



# Chapter 3-2

## RECEIVERS

ACMA Foundation Syllabus 4.1 and 4.11

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## Receivers

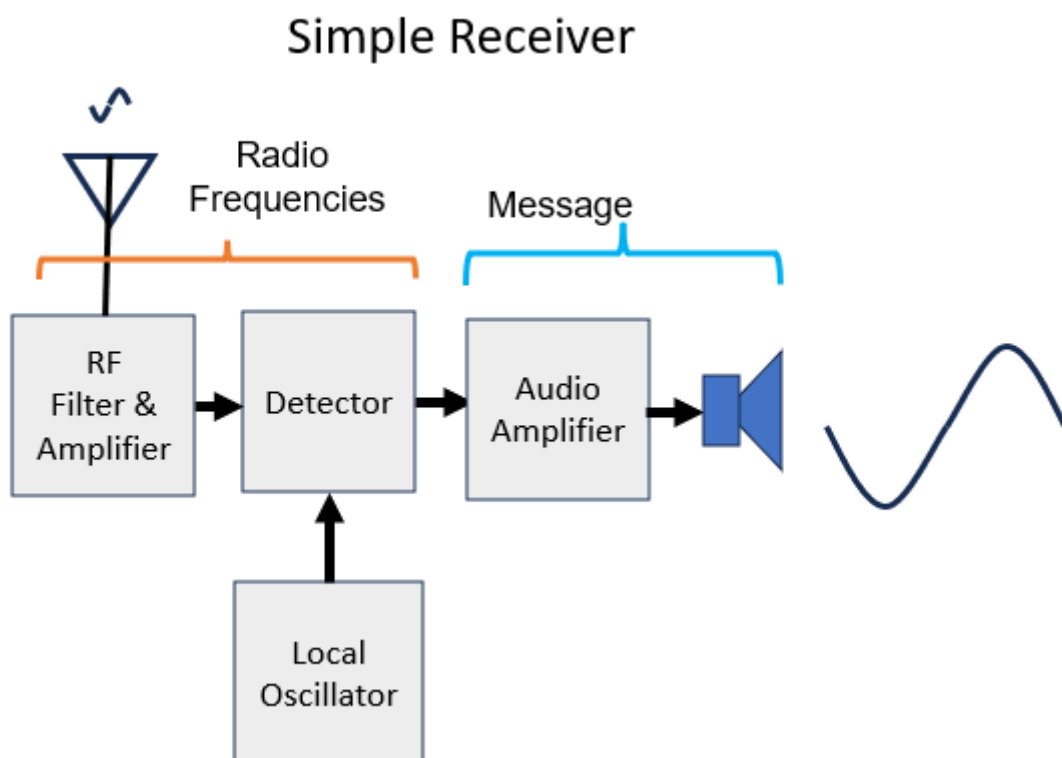
A radio receiver is an electronic device that receives radio waves through an antenna and converts the information to a usable form. The desired information is extracted from the carrier wave by demodulation. A **detector** is used to extract information from an AM signal, and a **discriminator** is used to extract information from a FM signal.

The overall receiver gain must be carefully controlled so that spurious emissions are not produced within the receiver.

A simple receiver is the Tuned Radio Frequency Receiver (TRF). This receiver has a series of filters tuned to one carrier frequency.

### Block Diagram

A simple AM audio receiver is shown below.



### Mode

The *mode of operation* for a receiver defines the type of signals the receiver processes: e.g. AM, FM, SSB or CW (Morse code).

### Superhet

A modern receiver is referred to as a superheterodyne receiver. A superheterodyne receiver, often shortened to superhet, is a type of radio receiver that uses frequency mixing to convert a received signal to a fixed intermediate frequency (IF). This signal can be more conveniently processed than the original carrier frequency.

## Three Ss

Receivers are rated on three criteria (the three Ss), their sensitivity, selectivity and stability,

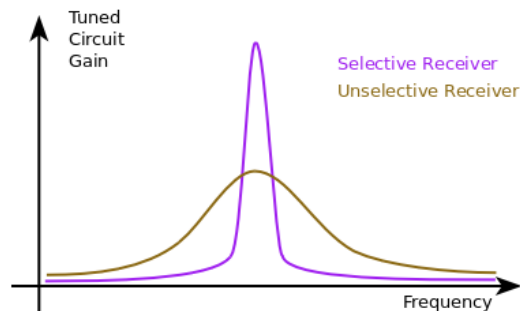
### Sensitivity

Receiver sensitivity indicates how faint an input signal can be to be successfully received by the receiver. Sensitivity is defined as the receiver's ability to detect a signal at the input and give a signal-plus-noise ratio of 10dB above the noise output of the receiver.



### Selectivity

Selectivity is an important parameter in any radio receiver. Selectivity is necessary for the receiver to be able to select the wanted signal from the unwanted adjacent signal.



### Stability

Frequency stability means the receiver must stay "tuned" to the incoming radio signal and must not "drift" with time or temperature.



Wikipedia

Go to Chapter 3-2 Questions.

*Have fun and stay safe.*