

Special Problem II.B-28

The simple receiver below implements **no preselector** filter.

Moreover, it **up-converts** RF signals to a **high IF** of **6 GHz**.

We wish to tune to a "radio station" broadcasting at **1 GHz**.

1. To what **two** values of f_{LO} could we set the **local oscillator frequency**?
2. Assume the LO frequency is set to the **higher** of the two solutions found in part 1 (i.e., the larger of the two possible LO frequencies f_{LO} for $f_{RF} = 1\text{GHz}$). Determine the broadcast frequencies of **all other** radio stations that could (for this LO setting) produce **any second-order** mixer product that would reach the radio detector/demodulator.

