# WELLCORE®iBeaconW955Series

Product Specification V1.08-2018

Bluetooth BLE 4.0

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# 1 Product introduction:

## 1.1 summarize

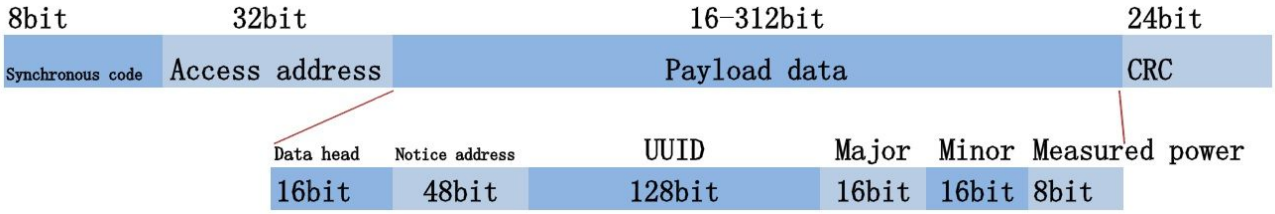
iBeacon isaBLE (Bluetooth low energy)introduced by Apple's Bluetooth application, a technologythat can be usedindoor positioning, to a certain extent,be used tocompensate for the lackof poor locate for GPSin the room, butiBeaconis different fromGPSpositioning principle, iBeaconpositioning iscalculatedbythe signal strengthreceived by the receivertodetermine the distancebetween the two, iBeaconcontinuingtransmitting broadcastinformationwhich contains a specificMACaddress, UUID, MAJOR, MINOR, etc., when the phonereceives theAPPYou

candeterminewhenthis broadcastinformationiBeaconlocation, but also by APPmobile clienttells the serverhasaccess to theiBeaconbroadcast area. iBeaconsend tophone only broadcast informationwithoutany other information,but according tobroadcastinformationsent byiBeacon , the phone can downloadrequired information in relevant server.

### 1.2 iBeacon technical introduction

iBeacon broadcast frame using "announcement frame" (Advertising) to send the message, the notice issued by a periodic frame with BLE devices (iBeacon), as long as the support BLE terminal can receive the signal. Announcement frame payload portion, and writes the data defined by Apple. iBeacon data mainly constituted by the four kinds of information, namely, UUID (Universal Unique Identifier), Major, Minor, Measured Power. UUID is defined as ISO/IEC11578: 1996 standard 128-bit identifier. Major and Minor iBeacon set by the owner, is a 16-bit identifier. For example, stores can use UUID name on behalf of the head office, Major representatives of regional names, Minor behalf of a shop name Measured Power is iBeacon distance between the module and the receiver reference received signal strength at 1 m. (RSSI: Received Singnal Strength Indicator) , the receiver of the reference RSSI based on the intensity of the received signal to the receiver module and calculating iBeacon distance.

As Measured Power, because Apple's iOS is not careful in judging distance, while using only close (Immidiate), 1m or less (Near), 1m or more (Far) from three kinds of states. When the distance less than 1m, RSSI value is substantially proportional to the reduction, a more accurate distance, the distance 1m in the above, the influence of the reflected waves and the like, RSSI but not significantly reduce fluctuations. In other words, when you can not be inferred from the above 1m apart, so simply judged Far.




**IBeaconData frame structure**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# 2 Technical parameter setting:

### 2.1 UsePlatform

Receiving end (mobile) hardware must be Bluetooth 4.0 or more, the software requires Android 4.3 or above Apple IOS7.0 more.

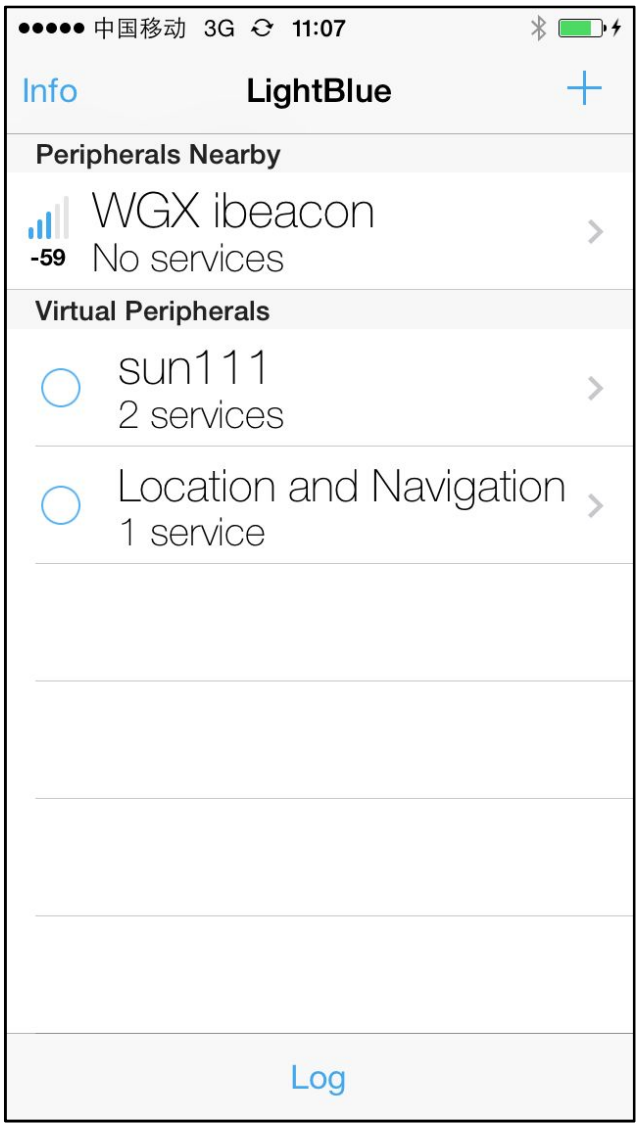
### 2.2 TestSoftware

SoftwareName: Light blue, the softwarecan be downloaded freefromthe AppleAPPstore.

## 2.3 Light bluemenu Introduction

Open the software Light blue, this time will automatically search out iBeacon device can also be connected to the sliding screen refresh Equipment, open software displays the following figure, this time in the menu Peripherals Nearby displayed at WGX ibeacon It means that the search has been successful to the device, the device name is WELLCORE factory default settings, the user can modify Refer to Section 2.9 to modify the method.

Figure 1





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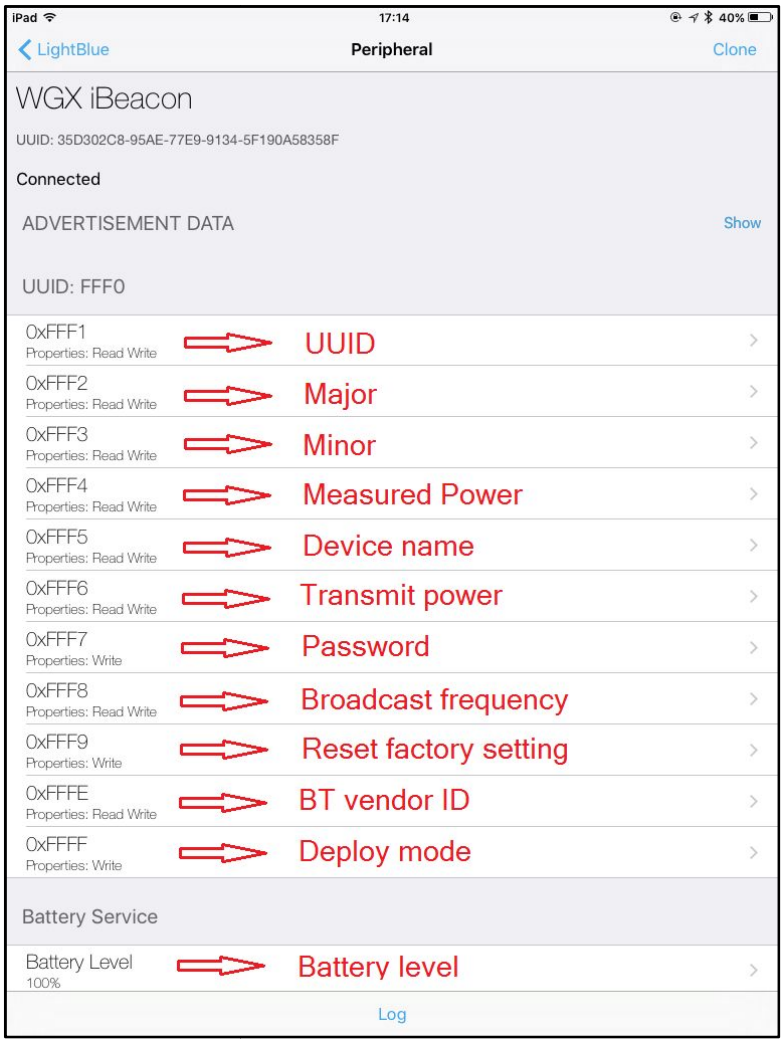
Clickbelow (Figure1) name of the deviceicon: WGX ibeacon, thenenter(Figure 2) interface, this menuhasall the informationlistedibeacon, Battery Level (100%)thisindicates that the currentcapacityof100% (3.0V),powerlow than 2.0Vthenshow 0%.

Figure 2





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## 2.4 The login password and how to modify.

Attention: For the iBeacon we provide, the login password is needed if want to check or modify Device Parameters. The original code is:140611,Please see Figure3-5 for the right way of Entering the password.Before entering the right password, it all shows 0(Figure 3 ) on the Icon:READ again.Click: Write new value(Figure 3 ),start to enter the password(Figure 4 ), nowEnter

AA140611,Prefix AA means enter password,Click done when finished.now you canCheckModify other parameters, It means the password is wrong if you can not see theparameters,Then need to enter the right password.

Modify password(Figure 5 ): Only can modify the password when the right passwordhas been put in. For example if you need to modify password to be : 123456,then youNeedEnter AC123456, Prefix AC means modify password,the password can be6-20 letters.ClickDone when finished.

Figure 3

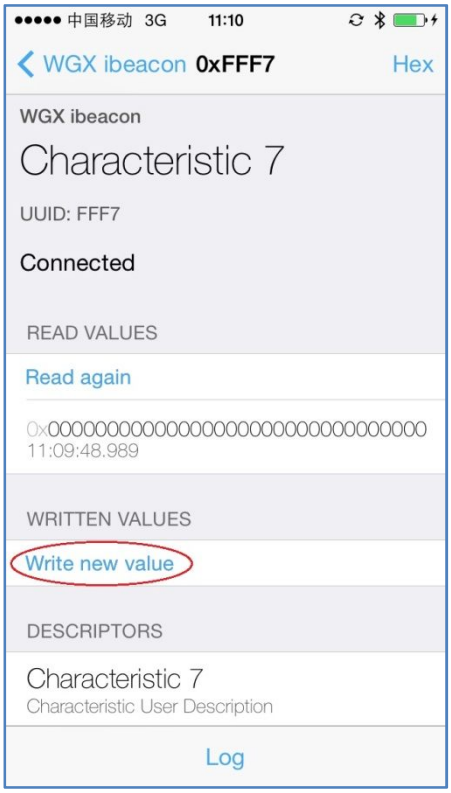



Figure 4

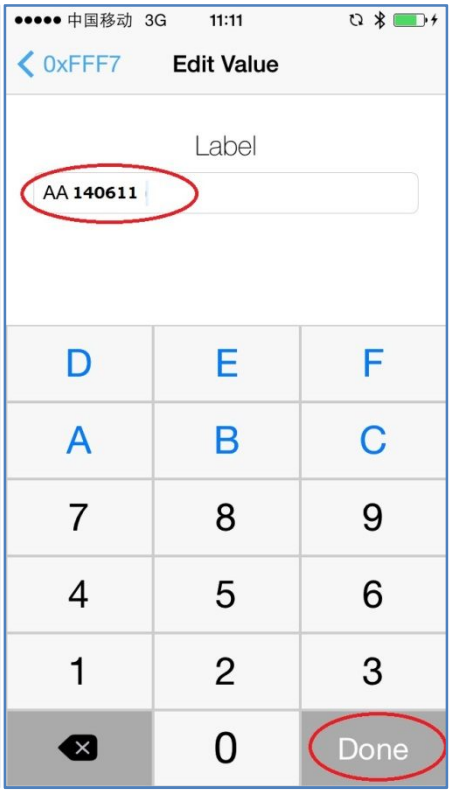
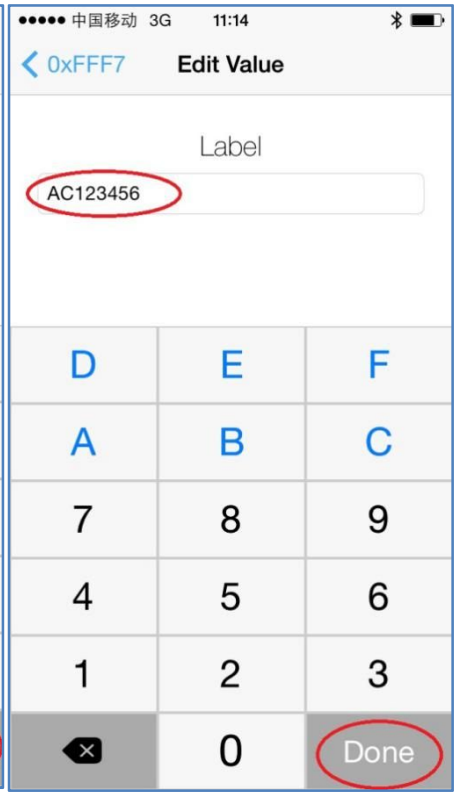



Figure 5





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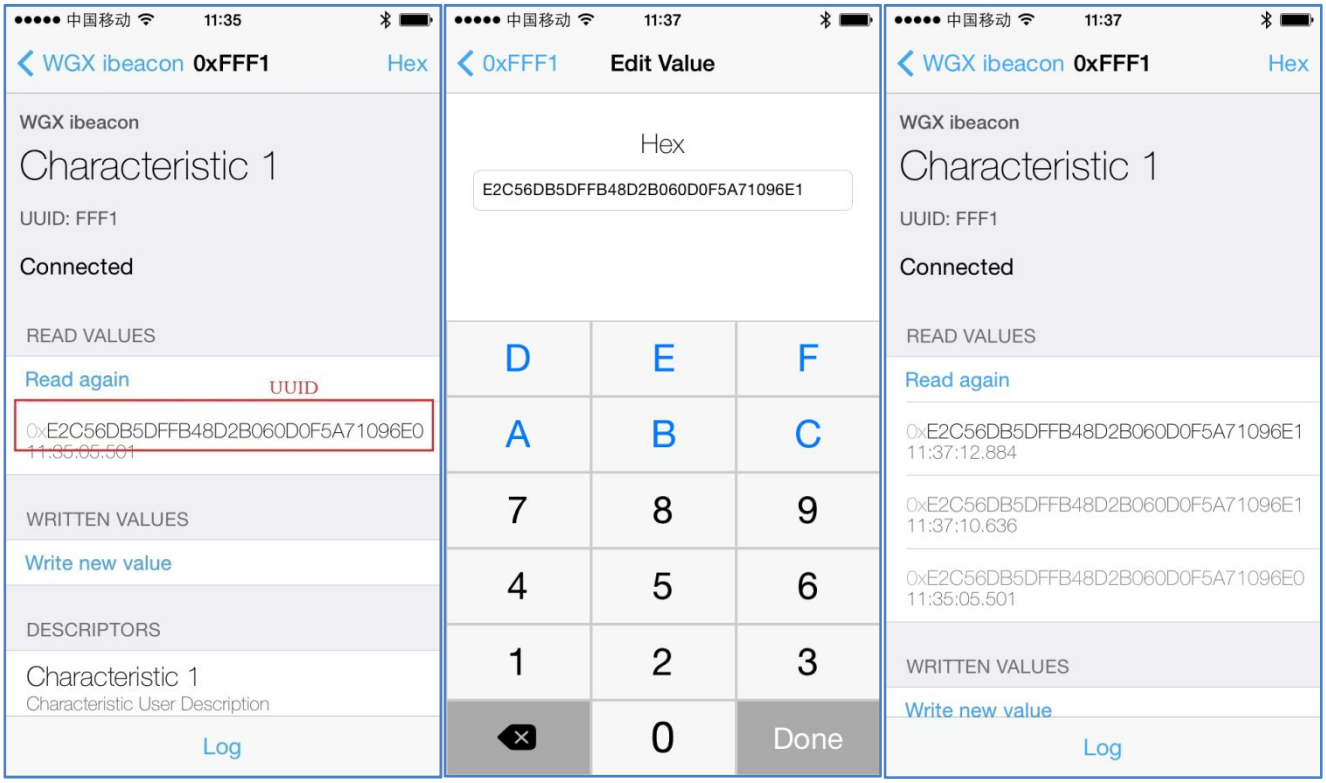
## 2.5 UUIDrevise

UUID is a 16 digits (32characters)HEX value , the default value is (Figure 6): E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0,For example,modifyUUID to be: E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E1,then write Corresponding values on “Write new value”(Figure 7),Clink Done when finished.Meanwhile,,the new set UUID shows on the “Read again”,Notice:Thedevices can

not be searched out on Locate ibeacon after finished modify UUID, As Locate ibeacon can only shows the Registered device,so you need to add a modified UUID device on the Options of iBeacon Transmitter.

.

Figure 6 Figure 7 Figure 8





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## 2.6 Major revise

Major is 2digits(4characters)HEX value, default value is (Figure 9):0000,For example,modifyMajor to be : 8810,Then write Corresponding values in the “Write new value”(Figure 10),Click Done when finished. Meanwhile, the new set Major shows on the Read again(Figure11).

Figure 9

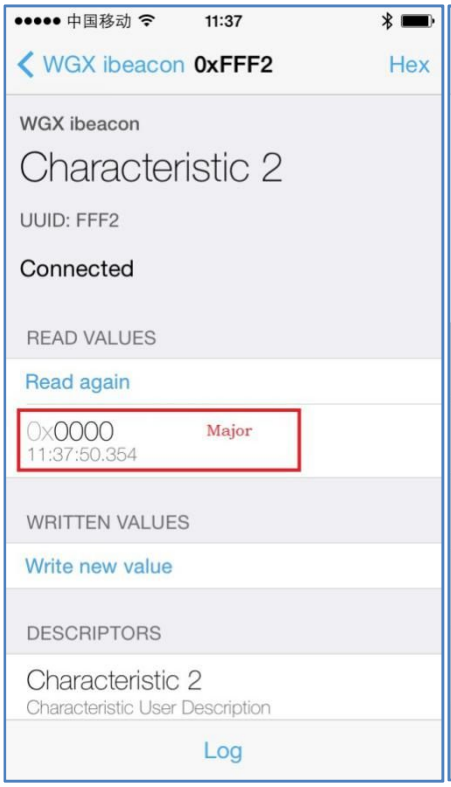



Figure 10

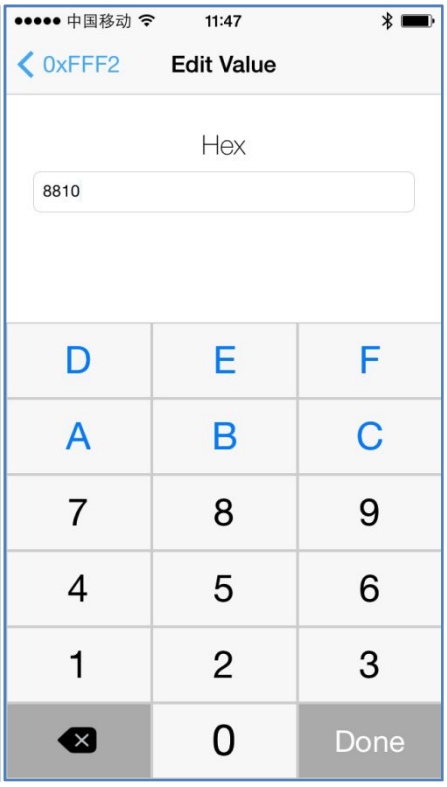
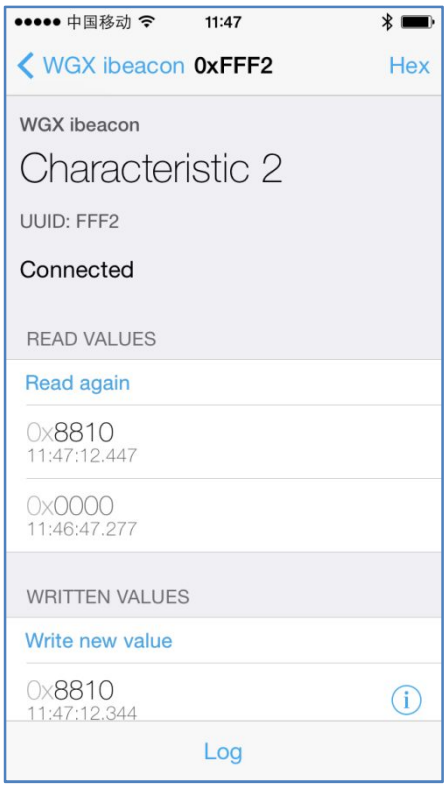



Figure 11





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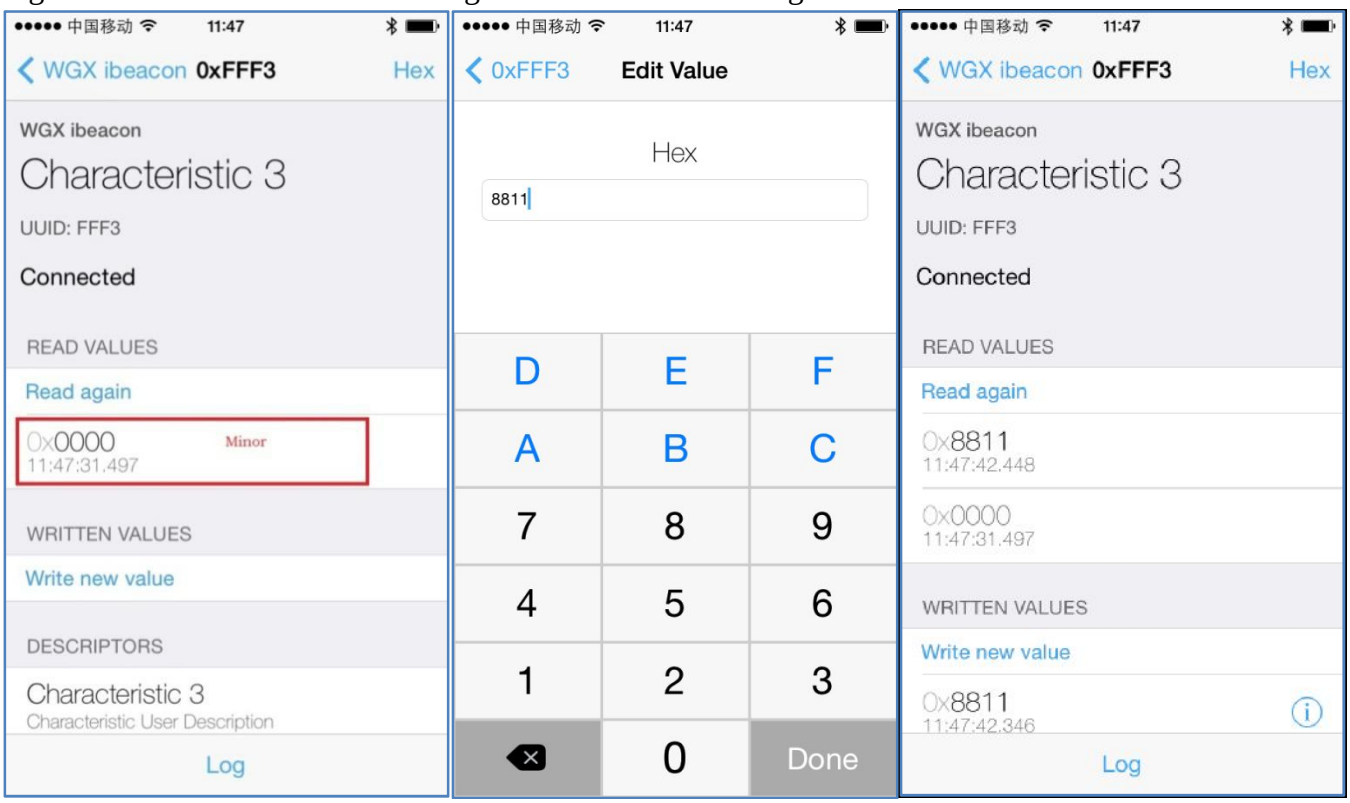
## 2.7 Minor revise

Minor is 2digits(4characters)HEX value, default value is (Figure 12):0000,For example, modify Minor to be: 8811,Then write Corresponding values in the “Write new value”( Figure 13),Click Done when finished.Meanwhile, the new set Minor shows on the Read again(Figure14).

Figure 12 Figure 13 Figure 14





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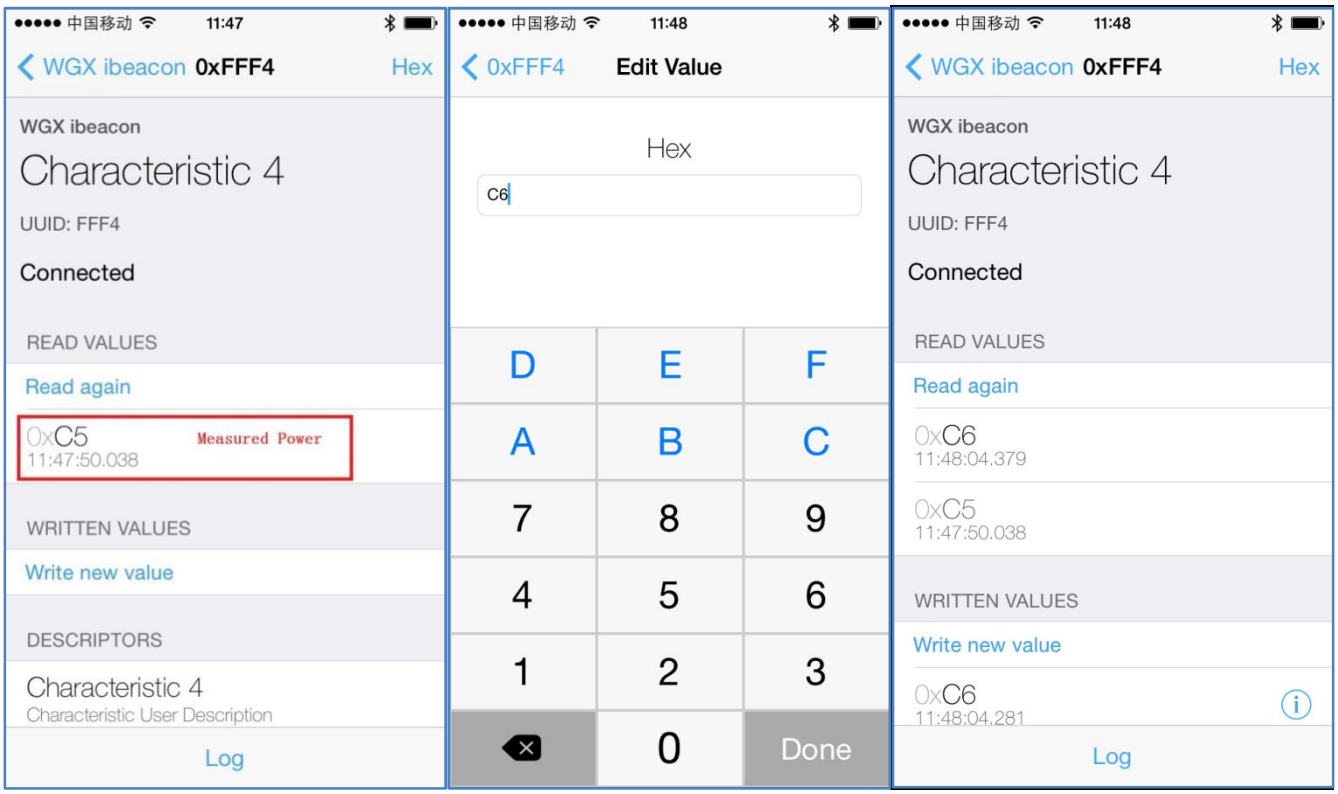
## 2.8 Measured Power revise

Measured Power is a 1digit(2 characters)HEX value, default value is(Figure15):C5,Forexample, modify Measured Power to be: C6,Then write Corresponding values in the Write new value(Figure 16), Click Done when finished.Meanwhile, the new set Measured Power shows on the Read again(Figure17).Notice Measured Power is a ISSI when the distance is 1 meter.The default value has been optimized,It’s not recommended modification.

Figure 15 Figure 16 Figure 17





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## 2.9 Device name revise

Device Name is 1-15 characters (ASCII Code), the default device name is “WGX ibeacon”(Figure 18)Example:Modify the Device name is:“wellcore01”: Writing the corresponding values in the place of "Write new value"(Figure 19). After finished Click“Done”to exit. At this time it displayed a new Device Name in the“Read again”(Figure 20), because this value must be entered

in ASCII.So before modifying,click the top right corner of the“Hex”(Figure 18),And change to the entry mode of“UTF-8”(Figure 19). Please pay attention:You should re-search the device again then it can display the New Modified Device Name.

Figure 18

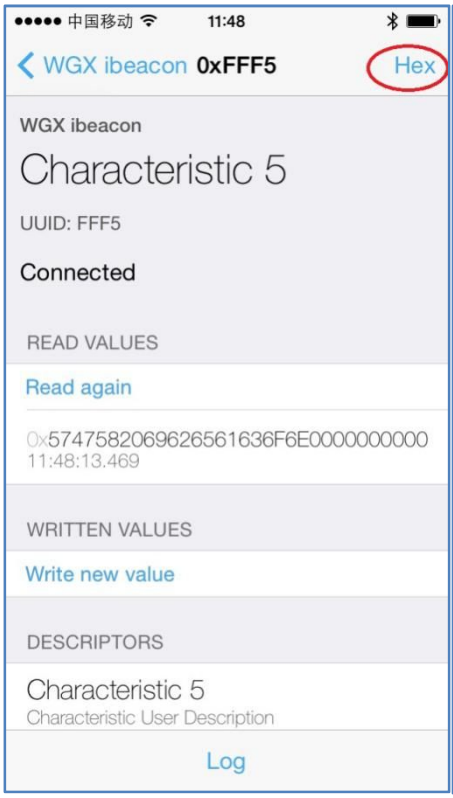
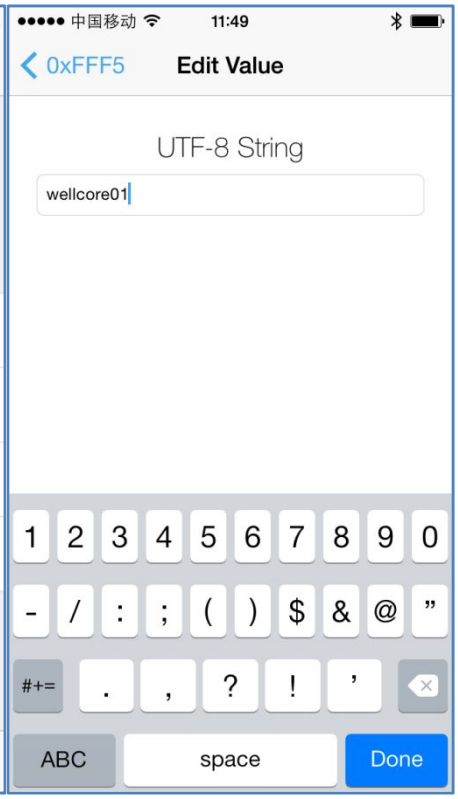



Figure 19

Figure 20





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## 2.10 Transmit Power revise

“Transmit Power”is a (2 characters) HEX value, the default value is 08(Figure 21),the transmit power has 9 grades."01"represent -40db;"02"represent -30db; "03" represent -20db;"04"represent -16db; ;"05"represent-12db; ;"06"represent -8db; ;"07"represent -4db; ;"08"represent 0db; ;"09"represent

+4db.Example:Modify the Transmit Power is 01: Writing the corresponding value in the place of "Write new value"(Figure 22). After finished Click“Done”toexit.At this time it can display the new Transmit Measured Power in the place of "Read again" (Figure 23). Please pay attention:You should modify transmit power according to the actual needs,"09 --- +4db" corresponds to the maximum power, the signal transmission distance can up to 100 meters, but the battery life will be relatively short.

Figure 21

Figure 22

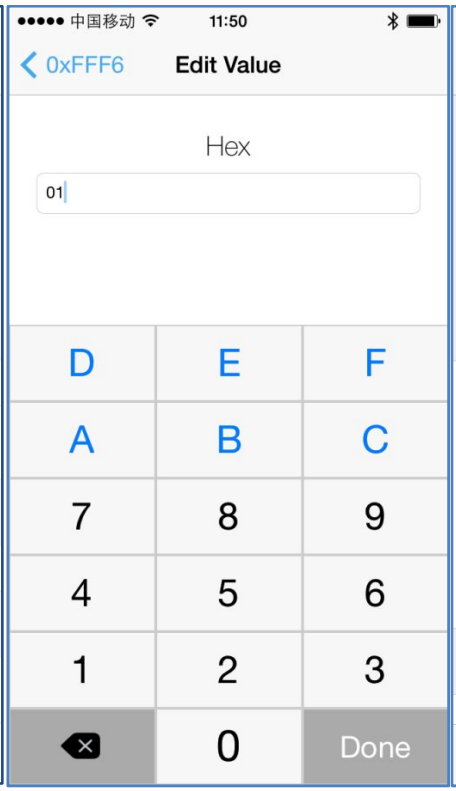
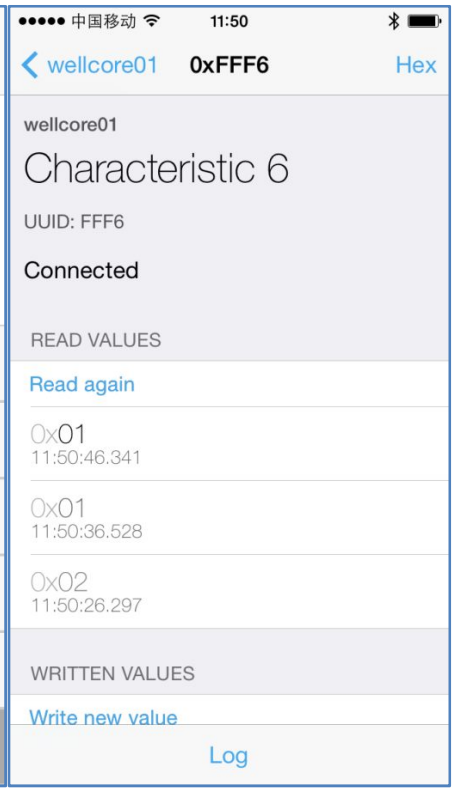



Figure 23





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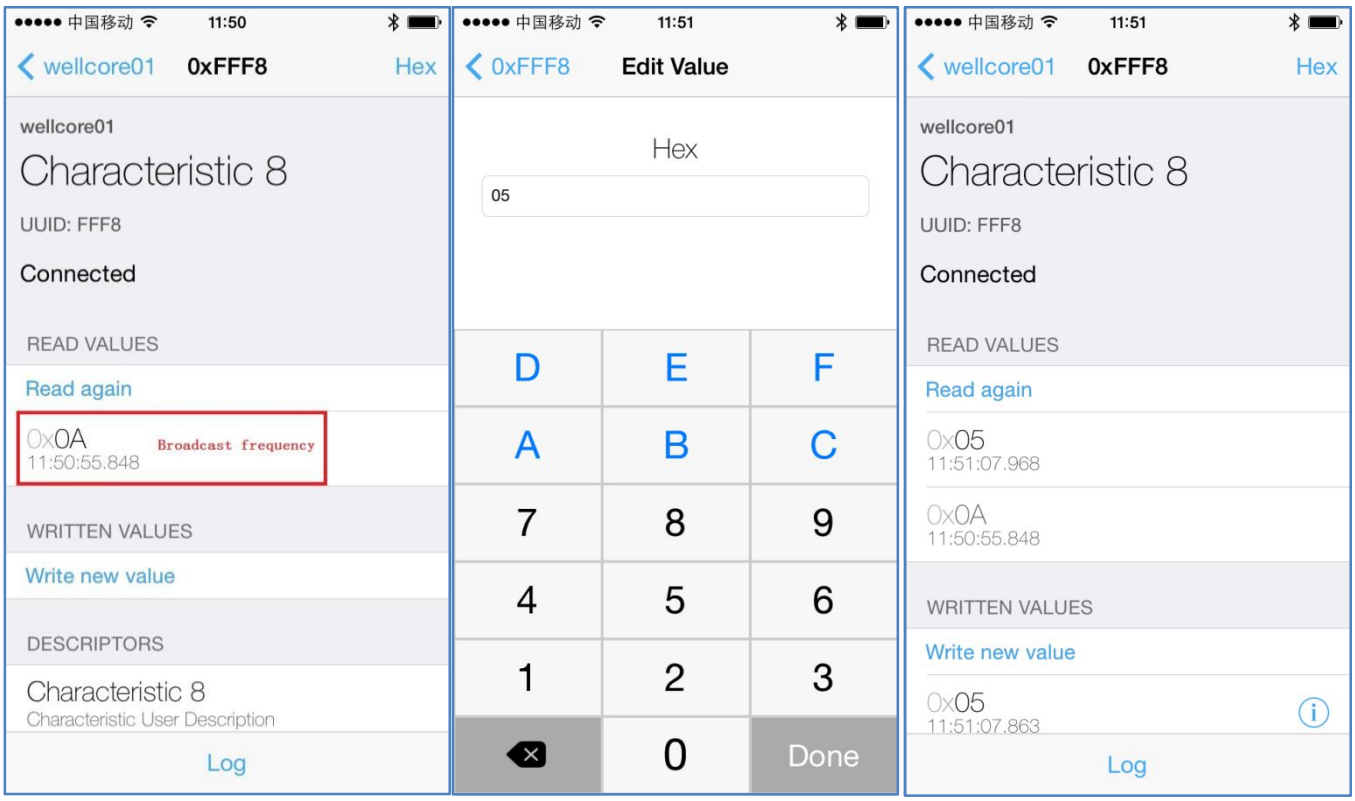
## 2.11 Broadcast frequency revise

"Broadcast Frequency"is a (2 characters) HEX value,the default value is 0A (Figure24).The Broadcast Frequency can be regulated from 0.1second to 10 seconds: 01 (0.1 seconds); 05 (0.5 seconds)..... 0A (1s); 64 (10 seconds) Example:Modify the Broadcast Frequency is 0.5 seconds: Writting the "05" in the place of "Write new value"(Figure 25). After finished Click “Done”to exit. At

this time it can display the new Broadcast Frequency in the place of "Read again" (Figure 26). Please pay attention:You should modify the Broadcast Frequency according to the actual needs,the Broadcast Frequency is small and power consumption is also small.The battery life will be relatively increased.

Figure 24 Figure 25 Figure 26





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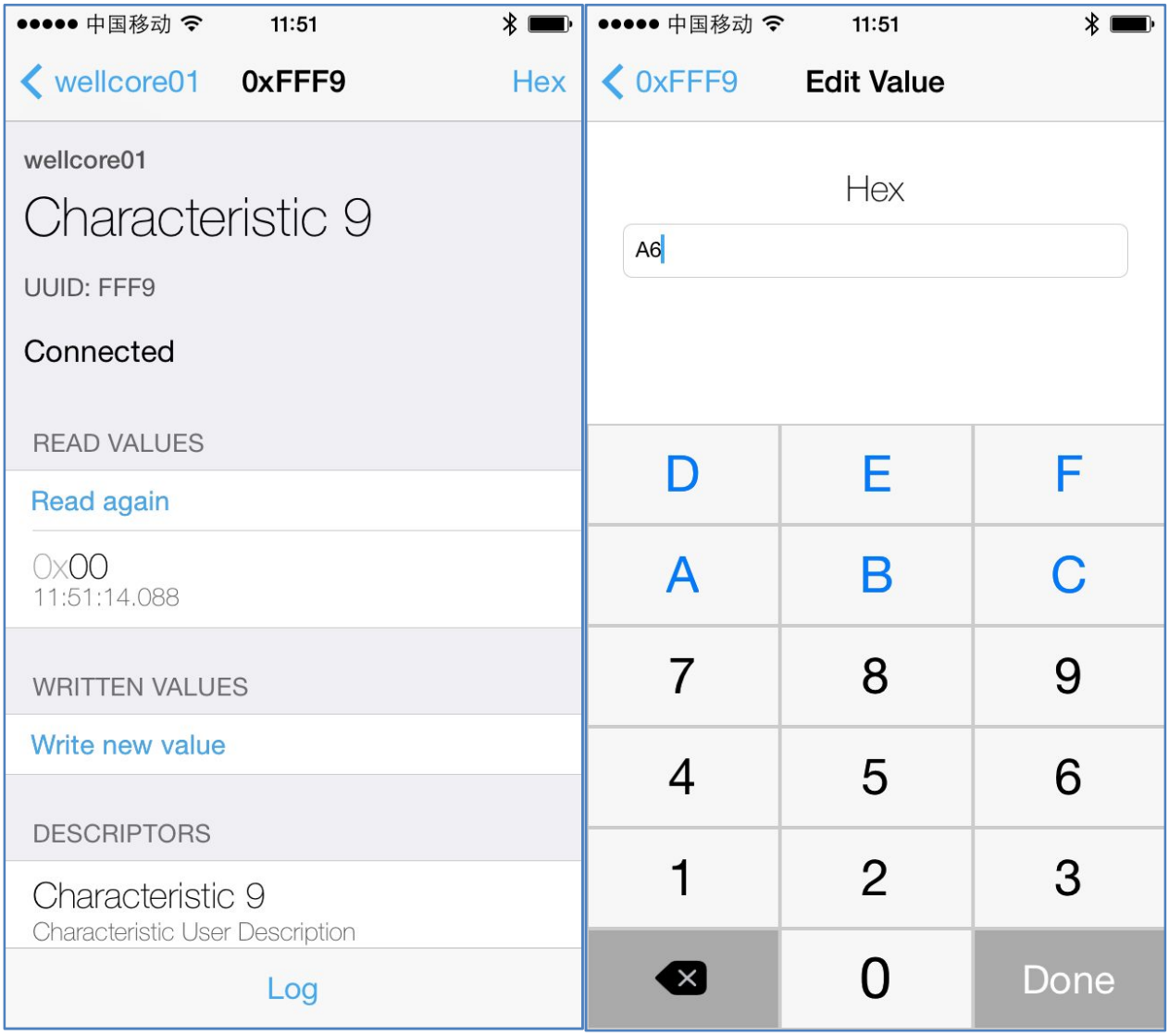
## 2.12Reset factory settings

"Reset factory settings" is a 1 byte (2 characters) HEX value,A6.Writing the "A6"In the place of "Write new value"(Figure 27). After finished Click “Done” to exit. Note that you must first restore the factory settings after power off and then turnOn the device.

Figure **27**





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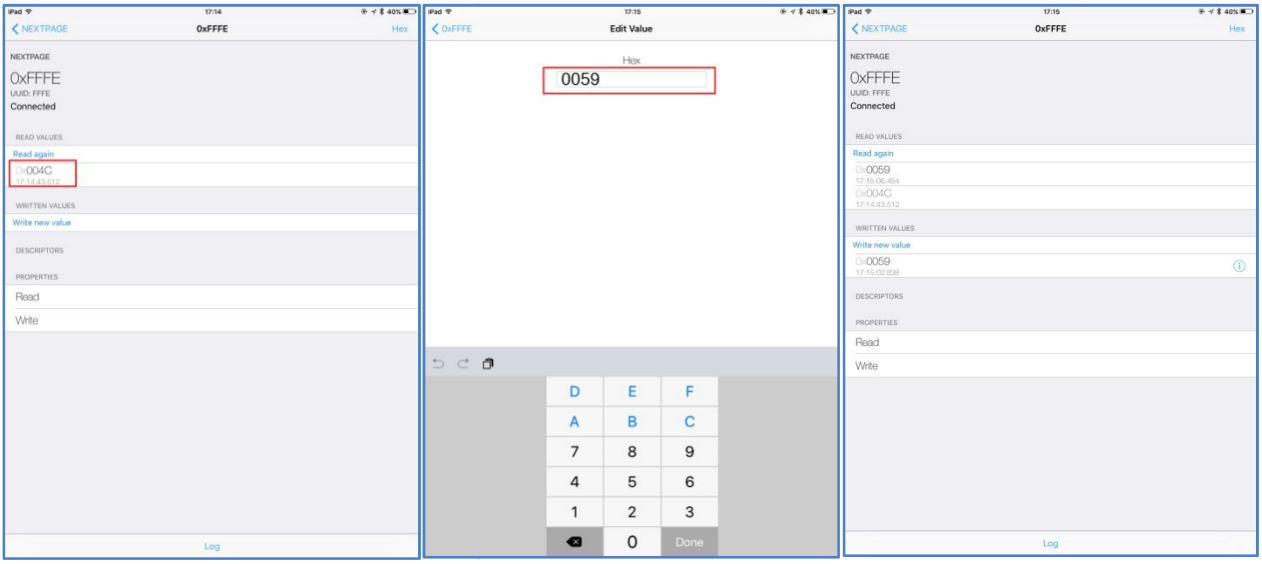
## 2.13 BT vendor ID revise

"BT vendor ID " is a 2 byte (4 characters) HEX value, the default value is 004C (Figure28),This ID by the Bluetooth Association of distribution companies, such as NORDICCorp is :0059, the Apple Corp is :004C ,Example:Modify the BT vendor ID is 0059,Writting the "0059" in the place of "Write new value"(Figure 29). After finished Click “Done”to exit. At this time it can display the new ID in the place of "Read again" (Figure 30).

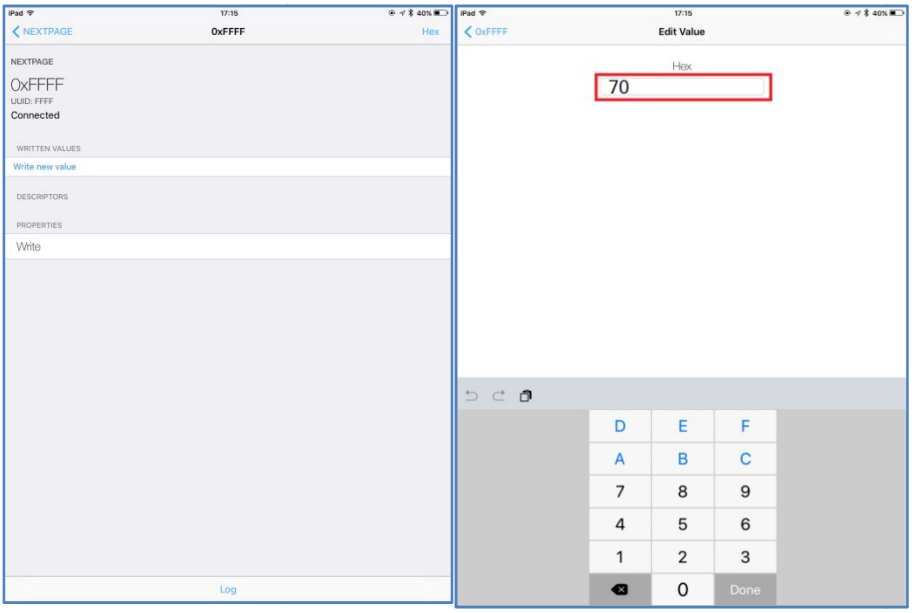
Figure 28 Figure 29 Figure 30




## 2.14 Deploy mode revise

"Deploy mode " is a 1 byte (2 characters) HEX value, the default value is (00), Deploy mode:value 70(careful operation, set up after the parameters can not be modified forever),Normal mode:value 00 (can be modified parameters) ,Example:Modify the value is 70,Writting the "70" in the place of "Write new value"(Figure 31). After finished Click “Done”to exit.

Figure 30 Figure 31





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# 3 Distance function:

## 3.1 Test Software

Software Name:Locateibeacon .You can download from the iphone “APPSTORE”with free charge.

## 3.2 The Use-method of Locate iBeacon

1.Open the software “Locate ibeacon” (Figure 28).Click“LocateiBeacons”you can enter the next two levels of menu (Figure29,30)At this time you can see all the informations of the device.Such asUUID,Major ,Minor, ISSI,RangeInformation,etc.

Figure 28

Figure 29

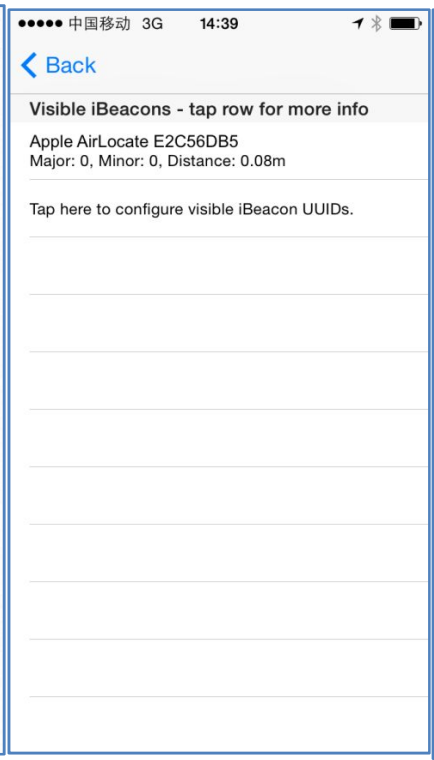
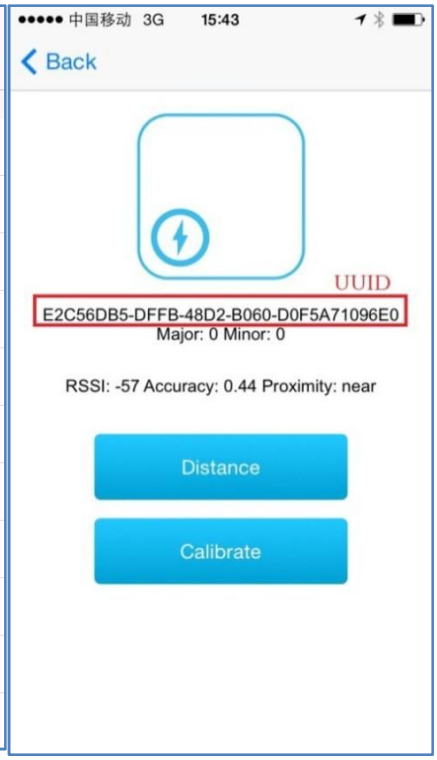



Figure 30





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2,If you had modified the present UUID:E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 to E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E5 At this time you can't recognize the current device in the place of “Locate iBeacon”, you must add an identical device UUID (Figure 32) ,Writing “Name”and “UUID”,you needn't write the Major,Minor. After finished click “SAVE”,(Figure 33) The interface indicates you has been set it successfully.

Figure 31

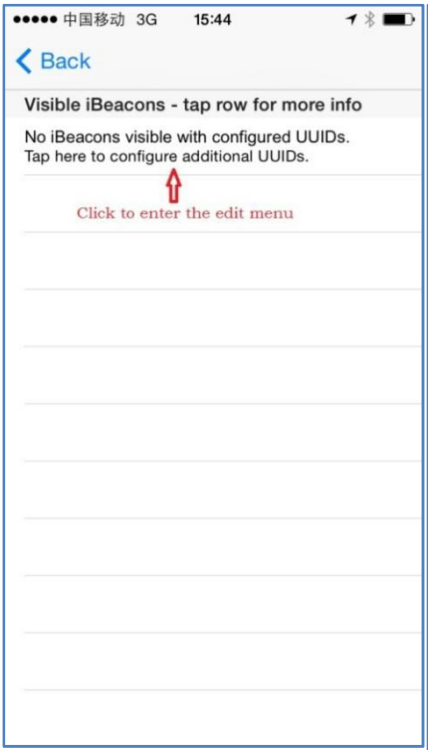
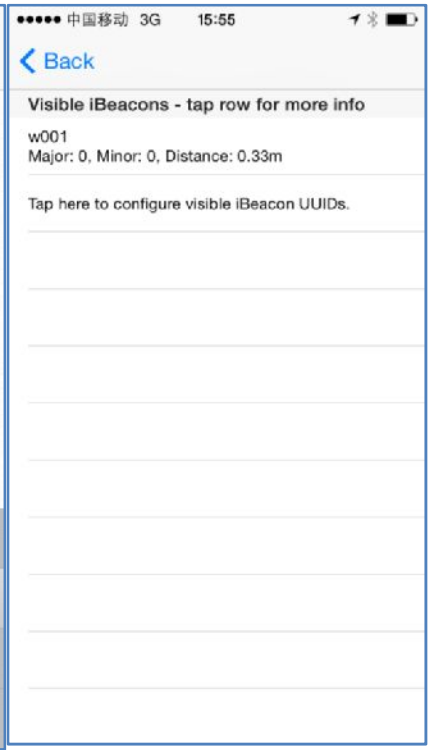



Figure 32

Figure 33





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# 4Product certification: CE,FCC ,ROHS

## 4.1 FCC ID:

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# 5Electrical Parameters:

5.1 Hardwareversion: Nordic NRF51822.
5.2 Operating Voltage: 1.8-3.8V
5.3Bluetooth: BLE V4.0
5.4OperatingFrequency:2.4GHz ISM band
5.5Modulation:GFSK(Gaussian Frequency Shift Keying)

# 6Use Environment:

6.1 Operating temperature: -25～+65℃
6.2 Storage Temperature: -40～+75℃
6.3 Environment Humidity: 5%～85%

# 7 Product Specifications

## 7.1 Model: W956D

1Product photos

2 Mechanical Dimensions: L*W*H: 100*68*50mm
3Weight: 230g
4 Batterytype: ER34615(19000mAH) (broadcast frequency of 1 second, the power of 0dB working more than 10 years).
5 Product Description: with waterproof function, waterproof grade IP67.


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**FCC Caution:**

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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.