

### 3.4.5.6 Flash Bank Usage

The NOR flash on the board can be seen as two flash banks. The board DIP switch configuration (for LS1021ATWR, SW3[5]) preselects bank 0 as the hardware default bank.

To protect the default U-Boot in bank 0, it is a convention employed by Freescale to deploy work images into the alternate bank, and then switch to the alternate bank for testing. Switching to the alternate bank can be done in software and effectively swaps the first bank with the second bank, thereby putting the alternate bank in the bank 0 address range until further configuration or until a reset occurs. This protects banks 0 and keeps the board bootable under all circumstances.

To determine the current bank, refer to the U-Boot log:

```
U-Boot 2014.07-02072-g1b84e75 (Nov 05 2014 - 15:34:50)

CPU:   Freescale LayerScape SLS1020, Version: 1.0, (0x87080010)
Clock Configuration:
  CPU0 (ARMV7):1000 MHz,
  Bus:300 MHz, DDR:800 MHz (1600 MT/s data rate),
Reset Configuration Word (RCW):
  00000000: 0608000a 00000000 00000000 00000000
  00000010: 20000000 00407900 e0025a00 21046000
  00000020: 00000000 00000000 00000000 00038000
  00000030: 00080000 881b7540 00000000 00000000
Board: LS1021ATWR
CPLD:  V1.1
PCBA:  V2.0
VBank: 0
```

Bank switching can be done in U-Boot using the following statements:

- Switch to bank 0:

```
=>reset
```

- Switch to alternate bank:

```
=>boot_bank 1
```

The table below shows a memory map for LS1021A TWR:

**Table 3-30. NOR Flash Memory Map**

Start	End Offset	Description	Size
0x60000000	0x6001ffff	bank0 rcw image	128 K
0x60020000	0x6011ffff	bank0 dtb image	1 M
0x60120000	0x6091ffff	bank0 Linux Kernel image	8 M
0x60920000	0x63f5ffff	bank0 RamDisk file system image	54.25 M

*Table continues on the next page...*

**Table 3-30. NOR Flash Memory Map (continued)**

0x63f60000	0x63f7fff	bank1 u-boot environment	128 K
0x63f80000	0x63ffff	bank1 u-boot image	512 K
0x64000000	0x6401fff	bank1 rcw image	128 K
0x64020000	0x6411fff	bank1 dtb image	1 M
0x64120000	0x6491fff	bank1 Linux Kernel image	8 M
0x64920000	0x67f3fff	bank1 RamDisk file system image	54.125 M
0x67f40000	0x67f5fff	bank0 qe-ucode	128 K
0x67f60000	0x67f7fff	bank0 u-boot environment	128 K
0x67f80000	0x67ffff	bank0 u-boot image	512 K

### 3.4.5.7 Programming a New U-boot and RCW

The following three sections will discuss how to individually update U-Boot, RCW. For specific addresses, please refer to the [memory map](#) as a reference. If the user intends to flash both two at once, there is no need to switch into the alternate bank after each configuration, i.e. type the command "boot\_bank 1" after U-Boot and RCW have both been programmed.

Prior to continuing with the following instructions, please refer to [Configuring U-Boot Network Parameters](#) to make sure all necessary U-Boot parameters have been set.

#### 3.4.5.7.1 Programming a New U-Boot

By default, an existing U-Boot is run in bank 0 after the system is powered on or after a hard reset is performed. To flash U-Boot to the alternate bank, first switch to bank 0 by performing a hard reset or by typing *reset*. Then use the following commands to flash a new U-Boot into the alternate bank and then switch to that alternate bank where the new U-Boot is flashed:

```
=>tftp 82000000 <u-boot_file_name>.bin
=>protect off 63f80000 +$filesize
=>erase 63f80000 +$filesize
=>cp.b 82000000 63f80000 $filesize
=>protect on 63f80000 +$filesize
=>boot_bank 1
```

The commands above will only program a new U-Boot. Programming a new RCW will be discussed in the next sections.