

Release Notes

1. Overview

This document is the release notes for the AmbiqSuite SDK v2.0.0. The Ambiq Suite SDK is a collection of software enablement for the Apollo, Apollo2, Apollo2-Blue, and Apollo3-Blue MCU based EVBs. The SDK includes a hardware abstraction layer (HAL), device drivers, and example applications to speed the understanding of the operation of the MCUs. Third party software including ARM's Cordio BLE Host stack and FreeRTOS 9.0 are distributed along with debugging tools and other support. Additional support for Ambiq products can be found at <http://ambiqmicro.com/support/>.

AmbiqSuite SDK v2.0.0 provides support for Ambiq's new Apollo3-Blue MCU including the following new features:

- Integrated BLE 4.2 Controller
- Multi-bit SPI (MSPI) with Execute in Place (XIP)
- TurboSpot MCU mode at 96MHz
- DMA and Command Queue support for IOM (I2C/SPI) and MSPI blocks
- DMA support for ADC and PDM blocks
- Simplified GPIO program with automated BSP generation
- Fast GPIO support
- Secure Bootloader with support for software upgrades and patching
- Stepper Motor Pattern Generation
- Uniform Device Driver module for most HAL functions
- CMSIS Register and ISR definitions supported¹

2. Target Hardware Supported

This release of the SDK enables support for the following targets:

- apollo1_evb (Apollo1 APOLLO512-KBR Board Rev 1.0)
- apollo2_blue_evb (Apollo2-Blue EVB Rev 1.0)
- apollo2_evb (Apollo2 AMAPH1KK-KBR EVB Rev 1.1)
- apollo3_evb (AMA3B1KK-KBR EVB Rev 1.0)

3. Development Tools

The Ambiq Suite SDK has been tested with the following Integrated Development Environments:

- IAR Embedded Workbench 8.32.2
- Keil uVision 5.24.2
- GCC 5.4.1
- SEGGER JLink 6.34 or later

¹ In anticipation of multiple instances of MSPI and PDM in future MCUs, the ISRs have been renamed as `am_mspi0_isr` and `am_pdm0_isr` respectively.

4. Resolved Defects

Module	Target	Description
HAL	Apollo Apollo2 Apollo2-Blue Apollo3-Blue	am_hal_systick.c Fixed defects in the am_hal_systick_delay_us() and am_hal_systick_wait_ticks() function for all Apollo devices.
HAL	Apollo Apollo2 Apollo2-Blue Apollo3-Blue	am_hal_sysctrl.c Updated am_hal_sysctrl_sleep to add ARM recommendation to execute __DSB() before WFI to flush any buffered writes. Also execute __ISB() after wake. This is especially important for the write to SCR to set either normal or deep sleep mode.
HAL	Apollo	am_hal_flash.c Fix to am_hal_flash_load_ui32 to make sure that SRAM_load_ui32 is word aligned.
HAL	Apollo Apollo2 Apollo2-Blue	am_hal_tpiu.c Fix to am_hal_tpiu_enable to make sure the TPIU is not in test mode for proper deep sleep operation.
HAL	Apollo2 Apollo2-Blue	am_hal_ctimer.c Fixed a defect in am_hal_ctimer_compare_set() where TimerB compare value wasn't being properly set.
HAL	Apollo2 Apollo2-Blue	am_hal_iom.c Added error checking in am_hal_iom_power_on_restore. Removed while(1) in am_hal_iom_spi_fullduplex_nq.
HAL	Apollo2 Apollo2-Blue	am_hal_flash.c Added interfaces of reprogramming 1 word for flash and INFO space. Added workaround inside HAL for a boot-rom defect that programming flash and info0 could not accept the source is the last word of SRAM.
HAL	Apollo2 Apollo2-Blue	am_hal_uart.c Fixed defects in config_baudrate() function.
BLE Examples	Apollo2-Blue	Updated the WSF memory pool allocations. Added error checking in case the static buffer and allocation are misaligned.
Devices	Apollo2-Blue	am_devices_em9304.c Updated driver to remove while(1)'s and check HAL return values.
Utils	Apollo Apollo2 Apollo2-Blue Apollo3-Blue	am_util_faultisr.c Updated fault handler to account for non-baremetal implementation where either PSP or MSP could be used.
Tools	Apollo Apollo2 Apollo2-Blue Apollo3-Blue	Cleaned up tool output (emp2include.py). Options for "weak" and "pulldown" (pinconfig.py) Updated EM9304 patches with GPIO10/11 disable patches.

Table 2. Resolved Defects in Release

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