RF Test Report

For

Project No.:	ZKT-241025L13927E
Client:	YA LI ELECTRIC CO LTD
Manufacturer:	YA LI ELECTRIC CO LTD
Product Description:	LED CONTROLLER
Model No.	YL-LEDAPP-AJ01
Test Engineer:	Jim Liu
Test Date:	2024-9-11

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	0.676	2439.660	2440.336	0.5	PASS
BLE_1M	Ant1	2480	0.668	2479.664	2480.332	0.5	PASS
BLE_2M	Ant1	2402	1.156	2401.424	2402.580	0.5	PASS
BLE_2M	Ant1	2440	1.140	2439.424	2440.564	0.5	PASS
BLE_2M	Ant1	2480	1.144	2479.428	2480.572	0.5	PASS

Test Graphs

BLE_1M-Ant1-2402-PASS

BLE_1M-Ant1-2440-PASS

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	1.0163	2401.4984	2402.5147	---	---
BLE_1M	Ant1	2440	1.0138	2439.4989	2440.5127	---	---
BLE_1M	Ant1	2480	1.0117	2479.5010	2480.5127	---	---
BLE_2M	Ant1	2402	2.0297	2401.0048	2403.0345	---	---
BLE_2M	Ant1	2440	2.0238	2439.0067	2441.0305	---	---
BLE_2M	Ant1	2480	2.0204	2479.0086	2481.0290	---	---

Test Graphs

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 C: Maximum conducted output power

Test Result Peak

TestMode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	**-0.29**	≤30	-0.29	≤36	PASS
BLE_1M	Ant1	2440	-0.39	≤30	-0.39	≤36	PASS
BLE_1M	Ant1	2480	-0.52	≤30	-0.52	≤36	PASS
BLE_2M	Ant1	2402	-0.29	≤30	-0.29	≤36	PASS
BLE_2M	Ant1	2440	-0.38	≤30	-0.38	≤36	PASS
BLE_2M	Ant1	2480	-0.54	≤30	-0.54	≤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-Ant1-2402-PASS

BLE_1M-Ant1-2440-PASS

BLE_1M-Ant1-2480-PASS

BLE_2M-Ant1-2402-PASS

BLE_2M-Ant1-2440-PASS

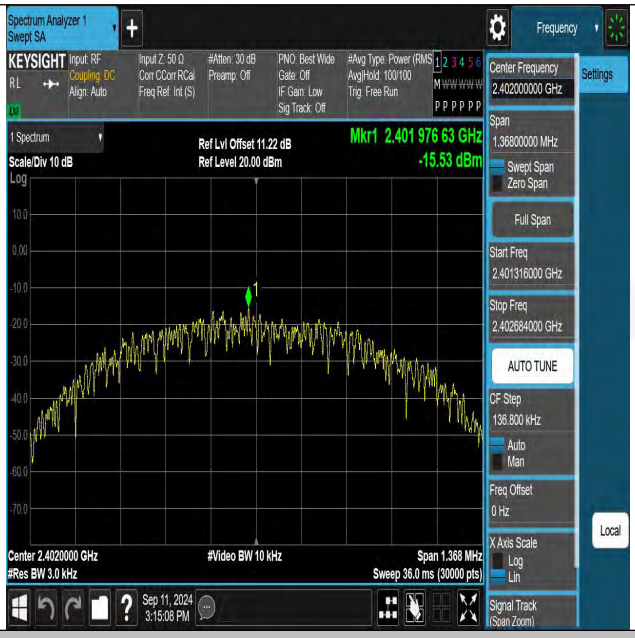
BLE_2M-Ant1-2480-PASS

Appendix D: Maximum power spectral density

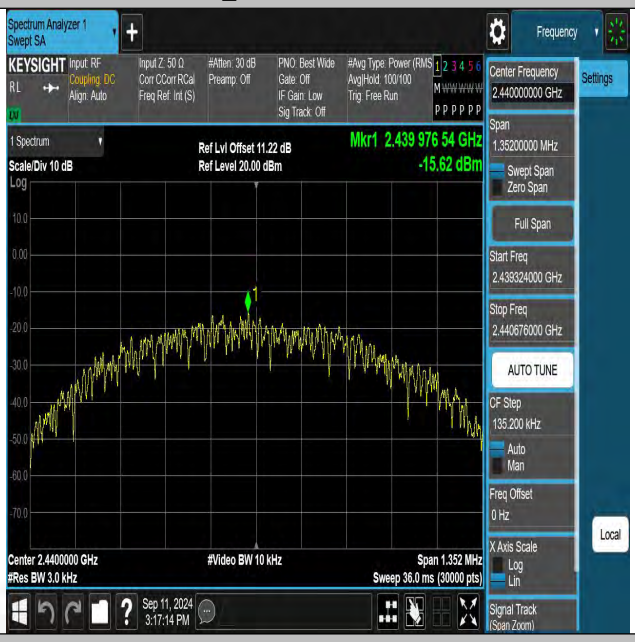
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.53	≤8.00	PASS
BLE_1M	Ant1	2440	-15.62	≤8.00	PASS
BLE_1M	Ant1	2480	-15.78	≤8.00	PASS
BLE_2M	Ant1	2402	-17.86	≤8.00	PASS
BLE_2M	Ant1	2440	-17.98	≤8.00	PASS
BLE_2M	Ant1	2480	-18.14	≤8.00	PASS

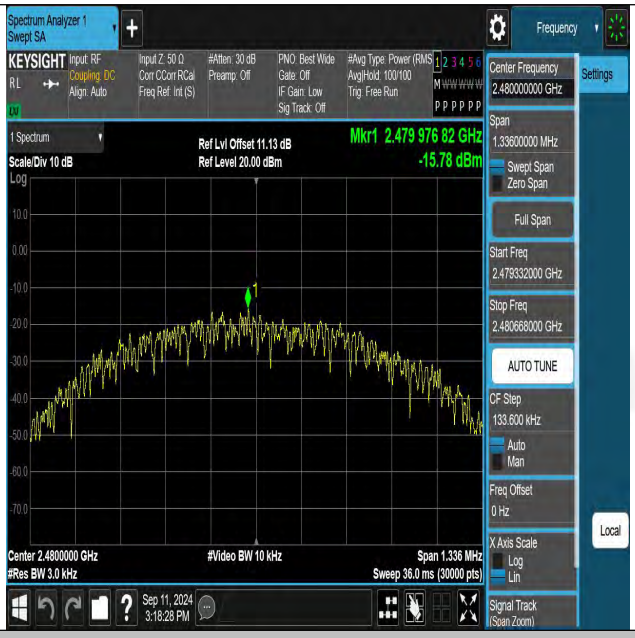
Test Graphs



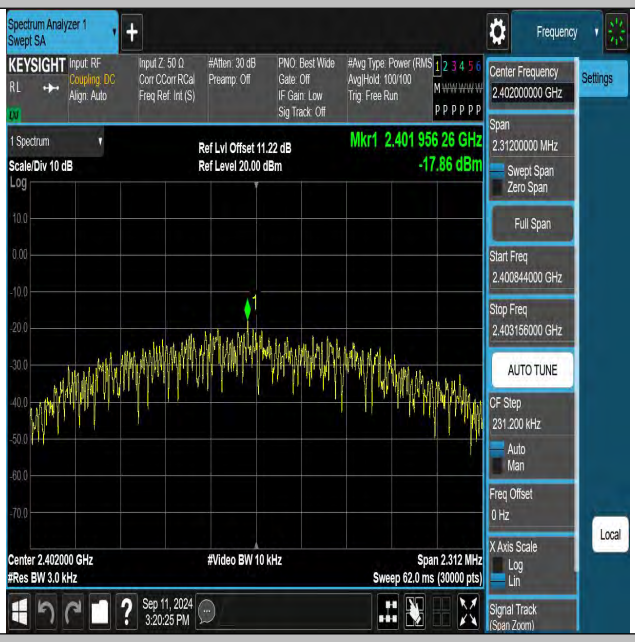
BLE_1M-Ant1-2402-PASS



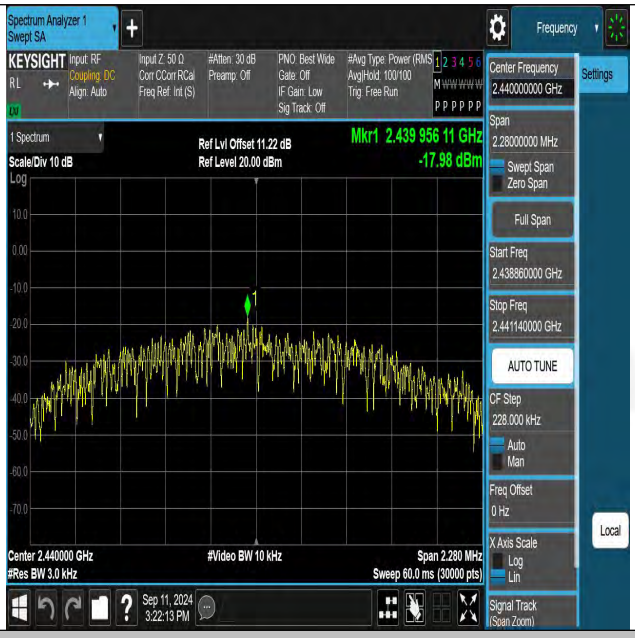
BLE_1M-Ant1-2440-PASS



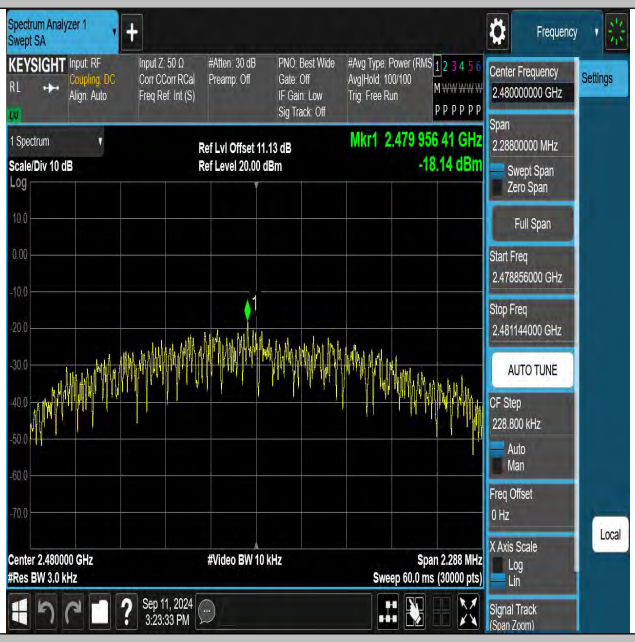
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



BLE_2M-Ant1-2480-PASS

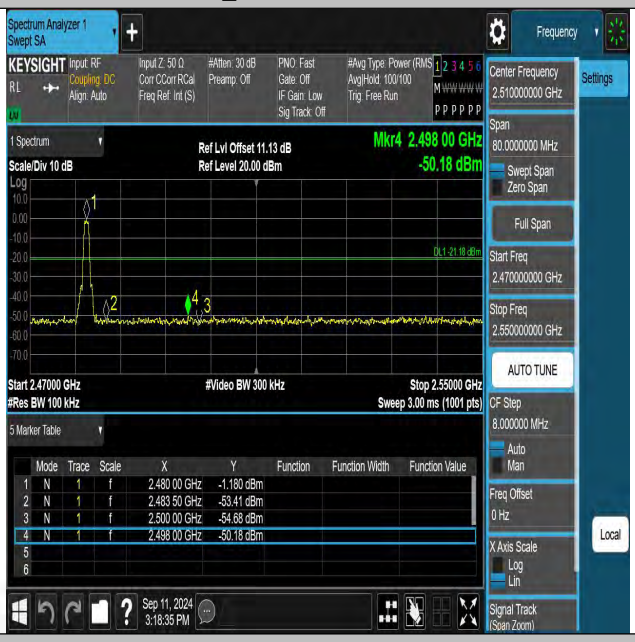
Appendix F: Band edge measurements

Test Result

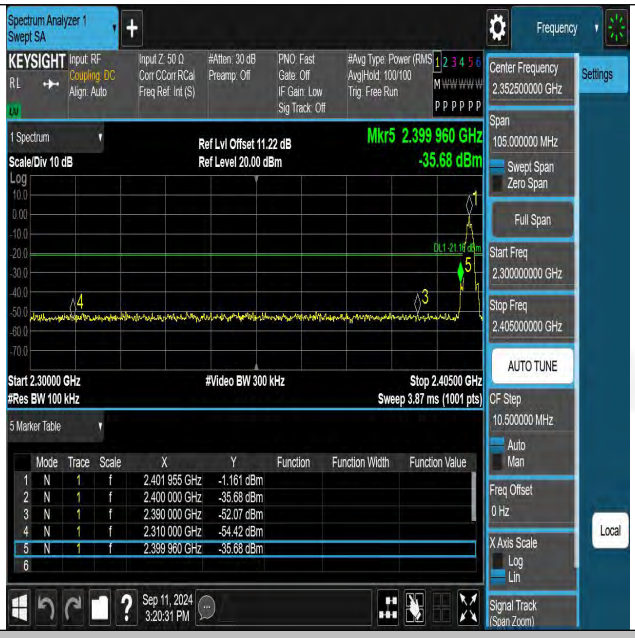
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.26	-49.85	≤-21.26	PASS
BLE_1M	Ant1	High	2480	-1.18	-50.19	≤-21.18	PASS
BLE_2M	Ant1	Low	2402	-1.16	-35.68	≤-21.16	PASS
BLE_2M	Ant1	High	2480	-1.80	-49.71	≤-21.8	PASS

Test Graphs

BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS

BLE_2M-Ant1-2480-PASS

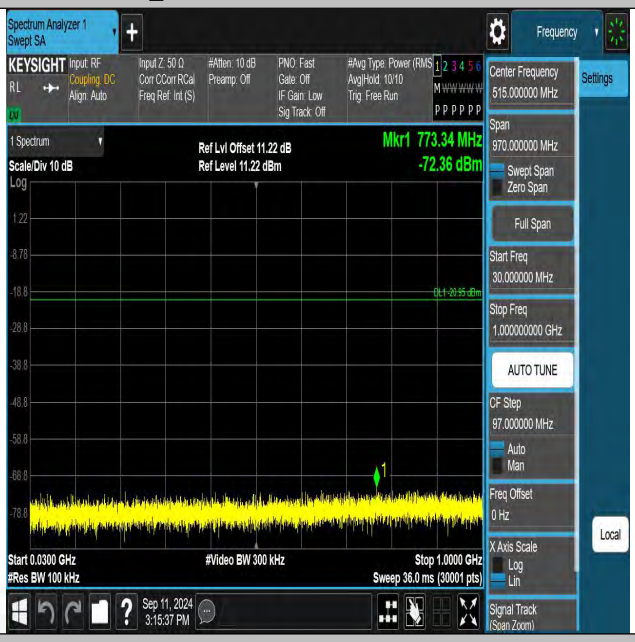
Appendix G: Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	-0.95	-0.95	---	PASS
BLE_1M	Ant1	2402	30~1000	-0.95	-72.36	≤-20.95	PASS
BLE_1M	Ant1	2402	1000~26500	-0.95	-50.51	≤-20.95	PASS
BLE_1M	Ant1	2440	0~Reference	-1.18	-1.18	---	PASS
BLE_1M	Ant1	2440	30~1000	-1.18	-71.77	≤-21.18	PASS
BLE_1M	Ant1	2440	1000~26500	-1.18	-50.1	≤-21.18	PASS
BLE_1M	Ant1	2480	0~Reference	-1.18	-1.18	---	PASS
BLE_1M	Ant1	2480	30~1000	-1.18	-70.95	≤-21.18	PASS
BLE_1M	Ant1	2480	1000~26500	-1.18	-49.76	≤-21.18	PASS
BLE_2M	Ant1	2402	0~Reference	-1.27	-1.27	---	PASS
BLE_2M	Ant1	2402	30~1000	-1.27	-72.39	≤-21.27	PASS
BLE_2M	Ant1	2402	1000~26500	-1.27	-50.01	≤-21.27	PASS
BLE_2M	Ant1	2440	0~Reference	-1.75	-1.75	---	PASS
BLE_2M	Ant1	2440	30~1000	-1.75	-72.5	≤-21.75	PASS
BLE_2M	Ant1	2440	1000~26500	-1.75	-49.71	≤-21.75	PASS
BLE_2M	Ant1	2480	0~Reference	-1.54	-1.54	---	PASS
BLE_2M	Ant1	2480	30~1000	-1.54	-72.01	≤-21.54	PASS
BLE_2M	Ant1	2480	1000~26500	-1.54	-49.98	≤-21.54	PASS

Test Graphs

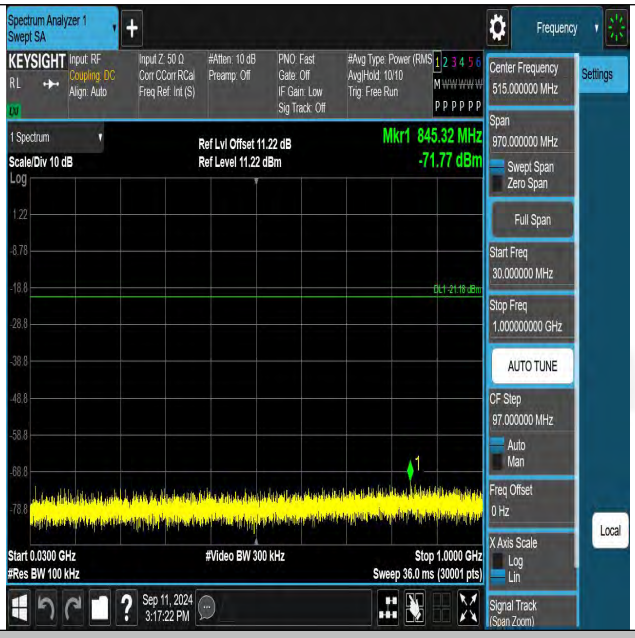
BLE_1M-Ant1-2402-0~Reference-PASS



BLE_1M-Ant1-2402-30~1000-PASS

BLE_1M-Ant1-2402-1000~26500-PASS

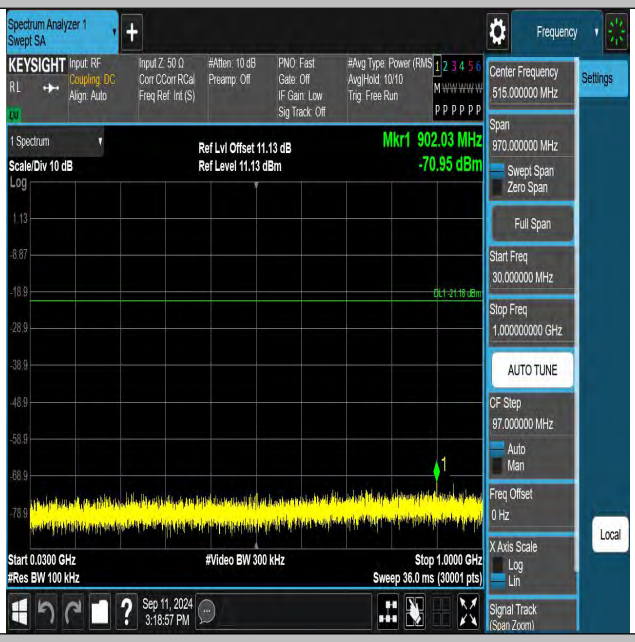
BLE_1M-Ant1-2440-0~Reference-PASS



BLE_1M-Ant1-2440-30~1000-PASS

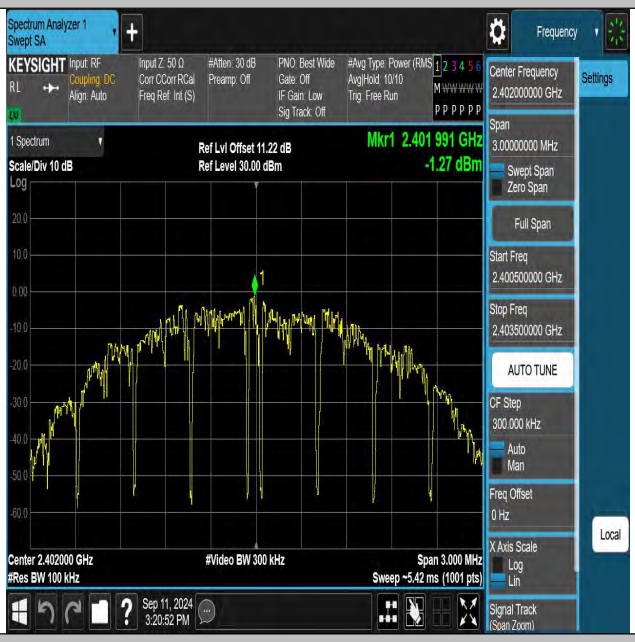
BLE_1M-Ant1-2440-1000~26500-PASS

BLE_1M-Ant1-2480-0~Reference-PASS

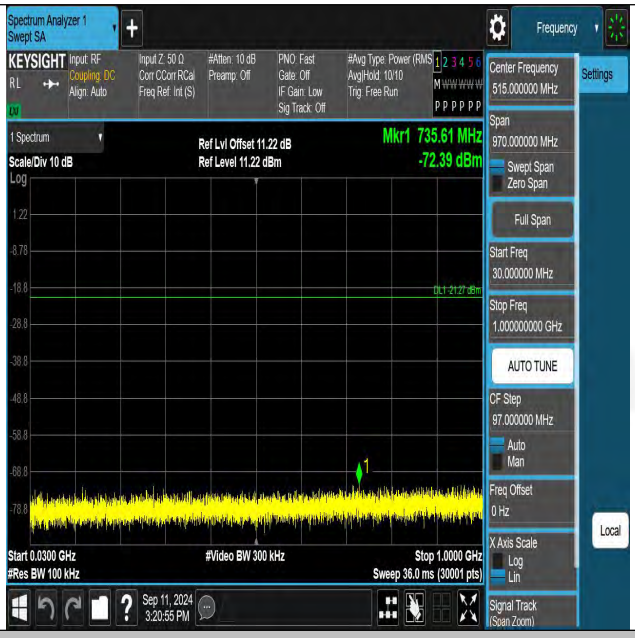


BLE_1M-Ant1-2480-30~1000-PASS

BLE_1M-Ant1-2480-1000~26500-PASS

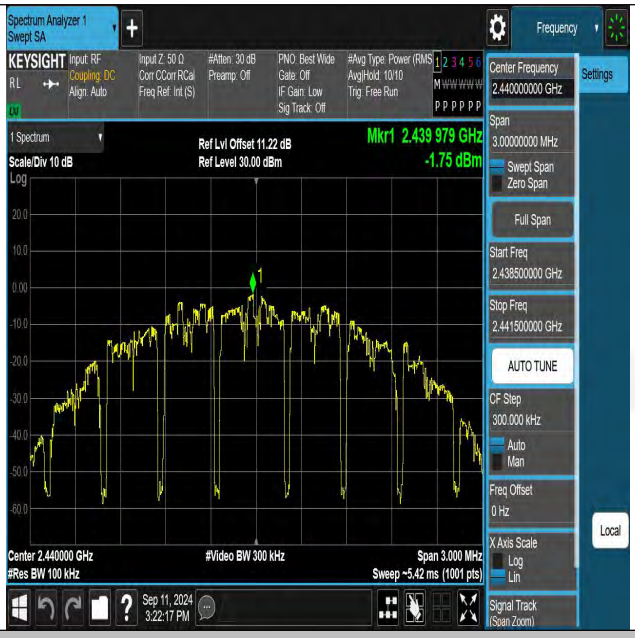


BLE_2M-Ant1-2402-0~Reference-PASS

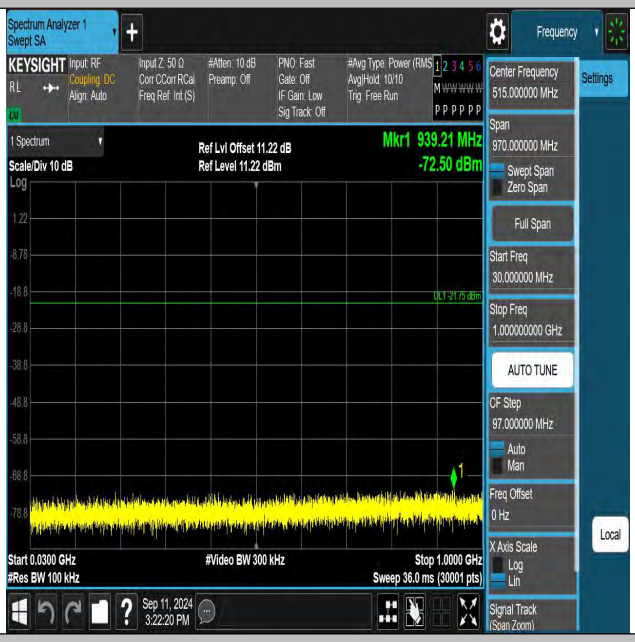


BLE_2M-Ant1-2402-30~1000-PASS

BLE_2M-Ant1-2402-1000~26500-PASS

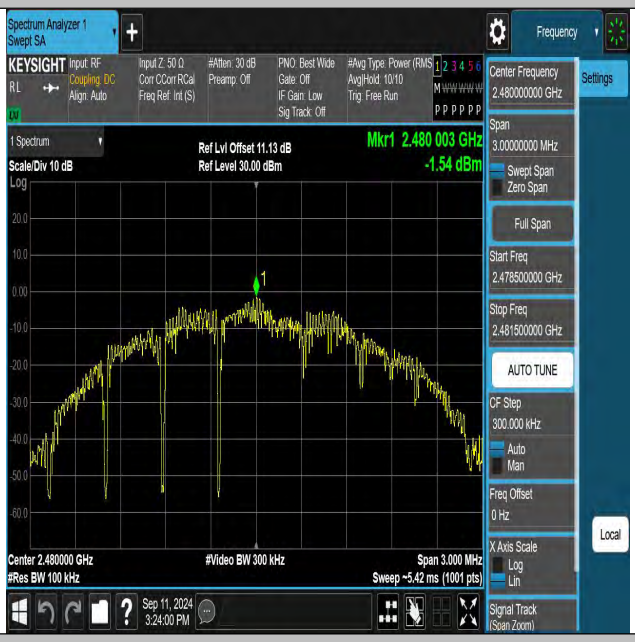


BLE_2M-Ant1-2440-0~Reference-PASS

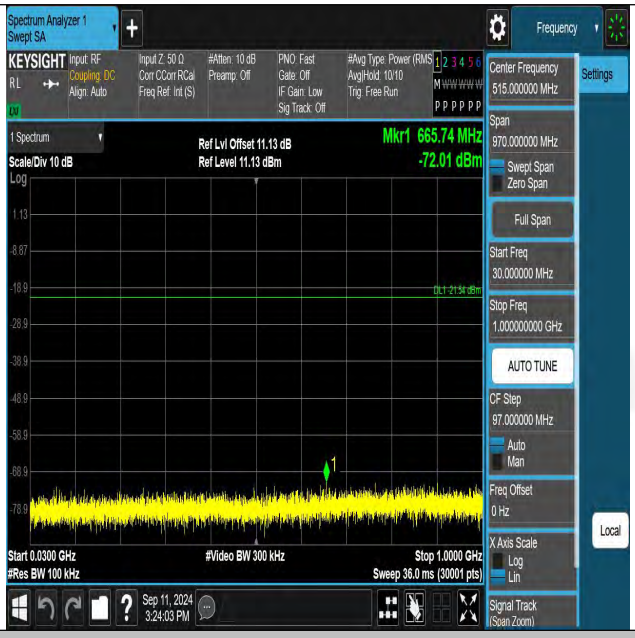


BLE_2M-Ant1-2440-30~1000-PASS

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-Ant1-2402

NTNV-BLE_1M-Ant1-2440

NTNV-BLE_1M-Ant1-2480

NTNV-BLE_2M-Ant1-2402

NTNV-BLE_2M-Ant1-2440

NTNV-BLE_2M-Ant1-2480