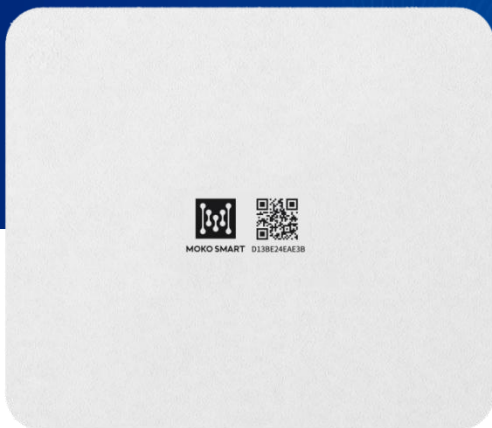




MOKO SMART

UT1

Ultra-thin Paper Tag



Product Specification

UT1 Ultra-thin Paper Tag

Version 2.1

Revision History

Version	Date	Notes	Contributor(s)
V1.0	Aug 4, 2023	Initial version	Leo
V1.1	Aug 19, 2024	1. Update the battery capacity to 40mAh. 2. Update the UT1 supported broadcast slots to support 2 channels of broadcast.	Leo
V1.2	Sep 18, 2024	1. Newly added UT1 product series UT1P model description. 2. Update UT1 Default broadcast parameters and lifetime 3. Change the default value of the trigger status in the Nanobeacon info broadcast frame.	Leo
V2.1	Feb 25, 2025	1. Update UT1&UT1P default parameters 2. Added Product Waterproof Instruction	Leo

About document

This **product specification** was designed to help users to know the hardware overview and basic instructions of **UT1/UT1P Ultra-thin Paper Tag** product. Through this document, users will be initial to understand the application scenarios, hardware specifications, basic instructions of product.

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1. Overview

This *Product specification* is mainly applicable for MOKO **UT1/UT1P Ultra-thin Paper Tag** product, and mainly contained below parts:

➤ [General specifications](#)

➤ [Basic instructions](#)

For more information about user guidance of product functions and configuration APP, please ask our sales team directly for official document – “**IN100 Solution Beacon User Guide**”.

2. General specifications

2.1 UT1 Series Tag specifications

General specifications		
Model	UT1 / UT1P	
Physical Specification	Dimensions(L*W*H)	67.3mm x 58.0mm x 2.3mm (UT1) 73.3mm x 83.5mm x 1.2mm (UT1P)
	Weight	5g (UT1) 6.6g (UT1P)
	Material	PVC (Environmentally friendly material)
	Color	White
Hardware Specification	Sensor / LED / Button	No
	NFC tag	Optional (13.56MHz; ISO/IEC 14443-A)
	Power activation	NFC (optional)
Structural Specification	Waterproof*	IP67
	Operating temperature	-25°C ~ 50°C
	Storage temperature	0°C ~ 25°C
	Operating humidity	20% ~ 90%
	Installation mode	Sticker
Battery Specification	Battery	Environmentally-friendly Zn-Mn coated disposable paper battery, 40mAh (1.5V)
	Replaceable	No
	Rechargeable	No
	Lifetime	3 months (Default setting*)
Bluetooth feature*	Bluetooth version	Bluetooth LE 5.0 and 5.3 compatible
	Bluetooth range	100m (open area)
	Advertising feature	Support up to 2 advertising slots
	Connectivity	Unconnectable
	Configure parameters	<ul style="list-style-type: none"> Advertising type: iBeacon, Eddystone(UID/TLM), NanoBeacon info Tx Power(dBm): -30/ -20/ -16 /-11 /-7 /-4 / 0 Advertising interval: 100ms ~ 20000ms Not Support configure after delivery
	OTA	No
Application scenarios	Asset management; Shipment tracking; Exhibitions; Smart office	

Table 1: General specifications of UT1/UT1P Ultra-thin Paper Tag

Waterproof*: Although the product can pass the IP67 waterproof test standard(Need to use the matching 3M adhesive to seal the exposed PCBA area on the back of the product), due to the special nature of the product material, it is not recommended to use the product directly in the underwater environment or long-term use in the underwater environment, so as not to cause damage to the product.

Default setting*: The UT1/UT1P Ultra-thin Paper Tag lifetime estimated based on standard working mode under 25°C conditions. (NanoBeacon info | 0dBm Tx Power | 3000ms ADV interval | Continuous broadcast)

Bluetooth feature*: If you want to know more about the functions of the UT1/UT1P, please contact MOKO sales staff to get the relevant IN100 Solution Beacon User Guide.

2.2 Battery consumption

Here we have described battery consumption in some common configurations which refer to different use cases. You can refer to below table to create the use case and estimate battery lift time.

UT1/UT1P Ultra-thin Paper Tag battery consumption			
Advertising interval	Tx Power	Consumption (uA)	Life time (Days)
1000ms	0dBm	17.6	37
3000ms	0dBm	6.4	91 (Default setting)
5000ms	0dBm	4.5	140
10000ms	0dBm	2.9	210

Table 2: Battery consumption in different conditions

2.3 Mechanical Drawings

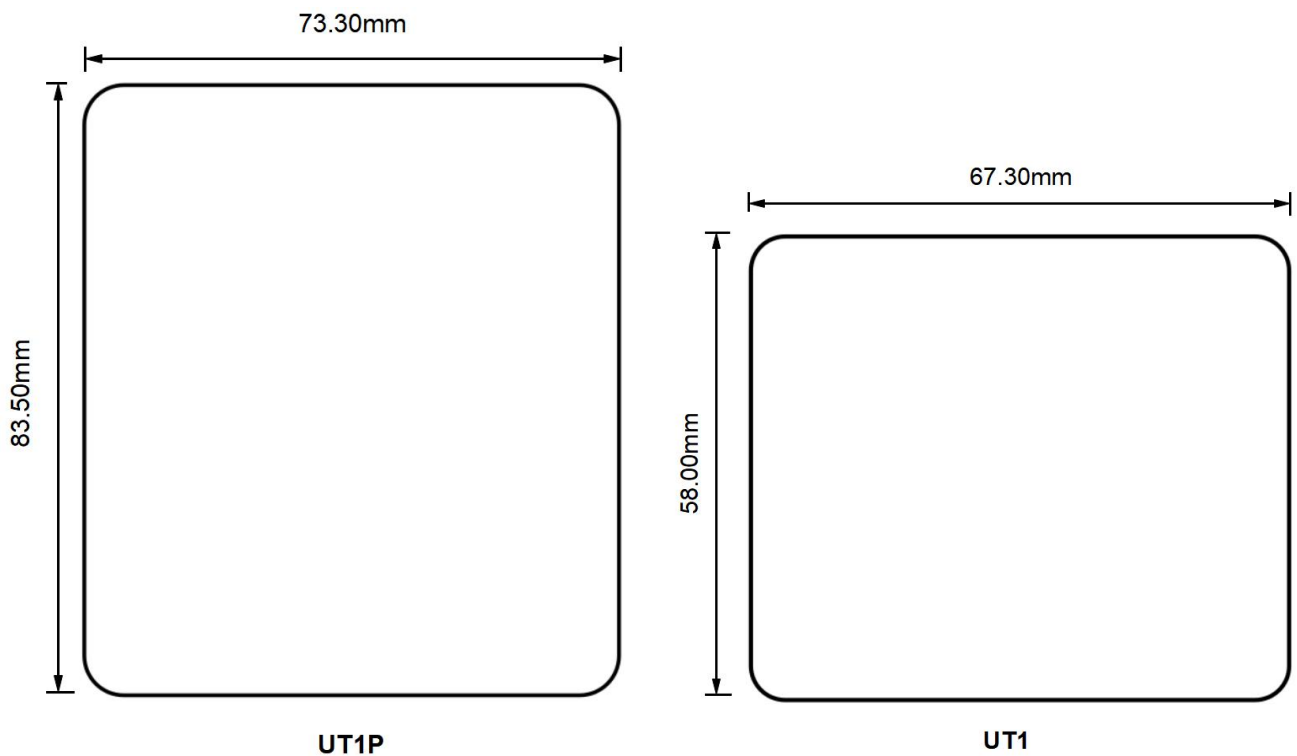


Figure 1: UT1/UT1P Ultra-thin Paper Tag Drawings

3. Basic instructions

3.1 How to power ON/OFF the tags

The UT1/UT1P Tag supports two power-on methods (choose one)-- **Powered on via NFC** or **Powered on by peeling off the release paper** on the back of the product (which has a layer of conductive adhesive attached to it).

You can refer to below operation flow to power on/off device.

powered on via NFC:

- Power ON: The product is powered off by default. Use an NFC-enabled scanning device, such as a smartphone with NFC functionality or an NFC card reader, and swipe it over the NFC area (at the laser engraving positions of the logo and QR code.) of the UT1/UT1P Tag to power on the device.
- Power OFF: Once product powered on, it does not support powering off again.

powered on by peeling off the release paper:

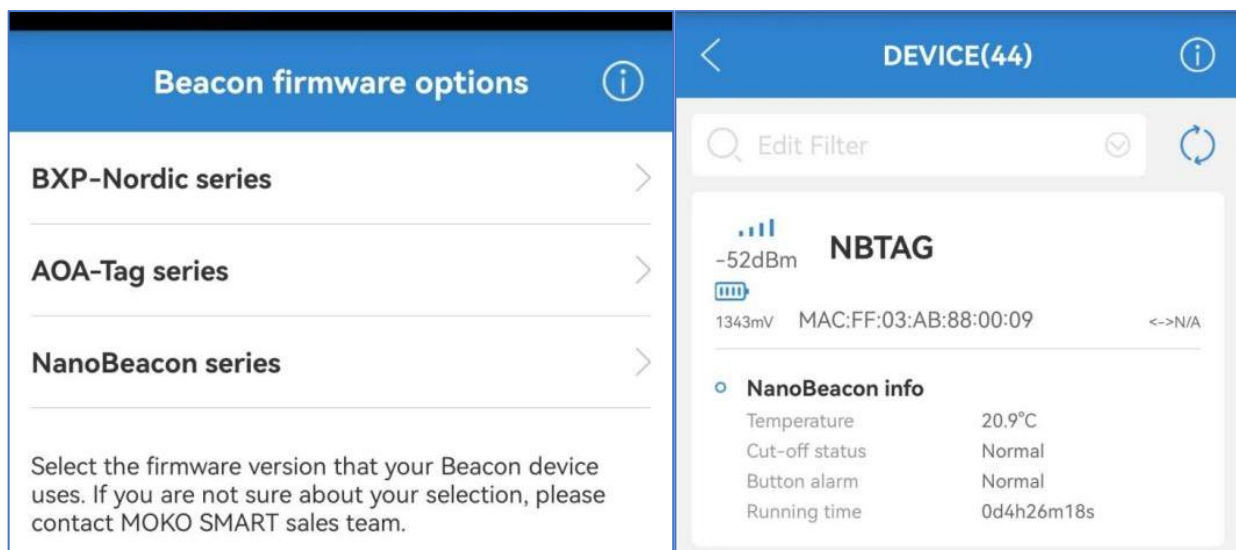
- Power ON: Peel off the release paper on the back of the product to power on the device.
- Power OFF: Once product powered on, it does not support powering off again.

3.2 How to confirm the tag is powered on

You can determine if the device is operational by using the BeaconX Pro app to scan for its broadcast. If the broadcast from the tag's specified MAC address is detected, it indicates the device is powered on. If no broadcast is detected after an extended period of scanning, it can be inferred that the device is not yet powered on.

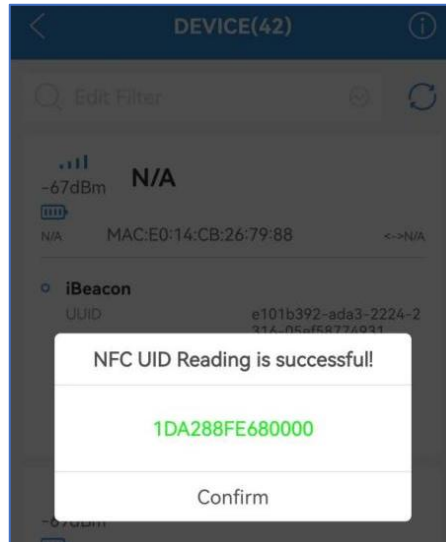
Here is the process for powering on UT1/UT1P and verifying its operational status.

Step1. Open the BeaconX Pro app, with app version V2.0.7 or higher, and select the “**NanoBeacon series**”, then you will enter the scanning page.



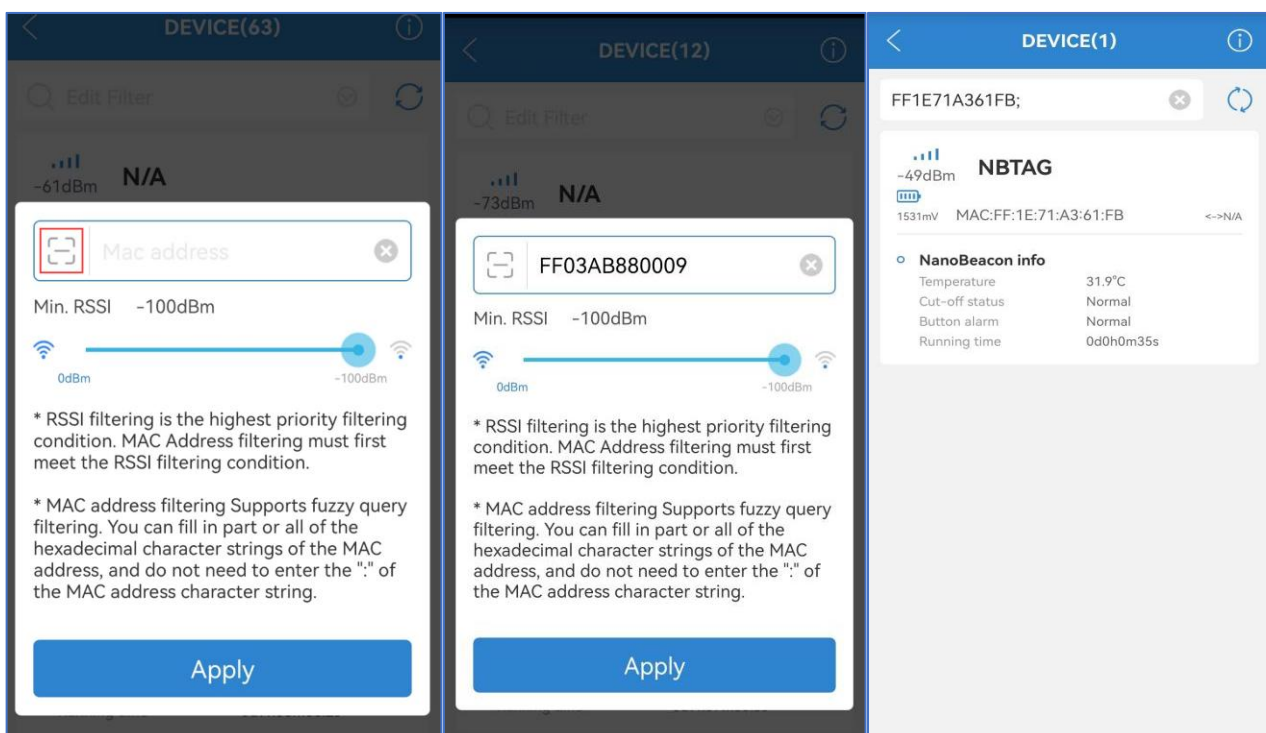
Step2. Power on the Tag.

- **powered on via NFC:** Bring the NFC area of your phone close to the NFC sensing area of the UT1/UT1P tag until your phone emits a recognition sound. The app will then display the recognized NFC information corresponding to the UT1/UT1P product. Usually, once the phone emits the recognition sound, it indicates that UT1/UT1P has been successfully powered on.



- **powered on by peeling off the release paper:** Peel off the release paper on the back of the product to power on the device.

Step3. Click on **"Edit Filter"** to enter the scan filter page. Choose the QR code scanning function and use your phone camera to scan the QR code on the Tag. The QR code contains the MAC address information of Tag. Once the QR code is successfully recognized, the MAC address information of this device will automatically populate the scan filter box. Click **'Apply'** and wait for a moment. If the app's scan page detects the broadcast information from the corresponding device, it indicates that the device has been successfully powered on and is operating normally.



3.3 NanoBeacon info broadcast format description

The Default setting of the UT1/UT1P Ultra-thin Paper Tag are as follows:

SLOT1
<i>Adv type -- NanoBeacon (MOKO Custom)</i> <i>Adv interval -- 3000ms</i> <i>Adv Tx Power -- 0dBm</i> <i>Adv mode -- Continuous</i>

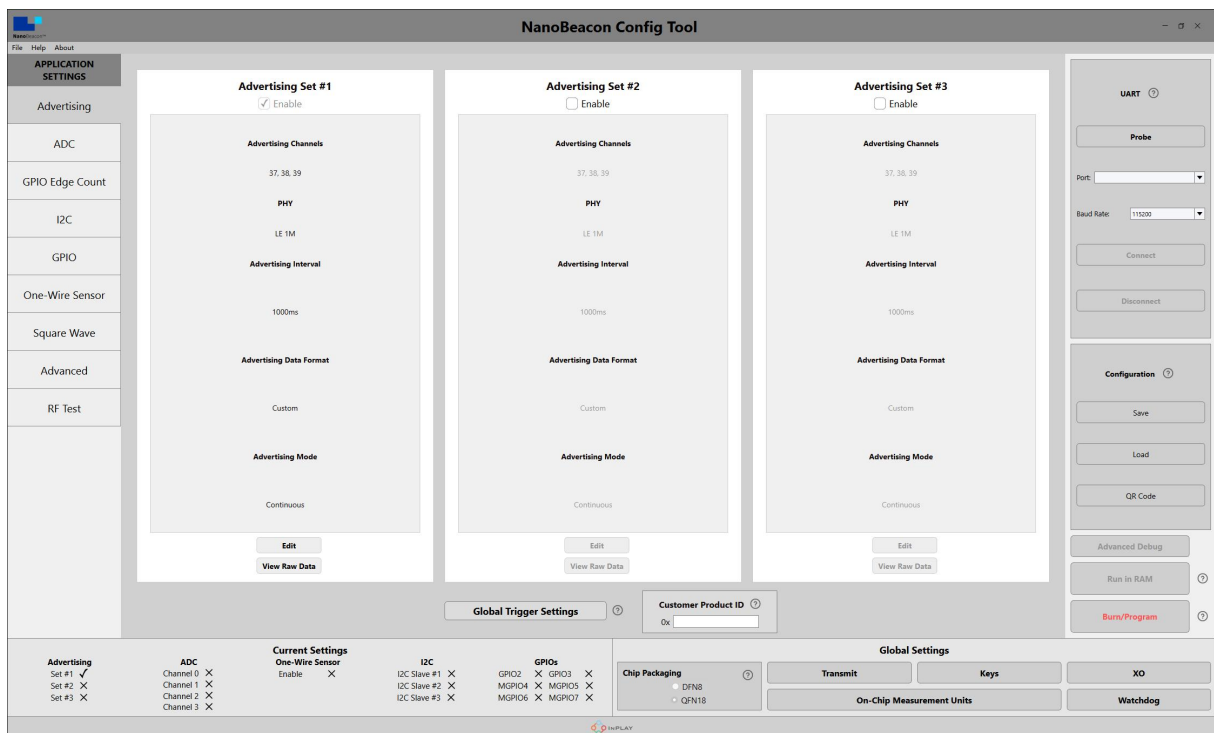
Advertisement Data (NanoBeacon)			
Offset	Field	Example value	Descriptions
0	Data length	0x06	AD length of Flags content
1	Data type	0x09	AD type: Flags
2 - 6	Device name	0x4e 42 54 41 47	Device name : NBTAG
7	Data length	0x12	AD length of NanoBeacon content
8	Data type	0xff	Manufacturer Spec
9 - 10	Manufacturer ID	0x05 05	Manufacturer ID
11	Adv type	0x00	0x00 -- Normal Adv type
12	Battery voltage	0x60	(Little-endian), uint: 0.03125V Content Parse: 0x60 >>>96 -- > 96×0.03125V = 3V
13 - 14	Beacon temperature	0x30 0A	(Little-endian), uint: 0.01℃ Content Parse: 0x0A 30>>>2610 -- > 2610×0.01℃ = 26.1℃
15 - 18	SEC_CNT	0x8B 7C 3B 00	(Little-endian), SEC_CNT is a 1 second resolution counter that represents time since beacon power-up or reboot. If this value is reset (e.g. on a reboot), the ADV count field must also be reset. 4 bytes, Content parse: 0x00 3B 7C 8B>>>3,898,507, that is 3,898,507s
19	Fixed value	0xDD	■ 0xDD -- no alarm
20-25	MAC address	0x46 4D A3 71 3E FF	(Little-endian), Content parse: Beacon MAC address: FF:3E:71:A3:4D:46

4. Advertising Data Configuration

The hardware based on the IN100 chip solution support configure the advertising data and advertising parameters of the Bluetooth beacon according to customer's application requirements through the configuration tool to achieve the purpose of different broadcast functions.

MOKO can also provide pure hardware equipment, which can be configured by the customer, or MOKO can configure the parameters as customer's requirements for verification.

The GUI of the configuration tool is shown in the below picture.



Note:

1. The broadcast parameters of the device can be configured only once before the device leave the factory, and cannot be configured again after the device leave the factory
2. The UT1/UT1P Product supports a maximum transmit power configuration of 0dBm.

The Bluetooth beacon supports configure the following functions and parameters:

- The Bluetooth beacon supports up to two advertising slots sets which means beacon can broadcasts different advertising packets separately.
- The Bluetooth beacon supports two commonly used advertising data formats.
 - iBeacon: Apple proprietary Beacon advertising frame format based on Bluetooth standard advertising (The parameters of UUID/ Major/ Minor/ Measured Tx Power in the iBeacon data format support configure)
 - Eddystone(UUID/TLM): Google proprietary Beacon advertising frame format based on the service data of the Bluetooth standard advertising.
 - Custom: the advertising data in a custom user-defined format as customer's application requirements

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FCC STATEMENT

1. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. 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.

RF warning statement:

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

Contact

MOKO TECHNOLOGY LTD. An original manufacturer for IoT smart devices

Address: 4F, Building 2, Guanghui Technology Park, MinQing Rd, Longhua, Shenzhen, Guangdong, China

E-mail: Support_BLE@mokotechnology.com

Website: www.mokosmart.com