

# *Radicom Research, Inc.*

*Preliminary  
Designers Guide for the*

## *WiFiHU2-NE and WiFiHU2*



*RoHS Compliant*

*USB WiFi Modules*



*April 17, 2012*

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## ***Introduction***

Thanks for purchasing Radicom Research's USB WiFi Module. Radicom is committed to providing quality service and technical support in order to expedite the product development process. The WiFiHU2 Module requires only a USB (Universal Serial Bus) interface to add state of the art data WiFi wireless operation to any system. It is designed to fully support **IEEE802.11n™** Draft 2.0, **IEEE802.11e™** and **IEEE802.11i™** standards. If further information is required, please contact us and we will provide any additional help needed. The WiFiHU2 series offers Soft AP support. It can turn your Internet connected PC or Laptop into a WiFi Wireless Access Point. So any WiFi device such as iPhone, iPod, PDA, within range can connect to Internet by sharing your WiFiHU2 Access Point.

## ***Features***

- Compatible with both USB 1.1 and USB 2.0 host controllers
- Soft AP support (Software enabled Access Point)
- Supports ACCESS Point (Host WiFi)
- USB 2.0 Compatible Hot Swappable Interface
- IEEE 802.11b/g/n compatible WLAN
- 150Mbps receive PHY rate and 75Mbps transmit PHY rate using 20MHz bandwidth
- 300Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- 20MHz and 40MHz bandwidth transmission
- Operates in 2.4GHz Frequency Range
- Compatible with 802.11n draft 2.0 specification
- 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
- MIMO power saving mechanism and increased performance when using dual antennas
- 2 x 2 MIMO technology for extended reception robustness and exceptional throughput
- Two Transmit and Two Receive paths (2T2R) with 2.UFL TX/RX antenna ports
- Hardware antenna diversity
- Channel management and co-existence
- Multiple BSSID feature allows multiple MAC identities when used as a wireless bridge
- Supports 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
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation  
Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- 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)

### Approvals

- FCC Part 15: FCC OET 65 Supplement C (SAR), 47 CFR FCC Part 15 Subpart C 15.247, 47 CFR FCC Part 15 Subpart B 2009 (Class B)
- IC RSS-102, IC ES-003 issue 4, IC RSS-210 issue 8:2010
- RoHS Compliant
- CE Marked: EN 61000-3-2:2006+A2:2009, EN 62311:2008, EN 300 328 V1.7.1, EN 301 489-1, V1.8.1, EN 61000-3-3:2008, EN 301 489-17 V2.1.1)
- EN 60950-1:2006+A11:2009+A1:2010+A12:2011

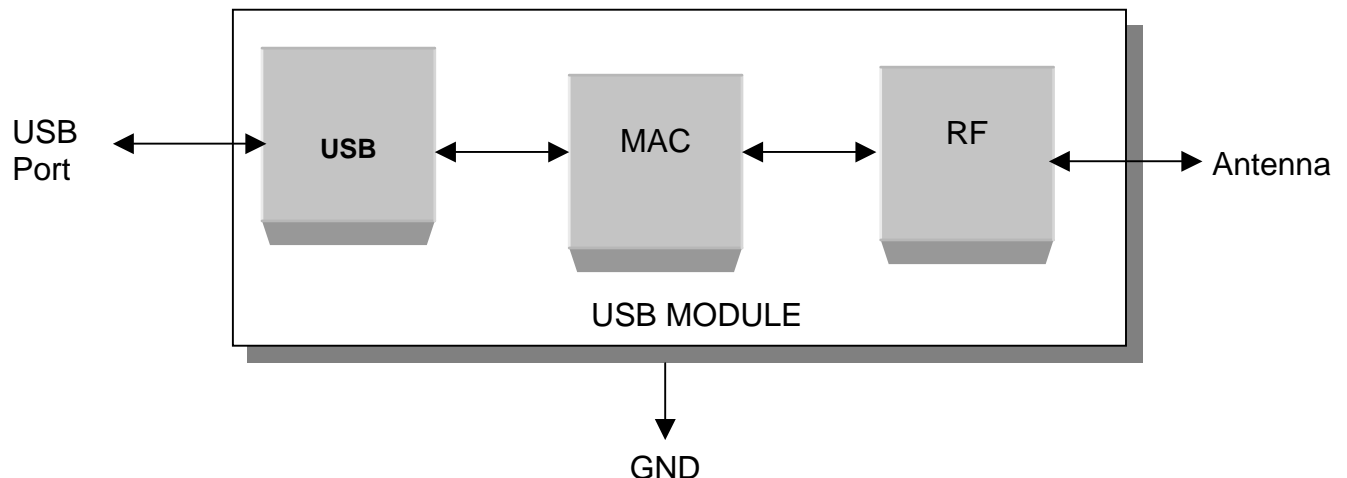
### Support

- IEEE 802.11b/g/n compatible WLAN
- IEEE 802.11e QoS Enhancement (WMM)
- IEEE 802.11h TPC, Spectrum Measurement
- IEEE 802.11i (WPA, WPA2, WEP). Security ~ Open, shared key, and pair-wise key authentication services
- Cisco Compatible Extensions (CCX4)

### Ratings





Parameter	Min	Typical	Max	Units
Maximum Data Rate			300M	bps
Operating Temperature HU	-40°		+85°	°C
Relative Humidity (non-condensing)	5 %		95	%
USB Power		5V ± 10%		
Current Consumption	152	155	162	mA
Transmit & Receive Level	-84(Rx)		+17 (Tx)	dBm

### Block Diagram





## ***Model and Ordering Information***

This versatile WiFiHU2 USB family of products offers various configuration options to meet the specific system requirements a designer may need to add state of the art WiFi USB operation. The WiFiHU2 is available as a module, a module with USB Jack and antennae interface, or as a complete external device in an enclosure. The WiFiHU2 also has many different antennae options.

Model	Description	Comments
	<b>WiFi USB Module with dual on board chip antennae</b>	<b>Uses onboard chip antennae. Not for use with External Antenna. Allows designer to determine USB Jack placement.</b>
	<b>WiFiHU2-a installed in a WiFiHU2-CB1 Carrier Board with on board USB Jack.</b>	<b>Complete WiFi Module with dual chip antennae with USB Jack interface.</b>
	<b>WiFi USB Module with two SMD Connectors for attaching antenna cables and 2.4GHz 2 dBi Omni-directional antennas</b>	<b>Allows designer to determine USB Jack and antenna placement. Can use one or two cables and antennas</b>
	<b>WiFiHU2-c installed in WiFiHU2-CB1 Carrier Board with on board USB Jack.</b>	<b>Complete WiFi Module for 2 cables and 2 antennas with USB Jack interface.</b>

**\*These models can use either one or two cables and antennas. For ultimate performance, we recommend using two antennas to meet MIMO requirement with better adaptability for receiving.**

<p><b>WiMDK-2001</b></p> 	<p><b>Complete WiFiHU2 development kits including WiFiHU2 module installed in Carrier Board with USB jack interface. All kits include 6ft USB cable, and CD with Designers Guide and Drivers. Antennas and Cables are also provided for external antenna models.</b></p>	<p><b>WiMDK-2001-a Kit for Model WiFiHU2-a-1-NE</b></p> <p><b>WiMDK-2001-c Kit for Model WiFiHU2-c-1-NE</b></p>
<p><b>AC6i-RP-SMA</b></p> 	<p><b>6" U.FL. to RP-SMA female connector antenna cable</b></p>	<p><b>Antenna Cable for models WiFiHU2-c and WiFiHU2-c-1-NE</b></p>
<p><b>ATN-2d-RP-SMA</b></p> 	<p><b>Replacement antenna, 2.4GHz, 2dBi, RP-SMA, Omni-directional.</b></p>	<p><b>Antenna for models WiFiHU2-c and WiFiHU2-c-1-NE</b></p>

## ***Connecting the WiFiHU2 or WiFiHU2-NE to Your System***

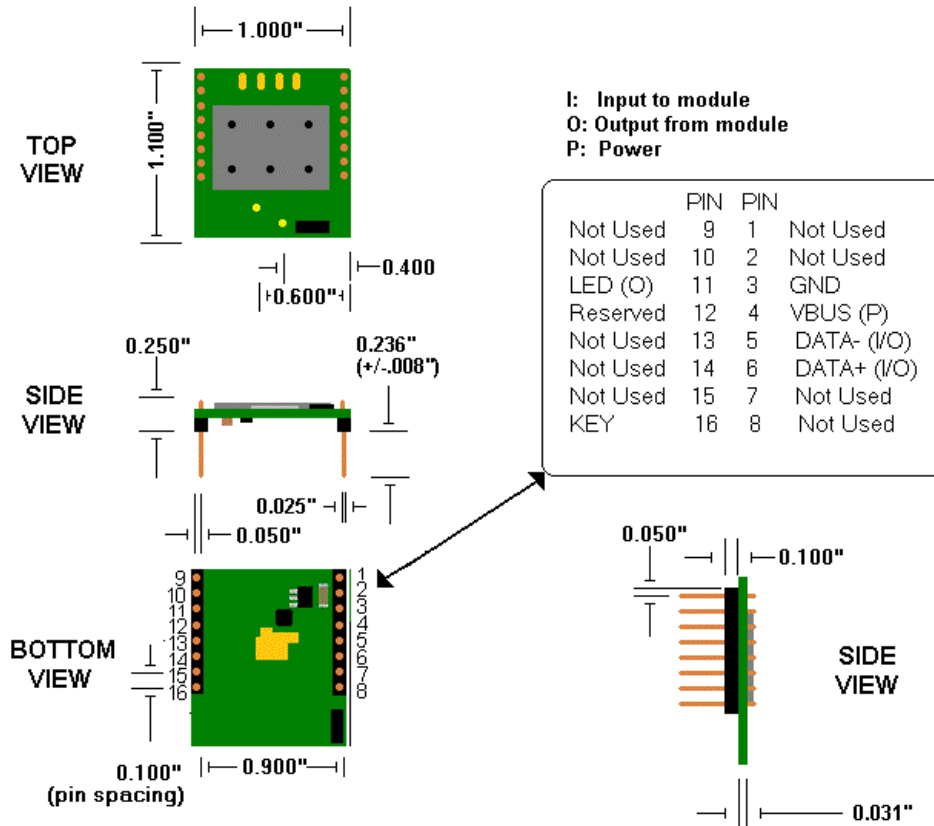
Prior to connecting the WiFiHU2 to a Window XP, the drivers should be installed. The WiFiHU2 Modules are designed for easy connection to any standard USB Port and wireless network. Connect one end of the USB cable into the USB connector on the WiFiHU2-NE and the other into any available USB receptacle on your computer. The WiFiHU2-NE's "Hot Swap-able" interface allows you to plug or unplug the module even when the computer is on. If using Windows, load the provided drivers. The WiFiHU2-NE is now ready for use.

If you plan to embed the WiFiHU2 into your system, the initial evaluation consists of the WiFiHU2 USB Module mounted onto a USB hub PCB (WiFiHU2-NE). To remove the WiFiHU2 carefully remove it from the two 8 pin headers on the WiFiHU2-NE USB interface board. Save this interface board. The WiFiHU2 can always be reinstalled into the WiFiHU2-NE USB interface board and connected to any standard USB port to verify or test the module functions.

If you use external antenna, connect one end of Radicom approved antenna to the on board socket. For ultimate performance, we recommend using two antennas to meet MIMO requirement with exceptional reception and throughput. If only using one antenna, you must use the correct antenna socket for good performance. Connect single antenna to the socket closest to the Radicom Research white silkscreen legend on the PCB.

## Mechanical Specification and Pin Orientation for the WiFiHU2

The WiFiHU2 USB Half Inch Modules are designed for easy connection to any standard USB interface and wireless network. The connection is made through two 8-pin headers, which may be attached to your device via a socket or by individually hardwiring each pin.

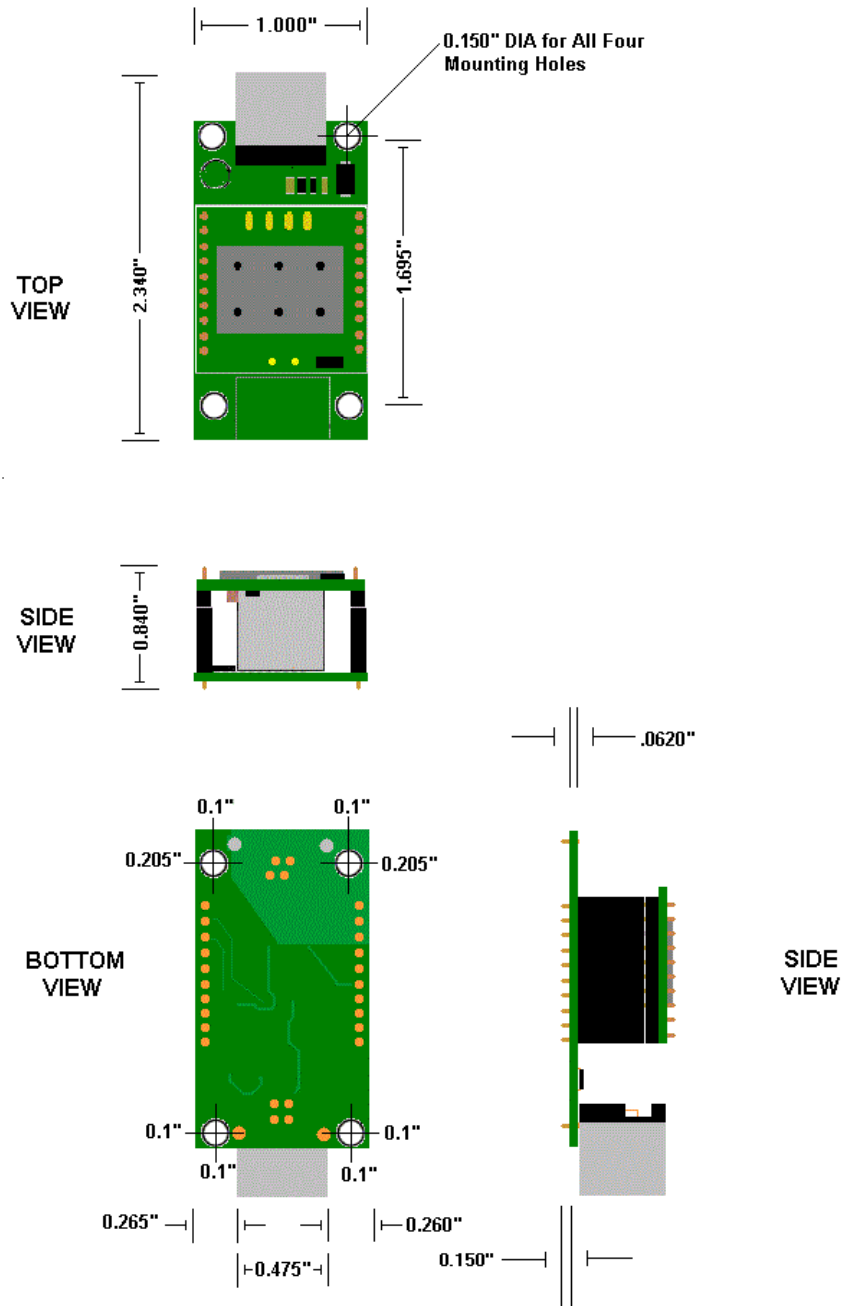


### Notes:

1. Pin Spacing is 0.100 inch from center to center
2. Dimension of the WiFiHU2 module – 1.10 x 1.00 x 0.25 inch
3. Suggested mating female connector:  
 Samtec P/N. #SSW-108-21-G-S (RoHS Thru-Hole)  
 Samtec P/N. #SSW-108-22-G-S-VS (RoHS SMT)
4. Square pins – 0.025 x 0.025 inch



## *Mechanical Specification for the WiFiHU2-c-1-NE and WiFiHU2-a-1-NE*



## ***WiFiHU2 USB Interface Pins***

The following shows the I/O Pins required for adding the WiFiHU2 USB Module to your embedded system.

<b>PIN Number</b>	<b>Name</b>	<b>Type</b>
1	Not Used	
2	Not Used	
3	GND	Ground
4	VBUS	USB Power
5	DATA-	Input / Output
6	DATA+	Input / Output
7	Not Used	
8	Not Used	
9	Not Used	
10	Not Used	
11	LED (O)	Output
12	Reserved	
13	Not Used	
14	Not Used	
15	Not Used	
16	Key	No Pin

### *Additional Information on the Interface Signals*

<b>PIN</b>	<b>Name</b>	<b>Definition</b>
1,2		Not used – No Connection can be used for mounting purposes
3	<b>GND</b>	– Ground – Connect this pin to the ground of the USB bus
4	<b>VBUS</b>	– This is the USB Power Connection. Connect this pin to VBUS
5	<b>*DATA (-)</b>	- Connect this pin to Data –
6	<b>*DATA (+)</b>	- Connect this pin to the Data +
7,8,9,10		Not used – No Connection can be used for mounting purposes
11	<b>LED - Link Process</b>	
12	<b>Reserved</b>	
13,14,15		Not used – No Connection can be used for mounting purposes
16		No Pin – This Pin has been removed. Add a key to the mating connector to prevent the module from being plugged in backwards.

**\*Note: D+ (Pin 15) and D- (Pin 16) are the differential data plus and minus signals of the USB port. The two traces should be in parallel and equal in length.**

## *FCC, IC, and CE Label Location and Module Model Identification*

The WiFiHU2 module family is FCC Part 15 and IC (Industry Canada) certified. The WiFiHU2 is also CE marked. The modules are labeled with the appropriate WiFiHU2 module model number and FCC Part 15 ID, IC registration number and CE mark. The label can be found on top of the metal shielding on the WiFiHU2 Module.

**Radicom Research Inc.**

**Model:** WiFiHU2-a  
**FCC ID:** K7T-WIFIHU2  
**IC:** 2377A- WIFIHU2



**Radicom Research Inc.**

**Model:** WiFiHU2-c  
**FCC ID:** K7T- WIFIHU2  
**IC:** 2377A- WIFIHU2



**Radicom Research Inc.**

**Model:** WiFiHU2-a-1-NE  
**FCC ID:** K7T- WIFIHU2  
**IC:** 2377A- WIFIHU2



**Radicom Research Inc.**

**Model:** WiFiHU2-c-1-NE  
**FCC ID:** K7T- WIFIHU2  
**IC:** 2377A- WIFIHU2



## ***Important Regulatory Compliance and User Information***



The final product with the modules installed needs to be tested for FCC Part 15, IC (Industry Canada) CE, EMI/RFI compliance. Radicom certification documentation will help streamline the final product approval process. Contact Radicom for more information. To maintain compliance in the finished product, carefully follow guidelines in this section.

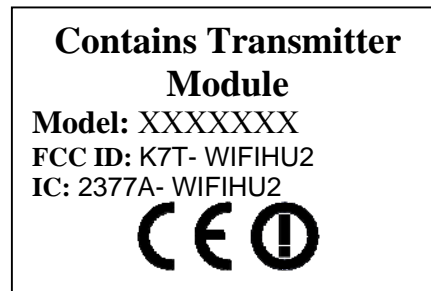
This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users. For laptop installations, the antenna must be installed to ensure that the proper spacing is maintained in the event the users places the device in their lap during use.
- 2) The transmitter module may not be co-located with any other transmitter or antenna. As long as the two conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with the 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 circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

## **Host (End Product) Labeling Requirements**

To maintain compliance, the end product hosting the WiFiHU2 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:



**The XXXXXXXX reflects the correct model installed into the host equipment: The models are WiFiHU2-a, WiFiHU2-c, WiFiHU2-a-1-NE, or WiFiHU2-c-1-NE**

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 users 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 product meets the applicable Industry Canada technical specifications. / Le present materiel est conforme aux specifications techniques applicables d'Industrie Canada.

### **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).

## ***CE Declaration of Conformity***

For the following equipment:

Radicom Research Inc. WiFi USB Modem Module

Model(s): WiFiHU2-a, WiFiHU2-c, WiFiHU2-a-1-NE, WiFiHU2-c-1-NE

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 61000-3-2:2006+A2:2009, EN 300 328 V1.7.1, EN 62311: 2008,  
EN 301 489-1, V1.8.1, EN 61000-3-3:2008, EN 301 489-17 V2.1.1  
EN 60950-1:2006+A11:2009+A1: 2010+A12:2011



This equipment is marked with the  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.



## *WiFiHU2 Regulatory Domain Frequencies*

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

Model: WiFiHU2 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	∨					

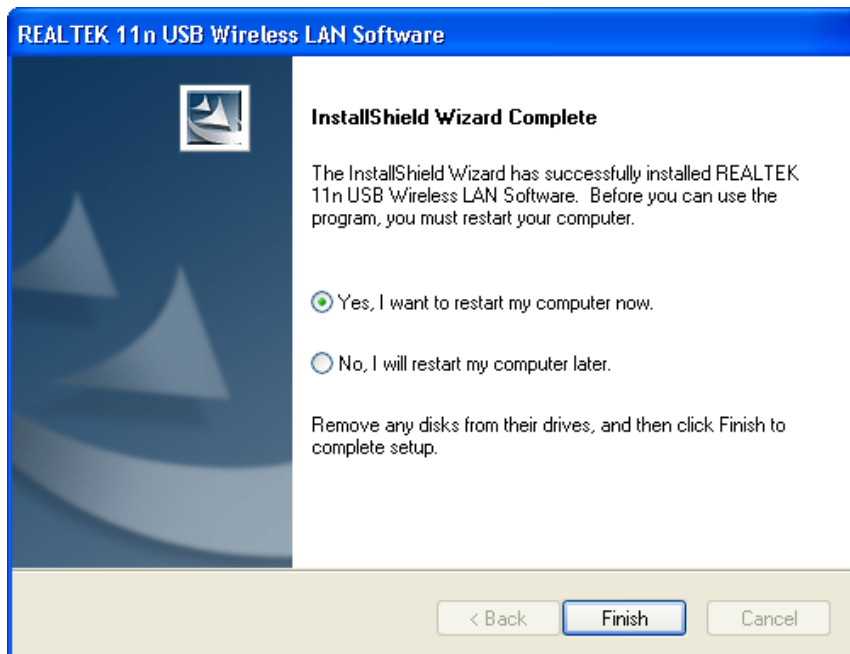
## *Driver Installation Guide For Windows XP*

Do not plug the WiFiHU2 module into USB port until the drivers are loaded.

Insert the installation disc into CD-ROM. Open the WiFiHU2 Drivers + Manual Folder. Open the WiFiHU2 Driver Folder. Open the Windows folder and select “Setup.exe”.



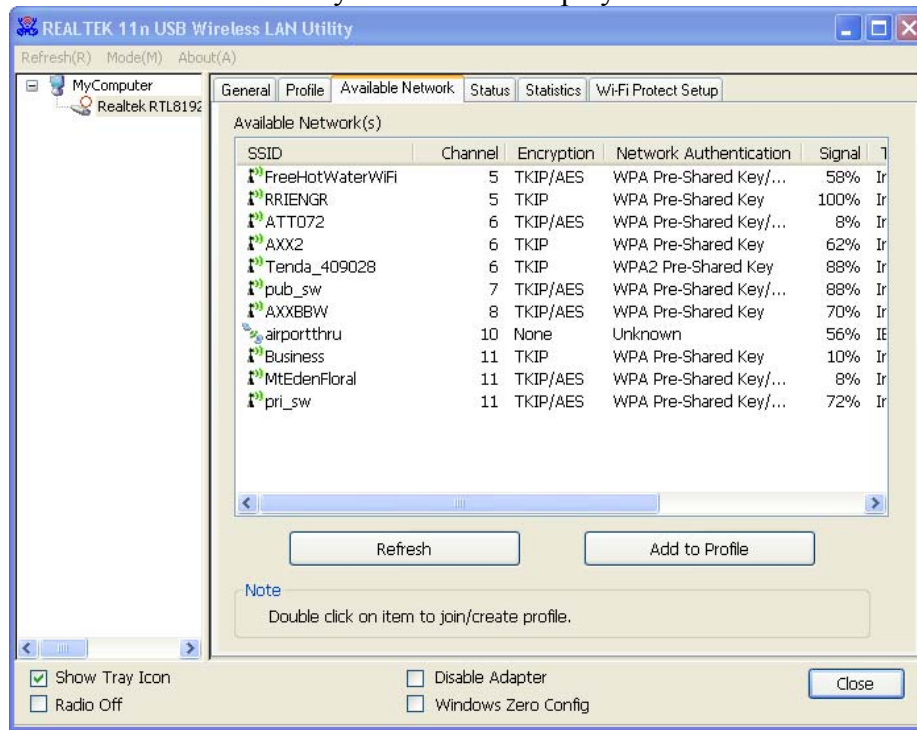
Click Next. Windows will now install the driver. This may take a few moments.



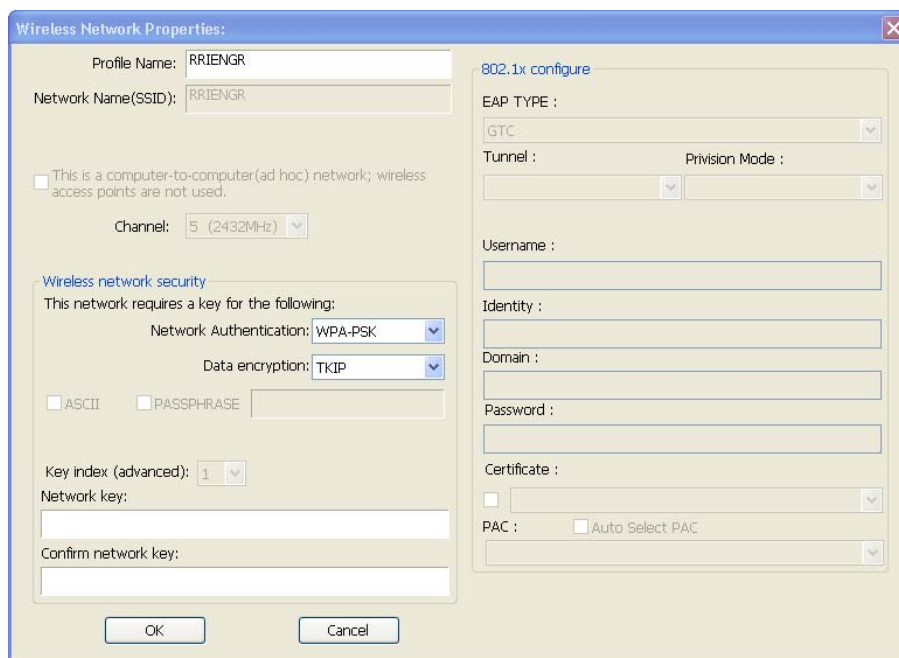
Click Finish.

Windows will now restart. After the computer reboots, plug the WiFiHU2 into a USB port. Windows will briefly display “Found New Hardware” and automatically load the drivers.

Left Click the 5 red signal strength bars of the Realtek Icon in the Window system tray. The “Realtek Wireless LAN Utility” box will be displayed.

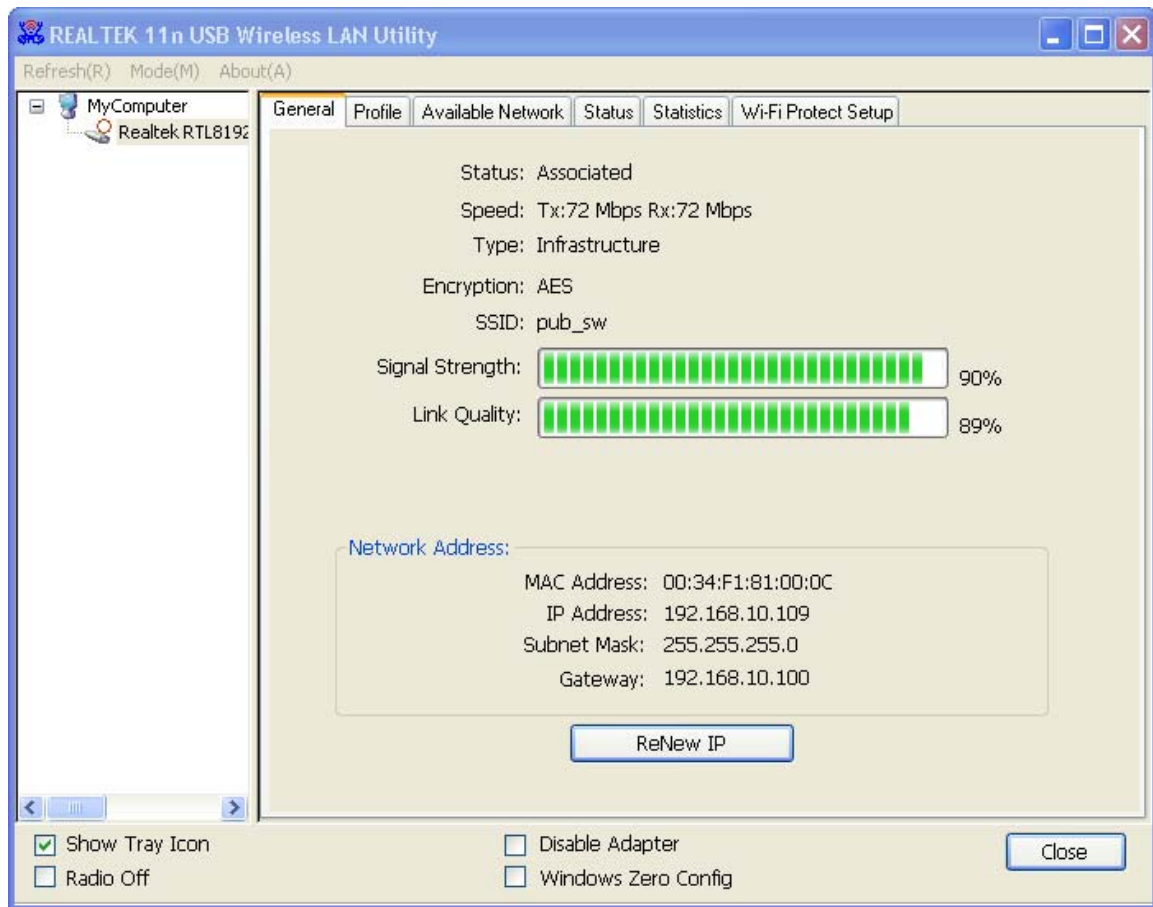


Left Click the “Available Network” box. Highlight and Double Click the network you want to connect with. The “Wireless Network Property” box will appear.



Enter and then confirm the Network Key, then Click OK.

The “LAN Utility” box will display the Signal Strength and Link Quality.



The WiFiHU2 is now connected to the network. The signal strength bars in the Realtek Icon in the system tray should be green.

## ***WiFiHU2 USB Linux Driver Quick Installation Guide***

Software Package & Platform requirements:

- The software package contains one WiFiHU2 Linux driver (source code) that supports Linux Kernel version 2.6.18 thru 2.6.38 and Kernel version 3.0.2, and WiFiHU2 documents.
- Platform requirements: PC-based Linux platform (i386) and WiFiHU2 Linux driver.

**NOTE: Kernel versions 2.6.41 and 3.2.1 will automatically detect the WiFiHU2.**

## *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.

**How to Receive Warranty Service:**

To obtain warranty service, contact RRI by phone (408) 383 9006 for RMA Department or email to [rma@radi.com](mailto:rma@radi.com) for an 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.

## *Contacting Radicom Research*

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



2148 Bering Drive

San Jose, CA. 95131

Telephone: (408) 383 9006

Fax: (408) 383 9007

or

e-mail: [sales@radi.com](mailto:sales@radi.com)

<http://www.radi.com/>

# Warning

## Federal Communications Commission Statement Warning

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

“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.”

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

1) The antenna must be installed such that 20 cm is maintained between the antenna and users. For laptop installations, the antenna must be installed to ensure that the proper spacing is maintained in the event the users places the device in their lap

during use (i.e. positioning of antennas must be placed in the upper portion of the LCD panel only to ensure 20 cm will be maintained if the user places the device in their lap for use) and

2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the 2 conditions above are met, further transmitter testing 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 circumstances, 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 devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ASDL modems, certain laptop configurations, and similar equipment). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: K7T-WIFIHU2".

### RF Exposure Manual Information That Must be Included

The users manual for end users must include the following information in a prominent location "IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

### Additional Information That Must be Provided to OEM Integrators

The end user should NOT be provided any instructions on how to remove or install the device.

## Industry Canada Interference Statement Warning

“This device complies with Industry Canada licence-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 présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.