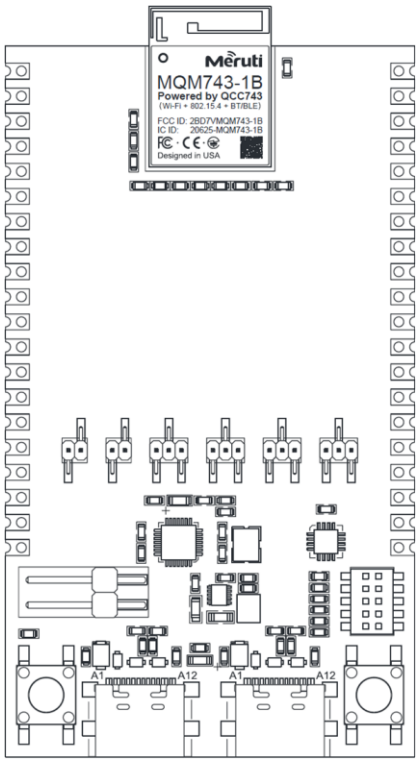
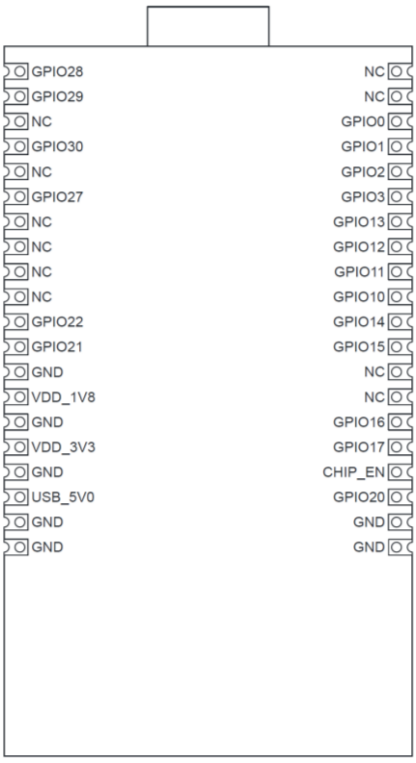
User Manual

# Qualcomm QCC743 Module Development Kit

January 2024



# Table of Contents

# 1 Overview

Powered by Qualcomm QCC743, Qualcomm QCC743 Module Development Kit (“DevKit”) is purposely-designed for application software developers with developer first mindset. The DevKit exposes all QCC743 GPIO pins via QCC743 module to dual 2.54mm (0.1inch) headers to allow flexible expansion. Developers can easily add sensors and other accessories through these dual headers. The dual header is designed to have width of 25.4mm (1.0inch) to allow easy plug-in to the widely used breadboard further to facilitate prototyping development.

The QR code is provided on the back of the DevKit to allow developers to obtain this user manual online.

Figure 1: QCC743 Module Development Kit QR Code

The DevKit 3-side view is shown below:

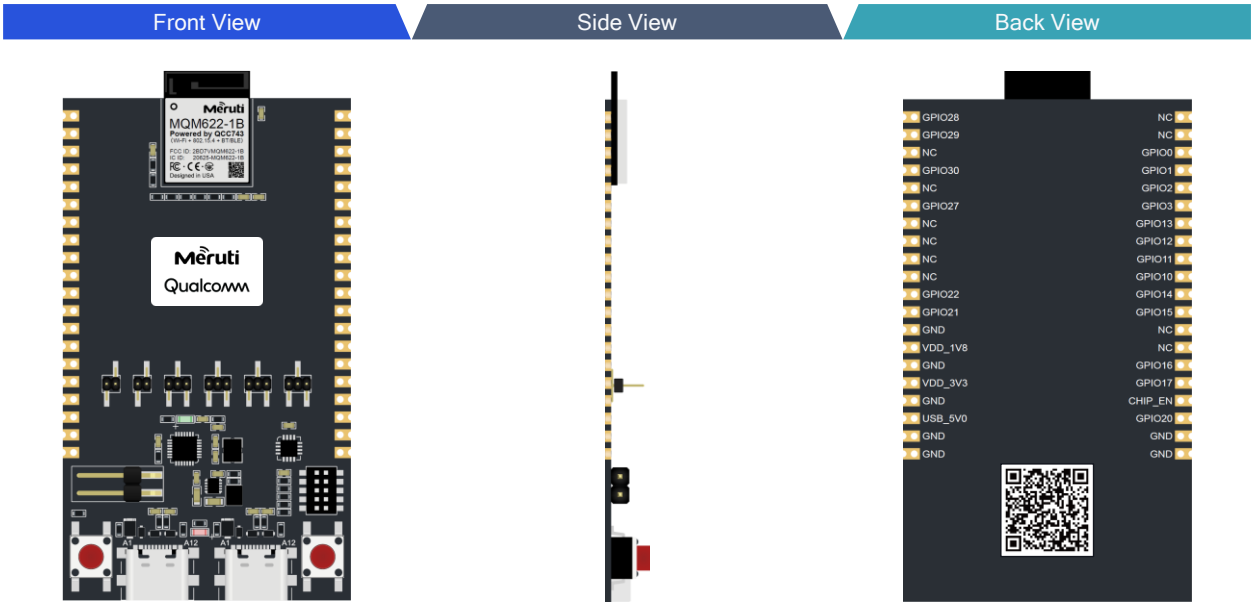



Figure 2: QCC743 Module Development Kit View

# 2 Package

Included with the DevKit are a pair of male and a pair of female headers to allow developers to have flexibility to mate into their expansion boards.

The DevKit package content is shown below:

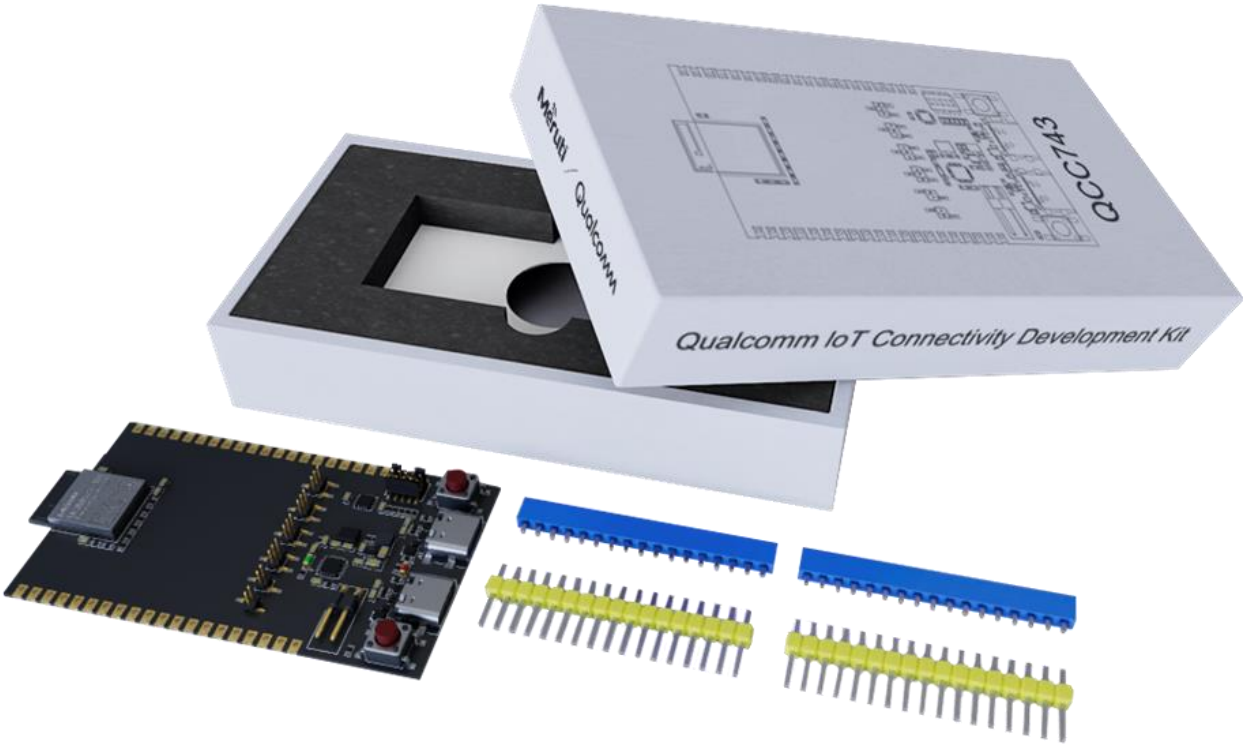



Figure 3: QCC743 Module Development Kit Packaging

# 3 Hardware

## 3.1 Block Diagram

The DevKit block diagram is shown below:

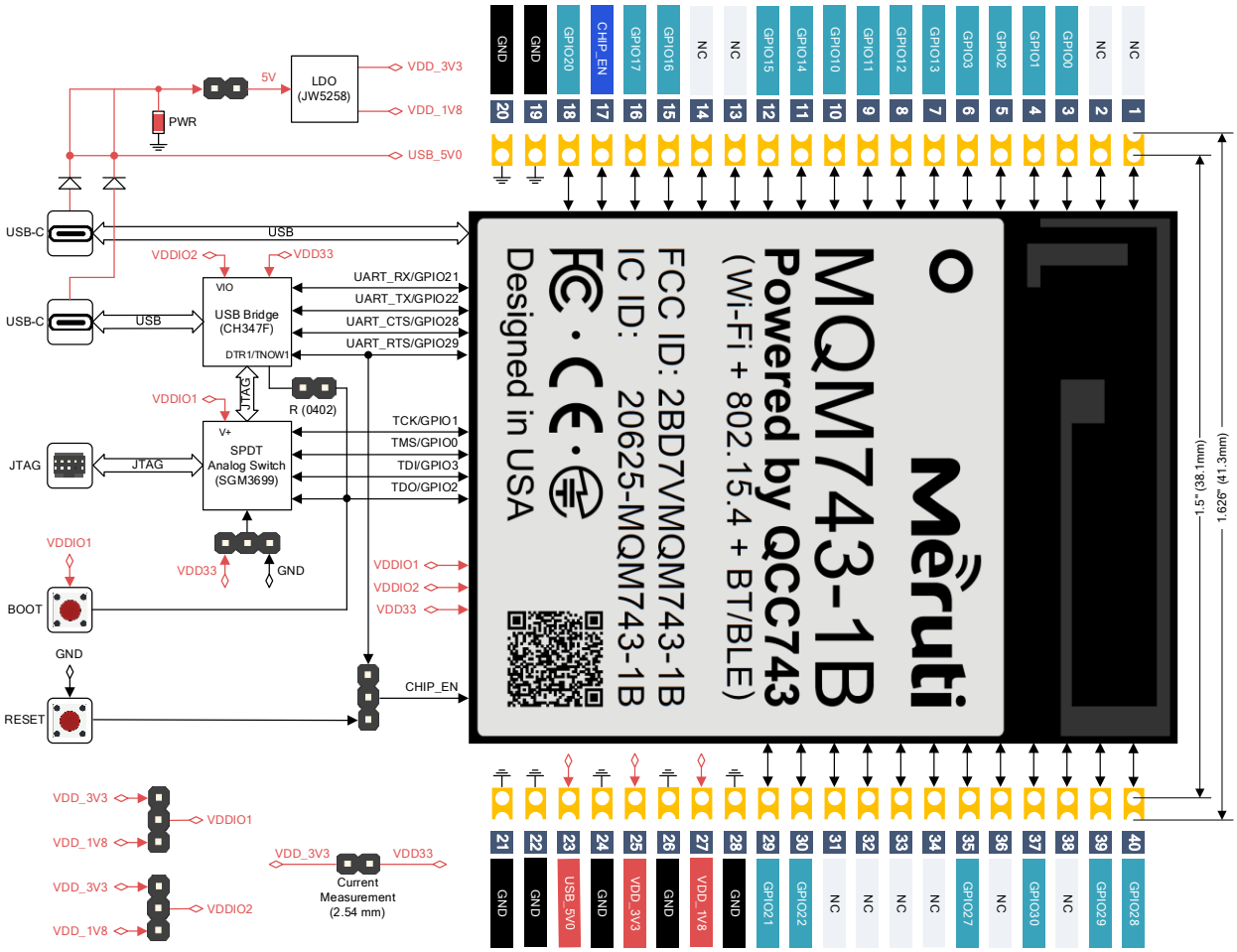



Figure 4: QCC743 Module Development Kit Block Diagram

## 3.2 Functional Description

### 3.2.1 Power Supply

The DevKit can be powered from USB-C by plugging into PC. The on-board LDO can convert USB-C 5V into 3.3V and 1.8V. The DevKit input and I/O voltage can be selected from either 3.3V or 1.8V. These 3.3V and 1.8V are also pulled to the DevKit header pins to power expansion boards attached to the DevKit.

The DevKit can also be powered from battery pack which can be plugged into the DevKit headers. The power from USB-C can be de-selected removing the jumper. The battery pack power can be supplied through VDD_3V3 and VDD-18V on the DevKit headers.

### 3.2.2 Power Measurement

QCC743 module power consumption can be measured through the on-board jumper by connecting to an external current measurement device.

### 3.2.3 Debug

The DevKit supports SEGGER J-Link and OpenOCD. The on-board analog switch allows developers to choose MQM622-1 module JTAG to go through SEGGER J-Link or thru USB-C connected to PC. The on-board USB to UART/JTAG bridge allows both JTAG and UART populated on the PC device manager. Developers can use OpenOCD and UART simultaneously.

### 3.2.4 Reset and Boot

Two buttons are placed on the DevKit with one for software RESET while the other is for BOOT. The headers (J10, J11) is created to allow developers to choose either SW or HW reset/boot.

### 3.2.5 Headers

Dual standard 2.54mm (0.1inch) headers with 20-pin each side is created on the DevKit to allow developers to attach to any expansion boards of their choice.

The pin map is shown below:

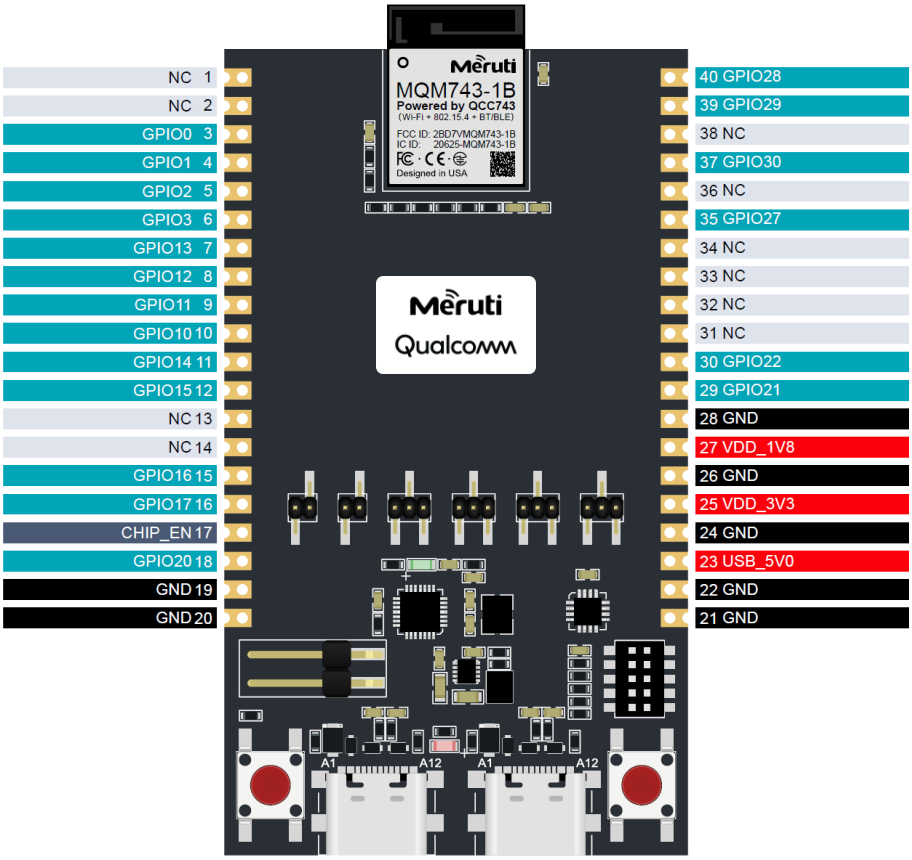



Figure 5: QCC743 Module Development Kit Pin Map

### 3.2.6 Pin Definition

| Pin | Pin Name | Type | Power Domain | Description |
|---|---|---|---|---|
| 23 | VDD_5V0 | PWR | - | 5.0V from USB-C |
| 25 | VDD_3V3 | PWR | - | 3.3V from on-board LDO or external battery |
| 27 | VDD_1V8 | PWR | - | 1.8V from on-board LDO or external battery |
| 19,20,21,22, 24.26,28 | GND | GND | - | Ground |
| 1,2,13,14, 31,32,33,34, 36,38 | NC | - | - | Open header pin |
| 17 | CHIP_EN | DI | - | Chip power on |
| 3 | GPIO0 | DI/DO | VDDIO1 | Generic PIO |
| 4 | GPIO1 | DI/DO | VDDIO1 | Generic PIO |
| 5 | GPIO2 | DI/DO | VDDIO1 | Generic PIO |
| 6 | GPIO3 | DI/DO | VDDIO1 | Generic PIO |
| 10 | GPIO10 | DI/DO | VDDIO1 | Generic PIO |
| 9 | GPIO11 | DI/DO | VDDIO1 | Generic PIO |
| 8 | GPIO12 | DI/DO | VDDIO1 | Generic PIO |
| 7 | GPIO13 | DI/DO | VDDIO1 | Generic PIO |
| 11 | GPIO14 | DI/DO | VDDIO1 | Generic PIO |
| 12 | GPIO15 | DI/DO | VDDIO1 | Generic PIO |
| 15 | GPIO16 | DI/DO | VDD33 | Generic PIO |
| 16 | GPIO17 | DI/DO | VDD33 | Generic PIO |
| 18 | GPIO20 | DI/DO | VDDIO2 | Generic PIO |
| 29 | GPIO21 | DI/DO | VDDIO2 | Generic PIO |
| 30 | GPIO22 | DI/DO | VDDIO2 | Generic PIO |
| 35 | GPIO27 | DI/DO | VDDIO2 | Generic PIO |
| 40 | GPIO28 | DI/DO | VDDIO2 | Generic PIO |
| 39 | GPIO29 | DI/DO | VDDIO2 | Generic PIO |
| 37 | GPIO30 | DI/DO | VDDIO2 | Generic PIO |

## 3.3 Jumper Setting

The DevKit jumper settings are illustrated below:

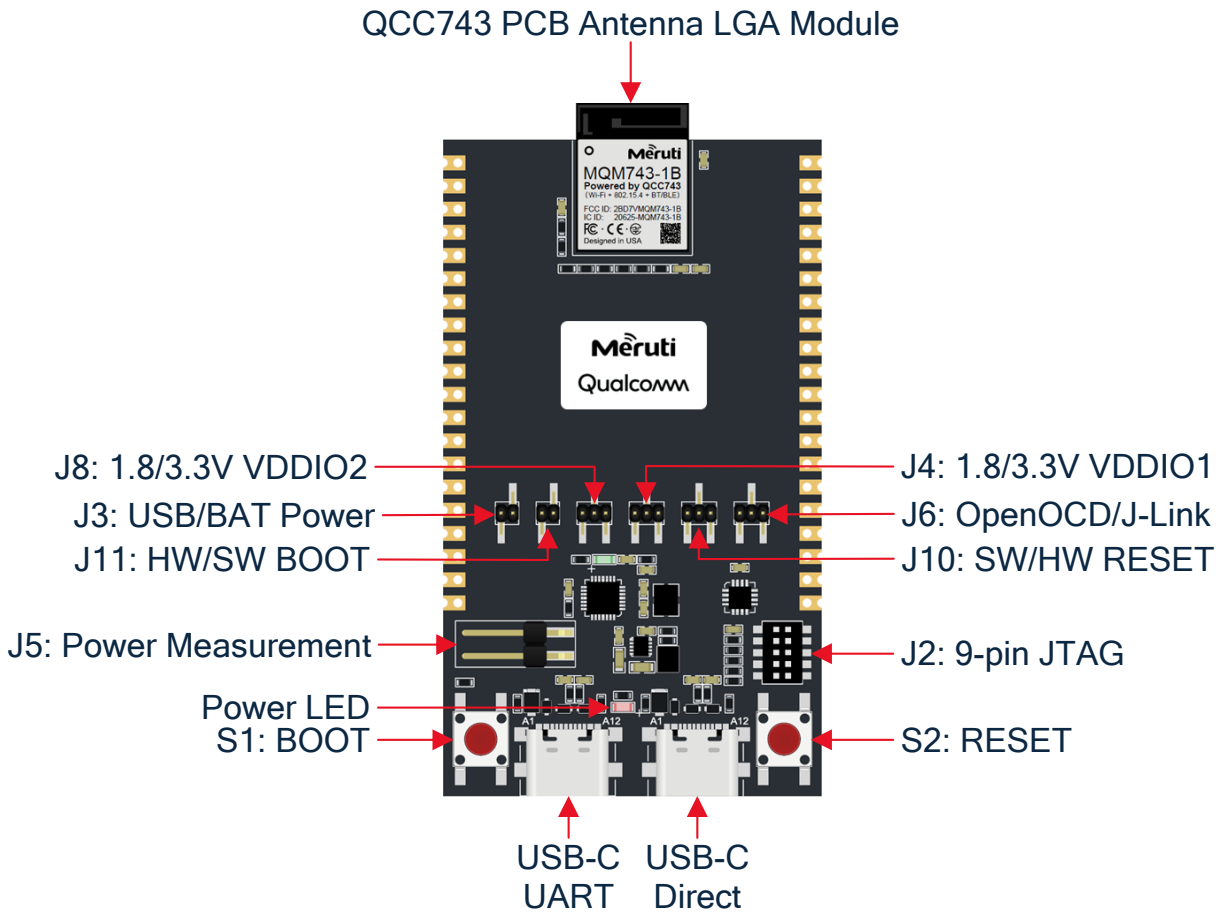



Figure 6: MQM622-1 Module Development Kit Jumper Setting

Jumpers and button are purposedly designed and defined to allow flexible configurations and operations.

The jumper and button functions are described below:

- J3 – Choose power source either from USB-C or headers (VDD_3V3 and VDD_1V8)
- J4 – Select either 3.3V or 1.8V for VDDIO1 (GPIO0~15)
- J8 – Select either 3.3V or 1.8V for VDDIO2 (GPIO20~30)
- J10 – Select SW or HW reset
- J11 – Select HW or SW boot control
- J6 – Select either SEGGER J-LINK or OpenOCD debug
- J2 – Cortex Debug Connector (10-pins, 0.05") for JTAG
- J5 – Power measurement for VD33
- S1 – BOOT button
- S2 – RESET button

Each individual jumper setting is defined in the table below:

| Jumper | Position | Description |
|---|---|---|
| J3 | ON | Power source from USB |
| | OFF | Power source from header |
| J4 | LEFT | 1.8V I/O voltage for VDDIO1 (GPIO0~15) |
| | RIGHT | 3.3V I/O voltage for VDDIO1 (GPIO0~15) |
| J8 | LEFT | 1.8V I/O voltage for VDDIO2 (GPIO20~30) |
| | RIGHT | 3.3V I/O voltage for VDDIO2 (GPIO20~30) |
| J10 | LEFT | HW reset |
| | RIGHT | SW reset from UART RTS pin |
| J11 | ON | SW boot control from UART DTR |
| | OFF | HW boot |
| J6 | LEFT | OpenOCD via USB |
| | RIGHT | SEGGER J-Link via 9-pin JTAG |
| J5 | - | Current (power) measurement of VD33 |
| S1 | PUSH_DOWN | Boot the board |
| S2 | PUSH_DOWN | Reset the board |

## 3.4 Mechanical Dimension

The DevKit mechanical dimension is shown below:

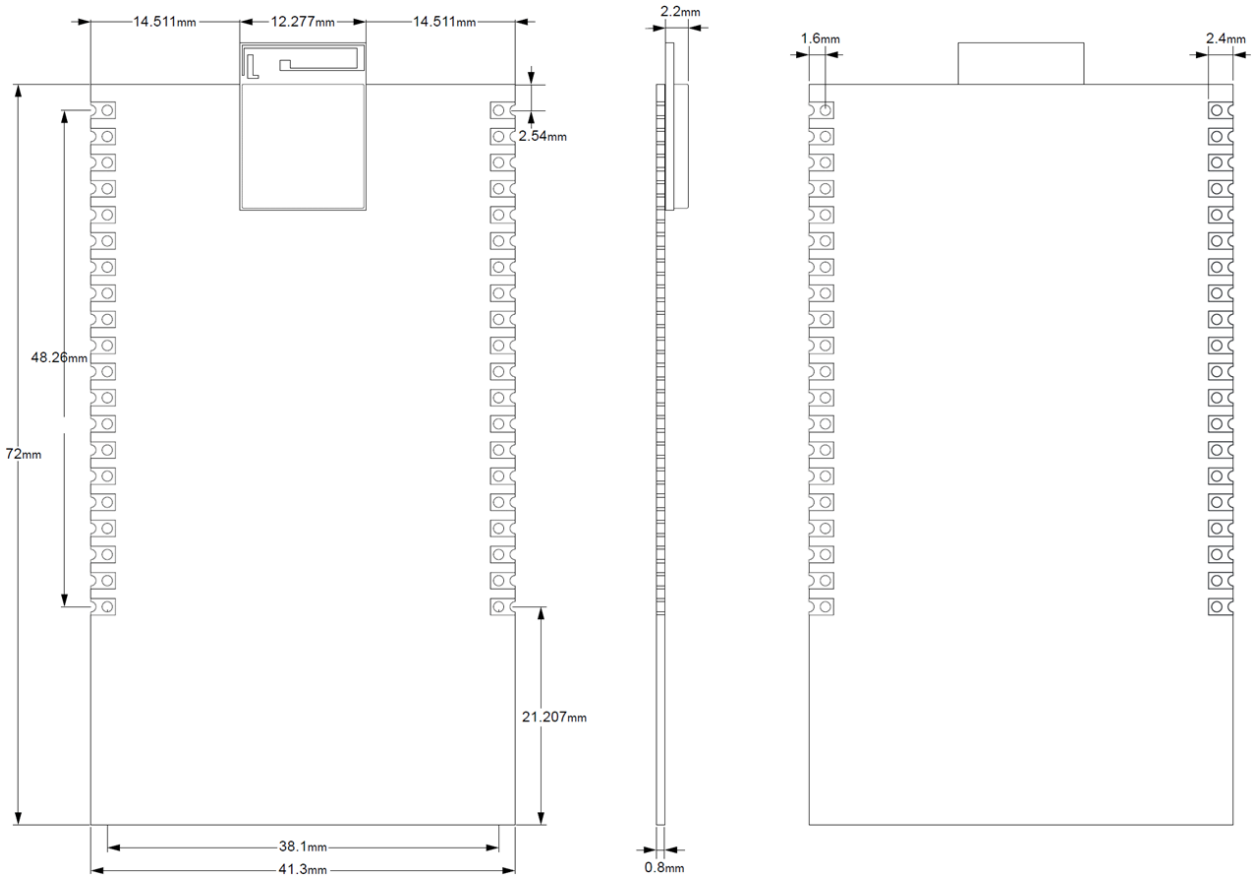



Figure 7: QCC743 Module Development Kit Dimension

## 3.5 Schematic

The DevKit schematic is shown below:

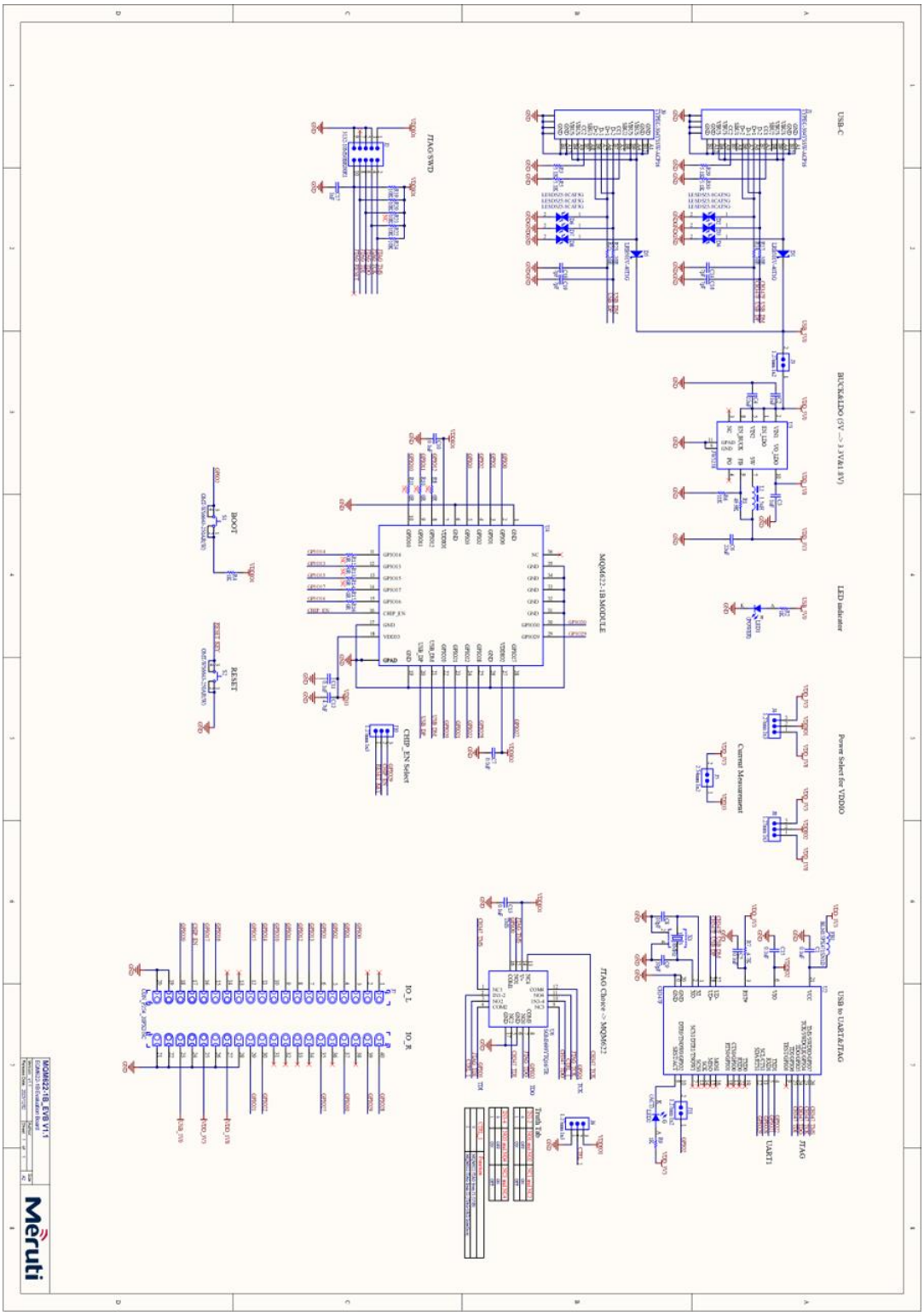


Figure 8: QCC743 Module Development Kit Schematic

# 4 Software

The DevKit software SDK architecture is shown below. The grey blocks will be provided in the form of binary while FreeRTOS and all upper layer stacks and middleware like Matter over Wi-Fi and AWS IoT will be open sourced.

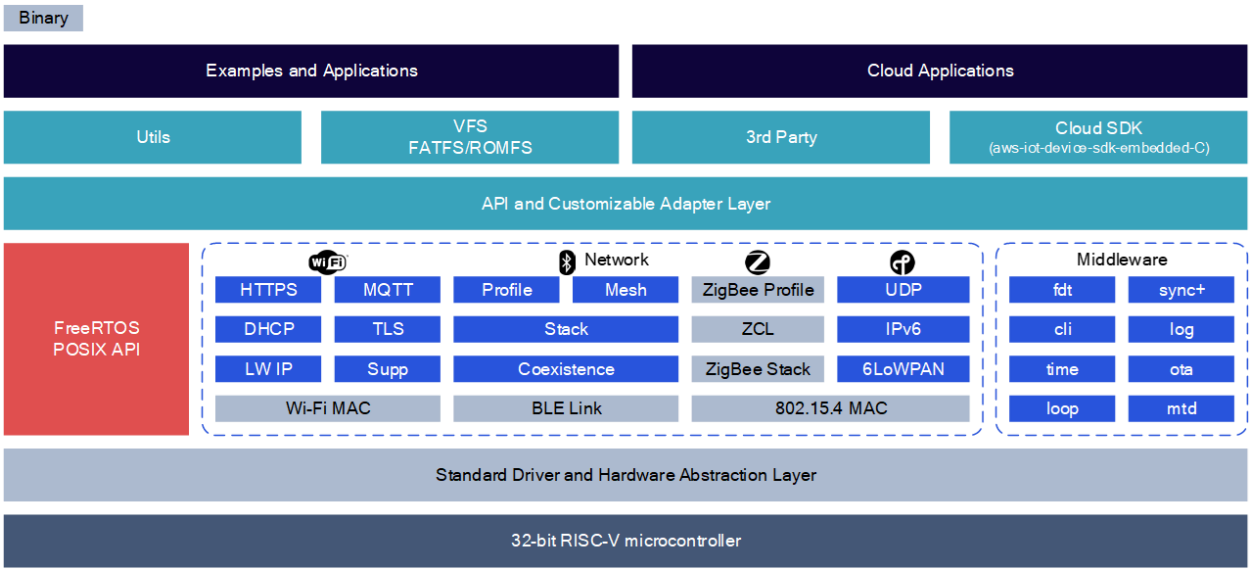



Figure 9: QCC743 Module Development Kit SDK Software Architecture

The software SDK can be available at GitHub: *Link to be provided soon*

Figure 10: MQM100-1B Module Development Kit Software SDK GitHub Page

# 5 Integrated Development Environment (IDE)

The DevKit leverages Microsoft Visual Studio Code (“VS Code”) for its integrated development environment (IDE). The VS Code market extension (to be available free on GitHub soon) is developed to customize VS Code for Qualcomm QCC743.

## 5.1 Microsoft Visual Studio Code (VS Code)

Microsoft Visual Studio Code is widely adopted Integrated Development Environment (IDE) embraced by developer community. It becomes an ad-hoc standard IDE lately. VS Code can be downloaded from:

VS Code: *https://code.visualstudio.com/docs/?dv=win*

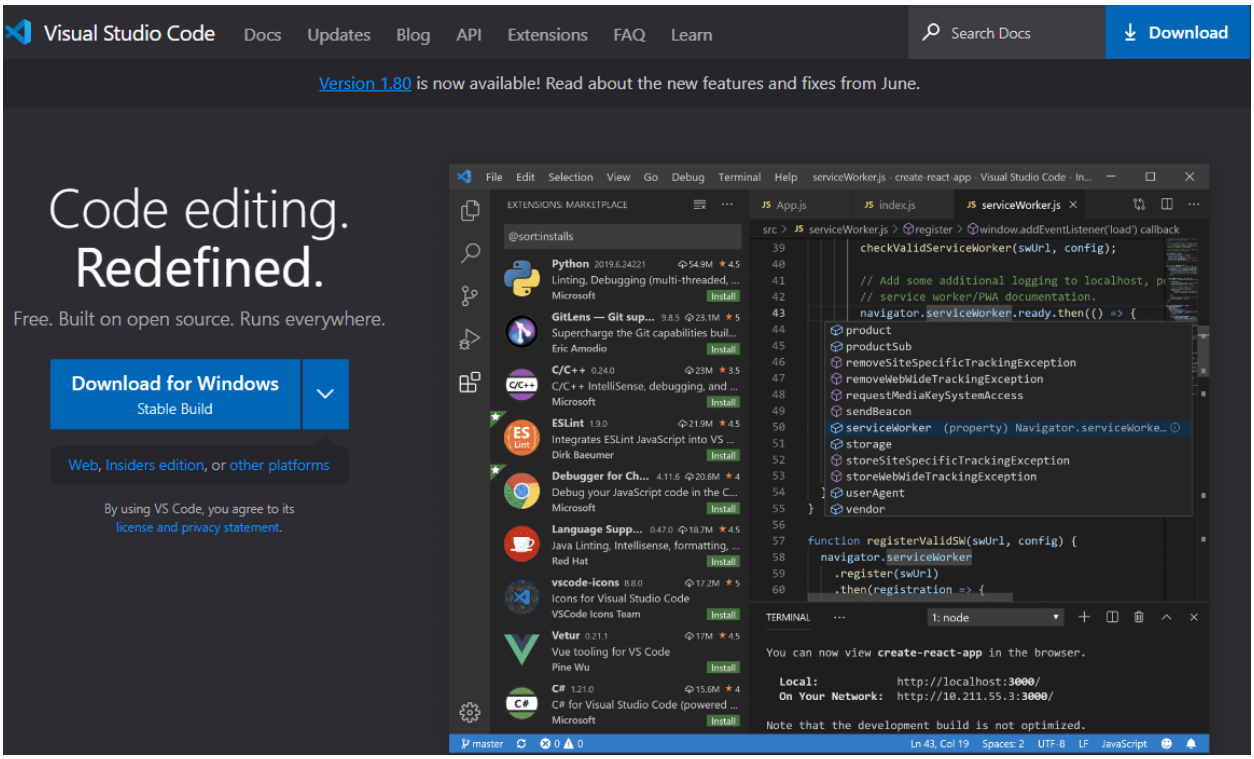



Figure 11: Microsoft Visual Studio Code Download

## 5.2 VS Code IDE Functional Description

With VS Code, developers can complete all application software development inside this IDE, including:

Edit/Build/Flash

- Build and flash bin
- Build parameter config
- Console port
- Code editor

Debug Target

- Breakpoint

- Back trace
- Step in/out
- Step over
- Local variable, argument variable, and register watch
- Add variable to watch
- Reset debug
- Pause debug
- Stop debug
- Read memory

Project
- Create new project from example
- Download SDK
- Auto configure Build & debug environment

The DevKit VS Code IDE architecture is shown below:

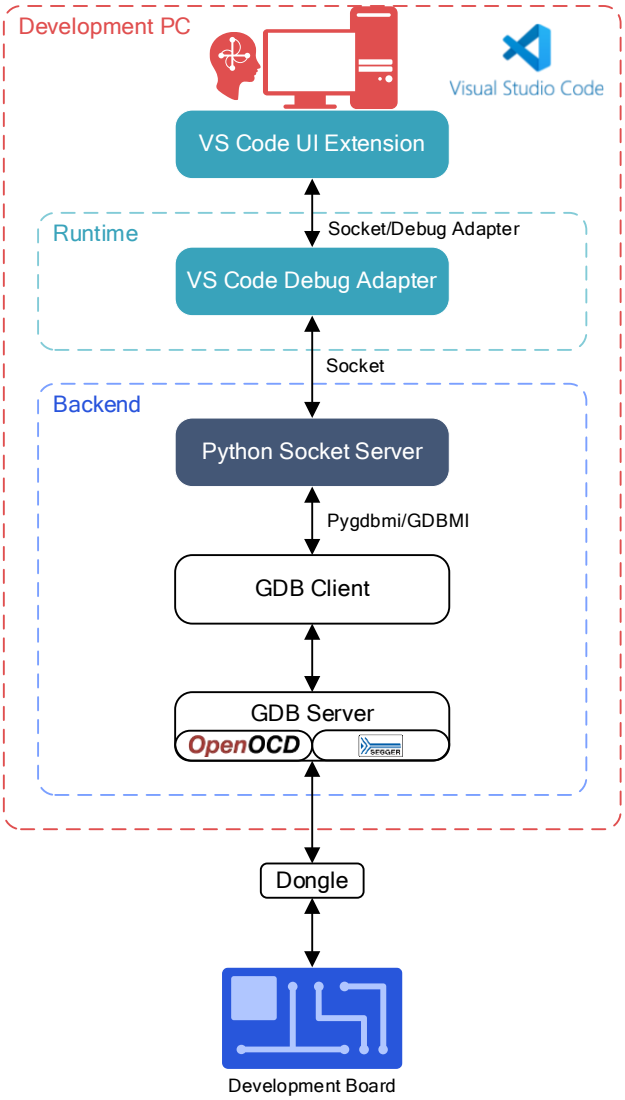



Figure 12: QCC743 Module Development Kit VS Code IDE Architecture

# 6 Order Information

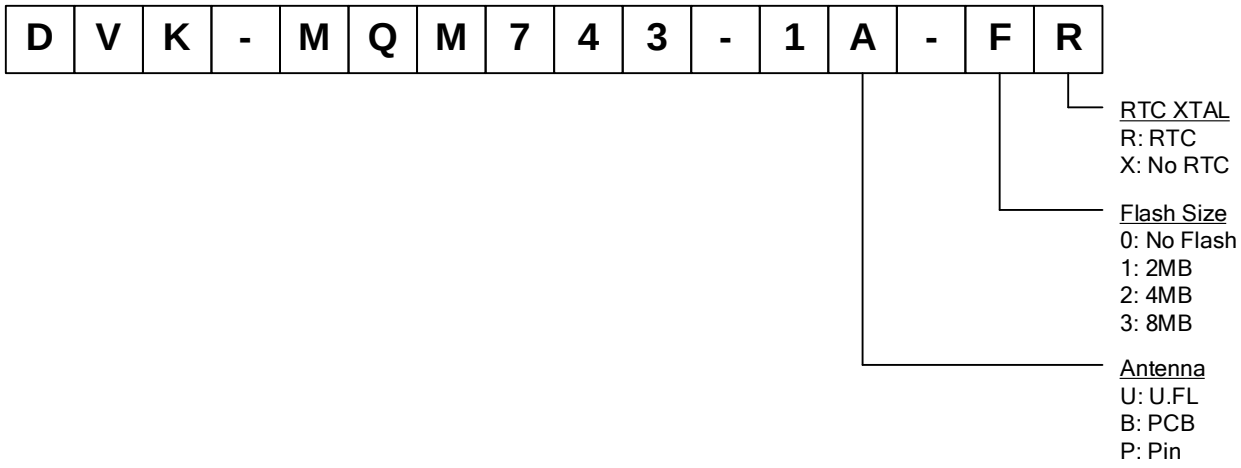



Figure 13: Order Number

# 7 Where to Buy

The MQM100-1B Module Development Kit can be available from the following retailors:

| Retailer | Region | Website |
|---|---|---|
| Codico | Europe | *www.codico.com* |
| OKdo | Europe, USA | *www.okdo.com* |
| Excelpoint | SE Asia, USA | *www.excelpoint.com* |
| SeeedStudio | Global | *www.seeedstudio.cc* |
| | | |
| | | |
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# Revision History

| Revision | Description | Date |
|---|---|---|
| 0.1 | Initial draft | January 5, 2024 |
| 0.2 | Miscellaneous error correction | January 15, 2024 |
| 0.3 | Changed module model name to MQM743-1 | January 20, 2024 |
| 1.0 | The first public release | TBD |

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