Caution:
This device complies with Part 15 of the FCC Rules / 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 harmful interference. (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

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

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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power
(e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé

pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Information for the OEM Integrators

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

Label Information to the End User by the OEM or Integrators

If the FCC ID of this module is not visible when it is installed inside another device, then the outside of the device into which the module is installed must be label with

"Contains FCC ID: SYW-A19BR30HKD and IC: 20416-A19BR30HKD

The requirement for KDB 996369 D03:

1. List of applicable FCC rules

FCC Part 15. 247.

2. Summarize the specific operational use conditions

None

3. Limited module procedures

The module is a single module, so this requirement is not applicable to the product.

4. Trace antenna designs

The module uses the PCB antenna, so this requirement is not applicable to the product.

5. RF exposure considerations

None

6. Antennas

PCB antenna, 1.0dBi

7. Label and compliance information

If this certified module is installed inside the host device, then the outside of the host must be labeled with "Contains FCC ID: SYW-A19BR30HKD and IC: 20416-A19BR30HKD".

8. Information on test modes and additional testing requirements

The host manufacturer can use the software of "tcdb" to make the Bluetooth transmit continuously.

9. Additional testing, Part 15 Subpart B disclaimer

The module only complies with the FCC Part 15.247. If the module is installed in the host device, the host manufacturer is responsible for the compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. For example, if the host manufacturer markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the host manufacturer shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Homekit T82XXLM

Contents

1.Introduction

The Homekit 82XX module with internal PCB printing antenna is MESH Bluetooth Low Energy (BLE) solution which is fully Bluetooth 4.2 standard compliant and allows easy connectivity with Bluetooth Smart Ready devices. Homekit 82XX module supports BLE slave and master mode operation, including broadcast, encryption, connection updates, and channel map updates. It is RoHS-compliant and 100% lead (Pb)-free. With internal 512KBytes Flash and 16KB SDRAM are programmable for more applications, 14bits ADC with PGA, 6 channels PWM, three quadrature decoders, GPIOs.8 pins are easy installation with removable to be an SMT module (PCB stamp holes linking) in the mean time.

2.Features

- Bluetooth standard ： BLE4.2
- Frequency range: 2400~2483.5MHz
- RX :-96dBm@BLE 1Mbps,-99.5dBm@ IEEE802.15.4.250kbps,
- TX RF Power:up to +5.61dBm
- Network:Mesh
- power supply: 1.8V-3.6V
- RX MODE:5.3mA ,TX mode:4.8mA
- RSSI Monitoring
- Embedded LDO
- Battery monitoring:Supports low battery detection
- Low power consumption
- Support Bluetooth bulb lamp.flat lamp,tube lamp ,vacuum lamp,cabinet lamp
- support door magnetic,light sensor,microwave,pyroelectric,infiared sensor
- support Bluetooth smart socket and switch.
- support Apple Homekit with external DSP
- Embedded Hardware AES
- Operating Temperature range: ET Version: -40℃ ~ +85℃,
  AT version: －40℃~+125℃

3. Applications

●Mesh intelligent dimming, Smart Devices Switch, Remote Control and 3D glasses LED Lighting control。

●This module can adjust light, color and switch control by 5PWM signal. Can achieve monotonic light, dimmer, RGB

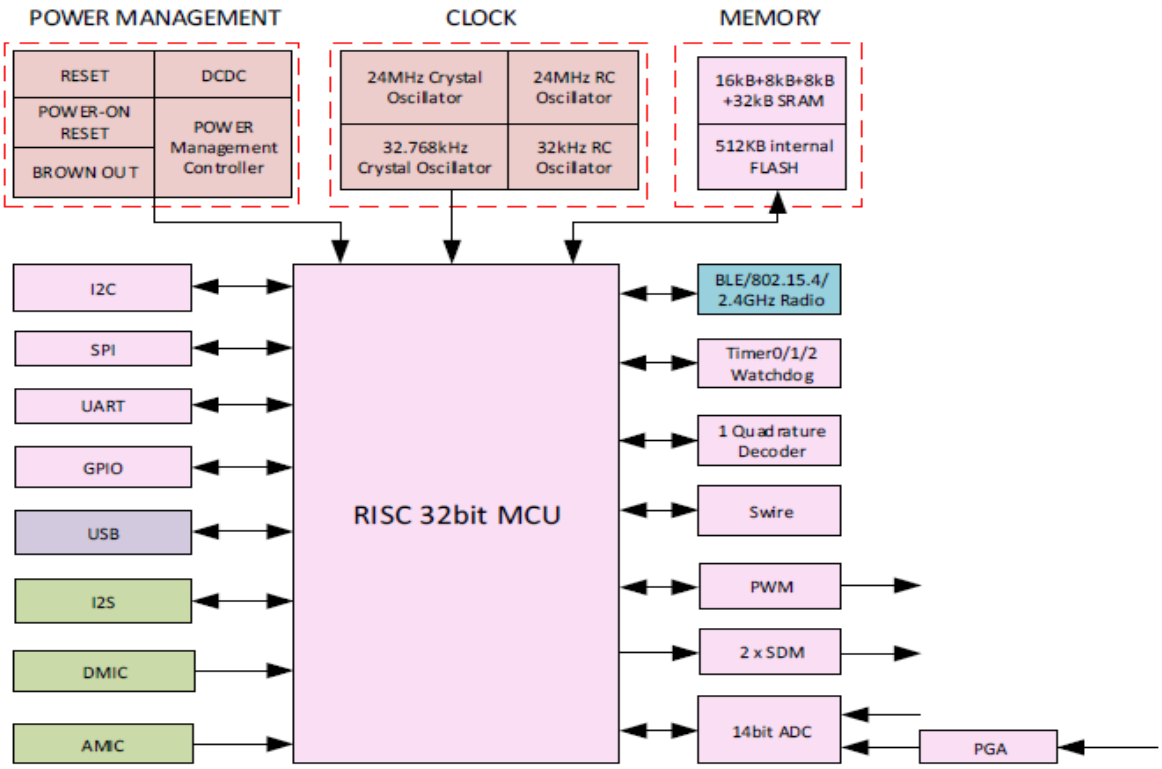
●Low power consumption long standby, you can use the button battery, with keyboard interface without external MCU

●Smartphone accessories

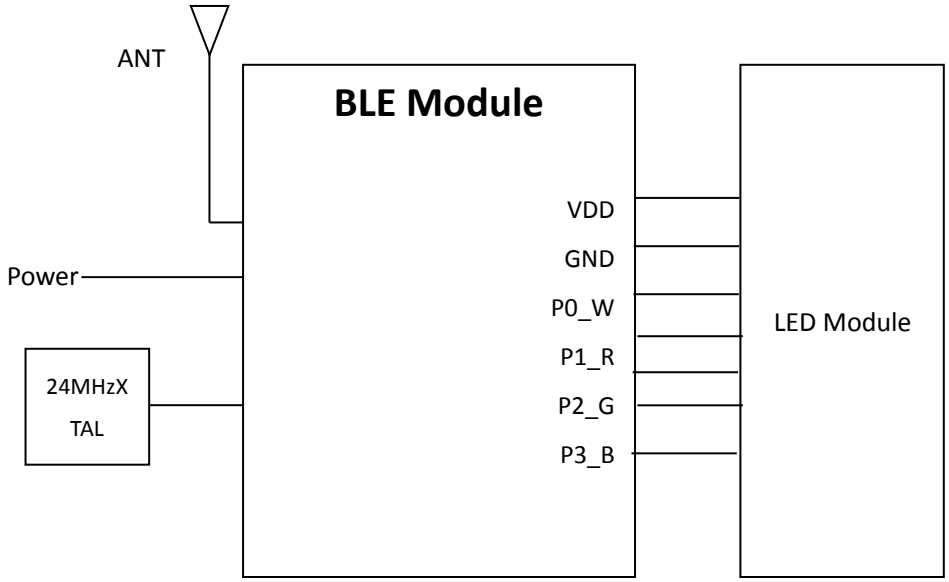
- Wireless Microphone
- Health monitoring
- Sports and fitness tracking
- Wearable devices
- PC and tablet peripherals, including Mouse / Keyboard

4. Module Diagram

SoC diagram

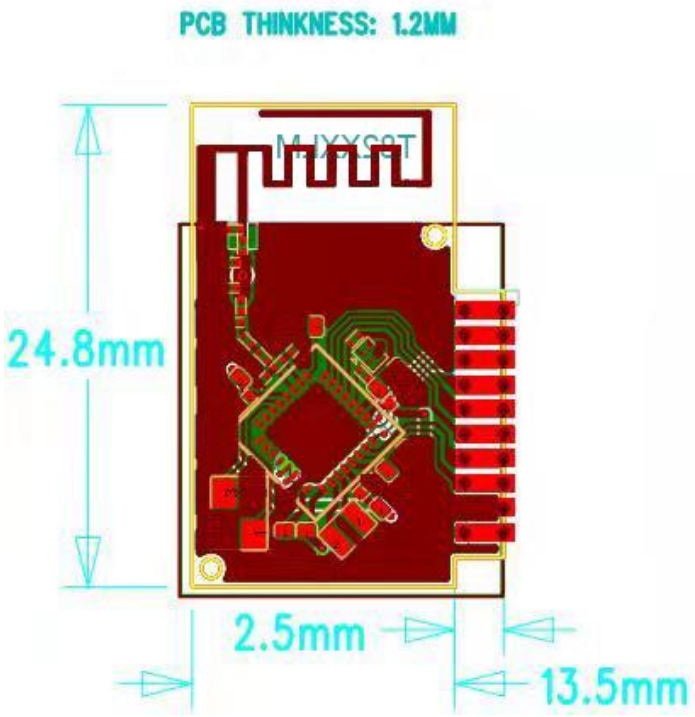


BLE Module4 pins diagram



PCBA top view diagram & Module physical map

dimension unit: mm



5.Pins Description

Pin	NAME	Inter face	I/O	Description
1	VDD	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V
2	GND	Ground	-	Ground
3	P0_W	PWM0	I/O	PWM0
4	P0_R	PWM1	I/O	PWM1
5	P0_G	PWM2	I/O	PWM2
6	P0_B	PWM3	I/O	PWM3
7	ADC	ADC		ADC
8	UART-RX	UART-RX		UART-RX
9	UART-TX	UART-TX		UART-TX

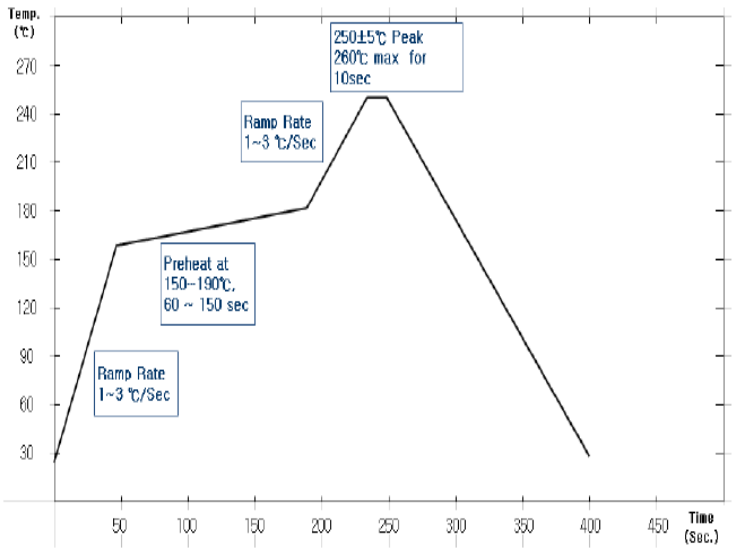
6.Electronic Specification

Item	Specification
RF Transmitting Power Level	+10 dBm Max
RF Receiver Sensitivity	-96 dBm at 1Mbps
Flash	512kb
Antenna	Printed PCB Antenna 1 dBi Gain
Linking Distance	At least 30 M
RAM	64KB
Data Rate	125 kbps,250 kbps, 500 kbps, 1 Mbps, 2 Mbps
Operation Voltage	3.0V to 3.6V
Operation Temperature	ET Version: -40℃ ~ +85℃, AT version: - 40℃~+125℃
Security	128 Bit AES encryption
Interface	PWM, UART, I2C,GPIO
EMC	Europe: ETSI EN 300 328 and EN 300 440 Class 2 USA: FCC CFR47 Part 15 Japan: ARIB STD-T66

7.Power Consumption

Operation Mode	Consumption
Operation (TX/RX) 0dBm	RX:5.3mA ,TX:4.8mA
Standby (Deep Sleep) depend on firmware	0.4uA (optional by firmware)

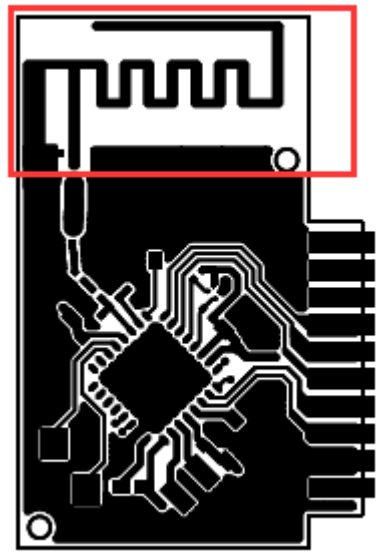
8. Reflow Profile



9. Application Design Note

To Be Discussed

10.Antenna Design



Influence of GND on Antenna

a) The GND interrupts the emission of antenna but is essential.

b) RF vertical GND is important in antenna design.

c) Normally, the emission rate is improved as more GND is secured and edged GND of antenna is cut.