

PRODUCT SPECIFICATION

6221E-UUC

Wi-Fi Dual-band 1x1 11ac + Bluetooth 4.2

Combo Module

Version:v1.6



6221E-UUC Module Datasheet

Ordering Information	Part NO.	Description
	FG6221EUUC-06	RTL8821CU-CG,a/b/g/n/ac,Wi-Fi +BT4.2,1T1R,12.2X12.9mm ,

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

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Revision History

[illegible]

1. General Description

1.1 Introduction

FN-Link Technology would like to announce a low-cost and low-power consumption module which has all of the Wi-Fi functionalities. It is a highly-integrated IEEE 802.11 a/b/g/n/ac 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/80MHz co-existence mechanisms to ensure backward and network compatibility

The wireless module complies with IEEE 802.11 a/b/g/n/ac standard and it can achieve up to a speed of 433.3Mbps with single stream in 802.11ac draft to connect to the wireless LAN. The integrated module provides USB interface for Wi-Fi, USB 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.

1.2 Description

Model Name	6221E-UUC
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L x W x H: 12.2 x 12.9 x1.7 mm
Wi-Fi Interface	Support USB 2.0
BT Interface	USB 2.0
Operating temperature	0°C to 70°C
Storage temperature	-55°C to 85°C

2. Features

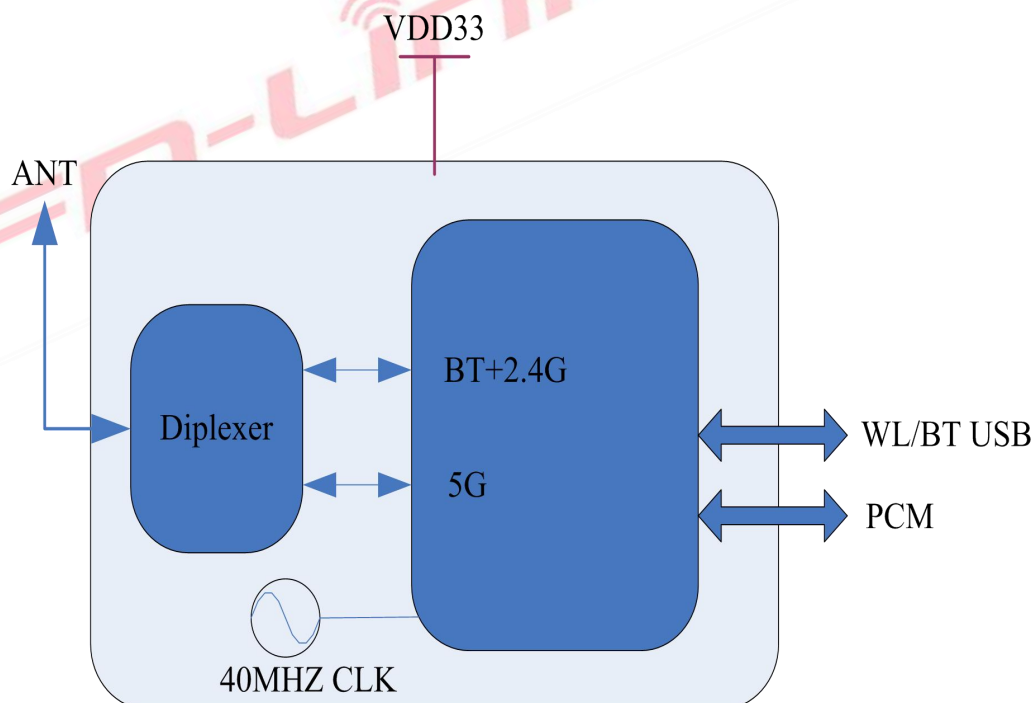
General Features

- Highly integrated wireless local area network(WLAN) system-on-chip (SOC) for 5 GHZ 802.11ac, or 2.4G/5G 802.11n WLAN applications.
- Supports 20/40MHz at 2.4GHz and supports 20/40/80MHz at 5GHz
- Supports WLAN-Bluetooth coexistence.

Bluetooth Features

- Supports Bluetooth V4.2+HS, BLE and be backwards compatible with Bluetooth 1.2, 2.X+ enhance data rate.
- Supports Bluetooth for class1、 class2 and class 3 power level transmissions without requiring an external PA.

3. Block Diagram



4. General Specification

4.1 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	
Test Items	Typical Value	EVM
Output Power	802.11b /11Mbps : 16dBm \pm 2 dB	EVM \leq -9dB
	802.11g /54Mbps : 16dBm \pm 2 dB	EVM \leq -26dB
	802.11n /MCS7 : 15dBm \pm 2 dB	EVM \leq -30dB
	Other rate Tx power control by 'power by rate'	
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	\pm 20ppm	
Test Items	TYP Test Value	Standard Value
Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps PER @ -92 dBm, typical	\leq -85
	- 2Mbps PER @ -90 dBm, typical	\leq -83
	- 5.5Mbps PER @ -87 dBm, typical	\leq -81
	- 11Mbps PER @ -85 dBm, typical	\leq -79
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -89 dBm, typical	\leq -85
	- 9Mbps PER @ -88 dBm, typical	\leq -84
	- 12Mbps PER @ -87 dBm, typical	\leq -82
	- 18Mbps PER @ -84 dBm, typical	\leq -80
	- 24Mbps PER @ -81 dBm, typical	\leq -77
	- 36Mbps PER @ -78 dBm, typical	\leq -73
	- 48Mbps PER @ -73 dBm, typical	\leq -69
	- 54Mbps PER @ -71 dBm, typical	\leq -68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -89 dBm, typical	\leq -85
	- MCS=1 PER @ -86 dBm, typical	\leq -82
	- MCS=2 PER @ -84 dBm, typical	\leq -80
	- MCS=3 PER @ -80 dBm, typical	\leq -77
	- MCS=4 PER @ -77 dBm, typical	\leq -73
	- MCS=5 PER @ -72 dBm, typical	\leq -69
	- MCS=6 PER @ -71 dBm, typical	\leq -68
	- MCS=7 PER @ -69 dBm, typical	\leq -67
Receive Sensitivity	- MCS=0 PER @ -87 dBm, typical	\leq -82

(11n,40MHz) @10% PER	- MCS=1	PER @ -83 dBm, typical	≤ -79
	- MCS=2	PER @ -82 dBm, typical	≤ -77
	- MCS=3	PER @ -78 dBm, typical	≤ -74
	- MCS=4	PER @ -74 dBm, typical	≤ -70
	- MCS=5	PER @ -70 dBm, typical	≤ -66
	- MCS=6	PER @ -68 dBm, typical	≤ -65
	- MCS=7	PER @ -67 dBm, typical	≤ -64

4.2 5GHz RF Specification

Feature	Description	
WLAN Standard	IEEE 802.11a/n/ac, Wi-Fi compliant	
Frequency Range	5.150 GHz ~ 5.850 GHz (5.0 GHz ISM Band)	
Number of Channels	5.0GHz: Please see the table1	
Modulation	802.11a/n : 64-QAM,16-QAM, QPSK, BPSK 802.11ac : 256-QAM, 64-QAM,16-QAM, QPSK, BPSK	
Test Items	Typical Value	EVM
Output Power2	802.11a /54M : 12 dBm \pm 2 dB	EVM \leq -25dB
	802.11n /MCS7 : 11 dBm \pm 2 dB	EVM \leq -28dB
	802.11ac/MCS7 : 10 dBm \pm 2 dB	EVM \leq -28dB
	802.11ac/MCS9 : 10 dBm \pm 2 dB	EVM \leq -32dB
	Other rate Tx power control by 'power by rate'	
Test Items	TYP Test Value	Standard Value
Receive Sensitivity (11a, 20MHz) @10% PER	- 6Mbps PER @ -86 dBm, typical	≤ -85
	- 9Mbps PER @ -86 dBm, typical	≤ -84
	- 12Mbps PER @ -85 dBm, typical	≤ -82
	- 18Mbps PER @ -83 dBm, typical	≤ -80
	- 24Mbps PER @ -79 dBm, typical	≤ -77
	- 36Mbps PER @ -76 dBm, typical	≤ -73
	- 48Mbps PER @ -71 dBm, typical	≤ -69
	- 54Mbps PER @ -70 dBm, typical	≤ -68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -85 dBm, typical	≤ -85
	- MCS=1 PER @ -83 dBm, typical	≤ -82
	- MCS=2 PER @ -80 dBm, typical	≤ -80
	- MCS=3 PER @ -77 dBm, typical	≤ -77
	- MCS=4 PER @ -73 dBm, typical	≤ -73

Receive Sensitivity (11n,40MHz) @10% PER	- MCS=5	PER @ -69 dBm, typical	≤-69
	- MCS=6	PER @ -68 dBm, typical	≤-68
	- MCS=7	PER @ -67 dBm, typical	≤-67
	- MCS=0	PER @ -83 dBm, typical	≤-82
	- MCS=1	PER @ -80 dBm, typical	≤-79
	- MCS=2	PER @ -78 dBm, typical	≤-77
	- MCS=3	PER @ -75 dBm, typical	≤-74
	- MCS=4	PER @ -72 dBm, typical	≤-70
	- MCS=5	PER @ -67 dBm, typical	≤-66
	- MCS=6	PER @ -66 dBm, typical	≤-65
	- MCS=7	PER @ -64 dBm, typical	≤-64
	- MCS=0	PER @ -86 dBm, typical	≤-84
	- MCS=1	PER @ -84 dBm, typical	≤-81
	- MCS=2	PER @ -81 dBm, typical	≤-79
	- MCS=3	PER @ -77 dBm, typical	≤-76
	- MCS=4	PER @ -74 dBm, typical	≤-72
	- MCS=5	PER @ -70 dBm, typical	≤-68
	- MCS=6	PER @ -68 dBm, typical	≤-67
	- MCS=7	PER @ -67 dBm, typical	≤-66
	- MCS=8	PER @ -63 dBm, typical	≤-61
	- MCS=0	PER @ -83 dBm, typical	≤-81
	- MCS=1	PER @ -79 dBm, typical	≤-78
	- MCS=2	PER @ -77 dBm, typical	≤-76
	- MCS=3	PER @ -74 dBm, typical	≤-73
	- MCS=4	PER @ -71 dBm, typical	≤-69
	- MCS=5	PER @ -66 dBm, typical	≤-65
	- MCS=6	PER @ -64 dBm, typical	≤-64
	- MCS=7	PER @ -63 dBm, typical	≤-63
	- MCS=8	PER @ -60 dBm, typical	≤-58
	- MCS=9	PER @ -59 dBm, typical	≤-56
Receive Sensitivity (11ac,80MHz) @10% PER	- MCS=0	PER @ -80 dBm, typical	≤-78
	- MCS=1	PER @ -77 dBm, typical	≤-75
	- MCS=2	PER @ -75 dBm, typical	≤-73
	- MCS=3	PER @ -71 dBm, typical	≤-70
	- MCS=4	PER @ -68 dBm, typical	≤-66
	- MCS=5	PER @ -66 dBm, typical	≤-62

	- MCS=6	PER @ -62 dBm, typical	≤-61
	- MCS=7	PER @ -60 dBm, typical	≤-60
	- MCS=8	PER @ -57 dBm, typical	≤-55
	- MCS=9	PER @ -56 dBm, typical	≤-53

1. 2.4G band power calibrated 11M/MCS7 HT40, other rate power controlled by firmware driver;

2. 5G band power calibrated MCS7 HT40, other rate power controlled by firmware driver;

15GHz Channel table

Band (GHz)	Operating Channel Numbers	Channel center frequencies(MHz)
5150MHz~5250MHz	36	5180
	40	5200
	44	5220
	48	5240
5250MHz~5350MHz	52	5260
	56	5280
	60	5300
	64	5320
5470MHz~5725MHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700
	149	5745
5725MHz~5850MHz	153	5765
	157	5785
	161	5805
	165	5825

4.3 Bluetooth Specification

Feature	Description
General Specification	

Bluetooth Standard	Bluetooth V4.2 of 1, 2 and 3 Mbps.		
Host Interface	USB		
Antenna Reference	Small antennas with 0~2 dBi peak gain		
Frequency Band	2400 MHz ~ 2483.5 MHz		
Number of Channels	79 channels for classic,40 channels for BLE		
Modulation	GFSK, π /4-DQPSK,8DPSK		
RF Specification			
	Min(dBm)	Typical(dBm)	Max(dBm)
Output Power (Class 1)	2	5	8
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-88	
Sensitivity @ BER=0.01% for π /4-DQPSK (2Mbps)		-88	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-81	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	π /4-DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

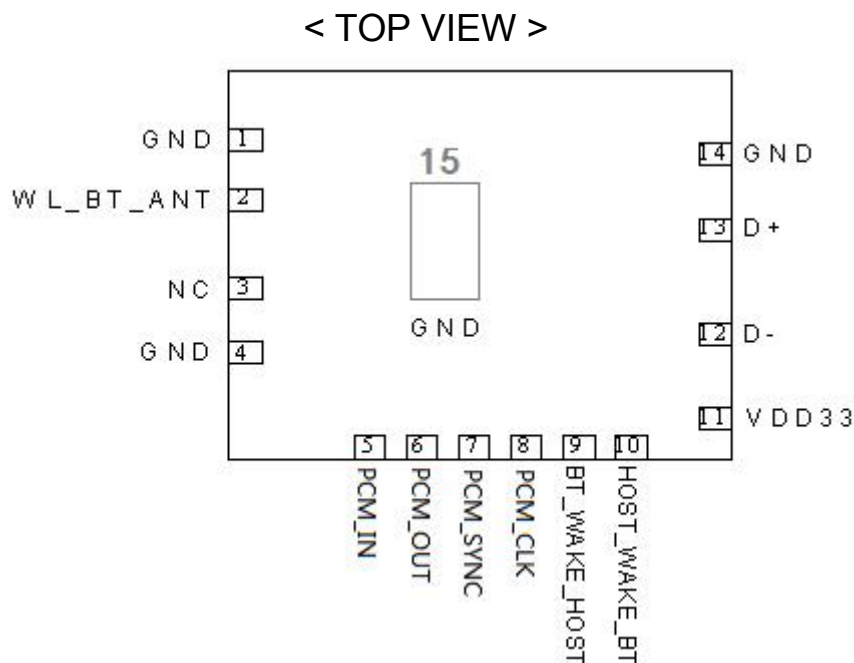
5. ID setting information

WI-FI

Vendor ID	0BDA
Product ID	C820

6. Pin Definition

6.1 Pin Outline



6.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	GND	-	Ground connections	
2	WL_BT_ANT	I/O	2.4G+5G Wi-Fi AND BT ANT	
3	NC	-	Floating (Don't connected to ground)	
4	GND	-	Ground connections	
5	PCM_IN	I	PCM_IN	
6	PCM_OUT	O	PCM_OUT	
7	PCM_SYNC	I/O	PCM_SYNC	
8	PCM_CLK	I/O	PCM_CLK	
9	BT_WAKE_HOST	O	Bluetooth device to wake-up HOST Default low, High active.	3.3V
10	HOST_WAKE_BT	I	HOST to wake-up Bluetooth device Can keep this pin NC, using USB interface wake BT	3.3V
11	VDD33	P	3.3V POWER INPUT	3.3V
12	D-	I/O	USB DATA DM	
13	D+	I/O	USB DATA DP	
14	GND	-	Ground connections	
15	GND	-	Ground connections	

P:POWER I:INPUT O:OUTPUT

7. Electrical Specifications

7.1 Power Supply DC Characteristics

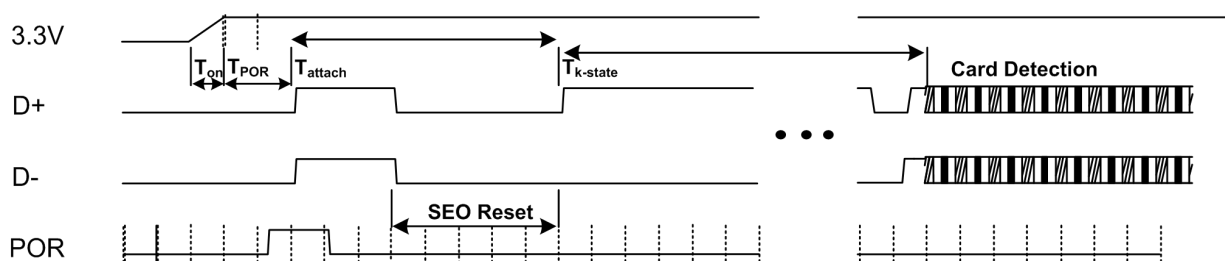
	MIN	TYP	MAX	Unit
Operating Temperature	0	25	70	deg.C
VCC33	3.0	3.3	3.6	V

7.2 Power Consumption

Power Consumption		VCC33 = 3.3V(Unit:mA)
	Wi-Fi on Mode	90
	TX (2.4G HT40)	241
	RX (2.4G HT40)	115
	TX (5G HT80)	219
	RX (5G HT80)	128

7.3 Interface Circuit time series

7.3.1 USB Bus during Power On Sequence



T_{on} :The main power ramp up duration

T_{por} :The power on reset releases and power management unit executes power on tasks

T_{attach} :USB attach state

$T_{k-state}$:the duration from resistor attached to USB host starting card detection procedure

The power on flow description:

After main 3.3V ramp up, the internal power on reset is released by power ready detection circuit and the power management unit will be enabled. The power management unit enables the internal regulator and clock circuits.

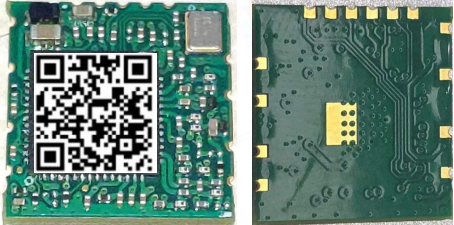
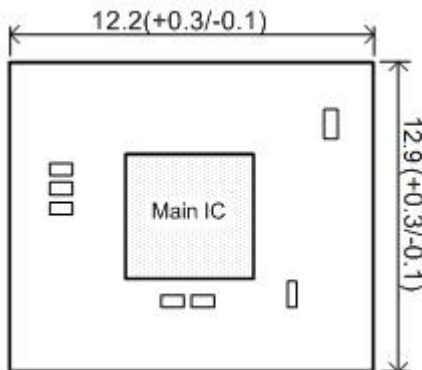
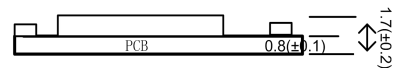
The power management unit also enables the USB circuits.

USB analog circuits attach resistors to indicate the insertion of the USB device

	Unit	Min	Typical	Max
T_{on}	ms	--	1.5	5
T_{por}	ms	--	2	10
T_{attach}	ms	2	7	15
T_{k-state}	ms	50	250	--

8. Size reference

8.1 Module Picture

<p>L x W : 12.9 x 12.2 (+0.3/-0.1) mm</p> 	
<p>H: 1.7 (±0.2) mm</p>	
<p>Weight</p>	<p>0.45g</p>

8.2 Marking Description

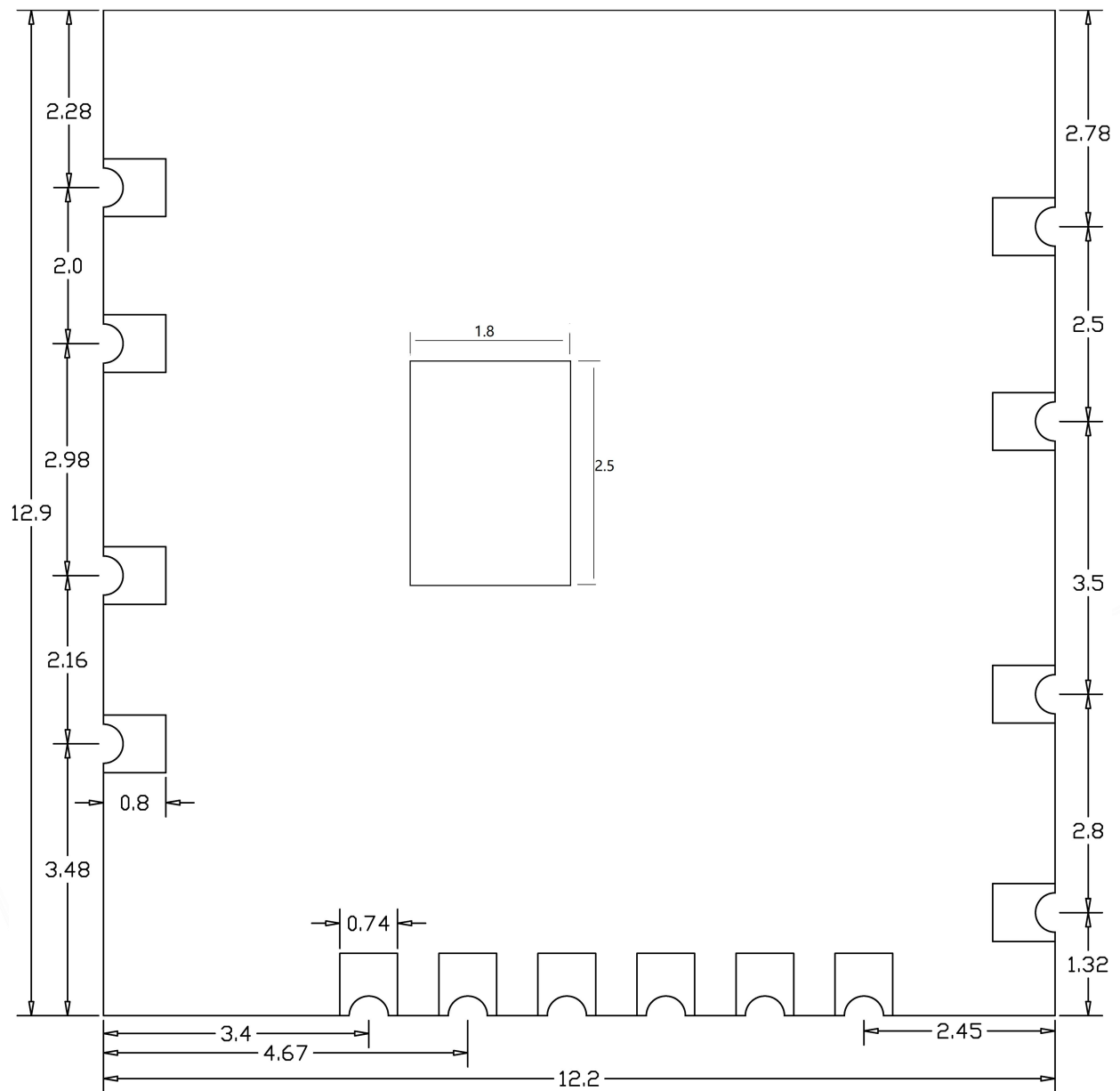


8.3 List of certified information

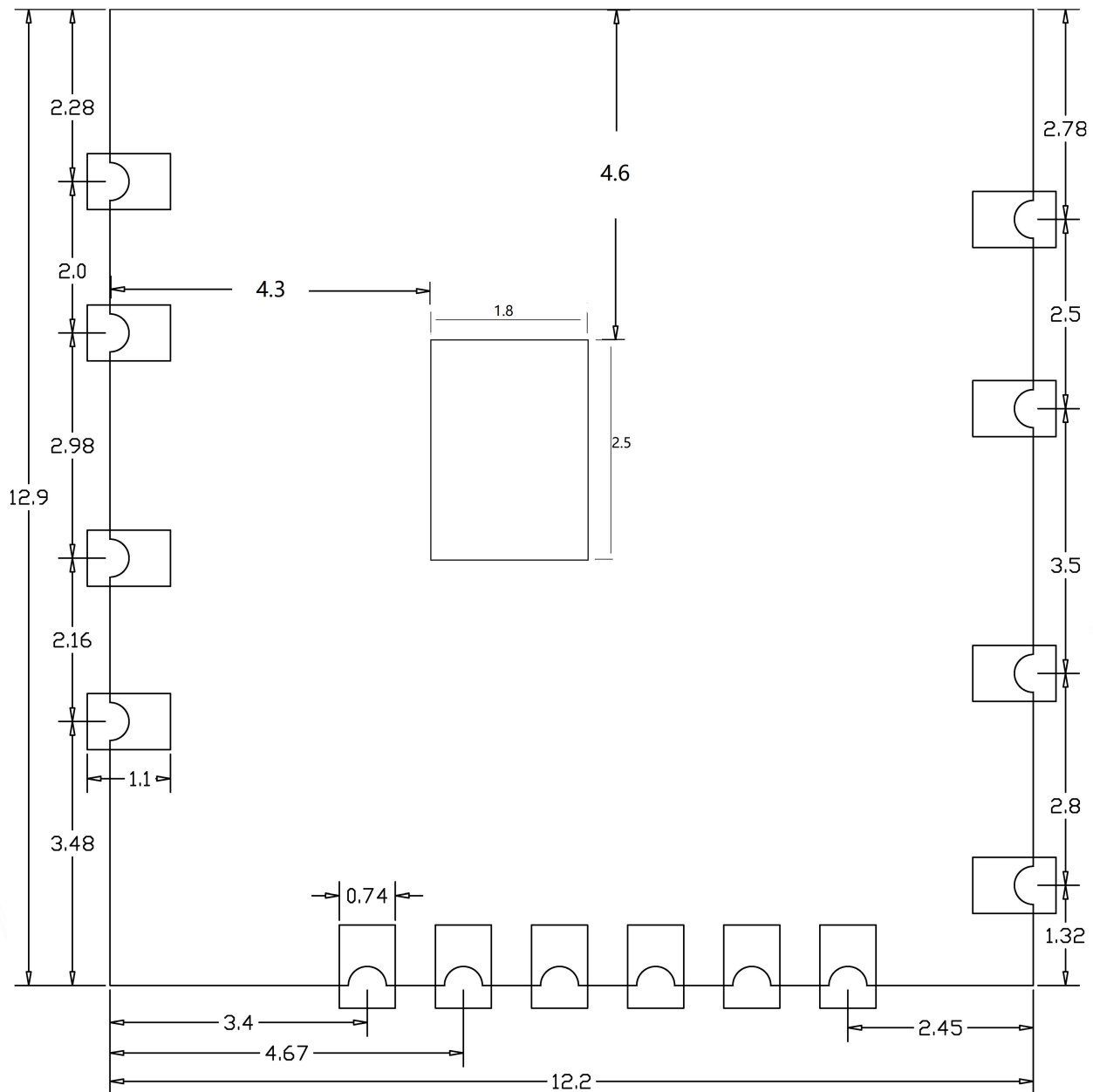
Certification project	Certificate number
SRRC	CMIIT ID:2109AP11850(M)
FCC	2ACML-201850
CE	EC2104035S01
IC	TBD
NCC	TBD
KCC	TBD
TELEC	TBD
Brazil	TBD
Argentina	TBD
Japan	TBD
BQB	D057406

8.4 Physical Dimensions

<TOP View>



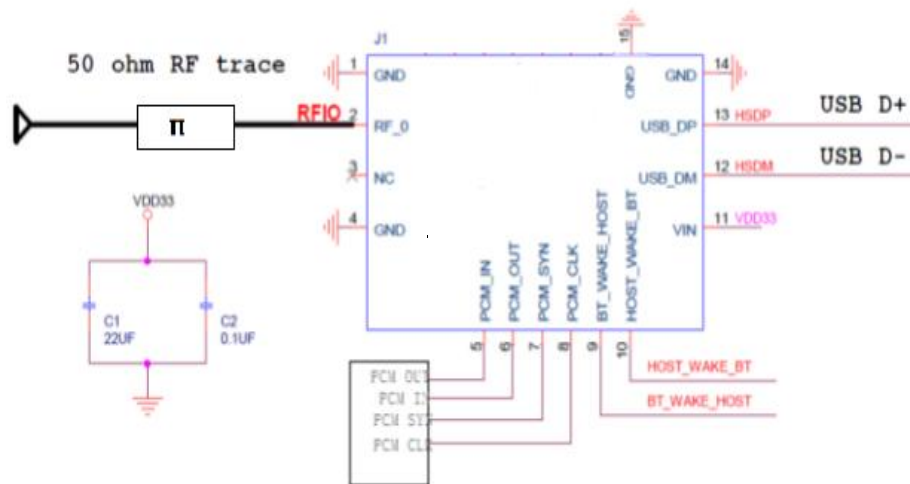
8.5 Layout Recommendation



9. The Key Material List

Item	Part Name	Description	Manufacturer
1	PCB	6221E-UUC, 4L,FR4,12.2 x 12.9 x 0.8mm	XY-PCB, GDKX, Sunlord, SLPCB
2	Crystal	2520 40MHz 15pF ± 10 ppm	ECEC, Hosonic, TKD, JWT
3	Chipset	RTL8821CU-CG MQFN56	
4	Diplexer	LFD152G45MU7E010,2.4GHz&5GHz	Glead, Walsin, ACX, Murata, MAG.LAYERS,ftgroup
5	Inductor	0201 3.3nH, ± 0.3 nH	MURATA,microgate,cenke,ceaiya

10. Reference Design



Note:

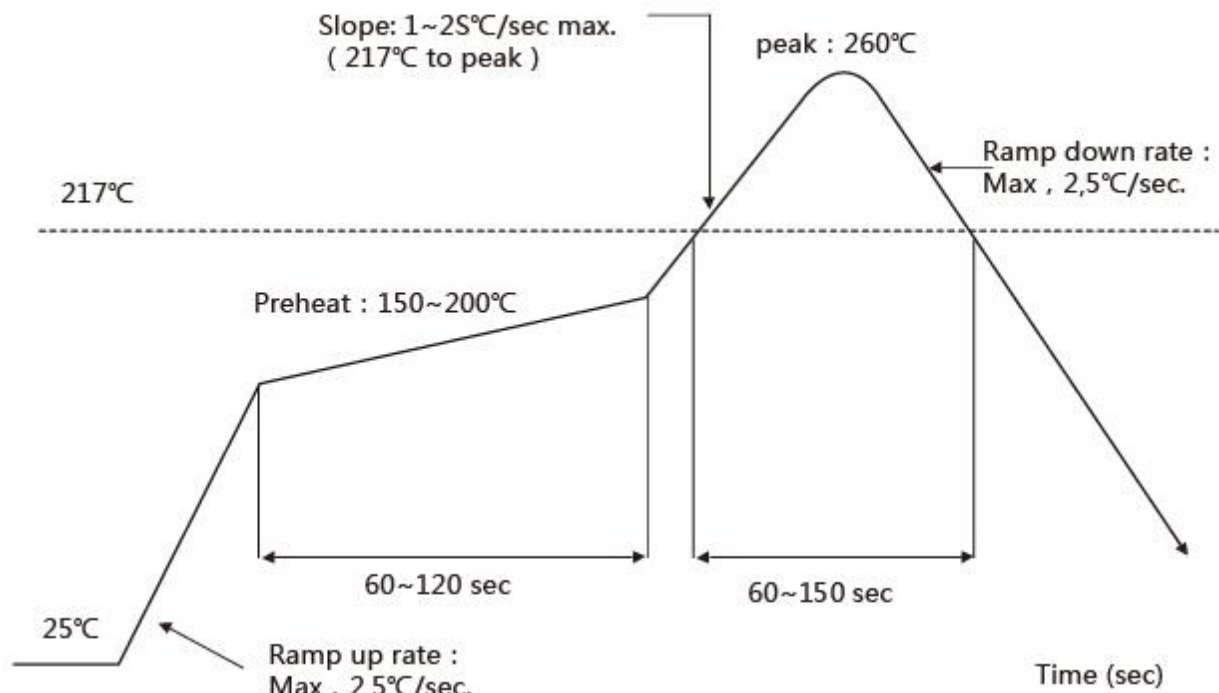
- Module requires independent power supply , supply capacity greater than 600mA and ripple less than 100mv;
- Attention to power up timing;
- Do not share power with amplifier, infrared device, camera, etc.

11. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : $<260^{\circ}\text{C}$

Number of Times : ≤ 2 times



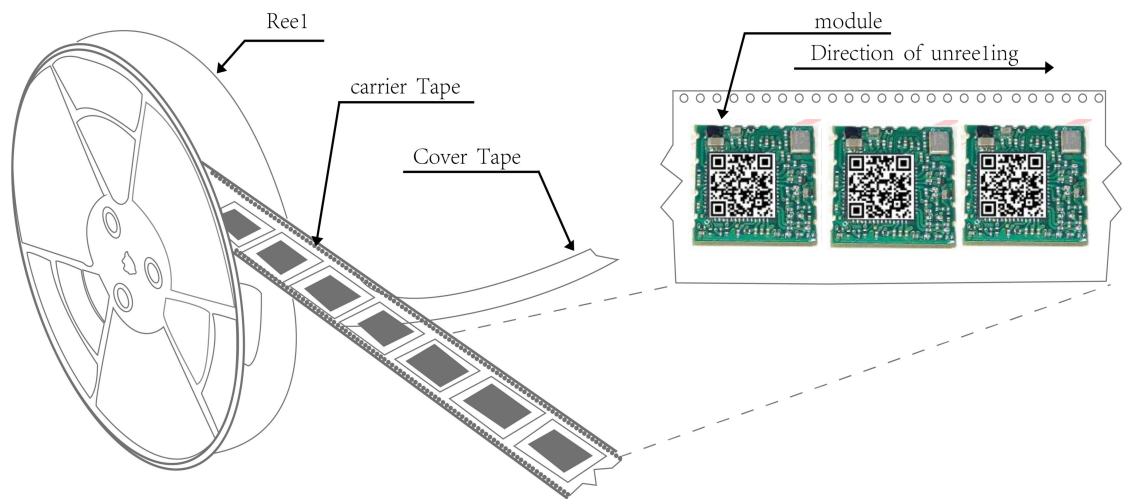
12. RoHS compliance

All hardware components are fully compliant with EU RoHS directive

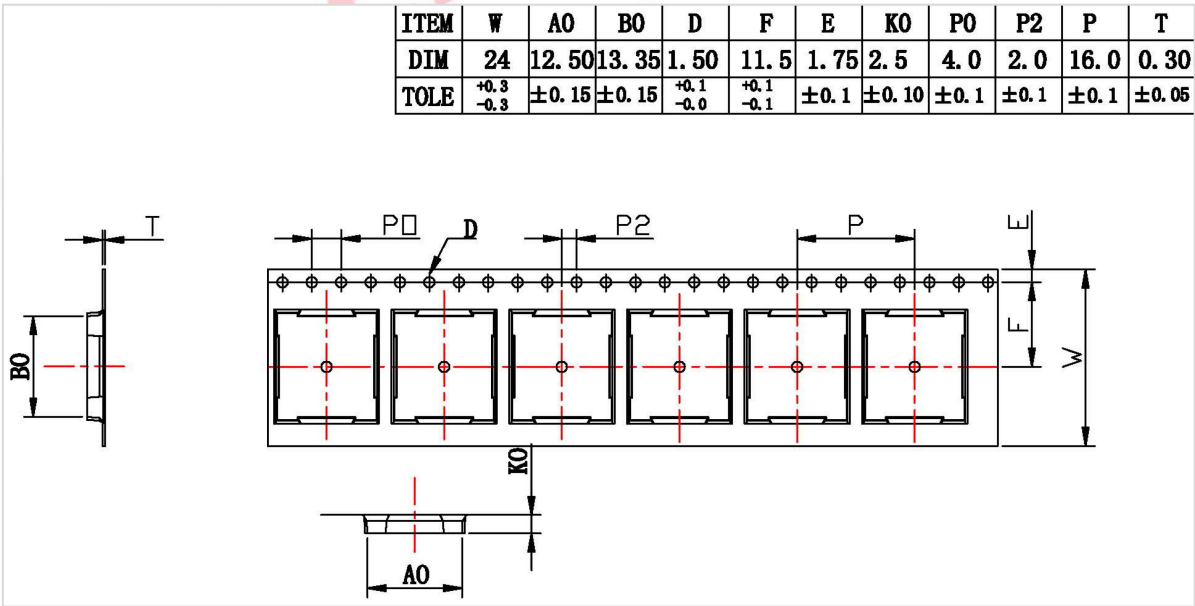
13. Package

13.1 Reel

A roll of 1500pcs



13.2 Carrier Tape Detail



13.3 Packaging Detail

the take-up package



Using self-adhesive tape

Size of black tape: 24mm*24.4m the cover tape :21.3mm*32.6m

Color of plastic disc: blue



NY bag size:450mm*415mm



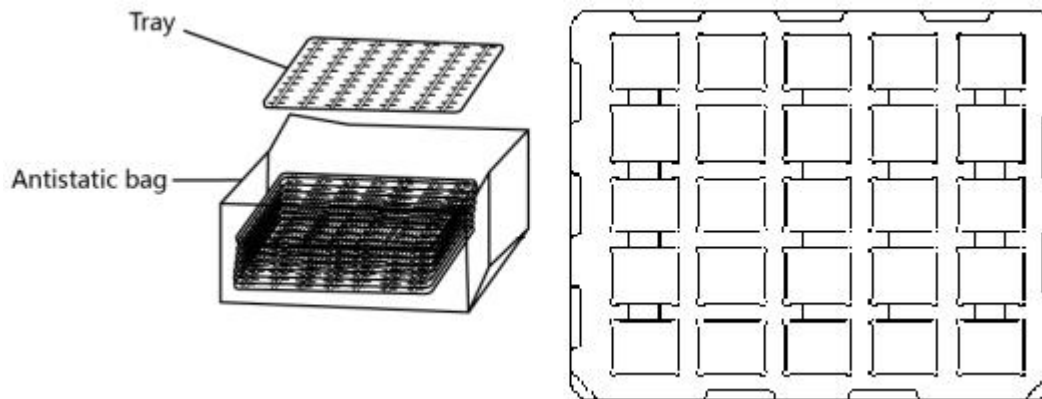
size : 350*350*35mm



The packing case size:360*210*370mm

13.4 Tray

Use pallet packaging for less than 300 pieces



14. 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

15. Certification Information

15.1 CE

RF Power(EIRP):

17.38dBm (2412MHz-2472MHz) 2.4G WiFi

9.72dBm (2402MHz-2480MHz) BT4.2+EDR

9.66dBm (2402MHz-2480MHz) BLE

12.85dBm (5150MHz-5250MHz & 5725MHz-5850MHz) 5G WiFi

Caution:

- 1.The max operating of the EUT is 70°C. and shouldn't be lower than 0°C.
- 2.The module complies with RF specifications when the device used at 20cm form your body.
- 3.Declaration of Conformity

We, HUNAN FN-LINK TECHNOLOGY LIMITED hereby, declare that the essential requirements compliance with the Directive 2014/53/EU.have been fully fulfilled on our product with indication below:

Product Name: Wi-Fi Dual-band 1X1 11ac +Bluetooth 4.2 Combo Module

Brand Name : Fn-Link

Model : 6221E-UUC

This product can be used across EU member states.

15.2 FCC

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.

2.2 List of applicable FCC rules

FCC Part 15.247, FCC Part 15.407

2.3 Specific operational use conditions

This product is a Single-modular transmitter policy independent of any host. Not applicable.

2.4 Limited module procedures

This product is a Single-modular transmitter. It is not a limited module. Not applicable.

2.5 Trace antenna designs

This product has a external antennas. Not applicable.

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

This product has two external antennas. The antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

No.	Antenna Type	Frequency Range	Gain	Impedance
1	FPC Antenna	2402-2480MHz 2412-2462MHz	2.9dBi	50ohm
2	FPC Antenna	5180-5240MHz, 5260-5320MHz 5500-5700MHz, 5745-5825MHz	5.9dBi	50ohm

2.8 Label and compliance information

Remind end customers to add "Contain FCC ID: 2AATL-6221EUUC"

2.9 Information on test modes and additional testing requirements

Contact FN-LINK 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 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, FN-LINK 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: 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.

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.

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.

Note 4: 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.

Note 5: 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 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, FN-LINK TECHNOLOGY LIMITED shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

Note 6: FCC ID label on the final system must be labeled with “Contains FCC ID: 2AATL-6221EUUC” or “Contains transmitter module FCC ID: 2AATL-6221EUUC”.

Note 7: For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

IC WARNING

This device contains licence-exempt transmitter(s) that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique 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’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

This radio transmitter [IC: 12425A-6221EUUC] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

No.	Antenna Type	Gain	Impedance
1	FPC Antenna	2.9dBi	50ohm
2	FPC Antenna	5.9dBi	50ohm

IC Radiation Exposure Statement:

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with IC multi-transmitter product procedures. Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without reassessment permissive change.

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmetteur.

This equipment complies with IC RSS-102 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.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps.

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

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

The final end product must be labeled in a visible area with the following " Contains IC: 12425A-6221EUUC ".