

What is 4 x 4 MIMO? Is your phone needed?

MIMO stands for 'Multiple Input, Multiple Output'.

MIMO stands for 'Multiple Input, Multiple Output'. The 4x4 MIMO device has 4 antennas for 4 simultaneous data streams, while 2x2 MIMO has only 2 antennas. iPhone XR is 2x2 MIMO device and iPhone XS and XS Max are 4x4 MIMO machines.

What is MIMO?

MIMO is part of wireless communication technology, whether WiFi 802.11ac or 4G LTE. Usually a device will have an antenna in it, called 1x1 MIMO and only supports one data stream at a time.

Devices with more antennas support more data streams, such as 2x2 MIMO supporting 2 lines, 3x3 MIMO supporting 3 lines .

The more MIMO, the faster the speed

Each antenna is used to receive and send data. The more antennas, the more data can be transmitted at a time, meaning faster uploads and downloads over the wireless network. You imagine it as a highway, the more lanes, the more cars pass through at a time.

1x1 MIMO to 4x4 MIMO means 4 times the theoretical maximum data transfer rate. That's because each antenna supports transmitting a stream of data at a theoretical maximum speed. The exact number depends on the network you use.

If you want fast speed, you must connect to 4x4 MIMO support network, not every network has but is gradually used more, almost throughout the United States for several years.

More MIMO means stronger signals

Recent tests also show that the 2x2 MIMO to 4x4 MIMO improves wireless signals. PC Magazine tested the comparison of iPhone XR and iPhone XS, two machines with the same wireless modem, so the difference was only at the number of names, and on XR, there were 2 and above the XS was 4.

Both machines are connected to LTE 4x4 MIMO network, but the download speed of XS is 400 Mbps and XR is only under 200 Mbps.

That is the result of data transfer rate. The test also showed that XS has stronger XR signals on 4x4 MIMO networks, and even when using 2x2 MIMO networks. This is not important when the network is stable. But

when the network is weak, the additional antenna on the 4x4 MIMO will help the waves get stronger.



iPhone XR is quite special when only 2x2 MIMO is available

Cellular and WiFi

MIMO technology is used for both WiFi and mobile network (Cellular) connections.

4x4 MIMO is now very popular on high-end segment phones like iPhone XS or XS Max. Galaxy S9 or S9 +, Google Pixel 3 or Pixel 3 XL also support this technology. They can support 4 data streams when supported mobile network connection.

But that's just a mobile network connection. iPhone XS and Pixel 3 both support 4x4 MIMO LTE networks but WiFi is only 2x2 MIMO. Even when connecting to the 4x4 MIMO router, you only get 2x2 MIMO speed because the mobile network and WiFi use separate antenna.

What is MU-MIMO 4x4?

4x4 MU-MIMO stands for Multi User, Multi Input, Multi Output. Basically, many devices are connected to that router, all of which can simultaneously transmit four data streams. What are the readers who learn more about this technology at MU-MIMO article? Why should your next WiFi router have MU-MIMO?

Does 4x4 MIMO be required?

If all parameters are equal, 4x4 MIMO is better than 2x2 MIMO. In other words, the more MIMO the better. Machines with multiple antennas will also be more expensive. High-end segment phones often have 4x4 MIMO.

Adding antennas is additional hardware, so the 4x4 MIMO will also consume more battery than 2x2 MIMO but probably not too big compared to many other battery-consuming tasks you perform on the device.

See more:

1. Tips to increase Wifi signal to the highest level

2. Wi-Fi 6, how will the next Wi-Fi version change the concept of wireless networks?
3. Learn about WiGig, the new super fast WiFi standard

You finished reading the article "**What is 4 x 4 MIMO? Is your phone needed?**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.
