

# TL8188EUB

## Product Specifications

### WLAN 11b/g/n USB module (1T1R)

Version: V1.2

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## Overview

TL8188EUB 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.

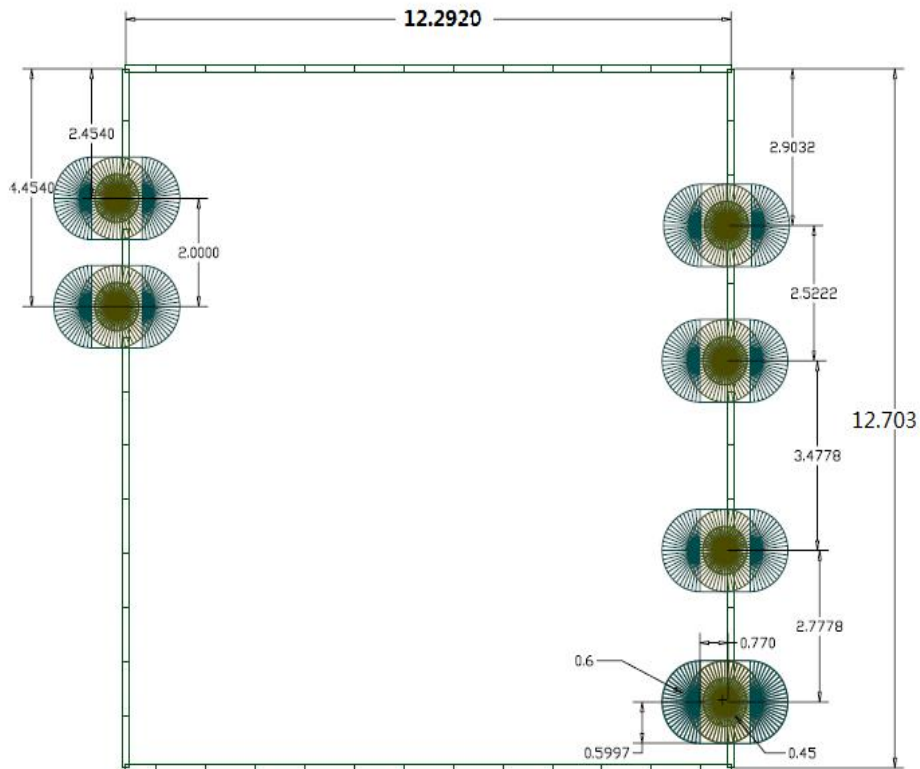
## Features

- \* Operates in 2.4 GHz frequency bands
- \* 1x1 MIMO technology improves effective throughput and range existing 802.11 b/g products
- \* Data rates: up to 150Mbps
- \* 802.11e-compatible bursting and I standards
- \* BPSK, QPSK, 16 QAM, 64 QAM modulation schemes
- \* WEP, TKIP, and AES, WPA, WPA2 hardware encryption schemes

## General Specification

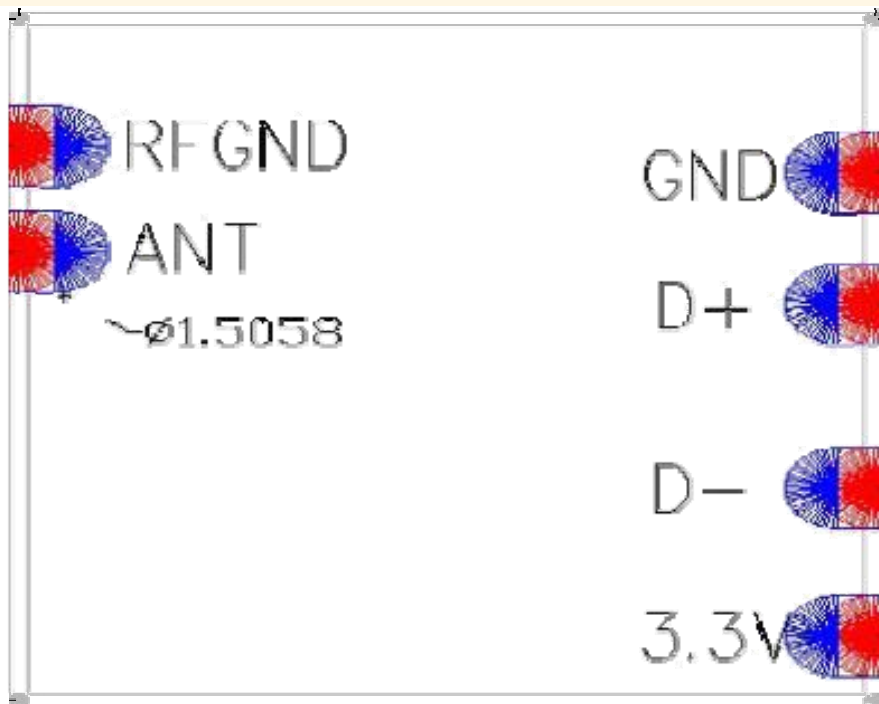
Model	TL8188EUB
Product Name	WLAN 11n USB module
Major Chipset	Realtek RTL8188EUS
Standard	802.11b/g/n, 802.3, 802.3u
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 and maximum of 150Mbps
Modulation Method	BPSK/ QPSK/ 16-QAM/ 64-QAM
Frequency Band	2.4 ~ 2.4835 GHz ISM Band
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)
RFOutputPower	13±1.5dBm@11n,17 ± 1.5dBm@11b,15 ± 1.5dBm@11g
NetworkArchitecture	WiFi:Ad-hocmode(Peer-to-Peer)
Receiver Sensitivity	11Mbps -86dBm@8%,54Mbps -73dBm@10%,130Mbps -66dBm@10%
Operation Range	Up to 180 meters in open space
LED	
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	DC3.3V Maximum power dissipation in 80MA
Operating Temperature	-10 至 70°C ambient temperature
Storage Temperature	-20~80°C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Dimension	12.2x12.9x1.6mm(LxWxH)+-0.2MM

## Dimensions:

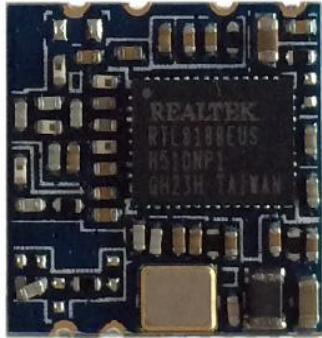


The PCB tolerances within + / -0.2 or so

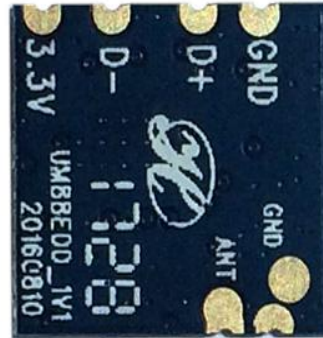
## PIN Definition



## Physical map



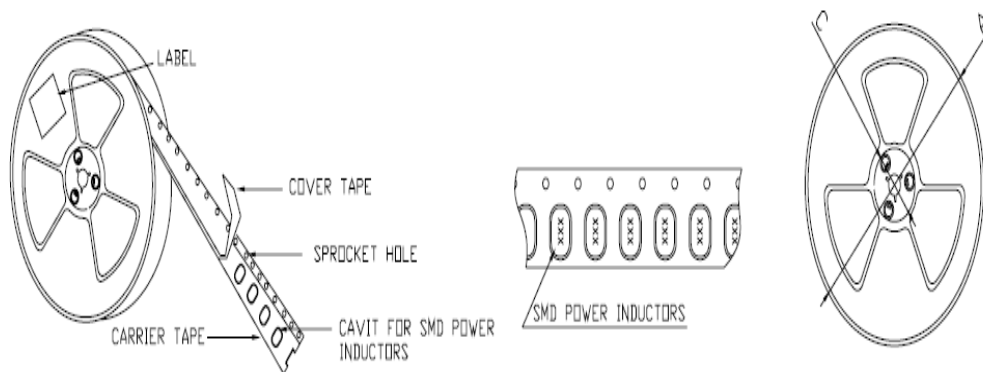
产品正面



产品背面

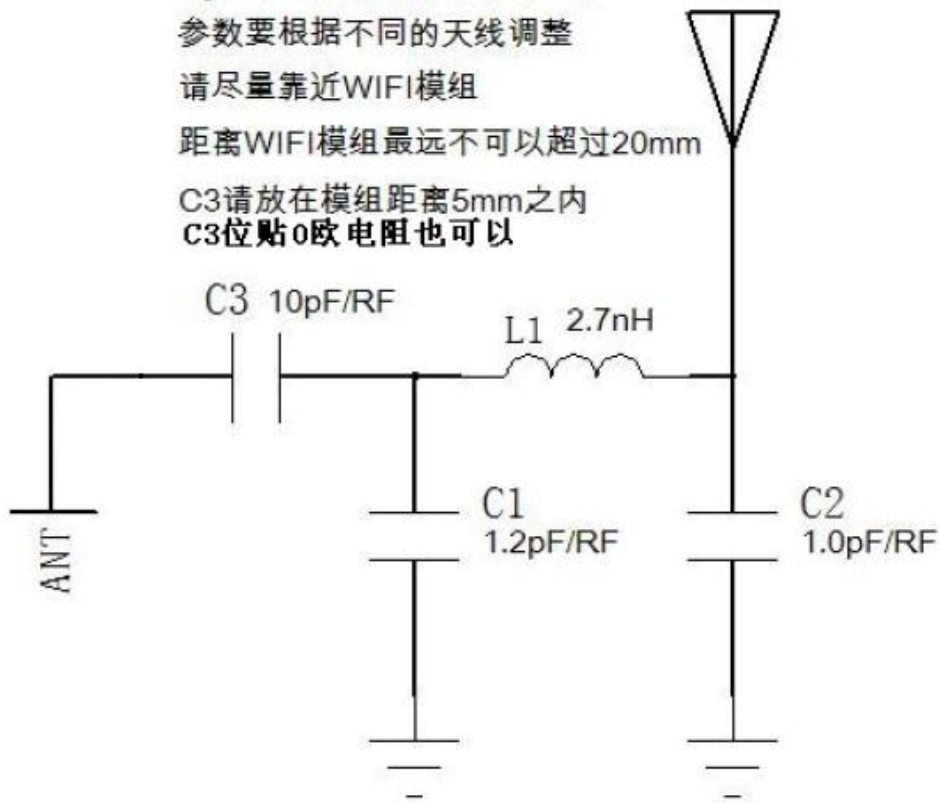
注：我司 ML510E 有红、黑、蓝、黄四种颜色的板，上图标出一种蓝色供客户参考。

## Packaging Appearance Figure



## External antenna reference design

此部分需要做50R的单线阻抗  
 layout走线请走弧型线或直线  
 参数要根据不同的天线调整  
 请尽量靠近WIFI模组  
 距离WIFI模组最远不可以超过20mm  
 C3请放在模组距离5mm之内  
 C3位贴0欧电阻也可以



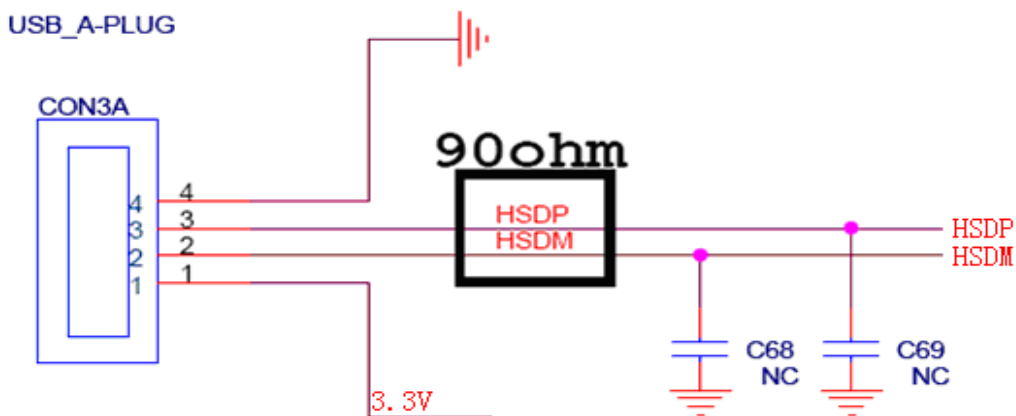
## DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VD33A, VD33D	3.3V I/O Supply Voltage	3.1	3.3	3.5	V
VD15A, VD15D	1.5V Supply Voltage	1.4	1.5	1.6	V
IDD33	3.3V Rating Current	-	-	400	mA

# Power Consumption

Parameters	Sym	Conditions	Min	Typ	Max	Unit
3.3V Supply Voltage	Vc33		3.1	3.3	3.5	V
1.5V Supply Voltage	Vc15		1.4	1.5	1.6	V
<b>Receiving Tests the biggest receive</b>						
3.3V Current Consumption	Icc33rx	H40MCS7		65		MA
3.3V Current Consumption	Icc33rx	OFDM 54M		70		MA
<b>Transmission Biggest transmission test</b>						
3.3V Current Consumption	Icc33tx	H40 MCS7		80		MA
3.3V Current Consumption	Icc33tx	OFDM 54M		85		MA
<b>The depth waits for an opportunity</b>	Icc33tx/rx			2		MA
<b>Deep sleep</b>	Ic33tx/rx			2		MA

## USB interface electrical characteristics



Two root go line do difference, but also required to make 90 0 the impedance test

建议在电源输入端留一个电源开关，每次开关卡时可以做一个上电断电的作用。可以使WIFI复位。就不会有打开WIFI出错的现象了。



贴片 WIFI 模块装机的前注意事项：

- 1、客户在开钢网时一定要将 WIFI 模块焊盘的孔开大，请按 1 比 1 再向外扩大 0.7Mm 比例来开，厚度按 0.12Mm。
- 2、有需要拿 WIFI 模时一定要不要光着手去拿 WIFI 模块，一定要戴上手套及静电环。
- 3、过炉温度要根据客户主板的大小而定，一般像贴在平板电脑上 250+-5 度。

关于模块包装，储存及使用管制应注意事项如下：

1.模块的卷盘加真空包装之储存期限：

1) .保存期限：12 个月，储存环境条件：温度在：<40℃，

相对湿度：<90%R.H

2.模块真空包装拆封后，组装之时限：

1) .检查湿度卡：显示值应小于 30%（蓝色），如：30%~40%(粉红色) 或者大于 40%（红色）表示模块已吸湿气。

2) .工厂环境温度湿度管制：≦30%℃，≦60%R.H。

3) .拆封后，车间的保存寿命为 168 小时。

3.拆封后，如未在 168 小时内使用完时：

1) .模块须重新烘烤，以除去模块吸湿问题。

2) .烘烤温度条件：125℃，8 小时。

3) .烘烤后，放入适量的干燥剂再密封包装。