Witch-AK801-A1.0 Module Datasheet

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Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie 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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé.

FCC Statements

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.

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

FCC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 Transmitter Module FCC ID: PUU- CAN06DW

When the module is installed inside another device, the user manual of this device must contain below warning statements:

1. 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.

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

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

The 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. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

The end user manual shall include all required regulatory information/warning as shown in this manual, include:

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.

FSL

Witch-AK801-A1.0

Module

1. Product overview

■Witch-AK801-A1.0 is an embedded low-power BLE Beacon module that FSL has developed.The module works in 2.400 ~ 2.480GHz general ISM frequency band.

Compatible with BLE iBeacon protocol, it can realize bidirectional data transmission with smart phones through iBeacon protocol, with good performance, especially suitable for short data communication with mobile phones.

■Witch-AK801-A1.0 module in low power mode standby current is very low, and rich peripheral resources. Based on these, you can develop smart products that meet your needs.

■SMT patches are supported for the half hole of Witchy-AK801-A1.0 module. Goldfinger can insert the board and vertically install the module through wave soldering. Easy to use and reduce the development cycle.

2. Features

■Emission mode(8dBm)Working current18mA@8dBm
■Receiving mode(1Mbps)Working current18mA
■Dormant current2.5uA
■The receiving sensitivity is -90dBm in 1Mbps mode
■Transmitting maximum power8dBm
■Good anti-interference
■The receiving filter has high adjacent channel inhibition
■Antenna gain2dBi
■Working temperature::-40 to 105 ℃

3. Application field

■Smart household and home appliances

■Smart socket and light

■Industrial wireless control

■Security monitor

4. Authentication information

■ This device complies with Part 15 of the FCC Rules

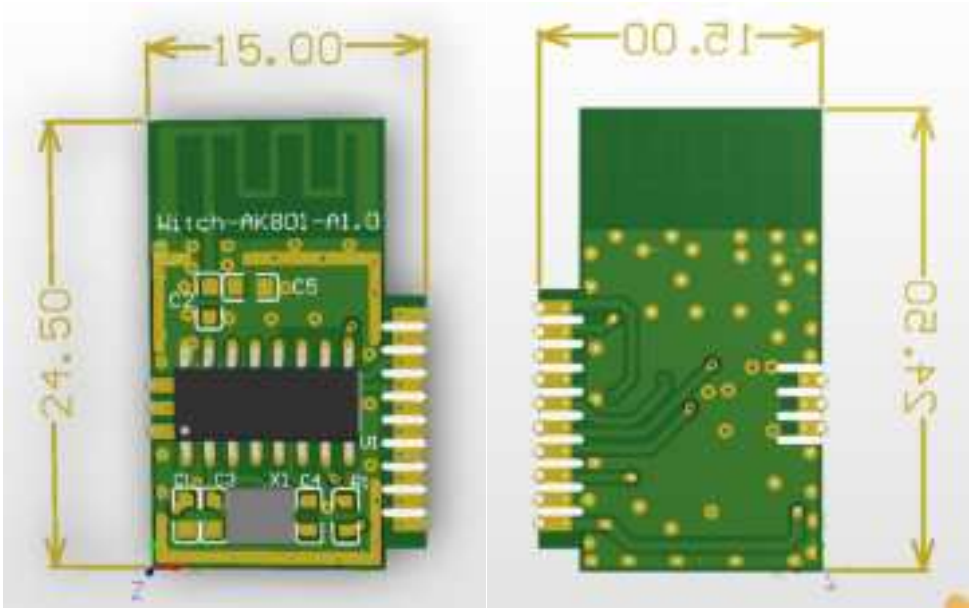
5. Module interfaces

5.1Dimensions and package

The Witch-AK801-A1.0 module has two rows of pins, and the pin spacing is 1.27 ±0.1mm.

Witch-AK801-A1.0 Module size: 24.5±0.35mm (W) x 15.0±0.35mm (L) x 1±0.15mm (H).

Witch-AK801-A1.0 The module size diagram is shown in the figure:



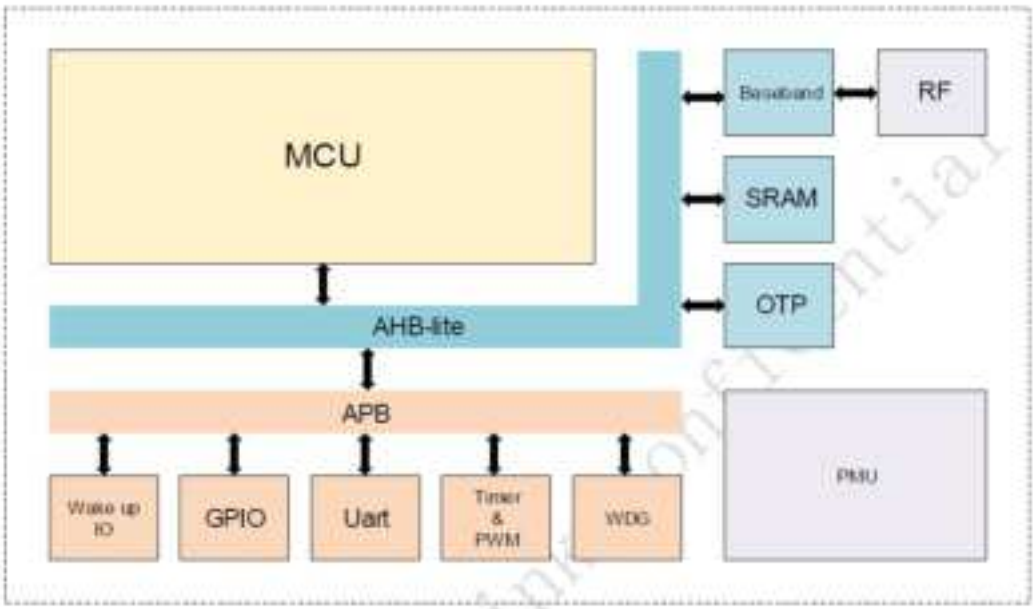
5.2 Pin definition

Define pin ordering from bottom o up

Pin number	Symbol	I/O type	Function
PIN1	VCC	P	Power pin
PIN2	GND	P	Ground pin
PIN3	GPIO4/PWM1	I/O	Support hardware PWM
PIN4	GPIO8/PWM5	I/O	Support hardware PWM
PIN5	GPIO6/PWM3	I/O	Support hardware PWM
PIN6	GPIO7/PWM4	I/O	Support hardware PWM
PIN7	GPIO3/PWM0	I/O	Support hardware PWM
PIN8	GPIO2	I/O	
PIN9	GPIO15/TX	I/O	
PIN10	GPIO16/RX	I/O	
PIN11	GPIO5/PWM2	I/O	Support hardware PWM
PIN12	GPIO19	I/O	
PIN13	GPIO0/ADC	I/O	

6. Block diagram

Chip block diagram



7. Electrical characteristics

ITEM	Minimum value	Typical value	Maximum value	unit
RF Electrical specification				
RF Transmitted power	-18	0	8	dBm
RF Receiving sensitivity@FER<30.8%,1Mbps		-90		dBm
RF Transmitting center frequency deviation		+/-10		KHz
RF frequency	2402		2480	MHz
RF channel	CH0		CH39	/
BW 20dB bandwidth		1.1		MHz
AC/DC Electronic property				
Operating voltage	3.0	3.3	3.6	V
Voltage rise time			10	ms

（from1.6Vto2.8V）				
High level input	0.7VDD		VDD	V
Low level input	VSS		0.3VDD	V
High level input	0.9VDD		VDD	V
Low level input	VSS		0.1VDD	V

8. Module power consumption

Operating mode power consumption current	
Working mode(RX mode)	6.3mA
Working mode(TX mode)	18mA
Sleep pattern	2.3uA

9. Antenna characteristics

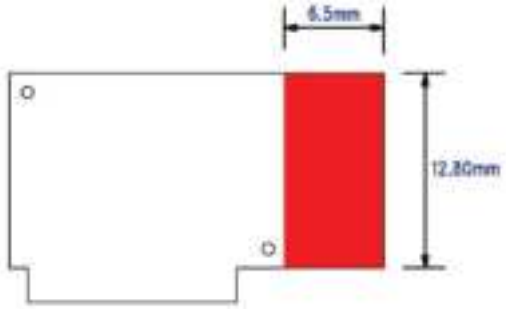
ITEM	UNIT	Minimum value	Typical value	Maximum value
frequency	MHz	2400	-	2500
Voltage standing wave ratio	-	-	-	2.0
gain	dBi	-	1.1	-
Maximum input power	W	-	-	3
impedance	-	-	50	-

10. Application precautions

10.1In order to prevent the module from being strongly interfered by the LED driver, it is necessary to keep the module at least 10cm from the oscillator signal source, such as chip switch output pin, switching transformer, COM driver tube, switching diode, etc.

10.2The module supports onboard antennas. The following describes antenna precautions and module placement rules.

1》On the user's PCB board, components and GND should not be placed in the area corresponding to the red area (12.8x6.5mm) in the following figure. The PCB bottom plate should be hollowed out。



2》Keep the antenna away from metal, at least 10 mm away from the surrounding taller components

3》The antenna part cannot be obscured by the metal casing.

4》As far as possible placed in the user board in the following areas to reduce the impact on the antenna and wireless signal.