8188EU1（ETV）

Product Specification

WLAN 11b/g/n USB MODULE

Version: 2.2

Contents

1 General Description

BL-8188-EU1 product Accord with FCC CE and is 150 wireless USB adapter which has lower power consumption, high linearity output power, accords with IEEE802.11B/G/N, and supports IEEE802.11i safety protocol, along with IEEE 802.11e standard service quality. It connects with other wireless device which accorded with these standards together, supports the new data encryption on 64/128 bit WEP and safety mechanism on WPA-PSK/WPA2-PSK, WPA/WPA2.Its wireless transmitting rate rises 150M, equivalent to 10 times of common 11b product. The inner AI high gain ceramics antenna adapts different kinds of work environment. It's easy and convenient to link to wireless network for the users using desktop, laptop and other device that needs connect to wireless network.

2 The range of applying

MID, networking camera, STB GPS, E-book, Hard disk player, Network Radios, PSP, etc, the device which need be supported by wireless networking.

3 Features

Feature	**Implementation**
Power supply	VCC_3.3V +-0.2V
Clock source	40MHz
Temperature range	Work temperature:-20ºC---70ºC Storage temperature -55℃ ~ +125℃
Package	SMT 6 pins
WLAN features	
General features	■CMOS MAC, Baseband PHY, and RF in a single chip for IEEE 802.11b/g/n compatible WLAN ■Complete 802.11n solution for 2.4GHz band ■72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth ■150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth ■Compatible with 802.11n specification

	■Backward compatible with 802.11b/g devices while operating in 802.11n mode
Host Interface	Complies with USB Specification Revision 2.0
Standards Supported	■IEEE 802.11b/g/n compatible WLAN ■IEEE 802.11e QoS Enhancement (WMM) ■IEEE 802.11h TPC, Spectrum Measurement ■802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services
WLAN MAC Features	■Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU) ■Low latency immediate High-Throughput Block Acknowledgement (HT-BA) ■PHY-level spoofing to enhance legacy compatibility ■Power saving mechanism ■Channel management and co-existence ■Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth
WLAN PHY Features	■IEEE 802.11n OFDM ■One Transmit and one Receive path (1T1R) ■20MHz and 40MHz bandwidth transmission ■Short Guard Interval (400ns) ■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 150Mbps in 802.11n ■Switch diversity for DSSS/CCK ■Hardware antenna diversity ■Selectable receiver 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

4 DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VD33A, VD33D	3.3V I/O Supply Voltage	3.0	3.3	3.6	v
VD12A, VD12D	1.2V Core Supply Voltage	1.10	1.2	1.32	v
VD15A, VD15D	1.5V Supply Voltage	1.425	1.5	1.575	v
IDD33	3.3V Rating Current	-	-	600	mA

5 The main performance of product

Item	Description
The supported protocol and standard	IEEE 802.11n, IEEE 802.11g,EE 802.11b
Interface type	USB2.0
The range of frequency	2.4-2.484GHZ
The amount of working Channel	1-11（America, Canada）;1-13（China, Europe）;1-14（Japan）
Data Modulation	OFDM/DBPSK/DQPSK/CCK
Working Mode	Infrastructure, Ad-Hoc
The transmitting rate	135/54/48/36/24/18/12/9/6 /1M（self-adapting）
Spread spectrum	DSSS
Sensitivity @PER	54/135M:-74dBm@10%PER, 11M:-85dBm@8%PER 6M: -88dBm@10%PER , 1M: -90dBm@8%PER
RF Power	135M:15dBM, 54M:15dBM, 11M:19dBM
Throughput	80Mbps(external 2dbi antenna ,damping 50dbm in Shielding box)
The connect type of Antenna	Connect to the external antenna through the half hole
The transmit distance	Indoor 100M, Outdoor 300M, according the local environment
Working Power consumption	149MA

MENS(L*W*H)	12.3MM*13MM*0.6MM
The chipset model	RTL8188ETV

6 DC/RF characteristics

Terms	**Contents**			
Specification : IEEE802.11b				
Mode	DSSS / CCK			
Frequency	2412 – 2484MHz			
Data rate	1, 2, 5.5, 11Mbps			
DC Characteristics	min	Typ.	max.	unit
TX mode	300	310	320	mA
Rx mode	148	150	155	mA
Standby mode	140	145	146	uA
Specification : IEEE802.11g				
Mode	OFDM			
Frequency	2412 - 2484MHz			
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps			
DC Characteristics	min	Typ.	max.	unit
TX mode	280	285	288	mA
Rx mode	140	145	150	mA
Standby mode	143	145	146	uA
Specification : IEEE802.11n				
Mode	OFDM			
Frequency	2412 - 2484MHz			
Data rate	6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps			
DC Characteristics	min	Typ.	max.	unit
TX mode	280	286	230	mA
Rx mode	148	150	150	mA
Standby mode	144	145	146	uA

7 The block diagram of product principle

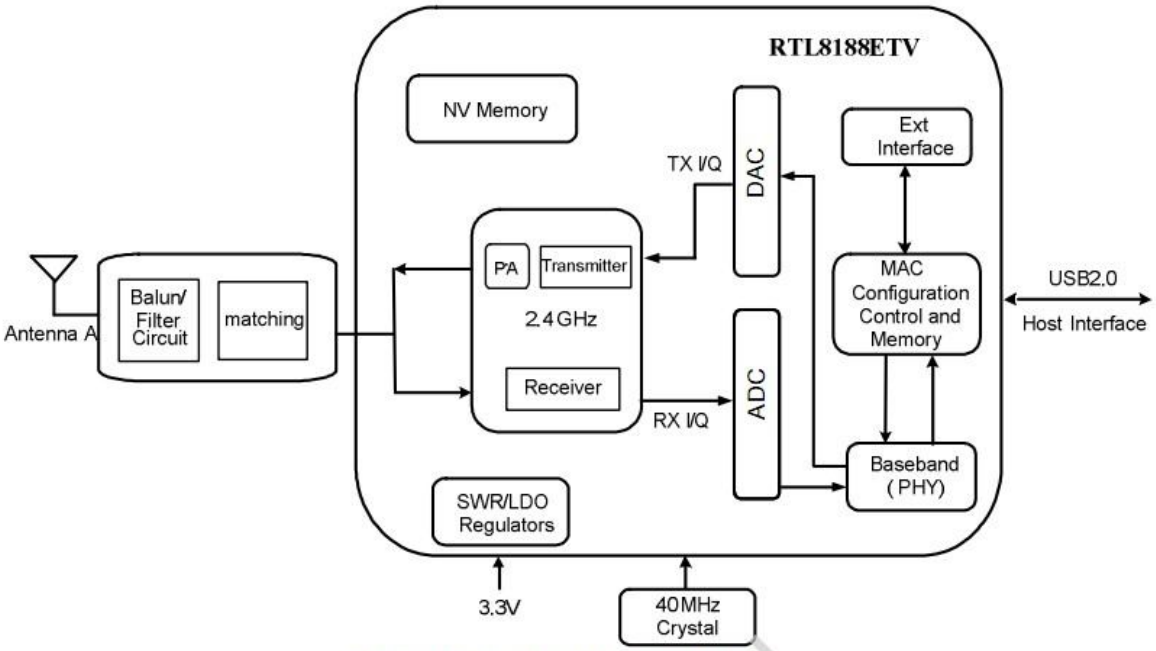
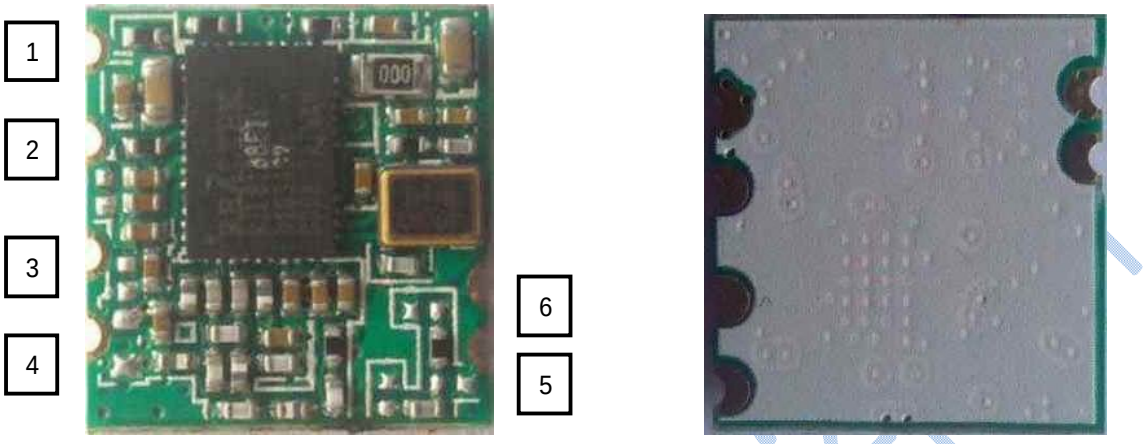


Figure 1. Single-Band 11n (1x1) Solution

8 The supported platform

Operating System	CPU Framework	Driver
WIN2000/XP/VISTA/WIN7	X86 Platform	Enable
LINUX2.4/2.6	ARM, MIPSII	Enable
WINCE5.0/6.0	ARM ,MIPSII	Enable

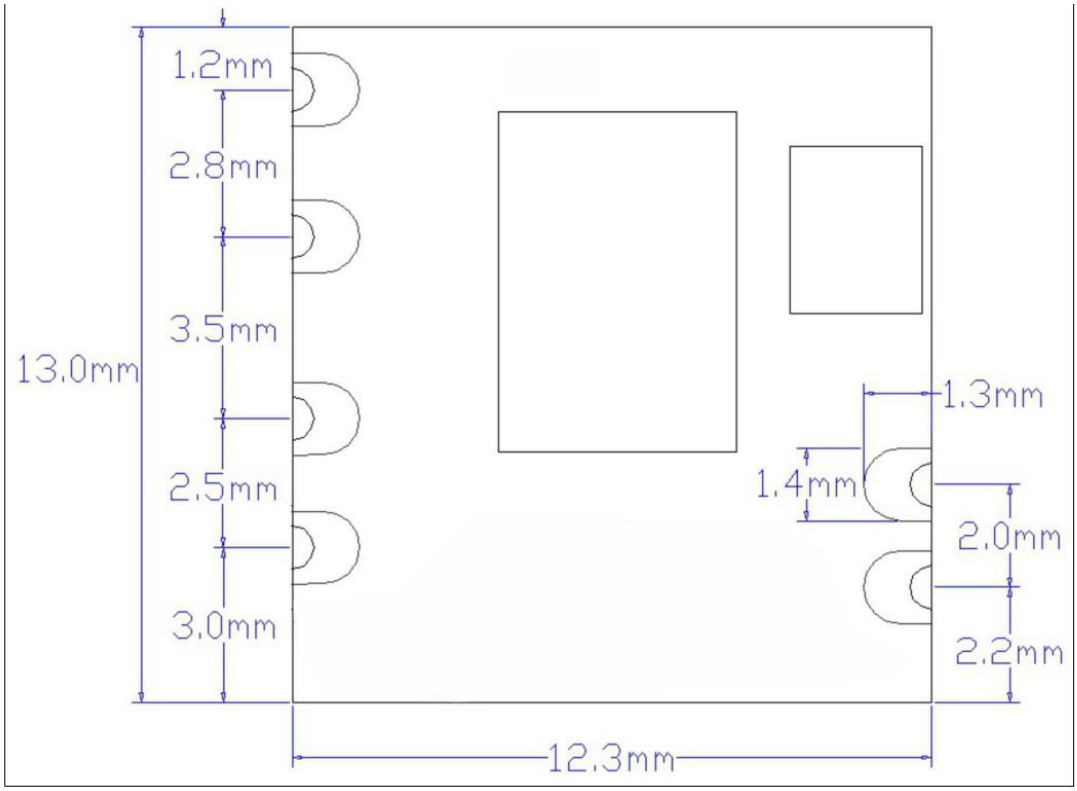
9 The definition of product Pin



Top and bottom view of BL-8188-EU1

Pin No：	TYPE	Description
1	P	DC :3.3V
2	I/O	UDM-
3	I/O	UDP+
4	P	GND
5	P	GND
6	O	ANT

10 The Structure and Size of product



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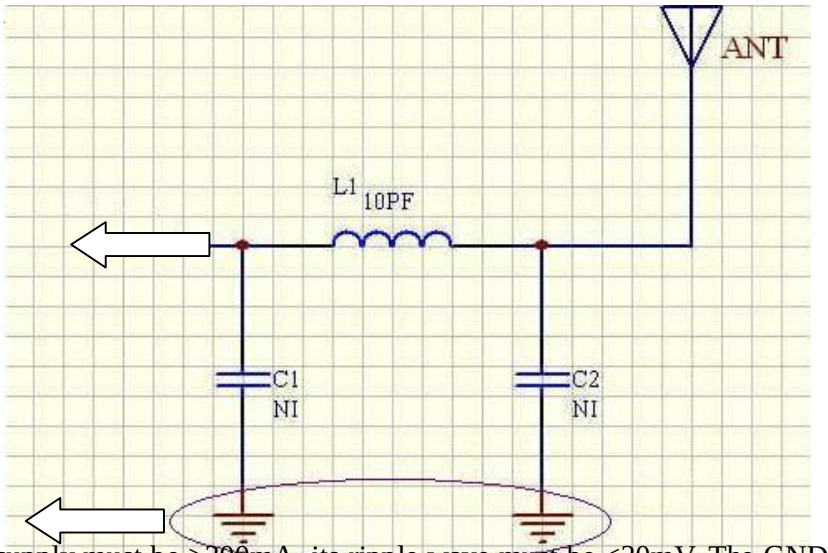
11 The 6th Pin connect to antenna, please refer to design demand

Connect to the 6th pin of Module



Connect to the 5th pin of Module

a) The current of 3.3V power supply must be >300mA, its ripple wave must be <30mV. The GND pins of module and external antenna need to be an incorporated part. The ground plane should be larger, module and antenna should keep far away from interference source.

b) The sixth pin is 2.4G high frequency output, coplanar impedance of layout line between this pin to antenna interface should be 50Ω, we suggest use arc line or straight line, and beside the line there will be ground plane that its length as shout as possible, the longest length is no more than 50mm.

c) L1, C1, C2 constitute a π-type network that we preset, please make it close to antenna interface, this π-type network is used to match the antenna parameters and control the radiation. It should be adjusted according to the real condition when being used. Normally you can only mount L1 that its parameters are: 10pF, NP0 material. No need C1 and C2

12 Tpical Solder Reflow Profile