

# Bluetooth Beacon VG05 User Manual

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**This document applicable to the following products:**

Product name	Type number	Product status
Beacon	VG05	Mass Production

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**List**

Device Name	Device No.	Number	Remark
Bluetooth 4.2 Beacon	VG05	1 PCS	
Battery	CR14250	2 PCS	Inside VG05

## 1. Product Introduction

VG05 is a Bluetooth Beacon device. It uses a broadcasting protocol which is based on BLE (Bluetooth Low Energy ). VG05 broadcasts its general config parameters like UUID, Major, Minor, RSSI etc. to surroundings over 37, 38 and 39 BLE channels continuously and non-directionally . The broadcasting information can be read by “Skylab\_xbeacon” APP, which is designed by Skylab R&D Team.

### 1.1 VG05 Internal Module Introduction

VG05 is based on Nordic Bluetooth 4.2 chip. It is powered by 2 CR14250 batteries. Its battery life is related to the internal broadcasting parameters.

### 1.2 VG05 Features

- Low Power Consumption
- Small,Lightweight,Beautiful appearance
- Flexible Application
- Easy to Install(use 3M sticky tape)
- Advertise Range up to 100 Meters
- RoHS compliance (Lead-free)
- FCC,CE compliance

### 1.3 VG05 Application

- Indoor Positioning
- Information Push
- Identification
- WeChat Shake



## 2. Hardware Parameter

### Product Parameter

Hardware Features	
<b>Model</b>	VG05
<b>Antenna Type</b>	PCB Antenna
<b>Battery</b>	ER14250 2*1200mAh
<b>Voltage</b>	3.6V
<b>Dimension(D×H)</b>	52.1*23.1(±0.3)mm
Wireless Features	
<b>Wireless Standards</b>	Bluetooth® 4.2
<b>Frequency Range</b>	2400MHz---2483.5MHz
<b>Data Rates</b>	250kbps/1Mbps/2Mbps
<b>Modulation Technique</b>	GFSK Modulation
<b>Wireless Security</b>	AES HW Encryption
<b>Transmit Power</b>	Tx Power -20 to +4 dBm in 4 dB Steps
<b>Sensitivity</b>	-93dBm at 1 Mbps BLE
<b>Work Mode</b>	Peripheral
Others	
<b>Environment</b>	Operating Temperature: -40°C~85°C
	Storage Temperature: -40°C~85°C
	Operating Humidity: 10%~90% Non-condensing
	Storage Humidity: 5%~90% Non-condensing

### Battery Life

Transmission Power (dBm)	Broadcast Distance (m)	Broadcast time interval (ms)	Power consumption per day (mAh)	Battery life (days)
4	70	100	8.70984	276
		400	2.23146	1076
		500	1.799568	1334
		1000	0.935784	2565
0	50	100.	5.82984	412
		400	1.51146	1588
		500	1.223568	1961
		1000	0.647784	3705
-4	35	100	4.38984	547
		400	1.15146	2084
		500	0.935568	2565
		1000	0.503784	4764

**Attention:**

The above data may differ from different environments. It is caculated by current-test (Battery Loss not included) and just for reference.

### 3. Hardware Guide

#### 3.1 VG05 Power on

VG05 will power on as soon as any one of its 2 batteries is correctly installed. By default , 2 CR14250 battery will be pre-installed before it arrives at customers' hand.

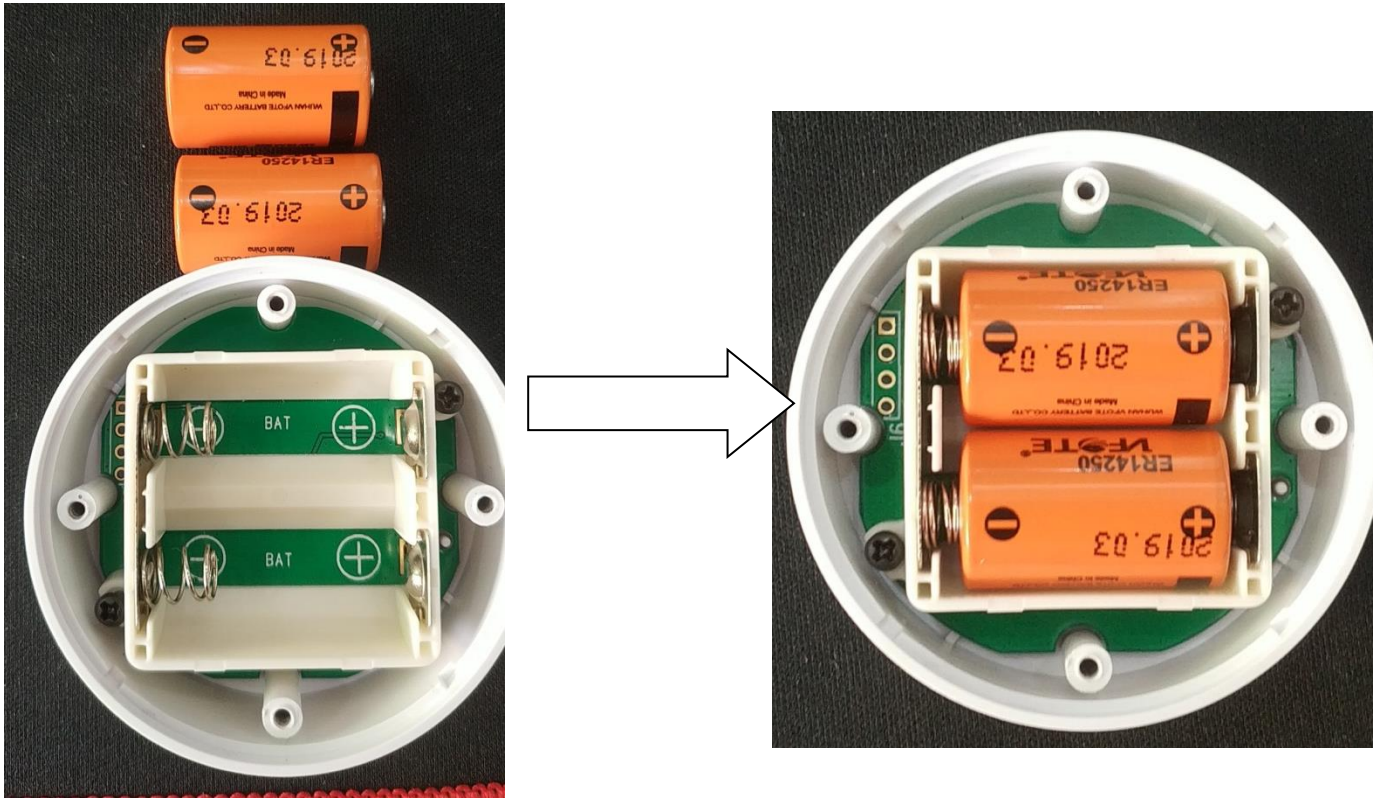
If you need to change its batteries, please follow the instruction below.

- a. Remove 4 screws with a Phillips screwdriver

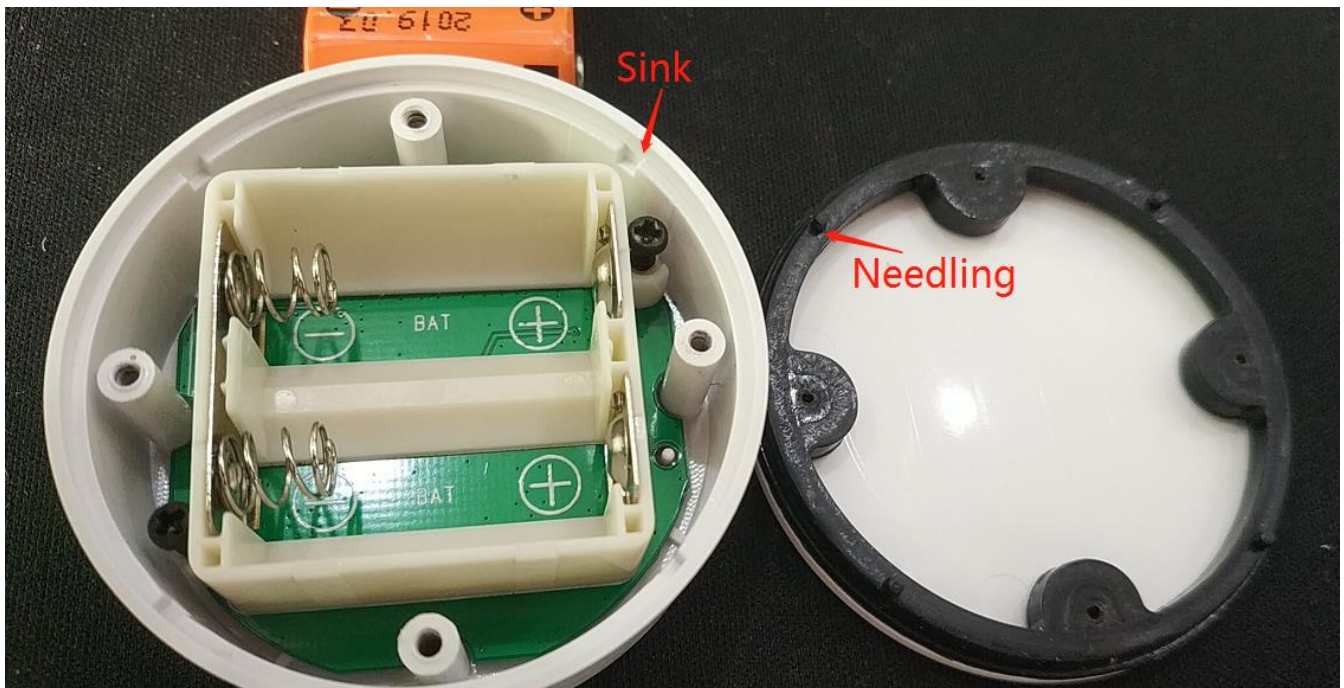




b. Open the bottom shell of the VG05, follow the Battery polarity on the bottom of the battery cell, and replace its 2 CR14250 Li-Batteries.



c. Close the bottom shell with its rubber needling aligned to the sink around the side-shell.



d. Install 4 screws with a Phillips screwdriver.

### 3.2 VG05 Installation instructions

a. Clean up VG05 bottom side (screw side).



b. Tear off 3M round tape from the oil-paper and sticky it to the bottom side.



c. Press evenly for 5-10 seconds, make VG05 bottom side and 3M tape fully bonded.



d. Remove the protective oilpaper on the other side of the 3M tape and install VG05 to target installation location (if there is dust or grease stain in the target location, it needs to be cleaned and dried in before install). Press evenly for 5-10 seconds.



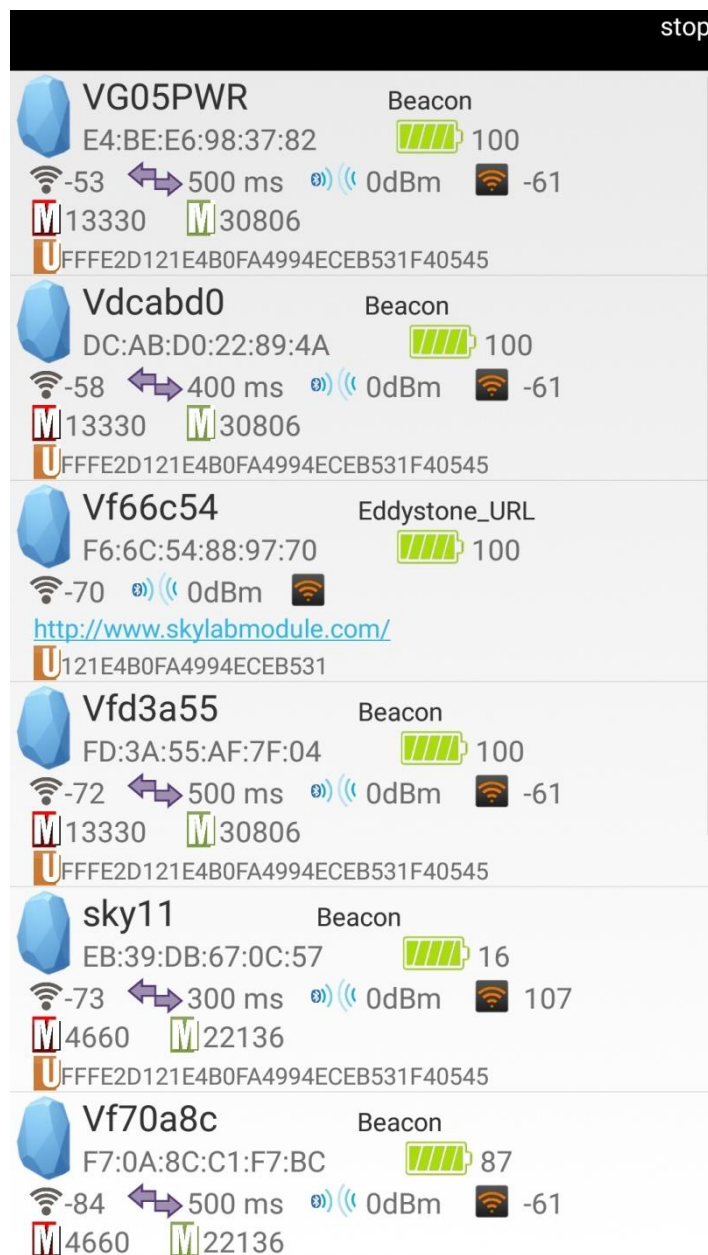
## 4. Software Application Guide

### 4.1 Download APP

Skylab\_xbeacon hasn't been put into the market yet. Please contact our salesman for this APP.

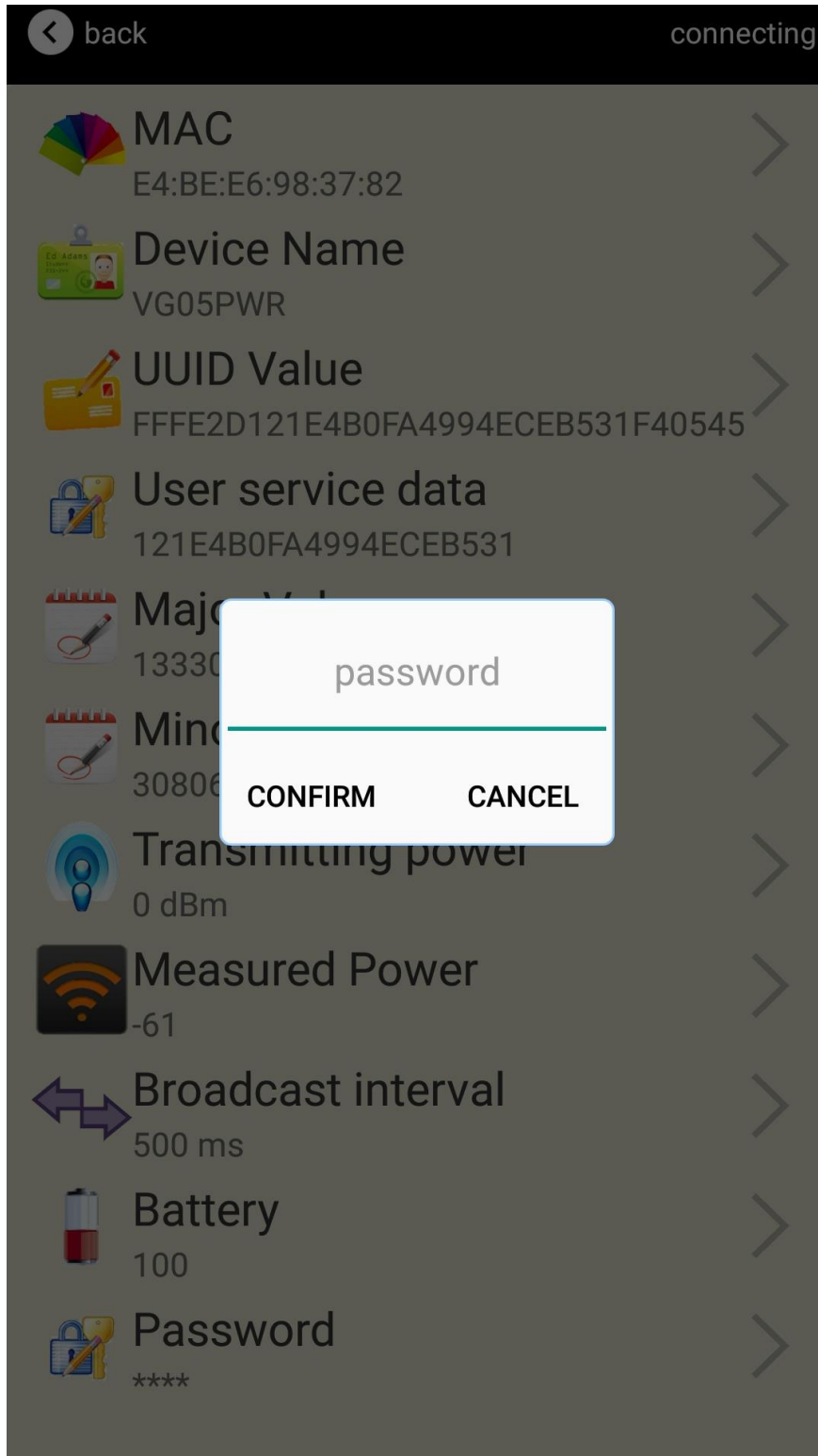
### 4.2 Scan Bluetooth 4.2 Beacon

Open the APP, if cell phone ask for permission to open bluetooth, please select yes. Then it will begin to scan the surrounding Bluetooth 4.2 Beacons.

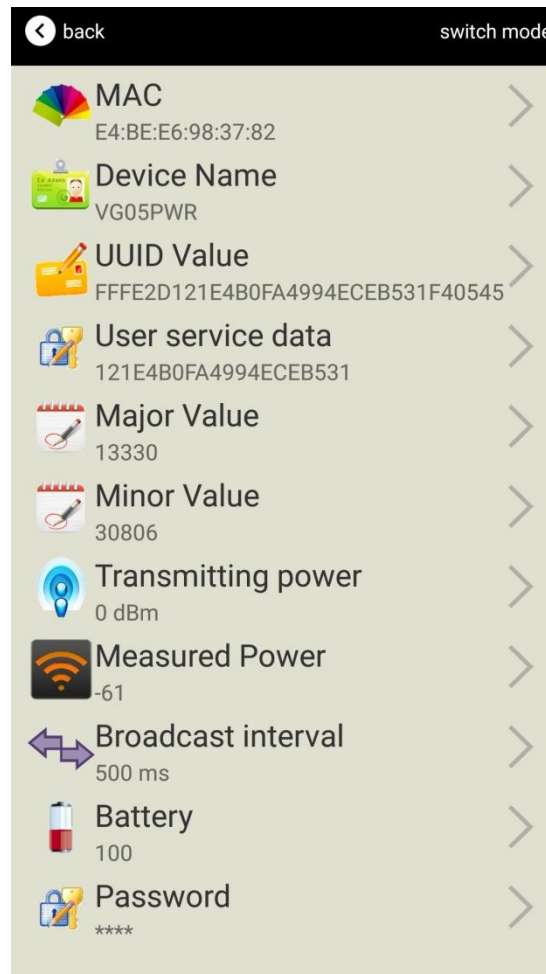


### 4.3 Connect Bluetooth 4.2 Beacon

Click the Bluetooth 4.2 Beacon to be connected, enter the password within 30 seconds, in order to obtain operating privileges .(Factory Password:1234)



## 4.4 Configuration Introduction



Introductions:

MAC: Chip MAC address

Name: The name of the Bluetooth 4.2 Beacon which is selected.

UUID: 128-bit identifier according to ISO/IEC11578:1996 standard (32 hexadecimal digits)

Major: set 16-bit identifier (0-65535)

Minor: set 16-bit identifier (0-65535)

Measured Power: Signal strength at 1 meter (VG05 transmission power is 0dBm)

Transmit Power: VG05 transmit power

Advertise Interval: VG05 advertise interval

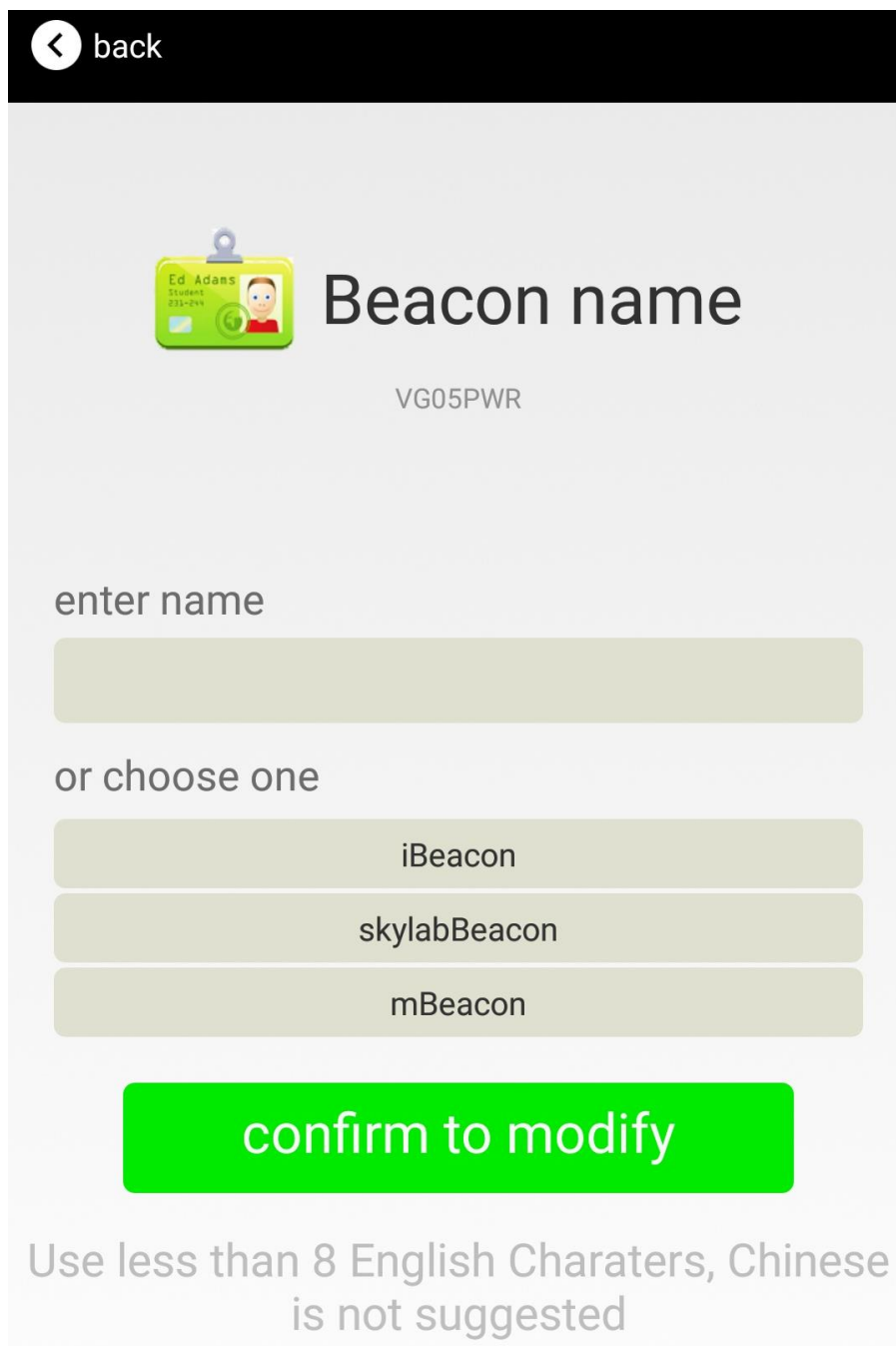
Battery Capacity: VG05 battery Capacity

Password: VG05 connection password

After the information is configured ,the configuration will take effect after the bluetooth connection is disconnected.

#### 4.5 Modify Bluetooth 4.2 Beacon Name

Click the “Device Name”, the following UI will be opened. Then enter a length of less than 12-bit English characters as VG05 device name in the following “Enter a Name” box. Then click “confirm to modify”.



#### 4.6 Modify UUID


Click the “UUID”, ,the following UI will be opened. Then and then enter a 32-byte string of sixteen as the UUID of VG05 in the following “Enter an UUID” box. Then click “confirm to modify”.



#### 4.7 Modify User service data

Click the " User service data ", the following interface will be opened. Then enter a Hexadecimal string of 24 word . Then click "confirm to modify".

back

 User data

121E4B0FA4994ECEB531

enter user data

or choose one

AABBCCDDEEFF001122334455

00112233445566778899AABB

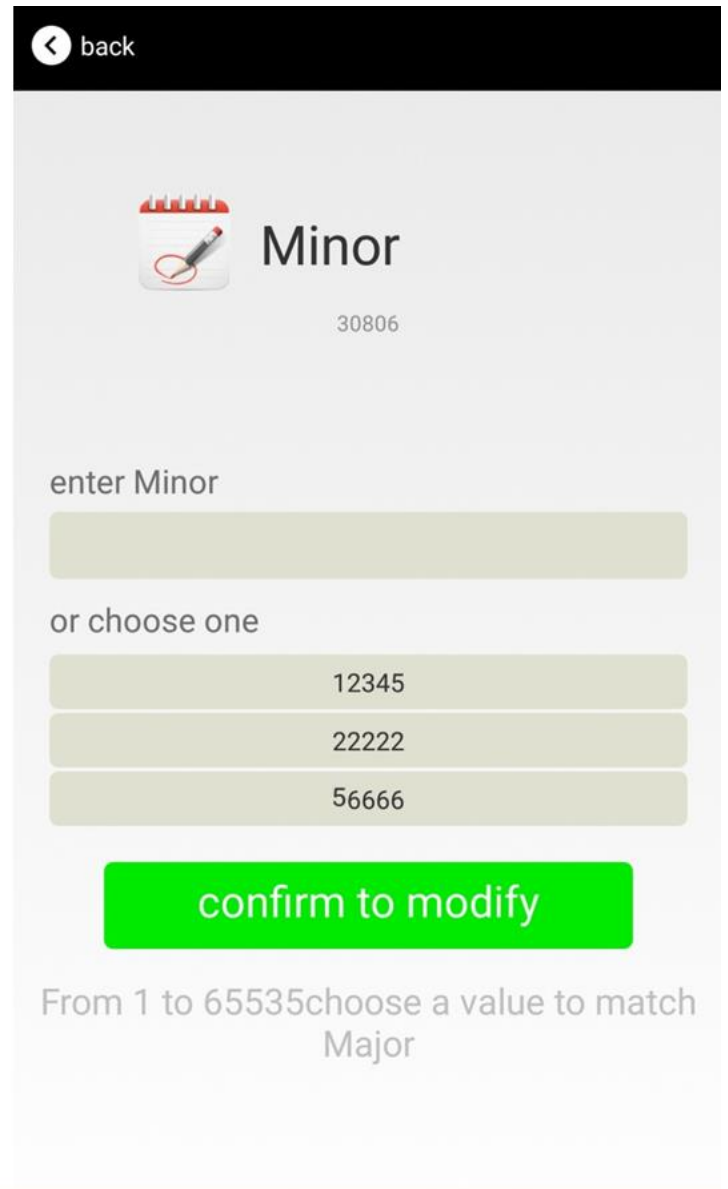
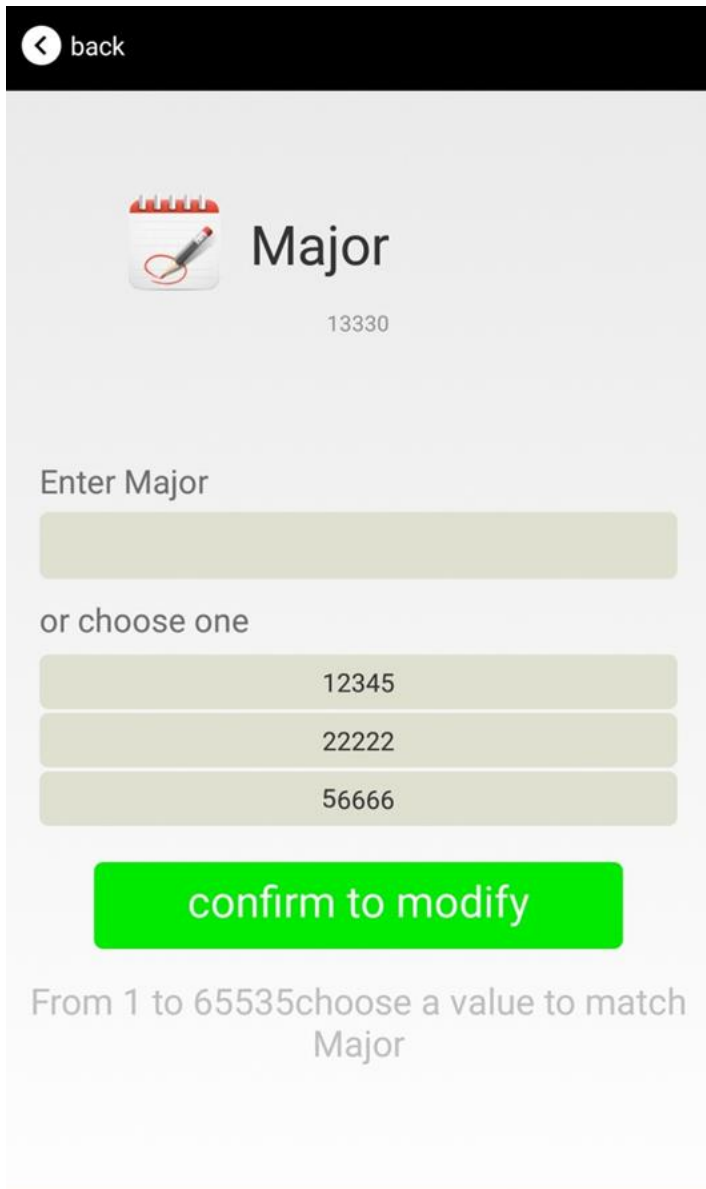
123456781234567812345678

**confirm to modify**

the length of user data can not over 13bytes, please use Hexadecimal format

### 4.8 Modify Major/Minor

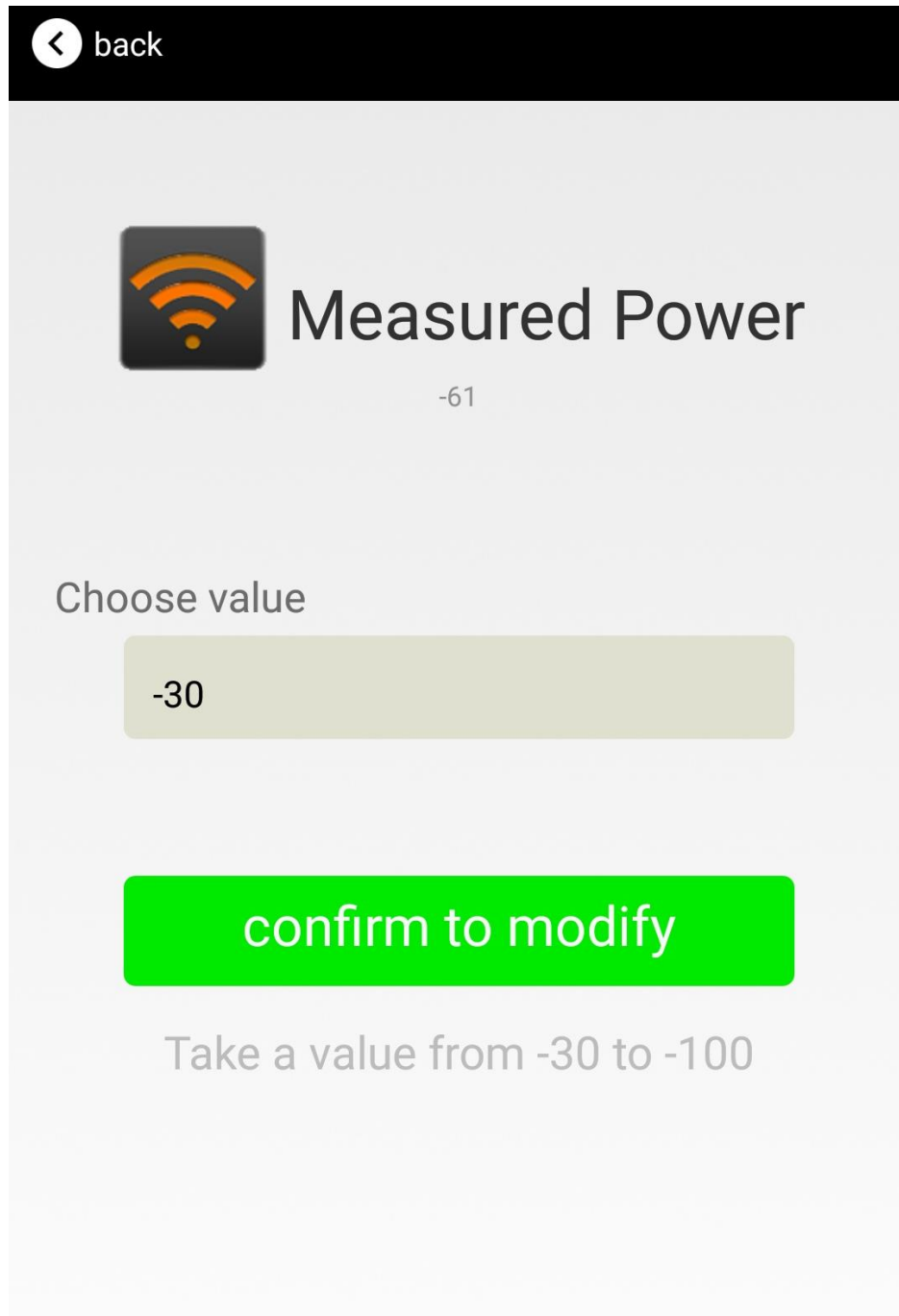
Click the "Major"/"Minor" ,the following UI will be opened. Then set a value between 0~65535 as the Major/Minor value of the device. Then click "confirm to modify".



#### 4.9 Modify Measured Power

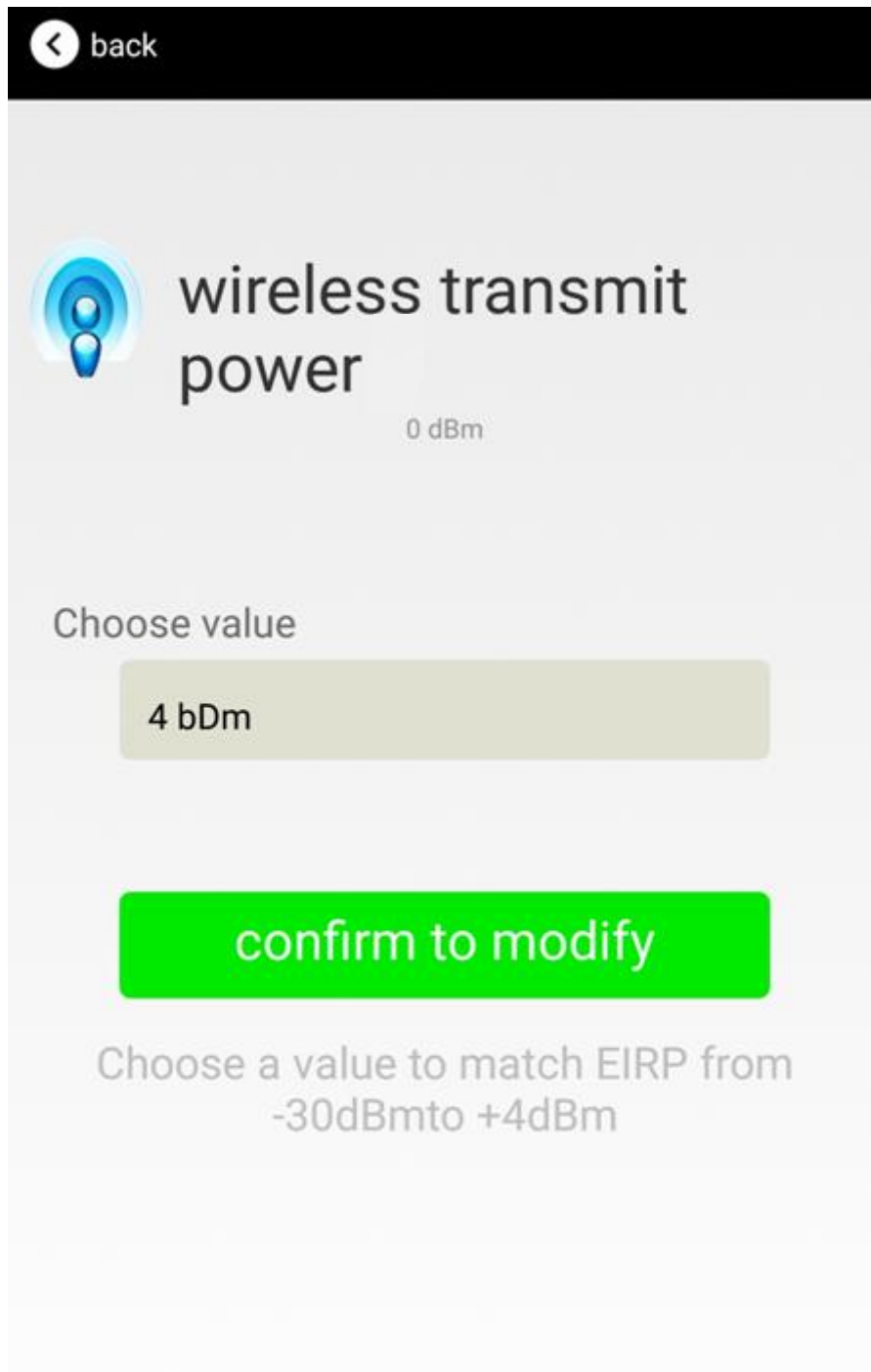
Click the “Measured Power”, ,the following UI will be opened. Then select a measured power range from -100dBm to -30dBm. The default is -61dBm. Then click “confirm to modify”.

Measured Power means, when a phone’s RSSI is -61dBm, it is about 1 meter from VG05.



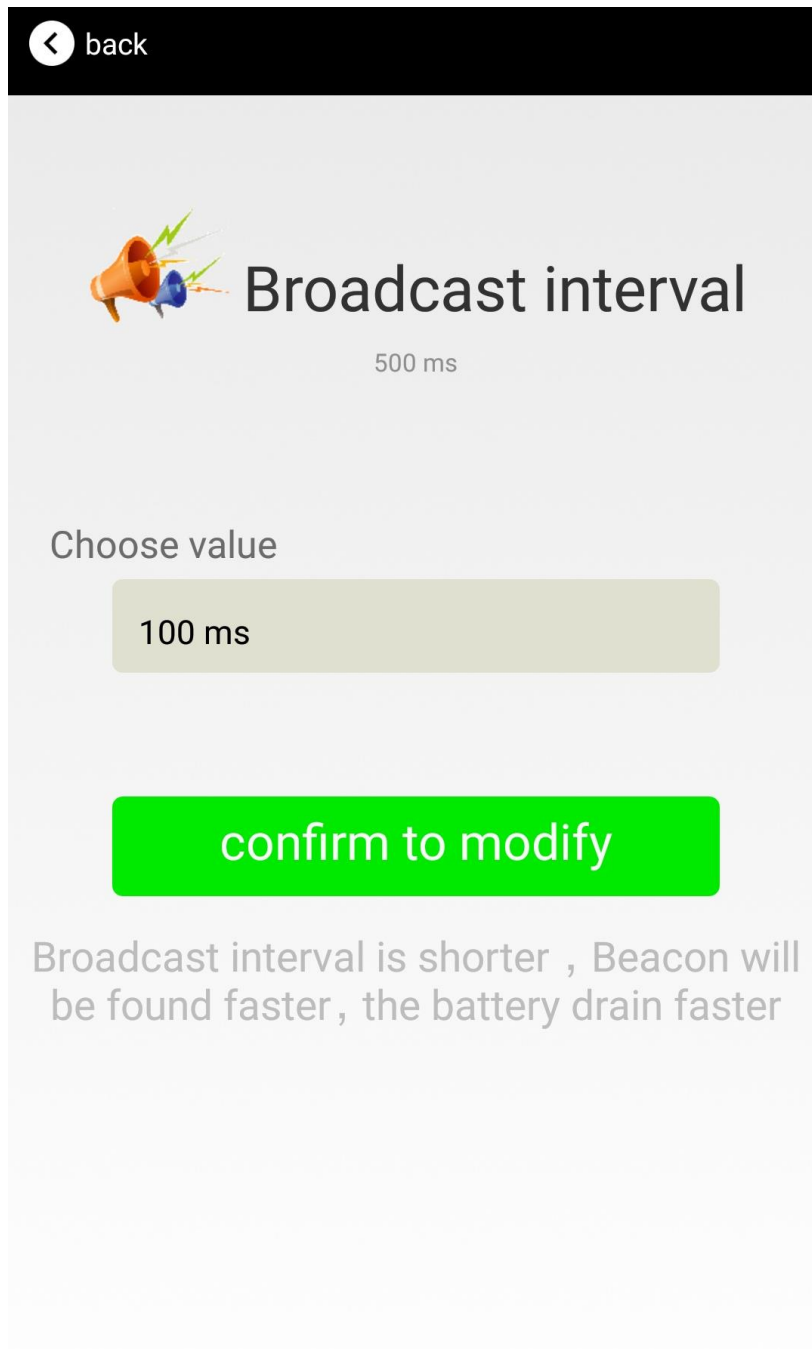
#### 4.10 Modify Transmitting Power

Click the "Transmitting Power" ,the following UI will be opened. Then set a transmitting power, which can be set to: -30dBm, -20dBm, -16dBm, -12dBm, -8dBm, -4dBm, 0dBm, 4dBm and 8dBm. Default Power is 0dBm. Then click “confirm to modify”.



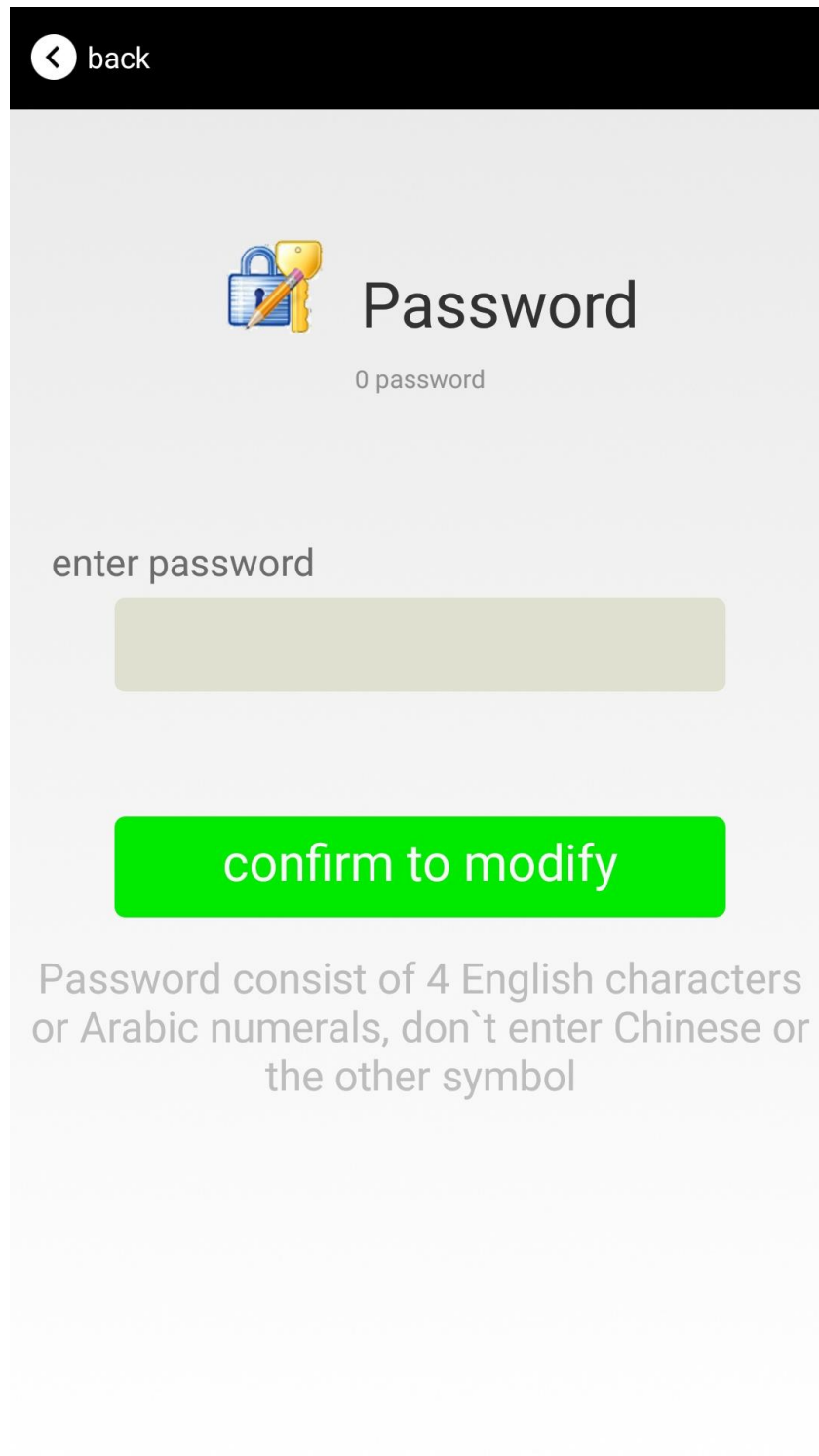
#### 4.11 Modify Advertise Interval

Click the "Advertise Interval" ,the following UI will be opened. Then set a advertise interval. Broadcasting interval can be set to 100ms, 200ms, 300ms, 400ms, 500ms, 600ms ,700ms, 800ms, 900ms and 1000ms. The default is 500ms. Then click "confirm to modify".



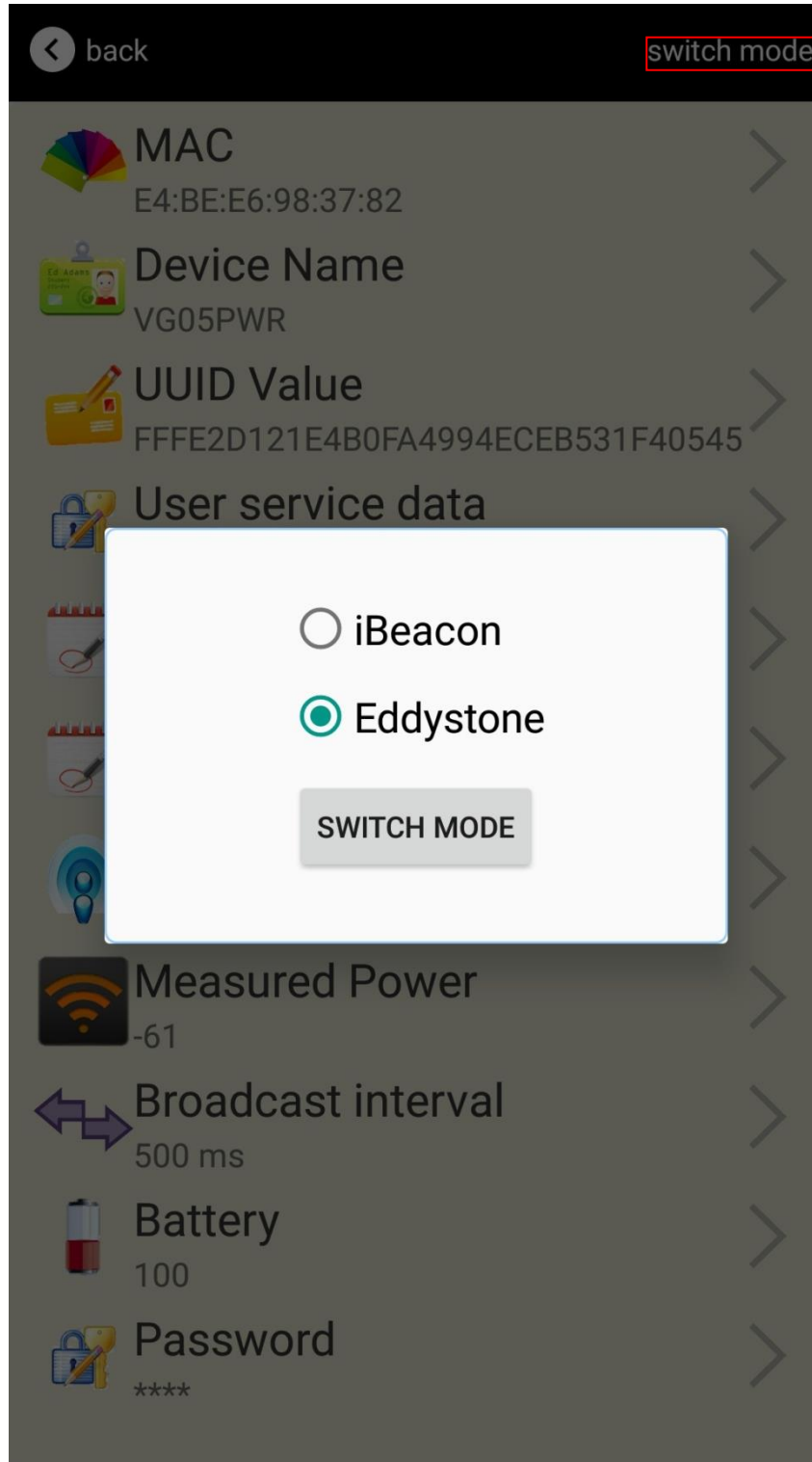
#### 4.12 Modify Password

Click the “Password”, ,the following UI will be opened. Then and then enter the 4 characters as a connection password in the “Password” box, the default is 1234. Then click “confirm to modify”.

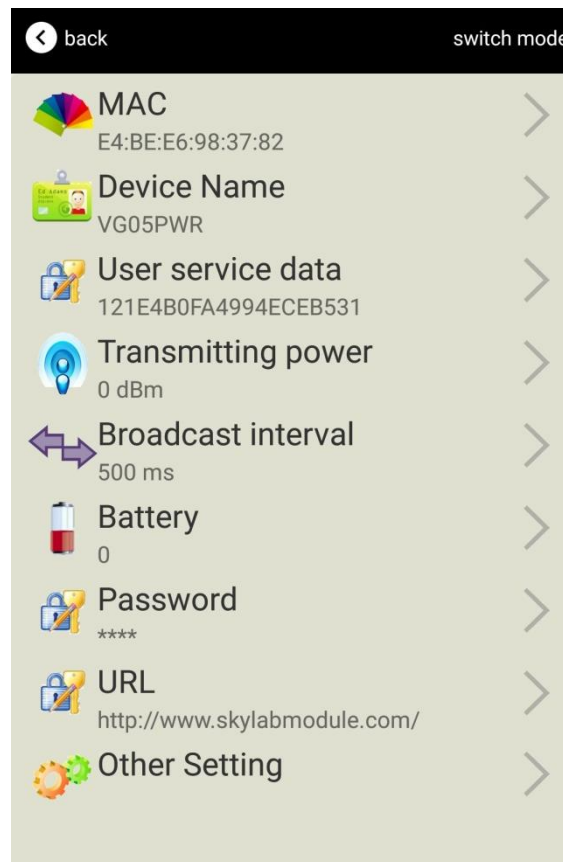


#### 4.13 Switch mode

Click “ switch mode” on the upper right corner, the mode selection window will be openend. Then you can choose iBeacon or Eddystone mode. Default mode is iBeacon.



## 4.14 Eddystone configuration page Introduction



Introduction:

MAC: Chip MAC address

Name: The name of the Bluetooth 4.2 Beacon which is selected.

User service data: User-defined data in broadcasting

Transmit Power: VG05 transmit power

Advertise Interval: VG05 advertise interval

Battery Capacity: VG05 battery Capacity

Password: VG05 connection password

URL : modify the Frame field information in Eddystone. The default format is URL. Other Formats can be selected by other setting

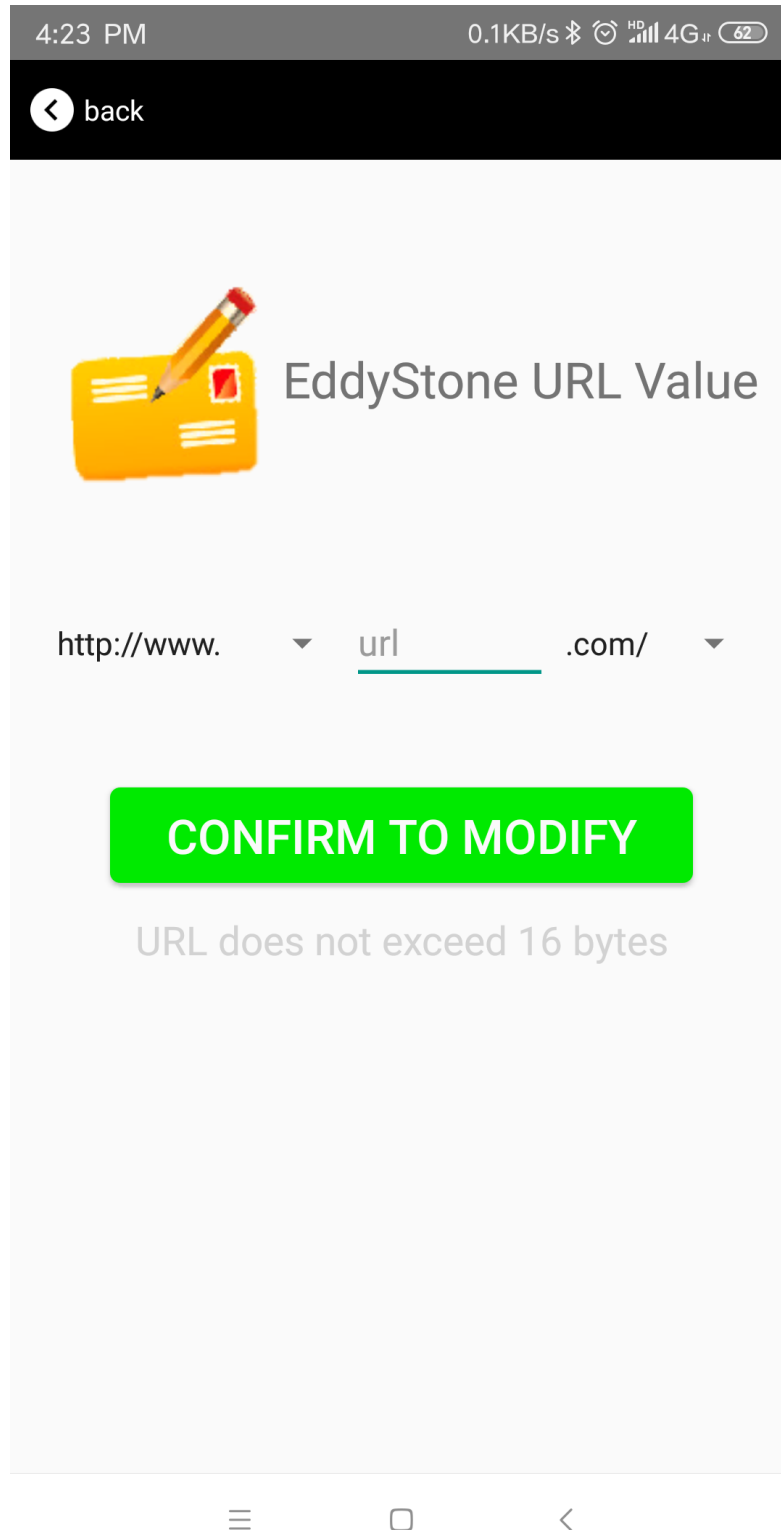
Other setting :Format selection of Frame field information in Eddystone.

After the information is configured ,the configuration will take effect after the bluetooth connection is disconnected.

## 4.15 Modify URL

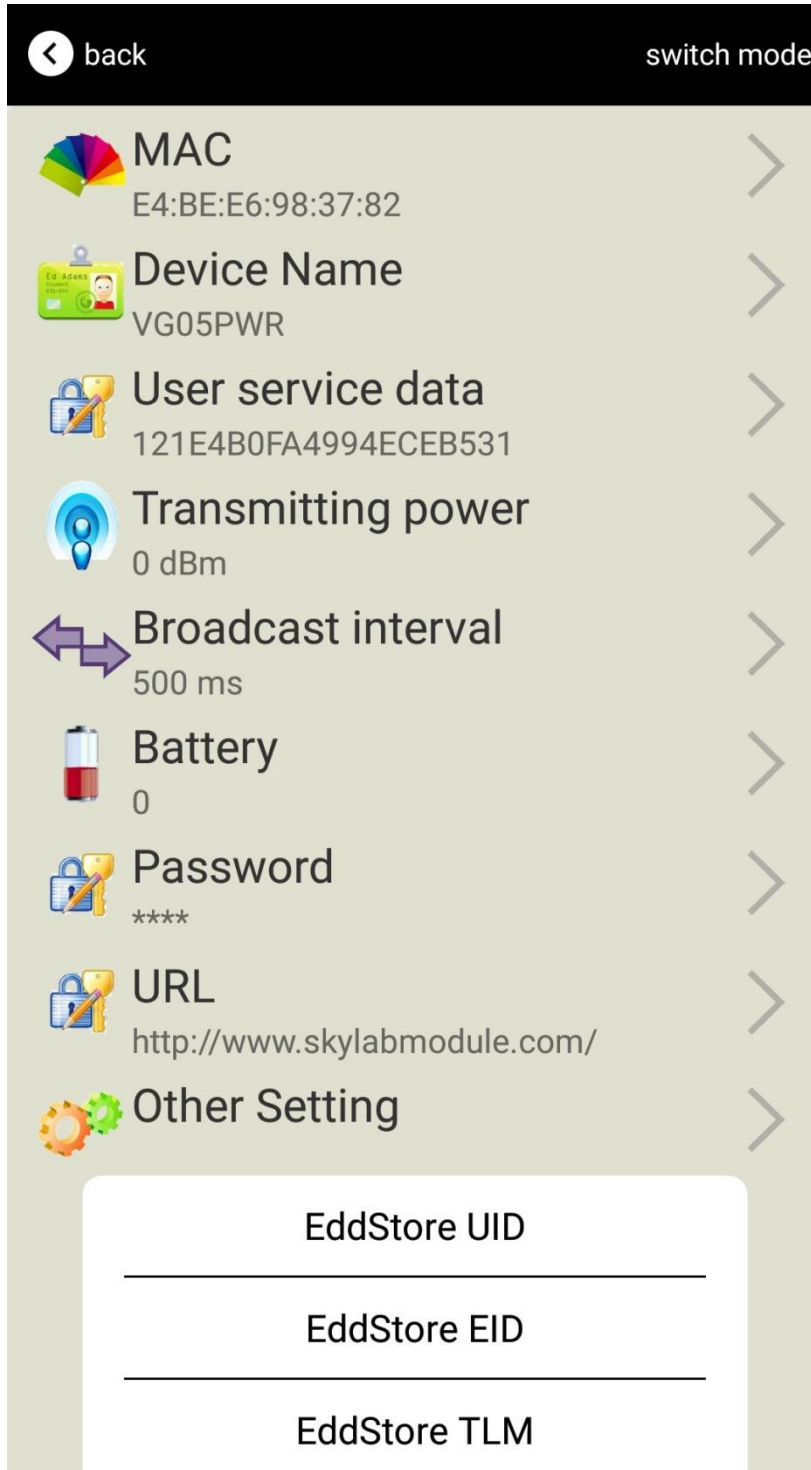


Click "URL" ,the following UI will be opened. Then input at most 16 characters as broadcasting URL. Then click "confirm to modify".




#### 4.16 Other Setting


Click “Other setting” ,the following UI will be opened. The following three options are UID, EID and TLM.



**Select and set UID information:**

NameSpace(10 bytes) and Instance(6 bytes) are set,respectively.

 back

 **EddyStone Uid Value**

enter NameSpace value

10 byte input 16 hexadecimal format


enter Instance value


6 byte input 16 hexadecimal format

**CONFIRM TO MODIFY**

Select and set EID information:

Set EID information, maximum 8 bytes.

 back



## Encrypted value

Enter Encrypted

or choose one

AABBCCDDEEFF0011

0011223344556677


1234567812345678


**CONFIRM TO MODIFY**

Use less than 8 English Charaters, Chinese is not suggested

Select and set TLM information:

Select “Encrypted TLM specification” (suggested), and input encrypted TLM data(at most 12 byte), 16-bit Salt(2 byte) and 16-bit Message Integrity check(2 byte).

 back



## TLM data value

Encrypted TLM specification  
 Unencrypted TLM specification

Encrypted TLM data 12 byte

16-bit Salt 2 byte

16 bit Message Integrity Check 2 byte

**CONFIRM TO MODIFY**

## 5. Contact Information

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