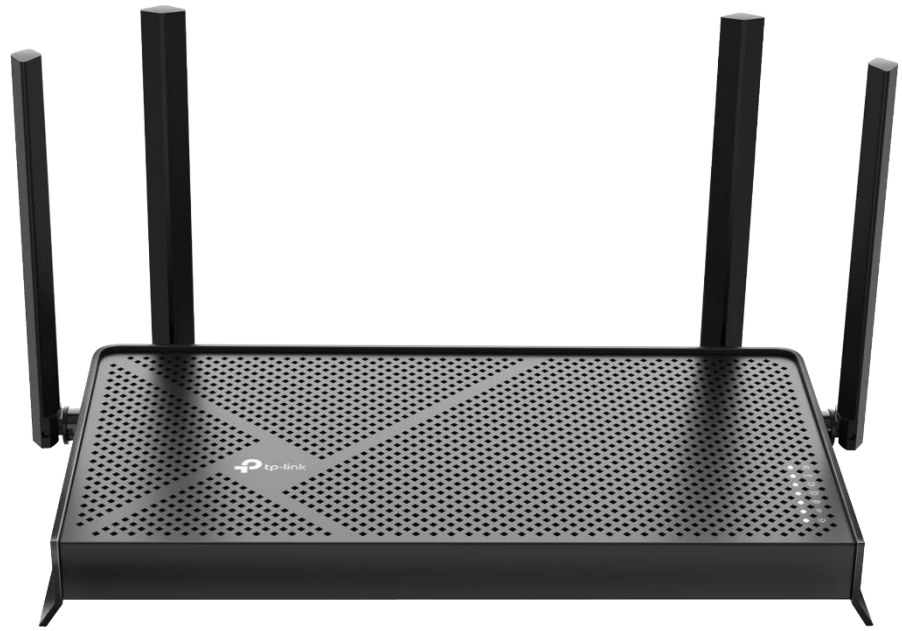
REVIEWER'S GUIDE

Archer BE230

BE3600 Dual-Band Wi-Fi 7 Router



TEST OVERVIEW

In this document, we will introduce how we suggest testing the Archer BE230 and for reference, we provide the test results that we produced in our laboratory and test house.

- **PART 1. Wi-Fi Peak Performance**

  Test the peak Wi-Fi performance with Wi-Fi 7 client. When testing with Wi-Fi 7 Client (Intel BE200), Archer BE230's Wi-Fi peak performance exceeds that of a Wi-Fi 6 router.

- **PART 2. Wi-Fi Coverage**

  In a simulated home environment, Archer BE230 has powerful Wi-Fi 7 coverage performance.
  Note: The test results are based on Wi-Fi 6E clients.

- **PART 3. WAN Peak Performance**

  Archer BE230's bi-directional WAN peak performance is twice that of a Wi-Fi 6 router.

- **PART 4. USB**

  Test the USB function.
  Archer BE230 owns reliable USB capability, allowing users to conveniently transfer large files of varied formats.

- **PART 5. VPN Server & Client**

  Archer BE230 has power VPN performance. Whether serving as a VPN server or client, the transmission speed of Archer BE230 is significantly higher than a Wi-Fi 6 router.

SUGGESTED EQUIPMENT AND TOOL

SERVER / CLIENT PC

CPU: Intel i5-9400

RAM: DDR4 16G

10Gbps Wired Network Adapter: TP-Link TX401, XG-C100C

Wi-Fi 6E CLIENT

Intel AX210, Driver Version: 22.200.0

Intel AX211, Driver Version: 23.10.0.8

Google Pixel 8

Wi-Fi 7 CLIENT

Intel BE200 , Driver Version: 23.30.0.6

For now, the MLO network of Intel BE200 cannot work with a channel width of 320MHz.
Note: Intel BE200 used during our test is a beta version, and advanced features such as 5&6GHz MLO will be supported in subsequent versions.

- If you use iPerf 3 as the testing tool, please refer to APPENDIX for how to run iPerf 3 on an Android phone.

Test Routers

TP-Link Archer BE230(EU)1.0

TP-Link Archer AX55 Pro(EU) 1.0

TP-Link Archer AXE75 (EU)1.0

TESTING TOOLS

iPerf 3

Download via the link below and refer to APPENDIX for installation details.

https://iperf.fr/iperf-download.php

- Client Command:

  iperf3 -c [Server IP Address] -P 20 -w 2M -t 60

- Analiti app:

  iperf3t://[Server IP Address]?P=20

IxChariot 6.7

Download and install it via the link below.

https://support.ixiacom.com/support-overview/product-support/downloads-updates

- TCP Stream Pairs for Ethernet Client: 150
- TCP Stream Pairs for Wi-Fi Client: 40
- Script for Ethernet Client : High_Performance_Throughput.src
- Script for Wi-Fi Client: High_Performance_Throughput.src
- Duration: 60 seconds

Ookla SpeedTest

A popular website for testing real Internet speed.

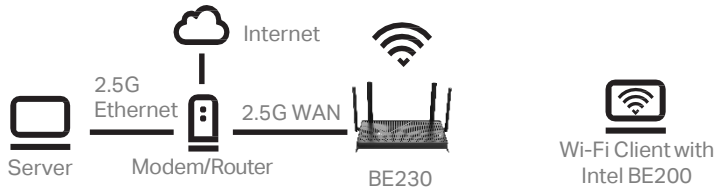
https://www.speedtest.net/

PART 1. Wi-Fi Peak Performance

TEST FOCUS

Test the peak Wi-Fi performance of Archer BE230 using Wi-Fi 7 client (Intel BE200), and compare it with Archer AX55 Pro.

TEST TOPOLOGY



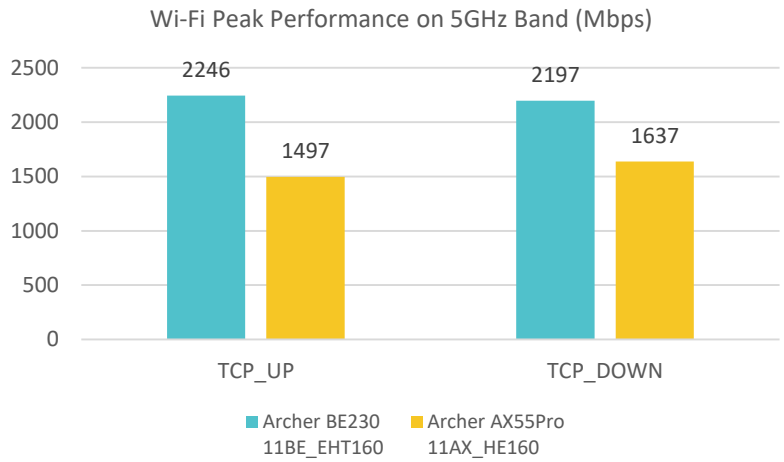
If the Modem/Router doesn't support 2.5Gbps Ethernet, please connect the Server to the router's 2.5Gbps LAN port instead.

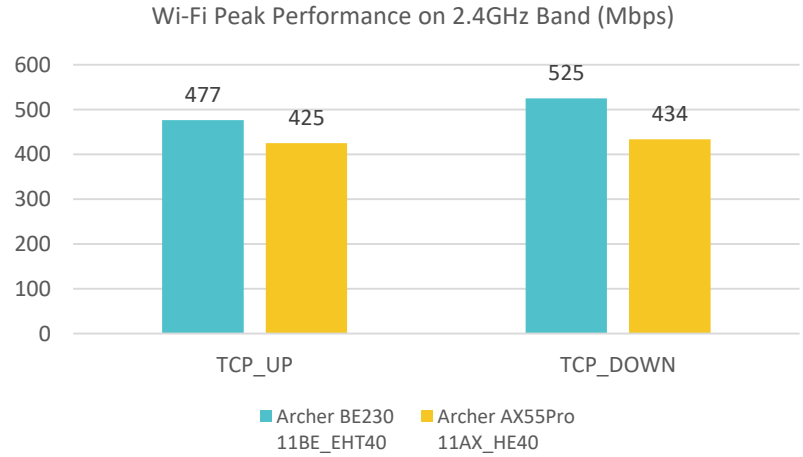
TEST STEPS

1. Log into the web management page of Archer BE230, go to **Wireless**, set the 2.4GHz Channel Width to 40MHz, and set the 5GHz Channel Width to 160MHz.
2. Connect the Wi-Fi Client (with Intel BE200) to the **2.4GHz and 5GHz bands** of the router accordingly. The distance between the router and the client is about **1-2 m**.
3. Run **40 streams** throughput test between the Server and the Client for **60 seconds**.

If you are using a wired PC as the client, you should connect a **2.5G or above** Ethernet adapter to it, and then connect to the router.

TEST RESULT





- When testing with Wi-Fi 6E Client (Intel BE200), Archer BE230's Wi-Fi peak performance exceeds that of Archer AX55 Pro in both the 5GHz and 2.4GHz bands.

PART 2. Wi-Fi Coverage

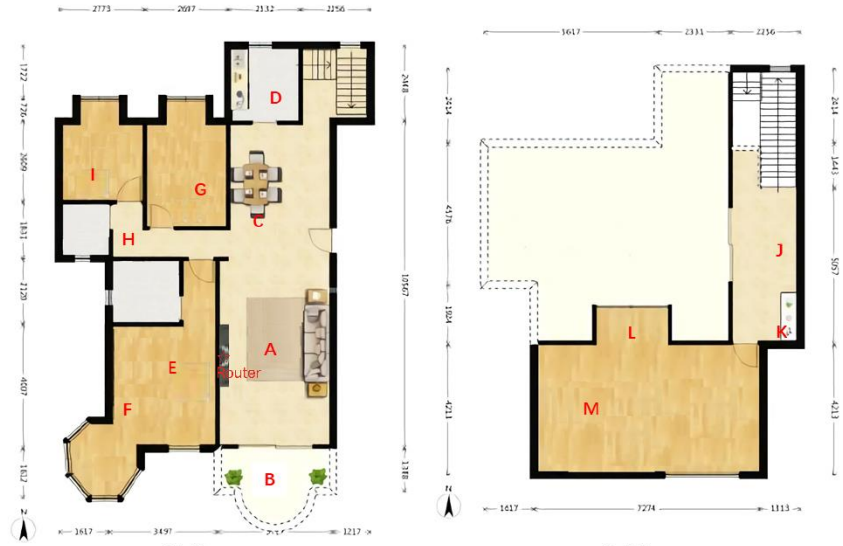
TEST FOCUS

With Wi-Fi 6E clients (Intel AX211 and Google Pixel 8) in a home environment, test the router's Wi-Fi coverage and compare it with Archer AX55 Pro.

TEST TOPOLOGY

Our test data was taken on a 5Gbps AT&T Internet line using Ookla Speed Test. If there is no line above 5Gbps, Wi-Fi performance can be tested on the LAN using a tool such as iPerf3.

TEST ENVIRONMENT



1st Floor　　2nd Floor

TEST RESULTS

- In a simulated home environment, Archer BE230 has powerful Wi-Fi 7 coverage performance which exceeds Archer AX55 Pro.
- Wi-Fi coverage performance comparison with **Intel AX211** as the tested client:
  - 5GHz (download & upload): **Archer BE230** > Archer AX55 Pro
  - 2.4GHz (download & upload): **Archer BE230** > Archer AX55 Pro
- Wi-Fi coverage performance comparison with **Google Pixel 8** as the tested client:
  - 5GHz (download): **Archer BE230** > Archer AX55 Pro
  - 5GHz (upload): **Archer BE230** ≈ Archer AX55 Pro
  - 2.4GHz (download & upload): **Archer BE230** > Archer AX55 Pro

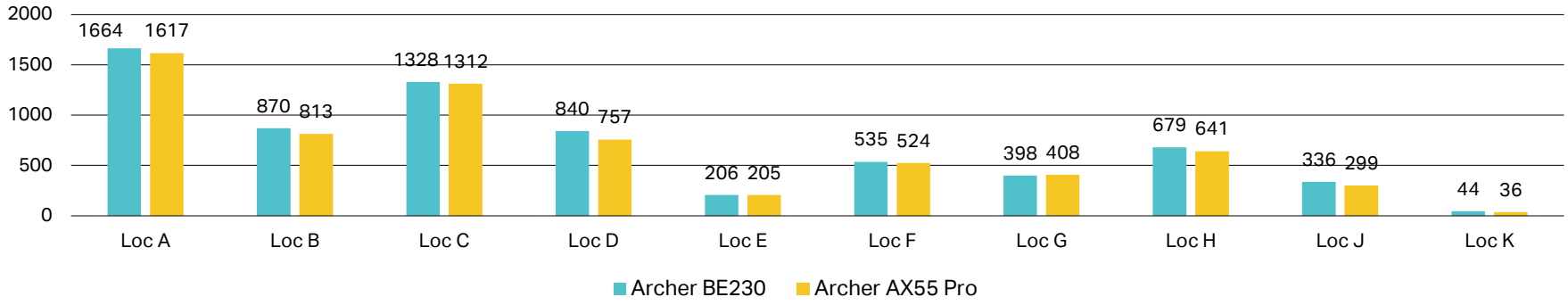
Detailed statistics are displayed in the following pages.

PART 2. Wi-Fi Coverage

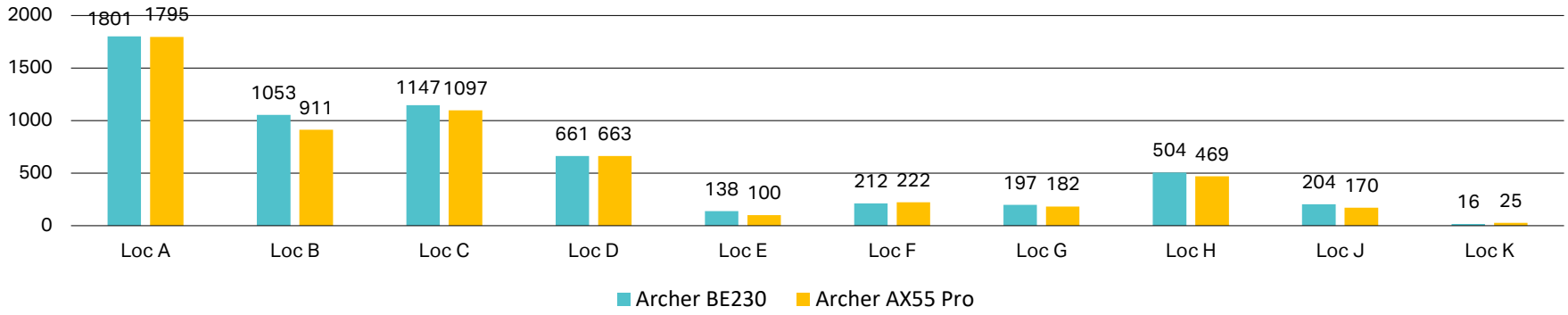
TEST RESULT: 5GHz_160M_CH40_Download & Upload

- **Client: Intel AX210**

5GHz Wi-Fi Download Performance (Mbps)



5GHz Wi-Fi Upload Performance (Mbps)

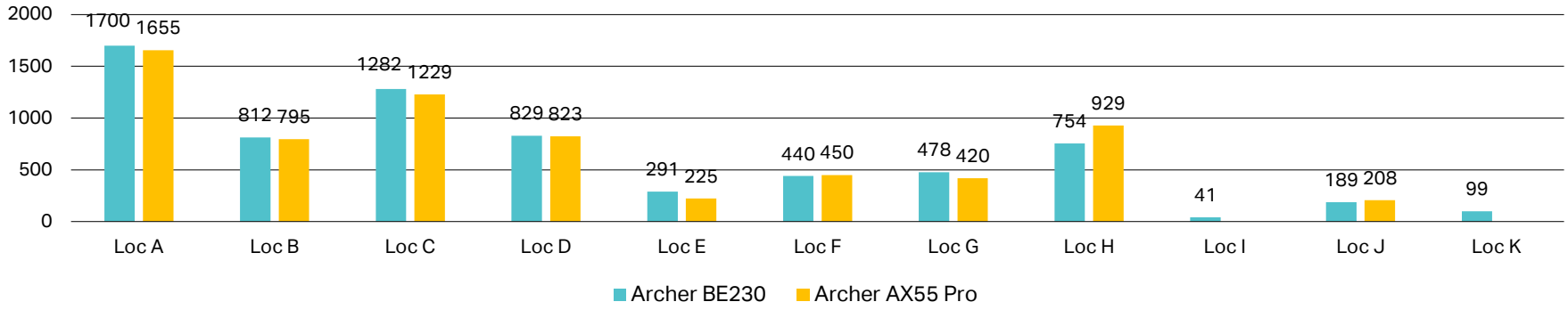


PART 2. Wi-Fi Coverage

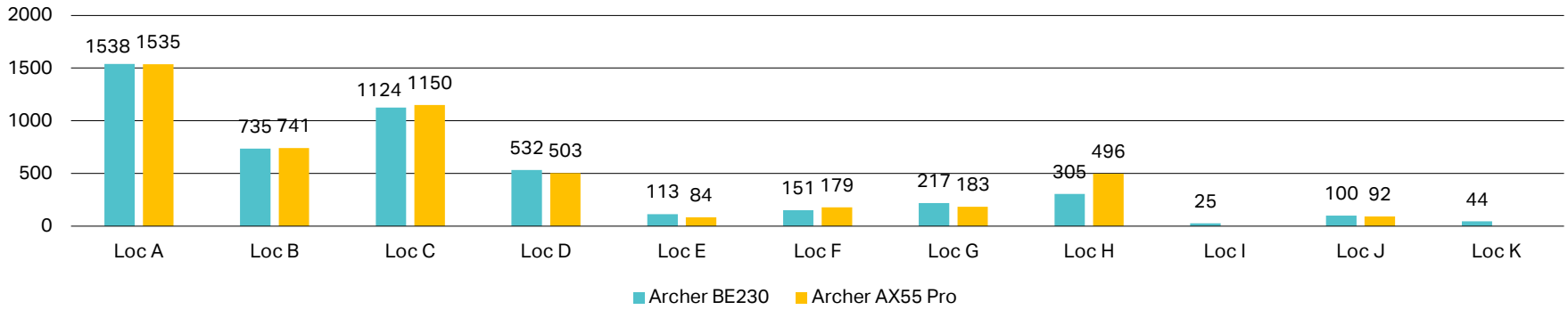
TEST RESULT: 5GHz_160M_CH40_Download & Upload

- **Client: Pixel 8**

5GHz Wi-Fi Download Performance (Mbps)



5GHz Wi-Fi Upload Performance (Mbps)

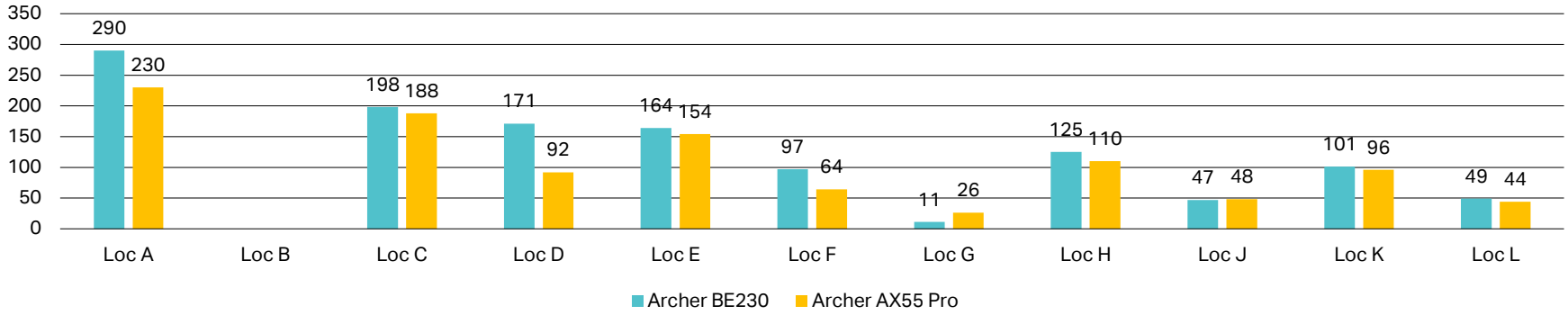


PART 2. Wi-Fi Coverage

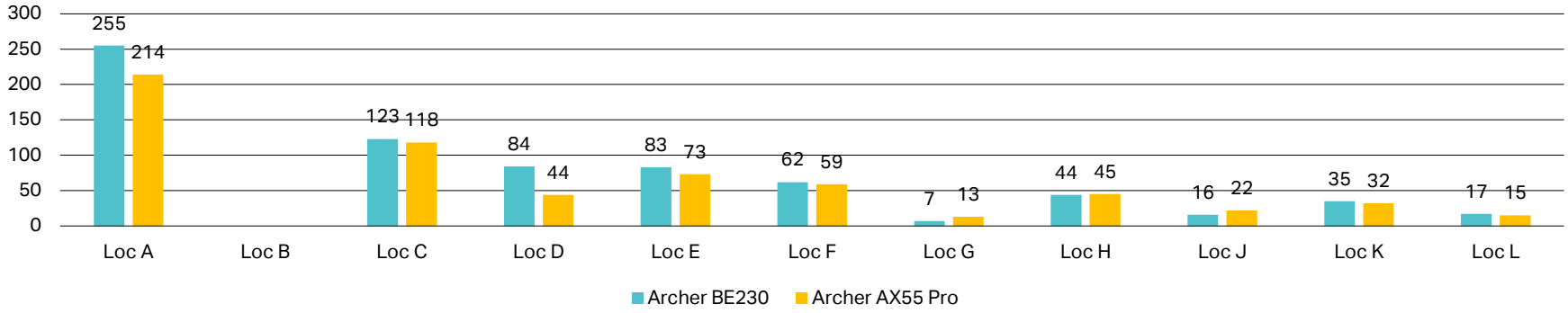
TEST RESULT: 2.4GHz_40M_CH6_Download & Upload

- **Client: Intel AX210**

2.4GHz Wi-Fi Download Performance (Mbps)



2.4GHz Wi-Fi Upload Performance (Mbps)*



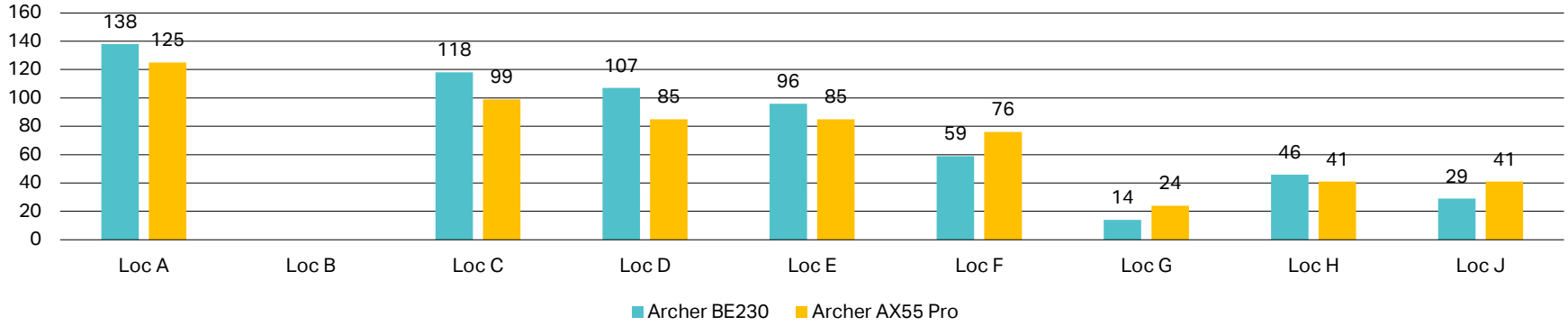
*Archer BE230 features two lateral 2.4G antennas, distinct from Archer AX55 Pro. This design may lead to differences in 2.4G Wi-Fi upload performance at various locations compared to Archer AX55 Pro.

PART 2. Wi-Fi Coverage

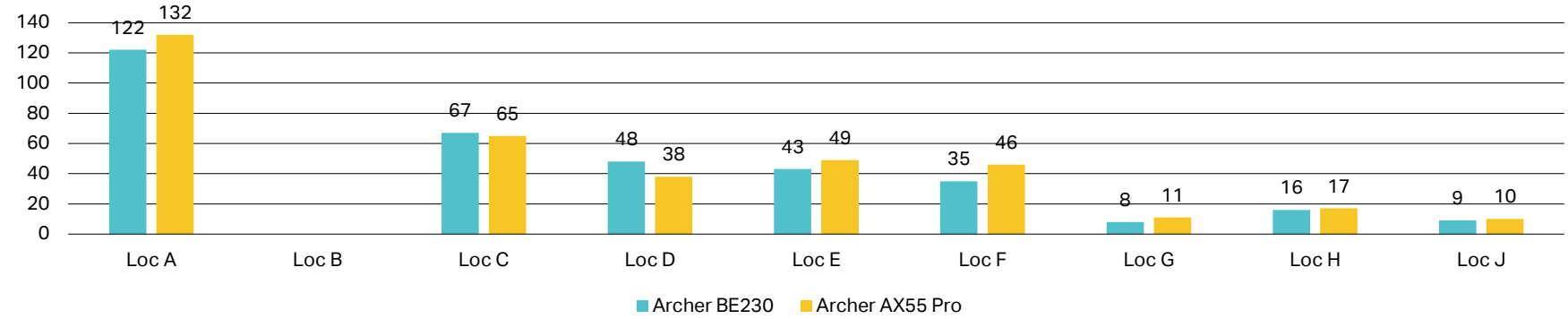
TEST RESULT: 2.4GHz_40M_CH6_Download & Upload

- **Client: Pixel 8**

2.4GHz Wi-Fi Download Performance (Mbps)



2.4GHz Wi-Fi Upload Performance (Mbps)



*Archer BE230 features two lateral 2.4G antennas, distinct from Archer AX55 Pro. This design may lead to differences in 2.4G Wi-Fi upload performance at various locations compared to Archer AX55 Pro.

PART 3. WAN Peak Performance

TEST FOCUS

Test Archer BE230's 2.5G WAN forwarding performance, and compare it to Archer AX55 Pro.

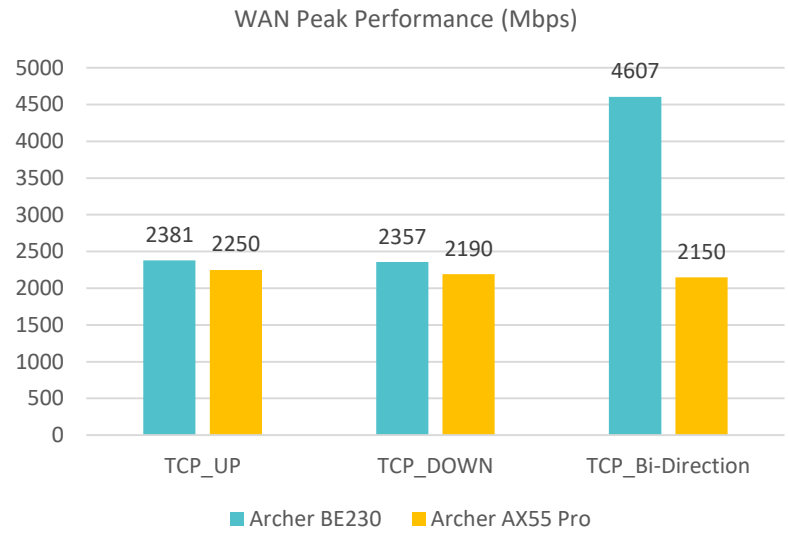
TEST TOPOLOGY

- Before you start, install and preset **IxChariot** on the test PCs first.
- The test PCs should be equipped with a **2.5G or above** Ethernet adapter.

TEST STEPS

1. Log into the web management page of Archer BE230. Go to **Internet**, and set the **Internet Connection Type** to **Dynamic IP**.
2. Run IxChariot on the test PCs. Set the **TCP Stream Pairs** to 50, and set the **script** to High_Performance_Throughput. Src.
3. Test the LAN-WAN uplink peak performance: Run **50 streams** throughput test from the Client to the Server for **60 seconds**.
4. Test the LAN-WAN downlink peak performance: Run **50 streams** throughput test from the Server to the Client for **60 seconds.**
5. Test the LAN-WAN/WAN-LAN bi-directional peak performance: Run **50 streams** bi-directional throughput test between the Client and the Server for **60 seconds.**

TEST RESULT



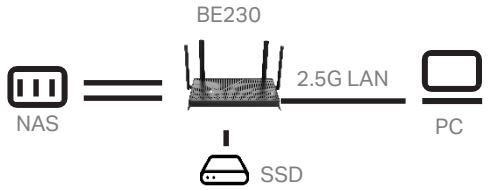
- Compared with Archer AX55 Pro, Archer BE230 bears a slight advantage in one-directional WAN peak performance.
- Archer BE230's bi-directional WAN peak performance is **twice** that of Archer AX55 Pro.

PART 4. USB

TEST FOCUS

Test the USB read and write performance.

TEST TOPOLOGY

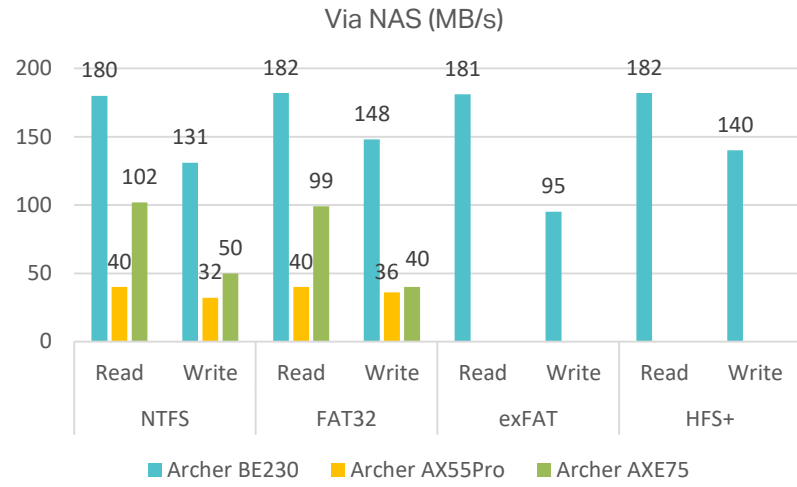


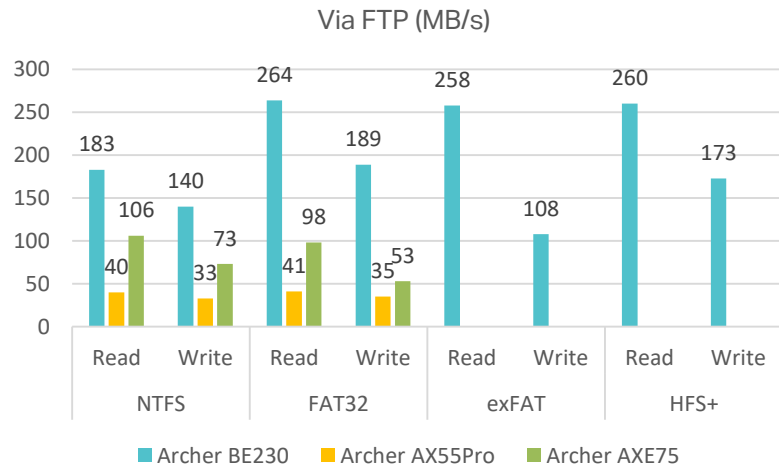
The test PC should install an SSD (solid-state drive), or a **2.5G or above** Ethernet adapter.

TEST STEPS

1. Connect the PC to the 2.5G LAN port of the router via an Ethernet cable, and connect the SSD to the router's USB port.
2. Open the File Explorer of the PC, and access the SSD via NAS **\\192.168.0.1** and then via FTP **ftp://192.168.0.1**.
3. Upload/download files larger than 2G to test the upload/download performance of USB.

TEST RESULTS





- Archer BE230 owns reliable USB capability which comprehensively outperforms that of Archer AX55 Pro and Archer AXE75, allowing users to conveniently transfer large files of varied formats.

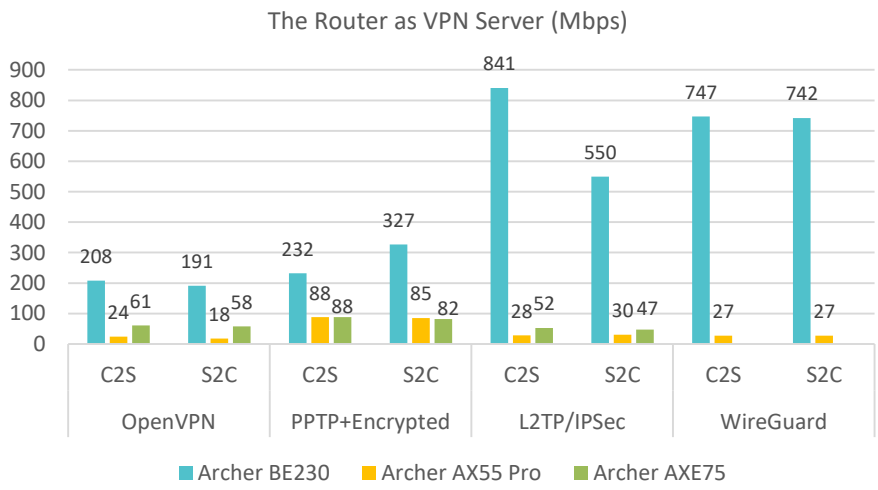
PART 5. VPN Server & Client

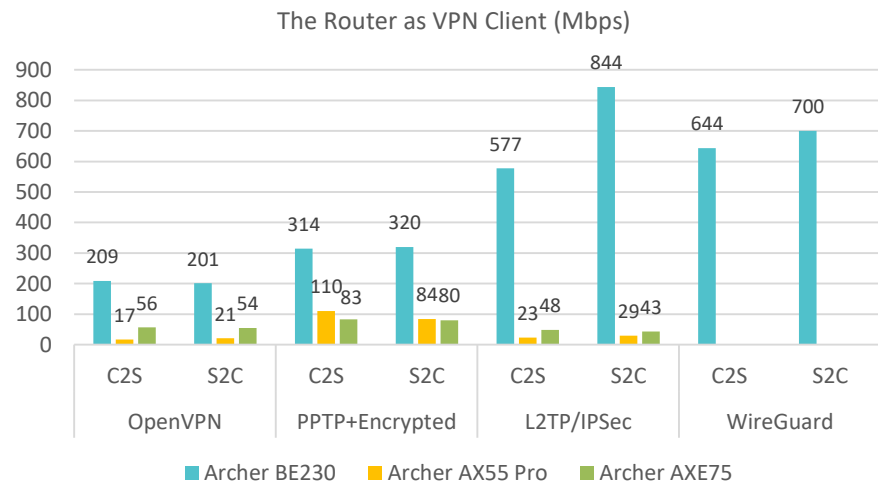
TEST FOCUS

Set Archer BE230's Internet connection type to Dynamic IP, test its capability of working as L2TP, PPTP, Open VPN, WireGuard server/ client, and compare the results with Archer AX55 Pro and Archer AXE75.

TEST RESULTS

C2S is used to stand for **Client to Server**.
S2C is used to stand for **Server to Client**.





- Archer BE230 has power VPN performance. Whether serving as a VPN server or client, the transmission speed of Archer BE230 is significantly higher than those of Archer AX55 Pro and Archer AXE75.

APPENDIX

How to install iPerf 3 in Windows and Mac OS

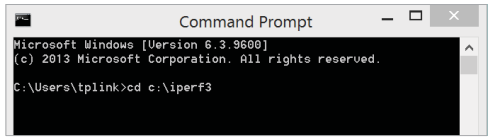
Windows:

a. Right-Click the zip file and Extract **All contents** to "C:\iperf3"

b. Press the "Windows" button and "X" simultaneously to open the Windows quick access menu

c. Select **Command Prompt (Admin)** or **Terminal (Admin)** and click **Allow** if the User Account Control window appears

d. Type **"cd c:/iperf3"** into the command prompt, then hit enter to change to the iPerf directory



e. (Optional) Type "iperf3" and hit enter to view a list of available iPerf commands

Mac OS:

a. Copy iperf3 to your desktop

b. Press the "**Command**" button and "**Spacebar**" simultaneously, type "Terminal", then press **Enter**

c. Copy and paste the following into the Terminal app, then press enter:

```
ruby -e "$(curl -fsSL https://raw.githubusercontent.
com/Homebrew/install/master/install)" < /dev/null 2>
/ dev/null
```

d. Type "**brew install iperf3**"

e. (Optional) Type "iperf3" and hit enter to view a list of available iPerf commands

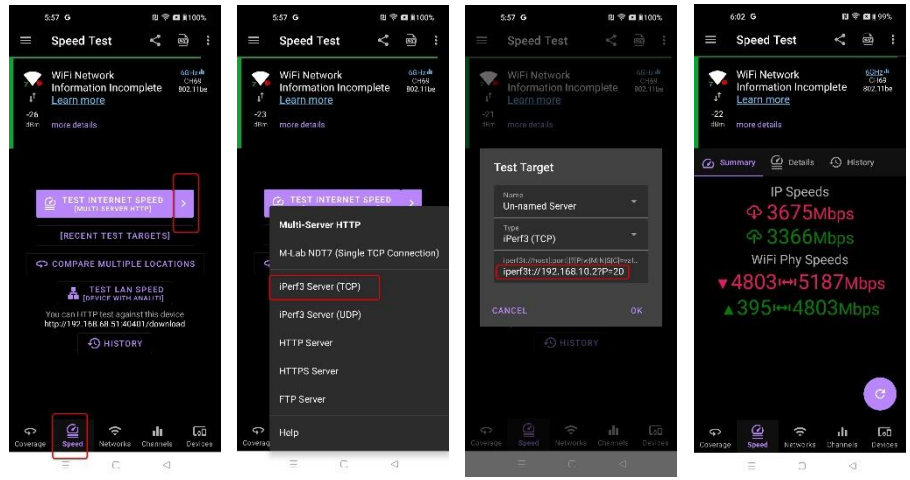
How to install iPerf 3 Client on an Android Phone

a. Install **analiti** app and open it

b. Tap **Speed**, and the "**>**" button to select a test target

c. Select **iPerf3 Server(TCP)**

d. Input the iPerf3 Server IP Address and Client Parameters like this: iperf3t://[Server IP Address]?P=20



e. To test it again, just tap **[RECENT TEST TARGETS]**.

Tips for Performance Test

- Sometimes, the OnePlus 11 may not connect to the Router's 6GHz band at 320MHz bandwidth, but only 160MHz bandwidth, which results in the performance halved. In this case, please change the channel of 6GHz band and try again.
- Turn off sources of Wi-Fi that are not needed for testing to minimize interference.