



**EarthLink MWA200
Quick Installation Guide**

4/14/2006
Version 1.0

DRAFT

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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.

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.

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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

Chapter 1:

MWA200 Default Configuration

MWA200's default configuration are listed as below table:

Item	Default Value
IP Address	192.168.1.1
SSID	linksys
Authentication Type	WPA2 Enterprise
Encryption Method	AES
EAP Type	TTLS
TTLS Authentication Protocol	PAP
Root Certificate	(Empty)
Email Address	(Empty)
Password	(Empty)

Note	<ol style="list-style-type: none"> 1. If you want to modify the SSID, please refer to Appendix A: How to Modify SSID. 2. If you want to upload root certificate to MWA200, please refer to Appendix B: How to Upload Root Certificate.
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IC STATEMENT

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

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

Declaration d'Industrie Canada

Le fonctionnement est soumis aux conditions suivantes :

- 1.Ce peripherique ne doit pas causer d'interferences;
- 2.Ce peripherique doit accepter toutes les interferences recues, y compris celles qui risquent d'entraîner un fonctionnement indesirable.

Chapter 2: How to configure MWA200

Generally speaking, according to AP's configuration you want to connect, you'll encounter several situations:

1. **AP's configuration is matching with MWA200.**
2. **AP's configuration isn't matching with MWA200.**
3. **No AP with the same SSID as MWA200's in your environment.**

According to above situations, following sections will introduce what will happen in MWA200 and how to re-configure MWA200.

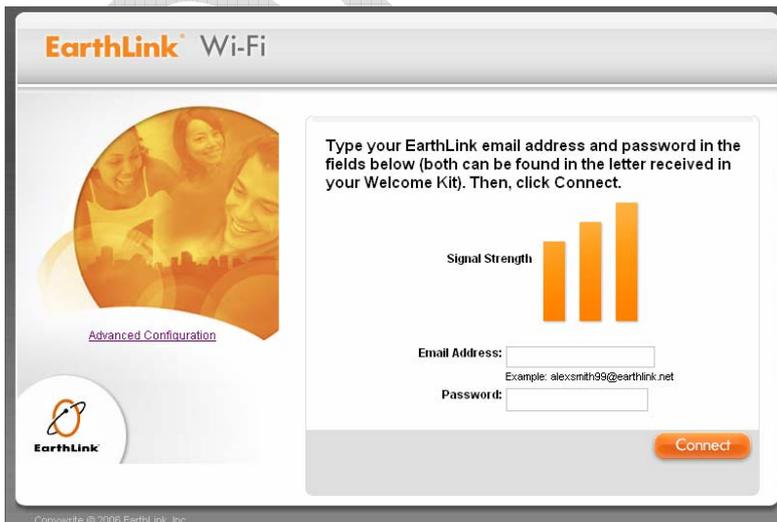
Note	MWA200 provides Web-based utility to configure all parameters. If you want to change the configuration of MWA200, please access the Web-based utility of MWA200 launch Internet Explorer or Netscape Navigator, and enter the default IP address, 192.168.1.1 , in the <i>Address</i> field.
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Situation 1: AP's configuration is matching with MWA200

Step 1: Launch to Web-base Utility. You'll see the below screen. Press *Next* button.



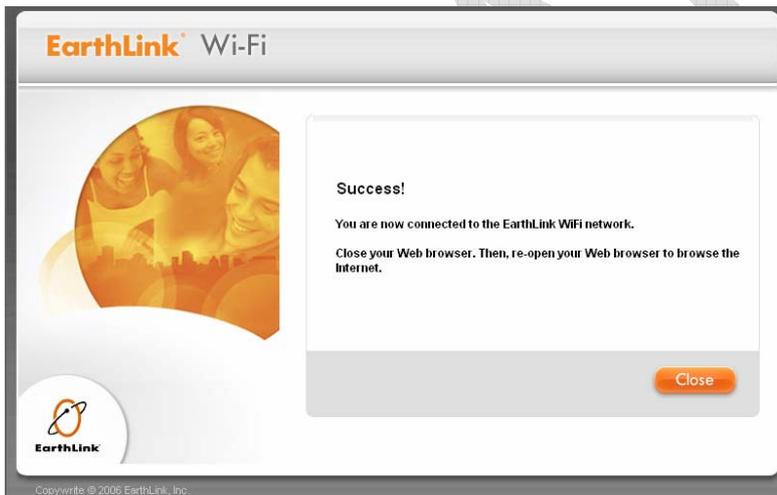
Step 2: Key in Email Address and Password for doing EAP TTLS authentication.



Step 3: Wait the connecting result.



Step 4: Success to connect to AP. Press *Close* button.



Step 5: You can see the status of MWA200 currently.

The screenshot displays the EarthLink Wi-Fi Modem Status page. On the left, there is a navigation menu with options: [Connect](#), [Modem Status](#) (highlighted), and [Modem Configuration](#). The main content area is titled "Wireless Modem Status" and contains the following information:

Model	MWA200
Firmware Version	v1.00.0#001
WAN Port	
MAC Address:	00:03:7F:FE:47:00
Connect Type:	DHCP
IP Address:	10.10.10.45
IP Subnet Mask:	255.255.255.0
Default Gateway:	10.10.10.1
DNS:	168.95.1.1
LAN Ports	
MAC Address:	00:03:7F:FE:47:03
IP Pool Start:	192.168.1.100
IP Pool End:	192.168.1.149
DHCP Server:	Enable
DHCP	
MAC	IP
Wireless	
SSID:	linksys
Mode:	Mixed 11/54Mbps
Channel:	1
Data Rate:	Auto
RSSI:	98 %

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Situation 2: AP's configuration isn't matching with MWA200.

Launch to Web-base Utility. You'll see the below screen.



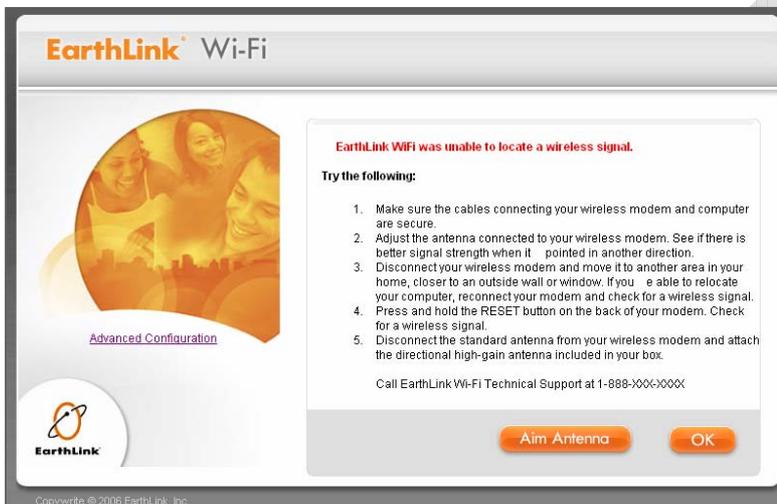
The screenshot shows the EarthLink Wi-Fi configuration utility interface. On the left, there is a circular image of a woman and a child, with the text "Advanced Configuration" below it. The EarthLink logo is at the bottom left. The main content area displays an error message: "The information you provided does not match our records. Please verify your email address and password and try again." Below this, it states: "Passwords are case-sensitive, so make sure the CAPS LOCK key on your keyboard is off." A "Signal Strength" bar chart shows three bars of increasing height. Below the chart are input fields for "Email Address:" and "Password:". An example email address "alexsmith99@earthlink.net" is provided. A "Connect" button is located at the bottom right. The footer of the utility shows "Copyright © 2006 EarthLink, Inc."

If occur this situation, you need to double check your configuration is the same as the AP's. To see whether have root certificate in MWA200 or AP enables WLAN authentication type to WPA2 enterprise or not.

If all configurations are matching, maybe it's because you give the wrong Email Address or Password. Please re-key again and press *Connect* button.

Situation 3: No AP with the same SSID as MWA200's in your environment.

Step 1: Launch to Web-base Utility. You'll see the below screen. Press *Aim Antenna* button.



Step 2: If you see it has signal, press *Connect* button. And following actions are the same as Situation 1, please refer to Situation 1 introductions.



Appendix A: How to Modify SSID

Please use your browser to connect to this URL, http://192.168.1.1/adv_config.html. Modify SSID to your desired value and press Save button. Then, connect to index page again, <http://192.168.1.1> and follow [Chapter 2- How to Configure MWA200](#) to do connecting action.



Appendix B: How to Upload Root Certificate

Step 1: Please use your browser to connect to this URL, *http://192.168.1.1/adminPage.html*. System will require user to key in the correct password, please key in “*admin*” in Enter Password field and press *Submit* button.



Step 2: Press *Browser* button to browser the file path of Root Certificate, and press *Upload* button. Then, connect to index page again, *http://192.168.1.1* and follow [Chapter 2- How to Configure MWA200](#) to do connecting action.



Appendix C: How to Modify WLAN's Security Mode

Step 1: Please use your browser to connect to this URL, *http://192.168.1.1/adminPage.html*. System will require user to key in the correct password, please key in “*admin*” in Enter Password field and press *Submit* button.



Step 2: If want to modify *Security Mode*, please pull down relating menu, select the preferable mode. If use *WPA2 Enterprise* mode, also can pull down the *TTL Authentication Protocol* menu to select preferable protocol and press *Save* button. Then, connect to index page again, *http://192.168.1.1* and follow [Chapter 2- How to Configure MWA200](#) to do connecting action.



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MWA200 Product Spec.

1. Introduction

The MWA200 High-Power Metro Wireless Internet Adapter is a CPE device that allows user's PC or notebook to connect to the Internet. This device supports AP client mode, it also comes with a single 10/100Mbps auto-sensing Ethernet port. The built-in high-power wireless function lets the user securely get authenticated and connects to the Municipal Wi-Fi mesh network without hassle.

The MWA200 High-Power Metro Wireless Internet Adapter is very easy to use and setup. It has three LED indicators to show the received signal strength. During power up, it will automatically determine the signal strength to the nearest AP with configured SSID and reflects on the LED accordingly. User can then move the device around until two more LEDs turn on. There is also a high gain omni directional antenna for user to get a better radio signal reception.

Users connect their laptop/ PC via the RJ-45 Ethernet port on the MWA200 High-Power Metro Wireless Internet Adapter, and it will assign an IP address to the laptop/ PC. Users can visualize the received signal quality via the GUI utilities once they have logged in the device's web browser..

2. Main features:

- **Hardware**
 - One port 10/100 802.3/u (RJ-45) LAN interface with auto MDI/MDIX sensing
 - Integrated 802.11/11b/11g wireless client .
- **Software**
 - Multicast Pass-Through
 - Stateful Packet Inspection Firewall support
 - Remote configuration via web browser
 - Supports VPN Pass-Through with IPSec, PPTP, and L2TP.
 - Acts as a DHCP Server

3. Product Specifications

- Hard Feature

* Features List

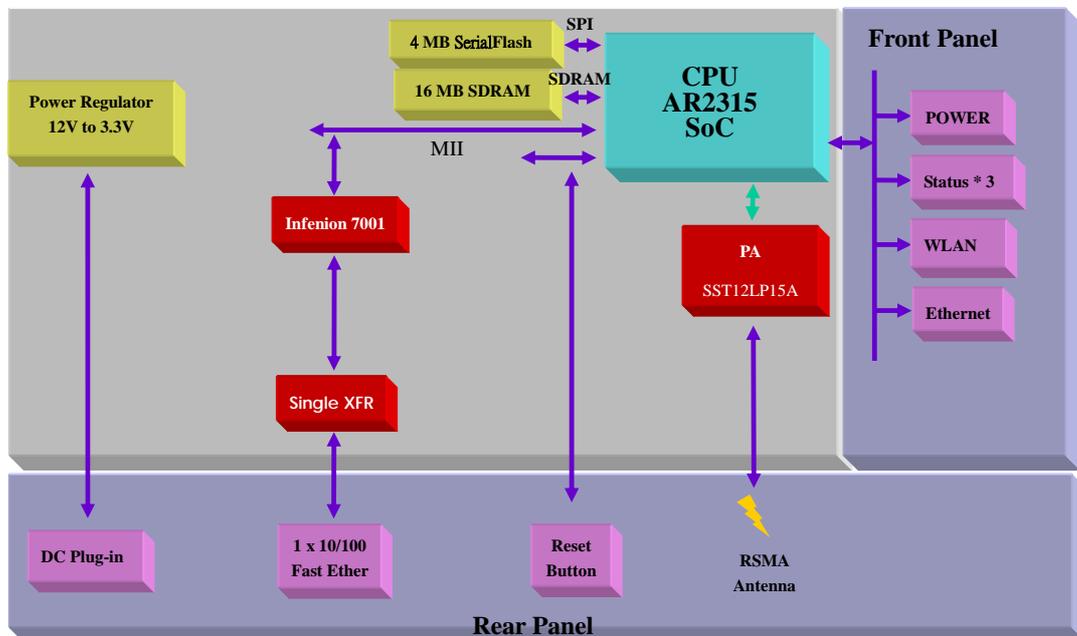
Feature	Additional Info
Main Processor	Atheros AR2315 at MIPS 4k/180 MHZ
Supplementary Processor	No
S. Processor SDRAM	No
S. Processor Flash ROM	No

System SDR	16 M Bytes (8M*16*1)																		
System Serial Flash ROM	4 M Bytes																		
Switch controller	ADM7001																		
RF	Built-in																		
PA	SST12LP15A-QVC																		
Packet memory	64 Kbytes																		
MAC addresses entries	2 Kbytes																		
System Power:	DC 12V/1A (Switching adapter)																		
EMI/EMC :	FCC Class B; FCC Part 15C, IC																		
Operation Requirement	Operating Temp. 0°C to 40°C (32°F to 104°F) Storage Temp. -20°C to 60°C (-4°F to 140°F) Operating Humidity 10% to 85% relative humidity, Non-Condensing Storage Humidity 5% to 90% Non-Condensing																		
Peak Gain of the omni Antenna (TBD)	802.11g: 2.4 GHz => 5 dBi, detachable Omni RSMA.																		
Transmitted Power	802.11g: Typical 17.5 +/- 1.5dBm, 200mw/Peak Power @ Normal Temp Range 802.11b: Typical 17.5 +/- 1.5dBm, 200mw/Peak Power @ Normal Temp Range																		
Receive Sensitivity	802.11g: Preliminary Performance – Minimum Sensitivity: <table border="1"> <thead> <tr> <th>Data Rate(Mbps)</th> <th>Sensitivity (dBm)</th> </tr> </thead> <tbody> <tr> <td>54</td> <td>-74 +/-2dbm</td> </tr> <tr> <td>48</td> <td>-77 +/-2dbm</td> </tr> <tr> <td>36</td> <td>-83 +/-2dbm</td> </tr> <tr> <td>24</td> <td>-86 +/-2dbm</td> </tr> <tr> <td>18</td> <td>-90 +/-2dbm</td> </tr> <tr> <td>12</td> <td>-91 +/-2dbm</td> </tr> <tr> <td>9</td> <td>-93 +/-2dbm</td> </tr> <tr> <td>6</td> <td>-94 +/-2dbm</td> </tr> </tbody> </table>	Data Rate(Mbps)	Sensitivity (dBm)	54	-74 +/-2dbm	48	-77 +/-2dbm	36	-83 +/-2dbm	24	-86 +/-2dbm	18	-90 +/-2dbm	12	-91 +/-2dbm	9	-93 +/-2dbm	6	-94 +/-2dbm
Data Rate(Mbps)	Sensitivity (dBm)																		
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	802.11b: Preliminary Performance – Minimum Sensitivity: <table border="1"> <thead> <tr> <th>Data Rate(Mbps)</th> <th>Sensitivity (dBm)</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>-92 +/-2dbm</td> </tr> <tr> <td>5.5</td> <td>-95 +/-2dbm</td> </tr> <tr> <td>2</td> <td>-96 +/-2dbm</td> </tr> <tr> <td>1</td> <td>-97 +/-2dbm</td> </tr> </tbody> </table>	Data Rate(Mbps)	Sensitivity (dBm)	11	-92 +/-2dbm	5.5	-95 +/-2dbm	2	-96 +/-2dbm	1	-97 +/-2dbm								
Data Rate(Mbps)	Sensitivity (dBm)																		
11	-92 +/-2dbm																		
5.5	-95 +/-2dbm																		
2	-96 +/-2dbm																		
1	-97 +/-2dbm																		
Dimensions	88.3 x 90 mm																		

***LED Status**

LED	Color(s)	Activity	Description
Power	Green	Off	Power OFF
		On	Power On / Device Ready
		Blinking	Booting / System Self-Test / Firmware upgrade
	Orange	Off	Operation normally
		On	Operation abnormally
Status * 3	Green	All Off	No Wireless signal available
		On (LED1)	60% >Link Quality>= 10 %
		On (LED1+2)	80% >Link Quality>= 60%
		On(LED 1+2+3)	Link Quality>=80%
		All On	Link Quality >= -80dbm
WLAN	Green	Off	Wireless option is disabled
		On	Wireless option is enabled
		Blinking	Data is transmission through wireless
Ethernet	Green	Off	No connection on LAN port
		On	LAN link is up
		Blinking	Data is transmission through LAN interface

***Block Diagram**



- Software Features

* NAT Requirements

The implementation of NAT must allow for specific port redirection, and must provide support for the following “NAT-unfriendly” applications:

- MSN Messenger
- NetMeeting
- CuSeeMe
- Microsoft PPTP client
- Microsoft Traceroute
- RealAudio
- VDOLive
- IRC
- ICQ 2003a
- Quake, Quake variants, and other popular games
- Port Forwarding

* Support Firewall Function

MWA200 Metro Wireless Internet Adapter supports Stateful Packet Inspection (SPI), and DoS prevention.

* General Features Summary

Feature	Additional Info
Protocol Support	<ul style="list-style-type: none">- IP Routing- IGMP Proxy v1/v2
Management	<ul style="list-style-type: none">- Embedded Web configuration- TFTP sever, firmware upgrade, configuration backup and restore are supported- DHCP, Static IP support.
Diagnostics Capabilities	The router can perform self-diagnostic tests. These tests check the integrity of the following circuitry: <ul style="list-style-type: none">- FLASH memory- RAM- CPU
UPnP	<ul style="list-style-type: none">- NAT traversal
802.1X	<ul style="list-style-type: none">- Authentication: EAP-TTLS (PAP/CHAP)- Dynamically varying encryption keys/AES
Other Features	<ul style="list-style-type: none">- DHCP Server/Client- DNS Relay

	<ul style="list-style-type: none">- Dynamic / Static IP Address Assignment- VPN (IPSec/PPTP/L2TP) pass-through
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Enclosure Specifications

The enclosure of the MWA200 High-Power Metro Wireless Internet Adapter is designed by Linksys. All interface and status LEDs will be provided on the front panel. The power connectors, signal connectors, and Restore Factory Defaults/Reboot button will be on the rear panel.

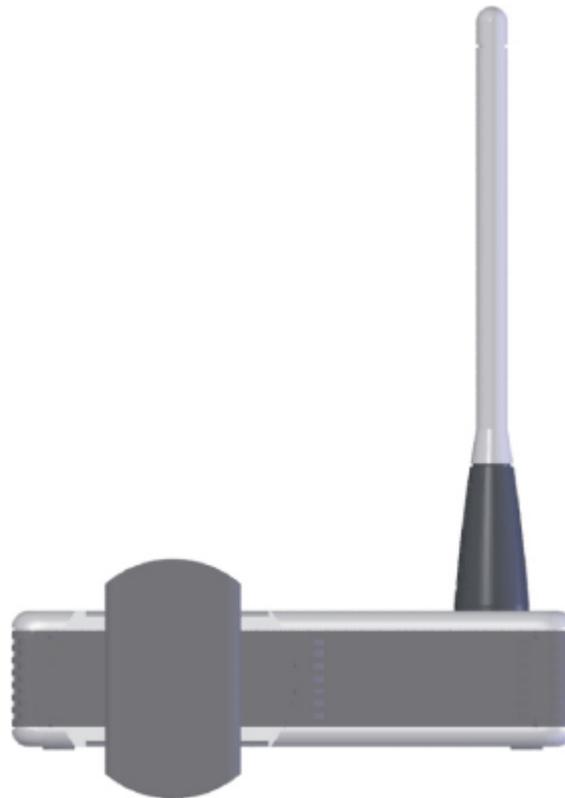
1.1 Front panel configuration



1.2 Rear panel configuration



1.3 Bottom side configuration



2. Power Supply Specifications

The power supply will be DC 12V/1 A power supply.

- Input: Voltage Range 110 – 240V AC, Frequency range 50 – 60Hz.
- Output: Linear 12VDC/1A , 2.0 mm barrel jack

Regional variations will be available, supporting 100V/60Hz, 120V/60Hz, and 240V/50Hz with connectors for North America, UK, continental Europe, and Australia. The supply must have the following regional safety approvals:

Region	Standard	Will Comply
North America Model	UL 60950 / cU; LPS	YES
CEC	EPA, EPS	YES
European Model	CE mark ; LPS EN300328,EN301489 EN60950 ,EN55022	N/A
UK		N/A
Japanese Model	Telec / VCCI	N/A
Australian Model	C-tick	N/A
China Model	CCC	N/A