

3M RFID Reader Circuit Description

The 3M RFID Reader consists of the following major circuits. (see Reader Block Diagram)

Master Osc, Microcontroller, Transmit RF amp, Receiver Mixer, IF Amp, and Receiver Demodulator.

The Master Osc operates at 27.12 MHz to provide the time base for the microcontroller, and a divide by 2 circuit to provide 13.56 MHz for the transmit RF, local osc injection for the receiver mixer, and reference osc for the receiver demodulator.

The Microcontroller controls all functions of the reader. Its main functions include communicating with a host via the RS232 interface, transmitting data to RFID tags by controlling the modulation, selecting the proper IF amplifier bandwidth, interfacing with the digital demodulator to select the appropriate demodulation scheme, receiving data from RFID tags via the demodulator, and communicating received RFID data back to the host via the RS232 interface.

The Receiver Mixer converts the received RF signal to base band information by mixing it with 13.56 MHz from the Local Oscillator Driver to produce the IF base band signal.

The IF Amplifier contains the base band amplifier, IF filters, and limiter.

The Receiver Demodulator extracts the digital information from the base band signal and sends this information to the microcontroller for transfer to the host via the RS232 interface.