



REPORT No.: SZ21010259S01

RF EXPOSURE EVALUATION REPORT

APPLICANT : ShenZhen Jimi IoT Co., Ltd
PRODUCT NAME : GPS VEHICLE TERMINAL
MODEL NAME : JM-VG02U, VG02U
BRAND NAME : JIMI
FCC ID : 2AMLF-JM-VG02U
STANDARD(S) : 47CFR 2.1091
KDB 447498
RECEIPT DATE : 2021-01-25
TEST DATE : 2021-02-07
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MORLAB

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Change History		
Version	Date	Reason for Change
1.0	2021-03-01	First edition



1. Technical Information

Note: Provide by applicant.

1.1 Applicant and Manufacturer Information

Applicant:	ShenZhen Jimi IoT Co., Ltd
Applicant Address:	Subregion B, Room 05,Floor 4th, Building C, Gaoxing Industrial Park, Liuxian 1st Road, Street Xin'an,district 67, Bao'an, Shenzhen, Guangdong,China
Manufacturer:	Huizhou Jimi Zhizao Technology Co. Ltd
Manufacturer Address:	No.12 Songyang Road, ZhongKai Development Zone, Huizhou Guangdong

1.2 Equipment under Test (EUT) Description

Product Name:	GPS VEHICLE TERMINAL
Hardware Version:	V3.0
Software Version:	NF6132_10_61DA1R1_D23_R0_V02_WM_20200323_1739
Frequency Bands:	GSM 850: 824 MHz ~ 849 MHz GSM 1900: 1850 MHz ~ 1910 MHz
Modulation Mode:	GPRS: GMSK
Antenna Type:	FPC Antenna
Antenna Gain:	GSM850: -2.5dBi GSM1900: -1.5dBi

Note:

When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% risk level.



1.3 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title	Note 1: Method determination /Remark
1	47 CFR§2.1091	Radio Frequency Radiation Exposure Assessment: mobile devices	<i>Note 2: No deviation</i>
2	KDB 447498 D01v06	General RF Exposure Guidance	<i>Note 3: No deviation</i>
Note 1: The test item is not applicable. Note 4: Note 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.			



2. Device Category and RF Exposure Limit

Per user manual, Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

General Population/Uncontrolled Exposure:

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

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)
(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



3. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
R&S	Network Emulator	CMW500	124534	2020.04.01	2021.03.31

Note:

For the maximum power, it was established between EUT and Base Station with following setting:
For GPRS testing, the MS TX Level was set 5 for low frequency bands and 0 for high frequency bands.



4. RF Output Power

<GSM850>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS 1 Tx slot	32.13	32.03	31.79	32.50	23.13	23.03	22.79	23.50
GPRS 2 Tx slots	31.30	31.02	30.93	31.50	25.30	25.02	24.93	25.50
GPRS 3 Tx slots	29.57	29.38	29.30	30.00	25.31	25.12	25.04	25.74
GPRS 4 Tx slots	28.30	28.37	27.92	29.00	25.30	25.37	24.92	26.00

<GSM1900>

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS 1 Tx slot	29.23	29.08	29.17	30.00	20.23	20.08	20.17	21.00
GPRS 2 Tx slots	28.90	28.77	28.85	29.50	22.90	22.77	22.85	23.50
GPRS 3 Tx slots	27.65	27.33	26.80	28.00	23.39	23.07	22.54	23.74
GPRS 4 Tx slots	26.56	26.10	25.52	27.00	23.56	23.10	22.52	24.00

5. RF Exposure Assessment

➤ Standalone Transmission Assessment:

Bands	Frequency (MHz)	Tune-up Power(dBm)	Antenna Gain(dBi)	EIRP (mW)	Power Density (mW/cm ²)	Limit for MPE (mW/cm ²)
GSM850	824.2	26.0	-2.5	223.87	0.045	0.549
GSM1900	1850.2	24.0	-1.5	177.83	0.035	1.0

Note:

1. According to KDB 447498, SAR test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring assessment, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.
2. MPE calculate method

$$\text{Power Density} = \text{EIRP}/4\pi R^2$$

Where: EIRP = P+G

P = Output Power (dBm)

G = Antenna Gain (dBi)

R = Separation Distance (20cm)

➤ Simultaneous Transmission Assessment:

This device contains transmitters that cannot be operated simultaneously, therefore simultaneous transmission analysis is not required.

➤ Conclusion:

According to 47 CFR §2.1091, this device complies with human exposure basic restrictions.



Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

The FCC designation number is CN1192, the test firm registration number is 226174.

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