A1101L09x Radio Modules
Block Diagram

Below is a block diagram for each of the A1101L09A and A1101L09C modules.

- Antenna
  - The antenna couples energy between the air and the AIR module. For applications where installations are done by an end user (non-professional), an omni-directional antenna pattern is desired; such that the application will work equally well in any direction. Similarly for peer to peer or point to multipoint applications an omni-directional pattern is desired such that all nodes have a fair chance of communicating. The A1101L09A module has an integral antenna that is near omni-directional, whereas the A1101L09C has approved antenna options ranging from near omni-directional to shaped front/back patterns (useful for inline, professional installations). Note that the end radiation patern depends not only on the antenna, but also on the ground plane, enclosure and installation environment.
    If the OEM or end user uses an antenna other than specified in Table 1, then the certification becomes void and it's the OEM/end user responsibility to re-certify the complete product.
- Filtering
  - Filtering removes spurious signals to comply with regulatory intentional radiator requirements.
- Switch
  - Switches between transmit and receive mode which helps in reducing some loss while in transmit mode.
- LNA
  - Amplifies the receive signal intended to reduce the noise by the gain of the amplifier and to achieve the best sensitivity. The noise of the amplifier is injected directly into the received signal.
- SAW Filter
  - Surface Acoustic Wave (SAW) filters has been used for sharp cut off of the unwanted spurs which helps in maintaining good quality in the receive signal within the band of interest.
- Matching
  - Matching provides the correct loading of the transmit amplifier to achieve the highest output power, as well as the correct loading for the receive LNA to achieve the best sensitivity.
- Physical
  - The physical layer provides conversions between data, symbol and RF signal.
- MAC
  - The MAC layer is part of the Logical Link Layer and provides frame handling, addressing and medium access services.

- Microcontroller Interface
  - The microcontroller interface exposes registers and commands for the physical and MAC layers to a microcontroller.
- Power Management
  - Power management ensures a stable supply for the internal functions, as well as providing means for a low power sleep mode (in which case, most of the transceiver is power off).

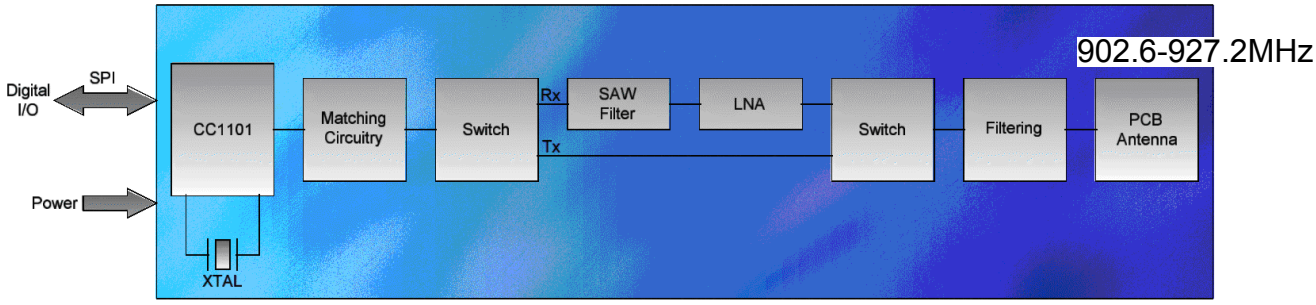

Figure 1 The functionality of the A1101L09A, using an integral antenna

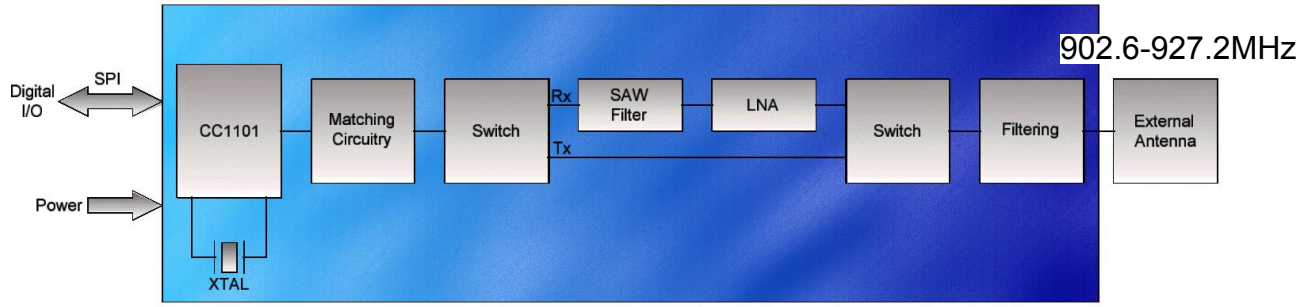

Figure 2 The functionality of the A1101L09C, using an external antenna.

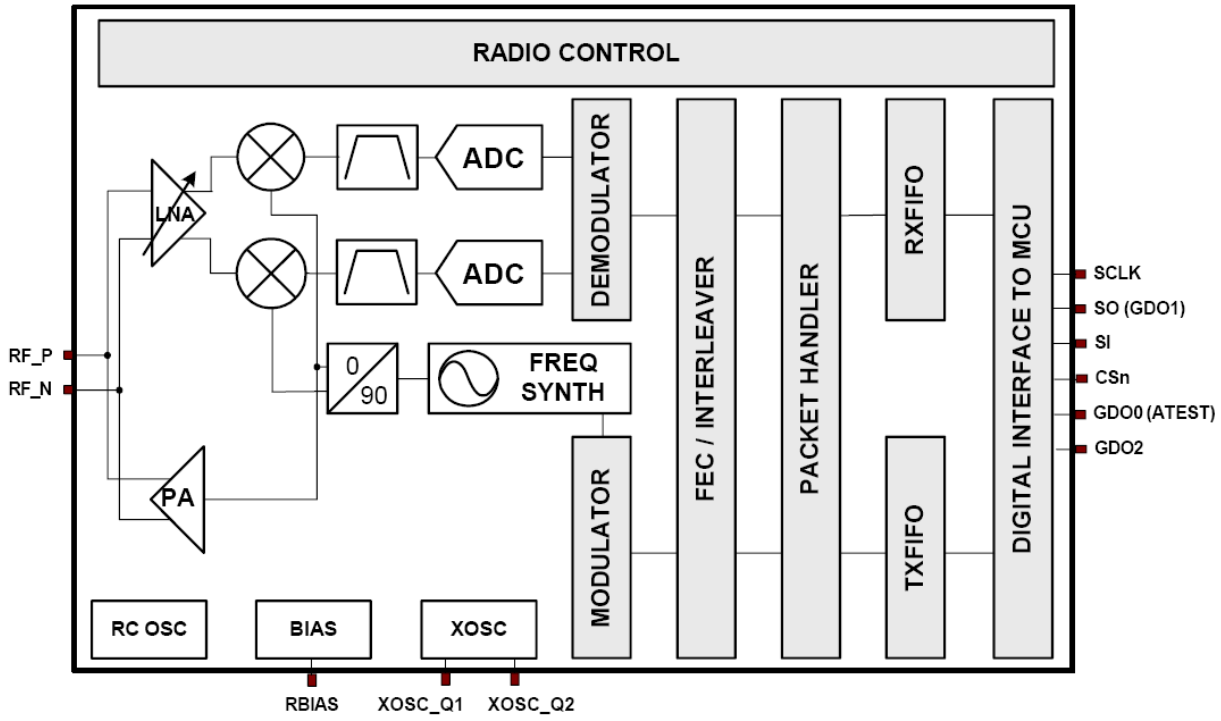

Figure 3 Transceiver IC block diagram.