Radicom Research, Inc.

Preliminary Designer's Guide for the

RW8300M Series (USB)
Universal USB/WiFi/LAN/BLE Adapter Module with Pin Header

RW8300NE Series (USB)
Universal USB/WiFi/LAN/BLE Adapter Module with mini USB and RJ45 jack

RW8300E Series (USB)
Universal USB/WiFi/LAN/BLE Adapter Standalone

Apr 20, 2017

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Introduction to the RW8300 (USB) Universal Adapter Products

Radicom Research's RW8300 (USB) series is all new Wi-Fi/LAN with USB Host or USB Device. It is the perfect networking center solution for embedded system to integrate Wi-Fi, Ethernet, BLE, or USB into a single platform. The AIO (All-In-One) networking capability provides many functions, such as single port router, Wi-Fi adapter, Ethernet adapter, Hotspot, Wi-Fi Repeater or WLAN bridge, BLE single mode, BLE dual mode, and with USB host capability for various applications.

It can turn any Ethernet LAN port to a WiFi hotspot or connect PC or Laptop into a WiFi Wireless Access Point. Any WiFi Device such as iPhone, iPod, PDA, within range can connect to Internet by sharing your RW8300 (USB) Access Point.

The RW8300 (USB) series is a full embedded system. It does not require CPU host when using as single port router or hotspot mode. This versatile RW8300 (USB) series of products offers easy integration for additional BLE single mode or dual mode module to meet the specific system requirements.

For RW8300 (USB-Device), please see RW8300 (USB-Device) Designer's Guide for details.
For RW8300 (Serial), please see RW8300 (Serial) Designer's Guide for details.

__Please note that RW8300 firmware for USB Host and USB Device are not compatible.__

Features

Wi-Fi
- WiFi AP/Client
- Router capability
- IEEE 802.11b/g/n compatible WLAN adapter
- WiFi USB adapter
- USB Ethernet adapter
- USB 1.1/2.0 and OTG (optional)
- 20MHz and 40MHz bandwidth transmission
- Operates in 2.4GHz Frequency Range
- Support WPS mode
- Backward compatible with 802.11b/g Devices while operating at 802.11n data rates
- 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
- Built-in TCP/IP stack
- Channel management and co-existence
- Support Wake-On-WLAN via Magic Packet and Wake-up frame
- Transmit Opportunity (TXOP) Short Inter-Frame Spaces (SIFS) bursting for higher multimedia bandwidth
- Short Guard Interval (400ns)
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble

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- Selectable digital transmit and receive FIR filters
- Support DHCP for LAN
- One Ethernet port
- Extended temperature: -40℃ to +85℃
- Support IEEE 802.11b/g/n compatible WLAN
- Support IEEE 802.11e QoS Enhancement (WMM)
- Support IEEE 802.11h TPC, Spectrum Measurement
- Support IEEE802.3 & IEEE802.3u
- Support IEEE802.3x full duplex flow control
- Support IEEE802.3az Energy efficiency
- Support IEEE 802.11i (WPA, WPA2, WEP). Security ~ Open, shared key, and pair-wise key authentication services
- Support TLS mode
- Firmware upgradable
- FCC/IC/CE (pending)
- RoHS compliant

Bluetooth Low Energy (BLE-single mode)
- Bluetooth 4.0 single mode Compliant
- Supports Host and Client modes
- Integrated Bluetooth low energy stack including ATT, GATT, SMP, L2CAP, GAP
- TX Power: 4.0 dBm Max   ~   RX Sensitivity: -92.5dBm Min
- Range: Up to 20 meters (line of sight)
- 12 digital PIOs, 3 analogue AIOs
- 10-bit ADC
- Serial Interface (UART / SPI / I^{2}C)
- SPI for external flash
- 3 PWM modules
- Wake-up interrupt
- Watch Dog Timer
- On-board microprocessor, RAM and ROM
- On-board antenna
- Passthrough Data Mode
- AT Commands
- Extended temperature operating
- FCC/IC/CE
- RoHS compliant

Bluetooth Low Energy (BLE-dual mode)
- Fully qualified Bluetooth® v4.0 system
- Full-speed Bluetooth operation with full Piconet and Scatternet support
- Class 1 Bluetooth power level supported
- Dual-mode Bluetooth low energy radio
- 2Mbps and 3Mbps EDR support
- High-sensitivity Bluetooth receiver
- Wideband speech
- A-law, μ-law and linear voice data from Host
- A-law, μ-law, and CVSD voice over the air
- Voice interpolation for lost packets
- Rate mismatch correction

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- PCM/I2S digital audio interface
- Fast AGC for enhanced dynamic range
- SBC encoding
- Fully integrated synthesizer requiring no external VCO varactor diode, resonator or loop filter
- 3 Bluetooth low energy connections at the same time as basic rate A2DP
- Low-power selectable 1.2 to 3.6V I/O (Optional)
- High-speed UART port (up to 4Mbps)
- Supports IEEE 802.11® coexistence
- Digital demodulator for improved sensitivity and co-channel rejection
- Real time digitized RSSI available on HCI interface
- Extended Temperature Operation
- FCC/IC/CE
- RoHS compliant

RW8300 (USB-Host) Universal Adapter Applications Summary
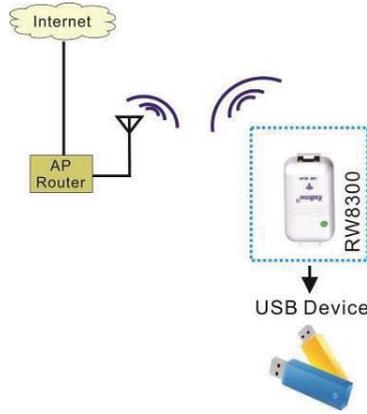
RW8300 (USB-Host) supported following applications:

LAN to USB Device

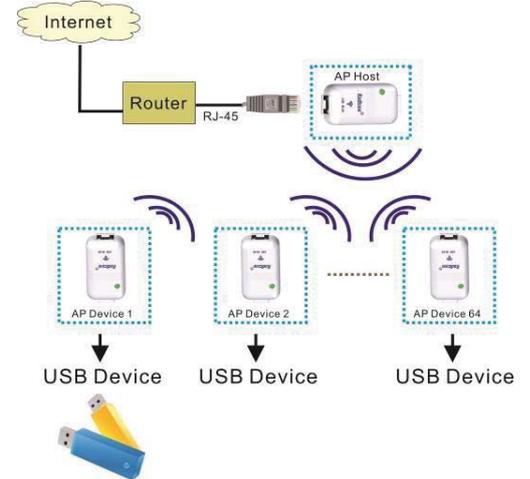LAN to USB device application.

Wi-Fi to USB Device

Wi-Fi to USB device application.

Extend Wired LAN through WiFi to reach USB Device

From RW8300 USB interface, USB devices can simply connect and access to other LAN through WiFi communication.

## Extend Wired LAN through WiFi from One LAN to the Other

From RW8300 LAN interface, computers can simply connect and access to other LAN through WiFi communication.
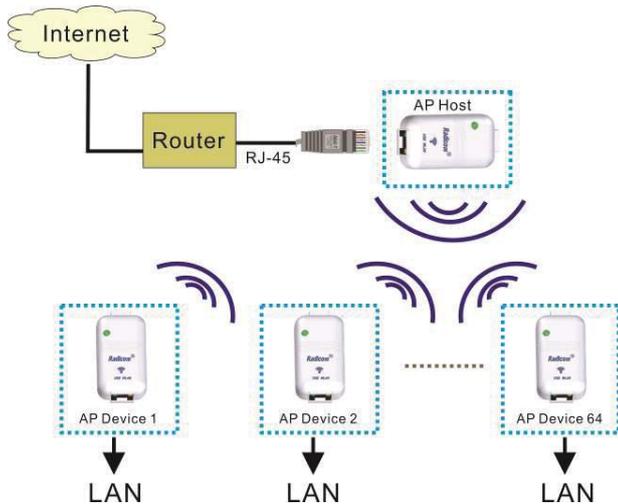
WiFi + LAN + Bluetooth

The RW8300 supported WiFi, LAN, and Bluetooth applications. It can be an IOT gateway with Bluetooth extended functions, such as Bluetooth remote control, sensor, BLE wrist band, keyfob, or BLE lights.

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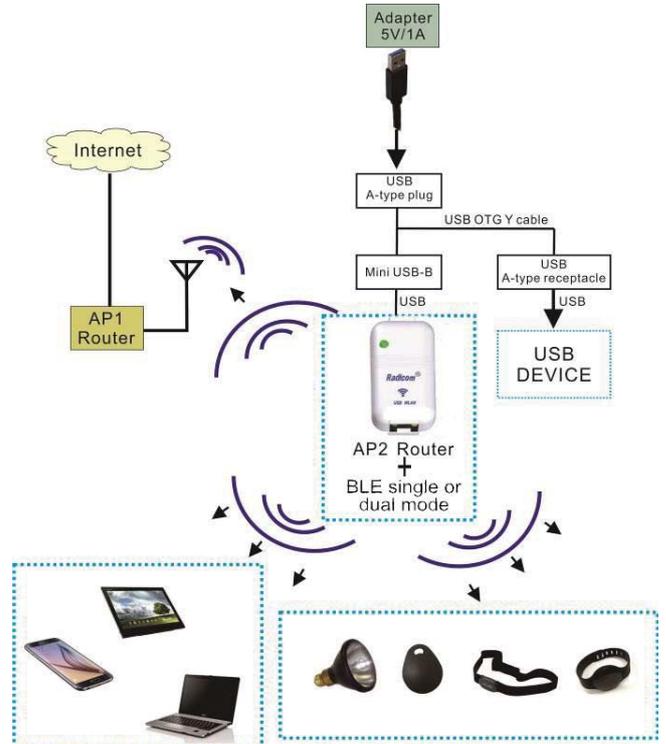
Model Naming System

Product Series: **RW8300 <u>x</u> – (<u>x</u>) –   <u>x</u> – (<u>x</u>) – <u>x</u>**

M: DIP module with pin headers
NE: Standalone module without enclosure
<u>E: Standalone product with enclosure</u>

Optional
B1: BLE single mode
<u>B2: BLE dual mode</u>

a: Embedded on-board antennas
<u>c: U.FL connectors for external antennas</u>

Optional
NL: no LAN
<u>NW: no WLAN</u>

D or (USB Device)
H or (USB Host)
HH or (2USB Host Ports)
S or (Serial)
<u>SH or (Serial+ USB Host)</u>

EVK Series: **RW8300-MB <u>x</u> – <u>x</u> – (<u>x</u>) – (<u>x</u>) – (<u>x</u>)**

1: MB1=RJ45, RS232, DB-9
2: MB2=MB1 + SPI, I2C, RS485, USBx2, BLE
3: MB3=MB2 + PoE, DC jack
<u>5: MB5=MB3 + Modem (industrial)</u>

S: Serial type
D: USB Device type
<u>H: USB Host type</u>

Optional for MB5
M: Modem

Optional for MB5
E: Enclosure

Optional for MB3/MB5
P: PoE (Power over Ethernet)

Available models:
    RW8300-MB1-S: Serial type
    RW8300-MB1-D: USB Device type
    RW8300-MB2-H: USB Host type
    RW8300-MB3-H: USB Host type
    RW8300-MB3-H-P: USB Host type + PoE
    RW8300-MB5-H: USB Host type
    RW8300-MB5-H-M: USB Host type + Modem
    RW8300-MB5-H-M-E: USB Host type + Modem + Enclosure
    RW8300-MB5-H-E: USB Host type + Enclosure
    RW8300-MB5-H-P: USB Host type +PoE
    RW8300-MB5-H-M-P: USB Host type + Modem +PoE
    RW8300-MB5-H-M-E-P: USB Host type + Modem + PoE + Enclosure
    RW8300-MB5-H-E-P: USB Host type + PoE + Enclosure

Model & Ordering Information

Model Number	Description

RW8300M Series	Universal Adapter (USB/WiFi/LAN/BLE) DIP Modules provide through hole (DIP) pins for the USB and Ethernet pins that allow the Jacks to be placed in preferred locations. Default 4M s-Flash, 8M as optional. This version of RW8300M also supported to add BLE features. *Note: firmware for USB Host and Device are not compatible.*
	
	Models:
	    RW8300M-a:module with PIFA antenna
	    RW8300M-a-H: USB host DIP module with on-board antennas
	    RW8300M-a-NL:module with PIFA antenna, no LAN(w/o RJ45 jack and 10/100 base transformer)
	    RW8300M-c: module with IPEX connector
	    RW8300M-c:-H USB host DIP module with U.FL antenna connectors
	    RW8300M-NW:module, no WLAN(w/o PIFA and IPEX)
	    RW8300M-B1-a-H: USB host + BLE single mode DIP module with on-board antennas
	    RW8300M-B1-c-H: USB host + BLE single mode DIP module with U.FL antenna connectors
	    RW8300M-B2-a-H: USB host + BLE dual mode DIP module with on-board antennas
	    RW8300M-B2-c-H: USB host + BLE dual mode DIP module with U.FL antenna connectors
	    RW8300M-B2-a-HH: 2 USB Host ports + BLE dual mode DIP module with on-board antennas
	    RW8300M-B2-c-HH: 2 USB Host ports + BLE dual mode DIP module with U.FL antenna connectors

RW8300NE Series	Universal Adapter (USB/WiFi/LAN/BLE) Module with on board mini USB and RJ45 jack that allow the flexibility of USB cable length. Default 4M s-Flash, 8M as optional. This version of RW8300NE also supported to add BLE single mode or dual mode.
	Note: firmware for USB Host and Device are not compatible.
	
	Models:
	    RW8300NE-a: Standalone module w/o enclosure, with PIFA antenna
	    RW8300NE-a-H: USB host module with on-board antennas
	    RW8300NE-a-NL: Standalone module w/o enclosure, with PIFA ,no LAN(w/o RJ45 jack and 10/100 base transformer)
	    RW8300NE-c: Standalone module w/o enclosure with IPEX connector
	    RW8300NE-c-H: USB host module with U.FL antenna connectors
	    RW8300NE-c-NL: Standalone module w/o enclosure, with IPEX ,no LAN(w/o RJ45 jack and 10/100 base transformer)
	    RW8300NE-NW: Standalone module w/o enclosure, w/o PIFA and IPEX
	    RW8300NE-B1-a-H: USB host + BLE single mode module with on-board antennas
	    RW8300NE-B1-c-H: USB host + BLE single mode module with U.FL antenna connectors
	    RW8300NE-B2-a-H: USB host + BLE dual mode module with on-board antennas
	    RW8300NE-B2-c-H: USB host + BLE dual mode module with U.FL antenna connectors

RW8300ESeries	Universal Adapter (USB/WiFi/LAN/BLE) Standalone in Plastic Enclosure with mini USB and RJ45 jack. RW8300E-a is embedded with on-board antennas and is optional to add BLE single mode or dual mode module in the plastic enclosure. Default loaded 4M s-Flash, 8M as optional. *__Note: firmware for USB Host and Device are not compatible.__*
	
	Models:
	    RW8300E-a-H: antenna embedded USB- Host standalone
	    RW8300E-B1-a: Standalone product with enclosure, with BT 4.0(RB1083), PIFA
	    RW8300E-B1-a-H: antenna embedded USB- Host standalone with BLE single mode
	    RW8300E-B2-a: Standalone product with enclosure, with BT 4.0(RB2083), PIFA
	    RW8300E-B2-a-H: antenna embedded USB-Host standalone with BLE dual mode
	    RW8300E: Standalone product with enclosure, with PIFA,LAN, WLAN
	    RW8300E-NW: produce with enclosure, no WLAN(w/o PIFA, IPEX)
	    RW8300E-NL: produce with enclosure, with PIFA, no LAN(w/o RJ45 jack and 10/100 base transformer)

RW8300-MBx-x-x	USB Host Development Board for RW8300M module plug-in and easy implementation. This development board series provides DB-9, USB, RJ-45, RS485, PoE interface connectors and support Wi-Fi, Bluetooth, Modem features for testing purpose.
	
	Models:
	    RW8300-MB2-H: Host type
	    RW8300-MB3-H: Host type
	    RW8300-MB5-H: Host type (industrial)
	    RW8300-MB5-H-M: Host type + Modem (industrial)
	    RW8300-MB5-H-M-E: Host type + Modem + Enclosure (industrial)
	    RW8300-MB5-H-E: Host type + Enclosure (industrial)

Power Adapter	Accessories- Power Adapter
USB Y cable	Accessories- Y cable (Optional for OTG feature)
USB to mini USB cable	Accessories- USB to mini USB cable
Antenna & Cable	Accessories- antenna and cable for models RW8300M-xx-xx-c & RW8300NE-xx-xx-c. ATN-2d-RP-SMA: Replacement antenna, 2.4GHz, 2dBi, RP-SMA plug, and Omni-directional. AC6i-RP-SMA: 6" U.FL. to RP-SMA jack antenna cable.
7' RJ-45 cable	Accessories- 7' RJ-45 cable

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RW8300 (USB) General Information

WiFi Ratings @ 25° C

Parameter	Min	Typical	Max	Units
Operating Temperature RW8300		25		C°
Relative Humidity (non-condensing)	5		95	%
USB Voltage Requirement				VDC
Current Consumption when WiFi_ON		370		mA
Current Consumption when WiFi_OFF and LAN connected		206		mA
Current Consumption when WiFi_OFF and LAN disconnected		173		mA
Storage and transportation condition, in range of °C and % R.H.				
Operating temperature, humidity and atmospheric pressure range				
Highest operation altitude				
IP Classification protection against harmful ingress of water and particulate matter. Ingress Protection Rating 21				
Expected service life				

BLE single mode Ratings @ 25° C

	Minimum	Typical	Maximum	Unit
Operation voltage	2.35	3.3	3.6	V
Output Power			4.0	dBm
Sensitivity	-92.5			dBm
Current Consumption *				
Dormant mode			600	nA
Deep Sleep mode			5	uA
Idle mode		1.91		mA
RX/TX active		2.24		mA

* The Current Consumption is code dependent. Bluetooth functions and characteristics will vary depending on the application firmware that is loaded into the RW8300xx-xx-B1-x module. The standard code is for BLE data applications and Deep Sleep or Dormant mode is not available. Using any I/O (output) will draw more current and change the overall current consumption.

BLE dual mode Ratings @ 25° C

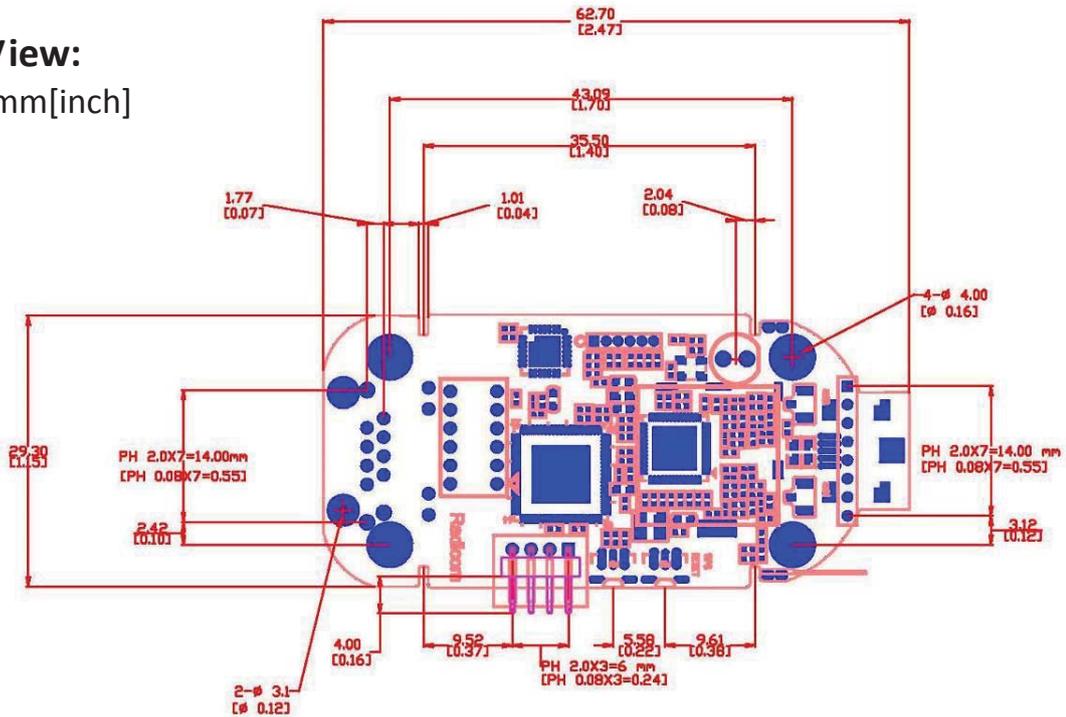|	Minimum	Typical	Maximum	Unit
Operation voltage	3.1	3.3	3.6	V
Output Power			4.0	dBm
Sensitivity	-84			dBm
Current Consumption *				
Host (Master) Idle mode	12.1	15.2	18.5	mA
Client (Slave) Idle mode	12.1	15.2	25.2	mA

RB8762   FCC ID:K7T-RB8762

Physical Description

RW8300M-H-a/c	2.5" x 1.2" x 0.5" (62.7 x 29.3 x 13.4mm)
Size & Weight:	7.3g
RW8300M-H-(B1/B2)-a/c	
Size & Weight:	
RW8300NE-H-a/c	2.5" x 1.2" x 0.8" (62.7 x 29.3 x 19.2mm)
Size & Weight:	9.9g
RW8300NE-H-(B1/B2)-a/c	
Size & Weight:	
RW8300E-H-a	2.7" x 1.4" x 1.0" (67.4 x 35.8 x 26.4mm)
Size & Weight:	35.6g
RW8300E-H-(B1/B2)-a	2.7" x 1.4" x 1.0" (67.4 x 35.8 x 26.4mm)
Size & Weight:	g

RW8300M-x DIP Module Mechanical Diagram & Pin Assignments
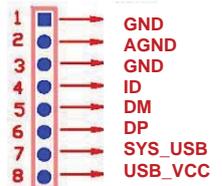
Top View:

Unit: mm[inch]

Side View:

Pin Assignments:

B–B (LAN port)

7 GND	8 GND
5 NO SIGNAL	6 RX0+
3 RX0–	4 NO SIGNAL
1 TX0–	2 TX0+

LED_PORT4
LED_WLAN
VDD33

C–C (Interface port)

3 WPS	2 RESET
4 AGND	1 SYS_LED

SEE B–B (LAN port)
SEE D–D (Debug port)
SEE A–A (USB port)
SEE C–C (Interface port)

D–D (Debug port)

1	CTS
2	RTS
3	RXD
4	GND
5	TXD
6	VDD

A–A (USB port)

1	GND
2	AGND
3	GND
4	ID
5	DM
6	DP
7	SYS_USB
8	USB_VCC

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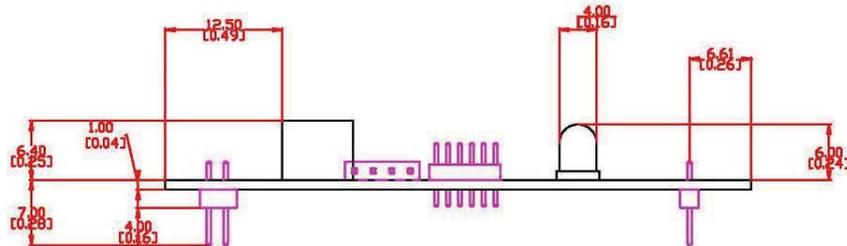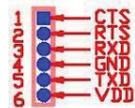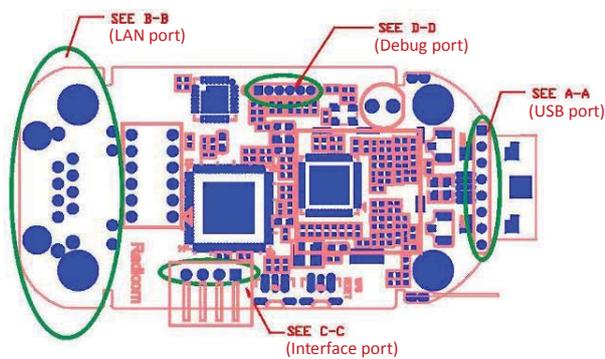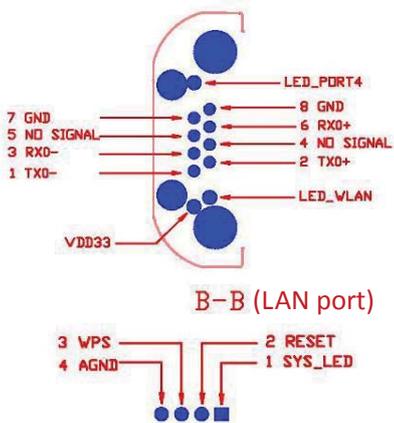
RW8300M-x-B1/B2 DIP Module Mechanical Diagram &
Pin Assignments

RW8300NE-x Module Mechanical Diagram

Top View:
Unit: mm[inch]
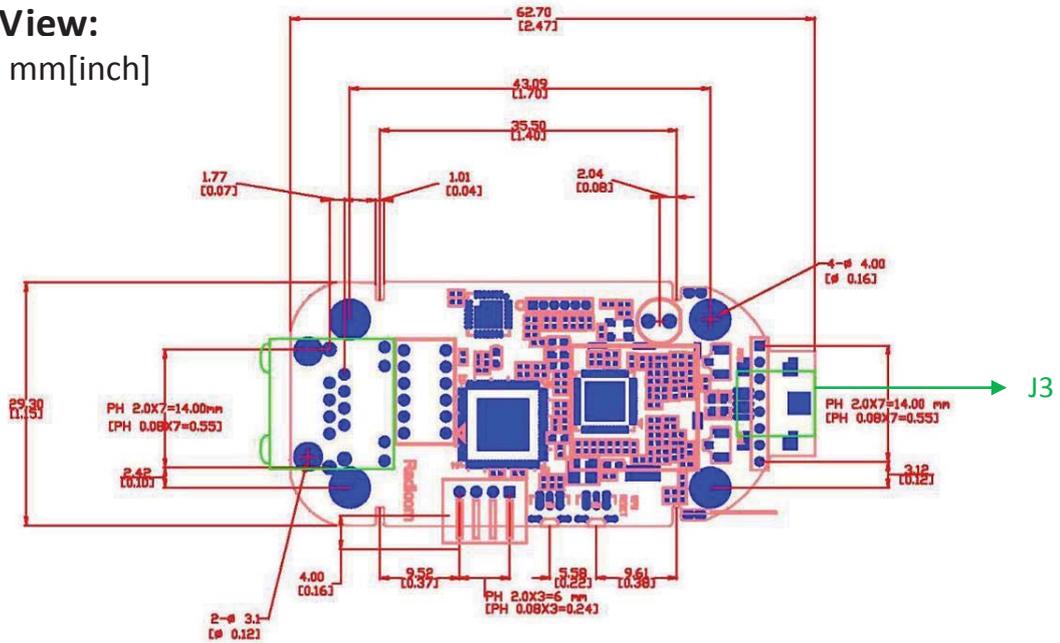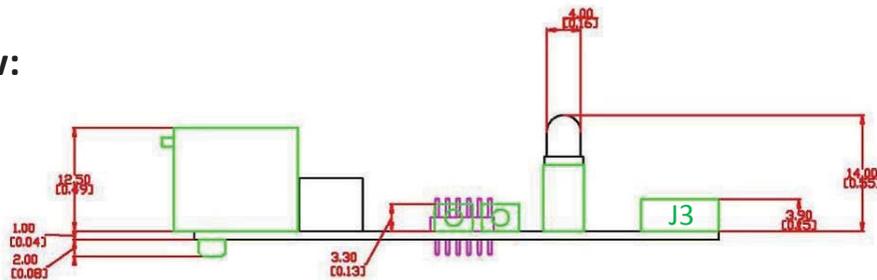
Side View:

Pin Assignments:

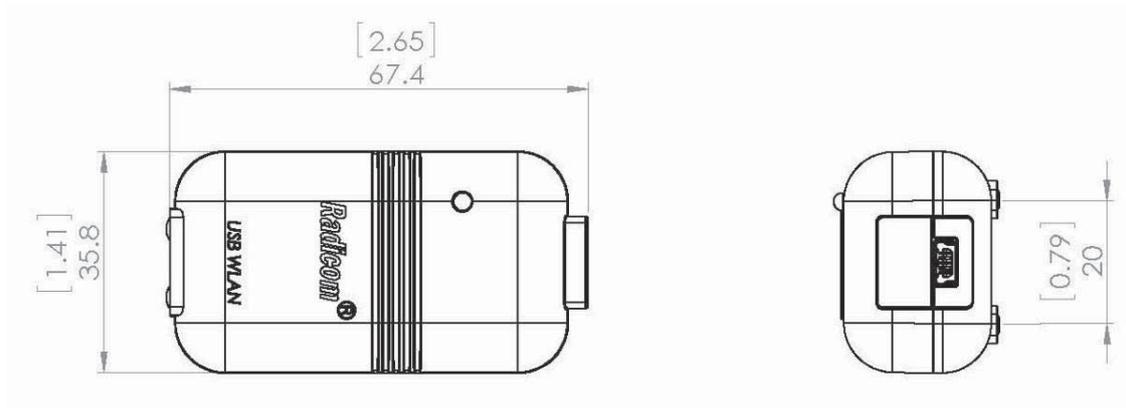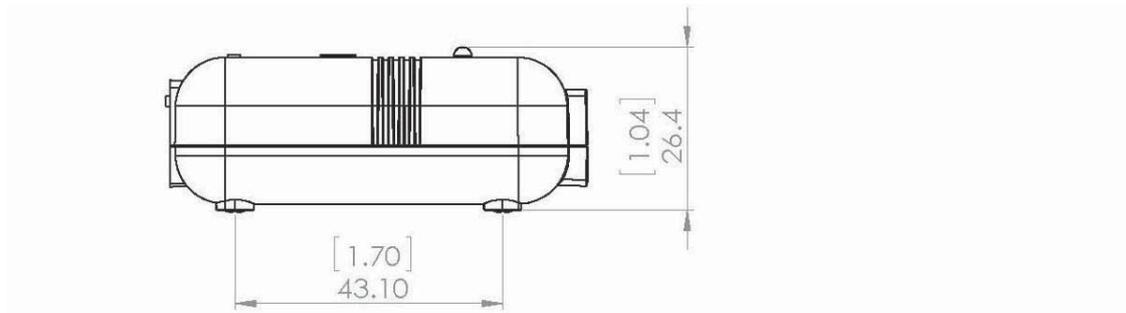| J3 (USB Connector)	USB_MODE
PIN 1	USB_VCC
PIN 2	DM
PIN 3	DP
PIN 4	AGND
PIN 5	AGND

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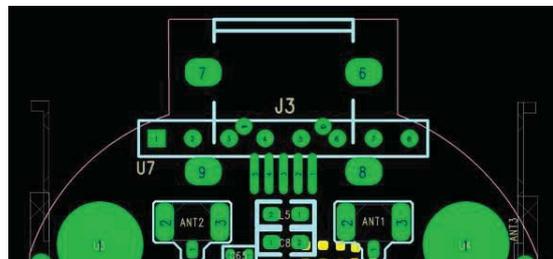
RW8300NE-x-B1/B2 Module Mechanical Diagram

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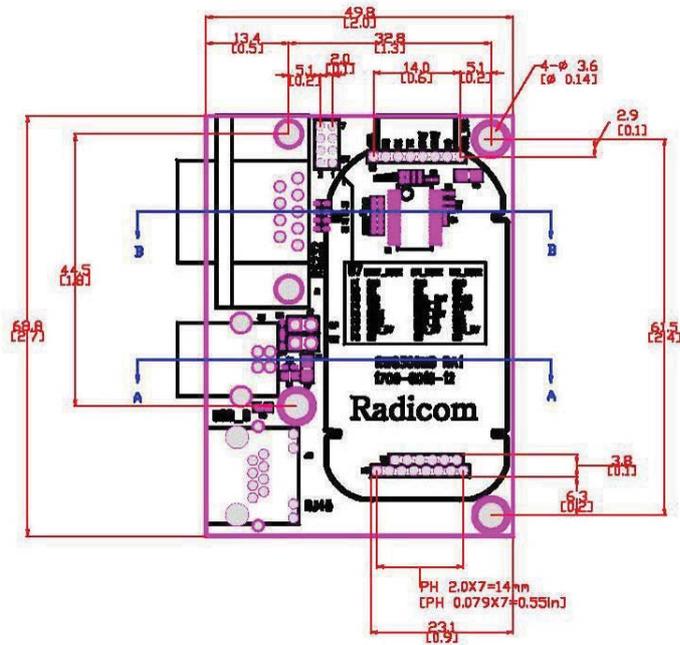# *RW8300E-x Standalone Product Mechanical Diagram*
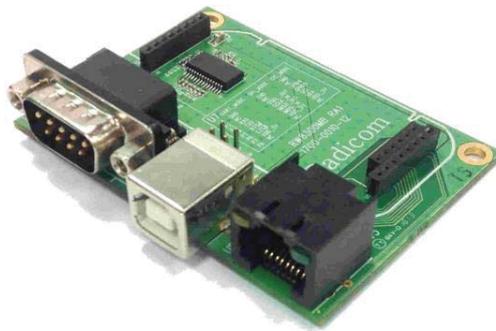
Top View:

Unit: mm[inch]

Side View:

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RW8300-MB1 Mechanical Diagram

Top View:

Unit: mm[inch]
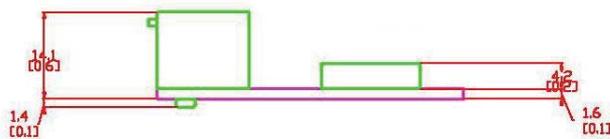
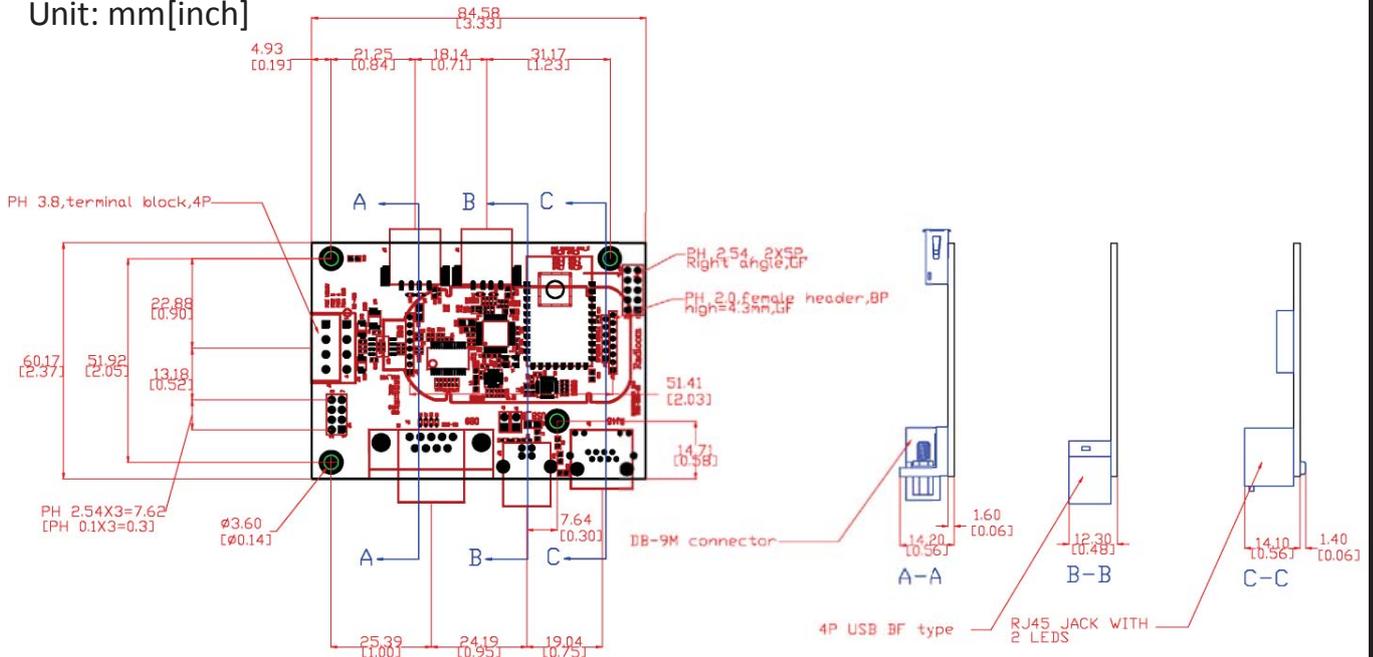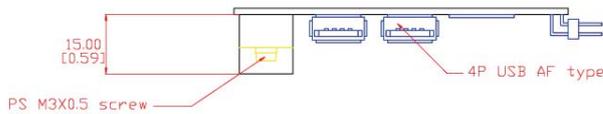## Side View:

RW8300-MB2 Mechanical Diagram and Pin Assignments
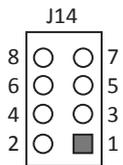
Top View:

Unit: mm[inch]
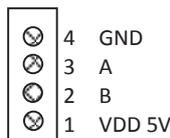

Side View:

Pin Assignments:
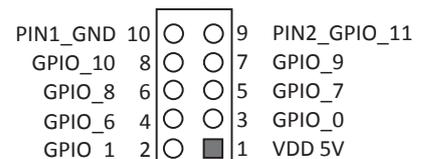

J14

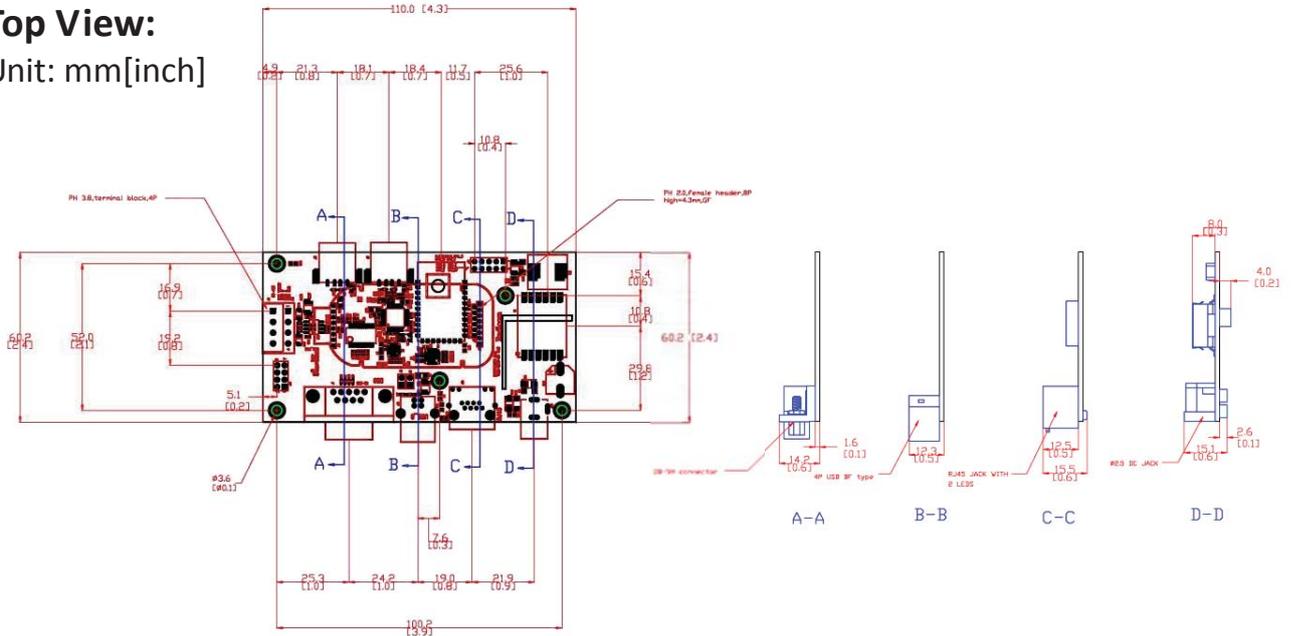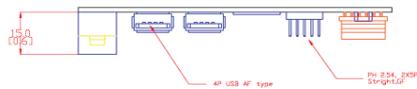| J14	I2C Mode	SPI Mode	UART Mode
P1	GND	GND	GND
P2	NC	NC	NC
P3	GPIO_6	SSEL_OUT	RXD
P4	GPIO_5	SCLK_IN	TXD
P5	SCL	MISO_OUT	RTS
P6	SDA	MOSI_IN	CTS
P7	VDD_5V	VDD_5V	VDD_5V
P8	NC	NC	NC

J13 RS-485 connector

4	GND
3	A
2	B
1	VDD 5V

J19 Reserved GPIOs

PIN1_GND	10		9	PIN2_GPIO_11
GPIO_10	8		7	GPIO_9
GPIO_8	6		5	GPIO_7
GPIO_6	4		3	GPIO_0
GPIO_1	2		1	VDD 5V

RW8300-MB3 Mechanical Diagram and Pin Assignments
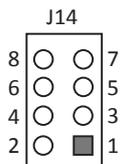
Top View:

Unit: mm[inch]
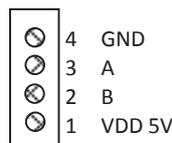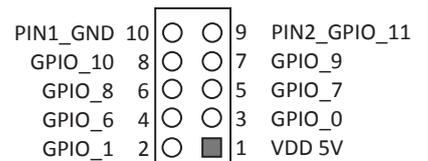

Side View:

Pin Assignments:

J14

J14	I2C Mode	SPI Mode	UART Mode
P1	GND	GND	GND
P2	NC	NC	NC
P3	GPIO_6	SSEL_OUT	RXD
P4	GPIO_5	SCLK_IN	TXD
P5	SCL	MISO_OUT	RTS
P6	SDA	MOSI_IN	CTS
P7	VDD_5V	VDD_5V	VDD_5V
P8	NC	NC	NC

J13 RS-485 connector

4	GND
3	A
2	B
1	VDD 5V

J19 Reserved GPIOs

|				
PIN1_GND	10		9	PIN2_GPIO_11
GPIO_10	8		7	GPIO_9
GPIO_8	6		5	GPIO_7
GPIO_6	4		3	GPIO_0
GPIO_1	2		1	VDD 5V

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RW8300-MB5 Mechanical Diagram and Pin Assignments

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Ethernet Port Connector Pin Definitions

Standard RJ45 10/100 BASE-T Port

An RJ-45 connector is used for Ethernet twisted pair links. The RJ-45 connector has 8-pins, and may also be referred to as an **8-pin Modular Connector**. A male RJ-45 plug is mounted on each end of the twisted pair cable. A female RJ-45 Jack or Receptacle is integrated into the Ethernet hub or NIC.
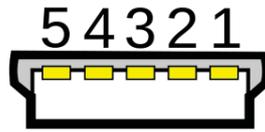
Ethernet Connector (J1)
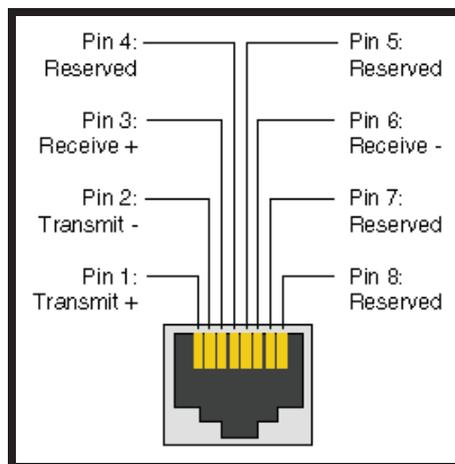
Ethernet Connector LED Operation

(TBD)

RW8300 (USB) LED Operation

When the RW8300 (USB) is power ON, the LED indicator will be blinking in about 10 seconds, it indicates the RW8300 (USB) has finished booting up.

Mini USB Type-B Connector Pinouts

5 4 3 2 1

Mini-B

| Pin	Name	Description	Color
1	VCC	+5V	Red
2	D-	Data -	White
3	D+	Data +	Green
4	ID	OTG Identification: • Host: connected to ground • Slave: not connected	Not connected
5	GND	Ground	Black

RJ45 Ethernet Cable Description

The following table shows the RJ-45 connector pin assignments for Ethernet Cable. PHY data rate is 100Mbps.

CAT.5e Ethernet Cable

RJ-45 Plug
(8 pin)
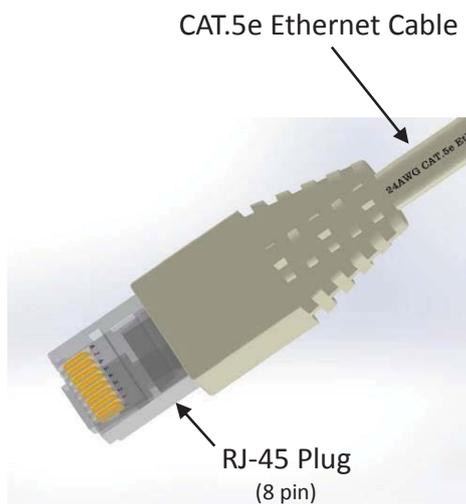
Contact	10/100 Base-T Signal
1	TD+ (Transmit Data)
2	TD- (Transmit Data)
3	RD+ (Receive Data)
4	Not used
5	Not used
6	RD- (Receive Data)
7	Not Used
8	Not Used

RW8300-MB1 Development Board Descriptions

The RW8300-MB1 Development Board is designed for RW8300M module easy testing and function verification.
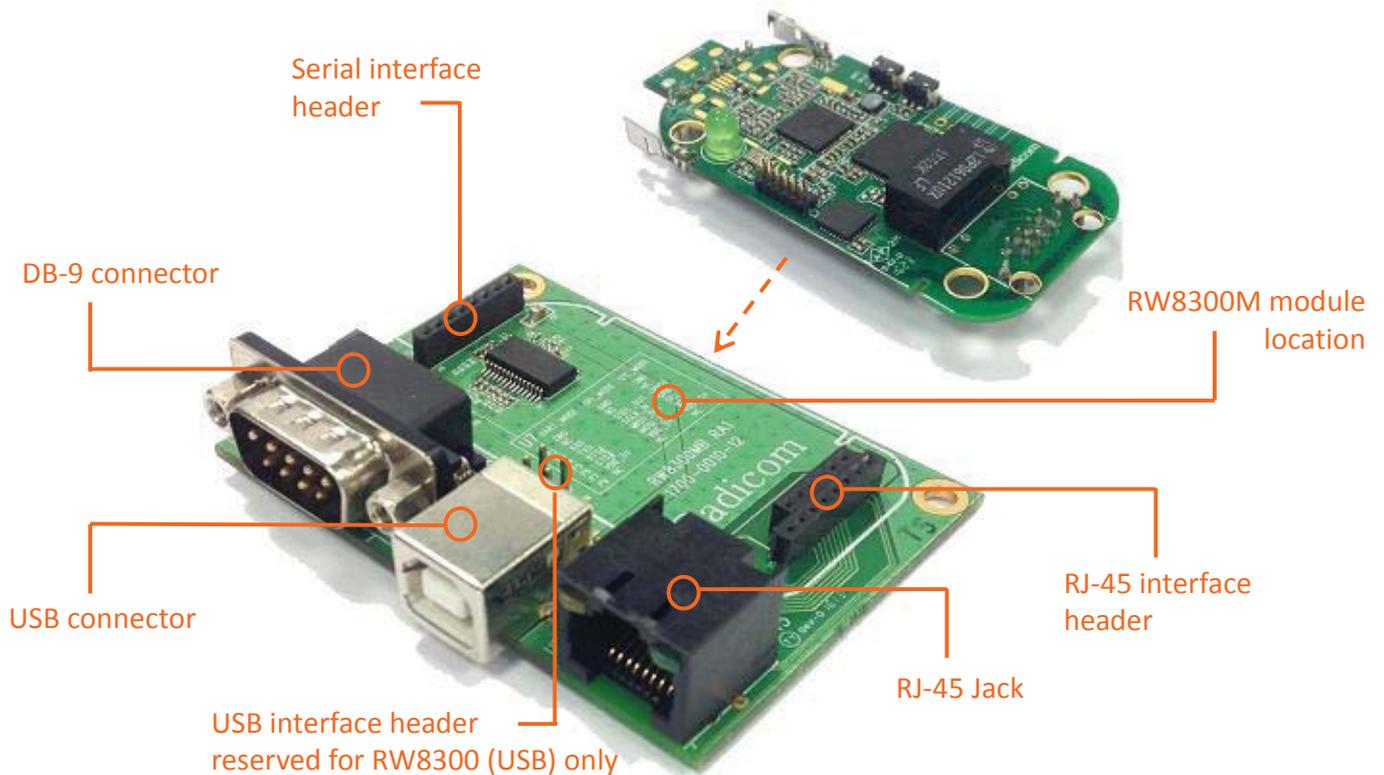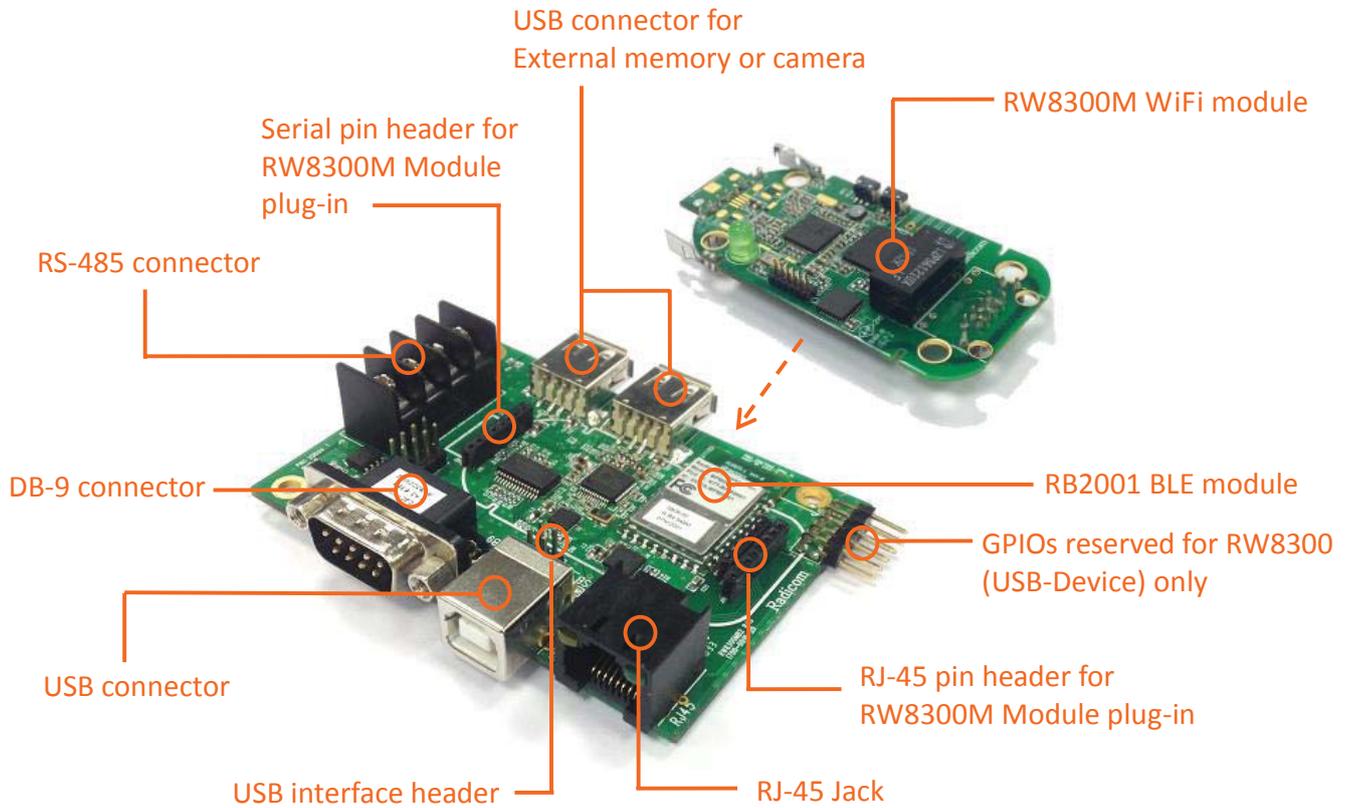

Operations:

1. Plug in RW8300M-x module onto the RW8300-MB1.

2. Connect RJ45 Ethernet cable to RW8300-MB1 RJ45 JACK.

3. Connect a serial cable between RW8300-MB1 Serial connector and PC serial port.

4. Connect USB cable to RW8300-MB1 USB connector for power supply.

5. Wait for LEDs on and it is ready for evaluation.

`

RW8300-MB2 Development Board Descriptions

The RW8300-MB2 Development Board is designed for RW8300M-H-x or RW8300M-HH-x module easy testing and function verification.
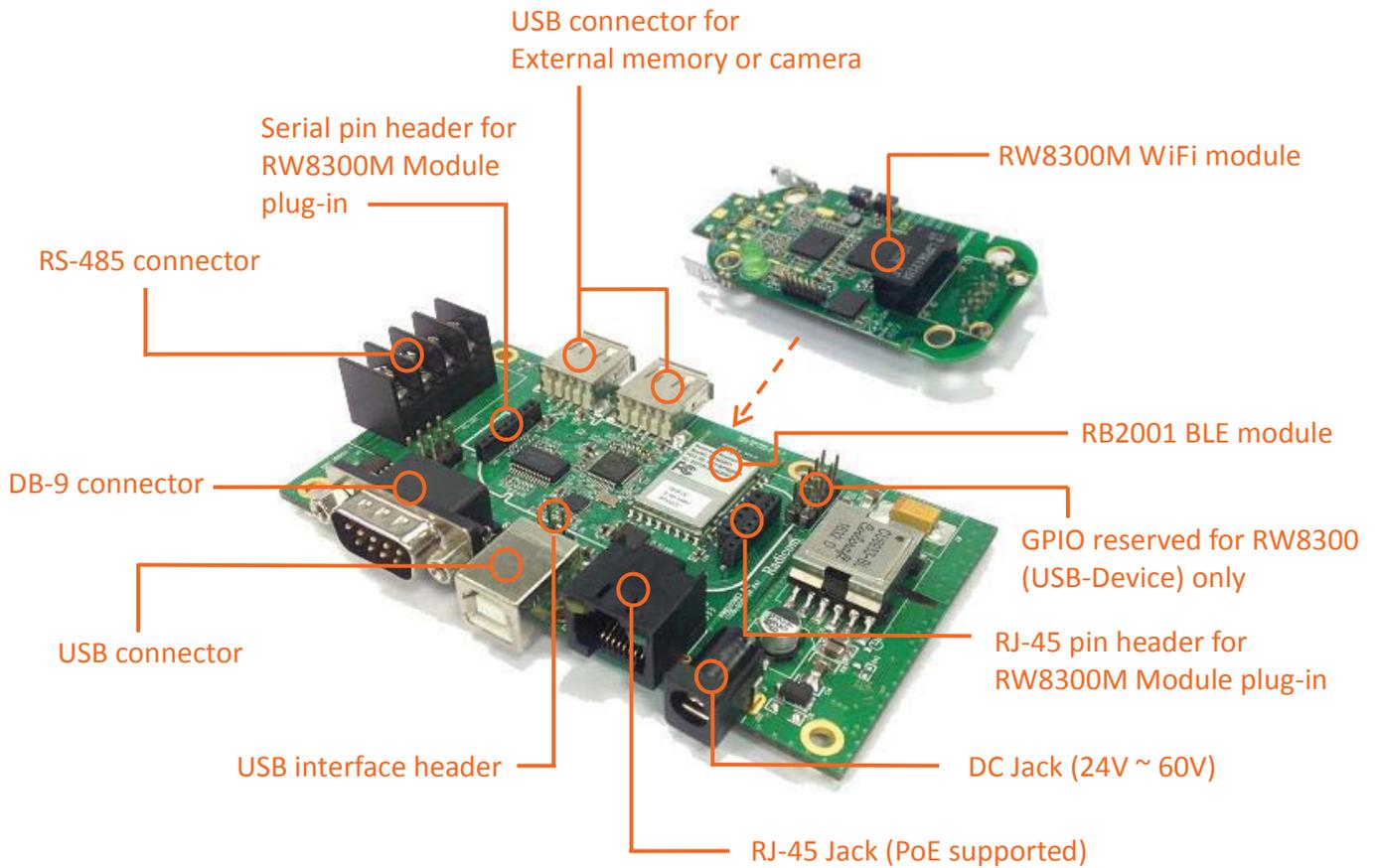

USB connector for
External memory or camera

RW8300M WiFi module

Serial pin header for
RW8300M Module
plug-in

RS-485 connector

DB-9 connector

RB2001 BLE module

GPIOs reserved for RW8300
(USB-Device) only

USB connector

RJ-45 pin header for
RW8300M Module plug-in

USB interface header

RJ-45 Jack

Operations:

1. Plug in RW8300M module onto the RW8300-MB2.

2.

`

RW8300-MB3 Development Board Descriptions

The RW8300-MB3 Development Board is designed for RW8300M-H-x or RW8300M-HH-x module easy testing and function verification.

USB connector for
External memory or camera

Serial pin header for
RW8300M Module
plug-in

RW8300M WiFi module

RS-485 connector

DB-9 connector

RB2001 BLE module

GPIO reserved for RW8300
(USB-Device) only

USB connector

RJ-45 pin header for
RW8300M Module plug-in

USB interface header

DC Jack (24V ~ 60V)

RJ-45 Jack (PoE supported)

Operations:

1. Plug in RW8300M module onto the RW8300-MB3.

2.

`

RW8300-MB5 Development Board Descriptions

The RW8300-MB5 Development Board is designed for RW8300M-H-x or RW8300M-HH-x module easy testing and function verification.

`

WPS/RESET Button on RW8300 (USB)

1. How to use the **RESET** MFB (multi-functional button)

   Reset (Reboot)/ Reset to Factory Default Setting

   1.1 Reset (Reboot): Press and hold the RESET button for 5~8 seconds then release, RW8300 (USB) will reboot.
   1.2 Reset to default: Press and hold the RESET button for 12 seconds then release, RW8300 (USB) will reboot and reset to factory default setting.

2. **WPS** button (* this function only available under AP mode, NOT available under Station mode)

   2.1 Press RW8300 (USB) WPS button to enter WPS mode and complete wireless settings.
   2.2 Make sure the PC or smart phone is also in the WPS mode (please refer to your PC or smart phone manual how to enter WPS mode).
   2.3 RW8300 (USB) and Device will automatically complete the wireless settings.
   2.4 Once WPS settings complete, PC or smart phone will connect to RW8300 (USB) AP.

WPS

Reboot/Reset to default

`
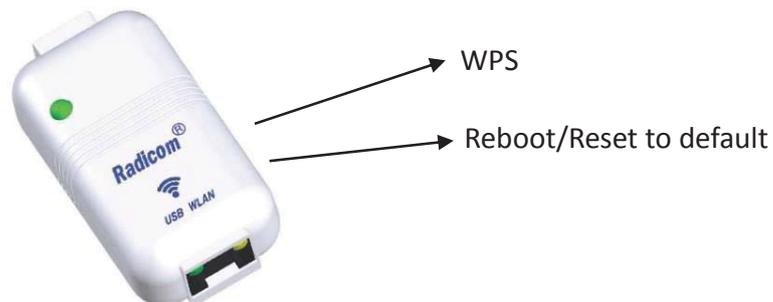
Checking & Upgrading Firmware Version

Connect the RJ45 cable and mini USB cable to RW8300.
Please make sure the RW8300 is connected to Webserver.
Open a browser and type the default gateway address (**192.168.1.254**).

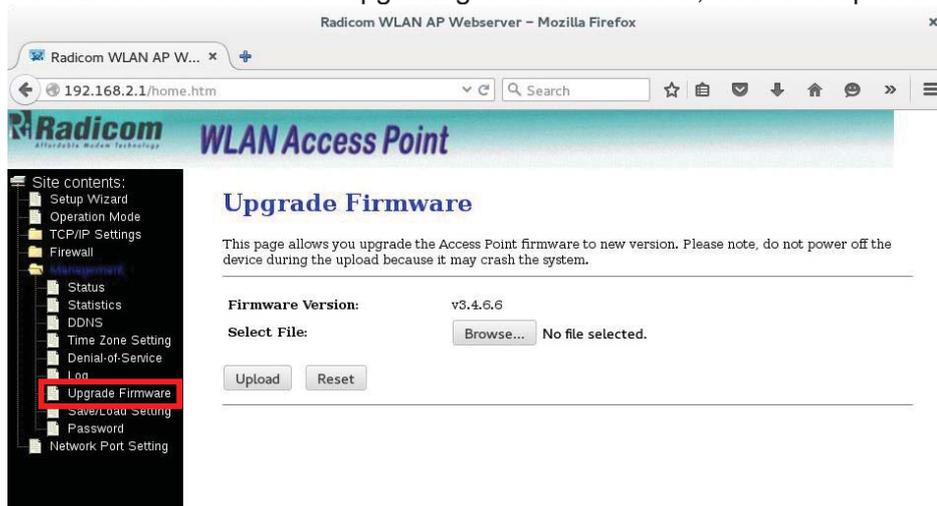Go to **Management** → **Status** page to check current firmware version.

Go to **Management** → **Upgrade Firmware** page for upgrading firmware.
1. Click Browse to select the upgrading firmware location, and click Upload.
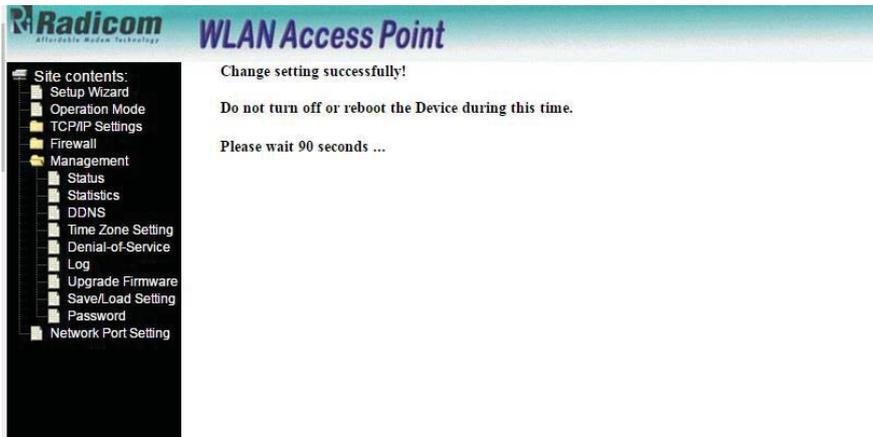
`

2. It will take approximately 95 seconds to complete the upgrading.
   Warning: "DO NOT power down or interrupt the upgrading process."

3. Press and hold the RESET button on RW8300 for 12 seconds then release, RW8300 will reboot and reset to factory default setting. Upgrading firmware is now complete.

`

Reset RW8300 (USB) to the Default

Reset to factory default setup procedures:
1. Plug-in RJ45 cable to RW8300 (USB) and the other side to the PC
2. Plug-in USB cable to RW8300 (USB) and the other side to the PC
3. Waiting for initiation (might takes up to 3min)
4. Confirm the default gateway setting (ex. 192.168.1.254):

Below is an example for Windows 7

Go to Start\Control Panel\Network and Internet\Network Connections
Double Click the RW8300 (USB) Network to find out the IPv4 default gateway IP address.

`
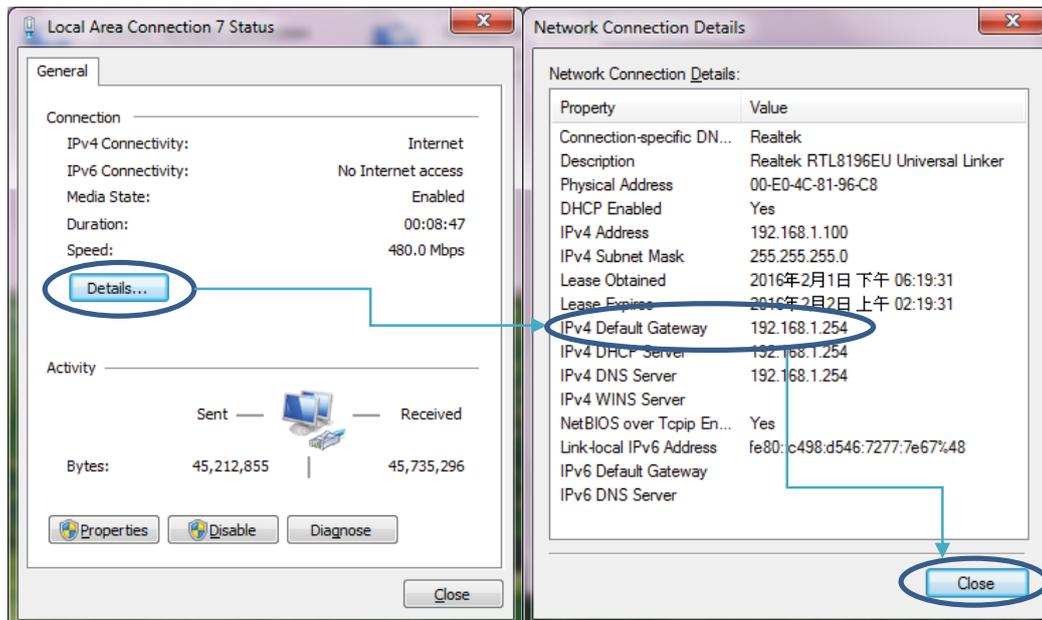
5. If you can't find the default gateway web page (ex. 192.168.1.254), please refer to following procedures to manually set up the parameters. You can skip the following if the default gateway web page is working.

Go to Start\Control Panel\Network and Internet\Network Connections

Right click the RW8300 (USB) Network and select Properties\Internet Protocol Version 4 (TCP/IPv4)\Properties
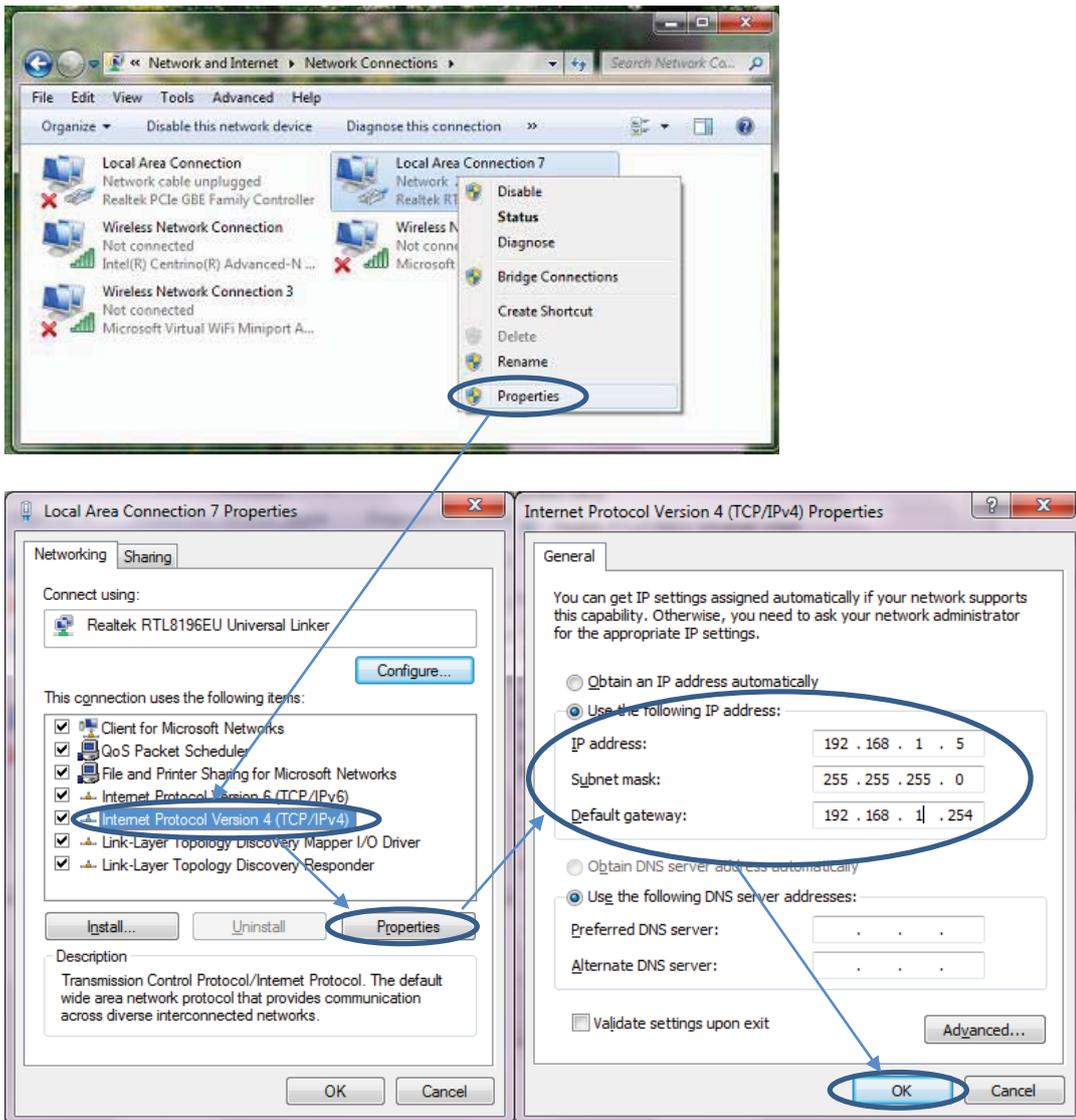
Appropriate IP settings：
IP address：192.168.1.2/253
Subnet mask：255.255.255.0
Default gateway：192.168.1.254

`

6.   Reset the Network：
     Disable the RW8300 (USB) Network
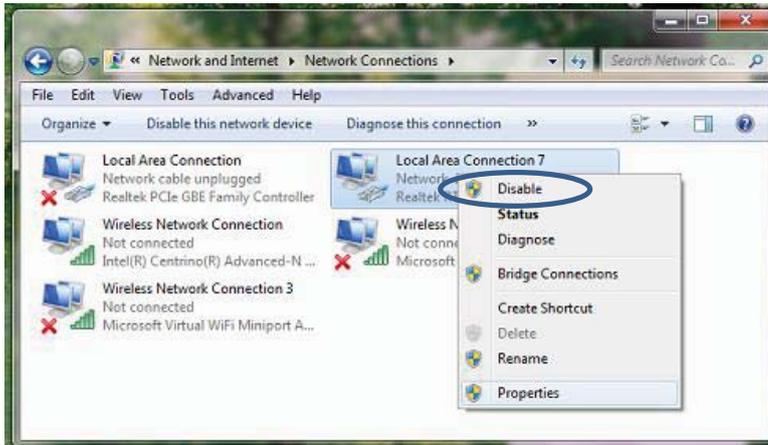
     Enable RW8300 (USB) Network
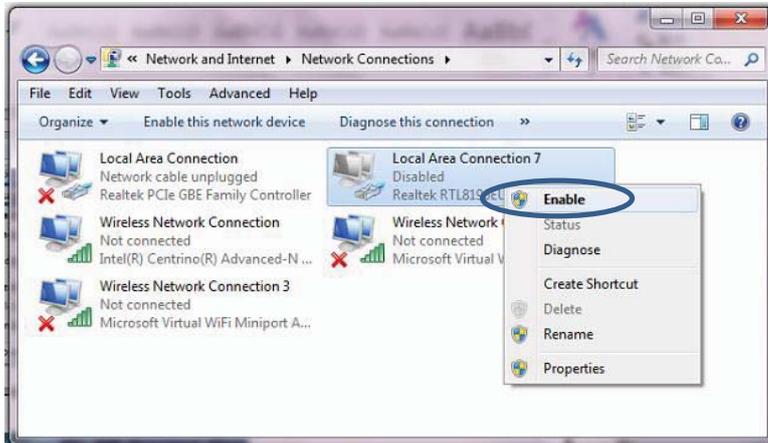
7.   Open a browser and type the default gateway address (ex. 192.168.1/0.254)
     Go to Management\Save/Load Setting, Click Reset
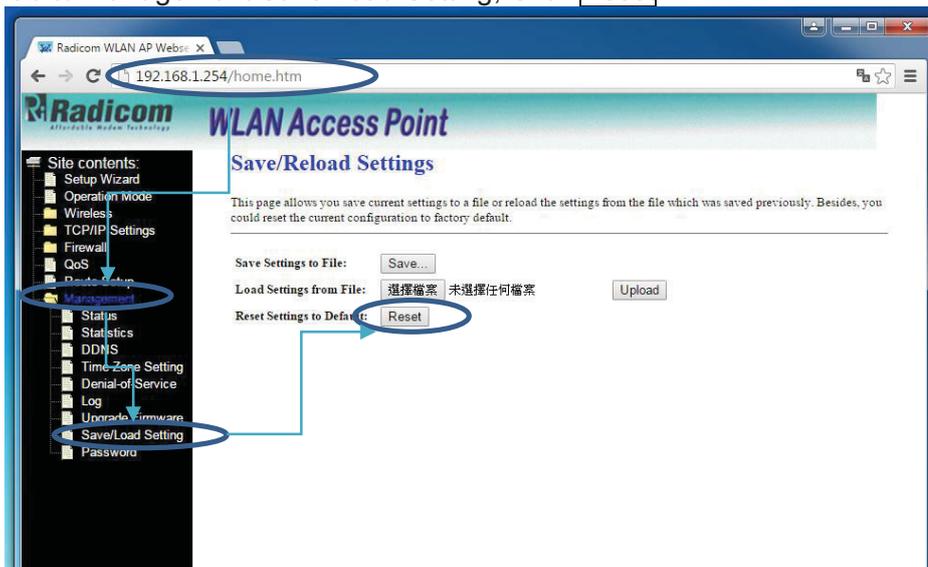
8.   Waiting 40sec to reboot

`
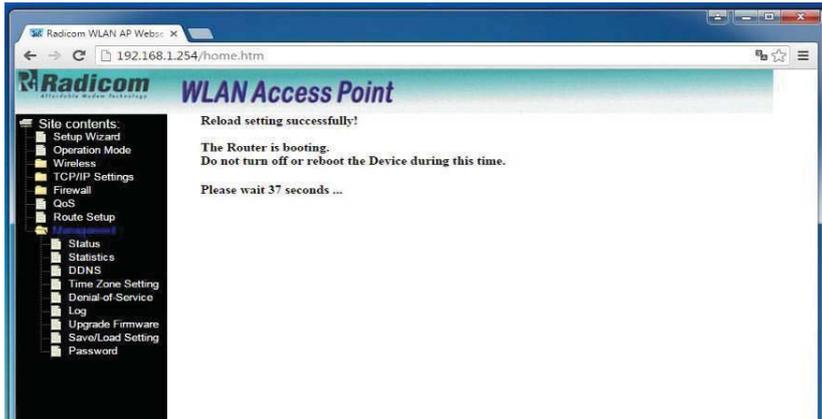
9. Go to Start\Control Panel\Network and Internet\Network Connections
    Change RW8300 (USB) Network setting back to original setting (DHCP IP and
    DHCP DNS or original ISP provided default setting. This is to avoid affecting this PC
    connectivity to other Networks.

`
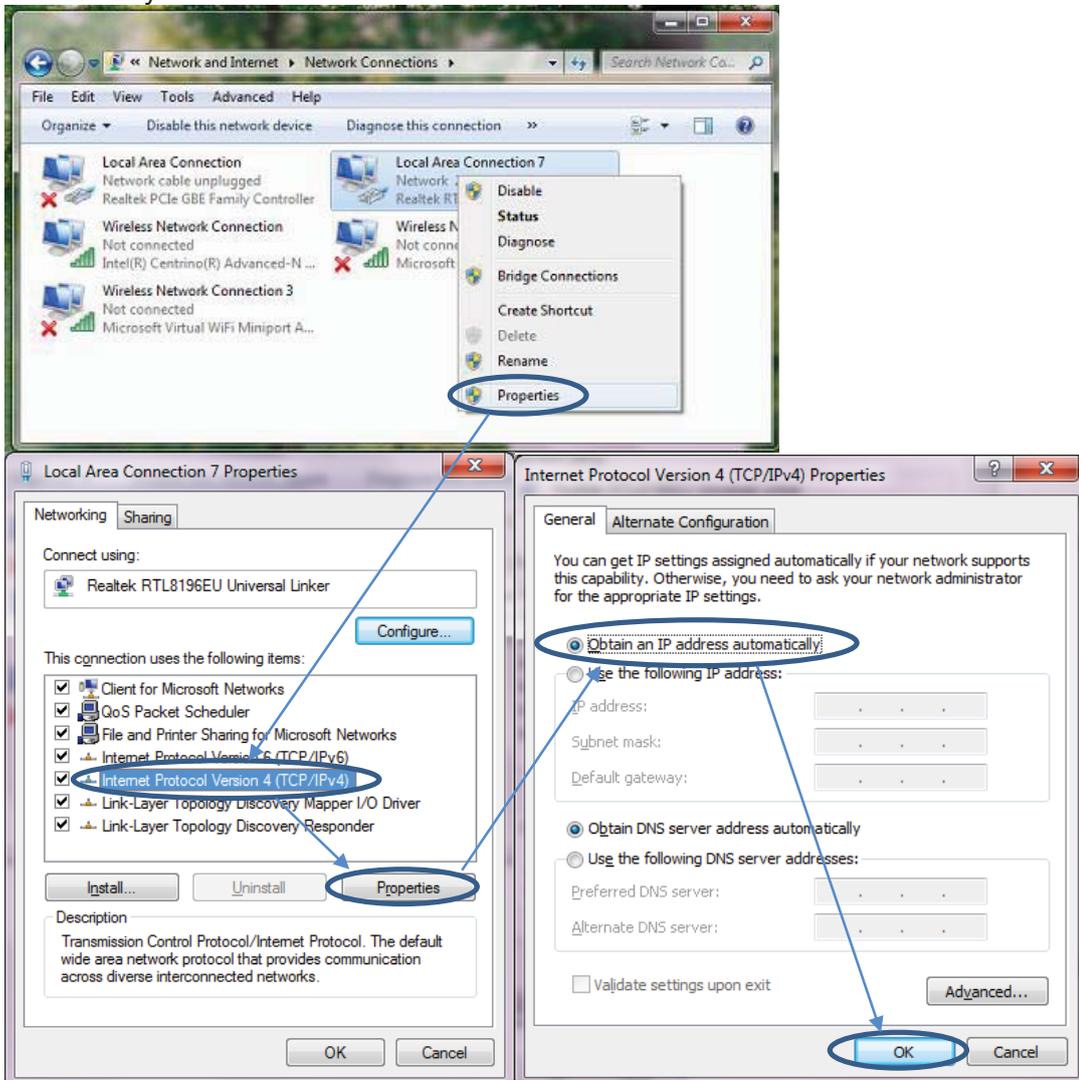
10. Reset the Network：
    Disable RW8300 (USB) Network
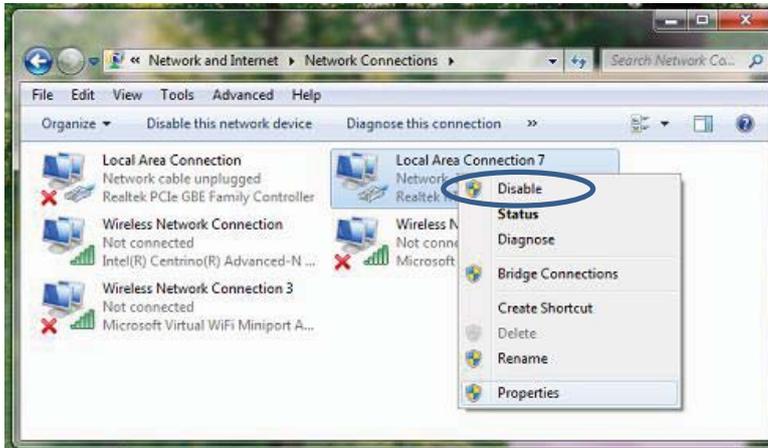
Enable RW8300 (USB) Network
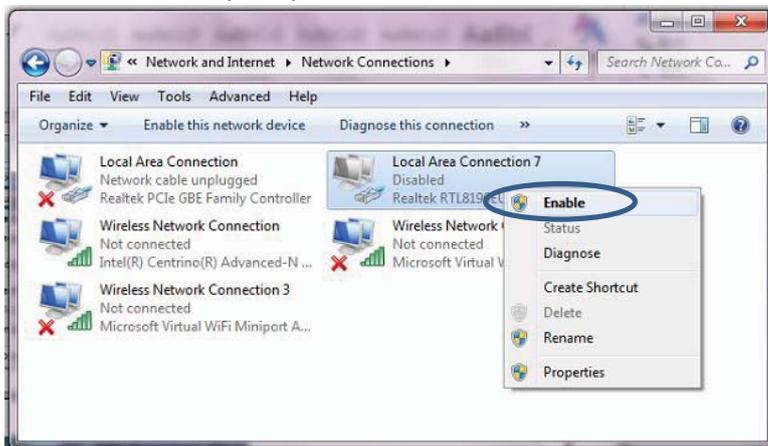
11. Unplug the RJ45 cable between RW8300 (USB) and PC.

12. RW8300 (USB) reset is now complete.

13. For other settings, please refer to "RW8300 Reference Guide for Network Setting.pdf".

`

RW8300 (USB) Universal Adapter Quick Set Up Guide
For Various Applications

Application Quick Setup Procedures.
Please restore to the default setting before changing to other applications (please refer to "Reset RW8300 (USB) to the Default").

For other settings, please refer to "RW8300 Reference Guide for Network Setting.pdf".

1. Smallest router
The RW8300 (USB) is easy to carry and set up. Connect an Ethernet cable and RW8300 (USB) will create a secure wireless network for your Devices.

Set up procedures:

1.1 Connect an Ethernet cable to RW8300 (USB) and wait for 1minute for initiation. User will see "RW8300 11n AP" from the WiFi list.

1.2 Click to connect to SSID：RW8300 11n AP (Default is no encryption）
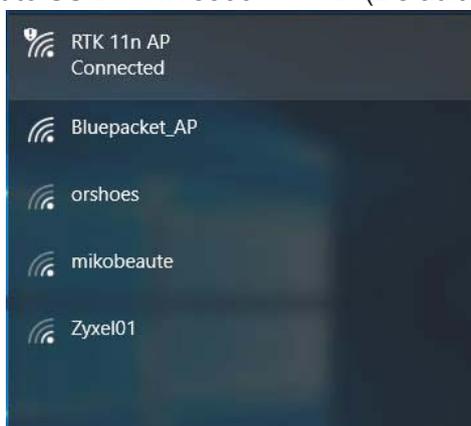
1.3 Press Windows + R or click "Start" -> "Run".   Input "cmd" to open the
Administrator.
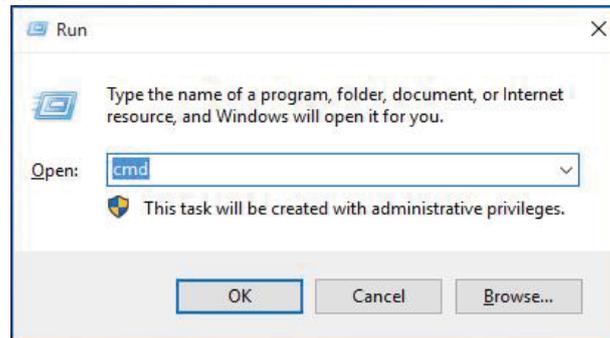
1.4 Input "ipconfig /all", then press Enter.
Find the default gateway IP address.

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : Realtek
   Link-local IPv6 Address . . . . . : fe80::11d:c654:fa0f:6e46%8
   IPv4 Address. . . . . . . . . . . : 192.168.0.100
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.0.254
```

1.5 Open a web browser and you should be able to surf the internet.
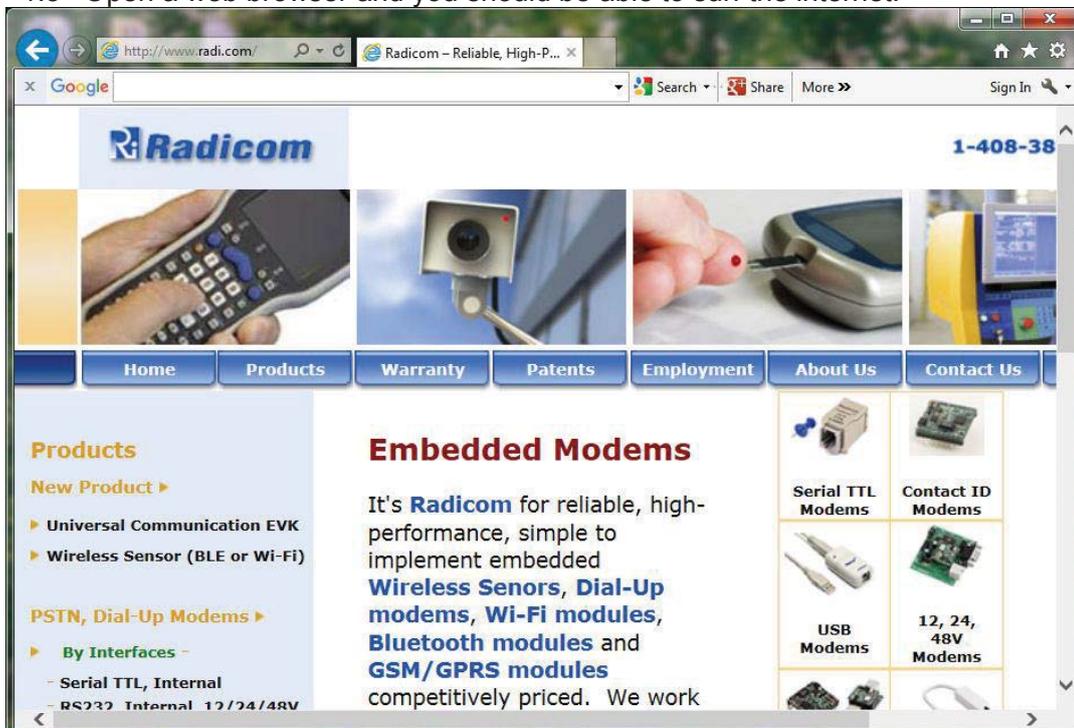
2. USB to LAN

Ultrabooks, such as ZENBOOK, MacBook Air, and MacBook Pro, usually lack a RJ-45 port, and users can simply connect a network cable to ultrabooks via USB port to provide a stable online access anywhere.
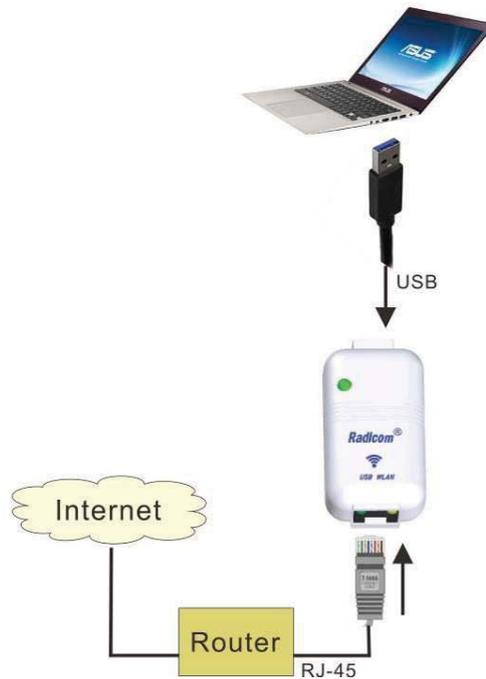
Set up procedures:

2.1 Connect a USB cable between your Ultrabook and RW8300 (USB). And connect an Ethernet cable to RW8300 (USB).

2.2 Ultrabook will auto detect the hardware and add a new CD Drive into your computer. Driver installation might take few minutes.
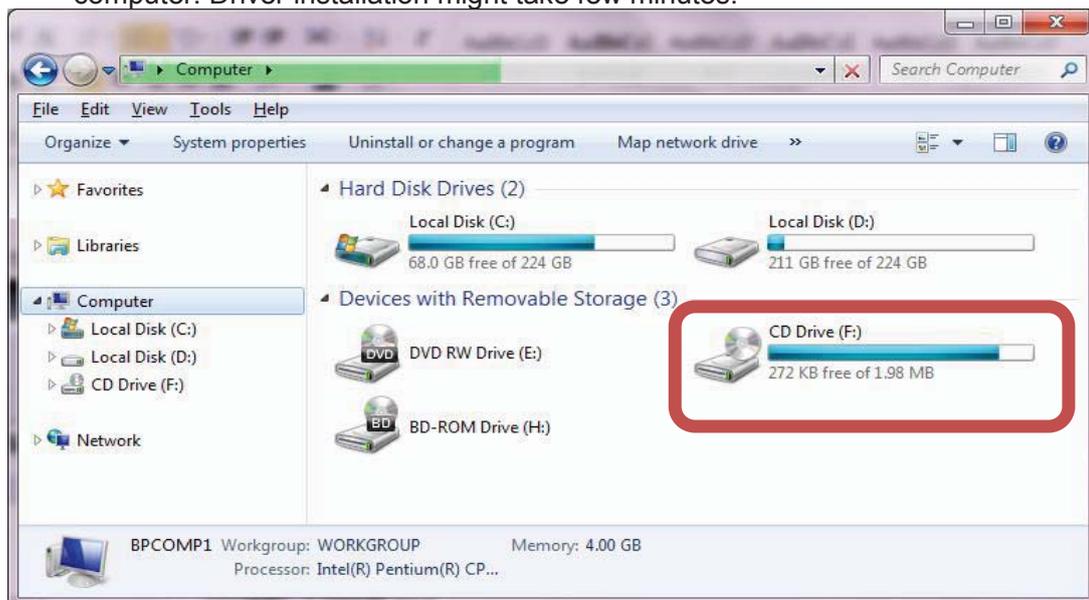
2.3 After driver installation complete, the Device will appear in the Device Manager.
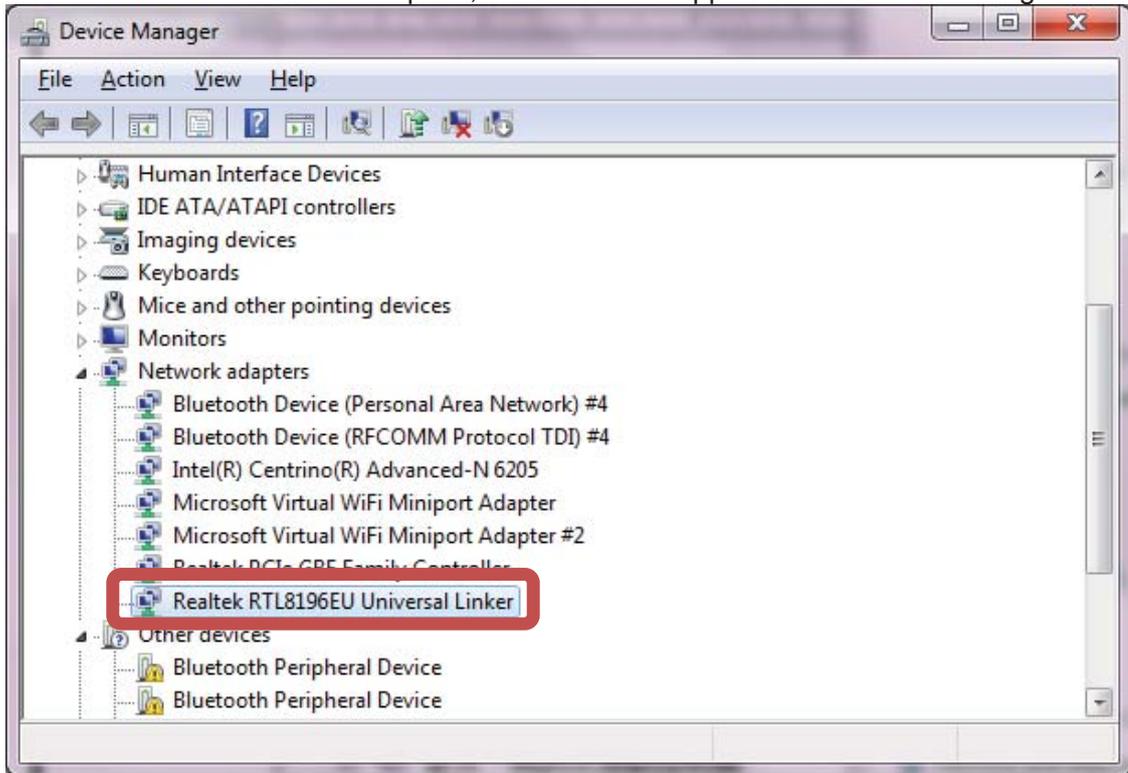
2.4 Open a web browser and you should be able to surf the internet.

3. Hot Spot Sharing

The RW8300 (USB) supported hot spot mode. Connect a mini USB cable to power on, and it can share a single account on multiple Devices, such as notebooks, smartphones, tablets, etc.
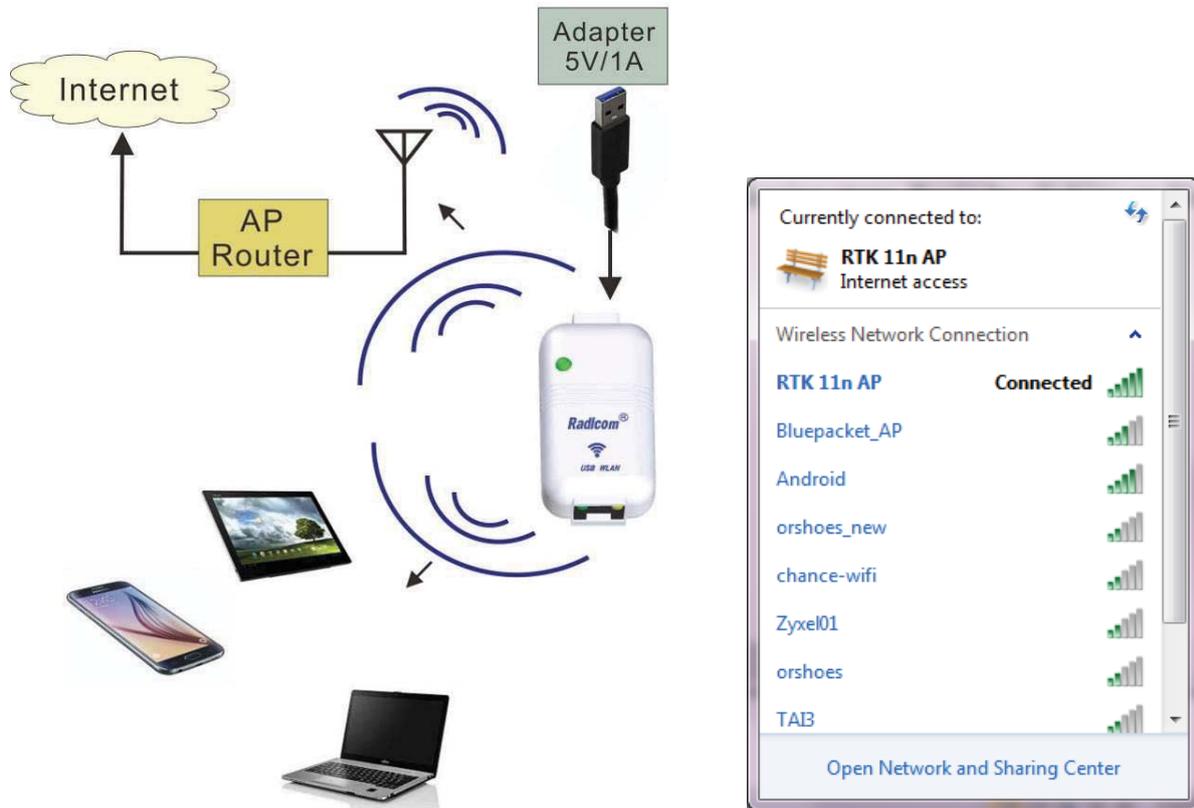
Set up procedures:

3.1 Connect an Ethernet cable between your computer and RW8300 (USB) for hot spot setting.

3.2 After your computer connected to RW8300 11n AP, please open a web browser and input "http://192.168.1.254" (default gateway) in the address bar.

`

3.3 Click "Operation Mode" and choose "Wireless ISP". Click "Apply Change".

Note: If the operation mode is already Wireless ISP, no need to click "apply change". Otherwise, the internet access might occur error. Troubleshooting is to disconnect the "RW8300 11n AP", then connect again.
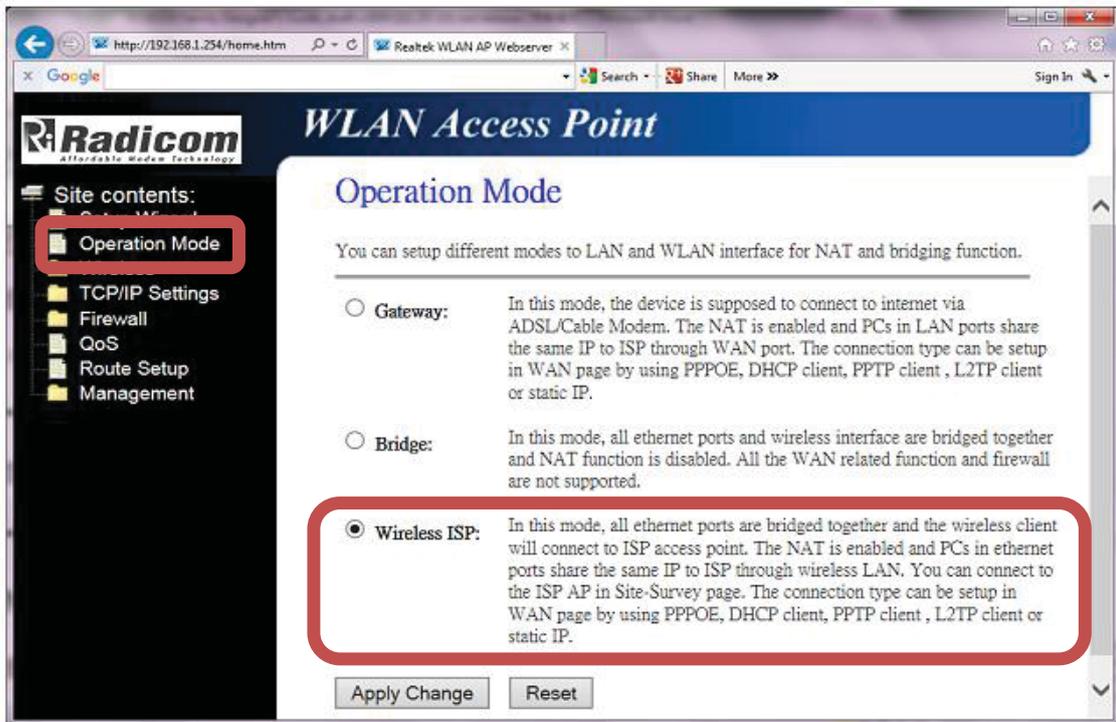
3.4 Click "Site survey" under "Wireless" directory to see current available SSID. Select the correct AP and click "Next".

`

3.5 Input the Pre-Shared Key and click "Connect".
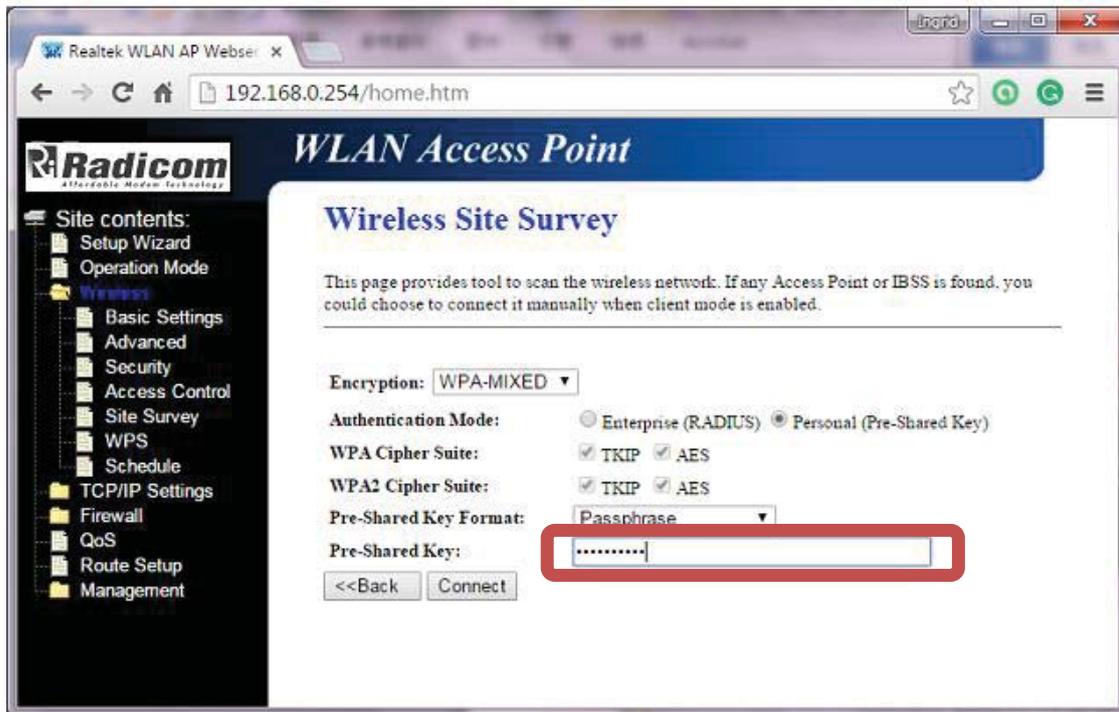
3.6 After connect successfully, please click "Reboot Now". Disconnect the hot spot, then connect again to activate. Now, the hot spot is available.

`
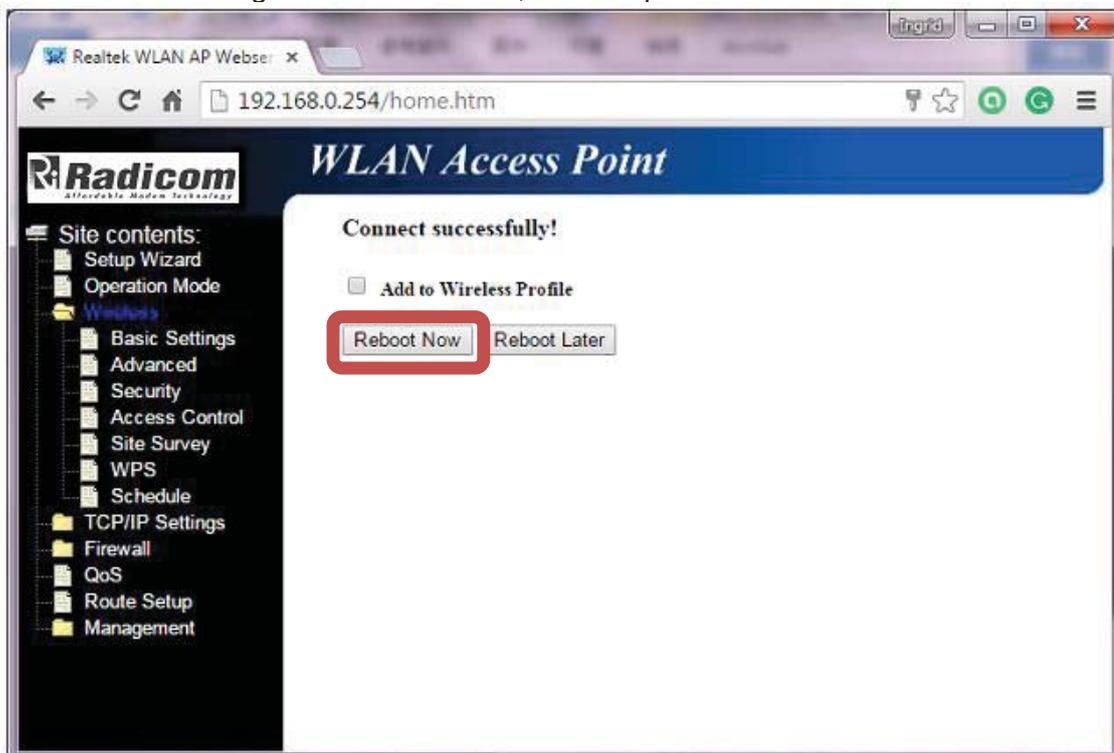
4. LAN to WLAN

The RW8300 (USB) is perfect for your desktops, which usually lack Wi-Fi capabilities. Simply connect an Ethernet cable to your desktops to stay connected.
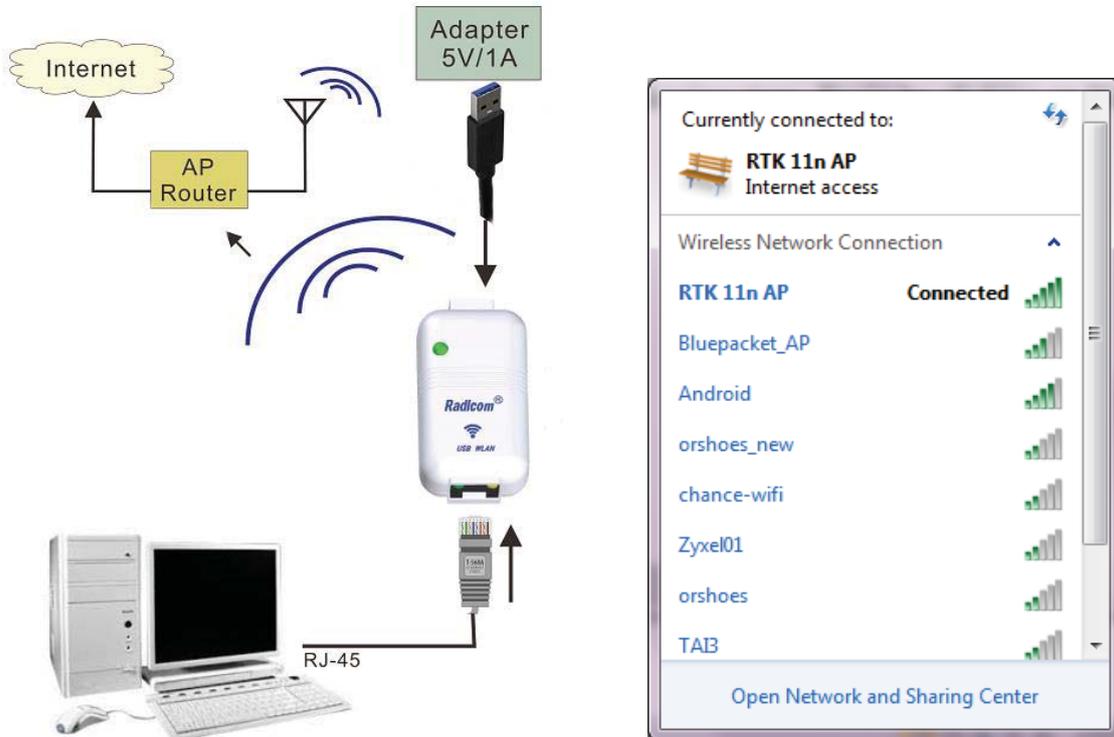
Set up procedures:

4.1 Connect an Ethernet cable between your computer and RW8300 (USB) for WLAN setting.

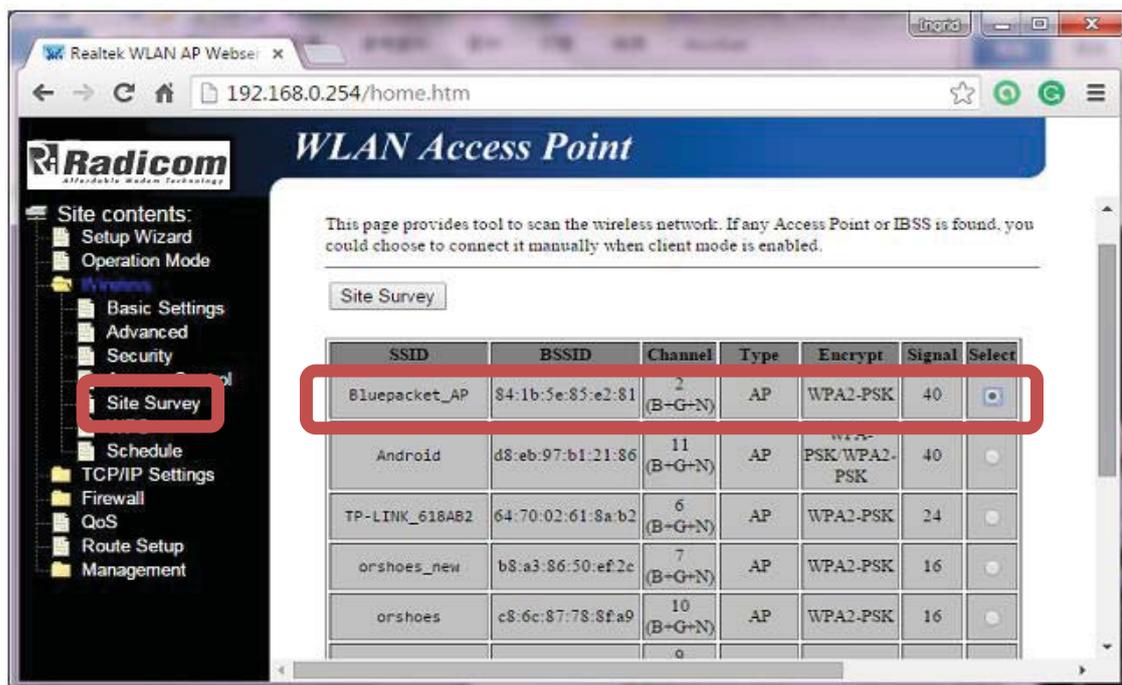4.2 After your computer connected to RW8300 11n AP, please open a web browser and input "http://192.168.1.254" (default gateway) in the address bar.

4.3 Click "Operation Mode" and choose "Wireless ISP". Click "Apply Change".

Note: If the operation mode is already Wireless ISP, no need to click "apply change". Otherwise, the internet access might occur error. Troubleshooting is to disconnect the "RW8300 11n AP", then connect again.
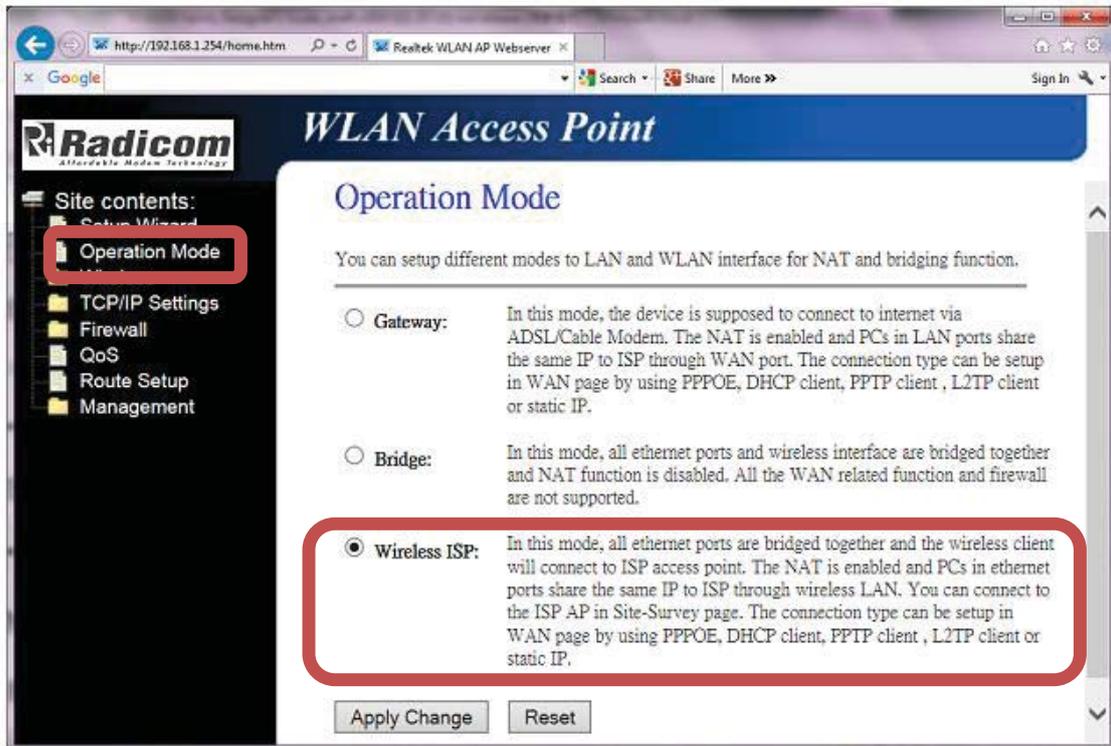
4.4 Click "Site survey" under "Wireless" directory to see current available SSID. Select the correct AP and click "Next".

`
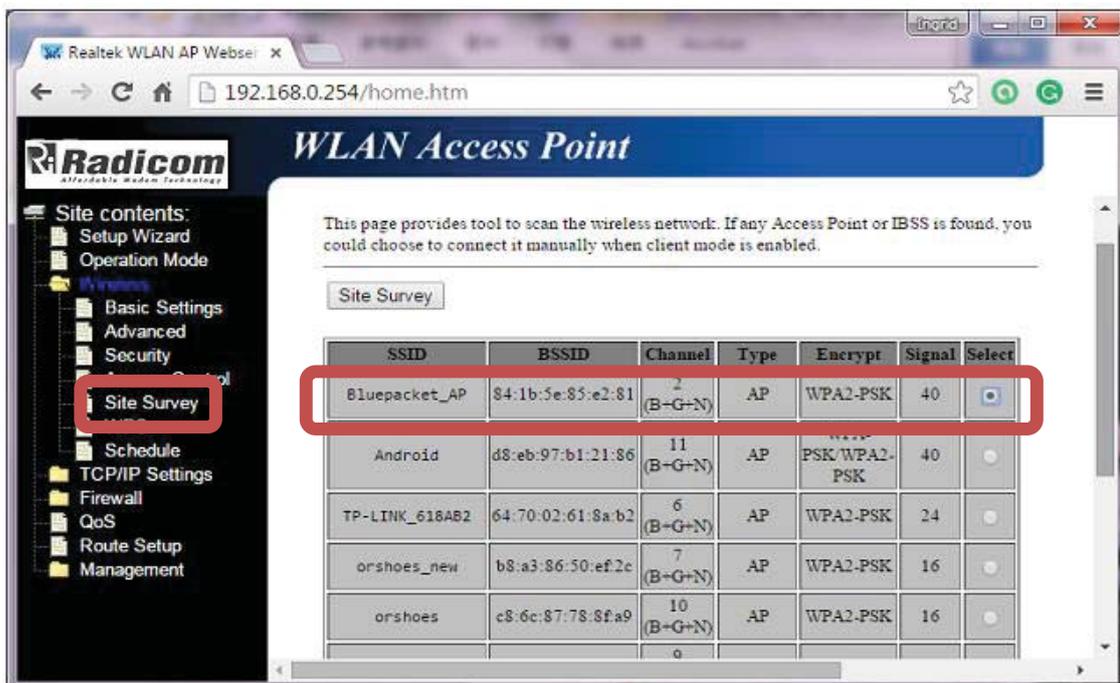
4.5 Input the Pre-Shared Key and click "Connect".
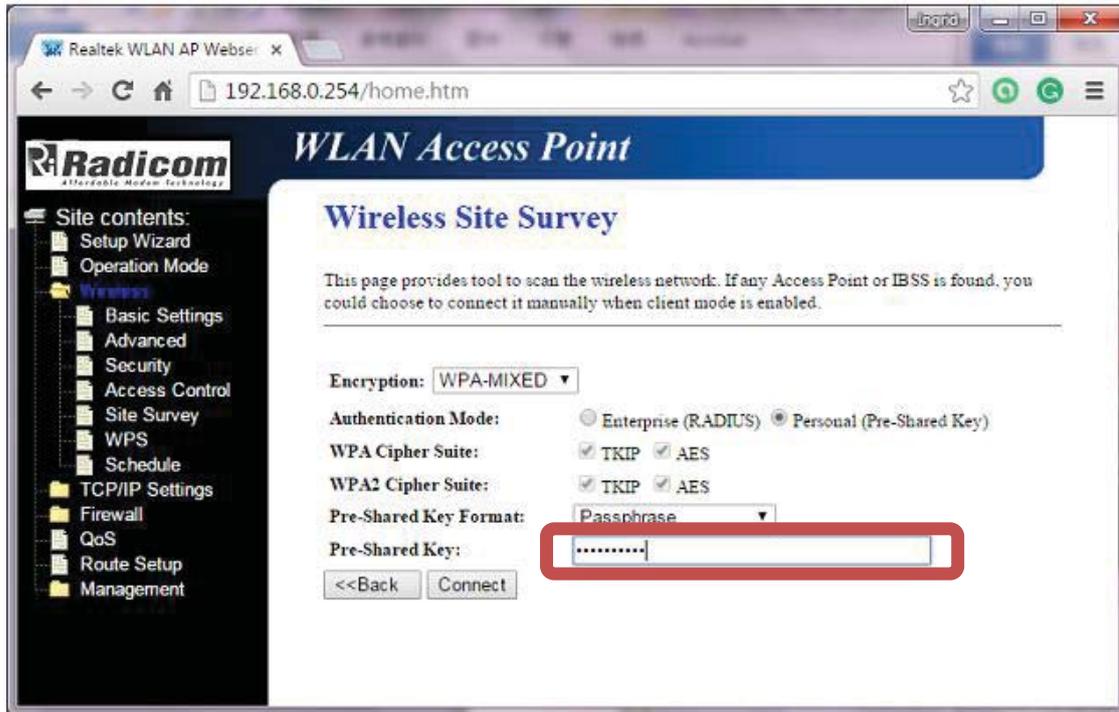
4.6 After connect successfully, please click "Reboot Now". Disconnect the hot spot, then connect again to activate. Now, the WLAN is available.
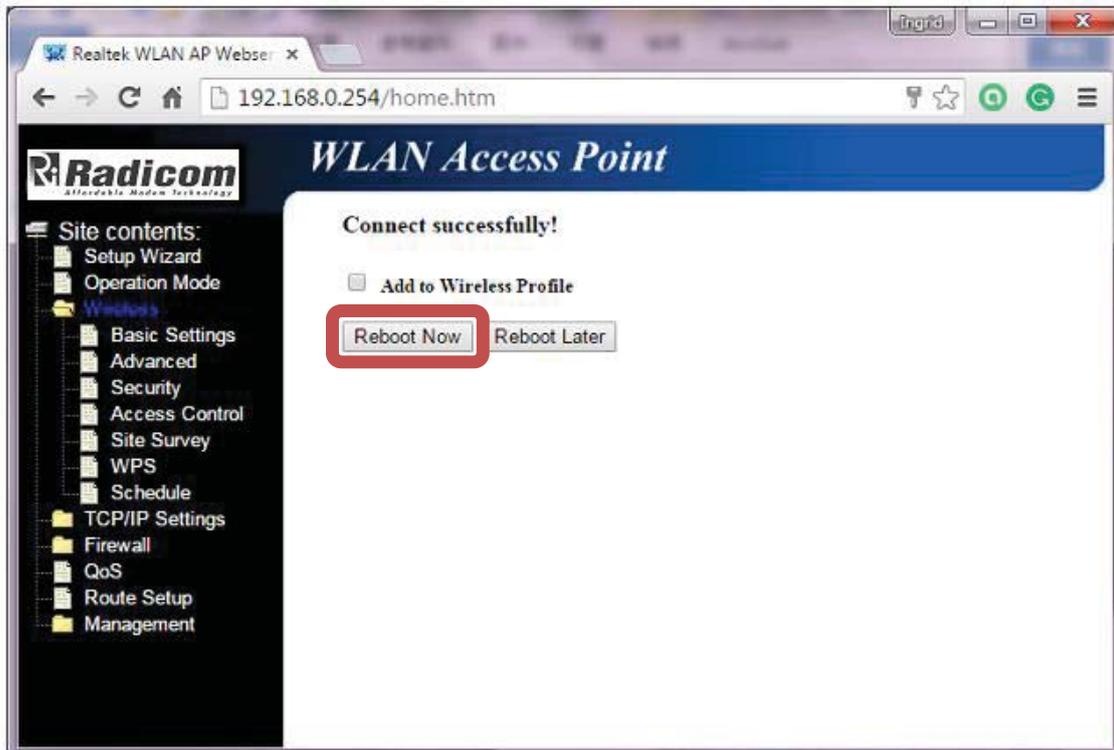
5. USB to WLAN

The RW8300 (USB) is easy for desktops to create a wireless network. Simply connect an USB cable and RW8300 (USB) will create a wireless secure network access to your desktops.
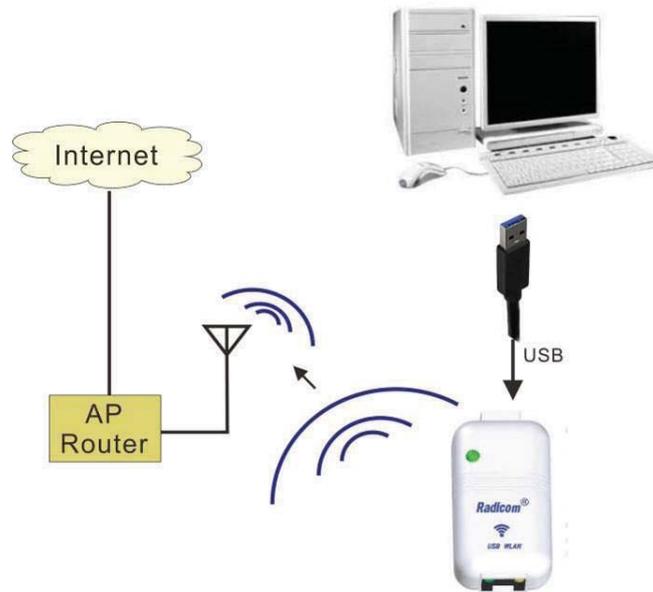
Set up procedures:

5.1 Connect a USB cable between your computer and RW8300 (USB).

5.2 Computer will auto detect the hardware and add a new CD Drive into your computer. Driver installation might take few minutes.

`
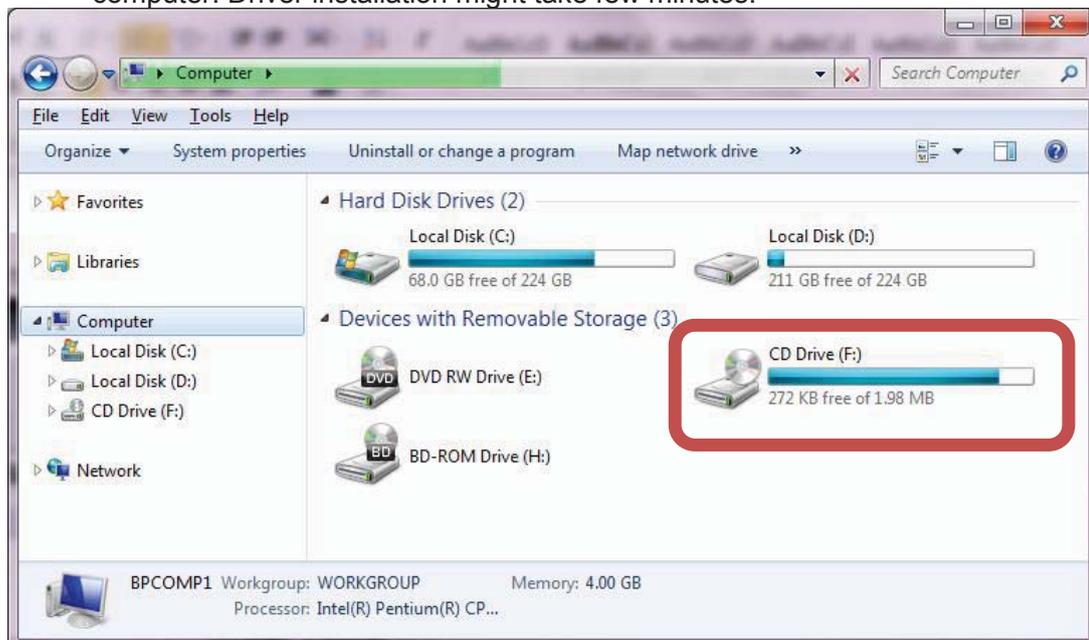
5.3 After driver installation complete, the Device will appear in the Device Manager.
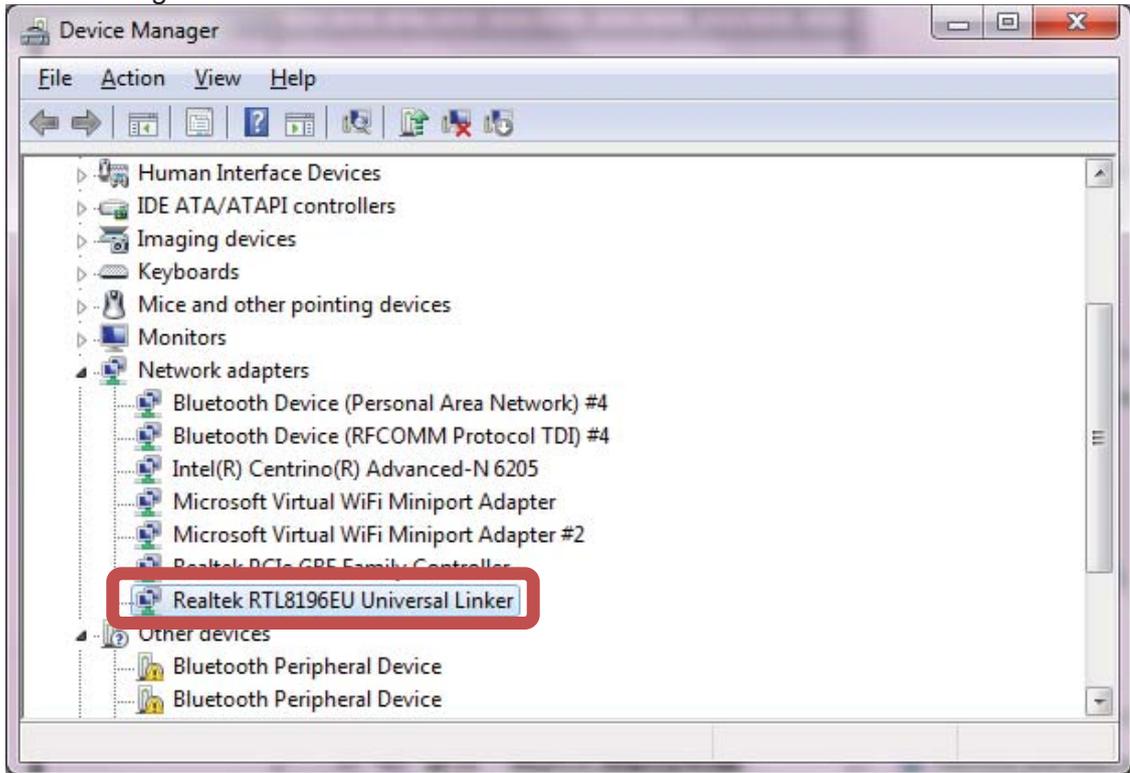
5.4 Press Windows + R or click "Start" -> "Run".   Input "cmd" to open the Administrator.
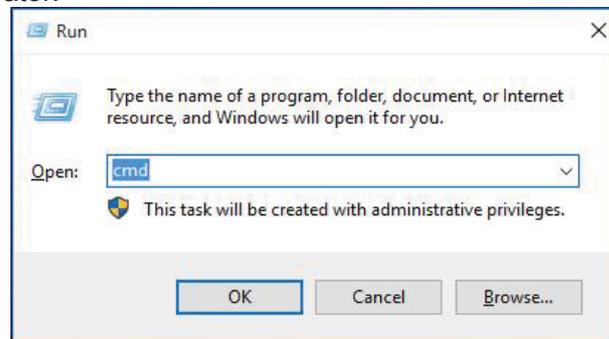
5.5 Input "ipconfig /all", then press Enter. Find the default gateway IP address.

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : Realtek
   Link-local IPv6 Address . . . . . : fe80::11d:c654:fa0f:6e46%8
   IPv4 Address. . . . . . . . . . . : 192.168.1.100
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.254
```

5.6 After your computer connected to RW8300 11n AP, please open a web browser and input "http://192.168.1.254" (default gateway) in the address bar.

5.7 Click "Operation Mode" and choose "Wireless ISP". Click "Apply Change".

Note: If the operation mode is already Wireless ISP, no need to click "apply change". Otherwise, the internet access might occur error. Troubleshooting is to disconnect the "RW8300 11n AP", then connect again.
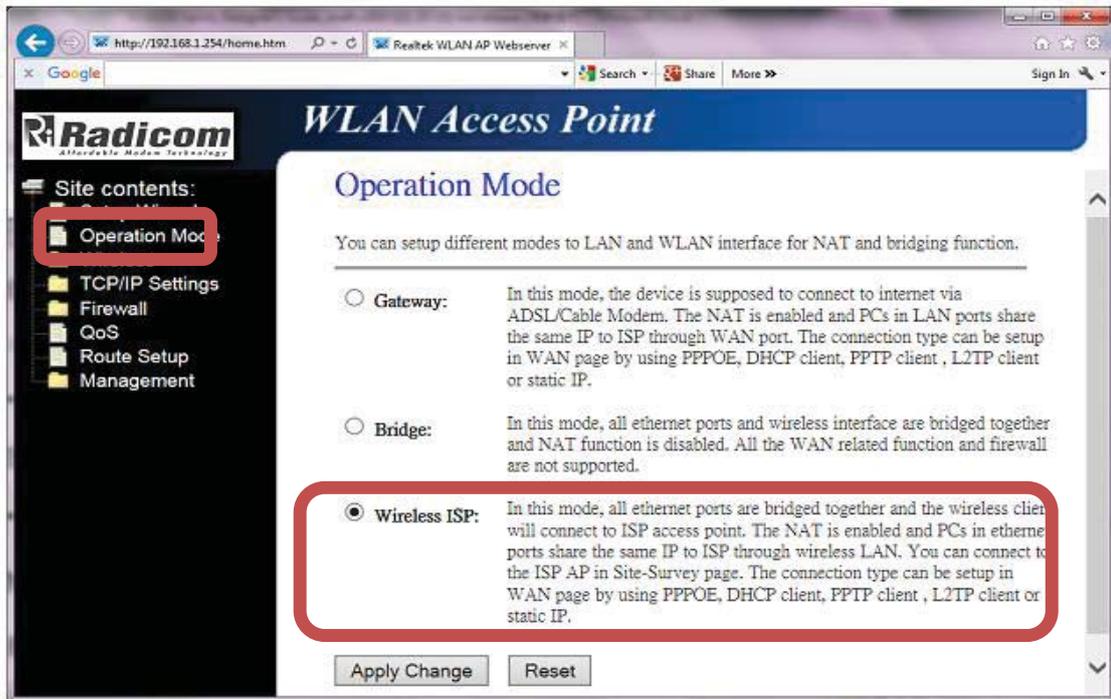

5.8 Click "Site survey" under "Wireless" directory to see current available SSID. Select the correct AP and click "Next".
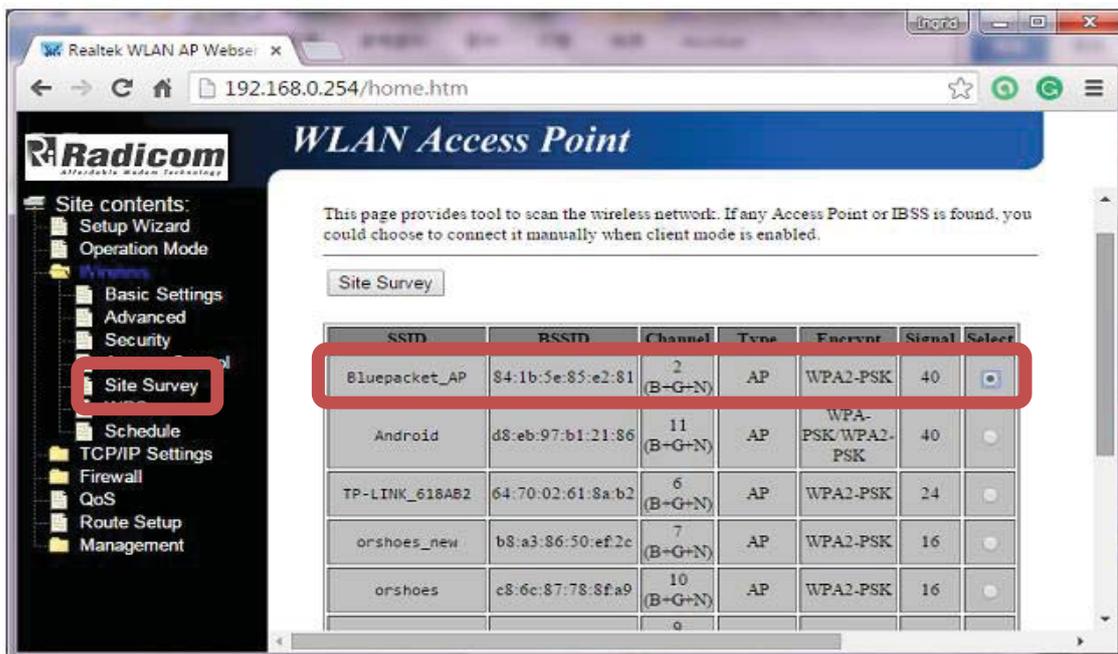
5.9 Input the Pre-Shared Key and click "Connect".
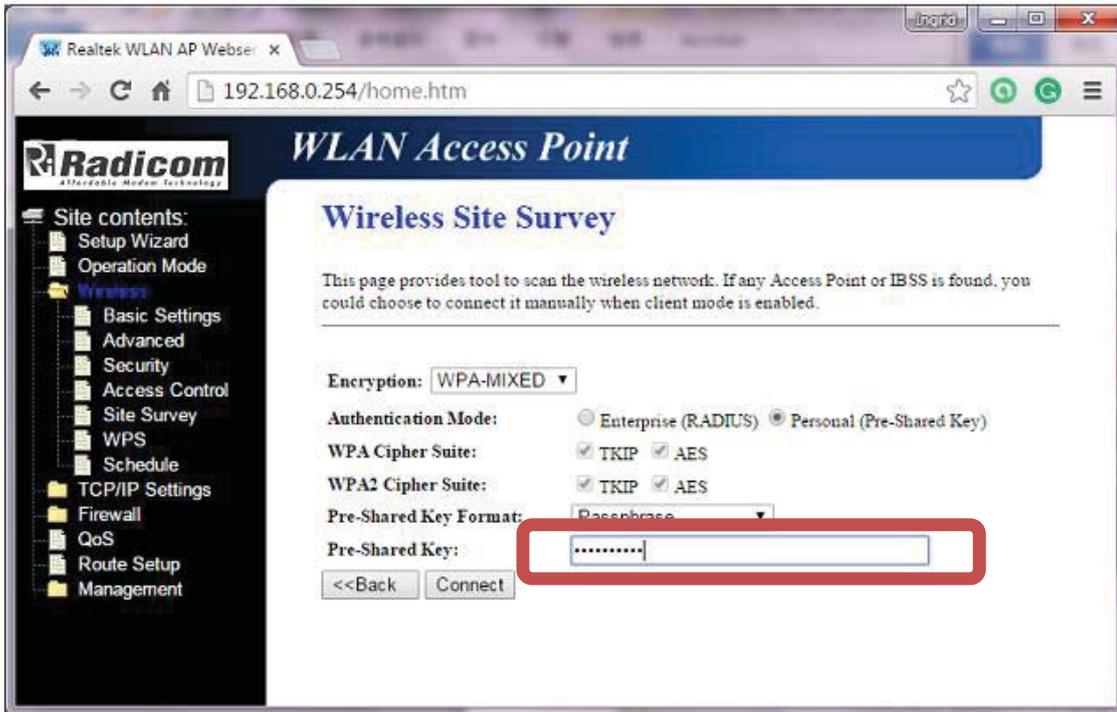
5.10 After connect successfully, please click "Reboot Now". Disconnect the hot spot, then connect again to activate. Now, the WLAN is available.

`
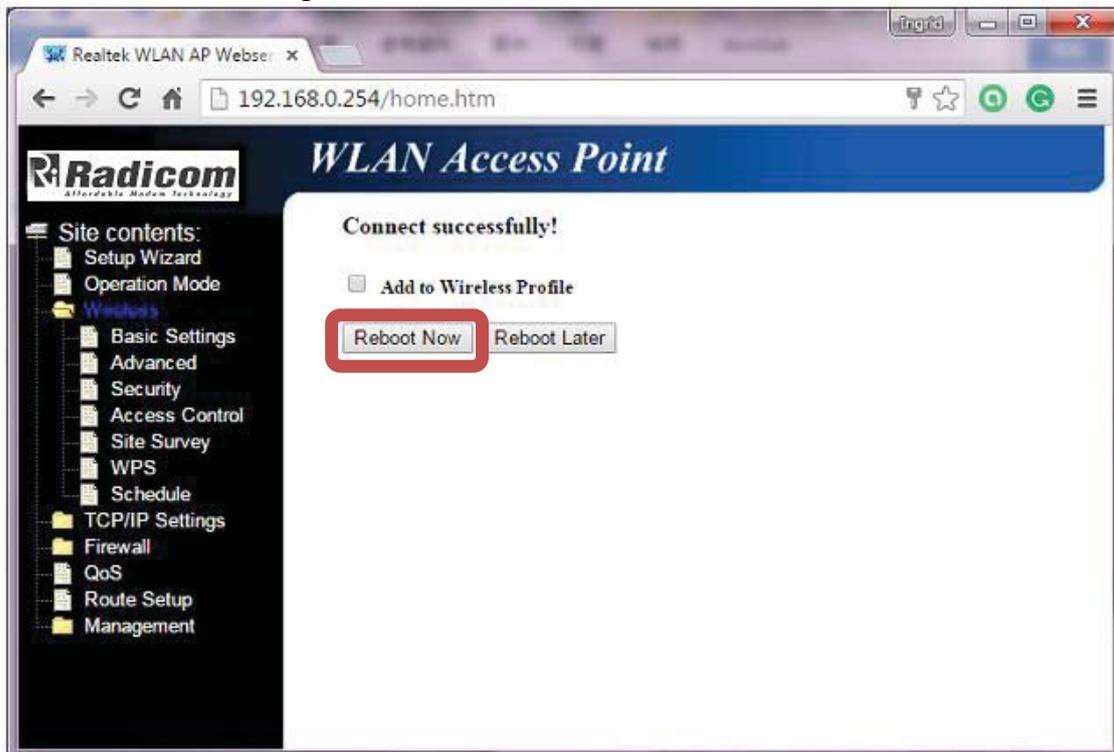
6. WLAN Bridge

The RW8300 (USB) supported WLAN bridge mode, which can share a single account on multiple subnet. All Devices are able to connect to the Internet.
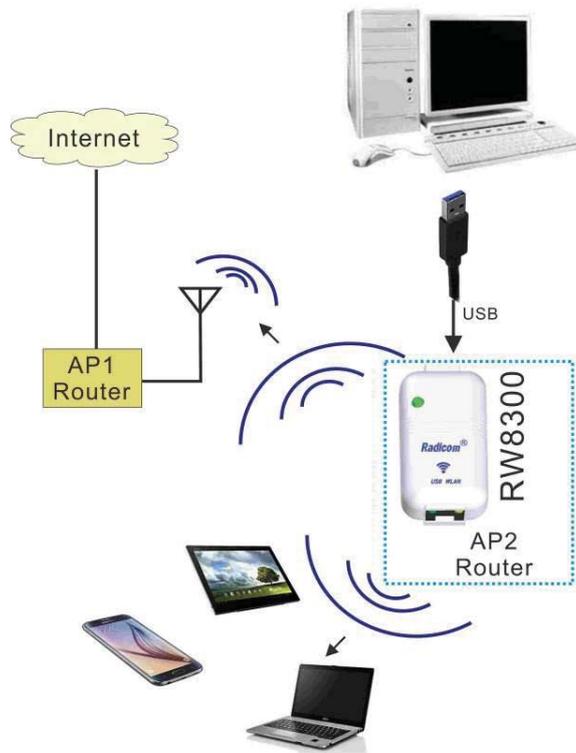
Set up procedures:

6.1 Connect an Ethernet cable to RW8300 (USB) and wait for 1minute for initiation. User will see "RW8300 11n AP" from the WiFi list.

6.2 Click to connect to SSID：RW8300 11n AP (Default is no encryption）

`
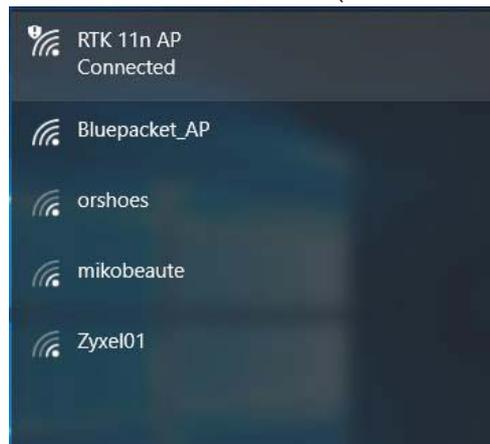
6.3 Press Windows + R or click "Start" -> "Run".   Input "cmd" to open the
Administrator.
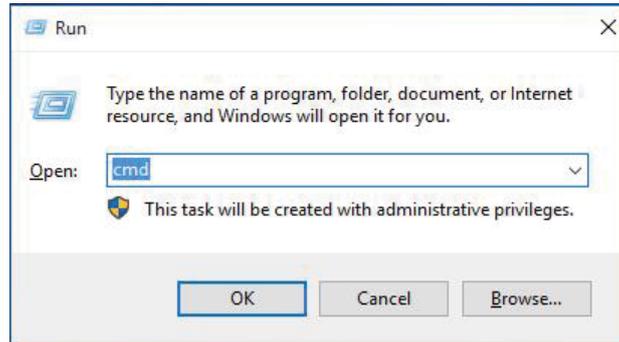
6.4 Input "ipconfig /all", then press Enter.
Find the default gateway IP address.

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : Realtek
   Link-local IPv6 Address . . . . . : fe80::11d:c654:fa0f:6e46%8
   IPv4 Address. . . . . . . . . . . : 192.168.0.100
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.0.254
```

6.5 Log into Web GUI (Router mode)
After your computer obtained an IP address from wireless router, please open a
web browser, and input the IP address of the Default Gateway in address bar, and
the following message should be shown. Please click "admin" to login the RW8300
(USB).

`
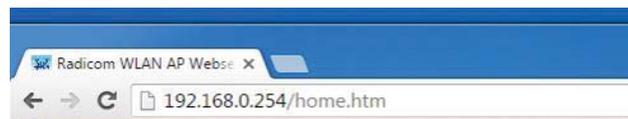
6.6 Click "Operation Mode" and choose "Bridge". Click "Apply Change".

Note: If the operation mode is already Wireless ISP, no need to click "apply change". Otherwise, the internet access might occur error. Troubleshooting is to disconnect the "RW8300 11n AP", then connect again.
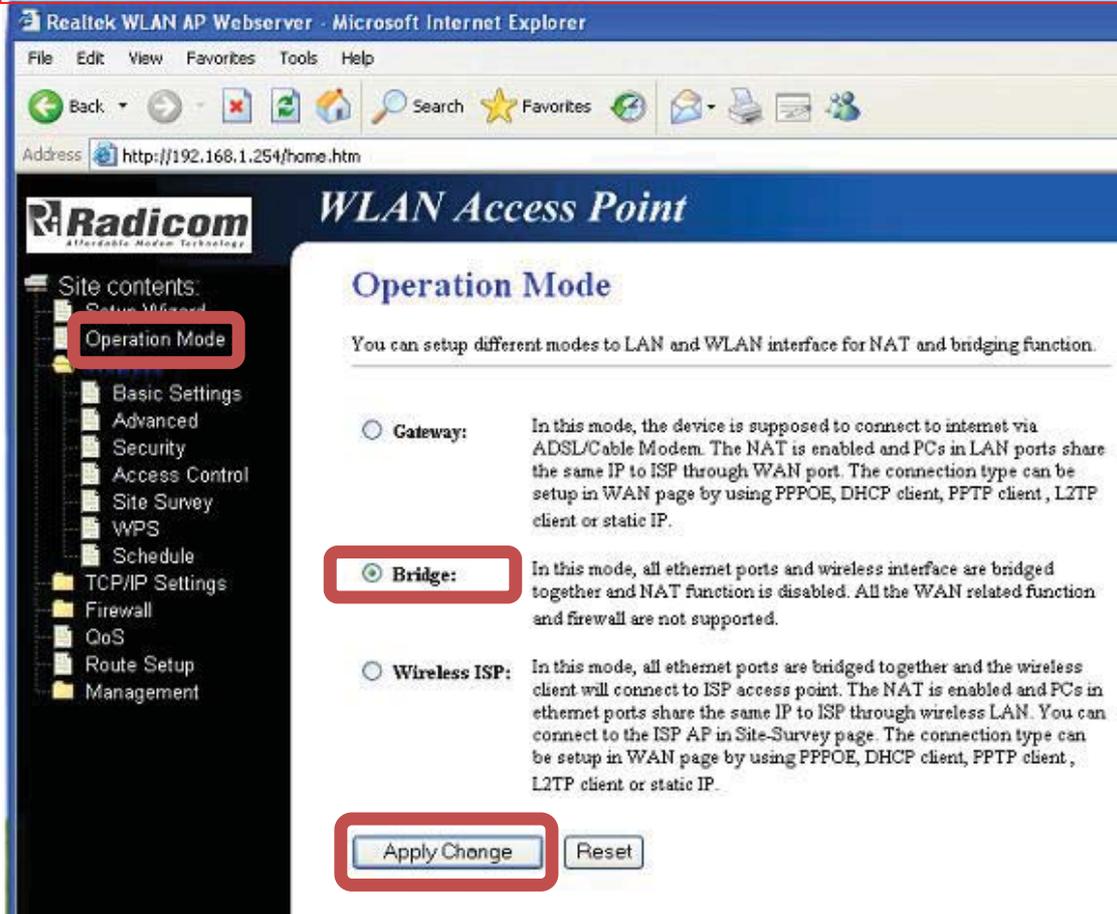
6.7 Please wait 25 seconds to complete the setting.

Change setting successfully!

Do not turn off or reboot the Device during this time.

Please wait 19 seconds ...

6.8 Click Network Settings > LAN Interface
      6.8.1   Select "Disabled" from *DHCP* pull-down list.
      6.8.2   Click "Apply Changes".

`
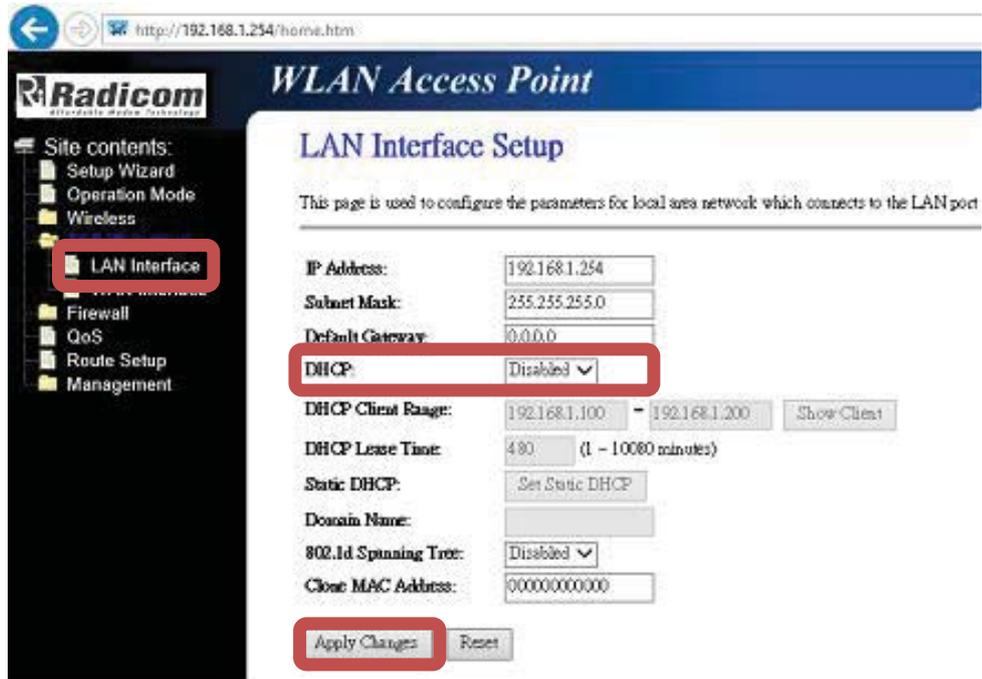
6.8.3   Reboot Now
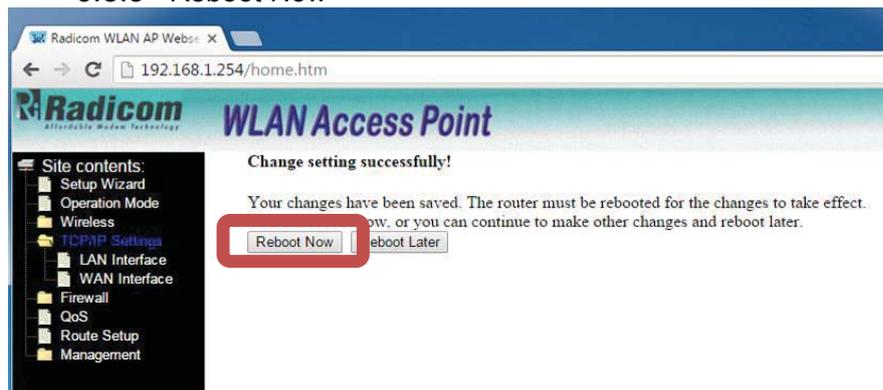
6.9 Please wait 25 seconds to complete the setting.

> Change setting successfully!
>
> Do not turn off or reboot the Device during this time.
>
> Please wait 19 seconds ...

Note: If you still can't use the Internet till now, please power cycle RW8300 (USB).

6.10 Open a web browser and you should be able to surf the internet. This AP now is also available for all other mobile Devices to connect.

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EMC Guidance and Manufacturer's Declaration

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RW8300 Regulatory Domain Frequencies

The channel identifiers, channel center frequencies, and regulatory domains of each 22-MHz-wide channel are shown in following table.

Model: RW8300 Family	Frequency (MHZ)	Regulatory Domains					
		Japan	ETSI	North America	Israel	France Outdoor	Mexico
1	2412	∨	∨	∨		∨	
2	2417	∨	∨	∨		∨	
3	2422	∨	∨	∨	∨	∨	
4	2427	∨	∨	∨	∨	∨	
5	2432	∨	∨	∨	∨	∨	
6	2437	∨	∨	∨	∨	∨	
7	2442	∨	∨	∨	∨	∨	
8	2447	∨	∨	∨	∨	∨	
9	2452	∨	∨	∨	∨	∨	
10	2457	∨	∨	∨			∨
11	2462	∨	∨	∨			∨
12	2467	∨	∨				
13	2472	∨	∨				
14	2484	∨					

Host (End Product) Labeling Requirements

To maintain compliance, the end product hosting the RW8300 module must be properly labeled to identify that this module is installed. This transmitter module is authorized only when used in devices where the antenna is installed such that 20 cm is maintained between the antenna and users. The final end product must have a label located in a visible area with the following information:

```
Radicom Research, Inc.
Model: RW8300E
FCC ID:K7T-RW8300E  MAC:
                    BD:
IC : 2377A-RW8300E
FCC      CE      IC
```

The XXXXXXX reflects the correct model installed into the host equipment: The models are RW8300-a, or RW8300-c.

The label shall be securely affixed to a permanently attached part of the device, in a location where it is visible or easily accessible to the user, and shall not be readily detachable. The label shall be sufficiently durable to remain fully legible and intact on the device in all normal conditions of use throughout the device's expected lifetime. These requirements may be met either by a separate label or nameplate permanently attached to the device or by permanently imprinting or impressing the label directly onto the device.   The label text shall be legible without the aid of magnification, but is not required to be larger than 8-point font size.

End User Information: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF Exposure compliance. The end user should NOT be provided any instructions on how to remove or install the device. The user's manual for end users must include the following information in a prominent location.

FCC RF Radiation Exposure Statement

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, the antenna used on this transmitter must be installed to provide a separation of at least 20 cm from all persons and must not be co-located or operating in conjunction with any antenna or transmitter. This device contains a low power transmitter. When this device is operational, use only with the supplied, or recommended antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations. Changes or modifications not expressly approved by the manufacturer or party responsible for compliance could void the user's authority to operate the equipment.

FCC Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

> *(1) This device may not cause harmful interference*
> *(2) This device must accept any interference received, including interference that may cause undesired operation.*

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 and radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. 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 assistance.

IC (Industry Canada) Statement:

"This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device"

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de license. L'exploitation est autorisee aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit acceptor tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement. Enonce d'exposition au rayonnement radioelectrique. Cet appareil est conforme aux limites d'exposition au rayonnement radioelectrique stipulees par la FCC pour une utilisation dans un environnement non controle. Cet appareil doit etre installe et utilise en respectant une distance minimale de 20 centimetres entre l'element rayonnant et votre corps. Pour une utilisation mobile ou portee sur le corps, cet appareil a ete teste et certifie conforme aux directives de la FCC relatives a l'exposition au rayonnement radioelectrique lorsqu'il est utilise avec la

Europe – R&TTE Compliance Statement:

Hereby, Radicom Research Inc. declares that this equipment complies with the essential requirements and other relevant provisions of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE).

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CE Declaration of Conformity

For the following equipment:

Radicom Research Inc. WiFi USB Modem Module
Model(s):   RW8300-a, RW8300-c

is herewith confirmed to comply with the requirements set out in the Council (European parliament) Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility of Radio and Telecom device (1999/5/CE). For the evaluation regarding this Directive, the following standards were applied:

EN 300 328 V1.8.1, EN 301 489-1 V1.9.2, EN 301 489-17 V2.1.1,
EN 61000-3-2:2006+A2:2009, EN 61000-3-3:2008,
EN 60950-1:2006+A11:2009+A1:2010+A12:2011, EN 62311:2008

_____

This equipment is marked with the **C E** *and can be used throughout the European community.*

France – 2.4GHz for Metropolitan France:
In all Metropolitan departments, wireless LAN frequencies can be used under the following conditions, either for public or private use:
- *Indoor use: maximum power (EIRP*) of 100 mW for the entire 2400-2483.5 MHz frequency band*
- Outdoor use: maximum power (EIRP*) of 100 mW for the 2400-2454 MHz band and with maximum power (EIRP*) of 10 mW for the 2454-2483 MHz band

Caution: Exposure to Radio Frequency Radiation.
To comply with RF exposure compliance requirements, for mobile configurations, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

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Limited Warranty

Warranty Coverage and Duration

Radicom Research, Inc. ("RRI") warrants to the original purchaser its RRI-manufactured products ("Product") against defects in material and workmanship under normal use and service for a period of one year from the date of delivery. During the applicable warranty period, at no charge, RRI will, at its option, either repair, replace or refund the purchase price of this Product, provided it is returned in accordance with the terms of this warranty to RRI.   Repair, at the option of RRI, may include the replacement of parts, boards or other components with functionally equivalent reconditioned or new parts, boards or other components. Replaced parts, boards or other components are warranted for the balance of the original applicable warranty period.   All replaced items shall become the property of RRI.

RRI MAKES NO GUARANTEE OR WARRANTY THAT THE PRODUCT WILL PREVENT OCCURRENCES, OR THE CONSEQUENCES THEREOF, WHICH THE PRODUCT IS DESIGNED TO DETECT.

This expressed limited warranty is extended by RRI to the original end-user purchaser only, and is not assignable or transferable to any other party.   This is the complete warranty for the Product manufactured by RRI, and RRI assumes no obligation or liability for additions or modifications to this warranty.   In no case does RRI warrant the installation, maintenance or service of the Product. RRI is not responsible in any way for any ancillary equipment not furnished by RRI that is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment and all such equipment is expressly excluded from this warranty. Because of wide variations in topographical and atmospheric conditions, which may require availability of repeater stations or of particular radio frequencies, RRI assumes no liability for range, coverage or suitability of the Product for any particular application.   Buyer acknowledges that RRI does not know a particular purpose for which buyer wants the Product, and that buyer is not relying on RRI's skill and judgment to select or furnish suitable goods.

What this Warranty does NOT Cover:

(a) Defects or damage resulting from use of the Product in other than its normal and customary manner.

(b) Defects or damage from misuse, accident or neglect.

(c) Defects of damage from improper testing, operation, maintenance, installation, alteration, modification or adjustment.

(d) Disassembly or repair of the Product in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim.

(e) Any Product that has had its serial number or date code removed or made illegible.

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How to Receive Warranty Service:

To obtain warranty service, contact RRI by phone (408) 383 9006 for RMA Department and RMA (Return Merchandise Authorization) number.   Deliver or send the Product, transportation and insurance prepaid to RRI, with the RMA number clearly marked on the outside of the package.

General Provision

This warranty sets forth the full extent of RRI's responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at RRI's option, is the exclusive remedy.   THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESSED WARRANTIES.   ANY APPLICABLE IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY.   TO THE FULLEST EXTENT PERMITTED BY LAW, RRI DISCLAIMS ANY LIABILITY FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVING OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE OR FAILURE OF SUCH PRODUCT.

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Contacting Radicom Research

If more information or technical support is needed, please contact us:

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