



SPECIFICATION FOR APPROVAL

Version: 1.0

Client			
Product	WiFi Module		
Descriptions	IEEE 802.11n, 1T1R, 150Mbps		
Vendor P/ N.	GWF-3B		
Issued By	Gordon	Date	2015/02/28
Checked By	Gordon	Date	2015/03/09
Confirmed By		Date	





Product Specifications

Version: 1.0

150Mbps 802.11 b/g/n

Single side WiFi Module

Model: GWF-3B

Date:

2015/02/26





1. Introduction

GWF-3B is a WLAN module supporting IEEE 802.11 b/g/n standards with 6-pin connector supporting USB 2.0 /1.1 interface. This is a small form factor and low cost compact WLAN module designed for the wireless connectivity of products with embedded system.

This module operates in 2.4GHz ISM frequency band, it applies a highly integrated MAC/BBP and RF single chip RT5370 with 150Mbps PHY rate supporting. This module can be built-in other embedded applications such as IP Camera, IP set top box, GPS, Internet radio apparatus, it can be directly soldered on a main PCB.

1.1 Features

802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 24, 36, 48, 54Mbps

802.11n: (20MHz) MCS0-7, Support up to 72Mbps

(40MHz) MCS0-7, Support up to 150Mbps

OFDM, Peak rate 150Mbps, Peak throughput 90Mbps.

Security support for 64/128 WEP, WPA, WPA2, TKIP, AES

Operates in 2.4GHz frequency bands. Power Management

WPS and TX external control, WiFi direct supported.

2. Product Information

2.1 Typical Specification Overview

Standards	IEEE802.11b/g/n (1T1R mode)
Operating Frequency	2.412GHz ~ 2.4835GHz, Details depend on different country region.
Protocols	802.11b: CCK, QPSK, BPSK, 802.11g/n: OFDM
Antenna	PCB Antenna
Security	WPA/WP2/WPAI, 64/128/152-bit WEP, WPS
Transmit Output Power (Typical value to antenna)	11b: 17±1.0dBm @ 11Mbps; 11g: 14±1dBm @ 54Mbps
	802.11n: (HT20), 12+/-1dBm, 802.11n: (HT40), 12+/-1dBm
Receive Sensitivity (Typical value without antenna)	11b: -84dBm @ 11Mbps; 11g: -72dBm @ 54Mbps.
	802.11n: (HT20), -68dBm@MSC7, (HT40),-67dBm@MSC7
Operating Voltage	5.0V or 3.3VDV± 5%
Operating Current (OFDM, 54Mbps)	5.0V power input,<160mA; 3.3V power input.<250mA;Tx off.<30mA





USB Interface	USB 2.0/1.1
Bus Interface	Max: 7 pins, 2.0 mm pitch pin header. Or Max: 7 pins semi-hole.

2.2 Hardware Information

2.2.1 General view

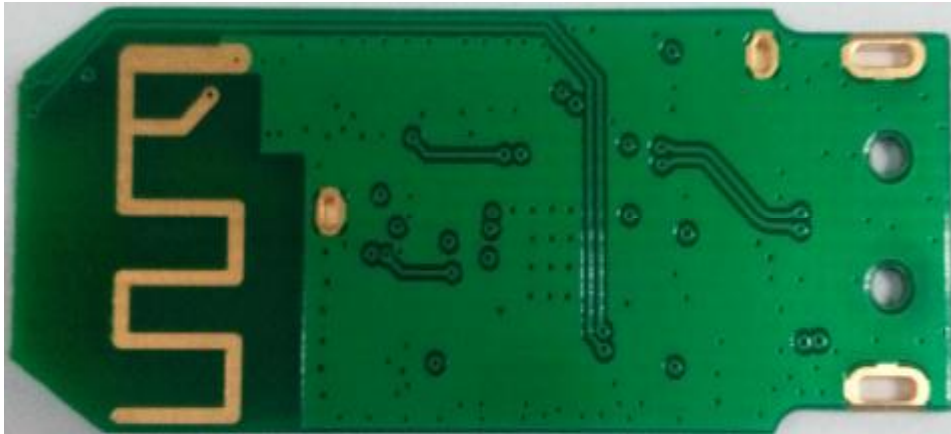


Fig1. 3B Top pcb & Bottom pcb view



2.2.2 Block Diagram

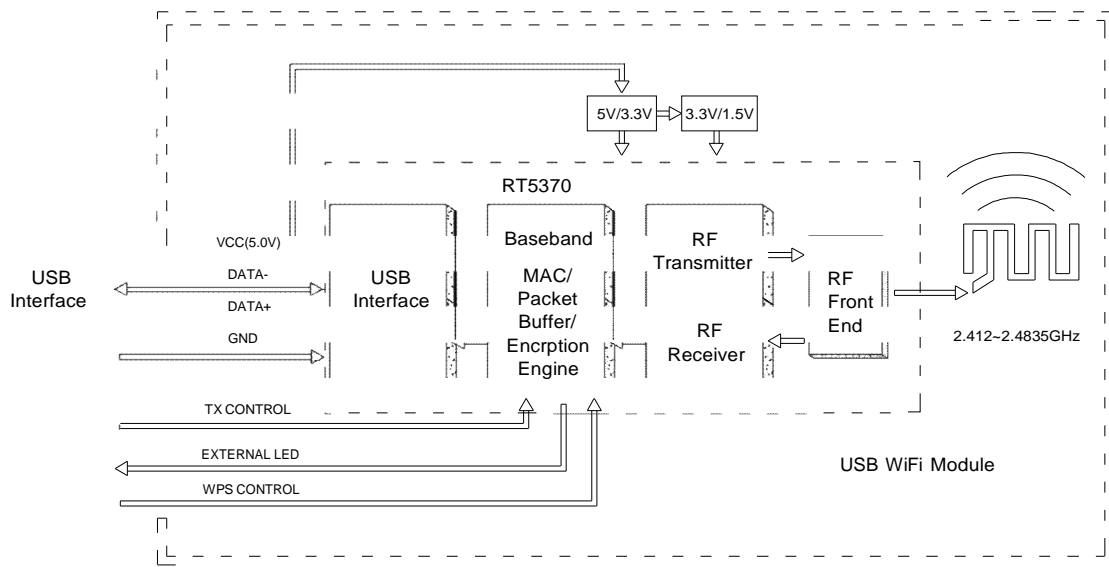


Fig 2. 5V DC 4pin power input with onboard PCB antenna used

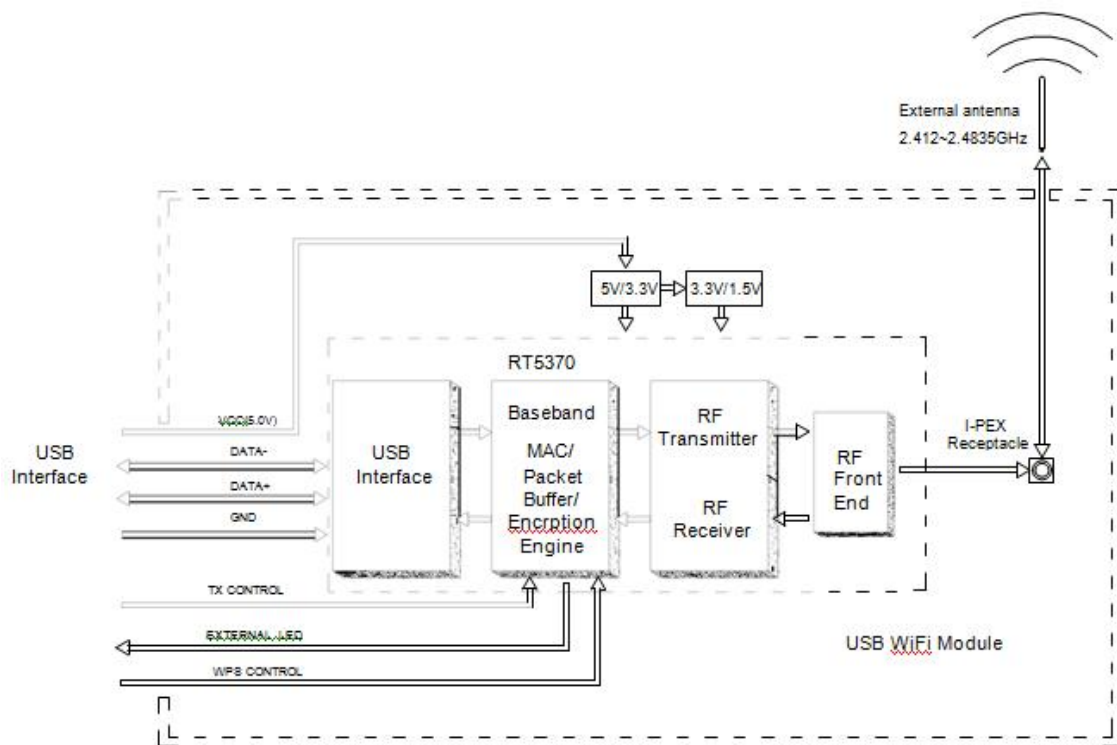


Fig 3. 5.0V DC 4pin power input with external antenna used



2.2.3 Mechanical Information

A. Physical Dimensions:

Unit: mm

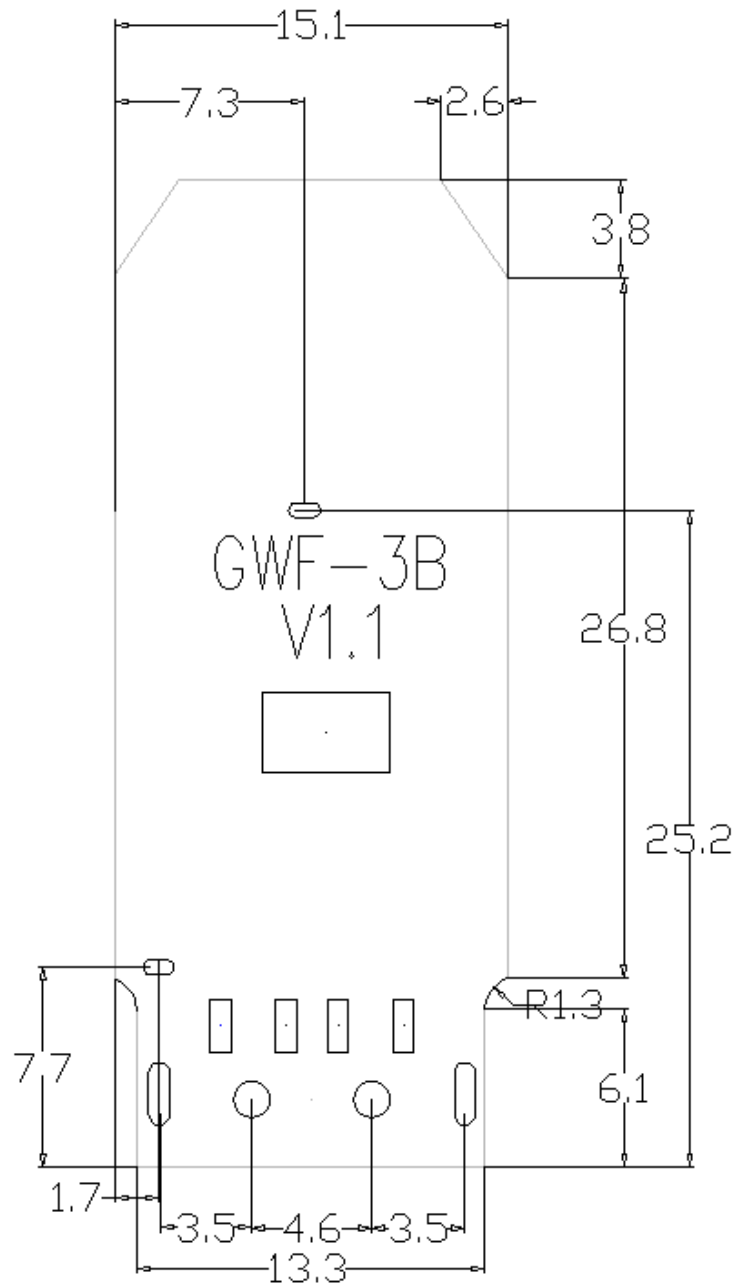


Fig 4. Pcb size



b. USB 4 pin name schematic diagram

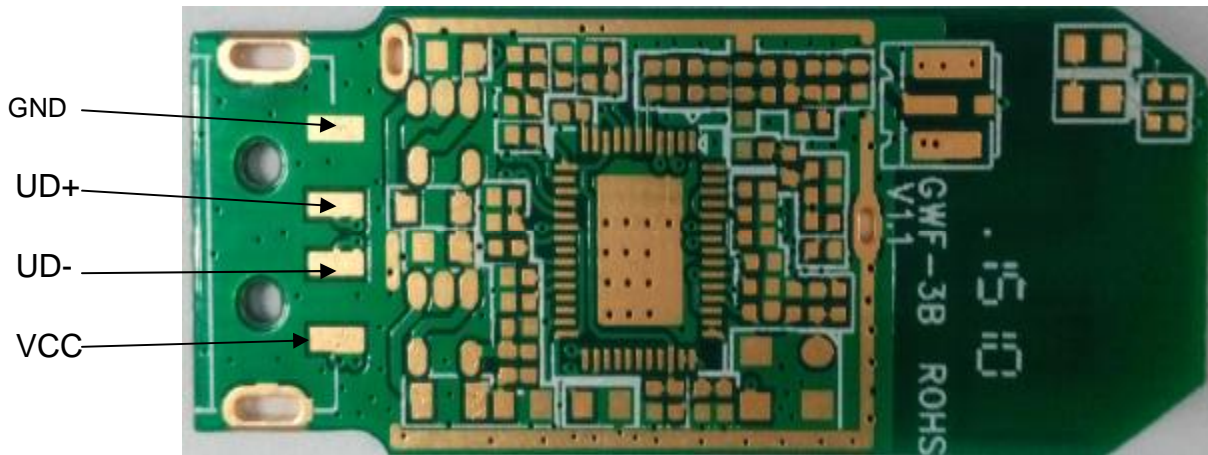


Fig 5. USB 4 pin name schematic diagram

C. Pin Descriptions:

Pin	Name	Descriptions
1	VCC	5.0V DC +/-5%
2	UD-	USB data-
3	UD+	USB data+
4	GND	Ground



b. on-board PCB antenna.

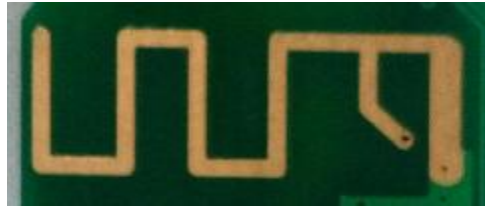


Fig 15.

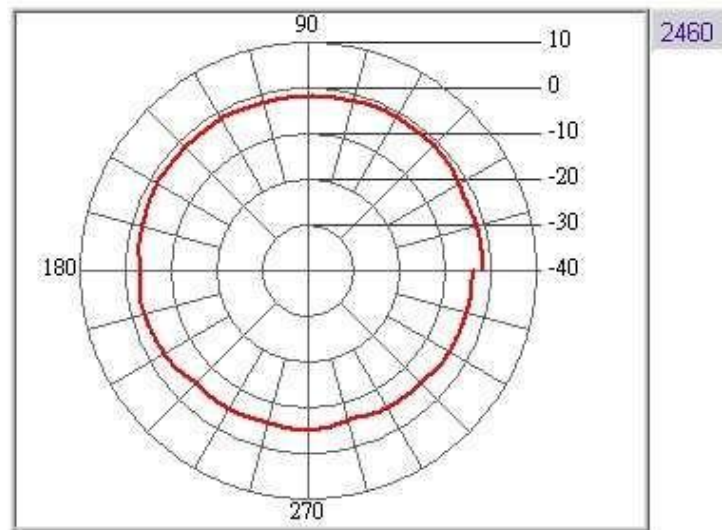


Fig 16.

Peak gain: -1dBi, Average gain: -3dBi





Patterns taken with Model N2420 mounted on 90mm x 90mm x 2.2mm thick, ABS Plastic sheet using 1.6mm double sided tape.

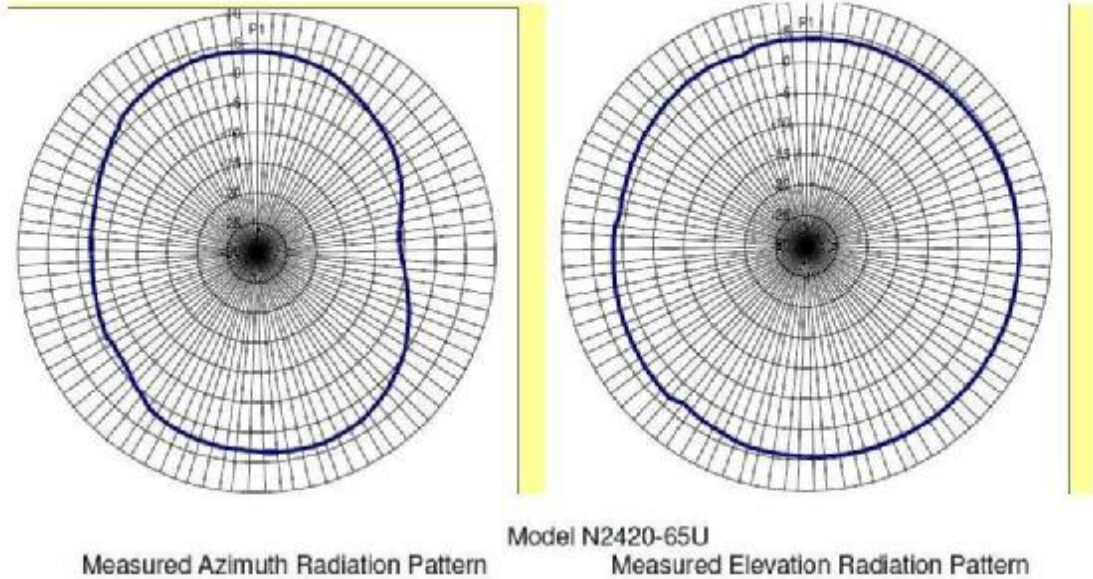


Figure 18: A recommended antenna (Airgain P/N:N2420) and its radiation pattern

2.3 Software and system Information

Operation System	CPU Supplier	Driver
Linux 2.4/2.6	ARM, MIPSII	Available
Windows XP/Vista/7/8	X86 Platform	Available
Windows CE 5.0/6.0	ARM, MIPSII	Available
Mac OS X 10.3~10.8	N/A	Available
Android 4.1	N/A	Available

Notes: The chipset manufacturer has initiated different kind of software, please describe detail requirements for better selection.





2.4. Design Concerns:

2.4.1 Power supply:

- 1) The input power can be 5.0V DC , please mentioned it when place an order.
- 2) The external power shall be well designed with enough capacity.

2.4.2 Using semi-holes:

- 1) When the module is designed to be soldered on a main PCB board directly, the area under the antenna end of the module should be keep clear of metallic components, connectors, vias, traces and other materials that can interfere with the radio signal. The recommended clear space requirements are refer to Fig 12 and Fig 13.
- 2) The module is not recommended using reflow oven process, hand soldering is suggested.

2.4.3 Clear place to use the module:

The following drawing shows a recommended footprint which can be a reference for a main PCB design.

The clear space requirement for onboard antenna is suit for either pin header or semi-holes connection application.

3. Certificates and Approval

Certificate	Descriptions
FCC Part15	Available
CE	Available
IC	Available
KCC	Approved by customers
RoHS	Available





4. Environment

4.1 Temperature

4.1.1 Operating Temperature

Continuous reliable operation in ambient temperature: -10°C to +60°C.

4.1.2 Storage Temperature

The product is not damaged or degraded when keeping in -20°C to +85°C.

4.2 Humidity

4.2.1 Operating Humidity Conditions

The product should be capable of continuous reliable operation when subjected to relative humidity in the range of 20% to 80% (non-condensing) .

4.2.2 Non-Operating Humidity Conditions (including warehouse)

The product should not be damaged or degraded when kept in the place (where relative humidity range is in the range of 20% to 80%) for 48 hours.

5. Disclaimer

THESE MATERIALS AND INFORMATION ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED , INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT.

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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.

Warning: 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.

FCC INFORMATION (additional)

OEM INTEGRATION INSTRUCTIONS:

This device is intended only for OEM integrators under the following conditions: The module must be installed in the host equipment 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. The module shall be only used with the internal antenna(s) that has been originally tested and certified with this module. As long as 3 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.).

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End product labeling:

The final end product must be labeled in a visible area with the following: "Contains FCC ID: YWT-GWF-3B".

Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

Antenna Specification:

Type: PCB Antenna

Model: GWF-3B

Gain: 3.88 dBi