

VDB01蓝牙信标使用手册

VDB01 Bluetooth Beacon User Manual

文档信息/document information

标题/Title	VDB01 蓝牙信标使用手册	
	VDB01 Bluetooth Beacon User Manual	
文档类型/ Document type	使用手册/User Manual	
文档编号/ Document number	WN-21050051	
版本日期/ Revision and date	V1.02	15-11 -2021
秘密等级/ Disclosure restriction	公开/Public	

修订历史/Revision History

修订/ Revision	描述/description	修改人/Modifier	日期/Date
V1.01	初始版本/Initial release	谢晓博/sherman	20210508
V1.02	增加安装步骤和更正产品介绍/Add installation steps and update product introduction	Wendy	20211115

设备清单/Product List

设备名称/Device Name	型号/Device No.	数量/Number	备注/Remark
蓝牙信标/Bluetooth 4.2 Beacon	VDB01	1 个/1pcs	
纽扣电池/Coin Battery	CR2477	1 个/1pcs	默认安装在 VDB01 内部 /Inside VDB01

95POWER 保留本文档及本文档所包含的信息的所有权利。95POWER 拥有本文档所述的产品、名称、标识和设计的全部知识产权。严禁没有征得 95POWER 的许可的情况下复制、使用、修改或向第三方披露本文档的全部或部分内容。

95POWER 对本文档所包含的信息的使用不承担任何责任。没有明示或暗示的保证，包括但不限于关于信息的准确性、正确性、可靠性和适用性。95POWER 可以随时修订这个文档。可以访问 www.95POWER.com 获得最新的文件。

Copyright © 2021, 深圳市微能信息科技有限公司。

95POWER® 是深圳市微能信息科技有限公司在中国的注册商标。

95POWER reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. Reproduction, use, modification or disclosure to third parties of this document or any part thereof without the express permission of 95POWER is strictly prohibited.

The information contained herein is provided “as is” and 95power assumes no liability for the use of the information. No warranty, either express or implied, is given, including but not limited, with respect to the accuracy, correctness, reliability and fitness for a particular purpose of the information. This document may be revised by 95power at any time. For most recent documents, visit www.95power.com.cn

Copyright © 2021, 95Power Information Technology Co., Ltd.

95POWER® is a registered trademark of 95Power Information Technology Co., Ltd in China.

目录

1. 产品介绍/Product Introduction.....	4
1.1 VDB01 特性/Features.....	5
1.2 VDB01 应用/Application.....	5
2. 硬件参数/Hardware Parameters.....	5
2.1 产品参数/Product Parameter.....	5
2.2 电池寿命/Battery life.....	6
3. 硬件使用说明/Hardware Instructions.....	7
3.1 VDB01 安装电池/ Install Battery.....	7
3.2 VDB01 安装固定方法/Mounting and Fixing Method.....	8
4. 软件使用说明/Software Instructions.....	8
4.1 下载应用程序/Download APP.....	9
4.2 扫描蓝牙信标/Scan Bluetooth beacons.....	9
4.3 连接蓝牙信标/Connect Bluetooth 4.2 Beacon.....	10
4.4 配置介绍/Configuration Introduction.....	11
4.5 修改蓝牙信标名称/Modify Bluetooth 4.2 Beacon Name.....	12
4.6 修改 UUID/Modify UUID.....	13
4.7 修改 User service data/Modify User service data.....	14
4.8 修改 Major、Minor/Modify Major、Minor.....	15
4.9 修改 Measured Power/Modify Measured Power.....	16
4.10 修改发射功率/Modify Transmitting Power.....	17
4.11 修改广播间隔/Modify Advertise Interval.....	18
4.12 修改密码/Modify Password.....	19
4.13 切换模式/Switch mode.....	20
4.14 Eddystone 配置页面简介/Eddystone configuration page Introduction.....	21
4.15 修改 URL /Modify URL.....	22
4.16 修改 Other Setting/Modify Other Setting.....	23
5. 联系信息/Content.....	26

1.产品介绍/Product Introduction

VDB01 是一款蓝牙信标设备。蓝牙信标使用 BLE 低功耗蓝牙广播的方法，利用其支持的通用属性配置文件在第 37、38、39 三个信道上连续发送无定向性的广播包。其广播内容可由我司研发团队开发的 APP “95POWER_xbeacon” 读取，包括 UUID、Major、Minor、RSSI 等信息。

VDB01 is a Bluetooth Beacon device. It uses a broadcasting protocol which is based on BLE (Bluetooth Low Energy). VDB01 broadcasts its general configure 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 “95POWER_xbeacon” APP, which is designed by 95POWER R&D Team.

VDB01 基于伦茨蓝牙 5.0 芯片 ST17H65，预留了加速度传感器和温湿度传感器（默认不贴）。

VDB01 is based on Lenze Tech Bluetooth 5.0 chip, ST17H65. It reserves an accelerometer and a temperature & humidity sensor(not mounted by default).

其内部由 1 节 CR2477 电池供电，电池续航时间与 VDB01 广播参数有关，默认配置下待机时间可达 2 年（500ms 广播间隔，0dBm 广播功率）。

It is powered by 1 CR2477 battery. Its battery life is related to the internal broadcasting parameters. By default setting the battery life can reach 2 years (500ms broadcasting interval, 0dBm TX Power).



Figure 1:VDB01 正视图/Top View

1.1 VDB01 特性/Features

- ◆ 低功耗/ Low Power Consumption
- ◆ 体积小、重量轻、造型美观/ Small,Light-weight,Beautiful appearance
- ◆ APP 可灵活配置参数/ Flexible Application
- ◆ 安装方便(泡棉胶安装) / Easy to deploy(use thick sticky tape)
- ◆ 广播范围最大可达 70 米/ Advertise Range up to 70 Meters
- ◆ 符合 RoHS (无铅)/ RoHS compliance (Lead-free)
- ◆ 符合 FCC, CE/ FCC,CE compliance

1.2 VDB01 应用/Application

- ◆ 室内定位/ Indoor Positioning
- ◆ 信息推送/ Information Push
- ◆ 身份识别/ Identification
- ◆ 微信摇一摇/ WeChat Shake

2. 硬件参数/Hardware Parameters

2.1 产品参数/Product Parameter

硬件特性/Hardware Features	
型号/ Model	VDB01
天线类型/ Antenna Type	PCB 天线 PCB Antenna
电池/ Battery	CR2477 1000mAh
电压/ Voltage	1.8~3.1 V
尺寸(直径×高度) /Dimension(D×H)	47.5*16.1mm
无线功能/ Wireless Features	
无线标准/ Wireless Standards	蓝牙®5.0 Bluetooth ®5.0
频率范围/ Frequency Range	2400MHz——2483.5MHz
数据速率/ Data Rates	125kbps/250kbps/500kbps/1Mbps/2Mbps
调制技术/ Modulation Technique	GFSK
无线安全/ Wireless Security	AES
传输功率/ Transmit Power	-20~+4dBm 可调, 步长 4dB Tx Power -20 to +4dBm in 4dB Steps
灵敏度/ Sensitivity	-97dBm @1Mbps BLE
工作模式/ Work Mode	从机/ Peripheral

其他/Others	
环境参数/Environment	工作温度:-20℃~ 70℃/ Operating Temperature: -20℃~70℃
	储存温度:-20℃~ 70℃/ Storage Temperature: -20℃~70℃
	工作湿度:10%~90%不凝结/ Operating Humidity: 10%~90% Non-condensing
	储存湿度:5%~90%不凝结/ Storage Humidity: 5%~90% Non-condensing

2.2 电池寿命/Battery life

发射功率/ TX Power	广播距离/ Adv. Distance	广播间隔 ms/ Adv. interval	每天功耗 mA*h/ Power consumption per day	VDB01 待机天数/ Battery life (day)	VDB01 待机年数/ Battery life (year)
4dBm	70m	100	7.25232	124	0.34
		200	3.66216	246	0.67
		400	1.86708	482	1.32
		500	1.508064	597	1.64
		800	0.96954	928	2.54
		1000	0.790032	1139	3.12
0dBm	50m	100	5.53872	162	0.45
		200	2.80536	321	0.88
		400	1.43868	626	1.71
		500	1.165344	772	2.12
		800	0.75534	1192	3.26
		1000	0.618672	1455	3.99
-4dBm	35m	100	5.13552	175	0.48
		200	2.60376	346	0.95
		400	1.33788	673	1.84
		500	1.084704	830	2.27
		800	0.70494	1277	3.50
		1000	0.578352	1556	4.26

注：以上数据可能因环境不同而有所改变，且未计入电池损耗，仅供参考。

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

3. 硬件使用说明/Hardware Instructions

3.1 VDB01 安装电池/ Install Battery

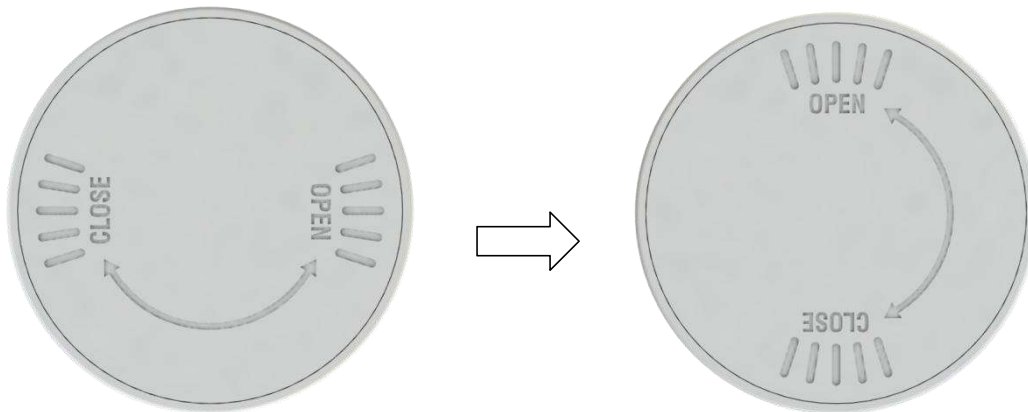
VDB01 安装电池后就会自动开机。默认情况下，出厂时已安装 CR2477 电池，并塞好了绝缘片。
VDB01 will start automatically after the battery is installed. By default, CR2477 batteries are installed and insulation sheet is inserted when it leave factory.

如果您需要更换电池，请遵循以下说明：

If you need to replace the battery, please follow the instructions below:

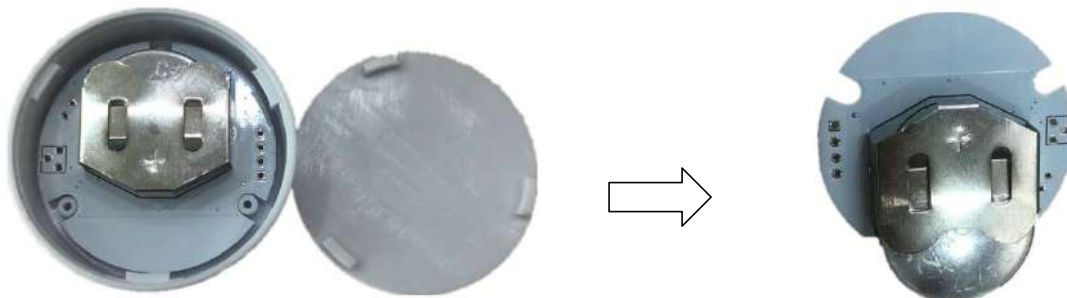
a. 一只手固定面壳，另一只手逆时针旋转后盖，取下后盖。

One hand fix the shell, the other hand turn the back cover counterclockwise and take off the back cover.



b. 取下旧电池，并更换 CR2477 纽扣电池，正极对着铁片，负极对着 PCBA 焊点。

Remove the old battery and replace the CR2477 coin-battery , positive to the iron sheet and negative to the PCBA.



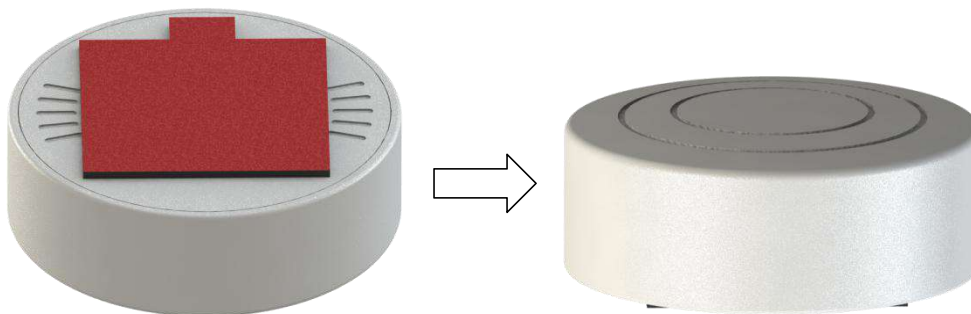
注意：请勿把电池方向装反！

Note: Don't put the battery in the wrong direction!

3.2 VDB01 安装固定方法/Mounting and Fixing Method

泡棉胶式安装/Thick Double-sided Tape Install

- a. 使用无尘布把 VDB01 后盖擦拭干净，防止使用过程中有灰尘或油污；
- a. Clean the back cover of VDB01 with a dust-free cloth to prevent dust or oil stains.
- b. 把泡棉胶片从油纸贴上揭掉，贴到 VDB01 后盖上。
- b. Remove the thick double-sided tape from the oil paper and attach it to the back cover of VDB01.
- c. 把 VDB01 贴泡棉胶一面放到平面上（如桌子上）均匀按压。
- c. Place the VDB01 on the thick double-sided tape side on a surface (such as a table) and press evenly.
- d. 撕掉红色泡棉胶保护膜，并把 VDB01 有泡棉胶一面贴到目标安装位置（选择合适贴装位置，目标位置如果有灰尘或油渍需要提前清理干净，并保持干燥）。然后均匀施力按压 5~10 秒。
- d. Tear off the red protective film of thick double-sided tape and attach the adhesive side of VDB01 to the target installation position (select the appropriate installation position, the target position should be cleaned in advance if there is dust or oil stains, and keep dry). Then apply force evenly and press for 5~10 seconds.



4. 软件使用说明/Software Instructions

95POWER_xbeacon 是 95POWER 研发团队开发的一款蓝牙 Beacon 软件，支持 iBeacon 和 Eddystone 两种模式，可灵活配置常用参数。

95POWER_xbeacon is a Bluetooth Beacon software developed by 95POWER research and development team. It supports iBeacon and Eddystone modes and can flexibly configure common parameters

4.1 下载应用程序/Download APP

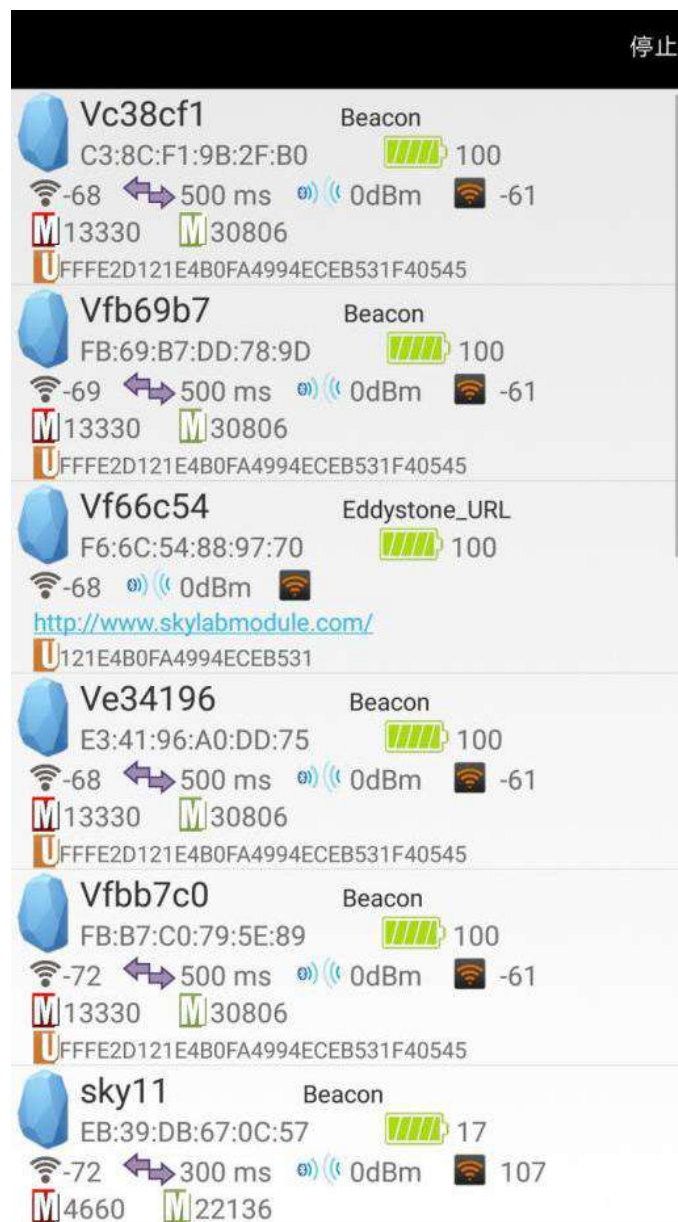
目前 APP 尚未上架，请联系销售人员提供，APP 名称 95POWER_xbeacon。

95power_xbeacon hasn't been put into the market yet. Please contact our sales team for this APP.

4.2 扫描蓝牙信标/Scan Bluetooth beacons

打开 APP，如果手机提示打开蓝牙，请允许，手机自动开始扫描周围的蓝牙信标，如下图。

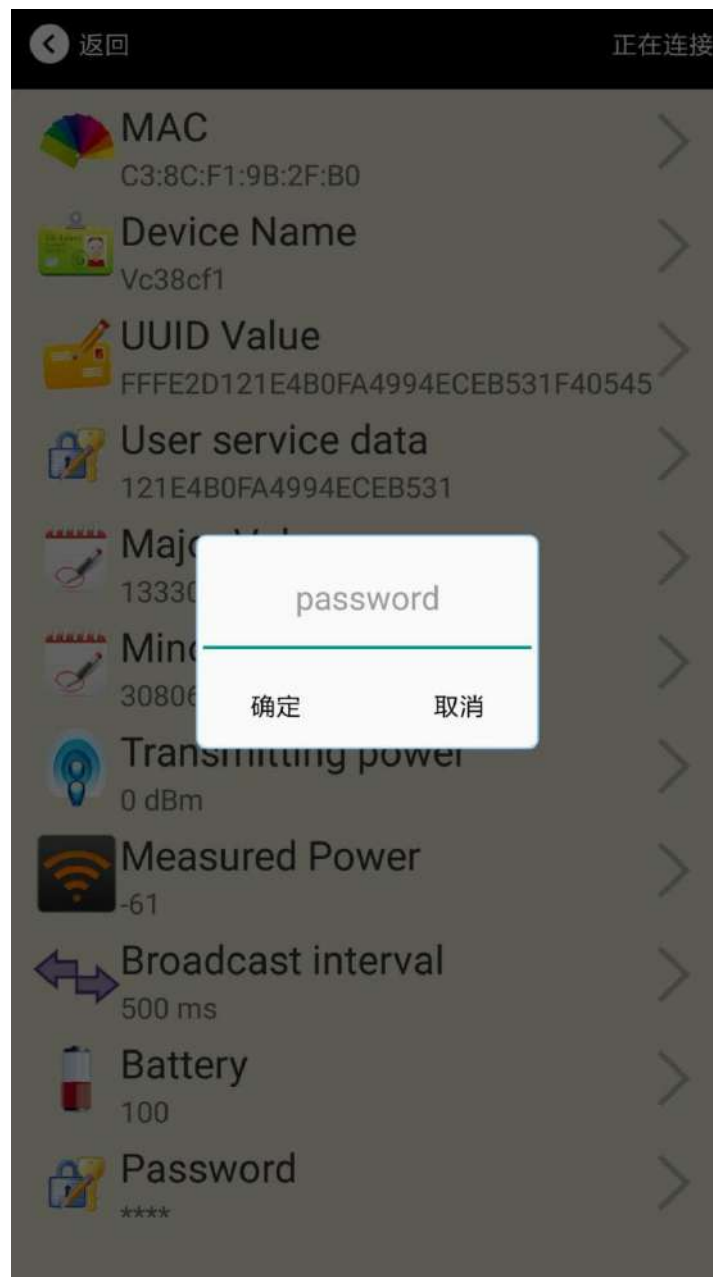
Open the APP, if cell phone ask for permission to open the Bluetooth function please select yes. Then it will begin to scan the surrounding Bluetooth Beacons, as shown below.



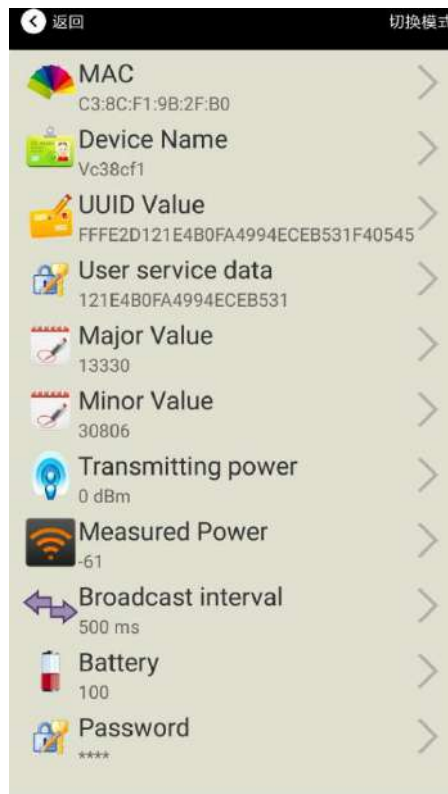
4.3 连接蓝牙信标/Connect Bluetooth 4.2 Beacon

点击要连接的蓝牙信标，30 秒内输入密码，即可获得操作权限。(出厂密码:1234)

Click the Beacon you want to connect, and enter the password within 30 seconds, in order to obtain operating privileges .(Factory Password:1234)



4.4 配置介绍/Configuration Introduction



介绍 Introductions:

MAC: MAC 地址/ Chip MAC address

Name: 所选蓝牙信标的名称/ The name of the Bluetooth 4.2 Beacon which is selected.

UUID: 按照 ISO/IEC11578:1996 标准的 128 位标识符(16 字节)/
128-bit identifier according to ISO/IEC11578:1996 standard (32 hexadecimal digits)

User service data: 用户数据, 24 个 16 进制数字 User data, 24 hexadecimal digits

Major: 16 位标识符(0-65535)/ set 16-bit identifier (0-65535)

Minor: 16 位标识符(0-65535)/ set 16-bit identifier (0-65535)

Measured Power: 距离 1 米时的参考信号强度
Signal strength at 1 meter (VDB01 transmission power is 0dBm)

Trasmit Power: VDB01 发射功率/ VDB01 transmit power

Advertise Interval: VDB01 广播间隔/ VDB01 advertise interval

Battery Level: VDB01 电池电量/ VDB01 battery Capacity

Password: VDB01 密码 (默认 1234) / VDB01 connection password

配置好信息后, 蓝牙连接断开, 配置将生效。

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

4.5 修改蓝牙信标名称/Modify Bluetooth 4.2 Beacon Name

点击“Device Name”，出现以下 UI，然后在“输入一个名称”框中输入长度小于 12 位的英文字符名称，也可以在“或者选一个”里选一个名称。然后点击“确认修改”。

Click the “Device Name”, the following UI will be opened. Then enter a length of less than 12-bit English characters as VDB01 device name in the following “Enter a Name” box. Then click “confirm to modify”.



4.6 修改 UUID/Modify UUID

点击“UUID”，出现以下 UI，然后在“输入一个 UUID 值”框中输满 16 个字节（32 个十六进制字符）作为 VDB01 的 UUID。然后点击“确认修改”。

Click the “UUID”, ,the following UI will be opened. Then and then enter a 32-byte string of sixteen as the UUID of VDB01 in the following “Enter an UUID” box. Then click “confirm to modify”.



4.7 修改 User service data/Modify User service data

点击“User service data”，出现如下界面，在“输入用户数据”中输入 24 个 16 进制字符。然后点击“确认修改”。

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



4.8 修改 Major、Minor/Modify Major、Minor

点击“Major”，出现如下界面，设置 0~65535 为设备的 Major 值。然后点击“确认修改”。Minor 类似，点击 Minor 进入修改即可。

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”. Minor is similar, click Minor to enter modify.

 back

 **Major**
13330

Enter Major

or choose one

12345

22222

56666

confirm to modify

From 1 to 65535choose a value to match
Major

 back

 **Minor**
30806

enter Minor

or choose one

12345

22222

56666

confirm to modify

From 1 to 65535choose a value to match
Major

4.9 修改 Measured Power/Modify Measured Power

点击“Measured Power”，出现如下 UI，在距离 VDB01 1 米远处，设置测量功率，可调范围 -100dBm~-30dBm，默认为-61dBm。然后点击“确认修改”。

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 含义为，当接收设备接收到的信号强度为-61dBm 时，可认为该设备距离 VDB01 约为 1 米。

Measured Power means, when a phone's RSSI is -61dBm, it is about 1 meter from VDB01.



4.10 修改发射功率/Modify Transmitting Power

点击“Transmission Power”出现如下 UI，设置 VDB01 的发射功率。功率可设置为:-30dBm, -20dBm, -16dBm, -12dBm, -8dBm, -4dBm, 0dBm, 4dBm。默认是 0dBm。然后点击“确认修改”。

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 修改广播间隔/Modify Advertise Interval

点击“广播间隔”出现如下 UI，设置广播间隔，广播间隔可以设置为 100ms、200ms、300ms、400ms、500ms、600ms、700ms、800ms、900ms 和 1000ms。默认为 500ms。然后点击“确认修改”。

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 修改密码/Modify Password

点击“Password”，出现如下 UI，然后在“Password”框中输入 4 个字符作为连接密码，默认为 1234。然后点击“确认修改”。

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”.



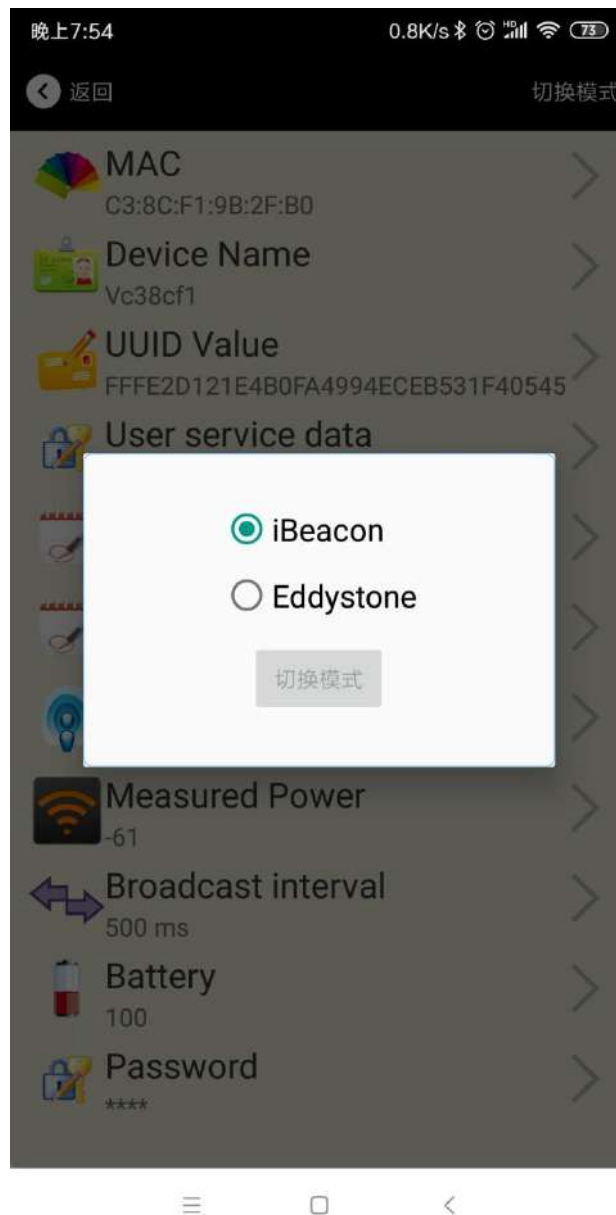
注意：请提前保存好您的密码，一旦修改新密码，原密码将失效，必须用新密码才能登陆。

Note: Please save your password in advance, once you change the new password, the original password will be invalid, you must use the new password to log in.

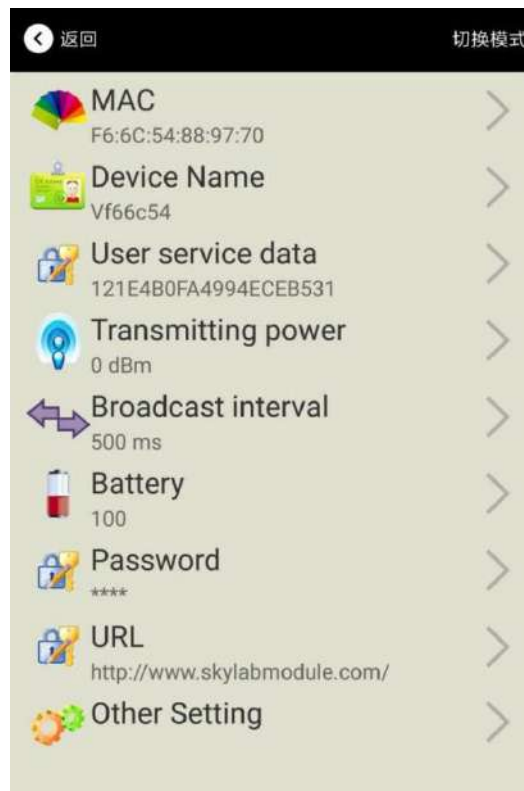
4.13 切换模式/Switch mode

点击右上角切换模式文字，出现模式选择窗口，点选 Eddystone。

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 配置页面简介/Eddystone configuration page Introduction



简介:

MAC: MAC 地址/ Eddystone configuration page Introduction

Name: 蓝牙信标的名称，配置方式同 iBeacon 模式。/The name of the Bluetooth 4.2 Beacon which is selected.

User service data: 用户自定义的数据，配置方式同 iBeacon 模式。/User-defined data in broadcasting

Transmit Power: VDB01 发射功率，配置方式同 iBeacon 模式。/VDB01 transmit power

Advertise Interval: VDB01 广播间隔，配置方式同 iBeacon 模式。/VDB01 advertise interval

Battery Level: VDB01 电池电量。/VDB01 battery Capacity

Password: VDB01 连接密码，配置方式同 iBeacon 模式。/VDB01 connection password

URL: 修改 Eddystone 字段信息。默认格式是 URL。/Modify the Frame field information in Eddystone. The default format is URL. Other Formats can be selected by other setting

Other Setting: 用于选择 Eddystone 其他字段信息。/Format selection of Frame field information in Eddystone.

配置好信息后，蓝牙连接断开，配置将生效。

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

4.15 修改 URL /Modify URL

点击“URL”，出现如下 UI，然后在“url”下划线上输入最多 16 字节的字符串，即可广播 URL。

Click "URL", the following UI appears, and then enter a string of up to 16 bytes on the "url" underscore, you can broadcast the URL.



4.16 修改 Other Setting/Modify Other Setting

a.选择并设置 UID 信息/Select and set the UID information:

分别设置 NameSpace(10 字节)和 Instance(6 字节)。

Set NameSpace(10 bytes) and Instance(6 bytes) respectively



晚上8:02 8.9K/s 蓝牙 信号 72

< 返回

 EddyStone Uid Value

输入一个 NameSpace 值

输入16进制格式的10个字节

输入一个 Instance 值

输入16进制格式的6个字节

确认修改

b.选择并设置 EID 信息 Select and set the EID information:

设置 EID 信息，最多 8 个字节。

Set the EID information to a maximum of 8 bytes.



c.选择并设置 TLM 信息 Select and set TLM information:

推荐选择 Encrypted TLM specification（加密的 TLM 规范），然后输入分别输入最多 12 字节的 Encrypted TLM data(加密 TLM 数据), 2 字节的 16-bit Salt, 以及 2 字节的 16 bit Message Integrity Check
It is recommended to select the Encrypted TLM Specification, then enter up to 12 bytes of Encrypted TLM Data, 2 bytes of 16-bit Salt, and 2 bytes of 16-bit Message Integrity Check.



5.联系信息/Content

深圳市微能信息科技有限公司

95Power Information Technology Co., Ltd

地址：深圳市龙华区工业东路利金城工业园 9 栋 6 楼

Address: 6 Floor, Building 9, Lijincheng Scientific & Technical Park, Gongye East Road, Longhua District, Shenzhen

电话 **Tel:** 86-755 23779409

传真 **Fax:** 86-755 23779409

邮箱 **E-mail:** sales@95power.com.cn

网页 **Website:** www.95power.com.cn