

Wireless earphone

Operation Principle

1. Controller Side Radio

The radio system is mainly composed of three parts: radio modem, frequency synthesizer and baseband microprocessor. The radio modem is a GFSK modem running at 768Kbps. The antenna is an embedded PCB antenna matching is done by using lumped inductors and capacitors.

The microcontroller scans keystrokes on the earphone, then packs the data by adding preambles, frame information, and error checking bytes. The radio system uses one of 34 channels (the frequency range is 2.406-2.472GHz) to send signal in random, and the channels change frequency is 62.5HZ per second. Otherwise, there are 16 synchronous channels (distribute in the 34 channels uniformity).

The earphone radio is powered by 2-AAA side batteries and regulated to 2.0V. The power consumption of RF module is about 20mA, the total power consumption of the earphone side radio system is about 40mA in normal working mode. It will enter sleep mode if no signature is input after 10 minutes, in this mode the total power consumption of joypad is only about 40uA*.

2. Station Side Radio

Station side radio will always send RF signal at intervals, and it also receives, un-packs , and sends the data to pc-usb or audio in.

Station side radio system will send sync packets after being powered on, and then search joypad's responses. This is search mode. If any responses-packets be received, the Station side radio system will enter normal working mode. Then, if station side radio system loses synchronization, it will enter search mode.

Station side radio system is powered by console (5V), power consumption is about 170mA in normal working mode.