IEEE 802.11a/n Wireless Access

Point/ Client Bridge



User Manual

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- 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- 3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
- 4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
- 5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. To avoid the possibility of exceeding radio frequency exposure limits, you shall beep a distance of at least 100cm between you and the antenna of the installed equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

Technical Support and Assistance

- 1. Visit the Advantech web site at www.advantech.com/support where you can find Step the latest information about the product.
- 2. Contact your distributor, sales representative, or Advantech's customer service Step center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Safety Instructions

- 1. Read these safety instructions carefully.
- 2. Keep this User's Manual for later reference.
- 3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- 4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
- 5. Keep this equipment away from humidity.
- 6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
- 7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- 8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- 9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- 10. All cautions and warnings on the equipment should be noted.
- 11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over voltage.
- 12. Never pour any liquid into an opening. This may cause fire or electrical shock.
- 13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- 14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.b. Liquid has penetrated into the equipment.

 - c. The equipment has been exposed to moisture.d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
- 15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -40℃ (-40°F) OR ABOVE 85℃ (185°F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- 1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- 2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Contents

Chapter 1 Introduction	1
Introduction	1
Appearance	1
Key Features	2
Specification	2
Typical Application	3
Chapter 2 Hardware Installation	5
Preparation before Installation	5
Professional Installation Required	5
Safety Precautions	5
Installation Precautions	6
Product Package	6
Hardware Installation	8
Connect up	8
Using the External Antenna	.11
Pole Mounting	12
Chapter 3 Basic Settings	13
Factory Default Settings	13
System Requirements	14
How to Login the Web-based Interface	14
Basic System Settings	16
Time Settings	19
RADIUS Settings	20
Firewall Settings	21
Basic Wireless Settings	24
Site Survey	27
VAP Profile Settings	27

VLAN Tab	30
Chapter 4 Advanced Settings	31
Advanced Wireless Settings	31
Wireless Security Settings	33
Data Encryption and Authentication Settings	33
Access Control	36
WDS Settings	37
Chapter 5 Management	38
Remote Management	38
SNMP Management	38
Configure SNMPv3 User Profile	40
Coovachilli Settings	41
Upgrade Firmware	42
Backup/ Retrieve Settings	43
Restore Factory Default Settings	44
Reboot	44
Password	45
Certificate Settings	46
Monitoring Tools	47
System Log	47
Site Survey	47
Ping Watch Dog	48
Date Rate Test	49
Antenna Alignment	49
Speed Test	50
Chapter 6 Status	51
View Basic Information	51
View Association List	51

View Network Flow Statistics	53
View ARP Table	53
View Bridge Table	
View Active DHCP Client Table	
View Network Activities	55
Chapter 7 Troubleshooting	56
Appendix A. ASCII	58
Appendix B. SSH Settings	59
Appendix C. GPL Declamation	67
Appendix D. Country Channel List	

Chapter 1 Introduction

Introduction

EKI-6331AN is a feature rich wireless AP/ CPE which provides a reliable 5GHz wireless connectivity for industrial environments. The PoE injector enhances flexibility in deployment of this AP/ CPE even where the DC power supply is hard to fulfill. As an 802.11n compliant device, EKI-6331AN provides 3 times higher data rates than legacy 802.11a devices. With 2X2 MIMO technology, EKI-6331AN provides both robust wireless connectivity as well as high throughput rate in wireless transmission. With the support of WMM and IGMP snooping protocols, EKI-6331AN effectively improves the reliability of wireless connectivity, especially in applications that need high reliability and high throughput data transmission. To secure wireless connections, EKI-6331AN implements the latest encryption technologies including WPA2/WPA/802.1x for powerful security authentication.

Appearance



Figure 1 IEEE 802.11a/n Wireless Access Point/ Client Bridge

Key Features

- Compliant with IEEE802.11a/n
- IP55 waterproof certification
- MIMO 2 x 2 11n
- Embedded 16dBi dual-polarity directional antenna with external R-SMA connector for optional antenna
- Passive PoE
- WEP/WPA/WPA2/ IEEE 802.1 x authentication support
- IGMP snooping protocol support

Specification

Standard Support

- Wireless IEEE802.11a/n
- Ethernet IEEE802.3u MDI / MDIX 10/100 Fast Ethernet
- LAN IEEE802.11a/n wireless LAN interface Passive PoE, max. distance: 50 meters

Certifications US FCC Part 15 Class B & C Europe ETSI 300 893, ETSI 301 489-1&17 EN 60950 compliant and CE Mark

Data Rates 802.11a 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto-fallback 802.11n: MCS0 - MCS15 (6.5 Mbps to 300 Mbps)

Physical Specifications

- Power AC Adapter 100V~240V
- Dimensions (L x W x H) 111 x 256 x 48 mm
- Weight 600g

Wireless Interface Operation Modes

- Access Point (AP)
- Customer Premise Equipment (CPE)

- Bridge (WDS)
- AP repeater

Antenna

- Default embedded 2T2R 16dBi dual-polarity directional antenna
- Reverse SMA Connector x 2 for external antennas *Switchable by software

Modulation Techniques

- 802.11a OFDM
- 802.11n OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

Support Frequency

- FCC : 5725-5850
- **CE:** 5470-5725 MHz (DFS band)

Wireless Tx power and Rx Sensitivity

- Transmitted Power
 - o 802.11a: 24dBm @ 6Mbps, 21dBm @ 54Mbps
 - o 802.11an HT20: 23dBm @ MCS0/8, 20dBm@ MCS7/15
 - o 802.11an HT40: 20dBm @ MCS0/8, 19dBm@ MCS7/15

Receiver Sensitivity

- 802.11a Sensitivity -89dBm @ 6Mbps; -73dBm @ 54Mbps
- 802.11n HT20 -89dBm @ MCS0; -71dBm @ MCS7; -65dBm @ MCS15
- 802.11n HT40 -85dBm @ MCS0; -67dBm @ MCS7; -61dBm @ MCS15

Typical Application

This section describes the typical applications of the IEEE 802.11a/n Wireless Access Point/ Client

Bridge. By default, it is set to AP mode which allows it to establish a wireless coverage; besides, it is

also able to join any available wireless network under wireless client mode. It is also able to deliver

stable and efficient broadband connectivity for various applications.



Figure 2 Typical Application

Chapter 2 Hardware Installation

This chapter describes safety precautions and product information you have to know and check before installing EKI-6331AN.

Preparation before Installation

Professional Installation Required

Please have EKI-6331AN installed by professional installer who is well trained in the RF installation and knowledgeable in the local regulations.

Safety Precautions

- To keep you safe and install the hardware properly, please read and follow these safety precautions.
- 2. When installing EKI-6331AN in outdoor environment, please note the following things:
 - Do not use a metal ladder;
 - Try to avoid the installation on a wet or windy day;
 - Wear shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
- 3. When the system is operational, avoid standing directly in front of it. Strong RF fields are present when the transmitter is on.

Installation Precautions

To have EKI-6331AN functioning well in outdoor environment, please read and follow these installation precautions while you are installing.

- Users MUST use a proper and well-installed grounding and surge arrestor with EKI-6331AN; otherwise, lightening could easily cause fatal damage to the unit. EMD (Lightning) DAMAGE IS NOT COVERED UNDER WARRNTY.
- Users MUST use the "Power cord & POE Injector" shipped in the box with EKI-6331AN. Use of other options may cause damage to the unit.
- Users MUST power off EKI-6331AN first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto EKI-6331AN; otherwise, damage might be caused to the device itself.

Product Package

The product package you have received should contain the following items. If any of them are not included or damaged, please contact your local vendor for support.

EKI-6331AN ×1
Pole Mounting Ring ×2
Power Cord & POE Injector ×1
Start up manual ×1
User's manual CD ×1

Pole Mounting Ring



Power Cord & POE Injector



Start up manual & User's manual CD



AWarning:

• Users MUST use the "Power cord & POE Injector" shipped in the box with EKI-6331AN. Use of other options will likely cause damage to the unit.

Hardware Installation

Connect up

1. The bottom of EKI-6331AN is a movable cover. Loosen the screw with a screwdriver. Grab the cover and pull it back harder to take it out as the figure shown below.



Figure 3 Move the Cover

 Plug a standard Ethernet cable into the RJ45 port labeled "LAN 1". Do not plug the cable into the RJ45 port labeled "LAN 2".



Figure 4 Cable Connection

The secondary Ethernet port (labeled LAN 2) is for EKI-6311GN or IP camera integration. To use it you need to enable the secondary port in advance before connecting with the EKI-6311GN or IP camera from EKI-6331AN Web Management as shown below.

AD \ANTECH	Industrial	Wireles	s EKI-6331.	${ m AN}$ Logout
Status	System Wi	ireless	Management	Tools
Basic Settings »	Basic Settings			
TCP/IP Settings	Use this page to configure the bas	ic parameters of devic	e.	
Time Settings	Device Settings			
RADIUS Settings	Device Name:	ap4e7e7c	(max. 15 characters and no space	s)
Firewall Settings	Network Mode:	Bridge 🔻		
	Ethernet 1 DataRate: Ethernet 2 DataRate:	Auto	▼ ▼	
	Country/Region:	United States	•	
	Secondary RJ45 Power:	🖲 Enabled 🛛 🔘 [Disabled	
	Spanning Tree:	🖲 Enabled 🛛 🗍	Disabled	
	STP Forward Delay:	1 (1~30 seco	onds)	

Take out the power cord and POE injector from the gift box, and plug the power cord into the DC port of the POE injector as the below picture shows.



Figure 5 Connect to POE Injector

4. Put what in the Step.2 and Step.3 together by plugging the other side of the Ethernet cable in the Step.2 into the POE port of the POE injector in the Step.3. When you finish the Step.4, the set will be like the following picture:



Figure 6 Plug the Ethernet cable to the RJ-45 jack of the injector

5. Press the black PWR button beside the LAN 1 Ethernet port.



6. Attach and fasten the removable cover to the bottom of the unit with the screw.



EKI-6331AN_User Manual

7. Power on EKI-6331AN by plugging the power adapter to the power socket.

Using the External Antenna

EKI-6331AN provides two reverse SMA antenna connectors if you prefer to use the external antenna for your application instead of the built-in directional antenna, please follow the steps below.

1. Remove the two plugs as circled below:



2. Connect your external antenna to the SMA-type connectors at the bottom of the EKI-6331AN.



Warning:

 Users MUST power off the EKI-6331AN first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto EKI-6331AN; otherwise, damage might be caused to the unit itself. Follow the steps described in **Connect Up** to finish the installation.

Pole Mounting

 Turn EKI-6331AN over. Put the pole mounting rings through the middle hole of it. Note that you should unlock the pole mounting ring with a screw driver before putting it through EKI-6331AN as the following right picture shows.





Figure 7 Pole Mounting – Step 1

2. Mount EKI-6331AN steadily to the pole by locking the pole mounting ring tightly. The mounting ring supports pole diameter 32mm to 70mm.



Figure 8 Pole Mounting – Step 2

3. Now you have completed the hardware installation of the EKI-6331AN.

Chapter 3 Basic Settings

Factory Default Settings

The following table shows EKI-6331AN factory default settings. You can re-acquire these parameters

by default. If necessary, please refer to the "Restore Factory Default Settings".

Table 1 Factory Default Settings

Features		Factory Default Settings	
Usernam	e	admin	
Passwor	b	password	
Wireless	Device Name	apXXXXXX (X represents the last 6	
		digits of Ethernet MAC address)	
Operating	g Mode	AP	
Data Rat	е	Auto	
	IP Address	192.168.1.1	
	Subnet Mask	255.255.255.0	
LAN	Gateway	0.0.0.0	
	Primary DNS Server	0.0.0.0	
	Secondary DNS Server	0.0.0.0	
Spanning	Tree	Enable	
802.11 M	ode	802.11a/n	
Country/I	Region	United States	
Channel	Number	149	
SSID		Wireless	
Broadcas	st SSID	Enable	
HT Prote	ct	Disable	
Data Rat	е	Auto	
Output P	ower	Full	
Channel	Mode	20MHz	
WMM		Enabled	
RTS Thre	eshold (byte)	2346	
Fragmentation Length (byte)		2346	
Beacon Interval		100	
DTIM Inte	erval	1	
Space in	Meter	0	
Flow Cor	ntrol by AP	Disable	
Security		Open System	

Encryptic	on	None	
Wireless Separation		Disable	
Access 0	Control	Disable	
	Enable/Disable	Enable	
	Read Community Name	Public	
SINIVIE	Write Community Name	Private	
IP Address		0.0.0.0	

System Requirements

Before configuration, please make sure your system meets the following requirements:

- A computer coupled with 10/ 100 Base-TX adapter;
- Configure the computer with a static IP address of 192.168.1.x, as the default IP address of EKI-6331AN is 192.168.1.1. (X cannot be 0, 1, nor 255);
- A Web browser on PC for configuration such as Microsoft Internet Explorer 6.0 or above, Netscape, Firefox, or Google Chrome.

How to Login the Web-based Interface

EKI-6331AN provides you with user-friendly Web-based management tool.

• Open Web browser and enter the IP address (Default: **192.168.1.1**) of EKI-6331AN into the address field. You will see the login page as below.

ADVANTECH Industrial Wireless EKI-6331AN

Name	admin	
Password		
	Login	Reset

Figure 9 Login Page

 Enter the username (Default: admin) and password (Default: password) respectively and click "Login" to login the main page of EKI-6331AN. As you can see, this management interface provides 5 main options in the black bar above, which are Status, System, Wireless,

Management and Tools.

AD\ANTECH Industrial Wireless EKI-6331AN Logout System Wireless Management Tools Status Information » Information Connections This page shows the current status and some basic settings of the device. Statistics System Information ARP Table Device Name ap4e7e7c MAC Address 00:19:70:4e:7e:7c Bridge Table Country/Region United States Firmware Version 3.0.4(AD)1 **DHCP** Clients LAN Settings Network Activities 60.248.159.176 IP Address Subnet Mask 255.255.255.0 Gateway IP Address 60 248 159 181

Figure 10 Main Page

Note:

• The username and password are case-sensitive, and the password should be no

more than 19 characters!

Basic System Settings

For users who use EKI-6331AN for the first time, it is recommended that you begin configuration from

"Basic Settings" in "System" shown below:

AD\ANTECH	Industri	al Wirele	ess EKI-6331	${f AN}$ Logout
Status	System	Wireless	Management	Tools
Basic Settings »	Basic Setti	ings		
Time Settings	Use this page to configur	re the basic parameters of de	avice.	
RADIUS Settings	Device Settings	an4o7o7c	(may 15 sharesters and as and	
Firewall Settings	Network Mode: Ethernet 1 DataRate	Bridge Auto	(max. 15 characters and no space	ces)
	Ethernet 2 DataRate Country/Region: Secondary RJ45 Po Spanning Tree:	e: Auto United States wer: © Enabled (© Enabled (▼ ▼ Disabled Disabled	

Figure 11 Basic System Settings

Basic Settings

Device Name: Specify the device name, which is composed of no more than 15 characters with (0-9), (A-Z), (a-z) or (-).

Network Mode: Specify the network mode, including Bridge and Router. It is easy to configure parameters in Bridge Mode; however, users must pay extra attention to the way they configure the device when it is set to Router Mode.

Ethernet 1 Data Rate: Specify the transmission rate of data of LAN1. Default is Auto.

Ethernet 2 Data Rate: Specify the transmission rate of data of LAN2. Default is Auto.

<u>Country Region</u>: The availability of some specific channels and/or operational frequency bands are country dependent.

Secondary RJ45 Power: The secondary Ethernet port (labeled LAN 2) is for IP video integration.

To use it you need to enable the secondary port via WEB UI in advance before connecting with the IP camera.

Spanning Tree: Spanning Tree Protocol (STP) is a link management protocol for AP which provides path redundancy while preventing loops in a network. STP allows only one active path at a time between the access points but establish the redundant link as a backup if the initial link

fails.

<u>STP Forward Delay</u>: STP Forward Delay is the time spent in detecting and learning network tree topology state before entering the forward state. Default time value is 1 sec.

GPS Coordinate Settings:

The GPS Coordinate Setting helps you mark the latitude and longitude of EKI-6331AN. Just enter the coordinates and click the **Apply** button.

TCP/IP Settings

Open "**TCP/IP Settings**" in "**System**" as below to configure the parameters for LAN which connects to the LAN port of EKI-6331AN. In this page, users may change the settings for IP Address, Subnet Mask, and DHCP Server.

AD\ANTECH	Indust	rial Wireles	ss EKI-633	1AN Logout
Status	System	Wireless	Management	Tools
Basic Settings	TCP/IP S	ettings		
TCP/IP Settings »	Use this page to con Access Point, Here	nfigure the parameters for local are you may change the setting for IP a	a network which connects to the L4 address, subnet mask, DHCP, etc	AN port of your
Time Settings	IP Address As	signment		
RADIUS Settings	Obtain IP /	Address Automatically		
Firewall Settings	Use Fixed	IP Address		
	IP Address :	192.168.1.176		
	Gateway Ip Ad	dress : 192.168.1.1		
	DNS 1 :	168.95.1.1		
	DNS 2 :	0.0.0.0		

Figure 12 TCP/IP Settings (Bridge)

Obtain IP Address Automatically: If a DHCP server exists in your network, you can check this option, thus EKI-6331AN is able to obtain IP settings automatically from that DHCP server.

0	Note:	
0	Note	

When the IP address of EKI-6331AN is changed, the clients on the network often need

to wait for a while or even reboot before they can access the new IP address. For an

immediate access to the bridge, please flush the netbios cache on the client computer by

running the "nbtstat -r" command before using the device name of EKI-6331AN to access

its Web Management page.

• In case the EKI-6331AN is unable to obtain an IP address from a valid DHCP server, it

will fall back to default static IP address.

<u>Use Fixed IP Address</u>: Check this option. You have to specify a static IP address, subnet mask, default gateway and DNS server for EKI-6331AN manually. Make sure the specified IP address is unique on your network in order to prevent IP conflict.

If EKI-6331AN is configured as Router mode, you need to configure some additional TCP/IP parameters for accessing the Internet.

AD \ANTECH	Indust	rial Wireles	ss EKI-633	$1\mathrm{AN}$ Logout
Status	System	Wireless	Management	Tools
Basic Settings	TCP/IP S	ettings		
TCP/IP Settings »	Use this page to cor Access Point. Here y	nfigure the parameters for local are you may change the setting for IP a	a network which connects to the LA address, subnet mask, DHCP, etc	N port of your
Time Settings	WAN Settings:			
RADIUS Settings	WAN Access Type:	Static IP 💌		
Firewall Settings	IP Address: Subnet Mask: Default Gateway:	192.168.1.1 255.255.255.0		
	DNS 1: DNS 2:	0.0.0.0		
	LAN Settings:			

Figure 13 TCP/IP Settings (Router)

<u>WAN Settings</u>: Specify the Internet access method to Static IP, DHCP or PPPOE. Users must enter WAN IP Address, Subnet Mask, Gateway settings provided by your ISPs.

LAN Settings: When DHCP Server is disabled, users can specify IP address and subnet mask for EKI-6331AN manually. Make sure the specified IP address is unique on your network in order to prevent IP conflict. When DHCP Server is enabled, users may specify DHCP IP Address Range, DHCP Subnet Mask, DHCP Gateway and Lease Time (15-44640 minutes). A DHCP relay agents is used to forward DHCP requests and replies between clients and servers when they are not on the same physical subnet. To enable the DHCP relay agent, check the "Enable DHCP Relay" checkbox and enter the IP address of the DHCP server.

AWarning:

• In AP mode, EKI-6331AN must establish connection with another wireless device

before it is set to Router mode. To access the unit in Router mode via wired port, please type the WAN IP address to enter the web page for WAN is on wired port and LAN is on wireless port. Or, you can access device through the wireless device connected with the EKI-6331AN.

- In wireless client mode, users can access EKI-6331AN via its wired port, for WAN is on wireless port and LAN is on wired port when device is set to Router mode.
- Bridge mode and AP Repeater mode are similar to AP mode when device is set to Router mode; WAN is on wired port and LAN is on wireless port. Thus users must also connect EKI-6331AN with another wireless device before it is set to Router mode and access EKI-6331AN via the connected wireless device.

Time Settings

Compliant with NTP, EKI-6331AN is capable of keeping its time in complete accord with the Internet time. Make configuration in "**Time Settings**" from "**System**". To use this feature, check "**Enable NTP Client Update**" in advance.

AD \ANTECH	Industr	ial Wirele	ss EKI-6331	IAN Logout
Status	System	Wireless	Management	Tools
Basic Settings	Time Sett	inas		
TCP/IP Settings	You can synchronize	System Log's time stamp with a	public time server over the Internet.	
Time Settings »	Current Time:	Yr 2011 Mon 8	Day 7 Hr 17 Mn 50	Sec
RADIUS Settings	Time Zone Select	57 (GMT+08:00)Taipe	i	~
Firewall Settings	Enable NTP	client update		
	NTP server:	203.117.180.36 - A	sia Pacific 🔻	
	Manual IP:	192.43.244.18]	
		Apply	Cancel	



Current Time

Display the present time in Yr, Mon, Day, Hr, Min and Sec.

Time Zone Select

Select the time zone from the dropdown list.

NTP Server

Select the time server from the "**NTP Serve**r" dropdown list or manually input the IP address of available time server into "**Manual IP**". (For example, 192.43.244.18 for NIST server.) Hit "**Apply**" to save settings.

RADIUS Settings

RADIUS (Remote Authentication Dial-In User Service) is a server for remote user authentication and accounting; playing a central role in the network in providing the capabilities of authenticating, authorizing, accounting, auditing, alarming and etc. It allows an organization to maintain user profiles in a central database that all remote servers can share.

Open "RADIUS Settings" in "System" to make RADIUS configuration.

AD\ANTECH	l Industr	ial Wirele	ss EKI-6331	${f AN}$ Logout
Status	System	Wireless	Management	Tools
Basic Settings		Settings		
TCP/IP Settings	Use this page to set th	e radius server settings.		
Time Settings				
RADIUS Settings >	> ID Address:	RADIUS Server		
Firewall Settings	Port: Shared Secret:	1812		
	Ciobal-Key I	Update econds		

Figure 15 RADIUS Settings

Authentication RADIUS Server

This is for RADIUS authentication. It can communicate with RADIUS through IP Address, Port and Shared Secret.

IP Address: Enter the IP address of the Radius Server;

Port: Enter the port number of the Radius Server;

Shared Secret: This secret, which is composed of no more than 31 characters, is shared by the

AP and RADIUS during authentication.

<u>Global-Key Update</u>: Check this option and specify the time interval between two global-key updates.

Firewall Settings

The firewall is a system or group of systems that enforce an access control policy between two networks. It may also be defined as a mechanism used to protect a trusted network from an un-trusted network. EKI-6331AN has capabilities of Source IP Filtering, Destination IP Filtering, Source Port Filtering, Destination Port Filtering, Port Forwarding as well as DMZ. This is available only under Router Mode.

Source IP Filtering: The source IP filtering gives users the ability to restrict certain types of data packets from your local network to Internet through EKI-6331AN. Use of such filters can be helpful in securing or restricting your local network.

AD\ANTECH	Indust	rial Wir	eless I	EKI-63	331AN	Logout
Status	System	Wireless		lanagement		Tools
Basic Settings	Source I	P Filtering				
TCP/IP Settings	Entries in this table	are used to restrict certai	n types of data pag	kets from your loca	al network to Inter	net
Time Settings	through the Gatewa	y. Use of such filters can	be helpful in securi	ng or restricting yo	ur local network.	-
RADIUS Settings	Enable S	Source IP Filtering				
Firewall Settings	Local IP Addres	SS:				
Src IP Filtering »						-
Dst IP Filtering		Ap	Cancel			
Src Port Filtering			Commont A	C - 1 +	F-1 4	
Det Port Eiltering		local IP Address 🗢	comment ∓	Select	Call	

Figure 16 Source IP Filtering

Destination IP Filtering: The destination IP filtering gives you the ability to restrict the computers in LAN from accessing certain websites in WAN according to specified IP addresses. Check the "**Enable Destination IP Filtering**" checkbox and enter the IP address of the clients to be restricted. Hit **Apply** to make the setting take effect.

AD \ANTECH	Indust	rial Wirele	ess EKI-6	5331AN	Logout
Status	System	Wireless	Managemen	nt To	ools
Basic Settings	Destinat	ion IP Filtering	g		
TCP/IP Settings	Entries in this table according to IP add	are used to restrict the computers	s in LAN from accessing cer	rtain websites in WAN	
Time Settings					-
RADIUS Settings	Destination IP	Destination IP Filtering			
Firewall Settings	Comment :				
Src IP Filtering					-
Dst IP Filtering »		Apply	Cancel		
Src Port Filtering	Des	tination IP Address Comr	ment 🗢 Select	Edit	_
Det Port Eiltering					

Figure 17 Destination IP Filtering

<u>Source Port Filtering</u>: The source port filtering enable you to restrict certain ports of data packets from your local network to Internet through EKI-6331AN. Use of such filters can be helpful in securing or restricting your local network.

AD\ANTECH	Indust	rial Wireles	ss EKI-633	1AN Logout
Status	System	Wireless	Management	Tools
Basic Settings	Source P	ort Filtering		
TCP/IP Settings	Entries in this table a through the Gateway	are used to restrict certain ports of . Use of such filters can be helpful	data packets from your local net in securing or restricting your loc	work to Internet cal network.
Time Settings	_			
RADIUS Settings	Port Range:	ource Port Filtering		
Firewall Settings	Protocol:	Both 🔻		
Src IP Filtering	Comment:			
Dst IP Filtering		Apply	Cancel	
Src Port Filtering »	Source Po	ort Range ♦ Protoco⊯	Comment	Edit

Figure 18 Source Port Filtering

Destination Port Filtering: The destination port filtering enables you to restrict certain ports of data packets from your local network to Internet through EKI-6331AN. Use of such filters can be helpful in securing or restricting your local network.

AD \ANTECH	Indust	rial Wirele	ss EKI-(6331AN	Logout		
Status	System	Wireless	Manageme	nt	Tools		
Basic Settings	Destinat	ion Port Filterin	a				
TCP/IP Settings	Entries in this table	e are used to restrict certain ports	s of data packets from y	your local network to			
Time Settings	Internet through t network.	he Gateway. Use of such filters ca	n be helpful in securing	or restricting your loc	cal		
RADIUS Settings	Enable D	Destination Port Filtering					
Firewall Settings	Port Range:						
Src IP Filtering	Protocol: Both Comment						
Dst IP Filtering							
Src Port Filtering		Apply	Cancel				
Dst Port Filtering »	Dest Po	rt Range	Comment 🜩	Select Edit			

Figure 19 Destination Port Filtering

Port Forwarding: The port forwarding allows you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings ne are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind the router's NAT firewall.

AD\ANTECH	Indust	rial Wireles	ss EKI-633	$1\mathrm{AN}$ Logout					
Status	System	Wireless	Management	Tools					
Basic Settings	Dent Ferm								
TCP/IP Settings	Entries in this table	varaing e allow you to automatically redir	ect common network services to	a specific					
Time Settings	machine behind the of server like a web firewall.	machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind your Gateway's NAT frewall							
RADIUS Settings									
Firewall Settings	IP Address:	ort Forwarding							
Src IP Filtering	Protocol:	Both 🔻	, ,						
Dst IP Filtering	Port Range: Comment:								
Src Port Filtering									
Dst Port Filtering		Apply	Cancel						
Port Forwarding »	Local IP Ad	dress‡ Protocêl Port Range	Comment Select	Edit					
DMZ Setting		Delete Selected De	elete All Refresh						

Figure 20 Port Forwarding

DMZ: A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to the Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

AD\ANTECH	Indust	rial Wirele	ss EKI-6331	${ m AN}$ Logout
Status	System	Wireless	Management	Tools
Basic Settings	DMZ			
TCP/IP Settings	A Demilitarized Zo	one is used to provide Internet s	ervices without sacrificing unauthor	ized access
Time Settings	to its local private traffic, such as We	network. Typically, the DMZ ho b (HTTP) servers, FTP servers	st contains devices accessible to Ir ,SMTP (e-mail) servers and DNS se	iternet rvers.
RADIUS Settings	Enable DI	MZ	7	
Firewall Settings	DMZ Host IP A	ddress: 0.0.0.0		
Src IP Filtering		Apply	Cancel	
Dst IP Filtering				
Src Port Filtering				
Dst Port Filtering				
Port Forwarding				
DMZ Setting »				

Figure 21 DMZ Settings

Basic Wireless Settings

Open "Basic Settings" in "Wireless" as below to make basic wireless configuration.

AD\ANTECH	Industrial V	Vireles	s EKI-6331	AN Logout
Status	System Wir	eless	Management	Tools
Basic Settings »	Wireless Basic S	Settinas	, in 1	
Profile Settings	Use this page to configure the p	arameters for wire	less LAN clients which may con	nect to your
Advanced Settings	Access Point. Here you may cha	nge wireless mode	as well as wireless network pa	rameters.
Access Control	🗏 Disable Wireless LAN In	terface		
WDS Settings	Wireless Mode: Wireless Network Name(SSID): Broadcast SSID: 802.11 Mode: HT protect: Frequency/Channel: Extension Channel: 40MHz Center Frequency: Channel Mode:	AP ▼ EKI-6331AN-Test © Enabled © Dia 802.11A/N ▼ © Enabled © Dia 5805MHz (161) ▼ Lower Channel ▼ 5795MHz (159) 40 MHz ▼	Site Survey (more) sabled sabled 5785MHz (157)	
	Antenna:	Internal (16 dBi)	SMA Connector	

Figure 22 Basic Wireless Settings

Disable Wireless LAN Interface

Check this option to disable WLAN interface, then the wireless module of EKI-6331AN will stop working and no wireless device can connect to it.

Wireless Mode

Four operating modes are available on EKI-6331AN.

<u>AP</u>: EKI-6331AN establishes a wireless coverage and receives connectivity from other wireless devices.

<u>Wireless Client</u>: EKI-6331AN is able to connect to the AP and thus join the wireless network around it.

Bridge: EKI-6331AN establishes wireless connectivity with other EKI-6331AN by keying in remote MAC address. Please refer to the "**WDS Setting**" for detailed configuration.

<u>AP Repeater</u>: EKI-6331AN servers as AP and Bridge concurrently. In other words, it can provide connectivity services for EKI-6331AN under Bridge mode.

• Wireless Network Name (SSID)

This wireless network name is shared among all associated devices in your wireless network.

Keep it identical on all those devices. Note that the SSID is case-sensitive and cannot exceed 32 characters.

• 802.11 Mode

EKI-6331AN can communicate with wireless devices of 802.11n or 802.11a/n.

HT Protect

Enable HT (High Throughput) protect to ensure HT transmission with MAC mechanism. Under 802.11n mode, wireless client can be divided into HT STA and Non-HT STA, among which the one with HT protect enabled gets higher throughput.

Note:

• STA stands for Station which is referred to wireless clients connecting to Access Point.

• Frequency/Channel

Channel varies much as the available band differs from country to country. Select a proper

operating channel in the drop-down list according to your situation

Extension Channel

Only applicable to AP, AP Repeater, and 40MHz channel width indicates the use of channel

bonding that allows EKI-6331AN to use two channels at once. Two options are available: Upper Channel and Lower Channel.

Channel Mode

4 levels are available: 40MHz, 20MHz, 10MHz and 5MHz. 40MHz can enhance data throughput, but it takes more bandwidth, thus it might cause potential interference.

Antenna

By default, EKI-6331AN uses its built-in antenna for directional transmission; however, if you prefer to use an external antenna for your case-dependent applications, you can switch from "Internal (16 dBi)" to "SMA Connector".

When **SMA Connector** is selected, an Antenna Gain bar will appear to allow you specify the gain of the external antenna. The antenna gain calculates the TX power back off needed to remain in compliance with regulations.

Warning:

• You are able to choose "SMA Connector" only from the WEB UI after you have physically installed the external antenna; otherwise, it might damage the unit itself.

• Maximum Output Power (per chain):

Specify the signal transmission power. The higher the output power is, the wider the signal can cover, but the power consumption will be greater accordingly.

Note:

- The output power here is counted from the RF single chain only not including the 16dBi internal antenna.
- The maximum output power will vary depending on the country selected in order to comply with the local regulation.
- You are able to choose "SMA Connector" only when you have well done installing the external antenna; otherwise, it might damage EKI-6331AN itself.

Data Rate

Usually "**Auto**" is preferred. Under this rate, EKI-6331AN will automatically select the highest available rate to transmit. In some cases, however, like where there is no great demand for speed, you can have a relatively-low transmit rate for compromise of a long distance.

Extension Channel Protection Mode

This is to avoid conflict with other wireless network and boost the ability of your device to catch all legacy devices transmissions. However, it may decrease wireless network performance.

Compared to CTS-Self; the transmission amount of CTS-RTS is much lower.

Enable MAC Clone

Available in wireless client mode, it hides the MAC address of EKI-6331AN while displays the one of associated wireless client or the MAC address designated manually.

Site Survey

Under wireless client mode, EKI-6331AN is able to perform site survey, through which, information on the available access points will be detected.

Open "**Basic Settings**" in "**Wireless**", by clicking the "**Site Survey**" button beside "**Wireless Mode**" option, the wireless site survey window will pop up with a list of available wireless networks around. Select the AP you would like to connect and click "**Selected**" to establish connection.

C Vireles	s Site Survey -	Vindows In	ternet Explorer			
🔊 http://19	2.166.1.1/wlsurvey.as	p				
Wirele	ess Site Su ovides tool to scan the en client mode is enab	I rvey wireless netwoled.	rork. If any Access Point or I	BSS is found, you cou	ld choose to co	nnect it
Select	S SID	Channel	MAC Address	Wireless Mode	Signal Strength	Security
0	W32_204	1	00:15:eb:00:02:04	b/g	-86	NONE
0	W32_204_WPA2	1	0e:15:eb:00:02:04	b/g	-87	WPA2
2			Selected Refresh			3
完成				i 🚱 🚱 1	Internet	🔍 100% 🔹 👘

Figure 23 Site Survey

VAP Profile Settings

Available in AP mode, EKI-6331AN allows up to 16 virtual SSIDs on a single BSSID and to configure
different profile settings such as security and VLAN ID to each SSID. To create a virtual AP, you may check the **Enable** box of the profile and click on the profile (eg. Profile 2) to configure wireless and security settings. Hit **Apply** to active the profile.

AD\ANTECH	In	dustria	l Wirel	es	s EKI-	633	1AN Logout
Status	Syster	n	Wireless		Managem	ent	Tools
Basic Settings Profile Settings »	VA define	P Profile S	ettings				
Advanced Settings	-	Profile Name 🛎	ssin		Security A	Vian ID	Enable
Access Control	1	Profile1	EKI-6331AN-Test		Open System		Always Enabled
WDS Settings	2	Profile2	Wireless		Open System	0	
	3	Profile3	Wireless		Open System	0	
	4	Profile4	Wireless		Open System	0	
	5	Profile5	Wireless		Open System	0	
	6	Profile6	Wireless		Open System	0	
	7	Profile7	Wireless		Open System	0	
	8	Profile8	Wireless		Open System	0	
	9	Profile9	Wireless		Open System	6	E.

Figure 24 VAP Profile Settings

D\ANTECH	Industrial V	Wireles	s EKI-6331	${ m AN}$ Logout
Status	System Wi	reless	Management	Tools
Basic Settings	VAP Profile1 Se	ttings		
Profile Settings :	»	tungo		
Advanced Settings	Basic Settings			
Access Control	Profile Name:	Profile1		
WDS Settings	Wireless Network Name (SSID)	EKI-6331AN-Test		
	Broadcast SSID:	💿 Enabled 🔘 D	isabled	
	Wireless Separation:	🔘 Enabled 💿 D	isabled	
	WMM Support:	Enabled D	isabled	
	Max. Station Num:	32 (0-	32)	19
	Security Settings			
	Network Authentication:	Open System	· •	
	Data Encryption:	None 🔻		
	Key Type:	Hex 💌		

Figure 25 VAP Profile Settings

Basic Setting

Profile Name: Name of the VAP profile

Wireless Network Name: Enter the virtual SSID for the VAP

Broadcast SSID: In AP mode, hiding network name is necessary when you are in a wireless

environment that may have potential risk. By disabling broadcast SSID, the STA cannot scan and find EKI-6331AN, so that malicious attack by some illegal STA could be avoided.

<u>Wireless Separation</u>: Wireless separation is an ideal way to enhance the security of network transmission. Under the mode except wireless client mode, enable "Wireless Separation" can prevent the communication among associated wireless clients.

<u>WMM Support</u>: WMM (Wi-Fi Multimedia) is a subset of 802.11e. It allows wireless communication to define a priority limit on the basis of data type under AP mode only, thus those time-sensitive data, like video/audio data, may own a higher priority than common one. To enable WMM, the wireless client should also support it

<u>Max. Station Number:</u> By checking the "Max. Station Num" EKI-6331AN will allow up to 32 wireless clients to associate with. By disabling the checkbox EKI-6331AN will allow up to 128 clients to connect, but it is likely to cause network congestion or poor performance.

Security Setting:

To prevent unauthorized radios from accessing data transmitting over the connectivity, EKI-6331AN provides you with rock solid security settings.

VLAN Tab

If your network uses VLANs, you can assign one SSID to a VLAN, and client devices using the SSID are grouped in that VLAN.

To allow users on the VLAN to access the WEB page of EKI-6331AN, you need to enable "**Enable 802.1Q VLAN**" and assign a management VLAN ID for your device. Make sure the assigned management VLAN ID is identical to your network VLAN ID to avoid failures of accessing the Web page of EKI-6331AN.

Status	-	System		Wireless	Manager	nent	Tools
Basic Setting	s	8	Profile8	Wireless	Open System	0	
Profile Setting	s >>	9	Profile9	Wireless	Open System	0	
		10	Profile10	Wireless	Open System	0	
Advanced Setting	5	11	Profile11	Wireless	Open System	0	
Access Contro	d.	12	Profile12	Wireless	Open System	0	
WDS Setting	s	13	Profile13	Wireless	Open System	0	
-	-	14	Profile14	Wireless	Open System	0	
		15	Profile15	Wireless	Open System	0	
		16	Profile16	Wireless	Open System	0	

Figure 26 Management VLAN ID

Chapter 4 Advanced Settings

Advanced Wireless Settings

Open "Advanced Settings" in "Wireless" to make advanced wireless settings.

AD \ANTECH	Industri	al Wirel	ess EKI-6331	${ m AN}$ Logout
Status	System	Wireless	Management	Tools
Basic Settings Profile Settings	Wireless Ac	vanced Se	ttings advanced users who have a sufficient	knowledge
Advanced Settings »	about wireless LAN. Th changes will take.	ese settings should no	ot be changed unless you know what e	effect the
Access Control	A-MPDU aggregation	Enabled	Disabled	
WDS Settings	A-MSDU aggregation	: 💮 Enabled	Oisabled	
	Short GI:	Enabled	Disabled	
	RTS Threshold:	2347	(1-2347)	
	Fragment Threshold:	2346	(256-2346)	
	Beacon Interval:	100	(20-1024 ms)	
	DTIM Interval:	1	(1-255)	
	IGMP Snooping:	Enabled	Disabled	
	RIFS:	Enabled	Disabled	
	Link Integration:	C Enabled	Disabled	
	TDM Coordination:	Coobled	Disabled	

Figure 27 Advanced Wireless Settings

A-MPDU/A-MSDU Aggregation

The data rate of your EKI-6331AN except wireless client mode could be enhanced greatly with this option enabled; however, if your wireless clients don't support A-MPDU/A-MSDU aggregation, it is not recommended to enable it.

Short GI

Under 802.11n mode, enable it to obtain better data rate if there is no negative compatibility issue.

RTS Threshold

EKI-6331AN sends RTS (Request to Send) frames to certain receiving station and negotiates the sending of a data frame. After receiving an RTS, that STA responds with a CTS (Clear to Send) frame to acknowledge the right to start transmission. The setting range is 0 to 2346 in byte. Setting it too low may result in poor network performance. Leave it at its default of 2346 is recommended.

Fragmentation Length

Specify the maximum size in byte for a packet before data is fragmented into multiple packets. Setting it too low may result in poor network performance. Leave it at its default of 2346 is recommended.

Beacon Interval

Specify the frequency interval to broadcast packets. Enter a value between 20 and 1024.

DTIM Interval

DTIM, which stands for Delivery Traffic Indication Message, is contained in the data packets. It is for enhancing the wireless transmission efficiency. The default is set to 1. Enter a value between 1 and 255.

IGMP Snooping

Available in AP/Router mode, IGMP snooping is the process of listening to IGMP network traffic. By enabling IGMP snooping, the AP will listen to IGMP membership reports, queries and leave messages to identify the ports that are members of multicast groups. Multicast traffic will only be forwarded to ports identified as members of the specific multicast group or groups.

RIFS

RIFS (Reduced Interframe Spacing) is a means of reducing overhead and thereby increasing network efficiency.

Link Integration

Available under AP/Bridge/AP repeater mode, it monitors the connection on the Ethernet port by checking "**Enabled**". It can inform the associating wireless clients as soon as the disconnection occurs.

TDM Coordination

Stands for "Time-Division Multiplexing Technique", this resource reservation control mechanisms can avoid packet collisions and send the packets much more efficiently allowing for higher effective throughput rates. This function is only available in AP/CPE mode. It is highly recommended to enable TDM coordination when there are multiple CPEs needed to connect to the AP in your application.

LAN2LAN CPE

LAN2LAN CPE mode enables packet forwarding at layer 2 level. It is fully transparent for all the

Layer2 protocols.

Space in Meter

To decrease the chances of data retransmission at long distance, EKI-6331AN can automatically adjust proper ACK timeout value by specifying distance of the two nodes.

Flow Control

It allows the administrator to specify the incoming and outgoing traffic limit by checking "Enable Traffic Shaping". This is only available in Router mode.

- Note:
 - We strongly recommend you leave most advanced settings at their defaults except
 "Distance in Meters" adjusted the parameter for real distance; any modification on them may negatively impact the performance of your wireless network.

Wireless Security Settings

To prevent unauthorized radios from accessing data transmitting over the connectivity, EKI-6331AN provides you with rock solid security settings.

Data Encryption and Authentication Settings

Open "Profile Setting" in "Wireless" and enter "VAP Profile 1 Settings" as below.

AD\ANTECH Industrial Wireless EKI-6331AN Logout					
Status	System Wir	eless	Management	Tools	
Basic Settings	VAP Profile1 Se	ttings			
Profile Settings »					
Advanced Settings	Basic Settings				
Access Control	Profile Name: Wireless Network Name (SSID):	Profile1			
WDS Settings	Windows Network Name (SSid). Broadcast SSID: Wireless Separation: WMM Support:	Enabled Disable Enabled Disable Enabled Disable Disable Isabled Disable Disable Isabled Disable Isabled Disable Isable Isable	led led		
	Security Settings Network Authentication: Data Encryption: Key Type: Default Tx Key:	Open System Open System Shared Key Legacy 802.1x WPA with Radius WPA2 with Radius WPA2 with Radius WPA2 SK	ius		
		WPA-PSK WPA-PSK WPA-PSK&WPA2-PSK	S Interne	t Protected Mode: Off	

Figure 28 Security Settings

Network Authentication

<u>Open System</u>: It allows any device to join the network without performing any security check. <u>Shared Key</u>: Data encryption and key are required for wireless authentication. (not available in Bridge/AP Repeater mode)

Legacy 802.1x: Available in AP/Wireless Client mode, it provides the rights to access the wireless network and wired Ethernet. With User and PC identity, centralized authentication as well as dynamic key management, it controls the security risk of wireless network to the lowest. To serve the 802.1x, at least one EAP type should be supported by the RADIUS Server, AP and wireless client.

Note:

 For first time users, if EAP type "TLS" is selected, you need to import valid user certificate given by CA in prior. To import user certificates, please refer to Chapter 5 Management/Certificate Settings for more details.

WPA with RADIUS: Available in AP/Wireless Client mode, with warrant (username, password and etc.) offered by user, this kind of authentication can be realized with specific RADIUS server. This is the common way to be adopted in large enterprise network.

<u>WPA2 with RADIUS</u>: Available in AP/Wireless Client mode, as a new version of WPA, only all the clients support WPA2, can it be available. If it is selected, AES encryption and RADIUS server is required.

WPA&WPA2 with RADIUS: Available in AP mode, it provides options of WPA (TKIP) or WPA2 (AES) for the client. If it is selected, the data encryption type must be TKIP + AES and the RADIUS server must be set.

WPA-PSK: It is a simplified WPA mode with no need for specific authentication server. In this so-called WPA Pre-Shared Key, all you have to do is just pre-enter a key in each WLAN node and this is the common way to be adopted in large and middle enterprise as well as residential network.

WPA2-PSK: As a new version of WPA, only all the clients support WPA2, can it be available. If it is selected, the data encryption can only be AES and the passphrase is required.

WPA-PSK&WPA2-PSK: Available in AP mode, it provides options of WPA (TKIP) or WPA2 (AES) encryption for the client. If it is selected, the data encryption can only be TKIP + AES and the passphrase is required.

Data Encryption

If data encryption is enabled, the key is required and only sharing the same key with other wireless devices can the communication be established.

None: Available only when the authentication type is open system.

64 bits WEP: It is made up of 10 hexadecimal numbers.

128 bits WEP: It is made up of 26 hexadecimal numbers.

152 bits WEP: It is made up of 32 hexadecimal numbers.

TKIP: Temporal Key Integrity Protocol, which is a kind of dynamic encryption, is co-used with WPA-PSK, etc.

AES: Advanced Encryption Standard, it is usually co-used with WPA2-PSK, WPA, WPA2, etc.

TKIP + AES: It allows for backwards compatibility with devices using TKIP.

Note:

- We strongly recommend you enable wireless security on your network!
- Only setting the same Authentication, Data Encryption and Key in EKI-6331AN and

other associated wireless devices, can the communication be established!

Access Control

The Access Control appoints the authority to wireless client on accessing EKI-6331AN, thus a further

security mechanism is provided. This function is available only under AP mode.

Open "Access Control" in "Wireless" as below.

AD\ANTECH	Industria	ıl Wireles	s EKI-6331	AN Logout
Status	System	Wireless	Management	Tools
Basic Settings	Wireless Ac	cess Control		
Profile Settings	If you choose 'Allowed L	isted', only those clients v	whose wireless MAC addresses a	re in the
Advanced Settings	these wireless clients or	the list will not be able to	ccess Point, When Deny Listed connect the Access Point.	is selected,
Access Control »	Access Control Mode:	Deny Listed 🔻		
WDS Settings	MAC Address:	00:19:70:4e:7e:79)	
		Apply C	ancel	
		MAC Address \$	Select Edit	
		Delete Selected Del	ete All Refresh	
	5			

Figure 29 Access Control

Access Control Mode

If you select "**Allow Listed**", only those clients whose wireless MAC addresses are in the access control list will be able to connect to your AP. While when "**Deny Listed**" is selected, those wireless clients on the list will not be able to connect the AP.

MAC Address

Enter the MAC address of the wireless client that you would like to list into the access control list, click "**Apply**" then it will be added into the table at the bottom.

Delete Selected/All

Check the box before one or more MAC addresses of wireless client(s) that you would like to cancel, and click "**Delete Selected**" or "**Delete All**" to cancel that access control rule.

WDS Settings

Extend the range of your network without having to use cables to link the bridges by using the Wireless

Distribution System (WDS): Simply put, you can link the bridges wirelessly. Open "WDS Settings" in

"Wireless" as below:

Status	System	Nireless	Management	Tools
Basic Settings	WDS Settings			
Profile Settings	Wilelas Distribution States		ammunianta uith athas ADa	like the
Advanced Settings	Ethernet does. To do this, y addresses of other APs whic WDS.This function can work	ou must set these APs in h you want to communicat only in Bridge and AP Rep	the same channel and set M with in the table and then water mode.	AC enable the
Access Control				
WDS Settings >>	WDS Separation:	🖗 Enabled 🛞 Disa	bled	
	Local MAC Address:	00:19:70;4e:7e:7e		
	Remote AP MAC Address 1	•		
	Remote AP MAC Address 3			
	Remote AP MAC Address 4			

Figure 30 WDS Settings

Enter the MAC address of another EKI-6331AN you wirelessly want to connect to into the appropriate field and click "**Apply**" to save settings.

1	Note:	

- WDS Settings is available only under Bridge and AP Repeater Mode.
- Bridge uses the WDS protocol that is not defined as the standard thus compatibility issues between equipment from different vendors may arise. Moreover, Tree or Star shape network topology should be used in all WDS use-cases (i.e. if AP2 and AP3 are specified as the WDS peers of AP1, AP2 should not be specified as the WDS peer of AP3 and AP3 should not be specified as the WDS peer of AP3 and AP3 should not be specified as the WDS peer of AP2 in any case). Mesh and Ring network topologies are not supported by WDS and should be avoided in all the use cases.

Chapter 5 Management

Remote Management

EKI-6331AN provides a variety of remotes managements including Telnet, SNMP, FTP, SSH, HTTPS and exclusive WISE tool, making configuration more convenient and secure.

With **Normal** selected, Telnet, SNMP and FTP are activated as default remote management options.

To use secure management tools such as SSH, HTTPS and WISE, please select "**Secure**". You may also choose "**Customized**" to enable any methods as desired.

AD\ANTECH	Industria	al Wireless	s EKI-6331	IAN Logout		
Status	System	Wireless	Management	Tools		
Remote Settings »	Remote Set	tings services of remote console.				
Firmware Upload	Management Privac	y Mode				
Configuration File	Normal Secure Customized Image: With the secure is a secure of the secure of the secure is a secure of the secur					
Certificate Settings	SNMP Settings	Force HTTPS WISE				
	Protocol Version: Server Port: Get Community: Set Community: Trap Destination: Trap Community:	V2 V 161 public private 0.0.0.0 public				

Figure 31 Remote Management

SNMP Management

EKI-6331AN supports SNMP for convenient remote management. Open "Remote Settings" in

"Management" shown below. Set the SNMP parameters and obtain MIB file before remote

management.

AD\ANTECH	Industrial W	Vireless	EKI-6331AN	Logout
Status	System Wire	less	Management 1	ools
Remote Settings >> CoovaChilli Settings Firmware Upload Configuration File Password Settings	Remote Settings	of remote console.		_
Certificate Settings	SNMP Settings Protocol Version: Server Port: Get Community: Set Community: Trap Destination: Trap Community:	V2 IG1 public private 0.0.0.0 public		

Figure 32 SNMP Configuration

Protocol Version

Select the SNMP version, and keep it identical on EKI-6331AN and the SNMP manager.

EKI-63331AN supports SNMP v2/v3.

Server Port

Change the server port for a service if needed; however you have to use the same port to use that service for remote management.

Get Community

Specify the password for the incoming Get and GetNext requests from the management station.

By default, it is set to public and allows all requests.

Set Community

Specify the password for the incoming Set requests from the management station. By default, it is set to private.

Trap Destination

Specify the IP address of the station to send the SNMP traps to.

Trap Community

Specify the password sent with each trap to the manager. By default, it is set to public and allows all requests.

Configure SNMPv3 User Profile

For SNMP protocol version 3, you can click "Configure SNMPv3 User Profile" in blue to set the

details of SNMPv3 user. Check "Enable SNMPv3 Admin/User" in advance and make further

configuration.

AD \ANTECH	Industr	ial Wireles	s EKI-633	BIAN Logout
Status	System	Wireless	Management	Tools
Remote Settings » CoovaChilli Settings	Configure SNMP ☑ Enable SN	v3 User Profile MPv3Admin		
Firmware Upload	User Name:	SNMPv3Admin		
Configuration File	Password: Confirm Passwor	d:		
Password Settings	Access Type:	Read/Write 🔻		
Certificate Settings	Authentication Pr Privacy Protocol:	None		
	🗹 Enable SN	MPv3User		
	User Name:	SNMPv3User		
	Password:			
	Confirm Passwor	d:		
	Access Type:	Read Only 🔻		

Figure 33 Configure SNMPv3 User Profile

User Name

Specify a user name for the SNMPv3 administrator or user. Only the SNMP commands carrying this user name are allowed to access EKI-6331AN.

Password

Specify a password for the SNMPv3 administrator or user. Only the SNMP commands carrying

this password are allowed to access EKI-6331AN.

Confirm Password

Input that password again to make sure it is your desired one.

Access Type

Select "Read Only" or "Read and Write" accordingly.

Authentication Protocol

Select an authentication algorithm. SHA authentication is stronger than MD5 but is slower.

Privacy Protocol

Specify the encryption method for SNMP communication. None and DES are available.

None: No encryption is applied.

DES: Data Encryption Standard, it applies a 58-bit key to each 64-bit block of data.

Coovachilli Settings

Coovachilli is a captive portal management which allows WLAN users to easily and securely access the Internet. Under Router mode, when Coovachilli is enabled, the IEEE 802.11b/g/n Wireless Access Point will force an HTTP client on a network to see a special web page (usually for authentication purposes) before using the Internet normally. At that time the browser is redirected to a web page which may require authentication. Captive portals are used at most Wi-Fi hotspots. Therefore, to use Coovachilli, you need to find Coovachilli service providers that have the additional services needed to make Coovahcilli work.

AD\ANTECH	Industrial	Wireless	EKI-6331	${ m AN}$ Logout
Status	System W	ireless	Management	Tools
Remote Settings				
CoovaChilli Settings »	CoovaChilli Se	ttings		
Firmware Upload	Use this page to set basic Co	ovaChilli settings.		
Configuration File	RADIUS Settings			
Password Settings	Primary RADIUS Server:	radius1.coova.net		
Certificate Settings	Secondary RADIUS Server: RADIUS Auth Port:	radius2.coova.net 1812		
	RADIUS Acct Port:	1813		
	RADIUS Shared Secret: RADIUS NASID:	your-radius-nasid	•	
	RADIUS Administrative -U	ser		
	RADIUS Admin Username: RADIUS Admin Password:	your-admin-username	•	

Figure 34 Coovachilli Settings

Radius Settings

Primary Radius Server

Enter the name or IP address of the primary radius server

Secondary Radius Server

Enter the name or IP address of the primary radius server if any.

• Radius Auth Port:

Enter the port number for authentication

Radius Acct Port:

Enter the port number for billing

• Radius Shared Secret:

Enter the secret key of the radius server

• Radius NAS ID:

Enter the name of the radius server if any

Radius Administrative-User

Radius Admin Username:

Enter the username of the Radius Administrator

Radius Admin Password:

Enter the password of the Radius Administrator

Captive Portal

UAM Portal URL:

Enter the address of the UAM portal server

UAM Secret:

Enter the secret password between the redirect URL and the Hotspot.

Upgrade Firmware

Open "Firmware Upload" in "Management" and follow the steps below to upgrade firmware locally or

remotely through EKI-6331AN's Web:

Status	System	Wireless	Management	Tools
Remote Settings	Ungrade	Firmware		
CoovaChilli Settings	This page allows	you upgrade the device firmw	vare to a new version. Please do not	: power off
Firmware Upload »	the device during	the upload because it may c	rash the system.	
Configuration File	Select File:		Browse	
Password Settings			Cancel	
Certificate Settings		opoad	Calle	

Figure 35 Upgrade Firmware

- Click "Browse" to select the firmware file you would like to load;
- Click "Upload" to start the upload process;
- Wait a moment, the system will reboot after successful upgrade.

Note:

• Do NOT cut the power off during upgrade, otherwise the system may crash!

Backup/ Retrieve Settings

It is strongly recommended you back up configuration information in case of something unexpected. If

tragedy hits your device, you may have an access to restore the important files by the backup. All

these can be done by the local or remote computer.

Open "Configuration File" in "Management" as below:

Status	System	Wireless	Management	Tools	
Remote Settings	Configuration	a Filo			
CoovaChilli Settings	This page allows you to s	ave current settings to	a file or load the settings from th	e file which	
Firmware Upload	was saved previously. Bes reboot the device.	sides, you could reset i	the current configuration to factory	default or	
Configuration File »	Save Settings to File:	Save			
Password Settings	Load Settings from File:	C:\Users\stev	ve.chen\Desktor Browse Upload)	
Certificate Settings	Reset Settings to Default Reboot The Device:	Reset			

Figure 36 Backup/Retrieve Settings

• Save Settings to File

By clicking "**Save**", a dialog box will pop up. Save it, then the configuration file **ap.cfg** will be generated and saved to your local computer.

Load Setting from File

By clicking "Browse", a file selection menu will appear, select the file you want to load, like ap.cfg;

Click "Upload" to load the file. After automatically rebooting, new settings are applied.

Restore Factory Default Settings

EKI-6331AN provides two ways to restore the factory default settings:

Restore factory default settings via Web

From "Configuration File", clicking "Reset Settings to Default" will eliminate all current settings

and reboot your device, then default settings are applied.

Status	System	Wireless	Managemen	t To
Remote Settings	Configuration	, File		
CoovaChilli Settings	This page allows you to s	ave current settings to	a file or load the setting	s from the file which
Firmware Upload	was saved previously. Bes reboot the device.	sides, you could reset i	the current configuration	to factory default or
Configuration File »	Save Settings to File:	Save		
Password Settings	Load Settings from File:	C:\Users\stev	e.chen\Desktor	Upload
Certificate Settings	Reset Settings to Default Reboot The Device:	Reset		

Figure 37 Restore Settings

Restore factory default settings via Reset Button

If software in EKI-6331AN is unexpectedly crashed and no longer reset the unit via Web, you may do hardware reset via the reset button. Press and hold the button for at least 5 seconds and then release it until the PWR LED gives a blink.

Reboot

You can reboot your EKI-6331AN from "Configuration File" in "Management" as below:

Click "**Reboot**" and hit "**Yes**" upon the appeared prompt to start reboot process. This takes a few minutes.

Status	System	Wireless	Management	Toois	
Remote Settings	Configuration	File			
CoovaChilli Settings	This page allows you to si	ave current settings to	a file or load the settings from th	e file which	
Firmware Upload	was saved previously. Bes reboot the device.	ides, you could reset	the current configuration to factory	default or	
Configuration File »	Save Settings to File:	Save			
Password Settings	Load Settings from File:	C:\Users\stev	ve.chen\Desktor Browse Upload)	
Certificate Settings	Reset Settings to Default: Reboot The Device:	Reset			
	le contra a contra a				



Password

From "Password Settings" in "Management", you can change the password to manage your

EKI-6331AN.

Enter the new password respectively in "New Password" and "Confirm Password" fields; click

"Apply" to save settings.

Status	system	wireless	Management	10015
Remote Settings	Password S	ettings		
CoovaChilli Settings	Use this page to set th	e password of this Access 1	Point.	
Firmware Upload				
Configuration File	New Password: Confirm Password:	••••••		
Password Settings >>			5 	
Certificate Settings		Apply Ca	ancel	

Figure 39 Password



• The password is case-sensitive and its length cannot exceed 19 characters!

Certificate Settings

Under Client mode, when EAP-TLS is used, the RADIUS server must know which user certificates to

trust. The Server can trust all certificates issued by a given CA.

To import a user certificate, from Import User Certificates, click "Browse" and specify the location

where the user certificate is placed. Click "Import".

D\ANTECH	NANTECH Industrial Wireless EKI-6331AN					
Status	System	Wireless	Management	Tools		
Remote Settings	Cortificato	Settings				
CoovaChilli Settings	Use this page to up	load/delete user certificate.				
Firmware Upload	Delete User Certifi	cate:	▼ Delete			
Configuration File	Import User Certifi	cates:	Browse Import	-		
Password Settings						
Certificate Settings »						

Figure 40 Certificate Settings

Monitoring Tools

System Log

System log is used for recording events occurred on EKI-6331AN, including station connection,

disconnection, system reboot and etc.

Open "System Log" in "Tools" as below.

			- In cress .		
Status	System	Wire	less	Management	Tool
System Log »	Syste	m Log			
Site Survey	Use this pa	age to set remote log	server and show the sy	stem log.	
Ping Watchdog	🗌 Enabl	le Remote Syslog S	erver		
Data Rate Test	IP Addre	988:	0.0.0.0		
Antenna Alignment	Port:		514		<u> </u>
Speed Test			Apply Cancel		
	# \$	Time 🕈	Source 🕈	Message	¢
	1	2011- 8- 4 20:43:09	78:E4:00:05:B7:DC	Station deauthenticated.	
	2	2011- 8- 4 20:43:09	78:E4:00:05:B7:DC	Station deauthenticated.	
	3	2011- 8- 4 20:43:09	78;E4:00:05:B7:DC	Station deauthenticated.	
	4	2011- 8- 4 20:43:09	78:E4:00:05:B7:DC	Station deauthenticated.	
		2011 0 4 20-42-00	79-64-00-05-87-00	Station doputhentionted	

Figure 41 System Log

Remote Syslog Server

Enable Remote Syslog: Enable System log to alert remote server.

IP Address: Specify the IP address of the remote server.

Port: Specify the port number of the remote server.

Site Survey

Only available under Wireless Client mode, site survey allows you to scan all the APs within coverage so that you may select a clean channel for your device based on the scan result. Open "**Site Survey**" in "**Tools**" as below.

AD\ANTECH	Indu	strial V	Vireless	EKI-63	331 A	AN	Logout
Status	System	Wir	eless	Management		т	ools
System Log	Wireles	ss Site Su	Irvev				
Site Survey »	This page pro	ovides tool to scan	the wireless network.	If any Access Point o	or IBSS is f	found,	
Ping Watchdog	you could che	oose to connect it r	manually when client m	node is enabled.			-
Data Rate Test	Select	SSID	Frequency/Channel	MAC Address	Wireless Mode	Signal Strength	Security
Antenna Alignment	O V	V8140_terence	5825MHz(165)	00:15:61:00:00:04	a/n	-91	NONE
Speed Test			Scan]			

Figure 42 Site Survey Tool

Ping Watch Dog

If the link is somehow broken and cut off your ability the log in to the unit, the ping watchdog has a

chance to reboot due to loss of connectivity.

ADVANTECH	FECH Industrial Wireless EKI-6331AN					
Status	System	Wireless	Management	Tools		
System Log Site Survey	Ping Watch	log	14-14-1- 16-16- 6-11			
Ping Watchdog »	to a specified value, the	ol to configure the Ping watchdog will reboot th	Watchdog, If the failcount of the F e device.	ing reaches		
Data Rate Test	 Enable Ping Wat 	chdog				
Antenna Alignment	IP Address to Ping:	192.168.17	3.30			
Speed Test	Ping Interval: Startup Delay: Failure Count To Reb	300 120 300 (Apply)	seconds seconds(>120) Cancel			

Figure 43 Ping Watchdog

Ping Watchdog

Enable Ping Watchdog: To activate ping watchdog, check this checkbox.

IP Address to Ping: Specify the IP address of the remote unit to ping.

Ping Interval: Specify the interval time to ping the remote unit.

Startup Delay: Specify the startup delay time to prevent reboot before EKI-6331AN is fully

initialized.

Failure Count To Reboot: If the ping timeout packets reached the value, EKI-6331AN will reboot automatically.

Date Rate Test

The Data Rate Test allows you test the current RSSI at each data rate between EKI-6331AN.

Status	System	Wir	eless		Managem	ent	Too
	1						
System Log	Data Rat	e Test					
Site Survey	Use this page to	test the link q	uality to the	remote WD	S node.		
Ping Watchdog		Index		MAC A	ddress		
Data Rate Test 😕	۲	1		00:19:70	0:00:fc:60		
Antenna Alignment							<u> </u>
Speed Test			Ref	resh St	op		
	1		Packet Size				Damata DOC
	Date			10	4470 0444	Local RSSI	Remote RSSI
	Rate	64 Bytes	256 Bytes	752 Bytes	1472 Bytes		
	Rate	64 Bytes	256 Bytes 100%	752 Bytes 100%	1472 Bytes	-56	-56
	Rate Auto 6M	64 Bytes 100% 100%	256 Bytes 100% 100%	752 Bytes 100% 100%	1472 Bytes 100% 100%	-56 -56	-56 -53

Figure 44 Data Rate Test

Antenna Alignment

Under WDS mode, when the bridges are not easily visible from the location where the dish will be installed, the antenna alignment tool can help you evaluate the position of the unit and adjust the angle of the antenna more precisely. Keep it that in real circumstances a lot of additional factors should be taken into account when your unit is installed. These factors include various obstacles (buildings, trees), the landscape, the altitude, transponder orientation, polarization, etc.

To use the tool, select the desired remote WDS bridge and click "Start", the web page will display the measured signal strength, RSSI and transmit/receive packets. If the signal quality is not quite good,

try to adjust the antenna and see if the quality improves or not.

DNANTECH	Industr	ial W	ireless	EKI-6331	AN Logo
Status	System	Wirele	255	Management	Tools
System Log	Antonno		21		
Site Survey	Use this page to al	ign the antenna	by link quality.		
Ping Watchdog	-	Index	MAC A	Address	
Data Rate Test	۲	1	00:19:7	0:00:fc:60	
Antenna Alignment »					
Speed Test			Refresh	Stop	
	Signal Str	ength:	-74 dBm		
	Current R	SSI:	-56 dBm		
	Transmit	Packets:	33179		
	Receiver	ackets:	541		

Figure 45 Antenna Alignment

Speed Test

The speed test is to monitor the current data transmission (TX) and data reception (RX) rate with the

remote EKI-6331AN. Enter the IP address of the remote EKI-6331AN, type in the user

name/password and click "**Test**". The result will display in the bottom **STATUS**. You may test single TX/RX or bi-direction.

Status	System	Wireless	Management	Tools
System Log	Speed Test			
Site Survey	This page allows you t	est the network speed bet	ween this device and another ter	min <mark>al.</mark>
Ping Watchdog	Destination IF	P: 192.10	68.1.1	
Data Rate Test	User Name:	admin		
Antenna Alianment	Password:		•.	
	Direction:	Trasm	it 💌	
Speed Test »		_	2	
		Test		
	STATUS: Test con	nplete.		
	TEST RESULT			1
	RX: N/A			

Figure 46 Speed Test

Chapter 6 Status

View Basic Information

Open "**Information**" in "**Status**" to check the basic information of EKI-6331AN, which is read only. Information includes system information, LAN settings, wireless setting and interface status. Click "**Refresh**" at the bottom to have the real-time information.

ADVANTECH	Industri	ial Wirele	ss EKI-633	IAN Logout			
Status	System	Wireless	Management	Tools			
Information >	Information	n					
Connections	This page shows the current status and some basic settings of the device.						
Statistics	System Informatio	on					
ARP Table	Device Name	Device Name ap4e7e7e MAC Address 00:19:70:4e:7e:7e Country/Region United States Firmware Version 3.0.4(AD)1					
Bridge Table	Country/Region						
DHCD Clients	Firmware Version						
Difer citents	LAN Settings						
Network Activities	IP Address	60.248.1	59.175				
	Subnet Mask	255.255.	255.0				
	Gateway IP Addres	s 60.248.1	59.254				
	MAC Address	00:19:70	:4e:7e:7e				
	Wireless Settings	i					
	Operation Mode	AP					
	Wireless Mode	802 114	/N				

Figure 47 Basic Information

View Association List

Open "**Connections**" in "**Status**" to check the information of associated wireless devices such as MAC address, signal strength, connection time, IP address, etc. All is read only. Click "**Refresh**" at the bottom to update the current association list.

NANTECH	Indu	ustrial	Wir	eles	ss EKI-(6331A	N Lo
Status	System	, w	ireless		Manageme	nt	Tools
Information	Asso	ciation Lis	st				
Connections »	This table	shows the MAC Ad	dress,IP Ad	dress and	d RSSI for <mark>e</mark> ach assoc	iated device(s).	
Statistics	1000000		-	1010000			
ARP Table	VAP Index	MAC Address 🕈	Strength	Floor	Connection Time	Last IP 🕈	Action
Bridge Table	1	00:19:70:4e:7e:7c	-66	-96	2011-8-5 10:25:25	192.168.0.99	Kick
DHCP Clients				Refresh			
Network Activities							
					111		

Figure 48 Connection

By clicking on the MAC address of the selected device on the web you may see more details including device name, connection time, signal strength, noise floor, ACK timeout, link quality, IP information, current data rate, current TX/RX packets.

ssociatio e details informati MAC Address Device Name Connect Time	n Node Deta ion of association node 00:19:70:4e:7e:7c ap4e7e7c	AIIS Negotiated Rate	Last Signal	>
e details informati MAC Address Device Name Connect Time	on of association node 00:19:70:4e:7e:7c ap4e7e7c	Negotiated Rate	Last Signal	
MAC Address Device Name Connect Time	00:19:70:4e:7e:7c ap4e7e7c	Negotiated Rate	Last Signal	
MAC Address Device Name Connect Time	00:19:70:4e:7e:7c ap4e7e7c	Negotiated Rate	Last Signal	
Device Name Connect Time	ap4e7e7c	Rate		
Connect Time				
	2011-8-5 10:25:25	162M	-67 dBm	
Signal Strength	-65 dBm	216M	-65 dBm	
Noise Floor	-96 dBm	243M	-64 dBm	
ACK Timeout	27	270M	-64 dBm	
.ink Quality	100%	300M	-65 dBm	
.ast IP	192.168.0.99			
TX/RX Rate	300/300 Mbps			
TX/RX Packets	212054/316867			
Bytes Transmitted	10565813			
	ignal sureingun oise Floor CK Timeout ink Quality ast IP X/RX Rate X/RX Packets ytes Transmitted	applia Strength -05 00 mm oise Floor -96 dBm CK Timeout 27 ink Quality 100% ast IP 192.168.0.99 X/RX Rate 300/300 Mbps X/RX Packets 212054/316867 ytes Transmitted 10565813	Image: synthesized synthesynthesized synthesized synthesized synthesized synthesized synthe	August Strength -05 dbm 243M -64 dBm CK Timeout 27 -64 dBm XRX Rate 100% -65 dBm xXRX Rate 300/300 Mbps -65 dBm XVRX Packets 212054/316867 -65 dBm

View Network Flow Statistics

Open "Flow Statistics" in "Status" to check the data packets received on and transmitted from the

wireless and Ethernet ports. Click "Refresh" to view current statistics.

ADVANTECH	Indus	trial W	ireless	EKI-633	\mathbf{IAN} Logout			
Status	System	Wirel	ess	Management	Tools			
Information	Statistic	s						
Connections	This page show and ethernet ne	s the packet count etworks.	ers for transmission	and reception regarding t	o wireless			
Statistics »	Statistics »							
ARP Table	Poll Interva	ıl: 5	(0-65534) sec	Set Interval Stop				
Bridge Table			Received	Transmitted				
-	Wi	ireless						
DHCP Clients	U	Inicast Packets	499765	253382				
Notwork Activition	В	Proadcast Packets	1447	12654				
Network Activities	٨	Iulticast Packets	133340	126273				
	7	otal Packets	634552	392309				
	7	otal Bytes	258983054	249580474				
	Etl	hernet 1						
	7	otal Packets	341464	398136				
	7	otal Bytes	298563236	57174035				
	Eti	hernet 2		·				

Figure 49 Network Flow Statistics

Poll Interval

Specify the refresh time interval in the box beside "**Poll Interval**" and click "**Set Interval**" to save settings. "**Stop**" helps to stop the auto refresh of network flow statistics.

View ARP Table

Open "ARP Table" in "Status" as below. Click "Refresh" to view current table.

Status	System	Wirele	ss	Manago	ement	Tools
Information		able				
Connections	This table sh	nows ARP table.				
Statistics						
ARP Table »		IP Address \$	MAC Address	¢	Interface \$	
Bridge Table		00.240.130.204	00.30.1A.10.31.11	-	010	
DHCP Clients			Refresh			
Network Activities						

Figure 50 ARP Table

View Bridge Table

Open "Bridge Table" in "Status" as below. Click "Refresh" to view current connected status.

Status	System	Wireles	S	N	vian	agement	Tools
Information	Bridge	Table					
Connections	This table sh	ows bridge table.					
Statistics							
ARP Table		MAC Address	¢	Interface	\$	Ageing Timer(s)	
Bridge Table »		00:19:10:46:76:76		LAN		0.00	-
DHCP Clients			R	efresh			
Network Activities							

Figure 51 Bridge Table

View Active DHCP Client Table

Open "DHCP Client" in "Status" as below to check the assigned IP address, MAC address and time

expired for each DHCP leased client. Click "Refresh" to view current table.

status	System	wirele	iss Ma	nagement	1001
Information	DHCP	Clients			
Connections	This table sl	hows the assigned IP ac	ldress, MAC address an	d time expired for each DH	ICP
Statistics	leased clien	t.			
ARP Table		IP Address 🕈	MAC Address 🕈	Time Expired(s)	
Bridge Table	-	None			32
DHCP Clients »			Refresh		
Network Activities					

Figure 52 DHCP Client Table

View Network Activities

The network activities allows you to monitor the current Wireless and Ethernet TX/RX data traffic in graphical and numerical form on the Web of the Skyport. The chart scale and throughput dimension (bps, Kbps, Mbps) changes dynamically according to the mean throughput value. Throughput statistics can be updated manually using the "**Refresh**" button.



Figure 53 Network Activities

Chapter 7 Troubleshooting

This chapter provides troubleshooting procedures for basic problems with EKI-6331AN. For warranty assistance, contact your service provider or distributor for the process.

Q 1. How to know the MAC address of EKI-6331AN?

MAC Address distinguishes itself by the unique identity among network devices. There are two ways available to know it.

• Each device has a label posted with the MAC address. Please refer below.



Figure 54 MAC Address

 On EKI-6331AN's Web-based management interface, you can view the MAC Address from "View Basic Information".

Q 2. What if I would like to reset the unit to default settings?

You may restore factory default settings in "Configuration File" from "Management".

Q 3. What if I would like to backup and retrieve my configuration settings?

You may do the backup by generating a configuration file or retrieve the settings you have backed

up previously in "Configuration File" from "Management".

Q 4. What if I cannot access the Web-based management interface?

Please check the followings:

- Check whether the power supply is OK; Try to power on the unit again.
- Check whether the IP address of PC is correct (in the same network segment as the unit);
- Login the unit via other browsers such as Firefox.
- Hardware reset the unit.

Q 5. In wireless client mode, what if the wireless connection is not stable after associating with

an AP?

- Since EKI-6331AN comes with a built-in directional antenna, it is recommended make it face to the direction where the AP is to get the best connection quality.
- In addition, you can start "Site Survey" in "Wireless Basic Settings" to check the signal strength. If it is weak or unstable (The smaller the number is, the weaker the signal strength is.), please join other available AP for better connection.

Appendix A. ASCII

WEP can be configured with a 64-bit, 128-bit or 152-bit Shared Key (hexadecimal number or ACSII).

As defined, hexadecimal number is represented by 0-9, A-F or a-f; ACSII is represented by 0-9, A-F,

a-f or punctuation. Each one consists of two-digit hexadecimal.

ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex
Character	Equivalent	Character	Equivalent	Character	Equivalent	Character	Equivalent
!	21	9	39	Q	51	i	69
н	22	•••	3A	R	52	j	6A
#	23	;	3B	S	53	k	6B
\$	24	<	3C	Т	54	Ι	6C
%	25	Η	3D	U	55	m	6D
&	26	^	3E	V	56	n	6E
"	27	?	3F	W	57	0	6F
(28	@	40	Х	58	р	70
)	29	А	41	Υ	59	q	71
*	2A	В	42	Z	5A	r	72
+	2B	С	43	[5B	S	73
,	2C	D	44	١	5C	t	74
-	2D	E	45]	5D	u	75
	2E	F	46	٨	5E	V	76
/	2F	G	47	I	5F	W	77
0	30	н	48	`	60	х	78
1	31	_	49	а	61	у	79
2	32	J	4A	b	62	Z	7A
3	33	К	4B	С	63	{	7B
4	34	L	4C	d	64		7C
5	35	Μ	4D	е	65	}	7D
6	36	Ν	4E	f	66	~	7E
7	37	0	4F	g	67		
8	38	Р	50	h	68		

Table 2 ACSII

Appendix B. SSH Settings

Table 3 SSH Settings

get	set	del	Keyword				Descriptions
\checkmark	\checkmark		time				time setting
\checkmark				-now			current system time
\checkmark	\checkmark			-zone			time zone
\checkmark	\checkmark			-NTPUpdate			NTP Update
\checkmark	\checkmark			-servertype			server type
\checkmark	\checkmark			-IP			-IP
\checkmark	\checkmark			-Manual IP			-Manual IP
\checkmark	\checkmark		system				system setting
\checkmark				-swversion			system firmware version
\checkmark	\checkmark			-systemmac			system MAC address
\checkmark				-devname			system name
\checkmark	\checkmark			-country			country/region
	\checkmark			-ethernet1DataRate			ether port 1 data rate
\checkmark	\checkmark			-ethernet2DataRate			ether port 2 data rate
\checkmark	\checkmark			-macclone			mac clone enable
\checkmark	\checkmark			-clonedmac			cloned mac address
\checkmark	\checkmark			-poepower			secondary RJ45 power
\checkmark	\checkmark			-stp			Spanning Tree
\checkmark	\checkmark			-stpForwardDelay			STP forward delay
\checkmark	\checkmark			-gpslatitude			gps latitude
\checkmark	\checkmark			-gpslongitude			gps longitude
\checkmark	\checkmark		ipset				
.1	./			u a true dura a da			network mode select
N	N			-networkmode			(bridge or router)
\checkmark	\checkmark			-bridge			bridge mode ip settings
	al				intuno		fixed/dynamical ip(dhcp
N	N				-iptype		client)
\checkmark	\checkmark				-ipaddr		ip address
\checkmark	\checkmark				-netmask		subnet mask
\checkmark	\checkmark				-gateway		gateway ip address
\checkmark	\checkmark				-dns1		dns1
\checkmark	\checkmark				-dns2		dns2
\checkmark	\checkmark			-router			router mode ip settings
\checkmark	\checkmark				-wan		wan ip settings
\checkmark	\checkmark					-accesstyp e	router mode access type
\checkmark	\checkmark					-staticipadd r	static ip address

EKI-6331AN_User Manual

\checkmark	\checkmark				-staticnetm	static subnet mask
					-staticnate	
\checkmark	\checkmark				way	static gateway ip address
\checkmark	\checkmark				-staticdns1	static dns1
\checkmark	\checkmark				-staticdns2	static dns2
\checkmark	\checkmark				-dhcpclient hostname	dhcp client hostname
\checkmark					-pppoecon nectstatus	pppoe connect status
1					-pppoelocal	obtains IP from pppoe
N					ip	server
\checkmark	\checkmark				-pppoestati cipaddr	pppoe static ip address
\checkmark	\checkmark				-pppoeuser name	pppoe username
\checkmark	\checkmark				-pppoepass word	pppoe password
\checkmark	\checkmark				-pppoeserv ername	pppoe server name
\checkmark	\checkmark				-pppoecon nectmode	pppoe connect mode
\checkmark	\checkmark				-pppoeidleti me	pppoe idle time
\checkmark	\checkmark			-lan		lan ip settings
\checkmark	\checkmark				-ipaddr	lan ip address
\checkmark	\checkmark				-netmask	lan subnet mask
\checkmark	\checkmark				-dhcpserve renable	dhcp server enable
\checkmark	\checkmark				-dhcpserve ripstart	dhcp server ip start
\checkmark	\checkmark				-dhcpserve ripend	dhcp server ip end
\checkmark	\checkmark				-dhcpserve rleasetime	dhcp server leasetime
\checkmark	\checkmark				-dhcprelay enable	dhcp relay enable
\checkmark	V				-dhcpserve rip	dhcp server ip
\checkmark	\checkmark	wlan				wlan setting
\checkmark	\checkmark		-operationmode			operation mode
\checkmark	\checkmark		-ssid			wireless network name
\checkmark	\checkmark		-ssidhided			wireless SSID broadcast
\checkmark	\checkmark		-radio			radio switch

\checkmark	\checkmark		-wirelessmode		wireless mode
\checkmark	\checkmark				
\checkmark	\checkmark		-HTprotect		HT protect
					-wireless frequency/channel
\checkmark	\checkmark		-frequency/channel		(depends on country and
					wireless mode)
\checkmark	\checkmark		-power		power
\checkmark	\checkmark		-rate		rate
\checkmark	\checkmark		-antenna		antenna type
\checkmark	\checkmark		-antennaGain		antenna gain setings
\checkmark	\checkmark		-wmm		wmm settings
					wireless isolate
\checkmark	\checkmark		-Isolation		communication between
					clients
2	N		-maxStaNum		max sta connection
v	v		-maxStainum		number
2	N		-StaNuml mt		Whether manually limit the
v	v		-Stanument		number o f station
	N		-spaceInMeter		wireless bwa space in
•	•		spacenimeter		meter setting
			-LinkIntegration		wireless bwa coverage
'	`		Linkinogration		class setting
\checkmark	\checkmark		-channelMode		channel mode
\checkmark	\checkmark		-channelOffset		channel offset of 40MHz
\checkmark	\checkmark		-extension		extension
\checkmark	\checkmark		-A-MPDU		A-MPDU
\checkmark	\checkmark		-A-MSDU		A-MSDU
\checkmark	\checkmark		-shortGI		short GI
\checkmark	\checkmark		-RIFS		rifs
\checkmark	\checkmark		-RTS		RTS
\checkmark	\checkmark		-fragment		fragment
\checkmark	\checkmark		-beacon		beacon
\checkmark	\checkmark		-DTIM		DTIM
\checkmark	\checkmark		-preamble		preamble
\checkmark	\checkmark		-IGMP		IGMP
			-stdm		stdm setting
\checkmark	\checkmark		-cpeType		СРЕ Туре
			-authentication		wireless authentication
·	ľ				type
\checkmark	\checkmark		-encryption		wireless data encryption
\checkmark	\checkmark	\checkmark	-key		wireless wep key setting
\checkmark	\checkmark			-type	wireless wep key type
				-default	wireless wep default key
					index

\checkmark	\checkmark	\checkmark			-1	wireless wep key 1
\checkmark	\checkmark	\checkmark			-2	wireless wep key 2
\checkmark	\checkmark	\checkmark			-3	wireless wep key 3
\checkmark	\checkmark	\checkmark			-4	wireless wep key 4
\checkmark	\checkmark	\checkmark		-wpa		wireless WPA setting
					nali	wireless pre-shared key
N	N	N			-рак	(PSK) for WPA-PSK
	2				roquithtimo	wireless WPA re-auth
N	N				-reautilitie	period (in seconds)
2	2				-kovundato	enable wireless WPA
v	v				-keyupuale	global key update
\checkmark	\checkmark	\checkmark		-eap		WPA EAP setting
\checkmark	\checkmark	\checkmark			-eaptype	WPA EAP Type
2	2	2			-innereapty	\//PA inner EAP Type
v	v	v			ре	
\checkmark	\checkmark				-username	WPA user name
\checkmark	\checkmark				-loginname	WPA login name
\checkmark	\checkmark				-password	WPA password
\checkmark	\checkmark				-usercert	WPA cert file
					-privatekey	M/DA private key personard
N	N				password	werk private key password
\checkmark	\checkmark			-trafficshaping		traffic shaping
\checkmark	\checkmark				-enable	enable Traffic Shaping
\checkmark	\checkmark				-downlimit	Incoming Traffic Limit
\checkmark	\checkmark				-downburst	Incoming Traffic Burst
\checkmark	\checkmark				-uplimit	Outgoing Traffic Limit
\checkmark	\checkmark				-upburst	Outgoing Traffic Burst
\checkmark	\checkmark			-wdsMac		WDS Remote Mac
\checkmark					-local	local macAddr
\checkmark	\checkmark				-remote1	remote macAddr1
\checkmark	\checkmark				-remote2	remote macAddr2
\checkmark	\checkmark				-remote3	remote macAddr3
\checkmark	\checkmark				-remote4	remote macAddr4
\checkmark	\checkmark			-wdsSeparation		WDS Separation
						list of associated wireless
N				-association		clients
2	2		vapprofile			
N	N		1(2, 3,etc)			
\checkmark				-active		on/off this vap
\checkmark	\checkmark			-profileName		Name of profile
\checkmark				-ssid		ssid of this vap
	2			seidbidod		Broadcast SSID Enable or
N	N			-5510111040		Disable
\checkmark	\checkmark			-vlanID		vlanID of this vap

\checkmark	\checkmark		-Isolation		wireless separation	
\checkmark	\checkmark		-wmm		WMM Support	
\checkmark	\checkmark		-MaxStaNum		Max Station Number	
			StoNuml mt		Whether manually limit the	
v	N		-Stanument		number o f station	
	al		authantiaction		wireless authentication	
v	v		-aumentication		type	
\checkmark	\checkmark		-encryption		wireless data encryption	
	al		dofoult		wireless wep default key	
v	v		-delault		index	
\checkmark	\checkmark		-wpa		wireless WPA setting	
			association		list of associated wireless	
v			-855001811011		clients	
\checkmark	\checkmark	vlan			vlan setting	
\checkmark	\checkmark		-active		enable 802.1Q VLAN	
\checkmark	\checkmark		-manageID		Management VLAN ID	
\checkmark	\checkmark	radius			radius setting	
\checkmark	\checkmark		-IPaddr		IP address	
\checkmark	\checkmark		-port		port	
	\checkmark		-shared secret		Shared Secret	
\checkmark	\checkmark	firewall			firewall setting	
\checkmark	\checkmark		-srcipfilter		source ip filter settings	
\checkmark	\checkmark			-enable	source ip filter enable	
\checkmark	\checkmark			-addrule	add a source ip filter rule	
	\checkmark			-delerule	delete source ip filter rule	
2				-rulolist	show source ip filter rule	
v				-Tulelist	lists	
\checkmark	\checkmark		-destipfilter		destination ip filter settings	
\checkmark	\checkmark			-enable	destination ip filter enable	
2	2			-addrule	add a destination ip filter	
v	v			-additite	rule	
	N			-delerule	delete destination ip filter	
	`				rule	
				-rulelist	show destination ip filter	
				- Gioliot	rule lists	
\checkmark	\checkmark		-srcportfilter		source port filter settings	
\checkmark	\checkmark			-enable	source port filter enable	
	\checkmark			-addrule	add a source port filter	
×					rule	
				-delerule	delete source port filter	
	<u> </u>				rule	
\checkmark				-rulelist	show source port filter rule	
Ľ,	ļ., .				lists	
\checkmark	\checkmark		-destportfilter		destination port filter	
						settings
--------------	--------------	-----	------	------------------	-------------	-------------------------------
2	2				anabla	destination port filter
v	v				-enable	enable
2	2				addrulo	add a destination port filter
v	v					rule
	2				delerule	delete destination port
	v					filter rule
2					-rulolist	show destination port filter
v						rule lists
\checkmark	\checkmark			-portforward		port forward settings
\checkmark	\checkmark				-enable	port forward enable
\checkmark	\checkmark				-addrule	add a port forward rule
	\checkmark				-delerule	delete port forward rule
2					-rulolist	show port forward rule
v						lists
\checkmark	\checkmark			-dmzenable		dmz enable
\checkmark	\checkmark			-dmzipaddr		dmz ip address
N	2	ror	mote			remote management
v	v		note			setting
\checkmark	\checkmark			-privacy		radius IP address
\checkmark	\checkmark			-telnet		enable telnet
\checkmark	\checkmark			-snmp		enable snmp
\checkmark	\checkmark			-ftp		enable ftp
\checkmark	\checkmark			-ssh		enable ssh
\checkmark	\checkmark			-forcehttps		force https
\checkmark	\checkmark			-wise		enable wise tools
\checkmark	\checkmark	sn	mp			SNMP setting
\checkmark	\checkmark			-version		Protocol Version
\checkmark	\checkmark			-port		Server Port
\checkmark	\checkmark			-getCommunity		SNMP Read Community
\checkmark	\checkmark			-setCommunity		SNMP Write Community
\checkmark	\checkmark			-trapdestination		Trap Destination
\checkmark	\checkmark			-trapcommunity		Trap Community
\checkmark	\checkmark			-v3Admin		v3Admin
\checkmark	\checkmark				-on	Enable SNMPv3Admin
\checkmark	\checkmark				-name	name
	\checkmark				-password	password
					-accessTyp	
N	N				е	access type
					-authentica	Authoritation Protocol
N	N				tion	
\checkmark	\checkmark				-Privacy	privacy protocol
\checkmark	\checkmark			-v3User		-v3User
\checkmark	\checkmark				-on	Enable SNMPv3User

\checkmark	\checkmark				-name	name
	\checkmark				-password	password
\checkmark	\checkmark				-accessTyp e	access type
\checkmark	\checkmark				-authentica tion	Authentication Protocol
\checkmark	\checkmark				-Privacy	privacy protocol
\checkmark	\checkmark		coovachilli			CoovaChilli setting
\checkmark	\checkmark			-coovaChilliEnable		Coovachilli Enable
\checkmark	\checkmark			-primaryRadiusServ er		Primary RADIUS Server
	\checkmark			-secondaryRadiusSe		Secondary RADIUS Server
\checkmark	\checkmark			-radiusAuthPort		RADIUS Authentication Port
	\checkmark			-radiusAcctPort		RADIUS Accounting Port
	\checkmark			-radiusSharedSecret		RADIUS Shared Secret
	\checkmark			-radiusNasid		RADIUS Nasid
\checkmark	\checkmark			-radiusAdminUserna me		RADIUS Admin Username
\checkmark	\checkmark			-radiusAdminPassw ord		RADIUS Admin Password
\checkmark	\checkmark			-uamPortalUrl		UAM Portal URL
\checkmark	\checkmark			-uamSecret		UAM Secret
\checkmark	\checkmark		syslog			syslog
\checkmark	\checkmark			-client		enable syslog client
\checkmark	\checkmark			-ipaddr		syslog server IP address
\checkmark	\checkmark			-port		syslog server port number
	\checkmark			-clear		syslog clear
\checkmark	\checkmark		pingwdg			ping watchdog
\checkmark	\checkmark			-enable		enable
\checkmark	\checkmark			-interval		interval
\checkmark	\checkmark			-startdelay		startup delay
\checkmark	\checkmark			-failcount		failure count
\checkmark	\checkmark			-ip		ip address
\checkmark	\checkmark	\checkmark	acl			access control
\checkmark	\checkmark			-mode		enable wireless access control (ACL)
		\checkmark		-delete		delete a local ACL address
\checkmark		\checkmark		-list		delete or display all local ACL address
	\checkmark			-MacAddr		add mac address to Current Access Control List

\checkmark			statistics			statistics
\checkmark				-Wireless		Wireless LAN
\checkmark				-Ethernet		Ethernet LAN
\checkmark		\checkmark	log list			syslog list
	\checkmark		password			system password
	\checkmark		reset			restore factory
			reboot			reboot system
	\checkmark		exit			logout from CLI

Appendix C. GPL Declamation

PUBLIC SOFTWARE DECLAMATION

In the software we delivered, there may contains some public software, if it is, please read below carefully:

1. Definition

"**Public Software**", when applicable, shall mean that portion of the Licensed Software, in source code form, set forth in the below Table, and provided under the terms set forth in <u>the Section 5</u>, the indicated website, the complete license terms can be found.

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5. Public Software Name and Description

Table 3 Public Software Name and Description

Program	Copy Right	Origin Sour	Licenses or	License Terms
Name	Description	Code	Distribution Models or	Website
			its special license	Reference
			terms	
U-boot	Wolfgang Denk,	ftp://ftp.denx.de/	GNU GENERAL	GNU GENERAL
	DENX Software	pub/u-boot/	PUBLIC LICENSE	PUBLIC
	Engineering,		Version 2	LICENSE Version
	wd@denx.de			2
Busybox		http://www.busy	GNU GENERAL	http://www.gnu.or
		box.net/downloa	PUBLIC LICENSE	g/licenses/old-lice
		ds/busybox-1.01	Version 2	nses/gpl-2.0.html
		.tar.bz2		
Goahead	Copyright (c)	http://data.goahe		
	GoAhead	ad.com/Software		

	Software Inc.,	/Webserver/2.1.		
	1992-2000.	8/webs218.tar.g		
		z		
hostapd	Copyright (c)	http://hostap.epit	GNU GENERAL	http://www.gnu.or
	2002-2006, Jouni	est.fi/releases/h	PUBLIC LICENSE	g/licenses/old-lice
	Malinen	ostapd-0.4.8.tar.	Version 2	nses/gpl-2.0.html
	<jkmaline@cc.hut< td=""><td>gz</td><td></td><td></td></jkmaline@cc.hut<>	gz		
	.fi> and			
	contributors			
wpa_supplic	Copyright (c)	http://hostap.epit	GNU GENERAL	http://www.gnu.or
ant	2003-2005, Jouni	est.fi/releases/w	PUBLIC LICENSE	g/licenses/old-lice
	Malinen	pa_supplicant-0.	Version 2	nses/gpl-2.0.html
	<jkmaline@cc.hut< td=""><td>4.7.tar.gz</td><td></td><td></td></jkmaline@cc.hut<>	4.7.tar.gz		
	.fi> and			
	contributors			
ntpclient	Copyright 1997,	http://doolittle.ica	GNU GENERAL	http://www.gnu.or
	1999, 2000, 2003	rus.com/ntpclien	PUBLIC LICENSE	g/licenses/old-lice
	Larry Doolittle	t/ntpclient_2003	Version 2	nses/gpl-2.0.html
		_194.tar.gz		
net-snmp	Copyright(c)	http://prdownloa	GNU GENERAL	http://www.gnu.or
	2001-2003,	ds.sourceforge.n	PUBLIC LICENSE	g/licenses/old-lice
	Networks	et/net-snmp/net-	Version 2	nses/gpl-2.0.html
	Associates	snmp-5.4.1.tar.g		
	Technology, Inc	z		
	All rights			
	reserved.			
vsftpd	Author: Chris	ftp://vsftpd.beast	GNU GENERAL	http://www.gnu.or
	Evans	s.org/users/ceva	PUBLIC LICENSE	g/licenses/old-lice

		ns/vsftpd-1.1.2.t	Version 2	nses/gpl-2.0.html
		ar.gz		
linux		ftp://ftp.kernel.or	GNU GENERAL	http://www.gnu.or
		g/pub/linux/kern	PUBLIC LICENSE	g/licenses/old-lice
		el/v2.6/linux-2.6.	Version 2	nses/gpl-2.0.html
		15.tar.bz2		
iptables	Copyright	ftp://ftp.netfilter.o	GNU GENERAL	http://www.gnu.or
	2000-2004	rg/pub/iptables/i	PUBLIC LICENSE	g/licenses/old-lice
	netfilter project	ptables-1.3.6.tar.	Version 2	nses/gpl-2.0.html
	http://www.netfilter	bz2		
	.org/			
openssl	Copyright (c)	http://www.open	GNU GENERAL	http://www.gnu.or
	1998-2008 The	ssl.org/source/o	PUBLIC LICENSE	g/licenses/old-lice
	OpenSSL Project.	penssl-0.9.8k.tar	Version 2	nses/gpl-2.0.html
	All rights	.gz		
	reserved.			
Igmpproxy	Copyright (C)	http://sourceforg	GNU GENERAL	http://www.gnu.or
	2005 Johnny	e.net/projects/ig	PUBLIC LICENSE	g/licenses/old-lice
	Egeland	mpproxy/files/ig	Version 2	nses/gpl-2.0.html
	<johnny@rlo.org></johnny@rlo.org>	mpproxy/0.1/igm		
		pproxy-0.1.tar.gz		
		/download		
Dnrd	Copyright (C)	http://sourceforg	GNU GENERAL	http://www.gnu.or
	1998 Brad M.	e.net/projects/dn	PUBLIC LICENSE	g/licenses/old-lice
	Garcia	rd/files/dnrd/2.12	Version 2	nses/gpl-2.0.html
	<garsh@home.co< td=""><td>/dnrd-2.12.tar.gz</td><td></td><td></td></garsh@home.co<>	/dnrd-2.12.tar.gz		
	m>	/download		
iproute	Stephen	http://developer.	GNU GENERAL	http://www.gnu.or
	Hemminger	osdl.org/dev/ipro	PUBLIC LICENSE	g/licenses/old-lice

	shemminger@osd	ute2	Version 2	nses/gpl-2.0.html
	l.org			
	Alexey Kuznetsov			
	kuznet@ms2.inr.a			
	c.ru			
Pppd	Paul Mackerras	ftp://ftp.samba.or		
	<paulus@linuxcar< th=""><th>g/pub/ppp/</th><th></th><th></th></paulus@linuxcar<>	g/pub/ppp/		
	e.com>			

Appendix D. Country Channel List

EKI-6331AN supports country selection. Channels may vary upon each country's regulation. The

following tables list the channel with country code in each bandwidth.

Table 4 FCC Countries

Country	Mode	Channel lis	st		
		40MHz	20MHz	10MHz	5MHz
United States Chile China Columbia Mexico Panama Pilippines Taiwan Uruguay Venezuela	(5725~5850)	149/153/157/ 161	149/153/157/161/ 165	149/151/153/155/ 157/159/161/163/1 65	149/150/151/152/ 153/154/155/156/ 157/158/159/160/ 161/162/163/164/ 165

Table 5 CE Countries

Country	Mode	Channel list					
oountry	mode	40MHz	20MHz	10MHz	5MHz		
Albania					100/101/102/103/		
Algeria	110				104/105/106107/		
Australia	(5470~5725)				104/105/106107/		
Austria	(0470 ~ 0720)		100/104/108/112	100/102/104/106/	108/109/110/111/		
Belgium	Excluded	100/104/108/	116/132/136/140	108/110/112/114/	112/113/114/115/		
Bulgaria	CH120~CH131	112/132/136		116/118/132/134/1	116/117/118/119/		
Cyprus	Meteorology			36/138/140	131/132/133/134/		
Czech					101/102/100/104/		
Republic	Radars				135/136/137/138/		
Denmark					139/140/141		
Estonia							

EKI-6331AN_User Manual

Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Italy
Latvia
Liechtenstein
Lithuania
Luxembourg
Macedonia
Malta
Netherlands
Norway
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Sweden
United
Kingdom

Table 6 Other Countries

Country	Mode	Channel list				
		40MHz	20MHz	10MHz	5MHz	
India	11a 5725-5875MHz	149/153/157/ 161	149/153/157/161/ 165/169/173	149/151/153/155/ 157/159/161/163/1 65/167/169/171/17 3	149/150/151/152/ 153/154/155/156/ 157/158/159/160/ 161/162/163/164/ 165/166/167/168/ 169/170/171/172/ 173	

		100/104/108/			100/101/102/103/
		112/149/153/			104/105/106107/
	11-	157/161	100/101/100/1101	100/102/104/106/	108/109/110/111/
Korea			100/104/108/112/	108/110/112/114/	112/113/114/115/
Russia		*Russia:	110/149/153/157/	116/149/151/153/1	116/149/150/151/
	5725-562510172	Does not	101	55/157/159/161/	152/153/154/155/
		support			156/157/158/159/
		HT40.			160/161/
					100/101/102/103/
					104/105/106107/
					108/109/110/111/
				100/102/104/106/	112/113/114/115/
		100/104/108/	100/104/108/112/	108/110/112/114/	116/117/118/119/
South Africa	11a 5470 5725MU-	112/116/132/	116/132/136/140/	116/118//132/134/1	131/132/133/134/
South Anica	5725 5975MHZ	136/140/149/	149/153/157/161/	36/138/140//151/15	135/136/137/138/
	5725-567 51VIL12	153/157/161/	165	3/155/157/159/161/	139/140/149/150/
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