

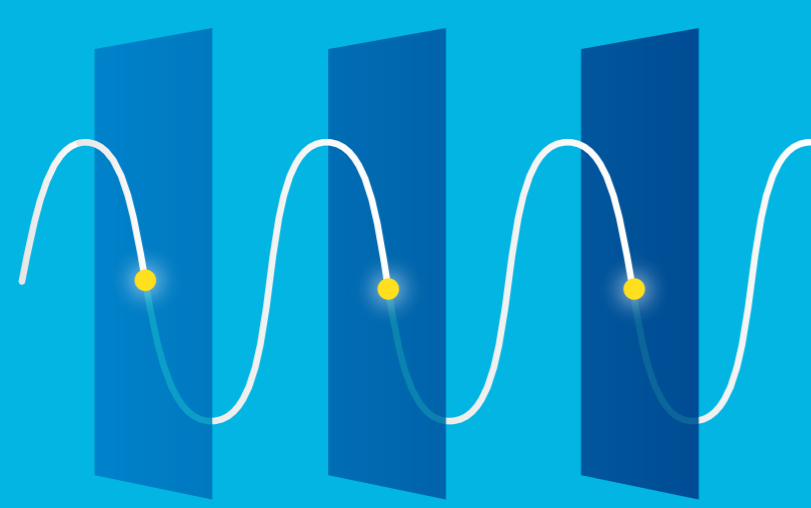
How electromagnetic waves help us stay connected

From streaming your favorite shows to making a phone call, our world relies on data transmission more than ever. But how exactly does it work?



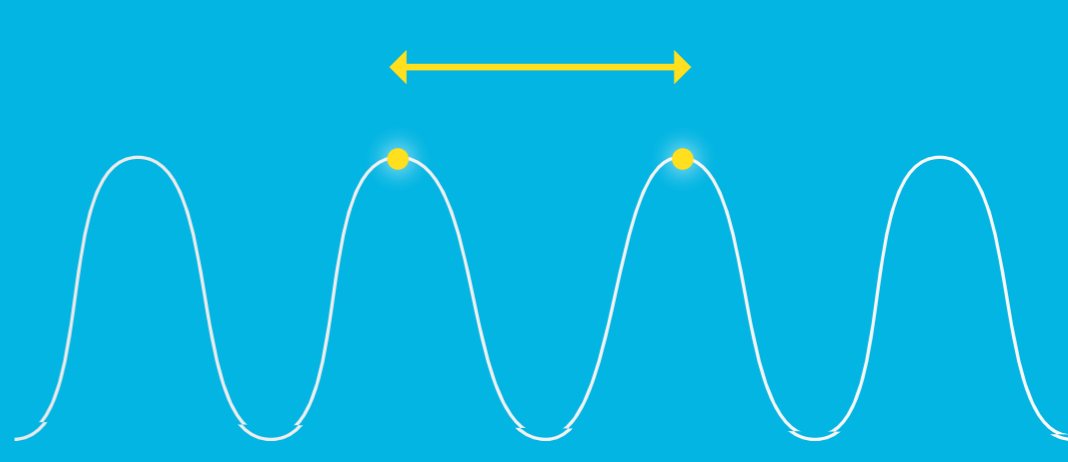
It starts with the electromagnetic spectrum.

The electromagnetic spectrum is a range of frequencies and wavelengths of electromagnetic radiation.



Frequency: How many waves pass a given point in a second.

- Frequency is measured in Hertz — one wave per second = 1 Hertz
- The more energy carried by a wave, the higher its frequency

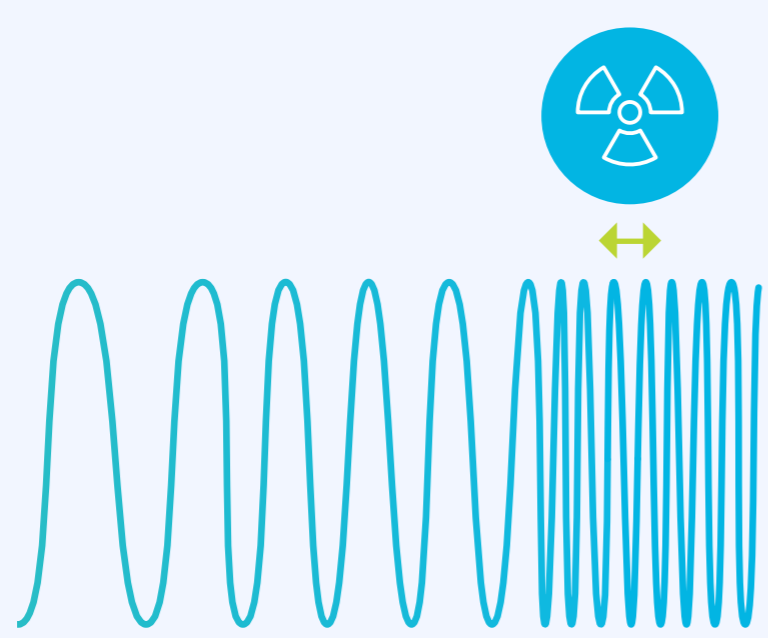


Wavelength: The distance from the crest of one wave to the crest of the next.

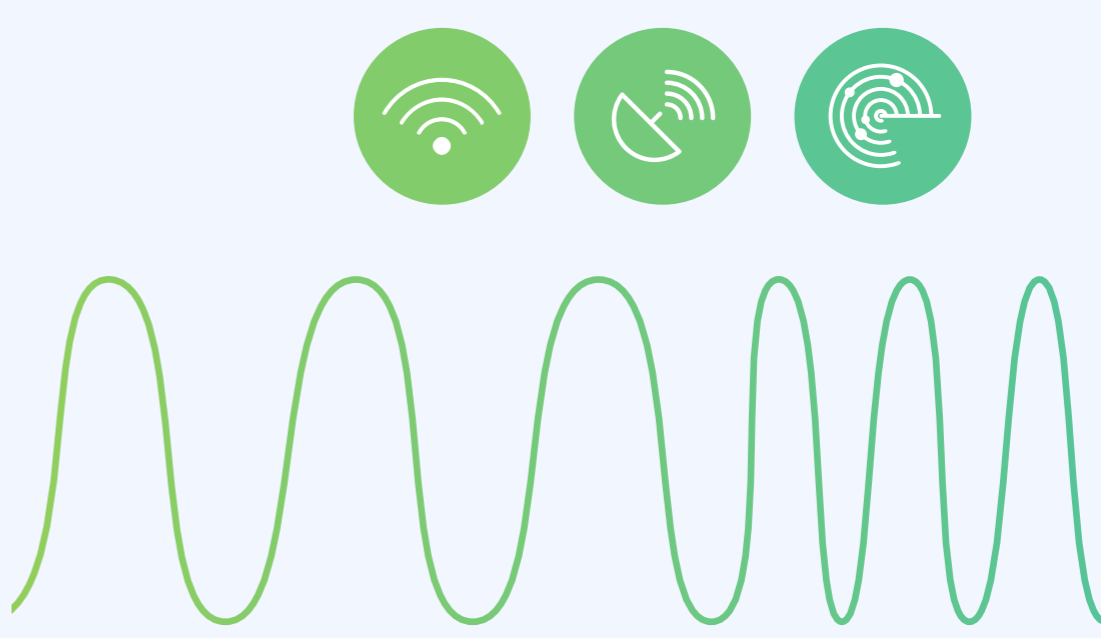
- Higher energy waves have a shorter wavelength

Electromagnetic waves are always all around us, but we don't notice most of them.

We mostly notice those on the **visible light spectrum**.

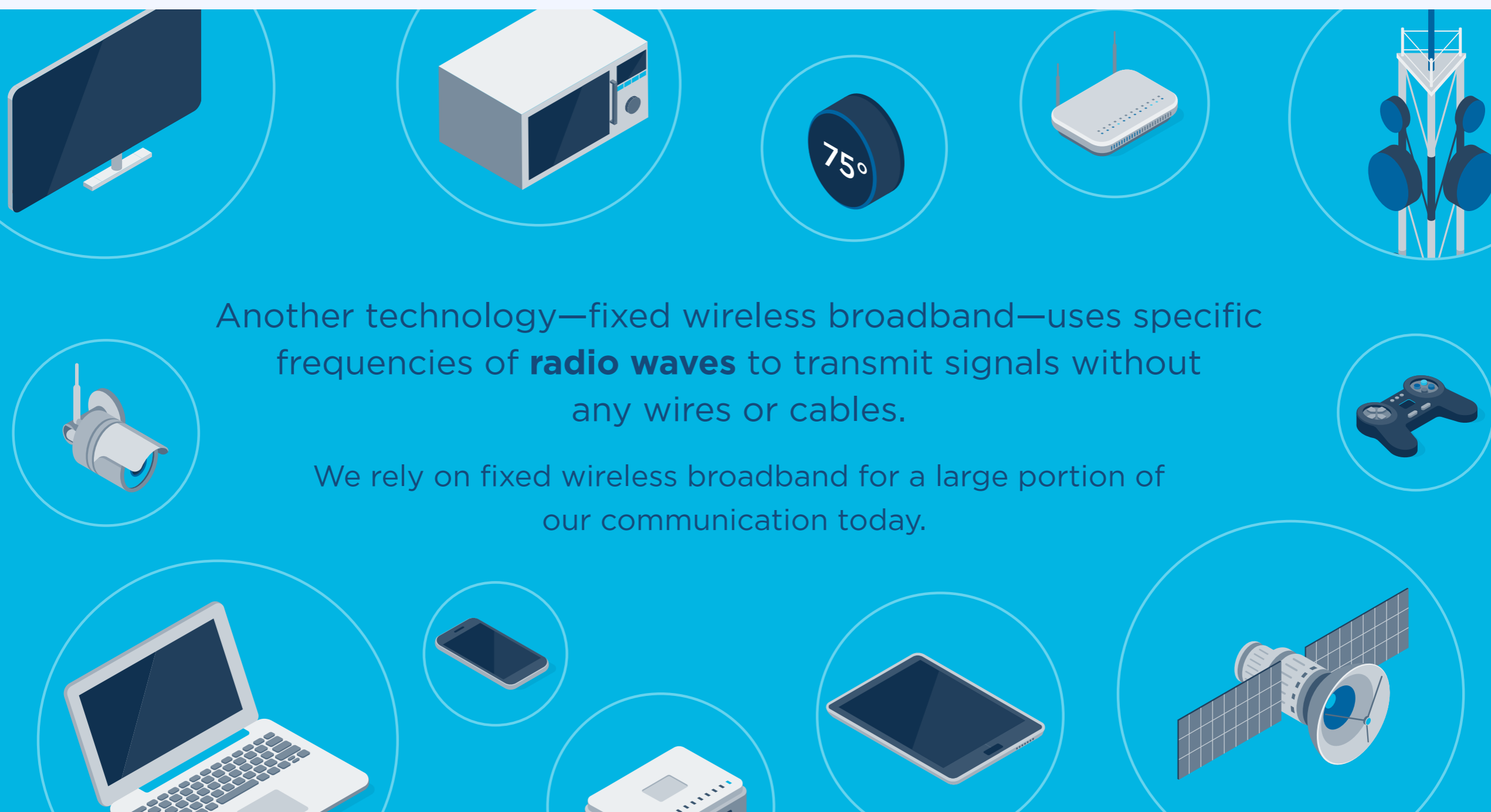


Gamma rays have the highest energy, highest frequency, and shortest wavelength of any waves on the spectrum.



Microwaves are used in many technologies, even outside the microwave oven we all know.

- Wireless networking technologies like Wi-Fi
- Satellite communication
- Radar



Another technology—fixed wireless broadband—uses specific frequencies of **radio waves** to transmit signals without any wires or cables.

We rely on fixed wireless broadband for a large portion of our communication today.

How do we keep the radio waves from getting too crowded with so much data coming and going?

Spectrum management is the process of regulating the use of radio frequencies, including defining ownership and making rules.



Promotes efficient use



Helps lead to a net social benefit—the most good for the most people



Ensures that no entity takes up too much of the spectrum

When we effectively manage the spectrum, we can use radio waves for what matters—staying connected.



Learn more about how the electromagnetic spectrum powers data transmission at howdatamoves.com