

# SOPIKA Transmitter Description – pg 1

Refer to Block Diagram

The Sopika Wireless Audio Transmitter consists of 3 major blocks:

- Configurable analog audio to digital audio converter (A-D)
- Configurable digital data Radio Frequency transmitter and antenna
- DC power regulators

## **Configurable analog audio to digital audio converter (A-D)**

The A-D accepts Left and Right channel line level audio input signals from such sources as TV's, radio's, and other consumer audio equipment via standard stereo connector.

Additionally, the A-D accepts stereo headphone level audio signals typically available as output from portable music and video players such as the iPod, as well as smart phones.

All analog audio signals are converted by the A-D into a 2-channel stream of digital audio samples which are sent to the digital data transmitter.

# SOPIKA Transmitter Description – pg 2

## **Configurable digital data transmitter and antenna (transmitter)**

The 2-channel stream of digital audio samples modulate the radio frequency transmitter signal in the 2.4GHz industrial, scientific and medical (ISM) radio band. Using various techniques including error correction, buffering, and re-transmission, the RF signal has excellent robustness and co-exists without interference with other ISM RF devices.

The Sopika transmitter complies with world wide radio frequency regulations. The ISM band was chosen for its ability to provide reliable short range communication, and 2.4GHz easily penetrates walls and other common barriers in typical buildings.

Programmable parameters at manufacturing time include digital data audio sample rate and transmitter power.

The antenna is specially designed to match the transmitter characteristics and to be made as part of the printed circuit board layout, thereby eliminating the need for an external antenna.

# SOPIKA Transmitter Description – pg 3

## **DC Power Regulators**

The DC Power Regulators accepts input DC voltage from a standard USB source such as a laptop computer or other consumer audio/video device.

Each major block of the Sopika transmitter has its own voltage regulator to ensure reliable and stable noise free operation.

## **General Note:**

The Sopika Transmitter is normally operated in conjunction with the Sopika Receiver. As such, when operating, the two units are 'paired' together. Pairing is established by pushing a button on both units the first time the units are used, and thereafter pairing occurs automatically when power is applied to both units.

# SOPIKA Receiver Description – pg 1

Refer to Block Diagram

The Sopika Wireless Audio Receiver consists of 5 major blocks:

- Configurable digital data Radio Frequency receiver and antenna
- Configurable analog digital to analog audio converter (D-A)
- Stereo high power amplifier
- OPTIONAL Mono high power Sub-woofer amplifier
- DC power regulators and control circuit

## **Configurable digital data receiver and antenna (receiver)**

The Sopika digital data RF receiver receives the 2-channel stream of digital audio samples sent by the Sopika transmitter, and in turn, sends them to the D-A.

Programmable parameters at manufacturing time include digital data audio sample rate, and is done to match the Sopika transmitter audio sample rate.

The antenna is specially designed to receiver the signal from the Sopika transmitter, and to be made as part of the printed circuit board layout, thereby eliminating the need for an external antenna.

# SOPIKA Receiver Description – pg 2

## **Configurable analog digital to analog audio converter (D-A)**

The D-A accepts the 2-channel stream of digital audio samples from the RF receiver, and decodes the signals into a Left and Right channel line audio output signal or a stereo headphone level audio output signal.

Additionally, the D-A output signals are made available to both the Stereo high power amplifier and the OPTIONAL Mono Sub-woofer high power amplifier.

Configuration options allow either one of the output types to be used alone, or they may be used simultaneously. Configuration also allows the use of local analog audio input sources to be connected to the Sopika receiver amplifiers.

# SOPIKA Receiver Description – pg 3

## **DC power regulators and control circuit**

The Sopika receiver has DC regulators for the D-A and RF receiver blocks. The power for these blocks is derived from a regulated external higher voltage supply. The higher voltage supply is used to directly power the Sopika receiver high power audio amplifiers.

Additionally, the power to the audio amplifiers is controlled such that power is applied to the amplifiers when audio signals are being received from the D-A, but when audio signals from the D-A stop, the amplifiers are turned off after a time delay to conserve power.

# SOPIKA Receiver Description – pg 4

## **Stereo High Power audio amplifier**

The Sopika receiver has a proprietary Class D stereo amplifier built in providing excellent stereo audio quality.

## **OPTIONAL High Power audio amplifier**

The Sopika receiver has an OPTIONAL low pass filter and a proprietary Class D mono Sub-woofer amplifier built in providing excellent low frequency power and response.

## **General Note:**

The Sopika Receiver is normally operated in conjunction with the Sopika Transmitter. As such, when operating, the two units are 'paired' together. Pairing is established by pushing a button on both units the first time the units are used, and thereafter pairing occurs automatically when power is applied to both units.