PRODUCT SPECIFICATION

B200T-UA

Wi-Fi Single-band 1x1 802.11ax/b/g/n + BLE5.1

Combo Module

Version:V1.0

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

Office: 14th floor, Block B, phoenix zhigu, Xixiang Street, Baoan District, Shenzhen

Factory: NO.8, Litong RD., Liuyang Economic & Technical Development Zone, Changsha, CHINA

TEL: +86-755-2955-8186   Website: www.fn-link.com

B200T-UA Module Datasheet

Ordering Information	Part NO.	Description
	FGB200TUAX-00	ECR6600-A,802.11b/g/n/ax,24x16mm,1T1R+BLE5.1, UART/GPIO/ADC/PWM/SPI/I2C

CONTENTS

Revision History

Version	Date	Contents of Revision Change	Draft	Checked	Approved
V1.0	2023/07/12	New version	Lxp	Zl	Qjp

1. General Description

1.1 Introduction

B200T-UA is a highly integrated, low-power Wi-Fi/BLE Combo chip, The chip supports 802.11 b/g/n/ax and BLE 5.1 protocol, integrates Wi-Fi FullMAC, Wi-Fi baseband (supporting 1T1R), and RF module, builds in the power management module, a power amplifier, low noise amplifier, and a TRX switch to provide a complete system of low-power Wi-Fi/BLE solution.which is a System-On-Chip (SoC) designed for the IoT application, for example, the smart home.

1.2 Description

Model Name	B200T-UA
Product Description	Support Wi-Fi/BLE functionalities
Dimension	L x W x H: 24 x 16 x 2.9mm
Wi-Fi Interface	Support UART
BT Interface	UART
Operating temperature	-40°C to 105°C
Storage temperature	-40°C to 125°C

2. features

General

- Support IEEE 802.11 b/g/n/ax
- Support WEP，WPA/WPA2/WPA3 Personal mode
- Supports WPS
- Supports of 802.11AX MCS0 up to MCS7
- Supports 20M and bandwidth 80211ax supports only 20M

3. Block diagram
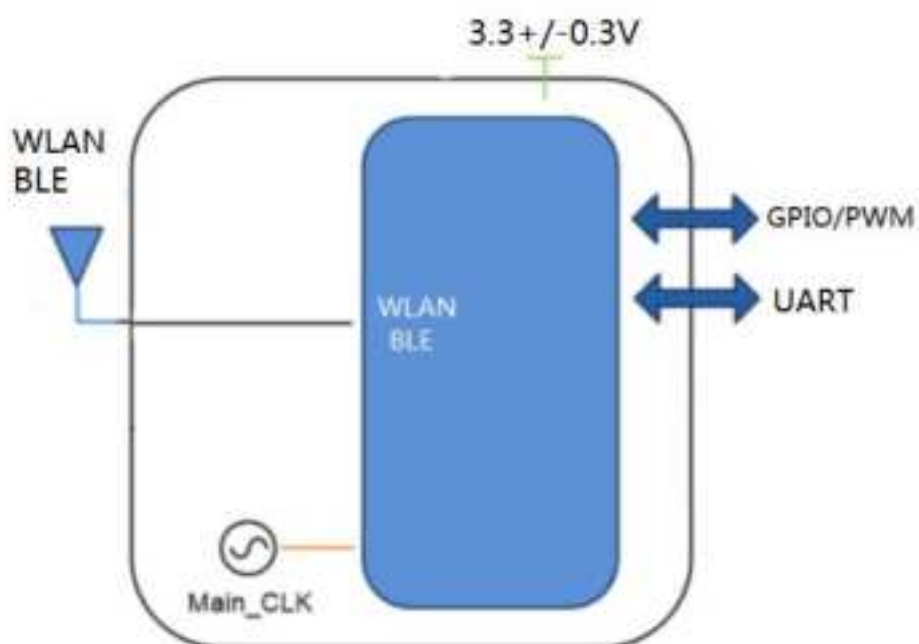
4. General Specification

4.1 2.4GHz RF Specification

features	describe	
WLAN Standard	IEEE 802.11 ax/b/g/n/ Wi-Fi compliant	
Range of frequency	2.400 GHz ~ 2.4835GHz (2.4 GHz ISM Band)	
channels	2.4GHz：Ch1 ~ Ch13	
Japan	Ch14	
Test Items	**Typical Value**	**EVM**
Power output	802.11b /11Mbps : 16dBm ± 2 dB	EVM ≤ -9dB
	802.11g /54Mbps : 14dBm ± 2 dB	EVM ≤ -25dB
	802.11n20 /MCS7　: 13dBm ± 2 dB	EVM ≤ -27dB
	802.11n40 /MCS7　: 13dBm ± 2 dB	EVM ≤ -27dB
	802.11ax /MCS7　: 13dBm ± 2 dB	EVM ≤ -27dB
Frequency spectrum template	Meet with IEEE standard	
Maximum RF Output Power	18dBm	
Standard frequency	±20ppm	
Test Items	**TYP Test Value**	**Standard Value**
Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps @ -92 dBm	≤-83 dBm
	- 11Mbps @ -85 dBm	≤-76 dBm
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps @ -89 dBm	≤-85 dBm
	- 54Mbps @ -70 dBm	≤-68 dBm
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 @ -89 dBm	≤-85 dBm
	- MCS=7 @ -68 dBm	≤-67 dBm
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 @ -85 dBm	≤-83 dBm
	- MCS=7 @ -66 dBm	≤-65 dBm
Receive Sensitivity (11ax,20MHz) @10% PER	- MCS=0 @ -83 dBm	≤-82 dBm
	- MCS=7 @ -64 dBm	≤-62dBm
Maximum receiving level	802.11b : -10 dBm	
	802.11ax/g/n : -20 dBm	

4.2 Bluetooth Specifications

Feature	Description
General Specification	
Bluetooth Specification	Bluetooth V5.1

Host interface	UART
Range of frequency	2400 MHz ~ 2483.5 MHz
channels	40 channels

Radio frequency Specifications

	Min(dBm)	**Typical**(dBm)	**Max**(dBm)
Power output	1	4	7
sensitivity @ BLE=30.8%			-70
Maximum input level	GFSK (1Mbps):-20dBm		

5. Pin definition

5.1 Pin Outline

< TOP VIEW >
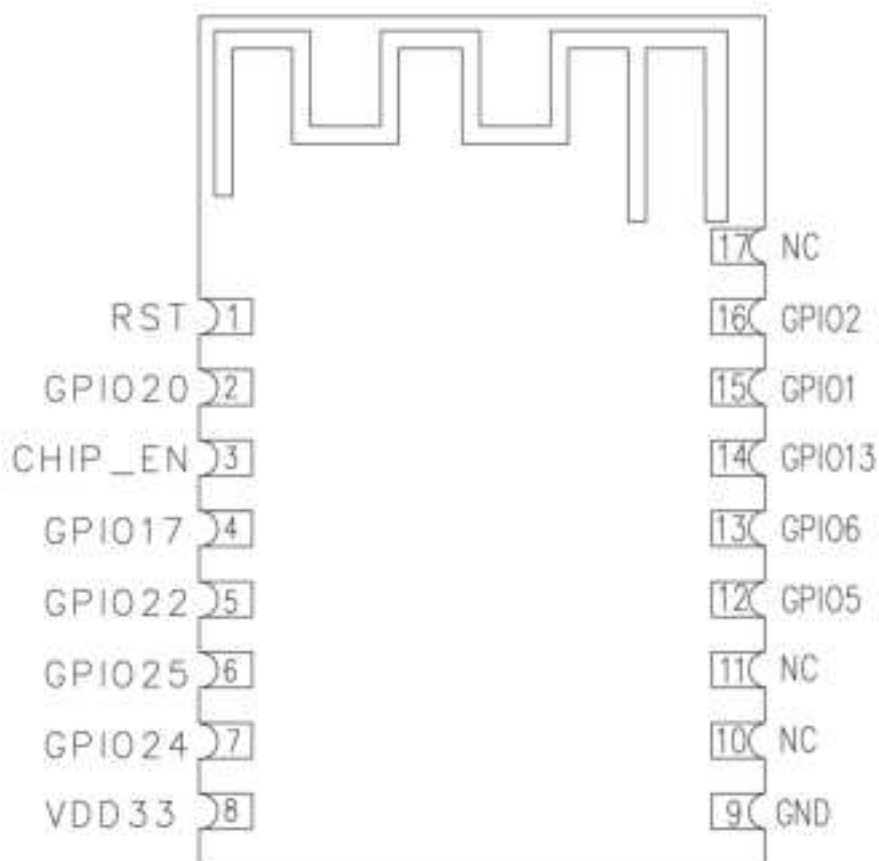
5.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	RST	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	
2	GPIO20	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	
3	CHIP_EN	I/O	Power enable of module ON: pull high ; OFF: pull low Pin Function Table	
4	GPIO17	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	VDDIO
5	GPIO22	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	
6	GPIO25	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	
7	GPIO24	I/O	Connect to FLASH and do not use	VDDIO
8	VDD33	P	Main power voltage source input 3.3V	3.3V
9	GND	P	Ground connections	
10	NC	-	NC	

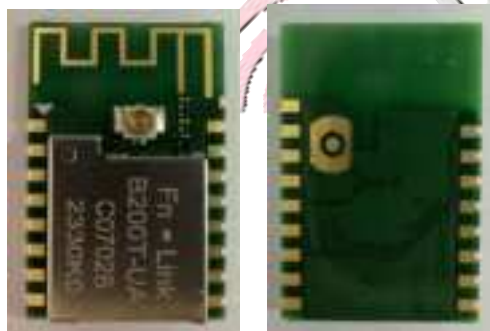| 11	NC	-	NC	
12	GPIO5	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	VDDIO
13	GPIO6	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	VDDIO
14	GPIO13	I/O	Connect to FLASH and do not use	VDDIO
15	GPIO1	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	VDDIO
16	GPIO2	I/O	GPIO Pin. The MUX Function can be referred to Pin Function Table	VDDIO
17	NC	-	NC	

6. Timing of circuit

To ensure normal power-on and startup, the power supply, reset, and Bootstrap pins must meet the corresponding timing requirements.

1. When Keyon detects high power level, POR module starts to work and generates por signal; The por signal is the enable signal of LP BandGap. When the por signal is elevated, LPBG starts to be enabled.

2. After LPBG is started, an lpbg_ok signal will be output; This signal enables LP_LDO and 32K RTC. At this point, the AO area begins to work.

3. Then, the status opportunity in AO area enables Main_BG and Buck DC-DC in turn, where Main_BG generates reference voltage and bias current required by each module, DC-DC generates two volttimes of 1V and 0.8V, 1V supplies power to RF module and 0.8V supplies power to PD area.

4. After the DC-DC is powered on, PLL-LDO and DCXO in the AO area are enabled in turn. PLL-LDO converts 1V output from DC-DC to 0.85V for DCXO to use.

5. Then, BootRom starts to work and raises the ps_hold to complete the startup. After the startup is complete, the RF power supply can be configured to control each RF module
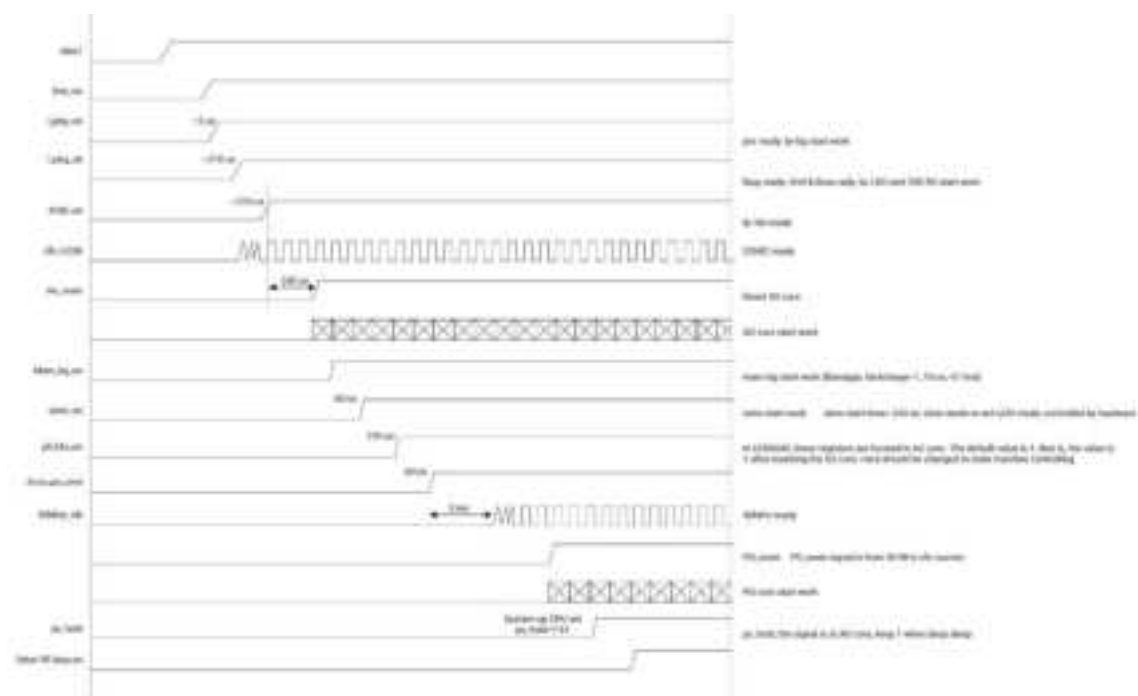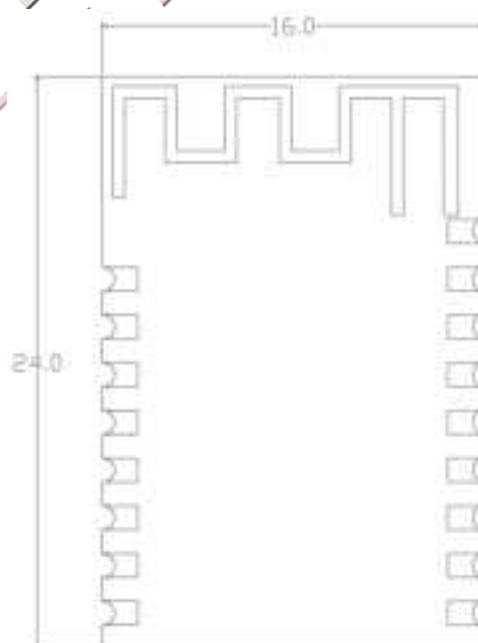
7. Size reference

7.1 Module diagram

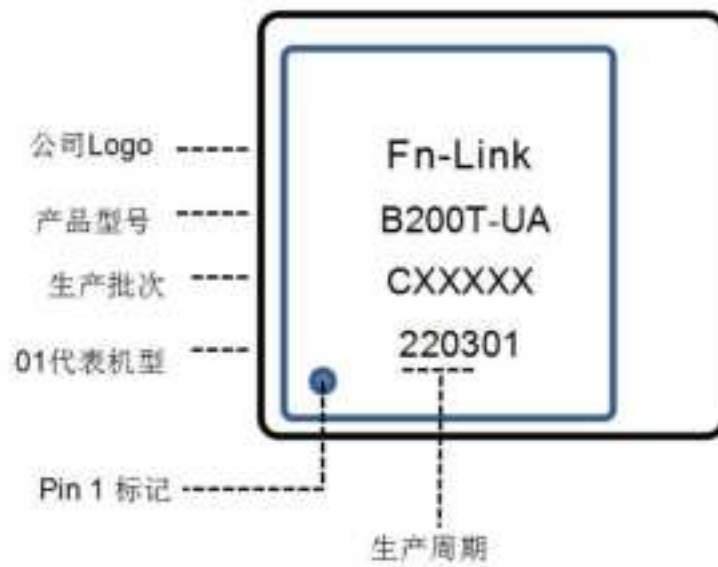|	
L x W : 24 x 16(+0.3/-0.1) mm	
H:2.9(+0.2/-0.2)mm	0.8±0.1
重量	1.25g

7.2 Screen printing diagram

公司Logo ----- Fn-Link

产品型号 ----- B200T-UA

生产批次 ---- CXXXXX

01代表机型 ----- 220301

Pin 1 标记 -----------

生产周期

7.3 Physical Dimensions
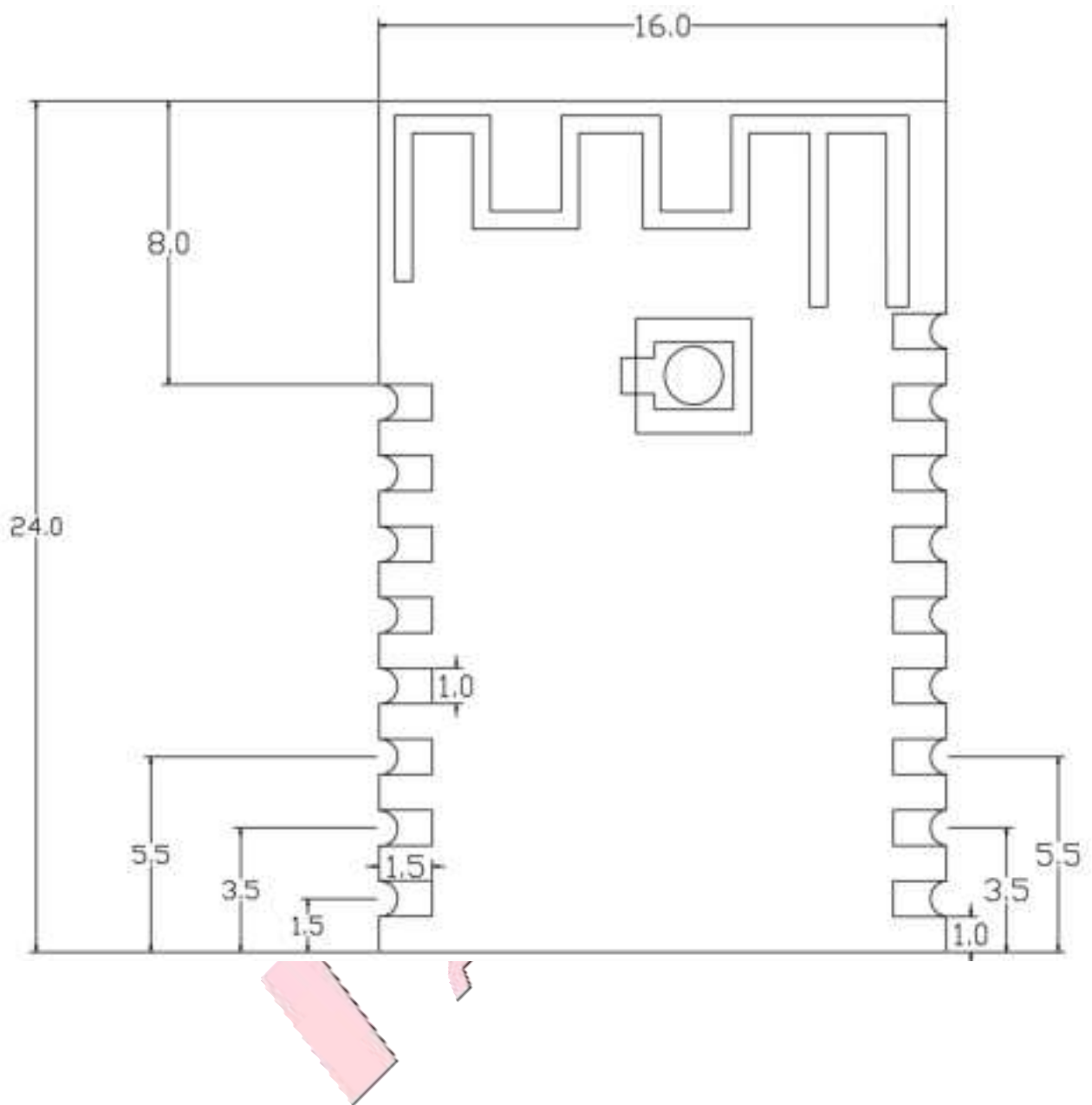
7.4 Physical Dimensions
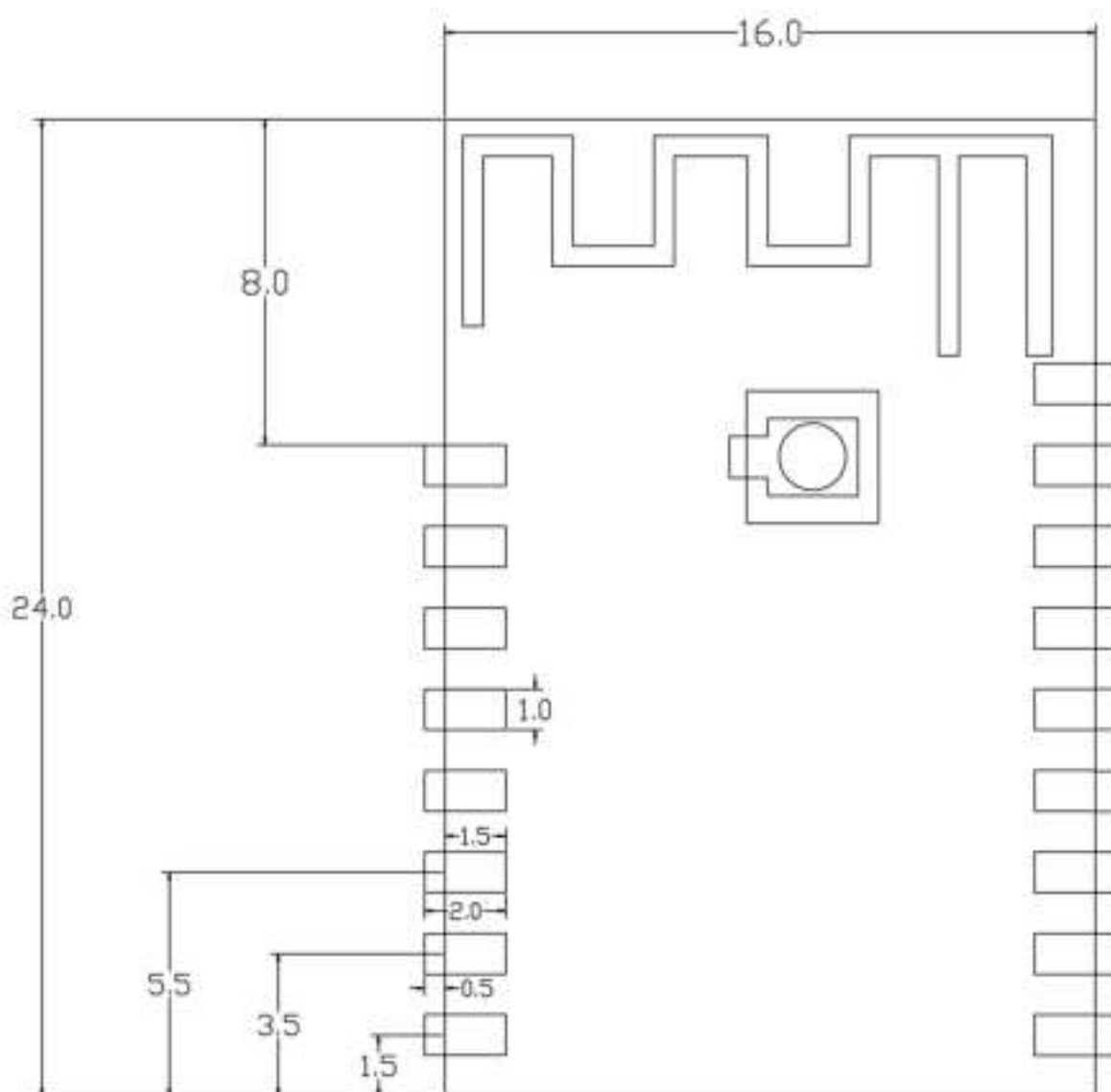
8. The Key Material List

| Item	Part Name	Description	Manufacturer
1	Crystal	2016 26MHz +10ppm 10pF -40~85C	ECEC, TKD, Hosonic, JWT, TXC
2	Chipset	ECR6600-A40D QFN40 -40~+105°C	ESWIN
3	PCB	B200T-UA 16x24x0.8mm	XY-PCB,GDKX,Sunlord, SL-PCB
4	Shielding	B200T-UA Shielding	JLT，SUNTECH，TOWIN
5	IPEX	1 generation RFCONN GENIWNOTCH	QMSEN

6	ANTENNA	DSH5310-2.4G-5.8G FPC K62mm	FN-LINK TECHNOLOGY LIMITED

9. Reference Design
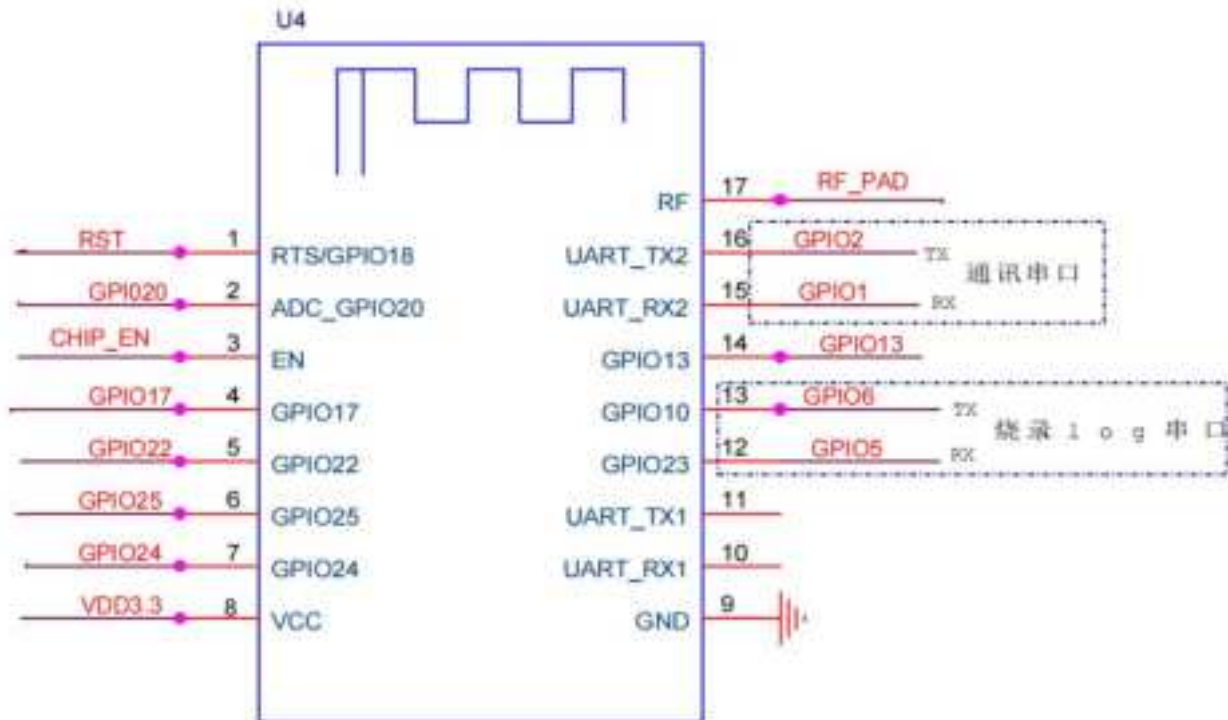
9.1 Antenna layout Requirement

When using the PCB antenna on the Wi-Fi module, keep the PCB on the mainboard at least 16mm away from other metal devices. The shaded area below should be kept away from metal devices, sensors, interference sources, and other materials that may interfere with the signal。
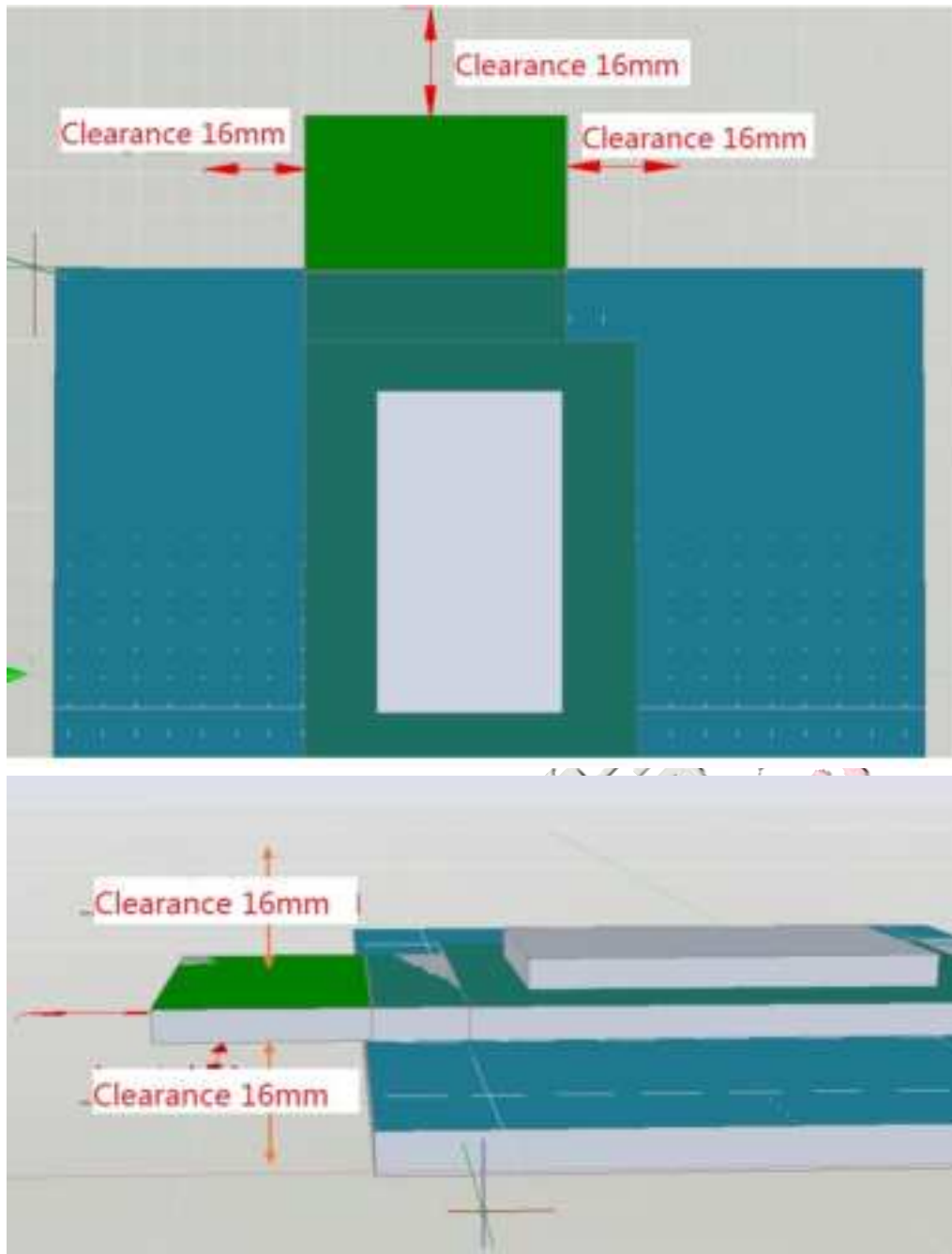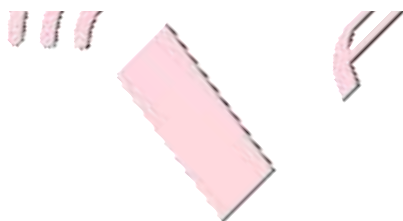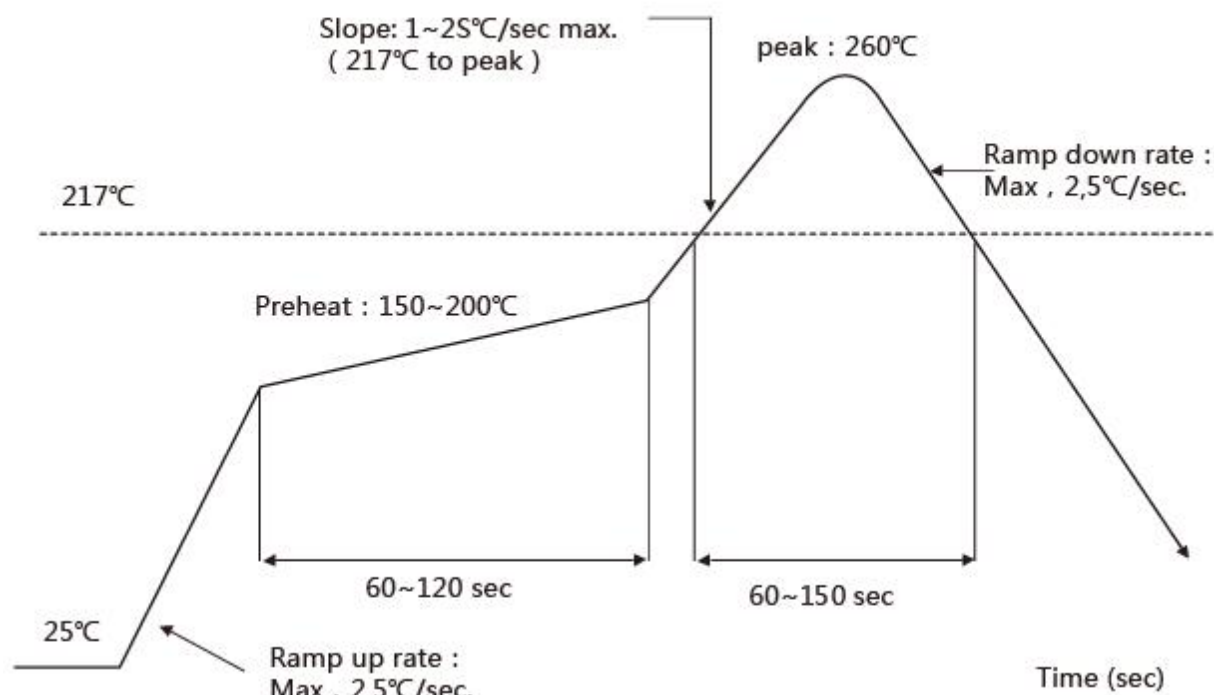
10. Recommended Reflow Profile

Referred to IPC/JEDEC standard.
Peak Temperature: 260±5 °C
5Time within 5° C of peak temperature：≥10s
Number of Times: 2 times

11. Package

11.1 package

A roll of 1500pcs

ITEM	W	A0	B0	D	E	F	F1	K0	P0	P2	P	T
DIM	44	16.00	24.00	1.5	1.75	20.2	40.4	3.60	4.0	2.0	24.0	0.30
TOLE	+0.3 -0.3	±0.15	±0.15	+0.1 -0.0	±0.1	±0.15	±0.10	±0.10	±0.1	±0.15	±0.1	±0.05
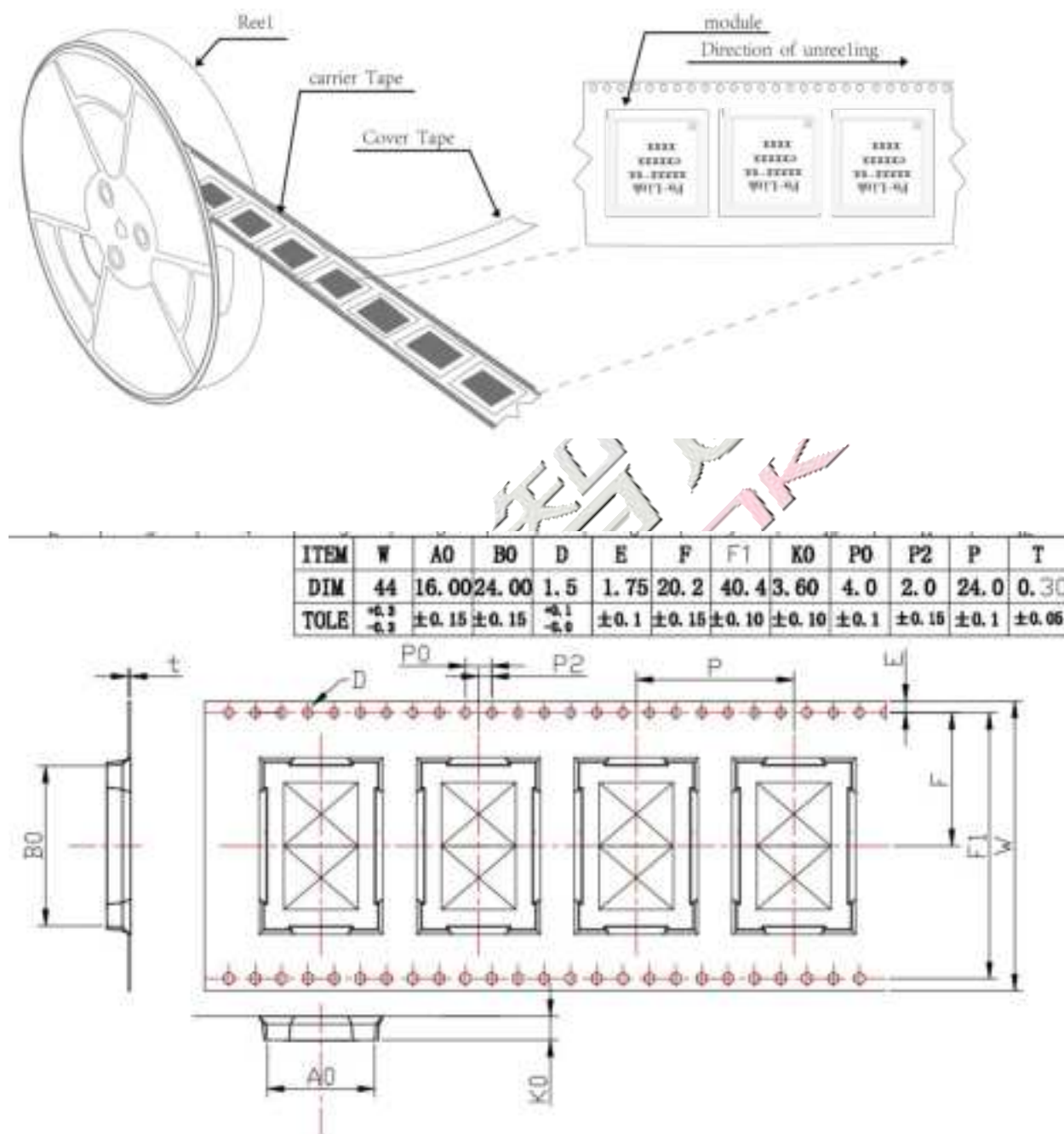
11.2 Details of packing

The take-up package:
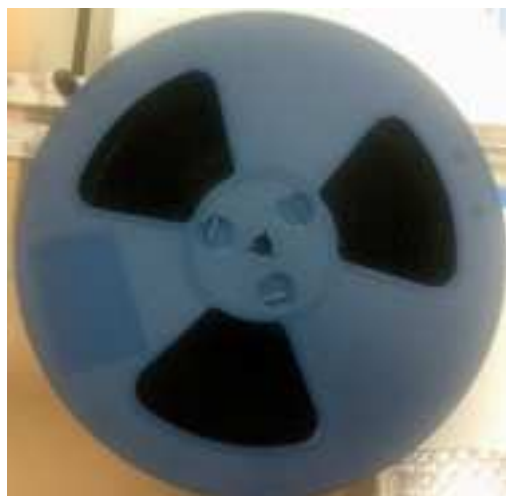
Using self-adhesive tape
Size of black tape:32mm*20.2m   the cover tape :25.5mm*32.6m
Color of plastic disc: blue
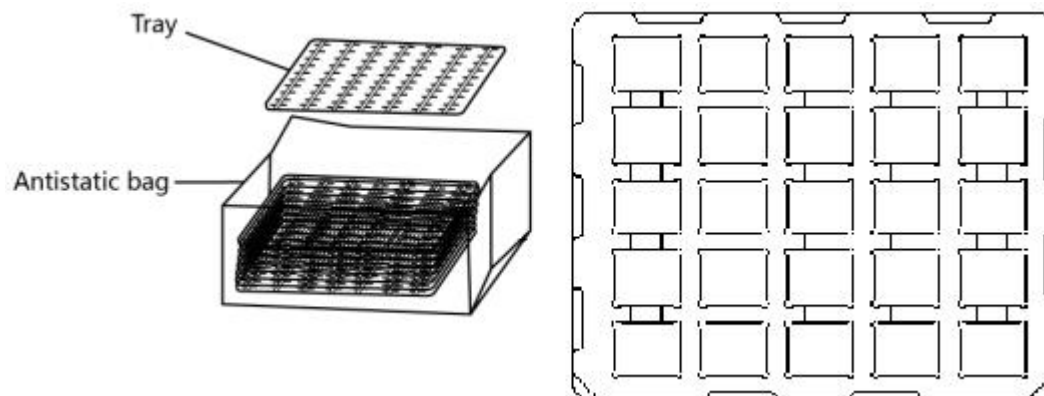

 NY bag size: 415mm*450mm   size ：350X350X35mm

Carton size:360X210X370mm

11.3 Tray

Use pallet packaging for less than 300 pieces

12. Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care

all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)

b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5

c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition

d) "IPC/JEDEC J-STD-033A paragraph 5.2" is respected

e) Baking is required if conditions b) or c) are not respected

f) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

Hereby, (FN-LINK TECHNOLOGY LIMITED) declare that the radio equipment type WIFI/BT Module is compliance with Directive 2014/53/EU.

CE

FCC Warning

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15.247

2.3 Specific operational use conditions

This transmitter/module and its antenna(s) must not be co-located or operating in conjunction with any transmitter. This information also extends to the host manufacturer's instruction manual.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

It is "not applicable" as trace antenna which is not used on the module.

2.6 RF exposure considerations

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This compliance to FCC radiation exposure limits for an uncontrolled environment, and minimum of 20cm separation between antenna and body.

The host product manufacturer would provide the above information to end users in their end-product manuals.

2.7 Antennas

FPC Antenna; 3.62dBi; WLAN: 2.412GHz ~ 2.462GHz；Bluetooth: 2.402GHz ~ 2.480GHz

2.8 Label and compliance information

The end product must carry a physical label or shall use e-labeling followed KDB784748D01 and KDB 784748 stating "Contains Transmitter Module FCC ID: 2AATLB200T-UA".

2.9 Information on test modes and additional testing requirements

For more information on testing, please contact the manufacturer.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) listed on the

grant, and that 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 when contains digital circuity.

FCC Statements

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.109) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end-user of the final host device.

The final host device, into which this RF Module is integrated has to be labeled with an auxiliary label stating the FCC ID of the RF Module, such as "Contains FCC ID: 2AATLB200T-UA ".

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 to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The Integrator will be responsible to satisfy SAR/ RF Exposure requirements, when the module integrated into the host device.

Module statement

The single-modular transmitter is a self-contained, physically delineated, component for

which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

1) The radio elements have the radio frequency circuitry shielded.

2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.

3) The module contains power supply regulation on the module.

4) The module contains a permanently attached antenna.

5) The module demonstrates compliance in a stand-alone configuration.

6) The module is labeled with its permanently affixed FCC ID label.

7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.

8) The module complies with RF exposure requirements.

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.

This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body；