



TRENDNET[®]



User's Guide

TEW-648UB

1.01

Federal Communication Commission Interference Statement

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, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, 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 help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this 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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

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. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

SAR compliance has been established in typical laptop computer(s) with USB slot, and product could be used in typical laptop computer with USB slot. Other application like handheld PC or similar device has not been verified and may not compliance with related RF exposure rule and such use shall be prohibited.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

For Taiwan 警語：

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN60950-1: 2006

Safety of Information Technology Equipment

EN 62311: 2008

Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300GHz)

EN 300 328 V1.7.1 (2006-10)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

EN 301 489-1 V1.8.1 (2008-04)

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

EN 301 489-17 V1.3.2 (2008-04)





Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

CE05600!

 Český [Czech]	TRENDnet tímto prohlašuje, že tento TEW-648UB je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
 Dansk [Danish]	Undertegnede TRENDnet erklærer herved, at følgende udstyr TEW-648UB overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
 Deutsch [German]	Hiermit erkläre TRENDnet, dass sich das Gerät TEW-648UB in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
 Eesti [Estonian]	Käesolevaga kinnitab TRENDnet seadme TEW-648UB vastavust










	direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
 English	Hereby, TRENDnet, declares that this TEW-648UB is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
 Español [Spanish]	Por medio de la presente TRENDnet declara que el TEW-648UB cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
 Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ TRENDnet ΔΗΛΩΝΕΙ ΟΤΙ ΤΕW-648UB ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
 Français [French]	Par la présente TRENDnet déclare que l'appareil TEW-648UB est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
 Italiano [Italian]	Con la presente TRENDnet dichiara che questo TEW-648UB è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo TRENDnet <i>izgatavotāja nosaukums</i>] deklarē, ka TEW-648UB atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo TRENDnet deklaruoja, kad šis TEW-648UB atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
 Nederlands [Dutch]	Hierbij verklaart TRENDnet dat het toestel TEW-648UB in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
 Malti [Maltese]	Hawnhekk, TRENDnet, jiddikjara li dan TEW-648UB jikkonforma mal-htigijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.
 Magyar [Hungarian]	Alulírott, TRENDnet nyilatkozom, hogy a TEW-648UB megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
 Polski [Polish]	Niniejszym TRENDnet oświadcza, że TEW-648UB jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
 Português [Portuguese]	TRENDnet declara que este TEW-648UB está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
 Slovensko [Slovenian]	TRENDnet izjavlja, da je ta TEW-648UB v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	TRENDnet týmto vyhlasuje, že TEW-648UB spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
 Suomi [Finnish]	TRENDnet vakuuttaa täten että TEW-648UB tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
 Svenska [Swedish]	Härmed intygar TRENDnet att denna TEW-648UB står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

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INTRODUCTION

Congratulations on your purchase of this Wireless N USB Adapter.

This manual contains detailed instructions regarding the operation of this product. Please keep this manual for future reference.

With the Wireless N USB Adapter, a desktop or laptop computer can communicate with another computer wirelessly. An easy-to-use utility is bundled with the Wireless USB Adapter for configuration, monitoring, and diagnostic purposes.

The Wireless N USB Adapter can wirelessly transmit and receive data, at a speed of up to 150 megabits per second.

The Wireless N USB Adapter provides users with access to real-time information anywhere in their organization. The mobility of the Wireless N USB Adapter provides productivity and service, which are not available under wired networks. The Wireless N USB Adapter can easily adapt from peer-to-peer networks, suitable for a small number of users, to full infrastructure networks of thousands of users that allow roaming around a broad area.

UNPACKING AND SETUP

This section provides unpacking and setup information for the Wireless N USB Adapter.

Unpacking

The box should contain the following items:

- ◆ TEW-648UB Wireless N USB Adapter
- ◆ Multi-Language Quick Installation Guide
- ◆ CD-ROM (Utility & Driver)

If any item is found missing or damaged, please contact your local reseller for replacement.

System Requirements

Before installation, check the following:

- ◆ Make sure your computer is running at least a 300MHz or above processor with 256MB RAM or above
- ◆ Make sure the USB ports are is USB 2.0 port
- ◆ The operating system on your computer must be the following: Windows 2000 (Service Pack 4), XP (Service Pack 2), Windows Vista
- ◆ A draft 802.11n or 802.11b/g access point.
- ◆ Make sure the environment has minimal interference and obstructions.

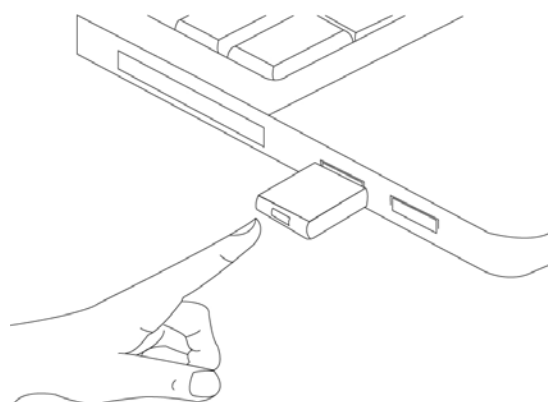
IDENTIFYING EXTERNAL COMPONENTS

LED

LED Status	Description
Slow Blink (1 blink/second)	When the LED is blinking, the WLAN Adapter is transmitting or receiving data on the Wireless Ethernet network.
Fast Blink (3 blinks/second)	After pressing the WPS button, the LED will flash 3 blinks/second. Once the connection is successfully established between the AP and the adapter, the LED will remain solid for 5 seconds to tell the users that the connection has been established. After 5 seconds, the LED will turn off to indicate that the AP is ready for a new WPS connection and the adapter is associated with the AP.
Off	User inserts the card into the NB without driver installed, and without connection.

WPS Button

Press the WPS button start the WPS pairing, the LED will begins to blinking for 3 blinks/second, once the connection is successfully established between the AP and the adapter, the LED will remain in solid for 5 seconds to tell the users that the connection has been established. After 5 second, the LED will light off to indicate user that the Access Point or Wireless Router is ready for a new WPS connection and the adapter is associated with the Access Point or Wireless Router.



WIRELESS PERFORMANCE CONSIDERATIONS

There are a number of factors that can impact the range of wireless devices.

1. Adjust your wireless devices so that the signal is traveling in a straight path, rather than at an angle. The more material the signal has to pass through the more signal you will lose.
2. Keep the number of obstructions to a minimum. Each obstruction can reduce the range of a wireless device. Position the wireless devices in a manner that will minimize the amount of obstructions between them.
3. Building materials can have a large impact on your wireless signal. In an indoor environment, try to position the wireless devices so that the signal passes through less dense material such as dry wall. Dense materials like metal, solid wood, glass or even furniture may block or degrade the signal.
4. Antenna orientation can also have a large impact on your wireless signal. Use the wireless adapter's site survey tool to determine the best antenna orientation for your wireless devices.
5. Interference from devices that produce RF (radio frequency) noise can also impact your signal. Position your wireless devices away from anything that generates RF noise, such as microwaves, radios and baby monitors.
6. Any device operating on the 2.4GHz frequency will cause interference. Devices such as 2.4GHz cordless phones or other wireless remotes operating on the 2.4GHz frequency can potentially drop the wireless signal. Although the phone may not be in use, the base can still transmit wireless signal. Move the phone's base station as far away as possible from your wireless devices.

If you are still experiencing low or no signal consider repositioning the wireless devices or installing additional access points. The use of higher gain antennas may also provide the necessary coverage depending on the environment.

SOFTWARE INSTALLATION

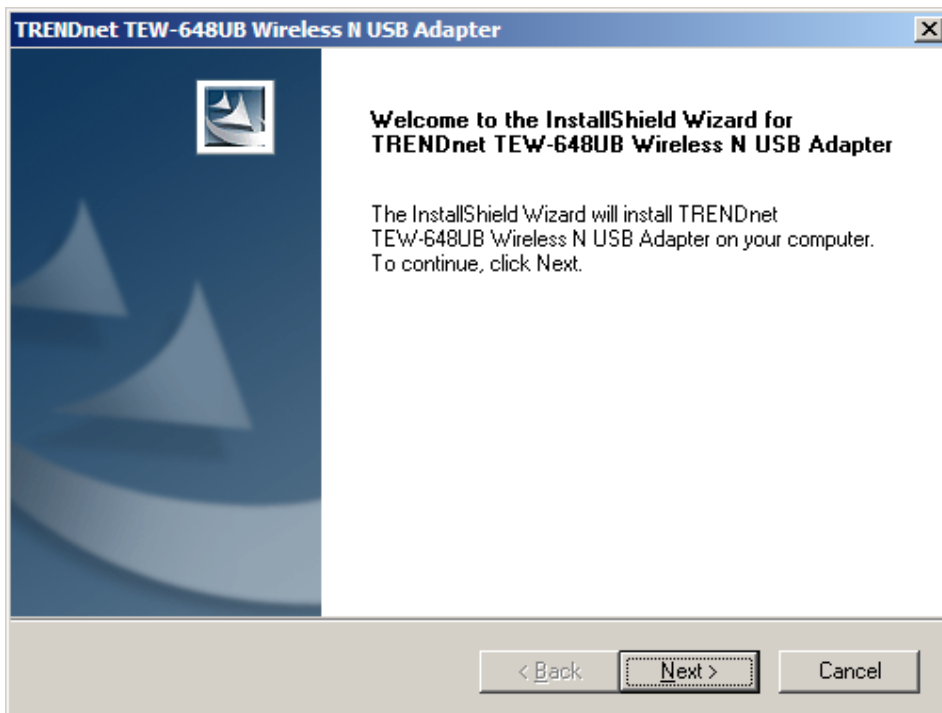
This section describes how to install the driver and utility for the Wireless N USB Adapter.

Windows Based Utility Installation

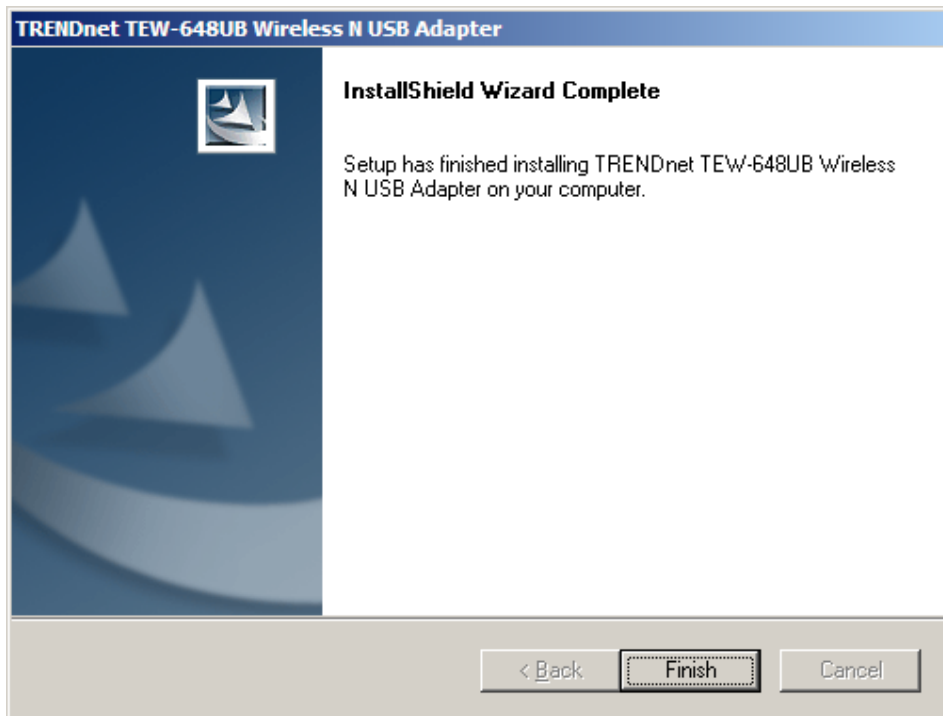
- 1) Insert the Utility and Driver CD-ROM into your computer's CD-ROM drive and then click **Install Utility**.



- 2) Follow the InstallShield Wizard Instructions



3) Click **Finish** to restart the computer.



4) After the computer is rebooted, plug the Wireless N USB Adapter into an available USB slot on your computer.

WIRELESS UTILITY SETTING

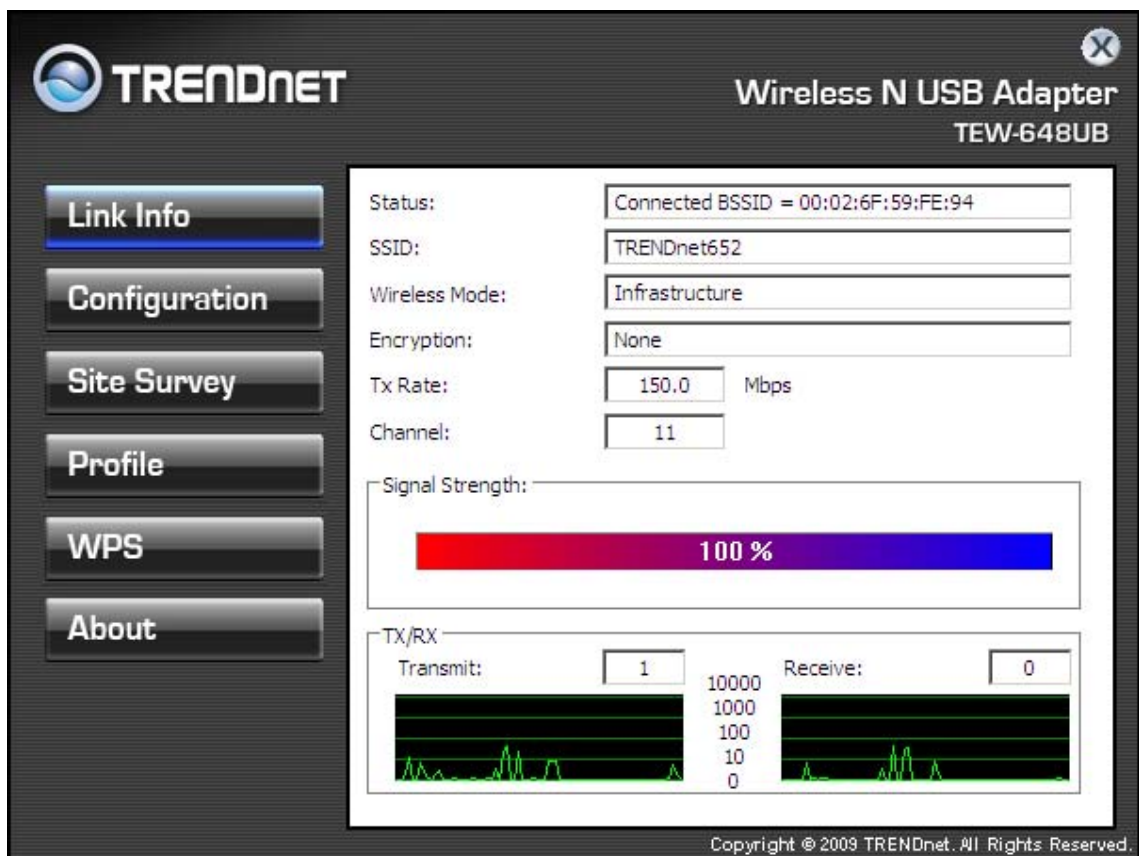
The user can configure the wireless settings using the Wireless Adapter Configuration Utility. Double-click the utility icon that appears in the taskbar.



The Wireless Adapter Configuration Utility is divided into six sections: Link Info, Configuration, Site Survey, Profile, WPS and About.

Link Information

This is the default screen after launching the Utility program.



Status: Shows the associated BSSID (MAC address), which can be used to identify the wireless access point or router that you are connecting to.

SSID: Shows the current SSID, which must be the same as your wireless access point or router in order to establish the connection correctly.

Frequency: Shows the current frequency used for your wireless network.

Wireless Mode: Shows the current wireless mode used.

Encryption: Shows the current encryption mode used.

TxRate: Shows the current data rate used for transmitting.

Channel: Shows the current channel for communication.

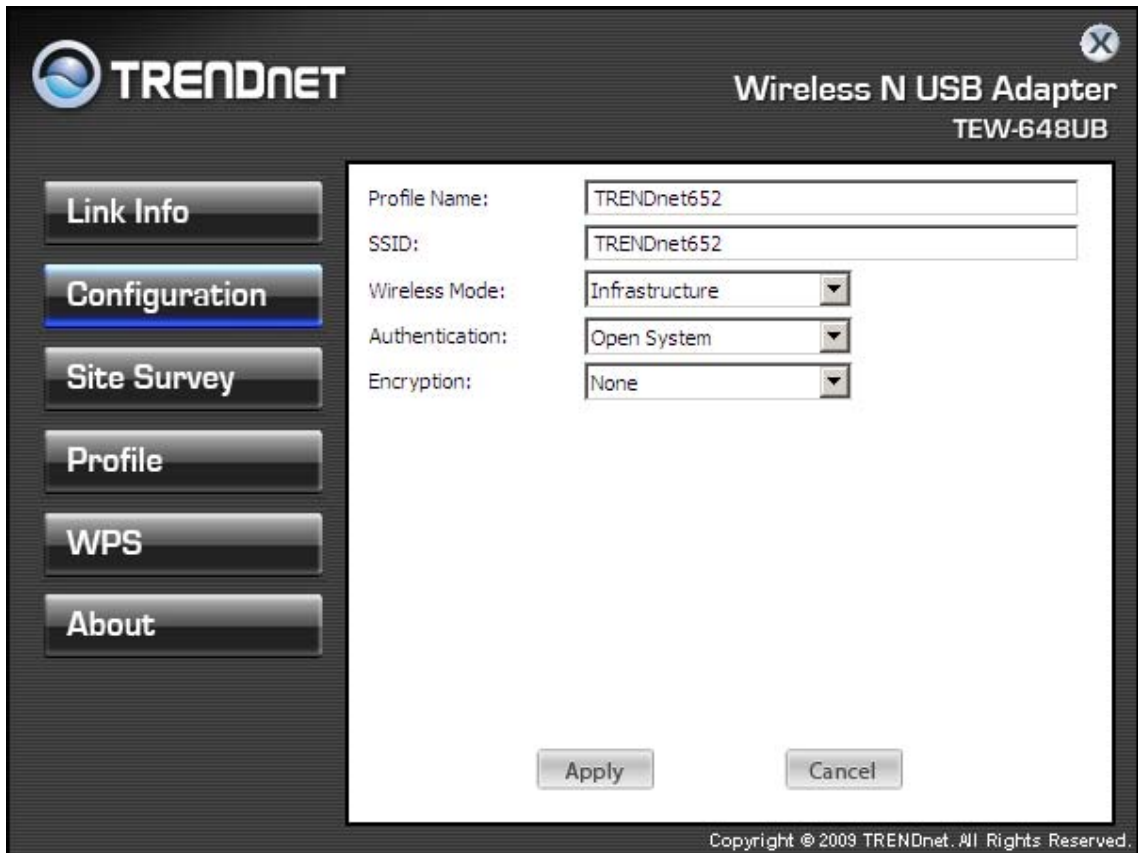
Link Quality: Shows the link quality of the Wireless N USB Adapter with the Access Point when operating under Infrastructure mode.

Signal Strength: Shows the wireless signal strength of the connection between the Wireless N USB Adapter with the Access Point.

Data Rate: Shows the statistics of data transfer, and the calculation is based on the number of packets transmitted and received.

Configuration

This screen is where you set the basic wireless settings for the Wireless N USB Adapter.



The screenshot shows the configuration window for a TRENDnet Wireless N USB Adapter (TEW-648UB). The window has a dark grey background with a sidebar on the left containing buttons for 'Link Info', 'Configuration' (which is highlighted), 'Site Survey', 'Profile', 'WPS', and 'About'. The main area contains the following settings:

Profile Name:	TRENDnet652
SSID:	TRENDnet652
Wireless Mode:	Infrastructure
Authentication:	Open System
Encryption:	None

At the bottom of the main area are 'Apply' and 'Cancel' buttons. The bottom right corner of the window contains the text: 'Copyright © 2009 TRENDnet. All Rights Reserved.'

Profile Name: You can modify the Profile Name to anything you would like, for example Home, Office, PlayRoom and etc.

SSID: Service Set Identifier, which is a unique name shared among all wireless clients in a wireless network. The SSID must match the wireless access point or router's SSID that you are connecting to.

Wireless Mode: There are two modes available for selection

- Infrastructure – to establish wireless communication with the LAN and other wireless clients through the use of Access Points or Wireless Router. This is most common type of connection.
- Ad-Hoc – to establish point-to-point wireless communication directly with other wireless client devices.

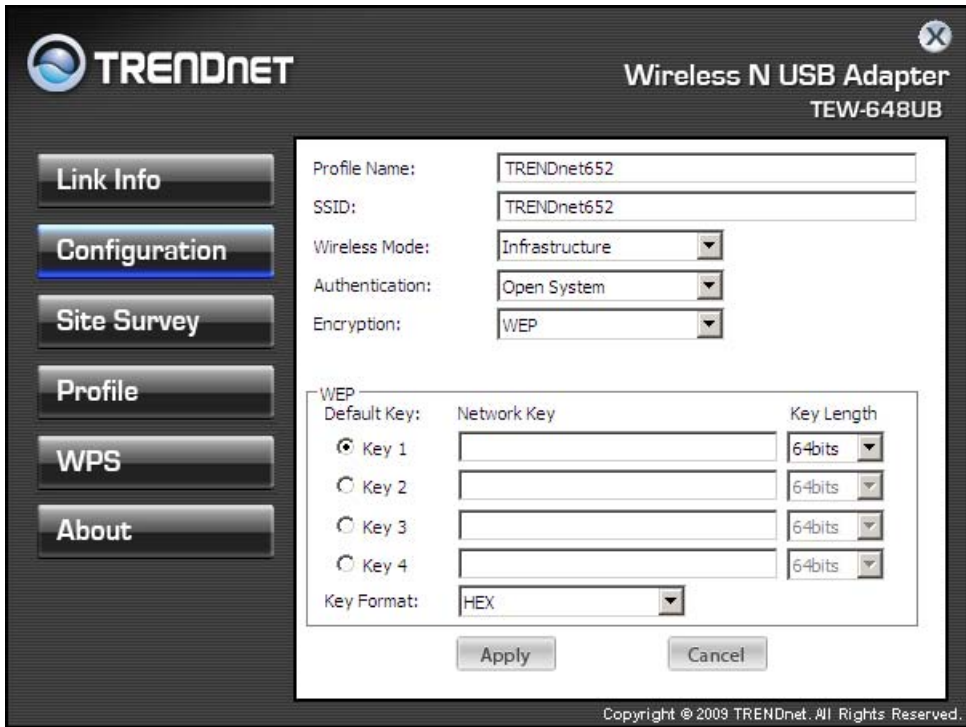
Authentication: The following options are available: Open System, Shared Key, WPA-PSK, WPA2-PSK, WPA EAP-TLS, WPA2 EPA-TLS . Select Open System, Shared Key for WEP data encryption feature.

Open or Shared Key

Open System and **Shared Key** require the user to set a WEP key to exchange data with other wireless clients that have the same WEP key. WEP is considered basic level of wireless encryption, if you would like higher security connection, WPA2 encryption is recommended.

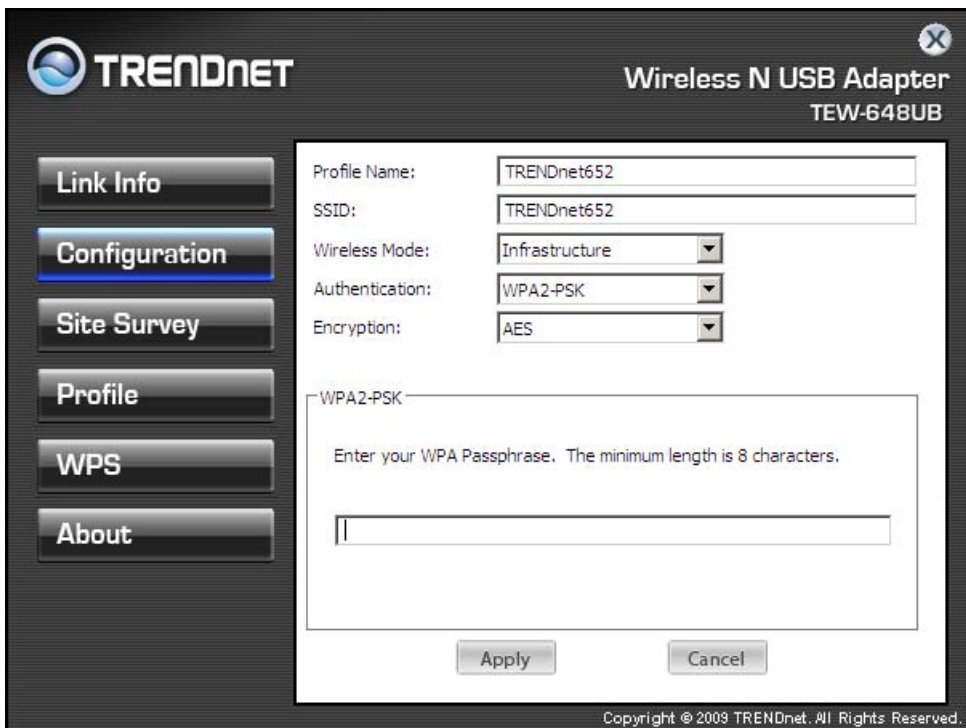
- Default Key: select one of the 4 keys to use.
- Network Key: choose the encryption way, either in HEX or ASCII formats, and enter the password in the blank space.
- Key Length: select 64 or 128 bits as the length of the keys
Key Format: HEX or ASCII

Key Length	Hex	ASCII
Type	characters 0-9, A-F, a-f	alphanumeric format
64-bit	10 characters	5 characters
128-bit	26 characters	13 characters



WPA-PSK / WPA2-PSK

If using the **WPA-PSK/WPA2-PSK** authentication method, please select the **Encryption** type for TKIP or AES then enter the Passphrase key. The minimum length is 8 characters.



WPA EAP-TLS

If using the **WPA/WPA2 EAP-TLS** authentication method, please select the **Encryption** type for TKIP or AES then select the **WPA/WPA2 Certificate** from drop down list.

The screenshot shows the configuration window for a TRENDnet Wireless N USB Adapter (TEW-648UB). The interface includes a sidebar with navigation buttons: Link Info, Configuration (highlighted), Site Survey, Profile, WPS, and About. The main configuration area is titled 'WPA2' and contains the following fields:

- Profile Name: TRENDnet652
- SSID: TRENDnet652
- Wireless Mode: Infrastructure
- Authentication: WPA2 EAP-TLS
- Encryption: TKIP

Below these fields is a section labeled 'WPA2' with the instruction 'Select a Certificate:' and a dropdown menu. At the bottom of the configuration area are 'Apply' and 'Cancel' buttons. The footer of the window reads 'Copyright © 2009 TRENDnet. All Rights Reserved.'

Site Survey

This screen allows the user to scan for available wireless network. It also allows the user to establish wireless communications with a target device.

The screenshot displays the 'Site Survey' interface of a TRENDnet Wireless N USB Adapter (TEW-648UB). The interface features a sidebar with navigation buttons: Link Info, Configuration, Site Survey (highlighted), Profile, WPS, and About. The main area shows a table of detected wireless networks. The table has the following columns: SSID, Security, Signal, Ch..., and MAC Address. The 'TRENDnettest652' network is selected and highlighted in blue. Below the table are 'Refresh' and 'Connect' buttons. The copyright notice at the bottom reads: Copyright © 2009 TRENDnet. All Rights Reserved.

SSID	Security	Signal	Ch...	MAC Address
net436TESTTREND	WPA2-PSK	88	1	00:18:E7:5C:3C
TRENDNETRMA-N	WPA2-PSK	82	3	00:14:D1:C3:BD
TrendnetSky2	WPA-PSK	80	2	00:14:D1:C0:64
TRENDnet	None	92	1	00:14:D1:C6:CE
TRENDnettest652	None	100	2	00:14:D1:58:E1
TrendnetSky2	WPA-PSK	82	4	00:14:D1:C0:64
default	None	76	6	00:03:2F:36:60
TrendnetSky2	WPA-PSK	96	5	00:0E:8E:7D:2E
RMALAB(PR)	WPA2-PSK	94	7	00:14:D1:C4:E9
7245 2150	WEP	64	6	00:0F:CC:EA:5E
Michelle632BRP_	None	100	6	00:14:D1:57:28
	WPA-PSK	100	9	00:C0:02:90:F3
sonnytest	WPA2-PSK	82	11	00:14:D1:61:2D
trendnetsky	WEP	100	8	00:C0:02:1A:AF
CAMTEST	None	98	10	00:C0:02:D4:BC
TRENDnet652	None	100	11	00:02:6F:59:FE
TrendnetSky2	WPA-PSK	66	11	00:0E:8E:7B:25

Available Network – displays the wireless networks (wireless clients, access points or routers) that are within range.

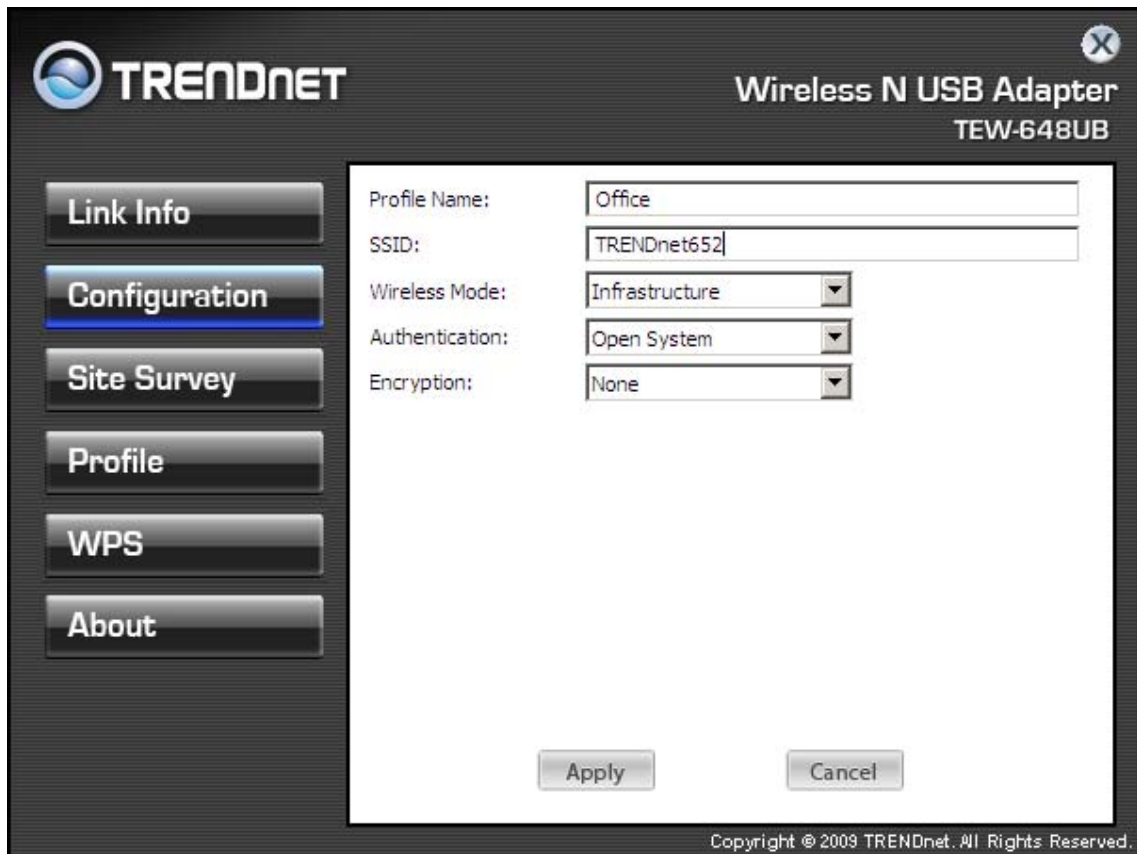
Select any one of the wireless networks by **double-clicking** on it or select the SSID then click the **“Connect”** button.

Click the **“Refresh”** button to scan for available networks.

Profile

Profile – The user can create and manage the created profiles for home, work or public areas. By double-clicking on one of the created profile, the setting will adjust to the specific setting such as SSID, channel, and encryption as saved by that particular profile.

Add: Adds a profile. The following screen will appear. The user can enter the necessary information required for accessing the particular Access Point or Wireless Router.



The screenshot shows the configuration window for a TRENDnet Wireless N USB Adapter (TEW-648UB). The window has a dark grey background with the TRENDnet logo in the top left. On the right side, it says "Wireless N USB Adapter TEW-648UB". On the left side, there is a vertical menu with buttons for "Link Info", "Configuration", "Site Survey", "Profile", "WPS", and "About". The "Profile" button is currently selected. The main area of the window is a white form with the following fields:

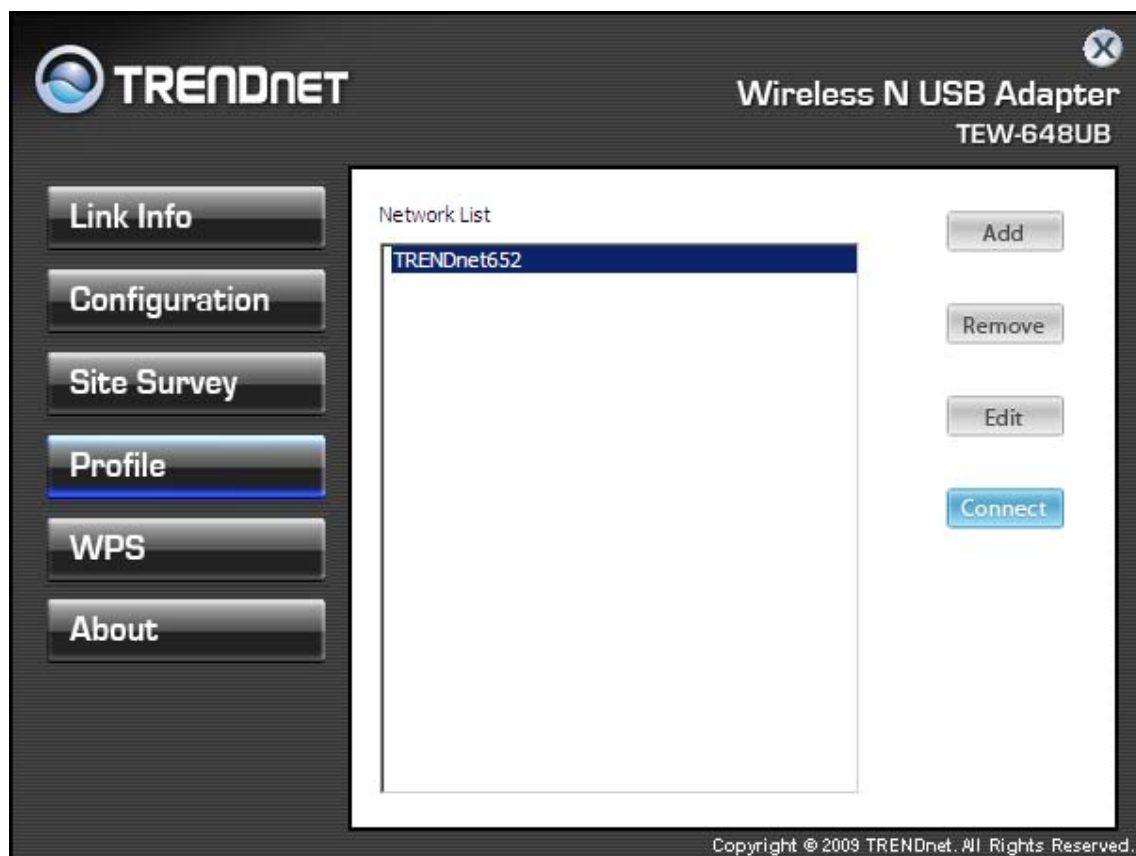
Profile Name:	Office
SSID:	TRENDnet652
Wireless Mode:	Infrastructure
Authentication:	Open System
Encryption:	None

At the bottom of the form, there are two buttons: "Apply" and "Cancel". At the very bottom of the window, there is a small copyright notice: "Copyright © 2009 TRENDnet. All Rights Reserved."

Remove: Deletes the selected profile

Edit: Edit an exist profile. The screen will back to profile. Edit the SSID and select the Wireless Mode, Authentication and Encryption then click **Apply** to save the profile. When the Profile name was changed, a new profile will be added in the list.

Connect: Selected a profile from list then click the **Connect** to connecting to the wireless network with the profile setting.



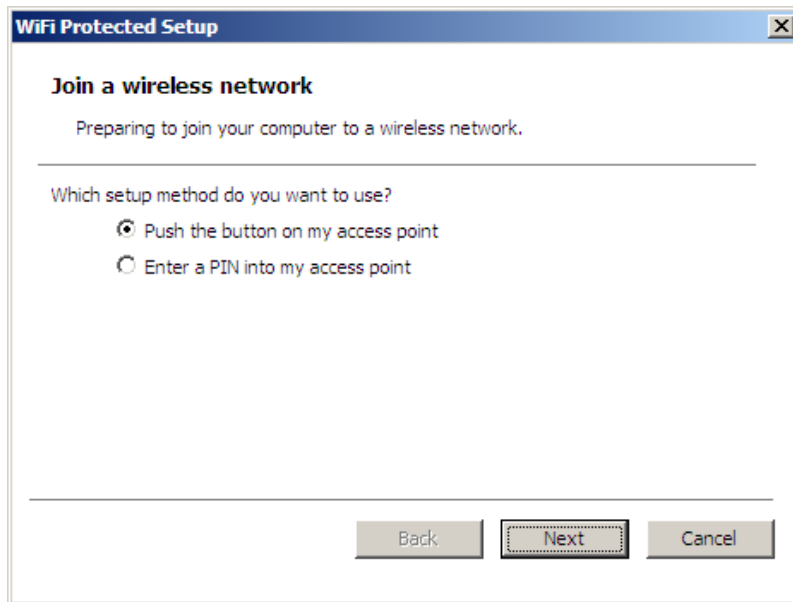
WPS

Wi-Fi Protected Setup (WPS) is an optional certification program from the Wi-Fi Alliance that is designed to ease the task of setting up and configuring security on a wireless network. There are two methods used in the WPS as below instruction.

Push the button on my access point

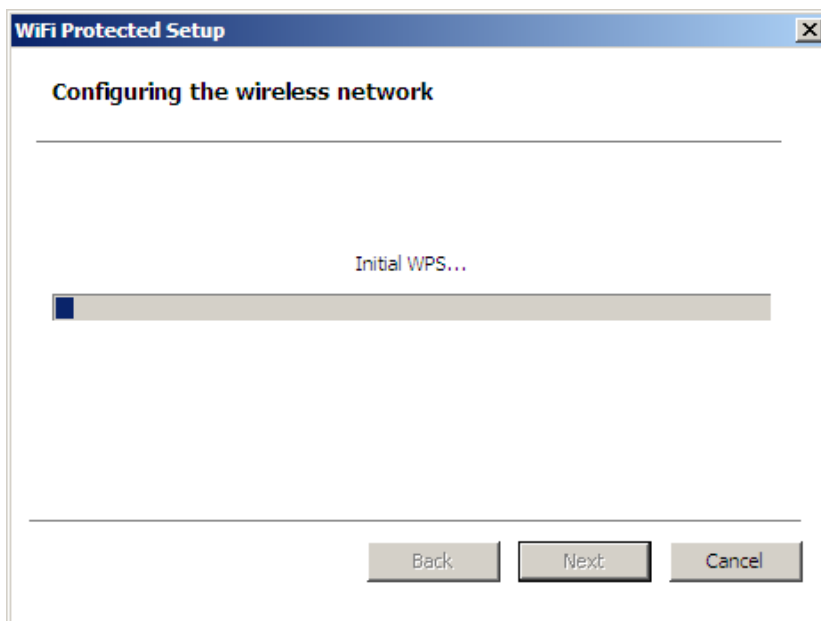
Using the WPS configuration with the “Push the button on my access point” method, the configuration steps as below:

1) Selected the “Push the button on my access point”.

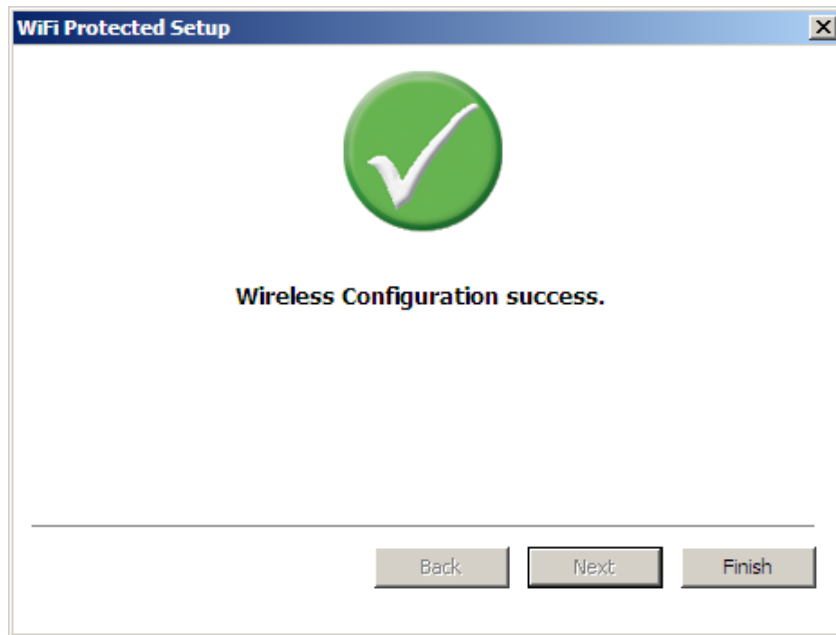


2) Push the WPS configuration button on your wireless access point or router.

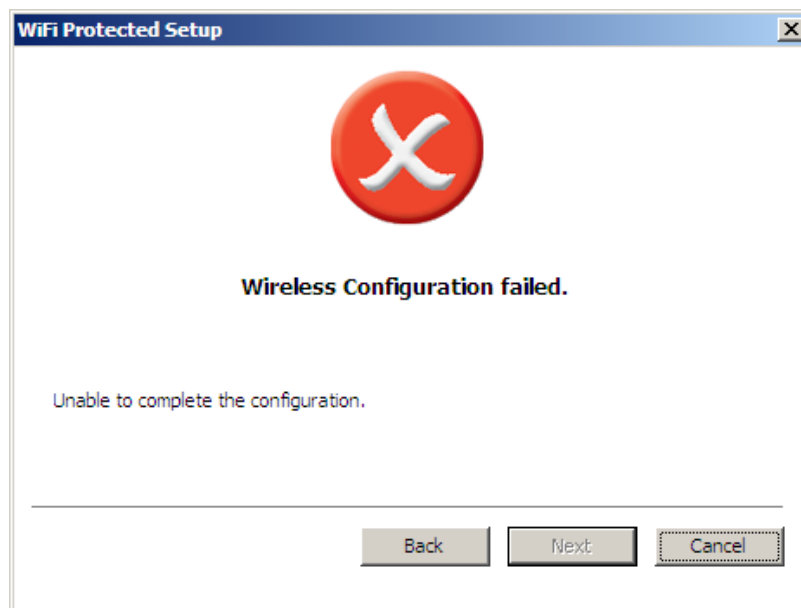
3) Click the **Next** button start the WPS configuration.



4) If the WPS configuration was successful, the follow window will show on.



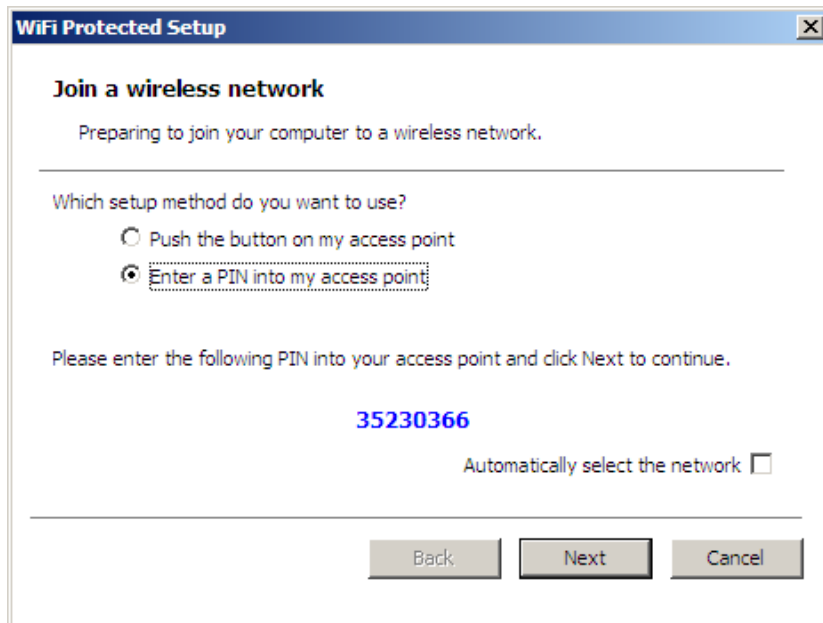
5) If the WPS configuration was failed, the follow window will show on.



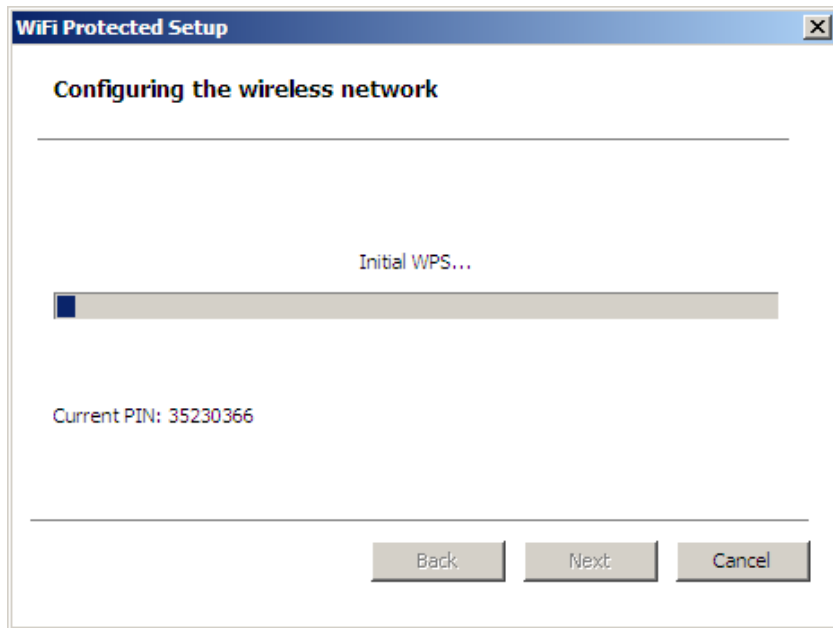
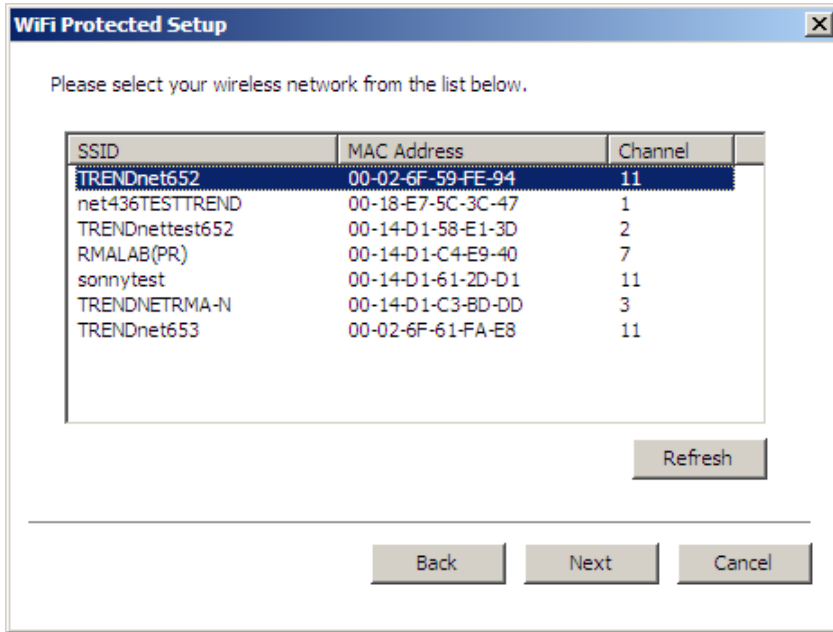
Enter a PIN into my access point

Using the WPS configuration with the “Enter a PIN into my access point” method, the configuration steps as below:

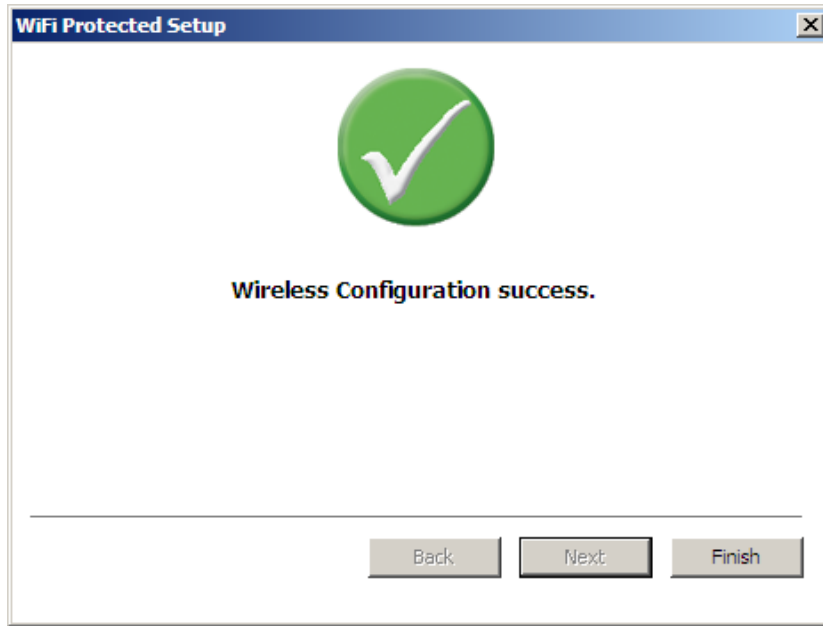
- 1) Selected the “Enter a PIN into my access point”, the PIN will be show on the button of the windows.



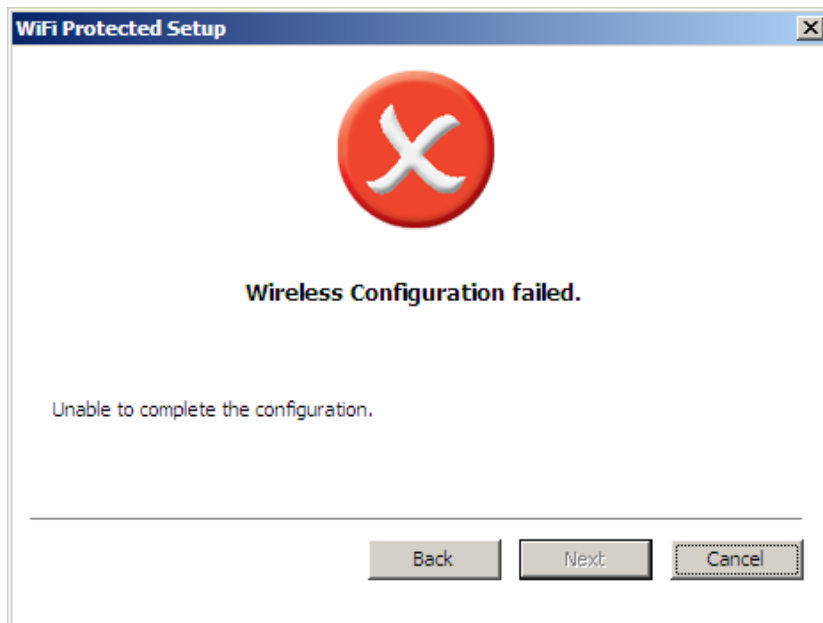
- 2) Enter the PIN code into the WPS “Client PIN number” of you wireless access point or router then click the **Start PIN** button, the wireless access point or router will start the WPS configuration process.
- 3) Selected a wireless access point or router which one will be connecting then click the **Next** button start the WPS configuration. If the “Automatically select the network” was checked, the setup step will be skip.



4) If the WPS configuration was successful, the follow window will show on.

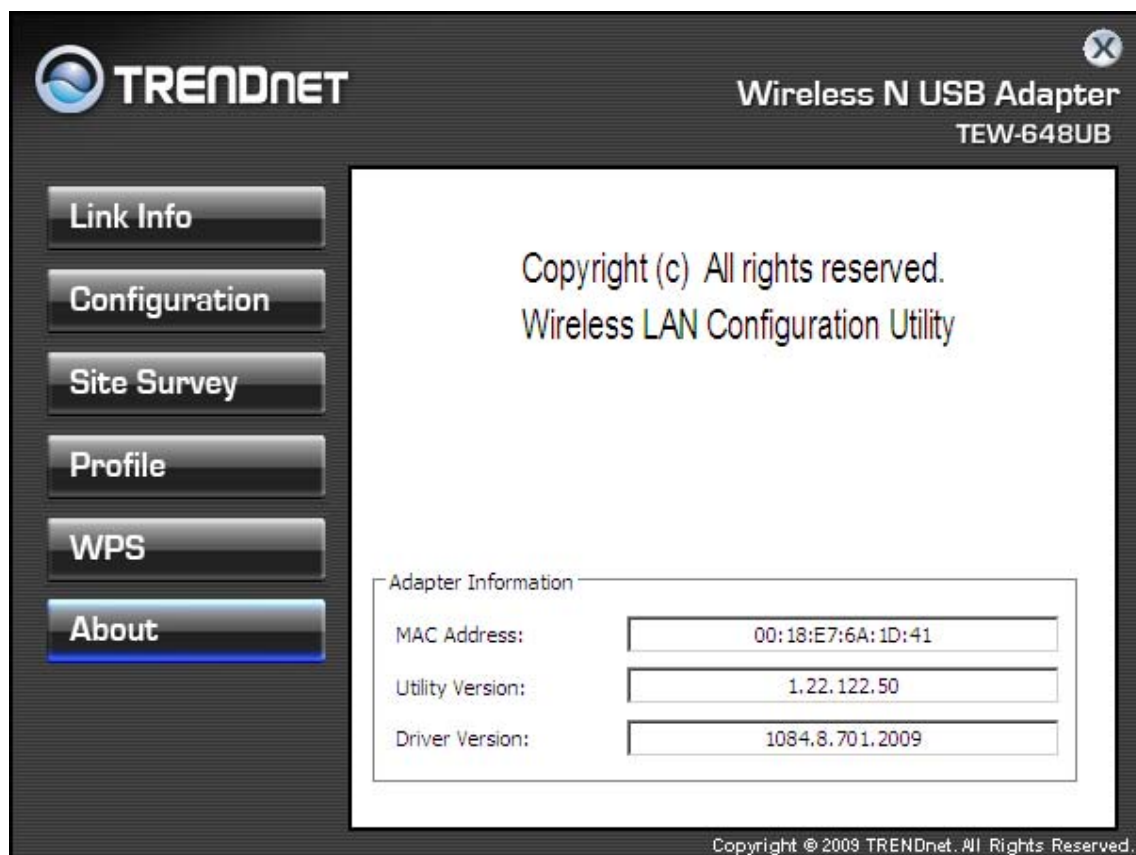


5) If the WPS configuration was failed, the follow window will show on.



About

This screen displays information about the Wireless N USB Adapter, such as the Driver and Utility version. When a new version of the utility becomes available for upgrade, users will be able to identify by version numbers.



The screenshot shows the 'About' screen of the TRENDnet Wireless N USB Adapter configuration utility. The interface has a dark grey background with a sidebar on the left containing several menu items: 'Link Info', 'Configuration', 'Site Survey', 'Profile', 'WPS', and 'About' (which is highlighted with a blue glow). The main content area is white and displays the following information:

TRENDnet Wireless N USB Adapter
TEW-648UB

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Wireless LAN Configuration Utility

Adapter Information

MAC Address:	00:18:E7:6A:1D:41
Utility Version:	1.22.122.50
Driver Version:	1084.8.701.2009

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TECHNICAL SPECIFICATIONS

Hardware	
Interface	USB 2.0 Compliant
Standards	IEEE 802.11n draft v2.0, IEEE 802.11b and IEEE 802.11g
Antenna	Integrated Printed Antenna
LED Indicator	Activity and WPS
Supported OS	Windows 2000, XP (32/64-bit), Vista (32/64-bit)
Dimensions	33.9 x 17 x 7mm (1.3 x 0.7 x 0.3in)
Temperature	Operating: 0° ~ 40° C (32° ~ 104° F) Storage: -10° ~ 70° C (14° ~ 158° F)
Humidity	10% ~ 95% max (Non-condensing)
Certification	CE, FCC
Wireless	
Module Technique	802.11b: CCK (11 and 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps) 802.11g/802.11n: OFDM
Frequency	2.412 ~ 2.484 GHz (Industrial Scientific Medical Band)
Media Access Protocol	CSMA/CA with ACK
Data Rate (auto fallback)	802.11b: 11Mbps, 5.5Mbps, 2Mbps, and 1Mbps 802.11g: 54Mbps, 48Mbps, 36Mbps, 24Mbps, 18Mbps, 12Mbps, 9Mbps and 6Mbps 802.11n: up to 150Mbps
Output Power	16dBm (typically) @ 802.11b 13dBm (typically) @ 802.11g 11dBm (typically) @ 802.11n
Receiving Sensitivity	802.11b: -84dBm (typical) at 11Mbps 802.11g: -68dBm (typical) at 54Mbps 802.11n: -65dBm at 150Mbps
Security	64/128-bit WEP (Hex/ASCII), WPA/WPA2, WPA-PSK/WPA2-PSK
Channels	1~11 Channels (FCC); 1~13 Channels (ETSI)

Limited Warranty

TRENDnet warrants its products against defects in material and workmanship, under normal use and service, for the following lengths of time from the date of purchase.

TEW-648UB – 3 Years Warranty

AC/DC Power Adapter, Cooling Fan, and Power Supply carry 1 year warranty.

If a product does not operate as warranted during the applicable warranty period, TRENDnet shall reserve the right, at its expense, to repair or replace the defective product or part and deliver an equivalent product or part to the customer. The repair/replacement unit's warranty continues from the original date of purchase. All products that are replaced become the property of TRENDnet. Replacement products may be new or reconditioned. TRENDnet does not issue refunds or credit. Please contact the point-of-purchase for their return policies.

TRENDnet shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDnet pursuant to any warranty.

There are no user serviceable parts inside the product. Do not remove or attempt to service the product by any unauthorized service center. This warranty is voided if (i) the product has been modified or repaired by any unauthorized service center, (ii) the product was subject to accident, abuse, or improper use (iii) the product was subject to conditions more severe than those specified in the manual.

Warranty service may be obtained by contacting TRENDnet within the applicable warranty period and providing a copy of the dated proof of the purchase. Upon proper submission of required documentation a Return Material Authorization (RMA) number will be issued. An RMA number is required in order to initiate warranty service support for all TRENDnet products. Products that are sent to TRENDnet for RMA service must have the RMA number marked on the outside of return packages and sent to TRENDnet prepaid, insured and packaged appropriately for safe shipment. Customers shipping from outside of the USA and Canada are responsible for return shipping fees. Customers shipping from outside of the USA are responsible for custom charges, including but not limited to, duty, tax, and other fees.

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