EWT201-xxxAxxS User Manual

EWM201-xxxAxxS Wireless Voice Intercom Module Test Kit



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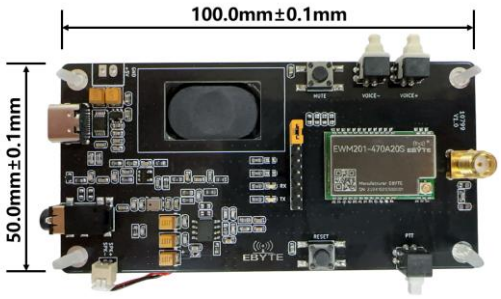
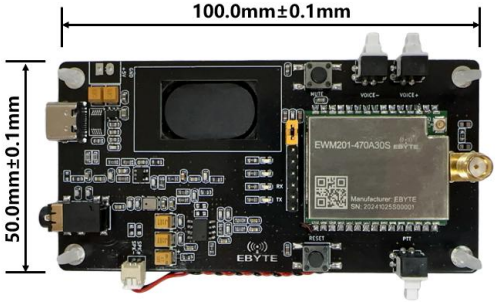
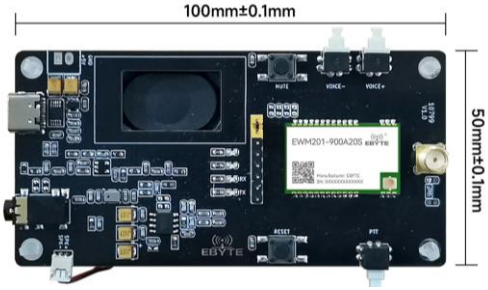
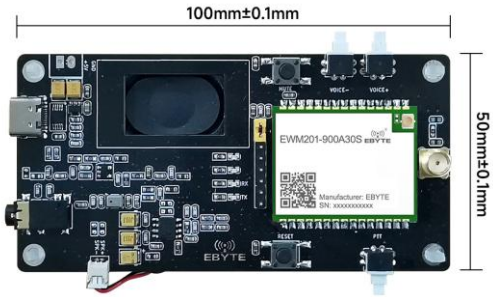
1 Product Overview

1.1 Product Introduction

EWT201-470A20S/EWT201-470A30S/EWT201-900A20S/EWT201-900A30S is a test kit developed based on the EWM201 series intercom module.

The test kit supports Type-C power supply, AT command configuration, and 3.5mm headphone jack.

Users only need to connect the antenna and turn on the power to complete a quick test.

EWT201-470A20S	EWT201-470A30S
	
EWT201-900A20S	**EWT201-900A30S**
	

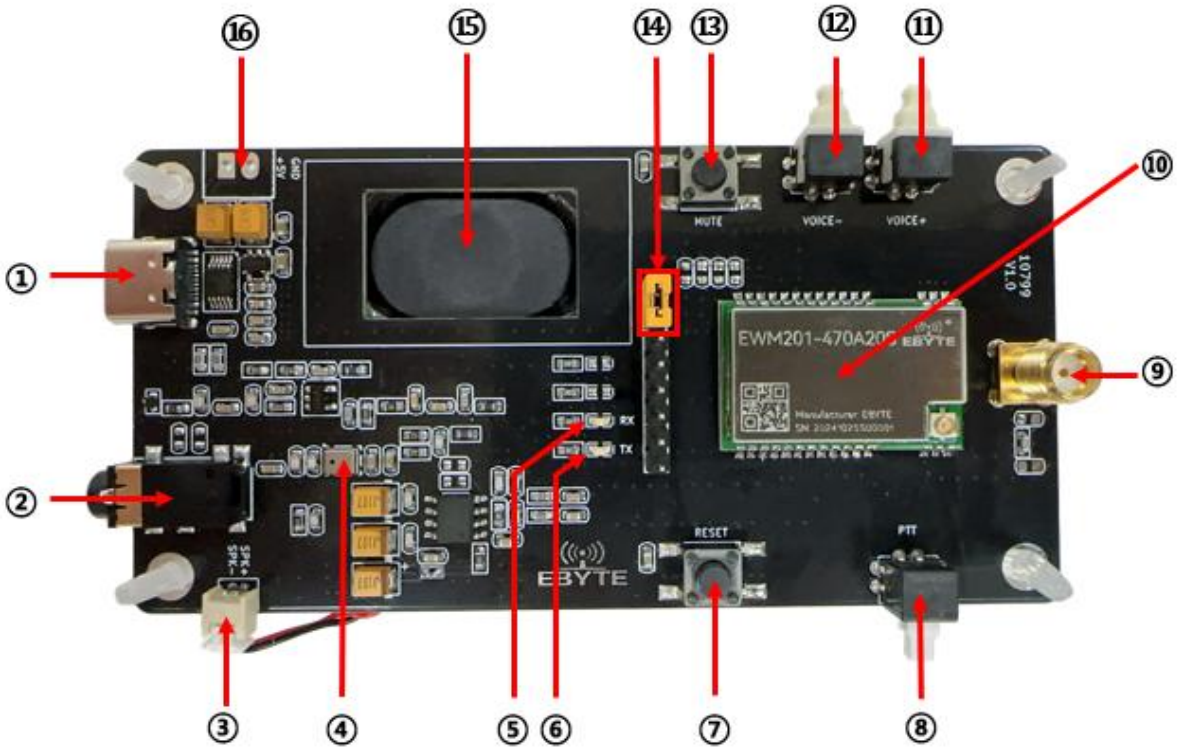
1.2 Features

- Support one-to-one and one-to-many audio transmission;
- After power on, voice intercom test can be carried out directly (antenna needs to be connected);
- Product size: 50.0*100.0mm;
- Support Type-C power supply or 5V power supply, connect to a power bank to realize the intercom function;
- Support frequency band 470～510MHz and 863MHz～928MHz;
- Parameters can be set via AT commands;
- Can realize half-duplex voice communication or full-duplex voice communication;
- It can realize unicast, multicast and broadcast intercom functions;

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2 Interface Description



Serial number	Name	Functional Description
①	Type-C	Type-C interface, taking into account both power supply and serial communication
②	3.5mm headphone jack	Support MIC input and audio output, Headsets with a single-ear microphone are required; standard 3.5mm headphones may result in the microphone not working.
③	Speaker socket	Speaker already connected
④	Onboard microphone	-
⑤	RX indicator	When it is always on, it is in receiving state
⑥	TX indicator	When it is always on, it is in the transmitting state
⑦	Reset button	Module restart reset
⑧	PTT intercom button	Press once to switch the transmitting and receiving status
⑨	Antenna SMA socket	Connecting the Antenna
⑩	Voice intercom module	Pre-welded

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		EWM201-470A20S/EWM201-470A30S/EWM201-900A20S/EWM201-900A30S
⑪	Volume up Key	Press once to increase the volume by 1, 16 levels in total
⑫	Volume down key	Press once to reduce the volume by 1, 16 levels in total
⑬	Mute button	Not supported yet
⑭	Power consumption test interface	Current test interface
⑮	Speaker	-
⑯	Battery Holder	5V DC power supply, battery powered communication has better distance

Notice:

1. Type-C and 5V DC power supply cannot be used at the same time, you can choose any of one to use.
2. External power supply range 5V DC

3 Quick Start

3.1 Hardware Connection

Please prepare two to three test kits for the development of EWM201 series intercom modules, connect antennas to each of them, and power on the test kits via Type-C cables or 5V power supplies.

3.2 Fast transmitting and receiving

After the hardware is connected, under the default initial parameters, the two test suites can be adjusted to one receiving and one sending state through the PTT button to immediately implement the voice intercom test. The test suite defaults to half-duplex communication.

RX indicator	When it is always on, it is in receiving state
TX indicator	When it is always on, it is in the sending state

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4 Test Evaluation

4.1 Communication Configuration

Step 1 : Use a USB to Type-C cable to connect the USB Type-C port of the development board to the USB port of the PC ;

Step 2 : Open the serial port debugging assistant on the computer and find the serial port number corresponding to the test board to connect;

Step 3 : In the serial port debugging software interface, select the corresponding communication configuration according to the table below

Baud rate	Data bit	Stop bit	Check bit
921600 bps	8	1	None

4.2 Half-duplex broadcast intercom test

Please prepare at least three test terminals to complete this test.

Step 1: Configure the **A** terminal parameters in the following order

order	command	instruction
①	**Send:** AT+VOICEMODE=51 **Return:** AT_OK	Set half-duplex communication mode
②	**Send:** AT+FREQ=16:490300000,491550000,492800000,494050000,495300000,496550000,497800000,499050000,500300000,501550000,502800000,504050000,505300000,506550000,507800000,509050000 **Return:** AT_OK	Set 16 channels of operating frequency
③	**Send:** AT+DESTID=16:0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15 **Return:** AT_OK	Target address setting: channel 0 target address is 0 for broadcast intercom; other target addresses other than 0 are point-to-point intercom.
④	**Send:** AT+TXP=15 **Return:** AT_OK	Set the wireless transmission power to maximum
⑤	**Send:** AT+CHANNEL=0 **Return:** AT_OK	Channel selection, here use channel 0
⑥	**Send:** AT+PANID=1 **Return:** AT_OK	Private network ID is set to 1
⑦	**Send:** AT+LOCALID=1 **Return:** AT_OK	The local ID address is set to 1
⑧	**Send:** AT+VOLUME=10 **Return:** AT_OK	Volume set to 10

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Step 2: Configure the **B and C** terminal parameters in the following order

Except for LOCALID, the parameter configurations of terminals B and C are the same as those of terminal A. The LOCALID of terminal B is set to 2, and the LOCALID of terminal C is set to 3.

⑦	**Terminal B sends:** AT+LOCALID= 2 **Terminal B returns:** AT_OK **Terminal C sends:** AT+LOCALID= 3 **C terminal returns:** AT_OK	local ID of terminal B is set to 2 C terminal local ID is set to 3

Step 3: Terminal A presses the PTT button (i.e. the voice sending button) and then counts evenly from 1 to 10. Terminals B and C can both receive the voice counting from 1 to 10.

4.3 Half-duplex point-to-point intercom test

Please prepare at least two test terminals to complete this test.

Step 1: Configure the **A** terminal parameters in the following order

order	command	instruction
①	**Send:** AT+VOICEMODE=51 **Return:** AT_OK	Set half-duplex communication mode
②	**Send:** AT+FREQ=16:490300000,491550000,492800000,494050000, 495300000,496550000,497800000,499050000,500300000,501550000,502800000,504050000,505300000,506550000,507800000,509050000 **Return:** AT_OK	Set 16 channels of operating frequency
③	**Send:** AT+DESTID=16:0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15 **Return:** AT_OK	Target address setting: channel 0 target address is 0 for broadcast intercom; other target addresses other than 0 are point-to-point intercom.
④	**Send:** AT+TXP=15 **Return:** AT_OK	Set the wireless transmission power to maximum
⑤	**Send:** AT+CHANNEL=15 **Return:** AT_OK	Channel selection, here we use channel 15
⑥	**Send:** AT+PANID=1 **Return:** AT_OK	The private network ID is set to 1
⑦	**Send:** AT+LOCALID=1 **Return:** AT_OK	The local ID address is set to 1
⑧	**Send:** AT+VOLUME=10 **Return:** AT_OK	Volume set to 10

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Step 2: Configure the **B** terminal parameters in the following order:

Compared to terminal A, only the DESTID and LOCALID parameters are changed.

③	**Send:** AT+DESTID=16:0,15,14,13,12,11,10,9,8,7,6,5,4,3,2,1 **Return:** AT_OK	Target address setting: channel 0 target address is 0 for broadcast intercom; other target addresses other than 0 are point-to-point intercom.
⑦	**Send:** AT+LOCALID=15 **Return:** AT_OK	The local ID address is set to 15

Step 3: Configure the **C** terminal parameters in the following order

Compared to terminal A, only the DESTID and LOCALID parameters are changed.

③	**Send:** AT+DESTID=16:0,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25 **Return:** AT_OK	Target address setting: channel 0 target address is 0 for broadcast intercom; other target addresses other than 0 are point-to-point intercom.
⑦	**Send:** AT+LOCALID=10 **Return:** AT_OK	The local ID address is set to 10

Step 4 : Terminal A presses the PTT button (the voice sending button) and then counts evenly from 1 to 10. Terminal B can receive the voice counting from 1 to 10, but terminal C cannot receive the voice counting.

4.4 Full-duplex intercom test

Please prepare at least three test terminals to complete this test.

Scenario description: Terminals **A and B** conduct a full-duplex intercom test, and both parties can hear each other's voices. At the same time, the third slave mode terminal **C** can hear the voices of both terminals A and B at the same time.

Configure the **A** terminal as the **Host in full duplex voice mode** in the following order:

order	command	instruction
①	**Send:** AT+VOICEMODE=61 **Return:** AT_OK	Configured as a P2P full-duplex voice mode host
②	**Send:** AT+FREQ=16:490300000,491550000,492800000,494050000, 495300000,496550000,497800000,499050000,500300000,501550000,502800000,504050000,505300000,506550000,507800000,509050000 **Return:** AT_OK	Set 16 channel operating frequencies
③	**Send:** AT+DESTID=16:0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15 **Return:** AT_OK	Target address setting: channel 0 target address is 0 for broadcast intercom; other target addresses other than 0 are point-to-point

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		intercom.
④	**Send:** AT+TXP=15 **Return:** AT_OK	Set the wireless transmission power to maximum
⑤	**Send:** AT+CHANNEL=0 **Return:** AT_OK	Channel selection, here use channel 0
⑥	**Send:** AT+PANID=1 **Return:** AT_OK	The private network ID is set to 1
⑦	**Send:** AT+LOCALID=1 **Return:** AT_OK	The local ID address is set to 1
⑧	**Send:** AT+VOLUME=10 **Return:** AT_OK	Volume set to 10

Step 2: Configure the **B and C** terminal as **slaves in full-duplex voice mode** in the following order:

Compared with terminal A, only the VOICEMODE and LOCALID parameters are changed.

①	**Send:** AT+VOICEMODE=62 **Return:** AT_OK	Configured as a slave in P2P full-duplex voice mode
⑦	**Terminal B sends:** AT+LOCALID= 2 **Terminal B returns:** AT_OK **Terminal C sends:** AT+LOCALID= 3 **C terminal returns:** AT_OK	local ID of terminal B is set to 2 C terminal local ID is set to 3

Step 3 : Conduct full-duplex intercom.

Terminal A presses the PTT button (i.e. voice sending button) to enter the voice transmitting mode;

Terminal B presses the PTT button to enter the voice transmitting mode.

At this time, when terminal A speaks, terminals B and C can hear it; when terminal B speaks, terminals A and C can hear it; when terminals A and B speak at the same time, terminal A can hear the voice of terminal B, terminal B can hear the voice of terminal A, and terminal C can hear the voices of terminals A and B at the same time.

4.5 Communication distance test

Please prepare two test terminals to complete this test.

Step 1: Configure the **A** terminal parameters in the following order

order	instruction	illustrate
①	**Send:** AT+VOICEMODE=51 **Return:** AT_OK	Configured as half-duplex communication mode
②	**Send:** AT+FREQ=16:490300000,491550000,492800000,494050000, 495300000,496550000,497800000,499050000,500300000,501550000 ,502800000,504050000,505300000,506550000,507800000,509050000 **Return:** AT_OK	Set 16 channels of operating frequency
③	**Send:** AT+DESTID=16:0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	Target address setting: channel 0

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	Return: AT_OK	target address is 0 for broadcast intercom; other target addresses other than 0 are point-to-point intercom.
④	**Send:** AT+TXP=15 **Return:** AT_OK	Set the wireless transmission power to maximum
⑤	**Send:** AT+CHANNEL=0 **Return:** AT_OK	Channel selection, here use channel 0
⑥	**Send:** AT+PANID=1 **Return:** AT_OK	The private network ID is set to 1
⑦	**Send:** AT+LOCALID=1 **Return:** AT_OK	The local ID address is set to 1
⑧	**Send:** AT+VOLUME=10 **Return:** AT_OK	Volume set to 10

Step 2: Configure the **B** terminal parameters in the following order:

The parameter configuration of terminal B is the same as that of terminal A except for LOCALID, and the LOCALID of terminal B is set to 2.

⑦	**Terminal B sends:** AT+LOCALID= 2 **Terminal B returns:** AT_OK **Terminal C sends:** AT+LOCALID= 3 **C terminal returns:** AT_OK	local ID of terminal B is set to 2 C terminal local ID is set to 3

Step 3: Perform communication distance test.

Test method: Terminal A remains stationary and terminal B is placed at test locations at different distances.

The tester at terminal A holds the voice development board at a height of about 1.5 meters, presses the PTT button (the voice sending button), points it at the onboard microphone, and counts from 1 to 10 at a constant speed (about one number per second). The tester at terminal B receives the voice at the same height to see if all the numbers can be heard.

The tester at terminal B holds the voice development board at a height of about 1.5 meters, presses the PTT button (the voice sending button), points it at the onboard microphone, and counts from 1 to 10 at a constant speed (about one number per second). The tester at terminal A receives the voice at the same height to see if all the numbers can be heard.

Repeat this process 10 times and count the listening situation.

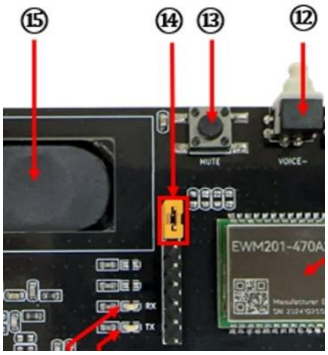
Voice sender	Voice receiver	Voice	Digital All Listen (frequency)	Incomplete digital listening (frequency)	Antenna Type
A	B	Count from 1 to 10	10	0	Rubber antenna
B	A	Count from 1 to 10	10	0	Rubber antenna

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4.6 Transmit/receive current test

Remove the power supply jumper cap of terminal ⑭ and connect the ammeter in series to the chip power supply circuit.



Transmitting current test: Terminal parameters are configured in the following order

order	instruction	illustrate
①	**Send:** AT+TXP=15 **Return:** AT_OK	Set the wireless transmission power to maximum
②	**Send:** AT+VOICEMODE=71 **Return:** AT_OK	Set to transmit current and transmit power test mode

Observe the ammeter and read the transmission current. EWT201-470A20S transmission current ≤95mA @AT+TXP=15; EWT201-470A30S transmission current ≤910mA@AT+TXP=15

Receiving current test: Terminal parameters are configured in the following order

order	instruction	illustrate
①	**Send:** AT+TXP=15 **Return:** AT_OK	Set the wireless transmission power to maximum
②	**Send:** AT+VOICEMODE=72 **Return:** AT_OK	Set to receive sensitivity test mode and receive current test mode

Observe the receiving current value read by the ammeter. The receiving current of EWT201-470A20S、EWT201-470A30S、EWT201-900A20S、EWT201-900A30S is ≤32Ma@ AT+TXP=15;

5 AT Command Reference

For detailed explanation of AT commands, please refer to our EWM201-470A20S/EWM201-470A30S/EWM201-900A20S/EWM201-900A30S module user manual.

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Revision History

Version	Revision Date	Revision Notes	Maintainer
1.0	2024-11-13	Initial release	Lei
1.1	2025-07-24	Added single-ear microphone description for 3.5mm interface	Lei
1.2	2025-8-4	More models	Hao

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