

H155E-U

Wi-Fi Single-band 1X1 802.11b/g/n

USB Module Datasheet



H155E-U Module Datasheet

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	_____	Title
	_____	Signature
	_____	Date
	_____	Fn-Link

Revision History

Version	Date	Revision Content	Draft	Approved
1.0	2020/08/25	New version	Lxy	Lgp

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1 Overview

1.1 Introduction

H155E-U is a low-cost and low-power consumption module which has all of the Wi-Fi functionalities. It is a highly-integrated IEEE 802.11 b/g/n MAC/Baseband/RF WLAN single chip. For Wireless LAN(WLAN)operation. The integrated module provides USB interface for Wi-Fi . The module provides simple legacy and 20MHz/40MHz co-existence mechanisms to ensure backward and network compatibility.

1.2 Features

- Operate at ISM frequency bands (2.4GHz)
- USB2.0 for Wi-Fi
- IEEE standards support: IEEE 802.11b, IEEE 802.11g, IEEE 802.11n
- Enterprise level security which can apply WPA/WPA2 certification for Wi-Fi.
- Wi-Fi 1 T 1R allow data rates supporting up to 150 Mbps PHY rates

Block Diagram:

confidentiality

1.3 General Specification

Model Name	H155E-U
Main Chipset	SV6155P
Product Description	Support Wi-Fi functionality

Dimension	L x W x H: 12.2 x 13 x1.6 mm (typical)
Wi-Fi Interface	Support USB2.0
Operating temperature	-10°C to 70°C
Storage temperature	-40°C to 85°C
RoHS	All hardware components are fully compliant with EU RoHS directive

1.4 Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	-10	25	70	deg.C
VCC33	3.15	3.3	3.45	V

※1.5 EEPROM Information

WI-FI

Vendor ID	-
Product ID	-

2 Wi-Fi RF Specification

2.1 2.4GHz RF Specification

Feature	Description			
WLAN Standard	IEEE 802.11 b/g/n Wi-Fi compliant			
Frequency Range	2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)			
Number of Channels	2.4GHz: Ch1 ~ Ch11			
Spectrum Mask	Min. b/g/n	Typ. b/g/n	Max. b/g/n	Unit b/g/n
1st side lobes(to fc ± 11MHZ)	-	-43/-30/-40	-	dBr
2st side lobes(to fc ± 22MHZ)	-	-52/-33/-58	-	dBr
Freq. Tolerance	-20/-20/-20	-	20/20/20	ppm
Test Items	Typical Value			EVM
Output Power	802.11b /11Mbps : 15dBm ± 2 dB			EVM ≤ -9dB
	802.11g /54Mbps : 15dBm ± 2 dB			EVM ≤ -26dB
	802.11n /MCS7 : 14dBm ± 3 dB			EVM ≤ -28dB
Test Items	TYP Test Value			Standard Value
SISO Receive Sensitivity	- 1Mbps	PER @ -92 dBm	≤-83	

(11b,20MHz) @8% PER	- 2Mbps PER @ -90 dBm	≤-80
	- 5.5Mbps PER @ -87 dBm	≤-79
	- 11Mbps PER @ -85 dBm	≤-76
SISO Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -89 dBm	≤-85
	- 9Mbps PER @ -88 dBm	≤-84
	- 12Mbps PER @ -87 dBm	≤-82
	- 18Mbps PER @ -84 dBm	≤-80
	- 24Mbps PER @ -81 dBm	≤-77
	- 36Mbps PER @ -78 dBm	≤-73
	- 48Mbps PER @ -73 dBm	≤-69
	- 54Mbps PER @ -71 dBm	≤-68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -87 dBm	≤-85
	- MCS=1 PER @ -84 dBm	≤-82
	- MCS=2 PER @ -82 dBm	≤-80
	- MCS=3 PER @ -78 dBm	≤-77
	- MCS=4 PER @ -75 dBm	≤-73
	- MCS=5 PER @ -70 dBm	≤-69
	- MCS=6 PER @ -69 dBm	≤-68
	- MCS=7 PER @ -68 dBm	≤-67
SISO Receive Sensitivity (11n ,40MHz) @10% PER	- MCS=0, PER @ -86 dBm	≤-82
	- MCS=1, PER @ -83 dBm	≤-79
	- MCS=2, PER @ -81 dBm	≤-77
	- MCS=3, PER @ -78 dBm	≤-74
	- MCS=4, PER @ -74 dBm	≤-70
	- MCS=5, PER @ -69 dBm	≤-66
	- MCS=6, PER @ -68 dBm	≤-65
	- MCS=7, PER @ -66 dBm	≤-64
Maximum Input Level	802.11b : -10 dBm	
	802.11g/n : -20 dBm	
Antenna Reference	Small antennas with 0~2 dBi peak gain	

3 Power Consumption

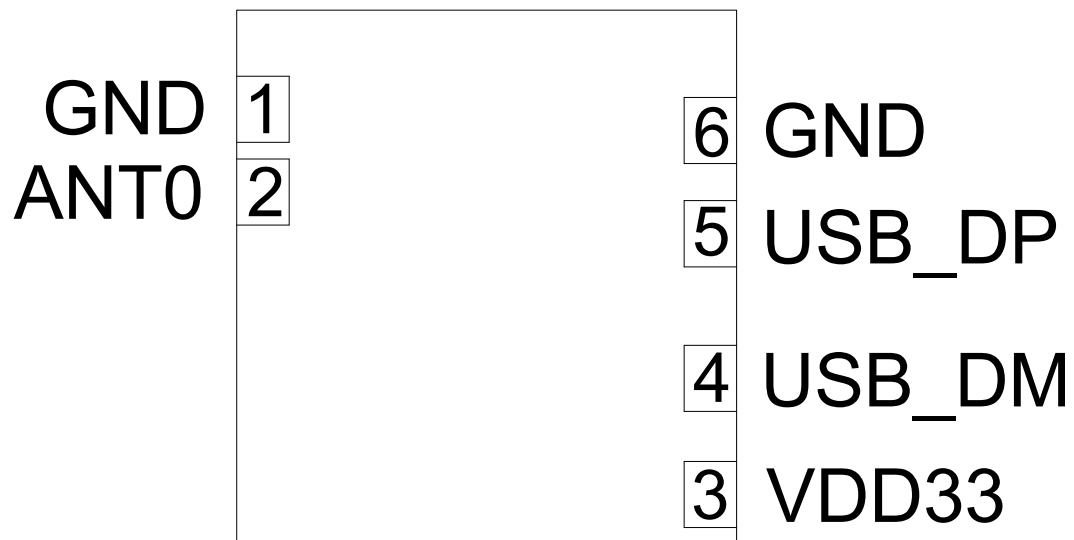
Vcc-3.3V, Ta=25° C, unit: mA	
current	Typ.
802.11b	11Mbps

TX mode	301.9
RX mode	117.9
802.11g	54Mbps
TX mode	267.5
RX mode	117.2
802.11n HT20	MCS7
TX mode	269.5
RX mode	118.9
802.11n HT40	MCS7
TX mode	275.1
RX mode	121.5
Standby mode	20

4 Pin Assignments

4.1 Pin Outline

< TOP VIEW >



4.2 Pin Definition

NO	Name	Type	Description	Voltage
1	GND	—	Ground connections	

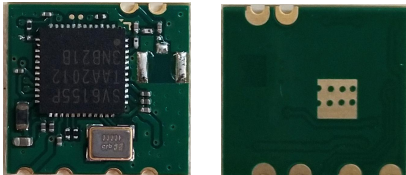
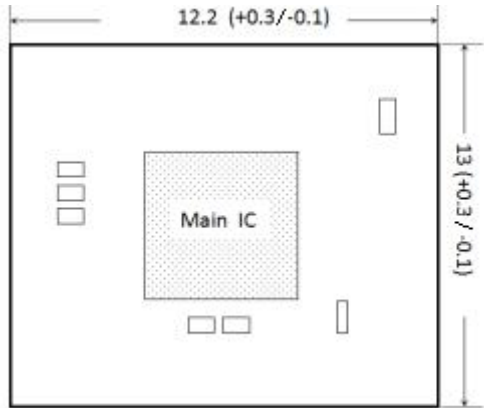
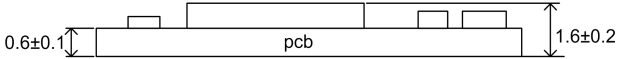
2	ANT 0	I/O	RF I/O port	
3	VDD33	—	Main power voltage source input 3.3V	3.3V
4	USB_DM	I/O	USB2.0 D- for WLAN	
5	USB_DP	I/O	USB2.0 D+ for WLAN	
6	GND	—	Ground connections	

P:POWER I:INPUT O:OUTPUT

5 Dimensions

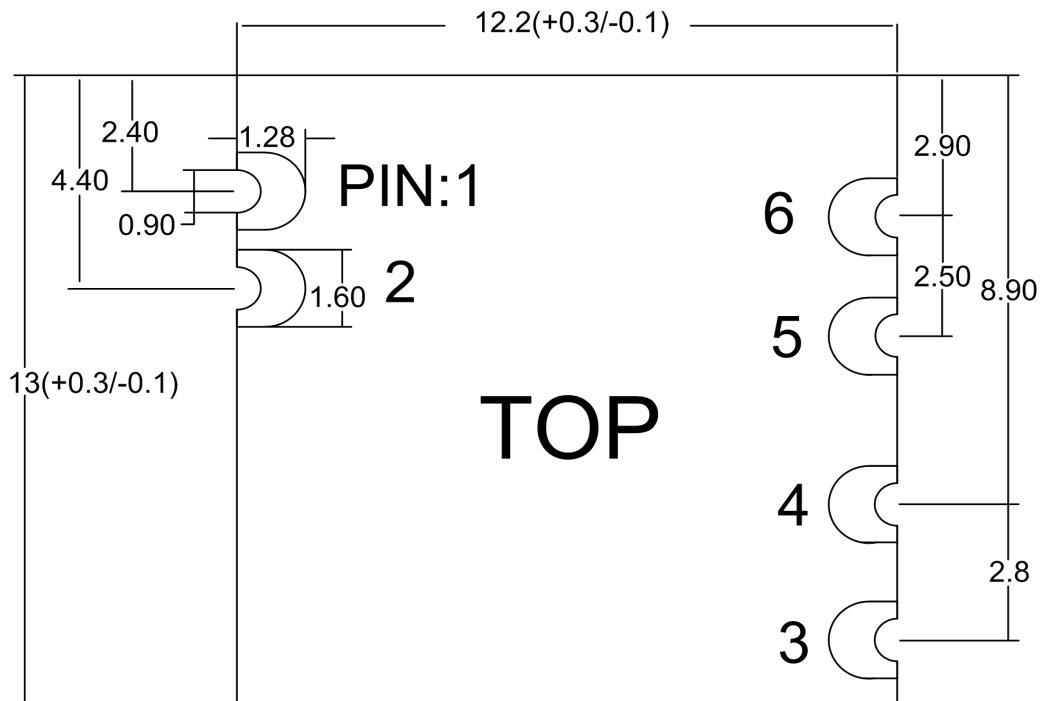
5.1 Physical Dimensions

(Unit: mm)

< TOP VIEW > L x W: 12.2 x 13 mm 	
< Side View > H:1.6 mm	
Weight	0.37g

5.2 Module Physical Dimensions

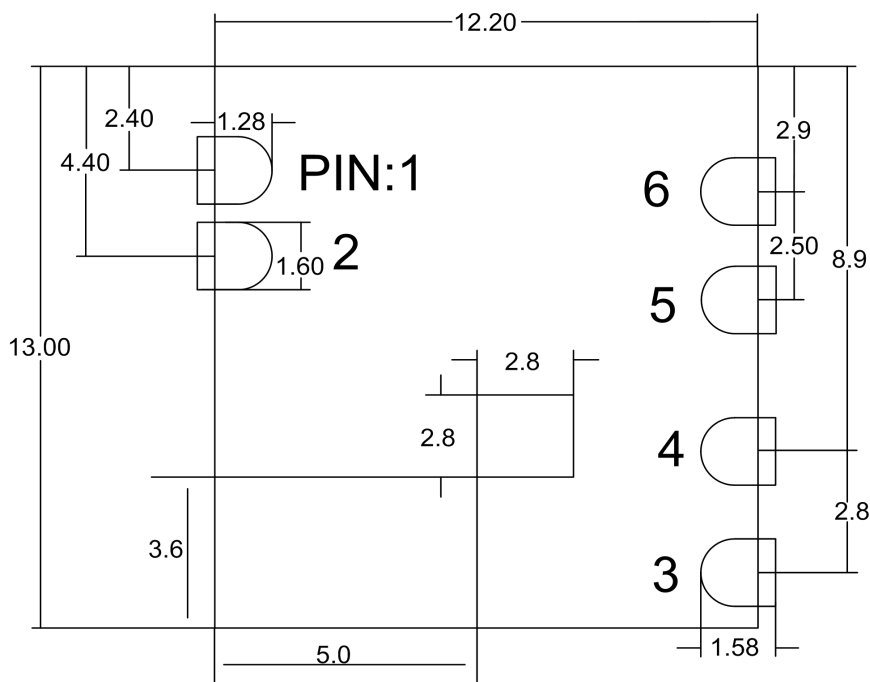
(Unit: mm)



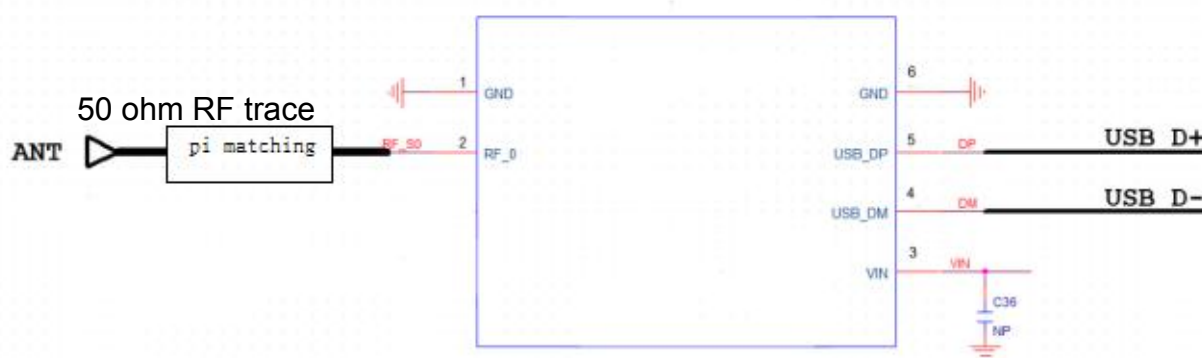
5.3 Layout Recommendation

(Unit: mm)

< TOP VIEW >



6 Reference Design



Note:

1. 邮票孔外接版本，客户主板建议预留 π ，匹配天线；

7 Ordering Information

Part No.	Description
FGH155EUX-00	SV6155P,b/g/n,Wi-Fi,1T1R,12.2X13mm,USB 邮票孔
FGH155EUX-02	SV6155P,b/g/n,Wi-Fi,1T1R,12.2X13mm,USB 邮票孔 (01005 版)

8 The Key Material List

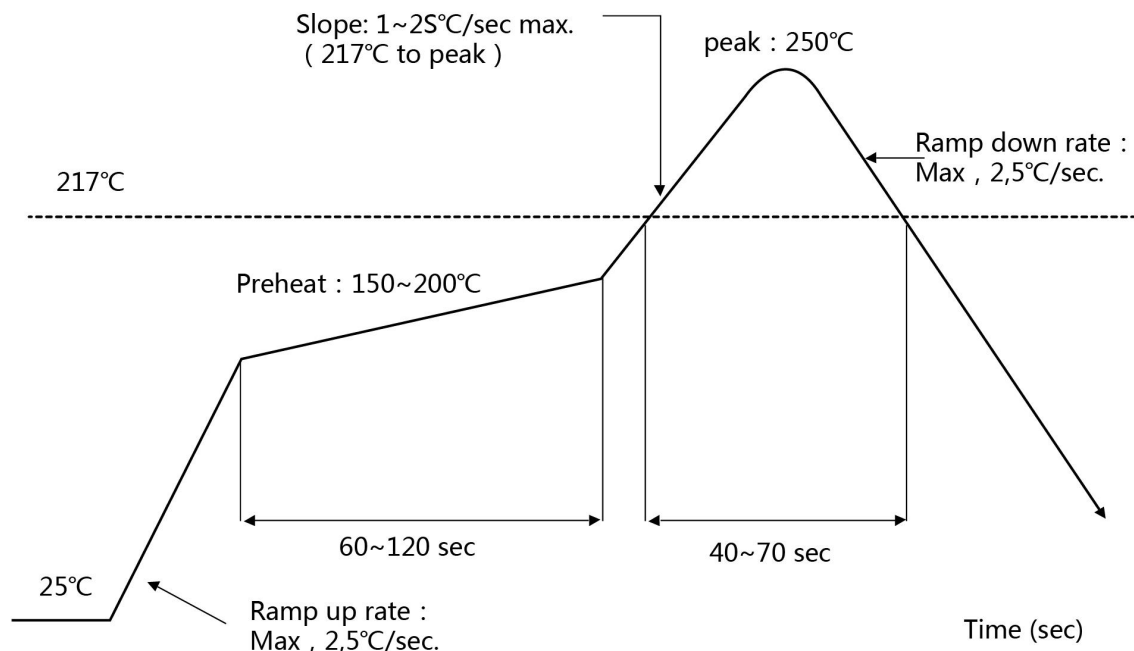
Crystal	3225 40Mhz 9PF $\pm 10\text{ppm}$ -20° C~85° C	ECEC,TKD,HOSONIC,JWT
PCB	H155E-U-V1.0 green, 4L,12.2X13X0.6mm	XY-PCB,SL-PCB,KX-PCB,S unlord
Chipset	SV6155P,802.11 b/g/n MAC/BB/Radio with USB Interface,QFN48L,0.4pitch,6x6mm	iComm-semi

9 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

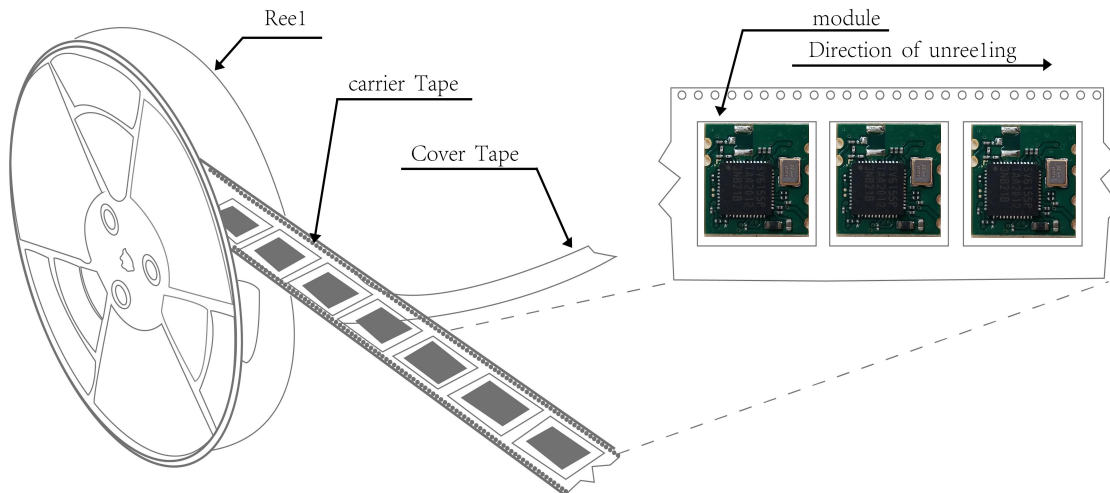
Number of Times : ≤ 2 times



10 Package Information

10.1 Reel

A roll of 2000pcs



10.2 Packaging Detail

the take-up package



Using self-adhesive tape

Size of black tape: 24mm*32.6m the cover tape : 21.33mm*32.6m

Color of plastic disc: blue

A roll of 2000pcs



NY bag size:460mm*385mm



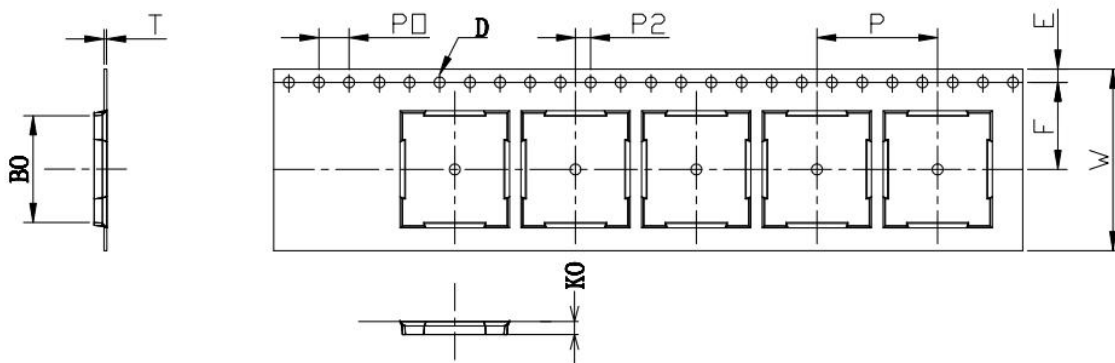
size : 350*350*35mm



The packing case size:350*210*370mm

10.3 Carrier Tape Detail

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	12.45	13.45	1.50	11.5	1.75	1.70	4.0	2.0	16.0	0.30
TOLE	+0.3 -0.3	±0.15	±0.15	+0.1 -0.0	+0.1 -0.1	±0.1	±0.10	±0.1	±0.1	±0.1	±0.05



10.4 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.

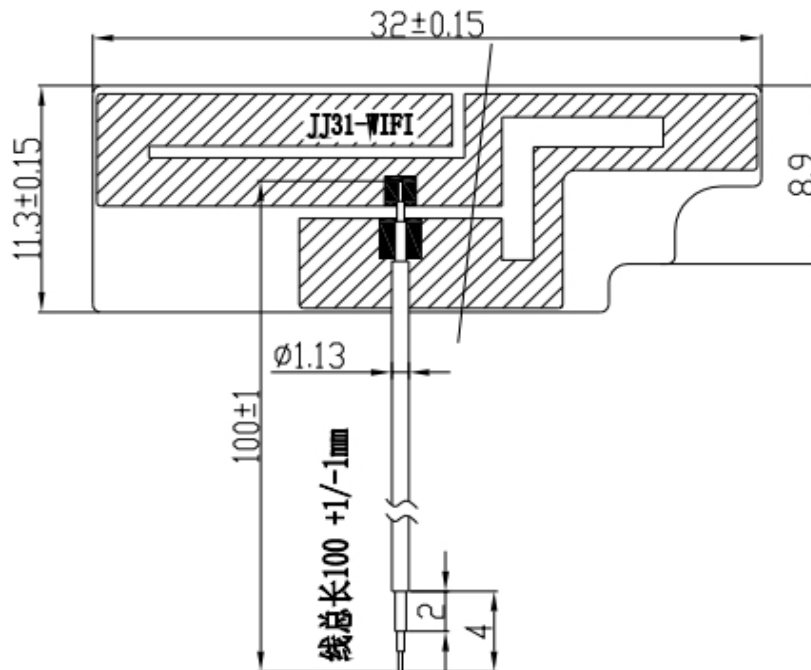
Moreover, the customer has to take care of the following conditions:

- 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
- b) "IPC/JEDEC J-STD-033A paragraph 5.2" is respected
- d) Baking is required if conditions b) or c) are not respected
- e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

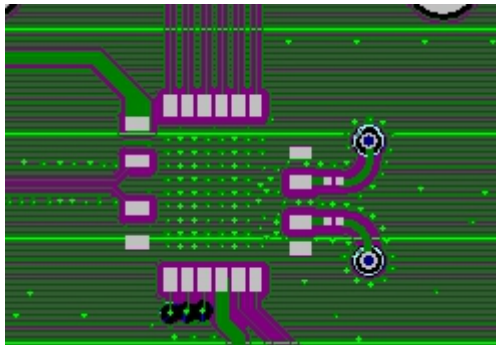
FPC antenna specification

You can see antenna size is 32mm*11.3mm* From below

Specification.

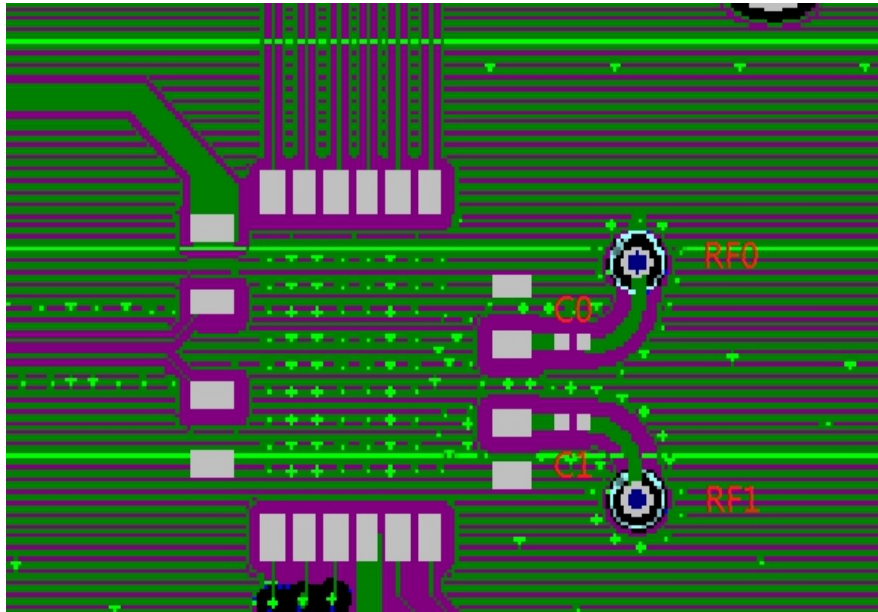


Please refer to the chart below for PCB size of RF line terminal.



Scrape a GND off the side of the RF1 and connect the FPC antenna to the PCB at the position of the RF line RF1

[The line between the FPC antenna and the WiFi module] must be 50 ohm.



C0	0 ohm
C1	0 ohm

FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Antenna info: Trace antenna Antenna gain 2.0dBi

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

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.

We will retain control over the final installation of the modular such that compliance of the end product is assured. In such cases, an operating condition on the limit modular approval for the module must be only approved for use when installed in devices produced by a specific manufacturer. If any hardware modify or RF control software modify will be made by host manufacturer, C2PC or new certificate should be apply to get approval, if those change and modification made by host manufacturer not expressly approved by the party responsible for compliance, then it is illegal.

FCC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device if without further certify such as C2PC with SAR. This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

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 Transmitter Module FCC ID: 2AATL-H155E-U Or Contains FCC ID: 2AATL-H155E-U"

When the module is installed inside another device, the user manual of the host must contain below warning statements;

1. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

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.

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

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with limit modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC part 15C : 15.247 and 15.209 & 15.207 , 15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 & 15.207 , 15B Class B requirement, then the host can be sold legally.