



CastleNet

User's Manual

Model: RTL8192DU

802.11 a/b/g/n RTL8192DU Module

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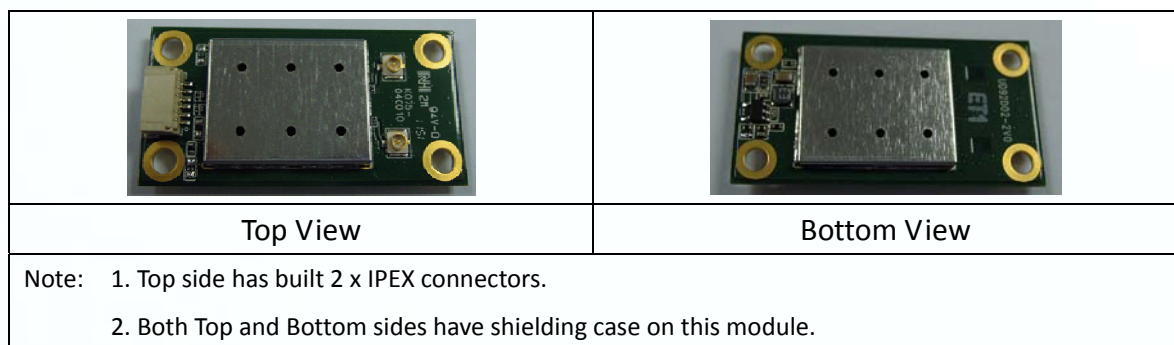
Declaration:

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1. INTRODUCTION

1.1 Scope

The **RTL8192DU** is the WLAN module with USB interface that provides 802.11n high transfer speed 2T2R MIMO solution, 2.4GHz / 5GHz RF dual band for the Notebook / Netbook / UMPC/ MID to enable Wireless LAN functionalities and data transmission .It has built 2x IPEX connector for external RF antenna connection.



1.2 Features

General:

- Form factor: Module Card
- Bus Interface: USB interface.
- Dimension: 40.0mm(L)x20.5mm(W)x1.0mm(H)
- 2 x IPEX connectors for 2T2R MIMO (Multi-input, Multi-output).
- RoHS compliant.

WLAN Features

- Complete 802.11n 2T2R (2x2) solution for 2.4GHz and 5GHz band
- Backward compatible with 802.11a/b/g devices while operating at 802.11n data rates.
- Support for WLAN 300Mbps PHY rate using 802.11n 40MHz band
- RF antenna diversity technology.
- Supports Dual MAC architecture with behaves a station and a AP concurrently.
- Wi-Fi Security: WEP 64/128, WPA, WPA2, TKIP, AES.
- 802.11e QoS-WMM, WMM-PS.
- Supports Wi-Fi Direct function.
- Supports 16 BSSIDs.
- Cisco CCX Support up to v5.0

1.3 Model Define

	RTL8192DU
RF Connector #	2 x IPEX connector
Antenna design	RF Switch with 2T2R/ Dual Band(2.4GHz and 5GHz)

2. SPECIFICATION

2.1 HARDWARE SPECIFICATION

2.1.1 General Specification

Specification	IEEE 802.11 a/b/g/n Wireless Local Area Networks
Protocol	WEP 64/128, WPA, WPA2, TKIP, AES
PHY Rate	2T2R mode with 300Mbps PHY Rate for both transmit and receiving
RF Frequency Range	2.4G~2.5GHz / 5GHz
Operating Voltage	+5V (+/-0.3V)
Interface	USB 2.0

2.1.2 Board Specification

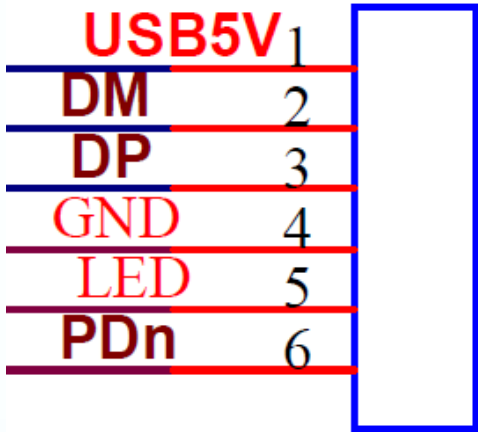
WLAN Chip	Realtek RTL8192DU
Antenna	External antenna (not included)
RF connector	IPEX
Form Factor	Module Card

2.1.3 Environmental

Operating	Operating temperature: 0 to 85 degree C Relative Humidity : 5-90% (non-condensing)
Storage	Temperature: -20 to 85 degree C Relative Humidity : 5-95% (non-condensing)

2.1.4 PIN Define

Please refer to the following circuits to know the pin-definition.



PIN	Definition	Remark
1	USB VCC	+5V
2	USB_D-	USB_D-
3	USB_D+	USB_D+
4	GND	GND
5	LED	Pull Low signal
6	PDN	Wi-Fi radio off

2.1.5 Power Consumption

Single Band Mode:

Mode (2.4GHz frequency band)	Power consumption (mA) / 5V			
	Uplink	Downlink	Radio off	Idle
11 a/g mode 2.4G	175	165	19	145
11 a/g mode 5G	220	215		
11 b mode 2.4G	180	155		
11 n HT40 2x2 2.4G	230	180		
11 n HT40 2x2 5G	330	240		
11 n HT40 1x1 2.4G	184	170		
11 n HT40 1x1 5G	230	220		

Dual Band Mode:

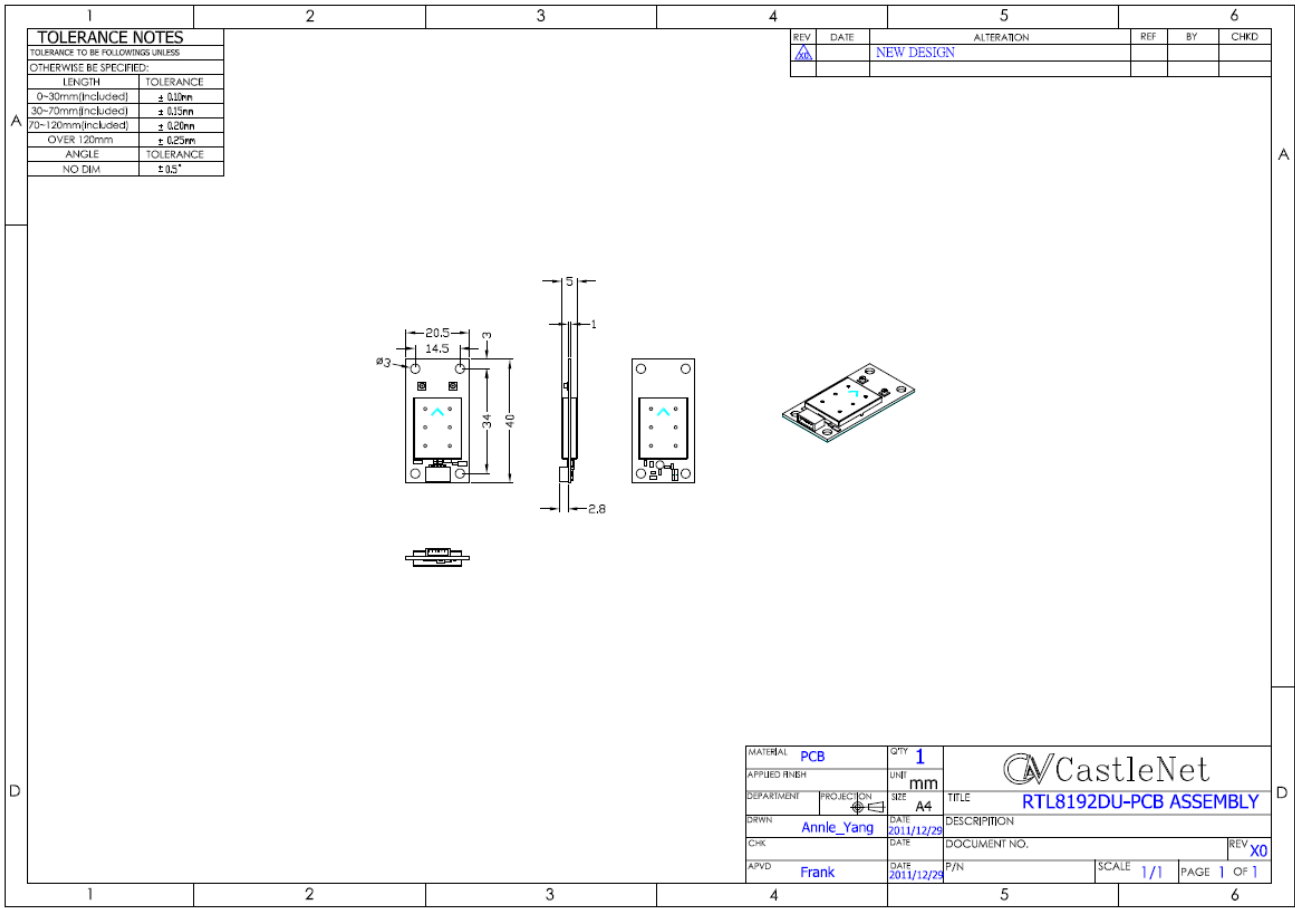
Mode (2.4G+5GHz band)	Power consumption (mA) / 5V		
	Up + Down link	Radio off	Idle
2.4G Tx+5G Rx(n mode HT-40)	274	22	203
2.4G Rx+5G Tx(n mode HT-40)	299		

2.2 MECHANICAL SPECIFICATION

2.2.1 Board Dimension

Form factor	Module Card		
PCB Dimension	40.0mm*20.5mm		
PCB thickness	1.0mm (+/- 0.1mm)		
SMD	Single side		
Max. height of components (from PCB)	Top side	Connect	2.8mm (+/- 0.2mm)
	Bottom side	Shielding case	2.0mm (+/- 0.2mm)

2.2.2 Mechanical Drawing



2.3 SOFTWARE SPECIFICATION

2.3.1 Operating system

- Windows XP, Vista, Win7 WHQL.
- Linux, Android supported. Necessary customized per customer requirement.

3. Warning

3.1 Federal Communication Commission Interference Statement

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 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

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.

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

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

Operations in the 5.15-5.25GHz band are restricted to indoor usage only. IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

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

- 1) The antenna must be installed such that 20cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to Ch11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

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.)

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstance, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: RK9-RTL8192DU".

Manual Information To the End User

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.

3.2 NCC 警語

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

在 5.25-5.35GHz 頻帶內操作之無線資訊傳輸設備，限室內使用。

本模組於取得認證後將依規定於模組本體標示審合格籤，並要求平台上標示「本產品內含射頻模組：ID 編號」

End of this documentation