



# **BL808**

## **Datasheet**

*Version: 1.1*

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## Features

- Wireless (Tier-1 RF Performance)
  - 2.4 GHz RF transceiver
  - Wi-Fi 802.11 b/g/n
  - Bluetooth® 5.x Dual-mode (BT+BLE)
  - Zigbee / IEEE 802.15.4
  - Wi-Fi/Bluetooth/Zigbee Coexistence
  - Integrated balun, PA/LNA
  - Support External PA/LNA
- Microcontroller
  - Multi-Core RISC-V CPUs (Max Freq 480MHz)
  - RTC timer up to one year
  - General purpose timers
  - DMA channels
  - JTAG development support
  - XIP QSPI flash support
- Audio Codec
  - ADC\*2 (Mic\*2 or Mic\*1+Line-in)
  - DAC\*1 (Speaker)
  - Sample Rate 8~192KHz, 24bit
- Video/Image/Display
  - MJPEG , H264 (Baseline/Main)
  - Maximum resolution:2M(1920x1080)
  - Video encoding format:
    - \* MJPEG and H264 (Baseline/Main)
    - \* 1920x1080 @ 30fps + 640x480 @ 30fps
    - \* Up to 8-ROI(region-of-interest)
- Camera Sensor interface: DVP and MIPI-CSI
- Display interface: SPI, DBI, DPI(RGB), MIPI-DSI
- AI NN general HW Accelerator
  - NPU BLAI-100 (Bouffalo Lab AI engine) For Video/Audio detection/recognition, etc.
- Memory
  - Embedded 32/64MB DRAM
  - Support max 128MB SPI-Nor Flash
  - Support max 256MB SPI-NAND Flash
- Security
  - Secure boot ; Secure debug
  - XIP QSPI On-The-Fly AES Decryption (OTFAD)
  - Support sensitive SW isolation (TrustZone)
  - AES-CBC/CCM/GCM/XTS modes
  - MD5, SHA-1/224/256/384/512
  - TRNG (True Random Number Generator)
  - PKA (Public Key Accelerator) for RSA/ECC
- Peripherals
  - USB 2.0 HS OTG
  - Ethernet RMII Interface
  - SD-card interface
  - Four UART interface
  - Two SPI interface
  - Four I2C interface
  - Eight PWM channels
  - I2S interface
  - PDM interface

- 
- General-Purpose ADC
  - General-Purpose DAC
  - General analog comparators (ACOMP)
  - PIR (Passive Infra-Red) detection
  - IR remote HW accelerator
  - Support 12-Channel Touch
  - Flexible 36 or 40 GPIOs
  - Power Modes (Ultra-low Power modes)
    - Off(~1uA) ; Hibernate
  - Power Down Sleep (flexible)
  - Clock
    - Support XTAL 24/26/32/38.4/40 MHz
    - Support XTAL 32/32.768 KHz
    - Internal RC 32KHz/32MHz oscillator
    - Internal System PLLs
  - Package Type
    - 88 pin QFN

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BL808 is a highly integrated AIoT chipset with Wi-Fi/BT/BLE/Zigbee, Multi-Core CPUs, Audio Codec , Video Codec and AI HW accelerator for high-performance & low-power application.

BL808 mainly includes two subsystems, wireless and multimedia.

The wireless subsystem includes a RISC-V 32-bit high-performance CPU, integrated Wi-Fi /BT/Zigbee wireless subsystem, which can realize a variety of wireless connections and data transmission, and provide a variety of connection and transmission experiences.

The multimedia subsystem includes a RISC-V 64-bit ultra-high-performance CPU and integrates video processing modules such as DVP/CSI/ H264/NPU, which can be widely used in various AI fields such as video surveillance/smart speakers.

The components of the multimedia subsystem are as follows:

- NPU HW NN co-processor (BLAI-100) generally used for AI applications
- Camera interface
- Audio Codec
- Video Codec
- Sensor
- Display interfaces

Power Management Unit provides low-power modes. Moreover, variety of security features are supported.

Peripheral interfaces include USB2.0, Ethernet, SD/MMC, SPI, UART, I2C, I2S, PWM, GPDAC, GPADC, ACOMP, PIR, Touch, IR remote, Display and GPIOs.

Flexible GPIO configurations are supported. BL808 has total 36 or 40 GPIOs.

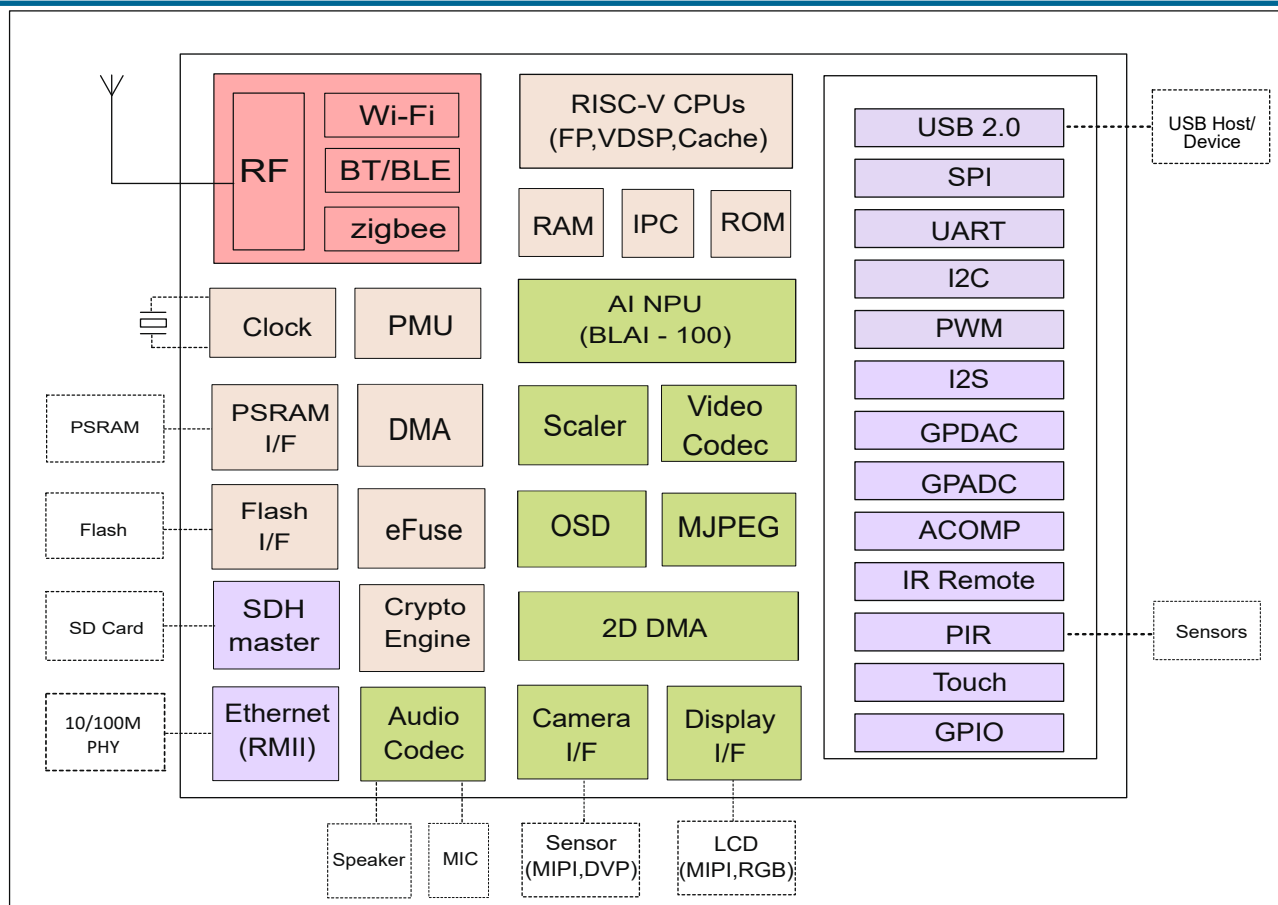


Fig. 1.1: Block Diagram

## Functional Description

BL808 main functions described as follows:

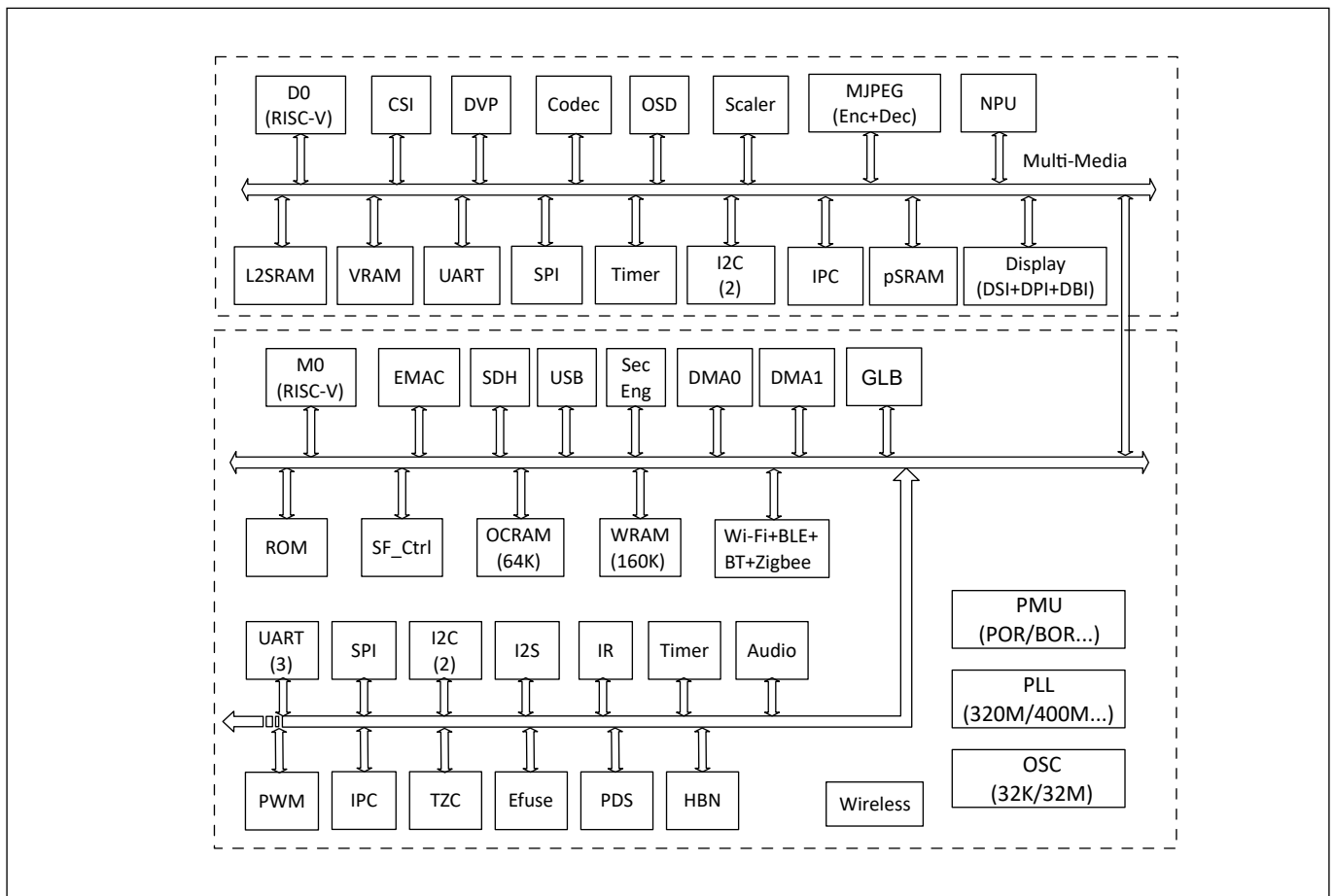


Fig. 2.1: System Architecture

## 2.1 CPU

BL808 contains multiple RISC-V processors inside.

M0 is a 32-bit RISC-V CPU with a 5-stage pipeline structure, supports RISC-V 32/16-bit mixed instruction set, contains 64 external interrupt sources, and 4 bits can be used to configure interrupt priority.

D0 is a 64-bit RISC-V CPU with a 5-stage pipeline structure, supports the RISC-V RV64IMAFCV instruction architecture, contains 67 external interrupt sources, and 3 bits can be used to configure the interrupt priority.

## 2.2 Cache

The cache of BL808 improves the performance of CPU accessing external memory. M0 contains 32K instruction cache and 16K data cache; D0 contains 32K instruction cache and 32K data cache.

## 2.3 Memory

BL808 memory includes: on-chip zero-delay SRAM memory, read-only memory, write-once memory, Embedded flash (optional), embedded pSRAM (optional).

## 2.4 DMA

The DMA controller has 20 dedicated channels (8 channels each for DMA0 and DMA2, and 4 channels for DMA1) to manage data transfers between peripherals and memory to improve CPU/bus efficiency. DMA has four transfer types, memory-to-memory, memory-to-peripheral, peripheral-to-memory, and peripheral-to-peripheral modes.

The DMA also supports the LLI (Linked List Item) feature, which consists of a series of linked lists that predefine multiple transfers, and then the hardware automatically completes all transfers based on the size and address of each LLI. Peripherals supported by DMA include UART, I2C, SPI, ADC, IR, GPIO, Audio, I2S, PDM, DBI, DSI.

## 2.5 Memory Map

Table 2.1: Memory Map

| Module     | Size  | Base Address(M0) |            | Base Address(D0) |            |
|------------|-------|------------------|------------|------------------|------------|
|            |       | Cache            | Non-cache  | Cache            | Non-cache  |
| OCRAM(MCU) | 64KB  | 0x62020000       | 0x22020000 | -                | 0x22020000 |
| WRAM(MCU)  | 160KB | 0x62030000       | 0x22030000 | -                | 0x22030000 |
| DRAM(MM)   | 512KB | -                | 0x3EF80000 | 0x3EF80000       | -          |
| VRAM(MM)   | 32KB  | -                | 0x3F000000 | 0x3F000000       | -          |

OCRAM and WRAM can be accessed either through AHB bus or through AXI. When the CPU accesses OCRM

using the address of 0x62020000, it will go through the internal cache and transfer AXI to AHB to achieve access to OCRAM. When the CPU uses the 0x22020000 address to access OCRAM, it does not go through the internal cache and directly accesses OCRAM through the AHB bus.

Table 2.2: Memory Map

| Module  | Target            | Base Address | Size | Description                                                          |
|---------|-------------------|--------------|------|----------------------------------------------------------------------|
| pSRAM   | pSRAM             | 0x54000000   | 64MB | pSRAM memory address space, actual size depends on chip model        |
| FLASH   | FlashA            | 0x58000000   | 64MB | Application address space, the actual size depends on the chip model |
| MMPERI  | TIMER1            | 0x30009000   | 4KB  | TIMER1 control register                                              |
|         | SPI1              | 0x30008000   | 4KB  | SPI1 control register                                                |
|         | MM_GLB            | 0x30007000   | 4KB  | Multimedia side global register                                      |
|         | DMA2D             | 0x30006000   | 4KB  | DMA2D control register                                               |
|         | I2C3              | 0x30004000   | 4KB  | I2C3 control register                                                |
|         | I2C2              | 0x30003000   | 4KB  | I2C2 control register                                                |
|         | UART3             | 0x30002000   | 4KB  | UART3 control register                                               |
|         | DMA2              | 0x30001000   | 4KB  | DMA2 control register                                                |
| MCUPERI | DMA1              | 0x20071000   | 4KB  | DMA1 control register                                                |
|         | EMAC              | 0x20070000   | 4KB  | EMAC control register                                                |
|         | AUDIO             | 0x20055000   | 4KB  | Audio control register                                               |
|         | USB               | 0x20072000   | 4KB  | USB control register                                                 |
|         | HBN               | 0x2000F000   | 4KB  | Hibernate register                                                   |
|         | PDS               | 0x2000E000   | 4KB  | Power-Down sleep register                                            |
|         | DMA0              | 0x2000C000   | 4KB  | DMA0 control register                                                |
|         | I2S               | 0x2000AB00   | 256B | I2S control register                                                 |
|         | ISO11898<br>UART2 | 0x2000AA00   | 256B | ISO11898 bus control register                                        |
|         |                   | 0x2000AA00   | 256B | UART2 control register                                               |
|         | I2C1              | 0x2000A900   | 256B | I2C1 control register                                                |
|         | IR                | 0x2000A600   | 256B | IR control register                                                  |
|         | TIMER0            | 0x2000A500   | 256B | TIMER0 control register                                              |
|         | PWM               | 0x2000A400   | 256B | PWM control register                                                 |
|         | I2C0              | 0x2000A300   | 256B | I2C0 control register                                                |
|         | SPI0              | 0x2000A200   | 256B | SPI0 control register                                                |
|         | UART1             | 0x2000A100   | 256B | UART1 control register                                               |
|         | UART0             | 0x2000A000   | 256B | UART0 control register                                               |
|         | eFuse             | 0x20056000   | 4KB  | eFuse memory control register                                        |
|         | TZ                | 0x20005000   | 4KB  | Security Zone partition                                              |
|         | SEC_ENG           | 0x20004000   | 4KB  | Security engine control register                                     |
|         | GPIP              | 0x20002000   | 1KB  | General purpose DAC/ADC/ACOMP interface control register             |
|         | GLB               | 0x20000000   | 4KB  | Global control register                                              |

Table 2.2: Memory Map

| Module | Target | Base Address | Size  | Description           |
|--------|--------|--------------|-------|-----------------------|
| ROM    | ROM    | 0x90000000   | 128KB | Bootrom address space |

Table 2.3: MRAM/VRAM address space

| MRAM/VRAM |                            | Configure(reg_h2pf_sram_rel , reg_vram_sram_sel , reg_ispl_sram_rel , reg_blai_sram_rel) |                  |                  |                  |                  |                  |                  |                  |
|-----------|----------------------------|------------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|           |                            | 0 , 0 , 0 ,<br>0                                                                         | 0 , 0 , 0 ,<br>1 | 1 , 0 , 0 ,<br>0 | 3 , 0 , 0 ,<br>0 | 0 , 0 , 1 ,<br>0 | 0 , 1 , 0 ,<br>0 | 2 , 0 , 0 ,<br>1 | 3 , 1 , 1 ,<br>1 |
| MRAM      | 0x3EF80000 -<br>0x3EF8FFFF | -                                                                                        | -                | -                | -                | -                | -                | -                | 64K              |
|           | 0x3EF90000 -<br>0x3EF9FFFF | -                                                                                        | -                | -                | -                | -                | -                | -                | 64K              |
|           | 0x3EFA0000 -<br>0x3EFAFFFF | -                                                                                        | -                | -                | -                | -                | -                | -                | 64K              |
|           | 0x3EFB0000 -<br>0x3EFBFFFF | -                                                                                        | -                | -                | -                | -                | -                | 64K              | 64K              |
|           | 0x3EFC0000 -<br>0x3EFCFFFF | -                                                                                        | -                | -                | 64K              | -                | -                | 64K              | 64K              |
|           | 0x3EFD0000 -<br>0x3EFDFFFF | -                                                                                        | 64K              | -                | 64K              | -                | -                | 64K              | 64K              |
|           | 0x3EFE0000 -<br>0x3EFEFFFF | -                                                                                        | 64K              | 64K              | 64K              | 64K              | 64K              | 64K              | 64K              |
|           | 0x3EFF0000 -<br>0x3EFFFFFF | 64K                                                                                      | 64K              | 64K              | 64K              | 64K              | 64K              | 64K              | 64K              |
| VRAM      | 0x3F000000 -<br>0x3F007FFF | 32K                                                                                      | 32K              | 32K              | 32K              | 32K              | 32K              | 32K              | 32K              |

## 2.6 Interrupt

BL808 supports internal RTC clock wake-up and external interrupt wake-up to realize low-power sleep wake-up function.

The CPU interrupt controller supports a total of 131 maskable interrupt trigger sources including UART interrupt, I2C interrupt, SPI interrupt, timer interrupt, DMA interrupt, etc.

All I/O pins can be configured as external interrupt input mode, the external interrupt supports nine trigger types: synchronous high/low level trigger, synchronous rising/falling edge trigger, asynchronous high/low level trigger, asynchronous rising edge /Falling edge trigger and synchronous double edge trigger.

## 2.7 Boot

BL808 supports multiple boot options: UART, USB, and Flash.

Table 2.4: Boot mode

| Boot pin | Level | Description                                                                                         |
|----------|-------|-----------------------------------------------------------------------------------------------------|
| GPIO39   | 1     | Boot from UART(GPIO20/21)/USB, this mode is mainly used for Flash download or download image to RAM |
|          | 0     | Launch application image from Flash                                                                 |

## 2.8 Power

PMU (power management unit) manages the power of the entire chip and is divided into running, idle, sleep, hibernation and power off modes. The software can be configured to enter sleep mode and wake-up via RTC timer or EINT to achieve low-power sleep and accurate wake-up management.

Power down sleep modes are flexible for applications to configure as the lowest power consumption.

## 2.9 Clock

Clock control unit generates clocks to the core MCU and the peripheral SOC devices. The root clock source can be XTAL, PLL or RC oscillator. Dynamic power-saved by proper configurations such as sel, div, en, etc.

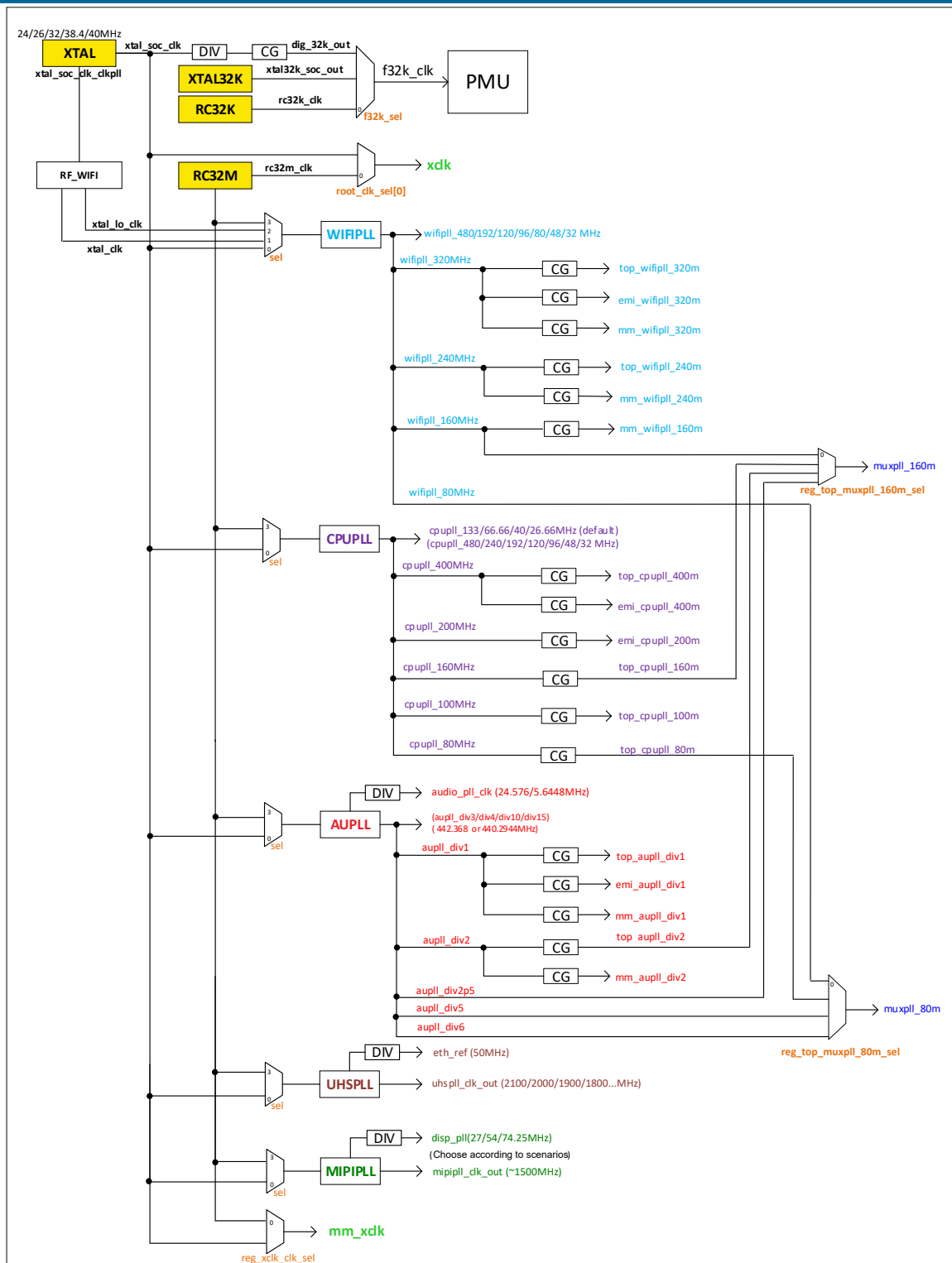


Fig. 2.2: System Clock Architecture

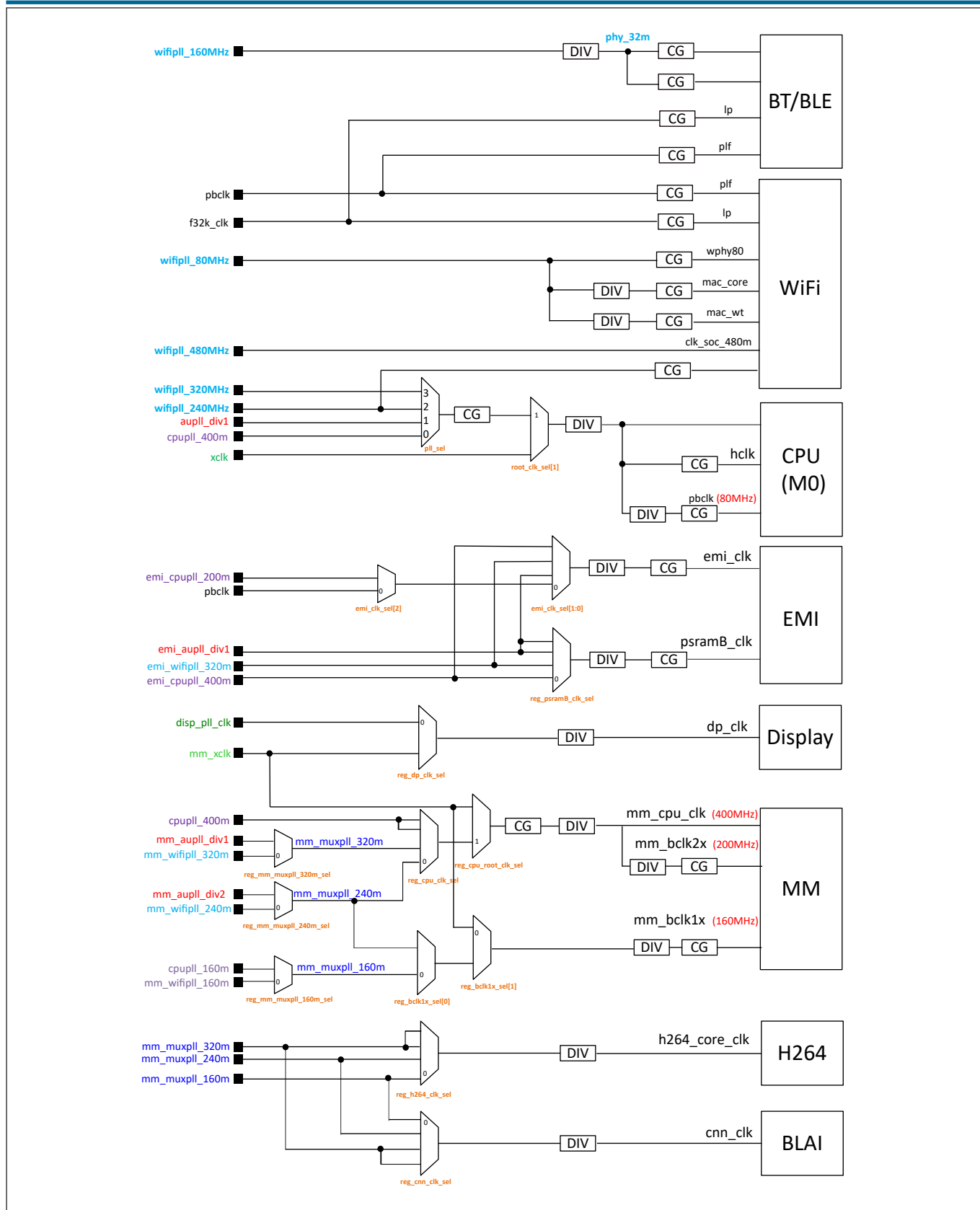


Fig. 2.3: Moudle Clock Architecture

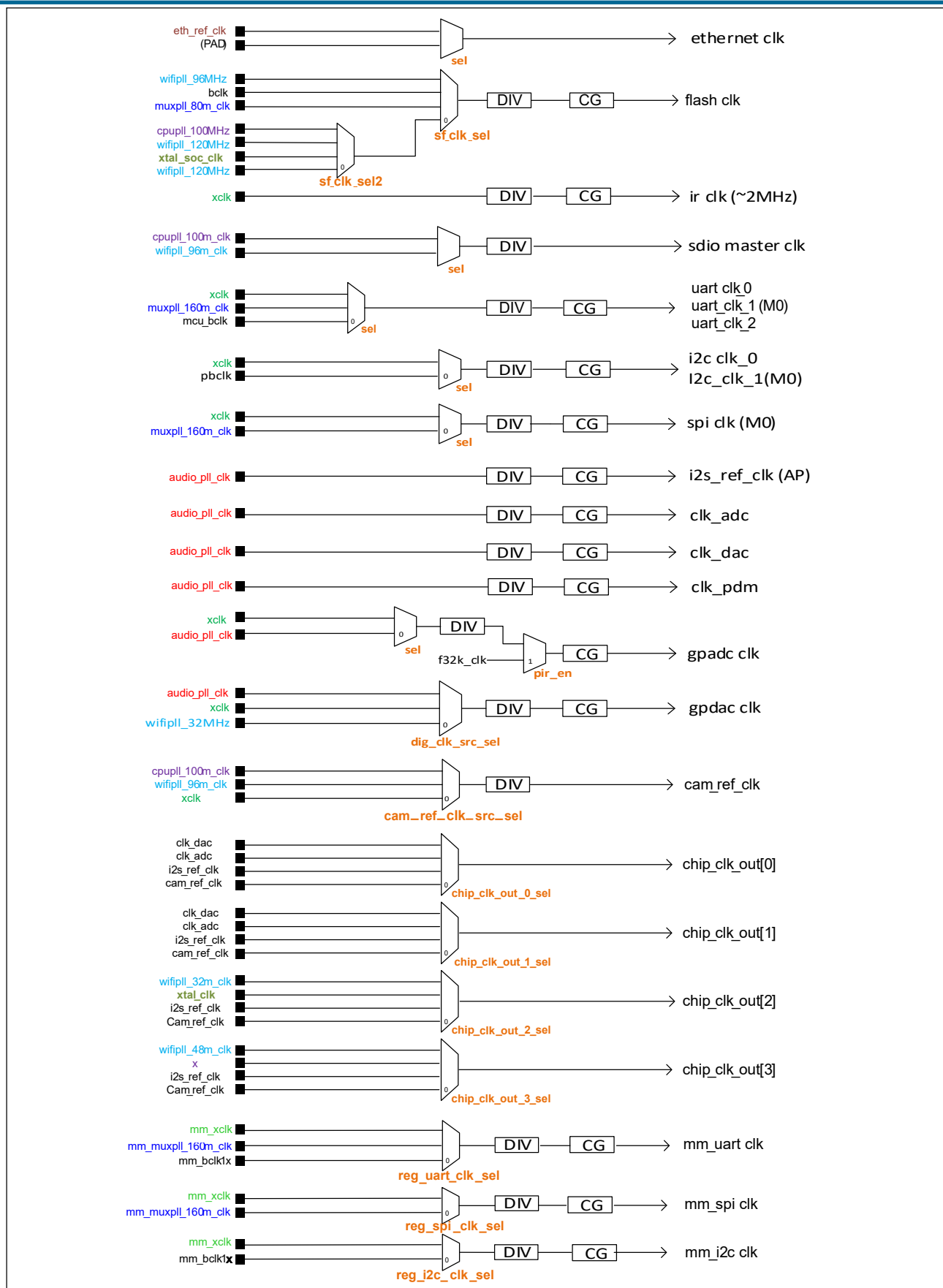


Fig. 2.4: Peripheral Clock Architecture

## 2.10 Peripheral

Peripherals include USB2.0, Ethernet, SD/MMC, SPI, UART, I2C, I2S, PWM, GPDAC/GPADC/, ACOMP, PIR, Touch, IR remote, Display and GPIO.

### 2.10.1 GPIO

BL808C can have up to 40 GPIOs, BL808D can have up to 36 GPIOs, with the following features:

- Each GPIO can be used as general purpose input and output function, pull-up/pull-down/float can be configured by software
- Each GPIO supports interrupt function, the interrupt supports synchronous high/low level trigger, synchronous rising/falling edge trigger, asynchronous high/low level trigger, asynchronous rising/falling edge trigger and synchronous double edge trigger
- Each GPIO can be set to high impedance state for low power mode

### 2.10.2 UART

The chip has four built-in UARTs (UART0/1/2/3) with the following features:

- Supports CTS and RTS flow control in hardware
- Support LIN master/slave function
- Configurable data bits, stop bits and parity bits
- Supports automatic baud rate detection for common/fixed characters
- The working clock can be selected as BCLK, XCLK or 160MHz, the maximum baud rate supports 10Mbps
- TX and RX have independent FIFO, FIFO depth is 32 bytes, support DMA function

### 2.10.3 SPI

The chip has two built-in SPIs, which can be configured as master mode or slave mode. The SPI module clock is XCLK or 160MHz, and has the following characteristics:

- In master mode, clock frequency up to 80 MHz
- In slave mode, the maximum allowed master clock frequency is 80 MHz
- The bit width of each frame can be configured as 8bit/16bit/24bit/32bit
- Adaptive FIFO depth change characteristics, suitable for high-performance scene applications
  - When the bit width is 32 bits, the depth of the FIFO is 8
  - When the bit width is 24 bits, the depth of the FIFO is 8

- When the bit width is 16 bits, the depth of the FIFO is 16
- When the bit width is 8 bits, the depth of the FIFO is 32
- Support DMA transfer mode

#### 2.10.4 I2C

The chip has four built-in I2C interfaces with the following features:

- Support multi-master mode and arbitration function
- The working clock can be selected as BCLK or XCLK
- With device address register, register address register, register address length can be set to 1 byte / 2 bytes / 3 bytes / 4 bytes
- I2C has independent transceiver FIFO, FIFO depth is 2 words
- Support DMA function

#### 2.10.5 I2S

The chip has a built-in I2S interface with the following features:

- Support master mode and slave mode
- Support Left-justified/ Right-justified/ DSP and other data formats, the data width can be configured as 8/16/24/32 bits
- The working clock can be selected as BCLK or XCLK
- Supports both four-channel and six-channel modes in addition to mono/dual-channel mode
- Supports playback of mono audio dubbing to binaural mode
- Support dynamic mute switching function
- I2S has independent transceiver FIFO, FIFO depth is 16 words
- Support DMA function

#### 2.10.6 EMAC

The EMAC module is a 10/100Mbps Ethernet Media Access Controller (Ethernet MAC) compatible with IEEE 802.3, has the following characteristics:

- Compatible with the MAC layer defined by IEEE 802.3
- PHY supporting MII/RMII interface defined by IEEE 802.3
- Interacts with PHY through MDIO interface

- Supports 10 Mbps and 100 Mbps Ethernet
- Supports half-duplex and full-duplex
- Supports automatic flow control and control frame generation in the full-duplex mode
- Supports collision detection and retransmission in the half-duplex mode
- Supports the generation and verification of CRC
- Generates and removes data frame preamble
- Supports automatic extension of short data frames when sending
- Detects too long/short data frames (length limit)
- Transmits long data frames (> standard Ethernet frame length)
- Automatically discards data packets with over-limit retransmission times or too small frame gap
- Broadcast packet filtering
- Internal RAM for storing up to 128 BDs
- Splits and configures a data packet to multiple consecutive Bds when sending
- Various event flags sent or received
- Generates a corresponding interrupt when an event occurs

The EMAC timing diagram is shown below:

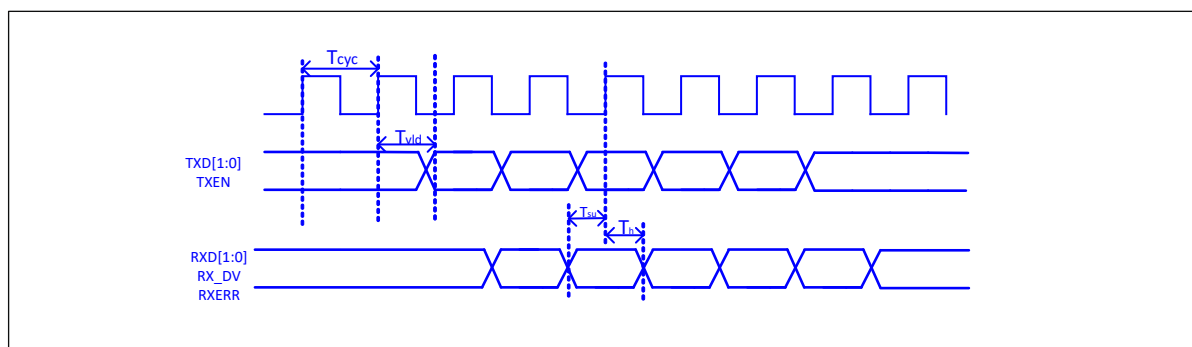


Fig. 2.5: EMAC Timing Diagram

Table 2.5: Timing conditions for using RX Clock

| Set the corresponding bit of register <code>eth_cfg0:cfg_inv_eth_rx_clk = 1, cfg_inv_eth_tx_clk = 0, cfg_sel_eth_ref_clk_o = 0</code> |                    |       |     |      |      |                    |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------|-----|------|------|--------------------|
| Timing parameters(1.8V, Load = 20PF)                                                                                                  |                    | Min.  | Typ | Max. | Unit | Note               |
| $T_{cyc}$                                                                                                                             | Clock Cycle        | -     | 20  | -    | ns   | Clock From ETH PHY |
| $T_{vld}$                                                                                                                             | Output Valid Delay | 10.37 | -   | 22   | ns   | TXD/TX_EN          |
| $T_{su}$                                                                                                                              | Input Setup Time   | 6     | -   | -    | ns   | RXD/RX_DV/RXERR    |

Table 2.5: Timing conditions for using RX Clock

| Set the corresponding bit of register eth_cfg0:cfg_inv_eth_rx_clk = 1, cfg_inv_eth_tx_clk = 0, cfg_sel_eth_ref_clk_o = 0 |                 |      |     |      |      |                 |
|--------------------------------------------------------------------------------------------------------------------------|-----------------|------|-----|------|------|-----------------|
| Timing parameters(1.8V, Load = 20PF)                                                                                     |                 | Min. | Typ | Max. | Unit | Note            |
| T <sub>h</sub>                                                                                                           | Input Hold Time | 0    | -   | -    | ns   | RXD/RX_DV/RXERR |

Table 2.6: Timing conditions without using RX Clock

| Set the corresponding bit of register eth_cfg0:cfg_inv_eth_rx_clk = 0, cfg_inv_eth_tx_clk = 0, cfg_sel_eth_ref_clk_o = 0 |                    |        |     |      |      |                    |
|--------------------------------------------------------------------------------------------------------------------------|--------------------|--------|-----|------|------|--------------------|
| Timing parameters(1.8V, Load = 20PF)                                                                                     |                    | Min.   | Typ | Max. | Unit | Note               |
| T <sub>cyc</sub>                                                                                                         | Clock Cycle        | -      | 20  | -    | ns   | Clock From ETH PHY |
| T <sub>vid</sub>                                                                                                         | Output Valid Delay | 10.374 | -   | 22   | ns   | TXD/TX_EN          |
| T <sub>su</sub>                                                                                                          | Input Setup Time   | 5      | -   | -    | ns   | RXD/RX_DV/RXERR    |
| T <sub>h</sub>                                                                                                           | Input Hold Time    | 3      | -   | -    | ns   | RXD/RX_DV/RXERR    |

## 2.10.7 TIMER

The chip has two built-in 32-bit general-purpose timers and a watchdog timer with the following features:

- The clock source of the general timer can be selected from FCLK/32K/XTAL, and the clock source of the watchdog timer can be selected from FCLK/32K/XTAL
- 8-bit divider for each counter
- Each group of general-purpose timers includes three compare registers, supports compare interrupts, and supports FreeRun mode and PreLoad mode in counting mode
- 16-bit watchdog timer, supports two watchdog overflow methods: interrupt or reset

## 2.10.8 PWM

The chip has built-in 2 groups of PWM signals, each group contains 4 channels of PWM signal output, each channel can be set to 2 channels of complementary PWM, with the following characteristics:

- Three clock sources BCLK/XCLK/32K
- Frequency divider register and period register are 16-bit wide
- Each channel PWM supports adjustable output polarity, dual threshold setting, increasing the flexibility of pulse output
- Each channel PWM has independent dead time setting

- Each PWM has an independent connection switch to choose whether to connect with the internal counter, and can set the default output level when not connected
- Software brake and external brake signal can put the PWM output level into a preset state
- Up to 11 trigger sources that can be used to trigger ADC conversions

### 2.10.9 IR(IR-remote)

The chip has a built-in infrared remote control with the following features:

- Support both sending and receiving modes
- Supports up to 128-bit data bits to be sent in non-free mode, and can continuously send data of any length in free mode
- Supports receiving data with fixed protocols NEC, RC-5, and receiving data in any format with pulse width counting
- The clock source is XCLK, and the maximum operating frequency is 32MHz. It has powerful infrared waveform editing capabilities, and can send waveforms that conform to various protocols. The transmit power is adjustable in 15 levels
- Receive FIFO depth is 128 bytes, transmit FIFO depth is 16 bytes
- Transmit supports DMA mode

### 2.10.10 PDM

The chip has a built-in PDM audio processing module with the following features:

- Integrated 3-channel digital filter, can support 3-channel digital microphone input
  - Sampling rate: 8k~48k
  - SNR > 110dB
  - Data valid bit width 20 bit
  - Digital gain: -95.5 ~ +32.5dB, 0.5dB step
- Independently adjustable three-channel high-pass filter
- Multiplexed GPIO input (1 clock output, 2 data input)
- Transmit FIFO width 32bit, depth 48
- Support DMA transfer mode

## 2.11 Video encoding

### 2.11.1 Introduction

VENC adopts the H264 video coding standard, which is mainly compressed by means of prediction and motion compensation, and uses loop filtering to improve the image quality, taking into account the requirements of code stream transmission and image quality.

### 2.11.2 Features

- 1920x1080p @ 30fps + 640x480 @ 30fps, BP/MP
- Input: Semi-Planar YCbCr 4:2:0
- Output: NALU(Network Abstract Layer Uint) in byte stream format
- CBR/VBR mode
- Up to 8 ROIs
- Up to 16 OSD coding areas
- Support software mode and linkage mode
- Dynamically configurable max/min quantization parameters
- Dynamically configurable I/P frame target bits
- Dynamically configurable I-frame distance

## 2.12 And sensor and display interface

### 2.12.1 And sensor

- MIPI-CSI
  1. Support 1-/2-lane mode
  2. Support hardware decoding (RAW8/10/12/14, RGB565/888, YUV422 8-/10-bit) or software decoding
- DVP
  1. Support RAW 12-bit data
  2. Support YUV/RGB 8-bit format
  3. Support image compression mode

## 2.12.2 And monitor

- MIPI-DSI
  1. Support 1-/2-/4-lane mode
  2. Support RGB565/666/888 and YUV422 8-bit format
  3. Support Sync Event Mode or Sync Pulse Mode
  4. Support Escape Mode, and can be used with DMA function
- MIPI-DBI
  1. Support Type-B (8-bit), Type-C Option 1 (3-wire) and Type-C Option 3 (4-wire) modes
  2. Support RGB565/666/888 format
  3. Built-in YUV2RGB conversion module
  4. Support DMA function
- MIPI-DPI
  1. Support data 16-bit mode
  2. Support RGB565 format
- QSPI
  1. CMD/ADDR/DATA can choose 1-/4-wire mode arbitrarily, so QSPI 111/114/144/444 mode can be supported
  2. Support RGB565/666/888 format
  3. Built-in YUV2RGB conversion module
  4. Support DMA function

## Pin Definition

BL808C 88-pin package includes 26 power pins, 22 analog pins, and 40 flexible GPIO pins.

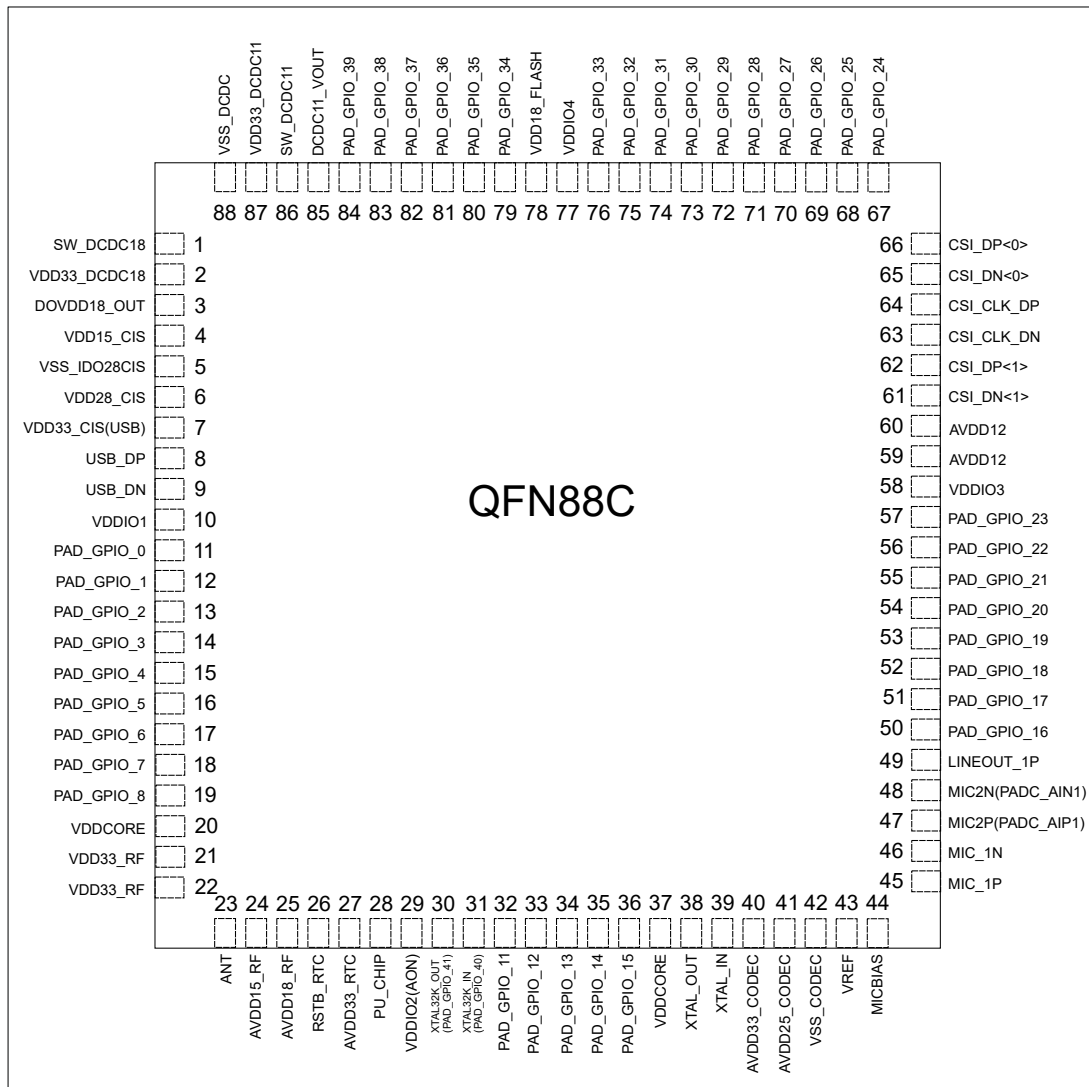


Fig. 3.1: BL808C Pin layout

BL808D 88-pin package includes 27 power pins, 25 analog pins, and 36 flexible GPIO pins.

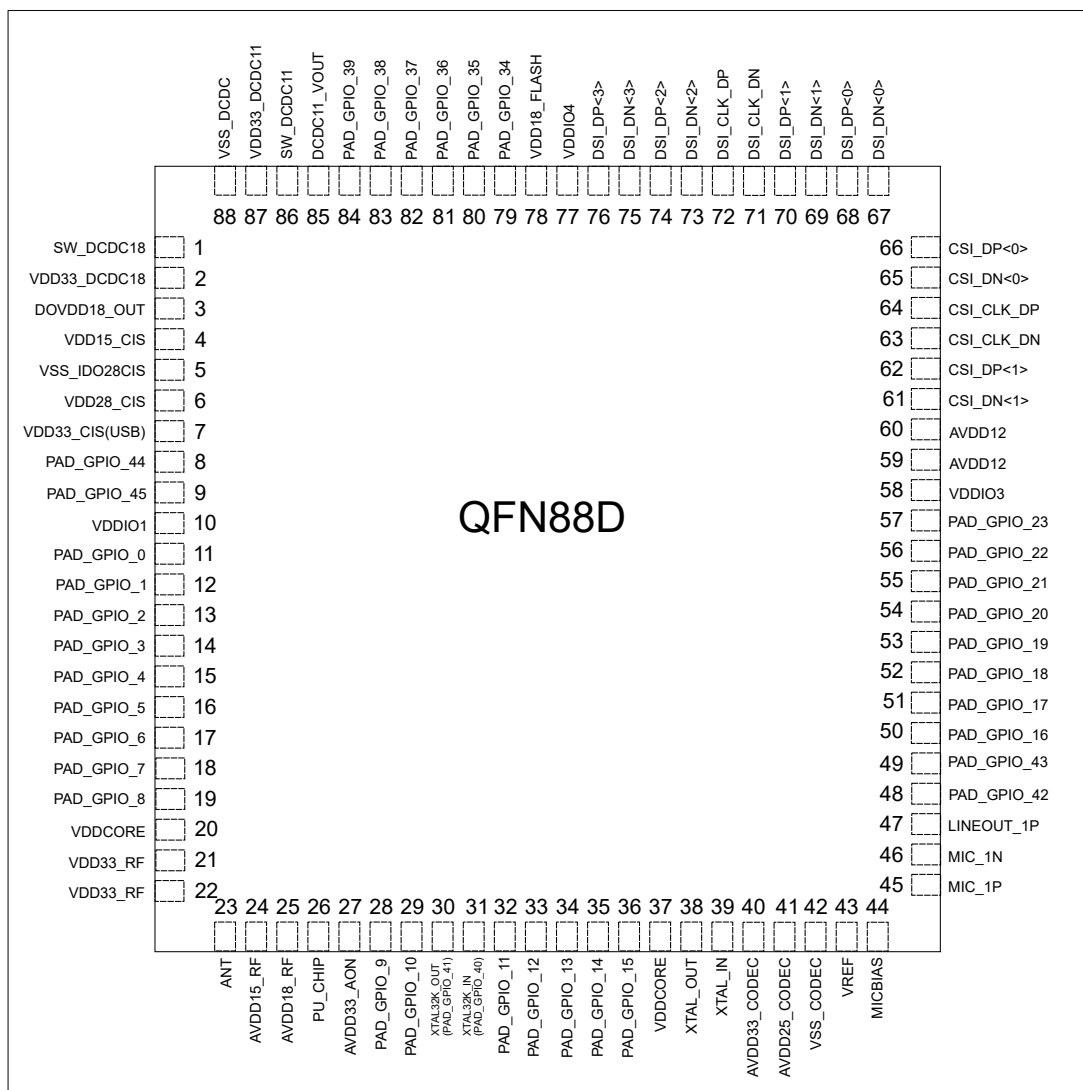


Fig. 3.2: BL808D Pin layout

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name       | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description                                                              |
|--------|--------|----------------|-------|----------------|-----------------------------|-------------------------------------|-------------------|--------------------------------------------------------------------------|
| 1      | 1      | -              | Power | SW_DCDC18      | -                           | -                                   | SW_DCDC18         | DCDC switch output, connected to power inductor                          |
| 2      | 2      | -              | Power | VDD33_DCDC18   | -                           | -                                   | VDD33_DCDC18      | DCDC power input, 3.3V                                                   |
| 3      | 3      | -              | Power | DOVDD18_OUT    | -                           | -                                   | DOVDD18_OUT       | DCDC mode, feedback voltage input, 1.8V LDO mode, power output, 1.8V     |
| 4      | 4      | -              | Power | VDD15_CIS      | -                           | -                                   | VDD15_CIS         | Integrated LDO output to power the image sensor digital power DVDD       |
| 5      | 5      | -              | Power | VSS_IDO28CIS   | -                           | -                                   | VSS_IDO28CIS      | Connect to the image sensor analog ground AGND                           |
| 6      | 6      | -              | Power | VDD28_CIS      | -                           | -                                   | VDD28_CIS         | Integrated LDO output to power the image sensor analog power supply AVDD |
| 7      | 7      | -              | Power | VDD33_CIS(USB) | -                           | -                                   | VDD33_CIS(USB)    | Integrated LDO VDD28_CIS input, 3.3V                                     |
| 8      | -      | VDDIO_1        | DI/DO | USB_DP         | -                           | -                                   | USB_DP            | USB2.0 differential data cable+                                          |
| 9      | -      | VDDIO_1        | DI/DO | USB_DN         | -                           | -                                   | USB_DN            | USB2.0 differential data cable                                           |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| -      | 8      | VDDIO_1        | DI/DO | PAD_GPIO_44 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |             | 2                           | -                                   | -                   | -                   |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |             | 4                           | -                                   | -                   | -                   |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |             | 7                           | uart_sig_8_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | -                   | -                   |
|        |        |                |       |             | 9                           | -                                   | -                   | -                   |
|        |        |                |       |             | 10                          | -                                   | -                   | -                   |
|        |        |                |       |             | 11                          | -                                   | SWGPIO44            | SWGPIO44            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2P           | PWM0_CH2P           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |             | 22                          | -                                   | -                   | -                   |
|        |        |                |       |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 24                          | -                                   | -                   | -                   |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function     | Description                                |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-----------------------|--------------------------------------------|
| -      | 9      | VDDIO_1        | DI/DO | PAD_GPIO_45 | 0                           | -                                   | -                     | -                                          |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI <sup>1</sup> | SPI_MOSI                                   |
|        |        |                |       |             | 2                           | -                                   | -                     | -                                          |
|        |        |                |       |             | 3                           | -                                   | I2S_FS                | I2S_FS                                     |
|        |        |                |       |             | 4                           | -                                   | -                     | -                                          |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA              | I2C0_SDA                                   |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA              | I2C1_SDA                                   |
|        |        |                |       |             | 7                           | uart_sig_9_sel=0                    | UART0_RTS             | UART0_RTS                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=1                    | UART0_CTS             | UART0_CTS                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=2                    | UART0_TXD             | UART0_TXD                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=3                    | UART0_RXD             | UART0_RXD                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=4                    | UART1_RTS             | UART1_RTS                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=5                    | UART1_CTS             | UART1_CTS                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=6                    | UART1_TXD             | UART1_TXD                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=7                    | UART1_RXD             | UART1_RXD                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=8                    | UART2_RTS             | UART2_RTS                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=9                    | UART2_CTS             | UART2_CTS                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=10                   | UART2_TXD             | UART2_TXD                                  |
|        |        |                |       |             |                             | uart_sig_9_sel=11                   | UART2_RXD             | UART2_RXD                                  |
|        |        |                |       |             | 8                           | -                                   | -                     | -                                          |
|        |        |                |       |             | 9                           | -                                   | -                     | -                                          |
|        |        |                |       |             | 10                          | -                                   | -                     | -                                          |
|        |        |                |       |             | 11                          | -                                   | SWGPI045              | SWGPI045                                   |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P             | PWM0_CH1P                                  |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2N             | PWM0_CH2N                                  |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P             | PWM1_CH1P                                  |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P             | PWM0_CH0P                                  |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI           | MM_SPI_MOSI                                |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA           | MM_I2C0_SDA                                |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA           | MM_I2C1_SDA                                |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD           | MM_UART_RXD                                |
|        |        |                |       |             | 22                          | -                                   | -                     | -                                          |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn               | DBI_DCn                                    |
|        |        |                |       |             | 24                          | -                                   | -                     | -                                          |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI           | M0_JTAG_TDI                                |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI           | D0_JTAG_TDI                                |
| 10     | 10     | -              | Power | VDDIO1      | -                           | -                                   | VDDIO1                | GPIO0~8, GPIO44~45 power supply, 3.3V/1.8V |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 11     | 11     | VDDIO_1        | DI/DO | PAD_GPIO_0 | 0                           | -                                   | SDH_CLK             | SDH_CLK             |
|        |        |                |       |            | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |            | 2                           | -                                   | -                   | -                   |
|        |        |                |       |            | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |            | 4                           | -                                   | PDM_0_IN            | PDM_0_IN            |
|        |        |                |       |            | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |            | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |            | 7                           | uart_sig_0_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |            |                             | uart_sig_0_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |            |                             | uart_sig_0_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |            |                             | uart_sig_0_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |            |                             | uart_sig_0_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |            |                             | uart_sig_0_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |            |                             | uart_sig_0_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |            |                             | uart_sig_0_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |            |                             | uart_sig_0_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |            |                             | uart_sig_0_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |            |                             | uart_sig_0_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |            |                             | uart_sig_0_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |            | 8                           | -                                   | -                   | -                   |
|        |        |                |       |            | 9                           | -                                   | -                   | -                   |
|        |        |                |       |            | 10                          | -                                   | USB20_RREF_EXT      | USB20_RREF_EXT      |
|        |        |                |       |            | 11                          | -                                   | SWGPIO0             | SWGPIO0             |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |            | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |            | 22                          | -                                   | -                   | -                   |
|        |        |                |       |            | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |            | 24                          | -                                   | -                   | -                   |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 12     | 12     | VDDIO_1        | DI/DO | PAD_GPIO_1 | 0                           | -                                   | SDH_CMD           | SDH_CMD     |
|        |        |                |       |            | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |            | 2                           | -                                   | -                 | -           |
|        |        |                |       |            | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |            | 4                           | -                                   | PDM_1_IN          | PDM_1_IN    |
|        |        |                |       |            | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |            | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |            | 7                           | uart_sig_1_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |            |                             | uart_sig_1_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |            |                             | uart_sig_1_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |            |                             | uart_sig_1_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |            |                             | uart_sig_1_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |            |                             | uart_sig_1_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |            |                             | uart_sig_1_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |            |                             | uart_sig_1_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |            |                             | uart_sig_1_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |            |                             | uart_sig_1_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |            |                             | uart_sig_1_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |            |                             | uart_sig_1_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |            | 8                           | -                                   | -                 | -           |
|        |        |                |       |            | 9                           | -                                   | -                 | -           |
|        |        |                |       |            | 10                          | -                                   | -                 | -           |
|        |        |                |       |            | 11                          | -                                   | SWGPI01           | SWGPI01     |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH0N         | PWM0_CH0N   |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |            | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |            | 22                          | -                                   | -                 | -           |
|        |        |                |       |            | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |            | 24                          | -                                   | -                 | -           |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 13     | 13     | VDDIO_1        | DI/DO | PAD_GPIO_2 | 0                           | -                                   | SDH_DAT0          | SDH_DAT0          |
|        |        |                |       |            | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |            | 2                           | -                                   | -                 | -                 |
|        |        |                |       |            | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |            | 4                           | -                                   | PDM_CLK_O         | PDM_CLK_O         |
|        |        |                |       |            | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |            | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |            | 7                           | uart_sig_2_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |            |                             | uart_sig_2_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |            |                             | uart_sig_2_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |            |                             | uart_sig_2_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |            |                             | uart_sig_2_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |            |                             | uart_sig_2_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |            |                             | uart_sig_2_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |            |                             | uart_sig_2_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |            |                             | uart_sig_2_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |            |                             | uart_sig_2_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |            |                             | uart_sig_2_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |            |                             | uart_sig_2_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |            | 8                           | -                                   | -                 | -                 |
|        |        |                |       |            | 9                           | -                                   | -                 | -                 |
|        |        |                |       |            | 10                          | -                                   | -                 | -                 |
|        |        |                |       |            | 11                          | -                                   | SWGPIO2           | SWGPIO2           |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |            | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |            | 22                          | -                                   | -                 | -                 |
|        |        |                |       |            | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |            | 24                          | -                                   | -                 | -                 |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 14     | 14     | VDDIO_1        | DI/DO | PAD_GPIO_3 | 0                           | -                                   | SDH_DAT1          | SDH_DAT1          |
|        |        |                |       |            | 1                           | -                                   | SPI_SCLK          | SPI_SCLK          |
|        |        |                |       |            | 2                           | -                                   | -                 | -                 |
|        |        |                |       |            | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O |
|        |        |                |       |            | 4                           | -                                   | PDM_0_IN          | PDM_0_IN          |
|        |        |                |       |            | 5                           | -                                   | I2C0_SDA          | I2C0_SDA          |
|        |        |                |       |            | 6                           | -                                   | I2C1_SDA          | I2C1_SDA          |
|        |        |                |       |            | 7                           | uart_sig_3_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |            |                             | uart_sig_3_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |            |                             | uart_sig_3_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |            |                             | uart_sig_3_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |            |                             | uart_sig_3_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |            |                             | uart_sig_3_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |            |                             | uart_sig_3_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |            |                             | uart_sig_3_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |            |                             | uart_sig_3_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |            |                             | uart_sig_3_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |            |                             | uart_sig_3_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |            |                             | uart_sig_3_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |            | 8                           | -                                   | -                 | -                 |
|        |        |                |       |            | 9                           | -                                   | -                 | -                 |
|        |        |                |       |            | 10                          | -                                   | -                 | -                 |
|        |        |                |       |            | 11                          | -                                   | SWGPIO3           | SWGPIO3           |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH1N         | PWM0_CH1N         |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P         |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK       |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA       |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA       |
|        |        |                |       |            | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS       |
|        |        |                |       |            | 22                          | -                                   | -                 | -                 |
|        |        |                |       |            | 23                          | -                                   | DBI_SDA           | DBI_SDA           |
|        |        |                |       |            | 24                          | -                                   | -                 | -                 |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO       |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 15     | 15     | VDDIO_1        | DI/DO | PAD_GPIO_4 | 0                           | -                                   | SDH_DAT2            | SDH_DAT2            |
|        |        |                |       |            | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |            | 2                           | -                                   | -                   | -                   |
|        |        |                |       |            | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |            | 4                           | -                                   | PDM_1_IN            | PDM_1_IN            |
|        |        |                |       |            | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |            | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |            | 7                           | uart_sig_4_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |            |                             | uart_sig_4_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |            |                             | uart_sig_4_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |            |                             | uart_sig_4_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |            |                             | uart_sig_4_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |            |                             | uart_sig_4_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |            |                             | uart_sig_4_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |            |                             | uart_sig_4_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |            |                             | uart_sig_4_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |            |                             | uart_sig_4_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |            |                             | uart_sig_4_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |            |                             | uart_sig_4_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |            | 8                           | -                                   | -                   | -                   |
|        |        |                |       |            | 9                           | -                                   | -                   | -                   |
|        |        |                |       |            | 10                          | -                                   | ADC_CH2             | ADC_CH2             |
|        |        |                |       |            | 11                          | -                                   | SWGPIQ4             | SWGPIQ4             |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH2P           | PWM0_CH2P           |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |            | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |            | 22                          | -                                   | -                   | -                   |
|        |        |                |       |            | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |            | 24                          | -                                   | -                   | -                   |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 16     | 16     | VDDIO_1        | DI/DO | PAD_GPIO_5 | 0                           | -                                   | SDH_DAT3          | SDH_DAT3    |
|        |        |                |       |            | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |            | 2                           | -                                   | -                 | -           |
|        |        |                |       |            | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |            | 4                           | -                                   | PDM_CLK_O         | PDM_CLK_O   |
|        |        |                |       |            | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |            | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |            | 7                           | uart_sig_5_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |            |                             | uart_sig_5_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |            |                             | uart_sig_5_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |            |                             | uart_sig_5_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |            |                             | uart_sig_5_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |            |                             | uart_sig_5_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |            |                             | uart_sig_5_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |            |                             | uart_sig_5_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |            |                             | uart_sig_5_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |            |                             | uart_sig_5_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |            |                             | uart_sig_5_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |            |                             | uart_sig_5_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |            | 8                           | -                                   | -                 | -           |
|        |        |                |       |            | 9                           | -                                   | -                 | -           |
|        |        |                |       |            | 10                          | -                                   | ADC_CH1           | ADC_CH1     |
|        |        |                |       |            | 11                          | -                                   | SWGPIOS           | SWGPIOS     |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH2N         | PWM0_CH2N   |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |            | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |            | 22                          | -                                   | -                 | -           |
|        |        |                |       |            | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |            | 24                          | -                                   | -                 | -           |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 17     | 17     | VDDIO_1        | DI/DO | PAD_GPIO_6 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |            | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |            | 2                           | -                                   | -                 | -                 |
|        |        |                |       |            | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |            | 4                           | -                                   | -                 | -                 |
|        |        |                |       |            | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |            | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |            | 7                           | uart_sig_6_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |            |                             | uart_sig_6_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |            |                             | uart_sig_6_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |            |                             | uart_sig_6_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |            |                             | uart_sig_6_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |            |                             | uart_sig_6_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |            |                             | uart_sig_6_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |            |                             | uart_sig_6_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |            |                             | uart_sig_6_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |            |                             | uart_sig_6_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |            |                             | uart_sig_6_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |            |                             | uart_sig_6_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |            | 8                           | -                                   | -                 | -                 |
|        |        |                |       |            | 9                           | -                                   | -                 | -                 |
|        |        |                |       |            | 10                          | -                                   | ADC_CH4           | ADC_CH4           |
|        |        |                |       |            | 11                          | -                                   | SWGPI06           | SWGPI06           |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |            | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |            | 22                          | -                                   | -                 | -                 |
|        |        |                |       |            | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |            | 24                          | -                                   | -                 | -                 |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

**Table 3.1: Pin Description**

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function<br>Select Number | Peripheral Internal<br>Function Select | PAD Main<br>Function | Description       |
|--------|--------|----------------|-------|------------|--------------------------------|----------------------------------------|----------------------|-------------------|
| 18     | 18     | VDDIO_1        | DI/DO | PAD_GPIO_7 | 0                              | -                                      | -                    | -                 |
|        |        |                |       |            | 1                              | -                                      | SPI_SCLK             | SPI_SCLK          |
|        |        |                |       |            | 2                              | -                                      | -                    | -                 |
|        |        |                |       |            | 3                              | -                                      | I2S_DO/I2S_RCLK_O    | I2S_DO/I2S_RCLK_O |
|        |        |                |       |            | 4                              | -                                      | -                    | -                 |
|        |        |                |       |            | 5                              | -                                      | I2C0_SDA             | I2C0_SDA          |
|        |        |                |       |            | 6                              | -                                      | I2C1_SDA             | I2C1_SDA          |
|        |        |                |       |            | 7                              | uart_sig_7_sel=0                       | UART0_RTS            | UART0_RTS         |
|        |        |                |       |            |                                | uart_sig_7_sel=1                       | UART0_CTS            | UART0_CTS         |
|        |        |                |       |            |                                | uart_sig_7_sel=2                       | UART0_TXD            | UART0_TXD         |
|        |        |                |       |            |                                | uart_sig_7_sel=3                       | UART0_RXD            | UART0_RXD         |
|        |        |                |       |            |                                | uart_sig_7_sel=4                       | UART1_RTS            | UART1_RTS         |
|        |        |                |       |            |                                | uart_sig_7_sel=5                       | UART1_CTS            | UART1_CTS         |
|        |        |                |       |            |                                | uart_sig_7_sel=6                       | UART1_TXD            | UART1_TXD         |
|        |        |                |       |            |                                | uart_sig_7_sel=7                       | UART1_RXD            | UART1_RXD         |
|        |        |                |       |            |                                | uart_sig_7_sel=8                       | UART2_RTS            | UART2_RTS         |
|        |        |                |       |            |                                | uart_sig_7_sel=9                       | UART2_CTS            | UART2_CTS         |
|        |        |                |       |            |                                | uart_sig_7_sel=10                      | UART2_TXD            | UART2_TXD         |
|        |        |                |       |            |                                | uart_sig_7_sel=11                      | UART2_RXD            | UART2_RXD         |
|        |        |                |       |            | 8                              | -                                      | -                    | -                 |
|        |        |                |       |            | 9                              | -                                      | -                    | -                 |
|        |        |                |       |            | 10                             | -                                      | -                    | -                 |
|        |        |                |       |            | 11                             | -                                      | SWGPIO7              | SWGPIO7           |
|        |        |                |       |            | 16                             | reg_pwm1_io_sel=0                      | PWM0_CH3P            | PWM0_CH3P         |
|        |        |                |       |            |                                | reg_pwm1_io_sel=1                      | PWM0_CH3N            | PWM0_CH3N         |
|        |        |                |       |            | 17                             | reg_pwm2_io_sel=0                      | PWM1_CH3P            | PWM1_CH3P         |
|        |        |                |       |            |                                | reg_pwm2_io_sel=1                      | PWM0_CH2P            | PWM0_CH2P         |
|        |        |                |       |            | 18                             | -                                      | MM_SPI_SCLK          | MM_SPI_SCLK       |
|        |        |                |       |            | 19                             | -                                      | MM_I2C0_SDA          | MM_I2C0_SDA       |
|        |        |                |       |            | 20                             | -                                      | MM_I2C1_SDA          | MM_I2C1_SDA       |
|        |        |                |       |            | 21                             | -                                      | MM_UART_CTS          | MM_UART_CTS       |
|        |        |                |       |            | 22                             | -                                      | -                    | -                 |
|        |        |                |       |            | 23                             | -                                      | DBI_SDA              | DBI_SDA           |
|        |        |                |       |            | 24                             | -                                      | -                    | -                 |
|        |        |                |       |            | 26                             | -                                      | M0_JTAG_TDO          | M0_JTAG_TDO       |
|        |        |                |       |            | 27                             | -                                      | D0_JTAG_TDO          | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type   | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description                                                                              |
|--------|--------|----------------|--------|-------------|-----------------------------|-------------------------------------|---------------------|------------------------------------------------------------------------------------------|
| 19     | 19     | VDDIO_1        | DI/DO  | PAD_GPIO_8  | 0                           | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 1                           | -                                   | SPI_SS              | SPI_SS                                                                                   |
|        |        |                |        |             | 2                           | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK                                                                                 |
|        |        |                |        |             | 4                           | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL                                                                                 |
|        |        |                |        |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL                                                                                 |
|        |        |                |        |             | 7                           | uart_sig_8_sel=0                    | UART0_RTS           | UART0_RTS                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=1                    | UART0_CTS           | UART0_CTS                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=2                    | UART0_TXD           | UART0_TXD                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=3                    | UART0_RXD           | UART0_RXD                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=4                    | UART1_RTS           | UART1_RTS                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=5                    | UART1_CTS           | UART1_CTS                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=6                    | UART1_TXD           | UART1_TXD                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=7                    | UART1_RXD           | UART1_RXD                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=8                    | UART2_RTS           | UART2_RTS                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=9                    | UART2_CTS           | UART2_CTS                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=10                   | UART2_TXD           | UART2_TXD                                                                                |
|        |        |                |        |             |                             | uart_sig_8_sel=11                   | UART2_RXD           | UART2_RXD                                                                                |
|        |        |                |        |             | 8                           | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 9                           | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 10                          | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 11                          | -                                   | SWGPIO8             | SWGPIO8                                                                                  |
|        |        |                |        |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P                                                                                |
|        |        |                |        |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0P           | PWM0_CH0P                                                                                |
|        |        |                |        |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P                                                                                |
|        |        |                |        |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT                                                                           |
|        |        |                |        |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS                                                                                |
|        |        |                |        |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL                                                                              |
|        |        |                |        |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL                                                                              |
|        |        |                |        |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD                                                                              |
|        |        |                |        |             | 22                          | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub>                                                                      |
|        |        |                |        |             | 24                          | -                                   | -                   | -                                                                                        |
|        |        |                |        |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK                                                                             |
|        |        |                |        |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK                                                                              |
| 20     | 20     | -              | Power  | VDDCORE     | -                           | -                                   | VDDCORE             | Core power, 1.1V                                                                         |
| 21     | 21     | -              | Power  | VDD33_RF    | -                           | -                                   | VDD33_RF            | RF transmitter power supply, 3.3V                                                        |
| 22     | 22     | -              | Power  | VDD33_RF    | -                           | -                                   | VDD33_RF            | RF transmitter power supply, 3.3V                                                        |
| 23     | 23     | AVDD15         | Analog | ANT         | -                           | -                                   | ANT                 | RF signal pin                                                                            |
| 24     | 24     | -              | Power  | AVDD15_RF   | -                           | -                                   | AVDD15_RF           | Integrated LDO output, RF circuit power supply, 1.5V, connected to decoupling capacitors |
| 25     | 25     | -              | Power  | AVDD18_RF   | -                           | -                                   | AVDD18_RF           | Integrated LDO input, 1.8V (connected to the third pin VDD18_OUT)/3.3V                   |
| 26     | -      | -              | Power  | RSTB_RTC    | -                           | -                                   | RSTB_RTC            | Real-time clock circuit reset, active low                                                |
| 28     | 26     | AVDD33         | Analog | PU_CHIP     | -                           | -                                   | PU_CHIP             | Chip enable, active high                                                                 |
| 27     | -      | -              | Power  | AVDD33_RTC  | -                           | -                                   | AVDD33_RTC          | Real-time clock circuit power supply, 3.3V                                               |
| 29     | 27     | -              | Power  | VDDIO2(AON) | -                           | -                                   | VDDIO2(AON)         | GPIO11~15, GPIO40~41 and AON circuit power input, 3.3V                                   |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name   | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|------------|-----------------------------|-------------------------------------|-------------------|-------------|
| -      | 28     | AVDD33         | DI/DO | PAD_GPIO_9 | 0                           | -                                   | -                 | -           |
|        |        |                |       |            | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |            | 2                           | -                                   | -                 | -           |
|        |        |                |       |            | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |            | 4                           | -                                   | -                 | -           |
|        |        |                |       |            | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |            | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |            | 7                           | uart_sig_9_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |            |                             | uart_sig_9_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |            |                             | uart_sig_9_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |            |                             | uart_sig_9_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |            |                             | uart_sig_9_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |            |                             | uart_sig_9_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |            |                             | uart_sig_9_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |            |                             | uart_sig_9_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |            |                             | uart_sig_9_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |            |                             | uart_sig_9_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |            |                             | uart_sig_9_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |            |                             | uart_sig_9_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |            | 8                           | -                                   | -                 | -           |
|        |        |                |       |            | 9                           | -                                   | -                 | -           |
|        |        |                |       |            | 10                          | -                                   | -                 | -           |
|        |        |                |       |            | 11                          | -                                   | SWGPI09           | SWGPI09     |
|        |        |                |       |            | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |            |                             | reg_pwm1_io_sel=1                   | PWM0_CH0N         | PWM0_CH0N   |
|        |        |                |       |            | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |            |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |            | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |            | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |            | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |            | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |            | 22                          | -                                   | -                 | -           |
|        |        |                |       |            | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |            | 24                          | -                                   | -                 | -           |
|        |        |                |       |            | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |            | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| -      | 29     | AVDD33         | DI/DO | PAD_GPIO_10 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_CLK_O         | PDM_CLK_O         |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_10_sel=0                   | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=1                   | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=2                   | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=3                   | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=4                   | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=5                   | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=6                   | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=7                   | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=8                   | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=9                   | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=10                  | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=11                  | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | -                 | -                 |
|        |        |                |       |             | 9                           | -                                   | -                 | -                 |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPI010          | SWGPI010          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | -                 | -                 |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description                                 |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|---------------------------------------------|
| 30     | 30     | AVDD33         | Clock | XTAL32K_OUT | -                           | XTAL32K_OUT                         | XTAL32K_OUT       | Connect to RTC passive crystal/active clock |
|        |        | VDDIO_2        | DI/DO | PAD_GPIO_41 | 0                           | -                                   | -                 | -                                           |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI                                    |
|        |        |                |       |             | 2                           | -                                   | -                 | -                                           |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS                                      |
|        |        |                |       |             | 4                           | -                                   | -                 | -                                           |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA                                    |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA                                    |
|        |        |                |       |             | 7                           | uart_sig_5_sel=0                    | UART0_RTS         | UART0_RTS                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=1                    | UART0_CTS         | UART0_CTS                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=2                    | UART0_TXD         | UART0_TXD                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=3                    | UART0_RXD         | UART0_RXD                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=4                    | UART1_RTS         | UART1_RTS                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=5                    | UART1_CTS         | UART1_CTS                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=6                    | UART1_TXD         | UART1_TXD                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=7                    | UART1_RXD         | UART1_RXD                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=8                    | UART2_RTS         | UART2_RTS                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=9                    | UART2_CTS         | UART2_CTS                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=10                   | UART2_TXD         | UART2_TXD                                   |
|        |        |                |       |             |                             | uart_sig_5_sel=11                   | UART2_RXD         | UART2_RXD                                   |
|        |        |                |       |             | 8                           | -                                   | -                 | -                                           |
|        |        |                |       |             | 9                           | -                                   | -                 | -                                           |
|        |        |                |       |             | 10                          | -                                   | -                 | -                                           |
|        |        |                |       |             | 11                          | -                                   | SWGPI041          | SWGPI041                                    |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P                                   |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0N         | PWM0_CH0N                                   |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P                                   |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P                                   |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI                                 |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA                                 |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA                                 |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD                                 |
|        |        |                |       |             | 22                          | -                                   | -                 | -                                           |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn                                     |
|        |        |                |       |             | 24                          | -                                   | -                 | -                                           |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI                                 |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI                                 |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description                    |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|--------------------------------|
| 31     | 31     | AVDD33         | Clock | XTAL32K_IN  | -                           | XTAL32K_IN                          | XTAL32K_IN        | Connect to RTC passive crystal |
|        |        | VDDIO_2        | DI/DO | PAD_GPIO_40 | 0                           | -                                   | -                 | -                              |
|        |        |                |       |             | 1                           | -                                   | SPI_SS            | SPI_SS                         |
|        |        |                |       |             | 2                           | -                                   | -                 | -                              |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK          | I2S_BCLK                       |
|        |        |                |       |             | 4                           | -                                   | -                 | -                              |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL                       |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL                       |
|        |        |                |       |             | 7                           | uart_sig_4_sel=0                    | UART0_RTS         | UART0_RTS                      |
|        |        |                |       |             |                             | uart_sig_4_sel=1                    | UART0_CTS         | UART0_CTS                      |
|        |        |                |       |             |                             | uart_sig_4_sel=2                    | UART0_TXD         | UART0_TXD                      |
|        |        |                |       |             |                             | uart_sig_4_sel=3                    | UART0_RXD         | UART0_RXD                      |
|        |        |                |       |             |                             | uart_sig_4_sel=4                    | UART1_RTS         | UART1_RTS                      |
|        |        |                |       |             |                             | uart_sig_4_sel=5                    | UART1_CTS         | UART1_CTS                      |
|        |        |                |       |             |                             | uart_sig_4_sel=6                    | UART1_TXD         | UART1_TXD                      |
|        |        |                |       |             |                             | uart_sig_4_sel=7                    | UART1_RXD         | UART1_RXD                      |
|        |        |                |       |             |                             | uart_sig_4_sel=8                    | UART2_RTS         | UART2_RTS                      |
|        |        |                |       |             |                             | uart_sig_4_sel=9                    | UART2_CTS         | UART2_CTS                      |
|        |        |                |       |             |                             | uart_sig_4_sel=10                   | UART2_TXD         | UART2_TXD                      |
|        |        |                |       |             |                             | uart_sig_4_sel=11                   | UART2_RXD         | UART2_RXD                      |
|        |        |                |       |             | 8                           | -                                   | -                 | -                              |
|        |        |                |       |             | 9                           | -                                   | -                 | -                              |
|        |        |                |       |             | 10                          | -                                   | ADC_CH5           | ADC_CH5                        |
|        |        |                |       |             | 11                          | -                                   | SWGPI040          | SWGPI040                       |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P         | PWM0_CH0P                      |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P                      |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P         | PWM1_CH0P                      |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT    | PWM0_BREAK_EXT                 |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS         | MM_SPI_SS                      |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL                    |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL                    |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD       | MM_UART_TXD                    |
|        |        |                |       |             | 22                          | -                                   | DBI_RDn           | DBI_RDn                        |
|        |        |                |       |             | 23                          | -                                   | DBI_CSn           | DBI_CSn                        |
|        |        |                |       |             | 24                          | -                                   | -                 | -                              |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK      | M0_JTAG_TCLK                   |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK       | D0_JTAG_TCK                    |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 32     | 32     | VDDIO_2        | DI/DO | PAD_GPIO_11 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SCLK            | SPI_SCLK            |
|        |        |                |       |             | 2                           | -                                   | -                   | -                   |
|        |        |                |       |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O   | I2S_DO/I2S_RCLK_O   |
|        |        |                |       |             | 4                           | -                                   | -                   | -                   |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA            | I2C0_SDA            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA            | I2C1_SDA            |
|        |        |                |       |             | 7                           | uart_sig_11_sel=0                   | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_11_sel=1                   | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_11_sel=2                   | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_11_sel=3                   | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_11_sel=4                   | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_11_sel=5                   | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_11_sel=6                   | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_11_sel=7                   | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_11_sel=8                   | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_11_sel=9                   | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_11_sel=10                  | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_11_sel=11                  | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | -                   | -                   |
|        |        |                |       |             | 9                           | -                                   | -                   | -                   |
|        |        |                |       |             | 10                          | -                                   | ADC_CH3             | ADC_CH3             |
|        |        |                |       |             | 11                          | -                                   | SWGPIO11            | SWGPIO11            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P           | PWM0_CH3P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1N           | PWM0_CH1N           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P           | PWM1_CH3P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P           | PWM0_CH2P           |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SCLK         | MM_SPI_SCLK         |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA         | MM_I2C0_SDA         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA         | MM_I2C1_SDA         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_CTS         | MM_UART_CTS         |
|        |        |                |       |             | 22                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 23                          | -                                   | DBI_SDA             | DBI_SDA             |
|        |        |                |       |             | 24                          | -                                   | -                   | -                   |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDO         | M0_JTAG_TDO         |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDO         | D0_JTAG_TDO         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description    |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|----------------|
| 33     | 33     | VDDIO_2        | DI/DO | PAD_GPIO_12 | 0                           | -                                   | -                 | -              |
|        |        |                |       |             | 1                           | -                                   | SPI_SS            | SPI_SS         |
|        |        |                |       |             | 2                           | -                                   | -                 | -              |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK          | I2S_BCLK       |
|        |        |                |       |             | 4                           | -                                   | -                 | -              |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL       |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL       |
|        |        |                |       |             | 7                           | uart_sig_0_sel=0                    | UART0_RTS         | UART0_RTS      |
|        |        |                |       |             |                             | uart_sig_0_sel=1                    | UART0_CTS         | UART0_CTS      |
|        |        |                |       |             |                             | uart_sig_0_sel=2                    | UART0_TXD         | UART0_TXD      |
|        |        |                |       |             |                             | uart_sig_0_sel=3                    | UART0_RXD         | UART0_RXD      |
|        |        |                |       |             |                             | uart_sig_0_sel=4                    | UART1_RTS         | UART1_RTS      |
|        |        |                |       |             |                             | uart_sig_0_sel=5                    | UART1_CTS         | UART1_CTS      |
|        |        |                |       |             |                             | uart_sig_0_sel=6                    | UART1_TXD         | UART1_TXD      |
|        |        |                |       |             |                             | uart_sig_0_sel=7                    | UART1_RXD         | UART1_RXD      |
|        |        |                |       |             |                             | uart_sig_0_sel=8                    | UART2_RTS         | UART2_RTS      |
|        |        |                |       |             |                             | uart_sig_0_sel=9                    | UART2_CTS         | UART2_CTS      |
|        |        |                |       |             |                             | uart_sig_0_sel=10                   | UART2_TXD         | UART2_TXD      |
|        |        |                |       |             |                             | uart_sig_0_sel=11                   | UART2_RXD         | UART2_RXD      |
|        |        |                |       |             | 8                           | -                                   | -                 | -              |
|        |        |                |       |             | 9                           | -                                   | -                 | -              |
|        |        |                |       |             | 10                          | -                                   | ADC_CH6           | ADC_CH6        |
|        |        |                |       |             | 11                          | -                                   | SWGPI012          | SWGPI012       |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P         | PWM0_CH0P      |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P      |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P         | PWM1_CH0P      |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT    | PWM0_BREAK_EXT |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS         | MM_SPI_SS      |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL    |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL    |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD       | MM_UART_TXD    |
|        |        |                |       |             | 22                          | -                                   | DBI_DCn           | DBI_DCn        |
|        |        |                |       |             | 23                          | -                                   | DBI_CSn           | DBI_CSn        |
|        |        |                |       |             | 24                          | -                                   | DPI_VS            | DPI_VS         |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK      | M0_JTAG_TCLK   |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK       | D0_JTAG_TCK    |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 34     | 34     | VDDIO_2        | DI/DO | PAD_GPIO_13 | 0                           | -                                   | -                 | -           |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |             | 2                           | -                                   | -                 | -           |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |             | 4                           | -                                   | -                 | -           |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |             | 7                           | uart_sig_1_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |             | 8                           | -                                   | -                 | -           |
|        |        |                |       |             | 9                           | -                                   | -                 | -           |
|        |        |                |       |             | 10                          | -                                   | ADC_CH7           | ADC_CH7     |
|        |        |                |       |             | 11                          | -                                   | SWGPI013          | SWGPI013    |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2N         | PWM0_CH2N   |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |             | 22                          | -                                   | DBI_WRn           | DBI_WRn     |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |             | 24                          | -                                   | DPI_HS            | DPI_HS      |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

**Table 3.1: Pin Description**

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function<br>Select Number | Peripheral Internal<br>Function Select | PAD Main<br>Function | Description       |
|--------|--------|----------------|-------|-------------|--------------------------------|----------------------------------------|----------------------|-------------------|
| 35     | 35     | VDDIO_2        | DI/DO | PAD_GPIO_14 | 0                              | -                                      | -                    | -                 |
|        |        |                |       |             | 1                              | -                                      | SPI_MISO             | SPI_MISO          |
|        |        |                |       |             | 2                              | -                                      | -                    | -                 |
|        |        |                |       |             | 3                              | -                                      | I2S_DI/I2S_RCLK_O    | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                              | -                                      | -                    | -                 |
|        |        |                |       |             | 5                              | -                                      | I2C0_SCL             | I2C0_SCL          |
|        |        |                |       |             | 6                              | -                                      | I2C1_SCL             | I2C1_SCL          |
|        |        |                |       |             | 7                              | uart_sig_2_sel=0                       | UART0_RTS            | UART0_RTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=1                       | UART0_CTS            | UART0_CTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=2                       | UART0_TXD            | UART0_TXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=3                       | UART0_RXD            | UART0_RXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=4                       | UART1_RTS            | UART1_RTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=5                       | UART1_CTS            | UART1_CTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=6                       | UART1_TXD            | UART1_TXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=7                       | UART1_RXD            | UART1_RXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=8                       | UART2_RTS            | UART2_RTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=9                       | UART2_CTS            | UART2_CTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=10                      | UART2_TXD            | UART2_TXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=11                      | UART2_RXD            | UART2_RXD         |
|        |        |                |       |             | 8                              | -                                      | -                    | -                 |
|        |        |                |       |             | 9                              | -                                      | -                    | -                 |
|        |        |                |       |             | 10                             | -                                      | -                    | -                 |
|        |        |                |       |             | 11                             | -                                      | SWGPIO14             | SWGPIO14          |
|        |        |                |       |             | 16                             | reg_pwm1_io_sel=0                      | PWM0_CH2P            | PWM0_CH2P         |
|        |        |                |       |             |                                | reg_pwm1_io_sel=1                      | PWM0_CH3P            | PWM0_CH3P         |
|        |        |                |       |             | 17                             | reg_pwm2_io_sel=0                      | PWM1_CH2P            | PWM1_CH2P         |
|        |        |                |       |             |                                | reg_pwm2_io_sel=1                      | PWM0_CH1P            | PWM0_CH1P         |
|        |        |                |       |             | 18                             | -                                      | MM_SPI_MISO          | MM_SPI_MISO       |
|        |        |                |       |             | 19                             | -                                      | MM_I2C0_SCL          | MM_I2C0_SCL       |
|        |        |                |       |             | 20                             | -                                      | MM_I2C1_SCL          | MM_I2C1_SCL       |
|        |        |                |       |             | 21                             | -                                      | MM_UART_RTS          | MM_UART_RTS       |
|        |        |                |       |             | 22                             | -                                      | -                    | -                 |
|        |        |                |       |             | 23                             | -                                      | DBI_SCL              | DBI_SCL           |
|        |        |                |       |             | 24                             | -                                      | -                    | -                 |
|        |        |                |       |             | 26                             | -                                      | M0_JTAG_TMS          | M0_JTAG_TMS       |
|        |        |                |       |             | 27                             | -                                      | D0_JTAG_TMS          | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type   | Pin Name         | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description                                                                                       |
|--------|--------|----------------|--------|------------------|-----------------------------|-------------------------------------|-------------------|---------------------------------------------------------------------------------------------------|
| 36     | 36     | VDDIO_2        | DI/DO  | PAD_GPIO_15      | 0                           | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 1                           | -                                   | SPI_SCLK          | SPI_SCLK                                                                                          |
|        |        |                |        |                  | 2                           | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O                                                                                 |
|        |        |                |        |                  | 4                           | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 5                           | -                                   | I2C0_SDA          | I2C0_SDA                                                                                          |
|        |        |                |        |                  | 6                           | -                                   | I2C1_SDA          | I2C1_SDA                                                                                          |
|        |        |                |        |                  | 7                           | uart_sig_3_sel=0                    | UART0_RTS         | UART0_RTS                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=1                    | UART0_CTS         | UART0_CTS                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=2                    | UART0_TXD         | UART0_TXD                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=3                    | UART0_RXD         | UART0_RXD                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=4                    | UART1_RTS         | UART1_RTS                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=5                    | UART1_CTS         | UART1_CTS                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=6                    | UART1_TXD         | UART1_TXD                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=7                    | UART1_RXD         | UART1_RXD                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=8                    | UART2_RTS         | UART2_RTS                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=9                    | UART2_CTS         | UART2_CTS                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=10                   | UART2_TXD         | UART2_TXD                                                                                         |
|        |        |                |        |                  |                             | uart_sig_3_sel=11                   | UART2_RXD         | UART2_RXD                                                                                         |
|        |        |                |        |                  | 8                           | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 9                           | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 10                          | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 11                          | -                                   | SWGPIO15          | SWGPIO15                                                                                          |
|        |        |                |        |                  | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P                                                                                         |
|        |        |                |        |                  |                             | reg_pwm1_io_sel=1                   | PWM0_CH3N         | PWM0_CH3N                                                                                         |
|        |        |                |        |                  | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P                                                                                         |
|        |        |                |        |                  |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P                                                                                         |
|        |        |                |        |                  | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK                                                                                       |
|        |        |                |        |                  | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA                                                                                       |
|        |        |                |        |                  | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA                                                                                       |
|        |        |                |        |                  | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS                                                                                       |
|        |        |                |        |                  | 22                          | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 23                          | -                                   | DBI_SDA           | DBI_SDA                                                                                           |
|        |        |                |        |                  | 24                          | -                                   | -                 | -                                                                                                 |
|        |        |                |        |                  | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO                                                                                       |
|        |        |                |        |                  | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO                                                                                       |
| 37     | 37     | -              | Power  | VDDCORE          | -                           | -                                   | VDDCORE           | Core Power, 1.1V                                                                                  |
| 38     | 38     | AVDD33         | Clock  | XTAL_OUT         | -                           | -                                   | XTAL_OUT          | Connect high frequency passive crystal                                                            |
| 39     | 39     | AVDD33         | Clock  | XTAL_IN          | -                           | -                                   | XTAL_IN           | Connect high frequency passive crystal/active clock                                               |
| 40     | 40     | -              | Power  | AVDD33_CODEC     | -                           | -                                   | AVDD33_CODEC      | Integrated LDO input, 3.3V                                                                        |
| 41     | 41     | -              | Power  | AVDD25_CODEC     | -                           | -                                   | AVDD25_CODEC      | Integrated LDO output, audio codec circuit power supply, 2.5V, connected to decoupling capacitors |
| 42     | 42     | -              | Power  | VSS_CODEC        | -                           | -                                   | VSS_CODEC         | Audio codec circuit ground pin                                                                    |
| 43     | 43     | -              | Power  | VREF             | -                           | -                                   | VREF              | Audio codec circuit reference voltage, connected to decoupling capacitors                         |
| 44     | 44     | -              | Power  | MICBIAS          | -                           | -                                   | MICBIAS           | Microphone Bias/Power                                                                             |
| 45     | 45     | AVDD33/25      | Analog | MIC_1P           | -                           | -                                   | MIC_1P            | Microphone 1 differential input+                                                                  |
| 46     | 46     | AVDD33/25      | Analog | MIC_1N           | -                           | -                                   | MIC_1N            | Microphone 1 differential input-                                                                  |
| 47     | -      | AVDD33/25      | Analog | MIC2P(PADC_AIP1) | -                           | -                                   | MIC2P(PADC_AIP1)  | Microphone 2 differential input+                                                                  |
| 48     | -      | AVDD33/25      | Analog | MIC2N(PADC_AIN1) | -                           | -                                   | MIC2N(PADC_AIN1)  | Microphone 2 differential input-                                                                  |
| 49     | 47     | AVDD33/25      | Analog | LINEOUT_1P       | -                           | -                                   | LINEOUT_1P        | Line 1 single-ended output                                                                        |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| -      | 48     | VDDIO_3        | DI/DO | PAD_GPIO_42 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | -                 | -                 |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_6_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | -                 | -                 |
|        |        |                |       |             | 9                           | -                                   | -                 | -                 |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPIO42          | SWGPIO42          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | -                 | -                 |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| -      | 49     | VDDIO_3        | DI/DO | PAD_GPIO_43 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_SCLK          | SPI_SCLK          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | -                 | -                 |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA          |
|        |        |                |       |             | 7                           | uart_sig_7_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | -                 | -                 |
|        |        |                |       |             | 9                           | -                                   | -                 | -                 |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPIO43          | SWGPIO43          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1N         | PWM0_CH1N         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SDA           | DBI_SDA           |
|        |        |                |       |             | 24                          | -                                   | -                 | -                 |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 50     | 50     | VDDIO_3        | DI/DO | PAD_GPIO_16 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |             | 2                           | -                                   | -                   | -                   |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |             | 4                           | -                                   | PDM_1_IN            | PDM_1_IN            |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |             | 7                           | uart_sig_4_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | -                   | -                   |
|        |        |                |       |             | 9                           | -                                   | CAM_HSYNC           | CAM_HSYNC           |
|        |        |                |       |             | 10                          | -                                   | ADC_CH8             | ADC_CH8             |
|        |        |                |       |             | 11                          | -                                   | SWGPIO16            | SWGPIO16            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |             | 22                          | -                                   | DBI_DB_0            | DBI_DB_0            |
|        |        |                |       |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 24                          | -                                   | DPI_PCLK            | DPI_PCLK            |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

**Table 3.1: Pin Description**

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function<br>Select Number | Peripheral Internal<br>Function Select | PAD Main<br>Function | Description |
|--------|--------|----------------|-------|-------------|--------------------------------|----------------------------------------|----------------------|-------------|
| 51     | 51     | VDDIO_3        | DI/DO | PAD_GPIO_17 | 0                              | -                                      | -                    | -           |
|        |        |                |       |             | 1                              | -                                      | SPI_MOSI             | SPI_MOSI    |
|        |        |                |       |             | 2                              | -                                      | -                    | -           |
|        |        |                |       |             | 3                              | -                                      | I2S_FS               | I2S_FS      |
|        |        |                |       |             | 4                              | -                                      | PDM_CLK_O            | PDM_CLK_O   |
|        |        |                |       |             | 5                              | -                                      | I2C0_SDA             | I2C0_SDA    |
|        |        |                |       |             | 6                              | -                                      | I2C1_SDA             | I2C1_SDA    |
|        |        |                |       |             | 7                              | uart_sig_5_sel=0                       | UART0_RTS            | UART0_RTS   |
|        |        |                |       |             |                                | uart_sig_5_sel=1                       | UART0_CTS            | UART0_CTS   |
|        |        |                |       |             |                                | uart_sig_5_sel=2                       | UART0_TXD            | UART0_TXD   |
|        |        |                |       |             |                                | uart_sig_5_sel=3                       | UART0_RXD            | UART0_RXD   |
|        |        |                |       |             |                                | uart_sig_5_sel=4                       | UART1_RTS            | UART1_RTS   |
|        |        |                |       |             |                                | uart_sig_5_sel=5                       | UART1_CTS            | UART1_CTS   |
|        |        |                |       |             |                                | uart_sig_5_sel=6                       | UART1_TXD            | UART1_TXD   |
|        |        |                |       |             |                                | uart_sig_5_sel=7                       | UART1_RXD            | UART1_RXD   |
|        |        |                |       |             |                                | uart_sig_5_sel=8                       | UART2_RTS            | UART2_RTS   |
|        |        |                |       |             |                                | uart_sig_5_sel=9                       | UART2_CTS            | UART2_CTS   |
|        |        |                |       |             |                                | uart_sig_5_sel=10                      | UART2_TXD            | UART2_TXD   |
|        |        |                |       |             |                                | uart_sig_5_sel=11                      | UART2_RXD            | UART2_RXD   |
|        |        |                |       |             | 8                              | -                                      | -                    | -           |
|        |        |                |       |             | 9                              | -                                      | CAM_VSYNC            | CAM_VSYNC   |
|        |        |                |       |             | 10                             | -                                      | ADC_CH0              | ADC_CH0     |
|        |        |                |       |             | 11                             | -                                      | SWGPI017             | SWGPI017    |
|        |        |                |       |             | 16                             | reg_pwm1_io_sel=0                      | PWM0_CH1P            | PWM0_CH1P   |
|        |        |                |       |             |                                | reg_pwm1_io_sel=1                      | PWM0_CH0N            | PWM0_CH0N   |
|        |        |                |       |             | 17                             | reg_pwm2_io_sel=0                      | PWM1_CH1P            | PWM1_CH1P   |
|        |        |                |       |             |                                | reg_pwm2_io_sel=1                      | PWM0_CH0P            | PWM0_CH0P   |
|        |        |                |       |             | 18                             | -                                      | MM_SPI_MOSI          | MM_SPI_MOSI |
|        |        |                |       |             | 19                             | -                                      | MM_I2C0_SDA          | MM_I2C0_SDA |
|        |        |                |       |             | 20                             | -                                      | MM_I2C1_SDA          | MM_I2C1_SDA |
|        |        |                |       |             | 21                             | -                                      | MM_UART_RXD          | MM_UART_RXD |
|        |        |                |       |             | 22                             | -                                      | DBI_DB_1             | DBI_DB_1    |
|        |        |                |       |             | 23                             | -                                      | DBI_DCn              | DBI_DCn     |
|        |        |                |       |             | 24                             | -                                      | DPI_DATA[0]          | DPI_DATA[0] |
|        |        |                |       |             | 26                             | -                                      | M0_JTAG_TDI          | M0_JTAG_TDI |
|        |        |                |       |             | 27                             | -                                      | D0_JTAG_TDI          | D0_JTAG_TDI |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 52     | 52     | VDDIO_3        | DI/DO | PAD_GPIO_18 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_0_IN          | PDM_0_IN          |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_6_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | -                 | -                 |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT8          | PIX_DAT8          |
|        |        |                |       |             | 10                          | -                                   | ADC_CH9           | ADC_CH9           |
|        |        |                |       |             | 11                          | -                                   | SWGPI018          | SWGPI018          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | DBI_DB_2          | DBI_DB_2          |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[1]       | DPI_DATA[1]       |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 53     | 53     | VDDIO_3        | DI/DO | PAD_GPIO_19 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_SCLK          | SPI_SCLK          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_1_IN          | PDM_1_IN          |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA          |
|        |        |                |       |             | 7                           | uart_sig_7_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | -                 | -                 |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT9          | PIX_DAT9          |
|        |        |                |       |             | 10                          | -                                   | ADC_CH10          | ADC_CH10          |
|        |        |                |       |             | 11                          | -                                   | SWGPI019          | SWGPI019          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1N         | PWM0_CH1N         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS       |
|        |        |                |       |             | 22                          | -                                   | DBI_DB_3          | DBI_DB_3          |
|        |        |                |       |             | 23                          | -                                   | DBI_SDA           | DBI_SDA           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[2]       | DPI_DATA[2]       |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 54     | 54     | VDDIO_3        | DI/DO | PAD_GPIO_20 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |             | 2                           | -                                   | -                   | -                   |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |             | 4                           | -                                   | PDM_CLK_O           | PDM_CLK_O           |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |             | 7                           | uart_sig_8_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | -                   | -                   |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT10           | PIX_DAT10           |
|        |        |                |       |             | 10                          | -                                   | -                   | -                   |
|        |        |                |       |             | 11                          | -                                   | SWGPI020            | SWGPI020            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2P           | PWM0_CH2P           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |             | 22                          | -                                   | DBI_DB_4            | DBI_DB_4            |
|        |        |                |       |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[3]         | DPI_DATA[3]         |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 55     | 55     | VDDIO_3        | DI/DO | PAD_GPIO_21 | 0                           | -                                   | -                 | -           |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |             | 2                           | -                                   | -                 | -           |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |             | 4                           | -                                   | PDM_0_IN          | PDM_0_IN    |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |             | 7                           | uart_sig_9_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |             | 8                           | -                                   | -                 | -           |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT11         | PIX_DAT11   |
|        |        |                |       |             | 10                          | -                                   | -                 | -           |
|        |        |                |       |             | 11                          | -                                   | SWGPI021          | SWGPI021    |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2N         | PWM0_CH2N   |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |             | 22                          | -                                   | DBI_DB_5          | DBI_DB_5    |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[4]       | DPI_DATA[4] |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 56     | 56     | VDDIO_3        | DI/DO | PAD_GPIO_22 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | -                 | -                 |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_10_sel=0                   | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=1                   | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=2                   | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=3                   | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=4                   | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=5                   | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=6                   | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=7                   | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=8                   | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=9                   | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=10                  | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=11                  | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | -                 | -                 |
|        |        |                |       |             | 9                           | -                                   | CAM_HSYNC         | CAM_HSYNC         |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPIO22          | SWGPIO22          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | DBI_DB_6          | DBI_DB_6          |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[5]       | DPI_DATA[5]       |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain    | Type   | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description                                                                                |
|--------|--------|-------------------|--------|-------------|-----------------------------|-------------------------------------|-------------------|--------------------------------------------------------------------------------------------|
| 57     | 57     | VDDIO_3           | DI/DO  | PAD_GPIO_23 | 0                           | -                                   | -                 | -                                                                                          |
|        |        |                   |        |             | 1                           | -                                   | SPI_SCLK          | SPI_SCLK                                                                                   |
|        |        |                   |        |             | 2                           | -                                   | -                 | -                                                                                          |
|        |        |                   |        |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O                                                                          |
|        |        |                   |        |             | 4                           | -                                   | -                 | -                                                                                          |
|        |        |                   |        |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA                                                                                   |
|        |        |                   |        |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA                                                                                   |
|        |        |                   |        |             | 7                           | uart_sig_11_sel=0                   | UART0_RTS         | UART0_RTS                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=1                   | UART0_CTS         | UART0_CTS                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=2                   | UART0_TXD         | UART0_TXD                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=3                   | UART0_RXD         | UART0_RXD                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=4                   | UART1_RTS         | UART1_RTS                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=5                   | UART1_CTS         | UART1_CTS                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=6                   | UART1_TXD         | UART1_TXD                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=7                   | UART1_RXD         | UART1_RXD                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=8                   | UART2_RTS         | UART2_RTS                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=9                   | UART2_CTS         | UART2_CTS                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=10                  | UART2_TXD         | UART2_TXD                                                                                  |
|        |        |                   |        |             |                             | uart_sig_11_sel=11                  | UART2_RXD         | UART2_RXD                                                                                  |
|        |        |                   |        |             | 8                           | -                                   | -                 | -                                                                                          |
|        |        |                   |        |             | 9                           | -                                   | CAM_VSYNC         | CAM_VSYNC                                                                                  |
|        |        |                   |        |             | 10                          | -                                   | -                 | -                                                                                          |
|        |        |                   |        |             | 11                          | -                                   | SWGPIO23          | SWGPIO23                                                                                   |
|        |        |                   |        |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P                                                                                  |
|        |        |                   |        |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH3N         | PWM0_CH3N                                                                                  |
|        |        |                   |        |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P                                                                                  |
|        |        |                   |        |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P                                                                                  |
|        |        |                   |        |             | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK                                                                                |
|        |        |                   |        |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA                                                                                |
|        |        |                   |        |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA                                                                                |
|        |        |                   |        |             | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS                                                                                |
|        |        |                   |        |             | 22                          | -                                   | DBI_DB_7          | DBI_DB_7                                                                                   |
|        |        |                   |        |             | 23                          | -                                   | DBI_SDA           | DBI_SDA                                                                                    |
|        |        |                   |        |             | 24                          | -                                   | DPI_DATA[6]       | DPI_DATA[6]                                                                                |
|        |        |                   |        |             | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO                                                                                |
|        |        |                   |        |             | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO                                                                                |
| 58     | 58     | -                 | Power  | VDDIO3      | -                           | -                                   | VDDIO3            | GPIO16~23 and integrated LDO power input, 1.8V (connected to the third pin VDD18_OUT)3.3V  |
| 59     | 59     | -                 | Power  | AVDD12      | -                           | -                                   | AVDD12            | Integrated LDO output, on-chip pSRAM power supply, 1.2V,connected to decoupling capacitors |
| 60     | 60     | -                 | Power  | AVDD12      | -                           | -                                   | AVDD12            | Integrated LDO output, on-chip pSRAM power supply, 1.2V,connected to decoupling capacitors |
| 61     | 61     | AVDD12_INT (1.2V) | Analog | CSI_DN<1>   | -                           | -                                   | CSI_DN<1>         | MIPI CSI data LANE1 differential input-                                                    |
| 62     | 62     | AVDD12_INT (1.2V) | Analog | CSI_DP<1>   | -                           | -                                   | CSI_DP<1>         | MIPI CSI data LANE1 differential input+                                                    |
| 63     | 63     | AVDD12_INT (1.2V) | Analog | CSI_CLK_DN  | -                           | -                                   | CSI_CLK_DN        | MIPI CSI clock LANE differential input-                                                    |
| 64     | 64     | AVDD12_INT (1.2V) | Analog | CSI_CLK_DP  | -                           | -                                   | CSI_CLK_DP        | MIPI CSI clock LANE differential input+                                                    |
| 65     | 65     | AVDD12_INT (1.2V) | Analog | CSI_DN<0>   | -                           | -                                   | CSI_DN<0>         | MIPI CSI data LANE0 differential input -                                                   |
| 66     | 66     | AVDD12_INT (1.2V) | Analog | CSI_DP<0>   | -                           | -                                   | CSI_DP<0>         | MIPI CSI data LANE0 differential input+                                                    |
| -      | 67     | AVDD12_INT (1.2V) | Analog | DSI_DN<0>   | -                           | -                                   | DSI_DN<0>         | MIPI DSI data LANE0 differential output-                                                   |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain    | Type   | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description                              |
|--------|--------|-------------------|--------|-------------|-----------------------------|-------------------------------------|---------------------|------------------------------------------|
| -      | 68     | AVDD12_INT (1.2V) | Analog | DSI_DP<0>   | -                           | -                                   | DSI_DP<0>           | MIPI DSI data LANE0 differential output+ |
| -      | 69     | AVDD12_INT (1.2V) | Analog | DSI_DN<1>   | -                           | -                                   | DSI_DN<1>           | MIPI DSI data LANE1 differential output- |
| -      | 70     | AVDD12_INT (1.2V) | Analog | DSI_DP<1>   | -                           | -                                   | DSI_DP<1>           | MIPI DSI data LANE1 differential output+ |
| -      | 71     | AVDD12_INT (1.2V) | Analog | DSI_CLK_DN  | -                           | -                                   | DSI_CLK_DN          | MIPI DSI clock LANE differential output- |
| -      | 72     | AVDD12_INT (1.2V) | Analog | DSI_CLK_DP  | -                           | -                                   | DSI_CLK_DP          | MIPI DSI clock LANE differential output+ |
| -      | 73     | AVDD12_INT (1.2V) | Analog | DSI_DN<2>   | -                           | -                                   | DSI_DN<2>           | MIPI DSI data LANE2 differential output- |
| -      | 74     | AVDD12_INT (1.2V) | Analog | DSI_DP<2>   | -                           | -                                   | DSI_DP<2>           | MIPI DSI data LANE2 differential output+ |
| -      | 75     | AVDD12_INT (1.2V) | Analog | DSI_DN<3>   | -                           | -                                   | DSI_DN<3>           | MIPI DSI data LANE3 differential output- |
| -      | 76     | AVDD12_INT (1.2V) | Analog | DSI_DP<3>   | -                           | -                                   | DSI_DP<3>           | MIPI DSI data LANE2 differential output+ |
| 67     | -      | VDDIO_4           | DI/DO  | PAD_GPIO_24 | 0                           | -                                   | -                   | -                                        |
|        |        |                   |        |             | 1                           | -                                   | SPI_SS              | SPI_SS                                   |
|        |        |                   |        |             | 2                           | -                                   | -                   | -                                        |
|        |        |                   |        |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK                                 |
|        |        |                   |        |             | 4                           | -                                   | -                   | -                                        |
|        |        |                   |        |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL                                 |
|        |        |                   |        |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL                                 |
|        |        |                   |        |             | 7                           | uart_sig_0_sel=0                    | UART0_RTS           | UART0_RTS                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=1                    | UART0_CTS           | UART0_CTS                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=2                    | UART0_TXD           | UART0_TXD                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=3                    | UART0_RXD           | UART0_RXD                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=4                    | UART1_RTS           | UART1_RTS                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=5                    | UART1_CTS           | UART1_CTS                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=6                    | UART1_TXD           | UART1_TXD                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=7                    | UART1_RXD           | UART1_RXD                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=8                    | UART2_RTS           | UART2_RTS                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=9                    | UART2_CTS           | UART2_CTS                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=10                   | UART2_TXD           | UART2_TXD                                |
|        |        |                   |        |             |                             | uart_sig_0_sel=11                   | UART2_RXD           | UART2_RXD                                |
|        |        |                   |        |             | 8                           | -                                   | RMII_REF_CLK        | RMII_REF_CLK                             |
|        |        |                   |        |             | 9                           | -                                   | DVP_CLK             | DVP_CLK                                  |
|        |        |                   |        |             | 10                          | -                                   | -                   | -                                        |
|        |        |                   |        |             | 11                          | -                                   | SWGPI024            | SWGPI024                                 |
|        |        |                   |        |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P                                |
|        |        |                   |        |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0P           | PWM0_CH0P                                |
|        |        |                   |        |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P                                |
|        |        |                   |        |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT                           |
|        |        |                   |        |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS                                |
|        |        |                   |        |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL                              |
|        |        |                   |        |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL                              |
|        |        |                   |        |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD                              |
|        |        |                   |        |             | 22                          | -                                   | -                   | -                                        |
|        |        |                   |        |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub>                      |
|        |        |                   |        |             | 24                          | -                                   | DPI_DATA[7]         | DPI_DATA[7]                              |
|        |        |                   |        |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK                             |
|        |        |                   |        |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK                              |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 68     | -      | VDDIO_4        | DI/DO | PAD_GPIO_25 | 0                           | -                                   | -                 | -           |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |             | 2                           | -                                   | -                 | -           |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |             | 4                           | -                                   | PDM_1_IN          | PDM_1_IN    |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |             | 7                           | uart_sig_1_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |             | 8                           | -                                   | RMII_TXD[0]       | RMII_TXD[0] |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT0          | PIX_DAT0    |
|        |        |                |       |             | 10                          | -                                   | -                 | -           |
|        |        |                |       |             | 11                          | -                                   | SWGPIO25          | SWGPIO25    |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0N         | PWM0_CH0N   |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |             | 22                          | -                                   | -                 | -           |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[8]       | DPI_DATA[8] |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 69     | -      | VDDIO_4        | DI/DO | PAD_GPIO_26 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_CLK_O         | PDM_CLK_O         |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_2_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_2_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_2_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_2_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_2_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_2_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_2_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_2_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_2_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_2_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_2_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_2_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | RMII_TXD[1]       | RMII_TXD[1]       |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT1          | PIX_DAT1          |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPIO26          | SWGPIO26          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[9]       | DPI_DATA[9]       |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 70     | -      | VDDIO_4        | DI/DO | PAD_GPIO_27 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_SCLK          | SPI_SCLK          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_0_IN          | PDM_0_IN          |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA          |
|        |        |                |       |             | 7                           | uart_sig_3_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_3_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_3_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_3_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_3_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_3_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_3_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_3_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_3_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_3_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_3_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_3_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | RMII_RXD[0]       | RMII_RXD[0]       |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT2          | PIX_DAT2          |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPIO27          | SWGPIO27          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1N         | PWM0_CH1N         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SDA           | DBI_SDA           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[10]      | DPI_DATA[10]      |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 71     | -      | VDDIO_4        | DI/DO | PAD_GPIO_28 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |             | 2                           | -                                   | -                   | -                   |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |             | 4                           | -                                   | -                   | -                   |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |             | 7                           | uart_sig_4_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_4_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_4_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | RMII_RXD[1]         | RMII_RXD[1]         |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT3            | PIX_DAT3            |
|        |        |                |       |             | 10                          | -                                   | -                   | -                   |
|        |        |                |       |             | 11                          | -                                   | SWGPI028            | SWGPI028            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2P           | PWM0_CH2P           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |             | 22                          | -                                   | -                   | -                   |
|        |        |                |       |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[11]        | DPI_DATA[11]        |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description  |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|--------------|
| 72     | -      | VDDIO_4        | DI/DO | PAD_GPIO_29 | 0                           | -                                   | -                 | -            |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI     |
|        |        |                |       |             | 2                           | -                                   | -                 | -            |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS       |
|        |        |                |       |             | 4                           | -                                   | -                 | -            |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA     |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA     |
|        |        |                |       |             | 7                           | uart_sig_5_sel=0                    | UART0_RTS         | UART0_RTS    |
|        |        |                |       |             |                             | uart_sig_5_sel=1                    | UART0_CTS         | UART0_CTS    |
|        |        |                |       |             |                             | uart_sig_5_sel=2                    | UART0_TXD         | UART0_TXD    |
|        |        |                |       |             |                             | uart_sig_5_sel=3                    | UART0_RXD         | UART0_RXD    |
|        |        |                |       |             |                             | uart_sig_5_sel=4                    | UART1_RTS         | UART1_RTS    |
|        |        |                |       |             |                             | uart_sig_5_sel=5                    | UART1_CTS         | UART1_CTS    |
|        |        |                |       |             |                             | uart_sig_5_sel=6                    | UART1_TXD         | UART1_TXD    |
|        |        |                |       |             |                             | uart_sig_5_sel=7                    | UART1_RXD         | UART1_RXD    |
|        |        |                |       |             |                             | uart_sig_5_sel=8                    | UART2_RTS         | UART2_RTS    |
|        |        |                |       |             |                             | uart_sig_5_sel=9                    | UART2_CTS         | UART2_CTS    |
|        |        |                |       |             |                             | uart_sig_5_sel=10                   | UART2_TXD         | UART2_TXD    |
|        |        |                |       |             |                             | uart_sig_5_sel=11                   | UART2_RXD         | UART2_RXD    |
|        |        |                |       |             | 8                           | -                                   | RMII_RXERR        | RMII_RXERR   |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT4          | PIX_DAT4     |
|        |        |                |       |             | 10                          | -                                   | -                 | -            |
|        |        |                |       |             | 11                          | -                                   | SWGPI029          | SWGPI029     |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P    |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2N         | PWM0_CH2N    |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P    |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P    |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI  |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA  |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA  |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD  |
|        |        |                |       |             | 22                          | -                                   | -                 | -            |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn      |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[12]      | DPI_DATA[12] |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI  |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI  |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 73     | -      | VDDIO_4        | DI/DO | PAD_GPIO_30 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | -                 | -                 |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_6_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_6_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_6_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | RMII_TX_EN        | RMII_TX_EN        |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT5          | PIX_DAT5          |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPI030          | SWGPI030          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[13]      | DPI_DATA[13]      |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 74     | -      | VDDIO_4        | DI/DO | PAD_GPIO_31 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_SCLK          | SPI_SCLK          |
|        |        |                |       |             | 2                           | -                                   | -                 | -                 |
|        |        |                |       |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | -                 | -                 |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA          |
|        |        |                |       |             | 7                           | uart_sig_7_sel=0                    | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=1                    | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=2                    | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=3                    | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=4                    | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=5                    | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=6                    | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=7                    | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=8                    | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=9                    | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_7_sel=10                   | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_7_sel=11                   | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | RMII_RX_DV        | RMII_RX_DV        |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT6          | PIX_DAT6          |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPIO31          | SWGPIO31          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH3N         | PWM0_CH3N         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SDA           | DBI_SDA           |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[14]      | DPI_DATA[14]      |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 75     | -      | VDDIO_4        | DI/DO | PAD_GPIO_32 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |             | 2                           | -                                   | -                   | -                   |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |             | 4                           | -                                   | -                   | -                   |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |             | 7                           | uart_sig_8_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_8_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_8_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | RMII_MDC            | RMII_MDC            |
|        |        |                |       |             | 9                           | -                                   | PIX_DAT7            | PIX_DAT7            |
|        |        |                |       |             | 10                          | -                                   | -                   | -                   |
|        |        |                |       |             | 11                          | -                                   | SWGPI032            | SWGPI032            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |             | 22                          | -                                   | -                   | -                   |
|        |        |                |       |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 24                          | -                                   | DPI_DATA[15]        | DPI_DATA[15]        |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 76     | -      | VDDIO_4        | DI/DO | PAD_GPIO_33 | 0                           | -                                   | -                 | -           |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |             | 2                           | -                                   | -                 | -           |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |             | 4                           | -                                   | -                 | -           |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |             | 7                           | uart_sig_9_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |             |                             | uart_sig_9_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |             |                             | uart_sig_9_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |             | 8                           | -                                   | RMII_MDIO         | RMII_MDIO   |
|        |        |                |       |             | 9                           | -                                   | -                 | -           |
|        |        |                |       |             | 10                          | -                                   | -                 | -           |
|        |        |                |       |             | 11                          | -                                   | SWGPIO33          | SWGPIO33    |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH0N         | PWM0_CH0N   |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |             | 22                          | -                                   | -                 | -           |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |             | 24                          | -                                   | DPI_DE            | DPI_DE      |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |
| 77     | 77     | -              | Power | VDDIO4      | -                           | -                                   | VDDIO4            | VDDIO4      |
| 78     | 78     | -              | Power | VDD18_FLASH | -                           | -                                   | VDD18_FLASH       | VDD18_FLASH |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 79     | 79     | VDDIO_4        | DI/DO | PAD_GPIO_34 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_MISO          | SPI_MISO          |
|        |        |                |       |             | 2                           | -                                   | SF2_CLK           | SF2_CLK           |
|        |        |                |       |             | 3                           | -                                   | I2S_DI/I2S_RCLK_O | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_1_IN          | PDM_1_IN          |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL          | I2C0_SCL          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL          | I2C1_SCL          |
|        |        |                |       |             | 7                           | uart_sig_10_sel=0                   | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=1                   | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=2                   | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=3                   | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=4                   | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=5                   | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=6                   | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=7                   | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=8                   | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=9                   | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_10_sel=10                  | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_10_sel=11                  | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | RMII_RXERR        | RMII_RXERR        |
|        |        |                |       |             | 9                           | -                                   | -                 | -                 |
|        |        |                |       |             | 10                          | -                                   | ADC_CH11          | ADC_CH11          |
|        |        |                |       |             | 11                          | -                                   | SWGPI034          | SWGPI034          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH2P         | PWM1_CH2P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH1P         | PWM0_CH1P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MISO       | MM_SPI_MISO       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL       | MM_I2C0_SCL       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL       | MM_I2C1_SCL       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RTS       | MM_UART_RTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SCL           | DBI_SCL           |
|        |        |                |       |             | 24                          | -                                   | -                 | -                 |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TMS       | M0_JTAG_TMS       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TMS       | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description       |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------------|
| 80     | 80     | VDDIO_4        | DI/DO | PAD_GPIO_35 | 0                           | -                                   | -                 | -                 |
|        |        |                |       |             | 1                           | -                                   | SPI_SCLK          | SPI_SCLK          |
|        |        |                |       |             | 2                           | -                                   | SF2_CS            | SF2_CS            |
|        |        |                |       |             | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O |
|        |        |                |       |             | 4                           | -                                   | PDM_CLK_O         | PDM_CLK_O         |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA          |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA          |
|        |        |                |       |             | 7                           | uart_sig_11_sel=0                   | UART0_RTS         | UART0_RTS         |
|        |        |                |       |             |                             | uart_sig_11_sel=1                   | UART0_CTS         | UART0_CTS         |
|        |        |                |       |             |                             | uart_sig_11_sel=2                   | UART0_TXD         | UART0_TXD         |
|        |        |                |       |             |                             | uart_sig_11_sel=3                   | UART0_RXD         | UART0_RXD         |
|        |        |                |       |             |                             | uart_sig_11_sel=4                   | UART1_RTS         | UART1_RTS         |
|        |        |                |       |             |                             | uart_sig_11_sel=5                   | UART1_CTS         | UART1_CTS         |
|        |        |                |       |             |                             | uart_sig_11_sel=6                   | UART1_TXD         | UART1_TXD         |
|        |        |                |       |             |                             | uart_sig_11_sel=7                   | UART1_RXD         | UART1_RXD         |
|        |        |                |       |             |                             | uart_sig_11_sel=8                   | UART2_RTS         | UART2_RTS         |
|        |        |                |       |             |                             | uart_sig_11_sel=9                   | UART2_CTS         | UART2_CTS         |
|        |        |                |       |             |                             | uart_sig_11_sel=10                  | UART2_TXD         | UART2_TXD         |
|        |        |                |       |             |                             | uart_sig_11_sel=11                  | UART2_RXD         | UART2_RXD         |
|        |        |                |       |             | 8                           | -                                   | RMII_TX_EN        | RMII_TX_EN        |
|        |        |                |       |             | 9                           | -                                   | -                 | -                 |
|        |        |                |       |             | 10                          | -                                   | -                 | -                 |
|        |        |                |       |             | 11                          | -                                   | SWGPI035          | SWGPI035          |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P         |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH1N         | PWM0_CH1N         |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P         |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P         |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK       |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA       |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA       |
|        |        |                |       |             | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS       |
|        |        |                |       |             | 22                          | -                                   | -                 | -                 |
|        |        |                |       |             | 23                          | -                                   | DBI_SDA           | DBI_SDA           |
|        |        |                |       |             | 24                          | -                                   | -                 | -                 |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO       |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function   | Description         |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|---------------------|---------------------|
| 81     | 81     | VDDIO_4        | DI/DO | PAD_GPIO_36 | 0                           | -                                   | -                   | -                   |
|        |        |                |       |             | 1                           | -                                   | SPI_SS              | SPI_SS              |
|        |        |                |       |             | 2                           | -                                   | SF2_D0              | SF2_D0              |
|        |        |                |       |             | 3                           | -                                   | I2S_BCLK            | I2S_BCLK            |
|        |        |                |       |             | 4                           | -                                   | PDM_0_IN            | PDM_0_IN            |
|        |        |                |       |             | 5                           | -                                   | I2C0_SCL            | I2C0_SCL            |
|        |        |                |       |             | 6                           | -                                   | I2C1_SCL            | I2C1_SCL            |
|        |        |                |       |             | 7                           | uart_sig_0_sel=0                    | UART0_RTS           | UART0_RTS           |
|        |        |                |       |             |                             | uart_sig_0_sel=1                    | UART0_CTS           | UART0_CTS           |
|        |        |                |       |             |                             | uart_sig_0_sel=2                    | UART0_TXD           | UART0_TXD           |
|        |        |                |       |             |                             | uart_sig_0_sel=3                    | UART0_RXD           | UART0_RXD           |
|        |        |                |       |             |                             | uart_sig_0_sel=4                    | UART1_RTS           | UART1_RTS           |
|        |        |                |       |             |                             | uart_sig_0_sel=5                    | UART1_CTS           | UART1_CTS           |
|        |        |                |       |             |                             | uart_sig_0_sel=6                    | UART1_TXD           | UART1_TXD           |
|        |        |                |       |             |                             | uart_sig_0_sel=7                    | UART1_RXD           | UART1_RXD           |
|        |        |                |       |             |                             | uart_sig_0_sel=8                    | UART2_RTS           | UART2_RTS           |
|        |        |                |       |             |                             | uart_sig_0_sel=9                    | UART2_CTS           | UART2_CTS           |
|        |        |                |       |             |                             | uart_sig_0_sel=10                   | UART2_TXD           | UART2_TXD           |
|        |        |                |       |             |                             | uart_sig_0_sel=11                   | UART2_RXD           | UART2_RXD           |
|        |        |                |       |             | 8                           | -                                   | RMII_RX_DV          | RMII_RX_DV          |
|        |        |                |       |             | 9                           | -                                   | -                   | -                   |
|        |        |                |       |             | 10                          | -                                   | -                   | -                   |
|        |        |                |       |             | 11                          | -                                   | SWGPIO36            | SWGPIO36            |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH0P           | PWM0_CH0P           |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2P           | PWM0_CH2P           |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH0P           | PWM1_CH0P           |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_BREAK_EXT      | PWM0_BREAK_EXT      |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_SS           | MM_SPI_SS           |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SCL         | MM_I2C0_SCL         |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SCL         | MM_I2C1_SCL         |
|        |        |                |       |             | 21                          | -                                   | MM_UART_TXD         | MM_UART_TXD         |
|        |        |                |       |             | 22                          | -                                   | -                   | -                   |
|        |        |                |       |             | 23                          | -                                   | DBI_CS <sub>n</sub> | DBI_CS <sub>n</sub> |
|        |        |                |       |             | 24                          | -                                   | -                   | -                   |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TCLK        | M0_JTAG_TCLK        |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TCK         | D0_JTAG_TCK         |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description |
|--------|--------|----------------|-------|-------------|-----------------------------|-------------------------------------|-------------------|-------------|
| 82     | 82     | VDDIO_4        | DI/DO | PAD_GPIO_37 | 0                           | -                                   | -                 | -           |
|        |        |                |       |             | 1                           | -                                   | SPI_MOSI          | SPI_MOSI    |
|        |        |                |       |             | 2                           | -                                   | SF2_D1            | SF2_D1      |
|        |        |                |       |             | 3                           | -                                   | I2S_FS            | I2S_FS      |
|        |        |                |       |             | 4                           | -                                   | PDM_1_IN          | PDM_1_IN    |
|        |        |                |       |             | 5                           | -                                   | I2C0_SDA          | I2C0_SDA    |
|        |        |                |       |             | 6                           | -                                   | I2C1_SDA          | I2C1_SDA    |
|        |        |                |       |             | 7                           | uart_sig_1_sel=0                    | UART0_RTS         | UART0_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=1                    | UART0_CTS         | UART0_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=2                    | UART0_TXD         | UART0_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=3                    | UART0_RXD         | UART0_RXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=4                    | UART1_RTS         | UART1_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=5                    | UART1_CTS         | UART1_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=6                    | UART1_TXD         | UART1_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=7                    | UART1_RXD         | UART1_RXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=8                    | UART2_RTS         | UART2_RTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=9                    | UART2_CTS         | UART2_CTS   |
|        |        |                |       |             |                             | uart_sig_1_sel=10                   | UART2_TXD         | UART2_TXD   |
|        |        |                |       |             |                             | uart_sig_1_sel=11                   | UART2_RXD         | UART2_RXD   |
|        |        |                |       |             | 8                           | -                                   | RMII_MDC          | RMII_MDC    |
|        |        |                |       |             | 9                           | -                                   | -                 | -           |
|        |        |                |       |             | 10                          | -                                   | -                 | -           |
|        |        |                |       |             | 11                          | -                                   | SWGPI037          | SWGPI037    |
|        |        |                |       |             | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH1P         | PWM0_CH1P   |
|        |        |                |       |             |                             | reg_pwm1_io_sel=1                   | PWM0_CH2N         | PWM0_CH2N   |
|        |        |                |       |             | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH1P         | PWM1_CH1P   |
|        |        |                |       |             |                             | reg_pwm2_io_sel=1                   | PWM0_CH0P         | PWM0_CH0P   |
|        |        |                |       |             | 18                          | -                                   | MM_SPI_MOSI       | MM_SPI_MOSI |
|        |        |                |       |             | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA |
|        |        |                |       |             | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA |
|        |        |                |       |             | 21                          | -                                   | MM_UART_RXD       | MM_UART_RXD |
|        |        |                |       |             | 22                          | -                                   | -                 | -           |
|        |        |                |       |             | 23                          | -                                   | DBI_DCn           | DBI_DCn     |
|        |        |                |       |             | 24                          | -                                   | -                 | -           |
|        |        |                |       |             | 26                          | -                                   | M0_JTAG_TDI       | M0_JTAG_TDI |
|        |        |                |       |             | 27                          | -                                   | D0_JTAG_TDI       | D0_JTAG_TDI |

**Table 3.1: Pin Description**

| BL808C | BL808D | Voltage Domain | Type  | Pin Name    | GPIO Function<br>Select Number | Peripheral Internal<br>Function Select | PAD Main<br>Function | Description       |
|--------|--------|----------------|-------|-------------|--------------------------------|----------------------------------------|----------------------|-------------------|
| 83     | 83     | VDDIO_4        | DI/DO | PAD_GPIO_38 | 0                              | -                                      | -                    | -                 |
|        |        |                |       |             | 1                              | -                                      | SPI_MISO             | SPI_MISO          |
|        |        |                |       |             | 2                              | -                                      | SF2_D2               | SF2_D2            |
|        |        |                |       |             | 3                              | -                                      | I2S_DI/I2S_RCLK_O    | I2S_DI/I2S_RCLK_O |
|        |        |                |       |             | 4                              | -                                      | PDM_CLK_O            | PDM_CLK_O         |
|        |        |                |       |             | 5                              | -                                      | I2C0_SCL             | I2C0_SCL          |
|        |        |                |       |             | 6                              | -                                      | I2C1_SCL             | I2C1_SCL          |
|        |        |                |       |             | 7                              | uart_sig_2_sel=0                       | UART0_RTS            | UART0_RTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=1                       | UART0_CTS            | UART0_CTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=2                       | UART0_TXD            | UART0_TXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=3                       | UART0_RXD            | UART0_RXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=4                       | UART1_RTS            | UART1_RTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=5                       | UART1_CTS            | UART1_CTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=6                       | UART1_TXD            | UART1_TXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=7                       | UART1_RXD            | UART1_RXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=8                       | UART2_RTS            | UART2_RTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=9                       | UART2_CTS            | UART2_CTS         |
|        |        |                |       |             |                                | uart_sig_2_sel=10                      | UART2_TXD            | UART2_TXD         |
|        |        |                |       |             |                                | uart_sig_2_sel=11                      | UART2_RXD            | UART2_RXD         |
|        |        |                |       |             | 8                              | -                                      | RMII_MDIO            | RMII_MDIO         |
|        |        |                |       |             | 9                              | -                                      | -                    | -                 |
|        |        |                |       |             | 10                             | -                                      | -                    | -                 |
|        |        |                |       |             | 11                             | -                                      | SWGPI038             | SWGPI038          |
|        |        |                |       |             | 16                             | reg_pwm1_io_sel=0                      | PWM0_CH2P            | PWM0_CH2P         |
|        |        |                |       |             |                                | reg_pwm1_io_sel=1                      | PWM0_CH3P            | PWM0_CH3P         |
|        |        |                |       |             | 17                             | reg_pwm2_io_sel=0                      | PWM1_CH2P            | PWM1_CH2P         |
|        |        |                |       |             |                                | reg_pwm2_io_sel=1                      | PWM0_CH1P            | PWM0_CH1P         |
|        |        |                |       |             | 18                             | -                                      | MM_SPI_MISO          | MM_SPI_MISO       |
|        |        |                |       |             | 19                             | -                                      | MM_I2C0_SCL          | MM_I2C0_SCL       |
|        |        |                |       |             | 20                             | -                                      | MM_I2C1_SCL          | MM_I2C1_SCL       |
|        |        |                |       |             | 21                             | -                                      | MM_UART_RTS          | MM_UART_RTS       |
|        |        |                |       |             | 22                             | -                                      | -                    | -                 |
|        |        |                |       |             | 23                             | -                                      | DBI_SCL              | DBI_SCL           |
|        |        |                |       |             | 24                             | -                                      | -                    | -                 |
|        |        |                |       |             | 26                             | -                                      | M0_JTAG_TMS          | M0_JTAG_TMS       |
|        |        |                |       |             | 27                             | -                                      | D0_JTAG_TMS          | D0_JTAG_TMS       |

Table 3.1: Pin Description

| BL808C | BL808D | Voltage Domain | Type  | Pin Name     | GPIO Function Select Number | Peripheral Internal Function Select | PAD Main Function | Description                                     |
|--------|--------|----------------|-------|--------------|-----------------------------|-------------------------------------|-------------------|-------------------------------------------------|
| 84     | 84     | VDDIO_4        | DI/DO | PAD_GPIO_39  | 0                           | -                                   | -                 | -                                               |
|        |        |                |       |              | 1                           | -                                   | SPI_SCLK          | SPI_SCLK                                        |
|        |        |                |       |              | 2                           | -                                   | SF2_D3            | SF2_D3                                          |
|        |        |                |       |              | 3                           | -                                   | I2S_DO/I2S_RCLK_O | I2S_DO/I2S_RCLK_O                               |
|        |        |                |       |              | 4                           | -                                   | PDM_0_IN          | PDM_0_IN                                        |
|        |        |                |       |              | 5                           | -                                   | I2C0_SDA          | I2C0_SDA                                        |
|        |        |                |       |              | 6                           | -                                   | I2C1_SDA          | I2C1_SDA                                        |
|        |        |                |       |              | 7                           | uart_sig_3_sel=0                    | UART0_RTS         | UART0_RTS                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=1                    | UART0_CTS         | UART0_CTS                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=2                    | UART0_TXD         | UART0_TXD                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=3                    | UART0_RXD         | UART0_RXD                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=4                    | UART1_RTS         | UART1_RTS                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=5                    | UART1_CTS         | UART1_CTS                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=6                    | UART1_TXD         | UART1_TXD                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=7                    | UART1_RXD         | UART1_RXD                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=8                    | UART2_RTS         | UART2_RTS                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=9                    | UART2_CTS         | UART2_CTS                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=10                   | UART2_TXD         | UART2_TXD                                       |
|        |        |                |       |              |                             | uart_sig_3_sel=11                   | UART2_RXD         | UART2_RXD                                       |
|        |        |                |       |              | 8                           | -                                   | -                 | -                                               |
|        |        |                |       |              | 9                           | -                                   | -                 | -                                               |
|        |        |                |       |              | 10                          | -                                   | -                 | -                                               |
|        |        |                |       |              | 11                          | -                                   | SWGPI039          | SWGPI039                                        |
|        |        |                |       |              | 16                          | reg_pwm1_io_sel=0                   | PWM0_CH3P         | PWM0_CH3P                                       |
|        |        |                |       |              |                             | reg_pwm1_io_sel=1                   | PWM0_CH3N         | PWM0_CH3N                                       |
|        |        |                |       |              | 17                          | reg_pwm2_io_sel=0                   | PWM1_CH3P         | PWM1_CH3P                                       |
|        |        |                |       |              |                             | reg_pwm2_io_sel=1                   | PWM0_CH2P         | PWM0_CH2P                                       |
|        |        |                |       |              | 18                          | -                                   | MM_SPI_SCLK       | MM_SPI_SCLK                                     |
|        |        |                |       |              | 19                          | -                                   | MM_I2C0_SDA       | MM_I2C0_SDA                                     |
|        |        |                |       |              | 20                          | -                                   | MM_I2C1_SDA       | MM_I2C1_SDA                                     |
|        |        |                |       |              | 21                          | -                                   | MM_UART_CTS       | MM_UART_CTS                                     |
|        |        |                |       |              | 22                          | -                                   | -                 | -                                               |
|        |        |                |       |              | 23                          | -                                   | DBI_SDA           | DBI_SDA                                         |
|        |        |                |       |              | 24                          | -                                   | -                 | -                                               |
|        |        |                |       |              | 26                          | -                                   | M0_JTAG_TDO       | M0_JTAG_TDO                                     |
|        |        |                |       |              | 27                          | -                                   | D0_JTAG_TDO       | D0_JTAG_TDO                                     |
| 85     | 85     | -              | Power | DCDC11_VOUT  | -                           | -                                   | DCDC11_VOUT       | Feedback voltage input, 1.1V                    |
| 86     | 86     | -              | Power | SW_DCDC11    | -                           | -                                   | SW_DCDC11         | DCDC switch output, connected to power inductor |
| 87     | 87     | -              | Power | VDD33_DCDC11 | -                           | -                                   | VDD33_DCDC11      | DCDC power input, 3.3V                          |
| 88     | 88     | -              | Power | VSS_DCDC11   | -                           | -                                   | VSS_DCDC11        | DCDC circuit ground pin                         |

<sup>1</sup> This function defaults to SPI\_MOSI, which can be converted to SPI\_MISO through a register.

## RF Characteristics

RF Characteristics of Receiving and Transmitting modes.

Table 4.1: WLAN TX RF characteristics

| Mode     |              | Note | Performance @3.3V,25°C |     |      |      |
|----------|--------------|------|------------------------|-----|------|------|
|          |              |      | Min.                   | Typ | Max. | Unit |
| TX power | 11b - 1Mbps  |      |                        | 21  |      | dBm  |
|          | 11b - 11Mbps |      |                        | 21  |      |      |
|          | 11g - 6Mbps  |      |                        | 19  |      |      |
|          | 11g - 54Mbps |      |                        | 18  |      |      |
|          | 11n - MCS0   |      |                        | 19  |      |      |
|          | 11n - MCS7   |      |                        | 17  |      |      |

Table 4.2: WLAN RX RF characteristics

| Mode           |              | Note | Performance @3.3V,25°C |     |      |      |
|----------------|--------------|------|------------------------|-----|------|------|
|                |              |      | Min.                   | Typ | Max. | Unit |
| RX sensitivity | 11b - 1Mbps  |      |                        | -98 |      | dBm  |
|                | 11b - 11Mbps |      |                        | -90 |      |      |
|                | 11g - 6Mbps  |      |                        | -93 |      |      |
|                | 11g - 54Mbps |      |                        | -77 |      |      |
|                | 11n - MCS0   |      |                        | -93 |      |      |
|                | 11n - MCS7   |      |                        | -74 |      |      |

Table 4.3: BLE RX RF characteristics

| Mode           |              | Note | Performance @3.3V,25°C |      |      |      |
|----------------|--------------|------|------------------------|------|------|------|
|                |              |      | Min.                   | Typ  | Max. | Unit |
| RX sensitivity | 1Mbps        |      |                        | -99  |      | dBm  |
|                | 2Mbps        |      |                        | -97  |      |      |
|                | S8 (125Kbps) |      |                        | -105 |      |      |
|                | S2 (500Kbps) |      |                        | -102 |      |      |

Table 4.4: BLE TX RF characteristics

| Mode     | Note | Performance @3.3V,25°C |     |      |      |
|----------|------|------------------------|-----|------|------|
|          |      | Min.                   | Typ | Max. | Unit |
| TX power |      |                        | 10  | 20   | dBm  |

Table 4.5: BT TX RF characteristics

| Mode                              | Note      | Performance @3.3V,25°C |      |      |      |
|-----------------------------------|-----------|------------------------|------|------|------|
|                                   |           | Min.                   | Typ  | Max. | Unit |
| BR output power                   |           |                        | 10   |      | dBm  |
| EDR output power                  |           |                        | 8    |      | dBm  |
| $\Delta f_{1avg}$                 | BR 1Mbps  |                        | 159  |      | kHz  |
| $\Delta f_{2max}$                 |           |                        | 132  |      |      |
| $\Delta f_{2avg}/\Delta f_{1avg}$ |           |                        | 0.88 |      |      |
| $\omega_0$                        | EDR 2Mbps | -3                     |      | 3    | kHz  |
| $\omega_i$                        |           | -12                    |      | 6    |      |
| $\omega_i+\omega_0$               |           | -6                     |      | 3    |      |
| RMS DEVM                          |           |                        |      | 5    | %    |
| 99% DEVM                          |           |                        |      | 9    |      |
| Peak DEVM                         |           |                        |      | 10   |      |
| $\omega_0$                        | EDR 3Mbps | -3                     |      | 3    | kHz  |
| $\omega_i$                        |           | -12                    |      | 6    |      |
| $\omega_i+\omega_0$               |           | -6                     |      | 3    |      |
| RMS DEVM                          |           |                        |      | 5    | %    |
| 99% DEVM                          |           |                        |      | 9    |      |
| Peak DEVM                         |           |                        |      | 10   |      |

Table 4.6: BT RX RF Characteristics

| Mode                    |           | Note      | Performance @3.3V,25°C |     |      |      |
|-------------------------|-----------|-----------|------------------------|-----|------|------|
|                         |           |           | Min.                   | Typ | Max. | Unit |
| Sensitivity             | BR 1Mbps  | Dirty Off |                        | -94 |      | dBm  |
| Maximum reception level |           |           |                        |     |      |      |
| Sensitivity             | EDR 2Mbps |           |                        | -95 |      |      |
| Maximum reception level |           |           |                        |     |      |      |
| Sensitivity             | EDR 3Mbps |           |                        | -89 |      |      |
| Maximum reception level |           |           |                        |     |      |      |

## Audio characteristic

### 5.1 Electrical characteristics

Table 5.1: Analog-to-Digital converter electrical characteristics

| At 25°C, AVDD25_CODEC= 2.5 V, f <sub>S</sub> = 48kHz, 20-bit audio data (unless otherwise noted) |                                   |                                                                         |       |      |      |      |
|--------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------|-------|------|------|------|
| Parameter                                                                                        |                                   | Conditions                                                              | Min.  | Typ  | Max. | Unit |
| AUDIO ADC                                                                                        | Input signal full-scale level     | Differential input, 0 dB PGA gain                                       |       | 1.8  |      | Vrms |
|                                                                                                  |                                   | Single-ended input, 0 dB PGA gain                                       |       | 0.9  | 1.4  |      |
|                                                                                                  | Input common-mode voltage         | differential/Single-ended input                                         |       | 1.23 |      |      |
| SNR                                                                                              | Signal-to-noise ratio, A-weighted | f <sub>S</sub> = 48 kHz, 0 dB PGA gain, 1kHz full-scale sine-wave input |       | 103  |      | dB   |
| DR                                                                                               | Dynamic range, A-weighted         | f <sub>S</sub> = 48 kHz, 0 dB PGA gain, 1kHz -60dB sine-wave input      |       | 103  |      |      |
| THD                                                                                              | Total harmonic distortion         | f <sub>S</sub> = 48 kHz, 0 dB PGA gain, 1kHz -5dB sine-wave input       |       | -95  |      |      |
| PSRR                                                                                             | Power supply rejection ratio      | 234 Hz, 100 mVPP on AVDD, single-ended input                            |       | -    |      |      |
|                                                                                                  |                                   | 234 Hz, 100 mVPP on AVDD, differential input                            |       | -    |      |      |
| Crosstalk                                                                                        | ADC channel separation            | 0 dB PGA gain, 1kHz full-scale sine-wave input                          | 130   |      |      |      |
|                                                                                                  |                                   | 36dB PGA gain, 1kHz full-scale sine-wave input                          | 100   |      |      |      |
| Freq. Response                                                                                   |                                   | -5dB 20Hz~24kHz sine-wave input                                         |       | 0.25 |      |      |
| ADC programmable analogue amplifier gain range                                                   |                                   | Analogue gain resolution = 3dB                                          | 0     |      | 42   |      |
| ADC programmable digital gain range                                                              |                                   | Digital gain resolution = 0.5dB                                         | -95.5 |      | 31.5 |      |

Table 5.1: Analog-to-Digital converter electrical characteristics

| At 25°C, AVDD25_CODEC= 2.5 V, f <sub>S</sub> = 48kHz, 20-bit audio data (unless otherwise noted) |                  |                                                                          |      |     |      |        |
|--------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------|------|-----|------|--------|
| Parameter                                                                                        |                  | Conditions                                                               | Min. | Typ | Max. | Unit   |
| Input resistance                                                                                 |                  | Analogue gain 0dB                                                        |      | 16  |      | kΩ     |
|                                                                                                  |                  | Analogue gain 6dB~42dB                                                   | 160  |     | 640  |        |
| Input capacitance                                                                                |                  |                                                                          |      | 10  |      | pF     |
| MICROPHONE<br>BIAS                                                                               | Bias voltage     | Programmable settings                                                    | 1.8  |     | 2.5  | V      |
|                                                                                                  | Current sourcing | 2.5V setting, load = 1 KΩ                                                |      | 2.2 |      | mA     |
|                                                                                                  | Integrated noise | BW = 20 Hz to 20 kHz, A-weighted, 1μF capacitor between MICBIAS and AGND |      | 1.5 |      | μV rms |

Table 5.2: Digital-to-Analog converter electrical characteristics

| At 25°C, AVDD25_CODEC= 2.5 V, f <sub>S</sub> = 48kHz, 20-bit audio data (unless otherwise noted) |                                                 |                                                           |      |      |      |        |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------|------|------|------|--------|
| Parameter                                                                                        |                                                 | Conditions                                                | Min. | Typ  | Max. | Unit   |
| AUDIO DAC                                                                                        | Input signal full-scale level                   | Differential output, 0 dB line-out gain                   |      | 1.68 |      | Vrms   |
|                                                                                                  |                                                 | Single-ended output, 0 dB line-out gain                   |      | 0.84 |      |        |
|                                                                                                  | Input common-mode voltage                       |                                                           |      | 1.23 |      |        |
| SNR                                                                                              | Signal-to-noise ratio, A-W without Noise Gating | f <sub>S</sub> = 48 kHz, 1kHz full-scale sine-wave output |      | 104  |      | dB     |
|                                                                                                  | Signal-to-noise ratio, A-W with Noise Gating    | f <sub>S</sub> = 48 kHz, 1kHz full-scale sine-wave output |      | 112  |      |        |
| DR                                                                                               | Dynamic range, A-weighted                       | f <sub>S</sub> = 48 kHz, 1kHz -60dB sine-wave output      |      | 104  |      |        |
| THD                                                                                              | Total harmonic distortion                       | f <sub>S</sub> = 48 kHz, 1kHz -5dB sine-wave output       |      | -89  |      |        |
| PSRR                                                                                             | Power supply rejection ratio                    | 234 Hz, 100 mVPP on AVDD, single-ended output             |      | -    |      |        |
|                                                                                                  |                                                 | 234 Hz, 100 mVPP on AVDD, differential output             |      | -    |      |        |
| Noise Floor                                                                                      |                                                 | A-weighted without Noise Gating                           |      | 10   |      | μV rms |
| Noise Floor                                                                                      |                                                 | A-weighted with Noise Gating                              |      | 4.3  |      |        |
| Crosstalk                                                                                        | DAC channel separation                          | 1kHz full-scale sine-wave output                          | 130  |      |      | dB     |
| Freq. Response                                                                                   |                                                 | -5dB 20Hz~24kHz sine-wave input                           |      | 0.25 |      |        |
| DC offset                                                                                        |                                                 | P/N output DC offset                                      |      | 0.5  |      | mV     |

Table 5.2: Digital-to-Analog converter electrical characteristics

| At 25°C, AVDD25_CODEC= 2.5 V, f <sub>S</sub> = 48kHz, 20-bit audio data (unless otherwise noted) |                                 |       |     |      |      |
|--------------------------------------------------------------------------------------------------|---------------------------------|-------|-----|------|------|
| Parameter                                                                                        | Conditions                      | Min.  | Typ | Max. | Unit |
| DAC programmable analogue amplifier gain range                                                   | Analogue gain resolution = 3dB  | -21   |     | 0    | dB   |
| DAC programmable digital gain range                                                              | Digital gain resolution = 0.5dB | -95.5 |     | 31.5 |      |

## Power Consumption

Power Consumption of each power mode.

Table 6.1: Power Modes & Whole-chip Current

| Mode      |                        | Conditions                | Performance @25°C |       |      |      |
|-----------|------------------------|---------------------------|-------------------|-------|------|------|
|           |                        |                           | Min.              | Typ   | Max. | Unit |
| RX        |                        | 3.3V, RF only             |                   | 13    |      | mA   |
| TX        | 11b - 11Mbps<br>@21dBm | 3.3V, RF only<br>Duty 99% |                   | 295   |      |      |
| HBN       | HBN0                   | Vdd11_aon = 0.9V          |                   | 7.9   |      | uA   |
|           |                        | Vdd11_aon = 1.1V          |                   | 14.3  |      |      |
| PDS       | PDS7                   | Vdd11_aon = 0.9V          |                   | 70.8  |      |      |
|           |                        | Vdd11_aon = 1.1V          |                   | 121.7 |      |      |
| Shut-down |                        |                           |                   | <0.5  |      |      |

## Electrical Specifications

### 7.1 Absolute Maximum Rating

Table 7.1: Absolute Maximum Rating

| Pin Name                   | Min. | Max. | Unit |
|----------------------------|------|------|------|
| VDD33_DCDC18, VDD33_DCDC11 | -0.3 | 3.63 | V    |
| VDD33(USB)                 | -0.3 | 3.63 | V    |
| VDDIO1                     | -0.3 | 3.63 | V    |
| VDDIO2                     | -0.3 | 3.63 | V    |
| VDDIO3                     | -0.3 | 3.63 | V    |
| VDDIO4                     | -0.3 | 3.63 | V    |
| VDD33_RF                   | -0.3 | 3.63 | V    |
| AVDD33_CODEC               | -0.3 | 3.63 | V    |

### 7.2 Operating Condition

#### 7.2.1 Power characteristics

Table 7.2: Recommended Power Operating Range

| Pin Name                   | Min.     | Typ     | Max.      | Unit |
|----------------------------|----------|---------|-----------|------|
| VDD33_DCDC18, VDD33_DCDC11 | 3        | 3.3     | 3.63      | V    |
| VDD33(USB)                 | 3        | 3.3     | 3.63      | V    |
| VDDIO1                     | 3.0/1.62 | 3.3/1.8 | 3.63/1.98 | V    |
| VDDIO2                     | 3        | 3.3     | 3.63      | V    |

Table 7.2: Recommended Power Operating Range

| Pin Name     | Min.     | Typ     | Max.      | Unit |
|--------------|----------|---------|-----------|------|
| VDDIO3       | 3.0/1.62 | 3.3/1.8 | 3.63/1.98 | V    |
| VDDIO4       | 3.0/1.62 | 3.3/1.8 | 3.63/1.98 | V    |
| VDD33_RF     | 3        | 3.3     | 3.63      | V    |
| AVDD33_CODEC | 3        | 3.3     | 3.63      | V    |

## 7.2.2 IO DC characteristics

Table 7.3: IO DC characteristics

| Symbol | Description         | Conditions | Min.           | Typ | Max.           | Unit |
|--------|---------------------|------------|----------------|-----|----------------|------|
| VOH    | Output voltage high |            | $0.8 * V_{IO}$ |     |                | V    |
| VOL    | Output voltage low  |            |                |     | $0.1 * V_{IO}$ | V    |
| VIH    | Input voltage high  |            | $0.7 * V_{IO}$ |     | $V_{IO} + 0.3$ | V    |
| VIL    | Input voltage low   |            | -0.3           |     | $0.3 * V_{IO}$ | V    |

## 7.2.3 Power-on sequence

In order to ensure normal power-on startup, the power, reset and Bootstrap pins need to meet the corresponding timing requirements.

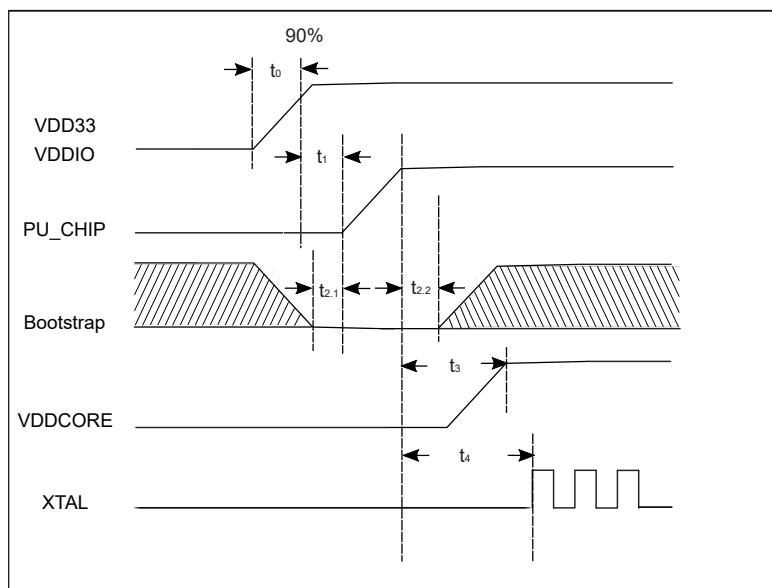


Fig. 7.1: Power-on sequence

Table 7.4: Power-on sequence parameters

| Parameters | Description                                                               | Min.(ms) | Typ(ms) | Max.(ms) |
|------------|---------------------------------------------------------------------------|----------|---------|----------|
| $t_0$      | Rise time for supply voltage to reach 90%                                 |          |         | 2        |
| $t_1$      | Delay time before power rises until PU_CHIP is pulled high                | 0.1      |         |          |
| $t_{2.1}$  | Bootstrap pin <sup>1</sup> level setup time before PU_CHIP is pulled high | 0        |         |          |
| $t_{2.2}$  | Hold time of Bootstrap pin level after PU_CHIP is pulled high             | 2        |         |          |
| $t_3$      | The time that PU_CHIP is pulled high to VDDCORE output                    |          | 2       |          |
| $t_4$      | The time when PU_CHIP is pulled high until XTAL starts to vibrate         |          | 2       |          |

<sup>1</sup> Bootstrap pin is GPIO39.

## 7.2.4 Temperature sensor characteristics

Table 7.5: Recommended Temperature Operating Range

| Item        |               | Min. | Max. | Unit |
|-------------|---------------|------|------|------|
| Temperature | Main Die      | -40  | 85   | °C   |
|             | Multi-Die SiP | -40  | 85   |      |

## 7.2.5 General operating conditions

Table 7.6: General Operating Conditions

| Item | Description              | Min. | Typ | Max. | Unit |
|------|--------------------------|------|-----|------|------|
| FCPU | CPU clock frequency (M0) |      |     | 320  | MHz  |
|      | CPU clock frequency (D0) |      |     | 480  |      |

## 8.1 Moisture Sensitivity Level(MSL)

The moisture sensitivity level of the chip is: MSL3. After the vacuum package is opened, it needs to be used up within 168 hours (7 days) at  $\leq 30^{\circ}\text{C}/60\%\text{RH}$ , otherwise it needs to be baked and put online.

For baking temperature and time, please refer to IPC/JEDECJ-STD-033B01.

Table 8.1: Reference Conditions for Drying Mounted or Unmounted SMD Packages (User Bake: Floor life begins counting at time = 0 after bake)

| Package Body                      | Level | Bake @ $125^{\circ}\text{C}$                 |                                                  | Bake @ $90^{\circ}\text{C}$<br>$\leq 5\%\text{ RH}$ |                                                  | Bake @ $40^{\circ}\text{C}$<br>$\leq 5\%\text{ RH}$ |                                                  |
|-----------------------------------|-------|----------------------------------------------|--------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|
|                                   |       | Exceeding<br>Floor Life<br>by $>72\text{ h}$ | Exceeding<br>Floor Life<br>by $\leq 72\text{ h}$ | Exceeding<br>Floor Life<br>by $>72\text{ h}$        | Exceeding<br>Floor Life<br>by $\leq 72\text{ h}$ | Exceeding<br>Floor Life<br>by $>72\text{ h}$        | Exceeding<br>Floor Life<br>by $\leq 72\text{ h}$ |
| Thickness<br>$\leq 1.4\text{ mm}$ | 2     | 5 hours                                      | 3 hours                                          | 17 hours                                            | 11 hours                                         | 8 days                                              | 5 days                                           |
|                                   | 2a    | 7 hours                                      | 5 hours                                          | 23 hours                                            | 13 hours                                         | 9 days                                              | 7 days                                           |
|                                   | 3     | 9 hours                                      | 7 hours                                          | 33 hours                                            | 23 hours                                         | 13 days                                             | 9 days                                           |
|                                   | 4     | 11 hours                                     | 7 hours                                          | 37 hours                                            | 23 hours                                         | 15 days                                             | 9 days                                           |
|                                   | 5     | 12 hours                                     | 7 hours                                          | 41 hours                                            | 24 hours                                         | 17 days                                             | 10 days                                          |
|                                   | 5a    | 16 hours                                     | 10 hours                                         | 54 hours                                            | 24 hours                                         | 22 days                                             | 10 days                                          |

## 8.2 Electro-Static discharge (ESD)

- Human Body Model(HBM): 2000V
- Charged-Device Model(CDM): 500V

## 8.3 Reflow Profile

For details, please refer to IPC/JEDEC J-STD-020E.

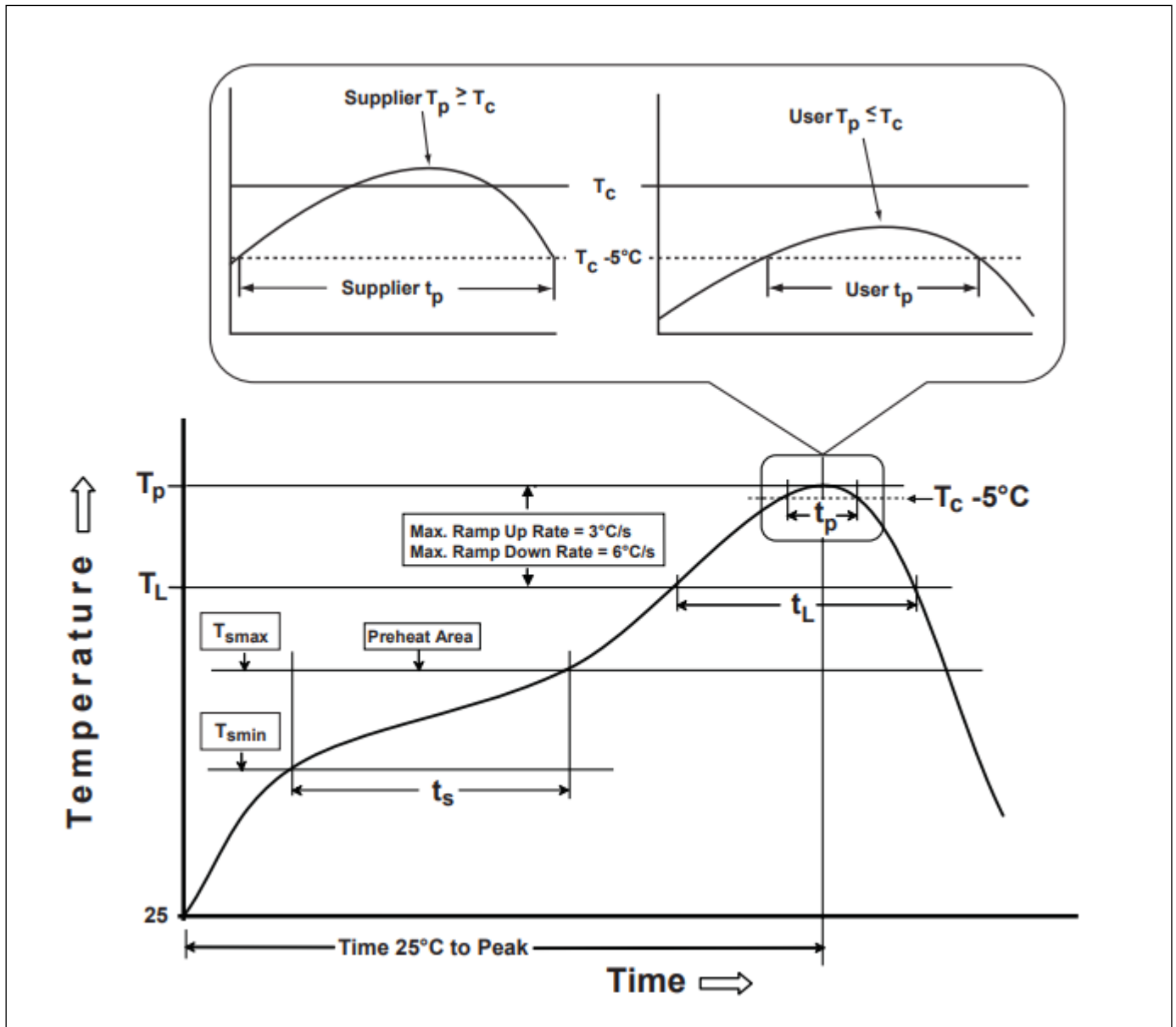


Fig. 8.1: Classification Profile (Not to scale)

Table 8.2: Classification Reflow Profiles

| Profile Feature                                                                                                                      | Sn-Pb Eutectic Assembly            | Pb-Free Assembly                   |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------|
| Preheat/Soak<br>Temperature Min ( $T_{smin}$ )<br>Temperature Max ( $T_{smax}$ )<br>Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ ) | 100 °C<br>150 °C<br>60-120 seconds | 150 °C<br>200 °C<br>60-120 seconds |
| Ramp-up rate ( $T_L$ to $T_p$ )                                                                                                      | 3 °C/second max.                   | 3 °C/second max.                   |
| Liquidous temperature ( $T_L$ )<br>Time ( $t_L$ ) maintained above $T_L$                                                             | 183 °C<br>60-150 seconds           | 217 °C<br>60-150 seconds           |
| Peak package body temperature ( $T_p$ )                                                                                              | 240 °C+0/-5 °C                     | 250 °C+0/-5 °C                     |
| Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_c$ )                                                    | 10-30 seconds                      | 20-40 seconds                      |
| Ramp-down rate ( $T_p$ to $T_L$ )                                                                                                    | 6 °C/second max                    | 6 °C/second max                    |
| Time 25 °C to peak temperature                                                                                                       | 6 minutes max                      | 8 minutes max                      |
| - Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.                              |                                    |                                    |



## Package Information(QFN88)

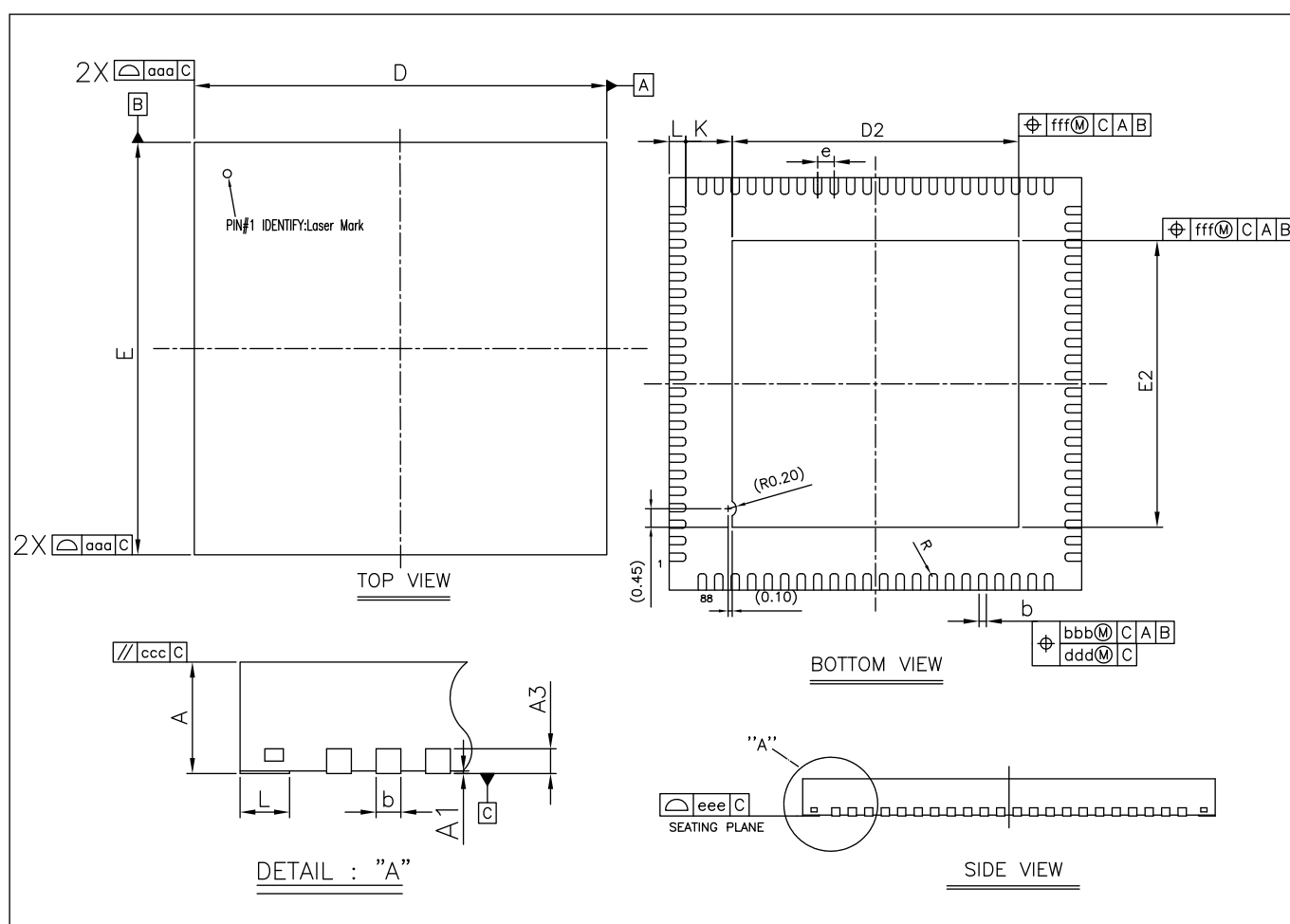


Fig. 10.1: QFN88 Package drawing

Table 10.1: QFN88 Size Description

| SYMBOL | UNIT OF MEASURE = MILLIMETER |           |       | UNIT OF MEASURE = INCH |       |       |
|--------|------------------------------|-----------|-------|------------------------|-------|-------|
|        | MIN                          | NOM       | MAX   | MIN                    | NOM   | MAX   |
| A      | 0.85                         | 0.90      | 0.95  | 0.033                  | 0.035 | 0.037 |
| A1     | 0.00                         | 0.02      | 0.05  | 0.000                  | 0.001 | 0.002 |
| A3     | 0.20 REF                     |           |       | 0.008 REF              |       |       |
| b      | 0.15                         | 0.20      | 0.25  | 0.006                  | 0.008 | 0.010 |
| D      | 9.90                         | 10.00     | 10.10 | 0.390                  | 0.394 | 0.398 |
| E      | 9.90                         | 10.00     | 10.10 | 0.390                  | 0.394 | 0.398 |
| D2     | 6.85                         | 6.95/6.40 | 7.05  | 0.270                  | 0.274 | 0.278 |
| E2     | 6.85                         | 6.95/6.40 | 7.05  | 0.270                  | 0.274 | 0.278 |
| e      | 0.40 BSC                     |           |       | 0.016 BSC              |       |       |
| L      | 0.30                         | 0.40      | 0.50  | 0.012                  | 0.016 | 0.020 |
| K      | 0.20                         | -         | -     | 0.008                  | -     | -     |
| R      | 0.075                        | -         | 0.125 | 0.003                  | -     | 0.005 |
| aaa    | 0.10                         |           |       | 0.004                  |       |       |
| bbb    | 0.07                         |           |       | 0.003                  |       |       |
| ccc    | 0.10                         |           |       | 0.004                  |       |       |
| ddd    | 0.05                         |           |       | 0.002                  |       |       |
| eee    | 0.08                         |           |       | 0.003                  |       |       |
| fff    | 0.10                         |           |       | 0.004                  |       |       |

**Note:** Control size: millimeter

## Top Marking Definition

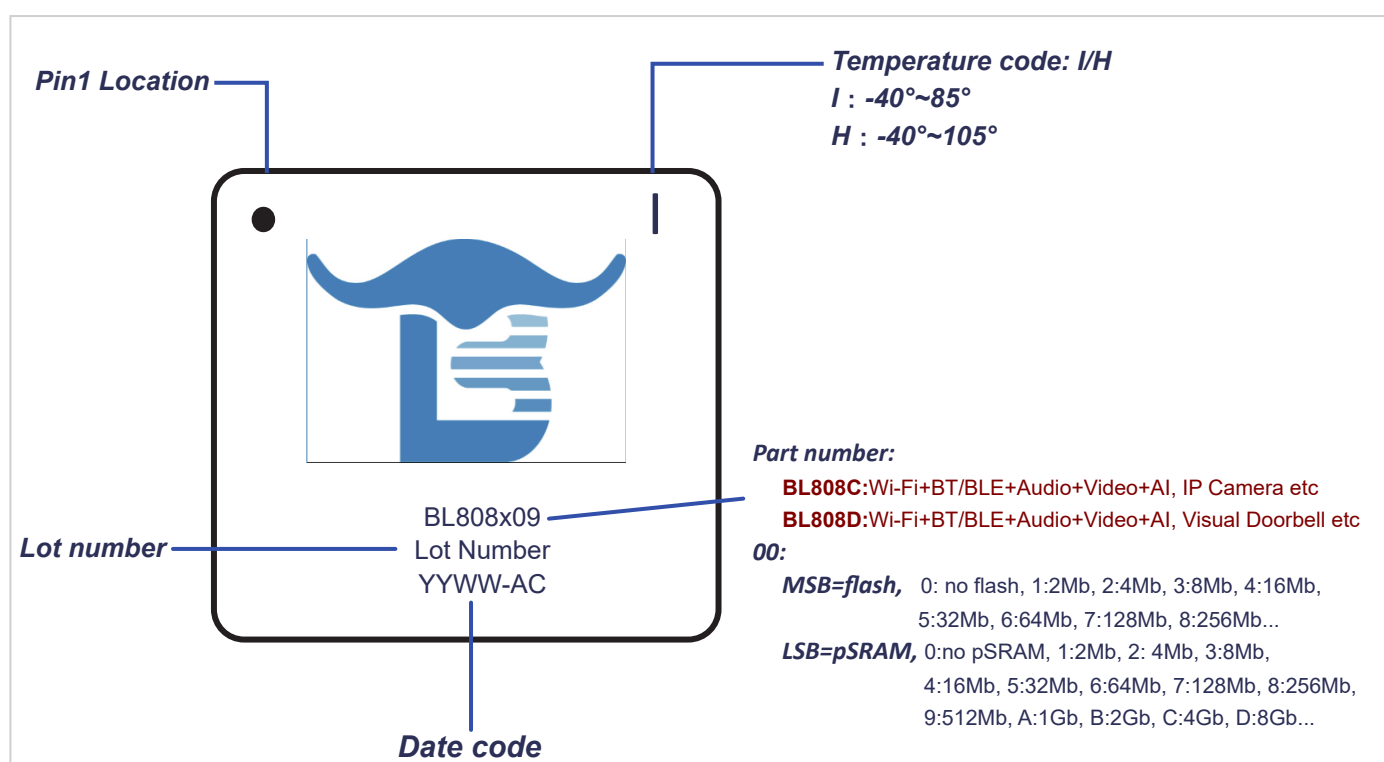


Fig. 11.1: Top Marking Definition

## Ordering Information

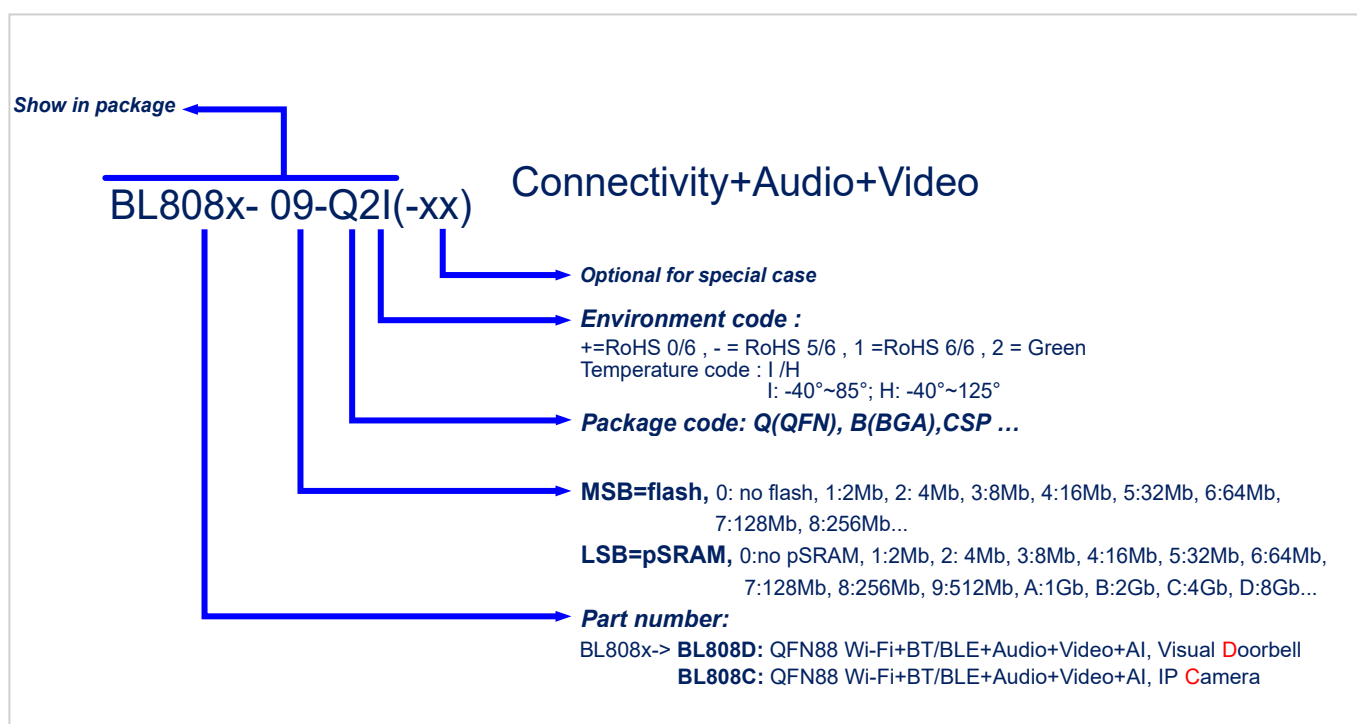


Table 13.1: Document revision history

| Date       | Revision | Changes                                                                  |
|------------|----------|--------------------------------------------------------------------------|
| 2021/12/17 | 0.9      | Initial release                                                          |
| 2022/1/14  | 0.95     | Add audio characteristics and RF characteristics data                    |
| 2022/2/10  | 0.96     | Add BLE RF characteristics and electrical characteristics                |
| 2022/3/3   | 0.97     | Add BT RF characteristics and Bootstrap pin description                  |
| 2022/3/17  | 0.98     | Add power consumption data                                               |
| 2022/5/12  | 0.99     | Modify memory map and add EMAC timing description                        |
| 2022/6/9   | 1.0      | Add pinmux function 26 and 27                                            |
| 2022/8/17  | 1.1      | Add spi and uart function descriptions, and add temperature descriptions |