

123RFID

Mobile Application



ZEBRA

User Guide

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About this Document

This guide provides detailed information about the 123RFID Mobile Application for Android.

Related Documents

The following documents provide more information about RFID products that support 123RFID Mobile Application for Android:

- MC3300R RFID Mobile Computer Integrator Guide Supplement, p/n MN-003180-xx
- RFD2000 RFID Sled User Guide, p/n MN-003128-xx
- RFD8500 User Guide, p/n MN002065Axx
- RFD40 Product Reference Guide, p/n MN-004189-xx
- RFD4031 Product Reference Guide, p/n MN-004373-xx

Notational Conventions

The following conventions are used in this document:

- **Bold** text is used to highlight the following:
 - Dialog box, window, and screen names
 - Drop-down list and list box names
 - Checkbox and radio button names
 - Icons on a screen
 - Key names on a keypad
 - Button names on a screen
- Bullets (•) indicate:
 - Action items
 - List of alternatives
 - Lists of required steps that are not necessarily sequential.
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

Service Information

If you have a problem with your equipment, contact Zebra Global Customer Support for your region. Contact information is available at: zebra.com/support.

When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software type and version number

Zebra responds to calls by email, telephone, or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Customer Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

123RFID Mobile Application

This chapter describes the enhanced version of the 123RFID Mobile Application for Android which demonstrates the device's capability and tag operation functionality.

This application is also available as part of Google Play store at: play.google.com/store/apps/details?id=com.zebra.rfidreaderAPI.demo&hl=en.

Requirements

Requirements for the 123RFID Mobile Application for Android are as follows:

- The recommended Android version on the mobile computer is Nougat version 7 and above.
- Zebra Enterprise RFID mobile computer and Android devices, such as the MC3300xR, compatible with RFD8500 or Zebra approved mobile computer compatible with the RFD40 Standard RFID and RFD4031 Premium/Premium+ sleds.
- Zebra RFID Manager APK. NOTE: The Zebra RFID Manager APK is only required when using RFD2000 products. Refer to the appropriate guide for more information.
- 123RFID Mobile Application APK.

Installing the 123RFID Mobile Application for Android

Install the 123RFID Mobile Application on the mobile computer from zebra.com/support or from the Google Play Store. The procedure to install the software on an Android device is dependent upon the Android version.

To install the software:

1. Connect the Android device to your computer. It is connected as MTP Device and shown as a drive on the computer.

For information on transferring files using Media Transfer Protocol, refer to the Mobile Computer Integrator Guide at: zebra.com/support.
2. Navigate to Device Settings > Security and check Unknown Sources to allow installation of applications from unknown sources.
3. Copy the 123RFID_Mobile_1.0.x.x.apk file to the mobile device.
4. Go to Settings > Security and select Unknown sources.

5. Use the File Manager to locate the 123RFID_Mobile_1.0.x.x.apk file in the folder to which it is copied in Step 3 and select it.
6. In the pop-up window, select the Android App installer to begin installation.

123RFID Mobile Application for Android

This application runs on Android mobile devices and demonstrates capability and tag operation functionality.

The application allows for navigating to all screens at any time, however, some actions are not permitted while the device is charging. These actions include any operation that involves Tag reading or writing (for example: Rapid Read, Inventory, Locate Tag, etc.).

Navigate to all screens when the inventory/locate operation is in progress. When the operation is in progress, the device displays Operation in Progress if additional operations are initiated.

Using the 123RFID Mobile Application for Android

To use the application for RFID operations:

1. Launch the 123RFID Mobile Application for Android on the mobile device.
2. From the Readers list, tap on the available device listed under Available Readers to connect and view the Rapid Read screen.
3. Tap Settings > RFID > Advanced Reader Options > Antenna.
Power Level is set to 27.0 dBm by default. However, it is shown as 270 dbm because the value used is in units of tens of dBm. Japan units are set to a different default power level depending on the SKU type.
4. Tap the **Back** button and select **Regulatory** to set the region in which the device is operating.



NOTE: By default, the fastest read profile is selected and configures the reader for the maximum power allowed based on the read profile. However, the dBm can be limited due to the regulatory requirements of the specified region in which the sled is being used.

5.

Navigating 123RFID Mobile


Navigate using the Home screen, menu, or bottom navigation bar. Switch between the Inventory screen and the Locate screen or the Inventory screen and the Rapid Read screen with a single tap of the appropriate icon.

To exit the application, tap the Back button, and click OK on the confirmation screen.

Home Screen

To access the 123RFID Mobile Application for Android, touch the Zebra RFID Reader icon on the mobile device to display the Home screen.

Menu

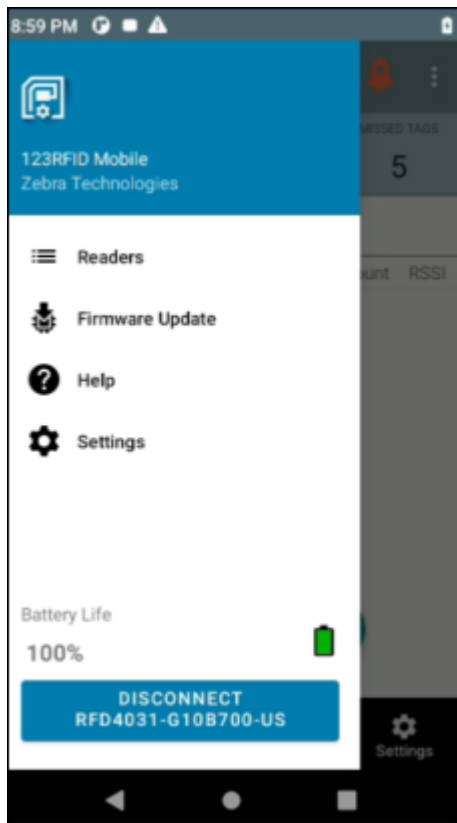
To access the menu, tap . The menu options include:

- Readers
- Firmware Update
- Help
- Settings

To disconnect the connected reader, tap the **Disconnect** reader button.



NOTE: The battery life (% charged) displays on this screen.



Navigation Bar

The Navigation Bar consists of the following tabs:

- **Readers** - displays a list of connected readers and available readers. On first time launch of the app, this is the tab that displays, unless the connection to the reader is over USB/CommonIO.
- **RFID** - select from RFID Settings, Locate Tag, Pre Filters, and Tag Write. This is the tab that displays most of the time when launching the app, if the reader has been previously connected to the app or the reader is connected over USB/Common IO.

- **Scan** - scan barcodes, view list of scanned barcodes or clear the scanned list.

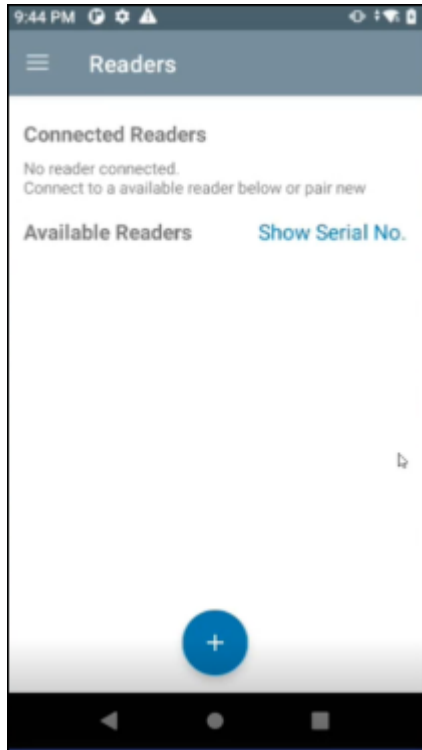


NOTE: Available only on RFD40 Premium and Premium+ devices with a built-in scanner.

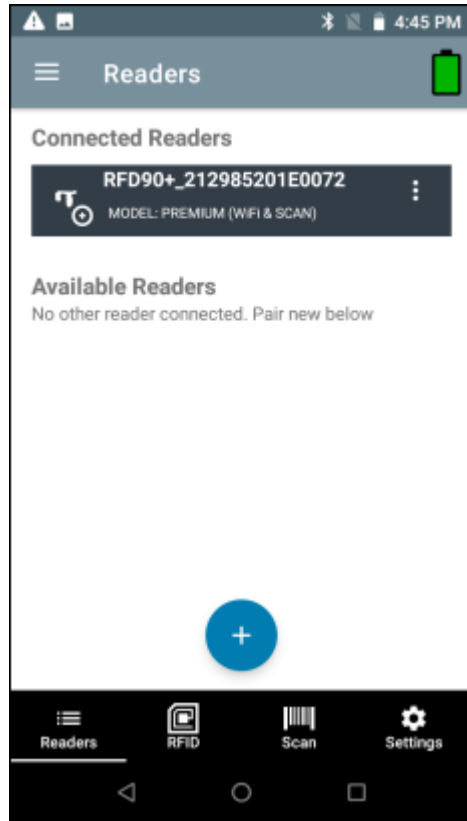
- **Settings** - configure General, RFID, Application, and Scan settings.

Readers List (Available vs. Connected)

The Readers list displays connected readers and available readers. After accessing 123RFID Mobile application for the first time, when no readers are available or connected, the following screen displays.

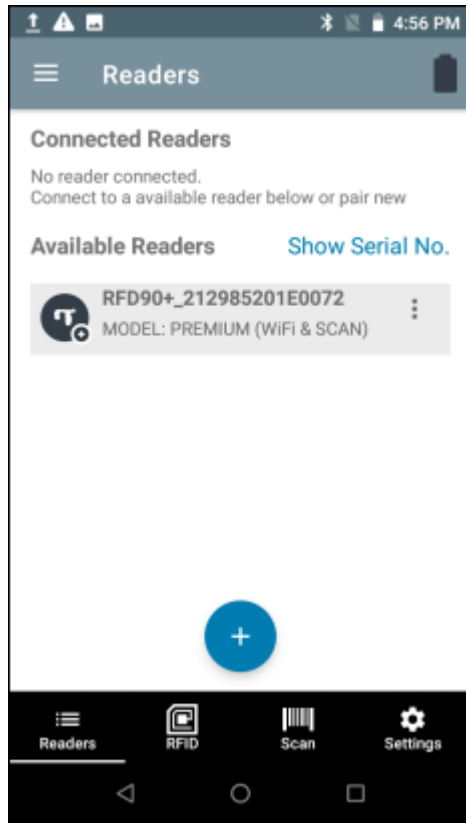


- **Connected Readers** - Lists the readers that are already connected and ready for use. Available options include:
 - Disconnect
 - Perform a firmware update
 - View reader details for a connected reader.



IMPORTANT: You can only connect to one device at a time.

- **Available Readers** - Lists the already paired devices that the user can choose to connect from. Available options include:
 - Connect
 - Unpair
 - View reader details for an available reader.




NOTE: The model name and description display under the reader name. To see the serial number, tap **Show Serial No.**

Connect a Reader



NOTE: A reader can be connected directly to the 8 pin common IO port (RFD40/RFD90 sleds only) or by using one of the three Bluetooth options.

To connect a reader:

1. From the bottom navigation bar, tap the Readers icon.
2. Tap a reader name from the Available Readers list to establish a session with the selected reader.
3. Tap again to terminate the session.
4. To obtain additional information about the device, tap  Reader Details within Connected Readers or Available Readers.

See Also

[Connect to Reader Directly Using USB](#)

[Connect to Reader Using Bluetooth](#)

Connect to Reader Directly Using USB/Common IO

There is no need to go through any manual steps or pairing. When connecting the RFD40 using USB, it connects directly.



NOTE: Use a USB eConnex pin if using the RFD40, or USB Serial connection if using the RFD2000.

1. Connect the RFD40 to USB.
2. Launch 123RFID Mobile App.

The RFID Rapid Read screen displays.

The RFD40 is directly connected.

Connect to Reader Using Bluetooth

Using Bluetooth, you can pair and connect to a reader in the following ways:

- Tap and Pair
- Scan and Pair
- Pair using Barcode

Pair Reader Using NFC Tag (Tap and Pair)

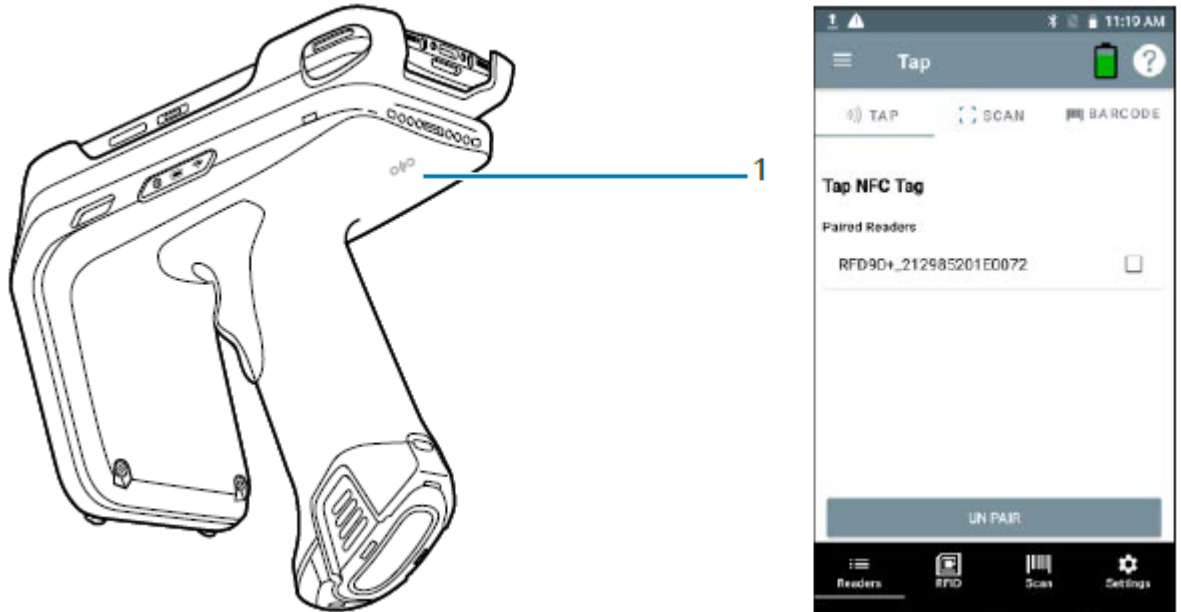


NOTE: Available only on RFD40 Premium and Premium +.

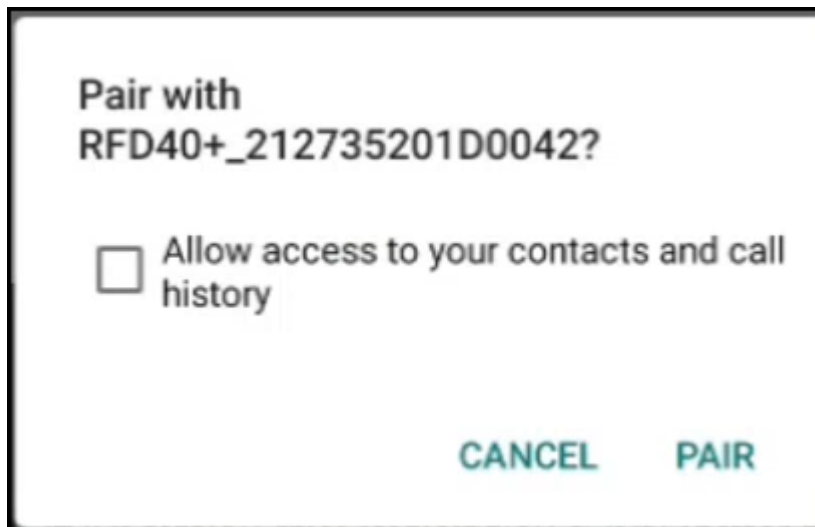
To pair a reader using the NFC tag:

1. From the bottom Navigation Bar, tap **Readers**.
2. Tap + icon.

3. To connect via NFC, align the NFC area behind the handle of the sled with the NFC area on the back of the mobile computer to pair.



4. On the **Pair with** screen:
 - a) (Optional) Check **Allow access to your contacts and call history**.
 - b) Tap **PAIR**.



The reader is paired with the mobile computer and the reader displays in the **Available Readers** list..

Once the sled has paired with a mobile computer, the sled recognizes the device going forward and automatically connects using the 123RFID Mobile Reader Discovery feature.

From the Readers list, select the checkbox for the paired reader and tap **UNPAIR** to unpair the reader from the mobile computer.

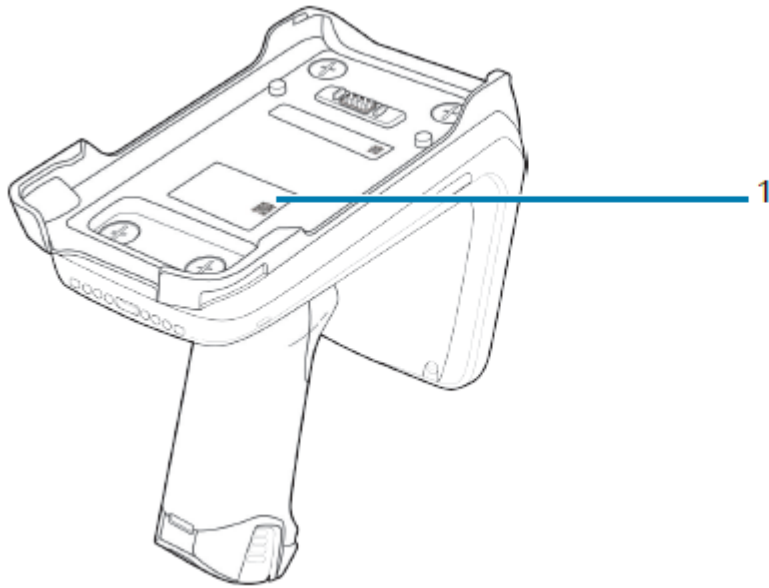
Scan and Pair - RFD40



NOTE: Available only for Zebra Enterprise Mobile Computing devices and not third party Android devices.

The RFD40 Premium + can connect to a host device over Bluetooth via Scan & Pair.

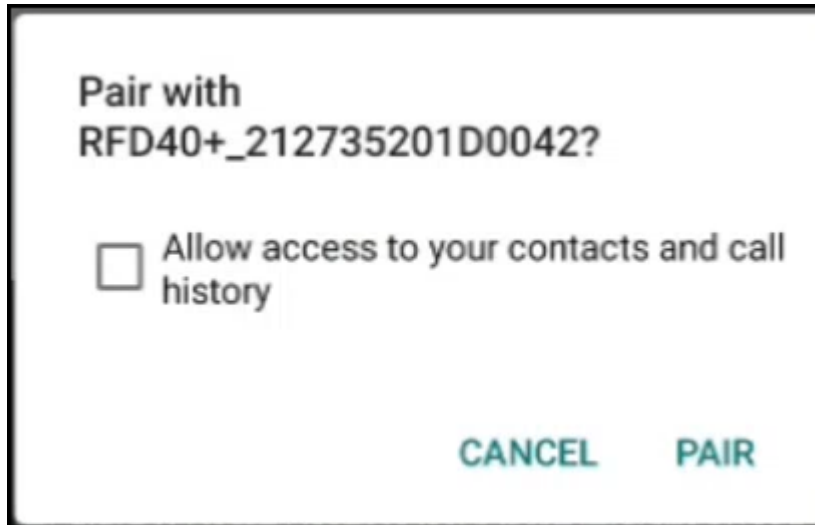
1. From the bottom Navigation Bar, tap **Readers**.
2. Tap + icon > Scan.
3. To connect via scan, scan the code on the sled using the mobile computer to obtain the Bluetooth MAC address to pair the device to the sled or you can scan the serial number of the device.



4. Tap **PAIR**.

5. On the **Pair with** screen:

- a) (Optional) Check **Allow access to your contacts and call history**.
- b) Tap **PAIR**.



The reader is paired with the mobile computer and the reader displays in the **Available Readers** list..

Once the sled has paired with a mobile computer, the sled recognizes the device going forward and automatically connects using the 123RFID Mobile Reader Discovery feature.

From the Readers list, select the checkbox for the paired reader and tap **UNPAIR** to unpair the reader from the mobile computer.

Scan and Pair - RFD8500

Pairing with the RFD8500 is completed from the Android platform via Bluetooth Settings on the mobile device.

Prior to pairing the RFD8500 with another device ensure the RFD8500 is charged.



IMPORTANT: For successful pairing of the RFD8500 to an Android device, the yellow trigger on the RFD8500 must be pressed when the RFD8500 displays in the list of available discoverable devices, and the RFD8500 Bluetooth LED starts flashing fast.

To pair with an Android device:

1. Power on the device.
2. Touch **Settings > Connected devices**.
3. Turn Bluetooth on.
4. Touch **Search for Devices** to display the available discoverable devices.
5. Turn the RFD8500 on and ensure Bluetooth is enabled. If not, press the Bluetooth button on the RFD8500 for one second to make it discoverable. When discoverable, the Bluetooth LED flashes blue.



NOTE: The RFD8500 is discoverable over Bluetooth for 40 seconds after start up. After that time Bluetooth suspends and is no longer discoverable. To restart discovery, press the Bluetooth button for one second.

6. When the RFD8500 displays in the list of available discoverable devices, tap the RFD8500 device in the list and press the RFD8500 trigger to pair when the Bluetooth LED starts flashing fast. A beep sounds when pairing completes successfully.



NOTE: Ensure you choose the correct RFD8500 serial number from the list of discoverable devices.

7. Exit the Device Settings screen and run the application.
8. From the application, select **Readers** and confirm that the RFD8500 serial number you paired with is displayed. Select it in the list of Available Readers. This connects the RFD8500 to the mobile device.

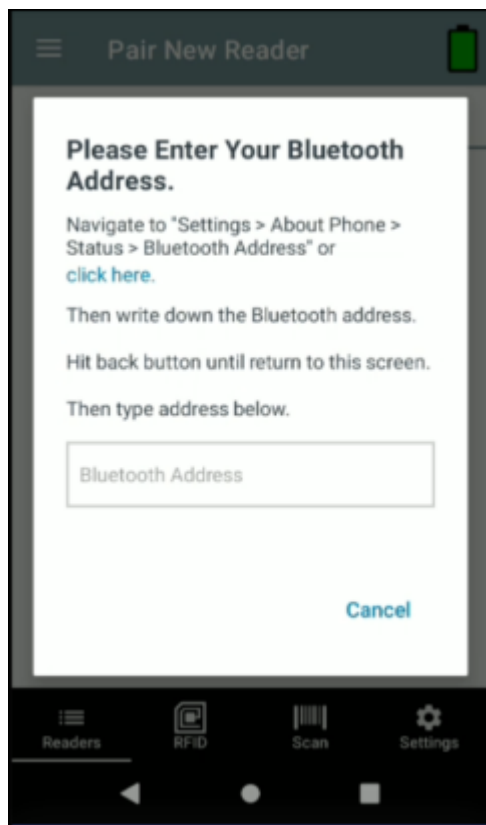
Pair Reader By Scanning a Barcode



NOTE: Available only on RFD40 Premium +.

To pair a reader by scanning a barcode:

1. From the bottom Navigation Bar, tap **Readers**.
2. Tap + icon > Barcode.
3. The very first time after you install the application, you will need to provide the Bluetooth address of the mobile computer. Navigate to **Settings > About Phone > Status > Bluetooth Address** or click the **click here** link on the **Please Enter Your Bluetooth Address** screen.

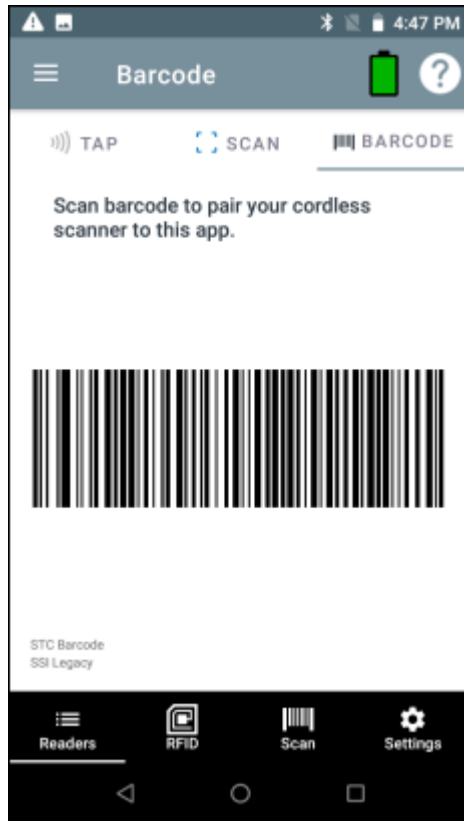


The **Settings** screen displays where you can locate the **Bluetooth address**.

4. Tap **Bluetooth address** and tap **Copy**.
5. Paste the Bluetooth address in the **Bluetooth Address** field on the **Please Enter Your Bluetooth Address** screen.
6. Tap **Continue**.

Once you do that, it sets the Bluetooth address barcode for you.

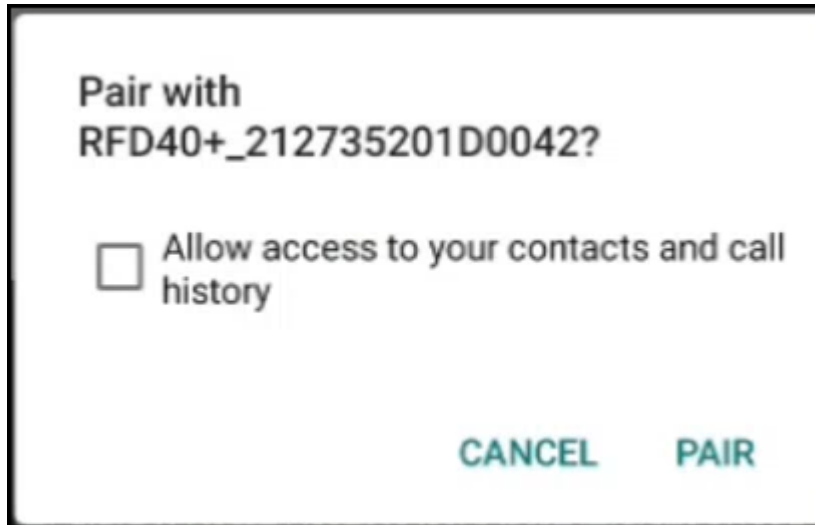
7. Scan the barcode using the sled.



8. Tap **PAIR**.

9. On the **Pair with** screen:

- a) (Optional) Check **Allow access to your contacts and call history**.
- b) Tap **PAIR**.



The reader is paired with the mobile computer and the reader displays in the **Available Readers** list..

Once the sled has paired with a mobile computer, the sled recognizes the device going forward and automatically connects using the 123RFID Mobile Reader Discovery feature.

From the Readers list, select the checkbox for the paired reader and tap **UNPAIR** to unpair the reader from the mobile computer.

Pair Reader Manually

If you do not use the Tap and Pair, Scan and Pair, or Scan a Barcode method to pair the reader, you can pair it manually.

1. Enable Bluetooth.
2. Discover Bluetooth devices.
3. Connect to a Bluetooth device.


See Also

[Enabling Bluetooth](#)

[Discovering Bluetooth Devices](#)

[Connecting to a Bluetooth Device](#)

Enabling Bluetooth

1. Swipe down from the Status bar to open the Notification panel.
2. Touch  to turn Bluetooth on.

Discovering Bluetooth Device(s)

The device can receive information from discovered devices without pairing. However, once paired, the device and a paired device exchange information automatically when the Bluetooth radio is on.

1. Ensure that Bluetooth is enabled on both devices.
2. Ensure that the Bluetooth device to discover is in discoverable mode.
3. Ensure that the two devices are within 10 meters (32.8 feet) of one another.
4. Swipe down from the Status bar to open the Quick Access panel.
5. Touch and hold **Bluetooth**.
6. Touch **Pair new device**. The device begins searching for discoverable Bluetooth devices in the area and displays them under **Available devices**.
7. Scroll through the list and select a device. The Bluetooth pairing request dialog box appears.
8. Touch **Pair** on both devices.
9. The Bluetooth device is added to the **Paired devices** list and a trusted (“paired”) connection is established.

Connecting to a Bluetooth Device

Once paired, connect to a Bluetooth device.

1. Go to **Settings**.
 2. Touch **Connected devices > Connection preferences > Bluetooth**.
 3. In the list, touch the unconnected Bluetooth device.
- When connected, **Connected** appears below the device name.

RFID Operations

Access RFID operations for the following:

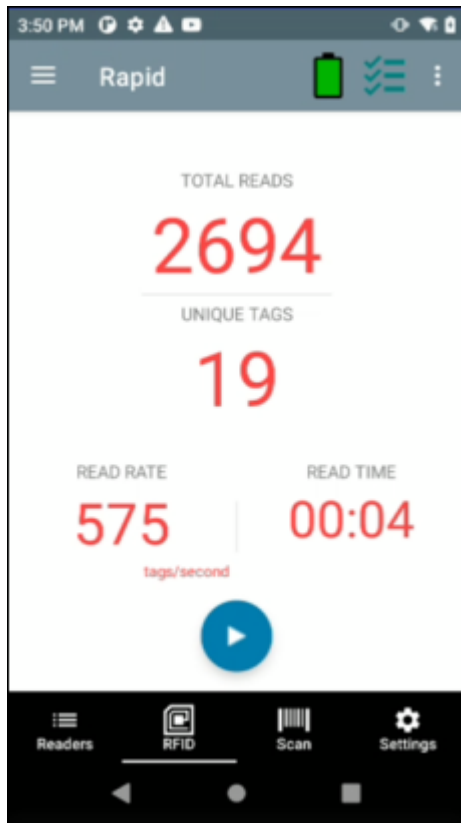
- **Rapid Read** - Displays a view of the inventory operation on the reader, including total reads, unique tag count, tag read rate, and read time.
- **Inventory** - Displays tag details, once tag reading begins.
- **Locate Tag** - Locates a single tag or multiple tags. Can be accessed from the Inventory screen.
- **Tag Write** - Allows you to write data to specified tags. Can be accessed from the Inventory screen.
- **Pre-Filters** - Allows you to set filters for tag data. Can be accessed from the Inventory screen.
- **RFID Settings** - Allows you to configure specific reader and antenna settings. Can be accessed from the Rapid Read and Inventory screens, as well as from Settings.

Rapid Read

The Rapid Read screen displays the following data:

- Total Reads
- Unique tag count

- Read time (mm:ss)
- Tag read rate (tags/sec).



The **Rapid Read** and **Inventory** screens present two different views of the inventory operation on the reader. The Start/Stop functionality can be used interchangeably on both screens. For example, when operation starts on the Rapid Read screen and you navigate to the Inventory screen, the button available on the Inventory screen is Stop. The same is true when the operation starts on the Inventory screen. During the rapid read process, you can navigate to the Inventory screen to view tag details along with tag counts for each tag. The statistics displayed are maintained on the Rapid Read and Inventory screens regardless of the screen used to start the process.

See Also
[Inventory](#)

View Rapid Read Results

To view Rapid Read results:

1. Tap Rapid Read from the Home or Menu screen.
2. Tap Start to start the rapid read inventory operation.
3. Tap Stop to stop the inventory operation.



NOTE: The scan trigger on the device can also start and stop the inventory operation. Press the trigger to start, continue to hold and release to stop.

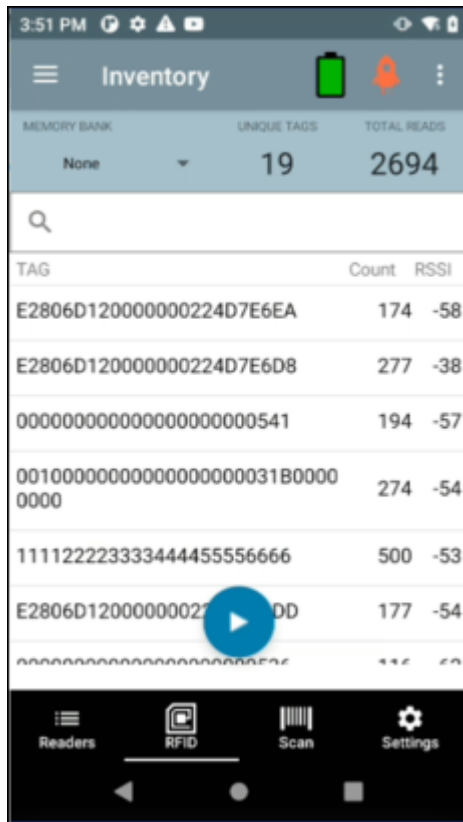
Progressing to another screen does not halt the operation. However, attempting to make changes or perform another operation while rapid read is in process results in an error.

Inventory

Once tags begin reading, the tag details populate the Inventory screen. Tag reading is started and stopped on this screen as well as on the Rapid Read screen. When the process starts, tag information displays on the screen.



NOTE: When the tag does not have printable ASCII data when in ASCII mode, a yellow highlighted background displays on the Inventory screen.




View Inventory Results

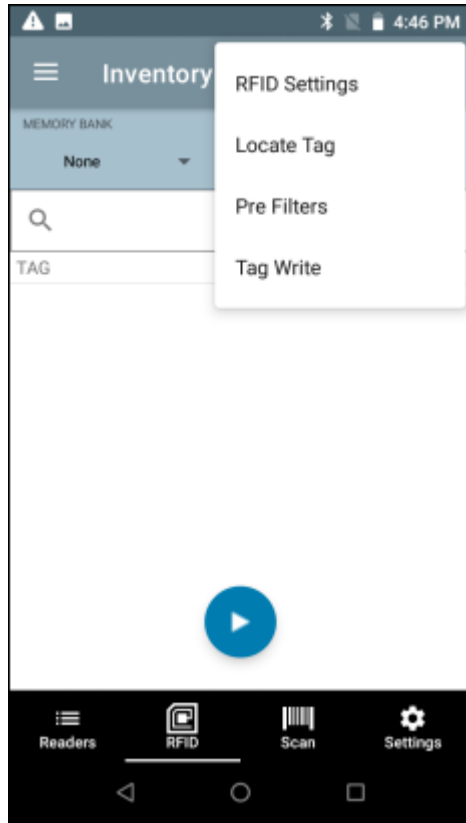
To view Inventory results:

1. Tap Inventory from the Home or Menu screen.
2. Tap Start to start the rapid read inventory operation.
The Start button changes to Stop.
3. Tap Stop to stop the read inventory operation.



NOTE: The scan trigger on the device can also start and stop the inventory operation. Press the trigger to start, continue to hold and release to stop.

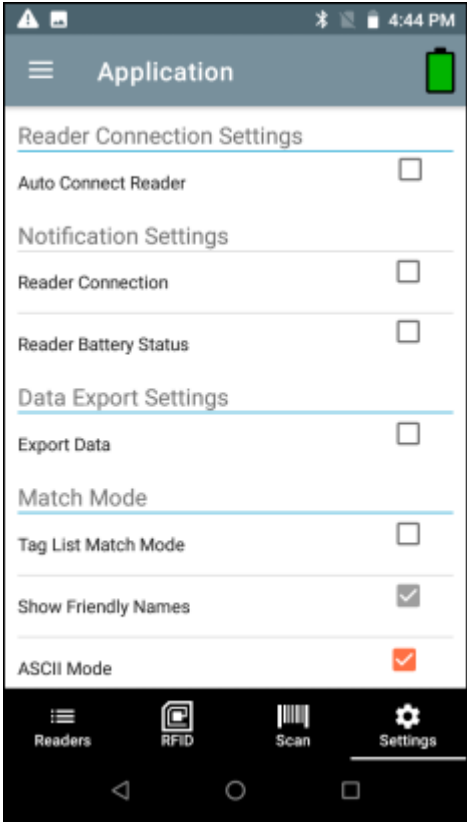
4. To filter information by type, tap the Memory Bank dropdown menu and select User, Reserved, TID, or EPC.
5. The tag ID selected can be used to locate, set pre-filters and tag write. After selecting a tag, tap  and select **Locate Tag**, **Pre Filters**, or **Tag Write**.



Progressing to another screen does not halt the operation. However, attempting to make changes or perform another operation while this operation is in process results in an error.



NOTE: Tags are fully convertible to ASCII format. ASCII mode may be enabled by selecting **Settings > Application Settings > ASCII Mode**.



See Also

[Rapid Read](#)

Inventory Screen Features

The following table provides information on various metrics that can be captured using the Inventory feature.

Table 1 Inventory Screen Features

Item	Description
Tags	<p>Tap Memory Bank to select one of the following memory bank options from the drop-down menu:</p> <ul style="list-style-type: none"> • None - Defaults to EPC. • User - Allows reading user memory bank data when the tag is inventoried. • Reserved - Allows reading reserved memory bank data when the tag is inventoried. • TID - Allows reading TID memory bank data when the tag is inventoried. • EPC - Allows reading EPC memory bank data when the tag is inventoried. When the next inventory operation starts, the details from the selected memory bank displays. This menu is inactive if there is an ongoing operation on the connected reader. • Default Display - None.
Search	Tap the Search icon and enter a tag ID. Tags that match the entry display in the content area.
Power Management	Icon indicates if Dynamic Power is on. See Power Management. Tap the Power Management icon to open the Battery Status screen.
Content Area (select a tag)	Tapping a Tag ID highlights the tag. The highlighted Tag ID is populated on the Tag Location text area as well as the Tag Pattern area in the Access Control screen. Tap Start to start searching for the tag. See Tag List Match Mode Operation. From this screen, return to the Menu or go to the Home screen and select Locate Tag.

Table 1 Inventory Screen Features (Continued)

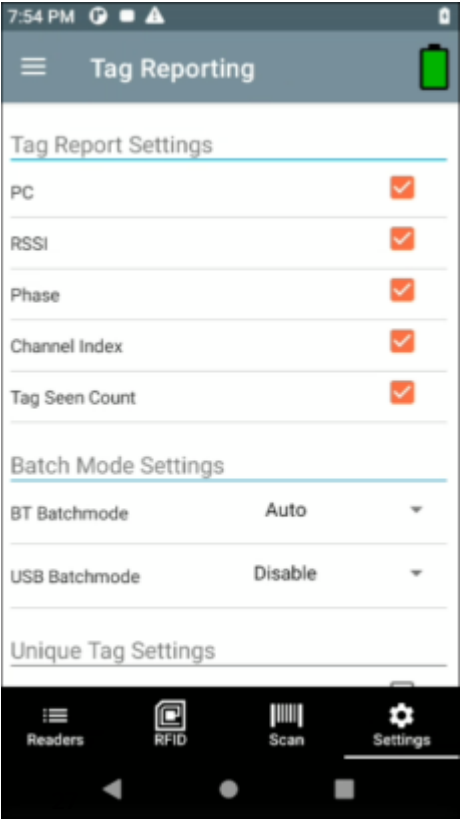
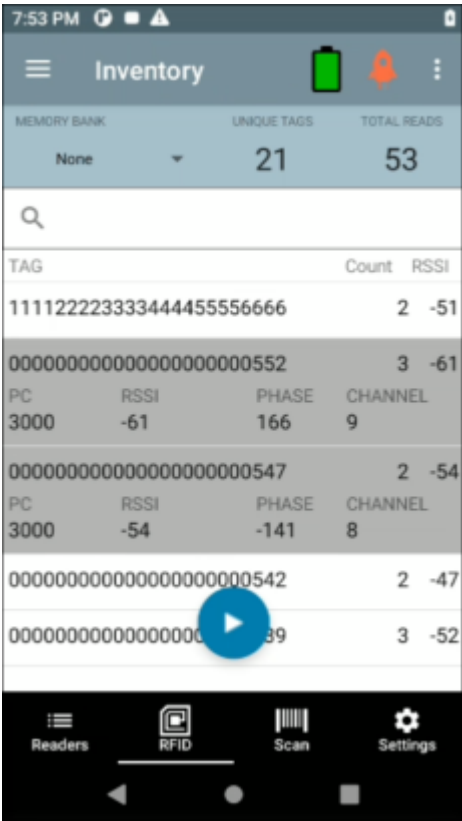
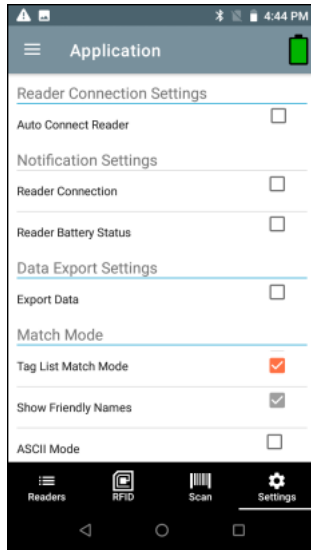
Item	Description
Content Area (select a tag)	<p>The tags displayed in this area are based on the option selected from RFID > RFID Advanced Settings > Tag Reporting. Tap the tag ID to expand details about the tag. Tap the tag ID again to collapse details.</p> <p>Example Default Tag Display:</p> <p>Tag ID Tag Count</p> <p>AD99 15404190725965400404</p> <p>Example Expanded Tag Display:</p> <p>Note: Expanded tag detail can only display when the inventory operation is stopped. Memory bank data is shown only when inventory is complete.</p> <p>Tag ID Tag Count</p> <p>AD99 15404190725965400404</p> <p>EPC MEMORY 3000</p> <p>RSSI</p> <p>-50</p> <p>Phase</p> <p>1800</p> <p>USER</p> <p>1122334455667788AABBCCDDEEFF</p> <p>1122334455667788AABBCCDDEEFF</p> <p>1122334455667788AABBCCDDEEFF</p> 

Table 1 Inventory Screen Features (Continued)

Item	Description
	

Tag List Match Mode Operation

When **Tag List Match Mode** is checked on the **Application Settings** screen, the application identifies tags from a given set of tags in csv tag list format (comma separated values file). Browse to choose the csv file. The contents of the csv file displays on the Inventory screen. By default, the application displays friendly names from csv files, if **Tag List Match Mode** is enabled. If you do not want to show friendly names, the setting can be disabled in Settings to show only EPC.



Before the inventory starts, the count is zero. The tag list can be sorted using the drop-down menu choices. Select an option to display the type of tags to show when the inventory starts.

- All
- Matching
- Missing
- Unknown

Figure 1 Tag List Match Mode Option Menu

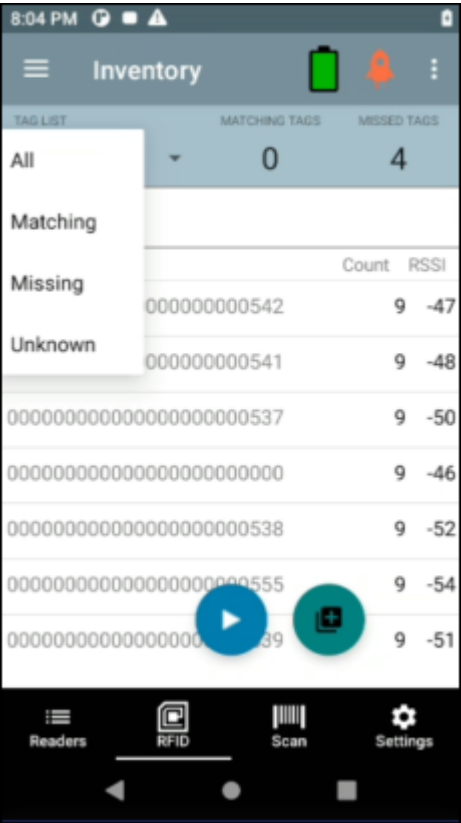
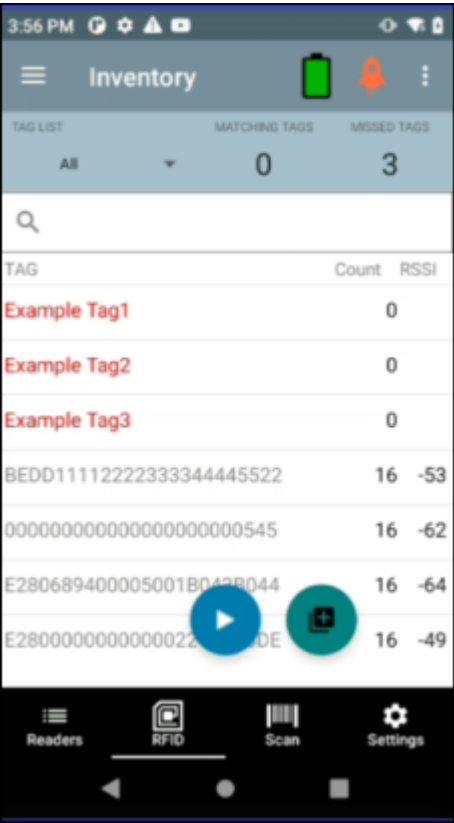


Figure 2 Tag List Match Mode Enabled with Friendly Names



If **Tag List Match Mode** is enabled, the text color changes accordingly:

- Matching = Green
- Missing/Expected = Red
- Unknown = Gray



NOTE: While running the inventory, you can re-import the csv file from the Inventory screen, by clicking **on the Re-import Tag list match mode csv file** icon.

See Also

- [Sample 1 Inventory List: Tag List Enabled; Matching Tag Option Selected](#)
- [Sample 2 Inventory List: Tag List Enabled; Missed Tag Option Selected](#)
- [Sample 3 Inventory List: Tag List Enabled; Unknown Tag Option Selected](#)
- [Sample 4 Inventory List: Tag List Enabled; All Tag Option Selected](#)

Tag List Color Mode

First, the Brand ID tag will be identified and the tag ID text color changes accordingly. Second, the non-Brand ID tag will be identified and the tag ID text color changes accordingly. Last, if Match Mode = Enable, then the text color changes accordingly to Match, Expected, or Unknown.

Brand ID Tag

- Blue: ASCII = Enable or ASCII = Disable, Tag List Match Mode = Disable.

Normal Tag (Brand ID = Disable)

Read both Brand ID and Non-Brand ID tags

- Black: ASCII = Enable or ASCII = Disable, Tag List Match Mode = Disable

Tag List Match Mode = Enable

- Green: Match read tag ID
- Red: Expected to read tag ID
- Gray: Unknown tag ID

Sample Contents of Taglist.csv File

The csv file should contain only alphanumeric characters in the tag column. If there are any special characters, the row is discarded.

The Taglist.csv file must be located inside the rfid folder which must be manually created at the Android device root directory.



NOTE: The folder name must be all lower case (for example, rfid and not RFID).

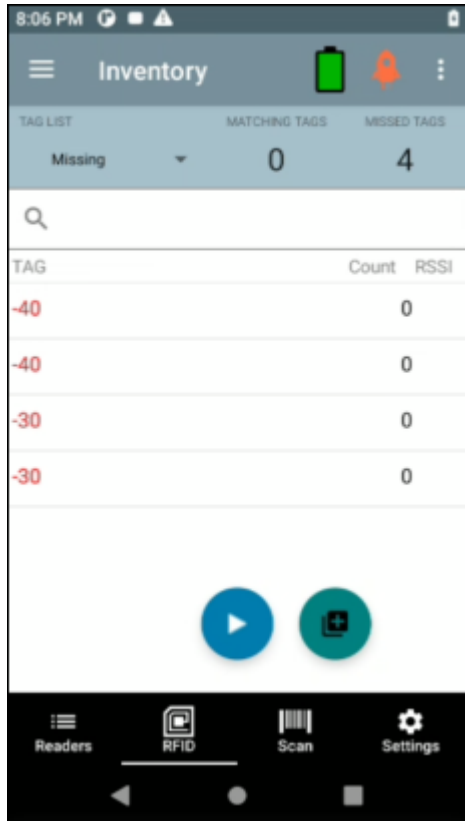
INVENTORY SUMMARY		
A	B	C
1 INVENTORY SUMMARY		
2 MATCH COUNT:	36	
3 MISS COUNT:	36	
4 UNKNOWN COUNT:	36	
5 READ TIME:	0:00:11	
6		
7 TAG ID	COUNT	
8 30304035A880C80000123658	0 null	
9 3035200EDC27074000123663	13 MATCH	
10 8DF0000000000000081291D	0 MISS	
11 30304035A880C80000123644	18 MATCH	
12 30304035A880C8000012365C	82 MATCH	
13 30304035A880C80000123654	0 null	
14 30304035A880C80000123710	7 MATCH	
15 30304035A880C80000123645	1 MATCH	
16 30304035A880C80000123656	0 null	
17 303425485C27074000123662	476 MATCH	
18 30304035A880C8000012364D	0 MISS	
19 30304035A880C80000123650	0 MISS	
20 8DF000000000000007CCCC7	0 MISS	
21 30304035A880C80000123705	0 MISS	
22 30304035A880C80000123737	3 MATCH	
23 30304035A880C8000012370F	28 MATCH	
24 30304035A880C8000012371D	27 MATCH	
25 30304035A880C80000123721	8 MATCH	
26 30304035A880C80000123736	0 null	
27 AD99160042DB2190540000C6	0 MISS	
28 8DF00000000000000812998	0 MISS	
29 30304035A880C8000012364C	0 MISS	
30 30304035A880C80000123652	0 null	
31 30304035A880C80000123664	532 MATCH	
32 30304035A880C8000012364E	0 MISS	
33 30304035A880C8000012364A	0 MISS	
34 30304035A880C80000123657	0 null	
35 30304035A880C80000123709	0 MISS	

Sample 1 Inventory List: Tag List Enabled; Matching Tag Option Selected

When inventory starts, the application only displays the tag reads that match the tags in the taglist.csv file. Matching tags display in green. Select any tag read to show the matching tag details in the csv file.

Sample 2 Inventory List: Tag List Enabled, Missed Tag Option Selected

When inventory starts, the application only displays the tag reads that are missed and included in the taglist.csv file. Missed tags display in red. Select any tag to show the missed tag details in the csv file.



Sample 3 Inventory List: Tag List Enabled, Unknown Tag Option Selected

When inventory starts, the application only displays tags that were read but not included in the taglist.csv file, Unknown tags display in gray. Select any tag to show the unknown tag details.

Sample 4 Inventory List: Tag List Enabled, All Tag Option Selected

When inventory starts, the application displays the tags for all the options:

- Tag reads that match the tags in the taglist.csv file. Matching tags display in green. Select any tag read to show the matching tag details in the csv file.
- Tag reads that are missed and included in the taglist.csv file. Missed tags display in red. Select any tag to show the missed tag details in the csv file.
- Tags that were read but not included in the taglist.csv file. Unknown tags display in gray. Select any tag to show the unknown tag details.

Sample 5 Tag List Matching Selected; Show Friendly Names

When inventory starts, the application displays the tags for selected options from All, Matching, Missing, or Unknown. Application shows friendly names (i.e. Tag details instead of EPC) on screen.

Sample 6 Exporting Data - Tag List Matching Selected

The application settings screen has the option to Export Data. If the option is checked, data is exported when the inventory stops. The tag content area is exportable to a file. For example, when Matching is

selected from the menu to display only matching tags in the tag content area, the matching data can be exported to a file. The exported csv file includes the matching, missing, and unknown tag count.

Unique Tag Reporting

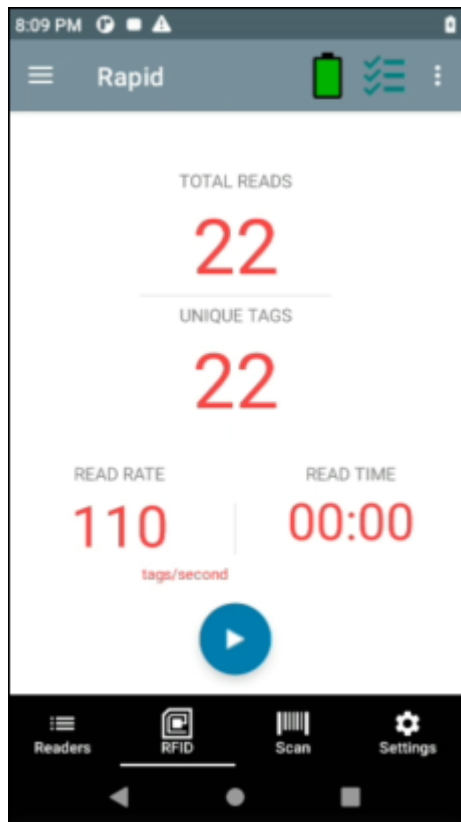
When Report Unique Tags is enabled on the Tag Reporting screen, the reader reports only unique tags based on the options below.

- When the Matching option is selected (See Sample 1 Inventory List: Tag List Enabled; Matching Tag Option Selected) the tag count cannot be greater than one because the unique tags are only reported one time.
- When the Matching option is not selected, the list displays unique and total reads. The tag count cannot be greater than one because the unique tags are only reported one time.

To export data, from the bottom navigation bar, tap **Settings** > **Application** and enable **Export Data** or tap **≡** > **Settings** > **Application** and enable **Export Data**.

Exported files are saved under /sdcard/inventory/RFID_2022-01-24_15-59-38.131.csv

Each exported file is named using the date and timestamp.




NXP BrandID Check

When **Check BrandID** is enabled on the Tag Reporting screen, the reader reports only tags based on the brand options below.

- Brand ID
- EPC Length

After enabling the **Check BrandID** settings, you can start the inventory. If the tag has a matching brand ID, the inventory list displays tag data in blue.

Locate Tag

Use Locate Tag to locate a single tag or multiple tags (Multi Tag). From the Inventory screen, tap  and select **Locate Tag**.

Locate a Single Tag

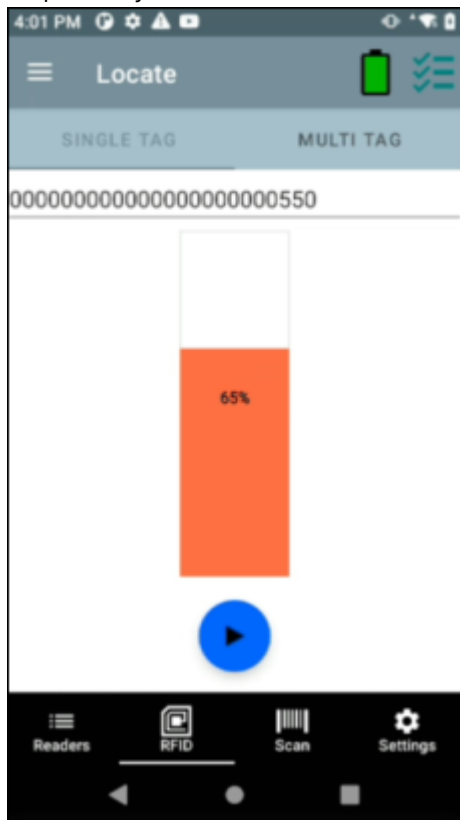
To locate a single tag:

1. Tap Locate Tag from the Home or Menu screen.
2. Enter the Tag ID in the text area or select a tag from the Inventory screen to pre-populate the Tag ID to search.
3. Tap Start to start the locate tag operation.
4. Tap Stop to stop the locate tag operation.



NOTE: The scan trigger on the device can also start and stop the locate tag operation. Press the trigger to start, continue to hold and release to stop.

The Locate Tag screen displays a color bar graph showing the proximity % (relative distance) of the tag. The % gives the relative distance, for example, from 0% to 100% where the tag is very far or very close respectively



Progressing to another screen does not halt the operation, until Stop is selected. However, attempting to make changes or perform another operation while the locate tag operation is in process results in an error.

Locate Multiple Tags (Multi Tag)

Locate multiple tags by importing a csv file.



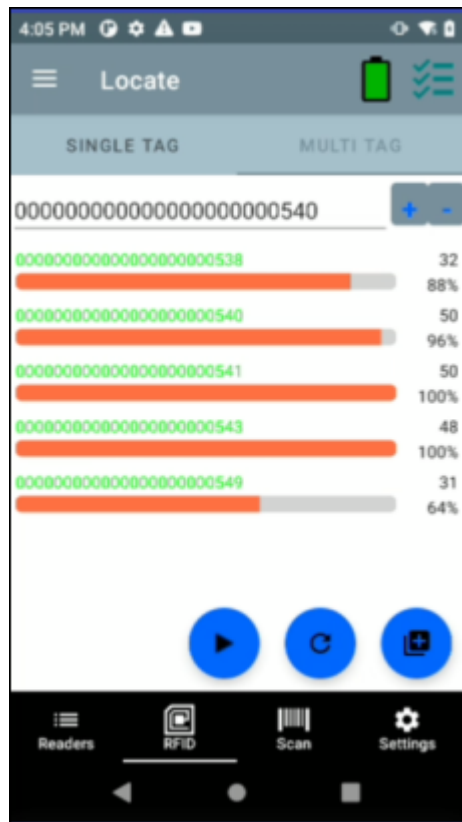
NOTE: Multi Tag Locate supports ASCII mode. Enable ASCII mode from **Settings > Application > Global Settings > Enable ASCII Mode**.

To locate and track multiple tags:


1. Tap Locate Tag from the Home or Menu screen.
2. Select the **Import csv file** on the Multi Tag panel.
The csv file holds the EPC ID and RSSI value. The default RSSI for the EPC will be -33.
3. Select the file containing the specific tag information from the file manager to bring the file into the application.
4. Tap the **Reset Data** icon to reset the tag count and RSSI proximity %.
5. Tap the **Add Tag ID** icon to add the EPC value of interest to the dynamic list of EPC's. It can only add the value which is present in the imported csv file.
6. Tap the **Remove Tag ID** icon to remove the EPC value of non-interest from the dynamic list of EPC's. It can only remove the value which is present in the csv file.

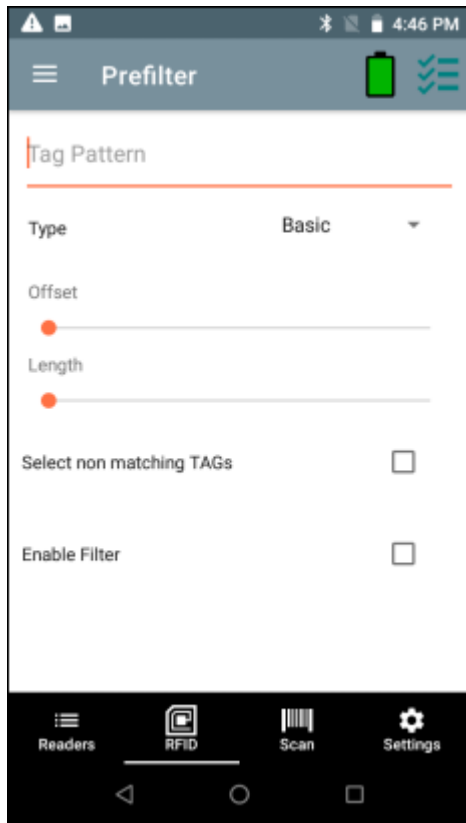


NOTE: Once you re-access the MultiTag Locate screen, the entire tag list from the csv file displays, if values were deleted dynamically.



Pre Filters

1. From the Inventory screen, tap  and select **Pre Filters**.



2. Select Basic or Advanced.


3. Complete the following:

- a) Memory Bank - EPC, TID and USER.
- b) Offset (words) - Offset in the memory bank is specified in words.
- c) Length (octets) - pattern length.
- d) Select non matching TAGs - Inventory shows tags which are not matching with Tag pattern entered.
- e) Action:
 - INV A NOT INV B or ASRT_SL_NOT_DSRT_SL
 - INV A or ASRT SL
 - NOT INV B or NOT DSRT SL
 - INV A2BB2A NOT INV A or NEG SL NOT ASRT SL
 - INV B NOT INV A or DSRT SL NOT ASRT SL
 - INV B or DSRT SL
 - NOT INV A or NOT ASRT SL
 - NOT INV A2BB2A or NOT NEG SL
- f) Target - SESSION S0, SESSION S1, SESSION S2, SESSION S3 & SL FLAG.



NOTE: Up to two pre-filters can be enabled.

Tag Write

1. From the Inventory screen, tap  and select **Tag Write**.
2. Select **Read/Write tags, Lock, Kill**.

Read/Write

The Tag Pattern area is automatically filled in when a tag is selected in the Inventory screen. The Read/Write access operation is simplified with offset and length fields are hidden. The user can tap the more/advanced options icon to see offset and length fields. Tap the icon again to hide the advanced options.

Memory Bank options now have extended menu options to choose directly interested area of memory bank. This avoids typing of offset and length etc.



NOTE: SDK 2.0.49 enabled with the Write + 1 retry feature, improves the efficiency during the Tag Write operation.

Read/Write options are:

- Tag ID and Password values are in hex. Tag ID is edited.
- Memory Bank options - EPC, TID, USER, PC and CRC, Access Password, Kill Password.
- Offset and Length values are in 16-bit words. This is only available after tapping the Advanced Options icon. To toggle visibility, tap Advanced Options again.
- Access operation screen maintains edited tag ID.



NOTE: The user can read/write to/from tags in ASCII mode.

Figure 3 Read/Write Basic



Figure 4 Read/Write Advanced

The screenshot displays the 'Tag Write' interface of the 123RFID Mobile Application. At the top, there's a status bar with the time 8:21 AM and various icons. Below the status bar, the title 'Tag Write' is centered. A navigation bar contains three tabs: 'READ \ WRITE', 'LOCK', and 'KILL'. The 'READ \ WRITE' tab is selected. Under this tab, the 'Tag Pattern' section is visible. It includes a 'Type' dropdown set to 'Advanced', a 'Password' field with '00', a 'Memory Bank' dropdown set to 'EPC', an 'Offset (words)' field with '2', and a 'Length (words)' field with '0'. Below these fields is a 'Data' section. At the bottom of the form are two large buttons: 'READ' and 'WRITE'. The bottom navigation bar features four icons: 'Readers', 'RFID' (which is highlighted), 'Scan', and 'Settings'.

Lock



NOTE: U9 NXP tags are not supported.

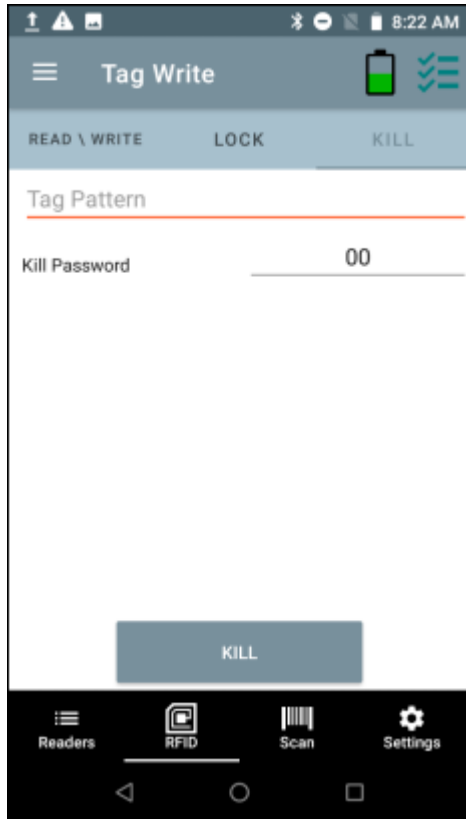
Lock privilege options are as follows:

- Read and Write
- Permanent Lock
- Permanent Unlock
- Unlock




Kill

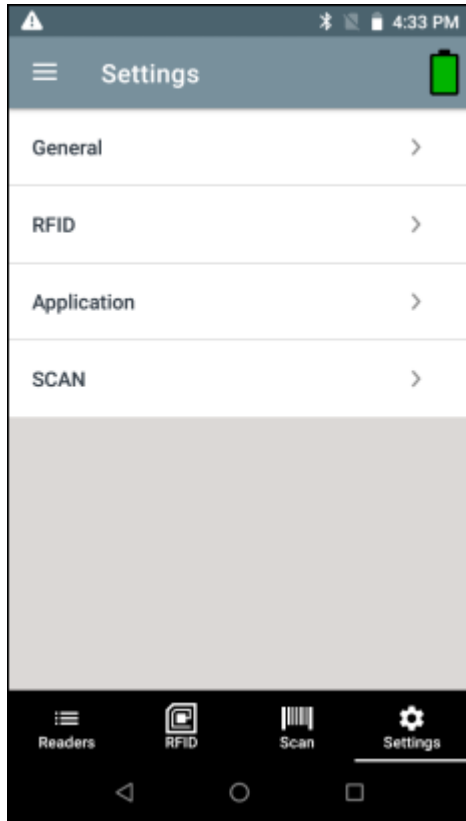
Permanently renders the tag unusable. A Kill Password must be provided.



Settings

To access Settings, tap **Settings** from the bottom navigation bar or tap  > **Settings**. Settings are divided into four types:

- **General** - allows you to configure settings on the device.
- **RFID** - allows you to configure specific reader and antenna settings.
- **Application** - allows you to make changes to the 123RFID Mobile Application settings.
- **SCAN** - allows you to configure settings for the scanner.



See Also

[General Settings](#)

[RFID Settings](#)

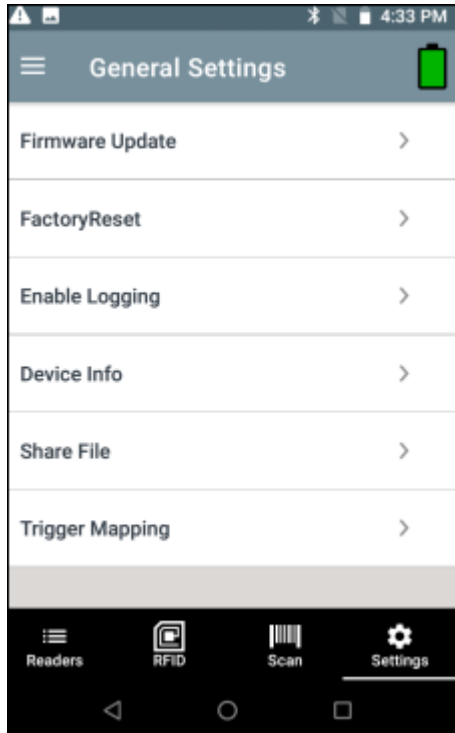
[Application Settings](#)

[Scan Settings](#)

General Settings

To access General Settings, from the bottom navigation bar, tap **Settings** > **General** or tap **☰** > **Settings** > **General**. The General Settings screen options include:

- **Firmware Update** - Update the firmware on the reader.
- **Factory Reset** - Reset file settings on the reader to factory defaults.
- **Enable Logging** - Enable the logging of tag reads.
- **Device Info** - View information such as friendly name, serial number, and RFID/scan settings.
- **Share File** - Share a file with a paired device.
- **Trigger Mapping** - Change the mapping for the upper and lower trigger and designate the Upper Trigger for RFID decode and the Lower Trigger for Host Scan or the Upper Trigger for Host Scan and the Lower Trigger for RFID decode.



See Also

[Firmware Update](#)
[Factory Reset](#)
[Enable Logging](#)
[Device Info](#)
[Share File](#)
[Trigger Mapping](#)

Update the Device Firmware

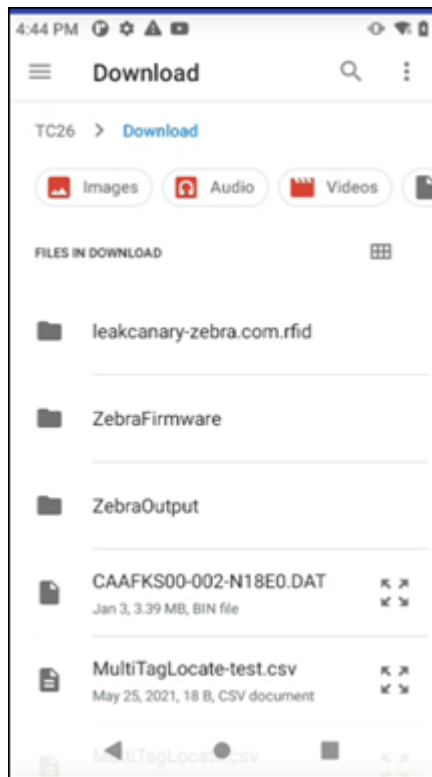


NOTE: Available only on RFD40.

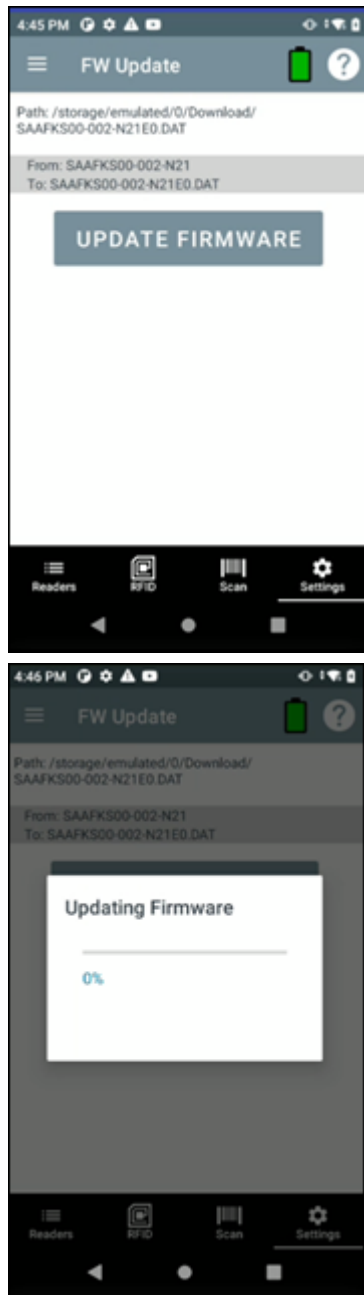
To update device firmware:

1. To access Firmware Update, from the bottom navigation bar, tap **Settings** > **General** > **Firmware Update** or tap **≡** > **Settings** > **General** > **Firmware Update**.

2. Select the firmware version to be loaded onto the device.



- a) Copy the correct .DAT file to /SDcard/download.
- b) Make sure the terminal is connected to the device.

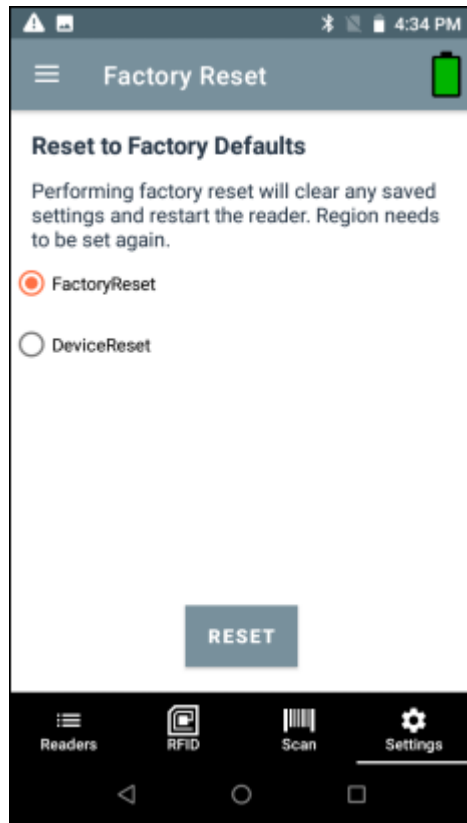
3. Tap Update Firmware.**Factory Reset**

Performing a factory reset will clear any saved settings and restart the reader. Region needs to be set again.

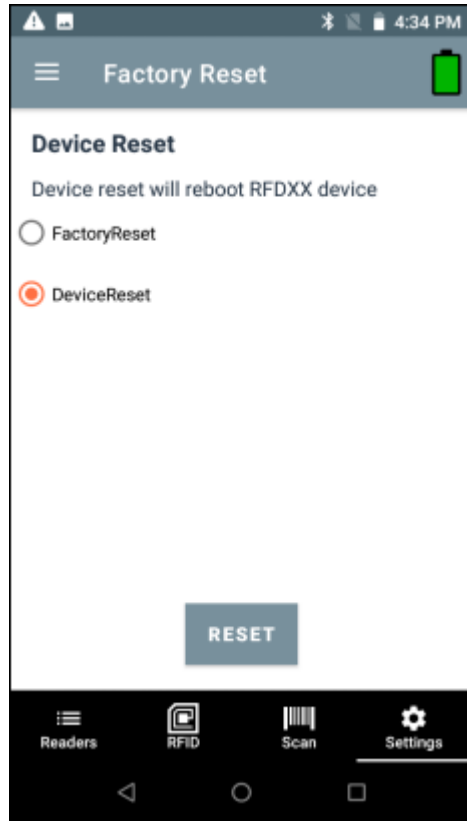
1. To reset to factory defaults, from the bottom navigation bar, tap **Settings** > **General** > **Factory Reset** or tap **≡** > **Settings** > **General** > **Factory Reset**.

2. Select one of the following:

a) **FactoryReset** to perform a factory reset.



b) **DeviceReset** to perform a device reset, which reboots the RFDXX device.



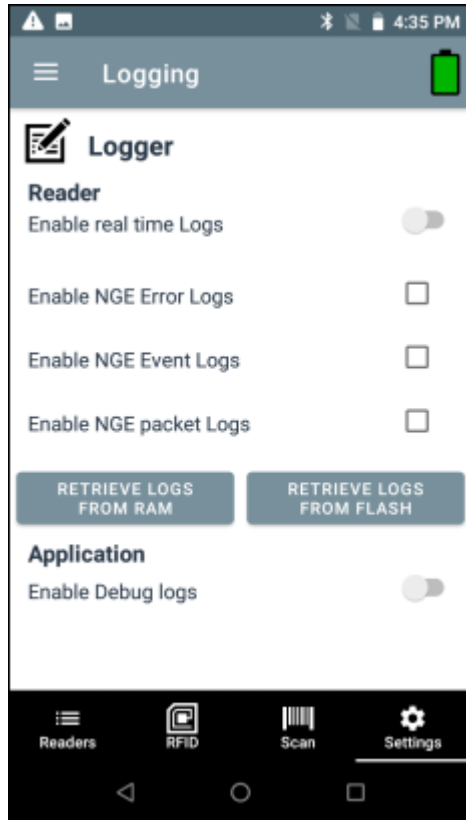
3. Tap **RESET**.

Enable Logging

1. To enable logging, from the bottom navigation bar, tap **Settings > General > Enable Logging** or tap **≡ > Settings > General > Enable Logging**. All the enabled logs are captured in logcat which can be retrieved through RxLogger for EMC devices.

2. Specify the following:

- Tap **Enable real time Logs** to toggle on or off.
- Tap **Enable NGE Error Logs** to select.
- Tap **Enable NGE Event Logs** to select.
- Tap **NGE packet Logs** to select.
- Tap **RETRIEVE LOGS FROM RAM** or **RETRIEVE LOGS FROM FLASH**.
- Tap **Enable Debug logs** to toggle on or off.

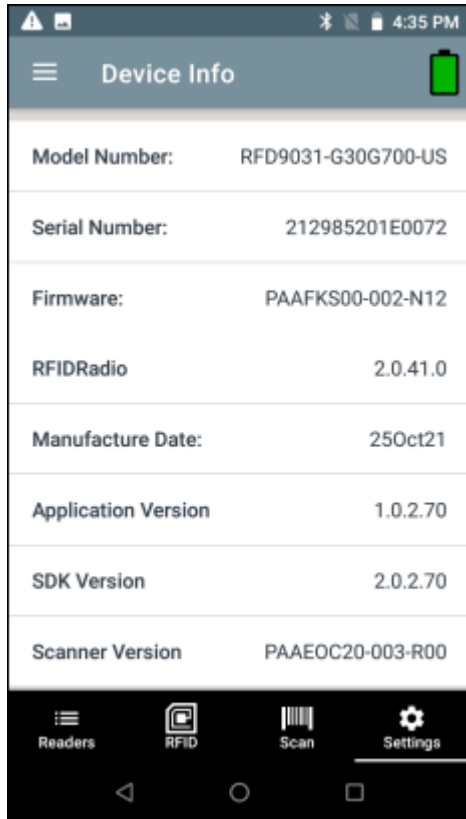


Device Info

To access Device Info, from the bottom navigation bar, tap **Settings** > **General** > **Device Info** or tap **≡** > **Settings** > **General** > **Device Info**.

Device Info displays the following:

- Model Number
- Serial Number
- Firmware
- Manufacture Date
- Application Version
- SDK Version

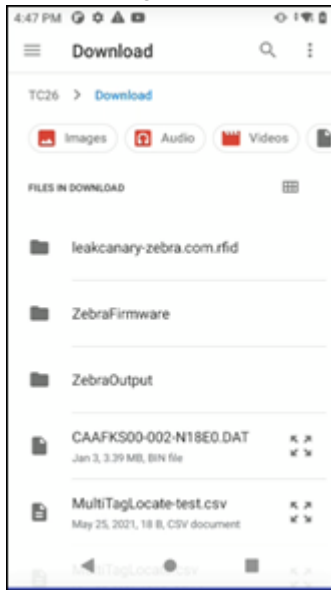


Share File

1. To share a file, from the bottom navigation bar, tap **Settings** > **General** > **Share File** or tap  > **Settings** > **General** > **Share File**.

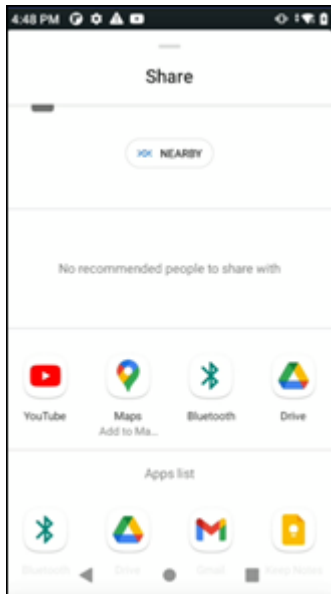
File Explorer opens.

2. Select a single file or multiple files.



User has an option to share the file(s) to a nearby device via Bluetooth or any other file sharing supported app.

3. Select from the provided options.



Trigger Mapping

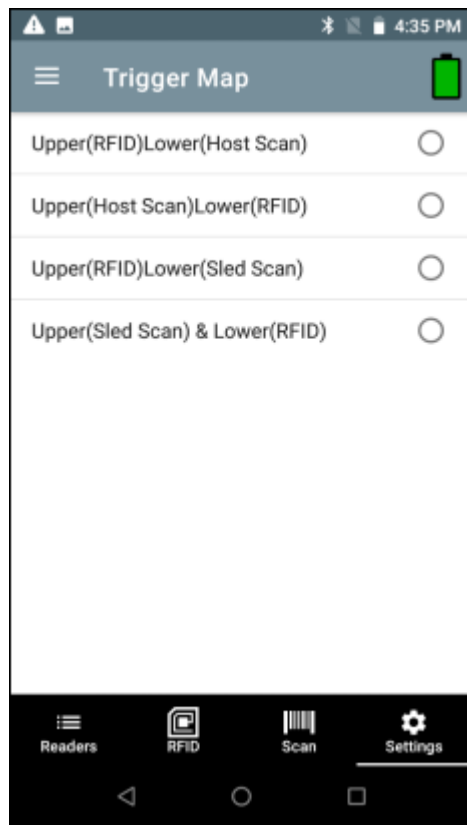
1. To map the trigger, from the bottom navigation bar, tap **Settings > General > Trigger Mapping** or tap **Settings > General > Trigger Mapping**.

2. Select one of the following options:



NOTE: For RFD40 Standard and RFD40 Premium, only the first two options are available.

- **Upper trigger - RFID Lower trigger - HOST:** Use upper trigger for RFID operations and lower trigger for scanning (Standard device = scanner on terminal; Premium device = scanner on terminal; Premium Plus device = scanner on sled device).
- **Upper trigger - HOST Lower trigger - RFID:** Use upper trigger for scanning (Standard device = scanner on terminal; Premium device = scanner on terminal; Premium Plus device = scanner on sled device) and lower trigger for RFID operations.
- **Upper trigger - RFID Lower trigger - Sled scan:** Use upper trigger for RFID operations and lower trigger for scanning (Standard device = scanner on terminal; Premium device = scanner on terminal; Premium Plus device = scanner on sled device).
- **Upper trigger - Sled scan Lower trigger - RFID:** Use upper trigger for scanning (Standard device = scanner on terminal; Premium device = scanner on terminal; Premium Plus device = scanner on sled device) and lower trigger for RFID operations.



RFID Settings

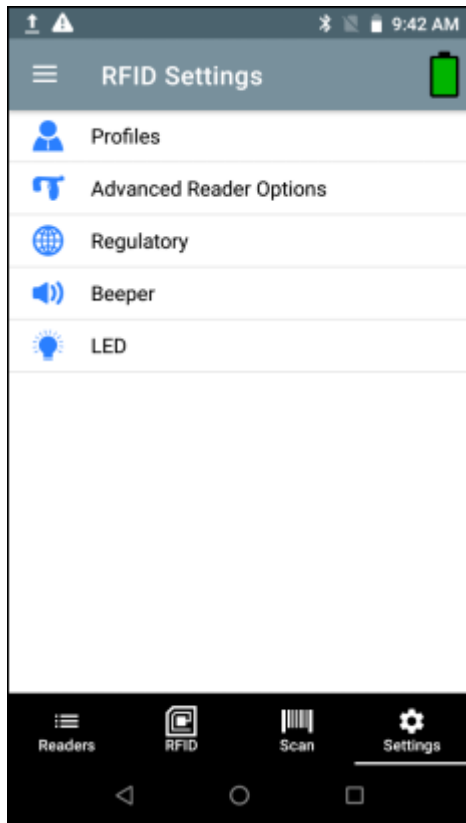
To access RFID Settings, from the bottom navigation bar, tap **Settings** > **RFID** or tap **☰** > **Settings** > **RFID** or from the Rapid Read or Inventory screens, tap **⋮** > **RFID Settings**. RFID Settings options include:

- **Profiles** - Displays Fastest Read, Cycle Count, Dense Readers, Optimal Battery, Balanced Performance, User Defined and Reader Defined profiles.

- Advanced Reader Settings - Antenna, Singulation Control, Start/Stop Triggers, Tag Reporting, Power Management and Save Configuration.
- Regulatory - Allows selection of region and available channels.
- Beeper - Provides the option to change the volume of both the host and sled device.
- LED - Enables/Disables Terminal/Host tag read LED for inventory indications.



NOTE: Available only on RFD8500 and MC33.



Profiles

To display the list of profiles, from the bottom navigation bar, tap **Settings > RFID > Profiles**.

- The currently selected profile is highlighted in orange.
- Tap profile item to expand the profile and view applicable configurations.
- Profiles can be selected or disabled by using the slider switch to the right of the profile name.

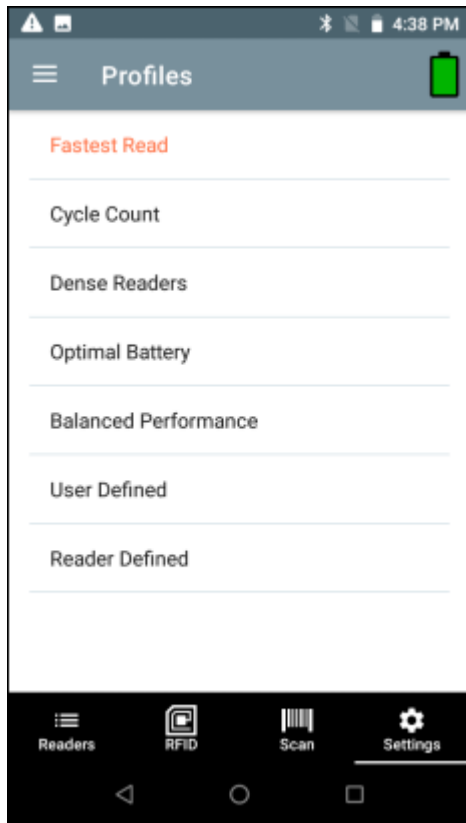


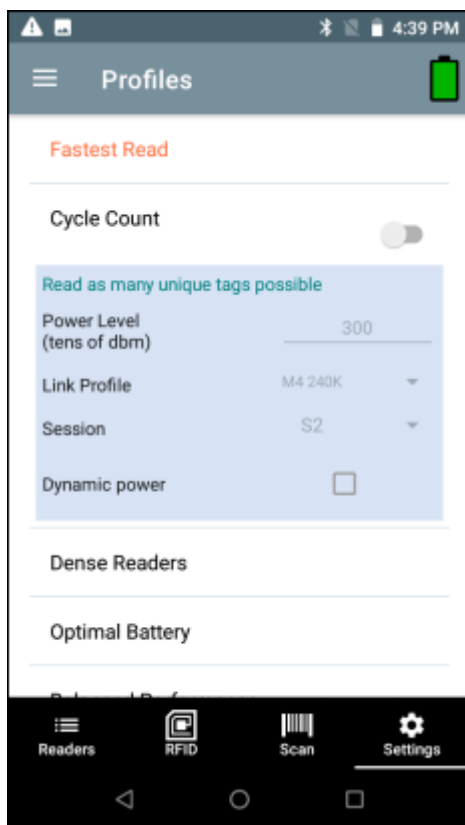
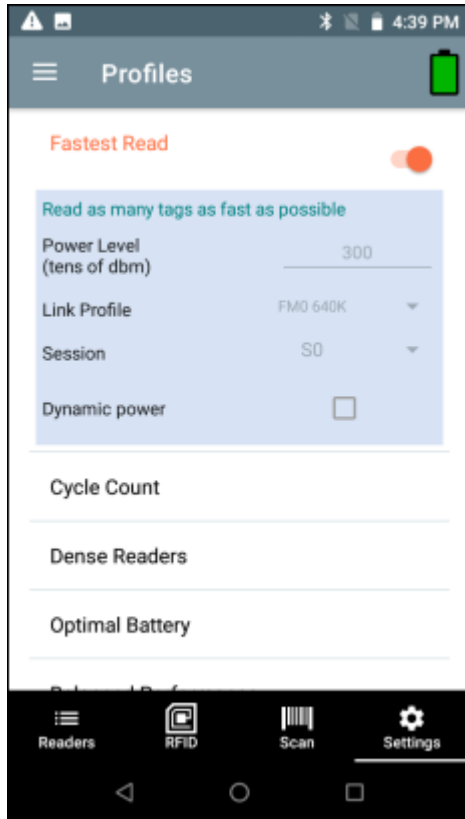
NOTE: If Power Level, Link Profile, Session, or Dynamic Power are modified from each respective screen, then the currently selected profile changes to User Defined profile and profile item values are modified with same values.

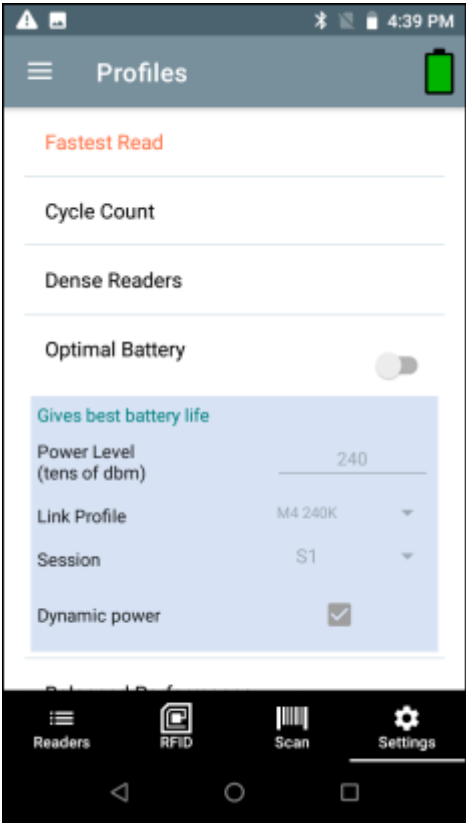
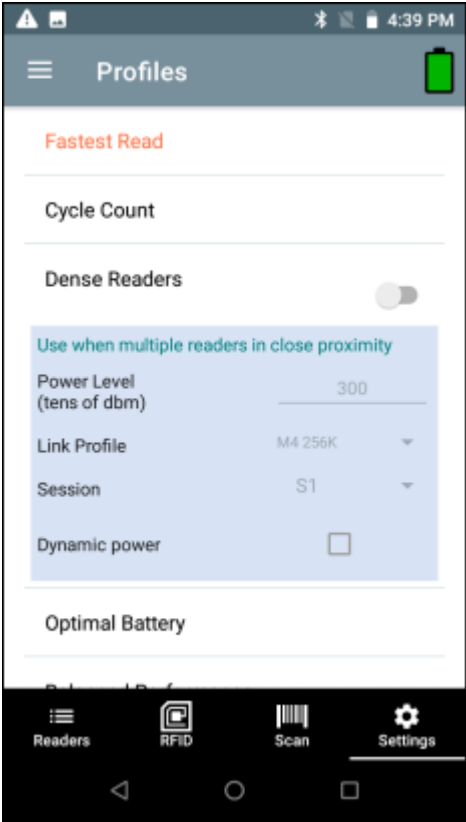
Profile setting options include:

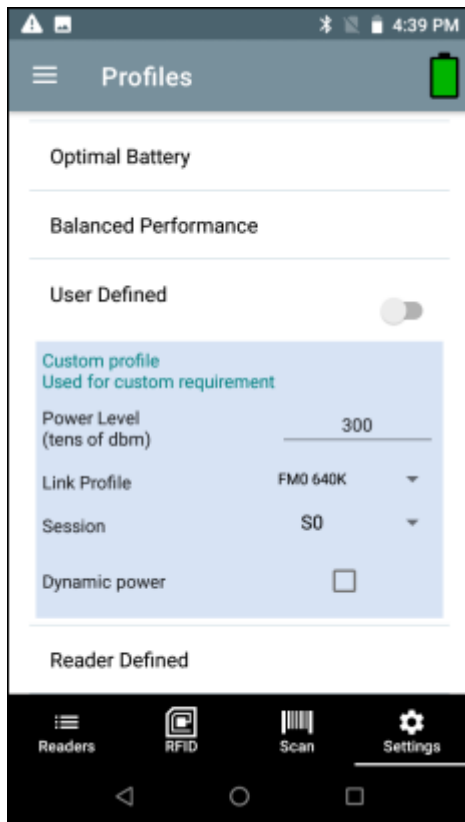
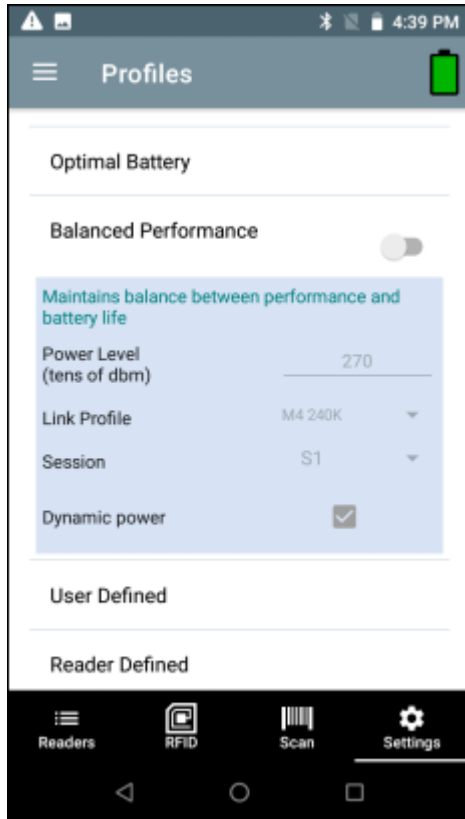
- Fastest Read - Read as many tags as fast as possible.
- Cycle Count - Read as many unique tags as possible.

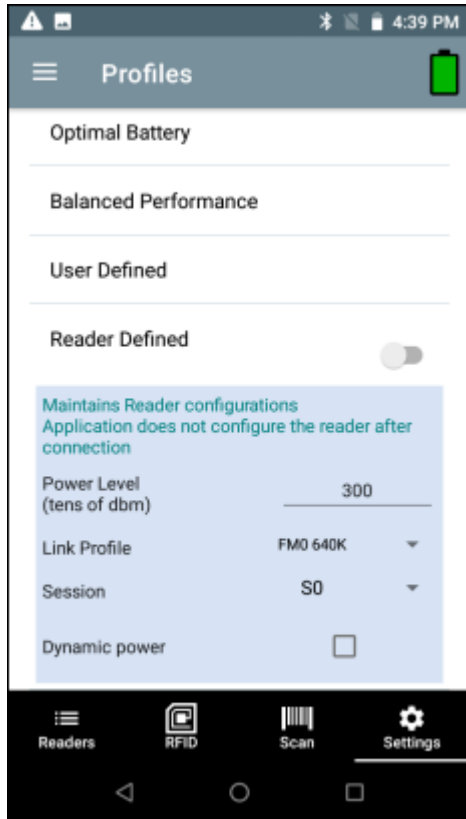
- Dense Readers - Use when there are multiple readers within close proximity.
- Optimal Battery - Provides best battery life.
- Balanced Performance - Maintains balance between performance and battery life.
- User Defined - Custom profile used for custom requirements.
- Reader Defined - Maintains reader configurations.







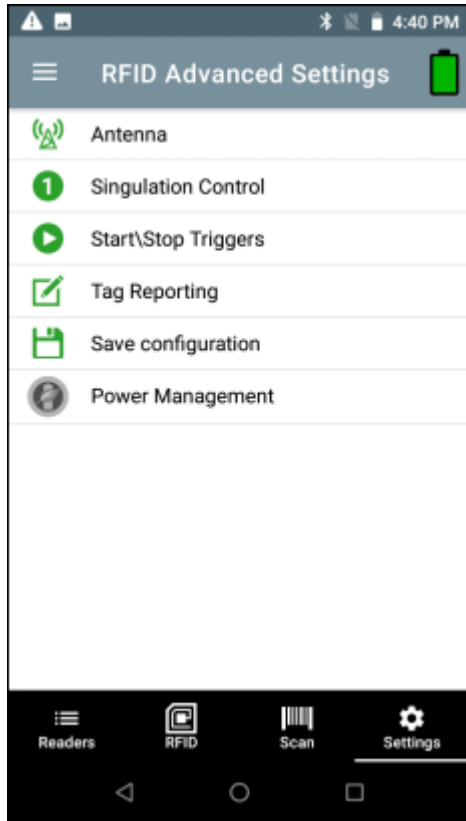




Advanced Reader Options

To set advanced reader options, from the bottom navigation bar, tap **Settings > RFID > Advanced Reader Options**. Advanced Reader Options include:

- Antenna
- Singulation Control
- Start/Stop Triggers
- Tag Reporting
- Save Configuration
- Power Management



See Also

[Antenna](#)

[Singulation Control](#)

[Start/Stop Triggers](#)

[Tag Reporting](#)

[Save Configuration](#)

[Power Management](#)

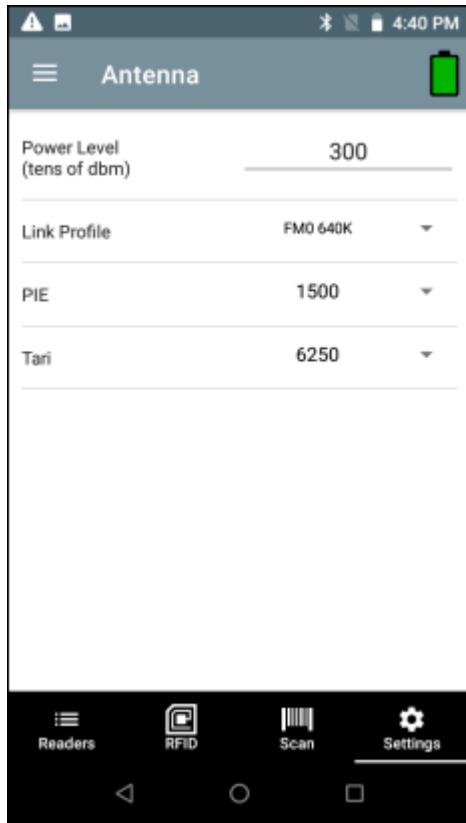
Antenna

To access the Antenna screen, from the bottom navigation bar, tap **Settings > RFID > Advanced Reader Options > Antenna**. The Antenna screen displays the following:

- **Power Level** - Displays the current selection and a text box for available power levels (as reported by the device). The default setting is 27.0 dBm (shown as 270; the value displayed is in units of tens of dBm). Japan units are set to a different default power level depending on the SKU type. The minimum power level when DPO is enabled is 3.1 dBm. When DPO is disabled, the minimum power level is 0 dBm.
- **Link Profile** - Displays the current selection and includes a drop-down list of available link profiles (reported by the device). Link Profile display format is as follows: Return link bit data rate in bis per second (e.g., 60000 -> 60 Kbs); Miller Value (e.g., MV_4 -> Miller 4); thus profile name M4 240K (240K becomes BLF) modulation type (PR ASK is the only one supported).
- **PIE value** has no units and is either 1500 and 2000 minimum.
- **Tari** applicable Tari value in thousands of micro seconds (e.g., 6250 -> 6.25 microseconds).



NOTE: By default, the fastest read profile is selected and configures the reader for the maximum power level allowed based on the read profile. However, the dBm can be limited due to the regulatory requirements of the specified region in which the sled is being used.

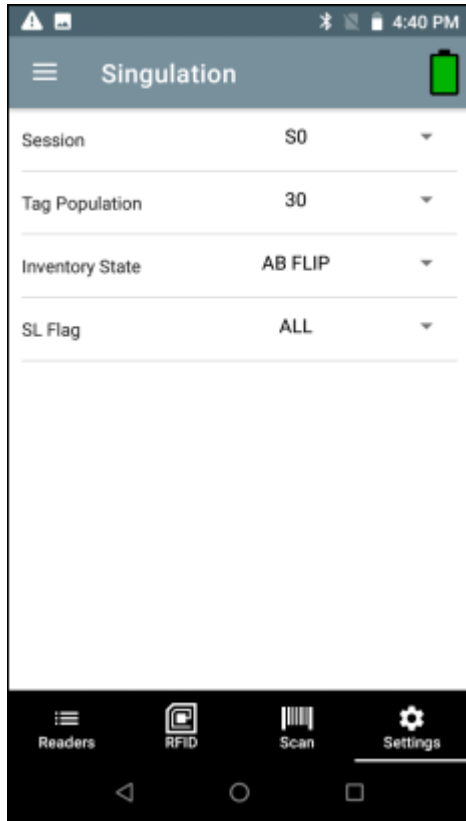


NOTE: The Power Level and Link Profile are blank when there is no connection to the reader.

Singulation Control

To access Singulation Control, from the bottom navigation bar, tap **Settings** > **RFID** > **Advanced Reader Options** > **Singulation Control**. View or configure the singulation control settings for each antenna.

- Session - The drop-down list includes the available session options (S0, S1, S2, S3).
- Tag Population - A numeric value of the estimated number of tags in the Field of View (FOV). Values shown are 30, 100, 200, 300, 400, 500, 600.
- Inventory State - State A, State B, AB Flip.
- SL flag - ALL, DEASSERTED, ASSERTED.



Start and Stop Triggers

To access the Start and Stop Triggers screen, from the bottom navigation bar, tap **Settings > RFID > Advanced Reader Options > Start/Stop Triggers**.

The Start Trigger Periodic displays the Period input box (in milliseconds).

The Stop Trigger Duration, Tag Observation and N attempts display numeric value input boxes.

All time entries are in milliseconds All the required details for saving triggers to the reader must be entered or the application does not save the trigger settings to the reader.

Required input for Start/Stop Trigger settings are as follows:

- Start Trigger
 - Immediate (default)
 - Handheld - Select either the Trigger Pressed or Trigger Released check box.
 - Periodic - Enter the period of time in milliseconds.
- Stop Trigger
 - Immediate (default)
 - Hand-held - Select either the Trigger Pressed or Trigger Released check box along with Timeout in milliseconds.
 - Duration - Enter duration in milliseconds.
 - Tag Observation - Enter the tag count along with timeout in milliseconds.
 - N Attempts - Enter the number of attempts along with timeout in milliseconds.



If the start trigger type is set to Hand-held trigger (pressed or released), the application sets the repeat for the operation to ensure the use case if repeated operations can be demonstrated.

If any trigger is defined as Hand-held, the application does not act on immediate trigger type for a Hand-held trigger action.

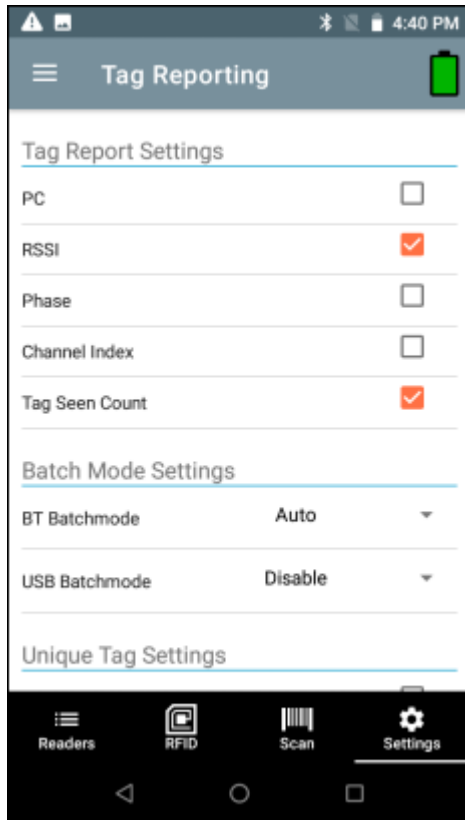
Tag Reporting

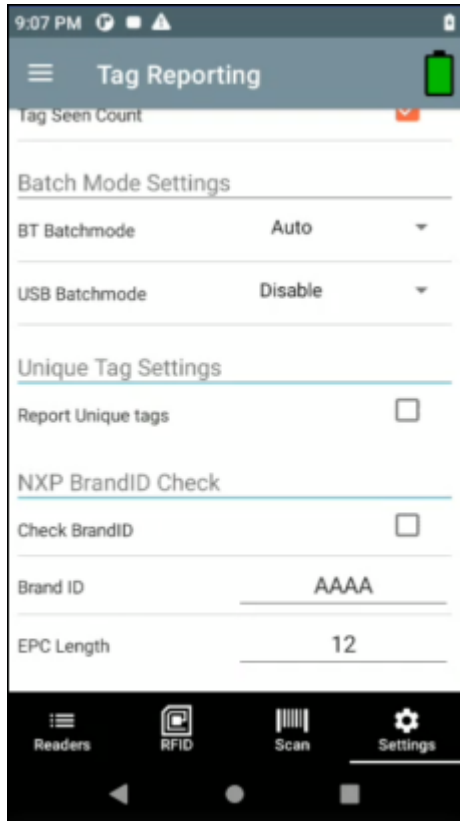
To access Tag Reporting, from the bottom navigation bar, tap **Settings** > **RFID** > **Advanced Reader Options** > **Tag Reporting**.

Tag Reporting screen options include:

- **Channel Index** - Select to indicate whether or not the Regulatory Channel Index is reported as part of the Tag Data.
- **Tag Seen Count** - Select to indicate whether or not the Tag Seen Count is reported as part of the Tag Data.
- **Report Unique Tags** - When this option is enabled, the reader reports only unique tag reads. The Unique Tag reporting feature can be enabled when using Tag List Match mode.
- **Check BrandID** - Check box to enable the Brand ID option.
- **Brand ID** - Perform NXP BrandID check (supported only on NXP U-Code 8 and above tags that supports this functionality). Brand ID check can be initiated by enabling BrandID. Reader performs an inventory operation with additional verification on whether or not the tag inventoried matches the BrandID and reports.
- **EPC Length** - The EPC length provided will consider the length of EPC data to be matched for Brand ID tags from offset 0.

- **PC** - Select to allow reporting the PC as part of the Tag Data.
- **RSSI** - Selection indicates whether or not the RSSI (Received Signal Strength Indication) is reported as part of the Tag Data.
- **Phase** - Select to indicate whether or not the Phase is reported as part of the Tag Data.



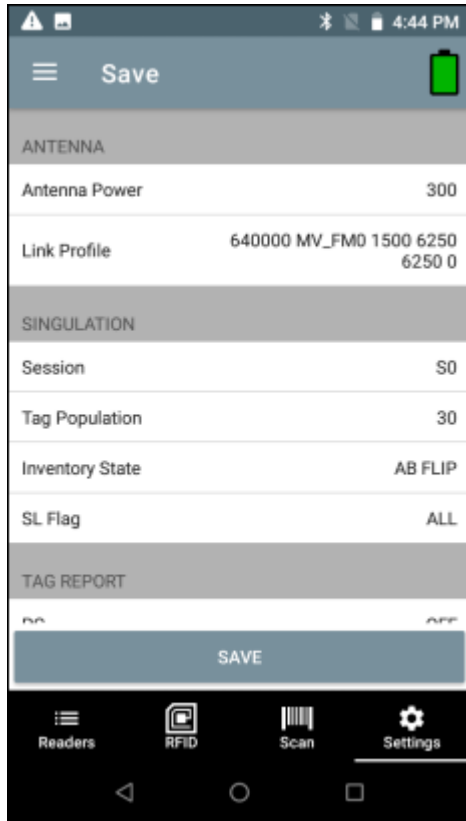


Save Configuration

To access Save Configuration, from the bottom navigation bar, tap **Settings > RFID > Advanced Reader Options > Save Configuration**. This screen is used to save the settings and displays the current settings on the device.

The settings are saved on the device until a reset to factory defaults is performed on the unit (see Settings).

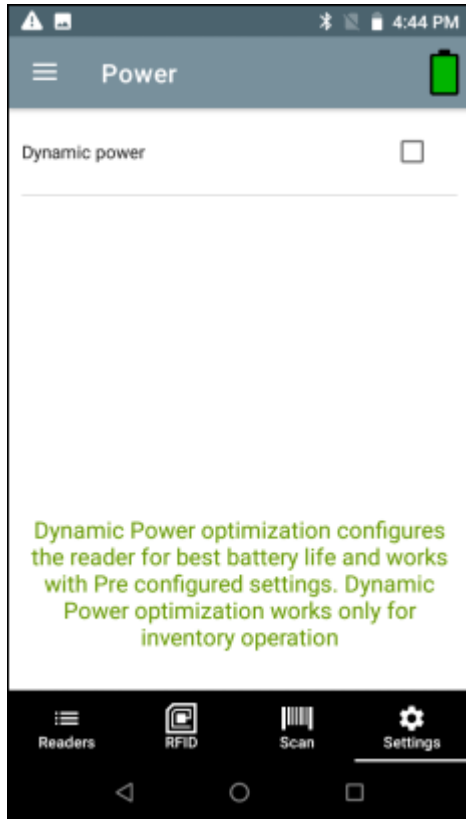
The Tag Pattern form field is automatically populated with tag data when a tag is selected from the Inventory Screen.



Power Management

To access Power Management, from the bottom navigation bar, tap **Settings > RFID > Advanced Reader Options > Power Management**. This screen provides an option to enable Dynamic Power Optimization (DPO) in the reader. Enabling DPO enhances battery life during inventory operations.

If Dynamic Power is On, a green battery icon appears in the title bar of the application. Tapping on this opens the Battery Status screen.



Regulatory

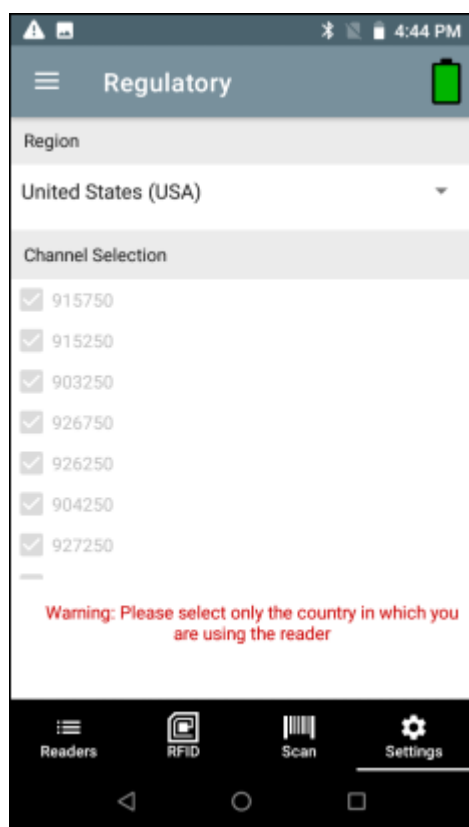
1. To set regulatory options, from the bottom navigation bar, tap **Settings** > **RFID** > **Regulatory**.



WARNING: Select only the country in which you are using the reader.

2. Select the region from the drop-down list.

3. Select from the available channels.

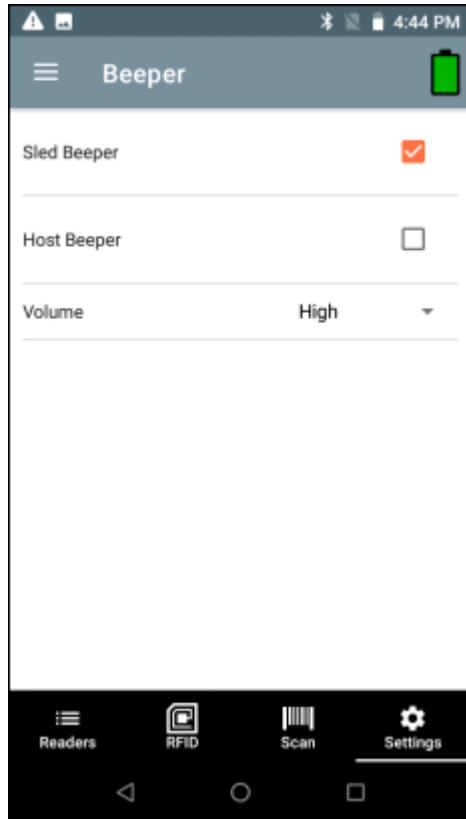


Beeper

1. To set beeper options, from the bottom navigation bar, tap **Settings** > **RFID** > **Beeper**.
2. Enable/disable the beeper on the sled.
3. Enable/disable the beeper on the host.

4. Select the volume:

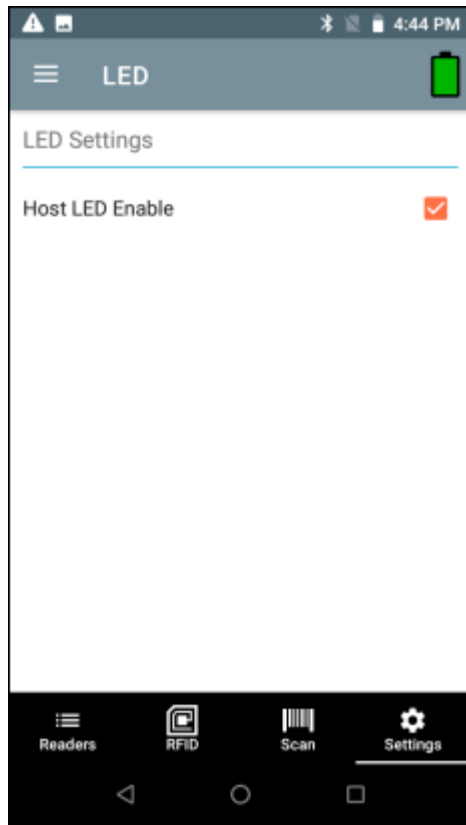
- High
- Medium
- Low



LED

1. To set LED options, from the bottom navigation bar, tap **Settings** > **RFID** > **LED**.

2. Enable/disable the LED on the host.



Application Settings

To access Application Settings, from the bottom navigation bar, tap **Settings** > **Application** or tap > **Settings** > **Application**.

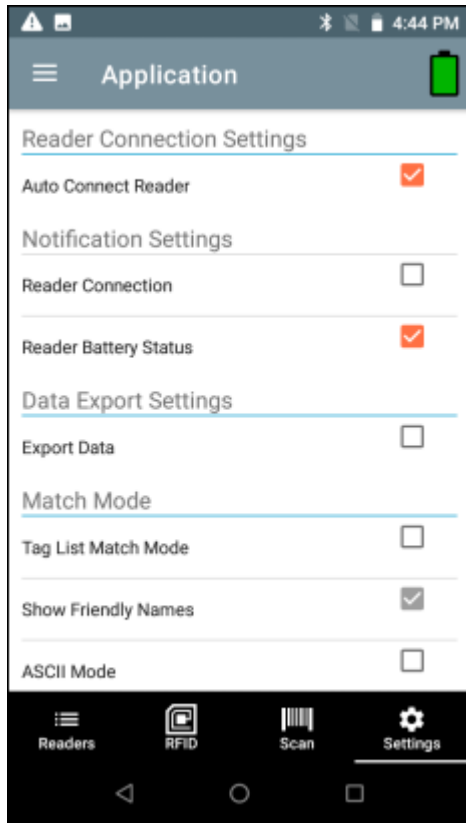
The Application Settings screen includes:

- Auto Reconnect Reader - When checked, the device connects to the RFID service which manages the connection to the reader.
- Reader Connection Notification - When checked, the application notifies the user when the reader is connected or disconnected.
- Reader Battery Status Notification - When checked, the application notifies the user when the battery has reached specific critical states.
- Export Data - When checked, the application writes the inventoried RFID data to a file when the inventory operation stops. On Android platforms the file is saved in a fixed directory. Check the files in file browsing in the Inventory directory (Sdcard/inventory/<files>). The files may be copied to a PC.

When **Profile** is set to **Cycle Count** and **Export Data** is enabled: If you start/stop inventory multiple times from the same screen, it will append cycle count data to existing data and generate a csv file (delete old csv) rather than creating a new csv file on each start/stop.

- Tag List Match Mode - Check to enable matching mode.
- Show Friendly Names - Check to show the tag's friendly names instead of EPC ID. Show friendly names is only available when Tag List Match Mode is enabled.

- **ASCII Mode** - Displays tag ID in ASCII format. If the full tag ID or memory bank data is convertible to ASCII format, then the application only shows the same. Inventory, Locate, Access, and Pre Filters show ASCII mode represented data in respective sections.



Scan Settings

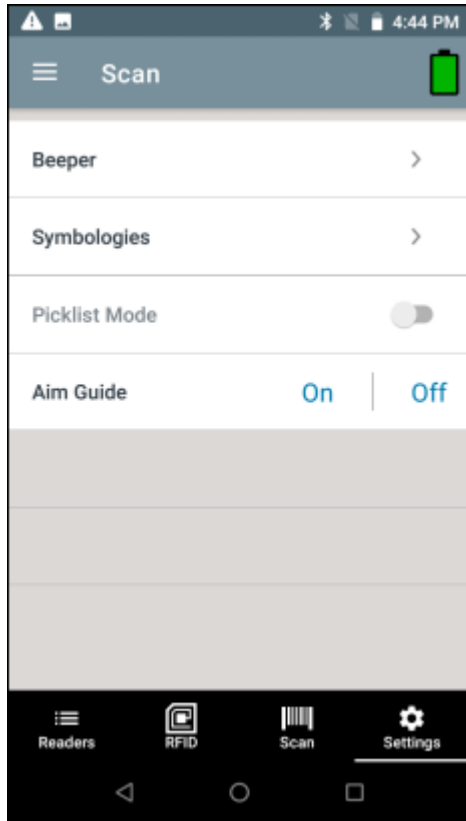
To access Scan Settings, from the bottom navigation bar, tap **Settings** > **SCAN** or tap > **Settings** > **SCAN**. Scan Settings options include:

- **Beeper** - allows you to change the beeper volume.



NOTE: Available only on hand-held devices with a scanner (RFD40 Premium and Premium+ and RFD8500 with imager).

- Provides option to change the scanner beeper volume to high, medium or low.
- **Symbologies** - Allows user to select/enable specific barcode types. Supported symbologies include: UPC-A, UPC-E, UPC-E1, EAN-8/JAN8, EAN-13/JAN13, Bookland EAN, Code 128, GS1-128, Code 39, Code 93, Code 11, Interleaved 2 of 5, Discrete 2 of 5, Chinese 2 of 5, Codabar, MSI, Code 32, Data Matrix, PDF417, ISBN, UCC Coupon Extended Code, ISSN EAN, ISBT 128, Trioptic Code 39, Matrix 2 of 5, Korean 3 of 5, GS1 DataBar-14, GS1 DataBar Limited, GS1 DataBar Expanded, MicroPDF417, Maxicode, QR Code, Aztec, Han Xin Code, Australian Post, US PLANET, US POSTNET, Netherlands KIX, USPS 4CB, UK Postal, Japan Post, UPU FICS, MicroQR, Composite C, Composite AB, TLC39, Dot Code.
- **Picklist Mode** - Toggle to turn picklist mode on or off. Default is Off.
- **Aim Guide** - Provides an aimer light which can be switched on or off.



Getting Help

On-screen help is available within 123RFID Mobile Application.

To access the Help screen, tap  > **Settings** > **Help** or when available, tap the ? icon in the upper right hand screen.

