



# XEMICS

**Product Brief**  
**XE1201A-WHK2**  
**Wireless Headset**



## XE1201A-WHK2

Wireless headset reference design

Based on XEMICS' ultra low power RF and Audio CODEC technology

### General Description

The XE1201A-WHK2 is a reference design for a bi-directional wireless voice communication using the XEMICS XE1201A ultra low power UHF transceiver, and XE3005 audio CODEC.

The voice link over RF features perceived full-duplex voice communication at an audio quality, equal to wired-line telephone conversations.

The XE1201A-WHK2 consists of two parts, the headset and the phone interface. Both boards have a small form-factor that can easily be mechanically integrated in various headset styles. Thanks to its low current consumption and robust technology, this design provides a reliable wireless voice link and an extended talk time. These are key benefits for portable communication devices.

The XE1201A-WHK2 design is complete, with hardware and software and targeted at OEMs with quick time to market requirements.

### Targeted applications

Wireless headsets for cell phones/cordless phones

### Design Features

- Duplex (bi-directional communication)
- Uses ISM license free band 300-500MHz single frequency
- Voice quality (telephone) speech transmission
- Secure communications link (both transmitter and receiver boards are assigned a unique ID)
- Broadcasting range 3 to 5 meters
- 12mA typical, 500µA standby @ 3.6V
- Rechargeable battery (power supplied by the cell-phone charger: 4 – 16V)
- Talk time up to 3 hours, standby time up to 80 hours with a 40mAh battery
- Call answer
- Volume control
- Battery level monitoring

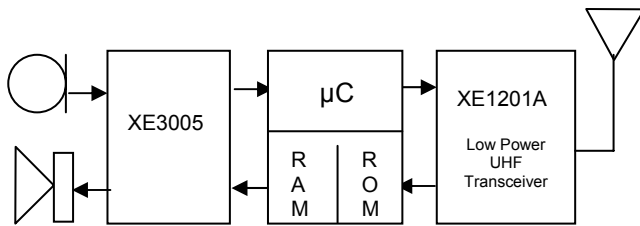
## Functional description

The voice transmission achieved over a RF link with the XE1201A-WHK2 design is fully digital. The kit uses the XE3005's 16-bit  $\Sigma$ - $\Delta$  ADC and DAC to convert the input/output voice signals. The sampled incoming voice data is reduced using a DVI-ADPCM like compression algorithm, which runs on a microcontroller.

The digitized voice is packetized and sent over the XE1201A RF link using its TDD protocol. The system takes advantage of the XE1201A's fast TX/RX switching time (15 $\mu$ s) to provide perceived full duplex voice communication. Each voice packet contains an ID number that must be matched at reception for security purposes.

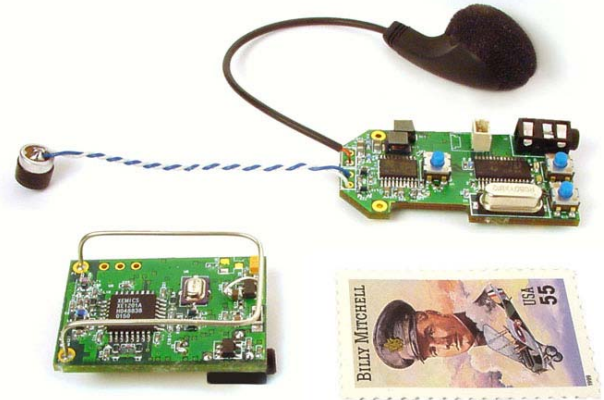
The XE1201A-WHK2 design requires analog audio input/outputs. The 2 boards have their own rechargeable battery, which has wide span supply capabilities: from +4V to +16V.

A raised antenna is mounted on each board as well as a power jack for the battery. The boards measure 20mm x 30mm x 12mm.



## Developing your application

The complete RF link for telephone quality voice transmission is fully functional. Both hardware and software on the XE1201A-WHK2 were optimized to this effect. The OEM will need to interface the analog input/output lines to the host system (i.e. a cell phone). The microcontroller that manages this application has spare cycles that will enable the OEM to implement application dependent features.



## Product availability

The 1201A-WHK2 design is available now. It includes standard components readily available from various vendors.

## Manufacturing

The 1201A-WHK2 design contains all manufacturing data (Gerber file + schematic) as well as the required microcontroller software.

## Reference

XE1201A-WHK2 Users Guide

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