Guitar Unit Description of Operation:

An analog audio signal generated by a musical instrument enters the device through a 1/4" Phone Plug. The audio signal is coupled to an analog input of an Analog to Digital Converter (ADC).

The ADC converts the analog signal into a digital representation and outputs a digital audio data stream aligned with a 12MHz clock to the Texas Instruments CC8520 RF Transceiver.

The Texas Instruments CC8520 RF Transceiver contains an oscillator circuit that stimulates an external 48.000 MHz crystal. An internal clock multiplier circuit then generates the necessary internal clocks for the 2.4xx GHz fundamental tone, modulator circuits, and a 12MHz output clock for the external ADC. The digital audio stream is framed into a 2.5ms TDM frame, which is then used to perform shaped 8FSK modulation of a fundamental tone in one of 18 channels (4MHz frequency bands with centers ranging from 2.406 GHz for 2.474 GHz). The modulated signal is then amplified to an appropriate power level. The CC8520 contains circuitry for monitoring and controlling the output power. The output of the transceiver is a fully modulated carrier signal at a level of 3.5dBm.

The modulated output of the RF transceiver is passed to an Inverted F Antenna (IIFA), and radiated from the unit.

Periodically, the CC8520's transmitter output powers down, and a receiver circuit monitors the signal received from the IIFA antenna. This signal is used as part of a Texas Instruments' proprietary protocol which contains information on channel quality and other useful control information. Any detected signal is demodulated, decoded, and appropriate actions taken. This return channel in the RF Transceiver is capable of carrying additional audio signals, but in this product it does not.