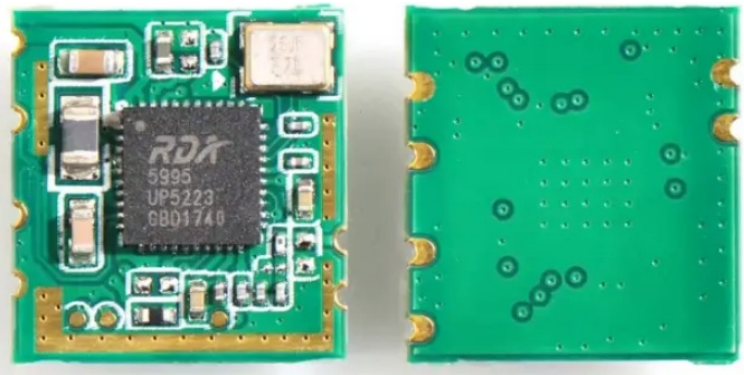
ALTOBEAM AB6031X-44PE WiFi and BLE Module User Manual

Contents

ALTOBEAM AB6031X-44PE WiFi and BLE Module



Product Information

Specifications

- Main chipset: AltoBeam’s ATBM6031-X IC chip
- Operating frequency: 2.4GHz
- Wi-Fi Standard: IEEE 802.11b/g/n
- BLE Standard: v4.2
- Wi-Fi Modulation: Not specified
- Wi-Fi Bandwidth: Not specified
- Wi-Fi PHY data rates: Not specified
- Wi-Fi sensitivity: Not specified
- Wi-Fi transmitting power: Not specified
- BLE transmitting power: Not specified
- BLE sensitivity: Not specified
- Host interface: SDIO 2.0
- Operation range: More than 150 meters in open space
- RF antenna: External antenna (2.4GHz 50Ohm Resistance)
- Security: WEP, WPA, WPA2, WPA3 personal
- Power consumption: Max. 300mA
- Operating temperature: -20°C to +70°C ambient temperature
- Storage temperature: -40°C to +125°C ambient temperature
- Humidity: 5% to 90% maximum (non-condensing)
- Dimension: L12.0*W12.0*H2.25mm

Product Usage Instructions

Section 1: Installing the AB6031X-44PE Module

1. Ensure that the device where you want to install the module has an SDIO 2.0 compliant interface.
2. Connect the AB6031X-44PE module to the SDIO interface of the device.
3. Securely attach the external antenna to the RF antenna port ofthe module.

Section 2: Connecting to Wi-Fi Networks

To connect the AB6031X-44PE module to Wi-Fi networks, follow these steps:

1. Power on the device.
2. Ensure that the device is within the operating range of the Wi-Fi network.
3. Configure the Wi-Fi network settings on the device according to the device's user manual or operating instructions.
4. Select the appropriate Wi-Fi network from the available networks list.
5. Enter the Wi-Fi network password, if required.
6. Wait for the AB6031X-44PE module to establish a connection with the Wi-Fi network.

Section 3: Using Bluetooth Low Energy (BLE)

The AB6031X-44PE module supports Bluetooth Low Energy (BLE) technology. To use BLE, follow these steps:

1. Ensure that the device is within range of the BLE-enabled device you want to connect to.
2. Enable BLE on the device you want to connect to, if necessary.
3. Scan for available BLE devices on your device.
4. Select the desired BLE device from the list of available devices.
5. Follow any additional pairing or connection instructions provided by the BLE device.

FAQ

Q: Can the AB6031X-44PE module be used in IP cameras?
A: Yes, the AB6031X-44PE module can be used in IP cameras as it supports Wi-Fi connectivity.

Q: What is the operating frequency of the AB6031X-44PE module?
A: The AB6031X-44PE module operates at a frequency of 2.4GHz.

Q: What is the maximum power consumption of the AB6031X-44PE module?
A: The AB6031X-44PE module has a maximum power consumption of 300mA.

DISCLAIMER

AltoBeam Inc.
Address: B808, Tsinghua Tongfang Hi-Tech Plaza, Haidian, Beijing 100083 Tel: (8610) 6270 1811 Fax: (8610) 6270 1830
Website: **www.altobeam.com**
Support: **support@altobeam.com**

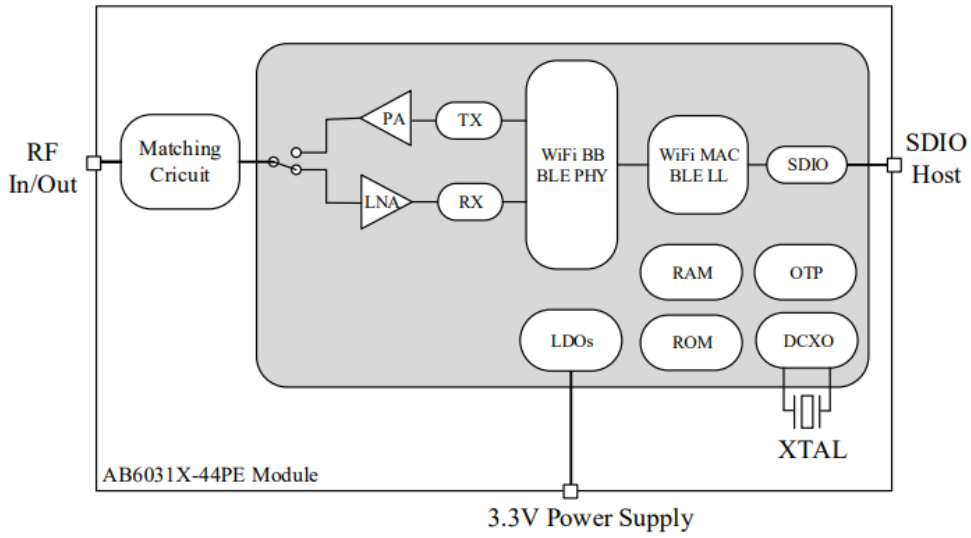
WRITTEN	CHECKED	APPROVED

REVISION HISTORY

Revision Number	Revision Date	Changes	
		Item	**Description**
1.0	2023-09-12		Formal release

Overview

AB6031X-44PE module is a highly integrated 1T1R 2.4GHz IEEE 802.11b/g/n and Bluetooth LE v4.2 device with SDIO interface (SDIO 2.0 compliant), based on AltoBeam's ATBM6031-X IC chip. The AB6031X-44PE module can be used in IP camera, printer and smart household products that need to connect Wi-Fi networks.



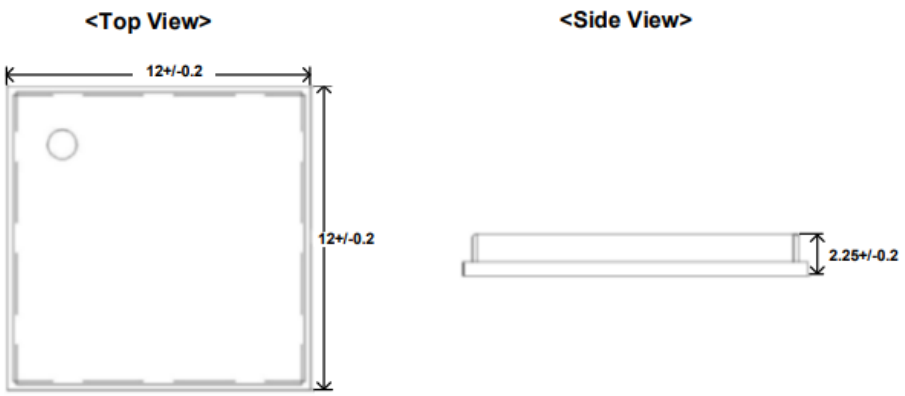
Product Characteristics

Main chipset	AltoBeam ATBM6031-X Wi-Fi and BLE chip
Operating frequency	2.412 ~ 2.472 GHz
Wi-Fi Standard	IEEE 802.11b/g/n 1T1R
BLE Standard	Bluetooth LE v4.2
Wi-Fi Modulation	802.11b: DBPSK (1Mbps), DQPSK (2Mbps), CCK (5.5, 11Mbps) 802.11g/n: OFDM
Wi-Fi Bandwidth	802.11b/g/n 20MHz: ≤20MHz 802.11n 40MHz: ≤40MHz
Wi-Fi PHY data rates	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MSC0~7, up to 150Mbps
Wi-Fi sensitivity	802.11b 1Mbps: -97.5dBm; 802.11b 11Mbps: -90.0dBm; 802.11g 6Mbps: -93.5dBm; 802.11g 54Mbps: -76.5dBm; 802.11n MSC7 HT20: -74.0dBm; 802.11n MSC7 HT40: -71.0dBm
Wi-Fi transmitting power	802.11b 11Mbps: 19.19dBm; 802.11g 54Mbps: 16.92dBm; 802.11n HT20 MSC7: 15.89dBm; 802.11n HT40 MCS7: 13.67dBm
BLE transmitting power	12.1dBm
BLE sensitivity	1Mbps: -99.5dBm

Host interface	SDIO 2.0
Operation range	More than 150 meters in open space
RF antenna	External antenna (2.4GHz 50Ohm Resistance)
Security	WEP, WPA, WPA2, WPA3 personal
Power consumption	DC3.3V Max.300mA
Operating temperature	-20 ~ +70℃ ambient temperature
Storage temperature	-40~ +125℃ ambient temperature
Humidity	5% to 90% maximum (non-condensing)
Dimension	Typical L12.0*W12.0*H2.25mm

Mechanical Specification

Outline drawing



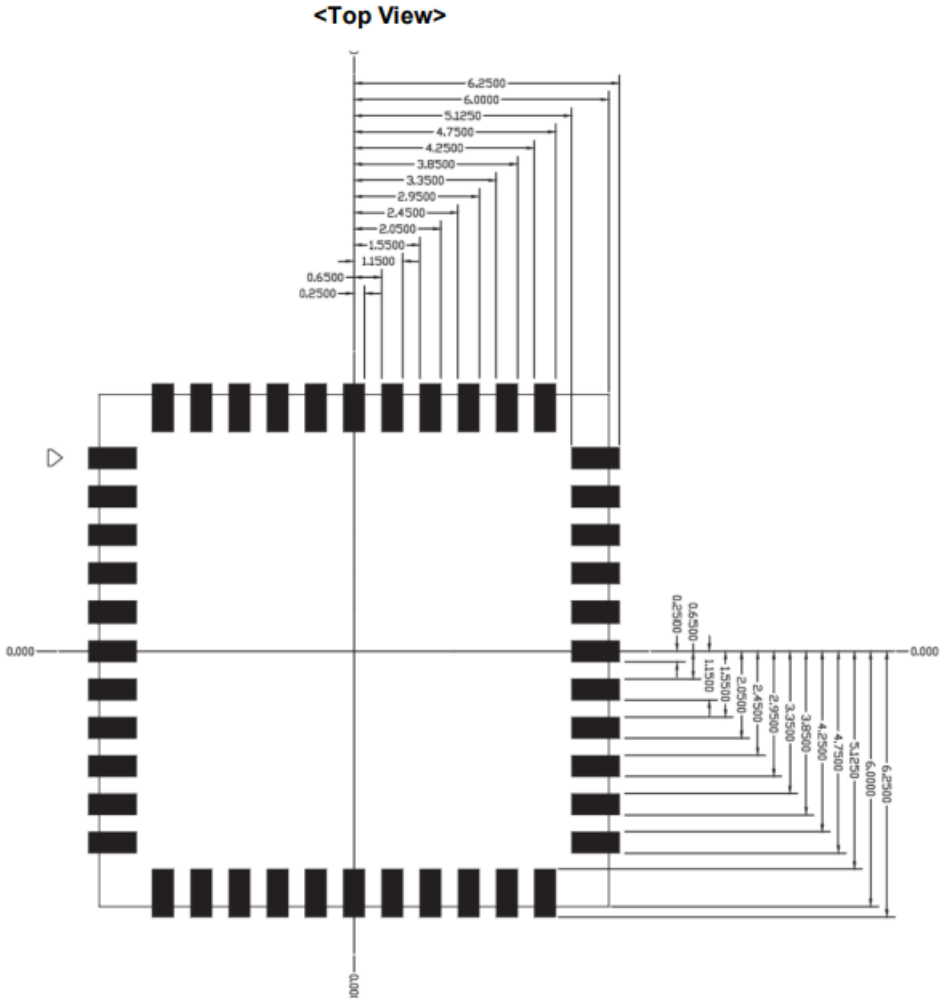
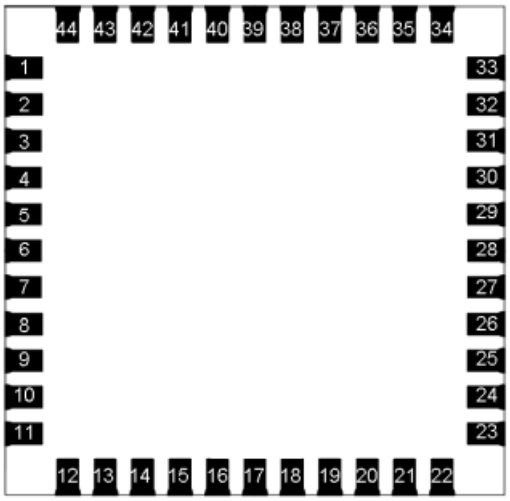


Fig. Outline drawing

Pin definition


44 43 42 41 40 39 38 37 36 35 34
1
2
3
4
5
6
7
8
9
10
11
33
32
31
30
29
28
27
26
25
24
23
12 13 14 15 16 17 18 19 20 21 22

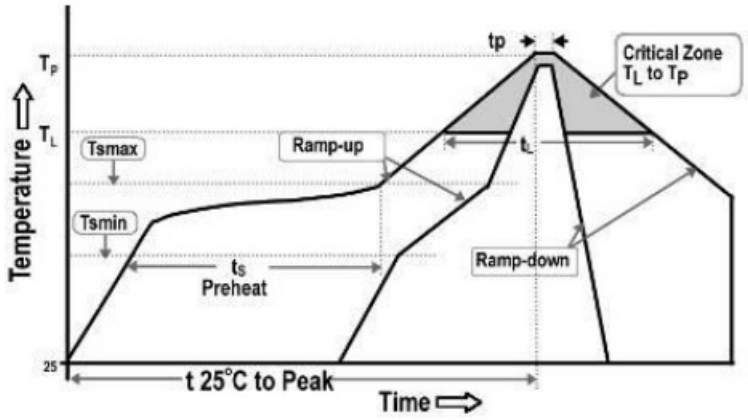
<Top View>

Pin Number	Pin Name	Pin Description
1	GND	Ground
2	RF_ANT	External Antenna (2.4GHz 50ohm)
3	GND	Ground
4	NC	
5	NC	
6	NC	
7	NC	
8	NC	
9	VDD	3.3V DC power supply input
10	NC	
11	NC	
12	CS	Internal regulator disable pin, low level is chip power down
13	WAKE_HOST	WLAN to wake up host
14	SDIO_DAT2	SDIO data line 2
15	SDIO_DAT3	SDIO data line 3
16	SDIO_CMD	SDIO command line
17	SDIO_CLK	SDIO clock line
18	SDIO_DAT0	SDIO data line 0
19	SDIO_DAT1	SDIO data line 1
20	GND	Ground
21	NC	
22	VDD	3.3V DC power supply input
23	NC	I2C SDA for debug
24	NC	I2C SCL for debug
25	NC	

26	NC	
27	NC	Left it floating
28	NC	
29	NC	
30	NC	
31	GND	Ground
32	NC	
33	GND	Ground
34	NC	
35	NC	
36	GND	Ground
37	NC	
38	NC	
39	NC	
40	NC	
41	GND	Ground
42	NC	
43	NC	
44	NC	

Solder Reflow Profile

- Referred to IPC/JEDEC standard.
- Peak Temperature: <260°C
- Number of Times: ≤2 times



Profile Feature		Specification*
Average ramp-up rate (tsmax to tP)		2℃/second max.
Pre-heat	Minimal temperature (Tsmin)	150℃
	Maximal temperature (Tsmax)	200℃
	Time (ts)	60~120 seconds
Time maintained above	Temperature (TL)	217℃
	Time (tL)	40~60 seconds
Peak/Classification temperature (TP)		260℃
Time within 5℃ of actual peak temperature (tP)		10~20 seconds
Ramp-down rate		2.5℃/second max.
Time 25℃ to peak temperature		8 minutes max.

Warning

1. Do not use this product under humid or hot conditions.
2. Do not use overloaded.
3. FCC 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 15.203
- 47 CFR Part 15, Subpart C 15.205
- 47 CFR Part 15, Subpart C 15.207
- 47 CFR Part 15, Subpart C 15.209
- 47 CFR Part 15, Subpart C 15.247
- 47 CFR Part 2.1091

#Summarize the specific operational use conditions
This module can be used in IOT devices, the input voltage to the module is nominally 5V.

#Limited module procedures
This module is not a limited module.

#Trace antenna designs
The antenna is not a trace antenna.

#RF Exposure compliance statement
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.

 # Antenna Change Notice to Host manufacturer
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.

#Labelling Instruction for Host Product Integrator
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: 2BAVS-AB6031X-44PE” 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
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 §2.1093 and difference antenna configurations.
Test software access to different test modes: AltoBeam WIFI GUI (for BT and WiFi test)Testing item, Frequencies, Transmit Power, Modulation Type can be selected on the test script instructions.

#FCC other Parts, Part 15B Compliance Requirements for Host product manufacturer
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

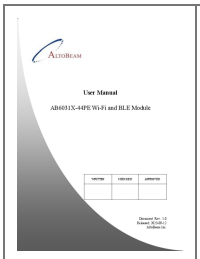
Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment 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.

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 20 cm between the radiator and your body. 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: 31395-AB6031X44PE" any similar wording that expresses the same meaning may be used.
This radio transmitter [IC: 31395-AB6031X44PE] 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

Documents / Resources

	ALTOBEAM AB6031X-44PE WiFi and BLE Module [pdf] User Manual AB6031X-44PE WiFi and BLE Module, AB6031X-44PE, WiFi and BLE Module, BLE Module, Module

References

- ALTOBEAM
- ALTOBEAM
- User Manual