

Explanation about the Powerline Rate and Actual speed of the Powerline Adapters

Q&A of functional explanation or specification parameters

Updated 03-19-2021 08:09:18 AM 44286

This Article Applies to: ♥

Some customers may be confused about the declared speed on the box or specification of power line adapters on the TP-Link official website. However, the declared speed is the speed on the physical level that includes all of the data of the powerline protocol.

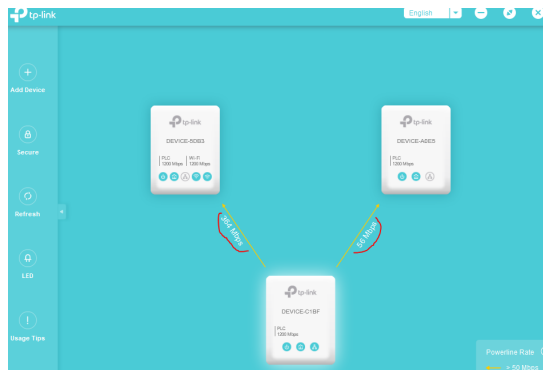
Let's take TL-WPA8630KIT(TL-WPA8630 & TL-PA8010) as an example:



AV1300 The Maximum Powerline speed

AV1300 is not the actual speed but the maximum powerline rate which will be shown on the tpplc utility. The powerline speed showing in tpplc utility will not reach 1300Mbps due to the interferes in the powerline environment.

We do two tests under some interferes as below, the Powerline speed between TL-WPA8630 and two TL-PA8010 can be only up to 364Mbps and 56Mbps. However, the conversion rate (The ratio of transmission rate and Powerline rate) is about 30%-35%(the actual conversion rate depends on the electric wiring system). So the actual throughput should be about 109Mbps-127Mbps.



Let's assume the Powerline speed between the TL-WPA8630 and TL-PA8010 is 1000Mbps in an ideal environment with few interferes, normally it will make an actual throughput of 300Mbps-350Mbps. This rule basically applies to all Home Plug AV products.

Note:

1. AV600(TL-WPA4010KIT) powerline adapters have a powerline rate of 500 Mbps in an ideal environment and they should have a throughput about 150Mbps-175Mbps theoretically, but their throughput should not spike more than 100 Mbps, since they only have an Ethernet port of 10/100 Mbps. Therefore, if the powerline rate of AV600 powerline adapters is higher than 200 Mbps, customers could get a speed of about 100 Mbps with our AV600 powerline adapters.
2. Some Powerline adapters work with HomeplugAV standard, however, the HomeplugAV2 powerline adapters which use MIMO technology would have a lower conversion rate. For example, If the powerline rates on Utility could reach to 400 M, then according to the conversion rate we mentioned, the throughput of the HomeplugAV powerline adapters would be around 120Mbps-140Mbps. But HomeplugAV2 powerline adapters that use MIMO technology would have a lower conversion rate.

AC1350 the maximum wireless link rate

The rate AC1350 on the box is the maximum wireless link rate that your client can communicate with the router, also called wireless negotiation rate, which is the physical rate derived from IEEE Standard 802.11 specifications. It will vary as a result of many factors, please refer to [here](#) to know more details.

If you have more questions except for the speed, please refer to [here](#).

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What can I do if my powerline rate is very low?

User Application Requirement

Updated 07-20-2021 08:41:55 AM  151573

This Article Applies to: 

Power line products in general, transmit data through the power line of your house. The power line rate is mainly decided by the quality of the power line environment it's operating in. When your power line rate is low, you may try the steps below to improve the quality of service.

Step 1:

Are your powerline adapters plugged into a power strip or surge protector? If yes, unplug them and reconnect the adapters to wall outlets

Step 2:

Please check whether any devices use electricity to power a motor around the powerline adapters. Devices such can be, air-conditioners, washing machines, fans, kitchen appliances, etc. If possible move these devices or move the powerline adapter. If not possible these devices can be plugged into a surge protector to avoid interfering with the Powerline Adapters.

Step 3:

AC power adapters that are used for mobile phones, laptops, etc. can cause noise on the power line. If the line has noise, that can affect the performance of the powerline adapters. Please move the AC power adapters away from the powerline adapters.

Step 4:

The maximum distance range is 300 meters. However, with noise, interference, and line quality the range the powerline adapter can reach may be reduced. Try moving the remote unit closer to the base unit and test for improvement in transmission rates.

Related Articles:

[What should I do if the internet connection is slow when the device is connected to TP-Link Powerline Adapters?](#)

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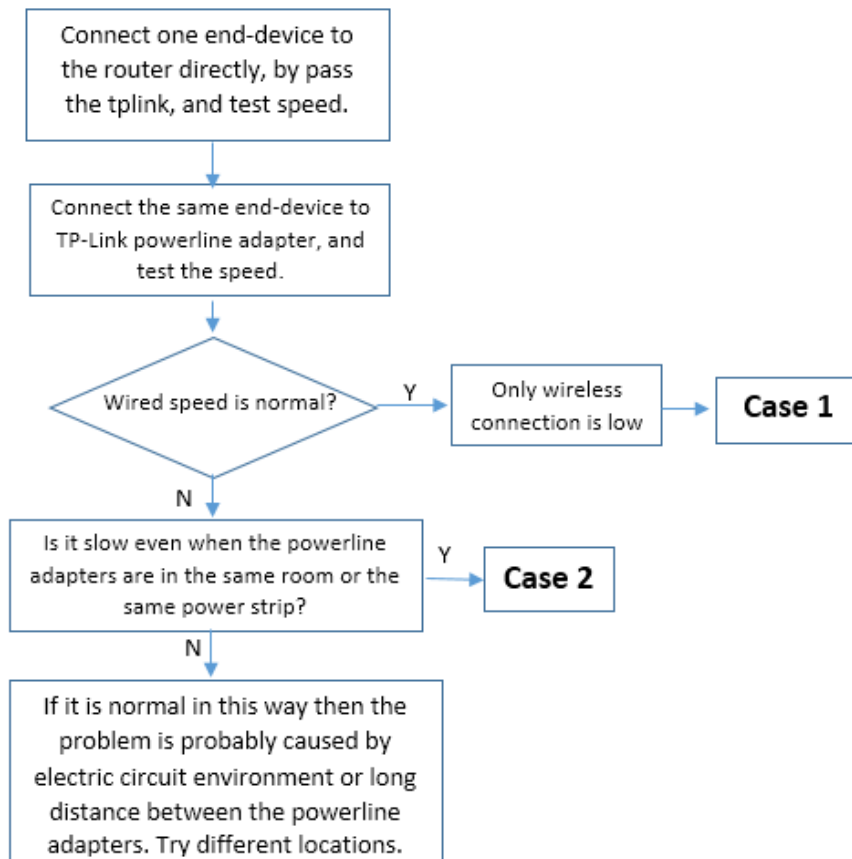
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What should I do if internet connection is slow when the device is connected to TP-Link Powerline Adapters?

Troubleshooting

Updated 07-20-2021 08:39:43 AM 131552

End-device means computer, laptop, mobile phone, etc.



Case 1

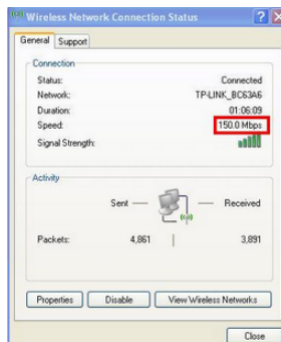
Step 1

Connect your end-device to the TP-Link by Wi-Fi without doing any high bandwidth activities and test the speed Speedtest® (www.speedtest.net). **Take screenshot of test result.**

Step 2

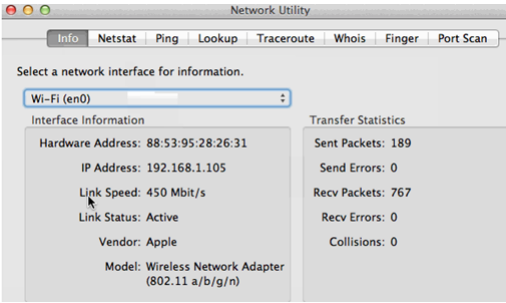
Check and **take screenshot** wireless link speed (Skip to next step if you don't know where to find it).

For Windows,



For Mac OS

Make sure you select network utility. Select Info tab and choose Wi-fi (en0 or en1) on the drop-down options. Please note that the Link Speed is your wireless connection speed. In this example, my connection speed is set to 450 Mbit/s (Mega bits per seconds).



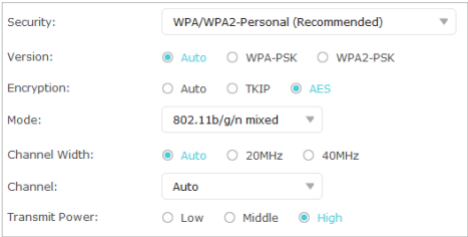
Step 3

Login web-based management interface of the wireless powerline extender (click [here](#)). Go to **Wireless > Settings** page, change Channel Width 2.4GHz→40MHz, 5GHz→80Mhz.

Step 4

The problem occurs on 5GHz or 2.4GHz? If end-devices support 5GHz as well, connect to 5GHz to check if it's better or not.

For 2.4GHz, change the Channel (channels 1, 6 and 11 are generally best, but any channel can be used, please try a few more channels). A wireless channel determines which operating frequency will be in use. It is not necessary to change the channel unless you're noticing interference problems with nearby wireless networks.



Step 5

Contact TP-Link support with the above results and let us know the number of your end-devices and their operating systems.

Case 2

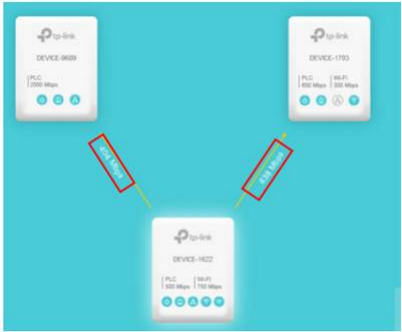
Step 1

Install TP-Link tpPLC utility (click [here](#)). Upgrade the PLC adapter and wired part of PLC Extender to the latest firmware (click [here](#)).

If it's still slow, go to next step.

Step 2

Check powerline rate between powerline adapters on the utility. Send screenshot or tell us what it is.



Step 3

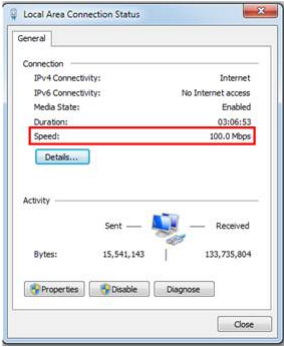
a. Connect only one end-device to the TP-Link via cable, and test the speed Speedtest® (www.speedtest.net) three times without doing **any high bandwidth activities like P2P download. Take screenshots.**

b. **Connect the same end-device to your router and test the speed in the same way.**

Step 4

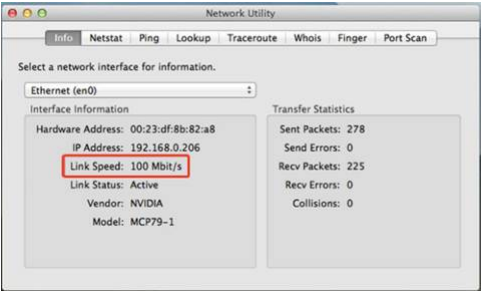
Check wired link speed of end-device (skip if you don't know where to find it).

For Windows,



For Mac OS

Locate the Network Utility on your mac: Applications > Utilities > Network Utility. Alternatively, search Network Utility in Spotlight Search.



Step 5

Contact TP-Link support with the results above.

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