# Wi-Fi Coverage Expectations

## Wi-Fi Survey

At the point of a new installation, we will offer an indoor Wireless Survey. The survey will be conducted by one of our qualified network engineers who will test and record the following information in each area:

- Signal Strength and SSID in dB for the customer WiFi router-AP

- Channel or frequency of the customer WiFi router/AP

- Signal Strength and SSID in dB for other WiFi sources that may have an overlapping transmission band with the customer WiFi router/AP

This information will be explained to the customer in simple terms by the network engineer so that the customer can easily see whether the coverage they have meets their needs and expectations.

## Please Consider

WiFi Coverage is affected by many factors in and around your property as well as the devices you are using, such as phones and laptops. Here are a few key factors that may help you to get the best from your wireless network:

- ### Location of Router

Your wireless router transmits and receives information from your wireless devices. Ideally this should be located as near as reasonably possible to the areas in your property where you need WiFi the most. Devices that use media streaming such as Smart TVs tend to be most sensitive to a strong signal.

- ### Walls and Property Size

The strength of wireless signals reduce with distance, but is also affected by absorption or reflection in walls. Sometimes this is easy to see, if the property has thick stone walls, but some types of modern insulated plasterboard or double-glazed windows can also have a significant effect on the wireless signal. If your WiFi network uses the faster 5GHz band (instead or as well as the 2.4GHz band) the effect of walls and distance is far greater. It is generally advised to use the 5GHz band within the same room as the router, as it may not work effectively through walls.

- ### Type and Location of Wireless Devices

 WiFi works across thousands of different types of devices, but they all follow industry standards for communication and security. Where multiple wireless devices are connected to the same router, such as TVs, laptops, and smartphones, they must communicate with each other to ensure that they all get a share of the WiFi capacity. By communicating between themselves, WiFi devices can 'agree' whose turn it is to send or receive data from the internet. In some cases, not all WiFi devices can talk to each other, for example where there is a laptop at one end of a property, a router in the middle

and smartphone at the other end. In this case, both devices can communicate with the router, but they may not see each other and therefore cannot agree whose turn it is to access the router.

This scenario can have a negative effect on all the devices in the network. Equally, if one wireless device has a very poor signal, but all others are good, the router will spend a disproportionate time re-sending information to the weakest device, reducing the capacity for all others.

- ### Channel Number and Channel Width

Generally, wide channels (40MHz) or higher have the highest data capacity and therefore can send or receive data faster. However, wide channels are also more likely to overlap with other wireless routers if nearby, which creates interference that reduces speeds. Sometimes a narrow channel (20MHz) can therefore give faster real-world performance.

- ### Security and Data Encryption

Always ensure that your WiFi network has encryption enabled. The best levels of encryption are based on standards known as WPA. It is not generally advised to use the older WEP encryption method. Please note that some very old wireless devices do not support WPA.

- ### Interference from Other Sources

Some non WiFi equipment is permitted to transmit data on the 2.4GHz WiFi band and can cause interference or reduced performance on your WiFi network.

This equipment can include baby monitors, DECT cordless phones, X-Box controllers, some alarm and door entry systems, microwave ovens and Zigbee remote controllers (used by some smart lighting and audio-visual systems). It is generally recommended to locate your router and wireless devices as far as possible from this type of equipment.

- ### Device Compatibility

 Most WiFi routers use up to date standards (protocols) to communicate with their associated WiFi devices. However, some old equipment may not be compatible with the latest standards. For example, older equipment used the 802.11 A, B and G protocols, whereas newer equipment is built to use 802.11 N and AC protocols. If you find that older devices cannot connect to your wireless network, please consider replacing this equipment with newer units, or change the protocol standards on your router.

- ### Using Wireless Extenders and Repeaters

Boosting wireless coverage can be achieved by using specialised equipment to add repeaters or extenders. Whilst these can be an effective means of improving coverage, it is vital that they are set up correctly or they can cause lower speeds and reduce reliability. We strongly advise asking for professional help in selecting and configuring extenders and repeaters. Please contact us for more information.

- ### Expected Speeds

Many routers claim speeds of 150Mbps, 300Mbps or higher data rates. These are theoretical maxima based on controlled laboratory environments. Real world speeds are generally less than 50% of these headline speeds. Please keep in mind that the speed of internet access is limited to the speed of your line or subscription package, which will often be different than the WiFi speed. As an example, if you have a 30Mbps internet subscription, you will not be able to download data from the internet faster than this. Please also note that your internet connection speed is shared between the users and devices connected to your network. Therefore, if say a Playstation game is being updated at the same time as an Apple update and a movie download, they will all share the overall internet capacity at the property and will therefore appear slower than the headline subscription speed.