

2.5.16.1 EVM DIP Switches

AM62x SKEVM has two 8 - position DIP Switch to set the SoC Boot mode and related parameters.

2.5.16.2 Boot Modes

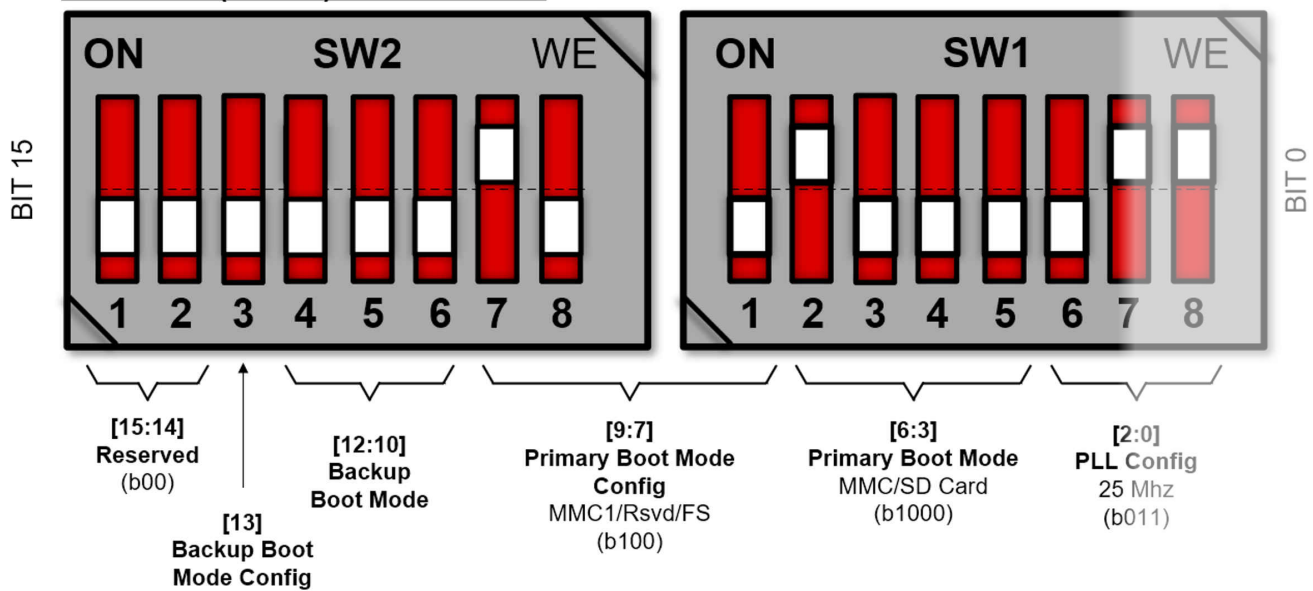
The boot mode for the SK EVM board is defined by two banks of switches SW1 and SW2 or by the I2C buffer connected to the Test automation connector. This allows for AM62x SoC Boot mode control by either the user (DIP Switch Control) or by the Test Automation connector.

All the bits of switch (SW1 and SW2) have weak pull down resistor and a strong pull up resistor as shown in below picture. Note that OFF setting provides a low logic level ('0') and an ON setting provides a high logic level ('1').

Note

The boot mode orientation has changed between E1 and E2. Please follow board silkscreen.

uSD Boot (MMC1) – 25 Mhz PLL



Note: Actual Board Silkscreen May Appear Inverted in this Orientation. Follow Physical Switch Text

Figure 2-7. Bootmode Switch Configuration for SD Boot (E1)

The boot mode pins of the SoC have associated alternate functions during normal operation. Hence isolation is provided using Buffer IC's to cater for alternate pin functionality. The output of the buffer is connected to the bootmode pins on the AM62x and the output is enabled when the bootmode is needed during a reset cycle. The input to the buffer is connected to the DIP switch circuit and to the output of an I2C buffer set by the test automation circuit. If the test automation circuit is going to control the bootmode, all the switches will manually be set to the OFF position. The bootmode buffer should be powered by an always ON power supply to ensure that the bootmode remains present even if the SoC power is cycled.

Switch SW1 and SW2 bits [15:0] are used to set the SoC Boot mode.

The switch map to the boot mode functions is provided in the tables below.

Table 2-17. BOOT-MODE Pin Mapping

| Bit 15 | Bit 14 | Bit 13 | Bit 12 | Bit 11 | Bit 10 | Bit 9 | Bit 8 | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|----------|----------|--------------------------------|------------------|--------|--------|---------------------------------|-------|-------|-------------------|-------|-------|-------------------|-------|-------|-------|
| Reserved | Reserved | Backup Boot Mode Configuration | Backup Boot Mode | | | Primary Boot Mode Configuration | | | Primary Boot Mode | | | PLL Configuration | | | |

- BOOT-MODE [0:2] – Denote system clock frequency for PLL configuration. By default, this bits are set for 25 MHz.

Table 2-18 gives details ON PLL reference clock selection.

Table 2-18. PLL Reference Clock Selection BOOTMODE [2:0]

| Bit 2 | Bit 1 | Bit 0 | PLL REF CLK (MHz) |
|-------|-------|-------|-------------------|
| OFF | OFF | OFF | RSVD |
| OFF | OFF | ON | RSVD |
| OFF | ON | OFF | 24 |
| OFF | ON | ON | 25 |
| ON | OFF | OFF | 26 |
| ON | OFF | ON | RSVD |
| ON | ON | OFF | RSVD |
| ON | ON | ON | RSVD |

- BOOT-MODE [3:6] – This provides primary boot mode configuration to select the requested boot mode after POR, that is, the peripheral/memory to boot from. Table 2-19 provides primary boot device selection details.

Table 2-19. Boot Device Selection BOOT-MODE [6:3]

| Bit 6 | Bit 5 | Bit 4 | Bit 3 | Primary Boot Device Selected |
|-------|-------|-------|-------|------------------------------|
| OFF | OFF | OFF | OFF | Serial NAND |
| OFF | OFF | OFF | ON | OSPI |
| OFF | OFF | ON | OFF | QSPI |
| OFF | OFF | ON | ON | SPI |
| OFF | ON | OFF | OFF | Ethernet RGMII1 |
| OFF | ON | OFF | ON | Ethernet RMII1 |
| OFF | ON | ON | OFF | I2C |
| OFF | ON | ON | ON | UART |
| ON | OFF | OFF | OFF | MMC/SD card |
| ON | OFF | OFF | ON | eMMC |
| ON | OFF | ON | OFF | USB0 |
| ON | OFF | ON | ON | GPMC NAND |
| ON | ON | OFF | OFF | GPMC NOR |
| ON | ON | OFF | ON | Rsvd |
| ON | ON | ON | OFF | xSPI |
| ON | ON | ON | ON | No boot/Dev Boot |

- BOOT-MODE [10:12] – Select the backup boot mode, that is, the peripheral/memory to boot from, if primary boot device failed.

Table 2-20 provides backup boot mode selection details.

Table 2-20. Backup Boot Mode Selection BOOT-MODE [12:10]

| Bit 12 | Bit 11 | Bit 10 | Backup Boot Device Selected |
|--------|--------|--------|-----------------------------|
| OFF | OFF | OFF | None (No backup mode) |

Table 2-20. Backup Boot Mode Selection BOOT-MODE [12:10] (continued)

| Bit 12 | Bit 11 | Bit 10 | Backup Boot Device Selected |
|--------|--------|--------|-----------------------------|
| OFF | OFF | ON | USB |
| OFF | ON | OFF | Reserved |
| OFF | ON | ON | UART |
| ON | OFF | OFF | Ethernet |
| ON | OFF | ON | MMC/SD |
| ON | ON | OFF | SPI |
| ON | ON | ON | I2C |

- BOOT-MODE [9:7] – These pins provide optional settings and are used in conjunction with the primary boot device selected.

Table 2-21 gives primary boot media configuration details.

Table 2-21. Primary Boot Media Configuration BOOT-MODE [9:7]

| Bit 9 | Bit 8 | Bit 7 | Boot Device |
|-----------|-------------|-------------|------------------|
| Reserved | Read Mode 2 | Read Mode 1 | Serial NAND |
| Speed | Iclk | Csel | OSPI |
| Reserved | Iclk | Csel | QSPI |
| Reserved | Mode | Csel | SPI |
| Clkout | Delay | Link stat | Ethernet RGMII |
| Clkout | Clk src | Reserved | Ethernet RMII |
| Bus Reset | Reserved | Addr | I2C |
| Reserved | | Reserved | UART |
| Port | Reserved | Fs/raw | MMC/ SD card |
| Reserved | | voltage | eMMC |
| Reserved | Mode | Lane swap | USB0 |
| Reserved | | | GPMC NAND |
| Reserved | | | GPMC NOR |
| Reserved | | | Reserved |
| SFDP | Read Cmd | Mode | xSPI |
| Reserved | | No/Dev | No boot/Dev Boot |

- BOOT-MODE [13] – These pins provide optional settings and are used in conjunction with the backup boot device devices. Switch SW2.6 when ON sets 1 and sets 0 if OFF, see the device-specific TRM.
- BOOT-MODE [14:15] – Reserved.

Table 2-22 provides backup boot media configuration options.

Table 2-22. Backup Boot Media Configuration BOOT-MODE [13]

| Bit 13 | Boot Device |
|----------|-------------|
| Reserved | None |
| Mode | USB |
| Reserved | Reserved |
| Reserved | UART |
| IF | Ethernet |
| Port | MMC/SD |
| Reserved | SPI |
| Reserved | I2C |

2.5.16.3 User Test LEDs

The AM62x SKEVM board contains two LEDs for user defined functions.