User's Guide

TRENDNET

N150 Micro Wireless USB Adapter

TEW-648UBM

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Product Overview



TEW-648UBM

Package Contents

The package includes:

- TEW-648UBM Wireless N Adapter
- Quick Installation Guide
- CD-ROM (Utility, Drivers and User's Guide)

If any package contents are missing or damaged, please contact the retail store, online retailer, or reseller/distributor that the item was purchased.

Features

The 150Mbps Micro Wireless N USB Adapter (model TEW-648UBM) quickly connects a laptop or desktop computer to a high speed wireless n network.

Enjoy proven wireless n speed and reliability, in a micro design that extends less than three eighths of an inch (9mm) from the edge of a computer.

Connecting to a network is made easy with the external one-touch Wi-Fi Protected Setup (WPS) button. Advanced wireless encryption protects your valuable data. Wi-Fi Multimedia (WMM) Quality of Service (QoS) prioritizes important video, audio, and gaming traffic. Seamlessly stream video, download files, and play games with this ultra compact wireless n adapter.

- Ultra compact high speed wireless n adapter
- Upgrade your laptop or desktop to wireless n
- One-touch wireless connection with a Wi-Fi Protected Setup (WPS) button
- WMM Quality of Service (QoS) data prioritization

*Maximum wireless signal rates are referenced from IEEE 802.11 theoretical specifications. Actual data throughput and coverage will vary depending on interference, network traffic, building materials and other conditions.

Product Hardware Features

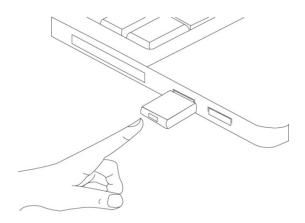


LED

LED Status	Description
Slow Blink (1 blink/second)	When the LED is blinking, the wireless adapter is transmitting or receiving data.
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.



Application Diagram

Wireless Networking Solution



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.
- 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.
- 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.
- 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.

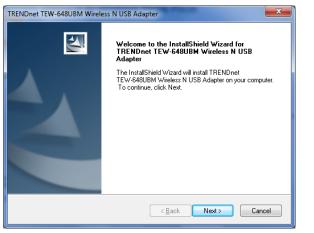
Software Installation and Configurations

Windows 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.



During the installation, you might see these warning message, please select continue anyway to install the software.

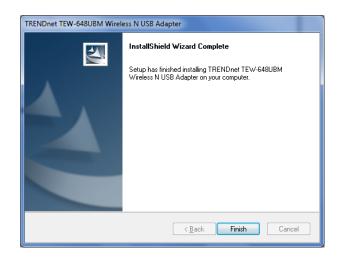
(Windows 7/Vista)



(Windows XP)



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.

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Windows Utility Configurations

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



This screen shows the general information of the wireless adapter.

The Wireless Adapter Configuration Utility is divided into six sections: General, Profile, Available Networks, Status, Statistics and WPS.

General

About ENDOET WiFi Station E- 🚽 My Computer General Profile Available Networks Status Statistics Wi-Fi Protected Setup TRENDnet 150 Status: Associated Speed: Tx:29 Mbps Rx:29 Mbps Type: Infrastructure Encryption: SSID: TRENDnet652 Signal Strength Link Quality Network Address: MAC Address: 00:14:D1:E7:1E:7A IP Address: 192.168.10.103 Subnet Mask: 255.255.255.0 Gateway: 192.168.10.1 < III Show Tray Icon Close Radio Off

Status: Shows connection status.

Speed: Shows the transmission and the reception data rate.

Type: Shows the connection type, Infrastructure or Ad-Hoc mode.

Encryption: Shows the current encryption type used.

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

Wireless Mode: Shows the current wireless mode used.

Signal Strength: Shows the wireless signal strength of the connection between the adapter and the Access Point or router.

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

Network Address: Shows the MAC address and IP address of the adapter.

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.



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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. Or you can search the desire wireless router or AP under **Available Networks** section and click on **Add Profile** button to add the Profile.

Add Profile					
This is a computer to computer(ad-hoc) network ; wireless access points are not used.					
Profile Name : TRENDnet652					
Network Name(SSID) : TRENDnet652					
Channel : 6					
Wireless Network Security This network requires a key for the following:					
Network Authentication : Open System					
Data Encryption : None 🔻					
Key index (advanced) : 1 v					
Confirm Network Key :					
OK Cancel					

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.

Duplicate: Duplicate the selected Profile.

Set Default: Set the selected Profile as default connection.

Wireless Network Security: 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	Нех	ASCII
Туре	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.

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Available Networks

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

Computer TRENDnet 150 General Profi	le Availat	le Networks	Status Statistics	Wi	-Fi Protected Se
Available Network	k(s)				
SSID	Chan	Encryption	Network Authentication	Signal	Туре
1 ³⁾ TRENDnet639-1	It 6	AES	WPA2-PSK	100%	Infrastructure
(³⁾ joetesting453a	pb 8	TKIP/AES	WPA2-PSK/WPA-PSK	100%	Infrastructure
1 ³⁾ TRENDNETRMA	-N 7	AES	WPA2-PSK	92%	Infrastructure
(³⁾ trendnetsky	8	WEP	Unknown	100%	Infrastructure
(³⁾ testlab	9	None	Unknown	46%	Infrastructure
1 ⁰⁾ Carlos691	10	TKIP/AES	WPA2-PSK	100%	Infrastructure
1 ³⁾ WEN888	11	AES	WPA2-PSK	100%	Infrastructure
1 ³⁾ CAMTEST	10	None	Unknown	96%	Infrastructure
1 ³⁾ 652brianddwrt	11	TKIP/AES	WPA2-PSK	100%	Infrastructure
1 ³³ TRENDnet436	1	None	Unknown	94%	Infrastructure
TRENDnet652	6	None	Unknown	80%	Infrastructure
1 ³⁾ trendnetsky	6	WEP	Unknown		Infrastructure
(³⁾ TRENDnet670N		None	Unknown		Infrastructure
1 ³⁾ TrendnetSkyN	9	AES	WPA2-PSK		Infrastructure
1 ³³ TrendnetSkyN	11	AES	WPA2-PSK	76%	Infrastructure
<					۱.

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

Select any one of the wireless networks and connect to it by double-clicking.

Click the "Refresh" button to rescan for available networks.

Status

Display the information of the adapter including manufacturer, driver version, utility version, encryption, encryption type, region, adapter's MAC address, current connection data rate, channel, connection status, the associated router or Access Point's SSID, network type, associated device's MAC address, and Up time.

	Doct	About
	NDNET	WiFi Statio
	General Profile Available Netw	orks Status Statistics Wi-Fi Protected Setup
TRENDnet 150		
	Manufacturer	TRENDnet
	NDIS Driver Version	1006.0.614.2010
	Utility Version	3.2.132.50
	Encryption	disabled
	Authentication	Open System
	Region	FCC
	MAC Address	00:14:D1:EA:4F:6F
	Data Rate (AUTO)	Tx:58 Mbps Rx:58 Mbps
	Channel (Frequency)	6
	Status	Associated
	SSID	TRENDnet652
	Network Type	Infrastructure
	Associated AP MAC	00:14:D1:E7:1E:7A
	Up Time (hh:mm:ss)	0:4:52
<		
Show Tray Icon		
Radio Off		Close

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.

Network Type:

- 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.

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Statistics

This section displays the statistics of the adapter connection. TX means transmission and RX means Reception.

	NDNET	About _ X
		WiFi Station
My Computer TRENDnet 150	General Profile Available Networks Status	Statistics Wi-Fi Protected Setup
	Counter Name	Value
	Tx OK Tx Error	114
	Rx OK	75
	Rx Packet Count	75
	Rx ICV error	0
	Reset	
		-
<		
Show Tray Icon		Close
Radio Off		Close

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 Button

Using the WPS configuration with the **Push Button** method, the configuration steps as below:

	About _ X
	General Profile Available Networks Status Statistics Wi-Fi Protected Setup
	HAFE Protected Setup (WPS) Are says and secure setup solution to Wi-Fi network. Are pushing (PIN) After pushing the PIN button. Please enter the PIN code into your AP
III Show Tray Icon Radio Off	Close

1) Click on the "Push Button Config (PBC)" button.

Wi-Fi Protected Setup	 X
Wi-Fi Protected Setup - PBC method	
If there are more than one AP on the PBC mode, there will be [Session overlap]. Please use PIN method or wait for a while to push the button again.	
Scanning AP	
	Cancel

- 2) Push the WPS button on your wireless access point or router.
- 3) Click the *Nex*t button start the WPS configuration.
- 4) If the WPS configuration was successful, the follow window will show on.

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Wi-Fi Protected Setup		×
Wireless Configuration success.		
	Fir	ish

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

Wi-Fi Protected Setup		×
Wireless Configuration failed.		
Unable to complete the configuration.		
	Ca	ancel

Enter a PIN

Using the WPS configuration with the **PIN Input** method, the configuration steps as below:

1) Click on the **Pin Input Config (PIN)** button, the PIN is shown on the button of the windows.

	NDNET WiFi Station
Hy Computer TRENDnet 150	General Profile Available Networks Status Statistics Wi-Fi Protected Setup
	Wi-Fi Protected Setup (WPS)
	An easy and secure setup solution to Wi-Fi network Pn Input Config (PIN) After pushing the PIN button. Please enter the PIN code into your AP.
	PIN: 84803009 Pin Input Config (PIN)
	Push Button After pushing the PBC button. Please push the physical button on your AP or visible button on the WPS config page.
	Push Button Config (PBC)
Show Tray Icon	
Radio Off	Close

 Enter the PIN code into the WPS "Client PIN number" of you wireless access point or router (in example, TRENDnet TEW-652BRP Wireless N Router) then click the Start PIN button, the wireless access point or router will start the WPS configuration process.

	ÎNET		300MI	ops Wireles	s N Home Router TEW-652BRP
Main Wireless	Wi-Fi Protecte	d Setu	D		Неір
• Basic	WPS	Enable	1 🔘 Disabled	Apply	
Security Advanced	Status	O UnCor	figured 🍥 Confi	gured	
WiFi Protected Setup	Self-PIN Number	63538656			
Status	Client PIN Number	84803009	Sta	irt PIN	
Routing	Push Button Configuration	Start P	BC		
Access	Authentication		Encryp	tion	Key
Management	WPA2-PSK	AE	S		testtest
Tools					
Wizard					
			Copyri	ght © 2011 TREN	Dnet. All Rights Reserved.

3) Choose to select the specific AP/Router or a WPS enabled device with client PIN entered.

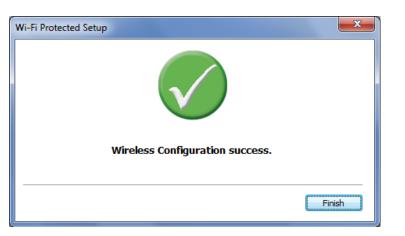


4) Select a wireless access point or router then click the *Select* button start the WPS configuration.

Vi-Fi Protected Setup - 3	Select AP
WPS AP Name	WPS AP MAC
Carlos691	00-14-D1-CD-F9-68
TRENDnet436	00-14-D1-A7-C9-5B
sonny652v2	00-14-D1-E9-1C-37
RMALAB (PR)	00-14-D1-CB-67-B8
sonnyW150NR	00-0D-56-01-23-16
123456+	00-14-D1-CD-5F-0C
TRENDnet6521be2	00-14-D1-BC-1B-E2
TRENDnet639-It	00-14-D1-C9-02-B8
WEN888	00-14-D1-AC-C0-0C
TRENDnet670N	00-14-D1-AA-CF-68
Select	Refresh Cancel

Wi-Fi Protected Setup	×
Wi-Fi Protected Setup - PIN method	
Please enter the following PIN code into your AP.	
Current PIN: 84803009	
Initial WPS	
	Cancel

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



6) If the WPS configuration was failed, the follow window will show on. Try to repeat the steps again if this screen appears.



Note: Do not install the TEW-648UBM until instructed to do so.

- 1. Go to the Mac folder on the Utility and Driver CD-ROM, For Mac OS 10.7, go to Mac OS 10.7 folder and skip to step 4. For Mac OS 10.8, go to Mac OS 10.8 folder and skip to step 4.
- 2. For Mac OS 10.4~10.6, double click on the TEW-648UBM_Mac_OS_X.dmg file.



3. Select the file for your operating system



5. Click Continue and follow the screen to install the driver.

Introduction	Welcome to 11n WLAN world	
Read Me		
License		
Select Destination		
Installation Type		
• Install	anniantimitian	
	10	
6 (A)		

6. Click Agree



7. Select Destination folder then click Continue.



For OS X 10.7, select Install for all users of this computer and then click Continue.

000	🥪 Install Wireless USB Adapter Driver
	Select a Destination
Introduction	How do you want to install this software?
🖯 Read Me	Install for all users of this computer
Eicense	
Destination Select	
Installation Type	
Installation	amulti amultimituri
μαμα <mark>βώμαπαιγ</mark> μημημημη ο 1 4 5	Installing this software requires 4.5 MB of space.
1	You have chosen to install this software for all users of this computer.
	Go Back Continue

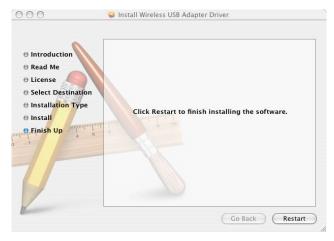
For OS X 10.8, click Install.



8. When the Authenticate screen appears, enter the **Name** and **Password** for your computer and then click **OK**; then click on **Continue Installation**.

		Authenticate
	nstaller re	equires that you type your password.
	Name:	MacUser
P	assword:	
▶ Details		
(?)		(Cancel) (OK)
	restart installa	ing this software requires you to your computer when the ation is done. Are you sure you wan all the software now?
	C	Cancel Continue Installation

9. Click **Restart** and when the computer is booted up, connect the wireless adapter to an available USB port.



Mac 10.8 window, click Restart.



Mac Utility Configuration

For Mac OS 10.8 Utility Configuration, please skip to page 17.

1. Click OK when prompted this message

NOTICE	
Please enable the WLAN card in the Net System Preferences.	work item

2. Double click on the System Preferences icon on the Dock



3. Double click on the Network icon



4. Click OK



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5. Select the adapter from the dropdown list and click Apply Now

0 0	Network	
Show All	٩	
Locatio	n: Location (9/13/10 5:10 PM)	
Show	v ✓ Network Status	
⊖ AirPort	Bluetooth Built–in Ethernet Built–in FireWire AirPort Ethernet Adaptor (en5)	
	Network Port Configurations	
	Configure Connect	?

6. Double click on the Wireless Utility icon on the Dock



7. Click **Available Network**, select the **SSID** (Wireless Network Name) and then click Add to Profile

Link Status	5 Profiles	Available Ne	tw Advance	ed Setting WP	5 Information
Associated	SSID	▲ Channel	Network Type	Encryption	BSSID
	TRENDnet	6	Infrastructure	WPA2-PSK AES	001
		efresh	Connect	Add	to Profile
	C R	lerresh	Connect	Add	to Profile

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8. If encryption is enabled on your wireless network (e.g. access point or wireless router), select the type of **Network Authentication** and **Data Encryption**, enter the network encryption, confirm the network key and then click OK

Profile Name :	TREND	net						
SSID :	TREND	net						
This is a comp	uter-to-	computer (A	dHoc) net	work; wi	reless acc	ess points	are not i	used.
Channel : 1: 24	12 MHz	*						
Vireless Network Seco	urity Prop	erties						
This network requ	uires a k	ey for the fol	lowing :					
Network Authenti	cation :	WPA2_PSK	\$					
Data Encr	yption :	AES	•					
	ASCII							
Netwo	rk key :	trendnet						
Confirm netwo	rk key :	trendnet						
Key index (adva	anced) :	[1	A V					
				_	Cancel		ОК	_

9. Configuration is complete

Mac OS 10.8 Utility Configuration

1. Click OK when prompted this message

Please	and the second s
System	enable the WLAN card in the Network item o Preferences.

2. System Preferences window will appear automatically

Personal							
General	Desktop & Screen Saver	Dock	Mission Control	Language & Text	Security & Privacy	Spotlight	Notification
Hardware							
6		P					0
CDs & DVDs	Displays	Energy Saver	Keyboard	Mouse	Trackpad	Print & Scan	Sound
Internet &	Wireless						
0	@		8				
iCloud	Mail, Contacts & Calendars	Network	Bluetooth	Sharing			
System							
11	**		(0)	8	0	\bigcirc	2
Users & Groups	Parental Controls	Date & Time	Software Update	Dictation & Speech	Time Machine	Accessibility	Startup Dis
Other							
1	WMV	-					
Flash Player	Flip4Mac WMV	Growl					

3. Double click on the Network icon



4. Click the plus sign to add the adapter



5. Select 11n USB Adapter from the dropdown list and click **Create.** The adapter name will appear on the left panel. Select the adapter and click the Apply button.

	Select the interfa	ce and enter a na	me for the new	service.	
Arduino Uno Not Configured	Interface Service Name	: 802.11n WLA		\$	
 Ethernet Not Connected 			Cancel	Create	ot plugged is not
FireWire Not Connected	¥	Configure IPv4:	Using DHCP		\$
⊖ Wi-Fi Off		IP Address: Subnet Mask:			
Bluetooth PAN No IP Address	8	Router:			
		DNS Server:			
	2	Search Domains:			
+ - &*	_			Ad	vanced

00		Network		
t ⊨ Show All			٩	
	Location:	Automatic	\$	
Wi-Fi Connected Arduino Uno Not Configured	Crus C	Status:	Cable Unplugged Either the cable for 802.11n WLAN Adapte is not plugged in or the device at the other end is not responding.	
Ethernet Not Connected	<>	Configure IPv4:		¢
802.11dapter Not Connected FireWire Not Connected	****	IP Address: Subnet Mask: Router:		
Bluetooth PAN No IP Address	8	DNS Server: Search Domains:		
			Advanced.	. ?

6. Click **Available Network**, select the **SSID** (Wireless Network Name) and then click Add to Profile

Associated	SSID	Channel	Network Type	Encryption	BSSID
	TRENDnet658	1	Infrastructure	WPA2-PSK AES	00e04c818682
	TRENDnet731	1	Infrastructure	WPA-PSK TKIP	0014d1d7e028
	LAL	1	Infrastructure	No Encryption	0014d19b08e4
	brian692gr24	2	Infrastructure	WPA(2)-PSK AES	0014d19ba504
	TRENDnet691	1	Infrastructure	WPA2-PSK AES	0014d1cb67b8
	TRENDnet692_2.4	1	Infrastructure	WPA2-PSK AES	0014d19c011c
	mugsy33	1	Infrastructure	WPA2-PSK AES	0014d19d9154
	673ddwrt	6	Infrastructure	WPA2-PSK AES	0014d1e1bc56
	TRENDnet639	6	Infrastructure	No Encryption	0014d1cd5df4
	brian651brv2	6	Infrastructure	WPA2-PSK AES	0014d1bab774
	TRENDNETRMA-N	7	Infrastructure	WPA2-PSK AES	0014d1c3bddd
	mediatest_TRENDnet	9	Infrastructure	WPA2-PSK AES	0014d19b70a8
	692gr-it	10	Infrastructure	WPA2-PSK AES	0014d19c7030
	CAMTEST	10	Infrastructure	WPA2-PSK TKIP	0014d1620d1d
	Wally World	11	Infrastructure	WPA2-PSK AES	0014d19bb374
	tspot	8	Infrastructure	WPA2-PSK AES	00c0021aafc1
			1	MIDAD DOV ACC	001441-270-6
	Refres	h]	Connect	Add to	Profile

7. If encryption is enabled on your wireless network (e.g. access point or wireless router), select the type of **Network Authentication** and **Data Encryption**, enter the network encryption, confirm the network key and then click OK

	orld					
SSID : Wally W	orld					
This is a computer-to-	computer (Ad	Hoc) netw	ork; wirel	ess acces	s points a	re not used
Channel : 1	*					
/ireless Network Security Prop						
Areless Network Security Prop	erties					
This network requires a k	ey for the follo	owing :				
Network Authentication :	WPA2_PSK	\$				
Data Encryption :	AES	\$				
ASCII						
Key index (advanced) :	1	\$				
Network key :	•••••					
Confirm network key :	•••••					
			C	ancel		OK

8. Configuration is complete

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Technical Specifications

Hardware	
Standards	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n USB 2.0
WPS Button	Enables Wi-Fi Protected Setup (WPS) function
LED Indicators	Activity, WPS
Power Consumption	Receive mode: 100mA (max)
	Transmit mode: 210mA (max)
Supported OS	Windows [®] 8.1 (32/64-bit), 8 (32/64-bit), 7 (32/64- bit), Vista (32/64-bit), XP (32/64-bit), 2000
	Mac OS X (10.4, 10.5, 10.6, 10.7, 10.8, 10.9)
Dimensions (L x W x H)	20 x 15 x 7 mm (0.8 x 0.6 x 0.3 in.)
Weight	1 g (0.03 oz)
Temperature	Operating: 0° ~ 40° C (32° ~ 104° F)
	Storage: -10° ~ 70° C (14° ~ 158° F)
Humidity	Max. 95% (non-condensing)
Certifications	CE, FCC
Wireless	
Frequency	2.412 ~ 2.484 GHz ISM band
Modulation	OFDM, DSSS
Antenna	Built-in on board antenna
Data Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 150Mbps
Output Power	802.11b: 14dBm (typical)

	802.11g: 11dBm (typical)			
	802.11n: 10dBm (typical)			
Receiving Sensitivity	802.11b: -84dBm (typical) at 11mpbs			
	802.11g: -69dBm (typical) at 54Mbps			
	802.11n: -66dBm (typical) at 150Mbps			
Encryption	64/128-bit WEP (HEX/ASCII), WPA /WPA2-PSK, WPA/WPA2-RADIUS			
Channels	1-11 (FCC), 1-13 (ETSI)			

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

TRENDnet hereby declare that the product is in compliance with the essential requirements and other relevant provisions under our sole responsibility.

Safety

EN60950-1 : 2006 + A11 : 2009 + A1: 2010 + A12: 2011 + A2 : 2013

EMC EN 301 489-1 V1.9.2: 09-2011 EN 301 489-17 V2.2.1: 09-2012 EN 55022 2010 + AC: 2011 (Class B)

Radio Spectrum & Health EN 300 328 V1.8.1 : 06-2012 EN 62311 2008

This product is herewith confirmed to comply with the Directives. Directives Low Voltage Directive 2006/95/EC and 2014/35/EU EMC Directive 2004/108/EC R&TTE Directive 1999/5/EC EMF Directive 1999/519/EC RoHS Directive 2011/65/EU REACH Regulation (EC) No. 1907/2006 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.



CS Česky [Czech]	TRENDnet tímto prohlašuje, že tento TEW-648UBM je ve shodě se
	základními požadavky a dalšími příslušnými ustanoveními směrnice 2006/95/ES, 2014/35/EU, 2004/108/ES, 1999/5/ES, 2009/125/ES, 2011/65/EU, a REACH (ES) 1907/2006.
da Dansk [Danish]	Undertegnede TRENDnet erklærer herved, at følgende udstyr TEW- 648UBM overholder de væsentlige krav og øvrige relevante krav i direktiv 2006/95/EF, 2014/35/EU, 2004/108/EF, 1999/5/EF, 2009/125/EF, 2011/65/EU, og REACH (EF) 1907/2006.
de Deutsch [German]	Hiermit erklärt TRENDnet, dass sich das Gerät TEW-648UBM in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 2006/95/EG, 2014/35/EU, 2004/108/EG, 1999/5/EG, 2009/125/EG, 2011/65/EU, und REACH (EG) 1907/2006 befindet.
et Eesti [Estonian]	Käesolevaga kinnitab TRENDnet seadme TEW-648UBM vastavust direktiivi 2006/95/EÜ, 2014/35/EU, 2004/108/EÜ, 1999/5/EÜ, 2009/125/EÜ 1999/5/EÜ, 2011/65/EU, ja REACH (EÜ) 1907/2006 põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
en English	Hereby, TRENDnet, declares that this TEW-648UBM is in compliance with the essential requirements and other relevant provisions of Directive 2006/95/EC, 2014/35/EU, 2004/108/EC, 1999/5/EC, 2009/125/EC, 2011/65/EU, and REACH (EC) 1907/2006.
es Español [Spanish]	Por medio de la presente TRENDnet declara que el TEW-648UBM cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2006/95/CE, 2014/35/EU, 2004/108/CE, 1999/5/CE, 2009/125/CE, , 2011/65/EU, y REACH (CE) 1907/2006.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑΤRENDnet ΔΗΛΩΝΕΙ ΟΤΙΤΕW- 648UBMΣYMMOPΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2006/95/ΕΚ, 2014/35/ΕU, 2004/108/ΕΚ, 1999/5/ΕΚ, 2009/125/ΕΚ, 2011/65/EU, REACH (ΕΚ) 1907/2006 και.
fr Français [French]	Par la présente TRENDnet déclare que l'appareil TEW-648UBM est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 2006/95/CE, 2014/35/EU, 2004/108/CE, 1999/5/CE, 2009/125/CE, 2011/65/EU, REACH (CE) 1907/2006 et.
it Italiano[Italian]	Con la presente TRENDnet dichiara che questo TEW-648UBM è

	conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2006/95/CE, 2014/35/EU, 2004/108/CE, 1999/5/CE, 2009/125/CE, 2011/65/EU, e REACH (CE) 1907/2006
ি Latviski [Latvian]	AršoTRENDnetdeklarē, ka TEW-648UBM atbilst Direktīvas 2006/95/EK, 2014/35/EU, 2004/108/EK, 1999/5/EK, 2009/125/EK, 2011/65/EU, un REACH (EK) 1907/2006 būtiskajāmprasībām un citiemar to saistītajiemnoteikumiem.
1 Lietuvių [Lithuanian]	Šiuo TRENDnet deklaruoja, kad šis TEW-648UBM atitinka esminius reikalavimus ir kitas 2006/95/EB, 2014/35/EU, 2004/108/EB, 1999/5/EB, 2009/125/EB, 2011/65/EU, ir REACH (EB) 1907/2006 Direktyvos nuostatas.
nl Nederlands [Dutch]	Hierbij verklaart TRENDnet dat het toestel TEW-648UBM in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 2006/95/EG, 2014/35/EU, 2004/108/EG, 1999/5/EG, 2009/125/EG, 2011/65/EU, en REACH (EG) 1907/2006.
mt Malti [Maltese]	Hawnhekk, TRENDnet, jiddikjara li dan TEW-648UBM jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2006/95/KE, 2014/35/EU, 2004/108/KE, 1999/5/KE, 2009/125/KE, 2011/65/EU, u REACH (KE) 1907/2006.
իս Magyar [Hungarian]	Alulírott, TRENDnet nyilatkozom, hogy a TEW-648UBMmegfelel a vonatkozó alapvető követelményeknek és az 2006/95/EK, 2014/35/EU, 2004/108/EK, 1999/5/EK, 2009/125/EK, 2011/65/EU, irányelv, a REACH (EK) 1907/2006 irányelv egyéb előírásainak.
P. Polski [Polish]	Niniejszym TRENDnet oświadcza, że TEW-648UBM jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 2006/95/WE, 2014/35/EU, 2004/108/WE, 1999/5/WE, 2009/125/WE, 2011/65/EU, i REACH (WE) 1907/2006.
pt Português [Portuguese]	TRENDnet declara que este TEW-648UBM está conforme com os requisitos essenciais e outras disposições da Directiva 2006/95/CE, 2014/35/EU, 2004/108/CE, 1999/5/CE, 2009/125/CE, 2011/65/EU, e REACH (CE) 1907/2006.
ब्री Slovensko [Slovenian]	TRENDnet izjavlja, da je ta TEW-648UBM v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2006/95/ES, 2014/35/EU, 2004/108/ES, 1999/5/ES, 2009/125/ES, 2011/65/EU, in REACH (ES) 1907/2006.

Slovensky [Slovak]	TRENDnettýmtovyhlasuje, že TEW-648UBMspĺňazákladnépožiadavky a všetkypríslušnéustanoveniaSmernice 2006/95/ES, 2014/35/EU, 2004/108/ES, 1999/5/ES, 2006/95/ES, 2004/108/ES, 1999/5/ES, 2009/125/ES, 2009/125/ES, 2011/65/EU, a REACH (ES) 1907/2006.
fi Suomi [Finnish]	TRENDnet vakuuttaa täten että TEW-648UBM tyyppinen laite on direktiivin 2006/95/EY, 2014/35/EU, 2004/108/EY, 1999/5/EY, 2009/125/EY,1999/5/EY, 2011/65/EU, ja REACH (EY) 1907/2006 oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
ঃথ Svenska [Swedish]	Härmed intygar TRENDnet att denna TEW-648UBM står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bEYtämmelser som framgår av direktiv 2006/95/EG, 2014/35/EU, 2004/108/EG, 1999/5/EG, 2009/125/EG, 2011/65/EU, och REACH (EG) 1907/2006.

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-648UBM – 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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