StarFive 赛昉科技

VisionFive Errata Sheet

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Preface

About this guide and technical support information.

About this document

This document provides information about known device issues affecting VisionFive.

Revision History

Table 0-1 Revision History

Version	Released	Revision
V0.1	2021/12/14	First release.
V0.2	2021/12/24	• Added the Ghosting Occurs when Moving Mouse Fast or Dragging Windows *(on page 8)* section. • Updated the Incoherent L2 Cache Coherence Affects SDIO*, GMAC, and USB3.0 Performance *(on page 7)* section.
V0.3	2022/05/10	Added Log Remains Displayed after Shutdown *(on page 8)*.

Notes and notices

The following notes and notices might appear in this guide:

- **Tip:**
  Suggests how to apply the information in a topic or step.
- **Note:**
  Explains a special case or expands on an important point.
- **Important:**
  Points out critical information concerning a topic or step.
- **CAUTION:**
  Indicates that an action or step can cause loss of data, security problems, or performance issues.
- **Warning:**
  Indicates that an action or step can result in physical harm or cause damage to hardware.

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1. Production Device Issues for VisionFive

The following table lists the issues and the affected device.

Table 1-1 Production Device Issues for VisionFive

No.	Issue	Affected Device	Planned Fix
1	Incoherent L2 Cache Coherence Affects SDIO*, GMAC, and USB3.0 Performance *(on page 7)*	VisionFive	Next-Generation VisionFive
2	Ghosting Occurs when Moving Mouse Fast or Dragging Windows *(on page 8)*	VisionFive	Next-Generation VisionFive
3	Log Remains Displayed after Shutdown *(on page 8)*	VisionFive	Next-Generation VisionFive

1.1. Incoherent L2 Cache Coherence Affects SDIO*, GMAC, and USB3.0 Performance

JH7100 main peripheral SDIO*, GMAC, and USB3.0 connect with NOC BUS directly. This could affect the performance of SDIO*, GMAC, and USB3.0. If any share data with CPU (U74) exists, you need to flush L2 cache to keep cache coherency.

A general DMA named SGDMA2P is connected to U74 CPU's front-port which will keep cache coherency automatically, peripheral data can use this DMA as a data share channel to connect with the CPU.

Workaround

This section provides workaround solutions for the issue.

Software Workaround Solution

Now there are two registers: Fulsh64 and Flush32 in the L2 cache controllers as described in the following figure:

Flush the physical address, and then the cache line will be invalid.

Figure 1-1 Flush64 and Flush32

0x200	Flush64	Flush the phsyical address equal to the 64-bit written data from the cache
0x240	Flush32	Flush the physical address equal to the 32-bit written data << 4 from the cache

```
void stmmac_flush_dcache(unsigned long start, unsigned long len)
{
    unsigned long addr = _ALIGN_DOWN(start, 64);
    unsigned long lenth = len+start%64;

    starfive_flush_dcache(addr,lenth);
}
```

```
void starfive_flush_dcache(unsigned long start, unsigned long len)
{
    unsigned long line = start;
    unsigned long end = start+len;
    unsigned char *addr = (unsigned char *)dcache_addr+0x200;

    if(start < 0x80000000 || start > 0x87FFFFFF || end < 0x80000000 || end > 0x87FFFFFF)
        return;
    while(line < end){
        writeq(line, addr);
        line += 64;
        asm volatile ("fence");
    }
}
```

Tip:

- `start` is the start of physical address;
- `len` is the length of memory that you want to flush.

Hardware Workaround Solution

Next-generation VisionFive will use JH7110. The SoC can solve the issue permanently via hardware.

- JH7110 connects high-speed peripherals to CPU front-port directly, which will keep cache coherency automatically.
- Low-speed peripherals and video frame buffer data which needs to share data with CPU cacheable region could use DMA as the data share channel to connect with the CPU.

1.2. Ghosting Occurs when Moving Mouse Fast or Dragging Windows

Ghosting occurs when a user moves the mouse fast or drags a window around on the Fedora system. Details are as follows:

- When a user moves the mouse fast on the menu bar of the Fedora system, the text or icons get momentarily blurry.
- When a user drags a window around on the VisionFive Fedora system, ghosting occurs.

Workaround

Next-generation VisionFive will use JH7110. The SoC can solve the issue permanently via hardware.

1.3. Log Remains Displayed after Shutdown

After shutting down the Fedora system on VisionFive by one of the following methods, the log outputted after the shutdown remains displayed on the screen:

- typing `shutdown` on the console of the Fedora system on VisionFive.
- selecting **Applications > Log Out > Shut Down** in the Graphical User Interface.

Workaround

Next-generation VisionFive will use JH7110. The SoC can solve the issue permanently via hardware.