

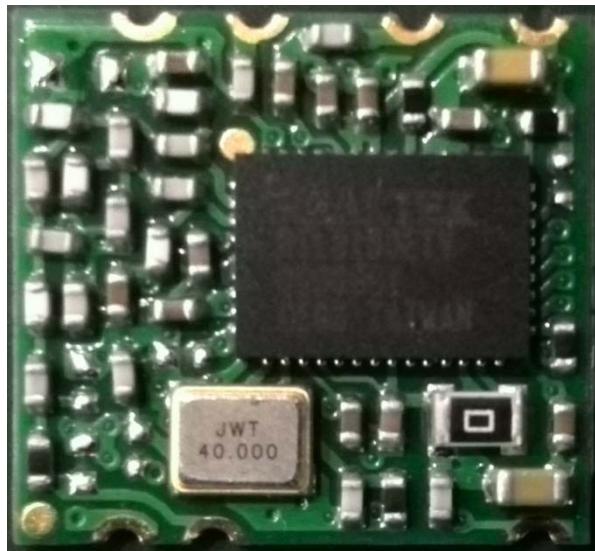
***WIFI Module
WIFI-2
User Manual / User Guide***

1. Overview

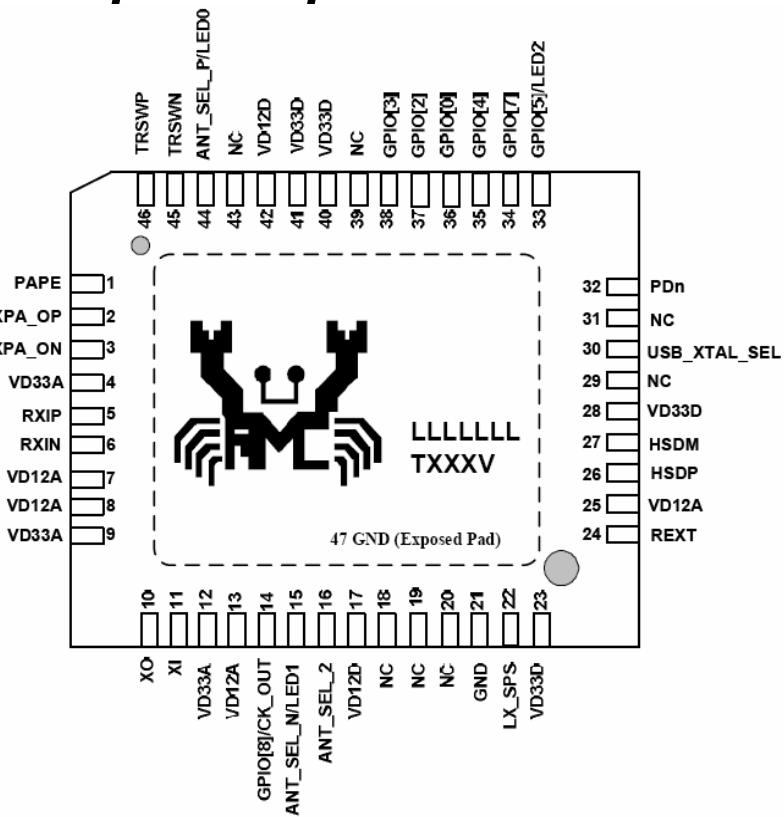
WIFI-2 Module has developed by Sichuan Changhong Electronic Component Co., Ltd.

This document is to specify the product requirements for 802.11 b/g/n Module. This Card is based on Realtekchip that complied with IEEE 802.11g, IEEE 802.11b, IEEE 802.11n standard from 2.4G-2.5GHz, and it can be used to provide up to 54Mbps for 802.11g, 11Mbps for 802.11b and 150Mbps for 802.11n to connect your wireless LAN.

WIFI-2 Module Support infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication. the driver supports the following operating systems: Windows 2000,XP,Vista. that complied with RoHS.



2. Chip Description



The Realtekchip is a highly integrated single-chip 802.11n Wireless LAN (WLAN) network interface controller. It combines a WLAN MAC, a WLAN baseband, and WLAN RF in a single chip. The chip provides a complete solution for a highthroughput performance integrated wireless LAN device.

The chip WLAN baseband implements Orthogonal Frequency Division Multiplexing (OFDM) with transmit and receive path and is compatible with the IEEE 802.11n specification. Features include one spatial stream transmission, short guard interval (GI) of 400ns, spatial spreading, and transmission over 20MHz and 40MHz bandwidth.

For legacy compatibility, Direct Sequence Spread Spectrum (DSSS), Complementary Code Keying (CCK) and OFDM baseband processing are included to support all IEEE 802.11b and 802.11g data rates. Differential phase shift keying

modulation schemes, DBPSK and DQPSK with data scrambling capability, are available, and CCK provides support for legacy data rates, with long or short preamble. The high-speed FFT/IFFT paths, combined with BPSK, QPSK, 16QAM, and 64QAM modulation of the individual subcarriers and rate compatible punctured convolutional coding with coding rate of 1/2, 2/3, 3/4, and 5/6, provide higher data rates of 54Mbps and 150Mbps for IEEE 802.11g and 802.11n OFDM respectively.

The chip WLAN Controller builds in an enhanced signal detector, an adaptive frequency domain equalizer, and a soft-decision Viterbi decoder to alleviate severe multi-path effects and mutual interference in the reception of multiple streams.

Efficient IQ-imbalance, DC offset, phase noise, frequency offset, and timing offset compensations are provided for the radio frequency front-end. Selectable digital transmit and receive FIR filters are provided to meet transmit spectrum mask requirements and to reject adjacent channel interference, respectively.

The chip WLAN Controller supports fast receiver Automatic Gain Control (AGC) with synchronous and asynchronous control loops among antennas, antenna diversity functions, and adaptive transmit power control function to obtain the better performance in the analog portions of the transceiver.

The chip WLAN MAC supports 802.11e for multimedia applications, 802.11i for security, and 802.11n for enhanced MAC protocol efficiency. Using packet aggregation techniques such as A-MPDU with BA and A-MSDU, protocol efficiency is significantly improved. Power saving mechanisms such as Legacy Power Save, and U-APSD, reduce the power wasted during idle time, and compensates for the extra power required to transmit OFDM. The RTL8188ETV provides simple legacy and 20MHz/40MHz co-existence mechanisms to ensure backward and network compatibility.

3. Chip Features

General

- ◆ 46-pin QFN
- ◆ 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

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

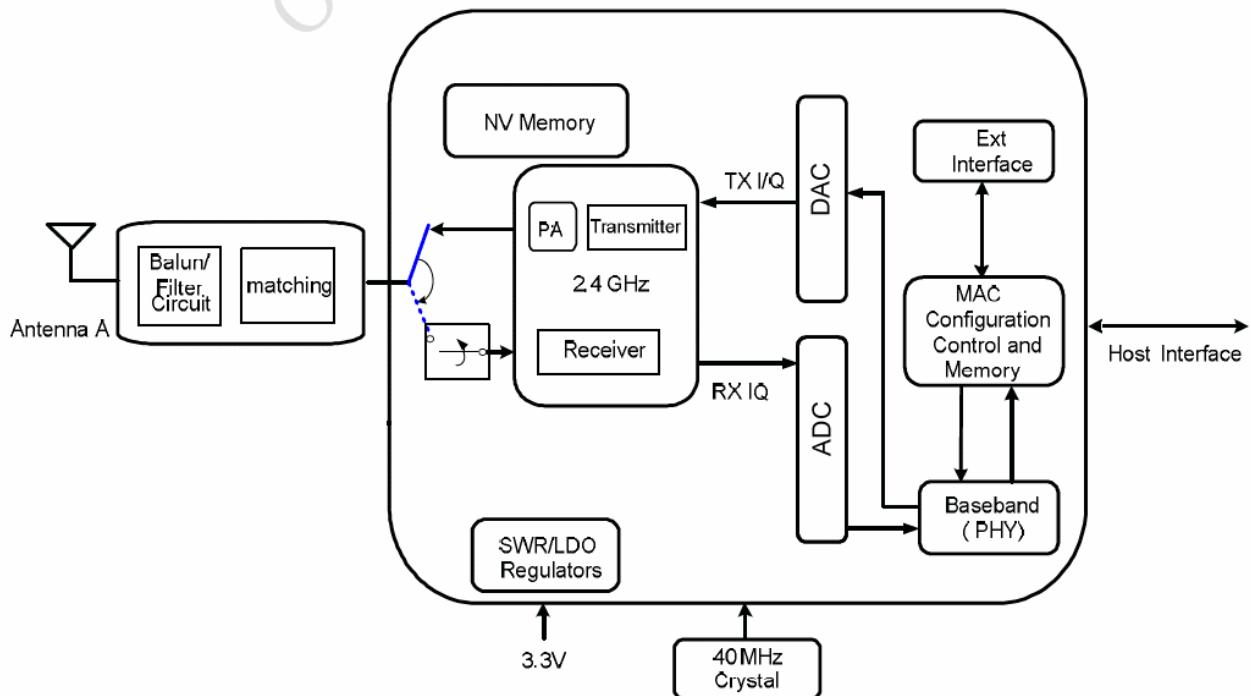
- ◆ Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)
- ◆ Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- ◆ PHY-level spoofing to enhance legacy compatibility
- ◆ Power saving mechanism
- ◆ Channel management and co-existence
- ◆ Transmit Opportunity (TXOP) Short Inter-Frame 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, CCKmodulation with long and short preamble
- ◆ OFDM with BPSK, QPSK, 16QAM, and64QAM modulation.Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- ◆ Maximum data rate 54Mbps in 802.11g and150Mbps in 802.11n
- ◆ Hardware antenna diversity in per packetbase
- ◆ Selectable receiver FIR filters
- ◆ Programmable scaling in transmitter andreceiver to trade quantization noise againstincreased probability of clipping
- ◆ Fast receiver Automatic Gain Control(AGC)
- ◆ On-chip ADC and DAC

4. Module Overview



5. Installation Guide



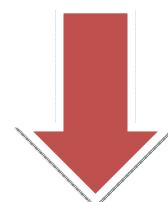
Finished Assembly

Master PCB (examples)

1、Check WIFI-2 Module connection pin is clean for soldering.



2、Ready the Master PCB which will connect with WIFI-2 Module. Check connection pads is clean for soldering.



3、Place the Module on the Master PCB with SMT



TestCheck

4、After soldering, Check all pads are well connected.

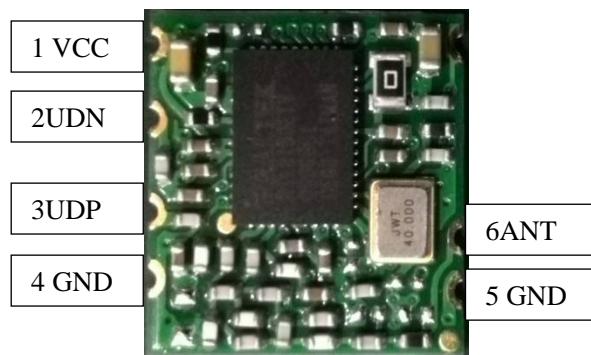


Impedance matching network

5、Connect DC Power
3.0-3.6V on VCC and GND
on Master PCB.
The Pin connect to Antenna
by Impedance matching
network.

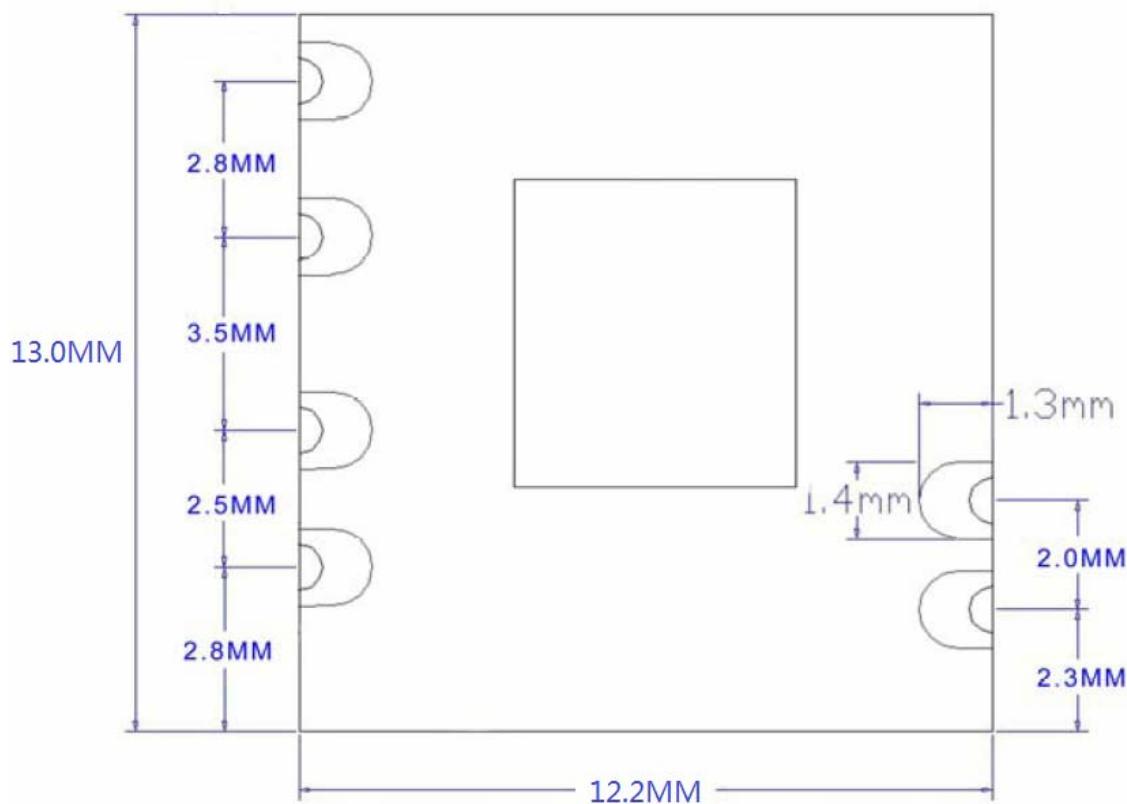


6. Pin Name & Dimension



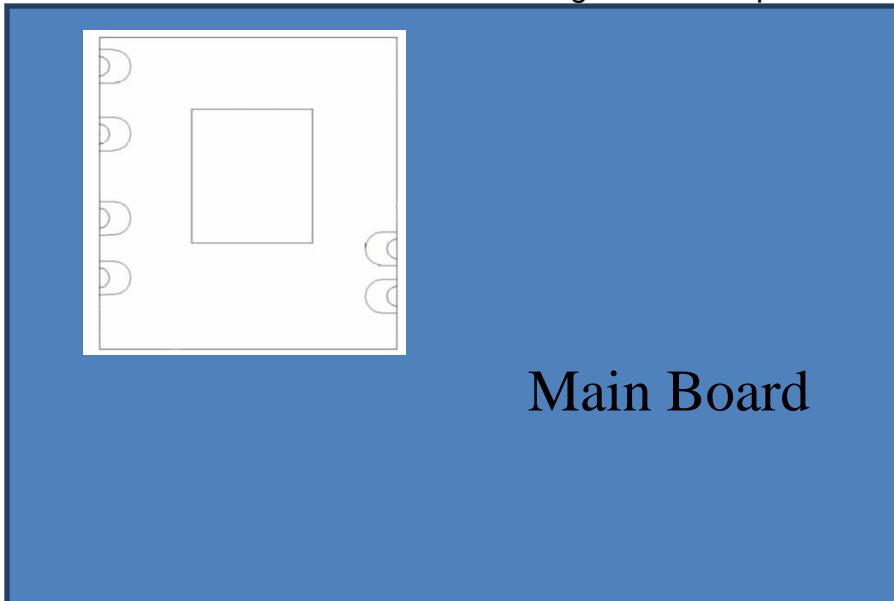
| Pin | TYPE |
|-----|-----------|
| 1 | VCC(3.3v) |
| 2 | UDN |
| 3 | UDP |
| 4 | GND |
| 5 | GND |
| 6 | ANT |

13.0 x 12.2 x 1.0 mm

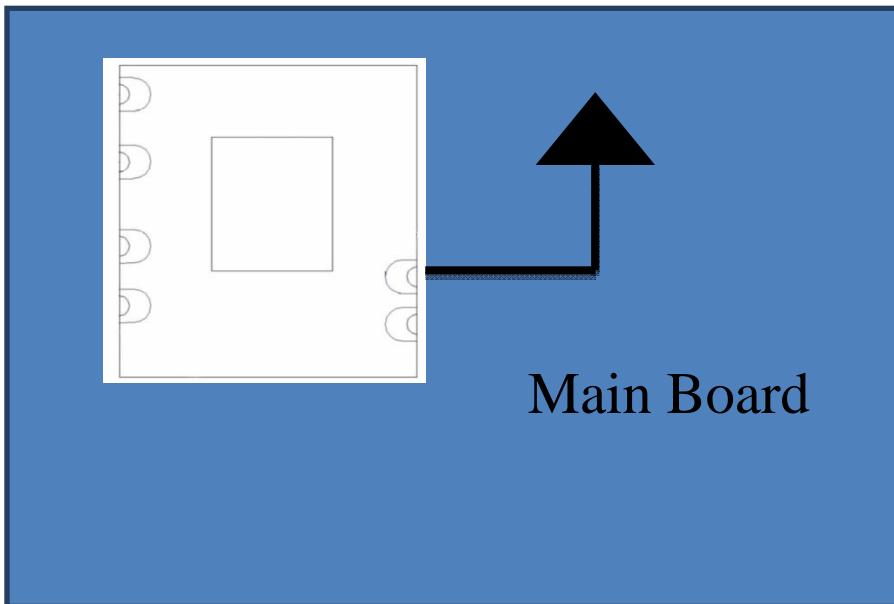


7. WIFI-2 Module Placement Tips

- 1) To enable DTM mode for R/F Test like FCC test...etc.,
UDN and **UDP** pad require to connect to RF Equipment
UDN and **UDP** pad located on the back side of the module.
Reserve hole at Main PCB for soldering **UDN&UDP**pads for RF Equipment .



- 2) Module Soldering on Main PCB, ensure the input impedance of the antenna is $50\ \Omega$.



- 3) Connect All Module Ground Pads to main PCB Ground to obtain better performance.

FCC Statement:

The final end product must be labeled in a visible area with the following "Contains TX FCC ID:2AC49WIFI-2". If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual:

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.

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.

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

FCC Radiation Exposure Statement:

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. Due to missing shielding the module is strictly limited to integration by the Grantee himself or his dedicated OEM integrator under control of the Grantee. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

This device is intended only for OEM integrators under the following conditions:

1) This module is granted as a Limited Modular Approval.

2) This device has been designed to operate with a Monopole antenna having a maximum gain of 2dBi. Only this type of antenna may be used.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be colocated or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.