CASTLES TECHNOLOGY

SATURN1000 EFT-POS Terminal

User Manual

Confidential

Version 0.4

Mar 2018

Castles Technology Co., Ltd.

6F, No. 207-5, Sec. 3, Beixin Rd., Xindian District,

New Taipei City 23143, Taiwan R.O.C.

http://www.castech.com.tw

WARNING

Information in this document is subject to change without prior notice.

No part of this publication may be reproduced, transmitted, stored in a retrieval system, nor translated into any human or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without the prior written permission of **Castles Technology Co., Ltd.**

All trademarks mentioned are proprietary of their respective owners.

Revision History

Version	Date	Descriptions	Author
0.1	Sep 8, 2017	Initial creation.	Jeff
0.2	Oct 11, 2017	1. Add the description of "Debug mode" in "3.1 System Panel". 2. Add the description of setting the permissions of storage in "3.4 POS Demo".	Jeff
0.3	Feb 27, 2018	Modify "2.2. Inserting the Battery".	Jeff
0.4	Mar 15, 2018	Add FCC Warning. 5.1	Jeff

Contents

1. Introduction

This document provides a guideline on operating and configuring Castles SATURN1000 terminal.

The scope of this document includes setting up the terminal, basic operation, application life cycle, and some advance features.
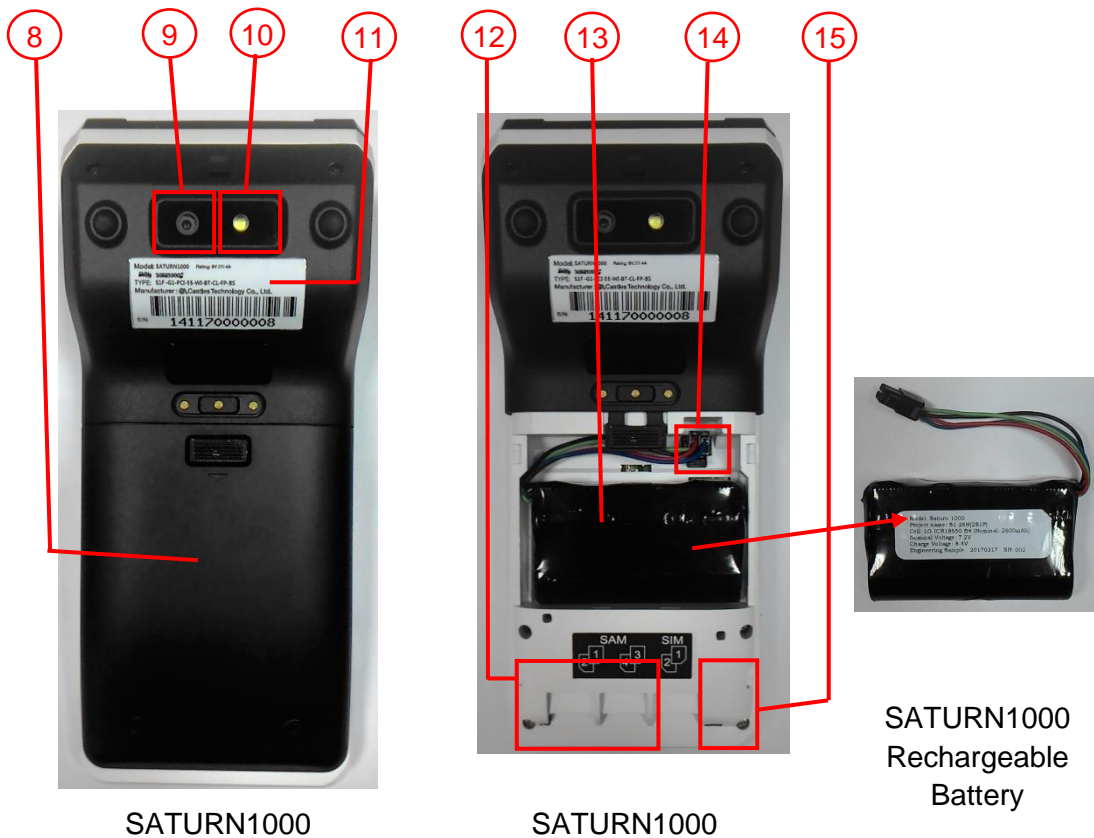
2. Hardware Setup

2.1. Parts of the Terminal

Front (Portable and Countertop)

SATURN100

1. **Paper Roll Box**
2. **Front camera (200 MP)**
3. **LCD Display (5.5")**
4. **Smart Card Reader**
5. **Magnetic Stripe Reader**

6. **Fingerprint identification area**
7. **Contactless Card Landing Zone**

Rear (Portable)

SATURN1000

SATURN1000

SATURN1000
Rechargeable
Battery

8. **Rechargeable Battery Cover**

9. **Rear camera (500 MP)**

10. **Photoflash**

11. **Product label**

12. **SAM Slots 1-4**

13. **Rechargeable Battery**

14. **Battery connector**

15. **GSM SIM Card Slots 1-2**

2.2. Inserting the Battery
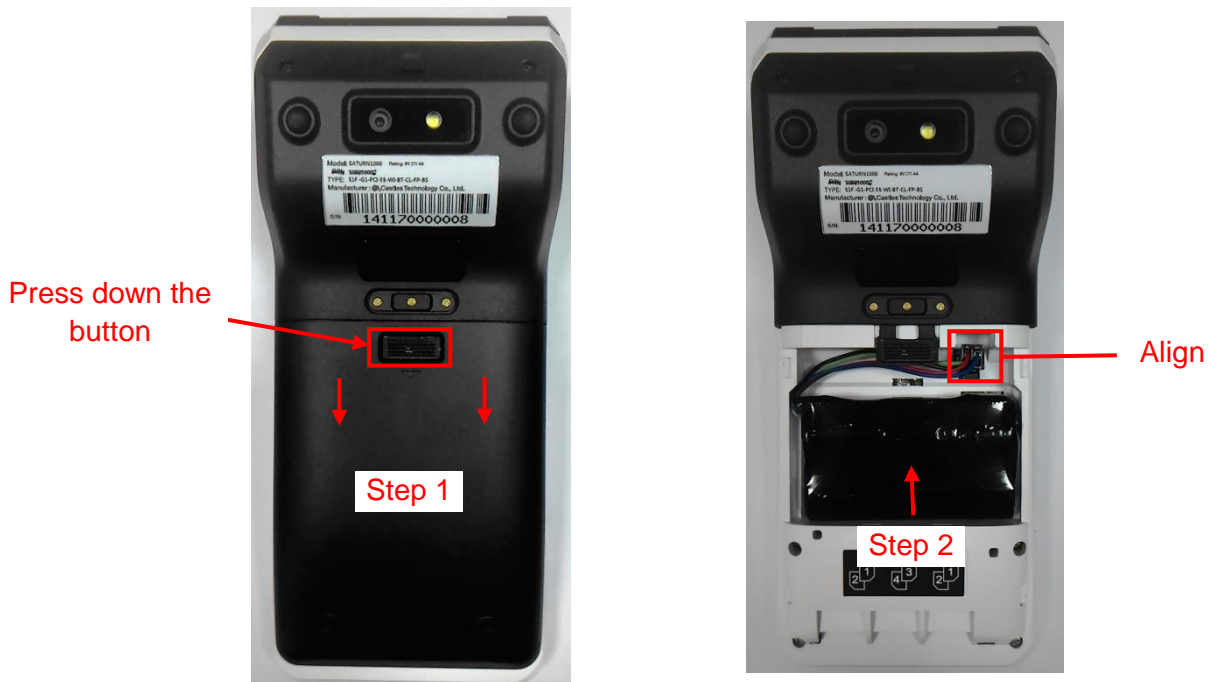
Step 1: Press down the button and push battery cover down to remove the cover.

Step 2: Insert battery into compartment, battery contact point must align with battery connector.

Step 3: Reverse the operation of step 1 to install the battery cover

Note: Please confirm the battery is installed before starting the terminal.

2.3. Inserting the SAM Card

SATURN1000
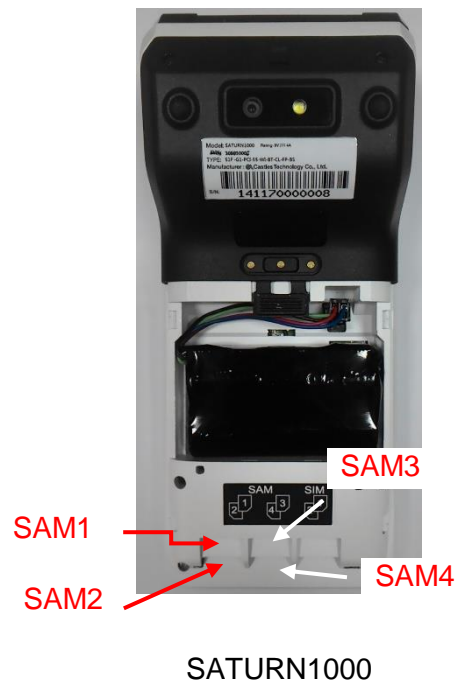
Step 1:   Remove battery cover / back cover

Step 2:   Insert SAM card into desire slot.

SAM 1 & 3:

Gold contact at upper side of card and facing down.

SAM 2 & 4:

Gold contact at upper side of card and facing up.

2.4. Inserting the Paper Roll
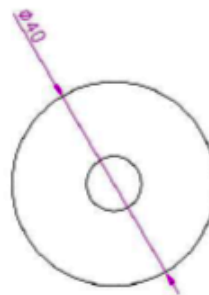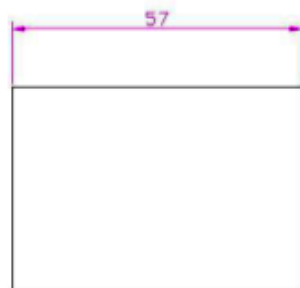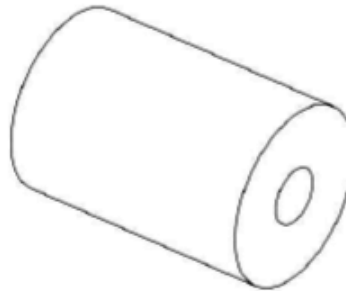

Step 1:   Pull up paper roll box handle.

Step 2:   Gentle open paper roll cover.

Step 3:   Insert paper roll as direction showed.

<u>Paper specification</u>

Width: 57mm

Outside diameter: 40mm

2.5. Inserting the GSM SIM Card

SATURN1000

Step 1: Remove battery cover / back cover

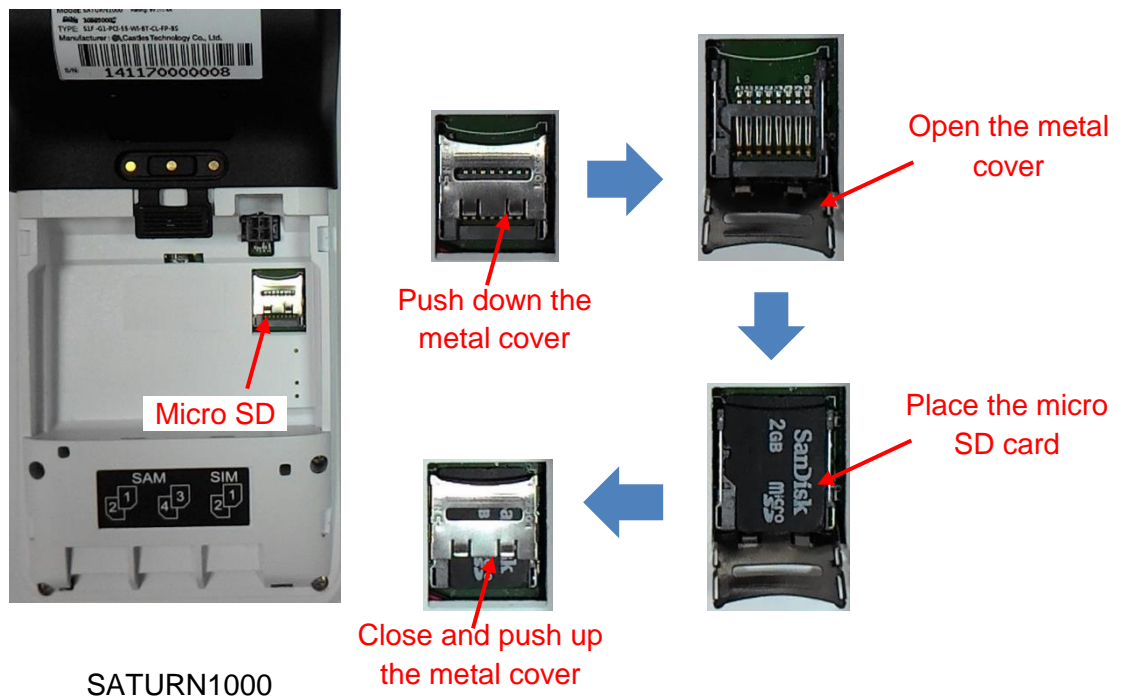Step 2: Open SIM socket and insert GSM SIM card into desire slot.

SIM 1:

Gold contact at upper side of card and facing down.

SIM 2:

Gold contact at upper side of card and facing up.

2.6. Inserting the Memory card

SATURN1000

Micro SD

Push down the metal cover

Open the metal cover

Place the micro SD card

Close and push up the metal cover

Step 1:   Remove battery cover / back cover

Step 2:   Place Micro SD memory card.

3. Basic Operation

Once the power is on in normal status, terminal will enter Launcher if no default application selected. All user applications are listed in Launcher. Users can click on an application and run the application. Castles provide applications "System Panel", "loader", "Test Utility" and "POS Demo" for developer use.
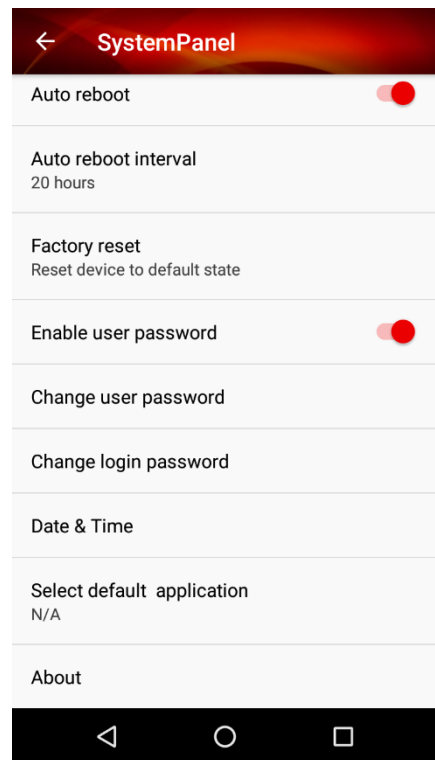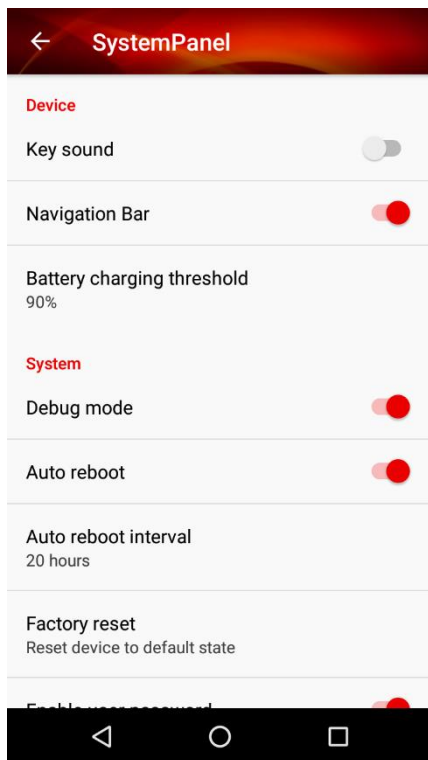
3.1. System Panel

Developer can use system panel to set system settings and check system versions.
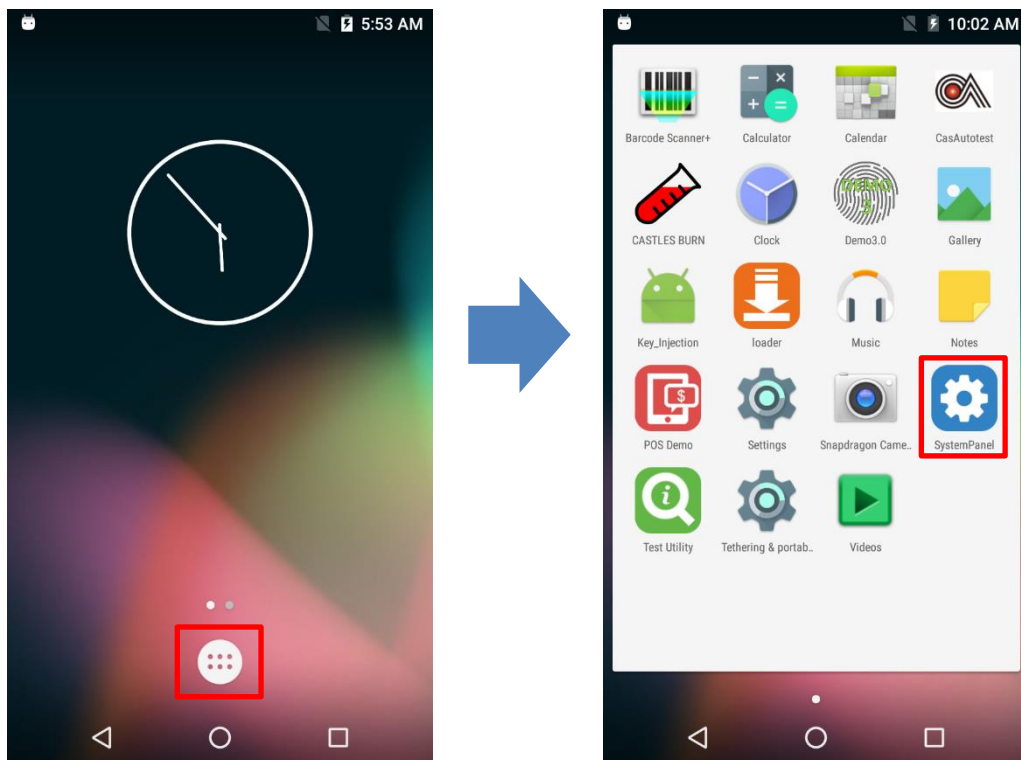
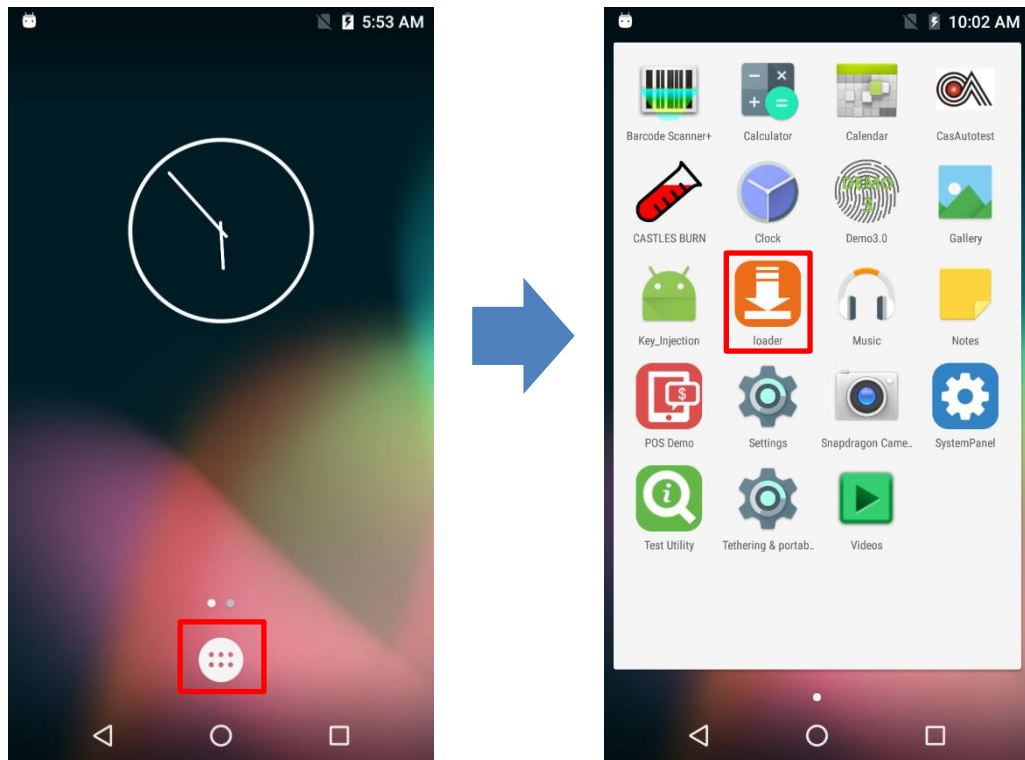
- Click on [App menu].
- Click on [SystemPanel].
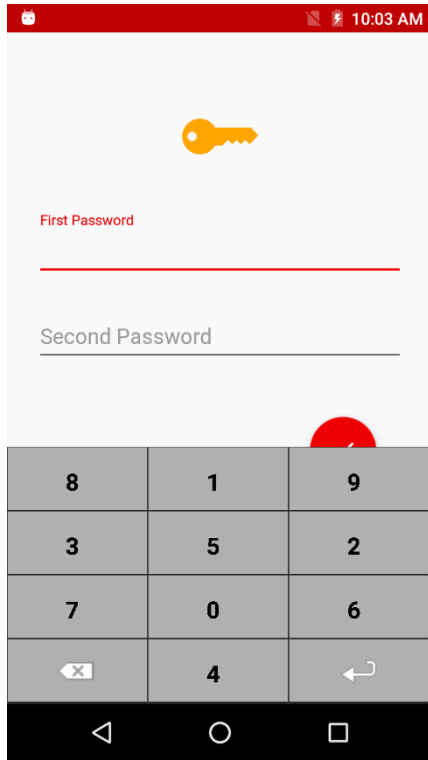
- Use random number keypad to enter default password '00000000' to both of first password and second password.

- Key Sound: Enable or disable the key sound function. (Currently only support to EMV pin code input.)
- Navigation Bar: Enable or disable this function can show or hide the navigation bar.
- Battery charging threshold: Set percentage of battery power to control the Charging time.
- Debug mode: Enable or disable the adb function. (After enable this function, please reboot the terminal at once.)
- Auto reboot: Enable or disable the auto reboot function.
- Auto reboot interval: select the auto reboot interval.
- Factory reset: Reset the terminal to the status of factory default.
- Enable user password: Enable or disable the user password function.
- Change user password: Change the user password.
- Change login password: Change the login password.
- Date & Time: Set date and time.
- Select default application: Select the default application which will auto run after system boot up.
- About: Show system versions.

3.2. Loader

Download user application, or update Android system and kernel modules firmware.

- Click on [App menu].
- Click on [loader].
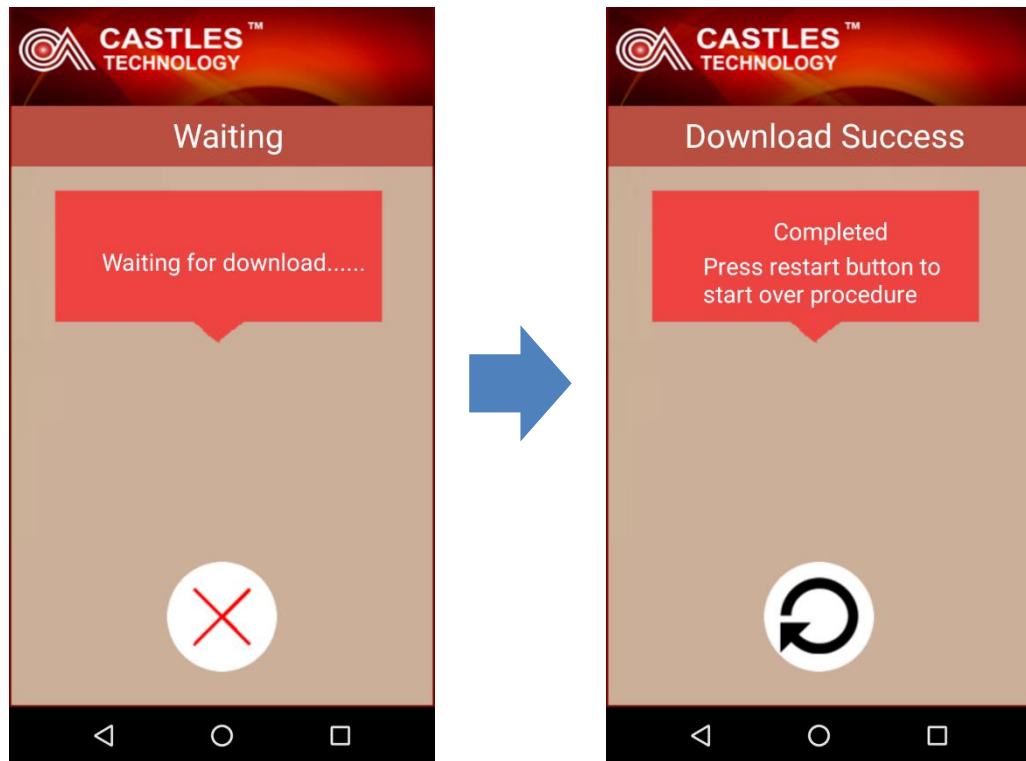
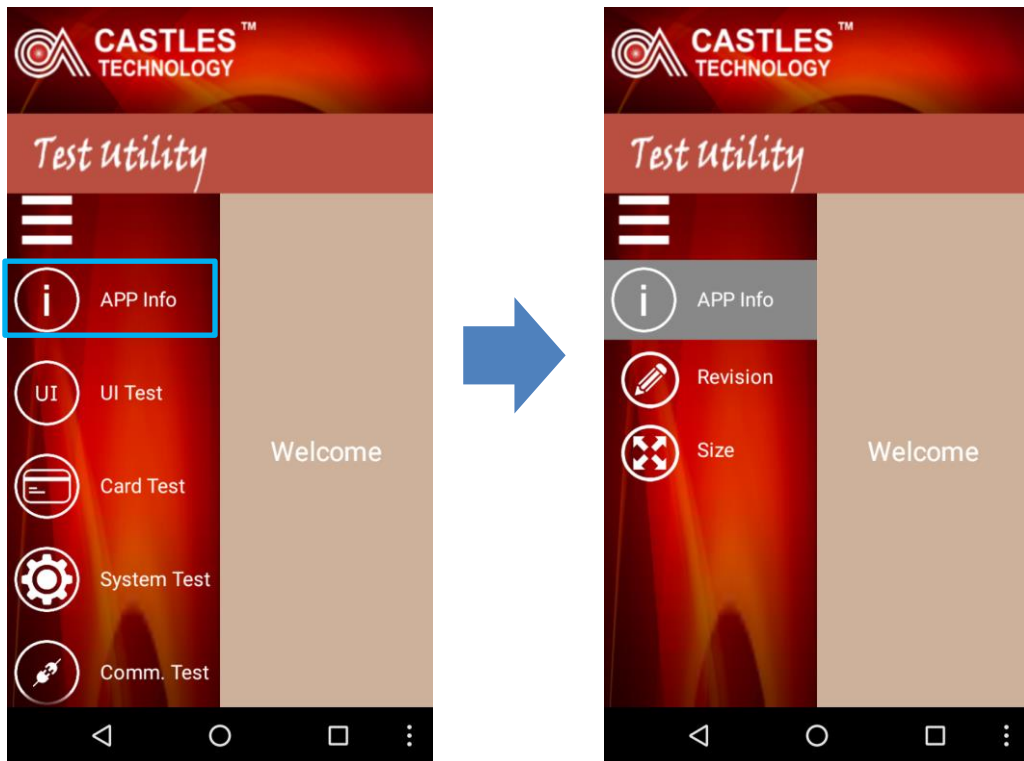- The loader will get into waiting for download status.
- If download successes, the screen will display completed information.

Notice: If cannot download success, please check the debug mode is disabled,.

3.3. Test Utility

Diagnose terminal hardware components.
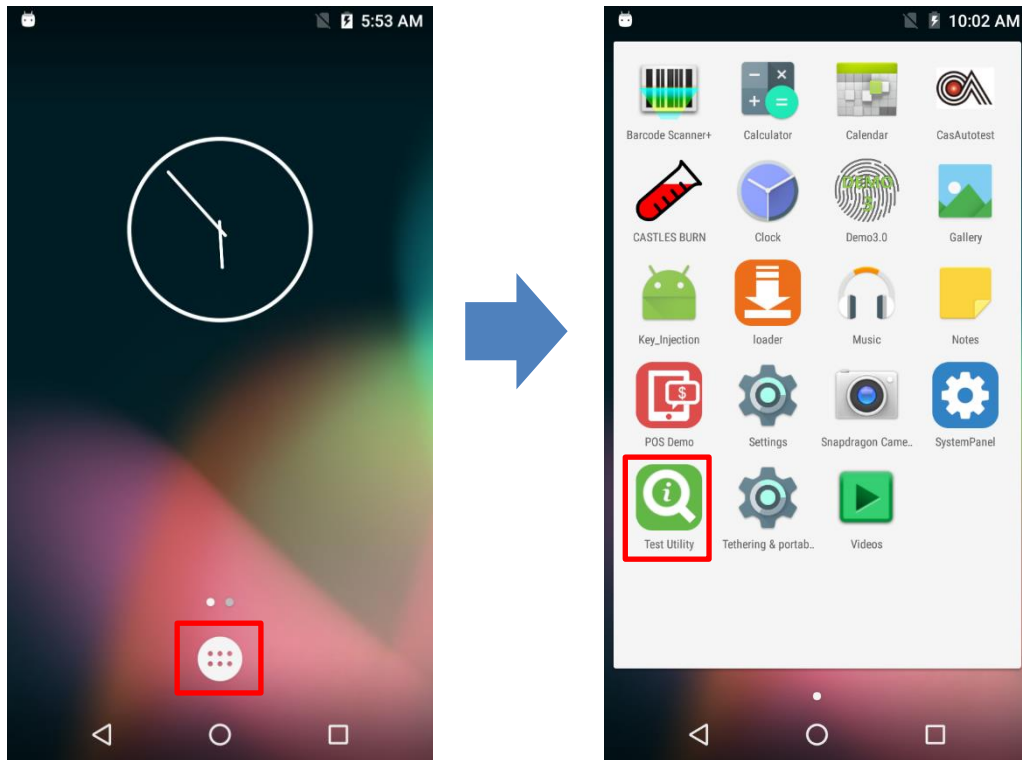
- Click on [App menu].
- Click on [Test Utility].

- Click on [APP Info].
- Revision: Display the android OS version.
- Size: Display the memory size info.

- Click on [UI Test].
- LCD: Diagnose the LCD display function.
- LED: Diagnose the rear side LED function.
- Backlight: Diagnose the brightness of backlight.
- RTC: Get system RTC info.
- Speaker: Diagnose the speaker function.
- Touch: Diagnose the touch function.
- Camera: Diagnose the rear camera function.
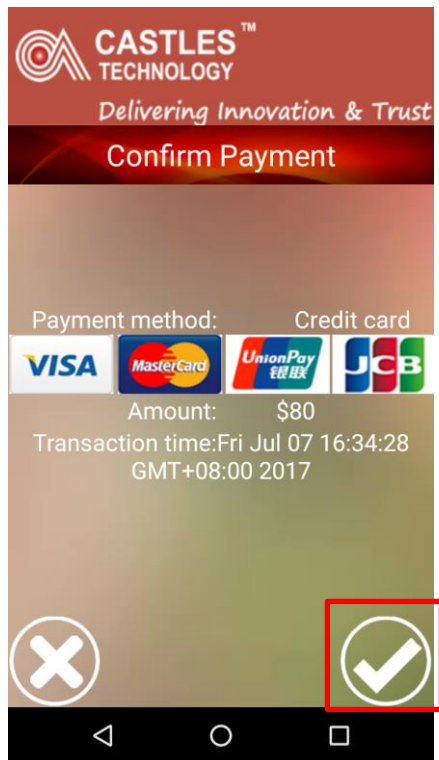- Finger Print: Diagnose the fingerprint function.
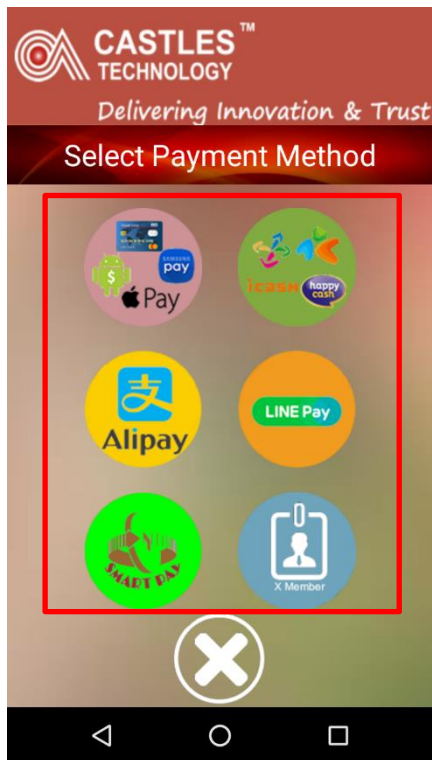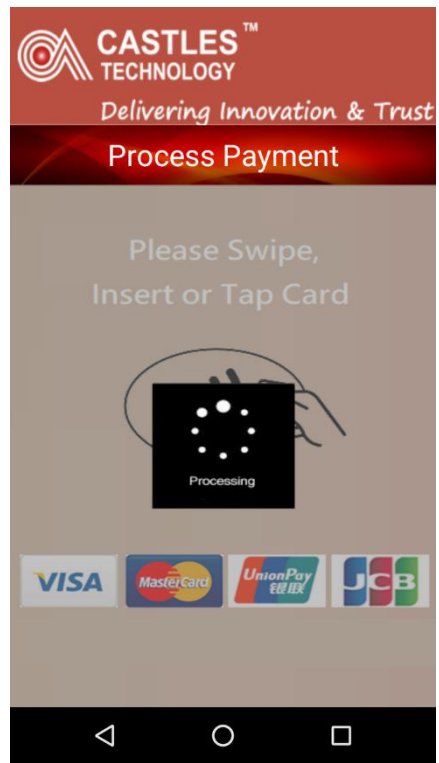
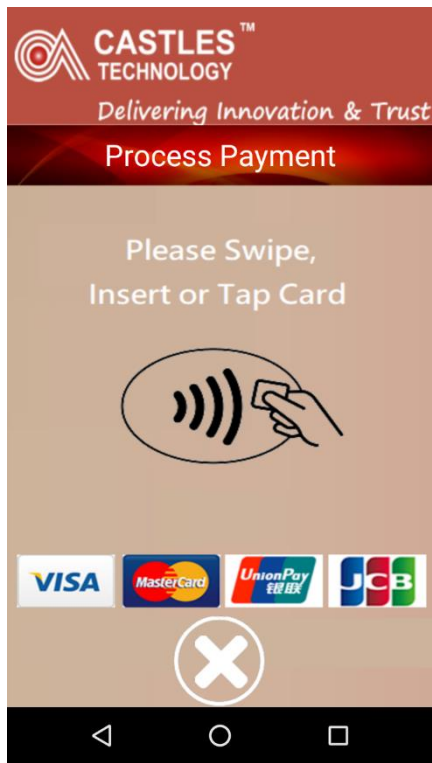## 3.4. POS Demo

Test EMV/EMVCL function and demo use.
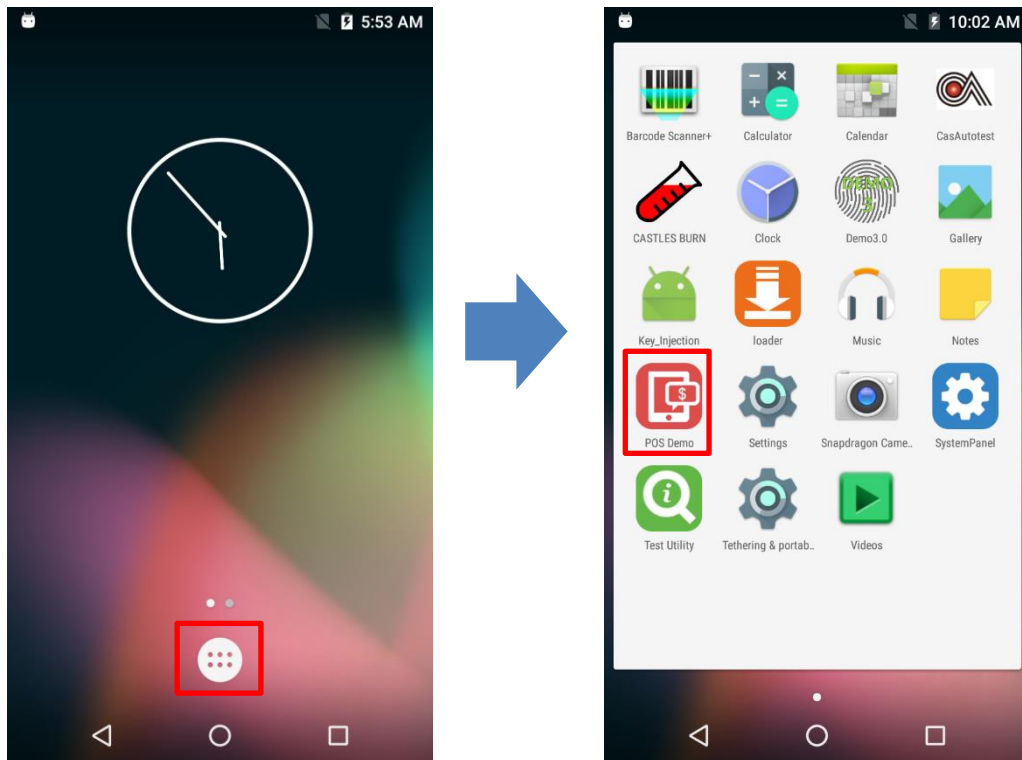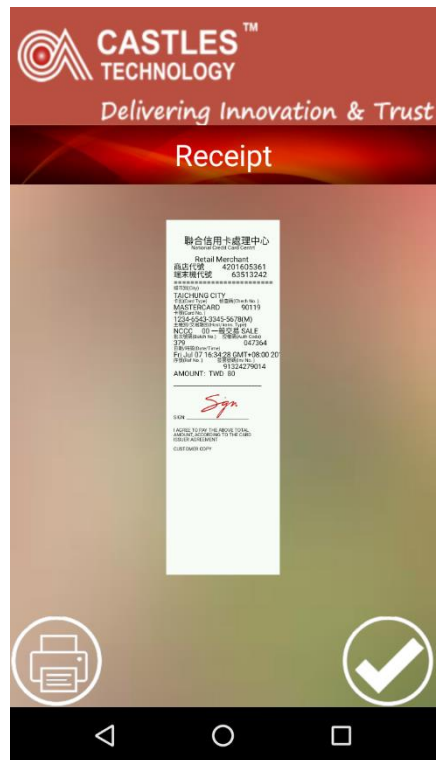

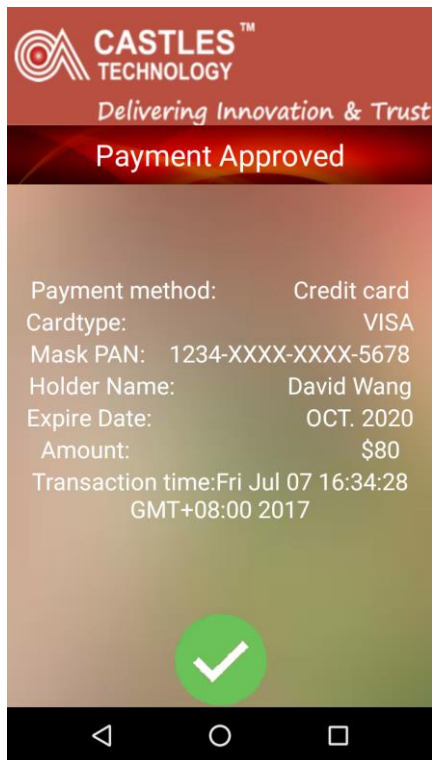- Click on [App menu].
- Click on [POS Demo].
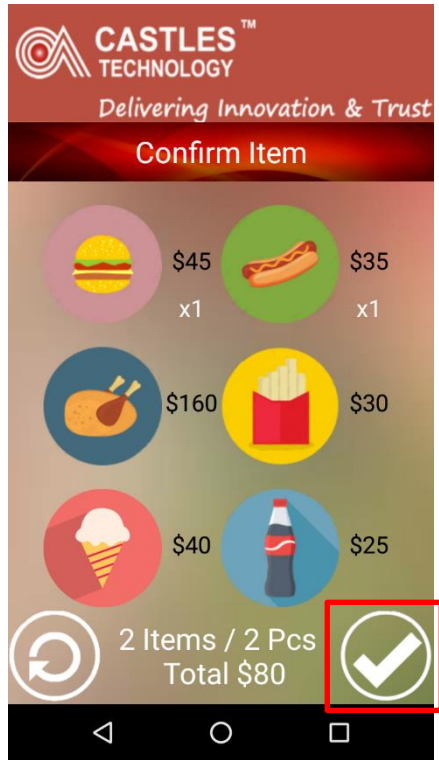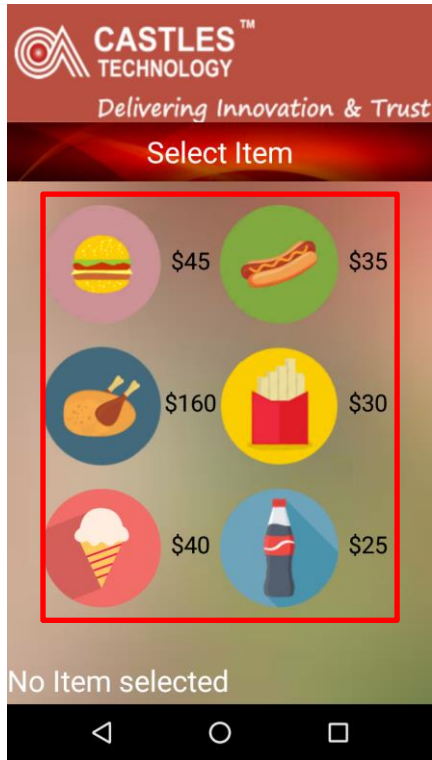
- Select items.
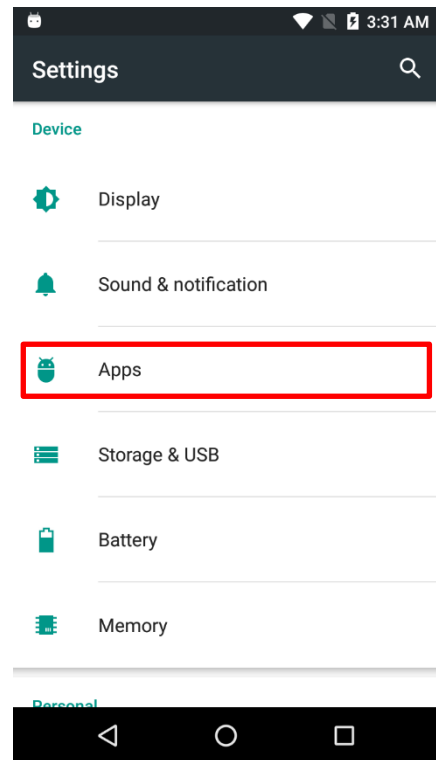- Confirm items.

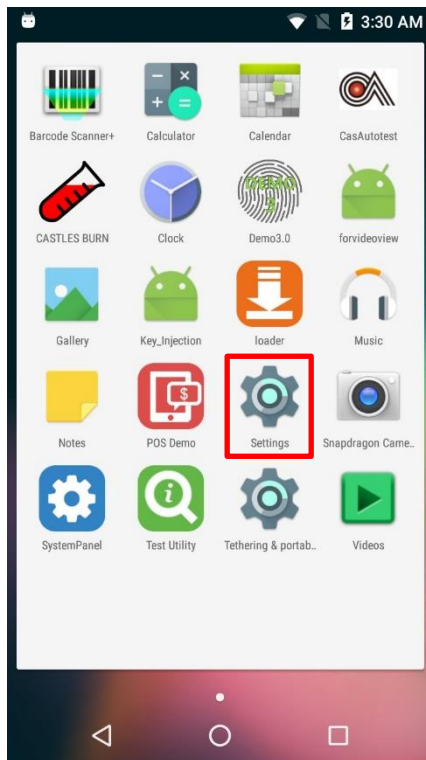- Select payment method.
- Confirm Payment.

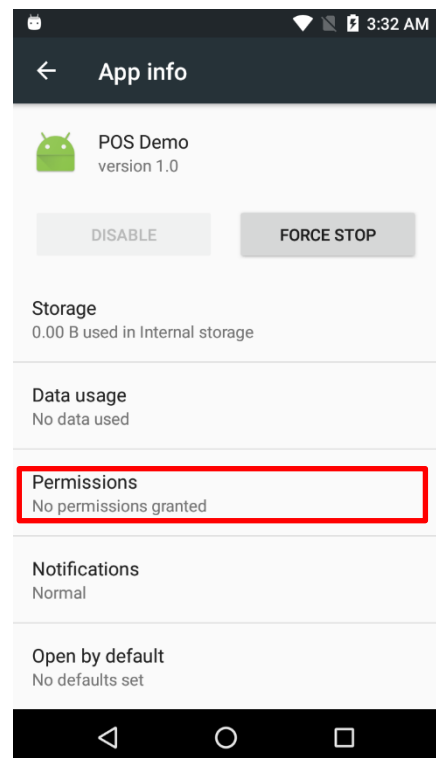- Waiting Swipe, insert or tap card.
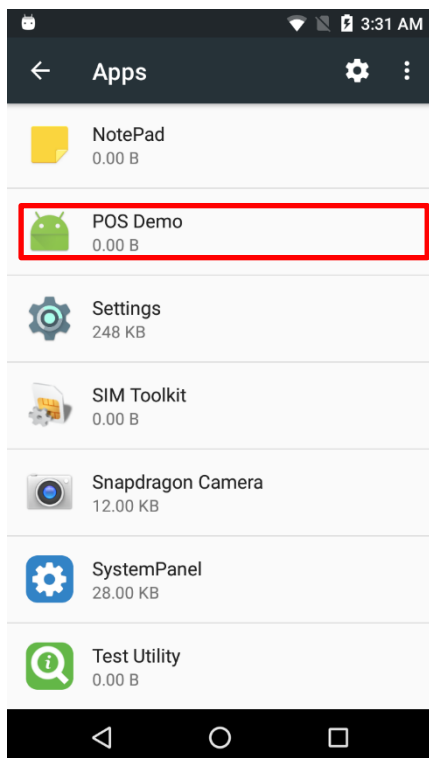- Process payment.
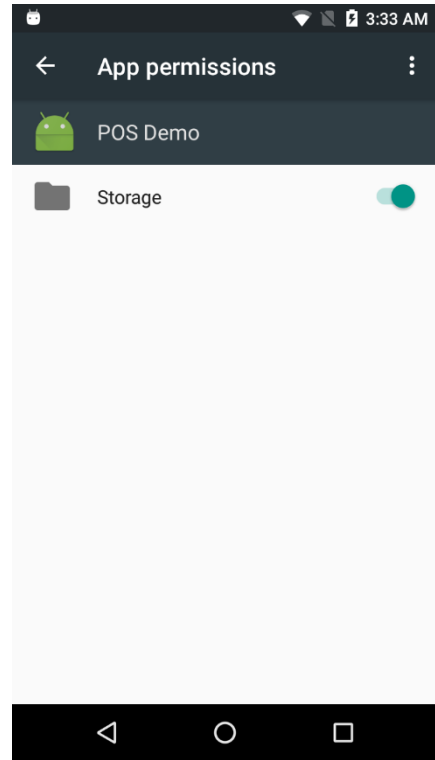

- Payment approved.
- Print receipt.

If print receipt fail, please check the permission of "storage" that is enable or not.

The steps to check the permission is shown as below.

- Click on [Settings].
- Click on [Apps].

- Click on [POS Demo].
- Click on [Permissions].
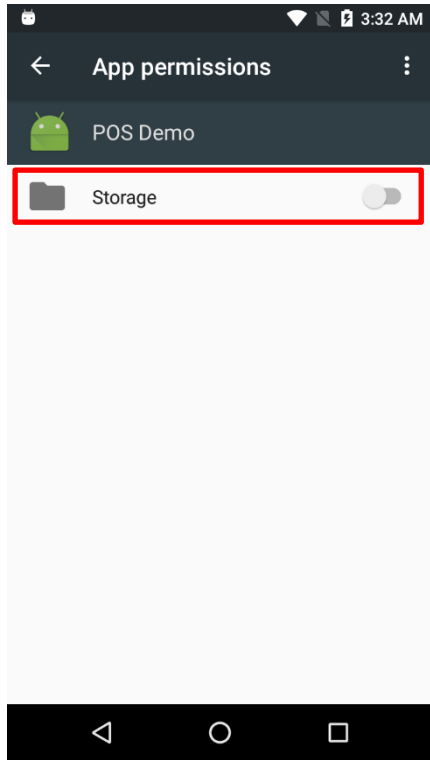
- Enable "Storage".

4. Secure File Loading

Castles implemented an interface in terminal named User Loader (ULD) to provide secure file loading to system memory. The Loader apply to download user application and kernel firmware.

The loading process is secure by signing the files using ULD Key System.

4.1. APK Signing

Castles Technology provides a tool named "CAPGen" to perform this task.

The CAPGen is located at:
C:\Program Files (x86)\Castles\SATURN1000\tools\CAPG (Evaluation Version)\

- Run CAPGen.exe

CAPGen.exe

- Click on "Enter & Sign Application" to browse file.
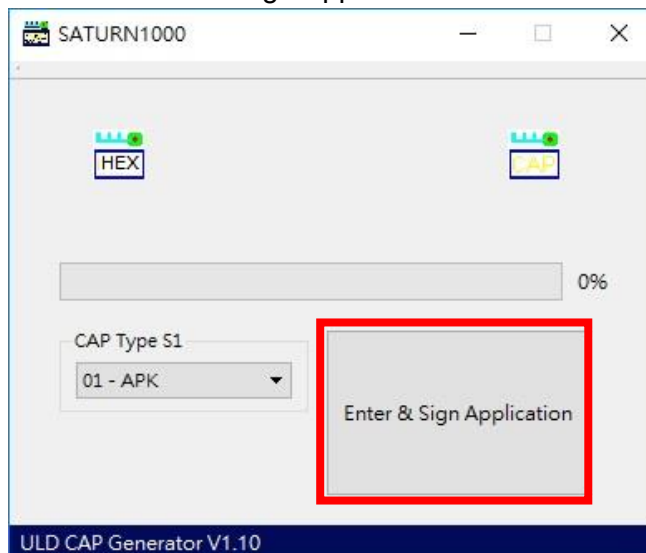
- If generate success, the tool will show "Finish…".
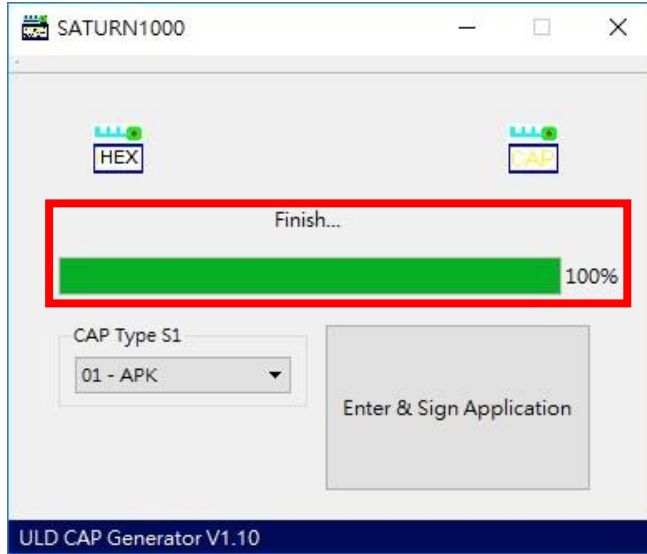
- The output file will be in a set. A "mci" file with one or more "CAP" files. CAP file contents the signed file binaries, where MCI file contents the list of CAP files.

App.CAP

App.mci

Note: If user would like to load multiple set of signed file, create a new file with extension of "mmci". Then put the mmci file contents with the list of mci file.

MultiApp.mmci

4.2. APK Loading

User Loader is a tool provided by Castles Technology. It's the formal way to download file to terminal.

The Loader is located at:
C:\Program Files (x86)\Castles\SATURN1000\tools\Loader

▪ Run Loader.exe
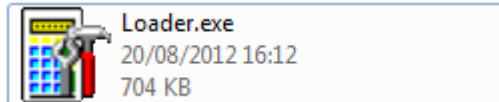
▪ Select COM port

▪ Browse and select mci file or mmci file

▪ Refer to the chapter "**3.2 Loader**" to setup terminal to enter download mode.

- Press "Download" button to start download.

- After download finish, the log screen will show message as following picture.

5. Appendix

5.1. FCC Warning

Federal Communication Commission Interference Statement

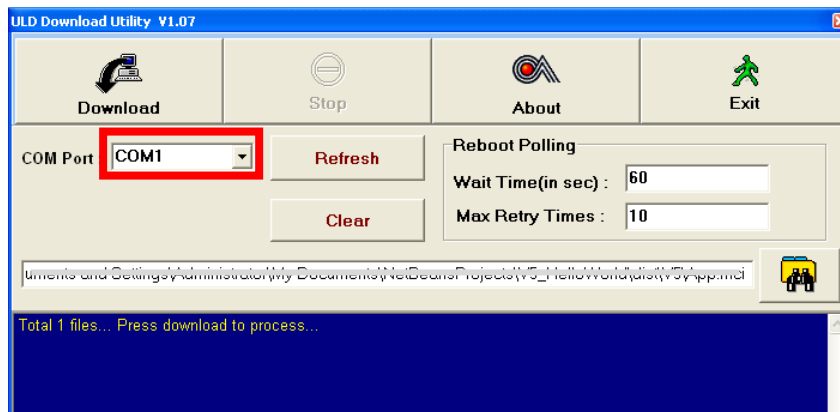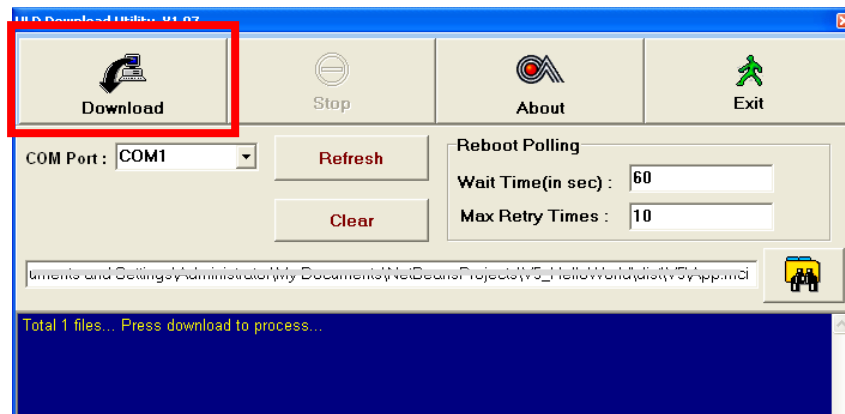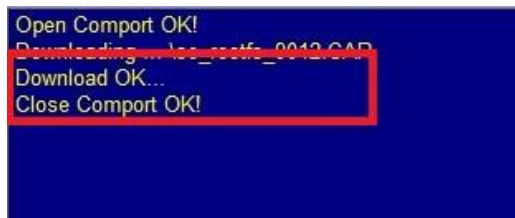This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

● Reorient or relocate the receiving antenna.
● Increase the separation between the equipment and receiver.
● Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
● Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:
➢ Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
➢ This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:
This device meets the government's requirements for exposure to radio waves.
This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.
The exposure standard for wireless device employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands.

~ END ~