



## **Theory of Operation Statement**

### **Operational Description**

The AXZI SB-1 is designed to read RFID transponders that operate at a frequency of 134.2 KHz. The reader sends out a magnetic field through the antenna at that frequency. Using the same antenna, the signal is received back from the transponder, sent through filters and decoded by the microprocessor. The resultant transponder ID is then displayed on the LCD and can also be stored in memory and/or sent out through communication ports to a host computer. Antennas used with the reader are directly connected. Jumper plugs are used to rough tune the antenna and the reader will then fine tune automatically.

### **Grounding Description**

All cables have shielding that is connected to frame ground. The frame ground is connected to AC through the DC power supply. The reader enclosure is also connected to frame ground.

### **Antenna Description**

The antennas used with the Destron Fearing readers are a tuned LC circuit. They are made of a coil and series capacitors tuned to peak the antenna current at 134.2 KHz.

### **Circuit Functions**

#### **Mother Board**

The Mother board contains the microprocessor and support circuitry for I/O functions such as serial communications, LCD display, and keypad scanning. The Mother board also contains the memory for storing operating parameters and RF tag ID's. All frequencies are generated on this board.

The Mother board also contains the circuitry for driving the antenna circuit and the receive filters for retrieving the signal back from the antenna.

#### **Display Board**

The Display board has the LCD and Keypad connections. It is connected to the Mother Board which contains all drive circuits for the display and keypad.