



Advanced Card Systems Ltd.
Card & Reader Technologies

ACR1255U-J1

Secure Bluetooth® NFC Reader

User Manual V1.01





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1.0. Introduction

ACR1255U-J1 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 Secure Bluetooth NFC Reader.

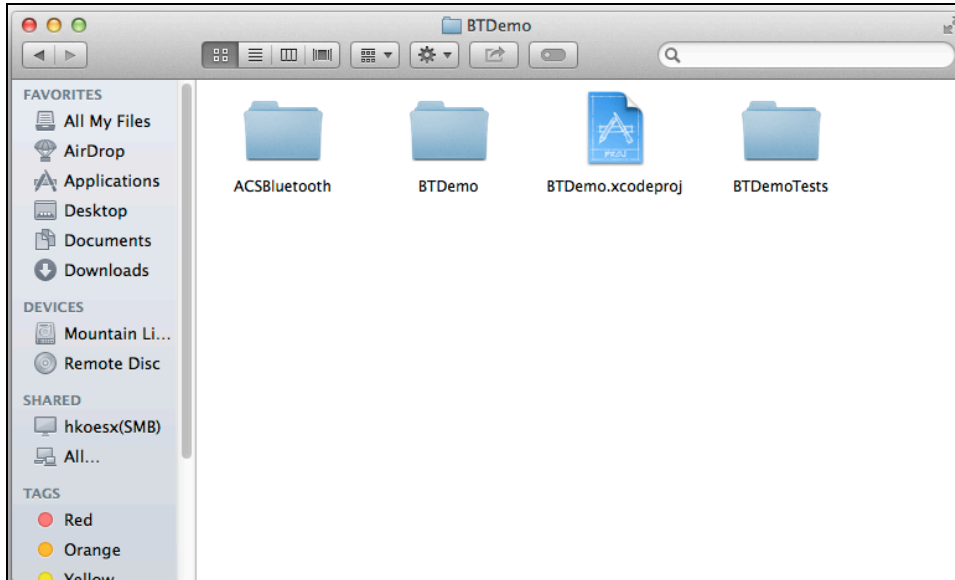
Topics covered in this user manual are as follows:

- **Section 2.0** – provides procedures on how to install and use Bluetooth (BT) demo application with ACR1255U-J1 using iOS device and library
- **Section 3.0** – provides procedures on how to install and use Bluetooth (BT) demo application with ACR1255U-J1 using Android device and library
- **Section 4.0** – provides procedures on how to install ACS Bluetooth driver, pair Bluetooth devices and use the ACS Bluetooth Device Management Tool

2.0. For iOS

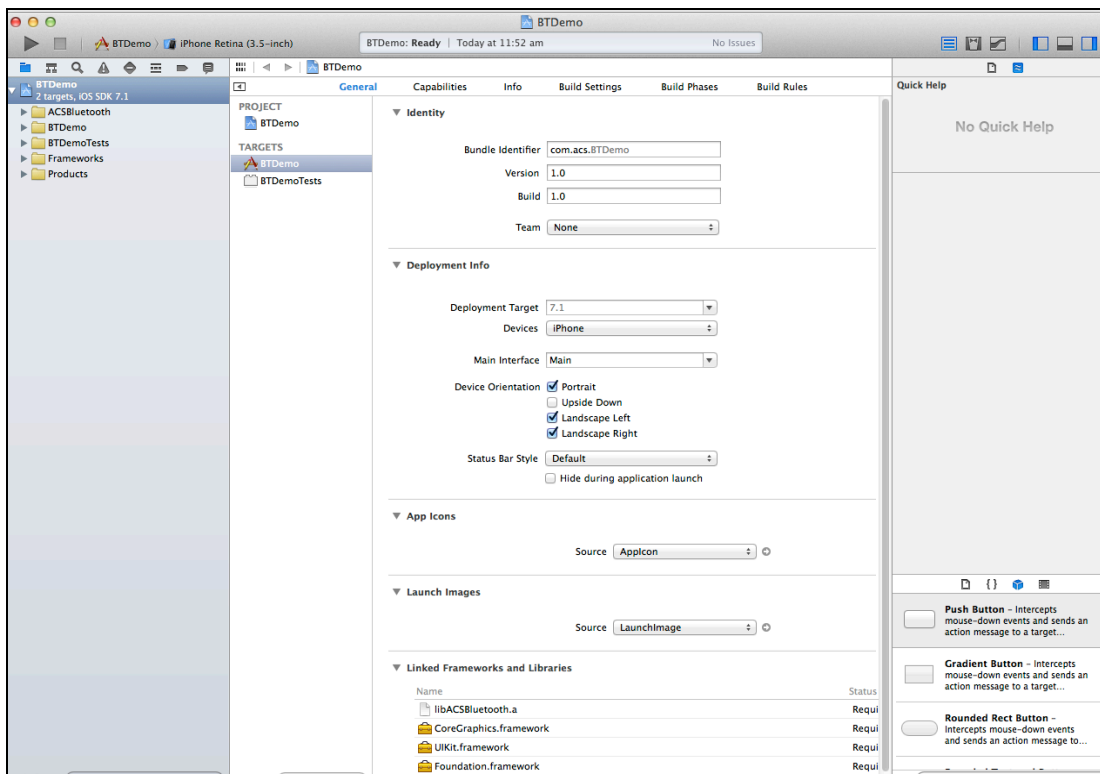
2.1. Install the Bluetooth demo application

1. You can access the device library when you download the **iOS & Mac 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.



2.2. Using the ACS Bluetooth demo application

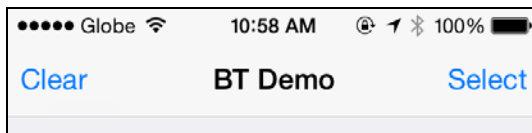
This section provides a simple step-by-step procedure on how to use the ACR1255U-J1 Bluetooth NFC Reader using the BT demo application.

2.2.1. Connect a device

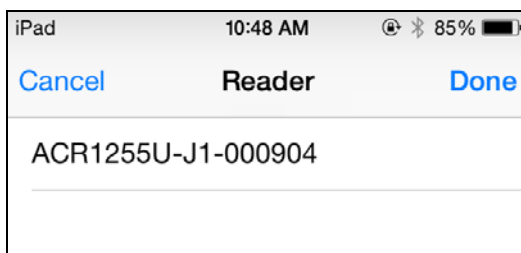
1. Turn on the Bluetooth mode of ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



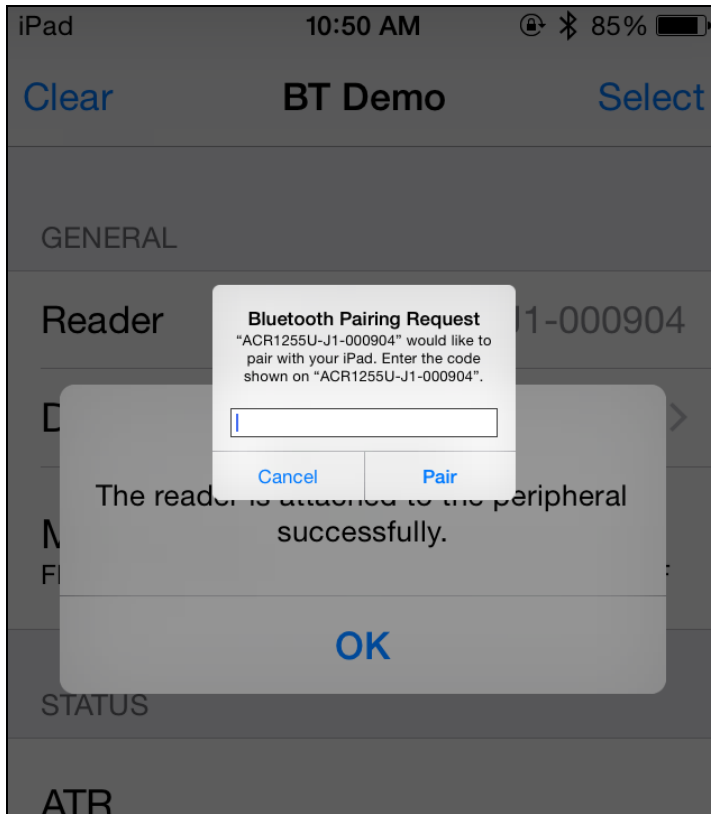
2. Turn on your device's Bluetooth by going to **Settings | Bluetooth**.
3. Open **BT Demo** application.
4. Tap **Select**.



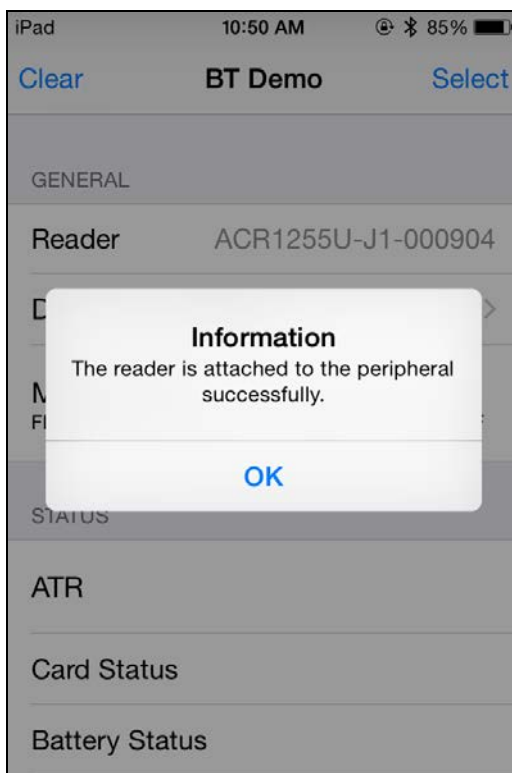
5. Choose the reader to pair your iOS device with, and then tap **Done**.



6. A bluetooth pairing request message will be displayed. Type in 000000, and then tap **Pair** to continue.



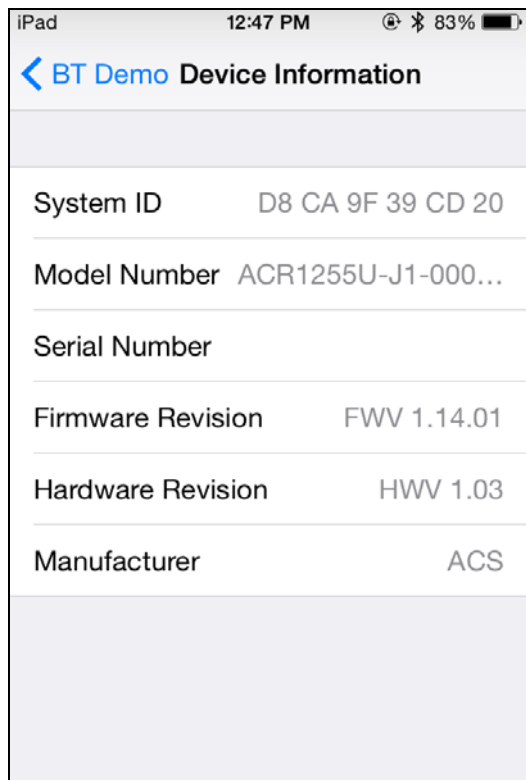
7. When the pairing is successful, tap **OK** to close the prompt.





2.2.2. Get the device information

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





2.2.3. Get the battery level

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

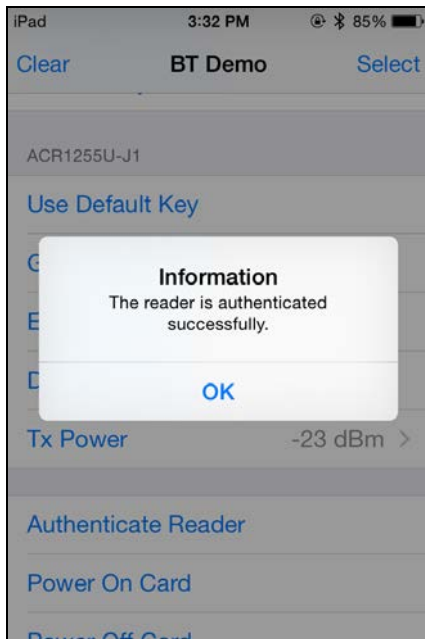
STATUS	
ATR	
Card Status	
Battery Status	
Battery Level	70%

APDU	
Command APDU	00 84 00 00 08
Response APDU	

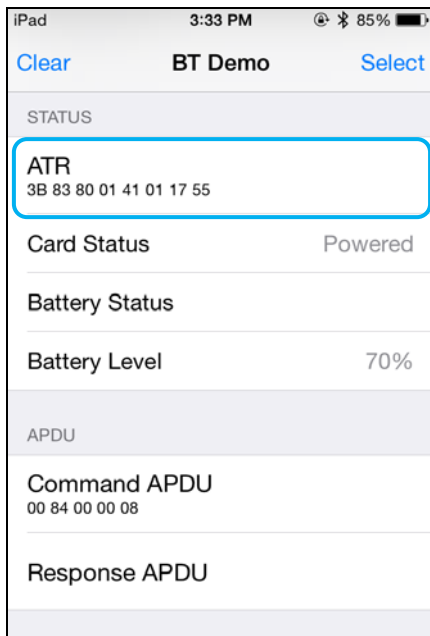
2.2.4. Get the card's ATR (Answer To Reset)

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.



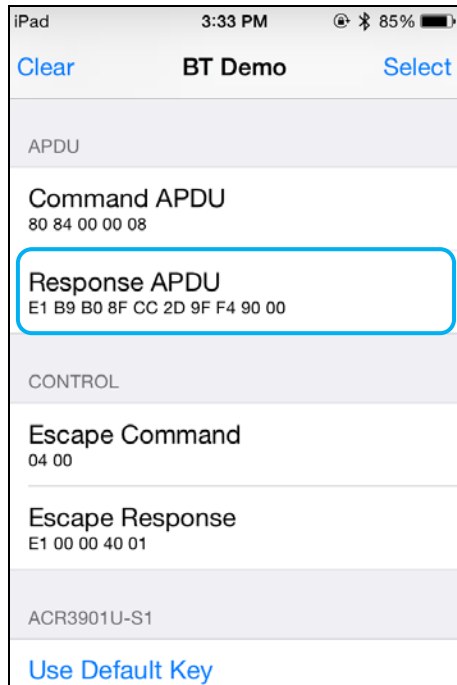
6. To end polling, tap **Power Off Card**, and then tap **Disable Polling**.



2.2.5. Transmit 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.



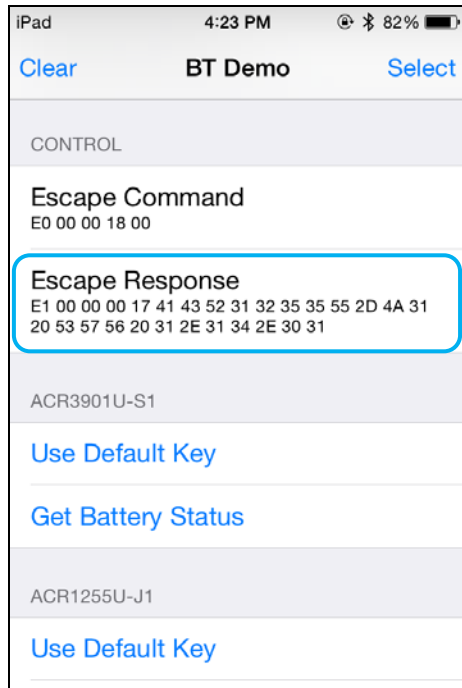
Note: You can edit the APDU command by tapping **Command APDU**.



2.2.6. Transmit 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.

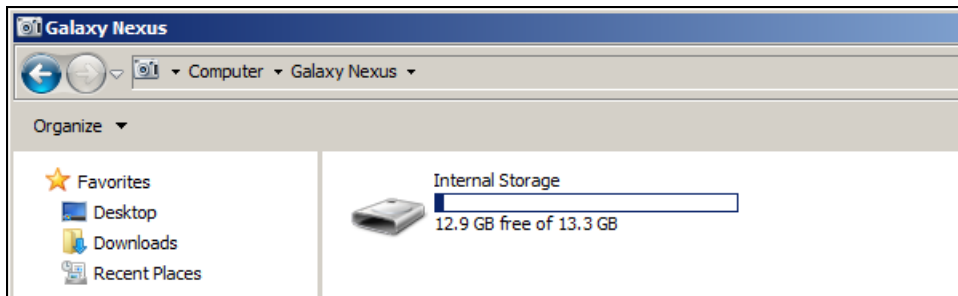


Note: You can edit the Escape command by tapping **Escape APDU**.

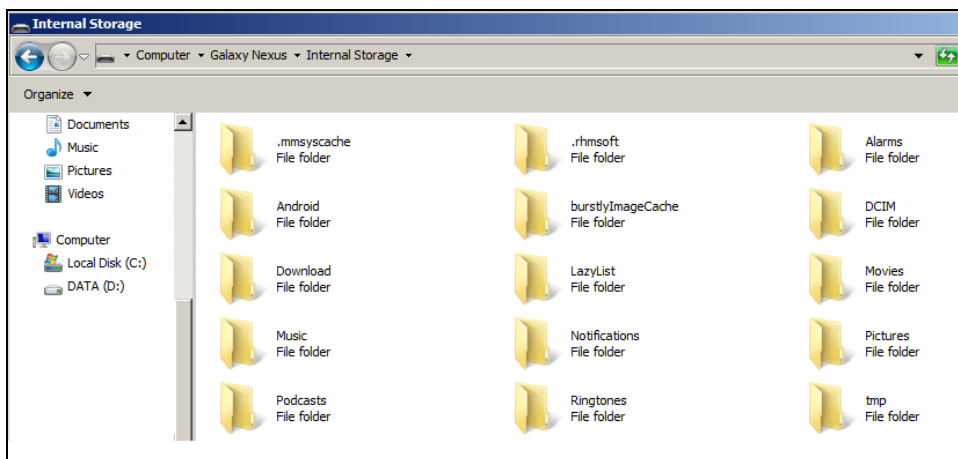
3.0. For Android

3.1. Install the Bluetooth demo application

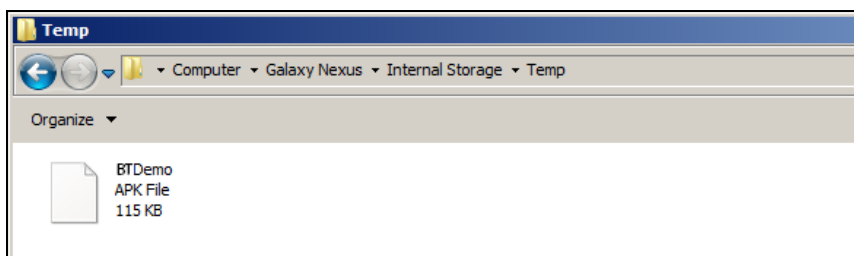
1. Connect your mobile device to the computer.



2. In the internal storage of your device, create a folder where the ACR1255U-J1 BTdemo will be placed.

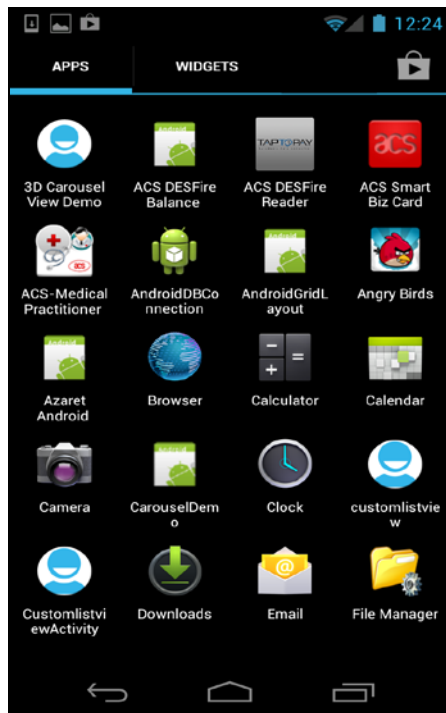


3. You can access the device library when you download the **Android EVK** from the ACS website.
4. In the Android library, copy the **BTDemo.apk** file to the previously created folder.

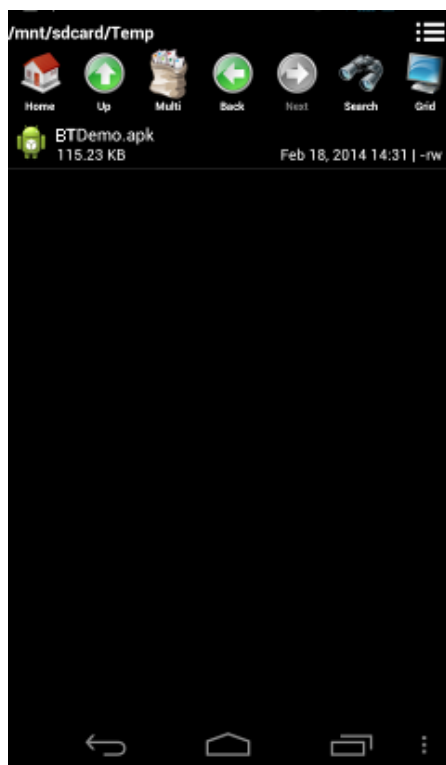




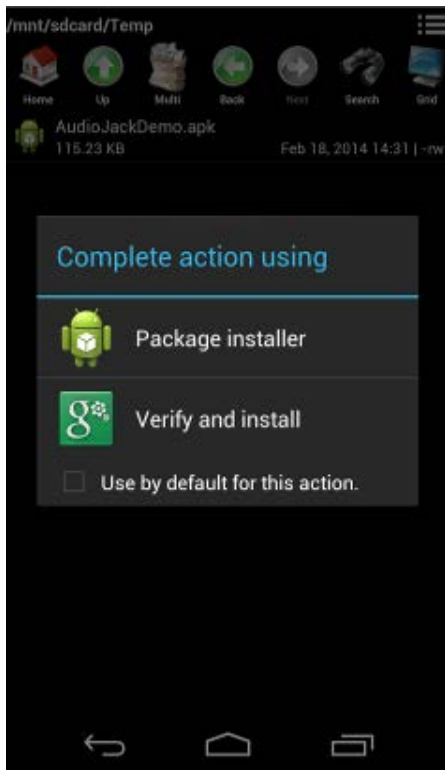
5. Disconnect your mobile device from the computer. Locate the **BTDemo.apk** using a file manager application.



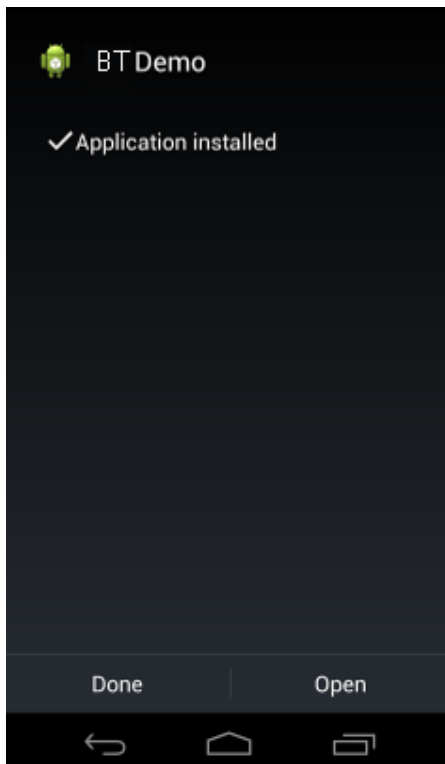
6. To start the installation, tap the **BTDemo.apk** file.



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.



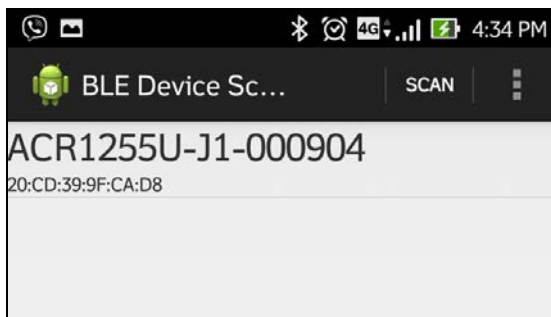
3.2. Using the ACS Bluetooth demo application

3.2.1. Connect a device

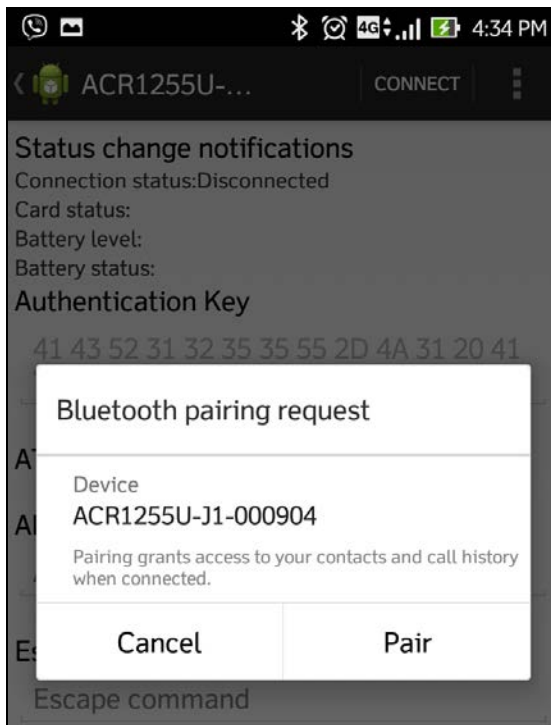
1. Turn on the Bluetooth mode of ACR1255U-J1 to make it discoverable. To do this, slide the toggle switch to the right.



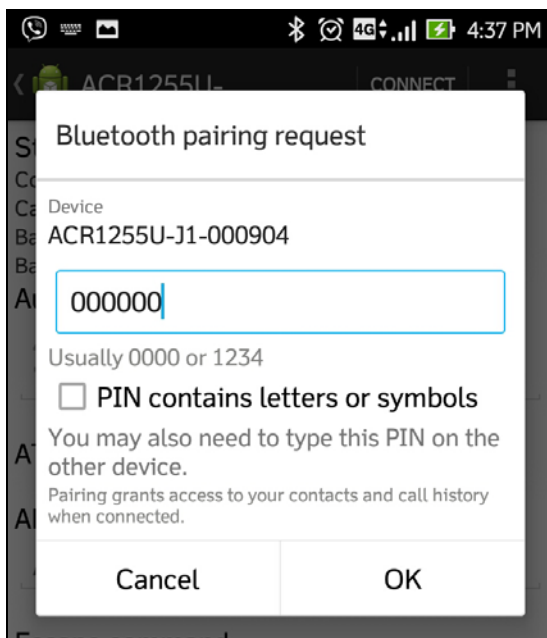
2. Turn on your device's Bluetooth by going to **Settings | Bluetooth**.
3. Open **ACS BT Demo application**.
4. Choose the reader to pair your Android device with, and then tap **Done**.



5. A Bluetooth pairing request will appear. Tap **Pair**.



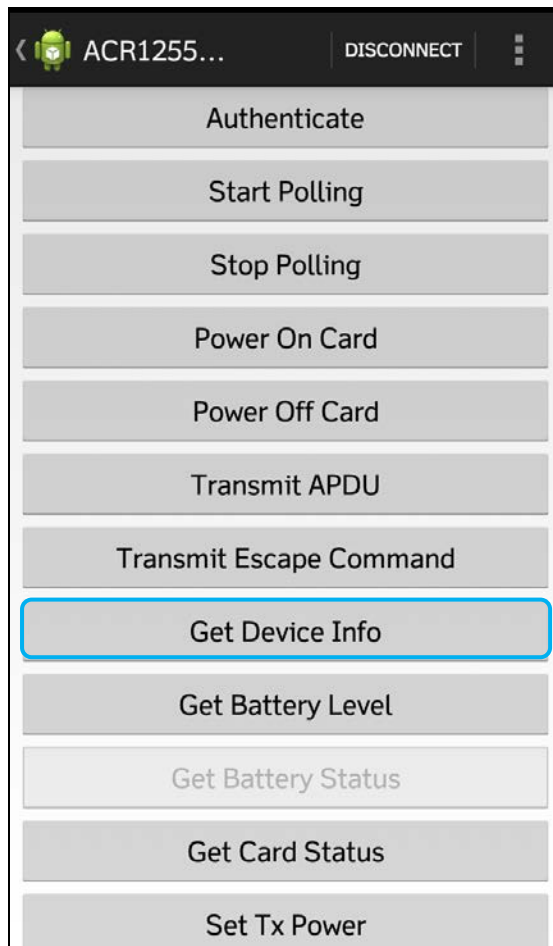
6. You will be prompted for a pairing code. Type in *000000* and then tap **OK**.





3.2.2. Get the device information

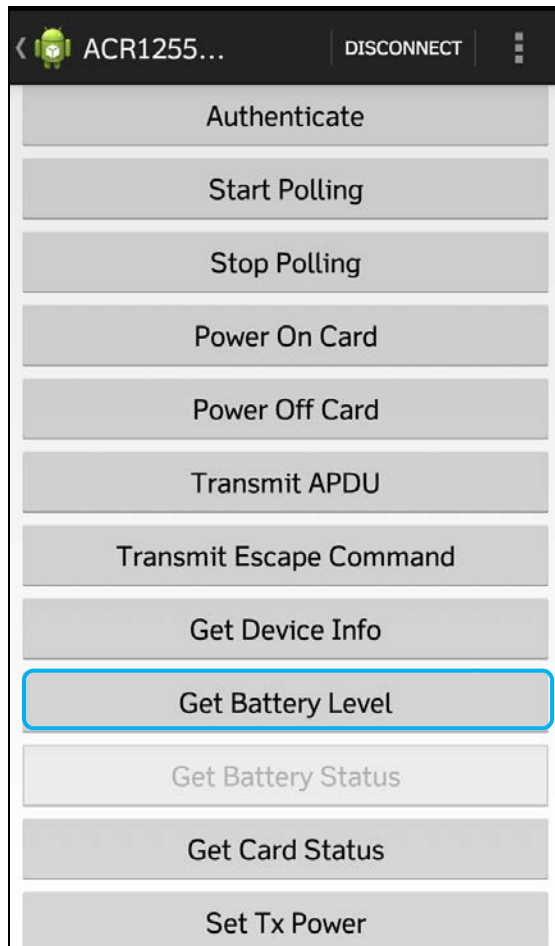
To get the reader's information, scroll down, and then tap **Get Device Info**. Scroll up again to view the Device information displayed.





3.2.3. Get the battery level

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

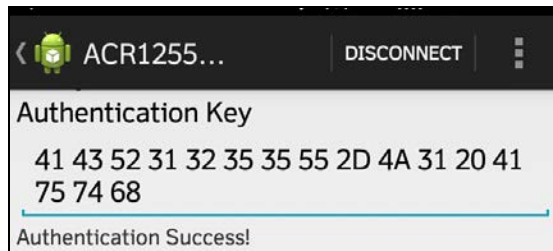




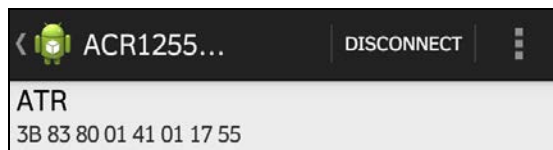
3.2.4. Get the card's ATR (Answer To Reset)

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.

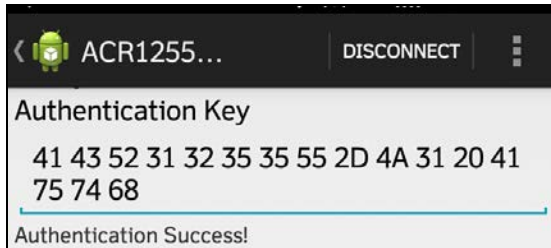


6. To end polling, tap **Power Off Card**, and then tap **Stop Polling**.

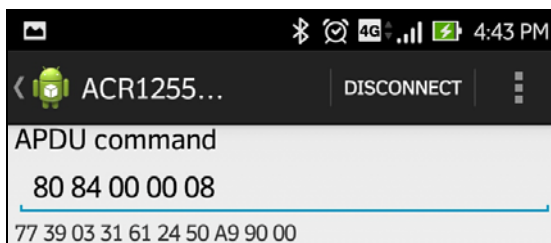
3.2.5. Transmit APDU command

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.



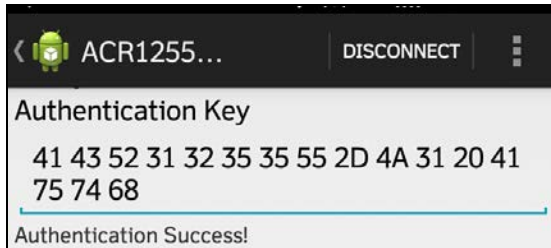
Note: You can edit the APDU command by tapping below the **APDU command**.



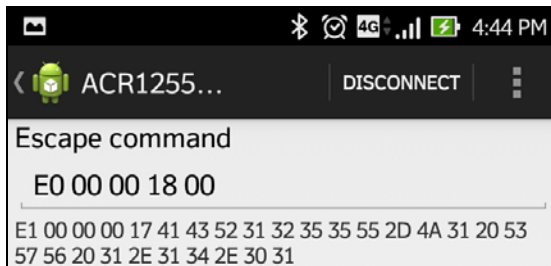
3.2.6. Transmit escape command

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.



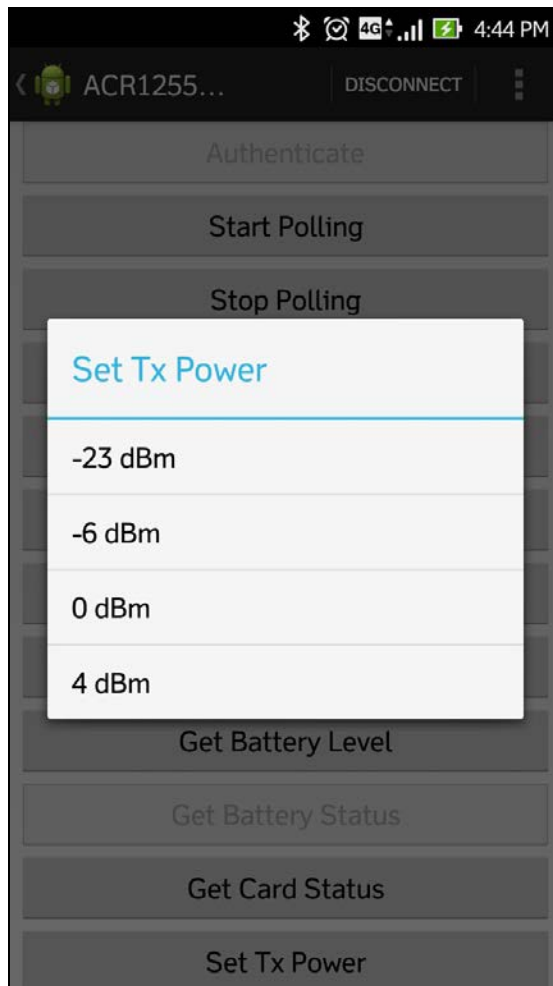
4. Tap **Transmit Escape Command**.
5. The Escape Response will be displayed.



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

3.2.7. Change 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

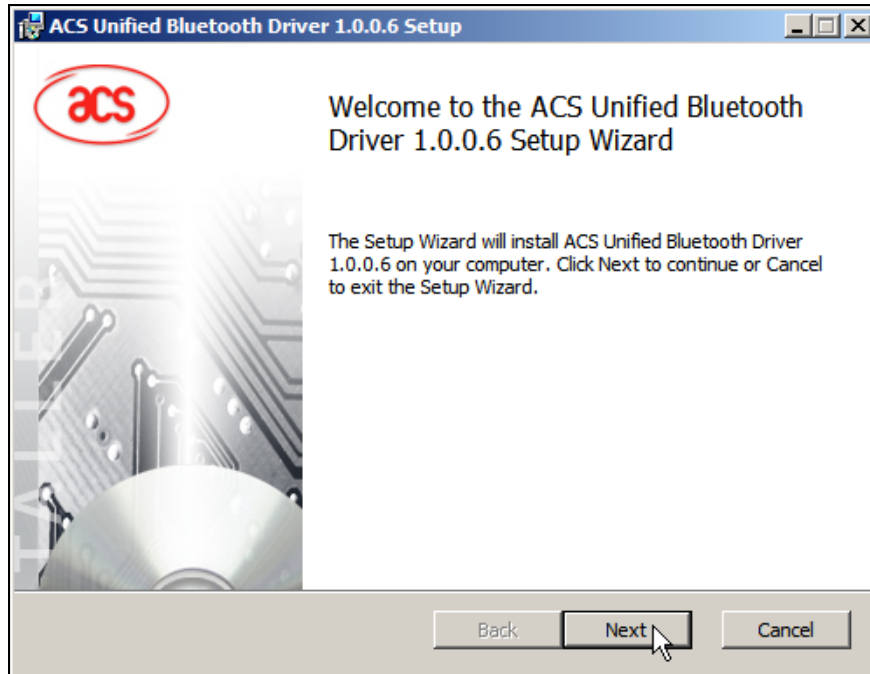
Note: The operating distance could be shorter when there is interference such as, metal, door, wall, or other radio emitting devices.

4.0. For Windows®

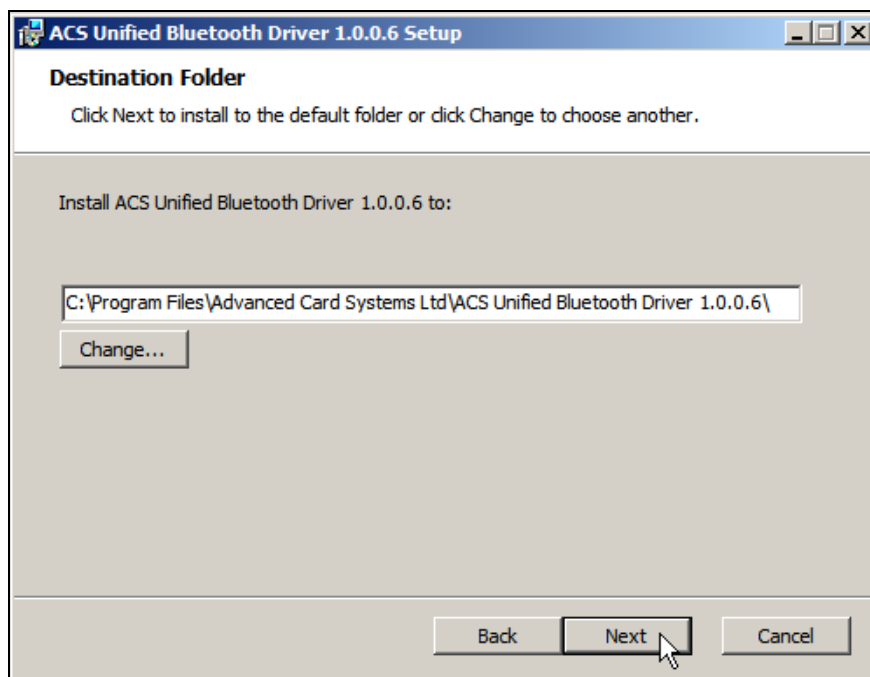
4.1. Install ACS Unified Bluetooth driver

To install the driver:

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

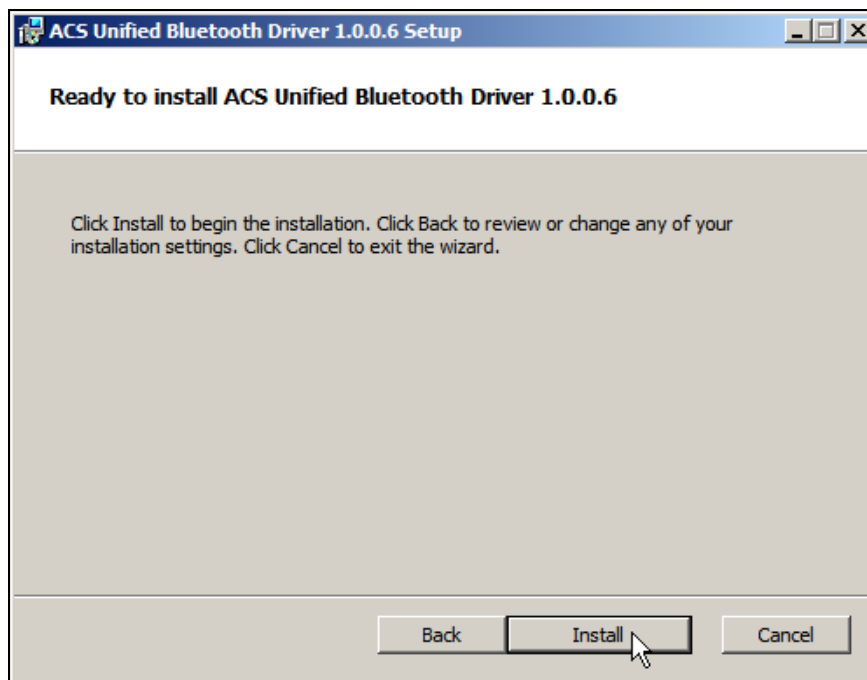


3. Click **Next** to install the driver to the default destination, located at **X:\Program Files\Advanced Card Systems Ltd\ACS Unified Bluetooth Driver 1.0.0.6**, with **X** as your local Windows drive.

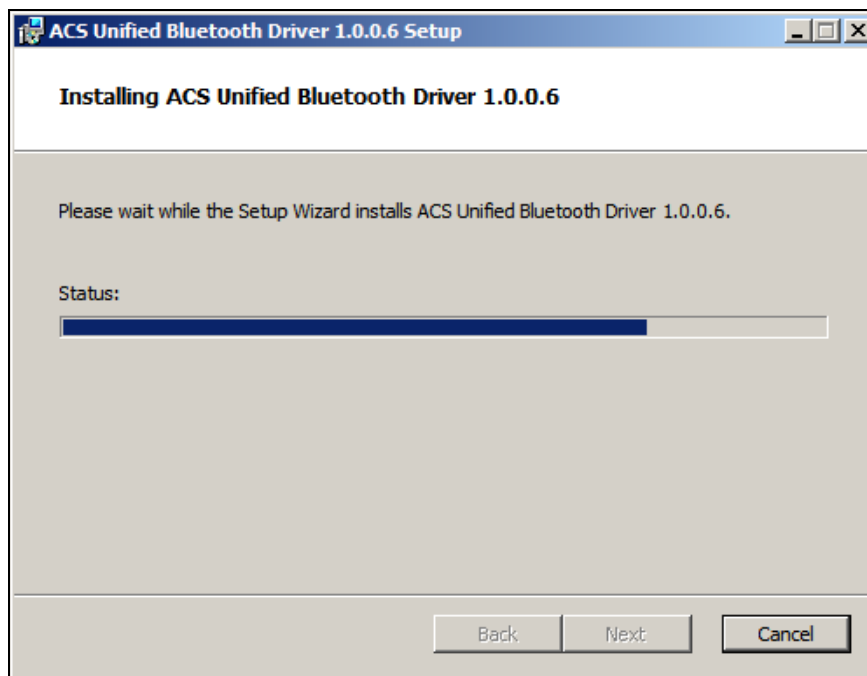




4. Click **Install**.

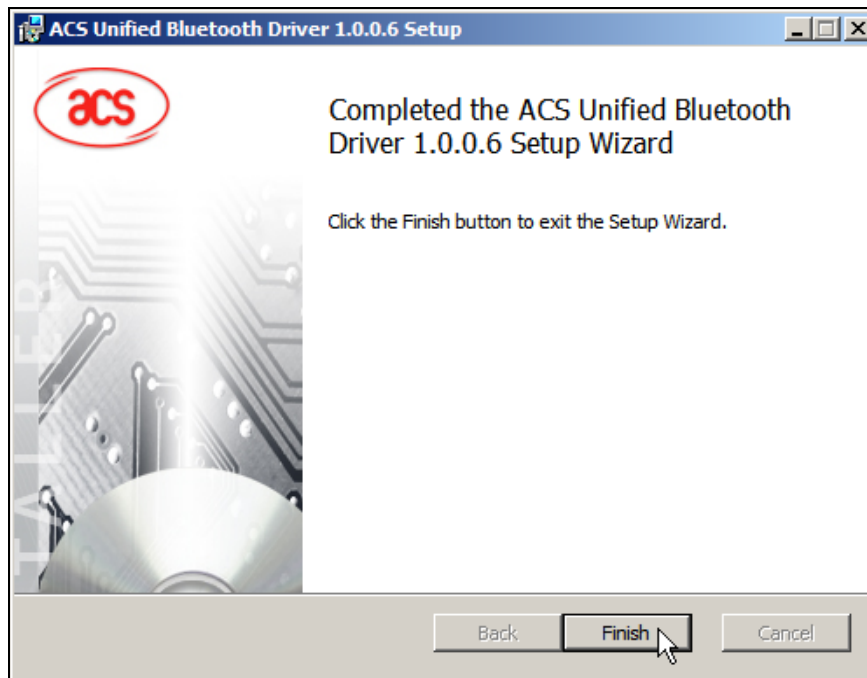


5. Wait while the driver installs.

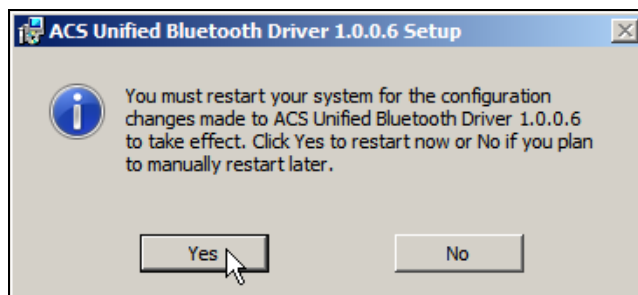




6. Once the installation is complete, click **Finish**.



7. You will need to restart your computer for the changes to take effect. Click **Yes** to restart.



4.2. Set up device pairing with built-in Bluetooth adapter

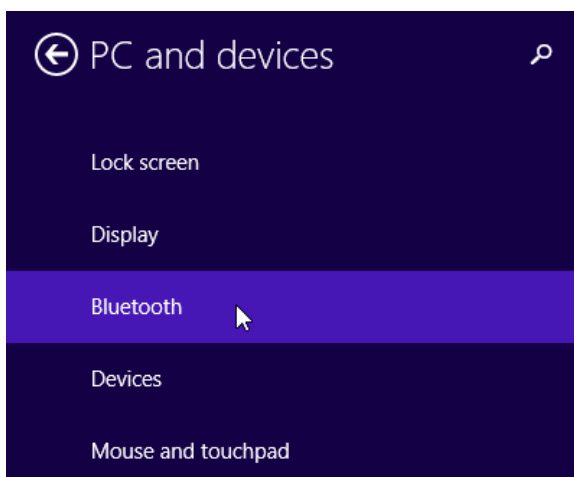
Note: This procedure only applies to Windows 8 and later. Windows 7 does not support devices using Bluetooth 4.0/Bluetooth Low Energy interface.

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 **PC and devices**, and then click **Bluetooth**.

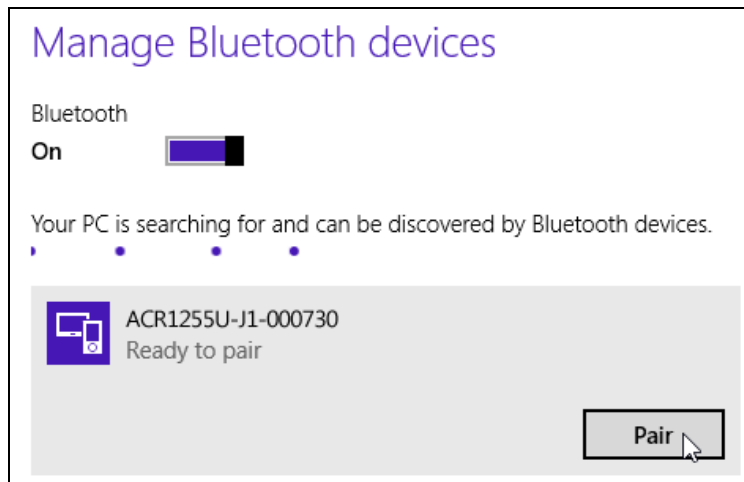


3. Turn on **Bluetooth**.

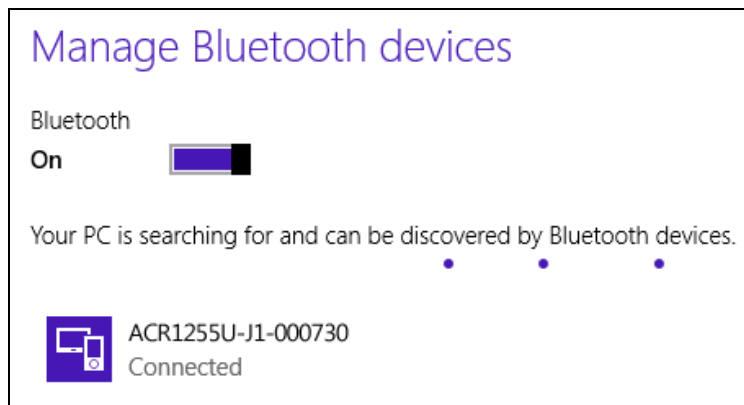




4. Select ACR1255U-J1, and then click **Pair**.



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



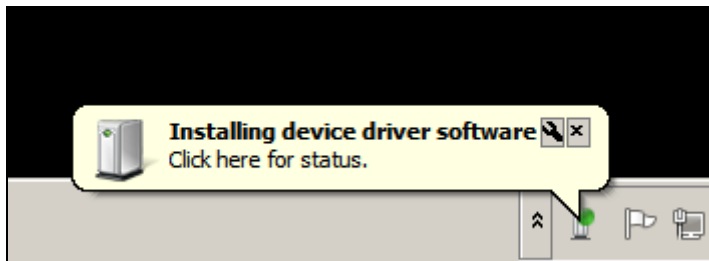
6. To complete the installation of the Bluetooth card reader, go to **ACS Bluetooth Device Management Tool**.

4.3. Set up device pairing with Bluetooth USB dongle

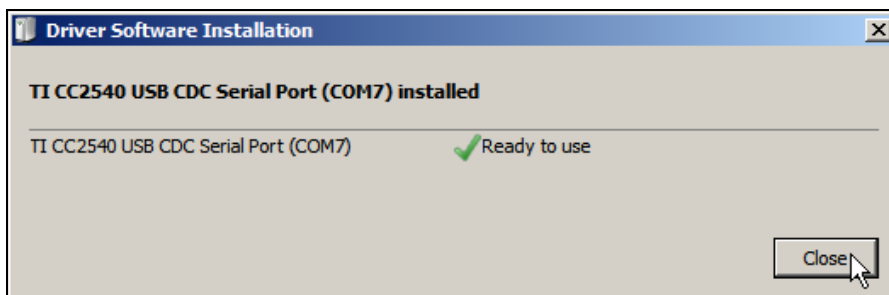
Note: This procedure will use the TI USB dongle as the Bluetooth adapter. Make sure that you have installed the ACS Bluetooth driver before performing this procedure (see **Install ACS Unified Bluetooth driver**).

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, indicated by the tooltip notification.



3. Wait while the device driver installs.
4. When it is ready to use, click **Close**.



5. When you open the **ACS Bluetooth Device Management Tool**, it automatically pairs the dongle to your system.

4.4. 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.

4.4.1. Install a device

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

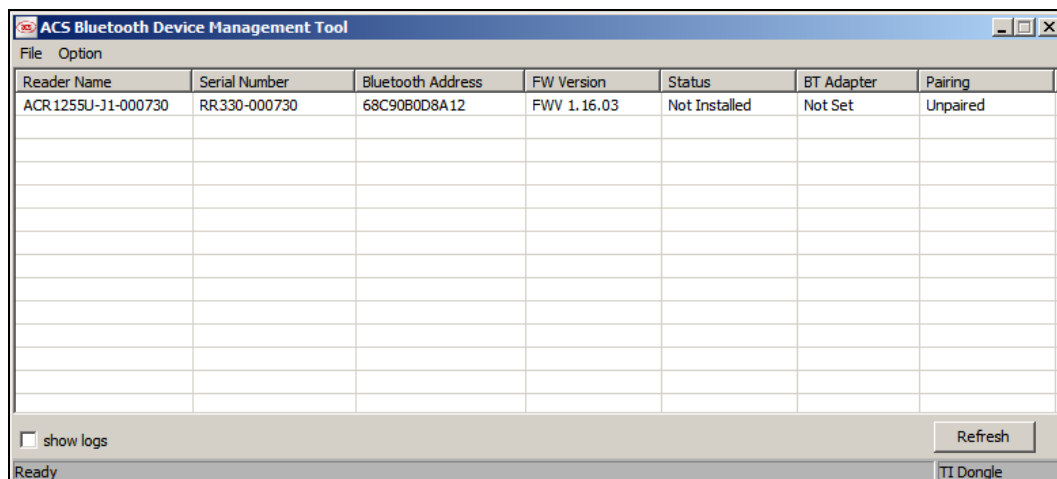
Note: The TI USB dongle can only work on a one-to-one connection with an installed ACS Bluetooth card reader. If there is a previously installed Bluetooth card reader in the tool, uninstall it first (see **Uninstall the device**).

To begin:

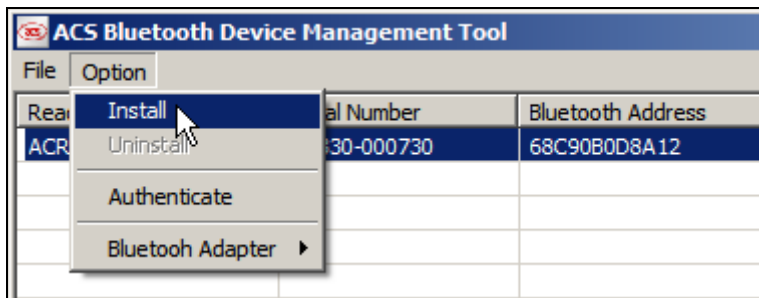
1. Turn on the Bluetooth mode of ACR1255U-J1 and make it discoverable. To do this, slide the toggle switch to the right.



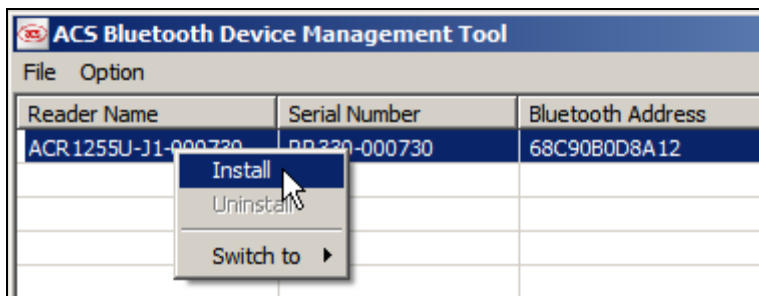
2. Run the **ACS Bluetooth Device Management Tool**.
3. Wait while the tool scans for Bluetooth devices within range.
Note: *If the device is not immediately discovered, click **Refresh**.*
4. Once the tool discovers ACR125U-J1, it will show in the list.



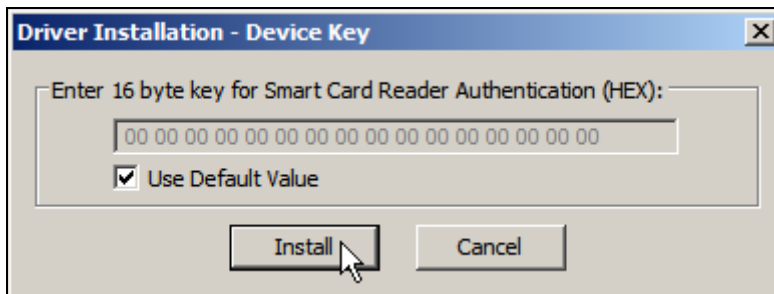
5. In the **Option** menu, click **Install**.



An alternative way to do this is to right-click on the device, and then click **Install**.

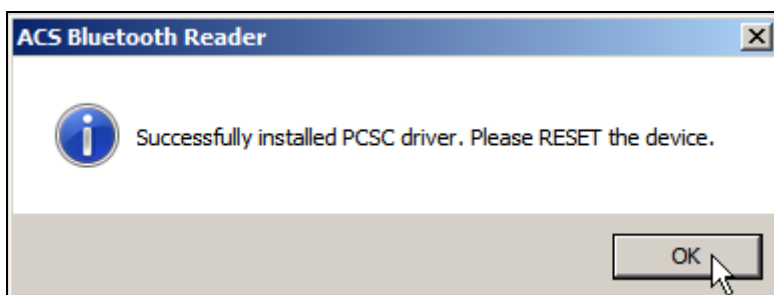


6. Type in a 16-byte hexadecimal key for authentication, or use the default value. Click **Install**.



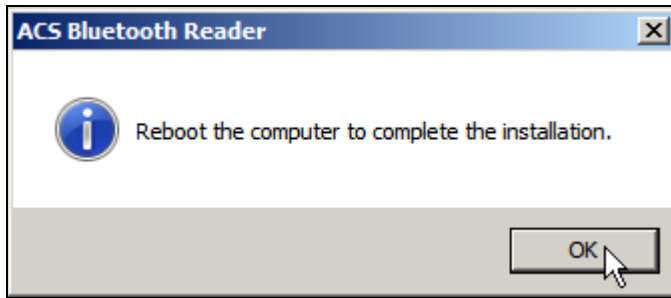
Note: The default authentication key is 41 43 52 31 32 35 35 55 2D 4A 31 20 41 75 74 68.

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

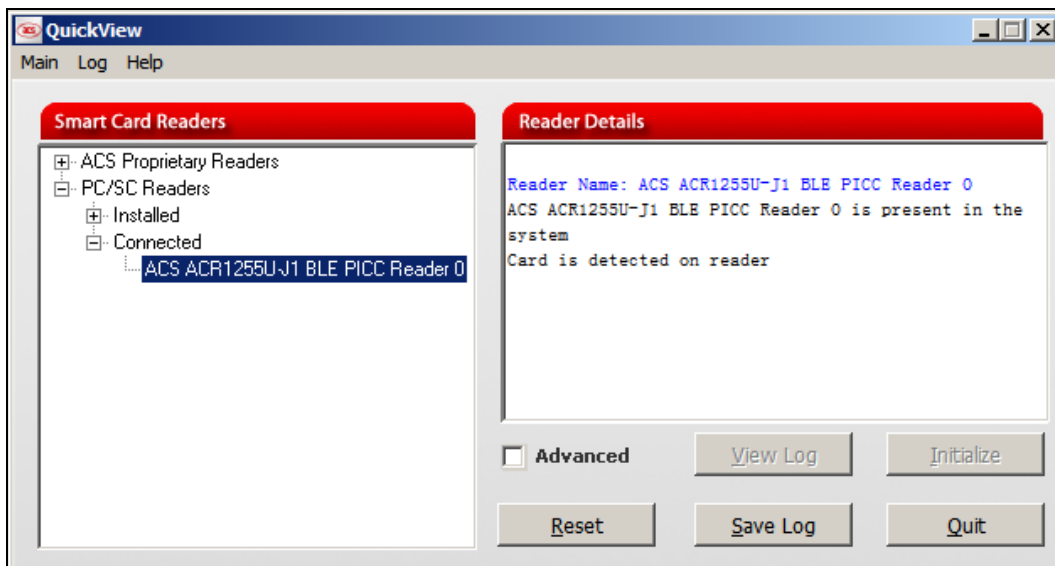




9. A message will appear reminding you to restart your computer. Click **OK**, and then restart your computer.



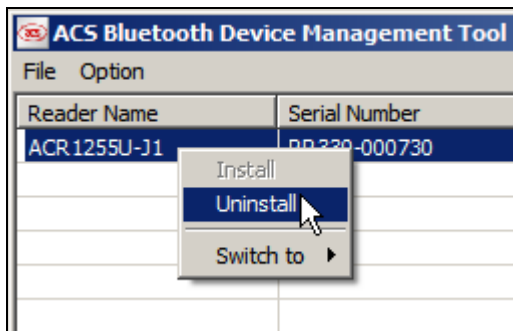
10. After a successful driver installation, you can now use ACR1255U-J1 with various smart card applications. Below is a sample of ACR1255U-J1 connected in **QuickView**.



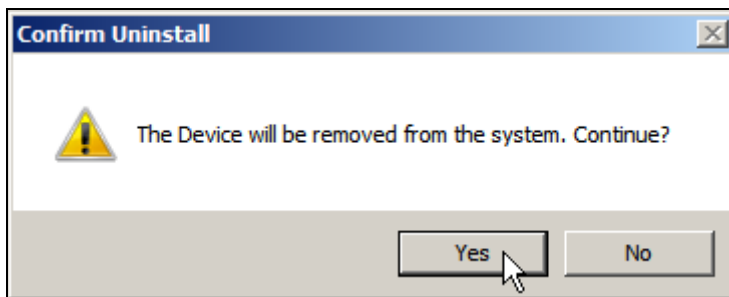
4.4.2. Uninstall a device

To uninstall a device:

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



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

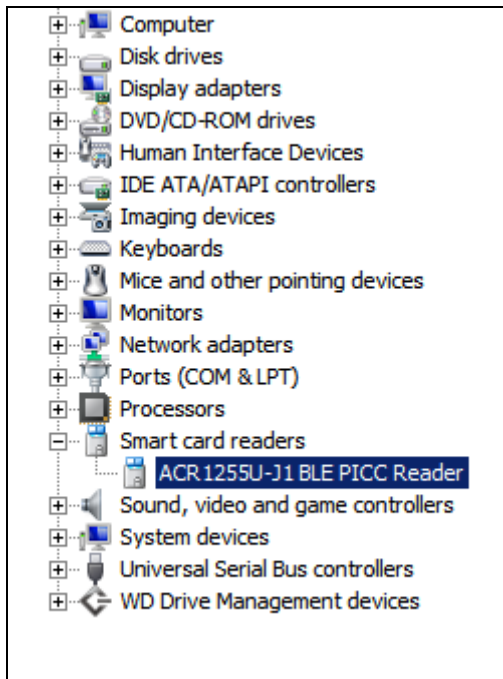


3. The device will be removed from the reader list.

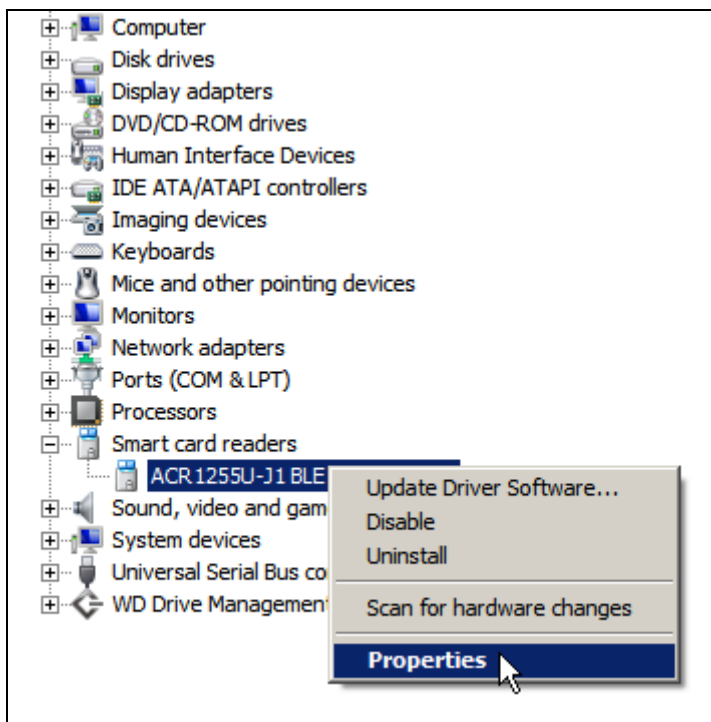
Note: Since the TI USB dongle can only work on a one-to-one connection with a Bluetooth card reader, you must first uninstall the previous device to connect to another one.

4.5. Check 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**.

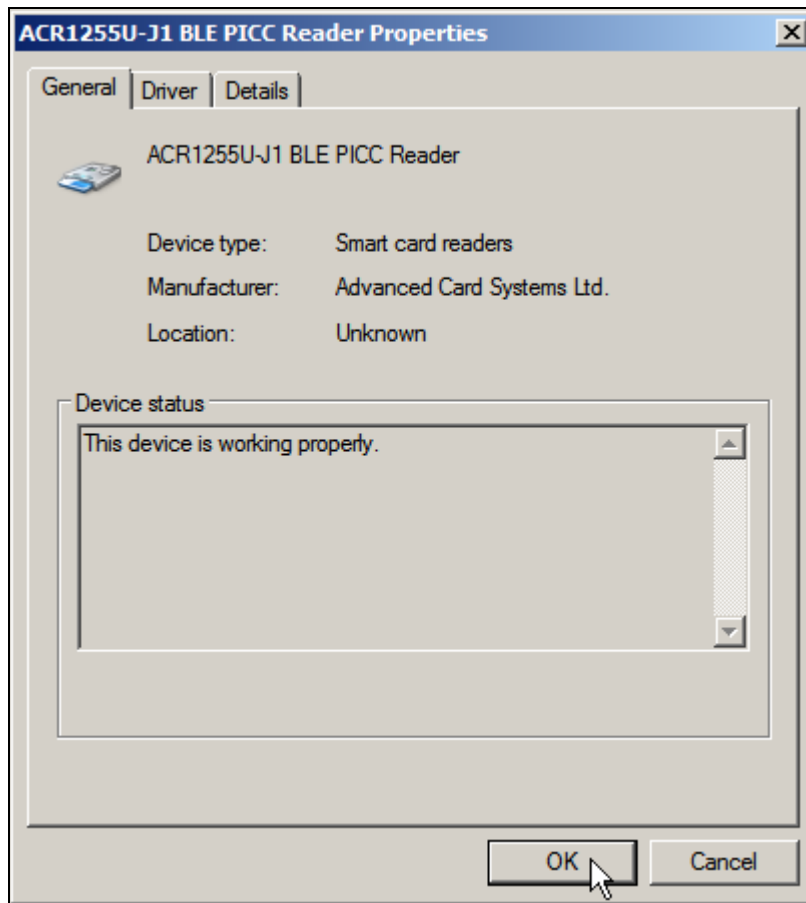


3. Right-click on the device, and then click **Properties**.





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



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The *Bluetooth*® word, mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Advanced Card Systems Ltd. is under license.

Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.