



## GEMRED SMART LEVEL USER MANUAL

ML200



Guilin GemRed Sensor Technology Co., Ltd.

2402MHz to 2480MHz @ -1.96 dBm  
2401-2480 MHz @ 8.97 dBm  
Manufacturer name: Guilin Gemred Sensor Technology Co., LTD  
Manufacturer address: No.D-08, Information Industrial Park, Chaoyang Road Qixing District, Guilin City,  
Guangxi zhuang Autonomous Region  
Importer name: SOLA-Messwerkzeuge GmbH  
Importer address: SOLA-Messwerkzeuge GmbH  
Unteres Tobel 256840 Goetzis/AustriaÖsterreich

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



**Before using Gemred Smart Level, please read the manual carefully.**

This user manual is intended as a guide to initial installation, integration and subsequent use and notes of the Gemred Smart Level system.

**Notes:**

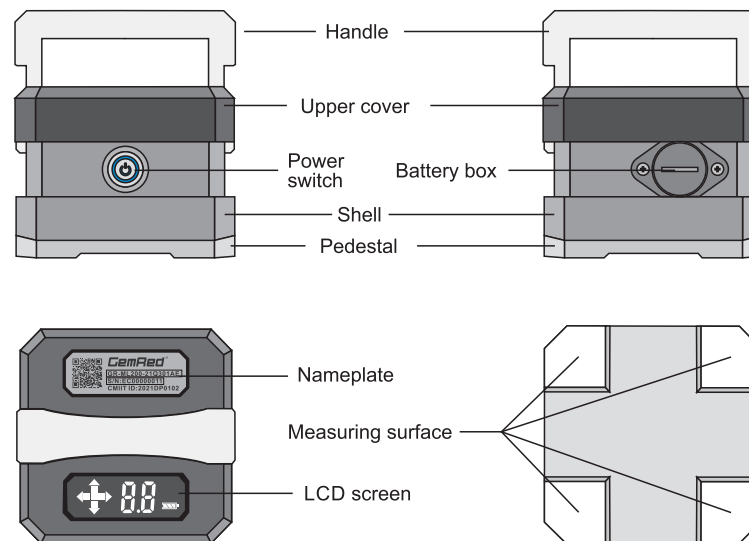
- ① Without external interference, the data transmission distance can reach 10m;
- ② Before using Smart Level, please use rust removing oil to remove debris and impurities on the machine surface and the measuring surface of the leveling, so as not to affect the validity of calibration and measurement accuracy by dust, grease, etc.
- ③ The Smart Level are calibrated at the factory. However, due to the change of external environment, it's recommended to calibrate before use in order to ensure the measurement accuracy. For specific instructions Please refer to calibration part in the manual. (See page 14-15 for more details.)

## Catalogs

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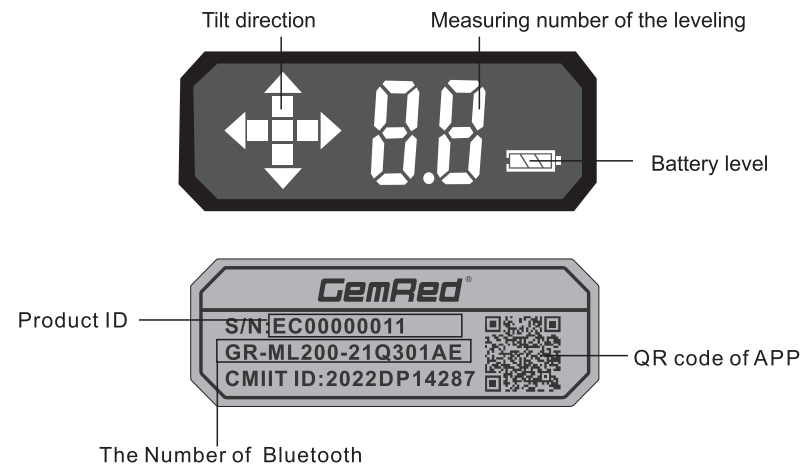
# 1 Introduction

## 1.1 Product description



| Technical Parameters of Leveling |               |                 |             |            |        |
|----------------------------------|---------------|-----------------|-------------|------------|--------|
| Resolution                       | Repeatability | Measuring range | Power       | Dimension  | Weight |
| 0.01mm/m                         | ±0.02 mm/m    | ±0.5mm/m        | DC3.3V-5.0V | 100×100×78 | 1.6    |

## 1.2 Instructions of LCD screen and nameplate



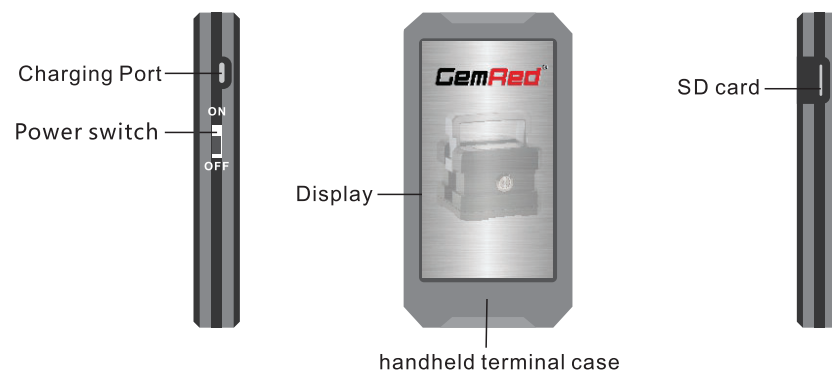
Tilt direction: The arrow pointing or the increasing direction of the square is the direction of high inclination of the measured surface, which can guide the rough adjustment of the level of the surface.

□ : Indicates the level of the measuring surface 0mm/m

□□ : Indicates the inclination in this direction □0.2mm/m

□□▶ : Indicates the inclination in this direction >0.2mm/m

### 1.3 Handheld terminal



| Technical Parameters of Handheld terminal |                  |                     |                    |               |            |
|-------------------------------------------|------------------|---------------------|--------------------|---------------|------------|
| Power                                     | Charging current | Power duration time | Charging port type | Dimension(mm) | Weight(kg) |
| DC 5V                                     | 1A               | >7hours             | TYPE-C             | 150×77×22     | 0.25       |

### 1.4 List of product accessories

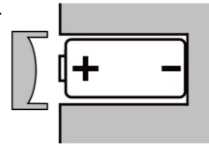
- (1) Type-C charging cable (1m)
- (2) AAA battery \*6
- (3) Right Angled Ruler (160\*100mm)
- (4) Rust protection cover for base
- (5) user manual
- (6) certificate of conformity

## 2 Getting Started

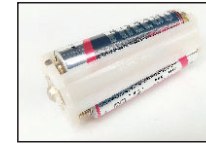
### 2.1 Battery

#### 2.1.1 Install battery

Turn the battery cover counterclockwise to open the battery box of the Smart Level. Put 3 AAA batteries into battery box, making sure the positive and negative directions of the battery are correct. Insert the battery box to the Smart Level and turn the battery cover clockwise to complete installation.



Signs of positive and negative



Battery box

#### 2.1.2 Battery level reminder

The battery level of the Smart Level is displayed at the bottom right of the LCD screen of the leveling. When the battery level is close to one bar, please replace the battery in time according to the needs of use.



2.1.3 The battery level of handheld terminal is on the top of the screen. When the battery level is equal to or less than 5%, the handheld terminal will pop up a low battery warning, please charging the handheld in time. The pop-up window is shown on the left.

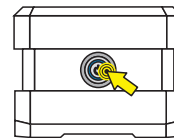


Please pay attention that we are required by law to properly dispose of used batteries.



## 2.2 Turn on and Connection

### 2.2.1 Turn on the Smart Level



Press the power button,  
the blue lights up.

### 2.2.2 turn on the Handheld terminal

The leveling instrument needs to be connected with the handheld terminal (default stand-alone mode for the first time).

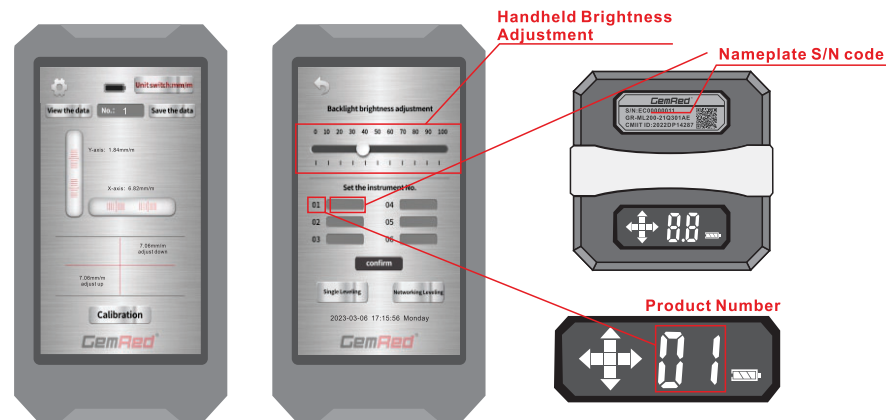
Open the handheld terminal, stay in the home page for 3 seconds, the handheld terminal automatically jump to the measurement interface.

After the device is successfully connected, the measurement interface of the handheld terminal will display the measurement data of the leveling instrument in real time. Translated with [www.DeepL.com/Translator](http://www.DeepL.com/Translator) (free version)



### 2.3 Setting the product number

Click the “” icon on the measurement screen , Enter the S/N code of the ML200 into the corresponding numbered position. (Each ML200 equipped with a handheld terminal has the corresponding S/N code entered at the factory.) , Click on Confirm to complete the setting of the ML200 code. (TIP: This step is done at the factory, if you do not need to replace the connected device, please ignore this step.)

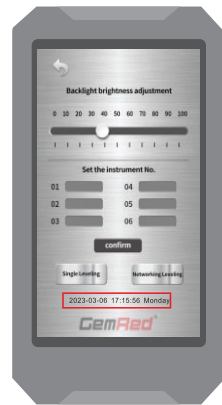


**Note:** The number on the leveler LCD is the same as the serial number in "Setting Instrument Number".

### 2.4 Setting the backlight

Slide the "Backlight Brightness Adjustment" progress bar left or right.

## 2.5 Modify the time



Long press on the area of the time display.



Pop-up keyboard for entering time.



Enter the correct time and confirm by pressing the Enter key.



The time is modified successfully.

## 2.6 Switching connection mode

If need to switch modes, restart the handheld terminal and ML200 after selecting the mode in the setup interface; after switching, the handheld terminal will remain in that mode until it is switched again.

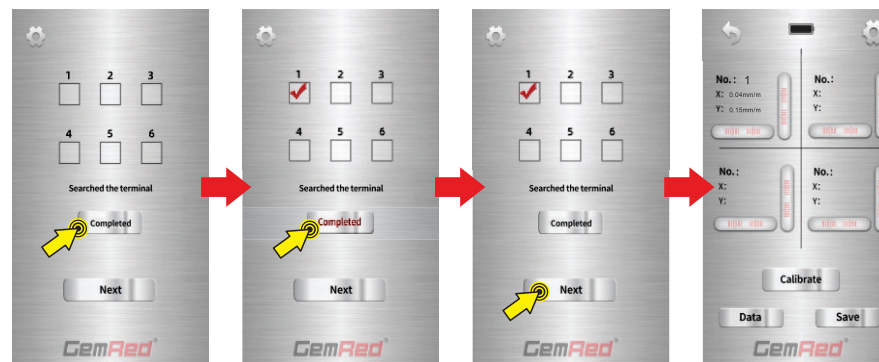


When use the handheld terminal for the first time, it defaults to stand-alone mode (single leveling) . Ignore this step if you do not need to switch.

If the handheld terminal is linked to only one ML200, please select "stand-alone mode" (single leveling) , if you choose to link with more than one ML200, please select "network mode" (networking leveling) .

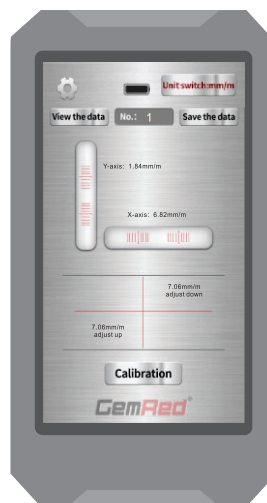
## 2.7 Search for ML200 (networking leveling)

For network mode, complete the product number setting in the handheld setup interface, restart the device after switching to the network measurement mode (see subsections 2.3 and 2.6 of the operation instructions), click "Start Search", and the searched device will be marked with a "✓", and then click "Search Complete", click "Next", and enter the data interface. Click "Search Complete", click "Next" to enter the data interface.

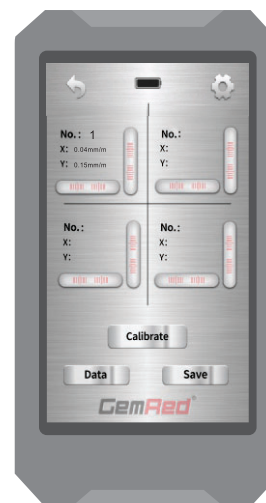


The serial number in this screen is the product number of the levelling instrument's LCD display, and you can search up to 4 ML200 at a time.

### 3 Measurement function



**Stand-alone Mode**



**Network Mode**

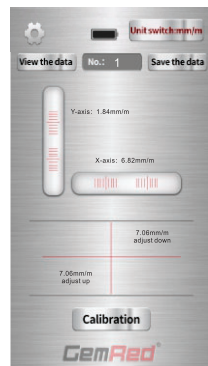
**3.1 Unit switching:** “mm/m” or “°”.

**3.2 Data retention:** Current measurement data can be saved.

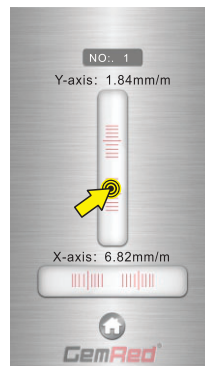
**3.3 Product number:** The serial number is shown on the LCD display of the ML200.

### 3.4 Measurement display:

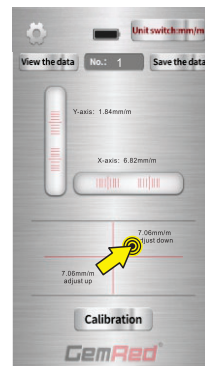
3.4.1 Stand-alone mode (single leveling) : can display measurement data, analogue blisters, levelling suggestions, (all can support zoom display, click the screen to return to the previous interface) .



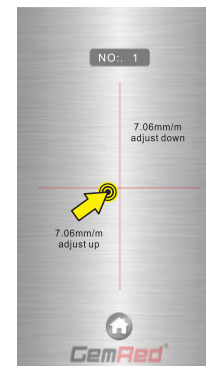
Click to enlarge



Click to return to  
previous screen

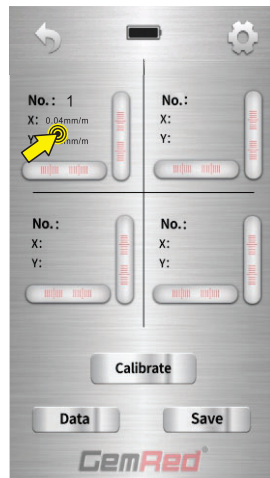


Click to enlarge

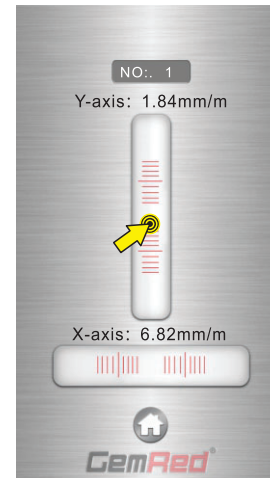


Click to return to  
previous screen

3.4.2 Networking mode: up to four ML200 measurements can be displayed, analogue blisters (all can support zoom display, click the screen to return to the previous interface)



Click to enlarge



Click to return to previous screen



### 3.5 View data.:

- 3.5.1 Click "View Data" to view the saved data;
- 3.5.2 Click "Single Clear" to clear the data at the end of the form;
- 3.5.3 Click "Clear All" to clear all the data in the form;
- 3.5.4 Click "Export Form" to export the form data to SD card.  
Type: EXCEL.

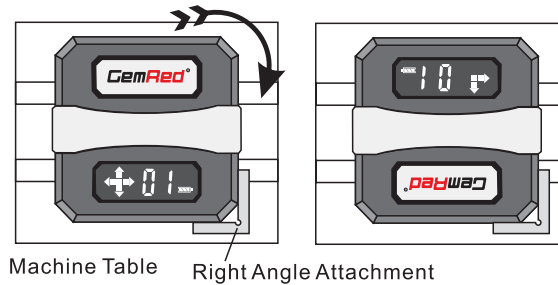
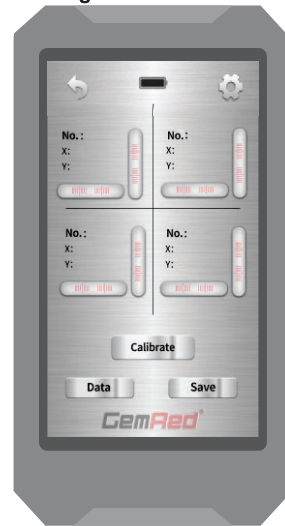
The screenshot shows a calibration interface with a metallic background. At the top, there are navigation icons (back, home, settings). The main area is divided into four quadrants, each with a 'No.:' label and input fields for 'X:' and 'Y:'. Below each quadrant is a red button with 'X' and 'Y' labels. At the bottom, there are three buttons: 'Calibrate', 'Data', and 'Save'. The 'GemRed' logo is at the very bottom.

The screenshot shows a data view interface with a metallic background. At the top, there are navigation icons (back, home, settings). Below them are three buttons: 'Clear All', 'Single Clear', and 'Data Export'. The main area is a table with the following columns: 'No.', 'Position', 'X-Axis Data', 'Y-Axis Data', and 'Date'. The table has 15 rows. The 'GemRed' logo is at the bottom.

| No. | Position | X-Axis Data | Y-Axis Data | Date |
|-----|----------|-------------|-------------|------|
|     |          |             |             |      |
|     |          |             |             |      |
|     |          |             |             |      |
|     |          |             |             |      |
|     |          |             |             |      |
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|     |          |             |             |      |
|     |          |             |             |      |
|     |          |             |             |      |
|     |          |             |             |      |
|     |          |             |             |      |

## 4 Calibration function

In order to eliminate the influence of environmental changes on the measurement accuracy of the levelling instrument, please carry out the calibration operation before use. Click "Calibration" in the measurement interface of stand-alone or network mode to enter the calibration function. Follow the prompts to calibrate the levelling instrument.



**Note:** When calibrating, please keep the measuring surface of the levelling device and the table surface in full contact, rotate the angle to 180° as far as possible, the table surface is flat, no vibration, no impurities or grease accumulation, it is recommended that the table surface level is within 1mm/m, if necessary, please use the ruler to assist the levelling device to rotate in place.

### The steps are as follows.

When using network mode, you need to select the product number before calibration, standalone mode ignores this step.



After completing the calibration, click the Back button to return to the measurement screen.

If the calibration is invalid, please exclude the factors affecting the calibration and click Step1 to restart the calibration.

## 5 Handling of common problems

| Concrete expression |                                                                              | Possible causes                                    | Solution                                                         |
|---------------------|------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------|
| ML200               | 1. No display or display is blurred or misaligned                            | Batteries not installed or reversed or low voltage | Install batteries or replace with new ones                       |
|                     | 2.The numerical display is unstable or the numerical display does not change | internal fault                                     | Remove the battery and leave it for a minute before reinstalling |
| handheld terminal   | 1.No response to screen taps                                                 | crash                                              | reopen                                                           |
|                     | 2.screen dimming                                                             | Screen brightness not set                          | Finish setting the screen brightness                             |
|                     | 3.The screen doesn't light up when switch on the computer                    | discharged                                         | Charge and switch on again                                       |

## 6 Precautions in use

- (1) The levelling instrument must be temperature equilibrated before use, i.e., placed in its working environment for 2 hours or more (no need to power on).
- (2) The levelling instrument is powered on for 5 minutes before normal testing.
- (3) For high-precision inspected workpiece, the location of the foundation should be solid, there should be no vibration effects. (4) When the product is working, the temperature should be kept stable, and the temperature change should not exceed 1°C per hour.

### Tips

When the environmental conditions do not meet the above requirements, the levelling instrument test may be biased.

If the working environment is to be changed frequently during use, please reserve a long enough time for temperature equilibrium (more than 2 hours).

## 7 Maintenance and conservation

**Thank you for your trust and support of our products, please follow the following requirements for maintenance and repair.**

### 7.1 Battery Maintenance

#### 7.1.1 Levelling instrument battery maintenance

- (1) It is recommended to remove the instrument battery during transport or when storing the equipment for a long time.
  - (2) Before installing the battery, please read the battery installation instructions in the manual carefully and position the battery according to the indicated symbols positive (+) and negative (-) battery installation directions to ensure proper insertion of the battery.
  - (3) Keep the battery contacts clean, use a clean eraser or cloth to gently wipe the battery contacts. (4) Replace the batteries with the battery size and type specified by the device manufacturer.
  - (5) Take care to store the battery in a dry place at room temperature.
  - (6) Do not charge the battery unless it is specified as "rechargeable".
- Rupture or leakage of liquid, and in extreme cases, explosion may occur.

#### 7.1.2 Hand-held terminal battery maintenance

- (1) The hand-held terminal uses rechargeable batteries and should avoid complete discharge (use until the black screen is disconnected).
- (2) The charging voltage of the handheld terminal is 5V, and it is prohibited to use a charger that does not match the voltage of the handheld terminal for charging.
- (3) If the handheld terminal is idle for a long time, it is recommended that users charge the handheld terminal every 3 months to avoid the battery damage caused by complete discharge.
- (4) It is recommended that you unplug the charger after a full charge to avoid prolonged charging or prolonged high power state to accelerate battery aging.

## **7.2 Instrument maintenance**

- (1) Keep the instrument dry and prohibit storing it in a humid place.
- (2) Long-term storage of the instrument should be boxed for preservation.
- (3) The sensor of the levelling instrument is a sensitive element with high sensitivity, it should be lightly held and placed in use to prevent the instrument is subjected to severe vibration.
- (4) Avoid using the instrument in dusty environment.
- (5) The bottom working surface of the instrument should be protected against rust, and should be coated with anti-rust grease to protect it when it is not used for a long time.
- (6) Please use the special instrument case equipped by our company in the process of transport vibration damage to the instrument.

## **7.3 Working and storage environment parameters**

Operating temperature: 10°C(32°F)~40°C(104°F)

Transport or Storage Temperature: -20°C(-4°F)~70°C(158°F)

Operating Humidity: ≤85

Electromagnetic Compatibility (EMC): Class II



## 8 After-sales products

### Service warranty card

**Thank you for your trust and support of Guilin Jingrui Sensing Technology Co., Ltd. electronic measurement products, we will be happy to provide you with satisfactory service, in order to protect your legitimate rights and interests, Jingrui sensing to you to make the following commitments:**

- 1、 where the company sells products, users with purchase invoices and valid certificates to enjoy the purchase date of the electronic part of the warranty service within one year.
- 2、 the company promises to receive the product for repair, seven working days to complete the overhaul, and special circumstances and your consultation to solve the problem.
- 3、 one of the following circumstances, then does not belong to the warranty. For non-warranty products the company will provide paid maintenance services.
  - a. Products beyond the warranty period.
  - b. Damage caused by flooding, falling, bumping, impact, high temperature, strong magnetism, corrosion, etc.;
  - c. Damage caused by unauthorised dismantling or maintenance of non-designated agencies.
  - d. Damage caused by accidents or other force majeure.
  - e. Other damage caused by the use, maintenance and repair not in accordance with the requirements of the user manual.
- 4、 the company reserves the right to improve the product, product specifications and design are subject to change without notice.

**Dear users, this warranty service card will be used as your warranty voucher to protect your legitimate rights and interests, please keep it properly. In filling out the warranty card, the company buyer please note that the full name of the company, personal purchase, please fill in the buyer's real name, thank you for your cooperation!**



### Service Warranty Card



|                  |             |  |              |  |
|------------------|-------------|--|--------------|--|
| Customer         | Name        |  |              |  |
|                  | Address     |  |              |  |
|                  | Telephone   |  | E-Mail       |  |
| Product          | Name        |  | Serial Nr.   |  |
|                  | Invoice Nr. |  |              |  |
| Service provider | Name        |  |              |  |
|                  | Address     |  |              |  |
|                  | Telephone   |  | Date of Sale |  |

2402MHz-2480MHz @ 3.15dBm

Manufacturer name: Guilin GemRed sensor technology Co.,Ltd.

Manufacturer address: Chengtian science and Technology Park D-08, Chaoyang Road, Qixing District, Guilin City, Guangxi Province, China

Importer name: Guilin GemRed sensor technology Co.,Ltd.

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



