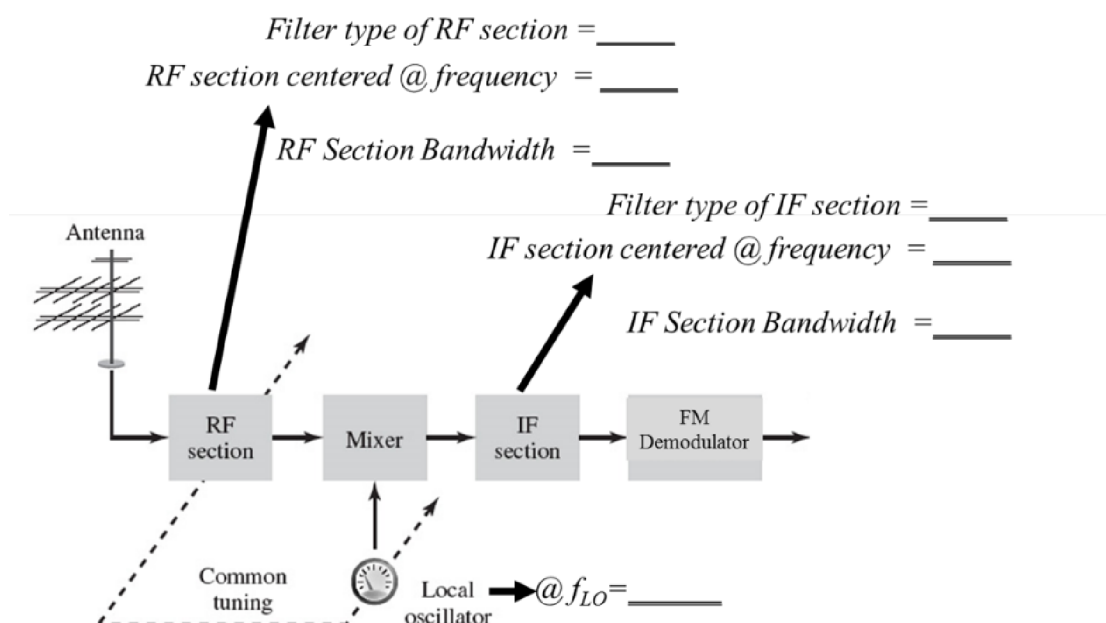
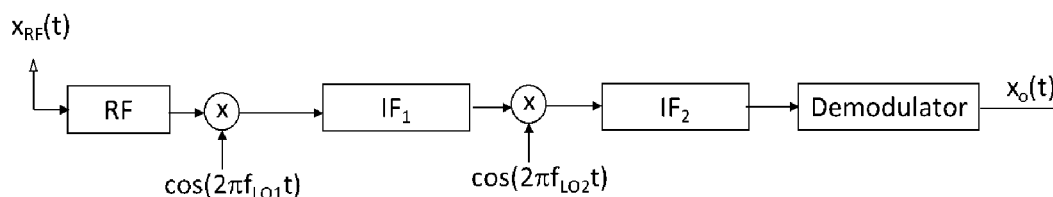


EECS 562
Homework 10

- The IF frequency of a commercial broadcast FM superheterodyne receiver is 10.7 MHz. Suppose we wish to “tune in” station KLWN FM at 101.7 on the dial.
 - What are the two possible frequencies for the local oscillator?
 - For each LO frequency in part a, what is the corresponding image frequency?
- The commercial AM radio station KLWN in Lawrence operates at 1320 kHz. In commercial AM the baseband signal bandwidth is 5 kHz. Commercial AM receivers use an $f_{IF} = 455$ kHz. Fill in the blanks below.



- A radar operates at $f_c = 10$ GHz the bandwidth of the baseband radar signal is 10 MHz. The receiver uses an $f_{IF} = 100$ MHz.
 - In a superheterodyne radar receiver what frequency is the local oscillator set at to receive this signal?
 - What is the bandwidth of the IF filter in this case?
- A receiver uses a dual conversion receiver, i.e., with two IF sections, as shown below.



Assume

$$f_c = 900 \text{ MHz}$$

$$f_{IF_1} = 400 \text{ MHz}$$

$$f_{IF_2} = 10.7 \text{ MHz}$$

$$B_{RF} = 200 \text{ kHz}$$

- a. What is the bandwidth of the RF section?
- b. What is the bandwidth of the IF_1 section?
- c. What is the bandwidth of the IF_2 section?
- d. What is f_{LO1} ?
- e. What is f_{LO2} ?