IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

LUCIO DEVELOPMENT LLC,	§	
	§	
Plaintiff,	§	Case No: 1:19-cv-661
	§	
vs.	§	PATENT CASE
	§	
AMBIQ MICRO, INC.,	§	
	§	
Defendant.	§	
	§	

COMPLAINT

Plaintiff Lucio Development LLC ("Plaintiff" or "Lucio") files this Complaint against Ambiq Micro, Inc. ("Defendant" or "AMI") for infringement of United States Patent No. 7,069,546 (hereinafter "the '546 Patent").

PARTIES AND JURISDICTION

1. This is an action for patent infringement under Title 35 of the United States Code. Plaintiff is seeking injunctive relief as well as damages.

2. Jurisdiction is proper in this Court pursuant to 28 U.S.C. §§ 1331 (Federal Question) and 1338(a) (Patents) because this is a civil action for patent infringement arising under the United States patent statutes.

3. Plaintiff is a Texas limited liability company with its office address at 555 Republic Dr., Suite 200, Plano, Texas 75074.

4. On information and belief, Defendant is a Delaware corporation with its principal place of business at 6500 River Pl. Blvd., #200, Austin, TX 78730. On information and belief, Defendant may be served through its agent, The Corporation Trust Company,

Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801.

5. This Court has personal jurisdiction over Defendant because Defendant has committed, and continues to commit, acts of infringement in this District, has conducted business in this District, and/or has engaged in continuous and systematic activities in this District.

6. On information and belief, Defendant's instrumentalities that are alleged herein to infringe were and continue to be used, imported, offered for sale, and/or sold in this District.

VENUE

7. Venue is proper in this District pursuant to 28 U.S.C. §1400(b) because acts of infringement are occurring in this District and Defendant has a regular and established place of business in this District at 6500 River Pl. Blvd., #200, Austin, TX 78730.

COUNT I
(INFRINGEMENT OF UNITED STATES PATENT NO. 7,069,546)

8. Plaintiff incorporates paragraphs 1 through 7 herein by reference.

9. This cause of action arises under the patent laws of the United States and, in particular, under 35 U.S.C. §§ 271, *et seq*.

10. Plaintiff is the owner by assignment of the '546 Patent with sole rights to enforce the '546 Patent and sue infringers.

11. A copy of the '546 Patent, titled "Generic Framework for Embedded Software Development," is attached hereto as Exhibit A.

12. The '546 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

13. On information and belief, Defendant has infringed and continues to infringe one or more claims, including at least Claim 1, of the '546 Patent by making, using, importing,

selling, and/or offering for sale a software platform for embedded software development, which is covered by at least Claim 1 of the '546 Patent. Defendant has infringed and continues to infringe the '546 Patent directly in violation of 35 U.S.C. § 271.

14. Defendant, sells, offers to sell, and/or uses embedded software development packages including, without limitation, the Ambiq Suite SDK, associated Apollo MCU family and System-on-a-chip solution, and any similar products ("Product"), which infringe at least Claim 1 of the '546 Patent. Apollo MCU family and System-on-a-chip solution integrates with Ambiq Suite SDK, which generates C, C++ and encapsulated C++ code for embedded processors (such as ARM Cortex-M4F processor). Ambiq Micro and/or its customers specifically use Apollo MCU family (such as Apollo, Apollo Lite, Apollo2, Apollo2 Blue and/or Apollo3 blue) and System-on-a-chip solution which integrates with Ambiq Suite SDK to produce embedded software. The Product practices a method for producing embedded software. Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

	Apollo Lite	Apollo	Apollo2	Apollo2 Blue	Apollo3 Blue
MCU Frequency	24MHz	24MHz	48 MHz	48MHz	48MHz TurboSPOT™ 96MHz
MCU	32-bit ARM Cortex-M4F	32-bit ARM Cortex-M4F	32-bit ARM Cortex-M4F	32-bit ARM Cortex-M4F	32-bit ARM Cortex-M4F DMA
MCU Power Efficiency	34 uA/MHz	34 uA/MHz	10uA/MHz	10uA/MHz	6 uA/MHz
Flash/SRAM	256KB/32KB	512KB/64KB	1MB/256KB	1MB/256KB	1MB/384KB
Voltage	2.2 - 3.8V	2.2 - 3.8V	1.8 - 3.6V	1.95 - 3.6V	1.8 – 3.6V
ADC	10 bit, 13-channel, up to 800 kSps	10 bit, 13-channel, up to 800 kSps	14 bit, 15-channel, up to 1.2 MSps	14 bit, 15-channel, up to 1.2 MSps	14 bit, 15-channel, up to 1.2 MSps
I/O	I²C/SPI master I²C/SPI slave UART (1)	I²C/SPI master I²C/SPI slave UART (1)	I²C/SPI master (6x) I²C/SPI slave UARTS (2)	I²C/SPI masters (4x) I²C/SPI slave UARTS (2)	I²C/SPI master (6x) I²C/SPI slave UARTS (2)
I²S	-	-	I2S slave for PDM Audio Pass-through	I2S slave for PDM Audio Pass-through	I2S slave for PDM Audio Pass-through
PDM	-	-	Dual interface for Mono and Stereo Audio Microphones	Dual interface for Mono and Stereo Audio Microphones	Dual interface for Mono and Stereo Audio Microphones
Wireless Connectivity	-	-	-	BLE 5 w/ Dedicated Processor	BLE 5 w/ Dedicated Processor
RF Sensitivity	-	-	-	-95dBm	-95dBm
RF TX Max	-	-	-	+5dBm	+4dBm
RX current	-	-	-	3.5mA	3 mA
TX current	-	-	-	5.05mA @ 0dBm 8mA @ +5dBm	3 mA @ 0dBm
Packages	- 2.49 x 2.90 mm 41-pin CSP w/ 27 GPIO - 4.5 x 4.5 mm 64-pin BGA w/ 50 GPIO	- 2.49 x 2.90 mm 41-pin CSP w/ 27 GPIO - 4.5 x 4.5 mm 64-pin BGA w/ 50 GPIO	- 2.5 x 2.5 mm 49-pin CSP w/ 34 GPIO - 4.5 x 4.5 mm 64-pin BGA w/ 50 GPIO	4 x 4 x 0.9 mm 64-pin LGA with up to 31 GPIO	3.3 x 3.2 mm 65-pin CSP w/ 37 GPIO 5 x 5 mm 81-pin BGA w/ 50 GPIO

Source: https://ambiqmicro.com/mcu/

ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

3. Overview

This version of the Ambiq Suite SDK is designed to target a family of Arduino compatible Evaluation Boards known as apollo1_evb and apollo2_evb. These boards are designed to be widely compatible with the Arduino ecosystem of reference shield boards. In addition, they include a SEGGER J-Link debugger on-board so there is no need for an external debugger.

This version supports example projects for the following toolchains:

- IAR Embedded Workbench 8.11.1
- Keil uVision 5.23
- Atollic TrueSTUDIO 7.1.2
- GCC 5.3.1

Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 4

ambiq micro
Giving batteries a better life

Apollo Datasheet

Ultra-Low Power MCU Family

Features

Ultra-low supply current:
- EEMBC ULPBench score of 377
- 35µA/MHz executing from flash at 3.3 V
- 143 nA deep sleep mode at 3.3 V
- 419nA deep sleep mode with XTAL-assisted RTC at 3.3 V

High-performance ARM Cortex-M4F Processor
- Up to 24 MHz clock frequency
- Floating point unit
- Memory protection unit
- Wake-up interrupt controller with 12 interrupts

Ultra-low power memory:
- Up to 512 KB of flash memory for code/data
- Up to 64 KB of low leakage RAM for code/data

Ultra-low power interface for off-chip sensors:
- 10 bit, 13-channel, up to 800 kSps ADC
- Temperature sensor with +/-4°C accuracy

Flexible serial peripherals:
- I^2C/SPI masters for communication with sensors, radios, and other peripherals
- I^2C/SPI slave for host communications
- UART for communication with peripherals and legacy devices

Rich set of clock sources:
- 32.768 kHz XTAL oscillator
- Low frequency RC oscillator – 1.024 kHz
- High frequency RC oscillator – 24 MHz
- RTC based on Ambiq's AM08X5/18X5 families

Wide operating range: 1.8-3.8 V, –40 to 85°C

Compact package options:
- 2.49 x 2.90 mm 41-pin CSP with 27 GPIO
- 4.5 x 4.5 mm 64-pin BGA with 50 GPIO

Applications

- Wearable electronics
- Wireless sensors
- Activity and fitness monitors
- Consumer medical devices

Description

The Apollo MCU family is an ultra-low power, highly integrated microcontroller designed for battery-powered devices including wearable electronics, activity & fitness monitors, and wireless sensors. By combining ultra-low power sensor conversion electronics with the powerful ARM Cortex-M4F processor, the Apollo MCU enables complex sensor processing tasks to be completed with unprecedented battery life. Weeks, months, and years of battery life are achievable while doing complex context detection, gesture recognition, and activity monitoring. The Apollo MCU takes full advantage of Ambiq Micro's patented Subthreshold Power Optimized Technology (SPOT) Platform, setting a new industry benchmark in low power design.

The Apollo MCU also integrates up to 512 KB of flash memory and 64 KB of RAM to accommodate radio and sensor overhead while still leaving plenty of space for application code. This microcontroller also includes a serial master and UART port for communicating with radios and sensors including accelerometers, gyroscopes, and magnetometers.

Source: https://ambiqmicro.com/static/mcu/files/Apollo_MCU_Data_Sh_DS-A1-1p00.pdf, page 2.

ambiq micro

Release Notes
Ambiq Suite SDK

Ambiq Suite (v1.2.10), Sept 2017

Release Notes

1. Overview

This document is the release notes for the Ambiq Suite SDK v1.2.10. The Ambiq Suite SDK is a collection of software enablement for the Apollo and Apollo2 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 is distributed along with debugging tools and other support. Additional support for Ambiq products can be found at http://ambiqmicro.com/support/.

2. Target Hardware Supported

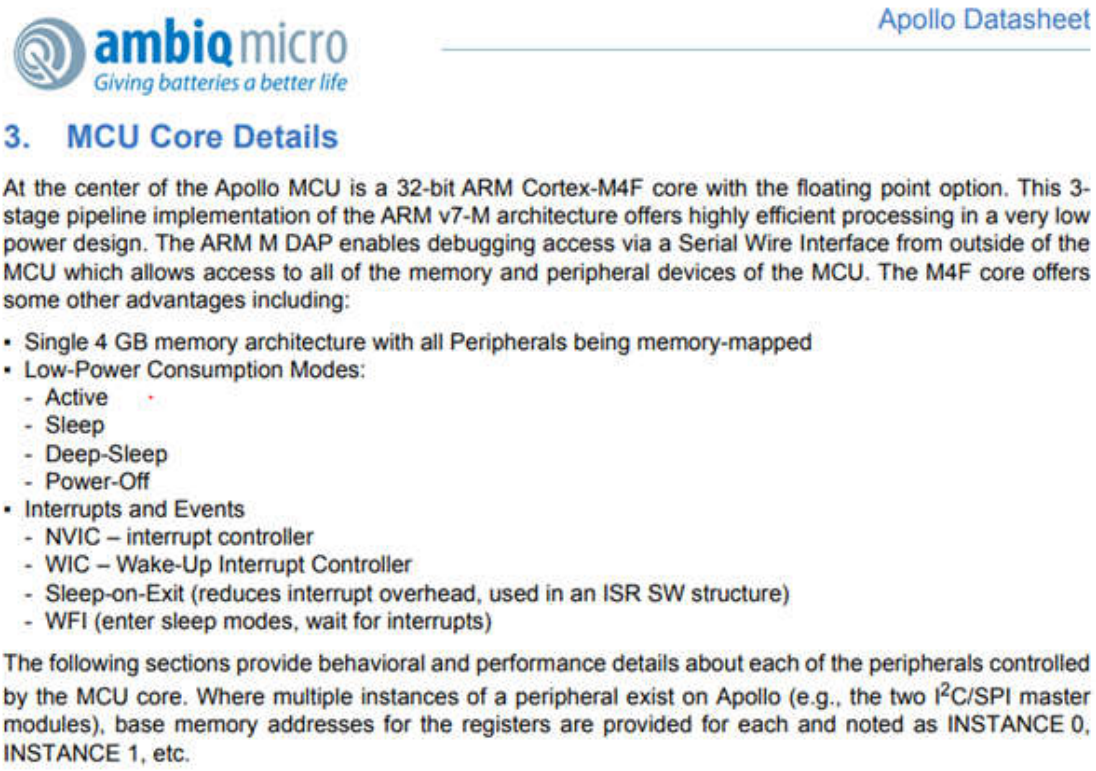
This release of the SDK enables support for the following targets:

- apollo1_evb (Apollo1 APOLLO512-KBR Board Rev 1.0)
- apollo1_evb_am_ble (Apollo1 APOLLO512-KBR Board Rev 1.0 + AM_BLE_SHIELD Rev 2[1])
- apollo1_evb_em9304 (Apollo1 APOLLO512-KBR Board Rev 1.0 + EM9304 DVK V4.0)
- apollo2_blue_evb (Apollo2-Blue EVB Rev 0.3)
- apollo2_evb (Apollo2 AMAPH1KK-KBR EVB Rev 1.1)
- apollo2_evb_am_ble (Apollo2 AMAPH1KK-KBR EVB Rev 1.1 + AM_BLE_SHIELD Rev 2)
- apollo2_evb_em9304 (Apollo2 AMAPH1KK-KBR EVB Rev 1.1 + EM9304 DVK V4.0)
- apollo2_evb_v1_0 (Apollo2 AMAPH1KK-KBR EVB Rev 1.0)
- apollo2_evb_v1_0_am_ble (Apollo2 AMAPH1KK-KBR EVB Rev 1.0 + AM_BLE_SHIELD Rev 2)
- apollo2_evb_v1_0_em9304 (Apollo2 AMAPH1KK-KBR EVB Rev 1.0 + EM9304 DVK V4.0)

Note that the following configuration has been deprecated:

- apollo2_evb_v0_4 (Apollo2 AMAPH1KK-KBR Rev 0.4)

Source: https://ambiqmicro.com/static/mcu/files/AMSDKRN-Ambiqsuite-1_2_10.pdf, page 1.



ambiq micro
Giving batteries a better life

Apollo Datasheet

3. MCU Core Details

At the center of the Apollo MCU is a 32-bit ARM Cortex-M4F core with the floating point option. This 3-stage pipeline implementation of the ARM v7-M architecture offers highly efficient processing in a very low power design. The ARM M DAP enables debugging access via a Serial Wire Interface from outside of the MCU which allows access to all of the memory and peripheral devices of the MCU. The M4F core offers some other advantages including:

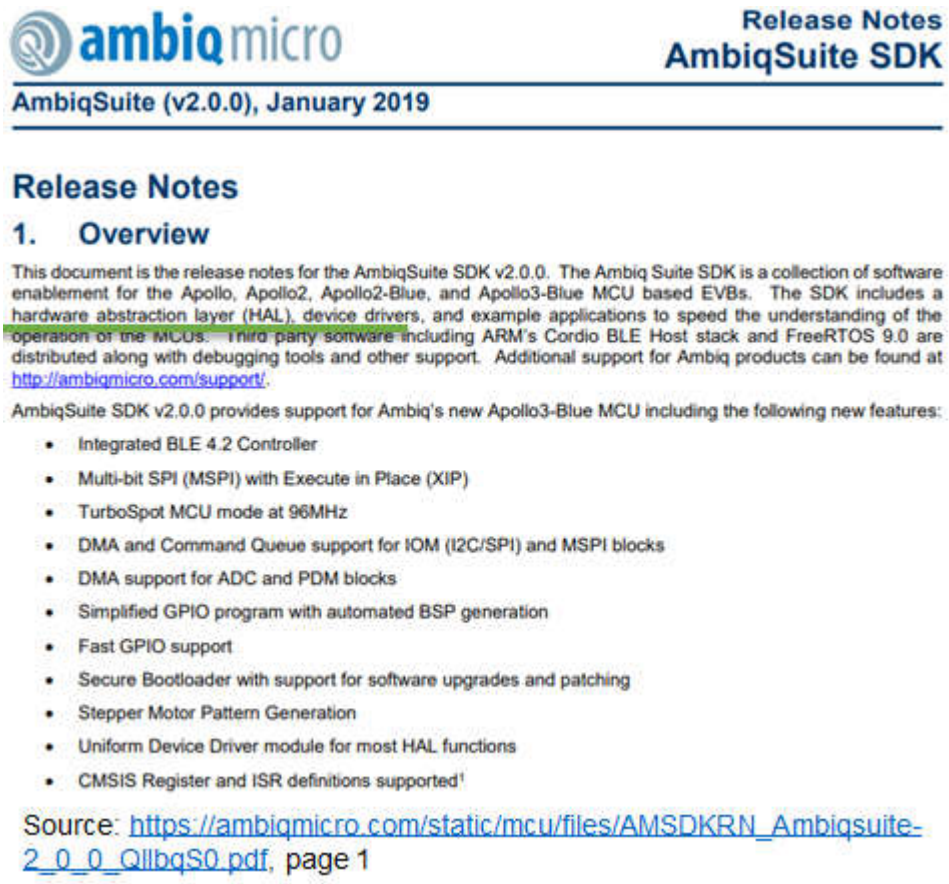
- Single 4 GB memory architecture with all Peripherals being memory-mapped
- Low-Power Consumption Modes:
  - Active
  - Sleep
  - Deep-Sleep
  - Power-Off
- Interrupts and Events
  - NVIC – interrupt controller
  - WIC – Wake-Up Interrupt Controller
  - Sleep-on-Exit (reduces interrupt overhead, used in an ISR SW structure)
  - WFI (enter sleep modes, wait for interrupts)

The following sections provide behavioral and performance details about each of the peripherals controlled by the MCU core. Where multiple instances of a peripheral exist on Apollo (e.g., the two I^2C/SPI master modules), base memory addresses for the registers are provided for each and noted as INSTANCE 0, INSTANCE 1, etc.

Source: https://ambiqmicro.com/static/mcu/files/Apollo_MCU_Data_Sheet_DS-A1-1p00.pdf, page 35.

15. The Product practices providing one or more generic application handler programs. Each program has code for performing generic functions common to multiple hardware modules used in a communication system. For example, Ambiq Suite SDK includes generic application handler programs including drivers, libraries, and Abstraction Layers (such as Hardware Abstraction Layer (HAL)) that provide multiple generic Application Programming Interfaces (APIs). The generic code provides common and generic functions to multiple hardware modules (such as Apollo, Apollo Lite, Apollo2, Apollo2 Blue and/or Apollo3 blue) used in a communication system (such as Wearable electronics, Wireless sensors, Activity and fitness monitors and/or consumer medical devices). Further, for ARM Cortex-M processor, Ambiq Suite SDK generates C code using Cortex Microcontroller Software Interface Standard (CMSIS) Library that provides Hardware Abstraction layer

(HAL). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.



ambiq micro

Release Notes
AmbiqSuite SDK

AmbiqSuite (v2.0.0), January 2019

Release Notes

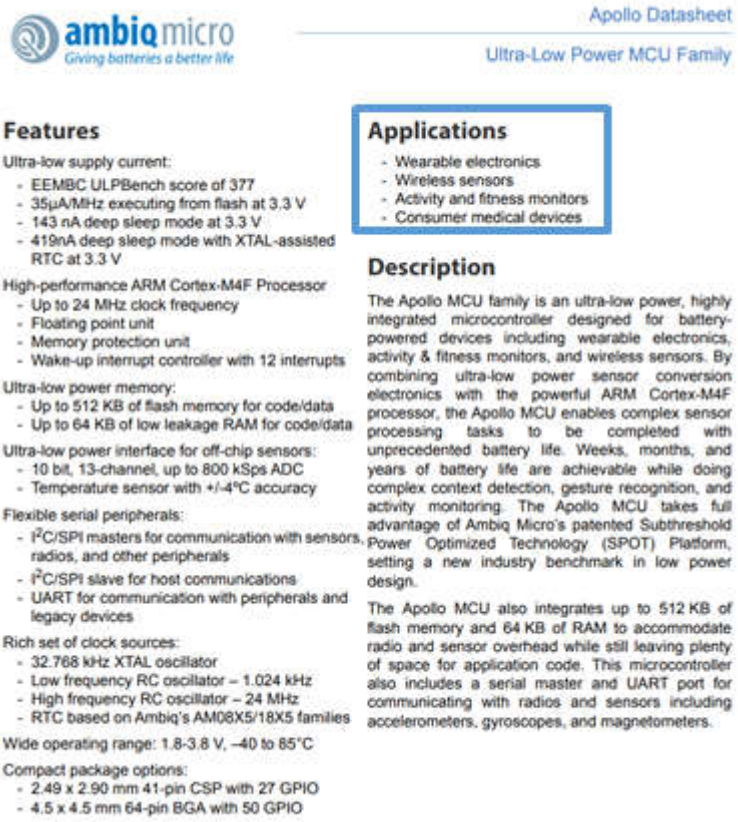
1. Overview

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 supported[1]

Source: https://ambiqmicro.com/static/mcu/files/AMSDKRN_Ambiqsuite-2_0_0_QIlbqS0.pdf, page 1



ambiq micro
Giving batteries a better life

Apollo Datasheet

Ultra-Low Power MCU Family

Features

Ultra-low supply current:
- EEMBC ULPBench score of 377
- 35µA/MHz executing from flash at 3.3 V
- 143 nA deep sleep mode at 3.3 V
- 419nA deep sleep mode with XTAL-assisted RTC at 3.3 V

High-performance ARM Cortex-M4F Processor
- Up to 24 MHz clock frequency
- Floating point unit
- Memory protection unit
- Wake-up interrupt controller with 12 interrupts

Ultra-low power memory:
- Up to 512 KB of flash memory for code/data
- Up to 64 KB of low leakage RAM for code/data

Ultra-low power interface for off-chip sensors:
- 10 bit, 13-channel, up to 800 kSps ADC
- Temperature sensor with +/-4°C accuracy

Flexible serial peripherals:
- I²C/SPI masters for communication with sensors, radios, and other peripherals
- I²C/SPI slave for host communications
- UART for communication with peripherals and legacy devices

Rich set of clock sources:
- 32.768 kHz XTAL oscillator
- Low frequency RC oscillator – 1.024 kHz
- High frequency RC oscillator – 24 MHz
- RTC based on Ambiq's AM08X5/18X5 families

Wide operating range: 1.8-3.8 V, –40 to 85°C

Compact package options:
- 2.49 x 2.90 mm 41-pin CSP with 27 GPIO
- 4.5 x 4.5 mm 64-pin BGA with 50 GPIO

Applications

- Wearable electronics
- Wireless sensors
- Activity and fitness monitors
- Consumer medical devices

Description

The Apollo MCU family is an ultra-low power, highly integrated microcontroller designed for battery-powered devices including wearable electronics, activity & fitness monitors, and wireless sensors. By combining ultra-low power sensor conversion electronics with the powerful ARM Cortex-M4F processor, the Apollo MCU enables complex sensor processing tasks to be completed with unprecedented battery life. Weeks, months, and years of battery life are achievable while doing complex context detection, gesture recognition, and activity monitoring. The Apollo MCU takes full advantage of Ambiq Micro's patented Subthreshold Power Optimized Technology (SPOT) Platform, setting a new industry benchmark in low power design.

The Apollo MCU also integrates up to 512 KB of flash memory and 64 KB of RAM to accommodate radio and sensor overhead while still leaving plenty of space for application code. This microcontroller also includes a serial master and UART port for communicating with radios and sensors including accelerometers, gyroscopes, and magnetometers.

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

Source:
https://ambiqmicro.com/static/mcu/files/AMSDKRN_Ambiqsuite-2_0_0_QIlbqS0.pdf, page 1

ambiq micro

Release Notes
Ambiq Suite SDK

Ambiq Suite (v1.2.9), July 2017

5. Resolved Defects

Module	Target	Description
HAL	Apollo Apollo2 Apollo2-Blue	Updated constructs surrounding all HAL interfaces files to support C++ "extern C" conditional compilation.
BLE	Apollo Apollo2 Apollo2-Blue	Fixed defect in EM9304 device driver to correctly handle the return of an available buffers which doesn't allow for the transmission of data (em9304BufSize of 0).
BLE	Apollo Apollo2 Apollo2-Blue	Fixed defect in AMOTA where upon interrupting a transfer, then switching to a new image cause perpetual CRC failure.
BLE	Apollo Apollo2 Apollo2-Blue	Updated suggested patches for EM9304. These are: • 0000000_META_hci_patches_v4_iram.emp • 0000000_META_hci_patches_v4_otp.emp • 0001642_PROD_boot_overhead.emp
FreeRTOS9	Apollo Apollo2 Apollo2-Blue	Fixed a race condition in Ambiq's FreeRTOS port for tick handling when using CTIMER.

Table 3. Resolved Defects in Release

Source: https://ambiqmicro.com/static/mcu/files/AMSDKRN-Ambiqsuite-1_2_10.pdf, page 4

ambiq micro
Giving batteries a better life

Apollo Datasheet

2. System Core

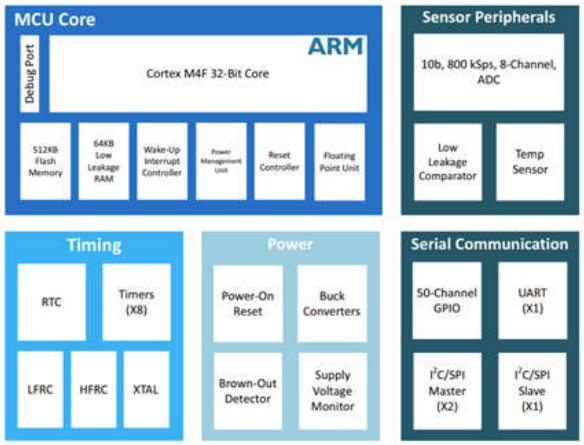


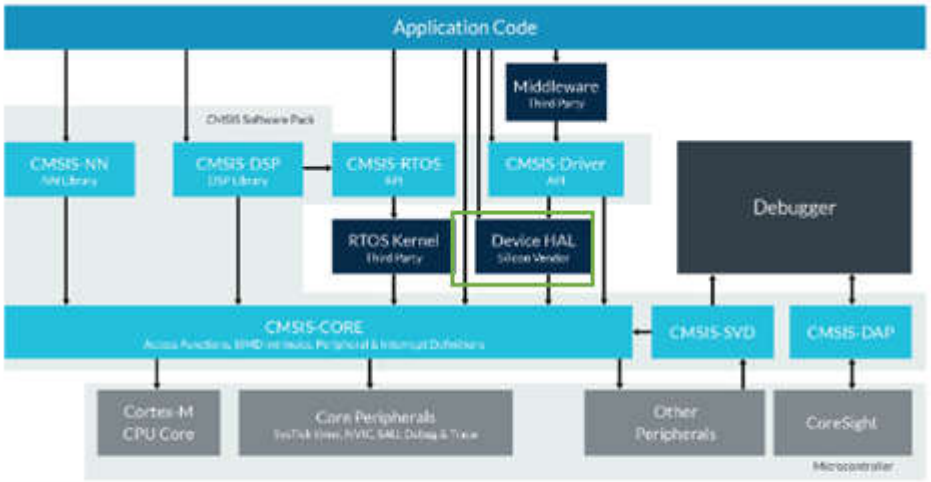
Figure 3. Block Diagram for the Apollo Ultra-Low Power MCU

Source: https://www.autosar.org/fileadmin/user_upload/standards/classic/4-3/AUTOSAR_EXP_LayeredSoftwareArchitecture.pdf, page 22.

Overview

Starting from CMSIS-CORE, a vendor-independent hardware abstraction layer for Cortex-M processors, CMSIS has since expanded into areas such as software component management and reference debugger interfaces. Creation of software is a major cost factor in the embedded industry. Standardizing the software interfaces across all Cortex-M silicon vendor products, especially when creating new projects or migrating existing software to a new device, means significant cost reductions.

Source: https://developer.arm.com/embedded/cmsis



Source: https://developer.arm.com/embedded/cmsis

16. The Product practices generating specific application handler code to associate the generic application functions with specific functions of a device driver for at least one of the types of the hardware modules. For example, in addition to the Hardware Abstraction Layer (HAL), Ambiq Suite SDK also include processor-specific application handler code that are specific to particular microprocessors (such as Atmel, ARM Cortex-M4F). Certain

elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

ambiq micro

Release Notes
Ambiq Suite SDK

Ambiq Suite (v1.2.10), Sept 2017

4. Functional Changes

Module	Target	Description
BLE	Apollo Apollo2 Apollo2-Blue	Ambiq Micro Data Transfer Profile (AMDTP) example. A BLE Master and Slave profiles to be used as a starter for creating transfer applications of arbitrary data.
BLE	Apollo Apollo2 Apollo2-Blue	Apple iBeacon example[2].
BLE	Apollo Apollo2 Apollo2-Blue	Master Profile example.
BLE	Apollo Apollo2 Apollo2-Blue	Google Eddystone Beacon example.
BLE	Apollo Apollo2 Apollo2-Blue	Support for Apple Notification Center Service (ANCS)
BLE	Apollo Apollo2 Apollo2-Blue	Support for TX Power Control via vendor specific HCI commands to EM9304.
BLE	Apollo Apollo2 Apollo2-Blue	Updated the EM9304 HCI Driver to provide an optional feature to allow customers to automatically invalidate EM9304 patches which have not been generated in the current build of the SDK. This feature needs is enabled by default in hci_driver_em9304.c using #define INVALIDATE_UNKNOWN_PATCHES
BLE	Apollo Apollo2 Apollo2-Blue	Updated to the Q3 2017 Release of the ARM Cordio Stack (see separate release notes "cordio_stack_profile_readme.md").
BLE	Apollo Apollo2 Apollo2-Blue	Added example for automated FCC testing.
BLE	Apollo Apollo2 Apollo2-Blue	Added handling of HCI command timeout and HCI HW Error events from EM9304.
IOM	Apollo2 Apollo2-Blue	Added I2C workaround to poll the SCL line prior to writing the CMD register on an I2C operation and verify that SCL is high.

Source: https://ambiqmicro.com/static/mcu/files/AMSDKRN-Ambiqsuite-1_2_10.pdf, page 2

ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

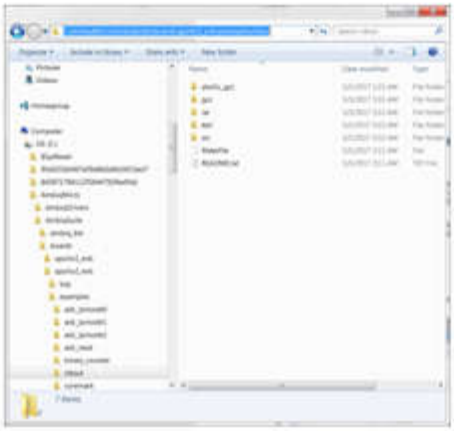
3. Overview

This version of the Ambiq Suite SDK is designed to target a family of Arduino compatible Evaluation Boards known as apollo1_evb and apollo2_evb. These boards are designed to be widely compatible with the Arduino ecosystem of reference shield boards. In addition, they include a SEGGER J-Link debugger on-board so there is no need for an external debugger.

This version supports example projects for the following toolchains:

- IAR Embedded Workbench 8.11.1
- Keil uVision 5.23
- Atollic TrueSTUDIO 7.1.2
- GCC 5.3.1

Project templates are released for each toolchain. They are found in the subdirectories inside each example project directory.



Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 4

ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

8. Atollic TrueSTUDIO

Launch the Atollic TrueSTUDIO and set up the workspace in C:\AmbiqMicro\AmbiqSuite\boards.

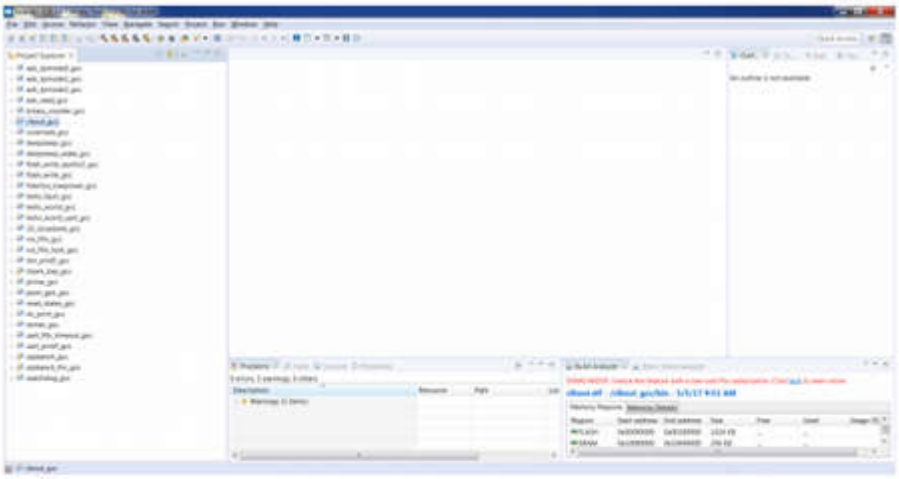
Wait for the Upgrade windows to finish (5 seconds) and close the window.

Choose the File->Import->General->Existing Projects into Workspace.

Click Browse, then navigate to the /boards/<target> directory of interest (e.g., /boards/apollo2_evb).

Click Finish to select all the projects, or de-select the unwanted projects.

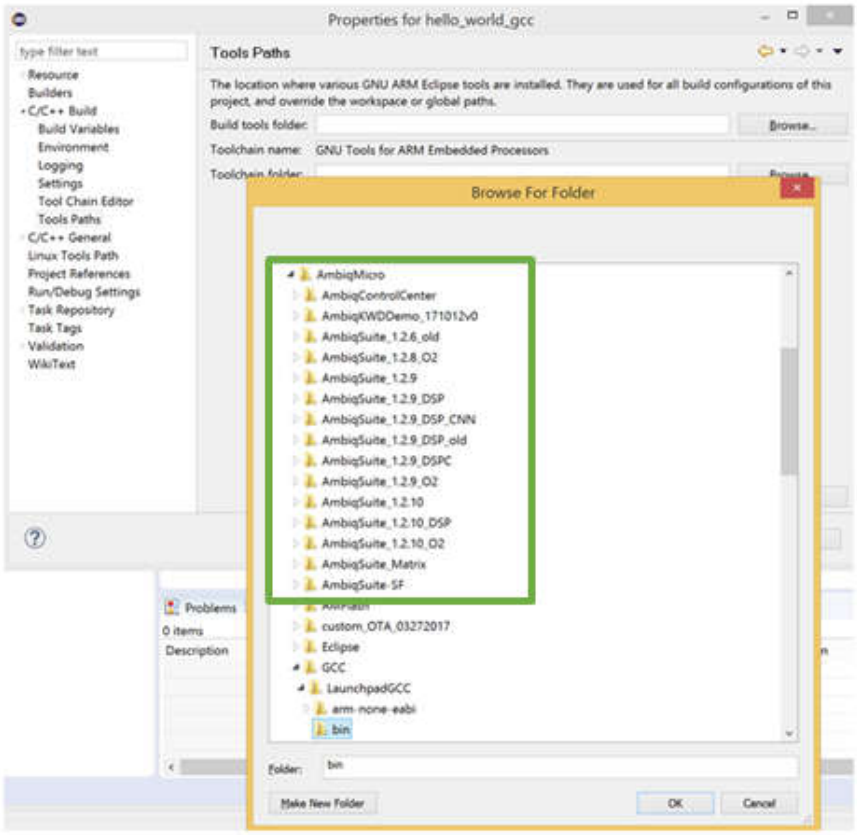
The Project Explorer should appear as below:



Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 13

17. The Product practices defining a specific element in the specific application handler code to be handled by one of the generic application functions for the at least one of the types of the hardware modules, and registering one of the specific functions of the device driver for use in handing the defined specific element. For example, Ambiq Suite SDK generates system-specific application handler code by defining a specific element such as data structures and functions that are to be handled by one or more generic application functions in the Hardware Abstraction Layer (HAL). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

Re-open the Preferences... "Tool Paths" is now a selection in the menu on the left. Click there and Browse on the "Toolchain folder". Navigate to AmbiqMicro/GCC/LaunchpadGCC/bin



Source: https://support.ambiqmicro.com/hc/en-us/articles/115003018912-Atollic-to-Eclipse-Conversion

ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

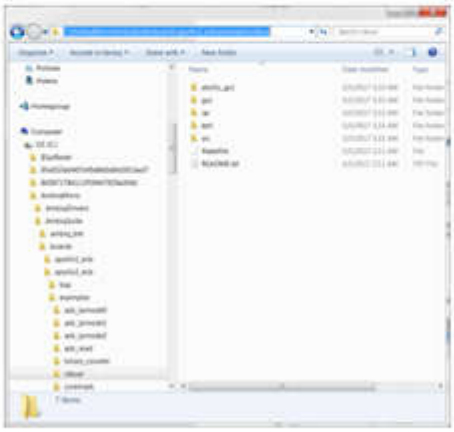
3. Overview

This version of the Ambiq Suite SDK is designed to target a family of Arduino compatible Evaluation Boards known as apollo1_evb and apollo2_evb. These boards are designed to be widely compatible with the Arduino ecosystem of reference shield boards. In addition, they include a SEGGER J-Link debugger on-board so there is no need for an external debugger.

This version supports example projects for the following toolchains:

- IAR Embedded Workbench 8.11.1
- Keil uVision 5.23
- Atollic TrueSTUDIO 7.1.2
- GCC 5.3.1

Project templates are released for each toolchain. They are found in the subdirectories inside each example project directory.



Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 4

18. The Product practices compiling the generic application handler programs together with the specific application handler code to produce machine-readable code to be executed by an embedded processor in the at least one of the types of the hardware modules. For example, when a specific application is needed for a particular hardware, the generic functions and the specific functions are compiled together to yield a machine readable code. Ambiq Micro and/or its customers compile the generic functions and the specific functions using Ambiq Suite SDK or any other IDE (such as Keil uVision, IAR Embedded Workbench, Atollic TrueStudio and/or GCC) supported by Ambiq Micro. Certain elements of this

limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

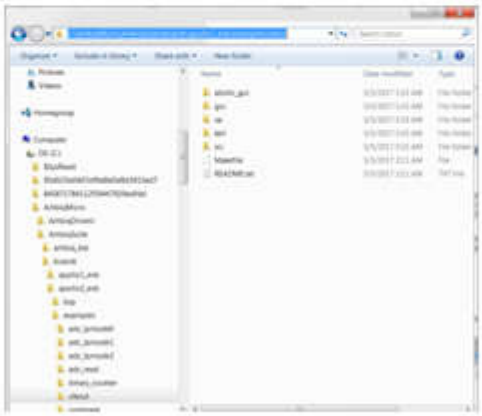
3. Overview

This version of the Ambiq Suite SDK is designed to target a family of Arduino compatible Evaluation Boards known as apollo1_evb and apollo2_evb. These boards are designed to be widely compatible with the Arduino ecosystem of reference shield boards. In addition, they include a SEGGER J-Link debugger on-board so there is no need for an external debugger.

This version supports example projects for the following toolchains:

- IAR Embedded Workbench 8.11.1
- Keil uVision 5.23
- Atollic TrueSTUDIO 7.1.2
- GCC 5.3.1

Project templates are released for each toolchain. They are found in the subdirectories inside each example project directory.



Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 4

ambiq micro

Apollo EVB Quick Start Guide

3. Overview of the Apollo1 EVB

The Apollo1 EVB features Arduino-compatible headers and an integrated J-Link debugger:

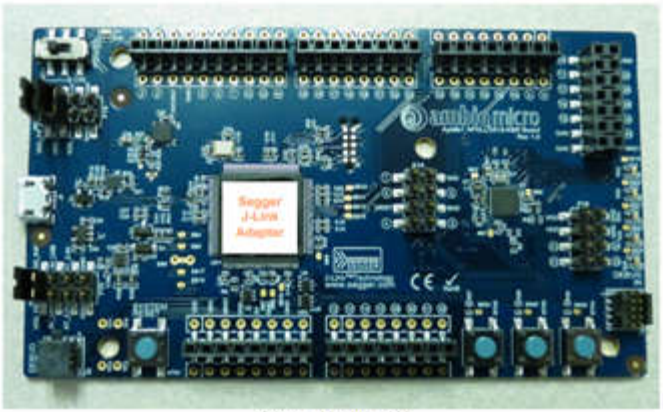


Figure 1. Apollo1 EVB

The EVB has these additional features:

- Low power reference design
- Apollo1 MCU in the BGA package (APOLLO512-KBR)
- Multiple power/clock options
- Micro USB connector for power/download/debug
- Segger J-Link debugger
- Debugger-in / debugger-out ports
- Five user-controlled LEDs
- Three push buttons for application use, plus a reset push button
- Power slide switch with LED power indicator
- Five 8-12 pin Arduino-style headers for pin/power access to shield board(s)
- Multiple test points for power measurements
- CE Mark and RoHS compliant

Source: https://ambiqmicro.com/static/mcu/files/Apollo1-EVB-Quick-Start-Guide-v1p0.pdf, page 6

ambiq micro

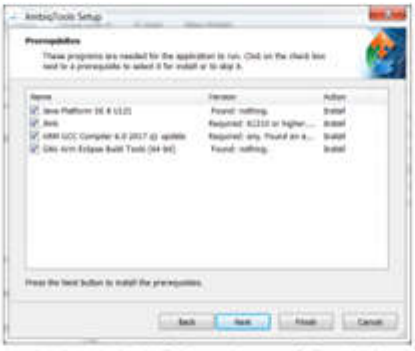
Getting Started Guide for the
Ambiq Suite SDK

Revision 1.1, June 2017

9. Eclipse/GCC

Note: The Eclipse/GCC environment is not operational due to an unforeseen interaction between the IDE and the J-Link GDB Server which has yet to be resolved.

The Eclipse environment is packaged into an Ambiq-Tools installer which provides for the installation of the required Java run-time environment, SEGGER J-Link tools, ARM GCC cross-compiler toolchain, and the GNU Arm Eclipse build tools, as follows:



Follow the installation steps to get started with the Eclipse environment. Once the tools are installed, the first step is to create a new workspace as follows:

Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 15

ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

7. IAR Embedded Workbench

The IAR project can be selected inside the appropriate subdirectory by double-clicking on the desired IAR IDE Workspace file. The project may be rebuilt as desired. When the debugger is launched for the first time in the project, the following message is displayed:

Note: The J-Link SWO Viewer has an interaction with the IAR Embedded Workbench such that the sequence of terminating a debug session vs. shutting down the J-Link SWO Viewer matters. The proper order to avoid this problem is to first terminate the debug session followed by shutting down the Viewer.

The output should be displayed as follows:

Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 12

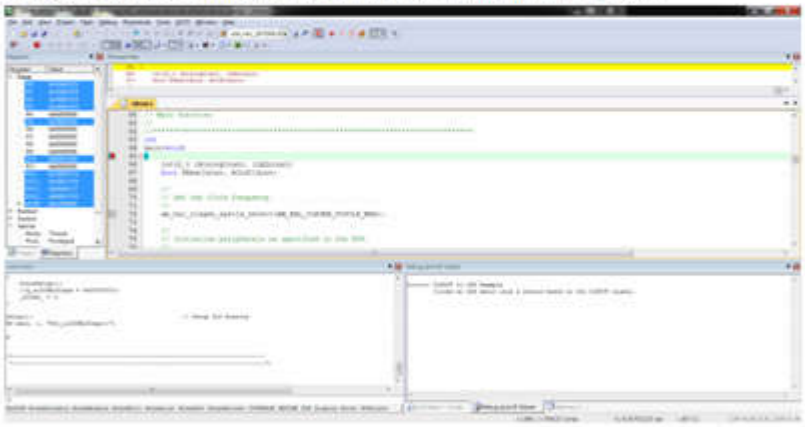
ambiq micro

Getting Started Guide for the
Ambiq Suite SDK

Revision 1.1, June 2017

6. Keil µVision MDK Development Environment

The Keil MDK projects are set up to run the SWO output through the Debug (printf) Viewer. This can be brought up by selecting View->Serial Windows->Debug (printf) Viewer. The output appears as follows:



Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 11

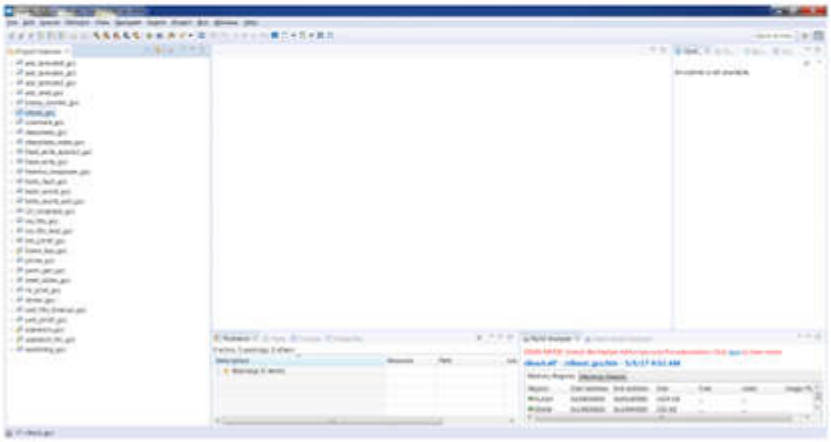
ambiq micro

Getting Started Guide for the Ambiq Suite SDK

Revision 1.1, June 2017

8. Atollic TrueSTUDIO

Launch the Atollic TrueSTUDIO and set up the workspace in C:\AmbiqMicro\AmbiqSuite\boards.
Wait for the Upgrade windows to finish (5 seconds) and close the window.
Choose the File->Import->General->Existing Projects into Workspace.
Click Browse, then navigate to the /boards/<target> directory of interest (e.g., /boards/apollo2_evb).
Click Finish to select all the projects, or de-select the unwanted projects.
The Project Explorer should appear as below:



Source: https://ambiqmicro.com/static/mcu/files/AMSDKGS-v1_1.pdf, page 13

19. Defendant's actions complained of herein will continue unless Defendant is enjoined by this court.

20. Defendant's actions complained of herein are causing irreparable harm and monetary damage to Plaintiff and will continue to do so unless and until Defendant is enjoined and restrained by this Court.

21. Plaintiff is in compliance with 35 U.S.C. § 287.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff asks the Court to:

(a) Enter judgment for Plaintiff on this Complaint on all causes of action asserted herein;

(b) Enter an Order enjoining Defendant, its agents, officers, servants, employees, attorneys, and all persons in active concert or participation with Defendant who receive notice of the order from further infringement of United States Patent No. 7,069,546 (or, in the alternative, awarding Plaintiff a running royalty from the time of judgment going forward);

(c) Award Plaintiff damages resulting from Defendant's infringement in accordance with 35 U.S.C. § 284;

(d) Award Plaintiff pre-judgment and post-judgment interest and costs; and

(e) Award Plaintiff such further relief to which the Court finds Plaintiff entitled under law or equity.

Dated: June 27, 2019

Respectfully submitted,

/s/ Jay Johnson
JAY JOHNSON
State Bar No. 24067322
D. BRADLEY KIZZIA
State Bar No. 11547550
KIZZIA JOHNSON, PLLC
1910 Pacific Ave., Suite 13000
Dallas, Texas 75201
(214) 451-0164
Fax: (214) 451-0165
jay@kjpllc.com
bkizzia@kjpllc.com

ATTORNEYS FOR PLAINTIFF

EXHIBIT A