



PowerLink BT Manual

Hardware Overview

- Gigabit Ethernet Port - 1000/100/10MB
- 60W 48V PoE 8 wire, at/bt compatible.
- Power Button on Top
- Light on top
- 8 wire Power Over Ethernet LAN Port
- USB-C QC Charging system In/Out 18W
- Dual band WiFi 5 GHz/2.4 GHz

Quick Start

- Charge the Unit Fully
- Power-On PowerLink BT Device
- Use a short CAT5 cable to go between the LAN port on the PowerLink BT and the CPE.
- Connect to www.linktechs.net_5G or www.linktechs.net_2.5G SSID
- IP address should come from DHCP.
- Connect to your CPE using installation web/winbox or installation application.



Normally there is no need to login to the PowerLink, unless you wish to do some kind of special configuration, things like change VLANs, SSIDs, security etc. Most of the time the unit will be completely pass-through, and transparent bridging. Most manufacture applications prefer this.



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Features:

- Passive Power Over Ethernet Device, Tarana, Cambium, Ubiquiti, Mikrotik, etc.
- 48V - 60W - 8 wire PoE.
- Will power up 802.3at/bt
- WiFi dual band, 2.4 GHz – 5 GHz AC
- 21000mA/h 78W/h built in battery.
- Short-circuit, Overload, Temperature, Low Output Voltage protection.
- Automated preparation of CPE antenna, via Linux script
- OpenWRT / LEDe, HTML menu, working opkg repository.
- VLAN support
- Iperf3 -s always active
- Samba 3, for files and memory sharing, USB flash memory.
- 8 wire data, 8 wire PoE (Pin 3,6,4,5 +38V, Pin1,2,7,8 GND)
- USB-C QC in/out (QC2.0/QC3.0/FCP/AFC/SFCP/SCP/MTK PE+ 1.1&2.0/USB C DRP)
- One-year warranty.
- Accessory:
 - Hard Case
 - USB Cable
 - LAN Cable
- 510 grams
- 91x51x107mm
- MT7621 + MT7615 Dual Band Radio ,Gigabit LAN, chipset
- 128MB ram, 16MB flash
- Two PCB antennas, dual band.



Hardware

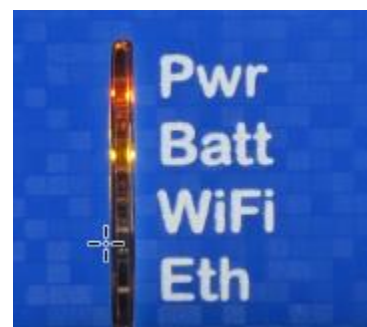
Basic Features

1. LAN Port + PoE
2. Reset Button
3. USB-C Power Input output
4. Power Button
5. LED Light
6. USB with Power Out



Front Buttons/LEDs

- The Pwr LED tells you if the router is powered on.
- The Green Battery light will blink if the unit is low on charge, or charging.
 - It will be solid if the unit is finished charging.
 - The red led is on when fast charge in/out is active (9V 2A)
- WiFi is on, when client are associated.
- Eth is on, when Ethernet are connected.



Functions

Top Button

This is the button on the top of the unit, next to the LAN and Power In port.

- One click – Turn on BT WiFi Router and PoE
- One click – Turn off BT WiFi Router and PoE
- Long click button – Turn on/off LED Light

Reset Button

The reset button is to either preform a firmware update or to factory Reset the unit. This is typically one of the major troubleshooting steps that

- Pressed during startup – firmware update
- Pressed for 30 seconds, when router is on – factory reset.



Customizing LEDS

All LEDs can be customized editing files on /root

- LED "Pwr" red/blue
 - Blink = Device is on
- LED "batt" red/green
 - While in Use
 - Green on = battery charged
 - Green Blink = battery not charged
 - During charging
 - Green Blink = battery on charge
 - Green On = battery fully charged
 - Red = fast charge in/out active (9V 2A)
- LED "WiFi" red/blue
 - Red = 5 GHz connected
 - Blue = 2.4 GHz connected
- LED "ETH" red/green/blue
 - Red = 10M
 - Green = 100M
 - Blue = 1000M

Timeout

- batt < 2.5V for 10 Sec
- PoE >= 60W for 1 Sec
- PoE < 5W for 3 min
- PoE < 35V for 100 mS
- Temp > 80°C for 10 Sec



Default IP/User/Password

To Connect to the device and change options, you can connect via web browser via <http://192.168.10.69> or SSH to the same IP address.

The default:

IP Address: 192.168.10.69

Username: root

Password: geva

Automatic CPE Preparation

/root/CpConf.sh	daemon for CPE configuration
/root/OnCpScript.sh	executed on the CPE for its configuration
/root/system.cfg	copied on the CPE for its configuration
/root/EthLED.sh	daemon that controls ETH LED
/root/WiFiLED.sh	daemon that controls WiFi LED
/root/LifeLED.sh	daemon that controls Life LED

On HTML page of router -> System -> Startup -> Local Startup

```
sh /root/WiFiLED.sh &
```

```
sh /root/EthLED.sh &
```

```
sh /root/LifeLED.sh &
```

```
iperf3 -s &
```

```
#!/root/CpConf.sh &
```

1. Remove comment (#) on the last line, for enable auto CPE conf.
2. Customize OnCpScript.sh for your requirement.
3. Copy your CPE configuration file, system.cfg
4. Examples work on the Ubiquiti AirOs CPE



Upgrading Firmware

3 available solutions

1. USB → Under 4gig capacity, formatted FAT32, firmware "BatteryPoE_at3_bt.bin"
 - Plug in USB, , PowerOff, press Reset.
 - Power-On PowerLink BT
 - During Startup the Firmware will be updated.
2. Use the Reset Button
 - Press Reset Button
 - Power-On PowerLink BT
 - When the Power LED blinks, you should be able to access the Firmware Page of uBoot via web at address <http://192.168.1.69/index.html>
 - Release reset once you access this page

FIRMWARE UPDATE

You are going to update firmware on the device.
Please, choose file from your local hard drive and click Update firmware button.

Nessun file selezionato

WARNINGS

- do not power off the device during update
- if everything goes well, the device will restart
- you can upload whatever you want, so be sure that you choose proper firmware image for your device

3. On HTML page of the router
 - system, backup, update.

DHCP-Server

Under Network → Interfaces, hit edit your interface and then you can go to DHCP Server. Here you configure options for DHCP Server.

VLANs

Under the Network → Switch, you have the ability to add VLANs to your configuration. What VLAN ID and what tag or untagged port it should come from.



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Web Interface

You can access the web interface by browsing to 192.168.10.69. The username is “root” and password is “geva”



Manual

Ver 5.0

Authorization Required

Please enter your username and password.

Username

Password

LOGIN

RESET



Status

The tight menu gives you the status page. This includes overview, Firewall, routes, logs, processes and graphing.

The Status page gives you Hardware, Firmware versions and uptime.

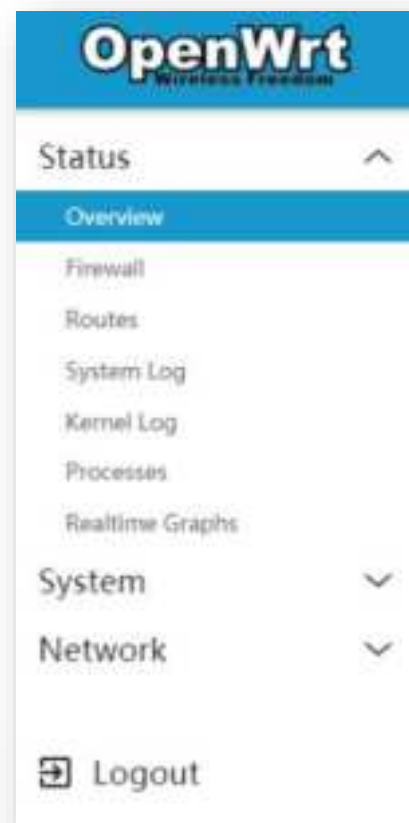
System	
Hostname	RouterPi4
Model	RouterPi4
Architecture	mips64le_mips64
Firmware Version	OpenWrt 19.07.5 r11287 (2020-05-12) (git-2020-05-12) (git-2020-05-12)
Kernel Version	4.14.200
Local Time	2021-05-26 17:31:40
Uptime	0h 4m 3s
Load Average	0.14, 0.17, 0.08

The network section tells you what is in-use and connected to the device.

Network

Protocol: Static address
Address: 192.168.1.69/24
Gateway: 192.168.1.1
DNS 1: 192.168.1.1
Connected: 0h 4m 34s

 **Device:** Bridge: "br-lan"
MAC-Address: F2:C4:08:C6:EA:62





Interface / Bridge

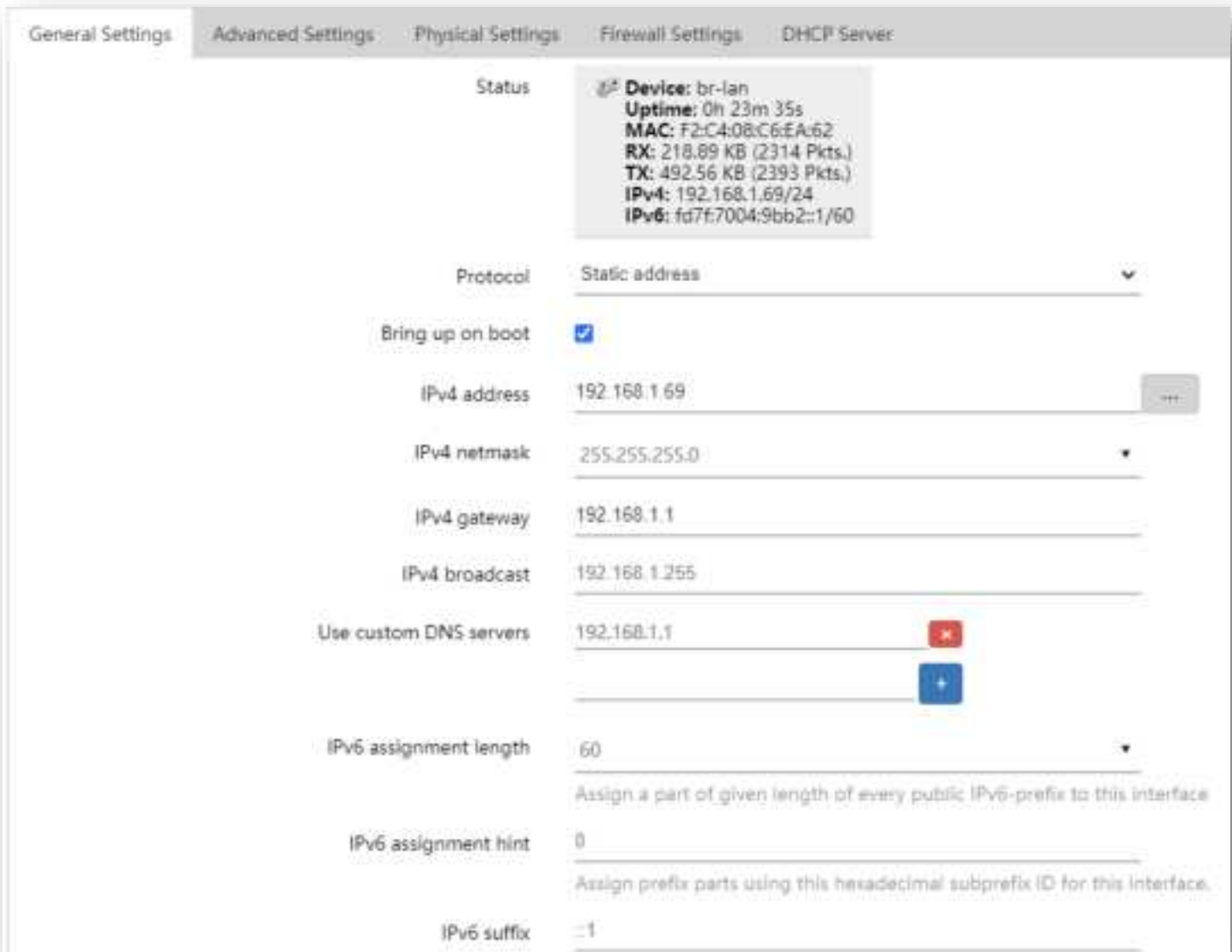
Under Network → Interfaces, you have the option to configure new interfaces and/or edit the existing. The default should be LAN, this is a br-lan bridge group.





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By clicking edit, you can edit the LAN interface, this will bring up the following menu options:



The screenshot displays a configuration window with tabs for General Settings, Advanced Settings, Physical Settings, Firewall Settings, and DHCP Server. The General Settings tab is active, showing the configuration for the 'br-lan' interface. The status section indicates the device is 'br-lan' with an uptime of 0h 23m 35s, MAC address F2:C4:08:C6:EA:62, and statistics for RX (218.89 KB, 2314 Pkts.) and TX (492.56 KB, 2393 Pkts.). The IPv4 address is 192.168.1.69 and the IPv6 address is fd7f:7004:9bb2::1/60. The protocol is set to 'Static address'. The 'Bring up on boot' checkbox is checked. The IPv4 address, netmask (255.255.255.0), gateway (192.168.1.1), and broadcast (192.168.1.255) are all configured. The 'Use custom DNS servers' checkbox is checked, with the DNS server set to 192.168.1.1. The IPv6 assignment length is 60, and the IPv6 assignment hint is 0. The IPv6 suffix is 1.

Field	Value
Status	Device: br-lan Uptime: 0h 23m 35s MAC: F2:C4:08:C6:EA:62 RX: 218.89 KB (2314 Pkts.) TX: 492.56 KB (2393 Pkts.) IPv4: 192.168.1.69/24 IPv6: fd7f:7004:9bb2::1/60
Protocol	Static address
Bring up on boot	☒
IPv4 address	192.168.1.69
IPv4 netmask	255.255.255.0
IPv4 gateway	192.168.1.1
IPv4 broadcast	192.168.1.255
Use custom DNS servers	☒ 192.168.1.1
IPv6 assignment length	60
IPv6 assignment hint	0
IPv6 suffix	1

Here, you have options to select what protocol you wish, this could be used on the ethernet or any other interface. The default option is static address, where the br-lan is statically configured.



PPP
PPPoATM
Static address
DHCP client
DHCPv6 client
PPtP
PPPoE
Unmanaged

Other options include; PPP, DHCP Client, or PPPoE. I would always recommend that you bring up the default interface statically as well as upon boot. NOTE, there is options here that can render the device not reachable, and then a factory reset would be the only option.

Under Physical Settings, you can tell that this interface is a bridge, enable STP and/or IGMP snooping, as well as select what interfaces you wish to bridge together. The image below is the default configuration.





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Change Password

To Change the PowerLink ATs default password, go to System → Administration. Here you can change the default password.

Router Password

Changes the administrator password for accessing the device

Password

Confirmation



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Switch

The different ports on this device can be combined to several **VLANs**, in which computers can communicate directly with each other. **VLANs** are often used to separate different network segments. Often there is the default one (VLAN 1) as a connection for the next greater network like the Internet and other ports for a local network.

Enable VLAN functionality ☒

VLANs on "switch0" (mt7620)

VLAN ID	CPU (eth0)	LAN
Port status:	1000baseT full duplex	1000baseT full duplex
1	tagged	untagged

[ADD VLAN](#)

[Save & Apply](#) [Save](#) [Reset](#)



Firewall

Firewall Status

IPTables Firewall

IPTables Firewall

HIDE EMPTY CHAINS

RESET COUNTERS

RESTART FIREWALL

Table: Filter

Chain *INPUT* (Policy: *ACCEPT*, 93 Packets, 6.01 KB Traffic)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options	Comment
542	29.98 KB	ACCEPT	all	lo	+	0.0.0.0/0	0.0.0.0/0	-	-
1.33 K	230.05 KB	input_rule	all	+	+	0.0.0.0/0	0.0.0.0/0	-	Custom input rule chain
1.24 K	324.04 KB	ACCEPT	all	+	+	0.0.0.0/0	0.0.0.0/0	state RELATED,ESTABLISHED	-

Chain *FORWARD* (Policy: *ACCEPT*, 0 Packets, 0 B Traffic)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options	Comment
0	0 B	forwarding_rule	all	+	+	0.0.0.0/0	0.0.0.0/0	-	Custom forwarding rule chain
0	0 B	ACCEPT	all	+	+	0.0.0.0/0	0.0.0.0/0	state RELATED,ESTABLISHED	-

Chain *OUTPUT* (Policy: *ACCEPT*, 76 Packets, 5.17 KB Traffic)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options	Comment
542	29.98 KB	ACCEPT	all	+	lo	0.0.0.0/0	0.0.0.0/0	-	-
1.70 K	1.11 MB	output_rule	all	+	+	0.0.0.0/0	0.0.0.0/0	-	Custom output rule chain
1.62 K	1.10 MB	ACCEPT	all	+	+	0.0.0.0/0	0.0.0.0/0	state RELATED,ESTABLISHED	-



Firewall - Zone Settings

The firewall creates zones over your network interfaces to control network traffic flow.

Enable SYN-flood protection ☐

Drop invalid packets ☐

Input accept

Output accept

Forward accept

Wireless

This section under status, gives you the wireless access point, SSID and encryption as well as the channel of radios0, this is the 2.4 GHz radio built into the PowerLink AT2. The radio1 would be if you have added the 5 GHz module into the unit.

Wireless

radio0	radio1
Type: 802.11bgn Channel: 1 (2.412 GHz) Bitrate: - SSID: www.linktechs.net Mode: Master BSSID: 00:0C:43:76:20:58 Encryption: None Associations: -	Type: 802.11bg Channel: 36 (5.000 GHz) Bitrate: - SSID: PowerLink_5Ghz Mode: Master BSSID: - Encryption: - Associations: -

Under Network → Wireless, you can configure the wireless interfaces:



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Once here you can click Edit to edit the WLAN you wish.

Here you have options to disable the radio interface, as well as set your network mode, channel, and width. You also have the option to select auto channel if you prefer.



The screenshot shows the 'Advanced Settings' tab of a wireless network configuration interface. The 'Status' section displays the following information: Mode: Master | SSID: www.linktechs.net, BSSID: 00:0C:43:76:20:58, Encryption: None, Channel: 1 (2.412 GHz), Tx Power: 20 dBm, Signal: 0 dBm | Noise: 0 dBm, Bitrate: 0.0 Mbit/s | Country: 00. Below this, a red 'DISABLE' button is visible. The 'Wireless network is enabled' section has a 'DISABLE' button. The 'Operating frequency' section shows Mode: N, Channel: 1 (2412 Mhz), and Width: 40 MHz. The 'Maximum transmit power' section shows 'driver default' with a dropdown arrow and a note: '- Current power: 20 dBm'. A descriptive text below states: 'Specifies the maximum transmit power the wireless radio may use. Depending on regulator reduced by the driver.'

The bottom section of the interface shows the 'Wireless Security' tab. It includes the following settings: Mode: Access Point, ESSID: www.linktechs.net, Network: lan (with a dropdown arrow), Hide ESSID: ☐, and WMM Mode: ☒. A note below the Network dropdown states: 'Choose the network(s) you want to attach to this wireless interface or fill out the customf'.

In advanced settings at the top, you can select your country you are operating in, therefore it will keep the power levels to the max your country supports. NOTE, if you have legacy 802.11b devices, you will need to check the box to allow 802.11b devices, else you can uncheck this. Please test to verify you are not using a legacy device.



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Under General Setup, you have options for what mode you wish to operate in, Access Point being the most common. Other options include client, ad-hoc, Monitor, and various WDS modes.

Changing SSID

You will change your SSID by going to Network → Wireless → select edit on the radio you wish to modify, then it will be under General Setup. Here you have ESSID, this is your SSID that will appear, if you wish to hide it or change the network that this interface operates off of you can do it here.

Access Point
Client
Ad-Hoc
802.11s
Pseudo Ad-Hoc (ahdemo)
Monitor
Access Point (WDS)
Client (WDS)

WPA2-PSK (strong security)
WPA-PSK/WPA2-PSK Mixed Mode (medium security)
WPA-PSK (medium security)
WEP Open System (weak security)
WEP Shared Key (weak security)
No Encryption (open network)

Securing Wireless

Under Network → Wireless → Wireless Security, you have options to select what security mode you wish to operate in. WPA2-PSK is the recommended. You will enter your network key under KEY

Isolating Clients

If you wish, you can click advanced settings under your wireless interface and select the check box to isolate clients.



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Appendix:

Samba3 and USB flash key

USB flash memory FAT32

mounted in /mnt/usbkey

Android and Linux shared as:

192.168.10.69/usbkey

Samba3 does not work with windows 10, but you can enable it. (Search in google)

Repository

If you set working gateway, repository work, and you can add the modules you need, for example to enable SAMA, GSM dongle, or other drives, the flash free is about xMb.

Cat5 Pinout



1,2,4,5 +48V
3,6,7,8 GND
8 wire LAN data

Application Notes

- Cannot connect Ethernet of this unit to router.
- During installation, charger not work.



Iperf3

Iperf3 is always running. You can run the following command:

```
iperf3 -c 192.168.1.69
```

On any Linux device, CPE, PC, etc.

This Ethernet Test:

```
root@PowerLinkAT:/# iperf3 -s
```

```
-----  
Server listening on 5201  
-----
```

```
Accepted connection from 192.168.1.30, port 50542
```

```
[ 5] local 192.168.1.69 port 5201 connected to 192.168.1.30 port 50544
```

[ID]	Interval		Transfer	Bitrate
[5]	0.00-1.02	sec	11.4 MBytes	93.5 Mbits/sec
[5]	1.02-2.01	sec	11.1 MBytes	94.2 Mbits/sec
[5]	2.01-3.01	sec	11.2 MBytes	94.1 Mbits/sec

```
-----  
[ ID] Interval          Transfer      Bitrate  
[ 5] 0.00-9.02    sec    106 MBytes  99.1 Mbits/sec
```

receiver

```
geva@PC: iperf3 -c 192.168.1.69
```

```
Connecting to host 192.168.1.69, port 5201
```

```
[ 5] local 172.20.207.228 port 37390 connected to 192.168.1.69 port 5201
```

[ID]	Interval		Transfer	Bitrate	Retr	Cwnd
[5]	0.00-1.00	sec	12.1 MBytes	101 Mbits/sec	0	225 KBytes
[5]	1.00-2.00	sec	11.4 MBytes	95.6 Mbits/sec	0	236 KBytes
[5]	2.00-3.00	sec	11.5 MBytes	96.1 Mbits/sec	0	236 KBytes
[5]	3.00-4.00	sec	10.9 MBytes	91.7 Mbits/sec	0	236 KBytes

```
-----  
[ ID] Interval          Transfer      Bitrate      Retr  
[ 5] 0.00-9.48    sec    107 MBytes  95.1 Mbits/sec      0  
[ 5] 0.00-9.48    sec     0.00 Bytes  0.00 bits/sec
```

sender
receiver

FCC Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this 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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0cm between the radiator and your body.