

RF Exposure Evaluation
For
Fujian OralGarden Technology Co.,Ltd.
WIFI-RF Gateway
Test Model: GWR025

Prepared for : Fujian OralGarden Technology Co.,Ltd.
Address : 3rd Floor, Plant No. 7, Gaoxin Avenue, High-tech Zone, Fuzhou, Fujian, China

Prepared by : Guangzhou LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : May 13, 2025
Number of tested samples : 2
Sample No. : A250318113-1, A250318113-2
Serial number : Prototype
Date of Test : May 13, 2025 ~ June 06, 2025
Date of Report : June 07, 2025

RF Exposure Evaluation	
Report Reference No.	LCSC05125053ED
Date of Issue	June 07, 2025
Testing Laboratory Name	Guangzhou LCS Compliance Testing Laboratory Ltd.
Address	No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China
Testing Location/ Procedure	Full application of Harmonised standards ☒ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name	Fujian OralGarden Technology Co.,Ltd.
Address	3rd Floor, Plant No. 7, Gaoxin Avenue, High-tech Zone, Fuzhou, Fujian, China
Test Specification	
Standard	FCC KDB publication 447498 D01 General RF Exposure Guidance v06 FCC CFR 47 part1 1.1310 FCC CFR 47 part2 2.1091
Test Report Form No.	TRF-4-E-215 A/0
TRF Originator	Guangzhou LCS Compliance Testing Laboratory Ltd.
Master TRF	Dated 2011-03
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Test Item Description.	WIFI-RF Gateway
Trade Mark	N/A
Test Model	GWR025
Ratings	Input: DC 5V, 360mA
Result	Pass

Compiled by:



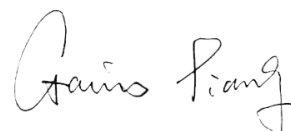
Lifeng Le/ Administrator

Supervised by:



Justin Zhu/ Technique Director

Approved by:



Gavin Liang/ Manager

RF Exposure Evaluation

Test Report No. : LCSC05125053ED	<u>June 07, 2025</u> Date of issue
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EUT.....	: WIFI-RF Gateway
Test Model.....	: GWR025
Applicant.....	: Fujian OralGarden Technology Co.,Ltd.
Address.....	: 3rd Floor, Plant No. 7, Gaoxin Avenue, High-tech Zone, Fuzhou, Fujian, China
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: Fujian OralGarden Technology Co.,Ltd.
Address.....	: 3rd Floor, Plant No. 7, Gaoxin Avenue, High-tech Zone, Fuzhou, Fujian, China
Telephone.....	: /
Fax.....	: /
Factory.....	: Fujian OralGarden Technology Co.,Ltd.
Address.....	: 3rd Floor, Plant No. 7, Gaoxin Avenue, High-tech Zone, Fuzhou, Fujian, China
Telephone.....	: /
Fax.....	: /

Test Result	Pass
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Guangzhou LCS Compliance Testing Laboratory Ltd.

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Report Version	Issue Date	Revision Content	Revised By
000	June 07, 2025	Initial Issue	---

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1. Product Information

EUT	: WIFI-RF Gateway
Test Model	: GWR025
Ratings	: Input: DC 5V, 360mA
Hardware Version	: 1.7
Software Version	: 1.0.24
Bluetooth	:
Frequency Range	: 2402MHz~2480MHz
Channel Number	: 40 channels for Bluetooth V5.2 (DTS)
Channel Spacing	: 2MHz for Bluetooth V5.2 (DTS)
Modulation Type	: GFSK for Bluetooth V5.2 (DTS)
Bluetooth Version	: V5.2
Antenna Description	: PCB Antenna, 1.37dBi(max.)
WIFI(2.4G Band)	:
Frequency Range	: 2412MHz~2462MHz
Channel Number	: 11 Channels for 20MHz bandwidth (2412~2462MHz) 7 Channels for 40MHz bandwidth (2422~2452MHz)
Channel Spacing	: 5MHz
Modulation Type	: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Description	: PCB Antenna, 1.37dBi(max.)
433.1MHz	:
Frequency Range	: 433.1MHz
Channel Number	: 1
Modulation Type	: FSK
Antenna Description	: spring Antenna, 0.56dBi(Max)
Exposure category	: General population/uncontrolled environment
EUT Type	: Production Unit
Device Type	: Mobile Device
Note: For a more detailed antenna description, please refer to the antenna specifications or the antenna report provided by the customer.	

2. Evaluation Method

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modelled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3. Limit

3.1 Refer Evaluation Method

[ANSI C95.1-2019](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz

[FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06](#): Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1091](#): Radiofrequency radiation exposure evaluation: mobile devices.

3.2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure				
Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
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
Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure				
Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Uncontrolled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 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

4. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

5. Conducted Power

[BLE1M]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
BLE 1M	0	2402	-0.82
	19	2440	1.79
	39	2480	0.72

[2.4G WIFI]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
IEEE 802.11b	1	2412	17.76
	6	2437	17.16
	11	2462	16.99
IEEE 802.11g	1	2412	17.49
	6	2437	16.88
	11	2462	16.68
IEEE 802.11n HT20	1	2412	16.95
	6	2437	16.31
	11	2462	16.19
IEEE 802.11n HT40	3	2422	16.42
	6	2437	15.49
	9	2452	16.07

Test Procedure

TX frequency range: 433.1MHz

Device category: Portable device (Distance: 20cm)

Field Strength: 50.96dBuV/m @3m

EIRP=E-104.8+20logD-4.70=50.96-104.8+20log3-4.70=-49.00dBm

Maximum Conducted Output Power: -49.56dBm

Turn-up: -49±1

6. Manufacturing Tolerance**[BLE1M]**

BT LE (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	0	1.0	0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

[2.4G WIFI]

IEEE 802.11b (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	17.0	17.0	16.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	17.0	17.0	16.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	17.0	17.0	16.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	16.0	15.0	16.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

7. Measurement Results

7.1 Standalone MPE Evaluation

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r=20\text{cm}$, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

[BLE1M]

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
GFSK	2.0	1.5849	1.37	1.3709	0.0004	1.0000

[2.4G WIFI]

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
IEEE 802.11b	18.0	63.0957	1.37	1.3709	0.0172	1.0000
IEEE 802.11g	18.0	63.0957	1.37	1.3709	0.0172	1.0000
IEEE 802.11n HT20	18.0	63.0957	1.37	1.3709	0.0172	1.0000
IEEE 802.11n HT40	17.0	50.1187	1.37	1.3709	0.0137	1.0000

[433.1MHz]

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
FSK	-48.00	0.0001	0.56	1.1376	0.00000001	0.2893

Remark:

1. Output power including tune-up tolerance;
2. Output power was adjusted to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

7.2 Simultaneous Transmission MPE Evaluation

The EUT equipped with one Bluetooth/WIFI antenna and one 433.1MHz antenna.so need consider simultaneous transmission;
According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

Simultaneous Transmission				
2.4GWIFI Antenna Max MPE ratios	433.1MHz Antenna Max MPE ratios	Σ MPE ratios	Limit	Results
0.0172	0.00000001	0.0172	1.0	Pass

8. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

9. Description of Test Facility

CNAS Registration Number is L11555.

A2LA Certificate Number: 5099.01.

FCC Designation Number is CN1379.

Test Firm Registration Number: 729882.

10. Measurement Uncertainty

BLE/2.4GWIFI/433.1MHz:

Test Item		Frequency Range	Uncertainty	Note
Output power	:	1GHz-40GHz	$\pm 0.57\text{dB}$	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

-----THE END OF REPORT-----