# F5D8231-4 Operational Principle

## 1. FUNCTION DESCRIPTION

The Belkin F5D8231-4 Wireless-11N Router is a next generation Router with built-in wireless access point (AP), 4-port Fast Ethernet (10/100Base-T) switch for LAN, and 1 Fast Ethernet port for WAN connection. The Router operates on 2.4GHz frequencies, which conforms to the IEEE 802.11b/g wireless standards, and the draft 802.11n specification. The router features Atheros's draft-802.11n-compliant radio in 2x3 (TX/RX) configuration offering breakthrough performance and enhanced coverage to it's WiFi network. The Router is to be used with either a Broadband ADSL or Cable Modem via the WAN port to share broadband connections with up to 4 computers via the LAN ports and 32 computers via the WLAN. Each LAN port supports 10/100 Base-T Networks with auto sensing and switching compatibilities. The Router's Next Gen EZ install software operates on Microsoft's Windows 2000 and XP, and on Mac OS X. The Router can be configured through a web-browser interface. The product is designed for the home and small office and will be available through major retailers and online retailers.

The F5D8231-4 uses the Marvell 88F5180N CPU as the micro-controller and it offers a memory configuration of 4M Bytes Flash and 32MBytes DDR RAM

This device derives its power from a 12V DC power adapter which needs to be converted to 3.3V, 2.5V, 1.5V, 1.4V and 1.2V.

The functional requirements of the system are as follows:

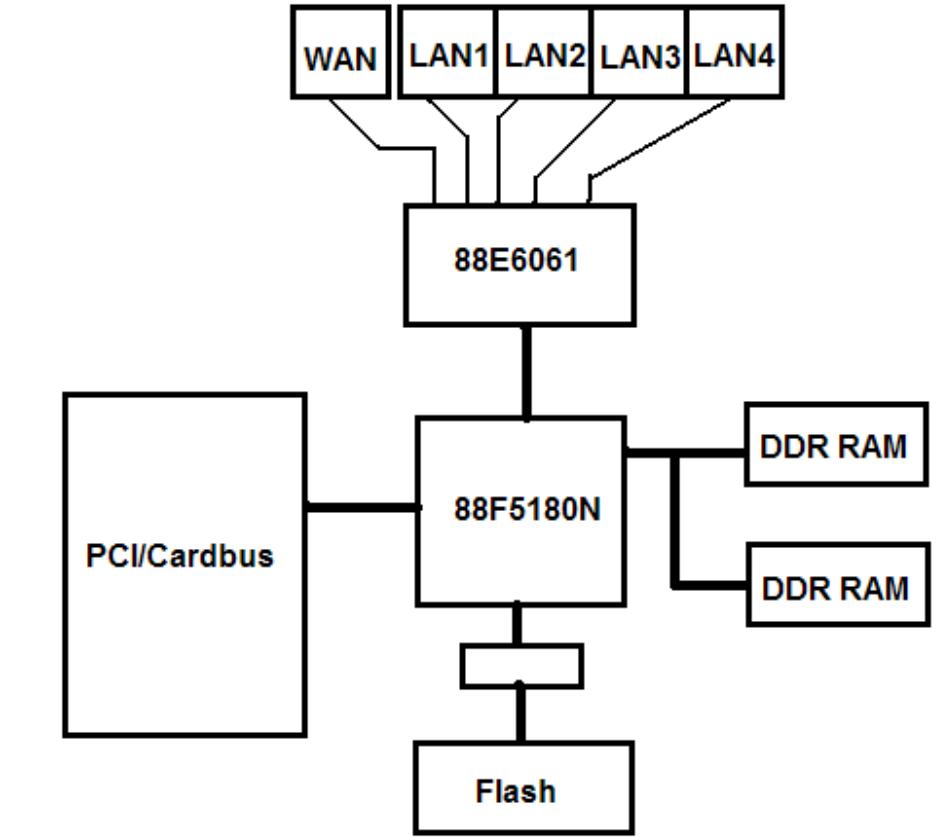
| | |
|---|---|
| 1. CPU | Marvell 88F5180n 333MHz |
| 2. CODE SIZE | 4Mbyte |
| 3. SDRAM | 32Mbytes |
| 4. Switch | Marvell 88E6061 |
| 5. WAN Port | One RJ45 port with auto negotiation |
| 6. LAN Port | Four RJ45 port with LED and auto negotiation |
| 7. Power Adapter | DC 12V/1.2A |
| 8. LEDs | Refer to Table 1 |
| 9. Reset button | Reset to factory default by pressing 5 seconds |
| 11. EMC | Class–B |
| 12. PCB Layout | 4 layers |

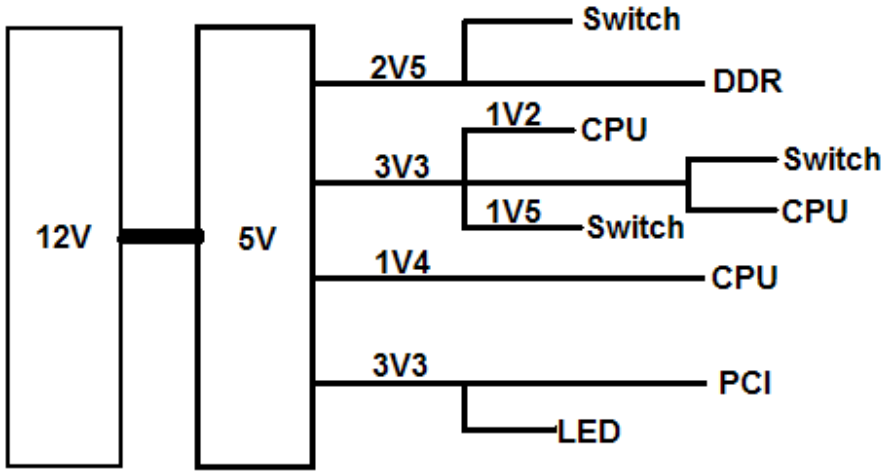
**Table 1: LED Table**

| Label | | Activity | Description |
|---|---|---|---|
| **Wireless Security** | | OFF | Wireless security is OFF |
| | | Solid Blue | Wireless security is ON |
| **Wireless Computer Status** | | OFF | Wireless computer is not present |
| | | Solid Blue | Wireless computer is connected to the Router |
| | | Blinking Amber | Problem with wireless computer connecting properly to the Router (Pending feasibility confirmation with ODM) Our suggestion now is when there is at least one wireless computer cannot access the router, then blinking amber. Need marvell's support to see if marvell driver can report some of wireless computer is power on, but has problem to associate. This may be not doable. |
| **Wired Computer Status** | | OFF | Wired computer is not present |
| | | Solid Blue | Wired computer is connected to the Router |
| | | Blinking Amber | Problem with wired computer connecting properly to the Router (Pending feasibility confirmation with ODM) Could have the same problem with the wireless computer. |
| **Router / Power Status** | | OFF | Router is OFF |
| | | Blinking Blue | Router is booting up |
| | | Solid Blue | Router is ON and ready |
| **Wireless Status** | | OFF | Wireless is OFF |
| | | Solid Blue | Wireless is ON |
| **Modem/WAN Status** | | Solid Blue | Router is connected to Modem and functioning properly |
| | | Blinking Amber | Problem with Modem (such as boot failure, etc.) |
| **Internet/Connected** | | Blinking Blue | Router is attempting to connect to the Internet |
| | | Solid Blue | Router is connected to the Internet |
| | | Blinking Amber | Router is NOT connected to the Internet |
| **LAN** | **LAN1** | Link/Act Green | Indicate that LAN is connected or there is data transaction |
| | | Speed | Indicate that the connect is 10baseT or 100baseT |
| | **LAN2** | Link/Act Green | Indicate that LAN is connected or there is data transaction |
| | | Speed | Indicate that the connect is 10baseT or 100baseT |
| | **LAN3** | Link/Act Green | Indicate that LAN is connected or there is data transaction |
| | | Speed | Indicate that the connect is 10baseT or 100baseT |
| | **LAN4** | Link/Act Green | Indicate that LAN is connected or there is data transaction |
| | | Speed | Indicate that the connect is 10baseT or 100baseT |

## 2. Block Diagram

The HW Block Diagram as below:

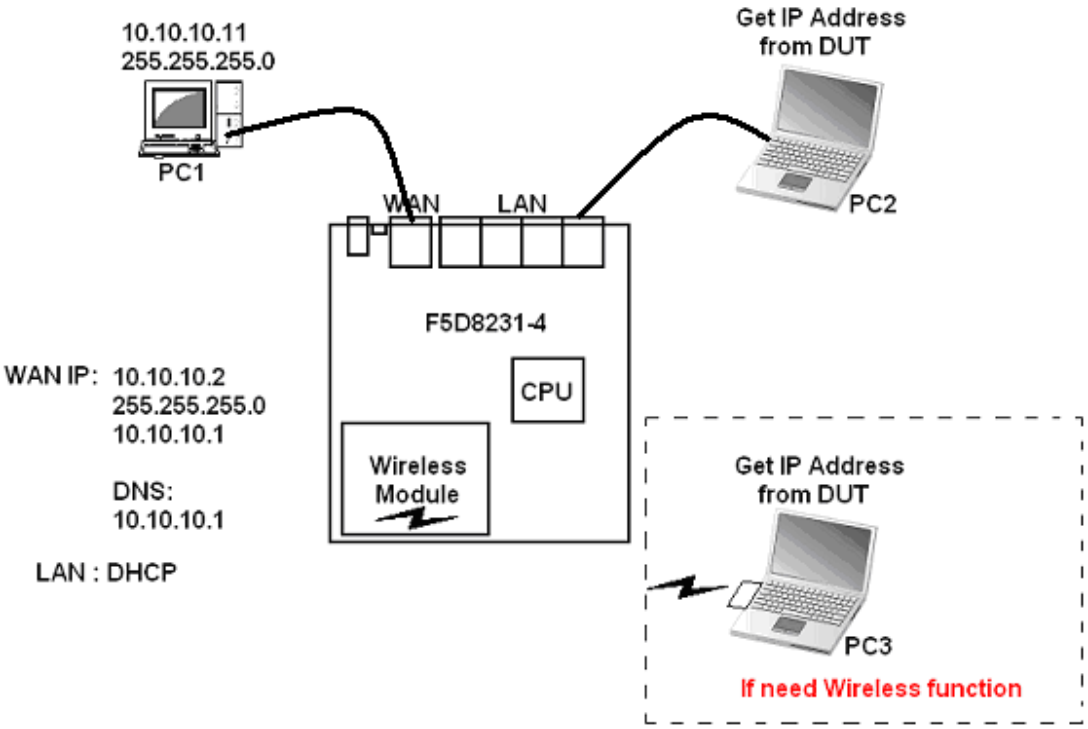


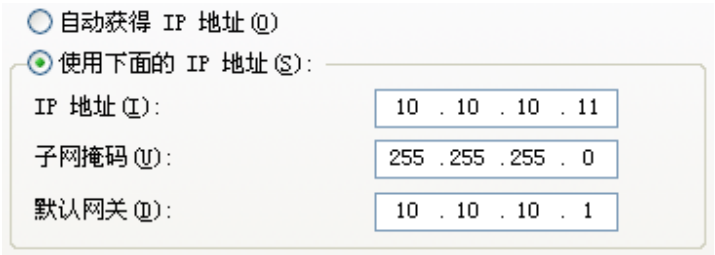

Operating Frequency in USA: 2412-2462 MHz
Operating Frequency in Europe: 2412-2472 MHz

## 3. Operational Principle

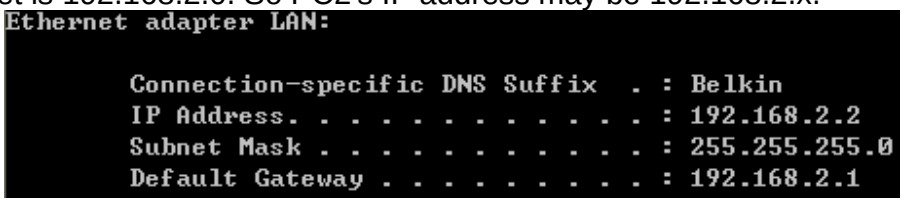
1). Power on the DUT, then connect WAN port with PC1 and LAN port with PC2.



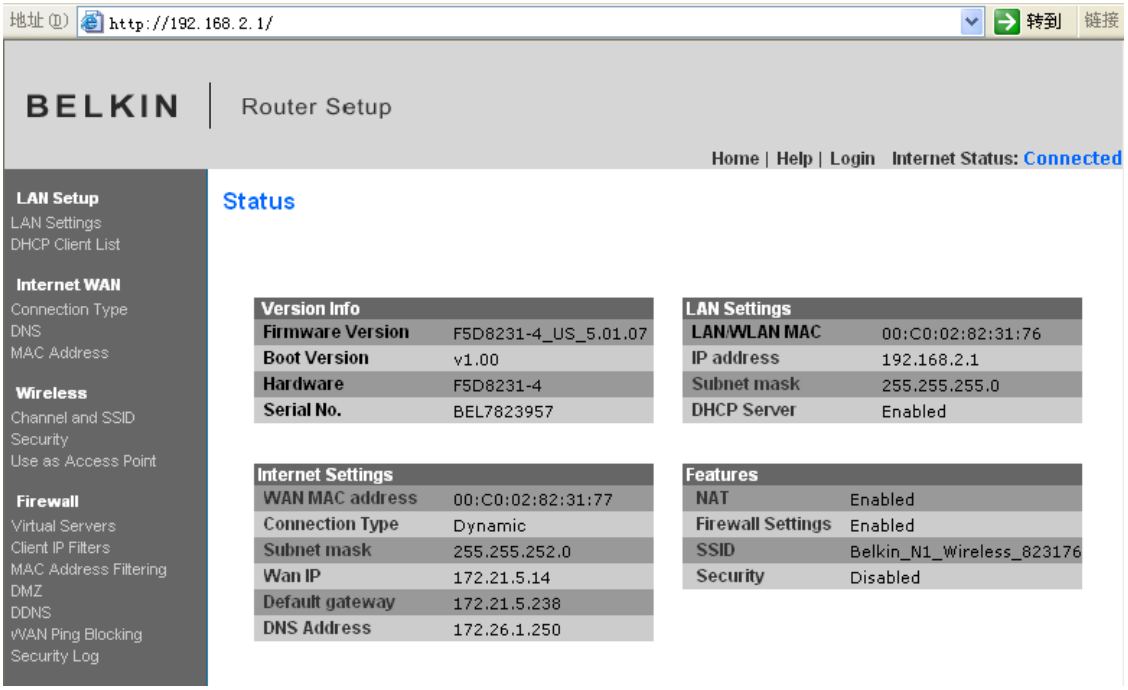

2). Set PC1(Connected with WAN) IP as:
IP Address:10.10.10.11;
Subnet Mask:255.255.255.0;
Gateway:10.10.10.1.



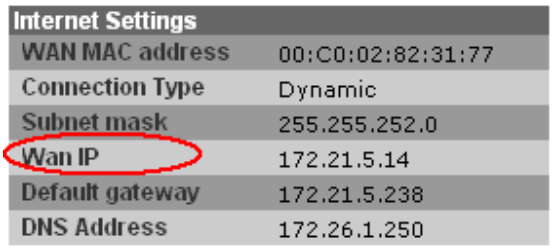

3). PC2(Connected with LAN) can get IP address from F5D8231-4 and the default IP subnet is 192.168.2.0. So PC2's IP address may be 192.168.2.x.



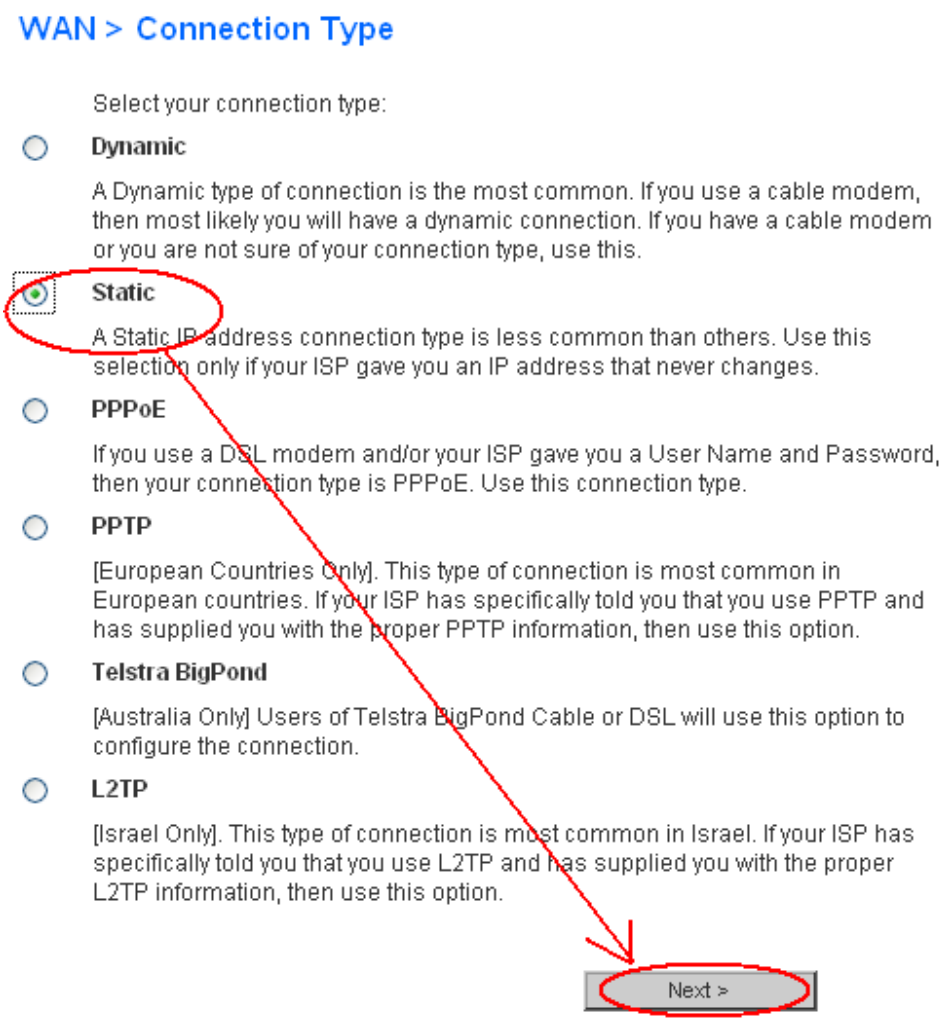
4). Open the Internet Explorer and type the Address: 192.168.2.1. Then press “Enter”.



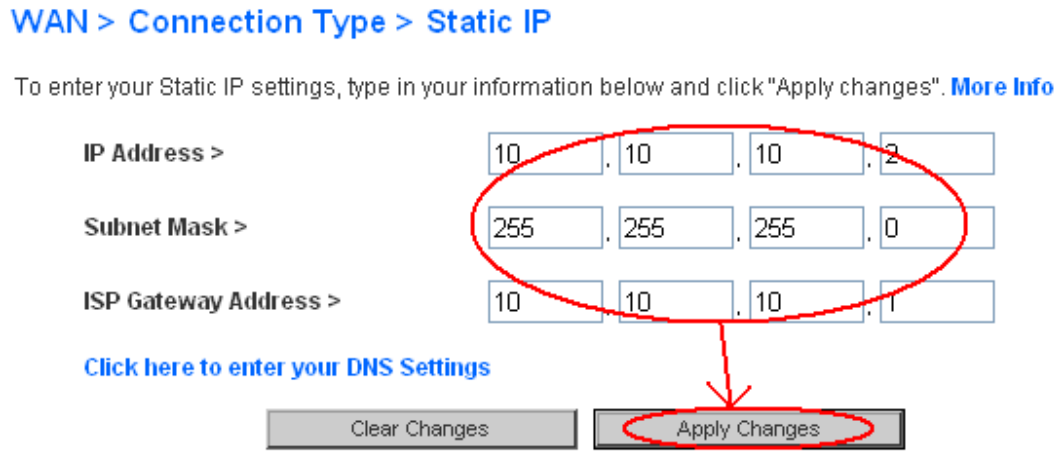

5)WAN Setting
Step1




Step2

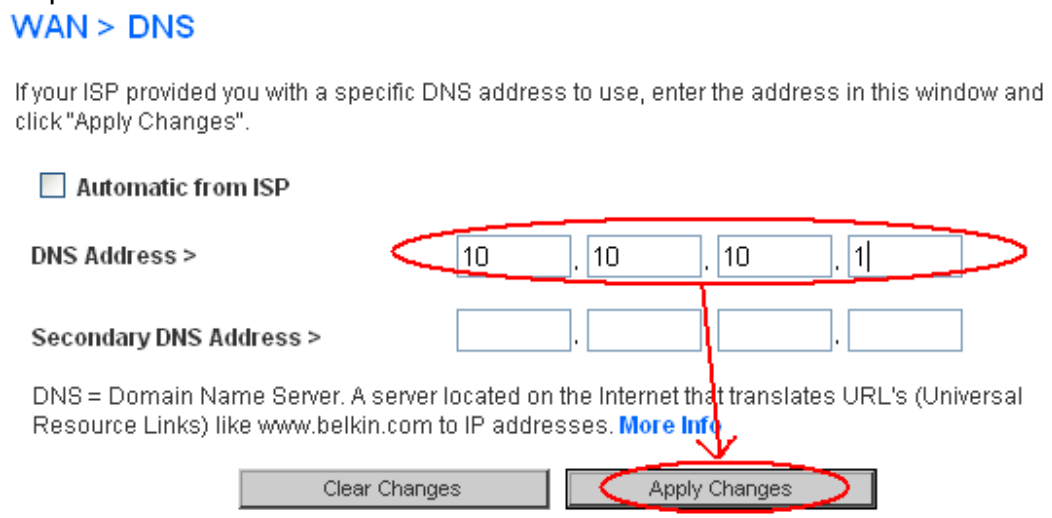

WAN > Connection Type
Select your connection type:
Dynamic
A Dynamic type of connection is the most common. If you use a cable modem, then most likely you will have a dynamic connection. If you have a cable modem or you are not sure of your connection type, use this.
Static
A Static IP address connection type is less common than others. Use this selection only if your ISP gave you an IP address that never changes.
PPPoE
If you use a DSL modem and/or your ISP gave you a User Name and Password, then your connection type is PPPoE. Use this connection type.
PPTP
[European Countries Only]. This type of connection is most common in European countries. If your ISP has specifically told you that you use PPTP and has supplied you with the proper PPTP information, then use this option.
Telstra BigPond
[Australia Only] Users of Telstra BigPond Cable or DSL will use this option to configure the connection.
L2TP
[Israel Only]. This type of connection is most common in Israel. If your ISP has specifically told you that you use L2TP and has supplied you with the proper L2TP information, then use this option.
Next >

Step3

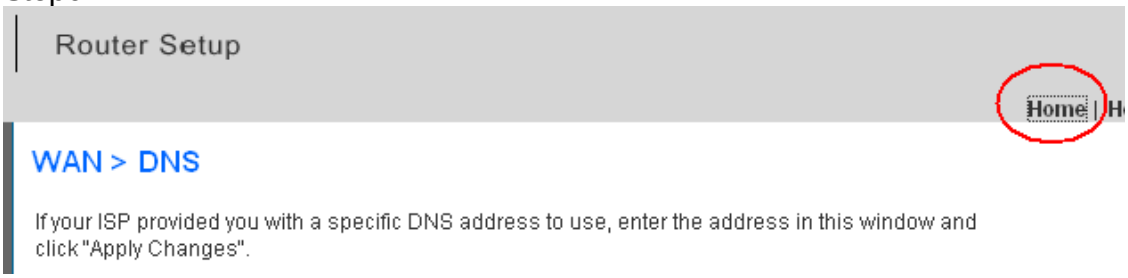

WAN > Connection Type > Static IP
To enter your Static IP settings, type in your information below and click "Apply changes". More Info
IP Address >
10 . 10 . 10 . 2
Subnet Mask >
255 . 255 . 255 . 0
ISP Gateway Address >
10 . 10 . 10 . 1
Click here to enter your DNS Settings
Clear Changes
Apply Changes

Step4

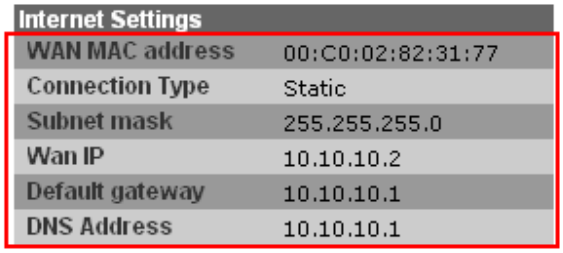

Step5




Step6




Step7→Completed

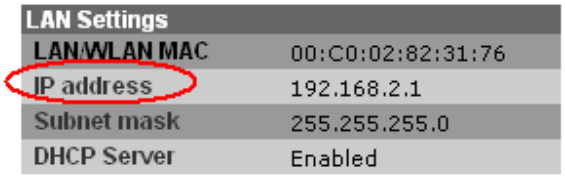


| Internet Settings | |
|---|---|
| WAN MAC address | 00:C0:02:82:31:77 |
| Connection Type | Static |
| Subnet mask | 255.255.255.0 |
| Wan IP | 10.10.10.2 |
| Default gateway | 10.10.10.1 |
| DNS Address | 10.10.10.1 |

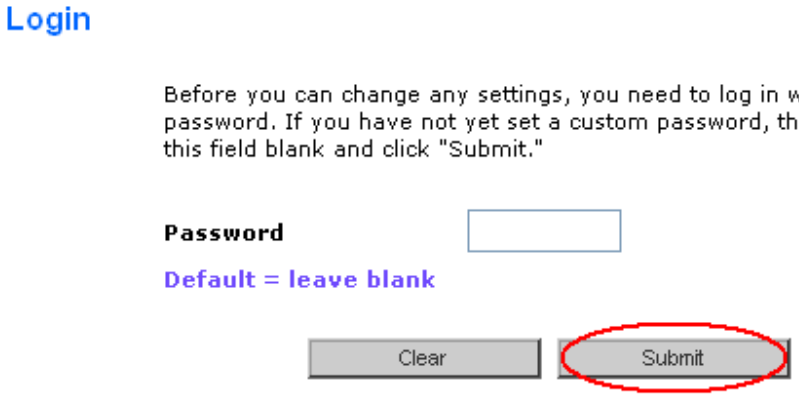
6). Then we can ping PC1 from PC2 (ping 10.10.10.11)

7). LAN subnet setting (If need)

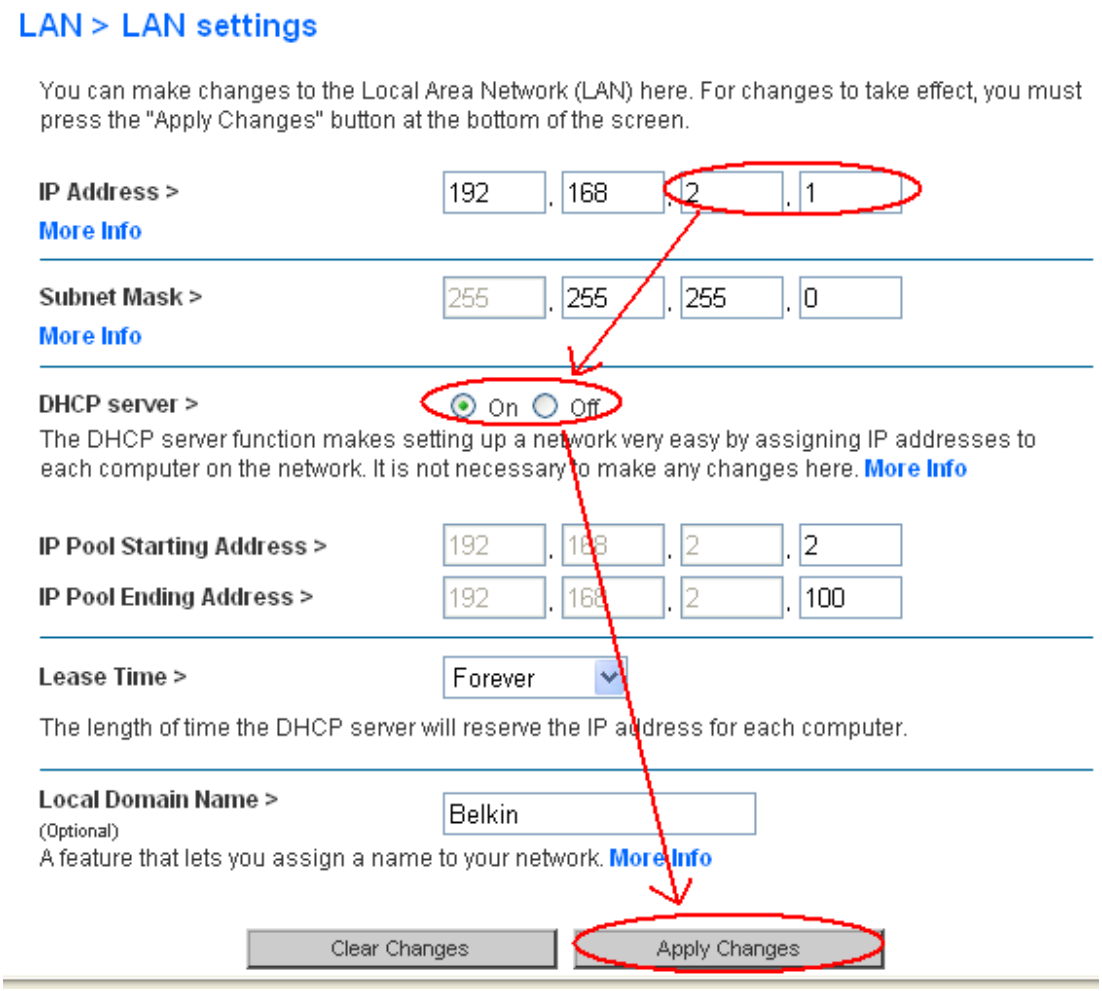
Step1


LAN Settings
LAN/WLAN MAC
00:C0:02:82:31:76
IP address
192.168.2.1
Subnet mask
255.255.255.0
DHCP Server
Enabled

Step2


Login
Before you can change any settings, you need to log in with a password. If you have not yet set a custom password, then leave this field blank and click "Submit."
Password
Default = leave blank
Clear
Submit

Step3

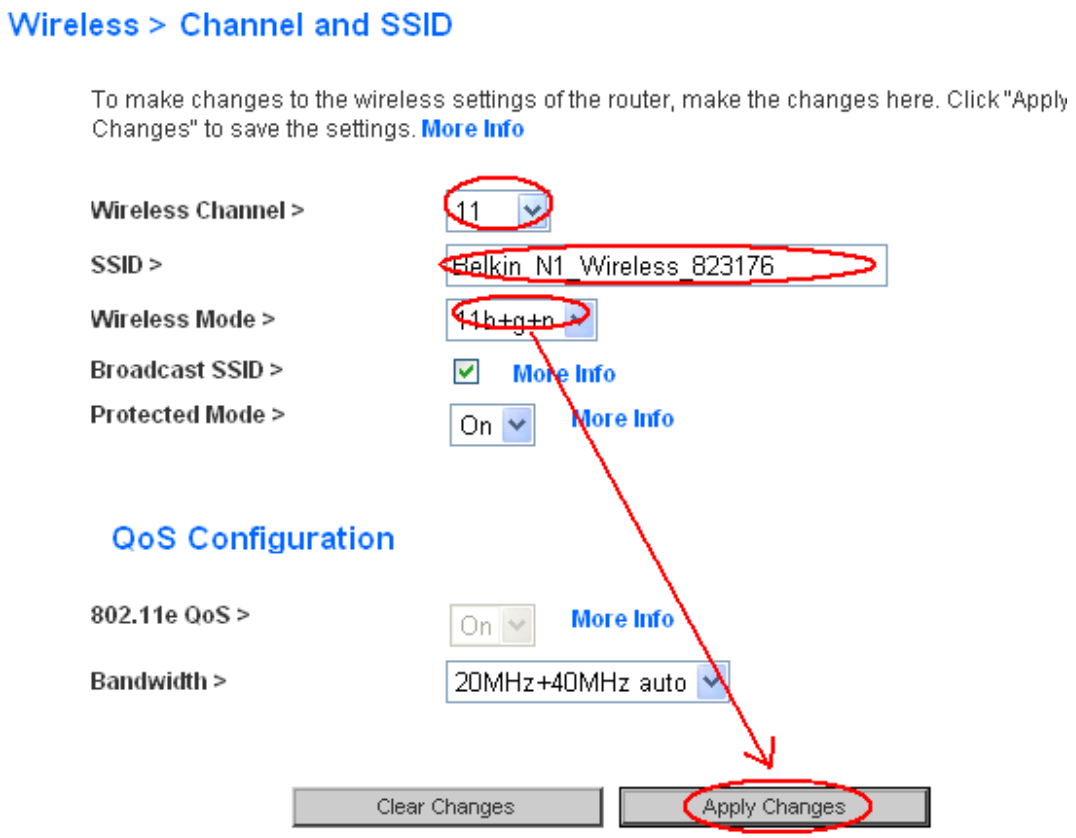



8). WLAN setting

Step1

| Features | |
|---|---|
| NAT | Enabled |
| Firewall Settings | Enabled |
| SSID | Belkin_N1_Wireless_823176 |
| Security | Disabled |

Step2




Step3
Then can use a PC3 with wireless module to connect with the DUT.