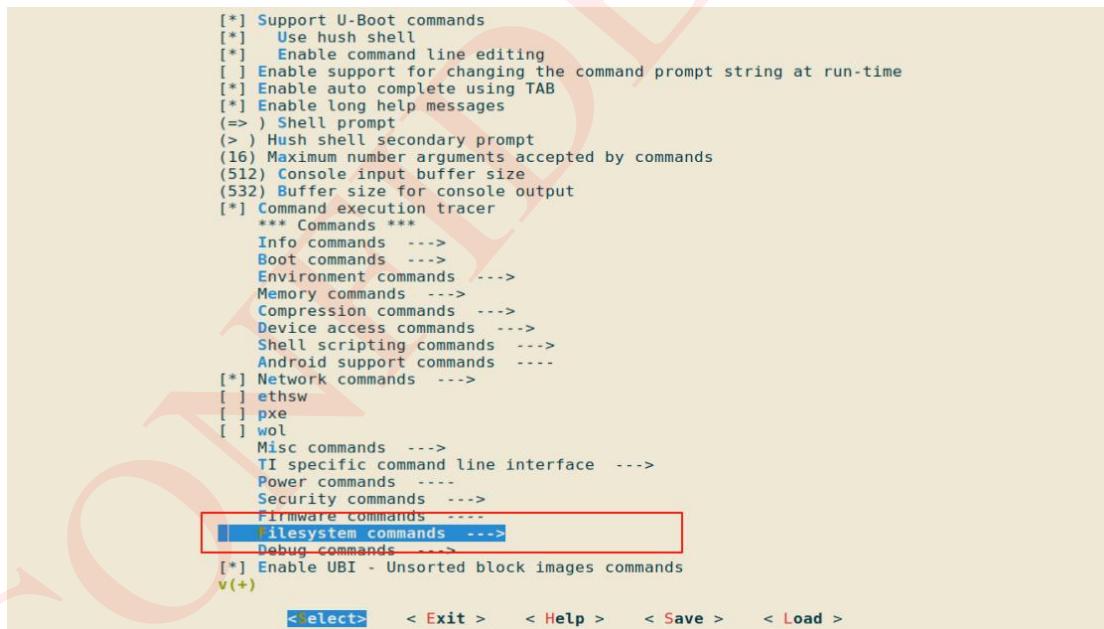
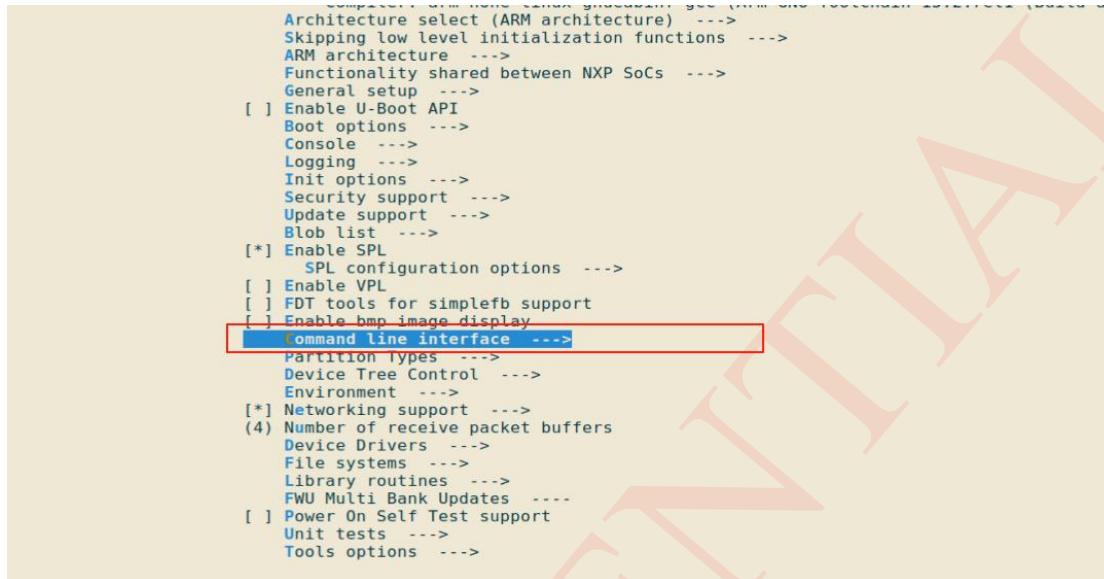


ARK1668ED 动画功能实现

1、动画分区的大小设置：

Nandflash 启动模式：



```
[ ] Enable the 'btrfs subvol' command
[ ] EROFS command support
[ ] ext2 command support
[ ] ext4 command support
[*] FAT command support
[ ] SquashFS command support
[ ] filesystem commands
[ ] fsuid command
[ ] jffs2 command
[*] MTD partition support
[ ] Pad partition size to take account of bad blocks
[ ] Show net size (w/o bad blocks) of partitions
(nand0=ark-nand) Default MTD IDs
[ ] mtdparts=ark-nand:256k(bootstrap),1m(loader),1m(loader_bak),512k(loaderenv),512k(loaderenv_bak),512k(fdt),7m
[ ] reiser - Access to reiserfs filesystems
[ ] zfs - Access of ZFS filesystem
```

在红线的位置进行修改；

EMMC 启动模式：

```
menu. <enter> selects submenu --> (or empty submenu ---). Highlighted letters are hotkeys. Pressing <r> includes, <n> excludes, <m> modularizes
c> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ] excluded <M> module <> module capable

*** Compiler: arm-none-linux-gnueabihf-gcc (Arm GNU Toolchain 13.2.rell (Build arm-13.7)) 13.2.1 20231009 ***
Architecture select (ARM architecture) -->
[*] ARM architecture --- <-->
  Functionality shared between NXP SoCs --->
    General setup --->
      [ ] Enable U-Boot API
      Boot options --->
      Console --->
      Logging --->
      Init options --->
      Security support --->
      Update support --->
      Blob list --->
    [*] Enable SPL
      SPL configuration options --->
    [ ] Enable VPL
    [ ] Enable tools for simplefb support
    [ ] Enable bmp image display
    [ ] Enable cmdline interface --->
    Partition Types --->
    Device Tree Control --->
    Environment --->
  [*] Networking support --->
  (4) Number of receive packet buffers
    Device Drivers --->
    File systems --->
    Library routines --->
    FWE Multi-Bank Updates --->
  [ ] Power On Self Test support
  Unit tests --->
  Tools options --->
```

```
[*] ARM PL310 L2 cache controller in SPL
[ ] L2cache off
[ ] prepare BOOT0 header
[*] Use an assembly optimized implementation of memcpy
[ ] Use an assembly optimized implementation of memcpy for SPL
[*] Use an assembly optimized implementation of memset
[ ] Use an assembly optimized implementation of memset for SPL
  Target select (Arkmicro soc)
  [ ] Support pre-device-tree ATAG-based booting
  [ ] Statically define the Machine ID number
  [ ] Enable DIPs detection for CHIP board
  [ ] Enable support for a hardware secure memory area
  [ ] Support the 'dek blob' command
  [ ] Support the DEK blob encapsulation with CAAM U-Boot driver
  [ ] Support the DEK blob encapsulation with OP-TEE
  [ ] Support the DEK blob encapsulation with SECO
  [ ] Support the DEK blob encapsulation with ELE
  [ ] Support the 'DEK blob' command
  (0x00010000) DCO Block location on the image
  [ ] Enable SPL loading U-Boot as a i.MX Container image
() i.MX Container config file
[*] Arkmicro board select (ark1668ed_devb_emmc board) --->
(0x50900000) GPIO Controller Base
(0x50b00000) PWM Controller Base
(24000000) PWR Source Clock Freq
(101) SPI CS0 GPIO
(1) sd dev part
(0) emmc dev part
  (mmcblk0:512k(bootstrap),1m(loader),1m(loader_bak),2m(loaderenv),5m(loaderenv),4m(reversingtrack),30m(userdat
  (1) mmc serial port
  (115200) mmc serial baud rate
  RM debug --->
```

在红线的位置进行 emmc 添加动画分区；

2、动画内存地址的设置：

在内核中，需要分配相应的动画数据空间：主要在设备树文件，其路径为：

ark1668ed-bsp/linux/arch/arm/boot/dts/arkmicro 下：

```
ark1668ed.dtst      ark1668ed_devb_emmc.dts      ar
21    stdout-path = "serial0:115200n8",
22  };
23
24 cpus {
25   #address-cells = <1>;
26   #size-cells = <0>;
27   enable-method = "arkmicro,arke-smp";
28
29   cpu0: cpu@0 {
30     compatible = "arm,cortex-a7";
31     device_type = "cpu";
32     reg = <0>;
33     clock-frequency = <800000000>;
34     next-level-cache = <&L2_Cache>;
35   };
36
37   cpu1: cpu@1 {
38     compatible = "arm,cortex-a7";
39     device_type = "cpu";
40     reg = <1>;
41     clock-frequency = <800000000>;
42     next-level-cache = <&L2_Cache>;
43   };
44
45   L2_Cache: cache-controller-0 {
46     compatible = "cache";
47     cache-unified;
48     cache-level = <2>;
49   };
50 };
51
52 memory {
53   reg = <0x60000000 0x1c000000>;
54 };
55
56 reserved-memory {
57   #address-cells = <1>;
58   #size-cells = <1>;
59   ranges;
60
61   /* global autoconfigured region for contiguous allocations */

```

memory 中 0x1c000000 为内存的大小，0x60000000 为内存的起始位置。Ark1668ed 内存起始地址是固定的，内存大小要根据 ddr 的大小以及显示的空间来确定分配大小。目前是在 512M 的 ddr 的基础上，进行分配的。分配空间的大小和位置如图所示（DDR256M 的可根据相应的偏移进行修改）：

```

ark1668ed.dtsi          ark1668ed_devb_emmc.dts          ark1668ed-pinctrl.dtsi
924                         status = "disabled";
925                     };
926     };
927 }#endif
928 gpu0: gpu@40600000 {
929     compatible = "arkmicro,ark1668ed_gc555";
930     reg = <0x40600000 0x1000>;
931     interrupts = <GIC_SPI 4 IRQ_TYPE_LEVEL_HIGH>;
932 };
933
934 vdec0: vdec@40700000 {
935     compatible = "on2,ark-vdec";
936     reg = <0x40700000 0x1000
937         0x7c000000 0x500000>;
938
939     interrupts = <GIC_SPI 1 IRQ_TYPE_LEVEL_HIGH>;
940     clocks = <&mfcclk>;
941     clock-names = "vdec_clk";
942     /*status = "disabled";*/
943 };
944
945 axi_scale: axi-scale@41000000 {
946     compatible = "arkmicro,ark1668ed-axi-scale";
947     reg = <0x41000000 0x1000
948         0x50000000 0x1000>;
949     interrupts = <GIC_SPI 8 IRQ_TYPE_LEVEL_HIGH>;
950     clocks = <&scalclk>;
951     clock-names = "scale_clk";
952     softreset-reg = <0x74>;
953     softreset-offset = <28>;
954 /* */
955 }#*
956 };
957
958 gpu_2d: gpu-2d@40500000 {
959     compatible = "arkmicro,gpu-2d";
960
961 };

```

分配的动画的空间是 0x500000 (5 M) 空间。(客户可根据实际情况进行分配不能超过 8M)。

在 uboot 中需要进行相应的数据的地址设置：目前按照 ark1668ed_devb 分支进行说明：

在/ark1668ed-bsp/u-boot/include/configs / ark1668ed_devb.h

Nandflash 需要修改：

```

62
63
64 #ifdef CONFIG_NAND_BOOT
65
66 #define CFG_EXTRA_ENV_SETTINGS \
67     "need_update=yes\0" \
68     "update_dev_type=usb\0" \
69     "update_dev_part=\0\0" \
70     "sd_dev_part=%CONFIG_SD_DEV_PART%\0" \
71     "loadaddr=0x64000000\0" \
72     "cmploadaddr=0x66000000\0" \
73     "fdtaddr=0x62000000\0" \
74     "kerneladdr=0x62100000\0" \
75     "bootanimationaddr=0x7c000000\0" \
76     "bootanimationsize=0\0" \
77     "reversingtrackaddr=0x6ea00000\0" \
78     "reversingtracksize=0\0" \
79     "ubootreset=0\0" \
80     "boardfdt=%CONFIG_DEFAULT_FDT_FILE%\0" \
81     NANDARGS
82
83 #define CONFIG_BOOTCOMMAND \
84     "run nandboot;" \
85

```

emmc 需要修改：



深圳开阳电子股份有限公司
Arkmicro Technologies (ShenZhen) CO.,Ltd.