Operational Description AudioStreamer

1. Introduction
The AudioStreamer is a wireless Gateway utilizing Bluetooth technology in the 2.4 GHz band for a short range (up to 100 meters) RF link. The Gateway contains a row of analogue inputs, and is intended for hands free communications with stereo headphones containing Bluetooth compatibility or any other device that has a Bluetooth Audio. Furthermore, the Gateway is capable of transmitting high quality music over the Bluetooth link. The gateway power is provided by external mains adaptor.

2. User Operated Controls
The gateway has the following user operated controls:
- Multi Function Button (Master button) for setting the device into paring and to initiate connection to a headset device.
- Master reset button – to set the gateway to factory setting.
- A row of 4 buttons to select the analogue input

3. Indicators
A Blue/red LED located in the corner of the gateway used for visual indication. A blue LED flashes to indicate connection status

The gateway flashes red and blue when in parring mode.

On the front panels a row of green LED's indicates which analogue channel is open for audio input.

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 μs 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 Gatewayheadset 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.