



L511 Series_EVB User Manual

LTE Module Series

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Version History

Date	Version	Modify records	Author
2022-06-14	V1.0	Initial	hb.fang
2022-07-20	V1.1	Change the picture	hb.fang
2023-02-22	V1.2	Update picture of the SUB	rc.dong

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1. Introduction

The L511_EVB is designed to help the developers to debug and test the L511 Series module. The following figure shows the label of the main functions of the L511_EVB. This document will describe the various parts of its functions in later chapters.

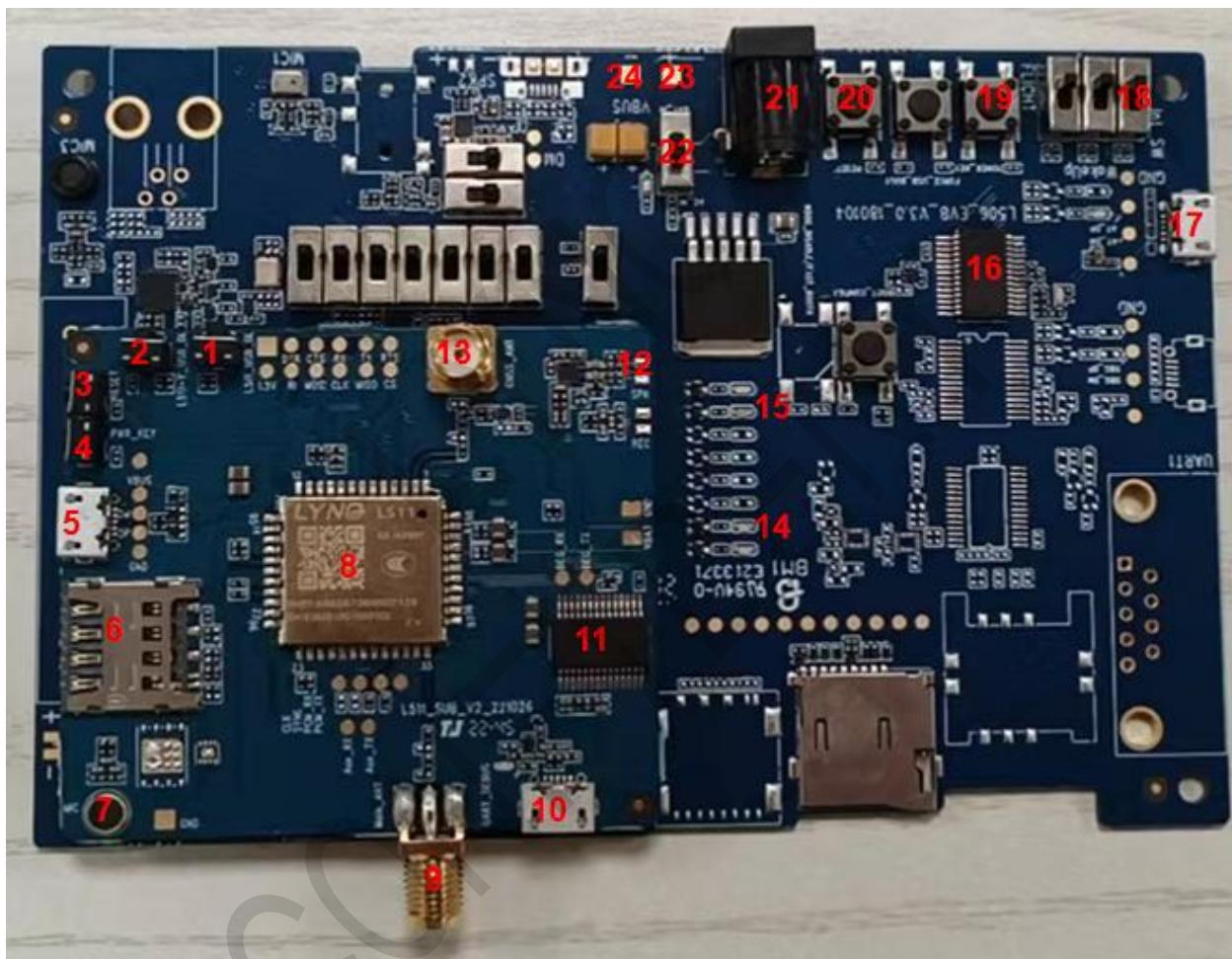


Figure 1-1 L511_EVB TOP View

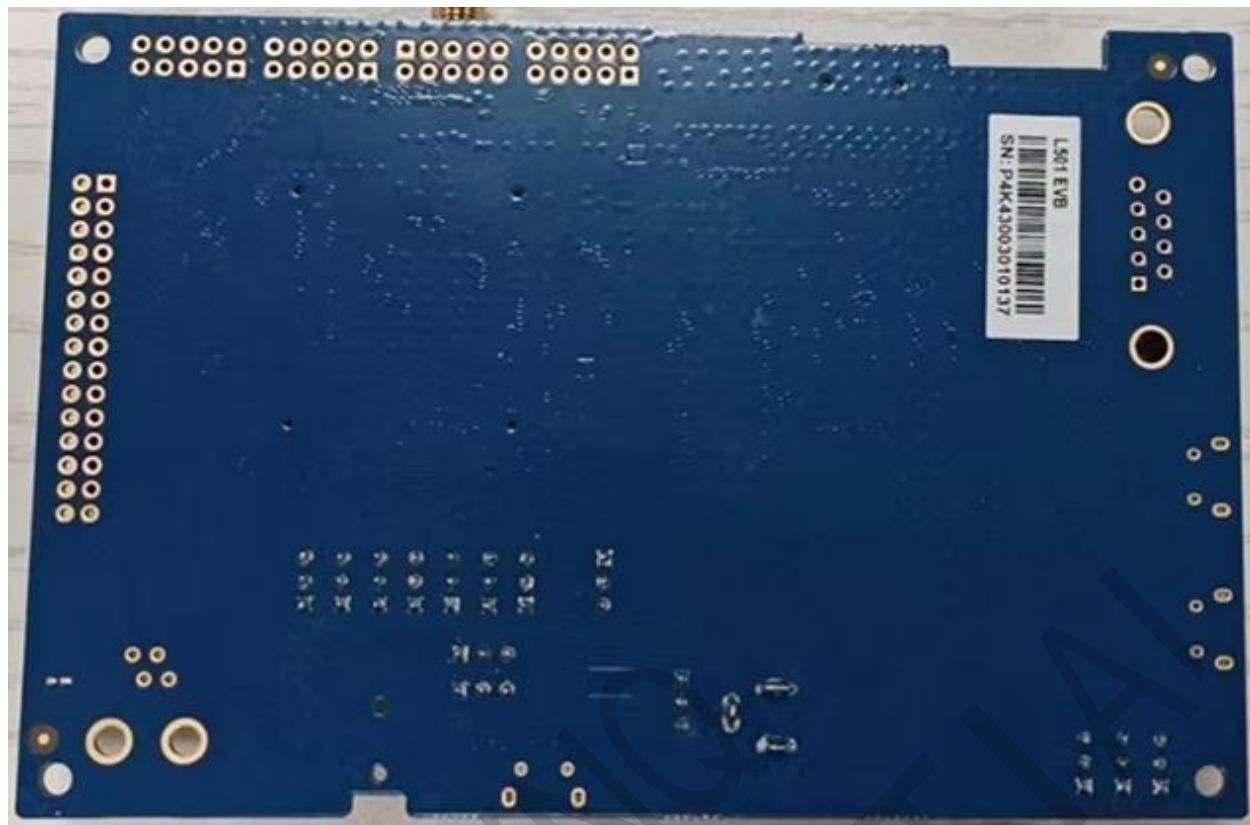


Figure 1-2 L511_EVB BOT View

Table 1-1 Label Description

1. FORCE_DOWNLOAD Key for L511C(N)/L511CS(N)/L511C-6L	2. FORCE_DOWNLOAD Key for L511C-Y	3. RESET Key
4. Power Key	5. 5pin Micro USB	6. (U)SIM Card
7. Cylindrical MIC	8. L511 Series Module	9. MAIN Antenna
10. 5pin Micro USB (Debug)	11. USB to UART IC	12. SPK Interface
13. GNSS Antenna	14. NET_STATUS LED	15. STATUS LED
16. USB to UART IC	17. 5pin Micro USB (AT Command)	18. DTR Switch
19. Power Key	20. RESET Key	21. DC5V
22. Power Switch	23. DC3.8V	24. GND

2. Function Introduction

2.1 Power Supply

The L511_EVB provides two kinds of power supply: DC5V adapter power supply and DC3.8V power supply. Customers can switch by controlling Power Switch. When the switch sets to the DC5V, it is powered by the DC5V adapter. When the switch sets to the DC3.8V, it is powered by the DC3.8V. As shown in the figure below.

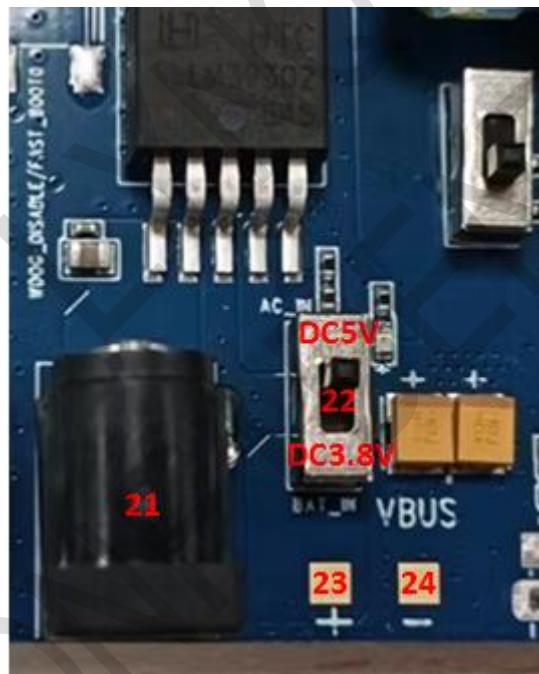


Figure 2.1-1 L511_EVB DC Power Interface and Power Switch

2.2 Power Key

The module can be turn on by pressing the power key for 1s.



Figure 2.2-1 Power Key

2.3 Force download key

When the force download key is pressed, the module will enter USB download mode. The L511C-Y can also use MAIN UART to upgrade firmware, and there is no need to use the force download key when using the MAIN UART to upgrade the firmware.



Figure 2.3-1 Force download key

2.4 RESET Key

Pressing the reset key, the L511C(N)/L511CS(N)/L511C-6L will restarted, and the L511C-Y will not restart after reset.



Figure 2.4-1 RESET Key

2.5 DTR Switch

The DTR switch can enable the module to enter sleep mode or Wake Up mode. The DTR switch is shown in Figure 2.5-1.

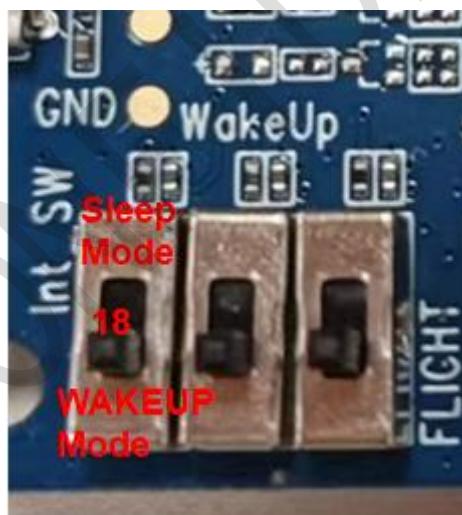


Figure 2.5-1 DTR Switch

2.6 Analog Audio Interface

The L511_EVB provides one MIC and one SPK. If you need to test the MIC and SPK functions, you need to solder the SPK device on the EVB. Only the L511C(N)/L511CS(N)/L511C-6L support analog audio.

2.7 Application Interface

2.7.1 USB to UART Interface

The L511_EVB provides two serial ports through serial USB to UART IC which converts the COMS 1.8V level of the L511 Series to a standard USB2.0 signal. Users can connect PC or other terminal equipment through USB cable for MAIN_UART communication and the default baud rate for the first boot is 115200bps. DBG_UART can be connected to the PC through the standard USB cable to debug, with a baud rate of 115200bps for the L511C(N)/L511CS(N)/L511C-6L and a baud rate of 3Mbps for the L511C-Y.

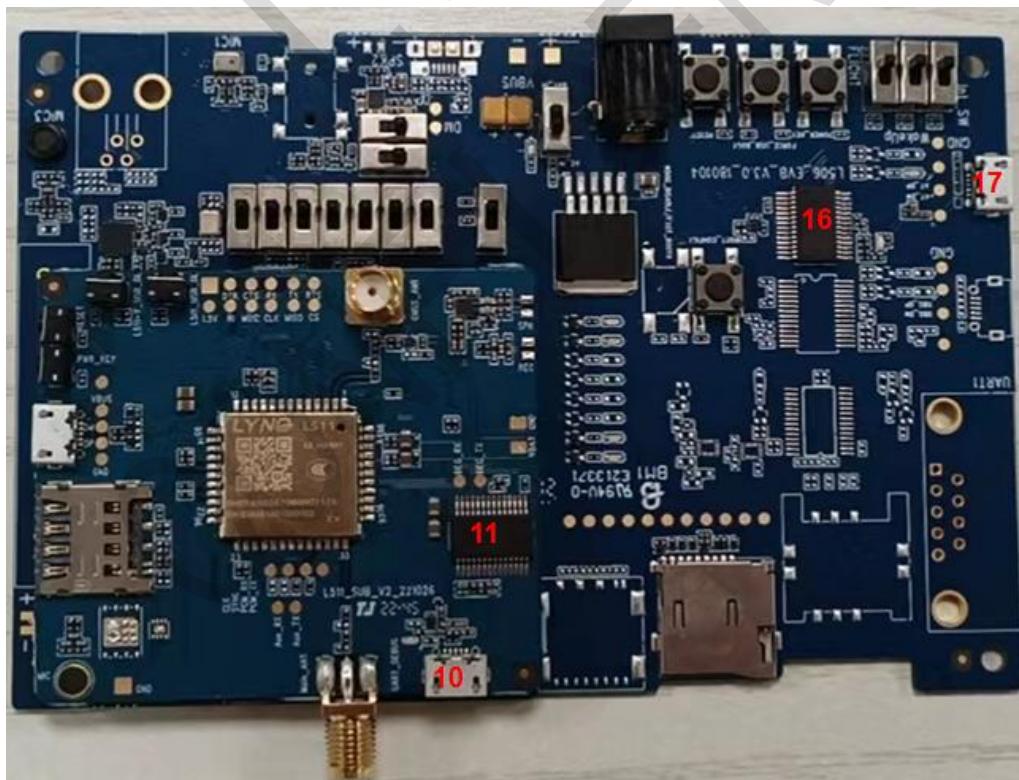


Figure 2.7.1-1 USB to UART Interface

2.7.2 USB Interface

The L511_EVB provides a standard Micro USB interface. The USB is mainly used for data transmission, firmware update, module program testing and send AT command.



Figure 2.7.2-1 USB Interface

2.7.3 (U)SIM Card

The L511_EVB provides one (U)SIM interface which can automatically identify 1.8V and 3V (U)SIM card.



Figure 2.7.3-1 (U)SIM Card

2.7.4 NET_STATUS

Table 2.7.4-1 NET_STATUS Status

LED Status	Module Status
OFF	Power off
64ms ON/800ms OFF	Shut down network
64ms ON/3000ms OFF	Registered network

2.8 Antenna Interface

The L511_EVB provides two antenna interfaces. One is the main antenna and the other is the GNSS antenna.



Figure 2.8-1 Antenna interface

3. EVB and Accessories

The EVB and its accessories are showed as follow figure which tell user how to connect them.



Figure 3-1 EVB and Accessories

4. USB to UART Driver

You need to install the driver of Micro-USB, when use Micro-USB for data communication. Please get the driver from our FAE of Mobiletek Company or download them from internet.

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5. Safety Information

For the reasonable usage of the module, please comply with all these safety notices of this page. The product manufacturers should send followed safety information to user, operator or product's spec.



The devices using the module may disturb some electronic equipment. Put the module away from the phone, TV, radio and automation equipment to avoid the module and the equipment to interfere with each other.



Shut down the mobile device or change to flying mode before boarding. The Using of wireless appliances in an aircraft is forbidden to avoid the interference, or else cause to unsafe flying, even violate the law.



In hospital or health care center, switch off the mobile devices. RF interference may damage the medical devices, like hearing-aid, cochlear implant and heart pacemaker etc.



Mobile devices can't guarantee to connect in all conditions, like no fee or with an invalid SIM card. When you need emergent help, please remember using emergency calls and make sure your device power on in an area with well signal.



Put the module away from inflammable gases. Switch off the mobile device when close to gas station, oil depot, chemical plant etc.



The module is not water proof. Please don't use the module in the area with high humidity like bathroom, which will decelerate the physical performance, insulation resistance and mechanical strength.



Non-professionals can't teardown the module which will damage it. Refer to the specification or communicate the related staffs to repair and maintain it.



Please switch on the module before cleaning. The staffs should be equipped with anti-ESD clothing and gloves.

The users and product manufacturers should abide by the national law of wireless modules and devices. If not, Mobiletek will not respond the related damages.

15.19 Labeling requirements.

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.

15.21 Changes or modification warning.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.105 Information to the user.

Note: 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

RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:

2.2 List of applicable FCC rules

This module has been tested for compliance to FCC Part 15

2.3 Summarize the specific operational use conditions

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

2.4 Limited module procedures

Not application

2.5 Trace antenna designs

Not application

2.6 RF exposure considerations

This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module. The antenna must be installed such that 20 cm can be maintained between the antenna and users.

Antenna Type(Dipole)	LTE band2/4/5/7/66 2.3dbi
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2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: "Contains FCC ID: 2AK9DL511-2". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

2.10 Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

As long as all conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Manual Information To the End User:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end

product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment