

The u-blox 5 Technology supports either a short circuit protection of the active antenna or an active antenna supervisor circuit (open and short circuit detection). For further information refer to *Section 2.9.2*.

2.9.1 Passive Antenna

A design using a passive antenna requires more attention regarding the layout of the RF section. Typically a passive antenna is located near electronic components; therefore care should be taken to reduce electrical 'noise' that may interfere with the antenna performance. Passive antennas do not require a DC bias voltage and can be directly connected to the RF input pin **RF_IN**. Sometimes, they may also need a passive matching network to match the impedance to 50 Ohms.



Some passive antenna designs present a DC short to the RF input, when connected. If a system is designed with antenna bias supply AND there is a chance of a passive antenna being connected to the design, consider a short circuit protection.



All u-blox 5 receivers have a built-in LNA required for passive antennas.

2.9.2 Active Antenna (LEA-5H, LEA-5S, LEA-5A, LEA-5T)

Active antennas have an integrated low-noise amplifier. They can be directly connected to **RF_IN**. If an active antenna is connected to **RF_IN**, the integrated low-noise amplifier of the antenna needs to be supplied with the correct voltage through pin **V_ANT** or an external inductor. Usually, the supply voltage is fed to the antenna through the coaxial RF cable. Active antennas require a power supply that will contribute to the total GPS system power consumption budget with additional 5 to 20 mA typically. Inside the antenna, the DC component on the inner conductor will be separated from the RF signal and routed to the supply pin of the LNA (see Figure 15).

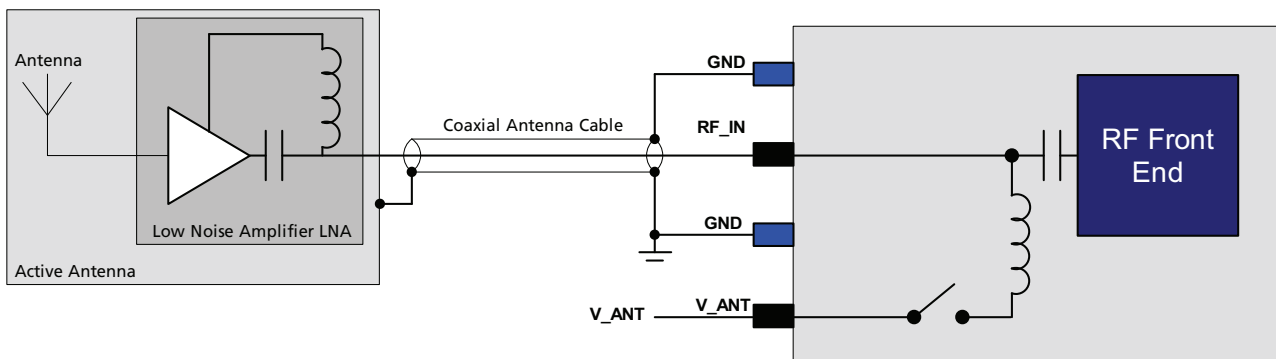


Figure 15: Active antenna biasing

Generally an active antenna is easier to integrate into a system design, as it is less sensitive to jamming compared to a passive antenna. But an active antenna must also be placed far from any noise sources to have good performance.



Antennas should only be connected to the receiver when the receiver is not powered. Do not connect or disconnect the Antenna when the u-blox 5 receiver is running as the receiver calibrates the noise floor on power-up. Connecting the antenna after power-up can result in prolonged acquisition time.



Never feed supply voltage into RF_IN. Always feed via V_ANT or an external inductor .



To test GPS/GALILEO signal reacquisition, it is recommended to physically block the signal to the antenna, rather than disconnecting and reconnecting the receiver.