
Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.66	2401.66	2402.32	0.5	PASS
BLE_1M	Ant1	2440	0.65	2439.67	2440.32	0.5	PASS
BLE_1M	Ant1	2480	0.65	2479.66	2480.32	0.5	PASS
BLE_2M	Ant1	2402	1.11	2401.45	2402.56	0.5	PASS
BLE_2M	Ant1	2440	1.09	2439.46	2440.55	0.5	PASS
BLE_2M	Ant1	2480	1.08	2479.45	2480.53	0.5	PASS

1.2 Test Graphs



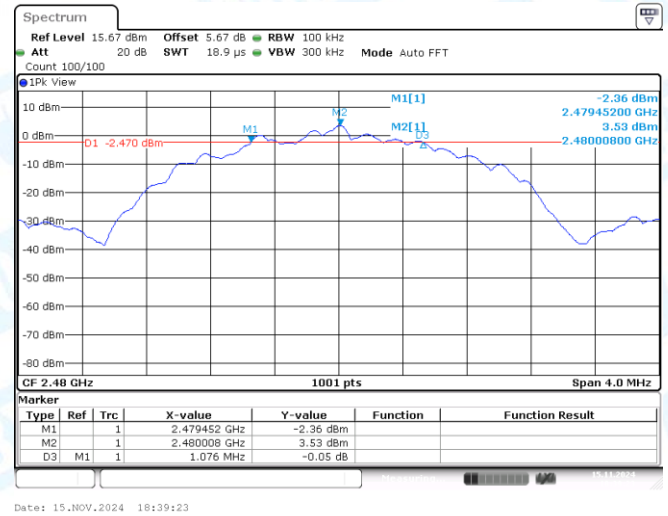
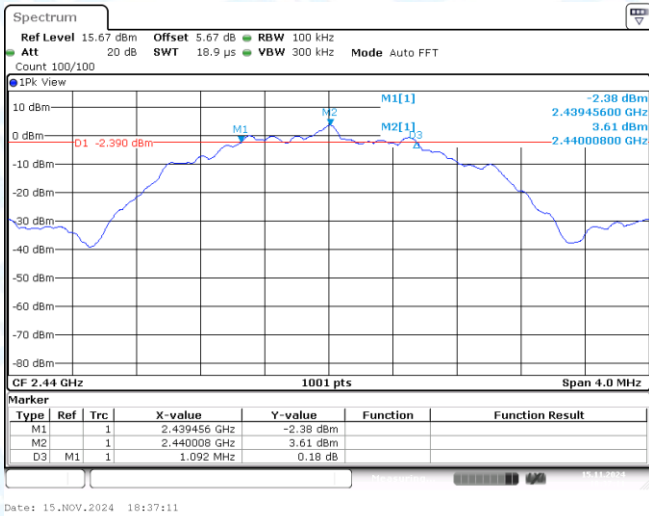
BLE_1M-Ant1-2402-PASS

BLE_1M-Ant1-2440-PASS



BLE_1M-Ant1-2480-PASS

BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS

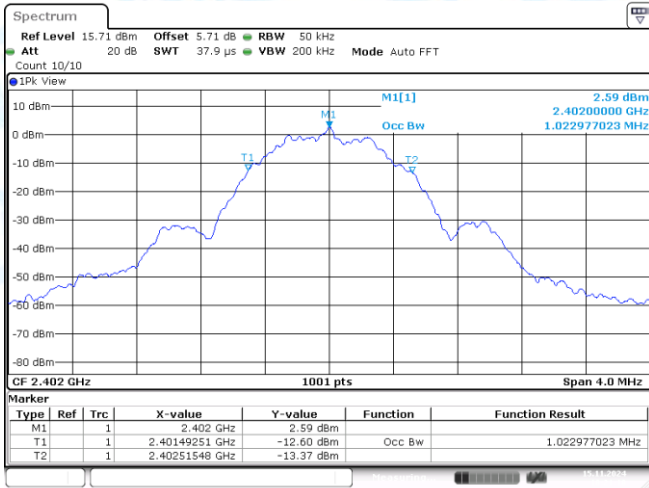
BLE_2M-Ant1-2480-PASS

2: Occupied Channel Bandwidth

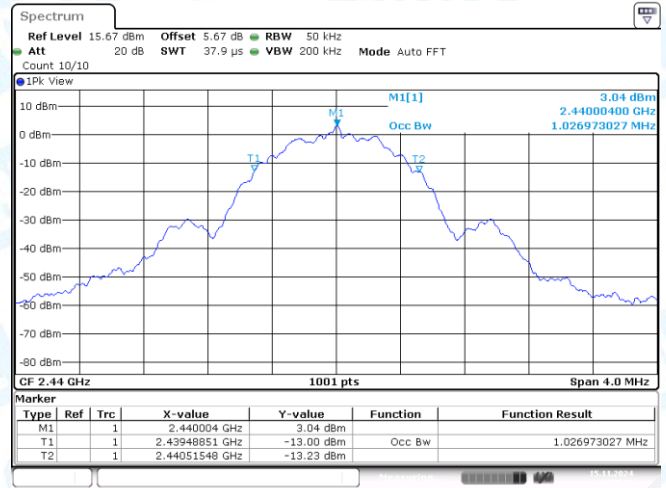
2.1 Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.023	2401.4925	2402.5155	---	---
BLE_1M	Ant1	2440	1.027	2439.4885	2440.5155	---	---
BLE_1M	Ant1	2480	1.027	2479.4925	2480.5195	---	---
BLE_2M	Ant1	2402	2.05	2400.9970	2403.0470	---	---
BLE_2M	Ant1	2440	2.046	2439.0010	2441.0470	---	---
BLE_2M	Ant1	2480	2.058	2478.9970	2481.0549	---	---

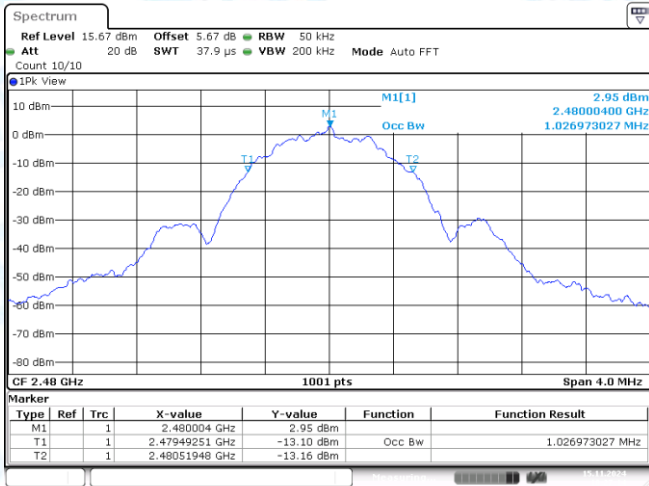
2.2 Test Graphs



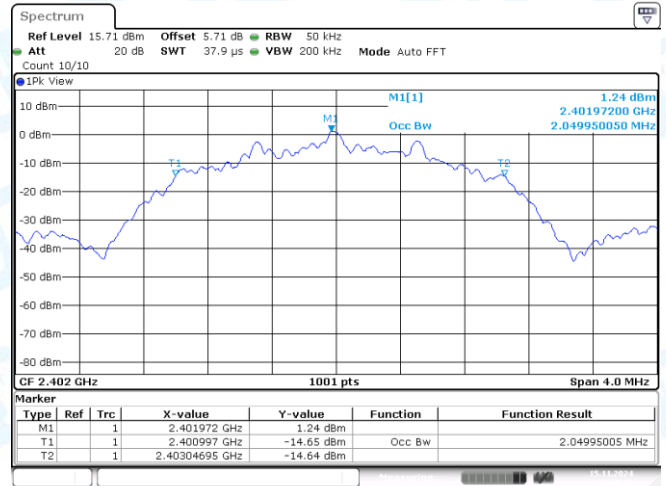
BLE_1M-Ant1-2402



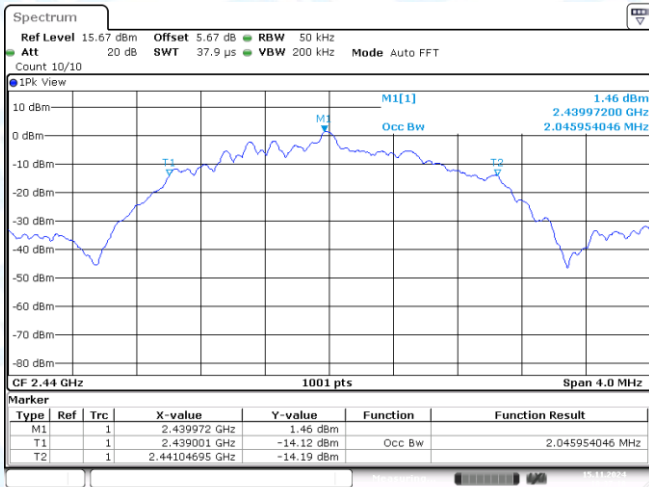
BLE_1M-Ant1-2440



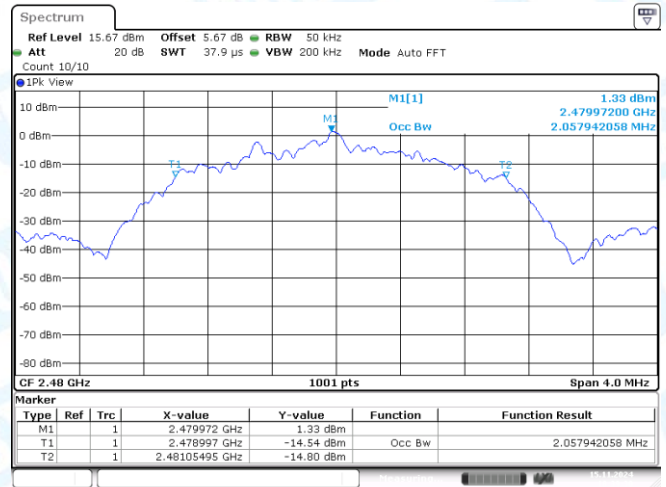
BLE_1M-Ant1-2480



BLE_2M-Ant1-2402



BLE_2M-Ant1-2440



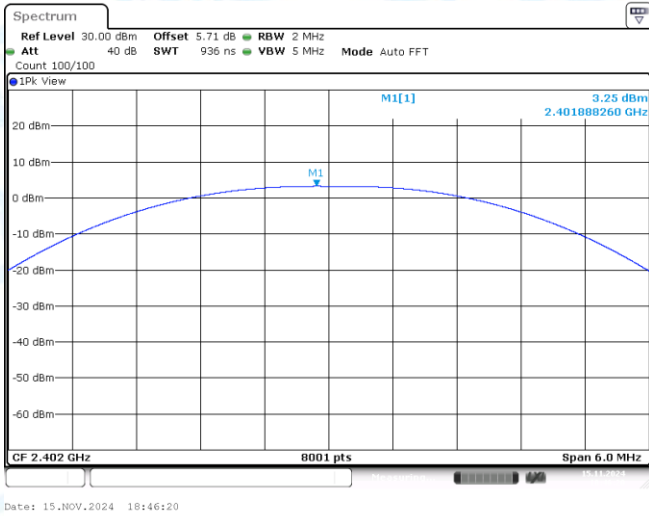
BLE_2M-Ant1-2480

3: Maximum conducted output power

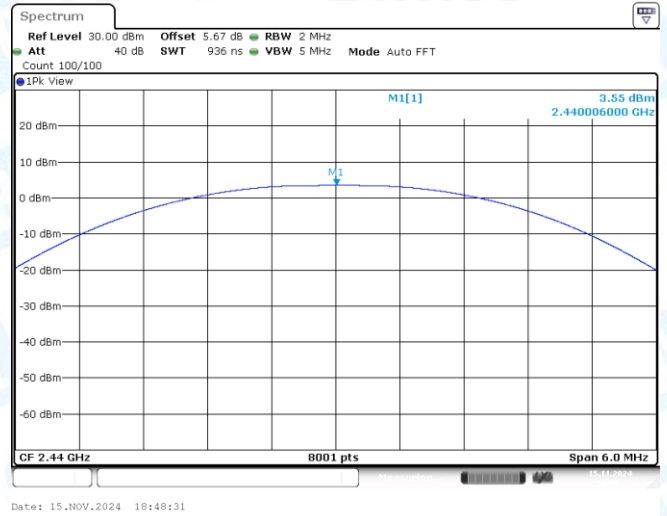
3.1 Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	3.25	≤30	PASS
BLE_1M	Ant1	2440	3.55	≤30	PASS
BLE_1M	Ant1	2480	3.47	≤30	PASS
BLE_2M	Ant1	2402	3.35	≤30	PASS
BLE_2M	Ant1	2440	3.74	≤30	PASS
BLE_2M	Ant1	2480	3.73	≤30	PASS

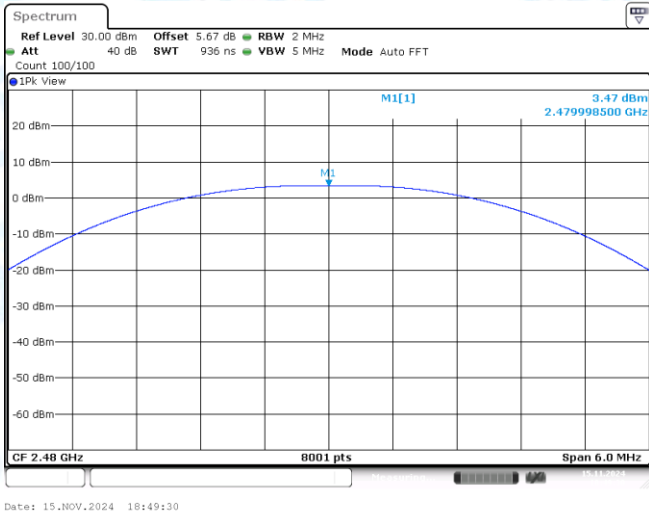
3.2 Test Graphs Peak



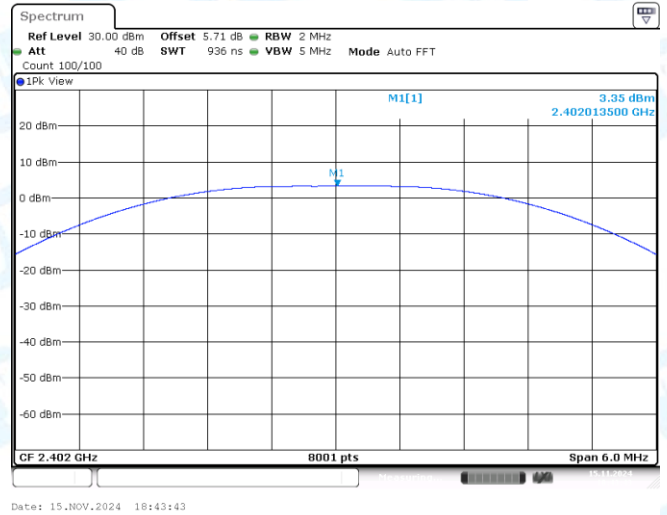
BLE_1M-Ant1-2402-PASS



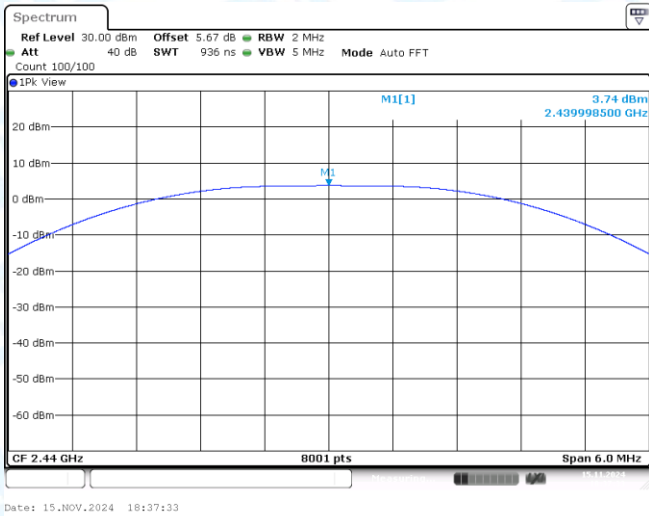
BLE_1M-Ant1-2440-PASS



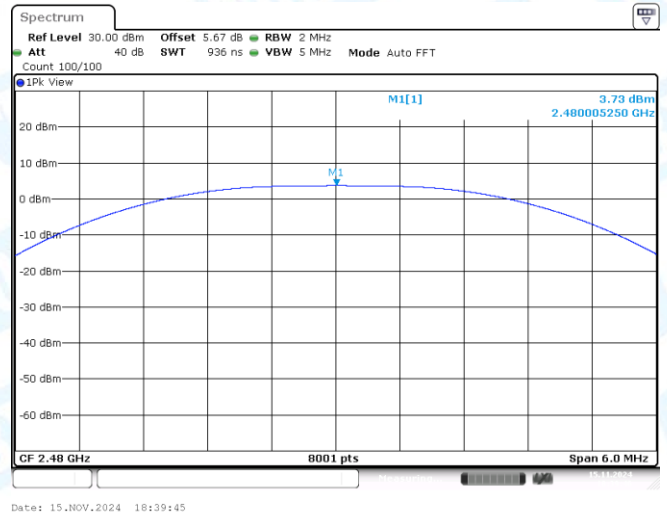
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



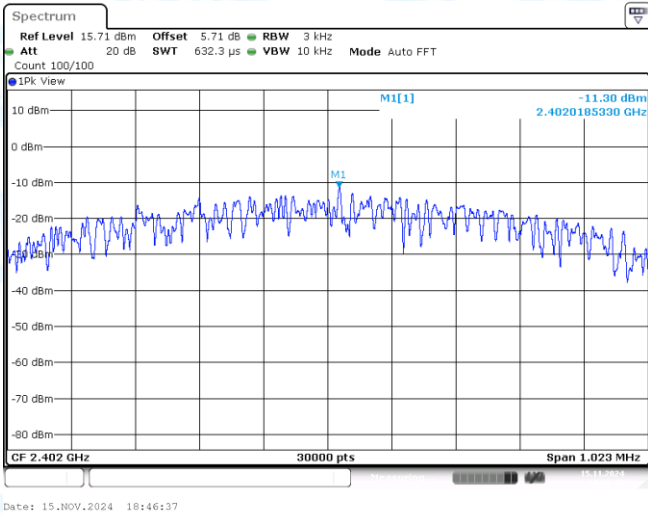
BLE_2M-Ant1-2480-PASS

4: Maximum power spectral density

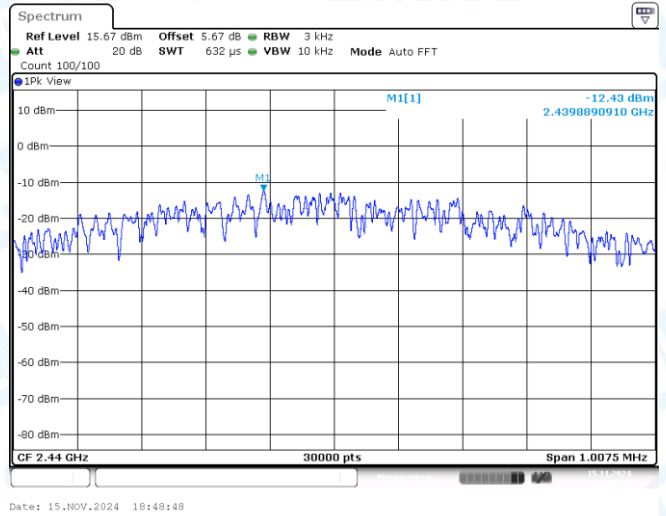
4.1 Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-11.30	≤8.00	PASS
BLE_1M	Ant1	2440	-12.43	≤8.00	PASS
BLE_1M	Ant1	2480	-12.80	≤8.00	PASS
BLE_2M	Ant1	2402	-13.82	≤8.00	PASS
BLE_2M	Ant1	2440	-14.09	≤8.00	PASS
BLE_2M	Ant1	2480	-14.11	≤8.00	PASS

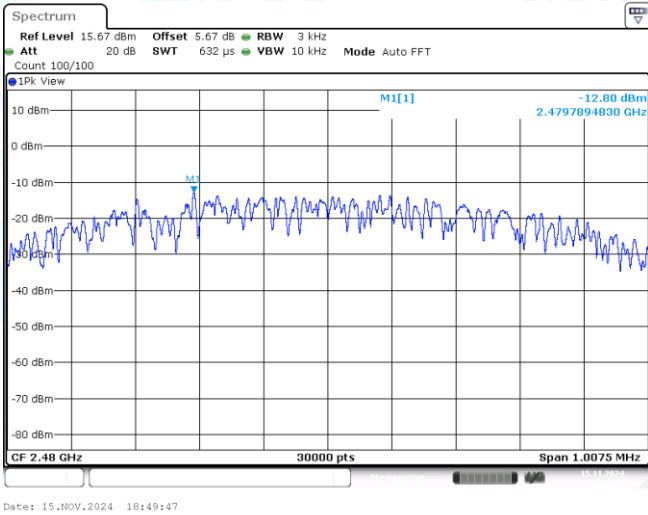
4.2 Test Graphs



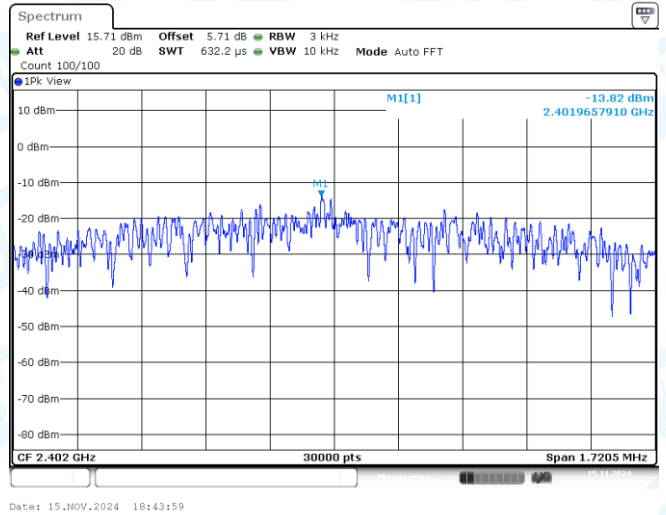
BLE_1M-Ant1-2402-PASS



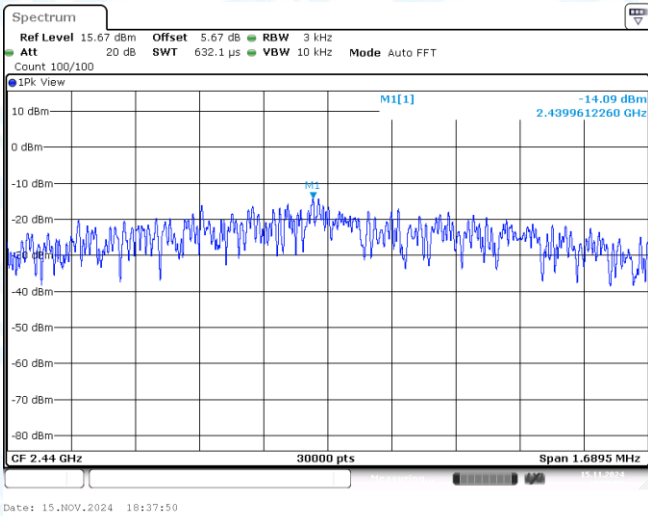
BLE_1M-Ant1-2440-PASS



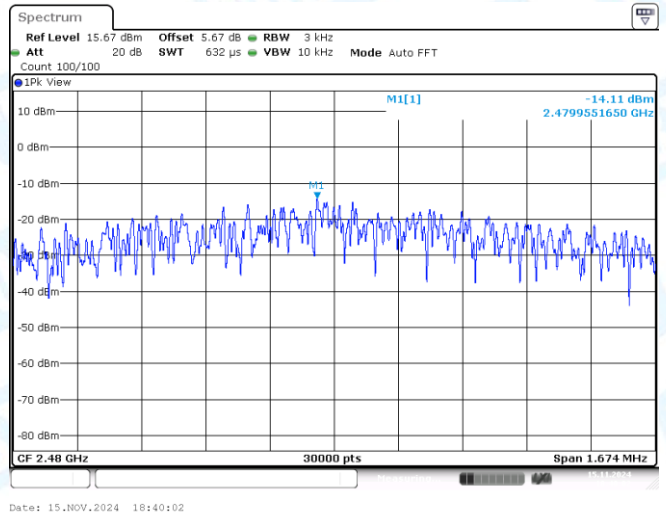
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



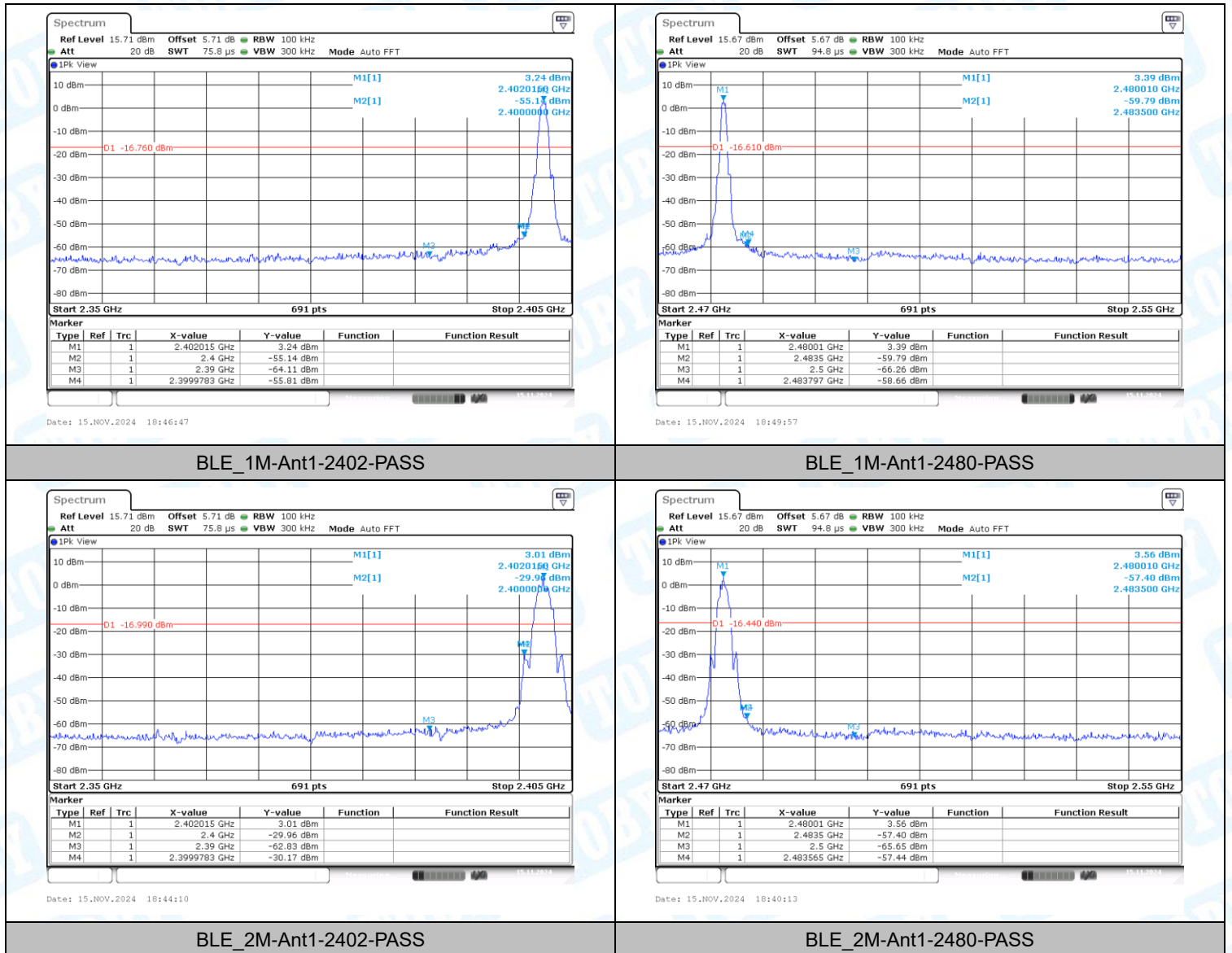
BLE_2M-Ant1-2480-PASS

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	3.24	-55.81	≤-16.76	PASS
BLE_1M	Ant1	High	2480	3.39	-58.66	≤-16.61	PASS
BLE_2M	Ant1	Low	2402	3.01	-30.17	≤-16.99	PASS
BLE_2M	Ant1	High	2480	3.56	-57.44	≤-16.44	PASS

5.2 Test Graphs

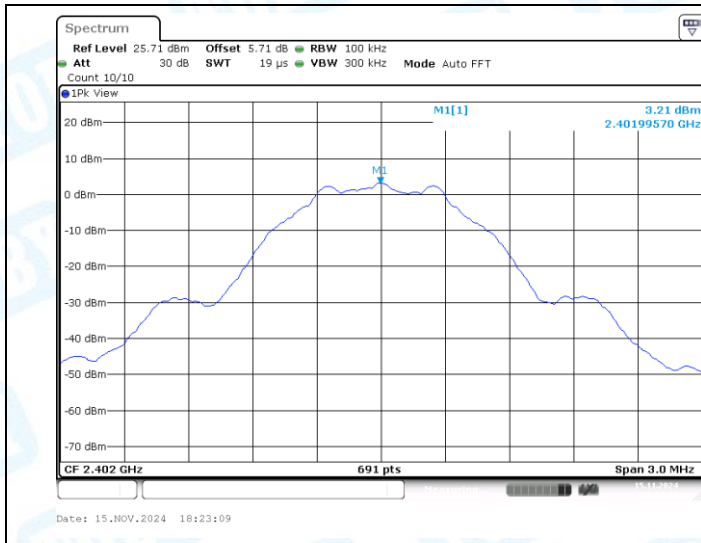


6: Conducted Spurious Emission

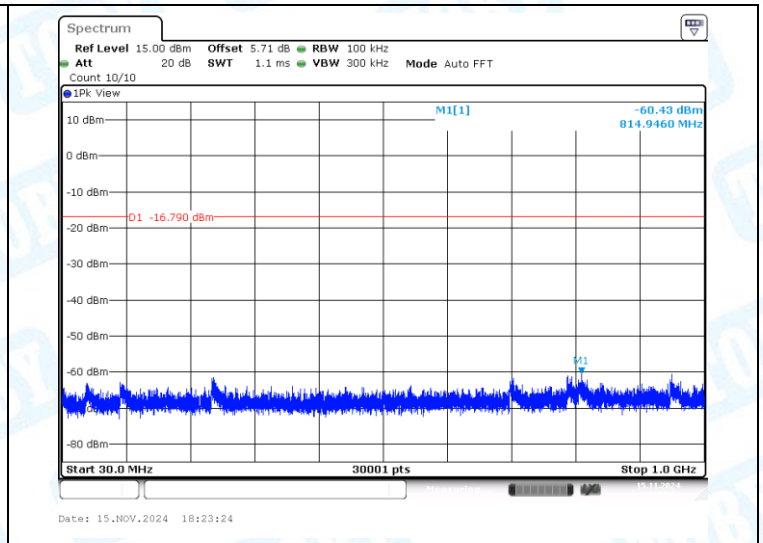
6.1 Test Result

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	3.21	3.21	---	PASS
BLE_1M	Ant1	2402	30~1000	3.21	-60.43	≤-16.79	PASS
BLE_1M	Ant1	2402	1000~26500	3.21	-51.3	≤-16.79	PASS
BLE_1M	Ant1	2440	0~Reference	3.49	3.49	---	PASS
BLE_1M	Ant1	2440	30~1000	3.49	-60.13	≤-16.51	PASS
BLE_1M	Ant1	2440	1000~26500	3.49	-53.59	≤-16.51	PASS
BLE_1M	Ant1	2480	0~Reference	3.45	3.45	---	PASS
BLE_1M	Ant1	2480	30~1000	3.45	-60.72	≤-16.55	PASS
BLE_1M	Ant1	2480	1000~26500	3.45	-50.95	≤-16.55	PASS
BLE_2M	Ant1	2402	0~Reference	3.34	3.34	---	PASS
BLE_2M	Ant1	2402	30~1000	3.34	-59.67	≤-16.66	PASS
BLE_2M	Ant1	2402	1000~26500	3.34	-51.06	≤-16.66	PASS
BLE_2M	Ant1	2440	0~Reference	3.59	3.59	---	PASS
BLE_2M	Ant1	2440	30~1000	3.59	-60.61	≤-16.41	PASS
BLE_2M	Ant1	2440	1000~26500	3.59	-53.93	≤-16.41	PASS
BLE_2M	Ant1	2480	0~Reference	3.51	3.51	---	PASS
BLE_2M	Ant1	2480	30~1000	3.51	-60.13	≤-16.49	PASS
BLE_2M	Ant1	2480	1000~26500	3.51	-53.52	≤-16.49	PASS

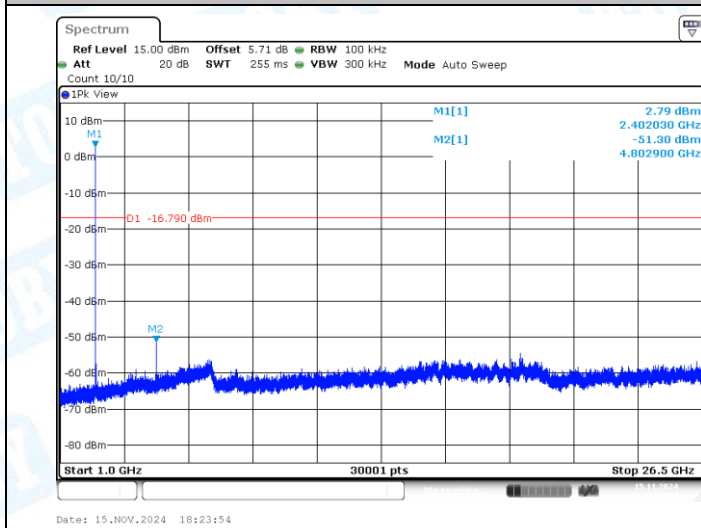
6.2 Test Graphs



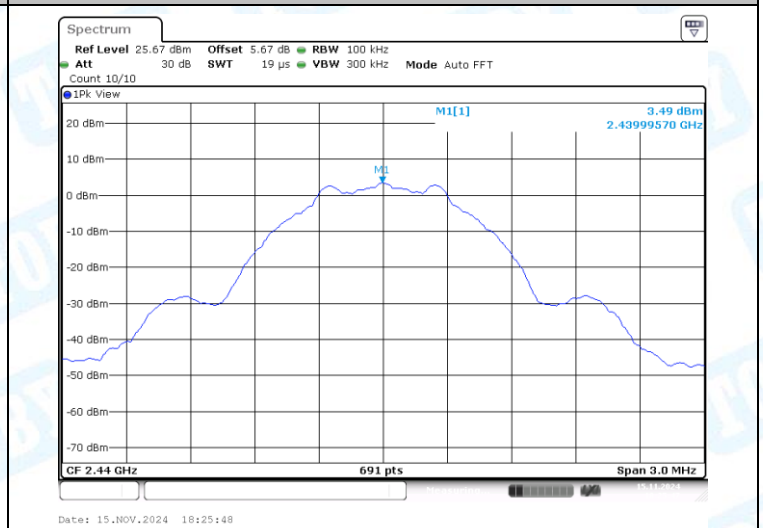
BLE_1M-Ant1-2402-0~Reference-PASS



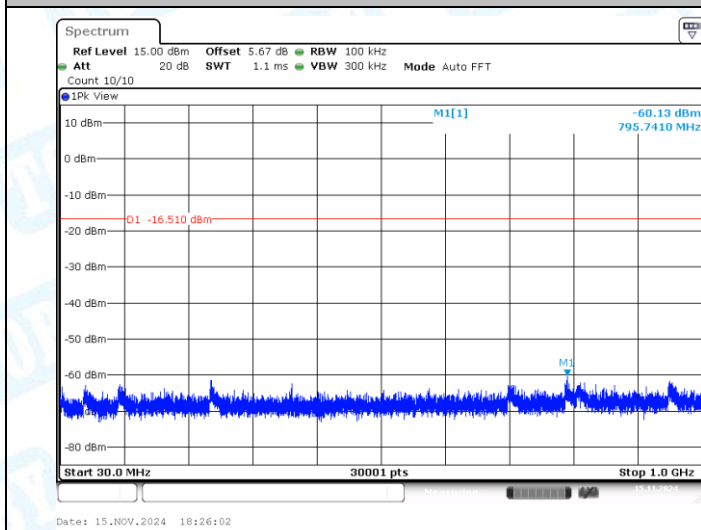
BLE_1M-Ant1-2402-30~1000-PASS



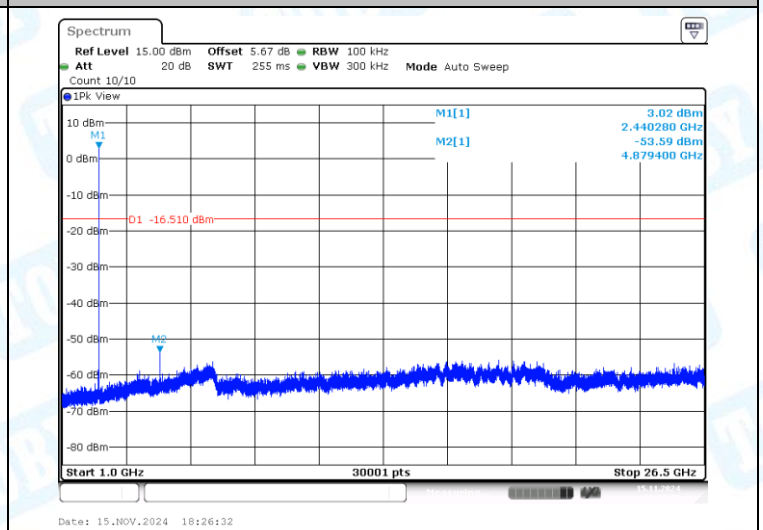
BLE_1M-Ant1-2402-1000~26500-PASS



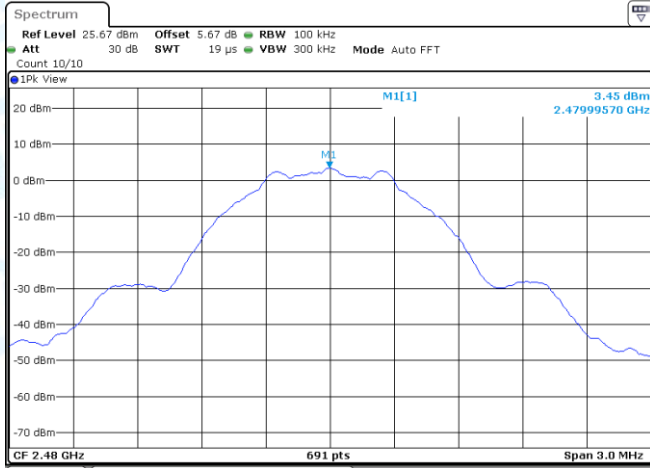
BLE_1M-Ant1-2440-0~Reference-PASS



BLE_1M-Ant1-2440-30~1000-PASS

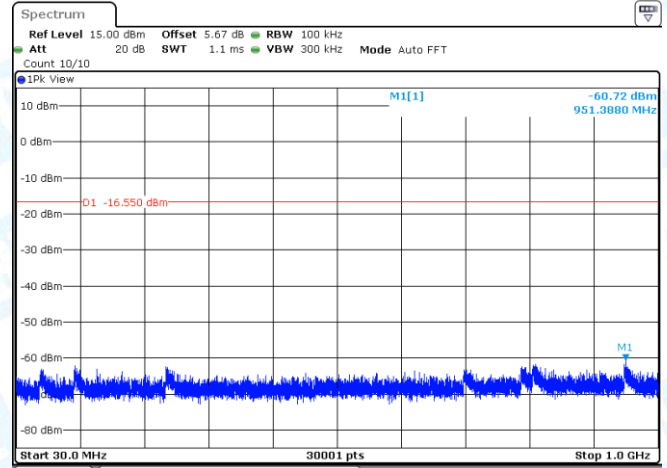


BLE_1M-Ant1-2440-1000~26500-PASS



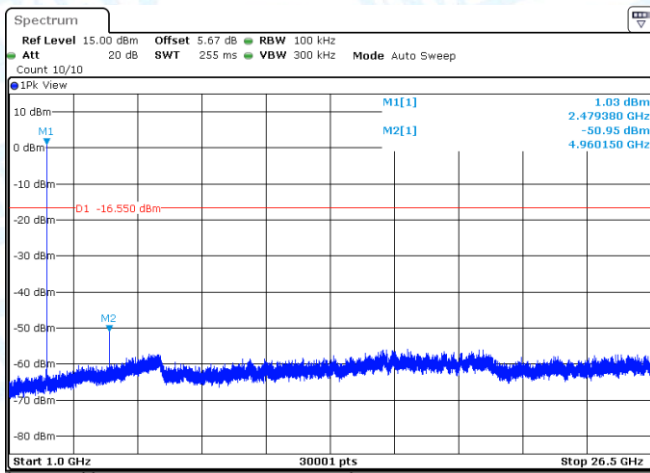
Date: 15.NOV.2024 18:29:06

BLE_1M-Ant1-2480-0~Reference-PASS



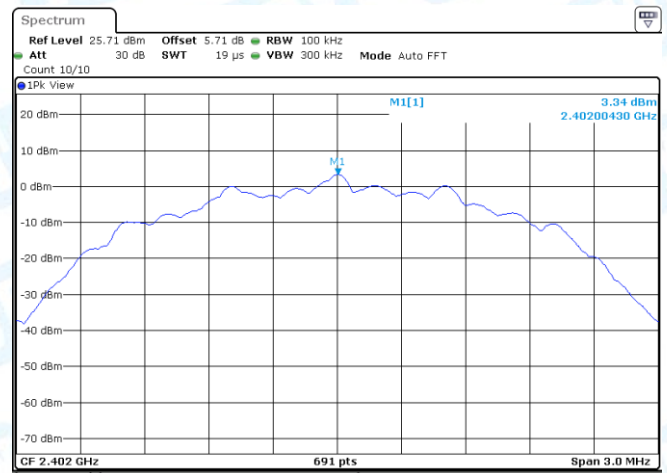
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BLE_1M-Ant1-2480-30~1000-PASS



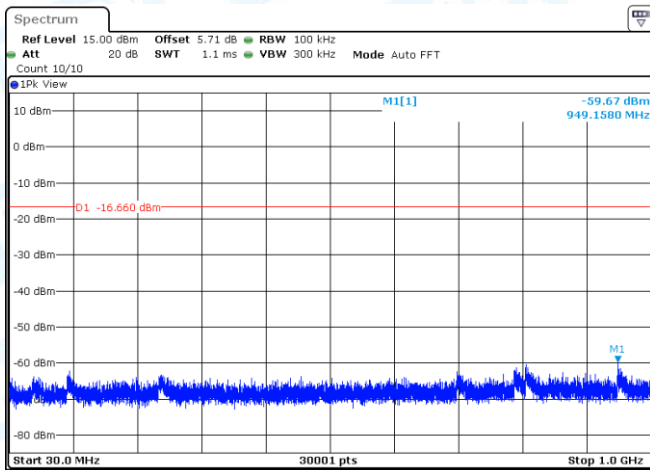
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BLE_1M-Ant1-2480-1000~26500-PASS



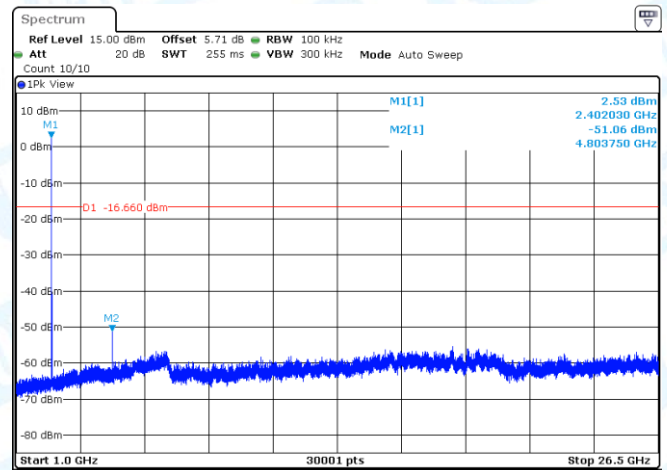
Date: 15.NOV.2024 18:32:33

BLE_2M-Ant1-2402-0~Reference-PASS



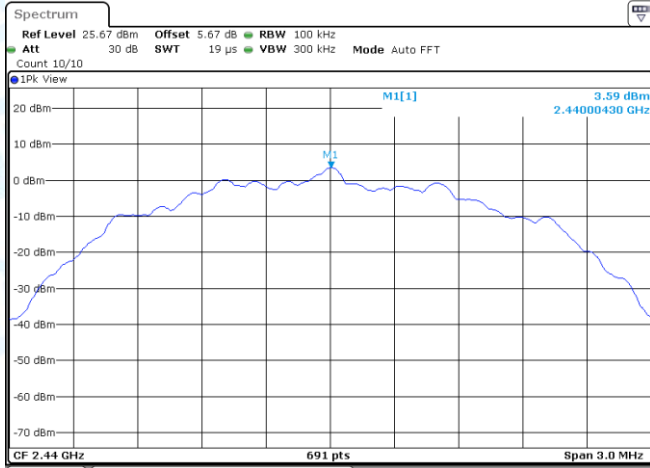
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BLE_2M-Ant1-2402-30~1000-PASS



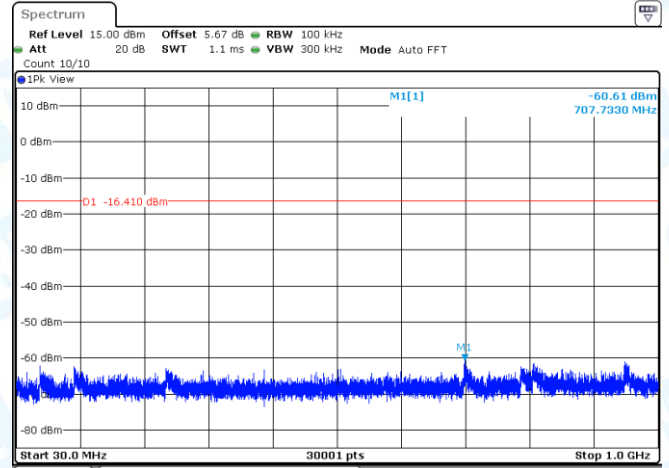
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BLE_2M-Ant1-2402-1000~26500-PASS



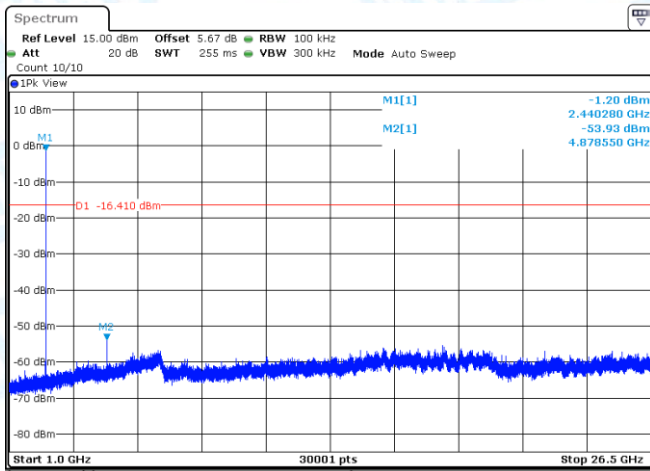
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BLE_2M-Ant1-2440-0~Reference-PASS



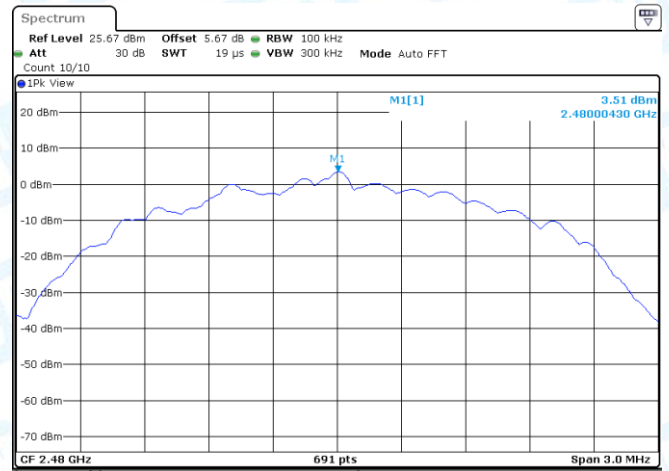
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BLE_2M-Ant1-2440-30~1000-PASS



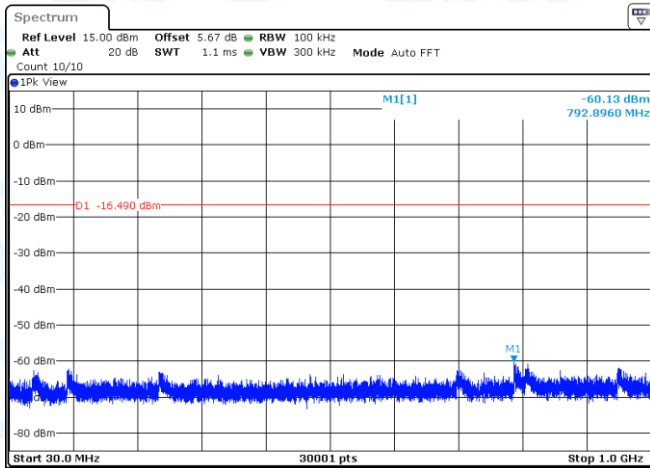
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BLE_2M-Ant1-2440-1000~26500-PASS



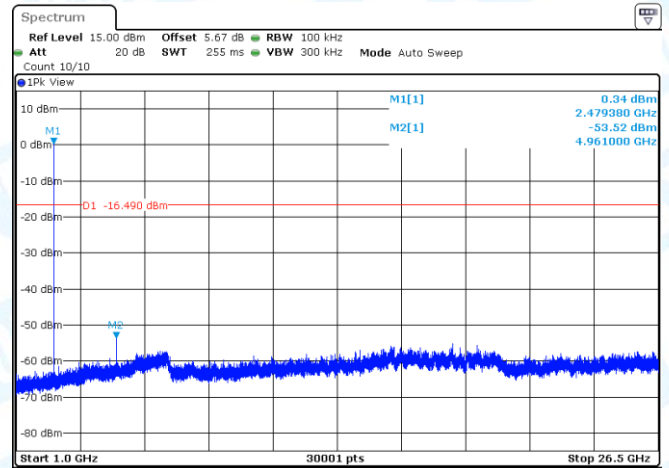
Date: 15.NOV.2024 18:41:21

BLE_2M-Ant1-2480-0~Reference-PASS



Date: 15.NOV.2024 18:41:36

BLE_2M-Ant1-2480-30~1000-PASS



Date: 15.NOV.2024 18:42:06

BLE_2M-Ant1-2480-1000~26500-PASS

7: Duty Cycle

7.1 Test Result

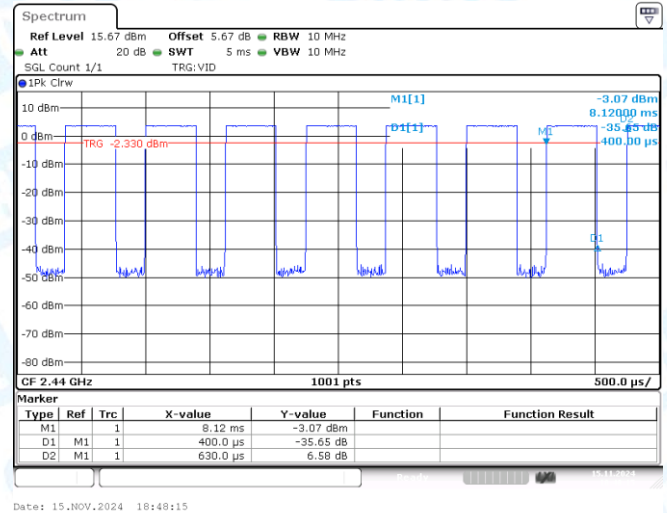
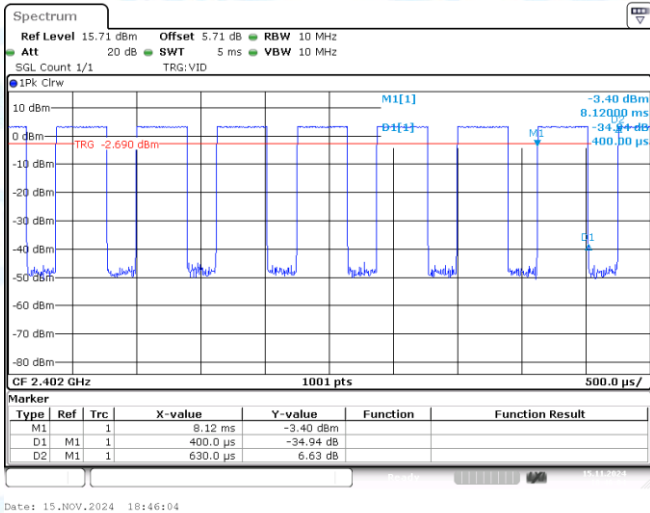
TestMode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factory	1/T [kHz]
BLE_1M	Ant1	2402	0.40	0.63	63.49	1.97	2.50
BLE_1M	Ant1	2440	0.40	0.63	63.49	1.97	2.50
BLE_1M	Ant1	2480	0.40	0.63	63.49	1.97	2.50
BLE_2M	Ant1	2402	0.21	0.63	33.33	4.77	4.76
BLE_2M	Ant1	2440	0.21	0.63	33.33	4.77	4.76
BLE_2M	Ant1	2480	0.21	0.63	33.33	4.77	4.76

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

2, DC Factory=10*Log₁₀(1/Duty Cycle)

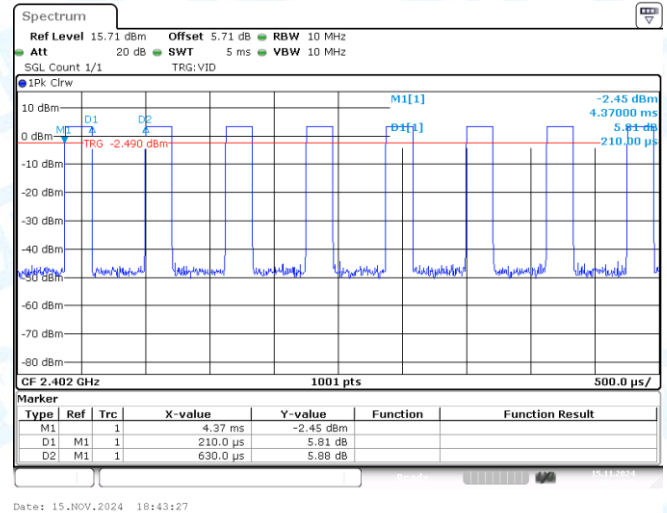
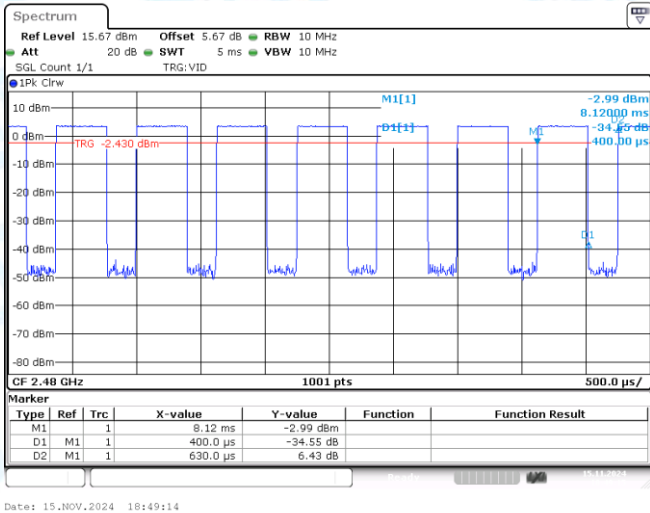
3, 1/T=1/ Transmission Duration

7.2 Test Graphs



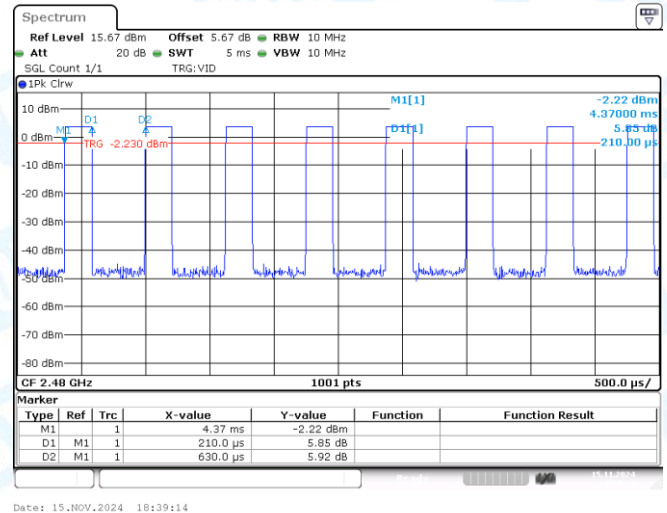
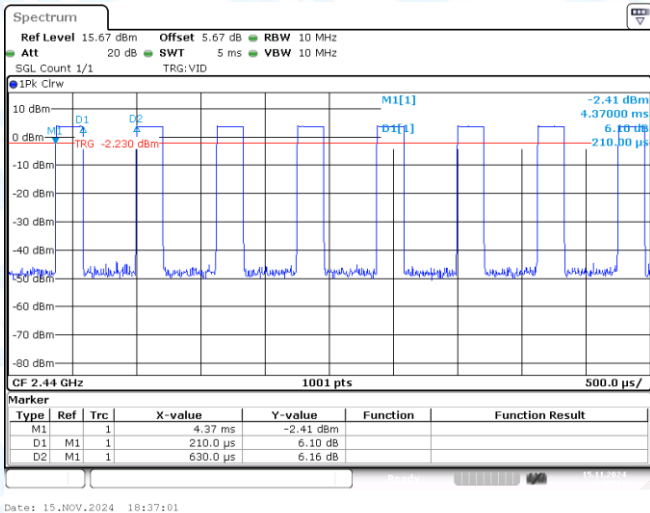
NTNV-BLE_1M-Ant1-2402

NTNV-BLE_1M-Ant1-2440



NTNV-BLE_1M-Ant1-2480

NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440

NTNV-BLE_2M-Ant1-2480

8: Emissions in Restricted Bands

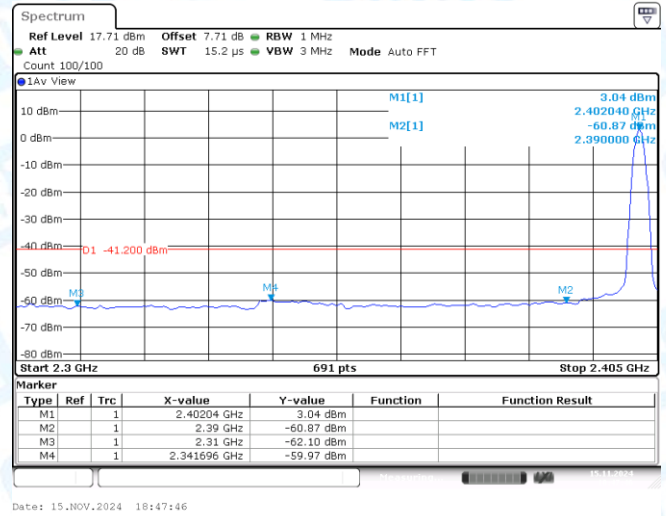
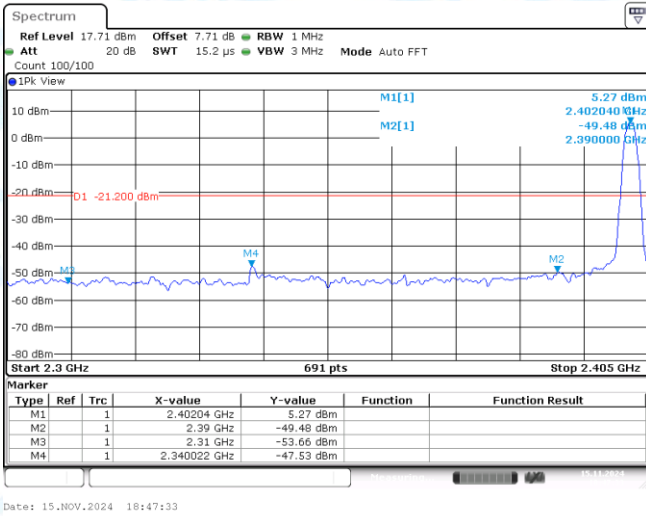
8.1 Test Result

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	-49.48	≤-21.20	45.72	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2310.000	-53.66	≤-21.20	41.54	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2340.022	-47.53	≤-21.20	47.67	≤74	PASS
BLE_1M	Ant1	Low	2402	AV	2390.000	-60.87	≤-41.20	34.33	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2310.000	-62.1	≤-41.20	33.10	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2341.696	-59.97	≤-41.20	35.23	≤54	PASS
BLE_1M	Ant1	High	2480	Peak	2483.500	-48	≤-21.20	47.20	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2500.000	-50.8	≤-21.20	44.40	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2483.681	-47.51	≤-21.20	47.69	≤74	PASS
BLE_1M	Ant1	High	2480	AV	2483.500	-57.66	≤-41.20	37.54	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2500.000	-61.54	≤-41.20	33.66	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2483.681	-57.69	≤-41.20	37.51	≤54	PASS
BLE_2M	Ant1	Low	2402	Peak	2390.000	-51.44	≤-21.20	43.76	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2310.000	-54.35	≤-21.20	40.85	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2340.022	-49.45	≤-21.20	45.75	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2390.000	-61.77	≤-41.20	33.43	≤54	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-62.24	≤-41.20	32.96	≤54	PASS
BLE_2M	Ant1	Low	2402	AV	2341.087	-59.98	≤-41.20	35.22	≤54	PASS
BLE_2M	Ant1	High	2480	Peak	2483.500	-46.05	≤-21.20	49.15	≤74	PASS
BLE_2M	Ant1	High	2480	Peak	2500.000	-52.48	≤-21.20	42.72	≤74	PASS
BLE_2M	Ant1	High	2480	Peak	2483.913	-46.37	≤-21.20	48.83	≤74	PASS
BLE_2M	Ant1	High	2480	AV	2483.500	-58.24	≤-41.20	36.96	≤54	PASS
BLE_2M	Ant1	High	2480	AV	2500.000	-61.66	≤-41.20	33.54	≤54	PASS
BLE_2M	Ant1	High	2480	AV	2483.565	-58.84	≤-41.20	36.36	≤54	PASS

Note:

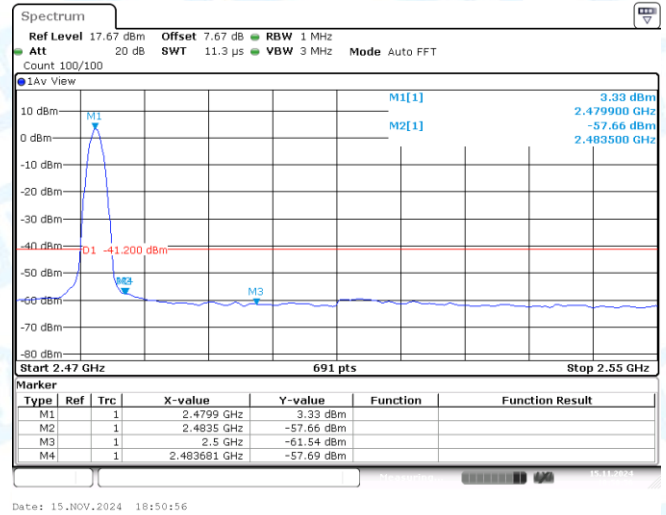
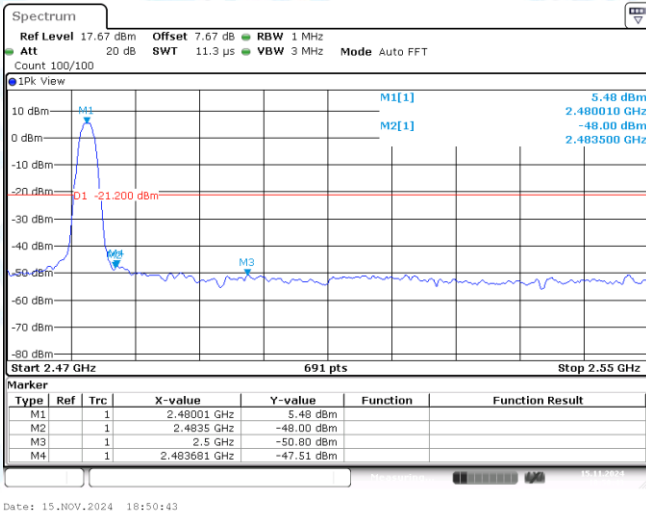
- The Antenna Gain is compensated in the graph.
- The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

8.2 Test Graphs



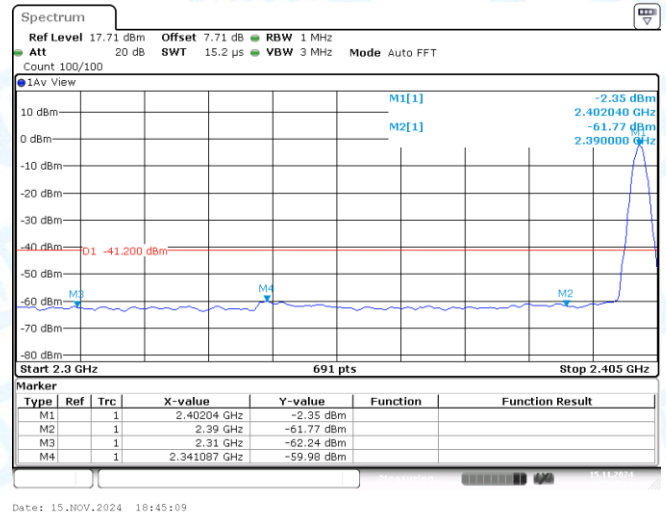
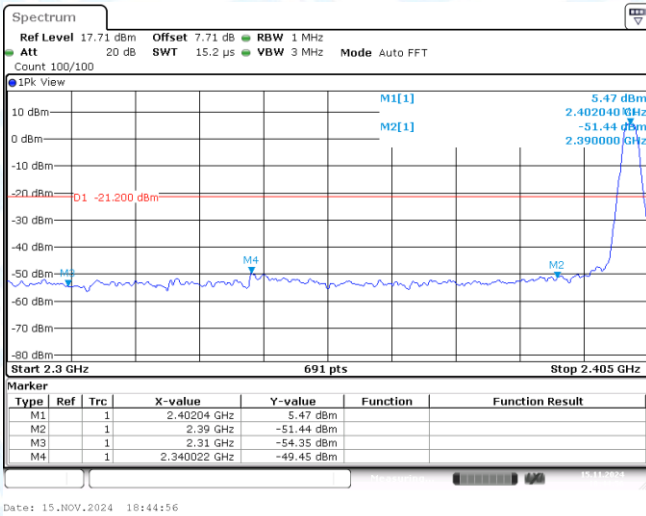
BLE_1M-Ant1-2402-PASS

BLE_1M-Ant1-2402-PASS



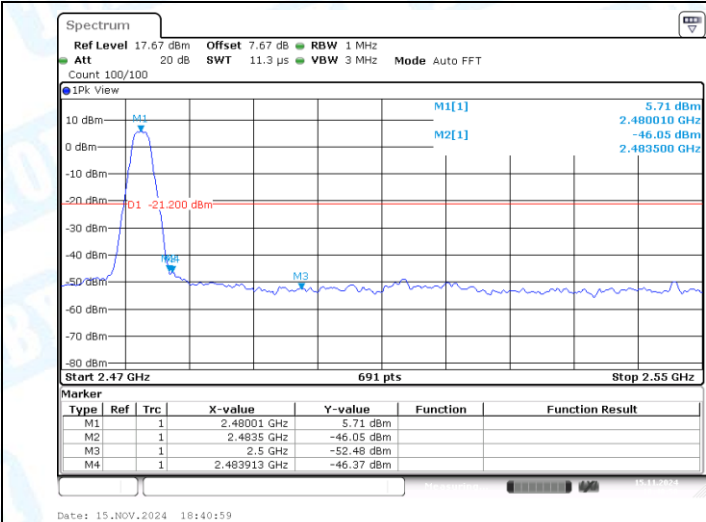
BLE_1M-Ant1-2480-PASS

BLE_1M-Ant1-2480-PASS

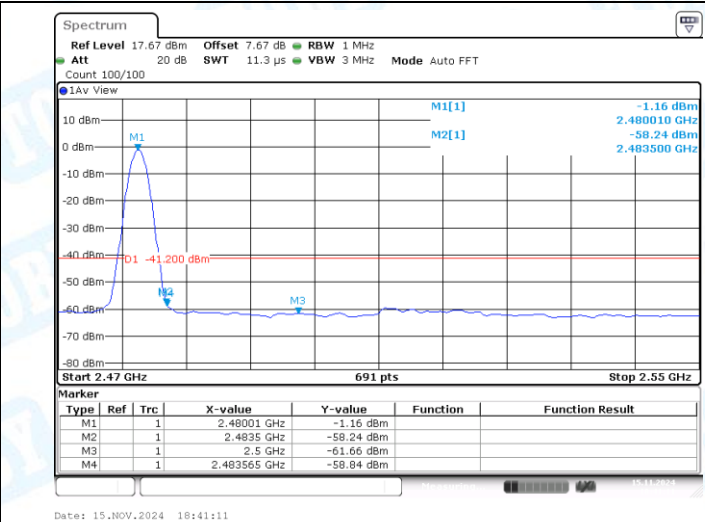


BLE_2M-Ant1-2402-PASS

BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2480-PASS



BLE_2M-Ant1-2480-PASS

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