

# RFD90 Ultra- Rugged UHF RFID Sled



**ZEBRA**

## **Product Reference Guide**

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# About this Document

This document provides information on using the RFD9030 Ultra-Rugged Standard-Range UHF RFID sled and the RFD9090 Long-Range Ultra-Rugged UHF RFID sled.

## 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.
- 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](http://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 outlined in support agreements.

## About this Document

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 void the warranty.

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

# Getting Started

The RFD90 Ultra-Rugged UHF RFID sled provides RAIN Radio Frequency Identification (RFID) tag reading, writing, and locating capability to support Zebra mobile computers and other host devices. This section provides information on sled features, adaptor installation, mobile computer attachment, battery replacement, UI indications, and charging.

To use the RFD90 sled for the first time with a mobile computer:

1. Insert the battery into the device.
2. Charge the RFD90 sled using the charging cradle or charging cup.
3. Replace the cover with the adaptor that is specific to the mobile computer to be used with the sled.
4. Place the mobile computer into the adaptor bottom first.
5. Secure the mobile computer into the adaptor by pressing down on the center of the top of the mobile computer.
6. Set the region using 123RFID Desktop or 123RFID Mobile applications.

For the latest versions of guides and software, go to: [zebra.com/support](https://zebra.com/support).

For detailed information, refer to the Product Reference Guide at: [zebra.com/support](https://zebra.com/support).

## Unpacking

This section provides information on Zebra RFD90 Ultra-Rugged UHF RFID Sled sled parts, battery installation, mobile device attachment, LED indications, and charging. Carefully remove all protective material from the RFD90 Ultra-Rugged sled and save the shipping container for later storage and shipping.

Verify the following items are in the box:

- RFD90 Ultra-Rugged UHF RFID Sled
- Battery
- Quick Start Guide

Inspect the equipment for damage. If any equipment is missing or damaged, contact the Zebra Support Center immediately.

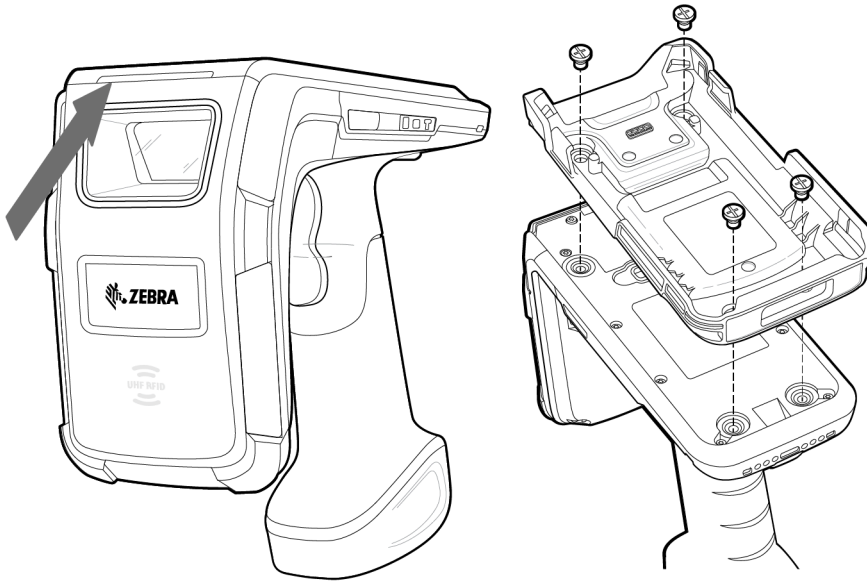
For a full list of accessories that can be used with the RFD90 Ultra-Rugged UHF RFID sled, refer to the product-specific Technical Accessory Guide available at: [zebra.com/support](https://zebra.com/support).



## Adaptor Installation

RFD90 Ultra-Rugged UHF RFID Sleds can be used with various mobile devices by using an adaptor to mount the device onto the sled.

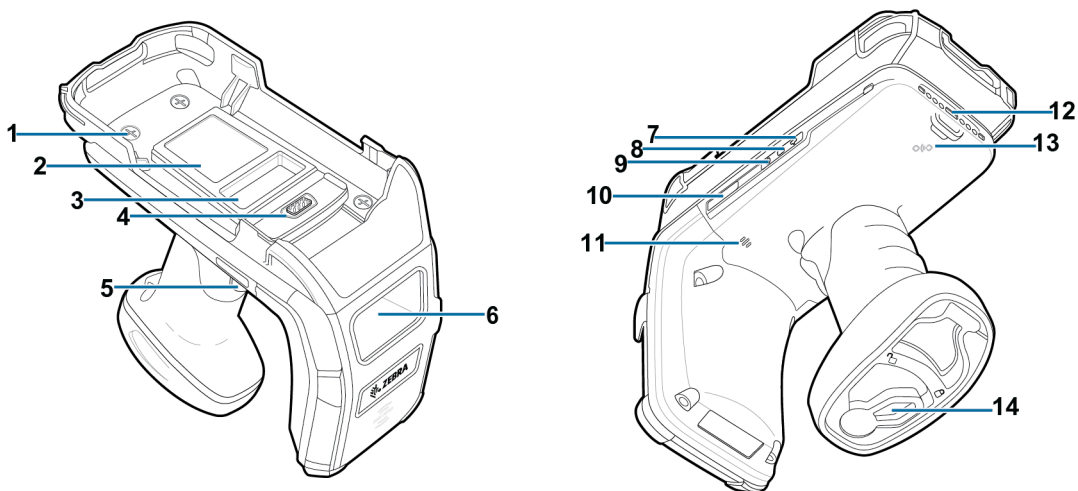
To install an adaptor:



1. Remove the cover by pulling up on the lip.
2. Secure the adaptor onto the RFD90 by fastening the four screws into the sled. Recommended Torque: 2.5 kgf-cm (14 ibf/in.)

## RFD9030 Standard-Range Ultra-Rugged UHF RFID Sled Features

Figure 1 RFD9030 Standard-Range Ultra-Rugged UHF RFID Features



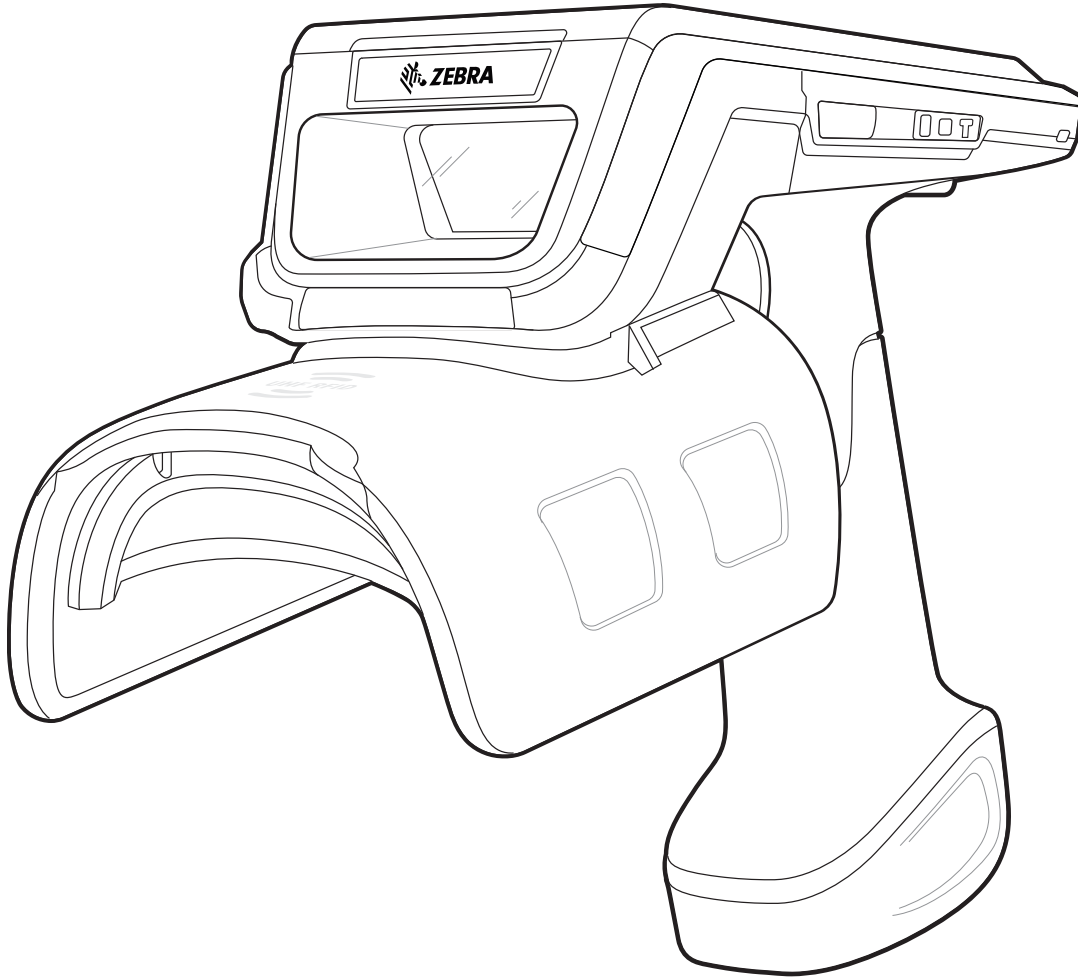
**Table 1** RFD9030 Standard-Range Ultra-Rugged UHF RFID Sled Features

Item	Description
1	Screws (4)
2	Adaptor Label
3	Sled Label
4	eConnex Communication Port (available on eConnex-enabled adaptors only)
5	Tri-Function Trigger
6	Imager
7	Wi-Fi Status LED
8	Battery Status LED
9	Bluetooth LED
10	Status LED
11	Beeper
12	Charging Contacts
13	NFC Area
14	Battery Door Lock

## RFD9090 Long-Range Ultra-Rugged UHF RFID Sled

The RFD9090 RFID Long Range Ultra-Rugged UHF RFID sled has the capacity to decode symbologies from an extended distance.

**Figure 2** RFD9090 Long Range Ultra-Rugged UHF RFID Sled



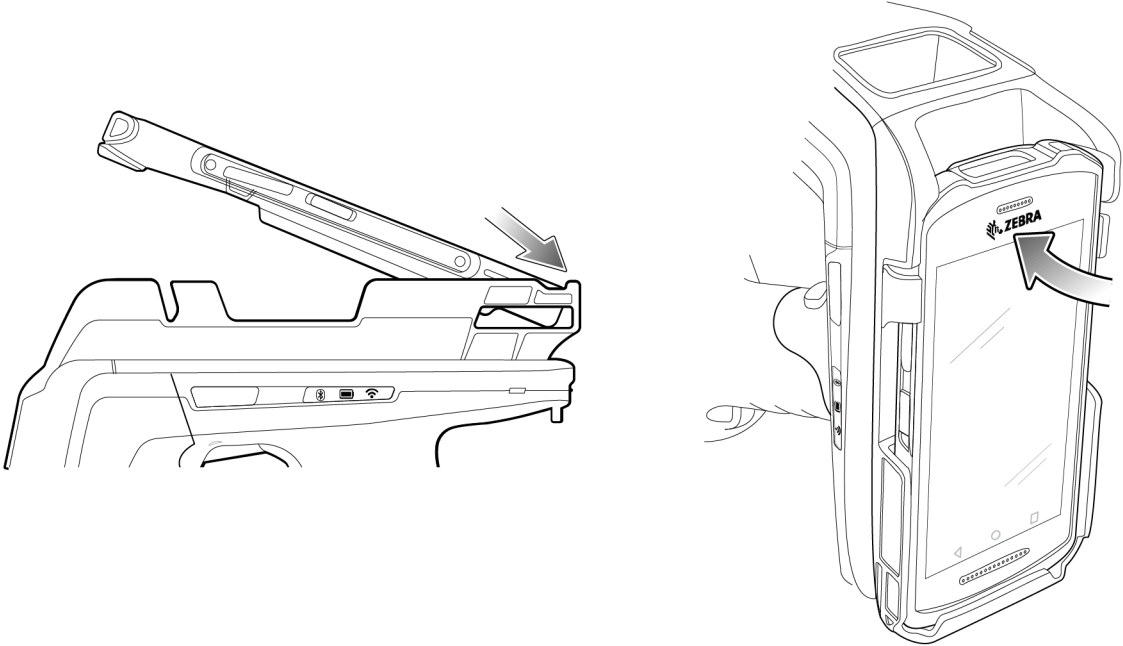
### Device Installation

To secure the mobile computer to the RFD90 sled, place the bottom of the device fully forward into the RFD90 sled adaptor and push on the top center of the mobile computer to secure it.



**NOTE:** While installing the mobile computer into the adaptor, use caution and do not collide with the pogo pins on the RFD90.

Figure 3 Device Installation



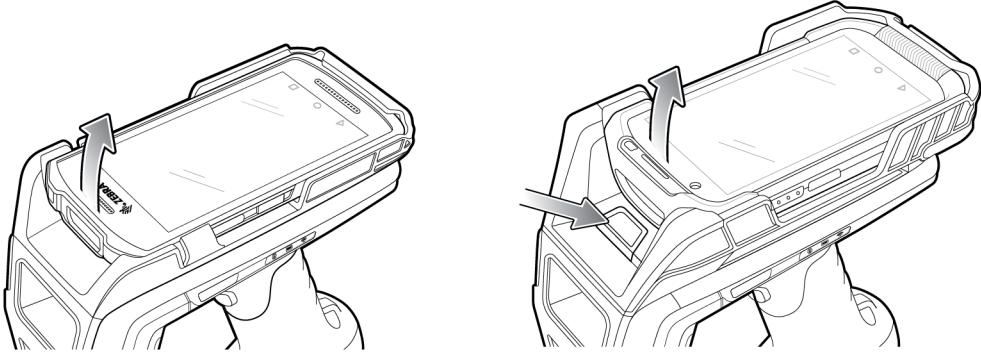
### Device Removal

To remove the mobile computer from the sled, firmly hold the sled handle, and lift the device off the sled adaptor.



**NOTE:** If using a TC7 mobile computer (shown on the right in the figure below) with the RFD90 sled, press the button on the adaptor to release the mobile computer and lift the device off of the sled adaptor.

Figure 4 Device Removal

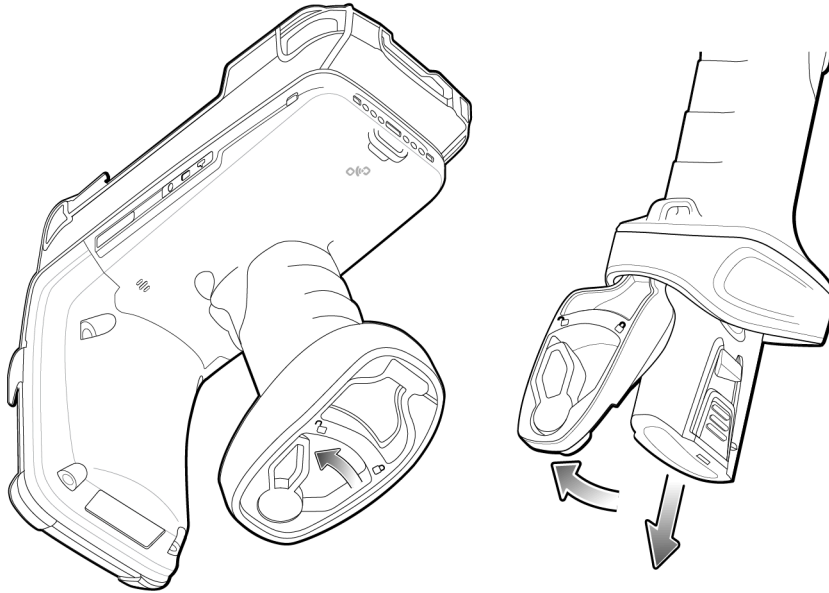


## Battery Replacement

The battery that comes standard with the sled can be replaced by following the instructions outlined in this section.

To remove the battery from the sled:

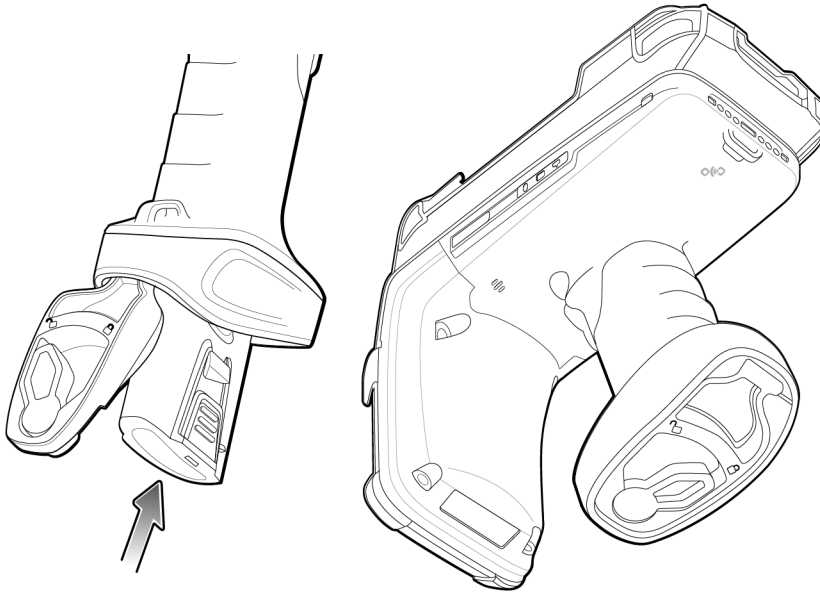
**Figure 5** Battery Removal



1. Slide the locking latch to the left to unlock the battery door.
2. Open the battery door.
3. Pull the battery downward to remove it.

## Battery Installation

Open the battery locking door and slide the battery into the handle to install the battery into the sled. Slide the lock on the battery locking door into the locked position to lock the door and secure the battery.



## Pairing the Sled with a Mobile Computer

Pair the sled with a mobile computer by connecting directly with the communication port, scanning the 2D barcode on the device, or using the Tap-to-Pair feature on the RFD90 to activate NFC Bluetooth pairing and facilitate Bluetooth communication between the sled and the mobile computer.

- 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.

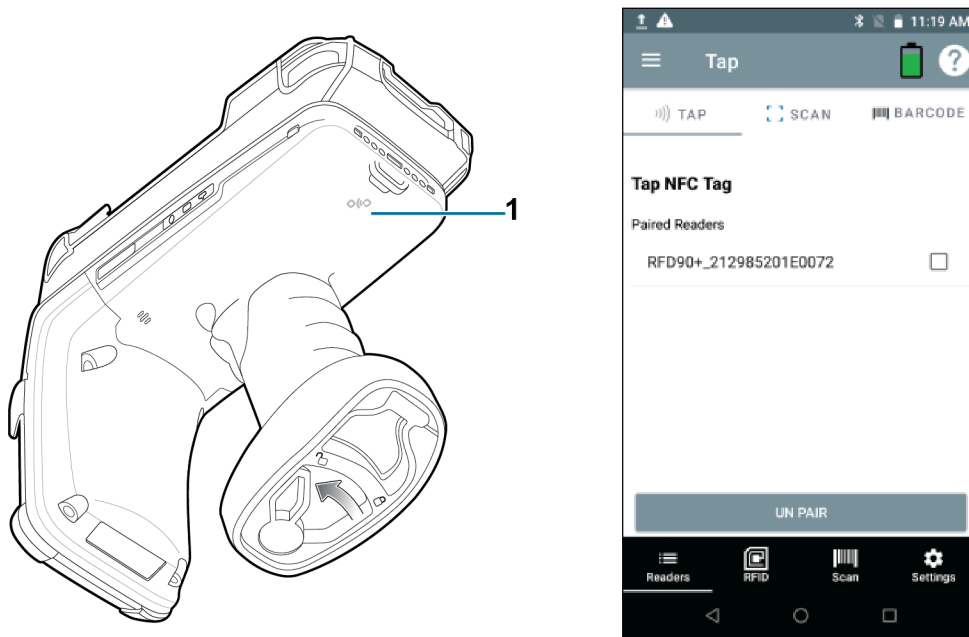
**Figure 6** Scan 2D Barcode to Obtain MAC Address



1	2D Barcode on Bluetooth Connection Manufacturing Label
---	--

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

**Figure 7** Tap-to-Pair



1	NFC Area
---	----------

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

## Charging

Before using the RFD90 RFID Ultra-Rugged UHF RFID for the first time, fully charge the battery by placing it in the charging cradle until the LED Power/Charging Indicator turns solid green.

The sled and mobile computer may be charged in the charging cradle individually or attached. The sled automatically powers on when removed from the charging cradle. The sled enters Off mode if it is idle for thirty minutes.



**NOTE:** The cradle does not charge the device if the battery is completely depleted.



**NOTE:** A 12V power supply must be connected to the power jack when charging the sled using the cable cup accessory.

## UI Indicators

The sled presents multiple forms of feedback to inform the user of various device states. The sled provides LED definitions for decode and battery status as well as beeper indications to indicate battery charge progress. The trigger on the device is capable of initiating a bootloader recovery and carrying out various programmable tasks.

## LED Definitions

The sled provides user feedback in the form of LED indications for decode, battery, Bluetooth, and Wi-Fi states.

### Decode LED Definitions

The following table outlines the context in which decode LED feedback is provided and the indication that is presented for a given device state.



**NOTE:** The LED indicators on the sled differ from the LED indicators on the mobile computer being used with the sled.

**Table 2** Decode LED Indicators

Condition	Indication
Good Scan	Green
Scan Error	Red
RFID Rag Read Indicator Enabled	Green
Read Error	Red

### Battery LED Definitions

The following table outlines the context in which battery LED feedback is provided and the indication that is presented for a given device state.



**Table 3** Battery LED Definitions While Charging

Conditions	Indications
Pre-charging	Amber (Fast, Fast, Slow)
Charging	Amber (Blinking)
Fully Charged	Green (Stays On)
Charging Error	Amber (Fast Blinking)

**Bluetooth LED Definitions**

The following table outlines the context in which Bluetooth LED feedback is provided and the indication that is presented for a given device state.

**Table 4** Bluetooth LED Definitions

Condition	Indication
Looking to Pair	Blue (Blinking)
Pairing	Blue (Stays On)
Paired/Connected	Blue (Stays On)
Error	Red (Stays On)

**Wi-Fi LED Definitions**

The following table outlines the context in which Wi-Fi LED feedback is provided and the indication that is presented for a given device state.

**Table 5** Wi-Fi LED Definitions

Condition	Indication
Connecting	Green (Blinking)
Connected	Green (Stays On)
Transmission Error/Out of Range	Red (Stays On)

**Beeper Indications**

The sled provides user feedback in the form of beeper tones for decode, battery, Bluetooth, and Wi-Fi states.

**Decode Beeper Indications**

The following table outlines the context in which beeper feedback is provided and the indication that is presented for a specific decode event

**Table 6** Decode Beeper Indications

Condition	Tone
Good Decode	Short high tone

**Table 6** Decode Beeper Indications (Continued)

Condition	Tone
Decode Transmission Error	No beep
Good RFID Decode	Short medium tone
RFID Error	No beep
Error Message (Other)	No beep
Sled Memory Full (Batch Mode)	Long tones for 5 seconds

**Battery Beeper Indications**

The following table outlines the context in which decode LED feedback is provided and the indication that is presented for a given device state.

**Table 7** Battery Beeper Indications

Condition	Tone
Low Battery (20%)	Medium-length tones
Lower Battery (10%)	Short tones - repeat
Suspend	High/Medium/Low
Charging	Short tone when the charger is connected.
Fully Charged	One beep
Charging Error	Three beeps (single occurrence)
Power On	Low/Medium/High beep

**Bluetooth Beeper Indications**

The following table outlines the context in which beeper feedback is provided and the indication that is presented for a specific Bluetooth state.

**Table 8** Bluetooth Beeper Indications

Condition	Tone
On/Not Connected	No beep
On/Pairing in Process	No beep
On/Connected	Short/Low/High
Out of Range	Short/High/Low
Pairing Error	No beep
Off	No beep

**Wi-Fi Beeper Indications**

The following table outlines the context in which beeper feedback is provided and the indication that is presented for specific Wi-Fi states.

**Table 9** Wi-Fi Beeper Indications

Condition	Tone
On/Not Connected	No beep
On/Pairing in Process	No beep
On/Connected	Short/Low/High
Out of Range	Short/High/Low
Pairing Error	No beep
Off	No beep

# 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](https://play.google.com/store/apps/details?id=com.zebra.rfidreaderAPI.demo&hl=en).

## 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.

## Installing the 123RFID Mobile Application for Android

Install the 123RFID Mobile Application on the mobile computer from [zebra.com/support](https://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](https://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.

## 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.

### Menu

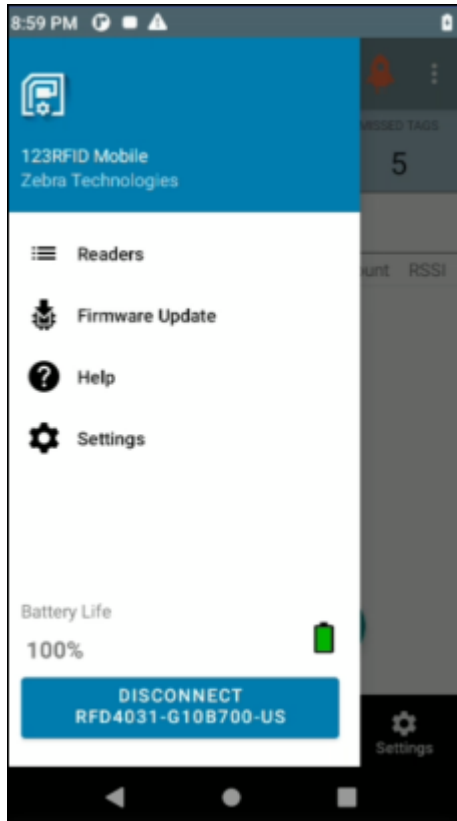
To access the menu, tap . The menu options include:

- 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.

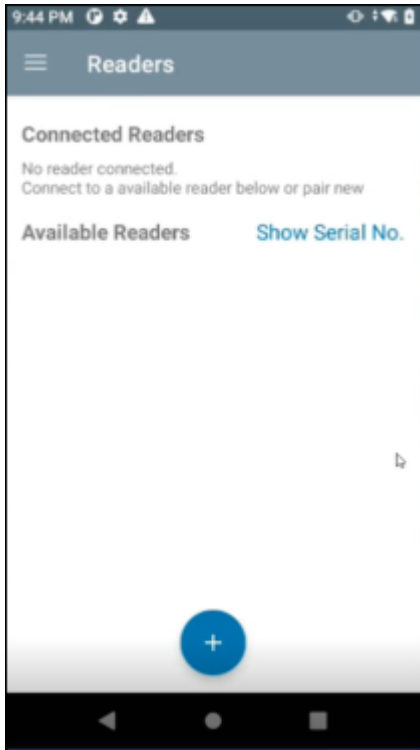


**NOTE:** Available only on RFD40 Premium and Premium+ devices with a built-in scanner.

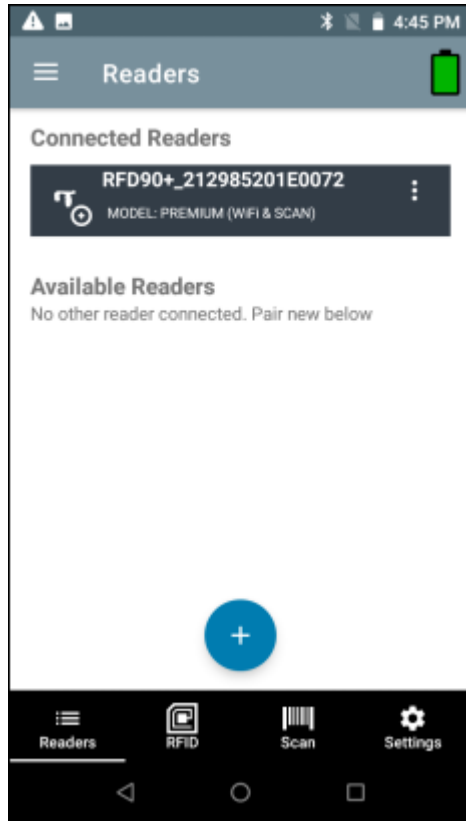
- **Settings** - configure General, RFID, Application, and Scan settings.

## 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.



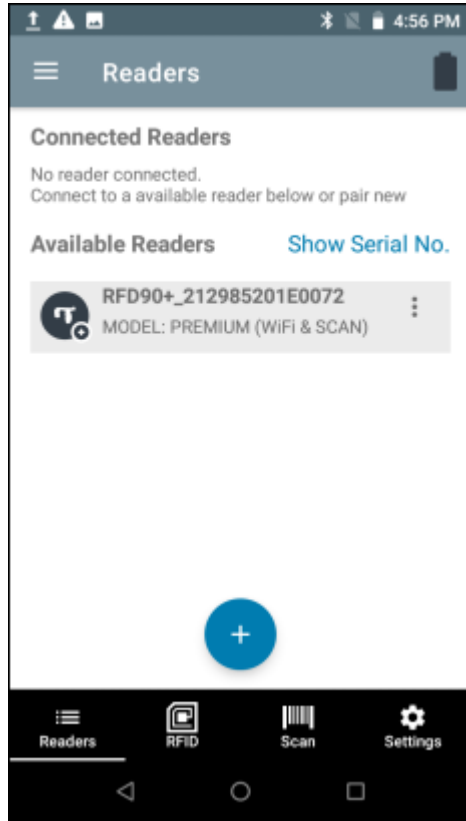
- **Connected Readers** - Lists the readers that are already connected and ready for use. Available options include:
  - Disconnect
  - Perform a firmware update
  - View reader details for a connected reader.



**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.**

## RFID Operations

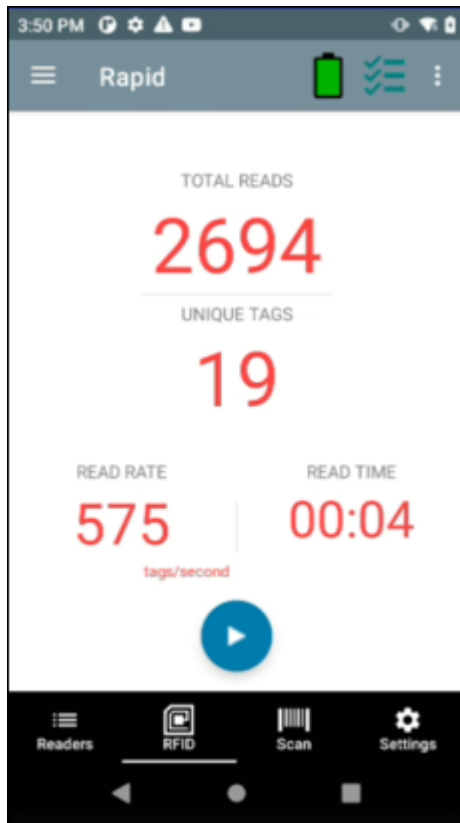
Access RFID operations for the following:

- 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.

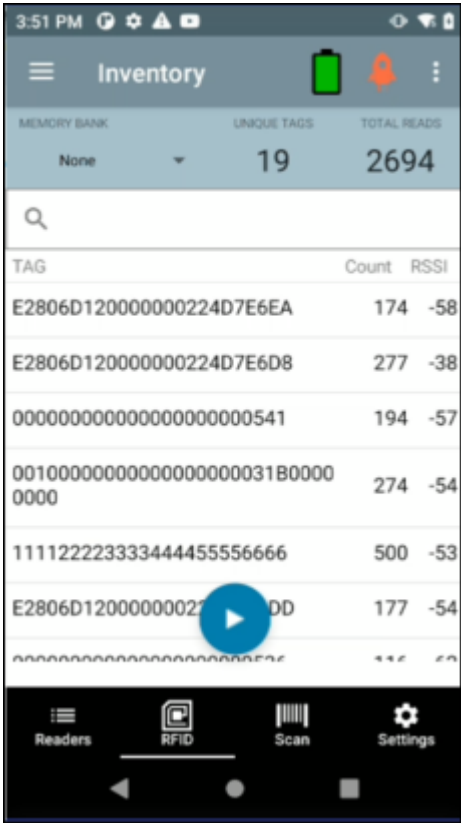
Progressing to another screen does not halt the operation. However, attempting to make changes or perform another operation while rapid read is in process results in an error.

## 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:

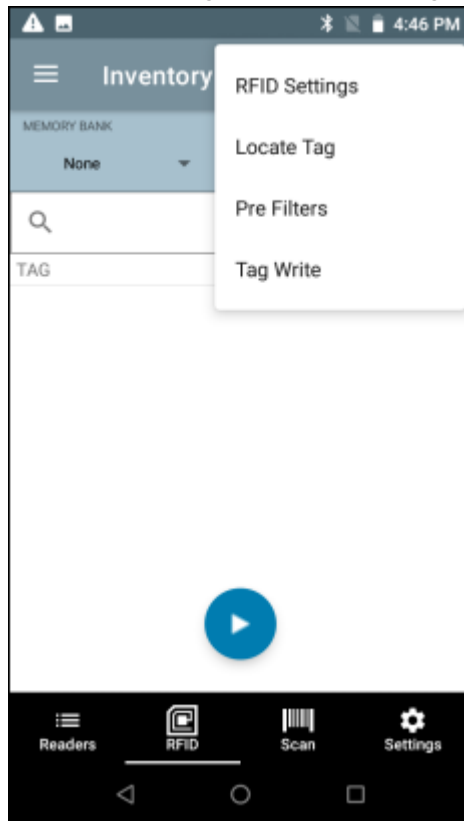
- 1. Tap Inventory from the Home or Menu screen.
- 2. Tap Start to start the rapid read inventory operation.  
The Start button changes to Stop.

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.

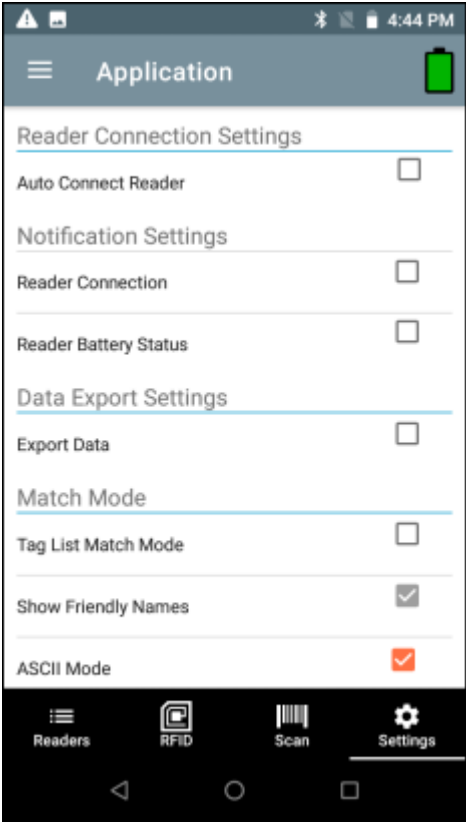
4. To filter information by type, tap the Memory Bank dropdown menu and select User, Reserved, TID, or EPC.
5. The tag ID selected can be used to locate, set pre-filters and tag write. After selecting a tag, tap  and select **Locate Tag**, **Pre Filters**, or **Tag Write**.



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](#)

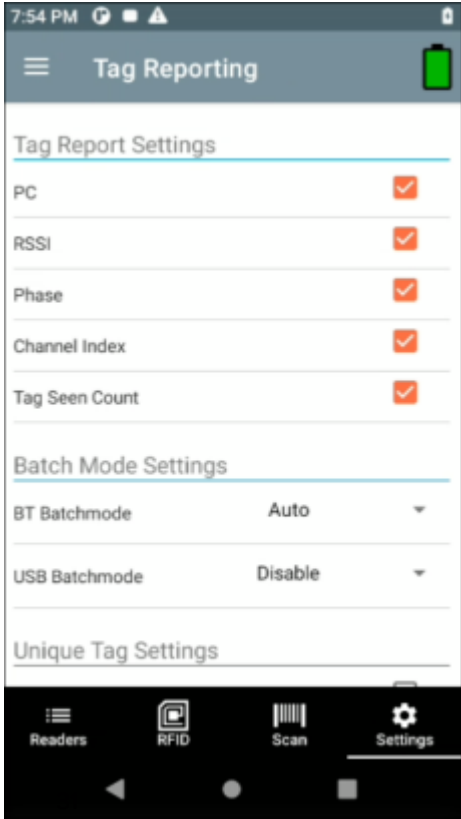
## Inventory Screen Features

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

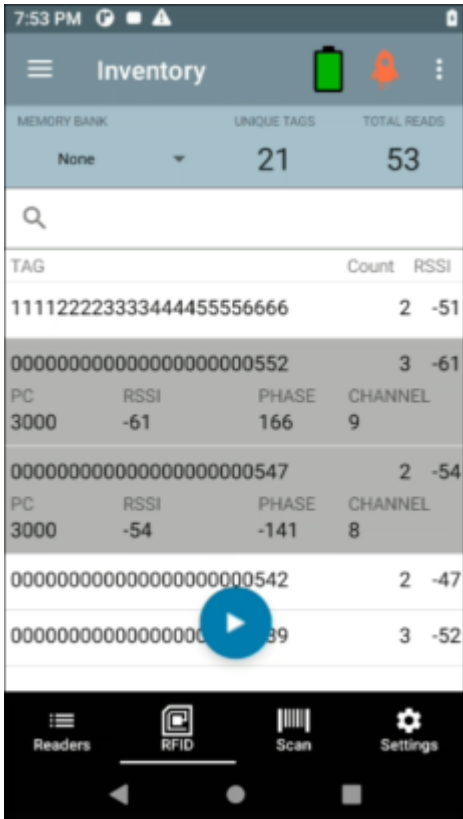
**Table 10** Inventory Screen Features

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"> <li>• None - Defaults to EPC.</li> <li>• User - Allows reading user memory bank data when the tag is inventoried.</li> <li>• Reserved - Allows reading reserved memory bank data when the tag is inventoried.</li> <li>• TID - Allows reading TID memory bank data when the tag is inventoried.</li> <li>• 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.</li> <li>• Default Display - None.</li> </ul>
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 10** Inventory Screen Features (Continued)

Item	Description
<p>Content Area (select a tag)</p>	<p>The tags displayed in this area are based on the option selected from <b>RFID &gt; RFID Advanced Settings &gt; Tag Reporting</b>. Tap the tag ID to expand details about the tag. Tap the tag ID again to collapse details.</p> <p>Example Default Tag Display:                      Tag ID    Tag Count                      AD99 15404190725965400404</p> <p>Example Expanded Tag Display:                      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                      AD99 15404190725965400404                      EPC MEMORY    3000                      RSSI                      -50                      Phase                      1800                      USER                      1122334455667788AABBCCDDEEFF                      1122334455667788AABBCCDDEEFF                      1122334455667788AABBCCDDEEFF</p> 

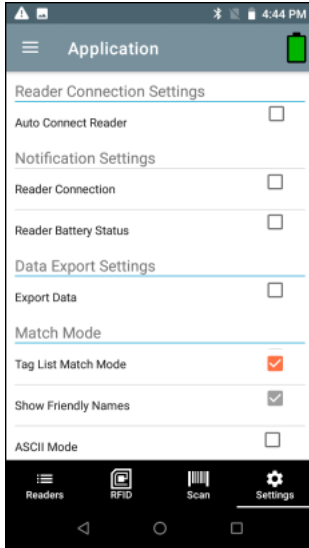
**Table 10** Inventory Screen Features (Continued)

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.

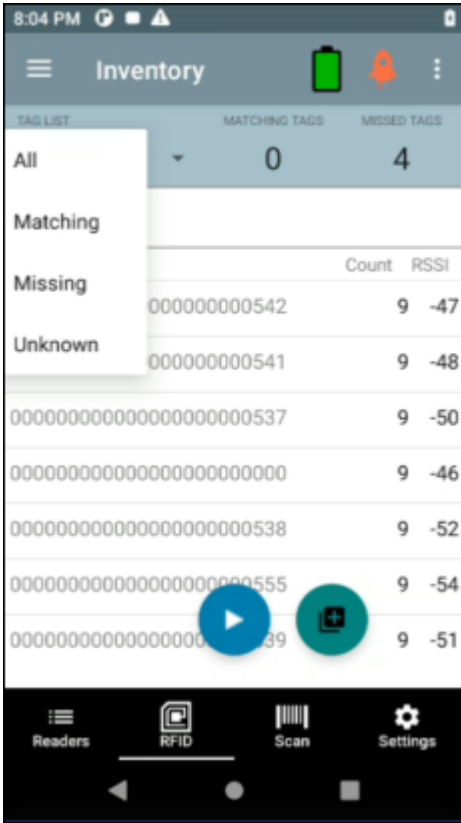


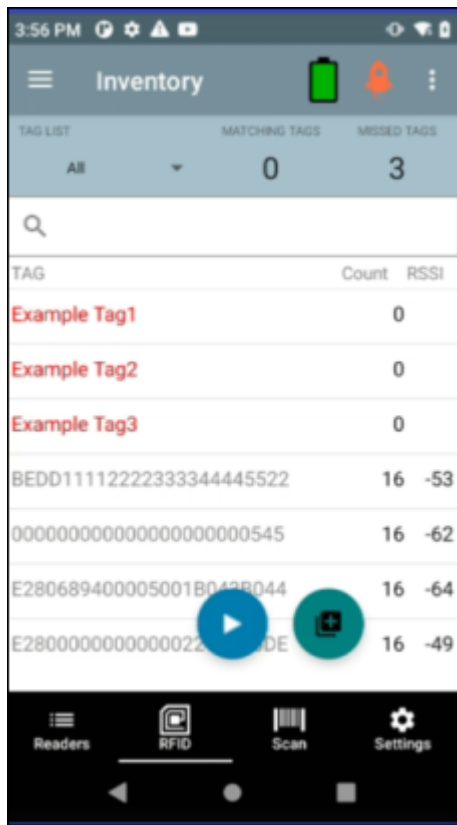


Before the inventory starts, the count is zero. The tag list can be sorted using the drop-down menu choices. Select an option to display the type of tags to show when the inventory starts.

- All
- Matching
- Missing
- Unknown

**Figure 8** Tag List Match Mode Option Menu



**Figure 9** 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).

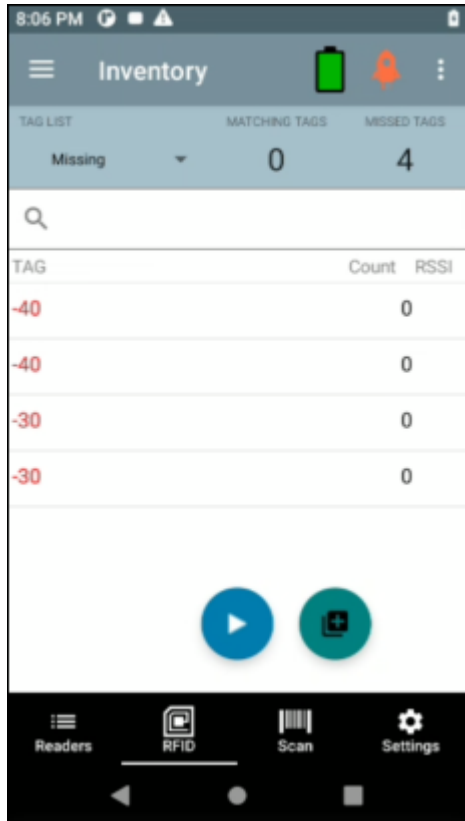
	A	B	C
1	INVENTORY SUMMARY		
2	MATCH COUNT:	36	
3	MISS COUNT:	36	
4	UNKNOWN COUNT:	36	
5	READ TIME:	0:00:11	
6			
7	TAG ID	COUNT	
8	30304035A880C80000123658	0 null	
9	3035200EDC27074000123663	13 MATCH	
10	8DF000000000000000081291D	0 MISS	
11	30304035A880C80000123644	18 MATCH	
12	30304035A880C8000012365C	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	8DF00000000000000007CCCC7	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	8DF0000000000000000812998	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

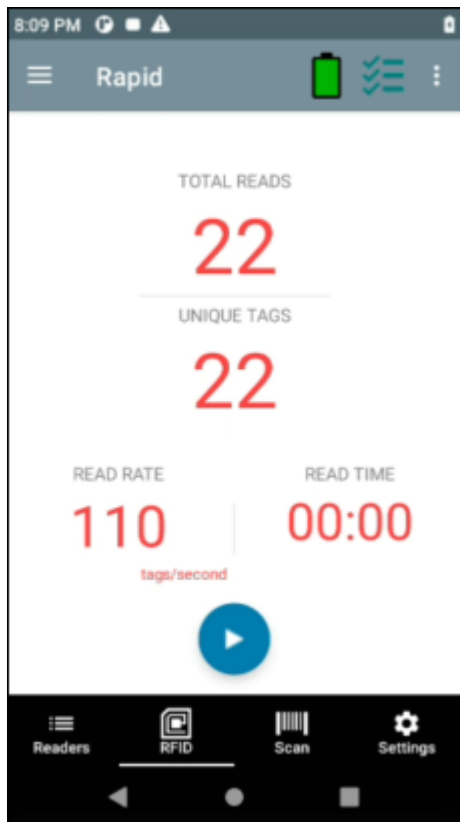
When Report Unique Tags is enabled on the Tag Reporting screen, the reader reports only unique tags based on the options below.

- 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:

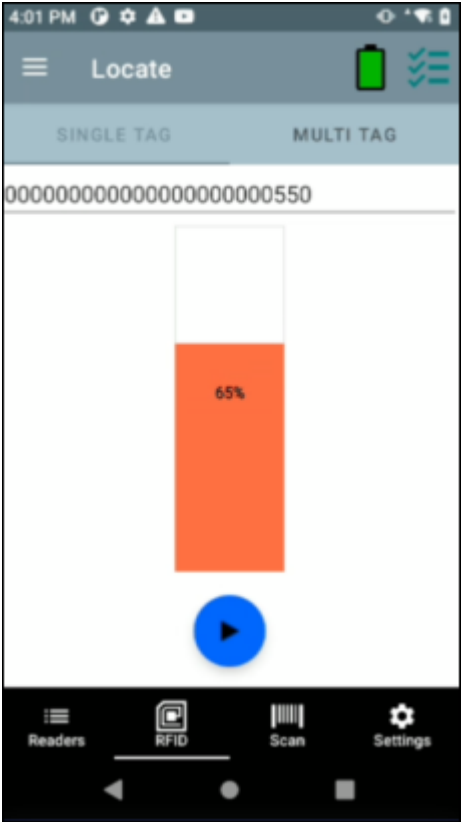
1. Tap Locate Tag from the Home or Menu screen.
2. Enter the Tag ID in the text area or select a tag from the Inventory screen to pre-populate the Tag ID to search.
3. Tap Start to start the locate tag operation.
4. Tap Stop to stop the locate tag operation.



**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.

- 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.

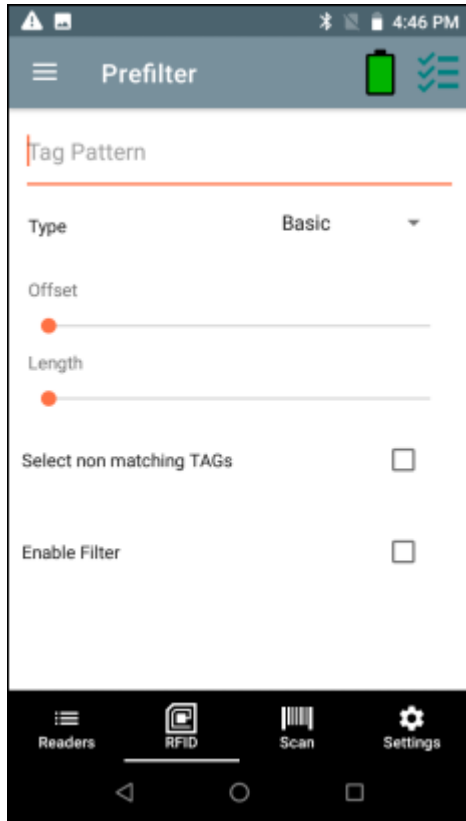


**NOTE:** Once you re-access the MultiTag Locate screen, the entire tag list from the csv file displays, if values were deleted dynamically.



## Pre Filters

- 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.

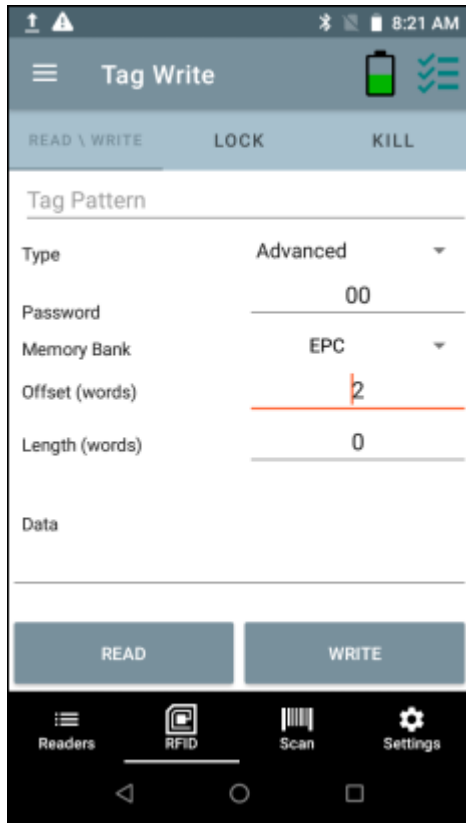


**NOTE:** The user can read/write to/from tags in ASCII mode.

Figure 10 Read/Write Basic



Figure 11 Read/Write Advanced



## 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.

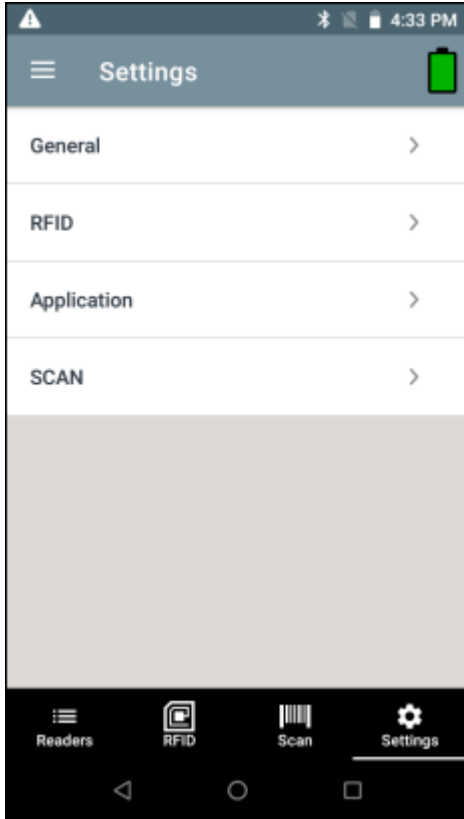


## Settings

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](#)

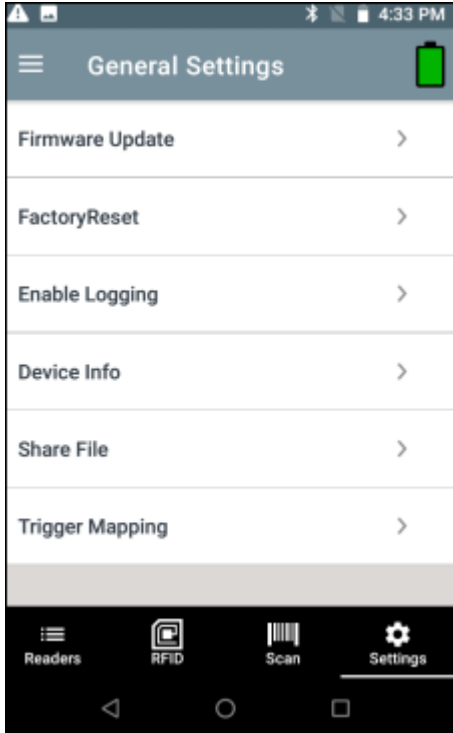
[Application Settings](#)

[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

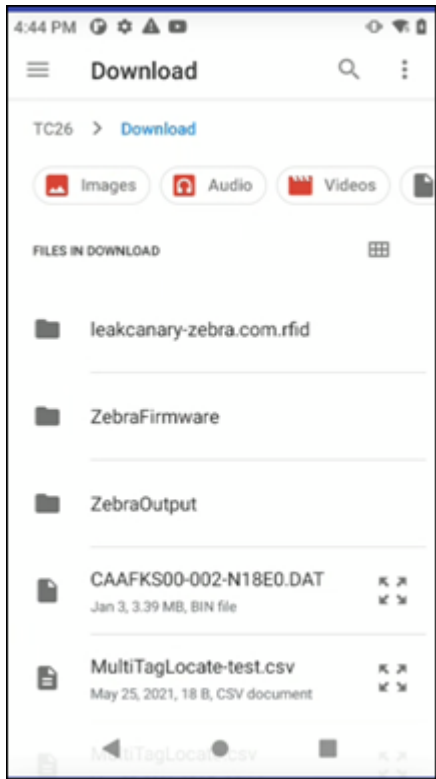


**NOTE:** Available only on RFD40.

To update device firmware:

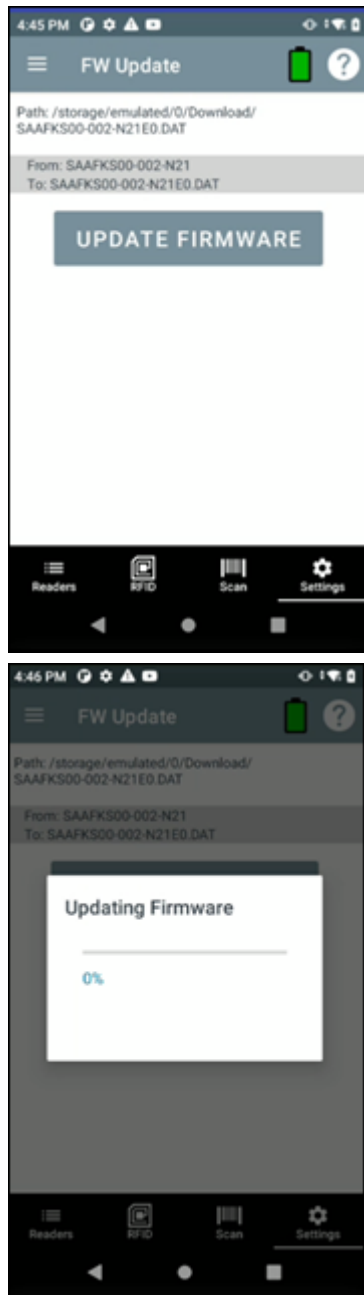
1. To access Firmware Update, from the bottom navigation bar, tap **Settings** > **General** > **Firmware Update** or tap **☰** > **Settings** > **General** > **Firmware Update**.

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**.



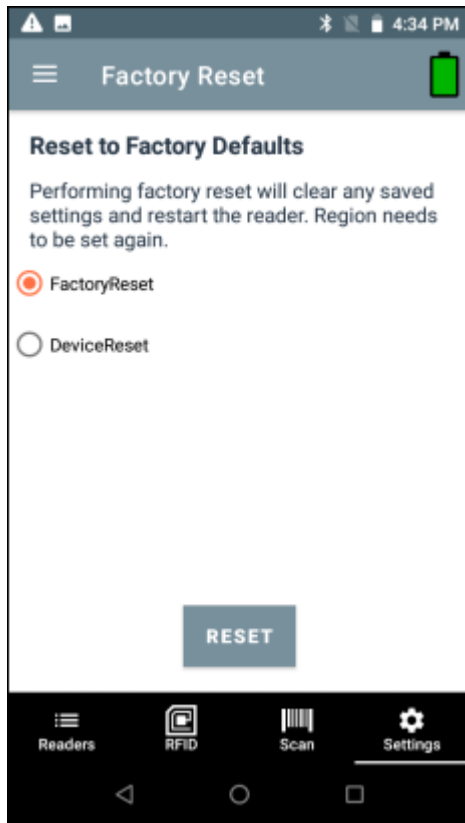
## Factory Reset

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.



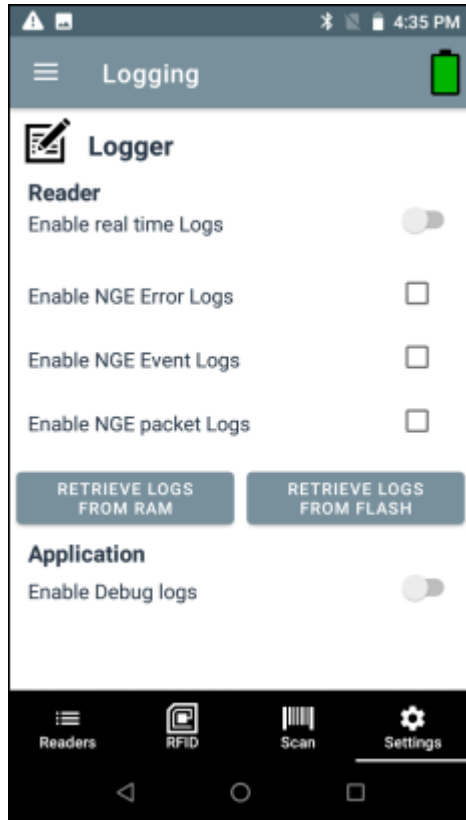
3. Tap **RESET**.

## 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.

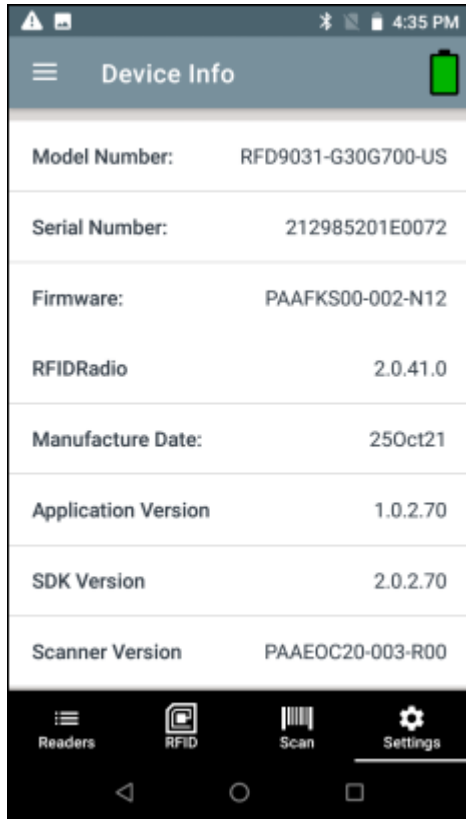


## Device Info

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



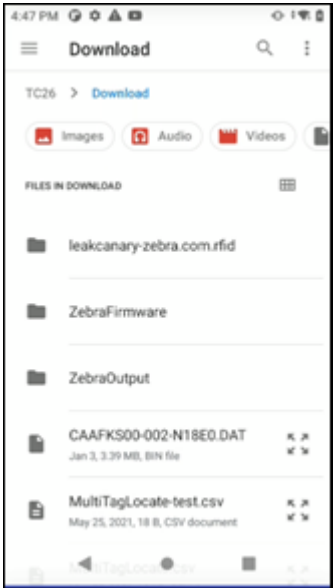
## Share File

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

File Explorer opens.

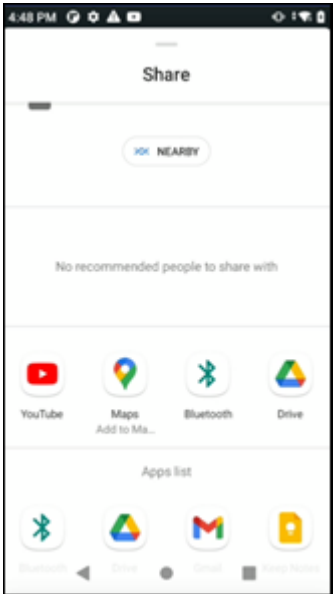


2. Select a single file or multiple files.



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

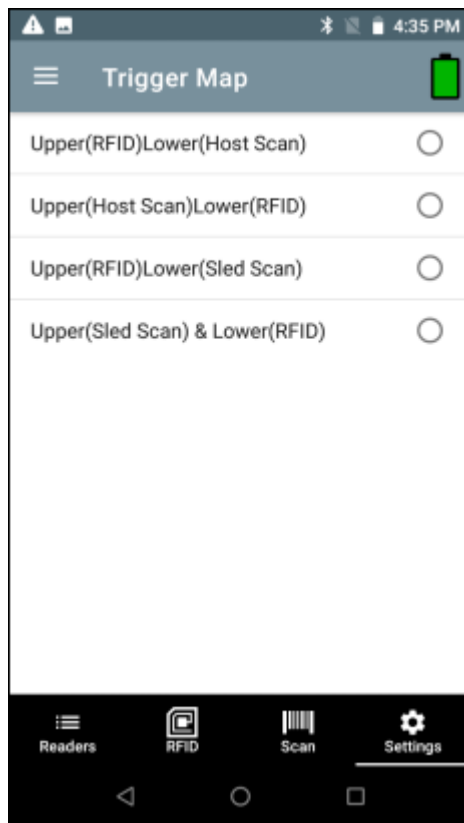
1. To map the trigger, from the bottom navigation bar, tap **Settings > General > Trigger Mapping** or tap **Settings > General > Trigger Mapping**.

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

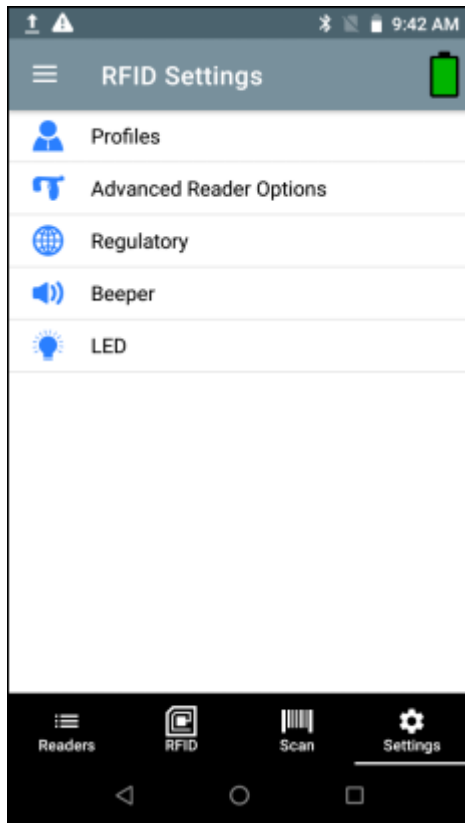
To access RFID Settings, from the bottom navigation bar, tap **Settings > RFID** or tap **☰ > Settings > RFID** or from the Rapid Read or Inventory screens, tap **⋮ > RFID Settings**. RFID Settings options include:

- 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.

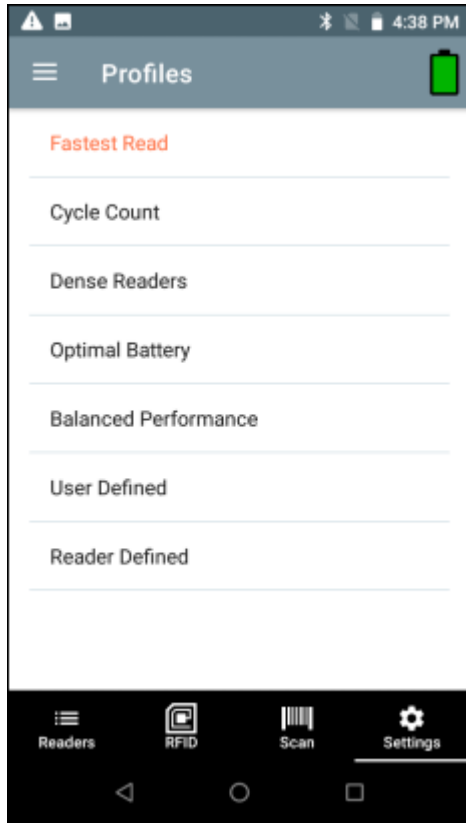


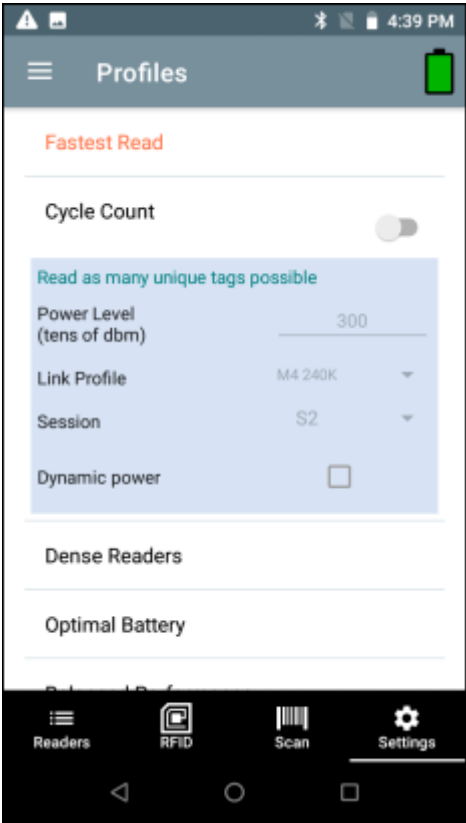
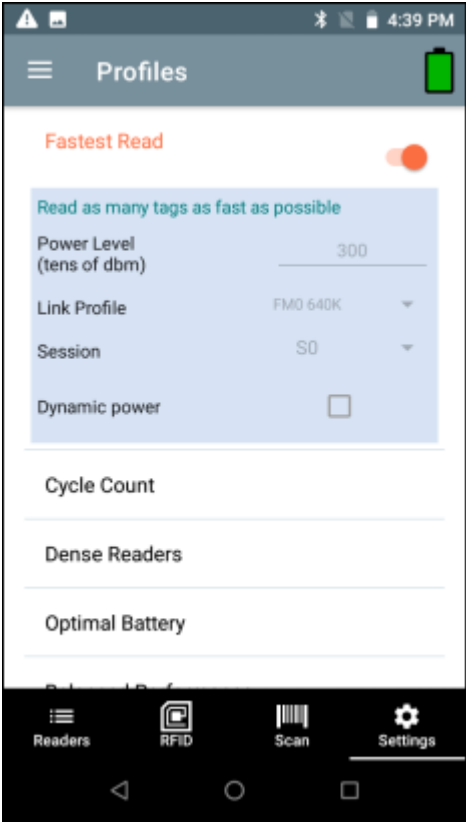
**NOTE:** If Power Level, Link Profile, Session, or Dynamic Power are modified from each respective screen, then the currently selected profile changes to User Defined profile and profile item values are modified with same values.

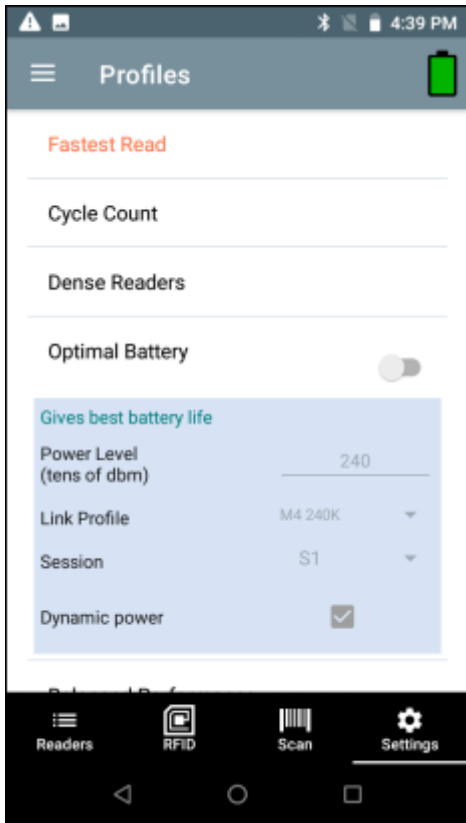
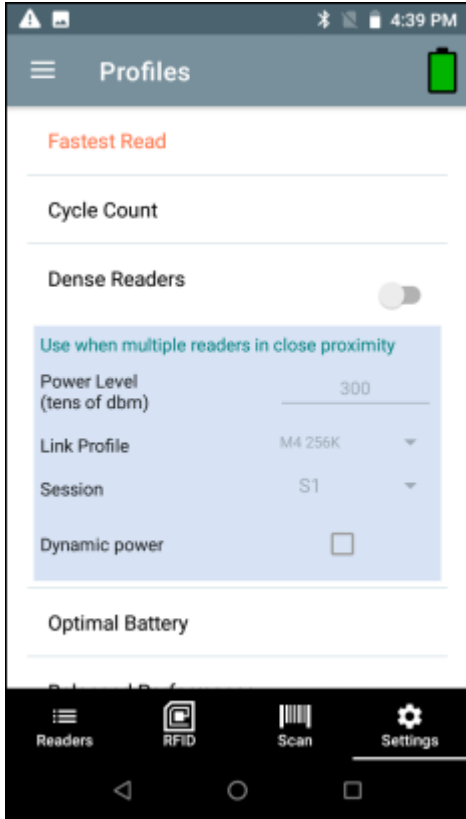
Profile setting options include:

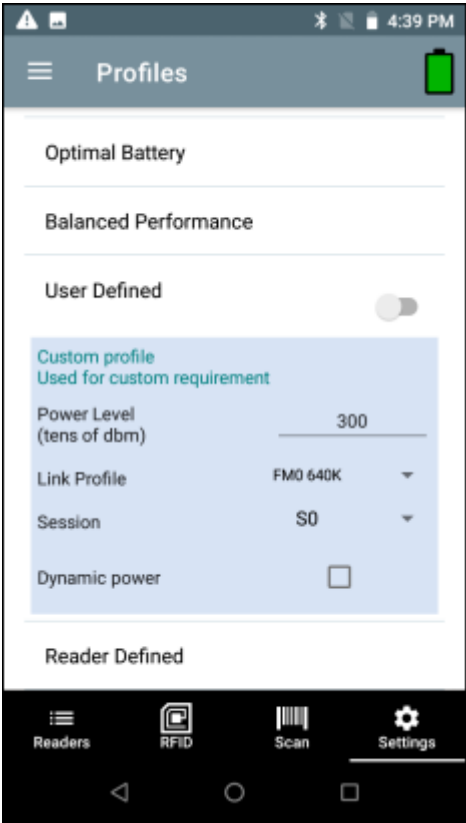
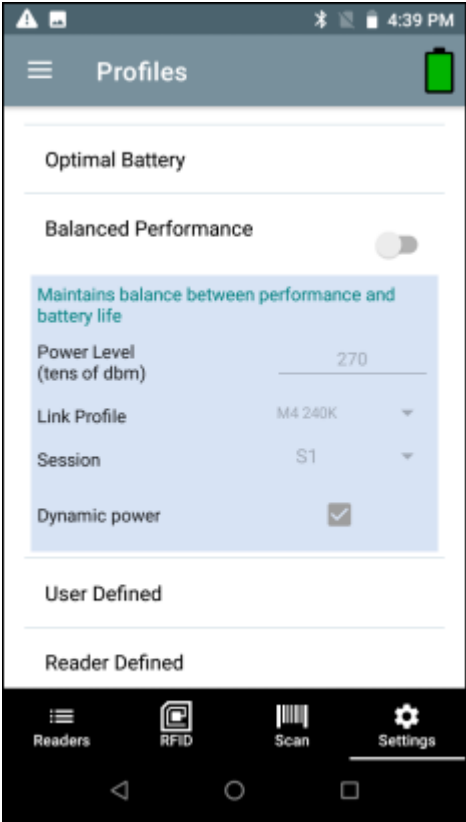
- Fastest Read - Read as many tags as fast as possible.
- Cycle Count - Read as many unique tags as possible.

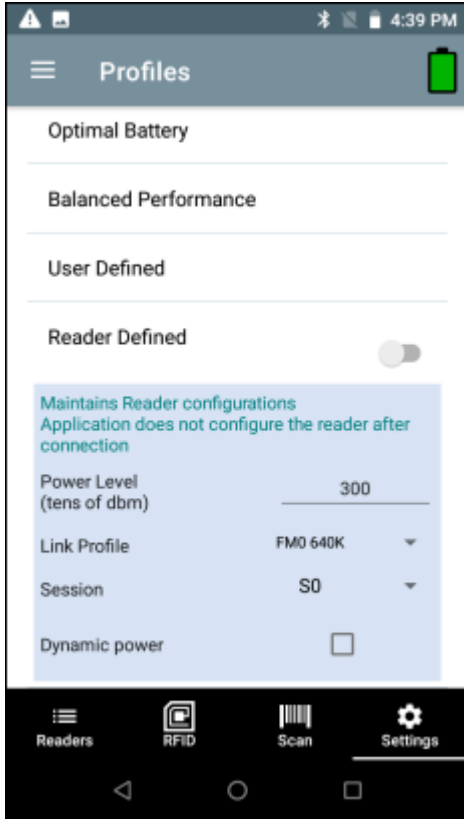
- Dense Readers - Use when there are multiple readers within close proximity.
- Optimal Battery - Provides optimal battery life.
- Balanced Performance - Maintains balance between performance and battery life.
- User Defined - Custom profile used for custom requirements.
- Reader Defined - Maintains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









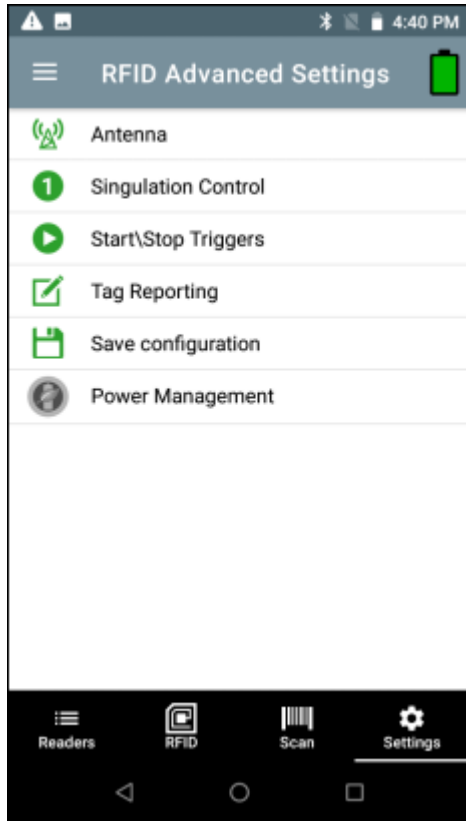


## Advanced Reader Options

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](#)

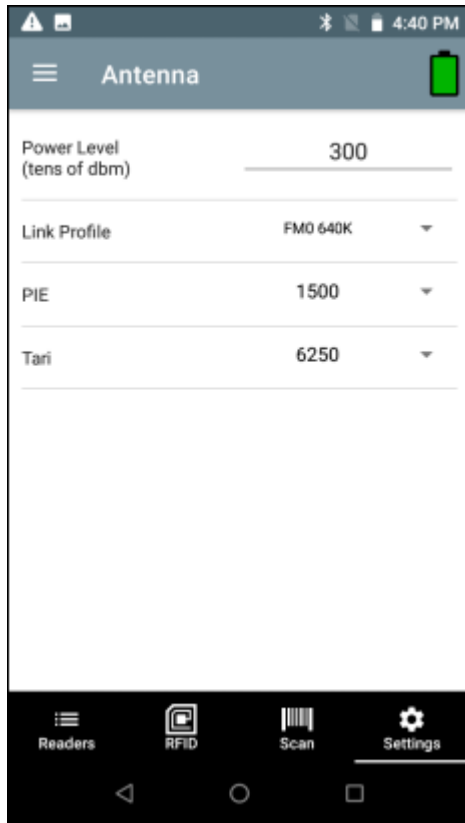
### Antenna

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.

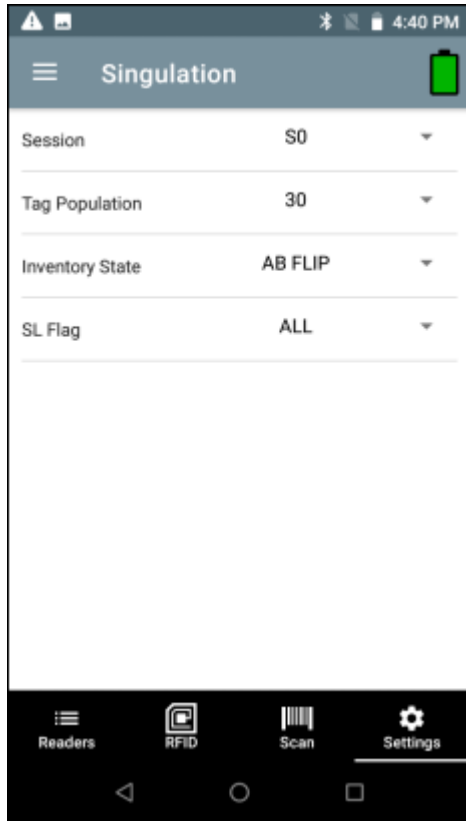


**NOTE:** The Power Level and Link Profile are blank when there is no connection to the reader.

### 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.

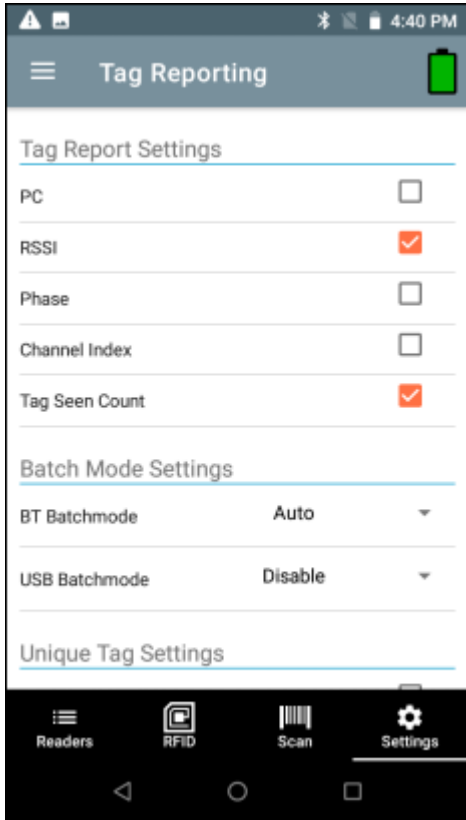
### Tag Reporting

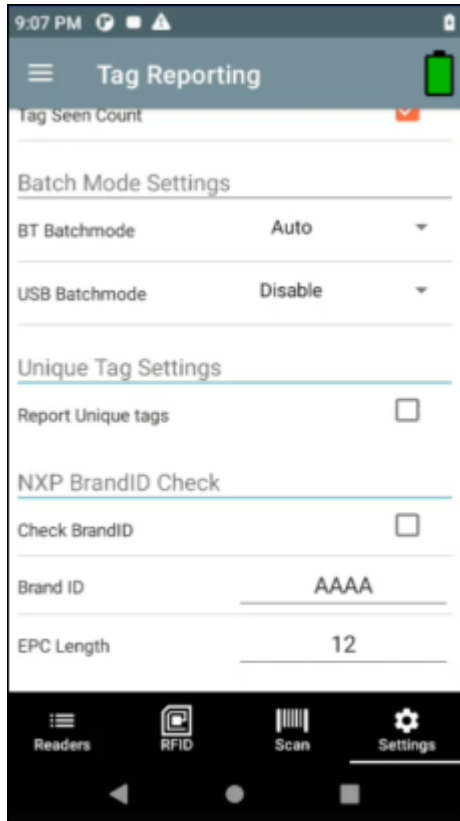
To access Tag Reporting, from the bottom navigation bar, tap **Settings > RFID > Advanced Reader Options > Tag Reporting**.

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.



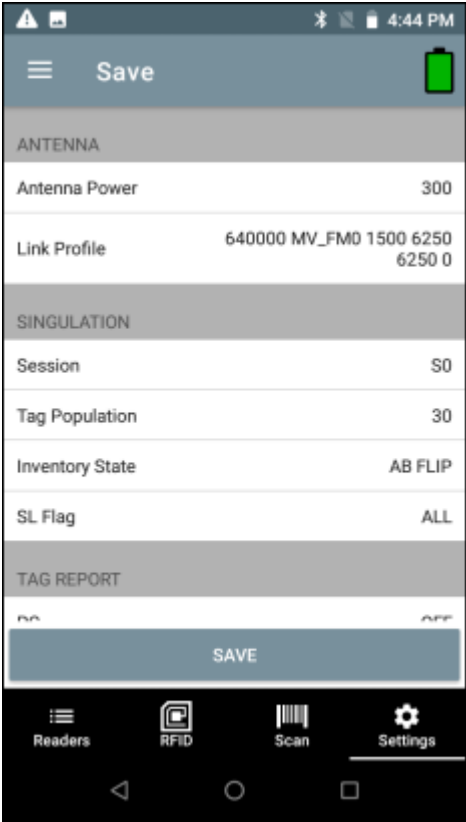


### Save Configuration

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).

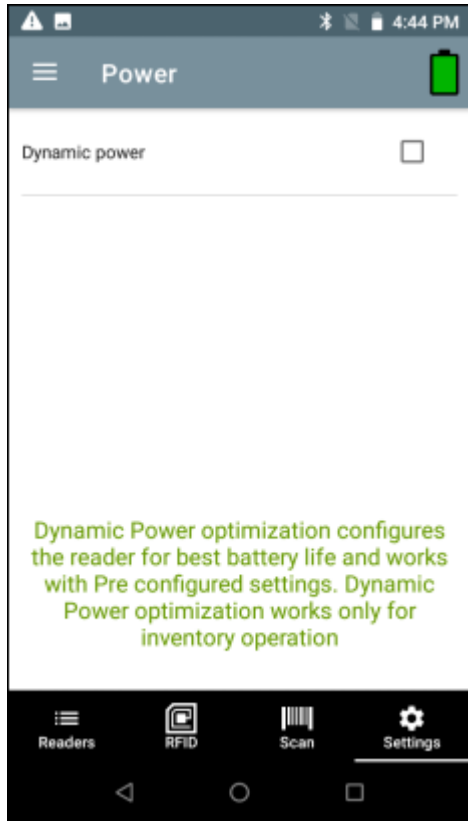
The Tag Pattern form field is automatically populated with tag data when a tag is selected from the Inventory Screen.



**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**.

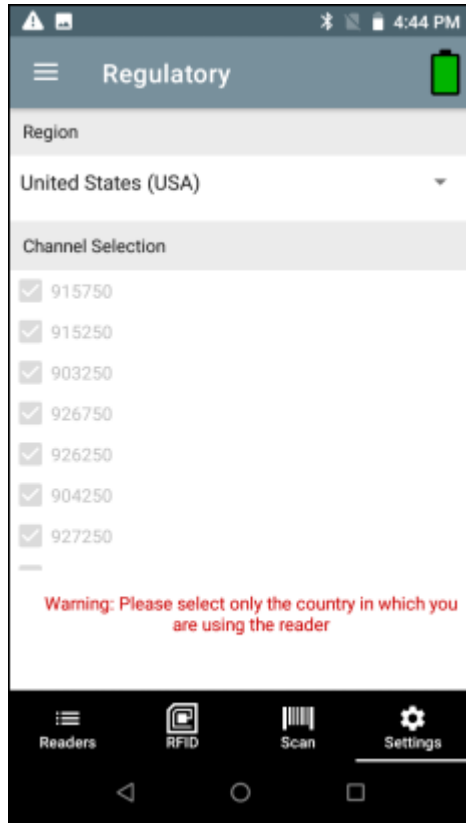


**WARNING:** Select only the country in which you are using the reader.

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



3. Select from the available channels.

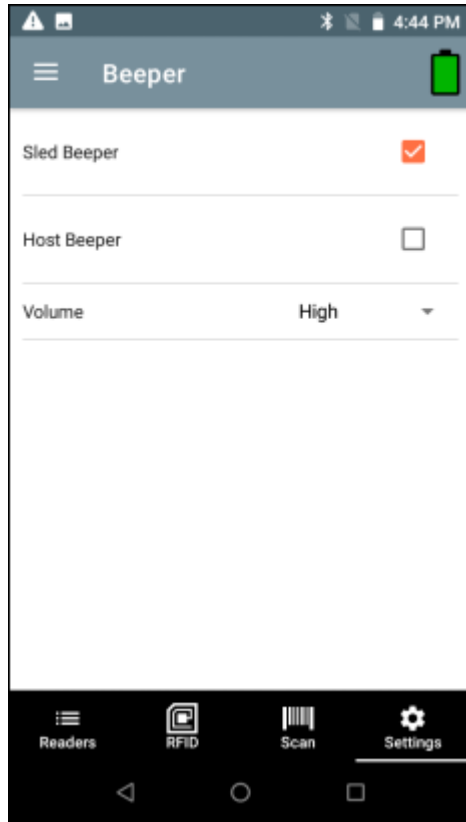


## Beeper

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:

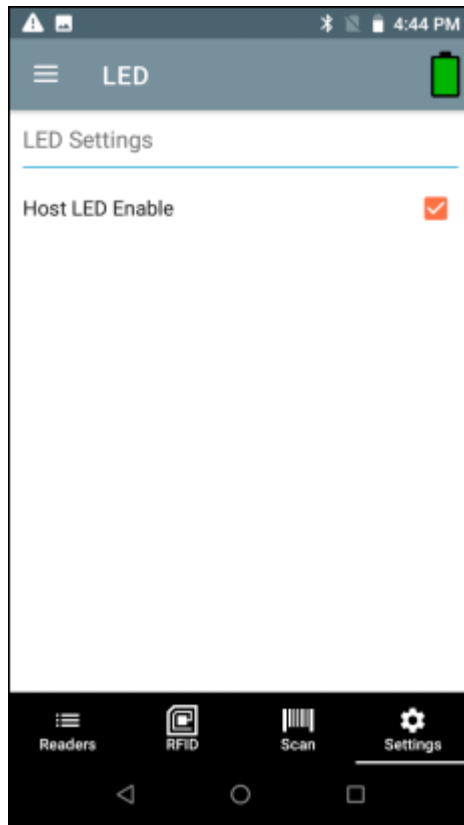
- High
- Medium
- Low



## 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**.

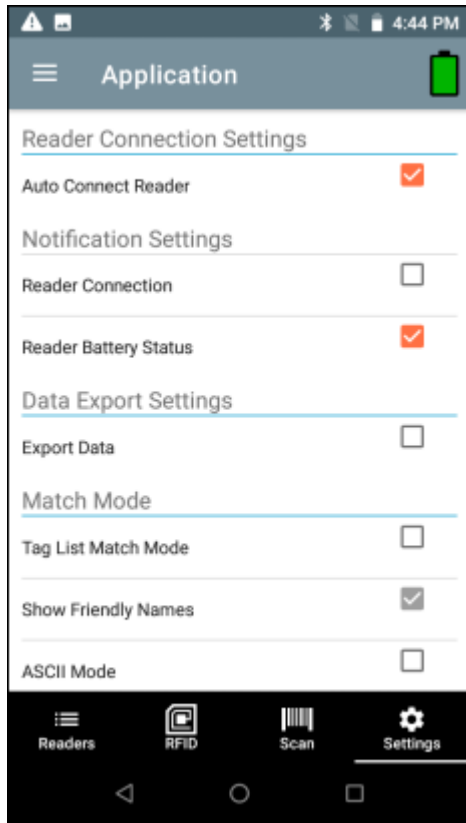
The Application Settings screen includes:

- 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

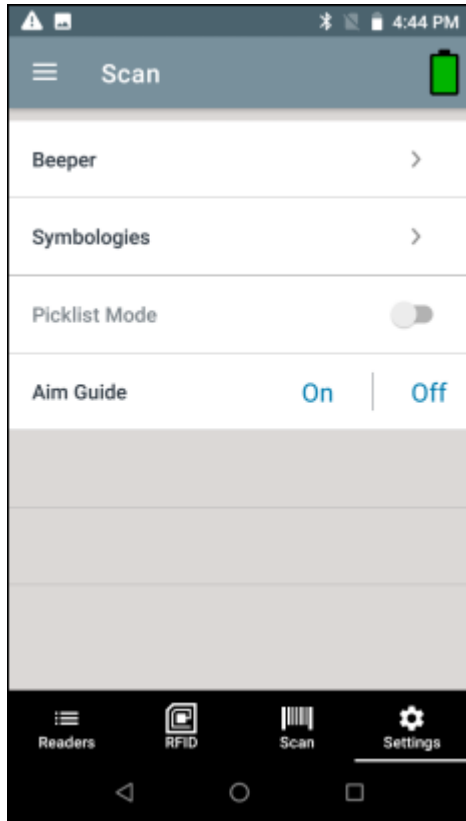
To access Scan Settings, from the bottom navigation bar, tap **Settings** > **SCAN** or tap  > **Settings** > **SCAN**. Scan Settings options include:

- **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).

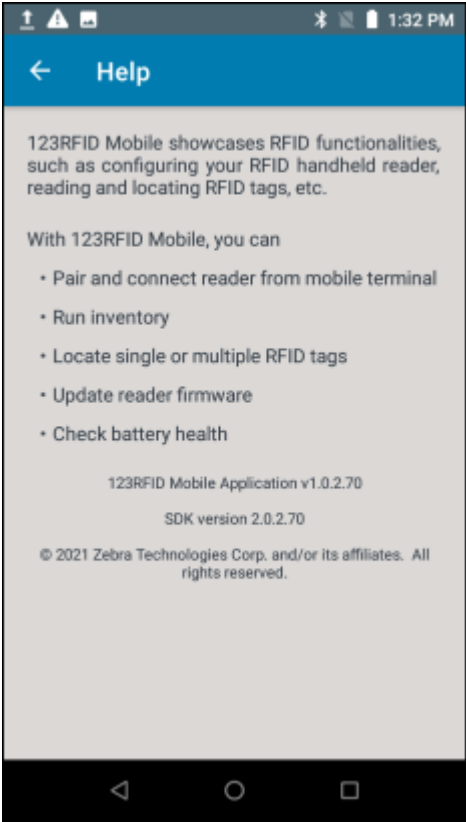
- Provides option to change the scanner beeper volume to high, medium or low.
- **Symbologies** - Allows user to select/enable specific barcode types. Supported symbologies include: UPC-A, UPC-E, UPC-E1, EAN-8/JAN8, EAN-13/JAN13, Bookland EAN, Code 128, GS1-128, Code 39, Code 93, Code 11, Interleaved 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.



# 123RFID Desktop Application

123RFID Desktop is a setup and optimization tool for RFID sleds. This section describes the application and its features.

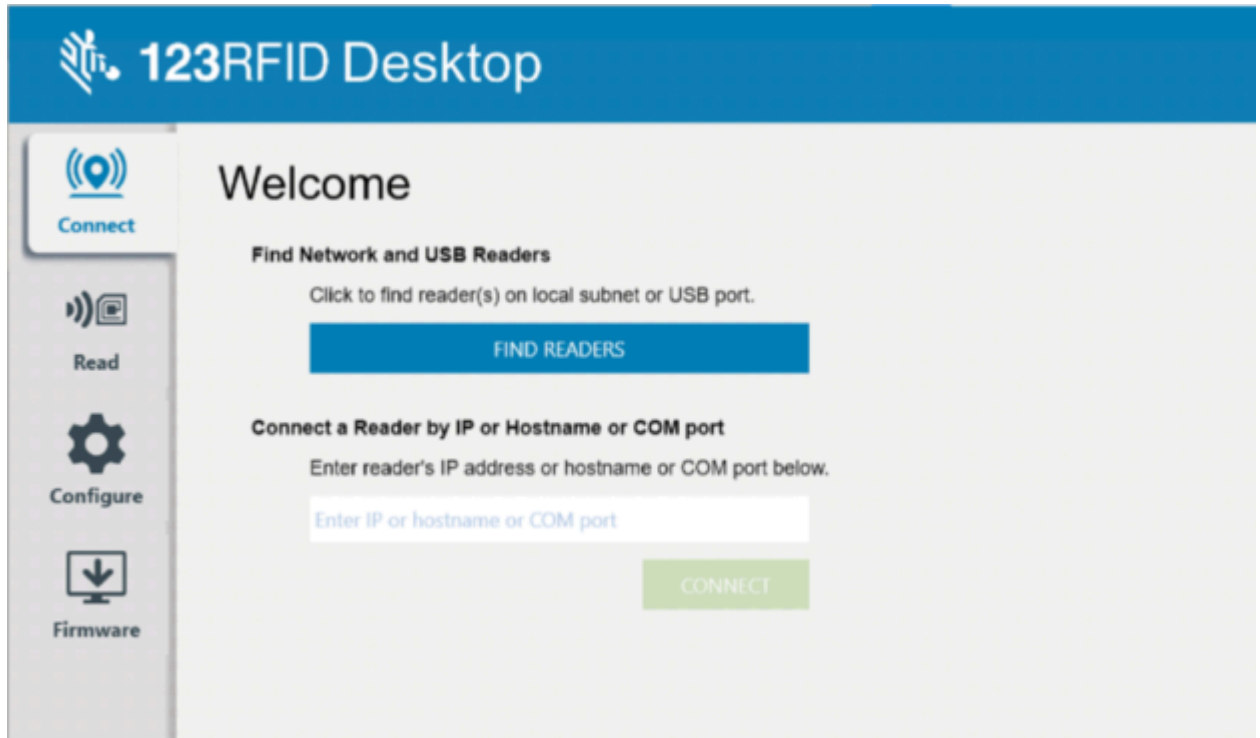
## Application Features

- Connect - allows users to search for readers on the local subnet or USB port.
- Read - allows users to start an inventory, view summary metrics on tag reads and sort, filter and export tag data. Select an antenna and set the power level to begin building an inventory.
- Configure - allows users to configure reader and antenna settings. Settings can be saved to a file or as a printed report.
- Firmware - allows users to update the firmware on up to five devices.

## Connect

Users can locate readers on the local subnet or via USB port by clicking the Find Readers button or by entering the IP, hostname, or COM port and clicking Connect.

**Figure 12** Connect



To discover readers on the network, view the Available Readers section of the application and click Connect on one of the associated rows to connect to the specified reader.

**Figure 13** Reader Discovery

## Read

The read feature allows users to start an inventory. Users can view summary metrics on tag reads by the reader, sort, filter, and export tag data to a file. Select antenna and set the power level to do inventory.

**Figure 14** Data View

Click the Start button to start reading tags and recording an inventory.

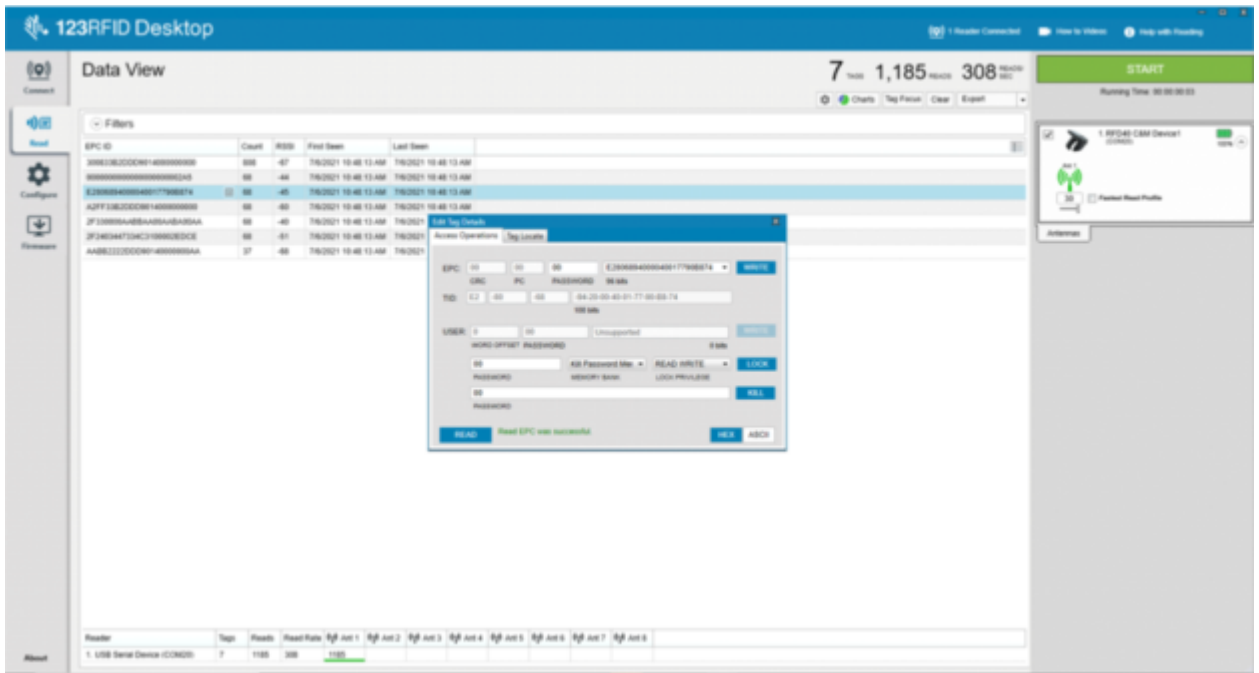
To download the inventory data for offline viewing, click the Export button to export tag data to excel.

- Export Summary - save a snapshot of all the tag reads displayed on the Read screen, in excel.
- Export History – Save timeline data for tags read, in excel.

To edit access operation information on a specific tag, select and double click on the associated tag row.

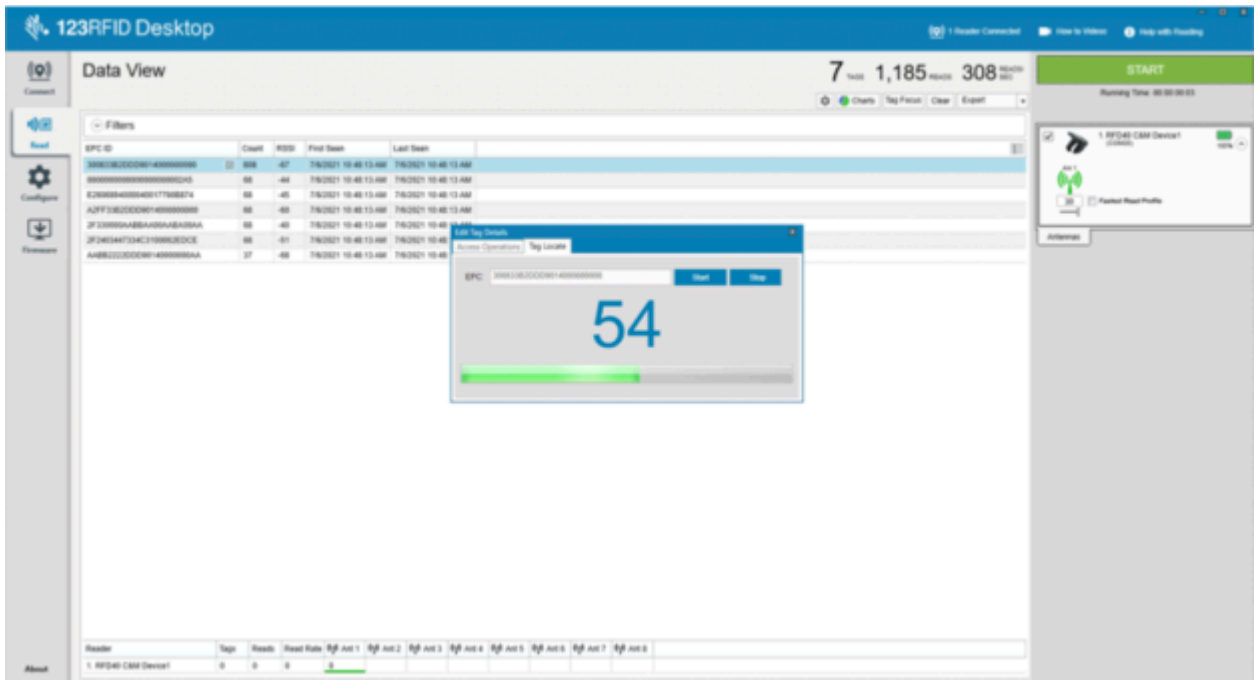


**Figure 15** Access Operations



To access specific tag location details, click on the Tag Locate tab.

**Figure 16** Tag Locate Data



## Reader Configuration

The Reader Configuration wizard configures the reader and antenna settings and saves them instantly. Users can also save settings to a file on the PC or print a report.

Click Edit Configuration on Reader to edit the reader's settings and use the wizard to do the following

- Assign names to the reader and its connected antennas.
- Set antenna settings or reset them to factory defaults.
- Change the reader's region configuration.
- Create rules for your GPIO (General Purpose Input/Output) accessories on when to trigger inventory and output results.
- Save/print configurations to a file.

Click Load a Saved Configuration File to Reader to load a saved configuration file from the PC to another connected reader.

**Figure 17** Select Configuration

## Reader Name

**Figure 18** Name the Configuration

## Parameter Settings

General Settings that are configurable include enabling Bluetooth Batch Mode, setting a delay before data is transmitted in Bat Mode, setting the Bluetooth Host Type, and setting the USB Host Type.

HID Keyboard Options include selecting the country code and keystroke delay. Bluetooth settings include enabling the device to attempt to reconnect automatically upon losing connection, beeper feedback when the device reconnects, setting a timeout period for the device to become discoverable, and automatically attempting to reconnect to the Bluetooth host. Beeper Settings include volume, tone, whether the sled beeps to confirm a successful decode, and the ability to suppress power-up beeps.

**Figure 19** General Settings

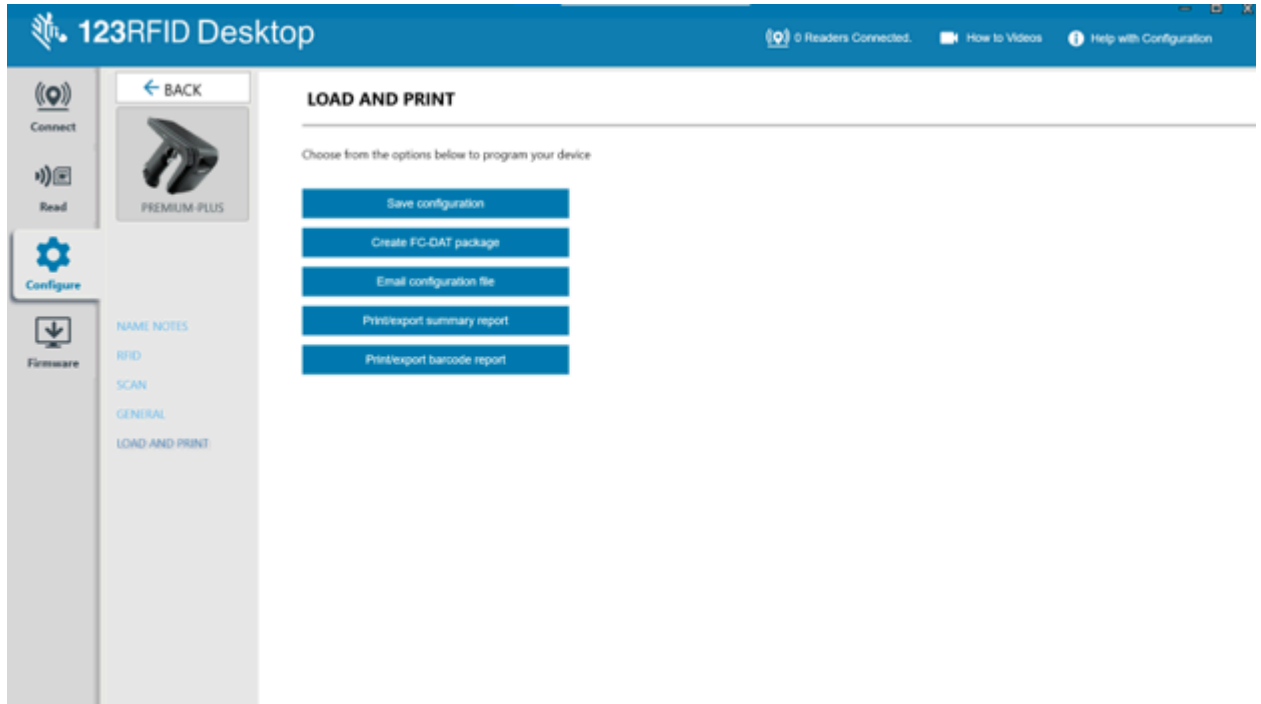
## Scanning Configuration

Configurable scanning settings include enabling or disabling specific symbologies and enabling/disabling specific settings at the system level such as transmitting the no read message or the device's trigger mode.

## Print Configuration

Load the configuration file to the PC, push the antenna settings to the reader, or reset the antenna settings to factory defaults at the end of the configuration workflow.

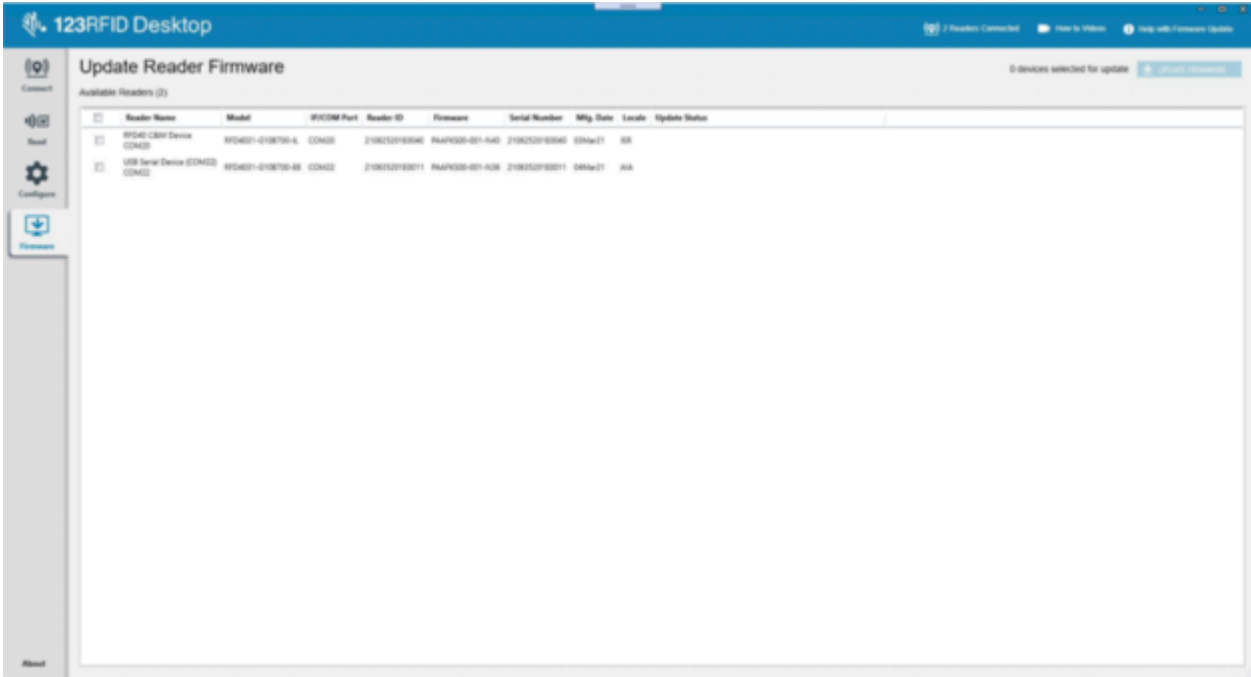
**Figure 21** Save Configuration



# Firmware Management

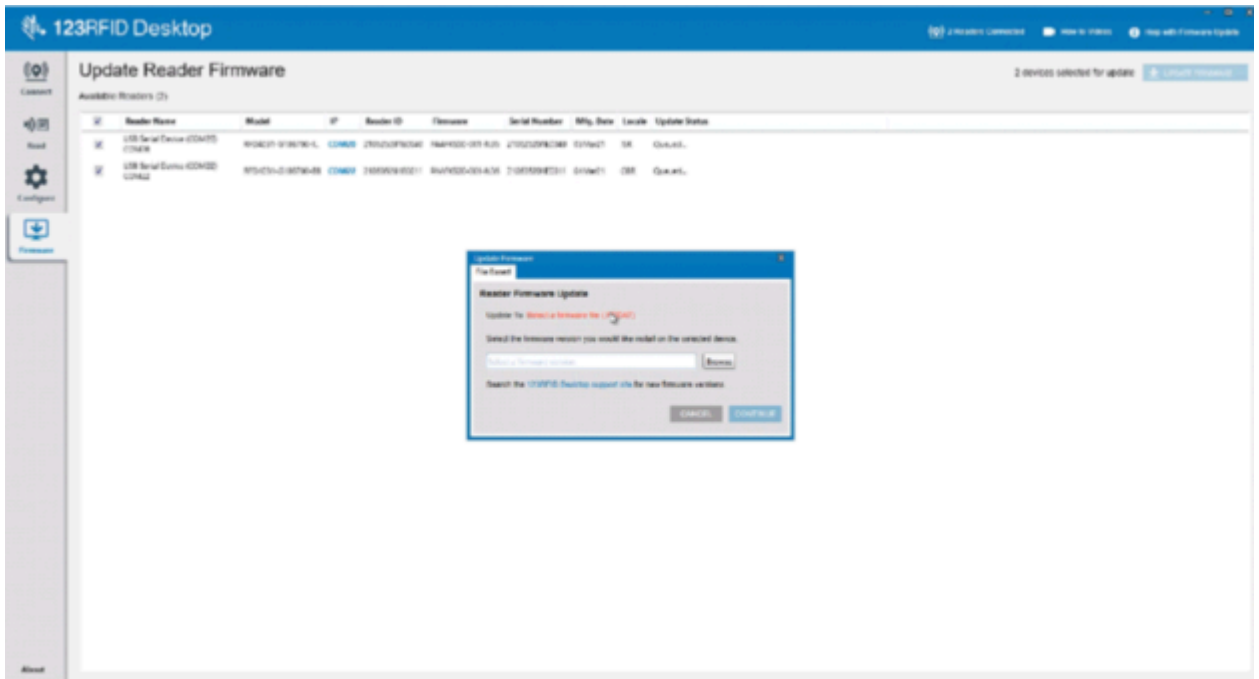
To update reader firmware on up to five devices simultaneously, select the devices on the table by clicking the associated checkbox and click the Update Firmware button.

Figure 22 Select Devices to Upgrade



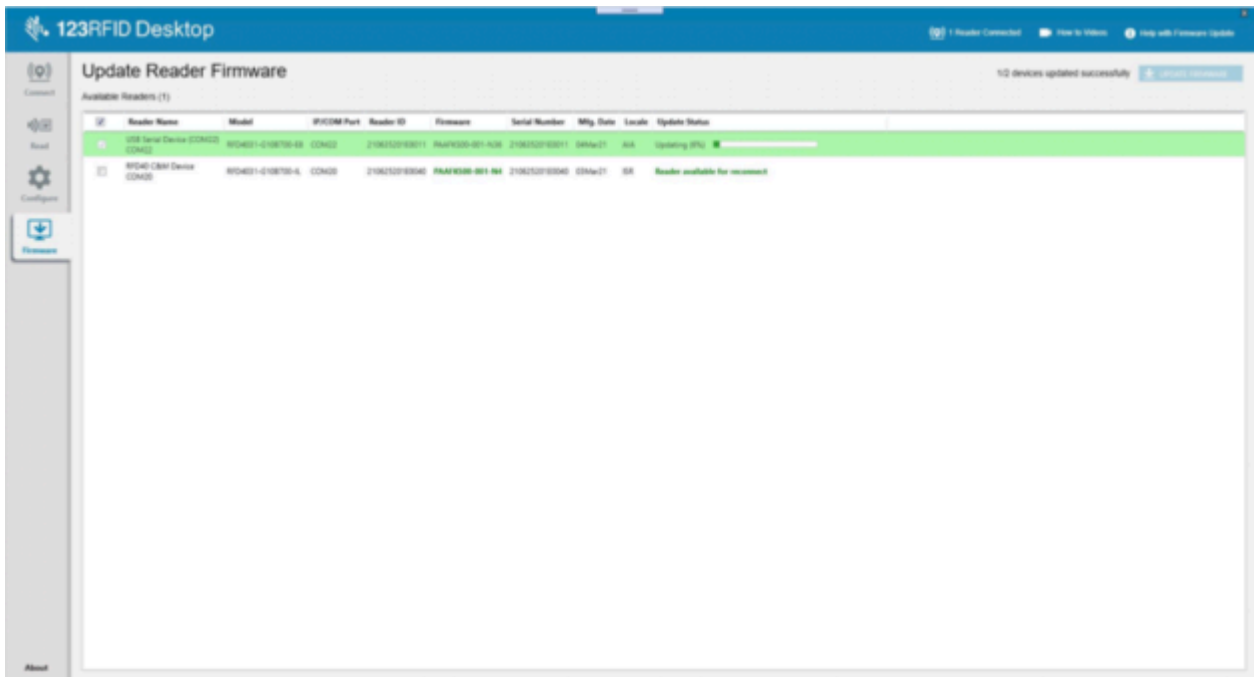
Next, the Reader Firmware Update window displays. Click Browse to select the firmware version to be enabled onto the selected device.

**Figure 23** Select a Firmware Update



Once the firmware file is selected, the update starts and the progress bars next to the associated readers indicate the completion percentage of the update.

**Figure 24** Firmware Update in Progress



# Maintenance

This chapter provides suggested sled maintenance, troubleshooting, and technical specifications.



**CAUTION:** Always wear eye protection. Read warning label on compressed air and alcohol product before using. If you have to use any other solution for medical reasons please contact Zebra for more information.



**WARNING:** Avoid exposing this product to contact with hot oil or other flammable liquids. If such exposure occurs, unplug the device and clean the product immediately in accordance with these guidelines.



**IMPORTANT:** Use pre-moistened wipes and do not allow liquid cleaner to pool. Ensure the following items are addressed when using sodium hypochlorite (bleach) based cleaners:

- For device only. Do not use on cradle.
- Always follow the manufacturer's recommended instructions: use gloves during application and remove the residue afterwards with a damp cloth to avoid prolonged skin contact while handling the device.
- Due to the powerful oxidizing nature of sodium hypochlorite, the metal surfaces, including electrical contacts on the device, are prone to oxidation (corrosion) when exposed to this chemical in the liquid form (including wipes) and should be avoided. In the event that these type of disinfectants come in contact with metal on the device, prompt removal with a dampened cloth after the cleaning step is critical.



**IMPORTANT:** To avoid damage to the device, use only approved cleaning and disinfecting agents listed below. The use of non-approved cleaning or disinfecting agents may void the warranty.

## Harmful Ingredients

The following chemicals are known to damage the plastics on Zebra devices and should not come in contact with the device:

- Acetone
- Ammonia solutions
- Aqueous or alcoholic alkaline solutions
- Aromatic and chlorinated hydrocarbons
- Benzene

- Carboic acid
- Compounds of amines or ammonia
- Ethanolamine
- Ethers
- Ketones
- TB-lysoform
- Toluene
- Trichloroethylene.

### Tolerable Industrial Fluids and Chemicals

The following industrial fluids and chemicals were evaluated and deemed tolerable for the RFD90 RFID sled:

- Motor/Engine Oil
- Automatic Transmission Fluid (ATF)
- Continuously Variable Transmission Fluid (CVT)
- Industrial De-Greaser (Engine Brite Heavy Duty)

### Cleaning the Sled

Routinely cleaning the exit window is required. A dirty window may affect scanning accuracy. Do not allow any abrasive material to touch the window.

To clean the device:

1. Dampen a soft cloth with one of the approved cleaning agents listed above or use pre-moistened wipes.
2. Gently wipe all surfaces, including the front, back, sides, top and bottom. Never apply liquid directly to the device. Be careful not to let liquid pool around the device window, trigger, cable connector or any other area on the device.
3. Be sure to clean the trigger and in between the trigger and the housing (use a cotton-tipped applicator to reach tight or inaccessible areas).
4. Do not spray water or other cleaning liquids directly into the exit window.
5. Wipe the device exit window with a lens tissue or other material suitable for cleaning optical material such as eyeglasses.
6. Immediately dry the device window after cleaning with a soft non-abrasive cloth to prevent streaking.
7. Allow the unit to air dry before use.

### 8. Connectors:

- Dip the cotton portion of a cotton-tipped applicator in isopropyl alcohol.
- Rub the cotton portion of the cotton-tipped applicator back-and-forth across the connector on the Zebra sled at least 3 times. Do not leave any cotton residue on the connector.
- Use the cotton-tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
- Use a dry cotton tipped applicator and rub the cotton portion of the cotton-tipped applicator back-and-forth across the connectors at least 3 times. Do not leave any cotton residue on the connectors.



# Technical Specifications

The following table outlines the physical characteristics and user environment of the RFD90 UHF Ultra-Rugged RFID sled.

**Table 11** RFD90 UHF Ultra-Rugged RFID

Item	Description
Physical Characteristics	
Dimensions	RFD9030: 189 x 83.4 x 173 mm /7.4 x 3.2 x 6.8 in RFD9090: 248 x 96.3 x 173 mm/9.8 x 3.8 x 6.8 in.
Weight	RFD9030 with SE4750MR: 25 oz./714 grams RFD9030 with SE4850: 26.5 oz./751 grams RFD9090 with SE4750MR: 26.8 oz./759 grams RFD9090 with SE4850: 28.2 oz./799 grams
Power	Quick-Release, PowerPrecision+ 7000 mAh Li-Ion battery
Frequency Range/RF Output	US: 902-928 MHz; 0 - 30 dBm (EIRP) EU: 865-868 MHz; 0 - 30 dBm (EIRP) 916.3, 917.5, and 918.7 MHz; 0–30 dBm (EIRP) Japan: 916-921 MHz (w LBT); 0 - 30 dBm (EIRP)
User Environment	
Operating Temperature	-20°C to 55°C (-4°F to 131°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Charging Temperature	0°C to 40°C (32°F to 104°F)
Relative Humidity	Operating: 5 to 85% non-condensing
Sealing	IP65 (spray) and IP67 (submersion)
Drop Specification	Multiple 6 ft./1.8 m drops to concrete
Tumble Specification	500 cycles (1,000 drops, 1.6 ft./0.5 m) at room temperature
Electrostatic Discharge	± 15 kV air discharge ± 8 kV direct discharge ± 8 kV indirect discharge

# Troubleshooting

The table below outlines possible troubleshooting cases that may occur when using the sled related to data communication, barcode decode, and Bluetooth.

**Table 12** Troubleshooting the RFD90

Problem	Cause	Solution
The RFID sled does not read tags.	The RF region configuration is not set.	Use the 123RFID Desktop or 123RFID Mobile application to set the regulatory region or country operation per the application instructions.
The RFID sled is attached to a mobile device and it is not responsive to a RFID application, even after the trigger is pressed.	The battery is too low and not able to power the RFID sled.	Press the trigger for a couple of seconds to power the RFID sled On. The RFID sled LED blinks amber when it is turned On. (By default, pressing the trigger turns On the RFID sled if it is in Off mode. However, the RFID sled can be disabled in which case this step is not necessary.) Place the RFID sled in the charging cradle. The RFID sled blinks amber LEDs indicating charging commenced.
	Zebra supported mobile computer is not properly inserted in the RFID Sled.	Reinsert the Zebra supported mobile device securely in the RFID sled and ensure that the USB cable is correctly inserted.
	Damaged battery.	If the sled LED does not blink amber after sitting on the charging cradle for a while, request service to replace the battery.
The sled is responsive but cannot read tags.	Battery is critically low.	Place the RFID sled in the charging cradle. The RFID Sled LED blinks amber. The RFID sled can be used when its LED turns on momentarily amber or green upon removal from the charging cradle.

**Table 12** Troubleshooting the RFD90 (Continued)

Problem	Cause	Solution
The sled LED blinks fast amber when in the cradle.	Charging error.	Restart charging by removing the RFID sled from the cradle and inserting it back in the cradle. If the issue persists, request service to replace the battery.
The sled LED blinks red, or LED blinks red alternating with green or amber while in use (not while charging).	Battery end of life indication.	Request service to replace the battery.
Zebra supported mobile computer battery is not charging.	Charging cradle was unplugged from AC power.	Ensure the charging cradle is receiving power.
	The Zebra supported mobile computer is not fully seated in the cradle.	Remove and re-insert the zebra supported mobile computer into the cradle, ensuring it is firmly seated in the charging cradle.
<b>Data Communication</b>		
During data communication with a host computer, no data transmitted, or transmitted data was incomplete.	Sled removed from cradle during communication.	Replace the sled in the cradle and re-transmit.
	Incorrect cable configuration.	See the system administrator.
	Communication software was incorrectly installed or configured.	Perform setup.
During data communication over Bluetooth, no data transmitted, or transmitted data was incomplete.	Bluetooth radio is not on.	Turn on the Bluetooth radio.
	The sled moved out of range of another Bluetooth device.	Move within 10 meters (32.8 feet) of the other device.
<b>Decode</b>		
The sled does not decode with a reading barcode.	The scanning application is not loaded.	Load 123RFID Mobile on the device or 123RFID Desktop on the PC. See the system administrator.
	Unreadable barcode.	Ensure the symbol is not defaced.
	The distance between the exit window and the barcode is incorrect.	Place the device within proper scanning range.
	The device is not programmed to generate a beep.	If the sled does not beep on a good decode, set the application to generate a beep on good decode.
	The battery is low.	If the sled stops emitting a laser beam upon a trigger press, check the battery level. When the battery is low, the sled shuts off before the low battery condition notification.
<b>Bluetooth</b>		

**Table 12** Troubleshooting the RFD90 (Continued)

Problem	Cause	Solution
The device cannot find any Bluetooth devices nearby.	Too far from other Bluetooth devices.	Move closer to the other Bluetooth device(s), within a range of 10 meters (32.8 feet).
	The Bluetooth device(s) nearby are not turned on.	Turn on the Bluetooth device(s) to find.
	The Bluetooth device(s) are not in discoverable mode.	Set the Bluetooth device(s) to discoverable mode.

