



# **CV181x STARTUP SCREEN USER GUIDE**

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**Revision History**

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1.0.0	2021/04/20	First Draft
1.1.1	2021/06/04	Fix Updated
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1.2.1	2022/02/07	Add LVDS and I80 interfaces
1.2.1.0	2022/06/13	Update for CV181x
1.2.2	2022/06/23	Fix Updated

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## STARTUP SCREEN USER GUIDE

### 2.1 Overview

This guide explains how to display the boot screen under uboot.

Uboot provides the following functions:

- Provide the switch of VO equipment in boot environment, including different VO interfaces and timing.
- Provide VL video layer switch in boot environment.
- Provide the setting of VO device background color in boot environment.
- The default format of VL video layer is YUV420 PLANAR.

### 2.2 Uboot Command

- **startvo: start VO device** Parameters: equipment number, interface type, timing.

```
cv1835# help startvo
startvo - open vo device with a certain interface.
```

- <dev> equipment number. Please refer to Table 1-1.
- <intf-type> Interface type. Please refer to Table 1-1.
- <timing> Timing.

<> MIPI\_TX, LVDS, I80 Without reference to timing variable, timing will be set according to the current corresponding driver.

The standard timing on CV181X is as follows:

2(1080P24),	3(1080P25),	4(1080P30),	5(720P50)	, 6(720P60)	,
7(1080P50)	, 8(1080P60),	9(576P50),	10(480P60),	11(800x600)	

- **stopvo: Turn off VO device** Parameter: equipment number

```
cv1835# help stopvo
stopvo - close interface of vo device.
```

- <dev> equipment number. Please refer to Table 1-1.

- **startvl: Start VL video layer** Parameters: video layer number, image file address, video address, image file size, VO alignment.

```
cv1835# help startvl
startvl - open video layer of the vo
```

- <layer> video layer number. Please refer to Table 1-1.

- <addr\_in> Image file address
- <addr\_out> Video address
- <size> image file size
- <alignment> VO alignment

- **stopvl: Turn off VL video layer** Parameter: video layer number

```
cv1835# help stopvl
stopvl - close video layer of the vo
```

- <layer> video layer number. Please refer to Table 1-1.

- **setvobg: Set VO device background color** Parameters: equipment number, background color.

- <dev> equipment number. Please refer to Table 1-1.
- <bgcolor> background color (10bit RGB array, bit[29:20] is R, bit[19:10] is G, bit[9:0] is B).

Table 1-1

Chip Type	Equipment	Video layer	Graphics Layer	Interface Type
CV181X	[0]	[0]	[0]	64(BT.1120), 1024(LCD_18BIT), 2048(LCD_24BIT), 4096(LCD_30BIT), 8192(MIPI_TX), 65536(I80)

Table 1-2

Chip type	Maximum resolution of video layer	Graphics library maximum image resolution
CV181X	1280x720	1280x720

## 2.3 Uboot Function

## 2.4 Related Codes

```
cmd/Makefile
cmd/cvi_vo.c
drivers/video/Makefile
drivers/video/cvitek/ (Include the following subdirectories)
include/cvi_disp.h
include/cvi_mipi.h
include/cvi_lvds.h
include/cvi_i80.h
include/cvi_panels/ (Include the following subdirectories)
```

## 2.5 Uboot Command Example

The following is to operate with CV181X chip, configure the timing of device DHD MIPI\_TX 720\*1080@60 output as an example.

<> The address of the picture placed by each DDR is different. Please use the DDR address according to the chip.

- Load JPEG files into memory

```
fatload mmc 1:1 0x84080000 logo.jpg
```

- Decode JPEG to memory (jpg\_buf\_addr dest\_buf\_addr jpg\_size)

```
cvi_jpeg 0x84080000 0x82080000 0x80000
```

- DHD0 device start

```
startvo 0 8192 0 (MIPI_TX)
startvo 0 1024 0 (Single 6bit LVDS)
startvo 0 2048 0 (Single 8bit LVDS)
startvo 0 4096 0 (Single 10bit LVDS, not supported temporarily)
startvo 0 65536 0 (I80)
```

- Video layer startup

```
startvl 0 0x84080000 0x82080000 0x80000 16
```

- Set VO background color to black

```
setvobg 0 0x00000000
```

- VL video layer off

```
Stopvl 0
```

- DHD0 equipment shutdown

```
Stopvo 0
```

## 2.6 Use equipment and open machine screen

1. Turn on the image file logo.jpg (BMP format drawing file is required for I80 screen) Copy to \$BOOTLOGO\_PATH(Default is /build/tools/common/bootlogo/logo.jpg).
2. Modify build/boards/cv18xx/cv18xx\_defconfig.The screen required for defconfig configuration is y, others need to be commented out.
3. Modify build/boards/cv18xx/u-boot/cv18xx\_defconfig .The screen required for defconfig configuration is y, others need to be commented out, and configure CONFIG\_BOOTLOGO is y.
4. Use the following command to compile BSP.

```
export ENABLE_BOOTLOGO=1; source build/envsetup_soc.sh
Build_all
```

## 2.7 Precautions

- Configure boot screen, When displayed through BT.1120/656 interface,the driver of the external chip needs to be transplanted by itself.
- If the boot screen uses MIPI\_TX, LVDS or I80 interfaces, if there is an unsupported mipi\_dsi, lvds or i80 panel, refer to headers in include/cvi\_panels, add the corresponding header. Just refer to include/cvi\_panels/cvi\_panels.h other modification ,immediately available for mipi\_dsi, lvds or i80 panel.
- When using the storage device and saving the boot screen, it is necessary to save the boot screen in CV181x\_asic.dtsi configures a memory space (Default is0x82080000), and ensure the LOGO\_RESERVED\_ADDR in u-boot/include/configs/CV181x-asic.h set to the same memory space.