wk1221 kit

OEM

Installation

Manual

V1.0

May 2015

version	writer	data	desciptoin
v0.1	Zhifu.lin	2015.5	Initial release
V0.2	Jeans	2015.6	Add external antenna description

The module is limited to OEM installation ONLY.
The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.
The module is limited to installation in mobile application;
A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.
There is requirement that the grantee provide guidance to the host manufacturer for compliance with Part 15B requirements.

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: 2ADPDWK1221" any similar wording that expresses the same meaning may be used.

FCC RF Exposure requirement

This equipment complies with FCC 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. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

1. Introduction

Demonstration wk1221 module transmitting function and mobile app through wifi to send data to wk1221, wk1221 transparent data transmission forwarding to the serial port, stm8 from the serial port to receive data, control development board two adjustable PWM output, and the development of plate temperature sensor value of real-time display in the interface of mobile phone app.

The hardware is composed of WiFi wk1221 module and the external stm8 MCU chip. Wk1221 is responsible for processing the data of WiFi, stm8 is responsible for driving peripherals, LED or sensor, etc.. Wk1221 and stm8 through UART communications, mobile phone socket and wk1221 through APP communications.

2.Hardware

2.1 WK1221 DVB

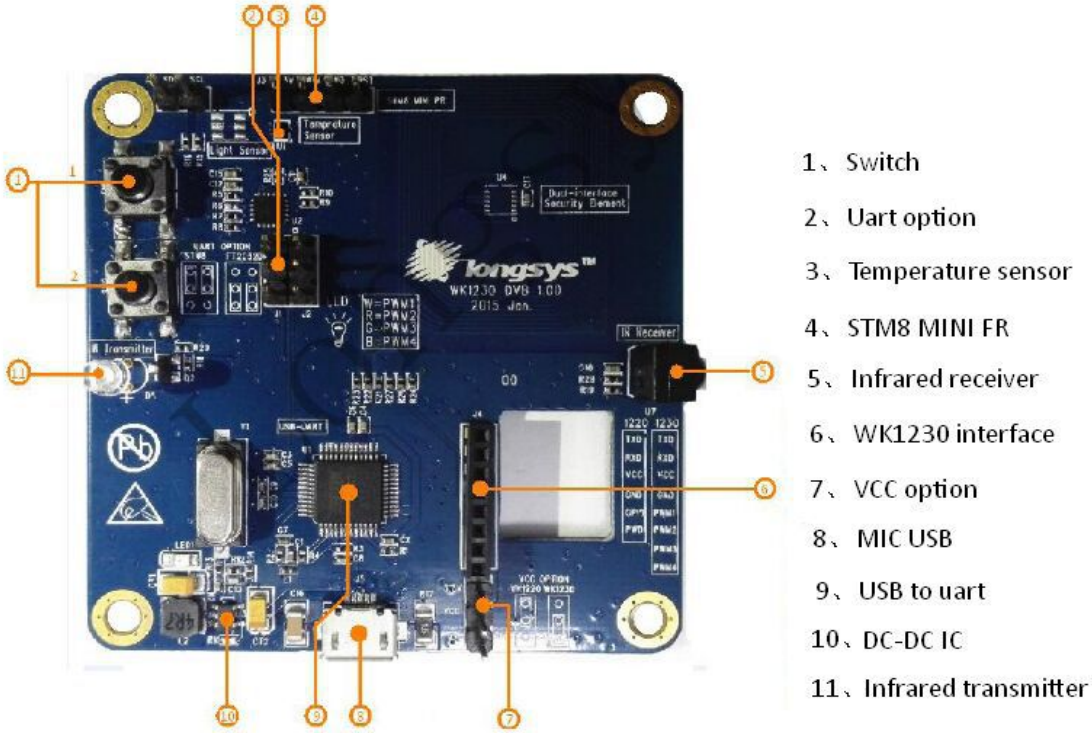

figure 2.1 WK1221 DVB Top

figure 2.1:

1.Temperature sensor: It is used to gather ambient temperature. Stm8 will read the current temperature and upload to the phone.

2. Switch1: Be used for setting wk1221 Working mode. Stm8 will judge level on the power, if to a high voltage (button is not pressed), stm8 will set wk1221 to sniffer mode by AT+ instruction. If the low level (press button is pressed), wk1221 will be set to SOFTAP mode by AT+ instruction. When the switch is not pressed, it is on the pull state. When pressed it is ground. (Switch2 is no used)

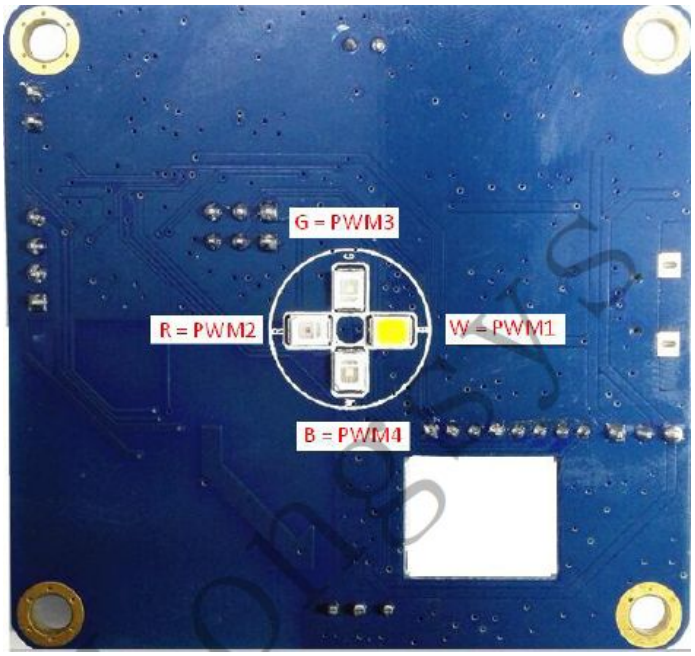

figure 1..2 WK1221 DVB Bottom

figure 2..2:

PWM1: Radius value

PWM2: Angle value

PWM3、PWM4: no use

2.2 WK1221

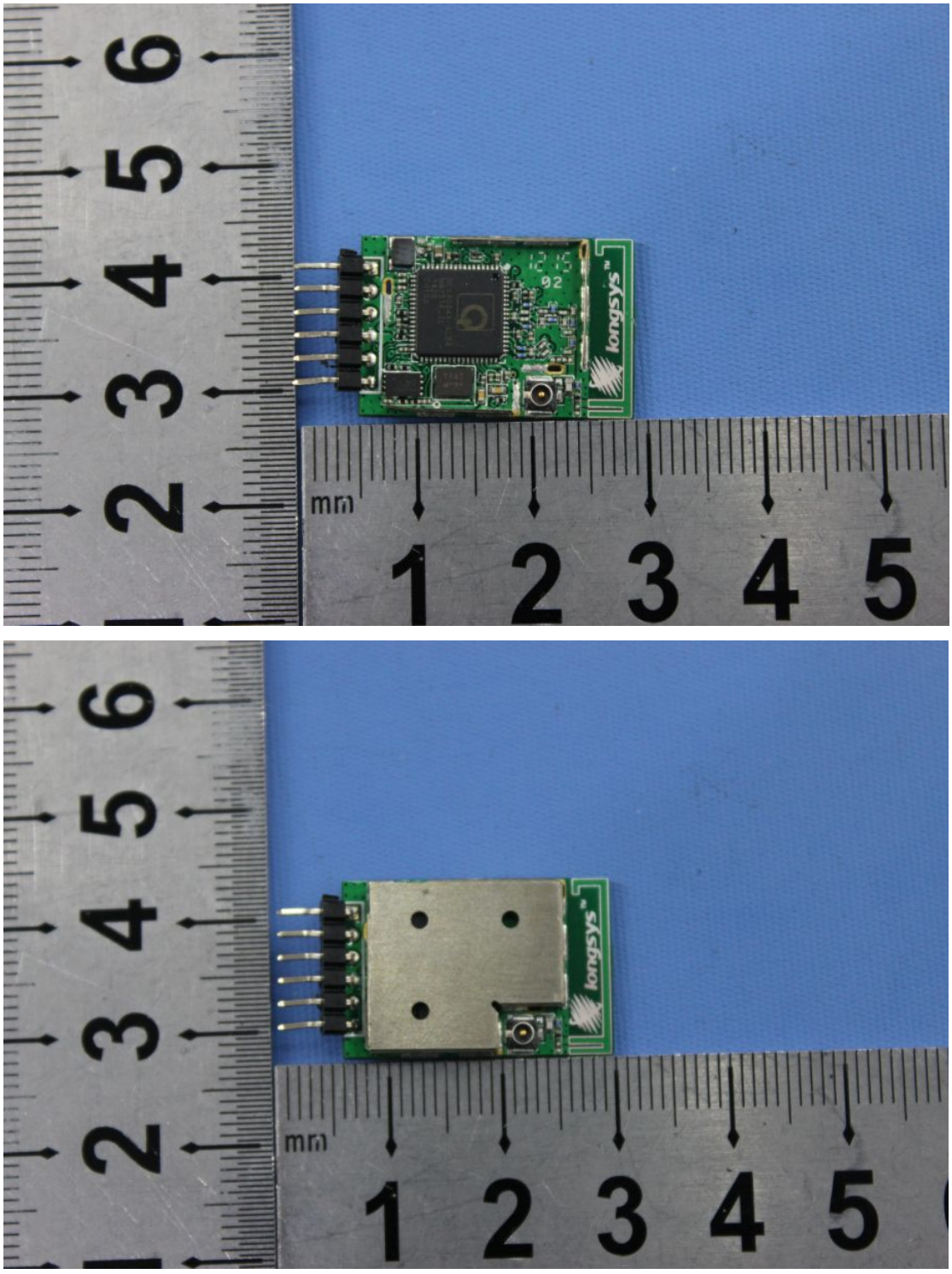

figure 2.3a&b wk1221

Insert the module into the development board according to the development board wk1221 silk screen. (Development board is compatible with wk1230 and wk1221.You should pay attention to distinguish between

wk1221 of the screen printing)

2.4 STM8 MINI FR

figure 2.4 STM8 MINI FR

When use the STM8 MINI FR copying code it only need 4 lines: RST, GND, swim and 3.3V (Figure 1, 3, 5, 7 feet) to connected with the DVB. Please attention the bottom the alignment of the silk screen, don't in the wrong, otherwise the IC will burn out.

2.5 WK1221 KIT

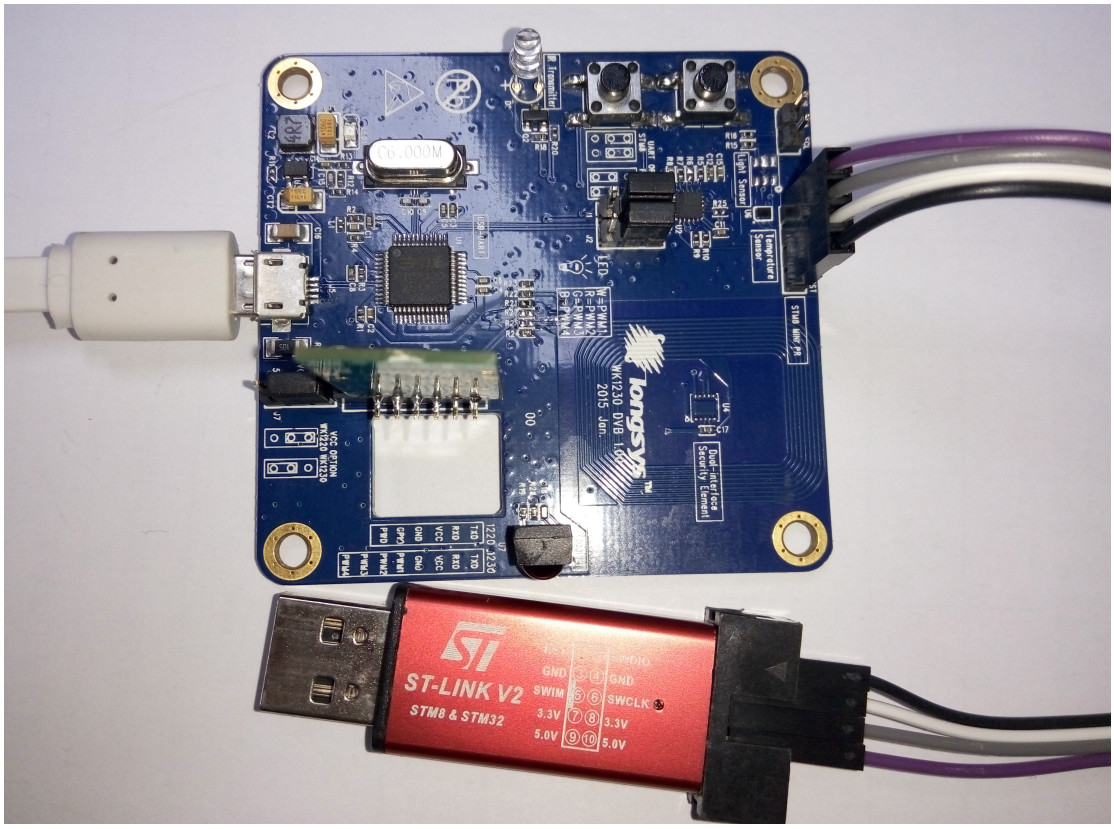

figure 2.5 WK1221 KIT

3.Data channel

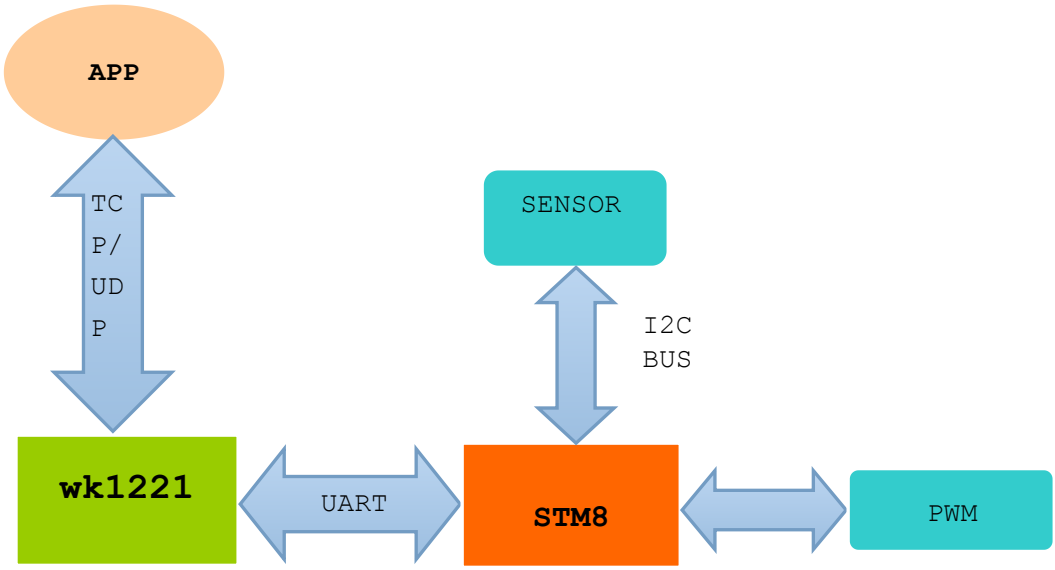

figure 3 flow chart

4. The use of APP mobile phone

4.1 Software interface

Click the software to enter the following 4.1 interface

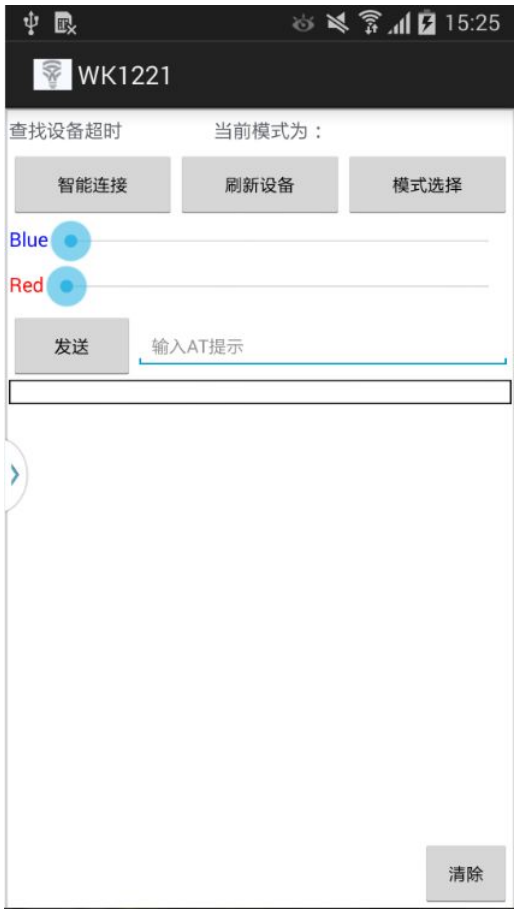

Figure 4.1 app control

Intelligent connection: when the device is in the sniffer mode, the device is used to configure the connection to the route.

Refresh equipment: it send find packets and query whether there is equipment online in the current LAN.

Mode selection: set the mode of the equipment work.

Send: use to send AT commands to wk1221.

Enter AT hint: use to enter the AT command.

Blue and Red slider: control 2PWM brightness on kit wk1221 board.

4.2 Intelligent connection

First, the wk1221 kit power off then power on and default sniffer in wk1221 mode. Phone connect a route (which is the user wants to configure the device to connect to the route)

Click smart connection, mobile phone send sniffer STATION mode configuration:

figure 4.2 SNIFFER Interface

Appear on the left side of the interface, the user can enter the WiFi password, then click "next", began to equipment connected to the routing, the connection is successful will show "a device configuration successfully". Then users can click exit ".

At this point, the device is configured to enter the station mode, and the phone is in the same LAN, can achieve control.

4.3 SOFTAP control

First, the wk1221 kit power off and press switch, then the kit power on. Press the switch about 500ms. At this point, wk1221 enters SoftAP mode. Mobile phone connected to the wk1221 module issued AP.

Note: the module is in the SoftAP mode, the phone must be connected

to the module issued SSID can control.

Then click the refresh device, it will appear below. The device online and the current mode is SOFTAP_MODE. It shows the device is controllable.

figure 4.3 SOFTAP connection

4.4 Station control

In this mode, the interface will show: the device online and the current mode is: STATION_MODE ".

Note: mobile connection and device connection must be controlled under the same LAN.

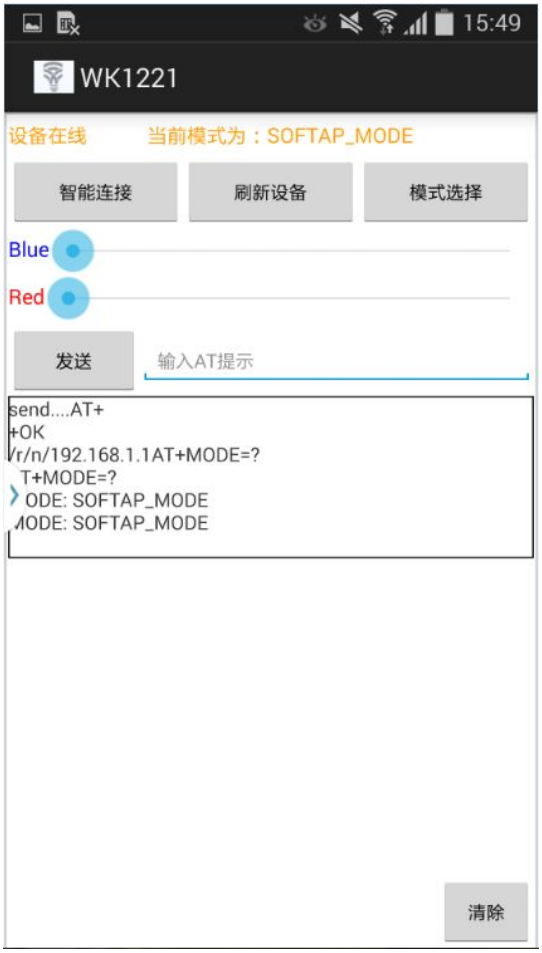

figure 4.4 STATION mode

There are two ways to enter the pattern:

1. From the smart connection configuration successfully, the module will automatically enter the station mode, and then realize the controllable (this way has been described in detail in Section 4.1).
2. From the premise of the SOFTAP mode controllable, set up to the station mode (the following start to describe the operation steps).

4.4.1 Softap go into station control

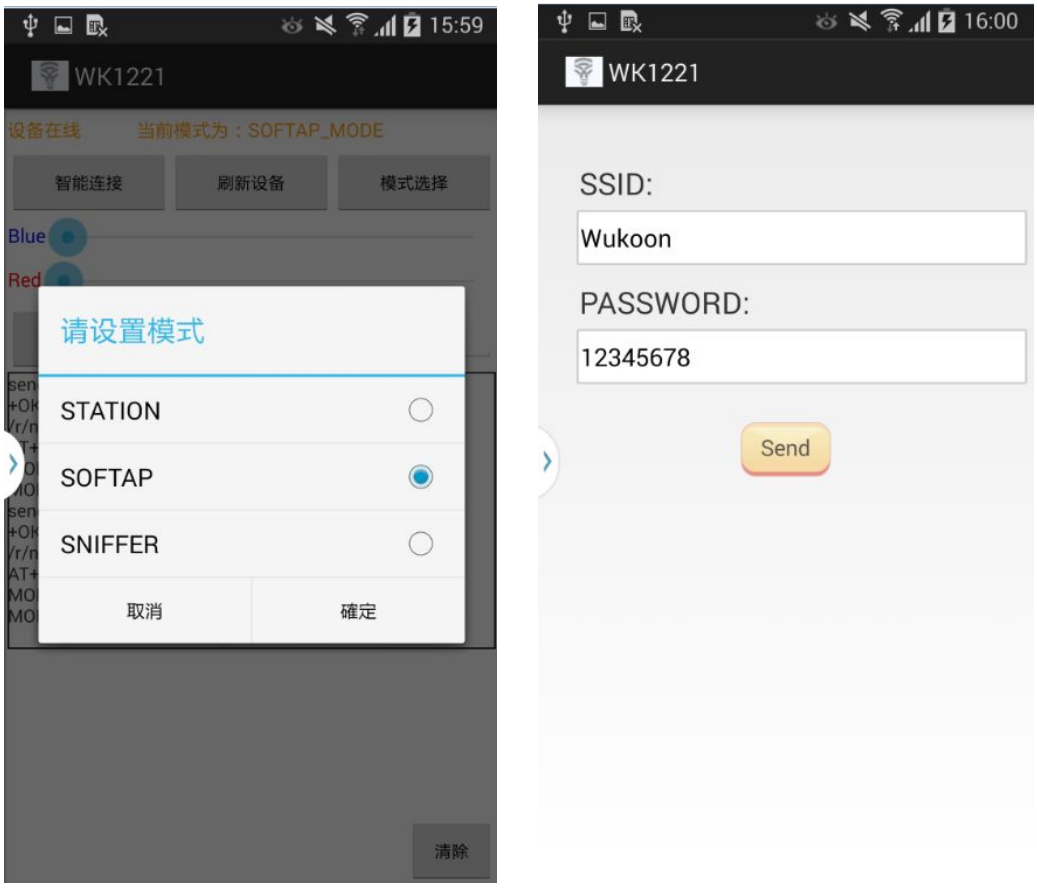

figure 4.5 setting station mode

The interface displays the "on-line" and "the current mode is: SOFTAP_MODE mode" said equipment in the SoftAP under the mode of and controllable, such as 4.5 on the left.
Click the mode select button, Select STATION, then click OK. ".
As figure 4.5. Enter the route SSID and after you want the device to enter the station mode to connect to the PASSWORD.
Click and send to finish. Equipment goes into station mode.

Note: this time to achieve the mobile app control devices, the phone must be connected to the same route.

4.5 Mode select option

Click "mode selection", the following interface appears:

figure 4.6 app mode select

station，softap，sniffer，Select the corresponding mode for configuration, default check the current mode, such as the current SOFTAP mode.

Station: Click STATION list to enter the SSID and PASSWORD configuration interface, enter the WiFi name and password after clicking send.

"Sniffer": Click SNIFFER to get the module back to "SNIFFER_MODE", while the word "device offline" is displayed, then you need to configure the smart connection (see Section 4.2)..

5. Work flow profile

5. Mobile app and wk1221 work flow profile

5.1.1 SOFTAP mode

1.Module power in the SoftAP mode, the phone is configured by the user connect the module of the SoftAP.
2 users click on the refresh device, the mobile phone app will broadcast a find packet through the UDP broadcast.
If the device is online, stm8 will do a response packet for find.
3 after the phone app determines the device online, the display of the device online and the current mode is SOFTAP_MODE ". Then the user can slide the blue and red slider. The device sends TCP information, and the content is set up to 2 PWM duty cycle (PWM between 0-255). Stm8 returns the OK response after the execution of the response.
4 then the mobile phone through the AT+ directive, the WiFi module configured to become station mode, the module will be connected to the route and fill in the password, and then restart. Waiting for modules to connect successfully to route.
5 mobile app connection and WiFi module same route, send find packet, found the device. To determine whether communication with the device.
6 the duty cycle of the same control 2 PWM is also controlled by the re execution step 3.
7 mobile phones can also be configured to become sniffer mode through AT+, the mode, the WiFi module can capture the surrounding WiFi data.
8 mobile app can send a SSID and PASSWORD for any route. When the module is caught in the data, it automatically enters the station mode, and the connection is set to the SSID. Next to the control module in station mode.

5.1.2 SNIFFER mode

。1 module power in SNIFFER mode, the phone first connected to any one AP, open the APP software, click smart connection button, enter the sniffer configuration.
2 enter the WiFi AP password, click start configuration. Wk1221 will get around the WiFi information, access to the SSID after the AP and PASSWORD, will automatically restart the station mode, began to connect the AP.

3 the next reference (5.1.1 SOFTAP mode starting from the 5 step), the phone APP and wk1221 connected to the same AP, you can control.

5.2 Stm8 and wk1221work profile

1 when the power, the button 1 is not pressed, stm8 will set the WiFi module for sniffer mode. When the power is pressed, when the key press 1S bell, stm8 will set the WiFi module to SoftAP mode. (the code switch can only be detected once on the stm8, after the power is invalid).

2 WiFi module every 500ms to send a pattern query instruction. Get the latest mode state for wk1221.
The 3 module is in SoftAP mode, indicating to 1S time flashing exhibit of lanterns. In station mode, indicating to 200ms time flashing exhibit of lanterns. In other modes, the indicator light is often bright. (the development board has not left the indicator light, but the code is implemented).

4 when the find packet is received from the mobile phone stm8, the app returns the module's mode and IP to the phone. To facilitate the phone app judgment equipment online.

5 when received from the mobile phone app to send the control PWM packet, stm8 will perform control PWM operation, and then return to the OK app response to the phone.

6 when a query sensor is sent to the mobile phone app, the stm8 executes the value of each sensor, then returns the data of each sensor to the mobile phone app. Mobile app should receive the data displayed on the screen, for the user to see (mobile app is not realized, SDK has achieved).