

APPENDIX B - RADIATED EMISSION -9 KHZ TO 30 MHZ

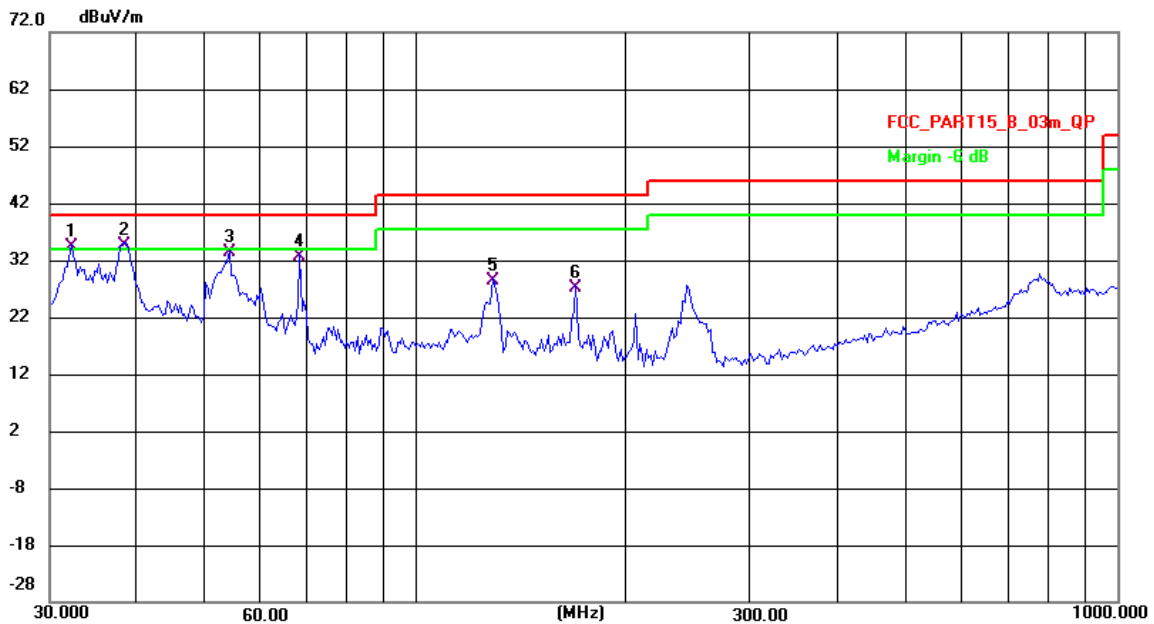
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

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
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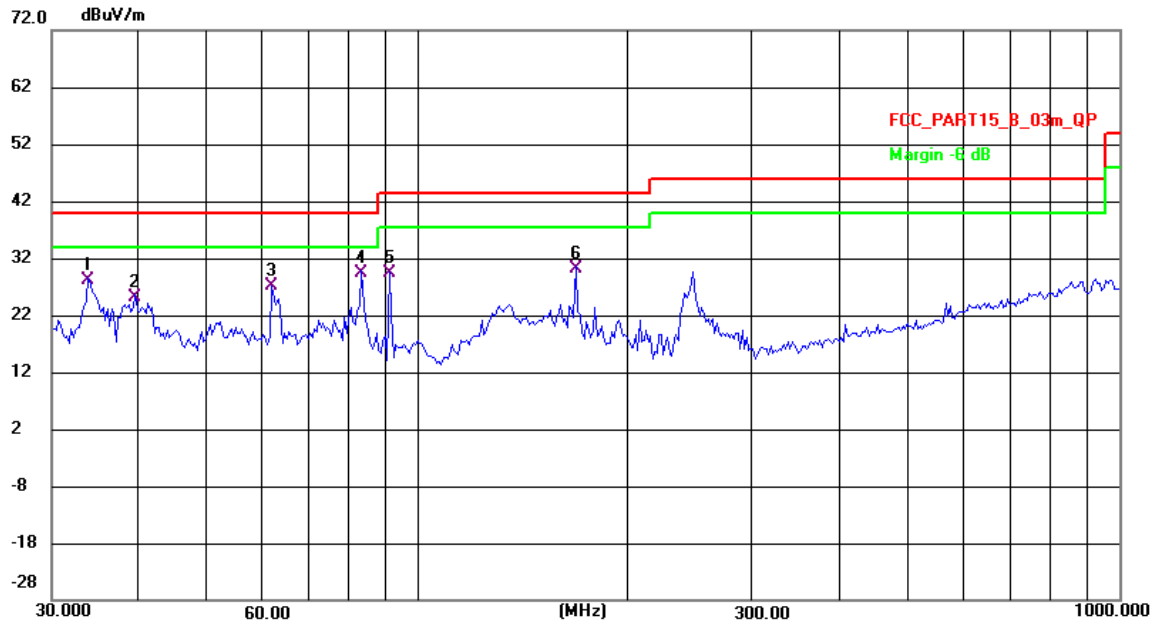


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 !	32.1840	57.60	-23.21	34.39	40.00	-5.61	QP	199	265	P	
2 *	38.3650	56.98	-22.35	34.63	40.00	-5.37	QP	215	312	P	
3	54.1350	55.72	-22.34	33.38	40.00	-6.62	QP	100	92	P	
4	68.2634	56.51	-23.77	32.74	40.00	-7.26	QP	184	143	P	
5	128.4861	50.53	-22.18	28.35	43.50	-15.15	QP	199	201	P	
6	168.9970	48.09	-20.97	27.12	43.50	-16.38	QP	121	19	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
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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	33.8066	51.30	-23.06	28.24	40.00	-11.76	QP	187	113	P	
2	39.4587	47.32	-22.15	25.17	40.00	-14.83	QP	200	232	P	
3	61.8674	49.84	-22.82	27.02	40.00	-12.98	QP	100	45	P	
4 *	83.1076	55.30	-25.84	29.46	40.00	-10.54	QP	216	6	P	
5	91.0574	54.95	-25.64	29.31	43.50	-14.19	QP	100	319	P	
6	167.8136	51.14	-20.93	30.21	43.50	-13.29	QP	109	98	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	89.69	-27.15	62.54	74.00	-11.46	Peak
2	4804	V	69.58	-27.15	42.43	54.00	-11.57	Avg
3	7206	--	--	--	--	--	--	--
4	9608	--	--	--	--	--	--	--
5	4804	H	90.01	-27.15	62.86	74.00	-11.14	Peak
6	4804	H	70.31	-27.15	43.16	54.00	-10.84	Avg
7	7206	--	--	--	--	--	--	--
8	9608	--	--	--	--	--	--	--

Test Mode : GFSK TX Mid

1	4880	V	90.61	-27.83	62.78	74	-11.22	Peak
2	4880	V	71.85	-27.83	44.02	54	-9.98	Avg
3	7320	--	--	--	--	--	--	--
4	9760	--	--	--	--	--	--	--
5	4880	H	90.14	-27.83	62.31	74	-11.69	Peak
6	4880	H	70.92	-27.83	43.09	54	-10.91	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	90.72	-28.45	62.27	74.00	-11.73	Peak
6	4960	H	69.24	-28.45	40.79	54.00	-13.21	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

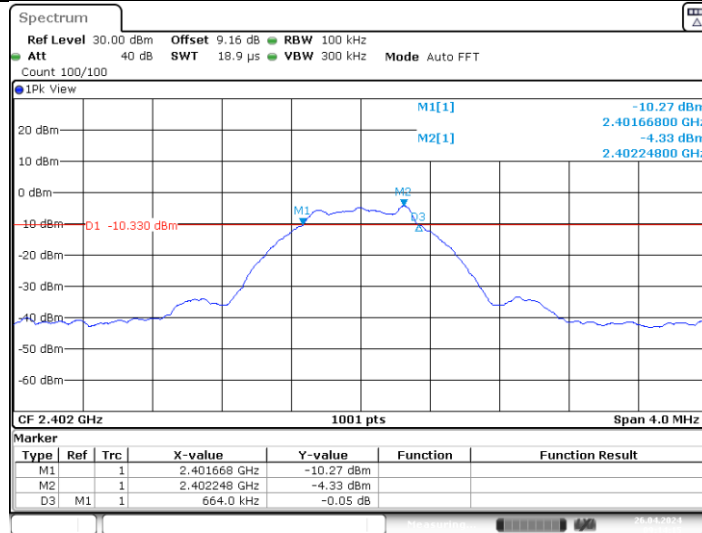
Test Results					PASS			
Frequency Range					2310MHz~2410MHz			
Test Mode					1Mbps: GFSK TX 2402MHz			
N o.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	75.61	-21.47	54.14	74.00	-19.86	Peak
2	2390	H	--	-21.47	--	54.00	--	Avg
3	2400	H	77.93	-26.12	51.81	74.00	-22.19	Peak
4	2400	H	--	-26.12	--	54.00	--	Avg
1	2390	V	76.27	-21.47	54.80	74.00	-19.20	Peak
2	2390	V	--	-21.47	--	54.00	--	Avg
3	2400	V	76.98	-26.12	50.86	74.00	-23.14	Peak
4	2400	V	--	-26.12	--	54.00	--	Avg
Test Results					PASS			
Frequency Range					2450MHz~2550MHz			
Test Mode					1Mbps: GFSK TX 2480MHz			
1	2483.5	H	74.68	-25.29	49.39	74.00	-24.61	Peak
2	2483.5	H	--	-25.29	--	54.00	--	Avg
1	2483.5	V	75.36	-25.29	50.07	74.00	-23.93	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

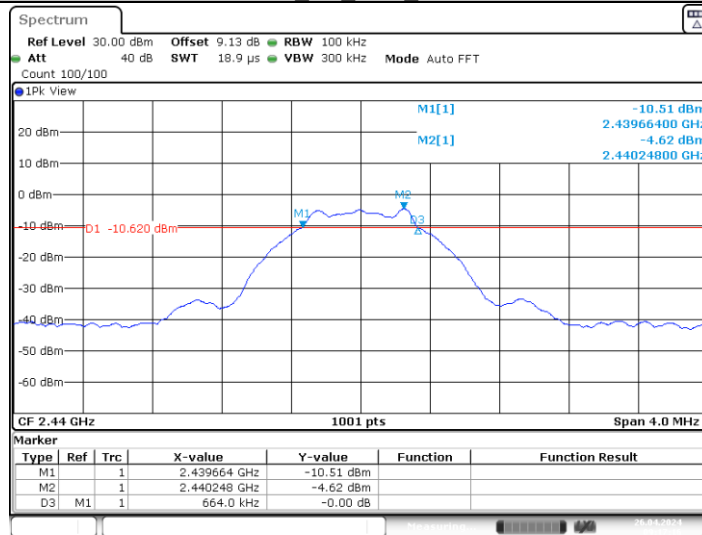
-6dB Bandwidth

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.66	2401.67	2402.33	0.5	PASS
		2440	0.66	2439.66	2440.33	0.5	PASS
		2480	0.66	2479.66	2480.32	0.5	PASS
BLE_2M	Ant1	2402	1.15	2401.43	2402.58	0.5	PASS
		2440	1.16	2439.42	2440.58	0.5	PASS
		2480	1.15	2479.43	2480.58	0.5	PASS

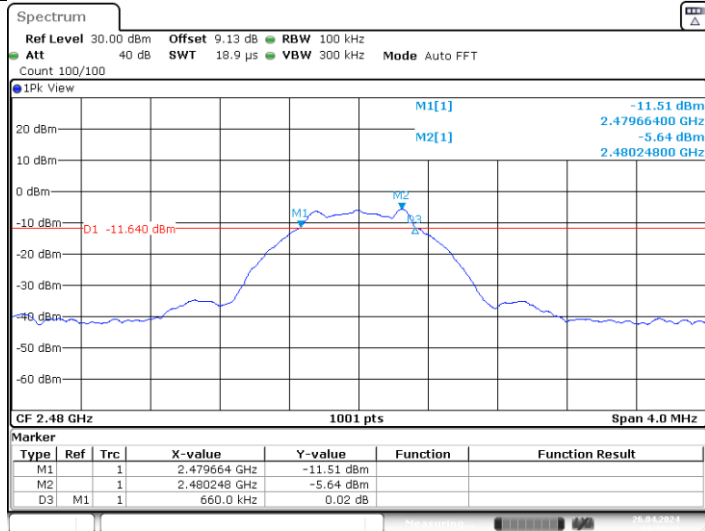
BLE_1M Ant1_2402



BLE_1M Ant1_2440

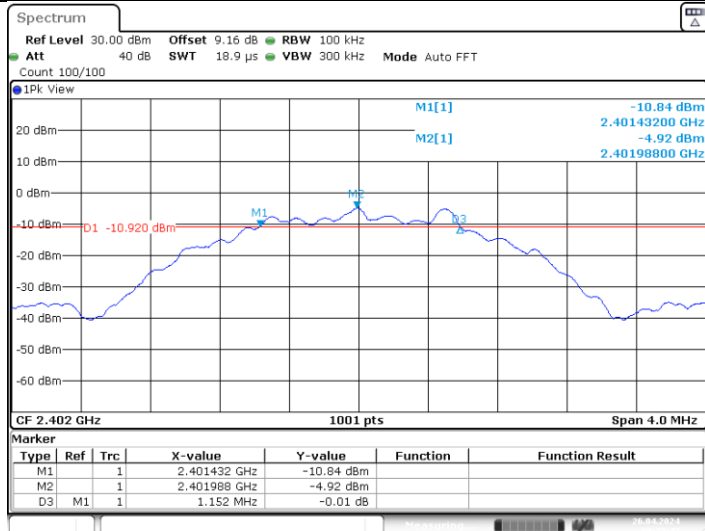


BLE_1M_Ant1_2480



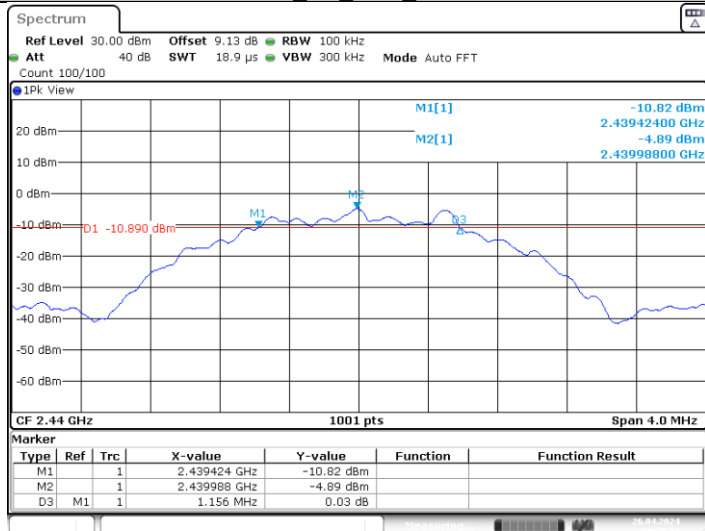
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BLE_2M_Ant1_2402

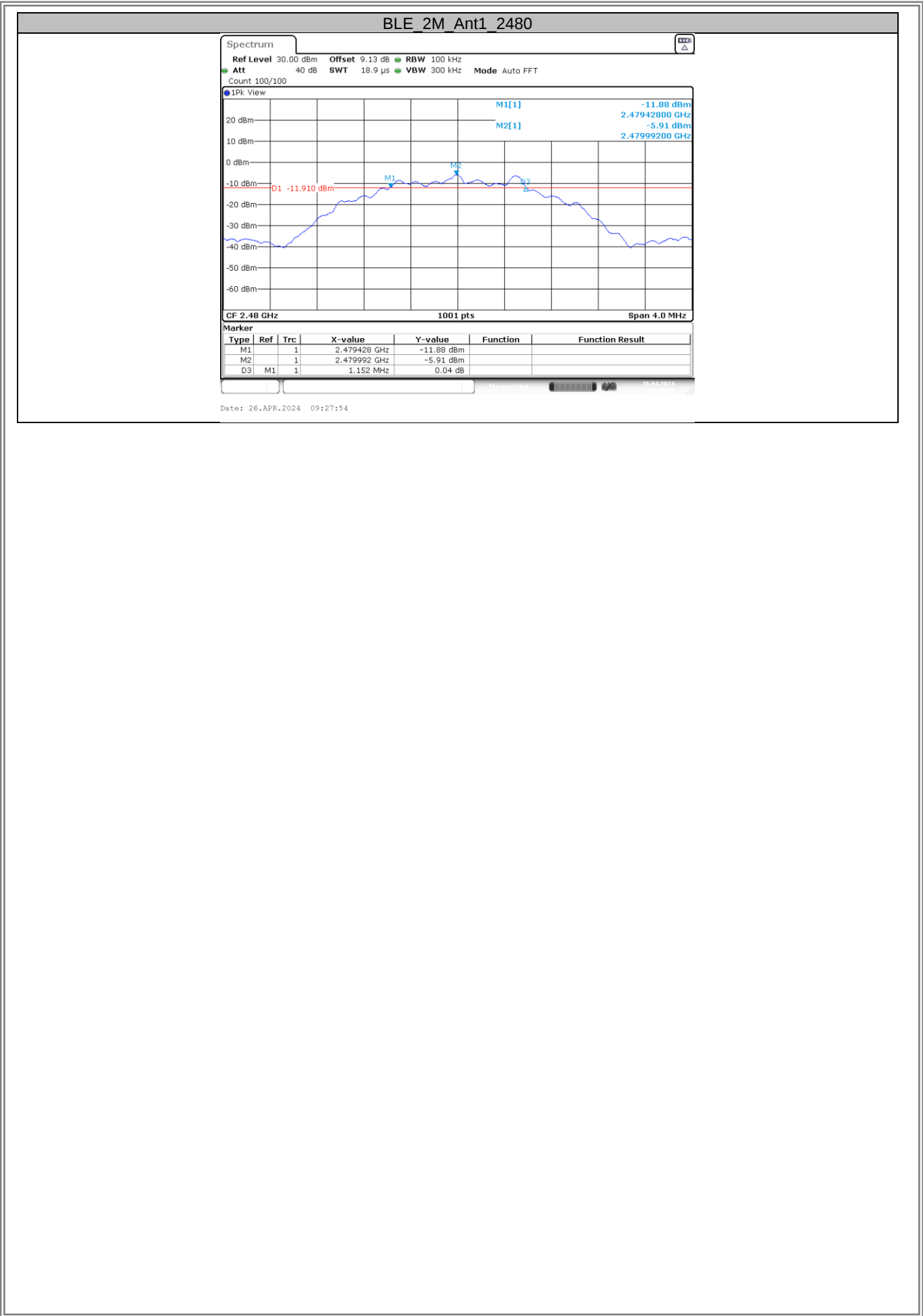


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BLE_2M_Ant1_2440



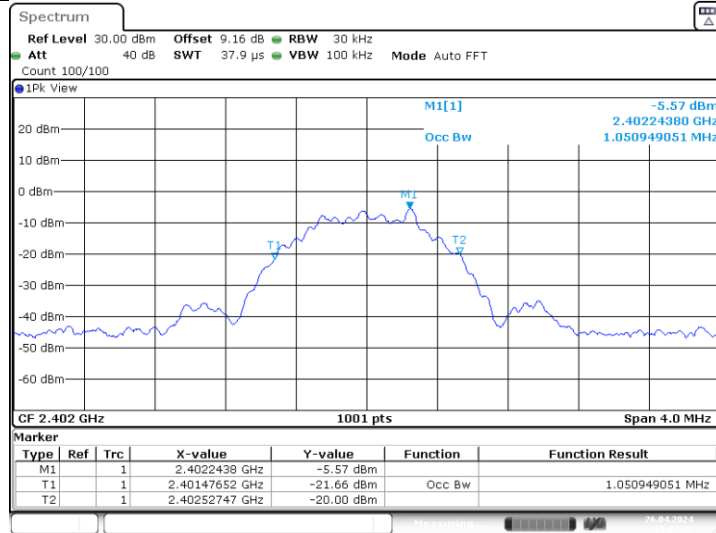
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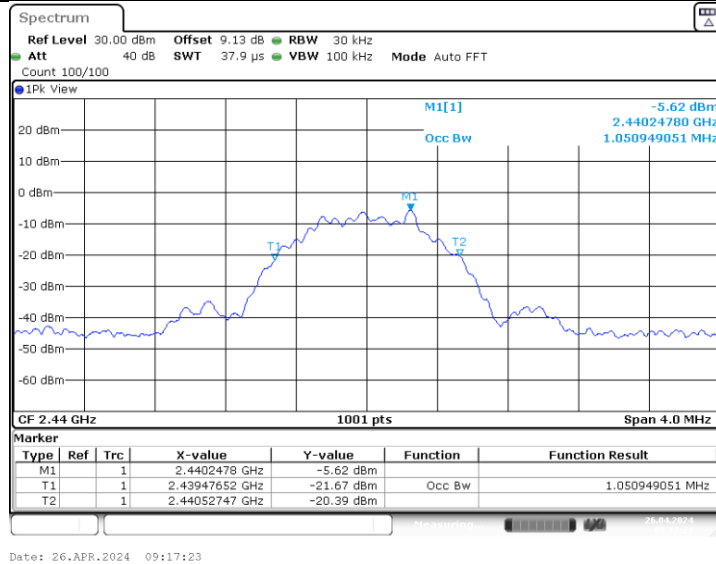
99% Occupied Bandwidth

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.051	2401.4765	2402.5275	---	---
		2440	1.051	2439.4765	2440.5275	---	---
		2480	1.055	2479.4725	2480.5275	---	---
BLE_2M	Ant1	2402	2.086	2400.9730	2403.0589	---	---
		2440	2.07	2438.9770	2441.0470	---	---
		2480	2.082	2478.9690	2481.0509	---	---

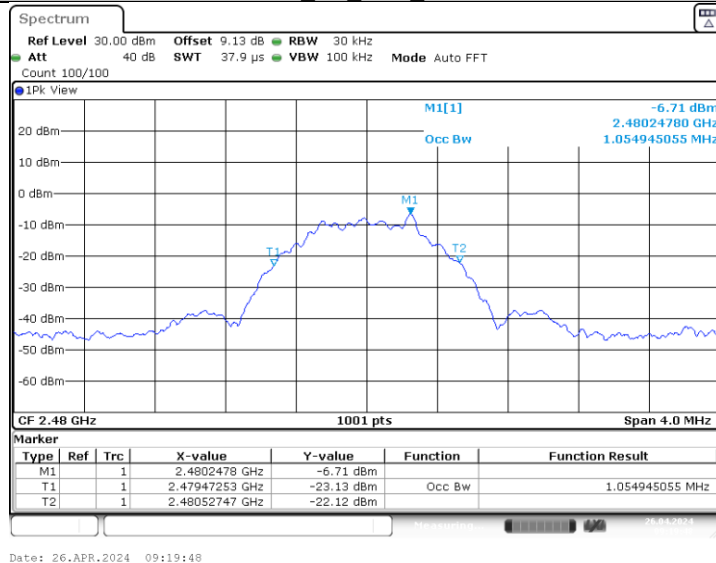
BLE_1M_Ant1_2402



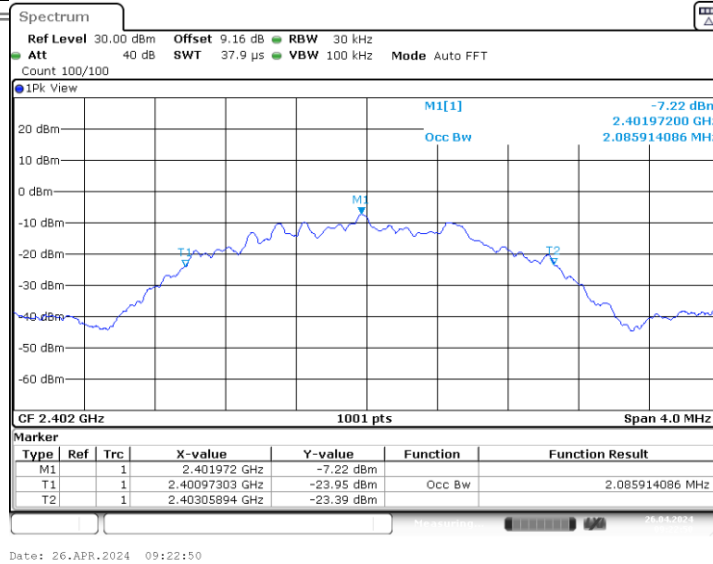
BLE_1M_Ant1_2440



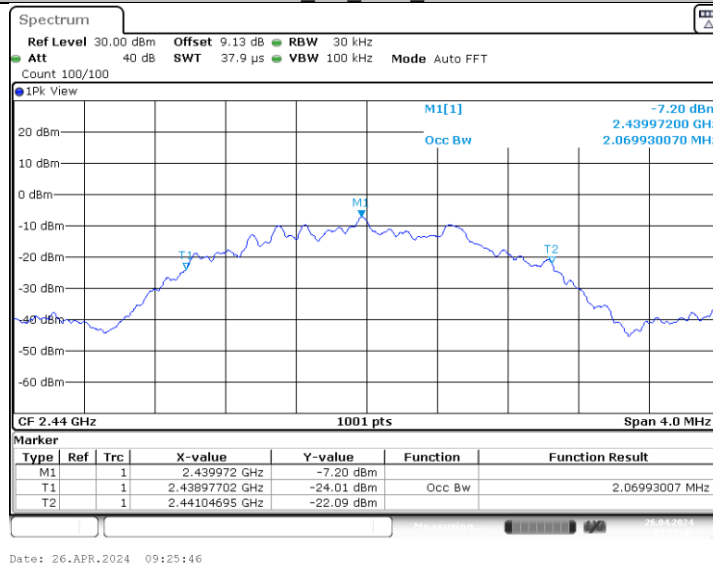
BLE_1M_Ant1_2480



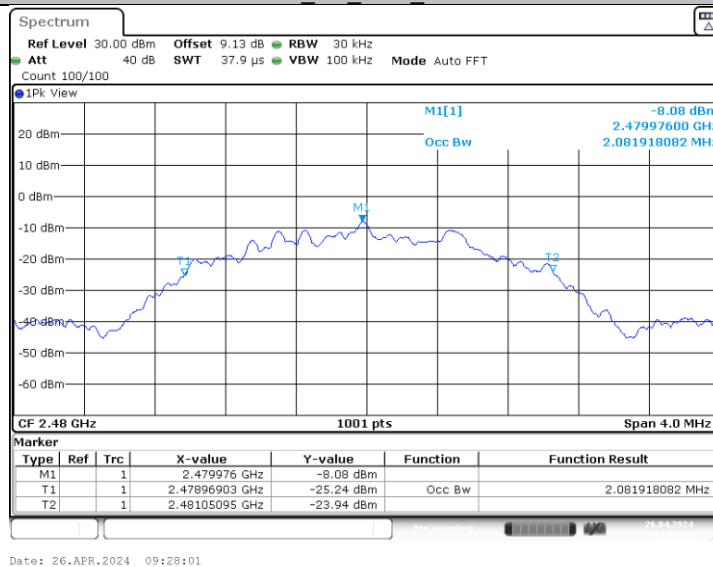
BLE_2M_Ant1_2402



BLE 2M Ant1 2440



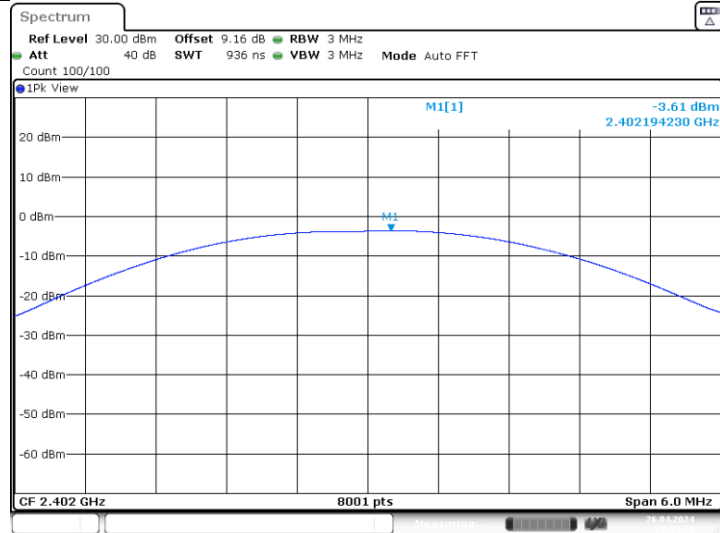
BLE 2M Ant1 2480



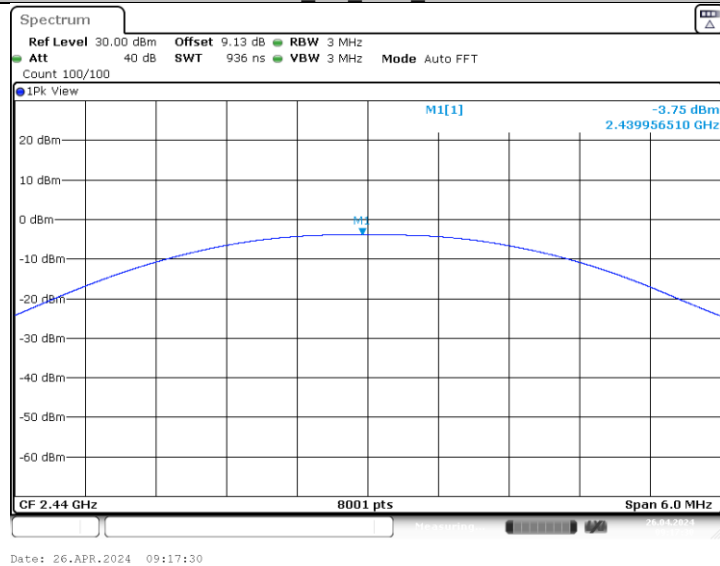
APPENDIX F - MAXIMUM OUTPUT POWER

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]
BLE_1M	Ant1	2402	-3.61	≤30
		2440	-3.75	≤30
		2480	-4.79	≤30
BLE_2M	Ant1	2402	-3.60	≤30
		2440	-3.68	≤30
		2480	-4.55	≤30

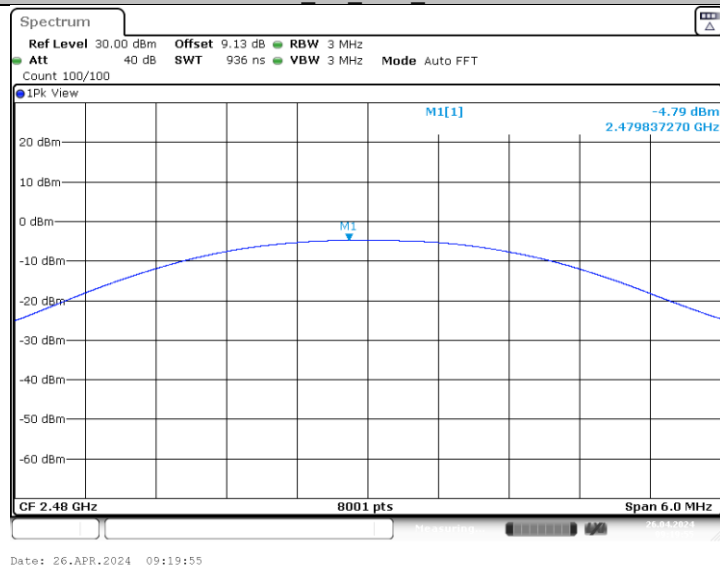
BLE_1M_Ant1_2402



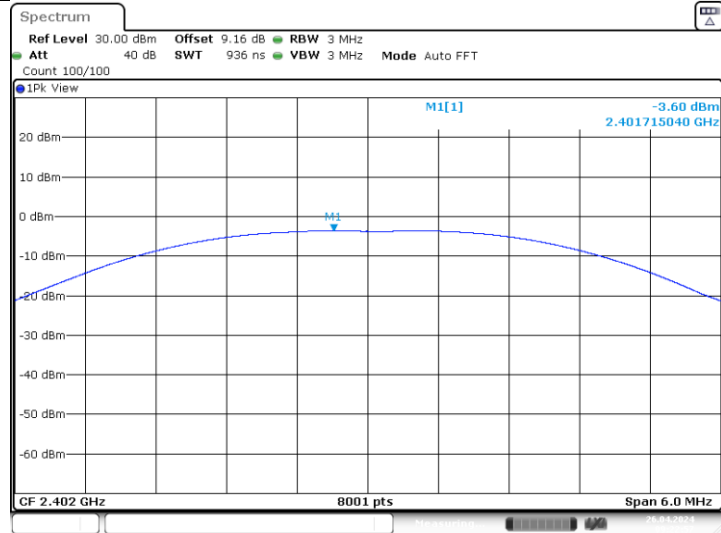
BLE_1M_Ant1_2440



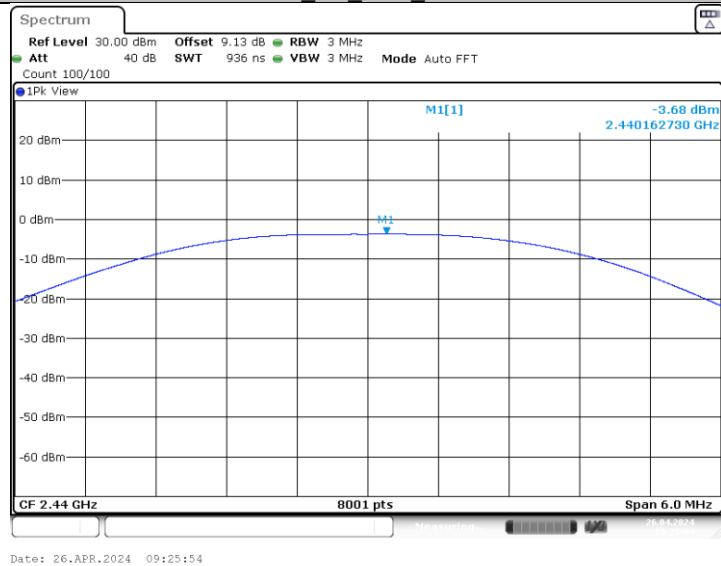
BLE_1M_Ant1_2480



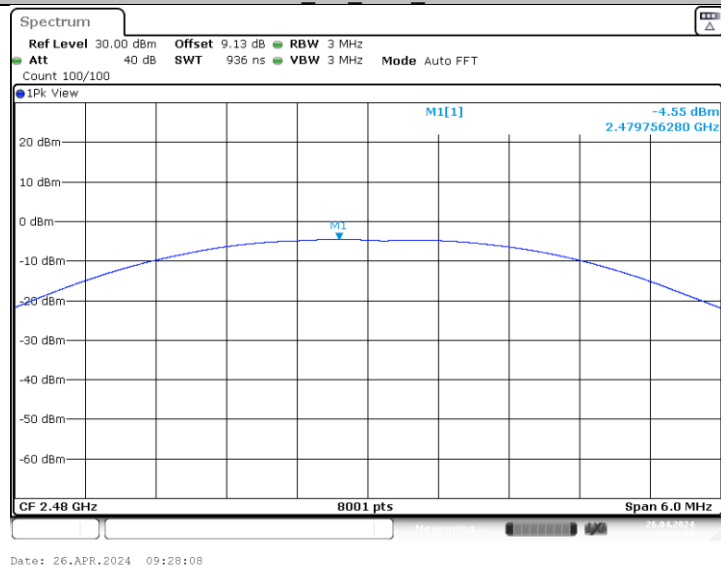
BLE 2M Ant1 2402



BLE 2M Ant1 2440



BLE 2M Ant1 2480

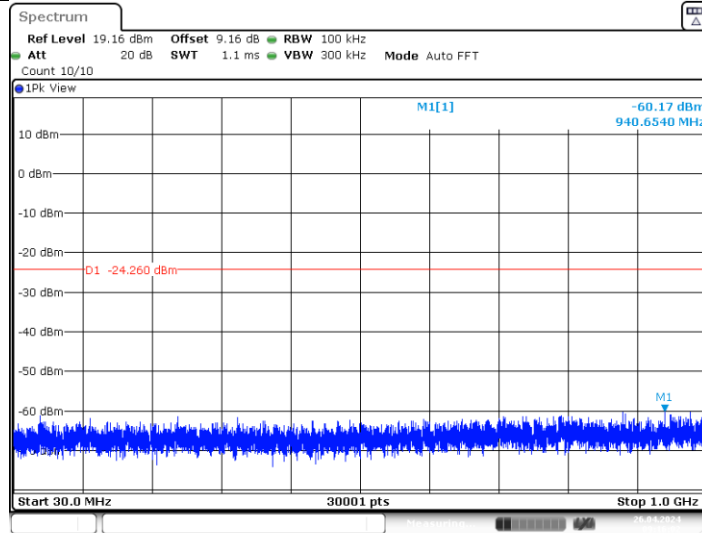


APPENDIX G - CONDUCTED SPURIOUS EMISSION

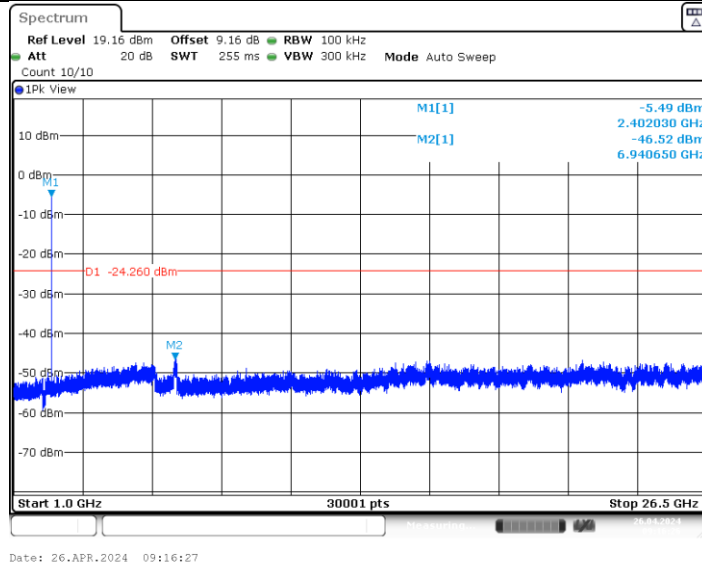
Spurious Emission

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	-4.26	-60.17	≤-24.26	PASS
			1000~26500	-4.26	-46.52	≤-24.26	PASS
		2440	30~1000	-4.56	-60.4	≤-24.56	PASS
			1000~26500	-4.56	-46.36	≤-24.56	PASS
		2480	30~1000	-5.60	-60.15	≤-25.6	PASS
			1000~26500	-5.60	-45.95	≤-25.6	PASS
BLE_2M	Ant1	2402	30~1000	-4.70	-59.05	≤-24.7	PASS
			1000~26500	-4.70	-46.8	≤-24.7	PASS
		2440	30~1000	-4.82	-60.25	≤-24.82	PASS
			1000~26500	-4.82	-46.39	≤-24.82	PASS
		2480	30~1000	-5.96	-60.38	≤-25.96	PASS
			1000~26500	-5.96	-46.65	≤-25.96	PASS

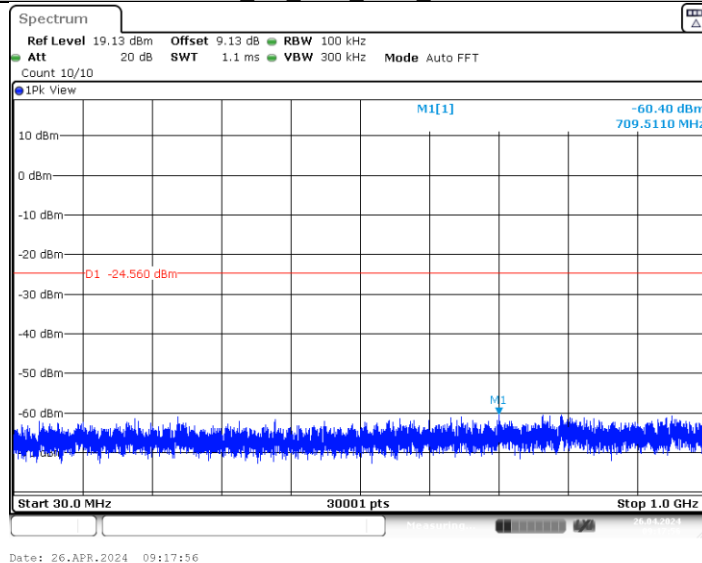
BLE 1M Ant1 2402_30~1000



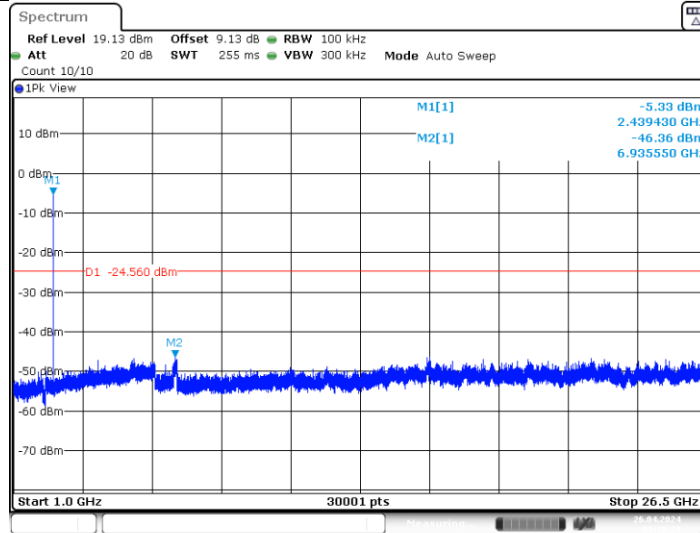
BLE 1M Ant1 2402_1000~26500



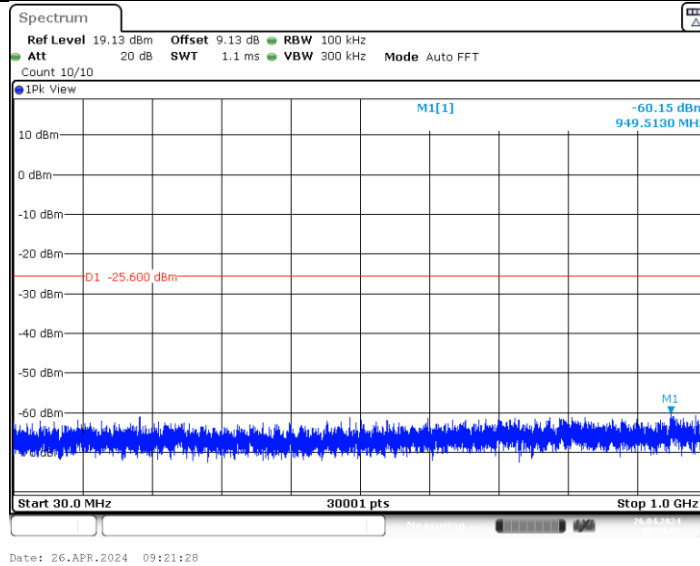
BLE 1M Ant1 2440_30~1000



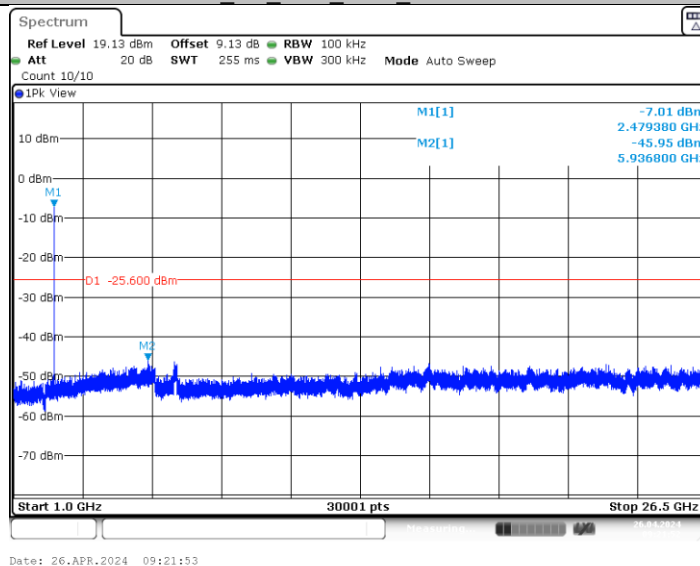
BLE_1M_Ant1_2440_1000-26500



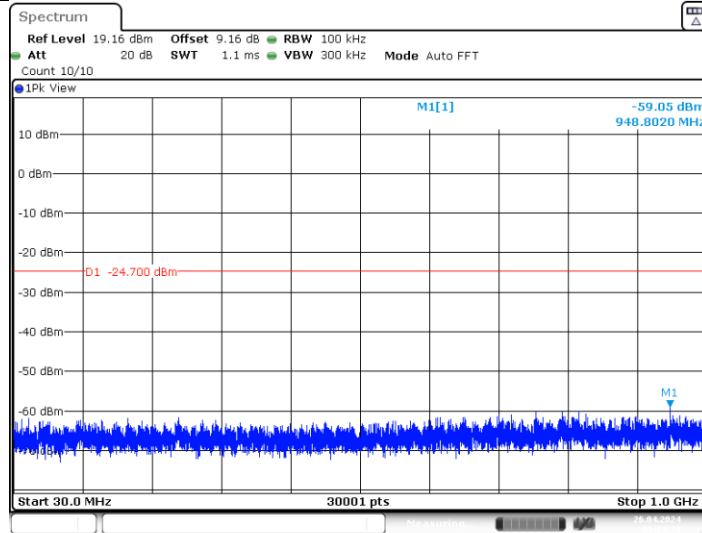
BLE_1M_Ant1_2480_30-1000



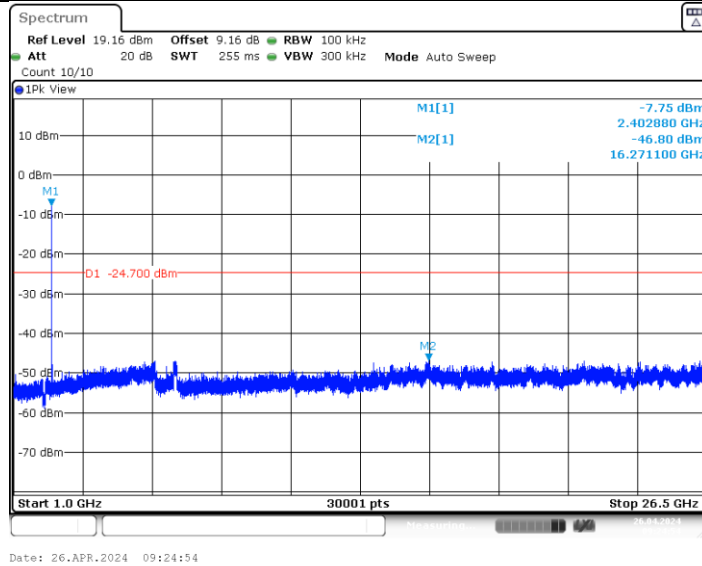
BLE_1M_Ant1_2480_1000-26500



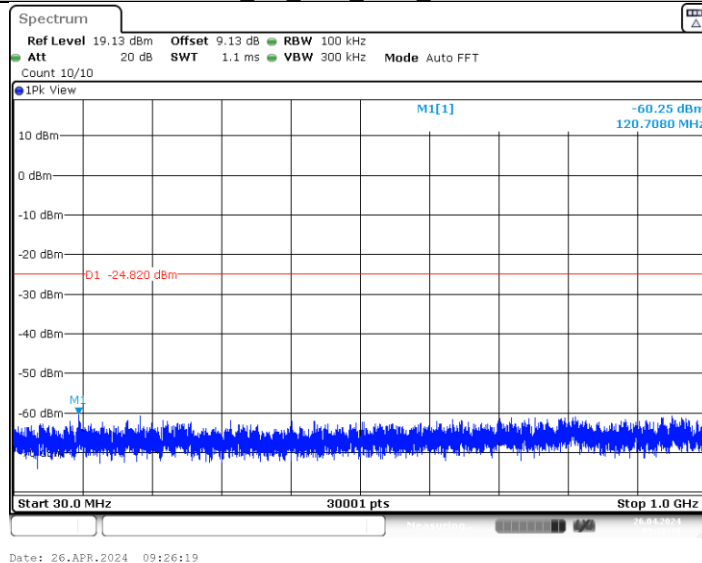
BLE_2M_Ant1_2402_30~1000



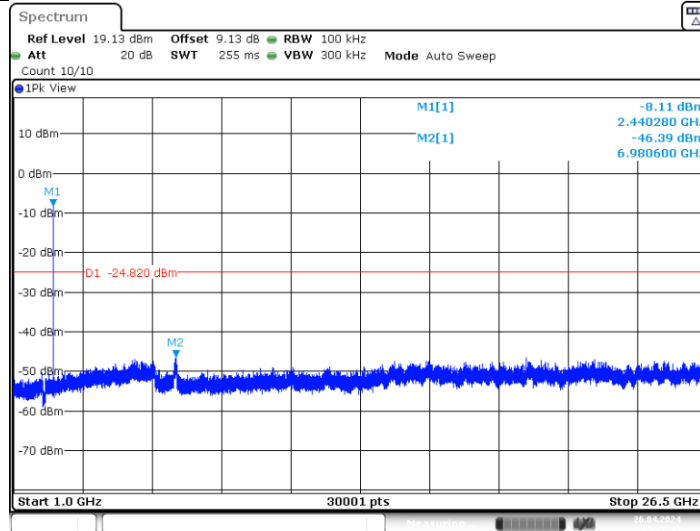
BLE_2M_Ant1_2402_1000~26500



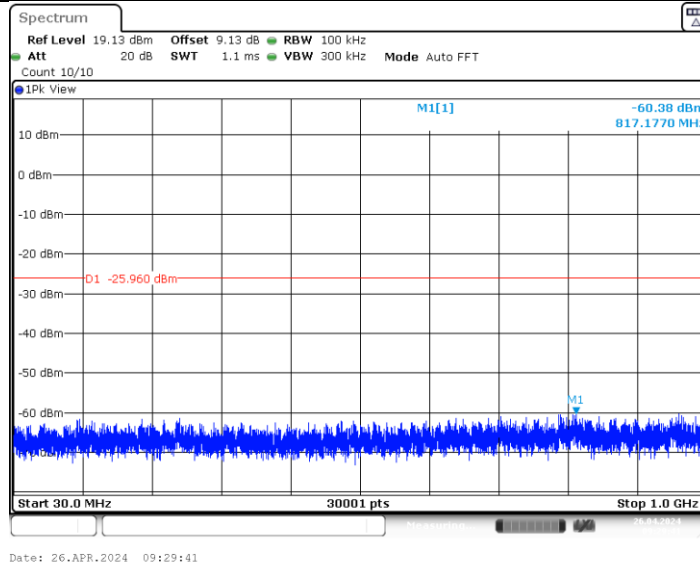
BLE_2M_Ant1_2440_30~1000



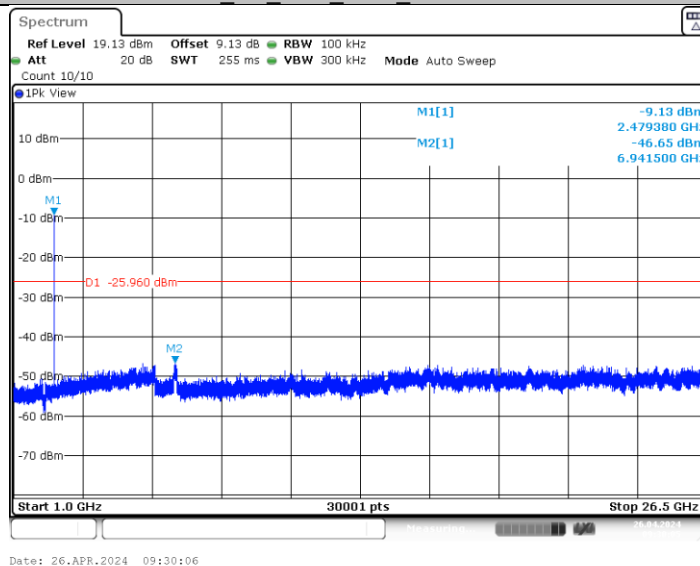
BLE 2M Ant1 2440 1000-26500



BLE 2M Ant1 2480 30~1000



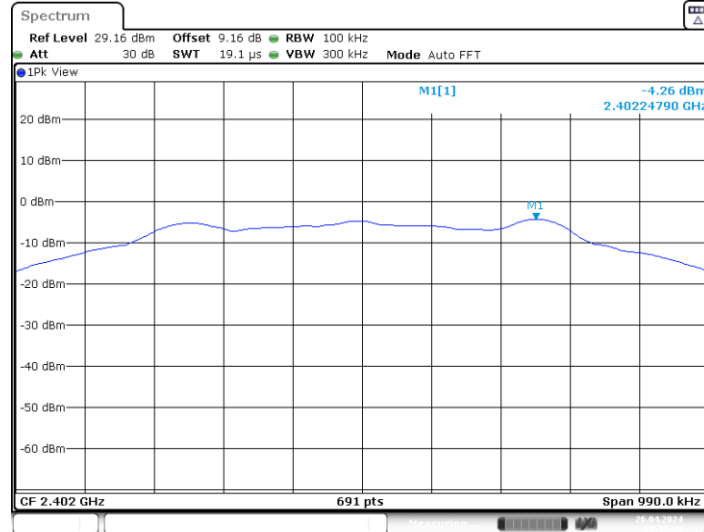
BLE 2M Ant1 2480 1000-26500



Reference level measurement

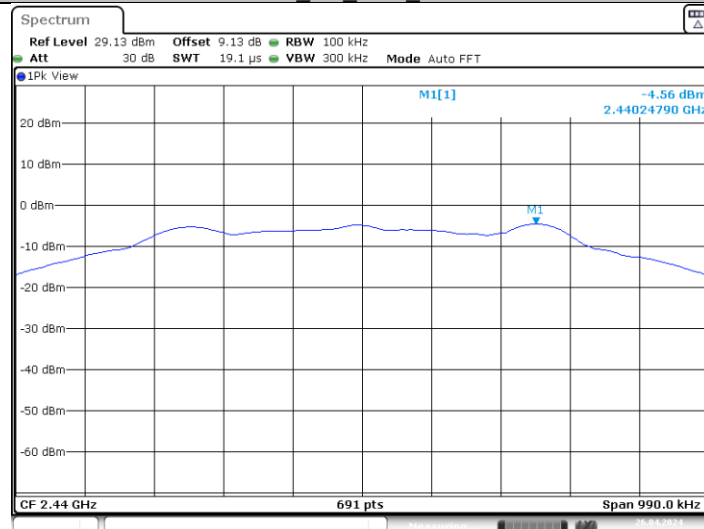
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2402.25	-4.26
		2440	2440.25	-4.56
		2480	2480.25	-5.60
BLE_2M	Ant1	2402	2401.99	-4.70
		2440	2439.99	-4.82
		2480	2479.99	-5.96

BLE_1M_Ant1_2402



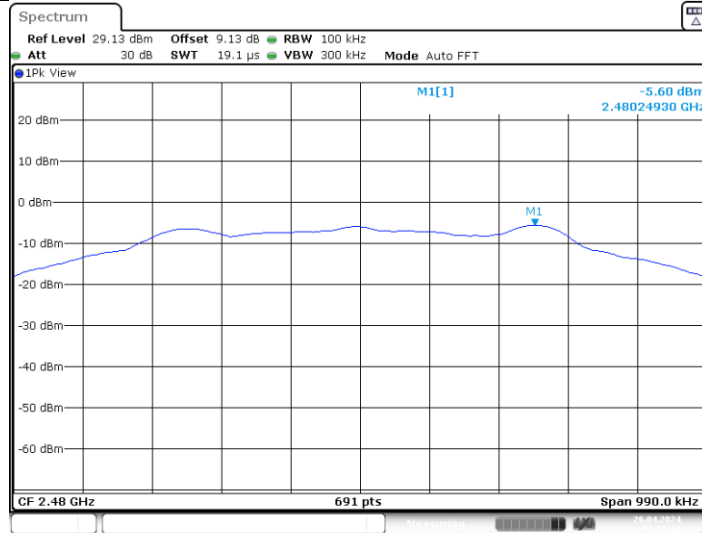
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BLE_1M_Ant1_2440



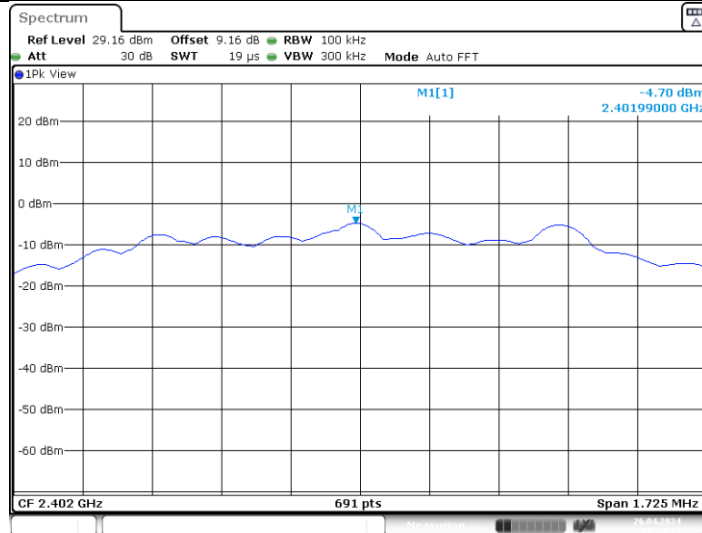
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BLE_1M_Ant1_2480



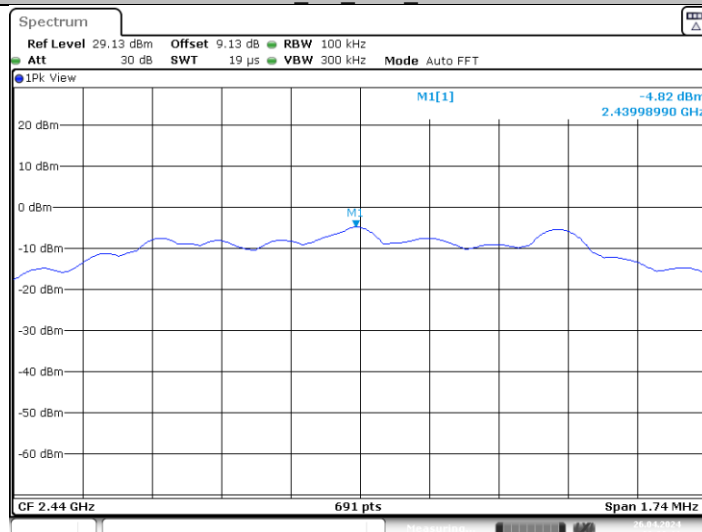
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BLE_2M_Ant1_2402

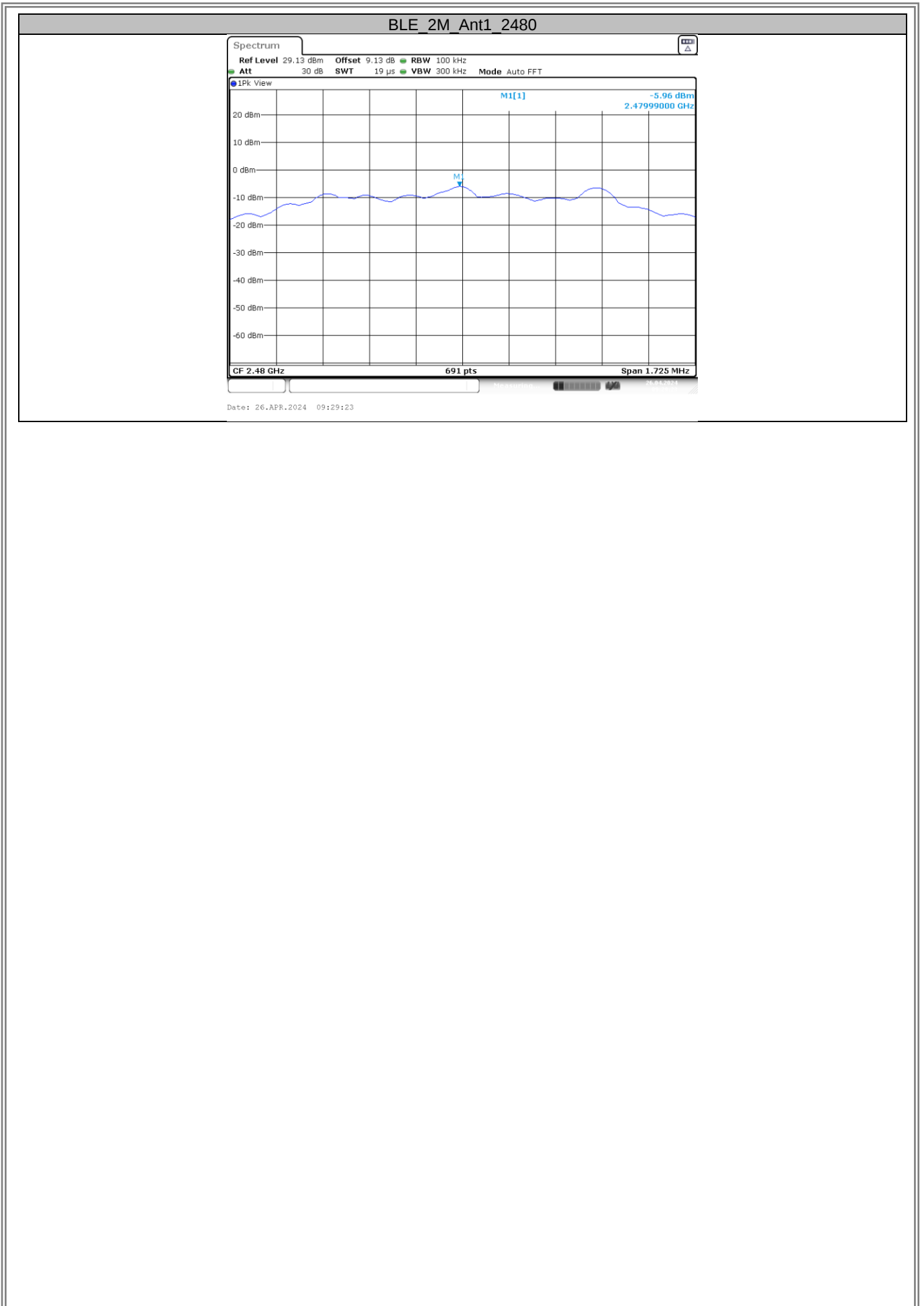


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BLE_2M_Ant1_2440



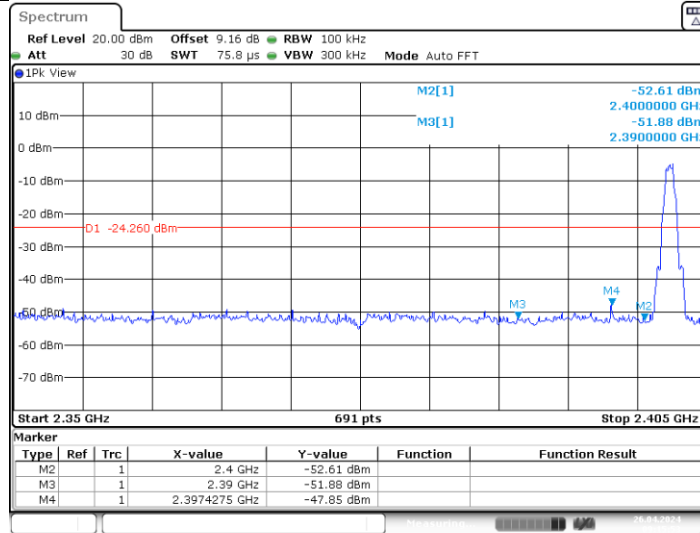
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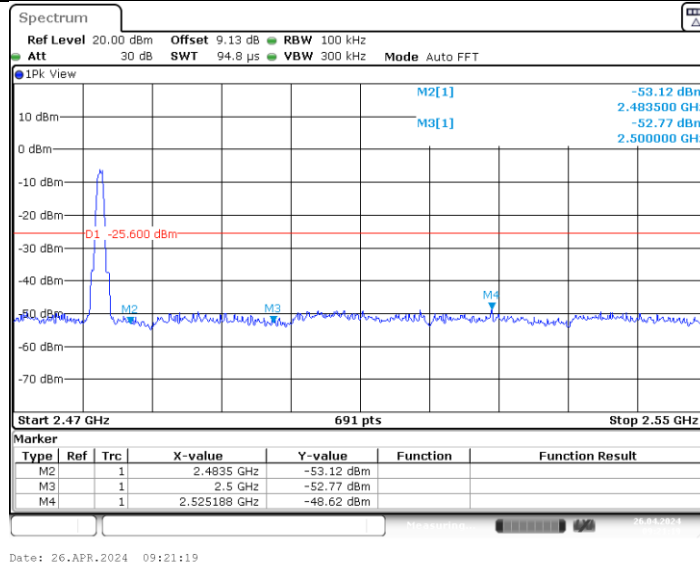
Band edge measurements

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-4.26	-47.85	≤ -24.26	PASS
		High	2480	-5.60	-48.62	≤ -25.6	PASS
BLE_2M	Ant1	Low	2402	-4.70	-37.73	≤ -24.7	PASS
		High	2480	-5.96	-48.33	≤ -25.96	PASS

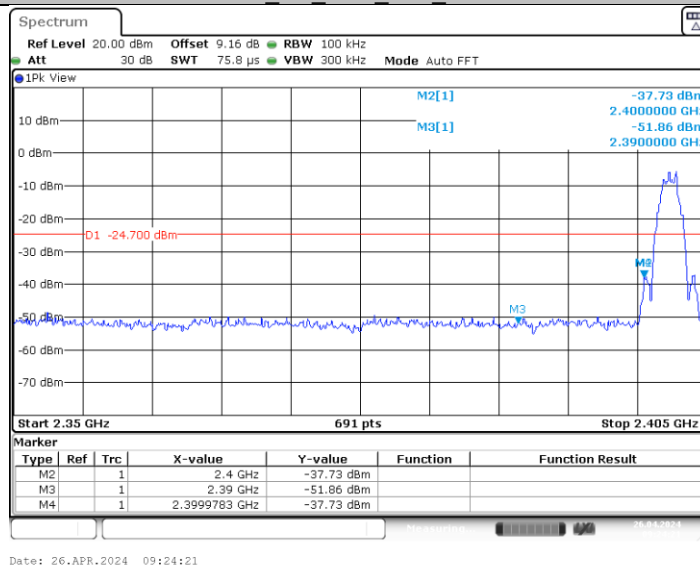
BLE 1M Ant1 Low 2402

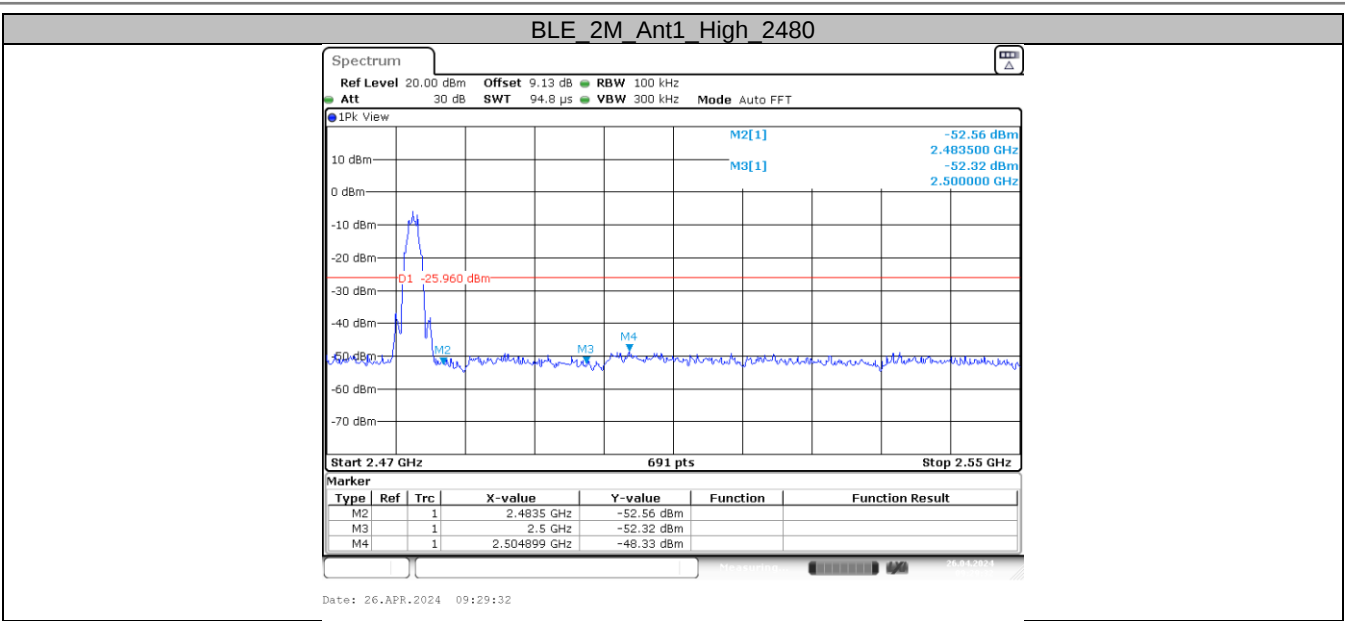


BLE 1M Ant1 High 2480



BLE 2M Ant1 Low 2402



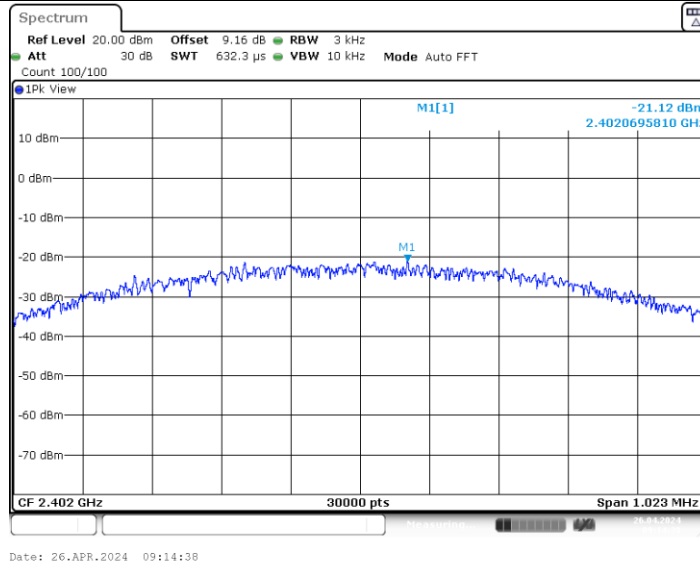


APPENDIX H- POWER SPECTRAL DENSITY

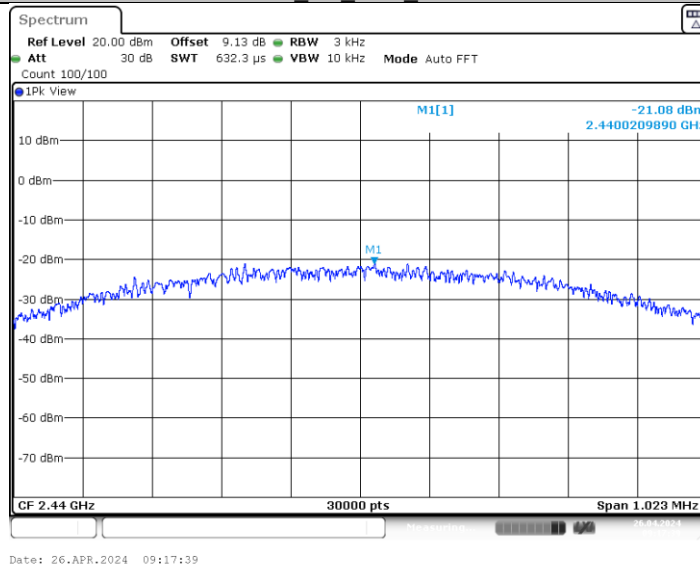
Power Spectral Density

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-21.12	≤8.00	PASS
		2440	-21.08	≤8.00	PASS
		2480	-22.14	≤8.00	PASS
BLE_2M	Ant1	2402	-23.11	≤8.00	PASS
		2440	-23.12	≤8.00	PASS
		2480	-24.30	≤8.00	PASS

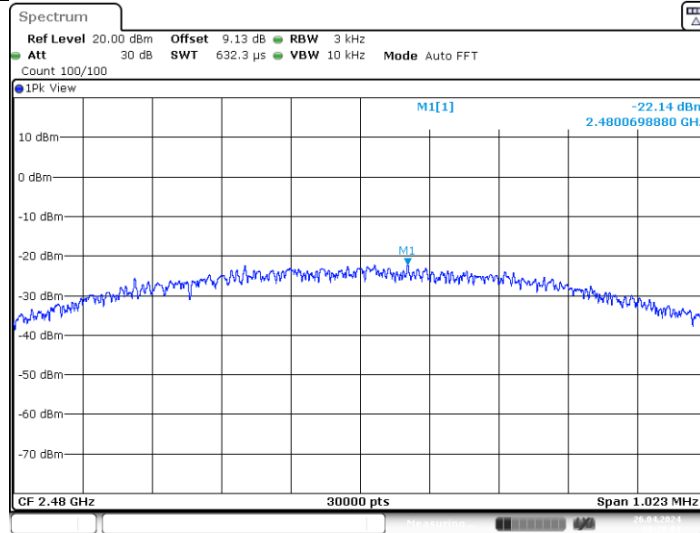
BLE_1M Ant1 2402



BLE_1M Ant1 2440

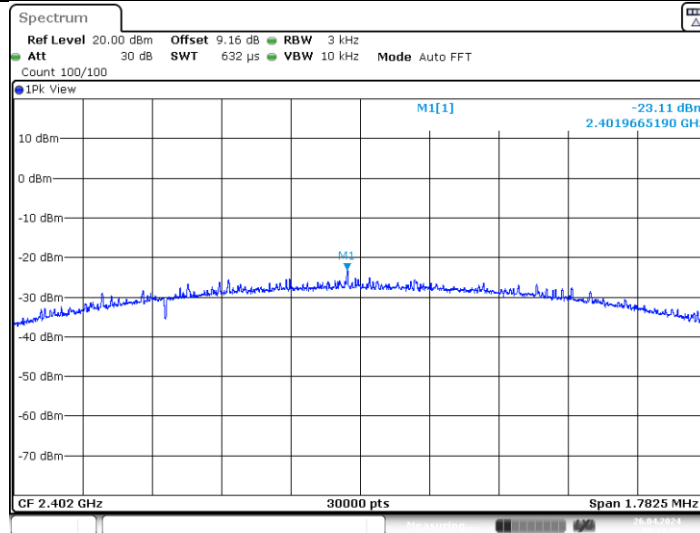


BLE 1M Ant1 2480



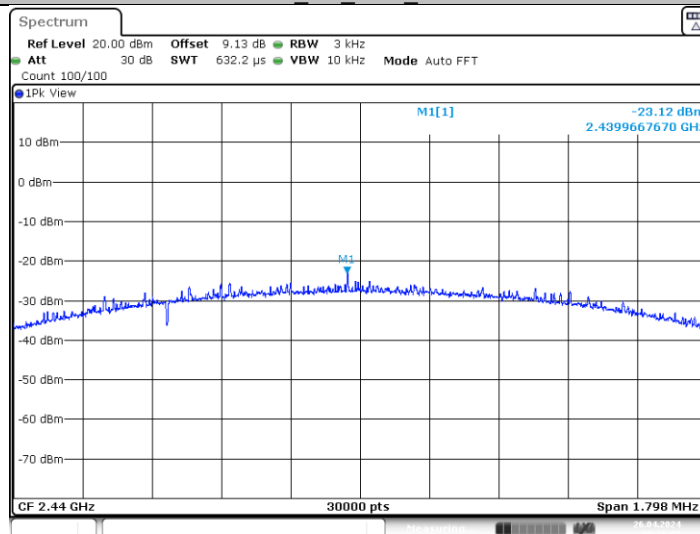
Date: 26.APR.2024 09:20:04

BLE 2M Ant1 2402

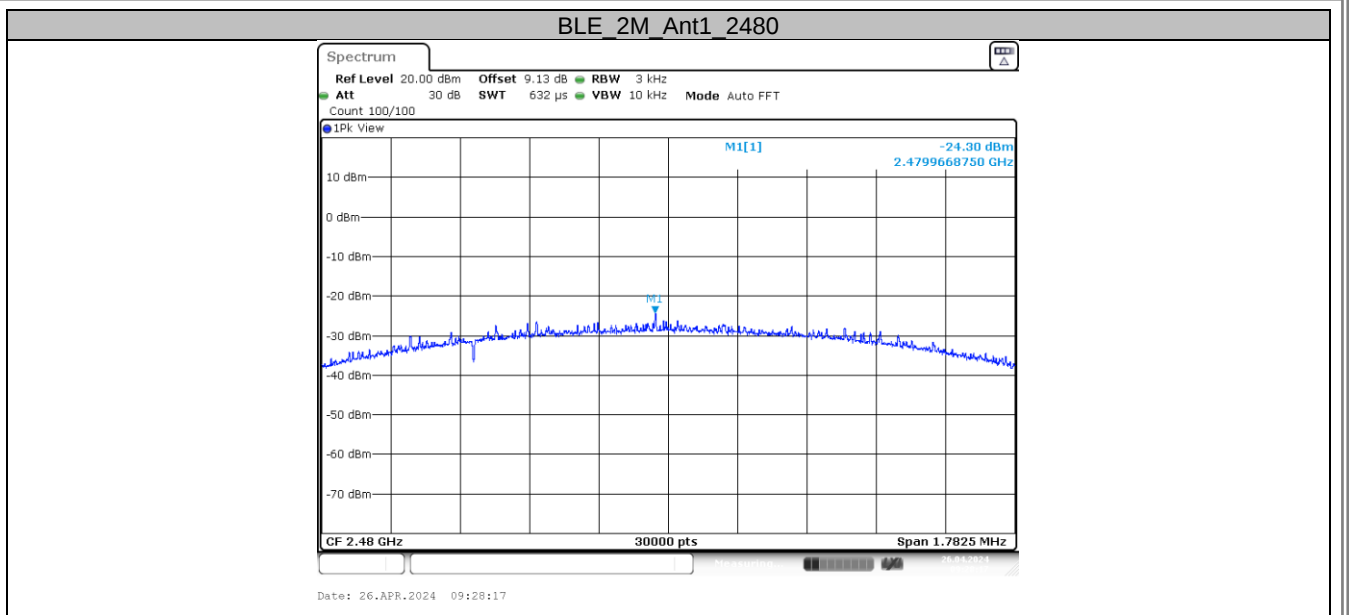


Date: 26.APR.2024 09:23:06

BLE 2M Ant1 2440



Date: 26.APR.2024 09:26:03



End of Test Report