



**Advanced Card Systems Ltd.**  
Card & Reader Technologies

# ACR1255U-J1

## ACS Secure Bluetooth<sup>®</sup> NFC Reader

User Manual V1.04





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## 1.0. Introduction

ACR1255U-J1 ACS Secure Bluetooth® NFC Reader combines the latest technology in the world of smart card readers with Bluetooth connectivity. This compact and wireless smart card reader brings together sophisticated technology with fresh design to meet different requirements in various smart card-based applications using Bluetooth-enabled devices, such as smart phones and tablets.

This document provides general procedures for installation of drivers and applications when using ACR1255U-J1 ACS Secure Bluetooth NFC Reader.

Topics covered in this user manual are as follows:

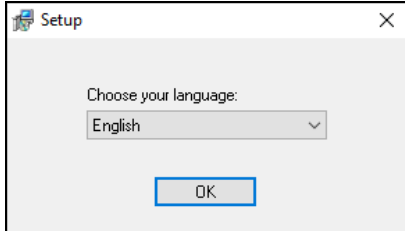
- **Section 2.0** – provides procedures on how to install ACS Bluetooth driver, pair Bluetooth devices and use the ACS Bluetooth Device Management Tool
- **Section 3.0** – provides procedures on how to install and use BLE demo application with ACR1255U-S1 using iOS device and ACS SmartCardIO library (*with Extended APDU Support; FW2.01.00 and above*)
- **Section 4.0** – provides procedures on how to install and use BLE demo application with ACR1255U-S1 using Android device and ACS SmartCardIO library (*with Extended APDU Support; FW2.01.00 and above*)
- **Section 5.0** – provides procedures on how to install and use BT demo application with ACR1255U-J1 using iOS device and ACS library
- **Section 6.0** – provides procedures on how to install and use BT demo application with ACR1255U-S1 using Android device and ACS library

## 2.0. For Windows®

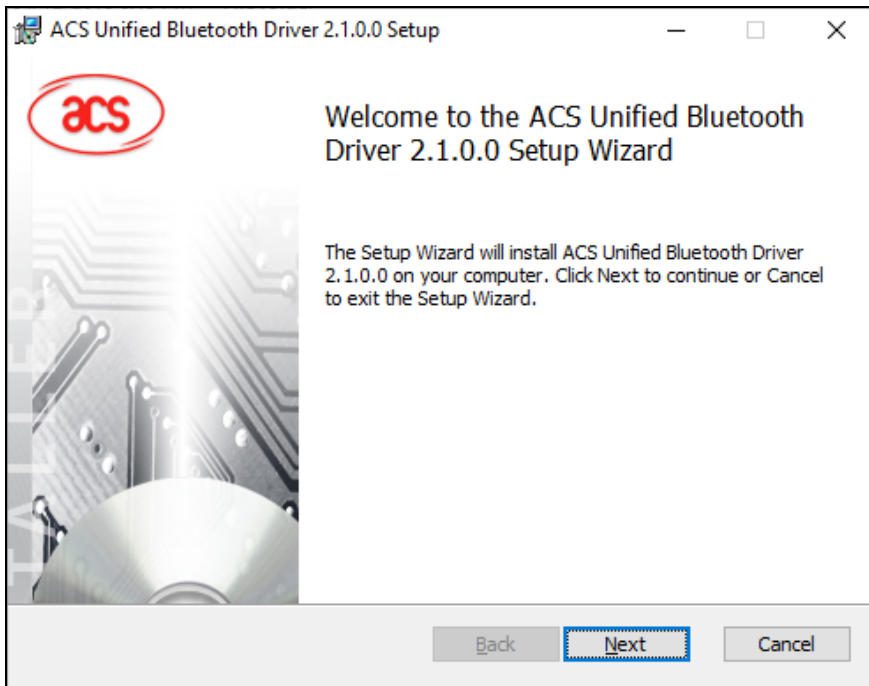
### 2.1. Installing ACS Unified Bluetooth driver

To install the driver:

1. Run the **ACS Unified Bluetooth Driver**.
2. The Setup Wizard will appear. To start the installation, click **OK**.

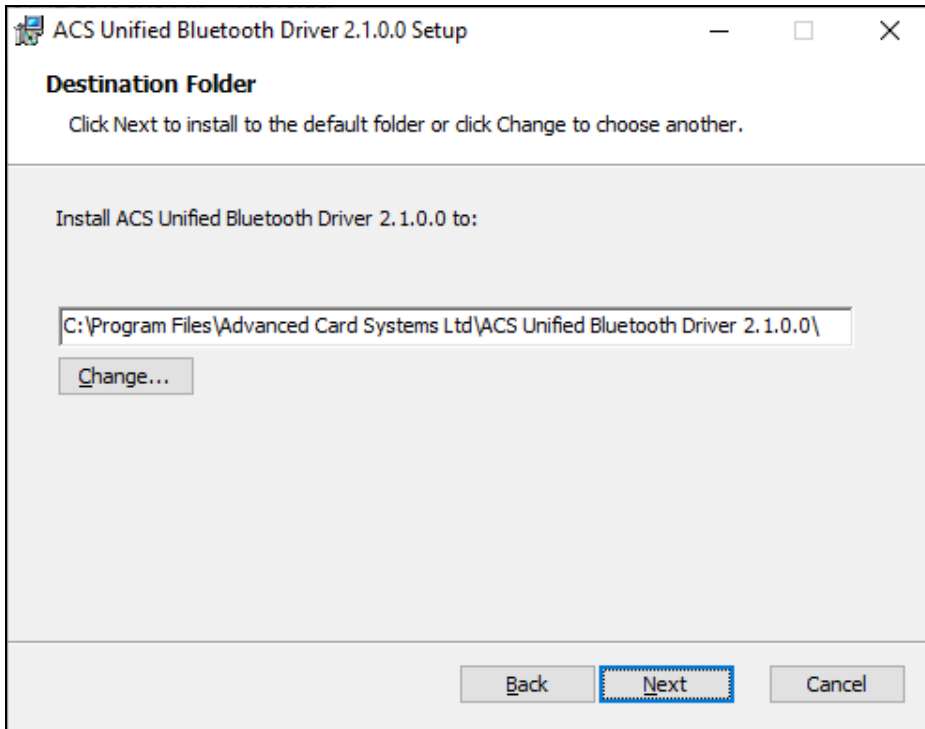


3. Then click **Next**.

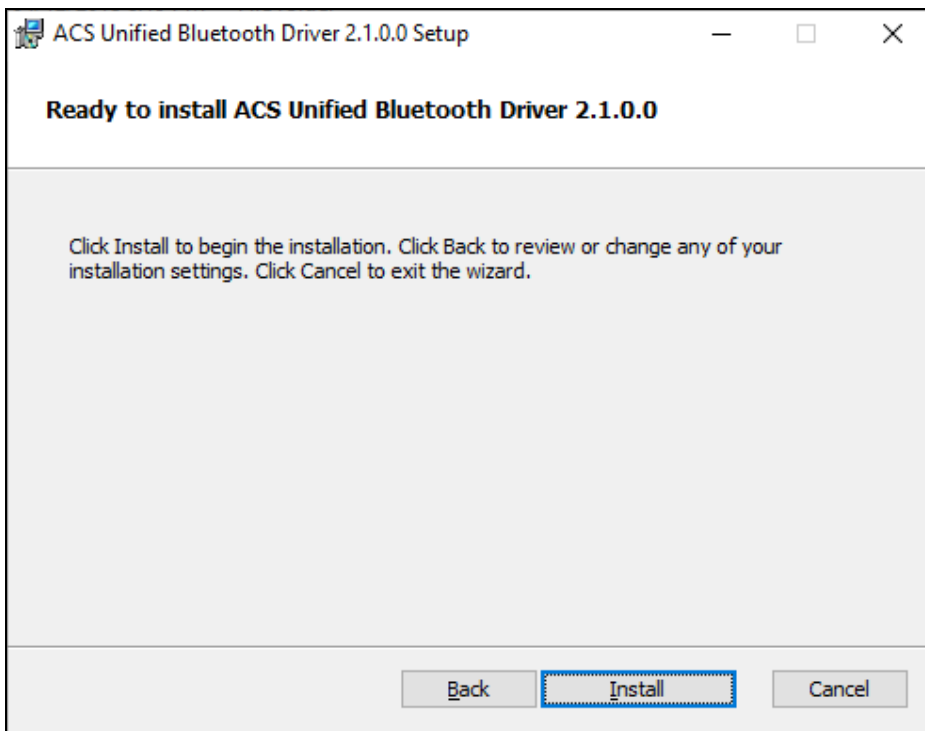




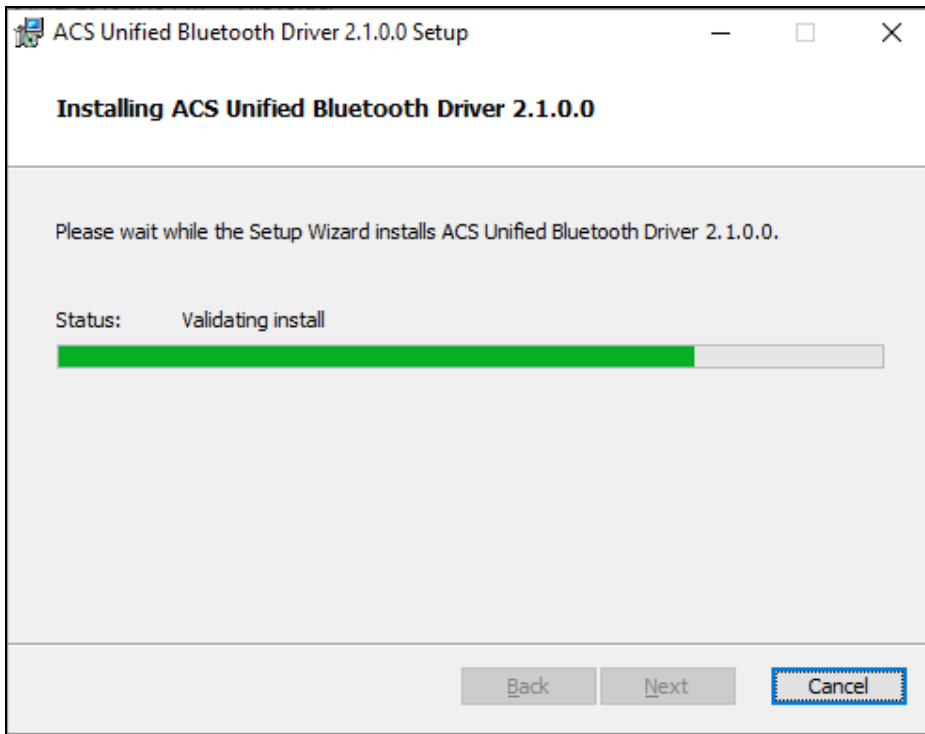
- Click **Next** to install the driver to the default destination, located at **X:\Program Files\Advanced Card Systems Ltd\ACS Unified Bluetooth Driver 2.1.0.0**, with **X** being your local Windows drive.



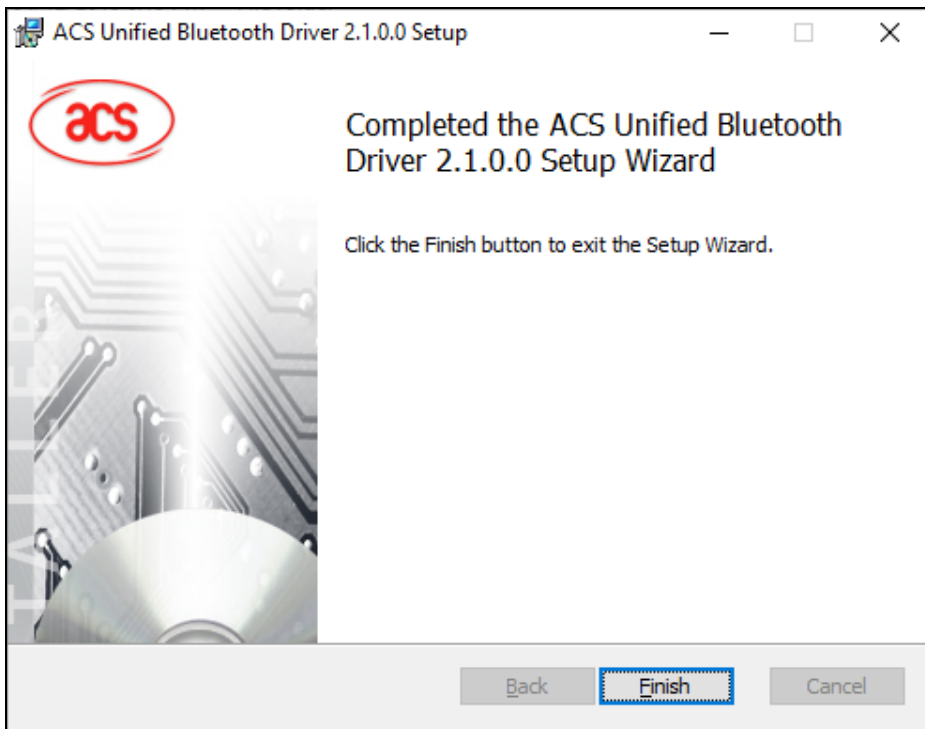
- Click **Install**.



6. Wait while the driver installs.



7. Once the installation is complete, click **Finish**.




## 2.2. Setting up device pairing with built-in Bluetooth adapter

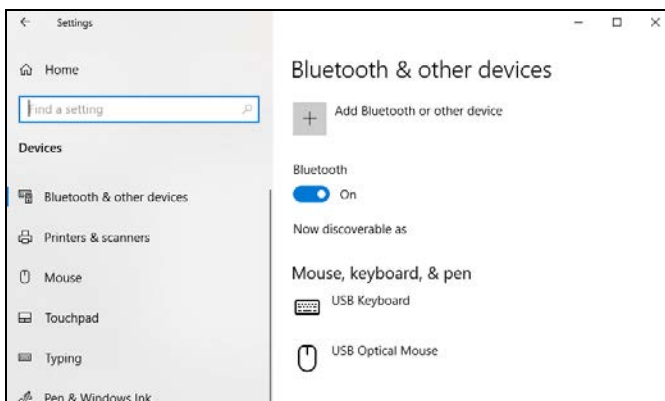
*Note: This procedure only applies to Windows 8 and later. Windows 7 does not support devices using Bluetooth 4.0/Bluetooth Low Energy interface.*

To pair using this setup:

1. Turn on the Bluetooth mode of ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



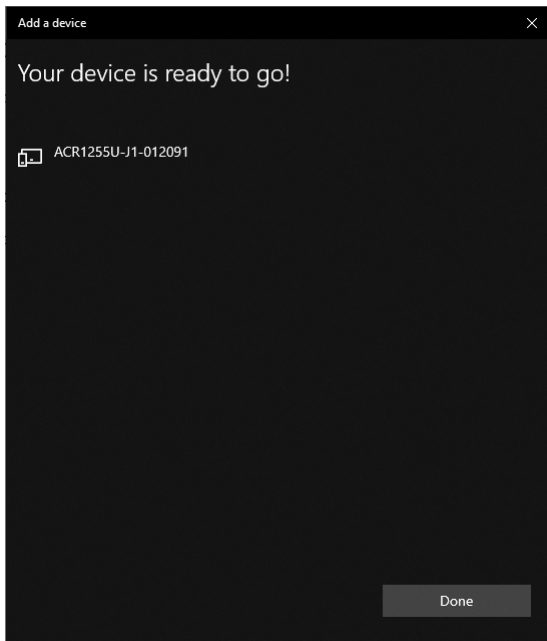
2. Go to **PC Settings** , choose **Devices**, and then click **Bluetooth & other devices**.
3. Turn on **Bluetooth**.
4. Click **Add Bluetooth or other device**



5. At the **Add a device** pane, click **Bluetooth** and select an **ACR1255U-J1** reader to pair.



- The pairing is complete when you see that the ACR1255U-J1 is connected.



- To complete the installation of the Bluetooth card reader, go to **ACS Bluetooth Device Management Tool**.



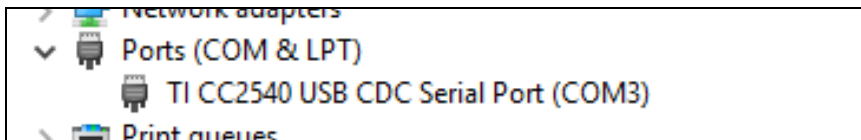


### 2.3. Setting up device pairing with Bluetooth USB dongle

**Note:** This procedure will use the TI USB dongle as the Bluetooth adapter. Make sure that you have installed the ACS Bluetooth driver before performing this procedure (see [Installing ACS Unified Bluetooth driver](#)).

To pair using this set up:

1. Plug in the TI Bluetooth USB dongle to your computer.
2. Windows will automatically install the device driver.
3. Wait while the device driver installs.
4. When it is ready you will see the dongle in Device Manager.



5. When you open the [ACS Bluetooth Device Management Tool](#), it automatically pairs the dongle to your system.



## 2.4. Using the ACS Bluetooth Device Management Tool

ACS Bluetooth Device Management Tool is an application that enables you to easily manage device pairings between ACS Bluetooth card readers and computers.

### 2.4.1. Installing a device

To establish full connection, you must install the Bluetooth card reader in the ACS Bluetooth Device Management Tool.

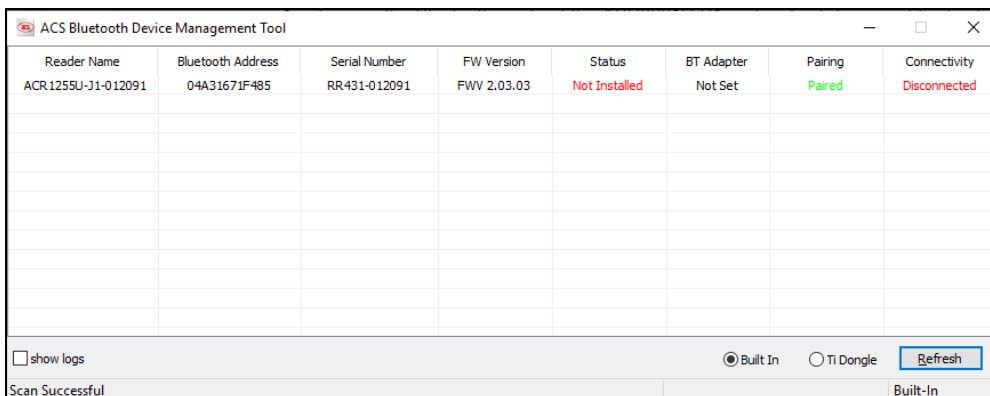
**Note:** The TI USB dongle can only work on a one-to-one connection with an installed ACS Bluetooth card reader. If there is a previously installed Bluetooth card reader in the tool, uninstall it first (see **Uninstalling a device**).

To begin:

1. Turn on the Bluetooth mode of ACR1255U-J1 and make it discoverable. To do this, slide the toggle switch to the right.

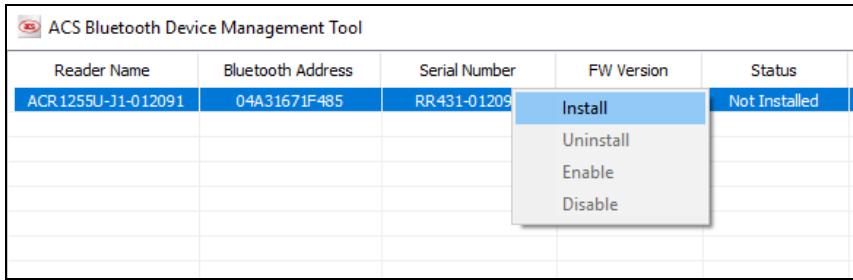


2. Run the **ACS Bluetooth Device Management Tool**.
3. Wait while the tool scans for Bluetooth devices within range.  
**Note:** If the device is not immediately discovered, click **Refresh**.
4. Once the tool discovers ACR1255U-J1, it will appear in the list.

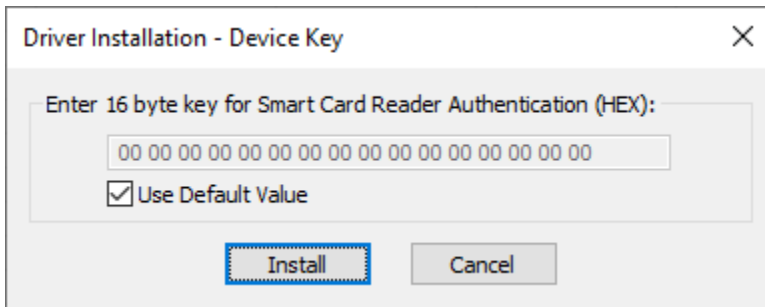




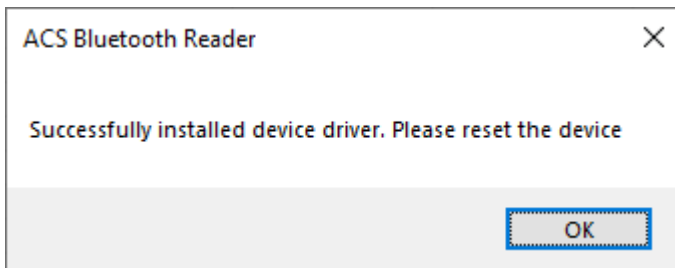
- Right-click on the device, and then click **Install**.



- Type in a 16-byte hexadecimal key for authentication, or use the default value. Click **Install**.

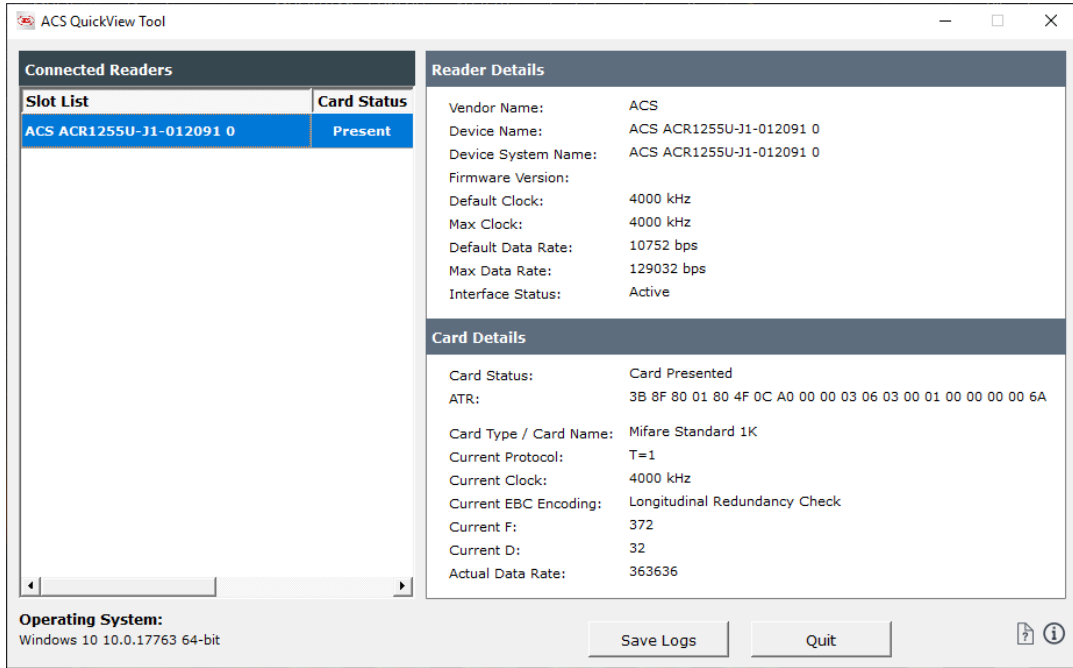


- Wait while the application installs the driver.
- A message will appear confirming a successful installation. Click **OK**, and then reset your device.





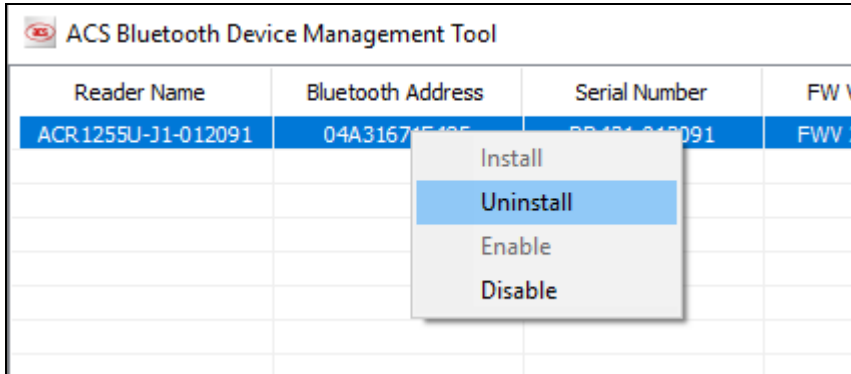
9. After a successful driver installation, you can now use the ACR1255U-J1 with various smart card applications. Below is a sample of ACR1255U-J1 connected in **QuickView**.



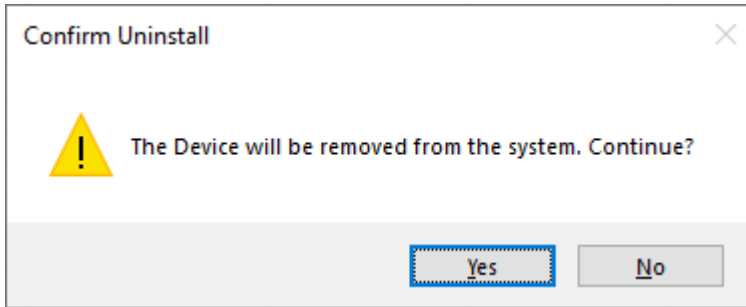
### 2.4.2. Uninstalling a device

To uninstall a device:

1. Right-click on the device, and then click **Uninstall**.



2. Click **Yes** to confirm uninstallation.

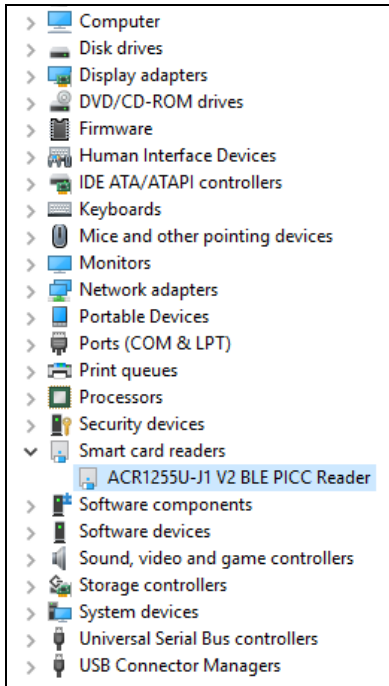


3. The device will be removed from the reader list.

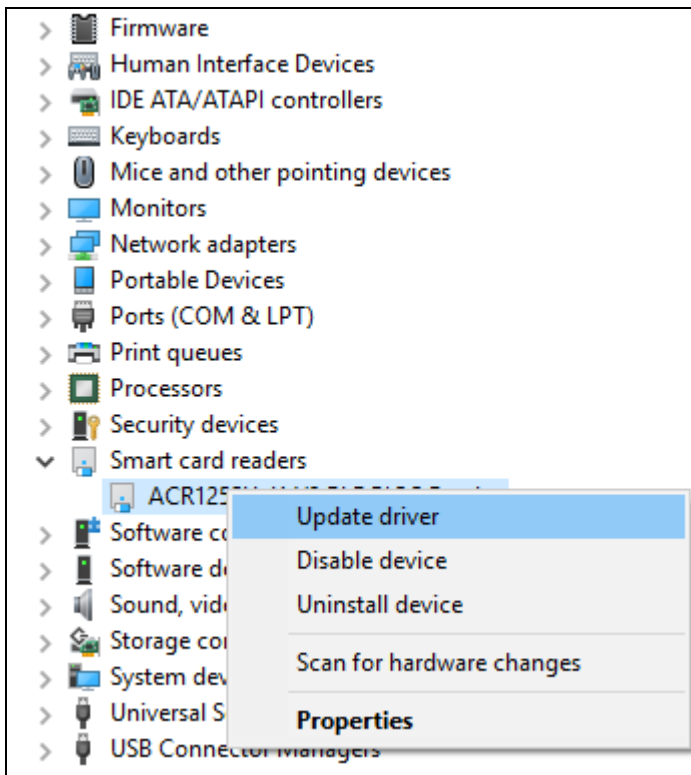
**Note:** The TI USB dongle will work with multiple reader pairing starting with ACS Unified Bluetooth Driver v2.1.0.0 and above ONLY.

## 2.5. Checking if Bluetooth card reader is installed correctly

1. Go to the **Device Manager**.
2. Under **Smart card readers**, the ACR1255U-J1 reader should show as **ACR1255U-J1 BLE PICC Reader** or **ACR1255U-J1 V2 BLE PICC Reader**.

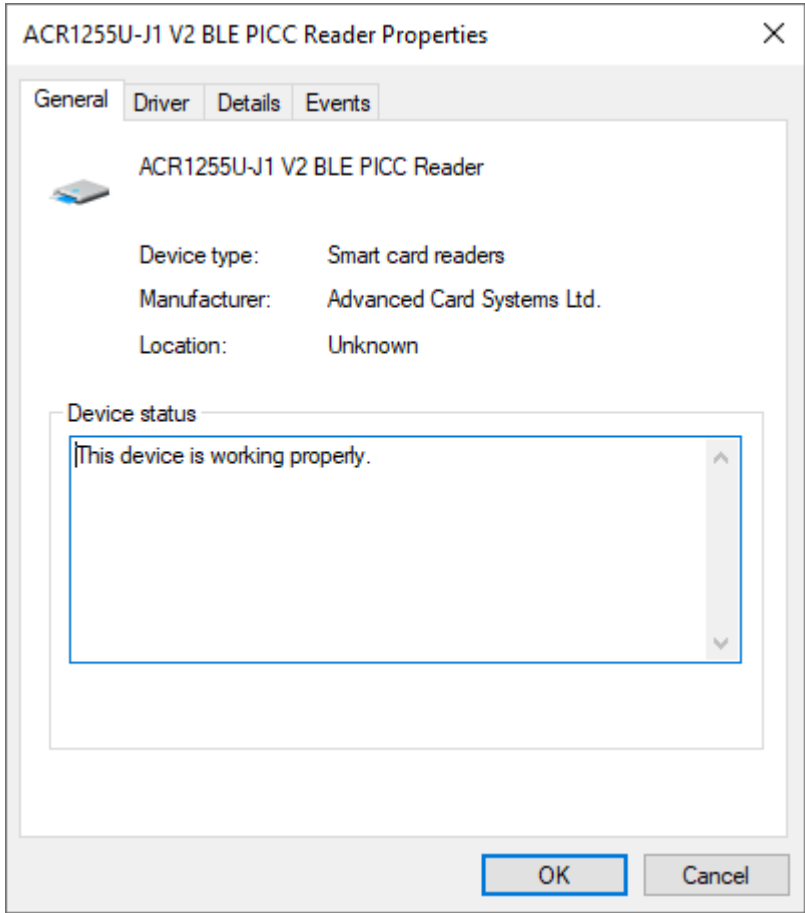


3. Right-click on the device, and then click **Properties**.





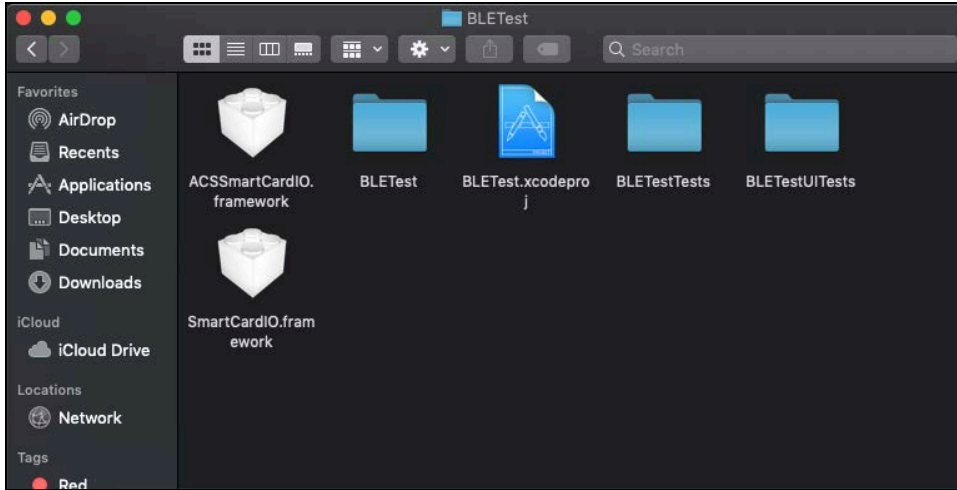
- The Bluetooth reader and driver are installed correctly if the device status shows *"This device is working properly"*.



### 3.0. For iOS (BLE Test Application)

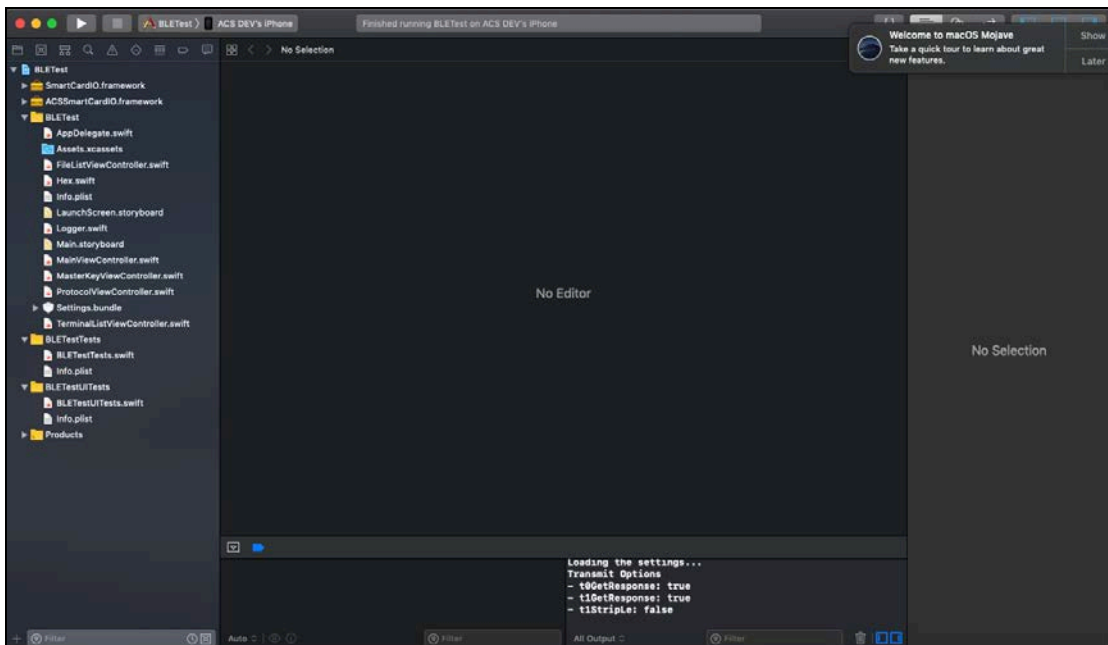
#### 3.1. Installing the BLE Test application

1. You can access the device library when you download the [iOS BLE EVK \(SmartCardIO\)](#) from the ACS website.
2. Using XCode application, open **BLETest.xcodeproj**.



3. Transfer **BLETest.xcodeproj** to your mobile device. Choose your mobile device, and then click **Play**.

**Note:** Make sure that your mobile device is connected to your computer.





### 3.2. Using the ACS Bluetooth demo application

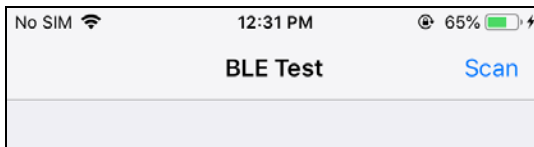
This section provides a simple step-by-step procedure on how to use the ACR1255U-J1 using the BLETest application.

#### 3.2.1. Connecting a device

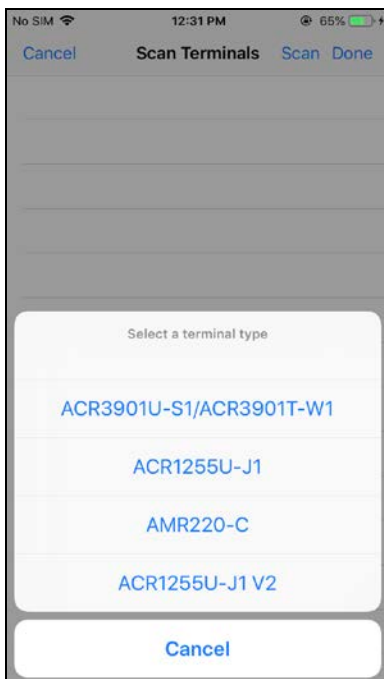
1. Turn on the Bluetooth mode of ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



2. Turn on your device's Bluetooth by going to **Settings > Bluetooth**.
3. Open **BLE Test** application.
4. Tap **Scan**.

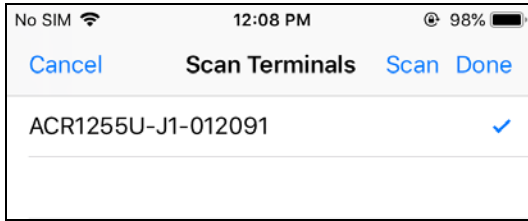


5. Select the terminal type **ACR1255U-J1** or **ACR1255U-J1 V2 (FW 2.01 and above; 128-bit UUID)**

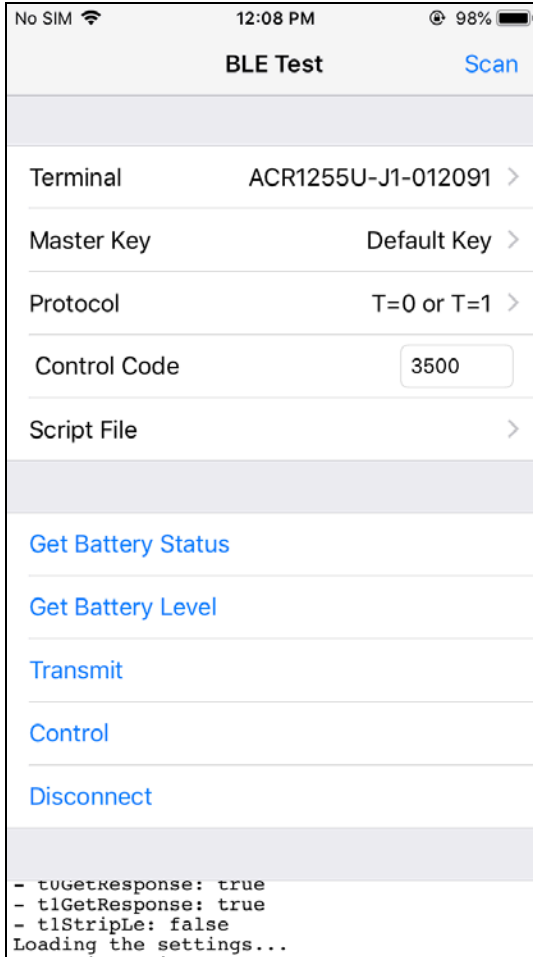




6. Choose the reader to pair your iOS device with, then tap **Done**.



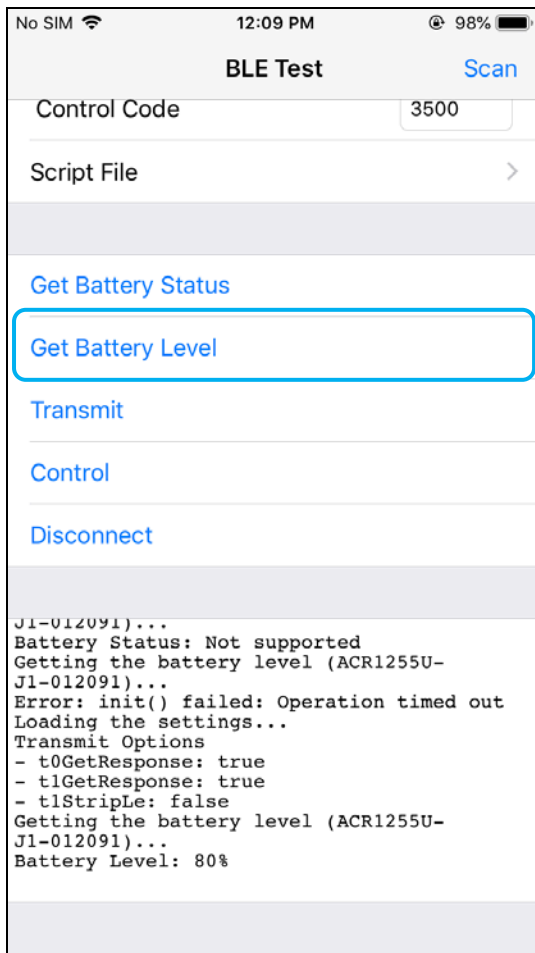
7. When the pairing is successful, the main page will be displayed.



### 3.2.2. Getting the battery level

To get the battery status, tap **Get Battery Level**.

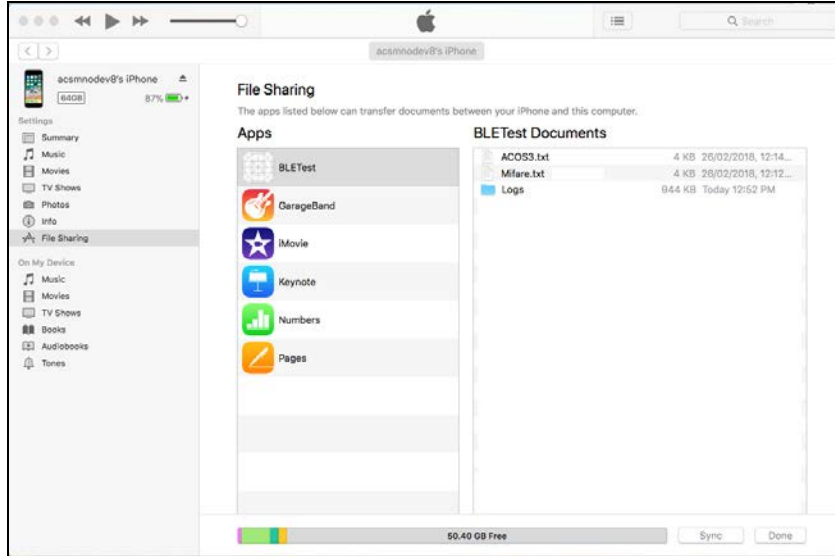
The status should be displayed as part of the logs.



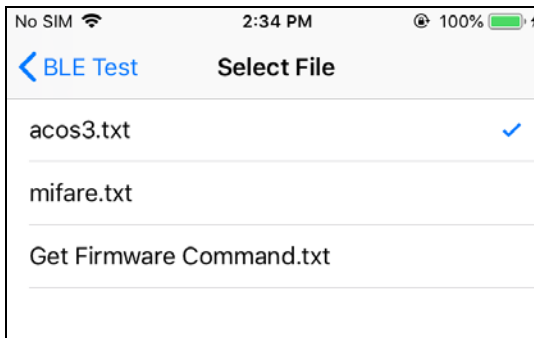
### 3.2.3. Transmitting an APDU command

To transmit APDU command:

1. Connect the mobile device to iTunes and locate File Sharing tab.
2. Under Apps section, click on **BLETest app** and add a text file (.txt) containing the APDU commands.



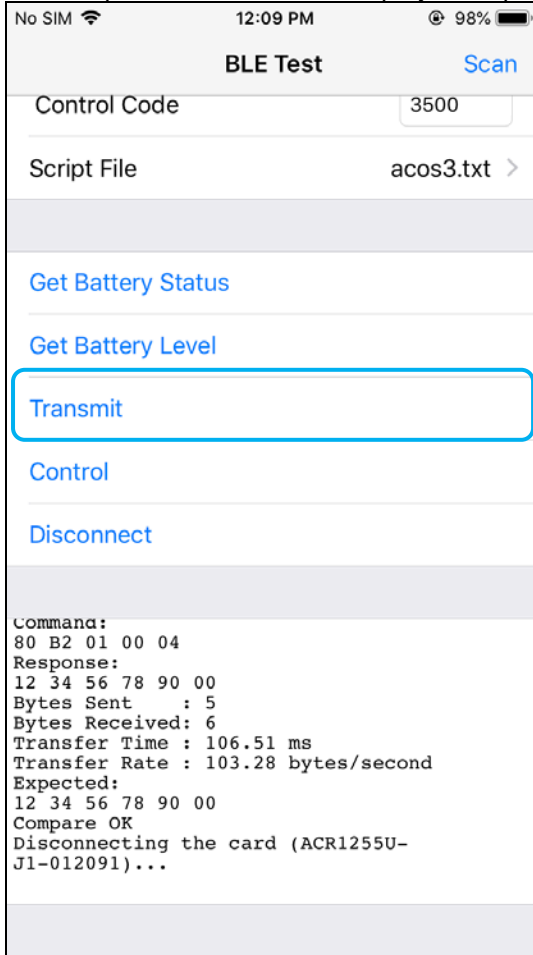
3. Insert smart card into the ACR1255U-J1 reader.
4. In the demo application on the mobile device, tap **Script File**, and then locate the .txt file to run.



5. Go back to the main page then Tap **Transmit** button.



6. The Response APDU will be displayed as part of the logs.



**Note:** The application is designed to get the ATR of the card before sending the APDU commands.

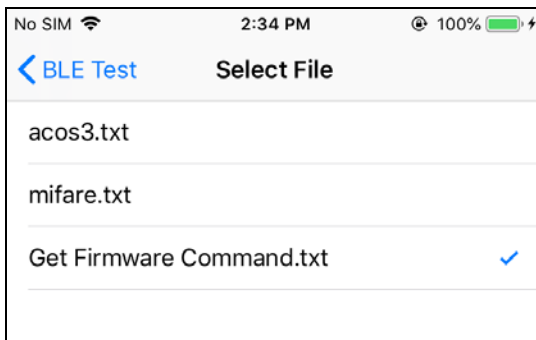
### 3.2.4. Transmitting an escape command

To transmit an escape command:

1. Connect the mobile device to iTunes and locate File Sharing tab.
2. Under Apps section, click on **BLETest app** and add a text file (.txt) containing the APDU commands.



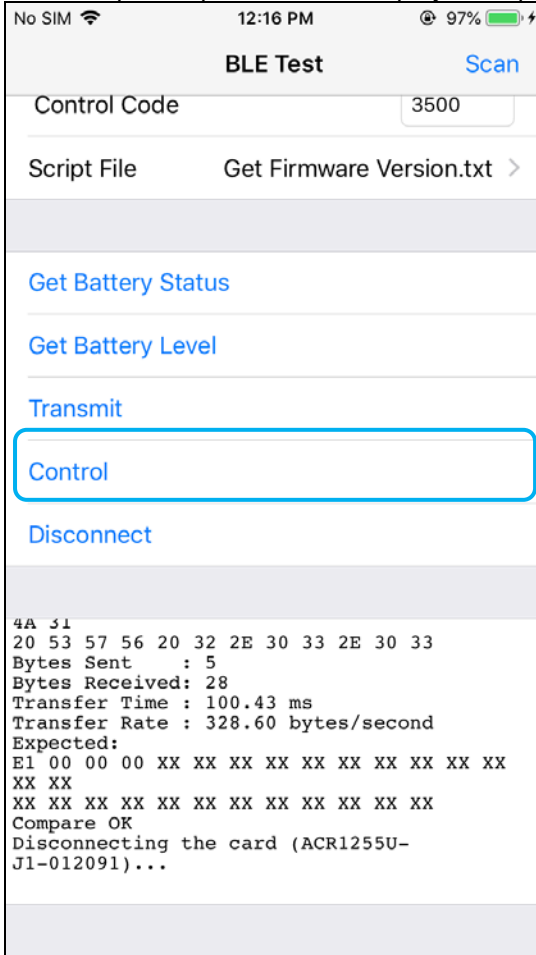
3. Insert smart card into the ACR1255U-J1 reader.
4. In the demo application on the mobile device, tap **Script File**, and then locate the .txt file to run.



5. Go back to the main page then Tap **Control** button.



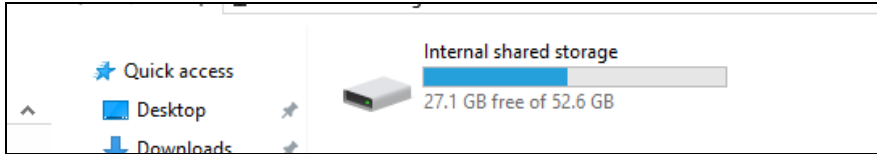
6. The Escape Response will be displayed as part of the logs.



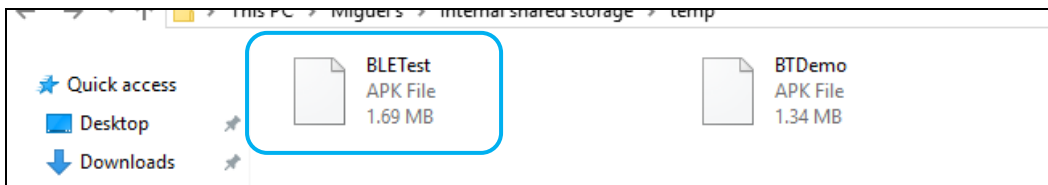
## 4.0. For Android (BLE Test Application)

### 4.1. Installing the BLE Test application

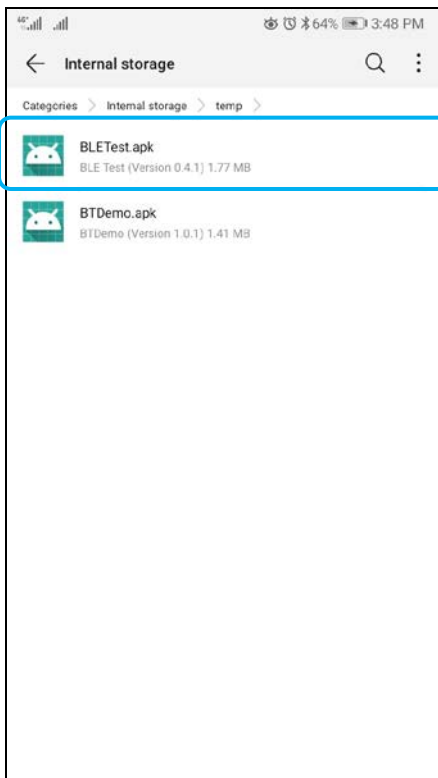
1. Connect your mobile device to the computer.



2. In the internal storage of your device, create a folder where the ACR1255U-J1 BLETest will be placed.
3. You can access the device library by downloading the **Android BLE EVK (SmartCardIO)** from the ACS website.
4. In the Android library, copy the **BLETest.apk** and the **test scripts(.txt)** files to the previously created folder.

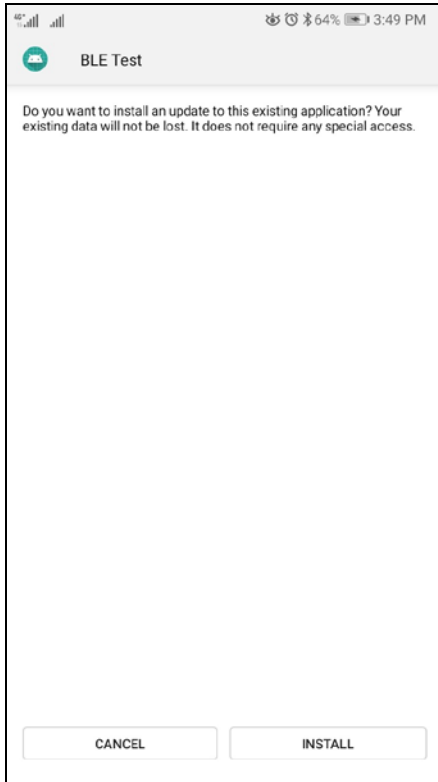


5. Disconnect your mobile device from the computer. Locate the **BLETest.apk** using a file manager application.
6. To start the installation, tap the **BLETest.apk** file.

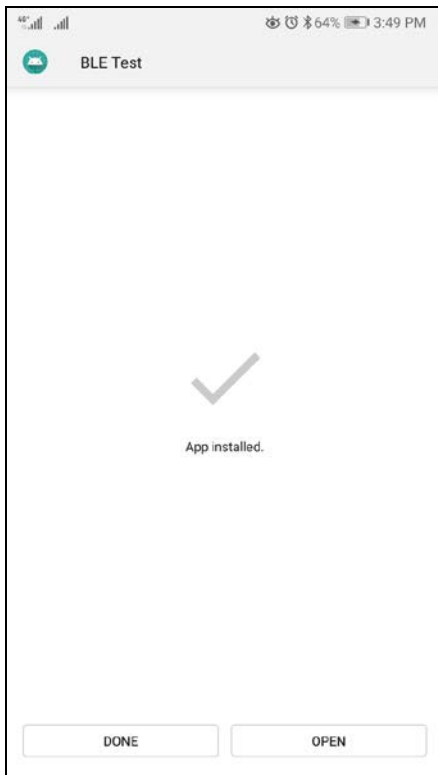




7. Complete the action using **Package Installer**.



8. A prompt will ask for hardware control access. Tap **Install** to proceed.
9. Once the installation is complete, you can now open the BLE Test application.



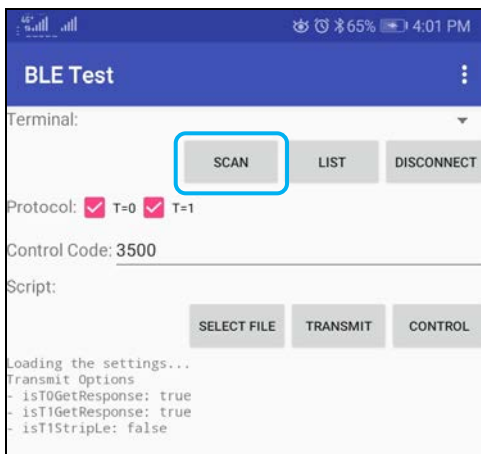
## 4.2. Using the ACS Bluetooth demo application

### 4.2.1. Connecting a device

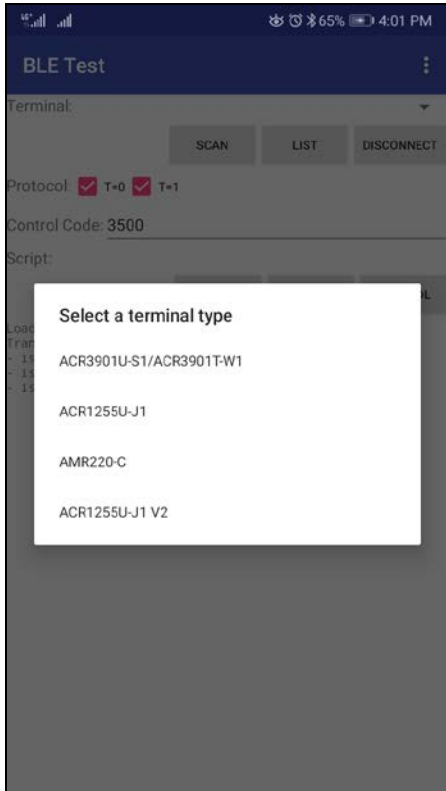
1. Turn on the Bluetooth mode of the ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



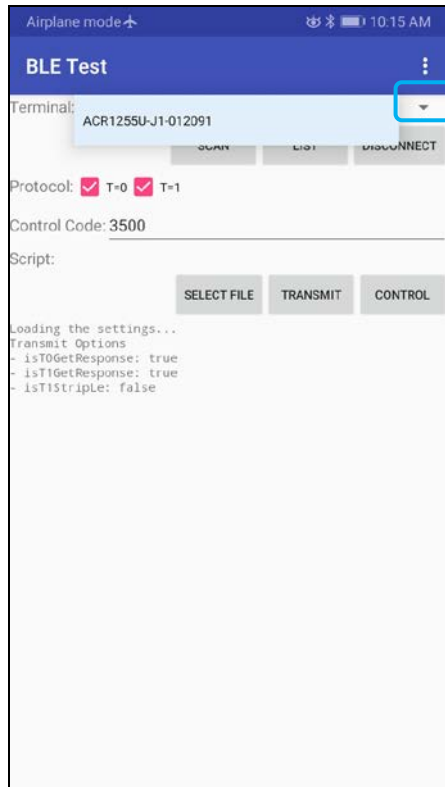
2. Turn on your device's Bluetooth by going to **Settings | Bluetooth**.
3. Open **BLE Test** application.
4. Tap **Scan**.



- Select the terminal type **ACR255U-J1** or **ACR1255U-J1 V2 (FW2.01 and above)**



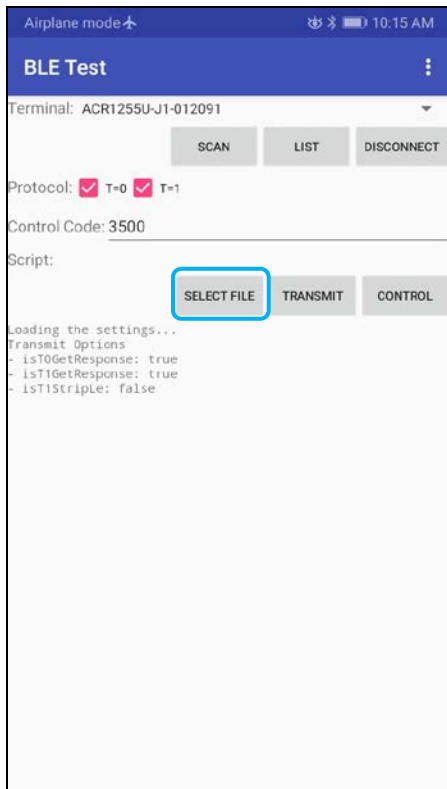
- Available devices will be displayed. Tap the drop down button to show the complete list of available devices



### 4.2.2. Transmitting an APDU command

To transmit APDU commands:

1. Insert a smart card into the ACR1255U-J1 reader.
2. In the demo application on the mobile device, tap **Select File**, and then locate the .txt file to run.



3. Go back to the main page then tap **Transmit**.



4. The Response APDU will be displayed as part of the logs.



**Note:** The application is designed to get the ATR of the card before sending the APDU commands.

### 4.2.3. Transmitting an escape command

To transmit an escape command:

1. In the demo application on the mobile device, tap **Select File**, and then locate the .txt file to run.



2. Go back to the main page then tap **Control**.



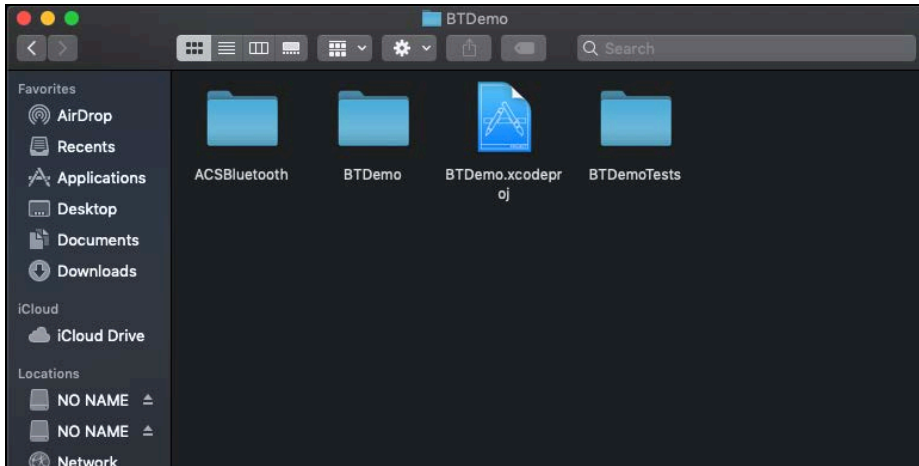
3. The Escape Response will be displayed as part of the logs.



## 5.0. For iOS (BT Demo Application)

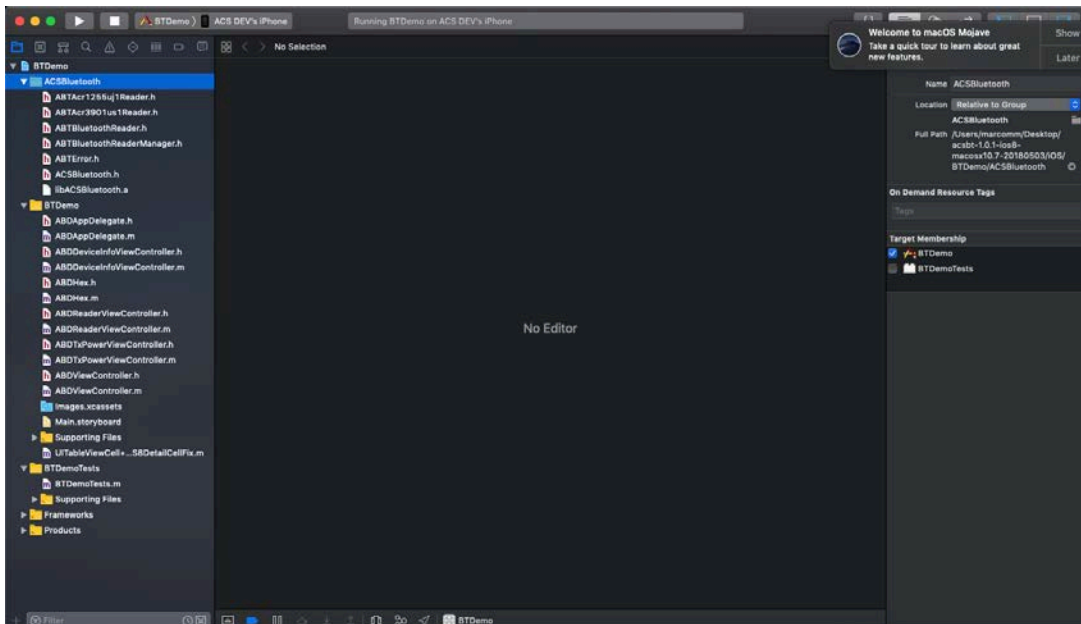
### 5.1. Installing the Bluetooth demo application

1. You can access the device library when you download the **iOS & Mac BT EVK** from the ACS website.
2. Using the XCode application, open **BTDemo.xcodeproj**.



3. Transfer **BTDemo.xcodeproj** to your mobile device. Choose your mobile device, and then click **Play**.

**Note:** Make sure that your mobile device is connected to your computer.





## 5.2. Using the ACS Bluetooth demo application

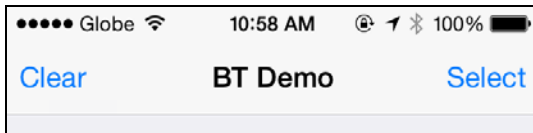
This section provides a simple step-by-step procedure on how to use the ACR1255U-J1 using the BT demo application.

### 5.2.1. Connecting a device

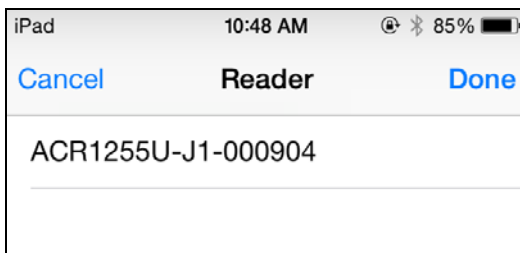
1. Turn on the Bluetooth mode of ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



2. Turn on your device's Bluetooth by going to **Settings | Bluetooth**.
3. Open **BT Demo** application.
4. Tap **Select**.

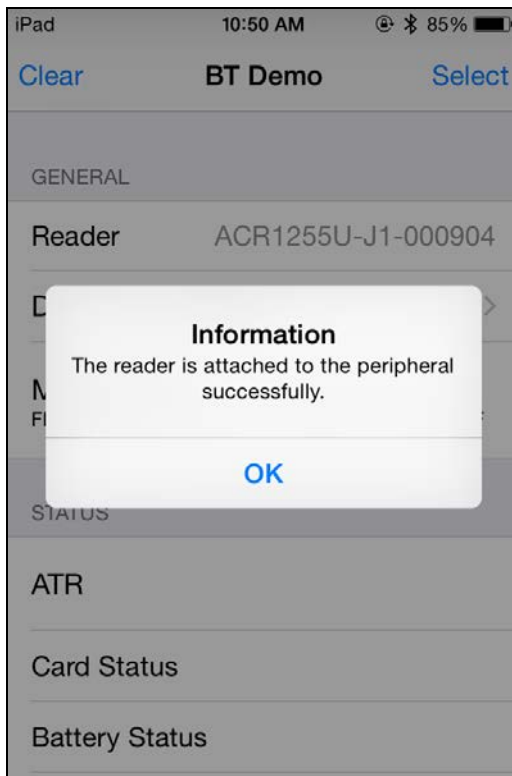


5. Choose the reader to pair your iOS device with, and then tap **Done**.





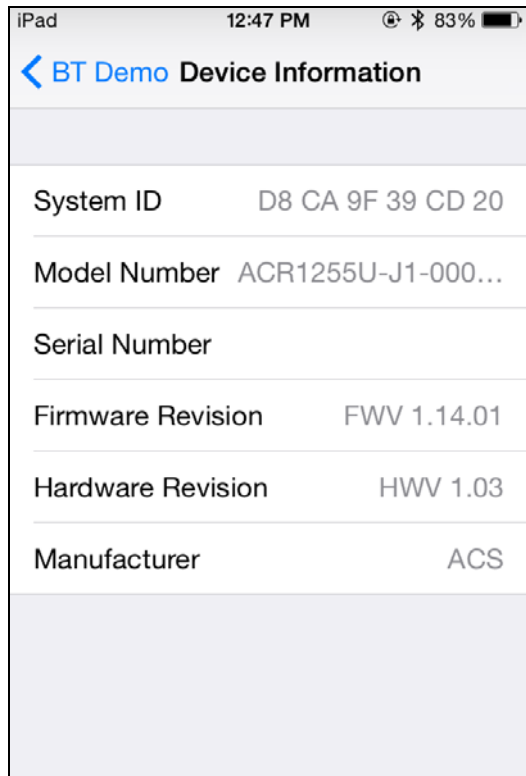
- When the pairing is successful, tap **OK** to close the prompt.





### 5.2.2. Getting the device information

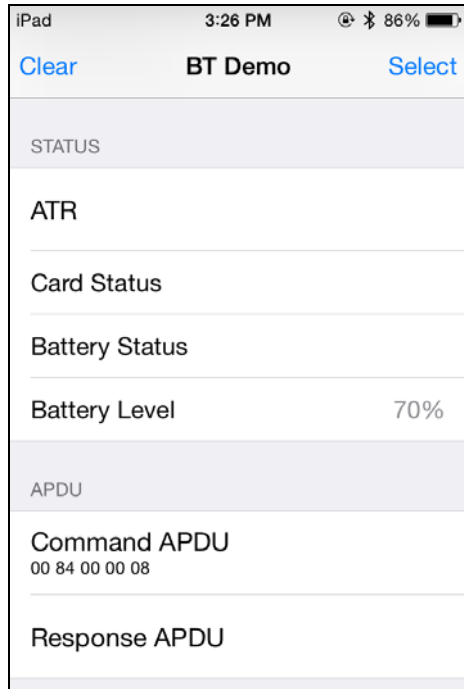
To get the reader's information, tap **Device Information**.





### 5.2.3. Getting the battery level

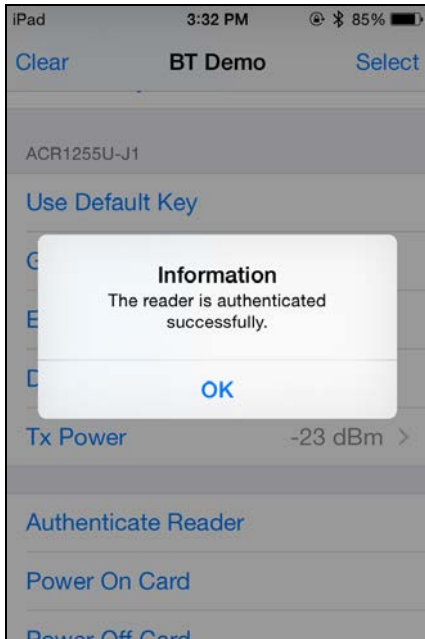
To get the battery level, tap **Get Battery Level**.



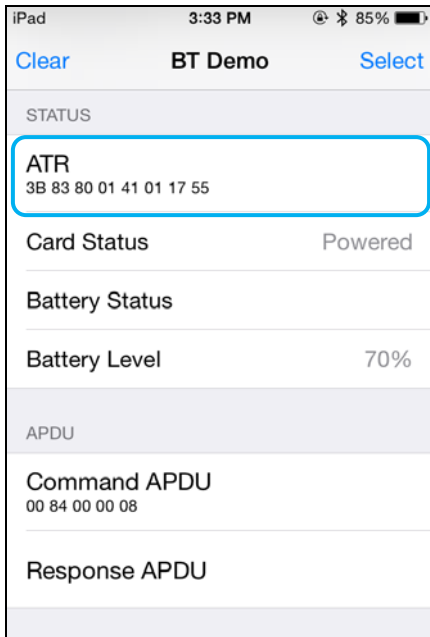
### 5.2.4. Getting the card's ATR (Answer To Reset)

To get the ATR of the card:

1. Tap the contactless smart card on the ACR1255U-J1 reader.
2. In the demo application, tap **Use Default Key**, and then tap **Authenticate Reader**.
3. You will be prompted that the authentication was successful. Tap **OK**.



4. To start polling, tap **Enable Polling**, and then tap **Power On Card**.
5. The card's ATR will be displayed.



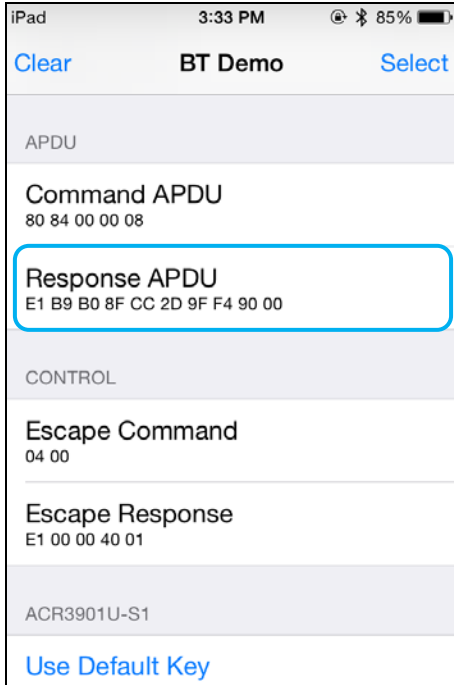
6. To end polling, tap **Power Off Card**, and then tap **Disable Polling**.



### 5.2.5. Transmitting an APDU command

To transmit APDU command:

1. Tap the contactless smart card on the ACR1255U-J1 reader.
2. In the demo application, tap **Use Default Key**, and then tap **Authenticate Reader**.
3. Tap **Transmit APDU**.
4. The Response APDU will be displayed.



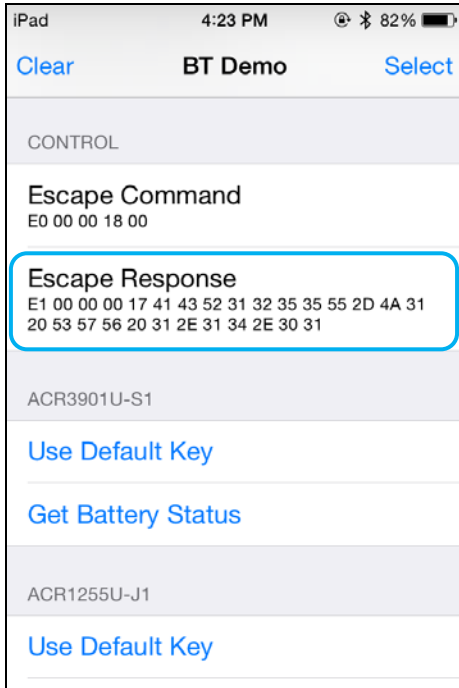
**Note:** You can edit the APDU command by tapping **Command APDU**.



### 5.2.6. Transmitting an escape command

To transmit an escape command:

1. Tap the contactless smart card on the ACR1255U-J1 reader.
2. In the demo application, tap **Use Default Key**, and then tap **Authenticate Reader**.
3. Tap **Transmit Escape Command**.
4. The Escape Response will be displayed.

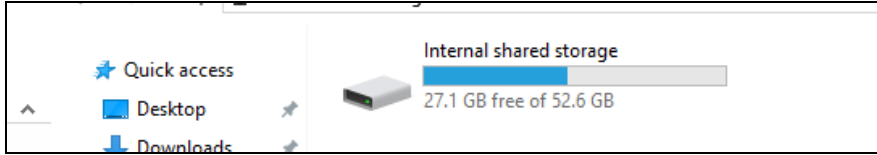


**Note:** You can edit the Escape command by tapping **Escape APDU**.

## 6.0. For Android™ (BT Demo Application)

### 6.1. Installing the Bluetooth demo application

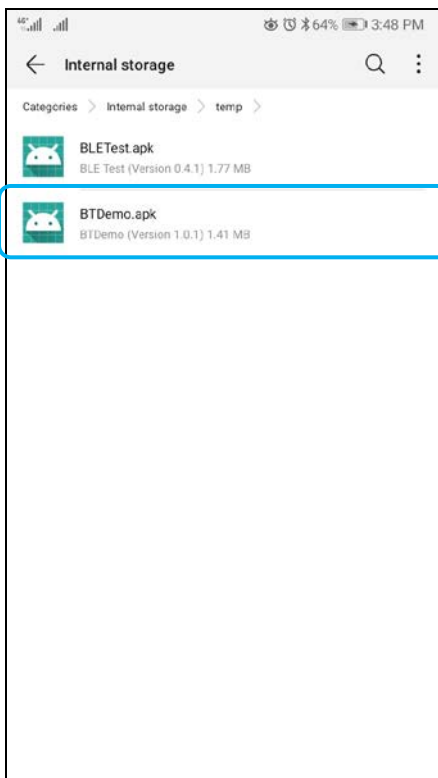
1. Connect your mobile device to the computer.



2. In the internal storage of your device, create a folder where the ACR1255U-J1 BTdemo will be placed.
3. You can access the device library when you download the **Android EVK** from the ACS website.
4. In the Android library, copy the **BTDemo.apk** file to the previously created folder.

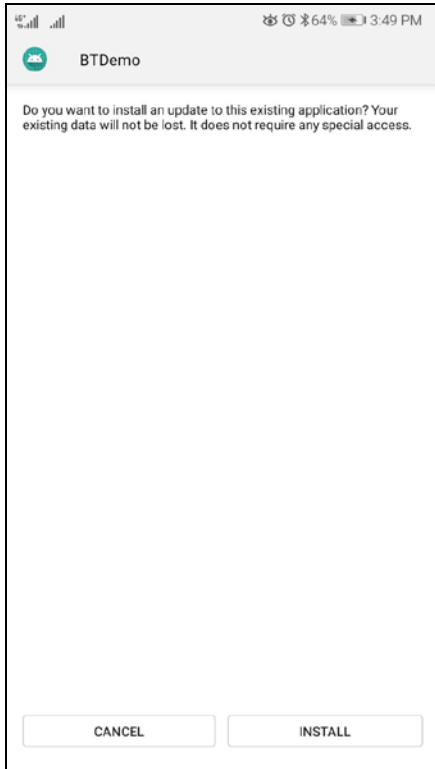


5. Disconnect your mobile device from the computer. Locate the **BTDemo.apk** using a file manager application.
6. To start the installation, tap the **BTDemo.apk** file.

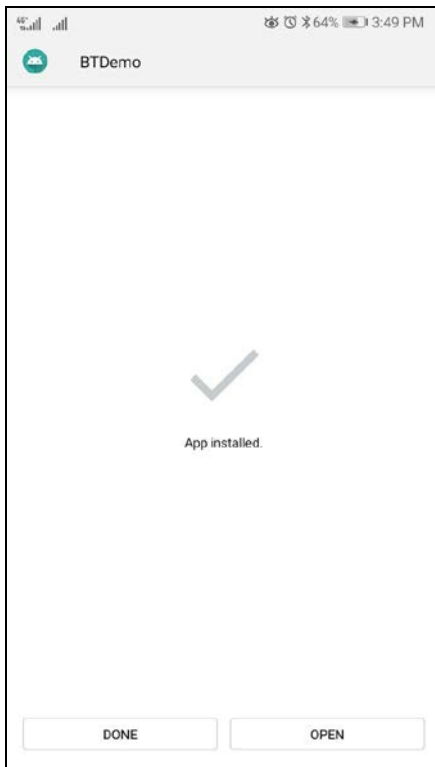




7. Complete the action using the **Package Installer**.



8. A prompt will ask for hardware control access. Tap **Install** to proceed.
9. Once the installation is complete, you can now open the BT demo application.



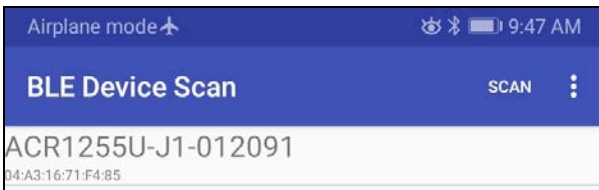
## 6.2. Using the ACS Bluetooth demo application

### 6.2.1. Connecting a device

1. Turn on the Bluetooth mode of ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



2. Turn on your device's Bluetooth by going to **Settings | Bluetooth**.
3. Open **ACS BT Demo application**.
4. Choose the reader to pair your Android device with.



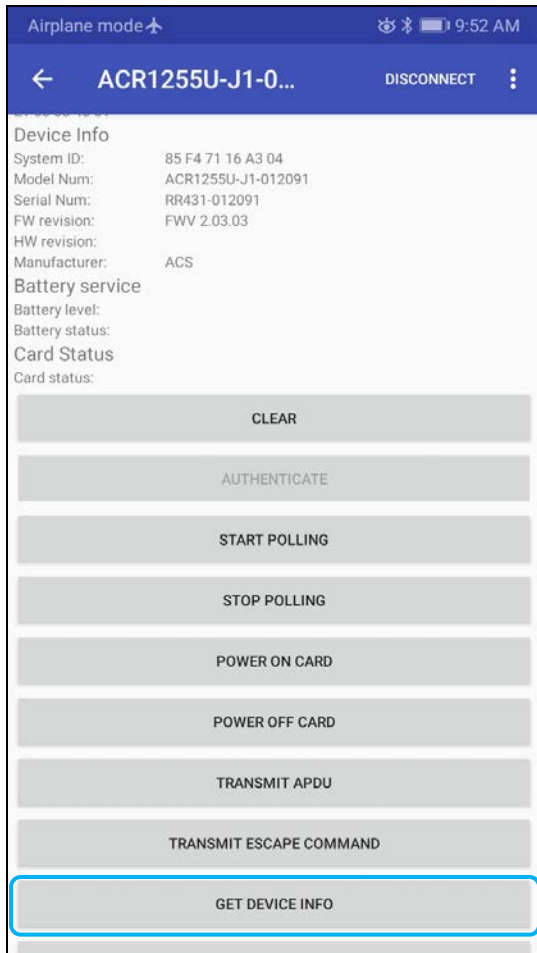
5. Once pairing is complete, the ACR1255U-J1 is now ready to be used with the mobile device.





### 6.2.2. Getting the device information

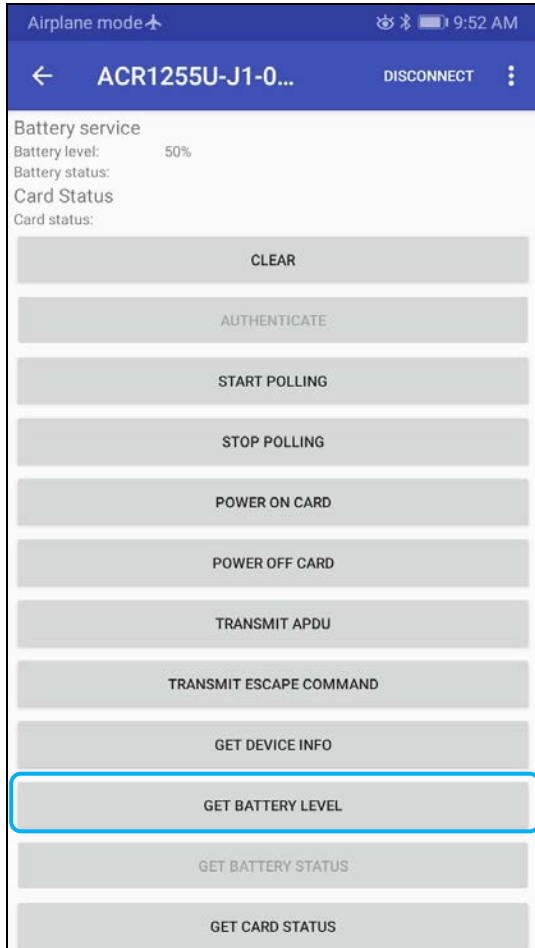
To get the reader's information, scroll down, and then tap **Get Device Info**. Scroll up again to view the Device information displayed.





### 6.2.3. Getting the battery level

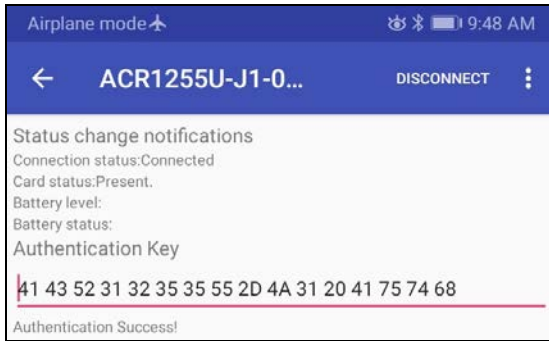
To get the battery status, tap **Get Battery Level**. Scroll up again to view the battery level.



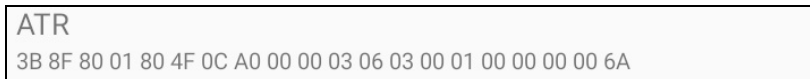
### 6.2.4. Getting the card's ATR (Answer To Reset)

To get the ATR of the card:

1. Tap the contactless smart card on the ACR1255U-J1 reader.
2. In the demo application, tap **Authenticate**.
3. Scroll up to see the **Authentication Success** message.



4. To start polling, tap **Start Polling**, and then tap **Power On Card**.
5. Scroll up to see the ATR of the contactless card.

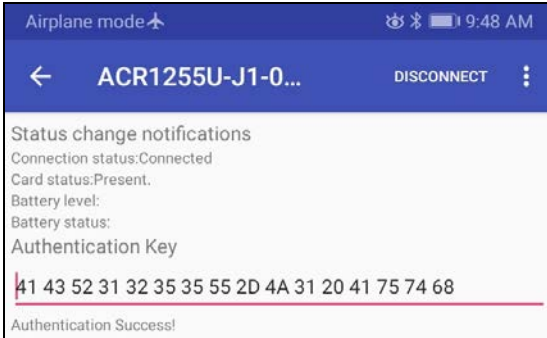


6. To end polling, tap **Power Off Card**, and then tap **Stop Polling**.

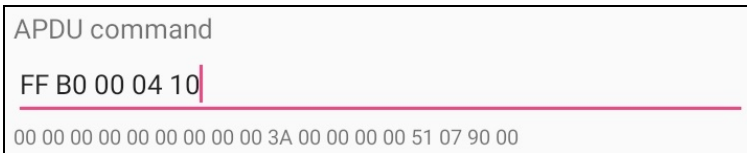
### 6.2.5. Transmitting an APDU command

To transmit APDU command:

1. Tap the contactless smart card on the ACR1255U-J1 reader.
2. In the demo application, tap **Authenticate**.
3. Scroll up to see the **Authentication Success** message.



4. To start polling, tap **Start Polling**, and then tap **Power On Card**.
5. Tap **Transmit APDU**.
6. The Response APDU will be displayed.

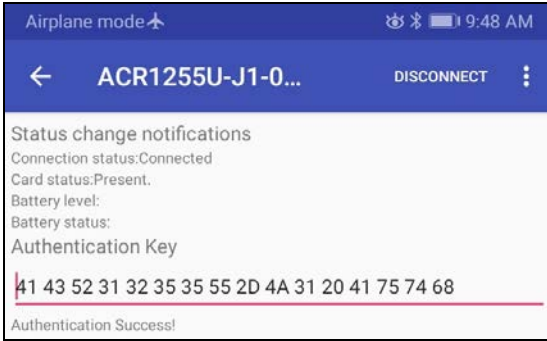


**Note:** You can edit the APDU command by tapping below the **APDU command**.

### 6.2.6. Transmitting an escape command

To transmit an escape command:

1. Tap the smart card on the ACR1255U-J1 reader.
2. In the demo application, tap **Authenticate**.
3. Scroll up to see the **Authentication Success** message.



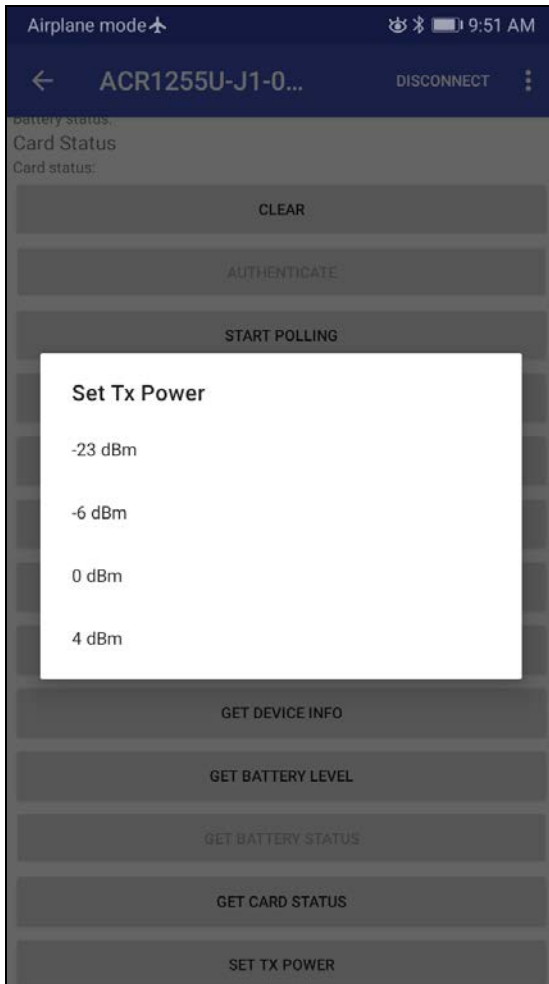
4. Tap **Transmit Escape Command**.
5. The Escape Response will be displayed.



**Note:** You can edit the Escape command by tapping below the **Escape command**.

### 6.2.7. Changing Bluetooth transmission power

To change transmission, tap **Set Tx Power**. Choose from the four available transmissions power for ACR1255U-J1.



The following are the range of operating distances for the modes above:

- -23 dBm: 3m – 5m
- -6 dBm: 7m – 9m
- 0 dBm: 10m –15m
- 4 dBm: 30m – 40m

**Note:** The operating distance could be shorter when there is interference such as, metal, door, wall, or other radio emitting devices.

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