logo

Ameba Release Note

SDK release note

Table of Contents

[1 Release v3.0 4](#_Toc16792114)

[1.1 v3.0a 4](#_Toc16792115)

[1.2 v3.0c 4](#_Toc16792116)

[2 Release v3.1 4](#_Toc16792117)

[2.1 v3.1a 4](#_Toc16792118)

[2.2 v3.1b 4](#_Toc16792119)

[3 Release v3.2 4](#_Toc16792120)

[3.1 v3.2a 4](#_Toc16792121)

[3.2 v3.2b 4](#_Toc16792122)

[3.3 v3.2c 4](#_Toc16792123)

[3.4 v3.2d 5](#_Toc16792124)

[4 Release v3.3 5](#_Toc16792125)

[4.1 v3.3a 5](#_Toc16792126)

[4.2 v3.3b 5](#_Toc16792127)

[4.3 v3.3c 5](#_Toc16792128)

[5 Release v3.4 6](#_Toc16792129)

[5.1 v3.4a 6](#_Toc16792130)

[5.2 v3.4b 8](#_Toc16792131)

[5.3 v3.4b2 10](#_Toc16792132)

[5.4 v3.4b3 10](#_Toc16792133)

[6 Release v3.5 11](#_Toc16792134)

[6.1 v3.5a 11](#_Toc16792135)

[6.2 v3.5b 13](#_Toc16792136)

[7 Release v4.0 15](#_Toc16792137)

[7.1 v4.0a 15](#_Toc16792138)

[7.2 v4.0b 17](#_Toc16792139)

[7.3 v4.0c 17](#_Toc16792140)

[8 Release v5.2 18](#_Toc16792141)

[8.1 v5.1b 18](#_Toc16792142)

[8.2 v5.1a 18](#_Toc16792143)

[8.3 v5.2b 18](#_Toc16792144)

[8.4 v5.2f 19](#_Toc16792145)

# Release v3.0

## v3.0a

* First release for 8195a

## v3.0c

* Fix WPS and long PassPrhase issue

# Release v3.1

## v3.1a

* Support EVB 2V0

## v3.1b

* add examples: crypto, i2s, flash, nfc, pw\_deepsleep
* update flash layout document: UM0034

# Release v3.2

## v3.2a

* add examples: pw\_deepstandby, pw\_sleep, watchdog, timer, adc(analog\_in), uart\_irq,
* wlan: support concurrent mode. support fast reconnect.
* evb: support 8195a 3v0 evaluation board (jlink).

## v3.2b

* Fix SPI clock rate issue
* Update example of disabling uart log before entering deep Sleep Mode
* Update I2C block read api

## v3.2c

* Modify heap size from 75KB to 70KB

## v3.2d

* Update for tool chain

# Release v3.3

## v3.3a

* Add peripheral example :
  + gtimer\_rtc,
  + spi\_stream\_twoboard: SPI DMA mode
  + uart\_clock: use uart to generate clock
* Add peripehral device examples:
  + i2c\_epl2197\_heartrate: heart rate sensor
  + i2c\_epl2590\_light: light Sensor
  + i2c\_epl2590\_proximity: proximity Sensor
  + i2c-shtc1: humidity and temperature Sensor
  + pwm-buzzer: PWM buzzer
* Add application example
  + wlan\_fast\_connect example
  + multicast example
  + mdns example
* I2S: api is modified in order to enhance performance.
* Wlan:
  + enhance AP mode throughput
  + support unassociated idle, associated idle power save
* LwIP: upgrade to LwIP 1.4.1
  + Standard library: update standard library

## v3.3b

* Fix issue of cannot load image

## v3.3c

* Fix WPS library
* Add simple config wizard lost library

# Release v3.4

## v3.4a

* Power Save
  + Provide power save mode to switch system between ON and Sleep dynamically and automatically.
  + example: pm\_tickless
  + Doc: AN0045 for detail discussion
* WLAN
  + Connection Indication
    - Support indication event of a STA association to Ameba AP
    - Please check wext\_wlan\_indicate, Running as AP mode.
  + Auto Connection after disconnect
    - Add an API for developer to decide retry time and timeout if wlan is disconnected.
    - API: wifi\_config\_autoreconnect
  + Fast Connect
    - Fix AES connect fail if key length is 13
    - Fix WEP connect fail for different key id
    - Change fast-connect flash area to prevent confliction with OTA address. (this address should finally be customized by developer according to their flash layout)
  + LwIP
    - Fix LwIP issue to solve hardfault issue.
* USB Video
  + Support USB camera software stack. It is able to use VLC on Windows/Android/iPhone to get video stream from Ameba.
  + Doc: AN0050
  + **It requires special guide** to turn on this function in SDK. Please contact FAE or agent for help.
  + Only several camera modules are included in supported vendor list, please contact FAE or agent for help. Before activation, please contact agent to apply for USB camera.
* Wi-Fi RS232, UART Adapter application
  + Support putting system in sleep mode and can be wake up by UART RX.
  + It is required to use PA\_7/PA\_6, which is different from previous SDK.
  + Doc: AN0046 and AN0045
* WiGadget Application
  + Provide an example to setup a sensor/control application quickly.
  + Sample code for both device code and Android app are provided.
  + Sample code for both local control and remote control are provided.
  + Doc: AN0049
* mDNS lib
  + In previous version, mDNS lib is located in SDRAM by default. For this version, developers can locate it in SRAM is required by modifying linker. Please check document in detail
  + Doc: AN0043
* Simple Config
  + Improve successful rate
  + Both libary for Ameba device and Android/iOS app are updated
  + Fix Hardfault if running wifi\_connect and simple config at the same time. (although it is not correct control flow)
  + Fix the issue of simple config fail in open mode with under certain flow.
* Efuse
  + Add example for using efuse. There are limited efuse storage, so
  + Please be caution when you decide to test efuse function. It is suggested to make a plan at first.
  + Example : example\_sources\efuse\_user\
* Google Nest
  + Google Nest Server changes its behavior, so modify implementation accordingly.
* GPIO
  + GPIO and Jtag
    - Add an example to disable jtag and config it as general gpio pin
    - Example: example\_sources\gpio\_jtag
* Boot
  + Fix flash calibration fail under some special condition
  + Change start address of image 2
* Application Example
  + SSL download large file (such as firmware)
    - It is usually used in OTA procedure
    - Example: component\common\example\ssl\_download
  + Socket Select
    - Example: component\common\example\socket\_select
  + XML parser/generator
    - Example: component\common\example\xml
* Crypto Engine
  + AES
    - Support AES-CBC and DES-CBC larger than 16000
* OTA
  + Add checksum feature
  + When using IAR to generate ota.bin, it appends checksum information at the end of image. Program downloads ota.bin from the internet and compares checksum value at the end.
* UART
  + UART socket
    - Use select function for UART send and receive
    - Example: component\common\utilities\uart\_socket.[c/h]

## v3.4b

* Wlan
  + Provide interface to control wi-fi power save mode and adjust DTIM time slot. Please check wifi\_set\_power\_mode, wifi\_set\_lps\_dtim.
  + Provide proper api for regulatory domain setting.
  + Fix long run disconnect issue in 3.4a
  + Fast Connect
    - Fix the issue of non-initialized content of channel field in flash causes scan fail.
    - Enable auto connect after fast connect.
  + Adaptivity
    - Add api to enabling adaptivity.
  + Isolate wlan and wps library to be os independent
* System power save
  + Log uart tx should be pulled up before entering sleep mode to prevent from the receiving peer misunderstanding this kind of situation as TX start.
  + Support option for do not disable log uart during system sleep.
* GPIO
  + Fix the issue of gpio port is disabled if the gpio share same pin with corresponding peripheral and the peripheral is disabled.
  + Add gpio level trigger example to represent how to detect both high and low triggered gpio
    - example\_sources/gpio\_level\_irq
* I2C
  + Update peripheral example to allow reading data more than 16 bytes.
* USB camera
  + Separate USB camera stack to several libraries.
  + Support more sets of USB camera
* OTA
  + Fix the issue of unable to do ota under the configuration of older bootloader and new ota image.
  + Update image checksum execution code for both winx86 and winx64 platform.
* File checksum tool
  + Provide a md5 file check sum tool
  + tools\file\_check\_sum.c
* Flash
  + Support new type of flash.
* Application
  + UART Adapter
    - Fix compiler error.
* Other
  + Fix hardfault caused by reusing of GPIO control related memory as heap space.
  + Fix compiler warning under IAR 7.40.
  + Do not show sdram init warning message for 8711AF
* Document
  + UM0014: Fix some typo.
  + UM0023: Add description for how to disable CMSIS-DAP.
  + UM0034: Add instruction for how to place data in sdram.

## v3.4b2

* Wlan
  + Patch: lib\_wlan.a, lib\_wlan\_mp.a
  + Patch: wifi\_conf.c, wifi\_util.[c/h]. (only if adaptivity feature is required)
  + Compatibility issue with one AP under AES mode
  + Add API for adaptivity mode and threshold.
  + Revise channel plan to improve tx power of channel 12, 13 in WW13.(Excluding FCC power limit for channel 12, 13)
  + Add Channel plan FCC2, MKK2 and Global.
  + Fix RX packet fail if RDU happened.
  + Fix TPLINK AP disconnect issue in power save mode.

## v3.4b3

* Wlan
  + Patch: lib\_wlan.a, lib\_wlan\_mp.a
  + Fix memory leak when continuously connect to encrypt AP.
  + Improve stability of wlan long run under power save. RF is off under some condition.
  + Improve stability of wlan long run under power save. One Netgear AP send deauth to STA under low traffic.
  + Update PHY parameter from v19 to v21.
  + CCK FA counter in MP mode. (wlan mp lib)
  + Fix ping loss in concurrent mode because PHY ODM excute twice in 2 seconds.
  + Add channel plan “Global”
* FreeRTOS
  + Patch: osdep\_service.h [MUST]
  + Should open USE\_MUTEX\_FOR\_SPINLOCK in freertos\_service.c to enable spinlock protect for wlanlib.
* Toolchain
  + Patch: platform\_lib.a
  + Support IAR 7.5
* OTA tool
  + Patch checksum.exe
  + Fix image checksum calculation incorrect that may lead to OTA fail

# Release v3.5

## v3.5a

* Wlan
  + [Fix] Strengthen stability long run for association idle mode.
  + [Fix] Improve DHCP procedure.
  + [Fix] Fix memory leak in scan command.
  + [New] Add command to get driver capability.
  + [New] Add flash access protection for fast connect data storage.
  + [New] Get sta info in AP mode.
  + [New] API for hidden ssid in AP mode
  + [New] API for disassociate a sta
  + [New] API/example to get current connected beacon content
  + [New] API to set channel plan in normal driver mode. wifi\_set\_channel\_plan().
  + [Update] Normal driver checks K-free according to effuse.
  + [Update] Report matched ssid on during scan with ssid procedure.
* Lwip
  + [Fix] handle dhcp renew by default.
* Power Save
  + [Fix] 8711AF doesn’t have SDRAM, so suspend/resume SDRAM cause device hang.
  + [Fix] The UART interrupt may cause sleep fail. Fix it by disable interrupt when enter sleepCG.
  + [New] Tickless: Extend wake lock module from one to 32 hardware device.
  + [New] Tickless: Support options that not to suspend sdram intickless. Please check flag FREERTOS\_PMU\_TICKLESS\_SUSPEND\_SDRAM.
  + [Update] Force to put stack of idle task in SRAM. To put idle task in SDRAM cause system hang because of incorrect power sequence.
* Simple config
  + [New] Simple config version 2. To reduce the condition that AP does not forward packets.
  + [fix] Improve 40MHz send/receive during simple config
* Multimedia
  + RTSP: Update RTSP library
  + Multimedia framework : New mmf middleware for streaming application.
  + UVC: Update UVC library
  + USB camera: Do not filter out unrecognized camera on 3.5 version.
* Storage Application
  + SD interface storage/file system. Create/Open/Delete/Save data. For detail please check UM0073.
  + USB mass storage class. Ameba act as a USB device class, and data is input from usb interface and stored in SD card. For detail please check UM0073.
* UART Adapter
  + [New] Add TCP socket auto-connect after reboot.
* UART
  + [New] Provide new set of API to control log uart usage
  + [Update] Uart flow control
* Efuse
  + [New] Add efuse api and provide example. Please check example\_sources\efuse\_mtp and example\_sources\efuse\_otp
  + [New] Add efuse api read/write lock to prevent from writing error under multiple thread access.
* I2C
  + [Fix] example\_sources/i2c: Initialize I2C structure
* SPI
  + [New] example\_sources/spi\_stream\_twoboard : support tx/rx concurrent mode
* RTC
  + [Fix] example\_sources/rtc: fix ctime() and wait() function fail in RTC example code.
* PWM & Gtimer
  + [Fix] Modify gtimer mapping to prevent from some PWM conflict with timer using by wlan
    - Support gtimer 0,1 IRQ handler.
    - Change PWM0~3 gtimer from 3~6 to 2~5. PWM[0,1,2,3] -> Timer[3,4,5,2]
    - Change RTC gtimer from 7 to 0.
* Gpio
  + [new] Add gpio\_level\_irq example
* Flash
  + [new] Add lock for flash r/w. device\_mutex\_lock(RT\_DEV\_LOCK\_FLASH);.
* Ethernet
  + [new] Add Ethernet api
* Network Stack
  + [Fix] ssl\_download example
  + [New] Add example for client/server authentication.
  + [New] Example for SNTP. Add example\_sntp\_showtime.c .
* Others
  + [Fix] Update NFC firmware.
  + [Update] Add more function and save up to 40KB sram
  + [Update] Move thread stack of log service and TCPIP to TCM to save SRAM usage.
  + [Update] Use heap\_5.c instead of heap\_4.c. Heap\_5.c allows the heap to span multiple non-contiguous regions.
  + [Update] Update flash loader in IAR.
    - When executing erash flash in IAR, do not clear system data and calibration data section.
  + [New] Provide a method to disable message output from printf
    - Set disablePrintf = TRUE low\_level\_io.c
  + [New] rtl\_vprintf and rtl\_vsnprintf
  + [New] Support AT command v2. Detail in AN0075
  + [New] Support firmware update through UART. Detail in AN0096
* Feature
  + Multimedia Frame Work
    - [New] Provide many audio/video examples.
* Document
  + [Update] UM0034. Provide methodology for how to use SDRAM

## v3.5b

* Wlan
  + [Update] Improve P2P connection stability.
  + [Update] Improve association idle stability with some specific AP.
  + [Update] Optimization for adaptivity test.
  + [New] Add API for cancel WPS session
* Lwip
  + [fix] interoperability with one specific AP. Hardfault fixed.
* Simple config
  + [Fix] Improve ipteroperability
* Efuse
  + [Fix] Enlarge efuse programming successful rate during mass production.
* I2S
  + [Update] Move audio driver to common parts.
* Flash
  + [Update] Lower Flash operation frequency for stability for some flash type.
* Ethernet
  + [Update] Optimize Ethernet initialization flow.
* Network Stack
  + MQTT
    - [New] Add MQTT example
  + SSL
    - [New] Add SSL server sample
* Others
  + - OTA
      * [Update] Move ota code from common to soc specific.
      * [New] Support flash read back check
      * after OTA accomplished.
      * [New] Example for OTA over http
    - Firmware update through UART
      * [Update] Check flash content after upgrading firmware through UART
    - Http download example
      * [Update] Refine timeout behavior
* Feature
  + SPI at command v2
    - [New] AT command over SPI interface. Ameba is SPI master. component\common\example\spi\_atcmd
  + Airkiss
    - [New] Support AirKiss2.0
  + UART at command v2
    - [Fix] Fix DCHP issue under AP mode
  + GoogleNest
    - [Update] Update client behavior according to google nest server
  + QQLink
    - [Update] Adjust connecting cloud server address, due to the old address is abolished.
  + HTTP client/daemon
    - [New] Support http client/demon. Please refer to api document in doc\api\_doc.htm, example is also supported.
* Document
  + [Update] Peripheral api document in doc\api\_doc.htm

# Release v4.0

Both Ameba-1 and Ameba-Z are supported from version greater than 4.0.

## v4.0a

* Wlan
  + Ameba-1/Ameba-Z
    - [Critical Fix] Fix packet fails to send out if AP’s IP address is 192.168.43.x. Android hotspot use 192.168.43.x. (existing in 3.5b only)
      * Patch is available for 3.5b: [3.5b\_patch\_fix\_android\_hotspot\_issue\_(v01)](https://www.amebaiot.com/?s2member_file_download=access-s2member-level1/3.5b_patch_fix_android_hotspot_issue_(v01).zip)
    - [Fix] Enhance WPS stability & interoperability.
    - [Fix] 4-way handshake fail under one special corner case with one AP. Hardfault fixed
    - [Update] Support channel plan WW2.
    - [Update] Support ping IP in external network
    - [New] WEP key error indication event
    - [New] Provide API “wext\_set\_sta\_num() “ to support limited STAs number for AP mode.
    - [New] Support EAP supplicant
    - [New] API for AP’s bssid wext\_get\_bssid()
    - [New] Support WPS multiple credential
    - [New] Support WPS2.0
    - [New] Support STA timeout mechanism in AP mode. Please check CONFIG\_ENABLE\_AP\_POLLING\_CLIENT\_ALIVE for detail.
* Simple config
  + Ameba-1/Ameba-Z
    - [Update] Improve simple config v3
* Power Save
  + Ameba-1/Ameba-Z
    - [Update] Adjust tickles API to support both Ameba-1/Ameba-Z
* Multimedia
  + Ameba1
    - [New] Playback MP3 file in sd card. Ameba-1 only
    - [New] Streaming MP3 from RTSP server. Ameba-1 only
* I2S
  + Add driver for audio codec sgtl5000
* Ethernet
  + - Ameba-1
      * [Fix] Fix routing error under fixed IP configuration
* Network Stack
  + Ameba-1/Ameba-Z
    - WebSocket
      * [Fix] fix memory leak on some condition
    - HTTP Server
      * [Update] Add some interface API
    - Ping
      * [Update] Support ping with domain name
    - DHCPc
      * [Fix] Fix DHCP release
    - DHCPs
      * [Fix] Fix interoperability with iPhone SE
    - QQLink
      * [Update] Lib update
    - Airkiss
      * [Update] Update to new version
  + Ameba-1
    - mbedTLS
      * [New] Support mbedTLS. It is suggested to stay PolarSSL in Ameba-Z for memory consideration.
    - PolarSSL
      * [Update] Speed up connection time
* Others
  + Ameba-1/Ameba-Z
    - OS API Suggestion
      * [Update] For new users, please use osdep\_service.h in folder component\os\os\_dep
      * [Update] For old uses, suggest replace osdep\_api.h with osdep\_service.h
      * [Update] move osdep\_api.h code to component\soc\realtek\8195a\misc\os
    - OTA
      * [Update]add the solution for the scenario that the size of http header over the buffer size
    - Toolchain
      * [Update] Support IAR 7.8
* Feature
  + Ameba-1/Ameba-Z
    - [Update] Airkiss 2.0
    - [Update] Support SSID with UTF-8 format such as Chinese character.
    - [New] AWSIoT
    - [New] DCT, Device Configuration Table for variable data management
      * component/common/example/dct
* Document
  + Ameba-1/Ameba-Z
    - [Update] API document update.

## v4.0b

* Network Stack
  + Ameba-1/Ameba-Z
    - WebSocket
      * [Update] Support buffer length assigned by user
* Feature
  + Ameba-Z
    - [Update] Alink
    - [Update] Joylink

## v4.0c

* Wlan
  + [Update] Support KRACK test
* Power Save
  + Ameba-Z
    - [Fix] Improve tickles mode stability
* Network Stack
  + Ameba/Ameba-Z
    - MDNS
      * [Fix] Fix hardfault when receiving extra large packet

# Release v5.2

Version 5.2x support AmebaPro series IC only.

## v5.1b

* First Release

## v5.2a

Support EVB 2\_0

* Wlan
  + AmebaPro
    - [Update] Provide wake on wlan example
* ISP
  + AmebaPro
    - [Update] Move ISP type selection file from eval\_board.h to sensor.h

## v5.2b

* Wlan
  + AmebaPro
    - [Update] Increase Wlan buffer for more stable streaming
    - [Update] Add API for Application Keep Alive mechanism
    - [Update] Add example for Wakeup pattern
* Network Stack
  + AmebaPro
    - [Update] Increase TCP/IP buffer for more stable streaming
    - [Update] Provide a lwip default setting suitable for video streaming application
* SD
  + AmebaPro
    - [Fix] Improve SD card stability and compatibility
    - [Fix] Resolve SD file system read/write error for alignment issue
* H.264
  + AmebaPro
    - [Update] Add Chroma QP control
    - [Update] Add stop streaming API
* Multi Media Framework
  + AmebaPro
    - [Update] Add example for I2S MIC scenario
* ISP
  + AmebaPro
    - [Update] Add API for frame rate control for sensor
    - [Fix] Fix showing of OSD timing
* Power Save
  + AmebaPro
    - [Update] Add example for Big/Little CPU standby and wakeup flow
* Other
  + AmebaPro
    - [Update] OTA method description, please check application note.
    - [Update] Provide example code of OTA over SD card
    - [Update] Add system reset API sys\_reset

## v5.2f

* Wlan
  + AmebaPro
    - [fix] Improve wifi connection stability
    - [fix] Improve wifi throughput for video stability
    - [Update] Support SKB buffer number setting
    - [Update] Save wifi calibration data in efuse by default
* Network Stack
  + AmebaPro
    - [fix] Improve tcp keep alive stability under standby mode
    - [fix] Improve stability or remote wake up
* SD
  + AmebaPro
    - [Fix] Improve SD card stability and compatibility
    - [Update] Add SD plug detect feature
    - [Update] Add mutex resource for FATFS
    - [Update] Add fatfs\_get\_free\_space\_byte to get accurate byte size
* H.264
  + AmebaPro
    - [Update] Add VBR with dynamic QP range
* ISP
  + AmebaPro
    - [Fix] Fix showing of OSD timing
* Power Save
  + AmebaPro
    - [Fix] Big/Little CPU standby and wakeup flow
    - [Update] Add standby\_multiple\_wake\_source
* Other
  + AmebaPro
    - [Fix] Fix ADC function on Big CPU

THIS SOFTWARE AND DOCUMENT ARE PROVIDED “AS IS” WITHOUT ANY WARRANTIES OF ANY KIND. REALTEK MAY MAKE IMPROVEMENTS AND/OR CHANGES TO THIS THE SOFTWARE AND DOCUMENT AT ANY TIME AND AT ITS SOLE DISCRETION. WITH RESPECT TO THE SOFTWARE; DOCUMENT; INFORMATION; MATERIALS; SERVICES; AND ANY IMPROVEMENTS AND/OR CHANGES THERETO PROVIDED BY REALTEK, REALTEK DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT.