

WalkLink Circuit Operation

The Bluetooth RF signals are received by the internal antenna and routed through a bandpass filter and switch to the Low Noise Amplifier (LNA) in the Atmel integrated circuit, and then forwarded to the Cambridge Silicon Radio (CSR) integrated circuit. The CSR circuit demodulates the signals and produces serial data which is routed through the RS-232 drivers and sent to the WalkAide through a cable. Serial data returning from the WalkAide is routed through the RS-232 receivers to the CSR chip. The CSR chip modulates the signal to RF frequencies which are amplified by the power amplifier in the Atmel chip, and finally routed through a switch and bandpass filter to the antenna for transmission. The CSR integrated circuit uses a 16 MHz crystal and performs all modulation, demodulation and Bluetooth protocol issues.

The WalkLink is powered by four alkaline batteries. The switching power supplies generate 1.8 volts DC and 3.3 volts DC to power the system. The microcontroller monitors the battery voltage and blinks the green LED when battery voltage is good. When battery voltage is low, the microcontroller blinks the red LED to inform the user that the batteries are low and should be replaced with a new set of batteries. The microcontroller also blinks the blue LED when a Bluetooth link is established. If there is no Bluetooth link established for a period of 15 minutes, the microcontroller powers-down the system to conserve battery power.

The internal antenna is mounted on the printed circuit board. The ground reference is the ground plane located in the printed circuit board.