

OFLYCOMM

欧飞信科技

8121N-UH

WiFi 802.11 a/n 2X2 5G Only High Power

Module Datasheet

Revision History

| Version | Date | Description | Draft | Approved |
|---------|------------|---|-------|-----------|
| 1.0 | 2018-09-08 | -Preliminary | Jane | Nick Yang |
| 2.0 | 2019-08-30 | Optimizing Power and RF Indicators Modify Power_en Voltage | Jane | Nick Yang |
| | 2019-09-06 | Adjust parameters | Jane | Nick Yang |

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1. Introduction

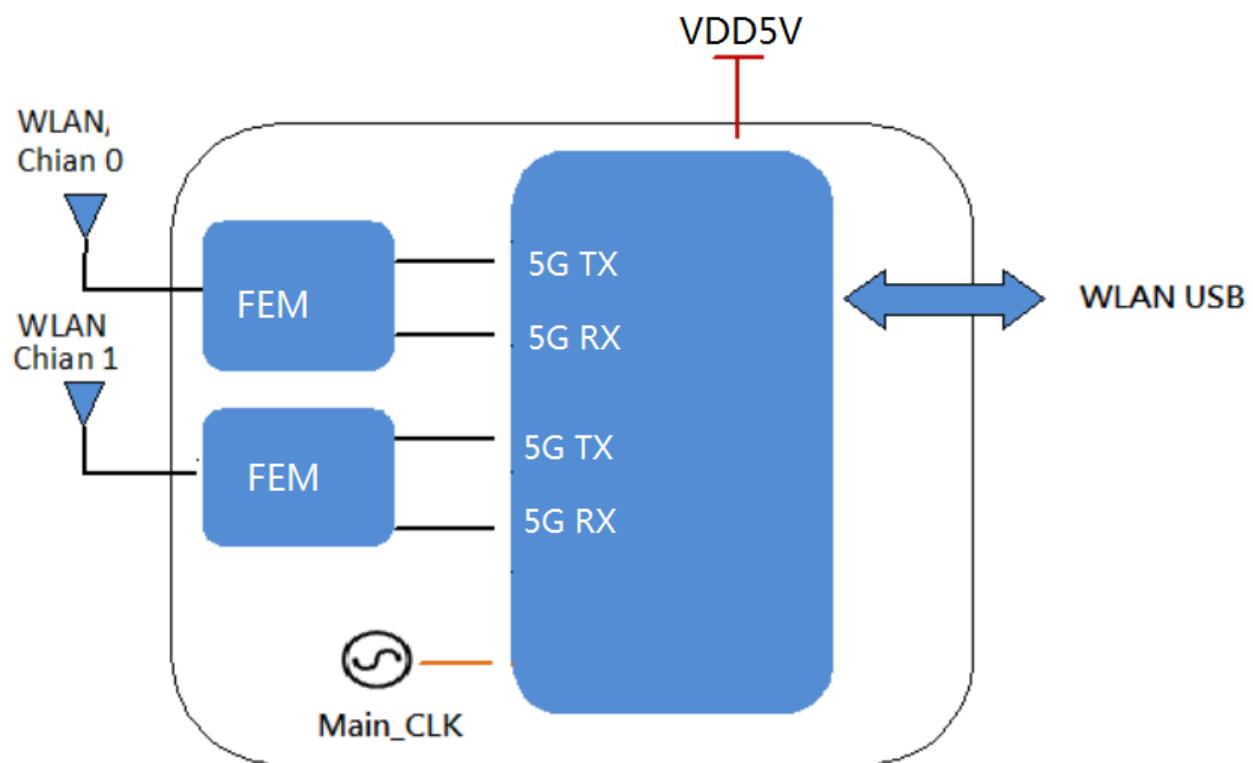
OFLYCOMM announce a low-cost and high-power consumption module which has 5g of the WiFi functionalities. The highly integrated module makes the possibilities of web browsing, VoIP, Long-distance audio and video transmission, Wireless HDMI Extender applications. With seamless roaming capabilities and advanced security, also could interact with different vendors' 802.11a/n 2x2 5G only Access Points in the wireless LAN..

The wireless module complies with IEEE 802.11 a/n 2x2 MIMO standard and it can achieve up to a speed of 300Mbps with dual stream in 802.11n to connect the wireless LAN. The integrated module provides USB interface for WiFi .

2. Features

- Highly integrated wireless local area network(WLAN) system-on-chip (SOC) for 5 GHZ 802.11a/n WLAN applications.
- Dual-stream spatial multiplexing up to 300 Mbps data rate.
- Supports 20/40MHz Bandwidth
- Supports USB interface for WLAN.
- Integrated high power FEM.

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



3. General Specification

3.1 General Specification

| | |
|-----------------------|--|
| Model Name | 8121N-UH |
| Product Description | Support WiFi |
| Dimension | L x W x H: 27 x 20 x 2.3 (typical) mm |
| WiFi Interface | Support USB2.0 |
| Operating temperature | -30°C to 85°C |
| Storage temperature | -40°C to 125°C |
| Humidity | Operating Humidity 10% to 95% Non-Condensing |

3.1.2 Recommended Operating Rating

| | Min. | Typ. | Max. | Unit |
|-----------------------|------|------|------|-------|
| Operating Temperature | -30 | 25 | 85 | deg.C |
| VCC5V | 4.8 | 5.0 | 5.2 | V |

4. WiFi RF Specification

4.1 5GHz RF Specification

| Feature | Description | |
|--|---|----------------|
| WLAN Standard | IEEE 802.11a/n 2x2, WiFi compliant | |
| Frequency Range | 4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band) | |
| Number of Channels | 5.0GHz: Please see the table ¹ | |
| Output Power | 802.11a /54Mbps : 19 dBm ± 2 dB @ EVM ≤ -25dB | |
| | 802.11n /MCS7 : 19 dBm ± 2 dB @ EVM ≤ -28dB | |
| Test Items | Typical Value | Standard Value |
| SISO Receive Sensitivity (11a,20MHz) @10% PER | - 6Mbps PER @ -90 dBm | ≤-85 |
| | - 9Mbps PER @ -87 dBm | ≤-84 |
| | - 12Mbps PER @ -86 dBm | ≤-82 |
| | - 18Mbps PER @ -83 dBm | ≤-80 |
| | - 24Mbps PER @ -80 dBm | ≤-77 |
| | - 36Mbps PER @ -77 dBm | ≤-73 |
| | - 48Mbps PER @ -75 dBm | ≤-69 |
| | - 54Mbps PER @ -73 dBm | ≤-68 |
| MIMO Receive Sensitivity (11a,20MHz) @10% PER | - 6Mbps PER @ -90 dBm | ≤-86 |
| | - 9Mbps PER @ -89 dBm | ≤-85 |
| | - 12Mbps PER @ -88 dBm | ≤-83 |
| | - 18Mbps PER @ -86 dBm | ≤-81 |
| | - 24Mbps PER @ -83 dBm | ≤-78 |
| | - 36Mbps PER @ -80 dBm | ≤-75 |
| | - 48Mbps PER @ -75 dBm | ≤-69 |
| | - 54Mbps PER @ -73 dBm | ≤-66 |
| SISO Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0 PER @ -88 dBm | ≤-85 |
| | - MCS=1 PER @ -85 dBm | ≤-82 |
| | - MCS=2 PER @ -83 dBm | ≤-80 |
| | - MCS=3 PER @ -80 dBm | ≤-77 |
| | - MCS=4 PER @ -76 dBm | ≤-73 |
| | - MCS=5 PER @ -71 dBm | ≤-69 |
| | - MCS=6 PER @ -72 dBm | ≤-68 |
| | - MCS=7 PER @ -68 dBm | ≤-67 |
| MIMO Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0 PER @ -89 dBm | ≤-82 |
| | - MCS=1 PER @ -88 dBm | ≤-80 |
| | - MCS=2 PER @ -86 dBm | ≤-79 |

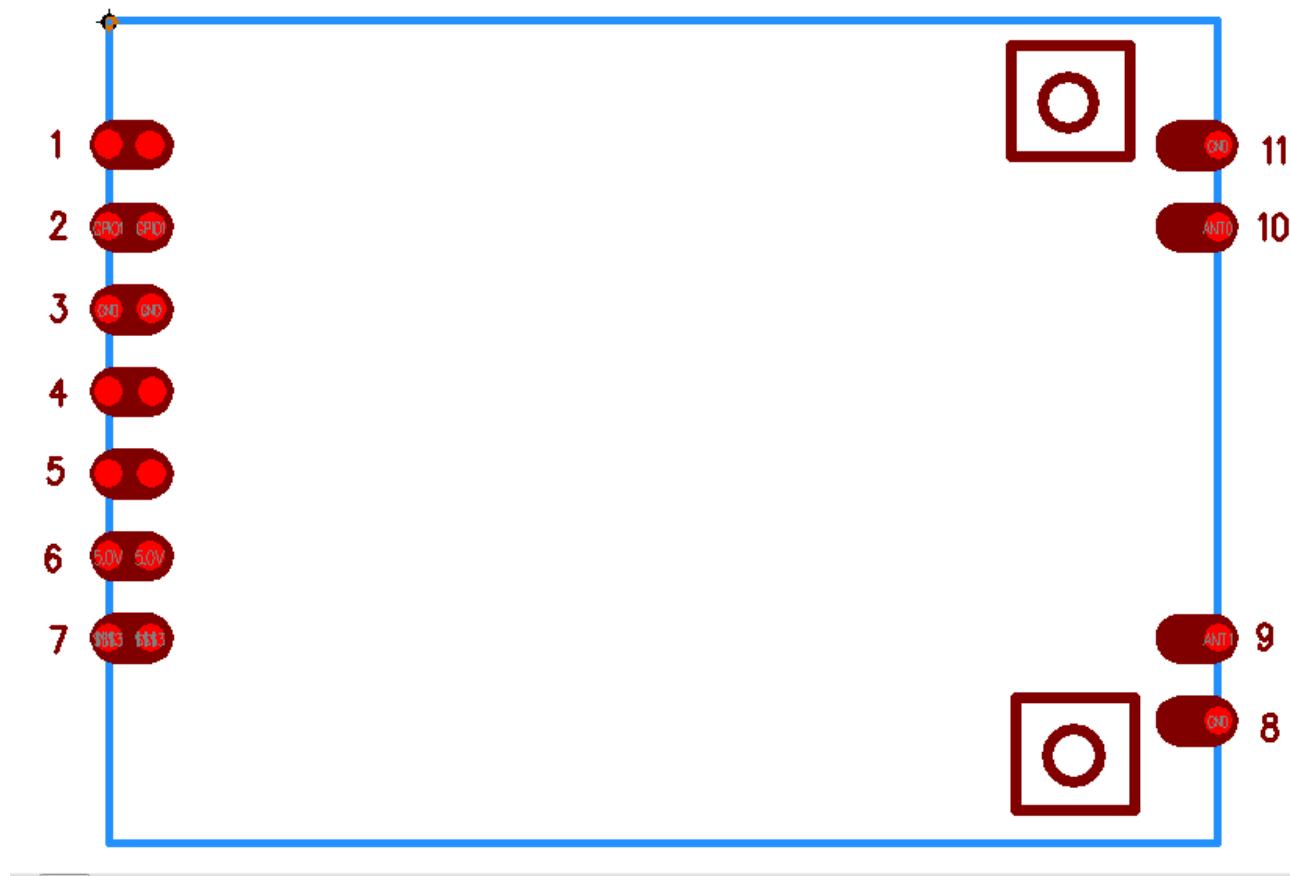
| | | | |
|--|---------------------------------------|---------------|------|
| | - MCS=3 | PER @ -83 dBm | ≤-78 |
| | - MCS=4 | PER @ -79 dBm | ≤-74 |
| | - MCS=5 | PER @ -74 dBm | ≤-68 |
| | - MCS=6 | PER @ -73 dBm | ≤-66 |
| | - MCS=7 | PER @ -71 dBm | ≤-64 |
| | - MCS=8 | PER @ -88 dBm | ≤-84 |
| | - MCS=15 | PER @ -68 dBm | ≤-63 |
| SISO Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0 | PER @ -85 dBm | ≤-82 |
| | - MCS=1 | PER @ -82 dBm | ≤-79 |
| | - MCS=2 | PER @ -80 dBm | ≤-77 |
| | - MCS=3 | PER @ -77 dBm | ≤-74 |
| | - MCS=4 | PER @ -73 dBm | ≤-70 |
| | - MCS=5 | PER @ -72 dBm | ≤-66 |
| | - MCS=6 | PER @ -70 dBm | ≤-65 |
| | - MCS=7 | PER @ -68 dBm | ≤-64 |
| MIMO Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0 | PER @ -87 dBm | ≤-79 |
| | - MCS=1 | PER @ -85 dBm | ≤-76 |
| | - MCS=2 | PER @ -83 dBm | ≤-74 |
| | - MCS=3 | PER @ -80 dBm | ≤-71 |
| | - MCS=4 | PER @ -76 dBm | ≤-67 |
| | - MCS=5 | PER @ -75 dBm | ≤-63 |
| | - MCS=6 | PER @ -73 dBm | ≤-62 |
| | - MCS=7 | PER @ -71 dBm | ≤-63 |
| | - MCS=8 | PER @ -70 dBm | ≤-79 |
| | - MCS=15 | PER @ -68 dBm | ≤-61 |
| Maximum Input Level | 802.11a/n : -30 dBm | | |
| Antenna Reference | Small antennas with 0~2 dBi peak gain | | |

¹5GHz(20MHz) Channel table

| Band range | Operating Channel Numbers | Channel center frequencies(MHz) |
|-----------------|---------------------------|---------------------------------|
| 5180MHz~5240MHz | 36 | 5180 |
| | 40 | 5200 |
| | 44 | 5220 |
| | 48 | 5240 |
| 5260MHz~5320MHz | 52 | 5260 |
| | 56 | 5280 |
| | 60 | 5300 |
| | 64 | 5320 |
| 5550MHz~5700MHz | 100 | 5500 |
| | 104 | 5520 |
| | 108 | 5540 |

| | | |
|-----------------|-----|------|
| | 112 | 5560 |
| | 116 | 5580 |
| | 120 | 5600 |
| | 124 | 5620 |
| | 128 | 5640 |
| | 132 | 5660 |
| | 136 | 5680 |
| | 140 | 5700 |
| 5745MHz~5825MHz | 149 | 5745 |
| | 153 | 5765 |
| | 157 | 5785 |
| | 161 | 5805 |
| | 165 | 5825 |

5. Pin Assignments



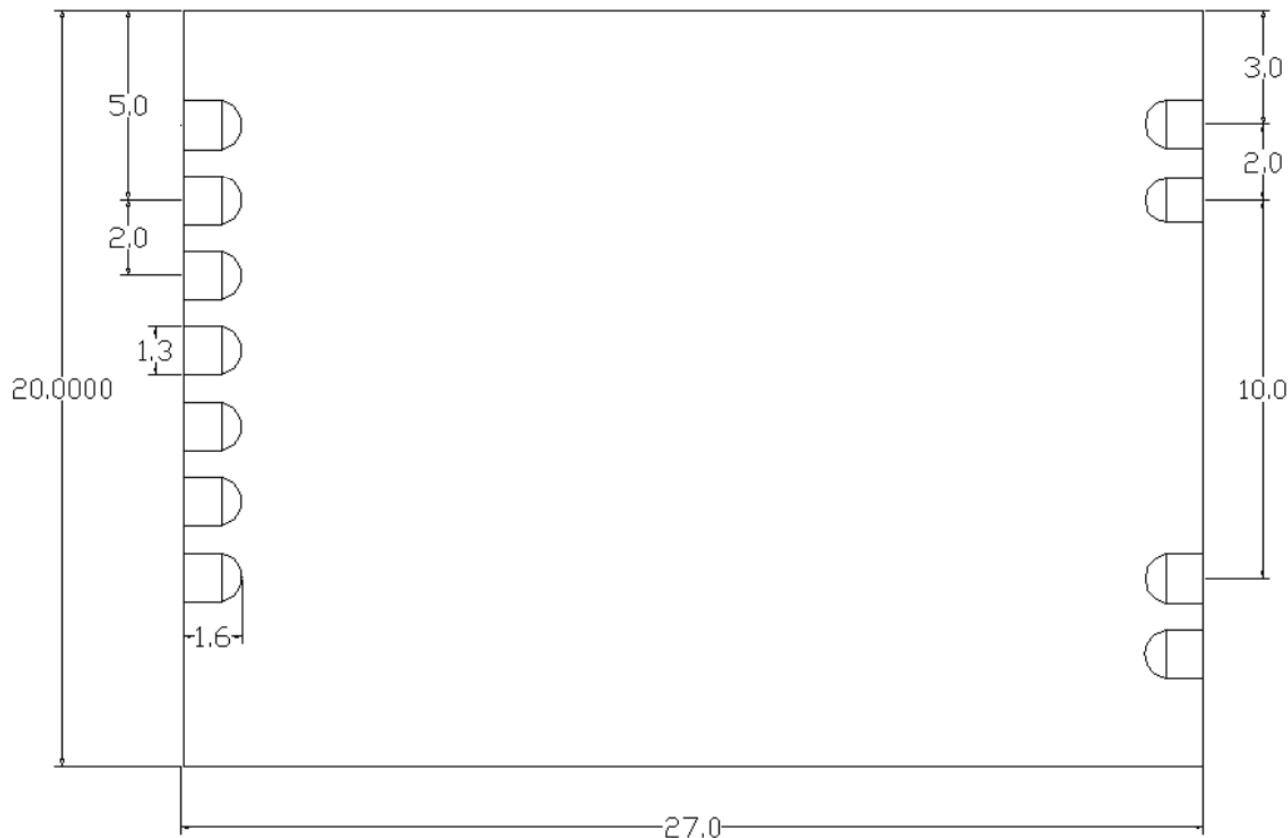
| NO. | Name | Type | Description |
|-----|----------|------|--|
| 1 | POWER_EN | I | Module working enable,High: power on,low: power off. 3.3V |
| 2 | WPS | I/O | WiFi protected setup |
| 3 | GND | - | Ground |
| 4 | D+ | I/O | USB2.0 Data+ |
| 5 | D- | I/O | USB2.0 Data- |
| 6 | VDD5V | P | 5V Power Input |
| 7 | LED | O | Driving LED to indicate WiFi state |
| 8 | GND | - | Ground |
| 9 | RF1 | I/O | 5G WiFi RF signal pin1 |
| 10 | RF0 | I/O | 5G WiFi RF signal pin0 |
| 11 | GND | - | Ground |

6. Dimensions

6.1 Physical Outline

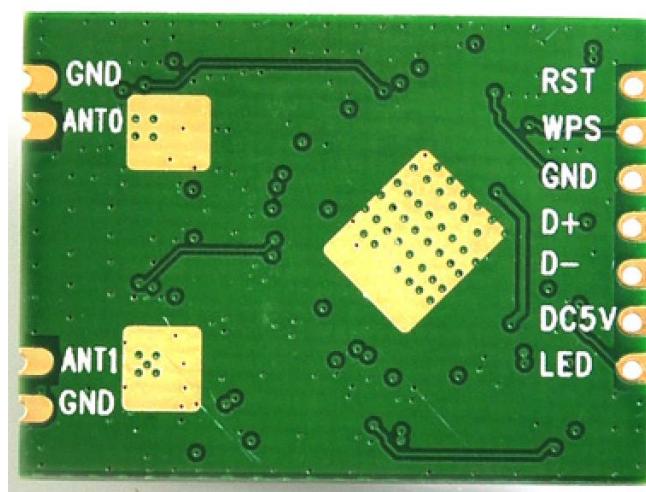
(Unit: mm)

< TOP VIEW >

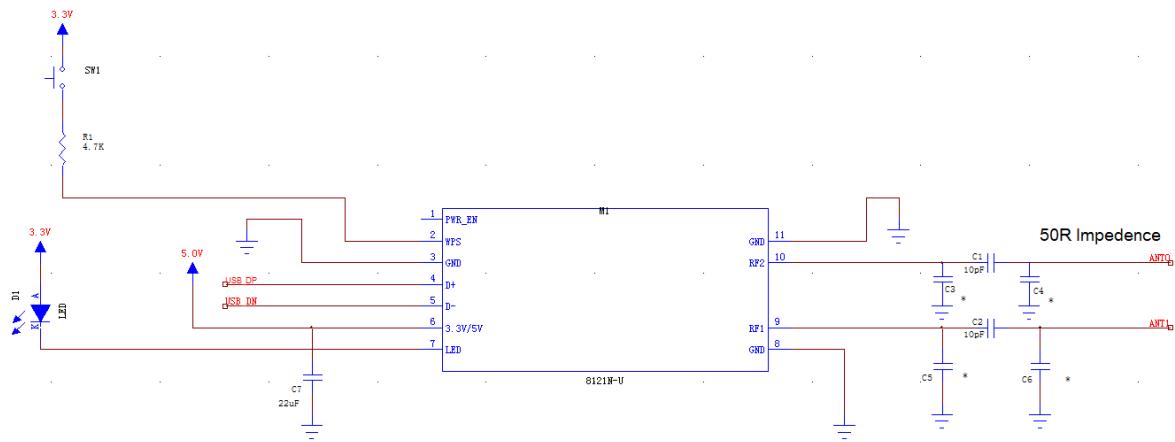


6.2 Module Photo

< TOP VIEW >



7. Reference Design

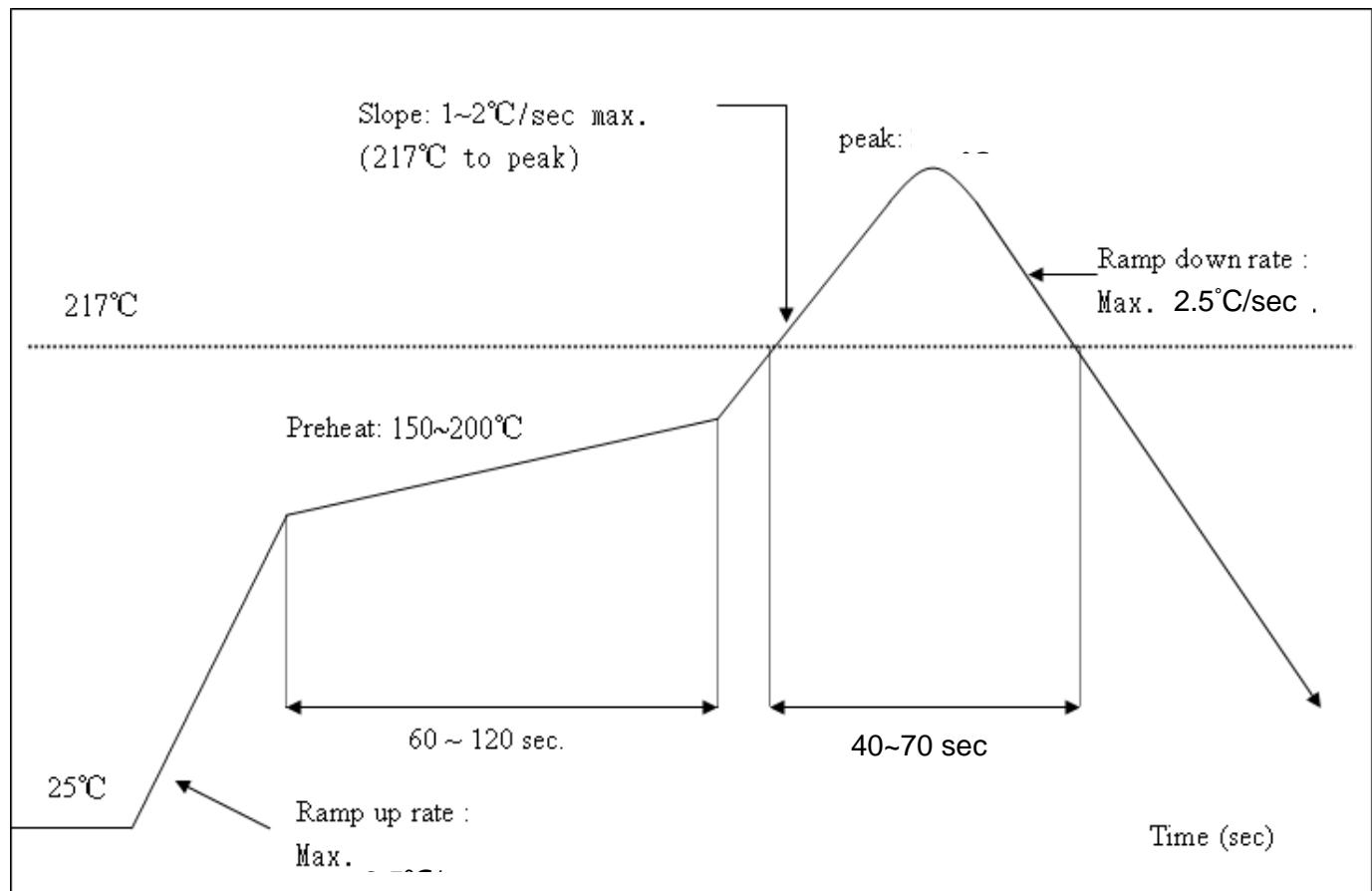


8. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature: <250°C

Number of Times: ≤2 times



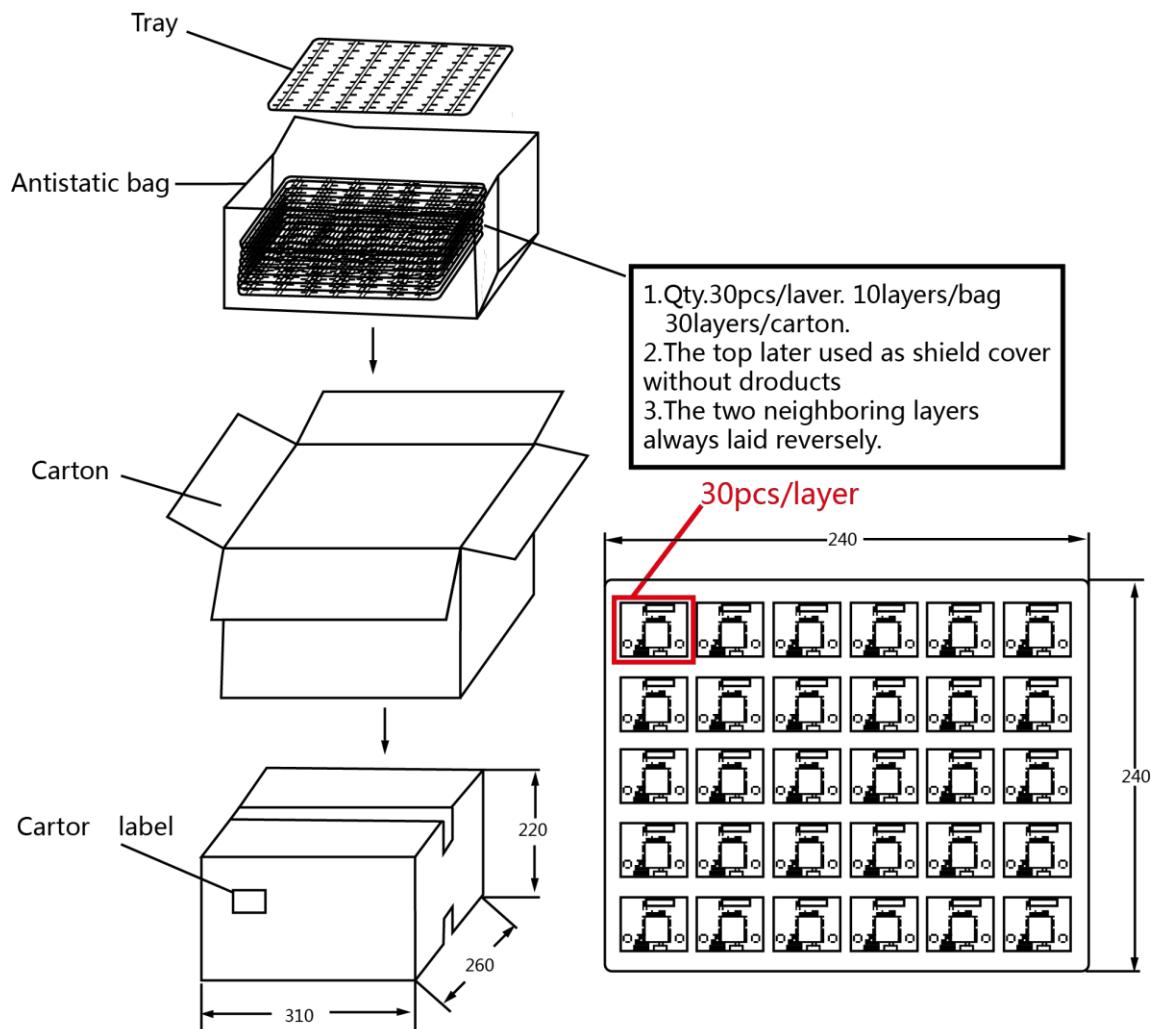
9. Package Information

Layer size: L300.0*W240.0 mm

Layer material: PVC

Carton size: L310.0*W260.0*H220.0 mm

Carton material: A=A



THE END

Caution:

Use the Product in the environment with the temperature Between -30°C and 85°C; Otherwise, it may damage your product. Products can only be used below 2000m altitude

For the following equipment:

Product Name: WIFI Module

Brand Name: --

Model No.: 8121N-UH

SHENZHEN OFEIXIN TECHNOLOGY LIMITED

E-mail: nickren@ofeixin.com

hereby declares that this [Name: WIFI Module, Model: 8121N-UH] is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

CE

This product is intended for sale and application in a business environment.

RED Article 10 2

-This product can be used across EU member states

RED Article 10 10

| | | | | | | | |
|---|----|----|----|----|----|----|------------|
|  | BE | BG | CZ | DK | DE | EE | IE |
| | EL | ES | FR | HR | IT | CY | LV |
| | LT | LU | HU | MT | NL | AT | PL |
| | PT | RO | SI | SK | FI | SE | UK (NI) |

The device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range.

The RF distance between body and product is 20cm

Wi-Fi (5G)

Support Standards: 802.11a, 802.11n-HT20

RF Output Power: Antenna 0: Max. 16.00dBm (EIRP); Antenna 1: Max. 14.94dBm (EIRP)

Operation Frequency: Band 1: 5150-5250MHz

5.8G SRD

Support Standards: 802.11a, 802.11n-HT20

RF Output Power: Antenna 0: Max. 13.75dBm (EIRP); Antenna 1: Max. 10.96dBm (EIRP)

Operation Frequency: 5745-5825MHz

2.2 List of applicable FCC rules

FCC Part 15.407

2.6 RF exposure considerations

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

2.7 Antennas

The module may be operated only with the antenna with which it is authorized. Any antenna that is of the same type and of equal or less directional gain as an antenna that is authorized with the intentional radiator may be marketed with, and used with, that intentional radiator. This product has two External Antenna. As follow,

| No. | Antenna Type | Gain | Impedance |
|-----|--------------|------|-----------|
| 1 | Integral | 2dBi | 50ohm |
| 2 | Integral | 2dBi | 50ohm |

2.8 Label and compliance information

FCC ID label on the final system must be labeled with “Contains FCC ID: 2AT5W-8121N-UH” or “Contains transmitter module FCC ID: 2AT5W-8121N-UH”.

2.9 Information on test modes and additional testing requirements

Contact SHENZHEN OFEIXIN TECHNOLOGY LIMITED will provide stand-alone modular transmitter test mode. Additional testing and certification may be necessary when multiple modules are used in a host.

2.10 Additional testing, Part 15 Subpart B disclaimer

To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Supplier's Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, SHENZHEN OFEIXIN TECHNOLOGY LIMITED shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

FCC Warning

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.

NOTE 1: Any 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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Note 1: This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: Additional testing and certification may be necessary when multiple modules are used.