Wireless LAN Access Point(RFMD)

User Manual

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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 Certifications

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 or more 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:

To assure continued compliance, (example – use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the part responsible for compliance could void your authority to operate the equipment.

FCC RF Radiation Exposure Statement

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

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1. Introduction:



Access Point (AP) provides capabilities of connecting Wireless LAN to Ethernet. Adaptors can connect to Ethernet through AP.

2. Features:

- Comply with 11 Mbps IEEE802.11b high data rate specification
- Seamless roaming within the 802.11 and 802.11b wireless LAN infrastructure
- Support 10Base-T networks
- Optimized wired-to-wireless data transfer
- Independent network operating system
- Enables roaming capability
- Antenna diversity for maximum communication, reliability and operating range
- Support SNMP and web-based management
- Watchdog timer
- Easy to install and user friendly
- Bridge function including point-to-point, and point-to-multipoint.
- Wireless Repeater Mode increase the coverage area of an ESS.

3. Environment Requirement:

You will need the following equipments to set up Access Point:

- Access Point Manager Installation CD or Disk
- Wireless LAN Access Point
- PC with Windows 95/98/ME/2000/XP (Only need one of OS)
- Ethernet or a RJ-45 Cross-Over cable

4. Install AP SNMP Manager:

4.1. InstallShield Wizard



Insert Access Point Manager Installation CD into the CD Drive, and execute the installation program **Setup.exe**. The screen of "InstallShield Wizard" will pop up. For the next step, click Next to continue.

4.2. Choose Destination Location



To install to "C:\Program Files\Access Point", click Next to continue.

If you want to change the destination folder, please click Browse... and select the folder to install. For the next step, click Next to continue.

4.3. Select Program Folder

Select Program Faildes		
Please select a program tobles		
Setup will odd program comi to the Pro- mates or celect are from the exciting to	spram Falder lotted ballons. You may tape a new does lat. Elick New to continue	e falder
Program Folders:		
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RD TeleSchool		
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Abera		
ATHEL 802 11 Waters LON		
AAGAD 2000 中北後		
CostDRWW 0		
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Type a new folder name or select one from the existing folders list. For the next step, click Next to continue.

4.4. Start Copying Files

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Start Capying Files Review antings before capying I	-	20
Setup has enough eternetion to sharing any untropy disk Back maying Miss Carwyl Setups	start copying the program lifes. It you want to new It you are calculated with the centropy, click lifest to	ene in begin
The chosen destenation path is,	C Pergram File: Water AP APPLD Cardge atom	
The volue type is Conpact	I	
The selected program Falder is:	And UNkerVAP RPMD Cardgaston	
The supported Operating System	n are	-
	Windows 200 Windows 2000 Windows Me	
1		1
atting -		
	1 Each. Seats	Carcel

Please review settings before copying files. If you want to review or change any settings, please click Back. Otherwise, click Next to continue.

4.5. InstallShield Wizard Complete



After the installation is completed, click Finish to exit the wizard.

Quick Start to Connect Access Point:

4.6. Connect Access Point (AP) to Computer

You can either connect AP to an Ethernet or AP to a computer by RJ-45 Cross-Over cable. Please avoid other computers to use any IP addresses on the Ethernet.

4.7. Setting Up IP address of Windows 2000

(* 1966 + 4) - 🔁 🔞 Sea	ch 🔁 Folders	Sintory 📳	19 X 19	E-
Address 💽 Network and Dial-up C	omedions			- 6
Network and Dial- up Connections	Mile New Connection	L da Doci Aver Processor Disable Status		
Local Area Connection Type: UAM Connection Status: Er abled Orthik DFE-SOIITO: PCI Past. Ethernet: Ackapter (Rev. 8)		Create Shim Delete Resame	tout	

4.7.1. Open Network Properties

Double-click on Network and Dial-up Connections on Control Panel and Right-Click on the connection and select Properties.

4.7.2. Check the Existence of Internet Protocol (TCP/IP)

Local Area Connection Properties
General
Carrnest using:
BCI Fast Ethernet Adapter
Configure
Components checked are used by this connection:
B. Clent for Microsoft Networks B. Cleaner Printer Charlow the Microsoft Networks
instal. Uninstal Rocerties
Description
Allows your conguter to access resources on a Microsoft returnly
ite main
Show icon in teskbar when connected
OK Carcel

If Internet Protocol (TCP/IP) exists, please skip to 5.2.4. If Internet Protocol (TCP/IP) does not exist, please continue the procedure of 5.2.3.

4.7.3. Install Internet Protocol (TCP/IP)

	Select Network Protocol
Select Network: Component Type 🛛 🕅	Click the Vetwork Protocol that you want to install, then click, D.C. If you have an installation disk for this component, click. Have Disk.
Click the type of network component you want to instal:	
Chert Chert Chert Chert Control Contro Control Control	Notwork Research Aught Tail Protocol DLC Protocol Network Research TERREN NetWork Research TERREN NetWork Montes Dires NetWork, IPA/SPX/NetBIDS Competitive Transport Protocol
Add. Devoi	Hane Olide
	DK. Cancel

Click Install... in connection properties frame. Select Protocol and click Add...... After all the procedures, select Internet Protocol (TCP/IP) and click OK. Windows 2000 will install TCP/IP protocol.

4.7.4. Set Up Configurations of Internet Protocol (TCP/IP)

ocal Area Connection Properties 🔋 🕺
General
Carriest using:
BØ PCI Fast Ethernet Adapter
Configure
Components checked are used by this connection:
🗹 💆 Client for Microsoft Networks
E Seine and Printer Sharing for Microsoft Networks
Internet Protocal (TUP/IP)
Install. Uninstal Properties
Desciption
Transmission Control Protocol/Internet Protocol. The default
wide area network protocol that provides communication
across diverse melconnected networks.
Shaw icon in tashbar when connected
CloseCarcel

Select Internet Protocol (TCP/IP), and click Properties.



Select DHCP server in your network.

Internet Protocol (TCP/IP) settings for Windows 95/98/ME/XP are similar to Windows 2000. Please refer to User Manual of Windows 95/98/ME/XP to learn more.

5. Modify Configurations by AP SNMP Manager:

5.1. AP SNMP Manager

Atmel Utilities \rightarrow AP Configuration \rightarrow AP Configuration

5.1.1. Connect to Access Point

Sector Decoupling	
24.24	
Contract of Contra	
P.M.	1921GRE11
Corr	
100	Use
	Manual Statements
	No.

Select File \rightarrow Connect to Access Point.

A screen Connect to Access Point will pop up:

- IP Address: Type IP address of AP (Please refer to section: 5.4.1 IP Address)
- Community: Type a password to connect AP. (The default password is "public")
- Authority:
 - 1. User: Read Only! You can only read AP configurations.
 - 2. Administrator: Read and modify! You can not only read but also modify AP configurations.

After completing all settings, click OK to connect to AP.

5.1.2. Find Access Point

Select File \rightarrow Find Access Point.

A screen Available Access Points will pop up and list all the available Access Points on the same subnet. Choose one of the AP and Click Connect to connect it.

A screen Connect to Access Point will pop up. Please repeat the procedures shown on section 5.1.1.

5.2. Close Connection of AP

Select File \rightarrow Close Connection AP.



To disconnect between AP and computer.

5.3. Download Changes to AP or Refresh Setting from AP

Select File \rightarrow Download Changes.



All settings will download to AP, and AP SNMP Manager will command AP to reset. If you want to get the original settings on AP, please select Refresh of File menu.

5.4. Modify Bridge

5.4.1. Modify Bridge IP Configuration

Select Setup \rightarrow Bridge \rightarrow IP Configuration.

Access Port SI24 Manager - Endge	Ji Configuration	
Windows LAV	ularuquu Sana umunu Zunum Dah	
✓ Enable SNMP Traps Authorization	<u> </u>	
	Bridge 17 Configuration	
	MAC Alderen DI 13 14 56 WICP	
	19 Addmen 192.109.0.02	
	IP Made 255 . 255 . 255 . 0	
	Galeway 0.0.0.0	
	C DHC/ Bashle	
	Primery Port F Ethernet C Wanders	
	Contiguation Port IP Ethemet IP Wireless	
	Cancel	
et Confinuration done		192 168 0.42

You can change configurations of IP Address, IP Mask, Gateway, DHCP Enable, and Primary Port here.

- MAC Address: The MAC address of the AP. Default setting, which is not allowed to modify in this field.
- IP Address: AP IP address
- IP Mask: AP mask
- Gateway: AP gateway
- DHCP enable: Enable DHCP client service that gets IP settings from DHCP server.
- Primary Port: Choose the location of DHCP server

5.4.2. Modify Bridge Filtering Configuration

Filtering Configuration	Select Setup \rightarrow Bridge \rightarrow Filterin	ng
IP Routing OK Cancel		🔖 Filtering Configuration 📃 🔲 🗙
		IP Routing OK Cancel

If you check IP Routing, only IP Packets will pass through AP between Ethernet and Wireless LAN.

5.5. Modify Wireless LAN

5.5.1. Modify Privacy Options

Select Setup \rightarrow Wireless LAN \rightarrow Privacy Options

🔌 Privacy Opt	ions	
Key 1	00 00 00 00 00 00 00 00 00 00 00 00 00	00
Key 2		00
Key 3	00 00 00 00 00 00 00 00 00 00 00 00 00)0
Key 4	00 00 00 00 00 00 00 00 00 00 00 00 00	00
Default key	None	
	ble 64 🔿 Enable 128 💿 Disal	
Set		*

- Key 1 ~ Key 4: Fill keys for WEP. 13 octets for 128-bit WEP, and 5 octets for 64-bit WEP.
- Default Key: Select default key from Key 1 ~ Key 4.
- WEP: Select WEP mode. 64-bit WEP, 128-bit WEP, or disable WEP.

5.5.2. Modify Operational Settings

Select	Setup	\rightarrow	Wireless LAN-	\rightarrow	Operational Settings



Most of the settings will not download to AP immediately after modifying. You should download the settings by selecting Download Changes of File menu to make the settings valid.

Operational Mode	2
Access Point	
C Access Point Client	Furtheast ESS
C Wareless Bridge G Fount to Four	Remote MAC Address
C Zont to MohiF	tnio
C Wireless Repeater	Training BSS
OK	Cancel

Click Advanced..., the screen of Operational Mode will pop up.

- Access Point: Normal AP mode
- Access Point Client: You have to fill AP BSSID in Preferred BSSID field. The ESSID and Channel of AP Client should be the same as AP.

- Wireless Bridge: All Bridges should use the same channel in the same connection.
 - Point-to-Point: You have to fill in the MAC address of the Bridge that you want to connect.
 - Point-to-Multipoint: In Point-to-Multipoint mode, you don't have to set MAC addresses.
- Wireless Repeater Mode: This mode is used in order to increase the coverage area of an ESS. The Wireless Repeater starts acting as an AP after it has associated itself with another AP (Parent AP). From that point on, STAs can get associated to it and the user can configure the device with the utilities available. You have to fill AP BSSID in Preferred BSSID field. The ESSID and Channel of AP Client should be the same as AP.

5.5.3. Modify Authorized MAC Adresses

Select Setup → Wireless LAN→ Authorized Mac Address



Different from most other configurations on Setup menu, all settings could be valid in this frame.

- Load file: You can build a text file, which contains a list of MAC Addresses.
 - i.e. 001122334455 998877665544

00:11:22:33:44:55 and 99:88:77:66:55:44 will be loaded to the list of MAC addresses.

- Download: Download MAC addresses from the list to AP.
- Get: Get MAC addresses from AP to the list.
- Authorization Table Enable: If checked, only devices using MAC address in authorization table could connect to the AP.
- Close: Close the Frame

5.6. Get Statistics

Select Info \rightarrow Wireless Statistics or Ethernet Statistics

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Enstant Tournebel Packets 54 Decelour Revised Packets (778	
Makent Transited Packets p Hydrox Factors (Refere	
OE	
N Elizad Detail	
Research Paularb Taxanabel Paularb	
TaniDate [2386 TaniDate [272]	
Tanilludet [11] Inhilludet [26	
Factor (RC Room 1 Pactor CRC Room 1	
(management)	

The screen "Wireless Statistics" or "Ethernet Statistics" will pop up and show all network statistics, but the data will not update automatically.



To enable statistics update automatically, select Options of File menu.

On Options, you can decide the polling interval, and the statistics can automatically update. Click OK to make the setting valid.

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			0.00	conda	e)			
								-110
	1	OK.			C	ancel	6	
	-						_	

5.7. Enable SNMP Traps

Select Setup → Enable SNMP Traps



If checked, AP SNMP Manager may receive trap messages from AP.



When AP SNMP Manager receives trap messages from AP, "# <Trap Received> "will appear on bottom-right of AP SNMP Manager.

Select Traps → View Records

ed. Presenter Test i Tills manage. Westak Halb	
Jan 2010	
Tan Bender	
The second of 12/22/11 (second second s	
This may memory to net when a demonstration antification packet is recover from a ETAtion. Define blue	
STORE OF ADDRESS	
Circ	

You can read all traps in this frame. Click Clear to clear all traps and leave.

5.8. Modify Authority Configuration

Select Setup→ Authorization Configuration

Authority configuration	×
Administrator Community	
New Community	
Confirm _	
C. Uzer Community	
New Community	
Confirm Community	
Apply	Cancel

You can change a password on Administrator Community or User Community.

5.9. Reset AP or Restore Defaults

9 ³⁰ Access Frint SHOP Henege	. O X
Ele Setto Connecada Info Izapa Network Andrew Elep Elect Device Regime Default	
Select Commands→ Reset Device	
The <i>AP</i> will reset.	
Select Commands \rightarrow Restore Defaults	

The AP will restore the default settings.

6. Wireless Lan AP Operation Modes:



6.1. Wireless LAN Access Point Mode

AP provides the capability of connecting Wireless LAN to Ethernet. Adaptors can connect to Ethernet through AP.

6.2. AP Client Mode



AP Client can connect to the AP like an adaptor. The figure shows that Ethernet B is connected to Ethernet A. Adaptors still could connect to the AP that the AP Client has connected to.



6.3. AP Bridge Mode

Different from the AP Client mode to bridge mode, no adapters could connect to any bridge

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in bridge mode. And there are two bridge modes.

- Point-to-Point Mode
 Bridge in this mode will only connect to one fixed bridge.
- Point-to-Multipoint Mode
 Bridge in this mode will connect to any other bridges nearby.

Ethernet A P2M Bridge A P2M Ethernet C

Bridge A and Bridge C are in Point-to-Multipoint mode, Bridge B is in Point-to-Point mode that only connect to Bridge A. In this case, Bridge A could connect to both Bridge B and Bridge C, but Bridge C could only connect to Bridge A.



If we set Bridge A to be Point-to-Point mode that only connects to Bridge B. Bridge C can't connect to either Bridge A or Bridge B.

(Note: Please refer to 6.2.2 Modify Operational Settings for more information.)

6.3.1. Bridge Connection Example 1

7. Specifications:

Standard compatibility	
	IEEE802.11b, FCC, RTSI, Wi-Fi compatible
	All major networking standards, including IP, IPX
	Wireless Network Interface: IEEE 802.11b (CSMA/CA)
	Wired Network Interface: RJ45(10Base-T)
	Encryption: 64-bit WEP and 128-bit WEP
Environmental	
	Operating Temperature is from 32°F to 131°F (0°C to 55°C)
	Humidity (non-condensing): 10 to 90%
Power specification	
	Power Consumption: 5V±5%@700mA
	Power Requirements: 110-120V/220-240V
Radio Specifications	
	RF Output Power: 15 dBm
	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum •
	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum • CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1Mpbs
	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum •CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1MpbsTypical Range: *50m indoors, 100m outdoors when 11Mbps
	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum •CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1MpbsTypical Range: *50m indoors, 100m outdoors when 11Mbps(May vary depending on operation environment)
	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum •CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1MpbsTypical Range: *50m indoors, 100m outdoors when 11Mbps(May vary depending on operation environment) Frequency range: 2.4-2.4835 GHz
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	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum •CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1MpbsTypical Range: *50m indoors, 100m outdoors when 11Mbps(May vary depending on operation environment) Frequency range: 2.4-2.4835 GHz Number of channels :14 channelsAntenna: Embedded Antenna Modulation with diversity support
Physical Dimensions	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum • CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1Mpbs Typical Range: *50m indoors, 100m outdoors when 11Mbps (May vary depending on operation environment) Frequency range: 2.4-2.4835 GHz Number of channels :14 channels Antenna: Embedded Antenna Modulation with diversity support
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Physical Dimensions	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum • CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1Mpbs Typical Range: *50m indoors, 100m outdoors when 11Mbps (May vary depending on operation environment) Frequency range: 2.4-2.4835 GHz Number of channels :14 channels Antenna: Embedded Antenna Modulation with diversity support Length 130mm*Height 190mm*Width 66mm Weight: 330g
Physical Dimensions Other Function	RF Output Power: 15 dBm Modulation Technique: Direct Sequence Spread Spectrum • CCK@5Mbps/11Mpbs • DQPSK@2Mpbs • DBPSK@1Mpbs Typical Range: *50m indoors, 100m outdoors when 11Mbps (May vary depending on operation environment) Frequency range: 2.4-2.4835 GHz Number of channels :14 channels Antenna: Embedded Antenna Modulation with diversity support Length 130mm*Height 190mm*Width 66mm Weight: 330g