

INTEGRATING TECHNOLOGY**● Radio Waves**

Radio waves are light waves, which are also called electromagnetic waves because they are made up of changing electric and magnetic fields. Electromagnetic waves at certain frequencies are called radio waves, while at other frequencies they are called microwaves, visible light, and X rays, for example. Like all electromagnetic waves, radio waves travel at the speed of light, which is almost 300,000 km/s (about 186,000 mi/s).

Broadcasting Uses Radio Waves to Deliver Sound

Radio waves carry energy through space. In a radio broadcast, this energy is produced by a radio transmitter. First, a sound signal—music from a CD, for example—is converted into a changing electric current. Then, the transmitter converts this current into a radio signal. The signal then pushes an electric charge up and down the length of an antenna. The motion of the charge in the antenna sends radio waves traveling through space.

How a Radio Signal is Received

This process happens in reverse at the receiver, where radio waves are converted back into sound. When you listen to a radio station, radio waves that have traveled from the transmitter are striking the antenna on your receiver. These waves cause an electric charge to move up and down the length of the receiving antenna. The receiver converts this moving charge into the sound signal that you hear.

Your Turn to Think

1. Most waves are caused by vibrations. What motion in a transmitting antenna causes the vibrations that produce radio waves?
2. Name two common household appliances that produce electromagnetic waves other than radio waves. What kind of electromagnetic waves do they produce?
3. When you are in a car and it passes through a tunnel, the radio signal is sometimes lost. Why do you think this happens?