FAQ-SMART

Revision2.0

CONTENTS

Revision History

Date	Version	Description	Author
2018-07-13	V1.0	1. First draft	Brad Hong
2023-06-10	V2.0		Hassan

1 Device

1.1 How to Upgrade Firmware?

Upgrade Firmware locally

The NEXGO's smart POSs support upgrading firmware by copying the local package to TF-Card and Internal Storage.

Step 1. Connect PC and POS terminal by USB cable, then unzip the local package and copy the two files named as "n5_base_rel_signed.zip" and "update_n5_sechip_signed.zip" to the internal storage.

Step 2. Select the "n5_base_rel_signed.zip" on terminal to start upgrading.

Step 3. Select the "update_n5_sechip_signed.zip" on terminal to start upgrading.

The upgrading will last 5 ~ 10 minutes.

Here provide some screenshots of the operation steps using Internal Storage.
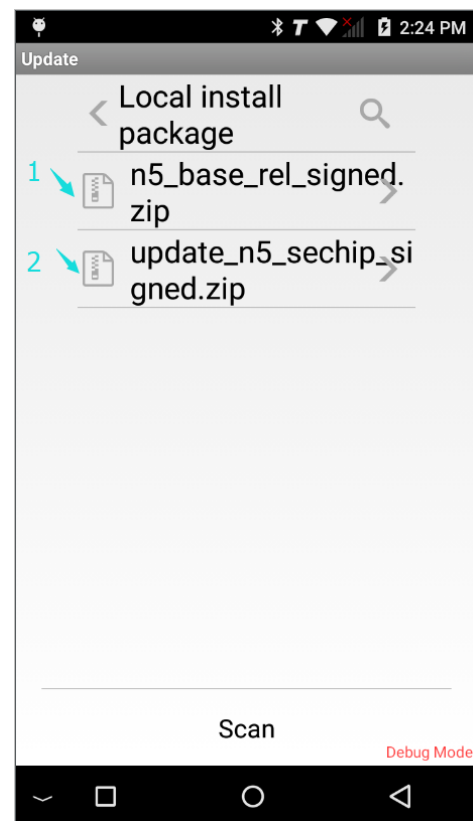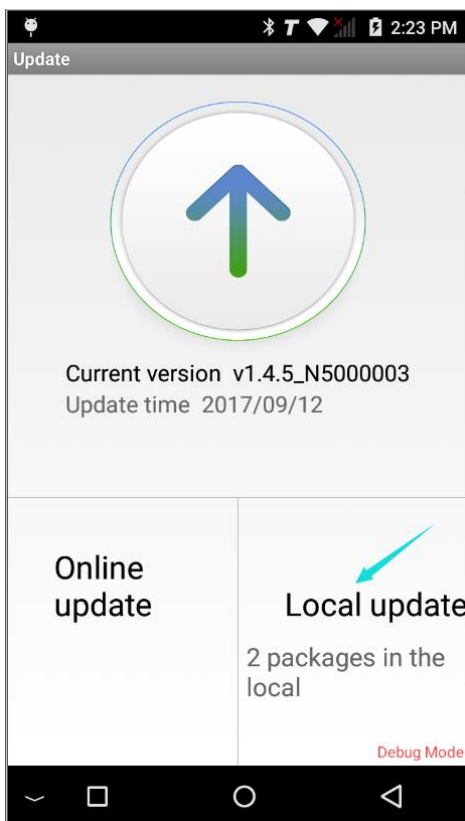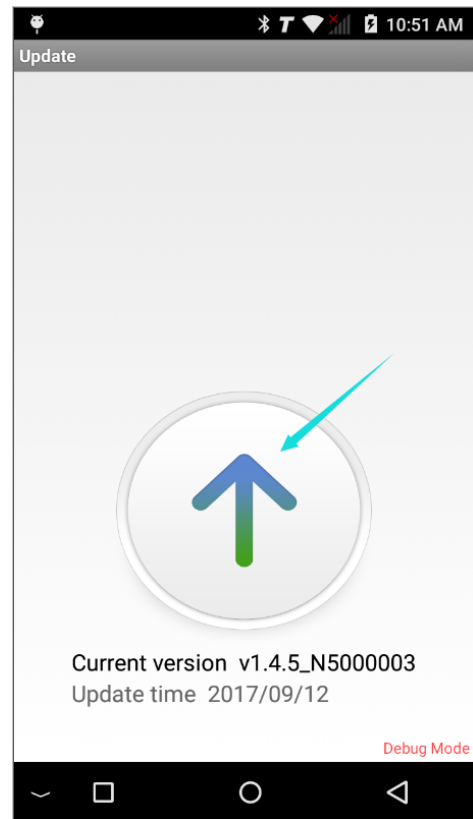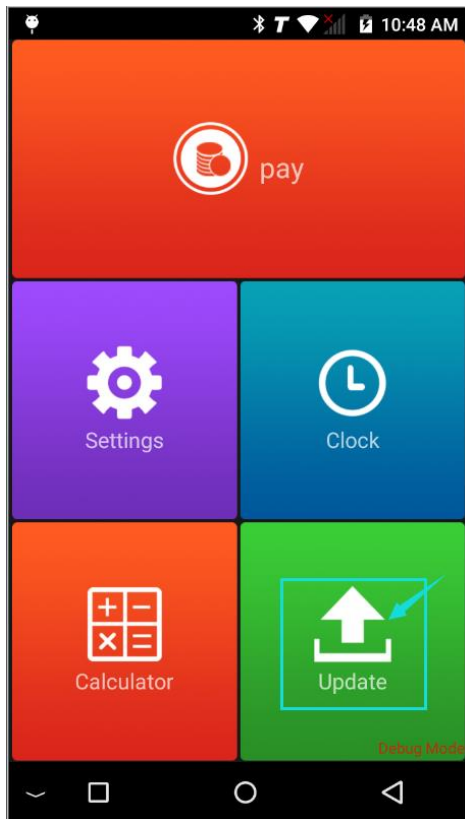
Upgrade Firmware Online

Refer to the **XTMS_User_Manual.pdf**.

1.2 How to Customize Start-up Logo and Animation?

Please contact Nexgo ADS support to help you

Email: ads_support@xgd.com

1.3 How to check android system version in details?

We have 2 ways to check the system version:

1. Please hold on the power key and press volume + three times, You will see hardware test menu , and then click on system info from the top of the

screen , you will see all the system version. You can share with Nexgo ADS team if necessary.
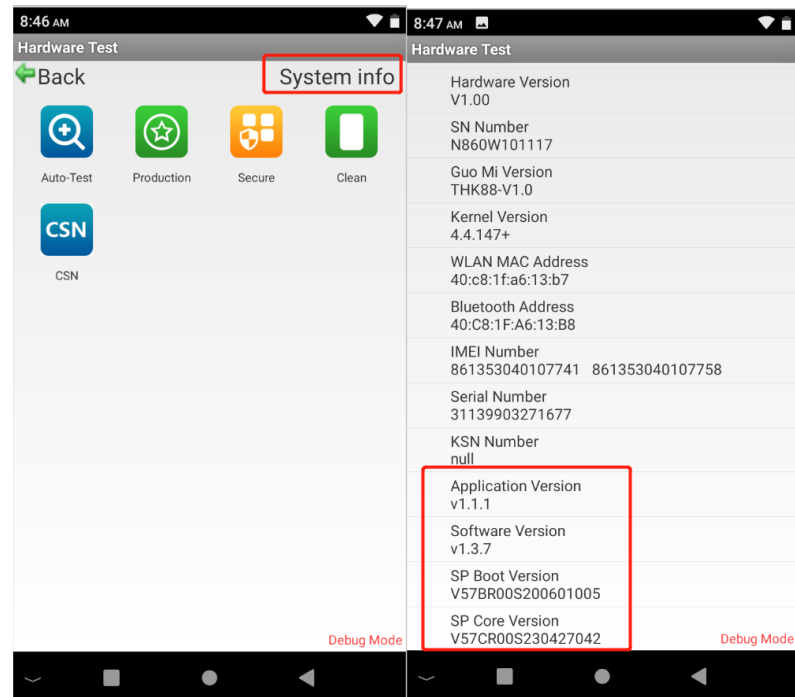
2. You can click on settings-> system -> about phone -> payment OS version details
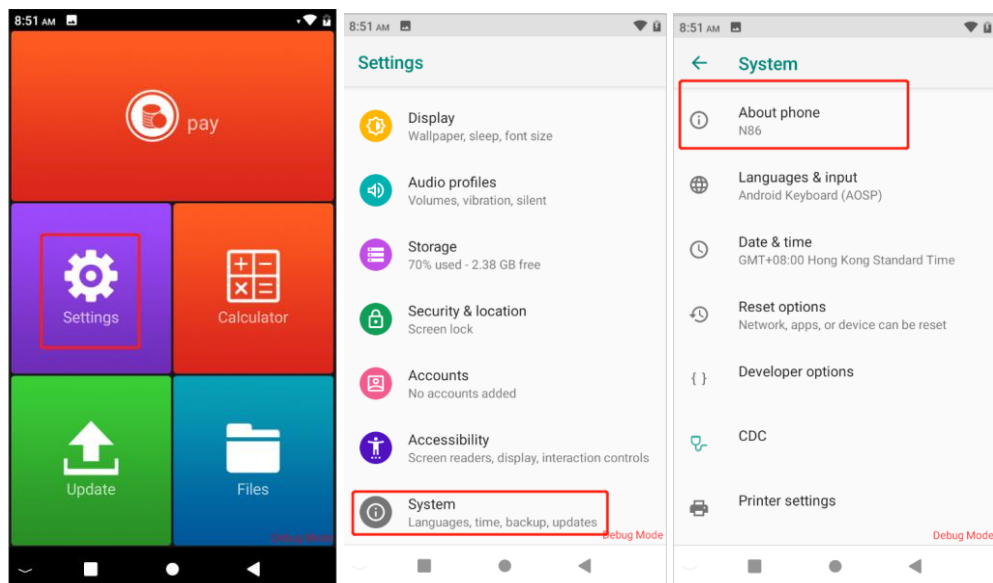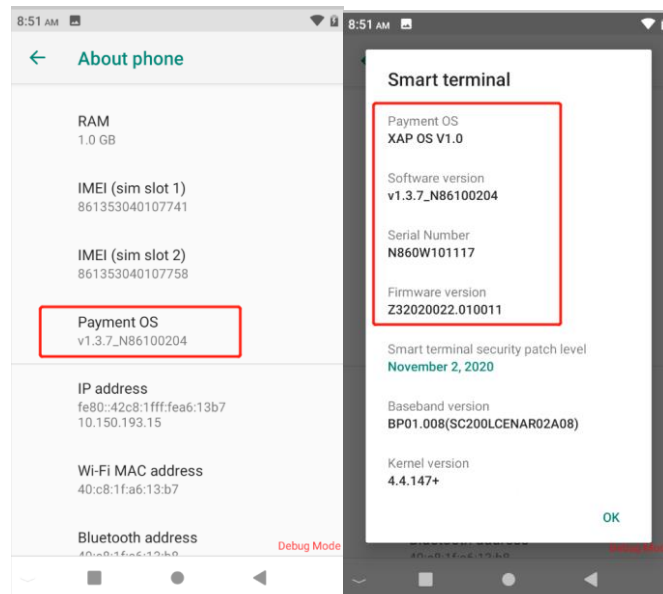
1.4 How to go to hardware test application to test printer, card reader, scanner…etc?

Please hold on the power key and press volume + three times, You will see hardware test menu, click production button, you can select the module which you want to test.
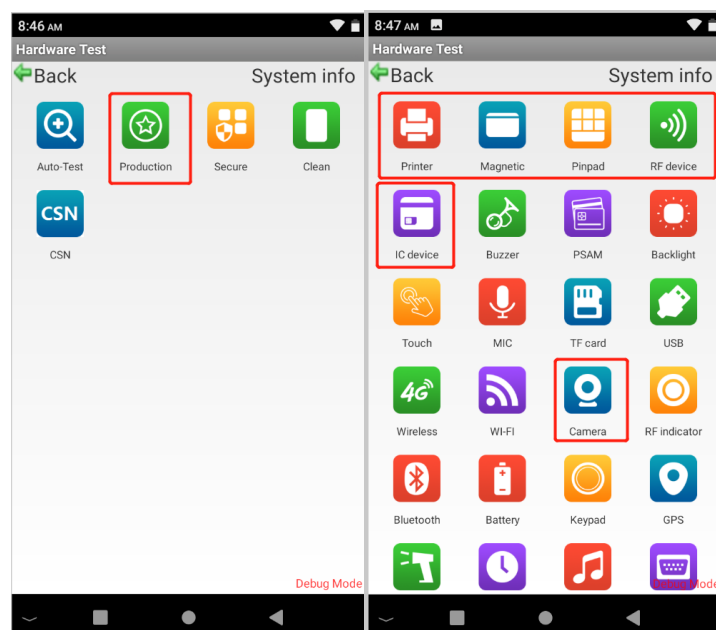
1.5 how to debug application via WIFI ADB?

Nexgo has some counter top devices, such as N6 counter top, N5 all-in-one device, or device on the Base; The USB-CDC port of these devices is not available for the developer to insert the USB cable, so can not debug from the cable.

In this case, we need WIFI ADB to debug.

1. All-in-one device or counter top device
   a. Contact ADS team(ads_support@xgd.com) to get the WIFI ADB firmware to enable the WIFI ADB function
   b. Let your PC and the device connect same WIFI hotspot
   c. Find the IP address in the device from WIFI, for example: 10.150.193.15
   d. Type: adb connect 10.150.193.15 in PC
   e. Device and PC connected.

2. Device on the Base(For example N86)
   a. Use USB cable connect N86 and PC
   b. Type: adb tcpip 5555 in PC to enable the WIFI ADB
   c. Disconnect USB calbe
   d. Put the N86 to the base
   e. Let your PC and the device connect same WIFI hotspot
   f. Find the IP address in the device from WIFI, for example: 10.150.193.15
   g. Type: adb connect 10.150.193.15 in PC
   h. Device and PC connected.
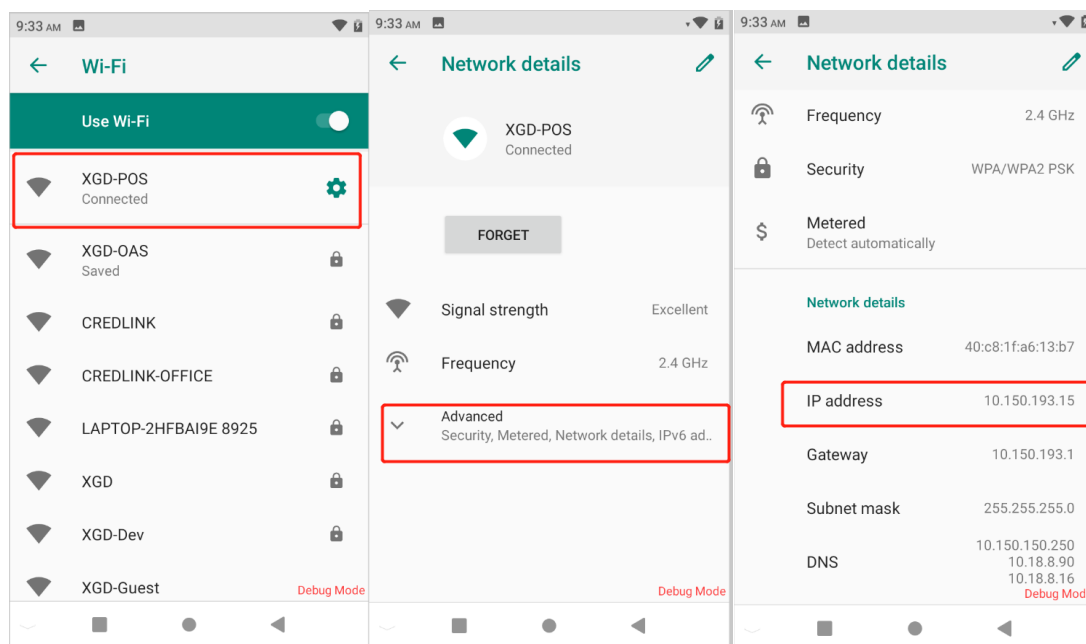
1.6 How to check device certificate?

Click setting- Encryption & credentials->SmartPOS Trusted credentials, you will find the certificate, see below picture:
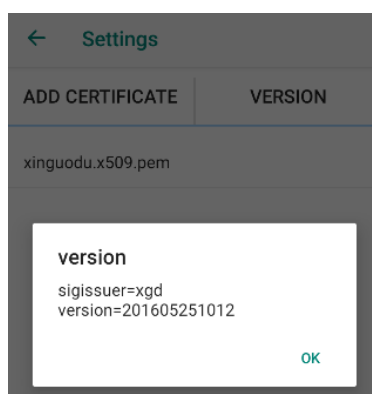
1.7 Why device show message "Credit card lock"?

For old firmware, we have some limitation that the device can accept transaction 120 times per 1 hour. if exceeds 120 per hour. Terminal should block the reader 1 hour.

We will remove this limitation with new firmware.

If you meet this kind of issue, please contact ADS team(ads_support@xgd.com).
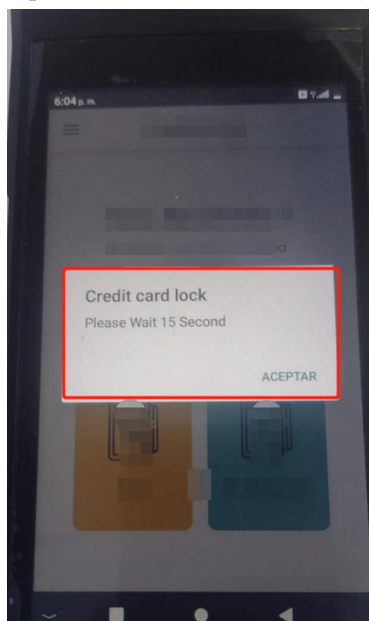
1.8 How to Sign APK with NEXGO's Signature Strategy?
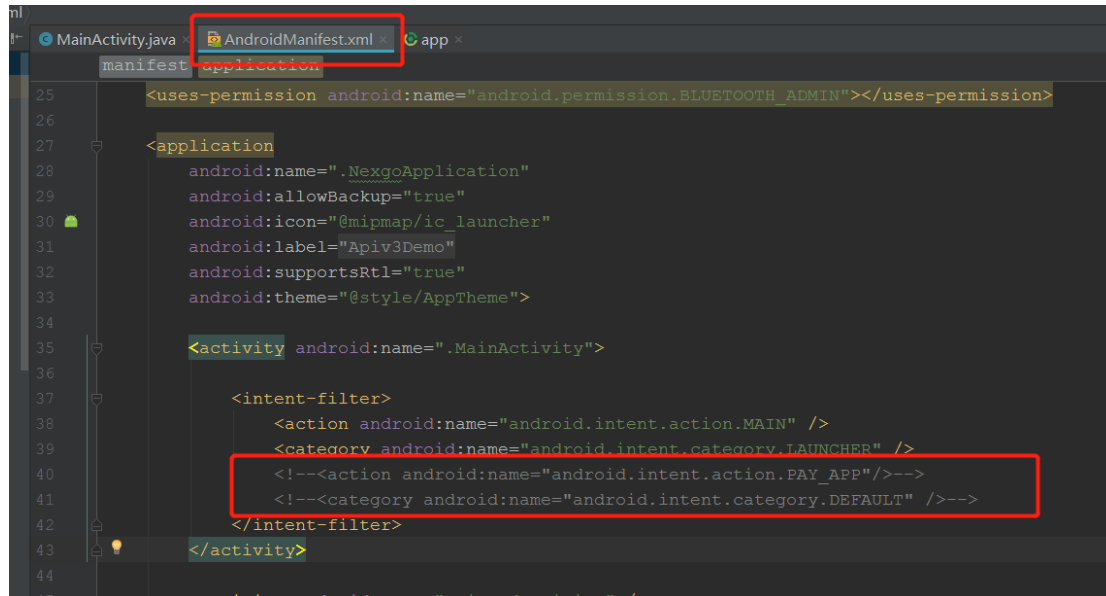
Refer to **Nexgo Security System.pdf**

2 Android System

2.1 How to Link your app into "Pay" icon in the desktop(launcher)?

Edit AndroidManifest.xml with your app, add the below code into it. Then this application will link into the "Pay" icon.

See below sample:

2.2 How to Disable the Status Bar(or dropdown menu) in App?

The standard method to hide the status bar in Android is not complete because it can be redisplayed by sliding the top area of the screen.

See below Nexgo SDK API to enable or disable the status bar:

```
DeviceEngine deviceEngine = ((NexgoApplication) getApplication()).deviceEngine;
platform = deviceEngine.getPlatform();
platform.enableControlBar();//enable the status bar
platform.disableControlBar();//disable the status bar
```

2.3 How to Control the Navigation Bar in App?

The navigation bar can be hidden or display by Nexgo API:

Hide Navigation Bar

```
DeviceEngine deviceEngine = ((NexgoApplication) getApplication()).deviceEngine;
platform = deviceEngine.getPlatform();
```

```
platform.hideNavigationBar();
```

Display Navigation Bar

```
DeviceEngine deviceEngine = ((NexgoApplication) getApplication()).deviceEngine;
platform = deviceEngine.getPlatform();
platform.showNavigationBar();
```

Disable MENU and HOME button of Navigation Bar

```
DeviceEngine deviceEngine = ((NexgoApplication) getApplication()).deviceEngine;
platform = deviceEngine.getPlatform();

platform.enableHomeButton();//enable home button
platform.disableHomeButton();//disable home button


platform.enableTaskButton();//enable task(menu) button
platform.disableTaskButton();//disable task(menu) button
```

2.4 How to install or uninstall app silently?

Can call Nexgo SDK API to install app or uninstall app:

```
DeviceEngine deviceEngine = ((NexgoApplication) getApplication()).deviceEngine;
platform = deviceEngine.getPlatform();

//install, pass the path of the apk
platform.installApp("/sdcard/app-debug.apk", new OnAppOperatListener() {
            @Override
            public void onOperatResult(int i) {
                LogUtils.debug("installApp ret :{}", i);


            }
        });

//uninstall, pass the package name of the apk
platform.uninstallApp("com.example.demo", new OnAppOperatListener() {
            @Override
            public void onOperatResult(int i) {
                LogUtils.debug("uninstallApp ret :{}", i);
```

```
        }
    });
```

2.5 How to power off or reboot device?

```
DeviceEngine deviceEngine = ((NexgoApplication) getApplication()).deviceEngine;
platform = deviceEngine.getPlatform();

platform.shutDownDevice();//power off device
platform.rebootDevice();//reboot device
```

2.6 How to Set System Time in App?

Call Nexgo SDK API setSystemClock :

3.10 setSystemClock

Set the system time.

public void setSystemClock (Context context, String datetime);

Parameters:

Parameter	Description
context	Context
datetime	Time format YYYYMMDDHHMMSS, the year in the range 1970-2049

Return Value: None

2.7 How to control(increase or decrease) the beep volume?

We have 3 beep mode for customer to config with Platform setBeepMode API:
BEEP_MODE_SYSTEM_DEFAULT:

the biggest system sound 80%

BEEP_MODE_CUSTOM:

Application can set beep volume, such as 80, 50...etc

BEEP_MODE_SYSTEM_VOLUME:

The beep sound volume will follow the system volume, you can click volume '+' '-' to adjust the beep sound according to system sound

3.19.14 setBeepMode

set device beep mode, application can control the beep volume

public void setBeepMode(BeepVolumeModeEnum beepMode, int volume);

Parameters:

Parameter	Description
beepMode	BEEP_MODE_SYSTEM_DEFAULT: system default BEEP_MODE_CUSTOM: application set the beep volume
volume	Beep volume, range 0 -100 (volume percentage)

BeepVolumeModeEnum

Enumeration Name	Description
BEEP_MODE_SYSTEM_DEFAULT	use 80% of the maximum volume of the system, regardless of the volume of the system
BEEP_MODE_CUSTOM	application set the beep volume, need to set the volume value
BEEP_MODE_SYSTEM_VOLUME	Beep sound following system volume

2.8 SerialPortDriver port number in android device

0: type C/micro USB,   1: UN20 RS232A , 2:UN20 RS232B ,   101: N86 base

3 EMV

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3.1 How to Set AID and CAPK for EMV?

The AidEntity and CapkEntity classes are used to specify an AID and a CAPK of different acquirers. Set AID and CAPK to EMV kernel by calling API EmvHandler2.setAidParaList() and EmvHandler2.setCAPKList().

An example to set an AID to EMV kernel.

```
private void addAnAid() {
    EmvHandler2 emvHandler = APIProxy.getDeviceEngine().getEmvHandler2("app");
    emvHandler.delAllAid(); // delete all aids

    AidEntity aidEntity = new AidEntity();
    aidEntity.setDDOL("9f3704");
    aidEntity.setAid("A000000003");
    aidEntity.setAppVerNum("008c");
    aidEntity.setAsi(0);
    aidEntity.setContactlessCvmLimit(10000);
    aidEntity.setContactlessFloorLimit(20000);
    aidEntity.setContactlessTransLimit(30000);
    aidEntity.setFloorLimit(0);
    aidEntity.setMaxTargetPercent(0);
    aidEntity.setOnlinePinCap(1);
    aidEntity.setTacDefault("d84000a800");
    aidEntity.setTacDenial("0010000000");
    aidEntity.setTacOnline("d84004f800");
    aidEntity.setTargetPercent(0);
    aidEntity.setThreshold(0);
    aidEntity.setTransLimit(4000);

    List<AidEntity> aidEntityList = new ArrayList<>();
    aidEntityList.add(aidEntity);
    emvHandler.setAidParaList(aidEntityList);
}
```

The method to add a CAPK is similar to adding an AID. Just call setCAPKList() instead of setAidParaList();

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3.2 How to get Support during EMV L3 certificate?

We have EMV L3 contactless guide document. You can check "EMV CLS L3 Certificate Guide" in SDK documents

📁 EMV CLS L3 Certificate Guide ←	2022/11/8 8:47
📄 ADS_Development_Guide_Smart.pdf	2020/7/13 14:01
📦 EMV CLS L3 Certificate Guide.zip	2023/6/14 15:05
📄 FAQ_Smart.pdf	2023/6/10 15:15
📄 Nexgo Cloud User Manual.pdf	2022/7/22 18:04
📄 Nexgo Security System.pdf	2021/12/10 11:26
📦 Nexgo SmartPos Development Guide Doc.zip	2023/6/12 15:19
📄 Nexgo_SmartPos_API_3.0.6.pdf	2022/11/8 9:47
📄 Operation_Manual_Of_XTMS3.pdf	2019/6/20 16:12
📄 xtms APP operation manual-v1.2.20-en.pdf	2018/7/16 19:53

You can also contact Nexgo ADS for support.

Email: ads_support@xgd.com

3.3 How to Set Terminal Capability or EMV tags with Paypass, Paywave?

It is supported to call API EmvHandler.setTlv() to set EMV tag and value such as 9F33 and 9F66 when processing the EMV flow.

We have an EMV callback API "onTransInitBeforeGPO", it is used for config special EMV tag.

For contact:

You can use API setTlv 9F33 in "onTransInitBeforeGPO" set terminal capability.

For contactless:

You can use API setTlv to config different TAG with different card brand.

See below sample, details you can check SDK sample code EmvActivity2.java:

3.4 How to Handle Contactless MSD Process?

In the callback method **onOnlineProc()** of **EmvProcessListener**, Call **EmvHandler.getEmvContactlessMode()** to get the current flow. If the return value is **EmvModeEnum.MSD**, do the MSD flow process as the project required.

3.5 How to get EMV contactless track 2 data in EMV mode and MSD mode?

3.6 There is also another report that during PayPass MSD or ExpressPay MSD, the host response error with "the track 2 data is incorrect or invalid".

We normally read track 2 data from Tag 57. But in case of PayPass MSD or ExpressPay MSD, the Tag 57 is incorrect.
So we can use API Public byte [] getTlv (byte [] tag, EmvDataSourceEnum pathId) to get

track 2 data:

1. For EMV mode, we get track 2 data from Tag 57
2. For PayPass MSD mode, get track 2 data from Tag 9F6B
3. For ExpressPay MSD mode, get track 2 data from Tag DF812B
4. Other case, get track 2 data from Tag 57.

See below sample code.

```java
if(mIsRf){
    if(getEmvContactlessMode() == EmvModeEnum.MSD){
        byte[] aid = getTlv(new byte[]{0x4F}, EmvDataSourceEnum.FROM_KERNEL);
        if(aid != null){
            if(ByteUtils.byteArray2HexString(aid).toUpperCase().contains("A000000004")){
                value = getTlv(ByteUtils.hexString2ByteArray("9f6b"), EmvDataSourceEnum.FROM_KERNEL);
                if(value != null){
                    LogUtils.info( msg: "call getTk2Ex PAYPASS MSD");
                    String tk2 = ByteUtils.byteArray2HexString(value).toUpperCase();
                    if (tk2.endsWith("F")) {
                        tk2 = tk2.substring(0, tk2.length() - 1);
                    }
                    return tk2;
                }
            }else if(ByteUtils.byteArray2HexString(aid).toUpperCase().contains("A000000025")){
                value = getTlv(ByteUtils.hexString2ByteArray("df812b"), EmvDataSourceEnum.FROM_KERNEL);
                if(value != null){
                    LogUtils.info( msg: "call getTk2Ex EXPRESSPAY MSD");
                    String tk2 = new String(value).toUpperCase();
                    tk2 = tk2.replace( target: ";", replacement: "");
                    tk2 = tk2.replace( target: "?", replacement: "");
                    tk2 = tk2.replace( target: "=", replacement: "D");
                    if (tk2.endsWith("F")) {
                        tk2 = tk2.substring(0, tk2.length() - 1);
                    }
                    return tk2;
                }
            }
        }
    }
}
```

Or there is a easy way, you can call getEmvCardDataInfo(); directly to get the track 2 data no matter it is EMV mode or MSD mode.

3.7 How to get EMV CVMR(cardholder verify methos result)?

```java
//get CVM result
EmvCvmResultEnum emvCvmResultEnum = emvHandler2.getEmvCvmResult();
Log.d("nexgo", "getEmvCvmResult:" + emvCvmResultEnum);
```

```
public enum EmvCvmResultEnum {
    EMV_CVMR_NA,
    EMV_CVMR_NOCVM,
    EMV_CVMR_SIGNATURE,
    EMV_CVMR_ONLINEPIN,
    EMV_CVMR_CONFVERIFIED,
    EMV_CVMR_CDCVM,
    EMV_CVMR_OFFLINEPIN_PLAINTEXT,
    EMV_CVMR_OFFLINEPIN_ENCIPHER,
    EMV_CVMR_OFFLINEPIN_PLAINTEXT_SIGNATURE,
    EMV_CVMR_OFFLINEPIN_ENCIPHER_SIGNATURE,
    EMV_CVMR_SKIP_CVM;

    private EmvCvmResultEnum() {

    }
}
```

3.8 How to set Paywave DRL?

If terminal support DRL, and card also have the DRL flag, then the transaction will use DRL limit to process the transaction.

You can call below API to config the DRL limit(or you can refer to Nexgo SDK EMV sample code).

emvHandler2.setDynamicReaderLimitListForPaywave(dynamicReaderLimitEntity);

Normally, the program ID has :

new byte[]{0x31, 0x02, 0x68, 0x26,0x00}

new byte[]{0x31, 0x02, 0x68, 0x26, 0x12}

new byte[]{0x31, 0x02, 0x68, 0x26, 0x12, 0x00,0x00,0x03}

new byte[]{0x31, 0x02, 0x68, 0x26, 0x20}

you need to follow below code to set the 4 program ID .

setPaywaveDrl should be excuted before emvprocess API.

```
  private void setPaywaveDrl() {

    List<DynamicReaderLimitEntity>      dynamicReaderLimitEntity      =      new
ArrayList<>();
```

```
DynamicReaderLimitEntity entity = new DynamicReaderLimitEntity();
entity.setDrlSupport(true);
entity.setAppProgID(new byte[]{0x31, 0x02, 0x68, 0x26, 0x20});//get from 9f5a
entity.setAuthOfZeroCheck(true);
entity.setStatusCheck(false);
entity.setReaderCVMReqLimitCheck(true);
entity.setReaderContactlessFloorLimitCheck(true);
entity.setReaderContactlessTransLimitCheck(false);
entity.setReaderCVMReqLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50, 0x01});
entity.setReaderContactlessFloorLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50,
0x00});
entity.setReaderContactlessTransLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x60,
0x01});
dynamicReaderLimitEntity.add(entity);


DynamicReaderLimitEntity entity1 = new DynamicReaderLimitEntity();
entity1.setDrlSupport(true);
entity1.setAppProgID(new       byte[]{0x31,     0x02,    0x68,    0x26,    0x12,
0x00,0x00,0x03});//get from 9f5a
entity1.setStatusCheck(false);
entity1.setAuthOfZeroCheck(true);
entity1.setReaderCVMReqLimitCheck(true);
entity1.setReaderContactlessFloorLimitCheck(true);
entity1.setReaderContactlessTransLimitCheck(false);
entity1.setReaderCVMReqLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50, 0x01});
entity1.setReaderContactlessFloorLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50,
0x00});
entity1.setReaderContactlessTransLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x60,
0x01});
dynamicReaderLimitEntity.add(entity1);


DynamicReaderLimitEntity entity2 = new DynamicReaderLimitEntity();
entity2.setDrlSupport(true);
entity2.setAppProgID(new byte[]{0x31, 0x02, 0x68, 0x26, 0x12});//get from 9f5a
entity2.setAuthOfZeroCheck(true);
```

```
    entity2.setStatusCheck(false);
    entity2.setReaderCVMReqLimitCheck(true);
    entity2.setReaderContactlessFloorLimitCheck(true);
    entity2.setReaderContactlessTransLimitCheck(false);
    entity2.setReaderCVMReqLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50, 0x01});
    entity2.setReaderContactlessFloorLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50,
0x00});
    entity2.setReaderContactlessTransLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x60,
0x01});
    dynamicReaderLimitEntity.add(entity2);


    DynamicReaderLimitEntity entity3 = new DynamicReaderLimitEntity();
    entity3.setDrlSupport(true);
    //get from 9f5a,program ID
    entity3.setAppProgID(new byte[]{0x31, 0x02, 0x68, 0x26,0x00});
    entity3.setAuthOfZeroCheck(true);
    entity3.setStatusCheck(false);
    entity3.setReaderCVMReqLimitCheck(true);
    entity3.setReaderContactlessFloorLimitCheck(true);
    entity3.setReaderContactlessTransLimitCheck(false);
    entity3.setReaderCVMReqLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50, 0x01});
    entity3.setReaderContactlessFloorLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50,
0x00});
    entity3.setReaderContactlessTransLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x60,
0x01});
    dynamicReaderLimitEntity.add(entity3);



emvHandler2.setDynamicReaderLimitListForPaywave(dynamicReaderLimitEntity);
}
```

```
DynamicReaderLimitEntity entity3 = new DynamicReaderLimitEntity();
entity3.setDrlSupport(true);
//get from 9f5a,program ID
entity3.setAppProgID(new byte[]{0x31, 0x02, 0x68, 0x26,0x00});
entity3.setAuthOfZeroCheck(true);
entity3.setStatusCheck(false);
entity3.setReaderCVMReqLimitCheck(true);
entity3.setReaderContactlessFloorLimitCheck(true);
entity3.setReaderContactlessTransLimitCheck(false);
entity3.setReaderCVMReqLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50, 0x01});
entity3.setReaderContactlessFloorLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x50, 0x00});
entity3.setReaderContactlessTransLimit(new byte[]{0x00, 0x00, 0x00, 0x00, 0x60, 0x01});
dynamicReaderLimitEntity.add(entity3);

emvHandler2.setDynamicReaderLimitListForPaywave(dynamicReaderLimitEntity);
```

3.9 How to set ExpressPay DRL?

DynamicReaderLimitEntity defaultDynamicReaderLimitEntity = new DynamicReaderLimitEntity();

defaultDynamicReaderLimitEntity.setAppProgID(new byte[]{(byte) 0xFF});

defaultDynamicReaderLimitEntity.setDrlSupport(false);

defaultDynamicReaderLimitEntity.setReaderCVMReqLimit(ByteUtils.hexString2ByteArray("000000001000"));

defaultDynamicReaderLimitEntity.setReaderContactlessTransLimit(ByteUtils.hexString2ByteArray("000000001500"));

defaultDynamicReaderLimitEntity.setReaderContactlessFloorLimit(ByteUtils.hexString2ByteArray("000000001200"));

List<DynamicReaderLimitEntity> dynamicReaderLimitEntities = new ArrayList<>();
//used for EP094,EP095

DynamicReaderLimitEntity dynamicReaderLimitEntity = new DynamicReaderLimitEntity();

dynamicReaderLimitEntity.setAppProgID(new byte[]{(byte) 0x06});

dynamicReaderLimitEntity.setReaderCVMReqLimit(ByteUtils.hexString2ByteArray("000000000200"));

dynamicReaderLimitEntity.setReaderContactlessTransLimit(ByteUtils.hexString2ByteArray("000000000700"));

dynamicReaderLimitEntity.setReaderContactlessFloorLimit(ByteUtils.hexString2ByteArray("000000000400"));

dynamicReaderLimitEntities.add(dynamicReaderLimitEntity);

//used for EP096

dynamicReaderLimitEntity = new DynamicReaderLimitEntity();

dynamicReaderLimitEntity.setAppProgID(new byte[]{(byte) 0x0B});

dynamicReaderLimitEntity.setReaderCVMReqLimit(ByteUtils.hexString2ByteArray("000000000200"));

dynamicReaderLimitEntity.setReaderContactlessTransLimit(ByteUtils.hexString2ByteArray("000000000300"));

dynamicReaderLimitEntity.setReaderContactlessFloorLimit(ByteUtils.hexString2ByteArray("000000000100"));

dynamicReaderLimitEntities.add(dynamicReaderLimitEntity);

//default drl will replace all expresspay aid limits even card doesn't support drl

int ret = emvHandler2.setDynamicReaderLimitListForExpressPay(defaultDynamicReaderLimitEntity, dynamicReaderLimitEntities);

Log.d(TAG, "setDynamicReaderLimitListForExpressPay : " + ret);

```java
private void setExpressPayDrl(){
    DynamicReaderLimitEntity defaultDynamicReaderLimitEntity = new DynamicReaderLimitEntity();
    defaultDynamicReaderLimitEntity.setAppProgID(new byte[]{(byte) 0xFF});
    defaultDynamicReaderLimitEntity.setReaderCVMReqLimit(ByteUtils.hexString2ByteArray( "000000001000"));
    defaultDynamicReaderLimitEntity.setReaderContactlessTransLimit(ByteUtils.hexString2ByteArray( "000000001500"));
    defaultDynamicReaderLimitEntity.setReaderContactlessFloorLimit(ByteUtils.hexString2ByteArray( "000000001200"));

    List<DynamicReaderLimitEntity> dynamicReaderLimitEntities = new ArrayList<>();
    DynamicReaderLimitEntity dynamicReaderLimitEntity = new DynamicReaderLimitEntity();
    dynamicReaderLimitEntity.setAppProgID(new byte[]{(byte) 0x06});
    dynamicReaderLimitEntity.setReaderCVMReqLimit(ByteUtils.hexString2ByteArray( "000000000200"));
    dynamicReaderLimitEntity.setReaderContactlessTransLimit(ByteUtils.hexString2ByteArray( "000000000700"));
    dynamicReaderLimitEntity.setReaderContactlessFloorLimit(ByteUtils.hexString2ByteArray( "000000000400"));
    dynamicReaderLimitEntities.add(dynamicReaderLimitEntity);

    dynamicReaderLimitEntity = new DynamicReaderLimitEntity();
    dynamicReaderLimitEntity.setAppProgID(new byte[]{(byte) 0x0B});
    dynamicReaderLimitEntity.setReaderCVMReqLimit(ByteUtils.hexString2ByteArray( "000000000200"));
    dynamicReaderLimitEntity.setReaderContactlessTransLimit(ByteUtils.hexString2ByteArray( "000000000300"));
    dynamicReaderLimitEntity.setReaderContactlessFloorLimit(ByteUtils.hexString2ByteArray( "000000000100"));
    dynamicReaderLimitEntities.add(dynamicReaderLimitEntity);

    emvHandler2.setDynamicReaderLimitListForExpressPay(defaultDynamicReaderLimitEntity, dynamicReaderLimitEntities);
}
```

3.10 How to config different AID parameter for EMV contact and contactless?

For example, we want to have different TAC-code for contact and contactless with MasterCard, how can we do?

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In AidEntity, we have a parameter AidEntryModeEnum aidEntryModeEnum; it can specify this aid is for EMV contact or contactless. The default value is AID_ENTRY_CONTACT_CONTACTLESS

```java
public enum AidEntryModeEnum {
    AID_ENTRY_CONTACT_CONTACTLESS,
    AID_ENTRY_CONTACT,
    AID_ENTRY_CONTACTLESS;

    private AidEntryModeEnum() {
    }
}
```

```json
{
    "ddol": "9f3704",
    "aid": "a0000000041010",
    "appVerNum": "0002",
    "asi": 0,
    "contactlessCvmLimit": 50000,
    "contactlessFloorLimit": 20000,
    "contactlessTransLimit": 50000000,
    "floorLimit": 0,
    "maxTargetPercent": 99,
    "onlinePinCap": 1,
    "tacDefault": "fc50b8a000",
    "tacDenial": "0400000000",
    "tacOnline": "fc50808800",
    "targetPercent": 99,
    "threshold": 0,
    "transLimit": 4000
},{
    "ddol": "9f3704",
    "aid": "a0000000041010",
    "appVerNum": "0002",
    "asi": 0,
    "contactlessCvmLimit": 50000,
    "contactlessFloorLimit": 20000,
    "contactlessTransLimit": 50000000,
    "floorLimit": 0,
    "maxTargetPercent": 99,
    "onlinePinCap": 1,
    "tacDefault": "fc50b8a000",
    "tacDenial": "0000000000",
    "tacOnline": "fc50808800",
    "targetPercent": 99,
    "threshold": 0,
    "transLimit": 4000,
    "emvEntryMode":2
```

Same AID, but different TAC-code

Entry mode: Contact or Cotactless

We have another parameter String transType in AidEntity, you can specify different AID for different transaction type(relate to 9C tag), such as "00" means sale, "20" means refund.

3.11   What trigger the kernel to change this Paywave 9F66 byte 2?

Req 5.35   (Reader CVM Required Limit Check)

If the Amount, Authorized is greater than or equal to the Reader CVM Required Limit, then the reader shall indicate CVM Required (set TTQ byte 2 bit 7 to 1b).

Req 5.36   (Reader Contactless Floor Limit Check)

If the Amount, Authorized is greater than either the Reader Contactless Floor Limit or (if the Reader Contactless Floor Limit is not present) the applicable Terminal Floor Limit (tag '9F1B'), then the reader shall indicate Online Cryptogram Required (set TTQ byte 2 bit 8 to 1b).

If an Authorization Request Cryptogram (ARQC) is returned by the card or Online Cryptogram Required by the reader (TTQ byte 2 bit 8 is 1b), then the reader shall set the Online Required by Reader Indicator to 1.

3.12   How to Disable pin for EMV Contact REFUND?

Set 9F33 byte 2 and disable all pin in GPO callback(onTransInitBeforeGPO) for contact

A.1.162   Terminal Capabilities

Tag: '9F33'
Template: —
Length: 3
Format: b
Update: K
Description: Indicates the card data input, CVM, and security capabilities of
                the Terminal and Reader. The CVM capability (Byte 2) is
                instantiated with values depending on the transaction amount.

Terminal Capabilities		
Byte 1	b8	Manual key entry
	b7	Magnetic stripe
	b6	IC with contacts
	b5-1	Each bit RFU
Byte 2	b8	Plaintext PIN for ICC verification
	b7	Enciphered PIN for online verification
	b6	Signature (paper)
	b5	Enciphered PIN for offline verification
	b4	No CVM required
	b3-1	Each bit RFU
Byte 3	b8	SDA
	b7	DDA
	b6	Card capture
	b5	RFU
	b4	CDA
	b3-1	Each bit RFU

3.13   Why EMV onFinish callback not reach?

```
void onSetSelAppResponse(int var1);

void onSetTransInitBeforeGPOResponse(boolean var1);

void onSetConfirmCardNoResponse(boolean var1);

void onSetPinInputResponse(boolean var1, boolean var2);

void onSetContactlessTapCardResponse(boolean var1);

void onSetOnlineProcResponse(int var1, EmvOnlineResultEntity var2);

void onSetRemoveCardResponse();

void onSetPromptResponse(boolean var1);
```
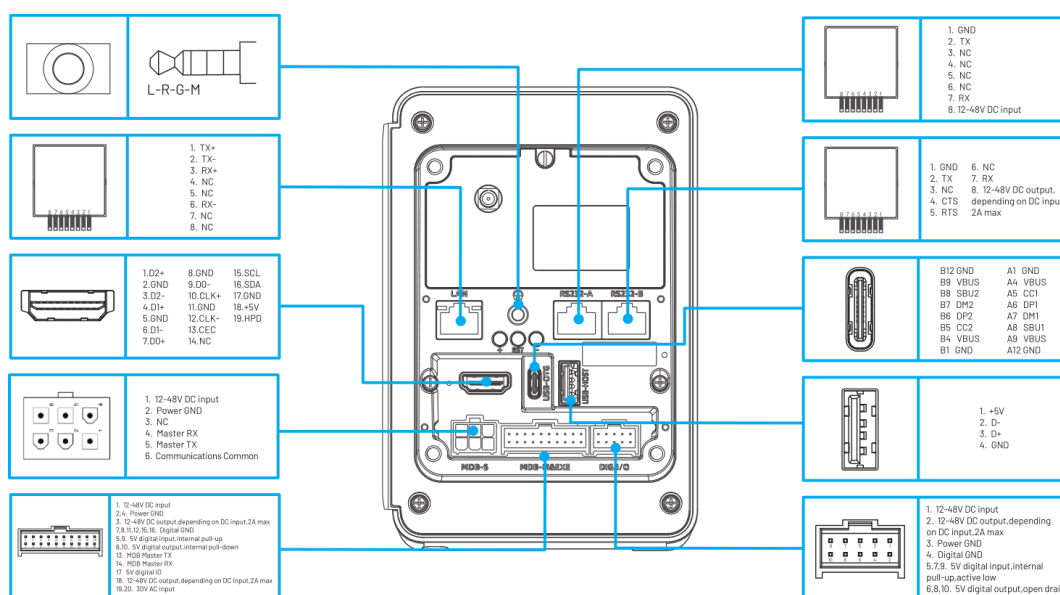
after callback invoked , the application didn't call onSetXXXXResponse() to release this CountDownLatch in EMV SDK. That is the reason.
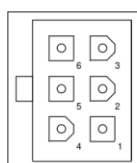
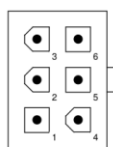# 4 UN20

4.1 UN20 VMC converter

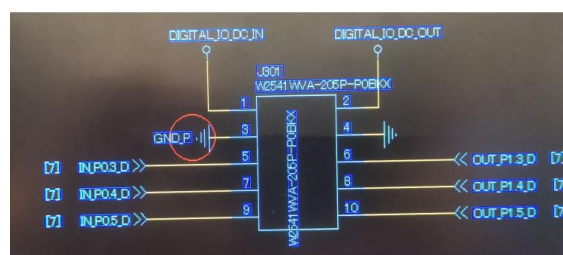## 4.2 UN20 PIN-PORT schematic

4.3 UN20 MDB Pin-Out & IO PORT

4.4 UN20 RS232 Device path

/dev/ttyS0、/dev/ttyS1

4.5 How to use GPIO with UN20?

Please refer API GpioDriver

5 Printer

5.1 Why is the Printed Receipt Fuzzy?

- The default gray level is *GrayLevelEnum.Level_1*. Users can darken the concentration by setting the **Gray Level** as *GrayLevelEnum.Level_2* or *GrayLevelEnum.Level_3 or GrayLevelEnum.Level_4*. Refer to the API manual.

NEXGO

```
public enum GrayLevelEnum {
    LEVEL_0,
    LEVEL_1,
    LEVEL_2,
    LEVEL_3,
    LEVEL_4;

    private GrayLevelEnum() {
    }
```

printer.setGray(GrayLevelEnum.Level_1);

Please note: The higher the printing gray level, the slower the printing speed

5.2 How to Print Different Fonts?

- Firstly, create a Paint class and Using a .ttf font's file and call **Typeface.createFromAsset()** to set the paint fonts.
- Generate a bitmap and then call **appendImage(Bitmap var1, AlignEnum var2)** of class **Printer** to print it.

  Note: confirm that you have the permission to use the .ttf file considering the copyright.

6 Why is the Battery Getting Weak Quickly?

Check setting - display

- Check if the system setting of Sleep is set as a proper value. Normally, the recommended value is 2 minutes. The system setting is shown as below:
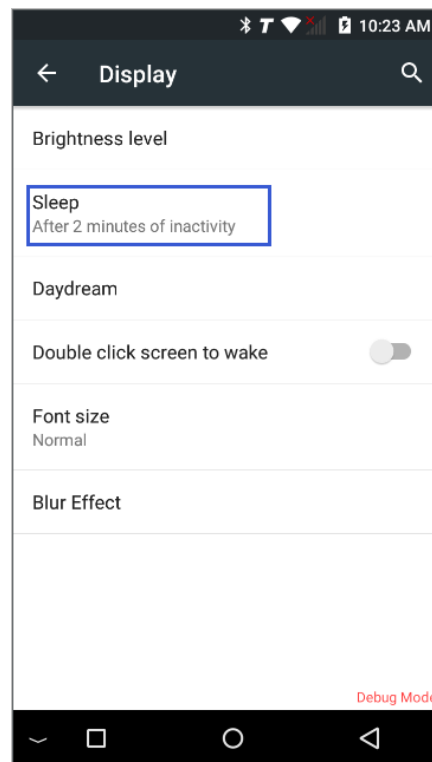
Check application

Solution 1:

- Check your application to see if the application enables the function of wake lock (A wake lock is a mechanism to indicate that your application needs to have the device stay on.), which will keep the screen on and speed up the power consumption.

private WakeLock mWakeLock;

private void acquireWakeLock() {

  if(mWakeLock == null) {

    PowerManager pm = (PowerManager)getSystemService(Context.POWER_SERVICE);

    mWakeLock = pm.newWakeLock(PowerManager.PARTIAL_WAKE_LOCK | PowerManager.ACQUIRE_CAUSES_WAKEUP,

NEXGO

```
        this.getClass().getCanonicalName());

    mWakeLock.acquire();

  }

}



private void releaseWakeLock() {

  if(mWakeLock != null) {

    mWakeLock.release();

    mWakeLock = null;

  }

}
```

AndroidManifest.xml add permisson：

```
<uses-permission android:name="android.permission.WAKE_LOCK"/>

<uses-permission android:name="android.permission.DEVICE_POWER" />
```

When using the above method, the wake lock must appear in pairs, after the acquire is applied for the lock, it must be released after use. Otherwise, the screen will be turned off, the screen will only be darkened, but the system will not go to sleep. Another point is that acquire will reset the screen-out time. if the program regularly requests wake locks, you should pay attention.

Solution 2:
- Check your application to see if the application enables windows property FLAG_KEEP_SCREEN_ON, but it should be execute before load the layout view. This method is valid for activity class.

getWindow().setFlags(WindowManager.LayoutParams.FLAG_KEEP_SCREEN_ON,

   WindowManager.LayoutParams.FLAG_KEEP_SCREEN_ON);

setContentView(R.layout.***);

To use this method to force keep the screen brighten, you should pay attention to whether the current activity is the resident interface of the application. If it is, it cannot be used. Because it will prevent the system into sleep.

Solution 3:

- Check your application to see if the layout of the view have set the windows property.

android:KeepScreenOn="true"

View.setKeepScreenOn(true);

View.setKeepScreenOn(false);

Check application related to nexgo SDK

Sultion 1:

- Change application code for searching card.

When nexgo SDK version is less than or equal to v2.0.8, after search mag-stripe , or contact, or contactless card, should add the below logic.

It is mandatory.

Method: close contactless reader, poweroff

private void closeRfSlot() {

   deviceEngine.getCPUCardHandler(CardSlotTypeEnum.RF).powerOff();

```
    }


Method: close contact reader

    private void closeIccSlot() {

        deviceEngine.getCPUCardHandler(CardSlotTypeEnum.ICC1).powerOff();

    }




Demo code for search card:

private void cardReaderTest() {

        final CardReader cardReader = deviceEngine.getCardReader();

        HashSet<CardSlotTypeEnum> slotTypes = new HashSet<>();

                //mag-striple

        slotTypes.add(CardSlotTypeEnum.SWIPE);

                //contact

        slotTypes.add(CardSlotTypeEnum.ICC1);

                //contactless

        slotTypes.add(CardSlotTypeEnum.RF);

        cardReader.searchCard(slotTypes, 60, new OnCardInfoListener() {

          @Override

          public void onCardInfo(int retCode, CardInfoEntity cardInfo) {

              if (retCode == SdkResult.Success) {
```

```
if (CardSlotTypeEnum.RF.equals(cardInfo.getCardExistslot())) {

    //if searched contactless card, should close contact reader

    closeIccSlot();

}else if (CardSlotTypeEnum.ICC1.equals(cardInfo.getCardExistslot())) {

    //if searched contact card, should close contactless reader

    closeRfSlot();

        }else if
      (CardSlotTypeEnum.SWIPE.equals(cardInfo.getCardExistslot())) {

     //if searched mag-stripe card, should close contact and contactless reader

      closeIccSlot();

    closeRfSlot();

}

//below is your project logic

                        ......

} else {

//if do not search any card, also should close contact and contactless reader

    closeIccSlot();

    closeRfSlot();


}

}
```

```
@Override

public void onSwipeIncorrect() {

}


@Override

public void onMultipleCards() {

}

});

}
```

Solution 2：

- Update nexgo SDK version to latest version(currently it is v2.1.1)

Please access to our FTP address to get the latest SDK version v2.1.1

Here is the FTP address:

IP: 123.58.32.120

PORT: 8490

USER: android

PWD: nexgo_123

Solution 3:

- For non-financial project , but the application use the contactless card, like Mifare , Desfire, Felica and other contactless card or NFC function .

After the transaction command is completed, you need to manually close the RF reader.

private void closeRfSlot() {

    deviceEngine.getCPUCardHandler(CardSlotTypeEnum.RF).powerOff();

  }

Here is an example flow:
Search contactless card
Command data exchange between card and device
Command complete, transaction finish, should close the RF contactless reader

```
closeRfSlot();
```