CipherLab User Guide

CipherLab UHF RFID Reader (works with EZConfig & EZEdit)

For Android 7, Android 9, Android 10

RK25 RS35

Version 1.3



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RELEASE NOTES

Version	Date	Notes
1.0	March 3 rd , 2022	Initial release
1.1	Nov. 09 th , 2022	 Modify the description of Fast Switching Mode in Sections 1.7.2 and 3.5.1.
		 Remove the description of UHF RFID + Barcode Reader mode from Sections 1.7.2~1.7.3 and 3.5.1.
		 Modify the picture of Frequency Channel for Europe
		Modify work mode and RF Link for European Edition
1.2	Nov. 18 th , 2022	 Modify the operating temperatue of RK25/RS35 UHF RFID Reader
1.3	May 18 th , 2023	 Modify the description of Low Battery LED on the table in Section 1.3.4

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SPECIFICATION				
RK25 UHF RFID Reader				
RS35 UHF RFID Reader				

INTRODUCTION

CipherLab RK25/ RS35 UHF RFID Reader, which works with RK25/ RS35 mobile computer built-in with the UHF RFID applications **EZConig** & **EZEdit**, uses Ultra-High Frequency (UHF) range to read and write RFID tags for the achievement of high performance and excellent reliability.

FEATURES

- Supports CipherLab RK25 mobile computer (for RK25 UHF RFID Reader) and RS35 mobile computer (for RS35 UHF RFID Reader).
- Supports importing and exporting settings to configuration files.
- High performance and accurate RFID tag captures.
- Ability to access and modify the tag's memory banks.

Chapter 1

RK25/ RS35 UHF RFID READER

This chapter gives the introduction about the **RK25/ RS35 UHF RFID Reader**.

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1.1 OVERVIEW

RK25/ RS35 UHF RFID Reader, a pistol-shaped handle with a trigger button, is used for working with RK25/ RS35 mobile computer to read UHF RFID tags.

1.1.1 RK25 UHF RFID READER

The appearance of RK25 UHF RFID Reader is as below:

SIDE VIEW





1.1.2 RS35 UHF RFID READER

The appearance of RS35 UHF RFID Reader is as below:







1.2 INSTALLATION & REMOVE

Please follow the below steps to mount the **RK25/ RS35 mobile computer** onto the **RK25/ RS35 UHF RFID Reader** or remove the device from the UHF RFID Reader:

1.2.1 RK25 UHF RFID READER

INSTALL

Step 1. Loosen the 2 screws in the back side of the RK25 mobile computer to remove the hand strap hole cover which covers the contact pins.

If a hand strap is attached, remove it from the RK25 mobile computer as well.



Step 2. With the back side of the RK25 mobile computer downwards, insert its top side into the top shell of the RK25 UHF RFID Reader first, and then press down the bottom side of the RK25 mobile computer to fasten it till you hear a "**click**" sound.



REMOVE

Step 1.

Place the RK25 UHF RFID Reader with the RK25 mobile computer mounted on it on a horizontal flat surface.



Place on a horizontal flat surface.

Step 2.

With your both hands holding the two side of the top shell, slightly pull aside the two sides of the top shell by thumbs.



Step 3.

While thetop shell sides are pulled aside by your thumbs, use other fingers to push out the RK25 mobile computer from its back side to make it apart with the RK25 UHF RFID Reader.



1.2.2 RS35 UHF RFID READER

INSTALL

Step 1.

Loosen the 2 screws in the back side of the RS35 mobile computer to remove the hand strap hole cover which covers the contact pins.

If a hand strap is attached, remove it from the RS35 mobile computer as well.



Step 2.

With the back side of the RS35 mobile computer downwards, insert its top side into the top shell of the RS35 UHF RFID Reader first, and then press down the bottom side of the RS35 mobile computer to fasten it till you hear a "**click**" sound.



REMOVE

Step 1.

As the figure shows, place the RS35 UHF RFID Reader with the RS35 mobile computer mounted on it on a horizontal flat surface.



Place on a horizontal flat surface.

Step 2.

Keep holding the top shell with both hands, and slightly pull aside the top shell sides of the RS35 UHF RFID Reader by thumbs.



Step 3.

While the top shell sides are pulled aside by your thumbs, use other fingers to push out the RS35 mobile computer from its back side to make it apart with the RS35 UHF RFID Reader.



1.3 BATTERY

The battery chamber is inside the handle part of the RK25/ RS35 UHF RFID Reader. The following is the instruction about battery installation & removing, and how to charge the battery by the battery charger.

1.3.1 INSTALL & REMOVE THE BATTERY

RK25 UHF RFID READER

To install the battery of RK25 UHF RFID Reader:

Step 1.

Pull up the captive screw and twist it anticlockwise to open the lid.



Step 2.

Put the battery into the battery chamber from the contact pins end.



Step 3.

Close the lid and twist the captive screw clockwise to lock it.

Remove:

To remove the battery, simply twist the captive screw anticlockwise and take the battery out.

RS35 UHF RFID READER

To install the battery of RS35 UHF RFID Reader:

Step 1. Pull up the captive screw and twist it anticlockwise to open the lid.



Step 2. Put the battery into the battery chamber from the contact pins end.



Step 3.

Close the lid and twist the captive screw clockwise to lock it.

Remove:

To remove the battery, simply twist the captive screw anticlockwise and take the battery out.

1.3.2 CHARGE THE BATTERY THROUGH BATTERY CHARGER

To charge the battery through the battery charger:

Step 1. Connect the battery charger to the external power source.

Step 2. Insert the battery into the battery charger.

Step 3. Lock the battery.



Remove: Press down the lock bolt to pull out the battery.



IMPORTANT INFORMATION

The below table lists the important charging information of the battery charger:

Power Supply	5V/2A output CipherLab approved
Battery Pack	3.6V, 3000mAh Li-ion CipherLab proprietary
Charging Time	Approx. 5 hours

LED INDICATOR ON BATTERY CHARGER

The LED indicator on the battery charger gives the following ststus indications:

LED Indicator Status	Description
Blue, Solid	Charger power on
Red, Solid	Charging battery
Green, Solid	Charging done
Blue/Red Ratio 0.5s: 0.5s	Error

1.3.3 CHECK THE BATTERY POWER

After successfully installing the RK25/ RS35 UHF RFID Reader with your RK25/ RS35 mobile computer, the UHF RFID Reader's battery power status can be checked on the device:

ON LOCK SCREEN

You can check on the lock screen for the battery status of the UHF RFID Reader:



To disable the battery notification on lock screen, please access from:

RK25 with Android Nougat
 App Drawer (All Applications)| Settings () Notifications () Setting () On the lock screen, and select "Don't show notifications at all".

 RK25 with Android Pie
 App Drawer (All Applications) | Settings () Apps & notifications () Notifications | On lock screen, and tap to select "Don't show notification at all" to disable the battery notification on lock screen.

 RS35 with Android 10
 App Drawer (All Applications) | Settings () Apps & notifications () Notifications () Settings () Apps & notifications () Notifications () Settings () Apps & notifications () Notification () Notification () Notifications () Notifications () Notifications () Settings () Apps & notifications () Notifications () Notifications () Notifications () Notifications () Notifications () Notification () No

ON STATUS BAR

The battery status of the UHF RFID Reader is shown on the status bar. By swiping down from the status bar to open notifications drawer, you can check its notification which is unclearable till the UHF RFID Reader is detached.



Charging:

The battery of the UHF RFID Reader is in charging status.

6:10 🖾 🌀			ND0 ▼ 🔽s 🖗	6:10	
				Fri, Oct 29	uDu 🔹 🗣 72%
	EZConfig	EZEdit			\$
Settings			-	Silent notifications	

Battery Power Level:

The remaining battery power level.

5:53 📼 🌀			nDn → ବି 🔒	5:53
				Fri, Oct 29
	EZConfig	EZEdit		
101				_
Settings				Silent notifications
octungo				RFID Service
				UHF RFID Reader Battery
				RFID Service
				UHF RFID Reader

ON POWER INFORMATION OF EZCONFIG

Launch EZConfig and tap on "Power Information"



on main screen, you can find the

UHF RFID Reader's battery power level under "Battery Status".

\equiv EZConfig	:	Power Information
Device Information Notification Settings Scan Settings	Power Information Filter	Battery 90 % Pistol Temperature 0 °C Pistol Temperature Protect 65 °C Power Mode Power Save Mode

Note:

The battery iocn shown on the RK25/RS35 mobile computer varies as the battery power of the UHF **RFID** Reader changes every 10% to indicate the battery status:

- (1) C : No battery, or the voltage is 0, or battery fault for charging status.
- (2) **(2)** : Low battery
- (3) **D** : Battery power level is 10% and 20%.
- (4) 🛄 : Battery power level is 30% and 40%.
- (5) Eattery power level is 50% and 60%.
- (6) E : Battery power level is 70%, 80%, and 90%.
- (7) **IIII**: Battery power level is 100%.
- (8) 🖅 : Battery is in charging status.

1.3.4 LOW BATTERY ALERT

EZConfig will prompt you when the battery power of the UHF RFID Reader is getting low. You can set the notification in "<u>Notification Settings</u>" on the main screen.

ltem	Description
Low Battery LED	If the battery power level is 0%, the LED indicator on the UHF RFID Reader will flash in red 5 times every 2 minutes when it wakes up.
Low Battery Beep	The low battery notification sound occurs when the UHF RFID Reader's battery power level is 0%.
Notification	 When the battery power is 20% and 10%: The low battery notification will pop up with the battery icon shown as on the status bar. When the battery power level is 0%: The low battery notification will pop up with the battery icon shown as on the status bar.

Note:

The UHF RFID Reader automatically enters "Power Saving Mode" as the mobile computer suspends.

1.4 CHARGING

By charging the mobile computer mounted on the UHF RFID Reader, the UHF RFID Reader can be charged at the same time. The charging time is approximate 6 hours.

You can charge the device by:

SNAP-ON CHARGING & COMM. CABLE

RK25



RS35



CHARGING & COMM. CRADLE

RK25



RS35


USB CABLE

• RK25: Micro USB Cable



RS35: USB Type-C Cable



Warning:

- (1) For charging the UHF RFID Reader through the mounted mobile computer, be sure to connect to the AC adapter, but not PC.
- (2) The UHF RFID Reader stops working during charging period.

1.5 LED INDICATOR

The LED Indicator on the UHF RFID Reader gives status indications as below:



LED Indicator Status	Description
Blue, blink	In working mode
Green, blink	Tag is detected.
Red, solid	Charging
Green, solid	Charging complete
Red, blink	Charging error
Red, flash once (Duration: 1 second)	Enter power saving mode

Note:

The UHF RFID Reader enters "Power Saving Mode" as the mobile computer suspends.

1.6 HOW TO SCAN

After properly installing your mobile computer onto the UHF RFID Reader, you can start to scan the UHF RFID tags:

• RK25:



RS35:



- **Step 1.** <u>Launch the application "**EZConfig**"</u> on your mobile computer.
- **Step 2.** Aim the RFID Antenna at the UHF RFID tag to read.
- **Step 3.** Pull the trigger on the handle.

1.7 SWITCH BETWEEN UHF RFID READER AND BARCODE READER

To quickly switch between UHF RFID Reader and barcode reader, you can set a key through the built-in app "Button Assignment" , or turn on "Fast Switching Mode" of "EZConfig".

1.7.1 HOW TO SET THE HOT KEY BY BUTTON ASSIGNMENT

The following steps take RS35 mobile computer for example.

1) Please go to App Drawer (All Applications), and tap on the application Button

Assignment to launch it.



Note:

For the details about the app "Button Assignment", please refer to <u>Button Assignment User Guide for</u> <u>Android</u>.

2) Tap on the system profile (or a profile to be assigned as the system profile) to list all the keys it contains, and tap to select a key to be the hot key for switching between UHF RFID Reader and barcode reader.

Button Assignment :	~	Keys(System Profile)	RESET		← Right Scan	
System Profile	 FN	FN			Key Mapping Right Scan	•
	••••	Left Scan			Launch Application	0
		Right Scan Pistol Scan		,	Launch Activity with Intent	0
		Volume Up			Wake Up	
	C	Volume Down				

3) Select "**Key Mapping**" to map the selected key by entering the key code. Please expand the **Miscellaneous** category then tap on **User-defined**.

← Right Scan			Select Key CANCEL
Key Mapping Right Scan			Contract Con
Launch Application	0	-	 Function keys
None Launch Activity with Intent	0	-	Modifier keys Navigation keys
None			 Numbers
Wake op			 Punctuation marks
		-	^ Miscellaneous
			Default
		-	User-defined

4) Input the key code "**UHFSWITCH**" in the dialog and tap **OK** to set the selected key to be the hot key.



Once the hot key is set, you can switch **UHF RFID Reader** to **Barcode Reader** by just one key press.

1.7.2 FAST SWITCHING MODE IN EZCONFIG

The function **"Fast Switching Mode**" of EZConfig is to rapidly change bwtween **UHF RFID Reader** and **Barcode Reader**

To turn on "Fast Switching Mode":

Step 1. Please go to App Drawer (All Applications) and launch EZConfig 淞 .





, and enable "Fast Switching Mode".



By enabling "**Fast Switching Mode**", you can switch the modes by continuously pressing the trigger key 3 times. The two modes to be fast switched are:



Use UHF RFID reader to read tags.



UHF RFID Reader



Use the barcode reader to read barcode.

RFID Service

Barcode Reader

1.7.3 HOW TO CHECK THE MODE

You can check the mode you are using from:

STATUS BAR

Check the status bar to see whether a **UHF RFID Reader** icon **G** or **Barcode Reader** icon **I** is displayed on it to know which mode is on.



NOTIFICATION DRAWER

Swipe down from the status bar to open the notification drawer to check the RFID Service notification:

G UHF RFID Reader is on.		Barcode Reader is on.
1:27		1:27
Mon, Nov 1 🕕 🕈 🗬 74%		Mon, Nov 1 🕩 🕈 🗬 74%
Silent notifications		Silent notifications
RFID Service	Switch the mode by	RFID Service
UHF RFID Reader	Pressing the Hot Key	Barcode Reader
III RFID Service	"Fast Switching Mode".	III RFID Service
UHF RFID Reader Battery		UHF RFID Reader Battery
Manage		Manage
G 4 ©		G 🌵 🖻

LOCK SCREEN

If lock screen notification is enabled, you can check the mode you are using from device lock screen.



To enable or disable the notification on lock screen, please access from:

RK25 with Android Nougat

App Drawer (All Applications) | Settings 🔯 | Notifications 🜲 | Setting 🔯 | On the lock screen, and select whether to show notification or not.

RK25 with Android Pie



- RS35 with Android 10
 - App Drawer (All Applications) | Settings Notifications | Notifications on lock screen, and tap to select "Don't show notification" to enable or disable the notification on lock screen.

Chapter 2

GETTING STARTED WITH EZCONFIG

This chapter guides to the launch of **EZConfig** and the user interface of **EZConfig**.

IN THIS CHAPTER

2.1 Launch EZConfig	51
2.2 User Interface Overview	53

2.1 LAUNCH EZCONFIG

EZConfig is an application which works with the UHF RFID Reader for reading UHF RFID tags. Make sure that you install the UHF RFID Reader properly as describes in <u>Install</u> so that **EZConfig** can work.

LAUNCH THE APP

To launch the built-in application "EZConfig", please go to App Drawer (All Applications),





CHECK THE CONNECT STATUS

To check whether your UHF RFID Reader is properly installed, please tap on "**Device Information**" on your device to confirm whether its "**Connect Status**" is "**Attached**".

Detached:

The UHF RFID Reader is **NOT** properly installed.

Device Information	
Connect Status	
Detached	
Senai Number	
None	
Region	
None	
Frequency	
None	
Firmware Version	
None	
RFID Module Version	
None	
RFID Module Unique ID	
None	

• Attached:

The UHF RFID Reader is successfully installed.

Device Information	
Connect Status Attached	
Senai Number #AS2180005217	
Region Japan	
Frequency 916 ~ 923 MHz	
Firmware Version K1.00 , U1.10f	
RFID Module Version	
RFID Module Unique ID	

2.2 USER INTERFACE OVERVIEW

The user interface of **EZConfig** is divided into three parts: main screen, option menu, and more settings menu.



2.2.1 MIAN SCREEN

The functions listed on **EZConfig** main menu are:

≡ EZConfig	:
Device	Power Information
Notification Settings	Filter
Scan Settings	

Device Information

The information about the UHF RFID Reader.



The battery power level, the pistol temperature, the temperature to trigger protection, and the power mode of the UHF RFID Reader.



Notification settings of good read, low battery, and temperature.

Filter

To allows RFID reader to accept various types of tag by EPC encoding scheme, and pick the target tags and bypass those beyond your criteria by "**Pre Filter**".

Scan Settings

Settings for "Trigger Key", "Power level", "Preferences", and "Data Output".

2.2.2 MORE SETTINGS MENU

To open "**More Settings Menu**", please tap on the more button **I** on the action bar:



Item	Description
Import	To import the saved settings.
Export	To export the settings and saved it in the internal storage.
Security	Set the password for certain functions.
Log	Select whether to save the log in the internal storage.
About	Show the app information.

For the detailed settings, please refer to More Settings.

2.2.3 OPTION MENU

Option Meun can be revealed by tapping on the menu button or swiping from the left edge on the screen. Please refer to <u>Option Menu</u> for details.



Item	Description
Scan Test	A page for scan testing.
Factory Default	To restore EZConfig to the default settings.
Update Firmware	To update the firmware of CipherLab UHF RFID Reader.

Chapter 3

EZCONFIG MAIN SCREEN

This chapter introduce about the Main Screen of **EZConfig**.

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3.2 Power Information	60
3.3 Notification	63
3.4 Filter	65
3.5 Scan Settings	73

3.1 DEVICE INFORMATION

"Device Information" shows the information about the UHF RFID Reader.



Item	Description
Connect Status	Showing whether the UHF RFID Reader is properly connected with the mobile computer.
Serial Number	Showing the serial number of the UHF RFID Reader.
Region	Showing the region.
Frequency	Please refer to " RFID Performance " of <u>Specification</u> for frequency range.
Firware Version	Showing the firmware version of the UHF RFID Reader.
RFID Module Version	Showing the RFID module version.
RFID Module Unique ID	Showing the RFID module unique ID.

3.2 POWER INFORMATION

You can check the battery power and the temperature of the UHF RFID Reader on "**Power Information**" page.



The items shown on "**Power Information**" page are:

BATTERY

Showing the battery power of the UHF RFID Reader.

PISTOL TEMPERATURE

Showing the temperature of the UHF RFID Reader.

Please refer to "**User Enviroment**" of <u>Specification</u> for operating temperature and storage temperature.

PISTOL TEMPERATURE PROTECT

When the UHF RFID Reader reaches the temperature you set, the protection is triggered and the the speed of reading tags is decelerated.

Power Information	
Battery 90 %	
Pistol Temperature 0 °C	
Pistol Temperature Protect	40 °C
65 °C -	45 °C
Power Mode	50 °C
Power Save Mode -	55 °C
	60 °C
	65 °C
	70 °C

POWER MODE

Select the power mode for the UHF RFID Reader.

Power Information		
Battery 90 %		
Pistol 1 0 °C	Femperature	
Pistol Te	emperature Protect	
65 °C -		
Power N	lode	
Power	Save Mode	–
	Save mode	
	Power Save Mode	
	Power Save Mode Normal Mode	
	Power Save Mode Normal Mode Boost Mode	
	Power Save Mode Normal Mode Boost Mode	
	Power Save Mode Normal Mode Boost Mode	
	Power Save Mode Normal Mode Boost Mode	
	Power Save Mode Normal Mode Boost Mode	

The options are:

Item	Description
Power Save Mode	The mode that saves the battery power. Its speed of reading multiple tags is 30% slower than "Normal Mode", but it improves 7% operating time compared with "Normal Mode".
Normal Mode	The mode which strikes a balance between performance and operating time.
Boost Mode	The mode which offers the maximum performance. Its speed of reading multiple tags is 50% superior to " Power Save Mode ".

Note:

The aforementioned operating times are the reference values measured under room temperature and other conditions set by our company. The actual operating times would be affected by the working conditions:

- (A) Half of display brightness
- (B) RF tag continuous read
- (C) Maximum device speaker level
- (D) Wi-Fi on

3.3 NOTIFICATION

On "**Notification**" page, you can set the notification of good read, low battery, and temperature:



Item	Description
Low Battery LED	To enable or disable the LED indicator for low battery notification which occurs when the UHF RFID Reader's battery power level is 0% .
Beep when good read	Select the beep sound for " good read " notification, or select " Mute " to turn the notification sound off.
Low Battery Beep	To enable or disable the notification sound as the low battery alert which occurs when the UHF RFID Reader's battery power level is 0% .
Temperature Warning	By enable " Temperature Warning ", EZConfig will prompt you if the UHF RFID Reader is over 65°C . The high temperature warning will not go off until the temperature drops down to 62°C .

Once you enable **"Temperature Warning**" and the temperature of your UHF RFID Reader reaches the temperature limit (**65°C**), the notification of high temperature will be displayed on the status bar and the notification drawer.



3.4 FILTER

The Flow Chart below is the procedure of scanning tags:



Scan Flow Chart

3.4.1 EPC ENCODING SCHEME

Select the **EPC** (Electronic Product Code) **Encoding Scheme** to decide which kind of tags can be read.

\equiv EZConfig	:	Filter	EPC Encoding Scheme	:
		EPC Encoding Scheme	SGTIN-96 Serialized Global Trade Item Number	2
Device	Power	Pre Filter	SGTIN-198 Serialized Global Trade Item Number	2
Information	Information	Repeated Tags Ignored	SSCC-96	2
		Clear The Data of Repeated Tags	Serial Shipping Container Code	
Notification Settings	Filter		Global Location Number With or Without Extension	2
			SGLN-195 Global Location Number With or Without Extension	2
Scan Settings			GRAI-96 Global Returnable Asset Identifier	2
			GRAI-170 Global Returnable Asset Identifier	2
			GIAI-96	1

By tapping on the more button on the action bar, a menu is opened for checking all EPC schemes or clearing all the checked ones.

EPC Encoding Scheme	:	Check All
SGTIN-96 Serialized Global Trade Item Number		Clear All
SGTIN-198 Serialized Global Trade Item Number		
SSCC-96 Serial Shipping Container Code		
SGLN-96 Global Location Number With or Without Extension		
SGLN-195 Global Location Number With or Without Extension		
GRAI-96 Global Returnable Asset Identifier		
GRAI-170 Global Returnable Asset Identifier		
GIAI-96	~	

For more details about EPC scheme, please refer to:

https://www.gs1.org/sites/default/files/docs/epc/GS1_EPC_TDS_i1_10.pdf

3.4.2 PRE FILTER

The UHF RFID reader accepts various types of tag. However, through the function "**Pre Filter**", you can set the limits to regulate the type of tags to be read and bypass those tags beyond your constraint.

lter	Pre Filter
Encoding Scheme	Filter type
	Scope of action
e Filter	Alone
epeated Tags Ignored	Offset (0)
	•
lear The Data of Repeated Tags	Length (0)
	•
	Pattern 1 (HEX)
	L

FILTER TYPE

"**Filter Type**" is designed to check the contents of the tag to determine whether the scanned record is accepted or ignored. By setting "**None**", it means no restriction is set.

Please tap to select "Include EPC" as the whitelist while "Exclude EPC" as the blacklist.

Pre Filter	RESET
Filter type None	
None	
^o Include EPC	
Exclude EPC	
•	
Pattern 1 (HEX)	

SCOPE OF ACTION

By setting "Filter Type" as "Include EPC" or "Exclude EPC", you are now able to define the restraint on your target tags. And at first, set "Scope of action" to limit the field for tags to be decoded. Please select between "Alone" and "Scope".

Pre Filter	RESET		
Filter type			
Include EPC	-		
Scope of action		Alone	
Alone	•	•	
Offset (0)		Scope	
••••••			
Length (0)			
••••••			
Pattern 1 (HEX)			

ltem	Description
Alone	To specify the constraint of the tags to be decoded. You have to set Offset, Length, and the tag pattern in hexadecimal format.
Scope	To regulate the range of tag to be decoded. Set the Pattern 1 and Pattern 2 (both in hexadecimal format) to restrict the scope.

OFFSET & LENGTH

After setting "Include EPC" or "Exclude EPC" as "Filter Type", you are able to set "Offset" and "Length" for further restricting by dragging the sliders.

Offset

To specify the start address.

Length

The number of bytes to be read.

Filter type Include EPC Scope of action Alone Offset (4)	•
Include EPC Scope of action Alone Offset (4)	· · ·
Scope of action Alone Offset (4) Length (10)	•
Alone Offset (4) Length (10)	•••
Length (10)	
Length (10)	
Length (10)	
· · · ·	
••	•••••
Pattern 1 (HEX)	
	0/20

PATTERN

Pattern, which is relevant to "**Scope of action**", is for specifying/ setting the filter for reading the target tags.

By setting "**Alone**", only one tag pattern (Pattern 1) needs to be designated in hexadecimal character so that the matched tags will be decoded.



If you set "**Scope**" for "**Scope of action**", you have to set the range by specifying Pattern 1 and Pattern 2 (both in hexadecimal character) to limit the range to be decoded.



3.4.3 REPEATED TAGS IGNORED & CLEAR THE DATA OF REPEATED TAGS

Filter	Filter		
EPC Encoding Scheme	EPC Encoding Scheme		
Pre Filter	Pre Filter		
Repeated Tags Ignored	Repeated Tags Ignored		
Clear The Data of Repeated Tags	Clear The Data of Repeated Tags		
	EZConfig Do you want to clear the data of repeated tags? CANCEL OK		

"**Repeated Tags Ignored**" is to avoid repeated reading of tags. By switching on "**Repeated Tags Ignored**", once a tag is identified as having already been read, its data will not be received by the UHF RFID Reader again.

"Clear the Data of Repeated Tags" is only available when "Repeated Tags Ignored" is enabled. If you need to regain the data of the read tags, tap on "Clear the Data of Repeated Tags" to wipe your received tag data, and then perform tag reading again to get the tag data.
3.5 SCAN SETTINGS

Depending on your need, select "**Power Level**" and the default mode for "**Trigger Key**". And in "**Preference**" and "**Data Output**", you can set further configurations if needed.



3.5.1 TRIGGER KEY

DEFAULT MODE

Set the default mode of "**Trigger Key**" is to decide how the UHF RFID Reader read the tags. The options are "**Alternate**", "**Once**", and "**Continuous**".

Default Mode

- Alternate
- O Once
- Ontinuous

CANCEL

Select "Once" or "Continuous" for the reading mode when pressing the trigger once.

Once	Continuous
Scan Test :	Scan Test :
3110afec2b0bebc201000000	3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000 3110afec2b0bebc201000000

"Alternate" is the mode which "once" and "continues" are performed one after the other repeatedly. The UHF RHID Reader starts to read tags after the trigger key is pressed, and it keeps reading tags till the trigger is pressed again.

FAST SWITCHING MODE

By turing on the function "Fast Switching Mode", user can press the trigger key 3 times to
rapidly change bwtween UHF RFID Reader 🙆 and Barcode Reader 🛄.
Please refer to Fast Switching Mode in EZConfig for details.

3.5.2 POWER LEVEL

Select the power level for reading distance. The available power level varies according to your <u>region</u>.

10:04 🌣 w 🖻 🕼 🔹	⊕ ▼ 🕯
Scan Settings	
Trigger Key	
Default Mode Continuous	
Fast Switching Mode Quickly press trigger Key more times to switch modes	
Miscellaneous	Power Level
Power Level	30
Proferences	5
Preference settings of the UHF RFID re	ader 6
Data Output Sets where and how to output data	CANCEL OK

Region	Power	Frequence
USA	27	902 - 928
EUROPE	30	865 - 868
TAIWAN	27	922 - 928
CHINA	27	920 - 924
New Zealand	27	920 - 926
Australia	27	920 - 926
Thailand	27	920 - 925
Singapore	24	920 - 925

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Region	Power	Frequence
RUSSIA	19	866.9
INDIA	30	865 - 867
JAPAN	30	916 - 923
BRAZII	27	902 – 907
DIALIE	27	915 - 928
Malaysia	27	919 - 923
Philippines	30	918 - 920
KOREA	30	917 - 923
Morocco	30	867.7 & 867.9

3.5.3 PERFERENCES

"Preferences" is configurable as the followings:



WORK MODE

The options listed on **Work Mode** menu differ based on your UHF RFID Reader edition. Select from **"Comprehensive mode"**, **"Multi-tag mode"**, **"User define 1"**, **"User define 2"**, **"User define 3"**, **"User define 4"**, and **"User define 5"**.

Option Menu for USA & European E	Editions Option Menu for Japan Edition
Work Mode	Work Mode
O Comprehensive mode	O Comprehensive mode
O Multi-tag mode	User define 1
• User define 1	O User define 2
O User define 2	O User define 3
O User define 3	O User define 4
O User define 4	O User define 5
O User define 5	CANCEL
CANCEL	

If you select the mode other than "Multi-tag mode", you can further set "RF Link".

Work Mode	Key Feature	Application
	 Higher speed in reading multiple types of tags 	
Comprehensive mode	 Automatically filtering the duplicate tags (which have been read) within a specific time period 	Replenishment in store
	 Higher accuracy 	
Multi-tag mode	 Higher speed in reading large amount of tags Power saving 	Inventory management
User define 1, 2, 3, 4, & 5	User can define more detailed settings according	ng to the real application.

Note:

- (1) "Multi-tag mode" is unavailable for Japan edition.
- (2) The UHF RFID Reader enters "Power Saving Mode" as the mobile computer suspends.

RF LINK

Depending on your UHF RFID Reader edition, the RF Link menu options may be slightly different. Select from DSB_ASK FM0 40KHz, PR_ASK Miller4 250KHz, PR_ASK Miller4 300KHz, and DSB_ASK FM0 400kHz.



The order of the throughput from high to low is DSB_ASK FM0 400kHz, PR_ASK Miller4 300KHz, PR_ASK Miller4 250KHz, and DSB_ASK FM0 40KHz. For the reading range test, **Miller4 250KHz** is recommended.

Tags communicate with readers by encoding tag preambles as either FM0 baseband or Miller subcarriers. FM0 offers the highest data rate which is more prone to bit errors, while Miller4 offers a good compromise between speed and insensitivity to interference.

Note:

[&]quot;DSB_ASK FM0 40KHz" , "DSB_ASK FM0 400kHz" , and "PR_ASK Miller4 300KHz" are unavailable for Japan edition.

RF LINK FOR JAPAN EDITION

For the UHF RFID Reader Japan edition, the available RF Link selections are **PR_ASK Miller4 250KHz**, **PR_ASK Miller2 250KHz**, and **PR_ASK FM0 250kHz**.

RF Link	
۲	PR_ASK Miller4 250KHz
\bigcirc	PR_ASK Miller2 250KHz
\bigcirc	PR_ASK FM0 250KHz
	CANCEL

Link Profile	Transmitter Modulation	Tari	Receiver Decode	Link Frequency	Data Speed
1	PR-ASK	25us	Miller4	250KHz	62.5 kbps
2	PR-ASK	25us	Miller2	250KHz	125 kbps
3	PR-ASK	25us	FM0	250KHz	250 kbps

Note:

FM0 offers the highest data rate among the 3 selections, followed by Miller2 and Miller4. However, Miller4 is with the strongest anti-interference ability while FM0 is the weakest one.

Please select the RF Link depends on the interference suppression abilities and the speed you need for the application environment. For example, RFID collision occurs when there are multiple readers and tags in your deployment area. A reader may be interfered by the signals tramsmitted from other readers nearby. Also, a reader may receive the respective signals sent from multiple tags simultanously and results in inaccurately recognizing a particular tag by this reader. If a tag is located within the interrogation zones of multiple readers, this tags may be required its reception of the signals form those readers simultaneously.

For such noisy environment as aforesaid, it is suggested to use Miller4 to get better communication quality between the readers and tags.

SESSION

4 sessions are used for reading tags, and every session has 2 target states A and B.

A tag is in state A if it is not read, and once it is read, its state flips from "A" to "B" and stops replying to readers.

Ses	sion	
۲	Session 0	
\bigcirc	Session 1	
\bigcirc	Session 2	
0	Session 3	
		CANCEL

The 4 sessions provide different persistence of state B:

Session	Description
Session 0	Tags are reset each time after being removed from the RF field. It reverts immediately from state B back to state A and is ready to be read again. Session 0 is suitable for rapidly and repeatedly reading small number of tags, but not for a large number of tags.
Session 1	Tags persist in state B for a maximum time of 5 seconds and will automatically revert back to state A. Session 1 reduces the number of times to re-read tags.
Session 2 & 3	These two sessions are similar in duration. A read tag will remain in state B, and the persistence lasts for a minimum of 2 seconds after being removed from the RF field. These sessions are for reading large tag populations which only need to be read once.

For standard, it is suggested to use Session 1.

Q VALUE

0-15 (two scenario: a. Fix Q , b. Dynamic Q)

Q value is effected by the number of tags from 0 to 15, and the tag population is based on 2^Q value. For example, if the tag quantity is 50, it is suggested to set the Q value as 6. However, dynamic Q is suggested for standard use.

Larger Q values decrease the probability of collision, and will reduce the throughput.

Inve	entory Status	
۲	STATE A	
\bigcirc	STATE B	
\bigcirc	AB FLIP	
		CANCEL

• STATE A:

INVENTORY STATUS

Tags are in state A before they are read, and they flip to state B once they are read.

• STATE B:

Once a tag is read, it changs its state from "A" to "B", and the tags in state B stops responding to a reader using the same session query. The persistence of the tag in state B varies based on the session.

AB FLIP:

Repeats State A and State B over and over.

FREQUENCY CHANNEL

FREQUENCY CHANNEL FOR USA & EUROPE

Tap to expand the region menu and scroll the drop-down menu to select your region.

USA Edition

Frequency Channel		Frequency Channel
USA 👻	Hong Kong Laos	Korea -
902.75	Indonesia	917.3
903.25	Korea	 917.9
903.75	Malaysia	918.5
904.25	Paraguay	919.1
904.75	Peru	919.7
905.25	Singapore	920.3
905.75	Sri Lanka	
906.25	Taiwan	

European Edition

Frequency Channel		Frequency Channel
Europe -	Europe	Europe -
865.7	India	865.7
866.3	Morocco	866.3
866.9	EAC	866.9
867.5		867.5

FREQUENCY CHANNEL FOR JAPAN

Simply tick the checkboxes of the frequency to be read to narrow down the target tag range. This function is only available for Japan.

Frequency Channel	
Japan	Ŧ
916.8	
918.0	
919.2	
920.4	
920.6	
920.8	

3.5.4 DATA OUTPUT

Data Output allows users to set the way to output decoded data.

1:00 🗷 🌣 ₩ 🐵 • 🔍 🕕 • 🖤 🖁
Scan Settings
Trigger Key
Once
Fast Switching Mode Quickly press trigger Key more
times to switch modes
Miscellaneous
Power Level
Preferences Preference settings of the UHF RFID reader
Data Output Sets where and how to output data

Please note that **Keyboard Emulation** and **Inter-Character Delay** are operative when <u>Default</u> <u>Mode of Trigger Key</u> is set as "**Once**".



KEYBOARD EMULATION

Keyboard Emulation is to treat the decoded data as typed text and outputs it to the active application on the mobile computer. Tick the checkbox to enable **Keyboard Emulation**.

On a web page or in an application, tap a text input field and press the trigger of the UHF RFID reader to read the tags, and the decoded data will be output to the text input field.

Data Output		← ec2b0115c00000001 × :
Keyboard Emulation		The output data.
Inter-Character Delay 0 ms	Decode	
Prefix		
Suffix		
		No results
		< 记 GIF 🖹 🏟 🤐 🦊
		$q^{1} w^{2} e^{3} r^{4} t^{5} y^{6} u^{7} i^{8} o^{9} p^{0}$
		asd fghjkl
		☆ z x c v b n m ⊗
		?123 , 😳 . 🔍

Note:

Keyboard Emulation is only available when <u>Trigger Key Default Mode</u> is set as "Once".

INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every character being transmitted. The longer the delay time is, the slower the transmission speed will be.

Data Output	
Keyboard Emulation	ו
Inter-Character Delay 0 ms	Inter-Character Delay
Prefix	254
Suffix	0
	1
	CANCEL OK

Note:

Inter-Character Delay is only available when <u>Trigger Key Default Mode</u> is set as "Once".

PREFIX & SUFFIX

"**Prefix**" is to affixes 0 to 20 characters to the left of the output data whereas "**Suffix**" is to affixes 0 to 20 characters to the right of the output data. Tap to open a character table for entering the prefix or suffix.

Tap the more button it to open the menu for more functions:

Prefix	C			=	:	Save
	00	10	20	30	4	Delete
00		DLE	Space	0	¢	Delete
01	SOH	DC1	1	1	Α	
02	STX	DC2		2	E	Clear All
03	ETX	DC3	#	3	C	
04	EOT	DC4	s	4	C	
05	ENQ	NAK	%	5	E	
06	ACK	SYN	&	6	F	
07	BEL	ETB	*	7	G	
08	BS	CAN	(8	F	
09	ТАВ	EM)	9	L	
0A	LF	SUB	*		J	
0B	VT	ESC	+	1	к	
0C	FF	FS	,	<	L	
0D	CR	GS	-	=	Л	
0E	SO	RS		>	N	
0F	SI	US	/	?	С	

Item	Description
Save	Save the setting of prefix or suffix.
Delete	Delete the last character of the prefix or suffix you enter.
Clear All	Delete all the character of the prefix or suffix you enter.

Note: Both prefixes and suffixes containing invisible characters are supported.

Tap the **button** on the action bar to switch between the character table and keyboard input field.

Prefix					←
	00	10	20	30	4
00		DLE	Space	0	C
01	SOH	DC1	1	1	A
02	STX	DC2	1	2	E
03	ETX	DC3	#	3	C
04	EOT	DC4	S	4	C
05	ENQ	NAK	%	5	E
06	ACK	SYN	&	6	F
07	BEL	ETB	1	7	Ċ
08	BS	CAN	(8	F
09	TAB	EM)	9	T
0A	LF	SUB	*		J
OB	VT	ESC	+	1	k
0C	FF	FS		<	L
0D	CR	GS	-	=	Ν
0E	SO	RS		>	٨
	01	US	1	?	C

Tap to open the more menu, and you can save the input prefix/ suffix, or clear all the input characters.

Prefix		
Keyboard input	Save	
	Clear All	

Chapter 4

EZCONFIG: MORE SETTINGS

This chapter gives the instruction about the functions on **EZConfig More Settings Menu** which delivers advanced settings including exporting and importing settings to/ from your device internal storage, setting password, enabling log, and the application version.

IN THIS CHAPTER

4.1 Overview	91
4.2 Export & Import	92
4.3 Security	94
4.4 Log	98
4.5 About	99

4.1 OVERVIEW

Tap on the more button on the action bar to open "More Menu":

≡ EZConfig	:	Import	
(1)		Export	
Device Information	Power Information	Security	
	(\mathbf{e})	Log	
Notification Settings	Filter	About	
Scan Settings			

Item	Description
Import	Import a .json file which contains EZConfig settings to apply the configuration.
Export	Export your EZConfig settings as a .json file.
Security	Set the password and the passwrod-protected features.
Log	Save the daily records of EZConfig.
About	Show the version information.

4.2 EXPORT & IMPORT

EXPORT

By tapping on "**Export**", you can export all your settings of **EZConfig** to your device internal storage (the default path is <u>/storage/emulated/0</u>):

\equiv EZConfig :	\equiv EZConfig :	\equiv EZConfig :
Import	Export Current Path:	
Export	/storage/emulated/0 ADC/	Device Power Information Information
Security	Alarms/	
N Log	Android/ CL_Settings/	Notification Settings
About	DCIM/	
Scan Settings	Download/	Scan Settings
	File Name: uhf_backupjson	
		Settings exported successfully.

To export your settings:

- Step 1. Tap on "Export" on the More Setting Menu and then "Export".
- **Step 2.** Select the path to save the exported setting file.
- Step 3. Tap "OK" to export.

Note: Your exported settings will be saved as a .json file.

IMPORT

To import the settings, tap on the more button in the right side of the action bar then tap on "**Import**". The "**Import**" page shows up, select the .json file that contains your settings to import.



4.3 SECURITY

By setting your password, you can restrict other users of this mobile computer from changing certain configurations or accessing certain functions in **EZConfig**.

0/32
0/32
0/32

On "**Security**" page, enter and confirm a password (up to 32 characters), and check the items that will be protected by this password.

EZConfig	:	Check All
Security password		
		Clear All
	7/32	
Confirm password		
	7/32	
Password-protected features:		
Magnet Import		
Export		
Factory Default		
Vpdate Firmware		

ltem	Description
Check All	To check all the items to be protected by password.
Clear All	To clear the password and untick all the checked items.

After setting the password, the "More Settings" menu changes:

• The original "More Settings" menu (which is without password protection):

Import	
Export	
Security	
Log	
About	

The "More Settings" menu with password protection:
 After logging out, you need to enter the password to log in to access the ptotected functions.

Logout	Login
Import	Import
Export	Export
Security	Security
Log	Log
About	About

The selected items to be protected by the password and "**Security**" on more settings menu will become unavailable after logging out.



To access the protected functions, please log in with your password.



Simply clear your password on "**Security**" page to disable the password protection function, or "**Clear All**" to restore all the settings of "**Security**".



4.4 LOG

With "Log" enabled, the daily log will be recorded and saved in /storage/emulated/0/CL Settings/EZConfig

≡ EZConfig	:	=	EZConfig	~	Q :
	Import	D	ocuments	Images	Audio
Device Information	Export	FILES	2021-10-29		
	Security		Nov 2	2.66 kB	BIN file
Notification Settings	Log	<>	EZConfigSetti 2:57 PM	ing.json 126 B	JSON docu
	About				
Scan Settings					

4.5 ABOUT

Tap on "About" to show the version information of EZConfig.

≡ EZConfig	
Device Information	Power Information
💫 EZConfig	
EZConfig RFID Service	1.0.17 1.0.30
Copyright © Cipher http://www.cipherl	Lab Co. Ltd. ab.com
	ок
Scan Settings	

Chapter 5

EZCONFIG: OPTION MENU

EZConfig Option Menu contains a scan test page, the restoring settings function, and the firmware updating function.

IN THIS CHAPTER

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5.4 Update Firmware	105

5.1 OVERVIEW

To open **Option Meun**, you can tap on the menu button error swipe from the leftmost side of the screen to the right side.



Option Meun offers the following functions:

ltem	Description
Scan Test	A page for test scanning.
Factory Default	Reset all the EZConfig settings to factory default.
Update Firmware	Update the firmware of the uHF RFID Reader.

5.2 SCAN TEST

Tap "Scan Test" in the option menu, and a page opens for test scanning.



By tapping on the more button in the action bar of the "Scan Test" page to open the menu which delivers the following functions:

ltem	Description
Save	To save the scanned tag information as a .txt file in the internal storage.
Clear All	To clear all the scanned tag information displayed in "Scan Tset" page.

Enter the "**Scan Test**" page, and then aim the RFID Antenna at the UHF RFID tag and pull the trigger on the handle to read. The tag information will be shown on the "**Scan Test**" page.

The following figures take RS35 UHF RFID Reader as example:



Please refer to <u>Scan Settings</u> for more settings.

5.3 FACTORY DEFAULT

Tap on "**Reset to Default**" to restore the default settings. Confirm by tapping on "**OK**" in the pop-up window:



5.4 UPDATE FIRMWARE

To update the firmware, tap on "**Update Firmware**" and select the file from the internal storage for update.

Please pay attention to the prerequisite as below for updating firmware:

- 1) The version of the selected firmware should not be the same with the current one.
- 2) The battery power level of the UHF RFID Reader should be over **30%**.
- 3) The battery power level of the mobile computer should be over **51%**. If it is under 51%, please connect the mobile computer with AC adapter for external power source to proceed firmware updating.
- 4) The UHF RFID Reader must be attatched with the mobile computer during firmware updating.



Please note that do not turn off the mobile computer or remove the UHF RFID Reader before completing the update of firmware.



Chapter 6

OVERVIEW OF EZEDIT

EZEdit is an application to work with the UHF RFID Reader for reading from and writing onto a Gen2 RFID tag. This chapter gives the introduction about EZEdit user interface.

IN THIS CHAPTER

6.1 Launch EZEdit	 108
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6.1 LAUNCH EZEDIT

EZEdit, a built-in application to work with the UHF RFID Reader, allows user to check or make changes to the 4 memory banks (**EPC**, **TID**, **Reserved**, and **User**) of the captured tags.

To launch EZEdit, please go to App Drawer (All Applications) and tap on EZEdit 淞.


6.2 USER INTERFACE INTRODUCTION

On **EZEdit Main Screen**, tap on the more button **i** on the action bar and the **More Options Menu** reveals.



6.2.1 MAIN SCREEN

The functions listed on Main Screen are:



To check the captured tag information and perform functions on the selected read tag.



To read/ write the 4 memory banks of the tag.



Tag Locating

To discover the position of a particular tag.



To lock or unlock the memory banks of a tag to make the memory bank(s) readable and writable, or unreadable and unwritable.



Authenticate Tag

To assign the encryption key to NXP UCODE DAN chips, and modify the memory bank(s) data to be concealed.

6.2.2 MORE OPTION MENU

On EZEdit Main Screen, tap on the more button in the action bar to reveal More Options Menu.



The functions on **More Options Menu** are as below:

Item	Description
Log	Tick the checkbox to enable "Log" to save the daily log in /storage/emulated/0/CL Settings/EZEZEdit
About	Show the version information of EZEdit.

LOG

"Log" is to record the daily log of EZEdit. By ticking the checkbox to enable "Log", the daily log will be saved in <u>/storage/emulated/0/CL_Settings/EZEZEdit</u>



ABOUT

"About" shows the version information of EZEdit.



Chapter 7

EZEDIT: INVENTORY

This chapter specifies the functions of "Inventory"



IN THIS CHAPTER

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7.1 OVERVIEW

"**Inventory**" offers a convenient and rapid way to read, write, lock or unlock, and find out the position of the captured tags.

On **"Inventory**" main page, tap on the more button **i** on the action bar to reveal **"More Menu**" for further functions.



7.2 MAIN PAGE

The main page of **Inventory** delivers the following functions:



Item	Description
Memory Bank	A Gen2 RFID tag has 4 memory banks: Reserved memory, EPC memory, TID memory, and User memory.
	Tap to select EPC type or TID type to read.
Unique Tags	List the amount of the read tags.
Total Reads	The total reading count of all the read tags.
Start/ Stop	Tap on the " Start " button to start to read the tags, and " Stop " for stopping reading tags. The function is unavailable when " Trigger Key " is set as " Once ".

7.2.1 HOW TO READ THE TAGS

Before start to read the tags, please make sure:

- The UHF RFID Reader is correctly installed to the mobile computer.
- The UHF RFID Reader is on.

Please follow the steps to read the tags:

Step 1. Select **EPC** type or **TID** type.

- Step 2. Tap on "Start" to read the tags.
- **Step 3.** The read tags' information are listed on **EZEdit** main page.

Step 4. Tap on "**Stop**" to stop reading the tags.

Inventory		:	Inventory		:	Inventory		:
Memory Bank	Unique Tags	Total Reads	Memory Bank	Unique Tags	Total Reads	Memory Bank	Unique Tags	Total Reads
EPC	0	0	EPC		26	EPC		27
			3450afec2b Count :1 3110afec2b Count :11 3030afec2b Count :1 3270afec2b Count :1 e2c0689200 Count :2 3330afec2b	00000000000000000000000000000000000000)	3450afec2b0 Count :1 3110afec2b0 Count :11 3030afec2b0 Count :1 3270afec2b0 Count :1 e2c06892000 Count :3 3330afec2b0	0000000000000 bebc201000000 9c44000000000 0020000000000 00003a1e33e15 115c0000000000	I) I D
	START			STOP			START	

7.2.2 OPTION MENU OF READ TAG

After reading tags on **Inventory main page**, you can tap on a read tag to open its **Option Menu** to execute the functions:



TAG INFORMATION

To check the tag information, tap to open the read tag's **Option Menu** and select **"Tag Information**".



TAG DETAIL

"Tag Detail" is for checking or modifying the designated tag.

Form the read tags list on **Inventory main page**, tap on the read tag to be checked or modified to open its **Option Menu**, and select "**Tag Detail**". The **EPC** tab page of "**Tag Detail**" shows up with the EPC number of the designated tag displayed in the "**EPC Binary Encoding (HEX)**" field.



Please refer to <u>EZEdit: Tag Detail</u> for further operations.

TAG LOCATING

You can acquire the position of the the read tags by "Tag Locating".

Designate a read tag from **Inventory main page** by tapping on it, and the screen will redirect to **"Tag Locating"** page.



Refer to <u>Tag Locating</u> for how to detect the tag position.

LOCK / UNLOCK

"Lock / UnLock" is to lock or unlock the tag's memory bank to restrict or allow others to reconfigure this tag.

Tap on the read tag listed on **Inventory main page** to reveal the read tag's **Option Menu** and select "**Lock / UnLock**". You'll enter "**Lock/ UnLock**" page where you can choose the tag's memory bank to be lock or unlock.



Please refer to Lock/ UnLock for details.

COPY TO CLIPBOARD

"**Copy to Clicpboard**" is to copy the read tag's **EPC Binary Encoding** (EPC number in hexadecimal format) as text.

7.3 MORE MENU

To open **Inventory More Menu**, please tap on the more button **i** on the action bar in **Inventory** main page.

Inventory	Trigger Key		rigger Key	
EPC 0 0	Reset Count	A	lternate	0
	Save	o	nce	0
		с	ontinuous	۲
START	Save Current Path: /storage/emulated/0 ADC/ Alarms/ Android/ BugReport/ CL_Settings/ DCIM/			
	Download/		_	
	Movies/	.CSV		
		CANCEL OK		

7.3.1 TRIGGER KEY

Tap on "**Trigger Key**" on the more menu to select the reading mode actuated by pressing the trigger key:

Inventory	Unique Tags	Total Reads	Trigger Key	Trigger Key	
EPC	3	34	Reset Count	Alternate	0
3110afec2b0k	pebc201000000		Save	Once	0
e2c06892000 Count :4	0003a1e33e150			Continuous	۲
3330afec2b01 Count :15	115c000000001				
	START				

Item	Description
Alternate	Repeatedly perform " Once " and " Continues " one after the other. In " Alternate " mode, press the trigger to start to read tags, and press the trigger again to end the reading.
Once	Read the tag once after pressing the trigger key.
Continues	Keep reading the tags during a trigger press.

The setting is synchronized with <u>Trigger Key Default Mode</u> of **EZConfig Scan Settings**.

7.3.2 RESET COUNT

Reset Count will clear the tags you just captured.



7.3.3 SAVE

Save the record of the read tags on "**Inventory**" page as a .csv file. Please choose your destination on the device internal storage.

Inventory		:	l Sava
Memory Bank	Trigger Key	+	Current Path: /storage/emulated/0 E ADC/
3110afec2b	Reset Count		Alarms/
Count :15	Save)	Android/
e2c0689200 Count :4		_	e2 CCCL_Settings/
3330afec2b0	0115c000000001		3: DCIM/
oount.15			Download/
			EnterpriseSettings/
			Movies/
			Music/
			File Name: record .csv
	START		CANCEL OK

Chapter 8

EZEDIT: TAG DETAIL

This chapter specifies how to check or modify the 4 memory banks (**EPC** bank, **TID** bank, **Reserved** bank, & **User** bank).

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8.1 INTRODUCTION

"Tag Detail" page allows user to check or modify the 4 memory banks (EPC bank, TID bank, Reserved bank, & User bank).



The function **"Reset**" on **"Tag Detail**" action bar is for clearing the read tag information displayed on **"Tag Detail**".

8.2 EPC

EPC (Electronic Product Code) bank is for storing the tag's universal identifier which contains a GS1 company identifier, a product identifier, and a unique serial number. This universal identifier is used to the object which the tag is affixed to.

Tag Deta	ail		RESET
EPC	TID	RESERVE D	USER
EPC Binar	y Encoding	(HEX)	
Allow Wri	ting Tag		
Write Offs	et (Words)		
			1/3
Replace T	o (HEX)		
GET E	PC	WR	ITE

ALLOW WRITING TAG

By checking "**Allow Writing Tag**", the read tag can be modified. Please refer to <u>Write</u> for how to encode tags.



8.2.1 READ

On "EPC" tab page of Tag Detail, tap on "GET EPC" button to read the tag, and "EPC Binary Encoding (HEX)" of the read tag is shown:

Tag Deta	ail		RESET
EPC	TID	RESERVE D	USER
EPC Binary	y Encoding ((HEX)	
Allow Writ	ting Tag		
Write Offs	et (Words)		
			1/3
Replace To	o (HEX)		
GET E	РС	W F	RITE

"**EPC Binary Encoding (HEX)**" is EPC number in hexadecimal format. It requires less memory of RFID tags and can be translated to the <u>EPC Tag URI</u> or Pure Identity <u>EPC URI</u> form.

8.2.2 WRITE

To change the information and write onto the tag, please:

Step 1.

Designate a read tag from Inventory or tap on "GET EPC" button on "Tag Detail" page to obtain the information of the tag you would like to write on.

Tag Deta	il		RESET
EPC	TID	RESERVE D	USER
EPC Binary 3110afec2	/ Encoding b0bebc201	(HEX) 000000	
Allow Writ	ing Tag		
Write Offso	et (Words)		
			1/3
Replace To	o (HEX)		
GET E	PC	WR	RITE

Step 2.

Check the checkbox "Allow Writing Tag" to make the fields "Write Offset (Words)" and "Replace To (HEX)" available.

Write Offset (Words)

To clearly demonstrate the start address of the memory bank. Offset is measured in "word" which is equal to 2 bytes or 16 bits.

Replace To (HEX)

To specify the data you'd like to modify in hexadecimal notation.



Step 3.

Input the information in the field to be modifed, and then tap on "WRITE".

Step 4.

Enter the <u>access password</u> and tap on "**OK**" to write the changed information onto the tag.

Step 5.

A hint message "**Operation success**" appears to indicate writing on tag is completed.



8.3 TID

TID (**Tag Identification**) memory bank is where the tag's unique manufacturer identity number is stored. **TID** is perma-locked when the tag is produced, and its unique tag ID number is for a reader to identify.

To read the TID bank, you may <u>designate a read tag from Inventory</u> and enter **TID** tag page to "**GET TID**", or simply tap on "**GET TID**" to read the tag's TID memory.



The followings are the information shown on TID tab page:

EPC Binary Encoding (HEX)

EPC Binary Encoding (HEX) is EPC number expressed in hexadecimal notation which requires less memory of RFID tags and can be translated to the <u>EPC Tag URI</u> or Pure Identity <u>EPC URI</u> form.

TID Binary Encoding (HEX)

TID Binary Encoding (HEX), which is not tampered, is TID numbers in hexadecimal format. It interprets the tag type, its vendor, and even the serial number specified by its vendor.

- Mask Designer Identifier
 The vendor of this tag.
- Tag Model
 The tag type of this tag.
- Serial Number
 The serial number of this tag.

8.4 RESERVED

Reserved is a memory bank which is embedded with two 32-bit value passwords, **Kill Password** and **Access Password**, for preventing modification of the tag memory. Both passwords are pre-encoded with zeros in hexadecimal format.

Tag Deta	ul		RESET
EPC	TID	RESERVE D	USER
EPC Binary	/ Encoding	(HEX)	
Memory Ba	ank		
Access Pa	assword		•
Read / Writ 2	te Offset (V	Vords)	
			1/3
Read Leng 2	th (Words)		
			1/3
Bank Data	(HEX)		
GET EI	PC	w	RITE

8.4.1 READ

Designate a read tag from Inventory and then enter "RESERVED" tab page,

OR

On "**RESERVED**" tab page, tap on "**GET EPC**" to retrieve the tag's information:



After successfully retrieving the EPC Binary Encoding (HEX), you can further fetch the "Kill Password", or "Access Password", or "User-defined" by tapping on "READ" button.

Tag Detail		RESET
EPC TIE	RESERVE D	USER
EPC Binary Encod 3450afec2b0000	ling (HEX) 0000000001	
Memory Bank Access Passwo	rd	Ť
Read / Write Offs	Access Pas	sword
	Kill Passwoi	rd
Read Length (Wo 2	User-defined	ł
Bank Data (HEX)		1/3
READ	w	RITE

Step 1. Tap to select "Kill Password", or "Access Password", or "User-defined" to read.

Tag Detail	RESET	Tag Deta	ail		RESET
EPC TID RESERVE D	USER	EPC	TID	RESERVE D	USER
EPC Binary Encoding (HEX) 3450afec2b00000000000001		EPC Binary 3450afec2	y Encoding	(HEX) 0000001	
Memory Bank Access Password		Memory Ba Kill Passv	ank vord		*
Read / Write Offs Access Passwo	rd	Read / Wri	te Offset (V	Vords)	
Kill Password					1/3
Read Length (Wo User-defined		Read Leng 2	th (Words)		
	1/3				1/3
Bank Data (HEX)		Bank Data	(HEX)		
READ WRITE	E	REAL	D	w	RITE

Step 2. Enter the <u>access password</u> and tap on "**OK**". The bank data is successfully read with a hint message "**Operation success**" appears.

Read reserved bank	Read reserved bank	Tag Detail	RESET
Enter current access password to continue.	Enter current access password to continue.	EPC TID RESERVE	USER
		EPC Binary Encoding (HEX) 3110afec2b0bebc201000000	
Default access password	Default access password	Memory Bank Kill Password	*
CANCEL OK	CANCEL OK	Read / Write Offset (Words) 0	
Intick the checkbox	Input the access password		1/3
- Ontick the checkbox	- input the access password	Read Length (Words) 2	
"Default access password"	and tap on "OK".		1/3
to manually input the access		Bank Data (HEX) pooooooo	
password.			
		Coperation success	ITE

8.4.2 ACCESS PASSWORD

Access Password, represented in 32-bit (8 hex characters), is stored in the reserved bank of the tag memory, and it is used for preventing others from changing lock or unlock status of the memory banks.

- Tag Detail RESET RESERVE EPC TID USER D EPC Binary Encoding (HEX) 3110afec2b0bebc201000000 Memory Bank Access Password -Read / Write Offset (Words) 1/3 Read Length (Words) 1/3 Bank Data (HEX) 00000000 READ WRITE
- Default Access Password

Programmed Access Password



The default Access Password is **00000000** (in hexadecimal format). By assigning a 32-bit (8 hex characters) non-zero access password to a tag, the write capabilities of this tag is unavailable till you enter the password which matches the one written in the "Access Password" section.

8.4.3 KILL PASSWORD

Kill Password, which is **00000000** (in hexadecimal format) by default, is used to deactivate the tag permanently and irrevocably. However, a tag with its kill password remains as default (00000000) is unable to executed the kill operation till a non-zero kill password (8 hex characters) is assigned. Once the tag is killed, it is unreadable hereafter.

Default Kill Password

Tag Det	ail		RESET
EPC	TID	RESERVE D	USER
EPC Binar 3110afec	y Encoding 2b0bebc201	(HEX) 1000000	
Memory B	ank		
Kill Pass	word		-
Read / Wr 0	ite Offset (V	Vords)	
			1/3
Read Leng 2	gth (Words)		
			1/3
Bank Data 00000000	(HEX)		
******			************
REA	D	WF	RITE

Programmed Kill Password

Tag Deta	ail		RESET
EPC	TID	RESERVE D	USER
EPC Binar 3110afec2	/ Encoding b0bebc201	(HEX) 1000000	
Memory Ba	ank		
Kill Passv	vord		-
Read / Wri 0	te Offset (V	Vords)	
			1/3
Read Leng 2	th (Words)		
			1/3
Bank Data 87654321	(HEX)		

REA	D	w	RITE

8.4.4 USER-DEFINED

Depending on the tag type, except of a 32-bit value Access password and a 32-bit value Kill password, there might be the additional free memory space inside the **Reserved** memory bank of a tag. For this kind of tags, the user data field in its **Reserved** bank is readable and editable for the user with the correct Access password, and you can perform reading and writing user data on the tag's **Reserved** bank through the option "**User-defined**" on the drop-down menu of "**Memory Bank**" on **Tag Detail**'s **RESERVED** tab page.

The user data stored in Reserved bank is shown in hexadecimal format on "**Bank Data (HEX)**" field.



8.4.5 WRITE

To change the Kill Password / Access Password / User-defined data:

- Step 1. Designate a read tag from Inventory and then enter "RESERVED" tab page,
 OR on "RESERVED" tab page, tap on "GET EPC" to read the tag whose Kill
 Password/ Access Password/ User-defined data is going to be changed:
- Step 2. After getting the EPC Binary Encoding (HEX), select which data to be modified from the drop-down menu of "Memory Bank", specify the offset and the length, and enter the new kill password/ access password/ user-defined data to be assigned into the field "Bank Data (HEX)".

ltem	Description
Read / Write Offset (Words)	To specify the start address of the memory bank to be read or written. Offset is measured in "word" which is equal to 2 bytes or 16 bits.
Read Length (Words)	To specify the data length to be read. Leagth is measured in "word" which is equal to 2 bytes or 16 bits.



Step 3. Tap on "WRITE".

Tag Deta	ail		RESET
EPC	TID	RESERVE D	USER
EPC Binar 3110afec2	y Encoding 2b0bebc201	(HEX) 1000000	
Memory B	ank		
Kill Passv	vord		-
Read / Wr 0	te Offset (V	Vords)	
			1/3
Read Leng 2	th (Words)		
			1/3
Bank Data 11111111	(HEX)		
REA	D	WF	RITE

Step 4. Confirm by entering the original access password and tap "**OK**" to proceed. A hint message "**Operation success**" appears to indicate data changing is completed.

Write reserved bank	Write reserved bank	Tag Detail	RESET
Enter current access password to continue.	Enter current access password to continue.	EPC TID RESERVE	USER
		EPC Binary Encoding (HEX) 3110afec2b0bebc201000000	
		Memory Bank	
Default access password	Default access password	Kill Password	*
CANCEL OK	CANCEL OK	Read / Write Offset (Words)	1/3
 Untick the checkbox "Default 	Input the original access	Read Length (Words) 2	
access password" to manually	password (not the one you are		1/3
access password to manually	password (not the one you are	Bank Data (HEX) 11111111	
input the access password.	going to change), and then tap		
	on "OK" to continue.		
		Operation success	ITE

8.5 USER

Some Gen2 tags provide "**User**" bank which is the extended memory for storing more information defined by the user, and the user memory size differs depending on the tag type.

Tag Det	ail		RESET
EPC	TID	RESERV ED	USER
EPC Bina 3110afec	ary Encodir 2b0bebc2	ng (HEX) 01000000	
Read / W 0	/rite Offset	(Words)	
			1/3
Read Ler 0	ngth (Word	ls)	
			1/3
User Binar 1111000	y (HEX) 0		
			8/8
RE	AD	WRI	TE

8.5.1 READ

To access a tag's "**User**" memory bank, please <u>designate a read tag from Inventory</u> and enter "**User**" tab page, or simply tap "**GET EPC**" on "**User**" tab page of **Tag Detail** to retrieve the tag's EPC number, and then "**READ**" button to reveal the information stored in the read tag.



Please note that the tag's <u>Access Password</u> is required for acquiring the user data stored in **User** memory bank.



The items listed on "User" tab page of Tag Detail are:

Item	Description	
EPC Binary Encoding (HEX)	EPC Binary Encoding is EPC number expressed in hexadecimal notation which requires less memory of RFID tags and can be translated to the <u>EPC Tag URI</u> or Pure Identity <u>EPC URI</u> form.	
Read / Write Offset (Words)	The word to be offset of the read data. A "Word" is 2 bytes (16 bits).	
Read Length (Words)	The read data leagth which is measured in "Word" (2 bytes).	
User Binary (HEX)	The user bank data in hexadecimal format.	

8.5.2 WRITE

To write additional information onto the tag's User memory bank:

Step 1. Designate a read tag from Inventory and then enter "USER" tab page,

OR

On "**USER**" tab page of "**Tag Detail**", tap on "**GET EPC**" to read the tag to be written.



Step 2.

Tap on "**READ**" and provide the tag's <u>Access Password</u> to get the data stored in this tag.

Read user bank	1/3
Enter current access password to continue.	Read Length (Words) 0
	1/3
······	User Binary (HEX)
Default access password	0/255
CANCEL	READ WRITE

Tag Detail

TID

EPC Binary Encoding (HEX) 3270afec2b00020000000001

Read / Write Offset (Words)

EPC

0

RESET

USER

RESERV ED

Step 3.

Input the information you would like to write in the field to be modified, and then tap on \mathbf{WRITE}'' .

Read / Write Offset (Words)

The start address of the memory bank. Offset is measured in "word" which is equal to 2 bytes or 16 bits.

Read Length (Words)

The data length to be read. "Word" equates with 2 bytes or 16 bits.

User Binary

The user bank data in hexadecimal format.

Tag Detail RESET RESERV EPC TID USER FD EPC Binary Encoding (HEX) 3110afec2b0bebc201000000 1 Read / Write Offset (Words) Ο 1/3Read Length (Words) Ω 1/3 User Binary (HEX) 11110000 8/8 2 READ WRITE

Step 4.

The information is written onto the tag with a hint message "**Operation success**" shows up.


Chapter 9

EZEDIT: TAG LOCATING, LOCK, & UNLOCK

This chapter introduce how to find your target tag, and how to lock/unlock a Gen2 tag.

IN THIS CHAPTER

9.1 Tag Locating	 146
9.2 Lock/ Unlock	 148

9.1 TAG LOCATING

"Tag Locating" helps user to find out where a specific tag is.



The functions on "Tag Locating" are:

Item	Description
RESET	To clear the read tag information displayed on "Tag Locating".
EPC Binary Encoding (HEX)	EPC Binary Encoding of the read tag or the tag to be detected is EPC number expressed in hexadecimal notation which requires less memory of RFID tags and can be translated to the <u>EPC Tag URI</u> or Pure Identity <u>EPC URI</u> form.
Signal maximum	The detected signal's maximum frequency.
The detected signal chart	The chart wich shows the signal strength of the detected tag.

To discover the tag's position:

Step 1.

Manually input the **EPC Binary Encoding (HEX)** of the target tag, or <u>designate a read tag from</u> <u>Inventory</u>.

Step 2.

Keep pressing the trigger and move your position to detect the tag signal. The chart interprets the signal strength values of the target tag. The stronger signal it shows, the shorter distance between the target tag and the UHF RFID reader it is.



9.2 LOCK/ UNLOCK

A Gen2 tag is in "**Secured**" state with its <u>access password</u> as the default setting, **00000000**, while it is in "**Open**" state with an assigned non-zero access password. Tags is re-configurable in **Secured** state. To prevent others from reading or writing the tag banks, you can lock a tag's memory banks with a non-zero access password.



Follow the steps to lock or unlock the memory bank:

Step 1.

Designate a read tag from Inventory,

or tap on "GET EPC" button to read the tag to be locked or unlocked.



Step 2.

Select the memory bank you'd like to demanded from the drop-down menu.

Lock / UnLoc	K RES	ET				
EPC Binary Enco 3110afec2b0beb	ding (HEX) c201000000					
Memory Bank		_				
Kill Password		•				
Kill	Password					
Aco	cess Password					
EPO	C memory					
Use	er Memory					
_						
GET EPC						
LOCK	UNLOCK					

Memory Bank		Description
Kill Password	Lock:	"Kill Password" is readable and writable if the entered access password is verified.
	Unlock:	"Kill Password" is always readable and writable.
Access Password	Lock:	"Access Password" is readable and writable if the entered access password is verified.
	Unlock:	"Access Password" is always readable and writable.
EPC Memory	Lock:	EPC memory bank is readable and writable if the entered access password is verified.
	Unlock:	EPC memory bank is always readable and writable.
User Memory	Lock:	User memory bank is readable and writable if the entered access password is verified.
	Unlock:	User memory bank is always readable and writable.

Step 3.

Tap on the button "LOCK" or "UNLOCK", and enter the access password to continue locking or unlocking the memory bank.

Lock / UnLock	RESET
EPC Binary Encoding (HEX) 3110afec2b0bebc201000000	
Memory Bank	
User Memory	•
GET EPC	
	ск

Step 4.

A hint message "**Operation success**" shows up to indicate completing locking or unlocking the target memory bank.



Chapter 10

EZEDIT: AUTHENTICATE TAG

This chapter is about the functions for NXP UCODE DNA.

IN THIS CHAPTER

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10.3 Authenticate & Modify the UCODE DNA Chip	159

10.1 INTRODUCTION

"Authenticate Tag" is only for NXP UCODE DNA chips which employs AES encryption protection for cryptographic communication.



10.2 SETTING ENCRYPTION KEY FOR UCODE DNA CHIP

Please go through the following steps to set a brand-new **UCODE DNA** tag (which is without the **Data Encryption Key** written onto it).



10.2.1 AUTHENTICATE KEY

"Authenticate Key" is to set a encryption key for cryptographic authentication purpose. Assigning Data Encryption Key is irreversible. Once "Data Encryption Key (HEX)" is written onto the UCODE DNA tag and successfully actived, it is unchangeable forever.



- **Step 1.** Tap to enter "**Authenticate Key**" page and tap on "**GET EPC**" button to obtain the EPC number of this brand-new **UCODE DNA** tag.
- Step 2. Input the Data Encryption Key (HEX) to be assigned, and then tap on "WRITE".

Authenticate Key	RESET	Authenticate Key	RESET	Authenticate Key Ri	ESET
EPC Binary Encoding (HEX)		EPC Binary Encoding (HEX) e2c068920000003a1e33e150		EPC Binary Encoding (HEX) e2c068920000003a1e33e150	
Data Encryption Key (HEX)		Data Encryption Key (HEX)		Data Encryption Key (HEX) 1111122223333344444555559999977	
	0/32		0/32	32	2/32
		٢			
	_				
GET EPC WRITE		GET EPC WRIT	Ξ	GET EPC WRITE	
ACTIVE NEXT		ACTIVE NEXT		ACTIVE NEXT	

Step 3. A pop-up dialogue "Write Encryption Key" appears for entering the <u>access</u> <u>password</u> of this UCODE DNA tag. Enter the access password and tap "OK" to continue writing the Data Encryption Key.



Step 4. Tap on "**ACTIVE**" button to activate the **Data Encryption Key**. The access password is demanded for the activation. Enter it and then tap "**OK**" in the pop-up dialogue.

Authenticate Key RESET	Activate Encryption Key	Authenticate Key RESET
EPC Binary Encoding (HEX) e2c068920000003a1e33e150	Enter current access password to continue. Encryption Key once enabled, it can not be changed.	EPC Binary Encoding (HEX) e2c068920000003a1e33e150
Data Encryption Key (HEX) 111112222233333444445555559999977		Data Encryption Key (HEX) 11111222223333344444555559999977
32/32	Default access password CANCEL OK Activate Encryption Key Enter current access password to continue. Encryption Key once enabled, it can not be changed.	32/32
GET EPC WRITE	Default access password	GET EPC WRITE
ACTIVE	CANCEL OK	ACTIVE NEXT

Step 5. Tap on "**NEXT**" button to enter "**Authenticate Verification**" page.

10.2.2 AUTHENTICATE VERIFICATION

After finishing the setting of **Authenticate Key**, you can perform cryptographic authentication communication between the UHF RFID Reader and this UCODE DNA tag by generating a random "**Authenticate Message**" to send to the tag which will response.

	Authenticate Key	RESET	Authenticate Verification RESET
Step 1. Enter Authenticate Verification	EPC Binary Encoding (HEX) e2c068920000003a1e33e150		Authenticate Message
page from "Authenticate Key "	Data Encryption Key (HEX)	111111	RANDOM GENERATOR
Key" is set.		32/32	Response Message
	GET EPC WRI	ГЕ	
	ACTIVE NEX	ίΤ –	SEND NEXT

Step 2.

Tap on "RANDOM MESSAGE" to generate a "Authenticate Message" and then "SEND".

Authenticate Verification RESET	Authenticate Verification RESET
Authenticate Message	Authenticate Message 77938C92E5CA2BD3DBA6
RANDOM GENERATOR	RANDOM GENERATOR
Response Message	Response Message
SEND NEXT	SEND NEXT

Step 3.

The **UCODE DNA** tag will feed back the UHF RFID Reader with a "**Response Message**" which is the same with the "**Authenticate Message**" the reader just sent.



Step 4.

The **Authenticate Verification** is accomplished, and now you can proceed to "**Untraceable Option**" by tapping on "**NEXT**" button.

Authenticate Ve	erification	RESET
Authenticate Mess A1679641C11ACD	age 153558	
RANDOM G	ENERATOR	
Response Message A1679641C11ACD	153558	
SEND	NEXT	

10.2.3 UNTRACEABLE OPTION

"**Untraceable Option**" is to set what can be read by the readers other than the authentic ones.



Step 1.

Enter the tag's <u>access password</u> in the "Password" field.

Step 2.

Select the data to be concealed or revealed from the drop-dowm menu of **EPC Memory**, **TID Memory**, and **User Memory**.

Untraceable Option	RESET	:	Untraceable Option	RESET	:	Untrac	eable Option RESET	
Password 11111111			Password 11111111			Passwo 1111111	rd 11	
		8/8			/9		8/8	
EPC memory			EPC memory			EPC mer	mory	
Hide all		*	Show all		-	Show a	II	
TID Memory			TID Memory			TID Mer	Hide all	
Hide all		•	Show all		-	Show a	Ob any true by tag	
User Memory			User Memory			User Me	Show two bytes	
Hide all		-	Hide all		•	Hide al	Show four bytes	
							Show six bytes	
							Show eight bytes	
							Show ten bytes	
APPLY			APPLY			A	Show all	

Step 3.

Tap on "**APPLY**" and a hint message "**Operation success**" appears to indicate that applying successfully.



10.3 AUTHENTICATE & MODIFY THE UCODE DNA CHIP

Directly enter the "Authenticate Verification" or "Untraceable Option" page, you can perform the below functions for the UCODE DNA tag with the encryption key assigned.



10.3.1 AUTHENTICATE VERIFICATION

To authenticate whether a UCODE DNA tag is genuine or not, you can send a message authentication code from the UHF RFID Reader to this UCODE DNA tag.

Authenticate Tag	Authenticate Verification RESET
Authenticate Key Only support NXP UCODE DNA tag.	EPC Binary Encoding (HEX)
Authenticate Verification	Data Encryption Key (HEX)
,	0/32
Untraceable Option Only support NXP UCODE DNA tag.	Authenticate Message
	RANDOM GENERATOR
	Response Message
	SEND NEXT

Step 1.

Manually input EPC number of the UCODE DNA tag to be authenticated in **EPC Binary Encoding (HEX)** field, and the encryption key into **Data Encryption Key (HEX)** field.

Authenticate Verification	RESET
EPC Binary Encoding (HEX) e2c068920000003a1e33e150	
Data Encryption Key (HEX) 111111111111111111111111111111111111	111111
Authenticate Message	32/32
RANDOM GENERATOR	
Response Message	
SEND NEXT	r

Step 2.

Top on **"RANDOM MESSAGE**" to generate a **"Authenticate Message**" which is an encrypted string, and then **"SEND**" it to this UCODE DNA tag for the tag to decrypt.

Authenticate Verification	ET	Authenticate Verification RESE	ET	Authenticate Verification RESET
EPC Binary Encoding (HEX) e2c068920000003a1e33e150		EPC Binary Encoding (HEX) e2c068920000003a1e33e150		EPC Binary Encoding (HEX) e2c068920000003a1e33e150
Data Encryption Key (HEX)		Data Encryption Key (HEX)		Data Encryption Key (HEX)
32/3	32	32/32	2	32/32
Authenticate Message		Authenticate Message 5BA7298D588D1B0F05F0		Authenticate Message 5BA7298D588D1B0F05F0
RANDOM GENERATOR		RANDOM GENERATOR		RANDOM GENERATOR
Response Message		Response Message		Response Message 5BA7298D588D1B0F05F0
SEND NEXT		SEND NEXT		Check string match SEND NEXT

Step 3.

A matched string from the genuine UCODE DNA tag is received by the UHF RFID Reader while no feedback string is obtained if the tag to be authenticated is counterfeit.

EPC Binary Encoding (HEX) e2c068920000003a1e33e150		EPC Binary Encoding (HEX) e2c06892000003a1e33e150	
Data Encryption Key (HEX)	111	Data Encryption Key (HEX)	
	32/32		32/32
Authenticate Message 5BA7298D588D1B0F05F0		Authenticate Message BB7CEBCCDB4903FCCD2C	
RANDOM GENERATOR		RANDOM GENERATOR	
Response Message 5BA7298D588D1B0F05F0		Response Message	

Please note that incorrect encryption key results in obtaining different feedback string.



10.3.2 UNTRACEABLE OPTION

To access and change the data of the hidden memory banks of a UCODE DNA tag, the UHF RFID Reader needs to get the authorization with the access password of this tag beforehand.

Step 1.

Manually input EPC number and the <u>access password</u> of the UCODE DNA tag to be modified.

Authenticate Tag	Untraceable Option	RESET	Untraceable Option	RESET
Authenticate Key Only support NXP UCODE DNA tag.	EPC Binary Encoding (HEX)		EPC Binary Encoding (HE e2c068920000003a1e33e	X) e150
Authenticate Verification	Password		Password 11111111	
Untraceable Option Only support NXP UCODE DNA tag.	EPC memory Hide all	0/8	EPC memory Show six bytes	8/8
	TID Memory Hide all User Memory	•	TID Memory Show all User Memory	.
	Hide all	*	Hide all	*
	APPLY		APPLY	

Step 2.

From the drop-dowm menu of **EPC Memory**, **TID Memory**, and **User Memory**, select to show or hide the memory banks or part of it. The unauthorized readers can only read the revealed data).



Step 3.

ntraceable Option	RESET
EPC Binary Encoding (HE e2c068920000003a1e33	EX) e150
Password 11111111	
	8/8
EPC memory	
Show six bytes	•
TID Memory	
Show all	~
User Memory	
Hide all	•
APPLY	

Tap on "**APPLY**", and the modification is accomplished with a hint message "**Operation** success" appears.

MORE MENU

Tap on the more button i on the action bar to open the **Untraceable Option More Menu**.

Untraceable Option RESET	Import
EPC Binary Encoding (HEX) e2c068920000003a1e33e150	Export
Password 11111111	
8/8	
EPC memory	
Show all 👻	
TID Memory	
Show all	
User Memory	
Show all	
APPLY	

Through **Untraceable Option More Menu**, you can import or export the record of the UCODE DNA from/to the internal storage of the mobile computer.

	Import	Untraceable Option RESET :
	Current Path: /storage/emulated/0	EPC Binary Encoding (HEX) e2c068920000003a1e33e150
	SAMService_Data/	Password 11111111
	ScreenshotTouch/	8/8 EPC memory
	SoftwareTrigger_Data/	Show all
Untraceable Option RESET	qcom/	TID Memory
EPC Binal	record.bin	Snow all 🔹
Password	sipcontroller_Data/	Show all
11111111 Export	Chosen File:record.bin	
EPC memory	CANCELOK	Record imported successfully.
Show all		
TID Memory		
Show all 👻	Export	Untraceable Option RESET
User Memory Show all	Current Path: /storage/emulated/0	EPC Binary Encoding (HEX) e2c068920000003a1e33e150
	ADC/	Password
	Alarms/	1111111
APPLY	Android/	EPC memory
	CL_Settings/	Show all
	DCIM/	Show all
	,	User Memory
	Download/	Show all
	File Name: record .bin	
	CANCEL OK	Record exported successfully.

Note: The record is saved as a .bin file.

SPECIFICATION

RK25 UHF RFID READER

PHYSICAL CHARACTERISTICS

Dimension	RK25 UHF RFID Reader: 152.4 mm x 85.3 mm x 158.8 mm
	RK25 UHF RFID Reader with RK25 Mobile Computer:
	181.4 mm x 85.3 mm x 162.9 mm
Weight	RK25 UHF RFID Reader: 353.4 g
	RK25 UHF RFID Reader with RK25 Mobile Computer: 632.7 g
Power	Li-ion battery pack
	Typical voltage: 3.6V
	Typical capacity: 3000mAh
Notification	R/G/B LED
Input	Trigger key
Compatible Host	CipherLab RK25 Mobile Computer
Communication	Electrical 8-pin connection

RFID PERFORMANCE

Standard	EPC Class1 Gen2 V2
RF Module	Impinj R2000 high performance UHF RFID chipset solution
Antenna	Circularly Polarized
Max Data Rate	700+ tags/sec
Nominal Read Range	8+ m (26+ ft)
Frequency Range	US: 902~928 MHz
	EU: 856~868 MHz
	TW: 922~928MHz
	JP: 916~920MHz
	AU: 920~924MHz
	NZ: 920~924MHz
	IN: 865.7~866.9MHz
	SG: 920~924 MHz
	Morocco: 867.7~867.9 MHz

USER ENVIRONMENT

Drop	1.2M (with RK25 Mobile Computer)
Operating Temp.	-20°C to 50°C / -4°F to 122°F
Storage Temp.	-30°C to 70°C / -22°F to 158°F
Sealing	IP54
Charging time	Full charged time: Approximate 6hrs. (charge with RK25 data terminal)
ESD	Air discharge: ±15kV Direct discharge: ± 8kV
Certificate	CE, FCC, NCC, IC, JRL, Telec, EAC, RCM, WPC

SOFTWARE

RFID Android Software Development KIT

EZConfig

EZEdit

ACCESSORIES

Battery

Battery charger

WARRANTY

1 year

RS35 UHF RFID READER

PHYSICAL CHARACTERISTICS

Dimension	RS35 UHF RFID Reader: 156.2 mm x 92.8 mm x 186.3 mm
	RS35 UHF RFID Reader with RS35 Mobile Computer:
	199.4 mm x 92.8 mm x 186.3 mm
Weight	RS35 UHF RFID Reader: 366 g
	RS35 UHF RFID Reader with RS35 Mobile Computer: 655 g
Power	Li-ion battery pack
	Typical voltage: 3.6V
	Typical capacity: 3000mAh
Notification	R/G/B LED
Input	Trigger key
Compatible Host	CipherLab RS35 Mobile Computer
Communication	Electrical 8-pin connection

RFID PERFORMANCE

Standard	EPC Class1 Gen2 V2
RF Module	Impinj R2000 high performance UHF RFID chipset solution
Antenna	Circularly Polarized
Max Data Rate	700+ tags/sec
Max Output Power	1 W, 30 dBm (26 steps)
Nominal Read Range	8+ m (26+ ft)
`Frequency Range	US: 902~928 MHz
	EU: 865~868 MHz
	TW: 922~928MHz
	JP: 916~920MHz
	AU: 920-924MHz
	NZ: 920-924MHz

USER ENVIRONMENT

Drop	1.2M (with RS35 Mobile Computer)
Operating Temp.	-20°C to 50°C / -4°F to 122°F
Storage Temp.	-30°C to 70°C / -22°F to 158°F
Sealing	IP54
Charging time	Full charged time approximate 6 hrs (charge with RS35 data terminal)
ESD	Air discharge: ±15kV Direct discharge: ± 8kV
Certificate	CE, FCC, NCC, IC, Telec, EAC

SOFTWARE

RFID Android Software Development KIT

EZConfig

EZEdit

ACCESSORIES

Battery

Battery charger

WARRANTY

1 year