



MT8367 MT8366 Evaluation Kit User Guide

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Version History

Version	Date	Description
0.1	2025-08-28	Initial draft.
1.0	2025-12-29	Official Release

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1 Overview

1.1 General Information

Genio 360P EVK is the evaluation kit for the MediaTek MT8367 platform, and Genio 360 EVK is the evaluation kit for the MediaTek MT8366 platform. Both kits integrate an M.2 Wi-Fi/Bluetooth module and provide a high-performance IoT platform with rich features.

Note: Genio 360P/360 (MT8367/MT8366) EVK is only for development and evaluation; please follow the **MT8367 MT8366 Application Processor Schematic and PCB Design Notice** document for hardware design rules.

1.2 Architecture and Block Diagram

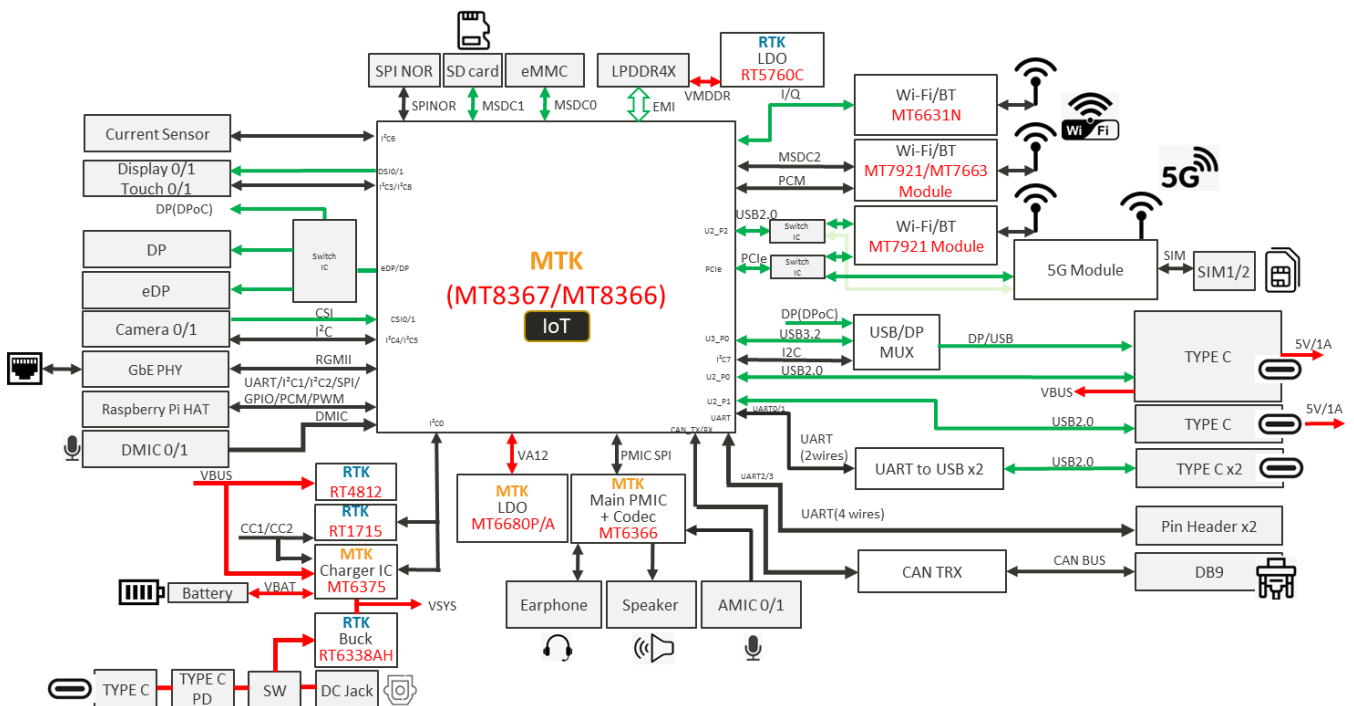


Figure 1-1 Genio 360P/360 (MT8367/MT8366) EVK System Block Diagram

1.3 Feature Summary

- MediaTek CPU (MT8367/MT8366)
- MediaTek PMIC (MT6366A)
- MediaTek Charger (MT6375P)
- 4GB LPDDR4X RAM (Micron MT53E1G32D2FW-046 IT:C)
- 64GB eMMC x 1 (Micron MTFC64GBCAQTC-IT)
- Φ 2.0 DC Jack x 1 (Supports 12V DC Input)
- USB Type-C Power Adapter (20V PD Adapter)
- Micro SD Card Connector x 1
- Push Buttons x 4 (Power, Reset, Home, and Download)
- 3 LEDs (System Power, Reset, DC-IN Power)
- 4-lane MIPI DSI x 2 (MUX)
- 4-lane MIPI CSI x 2
- DP x 1 (Mode over USB Type-C)
- LVDS x 1 (MUX)
- eDP x 1 (MUX)
- DP x 1 (MUX)
- 10/100/1000M Ethernet x 1 (Airoha AN8801RIN/A)
- USB Type-C Connector (UART) x 2
 - UART Port for Trace Log with a USB to UART Bridge IC
- USB Type-C Connector (USB 3.2) x 1
- USB Type-C Connector (USB 2.0) x 1
- 3.5mm earphone jack x 1 (with microphone input)
- 3.5mm Line Out Audio Jack x 1
- Analog Microphones x 2 (Merry MMA102-006)
- Digital Microphones x 2 (Merry MMD304-005)
- UART ports x 4 (USB ports x 2, pin headers x 2)
- M.2 Slot Key E x 2
 - For AzureWave AW-XB468NF Wi-Fi 6 & BT 5.2 Module
 - For Sona MT320 2230 Wi-Fi 6 & BT 5.4 Module
 - The M.2 slot designed on the EVK complies with the M.2 standard pin definition. Please ask the customer to confirm whether their M.2 module meets the M.2 standard pin definition
- M.2 Slot Key B x 1
 - The M.2 slot designed on the EVK complies with the M.2 standard pin definition. Confirm whether the M.2 module meets the M.2 standard pin definition.
- 40-Pin 2.54mm Pin Header x 1 (for a Raspberry Pi-like I/O interface)
- Micro SIM x 1
- Nano SIM x 1
- CAN Bus x 1 (RS-232 connector)

1.4 MediaTek Module Design (MMD) Layout Dimension

- MT8367/MT8366 + LPDDR4X: $20 \times 32 = 640\text{mm}^2$
- PMIC MT6366A: $27 \times 22 = 594\text{mm}^2$
- MT8367/MT8366 + LPDDR4X + PMIC: $60 \times 48 = 2880\text{mm}^2$

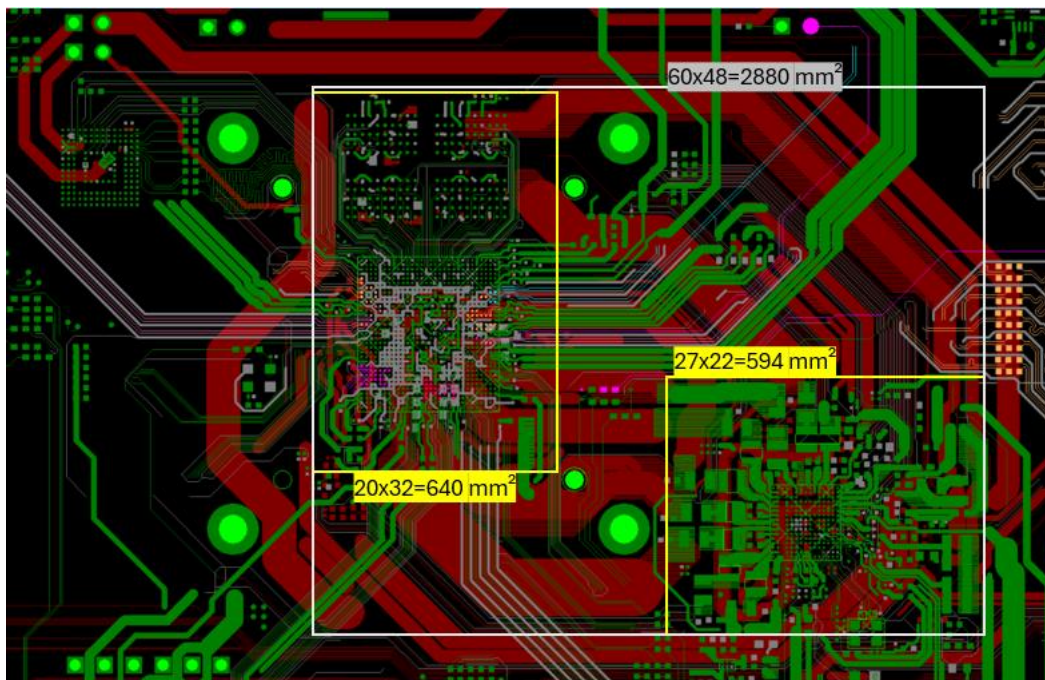


Figure 1-2 MMD Layout Dimension

2 Introduction

Genio 360P EVK board integrates the MediaTek MT8367 processor, and Genio 360 EVK board integrates the MediaTek MT8366 processor, together with 4 GB LPDDR4X memory, eMMC storage, the MT6366A power management IC (PMIC), and an M.2 Wi-Fi/Bluetooth module.

The EVK package includes one Genio 360P/360 (MT8367/MT8366) main board, a 7-inch MIPI-DSI LCD panel, one Wi-Fi 6 module, and two camera daughter boards.



Figure 2-1 Genio 360P/360 (MT8367/MT8366) EVK System Setup

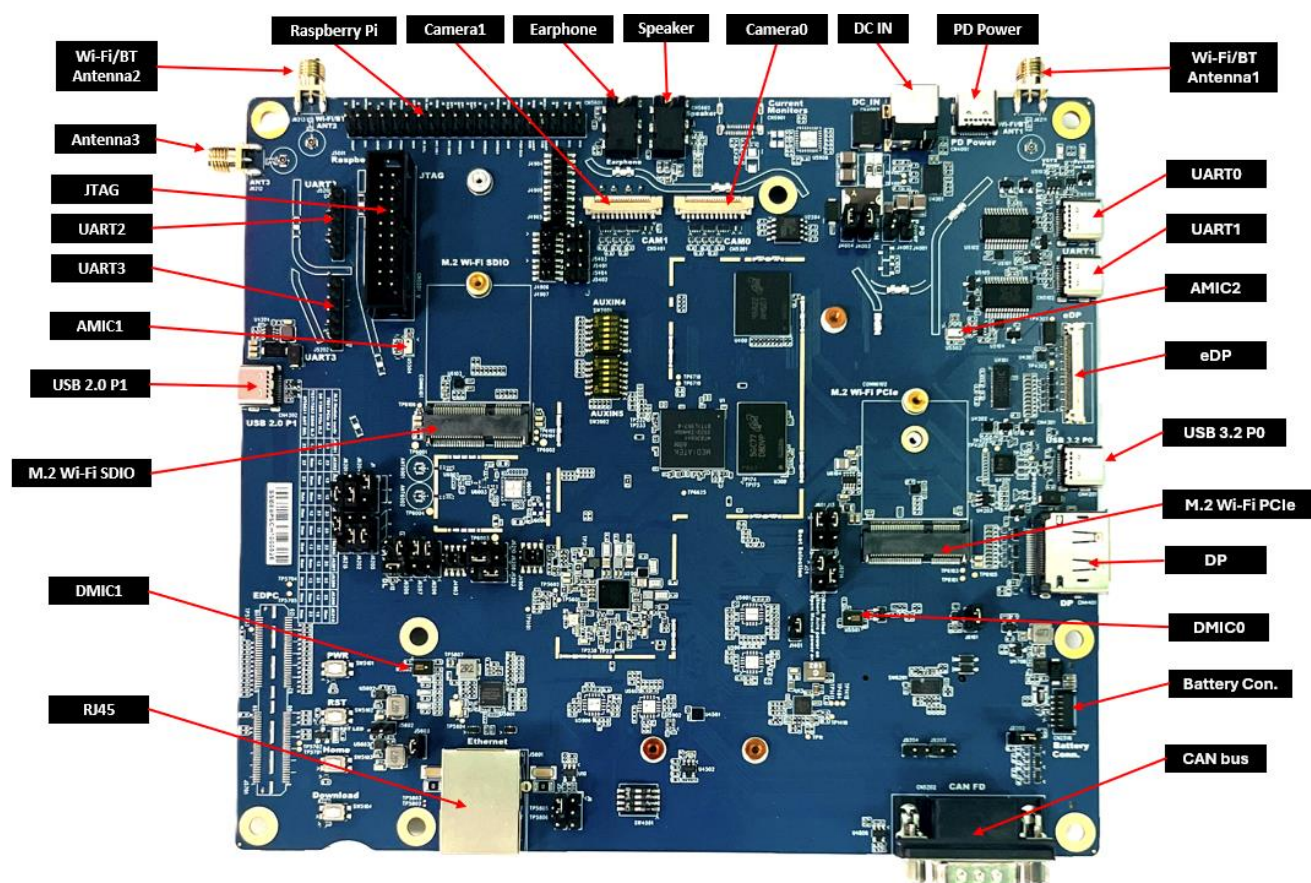


Figure 2-2 Genio 360P/360 (MT8367/MT8366) EVK Top View

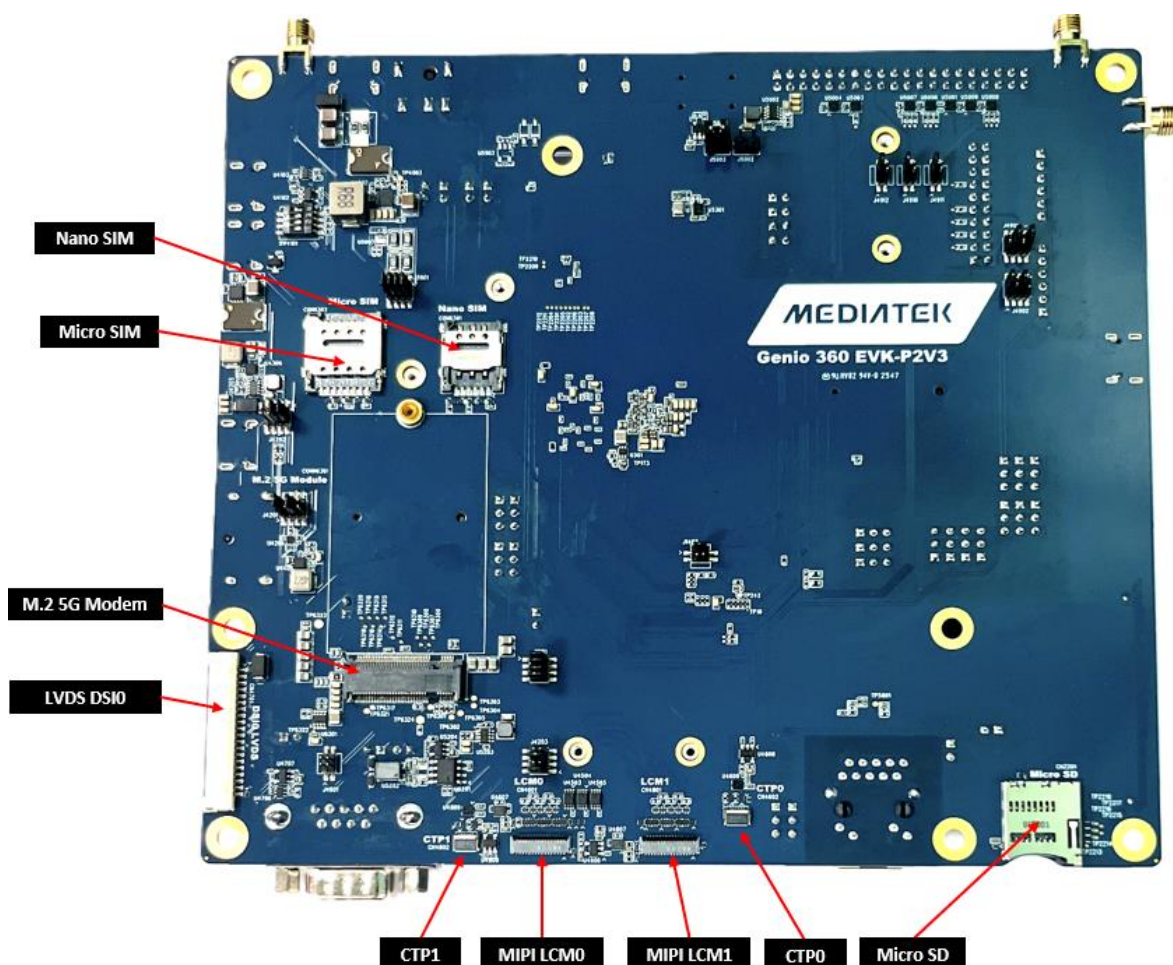


Figure 2-3 Genio 360P/360 (MT8367/MT8366) EVK Bottom View

Table 2-1 Box Contents

No.	Part number	Item Name	Description	Quantity
1	Genio 360 EVK-P2V3 or Genio 360P EVK-P2V3	Genio 360 EVK Main Board Genio 360P EVK Main Board		1
2	IoT-CAM-DTB-D8V2	Camera Module D8	IMX258 Camera Module	1
3	IoT-CAM-DTB-D9V2	Camera Module D9	OV5640 Camera Module	1
4	CAM-DTB-FPC-V2	FPC for Camera Board	FPC is suitable for both D8 and D9 camera boards	2
5	7" LCD Panel	7" LCD Panel	With a touch panel and an FPC cable	1
6	AW-XB468NF	Wi-Fi Module	M.2 Wi-Fi 6 module (IC: MT7921L)	1
7	Wi-Fi Antenna	Wi-Fi Antenna	SMA Antenna	2
8	EA1062SBR	USB Type-C Power Adapter		1

Table 2-2 Key Component List

Function	Manufacturer	PN
Baseband Processor	MediaTek	MT8367 MT8366
Main PMIC	MediaTek	MT6366A
Charger IC	MediaTek	MT6375P
Buck	Richtek	RT5760C
LDO	MediaTek	MT6680P/A
Memory	Micron	MT53E1G32D2FW-046
eMMC	Micron	MTFC64GBCAQTC-IT
Camera Module	MediaTek	IOT-CAM-DTB-D8V2, IOT-CAM-DTB-D9V2
Connectivity	AzureWave	AW-XB468NF (MT7921L Module)
Ethernet PHY	Airoha	AN8801RIN/A
SPI NOR Flash	MXIC	MX25U12832FM2I02

Table 2-3 Power Rails

Function	Regulator	Default Voltage (V)
GPU	MT6366A	0.65
APU		0.75
CPU_L		0.75
SRAM_CORE		0.75
CORE		0.75
eMMC VCC		3.3
eMMC VCCQ		1.86
LPDDR4X VDD2		1.2
LPDDR4X AVDD		1.2
Boost for USBP3 VBUS	RT4812GJ8F	5.0
Boost for MIPI LCM	RT4812GJ8F	5.0
Boost for Raspberry Pi	RT4812GJ8F	5.0
Boost for USBP1 VBUS	RT4812GJ8F	5.0
Boost for CAN bus	RT4812GJ8F	5.0
Boost for LVDS Backlight	RT8509GQW	12.0
Buck for Camera Board	RT5795AGQW	3.3
LDO for UART0 and UART1	FP6186S5	3.3
Buck for eDP	RT5788AGJ8F	3.3
Buck for 5G Module	RT5788AGJ8F	3.3
Buck for Wi-Fi Module	RT5788AGJ8F	3.3
Buck for LVDS	RT5788AGJ8F	3.3
Buck for Ethernet PHY	FP6381WDCTR	1.8
LDO for Raspberry Pi and SBU MUX	RT9078N-08GJ5	3.3
Buck for System	RT6338AHGQUF	4.2
USB PD for Systems	TPS25730DREFR	20.0

2.1 CPU (MT8367/MT8366)

The MT8367/MT8366 device is a highly integrated, powerful application processor designed for a wide range of Artificial Intelligence (AI) and Internet of Things (IoT) use cases. It supports high-performance edge processing, multi-standard video codecs, multiple high-resolution cameras, connected touchscreen displays, and a multi-tasking High-Level Operating System (HLOS)

The MT8367/MT8366 also features advanced capabilities for analytical AI and offline generative AI, enabling applications such as image synthesis, face detection, object detection, text generation, and other neural network-driven innovations, making it an ideal choice for next-generation AI-driven IoT solutions

The MT8367/MT8366 includes an extensive set of I/O interfaces and connectivity peripherals for Wi-Fi connectivity, touchscreen displays, Secure Digital (SD) cards, and sensors. The MT8367/MT8366 is an ideal solution for a wide range of applications, including Smart Home, Smart Retail, Transportation, Industrial Human Machine Interface (HMI), and Embedded Boards.

The MT8367, along with its companion chips, is marked as Genio 360P; while the MT8366, with its companion chips, is marked as Genio 360 (see Table 2-4). These two platforms share the same hardware design and utilize the same software

Table 2-4 Genio 360P/360 (MT8367/MT8366) EVK Board Feature Summary

Feature	Genio 360P (MT8367) EVK	Genio 360 (MT8366) EVK
SoC	MT8367AV/AZA	MT8366AV/AZA
ARM® Cortex-A76	2x 2.0GHz	1x 2.0 GHz
ARM® Cortex-A55	6x 2.0GHz	5x 2.0GHz
NPU MDLA 5.5	7.4 TOPS, 910MHz	5.1 TOPS, 630MHz
GPU (G57)	G57MC2,700MHz	G57MC2,700MHz
ISP	1x ISP	1x ISP

2.2 Power Management IC (MT6366A)

The MT6366A is the power management integrated circuit (PMIC) used on this evaluation kit (EVK). It features 9 buck converters and 33 low-dropout regulators (LDOs), providing optimized power management for various system subsystems.

Sophisticated controls exist for power-up and the RTC alarm. The MT6366A is optimized for maximum battery life. The RTC circuit can remain operational without a battery for several hours.

Note: For the PMIC MT6366A software naming conventions, please refer to FAQ on [MediaTek Online](#).

2.3 DRAM (Micron MT53E1G32D2FW-046 IT:C)

Genio 360P/360 (MT8367/MT8366) EVK has one 4GB LPDDR4X memory with the following features.

- Bi-directional differential data strobe (DQS_t, DQS_c)
- Differential clock inputs (CK_t, CK_c)
- DMI pin supports writing data masking and DBIdc functionality
- Support all bank auto-refresh and direct per bank auto-refresh
- Auto TCSR (Temperature-Compensated Self-Refresh)
- PASR (Partial Array Self Refresh) is controlled by Bank Group Mask and Segment Mask.

2.4 eMMC Storage (Micron MTFC64GBCAQTC-IT)

A 64GB eMMC 5.1 Micron MTFC64GBCAQTC-IT is used for code and data storage via the MSDC0 interface of the baseband processor MT8367/MT8366, which has an 8-bit width data bus.

2.5 M.2 Wi-Fi/Bluetooth Module (AzureWave AW-XB468NF)

The MediaTek MT7921 is designed inside the AzureWave AW-XB468NF M.2 module. This module supports the following features.

- M.2 2230 Wi-Fi Module with Key A-E
- MediaTek MT7921L Wi-Fi Chip
- PCIe/USB Interface
- Wi-Fi 802.11 a/b/g/n/ac/ax
- Dual Band 2T/2R MIMO
- Bluetooth 5.2
- Security WPA WPA2/WPA3 Personal, WPS 2.0, WAPI
- Integrated LNA, PA, and T/R switch

2.6 Ethernet PHY Transceiver (Airoha AN8801RIN/A)

The AN8801RIN/A is suitable for various applications that require Ethernet connectivity, including:

- IoT devices
- Ethernet Switches
- Routers, Gateways
- DSLAM, PON Equipment
- Set-Top Boxes
- Smart TVs
- Gaming Consoles

In summary, the AN8801RIN/A is a feature-rich, low-power, and highly integrated Ethernet PHY transceiver suitable for a wide range of networking applications. For more detailed information, it is recommended to refer to the AN8801R's product datasheet. You can search for and download it from Airoha Technology's official website.

- Ethernet Standard Compliance: Supports 10Base-T (IEEE 802.3), 100Base-TX (IEEE 802.3u), and 1000Base-T (IEEE 802.3ab)
- Low Power Consumption: Designed for energy efficiency
- High Integration: Integrates multiple functionalities into a single chip, reducing the need for external components
- Robust Data Transmission and Reception: Provides reliable data transfer and reception capabilities
- Energy-Efficient Ethernet (EEE) Support: Compliant with the IEEE 802.3az standard, which further reduces power consumption.
- Full-Duplex Flow Control Support: Compliant with IEEE 802.3x standard
- Auto-Negotiation: Automatically detects and configures the optimal connection speed and duplex mode
- Auto MDI/MDIX Support: Automatically detects and adjusts the wiring, eliminating the need for crossover cables
- Jumbo Frame Support: Supports jumbo frames up to 9KB

- Interfaces:
 - Single-Port Serdes Interface: Supports 1000Base-X/RGMII
 - MDC/MDIO Interface: For the management and control of the PHY
 - SPI Interface: Can be accessed via shared General Purpose Input/Output (GPIO) pins.
 - LED Control: It can control the LED status through shared GPIO pins

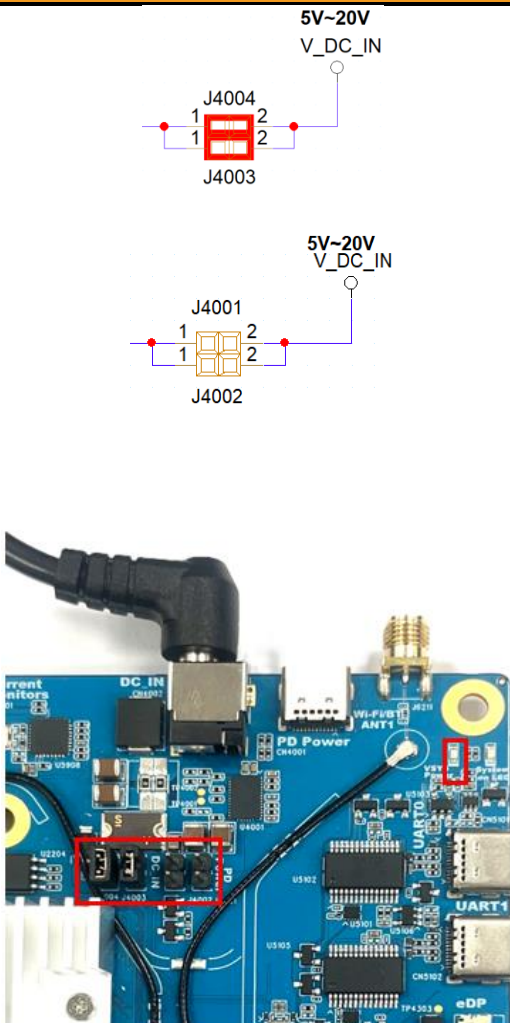
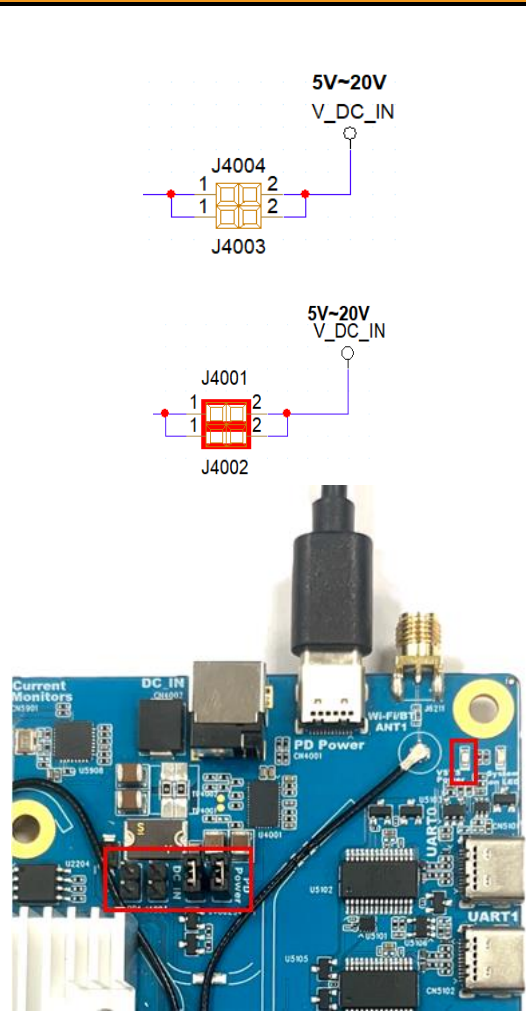
2.7 Power on the Genio 360P/360 (MT8367/MT8366) EVK

Power on the Genio 360P/360 (MT8367/MT8366) EVK board using the following steps.

- Step1: Must install camera board on CAM0 or CAM1 connector.
- Step2: Connect UART0 to the computer via a USB Type-C cable (If you want to view the logs).
- Step3: Set the jumper on J4001~J4004, then insert the DC 20V power adapter or USB Type-C PD adapter.
- Step4: Long press the PWR button for more than 3 seconds.

You will see the screen displayed on the MIPI DSI display and some trace logs coming out from UART0.

Table 2-5 Power Up the System

DC Jack Power Adapter	USB Type-C Power Adapter
	
J4004, J4003 short 1-2 & J4001, J4002 open 1-2	J4004, J4003 open 1-2 & J4001, J4002 short 1-2

```

system/uid_0/pid_2907
[ 231.383650][T700312] init: init 29: ReapLogF PropSet [init.svc.aeedump_v2]=[s
topped]235742 [init.svc_debug_pid.aeedump_v2]=[235742 Done
[ 231.385214][T700312] init: init 28: NtQ Control message: Could not find 'aidl
/vendor.mediatek.hardware.lbs.ILbs/mtk_lbs_log_v2s' for ctl.interface_start from
pid: 480 (/system/bin/servicemanager)
[ 232.143379][T200493] logd.auditd: type=1400 audit(1754888332.782:224): avc:
denied { read } for comm="ps" name="pid_max" dev="proc" ino=29978 scontext=u:r
:aee_aedv:s0 tcontext=u:object_r:proc_pid_max:s0 tclass=file permissive=0
[ 232.385220][T600312] init: init 28: NtQ Control message: Could not find 'aidl
/vendor.mediatek.hardware.lbs.ILbs/mtk_lbs_log_v2s' for ctl.interface_start from
pid: 480 (/system/bin/servicemanager)
[ 232.758505][T100493] logd.auditd: type=1400 audit(1754888333.394:225): avc:
denied { getattr } for comm="aee_dumpstatev" path="/sys/kernel/debug/dma_buf/
bufinfo" dev="debugfs" ino=3089 scontext=u:r:aee_aedv:s0 tcontext=u:object_r:deb
ugfs:s0 tclass=file permissive=0
[ 232.761806][T100493] logd.auditd: type=1400 audit(1754888333.394:226): avc:
denied { read } for comm="aee_dumpstatev" name="bufinfo" dev="debugfs" ino=30
89 scontext=u:r:aee_aedv:s0 tcontext=u:object_r:debugfs:s0 tclass=file permissiv
e=0
[ 232.873271][T102924] df: audit: audit_lost=2 audit_rate_limit=5 audit_backlog
limit=64
[ 232.874939][T102924] df: audit: rate limit exceeded

```

Figure 2-4 Console Screen

Note: If you want to use the camera app, please make sure to plug in the D8/D9 camera board before powering up the EVK.

2.8 LCM Interface selection

You can select the LCM panel output from the Genio 360P/360 (MT8367/MT8366) EVK by switching the SW4501. The default setting is MIPI display interface.

Table 2-6 LCM Jumper Configuration

MIPI (Default)	LVDS
SW4501 settings for MIPI	SW4501 settings for LVDS

2.9 EVK Debug

The SoC core processor logs output through USB Type-C (CN5101).

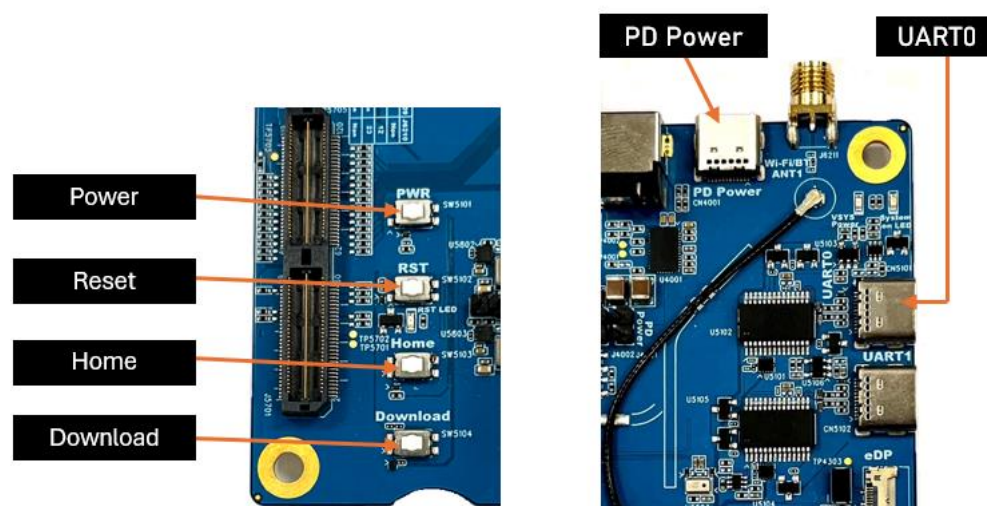


Figure 2-5 Debug Port

- Step1: Check whether the PC's USB port can recognize the UART device. If it cannot be recognized, please install the FT232RNL driver.
- Step2: Setting "Serial line" (ex. COM12), "Speed" to 921600, choose "Connection type" to serial and press "Open" on PuTTY for log (Example on PuTTY).

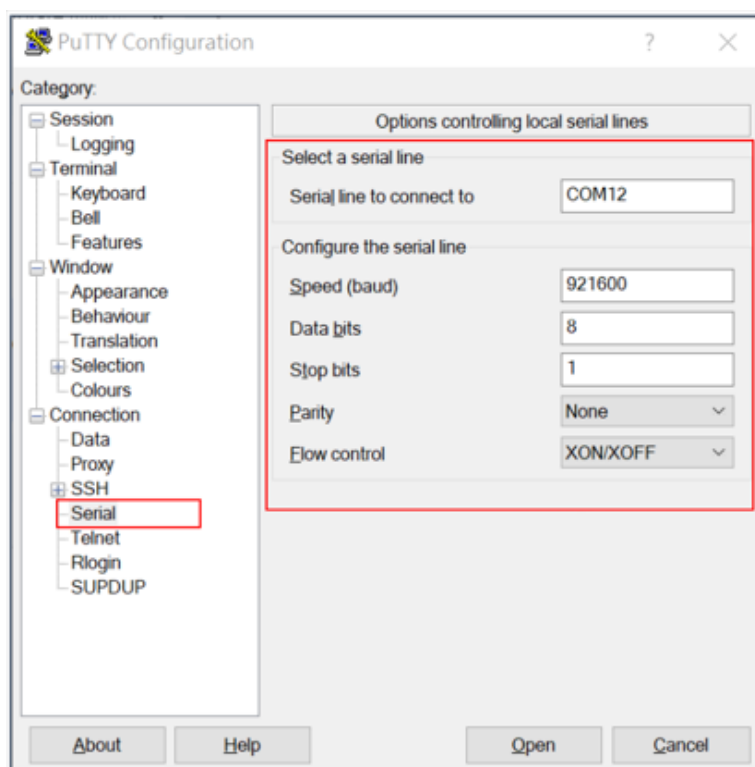


Figure 2-6 Putty Example

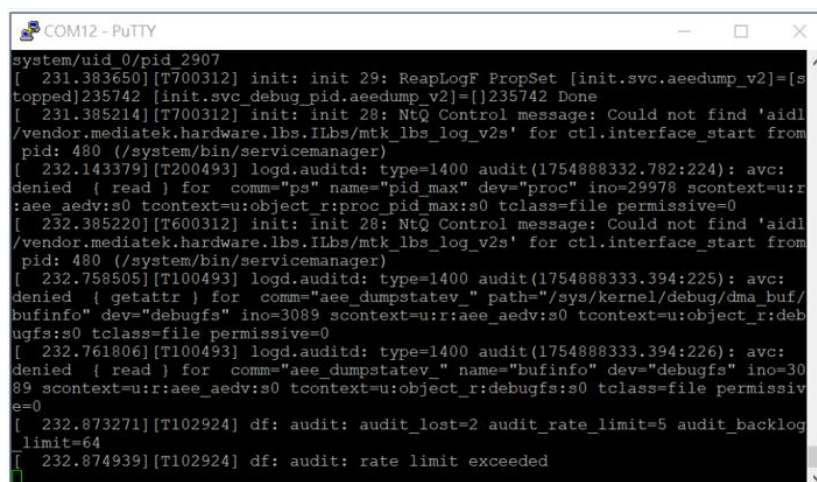


Figure 2-7 Log Screen

- Download "MTK USB cable driver (Driver_Auto_Installer_EXE.zip)" from MediaTek Genio Developer Center website (<https://genio.mediatek.com/download/f6935c8f-bfaa-4b2a-9acc-d61b0616f1cb>) and download "Universal ADB driver" from the Internet. Install these two programs into your Windows OS host machine.

3 Interface and Connectors

3.1 Genio 360P/360 (MT8367/MT8366) EVK I/O Connectors

Table 3-1 Main Board Connectors

Description	Location	Note
USB PD Sink Connector	CN4001	PWR-IN 20V/3A
DC Jack Connector	CN4002	PWR-IN 12V/5A
USB Type-C P0 Connector	CN4201	USB3.2 Gen1 or DPoC
Battery Connector	CN2516	
PWR On Indicator	D5101	RED
System Power Indicator	D5102	Green
RST Indicator	D5103	Green
Power Key Button	SW5101	
Reset Key Button	SW5102	
Home Key Button	SW5103	
JTAG Connector	CN3601	
USB Type-C P1 Connector	CN4202	
UART0 to USB Connector	CN5101	Log connector
UART1 to USB Connector	CN5102	
I ² C to USB Type-C Connector	CN5901	Current sense
Display Interface selection	SW4501	Selection of MIPI or LVDS interface
DSI LCM0 Connector	CN360P1	MIPI DSI LCM0
Touch Panel 0 Connector	CN360P2	Touch Panel of DSI LCM 0
LVDS LCM Connector	CN4701	LVDS LCM
DSI LCM1 Connector	CN4801	MIPI DSI LCM1
Pannel1 Connector	CN4802	Touch Panel of DSI LCM1
CAM0 Connector	CN5301	CAM0
CAM1 Connector	CN5401	CAM1
Micro SD Card Socket	CN2201	
Display Selection	SW4101	Selection of DP (STD), eDP, or DPoC
Display Port Connector	CN4401	DP Port
eDP LCM Connector	CN4301	eDP Port
Ethernet RJ45 Connector	J5801	Ethernet GBE Port
CAN bus DB9 Connector	CN3602	CAN Bus
UART2 Pin Header	J3601	UART2
UART3 Pin Header	J3602	UART3
Ras-Pi Pin Header	J5001	Ras-Pi
EPDC Connector	J5701	EPDC
TRRS Earphone Jack	CN5601	Earphone jack
Line OUT 3.5 TRRS Jack	CN5602	Audio Out
Analog Microphone	U5501, U5502	Dual analog microphone

Digital Microphone	U5503, U5504	Dual digital microphone
PCIe Path Selection Pin Header	J6214	PCIe to Wi-Fi or to 5G module selection
USB 2.0 Path Selection Pin Header	J6101	USB2 to Wi-Fi or to 5G module selection
WIFI Module1 Connector	CONN6102	PCIe M.2 Key E Module
WIFI Module2 Connector	CONN6101	SDIO M.2 Key E Module
5G Module Connector	CONN6301	M.2 Key B Module
RF Connectivity Setting	J6201, J6202, J6215, J6203, J6204, J6205, J6206, J6207, J6208, J6209, J6210	Configuration for Wireless connectivity
USB download port selection	J12	DL from USB P0 or USB P1
Boot Up Device SEL Pin Header	J13, J14	Boot Up Device Selection
Auto Power On Pin Header	J1401	Auto Power-On Setting
CAN Bus IOPWR SEL Pin Header	J5203	The power voltage level of CAN Bus IO
DCIN Power Source SEL Pin Header	J4001, J4002, J4003, J4004	Power on from the DC jack or Type-C PD.
GPIO mux SEL Pin Header	J4901, J4902	to UART3 / Ras-Pi
GPIO mux SEL Pin Header	J4906, J4907, J4908, J4909, J4960	to I2SIN5 / Ras-Pi / DSI1 LCM
Ras-Pi connector power output Enable	J5002, J5003	Enable the output power of the Raspberry Pi connector
GPIO mux SEL Pin Header	J4904, J4905	to RF PCM / Ras-Pi PCM
GPIO mux SEL Pin Header	J4910, J4911, J4912	to a CAM/Ras-Pi
PD PWR Path JUMP Pin Header	J4202	PD Power Path Selection of USB P0
PD CC Signal Path SEL Pin Header	J4201	PD Ctrl CC Signal Selection of USB P0

3.2 System Power Paths

3.2.1 System Power

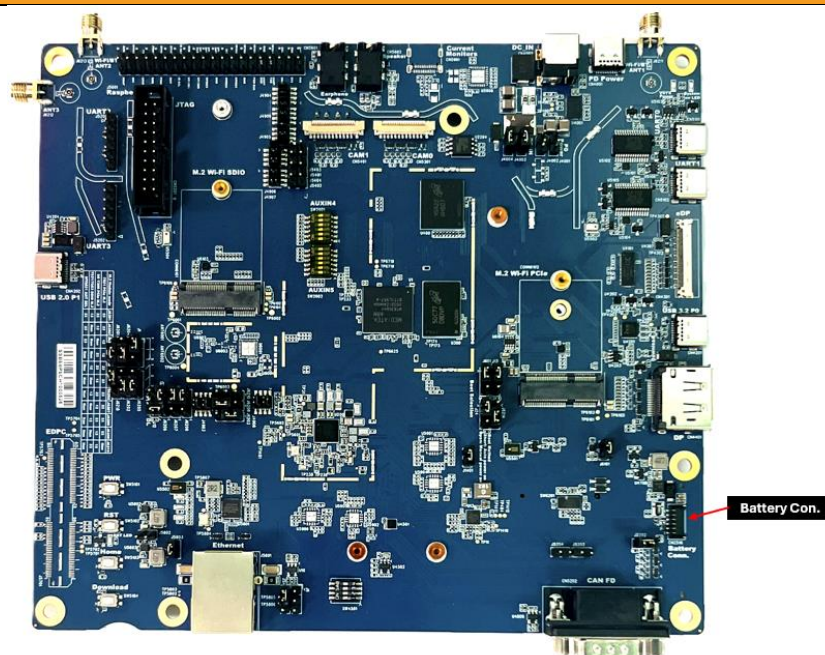
There are three power supply paths for the system. Two paths are selected as inputs using jumper J4001~J4004: USB PD adapters or DC adapters.

Note: DO NOT connect the battery when selecting USB PD adapters or DC adapters, as this will cause the battery charging to be unmanaged.

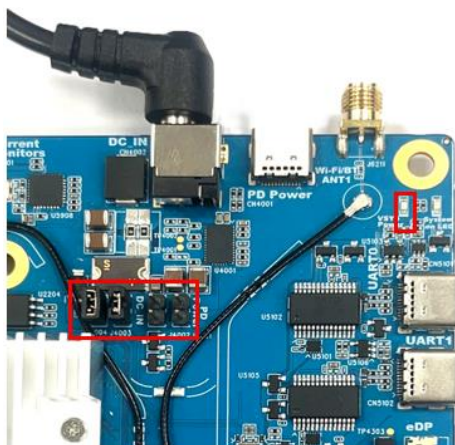
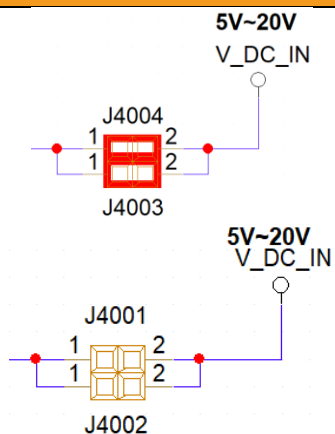
The third path is powered by a Li-polymer battery. The battery power is connected to the charger IC (MediaTek MT6375P) and then connected to VSYS through the charger IC. This path supports applications that use Li-polymer batteries. In this configuration, USB Port 0 is used as the power source for charging the battery. The power supplied from USB Port 0 is first processed by the charger IC to regulate the voltage and current before being delivered to the battery

Table 3-2 Power Paths

Battery Connector

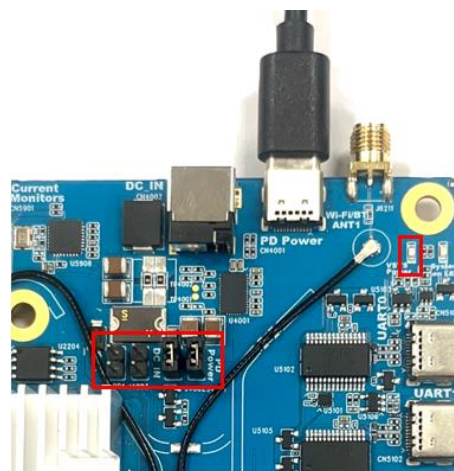
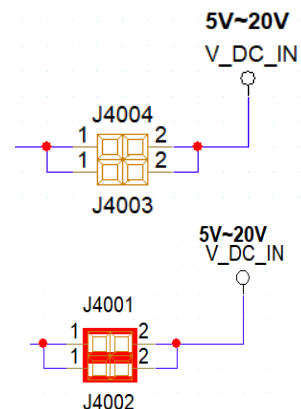


DC Jack Power Adapter



J4004, J4003 short 1-2 & J4001, J4002 open 1-2

USB Type-C PD Adapter



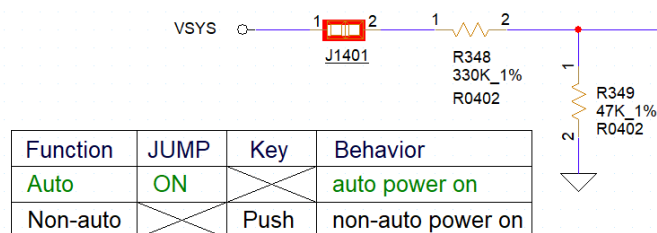
J4004, J4003 open 1-2 & J4001, J4002 short 1-2



The default setting for power on is “non-auto power on” mode, push the power button for 3 second to power on EVK when adapter is plugged.

Genio 360P/360 (MT8367/MT8366) EVK also supports system auto power on when the adapter is plugged without power button pushed. You need to short J1401 jumper to set to auto power on mode.

Auto Power On (Not Default)



Auto Power On (Not Default)



J1401 short 1-2 for auto power on

3.3 I/O Interface

LED Indicators

There are three LED indicators.

Table 3-4 LED Indicators

LED Indicators	Location	Color	Note
DC-IN Power Indicator	D5101	Red	The LED is on if adaptor is on
System Power Indicator	D5102	Green	The LED is on while the system is powered on
Reset Indicator	D5103	Green	The LED is off if the reset signal is low

UART

On the Genio 360P/360 (MT8367/MT8366) EVK, there are two UART interfaces (UART0 and UART1) equipped with USB to UART bridge ICs, and two 4-wire UART interfaces (UART2 and UART3) that are directly connected to the SoC.

- Supports word lengths from 5 to 8 bits with an optional parity bit and 1 or 2 stop bits
- Supports baud rates from 110 bps up to 921600 bps

Figure 3-2 shows the pin definitions of UART2 and UART3.

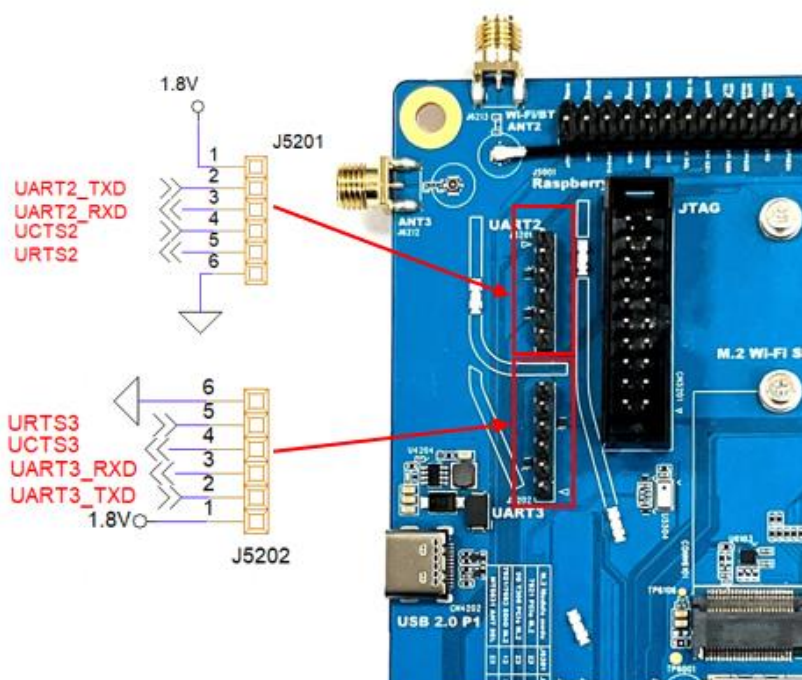


Figure 3-2 UART2/UART3 Pin Definition

Table 3-5 UART Ports (CON1605 and CON1606)

UART	Location	Note
UART0	CN5101 (Type-C)	Core Processor Log
UART1	CN5102 (Type-C)	
UART2	J5201 (6-pin header)	
UART3	J5202 (6-pin header)	

I²C

- Ten I²C buses (I²C0~I²C9)
- Supports master mode only
- Adjustable clock speed for LS/FS/FS+ mode operation
- Supports 7-bit address

Table 3-6 I²C Bus

I ² C Bus	Purpose	Note
I ² C0	Charger IC USB Type-C Port Controller and Power Delivery	MT6375P RT1715
I ² C1	Raspberry Pi-like I/O	
I ² C2	Raspberry Pi-like I/O	
I ² C3	Raspberry Pi-like I/O LCM1 TP	
I ² C4	CAM MIPI CSI0	Camera Sensor
I ² C5	CAM MIPI CSI1	Camera Sensor
I ² C6	Current Sensor	PAC1934T
I ² C7	USB Type-C SBU MUX	TS3USBCA410IRSVT
I ² C8	LCM0 TP	
I ² C9	Raspberry Pi-like I/O	

SPI

- Supports master mode

Table 3-7 SPI Bus

SPI Bus	Purpose	Note
SPIM4	Raspberry Pi Like I/O	
SPINOR	SPI NOR Flash	MX25U12832FZNI02

PWM

- PWM supports old mode and FIFO mode
- The frequency can be set up to 13 MHz in the production version image.
The maximum PWM frequency supported by the SoC is 39 MHz

Table 3-8 PWM

PWM	Purpose	Note
PWM0	Raspberry Pi-like I/O	
PWM1	Raspberry Pi-like I/O	

Raspberry Pi-like I/O Interface

Table 3-9 Pin Assignments of the Raspberry Pi Like I/O Pin Header

Pin #	Description	Note	Pin #	Description	Note
1	3.3V		2	5V	
3	SDA3	GPIO105	4	5V	
5	SCL3	GPIO104	6	GND	
7	GPIO94		8	UATXD3	GPIO73
9	GND		10	UARXD3	GPIO72
11	URTS3	GPIO41	12	PCM_CLK	GPIO86
13	GPIO95		14	GND	
15	GPIO96		16	GPIO97	
17	3V3		18	GPIO37	
19	SPIM4_MO	GPIO34	20	GND	
21	SPIM4_MI	GPIO35	22	SDA2	GPIO103
23	SPIM4_CLK	GPIO33	24	SPIM4_CS	GPIO32
25	GND		26	GPIO36	
27	SDA9	GPIO116	28	SCL9	GPIO117
29	SDA1	GPIO101	30	GND	
31	SCL2	GPIO102	32	PWM1	GPIO49
33	PWM0	GPIO48	34	GND	
35	PCM_FS	GPIO87	36	UCTS3	GPIO40
37	SCL1	GPIO100	38	PCM_DO	GPIO89
39	GND		40	PCM_DI	GPIO88

Note:

1. The VRasPi_5V power can provide a maximum of 5V/1A
2. EXT_3V3 power can deliver 3.3V at 300mA
3. Black text indicates a ground pin
4. Red text indicates a power pin
5. Green text indicates a special function pin
6. Blue text indicates a GPIO
7. Pink text indicates a pin, which multiplexes with other functions. Please check Section 3.16, Pin Mux, and Raspberry Pi

3.4 Micro SD Card Connector

Genio 360P/360 (MT8367/MT8366) EVK has one MicroSD connector. It uses MT8367/MT8366 MSDC1 interface and supports following features.

- Default Speed Mode
- High Speed Mode
- SDR12 Mode
- SDR25 Mode
- SDR50 Mode
- SDR104 Mode
- DDR50 Mode

3.5 Power and Function Key Interface

The system is supplied with 12V power from a 2.0 mm DC Jack (CN4002) or with 20V power from a USB Type-C connector (CN4001). The power-on button and reset button on the evaluation board allow the system to be turned on and rebooted, and the Home and Download buttons are also retained.

3.6 USB Device

Genio 360P/360 (MT8367/MT8366) EVK has two USB device ports, among which the USB Type-C port 0 can be used for ADB debugging port.

3.7 USB Host

Genio 360P/360 (MT8367/MT8366) EVK has two USB Type-C host ports for USB device connections.

Table 3-10 USB Feature in Genio 360P/360 (MT8367/MT8366) EVK

USB Port 0 on SoC	SW Support Mode		Function
	Host Mode	Device Mode	
USB3.2 Gen1	Support	Support	USB Type-C
USB2.0	Support	Support	USB Type-C

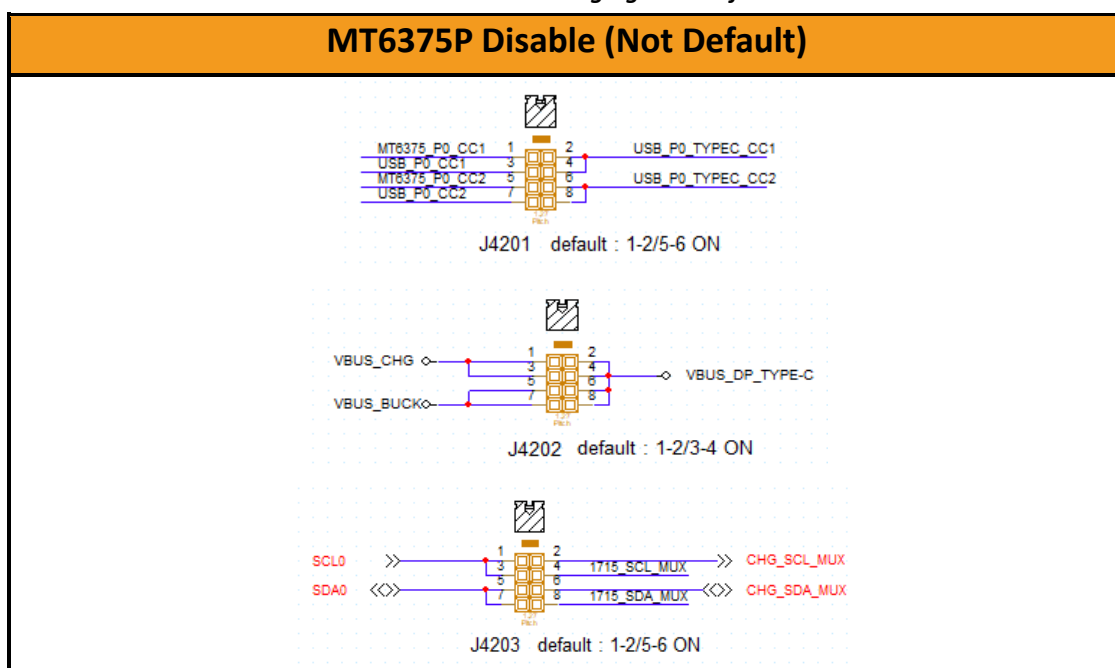
USB Port 1 on SoC	SW Support Mode		Function
	Host Mode	Device Mode	
USB2.0	Support	Not Support	USB Type-C

USB Port 2 on SoC	SW Support Mode		Function
	Host Mode	Device Mode	
USB2.0	Support	Not Support	5G Module

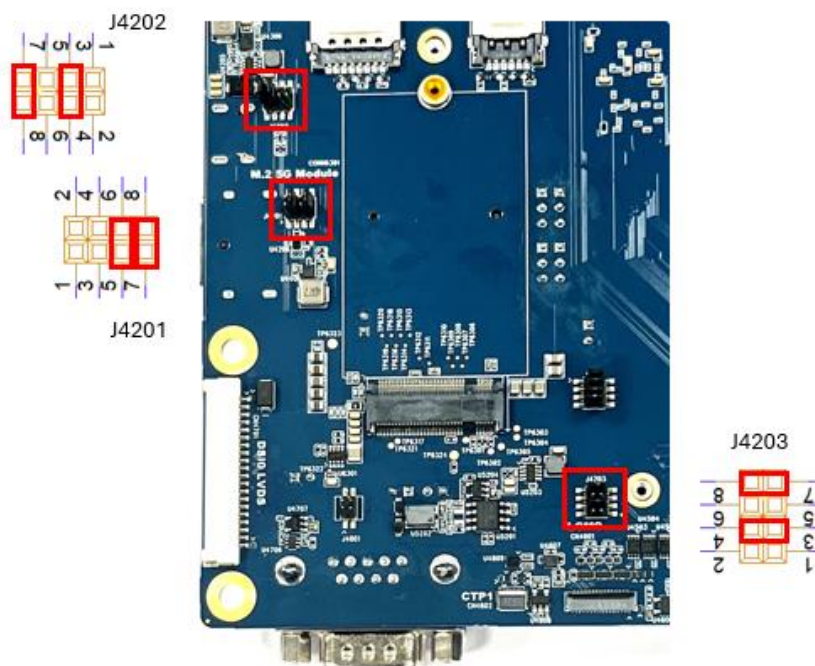
3.8 Disable Charger Function

Genio 360P/360 (MT8367/MT8366) EVK adopts MT6375P for charging and PD (Power Delivery) function for default. To disable MT6375P J4201, J4202 and J4203 must be set to open. J4201 and J4203 are set for PD channel and J4202 is set for Type C VBUS input trace (PD power in). When MT6375P is disable, a USB Type-C controller IC RT1715 will take over the PD function.

Table 3-11 MT6375P charging and PD function



MT6375P Disable (Not Default)



J4201 short (3-4, 7-8), J4202 short (5-6,7-8), J4203 short (3-4, 7-8) to disable MT6375P

3.9 Audio Interface

Genio 360P/360 (MT8367/MT8366) EVK provides a 3.5mm earphone jack (with a microphone input) and another 3.5mm audio jack for line out (no build-in audio amplifier).

3.10 Microphones

Genio 360P/360 (MT8367/MT8366) EVK provides two analog microphones (Merry MMA102-006) and two digital microphones(Merry MMD304-005).

Table 3-12 Microphones Location

Location	Type	Note
U5503	Digital Microphone	To Processor MT8367/MT8366
U5501	Analog Microphone	To PMIC MT6366A
U5504	Digital Microphone	To Processor MT8367/MT8366
U5502	Analog Microphone	To PMIC MT6366A

3.11 MIPI DSI Interface

Genio 360P/360 (MT8367/MT8366) EVK provides two 4-lane MIPI DSI interfaces. A Startek LCM (KD070FHFID078-01-C021A) with touch pad is provided in the box. The I²C capacitive touch controller is Goodix GT9271.

- Support MIPI DSI 2.0 with D-PHY.
- 4-lane D-PHY, up to 2.5 Gbps per lane
- Support up to 1920 x 1200 @60 fps

3.12 MIPI CSI Interface

Genio 360P/360 (MT8367/MT8366) EVK provides 2x MIPI CSI -2 high speed camera interfaces.

- Supports up to 4x data lanes of D-PHY at 2.5 Gbps
- Supports up to 3 sets of C-PHY at 2.5 Gbps
- Support up to 6 FHD30 cameras with a MIPI virtual channel

3.13 Ethernet Interface

- Operate with an external Ethernet PHY (Airoha AN8801RIN/A)
- Dynamically configurable to support 10/100/1000M with RGMII
- CRC-32 checking with optional forwarding of the FCS field to the user application
- Optional Magic Packet Detection
- EEE (Energy Efficient Ethernet) MII signaling according to the IEEE 802.3az specification
- RJ-45 Ethernet connector with a transformer and LEDs in it

Table 3-13 Ethernet LED Indicator

	10M (LED_D7)	100M (LED_D6)	1G (LED_D5)
Non-Link	OFF	OFF	OFF
Link	ON	ON	ON
Active	Flash	Flash	Flash

3.14 DP/ DPoC Port

Genio 360P/360 (MT8367/MT8366) EVK provides one DP TX port, supporting DP1.4.

DP TX features

- Support DP1.4/eDP1.3 combo interface, 4-lane up to 5.4Gbps per lane and combo with USB3.2 Gen1
- Supports DP TX HBR2 (eDP 1.3 PSR is not supported)
- DP 1.4-TX and eDP 1.3-TX cannot operate simultaneously on the same interface
- Supports Single Stream Transport (SST)
- Support DSC v1.1/1.2
- Support DP Alt Mode over USB Type-C

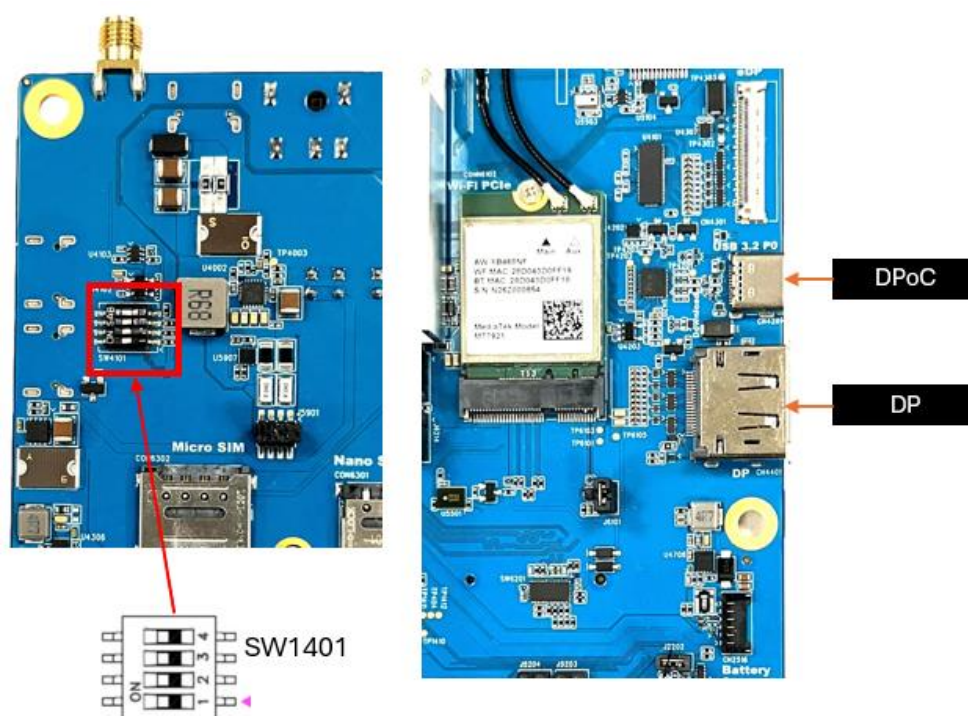


Figure 3-3 DP/DPoC Connector

Genio 360P/360 (MT8367/MT8366) EVK supports DPoC (DP Alt Mode over USB Type-C) function, that means the DP data can output from USB3.2 P0 Type C connector to external display. The default setting for DP port is disable. SW4101 should be adjusted to enable DP port and can select DP output or DPoC output by SW4101 as well.

Table 3-14 Setting for DP Port

SW4101 Setting	Function
(1-8 OFF),(2-7 OFF),(3-6 OFF),(4-5 ON)	Disable
(1-8 OFF),(2-7 ON),(3-6 ON),(4-5 OFF)	eDP
(1-8 OFF),(2-7 OFF),(3-6 ON),(4-5 OFF)	DPoC
(1-8 OFF),(2-7 ON),(3-6 OFF),(4-5 OFF)	DP

SW4101

Disable eDP DPoC DP

3.15 Antenna Connector

Genio 360P/360 (MT8367/MT8366) EVK has three Wi-Fi antenna connectors; users can connect them via coaxial cables. These connectors are designed for Wi-Fi modules.

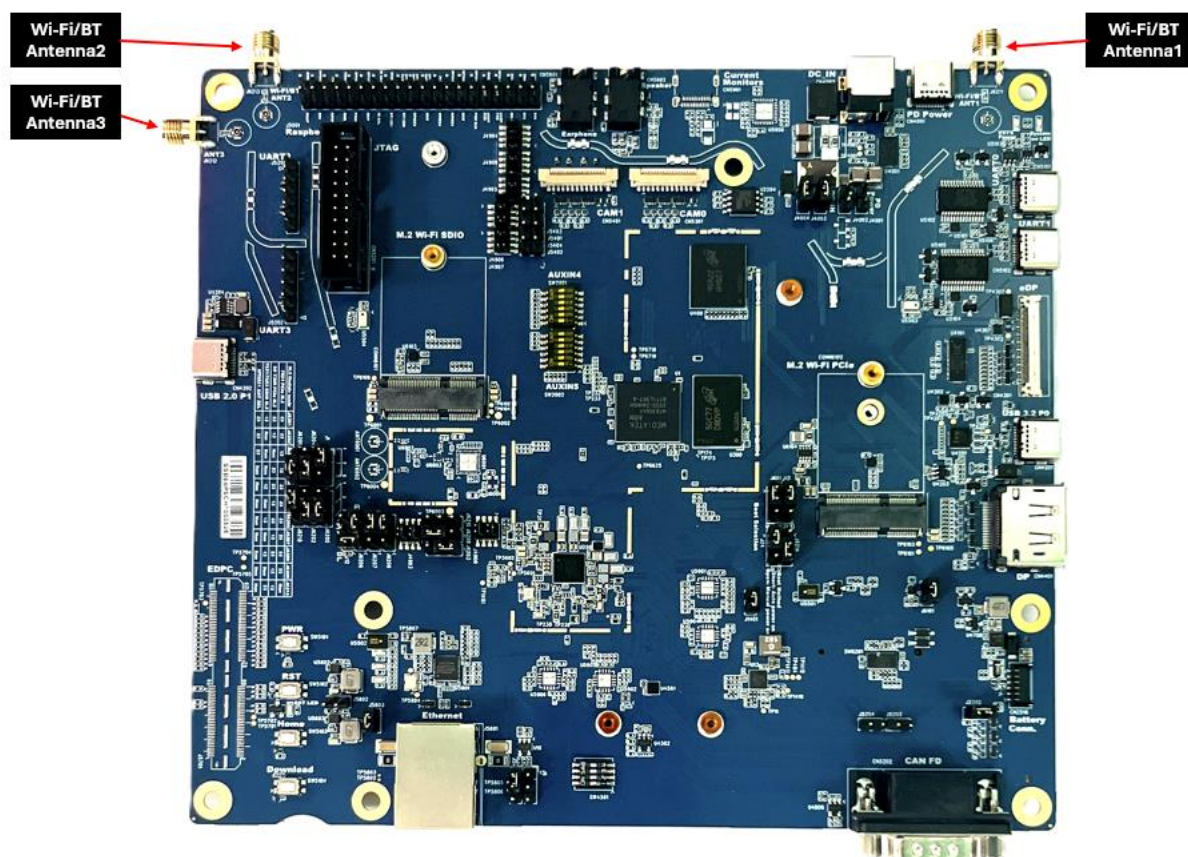


Figure 3-4 Antenna Connectors

Table 3-15 On-Board Antenna

Location	Band	Note
J6211	Antenna 1	Wi-Fi/BT
J6213	Antenna 2	Wi-Fi/BT
J6212	Antenna 3	Spare

3.16 How to Select the Display Panel

The default setting for display is MIPI panel output, while setting SW4501 switches the EVK to support LVDS panel output. The pre-installed software in the EVK MIPI is displayed by default. Customers can further request MediaTek to provide an eDP patch and/or a DP patch by platform for their software development.

Table 3-16 Panel Switch (SW4501)

MIPI (Default)	LVDS
SW4501 settings for MIPI	SW4501 setting for LVDS

Table 3-17 Pin Mux for LCM Interface

MT8367/MT8366 Pad Name	MIPI DPHY Mode	LVDS Mode
DSI_D0P	DSI_D0P	LVDS_A0P
DSI_D0N	DSI_D0N	LVDS_A0N
DSI_D1P	DSI_D1P	LVDS_A1P
DSI_D1N	DSI_D1N	LVDS_A1N
DSI_D2P	DSI_D2P	LVDS_A2P
DSI_D2N	DSI_D2N	LVDS_A2N
DSI_D3P	DSI_D3P	LVDS_A3P
DSI_D3N	DSI_D3N	LVDS_A3N
DSI_CKP	DSI_CKP	LVDS_ACKP
DSI_CKN	DSI_CKN	LVDS_ACKN

3.17 Pin Mux for Raspberry Pi Like Interface

The jumper is default set to not support Raspberry Pi configuration. Use the jumper to switch the GPIO shared by the M.2 slot (for MT7921), eDP, UART, CSI, and Raspberry Pi-like I/O.

You can configure the Pin Mux to Raspberry Pi Like I/O by setting jump J4901~J4912.

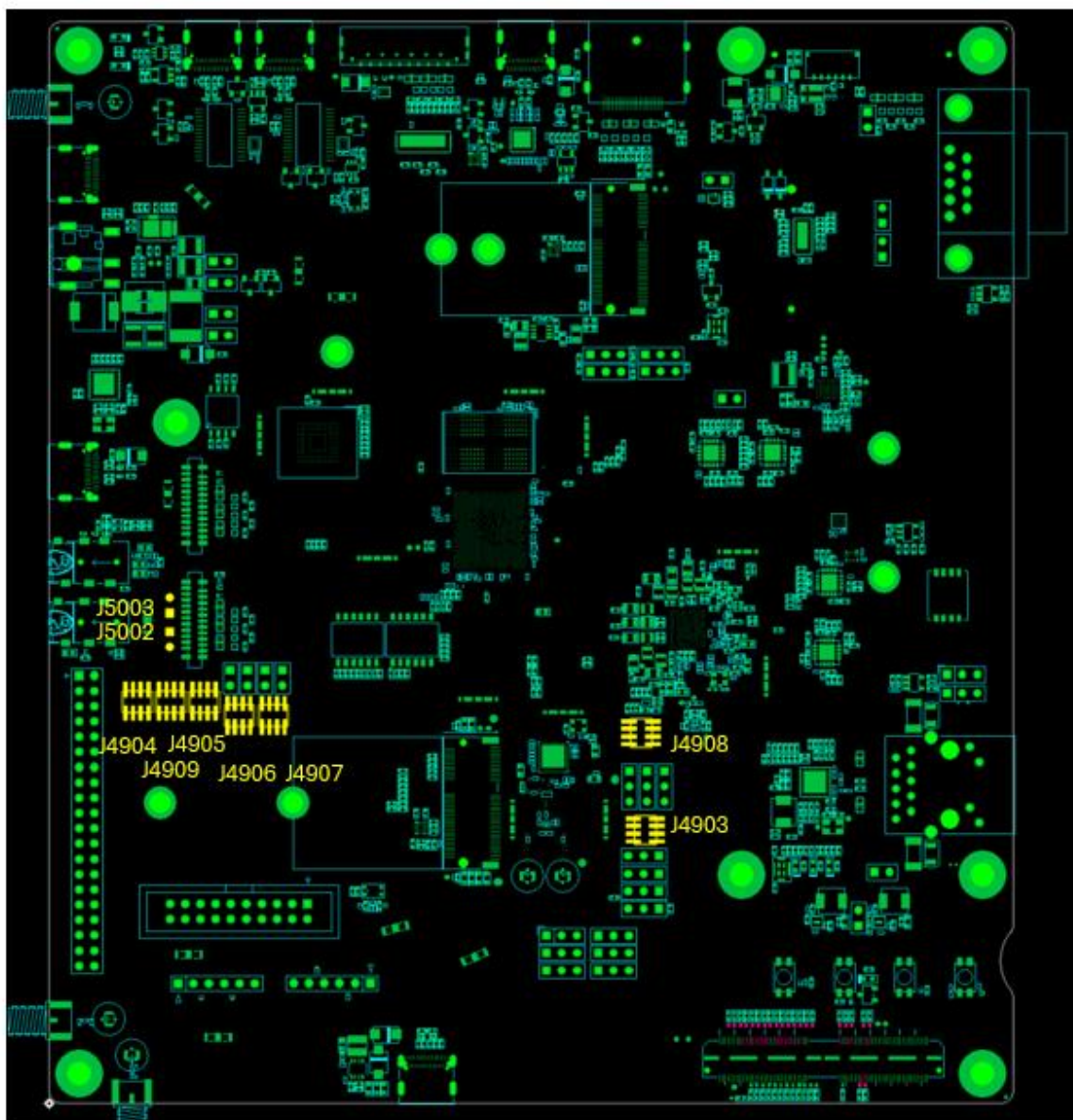


Figure 3-5 Jumps for Raspberry Pi Like I/O (TOP)

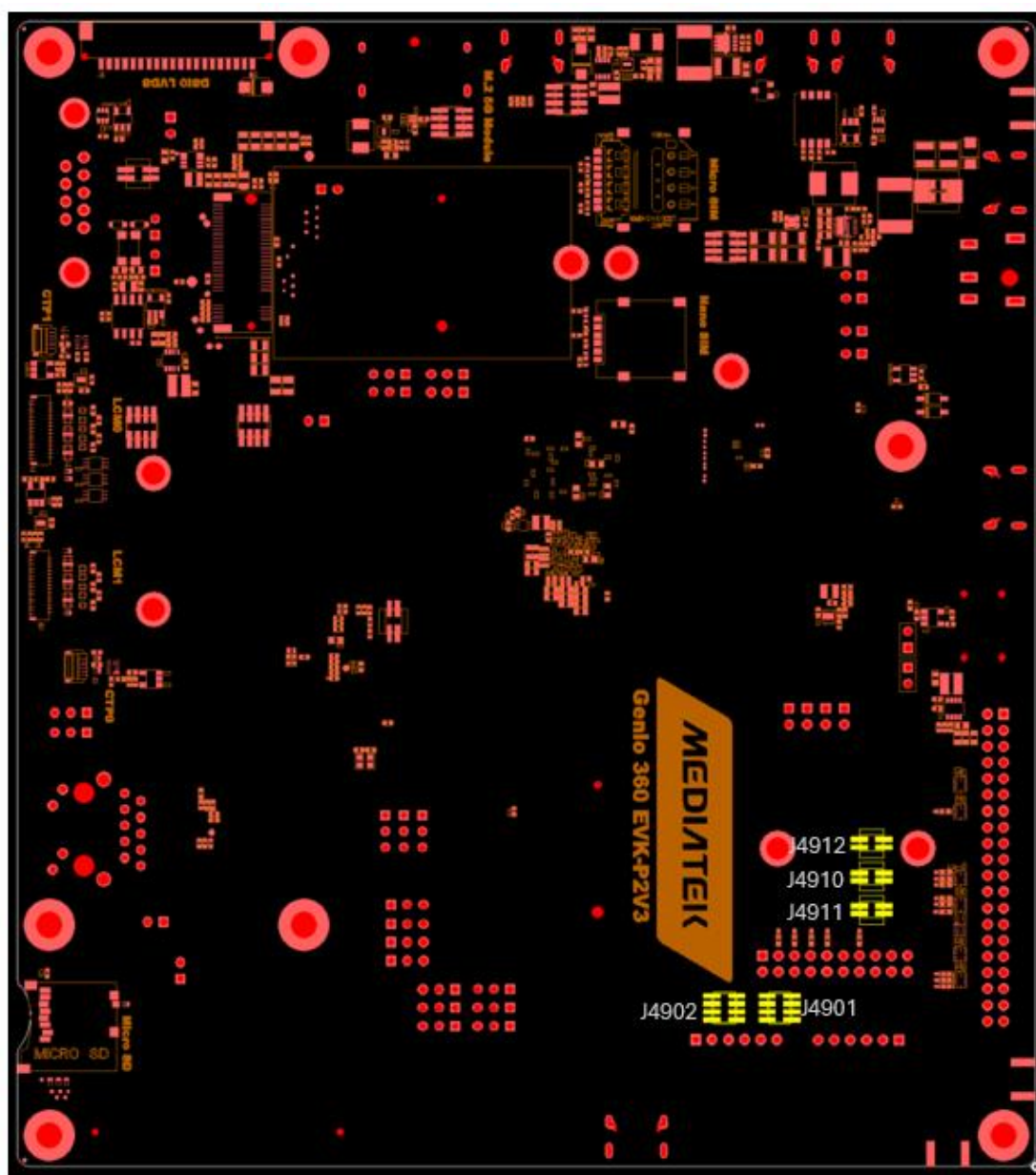


Figure 3-6 Jumps for Raspberry Pi Like I/O (BOT)

Table 3-18 Pin Header Mux Configuration to Raspberry P Like I/O (Power)

Raspberry Pi Power (Not Default)	
 	
J5003	J5002
J5002 shorted to enable 3.3V, J5003 shorted to enable 5V	

Table 3-19 Pin Header Mux Configuration to Raspberry P Like I/O

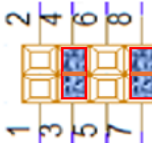
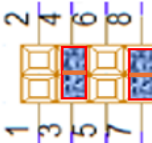
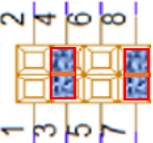
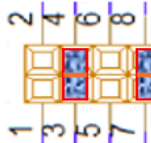
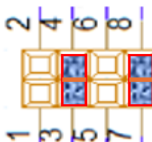
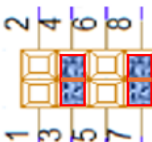
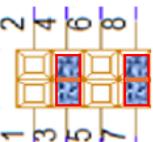
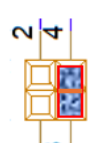
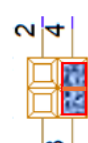
Raspberry Pi I/O (Not Default)			
   			
J4901	J4902	J4903	J4904
   			
J4905	J4906	J4907	J4908
   			
J4909	J4910	J4911	J4912
J4901~J4907 short (3-4, 7-8), J498~J4909 short (1-2, 5-6), J4910~J4912 shot (3-4)			

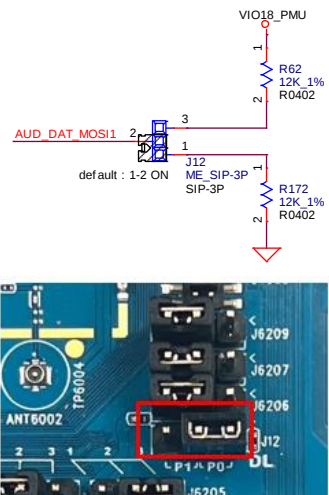
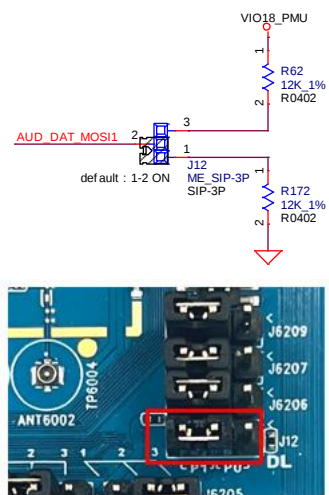
Table 3-20 Pin Mux and Raspberry Pi

MT8367/MT8366 GPIO	Jumper	Pin Mux. Functions	Raspberry Pi Function
GPIO94	J4903	I2SOUT_MCK	GPIO4(GPCLK)
GPIO41	J4912	URTS3	GPIO17
GPIO95	J4903	I2SOUT_BCK	GPIO27
GPIO96	J4902	I2SOUT_LRCK	GPIO22
GPIO116	J4908	I ² C9_SDA	GPIO0
GPIO101	J4906	I2SIN_BCK	GPIO5
GPIO102	J4907	I2SIN_LRCK	GPIO6
GPIO100	J4906	I2SIN_MCK	GPIO26
GPIO37	J4910	EPDC_SDLE	GPIO24
GPIO97	J4902	I2SOUT_DO	GPIO23
GPIO103	J4907	I2SIN_DI	GPIO25
GPIO117	J4908	I ² C9_SCL	GPIO1
GPIO40	J4911	UCTS3	GPIO16

3.18 How to Select the USB Download Port

The EVK supports the download function via USB Port 0 or Port 1. Download port settings are as follows:

Table 3-21 USB Download Port Selection

USB Port 0	USB Port 1
 J12 (1-2): Port0 (Default)	 J12 (2-3): Port1

3.19 How to Enable Boundary Scan Testing

The EVK supports the boundary scan test function with the following settings:

Table 3-22 Boundary Scan Selection

Normal Mode	Boundary Scan Mode
The schematic for Normal Mode shows the MT6366 chip with pins RESETB and WDTRSTB_IN connected to the PMIC SPI. J1402 (ME_SIP-3P) is shorted (1-2) and J601 (ME_SIP-3P) is shorted (1-2). The AUD_DAT_MISO0 signal is connected to J601 pin 2.	The schematic for Boundary Scan Mode shows the MT6366 chip with pins RESETB and WDTRSTB_IN connected to the PMIC SPI. J1402 (ME_SIP-3P) is shorted (3-4) and J601 (ME_SIP-3P) is shorted (2-3). The AUD_DAT_MISO0 signal is connected to J601 pin 2.
J1402 short (1-2) and J601 short (1-2)	J1402 short (3-4) and J601 short (2-3)

4 Camera Board

There are two camera boards incorporated with Genio 360P/360 (MT8367/MT8366) EVK: D8 and D9 camera boards.

Genio 360P/360 (MT8367/MT8366) EVK is built in with two CAM connectors.

Table 4-1 Camera Configuration (CAM Connector)

Camera Configuration	Front Camera	Rear Camera
No. 1	CAM 1	CAM 0

Table 4-2 Camera Board Differences

	D8 Camera Board	D9 Camera Board
Image Sensor	IMX258-0ATH5-C	OV5640
Output Format	RAW	YUV

Table 4-3 Collocation of Camera Board and CAM Connector

	D8 Camera Board	D9 Camera Board
CAM 0	O	O
CAM 1	O	O

Note: "O" means the camera board can be used in this CAM connector, "X" means it cannot.

4.1 D8 Camera Board

The D8 camera board is integrated with a SONY IMX258 image sensor chip, which is a high-performance camera image processor that provides rich features.

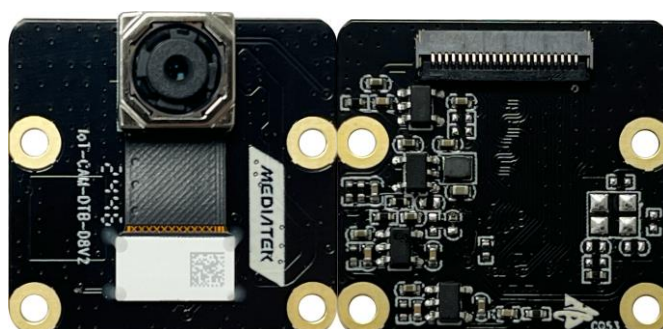


Figure 4-1 D8 Camera Board

4.2 D9 Camera Board

The D9 camera board is integrated with an OmniVision OV5640 image sensor chip, which is a high-performance camera image processor with rich features.

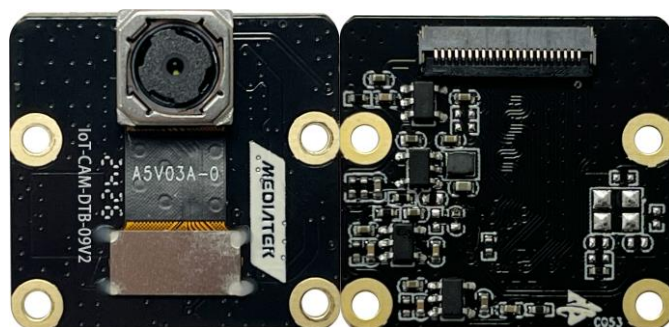


Figure 4-2 D9 Camera Board

4.3 Camera Board Installation

Installation procedure:

- Step 1

Loosen the camera board connector, insert the FPC into the camera board connector, and then lock it.

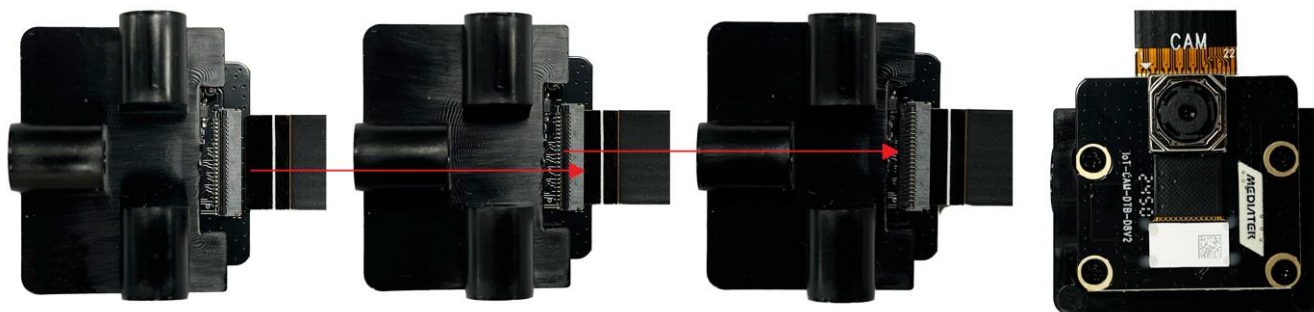


Figure 4-3 Camera Board FPC Installation

- Step 2

Loosen the connector on the Genio 360P/360 (MT8367/MT8366) EVK, insert the camera FPC into the connector, and then lock it.



Figure 4-4 Genio 360P/360 (MT8367/MT8366) EVK Camera FPC Installation

5.1 Power Distribution

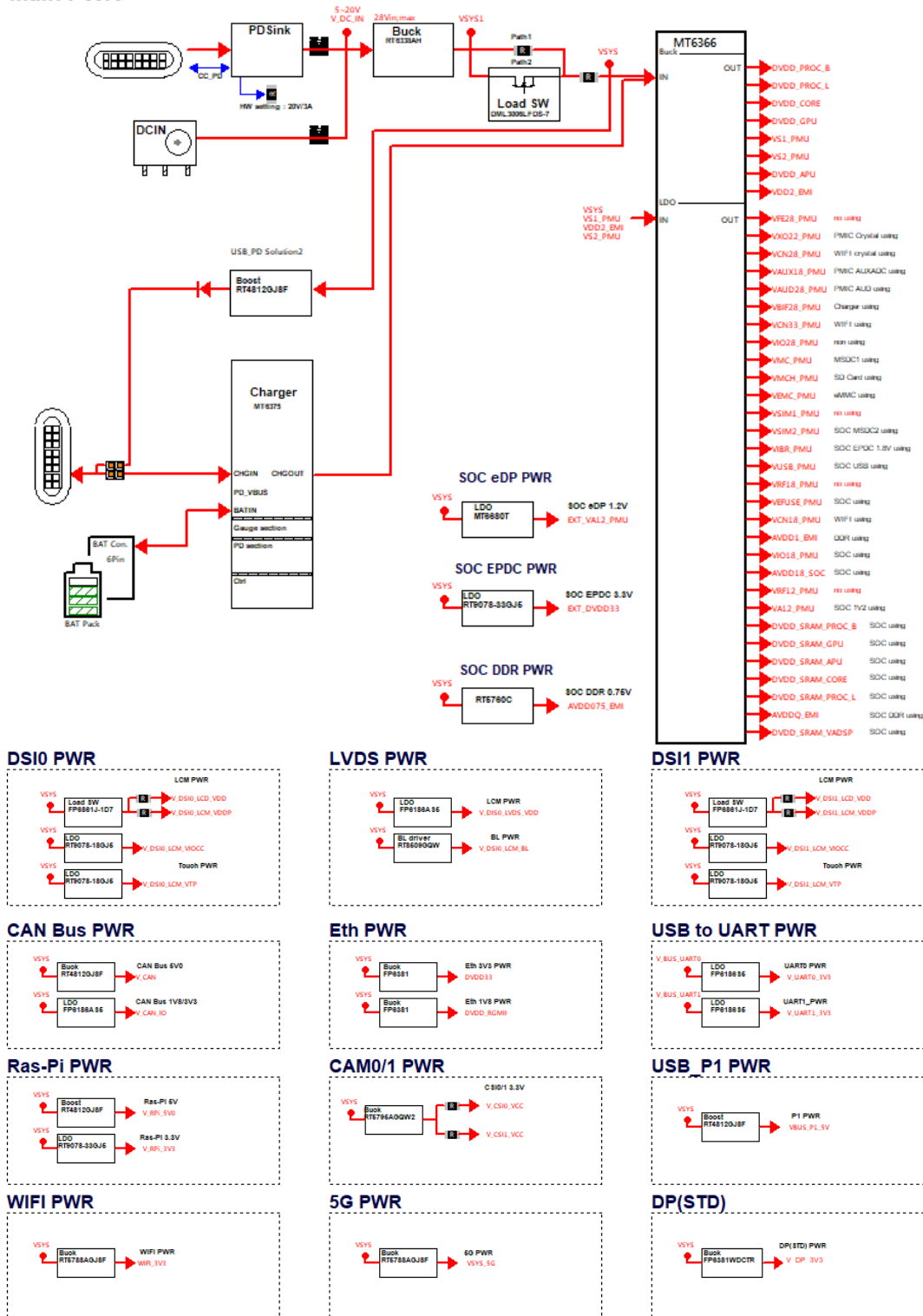


Figure 5-1 Power Distribution

6 Software

- Genio 360P/360 (MT8367/MT8366) EVK uses the same software, and any differences are automatically recognized by the software without the need for any configuration.
- The pre-installed software for Genio 360P/360 (MT8367/MT8366) EVK is Android. The following sections will guide you through the process of building, obtaining, and flashing images for the Android system.

6.1 Android

6.1.1 Android Software Project and Configuration

Table 6-1 Android Project Name and Configuration

Project Name	Configuration
AIOT8367P2_64_BSP	IoT EVK+eMMC+MT7921/MT7663

6.1.2 How to Get an Android Software Image

Please contact your Value-Added Reseller (VAR), Distributor, or MediaTek Field Application Engineer (FAE).

6.1.3 Setup Tool Environment

Install the **ADB Device USB Driver** and **SP Flash Tool** on your Windows environment.

- Download the latest USB driver (Driver_Auto_Installer)
<https://genio.mediatek.com/download/f6935c8f-bfaa-4b2a-9acc-d61b0616f1cb/info>
- Download the "SP Flash Tool"
<https://genio.mediatek.com/download/b78c5e11-5a50-4ba2-a8fa-a406f54da13f/info>

6.1.4 Android Software Image Flash Method

- Flash Download

The system codes of the Genio360P/360 EVK board can be flashed by following these steps:

1. Execute MediaTek flash tool "SP Flash Tool V6".
2. Select the proper "Download-XML" file. Choose the "flash.xml" file located in the "download agent" directory.
3. Select the download mode (<Firmware Upgrade> is preferred).
4. Start download by pressing the button "Download".

5. Connect the ADB port (USB port 0) to a PC via a USB Type-C cable, and then plug in the DC power cord; the downloader will start.
6. After flashing is finished, the system will automatically restart.

Note: If the flash tool does not start, please press the physical download and power buttons simultaneously on the EVK, and then re-plug the DC power cord. Once the progress bar starts to run, as shown in the flash tool, please release the power button and then the download button on the EVK in sequence.

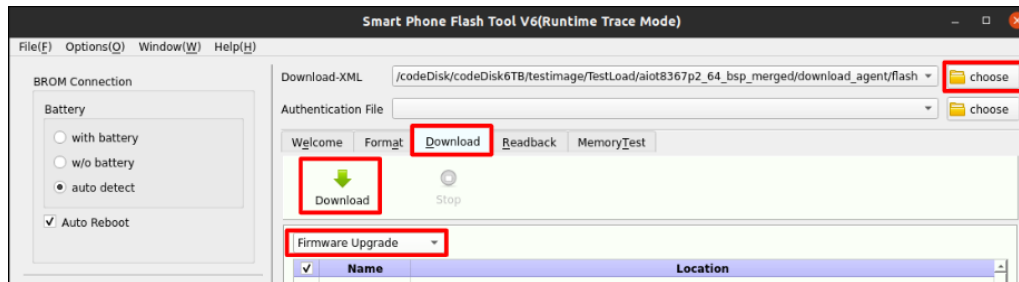


Figure 6-1 Flash Tool Window

- Format and Download

1. Execute MediaTek flash tool “SP Flash Tool V6”.
2. Select the proper “Download-XML” file. Choose the “flash.xml” file located in the “download_agent” directory.
3. Select the download mode as **<Format All + Download>**.
4. Start download by pressing the button “Download”.
5. Connect the ADB port (USB port 0) to a PC via a USB Type-C cable, and then plug in the DC power cord; the downloader will start
6. After flashing is finished, the system automatically restarts.

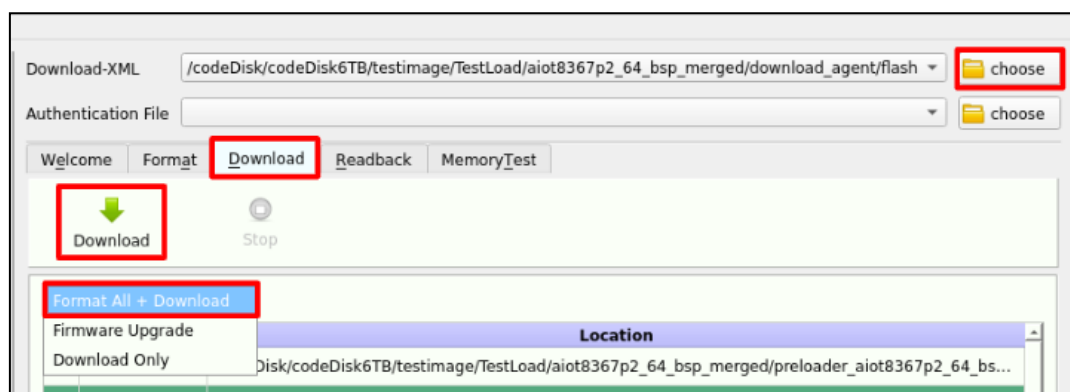


Figure 6-2 Flash Tool Format Download Screen

- Format eMMC

The following steps can format the eMMC system code of the Genio 360P/360 (MT8367/MT8366) EVK board and flash the system code to eMMC.

1. Execute MediaTek flash tool “SP Flash Tool V6”.
2. Select the “Format” tab.
3. Press “Start” button to format eMMC.
4. Connect the ADB port (USB port 0) to a PC via a USB Type-C cable.

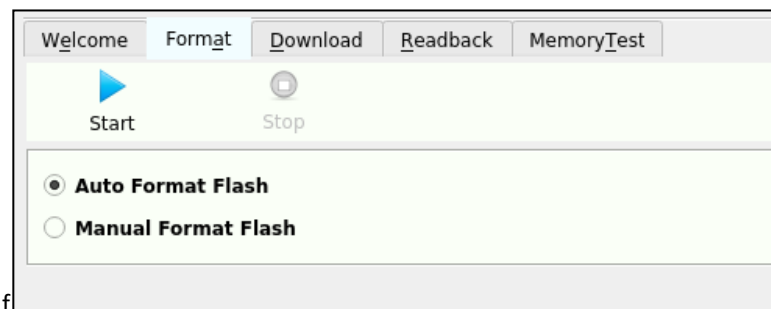


Figure 6-3 Flash Tool Format Screen

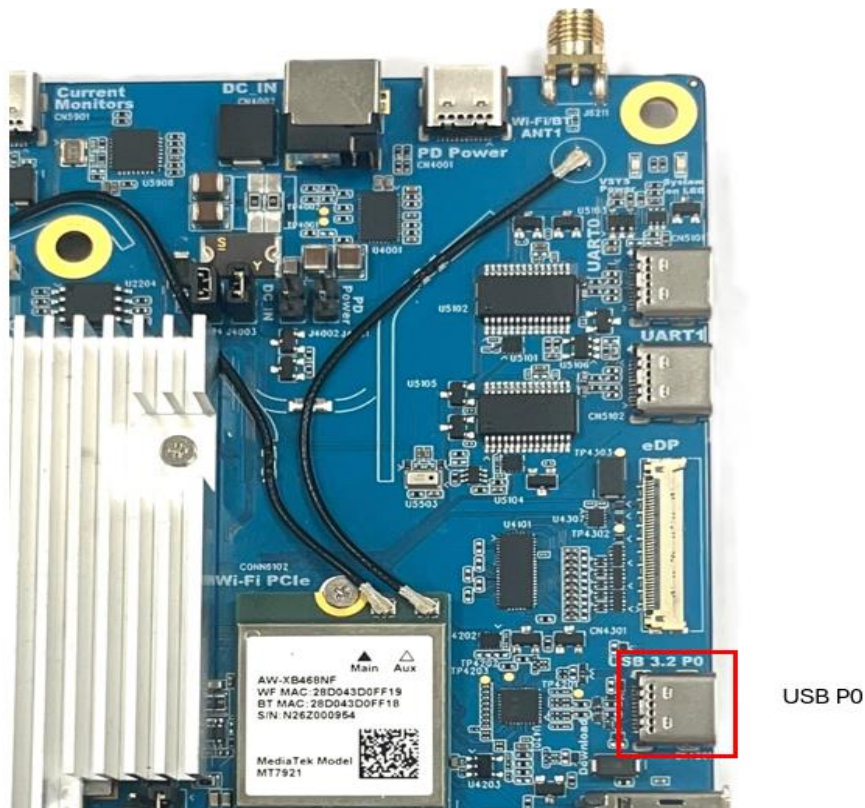


Figure 6-4 Download Port

7 Wi-Fi Chip Configuration

The aiot8367p2_64_bsp integrates three Wi-Fi chips into a single image: MT7921 (Module P/N: AW-XB468NF) with a PCIe interface, MT7921 (Module P/N: Sona MT320) with an SDIO interface, and MT7663 (Module P/N: AW-CB451NF-D V2) with an SDIO interface. Configuration of these chips is specified through the board ID (auxin4 and auxin5), which determines the loading of different Device Tree Blob Overlays (DTBOs). Adjust the board ID on the board side to select which Wi-Fi chip to use without needing to flash new images. The following sections explain the adjustments.

Among the three Wi-Fi modules, the SDIO interface modules (Sona MT320 and AW-CB451NF-D V2) are not sold together with the EVK, and please be noticed that “AW-CB451NF-D V2” is an M.2 Wi-Fi module with a proprietary pin definition and can’t be connected to the EVK directly.

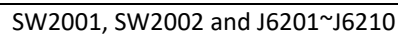
Table 7-1 Reference Parts for Genio 360P/360 (MT8367/MT8366) EVK on M.2 Wi-Fi Module

	Ezurio	AzureWave		
Part Number	Sona MT320	AW-CB451NF-D V2	AW-XB554NF	AW-XB468NF
Solution	MT7921LSN	MT7663BSN	MT7921LS	MT7921L
Interface	SDIO	SDIO	SDIO	PCIe
Pin Definition	M.2 Standard	Proprietary	Proprietary	M.2 Standard
Development Status	Software Support	Software Support	Not Support	Software Support
Box Contents of the EVK	No	No	No	Yes

For MT7921 with a PCIe interface (default settings):

1. Disconnect the USB cable and power supply
2. Set the board ID by adjusting SW2001 channel 1 to ON and SW2002 channel 1 to ON.
3. Set Jumper J6201~J6210.
4. Connect the MT7921 module and the antenna.
5. Power on the system.

Wi-Fi Configuration for the MT7921 PCIe Interface



For the MT7921 with an SDIO interface:

1. Disconnect the USB cable and power supply.
2. Set the board ID by adjusting SW2001 to channel 3 ON and SW2002 to channel 2 ON.
3. Set Jumper J6201~J6210.
4. Connect the MT7921 module and the antenna.
5. Power on the system.

Table 7-3 Configuration for MT7921 SDIO Interface

Wi-Fi Configuration for MT7921 SDIO Interface

MT7921 SDIO

AUXIN4
SW2001

AUXIN5
SW2002

M.2 Module mode	J6201	J6202	J6215	J6203	J6204	J6205	J6206	J6207	J6208	J6209	J6210
7921 PCIe M.2	23	23	12	12	23	23	23	23	23	23	Non
5G T300 PCIe M.2	23	12	Non	23	23	12	23	12	23	12	12
7921/7663 SDIO M.2	12	Non	Non	Non	12	Non	12	Non	12	Non	23
MT6631 ANT SEL	23	23	23	Non	Non	Non	Non	Non	Non	Non	Non

Default MT7921 PCIe M.2

M.2 Module mode	J6201	J6202	J6215	J6203	J6204	J6205	J6206	J6207	J6208	J6209	J6210
7921 PCIe M.2	23	23	12	12	23	23	23	23	23	23	Non
5G T300 PCIe M.2	23	12	Non	23	23	12	23	12	23	12	12
7921/7663 SDIO M.2	12	Non	Non	Non	12	Non	12	Non	12	Non	23
MT6631 ANT SEL	23	23	23	Non	Non	Non	Non	Non	Non	Non	Non

SW2001, SW2002 and J6201~J6210

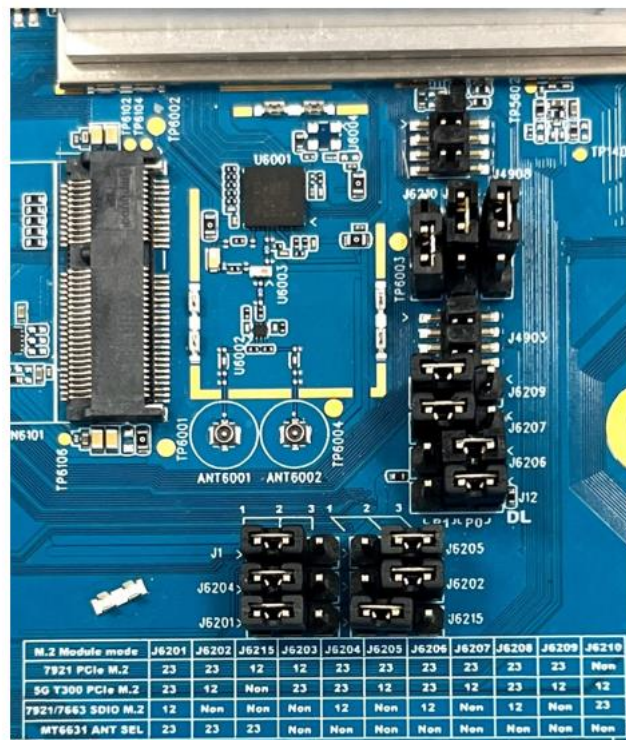
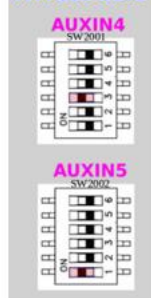
For the MT7663 with an SDIO interface:

1. Disconnect the USB cable and power supply
2. Set the board ID by adjusting SW2001 to channel 3 ON and SW2002 to channel 1 ON.
3. Set Jumper J6201~J6210.
4. Connect the MT7663 module and the antenna.
5. Power on the system.

Table 7-4 Configuration for MT7663 SDIO Interface

Wi-Fi Configuration for MT7663 SDIO Interface

MT7663 SDIO



Default MT7921 PCIe M.2

M.2 Module mode	J6201	J6202	J6215	J6203	J6204	J6205	J6206	J6207	J6208	J6209	J6210
7921 PCIe M.2	23	23	12	12	23	23	23	23	23	23	Non
SG T300 PCIe M.2	23	12	Non	23	23	12	23	12	23	12	12
7921/7663 SDIO M.2	12	Non	Non	Non	12	Non	12	Non	12	Non	23
MT6631 ANT SEL	23	23	23	Non	Non	Non	Non	Non	Non	Non	Non

SW2001, SW2002 and J6201~J6210

The default setting of Genio 360P/360 (MT8367/MT8366) EVK jumps are shown on Figure 8-1 and Figure 8-2.



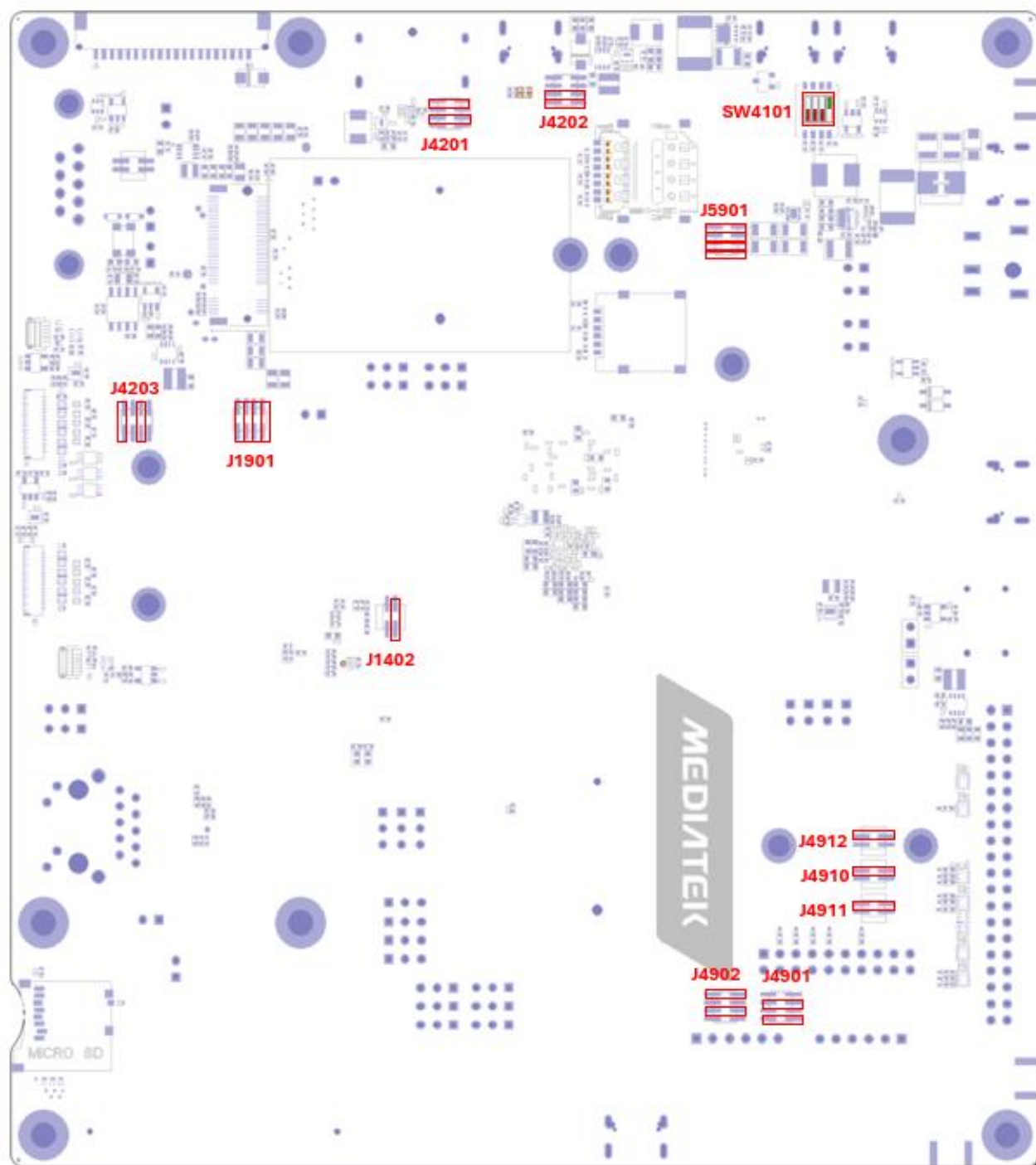


Figure 8-2 Default Setting of Jumps. (BOT)

9 Errata

- Description

The impedance for eDP and DP is 90 ohms, which differs from the requirements in the EVK and MT8367/MT8366 Application Processor Schematic and PCB Design Notice.

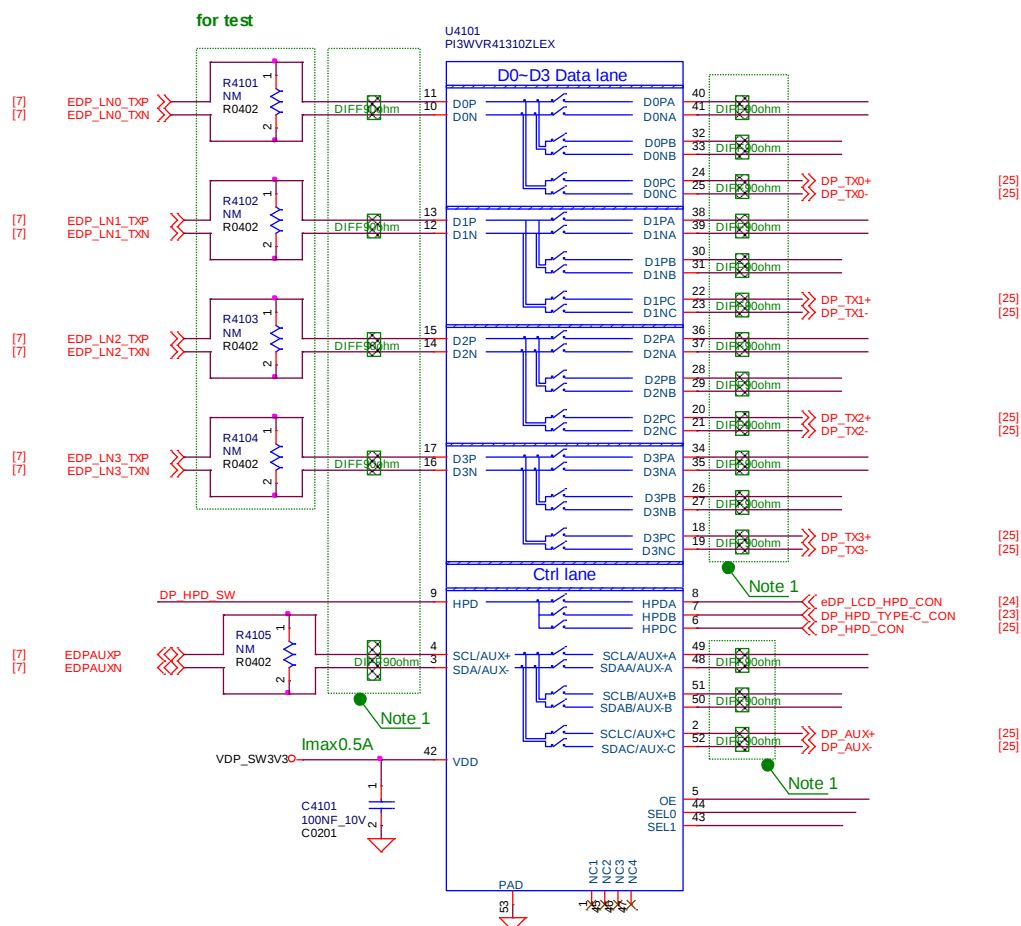
- Affect

Impedance mismatch may cause signal reflections on the transmission line, which can degrade signal integrity

- Workaround

Please set the impedance of the eDP and DP signals to 100 ohms according to the MT8367 MT8366 Application Processor Schematic and PCB Design Notice.

- MT8367 MT8366 Evaluation Kit DSN Version Reference Schematic :



Schematic design notice

Note 1 : Please set the impedance of the eDP and DP signals to 100 ohms, in accordance with the MT8367/MT8366 Application Processor Schematic and PCB Design Notice. Additionally, please refer to the Errata section of the EVK user guide for further details

Figure 8-3 Schematic on eDP and DP

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