

# AES-RCA8E

## User Manual

Rev\_1.0





# Acknowledgment

The following product names and trademarks are properties of their respective owners:

- Microsoft Windows is a registered trademark of Microsoft Corp.
- Intel is a registered trademark of Intel Corporation
- ARM, Cortex, and Cortex-A8 are registered trademarks of Arm Limited (or its subsidiaries).
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

All other product names or trademarks are properties of their respective owners. No ownership is implied or assumed for products, names or trademarks not herein listed by the publisher of this document.

## Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
AES-RCA8E	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

## About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at [ACROSSER.com](http://ACROSSER.com) for the latest version of this document.

## Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references.

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running.
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
17. If any of the following situations arises, please the contact our service personnel:
  - i. Damaged power cord or plug
  - ii. Liquid intrusion to the device
  - iii. Exposure to moisture
  - iv. Device is not working as expected or in a manner as described in this manual
  - v. The device is dropped or damaged
  - vi. Any obvious signs of damage displayed on the device
18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

## FCC Statement

**Warning!**



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

**Caution:**

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

**Attention:**

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.  
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur.  
Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

## China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

ACROSSER System

QO4-381 Rev.A0

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器 与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	×	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有毒有害物质在该部件所有均质材料中的含量均在

GB/T 26572标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了GB/T 26572的限量要求，然而该部件仍符合欧盟指令2011/65/EU 的规范。

备注：

一、此产品所标示之环保使用期限，系指在一般正常使用状况下。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。



# China RoHS Requirements (EN)

## Hazardous and Toxic Materials List

ACROSSER System

QO4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)
PCB and Components	X	O	O	O	O	O
Wires & Connectors for Ext. Connections	X	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	X	O	O	O	O	O
HDD Drive	X	O	O	O	O	O
LCD Module	X	X	O	O	O	O
Optical Drive	X	O	O	O	O	O
Touch Control Module	X	O	O	O	O	O
PSU	X	O	O	O	O	O
Battery	X	O	O	O	O	O

This form is prepared in compliance with the provisions of SJ/T 11364.

O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.

X: The level of toxic or hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.
2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.
3. LCD Module and Touch Control Module only applies to certain products which feature these components.

# Table of Contents

<b>TABLE OF CONTENTS</b> .....	<b>1</b>
<b>PRODUCT SPECIFICATIONS</b> .....	<b>3</b>
1.1. SPECIFICATIONS.....	3
<b>HARDWARE INFORMATION</b> .....	<b>5</b>
2.1 DIMENSIONS.....	5
2.2 WIRELESS HARDWARE SETUP (SIM CARD AND MINI CARD).....	5
2.2.1 Mini Card Installation.....	6
2.2.2 SIM Card Installation.....	7
<b>CONFIGURE AND SETUP THE GATEWAY</b> .....	<b>8</b>
3.1. CONNECTING TO SYSTEM.....	8
3.1.1. Add User Account.....	11
3.1.2. Delete User Account.....	11
3.2. NETWORK SETTINGS.....	11
3.2.1. Install the “Network Manager” Package.....	11
3.2.2. Check the IP settings.....	12
3.2.3. Set Static IP.....	12
3.2.4. Set Dynamic IP.....	13
3.3. CELLULAR NETWORK SETTINGS (OPTIONAL).....	14
3.3.1. Check the Cellular Module Status.....	14
3.3.2. Check Module Information in Minicom.....	15
3.3.2.1. Leave Minicom.....	15
3.3.3. Dial-up Cellular Module.....	16
3.4. WiFi AND BLUETOOTH NETWORK SETTINGS.....	17
3.4.1. Scan for WiFi Access Point.....	17
3.4.2. Connect to WiFi Access Point.....	17
3.4.3. Disconnect from WiFi Access Point.....	17

3.4.4.	Check WiFi Connection Status .....	18
3.4.5.	Enter Bluetooth Control Panel .....	18
3.4.6.	Scan Bluetooth Devices .....	18
3.4.7.	Pair Bluetooth Device .....	19
3.4.8.	Check Paired Bluetooth Devices .....	19
3.4.9.	leave Bluetooth mode .....	19
3.5.	SYSTEM MANAGEMENT .....	20
3.5.1.	Check OS Version .....	20
3.5.2.	Check Storage Status.....	20
3.5.3.	Shutdown the System.....	21
3.5.4.	Set Date and Time .....	21
3.6.	I/O MANAGEMENT .....	22
3.6.1.	Control GPIO .....	22
3.7.	WiFi AND BLUETOOTH TESTING METHODS .....	23
3.7.1.	Turn on /off WiFi .....	23
3.7.2.	WiFi Testing Steps .....	23
3.7.3.	Bluetooth Testing Steps .....	25

# Product Specifications

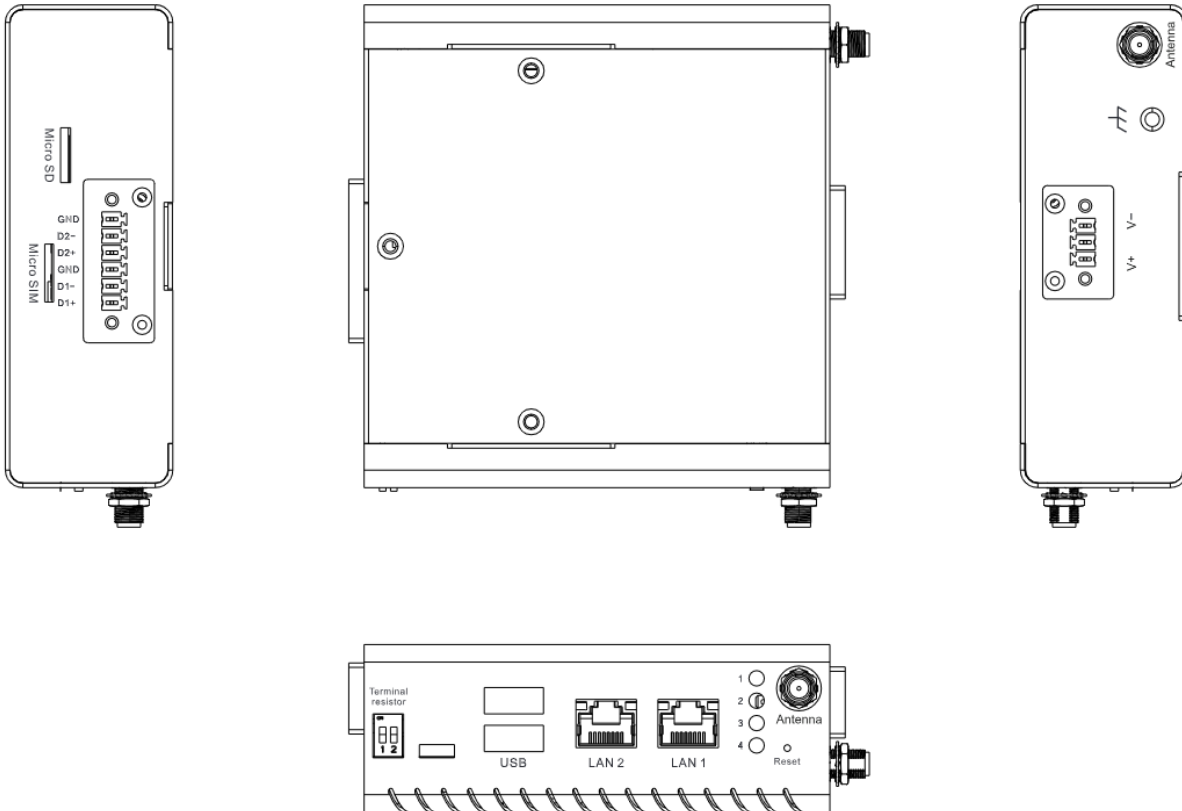
## 1.1. Specifications

<b>General</b>	CPU	ARM Cortex-A8 800 MHz RISC Processor
	Memory	DDR3L 1 GB
	Storage	eMMC 8G
	OS Supported	Debian 10 (buster)
<b>Interface</b>	Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
	USB Ports	USB 2.0, (Type A Connector) x 2
	Serial Ports	RS-485-2w ports (terminal block) x 2
	Expansion Ports	Mini PCIe Slot x 1
	SIM Slot	Micro SIM Type x 1
	SD Slot	Micro SD Type x 1
	Debug Port	Mini USB Type x 1
<b>Radio Frequency Interface</b>	WIFI	IEEE Std 802.11b/g/n
	Bluetooth	Bluetooth 4.2 and Bluetooth low energy
<b>Physical characteristics</b>	Dimensions	4.3" x 4.33" x 1.54"(109 x 110 x 39mm)
	Weight	430 g
	Mounting	DIN-rail mounting, Wall mount
<b>Environmental</b>	Operation Temperature	-4 °F ~ 158 °F (-20 °C ~ 70 °C)
	Operation Humidity	10% ~ 95% relative humidity, non-condensing
	Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
<b>Certification</b>	EMC	EN 55032/24

	EMI	FCC Part 15B Class A
	EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV IEC 61000-4-5 Surge: AC Line to Line: 1 kV, Line to Earth: 2 kV IEC 61000-4-6 CS: 0.15 to 80MHz; 3 Vrms IEC 61000-4-8 PFMF: 50Hz/60Hz, 1 A/m
	CE RED	EMC: EN301489-1/-17 RF: EN300328 (wifi,Bluetooth, 2.4G) Safety: EN 62368-1
	Green Product	RoHS
	MTBF	855,890(Hours)

# Hardware Information

## 2.1 Dimensions



## 2.2 Wireless Hardware Setup (SIM Card and Mini Card)

The AES-RCA8E features both a SIM Card and Mini Card slot for connecting to wireless networks such as 4G. This section details how to install a SIM Card and 4G/LTE module on the mini card slot.

### 2.2.1 Mini Card Installation

**Step 1.** Move the top cover by remove the 6 screw.



**Step 2.** Open the second antenna hole by removing the cover on the hold that locate on the left side.



**Step 3.** Install the RF coaxial cable on the antenna hole.



**Step 4.** Remove the button cover and install the 4G/LTE module into mini card slot, and connect the coaxial cable to the 4G/LTE module.



**Step 5.** Remove the button cover and install the 4G/LTE module into mini card slot, and connect the coaxial cable to the 4G/LTE module.



**Step 6.** Place the top cover and lock the screws.

## 2.2.2 SIM Card Installation

To install a SIM Card (Micro SIM) simply insert the SIM Card into the slot on the side of the system as shown. Take care to make sure the card is oriented correctly.





# Configure and Setup the gateway

## 3.1. Connecting to system

When connecting a PC or laptop to the AES-RCA8E system, it is recommended to use PuTTY with Windows 10. Users can download the software from the PuTTY website.

<https://www.putty.org/>

For Windows 7 or older, users must first set up their PC to recognize the system. The following instructions detail how to set up your PC to connect to the AES-RCA8E system by installing the CDC Serial Driver. The CDC Serial Driver can be downloaded from the AES-RCA8E product page on ACROSSER.com.

**Step 1.** Download the PuTTY tools software

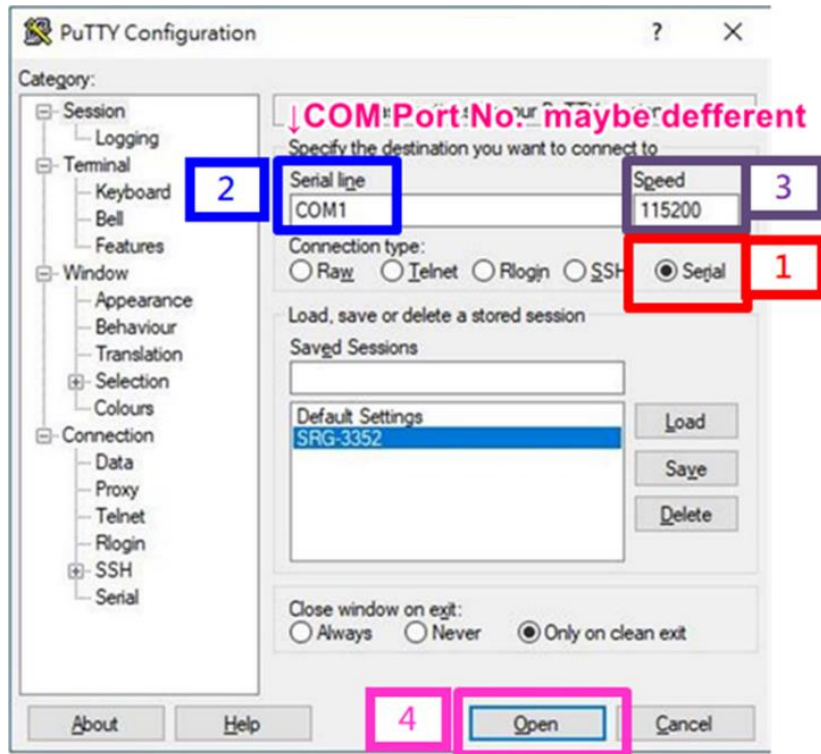
**Step 2.** Connect the gateway with USB cable

Connect your computer to the AES-RCA8E using the micro USB port. Open Device Manager and locate Multifunction Composite Gadget. Double click on the device. A pop-up should appear, with a notice that the CDC Serial is unrecognized.



**Step 3.** Setting the putty configuration

Open the putty and using the setting to login the system.



Serial Port Settings	
Baud rate	115200 bps
Parity	None
Data bits	8
Stop bits	1
Flow Control	None

**Step 4.** Login to the system

You will see the welcome message when successful connected to the gateway.

```
LINKENCE

2023 Linkence Technology Inc.

SPG-3352x IoT Gateway

SPG-3352x login: linkence
Password:
Last login: Thu Nov  9 08:23:43 UTC 2023 on ttyGS0
Linux SPG-3352x 4.19.94-SRG52x-rt52+ #1 PREEMPT RT Wed Sep 13 08:42:54 UTC 2023 armv7l

Welcome login Linkence IoT Gateway
-----
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

linkence@SPG-3352x:~$ █
```

And the login information is:

Login Settings	
Username	Acrosser
Password	Acrosser

You will see the welcome page when login is successful.

You can use command **sudo su** to login as root.

```
SPG-3352x login: linkence
Password:
Last login: Thu Nov  9 09:18:00 UTC 2023 on ttyGS0
Linux SPG-3352x 4.19.94-SRG52x-rt52+ #1 PREEMPT RT Wed Sep 13 08:42:54 UTC 2023 armv7l

Welcome login Linkence IoT Gateway
-----
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

linkence@SPG-3352x:~$
linkence@SPG-3352x:~$ sudo su
[sudo] password for linkence:
root@SPG-3352x:/home/linkence# █
```

## User Account Management

This section will show you how to manage to user accounts on this system.

### 3.1.1. Add User Account

- ✓ Command Line:

```
$ useradd -m -G sudo -s /bin/bash USERACCOUNT
```

**USERACCOUNT** -> Account name that you want to add

ex: Create an account of “lucky”

```
$ useradd -m -G sudo -s /bin/bash lucky
```

### 3.1.2. Delete User Account

- ✓ Command Line:

```
$ userdel USERACCOUNT
```

**USERACCOUNT** -> Account name that you want to del

ex: Delete an account of “lucky”

```
$ userdel lucky
```

## 3.2. Network Settings

This section details how to check and setup the network settings. This requires installing the Debian package “Network Manager” to manage the network settings.

### 3.2.1. Install the “Network Manager” Package

Before performing the following command, make sure the gateway is connected to the internet by a hub, switch or router. Note: The default network setting of LAN1 and LAN2 is DHCP.

- ✓ Command Line:

```
$ sudo apt-get install network-manager
```

- ✓ Result:

```
root@SPG-3352x:/home/linkence# sudo apt-get install network-manager
Reading package lists... Done
Building dependency tree
Reading state information... Done
network-manager is already the newest version (1.14.6-2+deb10u1).
0 upgraded, 0 newly installed, 0 to remove and 24 not upgraded.
root@SPG-3352x:/home/linkence#
```

### 3.2.2. Check the IP settings

- ✓ Command Line:

```
$ nmcli dev sh
```

**DEVICENAME** -> Device name and associated hardware is as follows:

Device Name	Support Hardware
eth0	LAN1
eth1	LAN2

- ✓ Result:

```
linkence@SPG-3352x:~$ nmcli dev sh
GENERAL.DEVICE: eth0
GENERAL.TYPE: ethernet
GENERAL.HWADDR: 60:B6:E1:0E:A2:FA
GENERAL.MTU: 1500
GENERAL.STATE: 100 (connected)
GENERAL.CONNECTION: eth0
GENERAL.CON-PATH: /org/freedesktop/NetworkManager/ActiveCo
nnection/4
WIRED-PROPERTIES.CARRIER: on
IP4.ADDRESS[1]: 192.16.12.21/24
IP4.GATEWAY: --
IP4.ROUTE[1]: dst = 192.16.12.0/24, nh = 0.0.0.0, mt =
100
IP6.ADDRESS[1]: fe80::7460:a53d:b8de:fb1/64
IP6.GATEWAY: --
IP6.ROUTE[1]: dst = fe80::/64, nh = ::, mt = 100
IP6.ROUTE[2]: dst = ff00::/8, nh = ::, mt = 256, table
=255

GENERAL.DEVICE: wlan0
GENERAL.TYPE: wifi
GENERAL.HWADDR: 6E:25:02:21:D3:B7
GENERAL.MTU: 1500
--More--
```

### 3.2.3. Set Static IP

- ✓ Command:

```
$ sudo nmcli connection add con-name eth0 type ethernet ifname eth0 ip4
192.16.12.21/24
```

```
$ sudo nmcli connection up eth0
```

```
$ sudo nmcli connection add con-name eth1 type ethernet ifname eth1 ip4
192.16.12.24/24
```

```
$ sudo nmcli connection up eth1
```

```
$ sudo nmcli dev sh
```

### 3.2.4. Set Dynamic IP

- ✓ Command:

```
$ sudo nmcli connection mod eth0 ipv4.method auto
```

```
$ sudo nmcli connection up eth0
```

```
$ sudo nmcli connection mod eth1 ipv4.method auto
```

```
$ sudo nmcli connection up eth1
```

```
$ sudo nmcli dev sh
```

### 3.3. Cellular Network Settings (Optional)

This section will show you how to check and setup the cellular network setting.

#### 3.3.1. Check the Cellular Module Status

**Step 1:** Leave Command:

```
$ apt-get install minicom
```

Then press 'Y'.

**Step 2:** Leave Command:

```
$ minicom -s
```

**Step 3:** Choose "Serial port setup", then press "A" to settings.

**Step 4:** Leave Command:

```
$ /dev/ttyUSB3
```

Finish setting configuration, then press "Enter"

**Step 5:** Choose "Exit" to leave the dialog.

### 3.3.2. Check Module Information in Minicom

■ **Check if module is connected to the serial port:**

✓ Command:

**\$ AT**

■ **Check the SIM card status:**

✓ Command:

**\$ AT+CPIN?**

■ **Check module manufacturer information:**

✓ Command:

**\$ ATI**

■ **Check setting APN:**

✓ Command:

**\$ AT+CGDCONT=1,"IPV4V6","internet"**

■ **Check 4G signal quality:**

✓ Command:

**\$ AT+CGDCONT?**

**\$ AT+CSQ**

#### 3.3.2.1. Leave Minicom

**Step 1:** Press "Ctrl +A".

**Step 2:** Press "X".

**Step 3:** Choose "Yes" then select "Enter" to leave Minicom.



### 3.3.3. Dial-up Cellular Module

#### ■ Check the cellular module status

✓ Command:

```
$ sudo su  
# systemctl enable ModemManager  
# sudo systemctl start ModemManager  
# mmcli --list-modems  
# mmcli -m 0
```

Cellular module will show “register” status when module is ready.

#### ■ Enable the cellular module

✓ Command:

```
# mmcli -m 0 -e
```

#### ■ Dial up the cellular module

✓ Command:

```
# nmcli -a  
# nmcli c add con-name test type gsm ifname ttyUSB2 apn internet
```

#### ■ Check the cellular module connection

✓ Command:

```
#ifconfig  
# ping 8.8.8.8
```

## 3.4. WiFi and Bluetooth Network Settings

This section details how to check and setup WiFi and Bluetooth wireless networks.

### 3.4.1. Scan for WiFi Access Point

- ✓ Command:

```
$ nmcli dev wifi
```

- ✓ Result:

```
nmcli dev wiroot@SRT3352C:~# nmcli dev wifi
* SSID          MODE  CHAN  RATE      SIGNAL  BARS  SECURITY
  TOTOLINK99    Infra 2     54 Mbit/s 34      **    WPA2
  scz-bdcd      Infra 11    54 Mbit/s 10      *    WPA2
  scz-3749      Infra 11    54 Mbit/s 7       *    WPA2
  TOTOLINK N150RA S Infra 11    54 Mbit/s 7       *    WPA2

* SSID          MODE  CHAN  RATE      SIGNAL  BARS  SECURITY
  TOTOLINK99    Infra 2     54 Mbit/s 34      **    WPA2
  scz-bdcd      Infra 11    54 Mbit/s 10      *    WPA2
  scz-3749      Infra 11    54 Mbit/s 7       *    WPA2
  TOTOLINK N150RA S Infra 11    54 Mbit/s 7       *    WPA2
root@SRT3352C:~#
```

### 3.4.2. Connect to WiFi Access Point

- ✓ Command:

```
$ nmcli dev wifi connect 'SSID' password 'PASSWORD'
```

**SSID**-> The ID of the WiFi access point you want to connect to  
**PASSWORD**-> Password for the chosen SSID

- ✓ Result:

```
aaeon@SRG-3352C:~$ sudo nmcli dev wifi connect 'TOTOLINK99' password 'password'
[sudo] password for aaeon:
Device 'wlan0' successfully activated with '64da4185-ebf6-4b1f-acfd-eb36d214cbb5'.
aaeon@SRG-3352C:~$
```

### 3.4.3. Disconnect from WiFi Access Point

- ✓ Command:

```
$ sudo nmcli con down id 'SSID'
```

**SSID**-> ID for the WiFi access point you want to disconnect from

- ✓ Result:

```
aaeon@SRG-3352C:~$ sudo nmcli con down id TOTOLINK99
[sudo] password for aaeon:
Connection 'TOTOLINK99' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/2)
aaeon@SRG-3352C:~$
```

### 3.4.4. Check WiFi Connection Status

✓ Command:  
**\$ nmcli dev**

✓ Result:

If connected, WiFi STATE will display “connected” as below:

```
aaeon@SRG-3352C:~$ sudo nmcli dev
DEVICE    TYPE      STATE      CONNECTION
eth0      ethernet  connected  Ethernet0
wlan0     wifi      connected  TOTOLINK99
eth1      ethernet  unavailable --
cdc-wdm0  gsm       unavailable --
lo        loopback  unmanaged  --
aaeon@SRG-3352C:~$
```

If disconnected, WiFi STATE will display “disconnected” as below:

```
aaeon@SRG-3352C:~$ sudo nmcli dev
DEVICE    TYPE      STATE      CONNECTION
eth0      ethernet  connected  Ethernet0
wlan0     wifi      disconnected --
eth1      ethernet  unavailable --
cdc-wdm0  gsm       unavailable --
lo        loopback  unmanaged  --
aaeon@SRG-3352C:~$
```

### 3.4.5. Enter Bluetooth Control Panel

✓ Command:  
**\$ sudo bluetoothctl**

### 3.4.6. Scan Bluetooth Devices

✓ Command:  
**\$ power on**  
**\$ scan on**

✓ Result:

```
linkence@SPG-3352x:~$ sudo bluetoothctl
Agent registered
[bluetooth]# power on
Changing power on succeeded
[bluetooth]# scan on
Discovery started
[CHG] Controller 0C:1C:57:83:73:D7 Discovering: yes
[NEW] Device 78:B7:1D:B1:B2:B8 78-B7-1D-B1-B2-B8
[bluetooth]#
```

### 3.4.7. Pair Bluetooth Device

- ✓ Command:  
`$ pair MAC_ID`  
**MAC\_ID**-> Bluetooth MAC ID for device you want to connect

- ✓ Result:

```
[bluetooth]# pair E8:6F:38:83:CF:10
Attempting to pair with E8:6F:38:83:CF:10
[CHG] Device E8:6F:38:83:CF:10 Connected: yes
Request confirmation
[agent] Confirm passkey 656573 (yes/no): yes
[CHG] Device E8:6F:38:83:CF:10 ServicesResolved: yes
[CHG] Device E8:6F:38:83:CF:10 Paired: yes
Pairing successful
```

### 3.4.8. Check Paired Bluetooth Devices

- ✓ Command:  
`$ paired-devices`

- ✓ Result:

```
[DESKTOP-6E636SN]# paired-devices
Device E8:6F:38:83:CF:10 DESKTOP-6E636SN
```

### 3.4.9. leave Bluetooth mode

- ✓ Command:  
`$ exit`

## 3.5. System Management

This section details how to check and setup the system settings like OS version, set RTC, etc.

### 3.5.1. Check OS Version

- ✓ Command:

```
$ cat /etc/os-release
```

- ✓ Result:

```
linkence@SPG-3352x:~$ cat /etc/os-release
PRETTY_NAME="Debian GNU/Linux 10 (buster)"
NAME="Debian GNU/Linux"
VERSION_ID="10"
VERSION="10 (buster)"
VERSION_CODENAME=buster
ID=debian
HOME_URL="https://www.debian.org/"
SUPPORT_URL="https://www.debian.org/support"
BUG_REPORT_URL="https://bugs.debian.org/"
IMAGE_UUID="569ea01c-30c8-4253-85ec-603baf5f2f3d"
BUILD_ID="v2.2.1"
BUILD_DATE="2023/09/13"
VARIANT="SRG-3352x Debian Buster image"
VARIANT_VERSION="2.2.1"
linkence@SPG-3352x:~$
```

### 3.5.2. Check Storage Status

- ✓ Command:

```
$ df -h
```

- ✓ Result:

```
linkence@SPG-3352x:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            470M   0  470M   0% /dev
tmpfs           100M  3.1M   97M   4% /run
overlay         13G   148M  12G   2% /
tmpfs           497M   0  497M   0% /dev/shm
tmpfs           5.0M   0  5.0M   0% /run/lock
tmpfs           497M   0  497M   0% /sys/fs/cgroup
tmpfs           497M   0  497M   0% /var/volatile
/dev/mmcbblk1p2 58M   21M   33M  39% /boot
tmpfs           100M   0  100M   0% /run/user/1000
```

### 3.5.3. Shutdown the System

- ✓ Command:  
**\$ sudo shutdown now**

### 3.5.4. Set Date and Time

- Check current Date and Time

- ✓ Command:  
**\$ timedatectl**

- ✓ Result:

```
linkence@SPG-3352x:~$ timedatectl
          Local time: Fri 2023-11-10 05:41:33 UTC
          Universal time: Fri 2023-11-10 05:41:33 UTC
             RTC time: Fri 2023-11-10 05:41:34
             Time zone: Etc/UTC (UTC, +0000)
System clock synchronized: yes
              NTP service: inactive
          RTC in local TZ: no
```

- Set Date and Time

- ✓ Command:  
**\$ sudo date MMDDhhmmYYYY**

**MM**-> Month

**DD**-> Date

**hh**-> Hour

**mm**-> Minute

**YYYY**-> Year

- ✓ Result:

```
linkence@SPG-3352x:~$ sudo date 111005412022
Thu 10 Nov 2022 05:41:00 AM UTC
linkence@SPG-3352x:~$ timedatectl
          Local time: Thu 2022-11-10 05:41:03 UTC
          Universal time: Thu 2022-11-10 05:41:03 UTC
             RTC time: Fri 2023-11-10 05:54:22
             Time zone: Etc/UTC (UTC, +0000)
System clock synchronized: no
              NTP service: inactive
          RTC in local TZ: no
```

- Set NTP

- ✓ Command: install ntp package

**\$ sudo apt install ntp -y**

Set ntp

**\$ sudo timedatectl set-ntp true**

Restart ntp

**\$ sudo systemctl restart ntp**

### 3.6. I/O Management

This section details how to operate I/O functions like GPIO, RS-232/422/485, CAN bus etc.

#### 3.6.1. Control GPIO

- ✓ Command:  
Set GPIO ON:




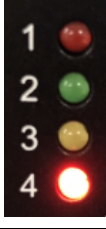
```
$ echo 1 > /sys/class/leds/srt3352:led1/brightness
```

Set GPIO OFF:

```
$ echo 0 > /sys/class/leds/srt3352:led1/brightness
```

- ✓ Result:

```
root@SRG-3352C:/home/aaeon# echo 1 > /sys/class/leds/srt3352:led1/brightness
root@SRG-3352C:/home/aaeon# echo 0 > /sys/class/leds/srt3352:led1/brightness
```

Number	Label	Picture	Number	Label	Picture
1 Red	led1		3 Yellow	led3	
2 Green	led2		4 Orange	ed4	

## 3.7. WiFi and Bluetooth Testing Methods

**Notice.** WiFi and BT share the same antenna and cannot be used at the same time. When using BT, if the connection condition is not good, you can manually turn off WiFi.

### 3.7.1. Turn on /off WiFi

- ✓ Command:

Turn off WiFi:

```
$ nmcli radio wifi off
```

Turn on WiFi:

```
$ nmcli radio wifi on
```

### 3.7.2. WiFi Testing Steps

- ✓ Command:

```
$ nmcli dev wifi
```

- ✓ Result:

```
aaeon@SRG-3352C:~$ nmcli dev wifi
IN-USE SSID          MODE  CHAN  RATE      SIGNAL  BARS  SECURITY
it/s 35  AAEON-Wireless  Infra  1    130 Mb
it/s 34  AAEON-Wireless-PEAP  Infra  1    130 Mb
it/s 32  --              Infra  9    270 Mb
it/s 27  LYDS           Infra  9    270 Mb
it/s 25  U_can't_see_me  Infra  6    65 Mbi
aaeon@SRG-3352C:~$
```



- ✓ Command:  
`$ sudo nmcli dev wifi connect 'dq' password '111222333'`

- ✓ Result:

```
aaeon@SRG-3352C:~$ nmcli dev wifi
IN-USE SSID MODE CHAN RATE SIGNAL BARS SECURITY
50 筧や埋__ WPA2
Aaeon-IOT Infra 5 270 Mbit/s
E14 筧 WPA2
```

```
aaeon@SRG-3352C:~$ sudo nmcli dev wifi connect 'dq' password '111222333'
[sudo] password for aaeon:
Device 'wlan0' successfully activated with '774e059f-c296-4290-b8bb-d6a951934f31'.
```

```
aaeon@SRG-3352C:~$ ifconfig
eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
ether 60:b6:e1:0e:97:48 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
device interrupt 50

eth1: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
ether 60:b6:e1:0e:97:4a txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.43.90 netmask 255.255.255.0 broadcast 192.168.43.255
inet6 fe80::7ee0:cf34:a018:3348 prefixlen 64 scopeid 0x20<link>
inet6 2402:7500:577:f337:478b:ad41:bab7:4961 prefixlen 64 scopeid 0x0<global>
ether 0c:1c:57:83:6e:1c txqueuelen 1000 (Ethernet)
RX packets 31 bytes 3799 (3.7 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 53 bytes 8378 (8.1 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

### 3.7.3. Bluetooth Testing Steps

- ✓ Command:

```
$ sudo bluetoothctl
```

```
[bluetooth]# power on
```

```
[bluetooth]# scan on
```

```
[bluetooth]# pair 80:45:DD:FD:DF:30
```

```
[agent] Confirm passkey 477177 (yes/no): yes
```

```
[ST-SV00086]# connect 80:45:DD:FD:DF:30
```

- ✓ Result:

```
aaeon@SRG-3352C:~$ sudo bluetoothctl
Agent registered
[bluetooth]# power on
Changing power on succeeded
[bluetooth]# scan on
Discovery started
[CHG] Controller 0C:1C:57:83:73:CB Discovering: yes
[NEW] Device 80:45:DD:FD:DF:30 ST-SV00086
[NEW] Device 58:BC:00:F4:68:F0 58-BC-00-F4-68-F0
[bluetooth]# pair 80:45:DD:FD:DF:30
Attempting to pair with 80:45:DD:FD:DF:30
[CHG] Device 80:45:DD:FD:DF:30 Connected: yes
Request confirmation
[agent] Confirm passkey 477177 (yes/no): yes
[ST-SV00086]# connect 80:45:DD:FD:DF:30
Attempting to connect to 80:45:DD:FD:DF:30
[CHG] Device 80:45:DD:FD:DF:30 UUIDs: 0000110a-0000-1000-8000-00805f9b34fb
[CHG] Device 80:45:DD:FD:DF:30 UUIDs: 0000110c-0000-1000-8000-00805f9b34fb
[CHG] Device 80:45:DD:FD:DF:30 UUIDs: 0000110e-0000-1000-8000-00805f9b34fb
[CHG] Device 80:45:DD:FD:DF:30 UUIDs: 0000110b-0000-1000-8000-00805f9b34fb
[CHG] Device 80:45:DD:FD:DF:30 UUIDs: 0000111f-0000-1000-8000-00805f9b34fb
[CHG] Device 80:45:DD:FD:DF:30 UUIDs: 0000111e-0000-1000-8000-00805f9b34fb
[ST-SV00086]#
```

- Delete a connected paired device
- ✓ Command:  
[ST-SV00086]# **disconnect 80:45:DD:FD:DF:30**  
[ST-SV00086]# **remove 80:45:DD:FD:DF:30**

- ✓ Result:

```
[ST-SV00086]# disconnect 80:45:DD:FD:DF:30
Attempting to disconnect from 80:45:DD:FD:DF:30
Successful disconnected
[CHG] Device 80:45:DD:FD:DF:30 Connected: no
```

```
[bluetooth]# remove 80:45:DD:FD:DF:30
[DEL] Device 80:45:DD:FD:DF:30 ST-SV00086
Device has been removed
[bluetooth]#
```

## **Acrosser Technology Inc.**

Copyright © 2023 Acrosser Technology Inc., All right reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language, in any form by any means, without the written permission of Acrosser Technology Inc.. Acrosser Technology Inc. reserves the right to modify or discontinue any product or piece of literature at anytime without prior notice.