Theory of Operation:

The Base utilizes a 433.92 MHz receiver and DECT transceiver. The base is powered by an AC line source with a battery backup and charger.

The 433 MHz receiver's extremely low receive sensitivity (–113 dBm) ensures extended range and improved link performance. It has a 30.0 MHz crystal reference. It uses a wire antenna.

 It also utilizes a DSP Group DCX79 DECT RF and baseband processor that will do all alarm processing and calling over the PSTN or cellular accessory interface. A microphone and speaker will also interface to the processor to allow audio to the human over the PSTN or cellular network.

This DECT device operates by means of a full duplex radio frequency TX/RX system in 1920 - 1930MHz band transceiver architecture.

It provides the following features:
1. 5 Radio frequency Channels in 1920 - 1930MHz
2. Time Division Duplex operation
3. 32kbps ADPCM voice CODEC

Transmission
ADPCM CODEC converts the voice signal into 32kbps digital data. The digital data is fed to Burst Mode Control Modem. The transmit FSK data is shaped by a Gaussian low-pass filter and modulated directly into the delta-sigma data stream. The DECT protocol used by the system utilizes Time Division Duplexing.

Receive
The receive path uses a single-conversion architecture which image-reject mixes the 2-level FSK-modulated receive signal to a low IF frequency of 864 kHz. Integrated band pass filters provide rejection of unwanted signals. The IF signal is amplified and limited prior to demodulation by an integrated FM discriminator that requires no external components or adjustment. The resulting demodulated audio signal is then filtered, sliced, and output to ADPCM CODEC. Finally, the ADPCM CODEC outputs received analog signal. The receiver uses one wire antenna.

DECT Specification:
- Frequency: 1920 - 1930MHz
- Number of channel: 5
- Two Internal Antennas
- Channel Separation: 1.782 MHz
- Modulation: FSK
- Bit Rate: 1152 kBit/sec.
- 1'st Intermediate frequency: 864 kHz
- Reference Clock: 13.824 MHz
- Duplexing: Time Division Duplex
- Burst Frame: 10 msec
- Voice Coding: ADPCM
- Monitoring is made thought the radio receiver used by this DECT phone for communication.
- Two wire antennas for diversity.

Shield can foot prints are provided on the PCB but are not populated.

After the base learns the pendant(s) ID's, it goes into standby mode. When the Caretaker Pendant button is pushed for 2 seconds, the following chain of events happen:

A) Info LED turns on
B) Base Beeps
C) A call is activated and dial tone should be heard through the speaker
D) Base dials a stored Caretaker telephone number
E) Microphone is turned on
F) Conversation can commence if voicemail or Caretaker answers. A 3 minute VOX timer starts.
G) Cancel button or #9 ends conversation
H) Base hangs up, turns Info LED off, and resets