Special Problem 4.E-6

In the receiver below, we know that:

1. The input **compression point** (saturation point) of the receiver is **+5.0 dBm**.

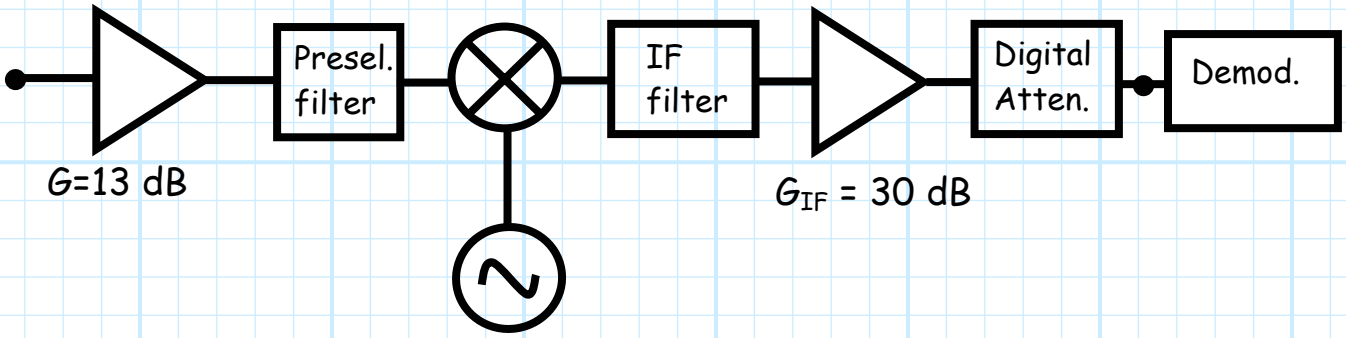
2. The **minimum** power required by the **demodulator** for proper operation is **-60 dBm**.

3. The **gain** of **LNA** is 13 dB, the **conversion loss** of the **mixer** is 6 dB, and the **insertion loss** of each **filter** is 0 dB.

4. The digital attenuator has a **minimum** attenuation of 3 dB, and a **maximum** attenuation of 60 dB.

5. The **attenuator** dynamic range is just **barely** large enough to satisfy the receiver design goals.

6. The receiver was **properly** designed by a **competent** radio engineer.



Determine the **total dynamic range** and the **instantaneous dynamic range** of this receiver.