蓝牙信标

VDB1615规格书/datasheet

文档信息	
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修订历史/Revision History

修订/ revision	描述/description	修改人/modifier	日期/date
V1.01	最初版本/initial release	谢晓博/sherman	20201111

此文档适用于以下产品：

产品名称	产品型号	产品状态
Beacon	VDB1615	量产

目录

列表

设备名称	型号	数量	备注
蓝牙信标	VDB1615	1 个	
电池	ER14250	2 个	默认安装在 VDB1615 内部

List

Device Name	Device No.	Number	Remark
Bluetooth 4.2 Beacon	VDB1615	1 PCS	
Battery	ER14250	2 PCS	Inside VDB1615

1.产品介绍/Product Introduction

VDB1615 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。

VDB1615 is a Bluetooth Beacon device. It uses a broadcasting protocol which is based on BLE (Bluetooth Low Energy). VDB1615 broadcasts its general cofig 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.

1.1 VDB1615 内部介绍/Internal introduction

VDB1615 基于 Nordic BLE 4.2 芯片。其内部由 2 节 ER14250 电池供电，电池续航时间与 VDB1615 广播参数有关。

VDB1615 is based on Nordic Bluetooth 4.2 chip. It is powered by 2 ER14250 batteries. Its battery life is related to the internal broadcasting parameters.

1.2 VDB1615 特性/features

低功耗 Low Power Consumption

体积小、重量轻、造型美观 Small,Lightweight,Beautiful appearance

APP 可灵活配置参数 Flexible Application

安装方便(可磁吸/3M 胶安装)

Easy to Install(use 3M sticky tape)

广播范围最大可达 100 米

Advertise Range up to 100 Meters

符合 RoHS (无铅) RoHS compliance (Lead-free)

符合 FCC, CE FCC,CE compliance

1.3 VDB1615 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	VDB1615
天线类型 Antenna Type	PCB 天线 PCB Antenna
电池 Battery	ER14250 2 * 1200 mAh
标称电压 Voltage	3.6 v
尺寸(D×H) Dimension(D×H)	52.0 * 23.2(±0.3)mm
无线功能 Wireless Features	
无线标准 Wireless Standards	蓝牙®4.2 Bluetooth ® 4.2
频率范围 Frequency Range	2400MHz——-2483.5MHz
数据速率 Data Rates	250 kbps / 1 Mbps / 2 Mbps
调制技术 Modulation Technique	GFSK 调制
无线安全 Wireless Security	AES
传输功率 Transmit Power	-20~+4 dBm 可调，步长 4 dB Tx Power -20 to +4 dBm in 4 dB Steps
灵敏度 Sensitivity	-93dBm at 1Mbps BLE
工作模式 Work Mode	Peripheral
其他 Others	

工作环境 Environment	工作温度:-40℃~ 85℃ Operating Temperature: -40℃~85℃
	储存温度:-40℃~ 85℃ Storage Temperature: -40℃~85℃
	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

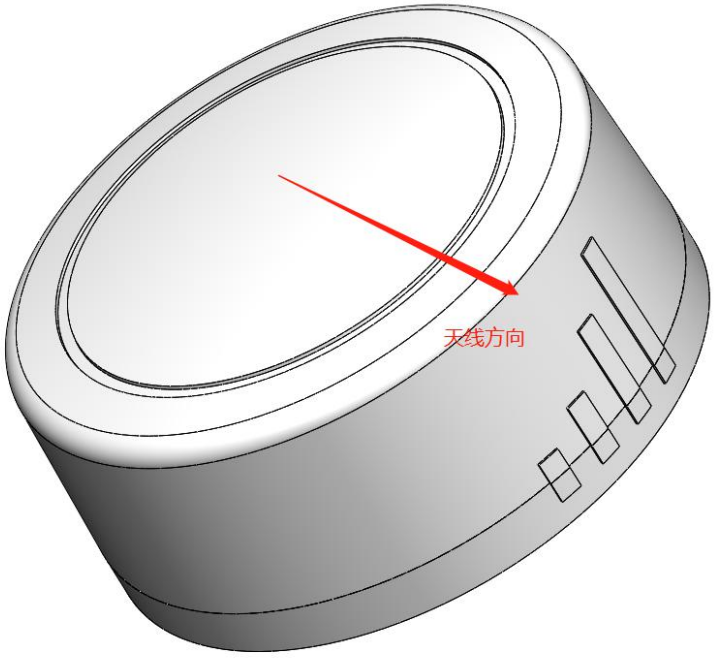
发射功率(dBm) Transmission Power (dBm)	广播距离(m) Broadcast Distance (m)	广播间隔(ms) Broadcast time interval (ms)	一天的功耗(mAh) Power consumption per day (mAh)	待机时长(天) Battery life (days)
4	70	100	8.70984	276
		400	2.23146	1076
		500	1.799568	1334
		1000	0.935784	2565
0	50	100.	5.82984	412
		400	1.51146	1588
		500	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

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。

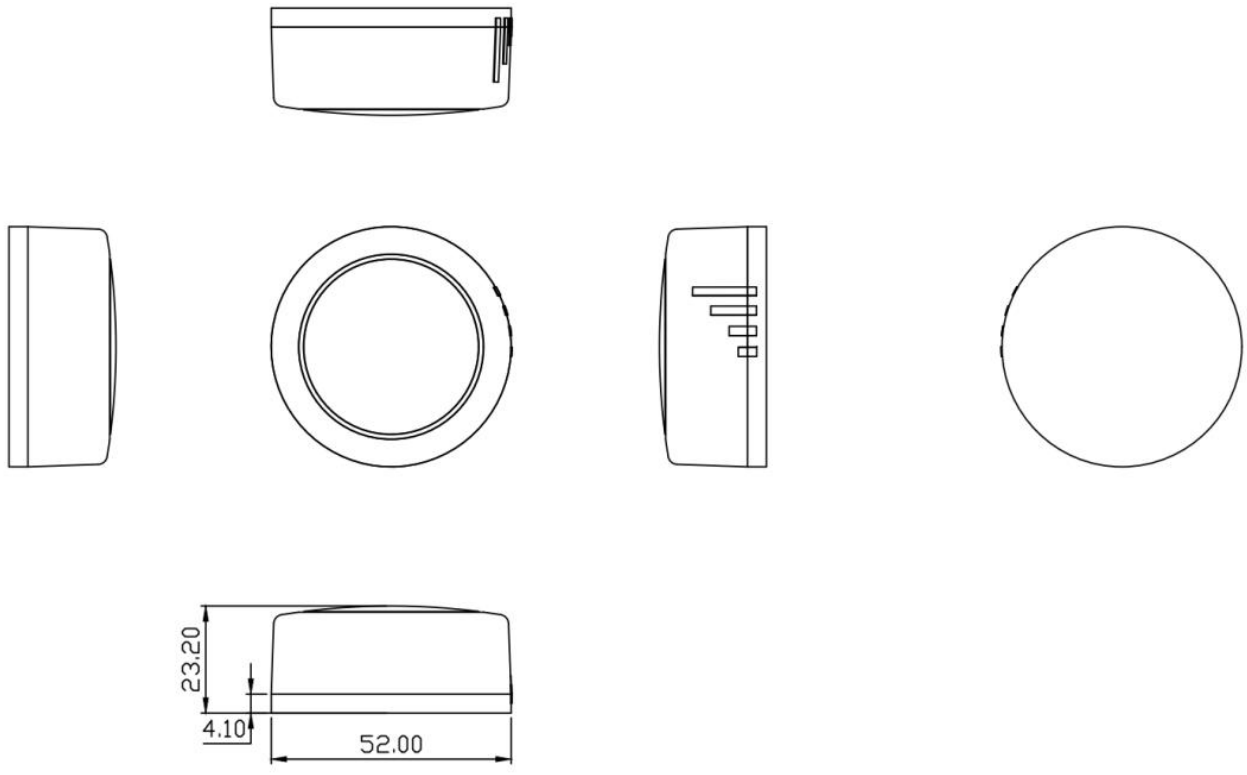
Attention:

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

2.3 结构参数/structural parameters



：天线方向指 PCB 板载天线信号强度最强的方向



3. 硬件使用说明/Hardware Instructions

3.1 VDB1615 安装电池/ install battery

VDB1615 安装电池后就会自动开机。默认情况下，出厂时已安装 2 节 ER14250 电池，并塞好了绝缘片。

VDB1615 will start automatically after the battery is installed. By default, two ER14250 batteries are installed and plugged in from the factory.

如果您需要更换电池，请遵循以下说明。

If you need to replace the battery, follow the instructions below.

一只手固定面壳，另一只手顺时针旋转后盖，取下后盖。

Holding the shell in place with one hand, remove the back cover by rotating it clockwise with the other hand.

取下旧电池，并更换更换 2 节 ER14250 锂电池，负极对弹簧，正极对铁片，两节电池并联，方向相同。

Remove the old batteries, and replace the two ER14250 lithium batteries, negative pole to spring, positive pole to iron, two batteries in parallel, the same direction

注意！千万不能把电池方向装反！

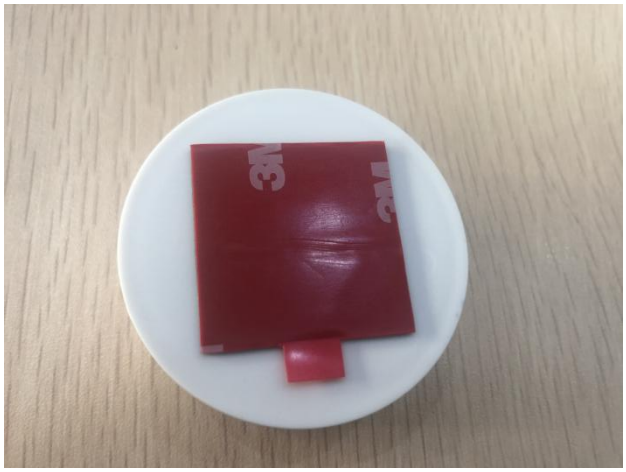
Attention！Don’t put the battery in the wrong direction!

重新安装后壳，请把后盖和面壳上有天线信号标志的方向对齐。

Reinstall the rear cover. Align the direction of the antenna signal mark on the rear cover and the face cover.

3.2 VDB1615 安装固定方法/Mounting and fixing method

3M 胶式安装



a.使用无尘布把 VDB1615 后盖擦拭干净，防止使用

过程中有灰尘或油污；

Clean the back cover of VDB1615 with a dust-free cloth to prevent dust or oil stains during use

b.把 3M 胶片从油纸贴上揭掉，贴到 VDB1615 后盖上。并把红纸撕掉。

Remove the 3M film from the oil paper and attach it to the back cover of VDB1615. And tear off the red paper

c.把 VDB1615 贴 3M 胶一面放到平面上（如桌子上）均匀按

压.

Place the VDB1615 on the 3M adhesive side on a surface (such as a table) and press evenly.

d.撕掉 3M 胶保护膜，并把 VDB1615 有 3M 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。

Tear off the protective film of 3M adhesive and attach the 3M adhesive side of VDB1615 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

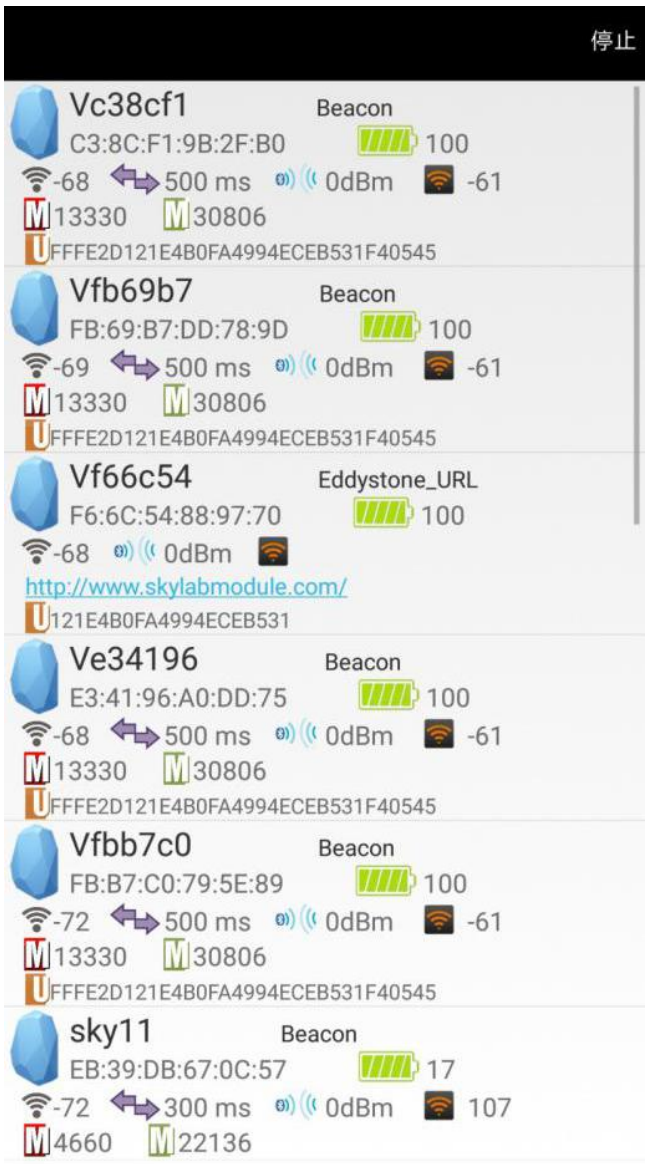
目前 APP 尚未上架，请联系销售人员提供，APP 名称 95POWER_xbeacon。

95power_xbeacon hasn’t been put into the market yet. Please contact our salesman 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。

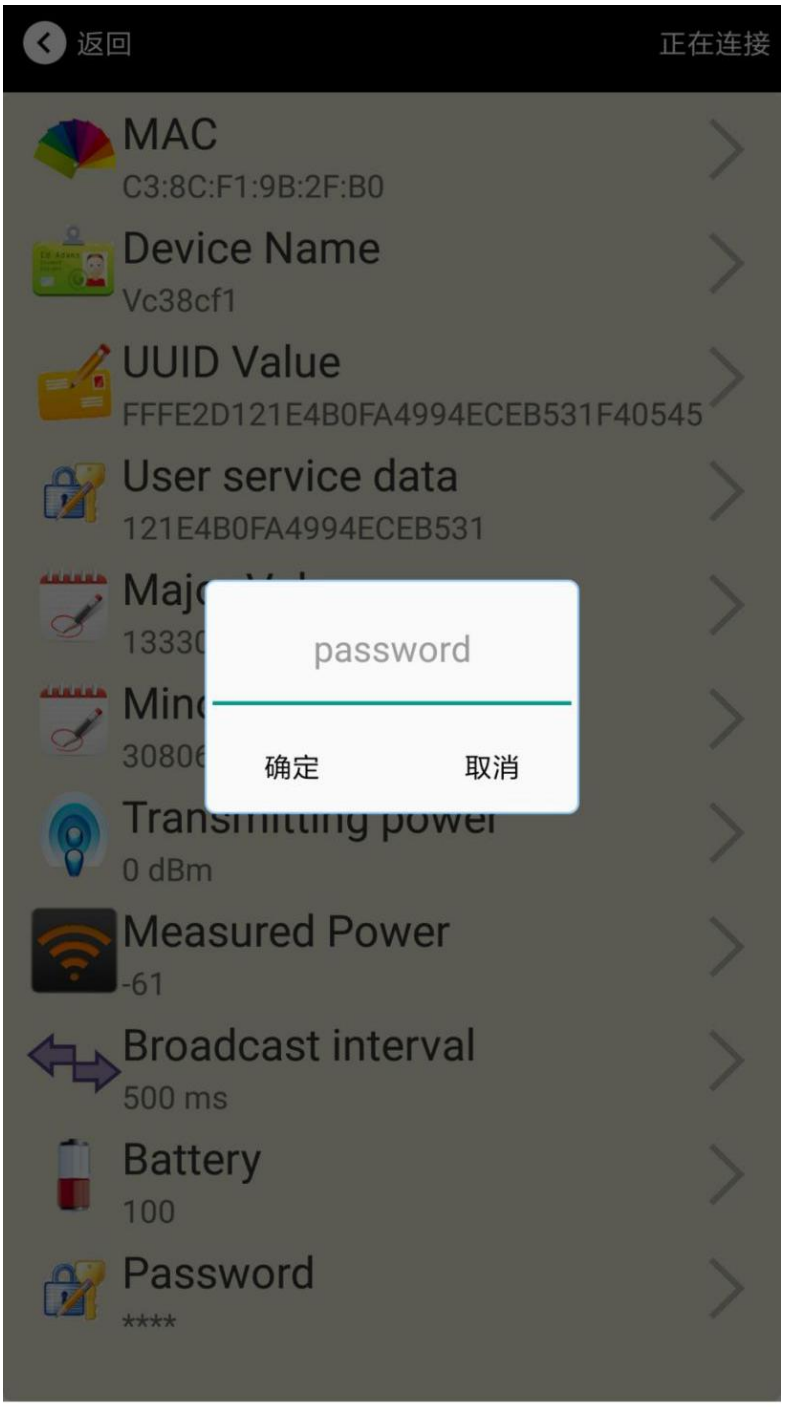
Open the APP, if cell phone ask for permission to open bluetooth please select yes. Then it will begin to scan the surrounding Bluetooth 4.2 Beacons.



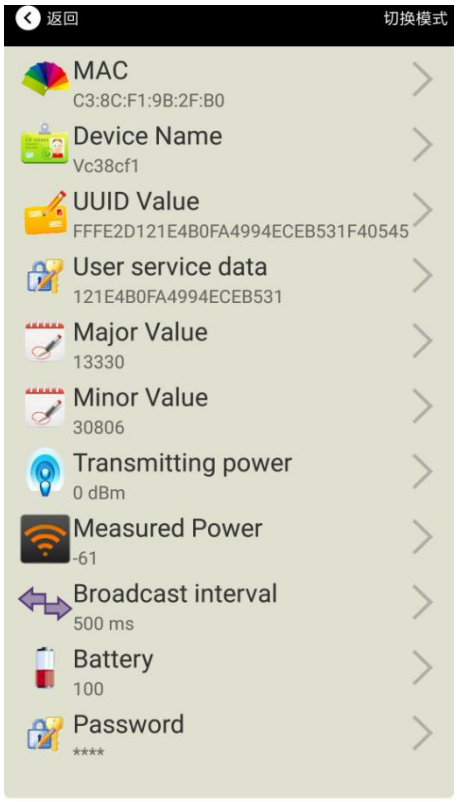
4.3 连接蓝牙信标/Connect Bluetooth 4.2 Beacon

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 Bluetooth 4.2 Beacon to be connected, 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（VDB1615 transmission power is 0dBm）

Trasmit Power:VDB1615 发射功率 VDB1615 transmit power

Advertise Interval:VDB1615 广播间隔 VDB1615 advertise interval

Battery Level:VDB1615 电池电量 VDB1615 battery Capacity

Password:VDB1615 密码（默认 1234）VDB1615 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 VDB1615 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 VDB1615 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 VDB1615 in the following “Enter an UUID” box. Then click “confirm to modify”.

4.7 修改 User service data/Modify User service data

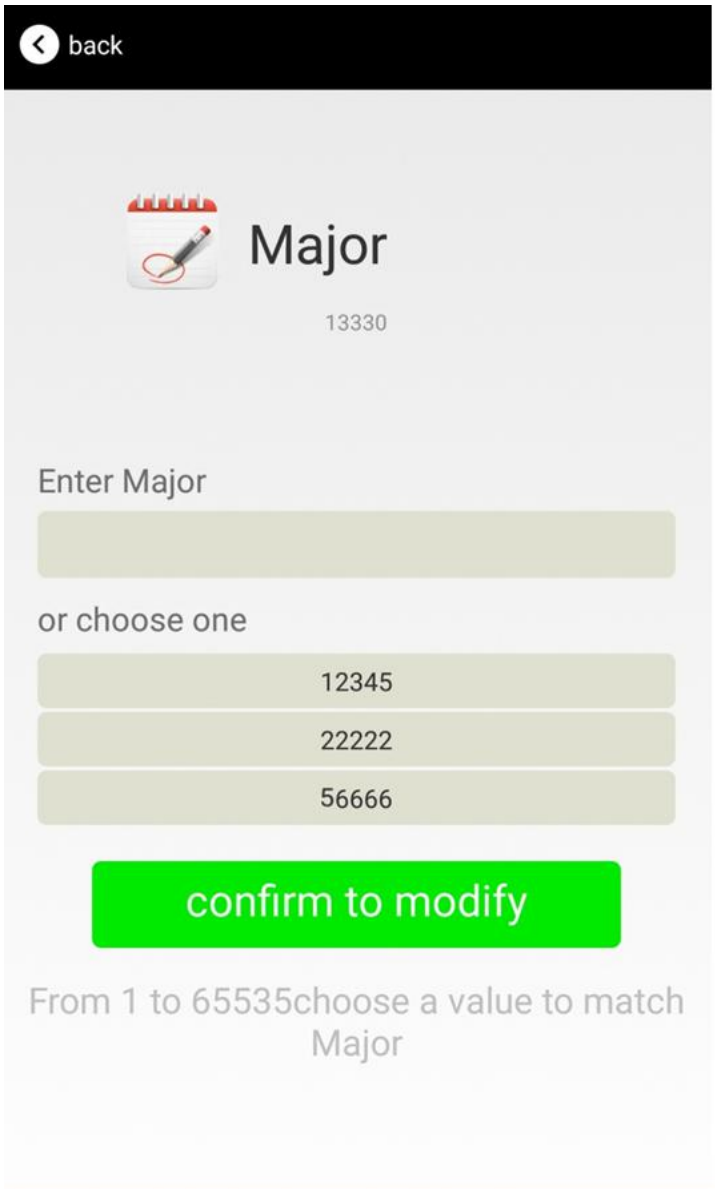
点击“User service data”，出现如下界面，在“输入用户数据”中输入 24 个 16 进制字符。然后点击“确认修改”。

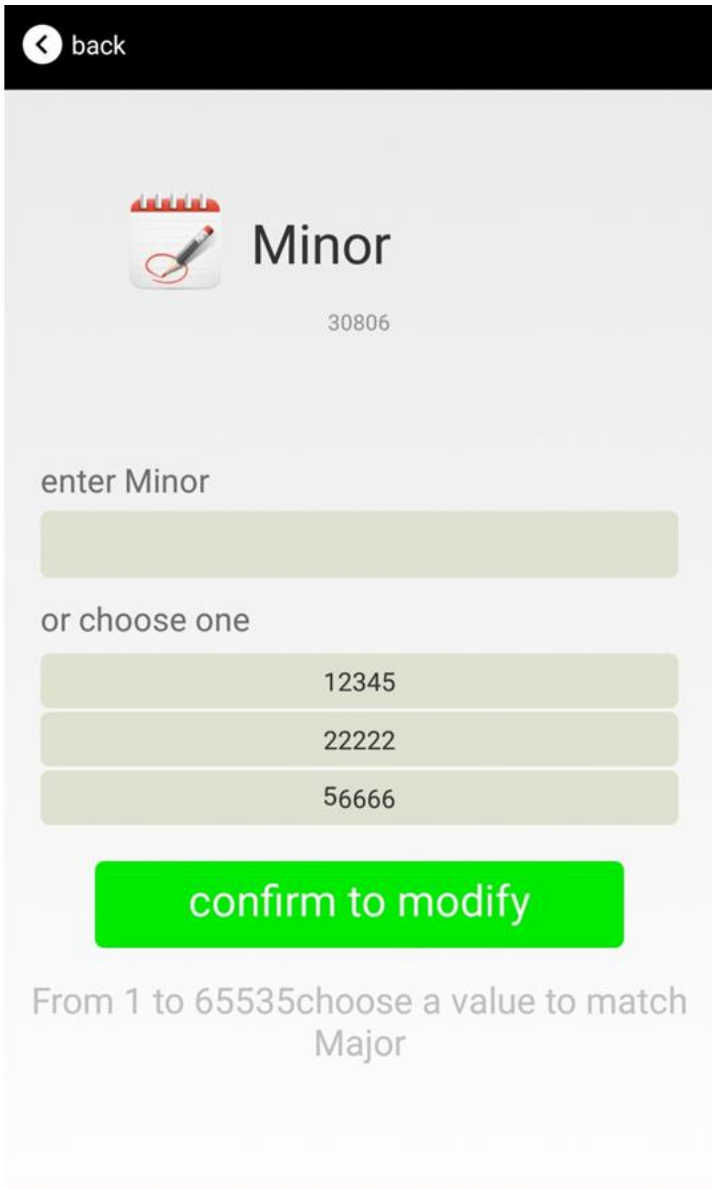
Click the " User service data ", the following interface will be opened. Then enter a Hexadecimal string of 24 word . Then click “confirm to modify”.

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.





4.9 修改 Measured Power/Modify Measured Power

点击“Measured Power”，出现如下 UI，在距离 VDB1615 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”.

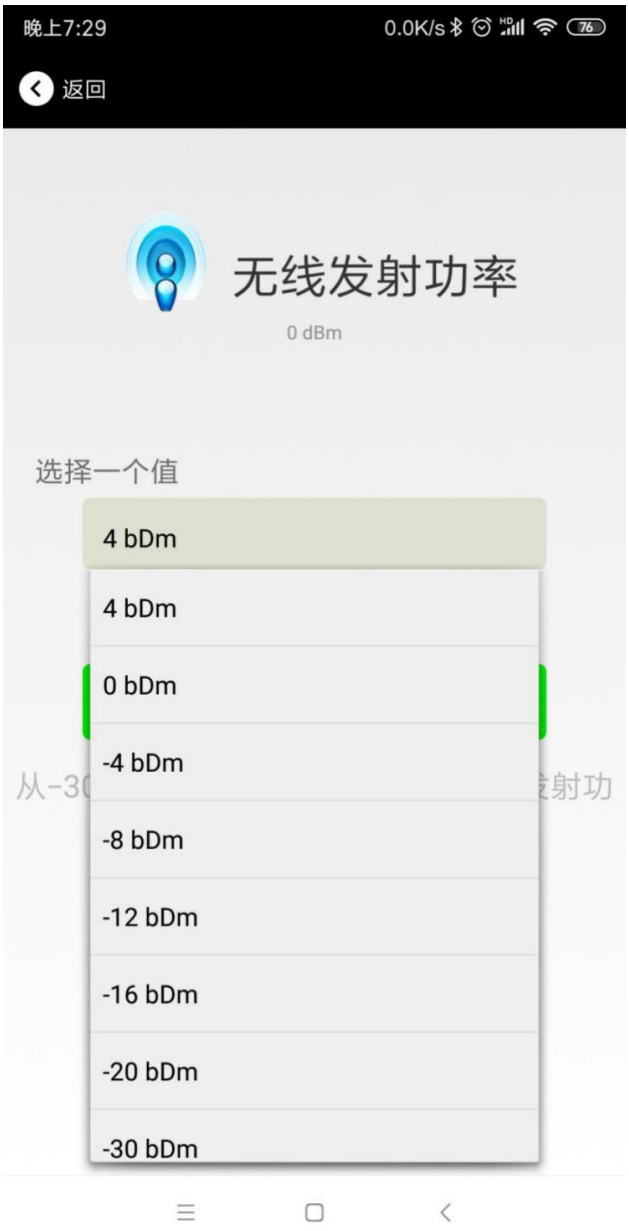
Measured Power 含义为，当接收设备接收到的信号强度为-61dBm 时，可认为该设备距离 VDB1615 约为 1 米。

Measured Power means, when a phone’s RSSI is -61dBm, it is about 1 meter from VDB1615.

4.10 修改发射功率/Modify Transmitting Power

点击“Transmission Power”出现如下 UI，设置 VDB1615 的发射功率。功率可设置为:-30dBm， -20dBm， -16dBm，-12dBm， -8dBm， -4dBm, 0dBm, 4dBm。默认是 0 dBm。然后点击“确认修改”。

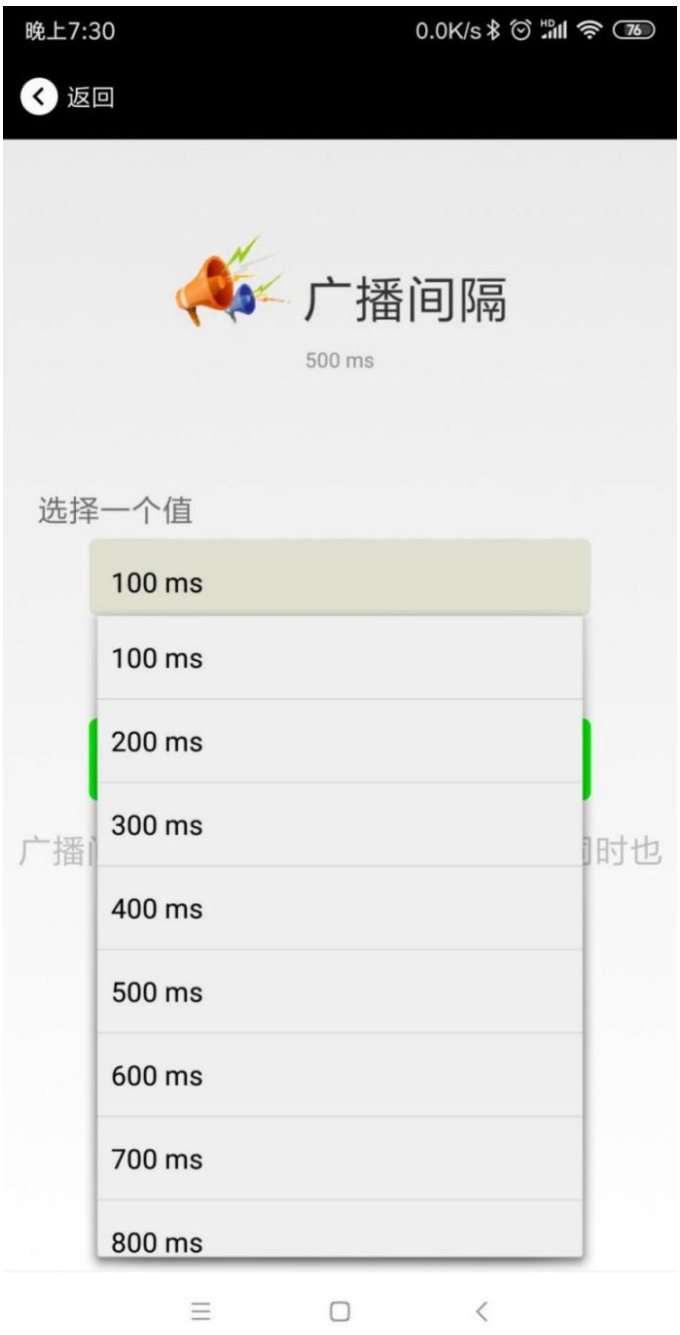
Click the "Transmitting Power" ,the following UI will be opened. Then set a transmitting power, which can be set to: -30dBm, -20dBm, -16dBm, -12dBm, -8dBm, -4dBm, 0dBm, 4dBm and 8dBm. Default Power is 0dBm. Then click “confirm to modify”.



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。

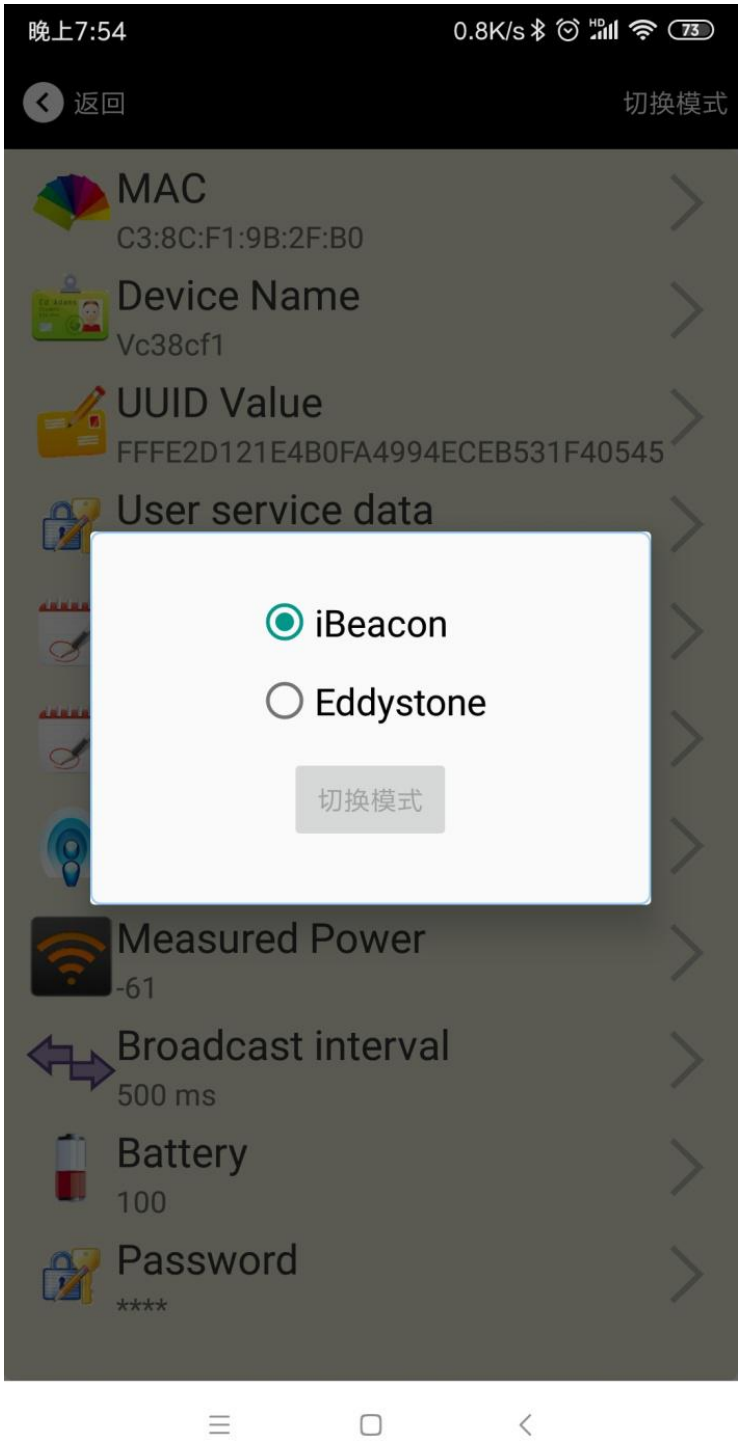
!!! Note:

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.

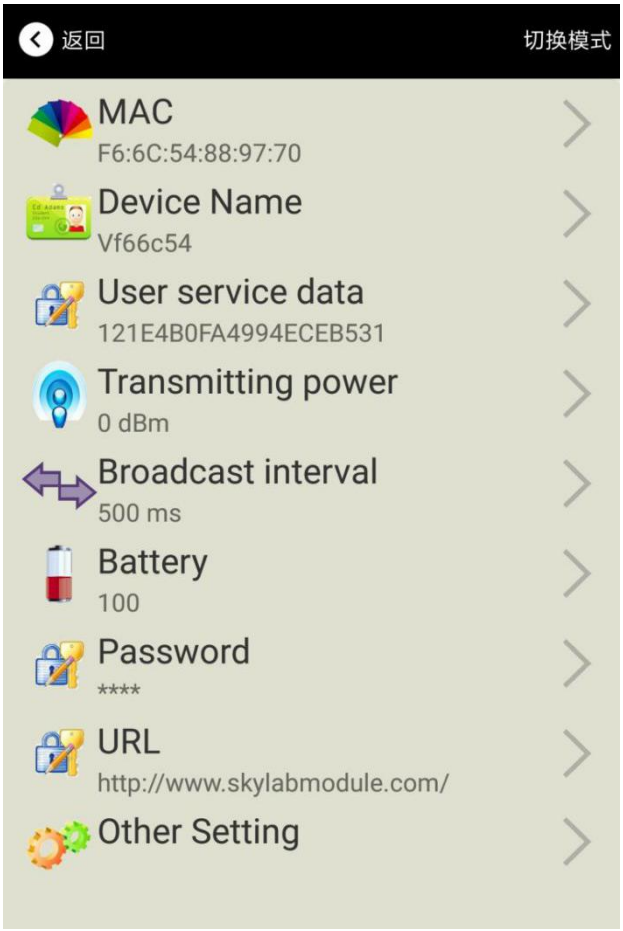
4.13 切换模式/Switch mode

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:VDB1615 发射功率，配置方式同 iBeacon 模式。/VDB1615 transmit power

Advertise Interval:VDB1615 广播间隔，配置方式同 iBeacon 模式。/VDB1615 advertise interva

Battery Level:VDB1615 电池电量。/VDB1615 battery Capacity

Password:VDB1615 连接密码，配置方式同 iBeacon 模式。/VDB1615 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。

Fornat selection of Frame field information in Eddystone.

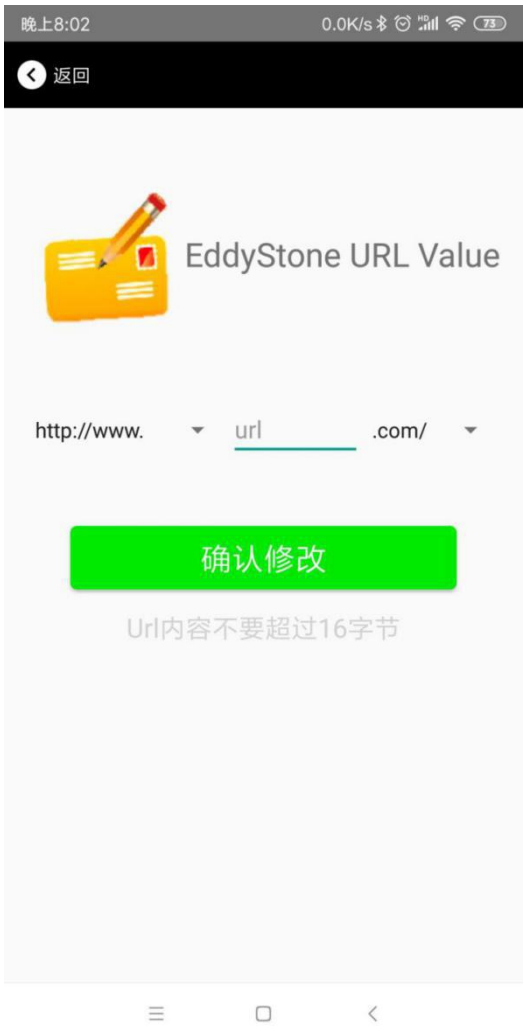
配置好信息后，蓝牙连接断开，配置将生效。

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

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)。

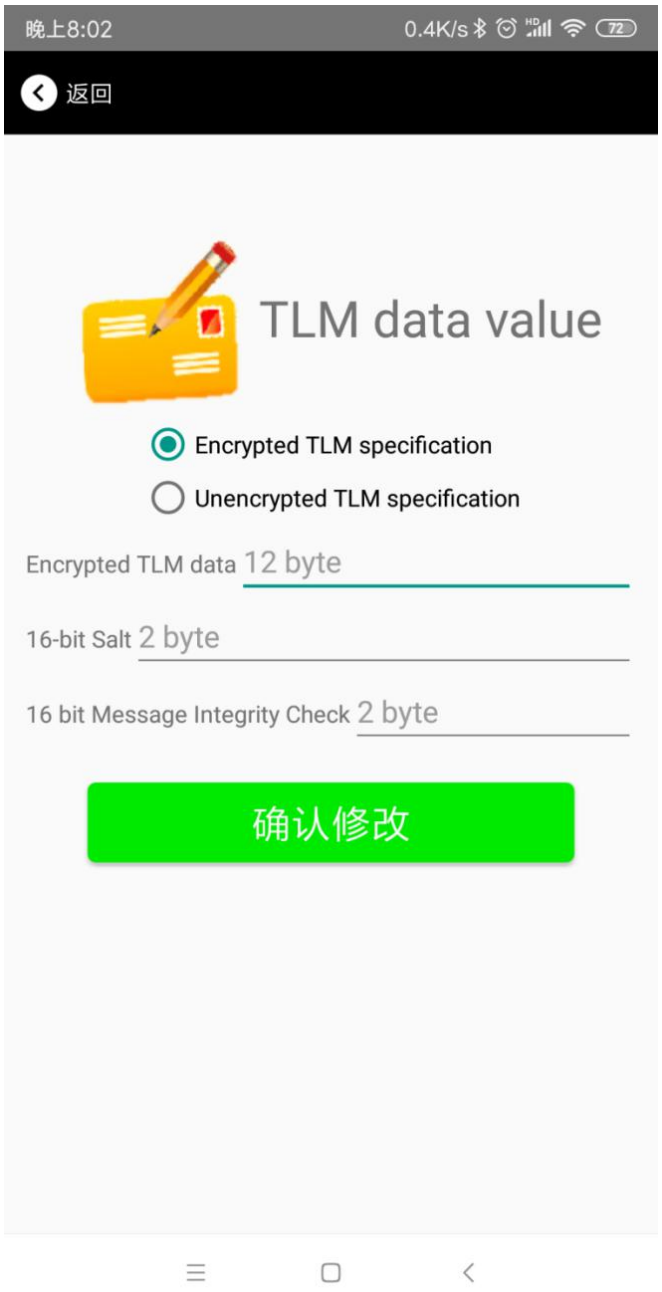
Set NameSpace(10 bytes) and Instance(6 bytes) respectively

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.

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

t 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

95Power Information Technology Co., Ltd

深圳市微能信息科技有限公司

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

Tel: 86-755 23779409

Fax: 86-755 23779409

E-mail: sales@95power.com.cn

Website: www.95power.com.cn