

## MRF89XAM9A Transceiver Module – Circuit Description

The MRF89XAM9A module is built around the MRF89XA RF transceiver IC (U1). This IC contains a standard SPI serial data interface to an external data source. The data source will typically be a microcontroller which may also support the application for the product that uses the module. The IC also includes a voltage regulator which provides regulated power to all of the internal circuits on the IC. Bypass capacitors are provided around the IC as needed.

An external crystal at 12.800 MHz generates the clock for all of the digital circuitry on the IC. It also serves as a reference for the frequency synthesizer used to generate the RF carrier. This is the only clock source for the IC.

The transmitter function of the IC takes the data from the external data source over the SPI interface and creates packets in the MAC and baseband processor. It has an RF signal source and modulator to create the 902-928 MHz RF output signal.

The receiver function of the IC takes a signal into the IC and performs a down conversion to baseband where the data is taken out of the incoming packets by the MAC and passed to the external data unit over the SPI interface.

The transmit output of the MRF89XA IC is impedance matched to a SAW filter (FL1) and then to a fixed PCB antenna.