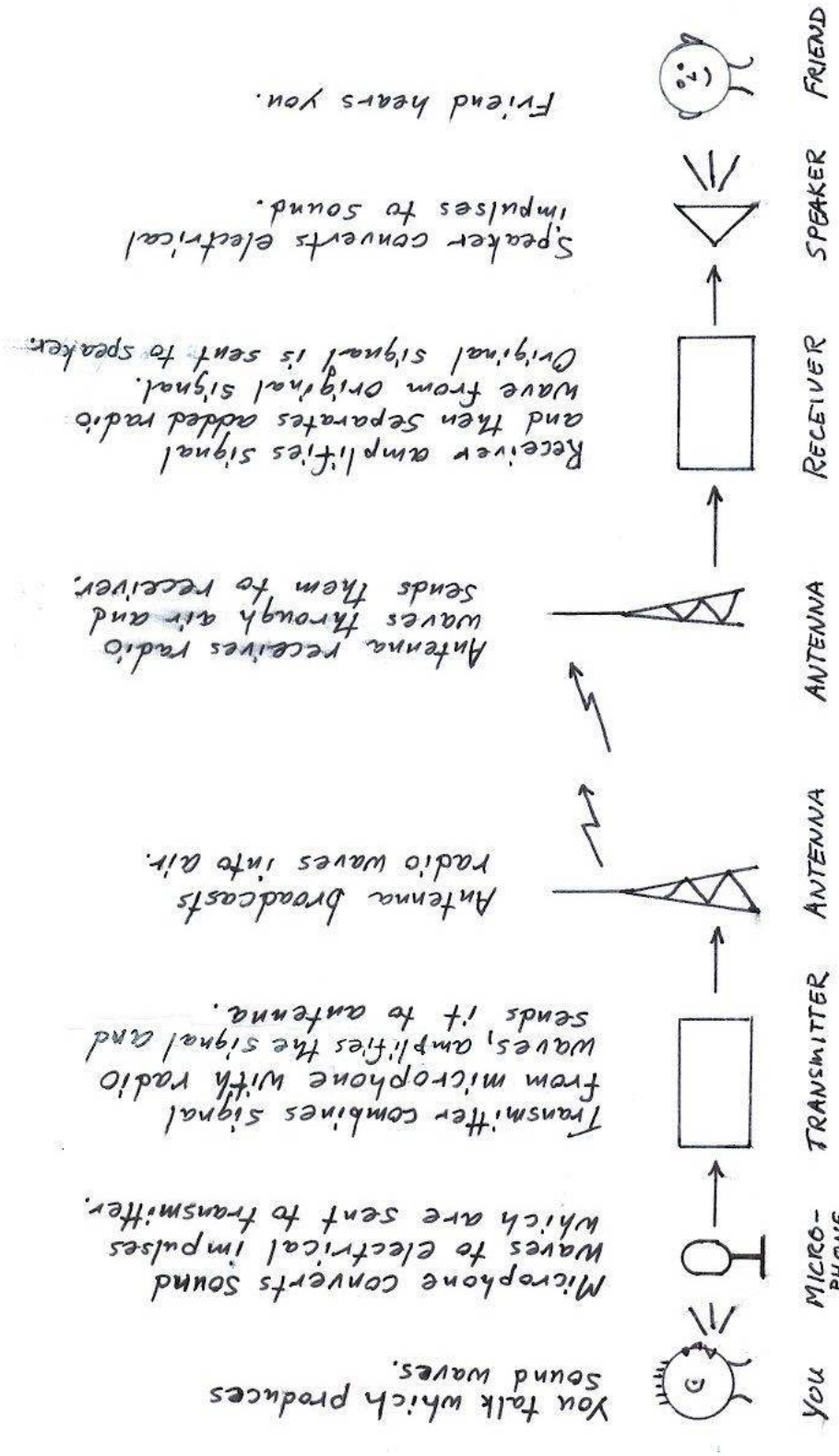
SENDING INFORMATION WITH RADIO WAVES

Process Diagram



Note: When the transmitter and receiver are in the same box, it is often referred to as a transceiver.

How Radio Waves Carry Information

Radio waves can be modified to carry information in many ways. Three ways are shown and described below.

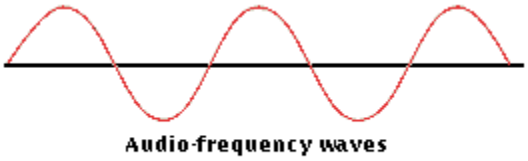
The "Audio-frequency waves" shown below might be the electrical signal produced by a microphone when you speak into it. It would also be the electrical signal sent to the speaker to produce the voice you hear coming from the radio.

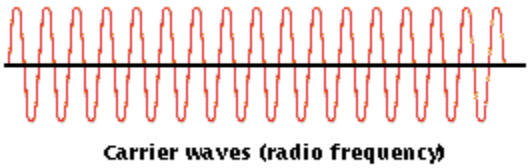
The "Carrier waves" shown below are the radio waves produced by the transmitter at the frequency you have your radio set to.

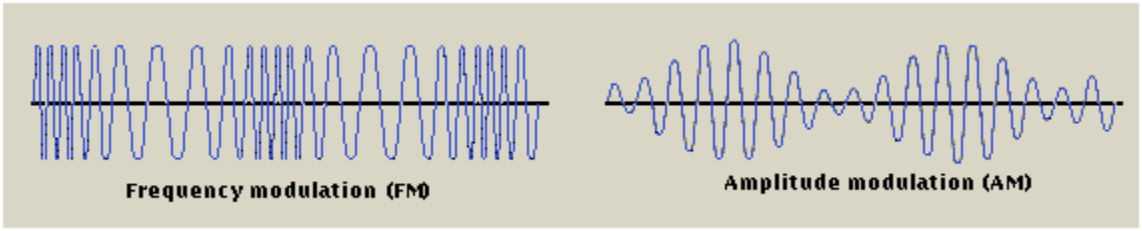
The transmitter modifies the carrier waves by combining it with the audio frequency waves to produce a new radio wave.

> One way to do this is by changing the carrier frequency. This is known as frequency modulation (FM). A picture of the resulting wave is shown below.
>
> Another way of modifying the carrier wave's amplitude (i.e., height). This is known as amplitude modulation (AM). A picture of the resulting wave is shown below.

These modified waves thus carry the audio frequency signal as they are transmitted from antenna to antenna through the air. When this modulated signal gets to the receiver, the receiver pulls out the carrier wave and is left with the original audio frequency wave which it can send to the speaker.







FM radio stations like KUNM 89.9 use this. AM radio stations like 770 KKOB use this.

Another way a radio wave can carry information is to just turn it on and off. This is the way Morse code is sent. Pictures of the carrier wave and the signal you get when you turn it on and off to send the letter C is shown below.