

YL430132

IEEE 802.11 a/b/g/n Wireless LAN and Bluetooth Combo Stamp Module

1. General Description

The YL430132 IEEE 802.11 a/b/g/n SDIO Wi-Fi with Bluetooth 5.0 combo stamp module is a highly integrated wireless local area network (WLAN) solution to let users enjoy the digital content through the latest wireless technology without using the extra cables and cords. It combines with Bluetooth 5.0 and provides a complete 2.4GHz Bluetooth system which is fully compliant to Bluetooth 5.0 with integrated PA for Class 1.5 and Low Energy (BLE) that supports EDR of 2Mbps and 3Mbps for data and audio communications. It enables a high performance, cost effective, low power, compact solution that easily fits onto the SDIO and UART stamp module.

Compliant with the IEEE 802.11a/b/g/n standard, YL430132 uses Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM), BPSK, QPSK, CCK and QAM baseband modulation technologies.

A high level of integration and full implementation of the power management functions specified in the IEEE 802.11 standard minimize system power requirements by using YL430132.

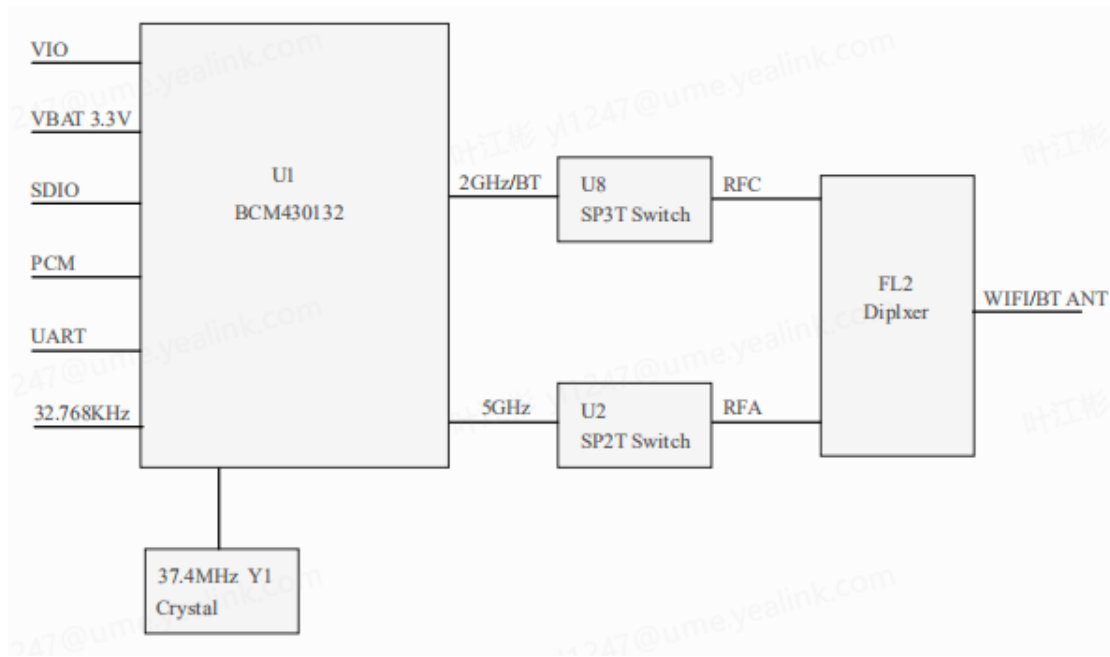
YL430132 module adopts BCM430132 single chip solution. The module design is based on the BCM430132 solution.

2. Key Features

1. Single spatial stream up to a 72 Mbps data rate.
2. 1(Transmit) ×1(Receive) Wi-Fi and Bluetooth 5.0
3. Low power consumption and high performance
4. Enhanced wireless security
5. Supports Bluetooth 5.0-compliant features
6. BDR、EDR(2、3Mbps)、LE(1Mbps) supported

3. Block Diagram

A simplified block diagram of the YL430132 module is depicted in the figure below.



4. Specifications Table

Model Name	YL430132
Description	Wireless LAN & Bluetooth Stamp Module
WLAN Standard	IEEE 802.11a/b/g/n & Wi-Fi compliant
Bluetooth Standard	Bluetooth 2.1 + EDR, Bluetooth 3.0, Bluetooth 4.2 (Bluetooth Low Energy), and Bluetooth 5.0.
Major Chipset	BCM430132
Host Interface	Wi-Fi: SDIO, BT: UART
Dimensions	12mm * 12mm * 2.0mm
Wi-Fi VID/PID	TBD
BT VID/PID	TBD
Weight	TBD
Operating Conditions	
Voltage	power supply for host:3.3V
Temperature	-40℃~85℃
Storage temperature	-45℃~135℃
Electrical Specifications	
Frequency Range	WLAN: 2.4 GHz ISM Bands 2.4-2.4835 GHz 5GHz: 5.15~5.35GHz、5.47~5.725GHz、5.725~5.85GHz (5GHz UNII Band) Bluetooth: 2402~2480MHz
Modulation	CCK、OFDM /64-QAM、16-QAM、QPSK、BPSK for WLAN GFSK, $\pi/4$ -DQPSK, 8DPSK for Bluetooth

Output Power	WLAN: 802.11b: TBD dBm (11Mbps) 802.11g: TBD dBm (54Mbps) 802.11n @2.4GHz: TBD dBm (HT20 MCS7) 802.11a @5GHz: TBD dBm (54Mbps)
Receive Sensitivity	802.11b: TBD dBm (11Mbps) 802.11g: TBD dBm (54Mbps) 802.11n @2.4GHz: TBD dBm (HT20 MCS7) 802.11a @5GHz: TBD dBm (54Mbps) BT: BER < 0.1% (IQXEL80 Tx -70 Bm)
Data Rates	WLAN 802.11b: 1, 2, 5.5, 11Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: up to 72Mbps-single Bluetooth BDR、EDR(2、3Mbps)、LE(1Mbps)
Security	◆ WPA, WPA2 (Personal) with security improvements, and WPA3 (Personal) support for powerful encryption and authentication ◆ AES and TKIP in hardware for faster data encryption and IEEE 802.11i compatibility ◆ Reference WLAN subsystem provides Wi-Fi Protected Setup (WPS) ◆ Worldwide regulatory support: Global products supported with worldwide homologated design
Operating System Compatibility	TBD

5. Electrical Characteristics

5.1 Absolute Maximum Ratings

Symbol	Parameter	Maximum	Unit
VDD	3.3V power supply voltage	5.25	V
VDDIO	Voltage supply for GPIO	2.07	V
RF _{in}	Maximum RF input (reference to 50 Ω)	TBD	dBm

5.2 Recommended Operating Conditions

Symbol	Parameter	Rating	Unit
VDD	3.3V power supply voltage	3.2~5.0	V
VDDIO	Voltage supply for GPIO	1.62~1.98	V

5.4 GPIO DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Unit
V _{IH}	Input high voltage	0.65*VDDIO	--	VIO+0.3	V
V _{IL}	Input low voltage	-0.3	--	0.35*0.65*VDDIO	V
V _{OH}	Output high voltage	VDDIO-0.45	--	VIO	V
V _{OL}	Output low voltage	0	--	0.45	V

6. Pin Definition

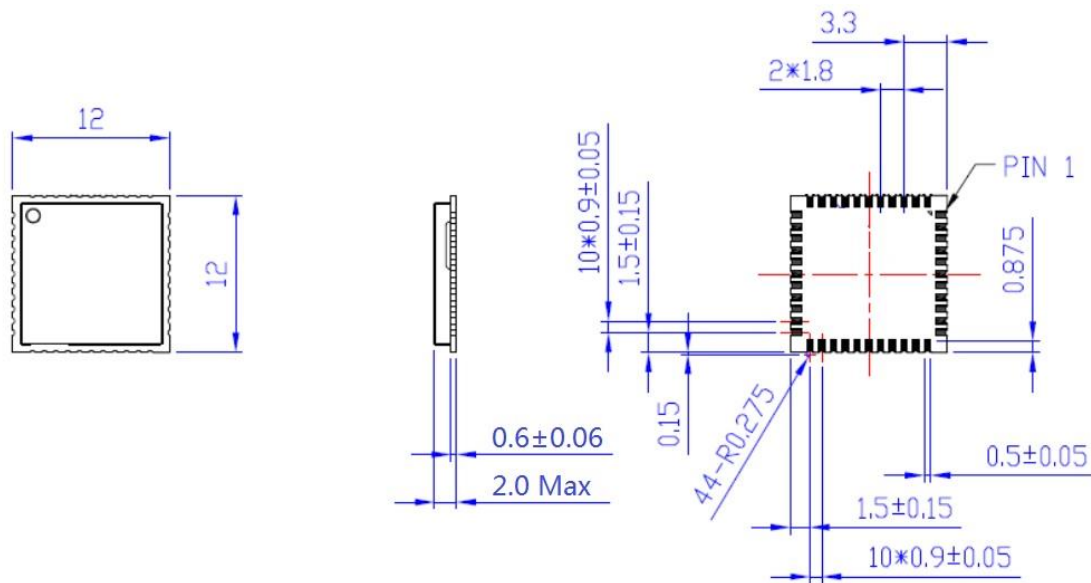
Pin Description



Pin No.	Definition	Basic Description Type	Type
1	GND	GROUND	GND

2	WL_BT_ANT	Wi-Fi/BT RF signal	I/O
3	GND	GROUND	GND
4	NC	Floating Pin, No connect to anything.	Floating
5	NC	Floating Pin, No connect to anything.	Floating
6	Host_Wakeup_BT	Host wakeup BT device	IN
7	BT_wakeup_Host	BT Device wakeup Host	I/O
8	NC/TMS	Reserve for EJTAG	I/O
9	VBAT	DC power supply +3.3V input	VCC
10	XTAL_IN/NC	Floating Pin, No connect to anything.	Floating
11	XTAL_OUT/NC	Floating Pin, No connect to anything.	Floating
12	WL_EN	GPIO pin to on/off the Wi-Fi function by software. Active high. Reserve pull high 100K resistor and shunt 100pF capacitor to GND on platform.	IN
13	WL_wakeup_Host	WLAN device wakeup host	OUT
14	SDIO_DATA2	SDIO Data Line 2	I/O
15	SDIO_DATA3	SDIO Data Line 3	I/O
16	SDIO_CMD	SDIO Command Input	I/O
17	SDIO_CLK	SDIO Clock Input	IN
18	SDIO_DATA0	SDIO Data Line 0	I/O
19	SDIO_DATA1	SDIO Data Line 1	I/O
20	GND	GROUND	GND
21	NC	Floating Pin, No connect to anything.	Floating
22	VDDIO	1.8V-3.3V VDDIO supply for WLAN and BT	VCC
23	NC	Floating Pin, No connect to anything.	Floating
24	LPO	External low-power 32.768KHz clock input.	IN
25	PCM_OUT	PCM synchronous data output, connected to PCM_IN on the host.	OUT
26	PCM_CLK	PCM Clock	I/O
27	PCM_IN	PCM synchronous data input, connected to PCM_OUT on the host.	IN
28	PCM_SYNC	PCM synchronous data SYNC	I/O
29	TDI	Reserve for EJTAG	IN
30	TDO	Reserve for EJTAG	OUT
31	GND	GROUND	GND
32	TCK	Reserve for EJTAG	GND
33	GND	GROUND	GND
34	BT_EN	GPIO pin to on/off the BT function by software. Active high. Reserve pull high 100K resistor and shunt 100pF capacitor to GND on host.	IN

35	NC	Floating Pin, No connect to anything.	Floating
36	GND	GROUND	GND
37	NC	Floating Pin, No connect to anything.	Floating
38	NC	Floating Pin, No connect to anything.	Floating
39	NC	Floating Pin, No connect to anything.	Floating
40	NC	Floating Pin, No connect to anything.	Floating
41	UART_RTS	UART Ready To Send, connected to CTS on the host.	OUT
42	UART_TXD	UART Transmit Data, connected to RXD on the host.	OUT
43	UART_RXD	UART Receive Data, connected to TXD on the host.	IN
44	UART_CTS	UART Clear To Send, connected to RTS on the host.	IN



Tolerances unless otherwise specified : $\pm 0.15\text{mm}$

FCC regulatory compliance statement

§15.19 Statement

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.

§15.21 Information to user

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- **List of applicable FCC rules:**

47 CFR Part 15, Subpart C 15.247

47 CFR Part 15, Subpart E 15.407

- **Summarize the specific operational use conditions**

The module can be used in teleconference machine. After installing this module, the telephone can be connected to the router through a wireless network. In WIFI coverage, users can send various instructions through smart phones or PCs, which is very convenient. The input voltage of the module is nominally 5V, and other antennas of the same type with less than the original gain can be replaced.

- **Limited module procedures**

This module is a limited module.

- **Trace antenna designs**

The antenna is not a trace antenna.

- **RF exposure considerations**

This Module 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 and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

- **Antennas**

The module itself does not have an antenna. During the test, the host provides a PCB antenna with a maximum gain of 3dBi.

If you desire to increase antenna gain and either change antenna type or use same antenna type certified, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

- **Label and compliance information**

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: T2C-YL430132" any similar wording that expresses the same meaning may be used.

§ 15.19 Labelling requirements shall be complied on end user device.

Labelling rules for special device, please refer to §2.925, § 15.19 (a)(5) and relevant KDB publications. For E-label, please refer to §2.935.

- **Information on test modes and additional testing requirements**

Test software access to different test modes: Wifi Test Tool v1.4.0

Testing item, Frequencies, Transmit Power, Modulation Type, test Antennas can be selected on the test script instructions.

The screenshot shows the Yealink T54W web interface. The left sidebar contains a menu with items: Status, Account, Network, Dsskey, Features, Settings, Directory, and Security. The main content area is titled 'WiFi' and includes the following settings:

- Start WiFi Test:** A blue button labeled 'Init WiFi'.
- WiFi Type:** Radio buttons for 'Indonesia' and 'CE/FCC' (selected).
- WiFi TX Test:**
 - WiFi Frequency:** Radio buttons for '5GHz' and '2.4GHz' (selected).
 - Protocol Mode:** A dropdown menu showing 'b'.
 - WiFi Channel:** A dropdown menu showing '1'.
 - Rate:** A dropdown menu showing '1'.
 - Power:** A dropdown menu showing '10'.
 - A blue button labeled 'WiFi TX Test'.
- WiFi RX Test:**
 - WiFi Frequency:** Radio buttons for '5GHz' and '2.4GHz' (selected).

● Additional testing, Part 15 Subpart B disclaimer

This modular transmitter is only FCC authorized for the specific rule parts listed on our grant, host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.

Please note that For a Class B or Class A digital device or peripheral, the instructions furnished the user manual of the end-user product shall include statement set out in §15.105 *Information to the user* or such similar statement and place it in a prominent location in the text of host product manual. Original texts as following:

For Class B

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.

For Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

ISED compliance statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED Radiation Exposure statement

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur et votre corps. Cet émetteur ne doit pas être colocalisé ou fonctionner en conjonction avec une autre antenne ou un autre émetteur.

End Device Labelling

Please notice that if the IC 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 IC: 10741A-YL430132" any similar wording that expresses the same meaning may be used.

L'étiquette d'homologation d'un module d'Innovation, Sciences et Développement économique Canada devra être posée sur le produit hôte à un endroit bien en vue, en tout temps. En l'absence d'étiquette, le produit hôte doit porter une étiquette sur laquelle figure le numéro d'homologation du module d'Innovation, Sciences et Développement économique Canada, précédé du mot « contient », ou d'une formulation similaire allant dans le même sens et qui va comme suit :

Contient IC: 10741A-YL430132 est le numéro d'homologation du module

5G Wi-Fi Use Notice

1. the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
 2. the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and
 3. the maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.
 4. Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.
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1. les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
 2. le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5250-5350 MHz et 5470-5725 MHz

doit se conformer à la limite de p.i.r.e.;

3. le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.
4. De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

This radio transmitter [IC: 10741A-YL430132] has been approved by Innovation, Science and Economic Development Canada 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.

a list of all antenna types

PCB Antenna	3dBi
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