WF-3220-Z1
User Manual

FCC 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 or more of the following measures:

- Reorient the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into and outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

Any special accessories needed for compliance must be specified in the instruction manual.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

The minimum distance between this equipment and user should be 40 cm when the equipment operates.

History Version

Version	Author	Time	Remarks

Preface

This manual mainly introduces how to configure the WF-3220-Z1 to users when they install AP device. It's suggested to read this guide carefully before install the WF-3220-Z1.

This part includes the follow contents:

● Content introduction

● Readers

● Conventions

Content introduction

This document introduces WEB configuration, CLI confuguration and WEB upgrade. It is divided into six chapters.

➢ Chapter 1 Product Introduction

➢ Chapter 2 WEB Configuration and Management

➢ Chapter 3 CLI Configuration

➢ Chapter 4 Change AP Working Mode

➢ Chapter 5 Common Operation in Fat AP Mode

➢ Chapter 6 Upgrade

Readers

This document is for readers as followss:

➢ FAE and technical support

➢ Network manager

Convention of symbols in this manual

Format	Definition
<>	Characters in <> means this is a button, such as < OK>
[ ]	Characters in[ ] means this is a window, menu or a datasheet, like popup a [new user] window.
/	Multilevel menu will use "/" to separate, such as [File/New/Folder], that means choose folder in the multilevel menu File/ New

This document adopts the following symbols to inform readers of special attention when they are operating the device. Notes and tips in the body of manual will be shown in Times New Roman fonts, and separated from surround contents with a horizontal line as followss:

📖 **TIP:**

Means a complementary description

⚠ **Caution：**

Means reader be careful. Improper operation may cause data loss or damage to equipment.

Professinal installation:

The device cannot be sold retail, to the general public or by mail order. It must be sold to dealers. It is installed by licensed professionals with special training according to Installation instruction provided by dealer or grantee.

Contents

Contents of Figure

Contents of Table

1 Product Introduction

Figure 1-1 Product Appearance

WF-3220-Z1 is an 11n access point with high power and double frequency. Compared with traditional 54Mbps 11G and 108Mbps Super G products, WF-3220-Z1 provides a rate of 300Mbps. With such high bandwidth, it highly enhances data transmission's effectiveness and reduces network delay in voice and video processing, network game playing, and video-on-line selecting.

Double frequency design satisfies the application needs of 2.4 GHz and 5.8GHz. With a gain planar antenna, WF-3220-Z1 highly enhances wireless reception and emission capacity, ensuring wireless signal's stability. The adoption of WPA/WPA2 and WEP security mechanism provides an overall safeguard for wireless network. WF-3220-Z1 is a newly developed comprehensive access point, which can be used to receive WiFi signal, cover wireless signal, and amplify signal. Meanwhile it can also work together with AC to realize a centralized management.

Hardware Specification

Items	Description
WLAN	IEEE802.11a/b/g/n(2*2:2)；Speed up to 300Mbit/s
Interface	10/100/1000M Ethernet Interface；Console Interface （for manufacture use only）；4 x N Female Interface (2 interface for 2.4GHz band and 2 interface for 5GHz band)；GND Earth Terminal；
2.4GHz band Directional dedicated MIMO antenna	Model: KBT65DP15-24RT0
5GHz band Directional dedicated MIMO antenna	Model: TDJ-5158GAx2
Indicator	One Power Indicator

Items	Description
	One WiFi Indicator
Power Supply	POE+（Accords with 802.3at standard）
Power consumption	＜26W
Dimension	300mm * 226mm * 144.5mm
Work Temperature	-40℃ ～ +55℃
Relative Humidity	0% ～ 100%
Weight	≤5Kg
Protection Grade	IP67
Accessories	One mounting rack
Wind-resisting Strength	＞90MPH

2 WEB Configuration and Management

2.1 Network Settings

You will need to install a wired or wireless network adapteradapter on your computer, and connect it to the AP's Ethernet port by exterior concentrator or switcher if you use wired network adapter. If you use wireless network adapter, the connection of Ethernet port can be skiped. Below operation steps are based on Windows XP, and the UI may be different if you use some other OS.

2.1.1 WAN interface network settings

⚠ **Caution：**

AP device can work in two network environments. One is working as a NE independently with WAN IP of 192.168.0.1 and subnet mark 255.255.255.0, and the other is controlled by AC, obtaining IP address and subnet mark from AC.

After AP device obtains IP address, you should follow the below steps to manually set IP address of PC, which is used to configurate and manage AP device

Step1. Click **[Start > Settings > Network Connections]**, and access the network settings UI. (Note: switch the menu to the classic view if you fail to find the settings option.)

Step2. Choose the internet connection that matches your wireless network adapter, right click its icon, and choose **properties**.

Step3. Double click **Internet Protocol (TCP/IP)** option and the **Internet Protocol (TCP/IP) properties** dialogue will be displayed.

Step4. Check the **Use the following IP address** option, and input IP address for PC. Note that subnet segment of IP address should be the same as AP's.

Step5. Set the subnet mask and click **<OK>**to finish the manual setting.

Step6. Ping the AP's IP address. Once the internet connection is successfully established, the below interface will display.

Figure 2-1 ping default IP of AP

```
C:\Documents and Settings\Administrator>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2.1.2 Wireless network settings

⚠ **Caution:**

This function is only used in the environment where AP is controlled by AC,otherwise STA can not connect to AP and login WEB management page.

If you don't want to use STA to manage AP, you can skip this chapter. We also suggest you not to use STA to manage AP.

Please follow the steps below to connect wireless network (AC controlls AP).

Step1. Click **[Start /Settings/Network Connections]** and access the network connections UI.

Step2. Right click the wireless network connections icon and choose **<Properties>**.

Step3. Double click the **Internet Protocol (TCP/IP)** option in the **Properties** interface, and **Internet Protocol (TCP/IP) Properties** dialogue will pop up.

Step4. If the access controller is activated, the AP's IP address can be assigned by AC remotelythrough DHCP. You may check **Automatic gain IP address** to gain the IP address assigned by DHCP Server.

Step5. Click the icon of wireless network adapter on the taskbar

Step6. Click the network connection status to **Check the available wireless connections**.

Step7. On the page of wireless connection, find out the SSID (take vap0 as example) of the AP which you want to connect to, then choose it and click the icon **<connect>** on the lower right corner.

Step8. If the wireless network adapter is connected to the device successfully, the reminding information **Connected** will be displayed on the right corner of the network connection icon.

2.2 Log on

Table 2-1 Default Configuration of AP

Iterms	Description
IP address	Base on the network environment, it may be https://192.168.0.1 or the IP address which assigned by AC/DHCP SERVER
Username	admin
Password	password

AP provides a web page configuration interface for users, so you can access to the AP by browsers.

1. Open a browser and input the AP's IP address like "https:// 192.168.0.1".

2. Input your username and password in the login UI. The default username/password is"admin" and "password".

2.3 System Status

There are three submenus in system status UI, including system information, LAN congiguration and others

After login, it automatically access to system information.Page of system information displays system status, LAN configuration, wireless network adapter status and others.

2.4 Wireless Settings

Wireless settings page displays wireless status, base settings, VAP settings, advanced settings and multi SSID-VLAN binding.

2.4.1 Wireless Status

Click **[Wireless Settings/ Wireless Status]**, access to page of Wireless Status.

2.4.2 VAP settings

Click **[wireless settings/ VAP settings]** to access the UI.

1）**Status:** Check it to activate the virtual AP

2）**Broadcast SSID:** Check it to broadcast the SSID, otherwise hide the SSID

3）**SSID:** Display the network name

4）**WMM:** Enable or disable WMM control

5）**Security:** Click **<Edit>** button to choose authentication method, encryption algorithm and secret key.

6）**APPLY:** After finish configuration, you need to click **<APPLY>** button to put the new configuration into practice.

2.4.3 Advanced settings

Click **[wireless settings/ advanced settings]** to access the UI.

1）**Mode:** 2.4G network could select 11B, 11G, 11NGHT20, 11NGHT40PLUS and 11NGHT40MINUS mode. 5.8G network could select 11A, 11NAH T20, 11NAHT40PLUS, 11NAHT40MINUS mode.

2）**Channel:** 2.4G frequency band can choose 1~11 channels, 5.8G frequency band can choose 149~165 channels. Default selection is Atuo.

3）**Speed:** It can set as Auto or MCS0~MCS15, default selection is Auto.

4）**MTU:** Set the maximum fragmentation length. When data package is larger than this value, it will be fragmented. Its unit is byte, range is 256~2346, and the default value is 2346.

5）**RTS Threshold:** Its unit is byte, range is 0~2347, 0 means disable this threshold and the default value is 2346. When data frame is larger than this value, the RTS/CTS protection mechanism will be enabled.

6）**Ack timeout control:** Its unit is μs, range is 0~256, and the default value is 64.

7）**Beacon Interval:** Its unit is TU, range is 100~1000, and the default value is 100.

8）**Packet aggregation:** Enable this function and MAPDU mechanism will be activated.

9）**Short GI:** By activating Short GI, data volume can be increased.

10）**Wireless user isolation:** When enable this item it will prevent wireless users communicate with each other.

11）**Txpower:** Set Txpower for AP channel.

12）**RS IP address:** Fill in the IP address of RS server

13）**AS IP address:** Fill in the IP address of AS server

2.4.4 Multi SSID-VLAN Binding

Click **[wireless settings/ Multi SSID-VLAN binding]** to access the UI and set its parameters.

2.5 TCP/IP settings

In this chapter, it mainly introduces wired setting for WAN port (local LAN port), including LAN status and LAN setting two submenus.

2.5.1 LAN Status

Click **[TCP/IP settings / LAN status]** to access the UI.

2.5.2 LAN Setting

Click **[TCP/IP settings/ LAN status]** to access the UI. Choose AP working mode as fat AP or fit AP in the UI.

2.6 Device Management

In this page, it includes time settings, system Log, firmware upgrade, configuration backup /restore, and user management.

2.6.1 Time Setting

Click **[Device management/ Time settings]** to access the UI.

2.6.2 System Log

Click **[Device management/ system Log]** to access the system log UI.

2.6.3 Firmware Upgrade

Click **[Device menagement / firmware upgrade]** to access firmware upgrade UI.

⚠ **Caution:**

Don't turn off the power when upgrading firmware, otherwise it may break down the system.

2.6.4 Configuration Backup and Restore

Click **[Device Menagement/ Configuration Backup and Restore]** to access the UI.

2.6.5 User Management

Open **[Device Menagement/ User Management]** to access the UI.

3 CLI Configuration

Obtain IP address for AP according to the network environment.

Table 3-1 Default Configuration of AP

Iterms	Description

IP address	Base on netwrok condition, it may be 192.168.0.1 or an IP address that issued by AC/DHCP SERVER
Username	root/admin(When login web page,username is admin)
Password	Password or admin
Telnet Port	23
RS232	115200，n，8，1

Table 3-2 Necessary software tool

Tools	Description
SecureCRT	It is used to login device by console port or telnet.
HyperTerminal	It is used to login device by console port.
Windows platform	PC system, it is used to run the SecureCRT and HyperTerminal

In this chapter, the SecureCRT in Windows XP is used as an Instance.

3.1 Entering CLI

3.1.1 Telnet by DOS interface

Click **[Start/ run(R)…]**, type "cmd" into the run box and press **<enter>**, to access to DOS interface.

Figure 3-1 DOC interface

Input the username and password, then access to telnet management UI.

Figure 3-2 Telnet management interface

3.1.2 Login through RS 232 Console Port

Click **[Start/Programs/Accessories/Communication/Hyper Terminal]** to access to hyper terminal UI

Create a new connect command, choose a suitable serial port, and follow the below table to set the parameter.

Table 3-3 Hyper Terminal parameters

Iterms	Parameters
Bits per second	115200
Data bits	8
Parity bit	0
Stop bit	1
DFC (Data flow control)	Null

Type in username and password, and then click **<OK>** to access device UI.

Figure 3-3 Startup information of AP


```
 ZOOMNETWORK-Bgate-GT09-S13-N11-P mips #3 Sat Aug 27 17:52:06 CST 2011 (none)
ZOOMNETWORK-Bgate-GT09-S13-N11-P login: br0: port 1(eth0) entering forwarding
ate
not find option60!
not find option43!
Sending select for 1.1.1.22...
Lease of 1.1.1.22 obtained, lease time 600
deleting routers
route: ioctl 0x890c failed: No such process
Start AC app
killall: apcomm: no process killed
Get AC IP address: DHCP Option 43 & 60
not find option43!
Can't get ac conf file...
Discovery ac by Bcast&mcast mode
ivalue is 8458

 ZOOMNETWORK-Bgate-GT09-S13-N11-P mips #3 Sat Aug 27 17:52:06 CST 2011 (none)
ZOOMNETWORK-Bgate-GT09-S13-N11-P login: _
```

3.1.3 Login by SecureCRT Tool

SecureCRT is used to login device by console port or telnet. We take logining device by console port as an example.

Run the SecureCRT tool, and input the correct username and password to access the UI

Username: root

Password: password

Figure 3-4 Logining interface

```
Serial-COM1
Start Web server
Adding password for admin.
mini_httpd: started as root without requesting chroot(), warning only
Start Snmp
Start Monitor app
starting pid 3159, tty '': '/bi
 ZOOMNETWORK-Bgate-GT09-S13-N11-P mips #3 Sat Aug 27 17:52:06 CST 2011 (none)
ZOOMNETWORK-Bgate-GT09-S13-N11-P login: root
Password:


BusyBox v1.15.0 (2011-09-01 17:32:37 CST) built-in shell (ash)
Enter 'help' for a list of built-in commands.

# br0: port 1(eth0) entering forwarding state
OK:find option60!
Sending select for 50.1.1.56...
Lease of 50.1.1.56 obtained, lease time 3600
deleting routers
route: ioctl 0x890c failed: No such process
Start AC app
killall: apcomm: no process killed
ivalue is 8458

#
```

3.2 CLI Commands

Useful commands are shown in below

Table 3-4 CLI Commands Overview List

Commands	Function Description
ifconfig	Set standard parameters for wired interface
iwconfig	Set standard parameters for wireless interface
iwpriv	Set standard parameters for private wireless interface
wlanconfig	It is a utility tool that used to manage VAP instance.
iwlist	Print the wireless parameters of output
get_ver.sh	Check the firmware version
athstats	Wireless statistics information

3.2.1 ifconfig

ifconfig command is a tool used to manage and configure parameters for wired interface.

Online help is as followss:

BusyBox v1.15.0 (2011-09-01 17:32:37 CST) multi-call binary

Usage: ifconfig [-a] interface [address]

Configure a network interface

Options:

[[-]broadcast [ADDRESS]] [[-]pointopoint [ADDRESS]]

[netmask ADDRESS] [dstaddr ADDRESS]

[hw ether ADDRESS] [metric NN] [mtu NN]

[[-]trailers] [[-]arp] [[-]allmulti]

[multicast] [[-]promisc] [txqueuelen NN] [[-]dynamic]

[mem_start NN] [io_addr NN] [irq NN]

[up|down]

Parameters description:

interface: Port of network device.

down: Disable the specified port.

up: Enable the specified port.

-arp: Enable or disable a specified port using the ARP protocol, when put a negative sign front "arp", it means disable this option.

-allmuti: Enable or disable the indistinction mode of specified port, when put a negative sign front "allmuti", it means disable this option.

-promisc: Enable or disable the promiscuous mode of specified network device, when put a negative sign front "promisc", it means disable this option.

add<IP>: Set Ipv6 address for network device.

del<IP>: Delete the Ipv6 address of network device.

media<type>: Set type of media for network device

mem_start<memory address>: Set the initial address of primary memory for network device.

metric< number>: A numeral add to the packetage When calculate its forwarded time.

mtu<value>: Set MTU for network device.

netmask< subnet mask>: Set subnet mask for network device.

tunnel< IP>: Set a tunnel IP address for Ipv4 device communicating with Ipv6 device.

-broadcast<IP>: Packets sent to the specified address are treated as broadcast packets.

-pointopoint< IP>: Derectly connect with the specified network device, this mode can keep secret.

Instance:

brctl addif br0 wifi0_wlan0   //Add the virtual AP(wifi0_wlan0) to bro port.

ifconfig br0 192.168.0.1 netmask 255.255.255.0   // Set IP address and netmask

ifconfig br0 192.168.0.1 // Set IP address

3.2.2 iwconfig

iwconfig command is a set of instructions used to set up and run the WLAN interface commands. The usages are similar to ifconfig, but they are only for 802.11 devices.

Online help is as followss:

```
# iwconfig --help
Usage: iwconfig [interface]
                interface essid {NNN|any|on|off}
                interface mode {managed|ad-hoc|master|...}
```

interface freq N.NNN[k|M|G]

interface channel N

interface bit {N[k|M|G]|auto|fixed}

interface rate {N[k|M|G]|auto|fixed}

interface enc {NNNN-NNNN|off}

interface key {NNNN-NNNN|off}

interface power {period N|timeout N|saving N|off}

interface nickname NNN

interface nwid {NN|on|off}

interface ap {N|off|auto}

interface txpower {NmW|NdBm|off|auto}

interface sens N

interface retry {limit N|lifetime N}

interface rts {N|auto|fixed|off}

interface frag {N|auto|fixed|off}

interface modulation {11g|11a|CCK|OFDMg|...}

interface commit

Check man pages for more details.

Parameter Description:

essid: Extended service set identifier SSID.

Instance: #iwconfig athN essid ZOOMNET_VAP0

Mode: Wireless mode, such as AP mode, AD-HOC mode and CLIENTmode.

Freq: The current frequency(It is a one-to-one correspondence between channel and frequency).

Instance:

#iwconfig wifi0_wlan0 freq 5.2G

#iwconfig wifi0_wlan0 freq 40

Channel: Working channel

Instance:

#iwconfig wifi0_wlan0 channel 11

bit : Set the speed for wireless port, and its unit is bit.

rate: Set the speed for wireless port, and its value is percent value.

Instance:

#iwconfig wifi0_wlan0 rate 54M

enc: Set or manage WEP secret key. It can be set 4 keys on each radio module, you can choose 1~4 to activate the key.

key: It is the same as enc

Instance:

#iwconfig wifi0_wlan0 key [2] DEAD_BEEF_EA

#iwconfig aht0 key [1] s:AnASCIIkeyVal

#iwconfig wifi0_wlan0 key off

power : Set Power Management.

nickname: Set a nickname for the interface, and it is not supported right now..

nwid: Network ID, and it is not supported right now. .

ap: Set unicast or broadcast IP address for AP, and it is not supported right now..

Txpower: Set Tx Power.This Tx Power is controlled by regulatory limits in the code of drive program.

Instance: #iwconfig wifi0_wlan0 txpower 30

Sens: Set sensitivity, no insignificance, and it is not supported right now. .

retry : Set Retry Limit, and it is not supported right now. .

rts: Set RTS Threshold.

Instance:

#iwconfig wifi0_wlan0 rts 64

Frag: Set Fragmentation Threshold

Instance:

#iwconfig wifi0_wlan0 frag 512

Modulation: Set modulation; note that it isn't the wireless mode.

Commit: Submit the setting, and it is not supported right now..

3.2.3 iwpriv

iwpriv command is a utility tool used to manage and configure parameters of wireless radio-frequency.

Online help is as followss:

Usage: iwpriv interface [private-command [private-arguments]]

Function of iwpriv command is powerful, mainly used to configure parameters and function of wireless radio-frequency.

Major function is described as below:

2. Set the chainmask value for sending and receiving

For the diversity receiver or MIMO device, this command is used to choose and configure its wireless link or antenna.

#iwpriv wifiN txchainmask mask

#iwpriv wifiN rxchainmask mask

For the device with 3 antennas, we define:

     Chain 0   0x01

     Chain 1   0x02

     Chain 2   0x04

Instance:

#iwpriv wifi0 txchainmask 0x05

#iwpriv wifiN rxchainmask 0x05

#iwpriv wifiN get_txchainmask

    wifi0 get_txchainmask:5

#iwpriv wifiN get_rxchainmask mask

    wifi0 get_rxchainmask:5

3. Commands related to WMM

Command format:

   #iwpriv athN wmm 1|0

Instance:

#iwpriv wifi0_wlan0 wmm 1

#iwpriv wifi0_wlan0 get_wmm

    wifi0_wlan0 get_wmm:1

4. Commands related to security.

It includes authentication and data encryption for user.

 (1) Authentication mode

Command format:

   #iwpriv athN authmode mode

Value	Description
0	None specified
1	Open Authentication
2	Shared Key (WEP) Authentication
3	802.1x Authentication
4	Auto Select/accept authentication (used by host_apd)
5	WPA PSK with 802.1x PSK

Instance:

#iwpriv wifi0_wlan0 authmode 2

#iwpriv wifi0_wlan0 get_authmode

    wifi0_wlan0 get_authmode:2

（2）WEP operation.

Command format:

#iwpriv athN privacy 1|0

Instance:

#iwpriv wifi0_wlan0 privacy 1

#iwpriv wifi0_wlan0 get_privacy

wifi0_wlan0 get_privacy:1

（3）Others

You can refer to the relevant technical documentation or contact with technical support staff.

3.2.4 wlanconfig

wlanconfig command is a utility tool used to manage the VAP (virtual AP). It provides an instance of a VAP that includes listing VAP and deleting VAP

Online help is as followss:

```
# wlanconfig --help
usage: wlanconfig athX create wlandev wifiX
            wlanmode [sta|adhoc|ap|monitor|p2pgo|p2pcli|p2pdev] [bssid | -bssid]
[nosbeacon]
usage: wlanconfig athX destroy
usage: wlanconfig athX nawds mode (0-4)
usage: wlanconfig athX nawds defcaps CAPS
usage: wlanconfig athX nawds override (0-1)
usage: wlanconfig athX nawds add-repeater MAC (0-1)
usage: wlanconfig athX nawds del-repeater MAC
usage: wlanconfig athX nawds list
```

1. Create a VAP

When create a VAP, you need to set several parameters of VAP to display its characteristics. VAP can be a client node or an infrastructure node. Client node is called as "managed" and infrastructure node is called as "master". The commands are used to create VAP are as followss:

Instance:

```
# wlanconfig ath[N] create wlandev wifiN wlanmode [ap|sta|mon] [bssid] [nosbeacon]
# wlanconfig wifi0_wlan0 create wlandev wifi0 wlanmode ap      //Create a wlan
```

2. Display VAP parameters

Only enable the VAP, it can display the parameters normally, the instance of enabling VAP is described as follows:

```
# iwconfig wlan0 essid asdddd
    DES SSID SET=asdddd
```

ifconfig wlan0 up

Command format:

  # wlanconfig athN list [sta|ap|chan|keys|caps|wme]

Instance:

wlanconfig wlan0 list ap // Display the information of neighbour AP

Figure 3-5 wlanconfig instance

```
# wlanconfig wlan0 list ap
SSID            BSSID              CHAN RATE  S:N   INT CAPS
hotstandby_...  d0:15:4a:fe:6b:07  858992978  54M  8:0   100 ESs  ??? ??? ??? ??? ??? ??? ATH VEN
lyf3000         f2:15:4a:ff:85:dc  858992978  54M  7:0   100 ESs  ??? ??? ??? ??? ??? ??? ATH
lyf400          02:15:4a:ff:85:dc  858992978  54M  7:0   100 ESs  ??? ??? ??? ??? ??? ??? ATH
zhangbw_716...  00:0b:6b:b2:21:b9  858992979  54M  61:0   44 ESs  ??? ??? ??? ??? ??? ??? ??? ??? ??? ??? WME ATH
zte_111         b4:b3:62:49:87:8e  858992978  54M  27:0  100 ESs  ??? ??? ??? ??? ??? ??? ATH VEN
ChinaNet-txvd   00:25:5e:2c:69:17  858992978  54M  9:0   100 EPs  ??? ??? ??? ??? ??? ??? VEN VEN WPA
lyf22           32:15:4a:ff:85:dc  858992978  54M  7:0   100 ESs  ??? ??? ??? ??? ??? ??? ATH
ZTE_222         ba:b3:62:49:87:8e  858992978  54M  27:0  100 ESs  ??? ??? ??? ??? ??? ??? ATH VEN
ZTE-333         be:b3:62:49:87:8e  858992978  54M  27:0  100 ESs  ??? ??? ??? ??? ??? ??? ATH VEN
lyf100          d0:15:4a:ff:85:dc  858992978  54M  7:0   100 ESs  ??? ??? ??? ??? ??? ??? ??? ATH
ZTE-444         82:b3:62:49:87:8e  858992978  54M  27:0  100 ESs  ??? ??? ??? ??? ??? ??? ATH VEN
```

3. Delete a VAP

To avoid the VAP which you want to delete is still interacting with others, you must close it before delete it. The command can only be applied to the defined VAP, otherwise it is invalid.

Command format:

  #wlanconfig athN destroy

3.2.5 iwlist

This command provides a powerful query function for status of wireless interface and wireless environment.

 Online help is as followss:

  # iwlist --help

  Usage: iwlist [interface] scanning [essid NNN] [last]

            [interface] frequency

            [interface] channel

            [interface] bitrate

            [interface] rate

            [interface] encryption

            [interface] keys

            [interface] power

            [interface] txpower

            [interface] retry

            [interface] ap

            [interface] accesspoints

            [interface] peers

            [interface] event

            [interface] auth

            [interface] wpakeys

[interface] genie

[interface] modulation

Parameters explanation please refer to the related sections

3.2.6 Synthesis Instance

To set up a VAP, follow the below Instance:

wlanconfig wifi0_wlan0 create wlandev wifi0 wlanmode ap   // Create a wlan

iwpriv wifi0_wlan0 mode 11NGHT20   // Set wireless mode

iwconfig wifi0_wlan0 channel 6   // Set wireless channel

iwconfig wifi0_wlan0 essid "ZOOM_TEST_2.4G"   //SSID name, it can be any

character including space key

iwconfig wifi0_wlan0 txpower 20dBm   // Set power

brctl addif br0 wifi0_wlan0   // Connect the wireless port to the network

bridge port

ifconfig wifi0_wlan0 up   // Makes wireless port put in working order.

Figure 3-6 Synthesis Instance

```
# iwconfig wifi0_wlan0
wifi0_wlan0  IEEE 802.11ng  ESSID:"abc"
        Mode:Master  Frequency:2.437 GHz  Access Point: 00:0B:6B:B6:EF:39
        Bit Rate:130 Mb/s    Tx-Power:27 dBm
        RTS thr:off   Fragment thr:off
        Encryption key:off
        Power Management:off
        Link Quality=94/94  Signal level=-96 dBm  Noise level=-95 dBm
        Rx invalid nwid:1  Rx invalid crypt:0  Rx invalid frag:0
        Tx excessive retries:0  Invalid misc:0   Missed beacon:0
```

4 Change AP working Mode

4.1 Operating through WEB UI

Login to the WEB of AP, click **[TCP/IP settings/ local network settings]**, enter the page and select fat AP or fit AP then click **<APPLY>**

⚠ **Note：**

After changing AP mode, it will not take effect until the device is restarted.

4.2 Operating through Serial Port

Login the device, input username and password.

Input "fitap"or "fatap" according to the AP mode

Input "reboot"

Enter the command line and input "fitap"or "fatap" then press**<Enter>**. It can set the AP mode.

Figure 4-1 Setting AP mode through serial port


```
Start monitor app
starting pid 445, tty '': '/bin/getty ttyS0 115
 ZOOMNETWORK-BGate-GT10-D24-N22-P mips #1 Fri Aug 3 17:28:15 EDT 2012 (none)
ZOOMNETWORK-BGate-GT10-D24-N22-P login: root
Password:


BusyBox v1.15.0 (2012-08-03 17:28:59 EDT) built-in shell (ash)
Enter 'help' for a list of built-in commands.

#
#
# fitap
OK, Please reboot the device...
# reboot
就绪                                          Serial:COM7   36,  9  36 行
```

5 Common Operation in Fat AP Mode

📖 Tip：

In this chapter, we take WiFlex WF-Z1 as example.

5.1 Check AP information

Step 1 Login AP through serial port or telnet tool.

Step 2 Run "show version" command

Figure 5-1 Check AP version


```
# show version
company:
hardware type:
hardware version:
software version:
upgrade flag:
```

5.2 Create VAP

Step1 Login the WEB page of AP

Step2 Click **[wireless settings/APsettings]** to access to the page of virtual AP settings.

Step3 Select "2.4G" or "5.8G" wireless network adapter according to actual needs to.

Step4 Fill in the parameter values of VAP:

1）**Status:** Activate VAP when check it

2）**Broadcast SSID:** Check it then AP broadcast the SSID, otherwise hide the SSID

3）**SSID:** Name of network

4）**WMM:** Enable or disable the WMM control

5）**Security:** Click**<Edit>** button then select authentication method, encryption algorithm and secret key

6）**APPLY:** After finish setting, click **<APPLY>** button to take the new configuration go into effect

5.3 Modify Wireless Parameters

Click **[Wireless Settings/Advanced settings]**, access to the UI, and then choose the parameters for 2.4G and 5.8G wireless network adapter.

Mode: 2.4G network could select 11B, 11G, 11NGHT20, 11NGHT40PLUS and 11NGHT40MINUS modes. 5.8G network could select 11A, 11NAH T20, 11NAHT40PLUS, 11NAHT40MINUS.

Channel: 2.4G frequency band can choose 1~11 channels, 5.8G frequency band can choose 149~165 channels. Default selection is Atuo.

Speed: It can set as Auto or MCS0~MCS15, default selection is Auto.

MTU: Set the maximum fragmentation length. When data package is larger than this value it will be fragmented. Its unit is byte, range is 256~2346, and the default value is 2346.

RTS Threshold: Its unit is byte, range is 0~2347, 0 means disable this threshold and the default value is 2346. When data frame is larger than this value, RTS/CTS protection mechanism will be enabled.

Ack timeout control: Its unit is μs, range is 0~256, and the default value is 64.

Beacon Interval: Its unit is TU, range is 100~1000, and the default value is 100.

Packet aggregation: Enable this function to activate MAPDU mechanism

Short GI: By activating Short GI, data volume can be increased.

Wireless user isolation: When enable this item it will prevent wireless users communicate with each other.

Txpower: Set Txpower for AP channel.

RS IP address: Fill in the IP address of RS server

AS IP address: Fill in the IP address of AS server

5.4 Check and Modify Parameters

Step1. Enter the CLI interface of AP device by serial port or telnet tool.

Step2. Run the command of iwpriv interface mode desired_mode. "interface" in this command is the name of port, and "desired_mode" is a anticipant mode, which can be selected from AUTO, 11A, 11NAHT20, 11NAHT40PLUS, 11NAHT40MINUS, 11B,1G,1NGHT20, 11NGHT40PLUS, and 11NGHT40MINUS.

Step3. Use command iwpriv interface get_mode to check the VAP mode.

Figure 5-2 Check VAP mode

```
# iwpriv wifi0_wlan0 mode 11NGHT40MINUS
# iwpriv wifi0_wlan0 get_mode
wifi0_wlan0  get_mode:11NGHT40MINUS
```

5.5 Check and Modify VAP Channel

Step1. Enter the CLI interface of AP device by serial port or telnet tool.

Step2. Run the command: iwconfig interface channel X.Interface in this command is the name of port, and X is a channel, such as iwconfig wifi0_wlan0 channel 11

Step3. Use command iwconfig interface to check information of the VAP. The value behind **Frequency** is channel value.

Figure 5-3 Check VAP Channel

```
# iwconfig wifi0_wlan0 channel 13
# iwconfig wifi0_wlan0
wifi0_wlan0  IEEE 802.11ng  ESSID:"ZOOM_TEST_2.4G"
          Mode:Master  Frequency:2.472 GHz  Access Point: 00:08:D2:00:00:22
          Bit Rate:144.4 Mb/s   Tx-Power=18 dBm
          RTS thr:off   Fragment thr:off
          Encryption key:F3E2-B646-ACD4-2DE4-FB81-63B9-83D1-805B [2]   Security mode:open
          Power Management:off
          Link Quality=94/94  Signal level=-96 dBm  Noise level=-95 dBm
          Rx invalid nwid:796  Rx invalid crypt:0  Rx invalid frag:0
          Tx excessive retries:0  Invalid misc:0   Missed beacon:0
```

5.6 Check and Modify Output Power

Step1. Enter the CLI interface of AP device by serial port or telnet tool.

Step2. Run the command iwconfig interface txpower X.Interface in this command is the name of port, and X is a channel, such as iwconfig wifi0_wlan0 txpower 18.

Step3. Use the command iwconfig interface to check information of the VAP. The value following TX-Power is channel value.

Figure 5-4 Check Output Power of VAP

```
# iwconfig wifi0_wlan0 txpower 18
# iwconfig wifi0_wlan0
wifi0_wlan0  IEEE 802.11ng  ESSID:"ZOOM_TEST_2.4G"
          Mode:Master  Frequency:2.462 GHz  Access Point: 00:08:D2:00:00:22
          Bit Rate:144.4 Mb/s   Tx-Power=18 dBm
          RTS thr:off   Fragment thr:off
          Encryption key:F3E2-B646-ACD4-2DE4-FB81-63B9-83D1-805B [2]   Security mode:open
          Power Management:off
          Link Quality=94/94  Signal level=-96 dBm  Noise level=-95 dBm
          Rx invalid nwid:704  Rx invalid crypt:0  Rx invalid frag:0
          Tx excessive retries:0  Invalid misc:0   Missed beacon:0
```

5.7 Save configuration

By default, all configurations will restore to default settings when restart the AP device, so you need to save the current configuration to prevent it being restored when restart AP.

Step1. Enter the CLI interface of AP device by serial port or telnet tool.

Step2. Run command "getall flash-conf" to save the current congiguration.

5.8 Backup Configuration to Local PC

You can follow the below steps to backup configuration to local computer.

Step1. Login the WEB page of AP

Step2. Click **[Device Management/Configuration Backup and Restorer]** to access the UI.

Step3. Click **<Backup>** button, and choose a local path to save the configuration.

5.9 Factory Default

1. Login the WEB UI of AP

2. Click **[Device Management/Configuration Backup and Restorer]** to access the UI.

3. Click **<Factory Default>** button, wait for the AP completely restart and the system will restore to factory default.

5.10 Software mirror

5.10.1 Mirroring Description

1. Classification

Mirroring of AP is classified as upgrading image and production image. xbin8 is the file extensions of upgrading image, and rbin8 is the file extensions of production image. The number 8 behind extension means it is 8VAP version, and 16 means 16VAP version.

2. Upgrading mirroring

It's used to upgarde a new mirroring in current system in the purpose of solving Bug or adding a new function.

Instance

ZOOMNETWORK_WF-3220-Z1_AP9344-Rev.D_V2.0.2-A100105_RNAA891.1.0.0C4.xbin8

3. Mirroring Component

Production mirroring is a whole copy of the content in flash memory, which is for factory production.

According to actual requirement, upgrading mirroring may contain three parts of kenel, file system, and configurationor any part of them.

Instance

ZOOMNETWORK_WF-3220-Z1_AP9344-Rev.D_V2.0.2-A100105_RNAA891.1.0.0C4-MAC (0008D2000000-60).rbin8

4. Filename Construction

ZOOMNETWORK: Trade name

WF-3220-Z1: Equipment model

AP9344-Rev.D: Number of hardware version

V2.0.2-A100105: Number of software version

6 Upgrade

6.1 Connect AP Correctly

Follow the figure below to connect the AP correctly
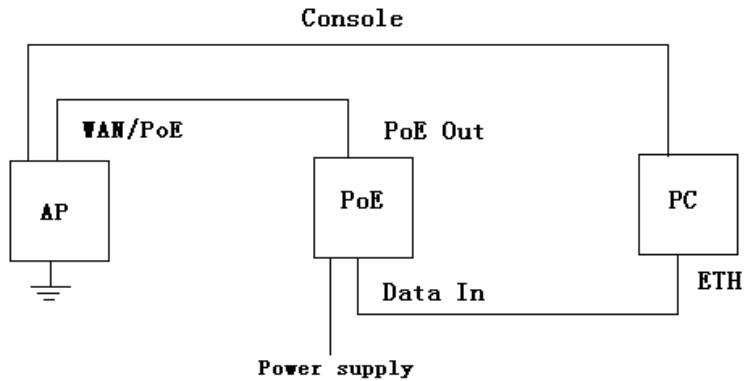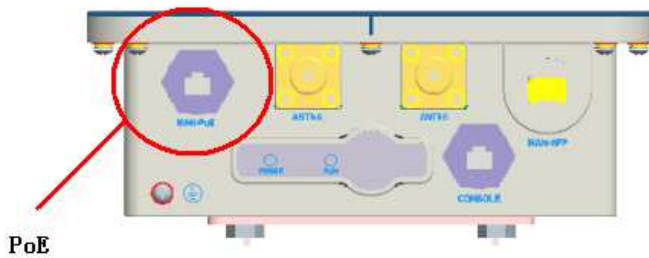
Figure 6-1 Connect AP

Figure 6-2 PoE port of AP

6.2 Set IP for Computer

Set the IP address for your computer according to the steps in chapter 2.1.1, Note that IP address should be the one in 192.168.0.X network segment not that of 192.168.0.1. Its subnet mask is 255.255.255.0.

6.3 Login AP

1. Open a browser

2. Input the AP's IP addresses: https://192.168.0.1, and press**< Enter>** key.

3. Input username and password in the login UI, the default username is "admin" and password is "password".

4. Access the configuration UI of System Status page.

6.4 Firmware Upgrade

⚠ **Caution：**

Don't power off or reboot AP device when it is upgarding, otherwise it will be damaged and cannot be recovered.

1) Click **\<management/ firmware upgrade\>**

2) Click **\<Browse\>** , choose the upgrade package" RNAA891.1.0.0C4.xbin", and then click **\<Upgrade\>**.

3) Upgrading is finish.

6.5 Checking

When progress bar is 100% completed, check whether the version of AP is correct or not.