

Operational Description CIBS

1. Introduction

The CIBS is a 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. Furthermore, the headset is capable of receiving high quality music over the Bluetooth link. The 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:

- ON/OFF button for powering the device.
- Pairing button / pause music.
- Multi Function Button to answer a call, hang up a call and initiate voice dial.
- Volume up and down wheel.
- Button to change Bluetooth device.

3. Indicators

A Blue/red LED located in the right side of the unit is used for visual indication. A blue LED flashes to indicate Power ON/OFF and Standby Mode. A red LED flashes to indicate low battery and talk-through feature enabled. Tones in the receiver during the call also indicates low battery. The LED blinking Blue and red alternatively indicates pairing mode.

On the battery side a Red/Blue LED indicates battery charging (Red) and battery fully charged (Blue)

4. Antenna type

The antenna used for the AudioStreamer is a Fractus Compact Reach Xtend™. Frequency range 2.4-2.5 GHz and Peak gain > 1dBi. Impedance is 50 Ohm and is linear polarized.

5. 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 79 MHz, 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 79 MHz, with a period length of 32. (Note: The headset does **never** use this sequence)
- A 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 79 MHz during a short time interval.