



M5STACK

M5Stamp C6LORA

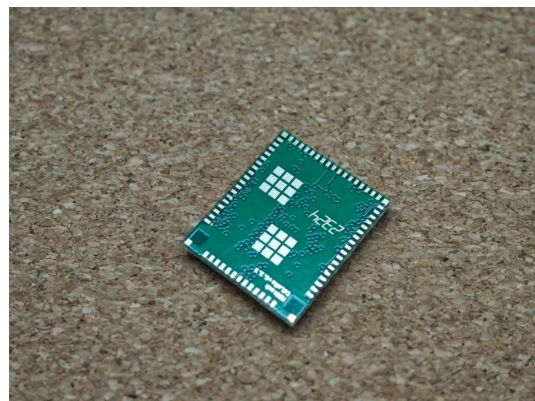
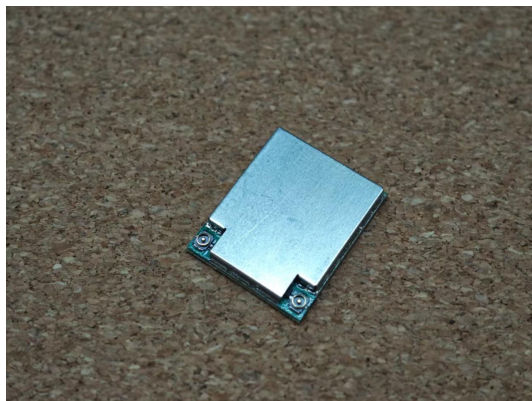
Model : Stamp C6LoRA

1. Description

Stamp C6LoRa is a high-performance programmable LoRa module designed for the 830 ~ 930 MHz frequency range. The module features an ESP32-C6 SoC, an SX1262 LoRa RF transceiver, and an LNA signal amplifier chip. It comes with two onboard IPEX antenna connectors for external Wi-Fi and LoRa antennas respectively.

At its core, the ESP32-C6 integrates a rich set of peripheral interfaces, enabling extended functionality through secondary development. It also supports 2.4GHz Wi-Fi 6, offering broader possibilities for IoT applications. Additionally, the module includes a PI4IOE5V6408 IO expander chip, which is used for LoRa transceiver circuit control and amplifier enable signal management, delivering enhanced power efficiency and providing additional usable IO resources.

A built-in DC-DC converter supports a DC input range of 3.7 to 5V and allows for lithium battery power, making it adaptable to various hardware deployment scenarios. The module is well-suited for long-range communication applications such as smart irrigation, remote metering, and power equipment control.



2. Specifications

Specification	Parameters
SoC	ESP32-C6
Flash	16MB
Wi-Fi	2.4GHz WiFi
LoRa Chip	SX1262
LoRa Frequency	830 ~ 930 MHz
Product Size	18.0 × 15.0 × 2.3 mm

3. Quick Start

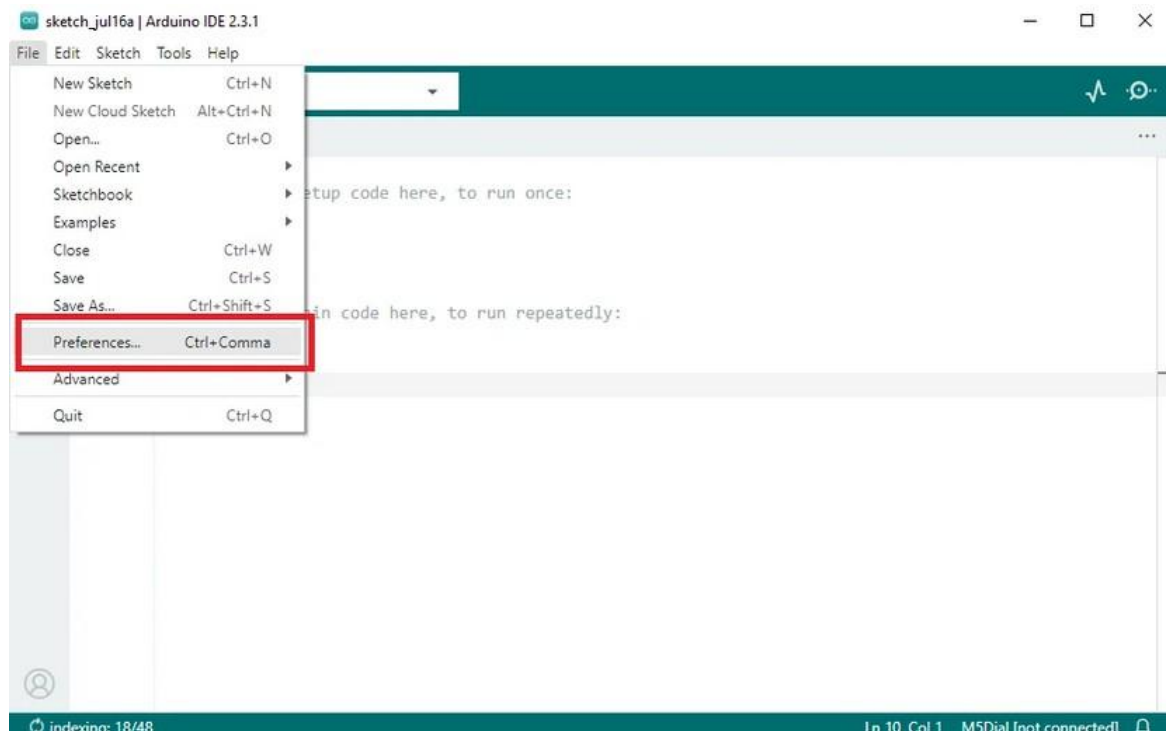
3.1 Preparation

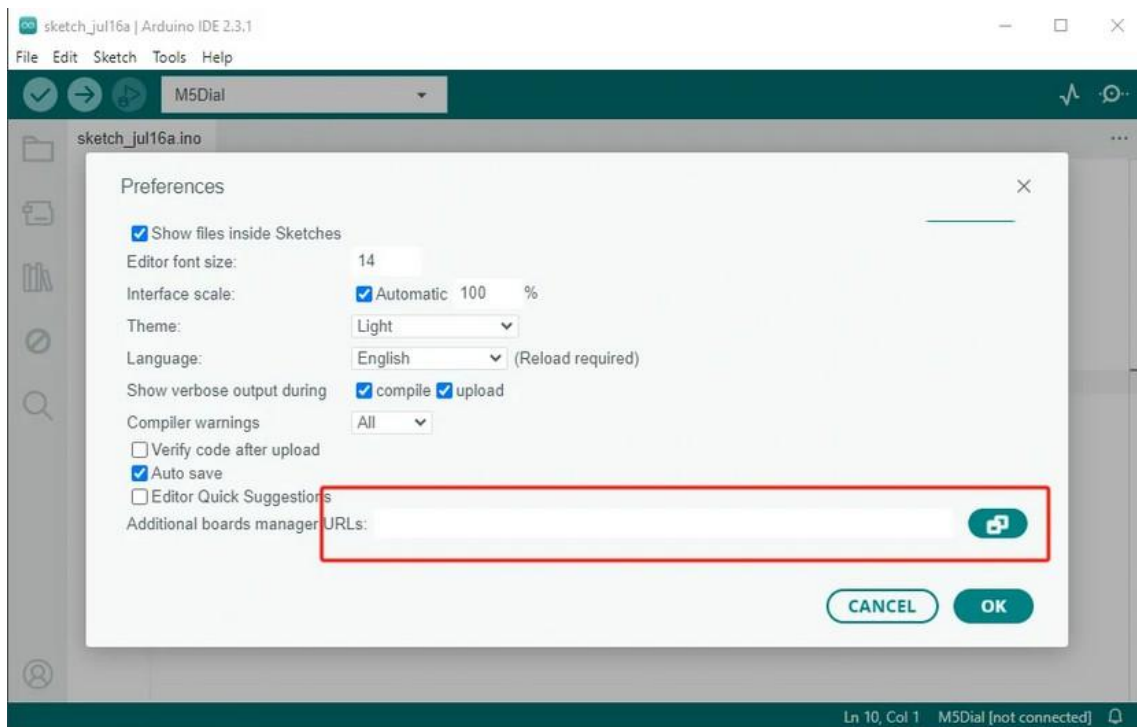
1. Visit the official Arduino website and install the Arduino IDE

<https://www.arduino.cc/en/Main/Software>

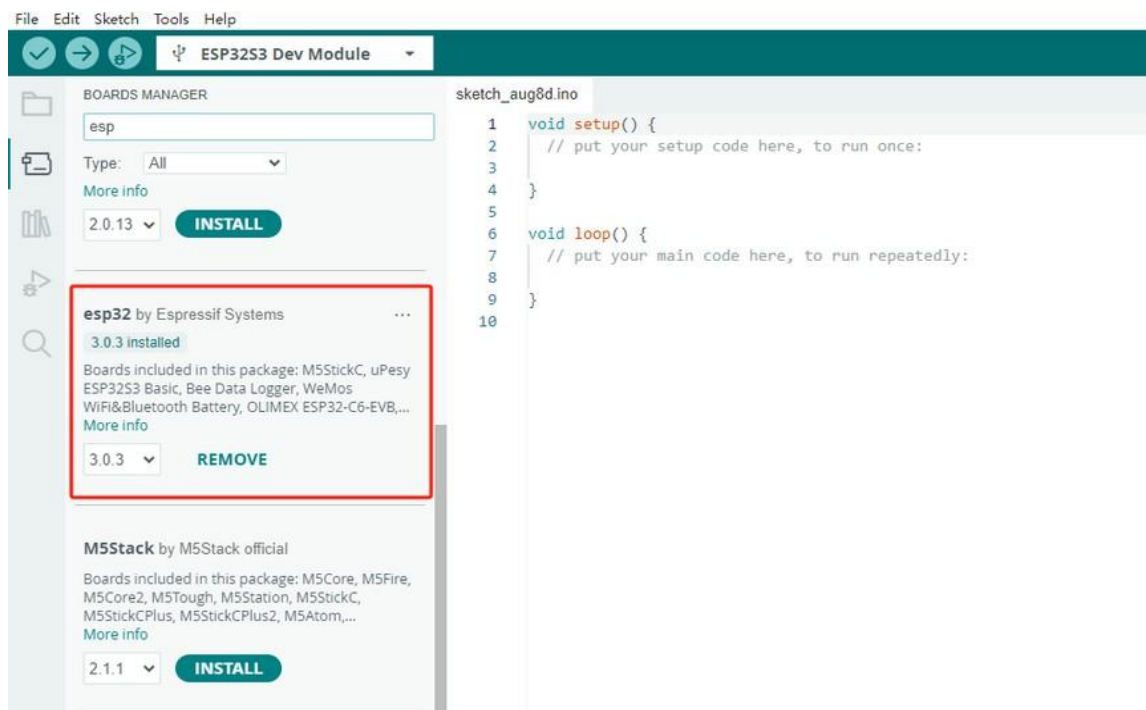
2. Add the following Board Manager URL to File → Preferences → Additional Boards Manager URLs:

https://espressif.github.io/arduino-esp32/package_esp32_dev_index.json

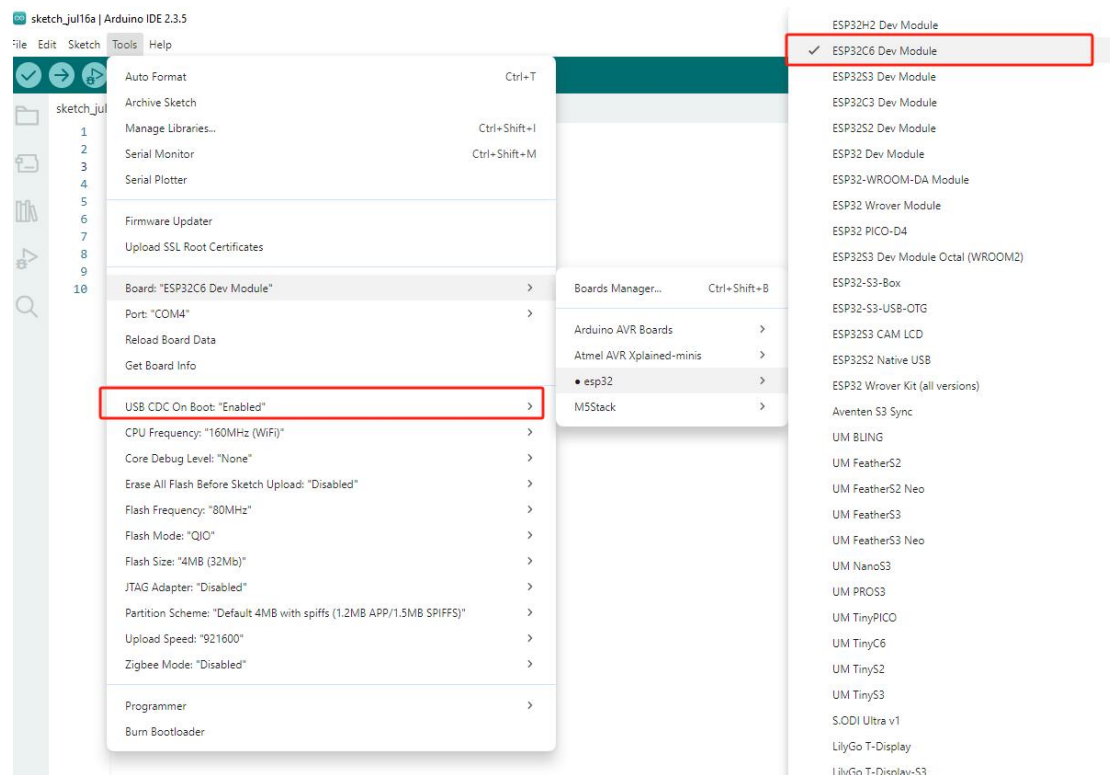




3. Open the Boards Manager, search for "ESP32", and click install.

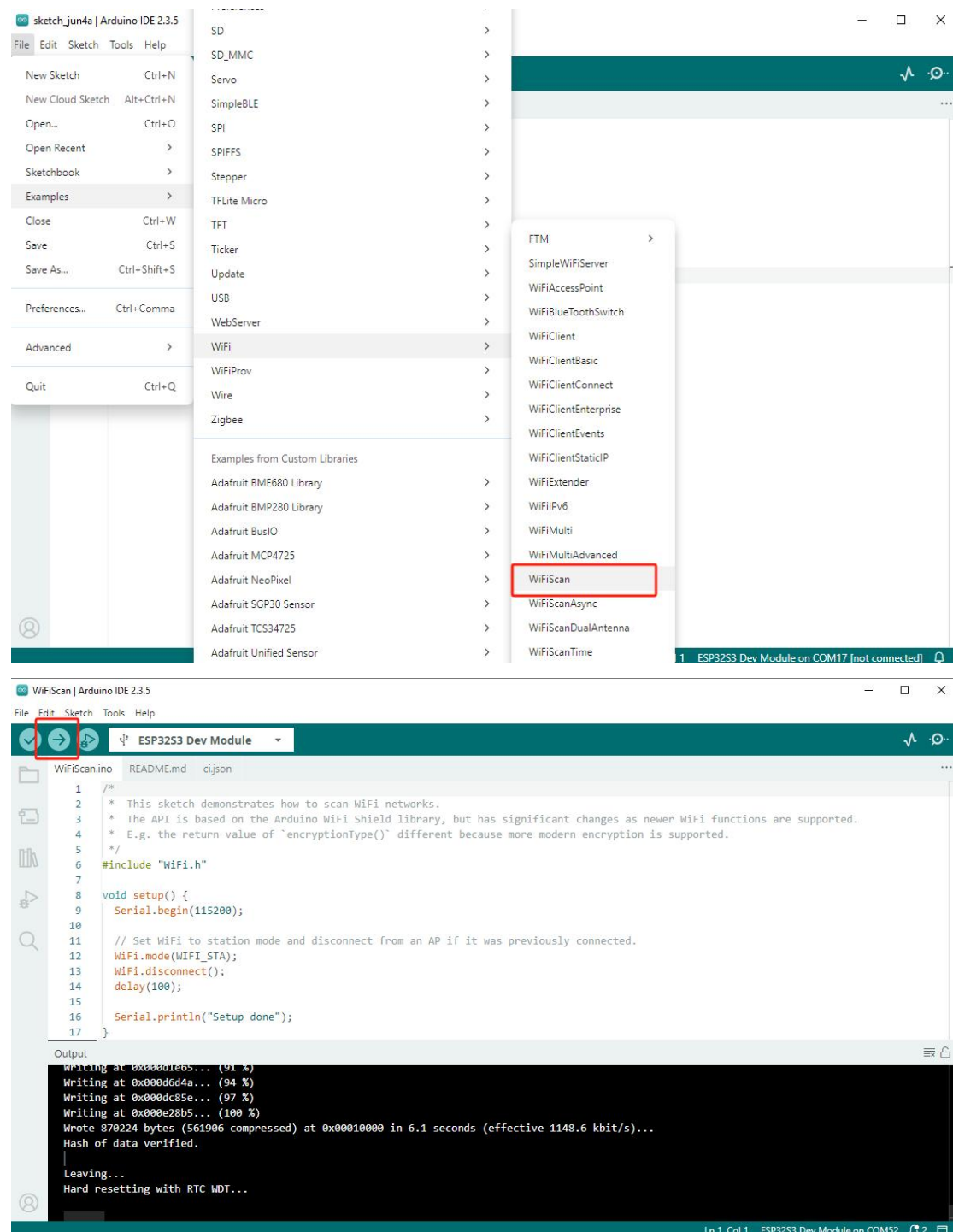


4. After installation, select the board "ESP32C6 Dev Module"
5. Configure the following options. USB CDC On Boot: "Enabled"



3.2 Wi-Fi Test

Select the example program "Examples" → "WiFi" → "WiFiScan", choose the port corresponding to your device, and click the compile and upload button in the top-left corner. After uploading is complete, open the Serial Monitor to view Wi-Fi scan information.



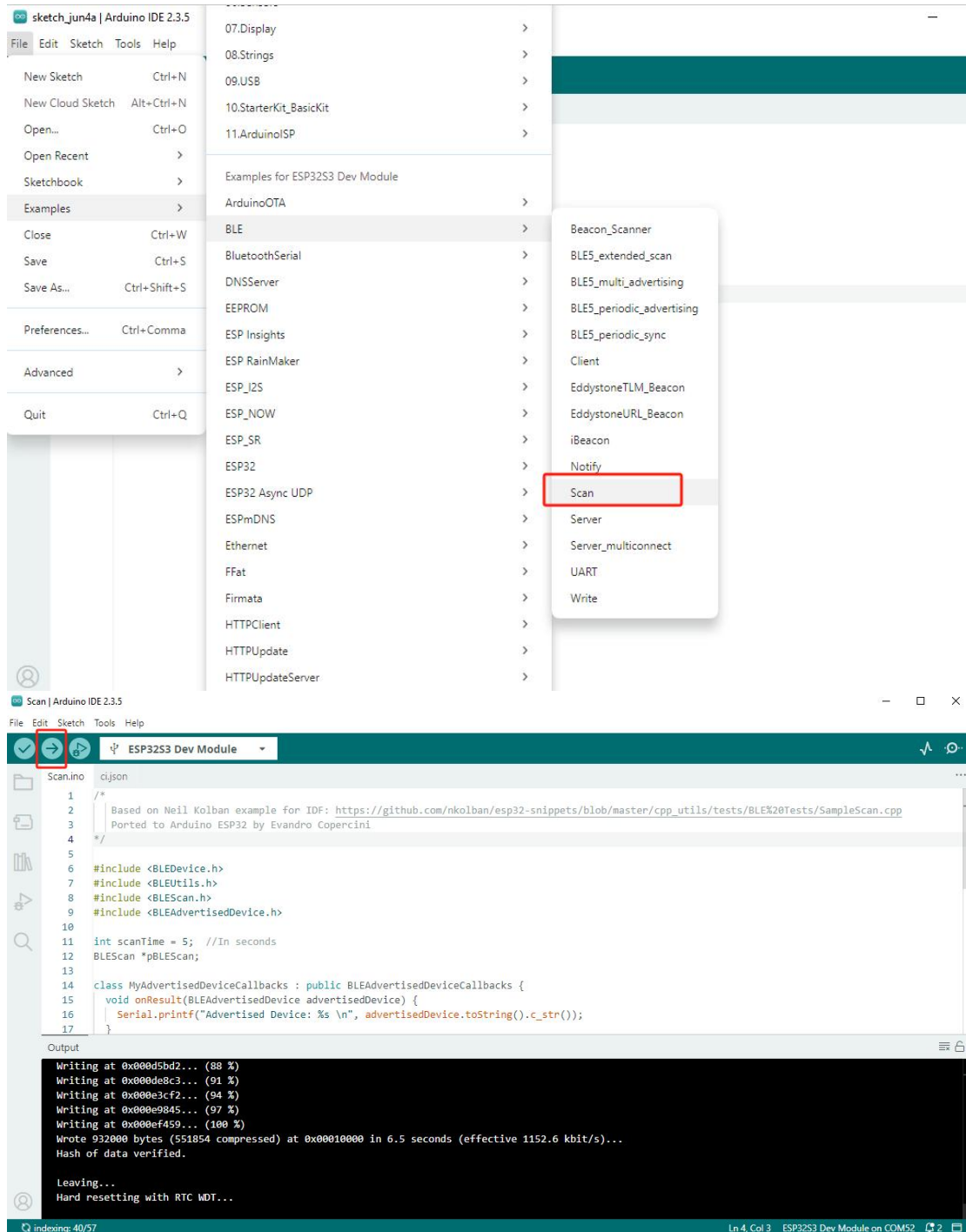
The screenshot shows the Arduino IDE 2.3.5 interface. The top menu bar includes File, Edit, Sketch, Tools, and Help. The toolbar shows icons for checking, compiling, and uploading code. The current board is set to 'ESP32S3 Dev Module'. The file 'WiFiScan.ino' is open, and the 'Serial Monitor' is active, displaying the output of the program. The output shows a list of 14 networks found, including their SSID, RSSI, CH, and Encryption type. The status bar at the bottom indicates 'Ln 1, Col 1' and 'ESP32S3 Dev Module on COM52'.

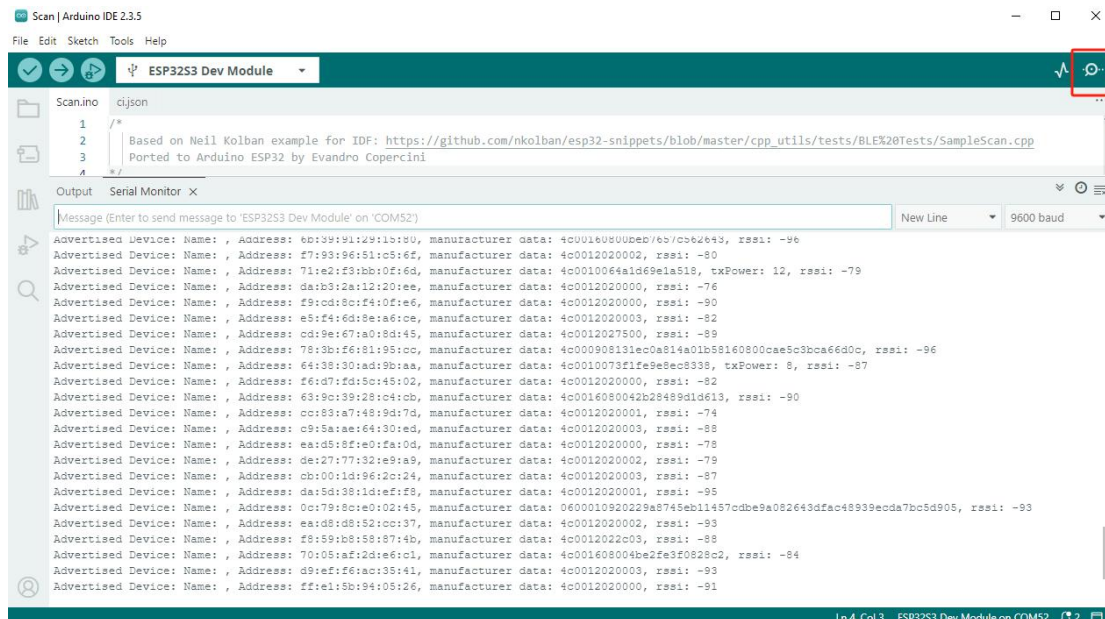
```
10 | | -70 | 11 | WPA+WPA2
11 | | -73 | 1 | WPA+WPA2
12 | MSStack | -74 | 1 | WPA+WPA2
13 | MSStack | -87 | 6 | WPA+WPA2
14 | UFS2000H-BT2430157250 | -87 | 11 | WPA2

Scan start
Scan done
14 networks found
Nr | SSID | RSSI | CH | Encryption
1 | DIANJIXZ | -52 | 6 | WPA+WPA2
2 | ocean | -61 | 11 | WPA+WPA2
3 | GL-AXT1800-06a | -64 | 6 | WPA2
4 | MSStack-Guest | -66 | 1 | WPA+WPA2
5 | MSStack | -67 | 1 | WPA+WPA2
6 | AEC_TEST_F1BB70 | -67 | 11 | open
7 | CMCC-NFUU | -68 | 4 | open
8 | MSStack | -69 | 11 | WPA+WPA2
9 | MSStack-Guest | -69 | 11 | WPA+WPA2
10 | MSStack | -74 | 1 | WPA+WPA2
11 | MSStack-Guest | -75 | 1 | WPA+WPA2
12 | MSStack-Guest | -87 | 6 | WPA+WPA2
13 | Mesh_lite_test | -88 | 11 | WPA+WPA2
14 | UFS2000H-BT2430157250 | -90 | 11 | WPA2
```

3.3 BLE Scan

Select the example program "Examples" → "BLE" → "Scan", choose the port corresponding to your device, and click the compile and upload button in the top-left corner. After uploading is complete, open the Serial Monitor to view BLE scan information.





3.4 LoRa TX

After burning the LoRa test firmware, check the LoRa transceiver information via the ESP32-C6 USB CDC serial port.

4. FCC Warning

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance 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.

IMPORTANT NOTE:

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.

FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

Important Note:

In the event that these conditions cannot 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 cannot 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.

End Product Labeling

The final end product must be labeled in a visible area with the following "Contains FCC ID: 2AN3WM5STAMPC6LORA ".

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.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the modular transmitter.

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

The device has been evaluated to meet general RF exposure requirement. The device can be used in mobile or fixed exposure condition with minimum distance 20 cm between the radiator & user's body.

2.7 Antennas

This radio transmitter has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna	Model No. of antenna:	Type of antenna:	Gain of the antenna (Max.)	Frequency range:
WIFI/BLE	/	External Antenna	2.77dBi	2400-2500MHz
LoRa	/	PCB antenna	-5.37 dBi	840-940MHz

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following "Contains FCC ID: 2AN3WM5STAMPC6LORA".

2.9 Information on test modes and additional testing requirements

Host manufacturer which install this modular with limit modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C:15.247 and 15.209 requirement, only if the test result comply with FCC part 15.247 and 15.209 requirement, then the host can be sold legally.

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.

2.11 Note EMI Considerations

We recommend to use "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties. The host manufacturer is responsible for ensuring compliance with the applicable FCC rules for the transmitters operating individually and simultaneously. This includes compliance for the summation of all emissions from all outputs occupying the same or overlapping frequency ranges, as defined by the applicable rules.

2.12 How to Make Changes - Important Note

In the event that these conditions cannot 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 cannot be used on the final product. In these circumstances, OEM integrator contact Grantees to make permissive changes or the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

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.