Description of how M1001 works:

The M1001 is a networked music player. It operates by connecting to a networked storage device which contains a music server. The network connection can be either wired Ethernet or Wireless 802.11b. The M1001 will allow the user to select from multiple music servers.

The M1001 has a VFD display which is driven from a serial shift register on the CPU. The CPU keeps the VFD display painted at all times.

The M1001 has an IR sensor by which it receives IR commands that tell it what to do. When the user presses buttons on the IR remote, the M1001 will change the display accordingly.

Once the user has selected a song or a list of songs to play from a server, then the M1001 will fetch the songs over the network. The songs are then decoded inside the CPU, and put out to the AC97 codec. The codec changes the digital codes back into analog and digital audio. A suitable stereo can be connected to the M1001 using analog line out, or digital coax SPDIF out, or digital optical SPDIF out.

The transmitter on the M1001 is a 802.11b module that we purchase from Philips. The M1001 commands this device to transmit and receive using the SPI bus. The 802.11b module is connected to a 44MHz crystal, and the module connects to two antennas. One antenna is for receive only, and the other antenna is able to transmit and receive. The transmit/receive antenna signal has a low pass filter on it to stop harmonics of the 2.4GHz main transmit signal.

The antennas used on the M1001 are chip antennas that mount directly to the PCB. There is ground plane next to the antenna. The traces that run from the Philips 802.11b module to the antenna are 50 Ohm traces.