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IEEE 802.11 a/b/g/n/ac 1T/1R USB模组

product name	FN-8811AU WIFI Module
Model name	F11AUUM13-W4

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规格书内容确认可接受.

客户	签名	承认日期

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0. 更新记录

版本	日期	变更记录	编者
Rev0.1	Dec.19.2014	初版释放	Neal Yu
Rev0.2	Mar.09.2015	更新外形图何包装信息	Neal Yu
Rev0.3	Mar.21.2015	更新5G输出功率	Neal Yu
Rev0.4	Apr.19.2018	修改外形图	Jacky

1. introduce

This note briefly describes the features of the F11AUUM13 module. Based on ruiyu RTL8811AU chip development of a support of 802.11a/b/g/n/ac, 2.4g +5G 1T1R, USB interface, wireless module. Perfect to meet the user's wireless experience.

1.1 overview

The module block diagram is as follows Figure 1.

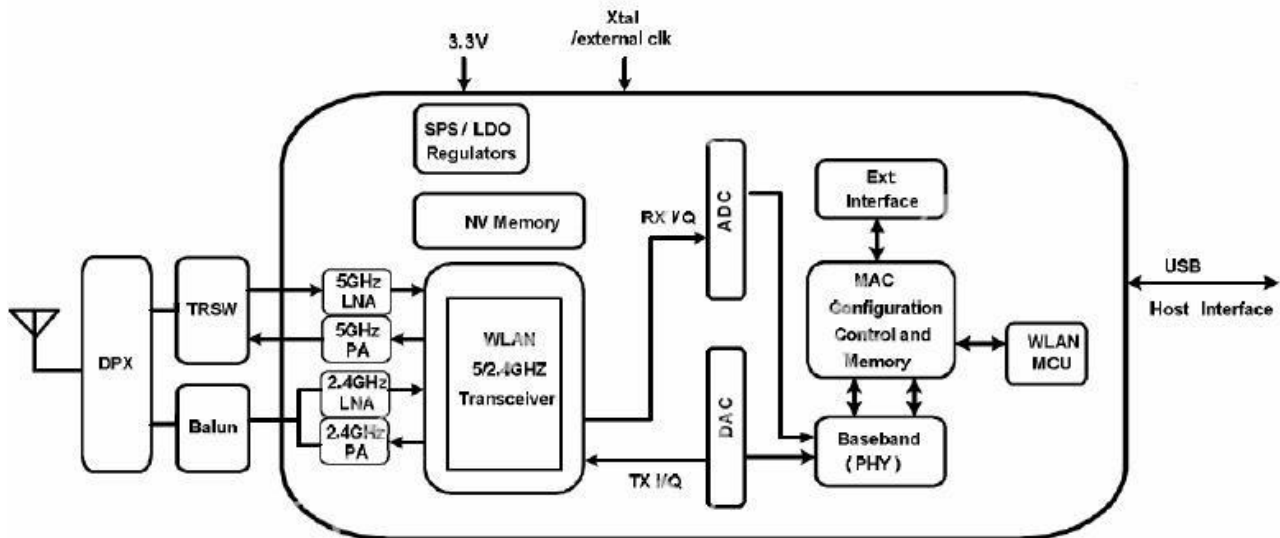


Figure 1. Dual-Band 11ac (1x1) Solution with single Antenna

1.2 特性

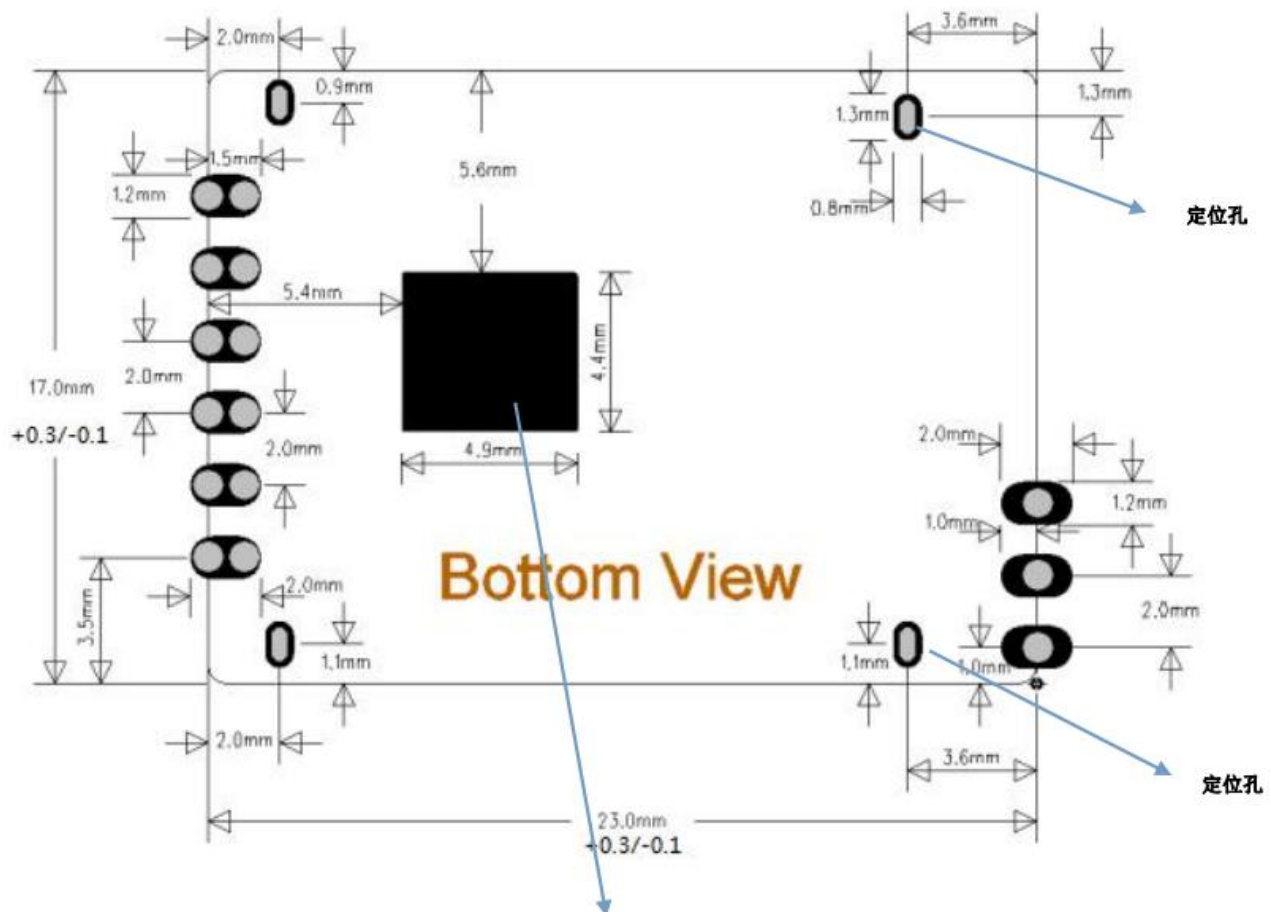
2. Support IEEE802.11a/b/g/n/ac standard..
3. The highest transmission rate supports the theory of 433Mbps
4. Operating at 2.4~2.4835GHz and 5180MHz~5240MHz, 5745MHz~5825MHz frequencies
5. Supports 20MHz/40MHz/80MHz bandwidth.
6. Support infrastructure and ad-hoc network modes
7. Support IEEE 802.11i(WPA and WPA2), WAPI. Enhance data confidentiality

2. main specifications

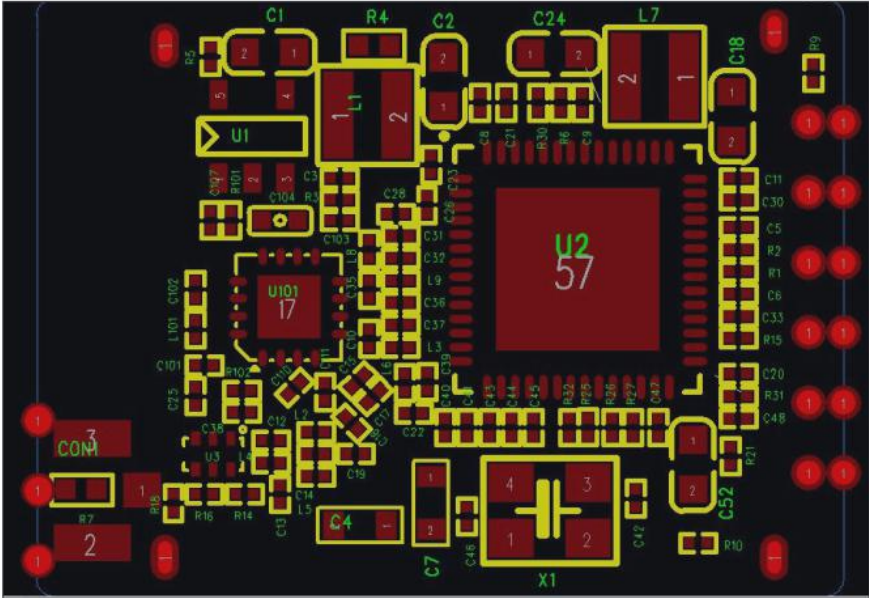
2.1 WiFi specifications

features	describe	
The main chip	Realtek RTL8811AU	
Working frequency	2.4G: 2.4000GHz~2.4835GHz, 5G: 5180MHz-5240MHz.5745MHz-5825MHz	
Working interface	USB 2.0	
Wi-fi standard	IEEE802.11a/b/g/n/ac	
Modulation method	802.11b: DBPSK/DQPSK/CCK (DSSS) 802.11 a/g/n/ac: BPSK/QPSK/16QAM/64QAM/256QAM(OFDM)	
rate	802.11a: 6,9,12,18,24,36,48,54Mbps 802.11b: 11,5.5,2,1 Mbps 802.11g: 6,9,12,18,24,36,48,54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps	
output power	802.11b@11Mbps 17±1.5dBm 802.11g@6Mbps 15±1.5dBm 802.11g@54Mbps 15±1.5dBm 802.11n@65Mbps 14±1.5dBm (MCS 0_HT20) 14±1.5dBm (MCS 7_HT20) 14±1.5dBm (MCS 0_HT40) 14±1.5dBm (MCS 7_HT40) 802.11a@54Mbps 13±1.5dBm 802.11ac@MCS7 13±1.5dBm 802.11ac@MCS9 13±1.5dBm	
Receiving sensitivity	802.11b@8% PER 1Mbps ≤ -83 ± 1dBm 2Mbps ≤ -80 ± 1dBm 5.5Mbps ≤ -79 ± 1dBm 11Mbps ≤ -76 ± 1dBm	
	802.11g@10% PER 6Mbps ≤ -82 ± 1dBm 9Mbps ≤ -81 ± 1dBm 12Mbps ≤ -79 ± 1dBm 18Mbps ≤ -77 ± 1dBm 24Mbps ≤ -74 ± 1dBm 36Mbps ≤ -70 ± 1dBm 48Mbps ≤ -66 ± 1dBm 54Mbps ≤ -65 ± 1dBm	
	802.11n@10% PER 2.4GHz Band/HT20 ● -82dBm at MCS0 ● -79dBm at MCS1 ● -77dBm at MCS2 ● -74dBm at MCS3 ● -70dBm at MCS4 ● -66dBm at MCS5 ● -65dBm at MCS6 ● -64dBm at MCS7	2.4GHz Band/HT40 ● -79dBm at MCS0 ● -76dBm at MCS1 ● -74dBm at MCS2 ● -71dBm at MCS3 ● -67dBm at MCS4 ● -63dBm at MCS5 ● -62dBm at MCS6 ● -61dBm at MCS7

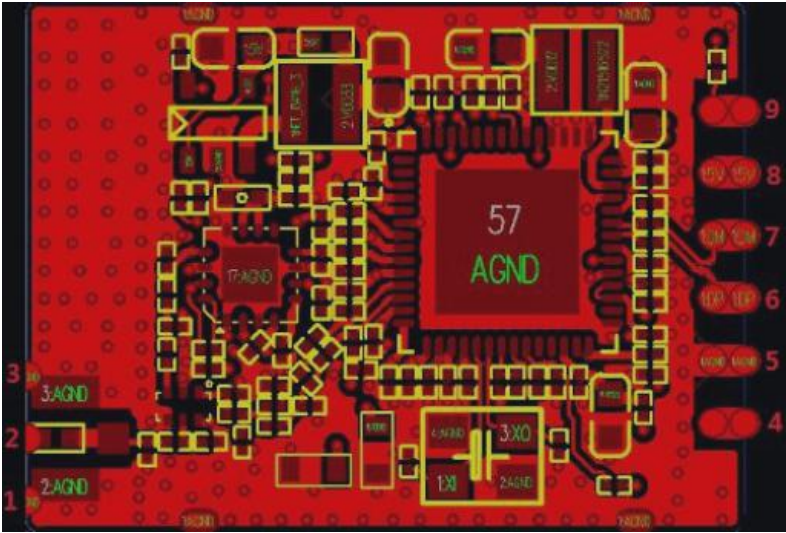
	5GHz Band/HT20 • -82dBm at MCS0 • -79dBm at MCS1 • -77dBm at MCS2 • -74dBm at MCS3 • -70dBm at MCS4 • -66dBm at MCS5 • -65dBm at MCS6 • -64dBm at MCS7		5GHz Band/HT40 • -79dBm at MCS0 • -76dBm at MCS1 • -74dBm at MCS2 • -71dBm at MCS3 • -67dBm at MCS4 • -63dBm at MCS5 • -62dBm at MCS6 • -61dBm at MCS7	
	802.11a@10% PER 6Mbps ≤-82±1dBm 9Mbps ≤-81±1dBm 12Mbps ≤-79±1dBm 18Mbps ≤-77±1dBm 24Mbps ≤-74±1dBm 36Mbps ≤-70±1dBm 48Mbps ≤-66±1dBm 54Mbps ≤-65±1dBm			
	802.11ac@10% PER 5GHz Band / HT20 • -82dBm at MCS0 • -79dBm at MCS1 • -77dBm at MCS2 • -74dBm at MCS3 • -70dBm at MCS4 • -66dBm at MCS5 • -65dBm at MCS6 • -64dBm at MCS7 • -59dBm at MCS8 • -57dBm at MCS9		5GHz Band / HT40 • -79dBm at MCS0 • -76dBm at MCS1 • -74dBm at MCS2 • -71dBm at MCS3 • -67dBm at MCS4 • -63dBm at MCS5 • -62dBm at MCS6 • -61dBm at MCS7 • -56dBm at MCS8 • -54dBm at MCS9	
	5GHz Band / HT80 • -76dBm at MCS0 • -73dBm at MCS1 • -71dBm at MCS2 • -68dBm at MCS3 • -64dBm at MCS4 • -60dBm at MCS5 • -59dBm at MCS6 • -58dBm at MCS7 • -55dBm at MCS8 • -51dBm at MCS9			
antenna	External antenna			
Support operating system	Windows XP,Vista.Win7			
encryption	WEP,TKIP,AES,WPA,WPA2			
size	L23.0mm*W17.0mm*T3.0mm			
Power consumption 3.3 V power supply	LINK	200mA		
	TX 2.4G	20M:240mA; 40M:220mA		
	TX 5G	20M:300mA; 40M:270mA; 80M:260mA		
	RX	210mA		



散热接地焊盘 (Bottom)

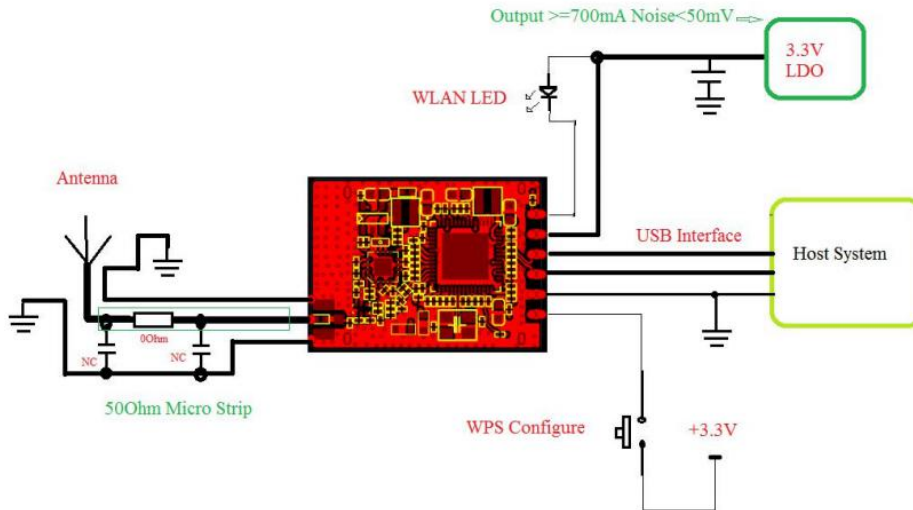


3.2 Pin definition



Pin #	Name	Description
1	GND	Ground
2	RF	Antenna
3	GND	Ground
4	PB	WPS
5	GND	Ground
6	DP	USB+
7	DM	USB-
8	VDD	3.3V Input
9	LED	LED PIN

3.3 Application circuit



4. Environmental features

4.1 Working storage condition

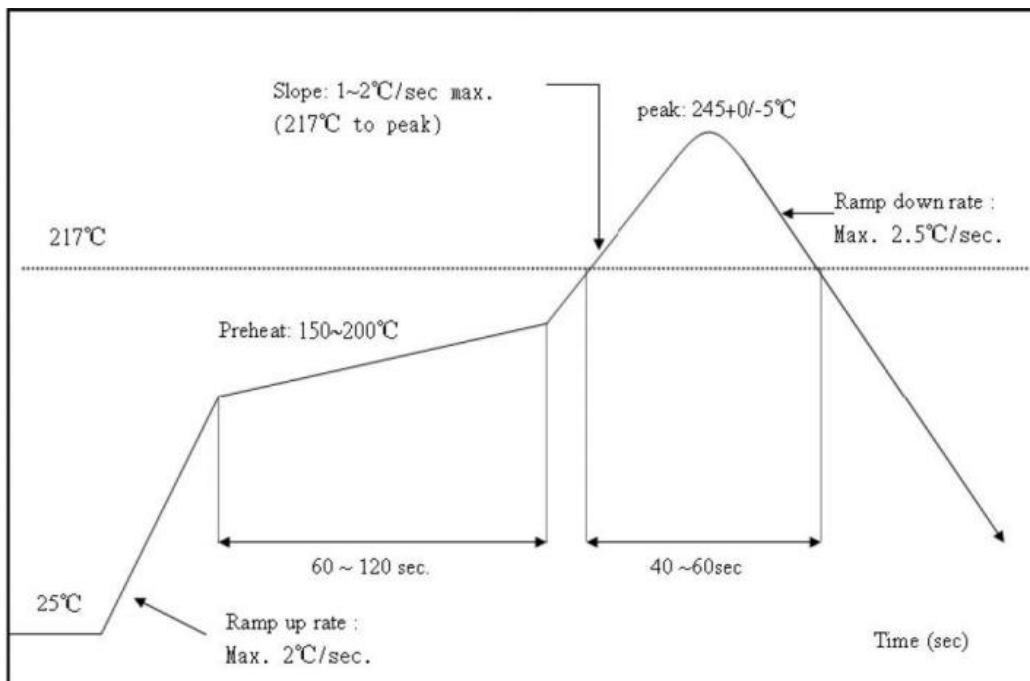
Operating	Temperature: 0°C to +70°C
	Relative Humidity: 10-90% (non-condensing)
Storage	Temperature: -40°C to +80°C (non-operating)
	Relative Humidity: 5-90% (non-condensing)
MTBF (Mean Time Between Failures)	Over 150,000hours

4.2 Recommended temperature curve

Referred to IPC/JEDEC standard. Peak

Temperature : $< 250^{\circ}\text{C}$ Number of Times :

≤ 2 times



4.3 : WIFI module installed note:

1. Please press 1 : 1 and then expand outward proportion to 0.7 mm, 0.12 mm thickness When open a stencil
2. Take and use the WIFI module, please insure the electrostatic protective measures.
3. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at $250 + 5^{\circ}\text{C}$ for the MID motherboard.

About the module packaging, storage and use of matters needing attention are as follows:

1. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage

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environment conditions: temperature in: $< 40^{\circ}\text{C}$, relative humidity: $< 90\%$ r.h.

2. The module vacuum packing once opened, time limit of the assembly:

1) check the humidity display value should be less than 30% (in blue), such as: 30% ~ 40% (pink), or greater than 40% (red) the module have been moisture absorption.

2) factory environmental temperature humidity control: $\leq 30^{\circ}\text{C}$, $\leq 60\%$ r.h..

3) Once opened, the workshop the preservation of life for 168 hours.

3. Once opened, such as when not used up within 168 hours:

1) The module must be again to remove the module moisture absorption.

2) The baking temperature: 125°C , 8 hours.

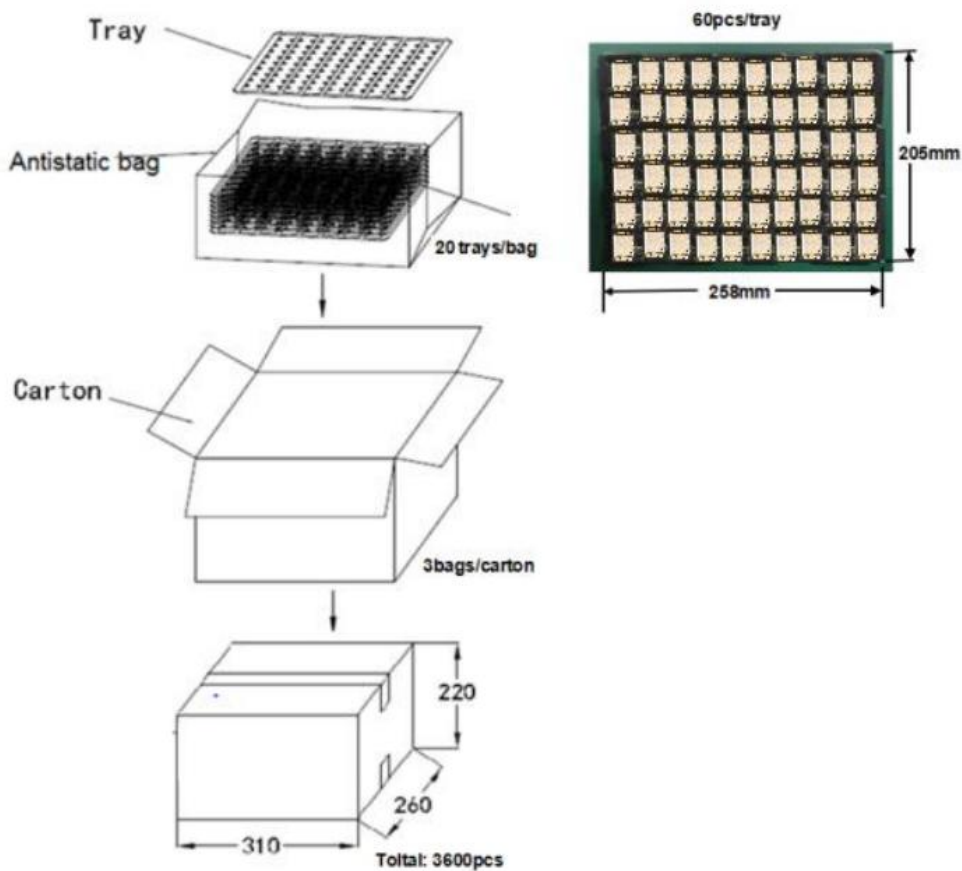
3) After baking, put the right amount of desiccant to seal packages.

5. packaging

5.1 Packaging information

Tray size: L258.0*W205.0 mm

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



FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247,15.407

Integral antenna with 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.

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: 2AT5W-F11AUUM13 Or Contains FCC ID: 2AT5W-F11AUUM13"

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 15.407 and 15.209 & 15.207, 15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.407 and 15.209 & 15.207, 15B Class B requirement, then the host can be sold legally.