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深圳拓邦股份有限公司
Shenzhen Topband Co.,Ltd.

TBAP6212
product manual

Address:
Topband Industrial Park, Liyuan Industrial Zone, Tangtou, Shiyan, Baoan, Shenzhen,
518108, Guangdong, China

Revision History

Date	Revision Content	Revised By	Version
2023/06/01	N/A	Zhang xiaoxiao	1.0

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1. Introduction

Topband would like to announce a low-cost and low-power consumption module which has all of the WiFi, Bluetooth functionalities. The highly integrated module makes the possibilities of web browsing, VoIP, Bluetooth headsets and other applications. With seamless roaming capabilities and advanced security, also could interact with different vendors' 802.11b/g/n Access Points in the wireless LAN. The wireless module complies with IEEE 802.11 b/g/n standard and it can achieve up to a speed of 72.2Mbps with single stream in 802.11n draft, 54Mbps as specified in IEEE 802.11g, or 11Mbps for IEEE 802.11b to connect to the wireless LAN. The integrated module provides SDIO interface for Wi-Fi, UART / I2S / PCM interface for Bluetooth.

This compact module is a total solution for a combination of Wi-Fi + BT technologies. The module is specifically developed for Smart phones and Portable devices.

2. Features

- 802.11b/g/n single-band radio
- Bluetooth V5.2 with integrated Class 1.5 PA and Low Energy (BLE) support
- WLAN host interface options: - SDIO v2.0 — up to 50 MHz clock rate
- BT host digital interface: - UART (up to 4 Mbps)
- IEEE Co-existence technologies are integrated die solution
- ECI — enhanced coexistence support, ability to coordinate BT SCO transmissions around WLAN receives

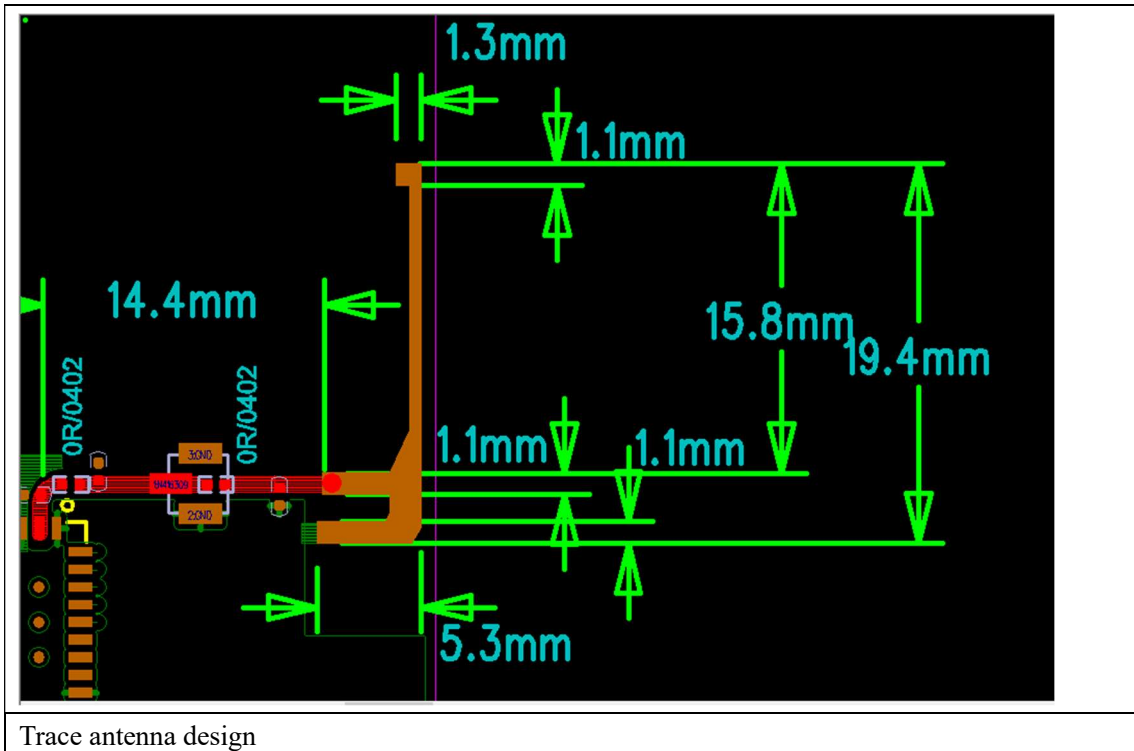
A simplified block diagram of the module is depicted in the figure below.

3. General Specification

3.1 General Specification

Model Name	
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L x W x H: 12 x 12 x 1.5 (typical) mm
WiFi Interface	SDIO V2.0
BT Interface	UART / PCM
Operating temperature a,b	-30°C to 85°C
Storage temperature	-40°C to 85°C
Humidity	Operating Humidity 10% to 95% Non-Condensing
Antenna Specification	
Manufacturer	Shenzhen Topband Co.,Ltd.
Address	Topband Industrial Park,LiYuan Industrial Zone, ShiYan Town, Bao'An District, Shenzhen 518108 China
Antenna model	TBAP6212 Antenna
Antenna Gain	-1.32dBi max.

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Trace antenna design

- The operating temperature 65 to 85°C is feasible at conditional environment. Please examine the reliability on final product.
- Functionality is guaranteed across this range of temperature. Optimal RF performance as specified in the data sheet, however, is guaranteed only for -10°C to 55°C.

3.2 Voltage

3.2.1 Absolute Maximum Ratings

Symbol	Description	Min.	Max.	Unit
VBAT	Input supply Voltage	-0.5	5.5	V
VDDIO	Digital/Bluetooth/SDIO/ I/O Voltage	-0.5	3.6	V

3.2.2 Recommended Operating Rating

The module requires two power supplies: VBAT and VDDIO.

	Min.	Typ.	Max.	Unit
Operating Temperature	-30	25	85	deg.C
VBAT	3.0	3.3	3.6	V
VDDIO	1.7	3.3	3.6	V

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4. Label

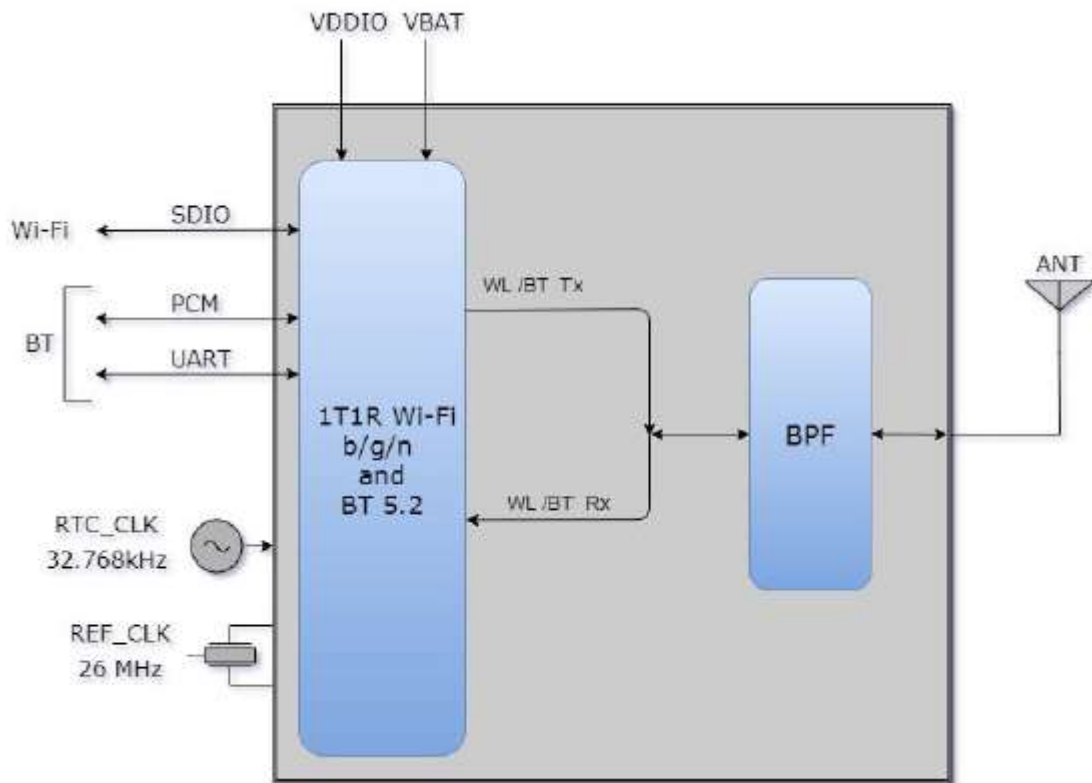


1. CE Logo要求高度不小于5mm
2. SN码编码规则:



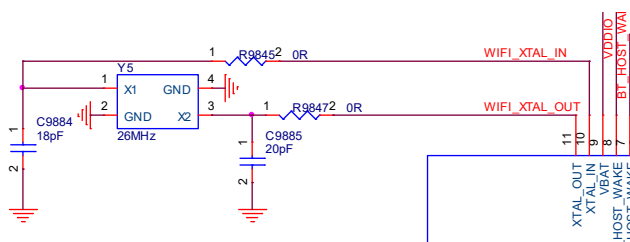
5. Features

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



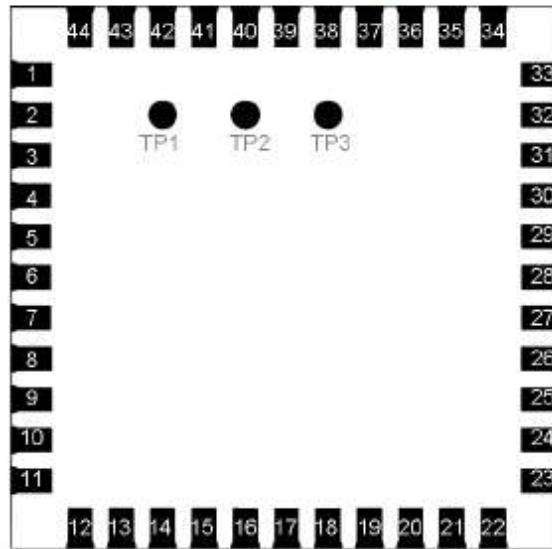
5.2 schematic diagram and PCB layout

External Crystal



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< TOP VIEW >



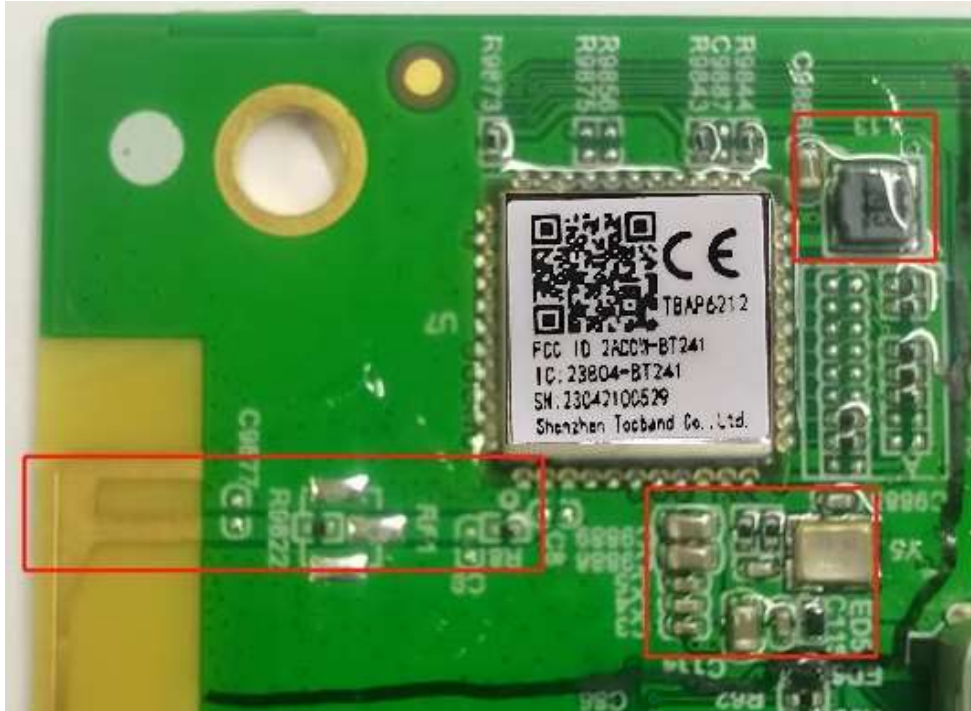
8.2 Pin Definition

NO	Name	Type	Description
1	GND	-	Ground connections
2	WL_BT_ANT	I/O	RF I/O port
3	GND	-	Ground connections
4	FM_RX	I	FM radio RF input antenna port
5	NC	-	Floating (Don't connected to ground)
6	BT_WAKE	I	HOST wake-up Bluetooth device
7	BT_HOST_WAKE	O	Bluetooth device to wake-up HOST
8	NC	-	Floating (Don't connected to ground)
9	VBAT	P	Main power voltage source input
10	XTAL_IN	I	Crystal input
11	XTAL_OUT	O	Crystal output
12	WL_REG_ON	I	Internal regulators power enable/disable
13	WL_HOST_WAKE	O	WLAN to wake-up HOST

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14	SDIO_DATA_2	I/O	SDIO data line 2
15	SDIO_DATA_3	I/O	SDIO data line 3
16	SDIO_DATA_CMD	I/O	SDIO command line
17	SDIO_DATA_CLK	I/O	SDIO clock line
18	SDIO_DATA_0	I/O	SDIO data line 0
19	SDIO_DATA_1	I/O	SDIO data line 1
20	GND	–	Ground connections
21	VIN_LDO_OUT	P	Internal Buck voltage generation pin
22	VDDIO	P	I/O Voltage supply input
23	VIN_LDO	P	Internal Buck voltage generation pin
24	LPO	I	External Low Power Clock input (32.768KHz)
25	PCM_OUT	O	PCM Data output
26	PCM_CLK	I/O	PCM clock
27	PCM_IN	I	PCM data input
28	PCM_SYNC	I/O	PCM sync signal
29	NC	–	Floating (Don't connected to ground)
30	NC	–	Floating (Don't connected to ground)
31	GND	–	Ground connections
32	NC	–	Floating (Don't connected to ground)
33	GND	–	Ground connections
34	BT_RST_N	I	Low asserting reset for Bluetooth core
35	NC	–	Floating (Don't connected to ground)
36	GND	–	Ground connections
37	GPIO4	I/O	WiFi Co-existence pin with LTE
38	GPIO3	I/O	WiFi Co-existence pin with LTE
39	GPIO2	I/O	WiFi Co-existence pin with LTE
40	GPIO1	I/O	WiFi Co-existence pin with LTE
41	UART_RTS_N	O	Bluetooth/FM UART interface
42	UART_TXD	O	Bluetooth/FM UART interface
43	UART_RXD	I	Bluetooth/FM UART interface
44	UART_CTS_N	I	Bluetooth/FM UART interface
45	TP1	O	FM Analog AUDIO left output
46	TP2	O	FM Analog AUDIO right output
47	TP3 (NC)	–	Floating (Don't connected to ground)

5.3 Profile Display



Description:

- 1, The left frame is the function module of the antenna;
- 2, The lower right corner is the 26MHz crystal oscillator function module;
- 3, The upper right corner is the power supply module;
- 4, Other conventional resistors are connected in series with the main chip RV1126 to limit current or facilitate debugging.
- 5, Later layout (such as layout diagram) will keep this layout unchanged.
- 6, The RV1126 feeds the module 32.768kHz through an I/O port to control the status of the module.
- 7, The 26MHz crystal perk is used to make the module work properly.

6.Certification

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

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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.

This equipment 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.

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

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: 2ADDW-BT241" any similar wording that expresses the same meaning may be used.

FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.

This is a limited modular approval, Class 2 permissive change needed if the layout out of the modular shielding changed when integrated into the Host device

This LMA can only be used when the Grantee is the host manufacturer for a series of similar host models to allow the host and the module to share compliance responsibilities.

When receiver detection is required (i.e., DFS, CBP), the certified antenna must be unrestricted by the host and, when used in a host and based on current policy, requires the module to be reviewed on a case-by-case base by submitting an equipment compliance review inquiry to confirm that the integration instructions will include strict guidance for antenna location for receiver detection.

This device complies with Industry Canada's licence-exempt RSSs. 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; (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Please notice that if the ISED certification 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: 23804-BT241" any similar wording that expresses the same meaning may be used.

l'appareil hôte doit porter une étiquette donnant le numéro de certification du module d'Industrie Canada, précédé des mots « Contient un module d'émission », du mot « IC: 23804-BT241 » ou d'une formulation similaire exprimant le même sens.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.