

1. Exynos 4412 S5PC220 Mango220 Hardware Specification

1.1. Intro

삼성 1GHz/1.4GHz Quad Core Cortex-A9 Application Processor 탑재 개발 보드

- Samsung Exynos 4412 S5PC220 (Cortex-A9 Quad Core Application Processor) Development Board
- LPDDR2 RAM 1Gbyte 기본 탑재
- Android, Linux 지원
- SATA 지원
- eMMC 4.4 지원
- USB Host, USB Device, 10/100 Mbps Ethernet, microSD socket, Audio Codec 기본 지원
- WIFI/Bluetooth, 각종 TFT LCD, 각종 Sensor (가속도, 자이로, 기압, 리모콘 등),
- MIPI Camera, LCD 지원

1.2. Manual

Hardware Schematic download

<http://www.mangoboard.com> "Downloads > Mango220"

Source Download

<http://crztech.iptime.org:8080/Release/mango220-exynos4412/>

Linux, Android Manual

https://drive.google.com/folderview?id=0Bxdf_3fzbUgSZI82X0x5SHInVmM&usp=sharing

또는

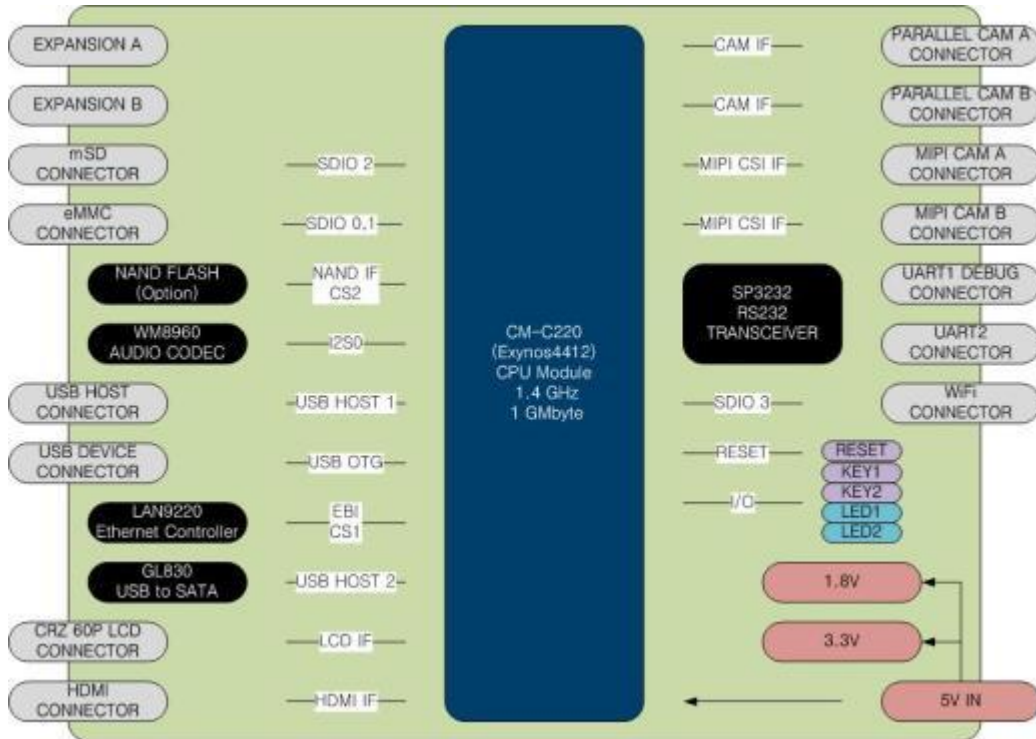
<http://cafe.naver.com/embeddedcrazyboys>

“망고보드 매뉴얼-> Mango220(Exynos4412)”

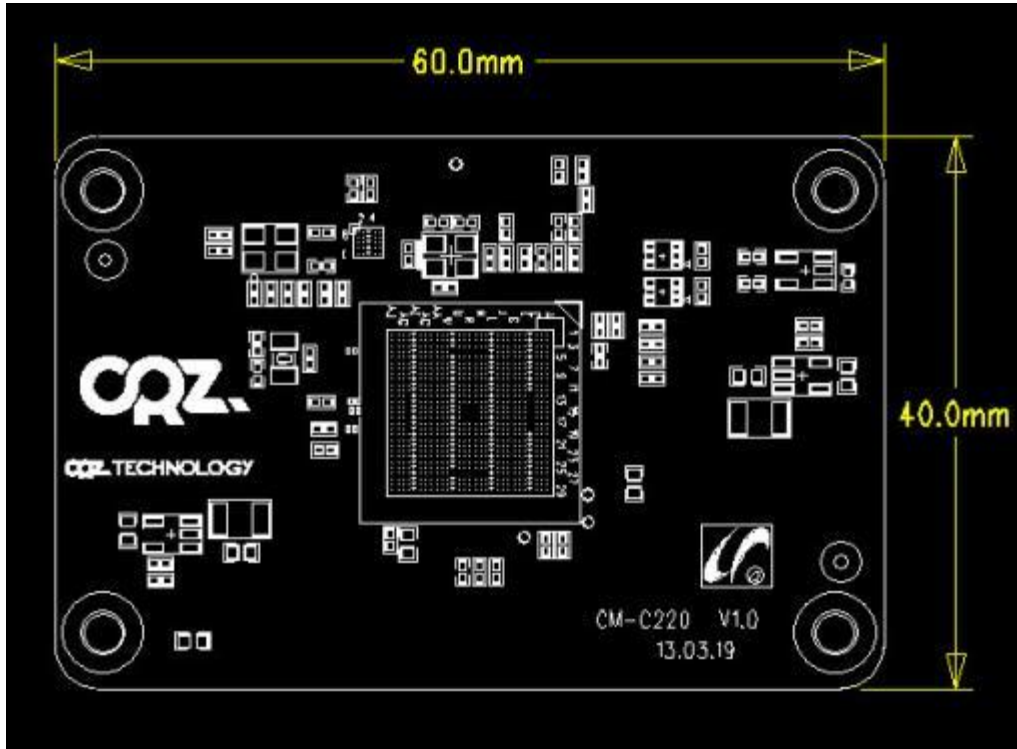
1.3. Hardware Specification

CPU	Samsung Exynos 4412 ARM Cortex A9	1.4GHz Application Processor
Memory	LP-DDR2 SDRAM	1Gbytes
	SLC NAND Flash (N.M)	
Display	7" WSVGA(1024x600) Color TFT LCD Etc	with Touch Screen Interface
Audio	Wolfson WM8960 Audio Codec	with 1W Stereo Speaker Amplifier
Ethernet	SMSC LAN9220	10/100Mbps Ethernet Controller
USB	USB 2.0 Host	
	USB 2.0 OTG	
SD/MMC	SD/MMC Port 2	Boot SD Connector
	SD/MMC Port 3	WiFi & Expansion Connector
eMMC	eMMC Ver 4.4 지원	
UART	UART Port 1	DEBUG
	UART Port 2	RS232
	UART Port 3	UART
HDMI	V1.4(1080p Full HD)	
Camera	Parallel CAM Port 2 지원	1.3M, 5M Pixel AF Camera
MIPI Camera	Port 2 지원	
MIPI LCD	지원	
WiFi/BT	SDIO ,802.11BGN 지원, BT(UART0,SDIO)	
SATA	SATA 2.0 지원	
DC Input	5 Volt / 2A	
Connectors	Expansion Connectors(40X2)	EBI, UART, SPI, GPIO etc

1.4. 블록도

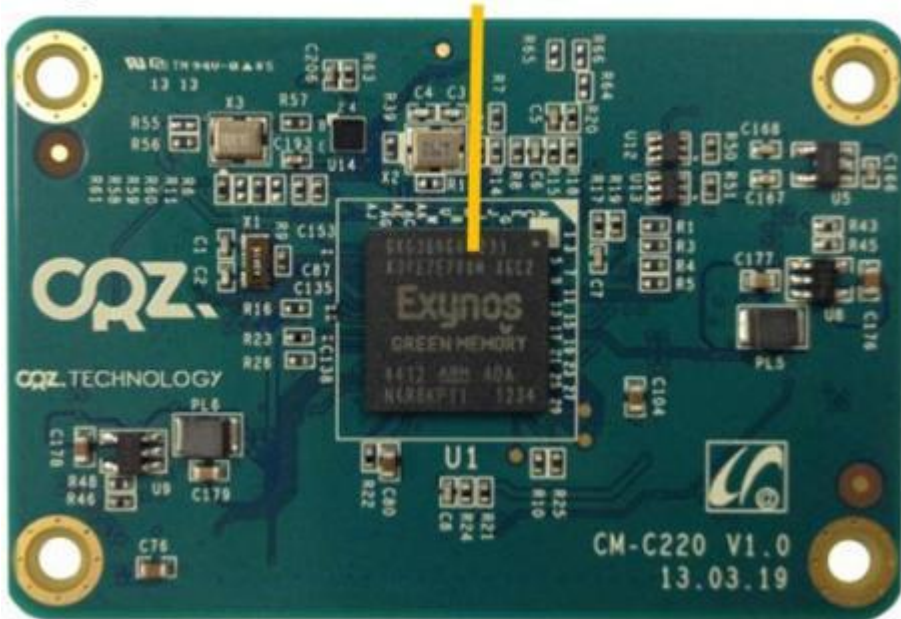


1.5. Exynos 4412 CM-220 CPU Module

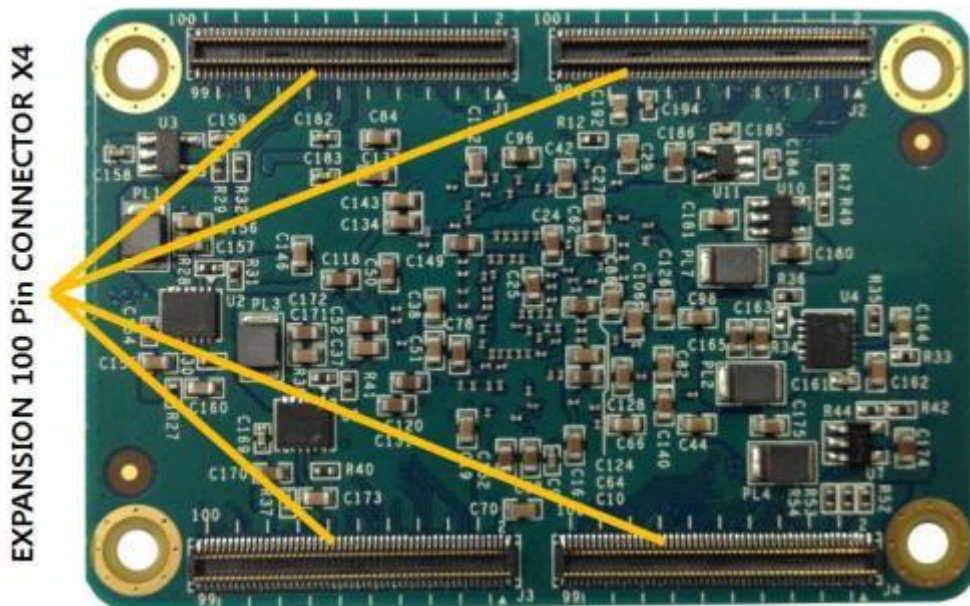


1.6. CM-C220 부품 배치도 TOP

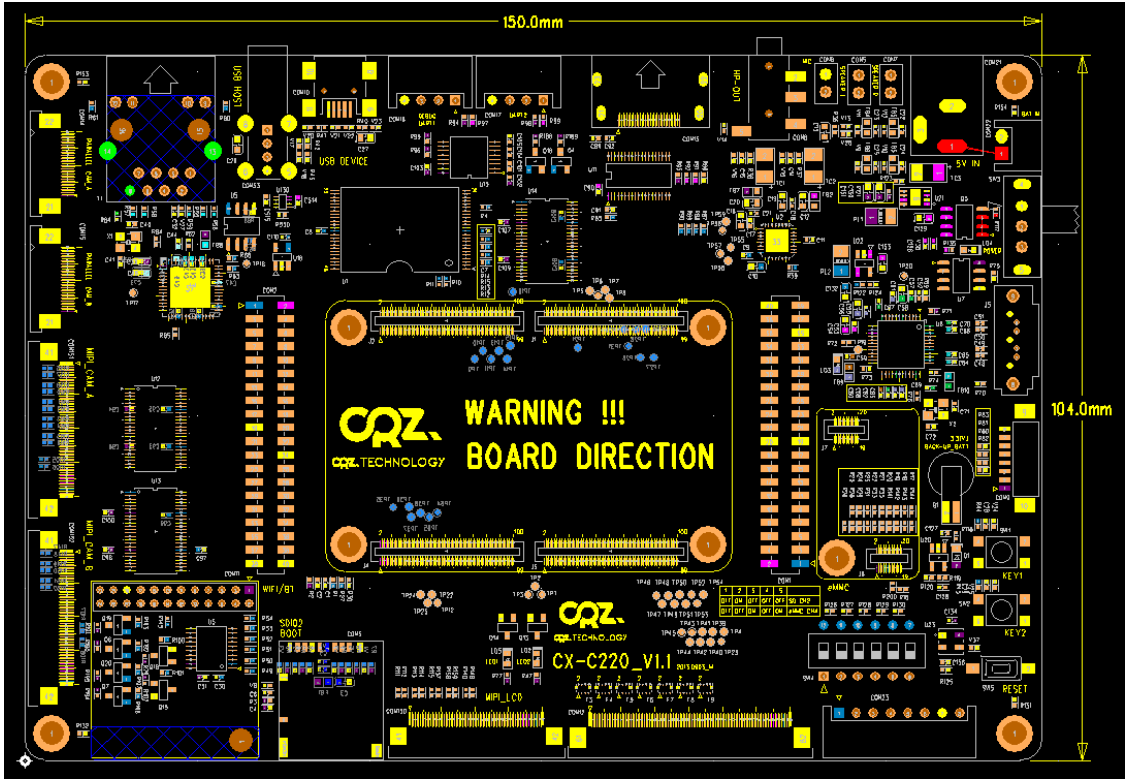
Exynos 4412 Coretex-A9 Quad Core 1.4 GHz



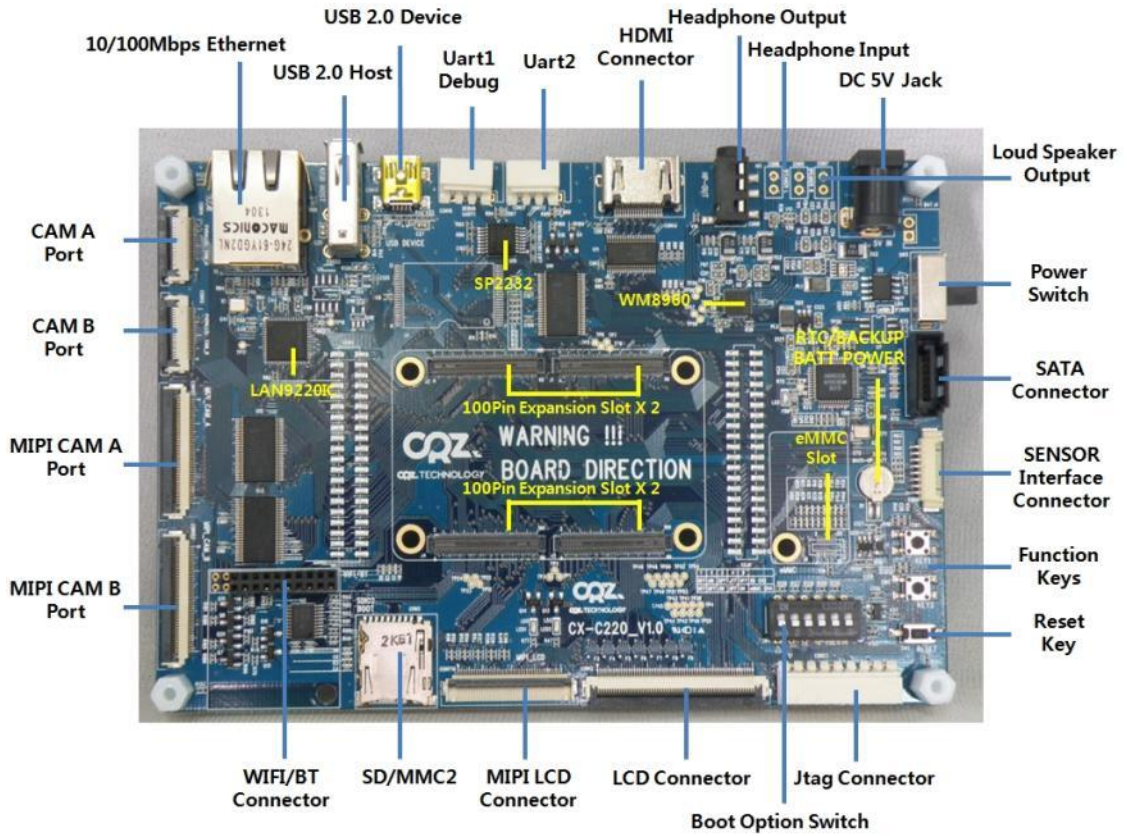
1.7. CM-C220 메인보드 부품면 BOTTOM



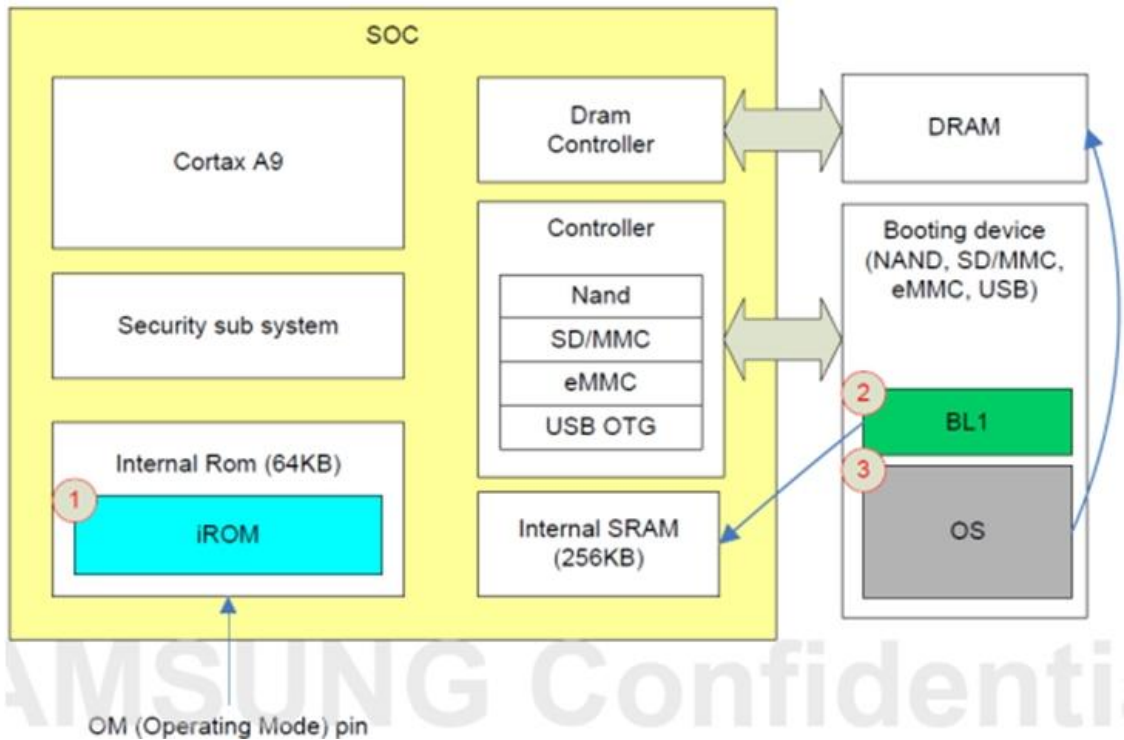
1.8. Exynos 4412 CX-C220 Base Board



1.9. CX-C220 부품 배치도 TOP

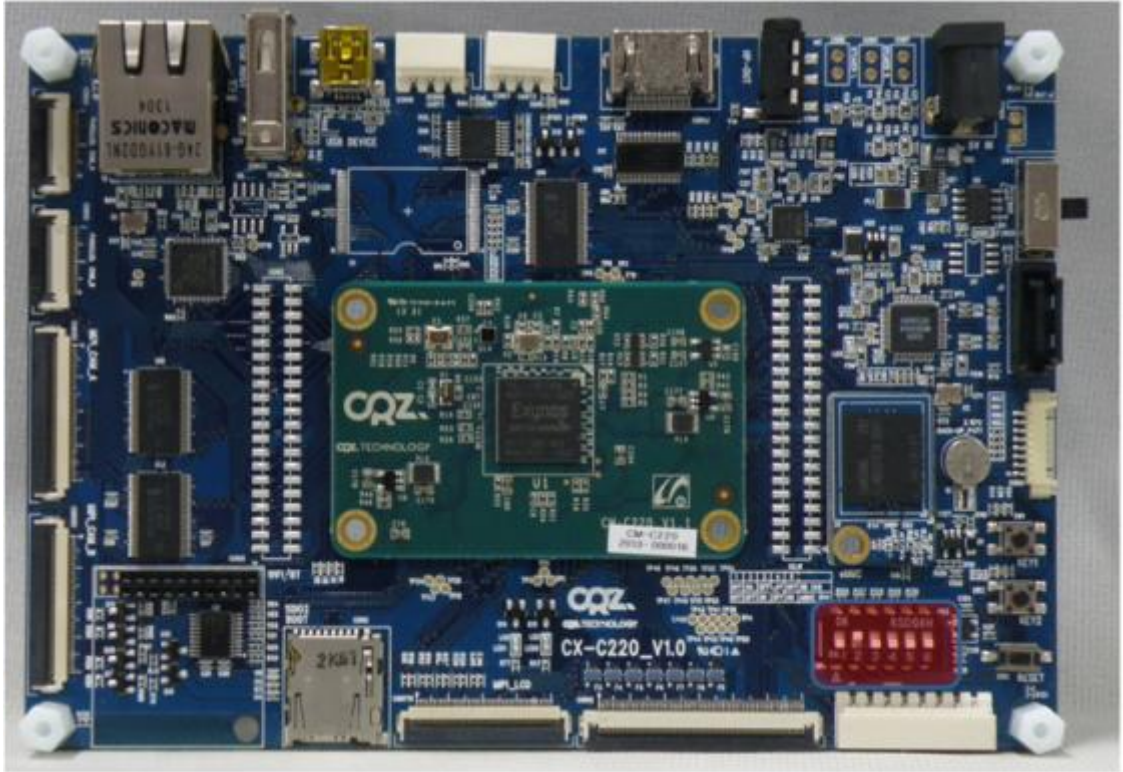


1.10.부팅 과정



- CPU S5PC2200이 Reset 되면 내부 롬 (Internal ROM, IROM)에 탑재 되어 있는 Boot Loader 0 (BL0)가 실행 됩니다. 위 그림에서 1번에 해당하는 것입니다.
- BL0는 OM[5:0]핀의 상태를 읽어, 부팅 디바이스를 선정하고, 부팅 디바이스에서 Boot Loader 1 (BL1)을 읽어 내부 SRAM에 탑재합니다. 위 그림의 2 과정입니다.
- 탑재된 SRAM에서 BL1의 코드가 수행됩니다.
- BL1은 사용자가 작성한 Boot Loader로서, 운영체제를 DRAM에 탑재하고 (3번 과정입니다), 수행 하기 위해, DRAM Controller등 주요 디바이스를 초기화한 후, 운영체제를 읽어 들여 운영체제로 제어를 넘기는 역할을 합니다.

1.10.1.OM핀 설정

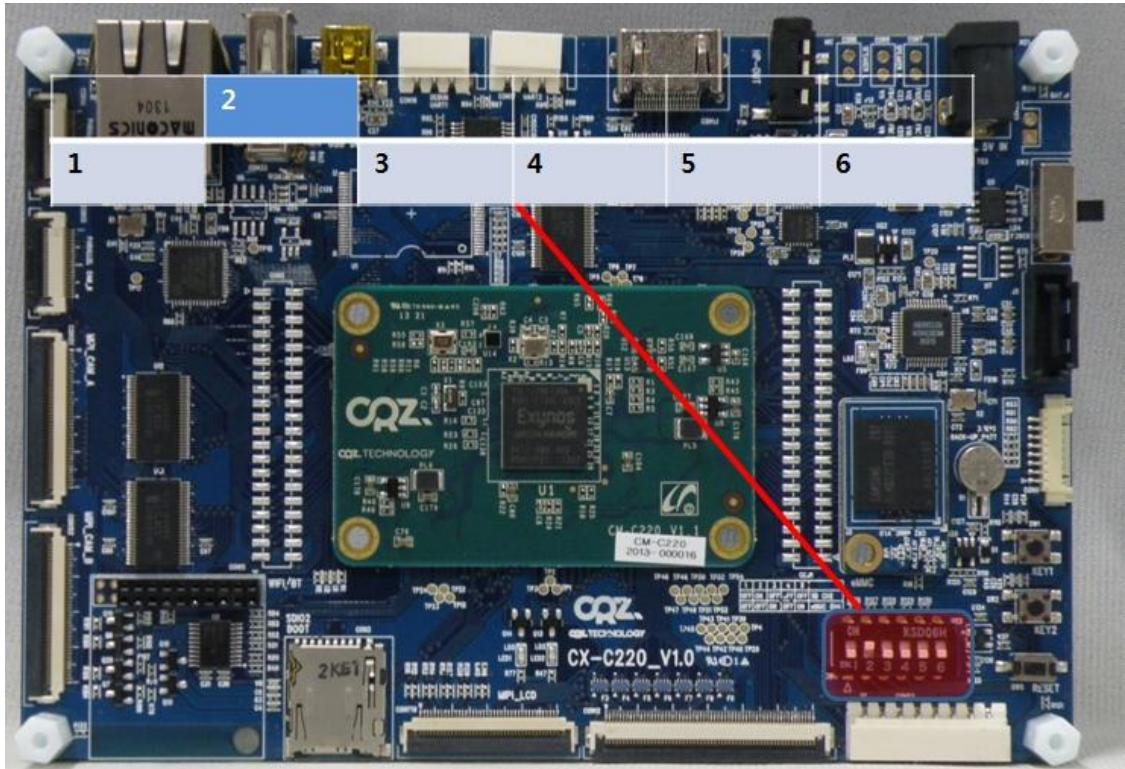


#	SW4
1	XOM1
2	XOM2
3	XOM3
4	XOM4
5	XOM5
6	GND

Table 5-3 OM Pin Setting

OM[5:1]	1 st Device	2 nd Device
5b'00000	Reserved	
5b'00001	Reserved	
5b'00010	SDMMC_CH2	USB
5b'00011	eMMC43_CH0	USB
5b'00100	eMMC44_CH4	USB
5b'00101 to 5b'00111	Reserved	
5b'01000	NAND_512_8ECC	USB
5b'01001	NAND_2KB_OVER	USB
5b'01001 to 5b'01111	Reserved	
5b'10000	Reserved	
5b'10001	Reserved	
5b'10010	Reserved	
5b'10011	eMMC43_CH0	SDMMC_CH2
5b'10100	eMMC44_CH4	SDMMC_CH2
5b'10101 to 5b'10111	Reserved	
5b'11000	NAND_512_8ECC	SDMMC_CH2
5b'11001	NAND_2KB_OVER	SDMMC_CH2
5b'11001 to 5b'11111	Reserved	

1.10.2.SD/MMC Boot Mode



1.10.3. eMMC Boot Mode

