LILYGO T-A7670G R2

LILYGO T-A7670G R2 4G LTE CAT1 SIM Module ESP32 Development Board User Manual

Model: T-A7670G R2

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1. Introduction

This manual provides detailed instructions for the LILYGO T-A7670G R2 4G LTE CAT1 SIM Module ESP32 Development Board. This board integrates an ESP32-S3 microcontroller with a SIM7670G 4G LTE CAT1 module, offering robust wireless communication capabilities for various IoT applications. It supports GSM/GPRS/Edge networks and includes a TF card slot for storage. This specific variant is the A7670G without integrated GPS functionality.

2. Product Features

- **Integrated ESP32-S3 Microcontroller:** Provides powerful processing for IoT applications.
- **SIM7670G 4G LTE CAT1 Module:** Enables reliable 4G cellular connectivity.
- **Network Support:** Compatible with GSM/GPRS/Edge networks.
- **TF Card Slot:** For expandable storage.
- **Android RIL Support:** Compatible with Android 5.0/6.0/7.0/8.0/9.0.
- **USB Driver Support:** For Microsoft Windows 7/8/10, Linux, and Android.
- **Advanced Protocol Support:** Includes TCP/IP, IPV4/IPV6, Multi-PDP, FTP, FTPS, HTTP, HTTPS,

and DNS.

- **Additional Features:** Supports TLS, File System, LBS, FOTA, WWAN (RNDIS), and ECM.
- **Low Power Design:** Supports solar charging for extended operation.
- **18650 Battery Holder:** Integrated for portable power solutions.

3. Package Contents

Verify that all items are present in your package:

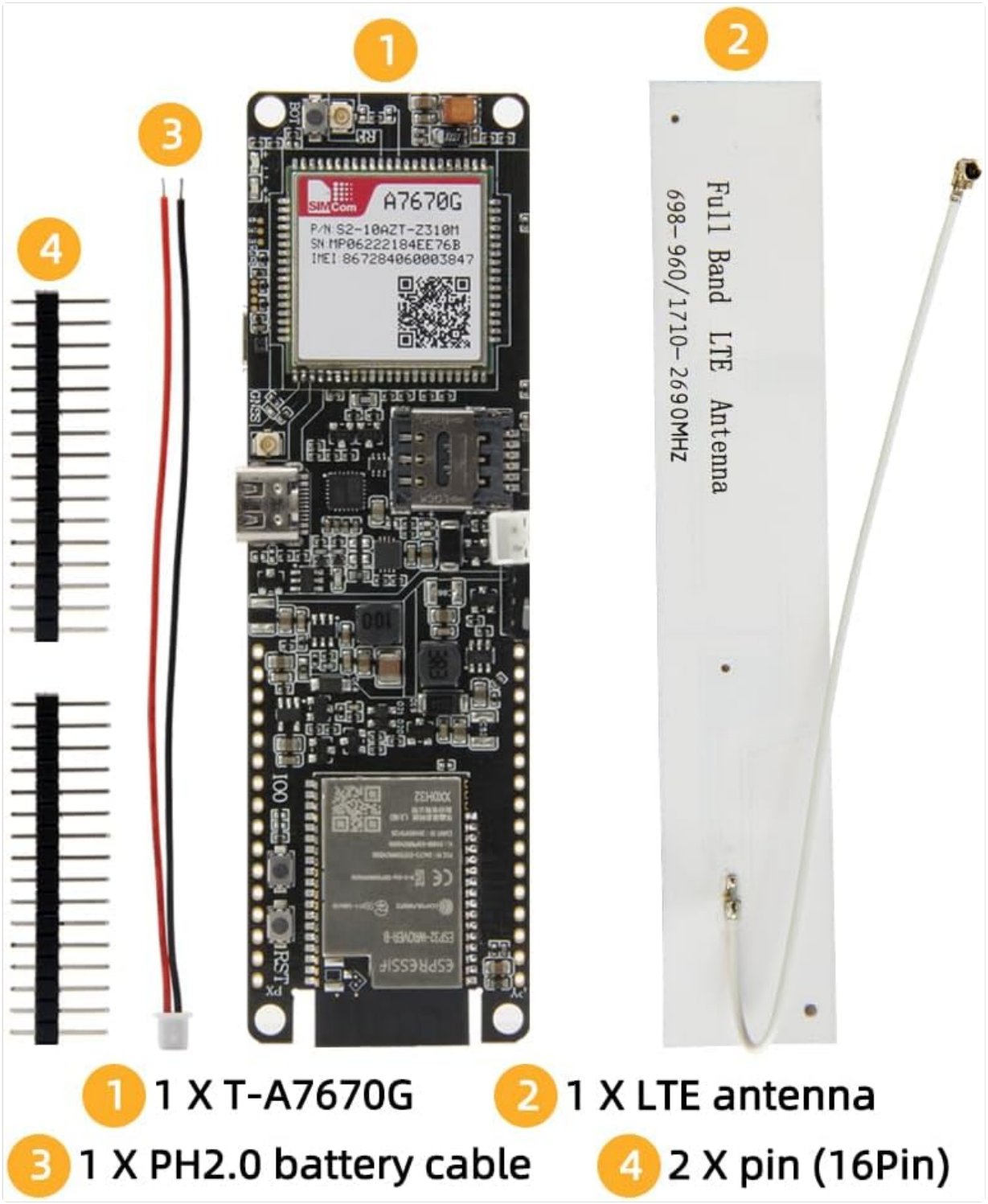

Image: LILYGO T-A7670G R2 development board kit contents.

1. 1 x LILYGO T-A7670G R2 Development Board
2. 1 x LTE Antenna

3. 1 x PH2.0 Battery Cable
4. 2 x 16-Pin Headers

4. Board Layout and Pinout

4.1. Board Overview

Image: Top view of the LILYGO T-A7670G R2 development board, showing the ESP32-S3 module, SIM7670G module, USB-C port, and SIM/TF card slots.

Image: Bottom view of the LILYGO T-A7670G R2 development board, featuring the integrated 18650 battery holder.

4.2. Dimensions

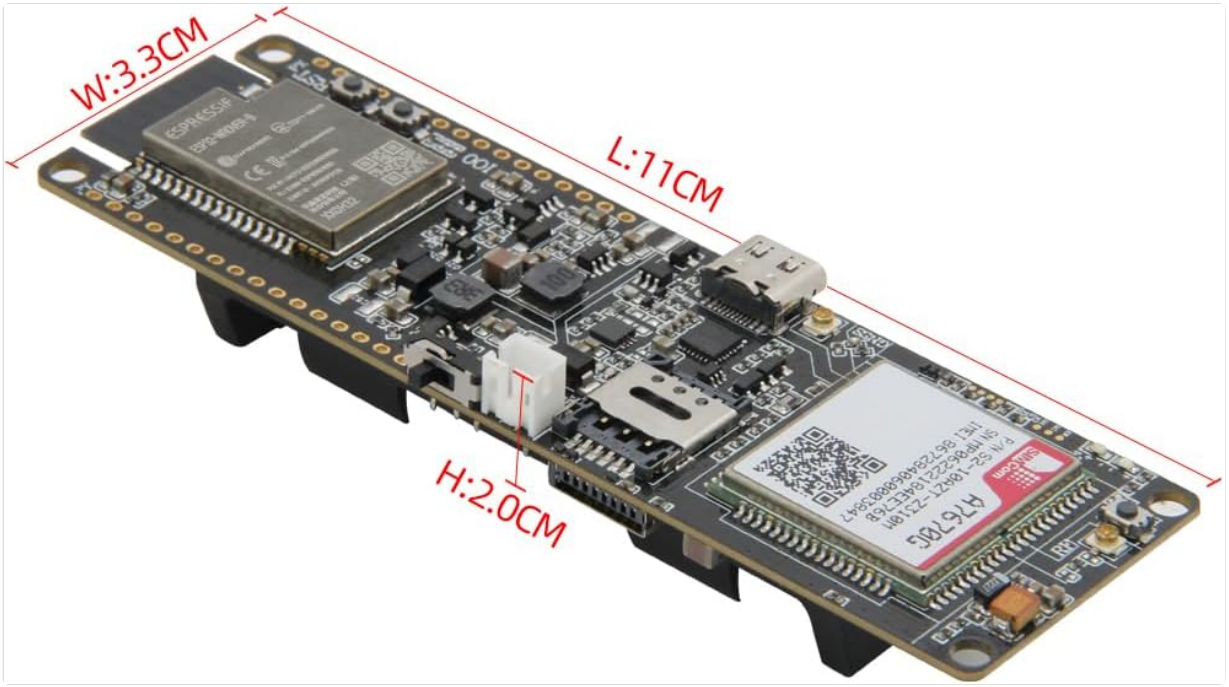

Image: Physical dimensions of the LILYGO T-A7670G R2 board, showing length (L: 11cm), width (W: 3.3cm), and height (H: 2.0cm).

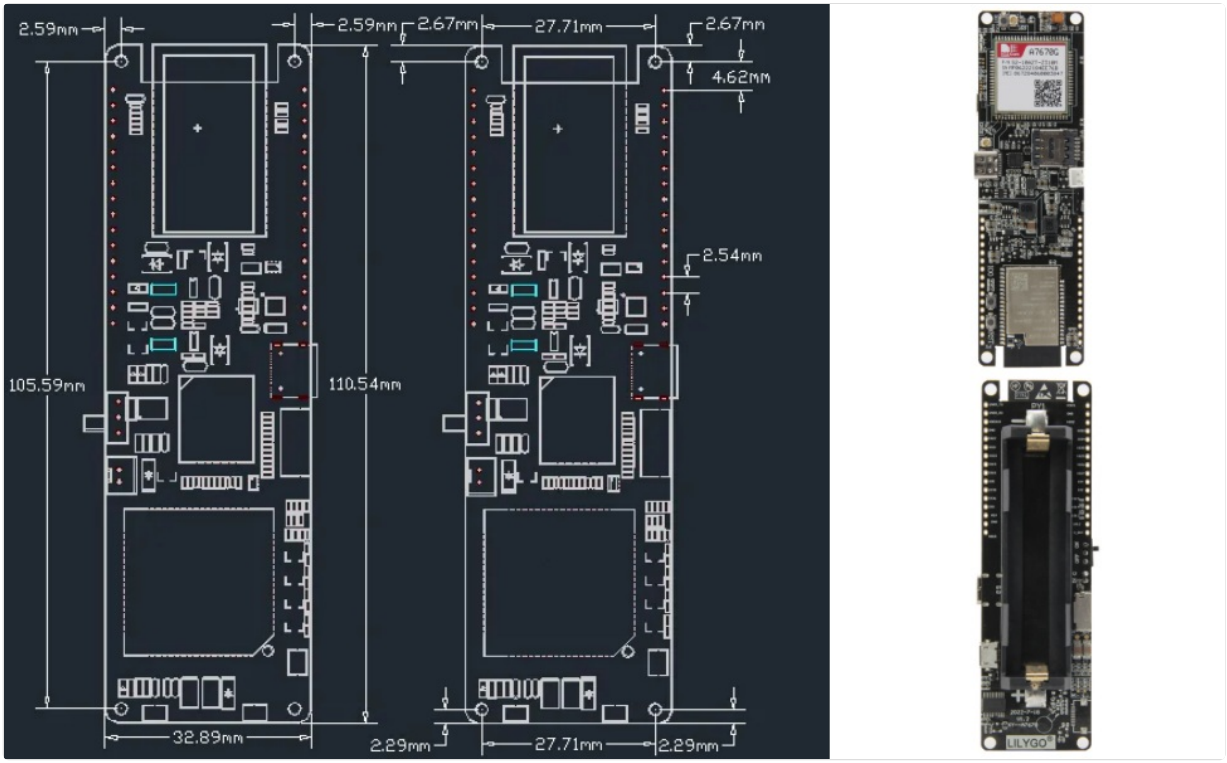

Image: Detailed technical drawing with precise dimensions of the LILYGO T-A7670G R2 board.

4.3. Pinout Diagram

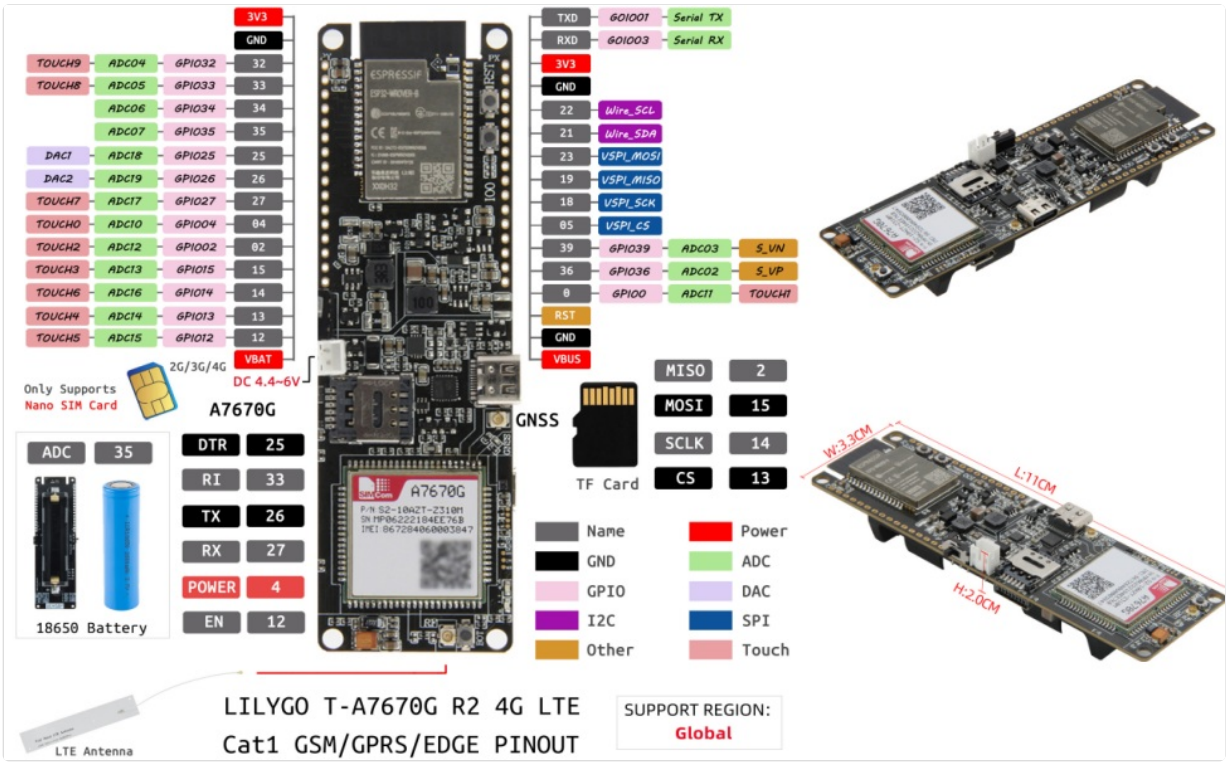

Image: Comprehensive pinout diagram for the LILYGO T-A7670G R2, detailing GPIOs, power pins, and communication interfaces. Note that this specific board variant is without GPS.

5. Setup Guide

5.1. Inserting Nano SIM Card

The board supports a Nano SIM card for 4G LTE connectivity. Locate the SIM card slot on the board and

gently insert your Nano SIM card until it clicks into place. Ensure the card is oriented correctly as indicated on the board.

5.2. Inserting TF Card

For additional storage, insert a TF (MicroSD) card into the designated slot. This is useful for logging data or storing larger files.

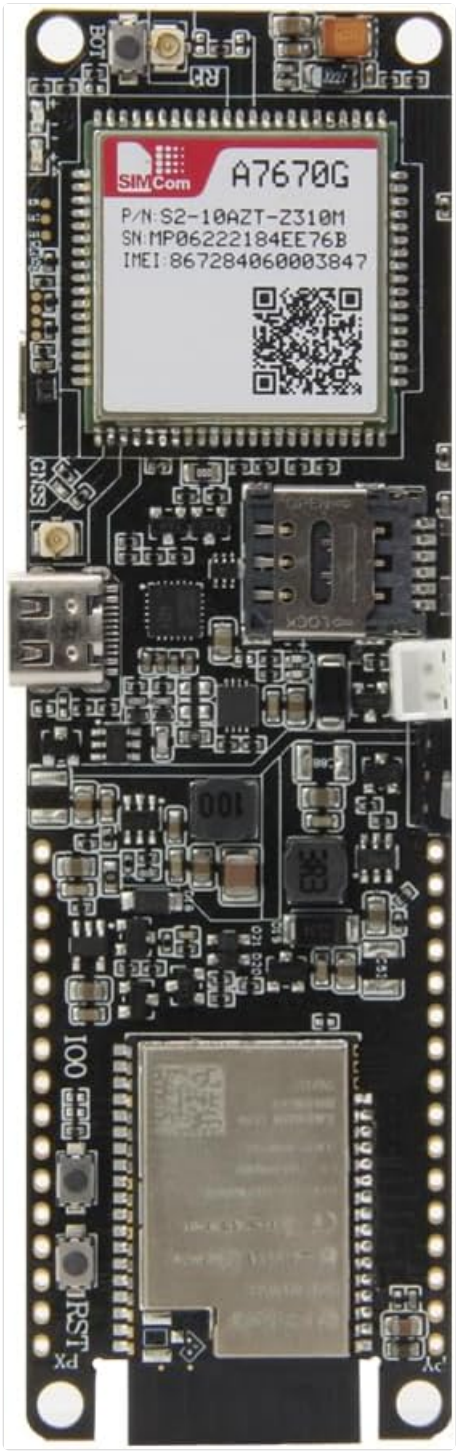

Image: Close-up view of the SIM card slot and TF card slot on the LILYGO T-A7670G R2 development board.

5.3. Connecting LTE Antenna

Attach the provided LTE antenna to the U.FL connector on the board. Ensure a secure connection for optimal signal reception.

5.4. Connecting 18650 Battery (Optional)

The board features an integrated 18650 battery holder. Insert a charged 18650 battery, observing the correct polarity (+/-). Use the provided PH2.0 battery cable to connect if necessary, or ensure direct contact with the battery holder terminals.

5.5. Powering On

The board can be powered via the USB-C port or a connected 18650 battery. Connect the board to a computer using a USB-C cable or ensure the battery is properly installed. The board should power on automatically or via a power switch if present.

6. Operation

6.1. Driver Installation

For communication with a computer, you may need to install appropriate USB drivers. Drivers are typically available for Microsoft Windows 7/8/10, Linux, and Android. Refer to the official LILYGO GitHub repository for the latest drivers and installation instructions.

6.2. Network Connectivity (4G LTE CAT1)

Once powered, the SIM7670G module will attempt to connect to the 4G LTE network using the inserted SIM card. You can monitor the connection status through serial communication or via indicators on the board, depending on your firmware.
Your browser does not support the video tag.

Video: An introduction to the LILYGO T-A7670G R2, demonstrating its features including the SIM7670G module, ESP32-S3, TF card slot, 18650 battery support, and solar charging capabilities.

6.3. Hotspot Sharing

The ESP32-S3, in conjunction with the 4G module, can be configured to share 4G hotspots, allowing mobile Wi-Fi terminals like smartphones or laptops to connect to the internet.
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Video: This video showcases the ESP32-S3-SIM7670G and ESP32-S3-A7670E-4G development boards, highlighting their 4G network support via USB, hotspot sharing, camera interface, and GNSS positioning. It also provides a comparison of the SIM7670G and A7670E modules.

6.4. Camera Interface (ESP32-S3 Capability)

While this specific T-A7670G R2 variant does not include a camera, the integrated ESP32-S3 microcontroller supports a 24-pin camera interface. This allows for integration with universal ESP32 camera models for applications such as outdoor monitoring or rapid face recognition, if a compatible camera module is added.

6.5. GNSS Positioning (SIM7670G Module Capability)

The SIM7670G module itself supports GNSS positioning (GPS, BeiDou, GLONASS, Galileo). However, this specific LILYGO T-A7670G R2 board variant is explicitly stated as "Without GPS". If GPS functionality is required, ensure you have the correct variant or an external GPS module connected and configured.

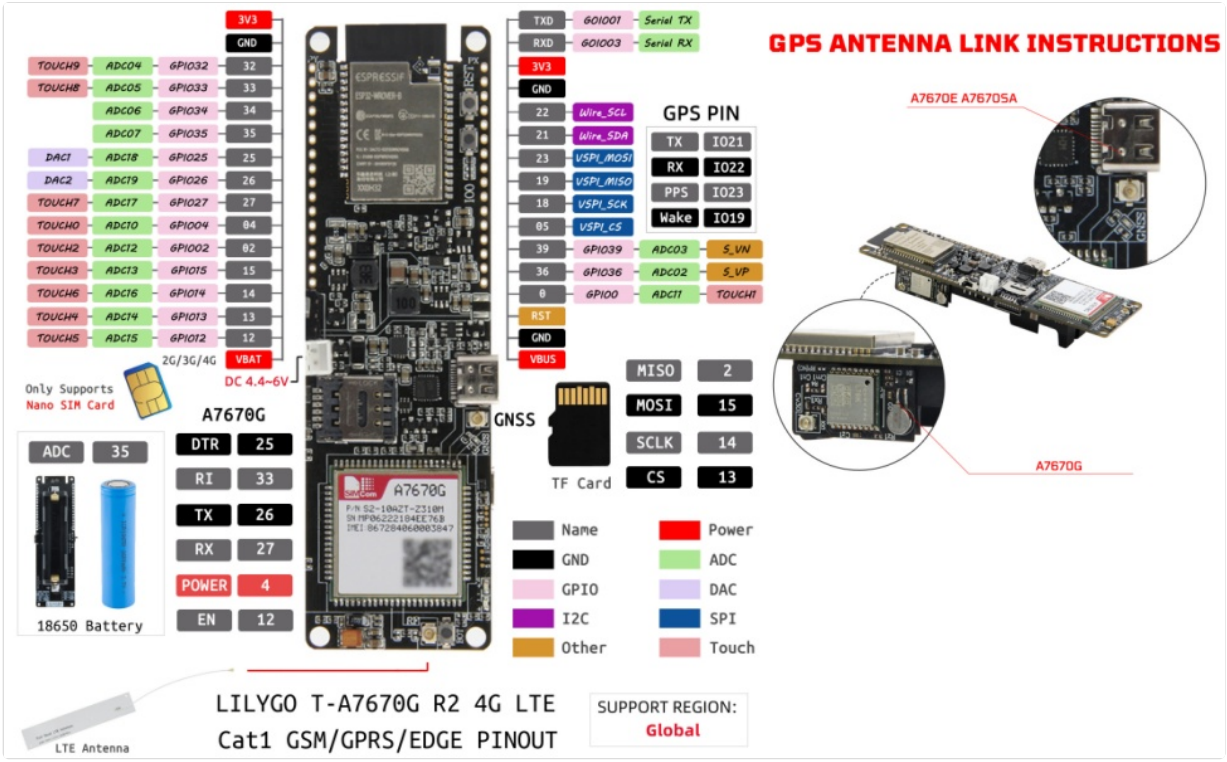

Image: GPS antenna link instructions and pinout for the LILYGO T-A7670G R2. Note that this specific board variant is without GPS, so this information applies to GPS-enabled variants or external GPS module integration.

6.6. Solar Charging

The board's low-power design supports solar charging. Connect a compatible solar panel to the designated input interface to charge the 18650 battery and power the board, enabling autonomous operation in remote locations.

7. Specifications

Feature	Detail
Brand	LILYGO
Model Name	LILYGO T-A7670G R2
Processor Brand	Espressif (ESP32-S3)
Number of Processors	1
RAM	LPDDR4
Operating System Support	Android (5.0-9.0), Windows 7/8/10, Linux
Connectivity Technology	USB, 4G LTE CAT1
Cellular Module	SIM7670G (4G LTE CAT1)
SIM Card Type	Nano SIM
Storage	TF Card Slot
Power Supply	USB-C, 18650 Battery Holder, Solar Charging Support

Feature	Detail
Dimensions (Approx.)	11cm x 3.3cm x 2.0cm

8. Troubleshooting

8.1. No Network Connection

- **Check SIM Card:** Ensure the Nano SIM card is correctly inserted and activated with a data plan.
- **Antenna Connection:** Verify the LTE antenna is securely connected to the U.FL port.
- **Signal Strength:** Check for adequate cellular signal in your location.
- **Firmware Configuration:** Ensure your firmware is correctly configured for the SIM7670G module and your network provider.
- **Roaming Issues:** If experiencing roaming issues, ensure your SIM card plan supports roaming or send appropriate AT commands to enable it if necessary (consult your network provider and module documentation).

8.2. USB Connection Issues

- **Driver Installation:** Confirm that the correct USB drivers for ESP32-S3 and SIM7670G are installed on your computer.
- **USB Cable:** Try a different USB-C cable to rule out cable defects.
- **Port Issues:** Test with a different USB port on your computer.

8.3. Power Issues

- **Battery Check:** If using an 18650 battery, ensure it is charged and correctly inserted with proper polarity.
- **USB Power:** If powering via USB, ensure the power source provides sufficient current.

8.4. General Software/Firmware Problems

- **Refer to GitHub:** The LILYGO GitHub repository (github.com/Xinyuan-LilyGO/LilyGO-T-A7670X) is an excellent resource for code examples, tutorials, and community support.
- **Update Firmware:** Ensure your board is running the latest stable firmware.

9. Maintenance

- **Keep Clean:** Regularly clean the board with a soft, dry brush to remove dust and debris. Avoid using liquids.
- **Proper Storage:** Store the board in a dry, anti-static environment when not in use.
- **Handle with Care:** Avoid dropping or subjecting the board to physical shock.
- **Temperature:** Operate and store the board within its specified temperature range to prevent damage.

10. Warranty Information

LILYGO products typically come with a limited manufacturer's warranty covering defects in materials and workmanship. Please refer to the official LILYGO website or contact their customer support for specific warranty terms and conditions applicable to your region and purchase date. Keep your proof of purchase for warranty claims.

11. Support and Resources

For further technical support, documentation, code examples, and community discussions, please visit the official LILYGO GitHub repository:

- **GitHub Repository:** github.com/Xinyuan-LilyGO/LilyGO-T-A7670X

For general inquiries or product information, you may also visit the LILYGO store on Amazon or their official website.