

1.1 General Description

UMS9117-L is a highly integrated application processor with embedded TDD-LTE/FDD-LTE/ WCDMA/ GSM modem, LPDDR2, also integrated **Bluetooth**[®]/FM. It consists of single core Arm[®] Cortex[®]-A7 as application processor, which is designed to provide a cost-effective, low-power and high-performance solution for mobile phones.

The specially optimized architecture of UMS9117-L can achieve high performance and low power for a lot of applications. Proprietary architectures and algorithms were developed for low power ASIC design and power management. Unique techniques are used for noise/offset calibration and cancellation. Overall, UMS9117-L chipset presents a high cost-effective platform for LTE devices.

1.2 Features

1.2.1 Platform Features

AP Subsystem

- Single-core Arm[®] Cortex[®]-A7 processor, up to 1.0GHz
- L1 cache:32KB-I, 32KB-D, L2 cache:128KB
- Support boot from USB, UART, SD, NAND
- Watchdog timer for system crash recovery
- JTAG port for in-circuit emulation
- Support DFS technology

Memory Interface

- Support SIP LPDDR2, 1 CS, 16-bits, up to 533MHz
- Support SPI NAND Flash, up to 4 bit SPI NAND Flash 1 CS up to 4Gbit
- Support 8bit SLC NAND Flash, 1 CS up to 4Gbit, 40bit ECC

Peripheral and Connectivity Interfaces

- Support dual-SIM cards, both 1.8V and 3.0V devices
- Support 2 SDIO 3.0
- 1 USB 2.0, low speed, high speed and full speed, host and device
- Support 3 UART
- Total 3 SPI, at least one support both master and slave, support 3-wire SPI, 4-wire SPI and synchronous SPI
- Support SPI LCD, up to QVGA resolution
- Support parallel LCD, up to HVGA, but LCD and camera can't use parallel interface simultaneously

- Support 2 IIS(PCM), for audio codec connection
- Support 5-column × 5-row keypad with internal pull-up resistors, can extend to 8-column × 8-row
- Support SPI and parallel Camera
- Support 3 I2C interfaces
- Total 120 GPIO pins
- Support SIM/USIM

1.2.2 Modem Features

TDD-LTE/ FDD-LTE Baseband

- Support 3GPP Release 12
- Support TDD/FDD LTE Category 1 i.e., DL 10Mbps/UL 5Mbps
- Support VoLTE
- Support MFB
- Support Short DRX /Long DRX /C-DRX
- Support TTI Bundling/SPS
- Cryptographic and integrity algorithms: EEA1/EIA1: SNOW-3G, EEA2/EIA2: AES, EEA3/EIA3: ZUC
- Support RoHC
- Support PWS (Public Warning System, including ETWS and CMAS) receiving
- Support MBMS/eMBMS

WCDMA/HSDPA/HSUPA Baseband

- Support 3GPP release 9
- Support downlink Category 8, throughput up to 7.2Mbps
- Support uplink Category 5, throughput up to 2.0Mbps
- Support CPC/enhanced cell-FACH/enhanced F-DPCH/eDRX
- Support SRBoHS, CELL & URA-PCH
- Support DL diversity and type3i receiver
- Support Fast Dormancy
- Cryptographic and integrity algorithms:
 - UEA1/UIA1: KASUMI
 - UEA2/UIA2: SNOW-3G
- Support PWS receiving

GSM/GPRS Baseband

- Support GSM/GPRS Release 6, Release 9 particularly for LTE inter-operation
- Support GSM850, GSM900, DCS1800, and PCS1900
- Support GPRS class12
- Support GPRS service: Class B
- Cryptographic algorithms: A5/1, A5/3, GEA1, GEA2, GEA3
- Support DL diversity receiver
- Support VAMOS I

- Support DARP1
- Support PWS receiving

Multi-mode

- Support DSDS, Dual VoLTE
- Support eSRVCC/aSRVCC/bSRVCC/mid-SRVCC
- Support PSHO/ CSFB/ Redirection

Voice Codec

- Support quad vocoders for AMR-NB, EFR, HR and FR
- Support AMR-WB/AMR-NB
- Support EVS-NB/WB/SWB
- Support noise reduction
- Support echo suppression/echo cancellation

1.2.3 Multimedia Features

LCD Display

- Support SPI/Parallel LCD
- Support panel resolution up to HVGA
- Scaling: Support HVGA resolution
- Rotation:
 - Output RGB656, with/without rotation
 - Output ARGB8888, with/without rotation
 - Output YUV420, with/without rotation
 - Output YUV422, with/without rotation

Camera Interface

- Support SPI sensor up to 0.3M pixel
- Support still capture while video recording with maximum resolution and displaying on local display

Video Codec

- Support MPEG4 decoding:
 - SP: including data partition, 4MV, DC/AC prediction
 - ASP: including B vop, compatible with XVID and DIVX, not support interlace, nor 1/4 pixel, nor GMC
- Support MPEG4 encoding: Up to QVGA (240×320), 800kbps, 30fps
- Support H263 decoding: Baseline profile, Up to HVGA (320×480), 1.5Mbps, 30fps
- Support H263 encoding: Up to QVGA (320×240) 2Mbps 30fps
- Support H264 decoding: Baseline profile
- Support H264 encoding: Up to QVGA (320×240) 2Mbps 30fps
- Support stream media H263/H264/MPEG4/FLV/AVI etc. format.

Audio Codec

- Support MP3/AAC/AAC+/ AMR-NB/AMR WB/PCM/ADPCM/WMA/MIDI decoding
- Audio recording codec support MP3/AMR/WAV format
- Both Arm® core and DSP can control the audio codec

Image Codec

- Support JPEG encoding:
 - Baseline, YUV422, YUV420
 - Up to 8Mpixel
- Support JPEG decoding:
 - Baseline, YUV444/YUV422/YUV420/YUV400/YUV411
 - Up to 16Mpixel

1.2.4 WCN Features

Bluetooth

- Bluetooth 5.0, Bluetooth Smart Ready compliant
- Bluetooth classic and Low Energy dual mode concurrent operation
- Integrated 10 dBm high efficiency on-chip PA for low energy application
- Integrated wide-band speech processing to improve voice quality
- Support Low Energy background scan for context awareness applications
- Support multiple piconets and up to 8 concurrent Bluetooth Low Energy concurrent links

FCC Caution.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This Kids Smart Watch meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health.

The SAR limit of USA (FCC) is 1.6W/kg & 4.0W/kg averaged over one gram of tissue. Device types: Kids Smart Watch (FCC ID: 2BHYW-A22) has also been tested against this SAR limit. The highest SAR value reported under this standard during product certification for use when properly worn Front of face is 0.660 W/kg (separation distance is 5mm) and Wrist: 0.914 W/kg (separation distance is 0mm). The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

Body-worn Operation

This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 5mm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components.

Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.