**What is the difference between 2.4 GHz and 5 GHz wireless frequencies?**

The primary differences between the two frequencies are the range (coverage) and bandwidth (speed) that the bands provide. The 2.4 GHz band provides coverage at a longer range but transmits data at slower speeds. The 5 GHz band provides less coverage but transmits data at faster speeds.

The range is lower in the 5 GHz band because higher frequencies cannot penetrate solid objects, such as walls and floors. However, higher frequencies allow data to be transmitted faster than lower frequencies, so the 5 GHz band allows you to upload and download files faster.

Your WiFi connection on a particular frequency band can also be faster or slower because of interference from other devices. Many WiFi-enabled technologies and other household devices use the 2.4 GHz band, including microwaves and garage door openers. When multiple devices attempt to use the same radio space, overcrowding occurs. The 5 GHz band tends to have less overcrowding than the 2.4GHz band because fewer devices use it and because it has 23 channels for devices to use, while the 2.4GHz band has only 11 channels. The number of channels that are available to you depends on the regulatory domain. If you’re experiencing a lot of interference from other devices, consider using the 5 GHz band.

What is the best WiFi frequency?

## 2.4GHz and 5GHz

A frequency band is how wireless data is transmitted between devices. These bands are radio waves that transfer the data, and they can be either 2.4 GHz or 5 GHz. The primary difference between 2.4 and 5GHz bands is the **range (coverage)** and the **bandwidth (speed)** that these bands provide. For instance, the 2.4GHz band offers coverage at a longer range; however, it transmits data at slower speeds. Instead, the 5GHz band gives less coverage but sends data at faster speeds.

How to choose the right WiFi frequency for your business?

The 2.4GHz frequency band covers a larger area and provides a more extended range than the 5GHz band, but with lower data rates. Instead, the 5GHz band provides a smaller coverage area than the 2.4 GHz band but with a higher data rate.

Speed

The GHz range that a wireless device uses does not necessarily determine the maximum speed of the WiFi. The environment in which the network will be set up is what really should be considered.

For instance, the 2.4GHz band usually supports up to 450 Mbps or 600 Mbps, depending on the device type, however as so many devices use the 2.4GHz band, the resulting congestion can cause discontinued connections and slower speeds.

Instead, the 5GHz band can bear up to 1300 Mbps. It tends to be less overcrowded than the 2.4GHz band because fewer devices use it and because it has more channels for devices to use than the 2.4GHz. The maximum speed would depend on the wireless standard the access point supports, i.e., 802.11b, 802.11g, 802.11n, or 802.11ac.

When comparing the 2.4GHz band with the 5GHz, the latter provides a lower coverage. Thus, when the frequency increases, its ability to penetrate solid objects (like walls) decreases, *reason why the 5GHz band was used mostly in outdoor deployments at the beginning*. But at the same time, the higher the frequency, the faster the data is transmitted. Therefore, the 5GHz band carries more data and sends it faster. Then, if your priority is to provide an excellent WiFi speed performance, your choice should lean to the 5GHz band, instead.

**Interference**

The other thing to check for is potential interference with the WiFi network’s frequency range. Interference can slow down a network significantly and reduce its scope as well. For instance, for the 2.4GHz band, the two most obvious sources of wireless network interference are wireless telephones and microwave ovens. Instead, for the 5GHz band, cordless phones, radars, digital satellite and perimeter sensors are the most common sources of interference.

When multiple devices operate on the same frequency, there is usually interference that can affect the signal’s characteristics at the receiving point and reduce the connection speed. Your WiFi connection on a particular frequency band can also be faster or slower because of other devices’ interference.

The waves used by the 2.4GHz band are better suited for longer ranges and transmission through walls and solid objects. Therefore, 2.4GHz is more convenient if you need to provide a better scope on your devices or have many walls or other objects where you need coverage.

On the other hand, the 5GHz band’s shorter waves make it less capable of going through walls and solid objects. This happens because of electromagnetic waves’ peculiar characteristics: at higher frequencies (5GHz), waves attenuate stronger. Hence, the signal is easily influenced by multiple obstacles like walls, floor, ceiling, doors, and others.

Overall, 5GHz WiFi frequency experiences fewer interferences from other devices than WiFi connections using 2.4GHz. Therefore, if your WiFi network is located where there are many interferences from other devices/appliances, it will slow down your connection; thus, we would suggest steering your devices to the 5GHz WiFi frequency. But, if you want to deliver more signal coverage, then use the 2.4 GHz frequency instead.

As a side note, when using the 5GHz frequency band, the client device (smartphone, tablet, laptop, or USB adapter) must support this frequency.

**Congestion**

When multiple devices attempt to use the same radio space, overcrowding happens. A negative connotation of the 2.4GHz band is its significant congestion driven by the high use of this band not only for WiFi but also for other devices, like garage door openers, microwave ovens, cordless phones, and Bluetooth devices.

On the other hand, the 5GHz band is not so overcrowded, and it has more free radio air and channels, i.e., 23 working channels vs. 11 in the 2.4GHz band. Consider that channel availability depends on the country in which the deployment is located, which results in higher stability and connection speed.

**Cost**

Finally, you should be aware that the cost of access points supporting 5GHz is higher than supporting 2.4GHz. This is because 5GHz is newer in the market. Furthermore, many 5GHz devices also support 2.4GHz radios.