

RF EXPOSURE EVALUATION REPORT

Application No.: GZCR2211001443AT
Applicant: CLMBR, Inc
Address of Applicant: 3033 E 1st Avenue Suite 501 Denver, Colorado, 80206, United States
Manufacturer: CLMBR, Inc
Address of Manufacturer: 3033 E 1st Avenue Suite 501 Denver, Colorado, 80206, United States
Factory: TES Touch Embedded Solutions (Xiamen) Co., Ltd.
Address of Factory: No. 60, Xinglin South Rd., Jimei District, Xiamen, Fujian 361022, China
Equipment Under Test (EUT):
EUT Name: Clmbr Connected
Model No.: CLMBR-16992
Trade Mark: 
Standard(s) : 47 CFR Part 1.1310
KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt: 2022-08-23
Date of Evaluation: 2022-08-30 to 2022-12-02
Date of Issue: 2023-04-14

Evaluation Result:

Pass*

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



Ricky Liu
Manager



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Guangzhou Branch Testing Center EEC Laboratory. 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

Revision Record			
Version	Report No.	Date	Remark
01	GZCR221100144307	2023-04-14	Original

Authorized for issue by:			
		Jim Li	
		Jim Li/Project Engineer	
		Vico Cui	
		Vico Cui/Reviewer	

2 Evaluation Summary

Item	Standard	Method	Requirement	Result
RF Exposure	KDB447498 D01 General RF Exposure Guidance v06	KDB447498 D01 General RF Exposure Guidance v06	47 CFR Part 1.1310	Pass

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

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4 General Information

4.1 Details of E.U.T.

Power supply: Powered by SWITCHING ADAPTER
MODEL: SOY-1200500-327
INPUT:100-240V~, 50/60Hz, 1.7A Max
OUTPUT:12.0V, 5.0A, 60.0W

Cable(s): AC mains for adapter:3 wires, 1.8m, unshielded
DC input for main unit:1.8m, with ferrite bead
DC IN Port x1 for power supply.
Type-C Port x1(only for debug)

RF Character(s): Refer to report GZCR221100144302 for 2.4G BT BLE.
Refer to report GZCR221100144303 for 2.4G BT Classic.
Refer to report GZCR221100144304 for 2.4G Wi-Fi.
Refer to report GZCR221100144305 for 5G Wi-Fi.

4.2 Evaluating Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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Guangzhou Branch EMC Laboratory

No.198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
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4.3 Facility

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

● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

● ISED (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

● CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.4 Deviation from Standards

None

4.5 Abnormalities from Standard Conditions

None



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5 Technical Requirements Specification

5.1 General Description of Applied Standards

KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.2 RF Exposure Evaluation

5.2.1 Limit & Test Method

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * P_i * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

P_i = 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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5.2.2 Conclusion

Normal use condition for Distance between antenna and body:	≥ 20 cm declared by applicant.
ANT Gain:	0.36 dBi declared by applicant. Directional gain=3.37 dBi
Remark:	The Bluetooth and Wi-Fi can be transmitted simultaneously.

For Bluetooth BLE

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2402	1.086	-4.5	0.355	0.0008	1	Complies
2440	1.086	-3.68	0.429	0.0009	1	Complies
2480	1.086	-3.29	0.469	0.0010	1	Complies

For Bluetooth Classic

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2402	1.086	-4.29	0.372	0.0008	1	Complies
2441	1.086	-3.53	0.444	0.0010	1	Complies
2480	1.086	-3.18	0.481	0.0010	1	Complies

For 2.4 GHz Wi-Fi

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
11B						
2412	1.086	8.06	6.397	0.0138	1	Complies
2442	1.086	7.90	6.166	0.0133	1	Complies
2462	1.086	7.94	6.223	0.0134	1	Complies
11G						
2412	1.086	11.41	13.836	0.0299	1	Complies
2442	1.086	11.44	13.932	0.0301	1	Complies
2462	1.086	11.54	14.256	0.0308	1	Complies
11N20						
2412	2.173	12.87	19.364	0.0837	1	Complies
2442	2.173	12.93	19.634	0.0849	1	Complies
2462	2.173	12.94	19.679	0.0851	1	Complies
11N40						
2422	2.173	11.75	14.962	0.0647	1	Complies
2442	2.173	11.75	14.962	0.0647	1	Complies
2452	2.173	11.76	14.997	0.0648	1	Complies

For 5 GHz Wi-Fi.

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm2)	Limit of Power Density (S) (mW/cm2)	Test Result
11A						
5700	1.086	5.74	4.207	0.0105	1	Complies
11N20						
5180	2.173	6.48	5.200	0.0260	1	Complies
11N40						
5230	2.173	6.13	4.797	0.0240	1	Complies
11AC(VHT20)						
5180	2.173	6.78	5.572	0.0279	1	Complies
11AC(VHT40)						
5190	2.173	6.61	5.370	0.0269	1	Complies
11AC(VHT80)						
5210	2.173	5.63	4.295	0.0215	1	Complies

The Bluetooth and Wi-Fi can be transmitted together, the result is

$$0.0851/1 + 0.0010/1 = 0.0961 < 1.0$$

So SAR report is not required.

Note: Refer to report No. GZCR220800106102, GZCR220800106103, GZCR220800106104 & GZCR220800106105 for EUT test Max Conducted Peak Output Power value.



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6 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2211001443AT

- End of the Report -