

WIRELESS EXPLAINED

You live your life at 2.4GHz. Your router, your cordless phone, your Bluetooth earpiece, your baby monitor and your garage opener all love and live on this radio frequency, and not many others.

WHAT WE'RE TALKING ABOUT

Before we charge too far ahead here, let's run over the basics. Your house or apartment, or the coffee shop you're sitting in now, is saturated with radio waves. Inconceivable numbers of them, in fact, vibrating forth from radio stations, TV stations, cellular towers, and the universe itself, into the space you inhabit. You're being *bombarded*, constantly, with electromagnetic waves of all kinds of frequencies, many of which have been encoded with specific information, whether it be a voice, a tone, or digital data.

On top of that, you're surrounded by waves of your own creation. Inside your home are a dozen tiny little radio stations: your router, your cordless phone, your garage door opener. Anything you own that's wireless, more or less. Radio waves are everywhere.

2.4GHZ VS 5GHZ?

There are two main frequencies that Wifi operates over, each with their own benefits. 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.

HOW DOES THIS AFFECT MY WiFi?

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, baby monitors 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'S THE SOLUTION?

While the connection to the router itself is a fibre connection and if you connect via a LAN cable you will experience the full speed of your line, your WiFi experience may be slightly different. Because of the routers that LunaFibre installs as a standard, you will most likely only have access to the more common 2.4GHz frequency which will affect your overall experience if the frequency is indeed overpopulated within your household.

To experience the full potential of your connection, we suggest either connecting via a LAN cable to take the complexities of WiFi out of the equation; or if you're determined to have a WiFi friendly home, you can purchase an access point or device that operates over the 5GHz frequency, to be added to your home connection. If you are experiencing sluggish connectivity over your WiFi connection, either of these solutions should greatly improve your internet experience.

OTHER FACTORS THAT CAN AFFECT WIFI

MICROWAVE OVENS

Using your microwave oven near your computer, Bluetooth device, or Wi-Fi base station might cause interference.

DIRECT SATELLITE SERVICE (DSS)

The coax cable and connectors used with some types of satellite dishes can cause interference. Check the cabling for damage that could cause radio frequency interference (RF leakage). Try replacement cables if you suspect interference.

POWER SOURCES

Certain external electrical sources like power lines, electrical railroad tracks, and power stations can cause interference. Avoid locating your Wi-Fi router near power lines in a wall, or near a breaker box.

2.4 GHZ OR 5 GHZ PHONES

A cordless telephone that operates in the 2.4 GHz or 5 GHz range can cause interference with wireless devices or networks while taking calls.

WIRELESS RF VIDEO

Wireless video transmitters that operate in the 2.4 GHz or 5 GHz bandwidth can cause interference with wireless devices or networks.

WIRELESS SPEAKERS

Wireless audio that operates in the 2.4 GHz or 5 GHz bandwidth can cause interference with other wireless devices or networks.

CERTAIN EXTERNAL MONITORS AND LCD DISPLAYS

Certain displays can emit harmonic interference, especially in the 2.4GHz band between channels 11 and 14. This interference might be stronger if you're using a notebook computer with the lid closed and have an external monitor connected. Try changing your access point to use 5 GHz or a lower 2.4 GHz channel.

POORLY SHIELDED CABLING

External hard drives or other devices with poorly shielded cabling can interfere with your wireless devices. If disconnecting or turning off the device appears to help, try replacing the cable that connects the device to your computer.

OTHER WIRELESS DEVICES

Other wireless devices that operate in the 2.4 GHz or 5 GHz bandwidth (microwave transmitters, wireless cameras, baby monitors, a neighbor's Wi-Fi device) can cause interference with Wi-Fi or bluetooth connections.

Some devices might not specifically state that they operate in the 2.4 GHz or 5 GHz band. The product's documentation should indicate the bands the device uses to operate. These might be referred to as "Dual Band" or "Wi-Fi" or "Wireless" devices.

WIRELESS BARRIERS

A device's location and building construction materials can affect Wi-Fi and Bluetooth performance. If possible, avoid barriers or change the placement of your Wi-Fi or Bluetooth devices for a clearer signal path.

Examples:

- Your computer is underneath a metal desk and you try to use a wireless (Bluetooth) mouse on top of the desk. The metal in the desk might act as a shield between the mouse and your computer. You might not be able to pair the device to your computer, or the pointer might move erratically.
- Your router is downstairs and your computer is upstairs. The material between the two floors is concrete with metal reinforcement. The floor might lower or block the Wi-Fi signal from your router to your computer. You might see slower network speeds, lower signal strength, or might not be able to connect to your Wi-Fi network at all.

Radio Frequency (RF) reflective and absorbing obstructions include the following:

TYPE OF BARRIER	INTERFERENCE POTENTIAL
Wood	Low
Synthetic material	Low
Glass	Low
Water	Medium
Bricks	Medium
Marble	Medium
Plaster	High
Concrete	High
Bulletproof glass	High
Mirrors	High
Metal	Very high

OTHER STEPS TO TAKE TO IMPROVE YOUR WiFi SIGNAL

To minimize interference between your Wi-Fi and Bluetooth devices, try the following:

1. Change channels on your wireless network.
2. Connect to a 5 GHz wireless network (if possible).
3. Move your computer and Wi-Fi router closer to each other.
4. Minimize the number of active Bluetooth wireless devices you have connected to your computer or nearby.