

## **RZ-G2L-OSM**

## yocto User's Manual



#### **REVISION HISTORY**

Date	Version number	Reason for change	Modifiers	Remarks
2022-11-03	1.0	Create Document	wj	



#### Content

1. RZG2L-OSM Operating System	4
2. Linux System Installation	
3. Function Description	4
3.1 Hardware interface schematic	4
3.2 WIFI Connection	6
3.3 Ethernet	11
3.4 TF card	11
3.5 MIPI Screen & Touch	13



## 1. RZG2L-OSM Operating System

RZG2L-OSM is currently supported by Linux

### 2. Linux System Installation

Installation steps are described in the <RZG2L-OSM\_yocto> burn-in instructions document>.

## **3. Function Description**

3.1 Hardware interface schematic



3.1.1 Test preparation:

Geniatech

(1) Serial cable\*1, connect to the serial port (J11), open the serial debugging software to select COM port and baud rate 115200

Pin NO	Definition
1	UART_RX2
2	GND
3	UART_TX2
4	NC





(2) After power on and boot up is complete, enter root to log in



#### 3.2 WIFI Connection

3.2.1 Test preparation: two WiFi antennas, connected as shown

# Shenzhen Geniatech Inc., Ltd. www.geniatech.com



3.2.2 To connect to the environment without encrypted WiFi, enter the following command Turn on the WiFi node, and then enter ifconfig to see if the node is on (1) ifconfig mlan0 up

root@sm	arc-rzg2l:~# ifconfig mlan0 up
root@sm	arc-rzg2l:~# ifconfig
eth0	Link encap:Ethernet HWaddr 06:29:3D:2F:EA:71 UP BROADCAST MULTICAST MTU:1500 Metric:1
	RX packets:0 errors:0 dropped:0 overruns:0 frame:0
	TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
	collisions:0 txqueuelen:1000
	RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
	Interrupt:107 DMA chan:ff
10	Link encap:Local Loopback
	inet addr:127.0.0.1 Mask:255.0.0.0
	UP LOOPBACK RUNNING MTU:65536 Metric:1
	RX packets:0 errors:0 dropped:0 overruns:0 frame:0
	<pre>TX packets:0 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txgueuelen:1000</pre>
	RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
mlan0	Link encap:Ethernet HWaddr 00:50:43:02:FE:01
	UP BROADCAST MULTICAST MTU:1500 Metric:1
	RX packets:0 errors:0 dropped:0 overruns:0 frame:0
	TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
	collisions:0 txgueuelen:1000
	RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)



www.geniatech.com

(2) vi /etc/wpa\_supplicant.conf Enter and press i to enter edit mode and change the configuration to the following
network={
ssid="TP-LINK\_5G\_20EE" (this is set to the WiFi name in the environment)
key\_mgmt=NONE
}
COM6:115200baud - Tera Term VT
File Edit Setup Control Window Help
ctrl\_interface=/var/run/wpa\_supplicant
ctrl\_interface\_group=0
update\_config=1

network={

ssid="TP-LINK 5G\_20EE" key mgmt=NONE

(3) When finished editing, press esc, then type :wq and enter to save the configuration

(4) Input wpa\_supplicant -B -c /etc/wpa\_supplicant.conf -imlan0 -Dnl80211,wext command

root@smarc-rzg?l:~# wpa\_supplicant -B -c /etc/wpa\_supplicant.conf -imlan0 -Dnl80211,wext Successfully initialized wpa\_supplicant nl80211: Driver does not support authentication/association or connect commands nl80211: deinit ifname=mlan0 disabled\_llb\_rates=0 rfkill: Cannot get wiphy information [ 987.113787] wlan: SCAN COMPLETED: scanned AP count=0 ioct1[SIOCSIWESSID]: Bad address root@smarc-rzg21:~# [ 994.682317] wlan: SCAN COMPLETED: scanned AP count=25

(5) Then enter the udhcpc -i mlan0 command to dial the number

root@smarc-rzg21:~# udhcpc -i mlan0 udhcpc: started, v1.31.1 udhcpc: sending discover udhcpc: sending select for 192.168.3.154 udhcpc: lease of 192.168.3.154 obtained, lease time 86400 /etc/udhcpc.d/50default: Adding DNS 192.168.3.1

(6) Type **ifconfig** to see if mlan0 gets IP, if it has IP, it is successfully connected.

### Shenzhen Geniatech Inc., Ltd.



www.geniatech.com

root@sm	arc-rzg21:~# ifconfig
eth0	Link encap:Ethernet HWaddr 06:29:3D:2F:EA:71 UP BROADCAST MULTICAST MTU:1500 Metric:1
	RX packets:0 errors:0 dropped:0 overruns:0 frame:0
	TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
	RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
	Interrupt:107 DMA chan:ff
10	Link encap:Local Loopback
	inet addr:127.0.0.1 Mask:255.0.0.0
	UP LOOPBACK RUNNING MTU:65536 Metric:1
	RX packets:0 errors:0 dropped:0 overruns:0 frame:0
	TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
	collisions:0 txqueuelen:1000
	RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
mlan0	Link encap:Ethernet HWaddr 00:50:43:02:FE:01
	inet addr:192.168.3.154 Bcast:192.168.3.255 Mask:255.255.255.0 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
	RX packets:110 errors:0 dropped:30 overruns:0 frame:0
	TX packets:11 errors:0 dropped:0 overruns:0 carrier:0
	collisions:0 txqueuelen:1000
	RX bytes:10534 (10.2 KiB) TX bytes:1632 (1.5 KiB)

3.2.3 Encrypted WiFi in the connected environment

(1) ifconfig mlan0 up Enter this command to turn on the WiFi node

(2) vi /etc/wpa\_supplicant.conf enter the configuration and press i to enter edit mode. Set the following network={

```
ssid="111" (the name of the encrypted WiFi in the environment)
key_mgmt=WPA-PSK
psk="12345678" (WiFi password)
```

#### }

File Edit Setup Control Window Help



Room 02-04, 10/F, Block A, Building 8, Shenzhen International Innovation Valley, Dashi Road, Nanshan District, Shenzhen, Guangdong, China Emai: <u>support@geniatech.com</u> Tel: (+ 86) 755 86028588



www.geniatech.com

(3) Press esc to exit editing, type :wq and enter to save

(4) input wpa\_supplicant -B -c /etc/wpa\_supplicant.conf -imlan0 -Dnl80211,wext command

root@smarc-rzg21:~# wpa\_supplicant -B -c /etc/wpa\_supplicant.conf -imlan0 -Dn180211,wext Successfully initialized wpa\_supplicant n180211: Driver does not support authentication/association or connect commands n180211: deinit ifname=mlan0 disabled\_11b\_rates=0 rfkill: Cannot get wiphy information [ 61.855951] wlan: SCAN COMPLETED: scanned AP count=0 ioct1[SIOCSIWESSID]: Bad address root@smarc-rzg21:~# [ 69.427259] wlan: SCAN COMPLETED: scanned AP count=26

(5) Then enter the udhcpc -i mlan0 command to dial the number

root@smarc-rzg21:~# udhcpc -i mlan0	
udhcpc: started, v1.31.1	
udhcpc: sending discover	
udhcpc: sending select for 172.20.10.2	
udhcpc: lease of 172.20.10.2 obtained, lease time 86	400
/etc/udhcpc.d/50default: Adding DNS 172.20.10.1	

(6) Enter ifconfig to see if mlan0 gets an IP, and if it has an IP, it is successfully connected

```
root@smarc-rzg21:~# ifconfig
eth0
         Link encap:Ethernet HWaddr 06:29:3D:2F:EA:71
         UP BROADCAST MULTICAST MTU:1500 Metric:1
         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
         TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
         Interrupt:107 DMA chan:ff
         Link encap:Local Loopback
10
          inet addr:127.0.0.1 Mask:255.0.0.0
         UP LOOPBACK RUNNING MTU:65536 Metric:1
         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
         TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
         RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
mlan0
         Link encap:Ethernet HWaddr 00:50:43:02:FE:01
          inet addr:172.20.10.2 Bcast:172.20.10.15 Mask:255.255.255.240
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:4 errors:0 dropped:0 overruns:0 frame:0
         TX packets:12 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:918 (918.0 B) TX bytes:1826 (1.7 KiB)
```

#### 3.3 Ethernet

3.2.1 Test tool preparation: network cable\*1

- (1) Power up the board and connect the network cable to the network port
- (2) After the system has finished booting, wait about 5 seconds and type **ifconfig** to see if the eth0 node has an IP

oot@sma	rc-rzg21:~# ifconfig
th0	Link encap:Ethernet HWaddr 06:29:3D:2F:EA:71 inet addr:192.168.6.104 Bcast:192.168.6.255 Mask:255.255.255.0 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1 RX packets:29 errors:0 dropped:3 overruns:0 frame:0 TX packets:20 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:7222 (7.0 KiB) TX bytes:2257 (2.2 KiB) Interrupt:107 DMA chan:ff
0	Link encap:Local Loopback inet addr:127.0.0.1 Mask:255.0.0.0 UP LOOPBACK RUNNING MTU:65536 Metric:1 RX packets:1 errors:0 dropped:0 overruns:0 frame:0 TX packets:1 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:90 (90.0 B) TX bytes:90 (90.0 B)
lan0	Link encap:Ethernet HWaddr 00:50:43:02:FE:01 inet addr:192.168.3.154 Bcast:192.168.3.255 Mask:255.255.255.0 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1 RX packets:159 errors:0 dropped:41 overruns:0 frame:0 TX packets:13 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:18950 (18.5 KiB) TX bytes:1716 (1.6 KiB)

(3) Obtain IP means successful connection

#### 3.4 TF card

Note: the system cannot start when the TF card is inserted, it needs to be inserted after the start-up is completed 3.4.1 Test tool preparation: a TF card

- (1) Insert the TF card into the (hot-swappable) card slot
- (2) fdisk -I View partition

## Geniatech

roocesmarc-rzyzr;~#	Tarsk -T				
Units: sectors of 1 Sector size (logical I/O size (minimum/op	* 512 = 512 ] /physical): ! timal): 512 ]	bytes 512 bytes / bytes / 512	512 bytes bytes		
Disklabel type: dos Disk identifier: Oxf	fffffff				
/dev/mtdblock0p1 /dev/mtdblock0p2 /dev/mtdblock0p3 /dev/mtdblock0p4	4294967295 4294967295 4294967295 4294967295 4294967295	8589934589 8589934589 8589934589 8589934589 8589934589	4294967295 4294967295 4294967295 4294967295 4294967295	2T ff 2T ff 2T ff 2T ff 2T ff	BBT BBT BBT BBT
Units: sectors of 1	* 512 = 512 1	bytes			
Sector size (logical I/O size (minimum/op	/physical): { timal): 512 }	512 bytes / bytes / 512	512 bytes bytes		
Units: sectors of 1	* 512 = 512 1	ovtes			
Sector size (logical I/O size (minimum/op	/physical): { timal): 512 ]	512 bytes / bytes / 512	512 bytes bytes		
Units: sectors of 1	* 512 = 512 1	bytes			
Sector size (logical I/O size (minimum/op	/physical): { timal): 512 }	512 bytes / bytes / 512	512 bytes bytes		
Units: sectors of 1	* 512 = 512 1	bytes			
Sector size (logical I/O size (minimum/op	/physical): ! timal): 512 ]	512 bytes / bytes / 512	512 bytes bytes		
Units, sectors of 1	* 512 = 512 1	butes			
Sector size (logical I/O size (minimum/op Disklabel type: dos Disk identifier: 0x5	/physical): { timal): 512 ] f0ae3db	512 bytes / bytes / 512	512 bytes bytes		
/dev/mmcblklpl	8192 305356	79 30527488	14.6G c W95	FAT32	(LBA
(3) mount /dev/mmcblk	lpl /media Man	ual mount			

(4) **df -h** View

Room 02-04, 10/F, Block A, Building 8, Shenzhen International Innovation Valley, Dashi Road, Nanshan District, Shenzhen, Guangdong, China Emai: support@geniatech.com Tel: (+ 86) 755 86028588

root@smarc-rzg21:~	# df -h				
Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/root	1.3G	894M	286M	76%	1
devtmpfs	743M	0	743M	0%	/dev
tmpfs	936M	0	936M	0%	/dev/shm
tmpfs	936M	9.7M	926M	2%	/run
tmpfs	936M	0	936M	0%	/sys/fs/cgroup
tmpfs	936M	0	936M	80	/tmp
tmpfs	936M	24K	936M	18	/var/volatile
tmofs	188M	0	188M	0%	/run/user/0
/dev/mmcblklpl	15G	128K	15G	1%	/media

#### 3.5 MIPI Screen & Touch

(1) Connect the MIPI screen as shown in the diagram



(2) Power on and start, observe whether there is backlight

# Shenzhen Geniatech Inc., Ltd. www.geniatech.com



#### (3) The boot screen is as follows

2.052909] mmcblM0boot1: mmc0:0001 D04016 partition 2 4.00 MiB 2.0531371 [drm] Initialized rear-dm 1.0.0 20130110 for 10030000.display on	
1007 0 2.072360] [drn] Dovice 10890000.display probed 2.072387] muchlkOrpmb: muc0:0001 DG4016 partition 3 4.00 HiB, chardeu (243:	
2 emetral Console: switching to colour frame buffer device 128x37	
2.4282533 rear-da 101990000 display: fb0: DBM emulated frame buffer double regulator.2	
2.436658) renesas_64h1_internal_dnac 11c10000.sd: Linked as a consumer to regulator.8	
2.592035] remesas_sdhi_internal_dmac 11c10000.sd; macl base at 0x11c10000 max close term	
2.511057] da7210 3-001a: pi/210 mail Codec 0.0.1	
2.5239231 da7210 3-001a: Unsupported HCLK value 12207978	
2.531528) da7210 3-001a: simple-card: set_agentia erits	
2.5405451 and simple card sound: ASoC: failed to instantiate card -ZZ	
2.5575333 asoc-single-card; probe of sound failed with error - as	
2.556589) hctosys: unable to open ick in X.569 certificates for regulatory database	
2.5053401 cfg00211: Loaded X.509 cert 'sforshee: 002204df47acf9cca7'	
2.594343 platform regulatory.0: Direct firmare loss for regulatory gas	
2.665561 cfreeD211: failed to load regulatory.db	
2.6178691 No soundcards found.	
2.6416661 EXT4-fs (machile): recovery compared with ordered data mode. Opts: (mull)	
2.6599011 EATT is Construction (ext4 filesystem) on device 179:0.	
2.6607783 devtapfs: nounted	
2.6746101 Freeing unused kernel nenery: 5/6k	
2.6815471 Ban /solaring time before build time, advancing clock.	



## Shenzhen Geniatech Inc., Ltd.

www.geniatech.com



#### (4) Desktop



(5) TP Test: Click on the software with your finger touch screen, for example, the terminal software



www.geniatech.com

in the upper left corner, you can click to open that is normal



#### **MIPI-DSI Connector (J28)**

Geniatech



Pin NO	Definition	Pin NO	Definition
1	NC	21	DSI_DATA3_P
2	VCC_LCD0	22	GND
3	IOVCC_1.8V/3.3V	23	NC
4	GND	24	NC
5	MIPI_DSI_nRST	25	GND
6	NC	26	NC
7	GND	27	PWMO
8	DSI_DATA0_N	28	NC
9	DSI_DATA0_P	29	NC
10	GND	30	GND
11	DSI_DATA1_N	31	VCC1_LED-
12	DSI_DATA1_P	32	VCC1_LED-
13	GND	33	NC
14	DSI_CLOCK_N	34	NC
15	DSI_CLOCK_P	35	NC
16	GND	36	NC
17	DSI_DATA2_N	37	NC
18	DSI_DATA2_P	38	NC
19	GND	39	VCC1_LED+
20	DSI_DATA3_N	40	VCC1_LED+

#### I2C TOUCH Connector (J36)



Pin NO	Definition	
1	I2C_A0_SCL	
2	I2C_A0_SDA	
3	VDD_3V3	
4	TP_nRST_C	
5	TP_nINT_C	
6	GND	