

## PDDAXLQUE DX-LR03-900T30D

# PDDAXLQUE DX-LR03-900T30D LORA UART Serial Transceiver Module Instruction Manual

## 1. PRODUCT OVERVIEW

The PDDAXLQUE DX-LR03-900T30D is an ultra-long-range LORA UART serial transceiver module designed for reliable wireless data transmission. It features an ASR6601 main chip with a PA amplifier, offering a communication range of up to 10 kilometers in open environments. This module is compatible with various microcontrollers like Arduino, Raspberry Pi, and ESP32, making it suitable for a wide range of DIY projects and industrial applications. The module supports serial communication for transparent data transmission and can be configured using AT commands, eliminating the need for custom LORA programming.

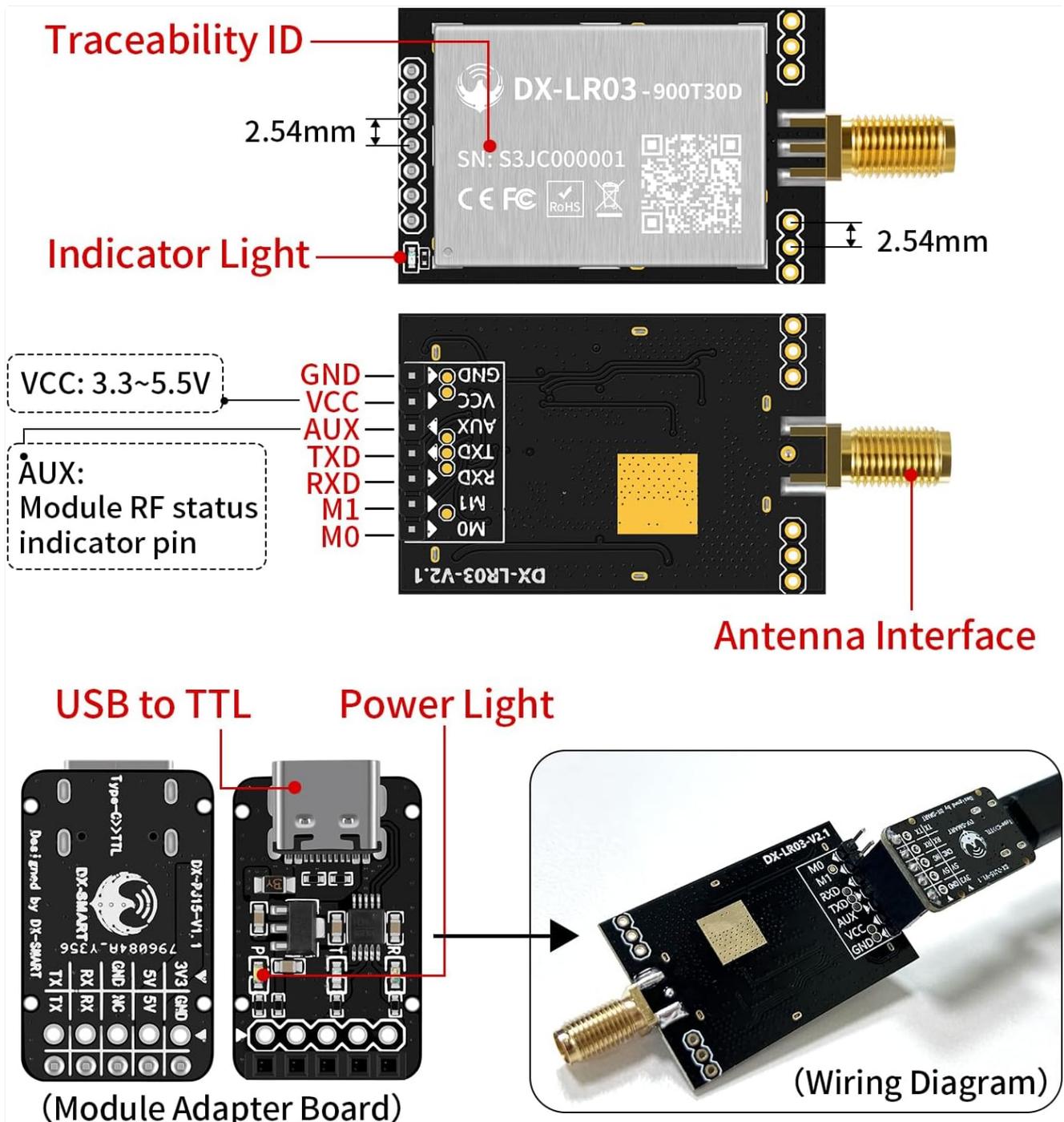
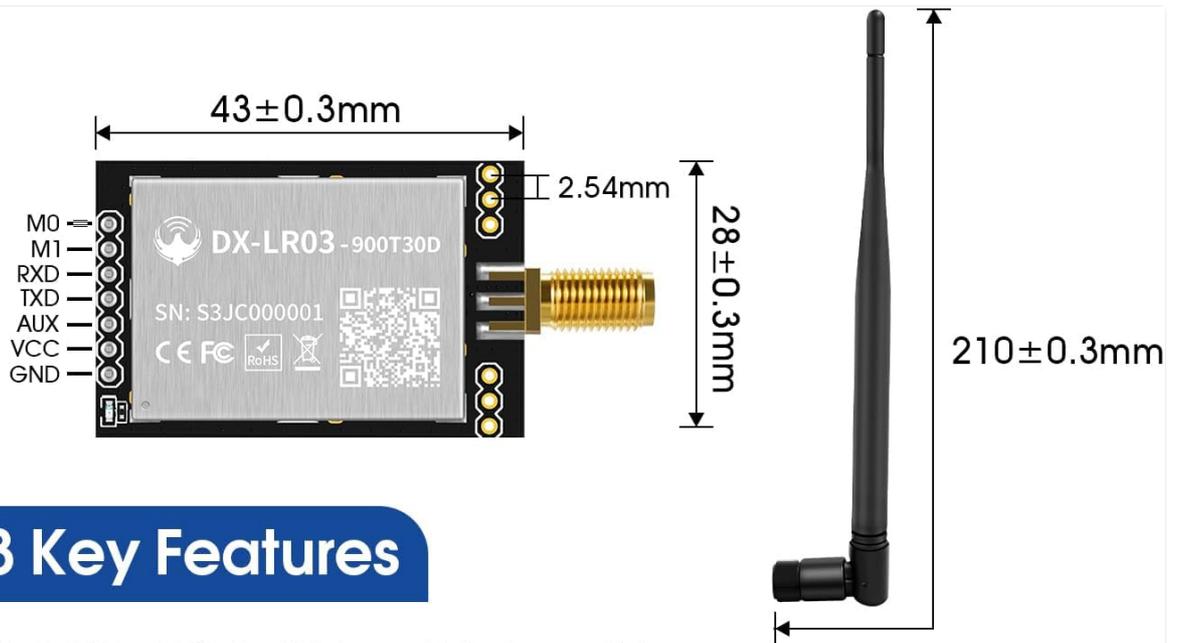


Figure 1: Top and bottom view of the DX-LR03-900T30D LORA module, showing pins and antenna connector.

## 2. KEY FEATURES

- **ASR6601 SOC Chip + PA Amplifier:** Ensures robust performance and extended range.
- **UART Serial Communication:** Facilitates transparent data transmission between devices.
- **Frequency Band:** Supports 850-931MHz for the LR03-900T30D model.
- **Output Power:** Adjustable from 0 to +27dBm.
- **Maximum Receiver Sensitivity:** -138dBm for reliable reception.
- **Line-of-Sight Distance:** Up to 10km in open environments.
- **Operating Voltage:** 4-5.5V (Typical: 5V).
- **Module Size:** 43(L) x 28(W) x 3.2(H)mm.
- **Certifications:** CE, FCC, ROHS certified for safety and reliability.
- **AT Command Settings:** Multiple AT commands for configuring mode, frequency, MAC, bandwidth, spreading

factor, coding rate, etc.



## LR03 Key Features

- ASR6601 SOC Chip+PA Amplifier
- Uart Serial Communication, Abundant AT commands
- LR03-433T30D: Support 433~475MHz  
LR03-900T30D: Support 850~931MHz
- Output power: 0~+27dBm
- Maximum Receiver Sensitivity: -138dBm
- Line-of-sight distance up to 10km
- Operating voltage: 4~5.5V(Typical: 5V)
- Module Size: 43(L) x 28(W) x 3.2(H)mm
- CE, FCC,ROHS certification

Figure 2: Detailed diagram illustrating the key features and physical dimensions of the DX-LR03 module.

### 3. PINOUT AND WIRING

Understanding the module's pinout is crucial for correct integration. The DX-LR03-V2.1 module features several pins for power, data transmission, and control. An adapter board is typically used to facilitate connection to development platforms.

#### 3.1 Module Pinout

1. **M0**: Reserved, customizable IO port.
2. **M1**: Reserved, customizable IO port.
3. **UART\_RX**: UART Receive pin.
4. **UART\_TX**: UART Transmit pin.
5. **AUX**: Module RF status indicator pin.
6. **VCC**: Power supply input (4V-5.5V).

7. **GND:** Ground pin.

The indicator light on the module provides status feedback:

- **Working status:** Red light blinking.
- **Hibernation mode:** Light off.
- **Waking up from hibernation:** Red light flashing.

### 3.2 Wiring with Adapter Board

To connect the LORA module to a computer or microcontroller, an adapter board (e.g., PJ15 USB to TTL adapter) is used. Ensure correct pin connections to avoid damage.

- Connect the LORA module's RXD to the adapter board's TX/TX.
- Connect the LORA module's TXD to the adapter board's RX/RX.
- Connect the LORA module's VCC to the adapter board's 5V/5V or 3V3/GND (depending on desired voltage). Recommended voltage is 4V or 5V.
- Connect the LORA module's GND to the adapter board's GND.
- The AUX pin can be connected to CNC/NC on the adapter board if needed for status indication.

**Caution: Incorrect wiring may cause module damage. Always verify connections before powering on.**

Your browser does not support the video tag.

Video 1: Demonstration of connecting the LORA module to an adapter board and antenna. This video illustrates the physical assembly process and highlights correct wiring to prevent damage.

## 4. OPERATING MODES

The DX-LR03 module supports various working modes for flexible data transmission:

- **Transparent Transmission:** Data is transmitted directly without specific addressing, requiring the same channel on both sender and receiver.
- **Broadcast Transmission:** Data is sent to all modules within range on a designated channel.
- **Fixed-Point Transmission:** Data is sent to a specific module identified by its address and channel.

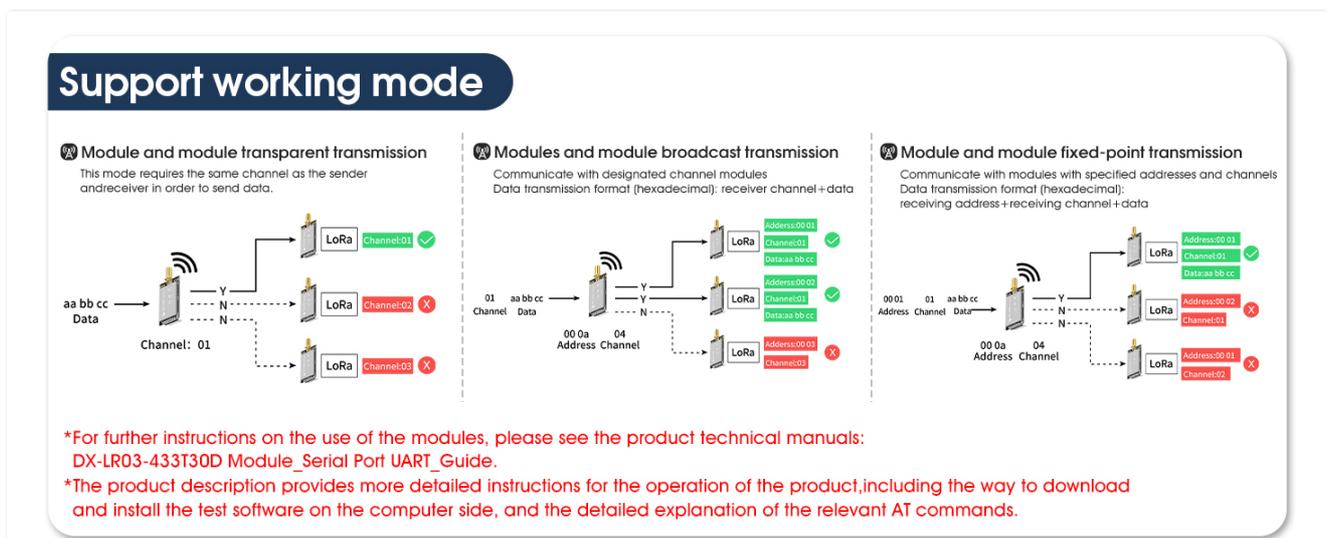


Figure 3: Visual representation of the different data transmission modes supported by the LORA module.

## 5. AT COMMAND SETTINGS

The module can be configured and queried using a set of AT commands via a serial port. This allows for easy setup without complex LORA programming.

## 5.1 Basic AT Commands

AT Command	Function
AT	Test instruction (responds OK)
+++	Enter/exit AT command mode
AT+BAUD	Set/query serial baud rate (Default: 9600)
AT+STOP	Set/query serial port stop bit (Default: 0 stop bit)
AT+PARI	Set/query serial port parity bit (Default: 0 (no parity))
AT+MODE	Set/query working mode (Default: 0 (transparent transmission))
AT+MAC	Set/query device address (Default: 0000)
AT+SLEEP	Set/query power consumption mode
AT+CHANNEL	Set/query working channels
AT+POWE	Set/query transmit power

For a complete list of AT commands and detailed usage, refer to the product information packages available on the manufacturer's website.

### Regarding serial port testing software for PC

**-What is the "LoraSetting" software tool used for?**  
Support using AT commands to modify transmission mode, working channel, working power, working mode, baud rate, query device information, etc

**-AT Commands for Easy Use:**  
A rich set of AT commands can help you use the product more conveniently

**-AT command set:**

AT command	Function	Description
AT	Test Instruction	For testing serial ports
+++	Entering or exiting AT command mode	Power-up defaults to transmission mode
AT+BAUD	Setting/Querying Baud Rate	Default:4(9600)
AT+STOP	Setting/querying serial port stop bit	Default:0(0 stop bit)
AT+PARI	Set/querying serial port parity bit	Default:0(no parity)
AT+MODE	Setting/querying working mode	Default:0(transparent transmission)
AT+MAC	Setting/Querying Device Address	Default:ffff

\*For more AT commands, please consult the product information packages.

**(Uart Assistant Tools Screenshot)**

Figure 4: Example of using Uart Assistant Tools software for PC to configure the LORA module with AT commands.

## 6. APPLICATION SCENARIOS

The DX-LR03 module's long-distance serial data transmission capabilities make it suitable for diverse applications:

- **Smart Home:** Long-distance control and data acquisition within residential areas (e.g., from living room to basement or yard).
- **Smart Farm/Pastures:** Monitoring and control in agricultural settings.
- **Industrial Parks:** Data transmission for industrial automation and monitoring.
- **DIY Products:** Development of custom solutions using Arduino, Raspberry Pi, or ESP32 MCUs for

applications like long-distance motor control and data logging.

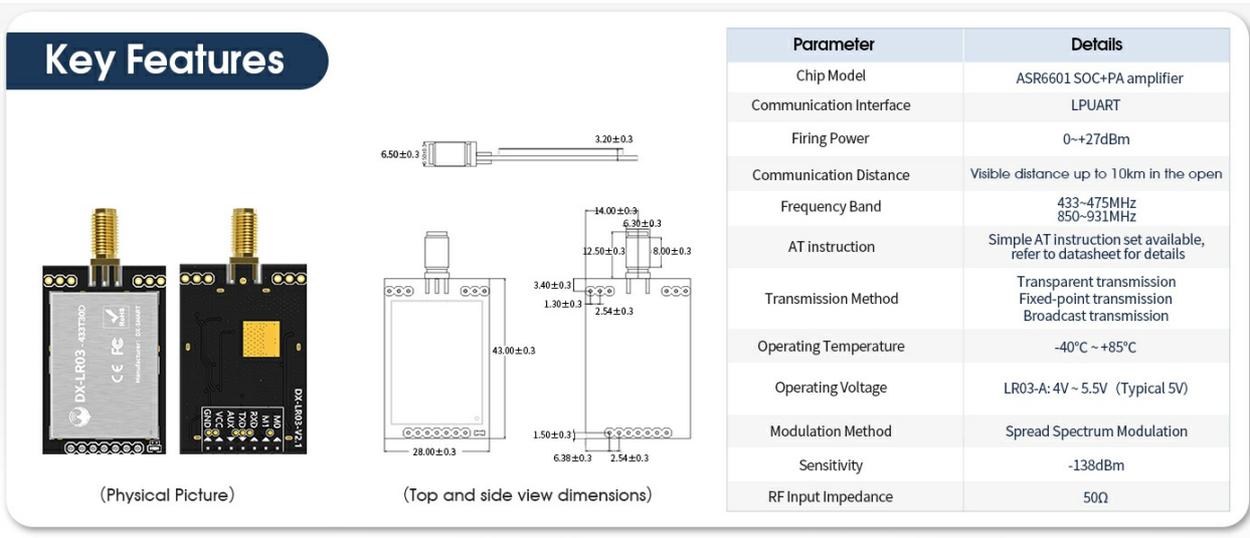


Figure 5: Examples of practical applications for the LORA module, including smart home, smart farm, industrial manufacturing, and hotel management.

### 6.1 Communication Distance Measurement

The module has been tested to achieve a visible communication distance of up to 10 kilometers in an open environment, as demonstrated by drone-based measurements.

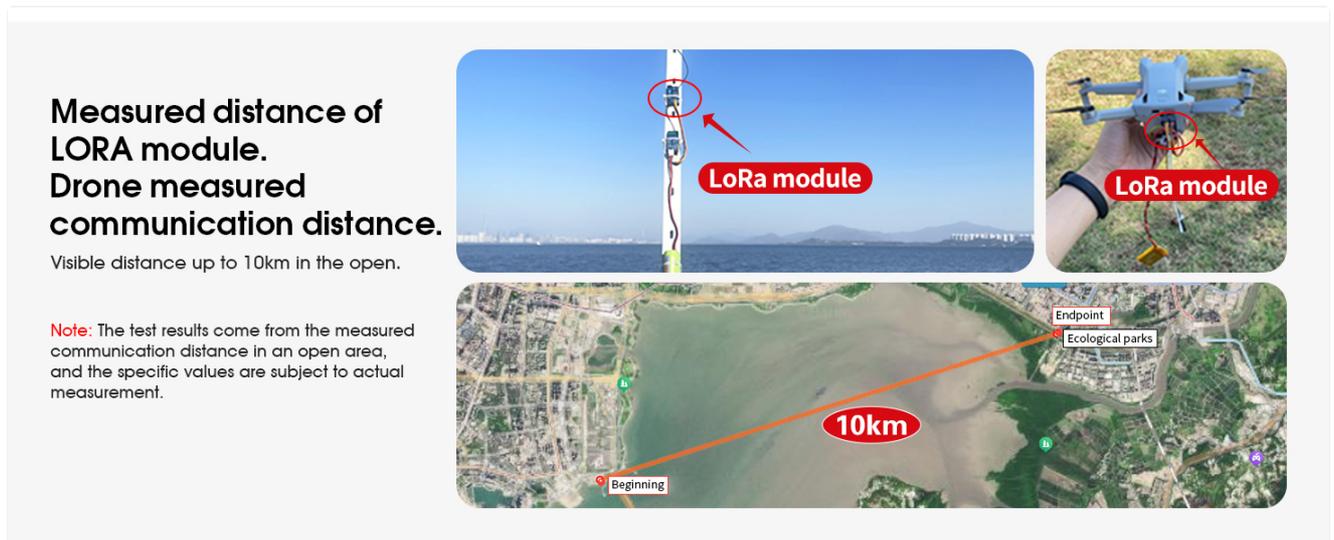


Figure 6: Illustration of a drone-based test demonstrating a 10km communication range for the LORA module in an open test environment.

## 7. SPECIFICATIONS

Parameter	Details
Chip Model	ASR6601 SOC amplifier
Communication Interface	LPUART
Firing Power	0 ~ +27dBm
Communication Distance	Visible distance up to 10km in the open
Frequency Band	850-931MHz (for LR03-900T30D)

Parameter	Details
AT Instruction	Simple AT Instruction set available, refer to datasheet for details
Transmission Method	Transparent transmission, Fixed-point transmission, Broadcast transmission
Operating Temperature	-40°C ~ +85°C
Operating Voltage	LR03-A: 4V ~ 5.5V (Typical 5V)
Modulation Method	Spread Spectrum Modulation
Sensitivity	-138dBm
RF Input Impedance	50Ω

## 8. TECHNICAL SUPPORT AND DOCUMENTATION

PDDAXLQUE provides comprehensive technical support and documentation to assist users with product integration and development.

- **Technical Documentation:** Includes detailed datasheets, AT command sets, module packages, and reference design schematics.
- **Development/Test Tools:** Software tools are available to help verify module functionality and accelerate product development.
- **Sample Code:** Extensive sample code is provided to quickly verify product functionality.
- **Development Kits:** It is recommended to purchase a development kit for initial setup and testing.

Access user guides, complete product information, and video tutorials through the official DX-SMART website or by following the provided documentation links.

# Easy to Use Complete Data Package

## DX-SMART Official Website:

The screenshot displays the DX-SMART official website interface. On the left, a navigation menu lists various product categories: Bluetooth Ibeacon, GNSS Module, Bluetooth module, WiFimodule, LORA module (highlighted in blue), Serial converter, Development tools, and Positioning module. The 'LORA module' category is expanded, showing sub-options: 5KM Communication distance, 10KM Communication distance (highlighted in blue), DX-LR03-900MHz, DX-LR03-433Mhz, LLCC68, SX1262, and Lora module & MCU case. On the right, the 'Product Information Package' section is visible, listing 'Product Information Package', 'DX-LR03-900 Data package', and 'DX-LR03-900 documentation G...'. A large orange arrow points from the 'DX-LR03-900 Data package' link to a box containing five folder icons labeled: Service Support, Video Tutorial, Technical Documentation, Test tools, and Hardware Information. The text 'Document Download' is written in orange next to the arrow.

- Click the Product Guide and Documentation links below to access user guides, complete product information, and product tutorials

Figure 7: Screenshot of the DX-SMART official website, highlighting sections for product information and document downloads, including technical documentation and video tutorials.

For further assistance, contact technical support via the User Guide -> Product Information -> Service Support section on the official website.

## 9. TROUBLESHOOTING

This section provides guidance for common issues. For more detailed troubleshooting, refer to the comprehensive technical documentation.

### 9.1 Communication Issues

- **No communication:**
  - Verify all wiring connections, especially RXD/TXD, VCC, and GND. Incorrect wiring can prevent communication or damage the module.
  - Ensure the power supply voltage is within the specified range (4V-5.5V).
  - Check the serial port settings (baud rate, stop bit, parity) match between the module and your device.

- Confirm the antenna is securely connected.

- **Short communication range:**

- Ensure the module is operating in an open environment with minimal obstructions.
- Verify the antenna is correctly installed and suitable for the operating frequency.
- Check the transmit power setting using AT commands; increase if necessary, within legal limits.
- Minimize interference from other RF devices.

## **9.2 Module Not Responding to AT Commands**

- Ensure you are in AT command mode by sending "+++".
- Verify the serial port connection and settings.
- Check if the module is powered correctly.