CASTLES TECHNOLOGY

SATURN1000E
EFT-POS Terminal User Manual

Confidential

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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

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Revision History

Version	Date	Descriptions	Author
1.0	Jun. 2, 2020	Initial creation.	Jeffrey
1.1	Jul. 22, 2020	1. Modify some information in "Regulatory instruction of usage".	Jeff
1.2	Jul. 28, 2020	1. Modify some information in "Saturn 1000 Elite Specification".	Jeff
1.3	Sep. 08, 2020	1. Modify Radiation Exposure Statement. 2. Add e-label instruction in Settings.	Tommy

Contents

1. Regulatory instruction of usage

- Before using the terminal, please check the does it has been disassembled, modified, or happened the abnormal situation. If yes, please do not continue to use.
- Please stay away from strong electromagnetic waves.
  (Example) Microwave ovens, magnets, shoplifting prevention devices, high-voltage wires, automatic doors, communication antennas, etc.
- Condensation can occur when moving from a cold place to a warm place. If condensation occurs, do not use the unit until the connected water droplets evaporate.
- Static electricity may occur in some places (such as where you are using a carpet).
- Please do not leave it in the sun for a long time.
- Please operate the unit carefully as it is a precision instrument. Do not apply impact, drop or heavy objects on top of the unit.
- Do not attach dust, oil, etc. to a part of the power terminal. Also, please do not scratch.
- **Warning:** Power cord shall be connected to a socket-outlet with earthing connection.
- The equipment is intended to be supplied by external power source (UL listed/ IEC 60950-1/ IEC 62368-1) which output complies with SELV, LPS, output rating 5Vdc, 2A, ambient temperature min. 40°C.
- **Warning:** Risk of explosion if battery is replaced by an incorrect type.
  Dispose of expended battery in accordance with local disposal regulations.

Attention:

- **Attention:** le cordon d'alimentation doit être branché sur une prise secteur avec mise à la terre.
- L'équipement est destiné à être alimenté par une source d'alimentation externe (répertoriée UL / CEI 60950-1 / CEI 62368-1) dont la sortie est conforme à la norme SELV, LPS, dont la tension nominale de sortie est 5Vdc, 2A, et la température ambiante inférieure à 40 ° C.
- **Attention:** Risque d'explosion si la batterie est remplacée par une de type incorrect. Éliminer la pile usagée conformément à la réglementation locale en vigueur.

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 equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 5mm between the radiator & your body.

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.
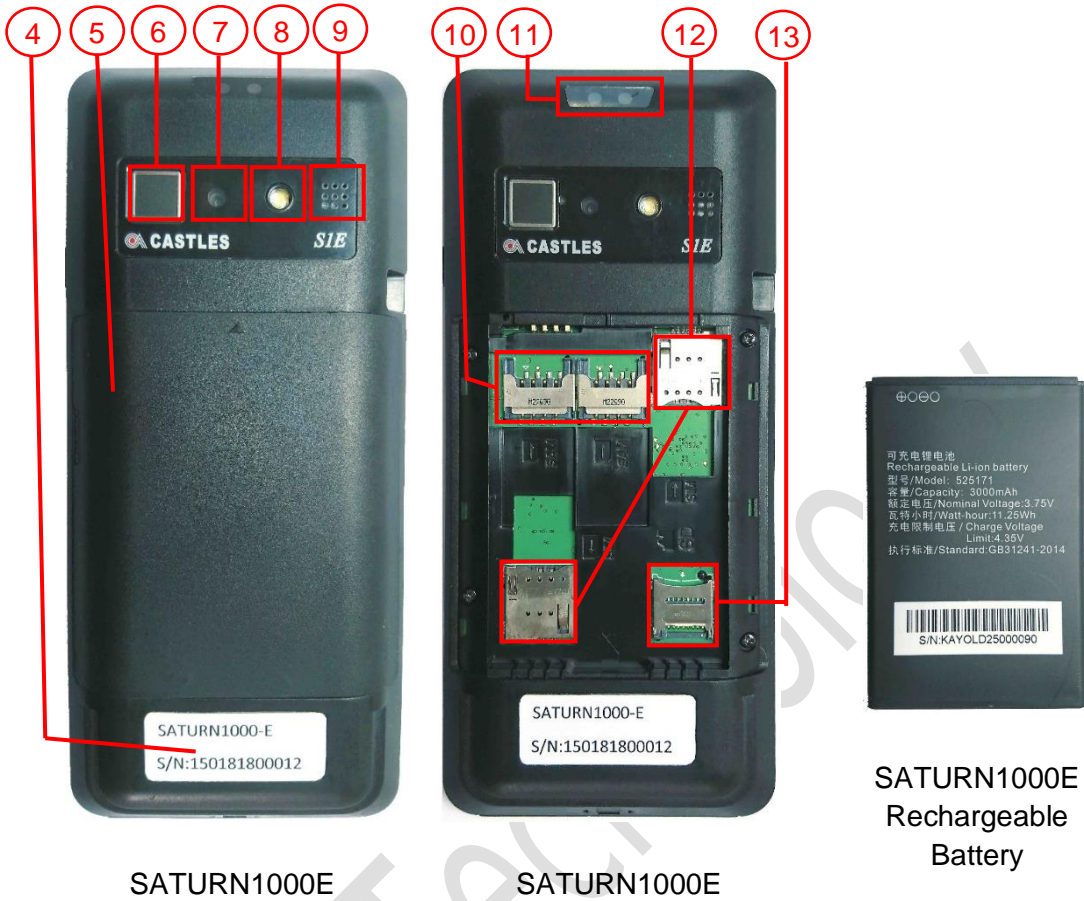
2. Hardware Setup

## 2.1. Parts of the Terminal

Front

SATURN1000E

1. **Contactless Card Landing Zone**
2. **LCD Display (5")**
3. **Smart Card Reader**

Rear

SATURN1000E

SATURN1000E

SATURN1000E
Rechargeable
Battery

4. **Product Label**

5. **Rechargeable Battery Cover**

6. **Fingerprint Identification Area**

7. **Rear Camera (500 MP)**

8. **Photo-Flash**

9. **Speaker**

10. **SAM Slots 1-2**

11. **Barcode Scanner**

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

13. **Micro SD Card Slot**

Left side
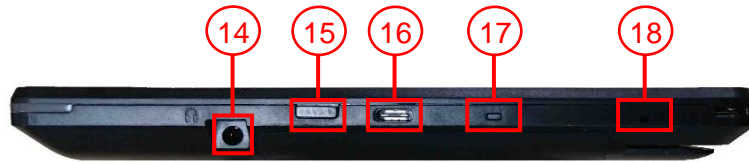
Right side

14. **Headphone Jack**

15. **Barcode Scan Button**

16. **USB Type C Slot**

17. **LED Indicator**

   Green Light: External power source connecting and battery is full.

   Red Light: Battery charging function activated

18. **Microphone**

19. **Contactless LED Indicator**

20. **Power Button**

21. **Magnetic Stripe Reader**

22. **Charger Pin**

2.2. Insert Battery
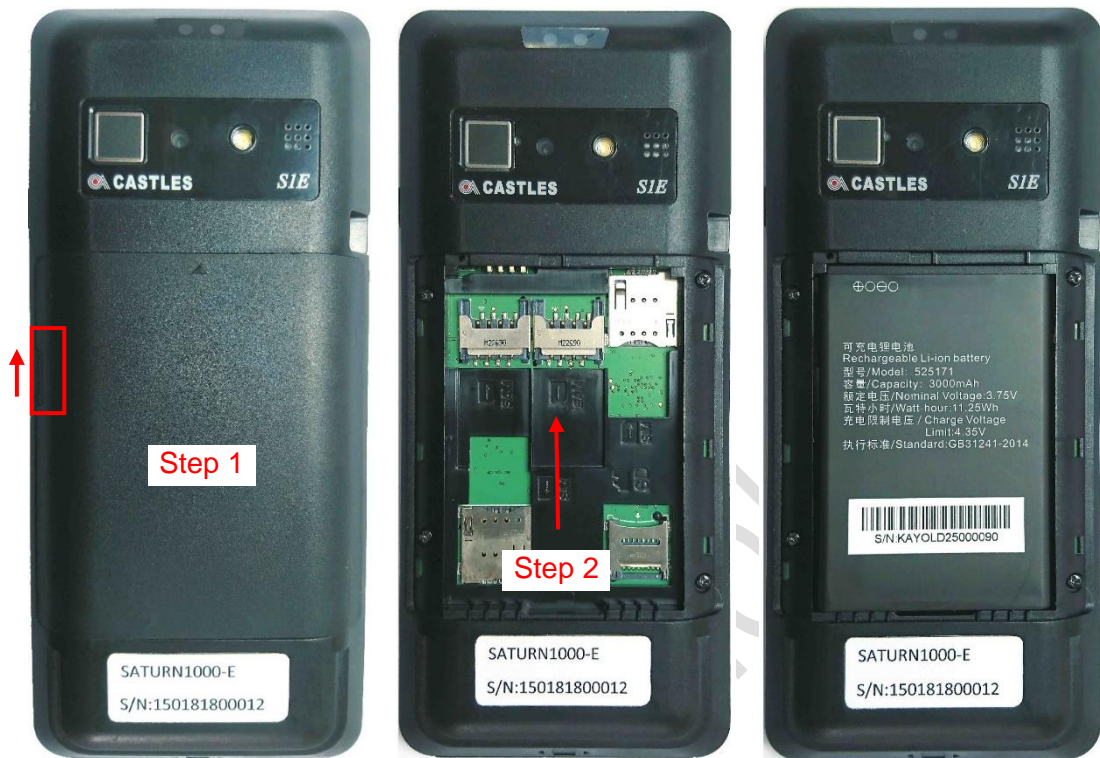
Step 1: Remove the battery cover.

Step 2: Insert the battery into the compartment.

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

Note: Please confirm the battery is installed before power on the terminal.

2.3. Insert SAM Card
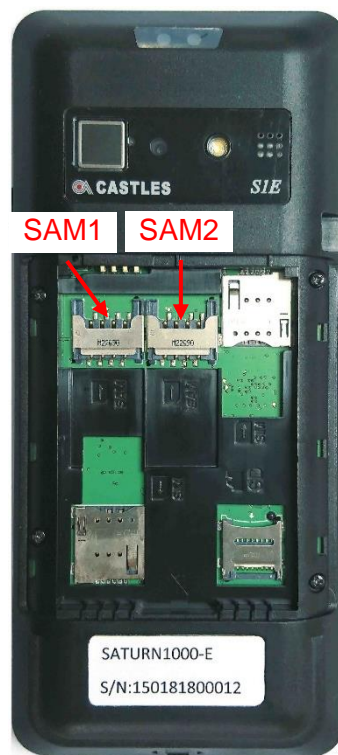
SATURN1000E

Step 1:   Remove battery cover / back cover

Step 2:   Insert SAM card into desire slot.

SAM 1 & 2:

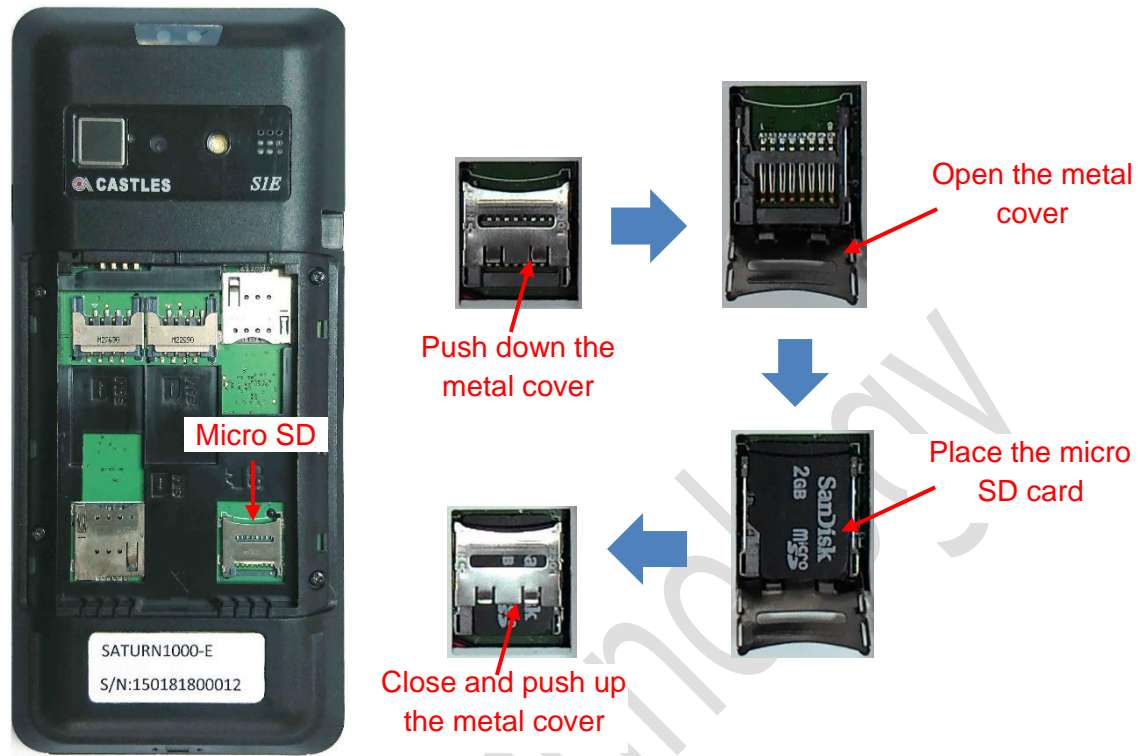Gold contact is on the upper side of the card and facing down.

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

2.4. Insert GSM Micro SIM Card
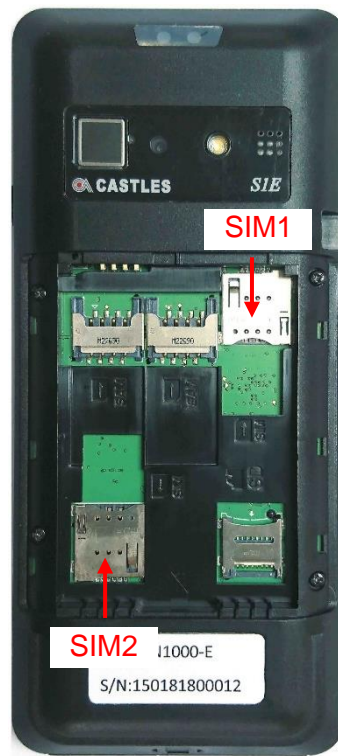
SATURN1000E

Step 1: Remove battery cover / back cover

Step 2: Insert GSM Micro SIM card into desire slot.

SIM 1:

Cut corner is on the upper left side of card and facing down.

SIM 2:

Cut corner is on the lower right side of card and facing down.

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

2.5. Insert Memory card

SATURN1000E

Push down the metal cover

Open the metal cover

Place the micro SD card

Close and push up the metal cover

Micro SD

Step 1:   Remove battery cover / back cover

Step 2:   Place Micro SD memory card.

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

3. Basic Operation

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

3.1. Main Screen

On the terminal, it provides some features for developers, and also have the simple symbols let users know the feature situation (e.g. internet, battery… etc.)
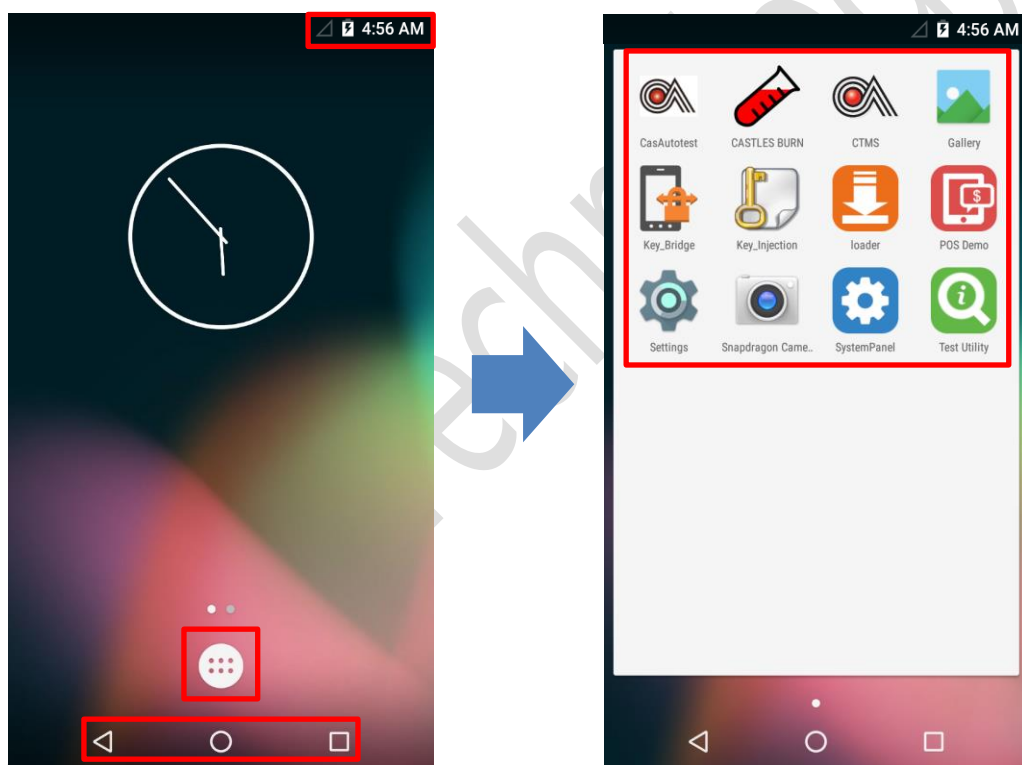
3.2. System Panel

The developer can use the system panel to set system settings and check system versions.
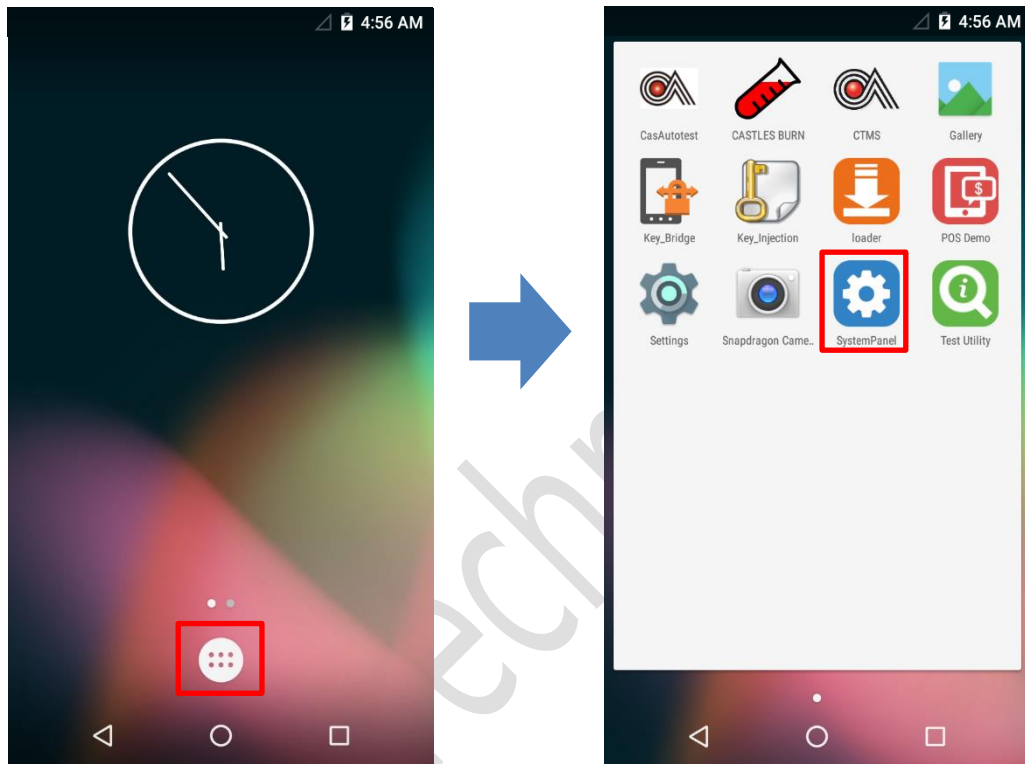
- Click on [App menu].
- Click on [System Panel].

3.3. Loader

Download user application, or update Android system and kernel modules firmware.
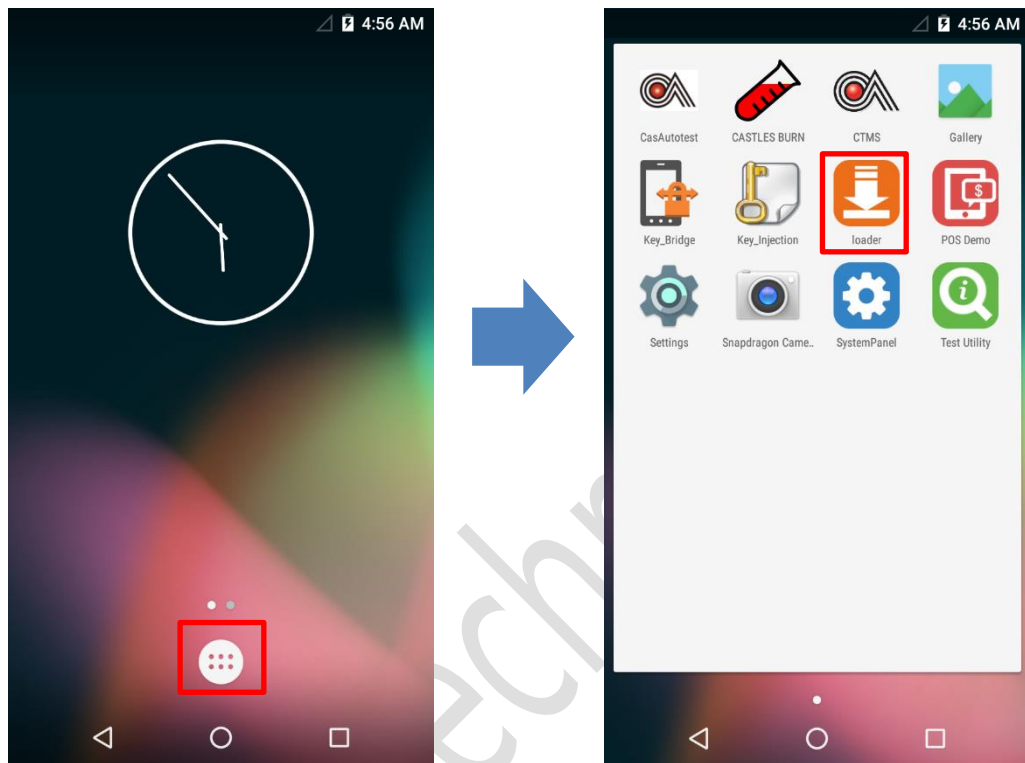
- Click on [App menu].
- Click on [loader].

3.4. Test Utility

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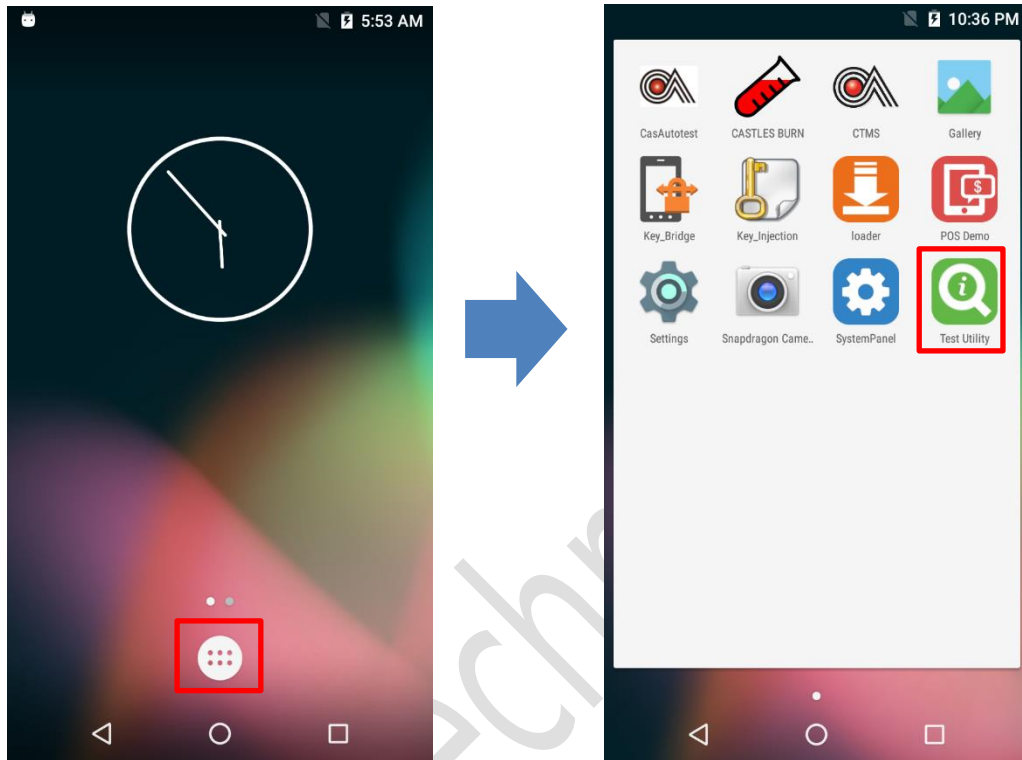
- Click on [App menu].
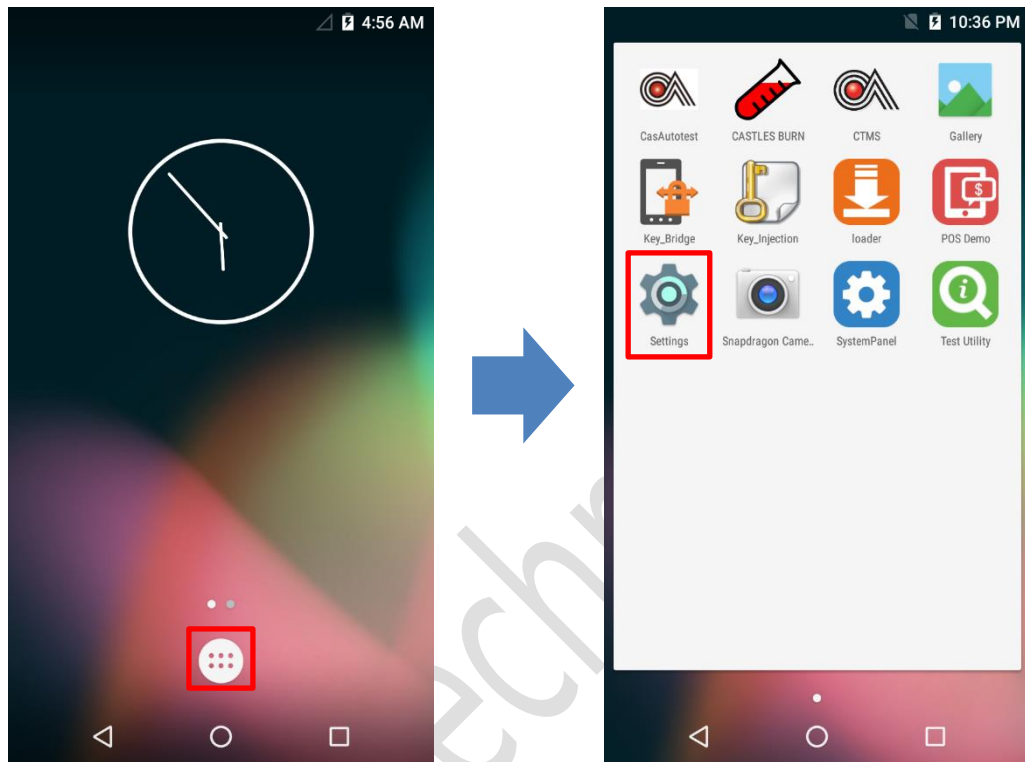- Click on [Test Utility].

3.5. POS Demo

Test EMV/EMVCL function and demo use.
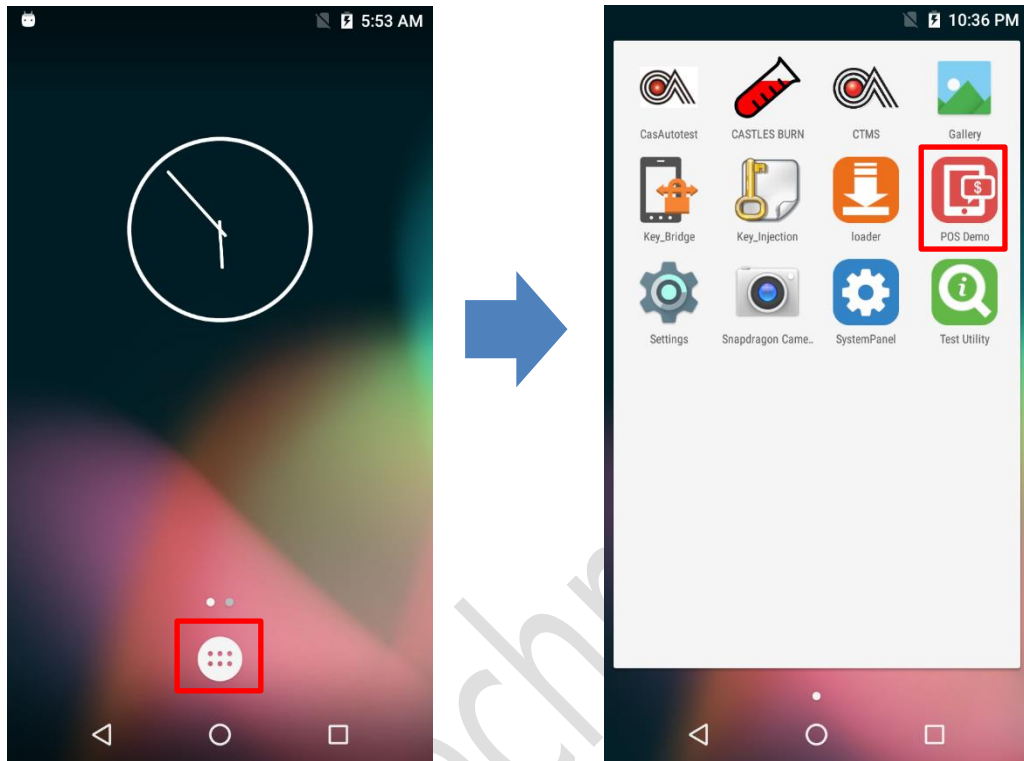
- Click on [App menu].
- Click on [POS Demo].

3.6. Setting

View/set the wireless & network, device configure, personal configure, system information on the terminal.

- Click on [App menu].
- Click on [Setting]

Note: The actual Steps are: Select Settings > About Phone > Certification

3.7. Snapdragon Camera

Users can use the rear camera or barcode scanner to snap the photo.

Note: This SnapDragon Camera is intended for internal use only.
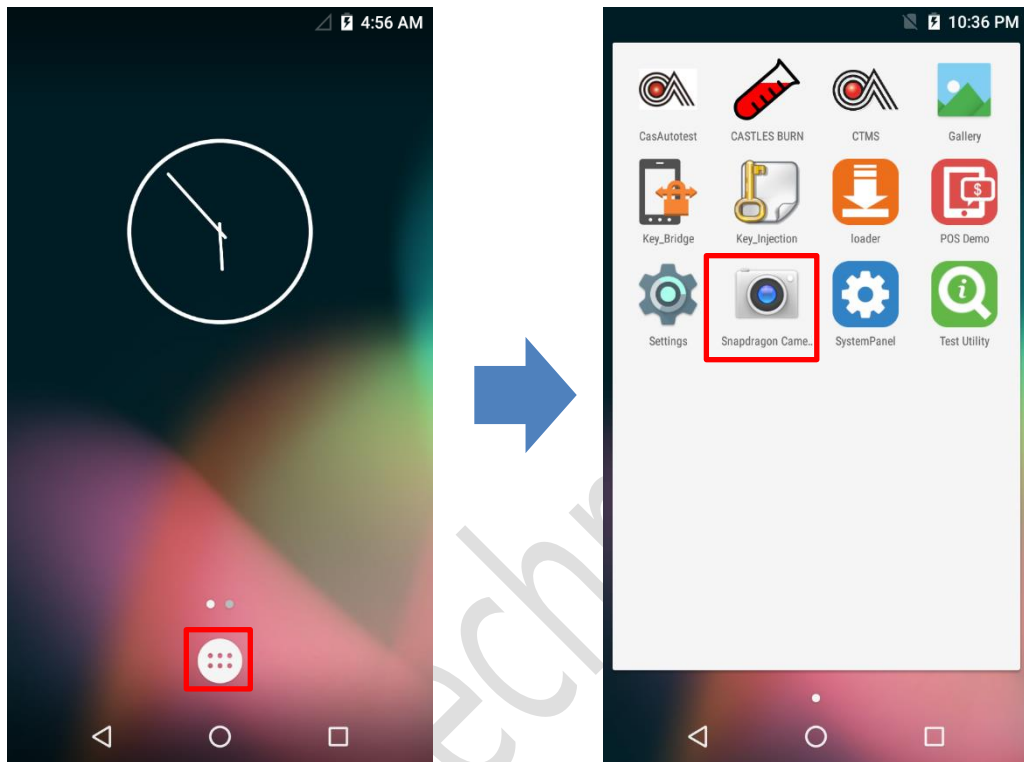
- Click on [App menu].
- Click on [Snapdragon Camera]

3.8. Gallery

View all of the snap photos on the terminal.

Note: This Gallery is intended for internal use only.
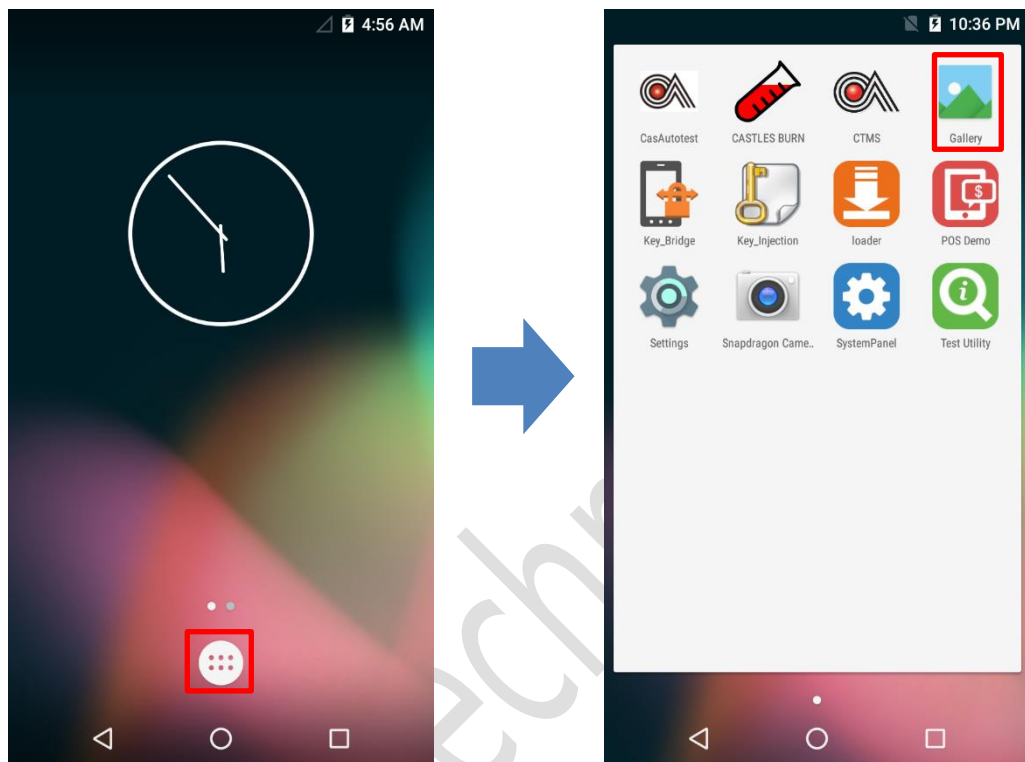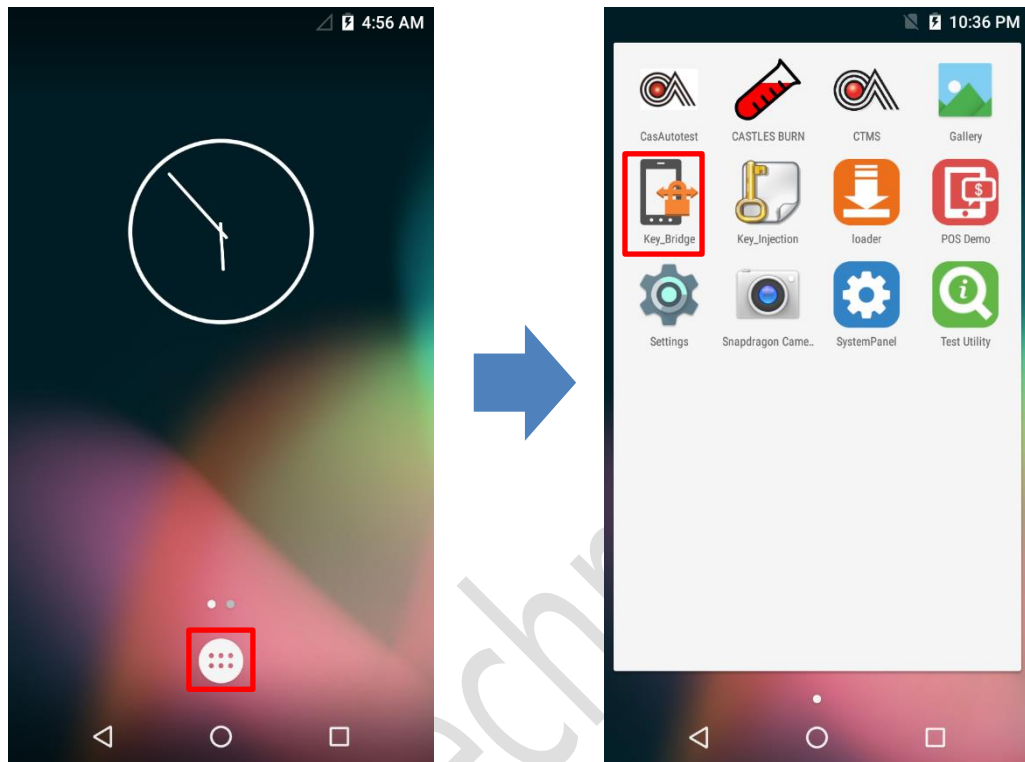

- Click on [App menu].
- Click on [Gallery]

3.9. CTMS

Connect to Castles terminal management server and management the terminals update schedule.
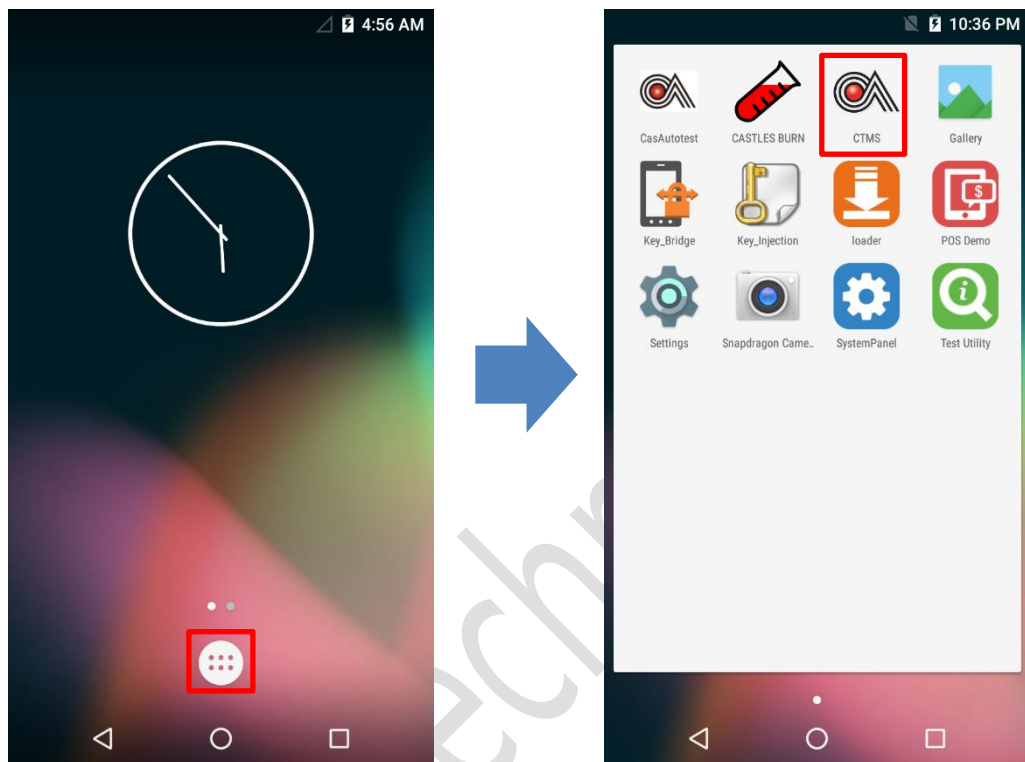
- Click on [App menu].
- Click on [CTMS]

3.10.Key Bridge

The customize feature, only provide for the specify customer to use.

- Click on [App menu].
- Click on [Key_Bridge]

4. Secure File Loading

Castles implemented an interface in terminal named User Loader (ULD) to provide secure file loading to system memory. The Loader only applies to download the "CAP" file for the user application and the kernel firmware.

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

4.1. File Signing

For convert the file to "CAP" file, Castles provides a tool named "CAPGen" to perform this task.
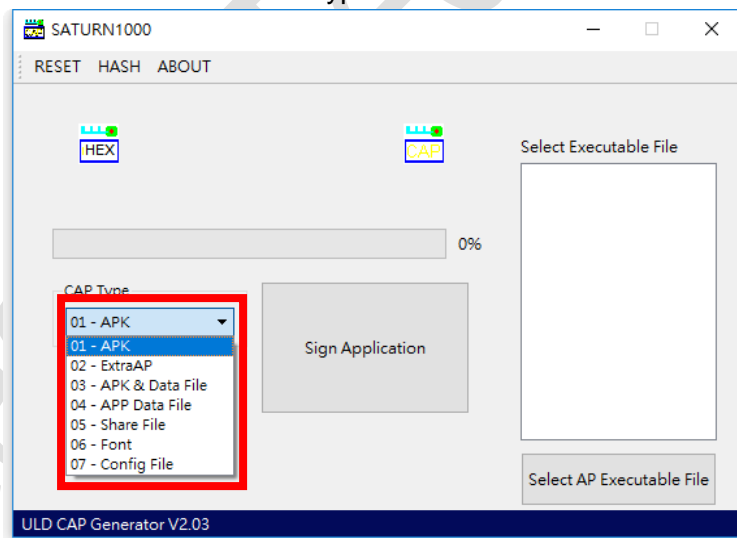
The CAPGen is located at:
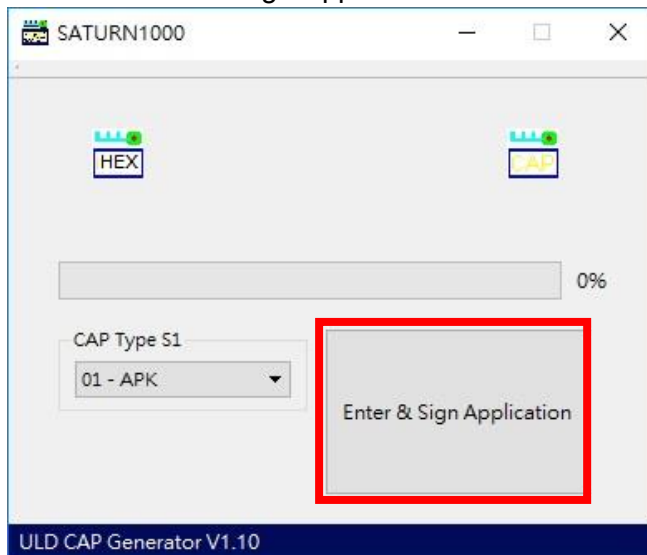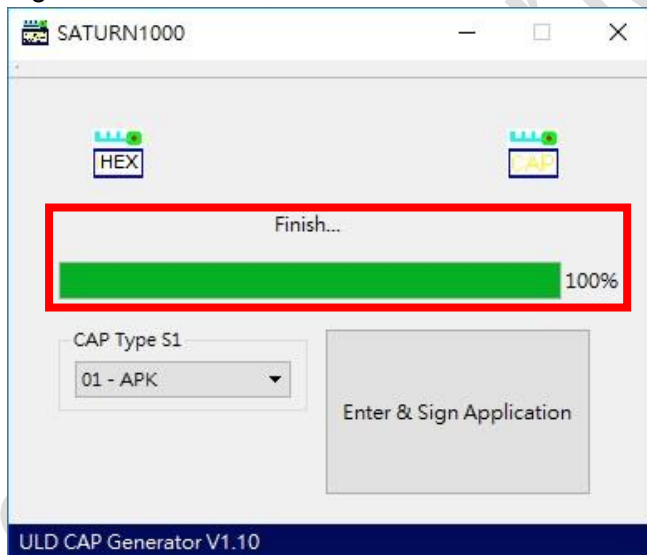C:\Program Files (x86)\Castles\SATURN1000\tools\CAPG (Evaluation Version)\

- Run CAPGen.exe

CAPGen.exe

- Select the correct CAP Type from the list

- Click on "Enter & Sign Application" to browse files.

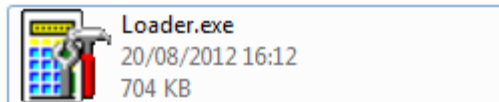- If generate success, the tool will show "Finish…".

4.2. CAP file loading

The "ULD Download Utility" is a tool which provided by Castles Technology. It's the formal way to download the "CAP" file to the terminal.
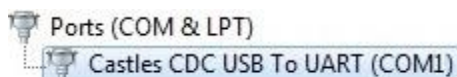
The Loader is located at:
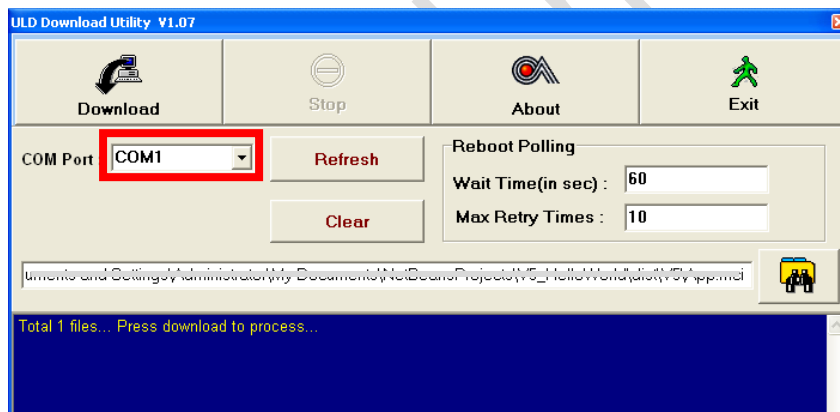C:\Program Files (x86)\Castles\SATURN1000\tools\Loader
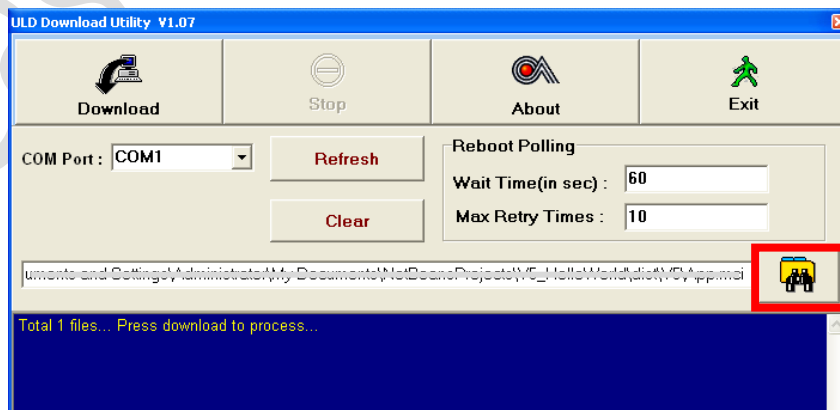
- Run Loader.exe
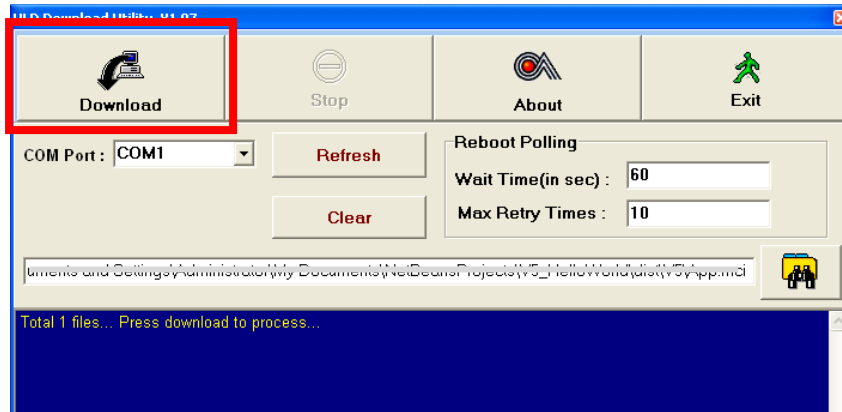

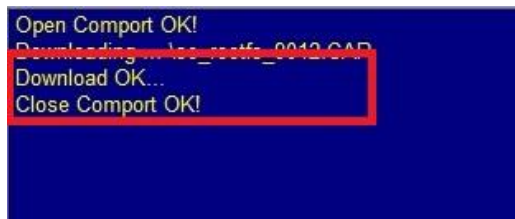- Check the terminal com port in Device Manager.

- Select COM port.

- Browse and select mci file or mmci file

- On terminal side, please refer to the chapter "**3.2 Loader**" to set the terminal in the status of waiting for download.

- Press "Download" button to start the download.

- After download finish, the log screen will show "Download OK…" as the following picture.

5. Saturn 1000 Elite Specification

Item	Specification
Processor	ARM Cortex A7 Quad-Core 1.1GHz Processor + Crypto Processor
Memory (Flash/RAM)	• 8GB/1GB (up to 16GB/2GB) • Micro SD Card
Operating System	Android 6.0
Display	5.5" color TFT display (1280x720)
Touch	Capacitive Touch
Magnetic Stripe Card Reader	ISO 7810, 7811 & 7813 Triple Track, Bi-Directional
Chip Card Reader	• ISO 7816, 1.8V/3V/5V, T=0, T=1 • SAM x2 (up to 4) • SIM x1 (up to 2)
Contactless Card Reader	ISO 14443 type A, B; ISO 18092 NFC, Working Frequency 13.56 MHz
Communication	• Wi-Fi 802.11 b/g/n, • Bluetooth 2.1 + EDR • 3G/4G LTE CAT.4 • GPS
Audio	• Speaker • Microphone (optional)
Barcode Scanner	300K pixel camera with aiming beam
Rear Camera	5 Megapixels AF with LED
I/O Ports	• USB x 1 • 3.5mm audio jack • Charging contact pins
Power	• Rechargeable Battery: 3.7V / 3,000mA • Adaptor: 5V/2A

Accessory	• Charging Cradle • holster
Payment Certification	• PCI PTS 5.x (SRED, OP, PIN on touch) • EMV Contact/Contactless L1, EMV L2 • VISA PayWave, MasterCard PayPass, AMEX ExpressPay, Discover D-PAS, CUP QuickPass, JCB J/Speedy, Interac Flash • MasterCard TQM

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