

Release Notes

1. Overview

This document is the release notes for the AmbiqSuite SDK v2.2.0. 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 v10.1.1 and v9.0 are distributed along with debugging tools and other support. Additional support for Ambiq products can be found at <https://support.ambiqmicro.com/hc/en-us>.

AmbiqSuite SDK v2.2.0 continues to support for Apollo3-Blue MCU both A1 and B0 silicon revisions from the same binary.

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

4. Resolved Defects

Module	Target	Description
IOM HAL (am_hal_iom.c)	Apollo3-Blue	Setting of DCX register (new for Rev B0) could cause I2C to fail. Added code to make this conditional on SPI mode only.
HCI Driver (hci_drv_apollo3.c)	Apollo3-Blue	<p>Vendor Specific HCI command to set BLE controller power does not work. Use BLE controller register setting over HCI instead.</p> <p>Restored the "heartbeat" function in the HCI driver. This new version of the HCI driver includes a macro definition that allows the user to enable or disable the heartbeat function based on their specific use case. The default configuration keeps the "heartbeat" running when the HCI interface is otherwise idle.</p> <p>There is a GPIO11 operation in HciDrvIntService() in hci_drv_apollo3.c. This may effect customer application case. The updated version disables this GPIO usage when AM_DEBUG_BLE_TIMING is not defined.</p>
BLE Controller Patches (am_hal_ble_patch.c, am_hal_ble_patch_b0.c)	Apollo3-Blue	This change reverted the interval between each advertising channel to default of 1.5ms to address an intermittent connection failures due to not receiving a scan response from the device. The impact to power consumption should be small, but we have not retested that.
GPIO HAL (am_hal_gpio.c)	Apollo3-Blue	<p>Configuration of pin UART1RX pin 38 via am_hal_gpio_pinconfig() was not setting the INPEN enable. This was due to an omission in the g_ui8Inpen[] lookup table. That table has been scrubbed to make sure all INPEN is set for all input functions.</p> <p>Selection of a configuration option of AM_HAL_GPIO_PIN_PULLUP_WEAK would result in a fail with am_hal_gpio_pinconfig() for most pins.</p>
Apollo3-Blue EVB (am_bsp.c)	Apollo3-Blue	Remove unnecessary disable of ITM in am_bsp_low_power_init() function. This call would hang Keil debugger in certain circumstances.
BLE Controller Patch (am_hal_ble_patch_b0.c)	Apollo3-Blue	Updated B0 patch designed to eliminate BLE spur issues on B0 silicon.
CLKGEN HAL (am_hal_clkgen.c)	Apollo3-Blue	CLKOUT enums ended up out-of-order after deprecation of some CLKOUT settings. Solution is to reset the enum values at the appropriate places.
adc_vbatt example	Apollo3-Blue	Fixed a bug in the example which was improperly reading back the VBatt voltage.

Table 2. Resolved Defects in Release

5. New Features

Module	Target	Description
GPIO HAL (am_hal_gpio.h)	Apollo3-Blue	A new method to support a fast GPIO read. New macro, am_hal_gpio_fastgpio_read(n).
SCARD HAL (am_hal_scard.*)	Apollo3-Blue	Added support for the SCard interface (not yet fully validated).
FreeRTOS	Apollo Apollo2 Apollo2-Blue Apollo3-Blue	Added default support for FreeRTOS v10.1.1. FreeRTOS v9 source code is retained.
BLE Voice Over LE Example (ble_freertos_vole)	Apollo3-Blue	Added Voice Over LE example using Opus Codec and Amazon Android App.
SW Workaround for ERR019 (am_hal_pwrctrl.c)	Apollo3-Blue	Added software workaround for Errata ERR019.

Table 3. New Features in Release

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