

HK NATER TECH LIMITED

RL-UM02S-8192EU Specification

Customer: _____

Description: RL-UM02S-8192EU-V1.0

Customer P/N: _____

Date: _____

Customer		
Approve	Auditing	Admit

Provider		
Approve	Auditing	Admit

Customer:

Add:

Tel:

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Attn:

E-mail:

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SPECIFICATIONS

IEEE 802.11 b/g/n 2.4GHz

Wi-Fi 2T2R Module

RL-UM02S-8192EU

Version: V1.0

1.Overview

General

- CMOS MAC, Baseband MIMO PHY, and RF in a single chip for 802.11b/g/n compatible WLAN
- Complete 802.11n MIMO solution for 2.4GHz band
- 2x2 MIMO technology for extended reception robustness and exceptional throughput
- Maximum PHY data rate up to 144.4Mbps using 20MHz bandwidth, 300Mbps using 40MHz bandwidth
- Compatible with 802.11n specification
- Backward compatible with 802.11b/g devices while operating at 802.11n data rates

Host Interface

- Complies with USB Specification Revision 2.0
- USB bridge for RTL8761 Bluetooth connection

Standards Supported

- 802.11e QoS Enhancement (WMM, WMM-SA Client mode)
- 802.11h TPC, Spectrum Measurement
- 802.11k Radio Resource Measurement
- 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services

MAC Features

- Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)
- Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- Long NAV for media reservation with CF-End for NAV release
- PHY-level spoofing to enhance legacy compatibility
- MIMO power saving mechanism
- Channel management and co-existence
- Multiple BSSID feature allows the RTL8192EU to assume multiple MAC identities when used as a wireless bridge
- Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth

Peripheral Interfaces

- Configurable Bluetooth Coexistence Interface

PHY Features

- 802.11n MIMO OFDM
- Two Transmit and Two Receive path (2T2R)
- 20MHz and 40MHz bandwidth transmission
- Short Guard Interval (400ns)
- Sounding packet
- Low Density Parity Check (LDPC) to enhance link robustness over range
- Transmit Beamforming
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- Maximum data rate 54Mbps in 802.11g and 300Mbps in 802.11n
- OFDM receive diversity with MRC using up to 2 receive paths. Switch diversity used for DSSS/CCK
- Selectable digital transmit and receive FIR filters
- Programmable scaling in transmitter and receiver to trade quantization noise against increased probability of clipping
- Fast receiver Automatic Gain Control (AGC)
- On-chip ADC and DAC

2.General Specification

Model	RL-UM02S-8192EU
Product Name	WLAN 11b/g/n USB module
Major Chipset	RTL8192EU
Standard	IEEE802.11n 、 IEEE 802.11g、 IEEE 802.11b
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 and maximum of 300Mbps
Modulation Method	DSSS,DBPSK, DQPSK, CCK and OFDM (BPSK/QPSK/16-QAM/64-QAM)
Frequency Band	2.485GHz
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) ,CCK(Complementary Code Keying) IEEE 802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)
OS Support	Windows 2000,XP32-64,Vista 32/64,Win7 32/64,Linux,Mac, Android, WIN CE
Operation Range	Up to 180 meters in open space
Security	WEP, TKIP, AES, WPA, WPA2
Interface	USB 2.0
Power Consumption	3.3V
Operating Temperature	-10 ~ +70° C ambient temperature
Storage Temperature	-10 ~ 70°C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Dimension	27.0x15.0 x 1.6mm (LxWxH) ±0.2MM

3.Electrical Specifications

1) DC Characteristics

Module	Voltage	Current Consumption (linking)
RL-UM02S-8192EU-V1.0	5V	(上网或者看电影时的功耗)
	3.3V	(上网或者看电影时的功耗)

2) RF Characteristics for IEEE802.11b (11Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11b			
Mode	CCK 11 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per \leq 85 dBm@8%)	-85 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (17 \pm 2 dBm)		17		dBm
EVM (\leq -18)		-23		dB

3) RF Characteristics for IEEE802.11g (54Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM 54 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per \leq 70 dBm@10%)	-70 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (14 \pm 2dBm)		14		dBm
EVM (\leq -28)		-28		dB

4) RF Characteristics for IEEE802.11n (BW20_MCS7)

Items	Contents			
Specification	IEEE802.11n (BW20_MCS7)			
Mode	OFDM 65 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per \leq 65 dBm@10%)	-65 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (13 \pm 2 dBm)		13		dBm
EVM (\leq -28)		-28		dB

5) RF Characteristics for IEEE802.11n (BW40_MCS7)

Items	Contents			
Specification	IEEE802.11n (BW40_MCS7)			
Mode	OFDM 135 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per \leq 65 dBm@10%)	-65 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (13 \pm 2 dBm)		13		dBm
EVM (\leq -28)		-28		dB

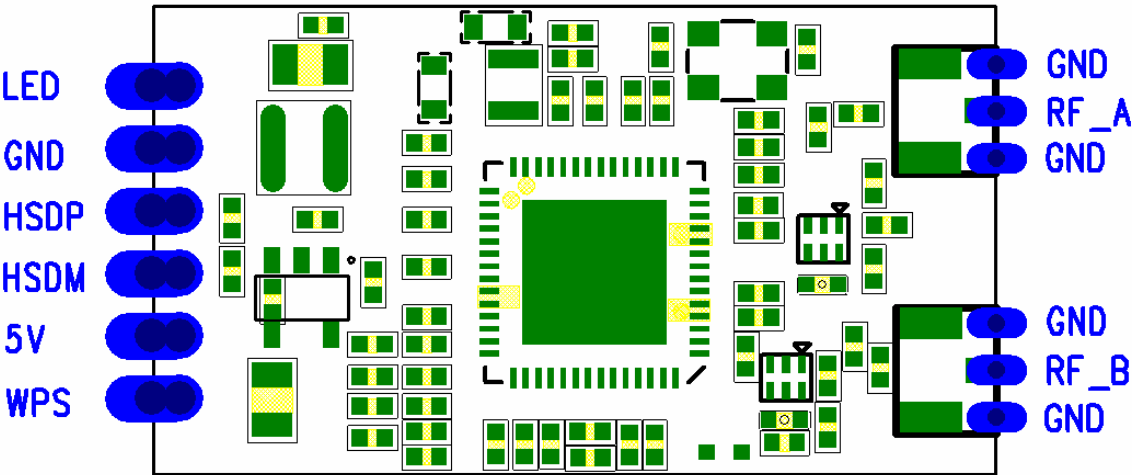
4.Mechanical

Dimensions (mm)	Length	Width	Height
	27 (Tolerance:±0.2mm)	15 (Tolerance:±0.2mm)	1.6 (Tolerance:±0.2mm)

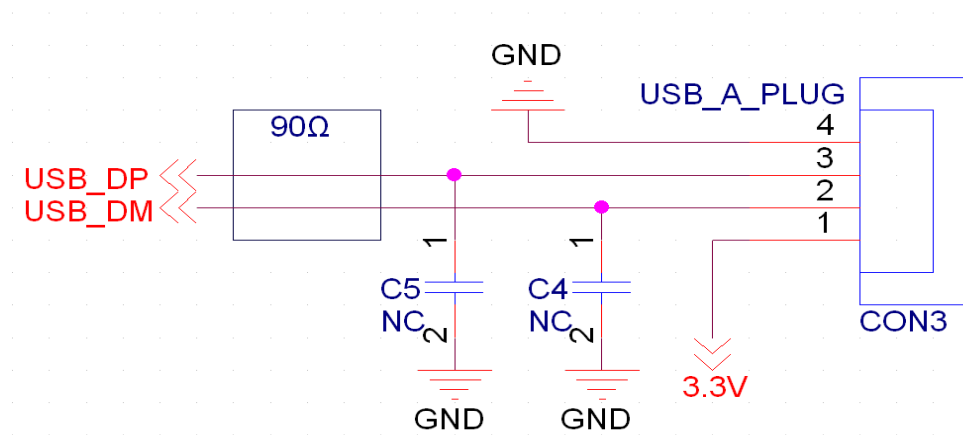


5.MODULE PIN ASSIGNMENT

Pin	Function	Pin	Function
H1	NC	H7	GND
H2	GND	H8	RF
H3	D+	H9	GND
H4	D-	H10	GND
H5	VDD33	H11	RF
H6	NC	H12	GND



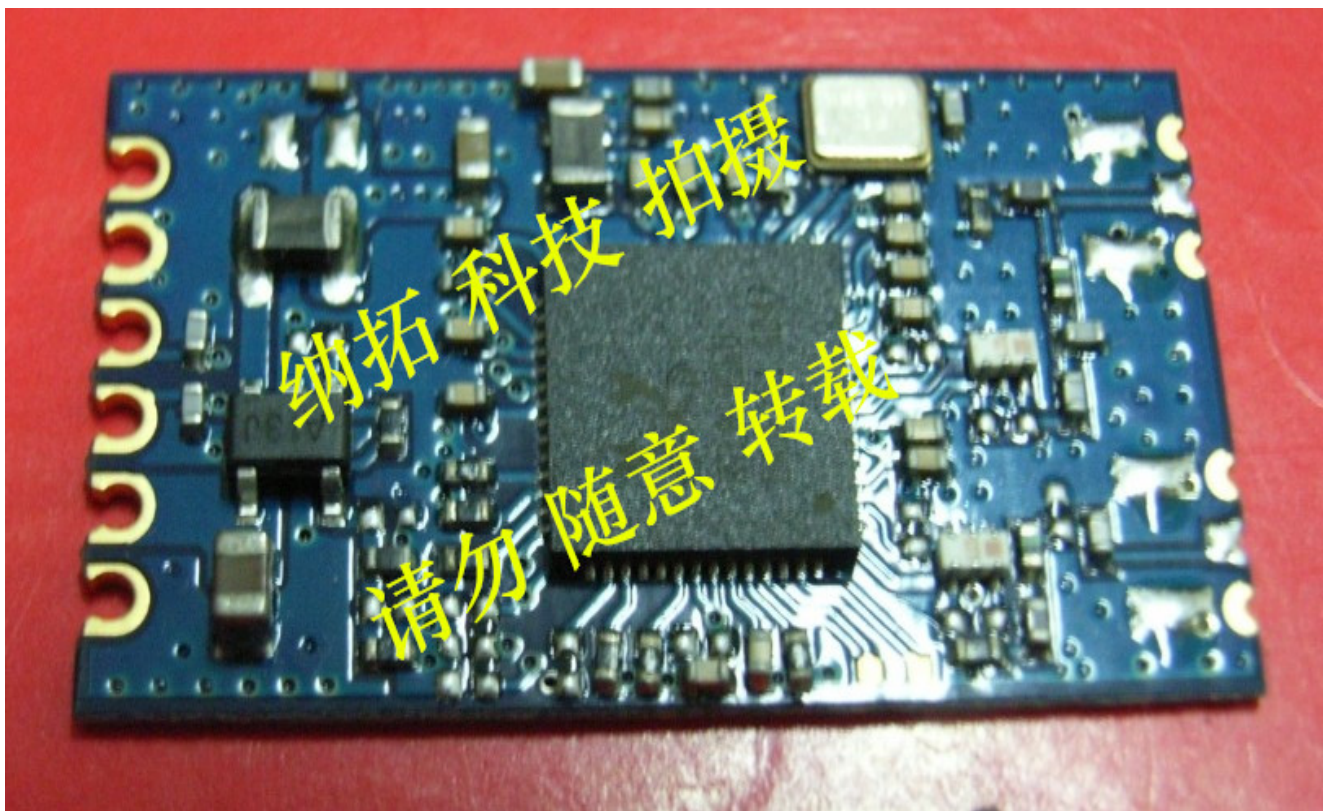
6.USB interface electrical characteristics



Two root go line do difference, but also required to make 90Ω 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，可以使用wifi 复位，就不会有打开wifi 出错的现象了。

7. Picture Module



Wireless module before the SMT note:

1. When customers Open stencil must be sure the hole bigger to the Wireless module plate, please press 1 to 1 and 0.7 mm is widened to open outward, the thickness of 0.12 mm.

2. Can't get the wifi module bare hands when needs, must we wear the gloves and static ring.

3. The furnace temperature according to the size of the customer the mainboard, generally like to stick on a tablet standard temperature of 250 + - 5, can do 260 + - 5.

Storage and use Wifi module control should pay attention to the following matters:

➤ Module of the storage life of vacuum packaging:

1-1. Storage life: 12 months. Storage conditions: <40℃. Relative humidity: <90%R.H.

1-2. After this bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be:

1-3. Check the humidity card: stored at $\leq 20\%RH$. If: 30%~40% (pink) or greater than 40% (red). Labeling module has moisture absorption.

① Mouthed within 168 hours at factory conditions of: $t \leq 30^\circ C$, $\leq 60\%RH$.

② Once opened, the workshop the preservation of life for 168 hours.

1-4. If baking is required, devices may be baked for:

① Modules must be to remove module moisture problem.

② Baking temperature: 125℃, 8 hours.

③ After baking, put proper amount of desiccant to seal packages.

1-5. Module vacuum packing 2000 PCS per disc.

2. Module reel packaging items as follows.

2-1. Storage life: 12 months. Storage conditions: <40℃. Relative humidity: <90%R.H.

2-2. Module apart packing after 168 hours, To launch patch need to bake, to remove the module hygroscopic, baking temperature conditions: 125℃, 8 hours.

2-3. Reel packing 2000 PCS or 1000 PCS per disc.

3. Module pallet packaging items as follows:

3-1. Storage life: 3 months. Storage conditions: <40℃. Relative humidity: <90%R.H.

3-2. Module if not used within 48 hours, before launch the need for baking, baking temperature: 125℃, 8 hours.

3-3. Pallet packaging each plate is 100 PCS to 1000 PCS or 2000 PCS shipment.

Wifi 模块贴片装机前注意事项:

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 比例开钢网, 厚度按 0.12mm.

2. 有需要拿 wifi 模块时不可以光手去拿, 一定要戴上手套以及静电环.

3. 过炉温度要根据客户主板的大小而定, 一般像平板电脑上的标准温度为 250+-5°, 也可以做到 260+-5°

Wifi 模块储存及使用管制应注意事项如下:

1. 模块的真空包装之储存期限:

1-1. 保存期限: 12个月, 储存环境条件: 温度在: <40℃, 相对湿度: <90%R.H.

1-2. 模块包装被拆后, SMT 组装之时限:

1-3. 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.

① 工厂环境温度湿度管制: $\leq 30^\circ C$, $\leq 60\%RH$.

② 拆封后, 车间的保存寿命为 168 小时.

1-4. 如在拆封后的 168 个小时内未使用完, 需要烘烤, 烘烤条件如下:

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.

1-5. 模块真空包装每盘 2000pcs, 真空包装图片

2. 模块卷盘包装事项如下:

2-1. 保存期限: 12个月, 储存环境条件: 温度在: <40℃, 相对湿度: <90%R.H.

2-2. 模块拆开包装 168 小时后, 如要上线贴片需要重新烘烤, 以除去模块吸湿问题, 烘烤温度条件: 125℃, 8 小时.

2-3. 卷盘包装标准为每盘 2000pcs, 也可以 1000pcs.

3. 模块托盘包装事项如下:

3-1. 保存期限: 3个月, 储存环境条件: 温度在: <40℃, 相对湿度: <90%R.H.

3-2. 模块如在 48 小时内未使用, 在上线之前需要进行烘烤, 烘烤温度条件: 125℃, 8 小时.

3-3. 托盘包装每盘为 100pcs, 以 1000pcs 或 2000pcs 出货.