EM45 RFID

Enterprise Mobile Series

User Guide

ZEBRA

MN-005048-01EN Rev A

Copyright

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About This Guide

This guide provides information about setting up and using EM45 enterprise mobile device. Some screens shown in this guide may differ from those on the device.

For device technical specifications, go to zebra.com.

Notational Conventions

The following notational conventions make the content of this document easy to navigate.

- **Bold** text is used to highlight the following:
  - Dialog box, window, and screen names
  - Dropdown 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.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following visual indicators are used throughout the documentation set.

NOTE: The text here indicates information that is supplemental for the user to know and that is not required to complete a task.

IMPORTANT: The text here indicates information that is important for the user to know.

CAUTION: If the precaution is not heeded, the user could receive a minor or moderate injury.

WARNING: If danger is not avoided, the user CAN be seriously injured or killed.

DANGER: If danger is not avoided, the user WILL be seriously injured or killed.

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.

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Checking the Software Version

Before contacting Zebra customer support, check the current software version on your EM45.

1. Swipe down twice from the status bar to open the Quick Access panel, and then tap .
2. Tap **About phone**.
3. Scroll down and tap **Android version**.

   The current Android operating system (OS) version and details display.

Checking the Serial Number

Before contacting Zebra customer support, check the serial number on your EM45.

1. Swipe down twice from the status bar to open the Quick Access panel, and then tap .
2. Tap **About phone**.
3. Scroll down and tap **Model**.

   The **Serial Number**, **Model Number**, and **Hardware Version** details display.

Getting Started

Begin using your device with these essential processes to set up and customize your device.

Unpacking the Device

Unpack the device from the box.

1. Carefully remove all protective material from the device and save the container for later storage and shipping.
2. Verify the following are in the box:
   - EM45 RFID Enterprise Mobile
   - SuperSpeed (USB 3.0) USB-C type cable
   - Regulatory guide
3. Inspect the equipment for damage. If any equipment is missing or damaged, contact the Global Customer Support Center immediately.
4. Before using the device for the first time, remove the protective shipping film.

Features

Main features of EM45.

Number	Item	Description
1	Front camera	8 megapixels (MP).
2	Back camera	50 MP with Optical image stabilization (OIS).
3	Integrated RFID	Ultra-high frequency (UHF) RFID.
4	Programmable button (right)	By default, opens Zebra's Workcloud Communication Push-to-Talk (PTT) (if installed), or can be used for other apps, such as Microsoft Teams PTT. **NOTE:** Both apps need to be installed separately.
5	Power button and biometric fingerprint sensor	Turns the display on/off. Also used as a fingerprint sensor for unlocking EM45. Go to Biometrics Security for more information.
6	Speaker	Audio output for video and music playback. Provides audio in speakerphone mode.

Number	Item	Description
7	USB-C port	Provides power and communications to the device.
8	Main microphone	Communications in handset/handsfree mode, audio recording, and noise cancellation.
9	Nano SIM/microSD slot	Holds a SIM and/or microSD card.
10	Microphone	Communications in handset/handsfree mode, audio recording, and noise cancellation.
11	Programmable button (top)	Opens the Camera app in unlocked mode and wakes up the device (default). Or it can be used to open other apps, such as a digital voice assistant or duress (emergency) apps that are installed separately
12	Volume buttons	Increase and decrease volume.
13	Programmable button (left)	Opens Camera barcode scanning for data capture (default).

Turning On/Off the Device

When turning on EM45 for the first time, it guides you to set up your Wi-Fi connection and device settings.

1. Press and hold the Power button (right side).
2. Follow the setup prompts (for example, language selection and network connection) displayed on the device.
3. To turn off the device, press and hold the Power button, and then tap **Power off**.

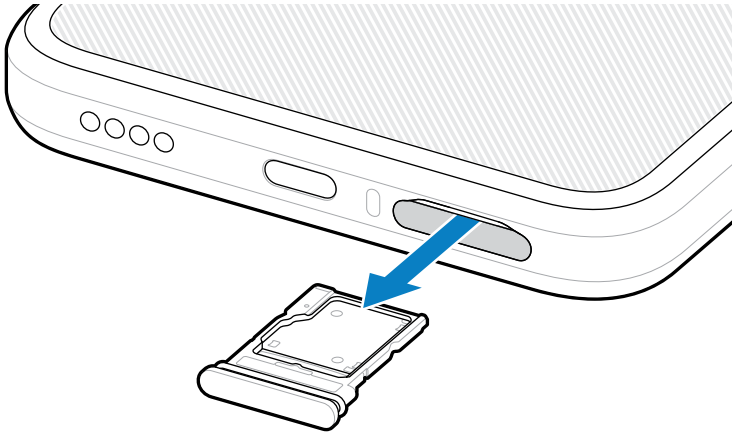
Installing the SIM Card

A SIM card or eSIM is required to make calls and transfer data over a cellular network.

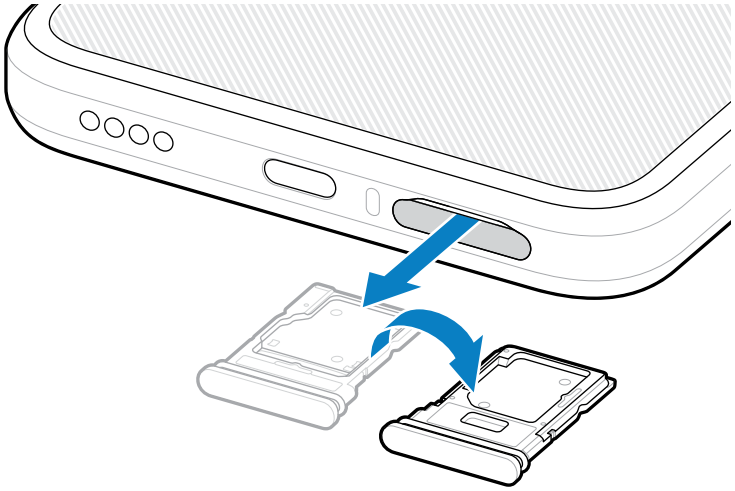
The device also offers Dual SIM/Dual Standby (DSDS), which allows users to use an eSIM and SIM card and remain on standby at any time.

CAUTION: Follow proper electrostatic discharge (ESD) precautions to avoid damaging the SIM card. Proper ESD precautions include but are not limited to, working on an ESD mat and ensuring the operator is properly grounded.

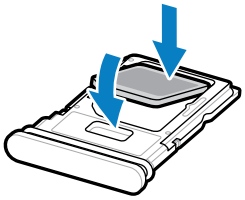
1. Pull the card holder out of the device.



2. Flip the card holder over.

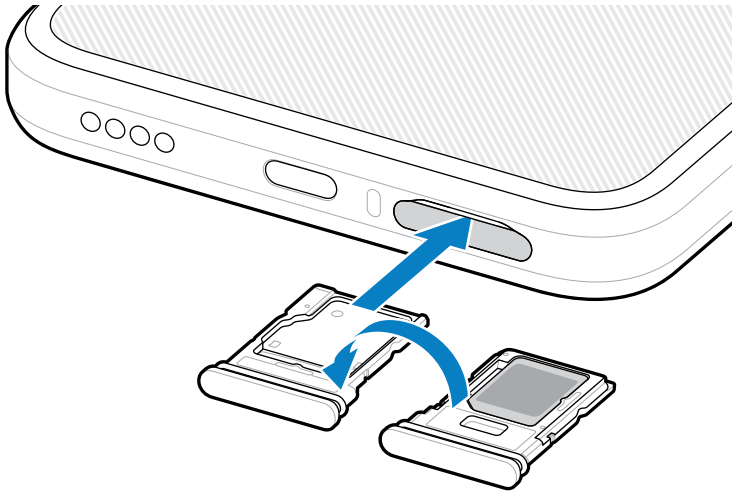


3. Place the SIM card end, with contacts facing up, into the card holder.



4. Press the SIM card down into the card holder and ensure that it seats properly.

5. Flip the cardholder over and re-install the card holder.

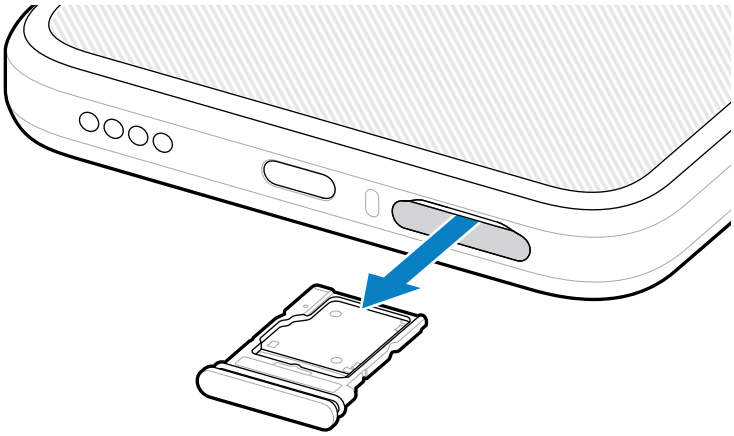


Installing the microSD Card

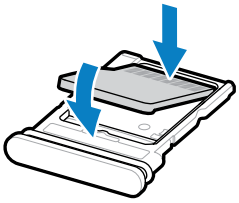
The microSD card slot provides secondary, non-volatile storage. For more information, refer to the documentation provided with the microSD card and follow the manufacturer's recommendations for use. It is strongly recommended that you format the microSD card on the device before use.

CAUTION: Follow proper electrostatic discharge (ESD) precautions to avoid damaging the microSD card. Proper ESD precautions include but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded.

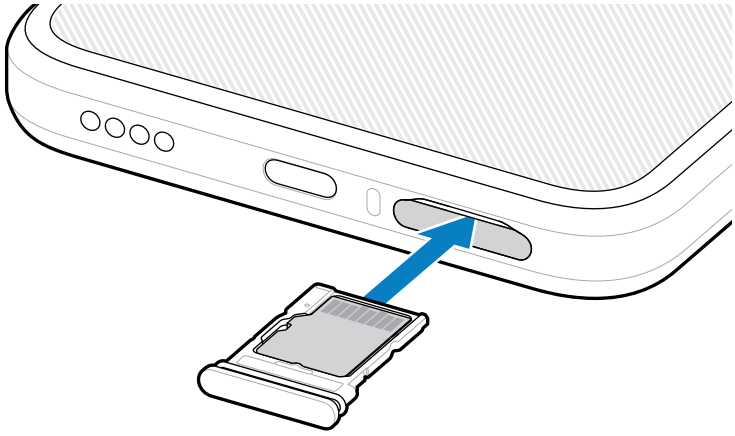
1. Pull the card holder out of the device.



2. Place the microSD card, contact end first, with contacts facing up, into the card holder.



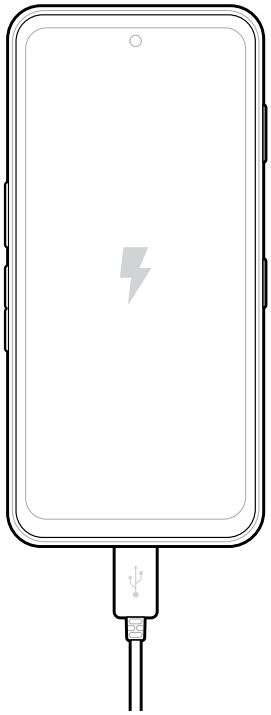
3. Press the card down into the card holder and ensure that it seats properly.
4. Re-install the card holder.



Charging the Device

Fully charge the device before turning it on.

1. Plug the Zebra 45W power adapter (sold separately) or compatible charger into a wall outlet.
2. Connect the USB-C cable to your device.



Protecting Your Device

Securing your device enhances privacy and safeguards personal information from unauthorized access.

Setting a Screen Lock

Protect your device with a screen lock.

1. Go to **Settings** > **Security** > **Screen lock**.

   The **Choose a screen lock** screen displays.
2. Select the backup locking method you want to use for the lock screen.
   - **Swipe**
   - **Pattern**
   - **PIN**
   - **Password**
3. Follow the screen prompt on how to set a lock.

Biometrics Security

Use biometrics to securely unlock your device and log into accounts.

Setting Up Face Authentication

Protect your device with facial authentication.

IMPORTANT: Do not wear a face covering (for example, a mask or sunglasses) when setting up face authentication.

1. Go to **Settings** > **Security** > **Face Unlock**.

   The **Choose a screen lock** screen displays.
2. Select the backup locking method you want to use for the lock screen.
   - **Face Unlock + Pattern**
   - **Face Unlock + PIN**
   - **Face Unlock + Password**
3. Follow the screen prompts to authenticate your face.

When unlocking your device with your face, turn on the display and look at the front camera.

Adding a Fingerprint Lock

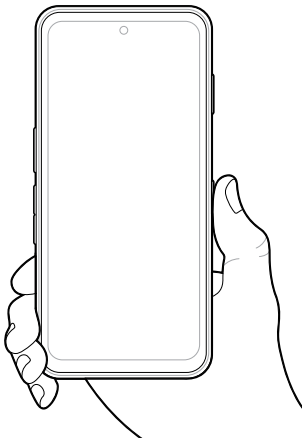
Protect your device with your fingerprint.

1. Go to **Settings** > **Security** > **Fingerprint**.

   The **Choose a screen lock** screen displays.

2. Select the backup locking method you want to use for the lock screen.
   - **Pattern**
   - **PIN**
   - **Password**
3. Follow the screen prompts to register your finger and activate the fingerprint lock.

When unlocking your device with your finger, place the registered finger on the Power button.



Adding an Account

Add a Google™ account to your phone to access your email and contacts. You can also download apps from the Google Play Store.

1. Go to **Settings** > **Passwords & accounts**.
2. Under **Accounts for Owner**, tap **Add account**.
3. Select **Google**.

   The Google Sign-In screen displays.
4. Enter your Google email or phone number that is associated with your Google account and tap **Next**.
5. Enter your Google account password.
6. Follow the setup prompts and tap **Accept**.

   Your Google account is now added to your device. The data associated with that account automatically syncs with your device.

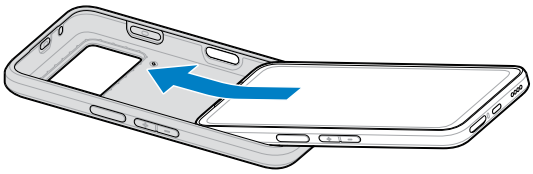
To remove an account, go to the **Passwords & accounts** screen, select the account, and then tap **Remove account**.

Installing a Protective Boot

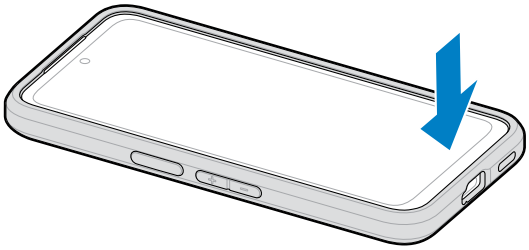
Safeguard your device from damage by installing a protective boot (sold separately).

1. Place the boot on a flat surface.

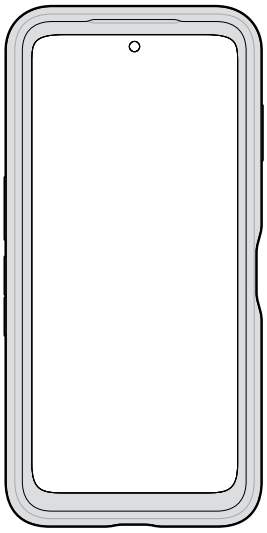
2. Slide the top of the device into the boot.



3. Press the bottom of the device down into the boot until it snaps into place.



The boot is now installed.



Using the Device

Effectively use your device with guidance on essential features and functionalities.

Locking and Unlocking the Device

Use the device's screen lock features to lock (and unlock) the device.

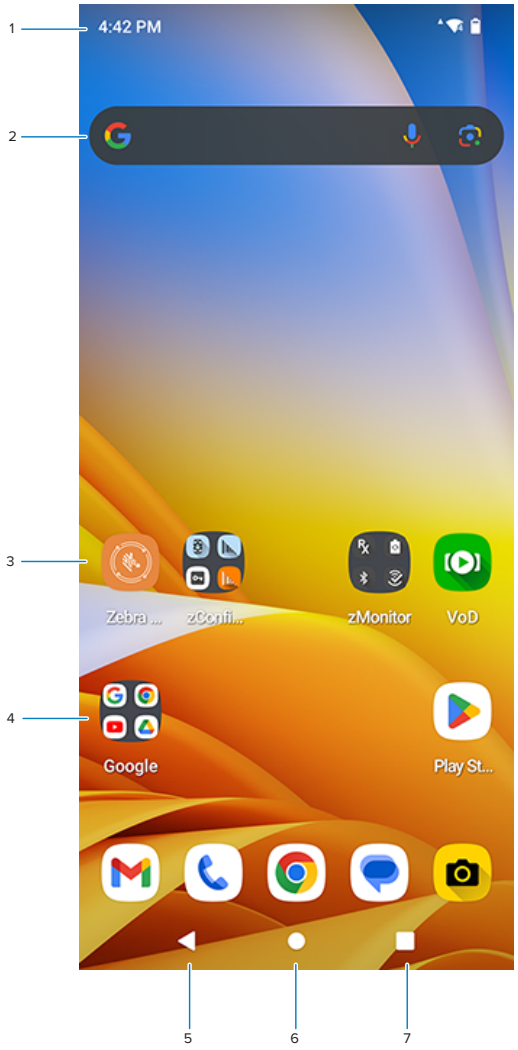
By default, the device automatically locks when the screen times out.

- To lock your device, press the Power button.
- To unlock your device, press the Power button and swipe up.

  If you added a screen lock and/or biometric authentication, follow the screen prompts.

Home Screen

Explore the home screen of the device, including its layout, icons, and customization options.



1	Status Bar
2	Widgets
3	Shortcut to apps
4	Apps folder
5	Back
6	Home
7	Recent (Displays recently used app screens)

For navigation, use a light touch with your finger in selecting or launching an app or item or swiping the screen.

Customizing the Home Screen

Personalize your device by customizing the Home screen with widgets, app icons, and wallpapers.

Wallpaper and Style

Customize the look of the Home screen by selecting a color scheme or pre-installed wallpaper.

1. On the Home screen, tap and hold the screen.
2. Tap **Wallpaper & style**.
3. Tap on one of the options:
   - **Change wallpaper**: Select a photo or a new wallpaper design.
   - **Wallpaper colors**: Scroll through the variety of wallpaper color schemes and select one.
   - **Basic colors**: Scroll through the variety of solid colors and select one.
   - **Dark theme**: Turn on to apply dark mode to your wallpaper.
   - **App grid**: Select from a variety of app organizational layouts.

Widgets

Add widgets to the Home screen for easy access to information or apps.

1. On the Home screen, tap and hold the screen.
2. Tap **Widgets**.

   A list of widgets display.
3. Locate the widget to add to the Home screen and click the down arrow.

   The widget app displays.
4. Tap and hold the widget.

   It automatically displays on the Home screen. To delete the widget from the Home screen, tap and hold the widget and drag it to **Remove**.

Apps and App Folders

Place any apps on the Home screen for easier app access.

1. From the Home screen, swipe up to access the apps screen.

   Go to Apps for more app infomation.
2. Tap and hold an app, and drag it to the Home screen.
3. To group apps in a folder, tap and hold an app, drag it next to another app, and release your hold.

   The apps are now in a folder. To rename the folder, touch **Edit Name**.
4. To delete an app or app folder from the Home screen, tap and hold the app or folder, and drag it to **Remove**.

Home Settings

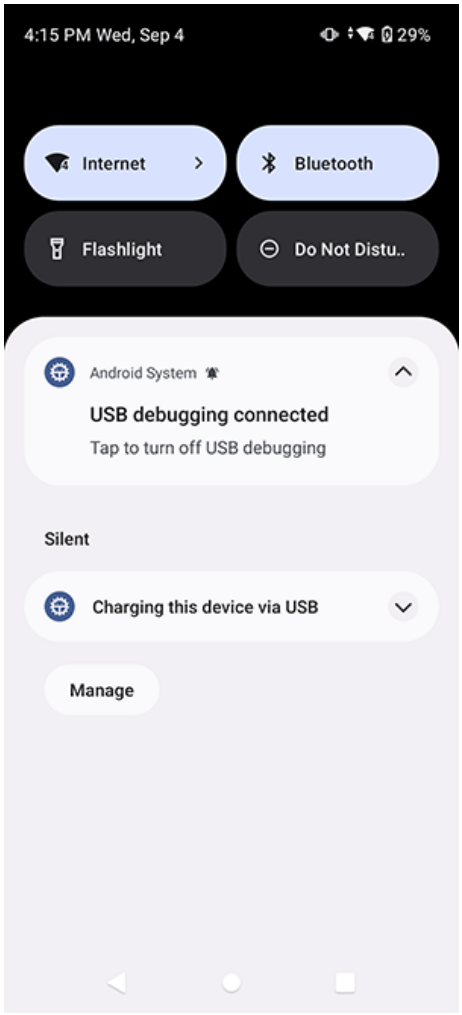
Customize the Home settings.

1. On the Home screen, tap and hold the screen.
2. Tap **Home settings**.
3. Tap to turn on (or off):
   - **Notifications dots**: Dot indicates unread app notifications.
   - **Add app icons to Home screen**: New apps will display on the home screen.
   - **Allow home screen rotation**: When your phone rotates, the screen will also rotate.

Notification Panel

When you receive notifications about, for example, an app, missed call, or device status, they display on top of the screen.

- When a notification displays, swipe down on the screen to reveal the Quick Access Panel.



- Tap the notification to open it.

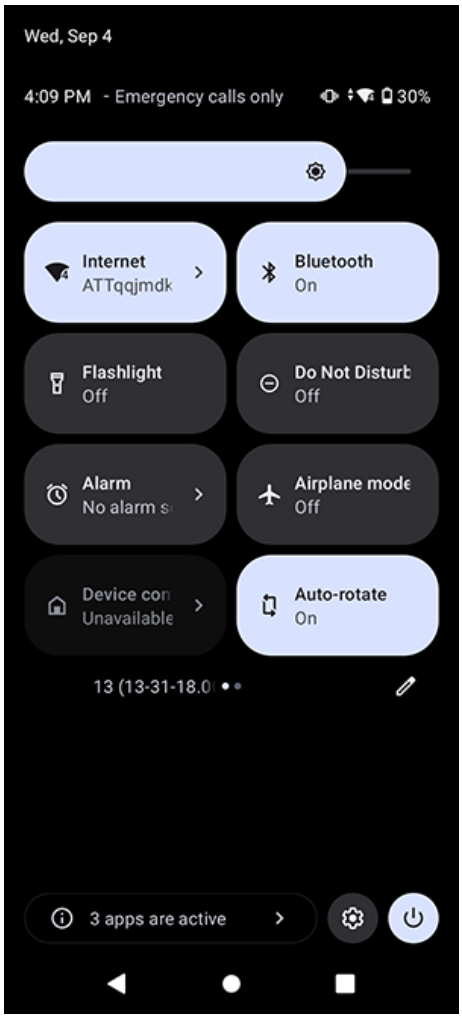
- To delete the notification, swipe the it the left or right.
- To customize the notification settings, tap **Manage**. Go to Notifications for more information on notification settings.

Quick Access Panel

Use the Quick Access panel to access frequently used device functions (for example, Airplane mode).

NOTE: Not all icons are pictured. Icons may vary.

- If the device is unlocked, swipe down twice to reveal the panel.
- If the device is locked, swipe down once. If you added a screen lock, follow the screen prompts to unlock the device.



- Tap the Settings to access the device settings.
- Tap the Power icon to power off, restart, or lock down the device.

Quick Access Panel Icons

Quick Access panel icons indicate frequently used settings (for example, Airplane mode).

To edit the Quick Access Panel icons, touch ✎ to edit, add, or remove settings tiles.

Icon	Description
	Display brightness - Use the slider to decrease or increase the brightness of the screen.
	Internet/Wi-Fi network - Turn Wi-Fi on or off. To open Wi-Fi settings, touch the Wi-Fi network name.
	Bluetooth settings - Turn Bluetooth on or off. To open Bluetooth settings, touch Bluetooth.
	Battery saver - Turn Battery saver mode on or off. When Battery saver mode is on the performance of the device is reduced to preserve battery power (not applicable).
	Invert colors - Invert the display colors.
	Do not disturb - Control how and when to receive notifications.
	Mobile data - Enables or disables data transfer via the WAN. The device is still available for voice calls and texts. To open Mobile data settings, touch and hold (WWAN only).
	Airplane mode - Turn Airplane mode on or off. When Airplane mode is on the device does not connect to Wi-Fi or Bluetooth.
	Auto-rotate - Lock the device's orientation in portrait or landscape mode or set to automatically rotate.
	Flashlight - Turn the flashlight or camera flash on or off. When the flashlight is activated, it stays on unless it is turned off or the camera app is run.
	Location - Enable or disable locationing feature.
	Hotspot - Turn on to share the device's mobile data connection with other devices.
	Data Saver - Turn on to prevent some apps from sending or receiving data in the background.
	Night Light - Tint the screen amber to make it easier to look at the screen in dim light. Set Night Light to turn on automatically from sunset to sunrise, or at other times.

Icon	Description
	Screen Cast - Share phone content on Chromecast or a television with Chromecast built-in. On the Cast screen, check the "enable wireless display" option, and then touch "cast screen" to display a list of devices. Touch a device in the list to begin casting.
	Dark Theme - Toggles dark theme on and off. Dark themes reduce the luminance emitted by the screen, while meeting minimum color contrast ratios. It helps improve visual ergonomics by reducing eye strain, adjusting brightness to current lighting conditions, and facilitating screen use in dark environments, while conserving battery power.
	Focus mode - Turn on to pause distracting apps. To open Focus mode settings, touch and hold.
	Bedtime mode - Turn grayscale on and off. Grayscale turns the screen black and white, reducing phone distractions and improving battery life.
	Screen Record - Makes a video recording of everything that happens on the screen, with options to include audio and screen touches.
	NFC - Enable or disable NFC communication.
	Wallet - Opens Android wallet.
	Scan QR code - Opens the camera app for QR code reading.
	Extra dim - Reduces screen brightness up to 50%.
	Color correction - Enable to help your device compensate for color blindness.
	Live caption - Enables captions to appear for any media playing, regardless of the device's volume level.
	Calculator - Open the calculator app.
	RxLogger - Report an issue.

Status Bar

The Status bar displays the time, notification icons (left side), and status icons (right side).

If there are more notifications than can fit in the Status bar, a dot displays, indicating that more notifications exist. Swipe from the Status bar to open the Notification panel and view all notifications and status.

Figure 1 Notifications and Status Icons

1	Notification icons
2	Status icons

Notification Icons

Notification icons display app, event, and network notifications.

NOTE: Not all icons are listed below.

Icon	Description
	The main battery is low.
	More notifications are available for viewing.
	Data is synching.
	An Open Wi-Fi network is available. The device is not connected to it.
	Audio is playing.
	A problem with sign-in or sync has occurred.
	The device is uploading data.
	Animated: the device is downloading data. Static: the download is complete.
	The device is connected to or disconnected from a virtual private network (VPN).
	Preparing internal storage by checking it for errors.
	USB debugging is enabled on the device.
	A call is in progress.

Icon	Description
	A call is on hold.
	A call was missed.
	The mailbox contains one or more voice messages.
	A wired headset with a boom module is connected to the device.
	A wired headset without a boom module is connected to the device.
	The RxLogger app is running.
	A Bluetooth scanner is connected to the device.
	A ring scanner is connected to the device in HID mode.

Status Icons

Status icons display system information.

NOTE: Not all icons are listed below.

Icon	Description
	Alarm is active.
	Main battery is fully charged.
	Main battery is partially drained.
	Main battery charge is low.
	Main battery charge is very low.
	Main battery is charging.
	All sounds, except media and alarms, are muted. Vibrate mode is active.
	Do Not Disturb mode is active.

Icon	Description
	Airplane Mode is active. All radios are turned off.
	Bluetooth is on.
	Connected to a Bluetooth device.
	Connected to a Wi-Fi network. Indicates the Wi-Fi version number.
	Not connected to a Wi-Fi network or no Wi-Fi signal.
	Connected to an Ethernet network.
	Speaker phone is active.
	Portable Wi-Fi hotspot is active.
	Data saver enabled.
5G	Connected to a 5G network.[1]
4G	Connected to a 4G network (WWAN only).[1]
[1] The cell network icon that displays is dependent on the carrier/network.	

Battery Management

Follow these tips to optimize the battery life.

- Set the screen to turn off after a short period of inactivity.
- Reduce screen brightness.
- Turn off all wireless radios when not in use.
- Display the battery percentage in the status bar.

Also go to Battery Manager App for detailed information on the battery.

Low Battery Notification

When the battery charge level drops below the change level in the following table, the device displays a notice to connect the device to power.

Charge Level Drops Below	Action
18%	Low battery; charge the battery soon.
10%	Very low battery; charge the battery.
0%	Critical; device turns off. Charge the battery.

Setting Screen Timeout

The screen turns off and goes into Suspend mode after the selected period of inactivity.

1. Tap **Settings** > **Display** > **Screen timeout**.
2. Select one of the sleep values:
   - **15 seconds**
   - **30 seconds** (default)
   - **1 minute**
   - **2 minutes**
   - **5 minutes**
   - **10 minutes**
   - **30 minutes**
3. Turn on the **Screen attention** switch to prevent your screen from turning off while you are looking at it.

Setting the Screen Brightness

There are two ways to adjust the screen brightness: Setting the adaptive brightness or manually setting it.

Setting Adaptive Brightness

- Tap **Settings** > **Display**.
- Tap the **Adaptive brightness** switch to enable (default) or disable it.

  The screen brightness will automatically adjust to your environment.

Setting the Brightness Manually

- Tap **Settings** > **Display** > **Brightness level**.
- Slide left or right to adjust the screen brightness level.

Turning On the Battery Saver

Battery Saver turns on Dark theme and limits (or turns off) background activity, some visual effects, certain features, and some network connections.

1. Tap **Settings** > **Battery** > **Battery Saver**.

2. Tap the **Use Battery Saver** switch to enable it.
3. You can also:
   - Tap **Set a schedule** to schedule when the battery saver turns on.
   - Tap the **Turn off when charged** switch to turn off the battery saver when the device charges about 90%.

Displaying the Battery Percentage

Display the battery percantage on the Status bar.

1. Tap **Settings** > **Battery** > **Battery Saver**.
2. Tap the **Battery percentage** switch to enable it.

   The battery precentage displays on the top right of the Status bar.

Interactive Sensor Technology

The device contains interactive sensors that monitor movement, orientation, and ambient light.

To take advantage of these sensors, the apps use API commands. Refer to the Google Android Sensor APIs for more information. For information on the Zebra Android EMDK, go to techdocs.zebra.com.

- Gyroscope - Measures angular rotational velocity to detect rotation of the device.
- Accelerometer - Measures the linear acceleration of movement to detect the orientation of the device.
- Digital Compass - The digital compass or magnetometer provides simple orientation in relation to the Earth's magnetic field. As a result, the device always knows which way is North so it can auto-rotate digital maps, depending on the physical orientation of the device.
- Light Sensor - Detects ambient light and adjusts the screen brightness.
- Pressure Sensor - Detects pressure on the touch screen.

Apps

To access the Apps list, swipe up from the bottom screen.

Apps can be downloaded from the Google Play™ store.

Accessing Apps

Access all apps installed on the device.

1. On the Home screen, swipe up from the bottom of the screen.

   All apps display.
2. Swipe up or down to view the apps installed.
3. You can:
   - Tap an app to open it.
   - In the **Search apps** field, enter a word or words, and, as you type, matching apps display on the screen.

Zebra Apps

This section describes the Zebra apps installed on the device.

Item	Description
	**123RFID Moblie** - Allows RFID tag reading, including inventory, access operation, and tag location.
	**Battery Manager** - Displays battery information (including charge level, status, health, and wear level) and use to place the device in Battery Swap mode when replacing the battery.
	**Bluetooth Pairing Utility** - Pair a Zebra Bluetooth scanner with the device by scanning a barcode.
	**Camera** - Take photos or record videos.

Item	Description
	**DataWedge** - Enables data capture using the imager.
	**DWDemo** - Provides a way to demonstrate the data capture features using the imager.
	**License Manager** - Use to manage software licenses on the device.
	**RxLogger** - Use to diagnose device and app issues.
	**RWDemo** - Uses DataWedge to read RFID tag data.
	**StageNow** - Allows the device to stage a device for initial use by initiating the deployment of settings, firmware, and software.
	**VoD** - Provides a how-to video for proper device cleaning. For Video on Device licensing information, go to learning.zebra.com.
	**Wireless Analyzer** - Diagnostic intelligent app that diagnoses the surrounding areas and displays network stats, such as coverage hole detection or AP in the vicinity. Refer to the Wireless Analyzer Administrator Guide for Android. Only available with Mobility DNA Enterprise License.
	**Zebra Bluetooth Settings** - Use to configure Bluetooth logging.
	**Zebra Data Services** - Use to enable or disable Zebra Data Services. The system administrator sets some options.
	**Zebra Showcase** - Provides a way to experience and learn about Zebra's new or existing capabilities.

Google Apps

This section describes Google apps installed on the device.

Go to support.google.com to learn more about these apps.

Item	Description
	**Calendar** - Schedule meetings and events, assign tasks, and share your schedule.
	**Contacts** - Stores and backs up your contacts.
	**Chrome** - Web browser.
	**Drive** - Store files and open/edit them.
	**Gmail** - Send and receive email.
	**Google** - Find online content and personalize your search with your interests.
	**Google TV** - Browse entertainment options.
	**Maps** - Web mapping platform with satellite imagery, aerial photography, and street maps.
	**Meet** - Online video calls, meetings, and conferencing.
	**Photos** - Edit, organize, search, and backup photos.

Item	Description
	**Play Store** - Find new apps, as well as entertainment and games.
	**YouTube** - Watch and upload videos.
	**YT Music** - Stream and browse playlists, albums, and artists.

Staying Connected

Stay connected with contacts using talk, email, and messaging features.

Making a Call

Contact your service provider for more information on advanced calling features.

1. Tap the **Phone** app.
2. Tap:
   - (Keypad) and enter a number, or
   - (Contacts) and select a contact you want to call.
3. Tap to make the call.

Adjusting the Volume and Ringtone Settings

Adjust the volume settings and browse through the device's library of ringtones.

1. Press either volume button on the left side.

   The quick volume control settings display on the right side.
2. Tap **More** .
3. Slide and adjust the volume for each level:
   - **Media volume**
   - **Call volume**
   - **Ring & notification volume**
   - **Alarm volume**
4. Tap **Settings** > **Phone ringtone** to change the ringtone.
5. Tap **OK** after selecting a ringtone.

Answering or Declining a Call

When receiving a phone call, the screen displays the caller ID and any additional information about the caller that is in the **Contacts** app.

- Touch **Answer** to answer the call or **Decline** to send the caller to voice mail.

  If the screen lock is enabled, the user can answer the call without unlocking the device.

Adding a Contact

Add a contact using the **Contacts** app.

1. Tap the **Contacts** app.
2. Tap +.
3. Enter the contact details.
4. Tap **Save**.

Saving a Contact from Call History

Add a contact using the recent call history from the **Phone** app.

1. Tap the **Contacts** app.
2. Tap **Recents**.
3. Tap the number you want to save.
4. Tap **Add contact**, enter the contact details, and tap **Save**.

Sending Messages

Use the **Messages** app to stay connected by sharing photos, sending emojis, or simply saying hello.

1. Tap the **Messages** app.
2. Tap **Start chat** from the bottom right.
3. From the **To** field, enter the contact's number, or select a contact from your contact list, and then tap ✓.
4. Write a message in the text box.
5. Tap to send the message.

Sending Mail

When using the **Gmail** app for the first time, follow the prompts to set up your email account.

Also go to Adding an Account for more information on setting up your Google account.

1. Tap the **Gmail** app.
2. Tap **Compose**.
3. From the **To** field, enter an email address.

   To add an existing contact, tap **More** , and then **Add from contacts**.

4. Enter a message subject and the email message.
5. Tap ▷ to send the message.

Camera

Capture high-quality pictures and videos using the Camera app.

Images and videos are stored in Google Photos, where you can view and edit them.

Taking Photos and Recording Videos

Take high-quality photos with the Camera app

The back camera features 50 megapixels (MP) with Optical Image Stabilization (OIS), stabilizing the lens to reduce shakiness in images and videos. The default setting is 12.5 MP (go to Camera app settings to update the MP).

1	Sets flash mode.
2	Expands Quick Settings Menu to control flash, timer, white balance, HDR, and Pro Mode.
3	Access detailed camera and video settings.
4	Sets Zoom level.
5	Switch to Photo mode.

6	Tap the Shutter button to take a picture and start/end a video.
7	Switch between the rear and front cameras (selfie mode).
8	Opens the previous photo saved in the Gallery.
9	Switch to Video mode.

Quick Photo and Video Mode Settings

Get quick access to photo and video settings.

In Photo mode, tap to display the setting options.

- **Flash** - Compensates for the lack of brightness when shooting in dimly lit environments. Select **Auto** (default), **On**, or **Off**.
- **Timer** - Set a delay between taking a photo. Select **Off** (default), **3 seconds**, or **10 seconds**.
- **White Balance** - Select how the camera adjusts colors in different kinds of light. Select **Auto** (default), **Incandescent**, or **Fluorescent**.
- **HDR Mode** - Turn on for high-dynamic range (HDR), high-contrast shots.
- **Pro Mode** - Turn on for easy access to ISO, exposure, white balance, and focus advanced settings.

In Video mode, tap to display the setting options.

- **Flash** - Compensates for the lack of brightness when shooting in dimly lit environments. Select **Auto**, **On**, or **Off** (default).
- **Resolution** - Number of pixels in each frame. Select **4K** (4K UHD), **FHD** (1080p, default), or **HD** (720p).
- **Audio** - Enable (default) or disable the audio.
- **White Balance** - Select how the camera adjusts colors in different kinds of light. Select **Auto** (default), **Incandescent**, or **Fluorescent**.

RxLogger

RxLogger is a comprehensive diagnostic tool that provides application and system metrics, and diagnoses device and application issues.

RxLogger logs the following information: CPU load, memory load, memory snapshots, battery consumption, power states, wireless logging, cellular logging, TCP dumps, Bluetooth logging, GPS logging, logcat, FTP push/pull, ANR dumps, etc. All generated logs and files are saved onto flash storage on the device (internal or external).

RxLogger logs the following information: CPU load, memory load, memory snapshots, battery consumption, power states, wireless logging, TCP dumps, Bluetooth logging, logcat, FTP push/pull, ANR dumps, etc. All generated logs and files are saved onto flash storage on the device (internal or external).

RxLogger Configuration

RxLogger is built with an extensible plug-in architecture and comes packaged with a number of plug-ins already built-in. For information on configuring RxLogger, refer to techdocs.zebra.com/rxlogger/.

To open the configuration screen, from the RxLogger home screen, touch **Settings**.

Enabling Logging

1. Swipe the screen up and select .
2. Touch **Start**.

Disabling Logging

1. Swipe the screen up and select .
2. Touch **Stop**.

Extracting Log Files

1. Connect the device to a host computer using a USB connection.
2. Using a file explorer, navigate to the RxLogger folder.
3. Copy the file from the device to the host computer.
4. Disconnect the device from the host computer.

Backing Up Data

RxLogger Utility allows the user to make a zip file of the RxLogger folder in the device, which by default contains all the RxLogger logs stored in the device.

- To save the backup data, touch > **BackupNow**.

RxLogger Utility

RxLogger Utility is a data monitoring application for viewing logs in the device while RxLogger is running. Logs and RxLogger Utility features are accessed using Main Chat Head.

Initiating the Main Chat Head

1. Open **RxLogger**.
2. Touch > **Toggle Chat Head**.

   The Main Chat Head icon appears on the screen.
3. Touch and drag the Main Chat Head icon to move it around the screen.

Removing the Main Chat Head

1. Touch and drag the icon.

   A circle with an X appears.
2. Move the icon over the circle and then release.

Viewing Logs

1. Touch the Main Chat Head icon.

   The RxLogger Utility screen displays.
2. Touch a log to open it.

   Open many logs with each displaying a new Sub Chat Head.
3. If necessary, scroll left or right to view additional Sub Chat Head icons.
4. Touch a Sub Chat Head to display the log contents.

Removing a Sub Chat Head Icon

- To remove a Sub Chat Head icon, press and hold the icon until it disappears.

Backing Up In Overlay View

RxLogger Utility allows the user to make a zip file of the RxLogger folder in the device, which by default contains all the RxLogger logs stored in the device.

The Backup icon is always available in Overlay View.

1. Touch .

   The Backup dialog box appears.
2. Touch **Yes** to create the backup.

Battery Manager

The Battery Manager provides detailed information about the battery.

Battery Manager Information Tab

The Battery Manager displays detailed information about battery charging, health, and status.

Table 1 Battery Icons

Battery Icon	Description
	Battery charge level is between 85% and 100%.
	Battery charge level is between 19% and 84%.
	Battery charge level is between 0% and 18%.

- **Level** - The current battery charge level as a percentage. Displays -% when the level is unknown.
- **Wear** - The health of the battery in graphical form. When the wear level exceeds 80%, the bar color changes to red.

- **Health** - The health of the battery. If a critical error occurs, appears. Touch to view the error description.
  - **Decommission** - The battery is past its useful life and should be replaced. See system administrator.
  - **Good** - The battery is good.
  - **Charge error** - An error occurred while charging. See system administrator.
  - **Over Current** - An over-current condition occurred. See system administrator.
  - **Dead** - The battery has no charge. Replace the battery.
  - **Over Voltage** - An over-voltage condition occurred. See system administrator.
  - **Below Temperature** - The battery temperature is below the operating temperature. See system administrator.
  - **Failure Detected** - A failure has been detected in the battery. See system administrator.
  - **Unknown** - See system administrator.
- **Charge Status**
  - **Not charging** - The device is not connected to AC power.
  - **Not charging** - The device is not charging.
  - **Charging-AC** - The device is connected to AC power and charging or is fast charging via USB.
  - **Charging-USB** - The device is connected to a host computer with a USB cable and charging.
  - **Discharging** - The battery is discharging.
  - **Full** - The battery is fully charged.
  - **Unknown** - The battery status is unknown.
- **Time until Full** - The amount of time until the battery is fully charged.
- **Time since charging** - The amount of time since the device began charging.
- **Time until empty** - The amount of time until the battery is empty.
- **Advanced info** - Touch to view additional battery information.
- **Battery present status** - Indicates that the battery is present.
- **Battery level** - The battery charge level as a percentage of scale.
- **Battery scale** - The battery scale level used to determine battery level (100).
- **Battery voltage** - The current battery voltage in millivolts.
- **Battery temperature** - The current battery temperature in degrees Centigrade.
- **Battery technology** - The type of battery.
- **Battery current** - The average current into or out of the battery over the last second in mAh.
- **Battery manufacture date** - The date of manufacture.
- **Battery serial number** - The battery serial number. The number matches the serial number printed on the battery label.
- **Battery part number** - The battery part number.
- **Battery rated capacity** - Lists the rated capacity of the backup battery in mAh.

- **Battery decommission status** - Indicates if the battery is past its life span.
  - **Battery Good** - The battery is in good health.
  - **Decommissioned Battery** - The battery is past its useful life and should be replaced.
- **Base cumulative charge** - Cumulative charge using Zebra charging equipment only.
- **Battery present capacity** - Maximum amount of charge that could be pulled from the battery under the present discharge conditions if the battery were fully charged.
- **Battery health percentage** - With a range from 0 to 100, this is the ratio of “present_capacity” to “design_capacity” at a discharge rate of “design_capacity”.
- **% decommission threshold** - The default % decommission threshold for a gifted battery as 80%.
- **Battery present charge** - Amount of usable charge remaining in the battery at present under the current discharge conditions.
- **Battery total cumulative charge** - The total accumulated charge in all chargers.
- **Battery time since first use** - The time passed since the battery was placed in a Zebra terminal for the first time.
- **Battery error status** - The error status of the battery.
- **Battery usage number** - The health of the battery as a result of charging and discharging. A high number indicates low battery health.
- **Usage decommission threshold** - When the Battery usage number is greater than or equal to the Usage decommission threshold, the battery is past its useful life and should be replaced.
- **App version** - The application version number.

DWDemo

Use DataWedge Demonstration (DWDemo) to demonstrate data capture functionality. To configure DataWedge, refer to techdocs.zebra.com/datawedge/.

NOTE: The DataWedge app is enabled on the Home screen. To disable this feature, disable the **Launcher** profile in the app. The **Profile0** profile is disabled in EM45, and can be enabled in the DataWedge app.

DWDemo Icons

This table lists the icons available on the **DWDemo** app.

Table 2 DWDemo Icons

Category	Icon	Description
Illumination		Imager illumination is on. Touch to turn illumination off.
Illumination		Imager illumination is off. Touch to turn illumination on.
Data Capture		The data capture function is through the rear camera.

Table 2 DWDemo Icons (Continued)

Category	Icon	Description
Data Capture		A Bluetooth scanner is connected.
Data Capture		A Bluetooth scanner is not connected.
Scan Mode		Imager is in picklist mode. Touch to change to normal scan mode.
Scan Mode		Imager is in normal scan mode. Touch to change to picklist mode.
Menu		Opens a menu to view the application information or to set the application DataWedge profile.

Selecting a Scanner

This section describes selecting a Bluetooth scanner in DWDemo.

NOTE: Go to Data Capture for more information on scanner selections.

1. To select a scanner, touch ⋮ > **Settings** > **Scanner Selection**.
2. Press the programming button (left side) or tap the yellow scan button to capture data.

   The barcode data displays in the field below the yellow scan button.

Settings

There are two ways of accessing the Settings options on the device.

- Swipe down twice from the status bar to open the Quick Access panel and tap .
- Swipe up from the bottom of the screen to view all apps.
  - Search for `Settings` in the Search bar.
  - Scroll down to the **Settings** app.

Searching for a Setting

Find a setting using the Search bar.

1. From the **Settings** app, tap the Search field.
2. Enter keywords (for example, `font` or `Bluetooth`) and then tap a result to go to that setting.

Display

Configure the screen brightness, lock display, display size, font, and more with the Display settings.

Setting the Screen Brightness

There are two ways to adjust the screen brightness: Setting the adaptive brightness or manually setting it.

Setting Adaptive Brightness

- Tap **Settings** > **Display**.
- Tap the **Adaptive brightness** switch to enable (default) or disable it.

  The screen brightness will automatically adjust to your environment.

Setting the Brightness Manually

- Tap **Settings** > **Display** > **Brightness level**.
- Slide left or right to adjust the screen brightness level.

Setting Dark Theme

The Dark Theme setting reduces the light emitted by the device, making the screen easier to read.

1. Tap **Settings** > **Display** > **Dark theme**.
2. Tap the **Dark theme** switch to enable (default) or disable it.
3. To customize when dark theme turns on, tap **Schedule**.
   a) Select one of the schedule values:
   - **None** (default)
   - **Turns on at custom time**
   - **Turns on from sunset to sunrise**

Setting Display Size and Text

Set the screen font and display size.

1. Tap **Settings** > **Display** > **Display size and text**.
2. In **Font size**, slide the circle (or touch - or +) to adjust the text size.
3. In **Display size**, slide the circle (or touch - or +) to adjust the display size.

Other display options include:

4. Tap the **Bold text** switch to improve text visibility.
5. Tap the **High contrast text** switch to change the text color to black or white, which maximizes the contrast with the background.

As you adjust the sizes, the **Preview** section displays the screen changes that will be made. To reset the settings back to the default, tap **Reset settings**.

Setting Touch Panel Mode

The device can detect touches using a finger or a gloved finger.

Types of gloves supported:

- Lightweight nylon gloves (nylon with lycra, black microform coated with palm and fingertips)
- Latex and nitrile gloves
- Knit nylon gloves with nitrile coating

1. Tap **Settings** > **Display** > **Touch panel mode**.
2. Select:
   - **Glove and Finger** to use a gloved finger on the screen.
   - **Finger Only** to use a finger on the screen (default).

Setting Screen Timeout

The screen turns off and goes into Suspend mode after the selected period of inactivity.

1. Tap **Settings** > **Display** > **Screen timeout**.

2. Select one of the sleep values:
   - **15 seconds**
   - **30 seconds** (default)
   - **1 minute**
   - **2 minutes**
   - **5 minutes**
   - **10 minutes**
   - **30 minutes**
3. Turn on the **Screen attention** switch to prevent your screen from turning off while you are looking at it.

Setting Lock Screen Display

The lock screen display setting wakes the screen when notifications are received.

Go to Protecting Your Device and/or Biometrics Security for more information on setting a screen lock.

1. Tap **Settings** > **Display** > **Lock screen**.
2. In the **What to show** and **When to show** sections, enable or disable an option by tapping the switch on or off.

Setting the Screen Saver

The screen saver shows photos, a colorful background, or a clock while charging.

1. Tap **Settings** > **Display** > **Screen saver**, and turn on the switch.
2. Tap **When to start** to select an option:
   - **Never** (default)
   - **While charging**
   - **While docked and charging**
3. Select one of the screen saver options:
   - **Clock** - Tap **Customize** to select clock settings.
   - **Colors** - Displays the color pattern on the device.
   - **Photo Frame** - Tap **Customize** to select photos on the device.
   - **Photo Table** - Tap **Customize** to select photos on the device.
   - **Photos** - Tap **Customize** to select photos on the device.
4. Touch **Preview** to view a preview of the screen saver.

Wireless

This section provides information on wireless features, such as Wi-Fi and network connections, near field communications (NFC), and Bluetooth settings.

Connecting to a Wi-Fi Network

Connect to a Wi-Fi network to access the internet.

1. Tap **Settings** > **Network & internet** > **Internet**.
2. Tap the **Wi-Fi** toggle to enable it, if disabled.

   The device searches and lists all available networks (SSID).
3. To connect to a network:
   - For open networks, tap the profile and then **Connect**.
   - For secure networks, tap the profile, enter the password, and tap **Connect**.

   You are now connected to the Wi-Fi network.

In the Wi-Fi setting field, **Connected** displays, indicating that the device is connected to the network.

Removing a Wi-Fi Network

Remove a Wi-Fi network that automatically connects to your device.

1. Tap **Settings** > **Network & internet** > **Internet**.
2. Tap **Saved Networks**.

   If there is a list of networks, scroll down until you see **Saved Networks**.
3. Tap the name of the network, and then **Forget**.

   The device automatically disconnects from the Wi-Fi network.

Turning on Airplane Mode

Airplane mode turns off all network connections.

When Airplane mode is turned on, you can turn on the Wi-Fi and Bluetooth settings.

- Tap **Settings** > **Network & internet** > **Airplane mode**, and tap the switch to enable (or disable) it.
- You can also turn on Airplane mode from the Quick Access Panel.

Sharing the Mobile Data Connection

The **Tethering & Portable Hotspot** settings allow sharing the mobile data connection with a single computer via USB tethering or Bluetooth tethering.

Share the data connection with up to eight devices at once, by turning it into a portable Wi-Fi hotspot. While the device is sharing its data connection, an icon displays at the top of the screen and a corresponding message appears in the notification list.

Configuring Wi-Fi Hotspot

Configure a Wi-Fi network with a cellular signal

1. Tap **Settings** > **Network & internet** > **Hotspot & tethering** > **Wi-Fi Hotspot**.
2. Tap the **Use Wi-Fi hotspot** toggle to enable it.
3. In the **Hotspot** field, edit the name for the hotspot.
4. Tap **Security** and select a security method from the drop-down list.
   - **WPA3-Personal**, **WPA2/WPA3-Personal**, or **WPA2-Personal**
     a. Tap **Hotspot password**.
     b. Enter a password.
     c. Tap **OK**.
   - **None** - If selected, a password is not required.
5. Tap **AP Band** and select **2.4 Ghz Band** or **5.0 Ghz Band preferred**.
6. If desired, Tap **Turn off hotspot automatically** to turn off Wi-Fi Hotspot when no devices are connected.
7. Select **Additional Settings** to configure the hotspot channel for the selected band, maximum number of clients, and connected clients.

Enabling Wi-Fi Hotspot

After configuring the device as a Wi-Fi hotspot, turn on Wi-Fi hotspot to begin using it.

1. Tap **Settings** > **Network & internet** > **Hotspot & tethering** > **Wi-Fi Hotspot**.
2. Tap the **Use Wi-Fi hotspot** toggle to enable it.

   The device starts broadcasting its Wi-Fi network name (SSID). The Hotspot icon appears in the status bar.

To stop sharing the hotspot, tap the **Use Wi-Fi hotspot** toggle to disable it.

Enabling Bluetooth Tethering

Share your data connection with another device using Bluetooth tethering.

1. Pair the device with the host computer.
2. Tap **Settings** > **Network & internet** > **Hotspot & tethering**.
3. Tap the **Bluetooth tethering** switch to enable it.

Enabling USB Tethering

Share your data connection with another device using a USB cable.

NOTE: USB tethering is not supported on computers running Mac OS. If the computer is running Windows or a recent version of Linux (such as Ubuntu), follow these instructions without any special preparation. If you are running a version of Windows that precedes Windows 7, or some other operating system, you may need to prepare the computer to establish a network connection via USB.

1. Connect the device to a host computer with a USB cable.

   The **Charging this device via USB** displays in the notification panel.
2. Tap **Settings** > **Network & internet** > **Hotspot & tethering**.
3. Tap the **USB tethering** switch to enable it.

Mobile Network Settings

Configure cellular network settings, such as adding or deleting an eSIM, setting data limits, or configuring the access point name.

Data Usage

Data usage refers to the amount of data uploaded or downloaded by the device during a given period. Depending on the wireless plan, you may be charged additional fees when your data usage exceeds your plan's limit.

Data usage settings allow you to:

- Enable Data Saver.
- Set the data usage warning level.
- Set a data usage limit.
- View or restrict data usage by app.
- Identify mobile hotspots and restrict background downloads that may result in extra charges.

Turning on Data Saver

Data Saver reduces data use by preventing selected apps from sending or receiving data in the background.

1. Tap **Settings** > **Network & internet** > **Data Saver**.
2. Tap the **Data Saver** switch to enable it.

   The Data Saver display on the Status bar.
3. To allow certain apps to have unrestricted data usage, tap **Unrestricted data**.

   The apps list displays.
4. Tap an app's switch to enable its unrestricted data usage.

   Also tap an app's switch to disable unrestricted data usage.

Setting Data Warning and Limit

Customize your data warning and limits.

NOTE: This may be different from carrier data.

1. Tap **Settings** > **Network & internet** > **SIMs**.
2. Tap the carrier/mobile network.

   The mobile network's data information displays.

3. Tap **Data warning & limit**.
4. You can:
   - Tap the **Set data warning** switch to enable it. Then, tap **Data warning** to enter the number gigabytes (GB)
   - Tap the **Set data limit** switch to enable it. Then, tap **Data limit** to enter the number of GB.

Configuring the Access Point Name (APN)

Configure the APN information to use the data on a network.

NOTE: Service provider APN data are usually pre-configured in the device. The APN information for all other service providers must be obtained from the wireless service provider.

1. Tap **Settings** > **Network & Internet** > **SIMs**.
2. Tap the carrier/mobile network.

   The mobile network's data information displays.
3. Tap **Access Point Names**.
4. Tap an APN name in the list to edit an existing APN or touch + to create a new APN.
5. Touch each APN setting and enter the appropriate data from the wireless service provider.
6. When finished, tap **OK**.
7. Touch the radio button next to the APN name to start using it.

Activating an eSIM

Use an eSIM on EM45. Before using it, activate the eSIM.

NOTE: Before adding an eSIM, contact your carrier to obtain the eSIM service and its activation or QR code.

1. On the device, establish an internet connection via Wi-Fi or cellular data with an installed SIM card.
2. Go to **Settings** > **Network & internet**.
3. Tap + next to **SIMs** if a SIM card is already installed, or tap **SIMs** if there is no SIM card installed.

   The **Mobile network** screen displays.
4. Select:
   - **MANUAL CODE ENTRY** to enter the activation code, or
   - **SCAN** to scan the QR code to download the eSIM profile.

   The Confirmation dialog box displays.
5. Tap **OK**.
6. Enter the activation code or scan the QR Code.
7. Tap **NEXT**.

   The Confirmation dialog box displays.
8. Tap **ACTIVATE**, and then **Done**.

   The eSIM is now activated.

Deactivating an eSIM

Turn off an eSIM temporarily and re-activate it later.

1. On the device, establish an internet connection via Wi-Fi or cellular data with an installed SIM card.
2. Tap **Settings** > **Network & internet** > **SIMs**.
3. In the **Downloaded SIM** section, tap the name of the eSIM to deactivate.
4. Tap **Use SIM** switch to turn off the eSIM.
5. Tap **Yes**.

   The eSIM is deactivated.

Erasing an eSIM Profile

Erasing an eSIM profile removes it completely from the device.

NOTE: After erasing an eSIM from the device, you cannot use it again.

1. On the device, establish an internet connection via Wi-Fi or cellular data with an installed SIM card.
2. Tap **Settings** > **Network & internet** > **SIMs**.
3. In the **Downloaded SIM** section, Tap the name of the eSIM.
4. Tap **Erase**.

   The **Erase this downloaded SIM?** message displays.
5. Tap **Erase**.

   The eSIM profile is now erased from the device.

Locking the SIM Card

Locking the SIM card with a PIN protects your device from unauthorized use.

It requires entering a PIN every time the device is turned on. If the correct PIN is not entered, only emergency calls are allowed.

1. Tap **Settings** > **Security** > **More security settings** > **SIM card lock** > **Lock SIM card**.
2. Enter the PIN associated with the card, and the tap **OK**.
3. Restart your device.

NFC

Near field communications (NFC) / Hi-Frequency (HF) RFID is a short-range wireless connectivity technology standard that enables a secure transaction between a reader and a contactless smart card.

The technology is based on ISO/IEC 14443 type A and B (proximity), ISO/IEC 15693 (vicinity), and FeliCa standards, using the HF 13.56 MHz unlicensed band.

NOTE: A Mobility DNA Enterprise License is required to pair and connect Zebra ring scanners.

The device supports reader and card emulation modes. With NFC, the device can:

- Read contactless cards, such as contactless tickets, ID cards, and ePassport.
- Read and write information to contactless cards, such as SmartPosters and tickets, and devices with an NFC interface, such as vending machines.
- Read information from supported medical sensors.
- Emulate contactless cards, such as a payment or ticket.

Turning on NFC

Enable NFC to read cards and make contactless payments.

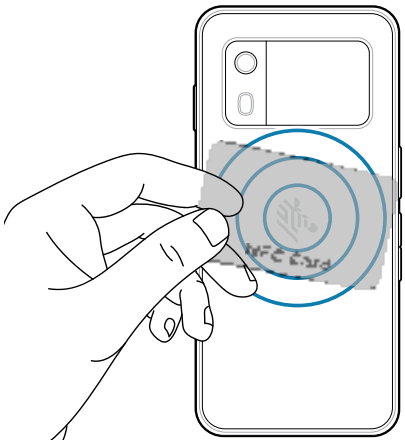
1. Tap **Settings** > **Connected Device** > **Connection Preferences** > **NFC**.
2. Tap the **Use NFC** switch to enable it.

   By default, NFC is enabled.
3. Tap **Contactless payments** to set a payment app (for example, Google Wallet).

Reading NFC Cards

Use an NFC-enabled app to read cards or make payments.

1. Launch an NFC-enabled application.
2. Move the card to the NFC antenna on the back of the device.



3. Move the device close to the NFC card until it detects the card.
4. Hold the card steadily until the transaction is complete (usually indicated by the app).

Enterprise NFC Settings

Improve NFC performance or increase battery life by selecting which NFC features to use on the device.

- **Card Detection Mode** - Select a card detection mode.
  - **Low** - Increases battery life by lowering the NFC detection speed.
  - **Hybrid** - Provides a balance between NFC detection speed and battery life (default).
  - **Standard** - Provides the best NFC detection speed but reduces battery life (Mandatory setting for ECP).
- **Supported Card Technology** - Select an option to detect only one NFC tag type, increasing battery life but reducing detection speed.
  - **ISO 14443 Type A**
  - **ISO 14443 Type B**
  - **FeliCa**
  - **ISO 15693**
- **NFC Debug Logging** - Use to enable or disable debug logging for NFC.
- **Other NFC settings available with Zebra administrator tools (CSP)**:
  - **Communication speed for Type A and Type B cards and ISO 14443-4 cards** - Higher rate improves transaction speed.
  - **NDEF Support** - Improves card detection speed for non-NDEF cards.
  - **CPU Speed** - Boosts CPU speed during short NFC transactions and improves transaction speed.
  - **Card Emulation** - Enables workaround for Card Emulation interoperability issues.
  - **Reset to Factory Defaults** - Default settings are reset to factory defaults.

Bluetooth

Bluetooth devices can communicate without wires, using frequency-hopping spread spectrum (FHSS) radio frequency (RF) to transmit and receive data in the 2.4 GHz Industry Scientific and Medical (ISM) band (802.15.1). Bluetooth wireless technology is specifically designed for short-range (10 m (32.8 ft)) communication and low power consumption.

Devices with Bluetooth capabilities can exchange information (for example, files, appointments, and tasks) with other Bluetooth enabled devices such as printers, access points, and other mobile devices.

The device supports Bluetooth Low Energy. Bluetooth Low Energy is targeted at applications in the healthcare, fitness, security, and home entertainment industries. It provides reduced power consumption and cost while maintaining standard Bluetooth range.

Adaptive Frequency Hopping

Adaptive Frequency Hopping (AFH) is a method of avoiding fixed frequency interferers, and can be used with Bluetooth voice. All devices in the piconet (Bluetooth network) must be AFH-capable in order for AFH to work. There is no AFH when connecting and discovering devices. Avoid making Bluetooth connections and discoveries during critical 802.11b communications.

AFH for Bluetooth consists of four main sections:

- Channel Classification - A method of detecting an interference on a channel-by-channel basis, or pre-defined channel mask.
- Link Management - Coordinates and distributes the AFH information to the rest of the Bluetooth network.
- Hop Sequence Modification - Avoids interference by selectively reducing the number of hopping channels.
- Channel Maintenance - A method for periodically re-evaluating the channels.

When AFH is enabled, the Bluetooth radio “hops around” (instead of through) the 802.11b high-rate channels. AFH coexistence allows enterprise devices to operate in any infrastructure.

The Bluetooth radio in this device operates as a Class 2 device power class. The maximum output power is 2.5 mW and the expected range is 10 m (32.8 ft). A definition of ranges based on power class is difficult to obtain due to power and device differences, and whether in open space or closed office space.

The Bluetooth radio in this device operates as a Class 1 device power class. The maximum output power is 7.5 mW and the expected range is 30 m (98.4 ft). A definition of ranges based on power class is difficult to obtain due to power and device differences, and whether in open space or closed office space.

NOTE: It is not recommended to perform Bluetooth wireless technology inquiry when high rate 802.11b operation is required.

Security

The current Bluetooth specification defines security at the link level. Application-level security is not specified. This allows application developers to define security mechanisms tailored to their specific needs. Link-level security occurs between devices, not users, while application-level security can be implemented on a per-user basis. The Bluetooth specification defines security algorithms and procedures required to authenticate devices, and if needed, encrypt the data flowing on the link between the devices. Device authentication is a mandatory feature of Bluetooth while link encryption is optional.

Pairing of Bluetooth devices is accomplished by creating an initialization key used to authenticate the devices and create a link key for them. Entering a common personal identification number (PIN) in the devices being paired generates the initialization key. The PIN is never sent over the air. By default, the Bluetooth stack responds with no key when a key is requested (it is up to the user to respond to the key request event). Authentication of Bluetooth devices is based upon a challenge-response transaction. Bluetooth allows for a PIN or passkey used to create other 128-bit keys used for security and encryption. The encryption key is derived from the link key used to authenticate the pairing devices. Also, the limited range and fast frequency hopping of the Bluetooth radios make long-distance eavesdropping difficult.

Recommendations are:

- Perform pairing in a secure environment.
- Keep PIN codes private and do not store the PIN codes in the device.
- Implement application-level security.

Pairing a Bluetooth Device

Connect the device with another Bluetooth device, such as headphones.

When paired, the devices will remember each other without entering a password.

1. Tap **Settings** > **Network & internet** > **Connected devices** > **Connection preferences**.

2. Tap the **Use Bluetooth** switch to enable it.
3. Tap **Pair new device**.
4. Tap the device that you want paired under **Available devices**.

   Enter a password or passkey, if required.

   The displays on the Status bar when the device is connected.

Unpairing a Bluetooth Device

When unpaired, the devices will not remember each other and be removed from the saved devices list.

1. Tap **Settings** > **Network & internet** > **Connected devices**.
2. Tap next to the device.
3. Tap **Forget** > **Forget device** to confirm.

   The device is removed from the Saved devices list.

Notifications

Configure notifications for the device and for specific apps.

Setting App Notifications

Configure the notifications settings for an app.

1. Tap **Settings** > **Apps**.
2. You can:
   - Select an app under **Recently opened apps**, or
   - Tap **See all ## apps** (where **##** is the number of apps on EM45) and tap an app from the list.
3. Tap **Notifications**.

   Options vary depending on the app.
4. Tap the switch to enable (or disable) notifications for the app.
5. If enabled, tap the **Allow notification dot** switch to enable it.

Viewing App Notifications

View all app notification settings, as well as configure them.

1. Tap **Settings** > **Notifications** > **App settings**.
2. From the drop-down menu, select:
   - **Most recent** - Apps that were most recently used.
   - **Most frequent** - Apps that are frequently used.
   - **All apps** - All apps that are on the device.
   - **Turned off** - Apps with notifications disabled.
3. Tap an app to configure the notification settings.

Setting Lock Screen Notifications

Control notifications when the device is locked.

1. Tap **Settings** > **Notifications** > **Notifications on lock screen**.
2. Tap one of the following:
   - **Show conversations, default, and silent** (default)
   - **Hide silent conversations and notifications**
   - **Don't show any notifications**

Do Not Disturb

Do Not Disturb mode blocks sounds and notifications.

Additionally, you can add exceptions (for example, what can interrupt Do Not Disturb) for people, apps, and alarms.

1. Tap **Settings** > **Notifications** > **Do Not Disturb**.
2. Tap **Turn on now** to enable blocking sounds and notifications.
3. To customize the settings:
   - **People** - Tap to enable contacts who can still reach you.
   - **Apps** - Tap to enable apps that can still notify you.
   - **Alarms & other interruptions** - Tap to enable sounds for alarms, media, reminders, and calendar events.
   - **Schedules** - Tap **Sleeping** to customize a sleeping schedule, or **Event** to add an event display during this Do Not Disturb mode.

Key Programmer

The Key Programmer allows you to modify the behavior of physical buttons on the device.

Remapping a Button

Buttons on the device can be programmed to perform different functions or as shortcuts to installed apps. For a list of key names and descriptions, go to techdocs.zebra.com.

NOTE: It is not recommended to remap the scan button.

1. Tap **Settings** > **Key Programmer**.

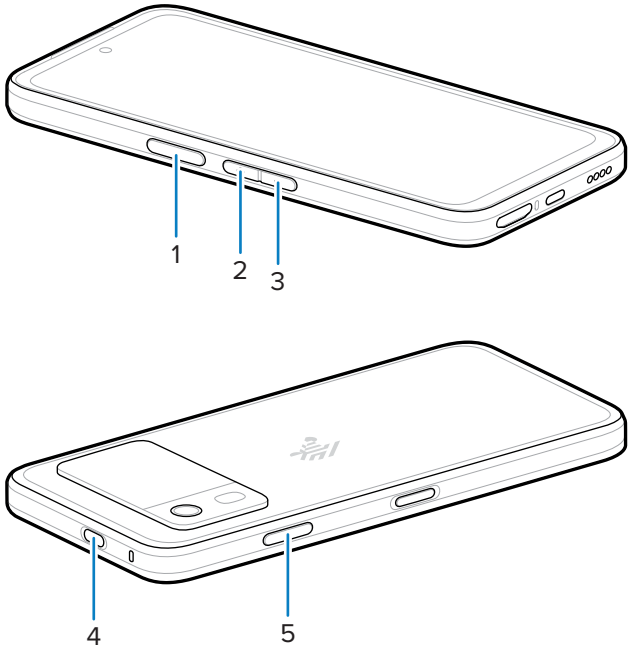
   A list of programmable buttons display.
2. Tap the button to remap.
3. Tap the **Shortcut**, **Keys and Buttons**, or **Trigger** tab that lists the available functions, apps, and triggers.
4. Select a function or app shortcut to map to the button.

NOTE: If you select an app shortcut, the app icon displays next to the button on the **Key Programmer** screen.

Remappable Buttons

List of remappable buttons.

Figure 2 Key Positions



1	SCAN	Left scan button
2	VOLUME_UP	Volume up button
3	VOLUME_DOWN	Volume down button
4	CAMERA	Top button
5	BUTTON_L2	Right button

Data Capture

Capture barcode data using various scanning options.

This device supports data capture using:

- Integrated RFID
- Integrated camera
- Any Zebra Bluetooth Scanners, such as:
  - RS2100 Bluetooth Ring Scanner
  - RS5100 Bluetooth Ring Scanner
  - RS6100 Bluetooth Ring Scanner
  - DS3678 Digital Scanner
  - DS2278 Digital Scanner
  - DS8178 Digital Scanner

Scanning Considerations

Typically, scanning is a simple matter of aim, scan, and decode, with a few quick trial efforts to master it.

However, consider the following to optimize scanning performance:

- Range — Scanners decode optimally over a particular working range — minimum and maximum distances from the barcode. This range varies according to barcode density and scanning device optics. Scan within range for quick and constant decodes; scanning too close or too far away prevents decodes. Move the scanner closer and further away to find the right working range for the barcodes being scanned.
- Angle — Scanning angle is important for quick decodes. When the illumination/flash reflects directly back into the imager, the specular reflection can blind/saturate the imager. To avoid this, scan the barcode so that the beam does not bounce directly back. Do not scan at too sharp an angle; the scanner needs to collect scattered reflections from the scan to make a successful decode. Practice quickly shows what tolerances to work within.
- Hold the device farther away for larger symbols.
- Move the device closer for symbols with bars that are close together.

NOTE: Scanning procedures depend on the app and device configuration. An app may use different scanning procedures from the one listed above.

Scanning with Integrated RFID

EM45's RFID reader uses the device's capabilities to communicate with RFID tags in an open environment. By emitting radio waves, the reader can detect, read, or write data to the tags within its range.

The RFID reader features a built-in encoder/reader, plus:

- RFID tag maximum read range of 1.2 m (4 ft).
- RFID read speed of 20 tags per second.
- RFID is disabled (default) and enabled/disabled via RFID SDK APIs.
- RFID and WWAN can co-exist.

NOTE: When using EM45 near the body in handset mode (for example, you are holding the device to their ear), RFID power will be disabled, per SAR regulations. Refer to the Regulatory Guide fo more information.

Using the 123RFID Mobile app

The 123RFID app demonstrates the device's functionality to read RFID tags.

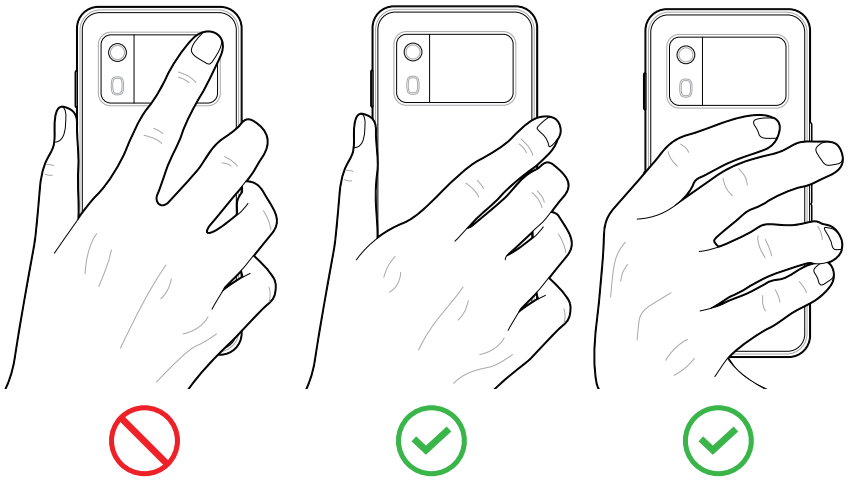
- When opening the 123RFID Mobile app for the first time, it automatically connects to your device. Follow the prompts to complete regulatory requirements.
- From the **RFID** tab, start tag reading from the **Rapid** (Read) or **Inventory** screen.
- For more information on the 123RFID Mobile app, go to the Zebra 123RFID Mobile Support page .

RFID Scanning Considerations

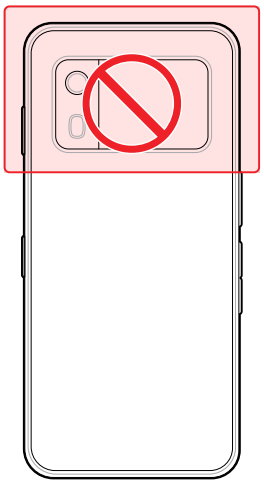
The following hand grips are recommended to ensure the RFID function works properly.

Optimal Hand Grips

NOTE: When holding the device, ensure your hand and fingers are below the RFID antenna.



IMPORTANT: For optimal RFID performance, avoid placing hands and fingers on the RFID antenna.



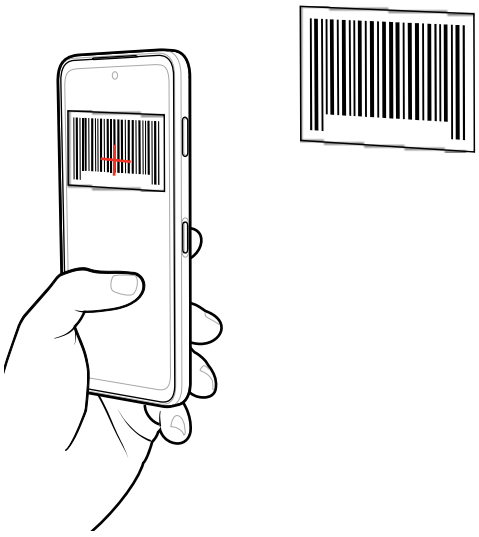
Scanning with Internal Camera

Use the internal camera to capture barcode data.

NOTE: A scan-enabled app is required to read a barcode. The device contains the DWDemo app, which allows you to enable the scanner to decode barcode data and display the barcode content.

1. Ensure an app is open on the device and a text field is focused (text cursor in the text field).

2. Point the camera at a barcode.



NOTE: When Picklist mode is enabled, move the device until the barcode is centered under the red target on the screen.

3. Move the device until the barcode is visible on the screen.

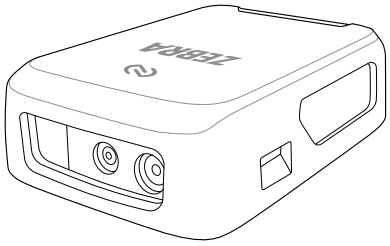
   The captured data appears in the text field.

Scanning with the RS2100 Wearable Scanner

Use the RS2100 Wearable Scanner to capture barcode data.

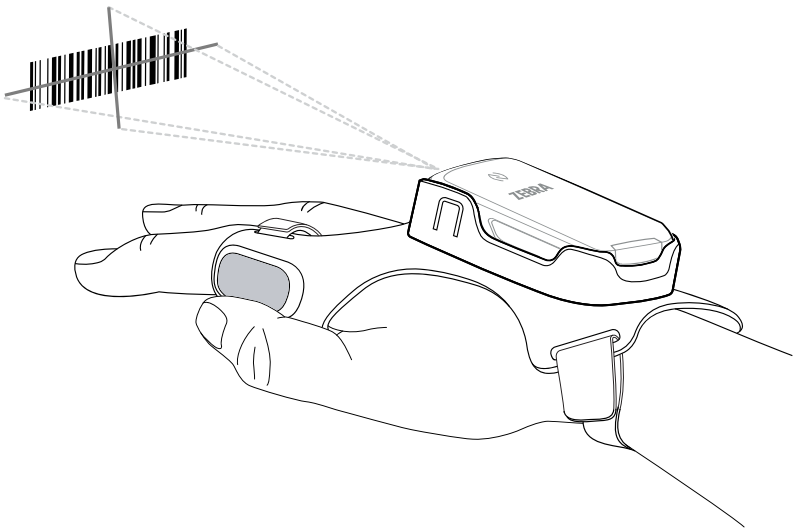
Refer to the RS2100 Wearable Scanner Product Reference Guide for more information.

Figure 3 RS2100 Wearable Scanner



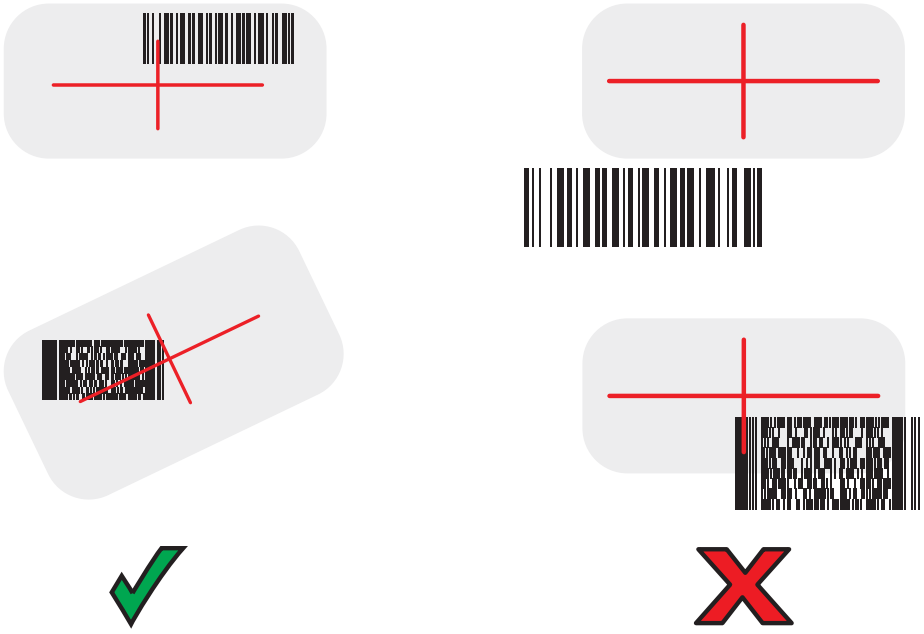
1. Aim the Imager Window at the barcode and press the scan trigger on the Slim Mount.

Figure 4 RS2100 Scanning Barcode



NOTE: Imager decoding usually occurs instantaneously. When the device is in Picklist mode, the scanner does not decode the barcode until the red crosshair touches the barcode.

2. Ensure the barcode is within the area formed in the aiming pattern.

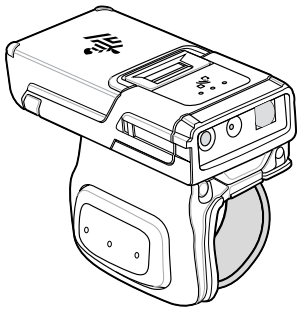


The Status LED illuminates red. Upon successful decoding, the Status LED changes from red to green, and an audible beep sounds.

Scanning with the RS5100 Ring Scanner

Use the RS5100 Ring Scanner to capture barcode data.

Figure 5 RS5100 Ring Scanner

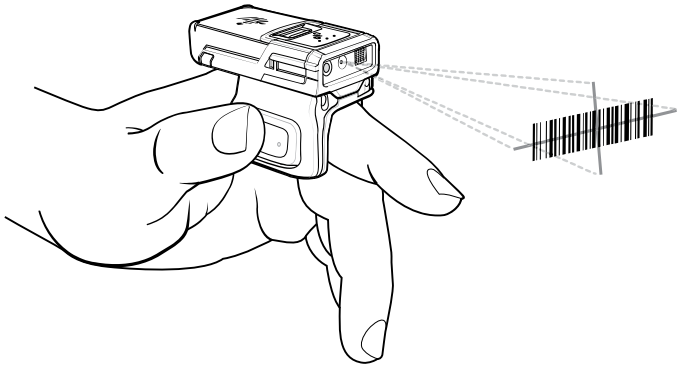


Refer to the RS5100 Ring Scanner Product Reference Guide for more information.

NOTE: To read a barcode, a scan-enabled app is required. The device contains the DataWedge app that allows the user to enable the scanner to decode barcode data and display the barcode content.

To scan with the RS5100:

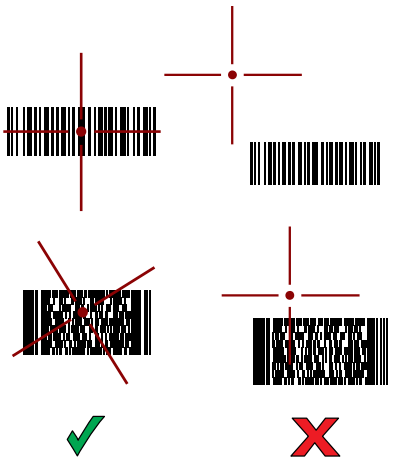
1. Pair the RS5100 with the device.
2. Ensure that an app is open on the device and a text field is in focus (text cursor in text field).
3. Point the RS5100 at a barcode.



4. Press and hold the trigger.

   The red laser aiming pattern turns on to assist in aiming. Ensure the barcode is within the area formed by the cross-hairs in the aiming pattern. The aiming dot increases visibility in bright lighting conditions.

Figure 6 RS5100 Aiming Pattern



When the RS5100 is in Pick List mode, the RS5100 does not decode the barcode until the center of the crosshair touches the barcode.

Figure 7 RS5100 Pick List Mode with Multiple Barcodes in Aiming Pattern

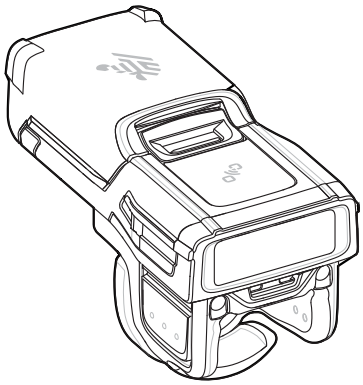
The RS5100 LEDs light green and a beep sounds to indicate the barcode was decoded successfully.

The captured data appears in the text field.

Scanning with the RS6100 Bluetooth Ring Scanner

Use the RS6100 Bluetooth Ring Scanner to capture barcode data.

Figure 8 RS6100 Bluetooth Ring Scanner



Refer to the RS6100 Bluetooth Ring Scanner Product Reference Guide for more information.

NOTE: To read a barcode, a scan-enabled app is required. The device contains the DataWedge app that allows the user to enable the scanner to decode barcode data and display the barcode content.

To scan with the RS6100:

1. Pair the RS6100 with the device.
2. Ensure that an app is open on the device and that a text field is in focus (text cursor in text field).
3. Point the RS6100 at a barcode.

4. Press and hold the trigger.

   The green laser aiming pattern turns on to assist in aiming. Ensure the barcode is within the area formed by the cross-hairs in the aiming pattern. The aiming dot increases visibility in bright lighting conditions.

Figure 9 RS6100 Aiming Pattern

When the RS6100 is in Pick List mode, the RS6100 does not decode the barcode until the center of the crosshair touches the barcode.

Figure 10 RS6000 Pick List Mode with Multiple Barcodes in Aiming Pattern

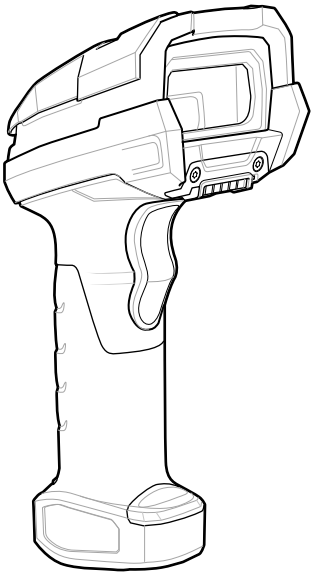
The RS6100 LEDs light green and a beep sounds to indicate the barcode was decoded successfully.

The captured data appears in the text field.

Scanning with the DS3678 Bluetooth Scanner

Use the DS3678 Bluetooth Scanner to capture barcode data.

Figure 11 DS3678 Digital Scanner

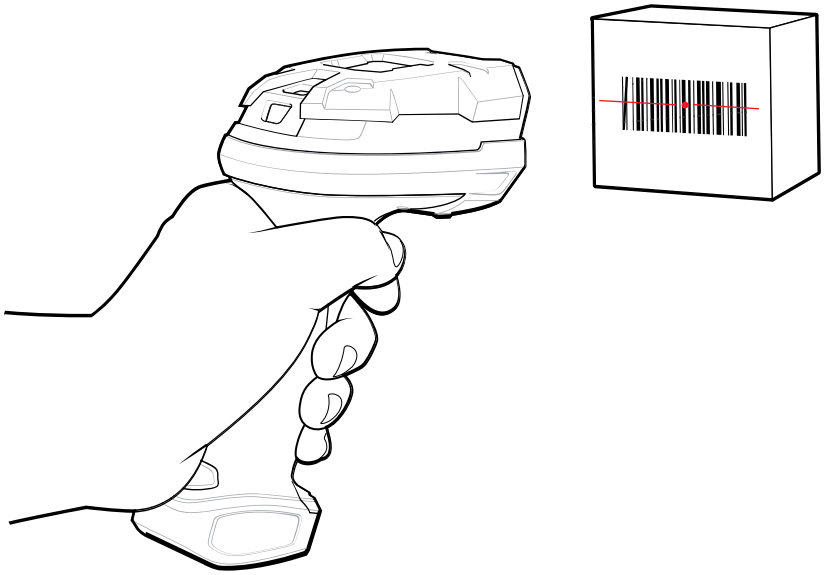


Refer to the DS3678 Product Reference Guide for more information.

NOTE: To read a barcode, a scan-enabled app is required. The device contains the DataWedge app that allows the user to enable the scanner to decode barcode data and display the barcode content.

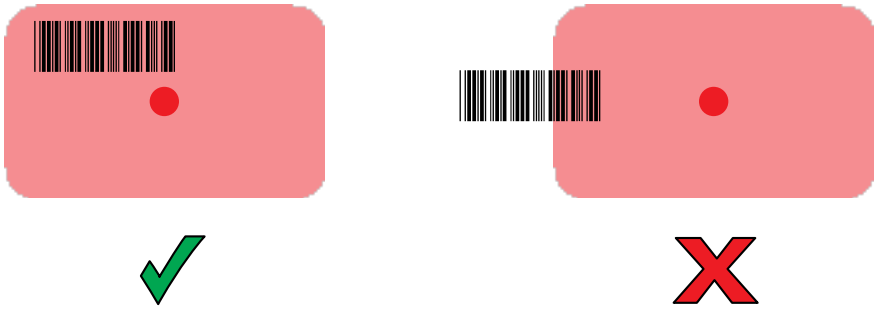
To scan with the DS3678 scanner:

1. Pair the scanner with the device. See Pairing Bluetooth Scanners for more information.
2. Ensure that an app is open on the device and a text field is in focus (text cursor in text field).
3. Point the scanner at a barcode.



4. Press and hold the trigger.

   Ensure the barcode is within the area formed by the aiming pattern. The aiming dot increases visibility in bright lighting conditions.



   The captured data appears in the text field.

Scanning with the DS2278 Digital Scanner

Use the DS2278 Digital Scanner to capture barcode data.

Figure 12 DS2278 Digital Scanner

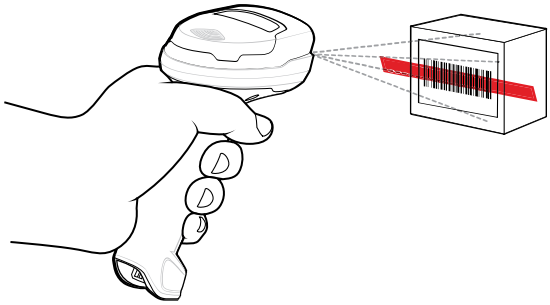
Refer to the DS2278 Digital Scanner Product Reference Guide for more information.

NOTE: To read a barcode, a scan-enabled app is required. The device contains the DataWedge app that allows the user to enable the scanner to decode barcode data and display the barcode content.

To scan with the DS2278:

1. Pair the DS2278 with the device. See Pairing a Bluetooth Scanner for more information.
2. Ensure that an app is open on the device and a text field is in focus (text cursor in text field).

3. Point the scanner at a barcode.



4. Press and hold the trigger.
5. Ensure the aiming pattern covers the barcode.

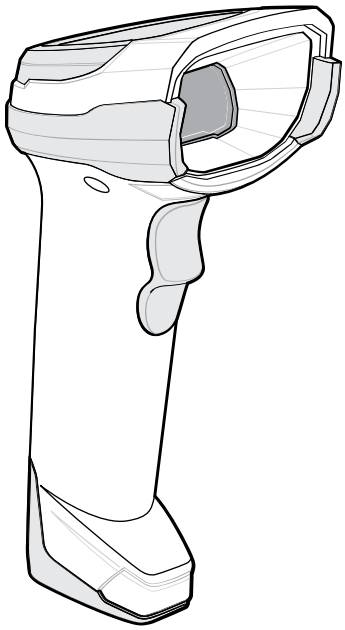
6. Upon successful decode, the scanner beeps and the LED flashes, and the scan line turns off.

   The captured data appears in the text field.

Scanning with the DS8178 Digital Scanner

Use the DS8178 Bluetooth Scanner to capture barcode data.

Figure 13 DS8178 Digital Scanner

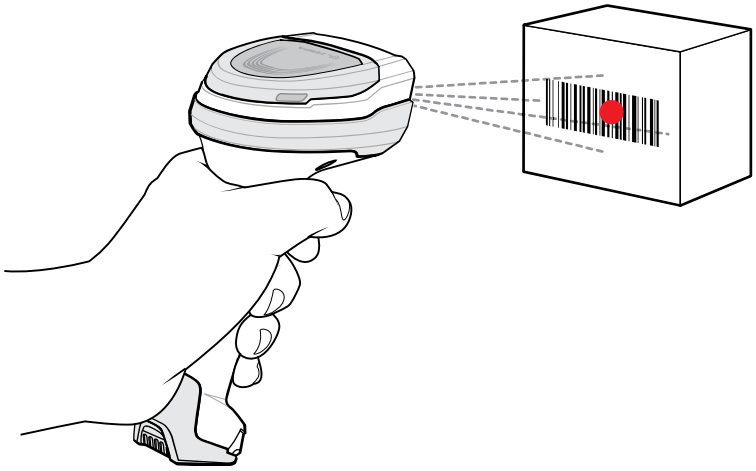


Refer to the DS8178 Digital Scanner Product Reference Guide for more information.

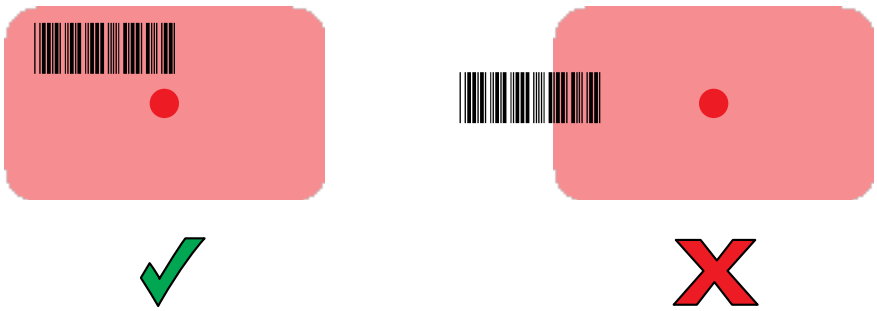
NOTE: To read a barcode, a scan-enabled app is required. The device contains the DataWedge app that allows the user to enable the scanner to decode barcode data and display the barcode content.

To scan with the DS8178 scanner:

1. Pair the scanner with the device. See Pairing Bluetooth Scanners for more information.
2. Ensure that an app is open on the device and a text field is in focus (text cursor in text field).
3. Point the scanner at a barcode.



4. Press and hold the trigger.
5. Ensure the barcode is within the area formed by the aiming pattern. The aiming dot increases visibility in bright lighting conditions.



6. Upon successful decode, the scanner beeps and the LED flashes, and the scan line turns off. The captured data appears in the text field.

Pairing a Bluetooth Ring Scanner

Before using a Bluetooth Ring Scanner with the device, connect the device to the Ring Scanner.

To connect the Ring Scanner to the device, use one of the following methods:

- Near Field Communication (NFC)
- Simple Serial Interface (SSI)

- Bluetooth Human Interface Device (HID) Mode

Pairing Using SSI

Pair the ring scanner with EM45 using SSI.

1. Swipe up from the bottom of the Home screen and tap the **Bluetooth Pairing Utility** icon.
2. Using the ring scanner, scan the barcode on the screen.

   The ring scanner emits a string of high/low/high/low beeps. The Scan LED flashes green indicating that the ring scanner is attempting to establish a connection with the device. When a connection is established, the Scan LED turns off, and the ring scanner emits one string of low/high beeps.

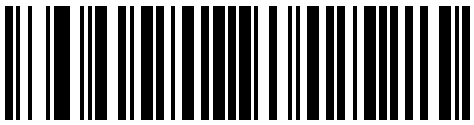
   A notification displays on the Notification panel and the icon displays in the Status bar.

Pairing the Ring Scanner Using Bluetooth HID

Pair the ring scanner with EM45 using HID.

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 m (32.8 ft) of one another.
4. Place the Ring Scanner in HID mode. If the ring scanner is already in HID mode, skip to step 5.
   a) Remove the battery from the ring scanner.
   b) Press and hold **Restore**.
   c) Install the battery onto the Ring Scanner.
   d) Hold the Restore key for about five seconds until a chirp is heard and the Scan LEDs flash green.
   e) Scan the barcode below to place the ring scanner in HID mode.

   Figure 14 RS6000 Bluetooth HID Barcode

5. Remove the battery from the ring scanner.
6. Re-install the battery into the ring scanner.
7. Swipe down from the Status bar to open the Quick Access panel and then tap .
8. Tap **Connected devices**.
9. Tap **Pair new device**. The device begins searching for discoverable Bluetooth devices in the area and displays them under **Available devices**.
10. Scroll through the list and select the ring scanner.

    The device connects to the Ring Scanner and **Connected** displays below the device name. The Bluetooth device is added to the **Paired devices** list and a trusted (“paired”) connection is established.

    A notification displays on the Notification panel and the icon displays in the Status bar.

Pairing in SSI Mode Using NFC

EM45 pairs with NFC-capable ring scanners in SSI mode using NFC.

1. Ensure that NFC is enabled on the device.
2. Align the NFC icon on the ring scanner with the NFC antenna on the back of the device.

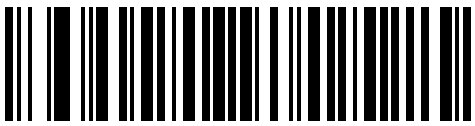
   A notification displays on the device screen and the displays in the Status bar.

Pairing in HID Mode Using NFC

EM45 pairs NFC-capable ring scanners HID Mode using NFC.

1. Ensure that NFC is enabled on the device.
2. Ensure that Bluetooth is enabled on both devices.
3. Ensure that the Bluetooth device to discover is in discoverable mode.
4. Ensure that the two devices are within 10 meters (32.8 feet) of one another.
5. Place the Ring Scanner in Human Interface Device (HID) mode. If the Ring Scanner is already in HID mode, skip to step 6.
   a) Remove the battery from the Ring Scanner.
   b) Press and hold the Restore key.
   c) Install the battery onto the Ring Scanner.
   d) Keep holding the Restore key for about five seconds until a chirp is heard and the Scan LEDs flash green.
   e) Scan the barcode below to place the Ring Scanner in HID mode.

   Figure 15 Bluetooth HID Barcode

   
6. Remove the battery from the Ring Scanner.
7. Re-install the battery into the Ring Scanner.
8. Align the NFC icon on the Ring Scanner with the NFC icon on the device.

A notification displays on the device screen and the appears in the Status bar.

Pairing a Bluetooth Scanner

Before using a Bluetooth scanner with the device, connect the device to the Bluetooth scanner.

Connect the scanner to the device using one of the following methods:

- Simple Serial Interface (SSI) mode
- Bluetooth Human Interface Device (HID) mode

Pairing Using SSI

Pair the ring scanner with EM45 using SSI.

1. Swipe up from the bottom of the Home screen and tap the **Bluetooth Pairing Utility** icon.
2. Using the ring scanner, scan the barcode on the screen.

   The ring scanner emits a string of high/low/high/low beeps. The Scan LED flashes green indicating that the ring scanner is attempting to establish a connection with the device. When a connection is established, the Scan LED turns off, and the ring scanner emits one string of low/high beeps.

   A notification displays on the Notification panel and the icon displays in the Status bar.

Pairing Using Bluetooth HID

Pair EM45 using Bluetooth HID.

1. Remove the battery from the scanner.
2. Replace the battery.
3. After the scanner reboots, scan the barcode below to place the scanner in HID mode.

4. On the device, swipe down from the Status bar to open the Quick Access panel and then touch .
5. Tap **Connected devices**.
6. Tap **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 XXXXX xxxxxx, where XXXXX is the scanner and xxxxxx is the serial number.

   The device connects to the scanner, the scanner beeps once and **Connected** appears below the device name. The Bluetooth device is added to the **Paired devices** list and a trusted (paired) connection is established.

Supported Decoders

This section provides the supported decoders for each data capture option.

Camera Supported Decoders

This section lists the supported decoders for the internal camera.

Table 3 Camera-Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X

Table 3 Camera-Supported Decoders (Continued)

Decoder	Default State	Decoder	Default State	Decoder	Default State
Canadian Postal	O	GS1 DataBar	X	QR Code	X
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	O
Codabar	X	GS1 DataBar Limited	O	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O
Code 39	X	HAN XIN	O	UPCA	X
Code 93	O	Interleaved 2 of 5	O	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	X	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O
Dutch Postal	O	Maxicode	X	US Postnet	O
DotCode	X	MicroPDF	O		
EAN13	X	MicroQR	O		

Key: X = Enabled, O = Disabled, - = Not Supported

DS8178 Supported Decoders

This section lists the supported decoders for the DS8178 Digital scanner.

Table 4 DS8178 Digital Scanner-Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X
Canadian Postal	—	GS1 DataBar	X	QR Code	X
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	—
Codabar	X	GS1 DataBar Limited	O	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O

Table 4 DS8178 Digital Scanner-Supported Decoders (Continued)

Decoder	Default State	Decoder	Default State	Decoder	Default State
Code 39	X	HAN XIN	—	UPCA	X
Code 93	O	Interleaved 2 of 5	O	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	X	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O
Dutch Postal	O	Maxicode	X	US Postnet	O
DotCode	O	MicroPDF	O		
EAN13	X	MicroQR	O		

Key: X = Enabled, O = Disabled, — = Not Supported

DS2278 Supported Decoders

This section lists the supported decoders for the DS2278 Digital Scanner.

Table 5 DS2278 Digital Scanner-Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X
Canadian Postal	—	GS1 DataBar	X	QR Code	X
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	O
Codabar	X	GS1 DataBar Limited	O	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O
Code 39	X	HAN XIN	—	UPCA	X
Code 93	O	Interleaved 2 of 5	O	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	X	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O

Table 5 DS2278 Digital Scanner-Supported Decoders (Continued)

Decoder	Default State	Decoder	Default State	Decoder	Default State
Dutch Postal	O	Maxicode	X	US Postnet	O
DotCode	O	MicroPDF	O		
EAN13	X	MicroQR	O		

Key: X = Enabled, O = Disabled, — = Not Supported

DS3678 Supported Decoders

This section lists the supported decoders for the DS3678 scanner.

Table 6 DS3678-Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X
Canadian Postal	—	GS1 DataBar	X	QR Code	X
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	—
Codabar	X	GS1 DataBar Limited	O	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O
Code 39	X	HAN XIN	O	UPCA	X
Code 93	O	Interleaved 2 of 5	O	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	X	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O
Dutch Postal	O	Maxicode	X	US Postnet	O
DotCode	O	MicroPDF	O		
EAN13	X	MicroQR	O		

Key: X = Enabled, O = Disabled, — = Not Supported

RS2100/RS5000X Supported Decoders

This section lists the supported decoders for the RS2100 and RS5000X Wearable Scanner.

Table 7 RS2100 and RS5000X Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X
Canadian Postal	O	GS1 DataBar	X	QR Code	X
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	O
Codabar	X	GS1 DataBar Limited	X	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O
Code 39	X	HAN XIN	O	UPCA	X
Code 93	X	Interleaved 2 of 5	X	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	O	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O
Dutch Postal	O	Maxicode	O	US Postnet	O
DotCode	O	MicroPDF	O		
EAN13	X	MicroQR	X		

Key: X = Enabled, O = Disabled, - = Not Supported

RS5100 Supported Decoders

This section lists the supported decoders for the RS5100 Ring Scanner.

Table 8 RS5100-Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X
Canadian Postal	O	GS1 DataBar	X	QR Code	X

Table 8 RS5100-Supported Decoders (Continued)

Decoder	Default State	Decoder	Default State	Decoder	Default State
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	O
Codabar	X	GS1 DataBar Limited	O	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O
Code 39	X	HAN XIN	O	UPCA	X
Code 93	O	Interleaved 2 of 5	O	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	X	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O
Dutch Postal	O	Maxicode	X	US Postnet	O
DotCode	O	MicroPDF	O		
EAN13	X	MicroQR	O		

Key: X = Enabled, O = Disabled, - = Not Supported

RS6100 Supported Decoders

Lists the supported decoders for the RS6100 Ring Scanner.

Table 9 RS6100 Supported Decoders

Decoder	Default State	Decoder	Default State	Decoder	Default State
Australian Postal	O	EAN8	X	MSI	O
Aztec	X	Grid Matrix	O	PDF417	X
Canadian Postal	O	GS1 DataBar	X	QR Code	X
Chinese 2 of 5	O	GS1 DataBar Expanded	X	Decoder Signature	O
Codabar	X	GS1 DataBar Limited	O	TLC 39	O
Code 11	O	GS1 Datamatrix	O	Trioptic 39	O
Code 128	X	GS1 QRCode	O	UK Postal	O
Code 39	X	HAN XIN	O	UPCA	X

Table 9 RS6100 Supported Decoders (Continued)

Decoder	Default State	Decoder	Default State	Decoder	Default State
Code 93	O	Interleaved 2 of 5	O	UPCE0	X
Composite AB	O	Japanese Postal	O	UPCE1	O
Composite C	O	Korean 3 of 5	O	US4state	O
Discrete 2 of 5	O	MAIL MARK	X	US4state FICS	O
Datamatrix	X	Matrix 2 of 5	O	US Planet	O
Dutch Postal	O	Maxicode	X	US Postnet	O
DotCode	O	MicroPDF	O		
EAN13	X	MicroQR	O		

Key: X = Enabled, O = Disabled, - = Not Supported

Application Deployment

This section provides steps on device security, app development, and app management.

NOTE: Ensure that the date is set correctly before installing certificates or when accessing secure websites.

Security

The current Bluetooth specification defines security at the link level. Application-level security is not specified. This allows application developers to define security mechanisms tailored to their specific needs. Link-level security occurs between devices, not users, while application-level security can be implemented on a per-user basis. The Bluetooth specification defines security algorithms and procedures required to authenticate devices, and if needed, encrypt the data flowing on the link between the devices. Device authentication is a mandatory feature of Bluetooth while link encryption is optional.

Pairing of Bluetooth devices is accomplished by creating an initialization key used to authenticate the devices and create a link key for them. Entering a common personal identification number (PIN) in the devices being paired generates the initialization key. The PIN is never sent over the air. By default, the Bluetooth stack responds with no key when a key is requested (it is up to the user to respond to the key request event). Authentication of Bluetooth devices is based upon a challenge-response transaction. Bluetooth allows for a PIN or passkey used to create other 128-bit keys used for security and encryption. The encryption key is derived from the link key used to authenticate the pairing devices. Also, the limited range and fast frequency hopping of the Bluetooth radios make long-distance eavesdropping difficult.

Recommendations are:

- Perform pairing in a secure environment.
- Keep PIN codes private and do not store the PIN codes in the device.
- Implement application-level security.

Secure Certificates

If the VPN or Wi-Fi networks rely on secure certificates, obtain the certificates and store them in the device's secure credential storage before configuring access to the VPN or Wi-Fi networks.

If downloading the certificates from a web site, set a password for the credential storage. The device supports X.509 certificates saved in PKCS#12 key store files with a .p12 extension (if key store has a .pfx or other extension, change to .p12).

The device also installs any accompanying private key or certificate authority certificates contained in the key store.

Installing a Secure Certificate

If required by the VPN or Wi-Fi network, install a secure certificate on the device.

1. Copy the certificate from the host computer to the root of the microSD card or the device's internal memory.
2. Go to **Settings**.
3. Touch **Security** > **More security settings** > **Encryption & credentials**.
4. Touch **Install a certificate** and select the type of certificate.
5. Navigate to the location of the certificate file.
6. Touch the filename of the certificate to install.
7. If prompted, enter the certificate's password and touch **OK**.
8. Enter a name for the certificate and in the Credential use drop-down, select **VPN and apps** or **Wi-Fi**.
9. Touch **OK**.

The certificate can now be used when connecting to a secure network. For security, the certificate is deleted from the microSD card or internal memory.

Configuring Credential Storage Settings

Configure credential storage from the device settings.

1. Go to **Settings**.
2. Touch **Security** > **More security settings** > **Encryption & credentials**.
3. Select an option.
   - Touch **Trusted credentials** to display the trusted system and user credentials.
   - Touch **User credentials** to display user credentials.
   - Touch **Install a certificate** to install a secure certificate from the microSD card or internal storage. Go to Installing a Secure Certificate.
   - Touch **Clear credentials** to delete all secure certificates and related credentials.

Android Development Tools

Development tools for Android include Android Studio, EMDK for Android, and StageNow.

Developer Options

Developer options are a hidden menu of advanced settings.

1. Tap **Settings** > **About phone**.
2. Scroll down to **Build number**, and then tap it seven times (or as prompted by the device).

   You are now a developer! displays.
3. Tap **Back**.

4. Tap **System** > **Developer options**.

   The **Developer options** are now displayed.

Android Development Workstation

Android development tools are available at developer.android.com.

To start developing applications for the device, download Android Studio. Development can take place on a Microsoft® Windows®, Mac® OS X®, or Linux® operating system.

Applications are written in Java or Kotlin, but compiled and executed in the Dalvik virtual machine. Once the Java code is compiled cleanly, the developer tools make sure the application is packaged properly, including the AndroidManifest.xml file.

Android Studio contains a full featured IDE as well as SDK components required to develop Android applications.

EMDK for Android

EMDK for Android provides developers with tools to create business applications for enterprise mobile devices. It is designed for use with Google's Android Studio and includes Android class libraries such as Barcode, sample applications with source code, and the associated documentation.

EMDK for Android allows applications to take full advantage of the capabilities that Zebra devices have to offer. It embeds Profile Manager technology within Android Studio IDE, providing a GUI-based development tool designed specifically for Zebra devices. This allows fewer lines of code, resulting in reduced development time, effort, and errors.

For more information, go to techdocs.zebra.com.

StageNow for Android

StageNow is Zebra's next-generation Android Staging Solution built on the MX platform. It allows quick and easy creation of device profiles and can deploy to devices simply by scanning a barcode or reading a tag.

The StageNow Staging Solution includes the following components:

- The StageNow Workstation tool installs on the staging workstation (host computer) and lets the administrator easily create staging profiles for configuring device components, and perform other staging actions such as checking the condition of a target device to determine suitability for software upgrades or other activities. The StageNow Workstation stores profiles and other created content for later use.
- The StageNow Client resides on the device and provides a user interface for the staging operator to initiate staging. The operator uses one or more of the desired staging methods (print and scan a barcode or read an NFC tag) to deliver staging material to the device.

For more information, go to techdocs.zebra.com.

ADB USB Setup

To use the Android Debug Bridge (ADB), install the development SDK on the host computer then install the ADB and USB drivers.

Before installing the USB driver, make sure that the development SDK is installed on the host computer. Go to developer.android.com/sdk/index.html for details on setting up the development SDK.

The ADB and USB drivers for Windows and Linux are available on the Zebra Support Central web site at zebra.com/support. Download the ADB and USB Driver Setup package. Follow the instructions with the package to install the ADB and USB drivers for Windows and Linux.

Enabling USB Debugging

The USB debugging is disabled by default.

Ensure Developer Options are enabled.

1. Tap **System** > **Developer options**.
2. Slide the **USB debugging** switch to the **On** position.

   The **Allow USB debugging?** message displays on the device.
3. Tap **OK**.
4. Connect the device to the host computer using the rugged charge/USB cable.

   The **USB debugging connected** message displays on the device.

   If the device and host computer are connected for the first time, the **Allow USB debugging?** dialog box with the **Always allow from this computer** check box displays. Select the check box, if required.
5. Tap **OK** or **Allow**.
6. On the host computer, navigate to the **platform-tools** folder and open a command prompt window.
7. Type `adb devices`.

   The following displays:

   ```
   List of devices attached          XXXXXXXXXXXXXXX device
   ```

   Where XXXXXXXXXXXXXXX is the device number.

NOTE: If device number does not display, ensure the ADB drivers are installed properly.

8. Tap **Home**.

Entering Android Recovery Manually

Many of the update methods discussed in this section require putting the device into Android Recovery mode. If you are unable to enter Android Recovery mode through `adb` commands, use the following steps to manually enter Android Recovery mode.

1. Press and hold the Power button until the menu appears.
2. Touch **Restart**.
3. Press and hold the PTT button until the device vibrates.

   The System Recovery screen appears.

Android System Update

System Update packages can contain either partial or complete updates for the operating system. Zebra distributes the System Update packages on the Zebra Support & Downloads website. Perform a system update using either a microSD card or using ADB.

Performing a System Update Using ADB

Use ADB to perform a system update.

Go to the Zebra Support & Downloads website at zebra.com/support and download the appropriate System Update package to a host computer.

1. Connect the device to a host computer using a USB-C cable.
2. Tap **Settings** > **System** > **Developer options**.
3. Tap the **USB debugging** switch to enable it.
4. If the device and host computer are connected for the first time, the **Allow USB debugging?** dialog box with the **Always allow from this computer** check box displays. Select the check box, if required
5. Tap **OK**.
6. On the host computer, navigate to the **platform-tools** folder and open a command prompt window.
7. Enter `adb devices`.

   If the device number does not display, ensure the ADB drivers are installed properly
8. Enter `adb reboot recovery`.
9. Press **Enter**.

   The System Recovery screen displays on the device.
10. Press **Volume Up** and **Volume Down** to navigate to **Apply upgrade from ADB**
11. Press **Power**.
12. On the host computer command prompt window type `adb sideload <file>`.

    where: <file> = the path and filename of the zip file
13. Press **Enter**.

    The System Update installs (progress displays as a percentage in the Command Prompt window), and then the System Recovery screen displays on the device.
14. Press **Power** to reboot the device.

NOTE: If you cannot enter Android Recovery mode through the ADB command, go to Entering Android Recovery Manually.

Performing a System Update Using a microSD Card

Before performing a system update, it is strongly recommended to format the microSD card on the device.

Go to the Zebra Support & Downloads website at zebra.com/support and download the appropriate System Update package to a host computer.

1. Copy the System Update ZIP file to the root of the microSD card.
   - Copy the ZIP file to a microSD card using a host computer, then install the microSD card into the device. Go to Installing the microSD Card for more information.
   - Connect the device (with a microSD card already installed) to the host computer, copy the ZIP file to the microSD card, and then disconnect the device from the host computer.
2. Press and hold **Power** until the menu displays.
3. Tap **Restart**.
4. Press and hold **PTT** until the device vibrates.

   The System Recovery screen displays.
5. Press **Volume Up** and **Volume Down** to navigate to **Apply upgrade from SD card**.
6. Press **Power**.
7. Press **Volume Up** and **Volume Down** to navigate to the System Update file.
8. Press **Power**.

   The System Update installs, and then the device returns to the Recovery screen.
9. Press **Power** to reboot the device.

Verifying a System Update Installation

Ensure the system update was successful by verifying the build number.

1. Tap **Settings** > **About phone** > **Build number**.
2. Ensure the build number matches the new System Update package file number.

Android Enterprise Reset

An Enterprise Reset erases all user data in the /data partition, including data in the primary storage locations (/sdcard and emulated storage), while preserving the contents of the /enterprise folder and its subfolders. The contents of the /enterprise folder and its subfolders are preserved. Zebra distributes the Enterprise Reset packages on the Zebra Support & Downloads website.

Before performing an Enterprise Reset, provision all necessary configuration files and restore after the reset.

Performing an Enterprise Reset Using ADB

Perform an enterprise reset using ADB.

1. Connect the cable or cradle to the host computer.
2. Go to **Settings**.
3. Touch **System** > **Developer options**.
4. Slide the **USB debugging** switch to the **ON** position.
5. If the device and host computer are connected for the first time, the **Allow USB debugging?** dialog box with the **Always allow from this computer** check box displays. Select the check box, if required.
6. Touch **OK**.

7. On the host computer, navigate to the **platform-tools** folder and open a command prompt window.
8. Type `adb reboot recovery`.
9. Press **Enter**.

   The System Recovery screen appears on the device.
10. Press **Volume Up** and **Volume Down** to navigate to **Apply upgrade from ADB**.
11. Press **Power**.
12. On the host computer command prompt window type `adb sideload <file>`

    where: <file> = the path and filename of the zip file.
13. Press **Enter**.

    The Enterprise Reset package installs and then the System Recovery screen appears on the device.
14. Press **Power** to reboot the device.

NOTE: If you cannot enter Android Recovery mode through the ADB command, go to Entering Android Recovery Manually.

Performing an Enterprise Reset Using microSD Card

It is strongly recommended that, before use, you format the microSD card on the device.

1. Copy the Enterprise Reset zip file to the root of the microSD card.
   - Copy the zip file to a microSD card using a host computer and then install the microSD card into the device.
   - Connect the device with a microSD card already installed to the host computer and copy zip file to the microSD card.
2. Press and hold **Power** until the menu appears.
3. Touch **Restart**.
4. Press and hold **PTT** until the device vibrates.

   The System Recovery screen appears.
5. Press **Volume Up** and **Volume Down** to navigate to **Apply upgrade from SD card**.
6. Press **Power**.
7. Press **Volume Up** and **Volume Down** to navigate to the Enterprise Reset file.
8. Press **Power**.

   The Enterprise Reset occurs and then the device returns to the Recovery screen.
9. Press **Power** to reboot the device.

Android Factory Reset

A Factory Reset erases all data in the /data and /enterprise partitions in internal storage and clears all device settings. A Factory Reset returns the device to the last installed operating system image. To revert to a previous operating system version, re-install that operating system image. Zebra distributes the Factory Reset packages on the Zebra Support & Downloads website.

Performing a Factory Reset Using ADB

Perform a Factory Reset using ADB.

Go to the Zebra Support & Downloads website at zebra.com/support and download the appropriate Factory Reset file to a host computer.

1. Connect EM45 to a host computer.
2. Tap **Settings**.
3. Tao **System** > **Developer options**.
4. Slide the **USB debugging** switch to the **ON** position.
5. If the device and host computer are connected for the first time, the **Allow USB debugging?** dialog box with the **Always allow from this computer** check box displays. Select the check box, if required.
6. Tap **OK**.
7. Type `adb reboot recovery`.
8. Press **Enter**.

   The System Recovery screen appears on the device.
9. Press **Volume Up** and **Volume Down** buttons to navigate to **Apply upgrade from ADB**.
10. Press **Power**.
11. On the host computer command prompt window type`adb sideload <file>`.

    where: <file> = the path and filename of the zip file.
12. Press **Enter**.

    The Factory Reset package installs, and then the System Recovery screen appears on the device.
13. Press **Power** to reboot the device.

Performing a Factory Reset Using microSD Card

Perform a factory reset using a microSD card.

Go to the Zebra Support & Downloads website at zebra.com/support and download the appropriate Factory Reset file to a host computer.

1. Copy the Factory Reset zip file to the root of the microSD card.
   - Copy the zip file to a microSD card using a host computer and then installing the microSD card into the device. See Getting Started for more information.
   - Connect the device with a microSD card already installed to the host computer, copy zip file to the microSD card, and then disconnect the device from the host computer.
2. Press and hold **Power** until the menu appears.
3. Touch **Restart**.
4. Press and hold **PTT** until the device vibrates.

   The System Recovery screen appears.
5. Press **Volume Up** and **Volume Down** to navigate to **Apply upgrade from SD card**.
6. Press **Power**.

7. Use **Volume Up** and **Down Arrow** to navigate to the Factory Reset file.
8. Press **Power**.

   The Factory Reset occurs, and then the device returns to the Recovery screen.
9. Press **Power** to reboot the device.

Android Storage

The device contains multiple types of file storage.

- Random Access Memory (RAM)
- On-device Storage
- Internal storage
- External storage (microSD card)
- Enterprise folder.

NOTE: It is recommended to install a microSD card on the device due to limited internal storage space.

Random Access Memory

Executing programs use RAM to store data. Data stored in RAM is lost upon a reset.

The operating system manages how applications use RAM. It only allows applications and component processes and services to use RAM when required. It may cache recently used processes in RAM, so they restart more quickly when opened again, but it will erase the cache if it needs the RAM for new activities.

The screen displays the amount of used and free RAM.

- **Performance** - Indicates memory performance.
- **Total memory** - Indicates the total amount of RAM available.
- **Average used (%)** - Indicates the average amount of memory (as a percentage) used during the period of time selected (default - 3 hours).
- **Free** - Indicates the total amount of unused RAM.
- **Memory used by apps** - Touch to view RAM usage by individual apps.

Viewing Memory

View the amount of memory used and free RAM.

1. Tap **Settings** > **System** > **Developer options**.
2. Tap **Memory**.

External Storage

The device can have a removable microSD card. The microSD card content can be viewed and files copied to and from when the device is connected to a host computer. The device can have a removable USB drive. The USB drive content can be viewed and files copied to and from when the device is connected to a host computer.

Formatting a microSD Card as Portable Storage

Format a microSD card as portable storage for EM45.

1. Tap **SD card**.
2. Tap ⋮ > **Storage settings**.
3. Tap **Format** > **ERASE & FORMAT** > **DONE**.

Formatting a microSD Card as Internal Memory

Format a microSD card as internal memory to increase the actual amount of the device's internal memory. Once formatted, the microSD card can only be read by EM45.

1. Tap **SD card**.
2. Tap ⋮ > **Storage settings**.
3. Tap **Format as internal** > **ERASE & FORMAT** > **DONE**.

Maintenance and Troubleshooting

This section includes instructions on cleaning and storing the device, using advanced developer options, and provides troubleshooting solutions for potential problems during operation.

Maintaining the Device

For a trouble-free service, observe the following tips when using EM45.

- To avoid scratching the screen, use only your fingers. Never use a pen, pencil, or other sharp object on the surface of the EM45's screen.
- EM45's touch-sensitive screen is made of glass. Do not drop the device or subject it to strong impact.
- Protect EM45 from temperature extremes. Do not leave it on the dashboard of a car on a hot day, and keep it away from heat sources.
- Do not store EM45 in any dusty, damp, or wet location.
- Use a soft lens cloth to clean EM45. If the surface of the device screen becomes soiled, clean it with a soft cloth moistened with an approved cleanser. For a list of approved cleansers, go to Approved Cleaning and Disinfectant Agents.

Display Best Practices

When a static image displays for extended periods of time, you may see a faint remnant of that image even after a new image displays. This is called image retention.

To prevent image retention:

- Set the display to turn off after a few minutes of idle time.
- Rotate background images periodically.
- Turn off the display when the device is not in use.
- While the static image is active, use a screen saver with one or more of the following characteristics:
  - The background color is set to black.
  - A small moving image (approximately 2% of the display size).
  - The image moves randomly across the screen.

Best Practices for Enterprise Mobile Computing Devices Operating in Hot Environments and Direct Sunlight

Exceeding the operating temperature by external hot environments will cause the device's thermal sensor to notify the user of a shutdown of the WAN modem or shutdown the device until the device's temperature returns to the operational temperature range.

- Avoid direct sunlight to the device - The easiest way to prevent overheating is to keep the device out of direct sunlight. The device absorbs light and heat from the sun and retains it, getting hotter the longer it remains in sunlight and heat.
- Avoid leaving the device in a vehicle on a hot day or hot surface - Similar to leaving the device out in direct sunlight, the device will also absorb the thermal energy from a hot surface or when left on the dashboard of a vehicle or seat, getting warmer the longer it remains on the hot surface or inside the hot vehicle.
- Turn off unused apps on the device. Open, unused apps running in the background can cause the device to work harder, which in turn may cause it to heat up. This will also improve your mobile computer device's battery life performance.
- Avoid turning your screen brightness up - Just the same as running background apps, turning your brightness up will force your battery to work harder and create more heat. Minimizing your screen brightness may extend operating the mobile computer device in hot environments.

Battery Safety Guidelines

To use the device safely, you must follow the battery guidelines.

- The area where the units are charged should be clear of debris and combustible materials or chemicals. Particular care should be taken when the device is charged in a non-commercial environment.
- Follow the battery and charging guidelines found in this guide.
- Improper battery use may result in a fire, explosion, or other hazard.
- To charge the mobile device battery, the ambient battery and charger temperatures must be from 5°C to 40°C (41°F to 104°F).
- Do not disassemble, open, crush, bend, deform, puncture, or shred the battery.
- Severe impact from dropping any battery-operated device on a hard surface could cause the battery to overheat.
- Do not short-circuit a battery or allow metallic or conductive objects to contact the battery terminals.
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.
- Do not leave or store the equipment in or near areas that might get very hot, such as in a parked vehicle or near a radiator or other heat source. Do not place a battery into a microwave oven or dryer.
- Battery usage by children should be supervised.
- Please follow local regulations to properly dispose of used rechargeable batteries.
- Do not dispose of batteries in a fire.
- Seek medical advice immediately if a battery has been swallowed.
- In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with water for 15 minutes, and seek medical advice.

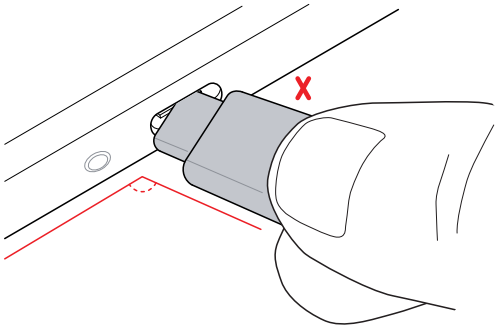
- If you suspect damage to your equipment or battery, contact Customer Support to arrange for inspection.

Properly Plugging and Unplugging a USB-C Cable

This section outlines the proper procedures for safely connecting and disconnecting a USB Type-C cable to prevent damage to the device's connector port.

When connecting/disconnecting the cable from your device:

- Visually inspect the input connector for damage, foreign materials, or signs of moisture.
- Avoid inserting or removing the cable in a non-horizontal direction (for example, upward, downward, left, right, or forward direction). Keep it straight.



- Avoid inserting or removing the cable in a forceful manner.
- Avoid wiggling the cable when plugged into the port.
- Avoid pulling or tugging the cable when plugged into the port.

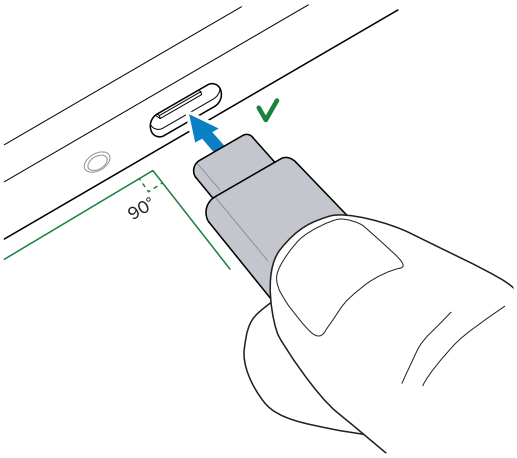
Connecting a USB-C Cable

It is important to correctly align the cable in a straight line when inserting it into the device to prevent damage to the connector or cable.

Examine the device's USB-C port and USB-C connector for damage. If either is damaged, stop using it and get it serviced or repaired.

1. Using your index finger and thumb, hold both sides of the USB-C cable.

2. Insert the cable straight into the port and not at an angle.

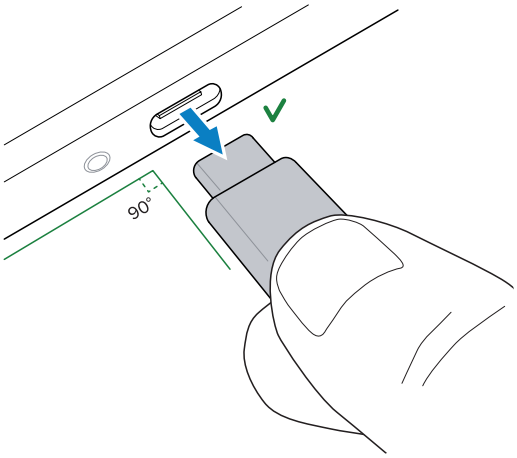


Disconnecting a USB-C Cable

It is important to correctly align the cable in a straight line when removing it from the device to prevent damage to the connector or cable.

Examine the device's USB-C port and USB-C connector for damage. If either is damaged, stop using it and get it serviced or repaired.

1. Using your index finger and thumb, hold both sides of the USB-C cable where it is connected to the device.
2. Gently pull it straight out and not at an angle.



Cleaning Instructions

Use caution and avoid damaging the device when using cleaning materials.

CAUTION: Always wear eye protection. Read the warning label on alcohol product before using. If you have to use any other solution for medical reasons please contact the Global Customer Support Center 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.

Approved Cleaning and Disinfectant Agents

100% of the active ingredients in any cleaner must consist of isopropyl alcohol or mild dish soap.

NOTE: Use pre-moistened wipes and do not allow liquid cleaner to pool.

WARNING: Do not use Clorox Disinfecting Wipes, hydrogen peroxide cleaners, or bleach products.

Approved cleaners:

- Purell Ethanol Wipes
- 409 Glass Cleaner
- Windex Blue

Cleaning and Disinfecting Guidelines

- Turn off and/or disconnect the device from AC/DC power.
- Use only approved cleaning and disinfecting agents specified for the device to avoid damage to it or its accessories.
- Follow the manufacturer's directions on the approved cleaning and disinfecting agent for using their product properly and safely.
- Use pre-moistened wipes or dampen a soft sterile cloth (not wet) with the approved agent. Never spray or pour chemical agents directly onto the device.
- Use a moistened cotton-tipped applicator to reach tight or inaccessible areas. Be sure to remove any lint the applicator leaves behind.
- Do not allow liquid to pool.
- Allow the device to air dry before use or dry with a soft lint-free cloth or towelette. Ensure the electrical contacts are fully dry before reapplying power.

Cleaning Frequency

The cleaning frequency is at the customer's discretion due to the varied environments in which the mobile devices are used and may be cleaned as frequently as required. When dirt is visible, it is recommended to clean the mobile device to avoid the build-up of particles, which makes the device more difficult to clean later on.

For consistency and optimum image capture, it is recommended to clean the camera window periodically especially when used in environments prone to dirt or dust.

Special Cleaning Notes

Do not handle the device while wearing vinyl gloves containing phthalates. Remove vinyl gloves and wash hands to eliminate any residue left from the gloves.

If products containing any of the harmful ingredients listed above are used prior to handling the device, such as a hand sanitizer that contains ethanolamine, hands must be completely dry before handling the device to prevent damage to the device.

Cleaning the Device

This section describes how to clean the housing, display, and camera for the device.

Housing

Thoroughly wipe the housing, including all buttons and triggers, using an approved alcohol wipe.

Display

The display can be wiped down with an approved alcohol wipe, but care should be taken not to allow any pooling of liquid around the edges of the display. Immediately dry the display with a soft, non-abrasive cloth to prevent streaking.

Camera Window

Wipe the camera window periodically with lens tissue or other material suitable for cleaning optical material, such as eyeglasses.

Shelf Mode

Devices left in storage for extended periods should be put in Shelf Mode to preserve the battery and prevent it from depleting. A device in shelf mode maintains a functional battery level for up to a year.

This mode is particularly useful for devices stored for an extended period. The conditions for storing a device in Shelf Mode are:

- The device's battery level is between 60 - 80 %.

NOTE: The recommended battery state of charge (SOC) is the optimal range to guarantee battery life in shelf mode at room temperature.

- The storage temperature is < 40°C (104°F).

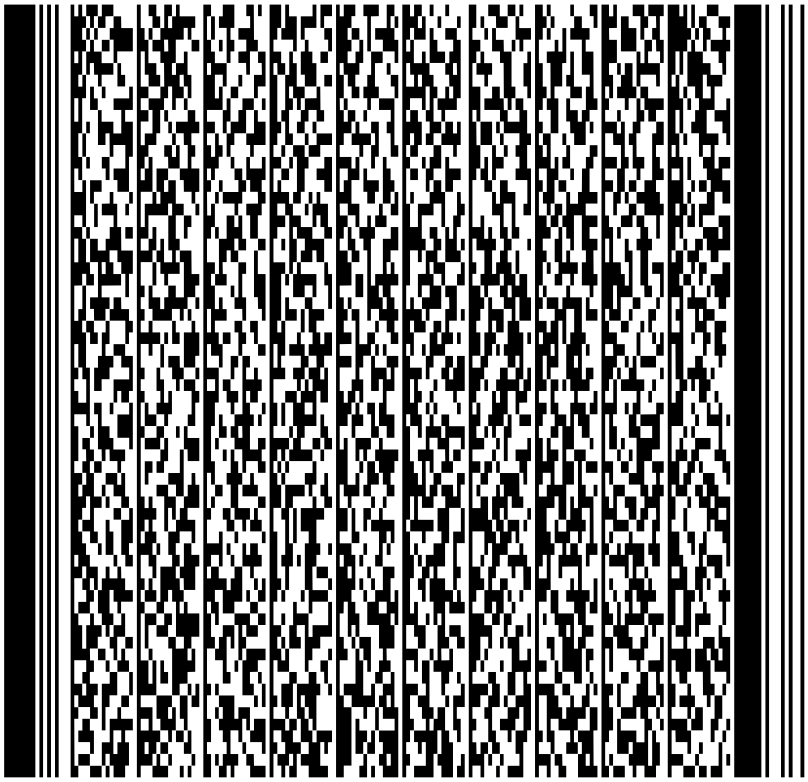
Using Shelf Mode

Enter and exit shelf mode using the StageNow app.

Minimum compatible MXMF version: 13.4.

1. Open the StageNow app.

2. Scan the barcode.



The device disables BLE beaconing and executes a graceful shutdown.

Place the device on a charger or power it on to exit shelf mode.

Troubleshooting

This section provides information for resetting and troubleshooting the device.

Resetting the Device

There are two reset functions: soft reset and hard reset.

Performing a Soft Reset

Perform a soft reset if applications stop responding.

1. Press and hold Power until the menu appears.
2. Touch **Restart**.

   The device reboots.

Performing a Hard Reset

Perform a hard reset if the device stops responding

CAUTION: Performing a hard reset with a microSD card installed in the device may cause damage or data corruption to the microSD card.

1. Simultaneously press the Power and Volume Up buttons for at least 4 seconds.
2. When the screen turns off, release the buttons.

   The device reboots.

EM45 Troubleshooting

Solutions to common EM45 issues.

Table 10 Troubleshooting EM45

Problem	Cause	Solution
When pressing the Power button the device does not turn on.	The battery is not charged.	Charge the battery in the device.
	System crash.	Perform a hard reset.
The battery did not charge.	Battery failed.	Replace battery. If the device still does not operate, perform a reset.
	Extreme battery temperature.	The battery does not charge if the ambient temperature is below 5°C (41°F) or above 40°C (104°F).
Cannot see characters on display.	The device is not powered on.	Press the Power button.
During data communication with a host computer, no data transmitted, or transmitted data was incomplete.	The device was disconnected from the host device during communication.	Reattach the communication cable and re-transmit.
	Incorrect cable configuration.	See the system administrator.
	Communication software was incorrectly installed or configured.	Perform setup.
During data communication over Wi-Fi, no data was transmitted, or transmitted data was incomplete.	The Wi-Fi radio is not on.	Turn on the Wi-Fi radio.
	You moved out of range of an access point.	Move closer to an access point.
During data communication over Bluetooth, no data transmitted, or transmitted data was incomplete.	The Bluetooth radio is not on.	Turn on the Bluetooth radio.
	You moved out of range of another Bluetooth device.	Move within 10 m (32.8 ft) of the other device.
During data communication over WAN, no data transmitted, or transmitted data was incomplete.	You are in an area of poor cellular service.	Move into an area that has better service.
	APN is not set up correctly.	See the system administrator for APN setup information.
	SIM card not installed properly.	Remove and re-install the SIM card.
	The data plan is not activated.	Contact your service provider and ensure that your data plan is enabled.
No sound.	The volume setting is low or turned off.	Adjust the volume.

Table 10 Troubleshooting EM45 (Continued)

Problem	Cause	Solution
The device shuts off.	The device is inactive.	The display turns off after a period of inactivity. Set this period to 15 seconds, 30 seconds, 1, 2, 5, 10 or 30 minutes.
	The battery is depleted.	Replace the battery.
Tapping the window buttons or icons does not activate the corresponding feature.	The device is not responding.	Reboot the device.
A message displays stating that the device's memory is full.	Too many files are stored on the device.	Delete unused memos and records. Save these records on the host computer (or use an SD card for additional memory).
	Too many applications are installed on the device.	Remove user-installed applications on the device to recover memory. Select **Settings** > **Apps**. Select the app in the list and select **UNINSTALL**.
The device does not decode with a reading barcode.	The scanning application is not loaded.	Load a scanning application on the device or enable the DataWedge app. See the system administrator.
	Unreadable barcode.	Ensure the symbol is not defaced.
	The distance between the camera and barcode is incorrect.	Place the device within the proper scanning range.
	The device is not programmed for the barcode.	Program the device to accept the type of barcode being scanned. Refer to the EMDK or DataWedge application.
	The device is not programmed to generate a beep.	If the device does not beep on a good decode, set the application to generate a beep on a good decode.
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 m (32.8 ft).
	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. If needed, refer to the device’s user documentation for help.
Cannot unlock the device.	The user entered an incorrect password.	If you enter an incorrect password five times, you are requested to wait for 30 seconds when using a PIN, Pattern, or Password.