



RF Test Report

For

Project No.:	ZKT-241025L13928E
Client:	YA LI ELECTRIC CO LTD
Manufacturer:	YA LI ELECTRIC CO LTD
Product Description:	LED CONTROLLER
Model No.	YL-LEDAPP-IR01
Test Engineer:	Jim Liu
Test Date:	2024-09-14



Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.648	2401.752	2402.400	0.5	PASS
BLE_1M	Ant1	2440	0.660	2439.740	2440.400	0.5	PASS
BLE_1M	Ant1	2480	0.652	2479.748	2480.400	0.5	PASS
BLE_2M	Ant1	2402	1.116	2401.524	2402.640	0.5	PASS
BLE_2M	Ant1	2440	1.116	2439.520	2440.636	0.5	PASS
BLE_2M	Ant1	2480	1.116	2479.520	2480.636	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	1.0251	2401.5616	2402.5867	---	---
BLE_1M	Ant1	2440	1.0307	2439.5605	2440.5912	---	---
BLE_1M	Ant1	2480	1.0225	2479.5658	2480.5883	---	---
BLE_2M	Ant1	2402	2.0472	2401.0662	2403.1134	---	---
BLE_2M	Ant1	2440	2.0471	2439.0671	2441.1142	---	---
BLE_2M	Ant1	2480	2.0536	2479.0614	2481.1150	---	---



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

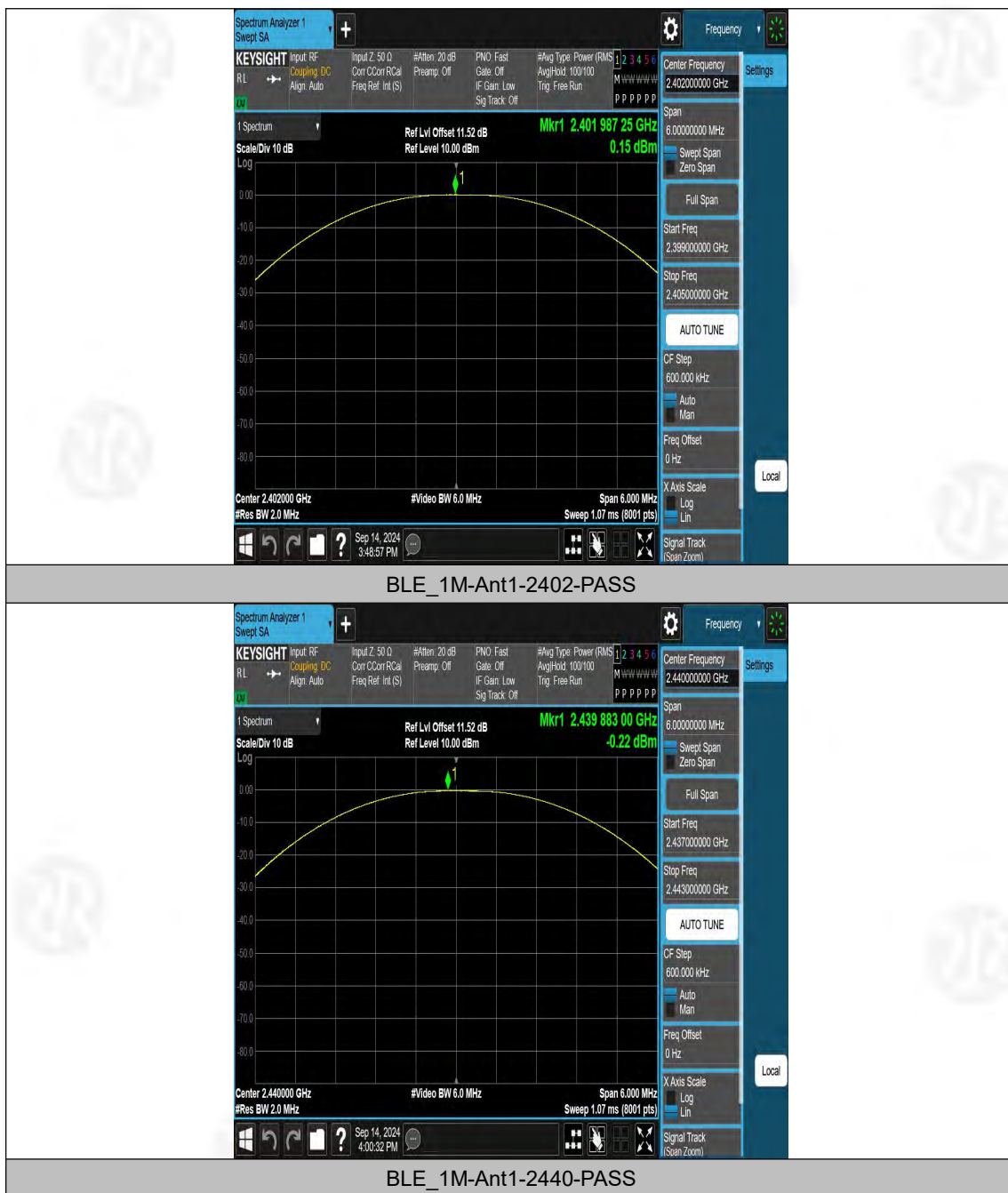
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.15	≤30	0.15	≤36	PASS
BLE_1M	Ant1	2440	-0.22	≤30	-0.22	≤36	PASS
BLE_1M	Ant1	2480	-1.20	≤30	-1.20	≤36	PASS
BLE_2M	Ant1	2402	-0.26	≤30	-0.26	≤36	PASS
BLE_2M	Ant1	2440	-0.56	≤30	-0.56	≤36	PASS
BLE_2M	Ant1	2480	-1.67	≤30	-1.67	≤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	-15.95	≤8.00	PASS
BLE_1M	Ant1	2440	-15.09	≤8.00	PASS
BLE_1M	Ant1	2480	-18.20	≤8.00	PASS
BLE_2M	Ant1	2402	-17.73	≤8.00	PASS
BLE_2M	Ant1	2440	-18.68	≤8.00	PASS
BLE_2M	Ant1	2480	-19.77	≤8.00	PASS



Test Graphs





BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



BLE_2M-Ant1-2480-PASS



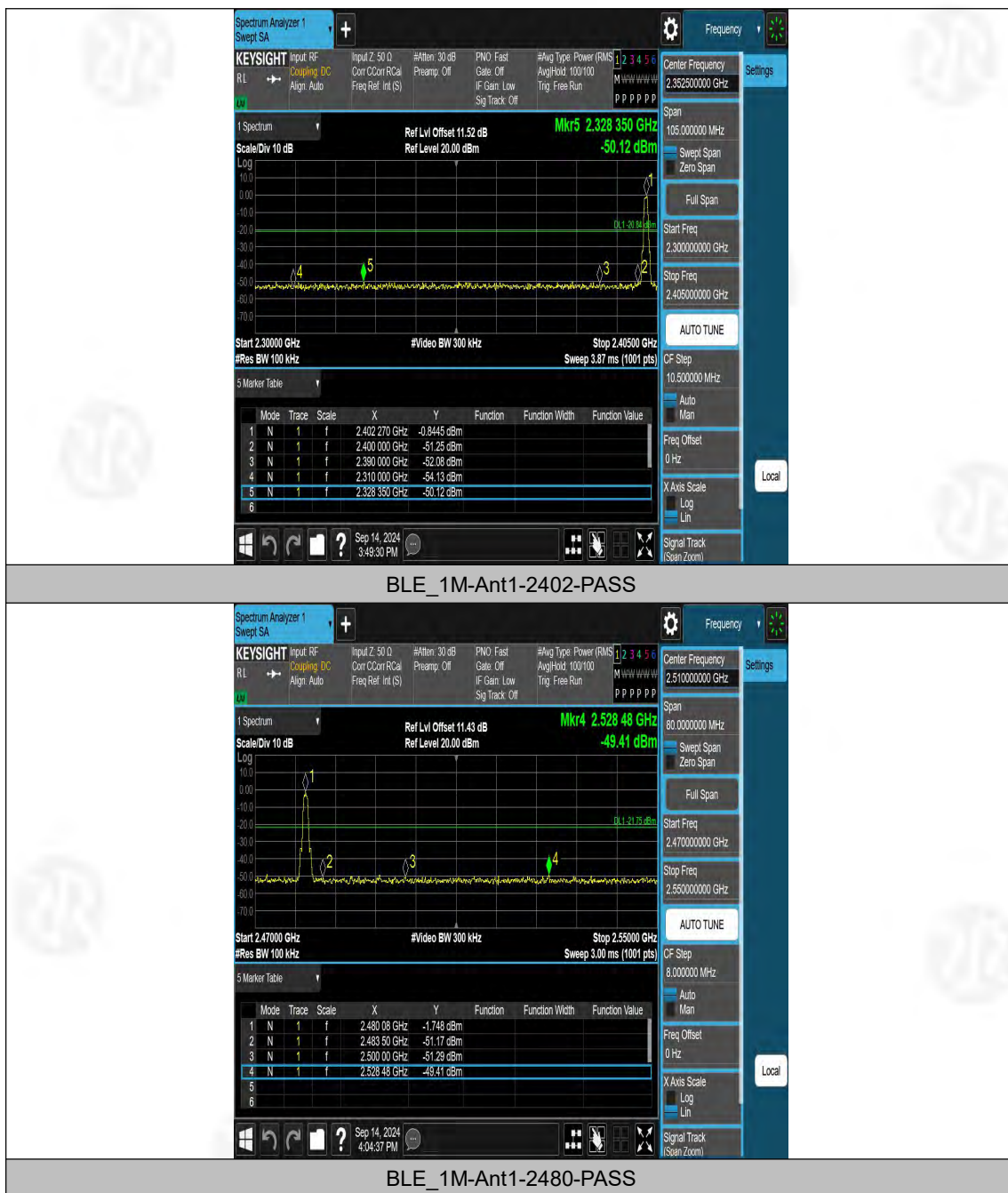
Appendix F: Band edge measurements

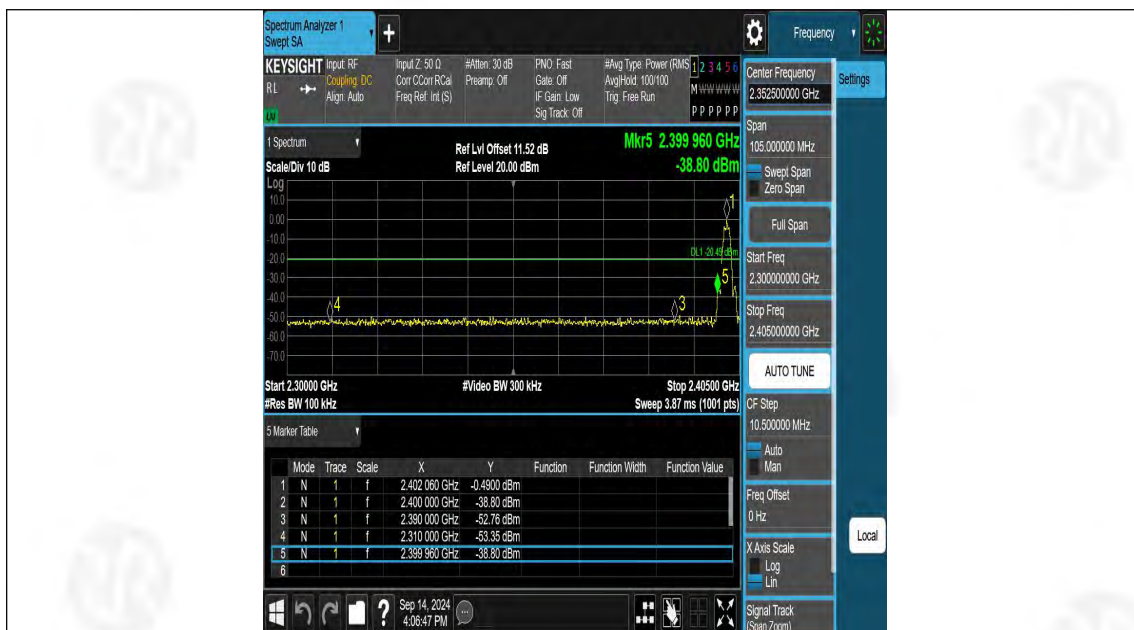
Test Result

TestMod e	Antenn a	ChNam e	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdic t
BLE_1M	Ant1	Low	2402	-0.84	-50.12	≤-20.84	PASS
BLE_1M	Ant1	High	2480	-1.75	-49.41	≤-21.75	PASS
BLE_2M	Ant1	Low	2402	-0.49	-38.8	≤-20.49	PASS
BLE_2M	Ant1	High	2480	-3.30	-49.12	≤-23.3	PASS



Test Graphs





BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2480-PASS



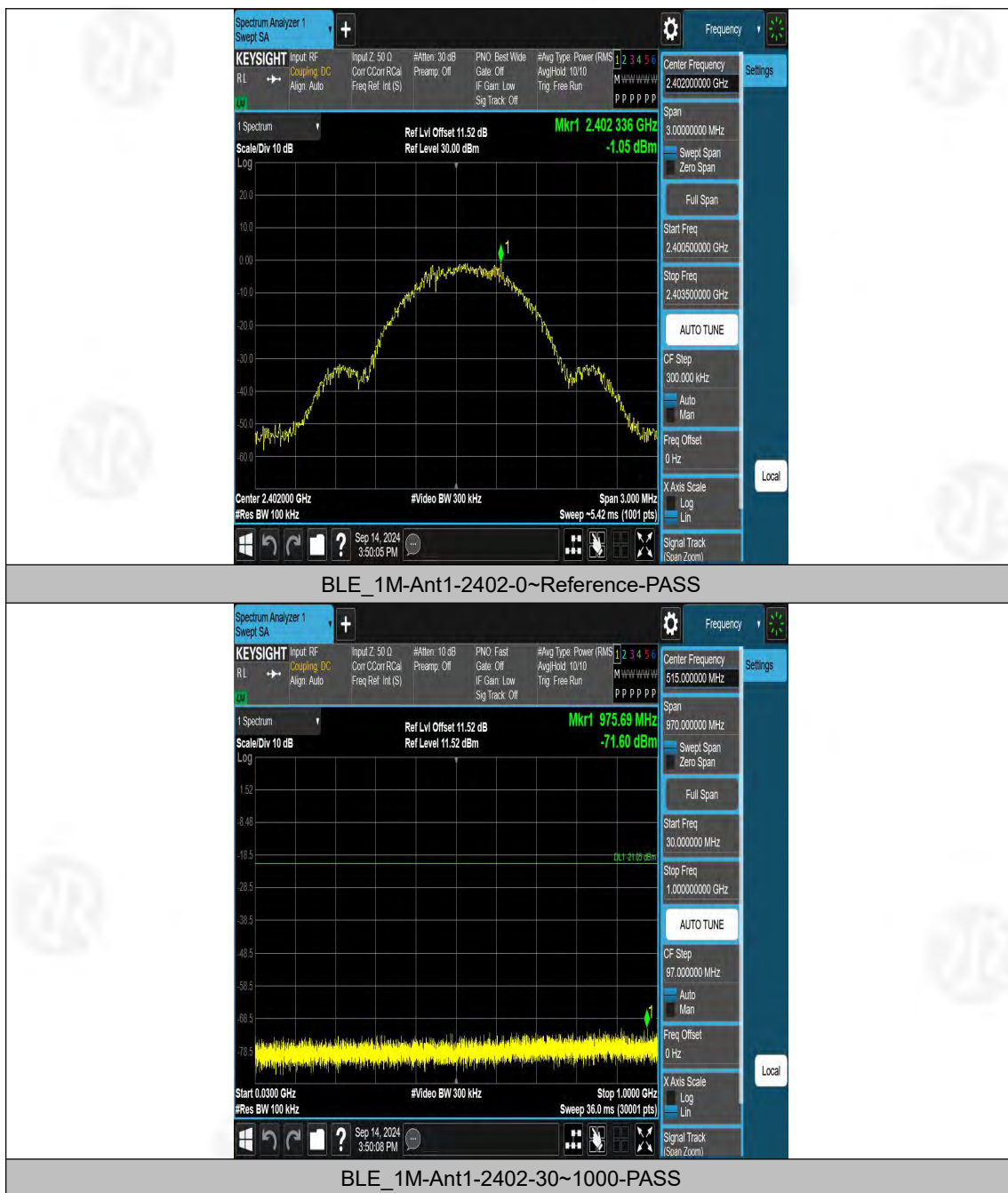
Appendix G: Conducted Spurious Emission

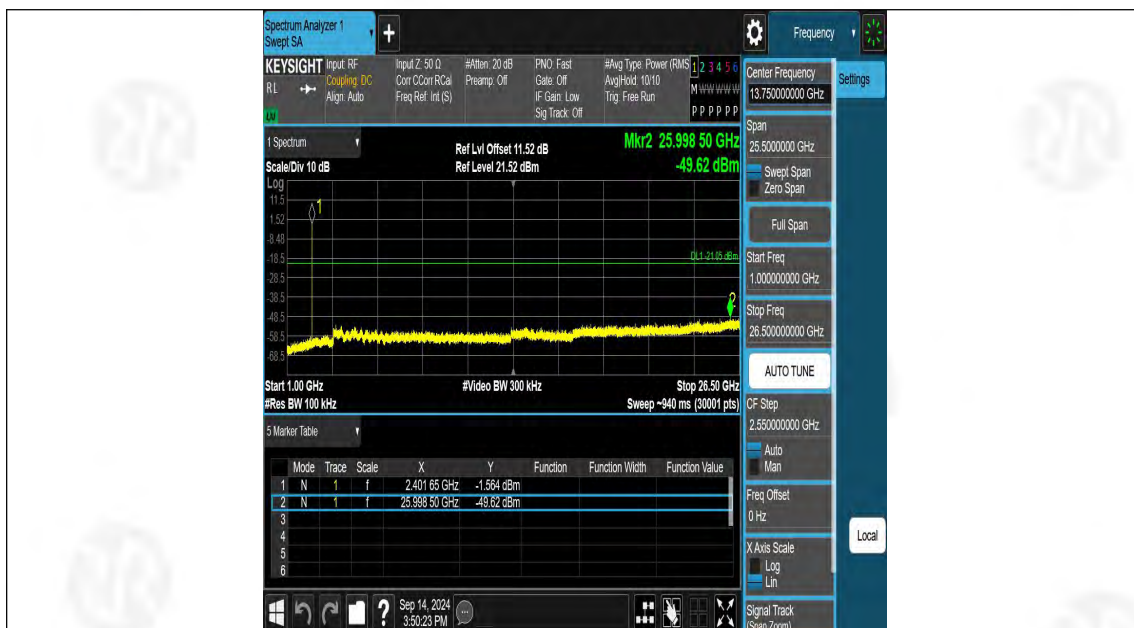
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	-1.05	-1.05	---	PASS
BLE_1M	Ant1	2402	30~1000	-1.05	-71.6	≤-21.05	PASS
BLE_1M	Ant1	2402	1000~26500	-1.05	-49.63	≤-21.05	PASS
BLE_1M	Ant1	2440	0~Reference	-1.38	-1.38	---	PASS
BLE_1M	Ant1	2440	30~1000	-1.38	-72.07	≤-21.38	PASS
BLE_1M	Ant1	2440	1000~26500	-1.38	-49.45	≤-21.38	PASS
BLE_1M	Ant1	2480	0~Reference	-1.71	-1.71	---	PASS
BLE_1M	Ant1	2480	30~1000	-1.71	-71.32	≤-21.71	PASS
BLE_1M	Ant1	2480	1000~26500	-1.71	-49.66	≤-21.71	PASS
BLE_2M	Ant1	2402	0~Reference	-3.56	-3.56	---	PASS
BLE_2M	Ant1	2402	30~1000	-3.56	-72.33	≤-23.56	PASS
BLE_2M	Ant1	2402	1000~26500	-3.56	-49.72	≤-23.56	PASS
BLE_2M	Ant1	2440	0~Reference	-1.24	-1.24	---	PASS
BLE_2M	Ant1	2440	30~1000	-1.24	-71.42	≤-21.24	PASS
BLE_2M	Ant1	2440	1000~26500	-1.24	-49.48	≤-21.24	PASS
BLE_2M	Ant1	2480	0~Reference	-1.99	-1.99	---	PASS
BLE_2M	Ant1	2480	30~1000	-1.99	-71.83	≤-21.99	PASS
BLE_2M	Ant1	2480	1000~26500	-1.99	-49.7	≤-21.99	PASS



Test Graphs

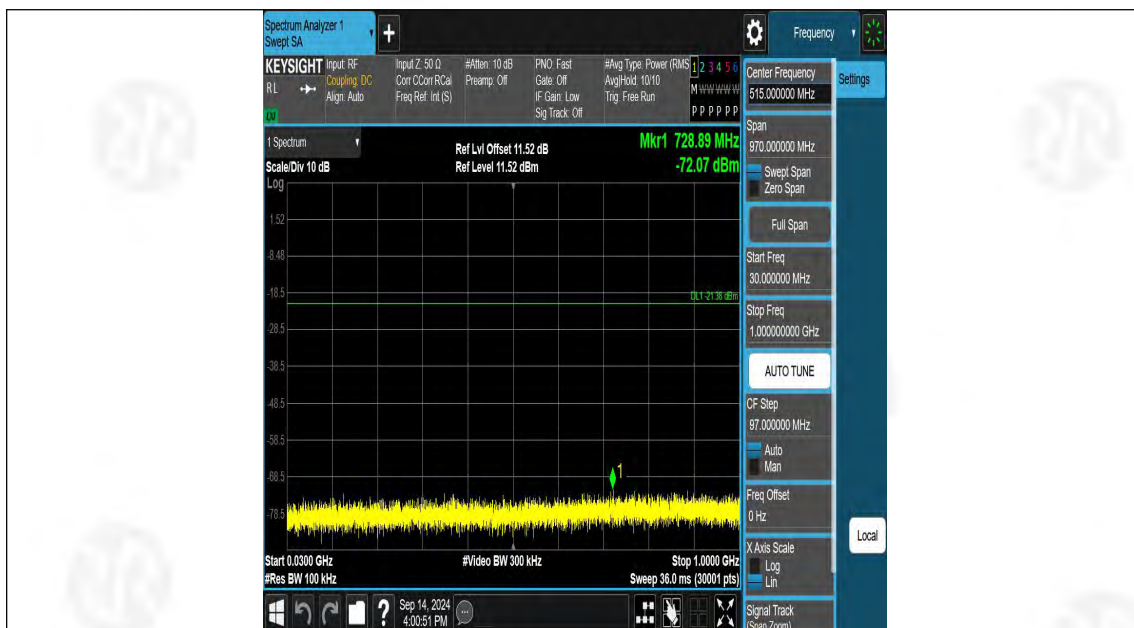




BLE_1M-Ant1-2402-1000~26500-PASS



BLE_1M-Ant1-2440-0~Reference-PASS



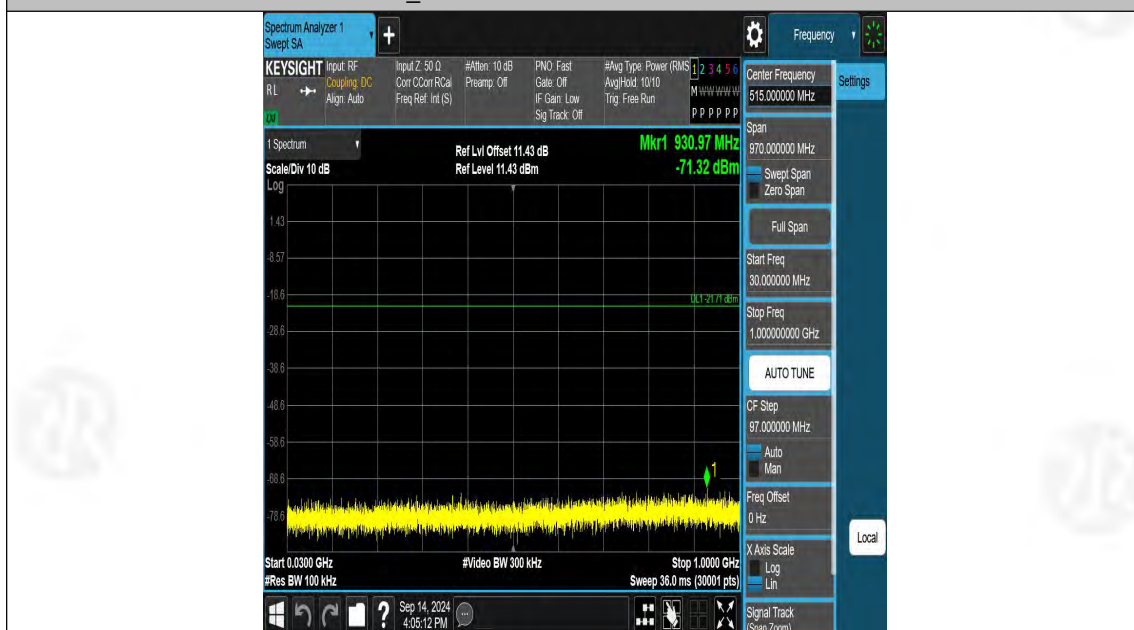
BLE_1M-Ant1-2440-30~1000-PASS



BLE_1M-Ant1-2440-1000~26500-PASS



BLE_1M-Ant1-2480-0~Reference-PASS



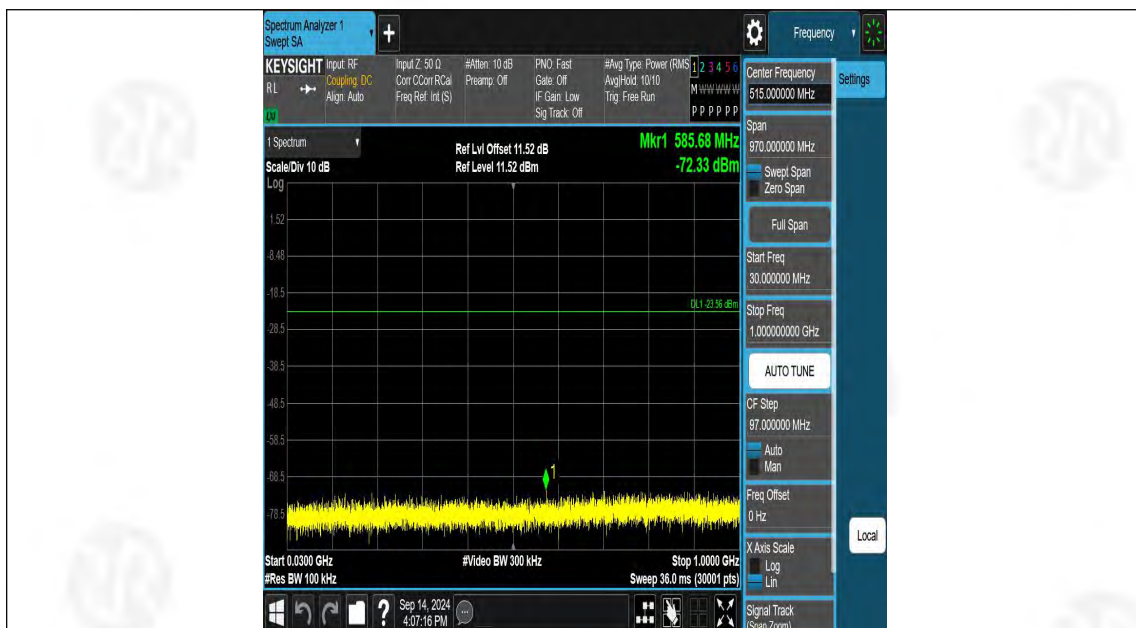
BLE_1M-Ant1-2480-30~1000-PASS



BLE_1M-Ant1-2480-1000~26500-PASS



BLE_2M-Ant1-2402-0~Reference-PASS



Spectrum Analyzer 1
Swept SA

KEYSIGHT Input: RF
RL → Coupling: DC
Align: Auto

Input Z: 50 Ω
Cont: CCont: RCal
Freq Ref: Int (S)

Attenuation: 20 dB
Preamp: Off

PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off

Avg Type: Power (RMS)
Avald: 10/10
Trig: Free Run
PPPPPP

Center Frequency: 13.750000000 GHz
Span: 25.500000000 GHz
Sweep Span: Zero Span
Full Span
Start Freq: 1.000000000 GHz
Stop Freq: 26.500000000 GHz
AUTO TUNE
CF Step: 2.500000000 GHz
Auto Man
Freq Offset: 0 Hz
X Axis Scale: Log Lin
Signal Track (Span 700m)

1 Spectrum
Scale/Div 10 dB
Ref Lvl Offset 11.52 dB
Ref Level 21.52 dBm
Mkr2 26.441 35 GHz
-49.72 dBm

1
2

Start 1.00 GHz
#Video BW 300 kHz
Stop 26.50 GHz
#Res BW 100 kHz
Sweep ~940 ms (30001 pts)

5 Marker Table

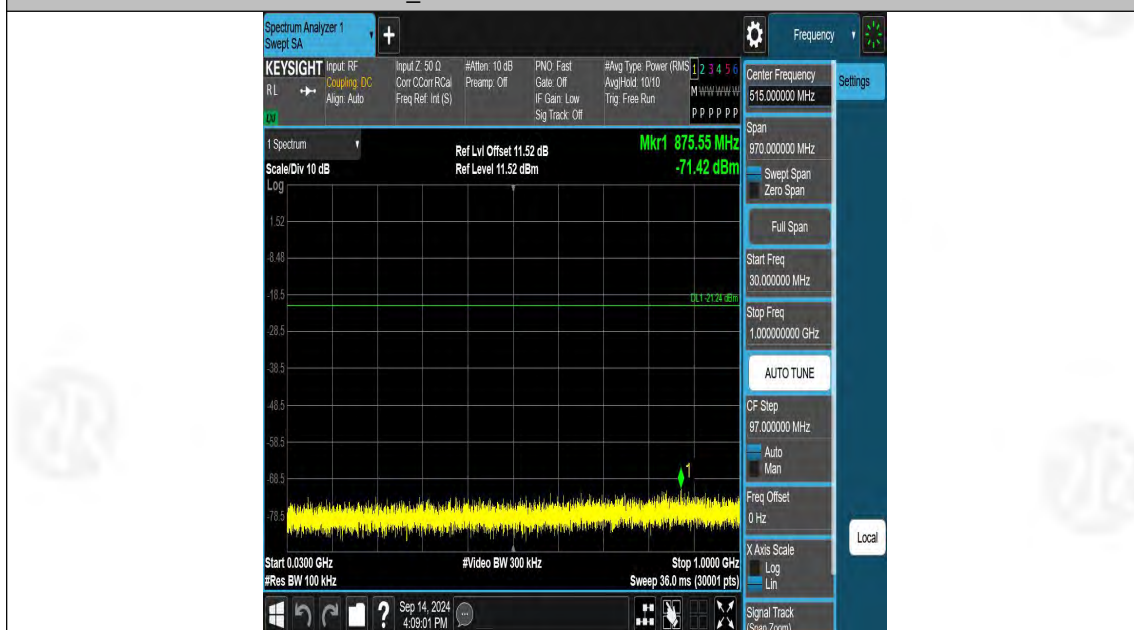
	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.402 50 GHz	-4.807 dBm			
2	N	1	f	26.441 35 GHz	-49.72 dBm			
3								
4								
5								
6								

Sep 14, 2024
4:07:31 PM

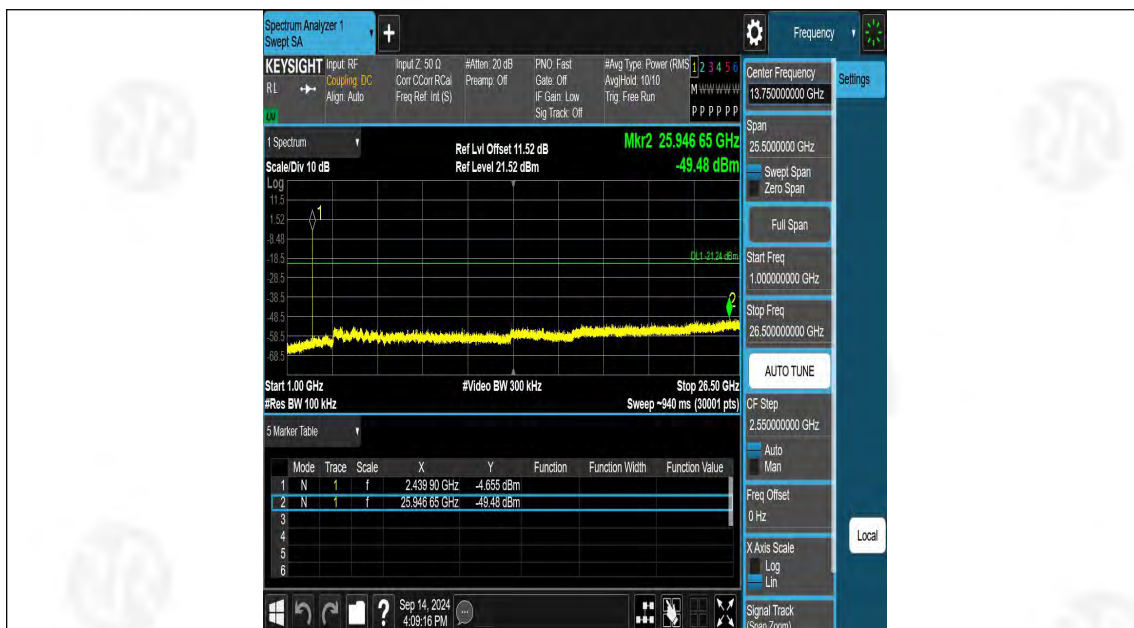
 www.zkt-lab.com



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



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	2.14	2.50	85.60	0.68
BLE_1M	Ant1	2440	2.14	2.50	85.60	0.68
BLE_1M	Ant1	2480	2.14	2.50	85.60	0.68
BLE_2M	Ant1	2402	1.08	1.88	57.45	2.41
BLE_2M	Ant1	2440	1.08	1.88	57.45	2.41
BLE_2M	Ant1	2480	1.08	1.88	57.45	2.41



Test Graphs





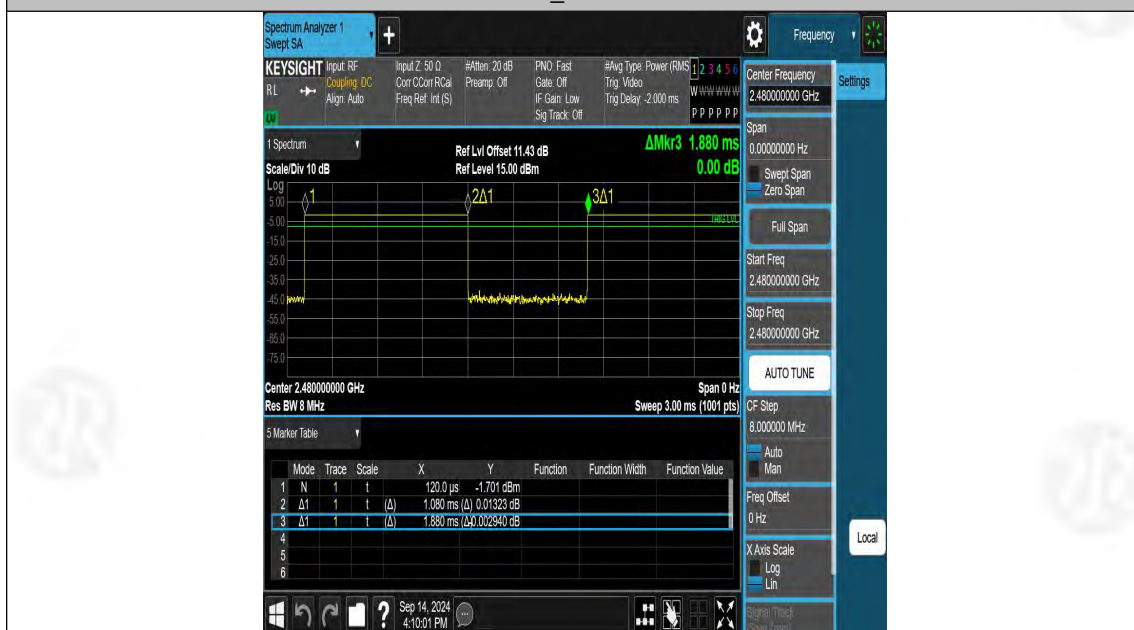
NTNV-BLE_1M-Ant1-2480



NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480