



RF Test Report

For

Project No.:	ZKT-241025L13925E
Client:	YA LI ELECTRIC CO LTD
Manufacturer:	YA LI ELECTRIC CO LTD
Product Description:	LED CONTROLLER
Model No.	YL-LEDAPP-01
Test Engineer:	Jim Liu
Test Date:	2024-10-13



Appendix A: DTS Bandwidth

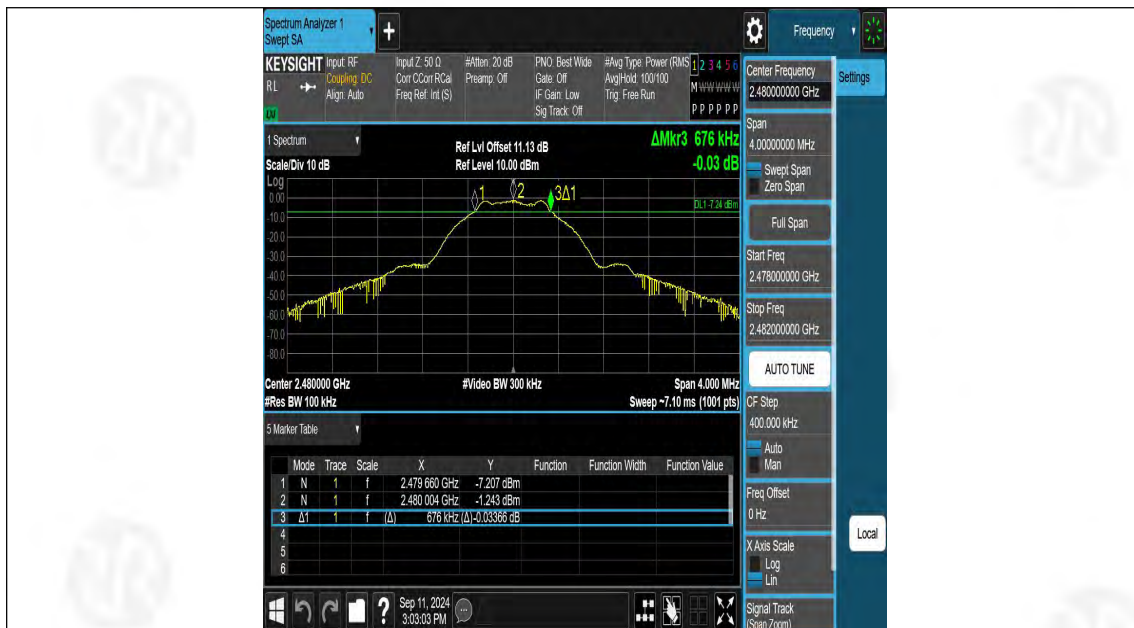
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.684	2401.660	2402.344	0.5	PASS
BLE_1M	Ant1	2440	0.672	2439.660	2440.332	0.5	PASS
BLE_1M	Ant1	2480	0.676	2479.660	2480.336	0.5	PASS
BLE_2M	Ant1	2402	1.156	2401.424	2402.580	0.5	PASS
BLE_2M	Ant1	2440	1.152	2439.424	2440.576	0.5	PASS
BLE_2M	Ant1	2480	1.148	2479.432	2480.580	0.5	PASS



Test Graphs





BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



BLE_2M-Ant1-2480-PASS



Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0153	2401.4990	2402.5143	---	---
BLE_1M	Ant1	2440	1.0122	2439.4998	2440.5120	---	---
BLE_1M	Ant1	2480	1.0123	2479.4998	2480.5121	---	---
BLE_2M	Ant1	2402	2.0272	2401.0048	2403.0320	---	---
BLE_2M	Ant1	2440	2.0245	2439.0061	2441.0306	---	---
BLE_2M	Ant1	2480	2.0297	2479.0039	2481.0336	---	---



Test Graphs





BLE_1M-Ant1-2480



BLE_2M-Ant1-2402



BLE_2M-Ant1-2440



BLE_2M-Ant1-2480



Appendix C: Maximum conducted output power

Test Result Peak

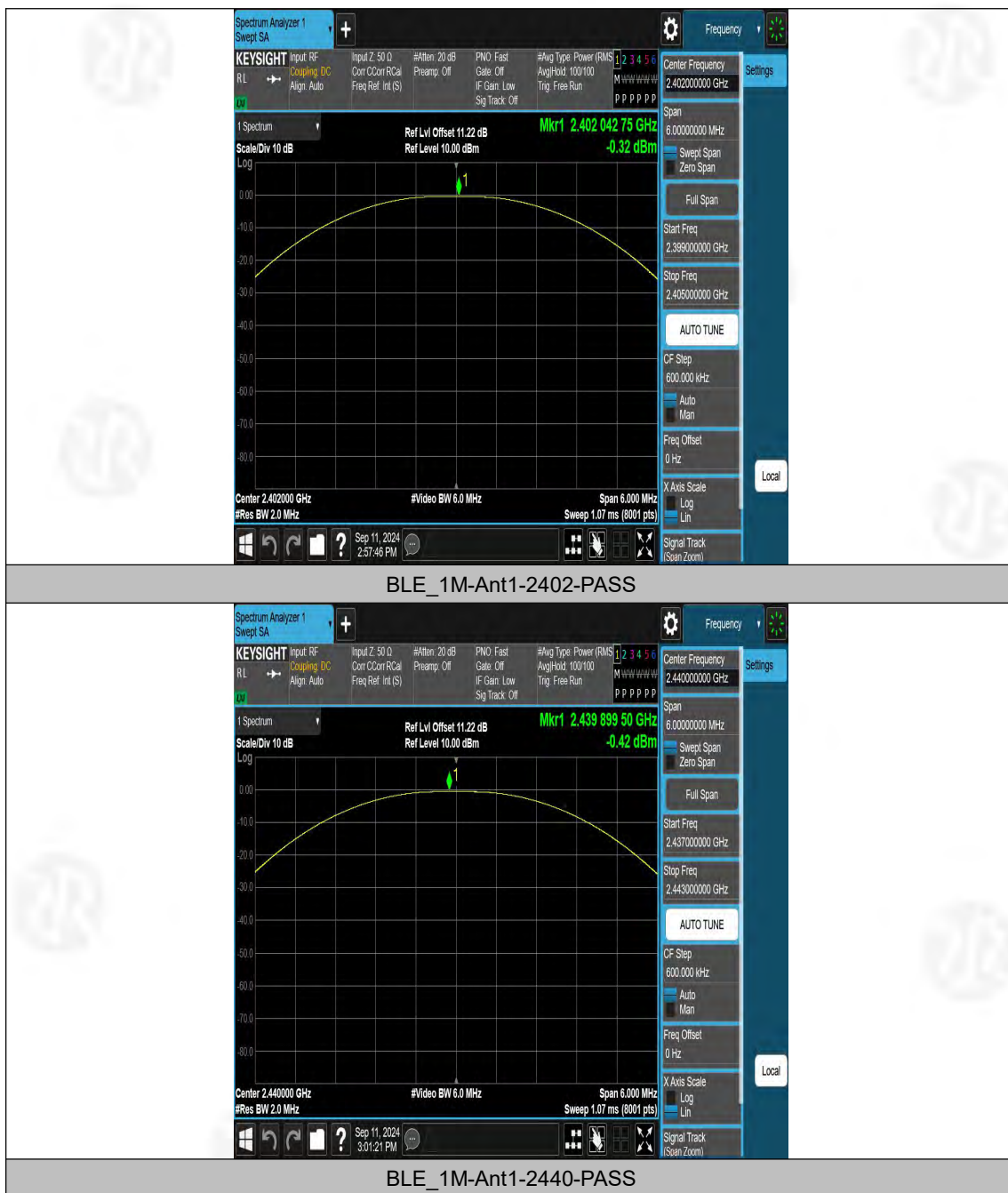
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-0.32	≤30	-0.32	≤36	PASS
BLE_1M	Ant1	2440	-0.42	≤30	-0.42	≤36	PASS
BLE_1M	Ant1	2480	-0.52	≤30	-0.52	≤36	PASS
BLE_2M	Ant1	2402	-0.27	≤30	-0.27	≤36	PASS
BLE_2M	Ant1	2440	-0.38	≤30	-0.38	≤36	PASS
BLE_2M	Ant1	2480	-0.51	≤30	-0.51	≤36	PASS

Test Result Average

Test Mode	Antenna	Frequency[MHz]	Conducted Sensor power[dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
TestMode	Antenna	Channel	RawPower	DC	DcFactor	Result	Limit	Gain	EIRP	Limit1	Verdict



Test Graphs Peak





BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



BLE_2M-Ant1-2480-PASS



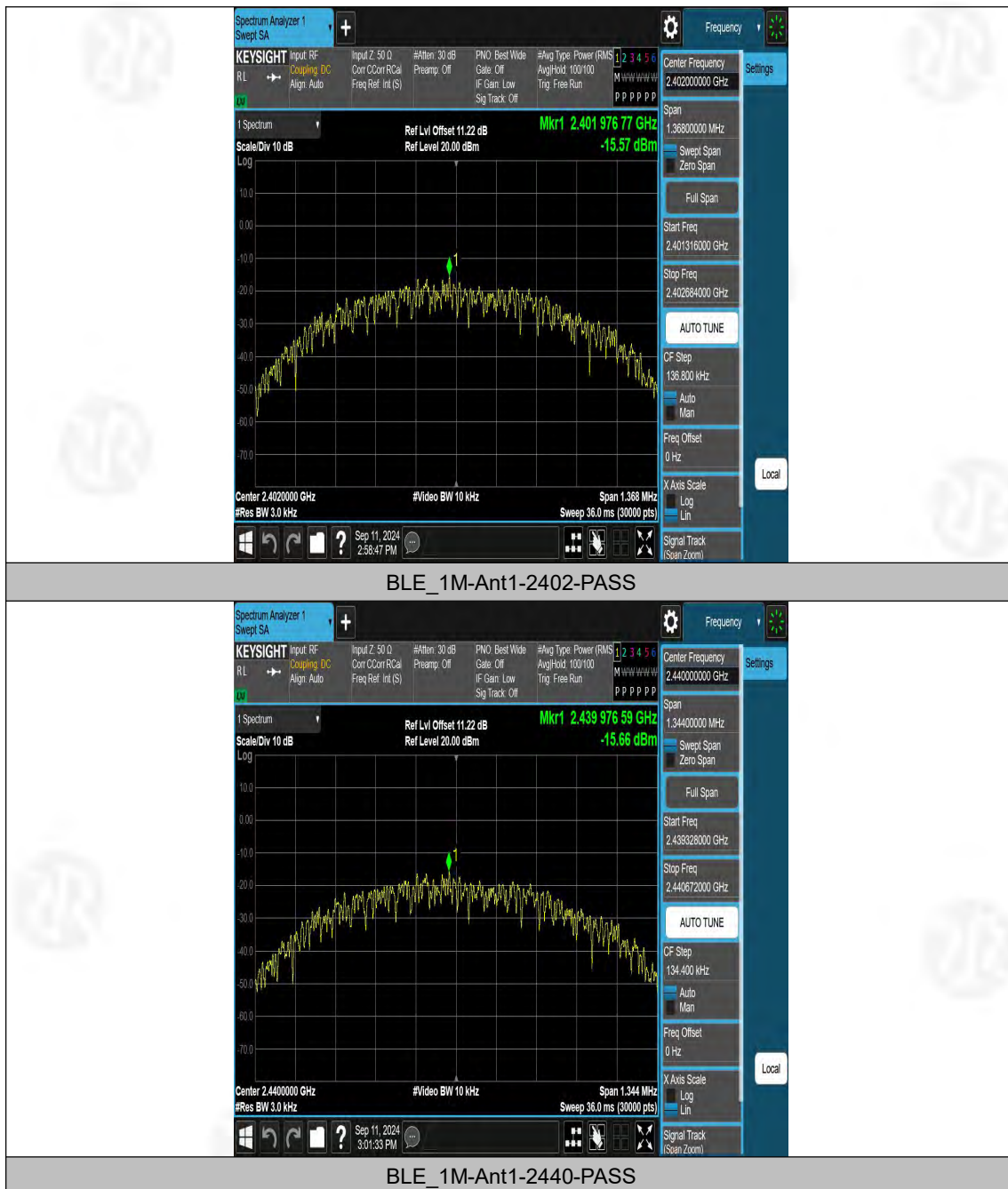
Appendix D: Maximum power spectral density

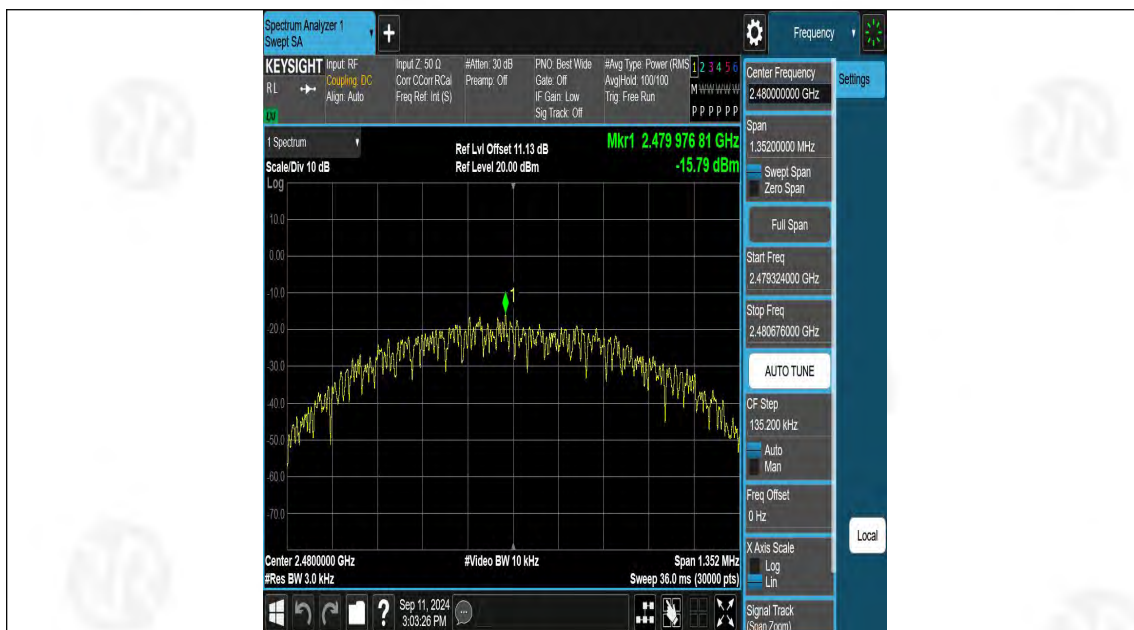
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.57	≤8.00	PASS
BLE_1M	Ant1	2440	-15.66	≤8.00	PASS
BLE_1M	Ant1	2480	-15.79	≤8.00	PASS
BLE_2M	Ant1	2402	-17.85	≤8.00	PASS
BLE_2M	Ant1	2440	-17.97	≤8.00	PASS
BLE_2M	Ant1	2480	-18.13	≤8.00	PASS

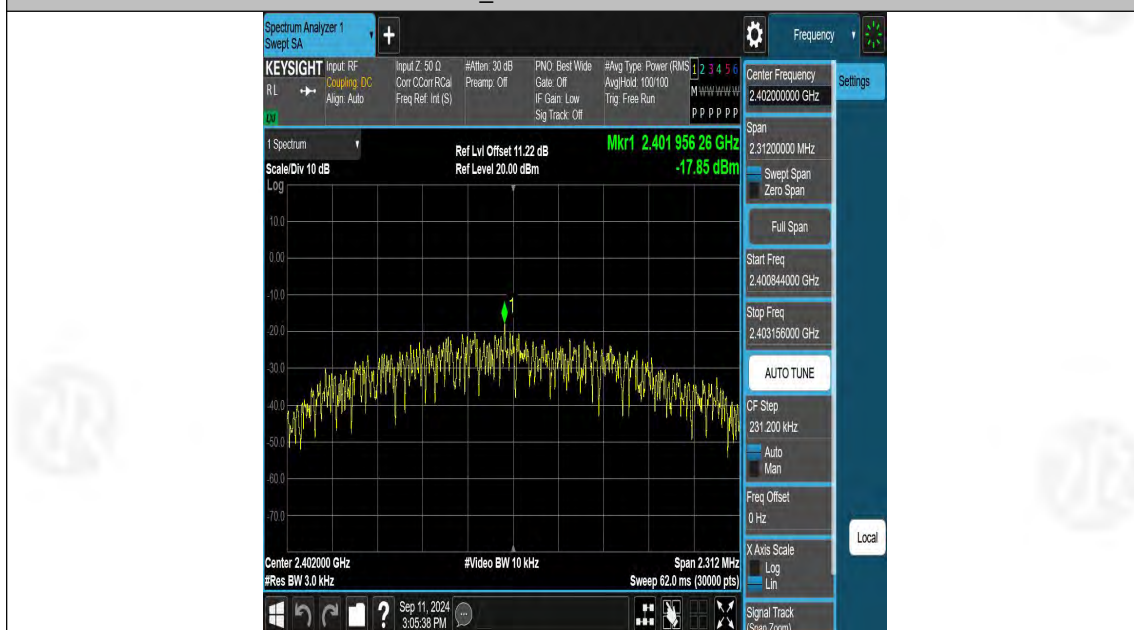


Test Graphs

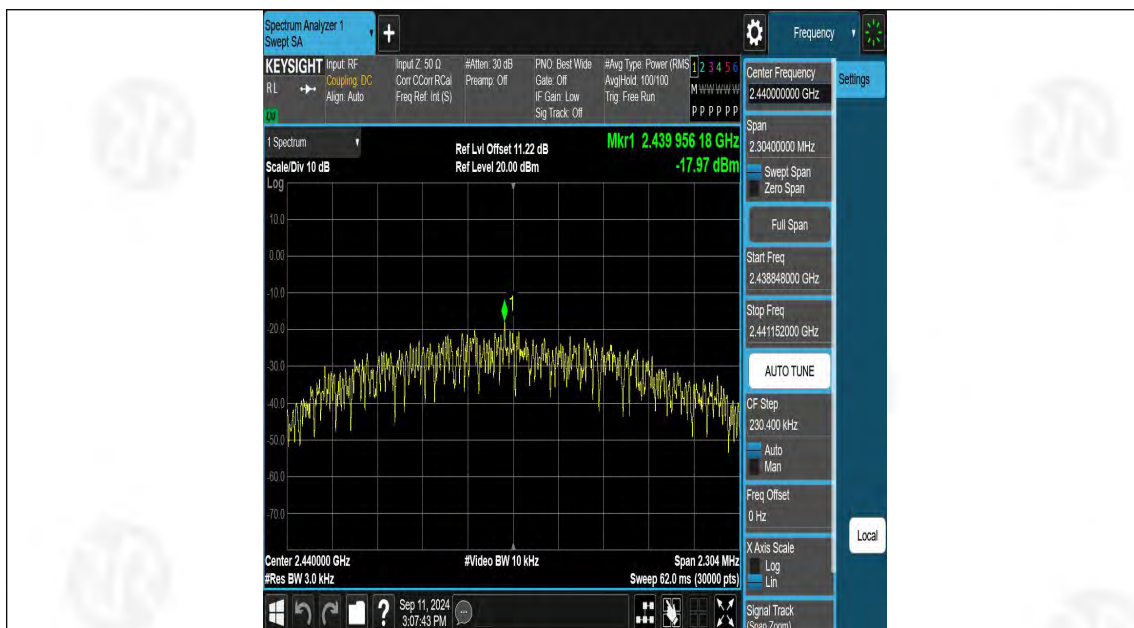




BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



The screenshot displays a Spectrum Analyzer 1 interface. The main display shows a spectrum plot with a peak at 2.47995634 GHz, labeled 'Mkr1', with a level of -18.13 dBm. The plot is set to a scale of 10 dB and a resolution bandwidth of 3.0 kHz. The center frequency is 2.480000 GHz, and the span is 2.286 MHz. The interface includes various settings and controls, such as 'Center Frequency', 'Span', 'Start Freq', 'Stop Freq', 'CF Step', 'Freq Offset', 'X Axis Scale', and 'Signal Track'. The bottom status bar shows the date and time as Sep 11, 2024, 3:09:46 PM.



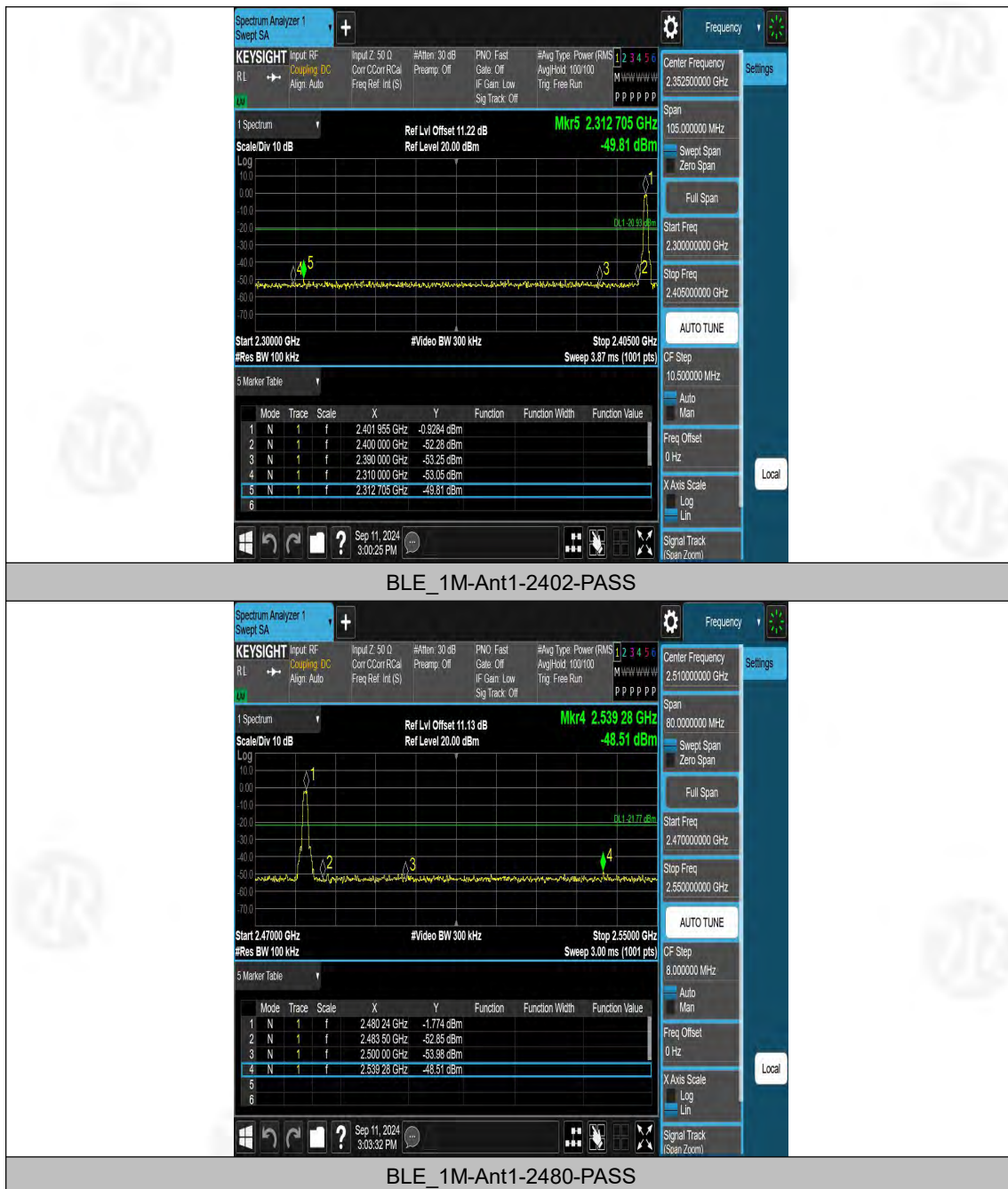
Appendix F: Band edge measurements

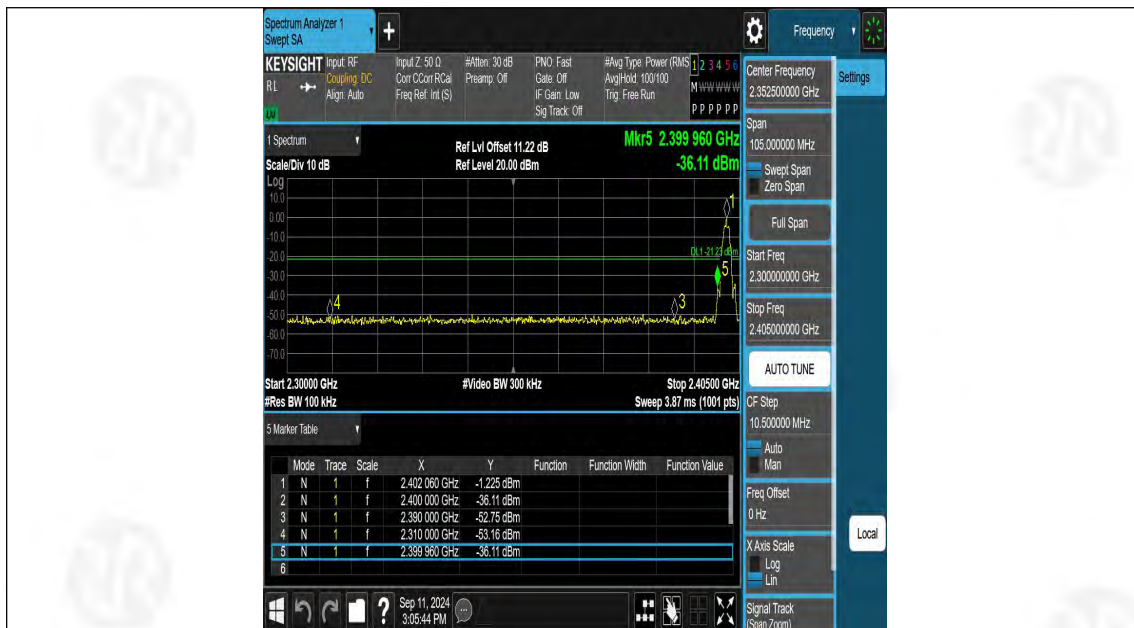
Test Result

TestMode	Antenna	Channel	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.93	-49.81	≤-20.93	PASS
BLE_1M	Ant1	High	2480	-1.77	-48.52	≤-21.77	PASS
BLE_2M	Ant1	Low	2402	-1.23	-36.11	≤-21.23	PASS
BLE_2M	Ant1	High	2480	-1.39	-49.36	≤-21.39	PASS

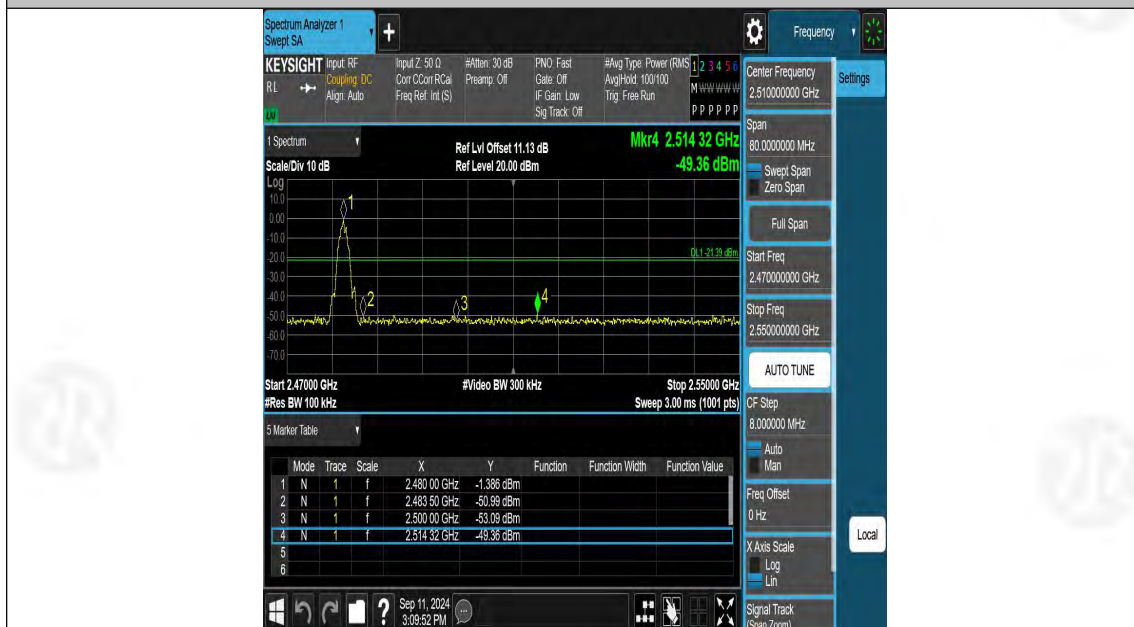


Test Graphs





BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2480-PASS



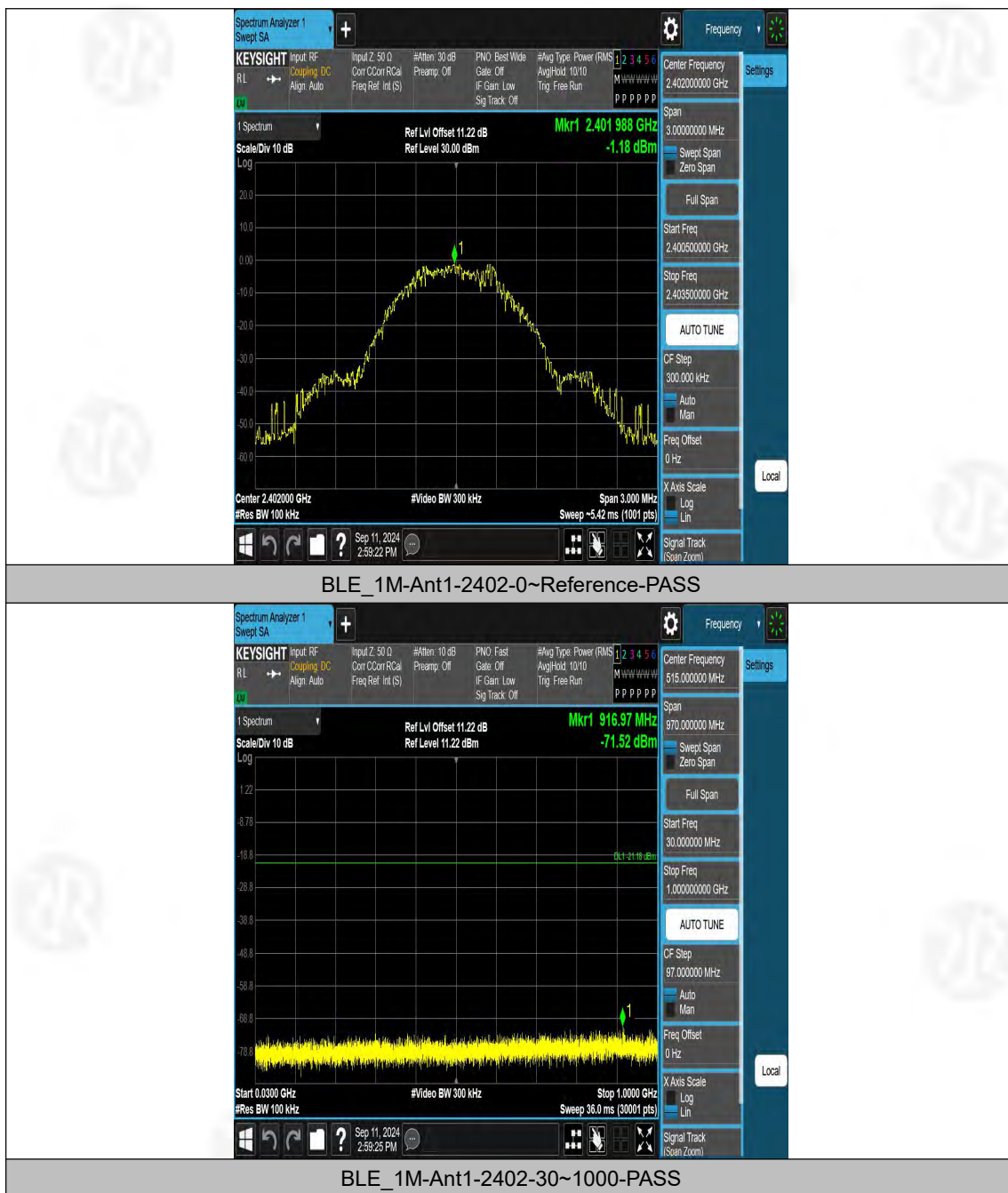
Appendix G: Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	-1.18	-1.18	---	PASS
BLE_1M	Ant1	2402	30~1000	-1.18	-71.52	≤-21.18	PASS
BLE_1M	Ant1	2402	1000~26500	-1.18	-49.8	≤-21.18	PASS
BLE_1M	Ant1	2440	0~Reference	-1.17	-1.17	---	PASS
BLE_1M	Ant1	2440	30~1000	-1.17	-71.75	≤-21.17	PASS
BLE_1M	Ant1	2440	1000~26500	-1.17	-49.81	≤-21.17	PASS
BLE_1M	Ant1	2480	0~Reference	-1.20	-1.20	---	PASS
BLE_1M	Ant1	2480	30~1000	-1.20	-71.23	≤-21.2	PASS
BLE_1M	Ant1	2480	1000~26500	-1.20	-49.59	≤-21.2	PASS
BLE_2M	Ant1	2402	0~Reference	-1.18	-1.18	---	PASS
BLE_2M	Ant1	2402	30~1000	-1.18	-72.06	≤-21.18	PASS
BLE_2M	Ant1	2402	1000~26500	-1.18	-49.34	≤-21.18	PASS
BLE_2M	Ant1	2440	0~Reference	-1.25	-1.25	---	PASS
BLE_2M	Ant1	2440	30~1000	-1.25	-71.6	≤-21.25	PASS
BLE_2M	Ant1	2440	1000~26500	-1.25	-49.68	≤-21.25	PASS
BLE_2M	Ant1	2480	0~Reference	-1.46	-1.46	---	PASS
BLE_2M	Ant1	2480	30~1000	-1.46	-71.77	≤-21.46	PASS
BLE_2M	Ant1	2480	1000~26500	-1.46	-49.48	≤-21.46	PASS



Test Graphs

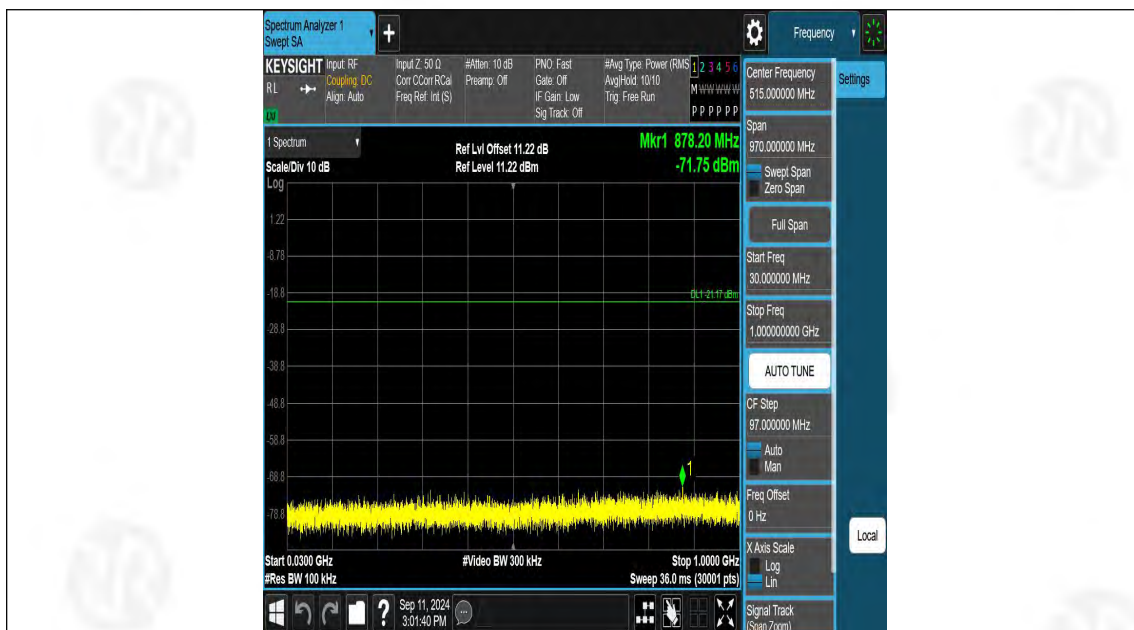




BLE_1M-Ant1-2402-1000~26500-PASS



BLE_1M-Ant1-2440-0~Reference-PASS



BLE_1M-Ant1-2440-30~1000-PASS



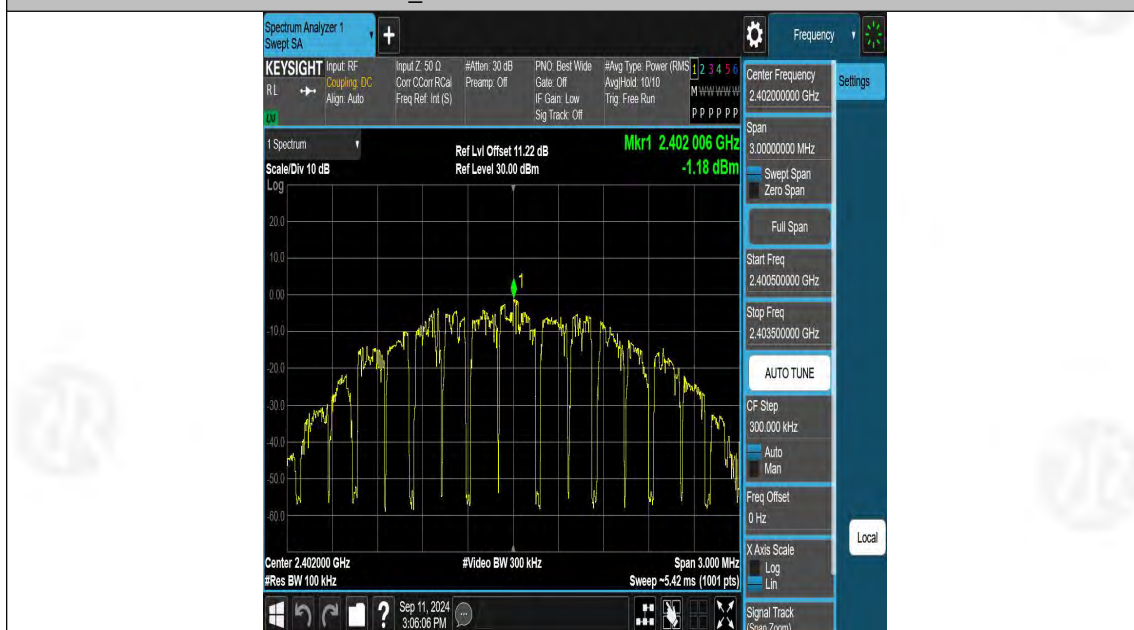
BLE_1M-Ant1-2440-1000~26500-PASS



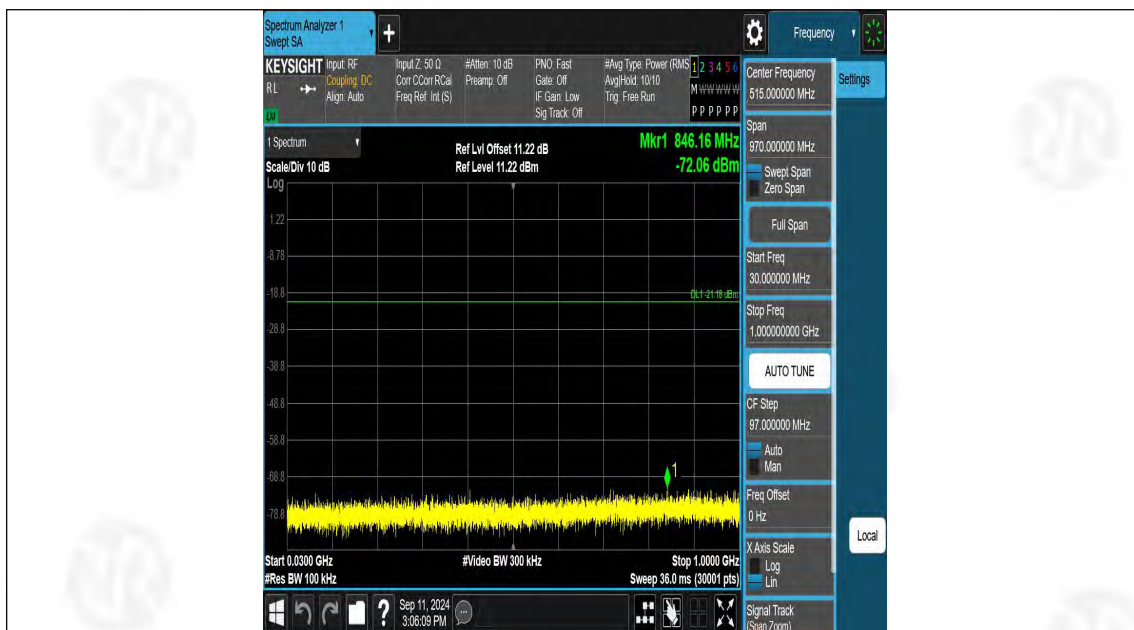
The screenshot displays a Spectrum Analyzer 1 interface. The top control bar includes a '+' button, a 'Spectrum Analyzer 1' title, and a 'Sweep SA' dropdown. Below this, the 'KEYSTAGE' section shows 'Input RF' (Coupling, DC), 'Input Z: 50 Ω', 'Attenuation: 10 dB', 'PNO: Fast', 'Avg Type: Power (RMS)', and 'Avg Hold: 10/10'. The 'Center Frequency' is set to 515.000000 MHz. The 'Span' is 970.000000 MHz. The 'Start Freq' is 30.000000 MHz, and the 'Stop Freq' is 1.000000000 GHz. The 'X Axis Scale' is set to 'Log'. The 'Signal Track' is 'Span Zoom'. The main display shows a spectrum plot with a yellow signal trace and a green marker at 875.45 MHz. The plot is labeled 'Mkr1 875.45 MHz' and '-71.23 dBm'. The 'Ref Lvl Offset' is 11.13 dB, and the 'Ref Level' is 11.13 dBm. The 'Scale Div' is 10 dB, and the 'Log' scale is selected. The 'Start' is 0.0300 GHz, the 'Stop' is 1.0000 GHz, the 'Res BW' is 100 kHz, and the 'Sweep' is 38.0 ms (30001 pts). The bottom status bar shows the date and time: Sep 11, 2024, 3:03:54 PM.



BLE_1M-Ant1-2480-1000~26500-PASS



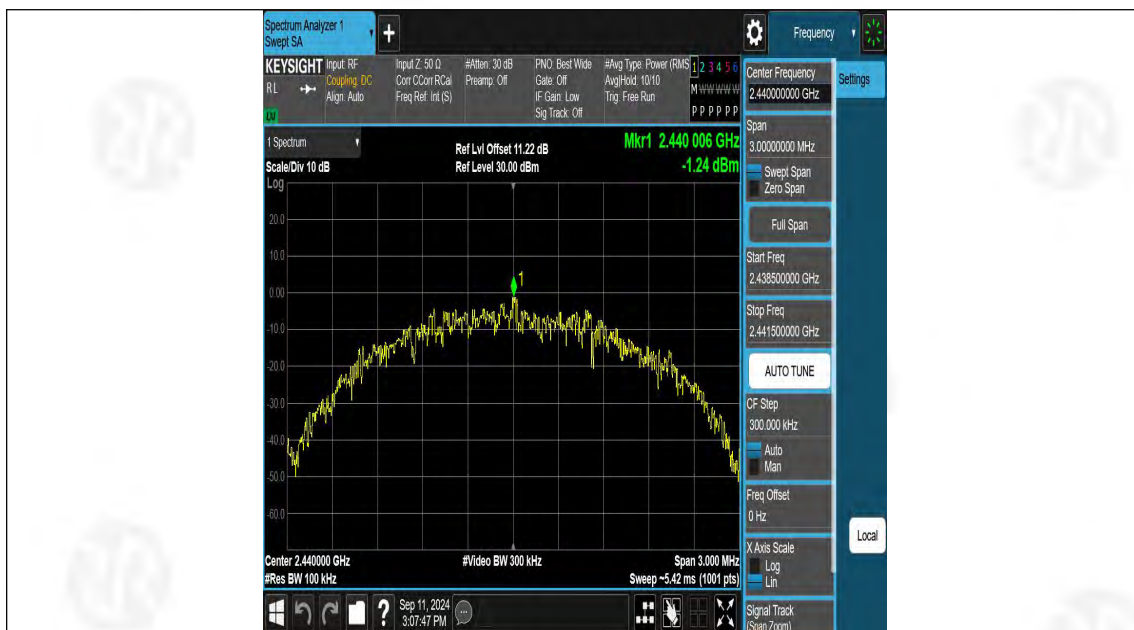
BLE_2M-Ant1-2402-0~Reference-PASS



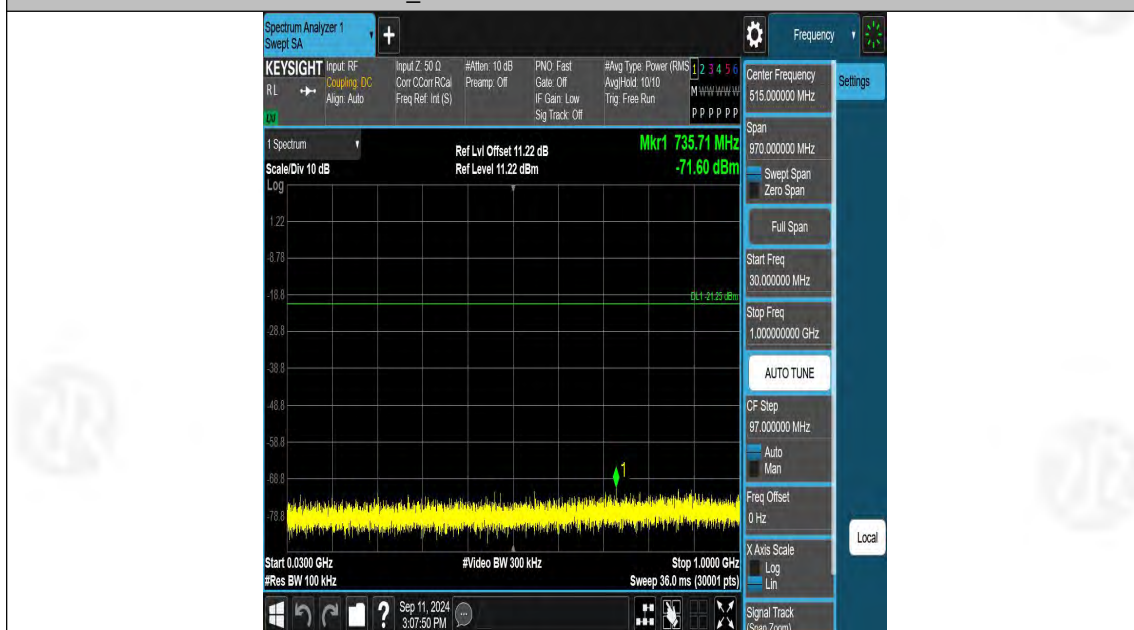
BLE_2M-Ant1-2402-30~1000-PASS



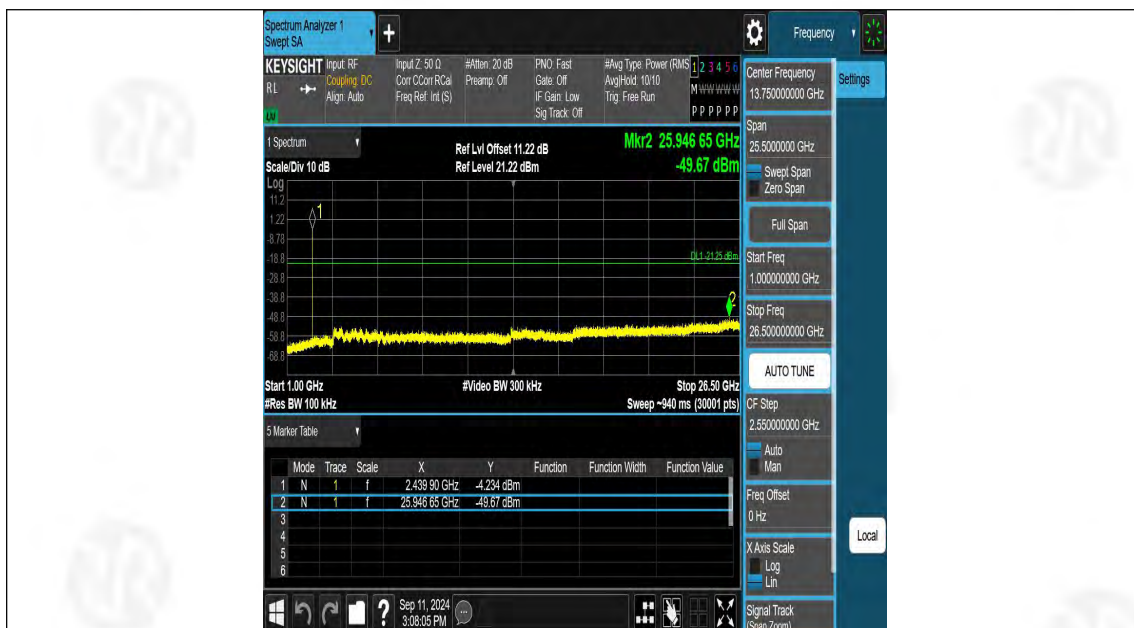
BLE_2M-Ant1-2402-1000~26500-PASS



BLE_2M-Ant1-2440-0~Reference-PASS



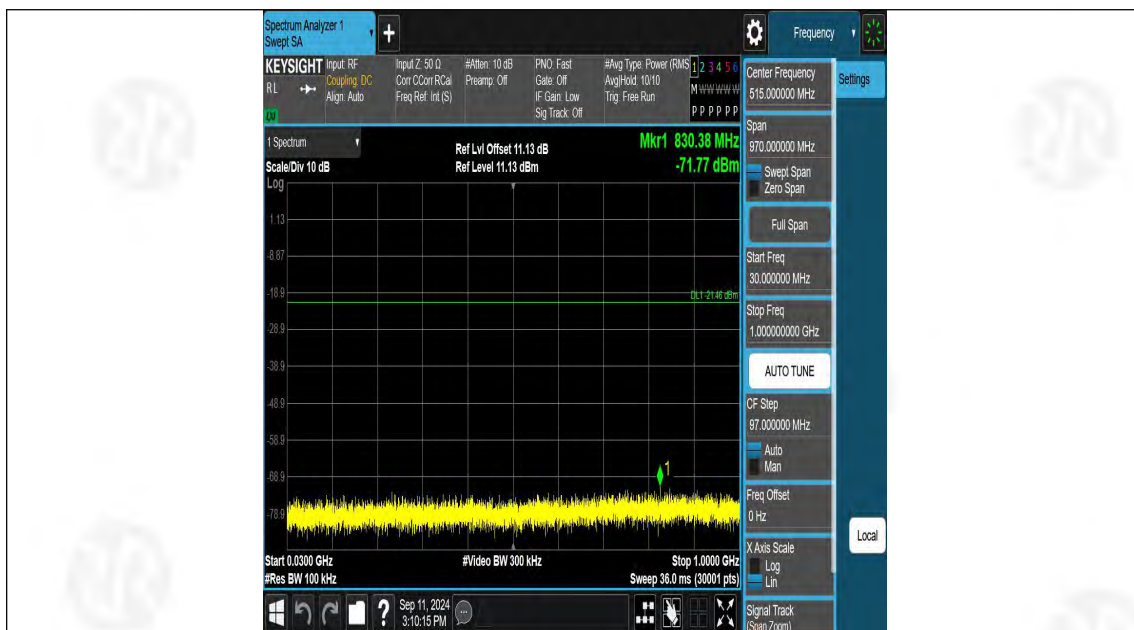
BLE_2M-Ant1-2440-30~1000-PASS



BLE_2M-Ant1-2440-1000~26500-PASS



BLE_2M-Ant1-2480-0~Reference-PASS



BLE_2M-Ant1-2480-30~1000-PASS



BLE_2M-Ant1-2480-1000~26500-PASS



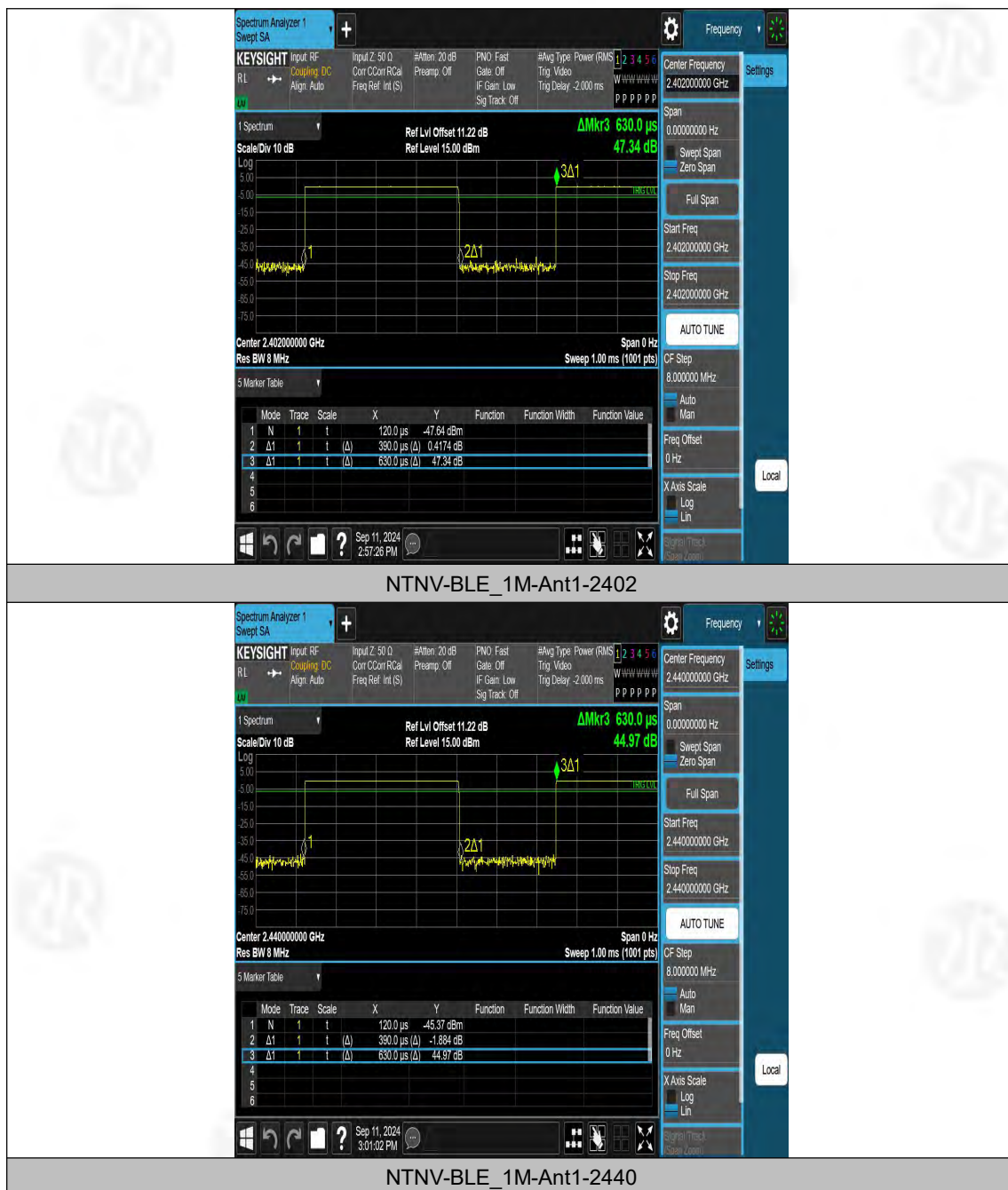
Appendix H: Duty Cycle

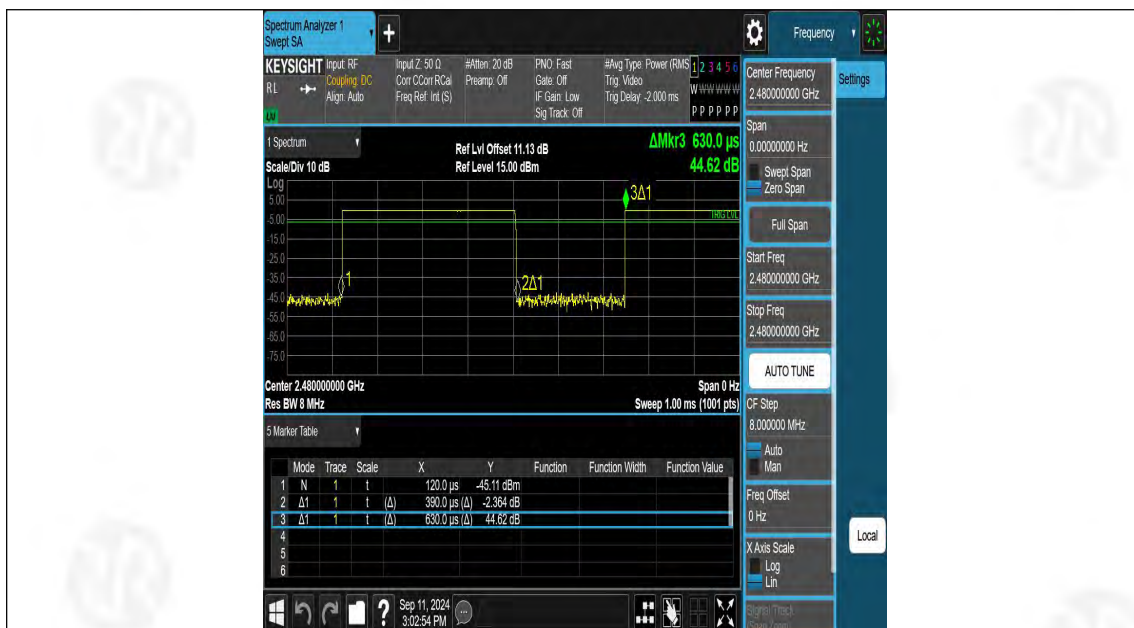
Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.39	0.63	61.90	2.08
BLE_1M	Ant1	2440	0.39	0.63	61.90	2.08
BLE_1M	Ant1	2480	0.39	0.63	61.90	2.08
BLE_2M	Ant1	2402	0.20	0.63	31.75	4.98
BLE_2M	Ant1	2440	0.20	0.63	31.75	4.98
BLE_2M	Ant1	2480	0.20	0.63	31.75	4.98

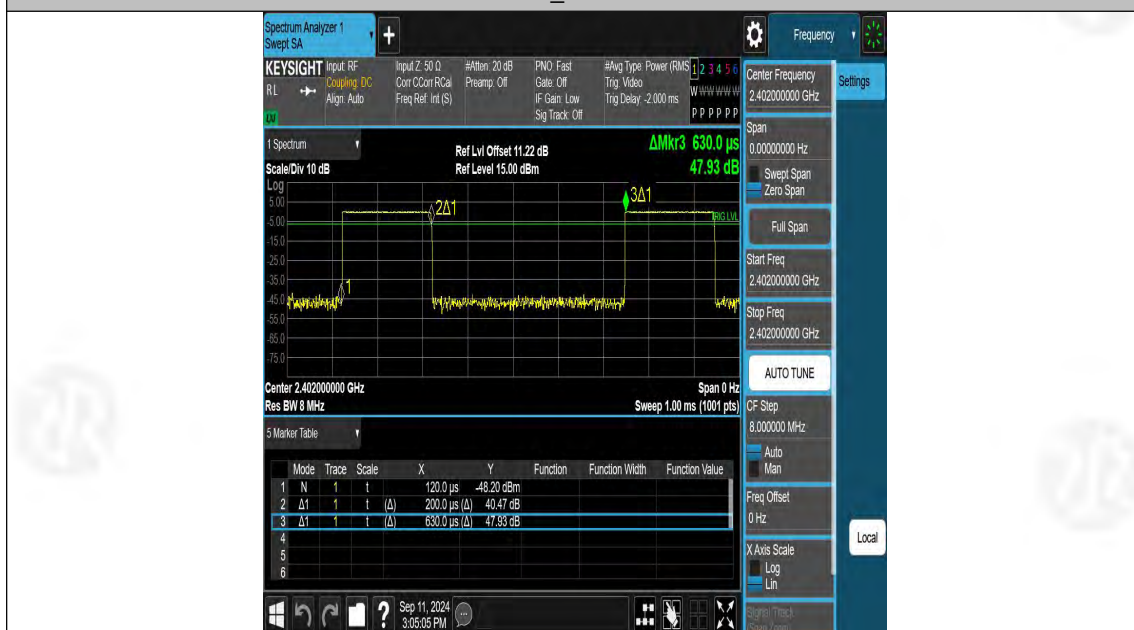


Test Graphs





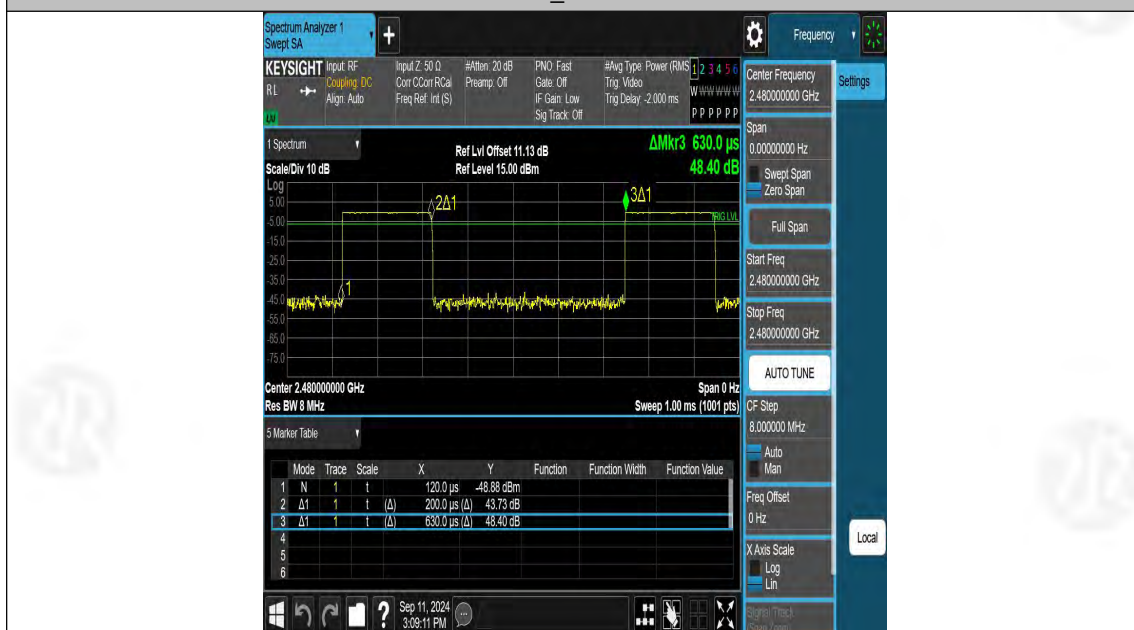
NTNV-BLE_1M-Ant1-2480



NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480