VOSIO x62 5G Dongle



User Manual

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1. Foreword

1.1 Introduction

This document describes the VOSIO x62 5G Dongle product detail specification and user manual. It helps you quickly retrieve product specifications, electrical, product functions and product usage details.

1.2 Safety Information

The following safety precautions must be observed during all phases of operation, such as usage, service or repair of any cellular terminal or mobile incorporating with 5G Dongle. Manufacturers of the cellular terminal should send the following safety information to users and operating personnel and incorporate these guidelines into all manuals supplied with the product. If not so, VOSIO x62 assumes no liability for customers' failure to comply with these precautions.



Full attention must be given to driving at all times in order to reduce the risk of an accident. Using a mobile while driving (even with a hands' free kit) causes distraction and can lead to an accident. Please comply with laws and regulations restricting the use of wireless devices while driving.



Switch off the cellular terminal or mobile before boarding an aircraft. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communication systems. If the device offers an Airplane Mode, then it should be enabled prior to boarding an aircraft. Please consult the airline staff for more restrictions on the use of wireless devices on boarding the aircraft.



Wireless devices may cause interference on sensitive medical equipment, so please be aware of the restrictions on the use of wireless devices when in hospitals, clinics or other healthcare facilities.



Cellular terminals or mobiles operating over radio signals and cellular network cannot be guaranteed to connect in all possible conditions (for example, with unpaid bills or with an invalid (U) SIM card). When emergent help is needed in such conditions, please remember using emergency call. In order to make or receive a call, the cellular terminal or mobile must be switched on in a service area with adequate cellular signal strength.



The cellular terminal or mobile contains a transmitter and receiver. When it is ON, it receives and transmits radio frequency signals. RF interference can occur if it is used close to TV set, radio, computer or other electric equipment.



In locations with potentially explosive atmospheres, obey all posted signs to turn off wireless devices such as your phone or other cellular terminals. Areas with potentially explosive atmospheres include fueling areas, below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles such as grain, dust or metal powders, etc.

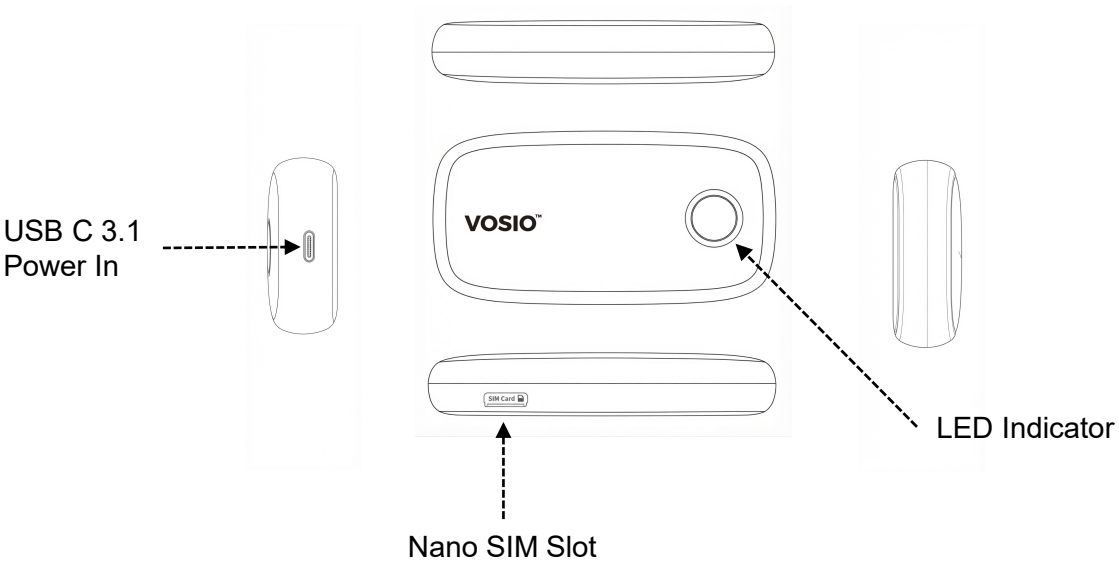
1.3 Device information

VOSIO x62 5G Dongle embedded with Qualcomm SDX62 5G Modem-RF System is a highly integrated 5G NR FR1 wireless communication module that adopts standard USB 3.1 Type-C interface as the dongle device and backward supports with NR/LTE system. It is applicable to most broadband communication networks of the mobile operator across the world.

Specification		
Platform	Qualcomm SDX62 ARM Cortex-A7 @1.7GHz	
Memory	4Gb LPDDR4X with 4Gb NAND Flash	
Operating Band(NA)	5G : n2/5/12/14/25/30/41/48/66/70/71/77	
	4G : B2/4/5/12/13/29/30/41/46/48/66/71	
Network option	SA	
	NSA	
Downlink	LTE	LTE CAT19; MIMO 4x4
	5G sub-6	Max BW 100MHz; MIMO 4x4
Uplink	LTE	LTE CAT18
	5G sub-6	Max BW 100MHz; MIMO 2x2
Carrier aggregation	ULCA, DLCA and EN-DC	
SRS antenna switching	n77: 1T2R(NSA) + 2T4R(SA)	
Power Supply	USB-C 3.1 power supply	
Temperature	Operating temperature :14°F ~ 122°F	
Physical characteristics	Interface: USB Type C, Nano-SIM, LED Indicators	
	Dimension: 3.86 x 1.97 x 0.7 inch	
	Weight: 0.15 lbs	
Software		
Driver	Windows 10 or higher, macOS 10.13 or higher, Linux Ubuntu 16.04 or higher , ChromeOS and iPadOS	
AT commands	3GPP TS 27.007 and 27.005	

2. Device

2.1 Device ID & Interface



2.2 Device LED Status

Dongle has 4 colors' LED status for below connection situations shows by tow.

LED Indicator Table

Situation	5G (Blue) PC/Laptop Max. Output Power: 3A	LTE (Green) PC/Laptop Max. Output Power: 1.5A	(Yellow) PC/Laptop Max. Output Power:900mA	PWR(Red)
Power On	Off	Off	Off	On (Solid 3~5 secs.)
USB-C Output	On (Solid 3~5 secs.)	On (Solid 3~5 secs.)	On (Solid 3~5 secs.)	Off
Search Network	Blue and Green Flashing (0.3 seconds interval)			Off
Network Connected (No Data Transmit)	Solid (Blue)	Solid (Green)	Solid (Yellow)	Off
Data Transmit <100Mbps	Slow Blink	Slow Blink	Slow Blink	Off
Data Transmit >100Mbps	Fast Blink	Fast Blink	Fast Blink	Off
FW Update	Off	Off	Off	Fast Blink
Error	Off	Off	Off	Slow Blink

NOTE :

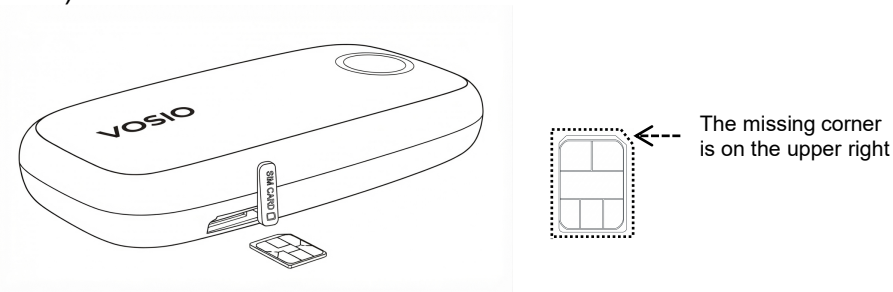
1. LED shows priority 5G > 4G/LTE (shows only 1 color when connected to 5G and LTE at the same time)
2. PC/Laptop Output Current lower than 900mA, shows only Yellow. (If the power supply of VOSIO x62 is lower than 900ma, VOSIO x62 works but may be disconnected or reboot continuously during the use.)

3. Connectivity

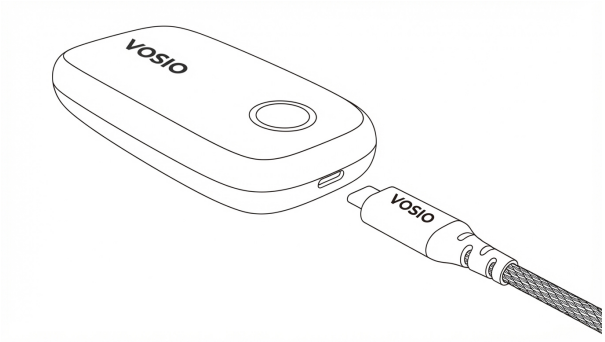
VOSIO x62 5G Dongle uses USB 3.1 Type C to Type C cable to link dongle & various host. Need to use the certified cable in box to retrieve the best performance.

NOTE : Please do not use any other type of cable with Type C adapter to link the dongle and various host.

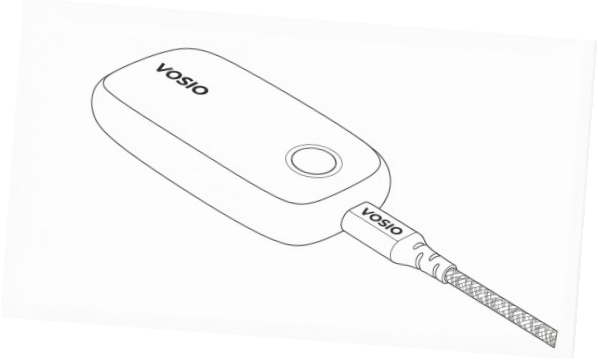
Step 1 : Use your fingernail or the corner of the SIM card to open the SIM slot cover. Insert Nano-SIM (Push In ; Push Out)



Step 2 : USB Cable



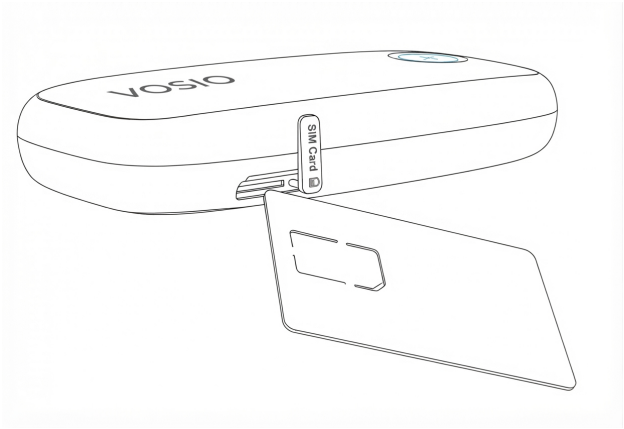
Step 3 : Plug in to the Host which is like Laptop, Desktop, IPC or iPad … etc.



NOTE : Make sure the cable is well-plugged in device side before connected to Host I/O.

NOTE :

If the Nano SIM card is hard to push-in and push-out with finger, user can use the SIM card adapter enclosed with the nano SIM card or credit card corner to push the nano SIM card in and out.



3.1 Host OS by Windows

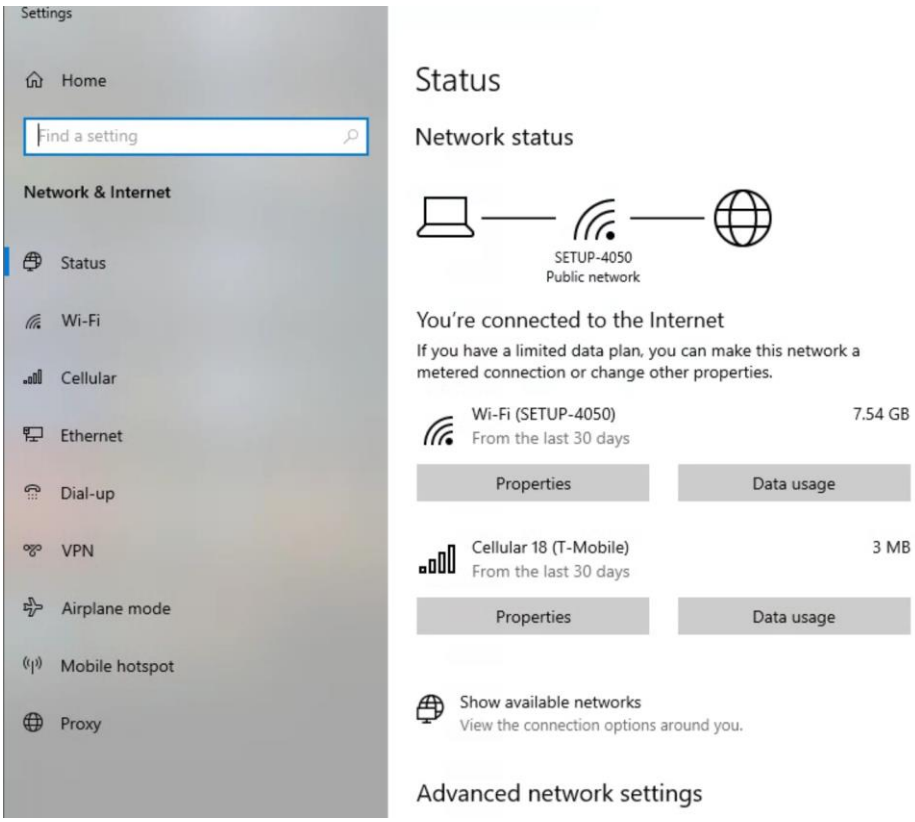
3.1.1 Windows UI & Setting

Dongle will boot and register to network automatically after connect to host. You can check the network status by click “internet access” icon.



NOTE : VOSIO x62 5G supports various OS, the default connection mode is MBIM, users can only see the icon of network on Windows. If you need to configure the network, you should switch to RNDIS mode or run VOSIO x62 5G on macOS so that you can update the related network configuration on Web Portal. Web Portal access, please refer to section: 3.2.2.1 RNDIS Mode Web Portal access.

In the Network & Internet Settings (Windows Settings), you can see the overview of network status



3.1.2 Connection Mode Switching

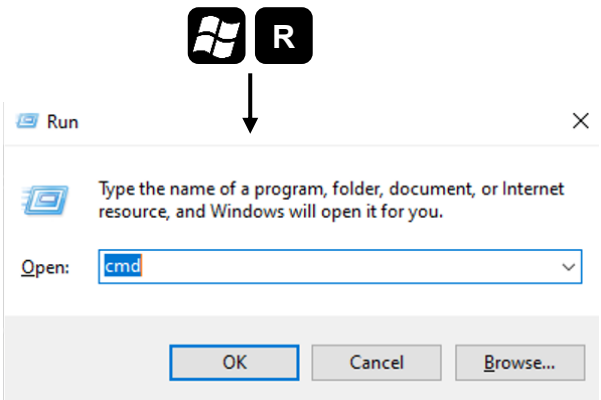
Dongle supports two modes. The default mode of the VOSIO x62 5G is MBIM on Windows. (macOS users can skip this section). To use the Android debugging bridge command to switch connection mode to RNDIS, under RNDIS mode can check VOSIO x62 5G Web Portal on Windows. The steps for switching mode are as follows:

Step 1 : Call out “Command Prompt” system.

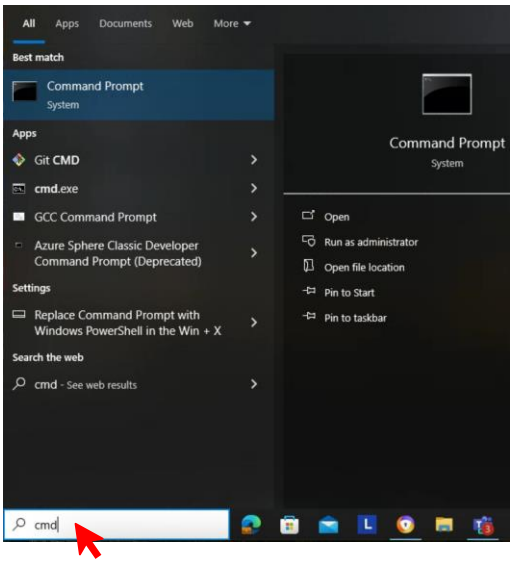
Method#1. Press the  keys on the keyboard at the same time, then enter “cmd”.

Method#2. Search “cmd” on Windows search bar, click “Command Prompt” app

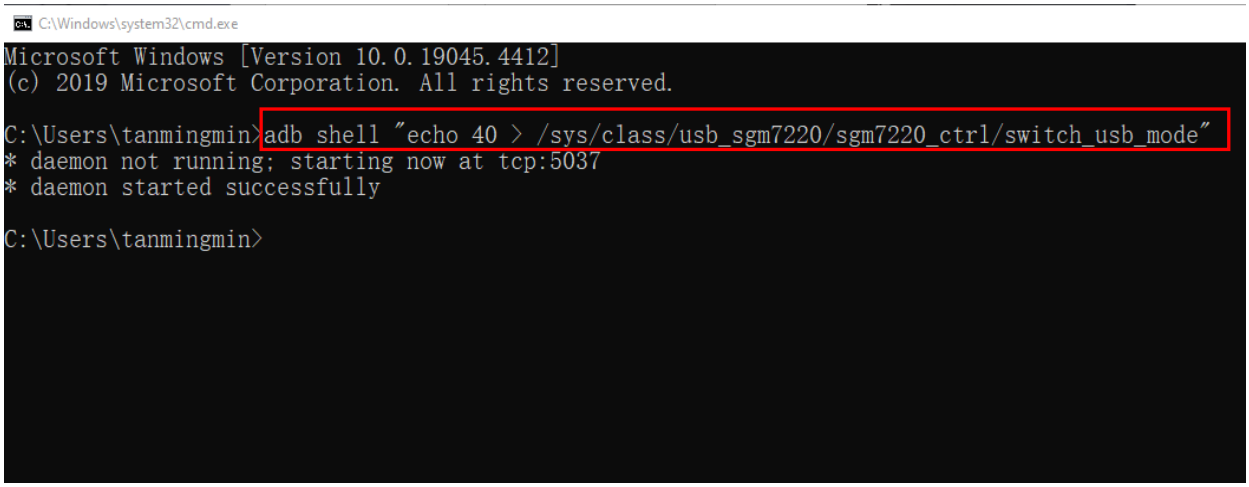
Method#1



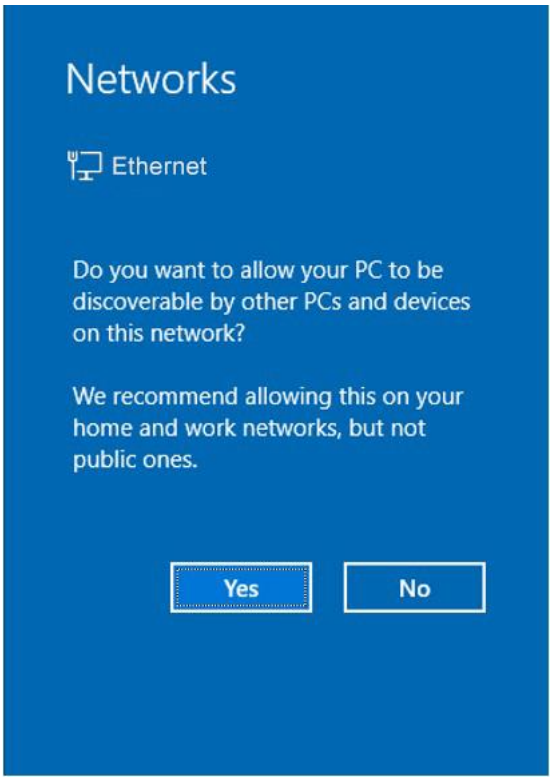
Method#2



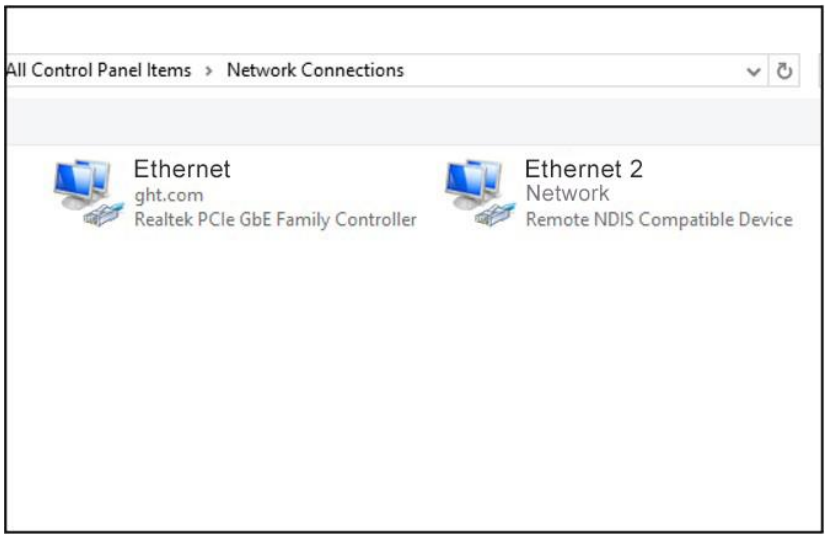
Step 2 : Copy the following command and past to “Command Prompt” and RUN
adb shell "echo 40 > /sys/class/usb_sgm7220/sgm7220_ctrl/switch_usb_mode”
to switch from MBIM to RNDIS mode.



After this command is applied, a network connection window will pop up. Click Yes to allow your PC to be discoverable by other PCs and devices on this network.



Then you will get a network card in RNDIS mode as shown in Figure.

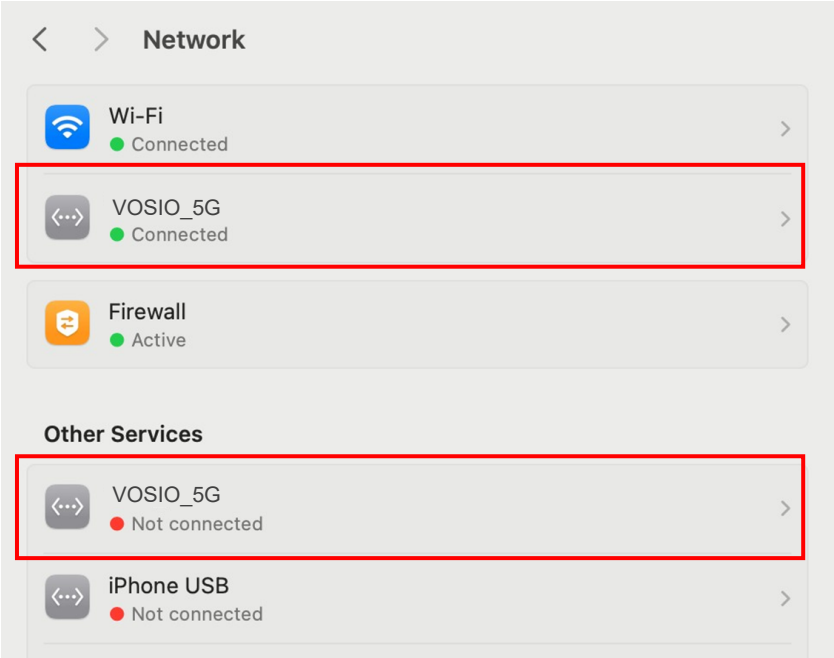


Note: 1. Web setting, please go to Page#12, section 3.2.2 Web UI Setting
2. Re-plug the 5G dongle to restore the default MBIM mode

3.2 Host OS by macOS

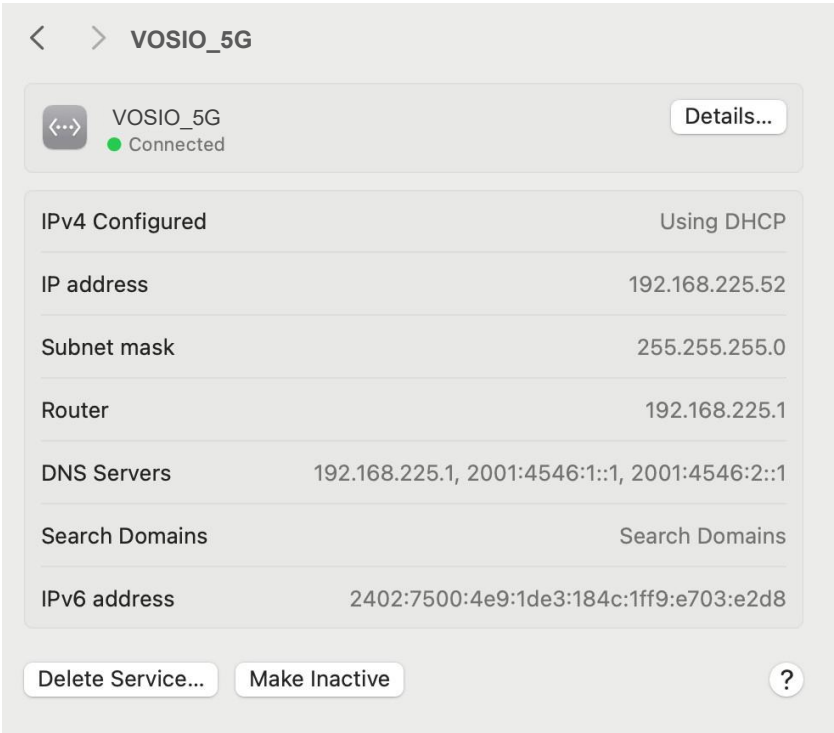
3.2.1 MacBook Setting UI

VOSIO x62 5G Dongle will boot and register to network automatically after connect to host. You can see connection detail by checking “Network”, and check network configuration on “Detailed Information”.



Notice:
In macOS, if you have connected to two or more VOSIO x62 5G dongles, your connected devices name will be automatically numbered sequentially.

Ex.
VOSIO_5G
VOSIO_5G 2



Note: We also provide WEB Portal based configuration utility for macOS, you can refer to configuration utility section on 3.2.2.1 RNDIS Mode Web Portal access.

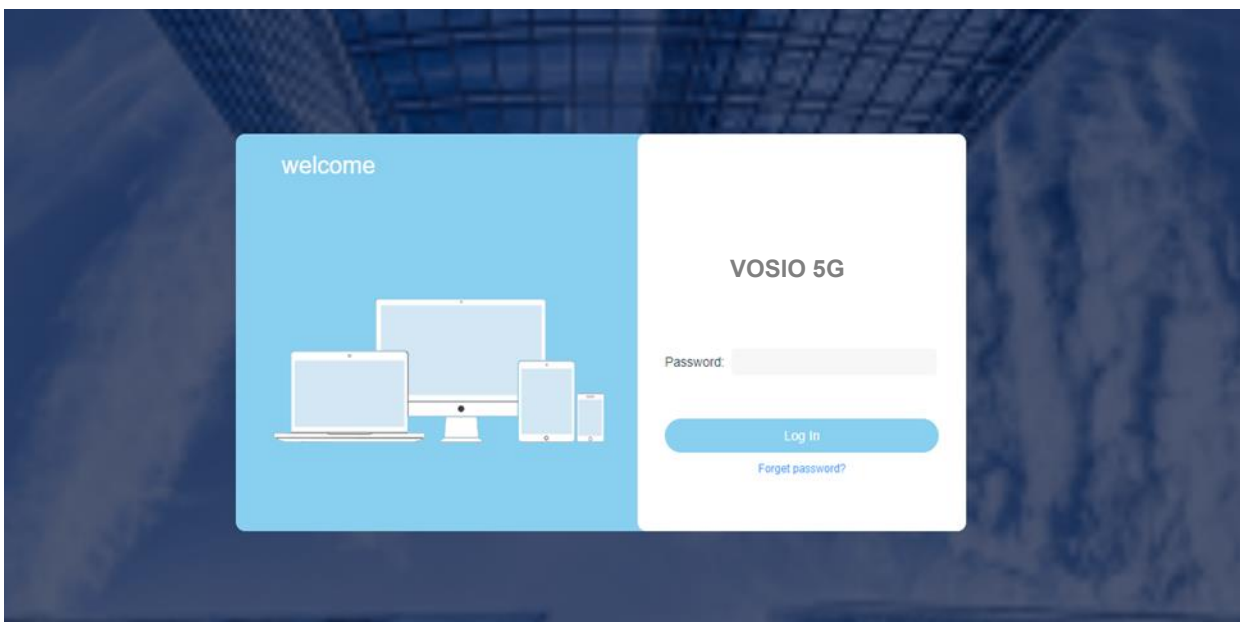
3.2.2 Web UI Setting

3.2.2.1 RNDIS Mode Web Portal access

Dongle also have RNDIS Mode. For connection management, we provide a WEB based configuration utility for users to customize connection configuration. To access the configuration utility, first of all, open a web browser (such as Internet Explorer) and enter the IP address of the router, which is 192.168.1.1 by default. Then the web page might popup a warning page state ”Your connection is not private”, please click the “Advanced” to access the configuration utility.

Login

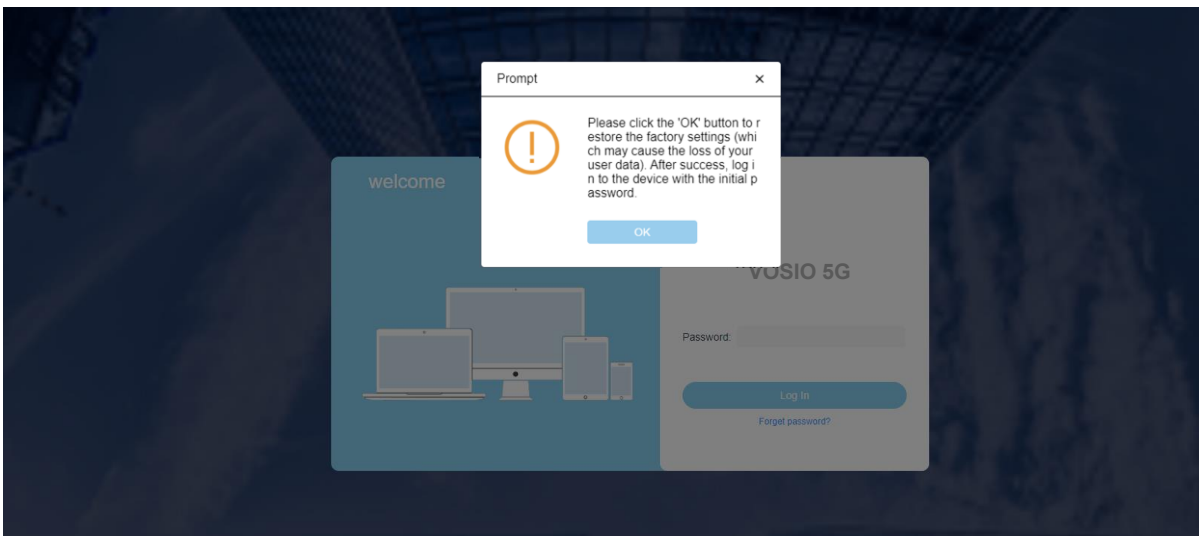
Once you have reached the configuration utility through your web browser, you will need to log in. There is no username option for page login, Enter the password “12345678” by default. So that you can enter login Operation interface successfully. System Languages support English, Spanish, Simplified Chinese, Traditional Chinese, Portuguese languages. You can switch the language on drop-down list.



If you failed in login web page, there are three chances to unlock, After three times of error, the second will be counted at the bottom of the page to indicate how long it is left to try. The locking time will not be accumulated, and it will be locked for 1 minute if it is wrong for three times.

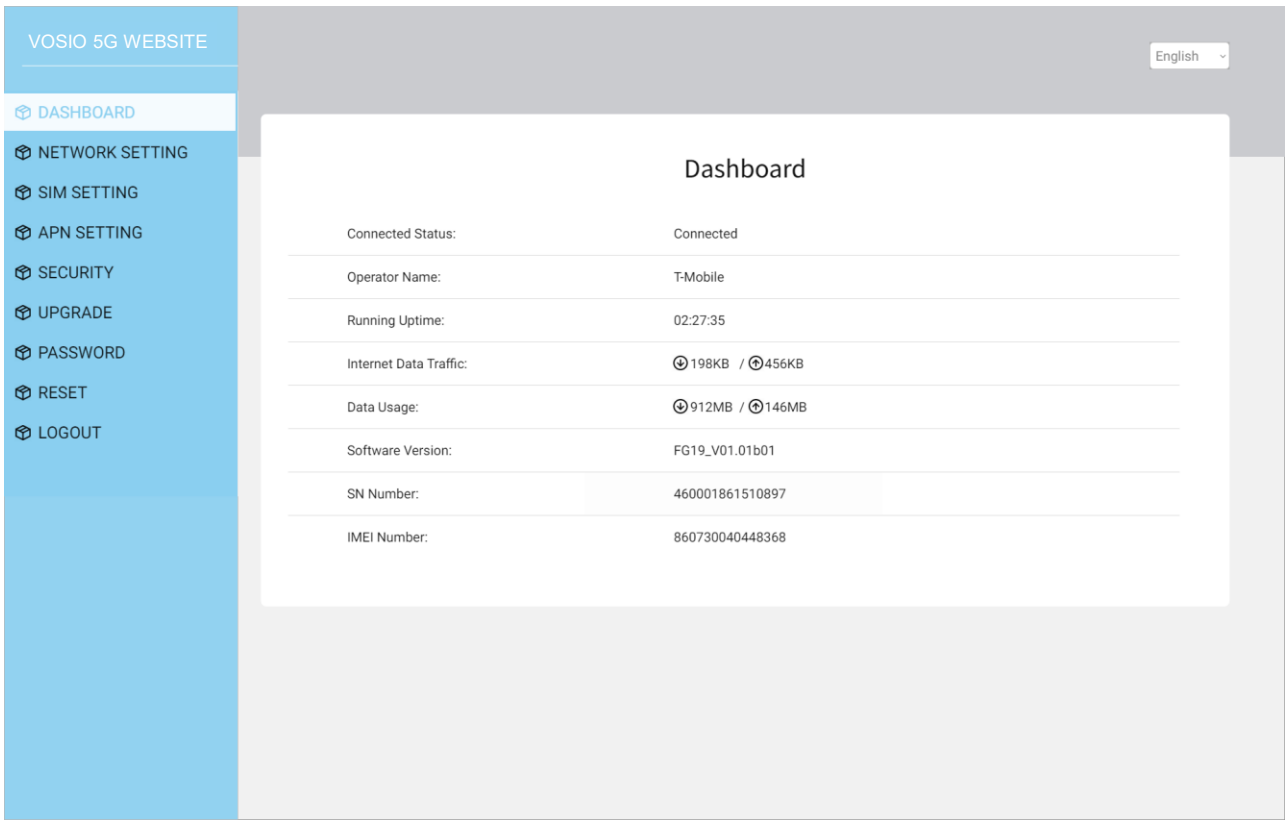


If you forget your password after modification, the page is set to click the "Forget password" section at the bottom of the password, and you will be prompted to restore the factory settings and restore the password to the initial password depends on the final version.



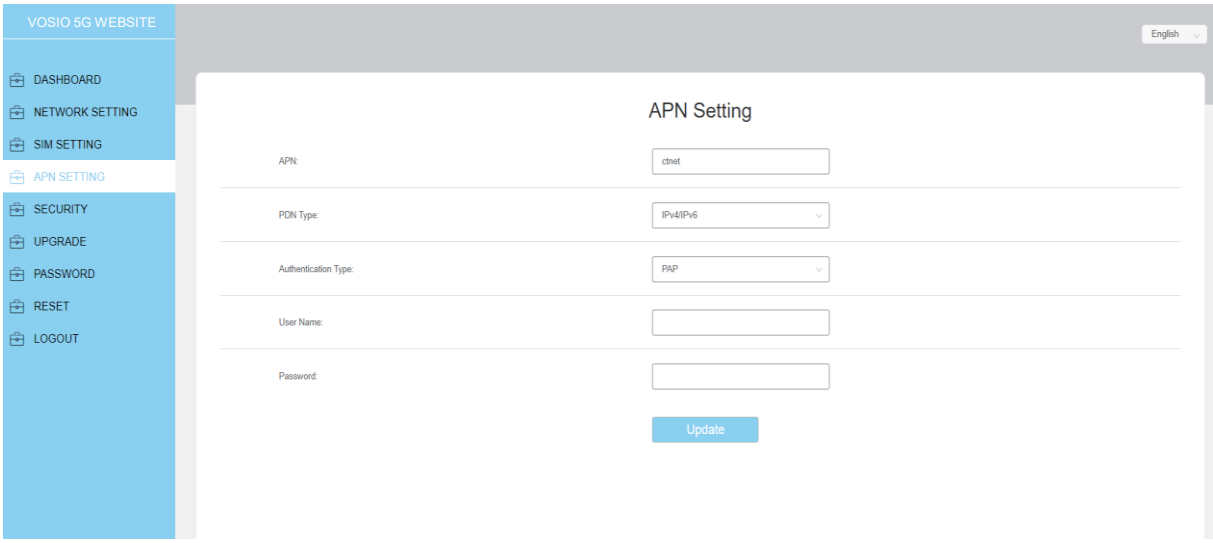
Dashboard

As you can see from the home page, it contains the following specific information about Dongle: Such as Connected Status, Operator Name, Running Uptime, Internet Data Traffic, Data Usage, Software Version and so on.



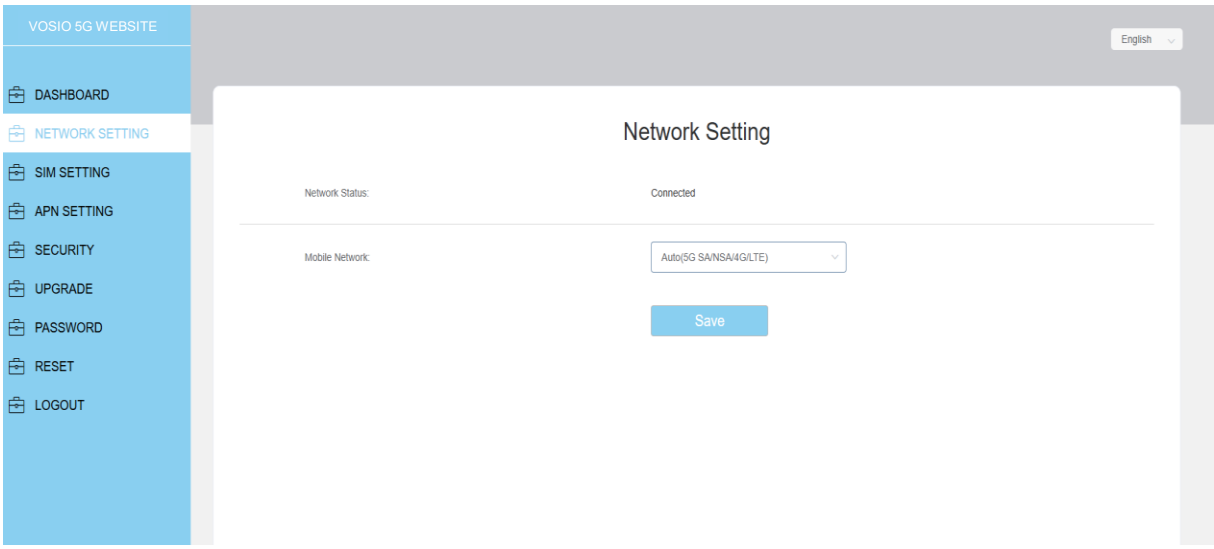
APN Setting

If you want to add a new APN profile, select the “PDN Type” (IPV4/IPV6/IPV4&IPV6) and “Authentication Type” (PAP/CHAP) which you need and enter profile data. Remember to “Update” when finished input.



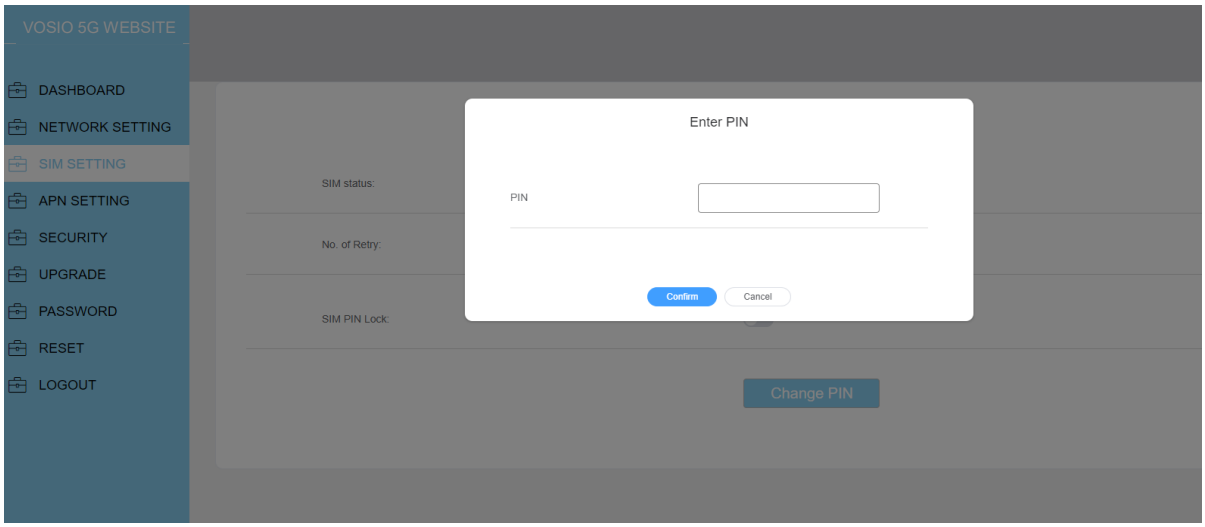
Network Setting

You can switch the network mode by selecting the network standard from the pull-down menu. Preference Networks: Select network type (4G/LTE only/5G only) and SA/NSA combination that you prefer to use. The default is automatic (5G SA/NSA/4G/LTE) Type.



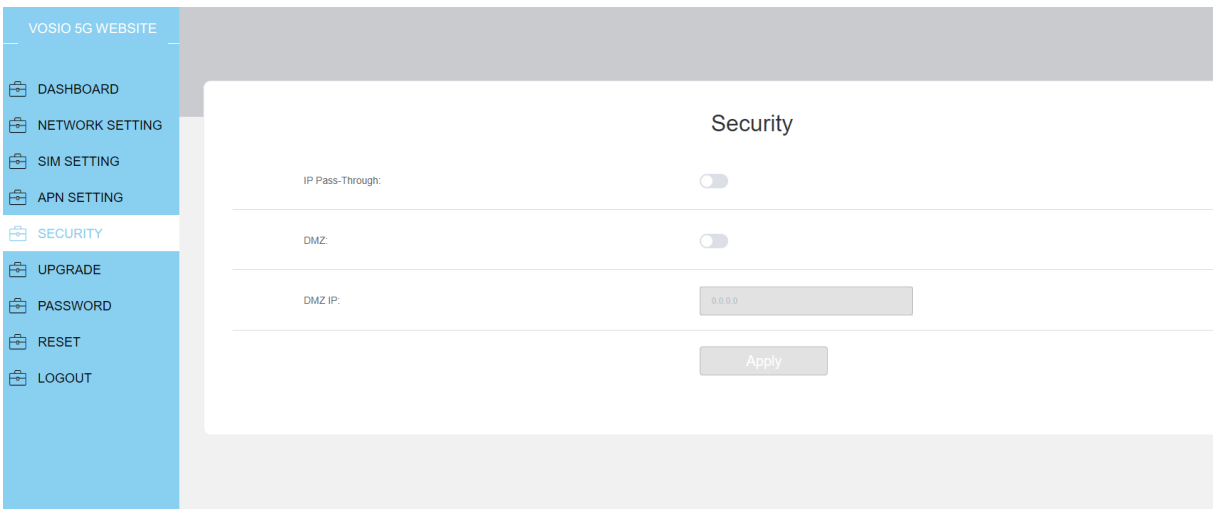
SIM Setting

You can turn on or off the SIM PIN Lock function by entering the SIM PIN code. After the PIN is wrong for three times, you need to reset the PIN code through PUK. PUK will lock the card after ten mistakes, then you need to contact your local operator for handling.



IP Pass-Through: IP Pass Through is disabled by default. In this case, the device assigns IP addresses to the PC. If you enable it, the IP address will be assigned directly from the carrier to the PC. Enabling or disabling this function does not affect the network status. Users can access the Internet normally. Note: If Dongle is unplugged again, it will remain in the last set state. For example, if you enter WebUI and set IPPT to on, plugging and unplugging Dongle IPPT will remain on.

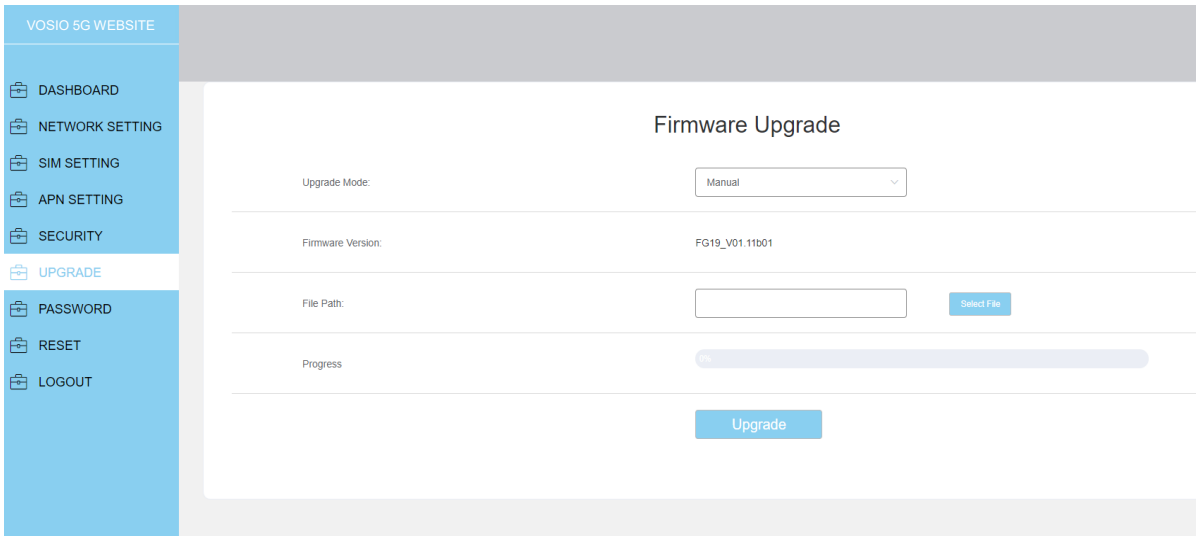
DMZ IP: Set the IP address of the local host, and the external network can access the services opened by this address. To enable DMZ, you need to click the button before entering the IP address. To close the DMZ, just click the button



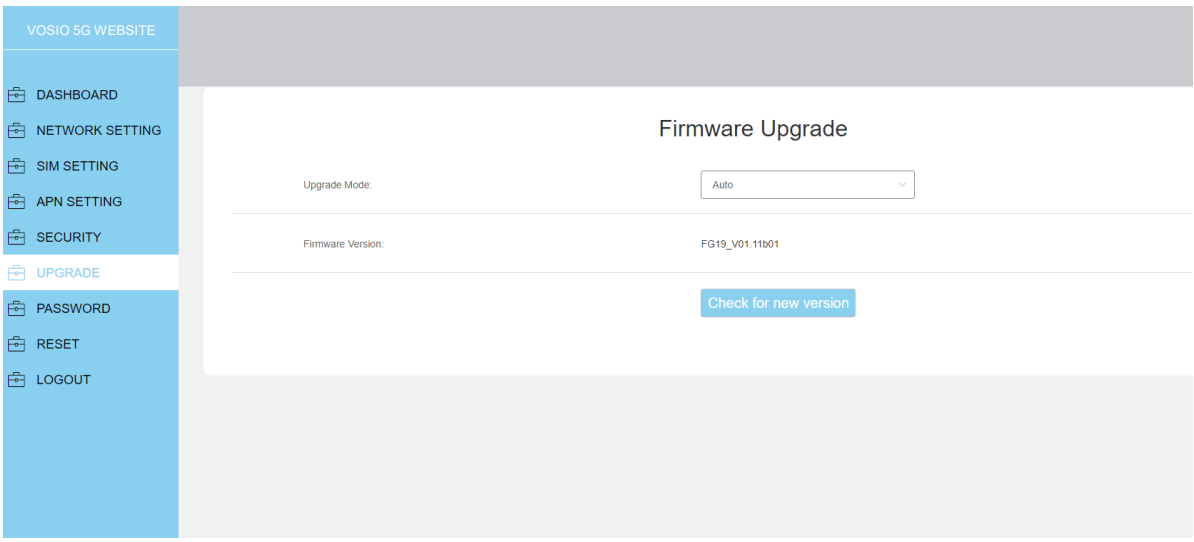
Firmware Upgrade

Firmware Version: Current Firmware (FW) version
Upgrade Mode: There are two ways to upgrade (Automatic & Manual)

Auto Upgrade: Checking server if there is a new FW to upgrade. It will start to upgrade Firmware if there has a new version. The version number will change according to the software upgrade. When Firmware upgrading, LED indicator will be RED fast flashing.



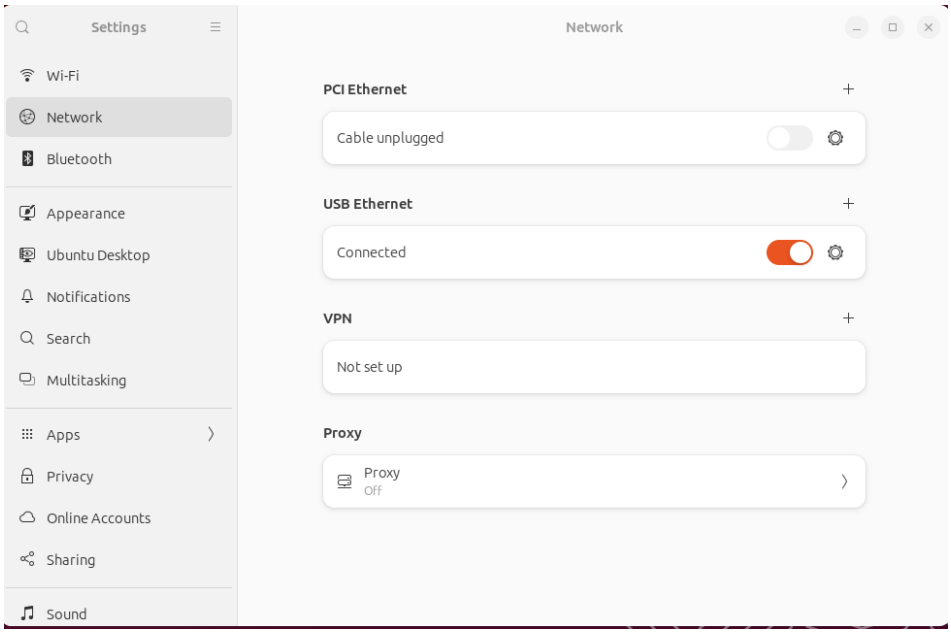
Manual Upgrade From Local: Select a firmware update package from computer, FW file need to be downloaded first.

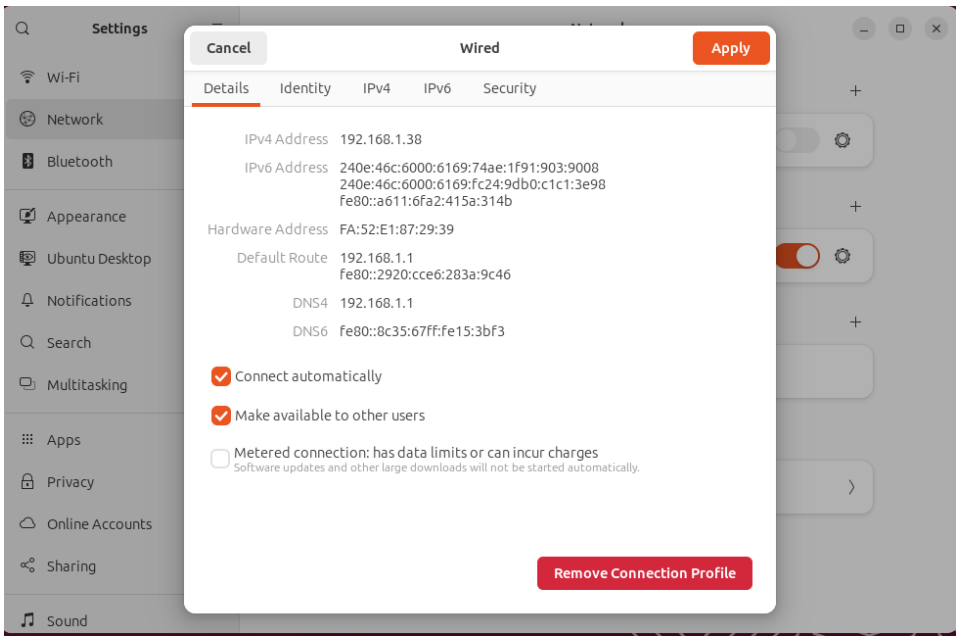


Note: During firmware update, you can find the Red Led light keep on.

3.3 Host OS by Linux

Dongle will boot and register to network automatically after connect to host. You can see “Connection Established” after dongle boot up and see the connection detail by checking “USB Ethernet”.



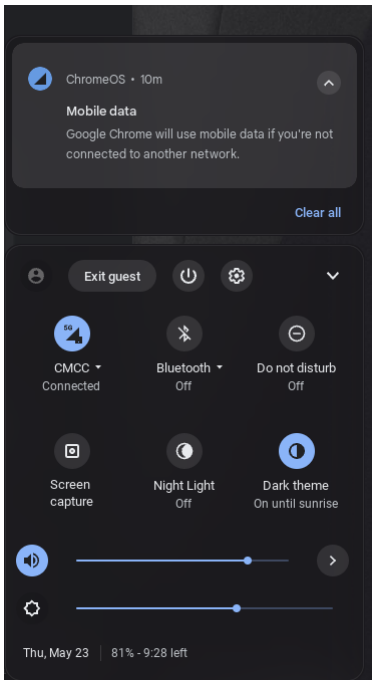


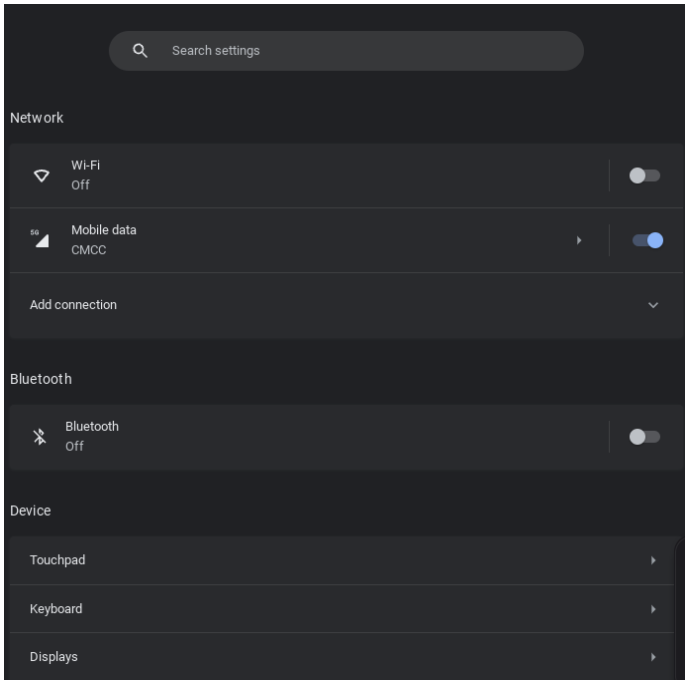
Note: We also provide WEB Portal based configuration utility for Linux, you can refer to configuration utility section on 3.2.2.1 RNDIS Mode Web Portal access.

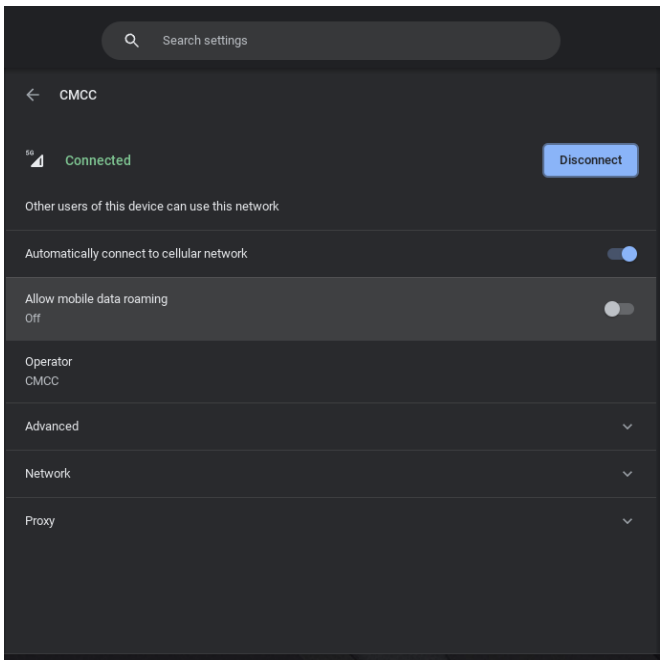
3.4 Host OS by ChromeOS

VOSIO x62 5G Dongle will boot and register to network automatically after connect to host. You can see connection detail by checking “Network”, and check network configuration on “Mobile data”.

Note: We also provide WEB Portal based configuration utility for ChromeOS, you can refer to configuration utility section on 3.2.2.1 RNDIS Mode Web Portal access.







Others:

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/ TV technician for help.

CAUTION:
Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. This device complies with Part 15 of the 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.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following " Contains Tri Cascade Inc. FCC ID: 2ACARVOS5G ".

RF Exposure warning:
This device meets the government’s requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. The exposure standard employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the EUT transmitting at the specified power level in different channels. To ensure that RF exposure levels remain at or below the tested levels, use a belt-clip, holster, or similar accessory that maintains a minimum separation distance of 5mm between your body and the device. SAR compliance of this product has only been verified for use with typical laptop computers. To comply with RF exposure limits, user must not simultaneously operate wireless products in adjacent USB- ports or card bus slots.