

## Riding the wave

Albert Einstein was 16 when he wondered what he would see if he chased after a beam of light. This eventually led him to his theory of special relativity and the famous equation,  $E=mc^2$ . That was a “thought experiment” - is it possible to ride on a light wave? No, of course you can’t, but you can get close! Your voice can ride the wave, all round the world.

Radio waves are similar to light waves, travelling far and wide at the same speed as light. We all watch TV, listen to the radio and use our mobile telephones without giving a moment’s thought to the way they work. Perhaps we should give it some thought?

This activity explores how radio works, so that we can better understand how we get terrestrial and satellite TV, listen to our car radios and speak to our friends on mobile phones. Those are all really, really technical, but radio amateurs use radio waves to communicate with friends in other continents and even to astronauts in space, using much simpler technology.



**Time:**  
10 mins  
of radio

communication,  
20mins of  
research



**Kit List:**

- A volunteer licensed amateur who will probably be able to bring the radios (The RSGB can support you in finding a local club)
- A radio for HF (high frequency) communication to “ride the waves” and a VHF (very high frequency) radio for more local communication



**Instructions:**

1. With the help of the licensed radio amateur, call out to make a contact with another amateur radio operator, who could be anywhere in the world
2. On HF, find out the call sign of the people you have spoken to. From that, you can find out what country they are in, or you could ask them as you speak to them. Most amateurs speak English, regardless of the country that they’re from.

If you’re connecting on VHF, you’ll probably speak with someone local, so see how far away they are from you. The volunteer licensed amateur may be able to find a repeater which means you will reach further. If the repeater is linked to the Internet, you can reach much further – ask them where they are speaking from

3. Mark your contacts on a map. Who got furthest? Who got the most interesting contact?

### »»» **Next steps:**

Want to become a licensed radio amateur? This web page tells you how you can gain your Foundation licence and get your own amateur radio call sign:

[rsgb.org/foundation](http://rsgb.org/foundation)