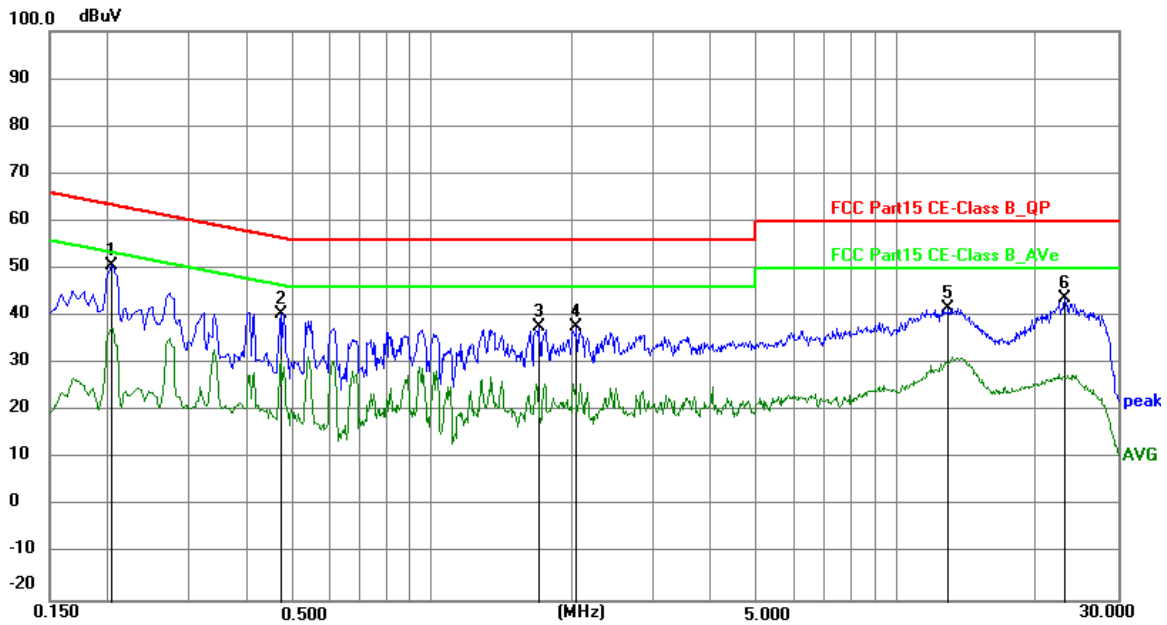




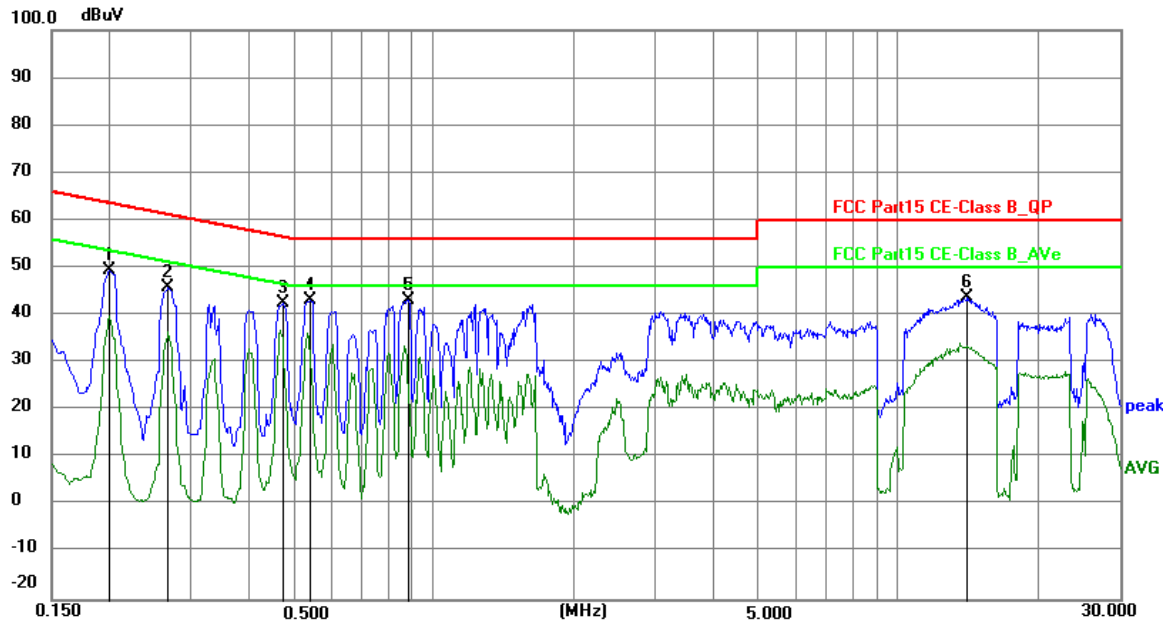
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

Polarization: Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.2040	40.94	9.63	50.57	63.45	-12.88	peak	P	
2	0.4695	30.91	9.62	40.53	56.52	-15.99	peak	P	
3	1.7070	28.12	9.65	37.77	56.00	-18.23	peak	P	
4	2.0490	28.00	9.65	37.65	56.00	-18.35	peak	P	
5	12.9480	31.95	9.74	41.69	60.00	-18.31	peak	P	
6	23.0280	33.94	9.77	43.71	60.00	-16.29	peak	P	

Polarization: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1995	39.68	9.63	49.31	63.63	-14.32	peak	P	
2	0.2670	36.19	9.62	45.81	61.21	-15.40	peak	P	
3	0.4740	32.92	9.62	42.54	56.44	-13.90	peak	P	
4	0.5414	33.40	9.62	43.02	56.00	-12.98	peak	P	
5 *	0.8834	33.66	9.64	43.30	56.00	-12.70	peak	P	
6	14.0820	33.88	9.76	43.64	60.00	-16.36	peak	P	

APPENDIX B - RADIATED EMISSION -9 KHZ TO 30 MHZ

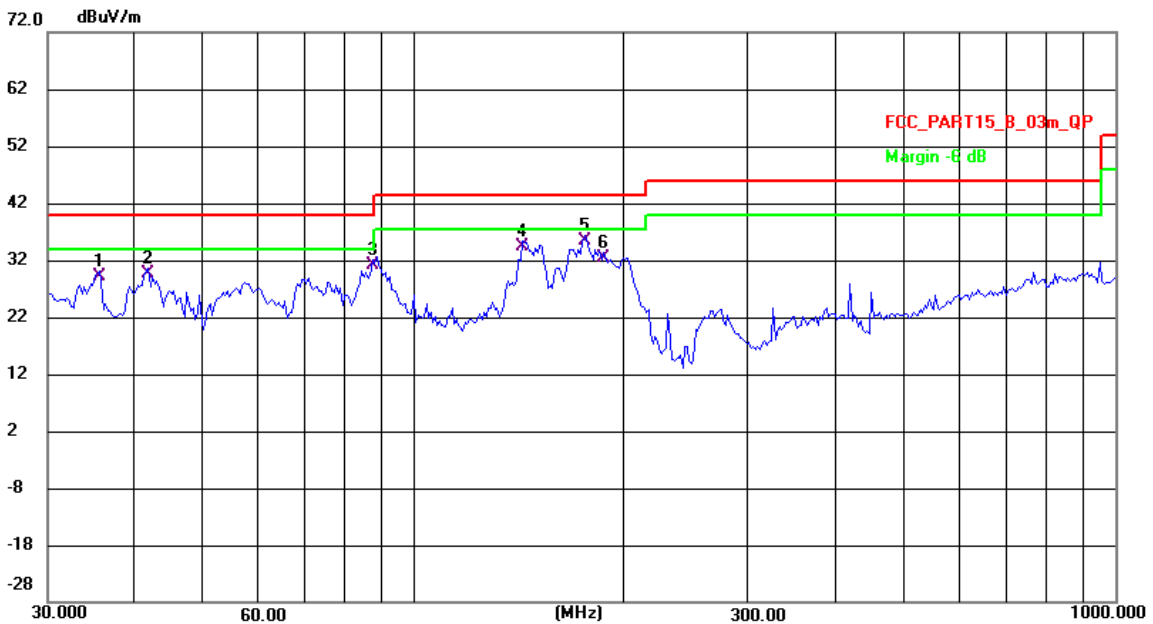
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

APPENDIX C - RADIATED EMISSION-30 MHZ TO 1000 MHZ

Only show the worst mode:

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Vertical
-----------	--------------------------	--------------	----------

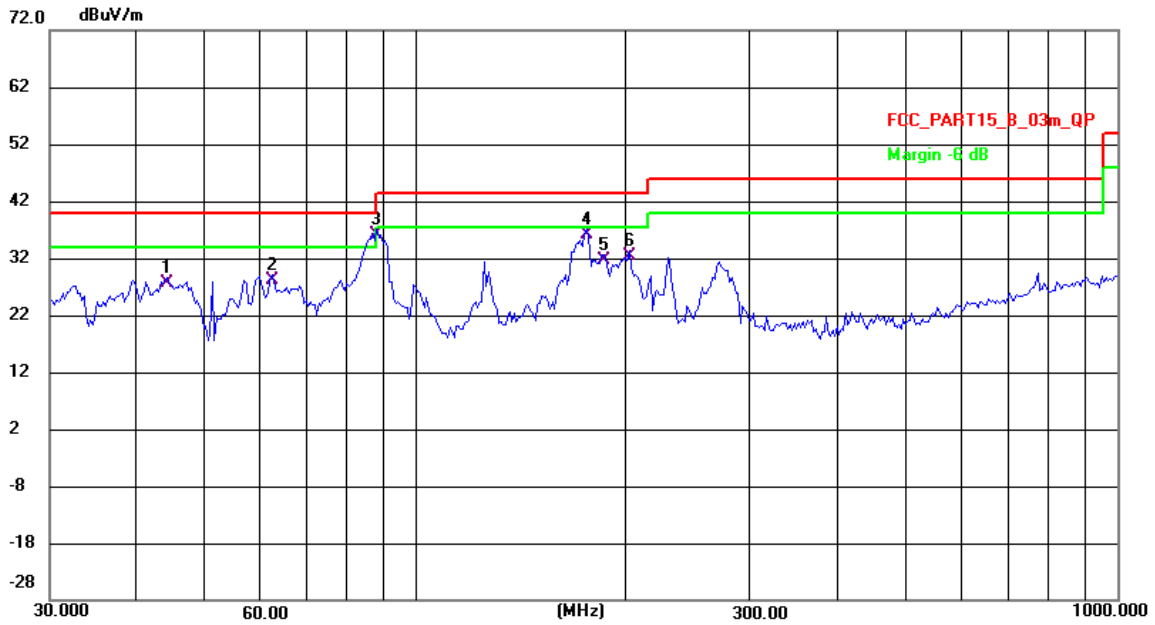


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	35.5112	52.05	-22.86	29.19	40.00	-10.81	QP	100	144	P	
2	41.7406	51.68	-22.12	29.56	40.00	-10.44	QP	100	174	P	
3	87.2980	56.82	-25.78	31.04	40.00	-8.96	QP	100	195	P	
4	142.7692	55.72	-21.39	34.33	43.50	-9.17	QP	100	347	P	
5 *	175.0404	57.02	-21.75	35.27	43.50	-8.23	QP	100	108	P	
6	186.4684	55.69	-23.43	32.26	43.50	-11.24	QP	100	151	P	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX Mode_1Mbps Channel 00	Polarization	Horizontal
-----------	--------------------------	--------------	------------



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	44.1544	49.81	-22.20	27.61	40.00	-12.39	QP	100	254	P	
2	62.3038	51.03	-22.88	28.15	40.00	-11.85	QP	100	219	P	
3 *	87.9136	61.94	-25.76	36.18	40.00	-3.82	QP	200	201	P	
4	175.0404	57.84	-21.75	36.09	43.50	-7.41	QP	200	77	P	
5	185.1626	54.88	-23.25	31.63	43.50	-11.87	QP	200	112	P	
6	201.4539	57.20	-24.74	32.46	43.50	-11.04	QP	100	276	P	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX D - RADIATED EMISSION - ABOVE 1000 MHZ

Test Result of RADIATED EMISSION-1000MHz TO 25GHz

Test Mode : GFSK TX Low

No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	4804	V	90.57	-27.15	63.42	74.00	-10.58	Peak
2	4804	V	68.25	-27.15	41.10	54.00	-12.90	Avg
3	7206	--	--	--	--	--	--	--
4	9608	--	--	--	--	--	--	--
5	4804	H	89.26	-27.15	62.11	74.00	-11.89	Peak
6	4804	H	68.65	-27.15	41.50	54.00	-12.50	Avg
7	7206	--	--	--	--	--	--	--
8	9608	--	--	--	--	--	--	--

Test Mode : GFSK TX Mid

1	4880	V	91.02	-27.83	63.19	74.00	-10.81	Peak
2	4880	V	72.36	-27.83	44.53	54.00	-9.47	Avg
3	7320	--	--	--	--	--	--	--
4	9760	--	--	--	--	--	--	--
5	4880	H	89.73	-27.83	61.90	74.00	-12.10	Peak
6	4880	H	68.05	-27.83	40.22	54.00	-13.78	Avg
7	7320	--	--	--	--	--	--	--
8	9760	--	--	--	--	--	--	--

Test Mode : GFSK TX High

1	4960	V	95.68	-28.45	67.23	74.00	-6.77	Peak
2	4960	V	74.25	-28.45	45.80	54.00	-8.20	Avg
3	7440	--	--	--	--	--	--	--
4	9920	--	--	--	--	--	--	--
5	4960	H	93.24	-28.45	64.79	74.00	-9.21	Peak
6	4960	H	73.05	-28.45	44.60	54.00	-9.40	Avg
7	7440	--	--	--	--	--	--	--
8	9920	--	--	--	--	--	--	--

Note

1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.

:

2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.
Result=Reading + Correct Factor. Margin= Result-Limit.

Test Result of Radiated Spurious at Band edges

Test Results				PASS				
Frequency Range				2310MHz~2410MHz				
Test Mode				1Mbps: GFSK TX 2402MHz				
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	76.32	-21.47	54.85	74.00	-19.15	Peak
2	2390	H	--	-21.47	--	54.00	--	Avg
3	2400	H	77.02	-26.12	50.90	74.00	-23.10	Peak
4	2400	H	--	-26.12	--	54.00	--	Avg
1	2390	V	75.31	-21.47	53.84	74.00	-20.16	Peak
2	2390	V	--	-21.47	--	54.00	--	Avg
3	2400	V	76.35	-26.12	50.23	74.00	-23.77	Peak
4	2400	V	--	-26.12	--	54.00	--	Avg

Test Results				PASS				
Frequency Range				2450MHz~2550MHz				
Test Mode				1Mbps: GFSK TX 2480MHz				
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2483.5	H	74.05	-25.29	48.76	74.00	-25.24	Peak
2	2483.5	H	--	-25.29	--	54.00	--	Avg
1	2483.5	V	73.96	-25.29	48.67	74.00	-25.33	Peak
2	2483.5	V	--	-25.29	--	54.00	--	Avg

Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.

2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.

Result=Reading + Correct Factor.

Margin= Result-Limit.

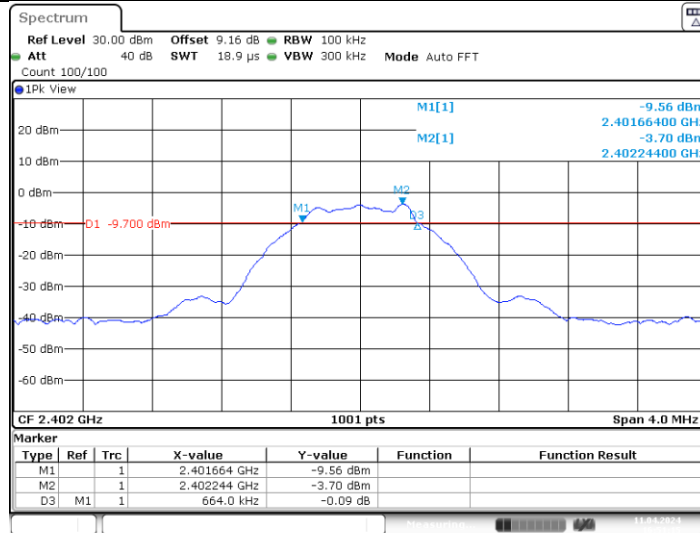
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.

APPENDIX E - BANDWIDTH

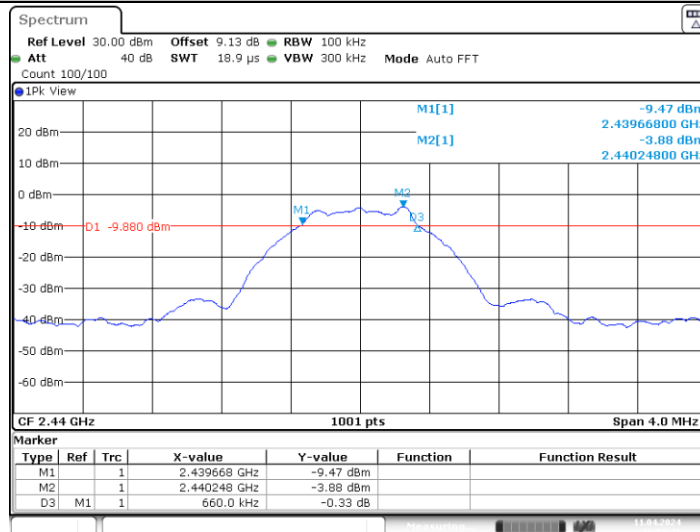
-6dB Bandwidth

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.66	2401.66	2402.33	0.5	PASS
		2440	0.66	2439.67	2440.33	0.5	PASS
		2480	0.66	2479.67	2480.33	0.5	PASS
BLE_2M	Ant1	2402	1.14	2401.44	2402.58	0.5	PASS
		2440	1.14	2439.44	2440.58	0.5	PASS
		2480	1.23	2479.35	2480.58	0.5	PASS

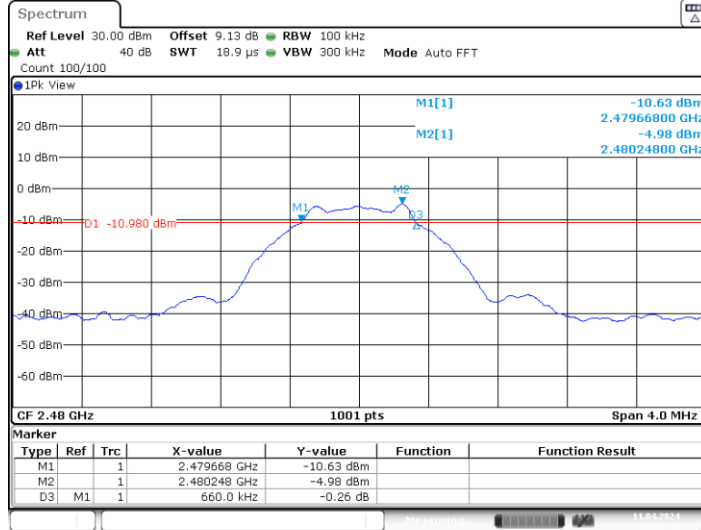
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440

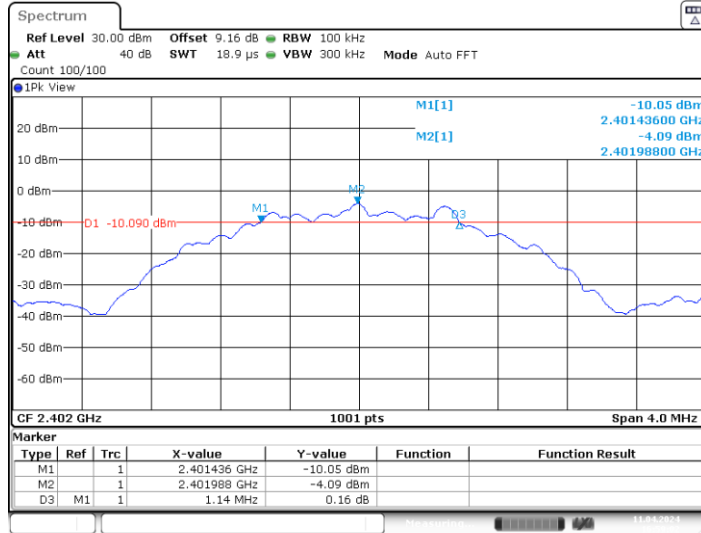


BLE_1M_Ant1_2480



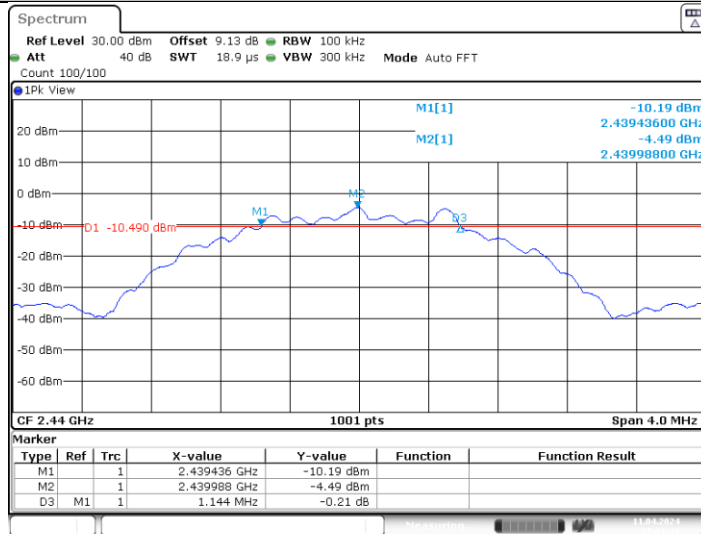
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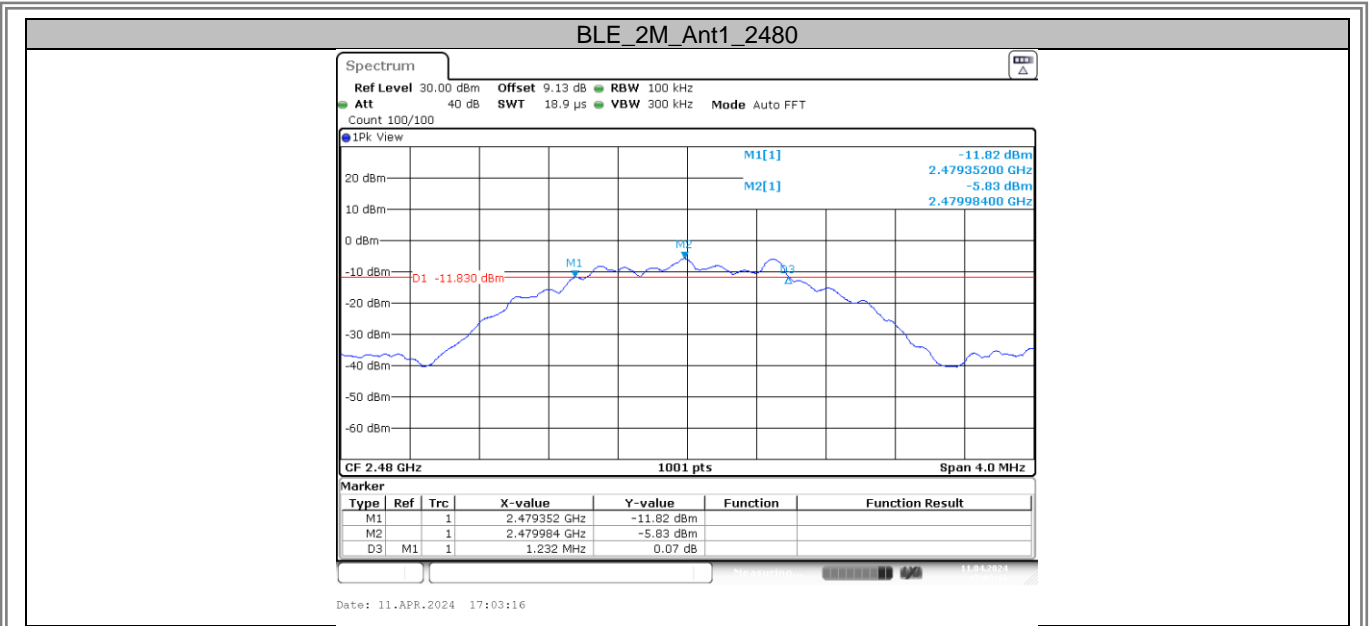


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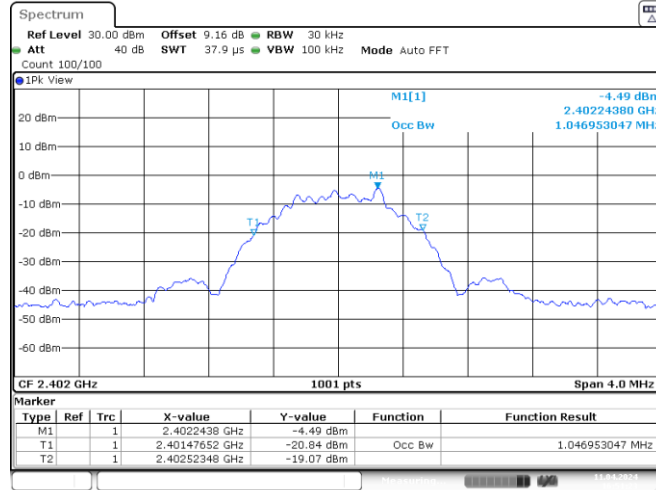


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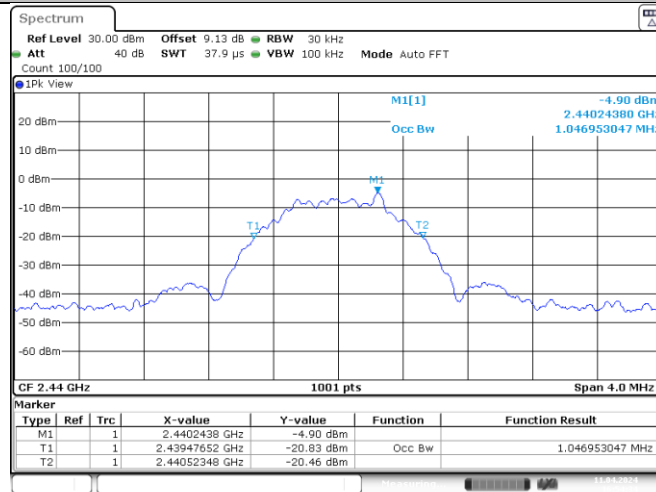


99% Occupied Bandwidth

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.047	2401.4765	2402.5235	---	---
		2440	1.047	2439.4765	2440.5235	---	---
		2480	1.051	2479.4725	2480.5235	---	---
BLE_2M	Ant1	2402	2.078	2400.9770	2403.0549	---	---
		2440	2.078	2438.9730	2441.0509	---	---
		2480	2.098	2478.9610	2481.0589	---	---

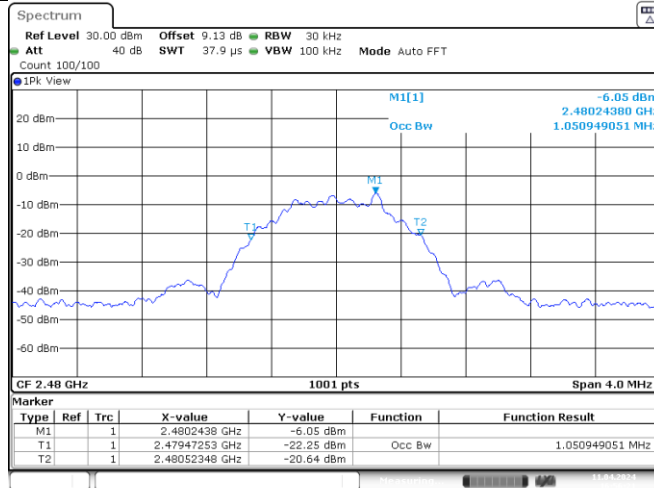
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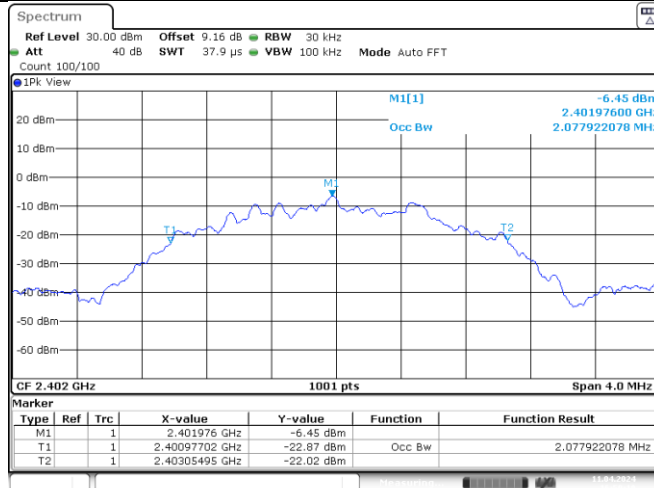
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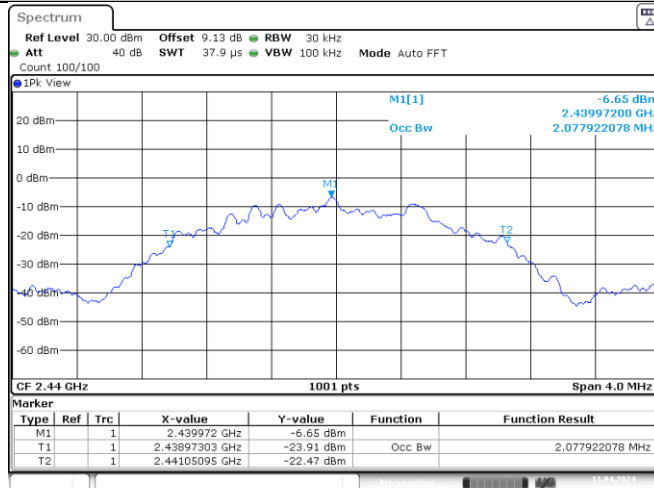
BLE_1M_Ant1_2480

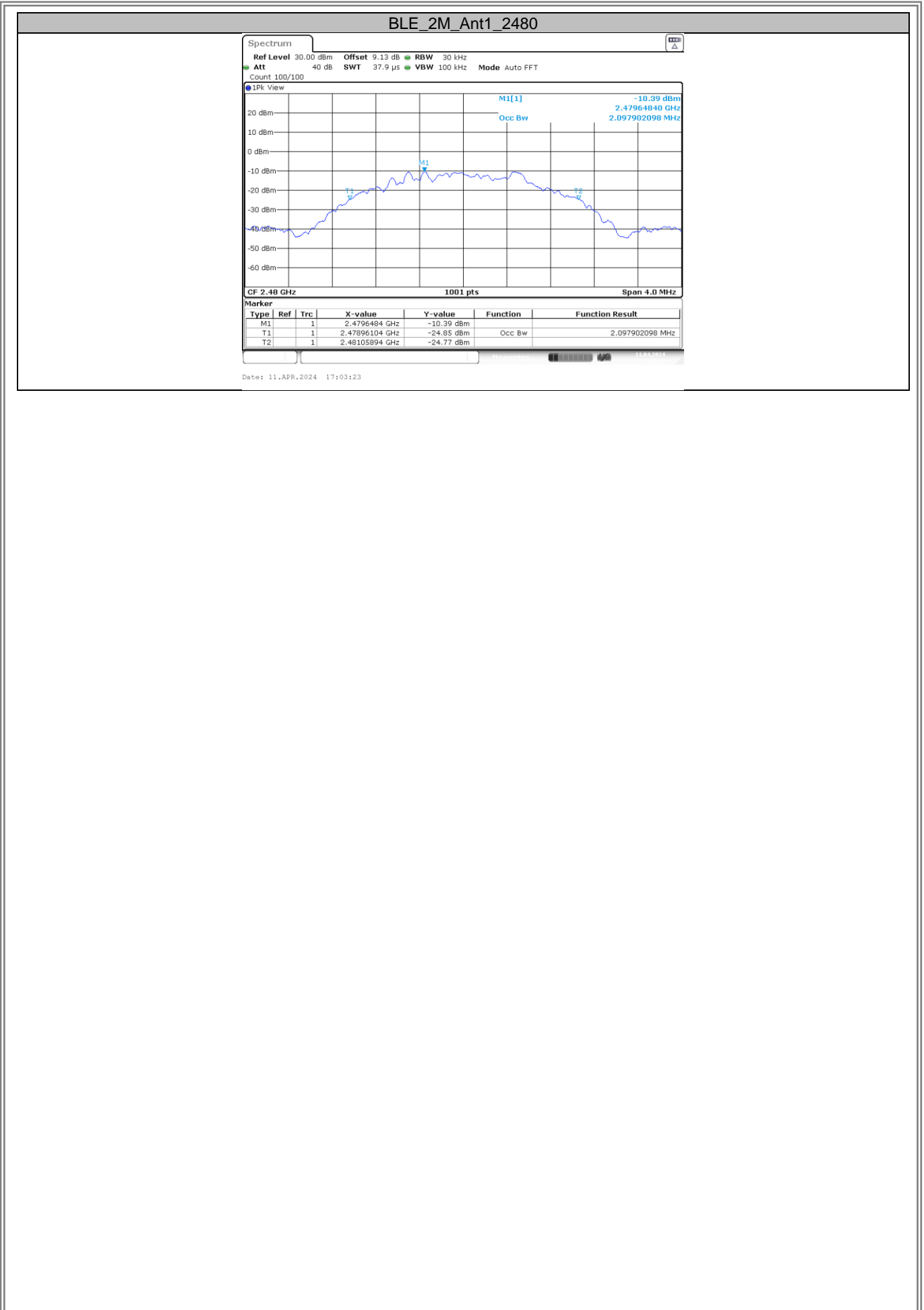


BLE_2M_Ant1_2402



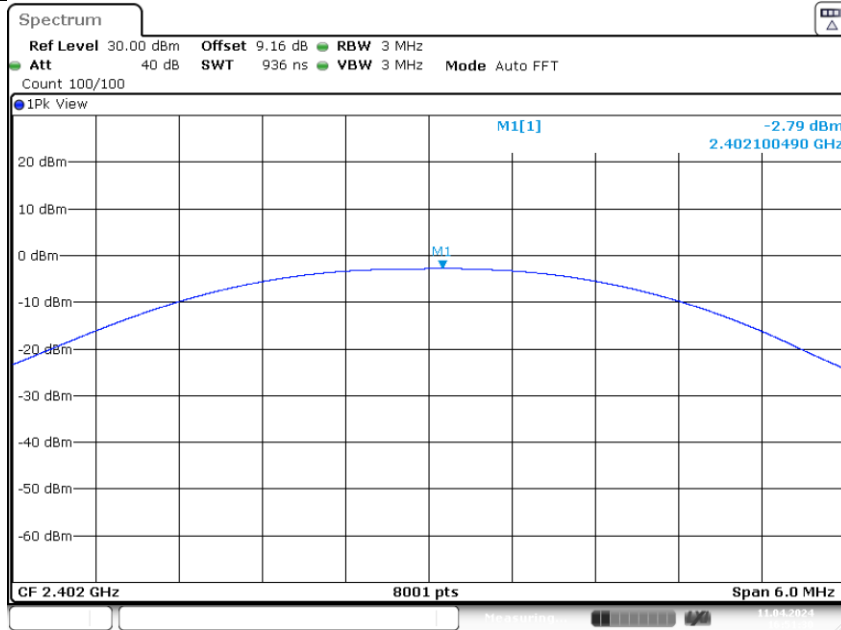
BLE_2M_Ant1_2440



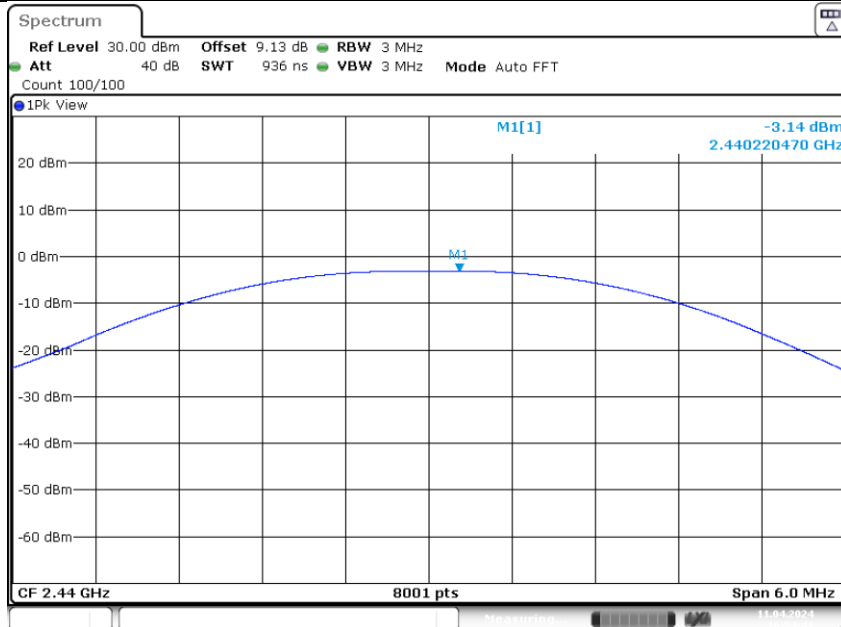


APPENDIX F - MAXIMUM OUTPUT POWER

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-2.79	≤30	PASS
		2440	-3.14	≤30	PASS
		2480	-4.22	≤30	PASS
BLE_2M	Ant1	2402	-2.90	≤30	PASS
		2440	-3.20	≤30	PASS
		2480	-4.25	≤30	PASS

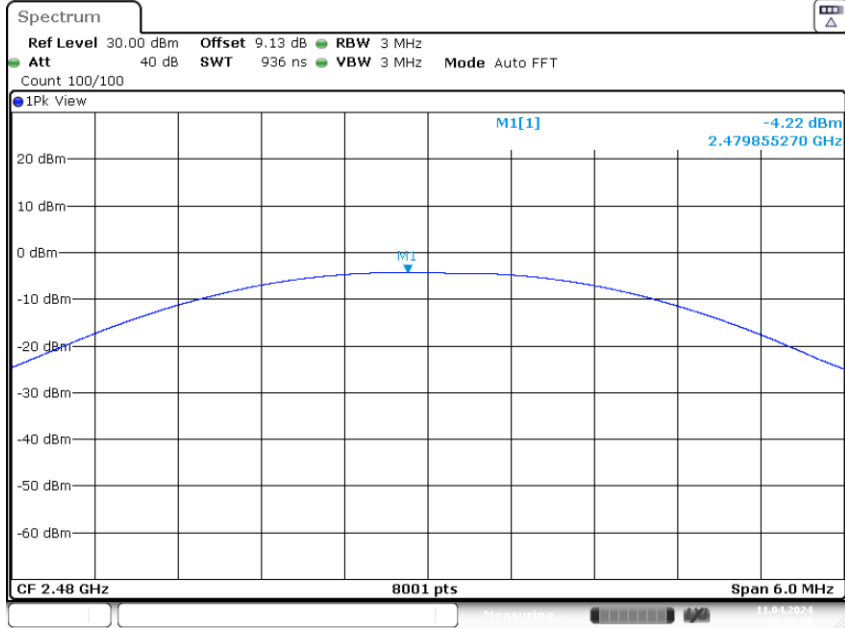
BLE_1M_Ant1_2402


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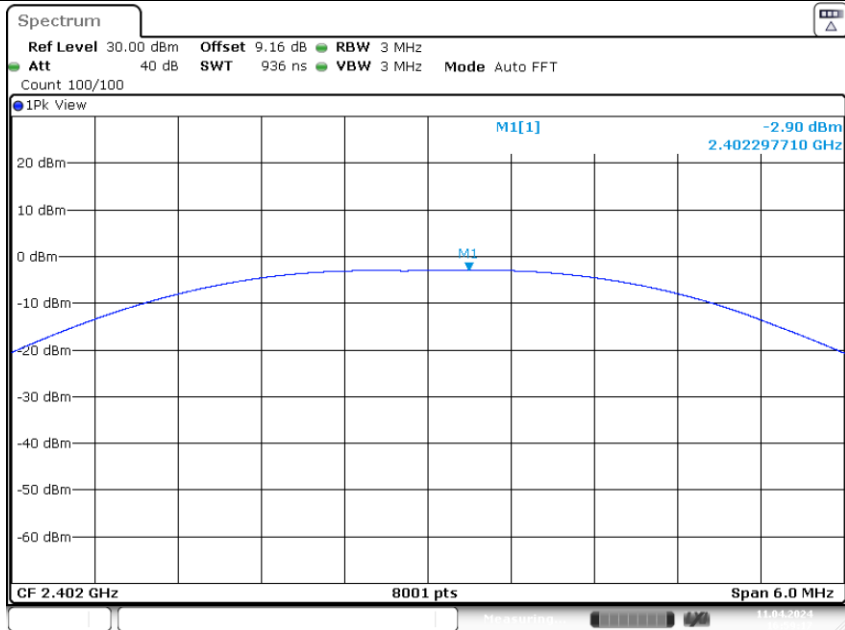
BLE_1M_Ant1_2440


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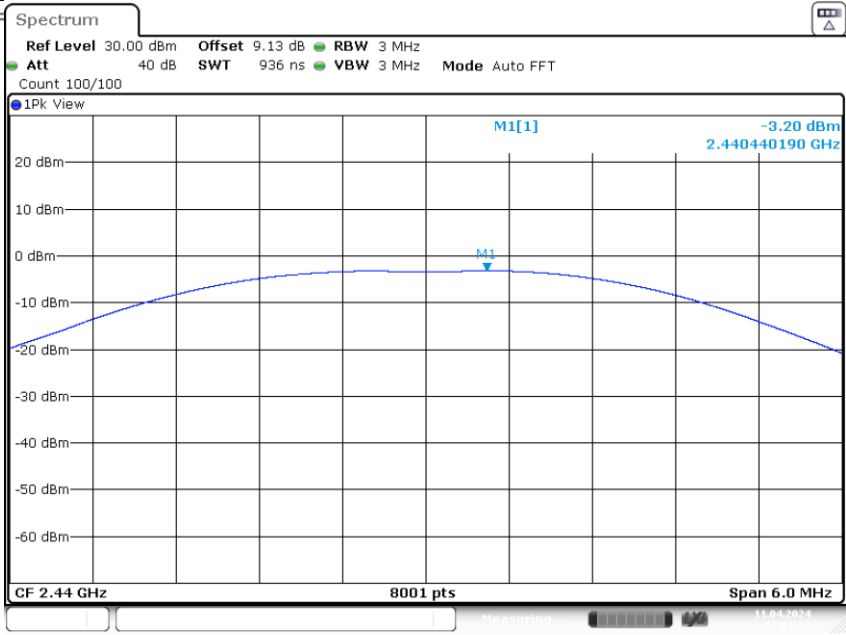
BLE_1M_Ant1_2480

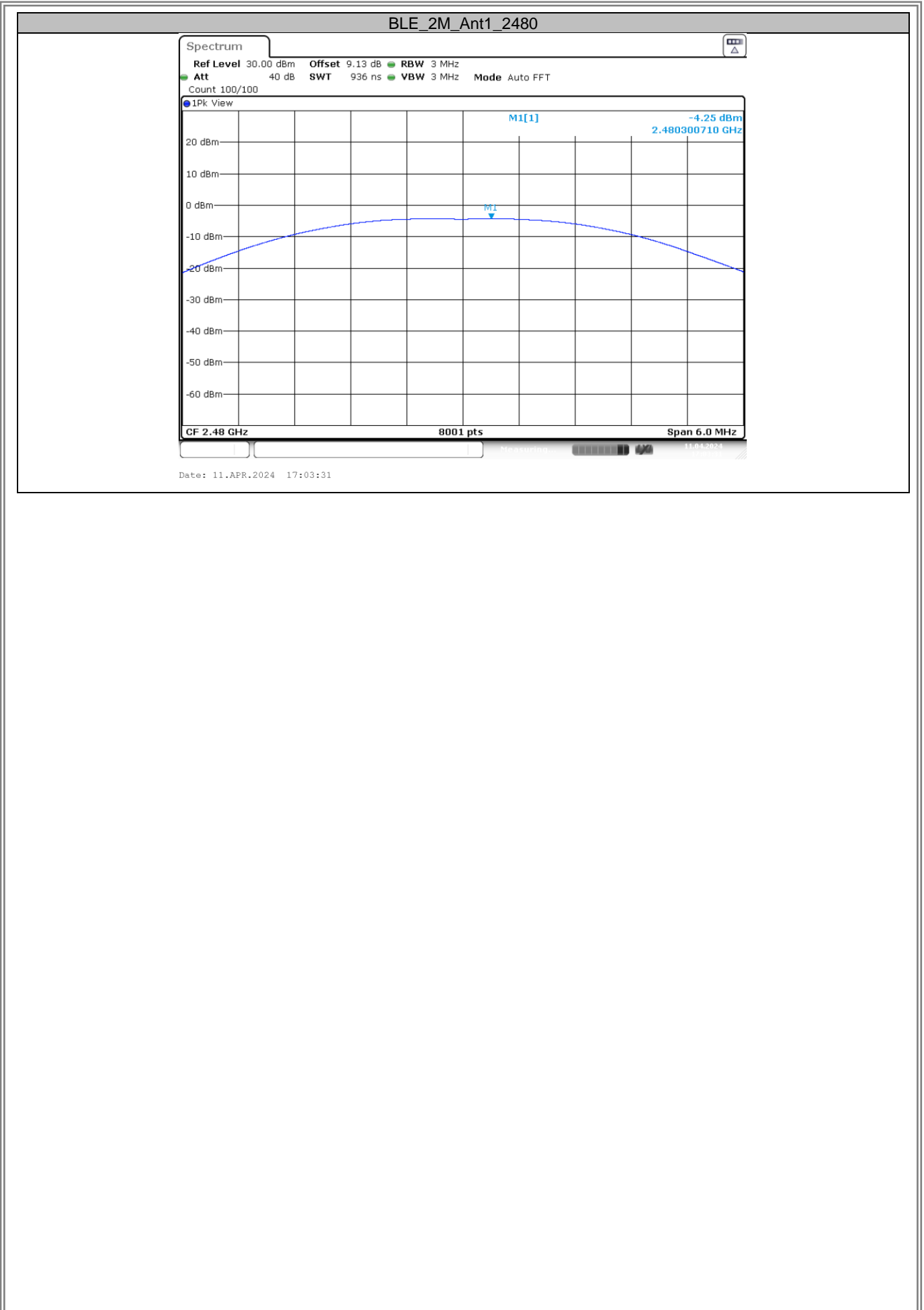


BLE_2M_Ant1_2402



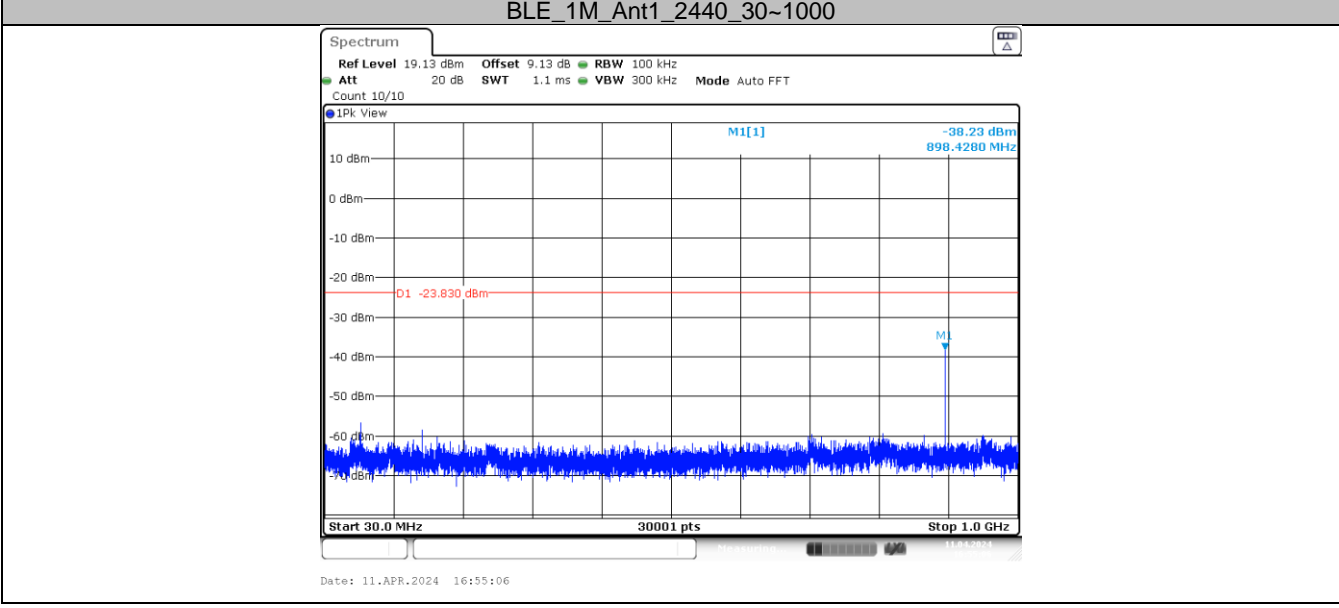
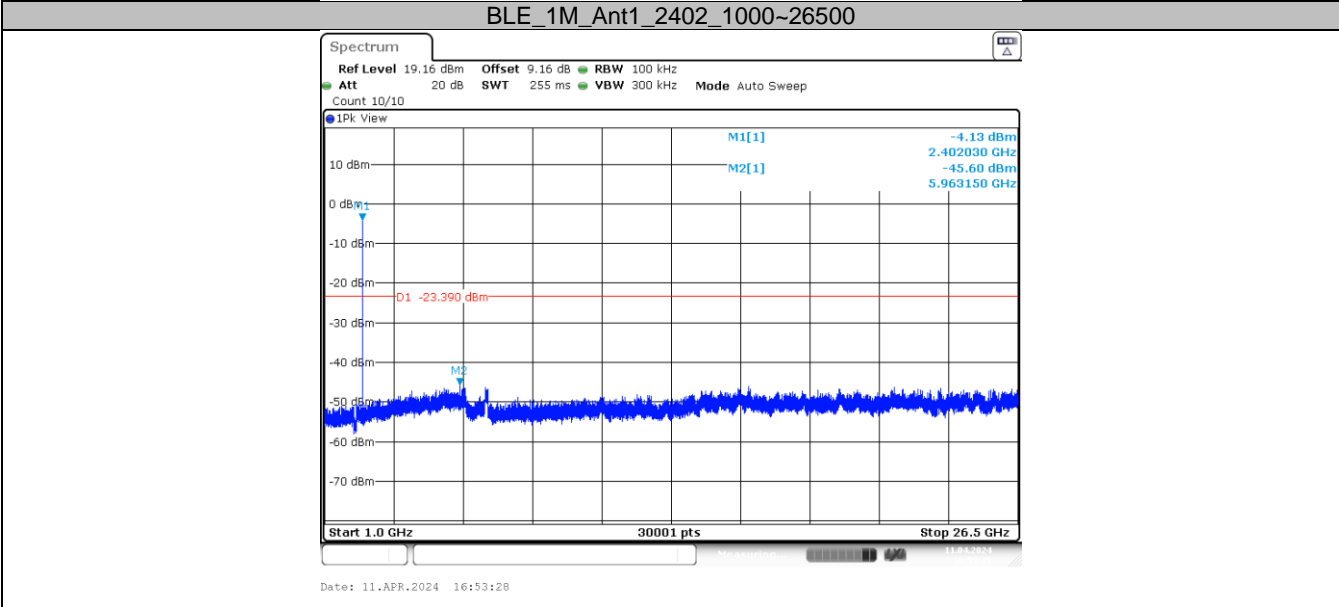
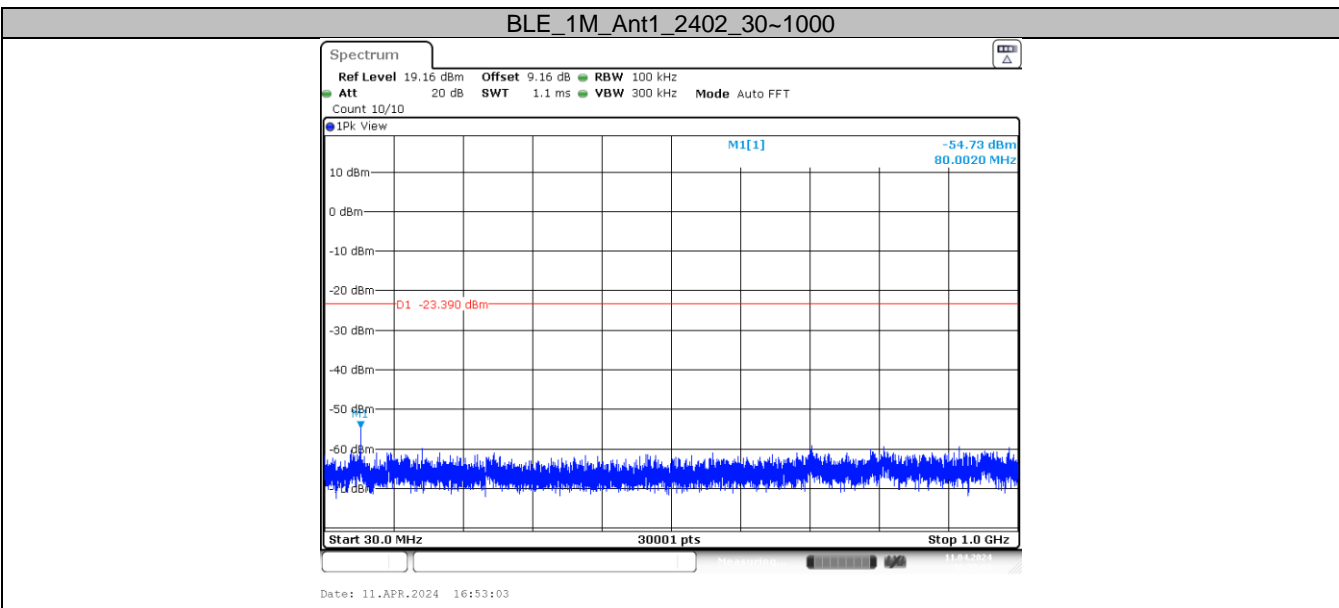
BLE_2M_Ant1_2440

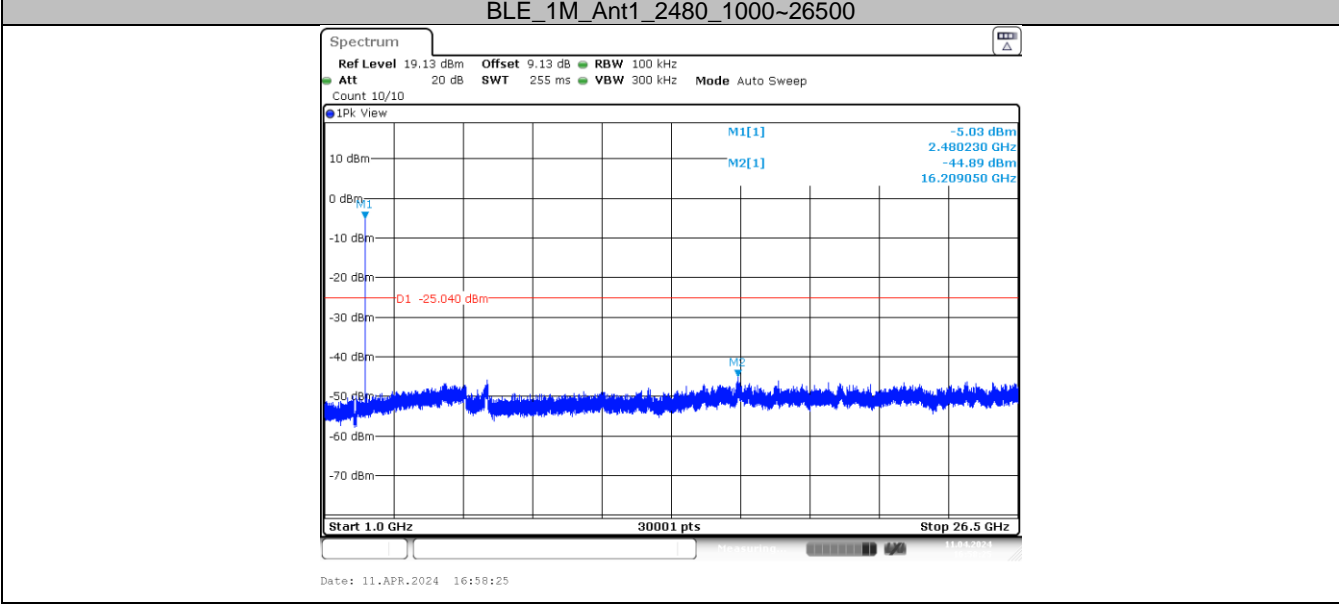
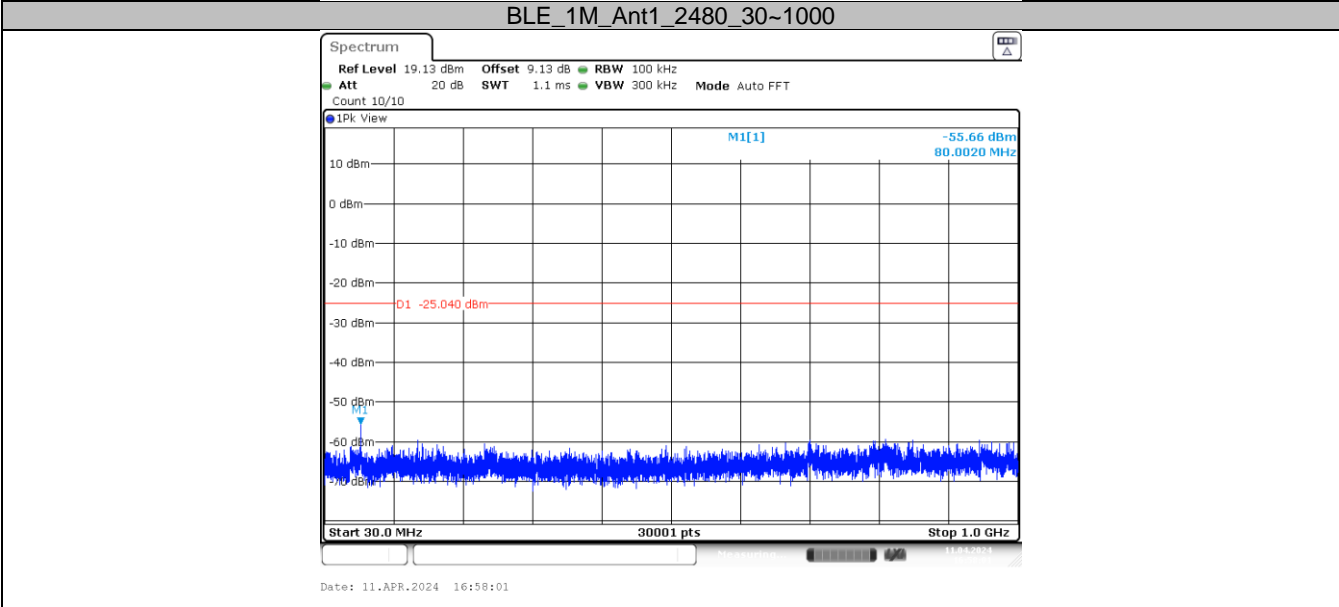
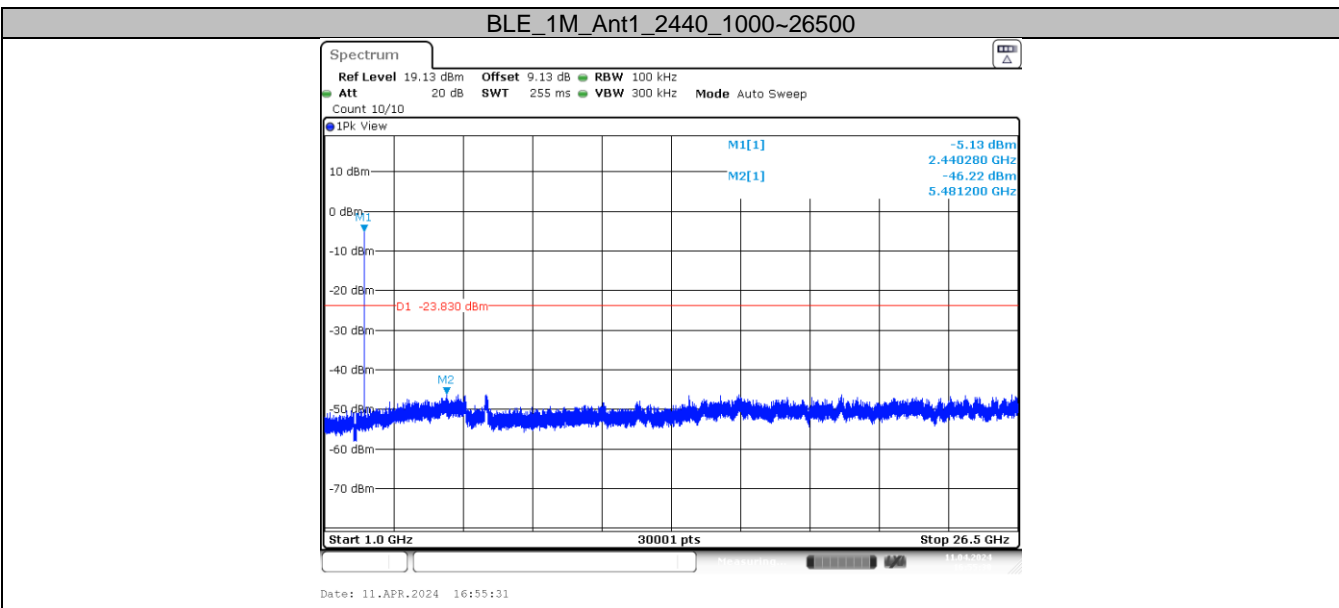


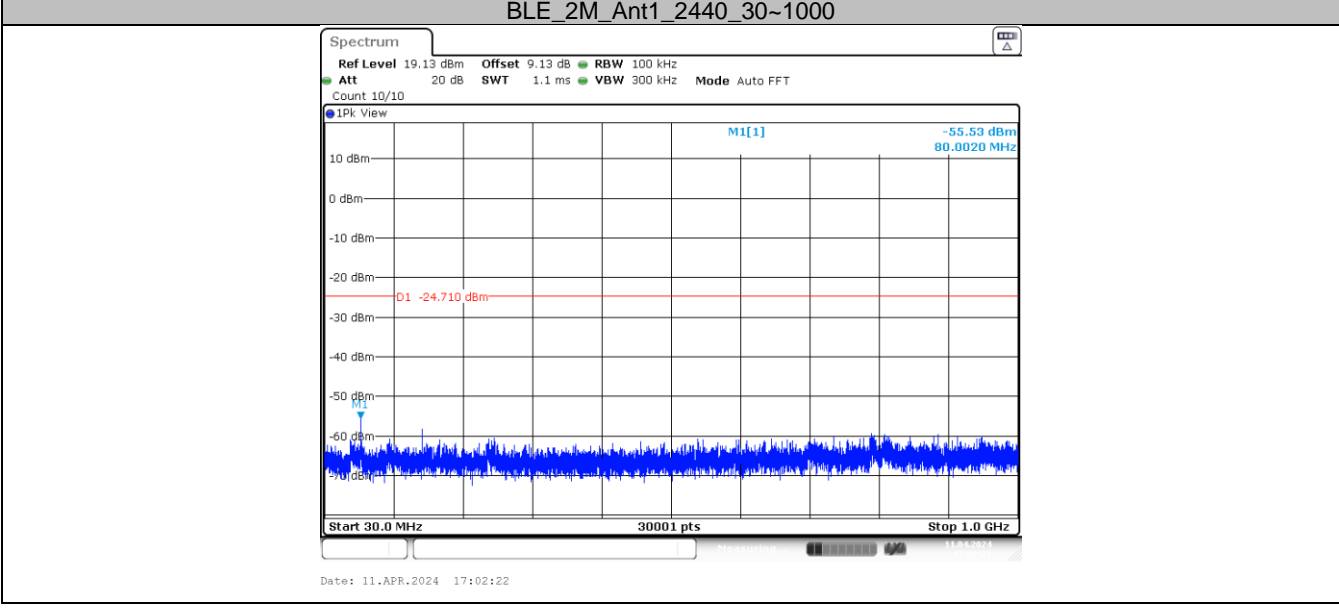
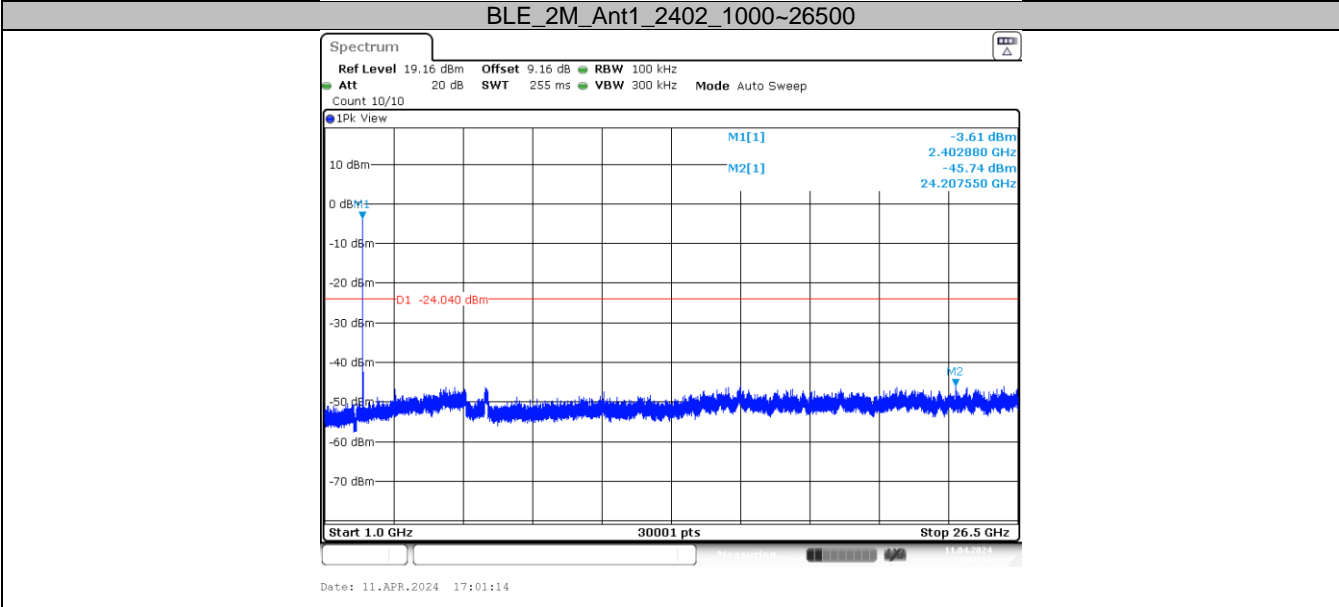
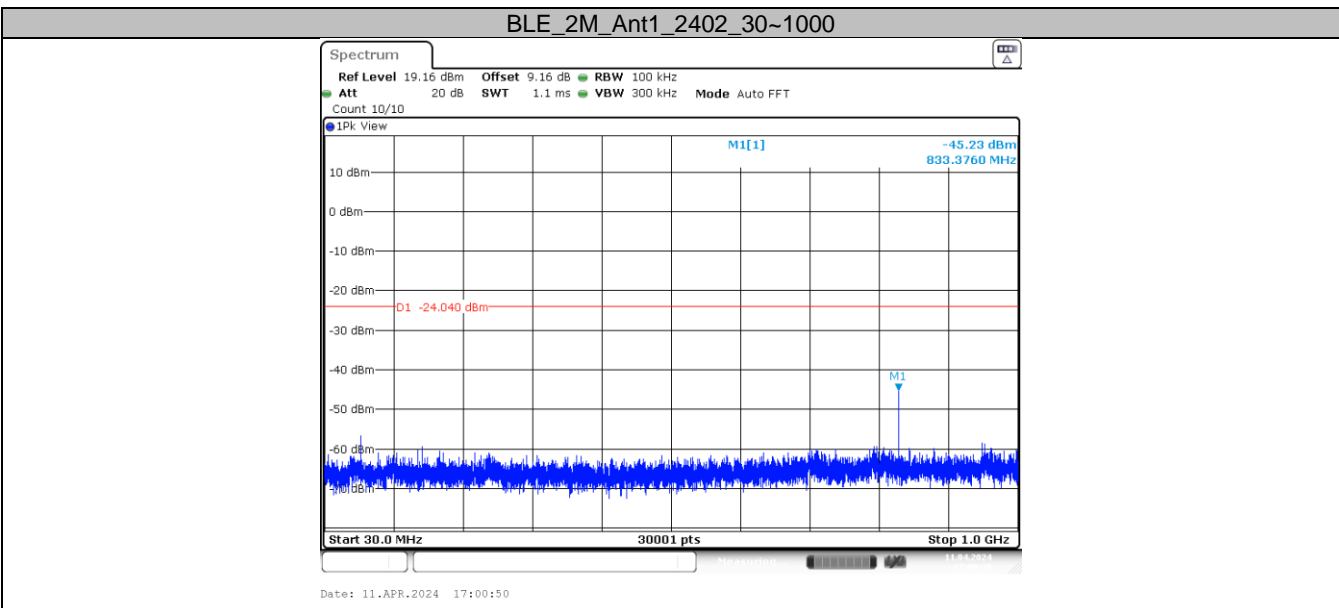


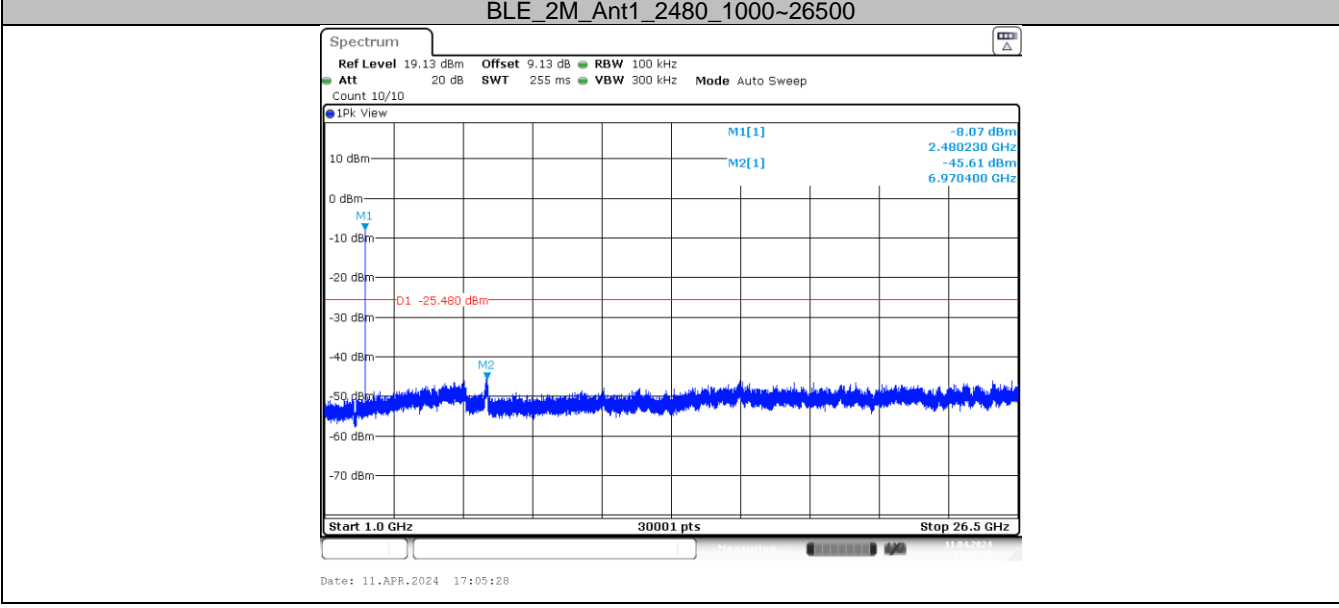
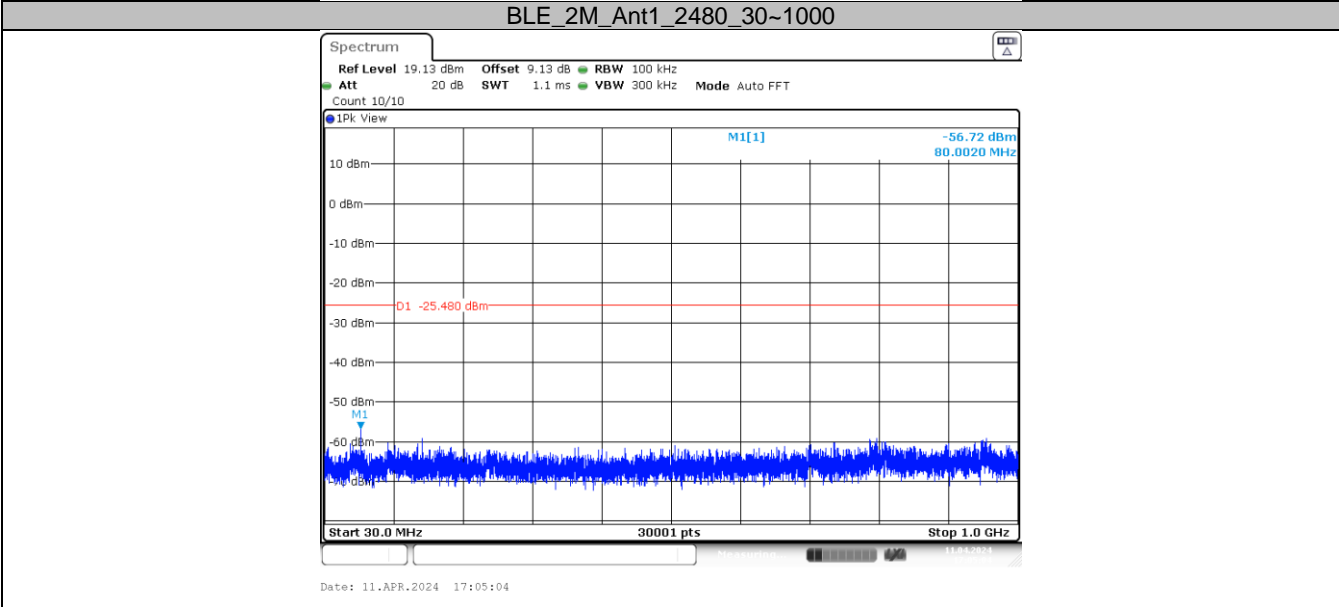
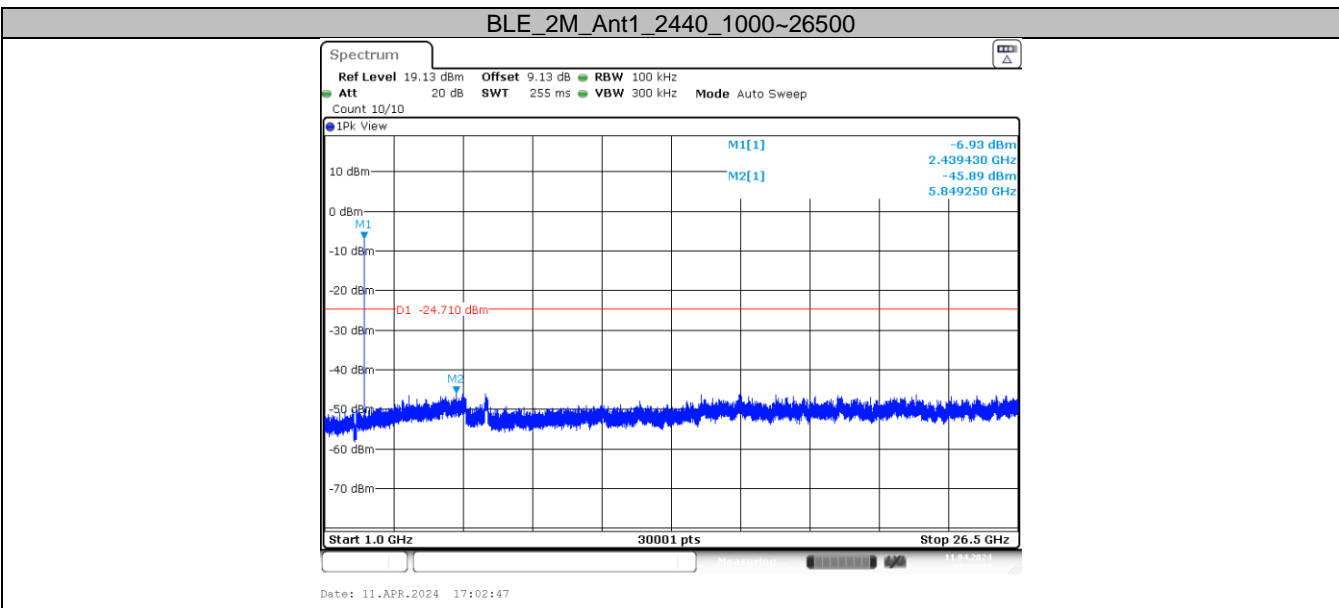
APPENDIX G - CONDUCTED SPURIOUS EMISSION
Spurious Emission

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	-3.39	-54.73	≤-23.39	PASS
			1000~26500	-3.39	-45.6	≤-23.39	PASS
		2440	30~1000	-3.83	-38.23	≤-23.83	PASS
			1000~26500	-3.83	-46.22	≤-23.83	PASS
		2480	30~1000	-5.04	-55.66	≤-25.04	PASS
			1000~26500	-5.04	-44.89	≤-25.04	PASS
BLE_2M	Ant1	2402	30~1000	-4.04	-45.23	≤-24.04	PASS
			1000~26500	-4.04	-45.74	≤-24.04	PASS
		2440	30~1000	-4.71	-55.53	≤-24.71	PASS
			1000~26500	-4.71	-45.89	≤-24.71	PASS
		2480	30~1000	-5.48	-56.72	≤-25.48	PASS
			1000~26500	-5.48	-45.61	≤-25.48	PASS





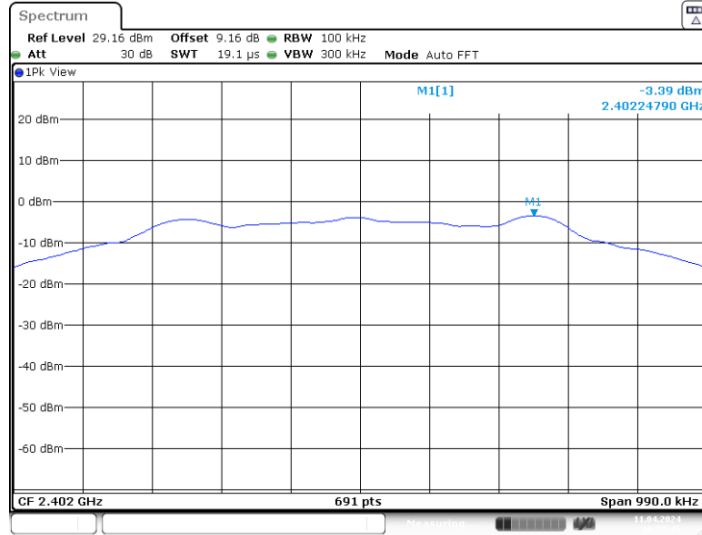




Reference level measurement

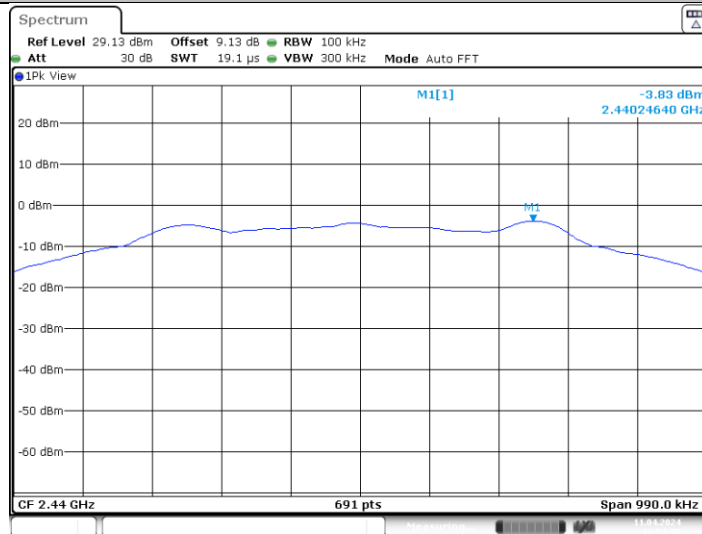
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
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		2440	2440.25	-3.83
		2480	2480.25	-5.04
BLE_2M	Ant1	2402	2401.99	-4.04
		2440	2439.99	-4.71
		2480	2479.99	-5.48

BLE_1M_Ant1_2402



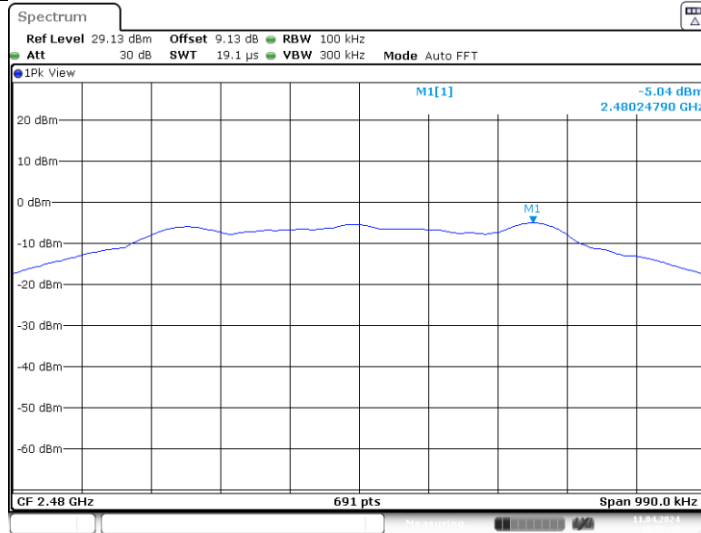
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BLE_1M_Ant1_2440

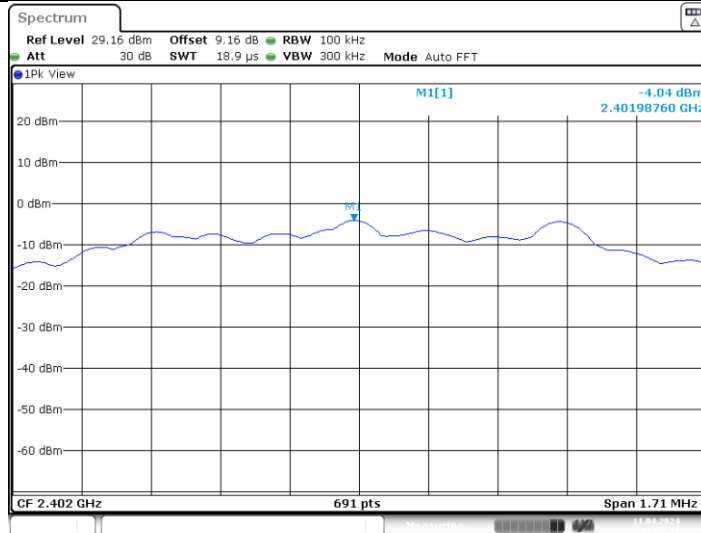


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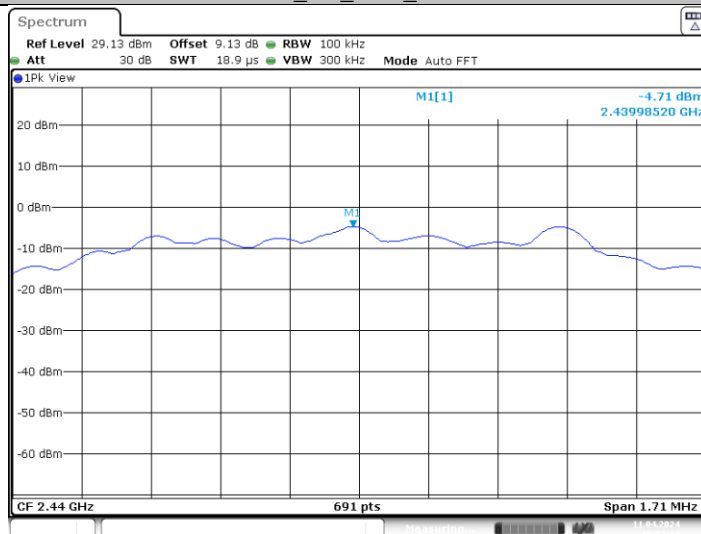
BLE_1M_Ant1_2480

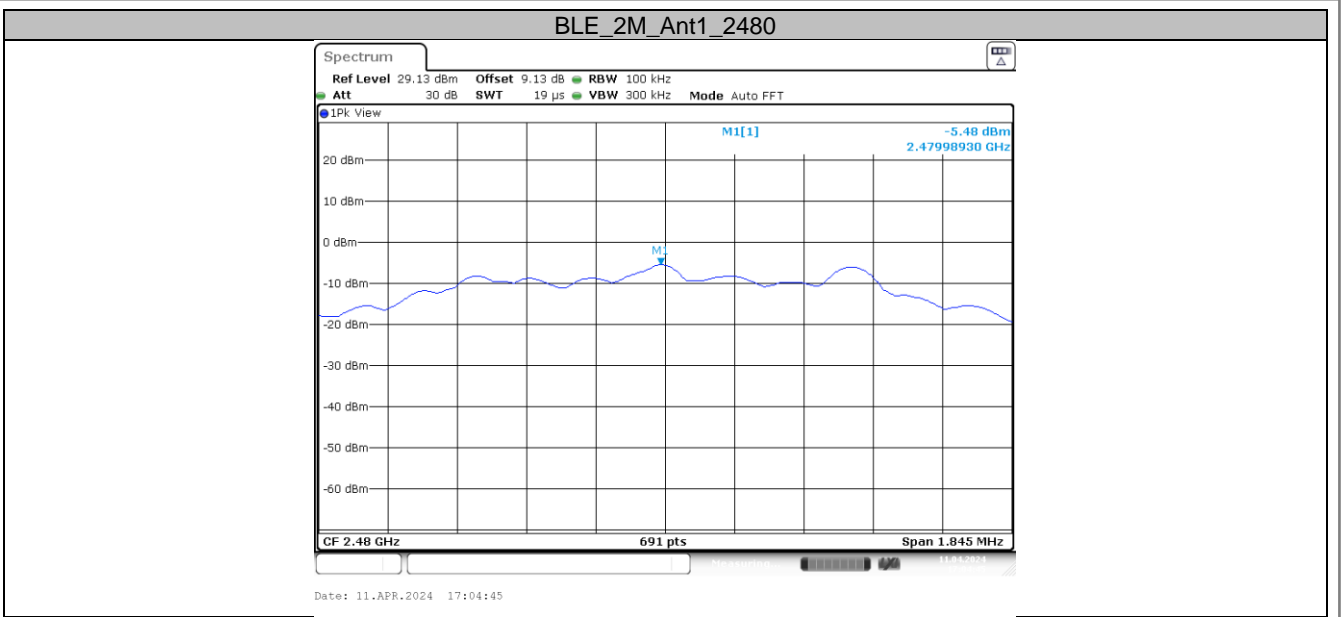


BLE_2M_Ant1_2402



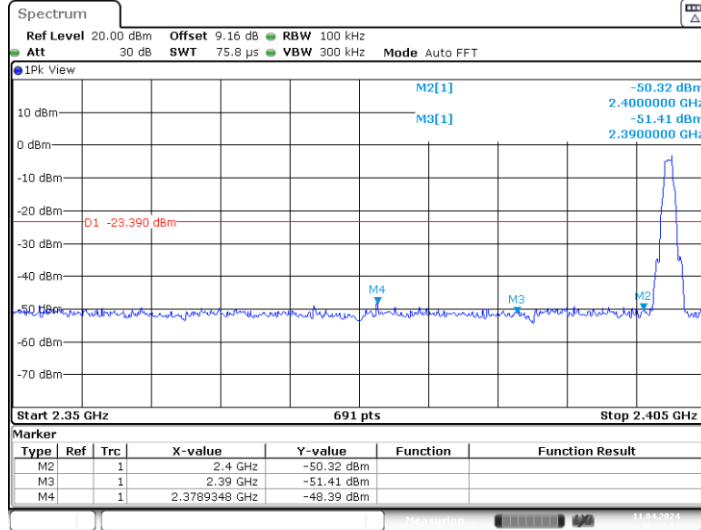
BLE_2M_Ant1_2440



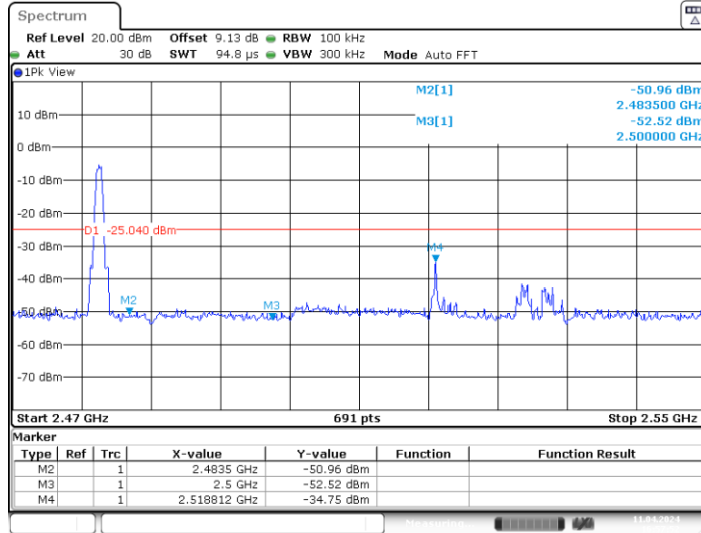


Band edge measurements

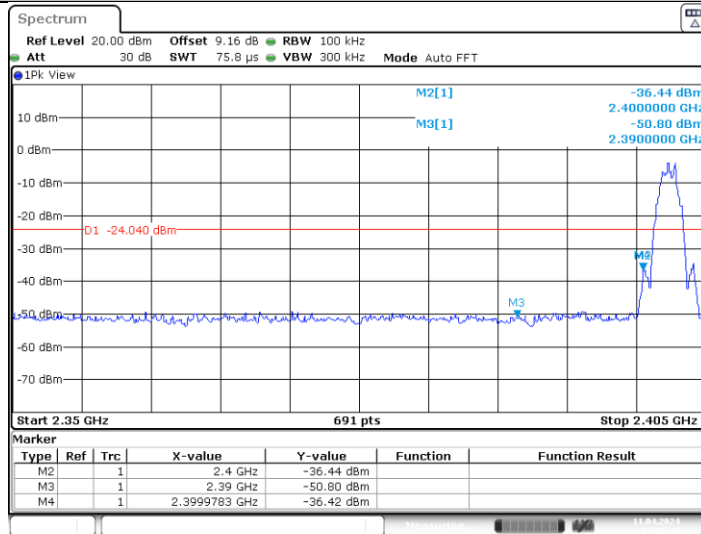
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-3.39	-48.39	≤-23.39	PASS
		High	2480	-5.04	-34.75	≤-25.04	PASS
BLE_2M	Ant1	Low	2402	-4.04	-36.42	≤-24.04	PASS
		High	2480	-5.48	-47.64	≤-25.48	PASS

BLE_1M_Ant1_Low_2402


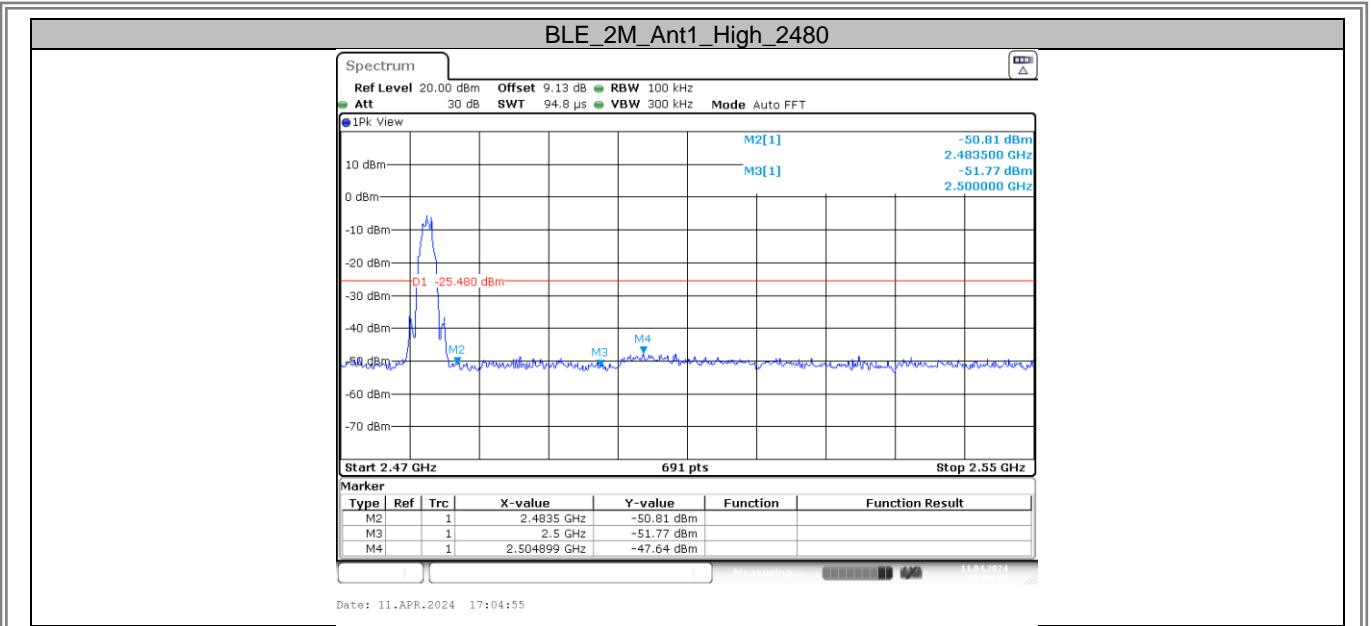
Date: 11.APR.2024 16:52:54

BLE_1M_Ant1_High_2480


Date: 11.APR.2024 16:57:52

BLE_2M_Ant1_Low_2402


Date: 11.APR.2024 17:00:41

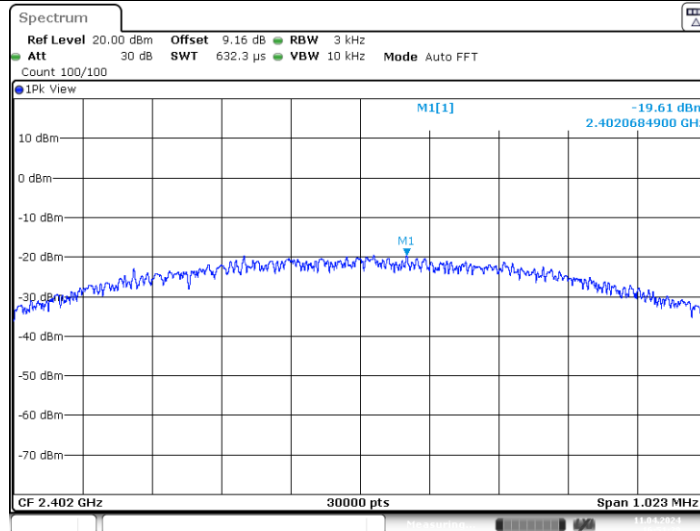


APPENDIX H- POWER SPECTRAL DENSITY

Power Spectral Density

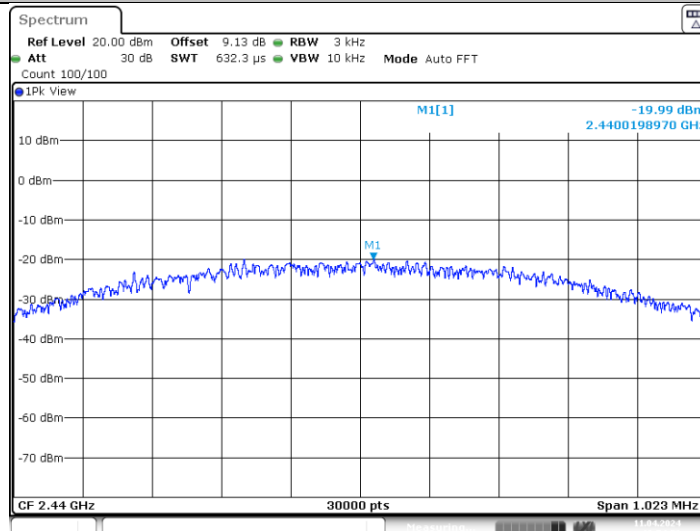
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.61	≤8.00	PASS
		2440	-19.99	≤8.00	PASS
		2480	-21.14	≤8.00	PASS
BLE_2M	Ant1	2402	-21.73	≤8.00	PASS
		2440	-21.94	≤8.00	PASS
		2480	-23.14	≤8.00	PASS

BLE_1M_Ant1_2402

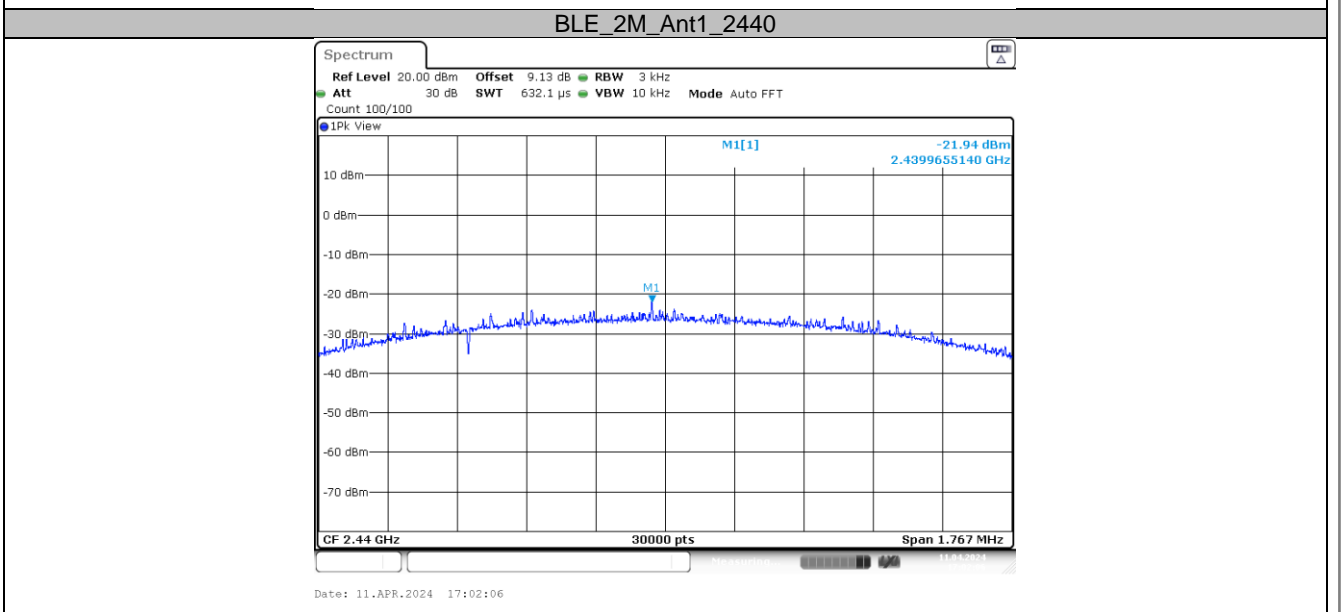
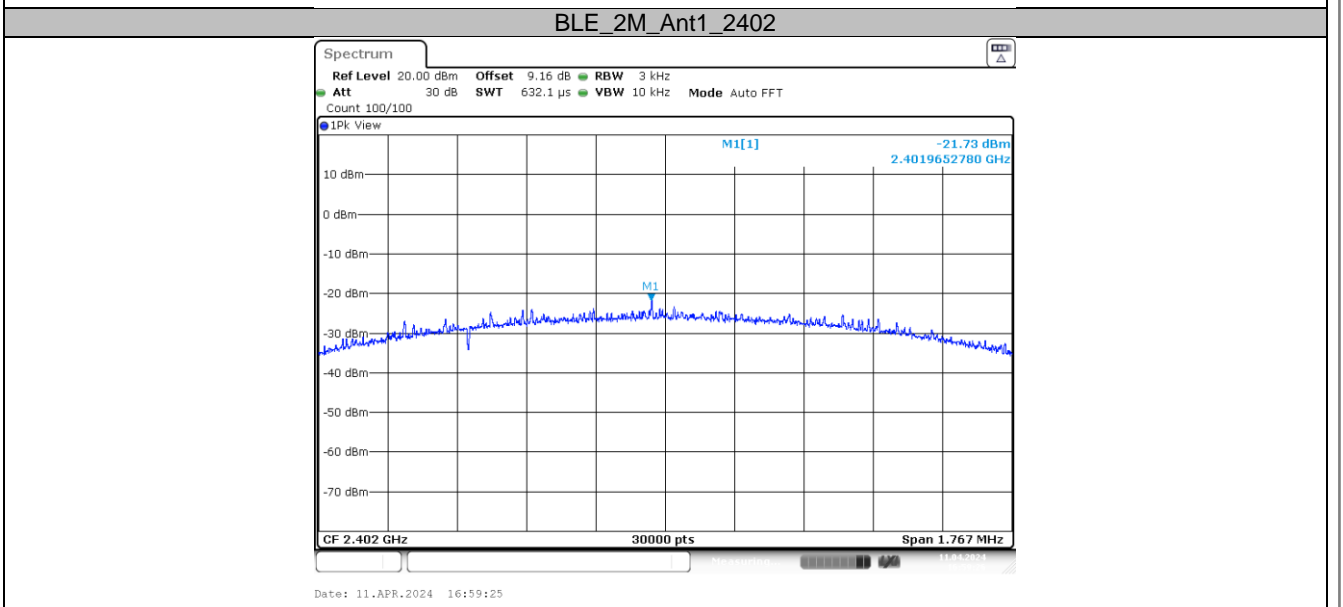
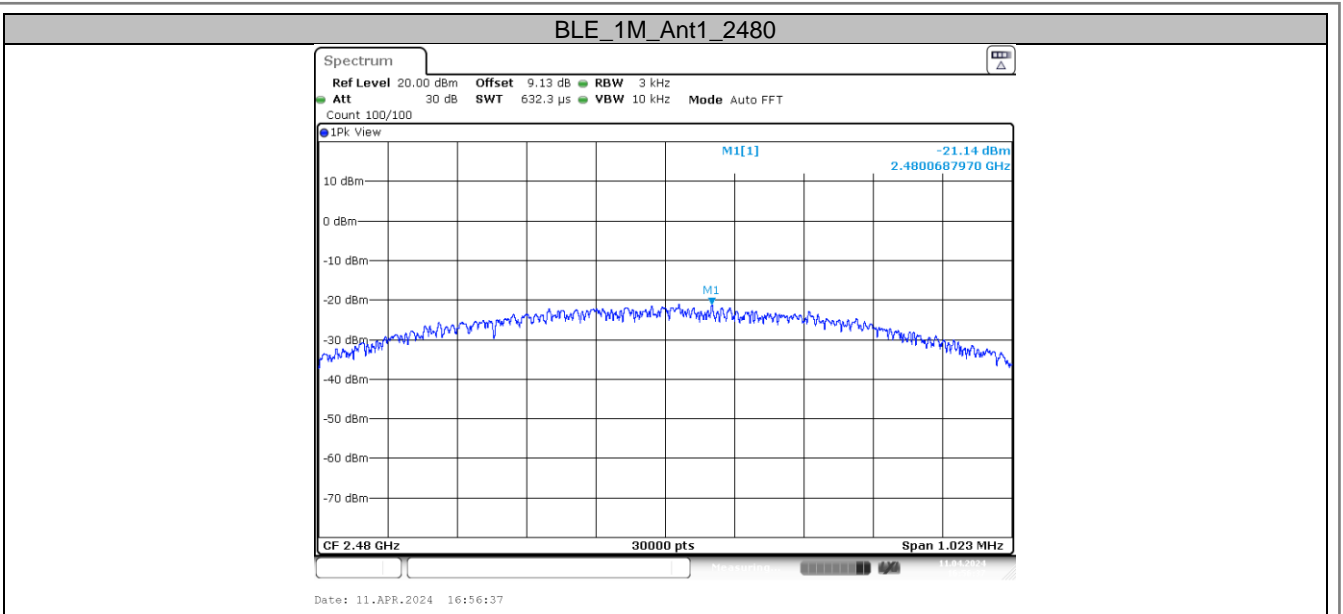


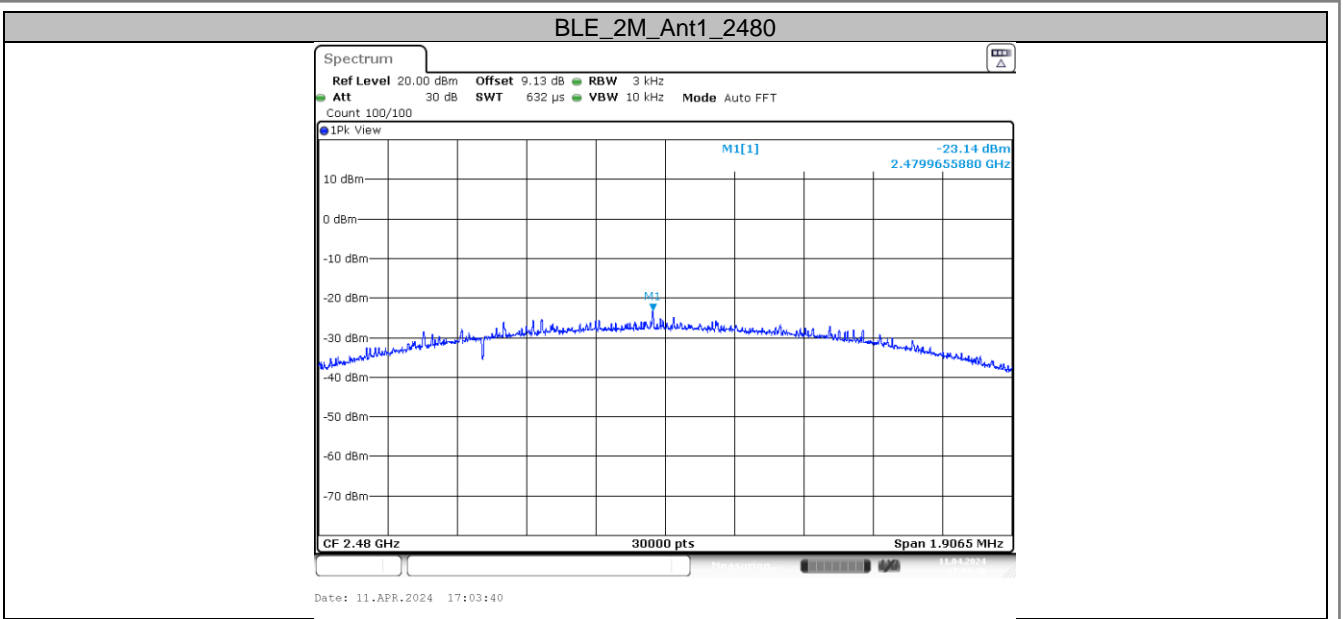
Date: 11.APR.2024 16:51:39

BLE_1M_Ant1_2440



Date: 11.APR.2024 16:54:49





End of Test Report