Advanced Card Systems Ltd.
Card & Reader Technologies

ACR3901U-S1
Secure Bluetooth Contact Card Reader

User Manual V1.01

Table of Contents

1.0. Introduction

ACR3901U-S1 Secure Bluetooth Contact Card 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 ACR3901U-S1 Secure Bluetooth Contact Card 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 ACR3901U-S1 using iOS device and library

- **Section 3.0** - provides procedures on how to install and use Bluetooth (BT) demo application with ACR3901U-S1 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
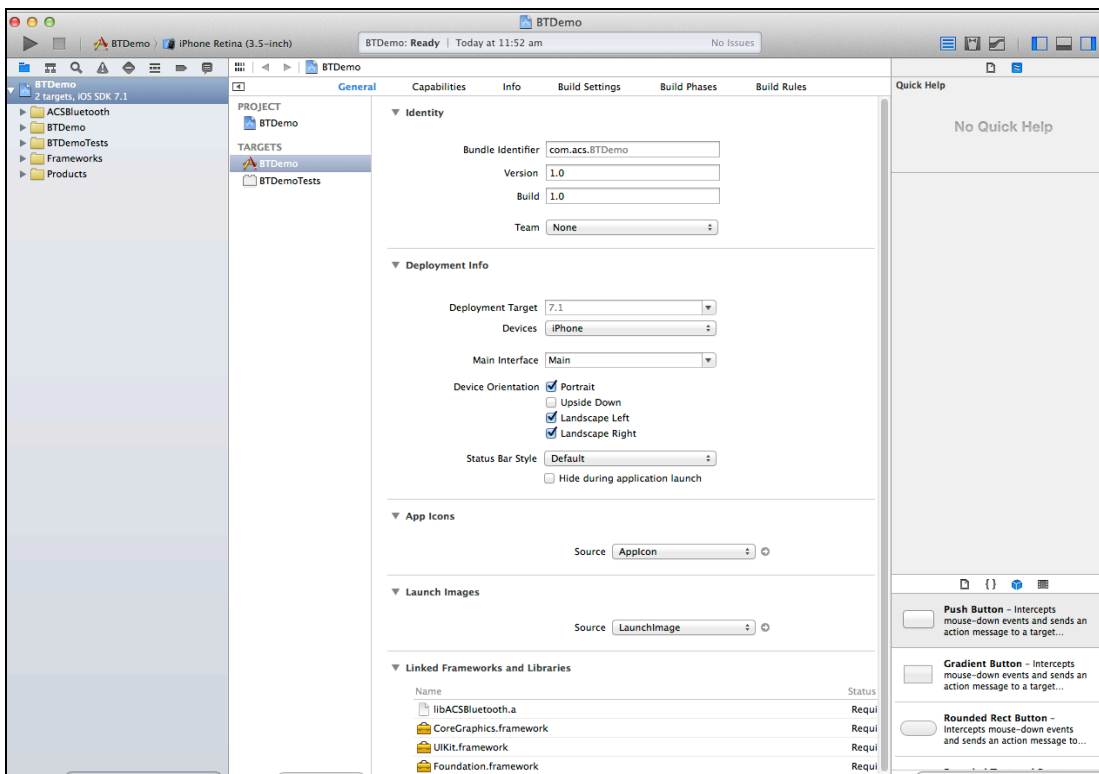
2.0. For iOS

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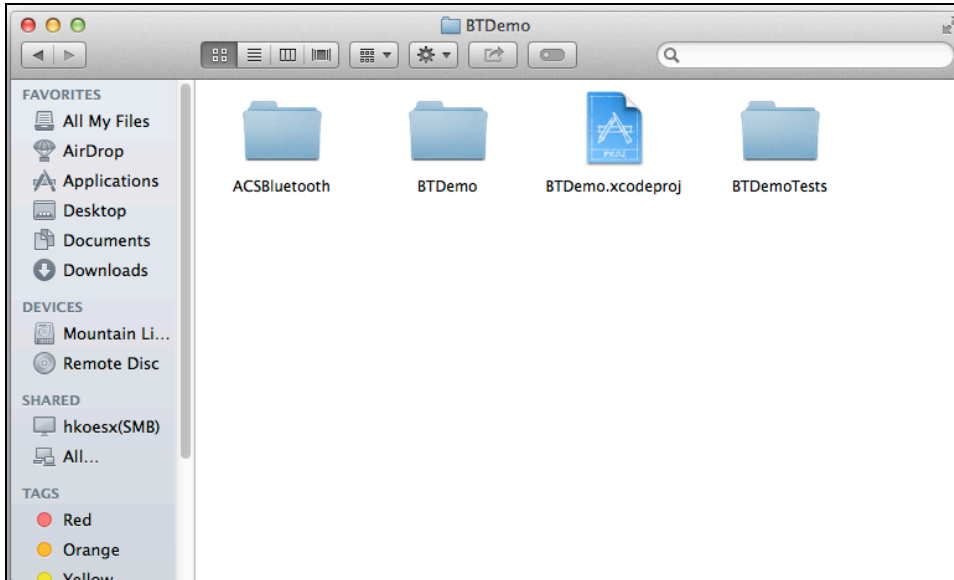
3. Transfer **BTDemo.xcodeproj** to your mobile device. Choose your mobile device, and then click **Play**.

   Note: Make sure that your mobile device is connected to your computer.
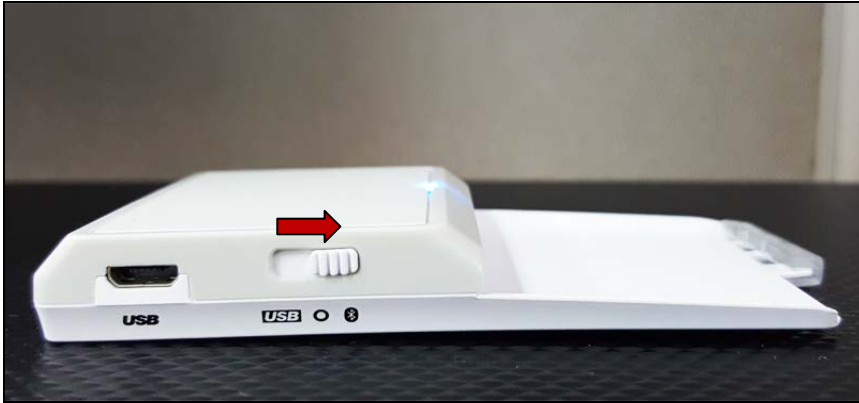
## 2.2. Using the ACS Bluetooth demo application

This section provides a simple step-by-step procedure on how to use the ACR3901U-S1 Bluetooth Card Reader using the BT Demo application.
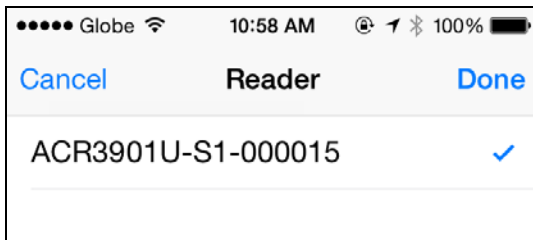
2.2.1. Connect a device

1. Turn on the Bluetooth mode of ACR3901U-S1 to make it discoverable. To do this, slide the toggle switch to the right.
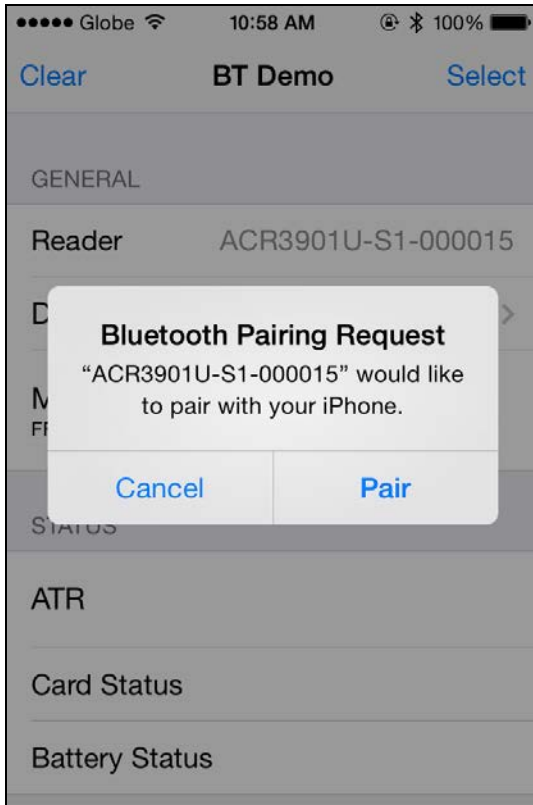

2. Turn on your device's Bluetooth by going to **Settings > Bluetooth**.

3. Open **BT Demo application**.
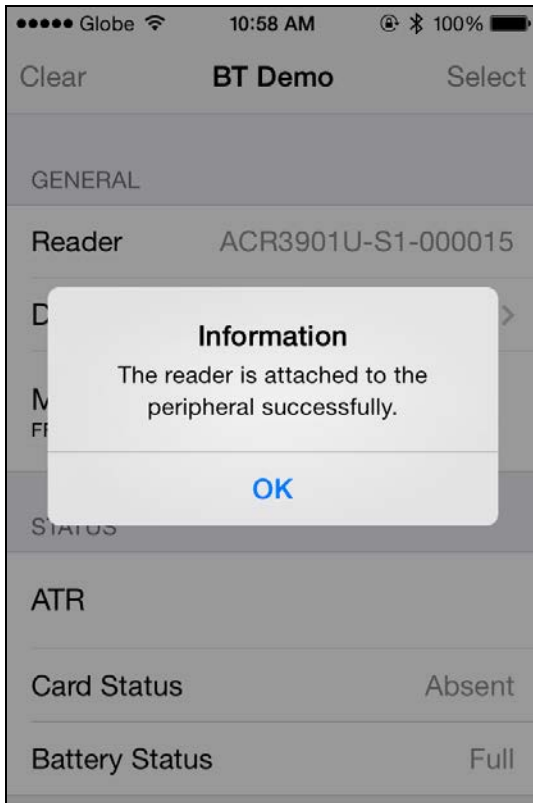
4. Tap **Select**.
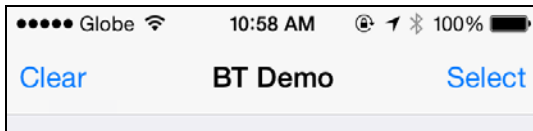
5. Choose the reader to pair your iOS device with, then tap **Done**.
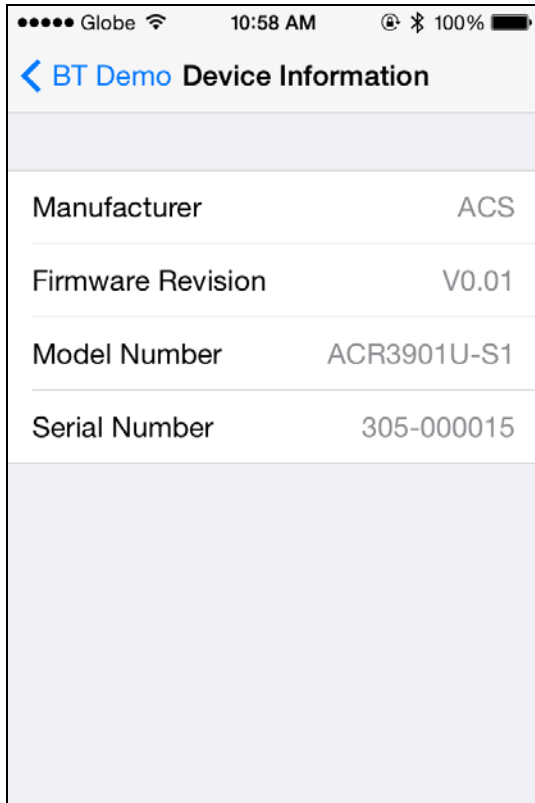
6. Tap **Pair** to continue.

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

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Version 1.01

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www.acs.com.hk

![Advanced Card Systems Ltd. Card & Reader Technologies logo]

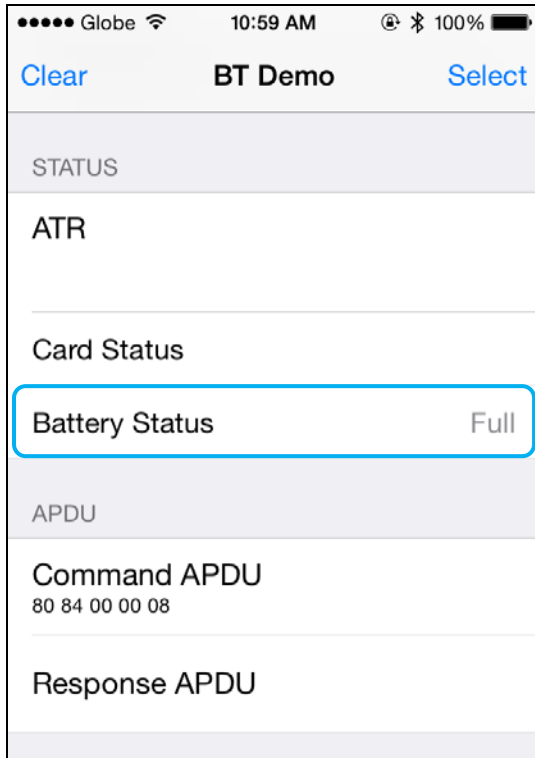### 2.2.2.   Get the device information

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

2.2.3.   Get the battery status

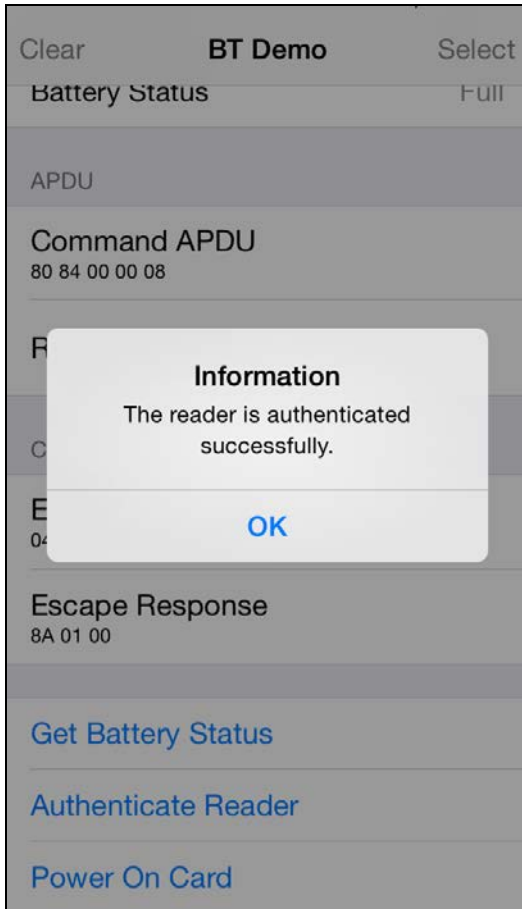To get the battery status, tap **Get Battery Status**.

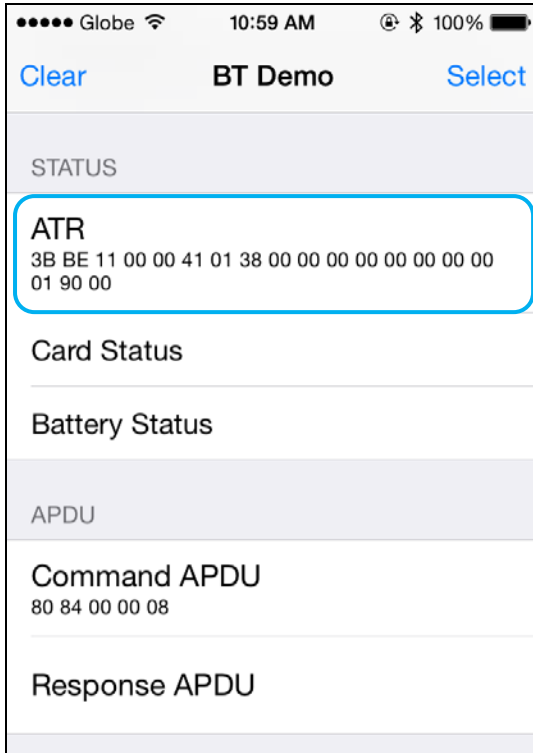### 2.2.4. Get the card's ATR (Answer ToReset)

To get the ATR of the card:

1. Insert smart card into the ACR3901U-S1 reader.

2. In the demo application, tap **Authenticate Reader**.

3. When the authentication is successful, tap **OK** to close the prompt.

4. Tap **Power On Card**.
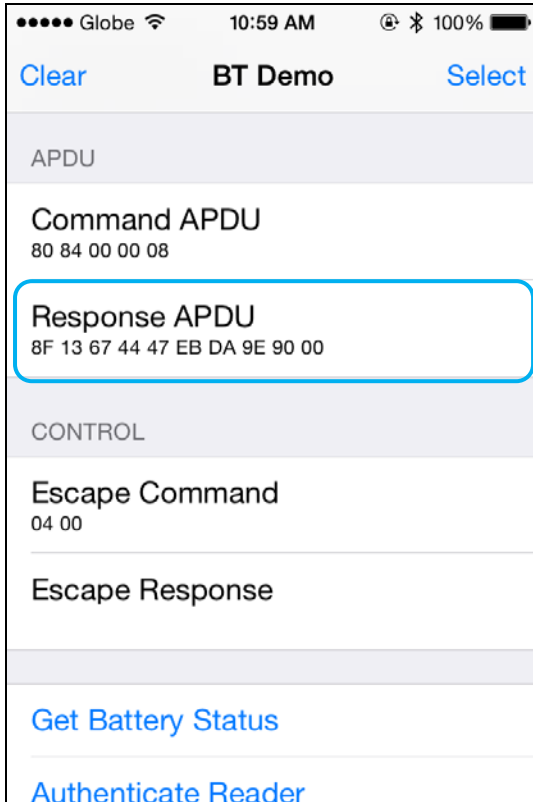
5. The card's ATR will be displayed.

2.2.5. Transmit an APDU command

To transmit APDU command:

1. Insert smart card into the ACR3901U-S1 reader.

2. In the demo application, 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 an escape command
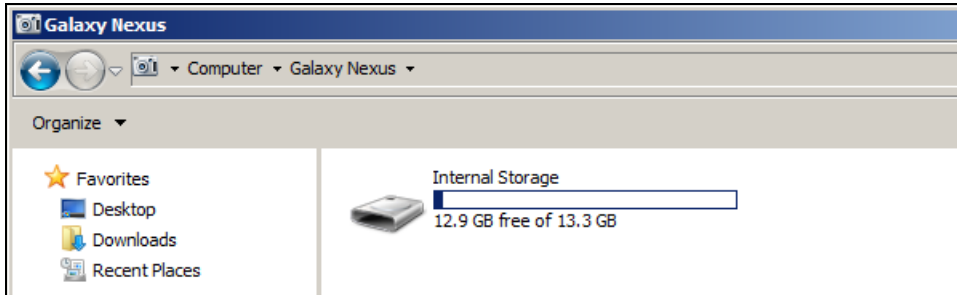
To transmit an escape command:

1. Insert smart card into the ACR3901U-S1 reader.

2. In the demo application, tap **Authenticate Reader**.

3. Tap **Power On Card**, and then tap **Transmit Escape Command**.

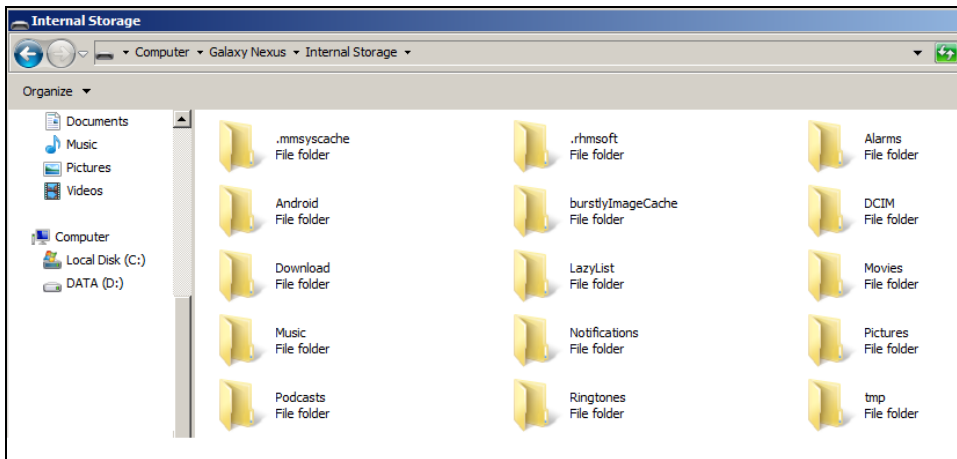4. The Escape Response will be displayed.
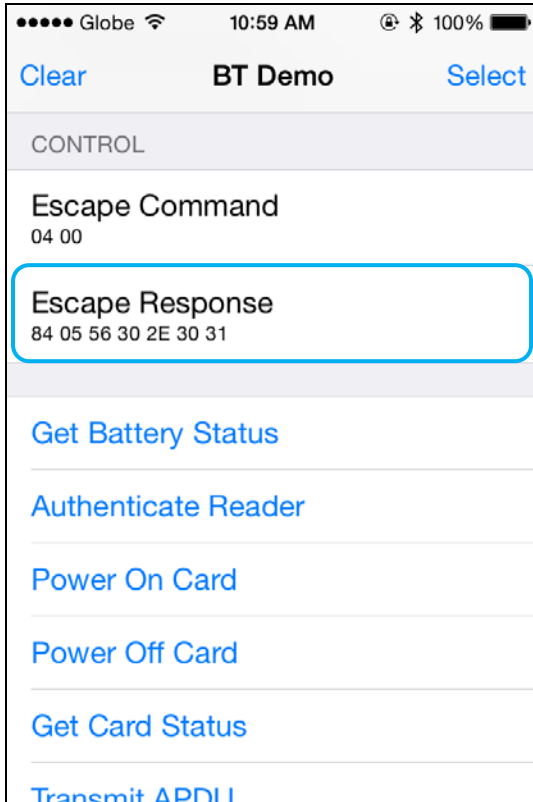
3.0. For Android

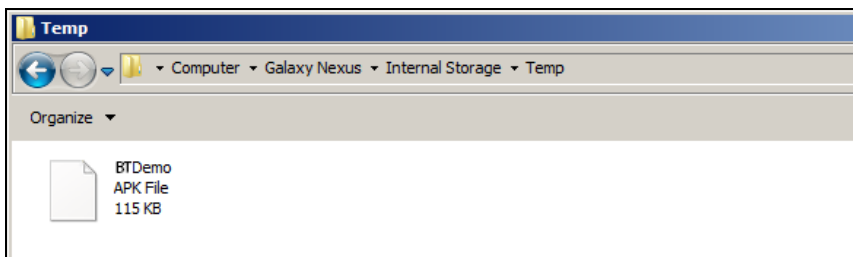## 3.1. Install the Bluetooth demo application

1. Connect your mobile device to the computer.

2. In the internal storage of your device, create a folder where the ACR3901U-S1 BTdemo will be placed.
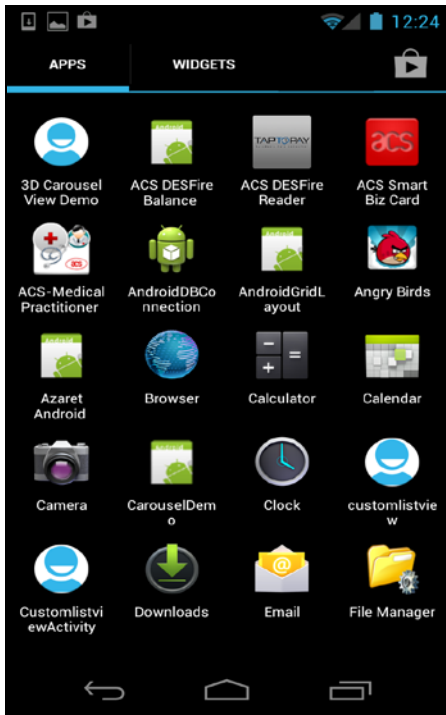

3. You can access the device library when you download the **Android EVK** from the ACS website.

4. In the Android library, copy the **BTDemo.apk** file to the previously created folder.
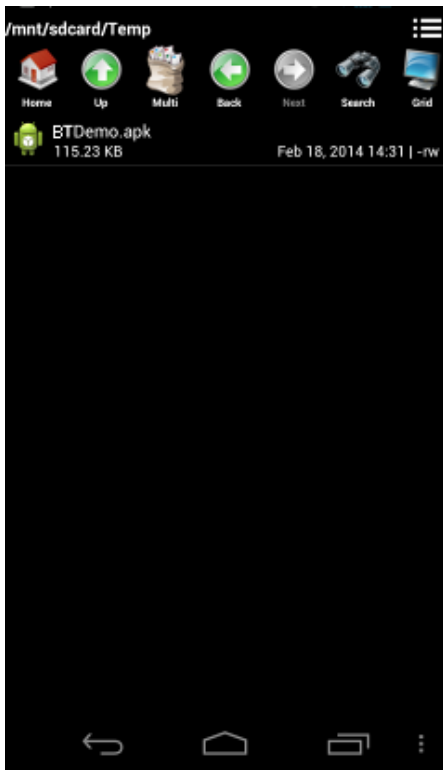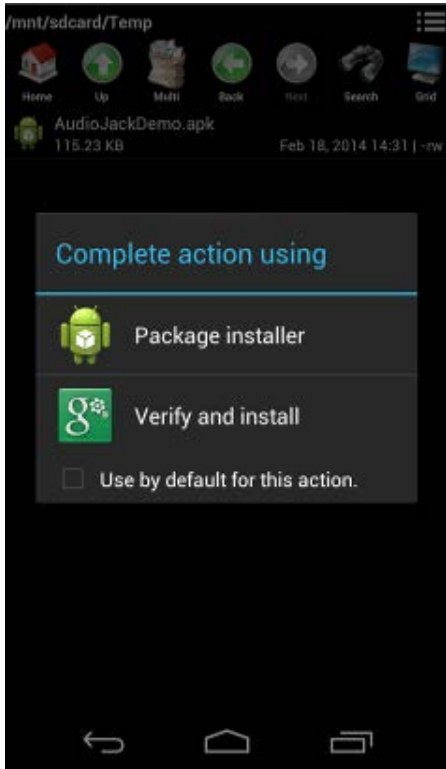
5. Disconnect your mobile device from the computer. Locate the **BTDemo.apk** using a file manager application.
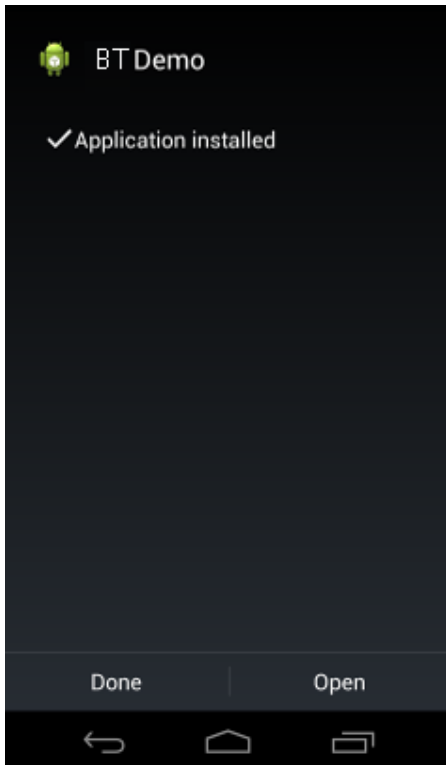

6. To start the installation, tap the **BTDemo.apk** file.

7. Complete the action using **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.
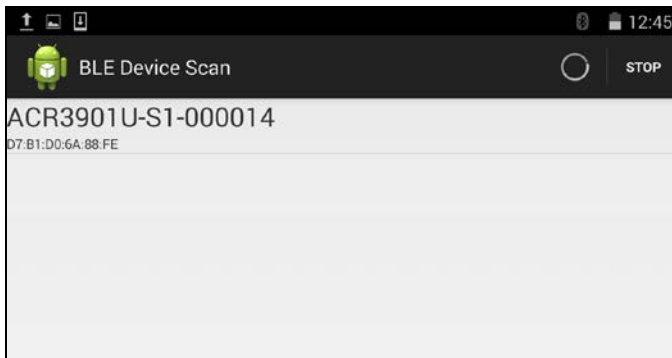
3.2. Using the ACS Bluetooth demo application

3.2.1. Connect a device

1. Turn on the Bluetooth mode of ACR3901U-S1 to make it discoverable. To do this, slide the toggle switch to the right.
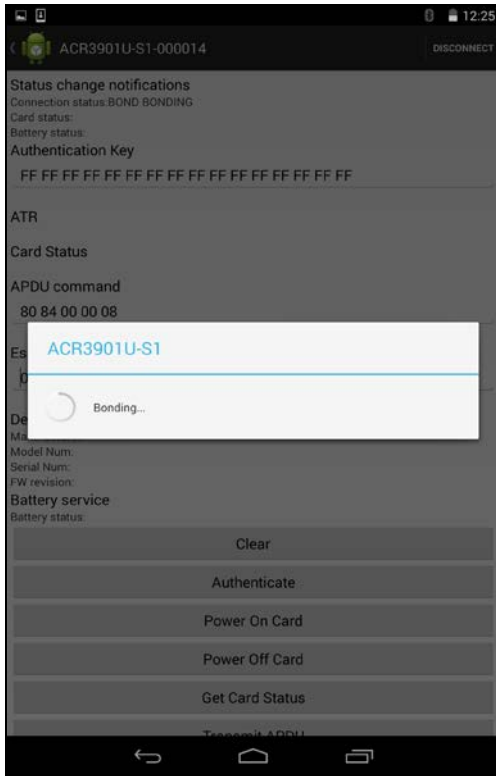

2. Turn on your device's Bluetooth by going to **Settings | Bluetooth**.

3. Open **ACS BT Demo application**.

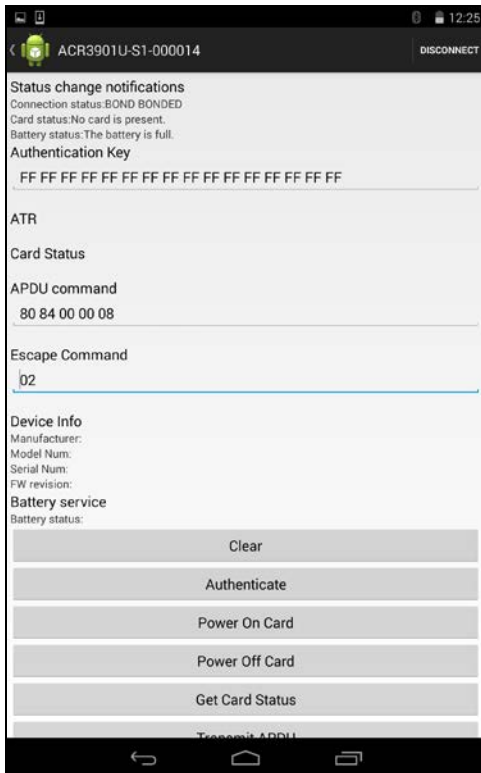4. Choose the reader to pair your Android device with, and then tap **Done**.

5. On the right top corner, click **Connect**. The reader and mobile device will start bonding.
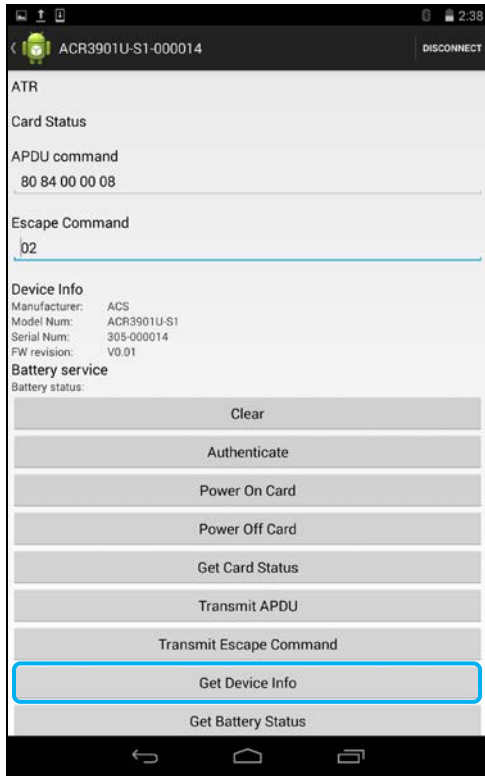
6. Once the bonding is complete, ACR3901U-S1 is now ready to be used with the mobile device.

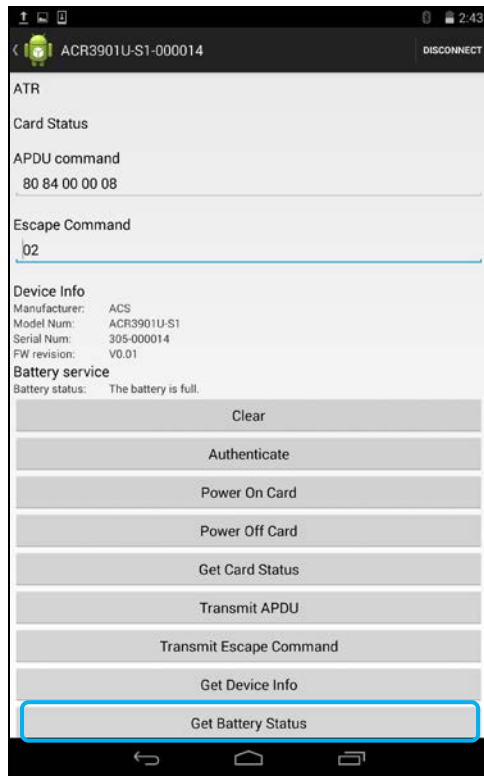### 3.2.2. Getting the device information

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

3.2.3. Getting the battery status

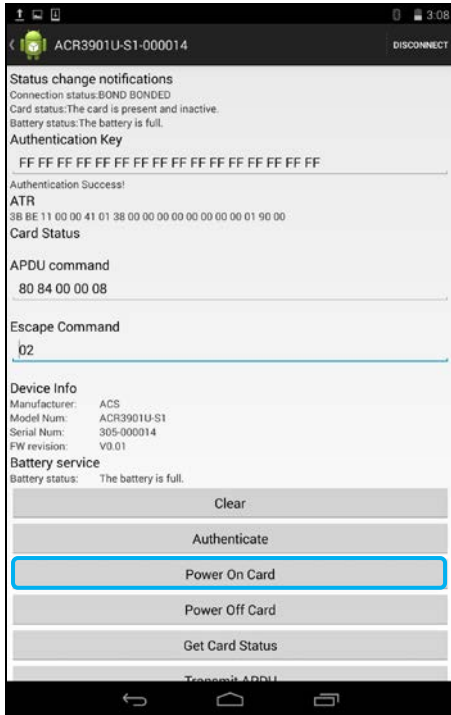To get the battery status, tap **Get Battery Status**.

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

To get the ATR of the card:

1. Insert smart card into the ACR3901U-S1 reader.

2. In the demo application, tap **Authenticate**.

3. Once it is finished, it will show an **Authentication Success** message.

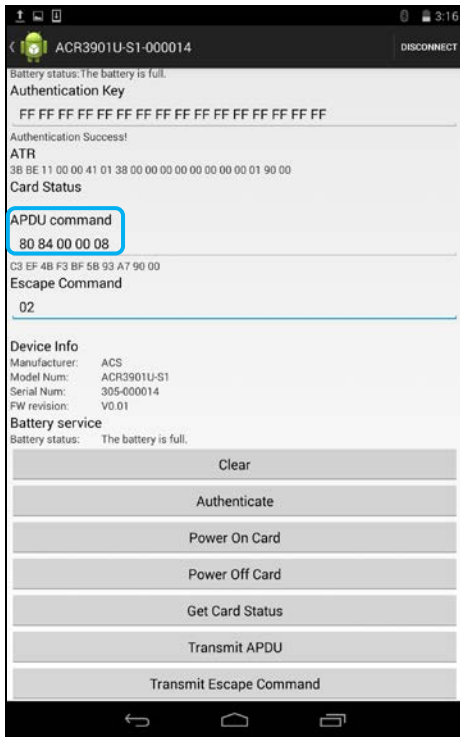4. Tap **Power On Card** to display ATR.

3.2.5. Transmit APDU command

To transmit APDU command:

1. Insert smart card into the ACR3901U-S1 reader.

2. In the demo application, tap **Authenticate**.

3. Once it is finished, it will show **Authentication Success** message.

4. Tap **Transmit APDU**, and response APDU will be displayed under APDU command.

5. The APDU command response will be displayed.

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

3.2.6. Transmit escape command

To transmit an escape command:

1. Insert smart card into the ACR3901U-S1 reader.

2. In the demo application, tap **Authenticate**.

3. Once it is finished, it will show an Authentication Success message.

4. Tap **Power On Card**, and then tap **Transmit Escape Command**.

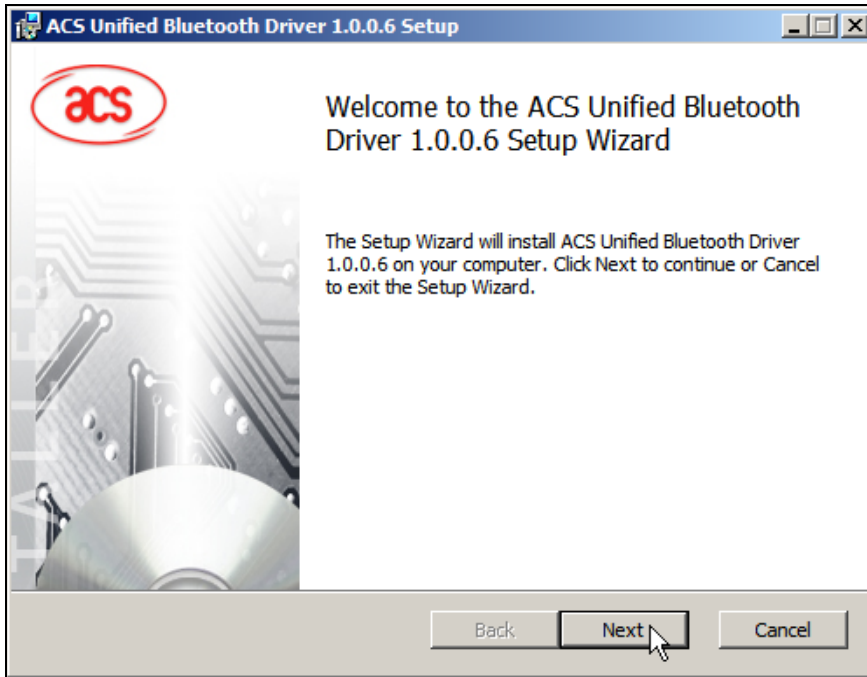5. The Escape Response will be displayed.
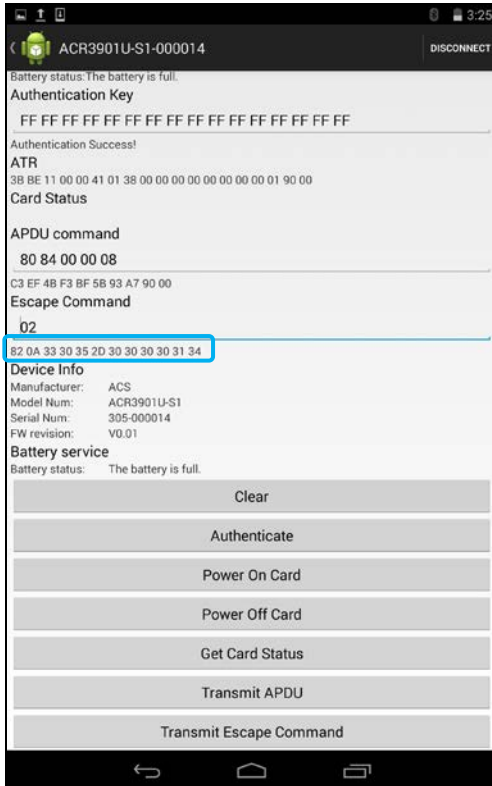
4.0. For Windows®

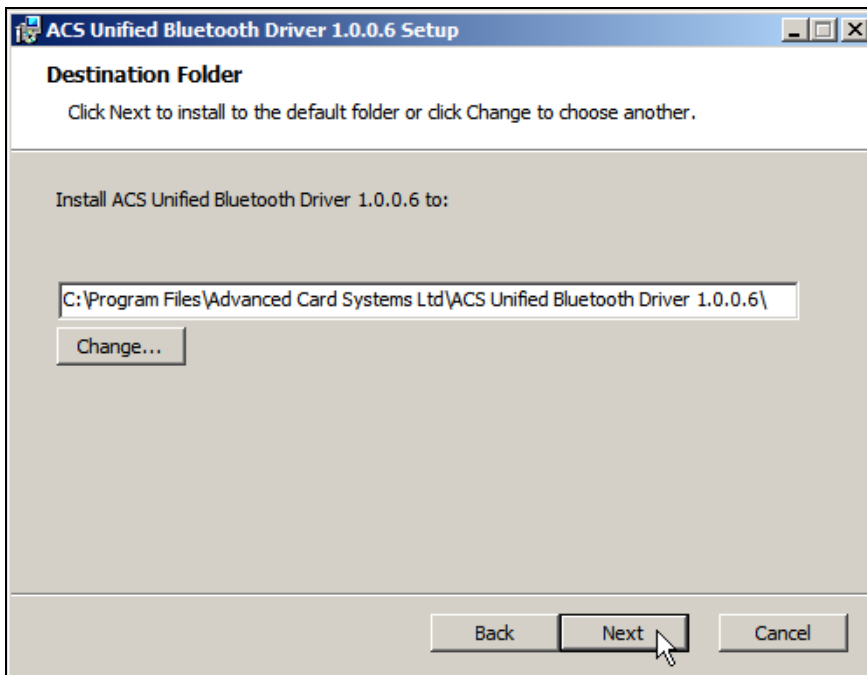## 4.1. Install ACS Unified Bluetooth driver
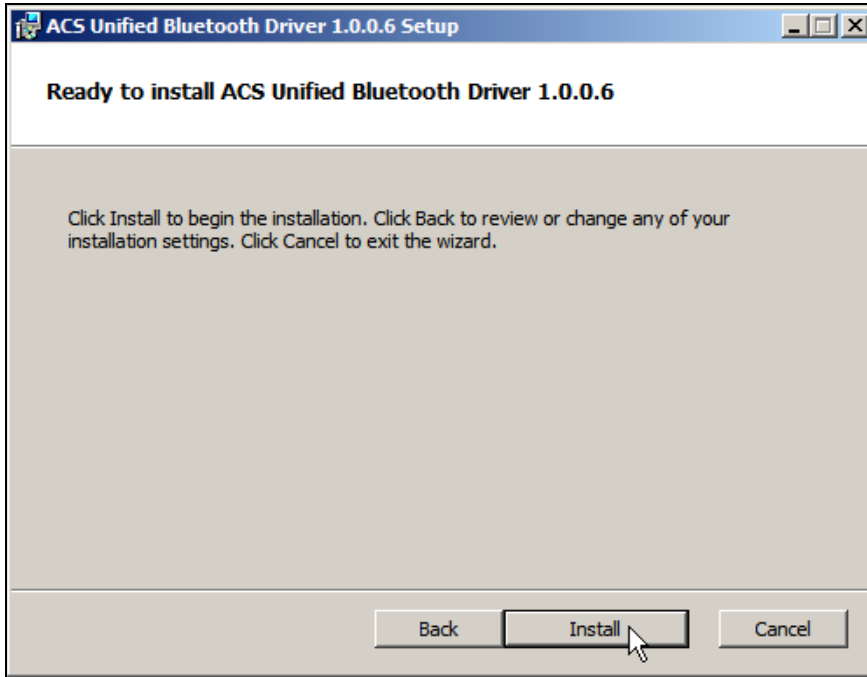
To install the driver:

1. Run the **ACS Unified Bluetooth Driver**.

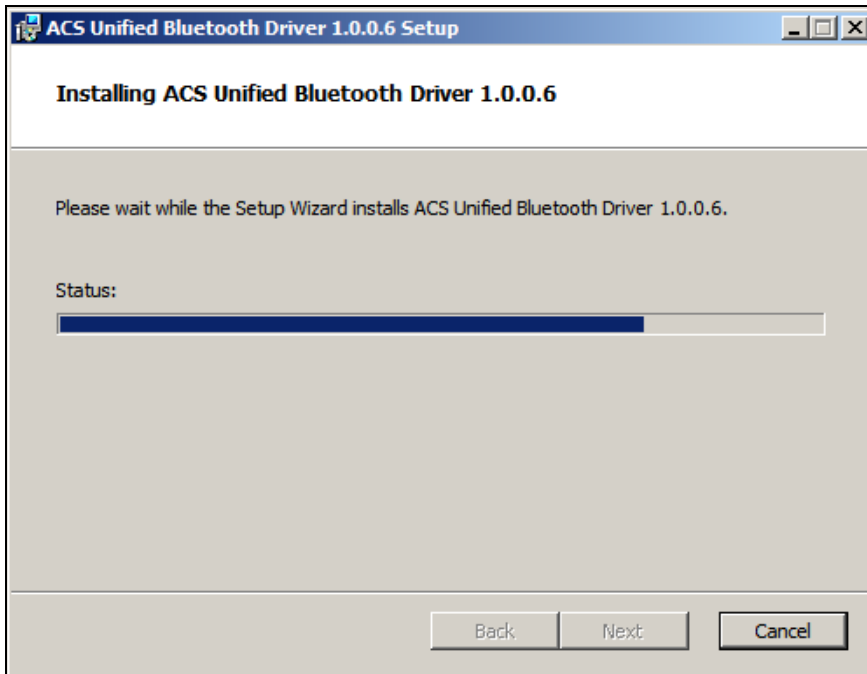2. The Setup Wizard will show. To start the installation, click **Next**.

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.
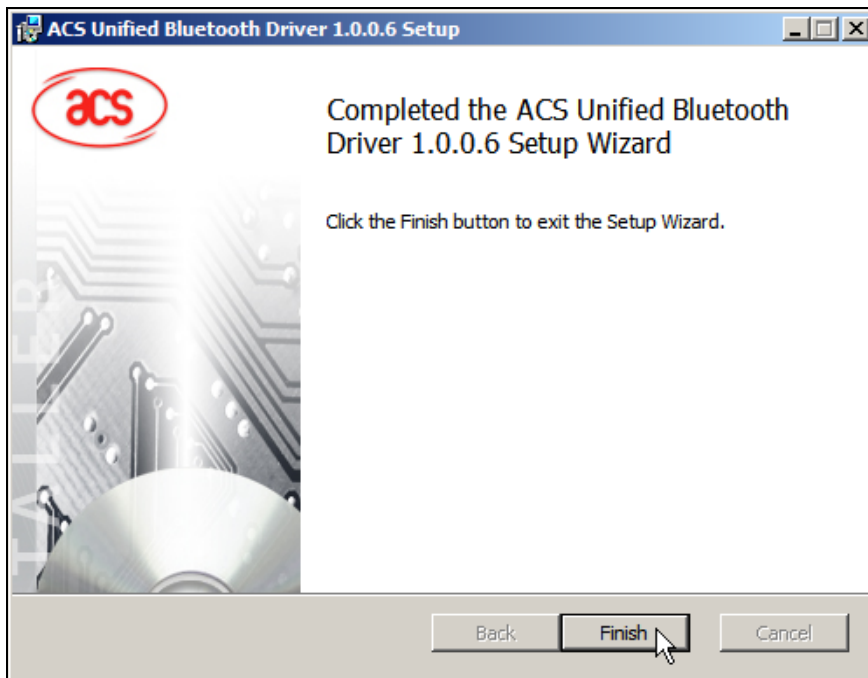
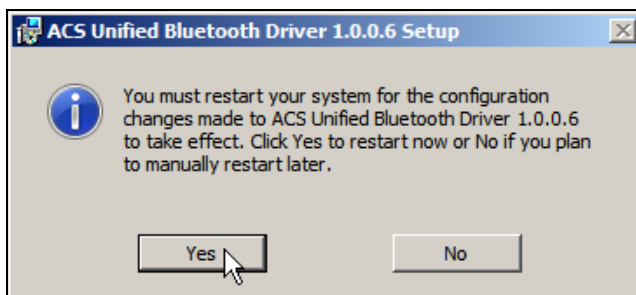4. Click **Install**.

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. Enable the Bluetooth mode of ACR3901U-S1 to make it discoverable. To do this, slide the toggle switch to the right.

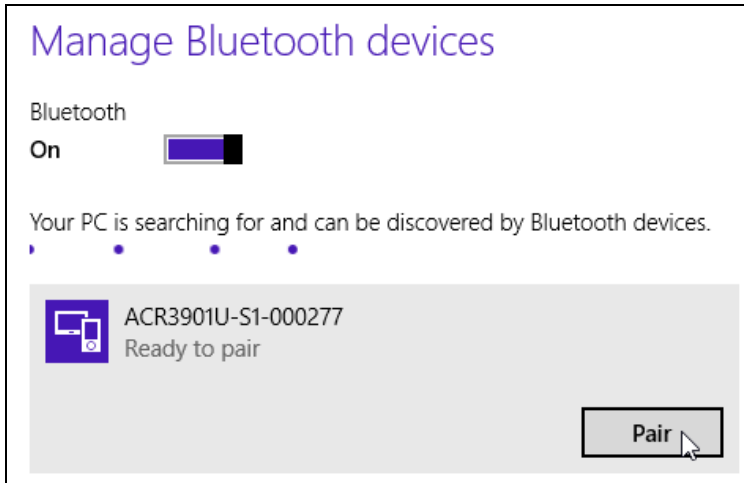2. Go to **PC Settings** , choose **PC and devices**, and then click **Bluetooth**.
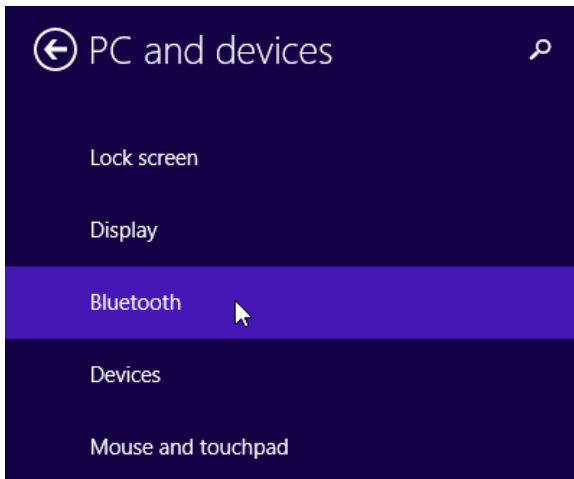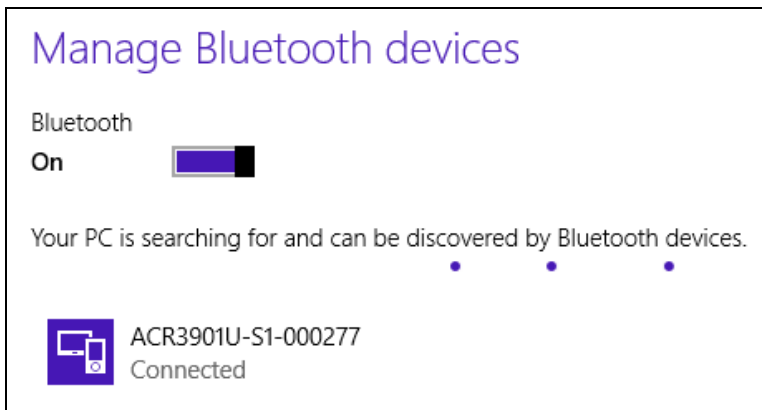

3. Turn on **Bluetooth**.

4. Select ACR3901U-S1, and then click **Pair**.

5. The pairing is complete when you see ACR3901U-S1 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.
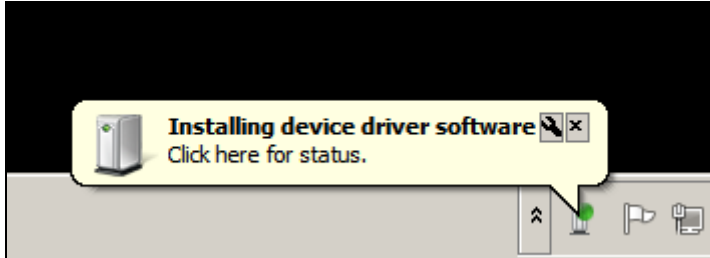
3. Wait while the device driver installs.

4. When it is ready to use, click **Close**.
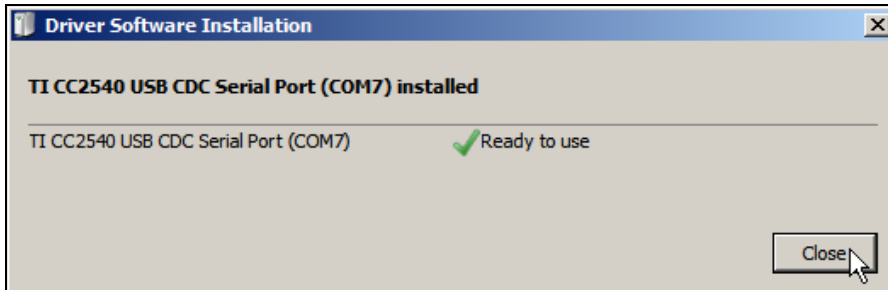
5. When you open the **ACS Bluetooth Device Management Tool**, it automatically pairs the dongle to your system.

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 <u>Uninstall the device</u>).*
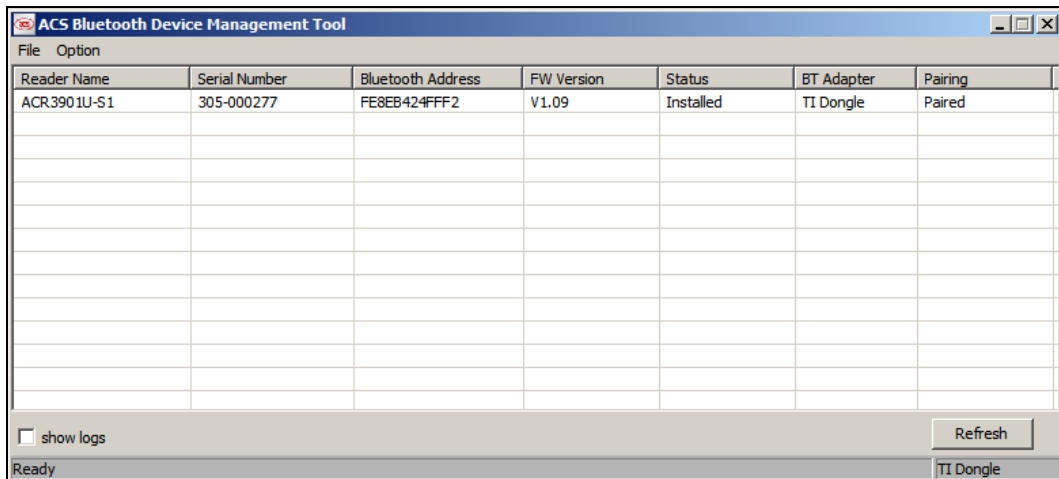

To begin:

1. Turn on the Bluetooth mode of ACR3901U-S1 and make it discoverable. To do this, slide the toggle switch to the right.
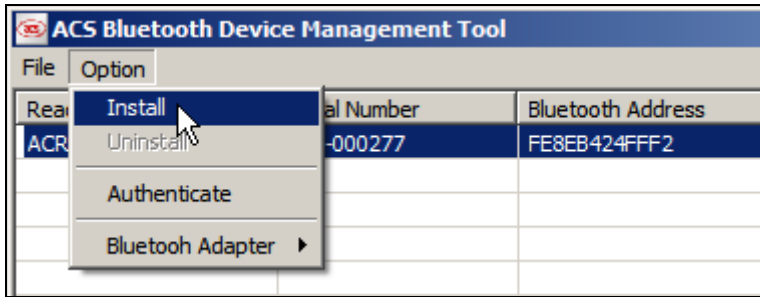

2. Run the **ACS Bluetooth Device Management Tool**.

3. Wait while the tool scans for Bluetooth devices within range.

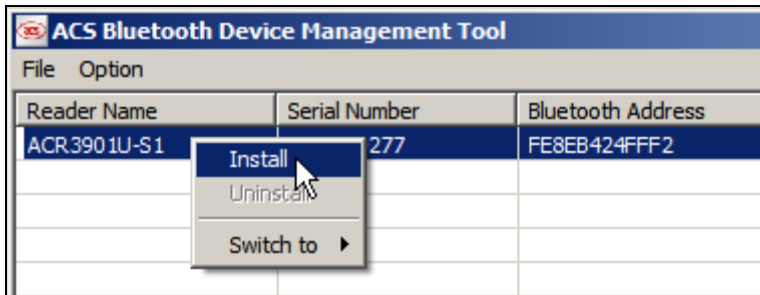   **Note:** *If the device is not immediately discovered, click **Refresh**.*

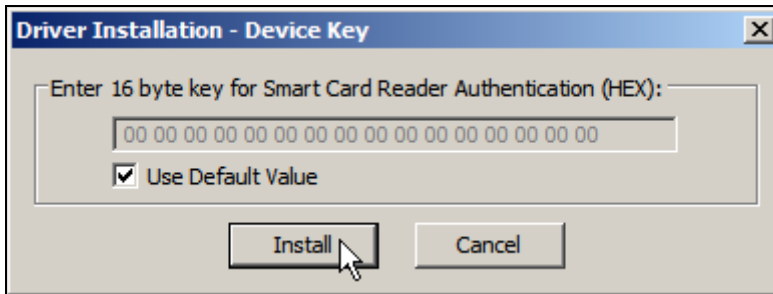4. Once the tool discovers ACR3901U-S1, it will show in the list.

5. In the **Option** menu, 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 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF.

7. Wait while the application installs the driver.

8. A message will appear confirming a successful installation. Click **OK**, and then reset your device.

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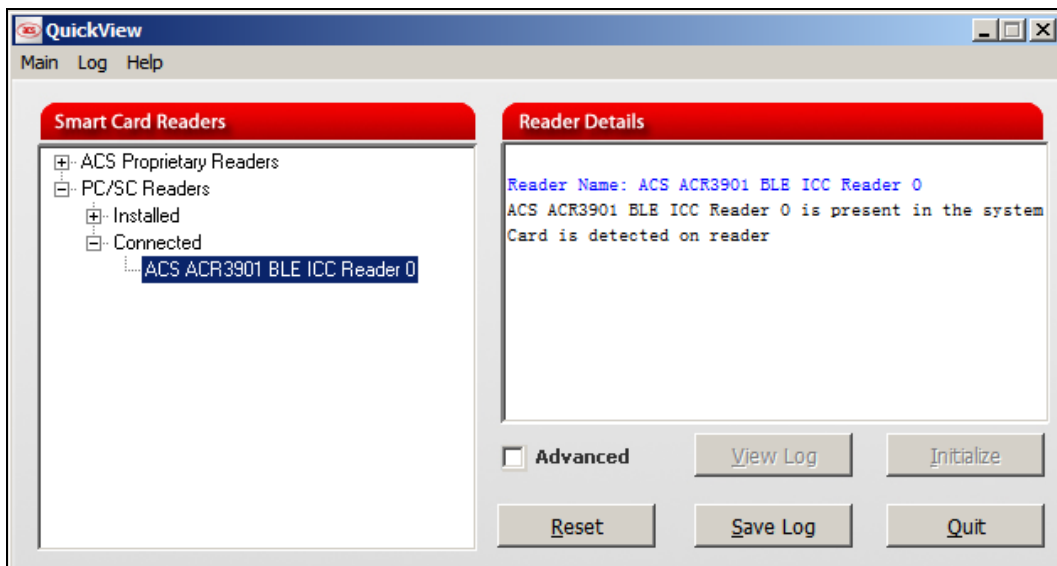info@acs.com.hk
www.acs.com.hk
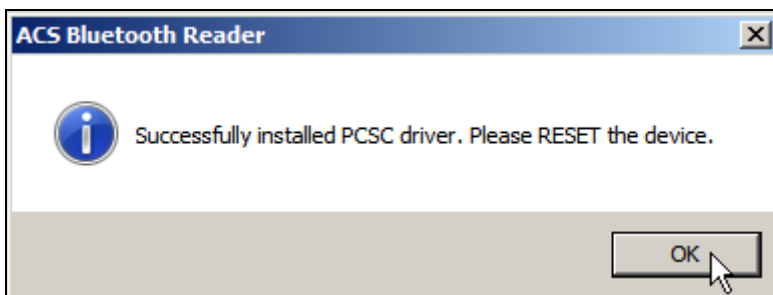
9. A message will appear reminding you to restart your computer. Click **OK**, and then restart your computer.
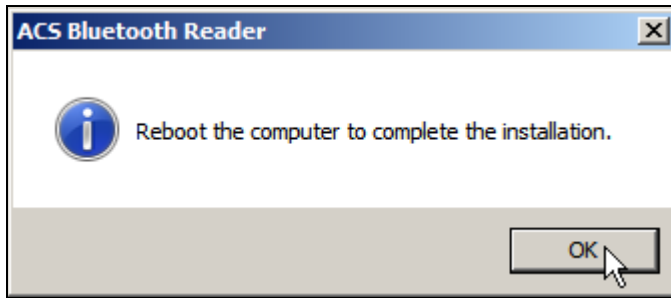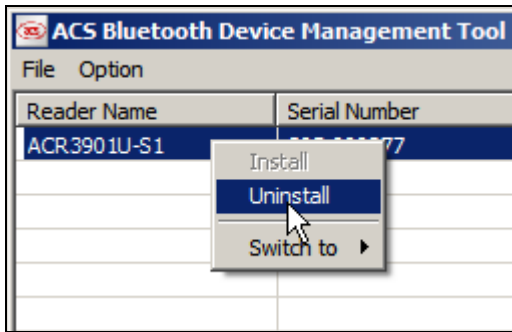

10. After a successful driver installation, you can now use ACR3901U-S1 with various smart card applications. Below is a sample of ACR3901U-S1 connected in **QuickView**.
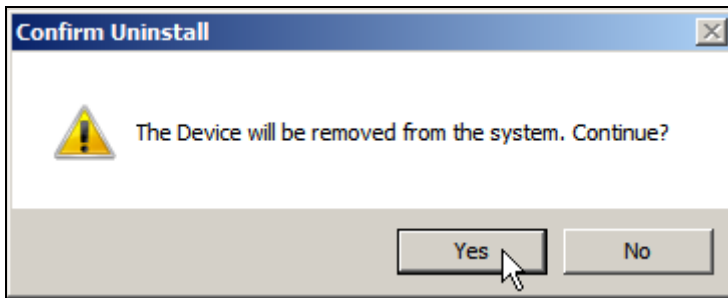
4.4.2. Uninstall a device

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.
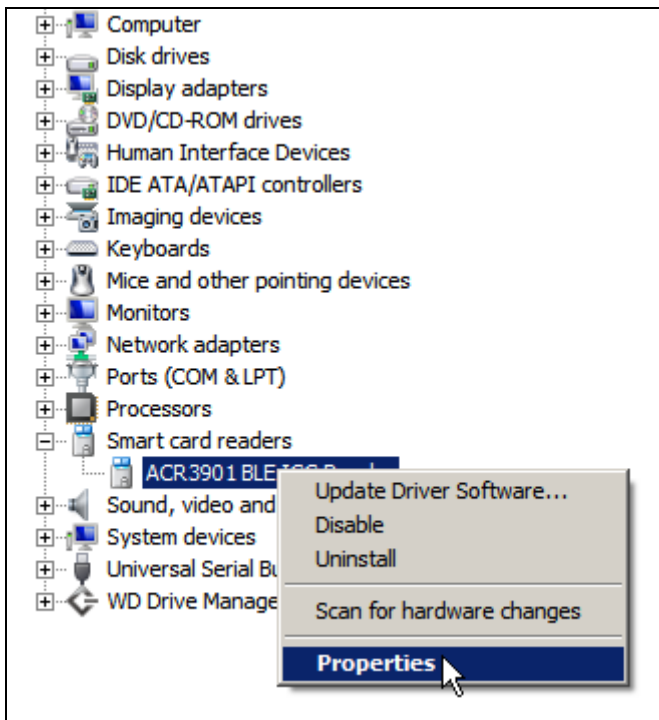
4.5. Check if Bluetooth card reader is installed correctly

1. Go to the Device **Manager**.

2. Under **Smart card readers**, the ACR3901U-S1 reader should show as **ACR3901 BLE ICC Reader**.
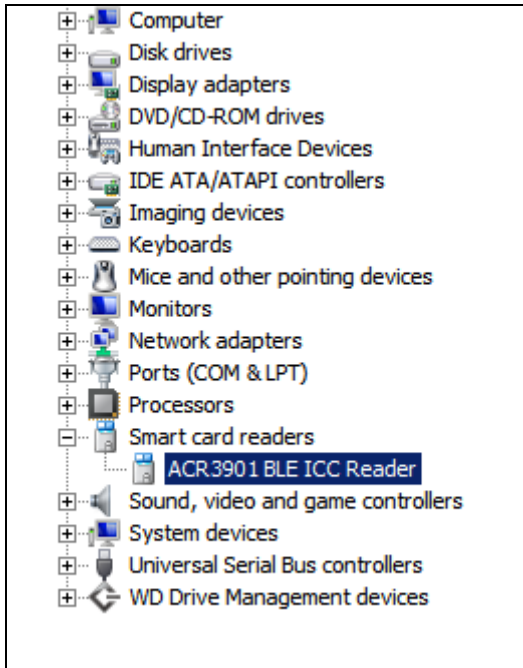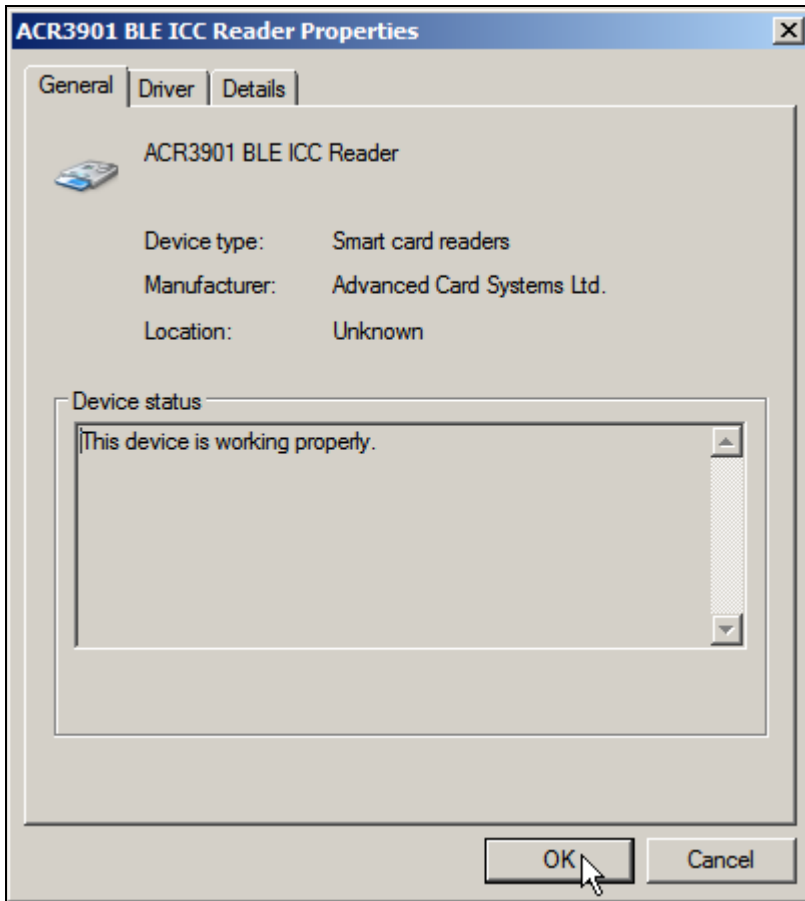

3. Right-click on the device, and then click **Properties**.

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

ACR3901 BLE ICC Reader Properties

General | Driver | Details

ACR3901 BLE ICC Reader

Device type:	Smart card readers
Manufacturer:	Advanced Card Systems Ltd.
Location:	Unknown

Device status

This device is working properly.

OK | Cancel