Communication Systems
EE-351

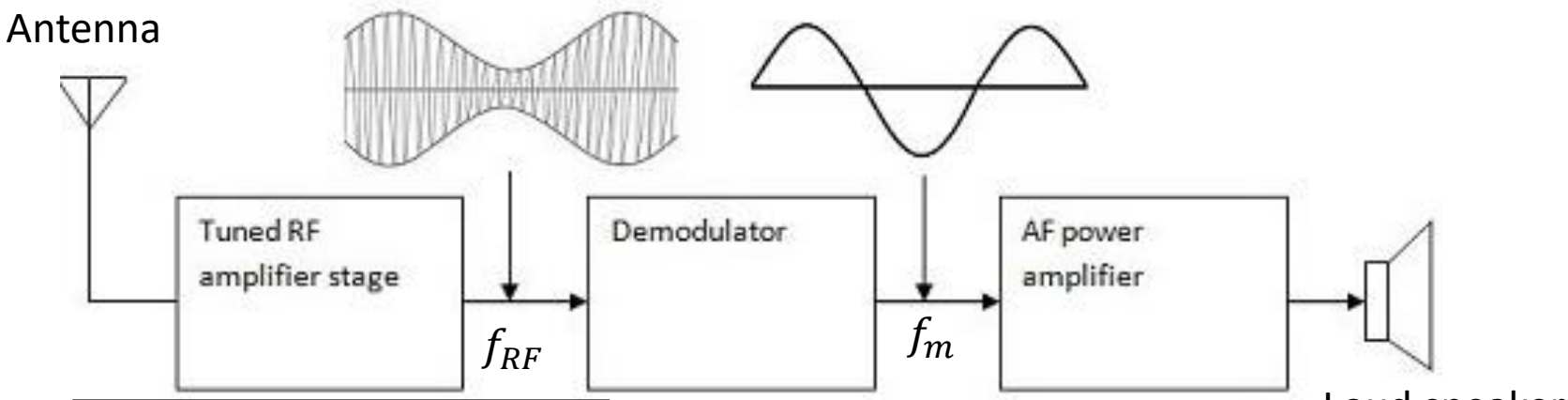
Lecture 24

AM Receivers:

- AM Receivers
  - TRF receiver (Tuned Radio Frequency)
  - Superheterodyne Receiver

- Characteristics Parameters of AM receivers
  - Selectivity: ability of receiver to select desired signal and reject unwanted signal
  - Sensitivity: pick weak signal and amplify it (due to noise)
  - Fidelity: to reproduce all the freq. components of m(t)

Tuned Radio Frequency (TRF) Receiver:



Problem?

Quality factor:

$$Q = \frac{f_{RF}}{BW}$$

f_{RF} is centered freq.

- AM broadcast = ??

Tuned Radio Frequency (TRF) Receiver:

TABLE 3.2 *Typical Frequency Parameters of AM and FM Radio Receivers*

	AM Radio	*FM Radio*
RF carrier range	0.535–1.605 MHz	88–108 MHz
Mid-band frequency of IF section	0.455 MHz	10.7 MHz
IF bandwidth	10 kHz	200 kHz

Tuned Radio Frequency (TRF) Receiver:

- Let,

$$f_{RF} = 1000kHz$$

BW = 10kHZ, i.e., $2f_m$

$$f_m = 5kHz$$

$$Q = \frac{f_{RF}}{BW} = 100$$

Not practical value, not possible to design this value with analog component,

Somehow, $Q = 100$,

$$f_{RF} = 1600kHz$$

so, BW = 16kHZ

Adjacent channel interference