

RF Test Data for Bluetooth LE (Conducted Measurements)

General Description of EUT	
Product Name:	4G multimode engineering gateway
Test Model:	UX33-US
Sample ID:	202305-0073-2-2#
Environmental Conditions	
Temperature:	25°C
Relative Humidity:	55%
Test Voltage:	DC 5V
Test Engineer:	Zhou zhen
Note: For a more detailed features description, please refer to the report TBR-C-202305-0073-111 The report only show the worst case data.	

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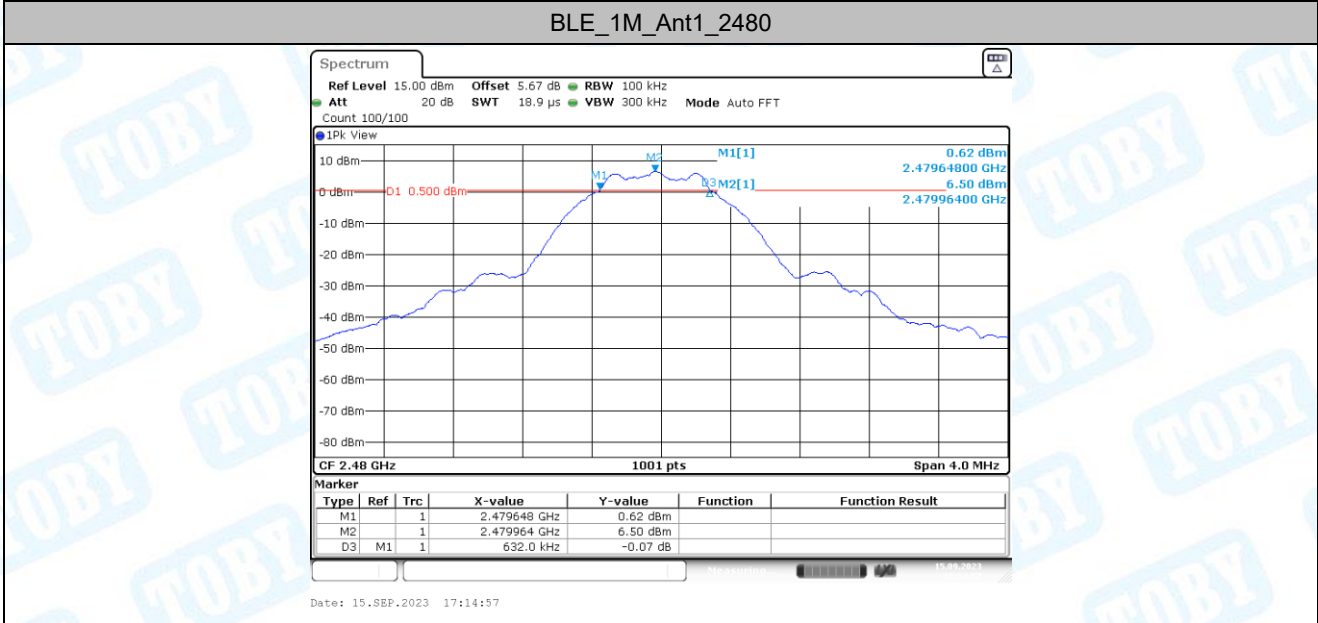
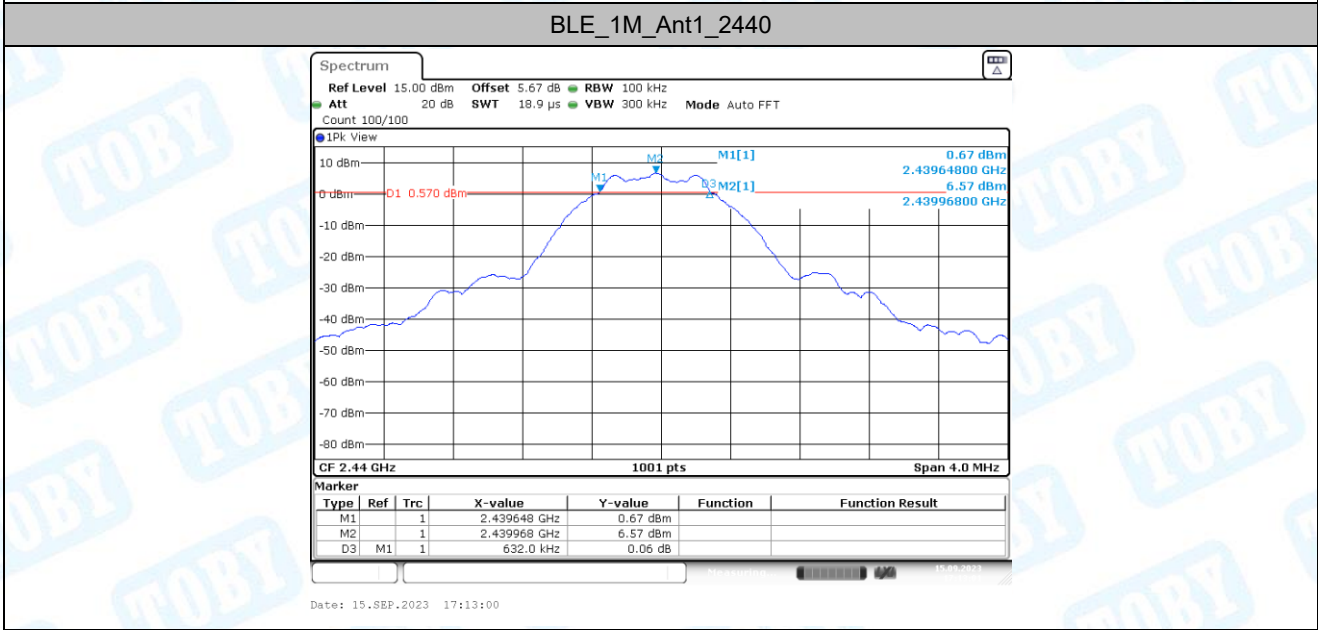
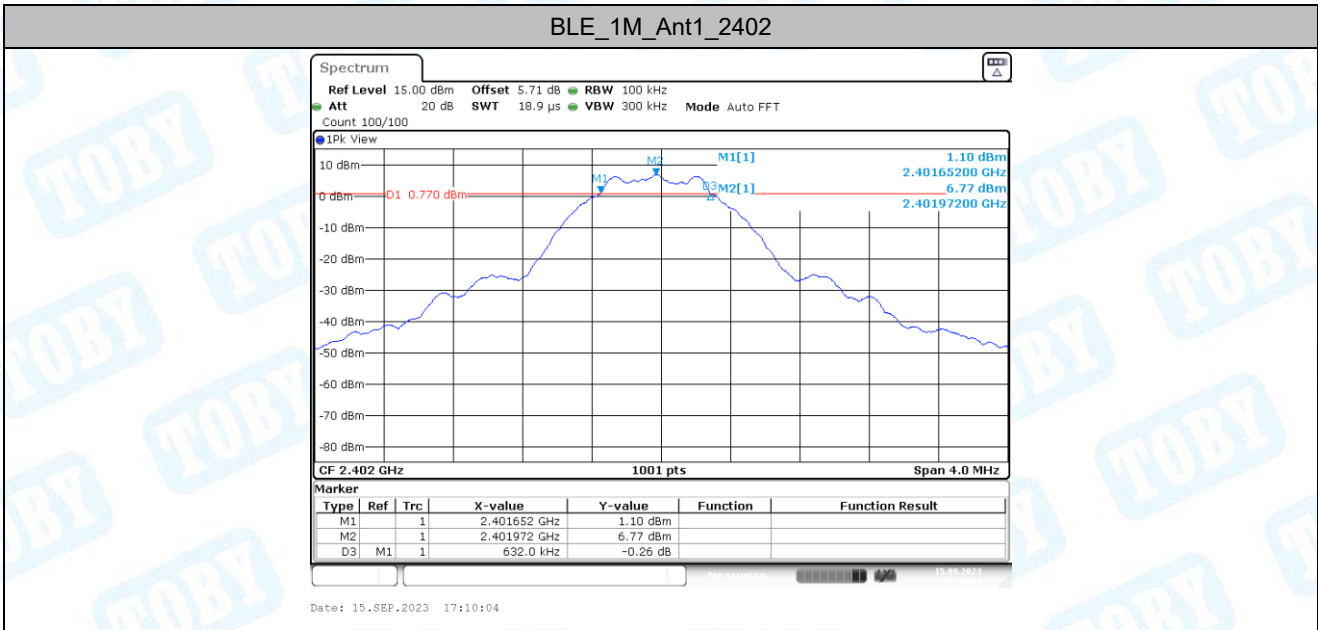
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1. DTS Bandwidth

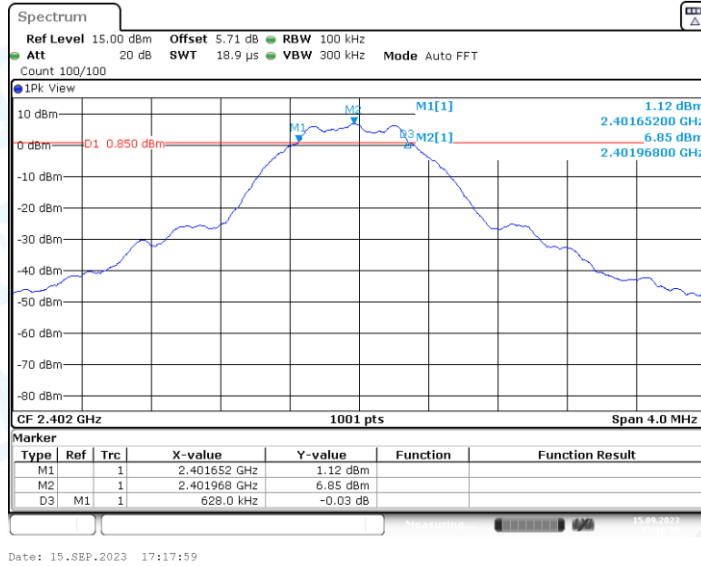
1.1. Test Result

Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.63	2401.65	2402.28	0.5	PASS
		2440	0.63	2439.65	2440.28	0.5	PASS
		2480	0.63	2479.65	2480.28	0.5	PASS
BLE_2M	Ant1	2402	0.63	2401.65	2402.28	0.5	PASS
		2440	0.63	2439.65	2440.28	0.5	PASS
		2480	0.63	2479.65	2480.28	0.5	PASS

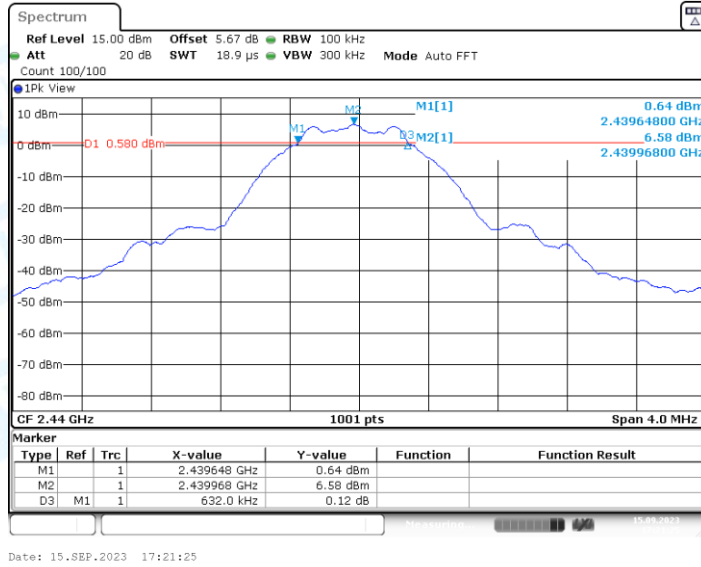
1.2. Test Graphs



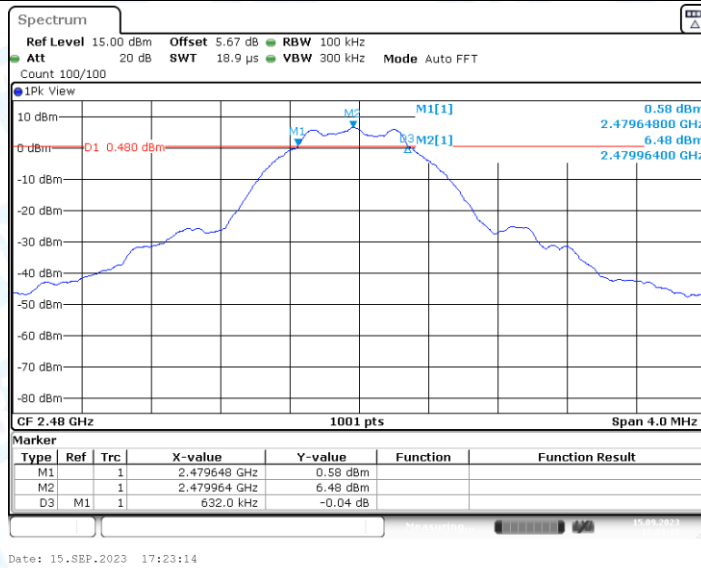
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

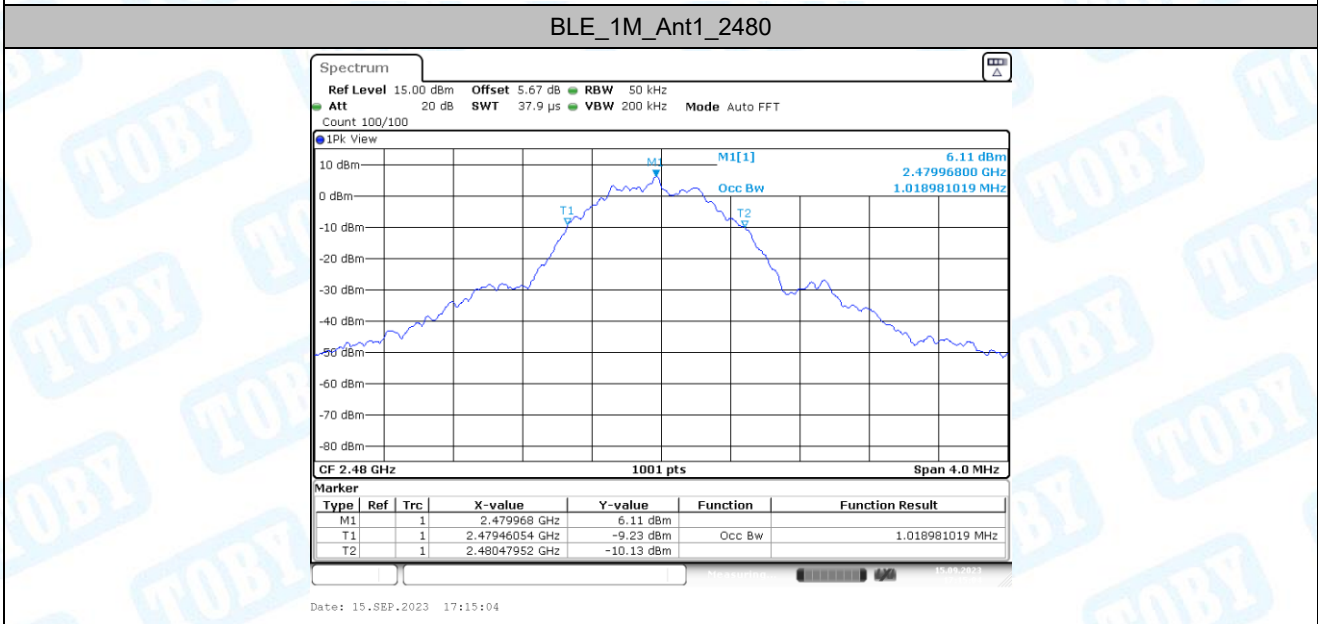
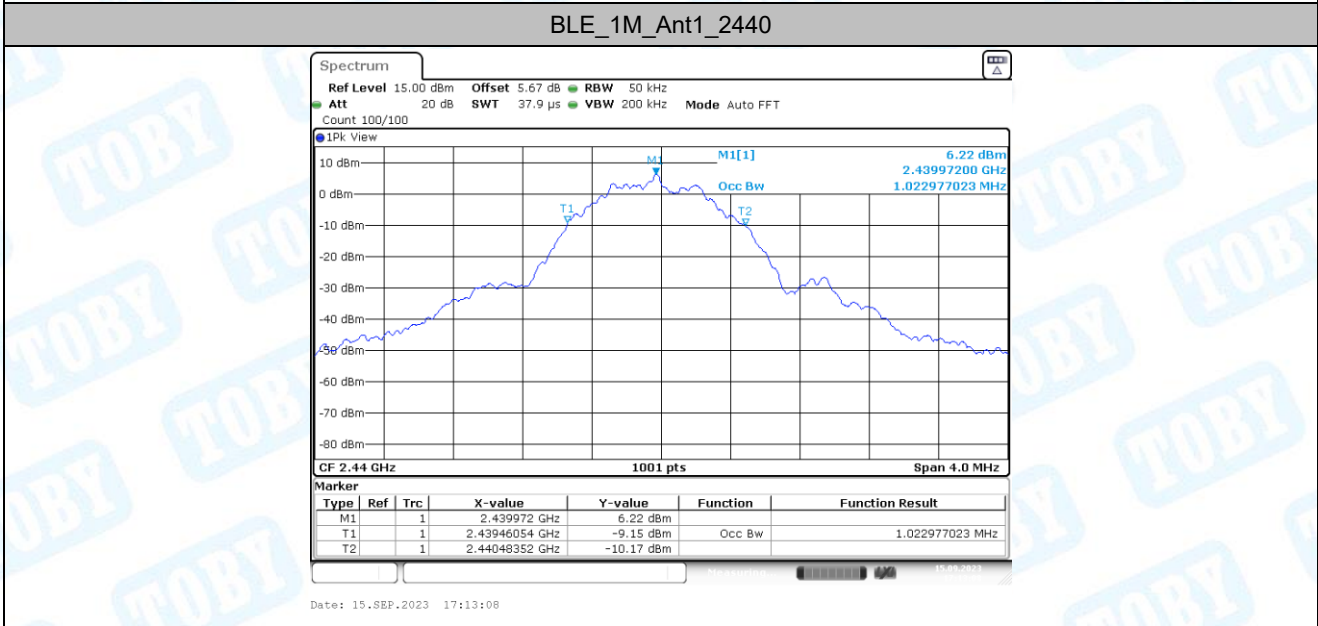
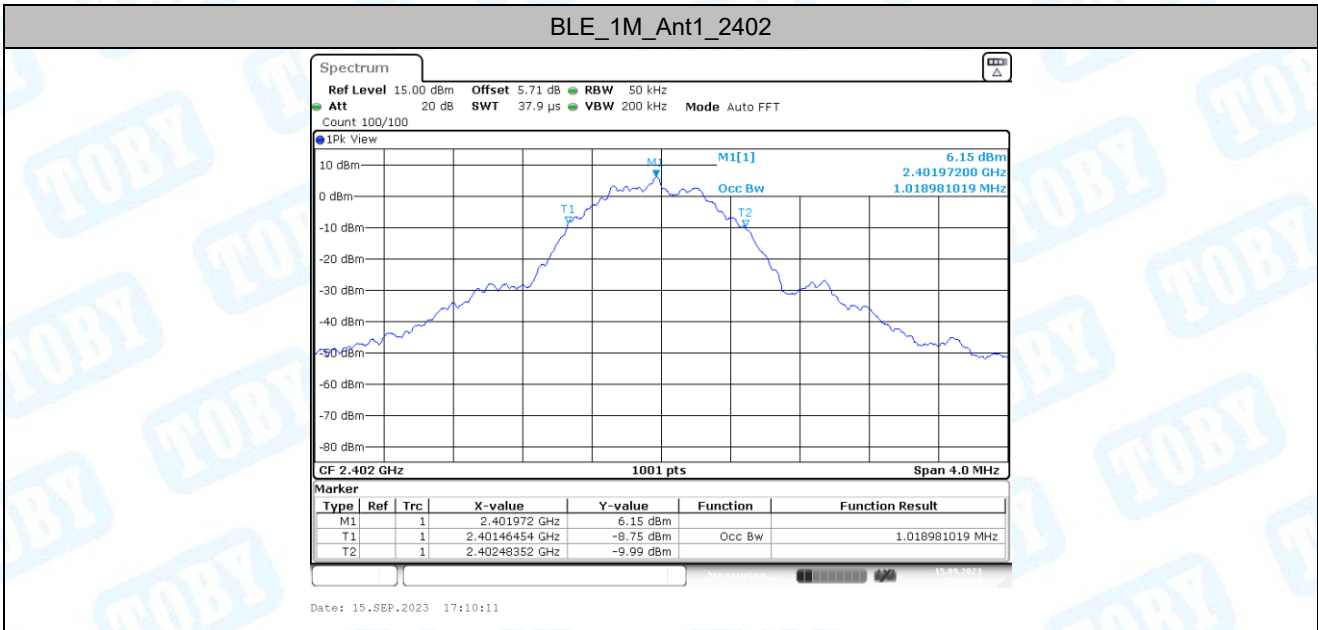


2. Occupied Channel Bandwidth

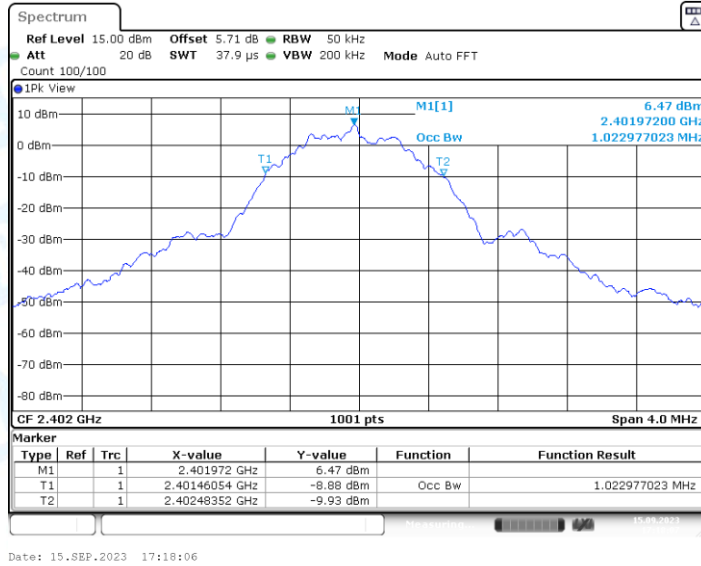
2.1. Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.019	2401.4645	2402.4835	---	---
		2440	1.023	2439.4605	2440.4835	---	---
		2480	1.019	2479.4605	2480.4795	---	---
BLE_2M	Ant1	2402	1.023	2401.4605	2402.4835	---	---
		2440	1.023	2439.4605	2440.4835	---	---
		2480	1.019	2479.4605	2480.4795	---	---

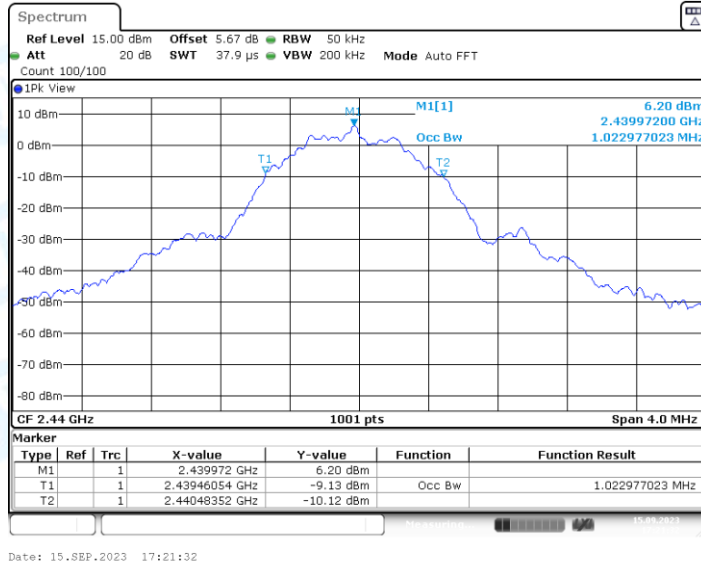
2.2. Test Graphs



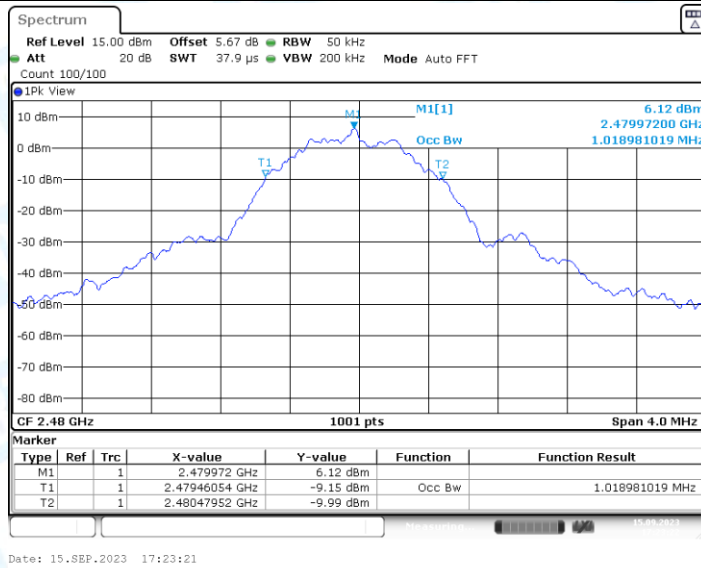
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

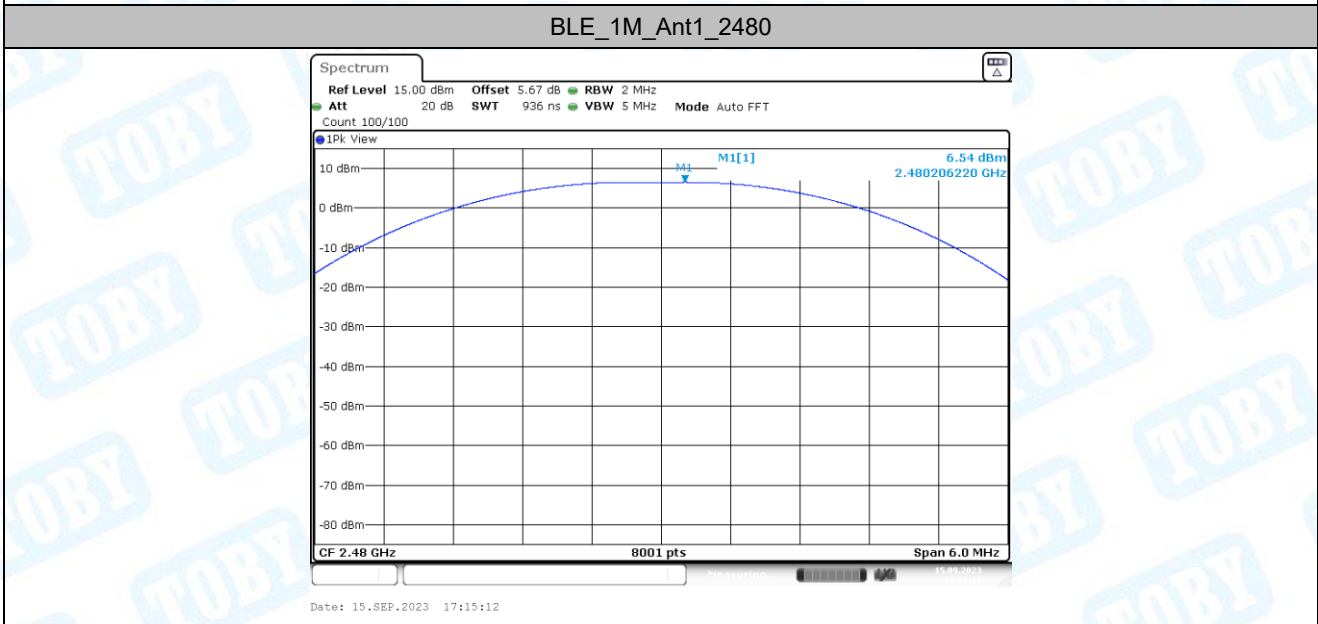
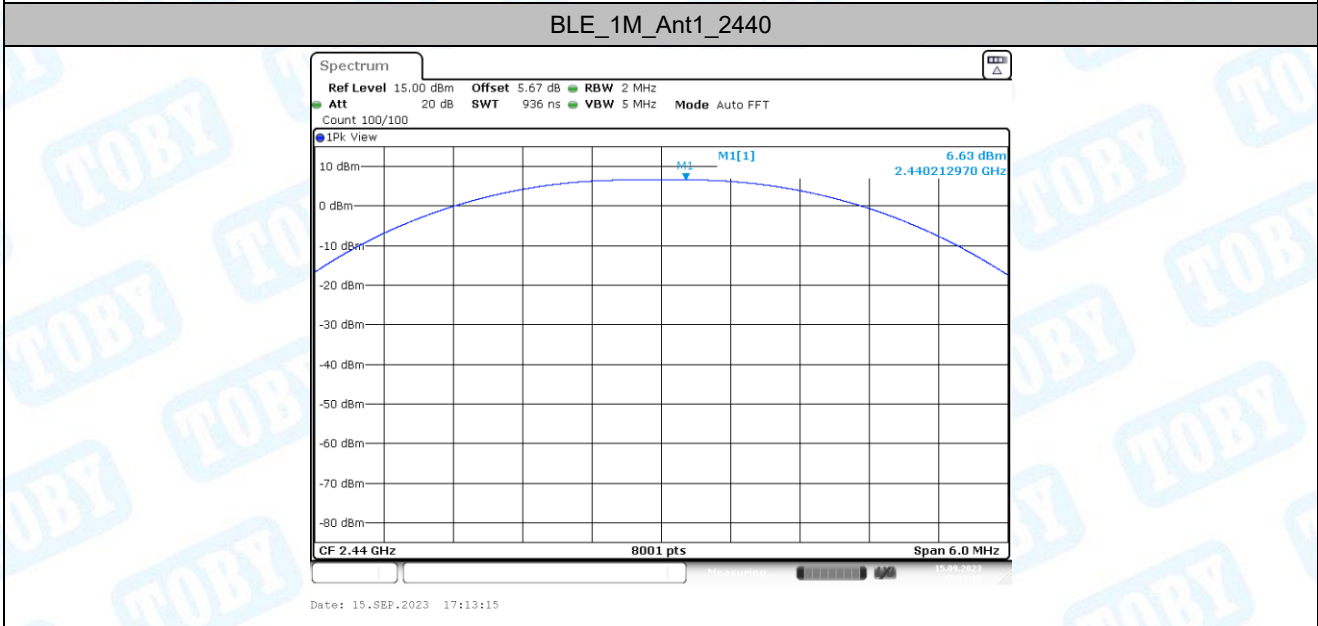
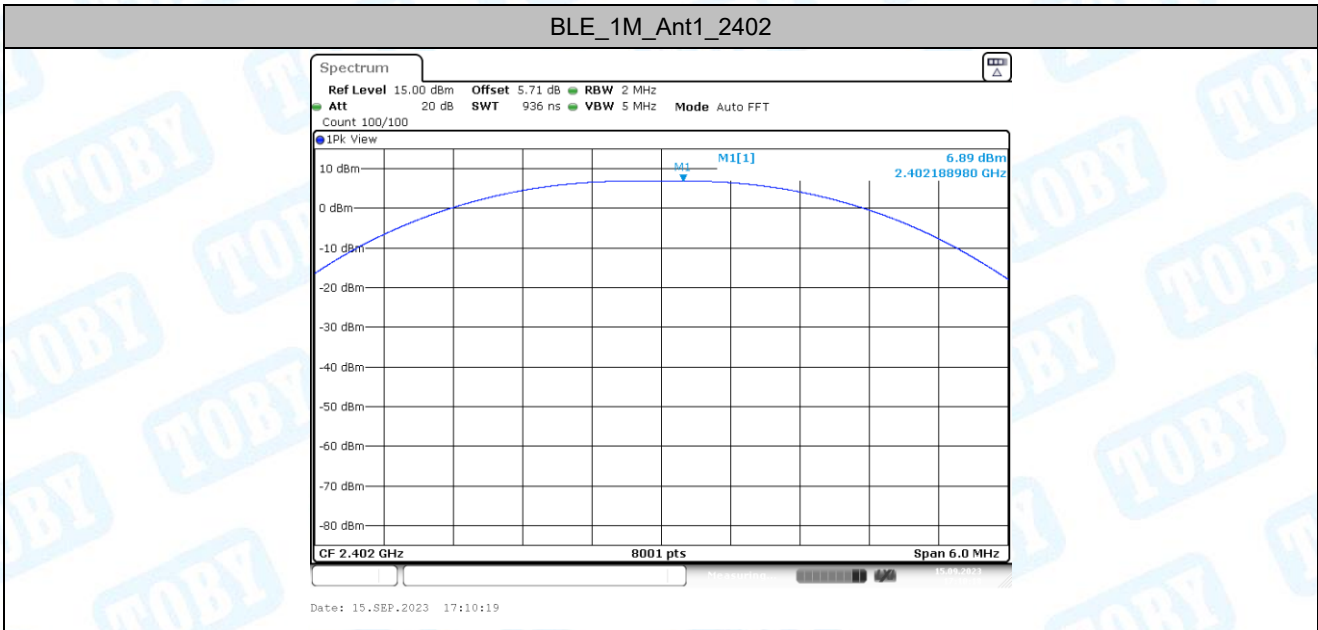


3. Maximum conducted output power

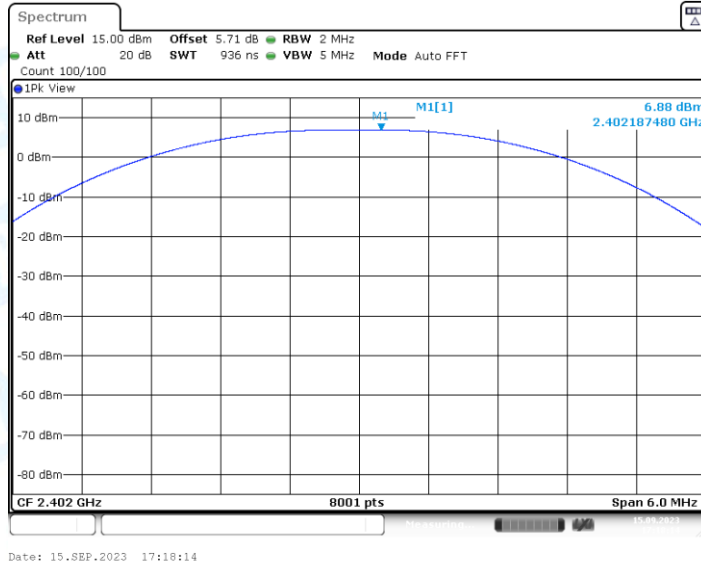
3.1. Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	6.89	≤30	PASS
		2440	6.63	≤30	PASS
		2480	6.54	≤30	PASS
BLE_2M	Ant1	2402	6.88	≤30	PASS
		2440	6.62	≤30	PASS
		2480	6.53	≤30	PASS

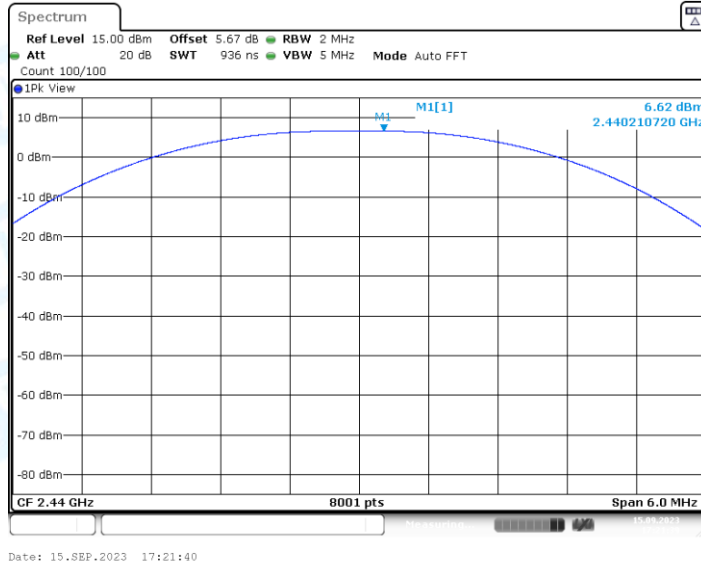
3.2. Test Graphs



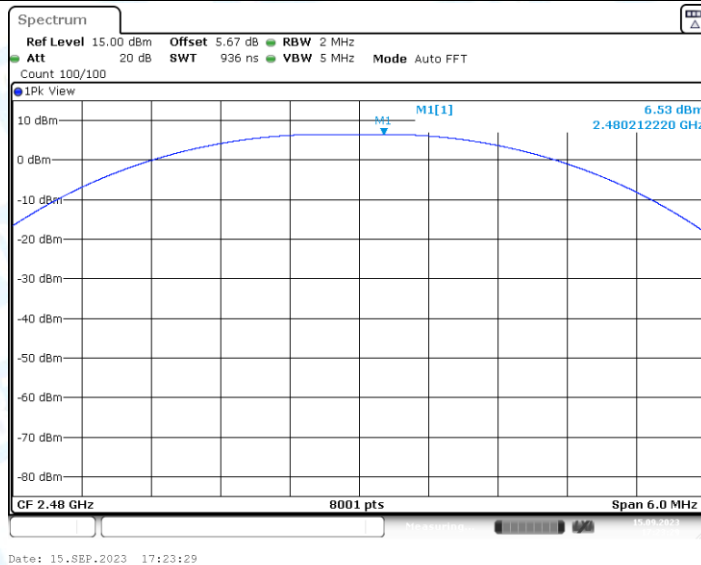
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

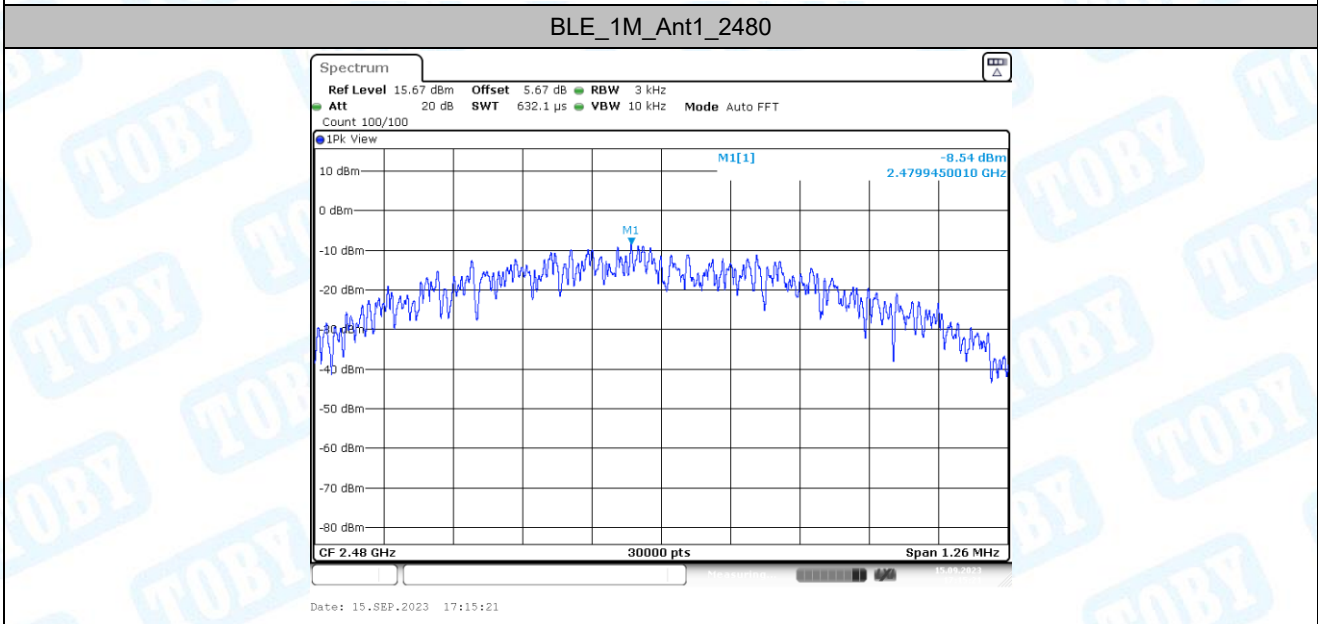
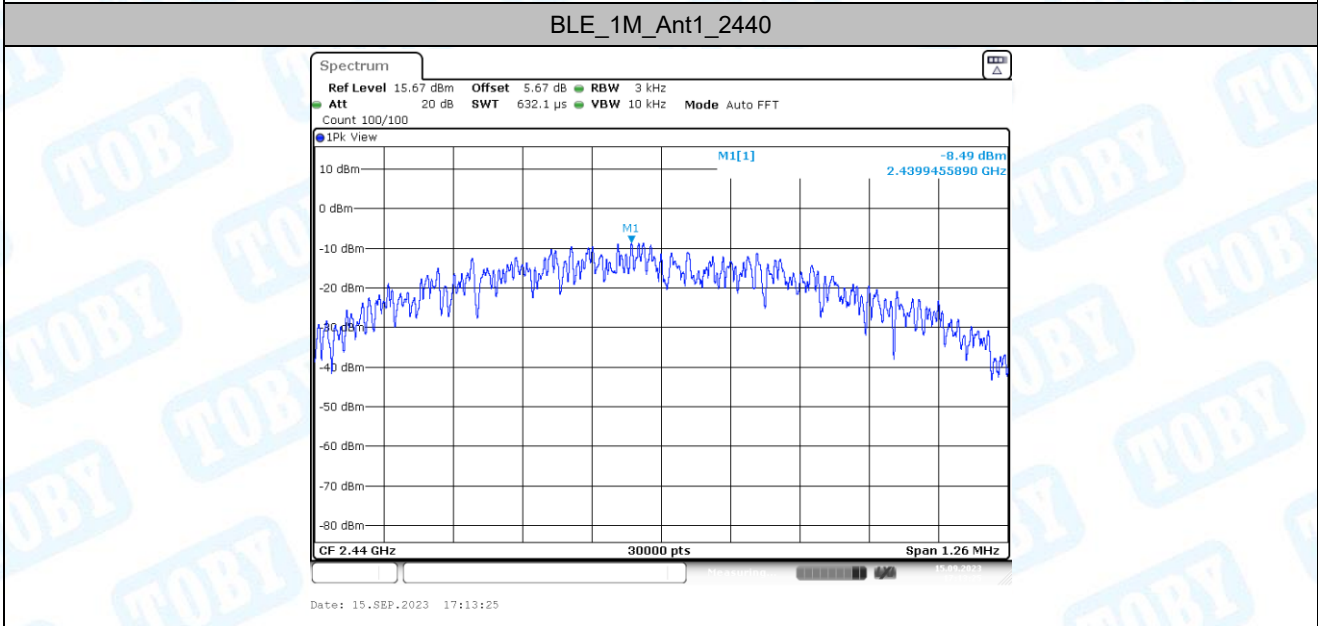
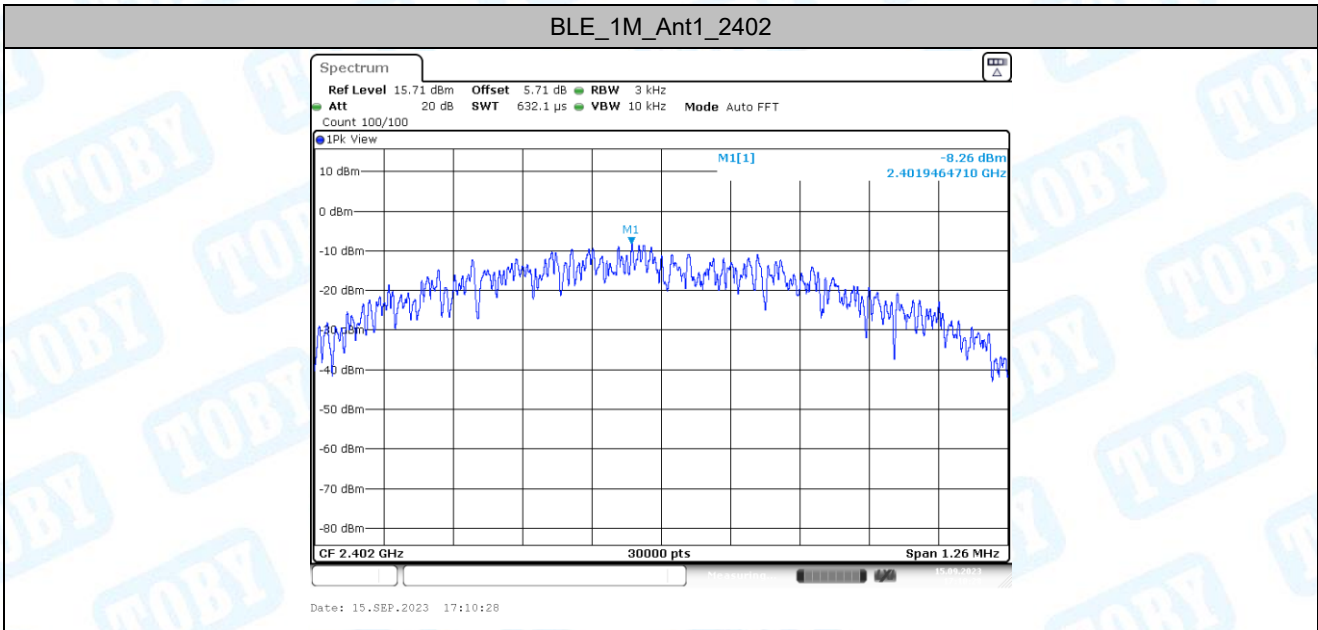


4. Maximum power spectral density

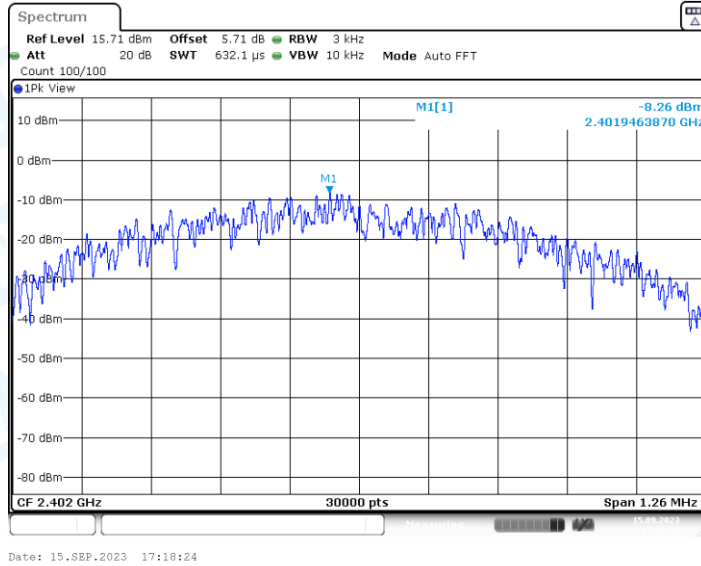
4.1. Test Result

Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-8.26	≤8.00	PASS
		2440	-8.49	≤8.00	PASS
		2480	-8.54	≤8.00	PASS
BLE_2M	Ant1	2402	-8.26	≤8.00	PASS
		2440	-8.49	≤8.00	PASS
		2480	-8.55	≤8.00	PASS

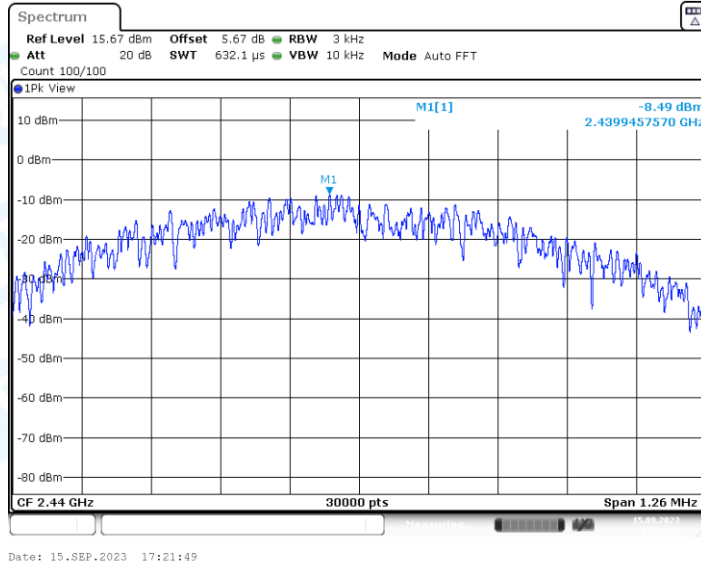
4.2. Test Graphs



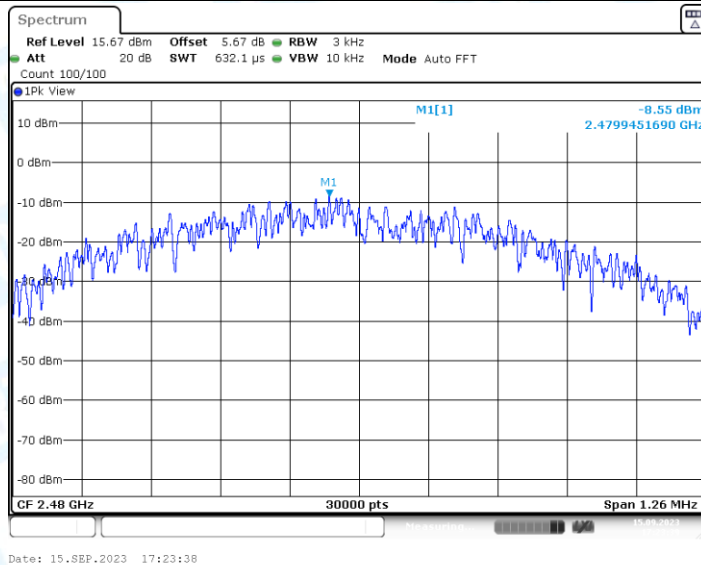
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

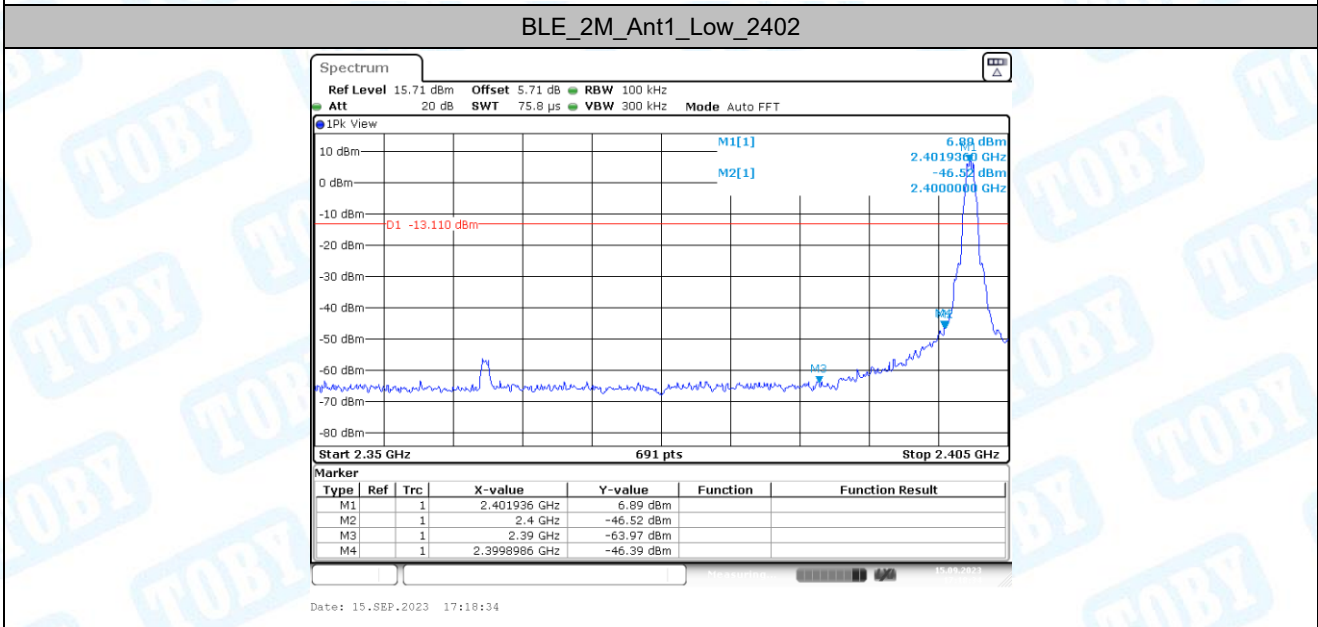
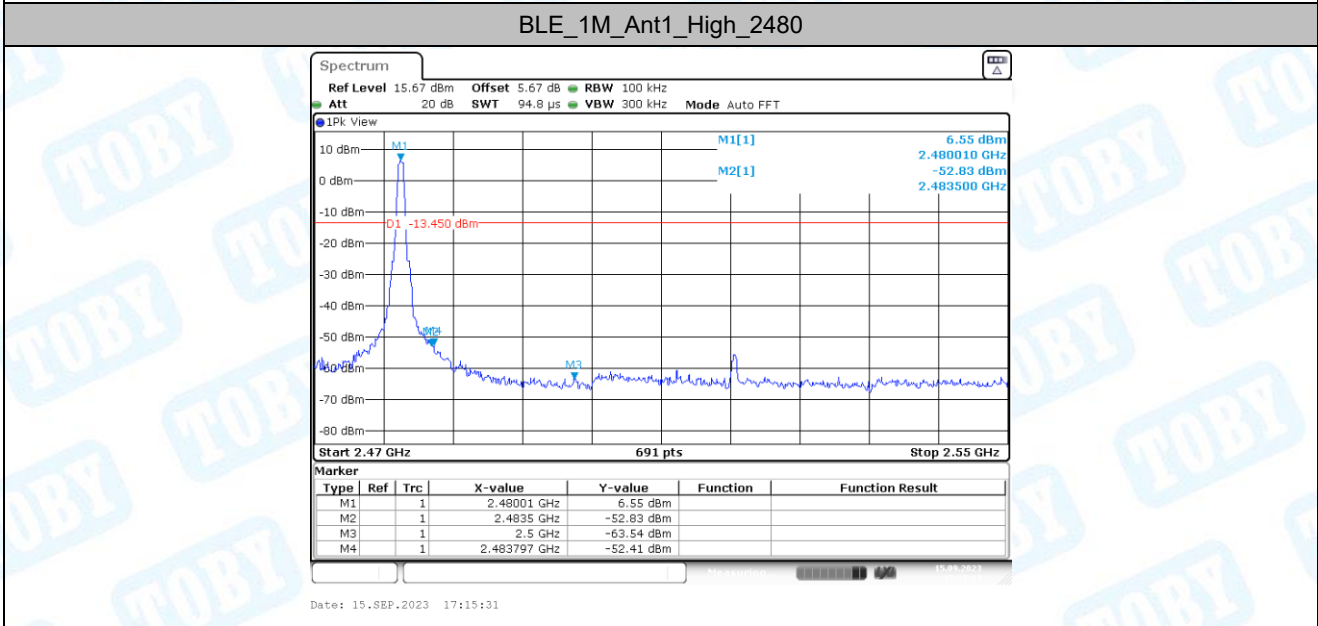
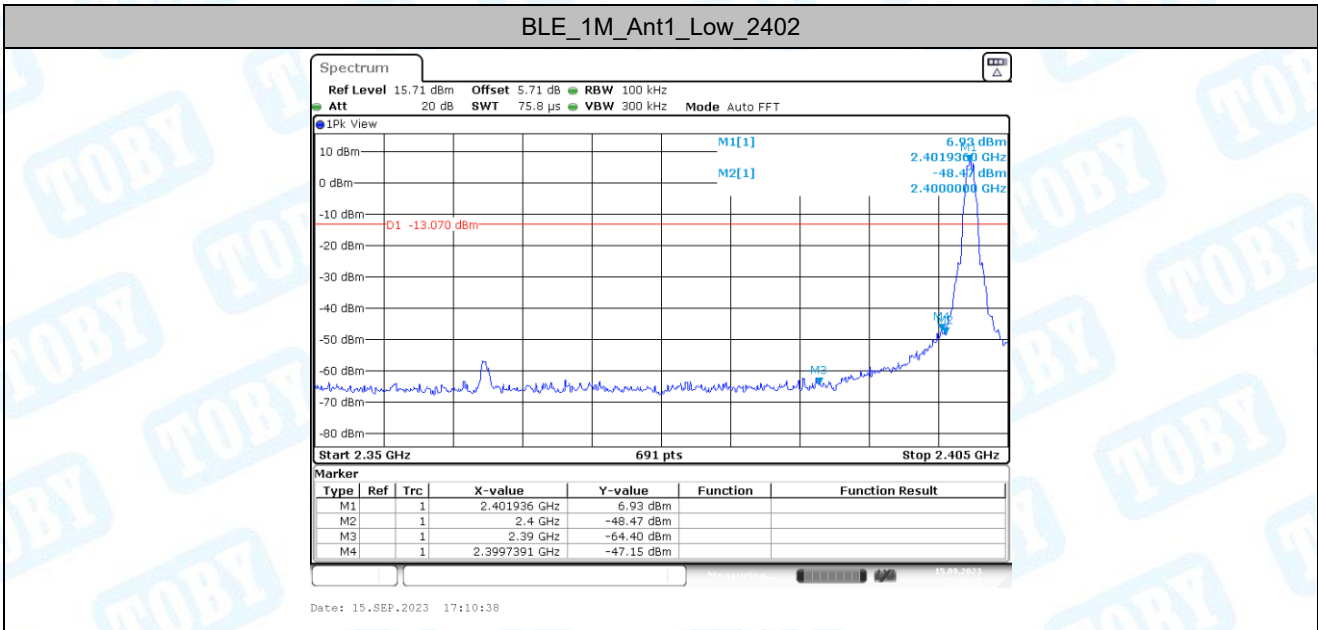


5. Band edge measurements

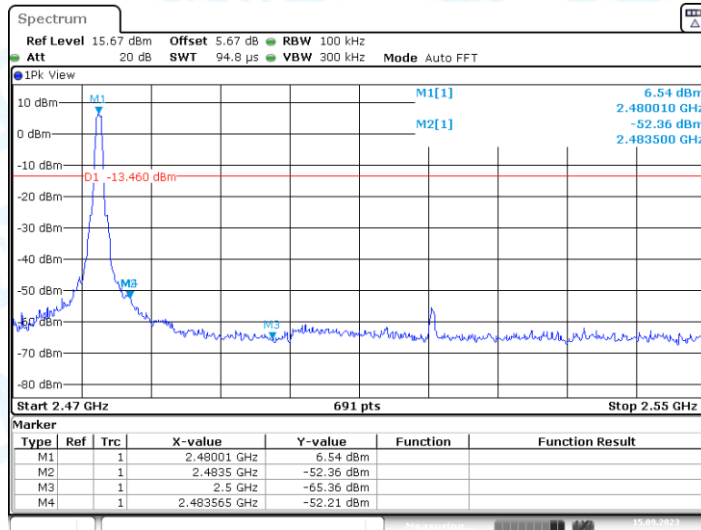
5.1. Test Result

Test Mode	Antenna	ChName	Channel	Ref.Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	6.93	-47.15	≤-13.07	PASS
		High	2480	6.55	-52.41	≤-13.45	PASS
BLE_2M	Ant1	Low	2402	6.89	-46.39	≤-13.11	PASS
		High	2480	6.54	-52.21	≤-13.46	PASS

5.2. Test Graphs



BLE_2M_Ant1_High_2480



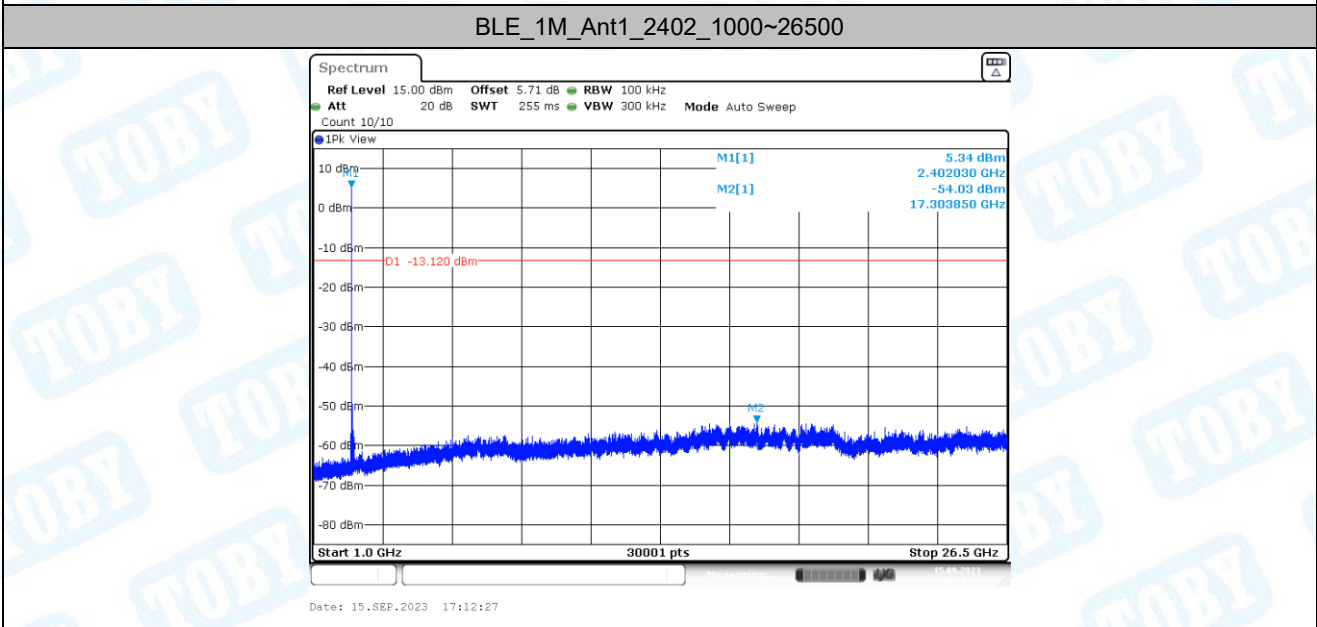
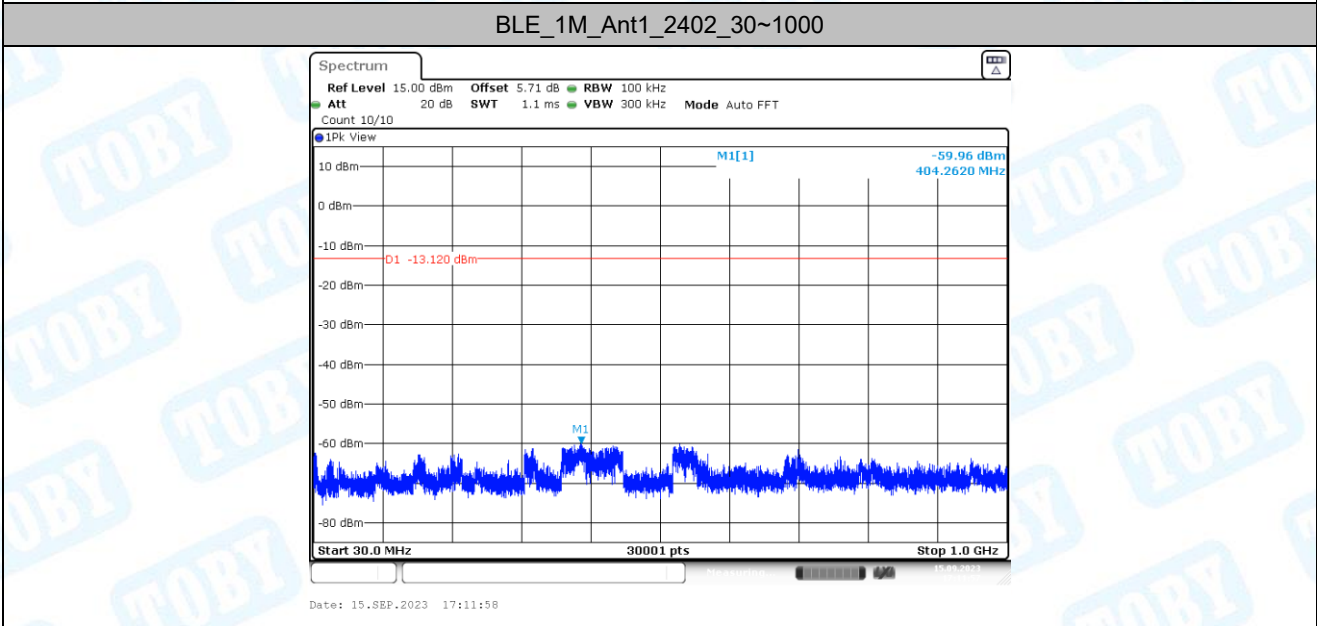
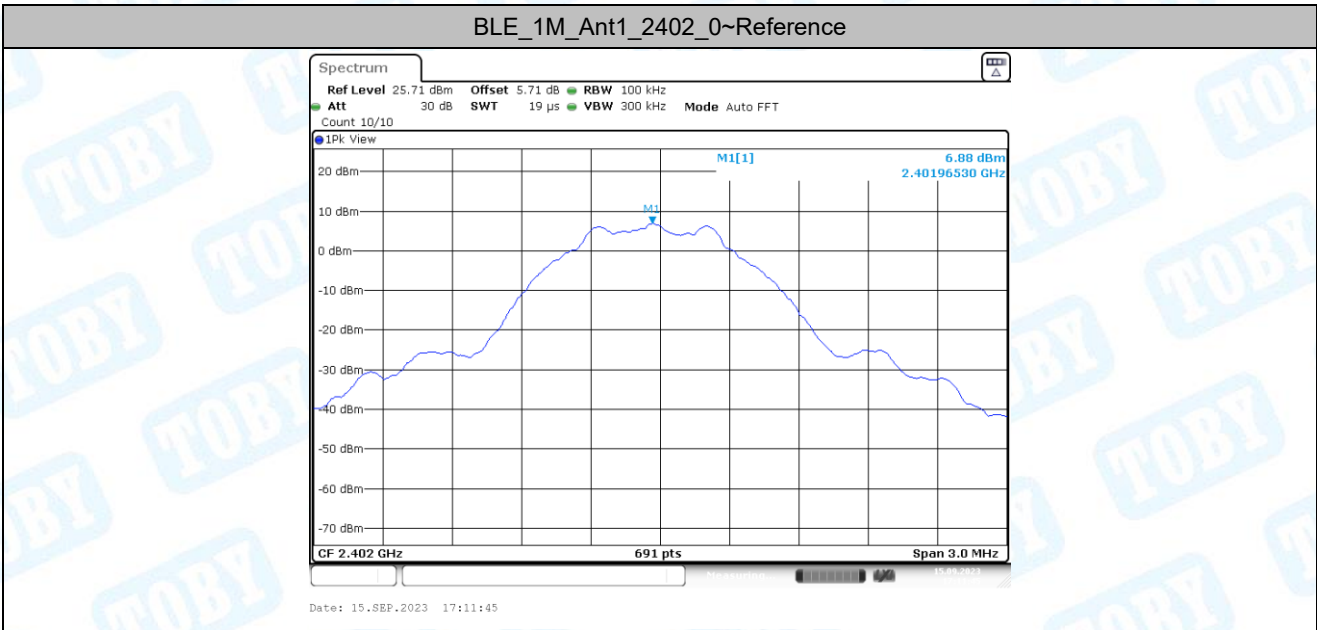
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6. Conducted Spurious Emission

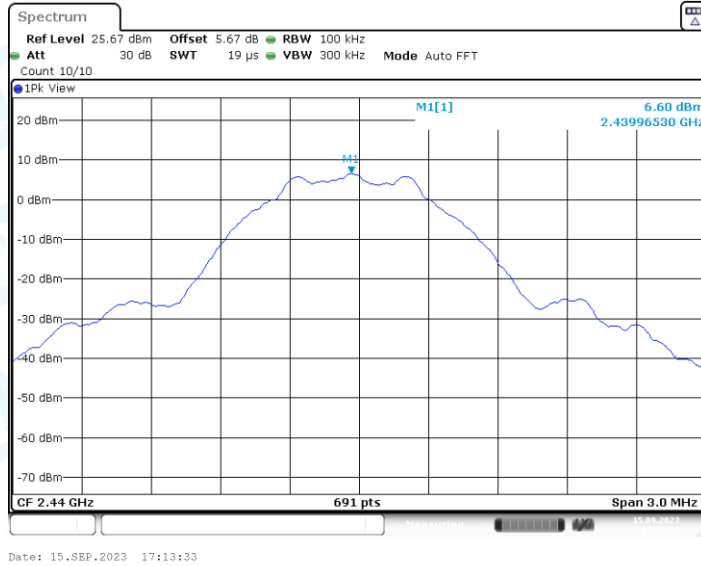
6.1. Test Result

Test Mode	Antenna	Channel	Freq. Range [MHz]	Ref. Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	6.88	6.88	---	PASS
			30~1000	6.88	-59.96	≤-13.12	PASS
			1000~26500	6.88	-54.03	≤-13.12	PASS
		2440	Reference	6.60	6.60	---	PASS
			30~1000	6.60	-59.6	≤-13.4	PASS
			1000~26500	6.60	-54.07	≤-13.4	PASS
		2480	Reference	6.49	6.49	---	PASS
			30~1000	6.49	-60.06	≤-13.51	PASS
			1000~26500	6.49	-52.13	≤-13.51	PASS
BLE_2M	Ant1	2402	Reference	6.87	6.87	---	PASS
			30~1000	6.87	-59.7	≤-13.13	PASS
			1000~26500	6.87	-53.87	≤-13.13	PASS
		2440	Reference	6.59	6.59	---	PASS
			30~1000	6.59	-59.47	≤-13.41	PASS
			1000~26500	6.59	-54.39	≤-13.41	PASS
		2480	Reference	6.49	6.49	---	PASS
			30~1000	6.49	-59.75	≤-13.51	PASS
			1000~26500	6.49	-54.04	≤-13.51	PASS

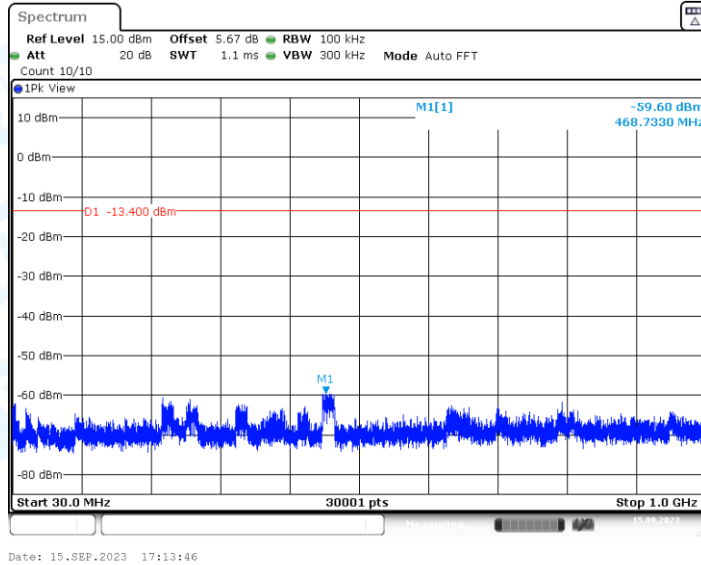
6.2. Test Graphs



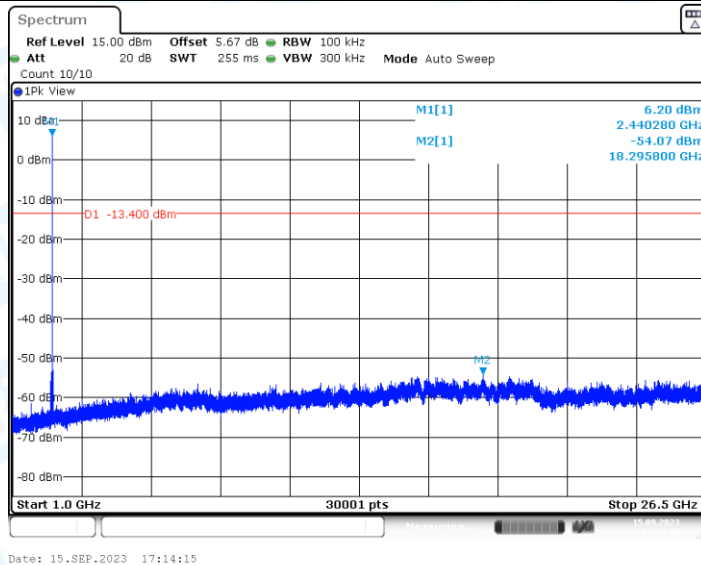
BLE_1M_Ant1_2440_0~Reference



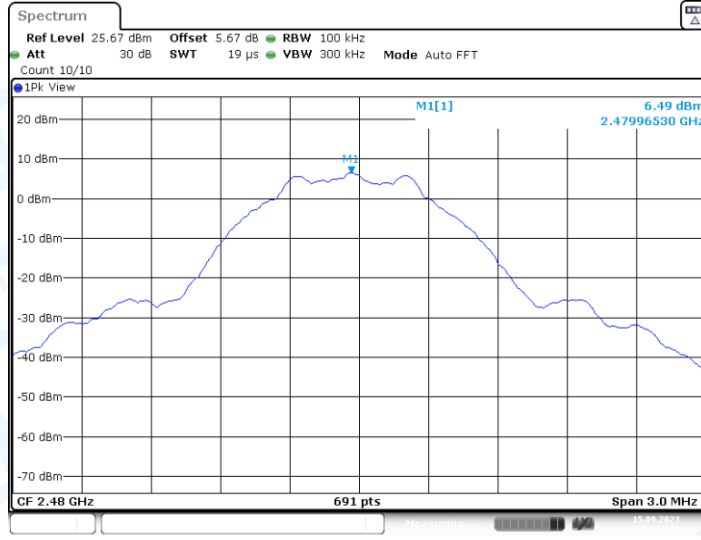
BLE_1M_Ant1_2440_30~1000



BLE_1M_Ant1_2440_1000~26500

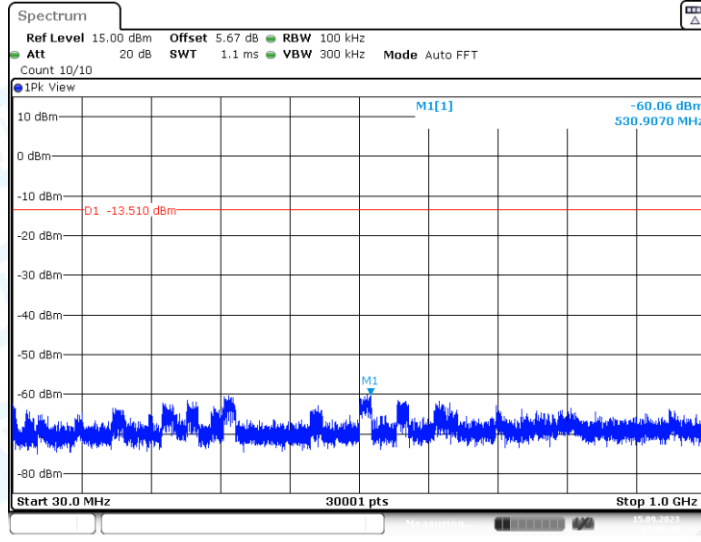


BLE_1M_Ant1_2480_0~Reference



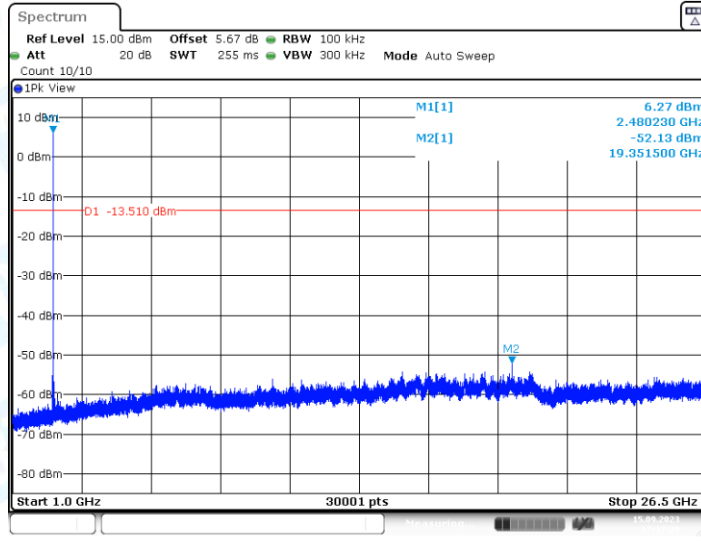
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BLE_1M_Ant1_2480_30~1000



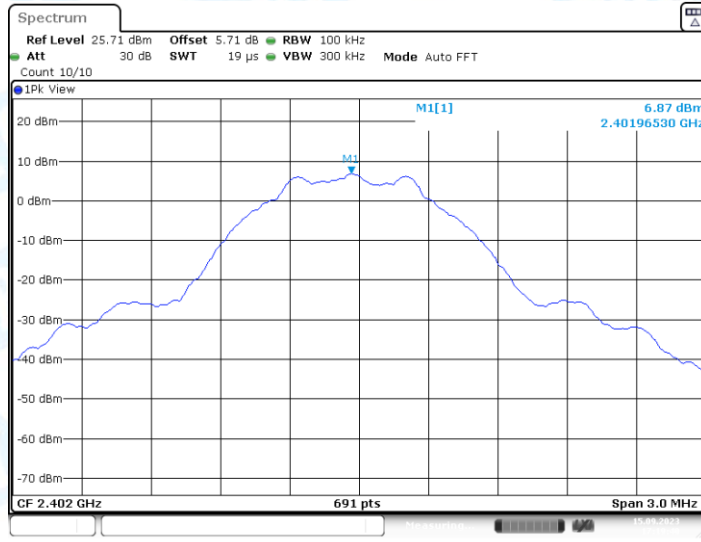
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BLE_1M_Ant1_2480_1000~26500



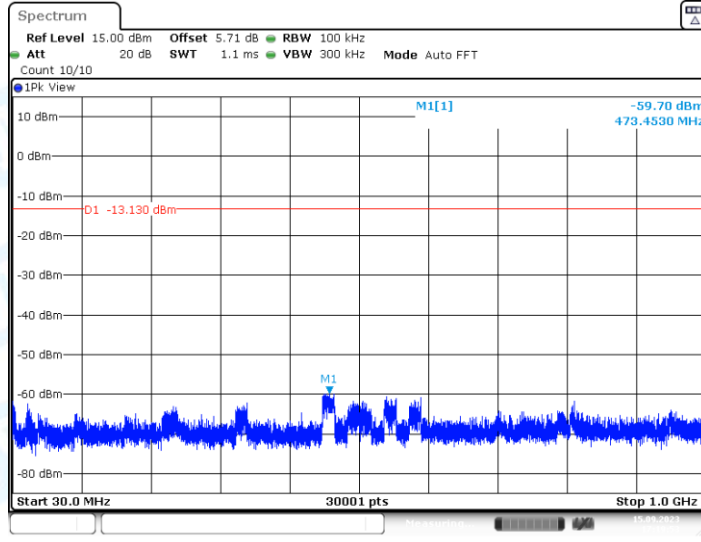
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BLE_2M_Ant1_2402_0~Reference



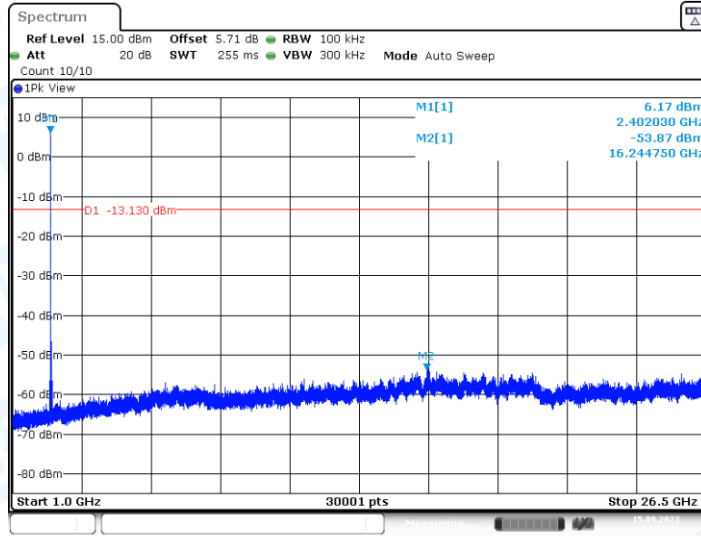
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BLE_2M_Ant1_2402_30~1000



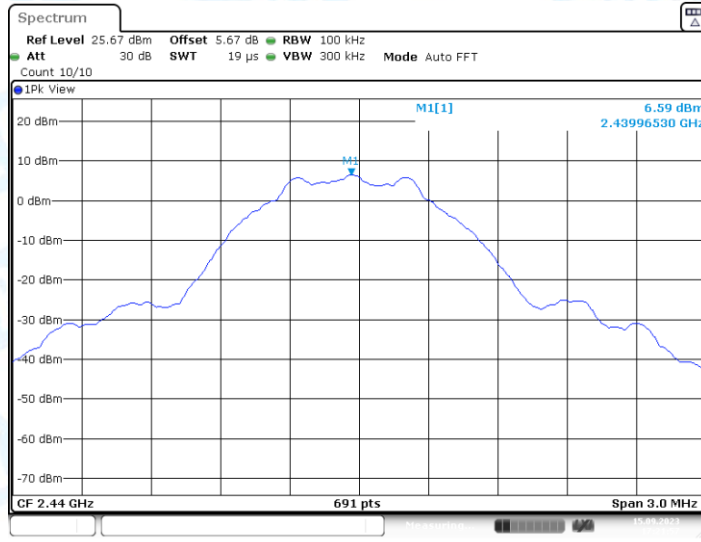
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BLE_2M_Ant1_2402_1000~26500

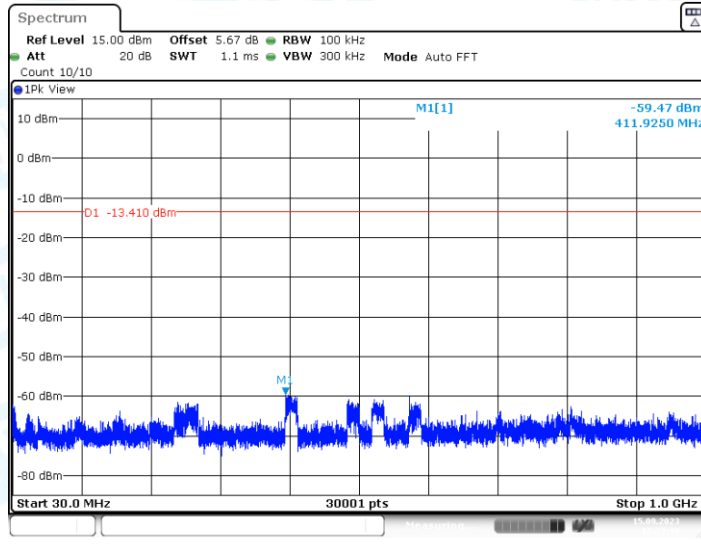


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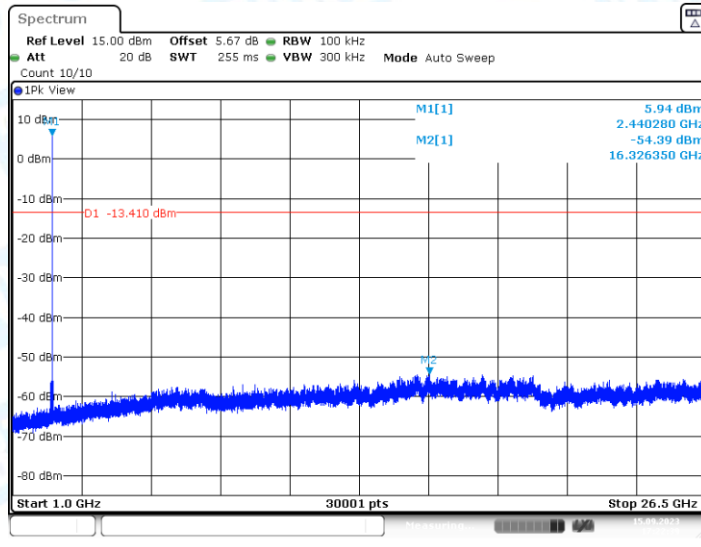
BLE_2M_Ant1_2440_0~Reference



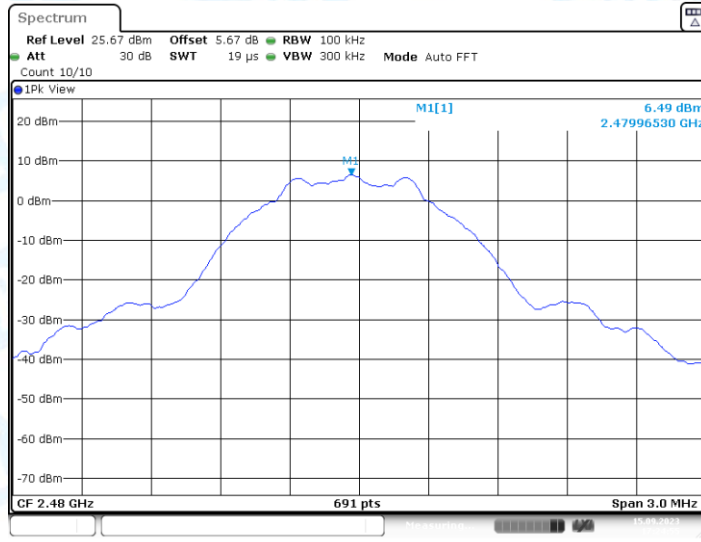
BLE_2M_Ant1_2440_30~1000



BLE_2M_Ant1_2440_1000~26500

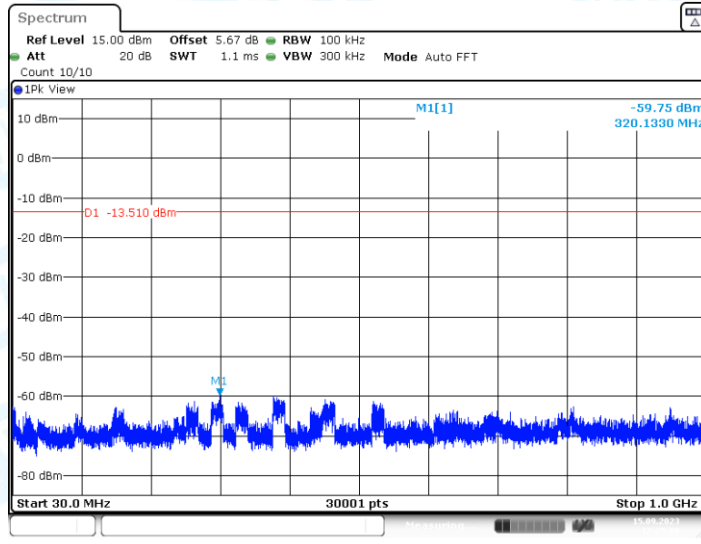


BLE_2M_Ant1_2480_0~Reference



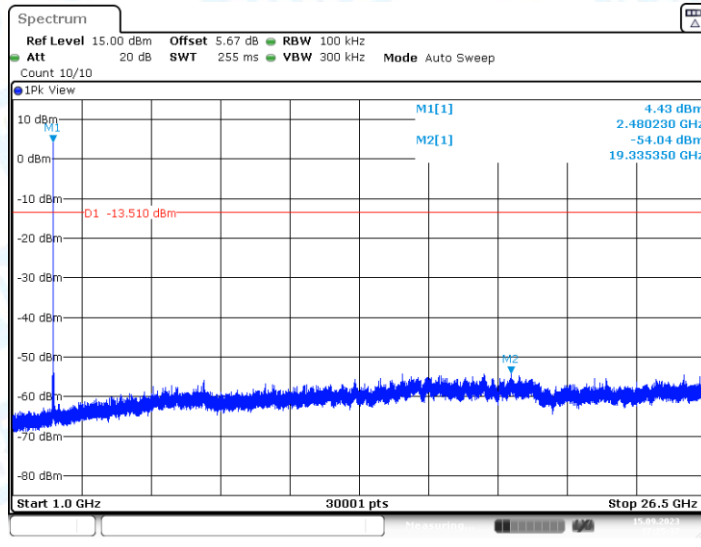
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BLE_2M_Ant1_2480_30~1000



Date: 15.SEP.2023 17:25:08

BLE_2M_Ant1_2480_1000~26500



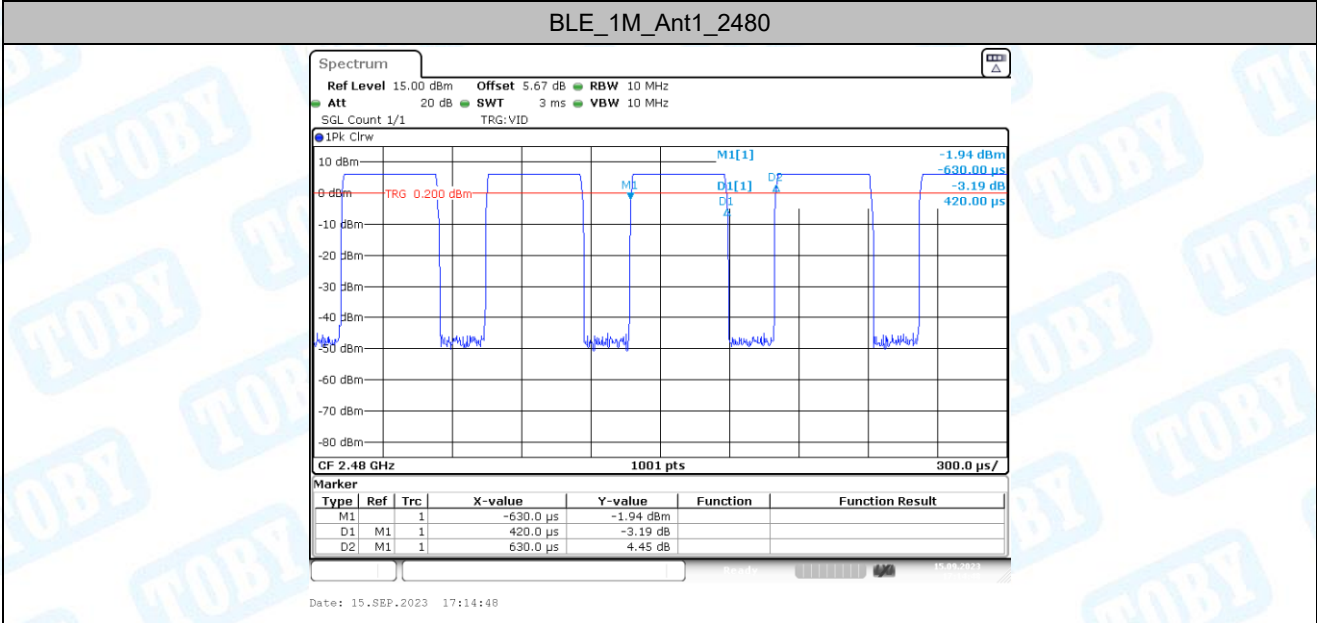
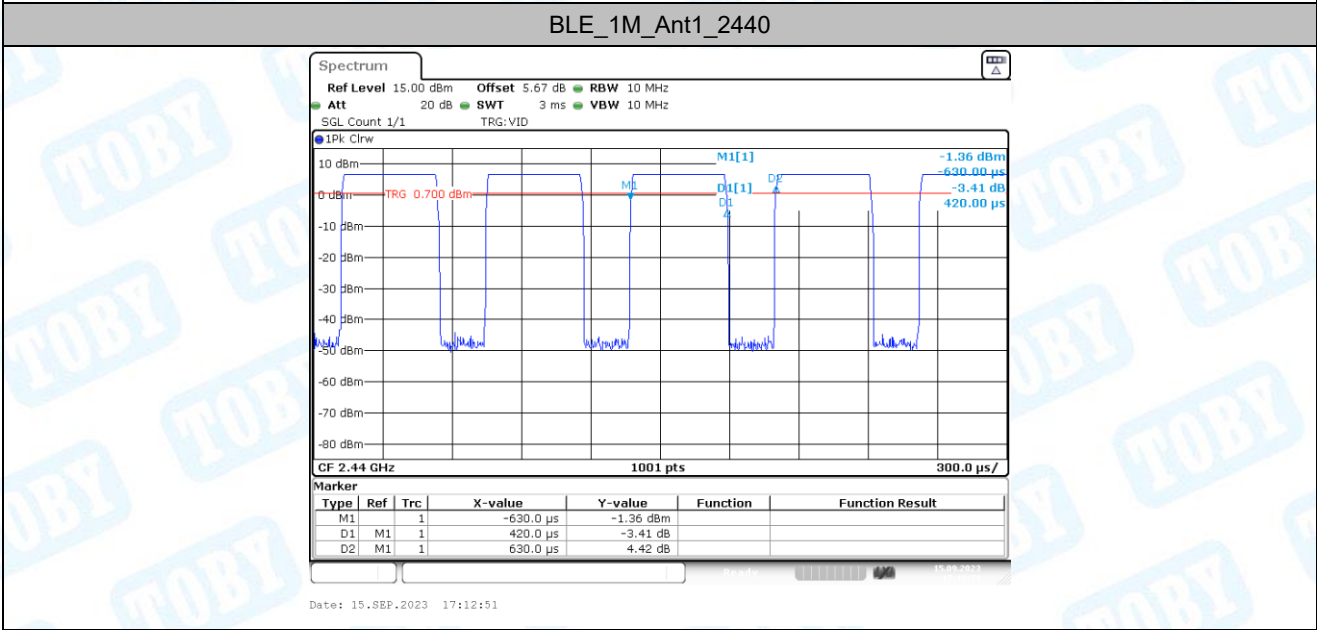
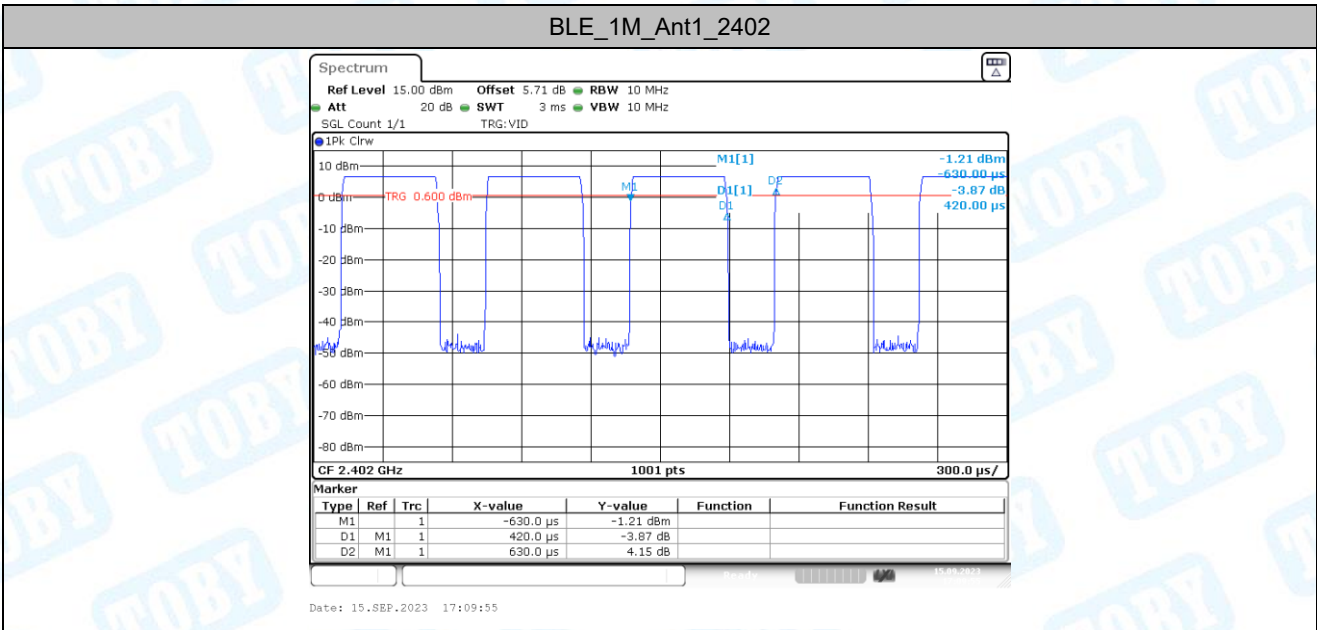
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7. Duty Cycle

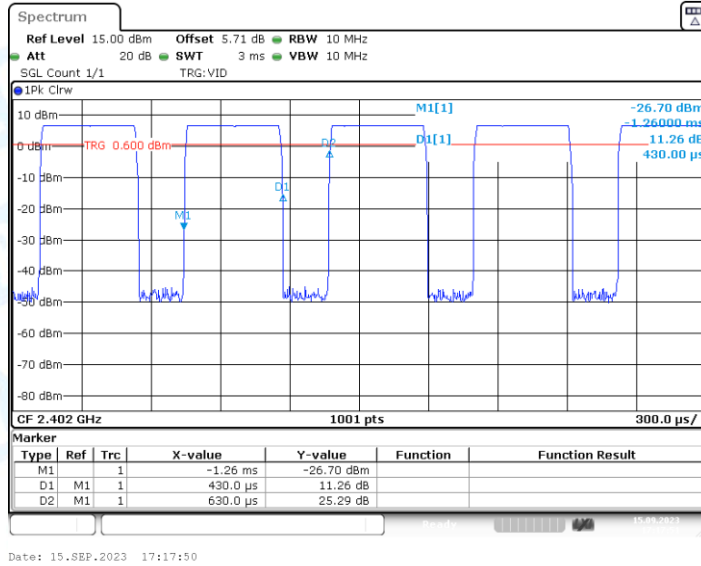
7.1. Test Result

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
BLE_1M	Ant1	2402	0.42	0.63	66.67	---	---
		2440	0.42	0.63	66.67	---	---
		2480	0.42	0.63	66.67	---	---
BLE_2M	Ant1	2402	0.43	0.63	68.25	---	---
		2440	0.42	0.63	66.67	---	---
		2480	0.42	0.63	66.67	---	---

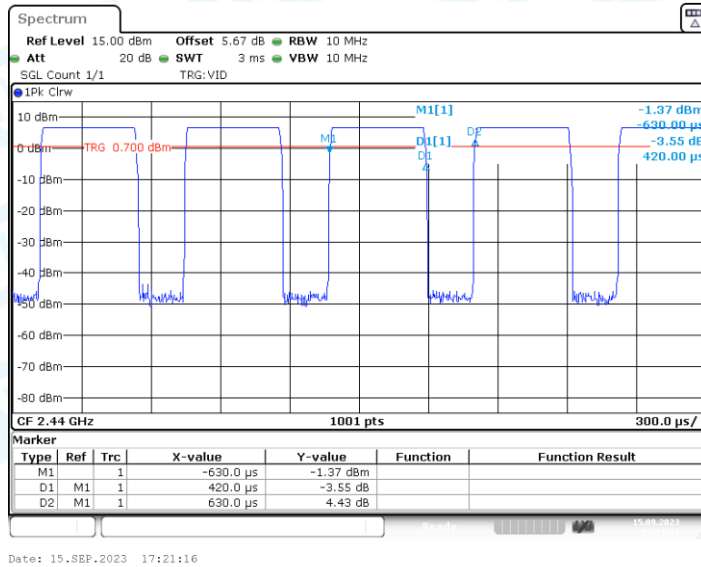
7.2. Test Graphs



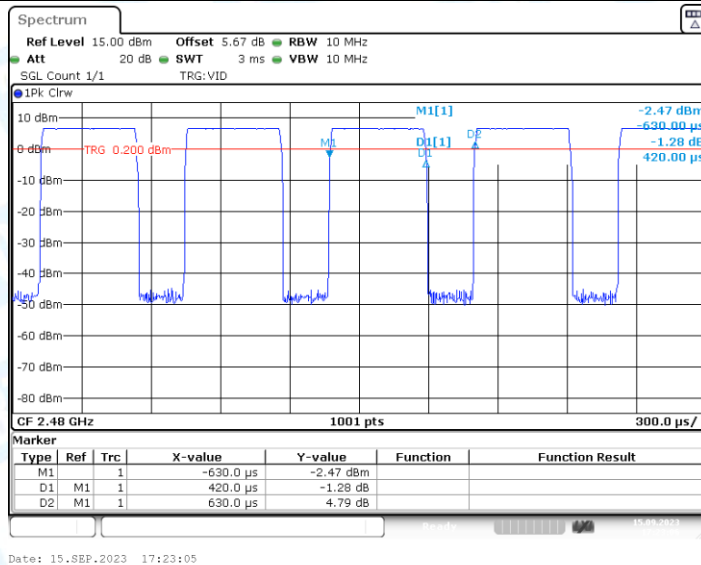
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



8. Emissions in Restricted Bands

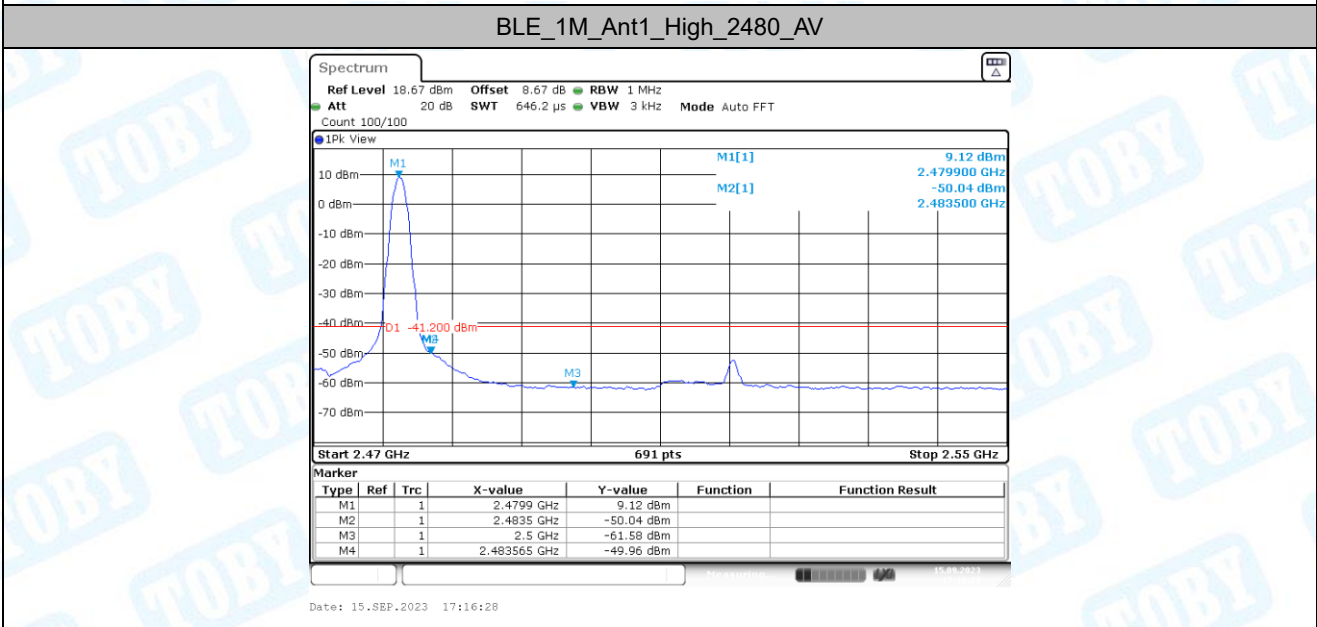
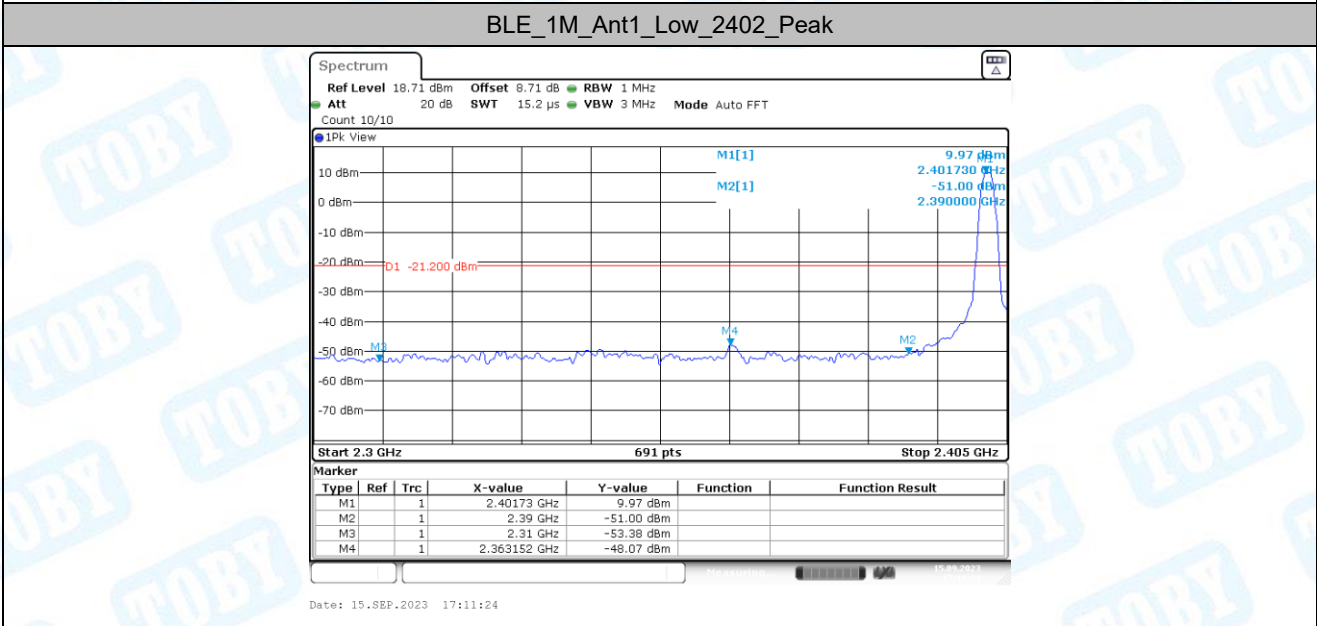
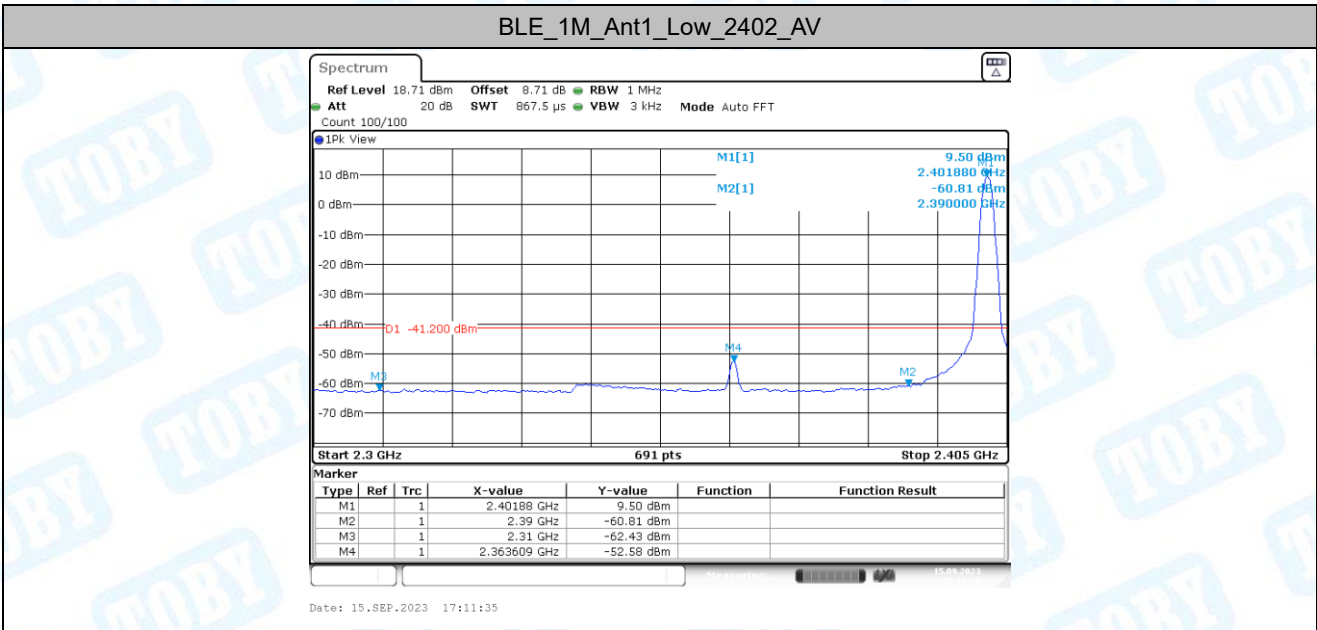
8.1. Test Result

Test Mode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-62.43	≤-41.20	PASS
				AV	2363.609	-52.58	≤-41.20	PASS
				AV	2390.000	-60.81	≤-41.20	PASS
				Peak	2310.000	-53.38	≤-21.20	PASS
				Peak	2363.152	-48.07	≤-21.20	PASS
				Peak	2390.000	-51	≤-21.20	PASS
		High	2480	AV	2483.500	-50.04	≤-41.20	PASS
				AV	2483.565	-49.96	≤-41.20	PASS
				AV	2500.000	-61.58	≤-41.20	PASS
				Peak	2483.500	-40.84	≤-21.20	PASS
				Peak	2483.681	-39.99	≤-21.20	PASS
				Peak	2500.000	-51.13	≤-21.20	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-62.67	≤-41.20	PASS
				AV	2363.609	-52.66	≤-41.20	PASS
				AV	2390.000	-60.88	≤-41.20	PASS
				Peak	2310.000	-52.04	≤-21.20	PASS
				Peak	2363.000	-47.47	≤-21.20	PASS
				Peak	2390.000	-51.27	≤-21.20	PASS
		High	2480	AV	2483.500	-49.85	≤-41.20	PASS
				AV	2483.565	-49.99	≤-41.20	PASS
				AV	2500.000	-61.67	≤-41.20	PASS
				Peak	2483.500	-39.98	≤-21.20	PASS
				Peak	2483.565	-40.13	≤-21.20	PASS
				Peak	2500.000	-51.62	≤-21.20	PASS

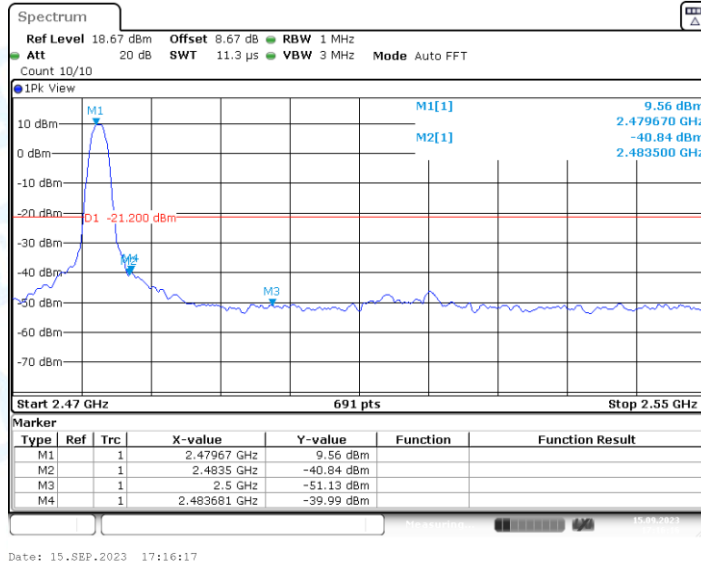
Note:

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.

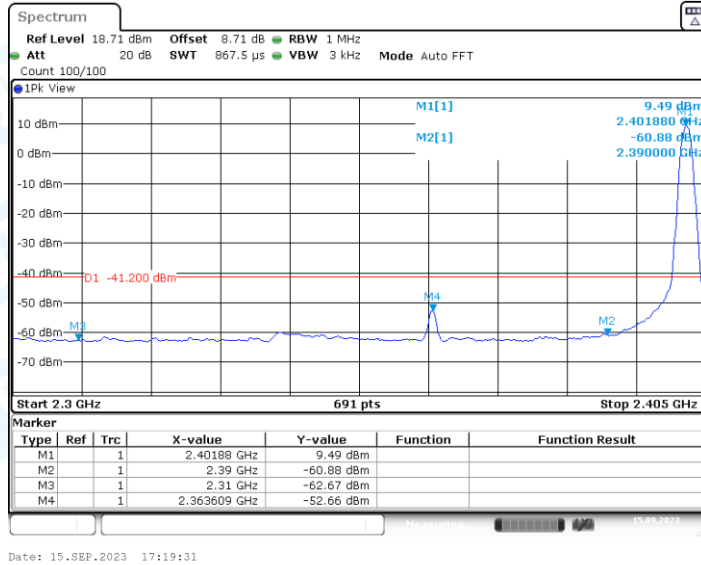
8.2. Test Graphs



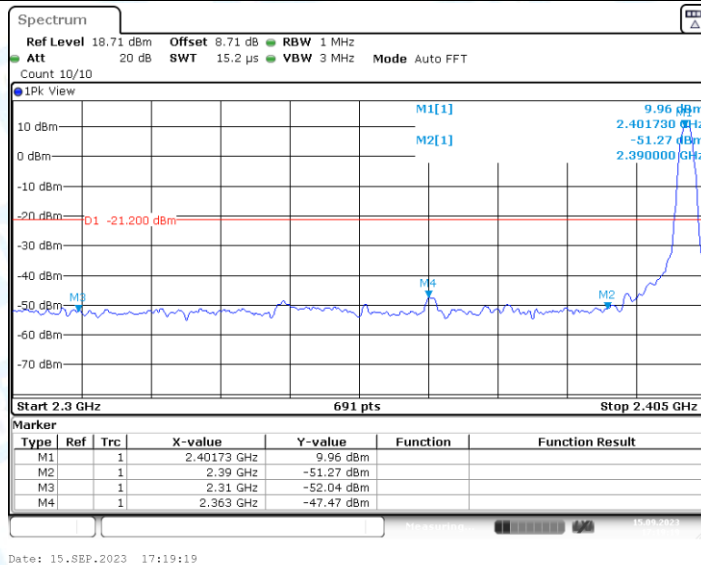
BLE_1M_Ant1_High_2480_Peak



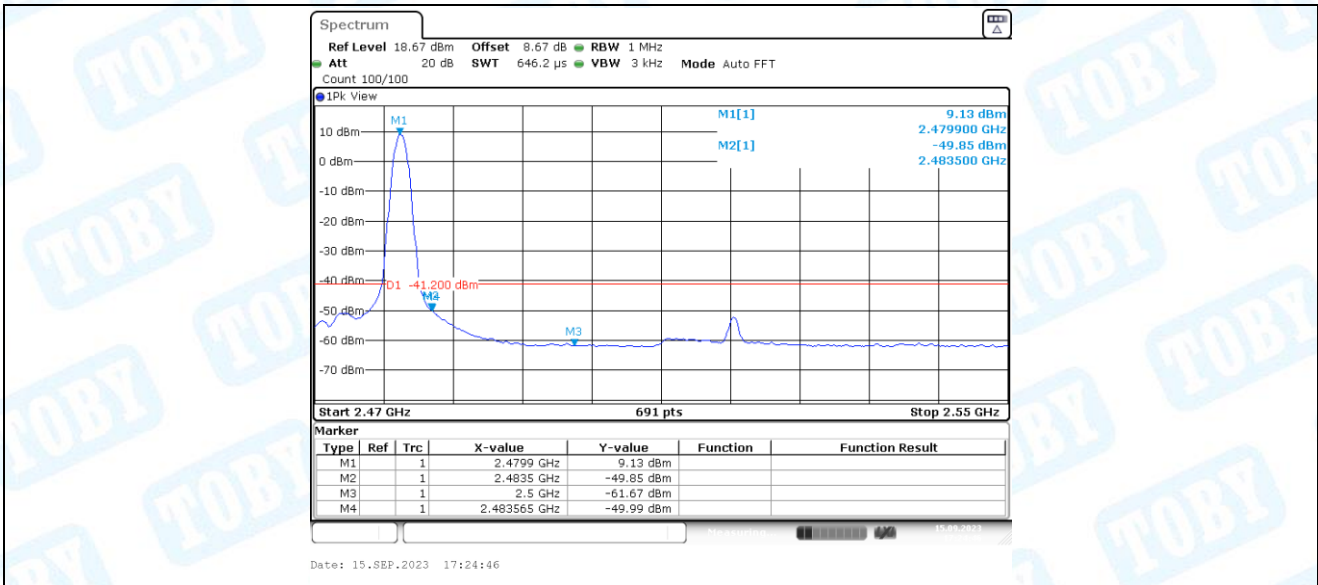
BLE_2M_Ant1_Low_2402_AV



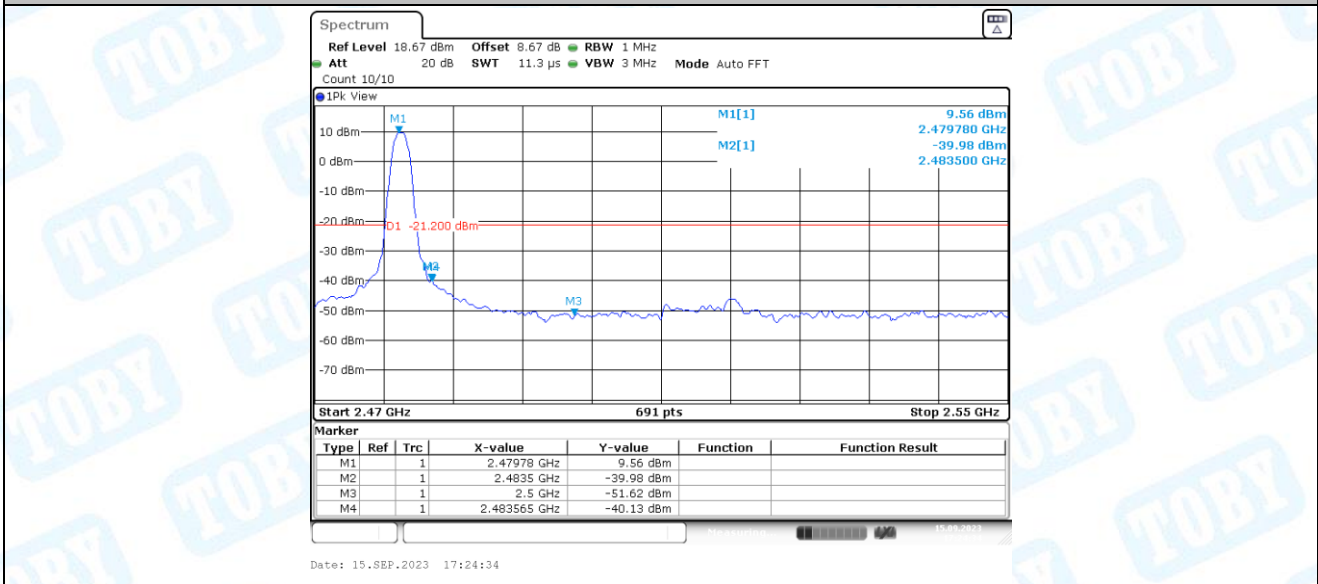
BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak



-----End of the report-----