# FCC RF EXPOSURE REPORT

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|---|---|---|
| **Applicant** | : | Beijing InHand Networks Technology Co., Ltd. |
| **Address of Applicant** | : | Room 501, floor 5, building 3, yard 18, ziyue road, chaoyang district, Beijing 100102, China |
| **Manufacturer** | : | Beijing InHand Networks Technology Co., Ltd. |
| **Address of Manufacturer** | : | Room 501, floor 5, building 3, yard 18, ziyue road, chaoyang district, Beijing 100102, China |
| **Equipment under Test** | : | InVehicle Gateway |
| **Model No.** | : | VG710, VG710-U, VG710-M, VG710-H, VG710-L |
| **FCC ID** | : | 2AANYVG710U |
| **Test Standard(s)** | : | KDB447498 D01 General RF Exposure Guidance v06 |
| **Report No.** | : | DDT-RE23122506-2E03 |
| **Issue Date** | : | 2024/03/05 |
| **Issue By** | : | Guangdong Dongdian Testing Service Co., Ltd. |
| **Address of Laboratory** | : | Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808 |

REPORT

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# Test Report Declare

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**Standard Used:** KDB447498 D01 General RF Exposure Guidance v06

**We Declare:**

The equipment described above is assessed by Guangdong Dongdian Testing Service Co., Ltd and in the configuration assessed the equipment complied with the standards specified above. The assessed results are contained in this report and Guangdong Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these assess.

**After evaluation, our opinion is that the equipment In Accordance with above standard.**

| | | | |
|---|---|---|---|
| **Report No.:** | DDT-RE23122506-2E03 | | |
| **Date of Receipt:** | 2024/02/01 | **Date of Test:** | 2024/02/01~2024/03/05 |

***Prepared By:***

Jacky Huang

***Jacky Huang/Engineer***

***Approved By:***

GUANGDONG DONGDIAN TESTING SERVICE CO.,LTD. 广东东电检测技术有限公司 Certificate and Report Seal 检测报告用章

Damon Hu

***Damon Hu/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

# Revision History

| Rev. | Revisions | Issue Date | Revised By |
|---|---|---|---|
| --- | Initial issue | 2024/03/05 | |
| | | | |

# 1. General Information

## 1.1. Description of equipment

| | | |
|---|---|---|
| EUT Name | : | InVehicle Gateway |
| Model Number | : | VG710, VG710-U, VG710-M, VG710-H, VG710-L |
| Model Difference | : | These models are the same in these: appearance, PCB layout and basic software function. The only difference is that the products are used in different markets. The test model is VG710. |
| EUT Function Description | : | Please reference user manual of this device |
| Power Supply | : | DC 9~36V |
| Radio Specification | : | WLAN (2.4 GHz): IEEE 802.11b/g/n,<br>WLAN (5 GHz): IEEE 802.11a/n/ac |
| Operation Frequency | : | IEEE 802.11b/g/n: 2412 MHz to 2462 MHz,<br>IEEE 802.11a/n/ac: 5180 MHz to 5240 MHz, 5745 MHz to 5825 MHz |
| Modulation | : | IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>IEEE 802.11g/a: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) |
| Sample Number | : | S23122506-03 |

Note 1: Another RF technical information please refer to the LTE Module Certification report: 2309RSU052-U8

Note 2: EUT is the abbreviation of equipment under test.

Note 3: Antenna information:

| Antenna information | | |
|---|---|---|
| Antenna Type | : | External antenna |
| Antenna Gain (dBi) | : | 1.05 dBi for 2.4G Band, from 2412MHz to 2462MHz,<br>-2.48 dBi for 5G Band, from 5180MHz to 5240MHz,<br>-2.89 dBi for 5G Band, from 5745MHz to 5825MHz |

## 1.2. Assess laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Unit 2, Building 1, No.17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

# 2. RF Exposure Evaluation

## 2.1. Requirement

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 0.2 m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm$^2$) | Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | F/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |

Note: f = frequency in MHz ; *Plane-wave equivalent power density

## 2.2. Calculation method

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } S(mW/cm^2) = \frac{E^2}{377}$$

**E** = Electric field (V/m)
**P** = Peak RF output power (mW)
**G** = EUT Antenna numeric gain (numeric)=
**d** = Separation distance between radiator and human body (m)
The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2 m, as well as the gain of the used antenna, the RF power density can be obtained.

## 2.3. Estimation result

| Mode | Output power (dBm) | Output power (mW) | tune up power (dBm) | tune up power (mW) | Antenna Gain (dBi) | Antenna Gain (linear) | MPE Values ($mW/cm^2$) | MPE Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 2.4G WIFI | 17.65 | 58.21 | 19.00 | 79.43 | 1.05 | 1.27 | 0.02 | 1 |
| 5G WIFI | 19.97 | 99.31 | 21.00 | 125.89 | -2.48 | 0.56 | 0.01 | 1 |

Simultaneous transmission (worst case):

2.4G WIFI+5G WIFI+ WCDMA: 0.02/1+0.01/1+248.3/425=0.614<1

2.4G WIFI+5G WIFI+ LTE: 0.02/1+0.01/1+231.7/358=0.677<1

Note:

1. The estimation distance is 20 cm
2. The test result of WCDMA and LTE was cited from report: 2309RSU052-U8, the specific results of other frequency bands please refer to this report.

Therefore, the device qualifies for RF exposure test exemption.

**END OF REPORT**