

# **IEEE802.11b/g/n WiFi Module**

## **Product Specifications**

**Model: FR1213C3**

**Version: 1.0**

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Revisio	Date	Author	Description
1.0	2013/03/13	Mandy	First formal release

## 1. Introduction

The FR1213C3 is a highly integrated Wi-Fi single chip which supports 150 Mbps PHY rate. It fully complies with IEEE 802.11n and IEEE 802.11 b/g standards, offering feature-rich wireless connectivity at high standards, and delivering reliable, cost-effective throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance and low power consumption. Intelligent MAC design deploys a high efficient DMA engine and hardware data processing accelerators which offloads the host processor.

The FR1213C3 is designed to support standard based features in the areas of security, quality of service and international regulations, giving end users the greatest performance any time and in any circumstance.

## 2. Features

- IEEE 802.11 b/g/n client
- Embedded high-performance 32-bit RISC microprocessor
- Highly integrated RF with 55nm COMS technology
- 1T1R mode with support of 150MHz PHY rate
- Integrate high efficiency switching regulator
- Best-in-class power consumption performance
- Compact 5mmx5mm QFN40L package
- 1/2/3/4- wire PTA Wi-fi/Bluetooth coexistence support
- 802.11 d/h/k compliant
- Security support for WFA WPA/WPA2 personal,WPS2.0,WAPI
- Supports 802.11w protected managed frames
- Qos support of WFA WMM,WMM PS
- Supports Wi-Fi Direct
- Fully compliance with USB v2.0 high-speed mode
- Per packet transmit power control
- Antenna diversity
- Auto-calibration

### **3. Application**

- IP camera,
- TV
- Note-book,
- Desk-Top PC
- Blue-ray disk
- Set-top box
- MID



## 4. Product specification

### 4.1 General section

Item	Description
Standard	IEEE 802.11B/G/N CSMA/CA ACK
Interface	USB1.1 USB2.0
Frequency range	2.4-2.4835GHZ
Dimension	15.7mm X 13.0mm X 0.6mm(PCB Size)
Modulation	OFDM/DBPSK/DQPSK/CCK
Mode	Infrastructure/ Ad-Hoc
Rate	135/54/48/36/24/18/12/9/6 /1M
Spreading	DSSS
Receive sensitivity	54M/135M:-72dBm@10%PER 11M:-85dBm@8%PER 6M: -88dBm@10%PER 1M: -90dBm@8%PER
RF Power	135M: 17BM,54M:17DBM, 11M:20DBM
Transmission distance	Indoor <100M, outdoor <300M
System platform	WIN2000/XP/VISTA/LINUX/WINCE/WIN7
Supply	DC 3.3V +-0.2V
Chip	MT7601U

## 4.2 Important parameters

Item	Receive sensitivity	rate
4.2.1	-72dBm@10%	54M/135M
4.2.2	-88dBm@10%PER	6M
4.2.3	-90dBm@8%PER	1M

Item	RF Power	rate
4.2.4	17DBM	135M
4.2.5	17DBM	54M
4.2.6	20DBM	11M

## 4.3 Current consumption

Description	performance	
	TYP.	Unit
Sleep mode	1.1	mA
RX Active HT40 MCS7	91	mA
RX Power saving,DTIM=1	15	mA
RX listen	6	mA
TX HT40,MCS7@15dBm	98	mA
TX CCK 11m@19dBm	202	mA

## 5. System platform

System	CPU	drive
WIN2000/XP/WIN7/VISTA	X86 Platform	support
LINUX2.4/2.6	ARM, MIPSII	support
WINCE5.0/6.0	ARM ,MIPSII	support

## 6. Environmental Requirements

Feature	Detailed Description
Operating temperature condition	-10°C~60°C
Operating humidity condition	10%~90% RH
Storage temperature condition	-40°C~70°C
Operating humidity condition	5%~90% RH



## 7. Functional Block Diagram

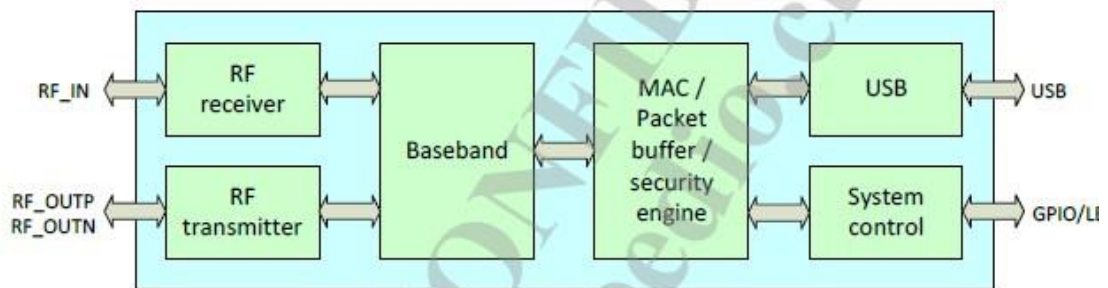


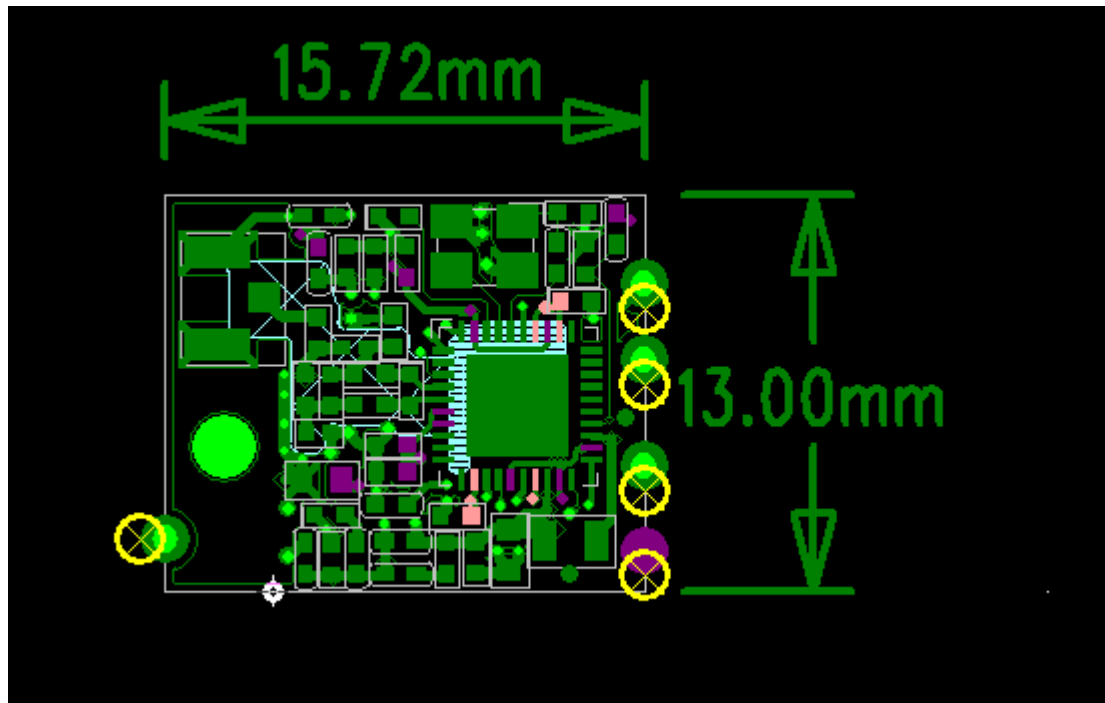
Figure 1 MT7601U block diagram

## 8. Mechanical Requirements

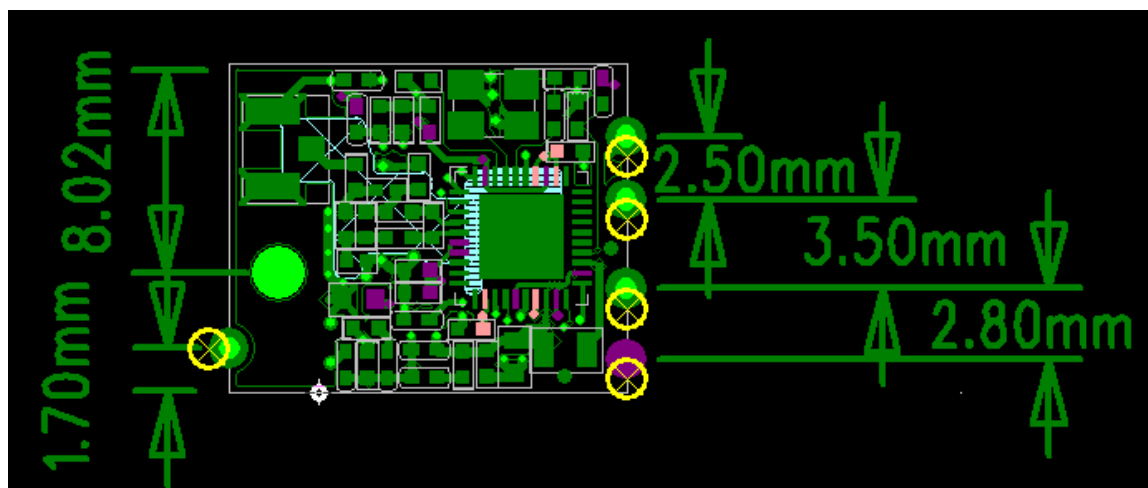
### 8.1

Feature	Detailed Description
length	15.7mm
width	13.0mm
heigh	1.6mm

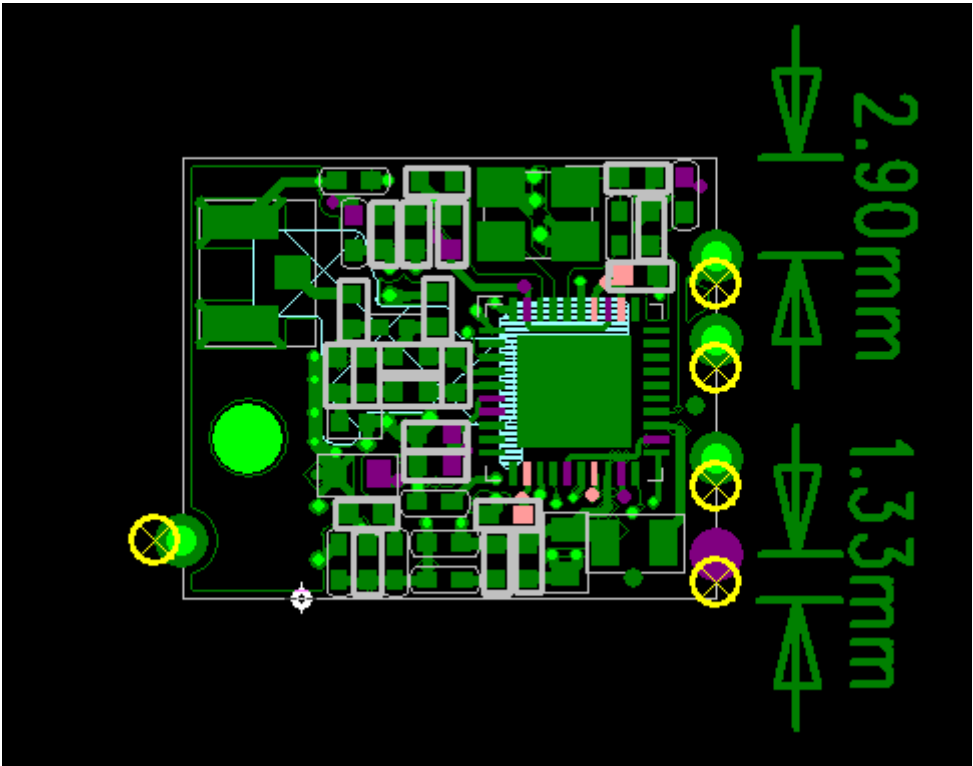
## 8.2



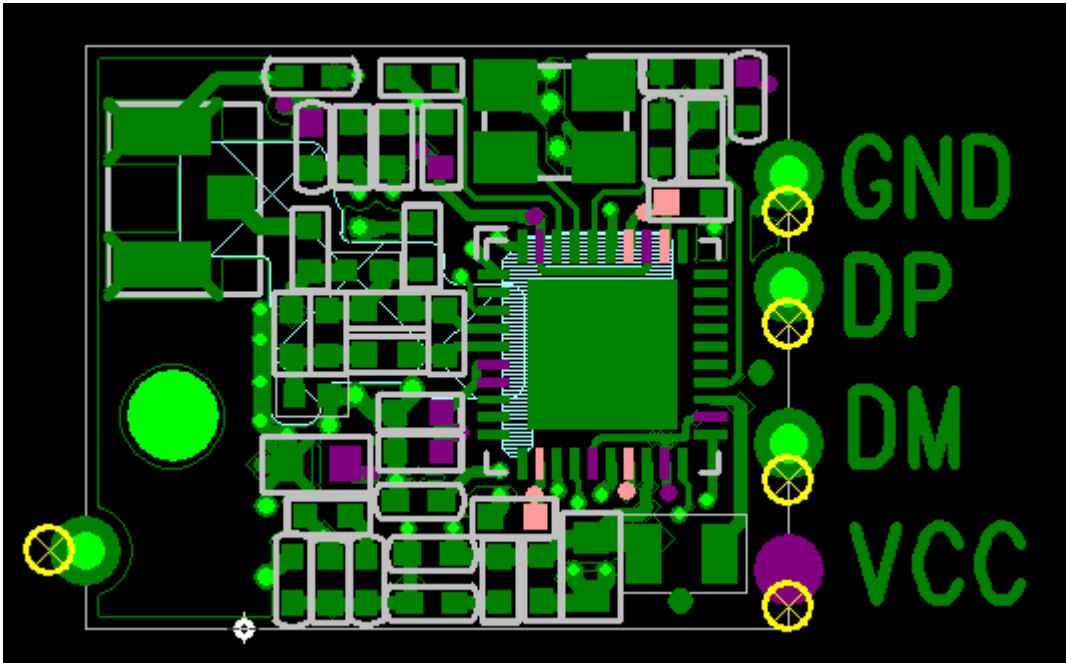
## 8.3



8.4



9. Pin Description



- 1 This device must not be co-located or operating in conjunction with any other antenna or transmitter

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 THE EQUIPMENT.

### **FCC Certification**

The United States Federal Communication Commission (FCC) have established certain rules governing the use of electronic equipment. Part15, Class B

This device complies with Part 15 of 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.

### **Federal Communications Commission (FCC) Requirements, Part 15**

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 Regulatory information / Disclaimers**

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the

equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government

**CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.**

### **MPE Statement (Safety Information)**

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

## **3 Safety Information**

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b/g operation of this product in the U.S.A. is firmware -limited to channels 1 through 11.

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

The antenna must be installed such that 20 cm is maintained between the antenna and users, and

The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

#### **FCC Label Instructions:**

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: Q8Y-FR1213C3” or “Contains FCC ID: Q8Y-FR1213C3” Any similar wording that expresses the same meaning may be used.