Setup Guide

Wireless Router/
Repeater Kit
WRB-G54K

BUFFALO™

Package Contents

▶ WBR-G54 Wireless Broadband Base Station-g	1
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If any item is found missing or damaged, please contact your local reseller or retailer for replacement.

Additional Requirements:

- ◗ Desktop or Laptop PC with Wired or Wireless Ethernet adapter.
- ◗ DSL or Cable Modem with internet service.
- ◗ Web browser (I.E. or Netscape versions 4.5 or greater).

WARNING Your Router/Repeater kit comes with settings preconfigured for easy setup. This includes WDS (Wireless Distribution System) which provides repeating functionality. Pressing the recessed "INIT" button on the back of your router or repeater will erase the preconfigured settings and require you to manually reconfigure your devices.

IMPORTANT It is strongly recommended that you backup your preconfigured settings prior to installation. See section "Backing up and Restoring your Configuration" at the end of this setup guide.

■ **NOTE:** If you plan on intentionally changing preconfigured settings (i.e. you plan on using the repeater as a stand-alone access point), or you inadvertently re-initialize your devices and need to reconfigure, refer to the User Manual on CD for that particular device.

Setting up the Router WBR-G54

■ Note: You can use either a Wired or Wireless connection from the PC you are using to setup your router. **It is strongly recommended** you use the Wired method to avoid possible errors or connection issues during the initial setup.

STEP 1. Connecting cables (Refer to Figure 1):

Rear View
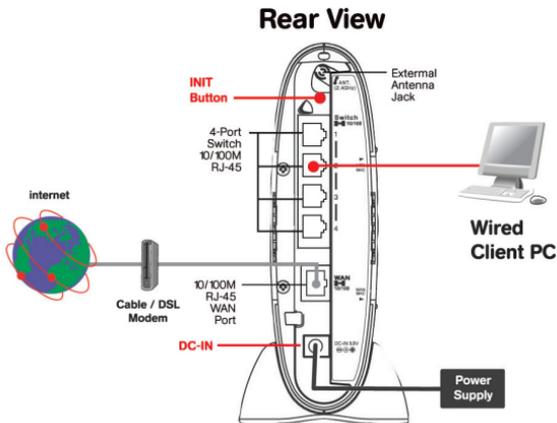
Figure 1: *Connecting Cables*

◗ Ensure your Cable or DSL modem, Wireless Router, and the computer you will be using to setup the Router, are powered off prior to connecting cables.

◗ Locate your DSL or Cable Modem LAN cable and connect it to the appropriate port on your Modem as per instructions from your Modem's manufacturer.

◗ Connect the other end of this cable to the port marked WAN on the back of the Router.

*Perform the next step for **Wired** (Recommended) Router Setup only :*

▶ Locate the provided Ethernet cable and connect one end to any one of the four numbered SWITCH ports located on the back of the router. Connect the other end of this cable to the properly installed Ethernet (NIC) port on the PC you are using for initial setup (Refer to Figure 1).

*Perform the next step for both **Wireless** AND *Wired Router Setup:**

▶ Locate Power adapter for the Wireless Router and Plug in to the DC-IN port on the back of the router and the other end to a wall outlet. (See Figure 1 for location of DC-IN Port).

*Perform the next step for **Wireless** *Router Setup only:**

■ **NOTE:** You will need the SSID of your router to properly connect your wireless adapter to your router. The default SSID for your Precon-figured Buffalo Router is "Buffalo" (case sensitive).

▶ Refer to your Wireless Ethernet adapter Manufacture's documentation for proper setup of your Wireless adapter for your appropriate Operating System and connect to the router.

The Remaining Steps apply to both Wired and Wireless Setup:

▶ Power up you Cable or DSL Modem

▶ Power up your computer that you are using to configure the Wireless Router.

Step 2: Configuring your computers IP address

Windows XP/2000 users:

▶ Click Start ⊃ Control Panel
▶ Double Click Network connections
▶ Right-Click on appropriate Local Area Network Connection and select Properties.
▶ Scroll down and highlight Internet Protocol (TCP/ IP) and then click Properties.
▶ Select Obtain IP address automatically.
▶ Click OK to close Internet Protocol (TCP/IP) Properties.

For Windows 98SE/ME

▶ Right-click on Network Neighborhood and select Properties.
▶ Select the Configuration tab, scroll down to highlight TCP/IP and click Properties.
▶ Select Obtain IP address automatically.
▶ Click OK to close Internet Protocol (TCP/IP) Properties.
▶ Click OK to close Network Connection Properties.

■ NOTE: The screen images below are for Windows XP. Consult the user manual for your specific operating system for further information on configuring TCP/IP.
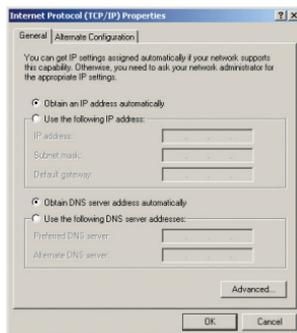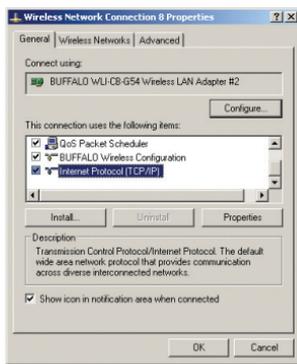
Step 3 Access the AirStation configuration page

Launch your Web browser and type 192.168.11.1 in the address field of the Web browser window and click "Go".

The Router Login Screen will appear:

> ◗ Enter "root" in the User Name Field
> ◗ Leave the password field blank and click on "OK".

■ **NOTE:** During configuration, your session may time out, requiring you to login again.

IMPORTANT *Each type of Broadband service along with your Internet Service Provider's (ISP) requirements will determine what information you will need for the following steps. Please contact your ISP, if necessary, to collect the information you will need to complete the Broadband connection setup steps that follow.*

The first page (Top) of the configuration offers three distinct buttons – DSL, Cable, and Advanced:

FOR DSL Service:
(If you have Cable Broadband Service, skip down to that section):
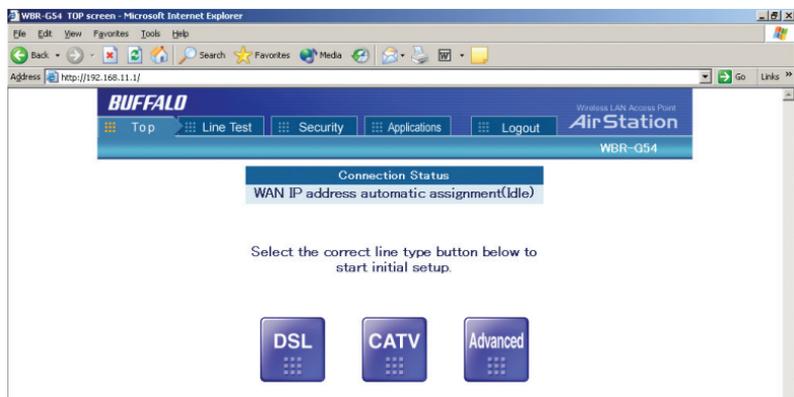
◗ Select the DSL Button ⟳ the DSL configuration screen will appear.
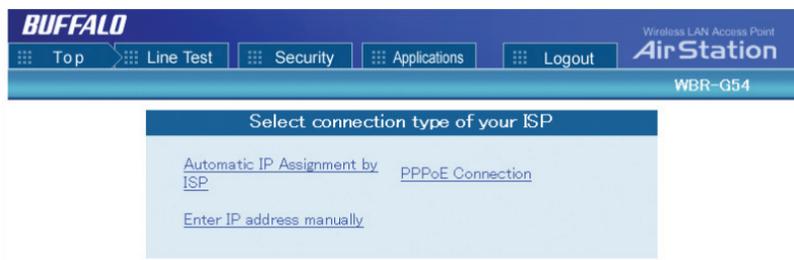
Click On the Link appropriate to your DSL providers requirements:

▶ **The IP Address is Acquired Automatically**: Choose this option IF your ISP uses Automatic IP address assignment. You will see a message asking you to wait. When you see a new Menu page appear, click "NEXT" at the bottom right corner of the screen and your connection to the internet will be tested.

▶ **The IP Address is Entered Manually**: If your ISP requires you to manually enter an IP address (static), then click on this option. Enter the information provided by your ISP into the appropriate fields, then click "NEXT" at the bottom right hand corner of the screen and your information will be stored. Click NEXT again to test your connection to the internet.

▶ **PPPoE Connection: IF your ISP requires PPPoE** (Point to Point Protocol over Ethernet) then click-on this option. Enter the appropriate PPPoE information and then click "NEXT". Once the information updates, you should click "NEXT" again and your connection to the internet will be tested.

FOR CABLE Broadband Service:

Click on the CATV button ⊃ the Cable Setup Screen will appear.
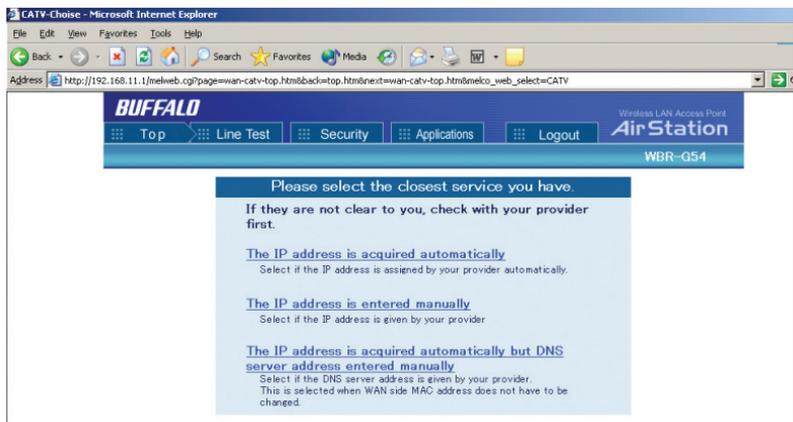
Click the link appropriate to your Cable Providers Requirements:

The IP Address is Acquired Automatically: Most Cable ISP provider's use automatic assignment of IP addresses. If this is true for your ISP, click this option. You will see a message asking you to wait while your settings are updated. When the new web page appears, click "Next" to test your connection to the Internet.

The IP Address is Entered Manually: If your provider requires you to manually enter IP information Select this option. When you have entered all the appropriate information, click "NEXT" at the bottom right hand corner of the screen and your information will be updated. Click "NEXT" again to test your connection to the Internet.

The IP Address is Acquired Automatically, but the DNS is Entered Manually: IF your provider uses Automatic IP assignment but requires manual DNS entries, click this option. When you have entered in all the appropriate information, click "NEXT" at the bottom right hand corner of the screen and your information will be updated. Click "NEXT" again to test your connection to the Internet.

Advanced Settings (Optional)

For more information on configuring advanced settings of your AirStation, refer to the User Manual on the included CD or the Buffalo Wireless Support Web Site: http://www.buffalotech.com/wireless/support.

■ **NOTE**: If at any time you wish to restore to factory defaults, press the Red INIT button on the rear of the AirStation for several seconds until the Red DIAG LED illuminates.

WARNING Resetting the AirStation to factory defaults will destroy the preconfigured repeating functionality of your kit. WDS settings and the SSID on both devices will need to be reentered manually for proper operation.

Determining the Best Location For the Repeater WLA-G54C

IMPORTANT   Although this procedure will assist you in selecting the best location for your repeater, some experimentation may be required to achieve optimal results. Many factors including line of sight obstructions and radio frequency interference affect signal strength, quality, and overall speed. Even small changes in the placement of the repeater can dramatically impact the quality of your connection.

Your WLA-G54C is preconfigured to work with your router so all that is required is to locate the best location for the WLA-G54C and attach power.

If the client computer you are using is portable you can use a signal strength indicator to determine the best location (***Procedure A below***).

If your computer is not portable, you can experiment with locations based on some general concepts to find a good spot and check signal strength (***Procedure B below***).

■ NOTE: if you intend not to use the preconfigured settings for your repeater (i.e. you intend to change the IP address or you intend to use the device as a stand-alone access point), please refer to the User Manual on your CD.

A. Using a signal strength indicator to determine the best location (Portable Computers):

This procedure varies slightly depending on your OS and platform. This procedure is based on using Buffalo Client adapters and Buffalo Client Manager Software. Consult other manufacture's documentation for adapter and client software details where applicable.

Ensure you are connected
Verify the WBR-G54 Broadband Router is operational and configured according to the "Setting up the Router" section above, and that your portable computer client adapter is configured correctly and is connected to the Wireless Broadband Router.

Windows XP users (Using XP Wireless Zero Configuration Services)

■ **NOTE**: Consult the documentation that came with your Wireless adapter for instructions on how to configure your adapter using Windows XP Wireless Zero Configuration Services.

> ◗ Locate the Wireless connection indicator in your computers "tray", usually at the bottom right hand corner of your screen on the taskbar.

> `« 📶 5:30 PM`

> ◗ Double Click on this icon to bring up the Wireless Status screen, take note of signal strength and connection speed.

> ◗ Skip to section "Surveying Your Environment"
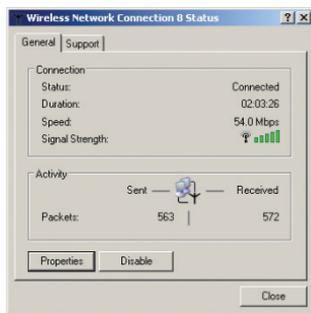
Other Windows Versions (Using Client Manager Software)

■ **NOTE**: Refer to your Wireless manufactures documentation for proper installation and configuration of your Wireless Network adapter and Client Manager software.

◗ Ensure your wireless client manager is installed for your appropriate Wireless LAN adapter and that you are connected to the Wireless Router.

◗ Launch the client manager software. For Buffalo client adapters you can launch the client manager from your computers "tray" Icon, or from the Buffalo folder under the Programs menu.

◗ On the main Buffalo Client Manger screen, note Transfer Rate, Signal Quality, and Signal Strength indicators. These items will degrade the further you move away from your router or if you encounter line of sight obstructions.
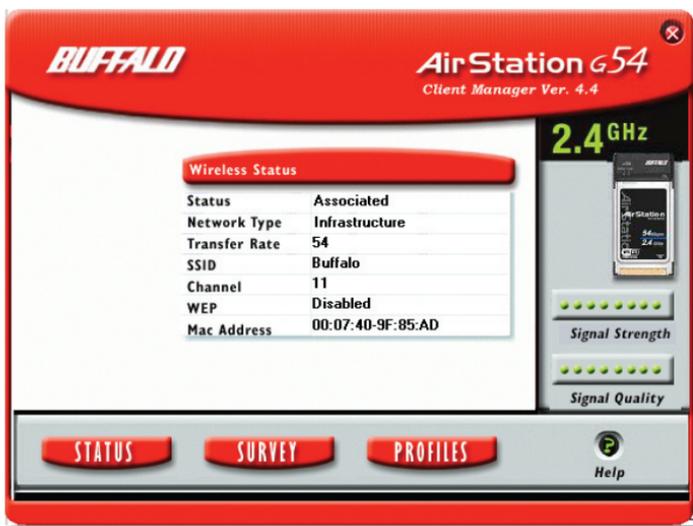
Surveying your Environment:

▶ Starting near the router, move your portable computer toward various points in your environment where you would like to have wireless coverage, taking note of the signal strength and connection speed as you move toward these locations.

▶ Note areas where the signal strength begins to drop off.

▶ Ideally, you are looking to place the repeater within a radius before the signal begins to drop out. This will ensure maximum repeated signal range and overall speed of your connections. (See figure 2 for an example of repeater placement).

▶ Once you have located this spot, position the repeater and plug in the provided power adapter to the DC-IN connection on the back of the device. Connect the other end of the power adapter to a nearby power outlet.

▶ The repeater will automatically connect to your Wireless Broadband Router within a few seconds of power being applied.

▶ You can now continue moving your portable to areas where you are wanting wireless coverage, continuing to take note of signal quality and strength.

▶ You may wish to experiment with repeater placement to see how your range and speed are affected.

■ **NOTE**: To achieve maximum overall range, you may place the repeater outside the radius where the signal begins to drop out. However, this will impact the overall connection speeds you will achieve.

■ **NOTE**: Alternatively, to use your repeater to avoid obstructions between the router and the client computers, position your repeater so that there is a clear line of sight between the repeater and the router and a clear line of sight between the repeater and client computers.
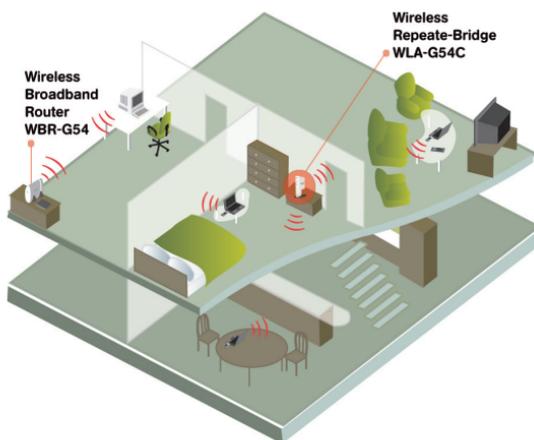
Figure 2: Typical two story residential placement of repeater.

Figure 3: Basic placement of repeater with repeater approximately half way between client machine and the router (65 feet from router to repeater and 65 feet from repeater to computer).

B. Placing Wireless Repeater manually when no portable computer is available.

▶ Ensure your Wireless Router is on and configured properly and that your Wireless Client computer is configured to connect to the router.

▶ Position your Wireless Repeater no more than about 65 feet from the router.   Your client computer should be approximately 65 feet or less from where you place the repeater (See Figure 3 for general repeater placement).

■ **NOTE**: The ranges given in the above step are estimates only, the actual optimal distance can vary greatly depending on obstructions and RF interference.

▶ Attach provided power adapter to the DC-IN connector on the back of the repeater and plug the other end to a convenient wall outlet.

Windows XP users (Using Windows XP wireless Zero Configuration Services)

■ **NOTE**: Consult your XP documentation for proper configuration of Windows XP Wireless Zero Configuration Services.

▶ Locate the Wireless connection indicator in your computers "tray", usually at the bottom right hand corner of your screen on the taskbar.

▶ Double Click on this icon to bring up the Wireless Status screen. Note Signal Strength and speed

▶ Skip to section "Check Signal Strength"
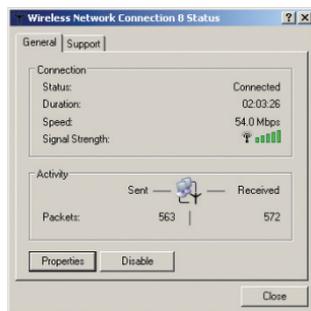
Other Windows Versions (Client Manager Software Required)

▶ Ensure your wireless client manager is installed for your appropriate Wireless LAN adapter.

■ **NOTE**: Refer to your Wireless manufactures documentation for proper installation and configuration of your Wireless Network adapter and Client Manager software.

▶ Launch the client manager software. For Buffalo client adapters, you can launch the client manager from your computers "tray" Icon, or from the Buffalo folder under the Programs menu.

▶ On the main Buffalo Client Manger screen, note Transfer Rate, Signal Quality, and Signal Strength indicators. These items will degrade the further your client computer are from the Router. Line of Sight obstructions or Radio Frequency interference can also cause signal loss and poor performance.
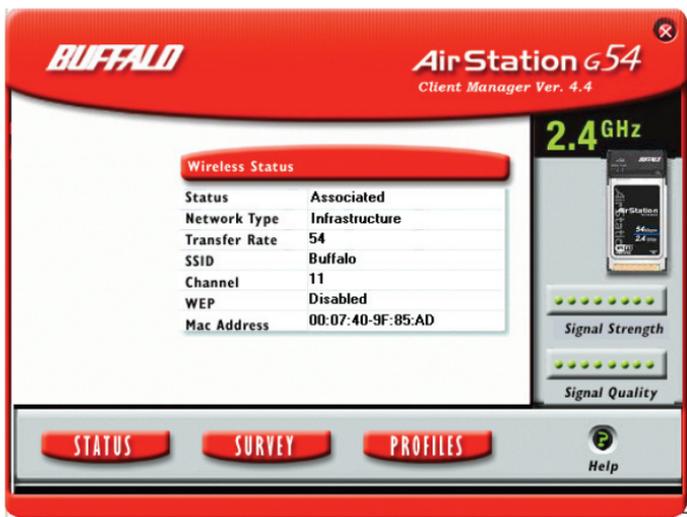
Check Signal Strength:

▶ Check Signal Strength and speed indications. If the signal is poor, you will have to adjust the position of the repeater, router, and/or your client computer. Some experimentation will be required to achieve desired results.

■ NOTE: Alternatively, to use your repeater to avoid obstructions between the router and the client computer, position your repeater so that there is a clear line of sight between the repeater and the router and a clear line of sight between the repeater and client computer, check signal strength as outlined above.

IMPORTANT *Certain Line of site obstructions between your router and repeater or between repeater and your PC can decrease signal strength.*

Backing Up and Restoring your Configuration

Backing Up

Your Buffalo Router/Repeater KIT comes preconfigured for WDS (Wireless Distribution System) which provides the repeating functionality and extended range for your wireless network. Should these preconfigured values be lost, so will the repeating functionality. Buffalo Technology highly recommends that you backup configuration settings on both the Router and Repeater using the following method:

> ◗ Ensure your computer is connected to the device you are backing up. This can be a wired or wireless connection.

> ◗ If you cannot access the device wirelessly for any reason, a direct wired connection will be required.

■ **NOTE**: See further information in this manual for details of connecting your computer to your router or repeater.

> ◗ Open your Web Browser and type in the IP address for the appropriate device in the address bar (See Device Pre-Configuration Settings at the end of this setup guide for the preconfigured IP address).

> ◗ Hit "go" or "return"

The Main Device configuration screen will appear:

■ **NOTE**: The screen shown below is the main configuration screen for The WBR-G54 only. The screen for your WLA-G54C with differ.
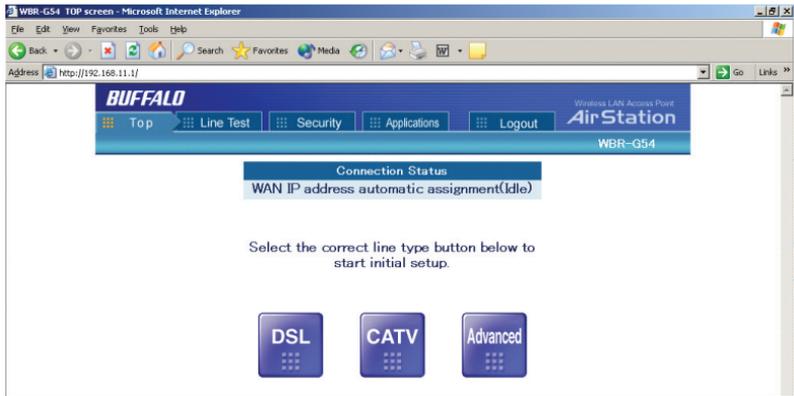
▶ Select the "Advanced" button

▶ Click on the Management link on the menu

▶ Click Save/Restore Settings link

The Save/Restore interface will open:
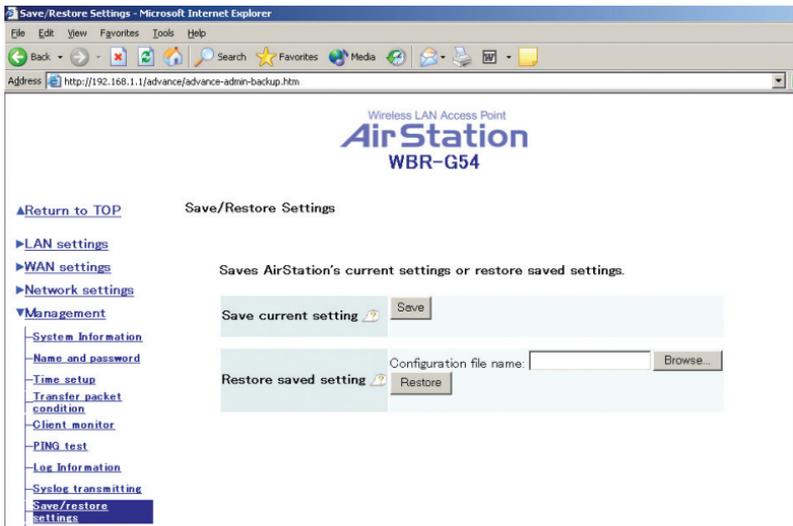
▶ Simply click on "Save" and you will be prompted for a location to save your device configuration file (this can be on your local machine or on a network share).

Restoring

▶ Navigate to the Save/Restore interface following the steps above.

▶ In the "Restore Saved Setting" section, either type in the location and file name or select browse to locate the configuration settings you saved previously.

▶ Click the restore button.

Device Pre-configuration Settings

These settings can be used to manually restore Kit settings should they be inadvertently lost.

WBR-G54 (Wireless Broadband Router)
IP = 192.168.11.1
Username = root
Password =
SSID = Buffalo
DHCP Server = Enabled
Scope = 192.168.11.2 – 192.168.11.16
Channel = 11
WDS = enabled
Wireless MAC ID of the WLA-G54C entered into the access list.

WLA-G54C (Wireless Compact Repeater Bridge)
IP = 192.168.11.254
Username = root
Password =
SSID = Buffalo
Channel = 11
WDS = Enabled
Wireless MAC ID of the WBR-G54 entered into the access list

WBR-G54 Specifications

Wireless LAN

Standards Compliance	802.11g (Wireless LAN standard) 802.11b (Wireless LAN Standard)
Frequency Range	2,412 - 2,462GHz
Transmission Rate	802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11b: 1, 2, 5.5, 11Mbps
Wireless Security	WPA, AES, TKIP, 802.1x, Intrusion Detector, 128/64-bit WEP, MAC address registration, Privacy Separator
Firewall	Dynamic Packet filtering, Intrusion Detector, NAT
Access Mode	Infrastructure Mode, WDS (Bridge/Repeater Mode)
Antenna	Diversity Method (Internal)
External Antenna Connector	MC
Output Power	15dBm (32mW)
Selectable Channels	11 Channels (3 non-overlapping)
Communication Protocol	Direct Sequence Spread Spectrum (DSSS), Half Duplex, OFDM

Wired LAN

Interface	IEEE802.3 (10 Base-T) /802.3u (100 Base-TX)
Transmission Rate	10 / 100 Mbps
Ports/Connector	Four (4) 10 / 100 Base-T RJ-45 ports (Auto MDI/X)
Transmission Encoding Method	10 Base-T Manchester coding; 100 Base-TX4B5B/MLT-3
Access Method	CSMA/CD
LAN to WAN Throughput	45Mbps
WAN Port/Connector	One (1) RJ-45 port
Power Supply	100-240V AC 50/60Hz DC 3.3V, 2.5A
Dimensions	W3 x H6.75 x D6.1in. (76 x 171 x 155mm)
Weight	1 lb. (445g)
Operating Environment	0-40˚ C, 20-80% humidity (non-condensing)

Communication Range

Speed	Indoor	Outdoor
54Mbps	65 ft. (20m)	165 ft. (50m)
18Mbps	195 ft. (60m)	490 ft. (150m)
11Mbps	245 ft. (75m)	590 ft. (180m)
1Mbps	410 ft. (125m)	1870 ft. (570m)

All distances are estimated. Wireless connections may be affected as physical conditions and circumstances vary.

WLA-G54C Specifications

Wireless LAN

Standards Compliance	802.11g (IEEE Wireless LAN Standard) 802.11b (IEEE Wireless LAN Standard)
Frequency Range	2,412 - 2,462GHz
Transmission Rate	802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11b: 1, 2, 5.5, 11Mbps
Security	Wi-Fi Protected Access™, AES, TKIP, 802.1x, WEP, password, MAC Address registration
Access Mode	Infrastructure Mode / WDS (Bridge/Repeater Mode)
Antenna	Diversity Method (Internal)
External Antenna Connector	MC
Output Power	15dBm (32mW)
Selectable Channels	11 Channels (3 non-overlapping)
Communication Protocol	Direct Sequence Spread Spectrum (DSSS), Half Duplex, OFDM
Interface	IEEE802.3 (10 Base-T / 100 Base-TX)
Wired Transmission Rate	10 /100 Mbps (Auto Sense)
Ports	One (1) 10 / 100 Base-T RJ-45 port
Access Method	CSMD/CD (Wireless) CSMD/CA (Wired)
Protocol	TCP/IP (HTTP)
Power Supply	AC 100-240V 50/60Hz - DC3.3V/2.5A
Dimensions	W2.3 x H4.8 x D3.5in (58 x 120 x 89mm)
Weight	4.4 oz. (100g)
Operating Environment	0-35˚ C, 20-80% humidity (non-condensing)

Communication Range

Speed	Indoor	Outdoor
54Mbps	65 ft. (20m)	165 ft. (50m)
18Mbps	195 ft. (60m)	490 ft. (150m)
11Mbps	245 ft. (75m)	590 ft. (180m)
1Mbps	410 ft. (125m)	1870 ft. (570m)

All distances are estimated. Wireless connections may be affected as physical conditions and circumstances vary.

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BUFFALO WARRANTY STATEMENT

Buffalo Technology (USA) product comes with a two-year limited warranty from the date of purchase. Buffalo Technology (USA) warrants to the original purchaser the product; good operating condition for the warranty period. This warranty does not include non-Buffalo Technology (USA) installed components. If the Buffalo product malfunctions during the warranty period, Buffalo Technology (USA) will, at its discretion, repair or replace the product at no charge, provided the product has not been subjected to misuse, abuse, or non-Buffalo Technology (USA) authorized alteration, modifications or repair.

When returning a product, include your original proof of purchase. Return requests cannot be processed without proof of purchase. Shipment of returned product to Buffalo Technology (USA) is the responsibility of the purchaser. All expressed and implied warranties for the Buffalo Technology (USA) product line including, but not limited to, the warranties of merchantability and fitness of a particular purpose are limited in duration to the above period.

Under no circumstances shall Buffalo Technology (USA) be liable in any way to the user for damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use the Buffalo products. Buffalo Technology (USA) reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity.

Please have your proof of purchase receipt to get warranty support. All defective products shall be returned to the original place of purchase with a copy of proof of purchase. **All RMAs are governed by the RMA policy or procedures of each individual reseller selling Buffalo WLAN products.** *In no event shall Buffalo Technology (USA) liability exceed the price paid for the product from direct, indirect, special, incidental, or consequential damages resulting from the use of the product, its accompanying software, or its documentation. Buffalo Technology (USA) does not offer refunds for any product.*

Buffalo Technical Support Information
(Please have your Proof of Purchase when calling Buffalo Technical Support)

[United States of America and Canada]

Buffalo Technology (USA) Inc,
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