**Introduction**
This document provides a description of the circuit schematic for reference. The schematic outlines the hardware details of a web enabled remote monitoring and control device. The basis of the device is that it is a network accessible device presenting a hardware interface layer for use in the development of secondary devices. The basic modules in the schematic are:

1. Power Interface
2. Ethernet Interface
3. IO Interface

**Power Interface**
The power interface is comprised of the power module as well as the connection to the mcu's various power supply pins. The end user is presented with jumpers allowing for different functions. The power supply a single center positive beryl connector to be connected to a standard wall transformer. A jumper (J9) is presented to the user to allow for an external switch should they choose such a function. The supply has a dedicated on-board switch to disconnect the power input from the rest of the circuitry. An ST-Micro LD29080DT33 (U2) voltage regulator is used to present the chip with a steady 3.3v supply voltage. An on-board LED (LED1) is used to signal power supply status. The 3.3v source is fed into the chips power supply network. This network follows recommendations made by Freescale regarding proper powering of this device. The A2D converter utilizes two pins in the supply network, VRH and VRL, as the reference levels for the converter. The user is presented with three jumper options (J6, J3, and J7) to choose the proper reference levels. If jumpers J6 and J7 are set, VRH is tied to VDD and VRL to ground. If J6 and J7 are cleared, J3_1 is tied to VRL and J3_2 tied to VRH. Note that J6 and J7 should not be set if specifying your own voltage levels. The MCU has an internal LVD module which will be turned on in software, and monitors VDD compared to an internal voltage reference. If VDD drops below this internal threshold, the device resets.

**Ethernet Interface**
To connect to an external network, this device is equipped with a 10/100 ethernet interface. The ethernet interface is properly biased according to specifications made available from Freescale. Pins {PHY_TXN, PHY_RXN, PHY_TXP, PHY_RXP} are connected to an isolating device (U3). U3 is a Pulse Isolation Transformer H1102 designed specifically for 10/100 ethernet interfaces. It provides inductive isolation from the physical network. Capacitor C20 is made to withstand 1000v to withstand any possible voltage spike originating from the pulse transformer. A shielded RJ45 connector (J4) is used with its chassis grounded. This device makes use of the activity monitor and link monitor. These outputs are tied through a pullup resistor to +3.3v. A jumper (J8) is used to allow external LED's to be used if the designer so chooses.

**IO Interface**
There are three main IO components, an input to the A2D converter, 8 GPIO outputs, and a reset switch connected to a GPIO port. The A2D converter is simply connected to a 1x8 pinheader (J2). The 8 GPIO ports are spread between two 4-bit GPIO banks on the MCU (PTA and PTC), and consequently connected to a single 1x8 pinheader. The reset switch is not an asynchronous reset, rather it resets the networking information on the device, and is connected to a GPIO port (PGP3). Through using these pinheaders, the user has complete access to the device. An IEEE JTAG pad has been incorporated to allow for field flash-reprogramming of this device.

**Conclusions**
This majority of this device is incorporated in the software design and implementation. All that is basically required is the power supply and interfacing circuitry. The majority of the interfacing circuitry is based on application notes and documentation out of the reference manual for the MCF52235 embedded micro controller.