



MEDIA TEK

Genio 1200 Evaluation Kit User Guide

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Version History

Version	Date	Description
0.1	2023-05-26	Draft Release
1.0	2023-10-06	<ul style="list-style-type: none"> • Updated Chapter 1.1, removed 5G module information • Updated Figure 1-1, added the Richtek part blocks and divided the MediaTek buck IC into 3 blocks: MT6315GP, MT6315LP, MT6391SVP • Updated Chapter 1.3, removed 5G module information • Added Chapter 1.4 “MediaTek Module Design (MMD) layout dimension” • Updated Chapter 2, changed descriptions of Genio 1200 EVK board • Updated Table 2-1, title changed to “Box Contents” • Added Table 2-3 “Power Rails” • Updated Chapter 2.2, added note for MT6365 software naming conventions • Removed “M.2 5G Module” chapter • Updated Chapter 2.7, added instructions for repairing the camera app • Updated Chapter 2.8, added UART configuration information • Updated Figure 2-7, changed to English text picture • Updated Chapter 2.9, added boot switch instruction • Updated Table 2-5, changed “AUD_CLK_MOSI” status in eMMC boot and UFS boot • Updated Chapter 3.2.1, added description of Note • Updated Chapter 3.3, added “sensor-hub control processor” information • Updated Table 3-5, added note for UART1 • Updated Table 3-7, added note for color descriptions • Updated Chapter 3.5, changed descriptions of Home and Download buttons • Updated Chapter 3.12, added Wake-on-Lan information • Updated Chapter 3.13, 3.14 and 3.15 order adjustment • Updated Chapter 3.13, added HDMI specification information • Updated Chapter 3.15, title changed to “How to Select the Display Panel”, and modified the description of the default display software • Updated Chapter 4, title changed to “Camera Board”, and added camera board usage restrictions and reference file descriptions • Added Table 4-2 “Camera Board Differences” • Added Table 4-3 “Collocation of Camera Board and CAM Connector” • Updated Chapter 6, software version notes have been added to the content • Updated Chapter 6.1.3, the content has been added to format the eMMC system code and flash the system code to UFS, and added "SP Flash Tool" download link • Updated Chapter 6.3, title changed to “How to Install Difference Software into Genio 1200 EVK”, and the content was divided into 6.3.1 “To Flash IoT Yocto” and 6.3.2 “To Flash Android” • Updated Chapter 7.1, title changed to “Troubleshooting on Camera Application Icon Disappearance”, and the content has been adjusted • Added Chapter 8 “Errata”

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1.3 Feature Summary

- MediaTek CPU (MT8395IV/ZA)
- MediaTek PMIC (MT6365IAW/B)
- 4GB LPDDR4X RAM x 2 (Micron MT53E1G32D2FW-046 IT:B)
- 64GB eMMC x 1 (Western Digital SDINBDG4-64G-XI2)
- Φ 2.0 DC Jack x 1 (for 12V DC Input)
- Micro SD Card Connector x 1
- Push Button x 4 (Power, Reset, Home and Download)
- LED x 3 (System Power, Reset, DC-IN Power)
- 4-Lane MIPI DSI x 2
- 4-Lane MIPI CSI x 3
- HDMI x 2 (IN x 1, OUT x 1)
- LVDS x 1
- eDP x 1
- 10/100/1000M Ethernet x 1 (Realtek RTL8211FI-CG)
- Micro USB x 2 (device, UART)
 - UART Port for Trace Log with USB to UART Bridge IC
- USB Type-A 3.2 Connector x 2
- USB Type-C Connector (USB 3.2/DP MUX)
- 3.5mm Earphone Jack x 1 (with Microphone Input)
- 3.5mm Line Out Audio Jack x 1
- Analog Microphone x 3 (Merry MMA102-006)
- Digital Microphone x 2 (Merry MMA102-007)
- UART Port x 1 (6 PIN/2.54mm Pin Header)
- M.2 Slot Key E x 1
 - For AzureWave AW-XB468NF Wi-Fi 6 & BT 5.2 Module
- M.2 Slot Key B x 1
- 40-Pin 2.54mm Pin Header x 1 (for Raspberry Pi Like I/O Interface)
- Micro SIM x 1
- Nano SIM x 1
- Operating Temperature: -40°C ~ 85°C

1.4 MediaTek Module Design (MMD) Layout Dimension

- MT8395 + 4-channel DRAM: $38 \times 34 = 1292\text{mm}^2$
- PMIC MT6365: $19.5 \times 19.5 = 380\text{mm}^2$
- Sub PMIC MT6360: $10 \times 10.8 = 108\text{mm}^2$
- Buck MT6315LP: $7 \times 11.5 = 80.5\text{mm}^2$
- Buck MT6315GP: $7 \times 10 = 70\text{mm}^2$

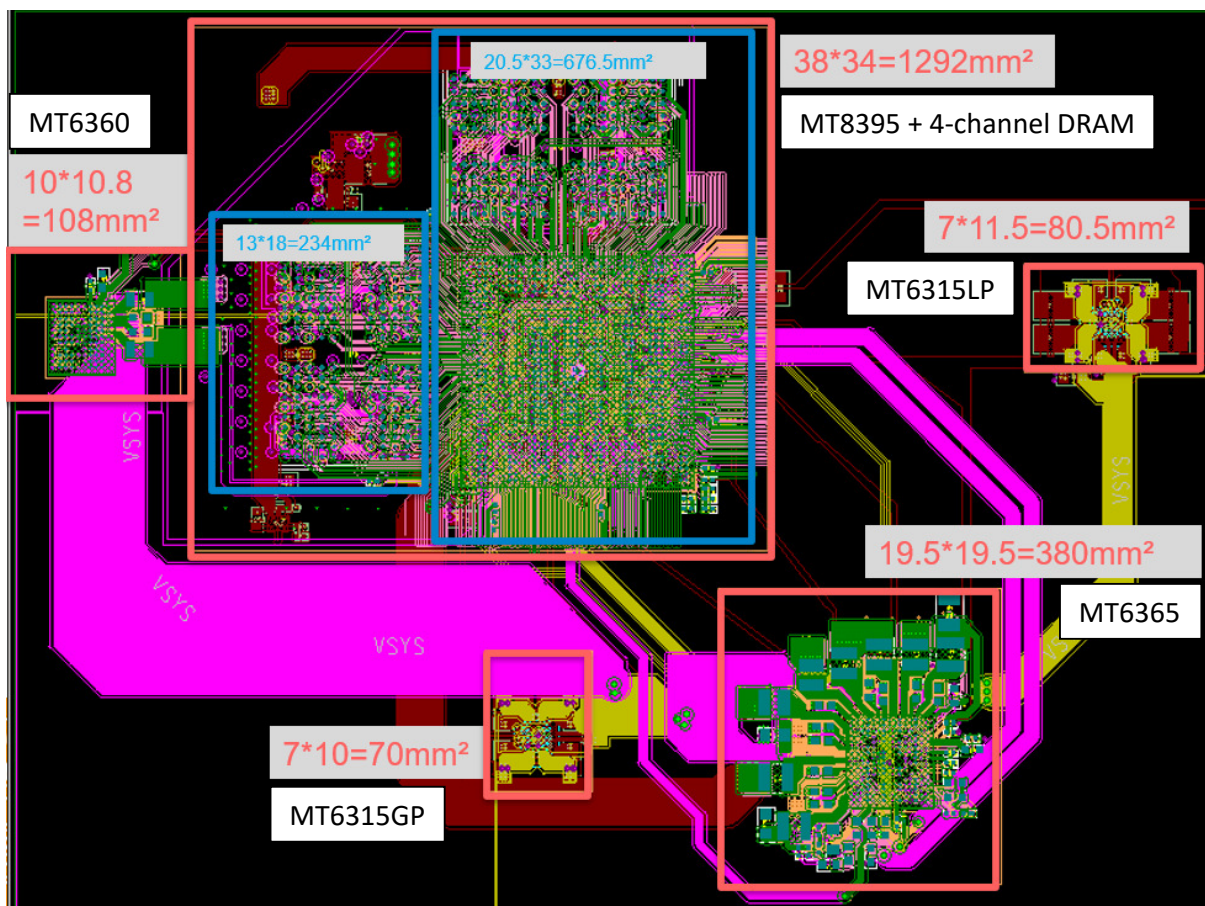


Figure 1-2 MMD Layout Dimension

2 Introduction

Genio 1200 EVK board integrates MediaTek MT8395 processor, 64bit LPDDR4X memory, eMMC, UFS, Power Management IC (MT6365) and Wi-Fi/BT M.2 Module.

The box contents a Genio 1200 EVK main board, MIPI DSI 7" LCD panel, one Wi-Fi 6 module and two camera boards.



Figure 2-1 Genio 1200 EVK System Setup

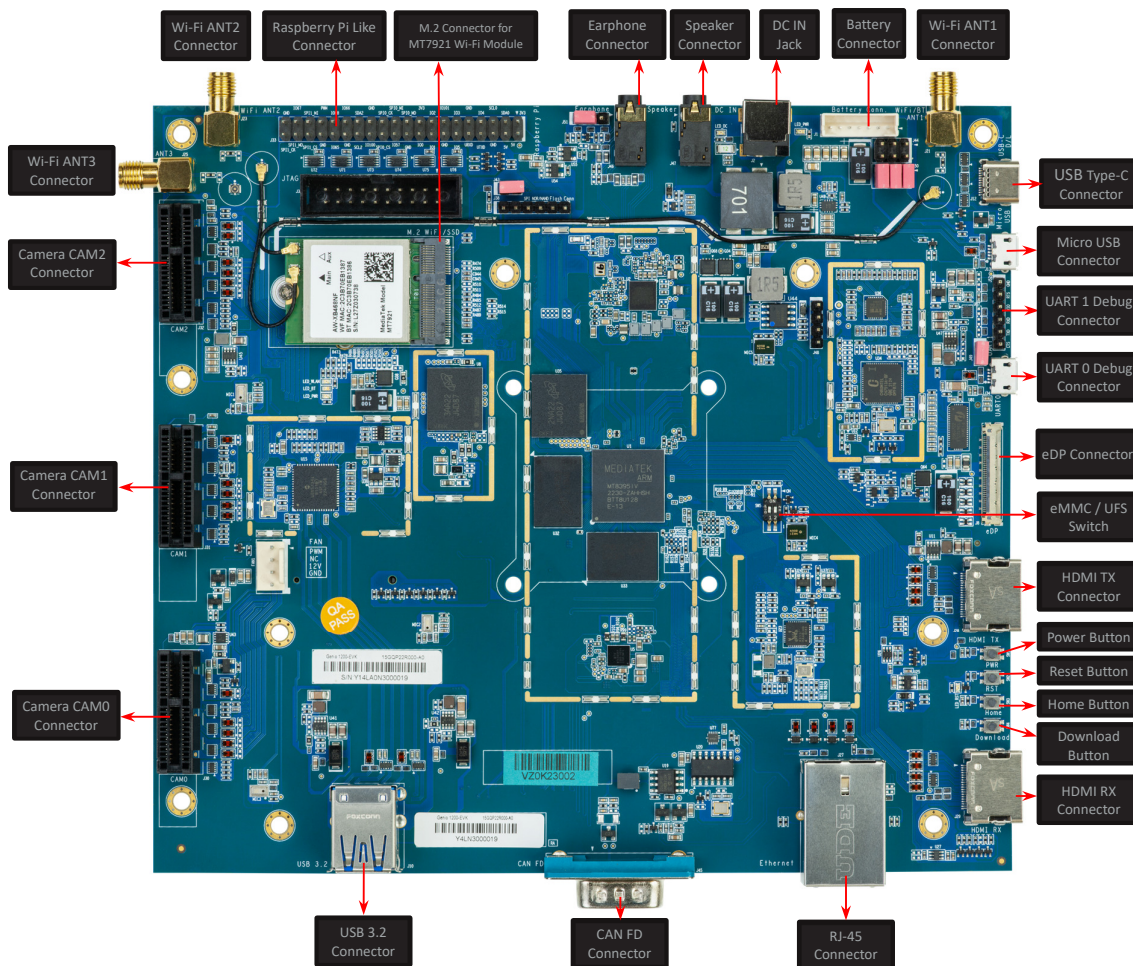


Figure 2-2 Genio 1200 EVK Top View

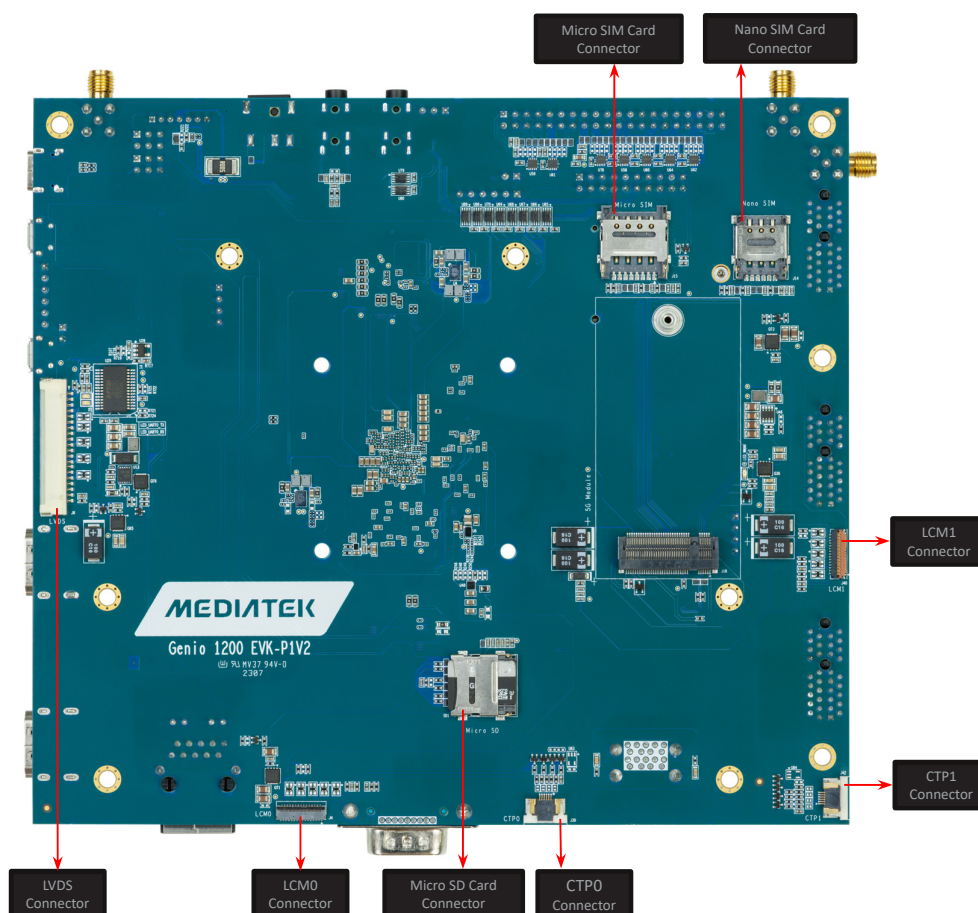


Figure 2-3 Genio 1200 EVK Bottom View

Table 2-1 Box Contents

No.	Part Number or Marketing	Item Name	Description	Quantity
1	Genio 1200 EVK-P1V2	Genio 1200 EVK Main Board		1
2	IoT-CAM-DTB-D1V2-D2	D2 Camera Board	Camera Board Using IMX214 Image Sensor	1
3	IoT-CAM-DTB-D1V3-D6	D6 Camera Board	Camera Board Using AR0830 Image Sensor	1
4	KD070FHFID078-01-C021A	7" LCD Panel	LCM Module	1
5	M.2 Wi-Fi 6 module AW-XB468NF (IC: MT7921L)	Wi-Fi Module	Installed	1
6	IPEX to IPEX cable-158mm		Installed on Mainboard	1
7	IPEX to IPEX cable-50mm		Installed on Mainboard	1
8	SMA antenna	Wi-Fi Antenna		2
9	12V/6.25A AC adaptor + power cord			1

Table 2-2 Key Component List

Function	Manufacturer	PN
Baseband Processor	MediaTek	MT8395IV/ZA
Main PMIC	MediaTek	MT6365IAW/B
Sub PMIC	MediaTek	MT6360PP
Buck	MediaTek	MT6315LP/B, MT6315GP/B, MT6691SVP/A
LDO	MediaTek	MT6680P/A
Memory	Micron	MT53E1G32D2FW-046 IT:B
eMMC	Western Digital	SDINBDG4-64G-XI2
UFS	Micron	MTFC64GASAONS-IT
Camera Module	MediaTek	IoT-CAM-DTB-D1V2-D2, IoT-CAM-DTB-D1V3-D6
Connectivity	AzureWave	AW-XB468NF (MT7921L Module)
Ethernet PHY	Realtek	RTL8211FI-CG

Table 2-3 Power Rails

Function	Regulator	Default Voltage (V)
APU	MT6365IAW/B	0.8
DLA		0.825
CPU_L		1
SRAM_CORE		0.75
CORE		0.75
LPDDR4X VDD2	MT6360PP	1.125
LPDDR4X VDDQ		0.6
CPU_B	MT6315LP/B	1
GPU	MT6315GP/B	0.75
LPDDR4X VMDDR	MT6691SVP/A	0.75
LPDDR4X VDD1	MT6680P/A	1.805
Buck for System	RT6238	4.19
Buck for eDP and LVDS LDO	RT5788A	3.3
Buck for 5G Module	RT5788A	3.9
Buck for Wi-Fi Module	RT5788A	3.3
Buck for Camera Board	RT5795A	3.3
Boost for LVDS Backlight	RT8509	12
Boost for USB VBUS	RT4812GJ8F	5
Boost for USB VBUS	RT4812GJ8F	5
Boost for USB VBUS	RT4812GJ8F	5
LDO for Ethernet PHY	RT9078-33GJ5	3.3
LDO for Ethernet PHY	RT9078-18GJ5	1.8

2.1 CPU (MT8395IV/ZA)

MediaTek Genio 1200 processor is a highly integrated platform incorporating the following key features:

- Quad-Core ARM® Cortex-A78 processor
- Quad-Core ARM® Cortex-A55 processor
- Arm Mali-D57 MC5 3D Graphics Accelerator (GPU) with Vulkan 1.1, OpenGL ES 3.2 and OpenCL 2.2
- Dual-core AI Processor Unit (APU) Cadence® Tensilica®
- VP6 processor with AI Accelerator (AIA)
- Single-core Cadence HiFi 4 Audio Engine DSP
- LPDDR4X: Up to 16GB, with memory data rate up to LPDDR4X-4266
- Display output supporting 4K60 + 4K60 resolution
- Image processing: 48MP @ 30fps for single camera capture; 16MP +16MP @ 30fps for dual camera capture
- Video encoding: 4K @ 60 fps with HEVC/H.264
- Video decoding: 4K @ 90 fps with AV1/VP9/HEVC/H.264

2.2 Power Management IC (MT6365IAW/B)

MediaTek MT6365 power management IC is a programmable power management IC that integrates 9 buck converters and 33 LDOs to provide all power rails required by SoC and peripherals.

MT6365 adopts the SPI interface and two SRCLKEN control pins to control buck converters, LDOs, and various drivers; it provides enhanced safety control and protocol for handshaking with the processor MT8395.

For system management, it provides the following features,

- 9 buck converters and 33 LDOs
- Precision voltage, temperature, and current measurement fuel gauge
- 26MHz external crystal for system clock
- 32.768KHz RTC oscillator for system timing
- Watchdog reset
- Over-current and thermal overload protection
- OVP, UVLO function
- WFBGA-203 package

Note: For the PMIC MT6365 software naming conventions, please refer to FAQ30421 on MediaTek On-Line.

2.3 DRAM (Micron MT53E1G32D2FW-046 IT:B)

Genio 1200 EVK has two 4GB LPDDR4X memory with the following features.

- Dual Channels with 16-bit Data Bus Width
- Supports self-refresh/ partial self-refresh mode
- Supports dual-rank memory device

2.4 eMMC Storage (Western Digital SDINBDG4-64G-XI2)

A 64GB eMMC 5.1 SDINBDG4-64G-XI2 of Western Digital is used for code and data storage, via MSDC0 interface of the baseband processor MT8395 with 8-bit width data bus.

2.5 UFS Storage (Micron MTFC64GASAONS-IT)

A 64GB UFS MTFC64GASAONS-IT of Micron is used for code and data storage, which can be switched by the switch SW5 on the EVK. Please refer to chapter 2.10.

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

MediaTek MT7921 is designed inside AzureWave AW-XB468NF M.2 Module. It supports 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

2.7 How to Boot the Genio 1200 EVK

Power on the Genio 1200 EVK board by following steps.

Step1: **Must install camera board on CAM0 or CAM2 connector.**

(If you perform boot without plugging in the camera board, the camera app will disappear in the desktop of Android OS, please refer to chapter 7 Appendix to know the way to fix it.)

Step2: Connect UART0 to the computer via a micro-USB cable (If you want to see the logs).

Step3: Plug in the DC 12V power adapter.

Step4: Long press PWR button more than 3 seconds.

You will see the screen is shown on MIPI DSI display and some trace logs come out from UART0.

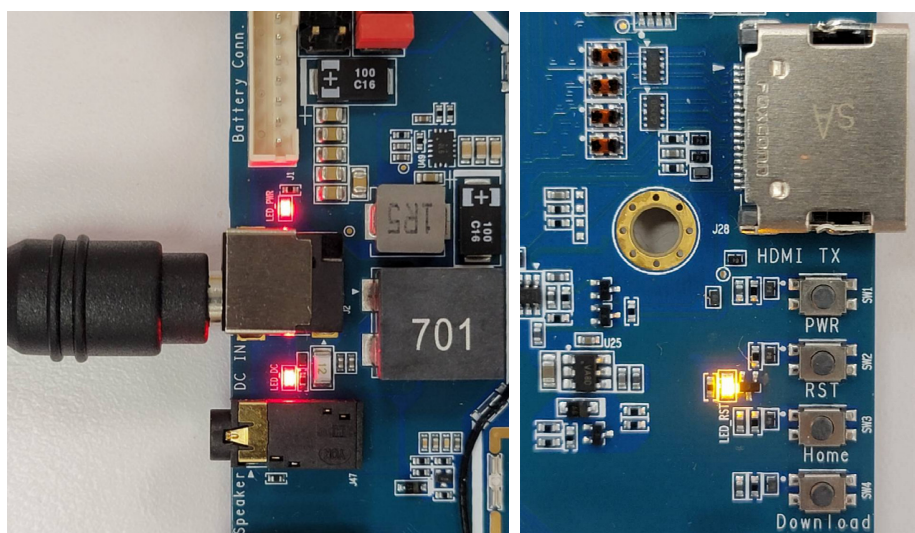


Figure 2-4 Power Up the System

```

[ 28.759408] <4>. (4) [1070:Bandier:1022_2][CEC] mtk_cec_tx_event_handler,889,err:Header NACK
[ 28.760435] <4>. (4) [1070:Bandier:1022_2][CEC] mtk_cec_tx_event_handler,913,err:Retransmit
[ 28.761451] <4>. (4) [173:kworker/4:2][CEC] mtk_cec_tx_work_handle,740,notify CEC CORE adapter tran
emit NACK
[ 28.763097] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_adap_transmit
[ 28.763665] <5>. (5) [1083:ActivityManager]BOOTPROF: 28763.662145:AP_Init:[service]:[com.android
d.inputmethod.latin]:[[com.android.inputmethod.latin/com.android.inputmethod.latin.LatinIME]]:pid:35
14
[ 28.763925] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_print_cec_frame,386,cec message initiator i
s 4
[ 28.767008] <4>. (4) [1072:android.fg]BOOTPROF: 28767.005222:PMS:reconcileAppDataLI
[ 28.767744] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_print_cec_frame,387,cec message follower is
0
[ 28.769639] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_print_cec_frame,388,cec message length is 1
5
[ 28.771098] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_print_cec_frame,389,cec message opcode is 0
x47
[ 28.772242] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_send_msg,667,tx header=0x40,seq=6,op=0x47,l
=15
[ 28.773396] <7>. (7) [130:cec-mtk-hdmi-ce][CEC] mtk_cec_tx_trigger_send
[ 28.790010] <1>. (1) [1:init]init 27: [28768][0]processing action (sys.boot_completed=1) from (/vend
dor/etc/init/hw/init.mt8395.rc:997)
[ 28.790408] <6>. (6) [72:kworker/6:1]mt635x-auxadc mt635x-auxadc: name:CHIP_TEMP, channel=4, adc_ou
t=0x634, adc_result=657
[ 28.792305] <1>. (1) [1:init]init 27: [28768][0]Command 'write /sys/devices/system/cpu/eas/enable 2
' action=sys.boot_completed=1 (/vendor/etc/init/hw/init.mt8395.rc:999) took 0ms and failed: Unable to
write to file '/sys/devices/system/cpu/eas/enable': open() failed: Permission denied
[ 28.802653] <0>. (0) [1:init]init 27: [28779][0]Command 'write /proc/sys/kernel/sched_migration_coe
st_ns 200000' action=sys.boot_completed=1 (/vendor/etc/init/hw/init.mt8395.rc:1007) took 0ms and fail
ed: Unable to write to file '/proc/sys/kernel/sched_migration_cost_ns': open() failed: Permission de
nied
[ 28.818566] <0>. (0) [347:init]BOOTPROF: 28818.557145: OFF
[ 28.819469] <0>. (0) [1:init]init 27: [28797][0]processing action (sys.boot_completed=1) from (/sys
tem_ext/etc/init/hw/init.aee.rc:50)
[ 28.821298] <0>. (0) [1:init]init 27: [28797][0]starting service 'aee-reinit'...
[ 28.835404] <7>. (7) [1:init]init 27: [28813][0]processing action (ro.build.type=userdebug && sys.bo
ot_completed=1) from (/system_ext/etc/init/hw/init.aee.rc:61)

```

Figure 2-5 Console Screen

Note: If you want to use the camera app, please make sure to plug in the D2/D6 camera board before power up the EVK.

2.8 EVK Debug

- Micro USB (J34) output UART log
- Please install FT232RL driver

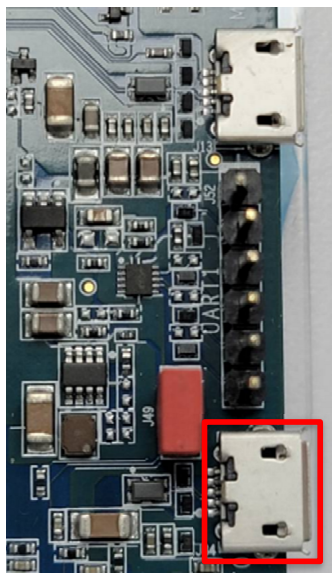


Figure 2-6 Debug Port

- Check PC USB port could be recognized the UART device
- Setting “serial line” (ex. COM57), “speed” to 921600, choose “connection type” to serial and press “Open” on PuTTY for log (Example on PuTTY)
- Parity: None, data bits: 8, stop bits: 1

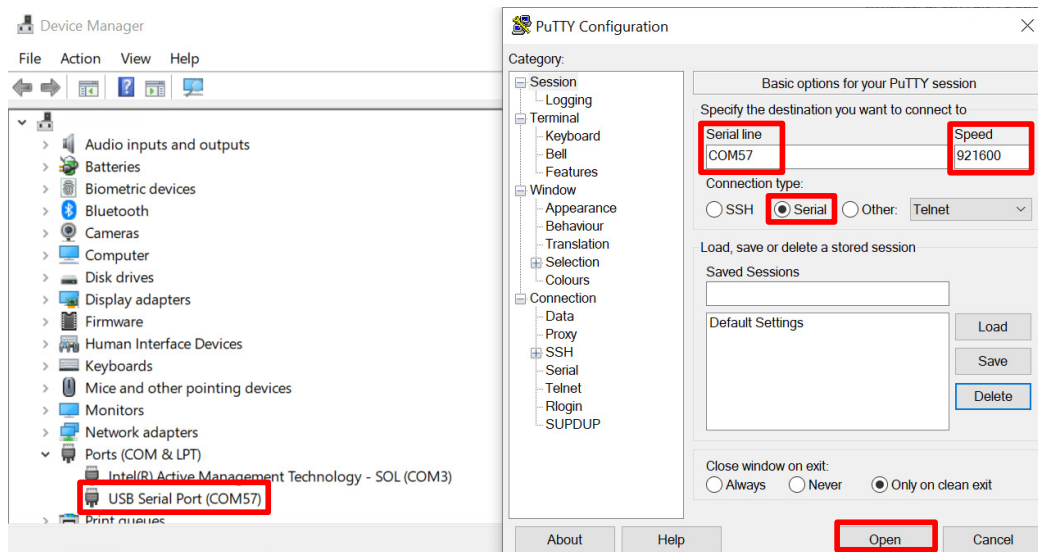


Figure 2-7 Putty Example

```

COM86 - PUTTY
[ 313.938486] <0>. (0) [156:battery_thread]lbat 0 0 0 0
[ 313.939113] <0>. (0) [156:battery_thread]car[0,0,0,0,0, cycle_car:0,near:0] c:0
0 vbat:4201 vbus:5001 soc:-1 50 gm3:1 0 0 0
[ 313.940577] <0>. (0) [156:battery_thread]tmp:25 65535 65535 hcar2:65535 lcar:2:6
5535 time:313 sw_iavg:0 0 0 navg_m:0 0 0
[ 314.368619] <3>. (3) [261:kworker/3:2]mt635x-auxadc mt635x-auxadc: name:CHIP_TE
MP, channel=4, adc_out=0x62c, adc_result=694
[ 314.420361] <0>. (0) [156:battery_thread][read_navg_vbat] i:6 navg_vbat_reg 0x0
navg_vbat_mv 0:0
[ 314.421506] <0>. (0) [156:battery_thread][read_navg_vbat1] 0 0 10 0 0 0 0 0
[ 314.422442] <0>. (0) [156:battery_thread][read_navg_vbat2] 1 0 1 1 1 0 1 0 0
0 0
[ 314.423402] <0>. (0) [156:battery_thread]GM3log-nint-navg 313 313 0 0 0 0 0
[ 314.424316] <0>. (0) [156:battery_thread]FG daemon is disabled
[ 316.149613] <0>. (0) [724:watchdog]AEEIOCTL_RT_MON Kick ( 300)
[ 316.150354] <0>. (0) [724:watchdog][Hang DeTect] hang_detect enabled 10
[ 316.152090] <0>. (0) [268:kworker/0:3]usb_state<DISCONNECTED>
[ 316.525898] <1>-. (1) [0:swapper/1][name:b0c]tick broadcast enter counter cpu: 7
4, 73, 60, 30, success counter cpu: 24, 6, 14, 2, fail counter cpu: 0, 0, 0, 0,
interrupt counter cpu: 47, 28, 41, 28, o: 0,2-3, p: , f: 1, t: 316890167323, 31
6489824923, 316508000000, 316568000000,
[ 319.488602] <3>. (3) [261:kworker/3:2]mt635x-auxadc mt635x-auxadc: name:CHIP_TE
MP, channel=4, adc_out=0x62c, adc_result=694

```

Figure 2-8 Log Screen

- Download "MTK USB cable driver (Driver_Auto_Installer_EXE.zip)" from MediaTek On-Line website and download "Universal ADB driver" from the Internet. Install these two programs into your Windows OS host machine

2.9 Boot Mode Selections

You can choose to boot from eMMC or boot from UFS by switching the state of SW5. This instruction is for Android image. In later section (6.1.3) we describe flashing Android image.

Table 2-4 Boot Initiation (SW5)

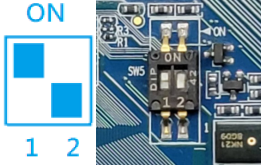
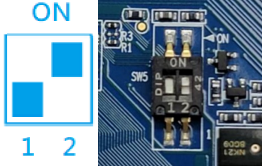
Boot from eMMC	Boot from UFS
 <p>1: ON, 2: OFF (Default)</p>	 <p>1: OFF, 2: ON</p>

Table 2-5 SW5 Pin Status

AUD_SYNC_MOSI	AUD_CLK_MOSI	Storage Booting	SW5
L	L (by external PD)	Only eMMC boot	1: ON, 2: OFF (Default)
L	H	Only UFS boot	1: OFF, 2: ON

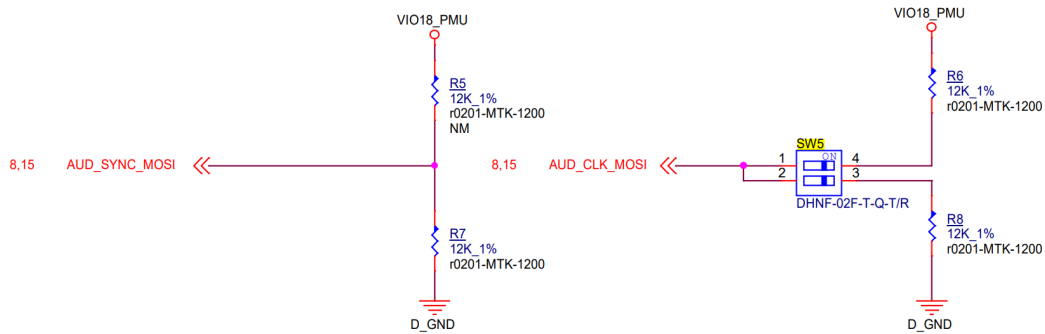


Figure 2-9 Boot on Strapping Path

3 Interface and Connectors

3.1 Genio 1200 EVK I/O Connectors

Table 3-1 Main Board Connectors

Description	Location	Note
Battery Connector	J1	
DC Jack	J2	
DC-IN Power-on Indicator	LED 11	Red LED
System Power-on Indicator	LED 1	Red LED
Reset Indicator	LED10	Yellow LED
Power On Button	SW1	
Reset Button	SW2	
Home Button	SW3	
Download Button	SW4	
Boot Switch	SW5	Switch between eMMC and UFS
USB 3.2	J10	Dual USB Type-A 3.2 x 2
USB 3.2 Type-C	J12	USB 3.2 Port / DP Display Port (MUX)
USB 2.0	J13	Micro USB
UART0	J34	Debug (Core Processor Log)
UART1	J52	Debug (SCP Log)
Micro SD Card Connector	SD1	
LCM0 Connector	J4	7" MIPI DSI Panel (DSI 0)
LCM1 Connector	J40	7" MIPI DSI Panel (DSI 1)
CTP0 Connector	J39	7" Touch
CTP1 Connector	J42	7" Touch
eDP Connector	J8	17.3" eDP Panel
LVDS Connector	J6	LVDS Panel
CAM0 Connector	J30	MIPI CSI0 A/B Interface
CAM1 Connector	J31	MIPI CSI0 C/D Interface
CAM2 Connector	J32	MIPI CSI1 A/B Interface
Nano SIM Card Connector	J14	
Micro SIM Card Connector	J15	
M.2 3052 Key B Slot	J18	
Wi-Fi Antenna (Aux)	J21	
Wi-Fi Antenna (main)	J23	
Wi-Fi Antenna (main spare)	J25	
M.2 2230 Key E Slot	J26	AW-XB468NF(MT7921L) Wi-Fi Module
Ethernet	J27	
HDMI TX	J28	HDMI Out
HDMI RX	J29	HDMI In
Raspberry Pi Like I/O	J33	

JTAG	J35	
SPI Flash Connector	J38	
CAN FD	J45	
Earphone Jack	J46	
Line Out	J47	
CH7513 EEPROM Connector	J48	
eDP/LVDS Switch Jumper	J49	
Auto Power-on Jumper	J51	
FAN Connector	FAN1	

3.2 System Power Paths

3.2.1 System Power

There are three power supply paths for the system. DC adaptor supply have two paths connect 12V DC adaptor, a buck converter (Richtek RT6238), which convert 12V (DC Jack) to 4.2V output. The 4.2V output connect two jumpers.

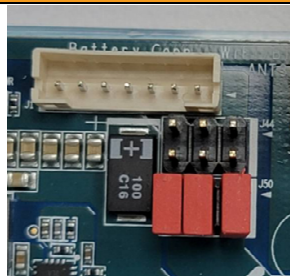
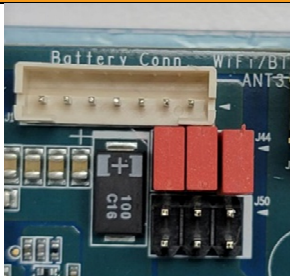
The first path is to short the jumper J50, the 4.2V output is connected to VSYS.

The second path is to short the jumper J44, the 4.2V output is connected to the charger IC (MediaTek MT6360), and then connected to VSYS through the charger IC.

Note: DO NOT connect the battery in the second path, as this will cause the RT6238's output power to charge the battery unmanaged.

The third path is battery power (not verified), the battery power is connected to the charger IC (MediaTek MT6360), and then connected to VSYS through the charger IC. This path supports those applications using Li-polymer batteries.

Table 3-2 Power Paths (J50 and J44)

Power Path DC to VSYS	Power Path DC to VBAT
	
J50 short 1-2, short 3-4, short 5-6 (default)	J44 short 1-2, short 3-4, short 5-6

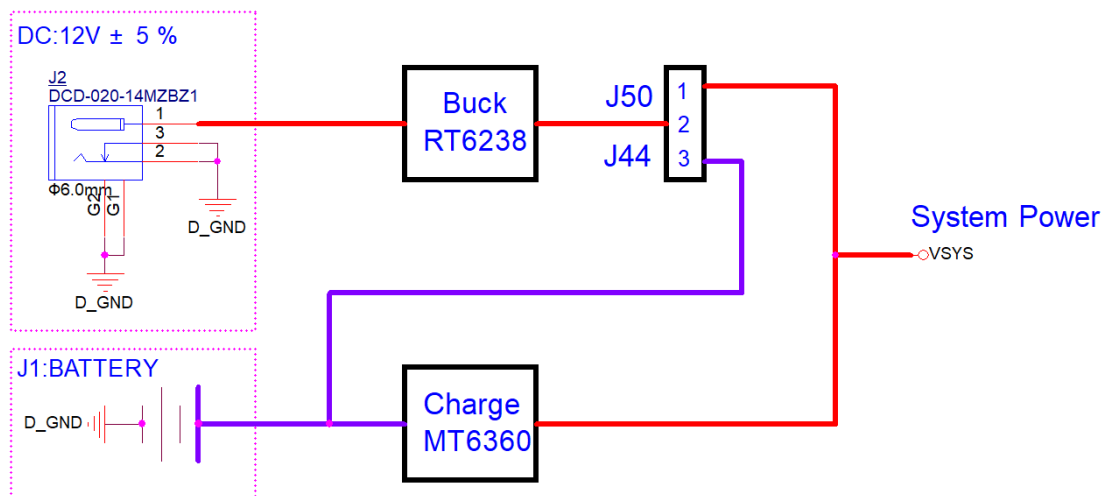


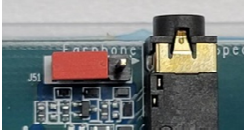

Figure 3-1 System Power Path

3.2.2 Auto Power On

The Genio 1200 EVK supports system power on when adaptor is plugged in. You need to change the J51 jumper to switch the power on mode.

If you need to use "auto power on" function, please ask MediaTek for a patch.

Table 3-3 Auto Power On (J51)

Manual Power On	Auto Power On
	
J51 short 1-2 (default)	J51 short 2-3

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	LED 11	Red	LED is on if adaptor is on
Reset Indicator	LED10	Yellow	LED is off if reset signal is low
System Power Indicator	LED 1	Red	LED is on while 12V to 5V complete

UART

On the Genio 1200 EVK there is a UART (UART0) with a USB to UART bridge IC and a 4-wire UART (UART1) console directly out of 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
- FTDI USB to UART bridge IC FT232RL
- SCP (sensor-hub control processor) is a sub-system which is designed to perform always-on tasks even when system is in low power states, such as voice wakeup

Table 3-5 UART Ports (J34 and J52)

UART	Location	Note
UART0	J34 (Micro USB)	Core Processor Log
UART1	J52 (6 pin header)	Sensor-hub Control Processor (SCP) Log

I2C

- Four I2C buses (I2C0, I2C1, I2C2 and I2C6)
- Supports Master Mode only
- Adjustable clock speed for LS/FS/FS+ mode operation
- Supports 7-bit address

Table 3-6 I2C Bus

I2C Bus	Purpose	Note
I2C0	CAM0 CAM1 Raspberry Pi Like I/O	IMX214 IMX214
I2C1	CAM2-1 Buck-Boost UFS EXT Power TP Controller - 0 USB HUB	IMX214 RT4803 MT6691OTP GT9271 USB5734
I2C2	TP Controller - 1 USB Type-C MUX CAM2-2 Raspberry Pi Like I/O	GT9271 IT5205FN IMX214
I2C6	Power_I2C LP4X DRAM Buck	MT6360 MT6691SVP/A

SPI

- Support Master/Slave mode
- One chip select output

PWM

- PWM supports old mode and FIFO mode
- The frequency can be set from 0Hz to 39MHz

Raspberry Pi Like I/O Interface

Table 3-7 Pin Assignments of the Raspberry Pi Like I/O Pin Header

Pin #	Description	Note	Pin #	Description	Note
1	3.3V		2	5V	
3	SDA0	GPIO8	4	5V	
5	SCL0	GPIO9	6	GND	
7	GPIO-04		8	TXD1	GPIO102
9	GND		10	RXD1	GPIO103
11	GPIO-03		12	GPIO-05	
13	GPIO-101		14	GND	
15	GPIO-02		16	GPIO-01	
17	3V3		18	GPIO-00	
19	SPI0_MO	GPIO142	20	GND	
21	SPI0_MI	GPIO143	22	GPIO-57	
23	SPI0_CLK	GPIO141	24	SPI0_CS	GPIO140
25	GND		26	GPIO-100	
27	SDA2	GPIO12	28	SCL2	GPIO13
29	GPIO-66		30	GND	
31	GPIO-68		32	GPIO-65	
33	PWM	GPIO109	34	GND	
35	SPI1_MI	GPIO139	36	SPI1_CS	GPIO136
37	GPIO-67		38	SPI1_MO	GPIO138
39	GND		40	SPI1_CLK	GPIO137

Note:

1. VDD_5V power can provide 5V/2A maximum but share with USB Host VBUS 5V output
2. VGPIEXT_3V3 power can deliver 3.3V/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 multiplex with other function. Please check section 3.16 Pin Mux for Other Interfaces

3.4 Micro SD Card Connector

Genio 1200 EVK has one MicroSD connector. It uses MT8395 MSDC1 interface and supports following features.

- Default Speed Mode
- High Speed Mode
- SDR12 Mode
- SDR25 Mode
- SDR50 Mode
- SDR104 Mode
- DDR50 Mode
- Support 1bit/4bit SD Bus Width

3.5 Power and Function Key Interface

12V power supplies to the system from a 2.0 mm DC Jack. Power-on button and Reset button on the evaluation-board to turn on and reboot the system, and Home and Download buttons are also retained.

3.6 USB Device

Genio 1200 EVK has two USB device ports, among which the USB Type-C port can be used for ADB debugging port.

3.7 USB Host

Genio 1200 EVK has four USB host ports for USB device connections, which are two USB Type-A connectors and one USB Type-C connector and one Micro USB connector.

Table 3-8 USB Feature in Genio 1200 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	
USB3.2 Gen1	Support	Not Support	EVK with Hub
USB2.0	Support	Not Support	EVK with Hub

USB Port 2 on SoC	SW Support Mode		Function
	Host Mode	Device Mode	
USB2.0	Support	Support	Micro USB

USB Port 3 on SoC	SW Support Mode		Function
	Host Mode	Device Mode	
USB2.0	Support	Not Support	Wi-Fi Module

3.8 Audio Interface

Genio 1200 EVK provides a 3.5mm earphone jack (with a microphone input) and another 3.5mm audio jack for line out (no audio amplifier is build-in).

3.9 Microphones

Genio 1200 EVK provides three analog microphones (Merry MMA102-006) and two digital microphones (Merry MMD300-007).

Table 3-9 Microphones Location

Location	Type	Note
MIC1	Analog Microphone	To PMIC MT6365
MIC2	Analog Microphone	To PMIC MT6365
MIC3	Analog Microphone	To PMIC MT6365
MIC4	Digital Microphone	To Processor MT8395
MIC5	Digital Microphone	To Processor MT8395

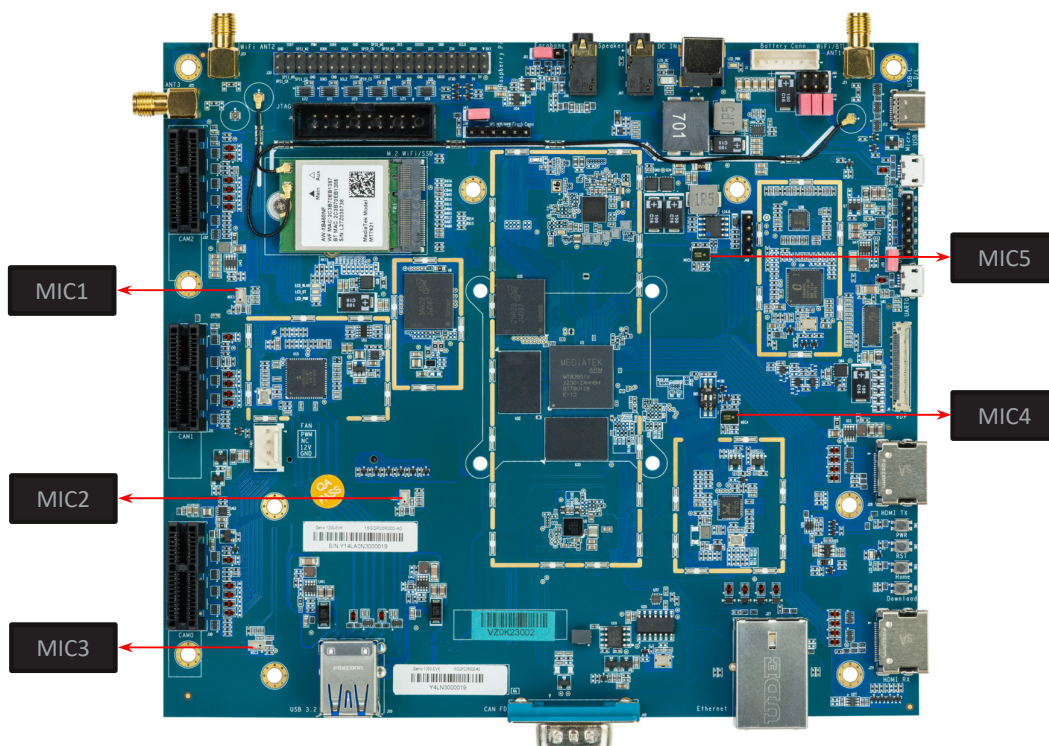


Figure 3-2 Microphone Placement

3.10 MIPI DSI Interface

Genio 1200 EVK provides two 4-lane MIPI DSI interface. A Startek LCM (KD070FHFID078-01-C021A) with touch pad is provided in the box. The I2C capacitive touch controller is Goodix GT9271.

- Up to 1.2Gbps for 1-Data Lane
- Pixel format of RGB565/RGB666 or Loosely RGB666/RGB888
- Support peripheral TE and external TE signal detection

3.11 MIPI CSI Interface

Genio 1200 EVK provides three 4-lane CSI interfaces, the CSI interface operates up to a maximum bit rate of 1.5Gbps per lane. Camera boards are connected through PCIe x1 slot.

Default: CAM0 and CAM2 enable.

3.12 Ethernet Interface

- Operate with an external Ethernet PHY (Realtek RTL8211F-CG)
- 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 transformer and LEDs in it
- Default does not support Wake-on-Lan

Table 3-10 Ethernet LED Indicator

B	10M	100M	1G
Link	-	Orange LED	Green LED
Active		Yellow LED Flash	

3.13 HDMI Port

Genio 1200 EVK provide two HDMI ports included one HDMI TX and one HDMI RX port, supporting HDMI 2.0b.

HDMI TX features

Video part

- Polarity inversion
- Support Deep Color up to 16 bits
- Support max frequency up to 594 MHz (4096 x2160p@60 Hz 8 bits mode)
- Support video color space RGB 444, YCbCr 4:2:2(ITU 601 and 709), YCbCr 4:4:4(ITU 601 and 709), YCbCr 4:2:0 and xvYCC
- Support 3D HDMI function
- Support SD mode
- Support HD/FHD/UFHD mode

Audio part

- Support Single LPC SPDIF IEC60958(up to 192 kHz and up to 24 bits), 32 kHz, 44.1 kHz,48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz
- Single compressed SPDIF IEC61937(up to 192 kHz)
- Support multi-channel PCM input(max. 8 channels)
- Support Direct Stream Digital (DSD) audio
- Support output compressed lossless audio according to HDMI 2.0(Dolby TrueHD and DTS-HD) Misc
- Support Hot Plug Detect (HPD)
- Support discovery by Extended Display Identification Data (EDID)
- Compatible with Digital Visual Interface (DVI) 1.0
- Support High-bandwidth Digital Content Protection (HDCP) 1.4/HDCP 2.3
- Support dynamic metadata Max to 2KB
- DDC supports clock stretching
- Support VRR/ALLM/eARC feature
- Support Consumer Electronics Control (CEC) function

HDMI RX features

Video part

- Support Deep Color up to 16 bits
- Support max frequency up to 594 MHz (4096 x2160p@60 Hz 8 bits mode)
- Support video color space RGB 444, YCbCr 4:2:2(ITU 601 and 709), YCbCr 4:4:4(ITU 601 and 709), YCbCr 4:2:0 and xvYCC
- Support 3D HDMI function
- Support SD mode
- Support HD/FHD/UFHD mode

Audio part

- Support Single LPC SPDIF IEC60958(up to 192 kHz and up to 24 bits), 32 kHz, 44.1 kHz,48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz
- Single compressed SPDIF IEC61937(up to 192 kHz)
- Support multi-channel PCM input(max. 8 channels)
- Support Direct Stream Digital (DSD) audio
- Support output compressed lossless audio according to HDMI 2.0(Dolby TrueHD and DTS-HD) Misc
- Support Internal Extended Display Identification Data (EDID) 512 bytes
- Support HDCP key revocation scheme
- Compatible with DVI 1.0
- Support HDCP 1.4/HDCP 2.3
- Support HDR10+/Dolby dynamic metadata
- Support Consumer Electronic Control (CEC) function

3.14 Antenna Connector

Genio 1200 EVK has three Wi-Fi antenna connectors, users can connect them via coaxial cables. These antennas are designed for AzueWave M.2 (MT7921) Wi-Fi module.



Figure 3-3 Antenna Connectors

Table 3-11 On-Board Antenna

Location	Band	Note
J21	Antenna 1	Wi-Fi / BT (AUX)
J23	Antenna 2	Wi-Fi (MAIN)
J25	Antenna 3	Spare

3.15 How to Select the Display Panel

Default setting is J49 jumper shorted, the EVK supports LVDS panel output (through a bridge IC CH7513), while setting J49 jumper open, the EVK supports eDP panel. eDP and LVDS panel output function is not supported simultaneously. The pre-installed software in the EVK have DSI + HDMI + LVDS displays by default. Customers can further request MediaTek to provide eDP patch and/or LVDS patch by platform for their software development.

Table 3-12 Panel Switch (J49)

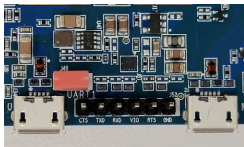
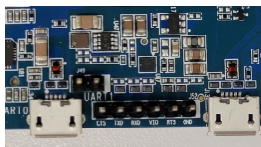
LVDS Panel	eDP Panel
	
J49 short (default)	J49 open

Table 3-13 Pin Mux for eDP Interface

MT8395 eDP	Switch IC(U81) Port A (Connect to LVDS Bridge IC)	Switch IC(U81) Port B (Connect to eDP Connector)
EDP_LN0_TXN	EDP_LN0_TXN_A	EDP_LN0_TXN_B
EDP_LN0_TXP	EDP_LN0_TXP_A	EDP_LN0_TXP_B
EDP_LN1_TXN	EDP_LN1_TXN_A	EDP_LN1_TXN_B
EDP_LN1_TXP	EDP_LN1_TXP_A	EDP_LN1_TXP_B
EDP_LN2_TXN		EDP_LN2_TXN_B
EDP_LN2_TXP		EDP_LN2_TXP_B
EDP_LN3_TXN		EDP_LN3_TXN_B
EDP_LN3_TXP		EDP_LN3_TXP_B
EDPAUXN	EDP_AUXN_A	EDP_AUXN_B
EDPAUXP	EDP_AUXP_A	EDP_AUXP_B
EDP_HPDA	HPD_A	HPD_B

3.16 Pin Mux for Other Interface

J43 jumper default set to not support Raspberry Pi configuration. Use the J43 jumper to switch the GPIO shared by the M.2 slot (for MT7663), DSI, UART and Raspberry Pi Like I/O.

Table 3-14 Other Interface (J43)

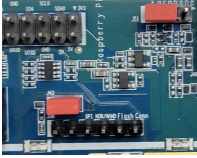
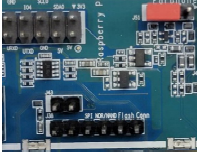
NOT Raspberry Pi Configuration	Raspberry Pi Configuration Supports
	
J43 short (default)	J43 open

Table 3-15 Pin Mux Controlled by Setting Jumper J43 Open or Short

MT8395 GPIO	Port Y0 of Switch IC (J43 Short)	Port Y1 of Switch IC (J43 Open)
GPIO00	MSDC2_CMD	RasPi_GPIO_00
GPIO01	MSDC2_CLK	RasPi_GPIO_01
GPIO02	MSDC2_DAT3	RasPi_GPIO_02
GPIO03	MSDC2_DAT0	RasPi_GPIO_03
GPIO04	MSDC2_DAT2	RasPi_GPIO_04
GPIO05	MSDC2_DAT1	RasPi_GPIO_05
GPIO57	DSI1_LCM_RST	RasPi_GPIO_57
GPIO65	MT7663_I2S_DO	RasPi_GPIO_65
GPIO66	MT7663_I2S_BCK	RasPi_GPIO_66
GPIO67	MT7663_I2S_DI	RasPi_GPIO_67
GPIO68	MT7663_I2S_LRCK	RasPi_GPIO_68
GPIO100	UART_RTS_D	RasPi_GPIO_100
GPIO101	UART1_CTS_D	RasPi_GPIO_101
GPIO102	UART1_TX	RasPi_TXD
GPIO103	UART1_RX	RasPi_RXD
GPIO107	DSI1_DSI_TE	RasPi_PWM

4 Camera Board

There are two camera boards incorporated with Genio 1200 EVK: D2 and D6 camera boards.

Genio 1200 EVK built in with three CAM connectors. CAM 0 and CAM 1 use the same bus of I2C, so **CAM 0 and CAM 1 cannot be inserted into the same model of camera board**, and the configuration is setting as below.

If you want to know how to customize the camera configuration, please refer this document

"MTK_MT8395_Android_T_Customization_SOP_V4L2_Camera_Sensor_Driver_Porting_User_Guide_V1.3" on MediaTek DCC.

Table 4-1 Camera Configuration (CAM Connector)

Camera Configuration	Front Camera	Rear Camera
No. 1 (Default)	CAM 2	CAM 0
No. 2	CAM 1	CAM 0

Table 4-2 Camera Board Differences

	D2 Camera Board	D6 Camera Board
Image Sensor	IMX214-0AQH5-C	AR0830
Output Format	RAW	RAW or YUV (Embedded ISP) (Setting by jumper)

Table 4-3 Collocation of Camera Board and CAM Connector

	D2 Camera Board	D6 Camera Board
CAM 0	O	O
CAM 1	O	O
CAM 2	O	O

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

4.1 D2 Camera Board

The D2 camera board integrated with a SONY IMX214-0AQH5-C image sensor chip, which is a high-performance camera image processor with rich features.

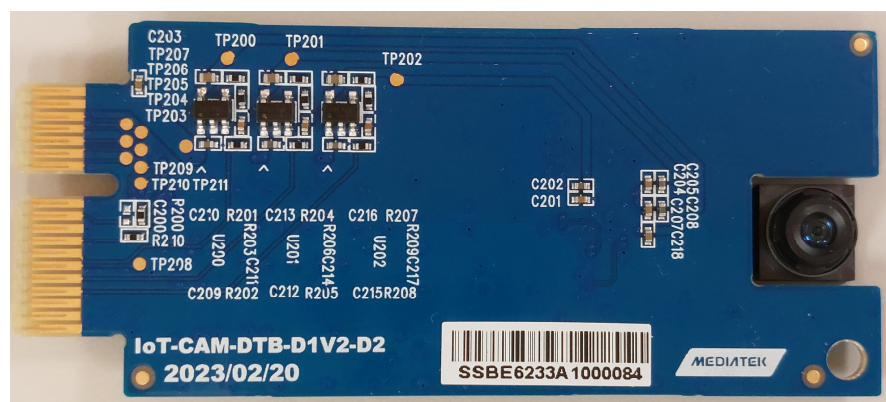


Figure 4-1 D2 Camera Board

4.1.1 D2 Camera Board Key Feature and Block Diagram

- Support 4-Lane MIPI CSI Interface and connect with main board through a 36 pin Gold-Finger.
- Integrate a 1.0V LDO circuit for camera digital power supply, a 2.8V LDO circuit for camera analog power supply and a 1.8V LDO circuit for camera I/O power supply.

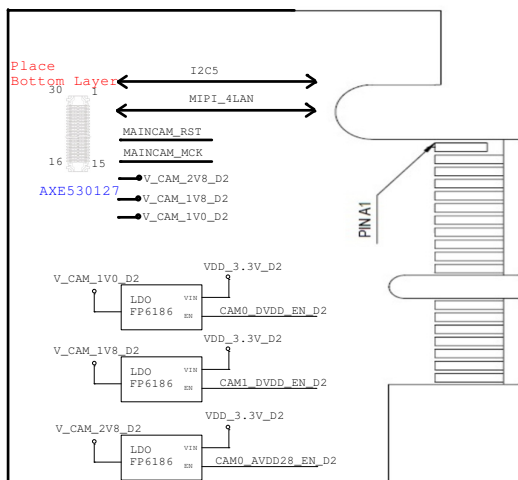


Figure 4-2 Block Diagram of D2 Camera Board

4.2 D6 Camera Board

The D6 camera board has two MIPI CSI paths, one connecting directly with the processor (MT8395) on the main board, and another connecting with the main board through an ISP (onsemi AP1302CSSL00SMGA0-DR). These two MIPI paths are switched by a MIPI multiplexer (TI TS3DV642RUARQ1).

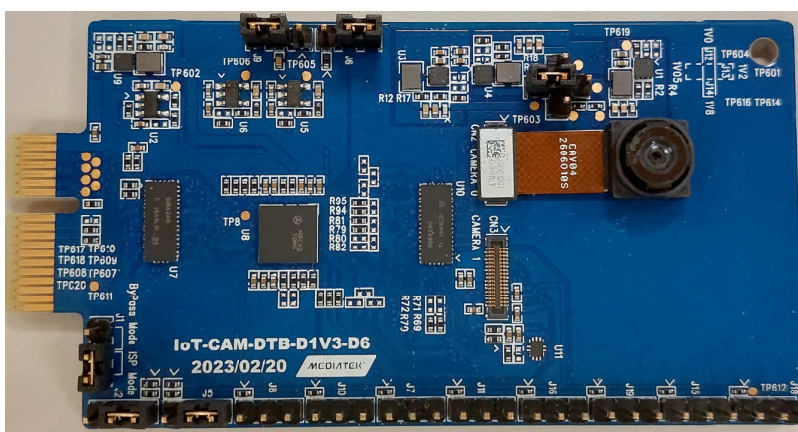


Figure 4-3 D6 Camera Board

4.2.1 D6 Camera Board Key Feature and Block Diagram

- Support 4-Lane MIPI CSI Interface and connect with main board through a 36 pin Gold-Finger
- Supports camera module with/without ISP (onsemi AP1302CSSL00SMGA0-DR)
- 8M pixel camera modules (VF08001 with onsemi CMOS image sensor AR0830)
- Since there is only one CSI interface from the main board, the D6 camera board can support two camera modules, with ISP and without ISP, switched by a MIPI multiplexer (TI TS3DV642RUARQ1)

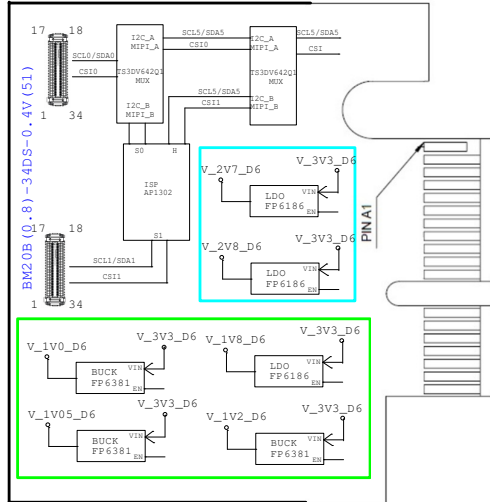


Figure 4-4 Block Diagram of D6 Camera Board

4.2.2 Configure D6 Camera Board

Table 4-4 Configure D6 Camera Board

Schematic	Description
<p>I2C ID Select</p> <p>V_1V8_D6</p> <ul style="list-style-type: none"> • GP10[11] == 0: ID == 0x78 • GP10[11] == 1: ID == 0x7A <p>R38 4.7K 1% R0402</p> <p>J5 PIN HEADER_3P SIP-3P</p> <p>I2C_ID</p>	<p>(1) Jumper@1-2: ISP I2C address = 0x7A</p> <p>(2) Jumper@2-3: ISP I2C address = 0x78</p>
<p>TESTMODE Select</p> <p>V_1V8_D6</p> <p>R39 4.7K 1% R0402</p> <p>J6 PIN HEADER_3P SIP-3P</p> <p>TEST_Mode</p>	<p>(1) Jumper@1-2: Test Mode</p> <p>(2) Jumper@2-3: Normal</p>

Schematic	Description																												
<p>Channel SEL</p>	<p>(1) Jumper@ 1-2: ISP Mode (2) Jumper@ 2-3: Bypass Mode</p>																												
	<p>(1) Jumper@ 1-2: ISP Mode (2) Jumper@ 2-3: Bypass Mode</p>																												
	<p>(1) Jumper@ J13.1-J13.2: VDD = 1.05V (2) Jumper@ J13.2-J13.3: VDD = 1.2V (3) Jumper@ J12.1-J13.2: VDD = 1.0V (4) Jumper@ J14.1-J13.2: VDD = 1.8V</p>																												
<table border="1"> <thead> <tr> <th>CAM0 + CAM1</th> <th>R79</th> <th>R80</th> <th>R81</th> <th>R82</th> <th>R94</th> <th>R95</th> </tr> </thead> <tbody> <tr> <td>2 Lane + 2 Lane</td> <td>NM</td> <td>NM</td> <td>NM</td> <td>NM</td> <td>NM</td> <td>NM</td> </tr> <tr> <td>3 Lane + 3 Lane</td> <td>NM</td> <td>0R</td> <td>NM</td> <td>0R</td> <td>0R</td> <td>0R</td> </tr> <tr> <td>4 Lane + 2 Lane</td> <td>0R</td> <td>NM</td> <td>0R</td> <td>NM</td> <td>0R</td> <td>0R</td> </tr> </tbody> </table>	CAM0 + CAM1	R79	R80	R81	R82	R94	R95	2 Lane + 2 Lane	NM	NM	NM	NM	NM	NM	3 Lane + 3 Lane	NM	0R	NM	0R	0R	0R	4 Lane + 2 Lane	0R	NM	0R	NM	0R	0R	<p>Number of data lanes can be set according to the resistors table in the left picture.</p>
CAM0 + CAM1	R79	R80	R81	R82	R94	R95																							
2 Lane + 2 Lane	NM	NM	NM	NM	NM	NM																							
3 Lane + 3 Lane	NM	0R	NM	0R	0R	0R																							
4 Lane + 2 Lane	0R	NM	0R	NM	0R	0R																							

4.2.3 D6 Camera Board Optional Function

Table 4-5 Optional Function of D6 Camera Board

Schematic	Description
	<p>GPIO[0]: Flash output (default), all input options in GPI[2]. GPIO[1]: Shutter output (default), 3-D daisy chain communication output and all options in GPI[2]. GPI[2]: SADDR and standby. GPI[3]: 3D daisy chain communication input and all options in GPI[2].</p>

Schematic	Description
<p>The schematic shows four identical circuit blocks. Each block consists of a 100K 1% resistor (R63, R64, R67, or R68) connected to a 1V8_D6 power source. The other end of the resistor is connected to pin 1 of a 3-pin header (J15, J16, J18, or J19). The headers are labeled CAM1_GPIO0_D6, CAM1_GPIO1_D6, CAM1_GPIO2_D6, and CAM1_GPIO3_D6 respectively. The headers have pins 1, 2, and 3.</p>	<p>GPIO[0]: Flash output (default), all input options in GPI[2].</p> <p>GPIO[1]: Shutter output (default), 3-D daisy chain communication output and all options in GPI[2].</p> <p>GPI[2]: SADDR and standby.</p> <p>GPIO[3]: 3D daisy chain communication input and all options in GPI[2].</p>

5 Power Distribution

5.1 Power Distribution

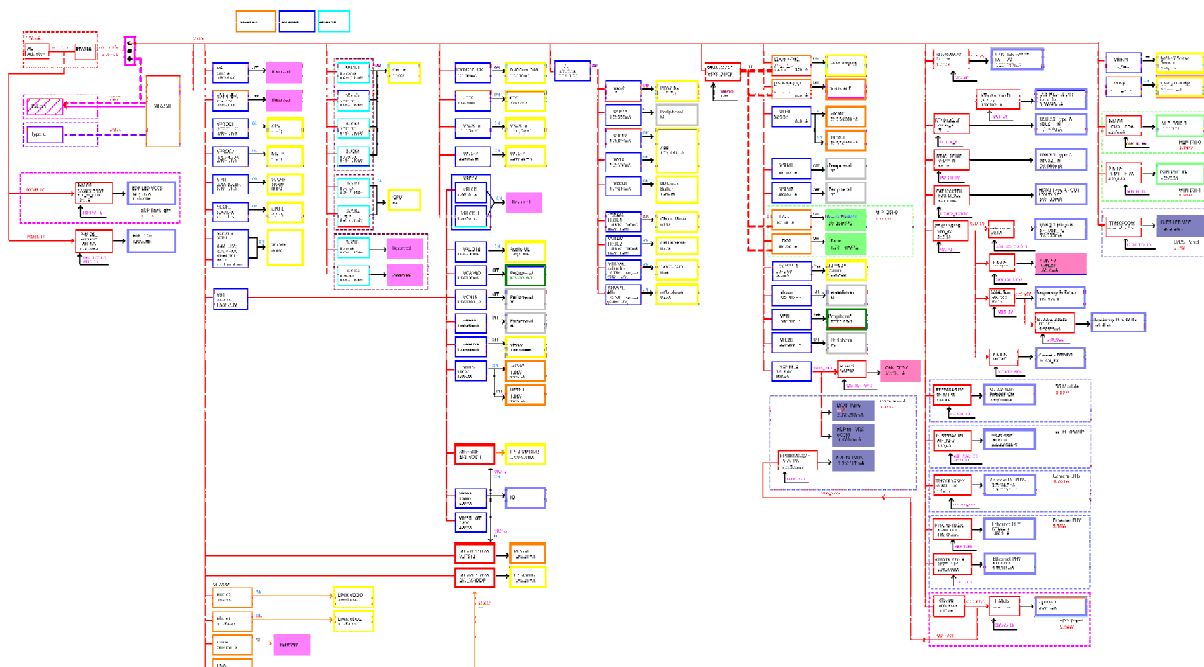


Figure 5-1 Power Distribution

6 Software

- Genio 1200 EVK is supported by two different software stacks: Android and Yocto. The pre-installed software for Genio 1200 EVK is Android, it is based on t0.mp5-V5.113
- Another software stack, IoT Yocto, is also provided as a separate download. The following sections describe how to build, get, and flash the images for Android and Yocto system respectively

6.1 Android

6.1.1 Android Software Project and Configuration

Table 6-1 Android Project Name and Configuration

Project Name	Configuration
AIoT8395P6_64_BSP	IoT EVK+MT7921

6.1.2 How to Get Android Software Image

Please contact with your VAR, Distributor, MediaTek FAE.

6.1.3 Android Software Image Flash Method

Following steps can format the eMMC system code of the Genio 1200 EVK board and flash the system code to UFS.

1. Power off the EVK, then switch DIP (SW5) to eMMC boot: Run "SP Flash Tool", on <Format> tab, press <Start> button to format eMMC. Then plug the USB Type-C cable to EVK. It will format eMMC partition automatically. "SP Flash Tool" can be downloaded from the following link: <https://online.mediatek.com/English/Tool>

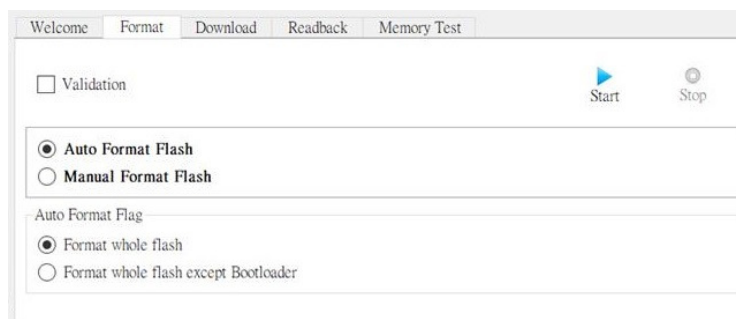


Figure 6-1 Flash Tool Format Screen

- Power off the EVK and then switch DIP(SW5) to UFS boot. Run "SP Flash Tool", choose <Format All + Download> in combo box on <Download> tab and then press <Download> icon. Power on the EVK for flashing images into UFS storage device.

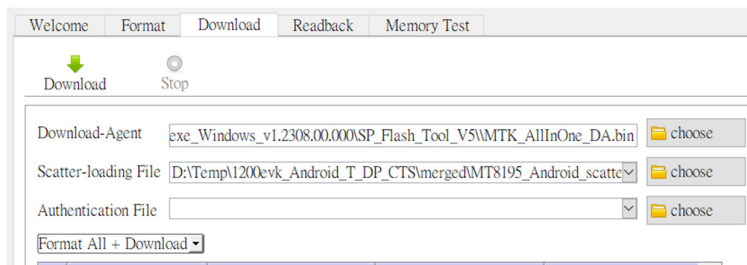


Figure 6-2 Flash Tool Download Screen

- After flashing finished, remove the USB Type-C cable and reboot system.

Note: Choose "Format All + Download", if Ethernet MAC address were set previously, after this action Ethernet MAC address will be format.

Following steps can reflash the system codes of Genio 1200 EVK board.

- Connect ADB port to PC via USB Type-C connector (J12)
- Execute MediaTek flash tool
- Select the proper Android scatter txt file
- Select the download mode ("Firmware Upgrade" is preferred.)
- Start download by pressing the button of "Download"
- Plug in the DC power cord, the downloader will start

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

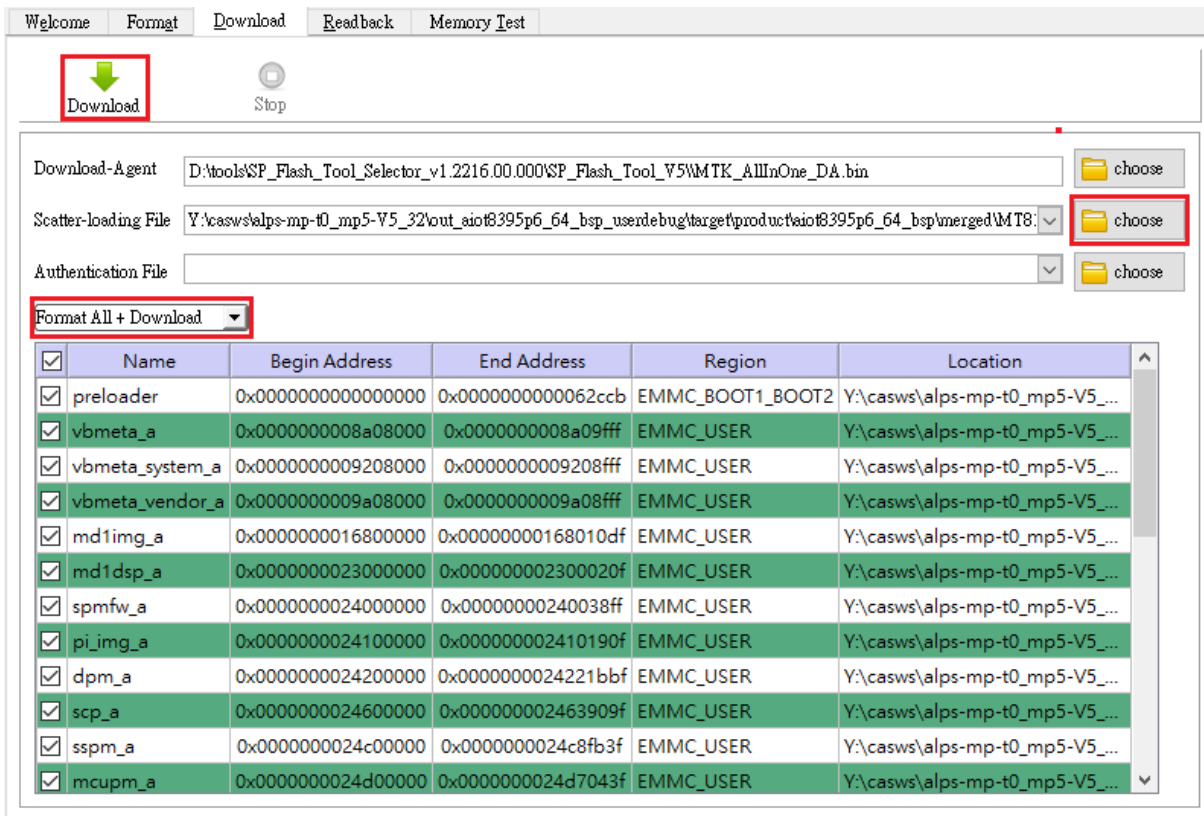


Figure 6-3 Flash Tool Window



Figure 6-4 Download Port

6.2 Yocto

The Yocto software for Genio 1200 EVK is IoT Yocto.

Please note that the enabled board hardware and supported features of IoT Yocto is different from Android.

For an overview, please refer to: <https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/>

Please note that then entire eMMC (except for data stored in eMMC RPMB) will be erased if you flash the board with IoT Yocto images.

6.2.1 Yocto Software Project and Configuration

The build environment for IoT Yocto, and Yocto projects in general, is different from Android. To build Genio 1200 EVK with IoT Yocto, you need to setup Yocto build environment first:

<https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/env-setup.html>

After the build environment is ready, set the bitbake MACHINE configuration to `genio-1200-evk`. Please visit the website for detail:

<https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/build-code.html#build-images-for-genio-evk-boards>

6.2.2 How to Get Yocto Software Image

To download the latest prebuilt board images, please visit:

<https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/sw/yocto/download.html#prebuilt-board-images>

6.2.3 Yocto Software Image Flash Method

IoT Yocto images uses a different tool to flash board images. Please visit the following link to install the flash tool for IoT Yocto on your computer:

<https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/env-setup.html>

After the flash tool has been installed, visit this page to flash the downloaded prebuilt image package:

<https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/flash.html>

6.3 How to Install Difference Software into Genio 1200 EVK

Please note that the storage partition layout of Android and Yocto are different, and the boot flow is also different.

6.3.1 To Flash IoT Yocto

When flashing IoT Yocto images by referring below gitlab link, **eMMC storage (except for data stored in eMMC RPMB) will be erased**, as the IoT Yocto flash tool always format the storage partitions, making the steps the same regardless the existing image on the board storage.

<https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/flash/flash-g1200-evk.html>

6.3.2 To Flash Android

To flash Android images to a board with IoT Yocto images already flashed, you'll need to:

- A. Configure the "Format" option as "Format whole flash":

Welcome | **Format** | Download | Readback | Memory Test

Validation

Auto Format Flash
 Manual Format Flash

Auto Format Flag

Format whole flash ←
 Format whole flash except Bootloader

- B. Select "Format All + Download" option before flashing the Android image:

Welcome | Format | **Download** | Readback | Memory Test

Download (with green arrow) | Stop

Download-Agent: [Progress bar]

Scatter-loading File: [Progress bar]

Authentication File: [Text field]

Format All + Download (dropdown menu)
 Format All + Download ←
 Firmware Upgrade
 Download Only

Begin Address | End Address

- C. You need to manually set the board into "Download Mode" by keeping pressing the "Download" button on the EVK while resetting the board.

7 Appendix

7.1 Troubleshooting on Camera Application Icon Disappearance

If we lack of installing the camera sensor on the EVK while booting 1st time on Android OS, the camera application icon will disappear, and you can follow the below recovery steps to fix it.

Step:

1. Power off the Genio 1200 EVK
2. Install the camera board into one of the camera connectors and power on the Genio 1200 EVK
3. Execute Factory reset:
Settings -> System -> Reset options -> Erase all data (factory reset) -> ERASE ALL DATA -> ERASE ALL DATA
4. Genio 1200 EVK will auto power on
5. Check the camera function

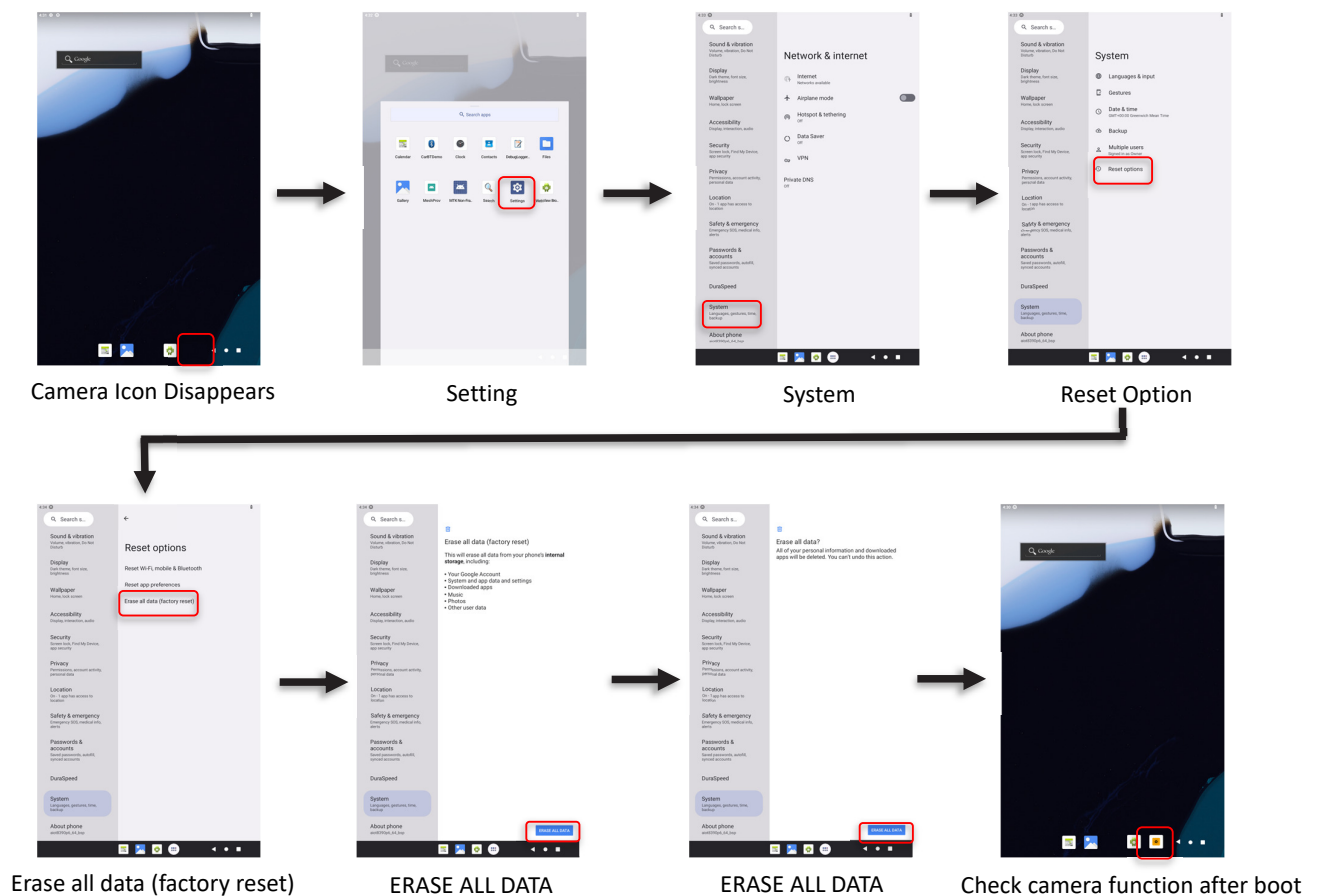


Figure 7-1 Factory Reset

8 Errata

8.1 Modify the LED2/CFG_LDO1 Configuration State of RTL8211FI-CG

- Description
The "LED2/CFG_LDO1" pin of RTL8211FI-CG should be set to pull up to 3.3V, but the EVK of P1V2 version is pulled down to GND.
- Affect
The drive strength of RGMII signal from RTL8211FI-CG will be stronger.
- Workaround
The R585 is not mounted, and the R576 needs to be mounted 4.7kohm resistor. Please correct it according to Figure 8-3.
- Original Schematic
The "LED2/CFG_LDO1" pin of RTL8211FI-CG is pulled down to GND through the R585. The R576 is not mounted.

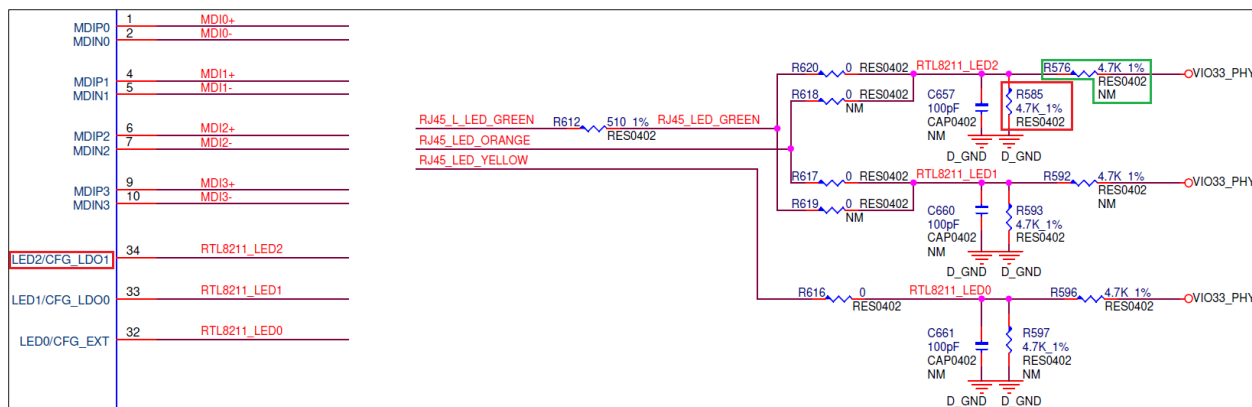


Figure 8-1 Original Schematic of the LED2/CFG_LDO1

- Original PCBA
The R585 is mounted 4.7kohm resistor, and the R576 is not mounted.

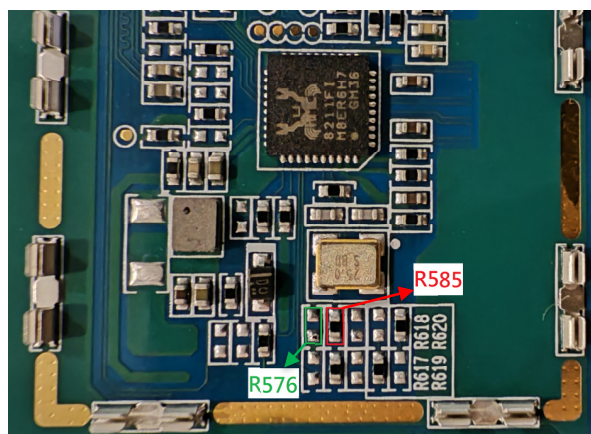


Figure 8-2 Location of R585 and R576 on PCBA

- Modify Schematic

The "LED2/CFG_LDO1" pin of RTL8211FI-CG is pulled up to 3.3V through 4.7kohm resistor in R576. The R585 is not mounted.

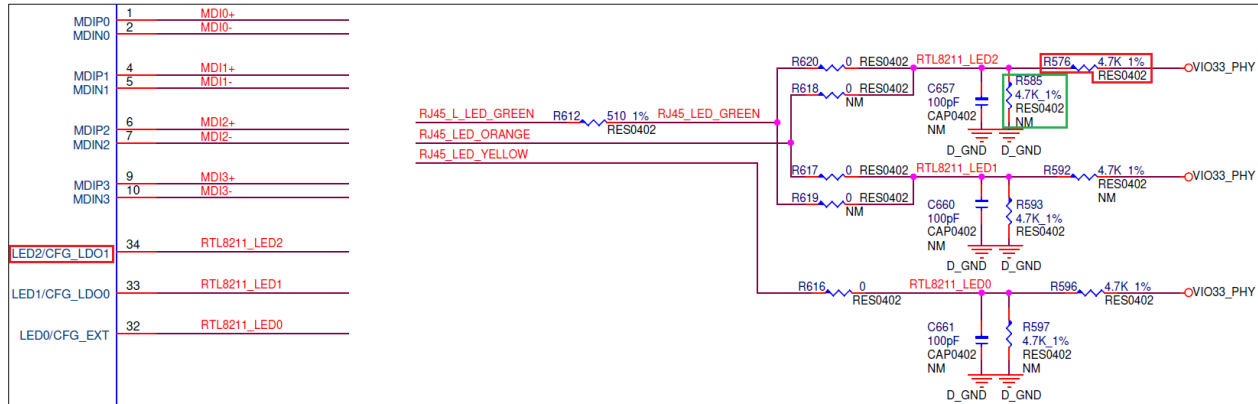


Figure 8-3. Modify Schematic of the LED2/CFG_LDO1

8.2 LDO (U12) Enable Pin Design for eDP to LVDS Bridge IC

- Description

The enable pin of U12 is controlled by the "LVDS_3V3" power, and "LVDS_3V3" is always turned on when the EVK is powered on.

- Affect

When EVK is in suspend state, there is an additional current consumption of 1.84 mA.

- Workaround

It is recommended to connect the enable pin of U12 to a separate GPIO pin to control the Vout ON/OFF of U12.

- Original Schematic

The enable pin of U12 is connected to the "LVDS_3V3" power.

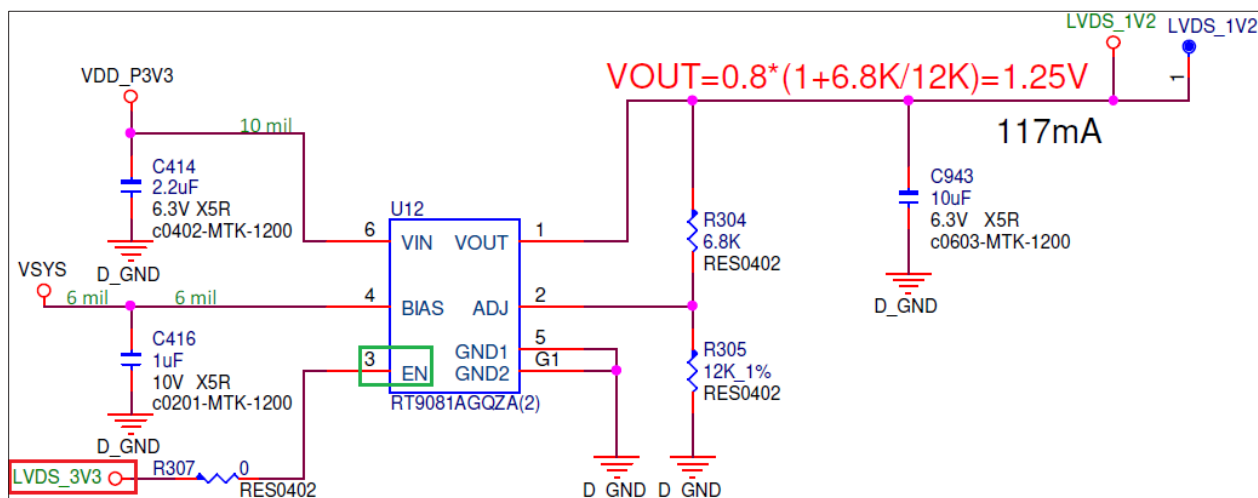


Figure 8-4. Original Schematic of the U12 Enable Pin

8.3 CMMRST and CMMPDN Control Signal Design for Camera Operation

- **Description**
Camera board connector CAM0, CAM1 and CAM2 share CMMRST and CMMPDN control signals.
- **Affect**
When the camera reset or the camera power down is performed, the camera board connected to the three camera connectors will perform the same operation simultaneously.
- **Workaround**
It is recommended to use separate GPIO pins for the control signals CMMRST and CMMPDN of the three camera connectors to control each camera board independently.
- **Original Schematic**
Three camera connectors share the same CMMRST and CMMPDN control signals.

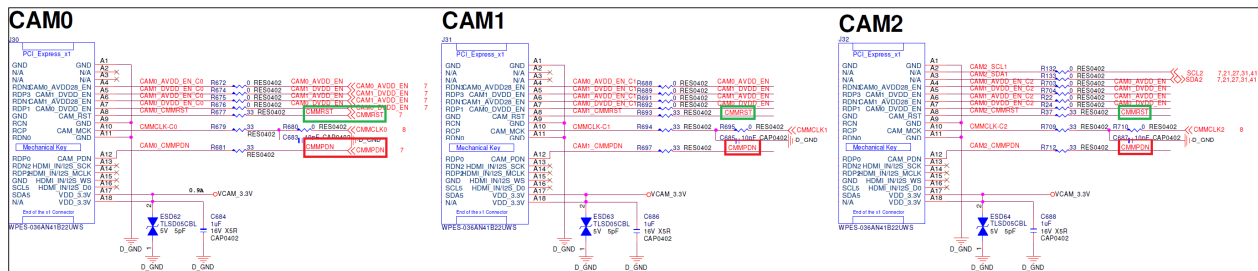


Figure 8-5. Original Schematic of CMMRST and CMMPDN Control Signals

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