
Entry

Consider the profession that you are training to *enter*. After graduating from law school, could you simply put out a shingle and provide legal services? The answer (perhaps regrettably) is no. To practice as an attorney, you must first receive permission from the state in the form of a license. This is not true of all professions. For instance, if you wanted to be a portrait painter, you would not need to get prior permission from the government before you started your business. Why the difference?

Imagine now that you are an entrepreneur ready to exploit some new communications technology. This could be radio broadcasting in the 1910s or the internet in the 1990s. Your technology allows people to communicate in novel and amazing ways. Your decision to enter this field will, of course, be a function of basic business and technological calculations, such as: Does the technology work? Also, will the public buy it at a price that allows an adequate return on investment?

But in addition to answering these questions, you need to determine if entry is also regulated by law—if you have to first obtain government permission. Entry into many communication services is regulated by the government. In this chapter, we focus on the broadcast, telephony, and cable TV as case studies. In our examination, a few basic questions repeatedly arise. Why should the government regulate entry? How should the government regulate entry? Is entry regulation consistent with the First Amendment, which protects the freedom of speech?

A. Broadcast

1. Technology

The term “broadcast” refers to both over-the-air radio (audio) and over-the-air television (video). From a technological perspective, radio and television broadcasting operate similarly. Some message, whether audio or video, is converted into an e-m signal, then encoded onto a carrier wave that is radiated out from a transmitting antenna. These e-m waves propagate (wirelessly), at a particular frequency, using the spectrum as the channel. When those e-m signals arrive at a receiving antenna such as the “rabbit ears” on an old television set, they are decoded back into the audio or video message.

Since communications law is filled with both technological and legal terms-of-art, it’s always helpful to look for concrete definitions. One place to start is 47 U.S.C. § 153, which is in Title I of the Communications Act. It lists some 50 definitions, including:

47 U.S.C. § 153. Definitions

(5) Broadcast station. The term “broadcast station”, “broadcasting station”, or “radio broadcast station” means a radio station equipped to engage in broadcasting. . . .

(6) Broadcasting. The term “broadcasting” means the dissemination of radio communications intended to be received by the public, directly or by . . . relay stations.

(35) Radio station. The term “radio station” or “station” means a station equipped to engage in radio communication or radio transmission of energy.

You know that there are two bands of radio stations, AM (amplitude modulation) and FM (frequency modulation), which have historically been analog services. This is an appropriate point to study *modulation*, a basic concept

relevant to all forms of e-m signal processing. Modulation simply means that some e-m carrier wave is being changed (i.e., modulated) in accordance with the message to be transmitted.

Amplitude modulation. In amplitude modulation (AM), the amplitude of some carrier wave is altered in accordance with the amplitude of the message signal. Recall that amplitude is one of the three basic properties of an e-m wave (the “height” in the typical diagram). The process looks like this.

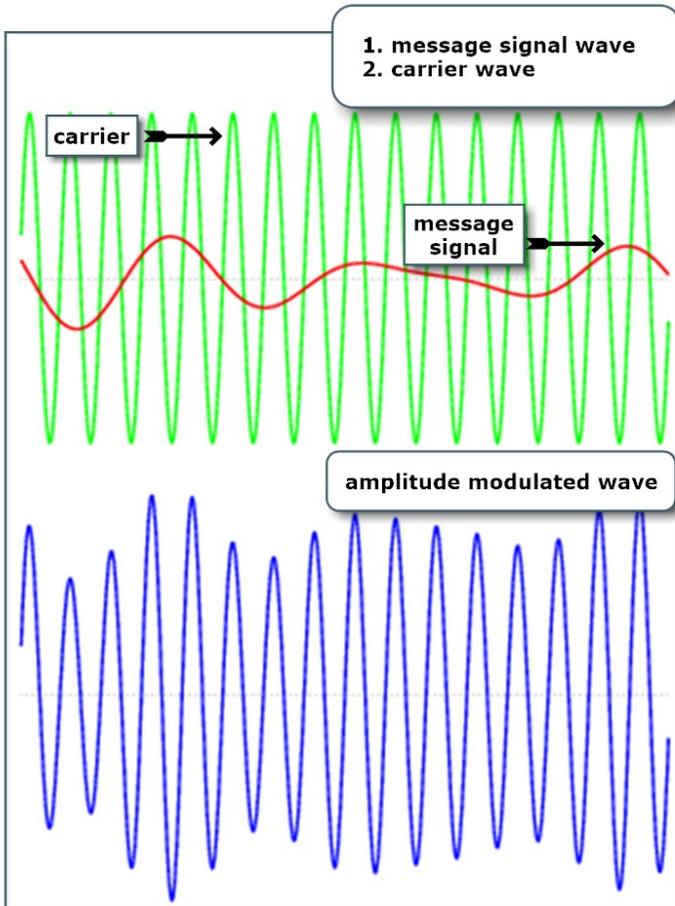


Figure 2.1: Amplitude Modulation

The carrier wave's frequency (i.e., the number of times per second the wave starts at zero, runs up to the crest, down to the trough, and back to zero) never changes. However, the wave's amplitude changes as a function of the message signal. If the message signal's height is high at one point, the carrier signal's amplitude increases; conversely, if the message signal's height is low at one point, the carrier signal's amplitude decreases. Once this modu-