Title: DIGITALLY PROGRAMMABLE WIRELESS TWO-WAY AUDIO AND VIDEO MESSAGE COMMUNICATION SYSTEM, WITH AUTOMATIC PHOTO FEATURE

Abstract: A two way video/audio wireless communication system having a video screen and an audio communication system attached on a peephole of a front door. The system has an automatic sensor on the door unit (PIR) that will take a photo of the guest and the image to the in door handheld unit. A built in answering machine to record video/audio messages left by visitors, and also store them on the door handheld unit. The system can be connected to the computer via USB or Bluetooth to check on the visitors. The video can be turned off/on at any time during transmission.
THE PROTECTOR

Digitally programmable wireless two-way audio and video message communication system, with automatic photo feature.

The present invention relates generally to intercom systems, and, in particular, to a wireless communication system between a front door audio and video receiving and audio and video transmitting unit, for use by a visitor to a building, and a portable audio and video transmitting and audio and video receiving unit for use by an occupant of the building.

When a person rings a doorbell of a home or other building, and there is no one inside to answer it, the person is normally unable to leave an audio or video message of their visit, if there are no recording units available for activation at that time.

Some buildings are equipped with security cameras that may provide a video recording of a person at the door, but not offer the visitor an opportunity to leave an audio or video message, especially one that is through a wireless communication system.

There are intercom systems that provide a live two-way exchange of audio only between the person at the door and the occupant of the building, and these systems may also provide for live one-way video imaging of the visitor for the occupant, but these systems are wired, and do not always allow the visitor to record an audio and video message, if no one answers the doorbell.

It would be of benefit to both visitors and occupants, if they could communicate both live and by recording through audio and video with a wireless system that has an audio and video receiving and recording unit fitted to the front door, for use by visitors and has an audio and video transmitting unit that is portable for use by occupants.
Accordingly, the present invention provides a wireless communication system between an outside and inside of a building, comprising:-

an audio and video receiving and an audio and video transmitting unit, fitted to a front door of a building, with an automatic photo sensor, for use by a visitor at the outside of the building;

an audio and video transmitting and audio and video receiving unit, that is portable for use by an occupant at the inside of the building,

wherein the front door fitted unit is configured such that, when the visitor identifies their presence at the front door, an audio and video message of the visitor can be sent to the portable unit, allowing for transmission of the audio and video message to the occupant, and

wherein the portable unit is configured such that:-

when the occupant activates the portable unit for live communication, the occupant can respond to the transmitted audio and video message, by sending an audio and video message to the visitor, and

when the occupant activates the portable unit for recorded communication, the audio and video message is recorded for its later transmission to the occupant.

The front door fitted unit has a doorbell for identifying the presence of visitors at the front door, and a motion sensor may alternatively be used, which takes automatic photos of guest and sends it to the handheld unit, then to a computer for off site security.

It is preferred that the front door fitted unit has a peephole camera for sending a video message to the portable unit.

In a preferred form, the front door fitted unit is also a video transmitting unit, and the portable unit is also a video receiving unit, and wherein both the front door fitted unit and the portable unit are further configured such that, when the occupant
activates the portable unit for live communication, the occupant can respond to the transmitted audio and video live transmission by sending an audio and video live transmission to the visitor.

The recording of the audio and video message of the visitor, by the portable unit, can preferably be monitored remotely, when the occupant is outside the building, by connection of the portable unit to an internet enabled computer inside the building.

In order that the present invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings, in which:-

Fig 1 is a schematic diagram of a front door fitted unit of a wireless communication system, according to a preferred embodiment of the invention, and

Fig 2 is a schematic diagram of a portable unit for use with the front door fitted unit shown in Fig 1 in a wireless communication system, according to a preferred embodiment of the invention.

A preferred wireless communication system of the invention between an outside and an inside of a building is to be described by reference to a front door fitted unit 12 shown in Fig 1, and a portable unit 14, shown in Fig.2.

The unit 12, is an audio and video receiving and an audio and video transmitting unit, which fits into the front door 16, through the peephole in the door. This connects 12 together (inside and outside pieces through the door).

The unit 14, is an audio and video transmitting and an audio and video receiving unit, which also includes a video receiving unit which is portable for use by an occupant at the inside of the building.
The front door fitted unit 12 is configured such that, when the visitor identifies their presence at the front door, such as by ringing a doorbell, or by having their motion sensed by a remote sensor, and an audio and video message or signal of the visitor can be wirelessly sent to the portable unit 14, allowing for transmission of the audio and video message live transmission to the occupant.

The portable unit 14, is configured such that, when the occupant activates the portable unit for live communication, the occupant can wirelessly respond to the transmitted audio and video live communication, by sending an audio and video live communication to the visitor. The portable unit 14 is also configured such that, when the occupant activates the portable unit for recorded communication, the audio and video message is recorded for its later transmission to the occupant.

More specifically, the front door fitted unit 12 includes a wireless 2.4 GB audio and video receiver and transmitter. The receiver component, on the outside of the door 16, has a peephole camera 20 for receiving and recording a video message from the visitor when a visitor presses a doorbell 22, and has a microphone 24, for receiving and recording an audio message from the visitor when the doorbell is so pressed. The transmitter component, also on the outside of the door, has a speaker 26, which co-operates with the doorbell 22, and the microphone 24, for transmitting an audio message from the visitor, when the occupant is not at home, and has a video screen 28, for transmitting a video message from the visitor, when the occupant is not at home.

On the inside of the door 16, is an answering machine, 30, which co-operates with the microphone 24, and the speaker 26, to both record audio and video messages left by a visitor for an occupant, and transmit audio messages left by an occupant for a visitor. The answering machine, 30, includes a button for standby mode 32, as well as the usual message set up buttons for recording mode 34, deleting mode 36, and play mode 38.
The unit 12, is powered by a 12V or three AAA batteries, which can slide into a wired housing 40 on the inside of the door adjacent to the answering machine.

The unit 14, which is also wireless, may be of a size suitable for clipping onto a person's belt, or for standing on a desk, table or other flat surface, with a rear support arm.

The portable unit 14 includes an audio and video receiver and transmitter, and can be activated by the occupant for live communication, by pressing the ON/OFF button 44, so that it is on the ON mode, and can be activated by the occupant for recorded communication by pressing the STANDBY button 46. When an audio and video message of a visitor has been recorded, the PLAY button 48 may be pressed later, to transmit that message to the occupant.

Alternatively, the portable unit 14 may be connected to an internet enabled computer, via a U.S.B. connection inside the building, so that the recording of the audio and video message of the visitor by the unit 14 can be monitored remotely, when the occupant is outside the building.

When the unit 14 is on the ON mode for live communication, and an audio and video message of a visitor is received by the unit 12, wirelessly sent to the portable unit 14, and then transmitted by the unit 14 to the occupant through the speaker 50, and video screen 52, the occupant can wirelessly respond live to that message, by pressing the TALK button 54, and speaking into the microphone 56, which co-operates with the speaker 50. The unit 14 includes a camera for receiving a video message of the occupant, which is wirelessly sent to the unit 12, and then transmitted, along with the audio message, to the visitor, through the video screen 28 of the unit 12.

The unit 14 also includes an LED message counter 58 and a USB port 60, for cable connection to a computer when in STANDBY mode for remote monitoring of recorded messages.
The system is digitally programmable to multi-channels.

The unit 14, is powered by one 12volt or 3 x AAA batteries, which fit into a wired housing within the body of the unit.

The system also includes a battery recharger unit and a tabletop 240V charging stand, preferably as a combined structure.

Dated, this 10th day of March, 2009.
Wireless peephole camera project  (THE PROTECTOR)

Function:

1. 2-way audio and 2-way video, 2.4 GHz wireless module.
2. Visitor call from outdoor unit, and talk with host, see imaging on LCD.
3. The bell ringing and display visitor's imaging on indoor unit. Press the button and-talk with visitor.
4. We can set on indoor unit to control the LCD of outdoor unit to display imaging.
5. Record visitor's imaging to indoor unit, and play.
6. Record visitor's voice, and play.
7. Digital technology with random coding.
8. SD card. USB interface.

Structure

1. Outdoor unit includes: pin hole camera, LCD display, speaker, microphone, button with LED.
2. Install outdoor unit via peep hole and connect with control box. There are battery, chamber and antenna in this control box.
3. Indoor unit includes: pin hole camera, LCD display, speaker, microphone, and buttons with LED light.
4. Indoor unit is portable for hand held or to be put on table. Sits in Charger.
5. Use rechargeable battery for outdoor and indoor unit.
6. As an accessory, provide charging assembly.
7. Easy to install, and easy to change battery.
8. All buttons with different colours, to identify.

**Appearance**

1. Outdoor unit, as thin as possible.
2. Bamboo style.
CLAIMS

1. Two-way audio and video communication system
2. Turns off video signal at any time during transmission, from hand held unit.
4. Stores photos, videos and audio messages.
5. S.D. card - stores audio and video messages.
6. U.S.B. - connects to computer to download photos, video and audio messages.
7. P.I.R. - Passive Infrared Detector - takes photos automatically, when movement is sensed at front door unit.
10. Stores images at front door for visual display for the guest.
11. Records in different modes - while in use and in standby, with audio and video.
12. Connected and installed, it replaces the peephole in the front door.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

H04N 7/14 (2006.0 1)  G05B 11/01 (2006.0 1)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPOQUE (WPI & EPDOC) & Google Patents: intercom, door phone, door answer, door bell, video, camera, photo, image, audio, speaker, microphone, speaker phone, record, store, message, answering machine, message bank, hand-held, mobile, portable, wireless and like terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>Y</td>
<td>US 2008/0069326 A1 (CHANG) 20 March 2008 (Para 0006)</td>
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<td>Y</td>
<td>US 2007/0042804 A1 (RYLEY et al.) 22 February 2007 (Fig 2, Paragraphs 0113, 0033, 0034, 0035)</td>
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☐ Further documents are listed in the continuation of Box C ☑ See patent family annex

Date of the actual completion of the international search

20 April 2010

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Date of mailing of the international search report

22 APR 2010

Form PCT/ISA/210 (second sheet) (July 2009)
This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX