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KBeaconPro App Instruction

Revision History

Version	Date	Change Description	Author
V1.0	2017/11/12	Initial draft for KBeaconTools	Adam
V1.2	2018/02/23	Name updating	Elaine
V1.3	2022/11/2	Adding Power Profiler function	Elaine

目录

1. Download KBeaconPro App

Download the App 'KBeaconPro' from iOS App Store or Android Google Play or scan the QR code below to down the App.

iOS APP

Android APP

Minimum requirements

A mobile phone with Bluetooth 4.0 support is needed. For Android devices, Android version 5.1 or newer. For iOS devices, iOS version 10.0 or newer.

Reminder: This instruction uses Android App to demonstrate. The iOS App interface is slightly different from Android App.

2. How to Connect KBeacon Device to KBeaconPro App

Kindly note: Please make sure your KBeacon device is with battery already.

Enable your smart phone Bluetooth and run the App 'KBeaconPro'.

2.1 Turn on KBeacon

The factory setting of P1 Beacon is ON already.

2.2 Connect KBeacon

Let's use a Beacon (MAC: DD3311000588) to demonstrate, the MAC ID is printed on the device:

- **Method 1: Scan QR code to connect**

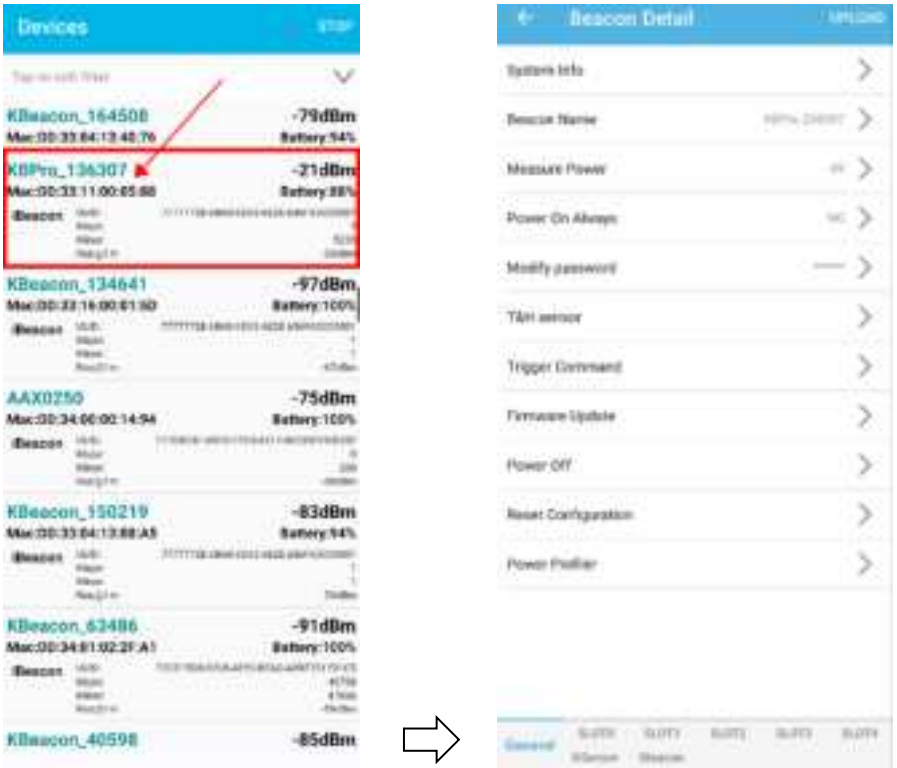
Run KBeaconPro App, Find 'Scan QR code' on the App, and then scan the QR code on the device to find this KBeacon device quickly.

Reminder: iOS App filter the device by Device Name when use the 'Scan QR code' method. If the device name is not KBPro, the device can not be found on iOS App when scan the QR code.

- **Method 2: Scan the Bluetooth signal to connect**

Run KBeaconPro App and tap 'SCAN' in the top right corner, the App can scan the device's Bluetooth signal, then the Beacon device will be displayed on the scan page.

Find the corresponding KBeacon device on the App according to its MAC ID, Tap it, it will start connecting and jump to the configuration page (see pictures below).



If there are too many devices found , filter by RSSI to find a certain Beacon quickly.

Put the KBeacon device close to your phone (within 10cm range). Slide the RSSI bar to set the RSSI value at -30~-40dBm, tap the arrow on the top right corner, then the nearest KBeacon can be found

3. How to Configure KBeacon

3.1 SLOT Definition

KBeacon supports total 5 SLOTs (SLOT0 to SLOT4). Each SLOT is independent and configurable. The Beacon type can be set for each SLOT. Beacon parameters such as Adv interval, Tx Power, Connectable enable/disable etc can be configured separately for each SLOT. They are independent of each other.

Each SLOT can be set to one Beacon type ONLY. For example, if you set SLOT0 to be iBeacon, set SLOT1 to be URL, set SLOT2 to be TLM, then the KBeacon device will broadcast iBeacon, URL and TLM simultaneously.

KBeacon supports the following Beacon types:

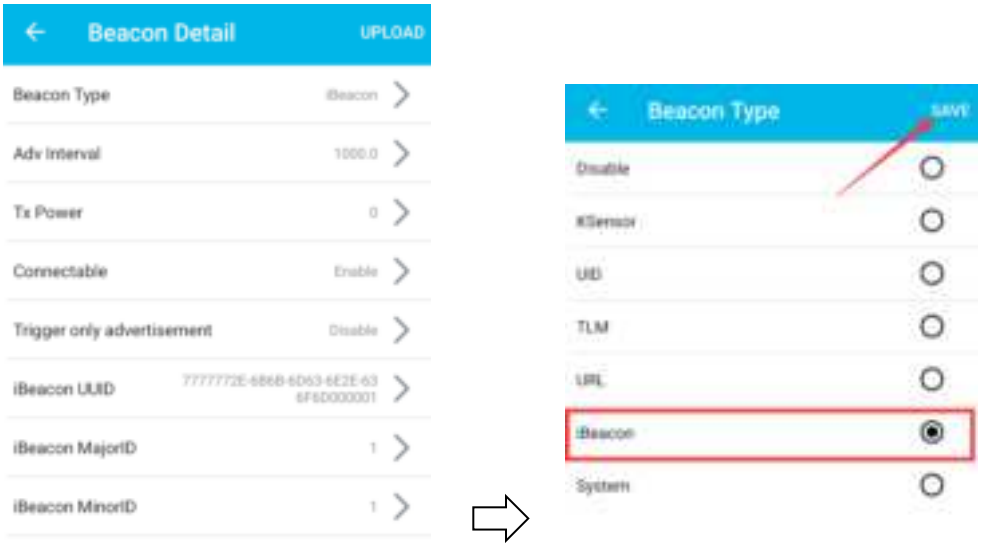
- **iBeacon**

- **Eddystone URL**
- **Eddystone UID**
- **Eddystone TLM**
- **KSensor:** KKM self-defined protocol, includes battery level and sensor information
- **System:** Including the KBeacon device info such as System ID (ie.MAC ID), Model name.

3.2 How to configure iBeacon and Eddystone

Take iBeacon as an example:

Tap: Beacon Type—> iBeacon—> Save—> Return

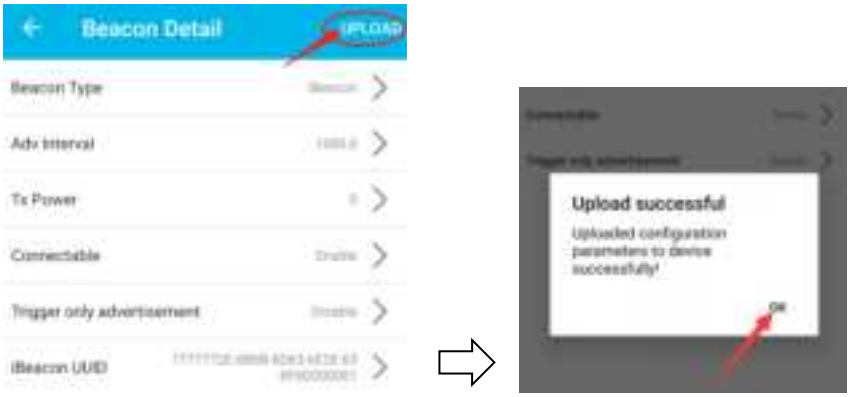


iBeacon parameters (UUID, Major ID, Minor ID, Adv Interval, TX power etc.) can also be configured in the App. Eddystone URL, UID, TLM, can be configured by the same steps above.

Parameters	Defaults	Describe
Beacon Type	iBeacon	Disable: Slot does not broadcast KSensor: KKM sensor data, see Section 6.3 for details UID/TLM/URL: Google Eddystone, see Section6.2 for details iBeacon: Apple iBeacon, , see Section 6.1 for details System: KKM System data, see Section 6.4 for details
Adv Interval	1000.0	Advertisement period is expressed in decimal and the unit is ms. If you need to use it on Apple devices, it is recommended to follow Apple's specifications. Apple has some suggestions that make the device more easily discovered by IOS phones. (The suggest value was: 152.5 ms; 211.25 ms; 318.75 ms; 417.5 ms; 546.25 ms; 760 ms; 852.5 ms; 1022.5 ms; 1285 ms). For more information, please refer to Section 3.5 in "Bluetooth Accessory Design Guidelines for Apple Products". https://developer.apple.com/accessories/Accessory-Design-Guidelines.pdf.

Tx power	-40 ~ 8?	Beacon TX power. The value range depends on the support capability of the device, some devices are -40~4dBm, some devices are -40~8dBm.
Connectable	Yes	Whether the device can be connected. For detailed description, please refer to Section 5.1.
Trigger only advertisement	No	When this feature is set to be 'YES', this slot will be broadcasted only when the trigger happens. For example, if you set 'Trigger Adv Slot' of 'Button single click' to be SLOT0 and SLOT0 is iBeacon, then iBeacon will be broadcasted only when the button single click happens.
iBeacon parameters (UUID/Major/Minor)	NA	Configuration parameters of iBeacon

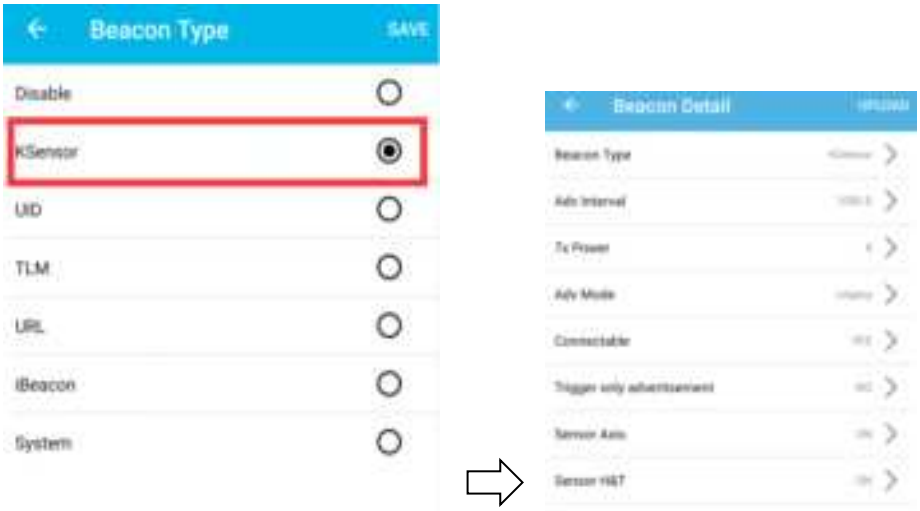
After the parameters are modified, you need to tap: UPLOAD—> OK, then all the parameters configured can be loaded to the device successfully.



3.3 How to configure KSensor and System

KSensor is KKM defined protocol, it includes battery level and sensor information (for example temperature&humidity sensor, acceleration sensor etc).

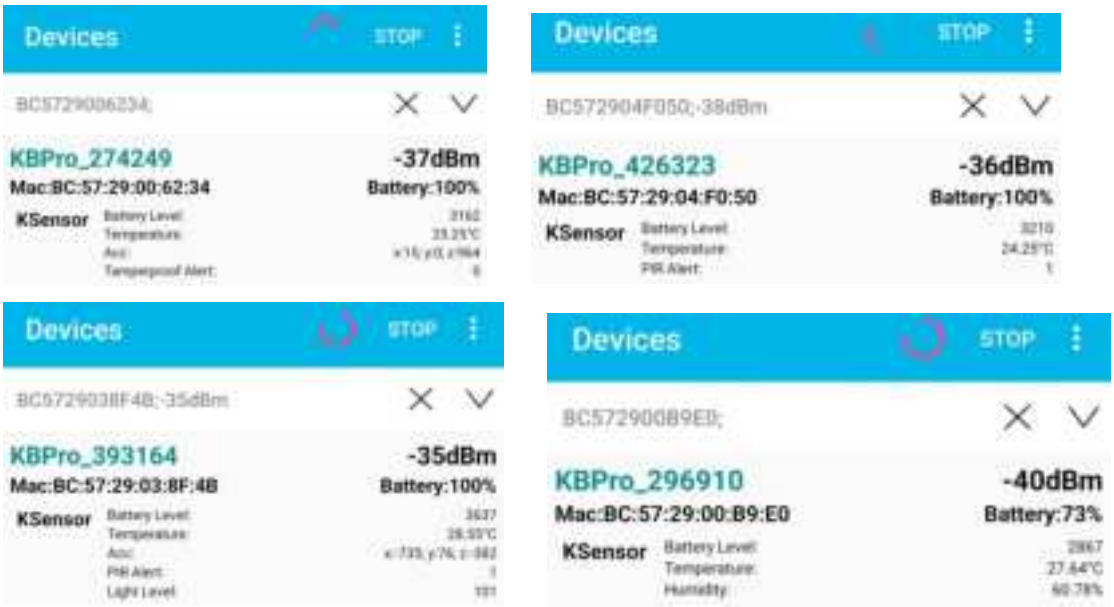
Tap: Beacon Type—> KSensor—> Save—> Return



“System” can also be configured by the same steps above.

3.4 View KSensor advertisement data

When we configure KSensor to broadcast sensor information in section 3.3, we can scan sensor data through app.



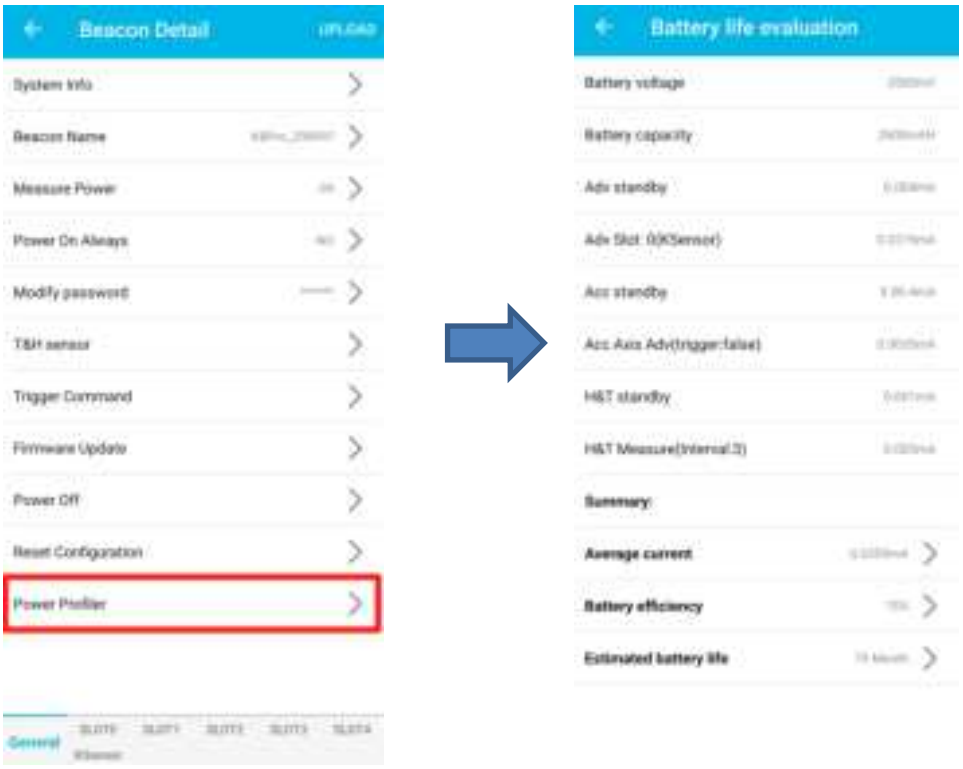
The broadcast content of different sensors is displayed differently on the APP.

Type	Describe
Battery Level	The unit of battery level is mV. For example, if it is 3210, it means the battery voltage is 3210mV.

Temperature	The unit of temperature is ℃. For example, if it is 25℃, it means that the current temperature detected by the beacon is 25℃.
Humidity	The unit of humidity is %. For example, if it is 60%, it means that the current humidity detected by the beacon is 60%.
Acc	Acc means the acceleration sensor. It includes the value of Axis X, Axis Y and Axis Z, and the unit is mg.

3.5 How to evaluate battery life

KBeaconPro supports evaluating the battery life of beacon according to the configured parameters.



Type	Describe
Adv standby	When the device is in standby mode, it also consumes a certain amount of power. This power consumption is usually between 1~4uA.
Adv slot: 0	When a slot broadcast is enabled, the slot will periodically send broadcast messages, which will generate a certain power consumption.
Acc standby	When the device has an acceleration sensor, even if the acceleration sensor is not

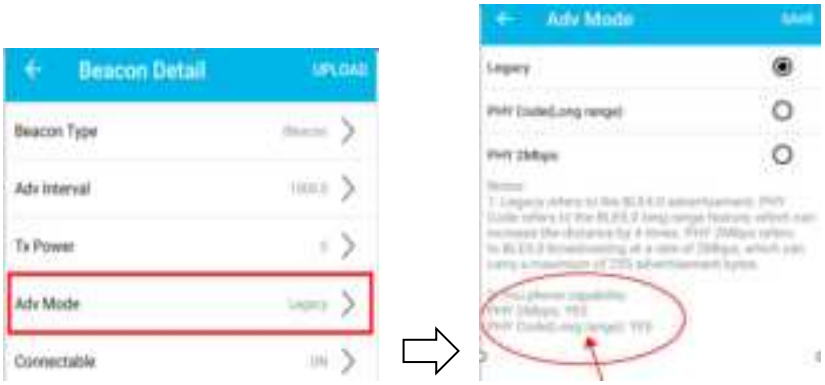
	working, there will be about 0.9uA of power consumption.
Acc Axis Adv	If you set KSensor to broadcast 3-axis information, the accelerator will start measuring. If the broadcast interval is shorter, the power consumption will be higher.
H&T standby	When the device has an humidity sensor, even if the sensor is not working, there is about 1uA of power consumption.
H&T measure (Interval:3)	Indicates the power consumption when the temperature and humidity sensor measures once every 3 seconds. The shorter the measurement interval, the higher the power consumption.
Average current	The average current of the device is based on the current configuration parameters, and calculated after the device is powered on for 30 seconds for current stabilizes. The average current does not include power consumption by trigger broadcasting. Also, it does not include the power consumption when the device is connected.
Battery efficiency	Usually the battery capacity is based on the ideal 1mA discharge model at room temperature. In actual use, the capacity of the battery is related to temperature, current and self-discharge. We recommend 75%.
Estimated battery life	= Battery capacity * Battery efficiency/ Average current/24(hours)/30(days)

3.6 How to configure advertisement mode

For some KBeacon models that support BLE5.0 long range feature, 'Adv Mode' can be configured.

- **Legacy:** BLE 4.0 advertisement
- **PHY Code:** BLE 5.0 long range feature
- **PHY 2Mbps:** BLE5.0 broadcasting at a rate of 2Mbps

KBeaconPro App can detect which Adv Mode your phone support (Only supported on Android phones).



Reminder:

Please make sure that your phone supports BLE 5.0 PHY Code (Long range) feature, otherwise you will not be able to scan the PHY code advertisement if the Beacon was set to PHY Code (Long range) Mode.

If you set the Beacon to PHY code advertisement, and your phone doesn't support PHY Code broadcast, you can force the device to enter the Legacy mode for 30 seconds by single click the button of the device.

4. How to Configure Trigger

For some KBeacon device that has some motion sensor, temperature&humidity sensor, push button, etc., The application can configure the KBeacon to monitor some trigger event. For example, button was pressed, the temperature is too high, or device was motion. The KBeacon can do some action when the trigger condition was met.

When the conditions of the Trigger are met, we can trigger a specific advertisement, or trigger the event to be recorded in memory, or report an event to the App.

Tap: Trigger Command—>Trigger Type

The following example is based on the K21 device

4.1 Trigger event to advertisement

The trigger advertisement has follow parameters:

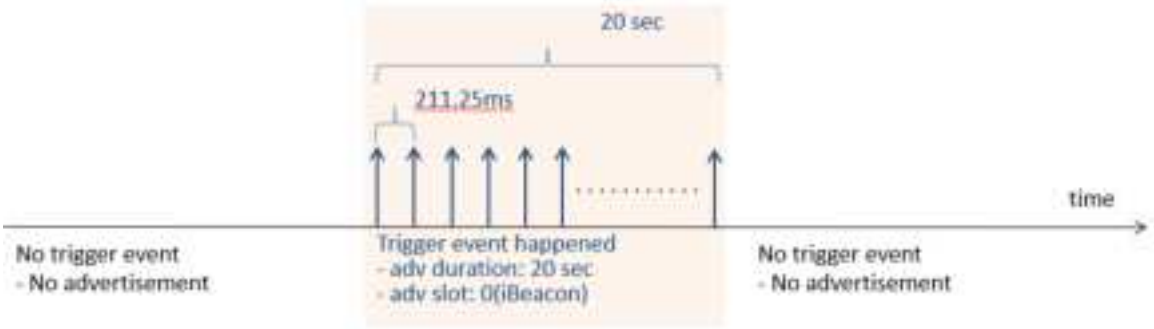
- Trigger No: Trigger instance number, the device supports up to 5 Triggers by default, the No is 0 ~ 4.
- Trigger type: Trigger event type
- Trigger action: Action when trigger event happened. For example: start broadcast, make a sound, or send a notification to the connected App.
- Trigger Adv slot: When the Trigger event happened, which advertisement Slot starts to broadcasting
- Trigger parameters: For motion trigger, the parameter is acceleration sensitivity. For temperature above trigger, you can set to the temperature threshold.
- Trigger Adv duration: The advertisement duration when trigger event happened. Unit is second.
- Trigger Adv TX power: The advertisement TX power when trigger event happened. Unit is dBm.
- Trigger Adv interval: The advertisement interval when trigger event happened. Unit is ms.

4.1.1 Trigger only advertisement

The device usually does not broadcast by default, and we want to trigger the broadcast when the trigger event happened.

Example:

1. Setting slot 0 to iBeacon advertisement(adv period = 211.25ms, trigger only adv = true).
2. Add a single button trigger(Trigger No = 0, Trigger type = Btn single click, Action = advertisement, Adv slot = 0, Adv duration = 20).



4.1.2 Trigger to an exist advertisement

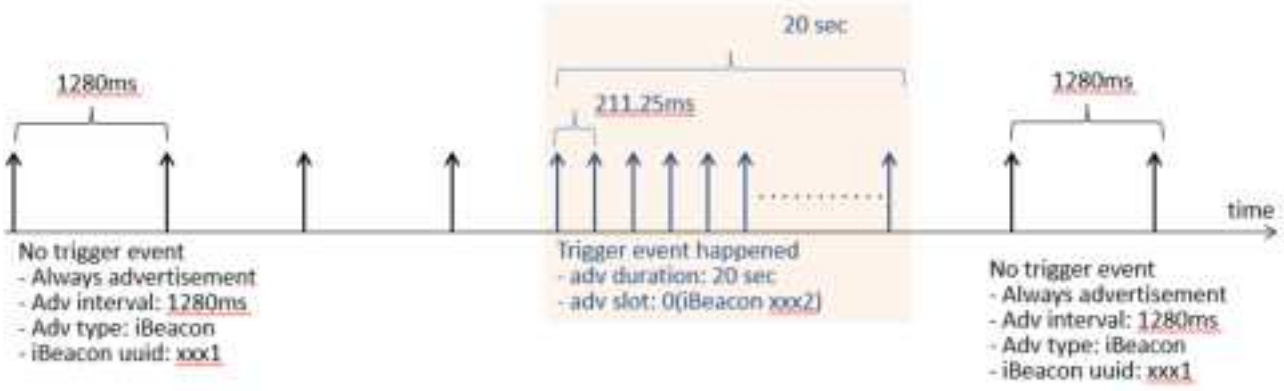
For some scenario, we need to continuously monitor the KBeacon to ensure that the device was alive. The device usually broadcasting iBeacon1 (UUID=xxx1) , and we want to trigger the broadcast iBeacon2 (UUID=xxx2) when the button is pressed.

Example:

1. Setting slot 0 to iBeacon advertisement (UUID=xxx1, adv period = 1280ms, trigger only adv = false).
2. Setting slot 1 to iBeacon advertisement (UUID=xxx2, adv period = 211.25ms, trigger only adv = true).

We set an larger advertisement interval during alive advertisement and a short advertisement interval when trigger event happened, so we can achieve a balance between power consumption and triggers advertisement be easily detected.

3. Add a single button trigger(Trigger No = 0, Trigger type = Btn single click, Action = advertisement, Adv slot = 1, Adv duration = 20).



4.1 Trigger event to record

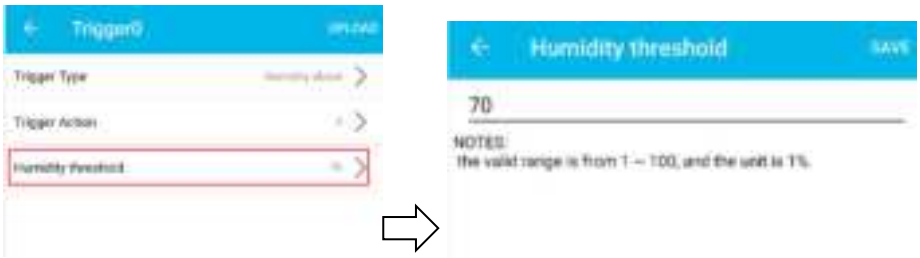
For some Triggers, the device supports recording the Trigger events. For more information, see 2.1.1 Trigger capability.

For the Trigger event, we can set the Trigger Action to "Record". After setting, when the trigger event is triggered, KBeacon will record the Trigger event.

Reminder: Currently, only some devices support recording Trigger events, including:

Example:

1. We assume that the current ambient humidity is 60%, and we set an trigger event to be logged when the humidity exceeds 70%.



2. Put the KBeacon in an environment with a humidity over 70%.

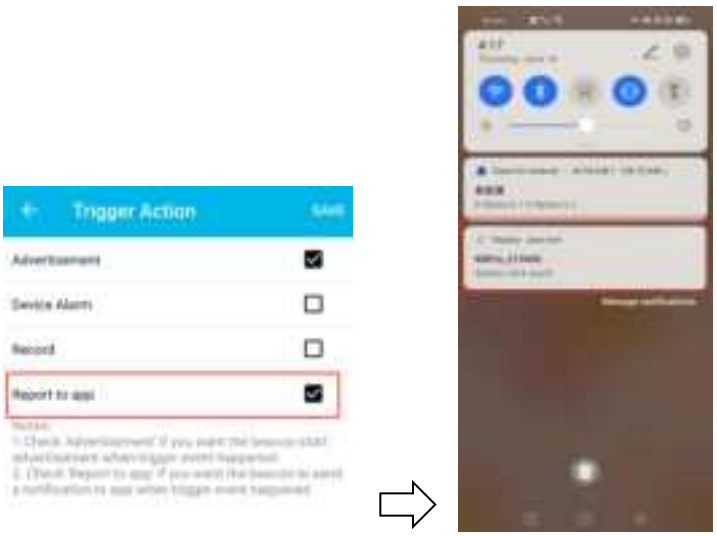
3. Observe whether the event is logged.

In order to verify that the record is generate by the Trigger, we can turn off the T&H Logger during the test, which means that when the temperature and humidity change exceeds the specified threshold, the recording will not be performed. It will only be logged when the Trigger event happened.

4.2 Trigger event to App

We can also set KBeacon to send an event message to the App when the Trigger is happened.

If set “Report to App”, there will be a message notification displayed on the cell phone when the trigger event happens.



5. Other Settings

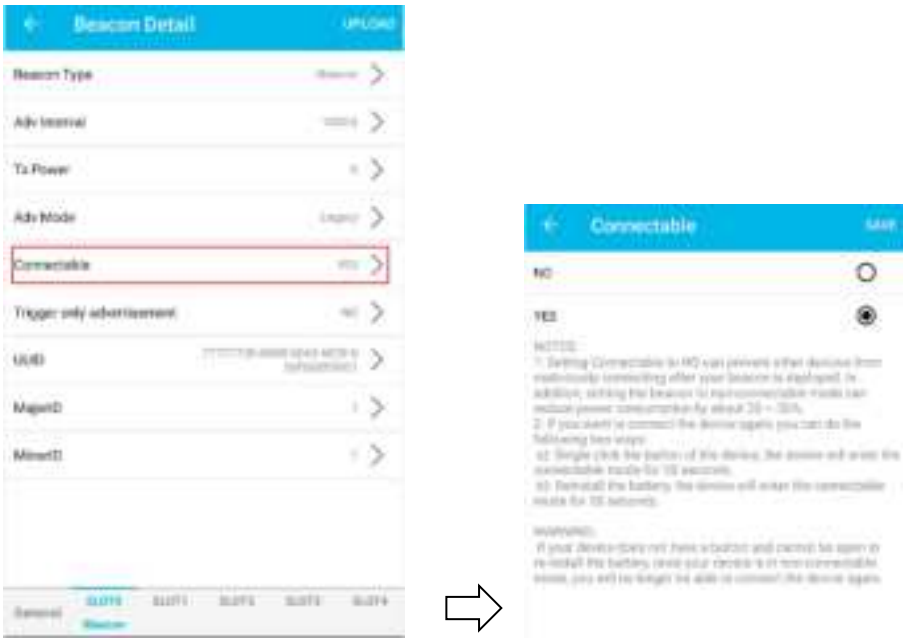
5.1 Unconnectable mode

Each SLOT has two different advertising status, connectable mode and unconnectable mode. Only when the advertising status is connectable, the KBeacon is configurable. But the unconnectable mode saves about 20% -30% power consumption than connectable mode.

After the KBeacon is deployed, we recommend setting the KBeacon to be unconnectable mode. This can lower battery power consumption and the Beacon also have better security performance.

How to set unconnectable mode:

Tap: Connectable—> OFF—> Save—>Return —>UPLOAD.



Warnning: If your device is in the following two situations, once you set No connectable, you will not be able to connect the device again:

1. The device does not have a button and cannot be opened to reinstall the battery. For example, K12, T1, etc.
2. The device has a button and a Button Trigger was set, and it cannot be opened to reinstall the battery. For example, K7, F1, etc.

Question: How can I configure KBeacon again if it was set to be unconnectable mode?

- For KBeacon with button: click the button, the Beacon will enter a connectable mode for 30 seconds, users can connect the device within these 30s. Or re-install battery.

(Reminder: If the KBeacon device is configured with button trigger, the Beacon will NOT enter a connectable mode by clicking the button.)

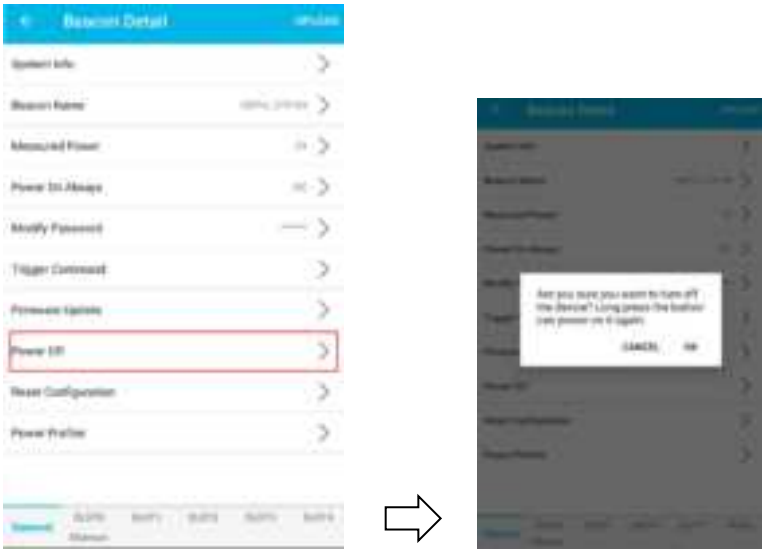
- For KBeacon without button: Re-install battery

(Reminder: For the KBeacon device that doesn't have button and whose battery can not be re-installed, once the device was set to unconnectable mode, it can not be configured any more!)

5.2 Power off

For KBeacon device WITH BUTTON, you can use the App to turn off the device.

Tap: Power Off—> OK

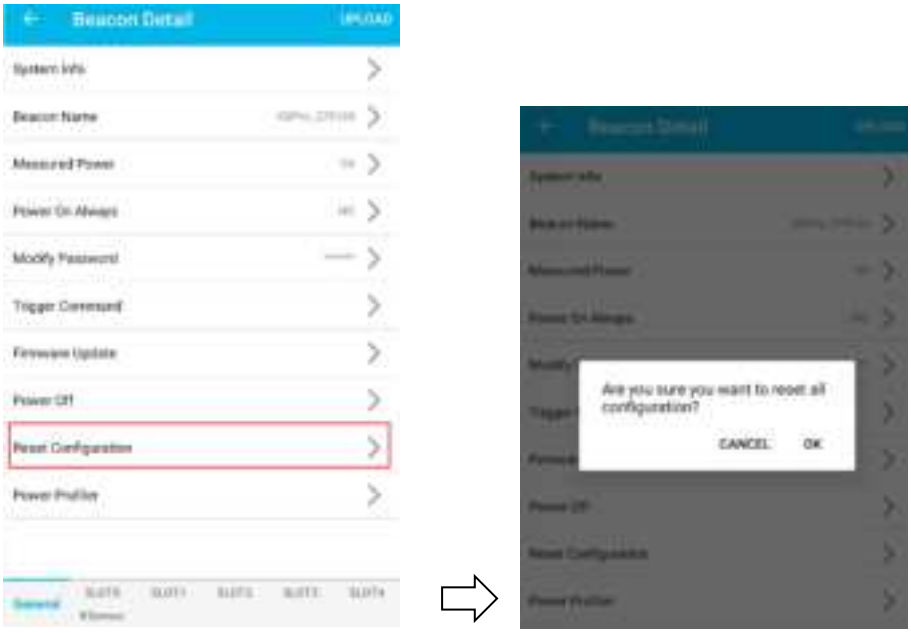


5.3 Reset configuration

You can reset the KBeacons setting to factory default configuration on the App.

Reminder: If you customize some of your own parameters to KKM, such as Trigger parameters, multiple slots broadcast parameters. KKM will configure these parameters for you before leaving the factory. If you perform the "reset configuration" operation, these pre-configured parameters may be lost.

Tap: Reset configuration—> OK



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

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.