QUICK START GUIDE

VIA SOM-7000 Starter Kit

Fanless low-power Edge AI platform with Octa-Core MediaTek Genio 1200 processor

1.01-17102023

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Regulatory Compliance

FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his personal expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Notice 3

The product described in this document is designed for general use, VIA Technologies assumes no responsibility for the conflicts or damages arising from incompatibility of the product. Check compatibility issue with your local sales representatives before placing an order.

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Safety Precautions

- Always read the safety instructions carefully.
- Keep this document for future reference.
- All cautions and warnings on the equipment should be noted.
- Keep this equipment away from humidity.
- Put this equipment on a reliable flat surface before setting it up.
- Check the voltage of the power source and adjust to 110/220V before connecting the equipment to the power inlet.
- Do not place the power cord where people will step on it.
- Always unplug the power cord before inserting any add-on card or module.
- If any of the following situations arise, get the equipment checked by authorized service personnel:
  - The power cable is damaged.
  - Liquid has entered into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment is faulty or you cannot get it work according to User's Manual.
  - The equipment has been dropped and damaged.
  - The equipment has an obvious sign of breakage.
- Do not leave this equipment in extreme temperatures or in a storage temperature above 60°C (140°F). . The equipment may be damaged.
- Do not leave this equipment in direct sunlight.
- Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- Do not place anything over the power cable.
- Do not cover the ventilation holes. The openings on the enclosure protect the equipment from overheating.

Packing List

Items for STK-SOM700-00A0

- 1 x VIA SOM-7000 module
- 1 x VIA SOMDB7 reference carrier board
- 1 x Heatsink
- 1 x Audio cable
- 1 x Power cable
- 1 x Debug console cable

Ordering Information

Part Number	SoC Frequency	Description
10GPZ22M30020	MediaTek Genio 1200 Octa-Core SoC @ 2.2GHz/2.0GHz	VIA SOM-7000 module with 2.2/2.0GHz MediaTek Genio 1200 Octa-Core SoC, 16GB eMMC, 4GB LPDDR4 SDRAM, CSI, audio (headphone out and MIC-in), Wi-Fi 6+ Bluetooth 5.2, 3 Wi-Fi/ Bluetooth antenna I-PEX connectors
STK-SOM700-00A0		VIA SOM-7000 starter kit with VIA SOM-7000 module, VIA SOMDB7 reference carrier board and accessory kit

Optional Accessories

Development Options

Part Number	Description
SOM-ACK-00A0	Development Pack including 5MP CMOS camera, Wi-FI/BT antenna and 12V 3A worldwide AC adapter
99G47-01025F	10.1" 1920x1200 MIPI LCD + touch panel display

Wireless Module Options

Part Number	Description
EMIO-2576-00A0	4G LTE mobile broadband M.2 module with two antennas and assembly

Table of Contents

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1. Overview

This guide introduces and describes how to install the standard and optional accessories available for the VIA SOM-7000 starter kit, which provides a base package for testing and evaluating the VIA SOM-7000 module with the VIA SOMDB7 carrier board.

Notes:

1. The operating temperature 0°C ~ 60°C is a result of testing performed in a testing chamber, and a number of variables can influence this result. Please note that the working temperature may vary depending on the actual situation and environment. It is highly recommended to execute a solid testing program and take all variables into consideration when building the system. Please ensure that the system is stable under the required operating temperature in terms of the target application.

2. Please note that the lifespan of the onboard eMMC memory chip may vary depending on the amount of access. More frequent and larger data access on the eMMC memory will shorten its lifespan. It is highly recommended to use a replaceable external storage (e.g., MicroSD card) for large data access.

2. Hardware Installation

This section introduces and describes how to install the following standard accessories bundled in the VIA SOM-7000 starter kit:

1. Audio cable

Figure 01: Audio cable

2. Debug console cable

Figure 02: Debug console cable

3. Power cable

Figure 03: Power cable

2.1 Installing the Audio Cable

Connect one end of the audio cable to the VIA SOM-7000 module's audio-out connector and the other end of the cable to the VIA SOMDB7 carrier board's audio-in connector.

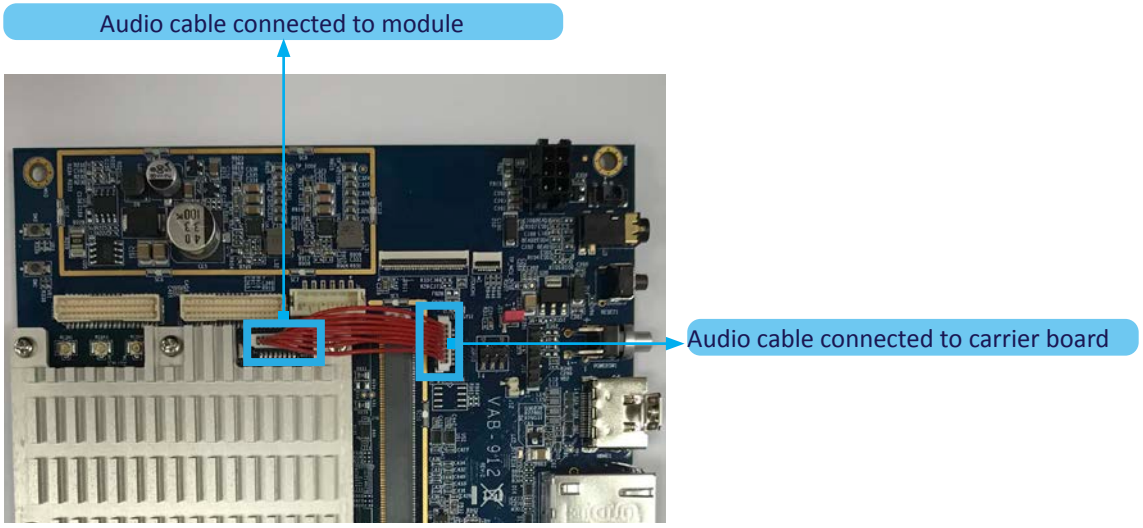

Figure 04: Connecting the audio cable between the module and the carrier board

2.2 Connecting the Debug Console Cable

Follow the steps below to connect the debug console cable between the VIA SOM-7000 starter kit and a developer PC:

Step 1

Connect the white connector of the debug console cable to the debug console connector labeled 'J14' on the bottom layer of the VIA SOMDB7 carrier board.

Step 2

Connect the opposite end of the debug console cable to the developer PC's RS232 D-sub serial port.

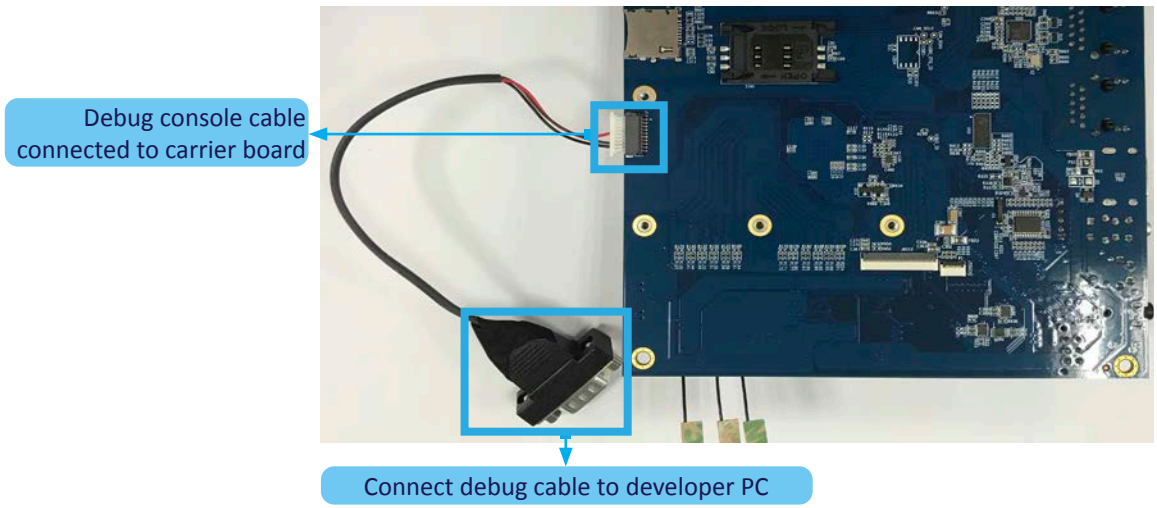

Figure 05: Connecting the debug console cable between the VIA SOMDB7 carrier board and a developer PC

2.3 Power Cable

Follow the steps below to connect the power cable between the VIA SOM-7000 starter kit and a power source:

Step 1

Connect the black connector of the power cable to the DC-in power connector labeled 'J7' on the top layer of the VIA SOMDB7 carrier board.

Step 2

Connect a 12V power adapter to the opposite DC-in jack end of the power cable.

Note:
A power adapter is not provided in the VIA SOM-7000 starter kit. A 12V 3A power adapter is bundled in the developer pack described in Appendix section B.1.

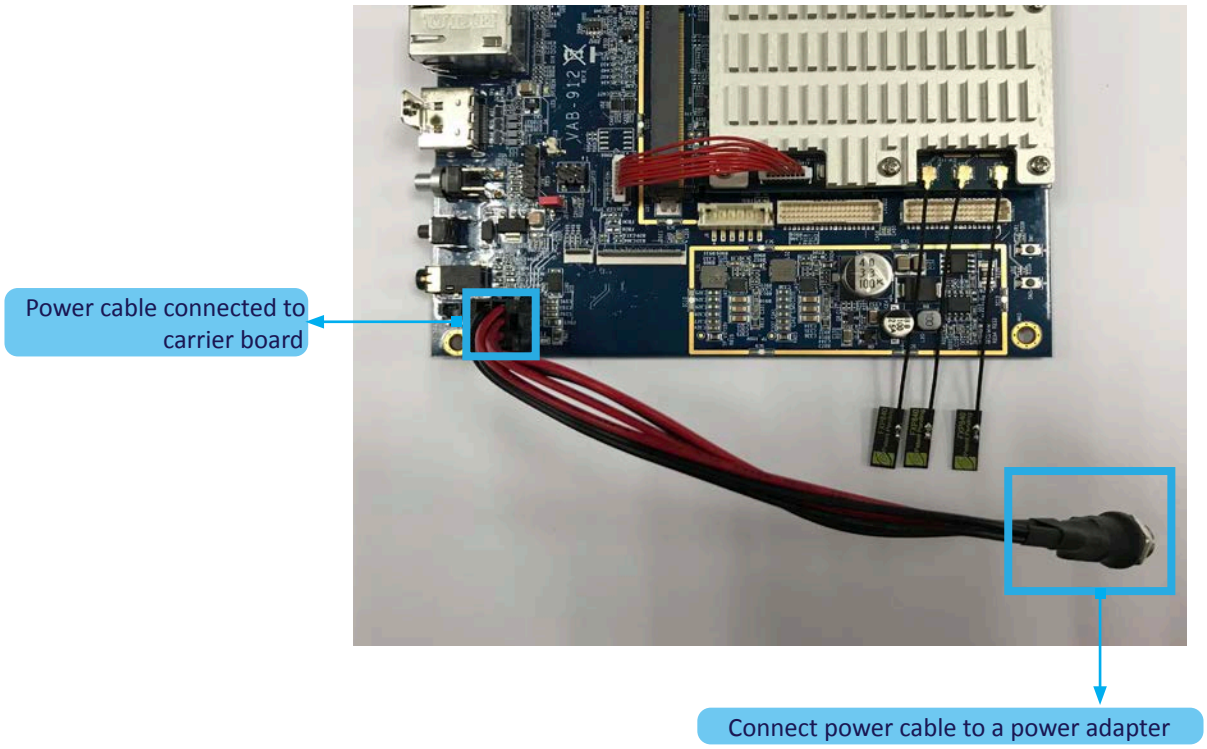

Figure 06: Connecting the power cable to the VIA SOMDB7 carrier board and a power adapter

Step 3

Connect the power adapter to a compatible power source.

Appendix A Recommended Mating/ Unmating Jig

A.1 Jig Dimensions

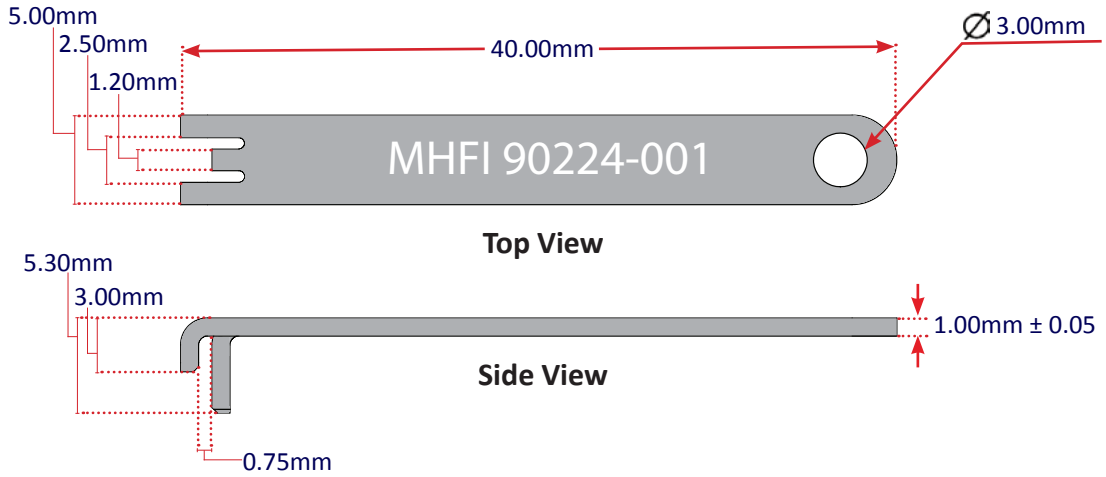

Figure 07: MHF® I mating/unmating jig dimensions

Figure 08: MHF® 4L mating/unmating jig dimensions

A.2 Mating Method of Plug Connector

Using the jig, align the plug connector with the micro-miniature RF antenna connector (I-PEX). Then push down gently until the plug connector is fully connected. The recommended force is 30N (maximum).

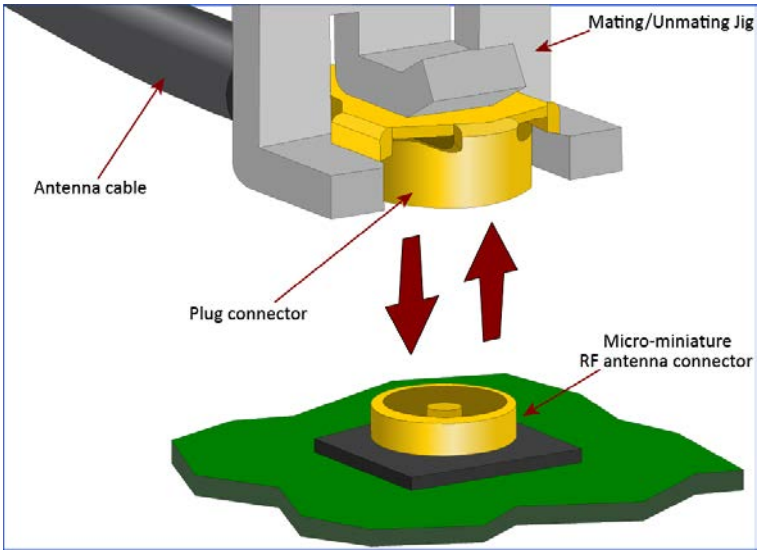

Figure 09: Mating the plug connector with the I-PEX connector

Appendix B Optional Accessories

This section introduces and describes how to install the optional accessories available for the VIA SOM-7000 starter kit.

Caution:
Ensure that the VIA SOM-7000 starter kit is is turned off before installing or uninstalling an optional accessory.

B.1 Development Pack

An optional development pack is available to test and evaluate the camera, Wi-Fi and Bluetooth networking, and power supply interfaces of the VIA SOM-7000 module and VIA SOMDB7 carrier board. The development pack consists of a 5MP CMOS camera module, three Wi-FI/BT antennas, and a 12V 3A worldwide AC adapter.

Figure 10: Development pack

B.1.1 Connecting the Camera Module

Follow the steps below to connect the 5MP CMOS camera module to the VIA SOM-7000 starter kit:

Step 1

Locate the 2-lane MIPI CSI connector labeled 'CSI2' on the top layer of the VIA SOMDB7 carrier board, and gently lift its lock.

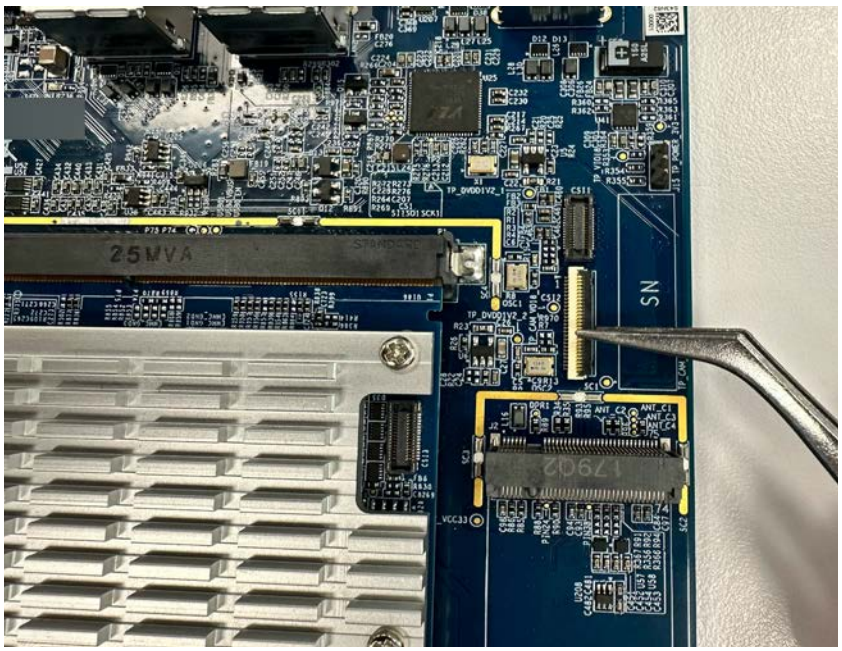

Figure 11: Lift the lock of the MIPI CSI connector 'CSI2'

Step 2

Insert the camera module's 26-pin FPC cable into the 'CSI2' connector with the pins facing up, and gently push down the connector's lock.

Note:
The 2-lane MIPI CSI connector is of the top contact type.

Figure 12: Insert camera module's FPC cable and push down the 'CSI2' connector's lock

B.1.2 Connecting the Bluetooth and Wi-Fi Antennas

Follow the steps below to connect the Wi-Fi/Bluetooth antennas to the VIA SOM-7000 starter kit:

Step 1

Connect a Wi-Fi/Bluetooth antenna to the Bluetooth antenna connector labeled 'WCON1 BT' on the VIA SOM-7000 module.

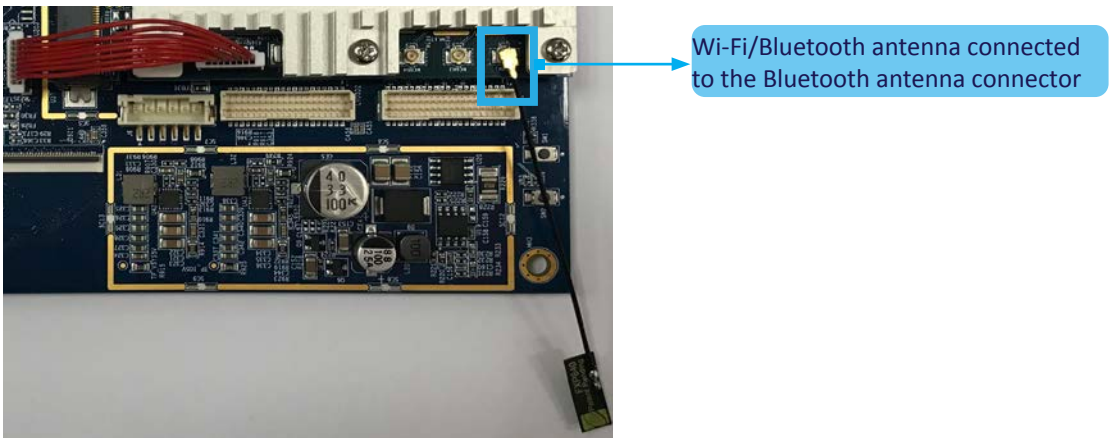

Figure 13: Connecting a Wi-Fi/Bluetooth antenna to the Bluetooth antenna connector

Step 2

Connect the other two Wi-Fi/Bluetooth antennas to the Wi-Fi MAIN and Wi-Fi AUX antenna connectors labeled 'WCON3 WF0' and 'WCON4 WF1' on the VIA SOM-7000 module.

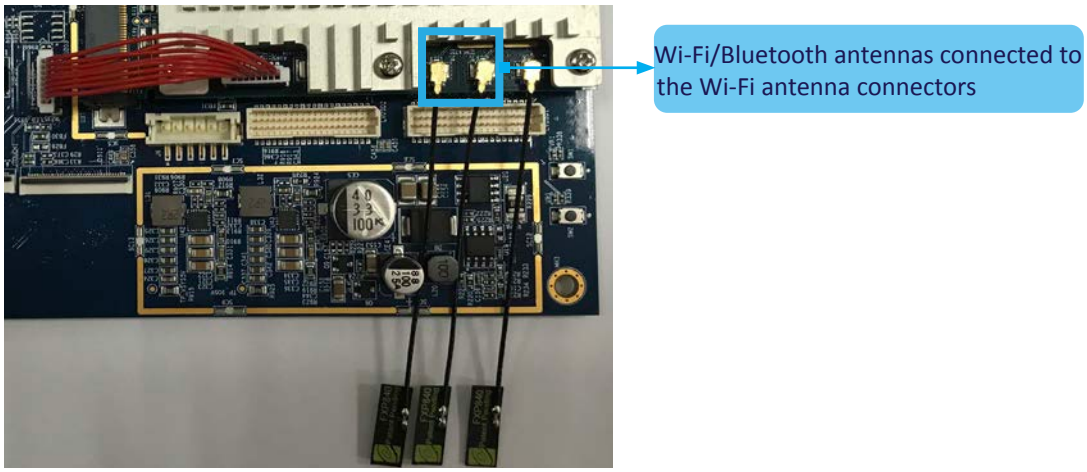

Figure 14: Connecting Wi-Fi/Bluetooth antennas to the Wi-Fi antenna connectors

Note:
Using an MHF® I mating/unmating jig is recommended for connecting the Wi-Fi/BT antennas to the I-PEX connectors on the VIA SOM-7000 module. Refer to Appendix A for more information.

B.1.3 Connecting the Power Adapter

Follow the steps below to connect the 12V 3A power adapter to the VIA SOM-7000 starter kit:

Step 1

Connect the power cable (provided in the starter kit) to the DC-in power connector labeled 'J7' on the top layer of the VIA SOMDB7 carrier board as described in section 2.3.

Step 2

Connect the 12V 3A power adapter to the opposite DC-in jack end of the power cable.

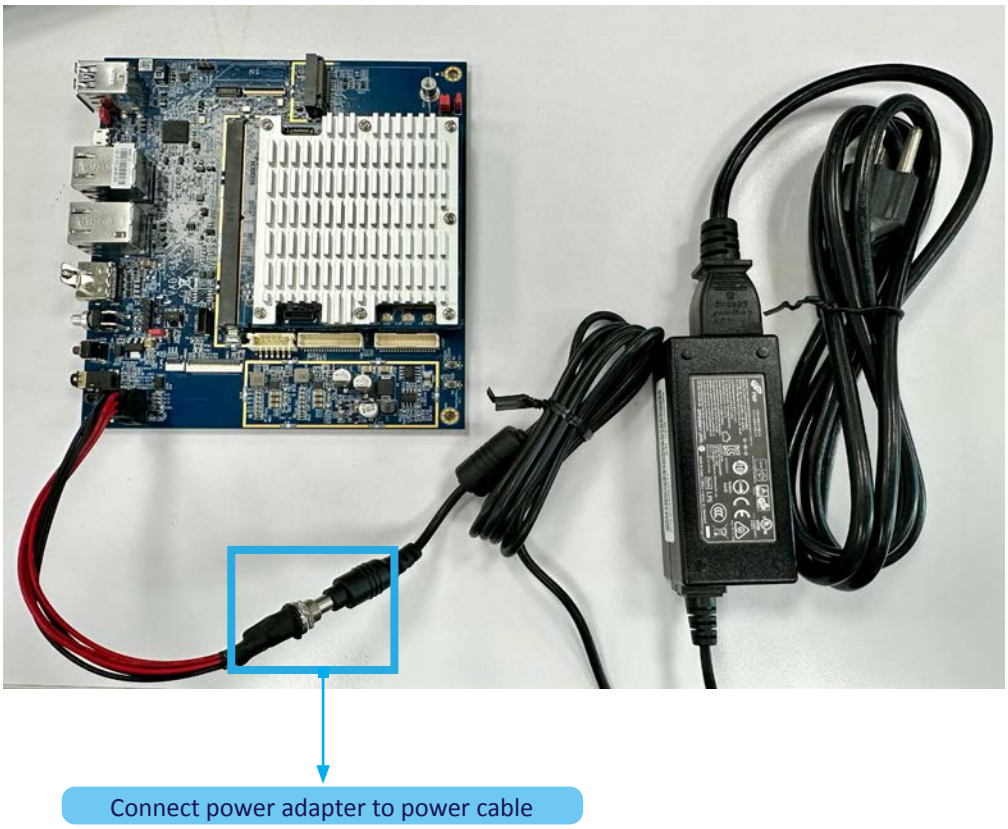

Figure 15: Connecting the power adapter to the VIA SOMDB7 carrier board

Step 3

Connect the power adapter to a compatible power source.

B.2 Installing the 10.1" MIPI LCD & Touch Panel Display

An optional 10.1" 1920x1200 MIPI LCD and touch panel display accessory is available for testing the MIPI DSI output from the VIA SOM-7000 starter kit.

Figure 16: 10.1" 1920x1200 MIPI LCD and touch panel display

Follow the steps below to connect the LCD + touch panel display to the starter kit:

Step 1

Locate the touch panel connector labeled 'JTOUCH1' and the 4-lane MIPI DSI connector labeled 'JDSI1' on the top layer of the VIA SOMDB7 carrier board, and gently lift both connectors' locks.

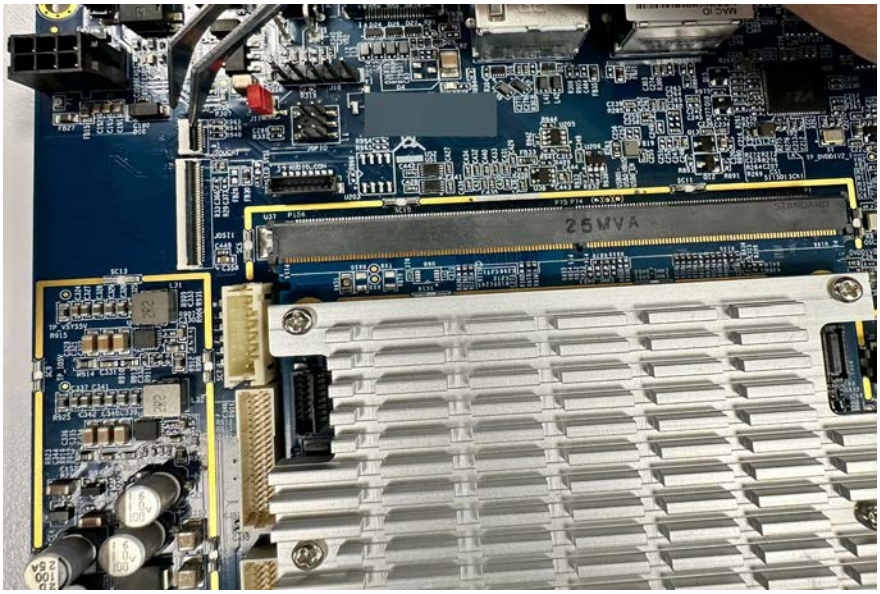

Figure 17: Lift the 'JTOUCH1' and 'JDSI1' connectors' locks

Step 2

Insert the LCD and touch panel display's 8-pin FPC cable into the 'JTOUCH1' connector with the pins facing up, and gently push down the connector's lock.

Note:
The touch panel connector is of the top contact type

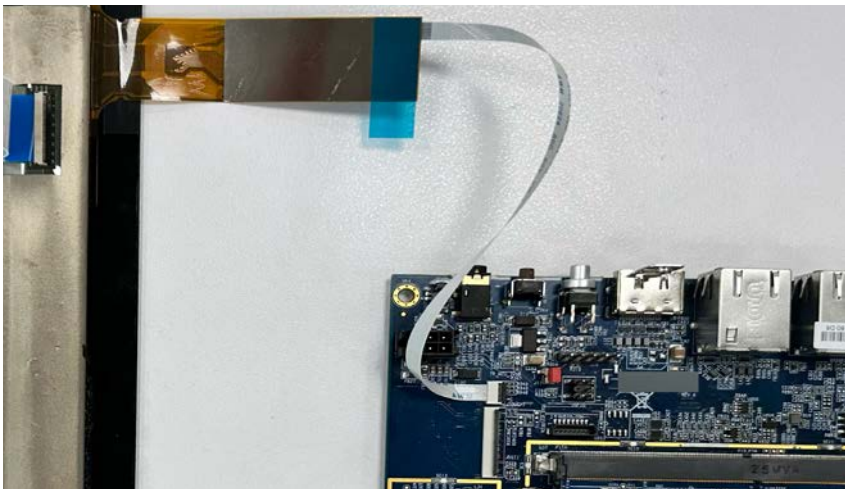

Figure 18: Insert LCD touch panel display's FPC cable and push down the 'JTOUCH1' connector's lock

Step 2

Insert the LCD and touch panel display's 8-pin FFC cable into the 'JDSI1' connector with the pins facing up, and gently push down the connector's lock.

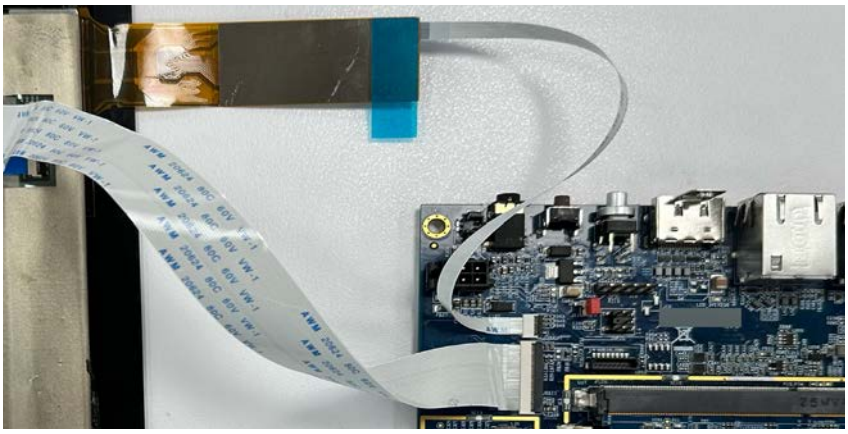

Figure 19: Insert LCD touch panel display's FFC cable and push down the 'JDSI1' connector's lock

Note:
The MIPI DSI 4-lane connector is of the top contact type

B.3 Installing the 4G LTE M.2 Wireless Module Kit

The optional 4G LTE wireless module accessory kit includes a 4G LTE M.2 module with antenna and screw pack to provide cellular connectivity (SIM card not provided).

Figure 20: 4G LTE wireless module accessory kit

Follow the instructions below to install the 4G LTE module and antenna:

Step 1

Align the 4G LTE module's notch with the notch of the M.2 slot located on the VIA SOMDB7 carrier board's top layer, and insert the 4G LTE module at a 30° angle.

Step 2

Once the 4G LTE module has been fully inserted, gently push down the module until its single standoff hole aligns with the carrier board's screw hole, then secure the module with the M3 screw provided in the kit.

Figure 21: Installing the 4G LTE module on the carrier board

Step 3

Connect the 4G LTE antenna to the "M" (MAIN) and "D" (DIV) I-PEX connectors on the 4G LTE module.

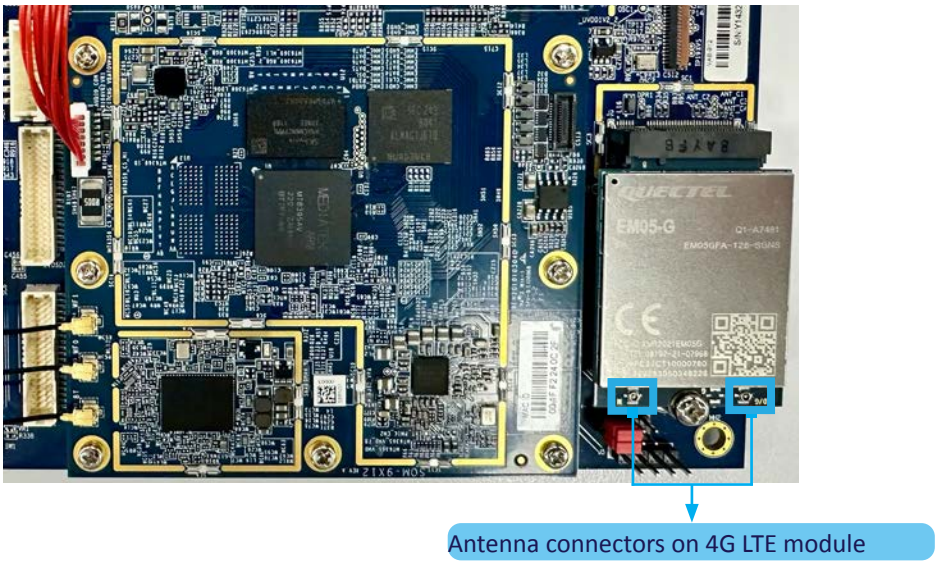

Figure 22: Connecting the antenna on the 4G LTE module

Note:
Using an MHF® 4L mating/unmating jig is recommended for connecting the 4G LTE antenna to the I-PEX connectors on the 4G LTE module. Refer to Appendix A for more information.

B.3.1 Installing the SIM Card

A SIM card slot labeled 'SIM1' is located on the VIA SOMDB7 carrier boards bottom layer. It supports 4G LTE SIM cards. The SIM card slot is disabled if the optional 4G LTE wireless module accessory is not installed, and is only designed for a 4G LTE wireless module without a built-in SIM card slot.

Follow the instructions below to install the SIM card:

Step 1

Firmly push back the SIM card slot to unlock the opening.

Step 2

Pull up the slot and slide in the SIM card, ensuring that the correct end goes in.

Step 3

Push down the slot.

Step 4

Gently lock the SIM card slot by sliding back the slot.

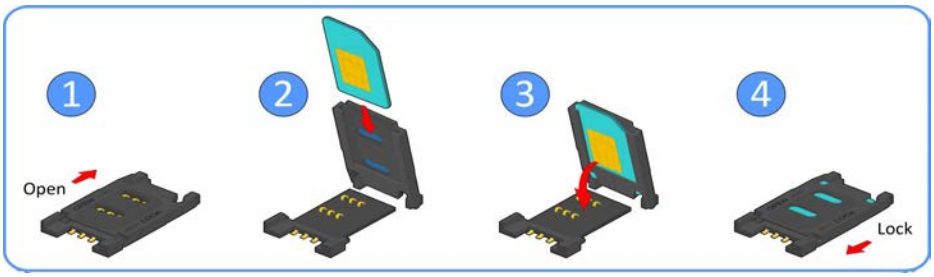

Figure 23: Installing the SIM card

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