

# CHAPTER 2

## OPERATIONAL OVERVIEW

### 2.1 OVERVIEW

The SelectAmp NBPCS-900-3 Paging Repeater accepts inputs in the 928 – 942 MHz paging band, and selectively passes one discrete channel in each band while rejecting the others. This is accomplished by downconverting the desired signals to a 45 MHz intermediate frequency and using narrowband crystal filters to provide adjacent channel rejection. The reverse path is not channelized, passing all frequencies in the 897 – 903 MHz band.

### 2.2 RF DISTRIBUTION

The amplifier contains two paths; forward for the base station to pager signal and reverse for the pager to base station signal. The forward path includes a diplexer, low noise amplifier and splitter, channelizer, combiner, and power amplifier. The channelizers determine the frequencies to be amplified and provide the gain control. The reverse path includes a diplexer, broadband module (amplifier and filters), and a power amplifier.

### 2.3 POWER DISTRIBUTION

Main power for the amplifier is provided by a 6.7 amp power supply operating at +15 VDC. The power supply accepts 100 - 240 VAC inputs. This +15 VDC output of the power supply is routed to the Control/Distribution board. The Control/Distribution board regulates and outputs the +15 volts, +12 volts, and +5 volts to the various modules.

### 2.4 CONTROL/DISTRIBUTION

The operator has control over the gain and operating frequency of the forward paths, and gain only of the reverse path. The gain setting is controlled via front panel accessible pots. The forward channel frequencies are entered through software installed on a PC/Laptop and sent to the Control/Distribution board. The channel setting is then sent via a three wire serial interface from the Control/Distribution to a synthesizer in each channelizer. Each active module in the amplifier outputs status line(s) to indicate the overall condition of the active devices. If an active device fails, the module reports a fault (red indicator) on the front panel. The reference oscillator for the channelizer synthesizers is located on the Control/Distribution board as well.