

# **User's Manual**

802.11ac 900Mbps

**Outdoor Wireless CPE** 

WBS-512AC





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### **Federal Communication Commission Interference Statement**

**FCC** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

- 1. Reorient or relocate the receiving antenna.
- 2. Increase the separation between the equipment and receiver.
- 3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 4. Consult the dealer or an experienced radio technician for help.

### **FCC Caution**

To assure continued compliance, use only shielded interface cables when connecting to computer or peripheral devices. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received, including interference that may cause undesired operation.

### **FCC Radiation Exposure Statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 26cm between the radiator & your body.

### **CE Compliance Statement**

This device meets the RED 2014/53/EU requirements on the limitation of exposure of the general public to electromagnetic fields by way of health protection. The device complies with RF specifications when it is used at a safe distance of 20 cm from your body.

### Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

### **National Restrictions**

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

Country	Restriction	Reasons/remarks
Bulgaria	None	General authorization required for outdoor use and public service
France	Outdoor use; limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. Refarming of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012
Italy	None	If used outside of own premises, general authorization is required
Luxembourg	None	General authorization required for network and service supply(not for spectrum)
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund
Russian	None	Only for indoor applications
Federation		

Note: Please don't use the product outdoors in France.

### **WEEE regulation**



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

## Revision

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## **Chapter 1. Product Introduction**

## **1.1 Package Contents**

Thank you for choosing PLANET WBS-512AC Wireless AP. Please verify the contents inside the package box.

P	Package Contents of WBS-	512AC/WBS-512AC	
WBS-512AC	Quick Guide	Ethernet Cable	Mounting Strap
O MERHET			



If there is any item missing or damaged, please contact the seller immediately.





## **1.2 Product Description**

#### Flexible and Reliable Outdoor Wireless Solution with Superior Performance

PLANET WBS-512AC 802.11ac WAVE 2 900Mbps Outdoor Wireless CPE offers a better range and excellent throughput than those of the traditional wireless device. With the standard IEEE 802.3at Power over Ethernet (PoE) design, the WBS-512AC can be easily installed in the areas where power outlets are not available. The WBS-512AC is definitely suitable for wireless IP surveillance, and bridge link of building to building and backbone of public service. Additionally, the self-healing capability keeps connection alive all the time. With the IP55-rated outdoor enclosure, the WBS-512AC can perform normally under rigorous weather conditions, meaning it can be installed in any harsh, outdoor environments.

#### Benefits of MU-MIMO under 802.11ac Wave 2

With the MU-MIMO Wave 2 technology, the WBS-512AC, installed in public areas such as hotspots, airports and conferences, reduces the frustration that Wi-Fi users often experience in downloading web pages, e-mail file attachments and media contents. For cellular operators, the WBS-512AC provides a better Wi-Fi user experience, reducing the likelihood of users turning off Wi-Fi and putting more load on the cellular network. For enterprises, this technology also can solve Wi-Fi congestion issues in open work spaces and conference rooms. Outdoor wireless CPE is specially designed for long-distance outdoor surveillance and wireless backhaul solutions that are capable of establishing stable bridge connection through the embedded antenna. To provide maximum performance, the outdoor wireless CPE can implement up to 8 operation modes where a multitude of applications in communities, warehouses, campuses, harbors, etc. can be made.





#### Multiple SSIDs with VLAN Tagging

The WBS-512AC supports WPA/WPA2, and the 802.1X RADIUS authentication to secure the wireless connection. Besides, the supported IEEE 802.1Q VLAN allows multiple VLAN tags to be mapped to multiple SSIDs to distinguish the wireless access. This makes it possible for the WBS-512ACN to work with managed Ethernet switches to have VLANs assigned to a different access level and authority.



Multi-SSIDs + VLANs

#### 3 Simple Steps to Set Up PtP Connection

Without needing to enter the Web interface for configuration, the WBS-512AC has the DIP switch for setting to master (AP mode) and to slave (repeater mode). User only needs three simple steps to establish the PtP connection without any difficulty. By just switching the button to "Master" on the master AP, and pressing the reset button, the PtP connection can be established in 2 minutes as the connection steps are shown below.

## 3 Steps to Set Up PtP Connection





#### **Optimized Efficiency in AP Management**

The brand-new GUI configuration wizard helps the system administrator easily set up the WBS-512AC step by step. Besides, the built-in Wi-Fi analyzer provides real-time channel utilization to prevent channel overlapping to assure greater performance. With the automatic transmission power mechanism, distance control and scheduling reboot setting, the WBS-512AC is easy for the administrator to deploy and manage without on-site maintenance. Moreover, you can use PLANET NMS-500 or NMS-1000V AP control function to deliver wireless profiles to multiple APs simultaneously, thus making the central management simple.

#### Setup Wizard Multiple Modes



Home Dashboard for Wi-Fi Status View

Wi-Fi Channel Analyzer



## **1.3 Product Features**

#### Industrial Compliant Wireless LAN and LAN

- Compliant with the IEEE 802.11a/n/ac WAVE2 MU-MIMO wireless technology
- 2T2R architecture with data rate of up to 900Mbps
- Equipped with two 10/100/1000Mbps RJ45 ports with auto MDI/MDI-X supported

#### Fixed Network Broadband Router

- Supported WAN connection types: DHCP, Static IP, PPPoE
- Supports Port Forwarding and DMZ for various networking applications
- Supports DHCP server in Gateway/WISP mode

#### RF Interface Characteristics

- Built-in 14dBi dual-polarization antenna
- High output power with multiply-adjustable transmit power control

#### Outdoor Environmental Characteristics

- IP55 rating
- IEEE 802.3 at Power over Ethernet design
- Operating temperature: -20~70 degrees C

#### Multiple Operation Modes and Wireless Features

- Multiple operation modes: AP, Gateway, Repeater, Super WDS, WISP
- WMM (Wi-Fi multimedia) provides higher priority to multimedia transmitting over wireless
- Coverage threshold to limit the weak signal of clients occupying session
- Real-time Wi-Fi channel analysis chart and client limit control for better performance
- Support Terminal Fast Roaming with 802.11k, 802.11v, and 802.11r

#### Secure Network Connection

- Full encryption supported: WPA/WPA2, WPA-PSK/WPA2-PSK and 802.1X RADIUS authentication
- Supports 802.1Q VLAN and SSID-to-VLAN mapping
- Supports IP/Port/MAC address/URL filtering, DoS, SPI Firewall
- Supports DMZ and Port Forwarding
- Bandwidth control per IP address to increase network stability

#### Easy Installation and Management

- 3 simple steps to establish PtP (AP + Repeater ) connection easily
- Supports PLANET NMS Controllers in AP mode
- Easy discovery by PLANET Smart Discovery
- Self-healing mechanism through system auto reboot setting
- System status monitoring through remote Syslog Server
- Supports PLANET DDNS/Easy DDNS



## 1.4 Product Specifications

Product	WBS-512AC			
	900Mbps Outdoor Wireless CPE Wave 2.0, MU-MIMO			
Hardware				
Standard Support	IEEE 802.11a/n/ac IEEE 802.11i IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3x flow control IEEE 802.11k, 802.11v, and 802.11r			
Dimensions (W x D x H)	87 x 38 x 260mm			
Weight	405g			
Power Requirements	48V DC IN, 0.5A, II 12V DC IN, 1.0A fro	EEE 802.3 at l om DC Jack	PoE+	or
Power Consumption (max.)	< 10W			
Interface	Wireless IEEE 802.11a/n/ac, 2T2R PoE: 1 x 10/100/1000BASE-TX, auto-MDI/MDIX, 802.3 at PoE In LAN: 1x 10/100/1000BASE-TX, auto-MDI/MDIX			
Button	Reset/Pair button, PtP Switch			
	Built-in 14dBi directional antenna with dual polarization			
Antenna	Half-power beam w	vidth	Vert Hor	tical H: 70 V: 15 izontal H: 50 V: 15
Data Rate	IEEE 802.11a: up to 54Mbps IEEE 802.11n (20MHz): up to 150Mbps IEEE 802.11n (40MHz): up to 300Mbps IEEE 802.11ac (80MHz): up to 867Mbps			
Media Access Control	CSMA/CA			
Modulation	802.11 a/n/ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)			
Frequency Band	FCC: 5.180~5.240GHz, 5.745~5.825GHz ETSI: 5.180~5.700GHz			
Operating Channels	FCC: 36, 40, 44, 48, 149, 153, 157, 161, 165 (9 channels) ETSI: 36, 40, 44, 48, 100, 104, 108, 112, 116, 132, 136, 140 (12 cha		1, 165 (9 channels) 2, 116, 132, 136, 140 (12 channels) countries according to their regulations.	
Max. Transmit Power (dBm)	FCC: up to 25 ± 1d ETSI: < 20dBm (EI	Bm RP)		
	Network Mode	Data Rate		Receive Sensitivity (dBm)
	802.112	6Mbps		-92
Receiver Sensitivity (dBm)	802.11a	54Mbps		-75
	802.11n HT20	MCS0/MCS	8 15	-91 -72



	802.11n HT40	MCS0/MCS8	-88		
		MCS7/MCS15	-70		
	802.11ac VHT20	MCS0	-92		
		MCS8	-70		
	902 44 co V/UT40	MCS0	-89		
	802.11ac VH140	MCS9	-65		
	902 11ac VUT90	MCS0	-87		
		MCS9	-61		
Environment & Certification					
Operating Temperature	-20 ~ 70 degrees C				
Operating Humidity	5 ~ 90% (non-conc	lensing)			
IP Level	IP55				
ESD Protection	± 8kV air-gap discharge				
Surge Protection	+ 4kV				
Regulatory	CE, RoHS				
Software					
	Static IP/DHCP				
LAN	Supports IP-MAC binding				
	Static IP				
WAN Type (GW/WISP mode)	■ Dynamic IP				
	■ PPPoE				
	Access Point				
	<ul> <li>Gateway</li> <li>Repeater</li> <li>Repeater</li> </ul>				
Wireless Modes					
	■ Super WDS				
Channel Width	20MHz, 40MHz, 80MHz				
Encryption Type	64-/128-bit WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, 802.1X				
	Enable/Disable SSID Broadcast				
Wireless Security	Wireless Max. 32 MAC address filtering				
	User Isolation				
Max. SSIDs	4				
Max. Wireless Clients	64 per radio (50 is	suggested, depend	ing on usage)		
Max. WDS Peers	4 (Up to 3 peers by	vusing "One-click W	/DS")		
Wireless QoS	Supports Wi-Fi Mu	ltimedia (WMM)			
	Auto Channel Selection				
Wireless Advanced	5-level Transmit Power Control (Max. (100%), Efficient (75%), Enhanced (50%), Standard (25%), Min. (12.5%))				
	Client Limit Control, Coverage Threshold				



	Wi-Fi channel analysis chart	
	Fast Roaming(IEEE 802.11k, 802.11r, 802.11v)	
	Device status, wireless client List	
Status Monitoring	PLANET Smart Discovery	
Status Monitoring	DHCP client table	
	System Log supports remote syslog server	
	IEEE 802.1Q VLAN (VID: 3~4094)	
VLAN	SSID-to-VLAN mapping up to 4 SSIDs	
Self-healing	Supports auto reboot settings per day/hour	
	Remote management through PLANET DDNS/Easy DDNS	
	Configuration backup and restore	
Managamant	Supports UPnP	
Management	Supports IGMP Proxy	
	Supports PPTP/L2TP/IPSec VPN Pass-through	
	SNMP v1/v2c/v3 support, MIB I/II, Private MIB	
Central Management	Applicable controllers: WAPC-500, WAPC-1000, NMS-500, NMS-1000V	



## Chapter 2. Hardware Installation

## 2.1 Product Outlook

### WBS-512AC

- Dimensions: 87 x 38 x 260mm
- Front Side:









Figure 2-2 WBS-512AC Rear Side





## Right Side



Figure 2-3 WBS-512AC Right Side

## LED Definitions

LED	State	Meaning
Dower	On	The device is powered on
Power	Off	The device is powered off
	On	Port linked
WAN Port	Blinking	Data is transmitting or receiving data
	Off	No link
	On	Port linked
LAN Port	Blinking	Data is transmitting or receiving data
	Off	No link
	On	The wireless radio is on
WLAN	Blinking	Data is transmitting or receiving over wireless
	Off	The wireless radio is off



## 2.1.1 Port and Button

It provides a simple interface monitoring the AP. Figure 2-4 shows the hardware-based interface of the WBS-512AC.

WBS-512AC Hardware-based Interface:



Figure 2-4 WBS-512AC Interface

## 2.1.2 Hardware Description

Object	Description	
PoE LAN Port	10/100/1000Mbps RJ45 port, auto MDI/MDI-X	
LAN Port	10/100/1000Mbps RJ45 port, auto MDI/MDI-X	
PtP Switch	Position "Master" to "Slave" on the AP.	
Reset/Pair Button	Press and hold the <b>Reset</b> button on the device for over 15 seconds the return to the factory default setting.	
	minutes. The connection has been successfully established.	



## **Chapter 3. Connecting to the CPE**

## 3.1 System Requirements

- Broadband Internet Access Service (Cable/xDSL/Ethernet connection)
- One IEEE 802.3at PoE switch (supply power to the WBS-512AC)
- PCs with a working Ethernet adapter and an Ethernet cable with RJ45 connectors
- PCs running Windows 98/ME, NT4.0, 2000/XP, Windows Vista / Win 7, MAC OS 9 or later, Linux, UNIX or other platforms compatible with TCP/IP protocols



## 3.2 Installing the CPE

Before installing the CPE, make sure your PoE switch is connected to the Internet through the broadband service successfully at this moment. If there is any problem, please contact your local ISP. After that, please install the AP according to the following steps. Don't forget to pull out the power plug and keep your hands dry.

Please install the AP according to the following steps. Don't forget to pull out the power plug and keep your hands dry.

Step 1. Push the latch on the bottom of the Outdoor Wireless CPE to remove the sliding cover.



Figure 3-1 Connect the Antenna



## **Step 2.** Plug the RJ45 Ethernet cable into the PoE Port of the Outdoor Wireless CPE. Then, slide back the cover to finish the installation.



Figure 3-2 Connect the Ethernet cable

**Step 3.** Place the mounting strap through the slot on the back of the Outdoor Wireless CPE and then around the pole. Tighten the mounting strap to secure the Outdoor Wireless CPE.



Figure 3-3 Connect the PoE injector



## Chapter 4. Quick Installation Guide

This chapter will show you how to configure the basic functions of your CPE within minutes.



A computer with wired Ethernet connection to the Wireless CPE is required for the first-time configuration.

## 4.1 Manual Network Setup -- TCP/IP Configuration

The default IP address of the WBS-512AC is **192.168.1.253**. And the default Subnet Mask is 255.255.255.0. These values can be changed as you want. In this guide, we use all the default values for description.

Connect the WBS-512AC with your PC by an Ethernet cable plugging in LAN port on one side and in LAN port of PC on the other side. Please power on the WBS-512AC by PoE switch through the PoE port.

In the following sections, we'll introduce how to install and configure the TCP/IP correctly in **Windows 10**. And the procedures in other operating systems are similar. First, make sure your Ethernet Adapter is working, and refer to the Ethernet adapter manual if needed.

## 4.1.1 Configuring the IP Address Manually

Summary:

- Set up the TCP/IP Protocol for your PC.
- Configure the network parameters. The IP address is 192.168.1.xxx (If the default IP address of the WBS-512AC is 192.168.1.253, and the DSL router is 192.168.1.254, the "xxx" can be configured to any number from 1 to 252.) and subnet mask is 255.255.255.0.
- 1 Select **Use the following IP address**, and then configure the IP address of the PC.
- 2 For example, as the default IP address of the WBS-512AC is 192.168.1.253 and the DSL router is 192.168.1.254, you may choose from 192.168.1.1 to 192.168.1.252.



You can get IP settings assigned a his capability. Otherwise, you ne or the appropriate IP settings.	automatically if your network supports eed to ask your network administrator
Obtain an IP address automa	atically
• Use the following IP address	5:
IP address:	192.168.1.100
Subnet mask:	255.255.255.0
Default gateway:	(3) (3) (3)
<ul> <li>Obtain DNS server address a</li> <li>Ose the following DNS server</li> </ul>	automatically er addresses:
Preferred DNS server:	19 (J) (M
Alternate DNS server:	1 34 W
	Advanced.

Figure 4-1 TCP/IP Setting

Now click  $\ensuremath{\text{OK}}$  to save your settings.

Now, you can run the ping command in the **command prompt** to verify the network connection between your PC and the AP. The following example is in **Windows 10** OS. Please follow the steps below:

- 1. Click on **Start > Run**.
- 2. Type "cmd" in the Search box.



=	er 🗅 🐵	Filters $\lor$
ඛ	Best match	
	Command Prompt Desktop app	
+	Documents (3+)	
~		
~		
2		
	∽ cmd	

Figure 4-2 Windows Start Menu

- 3. Open a command prompt, type ping **192.168.1.253** and then press **Enter**.
  - If the result displayed is similar to Figure 4-3, it means the connection between your PC and the AP has been established well.

Administrator: C:\Windows\system32\cmd.exe	
Microsoft Windows [Version 6.1.7601] Copyright (c) 2009 Microsoft Corporation. All rights reserved.	
C:\>ping 192.168.1.253	
Pinging 192.168.1.253 with 32 bytes of data:	
Reply from 192.168.1.253: bytes=32 time=17ms TTL=64	
Reply from 192.168.1.253: bytes=32 time=18ms TTL=64	
Reply from 192.168.1.253: bytes=32 time=18ms TTL=64	
Reply from 192.168.1.253: bytes=32 time=18ms TTL=64	
Ping statistics for 192.168.1.253:	
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),	
Approximate round trip times in milli-seconds:	
Minimum = 17ms, Maximum = 18ms, Average = 17ms	
C: \>	
	<b>T</b>

Figure 4-3 Successful Result of Ping Command



If the result displayed is similar to Figure 4-4, it means the connection between your PC and the AP has failed.



Figure 4-4 Failed Result of Ping Command

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your AP. Some firewall software programs may block a DHCP request on newly installed adapters.



## 4.2 Starting Setup in the Web UI

It is easy to configure and manage the CPE with the web browser.

Step 1. To access the configuration utility, open a web-browser and enter the default IP address http://192.168.1.253 in the web address field of the browser.



Figure 4-5 Login by Default IP Address

After a moment, a login window will appear. Enter **admin** for the password in lower case letters. Then click **LOGIN** or press the **Enter** key.



Figure 4-6 Login Window

Default IP Address: 192.168.1.253

Default Password: admin



If the above screen does not pop up, it may mean that your web-browser has been set to a proxy. Go to Tools menu> Internet Options> Connections> LAN Settings on the screen that appears, uncheck **Using Proxy** and click **OK** to finish it.

## Chapter 5. Configuring the CPE

This chapter delivers a detailed presentation of CPE's functionalities and features 3 main items below, allowing you to manage the CPE with ease.

	Flow (5G WiFi)	bps	
			— AP Down Stream — AP Up Stream
	22.5k		~
	20k		
	17.5k		
	(() () () () () () () () () () () () ()		
	10k —		
	7.5k —		
	5k 2.5k		
Uptime 00:05:09	0k 12:22:5	) 12:22:52 12:22:54 12:22:56 12:22:58 12	2:23:00 12:23:02 12:23:04 12:23:06 12
Uptime 00:05:09	0k 12:22:5	) 12:22:52 12:22:54 12:22:56 12:22:58 12	2:23:00 12:23:02 12:23:04 12:23:06 12
Uptime 00:05:09	0k 12:22:5	12.22.52 12.22.54 12.22.56 12.22.58 12	2:23:00 12:23:02 12:23:04 12:23:06 12
Uptime 00:05:09	Revice Description	) 12:22:52 12:22:54 12:22:56 12:22:58 12 # LAN Information IP Mode Static IP	2:23:00 12:23:02 12:23:04 12:23:06 12 Wiffi Information Status ON 0
Uptime 00:05:09 Bit Device Information CPU Usage 23%	W Device Description	) 12:22:52 12:22:54 12:22:56 12:22:58 12 <b># LAN Information</b> IP Mode Static IP Lan IP 192:168.1.253	2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:00 12:23:06 12 2:23:00 12:23:00 12:23:04 12:23:06 12 2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:00 12:23:06 12 2:23:00 12:23:00 12:23:06 12 2:23:00 12:23:00 12:23:00 12:23:06 12 2:23:00 12:00 12:23:00 12:20:00 12:20:00 12:20:00 12:00 1
Uptime 00:05:09 Bit Device Information CPU Usage 23%	<sup>0k</sup> 12.22.5	2) 12:22:52 12:22:54 12:22:56 12:22:58 12 <b>2: LAN Information</b> IP Mode Static IP Lan IP 192:168.1.253 Subnet 255:255.255.0	2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:06 12 2:23:00 12:23:04 12:23:06 12 2:3:00 12:23:02 12:23:06 12 2:3:00 12:23:02 12:23:06 12 2:3:00 12:23:02 12:23:06 12 2:3:00 12:23:00 12:23:00 12:23:06 12 2:3:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:23:00 12:00 1
Uptime 00:05:09 Bit Device Information CPU Usage 23% Memory Usage 29%	© Click Settings	2) 12:22:52 12:22:54 12:22:56 12:22:58 12 <b>21 LAN Information</b> IP Mode Static IP Lan IP 192:168.1.253 Subnet 255:255.255.0 Gateway 192:168.1.1	2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:02 12:23:04 12:23:06 12 2:23:00 12:23:00 12:23:06 12 2:23:00 12:23:00 12:23:06 12 2:23:00 12:23:00 12:23:06 12 2:23:00 12:23:00 12:23:00 12 2:23:00 12 2:23:0

#### Figure 5-1 Main Menu

#### The page includes the following fields:

Object	Description
Operation Mode	It shows the current mode status.
Device Information	It shows the CPU/memory usage.
Device Description	You can enter the device description.
Flow (5G Wi-Fi) bps	It shows the Upstream/Downstream graph.
LAN Information	It shows the device IP mode, LAN IP, subnet, gateway and MAC address.
Wi-Fi Information	It shows the Wi-Fi status, SSID, channel, Encryption, MAC address and client list.
Version	It shows the firmware version (Double-click to show more detailed info.).

## 5.1 Wizard

The Wizard guides you to configuring the WBS-512AC in a different mode, including Gateway, Super WDS, WISP, and AP (repeater) mode.









The default operation mode is AP mode.

Change the PtP switch to optional AP/repeater mode.

## 5.2 Gateway Mode

Click "Wizard"  $\rightarrow$  "Gateway Mode" and the following page will be displayed. This section allows you to configure the Gateway mode.

Gateway Mode		×
0		
WAN Settings		
Internet Mode	Static IP v	
IP Address	Static IP PPPoE DHCP	
Subnet		
Default Gateway		
Primary DNS	8.8.8	
Secondary DNS		
	Next	

Figure 5-3 Gateway Mode



## 5.2.1 WAN Settings

#### Static IP

If your ISP offers you static IP Internet connection type, select "**Static IP**" and then enter IP address, subnet mask, default gateway and primary DNS information provided by your ISP in the corresponding fields.

WAN Settings			
Internet Mode	Static IP	٣	
IP Address			
Subnet			
Default Gateway			
Primary DNS	8.8.8.8		
Secondary DNS			
	Next	1	

Figure 5-4 Gateway -- Static IP

#### The page includes the following fields:

Object	Description
IP Address	Enter the WAN IP address provided by your ISP. Enquire your ISP if you are not clear
Subnet Mask	Enter WAN Subnet Mask provided by your ISP
Default Gateway	Enter the WAN Gateway address provided by your ISP
Primary DNS	Enter the necessary DNS address provided by your ISP
Second DNS	Enter the second DNS address provided by your ISP

#### PPPoE (ADSL)

Select **PPPOE** if your ISP is using a PPPoE connection and provide you with PPPoE user name and password info.



WAN Settings		
Internet Mode	PPPoE	
Username	Please enter account.	
Password	Please enter password.	
Server Name	If not, please do not fill out	
Service Name	If not, please do not fill out	
	Next	

Figure 5-5 Gateway - PPPoE (ADSL)

Object	Description
Username	Enter the PPPoE User Name provided by your ISP
Password	Enter the PPPoE password provided by your ISP
Server Name	Enter the server name by your ISP, or not
Service Name	Enter the service name by your ISP, or not



#### DHCP

Choose "**DHCP**" and the router will automatically obtain IP addresses, subnet masks and gateway addresses from your ISP.

WAN Settings		
Internet Mode	DHCP	•
	Next	

Figure 5-6 Gateway - DHCP

### 5.2.2 Wireless

Gateway Mode				×
0	2			
5G WiFi Setting				
WiFi Status	<b>(</b> )			
SSID	PLANET_5G			
	Hide your SSID?			
Channel	20M/40M/80N •	36	T	
Encrypt	Open		•	
Timing	Everyday 🔻	3:00	v 🌔	
	Back	Next		

Figure 5-7 Gateway – Wireless



Object	Description
Wi-Fi Status	Select ON (Green) or OFF (Gray) to enable or disable wireless LAN
SSID	It is the wireless network name. The default SSID is <b>PLANET_5G</b>
Hide your SSID ?	Select ON (Green) or OFF (Gray) to hide wireless LAN or not
Channel	Select the operating channel you would like to use. The channel range will be changed by selecting a different domain.
Encryption	Select the wireless encryption. The default is <b>None</b>
Timing	Set time to restart for clock

## 5.3 Super WDS Mode

Super WDS Mode			×
1			•
wbs			
SSID	Wireless5.8G_WDS		
AP BSSID	C2:F7:E0:55:65:D9	Mark WDS-1	Scan
AP BSSID		Mark	Scan
AP BSSID		Mark	Scan
AP BSSID		Mark	Scan
Encrypt	Open y	6	
		Next	

#### Figure 5-8 Super WDS Mode

Object	Description
WDS SSID	It is the WDS wireless network name. The default SSID is



	"Wireless5.8G_WDS"
AP BSSID/Mark	Press the "Scan" button to find the WDS BSSID to connect
Enoruntion	Select open or WEP for the wireless encryption. The default is None
Енстурион	Key in the correct password for BSSID of WEP

Super WDS Mode				×
0	2			0
5G WiFi Setting				
WiFi Status				
SSID	PLANET_5G			
	Hide your SSID?		0	
Channel	20M/40M/80N 🔻	36 🔻		
Encrypt	Open	Ŧ		
	Back	Next		

Figure 5-9 Super WDS Mode

Object	Description
Wi-Fi Status	Select ON (Green) or OFF (Gray) to enable or disable wireless LAN
SSID	It is the wireless network name. The default SSID is "PLANET_5G"
Hide your SSID ?	Select ON (Green) or OFF (Gray) to hide wireless LAN or not
Bandwidth	Select the operating channel width, "20MHz" or "40MHz" or "80MHz"
Channel	Select the operating channel you would like to use. The channel
	range will be changed by selecting a different domain.
Encryption	Select the wireless encryption. The default is "None"



Super WDS Mode			×
1 2 LAN Settings		3	 0
IP Mode	Static IP	Ŧ	
Lan IP	192.168.1.253		
Subnet	255.255.255.0		
Gateway	192.168.1.1		
Primary DNS	114.114.114.114		
Secondary DNS	8.8.4.4		
Timing	1Day	•	
	Back	Next	

Figure 5-10 Super WDS Mode

Object	Description
IP Mode	Select "Static IP" or "DHCP Client" for setting up device IP
Timing	Set time to restart



AP1 - Enter the WDS SSID and encrypt password.

SSID	WDS-1			
AP BSSID			Mark	Scan
AP BSSID			Mark	Scan
AP BSSID			Mark	Scan
AP BSSID			Mark	Scan
Encrypt	WEP	~	User Password 1234567890	

Figure 5-11 Super WDS Mode – AP1

AP2 -- Press the "Scan" button to find AP1 BSSID and choose it to connect. Enter the encrypt password.

SSID	WDS-2			
AP BSSID	C2:F7:E0:55:65:D9		Mark WDS-1	Scan
AP BSSID			Mark	Scan
AP BSSID			Mark	Scan
AP BSSID			Mark	Scan
Encrypt	WEP	~	User Password 1234567890	

Figure 5-12 Super WDS Mode – AP2

## 5.4 WISP Mode

Click "Wizard"  $\rightarrow$  "WISP Mode" and the following page will be displayed. This section allows you to configure the WISP mode.



WISP Mode				×
12				0
Repeater Settings				
Repeater SSID	Wireless5.8G		Scan	
Lock BSSID				
Encryption	WPA/WPA2PSK_TKIPAES	•		
Password	דדדדדדד			
BandWidth	20M/40M/80M	٣		
	Next			

Figure 5-13 WISP Mode

Object	Description	
Repeater SSID	Enter the root AP's SSID or press "Scan" to select	
Lock BSSID	Check to lock the root AP' MAC address	
Encryption	Select the wireless encryption of root AP. The default is	
	"WPA/WPA2PSK_TKIPAES"	
Password	Enter the password of root AP	
Bandwidth	Select the operating channel width, "20MHz" or "40MHz" or "80MHz"	


WISP Mode		×
0		-0
WAN Settings		
Internet Mode	DHCP V Static IP PPPoE DHCP Back Next	

Figure 5-14 WISP Mode – Select Internet Mode (Set up WAN type)

WISP Mode						×
0@	)			3		
5G WiFi Setting						
WiFi Status						
SSID	PLANET_5G					
	Hide your SSI	D?				
Encrypt	Open			Ŧ		
Timing	Everyday	Ŧ	3:00	•	<u> </u>	
	Back		Next			

Figure 5-14 WISP Mode - Setting up Wi-Fi



# 5.5 AP Mode

Click "Wizard"  $\rightarrow$  "AP Mode" and the following page will be displayed. This section allows you to configure the AP mode.

AP Mode		×
1 LAN Settings		0
IP Mode	Static IP 🔹	
Lan IP	192.168.1.253	
Subnet	255.255.255.0	
Gateway	192.168.1.1	
Primary DNS	114.114.114.114	
Secondary DNS	8.8.4.4	
	Next	

Figure 5-8 AP Mode

The page includes the following fields:

Object	Description
IP Mode	Select "Static IP" or "DHCP Client" for setting up device IP
LAN IP	Enter the AP static IP address
Subnet	Enter the network mask
Gateway	Enter the default gateway IP address
Primary DNS	Enter the primary DNS IP address, or not
Secondary DNS	Enter the secondary DNS IP address, or not

Enter the LAN IP address.



AP Mode				×
0	2			
5G WiFi Setting				
WiFi Status	<b>(</b> )			
SSID	PLANET_5G			
	Hide your SSID?			
Channel	20M/40M/80N •	36	٣	
Encrypt	Open		Ŧ	
Timing	1Day		Ŧ	-
	Back	Next		

Figure 5-15 AP Mode - Set up Wi-Fi

Object	Description
Wi-Fi Status	Select ON (Green) or OFF (Gray) to enable or disable wireless LAN
SSID	It is the wireless network name. The default SSID is "PLANET_5G"
Hide your SSID ?	Select ON (Green) or OFF (Gray) to hide wireless LAN or not
Bandwidth	Select the operating channel width, "20MHz" or "40MHz" or "80MHz"
Channel	Select the operating channel you would like to use. The channel range will be changed by selecting a different domain.
Encryption	Select the wireless encryption. The default is "None"
Timing	Set time to restart



# 5.6 Repeater Mode

Click "Wizard"  $\rightarrow$  "Repeater Mode" and the following page will be displayed. This section allows you to configure the Repeater mode.

Repeater Mode		×
12		
Repeater Settings		
Repeater SSID	Wireless5.8G	Scan
Lock BSSID		
Encryption	WPA/WPA2PSK_TKIPAES	
Password	77777777	
BandWidth	20M/40M/80M	
Р2Р	0	
	Next	

Figure 5-16 Repeater Mode

Object	Description		
Repeater SSID	Enter the root AP's SSID or press "Scan" to select		
Lock BSSID	Check to lock the root AP' MAC address		
Encryption	Select the wireless encryption of root AP. The default is		
	"WPA/WPA2PSK_TKIPAES"		
Password	Enter the password of root AP		
Bandwidth	Select the operating channel width, "20MHz" or "40MHz" or "80MHz"		
P2P	Enable switch for Point to Point function		

Press the "Scan" button to find the root AP that you need to repeat and press Choice to select the AP.



Figure 5-17 Repeater Mode -- Scan AP

Set up the repeater wireless network

Repeater Mode				×
0	•			
5G WiFi Setting				
WiFi Status				
SSID	PLANET_5G			
	Hide your SSID?		0	
Encrypt	Open			
Timing	1Day	•		
	Back	Next		

Figure 5-18 Repeater Mode - Setting up Wi-Fi



Object	Description
Wi-Fi Status	Select ON (Green) or OFF (Gray) to enable or disable wireless LAN
SSID	It is the wireless network name. The default SSID is "PLANET_5G"
Hide your SSID ?	Select ON (Green) or OFF (Gray) to hide wireless LAN or not
Encryption	Select the wireless encryption. The default is "None"
Timing	Set time to restart

Repeater Mode			×
1 AN Settings	)	3	
	Otatia ID	_	
IP Mode	Static IP	· ·	
Lan IP	192.168.1.100		
Subnet	255.255.255.0		
Gateway	192.168.1.1		
Primary DNS	114.114.114.114		
Secondary DNS	8.8.4.4		
	Back	Next	

Figure 5-19 Repeater Mode - Setting up Wi-Fi

The page includes the following fields:

Object	Description
IP Mode	Select "Static IP" or "DHCP Client" for setting up device IP
LAN IP	Enter the AP static IP address
Subnet	Enter the network mask
Gateway	Enter the default gateway IP address
Primary DNS	Enter the primary DNS IP address, or not
Secondary DNS	Enter the secondary DNS IP address, or not

Enter the LAN IP address.



# 5.7 Wi-Fi

## 5.7.1 5G Wi-Fi

5.7.1.1. Basic

<b>^</b>	<b>5G WiFi</b> MAC ACL WiFi Timer Off Advar	
Home	Basic VAP 1 VAP 2 VAP 3	
	WiFi Status	WiFi Analyzer
Witterd	SSID PLANET_50	G
wizaru		SID?
8	BandWidth 20M/40M/	(80M <b>*</b>
WiFi	Channel 36	*
	Encrypt Open	*
	WMM 🌔	
Network		Apply
-		
Manage		

## Figure 5-20 Basic

Object	Description
Wi-Fi Status	Select ON (Green) or OFF (Gray) to enable or disable wireless LAN
SSID	It is the wireless network name. The default SSID is "PLANET_5G"
Hide your SSID ?	Select ON (Green) or OFF (Gray) to hide wireless LAN or not
Channel	It shows the channel of the CPE. Default 5GHz is channel 36.
Encryption	Select the wireless encryption. The default is "None"
WMM	Enable/Disable WMM (Wi-Fi Multimedia) function
Wi-Fi Analyzer	Press this button to analyze local area wireless signal



## 5.7.1.2. VAP

5G WiFi MAC ACL WiFi T	imer Off Advanced	
Basic VAP 1 VAP 2		
	tatus 💮	
	SSID PLANET_5G_1	
	Hide your SSID?	
	crypt Open 🔻	
	имм 🕐	
		Apply

Figure 5-21 VAP

Select VAP1~VAP3 to enable virtual AP

Object	Description
	Select ON (Green) or OFF (Gray) to enable or disable virtual wireless
WI-FI Status	LAN
SSID	It is the wireless network name. The default SSID is "PLANET_5G_1"
	to " <b>PLANET_5G_3</b> "
Hide your SSID ?	Select ON (Green) or OFF (Gray) to hide wireless LAN or not
Channel	It shows the channel of the CPE. Default 5GHz is channel 36.
Encryption	Select the wireless encryption. The default is "None"
WMM	Enable/Disable WMM (Wi-Fi Multimedia ) function



# 5.7.2 MAC ACL

5.7.2.1. MAC ACL

î		MAC ACL	WiFi Timer Off	Advanced				
Home		SN	Name		MAC Address	Mark	Status	Config
					B6:58:BF:65:9F:90	Eddie	0	٥
Wizard								
wiFi								
Network								
Manage								
	Add	Delete	Apply Disab	ble	*			

Figure 5-9 MAC ACL

The page includes the following fields:

Object	Description
Add	Press the " <b>Add</b> " button to add end-device that is scanned from wireless network and mark them
Delete	Press the "Delete" button to delete device from list
Арріу	Press the "Apply" button to enable/disable the rule
ACL Status	Select the rule of ACL, default is <b>Disable</b> .
	Whitelist: Allows the devices to pass in the rule
	Blacklist: Prohibited rules within the device through

Add	Delete	Apply	Allows the device to pass in th 🔻
			Disable
			Allows the device to pass in the rule
			Prohibited rules within the device through

Figure 5-22 ACL status



## 5.7.3 Wi-Fi Timer Off

## 5.7.3.1. Wi-Fi Timer Off

	5G WiFi MAC ACL WiFi Timer Off Advanced
Home	WiFi Timer Off
Wizard	WiFi Timer Off
WiFi	Арру
Network	
Manage	

## Figure 5-23 Wi-Fi Timer Off

Object	Description
Wi-Fi Timer Off	Select ON (Green) or OFF (Gray) to enable or disable timer
Time Frame	Choose the time frame of Wi-Fi



# 5.7.4 Advanced

## 5.7.4.1. Advanced

	5G WiFi MAC ACL WiFi Timer Of	f Advanced
Home	Advanced	
<b>Wizard</b>	5G Mode 5G Maximum for per AP	11AC • 64 (Range 1-64)
WiFi	5G WLAN Partition 5G Coverage Threshold 5G TX Power	OFF         •           -90         (-95dBm~-65dBm)           Max         •
(D) N tore d		OFF   ON  (256-2346)
		2347 (0-2347) ON V
Manage	Terminal Fast Roam	OFF • Apply

Figure 5-24 Advanced

Object	Description
5G Mode	Select 802.11A or 802.11AN or 802.11AC in CPE
Maximum 5G per AP	The maximum users are <b>64</b>
5G WLAN Partition	Enable it to isolate each connected wireless client so that they cannot
	access mutually.
5G Coverage Threshold	The coverage threshold is to limit the weak signal of clients occupying
	session. The default is -90dBm
5G TX Power	The range of transmit power is Max (100%), Efficient (75%),
	Enhanced (50%), Standard (25%) or Min (12.5%). In case of
	shortening the distance and the coverage of the wireless network, input
	a smaller value to reduce the radio transmission power
Multicast Fast	A part of the 802.11n standard that allows sending multiple frames per
	single access to the medium by combining frames together into one
	larger frame. It creates the larger frame by combining smaller frames
	with the same physical source, destination end points, and traffic class
	(QoS) into one large frame with a common MAC header
Short GI	Guard intervals are used to ensure that distinct transmissions do not
	interfere with one another.
Packet Threshold	When the length of a data packet exceeds this value, the router will



	send an RTS frame to the destination wireless node, and the latter will	
	reply with a CTS frame, and thus they are ready to communicate. The	
	default value is <b>2346</b>	
RTS Threshold	Enable or Disable RTS/CTS protocol. It can be used in the following	
	scenarios and used by Stations or Wireless AP.	
	1) When medium is too noisy or lots of interferences are present. If the	
	AP/Station cannot get a chance to send a packet, the RTS/CTS	
	mechanism can be initiated to get the packet sent.	
	2) In mixed mode, the hidden node problem can be avoided.	
	The default value is <b>2347</b>	
Dial Switch	Enable or Disable PtP switch	
Terminal Fast Roam	Enable or Disable 802.11k, 802.11v and 802.11r	



## 5.7.5 Network

## 5.7.5.1. LAN Settings

	LAN Settings Snmp Config VLAN	l Settings
Home	LAN Settings	
	IP Mode	Static IP 🔹
		192,168.1.253
wizard		255.255.255.0
		192.168.1.1
WiFi		114.114.114
		8.8.4.4
		Арріу
Network		
Manage		

Figure 5-25 LAN Settings

The page includes the following fields:

Object	Description	
IP Mode	Select "Static IP" or "DHCP Client" for setting up device IP	
LAN IP Enter the AP static IP address		
Subnet	Enter the network mask	
Gateway	Enter the default gateway IP address	
Primary DNS	Enter the primary DNS IP address, or not	
Secondary DNS	Enter the secondary DNS IP address, or not	

## 5.7.5.2. SNMP Config

LAN Settings	Snmp Config	VLAN	l Settings
Snmp Config			
			private
			public
		Idress	192.168.1.100

Figure 5-10 SNMP Config



Object	Description
Read Community	Enter the read community, default is <b>public</b>
Write Community	Enter the write community, default is private
Trap Destination Address	Enter the SNMP trap IP address, default is 192.168.1.100

## 5.7.5.3. VLAN Settings

LAN Settings	Snmp Config VLAN S	ettings		
	AP	VAP 1	VAP 2	VAP 3
5G WiFi	VLAN-ID range 3-4094	VLAN-ID range 3-4094	VLAN-ID range 3-4094	VLAN-ID range 3-4094
Apply OFF	Ţ			

#### Figure 5-11 VLAN Settings

The page includes the following fields:

Object Description	
AP	Select AP or VAP included in the VLAN
VLAN ID	Enter the VLAN ID from 3 to 4094

## 5.7.5.4. WAN Settings

#### Static IP

If your ISP offers you static IP Internet connection type, select "**Static IP**" and then enter IP address, subnet mask, default gateway and primary DNS information provided by your ISP in the corresponding fields.



LAN Settings Static DHCP WAN	Settings WAN Advanced Set	tings URL Mapping
WAN Settings		
	Static IP	
IP Address		
	1500	(1400-1500)
	8.8.8.8	
	4.4.4.4	
	1000M Fiber 🔻	
	1000000	Kbps
	1000000	Kbps
		Apply

## Figure 5-12 Static IP

## The page includes the following fields:

Object	Description	
IP Address	Enter the WAN IP address provided by your ISP. Enquire your ISP if you	
	are not clear	
Subnet	Enter WAN Subnet Mask provided by your ISP	
Default Gateway	Enter the WAN Gateway address provided by your ISP	
MTU	Maximum Transmission Unit. Default is 1500	
Primary DNS	Enter the necessary DNS address provided by your ISP	
Secondary DNS	Enter the secondary DNS address provided by your ISP	
Upstream	Enter limited upstream throughput, default is <b>1000000</b> Kbps	
Downstream	Enter limited downstream throughput, default is <b>1000000</b> Kbps	

# PPPoE (ADSL)

Select **PPPOE** if your ISP is using a PPPoE connection and provide you with PPPoE user name and password info.



LAN Settings Static DHCP WAN S	Settings WAN Advanced Set	tings URL Mapping
WAN Settings		
	РРРоЕ -	
	Please enter account.	
	Please enter password.	
	If not, please do not fill out	
	If not, please do not fill out	
	1452	(1400-1492)
	8.8.8.8	]
	4.4.4.4	
	1000M Fiber	
	1000000	Kbps
	1000000	КЪрз
		Apply

Figure 5-13 PPPoE (ADSL)

Object	Description	
Username	Enter the PPPoE User Name provided by your ISP	
Password	Enter the PPPoE password provided by your ISP	
Set DNS Manually	Enable/Disable DNS Manually	
Primary DNS	Enter the necessary DNS address provided by your ISP	
Secondary DNS	Enter the secondary DNS address provided by your ISP	
MTU	Maximum Transmission Unit. Default is 1452	
Band Type	Select the band type provided by your ISP	
Upstream	Enter limited upstream throughput, default is <b>1000000</b> Kbps	
Downstream	Enter limited downstream throughput, default is <b>1000000</b> Kbps	

## DHCP

Choose "**DHCP**" and the router will automatically obtain IP addresses, subnet masks and gateway addresses from your ISP.



LAN Settings Static DHCP WAN	Settings WAN Advanced Set	tings URL Mapping
WAN Settings		
	DHCP	
	1492	(1400-1500)
	8.8.8.8	
	4444	
Band Type	1000M Fiber 🔻	
	1000000	Kbps
	1000000	Kbps
		Арріу

Figure 5-14 DHCP

Object	Description
MTU	Maximum Transmission Unit. Default is 1452
Set DNS Manually	Enable/Disable DNS Manually
Primary DNS	Enter the necessary DNS address provided by your ISP
Secondary DNS	Enter the secondary DNS address provided by your ISP
Band Type	Select the band type provided by your ISP
Upstream	Enter limited upstream throughput, default is <b>1000000</b> Kbps
Downstream	Enter limited downstream throughput, default is <b>1000000</b> Kbps

## 5.7.5.5. WAN advanced settings

LAN Settings	Static DHCP	WAN Settings	WAN Advanced Settings	URL Mapping
WAN Advanced Settings				
		Enable well	b server access on WAN port	8080 (1-65535)
		MAC Clone	e.	Scan
		Enable Pin		
		Enable IPs		
		Enable PP1		
		Enable L2T		
		O Line Detec	tion Host Name 1 114.114	4.114.114 Host Name 2 114.114.115.115
				Apply

Figure 5-15 WAN advanced settings



Object	Description
Enable web server access on WAN port	Enable to access from WAN, default port is 8080
MAC clone	Enable and scan to clone the MAC address
Enable Ping Access on WAN	Enable or Disable this function
Enable IPsec passthrough on VPN connection	Enable or disable IPSec to pass through IPSec communication data.
Enable PPTP passthrough on VPN connection	Enable or disable PPTP to pass through PPTP communication data.
Enable L2TP passthrough on VPN connection	Enable or disable L2TP to pass through L2TP communication data.
Line Detection	Enable to ping Host 1 and Host 2 IP. If ping fails, the WAN will be disconnected.

# 5.7.6 Security

## 5.7.6.1. URL Filtering

Url Filter				×
Url Filter				
Status	•			
Rule Name	Black list			
Time Group	Any 🔻	Add		
URL	www.faceback.com			
Mark				
			Save	



Url Filter				×
Url Filter				
Status	•			
Rule Name	Black list			
Time Group	Custom	Add		
Time Range	00 • : 00 • - 00 • : 00			
Work Date	Everyday			
URL	www.faceback.com			
Mark				
			Save	

Figure 5-36 URL Filtering

Object	Description
Add	Press the "Add" button to add the rule
Delete	Press the "Delete" button to delete the rule
Apply	Press the "Apply" button to enable/disable the rule
Status	Select ON (Green) or OFF (Gray) to enable or disable
Rule Name	Enter the rule name, e.g. Black list
Time Group	Select Any or Customer to set up time range and work data.
URL	Enter the URL that you need to put in black list
Mark	Enter the mark string, or not

## Enable/disable URL filter function



Figure 5-37 URL Filtering



## 5.7.6.2. IP/Port Filtering

IP Filter					×
IP Filter					
Status	<b>(</b> )				
Rule Name					
Time Group	Any	•	Add		
IP Group	Custom	•	Add		
IP Address				Scan	
Port Range			No e	mpty,range:1-65535	5
Protocol	TCP+UDP	Ŧ			
Mark					
				Save	

Figure 5-38 IP/Port Filtering

Object	Description
Add	Press the "Add" button to add the rule in the black or white list
Delete	Press the "Delete" button to delete the rule
Apply	Press the "Apply" button to enable/disable the rule
Status	Select ON (Green) or OFF (Gray) to enable or disable
Rule Name	Enter the rule name, e.g. Black list
Time Group	Select Any or Customer to set up time range and work data.
IP Group	Select IP Group for adding IP by entering IP range or by scanning devices
IP Address	Enter the IP that you need to put in black or white list



Port Range	Enter the web port to access
Protocol	Select TCP, UDP or TCP+UDP
Mark	Enter the mark string, or not
IP/Port Filtering Status	Select the rule of IP/Port Filtering, default is <b>Disable</b> .
	Whitelist: Allow the devices to pass in the rule
	Blacklist: Prohibited rules within the device through

Add	Delete	Apply	Disable 🔻
			Disable Allows the device to pass in the rule Prohibited rules within the device through

Figure 5-39 IP/Port Filtering

## 5.7.6.3. MAC Filtering

MAC Filter					×
MAC Filter					
Status	•				
Rule Name					
Time Group	Any	٣	Add		
MAC Address			Scan		
Mark					
				Save	



MAC Filter					×
MAC Filter					
Status	•••				
Rule Name					
Time Group	Custom	T	Add		
Time Range	00 • : 00 • - 00 • : 00	۳			
Work Date	Everyday	¥			
MAC Address			Scan		
Mark					
				Save	

Figure 5-40 MAC Filtering

Object	Description		
Add	Press the "Add" button to add the rule in the black or white list		
Delete	Press the "Delete" button to delete the rule		
Apply	Press the "Apply" button to enable/disable the rule		
Status	Select ON (Green) or OFF (Gray) to enable or disable		
Rule Name	Enter the rule name, e.g. Black list		
Time Group	Select Any or Customer to set up time range and work data.		
MAC Address	Enter the MAC address that you need to put in black or white list		
Mark	Enter the mark string, or not		
MAC Filtering Status	Select the rule of MAC Filtering, default is <b>Disable</b> .		
	Whitelist: Allow the devices to pass in the rule		
	Blacklist: Prohibited rules within the device through		



Add	Delete	Apply	Disable 🔹
			Disable Allows the device to pass in the rule Prohibited rules within the device through

Figure 5-41 IP/Port Filtering

## 5.7.6.4. Security (Port Mapping/Port Forwarding)

Security					×
Security					
Status	<b>(</b> )				
Rule Class	User Defined	Ŧ			
Rule Name					
Protocol	TCP+UDP	•			
Lan IP			Scan		
External Port			No empty,r	ange:1-65535	
Internal Port			No empty,ra	ange:1-65535	
Mark					
				Save	

Figure 5-42 Port Mapping

Object	Description
Add	Press the "Add" button to add the rule in the black or white list
Delete	Press the "Delete" button to delete the rule
Apply	Press the "Apply" button to enable/disable the rule
Status	Select ON (Green) or OFF (Gray) to enable or disable
Rule Name	Enter the rule name, e.g. Black list
Protocol	Select TCP, UDP or TCP+UDP



LAN IP	Enter the IP address that you need for port forwarding
External Port	Enter the external port range
Internal Port	Enter the internal port range
Mark	Enter the mark string, or not

## Enable/disable Port Mapping function

Add	Delete	Apply	Disable
_			Disable
			Enable Port Mapping Function

## Figure 5-43 Port Mapping

## 5.7.6.5. DMZ

	Url Filter	IP Filter	MAC Filter		DMZ
DMZ					
				192.168.1.1	50

Figure 5-44 DMZ

Object	Description
Enable DMZ	Select Enable DMZ Host or Disable
DMZ Host IP	Enter the DMZ LAN IP



# Chapter 6. Quick Connection to a Wireless Network

In the following sections, the default SSID of the WBS-512AC is configured to "default".

# 6.1 Windows XP (Wireless Zero Configuration)

Step 1: Right-click on the wireless network icon displayed in the system tray



Figure 6-1 System Tray – Wireless Network Icon

#### Step 2: Select [View Available Wireless Networks]

Step 3: Highlight and select the wireless network (SSID) to connect

- (1) Select SSID [default]
- (2) Click the [Connect] button

<sup>(i</sup> t <sup>i)</sup> Wireless Network Connect	tion	×
Network Tasks	Choose a wireless network	
🚭 Refresh network list	Click an item in the list below to connect to a <u>w</u> ireless network in range or to get more information.	
Set up a wireless network for a home or small office	((p)	
Related Tasks	((q))	
<ul> <li>Learn about wireless networking</li> <li>Change the order of preferred networks</li> </ul>	Image: Security-enabled wireless network       Image: Security-enabled wireless network	
Change advanced settings	(( )) default	1
	To connect to this network, click Connect. You might need to enter additional information.	
	(( <b>p</b> ))	. 💌
		ect

Figure 6-2 Choosing a Wireless Network



## Step 4: Enter the encryption key of the wireless AP

- (1) The Wireless Network Connection box will appear
- (2) Enter the encryption key that is configured in section 5.7.1.1
- (3) Click the [Connect] button

Wireless Network Connection					
The network 'PLANET' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.					
Type the key, and then click	Connect.				
Network <u>k</u> ey:	•••••				
Confirm network key:					
	Cancel				

Figure 6-3 Entering the Network Key

## Step 5: Check if "Connected" is displayed

<sup>((†))</sup> Wireless Network Connect	ion	
Network Tasks	Choose a wireless network	
💋 Refresh network list	Click an item in the list below to connect to a <u>w</u> ireless network in ra information.	nge or to get more
Set up a wireless network	((p)) default	Connected 👷 🛆
For a nome or small ornee	Becurity-enabled wireless network (WPA)	
Related Tasks	((Q))	
<ul> <li>Learn about wireless</li> </ul>	🖡 👸 Security-enabled wireless network (WPA)	
Change the order of		
settings	Contraction of the security-enabled wireless network	
	((q))	
	Unsecured wireless network	
	((p))	- 0
	Unsecured wireless network	•800U 🧹
		Connect

Figure 6-4 Choosing a Wireless Network -- Connected



Some laptops are equipped with a "Wireless ON/OFF" switch for the internal wireless LAN. Make sure the hardware-based wireless switch is switched to "ON" position.

# 6.2 Windows 7 (WLAN AutoConfig)

WLAN AutoConfig service is built-in in Windows 7 that can be used to detect and connect to wireless network. This built-in wireless network connection tool is similar to wireless zero configuration tool in Windows XP.

Step 1: Right-click on the network icon displayed in the system tray



Figure 6-5 Network Icon

Step 2: Highlight and select the wireless network (SSID) to connect

- (1) Select SSID [default]
- (2) Click the [Connect] button



Figure 6-6 WLAN AutoConfig





If you will be connecting to this Wireless AP in the future, check [Connect automatically].

## Step 4: Enter the encryption key of the wireless AP

- (1) The Connect to a Network box will appear
- (2) Enter the encryption key that is configured in section 5.7.1.1
- (3) Click the [OK] button

Connect to a Netwo	ork 🗾
Type the networl	k security key
Security key:	
	Hide characters
0	You can also connect by pushing the button on the router.
	OK Cancel

Figure 6-7 Typing the Network Key

Y Connect to a Network	×
Connecting to default	
	Cancel

Figure 6-8 Connecting to a Network



## Step 5: Check if "Connected" is displayed



Figure 6-9 Connected to a Network



# 6.3 Mac OS X 10.x

In the following sections, the default SSID of the WBS-512AC is configured to "default".

Step 1: Right-click on the network icon displayed in the system tray

The AirPort Network Connection menu will appear



Figure 6-10 Mac OS - Network Icon

Step 2: Highlight and select the wireless network (SSID) to connect

- (1) Select and SSID [default]
- (2) Double-click on the selected SSID



Figure 6-11 Highlighting and Selecting the Wireless Network

#### Step 4: Enter the encryption key of the wireless AP

- (1) Enter the encryption key that is configured in section 5.7.1.1
- (2) Click the [OK] button



The network "default" requires a WPA password.
Password:
Show password Remember this network
Cancel OK

Figure 6-12 Enter the Password



## Step 5: Check if the AirPort is connected to the selected wireless network.

If "Yes", then there will be a "check" symbol in front of the SSID.

	0	* 🛜	•		J. O	Q	
AirPort: On Turn AirPort Off				÷.			
√default		A 🛜		- 19			
and the second s		<b>₽</b> 🤶					
The second se		(;;					
all the second sec		9					
20 10 10 10				. *			
COLORDON		((:-					
The second se							
and the second se		₽ 🔶			- taket		
100 Contraction of the local sector of the loc							
presi Terredi							
Inc. Bioscience							
Join Other Network Create Network							
Open Network Preference	s						

Figure 6-13 Connected to the Network



There is another way to configure the MAC OS X wireless settings:

#### Step 1: Click and open the [System Preferences] by going to Apple > System Preference or Applications



Figure 6-14 System Preferences

#### Step 2: Open Network Preference by clicking on the [Network] icon



Figure 6-15 System Preferences -- Network



Step 3: Check Wi-Fi setting and select the available wireless network

- (1) Choose the AirPort on the left-menu (make sure it is ON)
- (2) Select Network Name [default] here

If this is the first time to connect to the Wireless AP, it should show "No network selected".

0 0	Network		
Show All			٩
Lo	ocation: Automatic	•	
USB Ethernet     Not Connected	Status:	On T	urn AirPort Off
● 802.11dapter 《 ● Not Connected		AirPort is turned on but is a network.	not connected to
• AirPort	Network Name	' No network selected	
Home VPN			<b>ا</b> (جَ جَ
		default	
		the second se	<b>○</b>
			(î÷
			<b>₽</b> 🤶
		Join Other Network Create Network	
+ - \$-	Show AirPort statu	s in menu bar	Advanced ?
Click the lock to prever	t further changes.	Assist me	Revert Apply

Figure 6-16 Selecting the Wireless Network



# 6.4 iPhone/iPod Touch/iPad

In the following sections, the default SSID of the WBS-512AC is configured to "default".

Step 1: Tap the [Settings] icon displayed in the home screen



Figure 6-17 iPhone – Settings icon

Step 2: Check Wi-Fi setting and select the available wireless network

- (1) Tap [General] \ [Network]
- (2) Tap [Wi-Fi]

If this is the first time to connect to the Wireless AP, it should show "Not Connected".

iPad	10:35 AM	🕒 100% 🖿
Settings	General	
Airplane Mode OFF		
Wi-Fi Not Connected	About	>
Notifications On	Usage	>
Carrier	Sounds	>
🕎 Cellular Data		
🙀 Brightness & Wallpaper	Network	>
Picture Frame	Bluetooth	Off >
General	Location Services	On >
Salendars Mail, Contacts, Calendars	Spotlight Search	>
Mafari Safari		

Figure 6-18 Wi-Fi Setting



IPad	10:35 AM 🛞 100%
Settings	General Network
Airplane Mode OFF	
WI-FI Not Connected	VPN Not Connected >
Notifications     On	Wi-Fi Not Connected >
Carrier	
🔀 Cellular Data	
🙀 Brightness & Wallpaper	
Picture Frame	
General	
Mail, Contacts, Calendars	
Mafari	

Figure 6-19 Wi-Fi Setting - Not Connected

Step 3: Tap the target wireless network (SSID) in "Choose a Network..."

- (1) Turn on Wi-Fi by tapping "Wi-Fi"
- (2) Select SSID [default]

iPad	11:23 PM	76% 📼	
Settings	Network Wi-Fi Networks		
Airplane Mode		-	
Wi-Fi Not Connected	Wi-Fi ON		
Notifications On	Choose a Network		
Location Services On	default 🔒 🤝	٥	
🕅 Cellular Data	Other	>	
🙀 Brightness & Wallpaper	Ask to Join Networks		
Picture Frame	Known networks will be joined automatically. If no		
General	before joining a new network.		

Figure 6-20 Turning on Wi-Fi

## Step 4: Enter the encryption key of the Wireless AP

- (1) The password input screen will be displayed
- (2) Enter the encryption key that is configured in section 5.7.1.1
- (3) Tap the [Join] button



Pad 🕆	11:20 PM	@ 76%mmD
Settings	Wi-Fi Ne	tworks
Airplane Mode		
WI-FI CAB-4	Wi-Fi	ON
Notifications On	Choose a Network	
	✓ CA8-4	870
Location	Enter the password for "default"	000
Cellular Ganet	Enter Password	
Brightne		>
Picture   Password eee		
General		e It no
Mail, Co.		asked
Safari		_
iPod		_
Video		_
Photos		_
- Notes		
Store		
Apps		
1 2 3 4	5 6 7 8	9043
		s @ Join
#+= undo ,	, ? ! '	####
ABC		ABC 🕎

Figure 6-21 iPhone -- Entering the Password

Step 5: Check if the device is connected to the selected wireless network.

If "Yes", then there will be a "check" symbol in front of the SSID.

iPad	11:25 PM @ 75% #		
Settings	Network Wi-Fi Networks		
Airplane Mode OFF			
🛜 Wi-Fi default	Wi-Fi ON		
Notifications     On	Choose a Network		
Location Services On	✓ default		
🕎 Cellular Data	Other >		
🙀 Brightness & Wallpaper	Ask to Join Networks		
Picture Frame	Known networks will be joined automatically. If no known networks are available, you will be asked before joining a new network.		
General			

Figure 6-22 iPhone -- Connected to the Network


## Appendix A: Planet Smart Discovery Utility

To easily list the WBS-512A in your Ethernet environment, the Planet Smart Discovery Utility is an ideal solution.

The following installation instructions guide you to running the Planet Smart Discovery Utility.

#### Step 1: Download the Planet Smart Discovery Utility from the administrator PC.

## Step 2: Run this utility and the following screen appears.



#### Step 3: Press "Refresh" for the current connected devices in the discovery list as shown in the following screen:

	PLANET Smart D	iscovery Lite							_		×
Fi	File Option Help										
			<b>O</b> Refre	sh	🖹 Exit			9	PL	AN ng & Comm	ET
	MAC Address	Device Name	Version	DevicelP	NewPassword	IP Address	NetMask	Gateway	Descript	ion	
1	A8-F7-E0-55-65-D4	WBS-512AC	AP-ETSI-V3.0	192.168.1.253		192.168.1.253	255.255.255.0	0.0.0.0			
Γ											
	Select Adapter : 192.168.1.20 (00:30:4F:9E:B7:DF)										
	Update Device Update Multi Update All Connect to Device										
De	vice : WBS-512AC	(A8-F7-E0-55-6	55-D4) Get	Device Information	tion done.						1.

#### Step 3: Press "Connect to Device" and then the Web login screen appears.



The fields in white background can be modified directly and then you can apply the new setting by clicking "**Update Device**".



# Appendix B: FAQs

#### Q1: How to set up the AP Client Connection

#### Topology:



**Step1**. Use static IP in the PCs that are connected with AP-1 (Site-1) and AP-2 (Site-2). In this case, Site-1 is "**192.168.1.100**", and Site-2 is "**192.168.1.200**".

② 乙太網路 2 Properties X	Internet Protocol Version 4 (TCP/IPv4) Properties	$\times$
Networking Sharing	General	
Connect using:	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.	
Configure This connection uses the following items:           Image: Npcap Packet Driver (NPF) (Wi-Fi)           Image: Npcap Packet Driver (NPCAP) (Wi-Fi)	<ul> <li>Obtain an IP address automatically</li> <li>Use the following IP address:         <ul> <li>IP address:</li> <li>IP2.168.1.100</li> <li>Subnet mask:</li> <li>255.255.0</li> <li>Default gateway:</li> <li>.</li> <li>Obtain DNS server address automatically</li> <li>Use the following DNS server addresses:</li> </ul> </li> </ul>	
Install Uninstall Properties Description	Preferred DNS server:        Alternate DNS server:	
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Validate settings upon exit Advanced	
OK Cancel	OK Cancel	



Step2. In AP-2, change the PtP switch to slave, the default IP is 192.168.1.100.



Step 3. In AP-1, go to "Wizard" to configure it to AP Mode. In AP-2, configure it to Repeater Mode.



**Step 4**. In AP-2, press **Scan AP** to search the AP-1. You can also enter the MAC address, SSID, encryption and bandwidth if you know what they are.





Repeater Settings							
Repeater SSID	PLANET_5G_512AC		Scan				
Lock BSSID	A8:F7:E0:55:65:D9						
Encryption	WPA/WPA2PSK_AES	۳					
Password	77777777						
BandWidth	20M/40M/80M	٣					
P2P							
	Next						

Step 5. Click "Next" to finish the setting.



				— Repeater D	own Stream —	- Repeater Up St
		2500				
		2250				
	400	2000				
		1750				
ົ <u>ຈ</u> ັງ))((ເ,		1250	$\sim$			(
	• ·····	1000				
		750				
		/30				
		500		$\frown$		
		500 <u></u> 250 <u></u>				
Uptime 00:51:13		500 250 0	17:51:40 17:5	51:50 17:52:00	17:52:10	17:52:20
Uptime 00:51:13		500 <u></u> 250 <u></u> 0 <u></u>	17:51:40 17:	11:50 17:52:00	17:52:10	17:52:20
Uptime 00:51:13 B Device Information	# LAN Information	500 <u></u> 250 <u></u> 0 <u></u>	17:51:40 17: ₩ Repeater Inf	01:50 17:52:00	17:52:10	17:52:20
Uptime 00:51:13	ELAN Information Lan IP 192	500 500 250 0 2.168.1.253	17:51:40 17: E Repeater Int Repeater SSID	ormation PLANET_5G_512AC	17:52:10 II: WiFi Informa Status	17:52:20 ation
Uptime 00:51:13 B Device Information CPU Usage 11%	Si LAN Information Lan IP 192 Subnet 255	250 250 0 2.168.1.253 5.255.255.0	17:51:40 17: # Repeater Int Repeater SSID Channel	ormation PLANET_5G_512AC 36	17:52:10 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	17:52:20 ation ON 0 PLANET_5G_51:
Uptime 00:51:13 B2 Device Information CPU Usage 11%	LAN Information Lan IP 192 Subnet 255 MAC Address A83	250 250 0 2.168.1.253 5.255.255.0 F7:E0:55:65:D4	17:51:40 17: Repeater Ini Repeater SSID Channel BSSID	ormation PLANET_5G_512AC 36 A8:F7:E0:55:65:D9	17:52:10 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	17:52:20 ation ON 0 PLANET_5G_51. 36
Uptime 00:51:13 Device Information CPU Usage 11% Memory Usage 32%	LAN Information Lan IP 192 Subnet 255 MAC Address A8: Gateway 192	500 500 250 0 2.168.1.253 5.255.255.0 167:E0:55:65:D4 2.168.1.1	17:51:40 17: # Repeater Ini Repeater SSID Channel BSSID Encrypt	ormation PLANET_5G_512AC 36 A8:F7:E0:55:65:D9 WPA/WPA2PSK_AES	17:52:10 # WiFi Informa Status SSID Channel Encrypt	17:52:20 ON 0 PLANET_5G_51 36 WPA/WPA2PSH



Step 7. Use command line tool to ping each other to ensure the link is successfully established.

From Site-1, ping 192.168.1.200; and in Site-2, ping 192.168.1.100.



Step 8. Configure the TCP/IP settings of Site-2 to "Obtain an IP address automatically".

erworking	Alternate Configuration			
Connect using:	You can get IP settings assigned au	tomatically if y	our netwo	k supports
Intel(R) PRO/1000 MT Desktop Adapter	for the appropriate IP settings.	to ask your n	etwork adr	ninstrator
Configure	Obtain an IP address automati	cally		
This connection uses the following items:	OUse the following IP address:			
Gient for Microsoft Networks	IP address:			
QoS Packet Scheduler	Subnet mask:			
File and Printer Sharing for Microsoft Networks     Anternet Protocol Version 6 (TCP/IPv6)	Default gateway:			
Internet Protocol Version 4 (TCP/IPv4)      Internet Protocol Version 4 (TCP/IPv4)      Link-Layer Topology Discovery Mapper I/O Driver	Obtain DNS server address au	tomatically		
Link-Layer Topology Discovery Responder	O Use the following DNS server a	ddresses:		
Instal Uninstal Properties	Preferred DNS server:			
Description	Alternate DNS server:			
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Validate settings upon exit		A	dvanced
			014	Course



Step 9. Use command line tool to ping the DNS (e.g., Google) to ensure Site-2 can access internet through the

wireless connection.

C:\Windows\system32\cmd.exe - ping 192.168.1.1 -t
Reply from 192.168.1.1:       bytes=32 tine<1ns TTL=64         Reply from 192.168.1.1:       bytes=32 tine<1ns TTL=64         Reply from 192.168.1.1:       bytes=32 tine<1ns TTL=64         Reply from 192.168.1.1:       bytes=12 tine<1ns TTL=64         Reply from 192.168.1.1:       bytes=32 tine<1ns TTL=64
🚾 C/Windows/system32/cmd.exe - ping 8.8.8.8 -t
Reply from 8.8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 38ms ITL-53         Reply from 8.8.8: hytes -32 time - 36ms ITL-53         Reply from 8.8.8: hytes -32 time - 36ms ITL-53         Reply from 8.8.8: hytes -32 time - 36ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53         Reply from 8.8.8: hytes -32 time - 37ms ITL-53
Reply from 8.8.8.9: hytes 32 time 30m 111-53 Reply from 8.8.8.9: hytes 32 time 30m 111-53 Reply from 8.8.8: hytes 32 time 30m 111-53 Reply from 8.8.8: hytes 32 time 30m 111-53 Reply from 8.8.8.8: hytes 32 time 30m 111-53
Reply from 8.8.8.9: bytes -32 time-30ms TIL-53 Reply from 8.8.8.9: bytes -32 time-30ms TIL-53 Reply from 8.8.8.8: bytes -32 time-30ms TIL-53 Reply from 8.8.8.9: bytes -32 time-30ms TIL-53
Reply from 8.8.8. Bytes=12 time=3bms TLL=53 Reply from 8.8.8.8. bytes=12 time=3bms TLL=53 Reply from 8.8.8.8: bytes=32 time=37ms TTL=53

The following hints should be noted:

- 1) The encryption method must be the same as that of both sites if configured.
- Note Note
- 2) Both sites should be Line-of-Sight.
- For the short distance connection less than 1km, please reduce the "RF Output Power" of both sites.
- 4) For the long distance connection over 1km, please adjust the "Distance" to the actual distance or double the actual distance.

#### Q2: How to set up the WDS Connection

#### Topology:





Step 1. Use static IP in the PCs that are connected with WBS-512AC-1 (Site-1) and WBS-512AC-2 (Site-2). In this case, Site-1 is "192.168.1.100", and Site-2 is "192.168.1.200".

etworking	General			
Connect using:	You can get IP settings assigned	automatically if your network supports		
Realtek PCIe FE Family Controller	for the appropriate IP settings.	eed to ask your network administrator		
Configure	Obtain an IP address auton	natically		
This connection uses the following items:	Use the following IP addres	5:		
Client for Microsoft Networks	IP address:	192 . 168 . 1 . 100		
QoS Packet Scheduler	Subnet mask:	255 . 255 . 255 . 0		
Read Printer Sharing for Microsoft Networks	Default gateway:			
<ul> <li>Internet Protocol Version 6 (TCP/IPv6)</li> </ul>	Obtain DNS server address automatically			
Internet Protocol Version 4 (TCP/IPv4)     A Link-Laver Topology Discovery Mapper I/O Driver				
🗹 🔺 Link-Layer Topology Discovery Responder	Use the following DNS server	er addresses:		
Install Uninstall Properties	Preferred DNS server:	· · ·		
Description	Alternate DNS server:			
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Validate settings upon exit	Advanced		



**Step 2**. In AP-2, change the default IP to the same IP range but different from AP-1. In this case, the IP is changed to **192.168.1.252**.

LAN Settings		
IP Mode	Static IP	•
Lan IP	192.168.1.252	
Subnet	255.255.255.0	

Step 3. In both APs, go to "Wizard" to configure it in Super WDS Mode.

Home Wizard	Current Mode Current Mode Super WDS Mode Current Mode
Network	In this mode, the wireless interface can be connected with other wireless AP through WDS, and the wireless interface and cable interface. Without NAT, firewall and all network related functions.

Step 4. In AP1 set up WDS SSID, for example WDS-1. Select Encrypt for WEP and enter password.

Super WDS Mode			×
1 WDS			
SSID	WDS-1		
AP BSSID		Mark	Scan
AP BSSID		Mark	Scan
AP BSSID		Mark	Scan
AP BSSID		Mark	Scan
Encrypt	WEP 🗸	User Password 1234567890	
		Vext	



Step 5. Finish the 5G Wi-Fi and LAN setting.

Step 6. Click "Home" to check WDS status.



Step 7. In AP2 scan AP1 WDS SSID, for example WDS-1. Select Encrypt for WEP and enter password.

Wirele	ss List	×
((;;	C7200E-5-1 Channel[ 100 ] MAC[ A8:F7:E0:55:41:7C ] Signal[ -39dBm ] WPA/WPA2PSK_AES	^
((?	WDS-3 Channel[ 100 ] MAC[ C2:F7:E0:55:41:7C ] Signal[ -46dBm ] WEP	
(10-	scap-ap Channel[ 100 ] MAC[ BA:F7:E0:55:65:D9 ] Signal[ -50dBm ] Open	_
((;;	WDS-1 Channel[ 100 ] MAC[ C2:F7:E0:55:65:D9 ] Signal[ -52dBm ] WEP	
((;	512AC-1 Channel[ 100 ] MAC[ A8:F7:E0:55:65:D9 ] Signal[ -52dBm ] WPAPSK_AES	
	VAP 5G	*



Step 8.Confirm SSID and MAC. Select Encrypt for WEP and enter password.

Super W	DS Mode			×
0				
wD	s			
	SSID	WDS-2		
	AP BSSID	C2:F7:E0:55:65:D9	Mark WDS-1	Scan
	AP BSSID		Mark	Scan
l de la companya de l	AP BSSID		Mark	Scan
	AP BSSID		Mark	Scan
	Encrypt	WEP 🗸	User Password 1234567890	
		_		
		[	Next	

Step 9. Finish the 5G Wi-Fi and LAN setting.

Step 10. Go to "WDS Information" to check connection status.

	Idde Flow(bps)		— WDS 0	own Stream	— WDS Up Str
((( (A))	25k           22.5k           20k           17.5k           15k           12.5k           10k				
Uptime 00:52:57	7.5k 5k 2.5k 0k	4:44 16:04:46 16:04:48 16:04	:50 16:04:52 16:	:04:54 16:04:	56 16:04:58 16
Uptime 00:52:57	2.5k 2.5k 0k 16:0 16:0	4.44 16:04:46 16:04:48 16:04	.50 16:04:52 16:	04:54 16:04:	56 16:04:58 16
Uptime 00:52:57	g LAN Information IP Mode Static IP	4.44 16:04:46 16:04:48 16:04 B WDS Information Encrypt WEP	2:50 16:04:52 16: B	204:54 16:04: 9 WiFi Informa Status	56 16:04:58 16 Ition
Uptime 00:52:57 E Device Information CPU Usage 7%	g LAN Information IP Mode Static IP Lan IP 192.168.1.222	4.44 16:04:46 16:04:48 16:04 E WDS Information Encrypt WEP AP BSSID C2:F7:60.5	5:55.D9 ✔ S	04:54 16:04: WiFi Informa Status SSID	tion 0N 0 512AC-2
Uptime 00:52:57 E Device Information CPU Usage 7%	gi LAN Information           IP Mode           Static IP           Lan IP           192.168.1.222           Subnet           255.255.0	8 WDS Information Encrypt WEP AP BSSID C2:F7:E0.5 AP BSSID N/A	5.65.D9	WiFi Informa Status SSID Channel	56 16:04:58 16 tion ON 0 512AC-2 100
Uptime 00:52:57 B Device Information CPU Usage 7% Memory Usage 34%	Image: Second state state         16.0           Image: Second state         19           Image: Second state         10           Image: Second state         10	4.44 16:01:46 16:04:48 16:04 BI WDS Information Encrypt WEP AP BSSID C2:F7:E0:5 AP BSSID N/A AP BSSID N/A	565.D9 ✔	WiFi Informa Status SSID Channel Encrypt	56 16:04:58 1 ttion ON 0 512AC-2 100 WPA/WPA2PSK



Step 11. Use command line tool to ping each other to ensure the link is successfully established.

From Site-1, ping 192.168.1.200; and in Site-2, ping 192.168.1.100.

ev C:\WINDOW5\system32\CMD.exe - ping 192.168.1.100 -t \_ O × Destination host unreachable. . Ping statistics for 192.168.0.100: Packets: Sent = 25, Received = 0, Lost = 25 (100% loss), Control-C ^C C:\Documents and Settings\Administrator>ping 192.168.1.100 -t Pinging 192.168.1.100 with 32 bytes of data: Request tined Reply from 192 out bytes=32 bytes=32 bytes=32 bytes=32 bytes=32 bytes=32 bytes=32 bytes=32 bytes=32 100: tine=7ns tine=1ns 92.168.1.100: 92.168.1.100: 92.168.1.100: 92.168.1.100: 92.168.1.100: 92.168.1.100: 92.168.1.100: tine=1ns tine=2ns tine=1ns tine=2ns tine=2ns tine=1ns tine=1ns =128 168 . 1 100: 100: 100: 32 tine =1ns

The following hints should be noted:1) The encryption method must be

- Note Note
- The encryption method must be the same as that of both sites if configured.
   Both sites should be Line-of-Sight.
- 3) For the short distance connection less than 1km, please reduce the "RF Output Power" of both sites.
- 4) For the long distance connection over 1km, please adjust the "Distance" to the actual distance or double the actual distance.



# **Appendix C: Troubleshooting**

If you find the AP is working improperly or stops responding to you, please read this troubleshooting first before contacting the dealer for help. Some problems can be solved by yourself within a very short time.

Scenario	So	lution			
The AP is not responding to	a.	Please check the connection of the power cord and the			
me when I want to access it		Ethernet cable of this AP. All cords and cables should be			
by Web browser.		correctly and firmly inserted into the AP.			
		If all LEDs on this AP are off, please check the status of			
		power adapter, and make sure it is correctly powered.			
	c.	You must use the same IP address section where AP			
		uses.			
	d.	Are you using MAC or IP address filter? Try to connect			
		the AP with another computer and see if it works; if not,			
		please reset the AP to the factory default settings by			
		pressing the 'reset' button for over 7 seconds.			
	e.	Use the Smart Discovery Tool to see if you can find the			
		AP or not.			
	f.	If you did a firmware upgrade and this happens, contact			
		your dealer for help.			
	g.	If all the solutions above don't work, contact the dealer			
		for help.			
I can't get connected to the	a.	Go to 'Status' -> 'Internet Connection' menu on the			
Internet.		router connected to the AP, and check Internet			
		connection status.			
	b.	Please be patient, sometimes Internet is just that slow.			
	c.	If you've connected a computer to Internet directly			
		before, try to do that again, and check if you can get			
		connected to Internet with your computer directly			
		attached to the device provided by your Internet service			
		provider.			
	d.	Check PPPoE / L2TP / PPTP user ID and password			
		entered in the router's settings again.			
	e.	Call your Internet service provider and check if there's			
		something wrong with their service.			
	f.	If you just can't connect to one or more website, but you			
		can still use other internet services, please check			
		URL/Keyword filter.			
	g.	Try to reset the AP and try again later.			
	h.	Reset the device provided by your Internet service			
		provider too.			



	i.	Try to use IP address instead of host name. If you can
		use IP address to communicate with a remote server,
		but can't use host name, please check DNS setting.
I can't locate my AP by my	a.	'Broadcast ESSID' set to off?
wireless device.	b.	Both two antennas are properly secured.
	c.	Are you too far from your AP? Try to get closer.
	d.	Please remember that you have to input ESSID on your
		wireless client manually, if ESSID broadcast is disabled.
File downloading is very slow	a.	Are you using QoS function? Try to disable it and try
or breaks frequently.		again.
	b.	Internet is slow sometimes. Please be patient.
	c.	Try to reset the AP and see if it's better after that.
	d.	Try to know what computers do on your local network. If
		someone's transferring big files, other people will think
		Internet is really slow.
	e.	If this never happens before, call you Internet service
		provider to know if there is something wrong with their
		network.
I can't log into the web	a.	Make sure you're connecting to the correct IP address
management interface; the		of the AP!
password is wrong.	b.	Password is case-sensitive. Make sure the 'Caps Lock'
pacenera ie mong.		light is not illuminated.
	C.	If you really forget the password, do a hard reset.
The AP becomes hot	a.	This is not a malfunction, if you can keep your hand on
		the AP's case.
	b.	If you smell something wrong or see the smoke coming
		out from AP or A/C power adapter, please disconnect
		the AP and power source from utility power (make sure
		it's safe before you're doing this!), and call your dealer
		for help.



## **Appendix D: Glossary**

- 802.11ac 802.11ac is a wireless networking standard in the 802.11 family (which is marketed under the brand name Wi-Fi), developed in the IEEE Standards Association process, providing high-throughput wireless local area networks (WLANs) on the 5 GHz band.
- 802.11n 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multipleoutput). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) [3] was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- 802.11a 802.11a was an amendment to the IEEE 802.11 wireless local network specifications that defined requirements for an orthogonal frequency division multiplexing (OFDM) communication system. It was originally designed to support wireless communication in the unlicensed national information infrastructure (U-NII) bands (in the 5–6 GHz frequency range) as regulated in the United States by the Code of Federal Regulations, Title 47, Section 15.407.
- 802.11b The 802.11b standard specifies a wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- 802.11g specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- DDNS (Dynamic Domain Name System) The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.
- DHCP (Dynamic Host Configuration Protocol) A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.
- DMZ (Demilitarized Zone) A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.
- DNS (Domain Name System) An Internet Service that translates the names of websites into IP addresses.
- > **Domain Name -** A descriptive name for an address or group of addresses on the Internet.
- DSL (Digital Subscriber Line) A technology that allows data to be sent or received over existing traditional phone lines.
- > **ISP** (Internet Service Provider) A company that provides access to the Internet.



- > MTU (Maximum Transmission Unit) The size in bytes of the largest packet that can be transmitted.
- NAT (Network Address Translation) NAT technology translates IP addresses of a local area network to a different IP address for the Internet.
- PPPoE (Point to Point Protocol over Ethernet) PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
- SSID A Service Set Identification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.
- WEP (Wired Equivalent Privacy) A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- Wi-Fi A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.
- WLAN (Wireless Local Area Network) A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.



### **EC Declaration of Conformity**

English	Hereby, <b>PLANET Technology Corporation</b> , declares that this <b>900Mbps 802.11ac Wireless</b> <b>Outdoor CPE</b> is in compliance with the essential requirements and other relevant provisions of Directive <b>2014/53/EU</b> .	Lietuviškai	Šiuo <b>PLANET Technology Corporation</b> ,, skelbia, kad <b>900Mbps 802.11ac Wireless Outdoor CPE</b> tenkina visus svarbiausius <b>2014/53/EU</b> direktyvos reikalavimus ir kitas svarbias nuostatas.
Česky	Společnost PLANET Technology Corporation, tímto prohlašuje, že tato 900Mbps 802.11ac Wireless Outdoor CPE splňuje základní požadavky a další příslušná ustanovení směrnice 2014/53/EU.	Magyar	A gyártó <b>PLANET Technology Corporation</b> , kijelenti, hogy ez a <b>900Mbps 802.11ac Wireless</b> <b>Outdoor CPE</b> megfelel az <b>2014/53/EK</b> irányelv alapkövetelményeinek és a kapcsolódó rendelkezéseknek.
Dansk	PLANET Technology Corporation, erklærer herved, at følgende udstyr 900Mbps 802.11ac Wireless Outdoor CPE overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU	Malti	Hawnhekk, <b>PLANET Technology Corporation,</b> jiddikjara li dan <b>900Mbps 802.11ac Wireless</b> <b>Outdoor CPE</b> jikkonforma mal-ħtiģijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid- Dirrettiva <b>2014/53/EU</b>
Deutsch	Hiermit erklärt <b>PLANET Technology Corporation</b> , dass sich dieses Gerät <b>900Mbps 802.11ac</b> <b>Wireless Outdoor CPE</b> in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie <b>2014/53/EU</b> befindet". (BMWi)	Nederlands	Hierbij verklaart , <b>PLANET Technology orporation</b> , dat <b>900Mbps 802.11ac Wireless Outdoor CPE</b> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn <b>2014/53/EU</b>
Eestikeeles	Käesolevaga kinnitab PLANET Technology Corporation, et see 900Mbps 802.11ac Wireless Outdoor CPE vastab Euroopa Nõukogu direktiivi 2014/53/EU põhinõuetele ja muudele olulistele tingimustele.	Polski	Niniejszym firma <b>PLANET Technology Corporation</b> , oświadcza, że 900Mbps 802.11ac Wireless Outdoor CPE spełnia wszystkie istotne wymogi i klauzule zawarte w dokumencie "Directive <b>2014/53/EU</b> ".
Ελληνικά	ME THN ΠΑΡΟΥΣΑ , PLANET Technology Corporation, ΔΗΛΩΝΕΙ ΟΤΙ ΑΥΤΟ 900Mbps 802.11ac Wireless Outdoor CPEΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/EU	Português	PLANET Technology Corporation, declara que este 900Mbps 802.11ac Wireless Outdoor CPE está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/EU.
Español	Por medio de la presente, <b>PLANET Technology</b> <b>Corporation,</b> declara que <b>900Mbps 802.11ac</b> <b>Wireless Outdoor CPE</b> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva <b>2014/53/EU</b>	Slovensky	Výrobca PLANET Technology Corporation, týmto deklaruje, že táto 900Mbps 802.11ac Wireless Outdoor CPE je v súlade so základnými požiadavkami a ďalšími relevantnými predpismi smernice 2014/53/EU.
Français	Par la présente, <b>PLANET Technology</b> <b>Corporation,</b> déclare que les appareils du <b>900Mbps 802.11ac Wireless Outdoor CPE</b> sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive <b>2014/53/EU</b>	Slovensko	PLANET Technology Corporation, s tem potrjuje, da je ta 900Mbps 802.11ac Wireless Outdoor CPE skladen/a z osnovnimi zahtevami in ustreznimi določili Direktive 2014/53/EU.
Italiano	Con la presente , <b>PLANET Technology</b> <b>Corporation</b> , dichiara che questo <b>900Mbps</b> <b>802.11ac Wireless Outdoor CPE</b> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva <b>2014/53/EU</b> .	Suomi	PLANET Technology Corporation, vakuuttaa täten että 900Mbps 802.11ac Wireless Outdoor CPE tyyppinen laite on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Latviski	Ar šo <b>PLANET Technology Corporation,</b> apliecina, ka šī <b>900Mbps 802.11ac Wireless</b> <b>Outdoor CPE</b> atbilst Direktīvas <b>2014/53/EU</b> pamatprasībām un citiem atbilstošiem noteikumiem.	Svenska	Härmed intygar, <b>PLANET Technology Corporation</b> , att denna <b>900Mbps 802.11ac Wireless Outdoor</b> <b>CPE</b> står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv <b>2014/53/EU</b> .

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