

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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250200064404

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TEST REPORT

Application No.: SZCR2502000644TL
Applicant: Connected Solutions Group, LLC
Address of Applicant: 8529 Meadowbridge Rd, suite 300 Mechanicsville, Va 23116 America
Manufacturer: GL Technologies (Hong Kong) Limited
Address of Manufacturer: Unit 601, Building 5W, Hong Kong Science Park, Shation, N.T., Hong Kong
EUT Description: DUAL-SIM LTE ROUTER
Model No.: CSG-m106 pro
Trade Mark: CSG
FCC ID: 2A5KA-EG120KNA
Standards: FCC 47 CFR Part 2.1091
FCC KDB 447498 D01 v06
Date of Receipt: 2025/02/21
Date of Issue: 2025/03/24

Test Result:	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025/03/24		Original

Authorized for issue by:				
		Donjon Huang		
		Donjon Huang/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		



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

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3 General Information

3.1 General Description of EUT

EUT Description:	DUAL-SIM LTE ROUTER			
Model No.:	CSG-m106 pro			
Trade Mark:	CSG			
Hardware Version:	V1.0			
Software Version:	4.7.3			
Power Supply:	DC 3.7V from internal rechargeable battery which can be charge by AC/DC adapter Adapter model: ICP20-050-3000D			
Antenna Type:	☐ External, ☒ Integrated			
Antenna Gain:	LTE Band 2:	3.13dBi	LTE Band 4:	2.17dBi
	LTE Band 5:	1.42dBi	LTE Band 7:	0.96dBi
	LTE Band 12:	0.23dBi	LTE Band 13:	-0.56dBi
	LTE Band 14:	-0.85dBi	LTE Band 25:	3.25dBi
	LTE Band 26:	1.42dBi	LTE Band 30:	2.19dBi
	LTE Band 41:	1.25dBi	LTE Band 48:	3.31dBi
	LTE Band 66:	2.24dBi	LTE Band 71:	0.71dBi
	LTE CA_5B:	1.42dBi	LTE CA_7C:	0.96dBi
	LTE CA_41C:	1.25dBi		
		Note: The antenna gain are derived from the gain information report provided by the manufacturer.		
Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.				



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3.2 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.

3.3 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.



4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	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/f ²)	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/f ²)	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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 mW/cm². 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.



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4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

4.1.3 EUT RF Exposure Evaluation

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Power (dBm)	EIRP(ERP) (dBm)	EIRP(ERP) Limit (dBm)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Gain according to EIRP(ERP) (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
LTE Band 2	1850.7	3.13	25.00	28.13	33.00	0.1293	1.0000	8.00	12.01	8.00	Pass
LTE Band 4	1710.7	2.17	25.00	27.17	30.00	0.1037	1.0000	5.00	12.01	5.00	Pass
LTE/CA Band 5	824.7	1.42	25.00	24.27	38.45	0.0872	0.5498	15.60	9.41	9.41	Pass
LTE/CA Band 7	2502.5	0.96	25.00	25.96	33.00	0.0785	1.0000	8.00	12.01	8.00	Pass
LTE Band 12	699.7	0.23	25.00	23.08	34.77	0.0663	0.4665	11.92	8.70	8.70	Pass
LTE Band 13	779.5	-0.56	25.00	22.29	34.77	0.0553	0.5197	11.92	9.16	9.16	Pass
LTE Band 14	790.5	-0.85	25.00	22.00	34.77	0.0517	0.5270	11.92	9.23	9.23	Pass
LTE Band 25	1850.7	3.25	25.00	28.25	33.00	0.1330	1.0000	8.00	12.01	8.00	Pass
LTE Band 26 (814-824)	814.7	1.42	25.00	24.27	50.00	0.0872	0.5431	27.15	9.36	9.36	Pass
LTE Band 26 (824-849)	824.7	1.42	25.00	24.27	38.45	0.0872	0.5498	15.60	9.41	9.41	Pass
LTE Band 30	2307.5	2.19	21.60	23.79	23.98	0.0476	1.0000	2.38	15.41	2.38	Pass
LTE/CA Band 41	2498.5	1.25	25.00	26.25	33.00	0.0839	1.0000	8.00	12.01	8.00	Pass
LTE Band 48	3552.5	3.31	19.50	22.81	23.00	0.0380	1.0000	3.50	17.51	3.50	Pass
LTE Band 66	1710.7	2.24	25.00	27.24	30.00	0.1054	1.0000	5.00	12.01	5.00	Pass
LTE Band 71	665.5	0.71	25.00	23.56	34.77	0.0741	0.4437	11.92	8.48	8.48	Pass



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Due to the EUT support CA

$$\sum_{i=1}^n \frac{S_{E_i}(\text{duty factor})}{MPE_{E_i}} < 1$$

Both LTE and NR/LTE band can transmit simultaneously, the formula of the calculated the MPE is:

NOTE The corresponding MEs must be expressed in terms of power density in the above summation
Therefore, the worst-case(LTE CA_5B) situation is 0.1586+0.1586=0.3172,which is less than “1”,
this confirmed that the device comply with MPE limit.



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4.1.4 Exposure calculations for multiple sources

In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

The product also has multiple transmitters The Simultaneous Transmission Possibilities are as below:

Simultaneous Tx Combination	Configuration
1	WWAN + WiFi 2.4G

No.	Mode	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)	Result Ratio	Total Ratio	Limit	Result
1	LTE Band 71*	0.0741	0.4437	0.1670	0.1978	1.0000	Pass
	WiFi 2.4G	0.0308	1.0000	0.0308			

Remark: This WWAN Band was recalculated on worst Band.

WIFI2.4G power comes from FCC ID: 2A5KA-M106P

---End of Report---

