

UHF RFID SLED for PM30 **RF300** User Manual

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Instruction

RF300 is a UHF RFID sled for PM30. This manual provides information about basic features and using the RF300. Please read this manual carefully before using your UHF RFID reader to ensure safe and proper use.

Revision History

Revision	Date	Description
V01	08 Apr 2021	Initial release
V02	02 Jun 2021	Added note that RF300 must be connected via Bluetooth for F/W update. Modified the title of Service portal download post
V03	15 Jul 2021	Updated Battery safety information chapter
V04	29 Oct 2021	Correct the figures related to LED indicator Updated configuration description (TxCycle default value, Filter 2) Added charging cradle – 4SBC chapter and handstrap

Related Document

Following documents are related to RF300. Download the documents on <u>Service Portal</u> > Download > RFID Control Apps & Document.

- RFID Control User Guide describes how to use the RFID Control and RFID Demo applications.
- RFID Control Configuration Tool User Guide describes how to use the RFID Control Configuration Tool.

RF300 SKUs

The contents of this manual can cover the following SKUs.

SKU	Part Number	RFID Engine	Location
SKU1	RF300-00RY-2	Impini® Indv® R2000	EU
SKU2	RF300-00RY-5		US, KR

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Device Parts

Figure 1 RF300 Views





No	Name	Description
1	PM30 Connector	Connector for communication with PM30
2	Connector for cradle charging	Connector for cradle charging
3	USB Type C connector	USB 2.0 Type C. Plug USB cable to charge the RF300
4	Battery release button	Press to open battery cover and replace the battery
5	Power button	Press and hold to turn on/off the RF300
6	LED indicator	Indicate the status of power, battery charging, connect mode, trigger mode. Find more details in <u>LED Indicator</u>
7	PM30 retention fixture	Install PM30 onto this part
8	UHF RFID antenna	Read RFID tags
9	Trigger button	Read RFID tags or barcode by pressing
10	Battery slot	Open the slot cap by pressing battery release button
11	Trigger mode change button	Press and hold to change trigger mode, barcode scanning or RFID tag reading
12	Connect mode change button	Press and hold to change the connect mode

Product Standard Accessories

The following items are in the product box.

Accessory	Name
	Battery pack (Battery may be assembled in the RF300)
	5V / 2A power adapter
	AC plug (EU / KR plug)
	USB type C cable
	Hand Strap

Charge the Device

Caution: Always use an original charger and cable from Point Mobile. Other chargers and cables may damage RF300. Also, make sure the connector, charger, cable is not wet. Follow the <u>Battery Safety Information</u> for safety of using the battery.

Charge with AC/DC adaptor

Figure 2 Charge RF300

- 1. Assemble the AC plug and power adapter.
- 2. Plug USB type C cable to the power adapter.
- 3. Connect the cable to USB connector of RF300.
- 4. Provide power by plugging the power adapter to the power outlet.



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Note: If the adapter is connected to RF300 with PM30 mounted, RF300 is charged first and PM30 starts charging after RF300 is fully charged. When PM30 starts charging, the charging LED of RF300 will light on yellow.

Charging with Cradle

SSC (Single Slot Cradle)

Figure 3 Charging with RF300 and PM30



Charge the RF300 with PM30 mounted through the cradle (Optional accessory: PM30-SSC0, PM30-SSC0-5). Place the device onto the cradle as shown in Figure 3.



Note: If you use the cradle to charge, PM30 and RF300 will charge at the same time.

4SBC (4 Slot Battery Cradle)

4SBC is a charging cradle for the battery of Point Mobile RFID sled models.

All RFID reader's replaceable batteries can be charged with 4SBC. And the cradle can charge up to 4 batteries at the same time.

Insert the battery into the slot with correct orientation. The LED indicator next to the slot will light up to confirm the charging. (Red – Charging / Green – Fully charged)

Find more detail in RF851 4SBC Quick Start Guide.

Figure 4 Charge battery with 4SBC



Turn on/off the Device

To turn on or off the RF300, press and hold the power button for 2 seconds (Until the RF300's LED indicator lights on/off).

Figure 5 RF300 Power button



Replace the Battery

When the battery level is low, replace the battery with a charged one.

1. Press Battery release button on the back of the handle to open the battery cover.

Figure 6 Battery release button



2. Remove the battery and replace it.



3. Close the battery cover firmly until it clicks.

LED Indicator

Figure 8 RF300 LED Indicator



No	Indicator	Status	Indication
1 Trigger Mede LED	O Turned off	UHF RFID mode	
1		Solid red	Barcode scan mode
2	Connect Mode LED	O Turned off	Wired communication mode
2		Solid red	Bluetooth communication mode
3	State LED	Solid red	Power on
3		Solid green	Bluetooth or Wired connected
		Solid red	Charging RF300
		Solid green	RF300 is fully charged
		Solid yellow	Charging PM30
4	Charging LED	Alternately blinking green & red	Battery fault
		🔅 Blinking red	Low battery / Charging temperature is too high or low



Install PM30

1. Insert the PM30 into the retention fixture of RF300 from the top side first. Figure 9 Installing PM30_1



Push the bottom of PM30 down.
 Figure 10 Installing PM30_2



3. To remove, hold the RF300 and pull up the bottom side of PM30.

Install the RFID Control App

Connect your PM30 and RF300, set up the configuration, and update the firmware of the RF300 using RFID Control application. The app can be downloaded from Point Mobile Service Portal website.

This guide only describes a few basic features of RFID Control, so please find more detail information in <u>RFID Control User Guide</u>.

To install RFID Control,

- 1. Access to Service Portal and log in.
- 2. Go to the Download board and find a post titled as RFID Control Apps & Document.
- 3. Download the RFID Control application.
- 4. Connect PM30 with PC and copy the apk file to internal storage of PM30.
- 5. Go to **FileExplorer FileExplorer FileExplore**

Figure 11 FileExplorer



6. To run the app, tap RFID Control 📄 from App drawer or EmKit 🏟

Connect mode

RF300 supports two following connect modes.

Mode	Description
Wired communication (Default)	 Communicate through the pogo pin connectors on the PM30 and RF300. Need to install PM30 on RF300.
Bluetooth communication	Communicate through Bluetooth.

Change connect mode

To change connect mode from one to another,

- Press connect mode change button of RF300 until Connect-Mode LED changes.
- Change **Open option** in RFID Control.

Figure 12 Connect mode change button



Figure 14 RFID Control - Open options





Note: Disconnect current connection before changing connect mode. Connect mode change button does not work when RF300 is already connected to any PM30.

Wired Communication

Wired communication is a default connect mode for RF300 and PM30.

Because the devices communicate through pogo pin connectors, you must install PM30 on RF300 first for wired communication.

- 1. Install PM30 on RF300 referring to Install PM30.
- 2. Make sure the Connect-Mode LED is turned off. (= Wired mode)
- 3. Launch RFID Control and check if the Open option set as Wired.
- 4. Turn on Connect to RFID Reader toggle switch.

Figure 15 RFID Control - Wired mode



- 5. When the devices are connected properly,
 - State LED of RF300 lights green
 - An icon indicating the RF300's battery level is shown on the status bar

Figure 17 Wired connected screen					
10:46			100%		
	RFID Control		(i)		
PM30	Open option :	Wired	•		
Connect to RFID Reader On					

Figure 16 State LED (Wired or Bluetooth Connected)



Disconnect

In one of the following cases, the wired communication will be disconnected.

- Detach PM30 from RF300
- Turn off the Connect to RFID Reader toggle switch (In RFID Control)
- Change Open option to Bluetooth (In RFID Control)
- PM30 enters suspend mode
- Turn off the RF300 or PM30

Auto reconnect

Auto-reconnect is performed when RF300 and PM30, connected through wired communication once, are re-installed, or PM30 wakes up from suspend mode while installed on RF300.

For auto-reconnect, all of the following states must be satisfied.

- RF300 and PM30 are turned on
- RF300 and PM30 connected through wired communication at least one time
- Open option of RFID Control and connect mode of RF300 is set as Wired
- Previous connection is disconnected by removing PM30 from RF300 (If you disconnected it by toggle switch in RFID Control, Auto-reconnect does not perform.)

Bluetooth Communication

To connect RF300 and PM30 with Bluetooth, change the connect mode on the RF300 and RFID Control, first (Refer to <u>Connect mode - Change connect mode</u>).

When the **Open option** changes to Bluetooth while Bluetooth is turned off on PM30, the app tries to turn on the Bluetooth automatically. Tap **ALLOW**. If you denied, the app will be closed.

Figure 18 Bluetooth turn on dialog



Connect methods

There are two ways to establish the Bluetooth communication, Tap-to-Pair and Searching RFID reader. Choose more comfortable way.



Note: NFC Tap-to-Pair or Search RFID reader

- NFC Tap-to-Pair: Easy automatic pairing and connection process with a single tap
- Search RFID reader: Normal pairing and connection process with manual steps

Tap-to-Pair

Tap-to-Pair method uses NFC feature, and connect RF300 and PM30 just by getting them close. An NFC tag is on RF300 UHF RFID antenna to support Tap-to-Pair.

1. Change connect mode to Bluetooth on RF300

and Open option of RFID Control to Bluetooth.

2. Tap NFC Tap-to-Pair on RFID Control.



Note: NFC is enabled by default. But if NFC is turned off, app will ask to turn on NFC. Tap OK and tap NFC toggle switch to enable NFC.

Figure 19 NFC turn on dialog



Or before access the Tap-to-Pair screen, enable NFC by one of below ways.

- Settings > Connected devices > Connection preferences > enable NFC switch
- Open Quick setting panel > enable NFC





Figure 22 PM30 NFC antenna area

Connecting PM30

3. Referring to NFC antenna area of PM30, bring the PM30 close to the NFC logo of RF300 as the picture on the screen. And then, allow the connection in the dialogs.

Figure 23 Tap-to-Pair



- 4. Check the device and reader are connected properly
 - Enabled Connect to RFID Reader toggle switch and connected RF300's name is displayed
 - An icon indicating the RF300's battery level is shown on the status bar
 - RF300's state LED lights green

Figure 25 Bluetooth connected screen

2:48			82%
≡ 1	RFID Control		(i)
PM30	Open option :	Bluetooth	•
NFC Tap-to-Pair			
Search RFID Reader			
Connect 1 RF300 SN2	o RFID Reader	On	
Last Conr RF300 SN2	nected RFID Reade	r	

Figure 24 State LED (Wired or Bluetooth Connected)



Search RFID Reader

Search nearby RF300 and choose one of the RF300.

- Change connect mode to Bluetooth on RF300 and **Open option** of RFID Control to **Bluetooth**.
- 2. Tap Search RFID Reader on RFID Control

≡	RFID Control	í		
PM30	Open option : Bluetooth	•		
NFC Tap-to-Pair				
Search RFID Reader				
Connect to RFID Reader Off				
Connect	t to RFID Reader	Off		

3. When desired RF300 name appears, stop searching by tapping **STOP** and select the name Figure 27 Searching RFID reader



4. Allow the connection in the dialogs

Figure 28 Bluetooth pairing dialog



- 5. Check below items to confirm that RF300 is connected properly (Refer to Figure 25, Figure 24)
 - Enabled Connect to RFID Reader toggle switch and connected RF300's name is displayed
 - An icon indicating the RF300's battery level is shown on the status bar
 - RF300's state LED lights green

Disconnect

In one of the following cases, the Bluetooth communication will be disconnected.

- Change **Open option** to **Wired** (In RFID Control app)
- Disable Bluetooth from PM30
- Turn off the Connect to RFID Reader toggle switch (In RFID Control app)
- Turn off the RF300 or PM30

Reconnect

To reconnect to the last connected RFID reader, tap **Connect to RFID Reader** toggle switch and wait until the devices are connected.

Figure 29 Reconnect toggle switch

≡ 1	RFID Control		()	
PM85	Open option :	Bluetooth	•	
NFC Tap-	to-Pair			
Search RFID Reader				
Connect	to RFID Reader	\bigcirc	Off	
Last Con RF300 SN2	nected RFID Reade	er		

Configuration Detail

RF300 configuration contains below settings. Find the details of each setting from <u>RFID Control User</u> <u>Guide</u>.

Settings			Range or Options	Default Value
Beep Volume			Mute Low High	High
Vibrator			On / Off	Off
Radio Power			-30 ~ 0 (0 ~ 30 dBm)	0 (30 dBm)
Tx ON duration		40 ~ 400	200	
TX Cycle	Tx OFF dura	ation	0 ~ 255	0
Tx Data Format			TAG_DATA PREFIX_TAG_DATA TAG_DATA_SUFFIX PREFIX_TAG_DATA_SUFFIX	TAG_DATA
Data Format			PC_EPC_CRC PC_EPC EPC_CRC EPC_ONLY	PC_EPC_CRC
Filter duplicate tags		On / Off	Off	
Tag Pattern			(Blank)	
Filtor	Offset		0~62	0 (digit)
(Filter 1, 2)	Select		Matching tags Non-matching tags	Matching tags
Enable filter		r	Enable / Disable	Disable
		Session	0/1/2/3	1
Inventory Config	Inventory Param	Q	0 ~ 15	5
		Flag	A / B / A or B	A
	Operation	Mode	Continuous Mode Single Mode	Continuous Mode
	Mode Timeout		0 ~ 120	0 (Infinite)

Configuration Settings

Settings		Range or Options	Default Value
Tag Focus		On / Off	On
Fast ID		On / Off	Off
Continuous	Read	On / Off	On
Auto Read	On / Off	On / Off	Off
	Auto read interval	1 ~ 99	1 (sec)
Save Log		On / Off	Off
Sleep		30 seconds 1 minute 5 minutes 10 minutes 30 minutes 1 hour 2 hours	10 minutes
Reset RFID Settings			•

Configuration Settings

Apply Configuration

To adjust configuration, use RFID Control app or importing JSON file.

Apply via RFID Control

After connecting the devices, tap \equiv to open the side menu bar and select **Configuration**. And then, adjust each configuration manually using RFID Control interface.

Figure 30 Side menu bar - Configuration			Figure 31 Configuration		
RFID Reader Solution			← Configuration		
RFID R	Reader Settings	h ▾	Beep Volume High	On	
\$	Configuration		Vibrator	Off	
<prefix> EE <suffix></suffix></prefix>	Wedge	On	Radio Power 30dBm		
₼	Import Configuration		Tx Cycle		
8	Export Configuration	-	Tx Data Format		
Ŧ	Update RFID F/W		TAG_DATA		
₽	Launch RFID Demo		PC_EPC_CRC		
-			Filter duplicate tags	Off	
<u>(</u>)	RFID Reader Information		Filter		

Apply via JSON file

You can also apply the configuration by importing the JSON file which contains configuration.

The JSON file for configuration update can be made by RFID Control Configuration Tool. And it must be named as **Configuration.json** and copied into **RFIDControl/RFIDJsons** folder of host device's internal storage.



Note: Must follow the file name and path. Otherwise, RFID Control cannot find the file.

You can perform configuration update automatically or manually. Refer to below table to identify the differences and choose more suitable on your working environments.

Methods	Description
Auto Update	 Set auto update settings in JSON file Update configuration every time the RF300 is connected while RFID Control is running
Manual Update	Perform regardless the auto update is enabled or disabledPerform update immediately

Auto Update

To set up the auto update, enable and save the auto update setting (**Auto update (JSON)**) in **Configuration.json** file which contains the configurations. (Find more detail in <u>RFID Control</u> <u>Configuration Tool User Guide.</u>)

And then, launch RFID Control without any connection with RF300 to save the auto update setting on the app.

When you set up Auto update,

- Auto Update will be performed every time RF300 is connected while RFID Control is running
- Auto Update setting value will be maintained until next reading JSON file
 - JSON file is read when RFID Control is launched without any connection with RF300

Configuration Settings

Manual Update

Manual update can be performed regardless the auto update is enabled or disabled. To apply the configuration immediately, perform update manually.

- 1. Make Configuration.json file and copy it to specified folder in internal storage of host device
- 2. Tap \equiv to open the side menu bar and select **Import Configuration**.
- 3. Tap IMPORT and wait until the process is done

(There is no need to select JSON file because app will automatically find and use the

Configuration.json file in the RFIDControl/RFIDJsons folder)

Figu	ure 32 F	RFID Contro	ol - Import	Cor	nfiguration
4	Imp	ort			

← Import		
Auto update		
During Bluetooth connection process, RFID Configuration will be updated automatically		
path : RFIDControl/RFIDJsons/Configuration.json		
IMPORT		

Wedge Settings

Wedge Detail

Wedge contains the below values. Find the details of each setting from <u>RFID Control User Guide</u>.

Settings	Options	Default Value
Result Type	Callback (User Message) Keyboard Event Clipboard (KEYCODE_PASTE) Clipboard (Ctrl+V) Intent Broadcast Custom Intent	Clipboard (KEYCODE_PASTE)
Terminator	None Space Tab LF Tab & LF	None
Prefix		(Blank)
Suffix		(Blank)

Wedge Settings

Apply Wedge

To adjust wedge setting, use RFID Control app or importing JSON file.

Apply via RFID Control

After connecting the devices, you can access **Wedge**. Tap \equiv to open the side menu bar and select **Wedge**. And then, adjust desired configuration.

Figure 33 Side menu bar - Wedge			Figure 34 RFID Control - Wedge
RFID Reader Solution		G	← Wedge
h 🔻		h 🝷	Result Type Clipboard (KEYCODE_PASTE)
\$	Configuration		Terminator None
«Prefix» <u>Bij</u> «Suffu»	Wedge	On	Prefix
₩	Import Configuration		Suffix
8	Export Configuration		
Ŧ	Update RFID F/W		
E	Launch RFID Demo		
(j)	RFID Reader Information		

Apply via JSON file

See <u>Apply via JSON file in Configuration Settings</u>. If the JSON file contains wedge setting values, Wedge settings are applied at the same time when you apply the configuration settings via the JSON file.

Firmware Update

Point Mobile provides up-to-date RF300 firmware in <u>Service Portal</u>. The firmware files are provided by RFU file format, and it contains Bluetooth firmware and MCU firmware both.

To perform firmware update, download the RFU file from <u>Service Portal</u> and copy it into the specified folder of host device's internal storage.



Note: Must copy the RFU file to **RFIDControl/RFIDRFUs** folder of host device's internal storage. Otherwise, the app cannot find the file.

You can perform update automatically or manually. Refer to below table to identify the differences and choose more suitable on your working environments.

Methods	Description		
	 Set auto update settings and firmware filename in JSON file 		
Auto Update	 Update Firmware every time the RF300 is connected via Bluetooth while RFID Control is running 		
Manual Update	Select firmware file manually in RFID ControlPerform update immediately		



Note: RF300 must be connected via Bluetooth for firmware update.

Auto Update

To set up the auto update, enable and save the auto update setting (Auto update (RFU) & RFU filename) in Configuration.json file (Find how to set auto update in JSON file in <u>RFID Control</u> <u>Configuration Tool User Guide</u>) and copy the JSON file into **RFIDControl/RFIDJsons** folder of host device.

And then, launch RFID Control without any connection with RF300 to save the auto update setting on the app.

When you set up Auto Update,

- Auto Update will be performed...
 - Every time the RF300 is connected via Bluetooth while RFID Control is running & RFU file version is different from current RF300 firmware version
- · Auto Update setting value will be maintained until next reading JSON file
 - JSON file is read when RFID Control is launched without any connection with RF300

Firmware Update

Manual Update

Manual update can be performed regardless the auto update is enabled or disabled. To update the firmware of RF300 manually,

- 1. Execute RFID Control and connect RF300 via Bluetooth to host device
- 2. Tap \equiv and select Update RFID F/W
- 3. Tap ____ to browse the RFU file you prepared

(The file must be in RFIDControl/RFIDRFUs folder.)

Figure 35 RFID Control - Update RFID F/W

← Update RFID F/W
Auto update During Bluetooth connection process, RFID F/W will be updated automatically.
Please select a RFU file to update
UPDATE NOW

- 4. Select the RFU file and Tap UPDATE NOW
- 5. Wait until the update process is done

Read RFID Tag

RFID Demo

You can demonstrate the function of reading an RFID tag with RFID Demo. RFID Demo will be installed together with RFID Control.

There are two ways to launch RFID Demo,

- Tap RFID Demo To from App drawer or EmKit Image
- Open the side menu bar on the RFID Control and tap Launch RFID Demo



Read RFID Tag

Read the RFID Tag

Before read RFID tag, make sure that the Trigger-Mode LED lights off. Turned off Trigger-Mode LED means that RF300 is in UHF RFID mode.

If the LED lights on red, press and hold the Trigger-mode change button until the LED turns off because red LED means RF300 is in barcode scan mode.

Figure 36 Trigger mode change button





Read RFID tags after connecting the RF300 to your PM30. To read RFID tags, aim the tag and then press the trigger button of RF300 or tap the **Read RFID Tag** button on the screen.

Figure 38 Reading RFID tag



Figure 39 RFID Demo - Read tag

	emo		=↓		
Total Count : 0	-	Total Read Count : 0			
RFID Ta	ag Info	Read Count			
Continuous R	ead	🗌 Sa	ave Log		
Auto Read		🔽 Be	eep Sound	d	
Read RFID Tag					

Read RFID Tag



Note: Make sure the RF300 is in UHF RFID mode. If you try to read RFID tags using RFID Demo app while RF300 is in **barcode scan mode**, it does not work and a toast message pops up on the screen.



For demonstrating barcode scan function, use Scan Demo application.

Tap $\underline{-\uparrow}$ to sort the delivered tag data in order and tap $\mathbf{\overline{=}}$ to clear the tag data.

≡ RFID De	mo = 🖓 🧻
Total Count : 3	Total Read Count : 4
RFID Tag	g Info Read Count
40007370507479	1
40007370507479	2
3000e200001794	1
🗸 Continuous Re	ad 🗌 Save Log
Auto Read	🗹 Beep Sound
Rea	ad RFID Tag

Figure 41 RFID Demo - Read tags

Scan a Barcode

If you want to scan a barcode instead of RFID tag, change the trigger mode of RF300. Trigger button will activate the barcode scan action.

- 1. Press and hold the trigger mode change button until the Trigger-Mode LED turn on red.
 - Figure 42 Trigger mode change button



Figure 43 Trigger-Mode LED (Barcode scan mode)



- 2. Execute **Scan Demo** or scanner application, and then scan a barcode by pressing the trigger button of RF300.
- 3. Check the barcode information displayed on the app

Accessory

A hand strap is enclosed in the RF300 package. Attach the strap and carry the reader more comfortably.



To attach the hand strap,

1. Thread the strap through the hand strap hole next to the USB connector.



Accessory

2. Slide the strap through the buckle at the appropriate length.

Figure 46 Attach hand strap_2



Safety Information

Battery Safety Information

Follow battery safety guidelines in this manual for safe usage and disposal of Li-ion batteries. Improper battery usage may result in an explosion, fire, or other critical hazards.

Battery Usage & Disposal Guidelines

- 1. Use only Point Mobile approved batteries and charging accessories. Other batteries and charger may damage the device.
- 2. Do not disassemble or modify the battery. Do not bend, shred, deform the battery.
- 3. Do not expose the battery to excessive heat or cold. Do not place the battery into a microwave oven or dryer.
- 4. Do not short-circuit the battery or allow a foreign object to battery contacts.
- 5. Do not burn, expose to water, or other liquids the battery.
- 6. If battery leakage is observed, avoid any contact with the skin or eyes. If contact has been made, wash the affected area with water for 15 minutes, and seek medical attention.
- 7. Follow the local regulations for the disposal of used batteries.
- 8. Do not store or charge the battery in direct sunlight or in areas prone to get hot such as in a parked vehicle, near a heat duct, or close to other heat sources.

Battery Charging Guidelines

- 1. Do not charge the battery in or near areas with materials that could obstruct charging or cause a short-circuit.
- 2. Do not charge the battery in the excessive hot or cold area.
- 3. Separate the charger from the battery as soon as possible when the battery is fully charged.

Safety Information

Battery Storage Guidelines

Storing the batteries is as important as using it safely. Battery is a core part of the device's performance so that you should treat the batteries safely.

- Batteries should be stored in the clean, dry and ventilated environment within ambient temperature ranges of 20±5 °C
- 2. Keep batteries away from corrosive substances.
- 3. Keep batteries away from fire and heat.
- 4. Batteries are charged while producing to below 20 ~ 30 % of full capacity for safety regulations.
- 5. Charge it for 30 minutes –1hour t least once every six months to prevent full discharge and keep the performance, when you are not using the battery for a long period.



Notice: The battery is consumable goods. Point Mobile provides warranty for battery in 6 months after purchase. If you suspect the battery swelling, change the battery and contact Point Mobile to use safely.



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