

# Requirements Specification

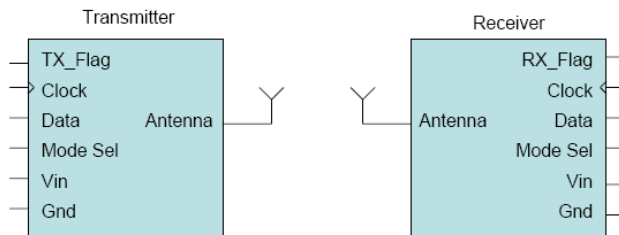
## The Deliverables of the Project Are:

- A working prototype of the following
  - o Transmitter Electronics
  - o Transmitter Antenna
  - o Receiver Electronics
  - o Receiver Antenna
  - o The design of the packaging is not part of this project
- A Bill of Material (BOM) for each of the prototypes
- A system specification document for each of the prototypes, including the design concept, block diagram, functional description of the blocks, a system description, and any analysis done during the design of the system
- Schematic diagrams and circuit descriptions for electronics
- Mechanical drawings for antennas

## Principle of Operation:

This radio is designed for short range, high data rate, one way digital communications. The user will write data to the SPI port of the transmitter. Once the data has been received by the transmitter, the transmitter will send the data to the receiver at a rate of 100kbs. Once the data has been received by the receiver, the receiver will indicate data has been received by setting an external pin high. The user will then clock the data out of a SPI on the receiver.

## Draft User Manual:



Both the transmitter and the receiver are 6 pin modules.  
The pin definitions with descriptions of their operation is as follows:

## Transmitter

1. TX\_Pin
  - a. The TX\_Pin indicates whether the current state of the transmitter

- i. If the TX\_Pin is high, the transmitter is busy, and cannot be written to
    - ii. If the TX\_Pin is low, the transmitter is ready to be written to
2. Clock Input
  - a. This is the clock input for a Master-Slave I<sup>2</sup>C communications protocol. The transmitter is the slave device.
3. Data
  - a. This is the data input for the transmitter. The transmitter reads the data on the low of each clock cycle.
4. Mode Select
  - a. There are 2 basic modes of operation for the transmitter which are selected by setting a logic 0 or 1 to this pin.
    - i. Logic 0: In this mode the transmitter sends 1 byte at a time.
    - ii. Logic 1: In this mode the transmitter sends a continuous stream of buffered digital data.
5. Voltage In
  - a. The transmitter can take a supply voltage of 2-5 Volts DC
6. Ground

## **Receiver**

1. RX\_Pin
  - a. The RX\_Pin indicates whether the current state of the receiver
    - i. If the RX\_Pin is high, the receive buffer is full
    - ii. If the RX\_Pin is low, the receive buffer is empty
2. Clock Input
  - b. This is the clock input for a Master-Slave I<sup>2</sup>C communications protocol. The receiver is the slave device.
3. Data
  - c. This is the data output for the receiver. The receiver writes the data on the low of each clock cycle.
4. Mode Select
  - d. There are 2 basic modes of operation for the receiver which are selected by setting a logic 0 or 1 to this pin.
    - i. Logic 0: In this mode the receiver receives 1 byte at a time.
    - ii. Logic 1: In this mode the receiver receives a continuous stream of buffered digital data.
5. Voltage In
  - e. The receiver can take a supply voltage of 2-5 Volts DC
6. Ground