

User Manual

Product Label:

WLAN 11n USB 1T1R Module

Model:A28188E

TATUNG COMPANY OF AMERICA, INC.

FCC ID: 2AHXS- A28188E

1. Overview :

A28188E is a WLAN 11n USB module, which fully supports the features and Functional compliance of IEEE 802.11n,e and i standards.

It supports up to 150Mbps high-speed wireless network connections.

It is designed to provide excellent performance with low power Consumption and enhance the advantages of robust system and cost-effective.

It is targeted at competitive superior performance, better power Management applications.

2. Features

General

- 5-pin Stamp hole
- CMOS MAC, Baseband PHY, and RF in a
- single chip for IEEE 802.11b/g/n compatible WLAN
- Complete 802.11n solution for 2.4GHz band
- 72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- Compatible with 802.11n specification
- Backward compatible with 802.11b/g devices while operating in 802.11n mode

Interface

- Complies with USB 1.0/1.1/2.0 for WLAN

Standards Supported

- IEEE 802.11b/g/n compatible WLAN
- IEEE 802.11e QoS Enhancement (WMM)
- 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services

WLAN MAC Features

- Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)

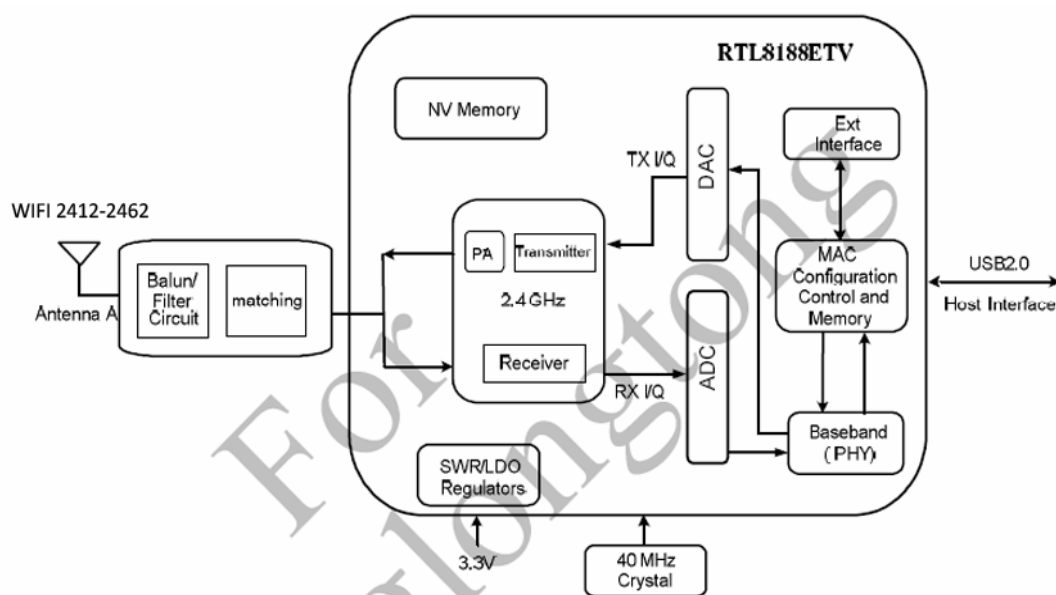
- Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- PHY-level spoofing to enhance legacy compatibility
- Power saving mechanism
- Channel management and co-existence
- Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth

WLAN PHY Features

IEEE 802.11n OFDM

- One Transmit and one Receive path (1T1R)
- 20MHz and 40MHz bandwidth transmission
- Short Guard Interval (400ns)
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation.
Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- Maximum data rate 54Mbps in 802.11g and 150Mbps in 802.11n
- Hardware antenna diversity in per packet base
- Selectable receiver FIR filters
- Programmable scaling in transmitter and receiver to trade quantization noise against increased probability of clipping
- Fast receiver Automatic Gain Control (AGC)
- On-chip ADC and DAC

Application Diagram



General Specification

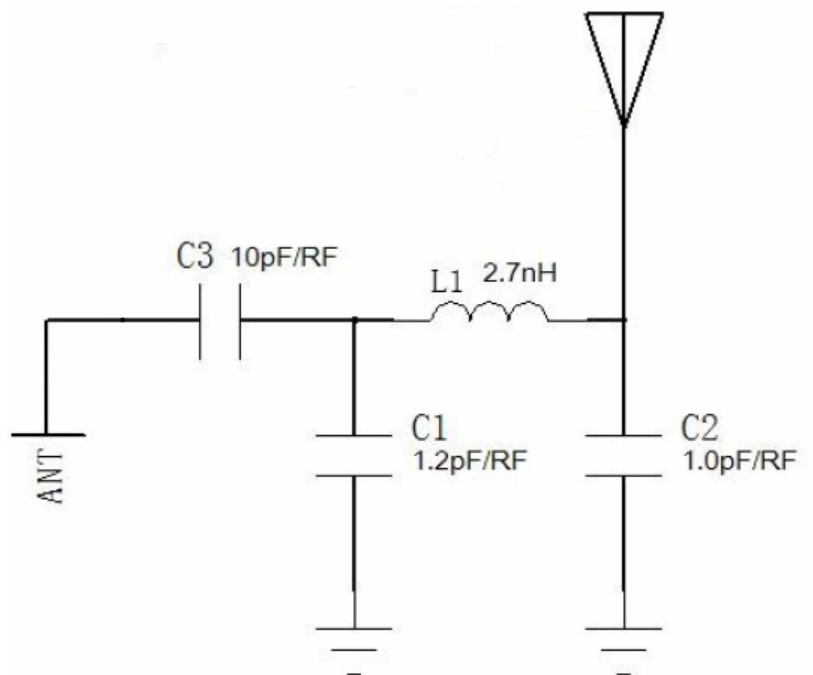
Model	A28188E
Product Name	WLAN 11n USB 1T1R module
Major Chipset	RTL8188ETV
Standard	802.11b/g/n-ht20/n-ht40,802.3,802.3u
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 and maximum of 150Mbps
Modulation Method	CCK/BPSK/ QPSK/ 16-QAM/ 64-QAM
Frequency Range	2.402~2.480 GHz
Spread Spectrum	IEEE802.11b:DSSS(Direct Sequence Spread Spectrum) IEEE802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)
Hardware Version	V0
Software Version	V1.1
Receiver Sensitivity	11Mbps-86dBm@8%,54Mbps -73dBm@10%,130Mbps, -66dBm@10%
Operation Range	Up to 180 meters in open space

LED	NO
OS Support	Windows 2000,XP32-64,Vista 32/64,Win7 32/64,Linux,Mac, Android, WIN CE
Security	WEP, TKIP, AES, WPA, WPA2
Interface	USB 2.0
Power Consumption	DC 5V Maximum power dissipation in 60mA
Operating Temperature	-10~+60° C ambient temperature
Storage Temperature	-20~70°C ambient temperature
Humidity	5 to 90% maximum (non-condensing)
Dimension	35.35 x12.35x0.8mm(LxWxH)+/-0.2mm

External antenna reference design

This part needs to be done 50R the impedance of the LAYOUT of the line is a straight line or curve, and not more than 20 mm if you want to do is compatible with the wrapping as far as possible don't have feedback.

Antenna Specification: IPEX Connector, Monopole Antenna, 2dBi



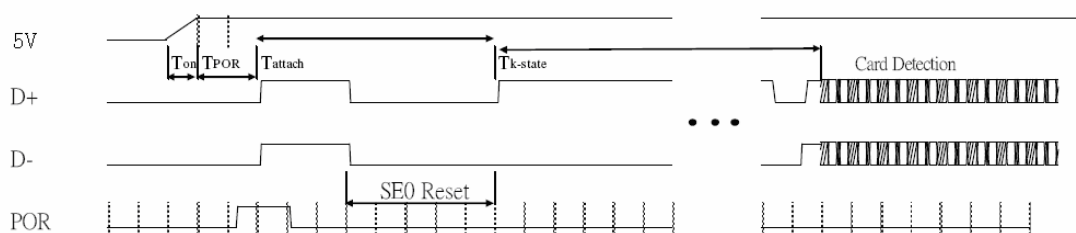
DC Characteristics

Power Consumption

Parameters	Conditions	Typ	Unit
Receiving Tests the biggest receive	11Mbps	145	mA
	54Mbps	145	mA
	65Mbps	145	mA
	135Mbps	145	mA
Transmission Biggest transmission test	11Mbps	310	mA
	54Mbps	225	mA
	65Mbps	225	mA
	135Mbps	200	mA
The depth waits for an opportunity		5	mA
Deep sleep		5	mA
Browse the webcurrent		145	mA
High-definition current		165	mA

USB interface electrical characteristics

USB Bus during Power On Sequence



Pin Description



Matters needing attention before patch installed the WIFI module

1.the customer must be at the time of open stencil will solder hole up WIFI module, please press 1 to 1

0.7 mm is widened to open outward again, according to the thickness of 0.12 mm.

2.the WIFI module before launch patch must bake for 12 hours, the temperature at 120 degrees +/- 5 degrees.

3.baking advice online immediately after OK, don't after a baking OK will all WIFI module

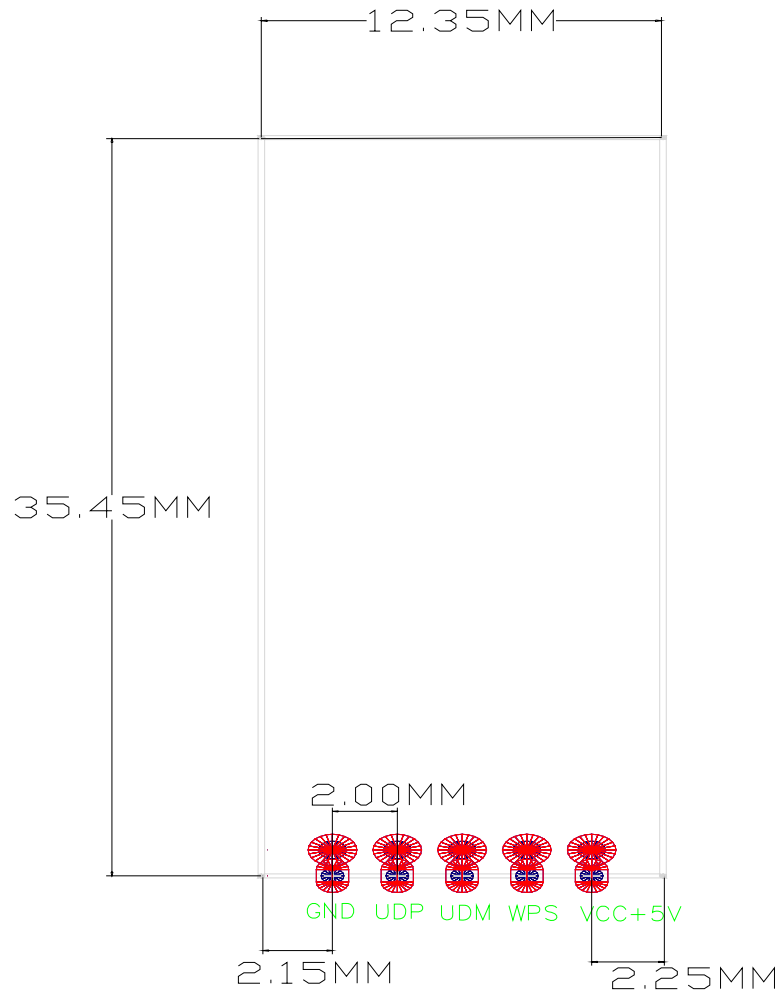
Block out of baking box. How many Suggestions posted how much per hour.

4.there is need to get the WIFI module must not be light to get WIFI module, be sure to wear

On the gloves and static ring.

5.a furnace temperature according to the size of the customer the mainboard, generally like to stick on the tablet 250 +/-5 degrees.

PCB size



FCC Statement

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: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. such modifications could void the user's authority to operate this equipment. Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates 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.

RF warning statement

The device has been evaluated to meet general RF exposure requirement. The device can be used in Mobile exposure condition with a 20cm distance restriction. The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

Co-location statement

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

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 FCC ID: 2AHXS-A28188E "

when the module is installed inside another device, the user manual of this device 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.

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 integrating that module into another host device is required to pass a FCC Class 2 Permissive Change procedure or separate FCC Certification which essentially need to include RF Exposure evaluation.