

Appendix for Bluetooth BLE

Model: VNE-N41

BTL-FCCP-2-2204C233

Content

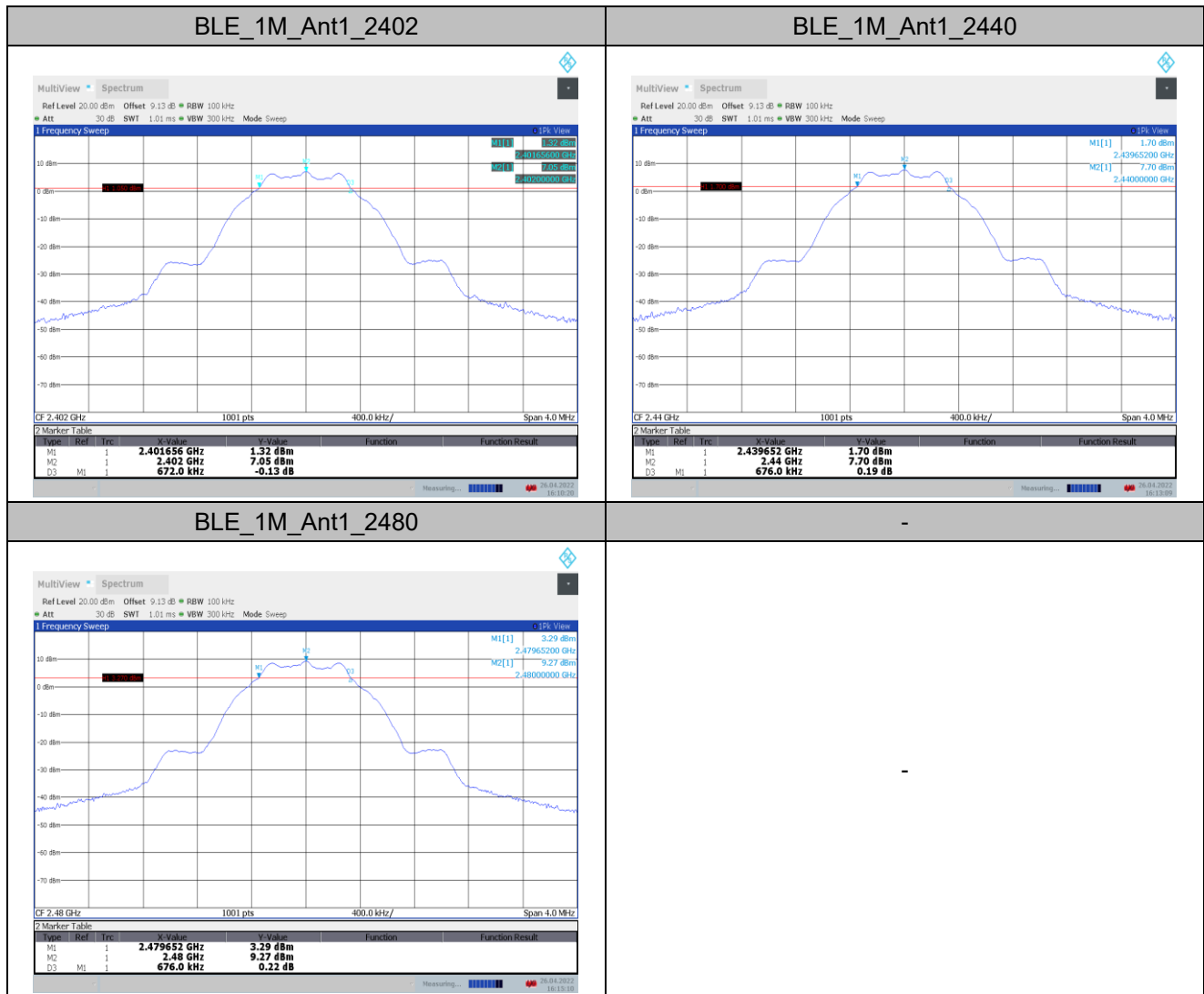
1	Appendix A: 6 dB Bandwidth	3
1.1	Test Result	3
1.2	Test Graphs	4
2	Appendix B: 99% Emission Bandwidth.....	6
2.1	Test Result	6
2.2	Test Graphs	7
3	Appendix C: Maximum conducted output power	9
3.1	Test Result	9
3.2	Test Graphs	10
4	Appendix D: Power Spectral Density.....	12
4.1	Test Result	12
4.2	Test Graphs	13
5	Appendix E: Reference level measurement	15
5.1	Test Result	15
5.2	Test Graphs	16
6	Appendix F: Band edge measurements	18
6.1	Test Result	18
6.2	Test Graphs	19
7	Appendix G: Conducted Spurious Emission.....	20
7.1	Test Result	20
7.2	Test Graphs	21
8	Appendix H: Duty Cycle	23
8.1	Test Result	23
8.2	Test Graphs	24

1 Appendix A: 6 dB Bandwidth

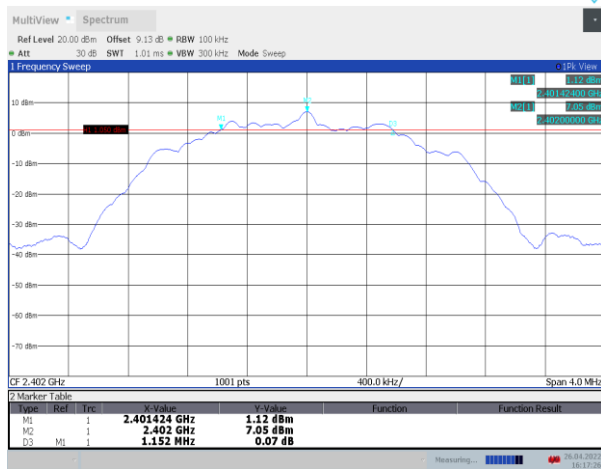
1.1 Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.67	2401.66	2402.33	0.5	PASS
		2440	0.68	2439.65	2440.33	0.5	PASS
		2480	0.68	2479.65	2480.33	0.5	PASS
BLE_2M	Ant1	2402	1.15	2401.42	2402.58	0.5	PASS
		2440	1.16	2439.42	2440.58	0.5	PASS
		2480	1.15	2479.42	2480.57	0.5	PASS

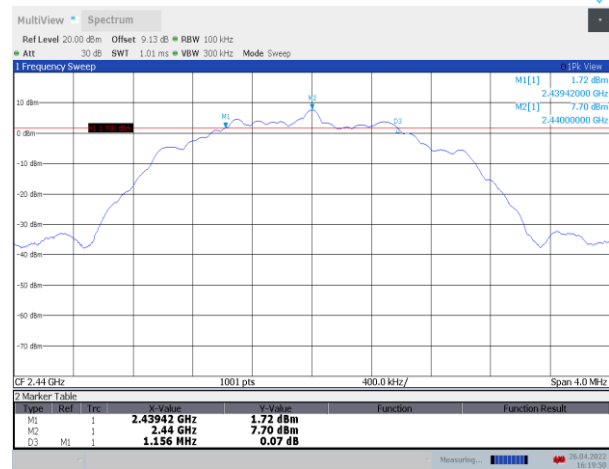
1.2 Test Graphs



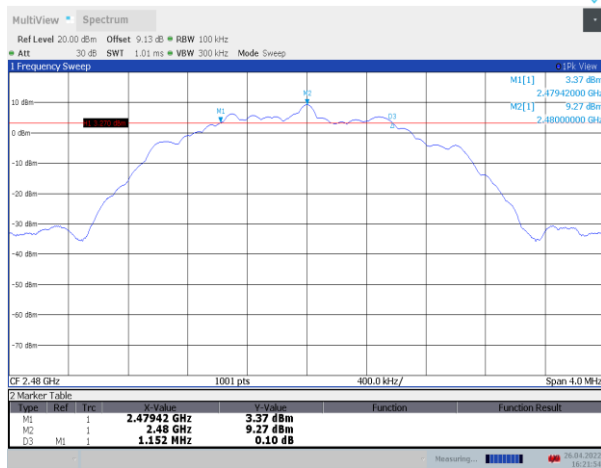
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



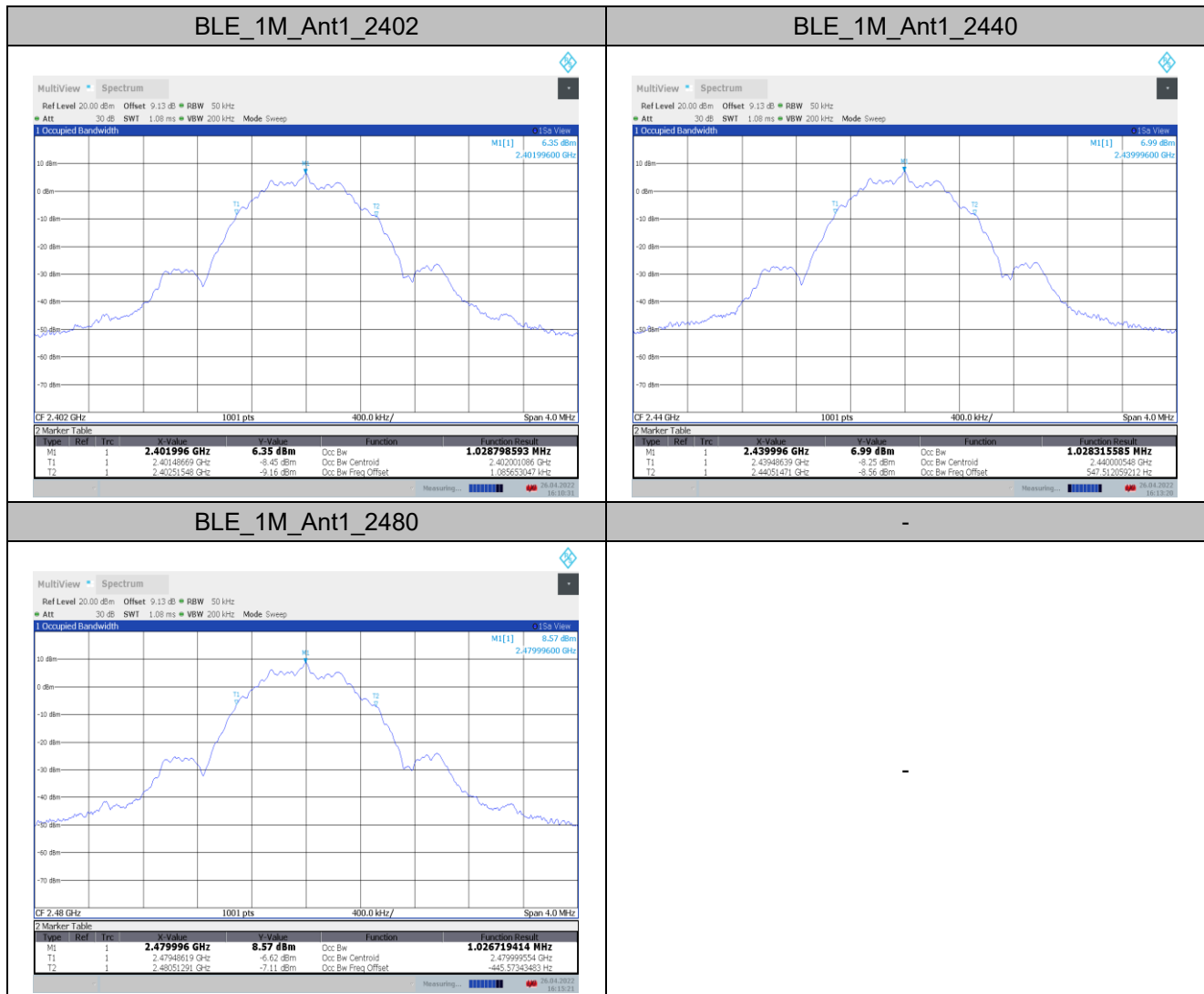
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2 Appendix B: 99% Emission Bandwidth

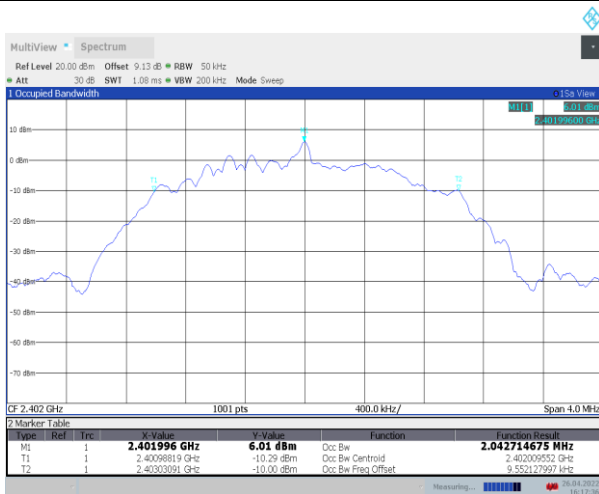
2.1 Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.029	2401.487	2402.515	---	PASS
		2440	1.028	2439.486	2440.515	---	PASS
		2480	1.027	2479.486	2480.513	---	PASS
BLE_2M	Ant1	2402	2.043	2400.988	2403.031	---	PASS
		2440	2.043	2438.987	2441.030	---	PASS
		2480	2.042	2478.986	2481.028	---	PASS

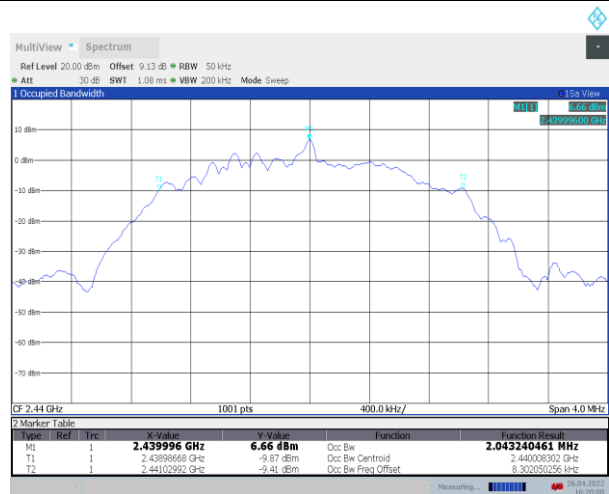
2.2 Test Graphs



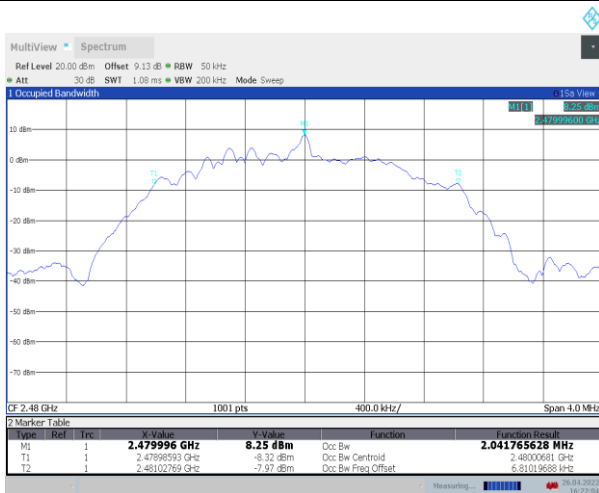
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



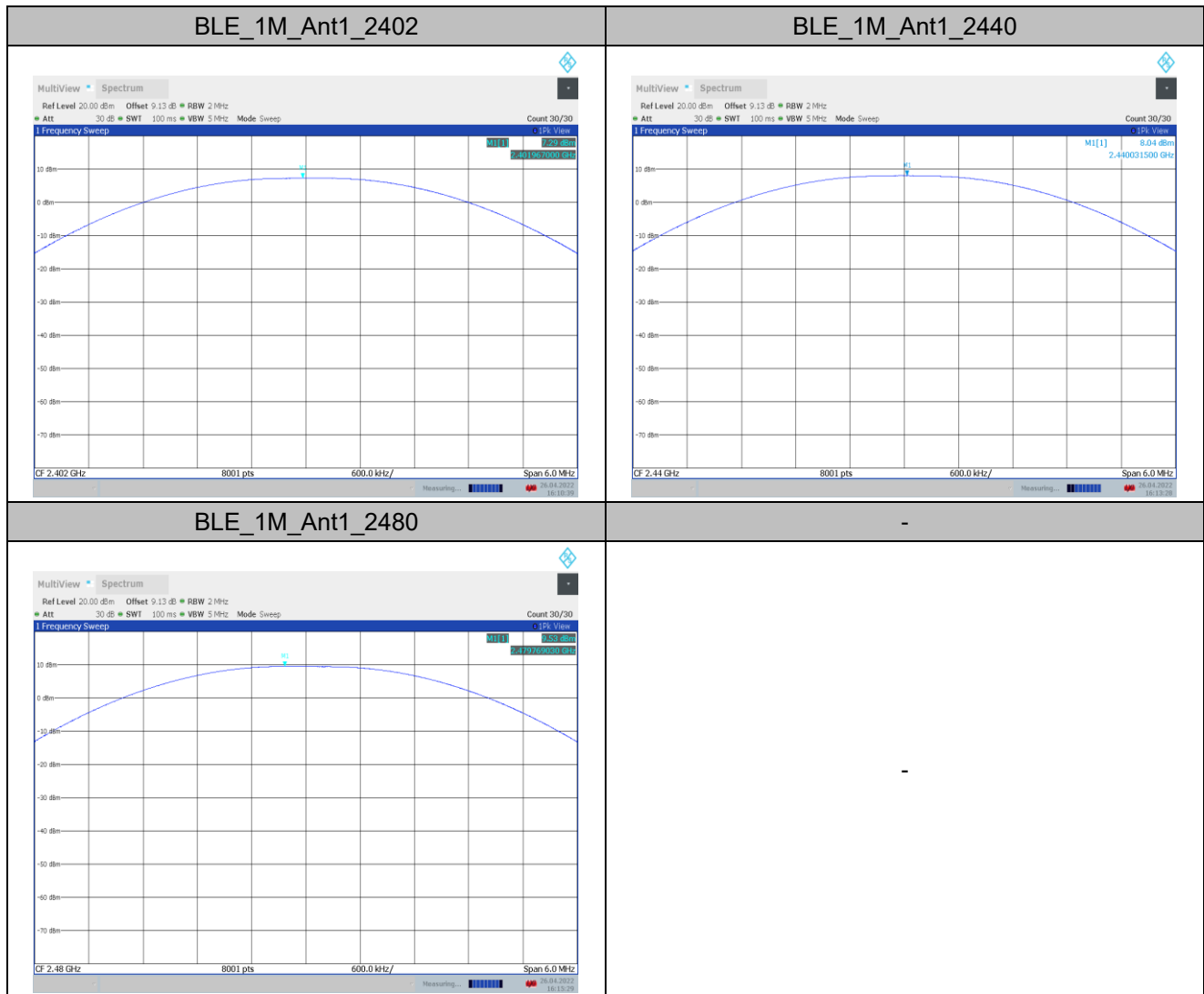
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3 Appendix C: Maximum conducted output power

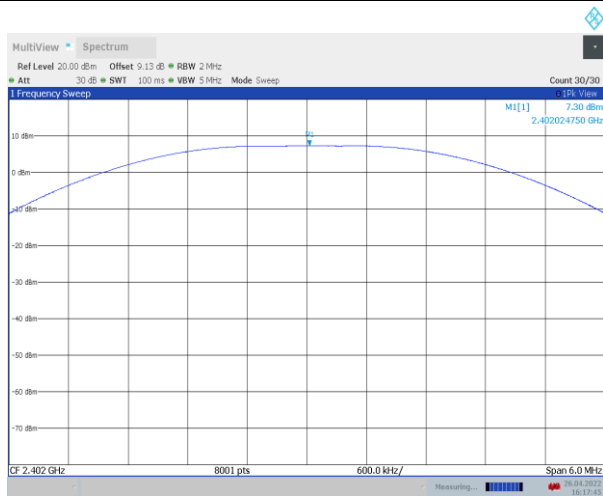
3.1 Test Result

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	7.29	≤30	PASS
		2440	8.04	≤30	PASS
		2480	9.53	≤30	PASS
BLE_2M	Ant1	2402	7.3	≤30	PASS
		2440	8.01	≤30	PASS
		2480	9.57	≤30	PASS

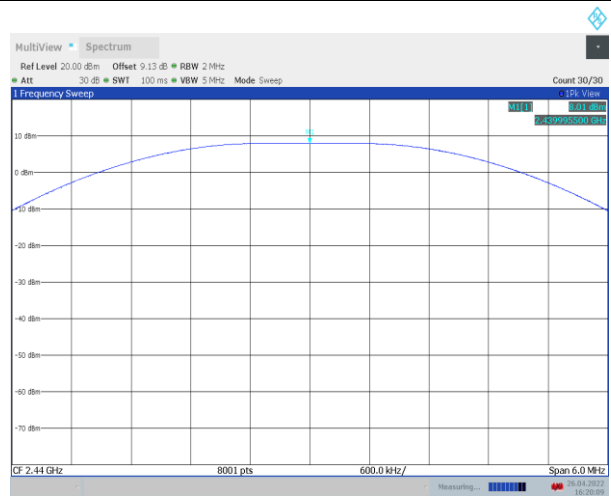
3.2 Test Graphs



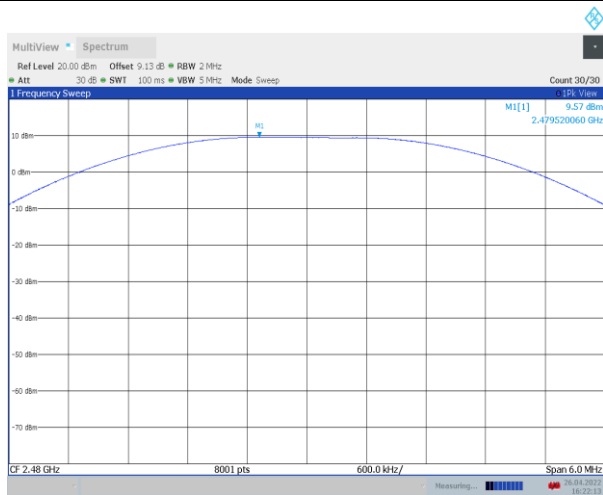
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



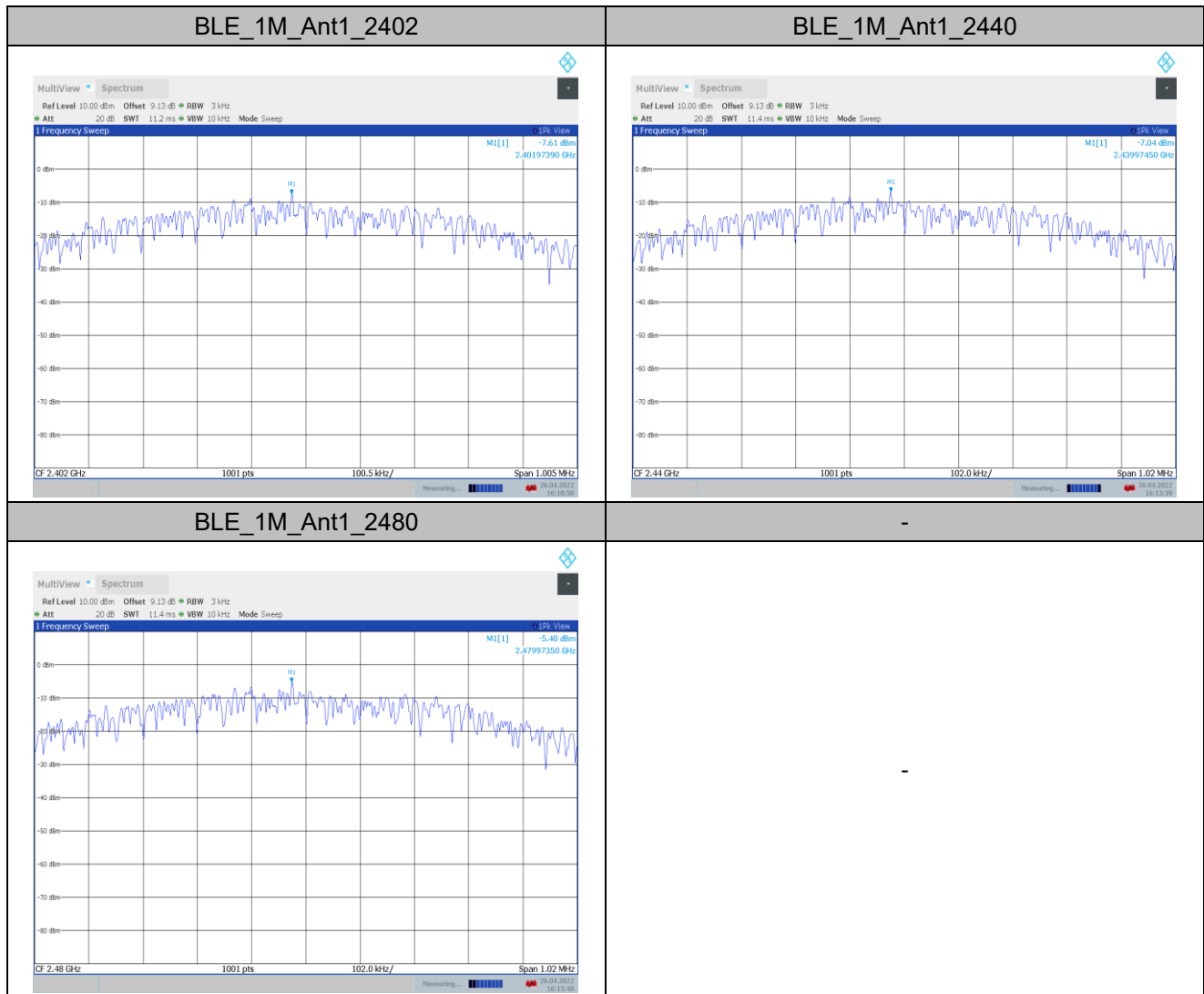
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4 Appendix D: Power Spectral Density

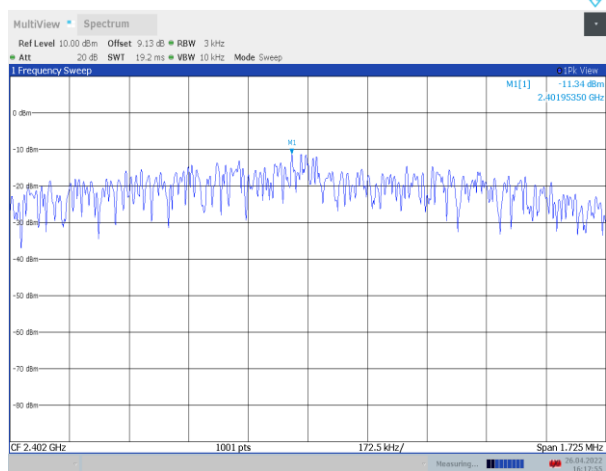
4.1 Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-7.61	≤8.00	PASS
		2440	-7.04	≤8.00	PASS
		2480	-5.4	≤8.00	PASS
BLE_2M	Ant1	2402	-11.34	≤8.00	PASS
		2440	-10.7	≤8.00	PASS
		2480	-9.08	≤8.00	PASS

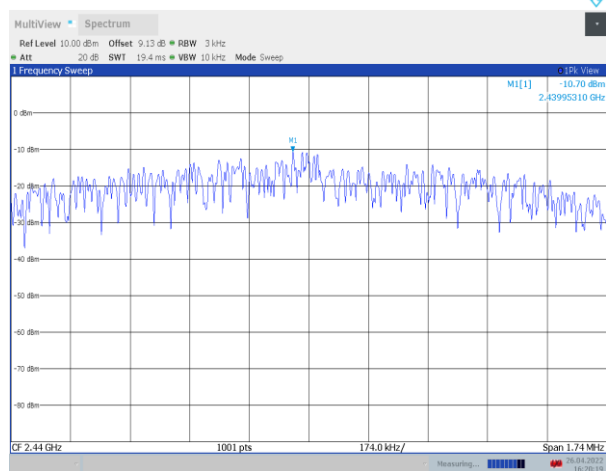
4.2 Test Graphs



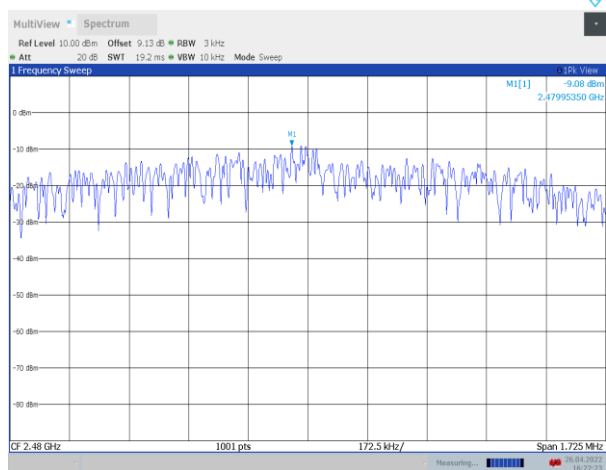
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



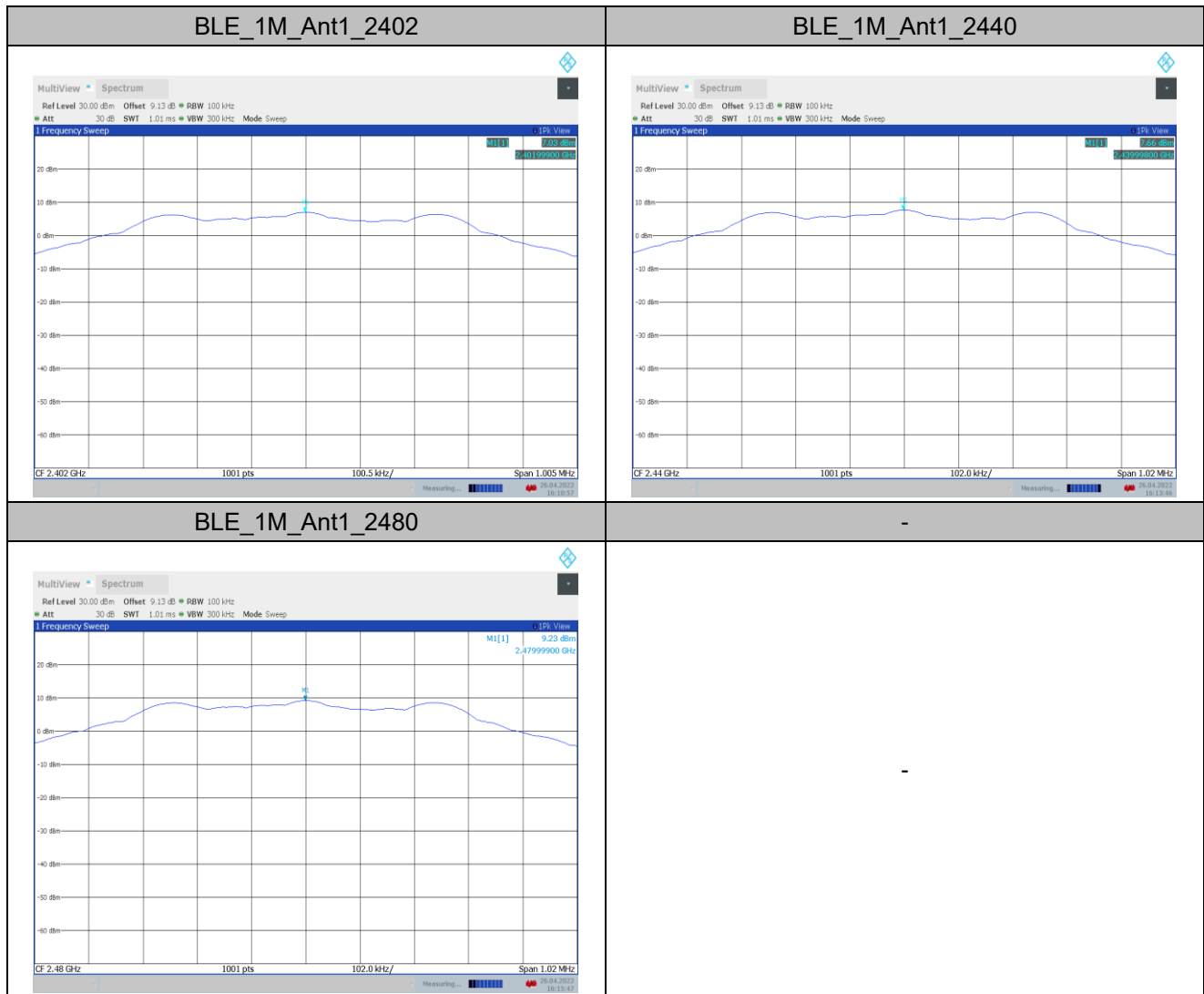
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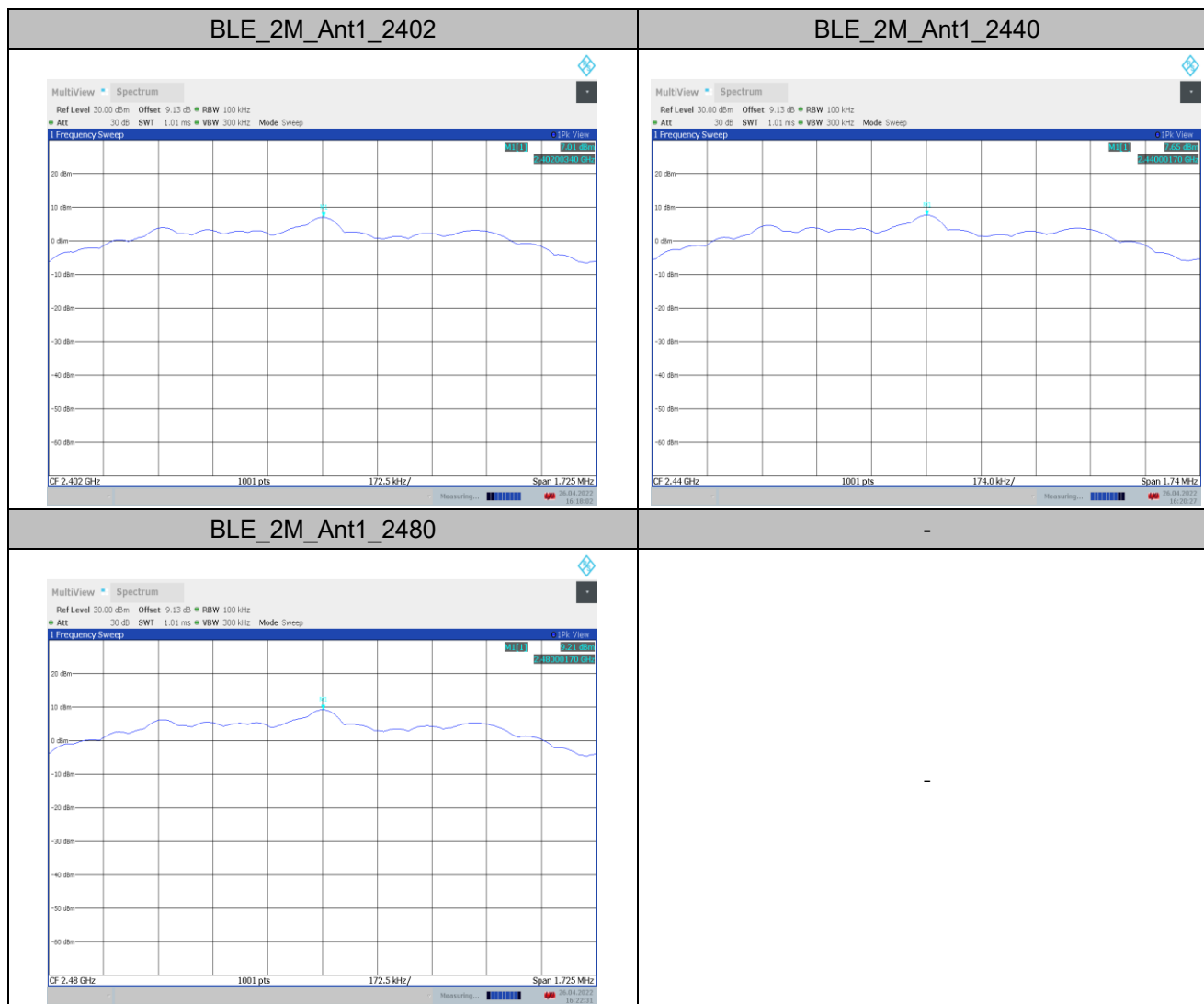
5 Appendix E: Reference level measurement

5.1 Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2402.00	7.03
		2440	2440.00	7.66
		2480	2480.00	9.23
BLE_2M	Ant1	2402	2402.00	7.01
		2440	2440.00	7.65
		2480	2480.00	9.21

5.2 Test Graphs



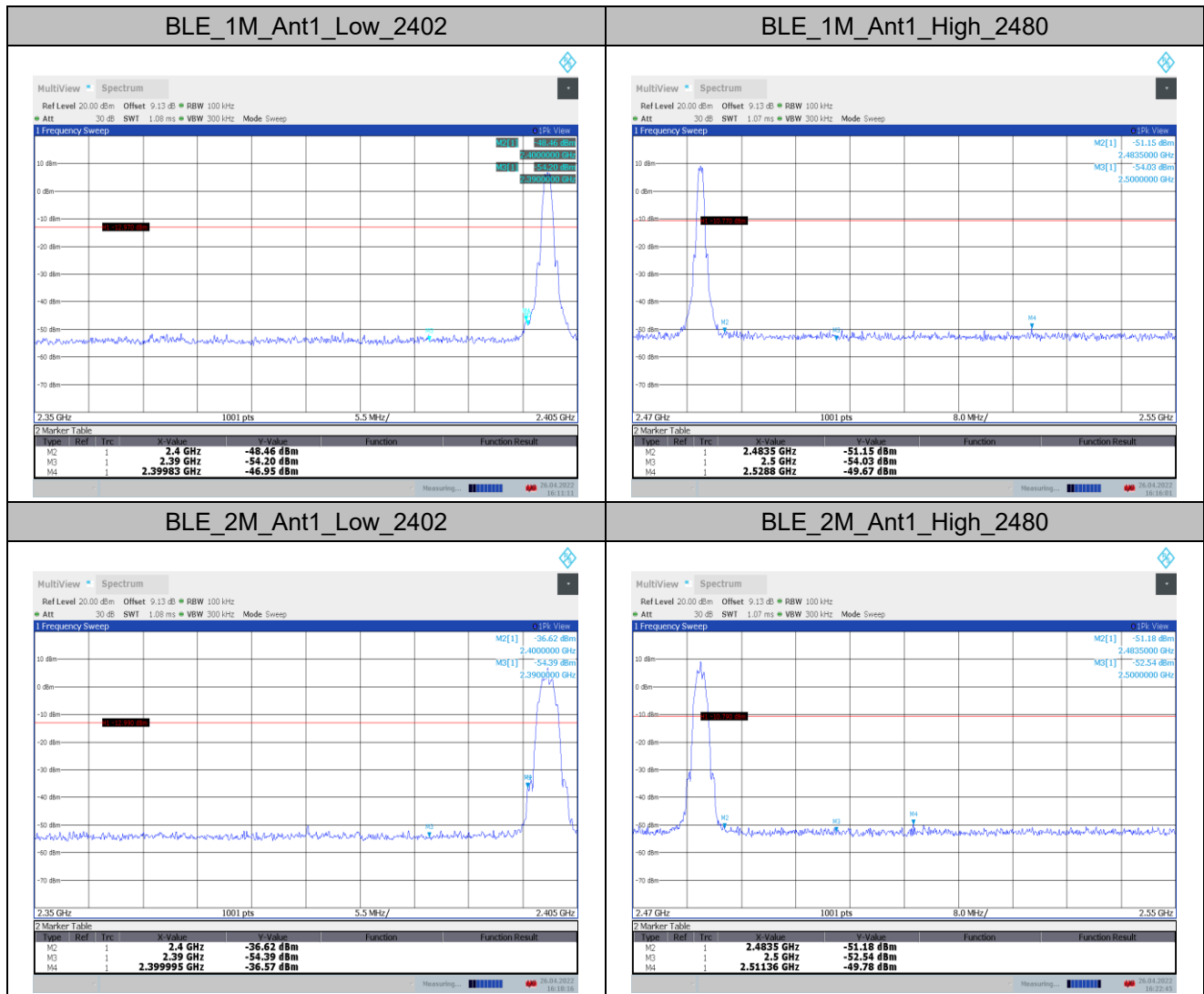


6 Appendix F: Band edge measurements

6.1 Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	7.03	-46.95	≤ -12.97	PASS
		High	2480	9.23	-49.67	≤ -10.77	PASS
BLE_2M	Ant1	Low	2402	7.01	-36.57	≤ -12.99	PASS
		High	2480	9.21	-49.78	≤ -10.79	PASS

6.2 Test Graphs

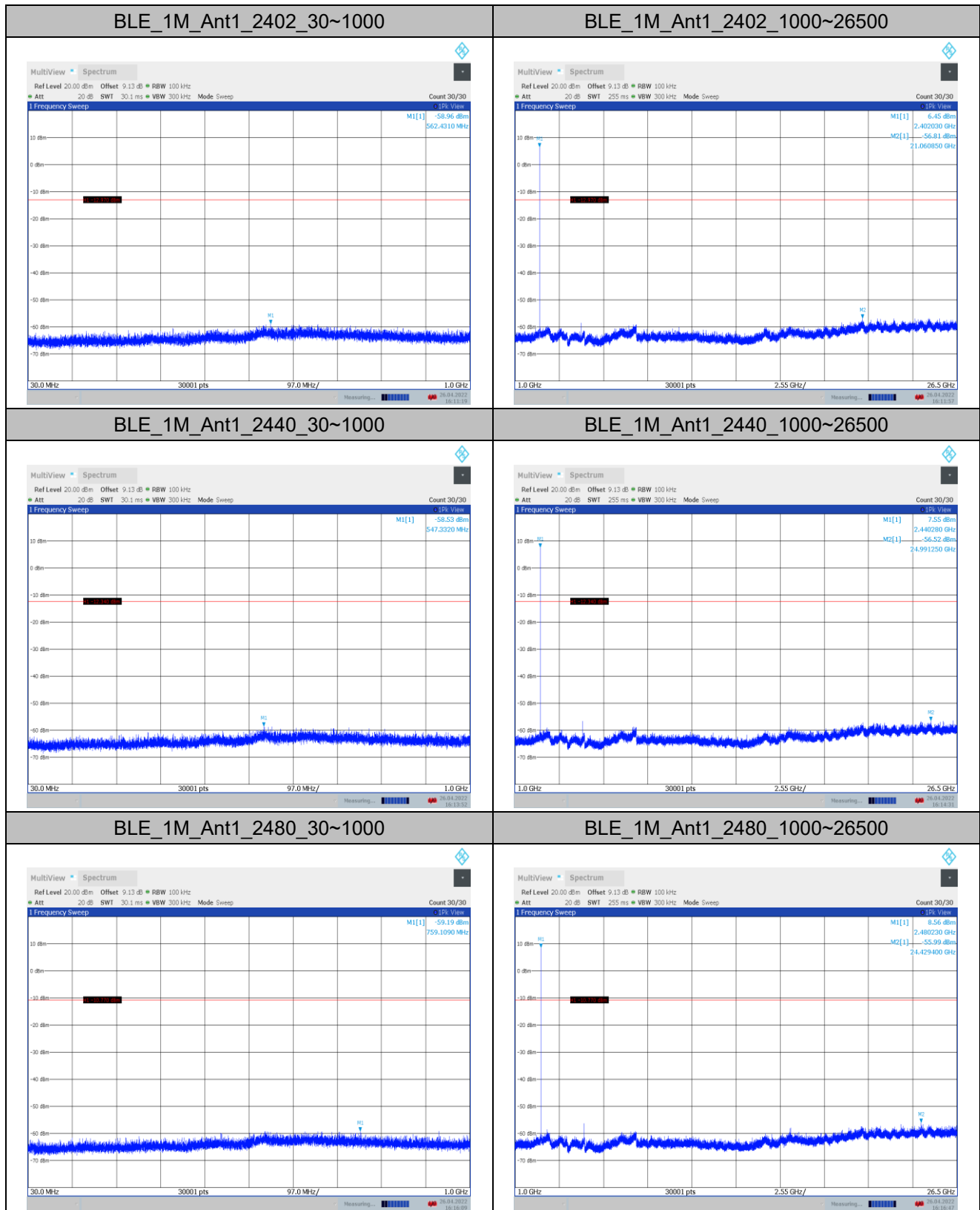


7 Appendix G: Conducted Spurious Emission

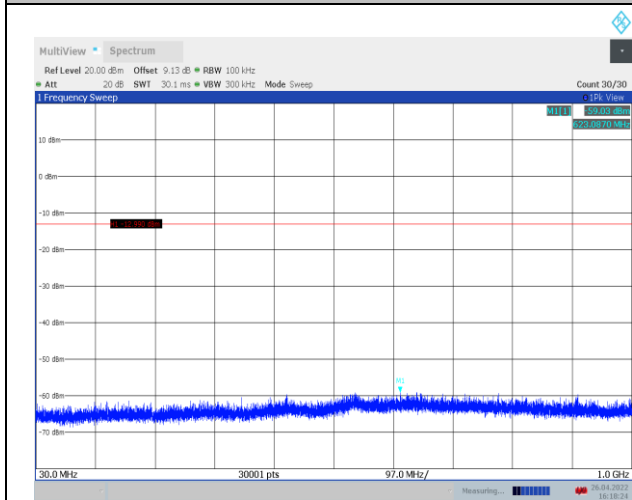
7.1 Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	7.03	-58.96	≤-12.97	PASS
			1000~26500	7.03	-56.81	≤-12.97	PASS
		2440	30~1000	7.66	-58.53	≤-12.34	PASS
			1000~26500	7.66	-56.52	≤-12.34	PASS
		2480	30~1000	9.23	-59.19	≤-10.77	PASS
			1000~26500	9.23	-55.99	≤-10.77	PASS
BLE_2M	Ant1	2402	30~1000	7.01	-59.03	≤-12.99	PASS
			1000~26500	7.01	-55.63	≤-12.99	PASS
		2440	30~1000	7.65	-58.51	≤-12.35	PASS
			1000~26500	7.65	-56.81	≤-12.35	PASS
		2480	30~1000	9.21	-58.42	≤-10.79	PASS
			1000~26500	9.21	-55.33	≤-10.79	PASS

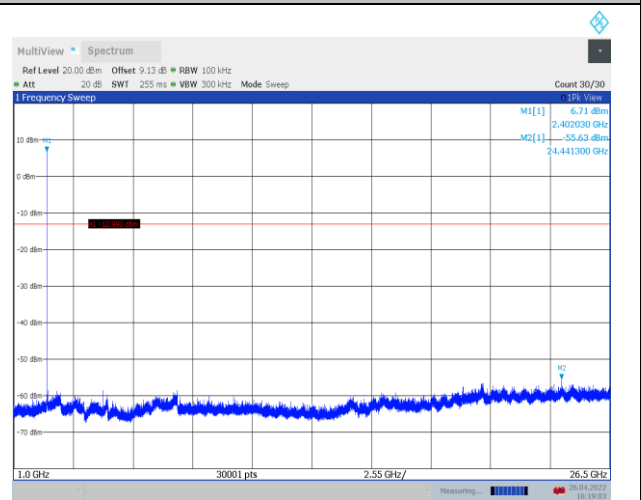
7.2 Test Graphs



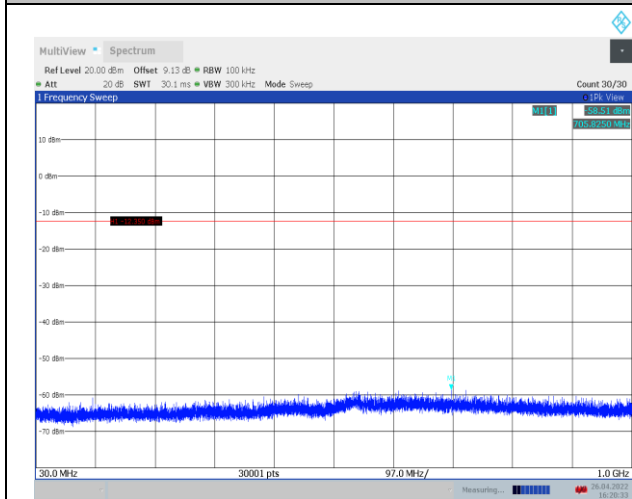
BLE_2M_Ant1_2402_30~1000



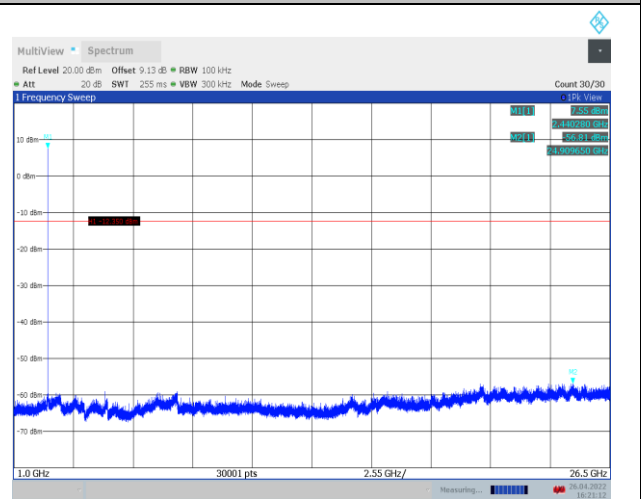
BLE_2M_Ant1_2402_1000~26500



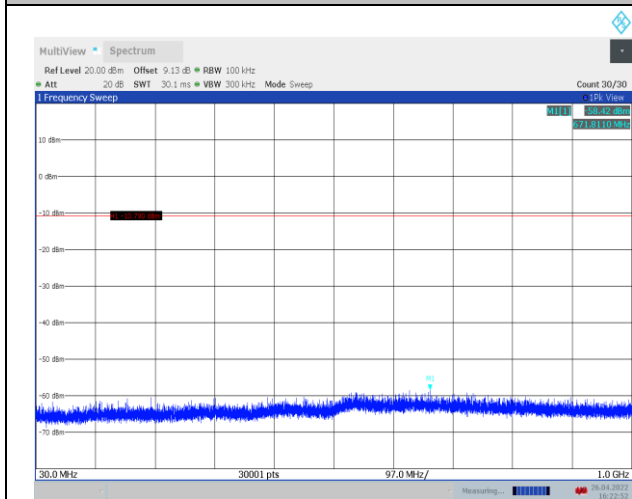
BLE_2M_Ant1_2440_30~1000



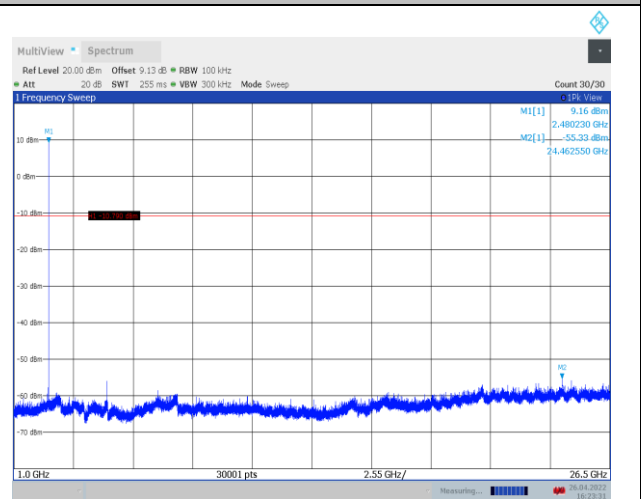
BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

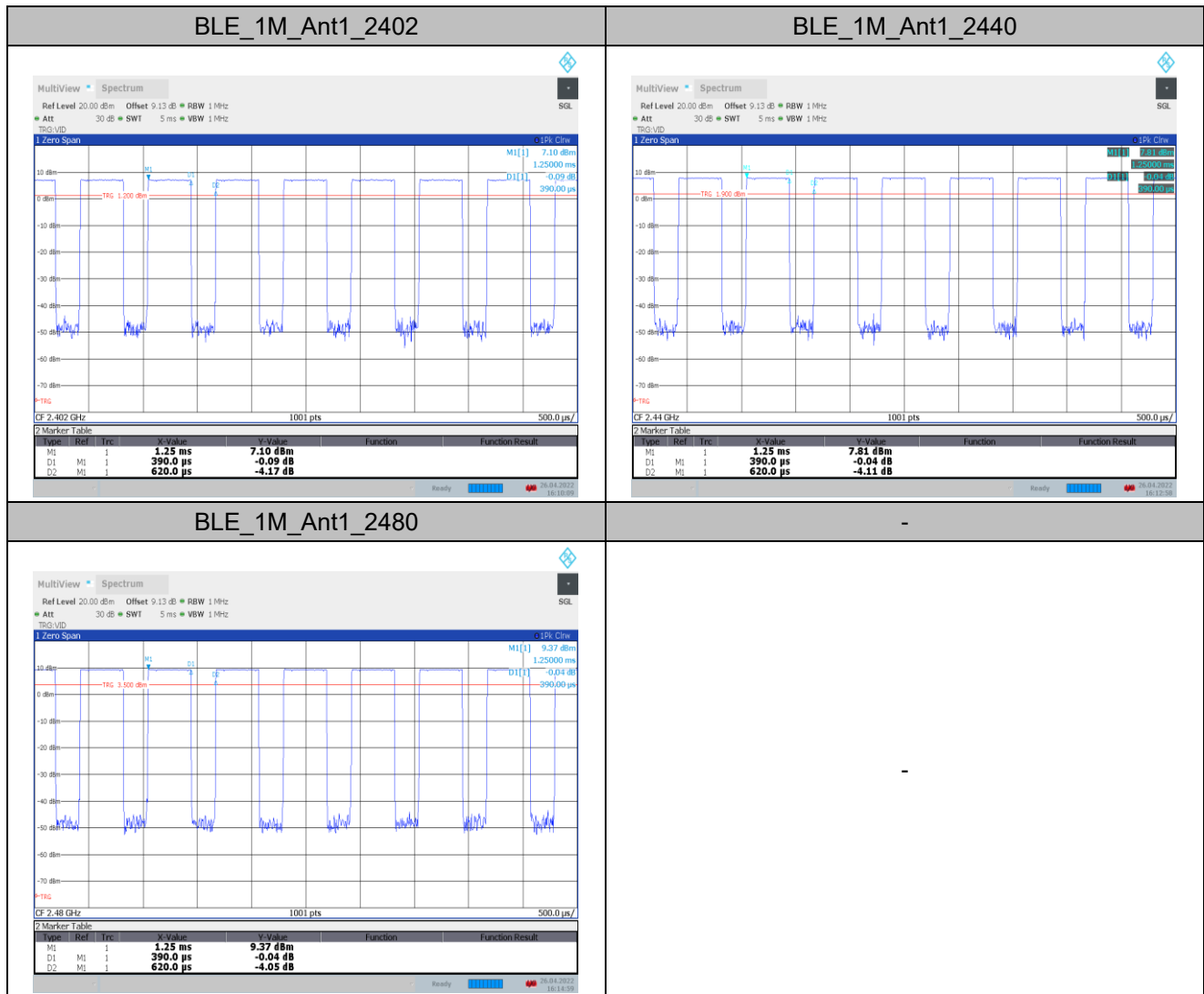


8 Appendix H: Duty Cycle

8.1 Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.39	0.62	62.90	2.01
		2440	0.39	0.62	62.90	2.01
		2480	0.39	0.62	62.90	2.01
BLE_2M	Ant1	2402	0.21	0.62	33.87	4.70
		2440	0.21	0.62	33.87	4.70
		2480	0.21	0.62	33.87	4.70

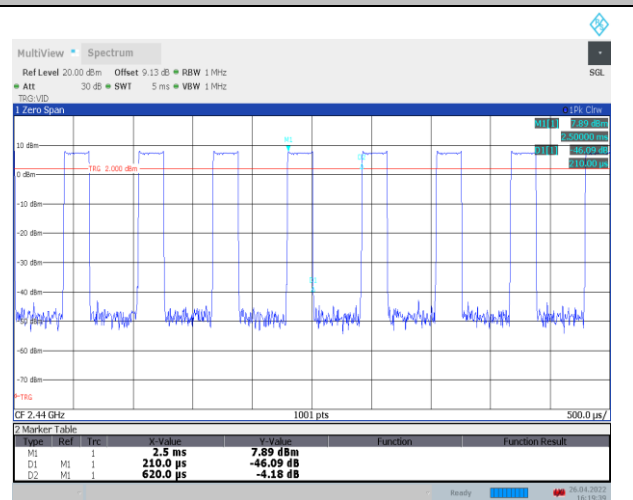
8.2 Test Graphs



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



End of Test Report