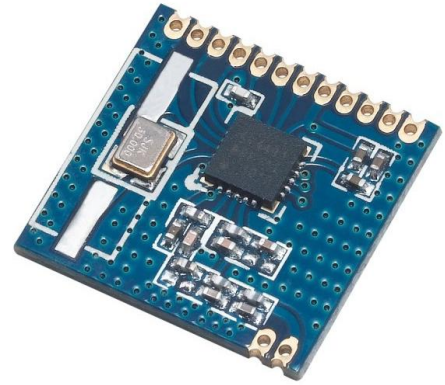


RF4431 wireless transceiver module

1. Description

RF4431 adopts Silicon Lab Si4431 RF chip, which is a highly integrated wireless ISM band transceiver. The features of high sensitivity (-121 dBm), +13 dBm output power, 10PPM crystal, and good RF matching circuit make this module work well in hot/cold environment with reliable communication and long distance.



2. Features

- Frequency Range: 315/433/868/915 (Customizable 240-930 MHz)
- Sensitivity up to -121 dBm
- Data transfer rate: 0.123-256 kbps
- FSK and GFSK Modulation mode
- 1.8-3.6 V Power supply
- Ultra-low consumption shutdown mode
- Digital received signal strength indicator (RSSI)
- Time wake-up function
- Excellent antenna match circuit and bi-direction communication
- Configurable packet structure
- Preamble detection
- 64-byte transmit and receive data FiFo
- Low battery detection
- Temperature sensor and 8-bit analog-to-digital converters
- 10PPM crystal with operating Temperature Range: -40 ~ + 85 °C
- Integrated voltage regulator
- Frequency hopping
- Power-on reset function
- Built-in crystal adjustment function

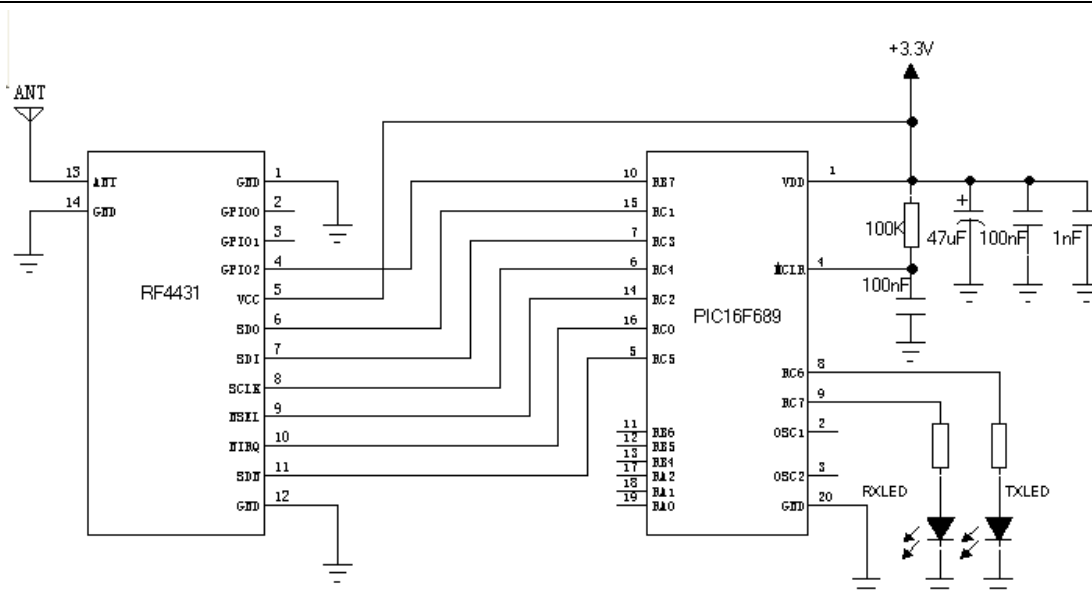
3. Application

- Remote control
- Remote meter reading
- Home security alarm and remote keyless entry
- Sensor networks
- Industrial control
- Tire Pressure Monitoring
- Home automation telemetry
- Health Monitoring
- Personal data records
- Wireless PC peripherals
- Toy control
- Tag reader

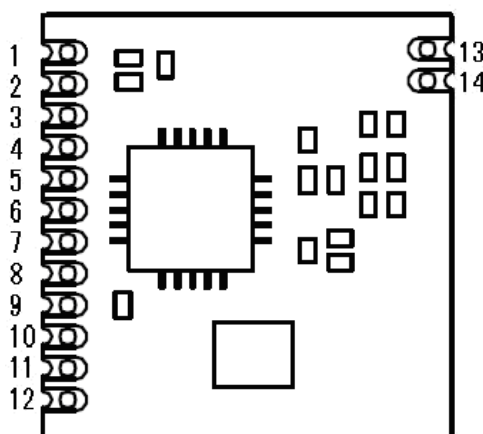
4. Electrical Specifications

Parameter	Min.	Typ.	Max.	Unit	Conditions
Operation conditions					
Supply Voltage	1.8	3.3	3.6	V	
Operating Temperature	-40	25	85	°C	
Current consumption					
RX Current		18.5		mA	
TX Current		35		mA	@13dBm
Sleep Current		<1		uA	
RF parameters					
Frequency	403	433	463	MHZ	@433MHZ
	838	868	898	MHZ	@868MHZ
Air data rate	0.123		256	Kbps	FSK
Output power	-8		13	dBm	
Sensitivity		-118		dBm	@data=1.2kbps,Fdev=30kHz

5. Schematic



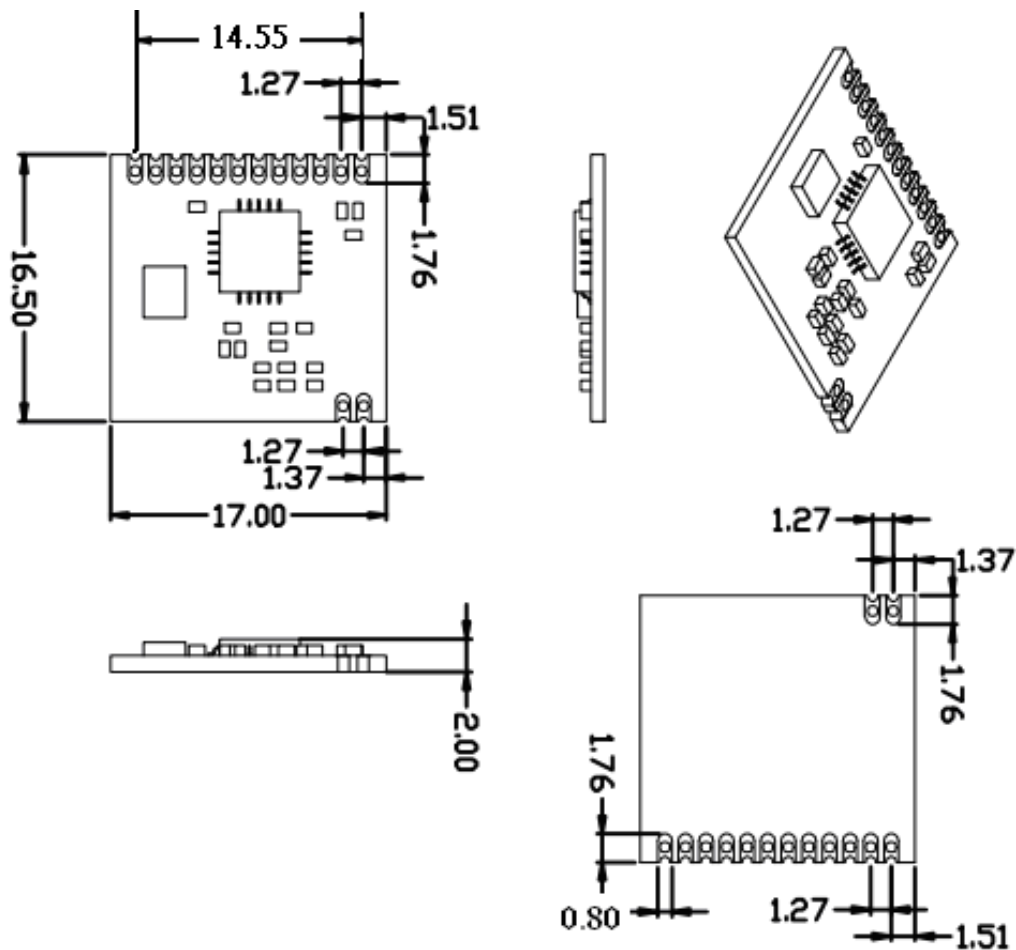
6. Pin Configuration



Pin Number	Pin Definitions	Description
1	GND	Connected to power ground
2	GPIO0	GPIO 0 of Si4431
3	GPIO1	GPIO 1 of Si4431
4	GPIO2	GPIO 2 of Si4431
5	VCC	Positive supply 1.8--3.6V
6	SDO	Serial data out for SPI interface
7	SDI	Serial data in for SPI interface

8	SCLK	Serial data clock for SPI interface
9	nSEL	Serial data selection for SPI interfaces.
10	nIRQ	Interrupt output
11	SDN	Power down control. SDN = 1, power down SDN = 0, normal working.
12	GND	Connected to power ground
13	ANT	From 50 ohm coaxial antenna
14	GND	Connected to power ground

7. Mechanism dimensions



8. Products Ordering Information

RF4431 - 433



 Module Model Frequency

For example:

If the customer needs the patch module small crystal 433MHZ band module that order

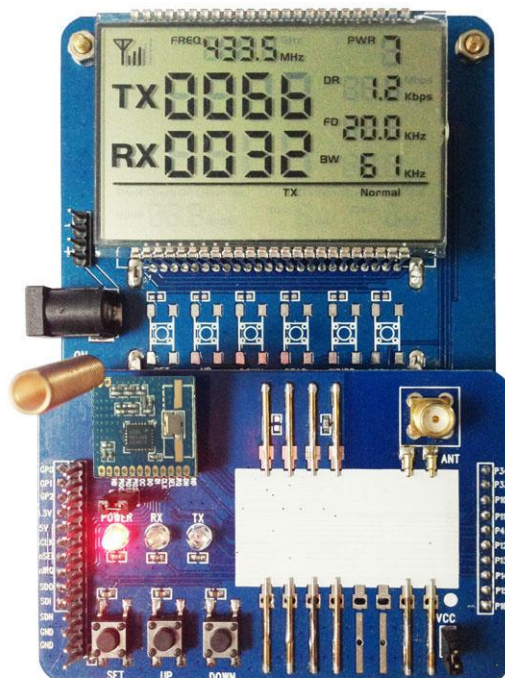
Model: RF4431 - 433

RF4431 products following models:

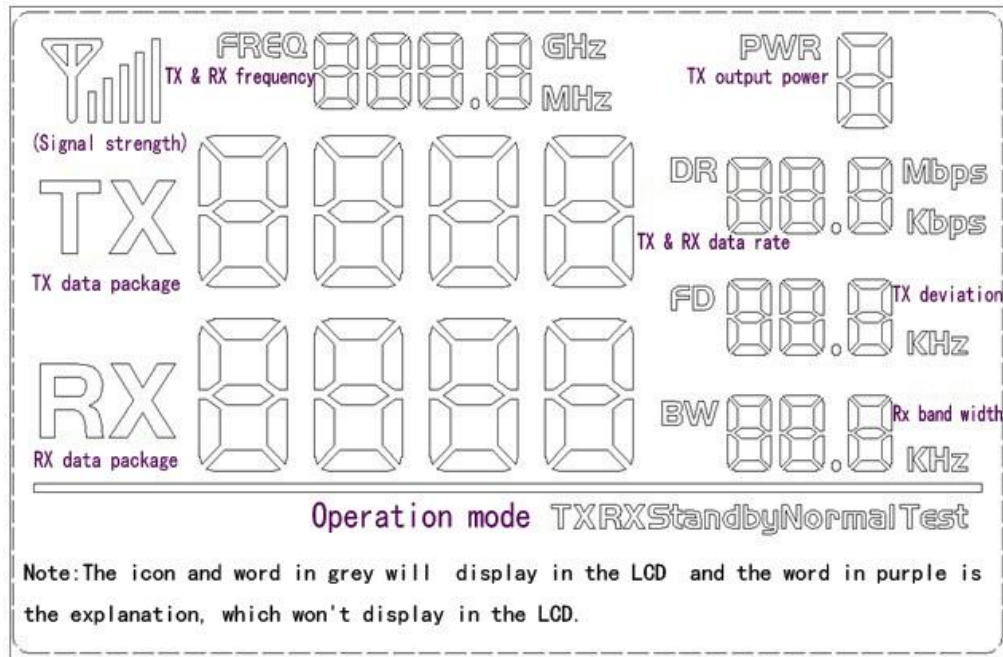
Part Number	Remark
RF4431-315	315MHZ,
RF4431-433	433MHZ,
RF4431- 868	868MHZ,
RF4431- 915	915MHZ,

Appendix:

The module is equipped with a standard DEMO board for customer to debug the program and test distance. It shows as below:



The LCD Full Segment is as below:



Users can set the parameters of the RF module such as frequency / transmitter power / transmission data rate / working mode through the buttons, and measure the wireless communication distance. Also, all the connection Pins of the module are extended to the demo board, user can use oscilloscope, multi-meter to monitor the operation of the RF module, which is very useful for software programming.

➤ Working Mode

There are 5 working modes in the DEMO. They are: Master mode, Slave mode, Tx Test mode, Rx test mode, Standby mode, accordingly, they are displayed on the LCD as: Tx normal / Rx normal / Tx Test / Rx test / Standby. When one packet is transmitted, the Red LED will blink once, the number of Tx packets will increase; when one packet is received, the Blue LED will blink once, the number of Rx packets will increase.

- 1) Master Mode: Send 1 packet per second, and waiting for the acknowledge;
- 2) Slave Mode: Stay in Rx mode to wait for the data from the master, it will send back the acknowledged signal after receiving the data from the master.
- 3) Tx Test Mode: RF module continuously transmit signal;
- 4) Rx Test Mode: RF module is always in Rx mode;
- 5) Standby Mode: RF module is always in standby state.

➤ Button Operation

- 1) [SET] Button

Press the [SET] button to enter setting mode if not in setting mode. In setting mode, press [SET] button to toggle between the set parameters: frequency / output power / data rate / working mode. The related LCD ICON will flash to indicate.

- 2) [UP] Button

In setting mode, press the [UP] button to increase the value of flash icon.

- 3) [Down] Button

In setting mode, press the [Down] button to decrease the value of flash icon.

Note: The DEMO board has FLASH memory inside, all the setting parameters will be saved

automatically and keep unchanged even power-off.