

Android 系统HDMI CEC开发指南

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前言

概述

此文档介绍Android 系统(主要是Android 14及之后版本)，支持HDMI CEC的配置调试及常见问题处理。

产品版本

芯片名称	Android版本
RK3399	Android 14
RK3576	Android 14
RK3588	Android 14

读者对象

本文档（本指南）主要适用于以下工程师：

技术支持工程师

软件开发工程师

修订记录

版本号	作者	修改日期	修改说明
V1.0.0	蔡建清	2024-08-10	初始版本
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1. 功能介绍

本文档介绍了Android 系统，大屏设备开启HDMI CEC的配置方式，整合验证过程中可能遇到的问题的排查手段，并对CECT测试中遇到的常见问题进行说明。

2. Android HDMI CEC配置

HDMI CEC 支持配置成多种设备形态，这边主要介绍在SDK中配置成TV和PLAYBACK的两种形态。

2.1 HDMI CEC TV

使能HDMI CEC及配置CEC设备类型：

device\rockchip\rkxxx\BoardConfig.mk

```
BOARD_SUPPORT_HDMI_CEC := true
BOARD_HDMI_CEC_TYPE := 0
BOARD_HDMI_IN_SUPPORT := true
```

根据设备的HDMI 实际情况配port数量：

hardware\rockchip\hdmicec\hdmicec.h

```
#define HDMI_PORT_NUM 1
```

修改port相关属性，比如port物理地址，哪个port支持ARC：

hardware\rockchip\hdmicec\hdm_connection.cpp

```
void hdmi_connection_get_port_info(struct hdmi_connection_context_t* ctx, struct
hdmi_port_info* list[], int* total)
{
    ...
    #else
        for (int i = 0; i < HDMI_PORT_NUM; i++)
        {
            #if HDMI_PORT_TYPE == in
                ctx->port[i].type = HDMI_INPUT;
            #else
                ctx->port[i].type = HDMI_OUTPUT;
            #endif

            ctx->port[i].port_id = i + 1; //start from 1
            ctx->port[i].cec_supported = 1;
            ctx->port[i].arc_supported = 0;
            ctx->port[i].physical_address = 0x1000*(i+1);
        }
    }
```

```
#if HDMI_PORT_TYPE == in
    //update port which support ARC
    //ctx->port[0].arc_supported = 1;
#endif
```

内核部分配置，如rk3588:

```
diff --git a/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
b/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
index ea7c8ea9d2ea..452a6b61be97 100644
--- a/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
+++ b/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
@@ -391,6 +391,7 @@ &hdmirx_ctrler {
    hdmirx-det-gpios = <&gpio2 RK_PB5 GPIO_ACTIVE_LOW>;
    pinctrl-names = "default";
    pinctrl-0 = <&hdmim1_rx &hdmirx_det>;
+    cec-enable;
};
```

内核配置生效，可以看到如下节点:

```
rk3588_u:/ # ls -l /dev/cec0
crw-rw---- 1 system system 248, 0 2024-07-25 01:51 /dev/cec0
```

2.2 HDMI CEC PLAYBACK

使能HDMI CEC及配置CEC设备类型:

device\rockchip\rkxxx\BoardConfig.mk

```
BOARD_SUPPORT_HDMI_CEC := true
BOARD_HDMI_CEC_TYPE := 0
BOARD_HDMI_IN_SUPPORT := true
```

根据设备的HDMI 实际情况配port数量:

```
#define HDMI_PORT_NUM 1
```

内核部分配置，如rk3588,在hdmi0口配置支持CEC:

```
diff --git a/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
b/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
index ea7c8ea9d2ea..e346de19509f 100644
--- a/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
+++ b/arch/arm64/boot/dts/rockchip/rk3588-evb1-lp4.dtsi
@@ -357,6 +357,7 @@ &gmacc0_rgmii_clk

    &hdmi0 {
        enable-gpios = <&gpio4 RK_PB1 GPIO_ACTIVE_HIGH>;
+       cec-enable;
        status = "okay";
    };
```

配置生效，可以看下如下节点：

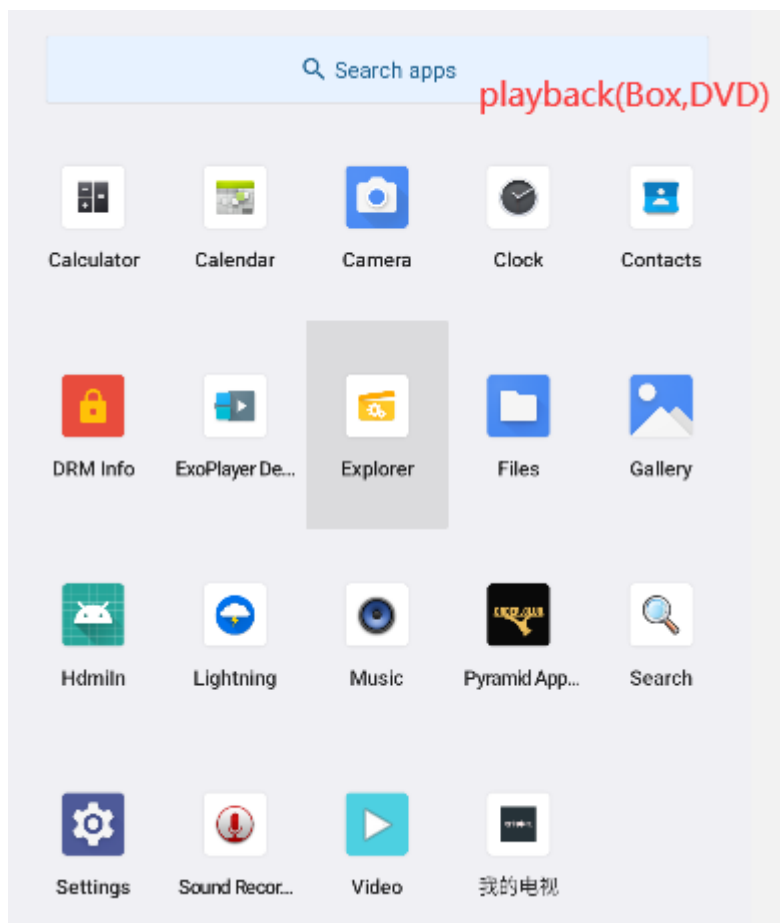
```
rk3588_u:/ # ls -l /dev/cec0
crw-rw---- 1 system system 244, 0 2021-01-01 12:00 /dev/cec0
```

3. HDMI CEC TV验证

3.1 按键事件

1. 配置为HDMI CEC TV的设备(In port)，使用支持HDMI CEC规范的HDMI 连接线，连接支持HDMI CEC的播放设备(Out Port)。
2. 打开HDMI CEC TV设备中的HdmiIn 应用：
3. 通过HDMI CEC TV设备的遥控器，方向键切换，可以控制播放设备。如果没有遥控器，可以PC ADB连接HDMI CEC TV设备，使用如下adb命令测试方向移动：

```
adb shell input keyevent 19 //up
adb shell input keyevent 20 //down
adb shell input keyevent 21 //left
adb shell input keyevent 22 //right
```



3.2 休眠唤醒

1. 在上述连接状态，按TV设备的电源键休眠唤醒，PLAYBACK设备同样会休眠唤醒（或开机，需要播放设备支持）。
2. 如果PLAYBACK设备进行休眠，TV设备会休眠，或者只是无显示。这里是否休眠，需要配置：

services/core/java/com/android/server/hdmi/HdmiControlService.java

```
private void onPendingActionsCleared(int standbyAction) {  
    ...  
    if (!isAudioSystemDevice()) {  
        //mCecController.enableSystemCecControl(false); //注释掉这句  
        mMhlController.setOption(OPTION_MHL_SERVICE_CONTROL,  
DISABLED);  
    }  
}  
// Always reset this flag to set up for the next standby  
mStandbyMessageReceived = false;  
}
```

关于唤醒问题，可以见下面注释：

frameworks\base\services\core\java\com\android\server\hdmi\HdmiCecLocalDeviceTv.java

```
protected int handleTextViewOn(HdmiCecMessage message) {  
    assertRunOnServiceThread();  
    // Note that if the device is in sleep mode, the <Text View On> (and  
<Image View On>)
```

```

        // command won't be handled here in most cases. A dedicated
        microcontroller should be in
        // charge while the Android system is in sleep mode, and the command
        doesn't need to be
        // passed up to this service.
        // The only situations where the command reaches this handler are
        // 1. if sleep mode is implemented in such a way that Android system
        is not really put to
        // standby mode but only the display is set to blank. Then the
        command leads to
        // turning on the display by the invocation of PowerManager.wakeUp().
        // 2. if the device is in dream mode, not sleep mode. Then this
        command leads to
        // waking up the device from dream mode by the invocation of
        PowerManager.wakeUp().
        if (getAutoWakeup()) {
            mService.wakeUp();
        }
        return Constants.HANDLED;
    }
}

```

即：

如果TV设备进入休眠，则需要其它地方，如uboot mcu中处理CEC唤醒事件，进行开机。

如果TV设备只是进入熄屏状态，框架服务还是在运行，可以继续处理CEC消息，则可以直接唤醒。

4. HDMI CEC调试相关

4.1 系统命令

4.1.1 dumpsys hdmi_control

通过 `dumpsys hdmi_control` 获取hdmi cec的port具体信息以及cec message历史记录：

```

mProhibitMode: false
mPowerStatus: 0
mIsCecAvailable: false
mCecVersion: 5
mIsAbsoluteVolumeBehaviorEnabled: false
System_settings:
    mHhlInputChangeEnabled: true
    mSystemAudioActivated: false
    mHdmiCecVolumeControlEnabled: 1
CEC settings:
    hdmi_cec_enabled (int): 1 (default: 1) [modifiable]
    hdmi_cec_version (int): 6 (default: 6) [modifiable]
    routing_control (int): 0 (default: 0) [modifiable]
    soundbar_mode (int): 0 (default: 0) [modifiable]
    power_control_mode (string): to_tv_and_audio_system (default:
to_tv_and_audio_system) [modifiable]

```

```
power_state_change_on_active_source_lost (string): standby_now (default:
standby_now) [modifiable]
system_audio_control (int): 1 (default: 1) [modifiable]
system_audio_mode_muting (int): 1 (default: 1) [modifiable]
volume_control_enabled (int): 1 (default: 1) [modifiable]
tv_wake_on_one_touch_play (int): 1 (default: 1) [modifiable]
tv_send_standby_on_sleep (int): 1 (default: 1) [modifiable]
set_menu_language (int): 1 (default: 1) [modifiable]
rc_profile_tv (int): 0 (default: 0) [modifiable]
rc_profile_source_handles_root_menu (int): 1 (default: 1) [modifiable]
rc_profile_source_handles_setup_menu (int): 1 (default: 1) [modifiable]
rc_profile_source_handles_contents_menu (int): 0 (default: 0) [modifiable]
rc_profile_source_handles_top_menu (int): 0 (default: 0) [modifiable]
rc_profile_source_handles_media_context_sensitive_menu (int): 0 (default: 0)
[modifiable]
query_sad_lpcm (int): 1 (default: 1) [modifiable]
query_sad_dd (int): 1 (default: 1) [modifiable]
query_sad_mpeg1 (int): 1 (default: 1) [modifiable]
query_sad_mp3 (int): 1 (default: 1) [modifiable]
query_sad_mpeg2 (int): 1 (default: 1) [modifiable]
query_sad_aac (int): 1 (default: 1) [modifiable]
query_sad_dts (int): 1 (default: 1) [modifiable]
query_sad_atrac (int): 1 (default: 1) [modifiable]
query_sad_onebitaudio (int): 1 (default: 1) [modifiable]
query_sad_ddp (int): 1 (default: 1) [modifiable]
query_sad_dtshd (int): 1 (default: 1) [modifiable]
query_sad_truehd (int): 1 (default: 1) [modifiable]
query_sad_dst (int): 1 (default: 1) [modifiable]
query_sad_wmapro (int): 1 (default: 1) [modifiable]
query_sad_max (int): 1 (default: 1) [modifiable]
earc_enabled (int): 1 (default: 1) [modifiable]
mMhlController:
eARC local device: None. eARC is either disabled or not available.
HDMI CEC Network
  mPortInfo:
    port_id: 1, type: HDMI_IN, address: 0x1000, cec: true, arc: true, mhl: false,
earc: false
    port_id: 2, type: HDMI_IN, address: 0x2000, cec: true, arc: false, mhl:
false, earc: false
    port_id: 3, type: HDMI_IN, address: 0x3000, cec: true, arc: false, mhl:
false, earc: false
    port_id: 4, type: HDMI_IN, address: 0x4000, cec: true, arc: false, mhl:
false, earc: false
  HdmiCecLocalDevice #0:
    mDeviceType: 0
    mPreferredAddress: 0
    mDeviceInfo: CEC: logical_address: 0x00 device_type: 0 cec_version: 5
vendor_id: 1 display_name: rk3588_u power_status: 0 physical_address: 0x0000
port_id: 0
    Device features: record_tv_screen: Y set_osd_string: N deck_control: N
set_audio_rate: N arc_tx: Y arc_rx: N set_audio_volume_level: Y
    mActiveSource: (invalid, invalid)
    mActiveRoutingPath: 0x0000
    mArcEstablished: false
    mArcFeatureEnabled: {1=true, 2=false, 3=false, 4=false}
    mSystemAudioMute: false
```

```

mSystemAudioControlFeatureEnabled: true
mSkipRoutingControl: true
mPrevPortId: -1
Active Source history:
mDeviceInfos:
    CEC: logical_address: 0x00 device_type: 0 cec_version: 5 vendor_id: 1
display_name: rk3588_u power_status: 0 physical_address: 0x0000 port_id: 0
    Device features: record_tv_screen: ? set_osd_string: ? deck_control: ?
set_audio_rate: ? arc_tx: ? arc_rx: ? set_audio_volume_level: ?
    CEC: logical_address: 0x04 device_type: 4 cec_version: 5 vendor_id: 1
display_name: rk3588_s power_status: -1 physical_address: 0xFFFF port_id: -1
    Device features: record_tv_screen: ? set_osd_string: ? deck_control: ?
set_audio_rate: ? arc_tx: ? arc_rx: ? set_audio_volume_level: ?
mCecController:
    CEC message history:
    [S] time=2024-03-27 06:16:00 message=<Report Physical Address> 0F:84:00:00:00
(ACK)
    [S] time=2024-03-27 06:16:00 message=<Device Vendor Id> 0F:87:00:00:01 (ACK)
    [S] time=2024-03-27 06:16:00 message=<Active Source> 0F:82:00:00 (ACK)
    [S] time=2024-03-27 06:16:00 message=<Request Active Source> 0F:85 (ACK)
    [R] time=2024-03-27 06:16:00 message=<Give Osd Name> 40:46
    [S] time=2024-03-27 06:16:00 message=<Set Osd Name> 04:47 <Redacted len=8>
(ACK)
    [R] time=2024-03-27 06:16:00 message=<Give Osd Name> 40:46
    [S] time=2024-03-27 06:16:00 message=<Set Osd Name> 04:47 <Redacted len=8>
(ACK)
    [R] time=2024-03-27 06:16:01 message=<Feature Abort> 40:00:47:03
    [S] time=2024-03-27 06:16:01 message=<Give Device Power Status> 04:8F (ACK)
    [R] time=2024-03-27 06:16:01 message=<Feature Abort> 40:00:47:03
    [R] time=2024-03-27 06:16:01 message=<Report Power Status> 40:90:00
    [S] time=2024-03-27 06:34:44 message=<User Control Pressed> 04:44 <Keycode
type = Navigation> (ACK)
    [S] time=2024-03-27 06:34:44 message=<User Control Release> 04:45 (ACK)

```

上述一般主要关注：

- CEC settings:可以确认当前 `hdmi_cec_enabled`是否使能。

HDMI CEC Network中：

- `mPortInfo`:当前port的配置情况
- `mDeviceInfos`:当前cec设备列表
- CEC message history:历史cec消息记录及发送接收情况

4.1.2 cmd hdmi_control

通过 `cmd hdmi_control` 命令直接发送相关命令：

```

cmd hdmi_control
HdmiControlManager (hdmi_control) commands:
help
Print this help text.
onetouchplay, otp
Send the "One Touch Play" feature from a source to the TV

```

```
vendorcommand --device_type <originating device type>
--destination <destination device>
--args <vendor specific arguments>
[--id <true if vendor command should be sent with vendor id>]
Send a Vendor Command to the given target device
cec_setting get <setting name>
Get the current value of a CEC setting
cec_setting set <setting name> <value>
Set the value of a CEC setting
setsystemaudiomode, setsam [on|off]
Sets the System Audio Mode feature on or off on TV devices
setarc [on|off]
Sets the ARC feature on or off on TV devices
```

如:

```
cmd hdmi_control deviceselect 4
```

4.2 调试宏配置

4.2.1 打开HAL层日志

开启hardware\rockchip\hdmicec\hdmicec.h的下面定义:

```
#define DEBUG_HDMI_HAL
```

4.2.2 打开框架层日志

方式一:

设备开机后, 输入如下命令HDMI CEC框架log (重启生效):

```
adb shell setprop persist.log.tag.HDMI VERBOSE
```

方式二:

直接在代码中修改:

frameworks\base\services\core\java\com\android\server\hdmi\HdmiLogger.java :

```
private static final boolean DEBUG = true; //Log.isLoggable(TAG, Log.DEBUG);
```

4.2.3 修改cec history记录大小

一般这个不用修改, 如果调试过程有比较多的cec命令交互, 可能导致前面的被清掉, 则建议修改下。

frameworks\base\services\core\java\com\android\server\hdmi\HdmiCecController.java

```
private static final int INITIAL_HDMI_MESSAGE_HISTORY_SIZE = 1000;
```

5. 常见问题处理

5.1 系统音量按键支持

设备做为TV设备，要实现音量按键透传给播放设备，可以通过HdmiTvClient.sendKeyEvent接口来处理，参考SDK示例。代码在：

packages/apps/rkCamera2/src/com/android/rockchip/camera2/activity/MainActivity.java:

```
public boolean dispatchKeyEvent(KeyEvent event) {
    if (event.getKeyCode() == KeyEvent.KEYCODE_BACK) {
        if (event.getAction() == KeyEvent.ACTION_DOWN) {
            return true;
        }
        if (event.getAction() == KeyEvent.ACTION_UP) {
            showToast(R.string.back_key_warn);
        }
    }
    if (DataUtils.BLOCKLIST_KEYCODE_TO_TIS.contains(event.getKeyCode())
        || KeyEvent.isGamepadButton(event.getKeyCode())) {
        return super.dispatchKeyEvent(event);
    }
    if (null != mHdmiTvClient) {
        mHdmiTvClient.sendKeyEvent(event.getKeyCode(), event.getAction() ==
            KeyEvent.ACTION_DOWN ? true : false);
    }

    return super.dispatchKeyEvent(event);
}
```

5.2 按键事件无效

在TV端传递事件给播放源时，要首先确认是哪个源（哪个HDMI Port),如果没的指定，CEC事件可能无法正常传递。下面是可能看到的异常logcat及对应的 `dumpsys hdmi_control` 信息：

```
HdmiCecLocalDevice: findKeyReceiverAddress() logicalAddress:-1
HdmiCecLocalDevice: force setkeyevent logicalAddress: 4
HdmiCecController: Failed to send <User Control Pressed> 04:44 <Keycode type =
Volume down> with errorCode=1

dumpsys hdmi_control:

[S] time=2024-07-12 17:23:56 message=<User Control Pressed> 04:44 <Keycode
type = Volume down> (NACK, NACK)
[S] time=2024-07-12 17:23:56 message=<User Control Release> 04:45 (NACK,
NACK)
```

所以，当TV设备在功能UI中选择某个播放源时，功能代码中需要对CEC Port进行配置：

```
import android.hardware.hdmi.HdmiControlManager;
import android.hardware.hdmi.HdmiTvClient;
import android.hardware.hdmi.HdmiTvClient.SelectCallback;
import android.hardware.hdmi.HdmiDeviceInfo;
import android.media.tv.TvInputManager;
...
private HdmiControlManager mHdmiControlManager;
private HdmiTvClient mHdmiTvClient;
private int portId=1;
private final SelectCallback mSelectCallback = new SelectCallback() {
    @Override
    public void onComplete(int result) {
        Log.d(TAG, "callen select onComplete result = " + result);
    }
};
...
进行port切换或者初始化时，指定port：
mHdmiTvClient.portSelect(portId, mSelectCallback);
```

上面代码，主要是 `mHdmiTvClient.portSelect` 这个接口，配置当前所选择的port.

6. HDMI CECT问题

6.1 CECT 11.1.1-1 One Touch Play

CECT 11.1.1 One Touch Play				[CEC: 13.1]
Required Test Method				
Test ID	Test Objective	Required Test Method	Pass Criteria	
11.1.1 - 1	Ensure that the DUT responds to an <Image View On> message coming from various Logical Addresses.	The following procedure should be repeated with the TE simulating a device at Logical Addresses 1, 3 and 4. Ensure the DUT is displaying an internal tuner or some other external source. Send the DUT an <Image View On> message. After more than 200msec, Send the DUT an <Active Source> message.	The DUT displays the new source.	

TV设备，在识别到源设备接入时，需要弹出源选择框，提示用户是否切换输入源。可以在 frameworks/base/services/core/java/com/android/server/hdmi/HdmiCecLocalDeviceTv.java 文件中添加Intent来广播消息：

```
import android.content.ComponentName;
import android.content.Context;
import android.content.Intent;

private void displayNewSource() {
    Slog.d(TAG, "displayNewSource");
    Intent intent = new Intent();
    //replace intent to display your source select componenent
    intent.setAction("android.intent.action.MAIN");
    intent.addCategory("android.intent.category.LAUNCHER");
    intent.setComponent(new ComponentName("com.android.rockchip.camera2",
        "com.android.rockchip.camera2.activity.WelcomeActivity"));
    intent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
    mService.getContext().startActivity(intent);
}
```

```
protected int handleTextViewOn(HdmiCecMessage message) {
    assertRunOnServiceThread();
    Slog.d(TAG, "handleTextViewOn message=" + message.toString());
    startHdmiDisplay();
    // Note that <Text View On> (and <Image View On>) command won't be
    handled here in
    // most cases. A dedicated microcontroller should be in charge while
    Android system
```

然后在应用端接收这个消息，进行源的切换提示。

6.2 CECT 11.1.2-5 Routing Control

11.1.2 - 5	Ensure that the DUT broadcasts a <Routing Change> message when it is manually switched. This test only applies if the DUT has several HDMI inputs which do not have independent CEC lines and which can be manually switched.	Ensure the DUT is currently switched to child position 1. (See first present entry in CDF (Sink Characteristics) field Sink_Input_Name) (See CDF for how to switch to child position 1) Switch the DUT manually to child position 2. (See second present entry in CDF (Sink Characteristics) field Sink_Input_Name) (See CDF for how to switch to child position 2)	The DUT broadcasts a <Routing Change> message with parameters [Original Address] and [New Address] containing Physical Addresses P.0.0.0 corresponding to values of P in CDF (Sink Characteristics) field Sink_Input_Name for those inputs.
------------	--	--	---

如果设备支持多端口输入，在切换端口时，命令，需要平台的UI应用调用如下接口，进行端口切换，参考如下代码：

```
import android.hardware.hdmi.HdmiControlManager;
import android.hardware.hdmi.HdmiTvClient;
import android.hardware.hdmi.HdmiTvClient.SelectCallback;
import android.hardware.hdmi.HdmiDeviceInfo;
import android.media.tv.TvInputManager;

private HdmiControlManager mHdmiControlManager;
private HdmiTvClient mHdmiTvClient;
```

```

private int portId=1;
private final SelectCallback mSelectCallback = new SelectCallback() {
    @Override
    public void onComplete(int result) {
        Log.d(TAG, "select onComplete result = " + result);
    }
};

mHdmiControlManager = (HdmiControlManager)
getSystemService(Context.HDMI_CONTROL_SERVICE);
mHdmiTvClient = mHdmiControlManager.getTvClient();

if (null != mHdmiTvClient) {
    mHdmiTvClient.portSelect(portId, mSelectCallback);
}

```

7. 附录1

7.1 Android 14 代码环境确认

如果确认SDK代码版本是14 RKR5版本，则下面提交都已经包含。

如果低于此版本，请确认准备验证的SDK，相关目录包含对应的提交。如果没有找到，可以同步下SDK代码，获取相关提交。

frameworks/base:

```

commit ff9eb2ddea46ba183bf81d474f4b020b97404367
Author: callen.cai <callen.cai@rock-chips.com>
Date:   Fri Jul 26 15:27:20 2024 +0800

    hdmicec : TV device should handle Routing Information.

    Type: Fix
    Redmine ID: https://redmine.rock-chips.com/issues/498556
    Associated modifications: N/A
    Test: N/A

    Change-Id: I24d96b4a679a16e3f8d658b625547cdf17a438d1
    Signed-off-by: callen.cai <callen.cai@rock-chips.com>

```

hardware/rockchip/hdmicec:

```

commit ca0f23d977dd43d5b57c19dfd02dabc889821bd4 (HEAD, tag: android-14.0-vehicle-
rkr2, tag: android-14.0-mid-rkr5, rk/rk35/mid/14.0/develop,
m/rk35/mid/14.0/develop)
Author: callen.cai <callen.cai@rock-chips.com>
Date:   Thu May 2 18:29:49 2024 +0800

    hdmicec : check hot plug status when send cec message.

```

Type: Feature
Redmine ID: N/A
Associated modifications: N/A
Test: N/A

Change-Id: I51bd094d76dd1bc8b286a9497733cb66c28ce7ee
Signed-off-by: callen.cai <callen.cai@rock-chips.com>

hardware/interfaces:

```
commit 273fdf3fe55efd3e638d2935b1ae78d154a5a7ec
Author: callen.cai <callen.cai@rock-chips.com>
Date: Mon Apr 1 16:00:05 2024 +0800
```

tv : refactor tv hdmi cec and connection to support multi ports.

Type: Function
Redmine ID: N/A
Associated modifications:
<https://10.10.10.29/c/android/rk/hardware/rk29/hdmicec/+216415>
Test: N/A

Signed-off-by: callen.cai <callen.cai@rock-chips.com>
Change-Id: I86910d38a6929a3c259af195862141030bd0fd58

device/rockchip/common:

```
commit c9d60d5fe89dd7663c5643dd0fefe6abeaed3719
Author: callen.cai <callen.cai@rock-chips.com>
Date: Tue May 7 19:29:41 2024 +0800
```

hdmicec : add sepolicy for hdmicec.

Type: Function
Redmine ID: N/A
Associated modifications: N/A
Test: N/A

Change-Id: If520ale266f6267dcf637fa90b1fceb552841f79
Signed-off-by: callen.cai <callen.cai@rock-chips.com>

packages/apps/rkCamera2

```
commit fbc1eeede5726e8ae36cd4d5c554b5e62f7f22b5 (HEAD -> master, tag: android-14.0-vehicle-rkr2, tag: android-14.0-mid-rkr5, rk29/master, m/rk35/mid/14.0/develop)
Author: callen.cai <callen.cai@rock-chips.com>
Date:   Fri May 31 16:19:44 2024 +0800
```

```
rkCamera2 : hdmi cec port select support.
```

```
Type: Function
```

```
Redmine ID: N/A
```

```
Associated modifications: N/A
```

```
Test: N/A
```

```
Change-Id: Id232c9f5781867909afae083e8548a618e7dd280
```

```
Signed-off-by: callen.cai <callen.cai@rock-chips.com>
```

8. 附录2(调试建议)

如果整合过程中遇到相关问题，需要RK支持，请按3.2 章节的建议，打开相关宏配置，然后提供相关代码仓库及logcat、dumpsys hdmi_control信息供我们分析。如果怀疑涉及kernel相关，一并抓取串口log.

1.需要提供的代码仓库：

```
frameworks/base/services/core/java/com/android/server/hdmi
hardware/rockchip/hdmicec
```

2.请描述下当前设备的连接情况，如HDMI 哪个口接着什么设备，是什么情况（播放，休眠？）预期的测试情况，当前测试情况。

3.必要时，请一并提供录制现场操作的短视频。

4.如果是进行CECT认证，有相关失败项，建议先多测试几次看看。然后重启再单独测试一下，提供上面的信息外，再提供测试设备的输出结果，以及测试设备（TE）ACA信息。

Quantum Data Auxiliary Channel Analyzer

File DDC CEC Search Options

Packets

Number	Err	Time since Boot	Speed (kHz)	Dir	Source	Type	Details
10		00:51:43.9456		STB1 -> TV	CEC	CEC	CEC Ping
31		00:52:34.9127		STB1 -> TV	CEC	CEC	Give Physical Address
82		00:52:35.0790		TV -> *ALL*	CEC	CEC	Report Physical Address
103		00:52:52.6214		STB1 -> TV	CEC	CEC	Give Vendor ID
154		00:52:52.7876		TV -> *ALL*	CEC	CEC	Device Vendor ID
175		00:53:04.1683		STB1 -> TV	CEC	CEC	Give OSD Name
276	!!!	00:53:04.4572		TV -> STB1	CEC	CEC	Set OSD Name
297		00:53:46.2323		STB1 -> TV	CEC	CEC	Give Device Power Status
328		00:53:46.3507		TV -> STB1	CEC	CEC	Report Power Status
349	!!!	00:54:39.1349		STB1 -> TV	CEC	CEC	Give Deck Status
380		00:54:39.2534		TV -> STB1	CEC	CEC	Deck Status
401		00:54:58.7178		STB1 -> TV	CEC	CEC	Give Physical Address
412	!!!	00:54:58.7551		TV -> *ALL*	CEC	CEC	CEC Ping or UnACKed Header
423	!!!	00:54:58.7925		TV -> *ALL*	CEC	CEC	CEC Ping or UnACKed Header
434	!!!	00:54:58.8298		TV -> *ALL*	CEC	CEC	CEC Ping or UnACKed Header
445	!!!	00:54:58.8995		TV -> *ALL*	CEC	CEC	CEC Ping or UnACKed Header

Details

Timing Information

Time since last reset: 00:54:58.7551

Error Information

The message is missing one or more acknowledgements from the target(s).

CEC Payload

Size of message: 1 bytes (11 bits total)
 Message source: TV (0x0)
 Message destination: *ALL* (0xF)
 Message opcode: None (ping message)

Bit Timings

Number	Lo(ms)	Hi(ms)	Inv	Dat	Val
0	3.69	0.61	---	N	S
1	1.40	0.60	---	Y	N

Data

Data Size: 1 bytes

0000 0F-

Connected to 192.168.254.002: 4 I2C, 3 CEC ports available for monitoring