

1. Introduction

The Jabra BT5010 Headset is an lightweight “over the ear” wireless headset utilizing Bluetooth technology in the 2.4 GHz band for a short range (up to 10 meters) RF link. The headset contains a microphone and a receiver, and is intended for hands free communications with mobile telephones containing Bluetooth compatibility or any other device that has a Bluetooth Audio Gateway. A flexible detachable earhook is used for wearing the headset over left or right ear.

Headset power is provided by a build in rechargeable Lithium-ion Polymer (LIP) battery. The battery can be charged with an AC charge adapter.

2. User Operated Controls

The headset has the following user operated controls:

- Multi Function Button (MFB) for power on/off, to initiate a call, hang up a call etc.
- Volume up and down buttons.
- Pairing button for entering pairing mode.

3. Indicators

A common red/green/blue LED located close to the volume buttons is used for visual indication.

A blue LED flashes to indicate Power ON/OFF, Pairing, BT Audio Link Established and Standby Mode.

A red LED flashes to indicate low battery. Tones in the receiver during the call also indicates low battery.

A green LED flashes to indicate battery charge complete.

4. RF Scheme of Operation

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The unique hopping sequence is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1600 hops/s. All Bluetooth units participating in a piconet are time- and hop-synchronized to the channel.

The channel is divided into time slots, each 625 μ s in length. In the time slots, master and slave can transmit packets. A TDD scheme is used where master and slave alternatively transmit. The RF hop frequency shall remain fixed for the duration of the packet. For a single packet, the RF hop frequency to be used is derived from the current Bluetooth clock value. For a multi-slot packet, the RF hop frequency to be used for the entire packet is derived from

the Bluetooth clock value in the first slot of the packet. The RF hop frequency in the first slot after a multi-slot packet shall use the frequency as determined by the current Bluetooth clock value. If a packet occupies more than one time slot, the hop frequency applied shall be the hop frequency as applied in the time slot where the packet transmission was started.

In total, 5 types of hopping sequences are defined:

- A page hopping sequence with 32 unique wake-up frequencies distributed equally over the 79MHz, with a period length of 32.
- A page response sequence covering 32 unique response frequencies that all are in an one-to-one correspondence to the current page hopping sequence.
- An inquiry sequence with 32 unique wake-up frequencies distributed equally over the 79MHz, with a period length of 32. (Note: The headset does **never** use this sequence)
- An inquiry response sequence covering 32 unique response frequencies that all are in an one-to-one correspondence to the current inquiry hopping sequence.
- A channel hopping sequence which has a very long period length, which does not show repetitive patterns over a short time interval, but which distributes the hop frequencies equally over the 79MHz during a short time interval.