TCPMESH8269-06

User Manual

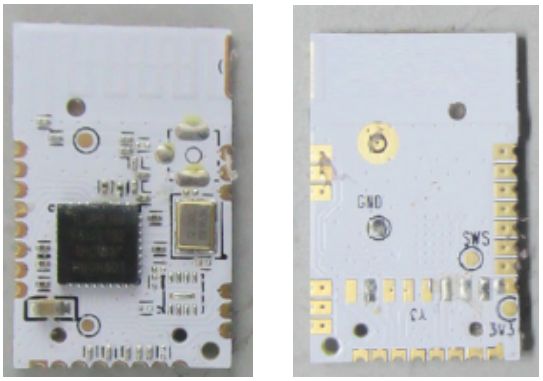
Bluetooth Module

Module No.: TCPMESH8269-06

Version: V3.2

Date: 2019-10-25

Content



1. Introduction

The module with internal PCB printing antenna is MESH Bluetooth Low Energy (BLE) solution which is fully Bluetooth 4.0 standard compliant and allows easy connectivity with Bluetooth Smart Ready devices. IPBM-06 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 internal512KBytes Flash and 32KB(TLSR8269f512ET32)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

- TLSR8269f512ET32 system on chip
- Built-in Flash 512KBytes
- Built-in 32KB TLSR8269f512ET32 SDRAM
- Compact size 22 x 14 x 2.8mm
- Up to 6 channels PWM

- Embedded Hardware AES
- Host Controller Interface (HCI) over UART, I2C and USB 2.0 in full speed
- Class 1 supported with 8dBm maximum TX power
- Operation Temperature: ET Version:-40 to 85 ℃, AT version: -40℃~+125℃
- Bluetooth 4.0 1Mbps, Boost Mode: 2Mbps
- TX RF Power: +7.58dBm
- RX :-92dBm BT4.0 Sensitivity
- RSSI Monitoring
- Embedded LDO
- Battery monitoring
- Low power consumption
- 100k program/erase, 20 years data retention

3. Applications

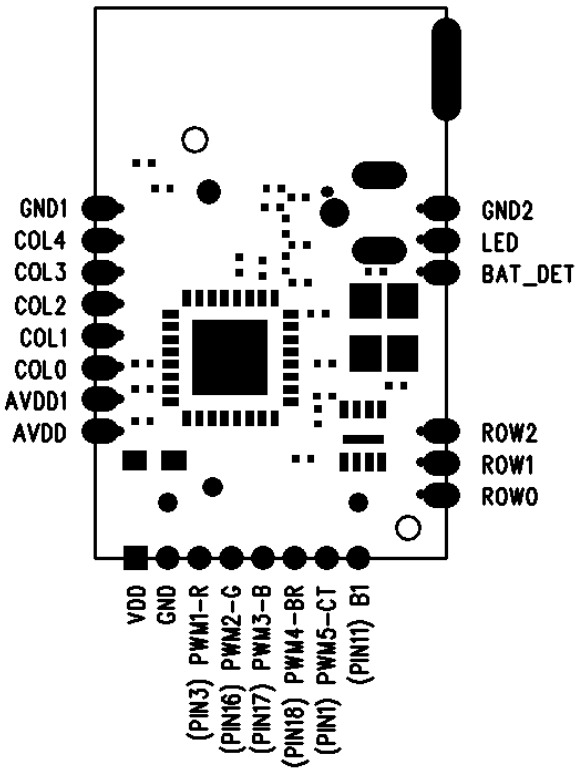
- Smart Devices Switch, Remote Control and 3D glasses
- LED Lighting control
- Smartphone accessories
- Wireless Microphone
- Health monitoring
- Sports and fitness tracking
- Wearable devices
- PC and tablet peripherals, including Mouse / Keyboard

4. Module Diagram

PCBA top view diagram

Dimension unit: mm

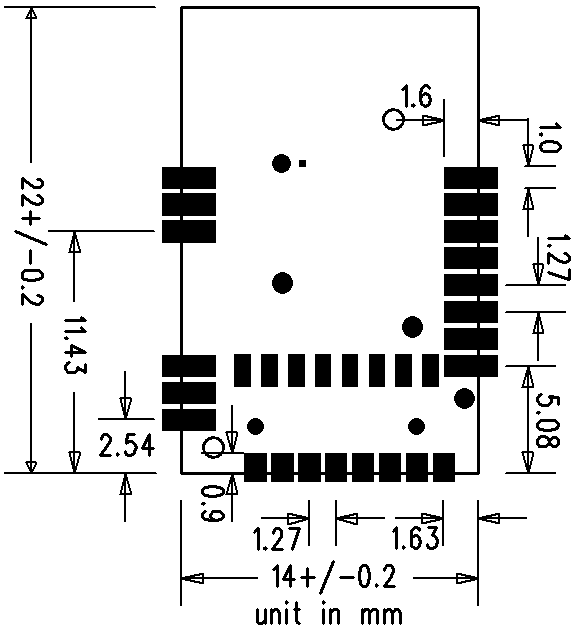
Top View



Dimension Diagram

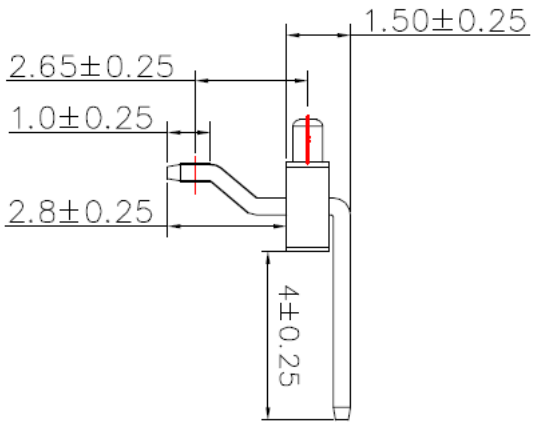
Dimension unit: mm

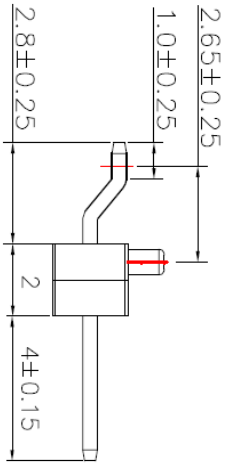
Bottom View



PCB Thickness: 0.8+/-0.15mm

Side View





5. Module Schematic

Please further contact if needed.

6. Pins Description

Pin	NAME	Inter	I/O	Description
1	VDD	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V
2	GND	Ground	-	Ground
3	PWM1-R	Analog	I/O	SoC TLSR8267F512P3 PWM01 Red (R)
4	PWM2-G	Analog	I/O	SoC TLSR8267F512P16 PWM02 Green (G)
5	PWM3-B	Analog	I/O	SoC TLSR8267F512P17 PWM03 Blue (B)
6	PWM4-BR	Analog	I/O	SoC TLSR8267F512P18 PWM04 Bright (BR)
7	PWM5-CT	Analog	I/O	SoC TLSR8267F512P1PWM00Control (CT)
8	B1	Digital	I/O	SoC TLSR8267F512P11 B1
9	ROW0	Analog	I/O	SoC TLSR8267F512P12 Remote Port
10	ROW1	Analog	I/O	SoC TLSR8267F512P13 Remote Port
11	ROW2	Analog	I/O	SoC TLSR8267F512P14 Remote Port
12	BAT_DET	Analog	I/O	SoC TLSR8267F512P15 Remote Control Battery Test
13	LED	Analog	I/O	SoC TLSR8267F512P19 Remote Light
14	GND2	Ground		Ground
15	GND1	Ground		Ground
16	COL4	Analog	I/O	SoC TLSR8267F512P27 Remote Port

17	COL3	Analog	I/O	SoC TLSR8267F512P29 Remote Port
18	COL2	Analog	I/O	SoC TLSR8267F512P30 Remote Port
19	COL1	Analog	I/O	SoC TLSR8267F512P31 Remote Port
20	COL0	Analog	I/O	SoC TLSR8267F512P32 Remote Port
21	AVDD1	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V
22	AVDD	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V

7. Electronic Specification

Item	Specification
RF Transmitting Power Level	7.58dBm Max
RF Receiver Sensitivity	-93 dBm at 1Mbps
Flash	512kb
Antenna	Printed PCB Antenna 0 dBi Gain
Linking Distance	30 M Out of Sight
RAM	16 KB x 32 bits
Data Rate	250 kbps, 500 kbps, 1 Mbps, 2 Mbps
Physical Connectors	1 x 8 pins 1.27mm pitch through terminal 14 holes PCB board edge stamp holes

Operation Voltage	2.9V to 3.6V
Operation Temperature	-40 to 125 ℃
Security	128 Bit AES encryption
Interface	PWM, UART, I2C, USB. GPIO
EMC/BQB approval	FCC, BQB approved

8. Power Consumption

Operation Mode	Consumption
Operation (TX/RX) 0dBm	30mA
Standby (Deep Sleep) depend on firmware	0.7uA (optional by firmware)

9. Antenna Specification

ITEM	UNIT	MIN	TYP	MAX
Frequency	MHz	2400		2500
V.S.W.R				2.0
Gain(AVG)	dBi	0		
Maximum input power	W			1
Characteristics TYPE	Meander IFA			
Polarization	Vertical			
Radiated Pattern	Omni-directional			
Impendence	50			
SIZE	14 X 4 X 22 mm			

Optional internal antenna by PCB printing antenna.

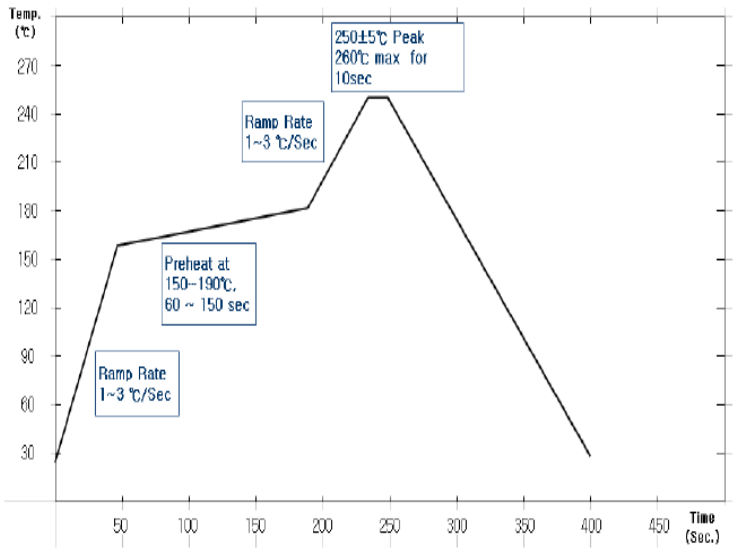
10. Ordering Information

Part Number	Description
IPBM-06-00-I_V3.2	Internal Printing PCB Antenna, SMT mounted form

11. Package

For special requirements, please contact the sales staff.

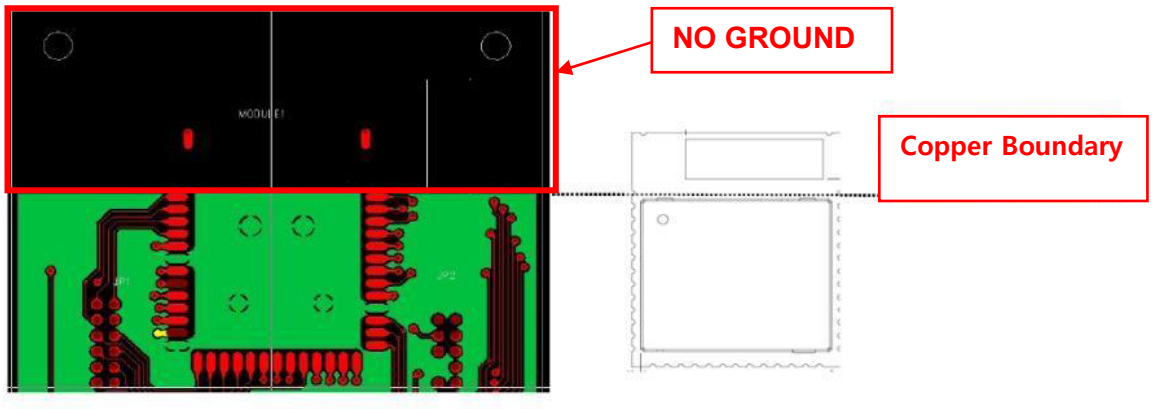
12. Reflow Profile



13. Application Design Note

To Be Discussed

14. Antenna Design



Influence of GND on Antenna

a) The GND interrupts the emission of antenna but isessential.

) RF vertical GND is important in antennadesign.

15. Critical Materials

Please further contact if needed.

16. Regulatory Module Integration Instructions

2.2 List of applicable FCC rules

This device complies with part 15.247 of the FCC Rules.

2.3 Summarize the specific operational use conditions

This module can be used in household electrical appliances as well as lighting equipments. The input voltage to the module should be nominally 2.9~3.6 VDC ,typical value 3.3VDC and the ambient temperature of the module should not exceed 105℃.
This module using only one kind of antennas with maximum gain is 0 dBi .Other antenna arrangement is not covered by this certification.
The antenna is not field replaceable. If the antenna needs to be changed, the certification should be re-applied.

2.4 Limited module procedures

This module can be used in lighting equipment, smart frontpanel, household electrical appliances. Normally host device should provide a power supply in range 2.0-3.6VDC, typically 3.3VDC for this module. The limited module manufacturer will reviews detailed test data or host designs prior to giving the host manufacturer approval.

2.5 Trace antenna designs Not applicable

2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.
If the device built into a host as a portable usage, the additional RF exposure evaluation may be required as specified by§ 2.1093.

2.7 Antennas

Module only contains one PCB antenna. No additional external connectors.

2.8 Label and compliance information

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as: “Contains Transmitter Module FCC ID: NIR-

MESH8269 " ,or "Contains FCC ID: NIR-MESH8269" , Any similar wording that expresses the same meaning may be used.

2.9 Information on test modes and additional testing requirements

a) The modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

b) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not

have any responsibility for final product compliance.

c) If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference has been corrected

Below are steps for on test modes:

The default initial state of the module after power-on is that the frequency point is 0, the low frequency point is 0, and the mode is 0.

1. Frequency button: TLSR8267 / 9 IC PIN3 interface button (connect one button to GND),

Press [Frequency] button to cycle from 0-2

Frequency: 0 Low frequency point 2402MHz

1 IF point 2442MHz

2 High frequency point 2480MHz

2. Mode button: TLSR8267 / 9 IC PIN1 interface button (connect one button to GND),

Press the [Mode] button to cycle from 0-3.

Mode: 0 transmit carrier

1 Send with data carrier

2 Receive packet

3 Send the packet

a. Additional testing, Part 15 subpart B disclaimer

The final host / module combination need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369.

Frequency spectrum to be investigated
For host products with certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Section 15.33(b)(1), whichever is the higher frequency range of investigation.

Operating the host product
When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publicly-available drivers and turned on, so the transmitters are active. In certain conditions it might be appropriate to use a technology-specific call box (test set) where accessory devices or drivers are not available.
When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive mode only is not possible then, the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4, ANSI C63.10 and ANSI C63.26 for further general testing details.

The product under test is placed into a normal ‘paired’ mode with another WIFI device, as per the normal intended use of the product (for example, transferring data).

FCC Statement

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

ISED RSS Warning:
This device complies with Innovation, Science and Economic Development Canada licence-exempt RSS standard(s). 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'ISED 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.

ISED RF exposure statement:
This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Le rayonnement de la classe b repecte ISED fixaient un environnement non contrôlés.Installation et mise en œuvre de ce matériel devrait avec échangeur distance minimale entre 20 cm ton corps.Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d’autres.

IC Label Instructions:
The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as: “Contains Transmitter Module IC: 9486A-WIFI8710”,or “Contains IC:9486A-WIFI8710”, Any similar wording that expresses the same meaning may be used.
Instructions d'étiquetage IC:
L'extérieur des produits finis contenant ce module doit afficher une étiquette faisant référence au module inclus. Cette étiquette extérieure peut utiliser des libellés tels que: contient le module émetteur IC:9486A-WIFI8710 ”ou“ contient: IC: 9486A-WIFI8710 ”, tout libellé similaire exprimant le même sens peut être utilisé.