RF Exposure Report

Application No.:	SZCR2507003219AT
Applicant:	LED Roadway Lighting Ltd.
Address of Applicant:	84 Chain Lake Drive, Suite 403, Halifax, Nova Scotia, B3S 1A2 Canada
Manufacturer:	LED ROADWAY LIGHTING LTD.
Address of Manufacturer:	21 Tantramar Crescent, Amherst, Nova Scotia, Canada, B4H 4S8
Factory:	LED ROADWAY LIGHTING LTD.
Address of Factory:	21 Tantramar Crescent, Amherst, Nova Scotia, Canada, B4H 4S8
Equipment Under Test (EUT):	
EUT Name:	Radar sensor
Model No.:	B870-RD
Trade Mark:	SLX-RADAR
FCC ID:	2ACR3-B870RD
Standard(s) :	FCC Rules 47 CFR §2.1091 KDB 447498 D04 interim General RF Exposure Guidance v01
Date of Receipt:	2025-07-22
Date of Test:	2025-07-27 to 2025-08-28
Date of Issue:	2025-09-01
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2025-09-01		Original

Authorized for issue by:				
		Leo Li **Leo Li/Project Engineer**		
		Eric Fu **Eric Fu/Reviewer**		

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2 General Information

2.1 General Description of E.U.T.

Product Type:	☐ Portable device
	☒ Mobile device
	☐ Fixed device

2.2 Details of E.U.T.

Power supply:	AC 120V/60Hz
Operation Frequency:	24.075-24.175GHz
Modulation:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	12.2dBi

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2.3 Separation Distance

Minimum test separation distance:	20cm
Remark: This minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander.	

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2.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

2.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

3 FCC Radiofrequency radiation exposure limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30
F=frequency in MHz *=Plane-wave equivalent power density RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).				

Friis Formula

Friis transmission formula: $P_d = (Pout*G)/(4* Pi * R^2)$

Where

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

4 Measurement and Calculation

4.1 Maximum transmit power

The Power Data is based on the RF Test Report SZCR250700321901

Test Mode	Channel [GHz]	dBuV/m @ 0.5m	E.I.R.P. Power (dBm)	E.I.R.P. Power (mW)
Tx mode	24.14430	118.108	7.318	5.39

Remark:

E[dBμV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and d = distance at which field strength limit is specified in the rules

EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77

Antenna Gain=12.2dBi

4.2 MPE Calculation Formula

$Pd = (Pout*G) / 4\pi R^2$

Where:

Pd = Power density in mW/cm2

Pout = Output power to antenna in mW

G = Antenna Gain in linear scale

π = 3.1416

R = distance to the center of radiation of antenna (in meter) = 20cm

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4.3 Test Results

Max. E.I.R.P. P(mW)	Operation Distance R(cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result	
5.39	20	0.00107	1	Pass	

Which is below the max permitted sending level of $10W/m^2$.

Simultaneous transmission

Σ rations of simultaneous transmitting= LTE + 24G radar:

Ratio of Power Density (W/m^2) of LTE at R = 20 cm	**Ratio of Power Density (mW/cm^2) of 24G radar at R = 20 cm**	**Total ratios of simultaneous transmitting at R =20cm**	**Limit**	**Result**
0.551	0.00107	0.55207	1.0	PASS

$\Sigma MPE\ Ratio$ = Max (HL7800 LTE module MPE ratio) + Max (24GHz Radar MPE ratio)
=0.551+0.00107=0.55207

Note 2: the maximum ISED Power Density MPE Ratio is 0.551 which provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

The EUT meet the Exemption Limits for Routine Evaluation – SAR Evaluation, so no SAR evaluation is required for the EUT.

- End of the Report -

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