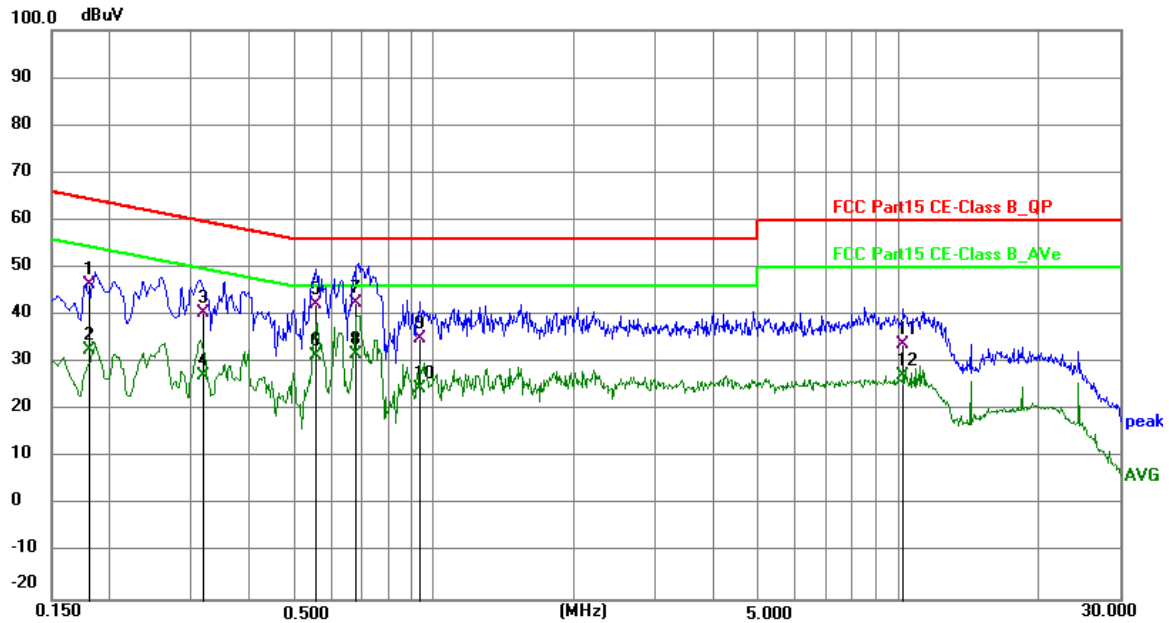




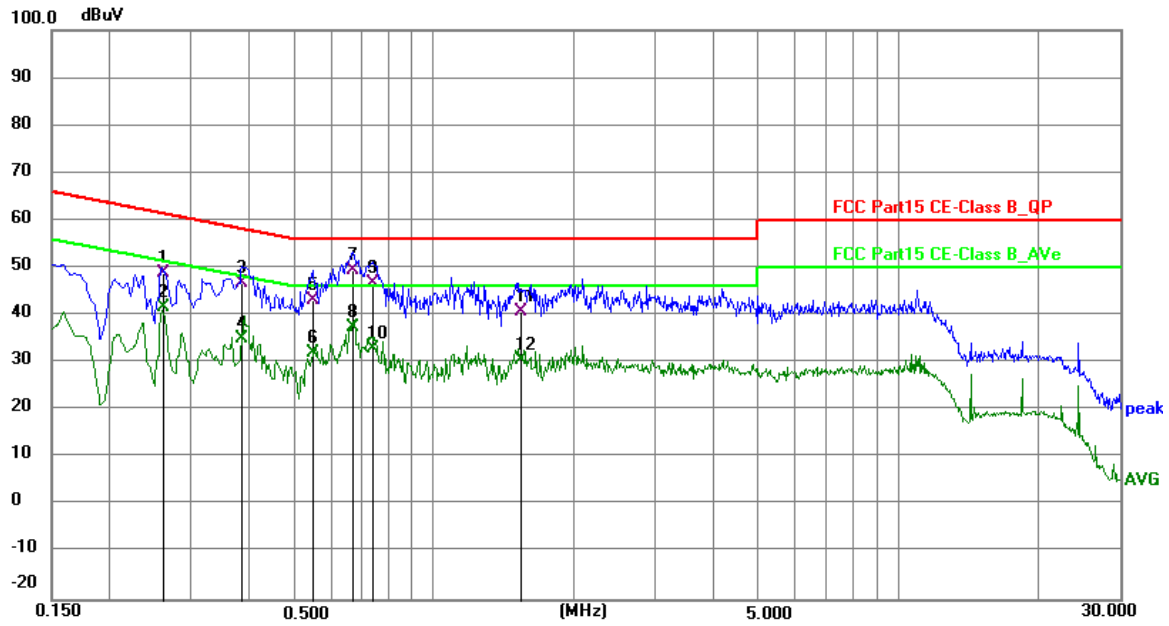
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

Polarization: Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1810	36.69	9.63	46.32	64.44	-18.12	QP	P	
2	0.1810	22.89	9.63	32.52	54.44	-21.92	AVG	P	
3	0.3185	30.77	9.63	40.40	59.75	-19.35	QP	P	
4	0.3185	17.77	9.63	27.40	49.75	-22.35	AVG	P	
5	0.5580	32.66	9.62	42.28	56.00	-13.72	QP	P	
6	0.5580	21.88	9.62	31.50	46.00	-14.50	AVG	P	
7 *	0.6803	32.78	9.63	42.41	56.00	-13.59	QP	P	
8	0.6803	22.25	9.63	31.88	46.00	-14.12	AVG	P	
9	0.9358	25.42	9.64	35.06	56.00	-20.94	QP	P	
10	0.9358	14.80	9.64	24.44	46.00	-21.56	AVG	P	
11	10.2385	24.14	9.72	33.86	60.00	-26.14	QP	P	
12	10.2385	17.53	9.72	27.25	50.00	-22.75	AVG	P	

Polarization: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2601	39.17	9.62	48.79	61.43	-12.64	QP	P	
2	0.2601	31.92	9.62	41.54	51.43	-9.89	AVG	P	
3	0.3852	37.00	9.62	46.62	58.17	-11.55	QP	P	
4	0.3852	25.38	9.62	35.00	48.17	-13.17	AVG	P	
5	0.5487	33.60	9.62	43.22	56.00	-12.78	QP	P	
6	0.5487	22.51	9.62	32.13	46.00	-13.87	AVG	P	
7 *	0.6693	39.71	9.62	49.33	56.00	-6.67	QP	P	
8	0.6693	27.74	9.62	37.36	46.00	-8.64	AVG	P	
9	0.7392	37.11	9.62	46.73	56.00	-9.27	QP	P	
10	0.7392	23.33	9.62	32.95	46.00	-13.05	AVG	P	
11	1.5384	31.16	9.65	40.81	56.00	-15.19	QP	P	
12	1.5384	20.79	9.65	30.44	46.00	-15.56	AVG	P	

APPENDIX B - RADIATED EMISSION -9 KHZ TO 30 MHZ

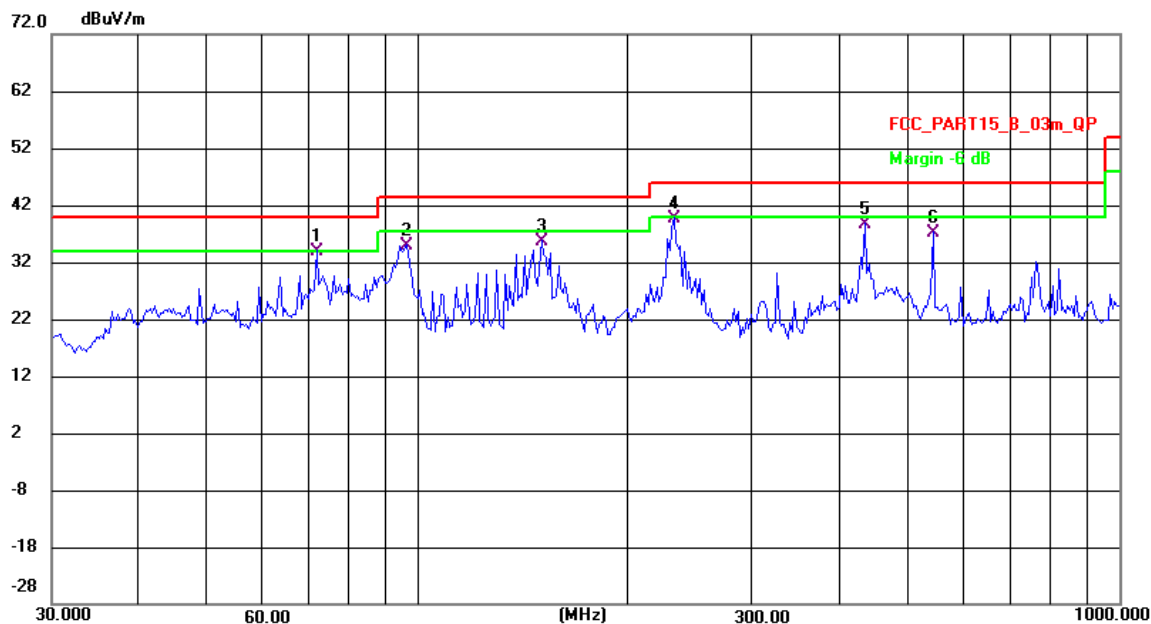
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

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
-----------	--------------------------	--------------	----------

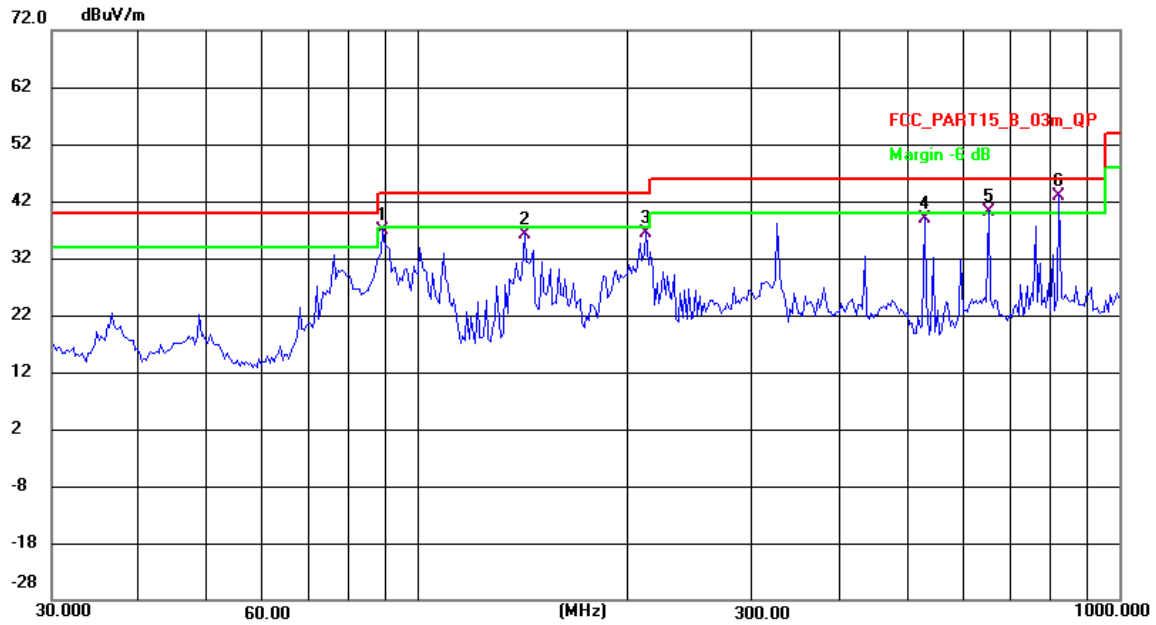


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	71.7054	58.31	-24.35	33.96	40.00	-6.04	QP	100	87	P	
2	96.3230	60.14	-25.18	34.96	43.50	-8.54	QP	210	80	P	
3	149.9676	56.40	-20.76	35.64	43.50	-7.86	QP	154	58	P	
4	231.8531	64.48	-24.87	39.61	46.00	-6.39	QP	100	65	P	
5	433.3397	56.77	-18.19	38.58	46.00	-7.42	QP	109	347	P	
6	542.6104	52.88	-15.75	37.13	46.00	-8.87	QP	199	156	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	89.1579	62.64	-25.74	36.90	43.50	-6.60	QP	199	77	P	
2	141.7694	57.71	-21.48	36.23	43.50	-7.27	QP	232	63	P	
3	211.6112	61.53	-25.12	36.41	43.50	-7.09	QP	199	55	P	
4	527.5707	55.15	-16.23	38.92	46.00	-7.08	QP	185	12	P	
5 !	651.3831	52.96	-12.71	40.25	46.00	-5.75	QP	100	349	P	
6 *	821.3871	52.44	-9.59	42.85	46.00	-3.15	QP	108	354	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	88.01	-27.15	60.86	74	-13.14	Peak
2	4804	V	69.12	-27.15	41.97	54	-12.03	Avg
3	7206	--	--	--	--	--	--	--
4	9608	--	--	--	--	--	--	--
5	4804	H	90.24	-27.15	63.09	74	-10.91	Peak
6	4804	H	68.32	-27.15	41.17	54	-12.83	Avg
7	7206	--	--	--	--	--	--	--
8	9608	--	--	--	--	--	--	--

Test Mode : GFSK TX Mid

1	4880	V	90.63	-27.83	62.8	74	-11.20	Peak
2	4880	V	71.26	-27.83	43.43	54	-10.57	Avg
3	7320	--	--	--	--	--	--	--
4	9760	--	--	--	--	--	--	--
5	4880	H	90.35	-27.83	62.52	74	-11.48	Peak
6	4880	H	70.01	-27.83	42.18	54	-11.82	Avg
7	7320	--	--	--	--	--	--	--
8	9760	--	--	--	--	--	--	--

Test Mode : GFSK TX High

1	4960	V	93.61	-28.45	65.16	74	-8.84	Peak
2	4960	V	72.34	-28.45	43.89	54	-10.11	Avg
3	7440	--	--	--	--	--	--	--
4	9920	--	--	--	--	--	--	--
5	4960	H	90.16	-28.45	61.71	74	-12.29	Peak
6	4960	H	69.31	-28.45	40.86	54	-13.14	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

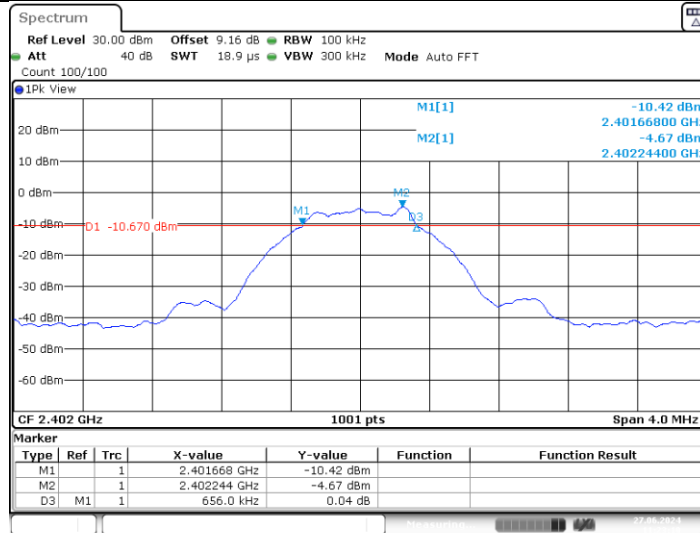
Test Results					PASS			
Frequency Range					2310MHz~2410MHz			
Test Mode					1Mbps: GFSK TX 2402MHz			
N o.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	74.64	-21.47	53.17	74.00	-20.83	Peak
2	2390	H	--	-21.47	--	54.00	--	Avg
3	2400	H	73.17	-26.12	47.05	74.00	-26.95	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	78.16	-25.29	52.87	74.00	-21.13	Peak
2	2483.5	H	--	-25.29	--	54.00	--	Avg
1	2483.5	V	78.39	-25.29	53.10	74.00	-20.90	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

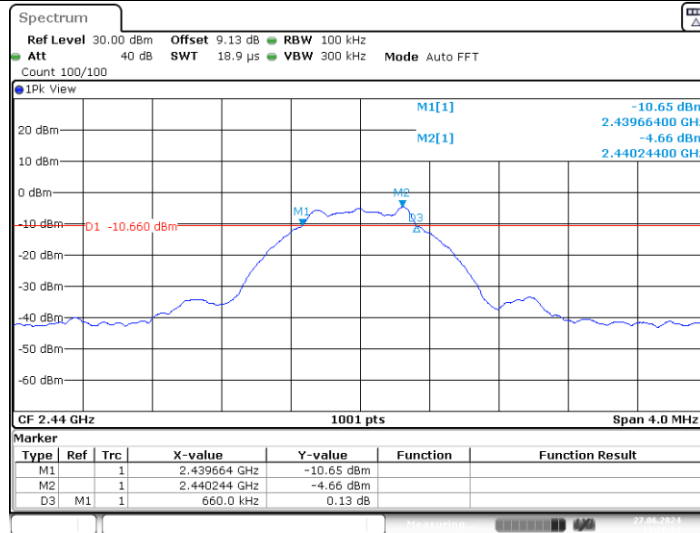
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.66	2401.67	2402.32	0.5	PASS
		2440	0.66	2439.66	2440.32	0.5	PASS
		2480	0.66	2479.66	2480.33	0.5	PASS
BLE_2M	Ant1	2402	1.15	2401.43	2402.58	0.5	PASS
		2440	1.15	2439.44	2440.58	0.5	PASS
		2480	1.14	2479.43	2480.58	0.5	PASS

BLE_1M Ant1 2402



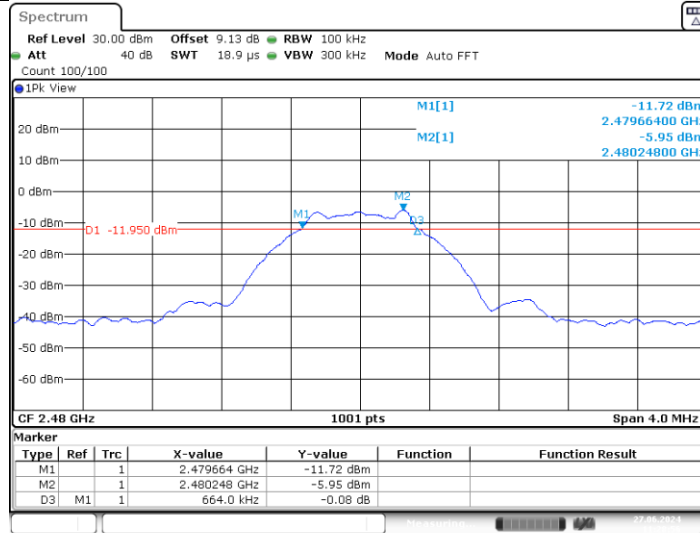
Date: 27.JUN.2024 11:23:10

BLE_1M Ant1 2440



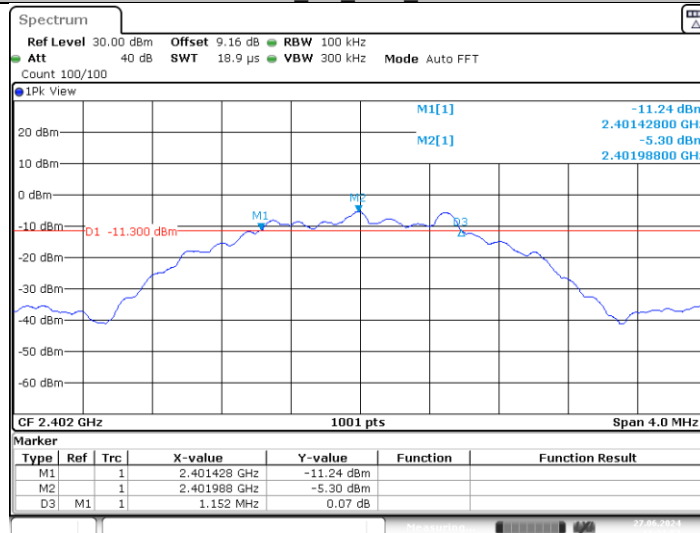
Date: 27.JUN.2024 11:26:34

BLE 1M Ant1 2480



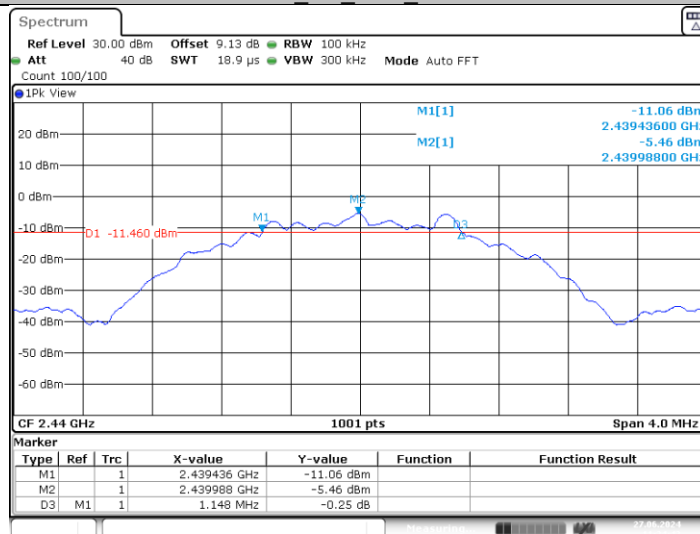
Date: 27.JUN.2024 11:28:56

BLE 2M Ant1 2402

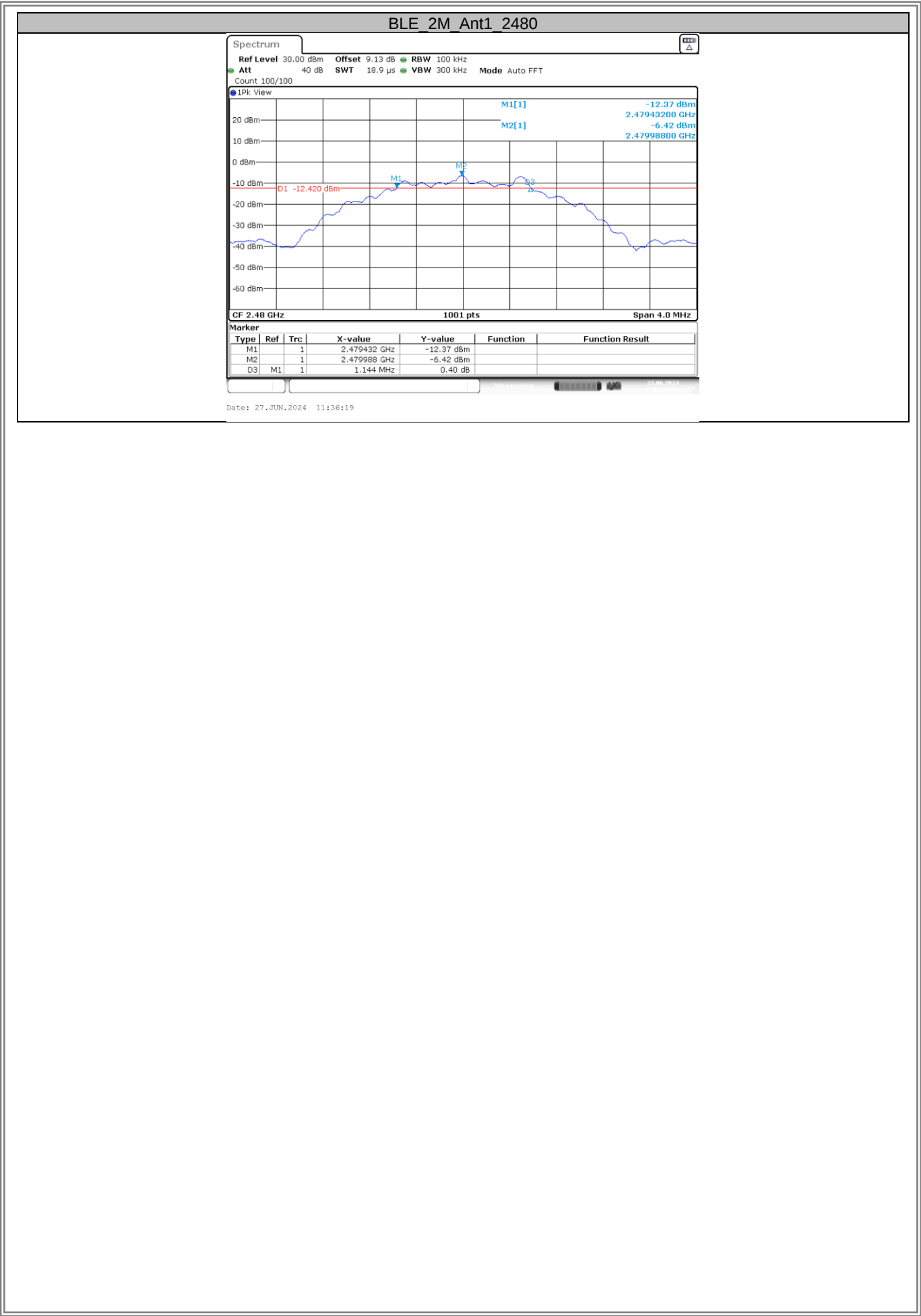


Date: 27.JUN.2024 11:31:54

BLE 2M Ant1 2440



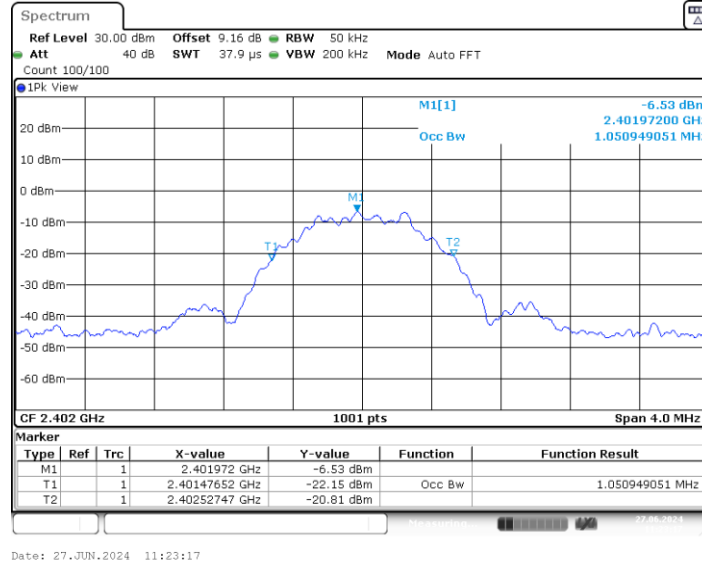
Date: 27.JUN.2024 11:34:43



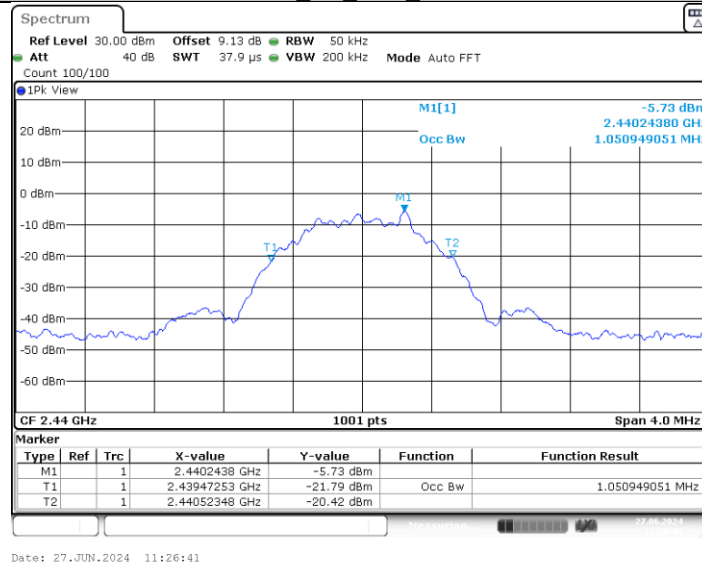
99% Occupied Bandwidth

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	2439.4725	2440.5235	---	---
		2480	1.063	2479.4645	2480.5275	---	---
BLE_2M	Ant1	2402	2.078	2400.9770	2403.0549	---	---
		2440	2.078	2438.9690	2441.0470	---	---
		2480	2.094	2478.9610	2481.0549	---	---

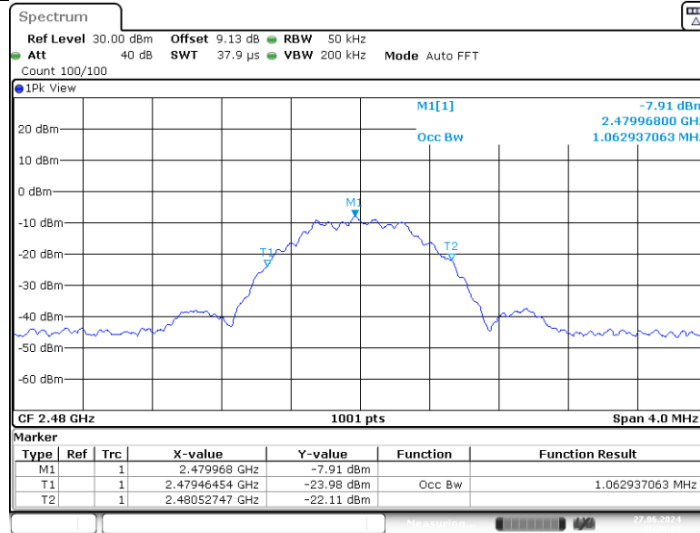
BLE 1M Ant1 2402



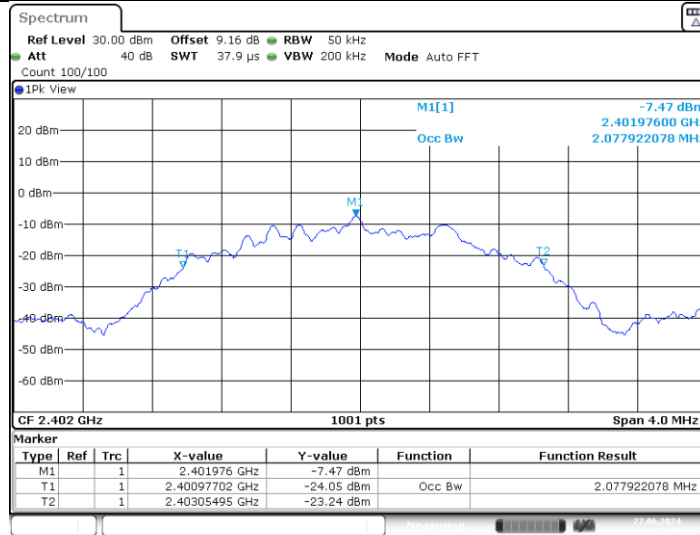
BLE 1M Ant1 2440



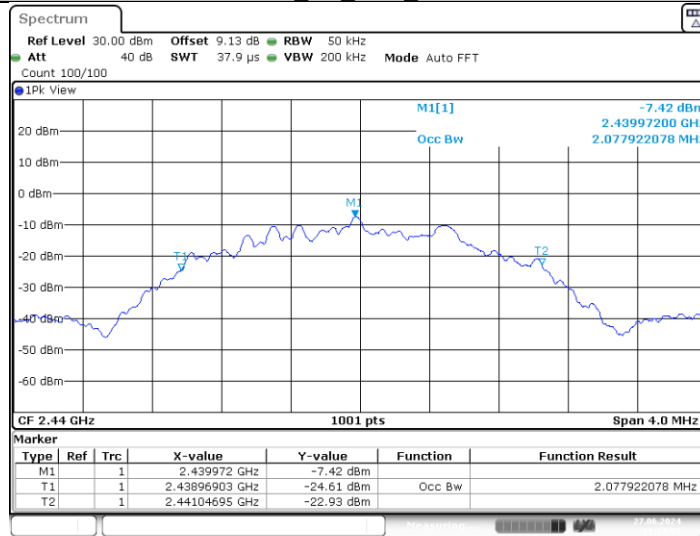
BLE 1M Ant1 2480

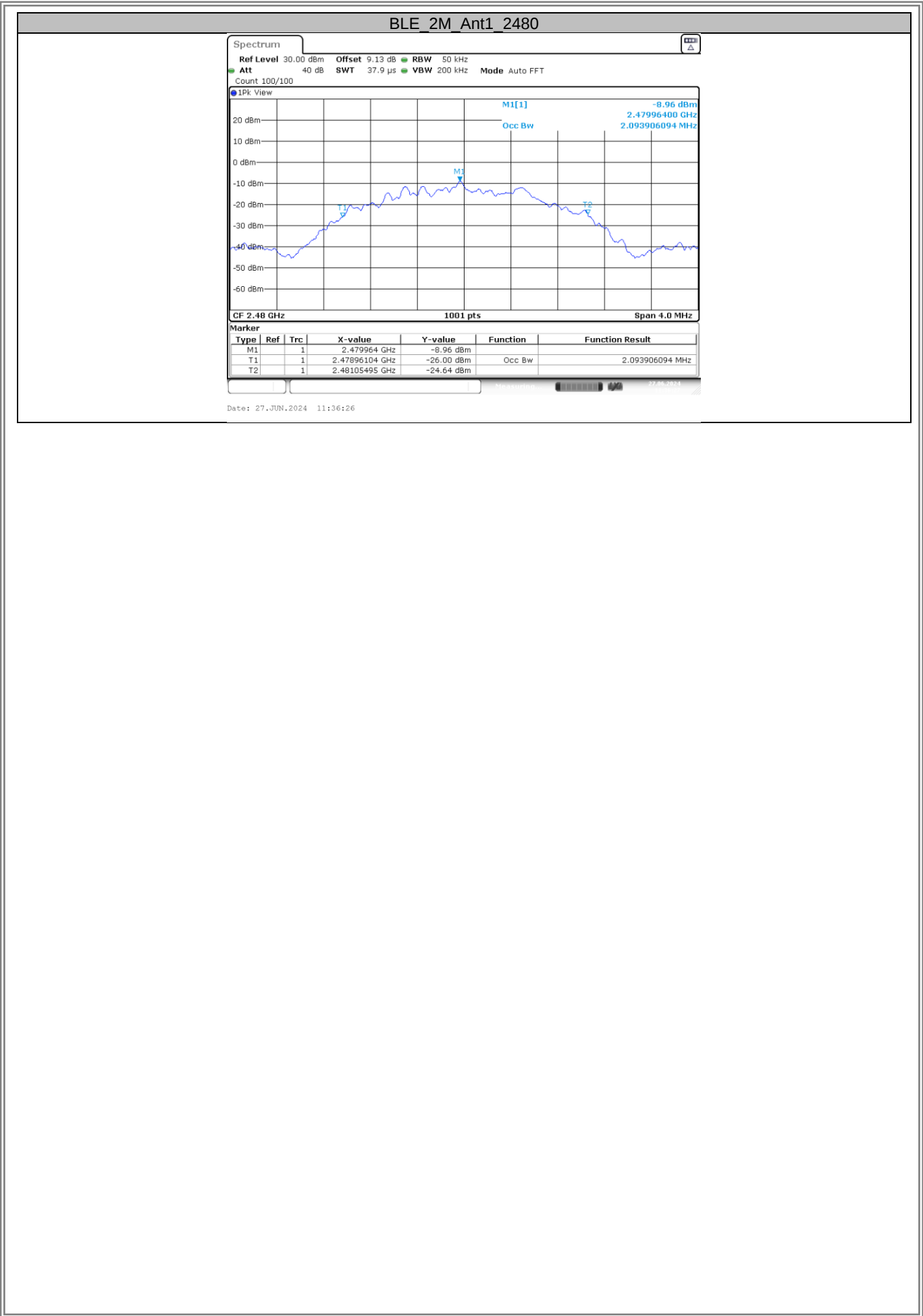


BLE 2M Ant1 2402



BLE 2M Ant1 2440

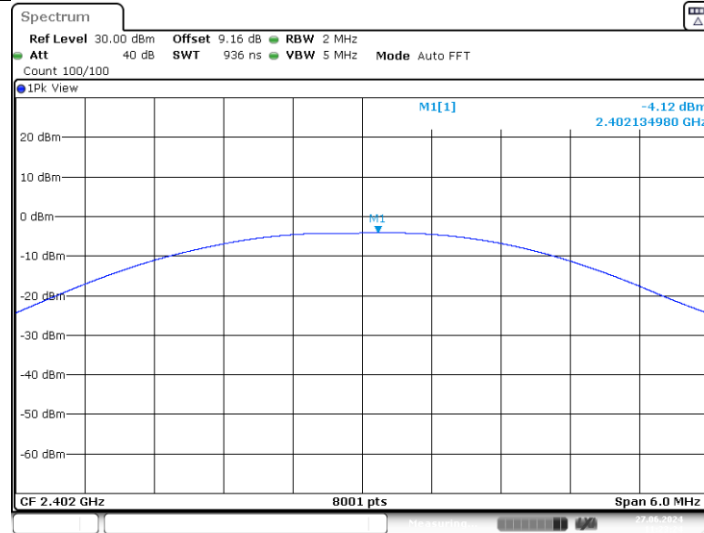




APPENDIX F - MAXIMUM OUTPUT POWER

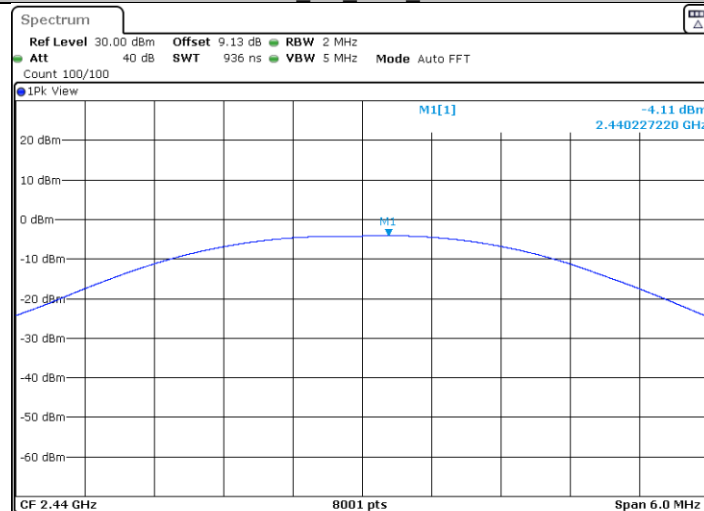
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-4.12	≤30	PASS
		2440	-4.11	≤30	PASS
		2480	-5.28	≤30	PASS
BLE_2M	Ant1	2402	-4.17	≤30	PASS
		2440	-4.00	≤30	PASS
		2480	-5.27	≤30	PASS

BLE_1M Ant1 2402



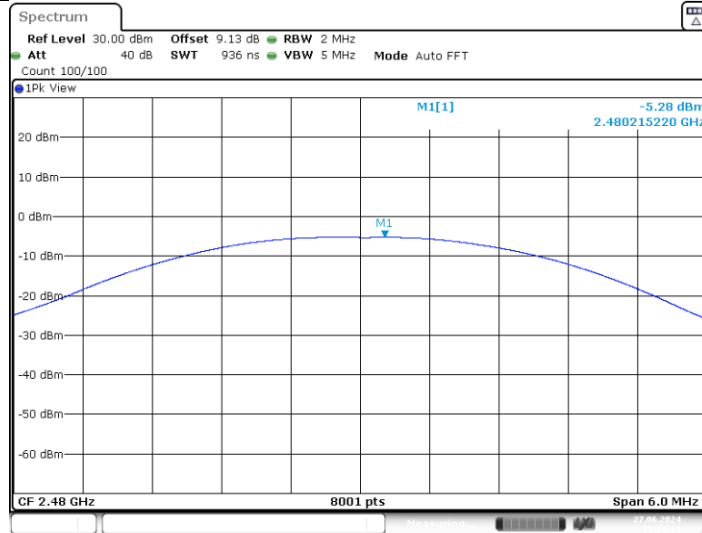
Date: 27.JUN.2024 11:23:25

BLE_1M Ant1 2440



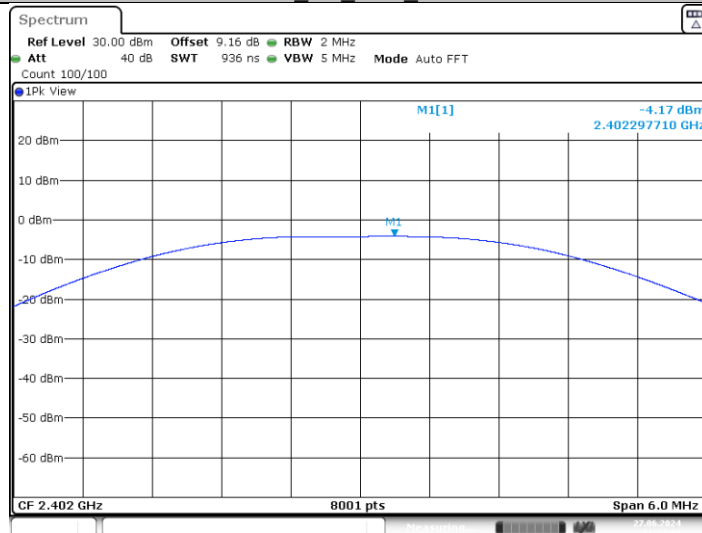
Date: 27.JUN.2024 11:26:48

BLE_1M_Ant1_2480



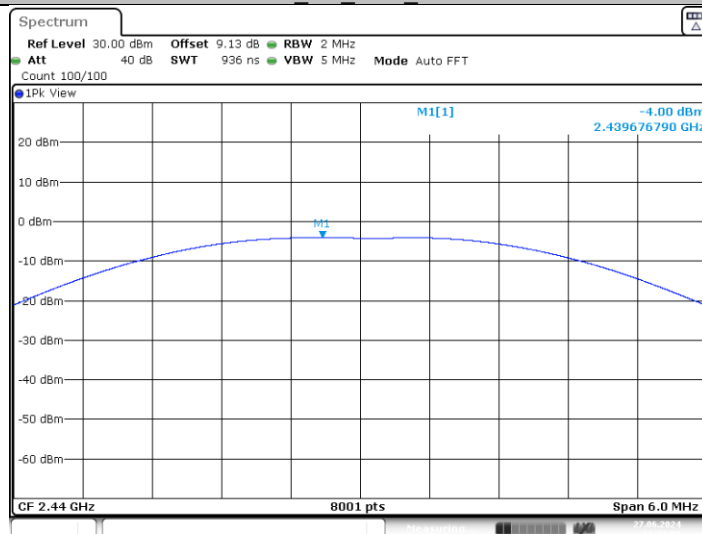
Date: 27.JUN.2024 11:29:11

BLE_2M_Ant1_2402

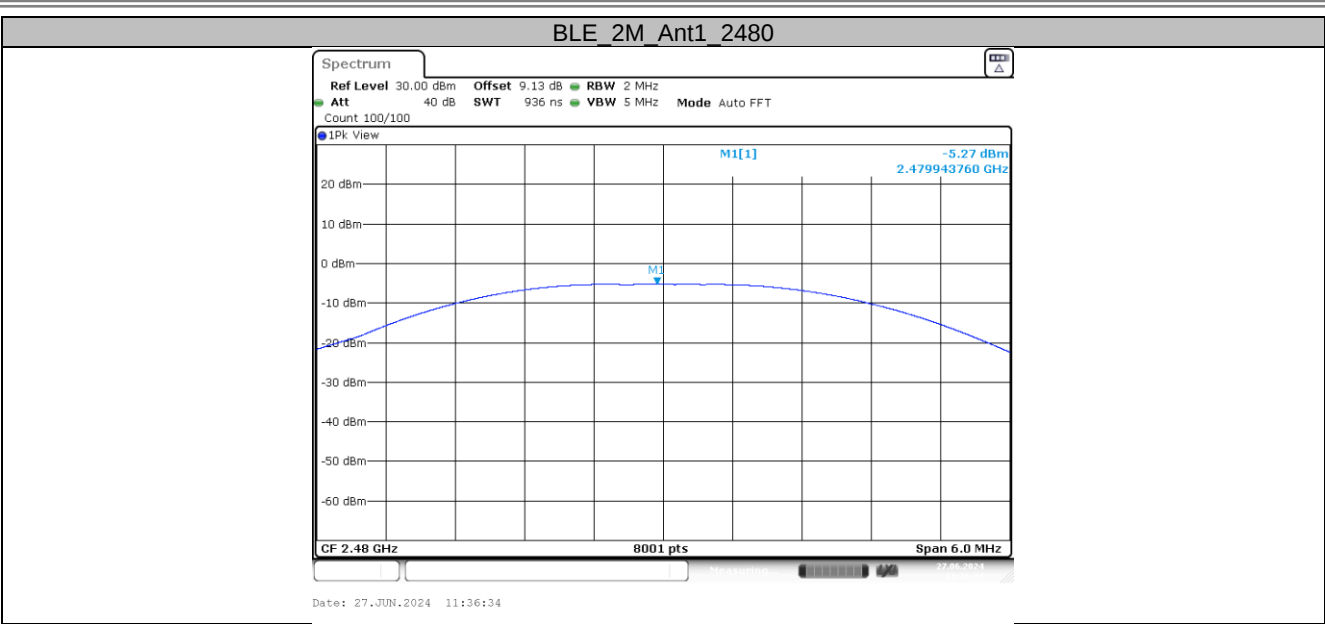


Date: 27.JUN.2024 11:32:09

BLE_2M_Ant1_2440



Date: 27.JUN.2024 11:34:58

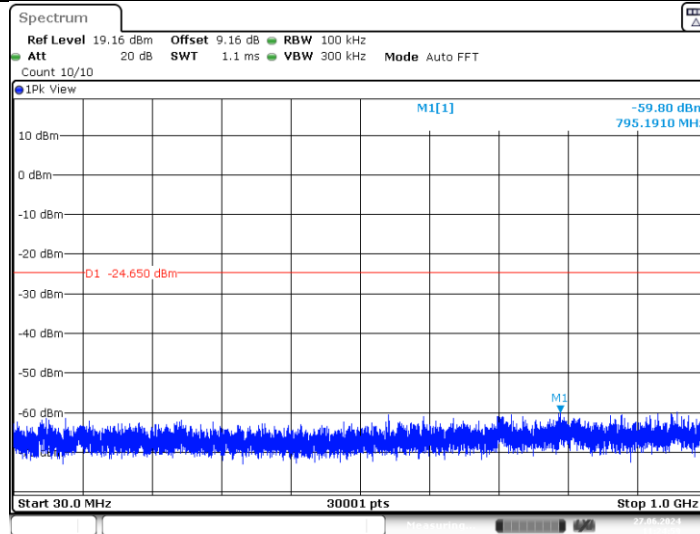


APPENDIX G - CONDUCTED SPURIOUS EMISSION

Spurious Emission

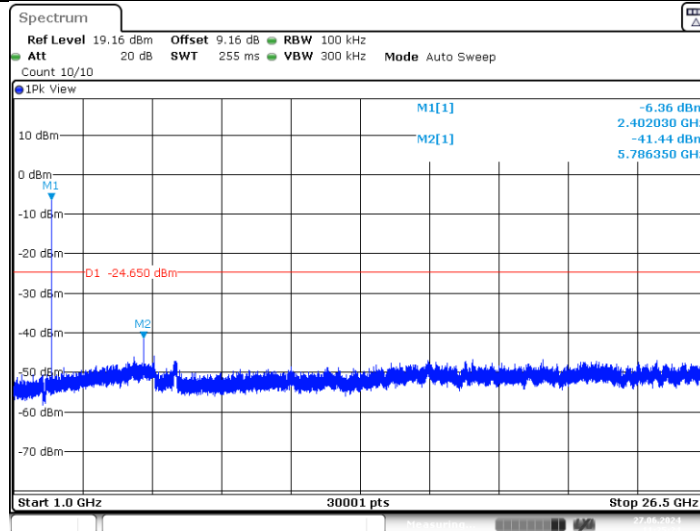
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	-4.65	-59.8	≤-24.65	PASS
			1000~26500	-4.65	-41.44	≤-24.65	PASS
		2440	30~1000	-4.71	-59.88	≤-24.71	PASS
			1000~26500	-4.71	-45.6	≤-24.71	PASS
		2480	30~1000	-5.96	-59.32	≤-25.96	PASS
			1000~26500	-5.96	-46.23	≤-25.96	PASS
BLE_2M	Ant1	2402	30~1000	-5.27	-58.4	≤-25.27	PASS
			1000~26500	-5.27	-45.87	≤-25.27	PASS
		2440	30~1000	-5.29	-59.7	≤-25.29	PASS
			1000~26500	-5.29	-46.59	≤-25.29	PASS
		2480	30~1000	-6.40	-60.24	≤-26.4	PASS
			1000~26500	-6.40	-46.03	≤-26.4	PASS

BLE_1M_Ant1_2402_30~1000



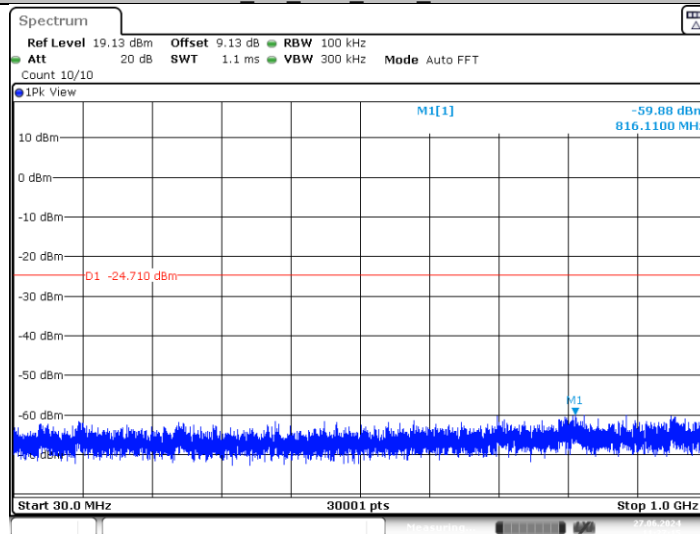
Date: 27.JUN.2024 11:25:00

BLE_1M_Ant1_2402_1000~26500



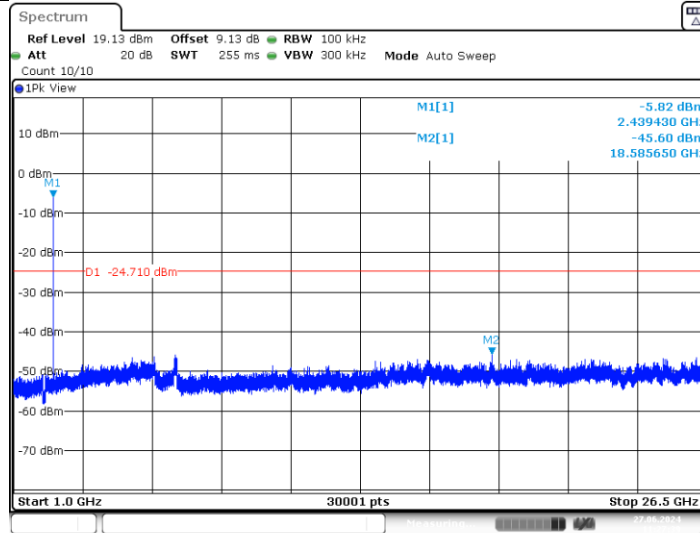
Date: 27.JUN.2024 11:25:24

BLE_1M_Ant1_2440_30~1000

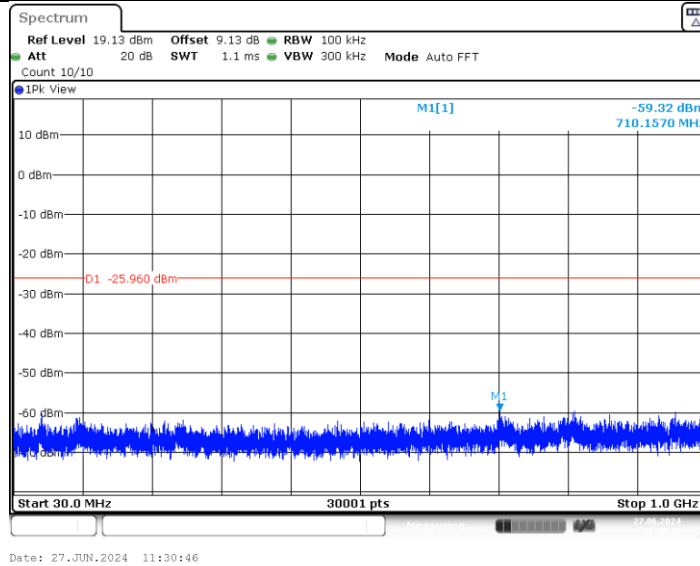


Date: 27.JUN.2024 11:27:15

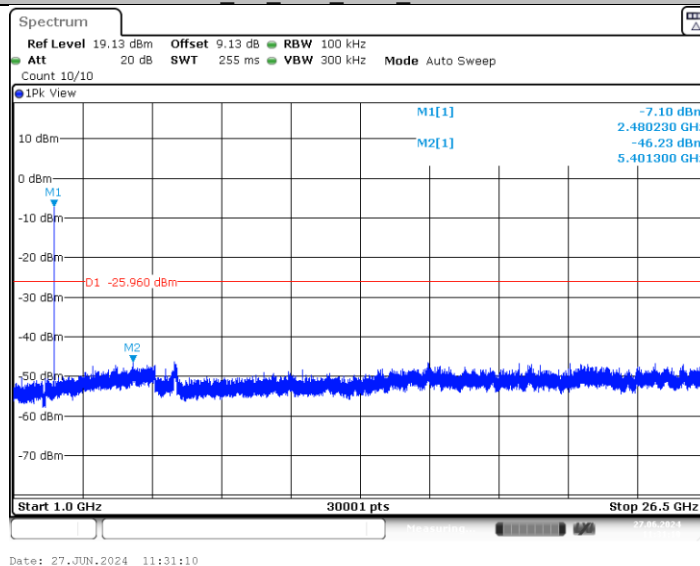
BLE_1M_Ant1_2440_1000-26500



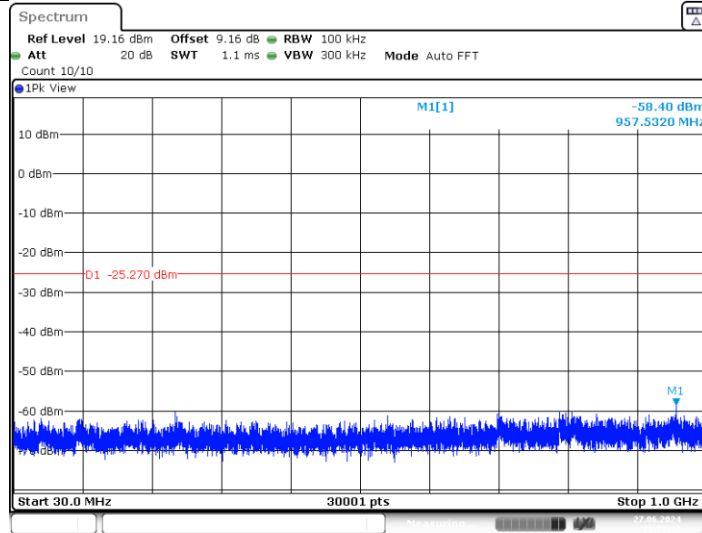
BLE_1M_Ant1_2480_30-1000



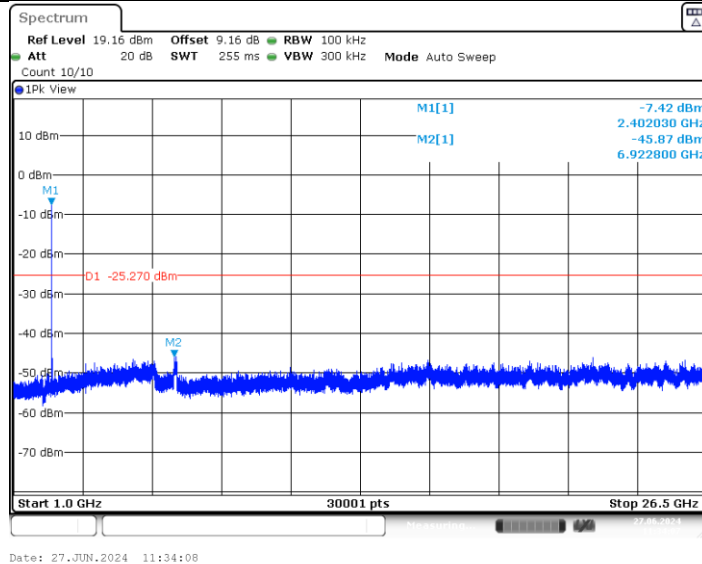
BLE_1M_Ant1_2480_1000-26500



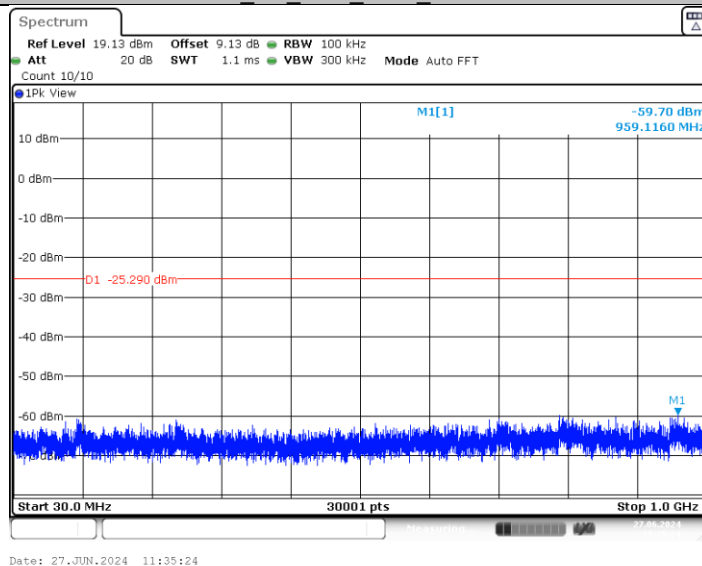
BLE_2M_Ant1_2402_30~1000



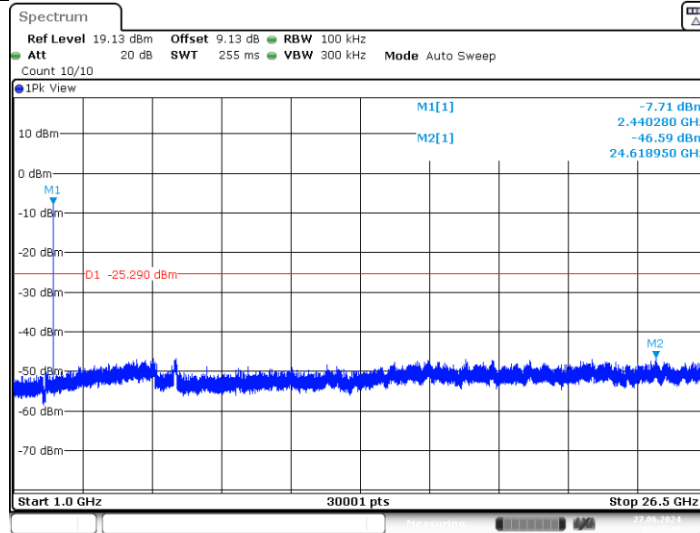
BLE_2M_Ant1_2402_1000~26500



BLE_2M_Ant1_2440_30~1000

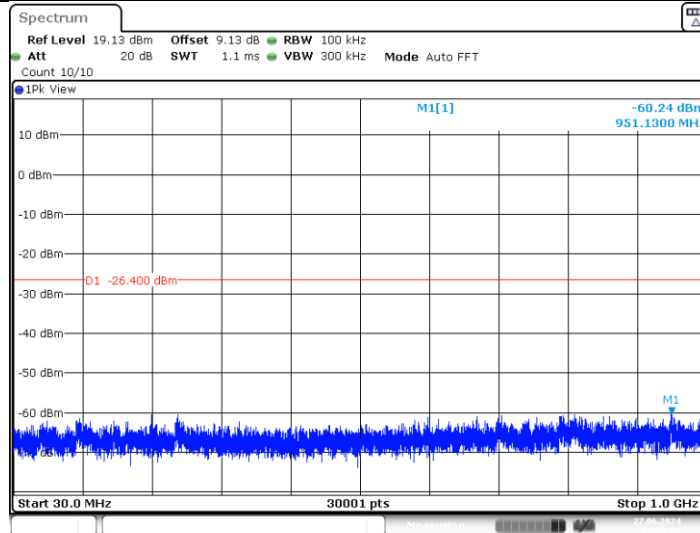


BLE 2M Ant1 2440 1000-26500



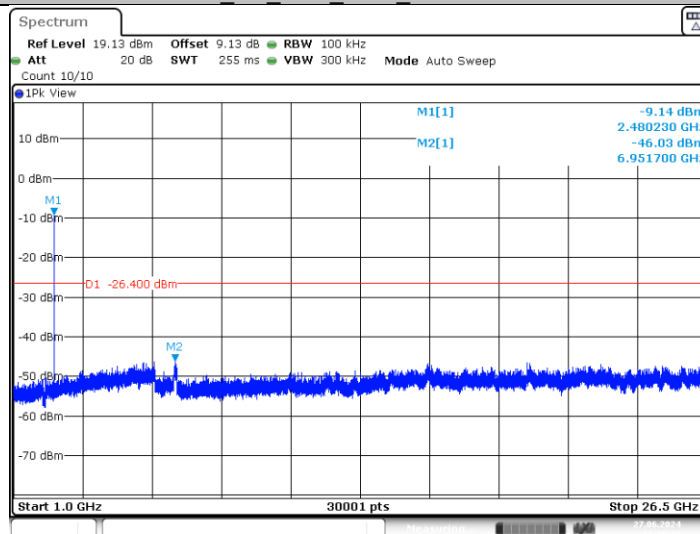
Date: 27.JUN.2024 11:35:49

BLE 2M Ant1 2480 30-1000



Date: 27.JUN.2024 11:38:08

BLE 2M Ant1 2480 1000-26500

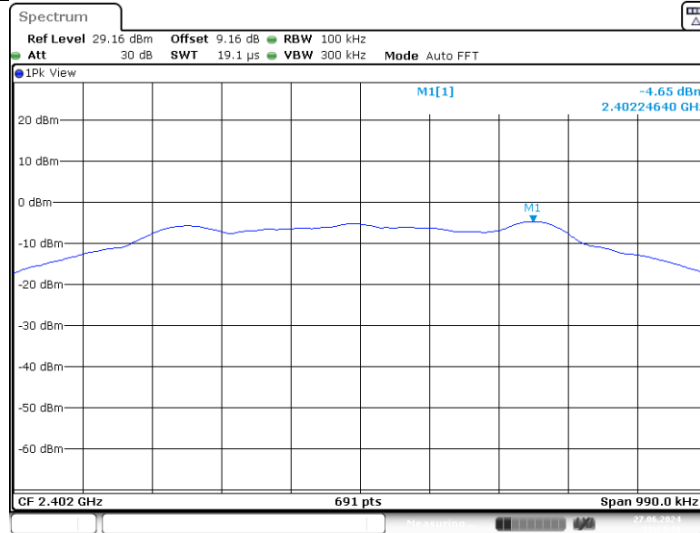


Date: 27.JUN.2024 11:38:33

Reference level measurement

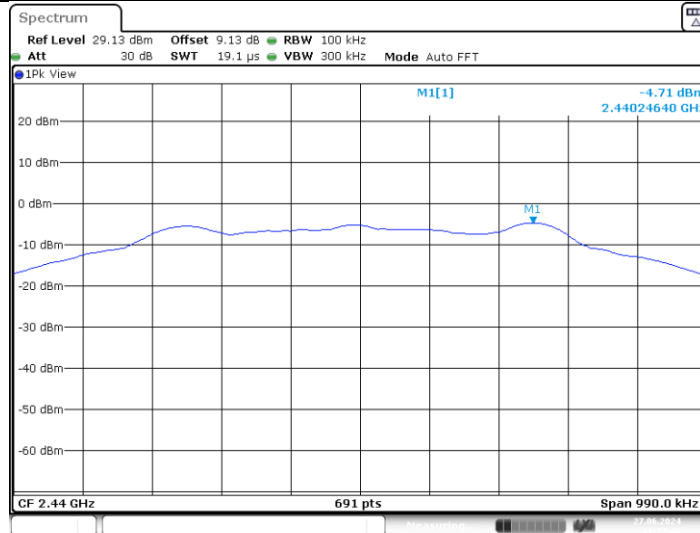
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2402.25	-4.65
		2440	2440.25	-4.71
		2480	2480.25	-5.96
BLE_2M	Ant1	2402	2401.99	-5.27
		2440	2439.99	-5.29
		2480	2479.99	-6.40

BLE_1M_Ant1_2402



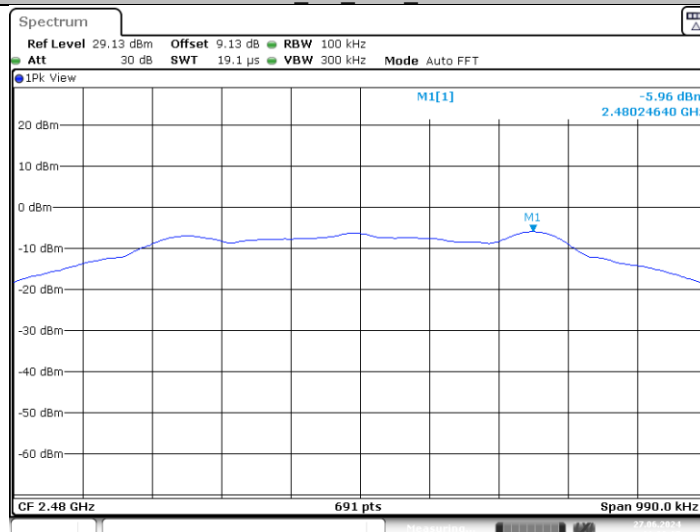
Date: 27.JUN.2024 11:24:41

BLE_1M_Ant1_2440

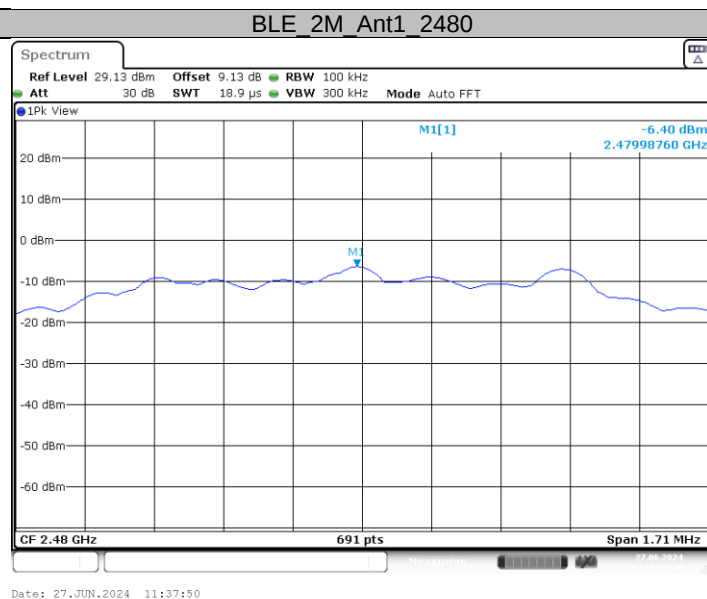
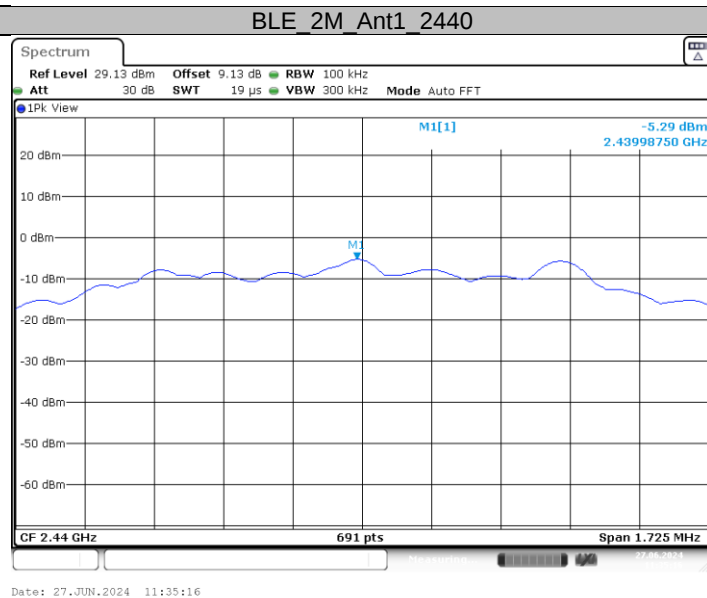
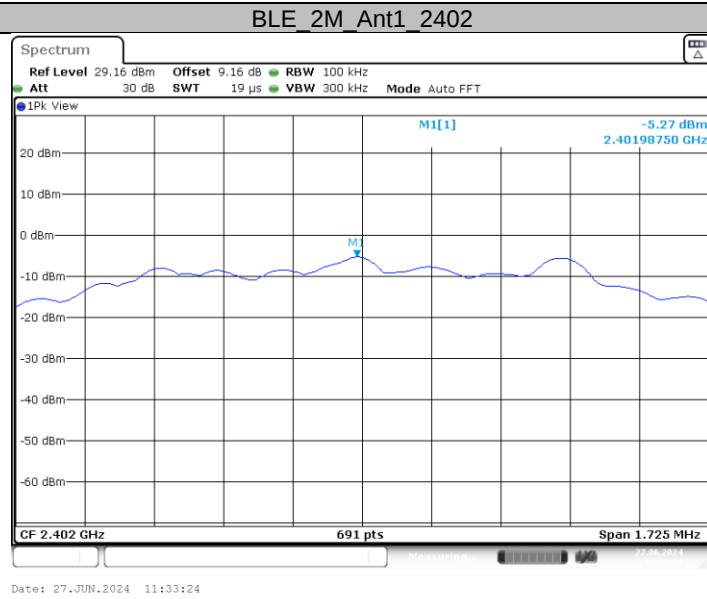


Date: 27.JUN.2024 11:27:07

BLE_1M_Ant1_2480



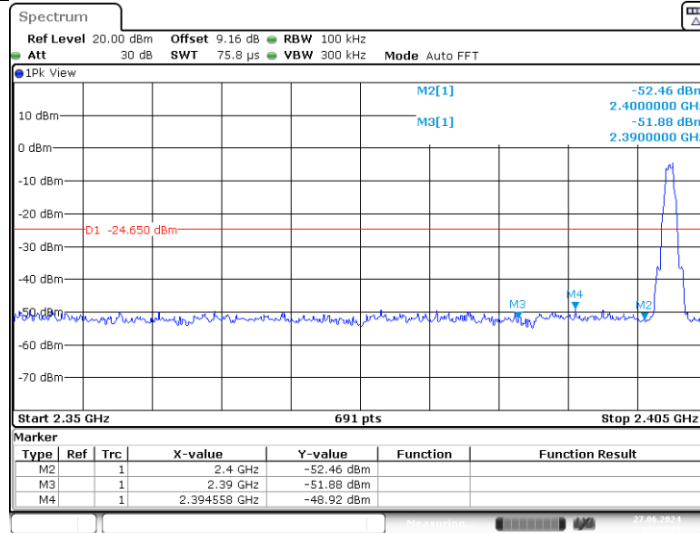
Date: 27.JUN.2024 11:30:27



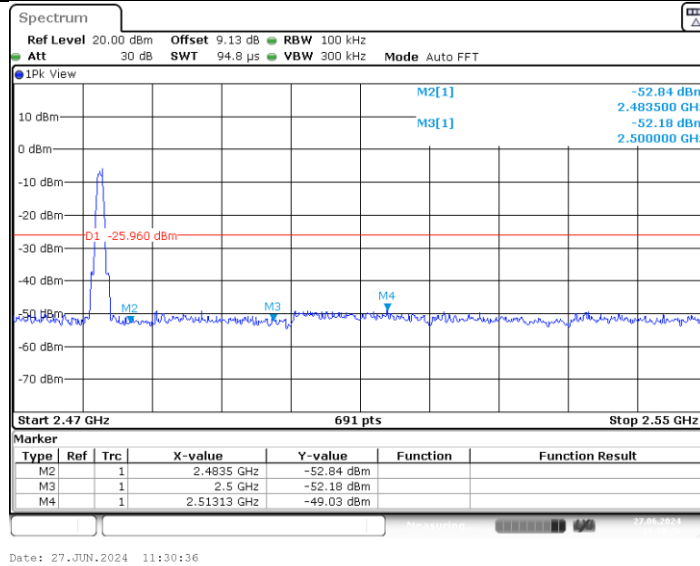
Band edge measurements

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-4.65	-48.92	≤ -24.65	PASS
		High	2480	-5.96	-49.03	≤ -25.96	PASS
BLE_2M	Ant1	Low	2402	-5.27	-37.25	≤ -25.27	PASS
		High	2480	-6.40	-47.01	≤ -26.4	PASS

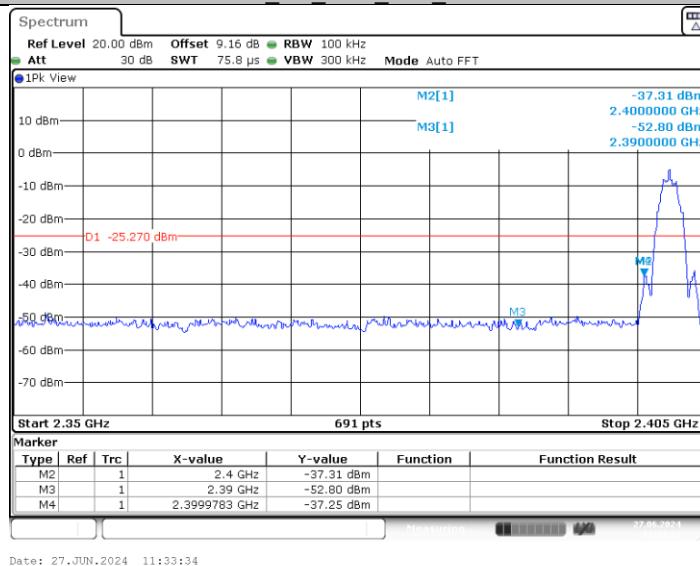
BLE 1M Ant1 Low 2402

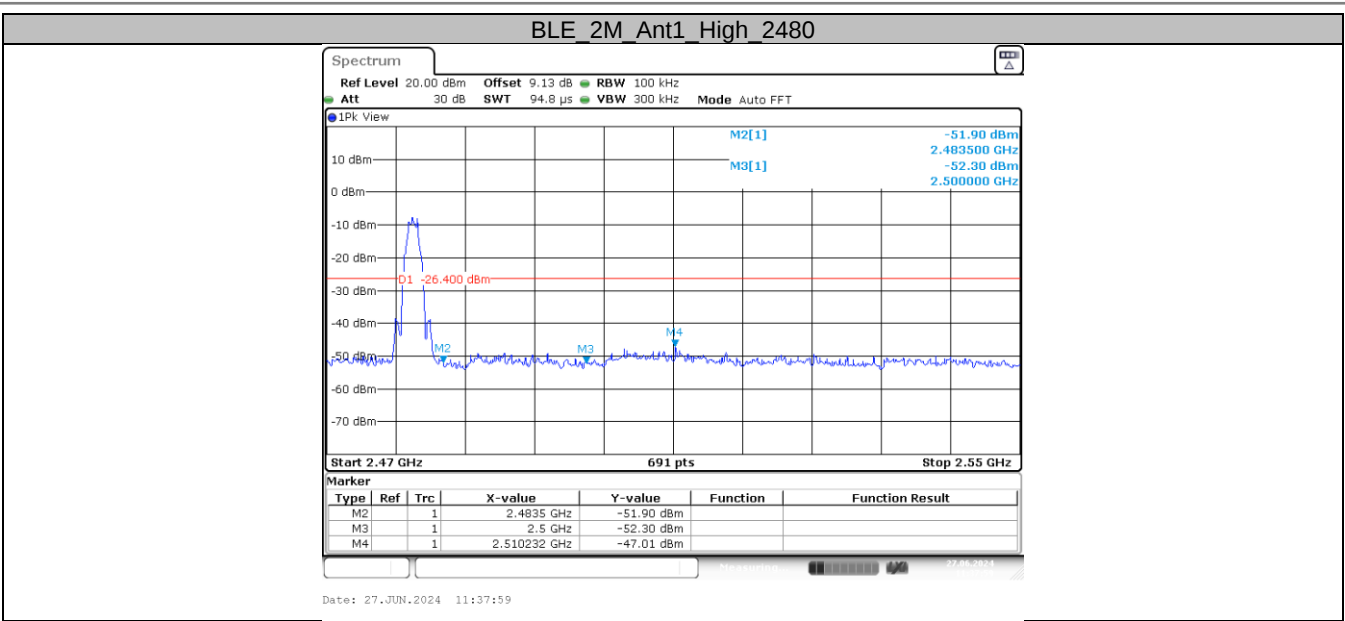


BLE 1M Ant1 High 2480



BLE 2M Ant1 Low 2402



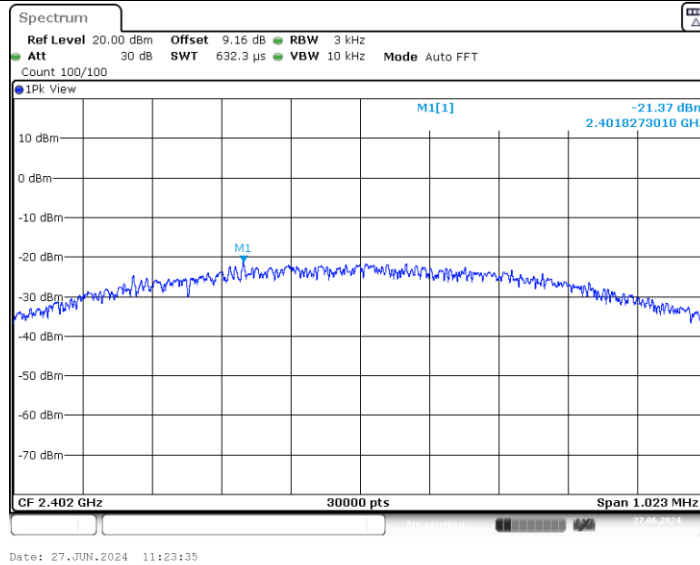


APPENDIX H- POWER SPECTRAL DENSITY

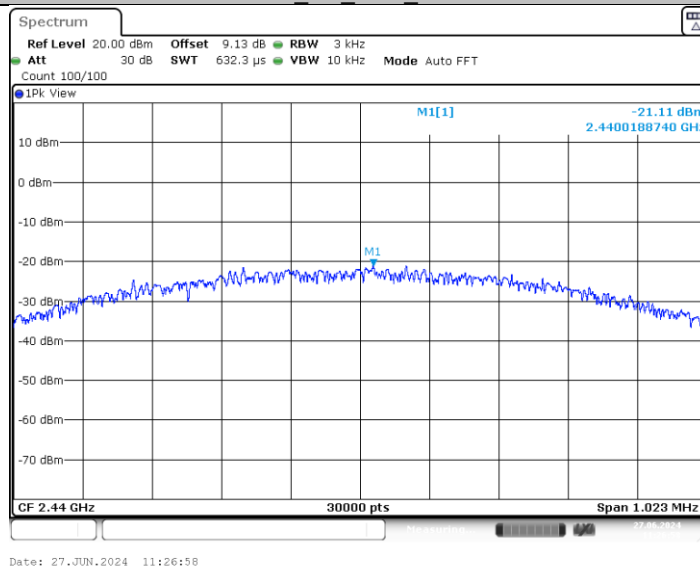
Power Spectral Density

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-21.37	≤8.00	PASS
		2440	-21.11	≤8.00	PASS
		2480	-22.64	≤8.00	PASS
BLE_2M	Ant1	2402	-23.10	≤8.00	PASS
		2440	-23.49	≤8.00	PASS
		2480	-24.28	≤8.00	PASS

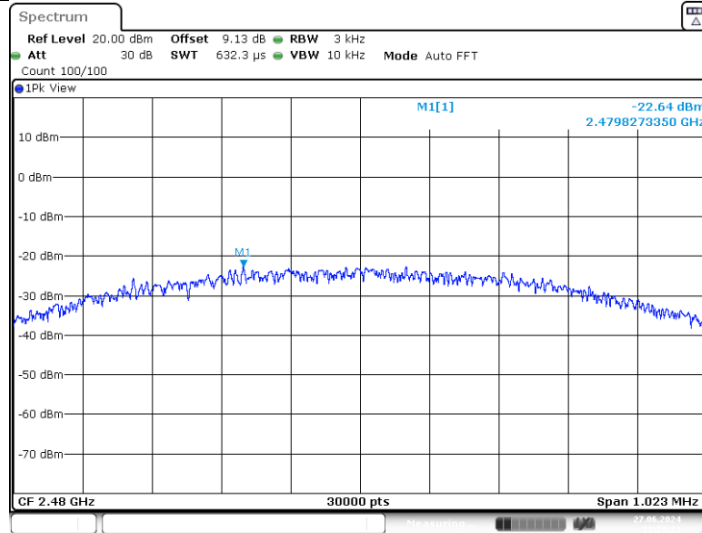
BLE_1M Ant1 2402



BLE_1M Ant1 2440

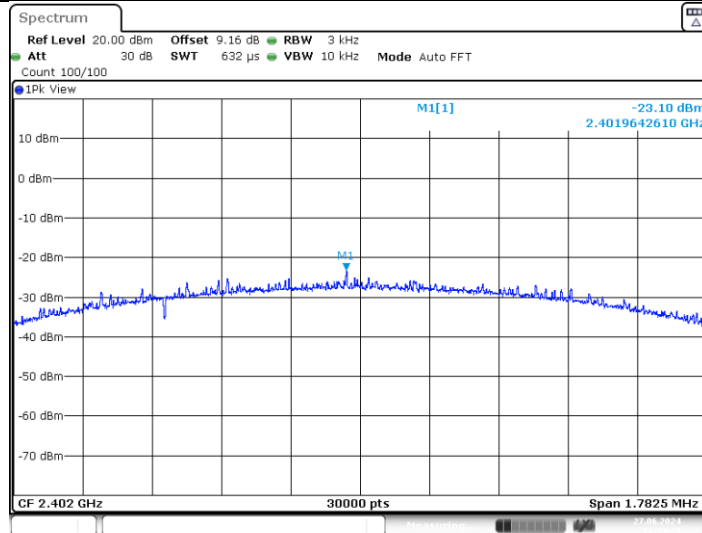


BLE_1M_Ant1_2480



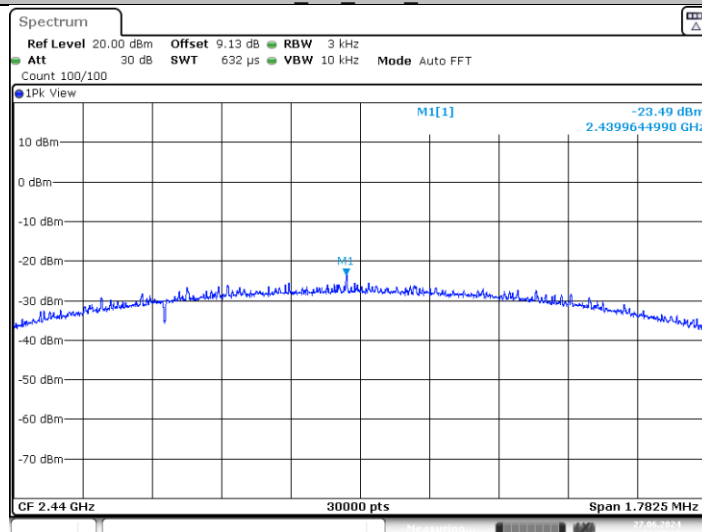
Date: 27.JUN.2024 11:29:21

BLE_2M_Ant1_2402

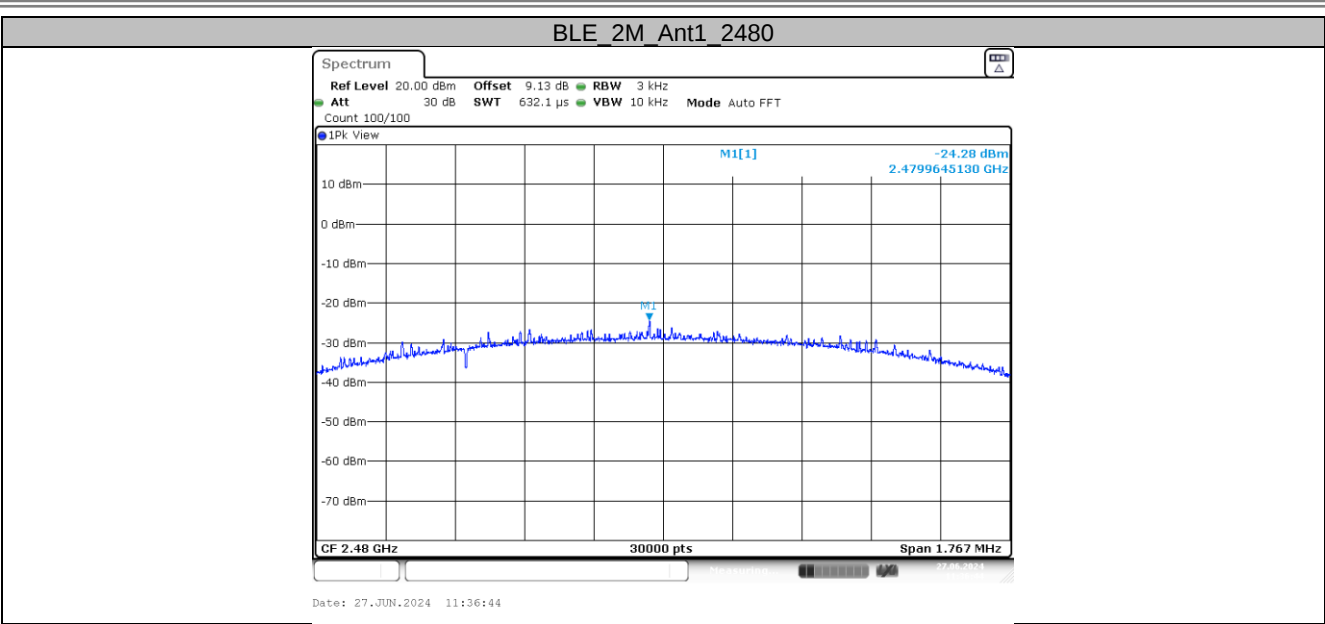


Date: 27.JUN.2024 11:32:18

BLE_2M_Ant1_2440



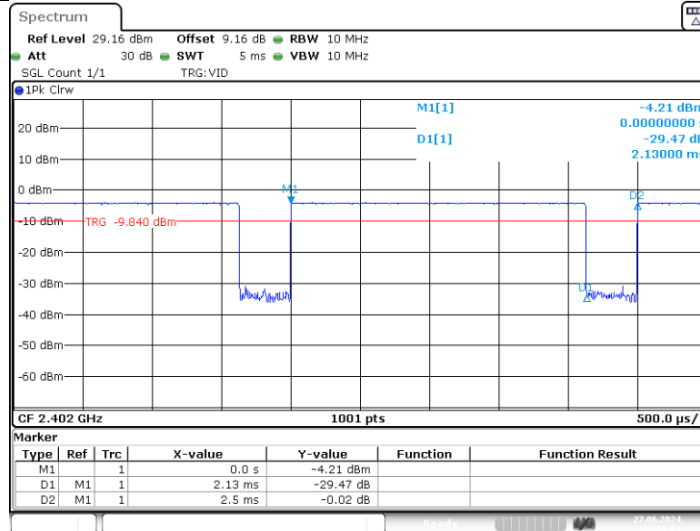
Date: 27.JUN.2024 11:35:08



APPENDIX I- DUTY CYCLE

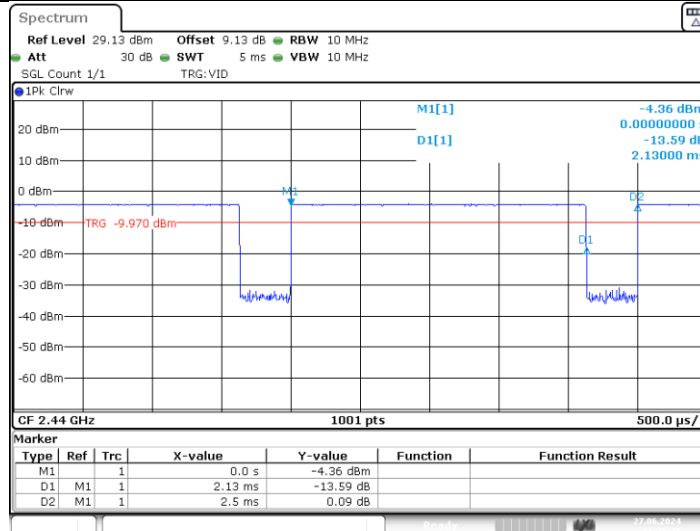
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	2.13	2.50	0.8520	85.20	0.70	---	---
		2440	2.13	2.50	0.8520	85.20	0.70	---	---
		2480	2.13	2.50	0.8520	85.20	0.70	---	---
BLE_2M	Ant1	2402	1.07	1.88	0.5691	56.91	2.45	---	---
		2440	1.07	1.88	0.5691	56.91	2.45	---	---
		2480	1.07	1.88	0.5691	56.91	2.45	---	---

BLE 1M Ant1 2402



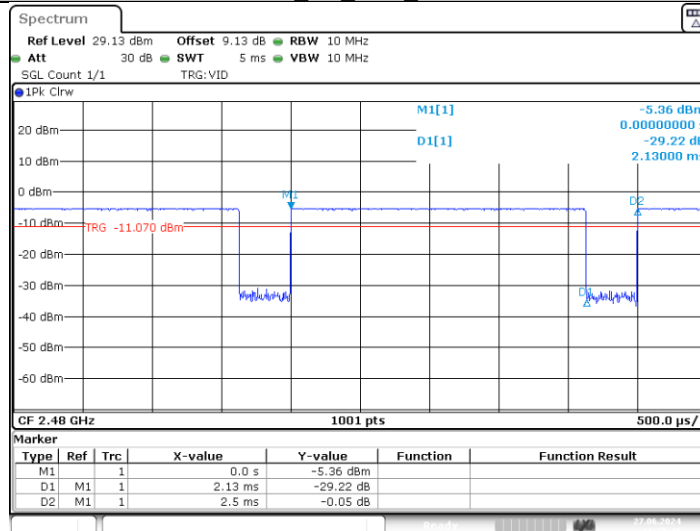
Date: 27.JUN.2024 11:23:01

BLE 1M Ant1 2440

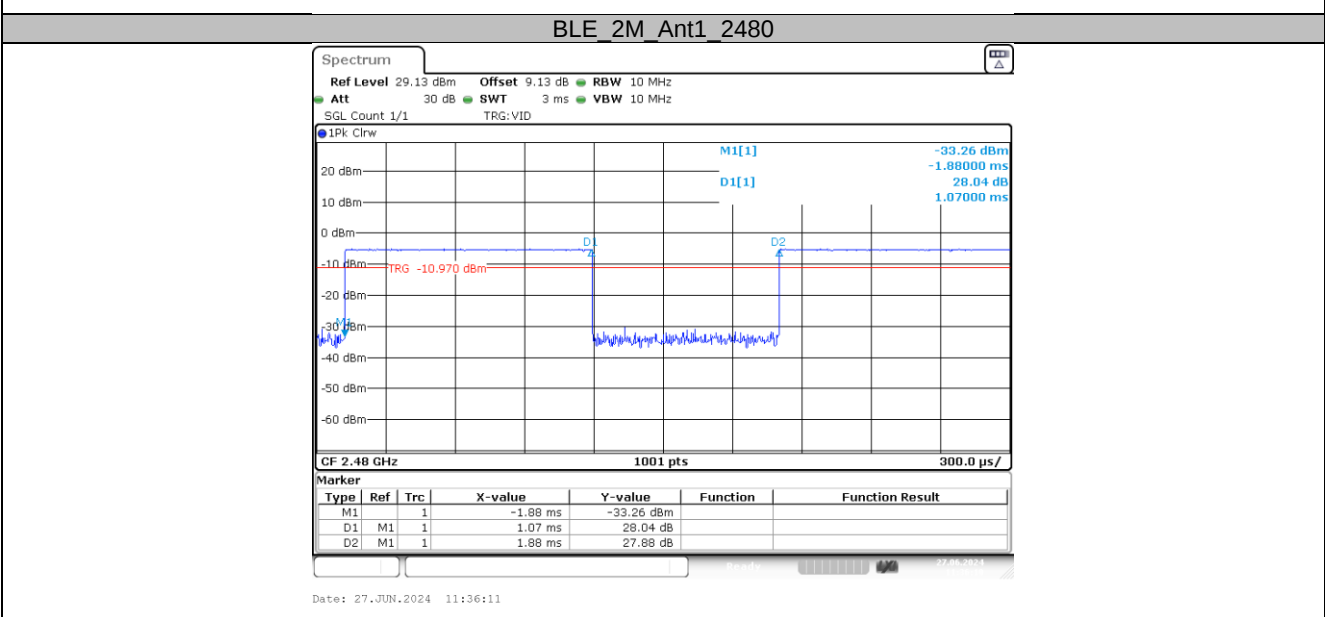
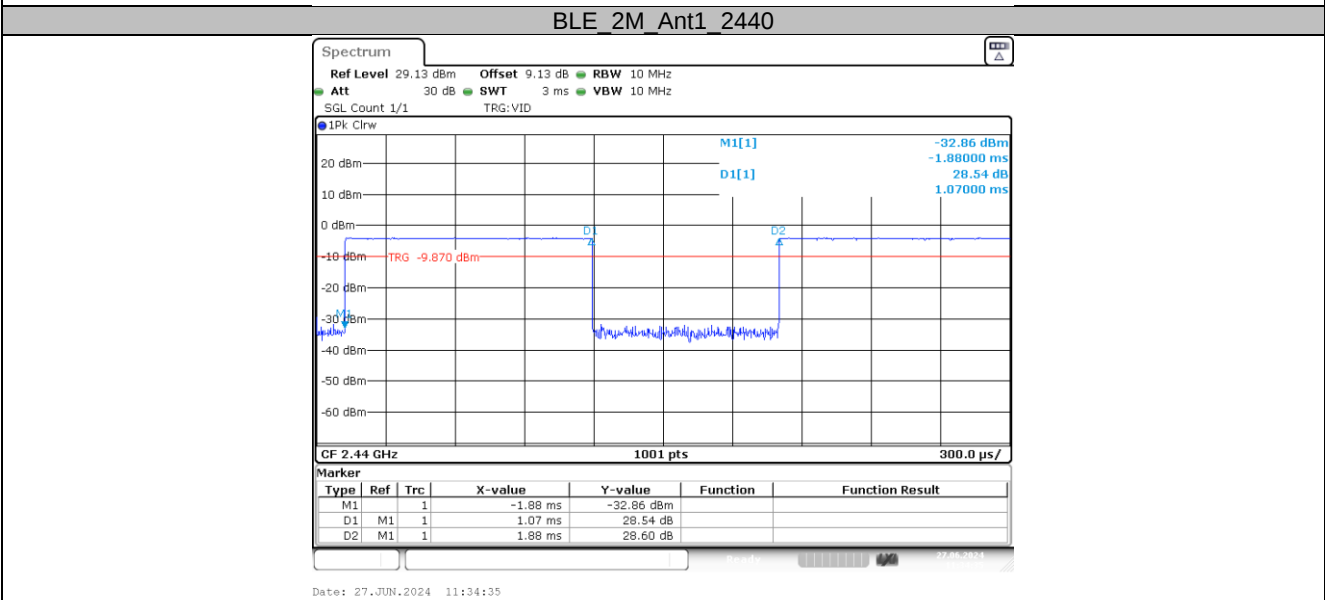
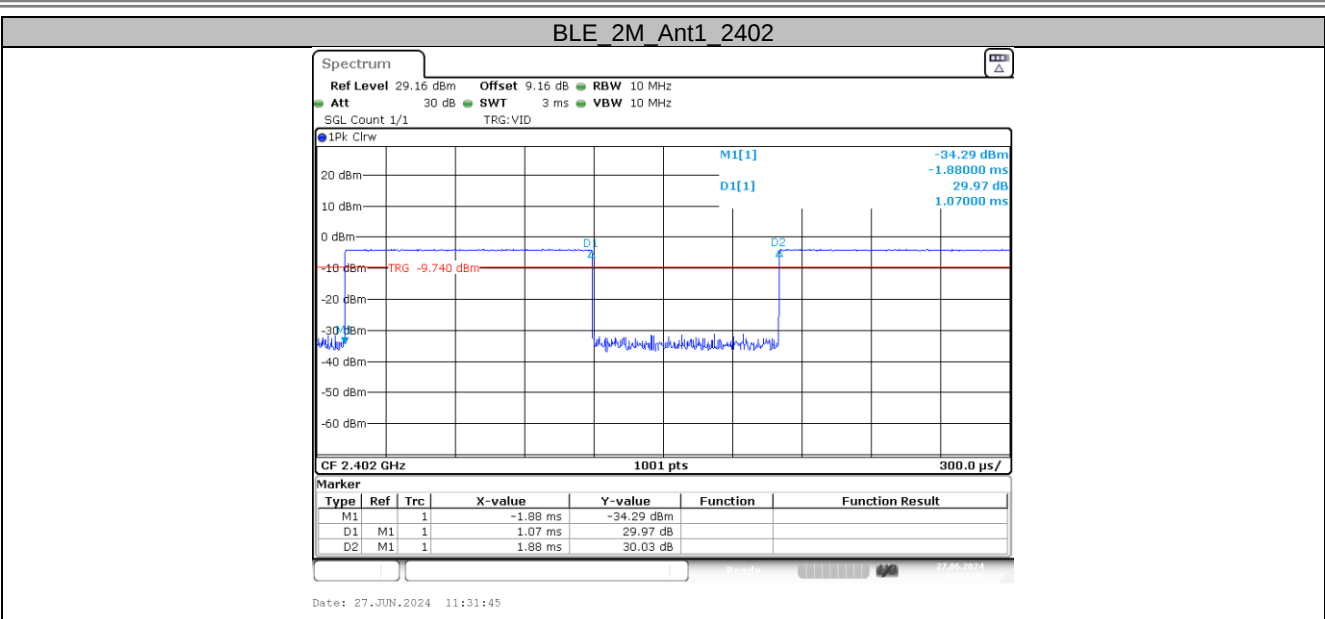


Date: 27.JUN.2024 11:26:25

BLE 1M Ant1 2480



Date: 27.JUN.2024 11:28:47



End of Test Report