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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **public address system using wireless mobile communication devices**

(57) A public address system is set forth, comprising at least one wireless mobile communication device; a sound system; and a back-end system for selectively re-

ceiving a wireless signal from the wireless mobile communication device and transmitting the signal to the sound system for broadcast.

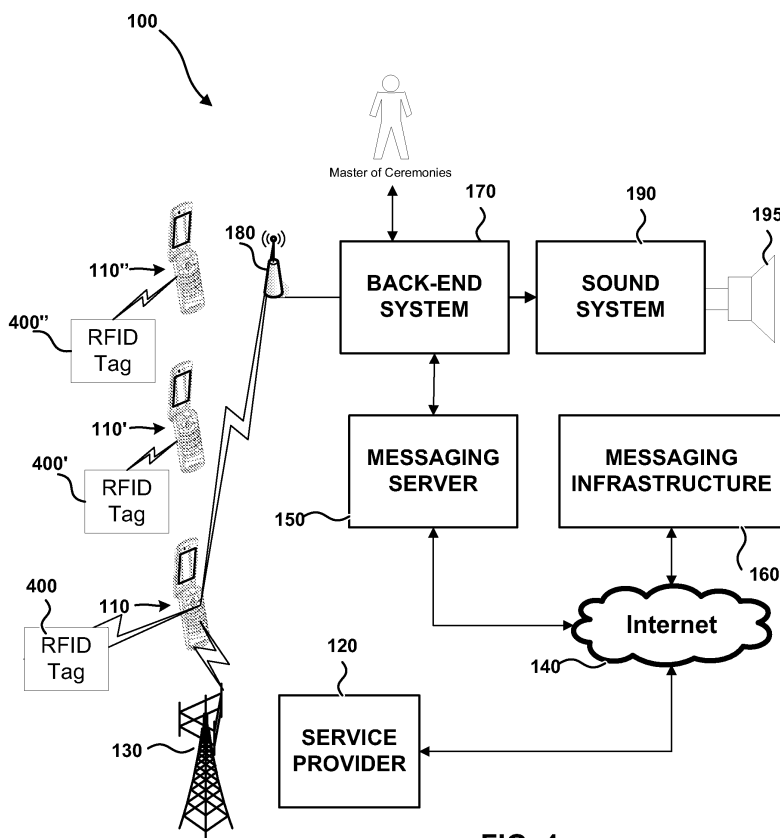


FIG. 4

Description

Technical Field

[0001] The present disclosure relates generally to public address systems, and more particularly to a public address system using wireless mobile communication devices as microphones.

Background

[0002] When an audience member wishes to speak (e.g. in order to ask a question of a presenter in a large conference room/auditorium), the audience member usual raises his/her hand in an effort to attract the attention of a moderator/master of ceremonies. Upon being recognized by the moderator/master of ceremonies, the audience member then normally has to wait for a wireless microphone to be passed to him/her by a conference assistant who must deliver the wireless microphone, either directly or hand-to-hand by several other audience members, and thereafter retrieve it in like fashion. This process is inefficient in that the moderator/master of ceremonies may accidentally overlook the audience member, and time delays are introduced while the audience member waits to receive the cordless microphone.

Summary

[0003] According to an aspect of this specification, there is provided a public address system, comprising at least one wireless mobile communication device; a sound system, and a back-end system having an interface for exchanging connection information and requests with the at least one wireless mobile communication device and in response sending a connection authorization message to the at least one wireless mobile communication device for enabling access to the sound system and transmission of wireless audio signals thereto for broadcast.

[0004] According to another aspect, there is provided a wireless mobile communication device, comprising: a microphone, a wireless microphone application for converting audio signals to wireless signals, and at least one communications subsystem for sending a request message responsive to one of either activation of a URL link or launching of the wireless microphone application, receiving a connection authorization message, and in response transmitting the wireless signals for broadcast.

[0005] According to a further aspect of this specification, there is provided a back-end system for use in a public address system, comprising: an antenna, a computer that includes a data interface and application software for exchanging connection information and requests with a plurality of mobile communication devices via the antenna and in response arbitrating between the requests and sending a connection authorization message to one of the wireless mobile communication de-

vices to enable access to the public address system and receiving and converting wireless signals from the one wireless mobile communication device to audio signals, and an audio interface for transmitting the audio signals to at least one speaker.

[0006] According to yet another aspect of this specification, there is provided a method of operating a public address system, comprising receiving at least one request message for access to the public address system, processing the request message for arbitrating between the request message and any other pending request message to access the public address system, and in response sending a connection authorization message to enable access to the public address system, and receiving wireless audio signals and transmitting said audio signals to the public address system.

Brief Description of the Drawings

[0007] FIG. 1 is a block diagram of an illustrative public address system using wireless mobile communication devices as microphones, in accordance with the present disclosure;

[0008] FIG. 2 is block diagram illustrating a wireless mobile communication device in accordance with the present disclosure;

[0009] FIGS. 3, 3A and 3B, are flow diagrams illustrating a method carried out by a wireless mobile communication device and a back-end system of the public address system, in accordance with the present disclosure; and

[0010] FIG. 4 is a block diagram of an alternative public address system using wireless mobile communication devices as microphones, in accordance with the present disclosure.

Description of Preferred Embodiments

[0011] FIG. 1 shows an illustrative public address system 100 using wireless mobile communication devices 110, 110', 110'', etc., as microphones. The public address system 100 may be configured to operate in a large conference room or auditorium environment, or other public or private venue.

[0012] Wireless mobile communication devices 110, 110', 110'' communicate with a service provider 120 via a cellular network 130 to exchange voice and data. The service provider 120 communicates via the Internet 140 to exchange voice and data with at least one messaging server 150 under control of a messaging infrastructure 160, in a well known manner.

[0013] The public address system 100 includes a back-end system 170 which, in the illustrated embodiment, includes an interface for communicating with the messaging server 150, as described in greater detail below, and an interface connected to an antenna 180 for wireless communication with mobile communication devices 110, 110', 110'' using any of a plurality of well known

wireless protocols, such as Wi-Fi or Bluetooth™ (Bluetooth™ is a registered trademark of Bluetooth SIG, Inc.), etc.. Wirelessly transmitted voice signals are transmitted from back-end system 170 to a sound system 190 for amplification and broadcast over at least one loudspeaker 195.

[0014] Back-end system 170 preferably comprises a computer, such as a PC or server that includes application software for wireless communication with mobile communication devices 110, 110', 110", using Bluetooth™, Wi-Fi, or other suitable wireless protocol. The system 170 preferably also includes an audio interface having an analog audio output to the sound system 190.

[0015] FIG. 2 shows a block diagram illustrating some of the components of the wireless mobile communication devices 110, 110', 110", etc. In the embodiment depicted in FIG. 2, wireless mobile communication device 110 includes a communication subsystem 200 for wireless two-way data and voice communication with the cellular network 130. Communication subsystem 200 may include one or more receivers, transmitters, antennas, signal processors and other components associated with wireless communications. The particular design of the communication subsystem 200 depends on the network in which the wireless mobile communication device 110 is intended to operate. The concepts herein may be applicable to a variety of wireless mobile communication devices, such as two-way pagers, cellular telephones, etc.

[0016] In the embodiment shown in FIG. 2, network access is associated with a subscriber or user of the wireless mobile communication device 110 via a memory module 202, which may be a Subscriber Identity Module (SIM) card for use in a GSM network or a Universal Subscriber Identity Module (USIM) card for use in a Universal Mobile Telecommunication System (UMTS). The SIM card is inserted in or connected to an interface 204 of the wireless mobile communication device 110 to operate in conjunction with a wireless network. Alternatively, the wireless mobile communication device 110 may have an integrated identity module for use with systems such as Code Division Multiple Access (CDMA) systems.

[0017] The wireless mobile communication device 110 also includes a battery interface 206 for receiving at least one rechargeable battery 208. The battery 208 provides electrical power to at least some of the electrical circuitry in the wireless mobile communication device 110, and the battery interface 206 provides a mechanical and electrical connection for the battery 208.

[0018] The wireless mobile communication device 110 includes a microprocessor 210 which controls the overall operation of the wireless mobile communication device 110. Communication functions, including at least data and voice communications, are performed through the communication subsystem 200, as discussed above. The microprocessor 210 also interacts with additional device subsystems such as a display 212, flash memory 214, a random access memory (RAM) 216, auxiliary input/output (I/O) subsystems 218, a data port such as se-

rial port 220, keypad 222, speaker 224, microphone 226, a short-range (i.e. near field) communications subsystem 228, and any other device subsystems generally designated as 230. The microprocessor may further interact with other components, which for simplicity are not shown in FIG. 2.

[0019] The microprocessor 210, in addition to its operating system functions, enables execution of software applications on the wireless mobile communication device 110. Software, which may include operating system software or application software, may be stored in flash memory 214, RAM 216 or any other memory element. As will be discussed below, according to an exemplary embodiment, application software is provided to permit the wireless mobile communication device 110 to function as a wireless microphone in the public address system 100 of FIG. 1.

[0020] A predetermined set of applications that control basic device operations, including data and voice communication applications, will normally be installed on the wireless mobile communication device 110 during or after manufacture. The wireless mobile communication device 110 may include a personal information manager (PIM) application having the ability to organize and manage data items relating to a user such as, but not limited to, instant messaging, email, calendar events, voice mails, appointments, and task items.

[0021] In a data communication mode, a received data signal representing information such as a text message, an email message, a media file to be transferred, or Web page download will be processed by the communication subsystem 200 and input to the microprocessor 210, which will further process the signal. In response to the received data signal, the microprocessor 210 may generate output for display on the display 212.

[0022] For voice communications, the wireless mobile communication device 110 may receive one or more signals associated with a voice communication, such as an indication of the identity of a calling party. In response to the received data signal, the microprocessor 210 may generate output for display on display 212 and/or the speaker 224.

[0023] In addition, as discussed briefly above, a short-range communications subsystem 228 is provided for communication between the wireless mobile communication device 110 and different systems or devices, which need not necessarily be similar devices. For example, the short-range communications subsystem 228 may include an infrared device and associated circuits and components, or a wireless bus protocol compliant communication mechanism such as a Bluetooth™ communication module to provide for communication with similarly-enabled systems and devices. In another embodiment, the short-range communications subsystem 228 may be a wireless networking communications subsystem, conforming to IEEE 802.11 standards such as one or more of 802.11b, 802.11g, or 802.11n.

[0024] In an embodiment discussed in greater detail

below, the short-range communications subsystem 228 permits wireless communication with the public address system 100 via antenna 180 using any of the foregoing well known wireless protocols to transmit voice signals that are then sent to sound system 190 for broadcast over the loudspeaker 195. The choice of wireless protocol may depend on the size of auditorium/hall/conference room in which the meeting is to take place. For example, a person of skill in the art will appreciate that phone-class Bluetooth™ communications may be used for distances of about 10 meters between the wireless mobile communication devices 110, 110', 110" and the public address system 100, whereas WiFi provides a range of about 100 meters.

[0025] In another embodiment discussed below in connection with FIG. 4, the short-range communications subsystem 228 may also communicate with an RFID/NFC (radio frequency identification/near field communication) or similar tag to identify an audience member and associate the audience member with a particular seat (or other location) in order to permit the audience member to speak or initiate questions under control of back-end system 170.

[0026] The wireless mobile communication devices 110, 110', 110" may include one or more circuit boards (not shown) that implement the components described above. This disclosure is not limited to any particular electronic component or software module or any combination thereof.

[0027] In operation, according to the embodiment of FIGS 1, 2 and 3 and 3A, a master of ceremonies (MC) issues an SMS/email/calendar appointment invitation (step 300) to the wireless mobile communication devices 110, 110', 110", etc. of a plurality of invited participants. Preferably, the invitation includes a link (e.g. URL) to a web site that provides information on how to connect to the public address system at the designated time and place of the appointment (i.e. meeting).

[0028] When an invited participant wishes to ask a question, make a comment or otherwise speak, he/she either clicks on the link in the invitation displayed on his/her wireless mobile communication device 110, 110', 110", etc. or launches an application on the wireless mobile communication device (step 305), which causes the device 110, 110', 110" to send a request message to back-end system 170 via the cellular network 130, Internet 140 and messaging server 150 under control of messaging infrastructure 160 (step 310). The request message is processed by the back-end system 170 (step 315), either automatically or under control of the MC, to arbitrate between the user request and any other pending user requests to access the public address system 100 via their wireless mobile communication devices 110, 110', 110", etc. In one embodiment, the back-end system 170 may send a confirmation message to the wireless mobile communication device 110, 110', 110", for displaying a message via display 212 to indicate that the user's request is pending.

[0029] Once the moderator/master of ceremonies (or automatic arbitration/selection program) determines that the request to speak should be granted, back-end system 170 transmits a connection authorization message (step 320) to the user's wireless mobile communication device 110, 110', 110" via messaging server 150 under control of messaging infrastructure 160, Internet 140 and the cellular network 130, to enable access to the public address system 100 via antenna 180. In response to receiving the authorization message (step 325), the wireless mobile communication device 110, 110', 110" launches its wireless microphone application from flash memory 214, RAM 216, etc., and communicates with the public address system 100 via antenna 180 (step 330) to transmit voice signals that are then sent to sound system 190 for broadcast over the loudspeaker 195. The wireless microphone application functions in a manner similar to well known hands-free applications for mobile GPS units, and can either be pre-loaded on the wireless mobile communication device 110, 110', 110", manually downloaded from service provider 120 (or other web application provider), or automatically downloaded from the back-end system 170 along with the connection data during step 320 or, according to one embodiment discussed below in connection with FIG. 4, the wireless microphone application may be downloaded from an RFID/NFC device to the wireless mobile communication device 110, 110', 110". In one embodiment, the wireless microphone application may enforce frequency damping to avoid feedback from loudspeaker 195.

[0030] Security of the voice channel between wireless mobile communication devices 110, 110', 110" and the public address system 100 may be provided using conventional protocols. For example, Wi-Fi utilizes WPA (Wi-Fi Protected Access) while Bluetooth™ may include a security layer on top of the communications channel, as is well known in the art.

[0031] Turning to the alternative embodiment of FIG. 4, whose operation is set forth in FIGS. 3 and 3B, before the meeting is scheduled to take place, an NFC-enabled device is used to program individual RFID/NFC tags 400, 400', 400", etc. with password information to enable either Bluetooth™ pairing or Wi-Fi authentication to the public address system 100.

[0032] During the meeting, when a participant wishes to ask a question, make a comment or otherwise speak, he/she either 'taps' (i.e. touches) his/her wireless mobile communication device 110, 110', 110", etc. on the RFID/NFC tag 400, 400', 400", etc. which causes the tag to transmit connection information (step 300') for connecting to the public address system 100 (i.e. type, encryption keys, PIN, seat number, etc.). As discussed above, in one embodiment, the wireless microphone application is also downloaded from the RFID/NFC tags 400, 400', 400", etc. to wireless mobile communication devices 110, 110', 110", etc.

[0033] RFID/NFC tags 400, 400', 400", etc. are integrated electronic chips and antennae. Normally, the

RFID/NFC tags are passive and battery-less and are powered by an electromagnetic excitation field from the short range (near field) communications component 228 of the mobile communication device. However, active, battery-powered tags may also be utilized.

[0034] In response to downloading the connection information, the wireless mobile communication device 110, 110', 110", etc. launches an application (step 305), which causes the device 110, 110', 110" to wirelessly send a request message to back-end system 170 via one of either antenna 180 or the cellular network 130, Internet 140 and messaging server 150 under control of messaging infrastructure 160 (step 310). The request message is processed by the back-end system 170 (step 315), either automatically or under control of the MC, to arbitrate between the user request and any other pending user requests to access the public address system 100 via their wireless mobile communication devices 110, 110', 110", etc.

[0035] Once the moderator/master of ceremonies (or automatic arbitration/selection program) determines that the request to speak should be granted, back-end system 170 sends a connection authorization message (step 320) to the user's wireless mobile communication device 110, 110', 110" to enable access to the public address system 100 via antenna 180. In response to receiving the authorization message 320 (step 325), the wireless mobile communication device 110, 110', 110" launches its wireless microphone application from flash memory 214, RAM 216, etc., and communicates with the public address system 100 via antenna 180 (step 330) to transmit voice signals that are then sent to sound system 190 for broadcast over the loudspeaker 195, as discussed above in connection with the embodiment of FIG. 1.

[0036] From the foregoing, it will be appreciated that a difference between the embodiments of FIGS. 1 and 4 is that in the embodiment of FIG. 4 connection/authentication information is received from the RFID/NFC tags 400, 400', 400", etc. (step 300') instead of being downloaded following user selection of a link in an email/SMS invitation and sending of the invitation before the meeting (step 300), as in the embodiment of FIG. 1.

[0037] The embodiments set forth above are for illustration, and although one or more particular embodiments of the system and method have been described herein, changes and modifications may be made thereto. For example, although transmission of the connection authorization message (step 320) from back-end system 170 to the user's wireless mobile communication device 110, 110', 110" is described in the embodiments of FIGS. 1 and 4 as occurring via messaging server 150 under control of messaging infrastructure 160, Internet 140 and the cellular network 130, it is contemplated that the connection authorization message can be transmitted from back-end system 170 to the user's wireless mobile communication device 110, 110', 110" via antenna 180. All such changes are believed to be within the scope of this disclosure in its broadest aspects and as set forth in the

following claims.

Claims

1. A public address system (100), comprising:

at least one wireless mobile communication device (110, 110', 110");
a sound system (190); and
a back-end system (170) having an interface for exchanging connection information and requests with said at least one wireless mobile communication device (110, 110', 110") and in response sending a connection authorization message to said at least one wireless mobile communication device for enabling access to the sound system (190) and transmission of wireless audio signals thereto for broadcast.

2. The public address system according to claim 1, wherein said at least one wireless mobile communication device (110, 110', 110") further comprises a microphone (226); and at least one communications subsystem (200, 228) for exchanging said connection information and transmitting said wireless audio signals.

3. The public address system according to claim 2, wherein said communications subsystem (110, 110', 110") comprises at least one of a Bluetooth™ transmitter and a WiFi transmitter.

4. The public address system according to any one of claims 1 to 3, further comprising at least one radio frequency/near field communication tag (400, 400', 400") for transmitting said connection information to said at least one wireless mobile communication device (110, 110', 110") for exchange with said back-end system (170).

5. The public address system according to any one of the preceding claims, further comprising a messaging server (150) for exchanging said connection information and requests between said back-end system (170) and said at least one wireless mobile communication device (110, 110', 110") and sending said connection authorization message from said back-end system to said at least one wireless mobile communication device.

6. A wireless mobile communication device (110, 110', 110"), comprising:

a microphone (226);
a processor (210);
a memory (214, 216) storing a wireless microphone application executable by said processor

- (210) for converting audio signals to wireless signals;
 at least one communication subsystem under control of said processor (210) for sending a request message responsive to one of either activation of a uniform resource locator 'URL' link or launching of said wireless microphone application, receiving a connection authorization message, and in response transmitting said wireless signals for broadcast.
7. The wireless mobile communication device according to claim 6, wherein said wireless microphone application enforces frequency damping to avoid feedback.
8. The wireless mobile communication device according to claim 6 or claim 7, further comprising a display (212) for displaying a confirmation message subsequent to sending said request message and prior to receiving said connection authorization message to indicate that the request is pending.
9. The wireless mobile communication device according to any one of claims 6 to 8, wherein said wireless microphone application is one of either a pre-loaded application, a downloaded application from one of either a wireless service provider (120) or web application provider, an automatically downloaded application that comprises said authorization message, or an application downloaded from a radio frequency identification/near field communication tag (400, 400', 400").
10. A back-end system (170) for use in a public address system (100), comprising:
- an antenna (180);
 a computer that comprises a data interface and application software for exchanging connection information and requests with a plurality of mobile communication devices (110, 110', 110") via said antenna and in response arbitrating between said requests and sending a connection authorization message to one of said wireless mobile communication devices to enable access to the public address system (100) and receiving and converting wireless signals from said one of said wireless mobile communication devices to audio signals; and
 an audio interface for transmitting said audio signals to a sound system (190).
11. The back-end system according to claim 10, further comprising an interface to a messaging system (120, 130, 140, 150, 160) for said exchanging of connection information and requests.

12. A method of operating a public address system (100), comprising:

receiving at least one request message for access to the public address system;
 processing the request message for arbitrating between said request message and any other pending request message to access the public address system, and in response sending a connection authorization message to enable access to the public address system; and
 receiving wireless audio signals and transmitting said audio signals to the public address system.

13. The method according to claim 12, further comprising transmitting a confirmation message after receiving said at least one request message to indicate that the request message is process pending.

14. The method according to claim 12 or claim 13, wherein at least one of said request message, connection authorization message and wireless audio signals are wireless signals conforming to one of either Bluetooth™ or WiFi signaling protocols.

15. The method according to any one of claims 12 to 14, wherein said wireless audio signals received at said public address system are received from a wireless mobile communication device (110, 110', 110").

Amended claims in accordance with Rule 137(2) EPC.

1. A public address system (100), comprising:

at least one wireless mobile communication device (110, 110', 110");
 a sound system (190); and
 a back-end system (170) having an interface for exchanging connection information and requests with said at least one wireless mobile communication device (110, 110', 110") and in response sending a connection authorization message to said at least one wireless mobile communication device via a cellular network, such that said at least one wireless mobile communication device (110, 110', 110") is enabled to access to the sound system (190) and transmit wireless audio signals thereto for broadcast via a short range communications component (228) of said at least one wireless mobile communication device (110, 110', 110").

2. The public address system according to claim 1, wherein said at least one wireless mobile communication device (110, 110', 110") further comprises a

microphone (226); and at least one communications subsystem (200, 228) for exchanging said connection information and transmitting said wireless audio signals.

3. The public address system according to claim 2, wherein said short range communications component (228) comprises at least one of a Bluetooth™ transmitter and a WiFi transmitter.

4. The public address system according to any one of claims 1 to 3, further comprising at least one radio frequency/near field communication tag (400, 400', 400'') storing said connection information, said connection information received at said at least one wireless communication device (110, 110', 110'') from at least one of said at least one radio frequency/near field communication tag (400, 400', 400'') or said back end system (170) via said cellular network and when said connection information is received from said at least one radio frequency/near field communication tag (400, 400', 400''), said at said at least one wireless communication device (110, 110', 110'') exchanges said connection information with said back-end system (170).

5. The public address system according to any one of the preceding claims, further comprising a messaging server (150), in communication with said interface, for exchanging said connection information and requests between said back-end system (170) and said at least one wireless mobile communication device (110, 110', 110'') and sending said connection authorization message from said back-end system to said at least one wireless mobile communication device.

6. A wireless mobile communication device (110, 110', 110''), comprising:

- a microphone (226);
- a processor (210);
- a memory (214, 216) storing a wireless microphone application executable by said processor (210) for converting audio signals to wireless signals;
- at least one communications subsystem under control of said processor (210) for sending a request message responsive to one of either activation of a uniform resource locator 'URL' link or launching of said wireless microphone application, and in response receiving a connection authorization message via a cellular network; and
- a short range communications subsystem (228) under control of said processor (210) for transmitting said wireless signals for broadcast, responsive to receiving said connection authori-

zation message.

7. The wireless mobile communication device according to claim 6, wherein said wireless microphone application enforces frequency damping to avoid feedback.

8. The wireless mobile communication device according to claim 6 or claim 7, further comprising a display (212) for displaying a confirmation message subsequent to sending said request message and prior to receiving said connection authorization message to indicate that the request is pending.

9. The wireless mobile communication device according to any one of claims 6 to 8, wherein said wireless microphone application is one of either a pre-loaded application, a downloaded application from one of either a wireless service provider (120) or web application provider, an automatically downloaded application that comprises said authorization message, or an application downloaded from a radio frequency identification/near field communication tag (400, 400', 400'').

10. A back-end system (170) for use in a public address system (100), comprising:

- an antenna (180);
- a computer that comprises a data interface and application software for exchanging connection information and requests with a plurality of mobile communication devices (110, 110', 110'') via a cellular network and in response arbitrating between said requests and sending a connection authorization message to one of said wireless mobile communication devices to enable access to the public address system (100) and receiving and converting wireless signals from a short range communications subsystem (228) of said one of said wireless mobile communication devices to audio signals, said wireless signals received via said antenna (180); and
- an audio interface for transmitting said audio signals to a sound system (190).

11. The back-end system according to claim 10, further comprising an interface to a messaging system (120, 130, 140, 150, 160) for said exchanging of connection information and requests.

12. A method of operating a public address system (100) in communication with a back end system (170), comprising:

- receiving, at said back end system (170), at least one request message from one of a plurality of mobile communication devices (110, 110', 110'')

for access to the public address system;
processing, at said back end system (170), the
request message for arbitrating between said
request message and any other pending re-
quest message from any other of said plurality 5
of said mobile communication devices (110,
110', 110'') to access the public address system,
and in response sending a connection authori-
zation message to said one of said plurality of
mobile communication devices (110, 110', 110'') 10
via a cellular network to enable access to the
public address system; and
receiving, at said back end system (170), wire-
less audio signals from a short range communi-
cations subsystem (228) of said one of said plu- 15
rality of mobile communication devices (110,
110', 110'') and transmitting said audio signals
to the public address system.

13. The method according to claim 12, further com- 20
prising transmitting a confirmation message after re-
ceiving said at least one request message to indicate
that the request message is process pending.

14. The method according to claim 12 or claim 13, 25
wherein said wireless audio signals are wireless sig-
nals conforming to one of either Bluetooth™ or WiFi
signaling protocols.

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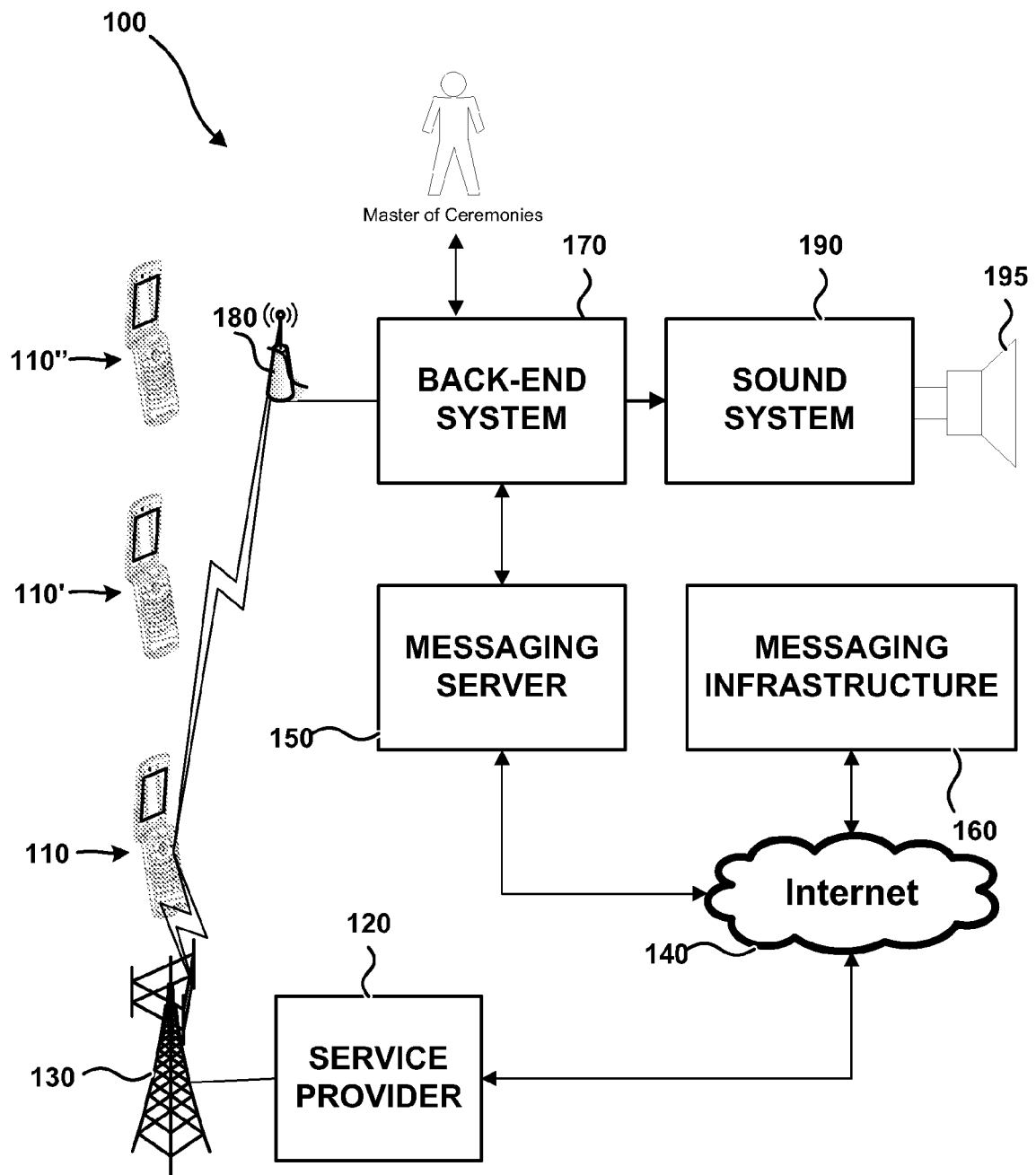


FIG. 1

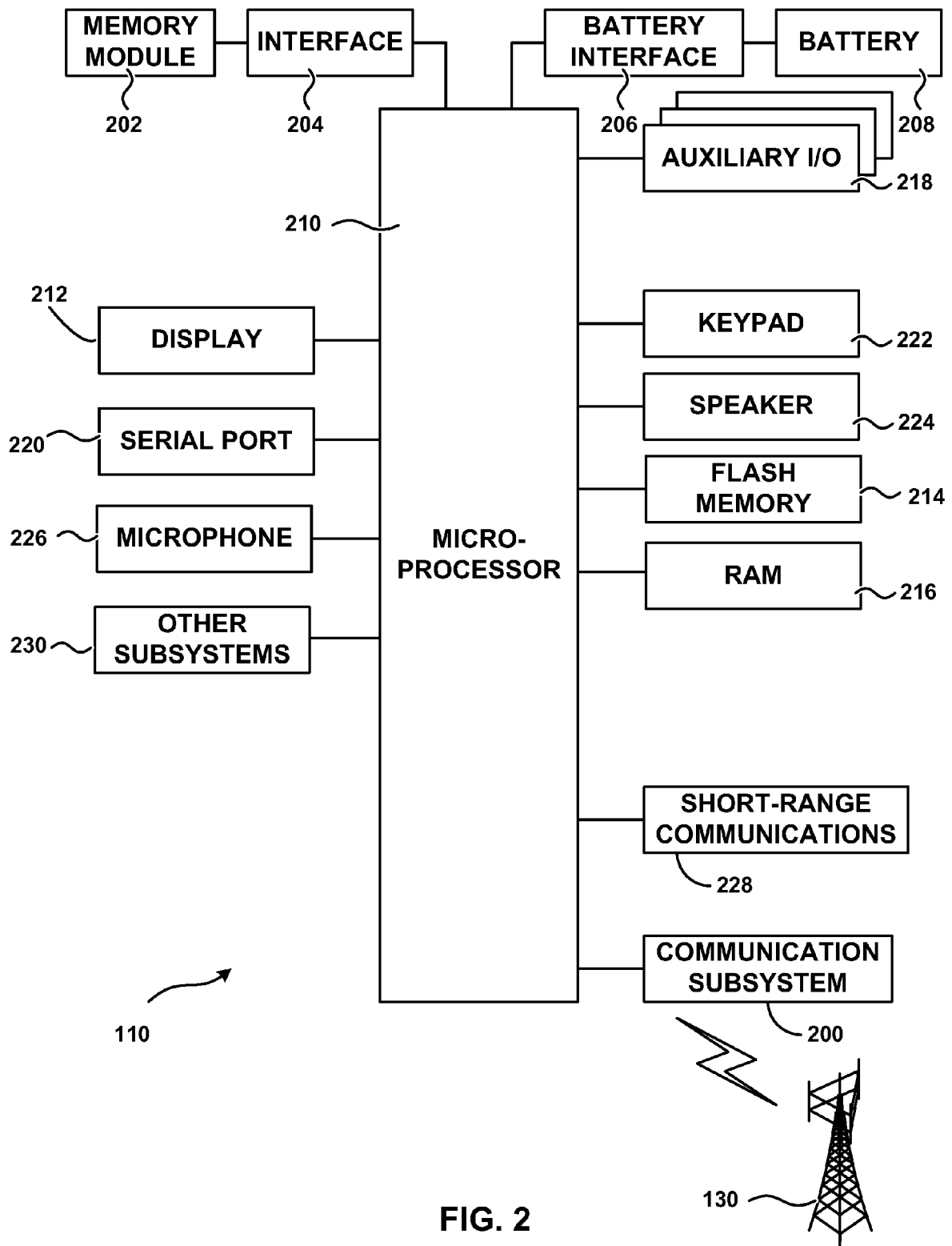


FIG. 2

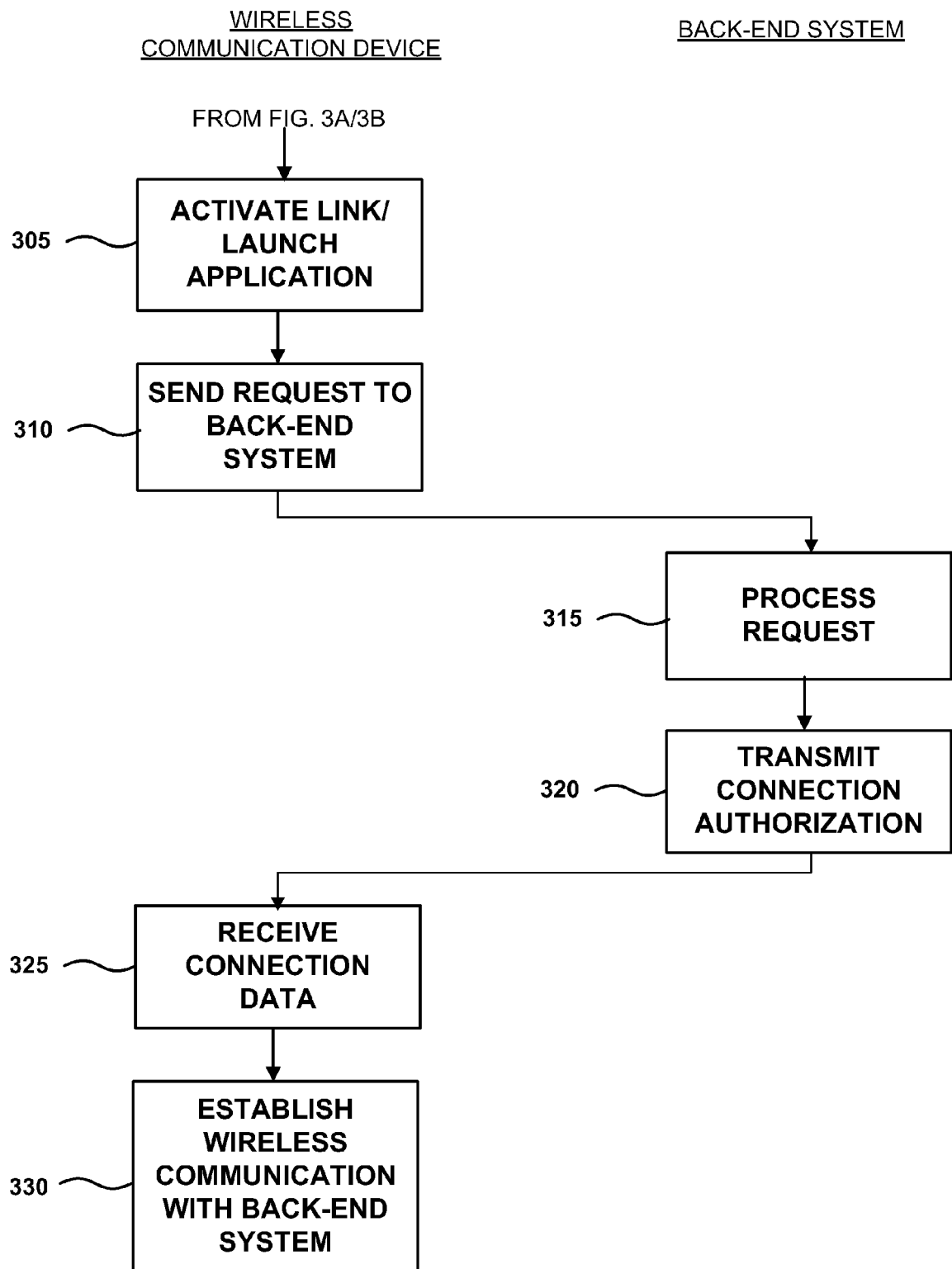


FIG. 3

BACK-END SYSTEM

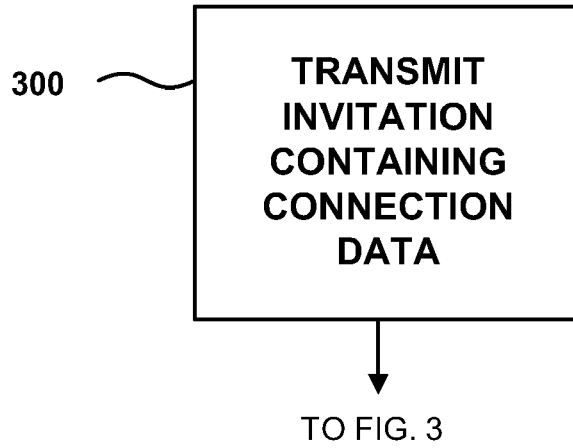


FIG. 3A

RFID TAG

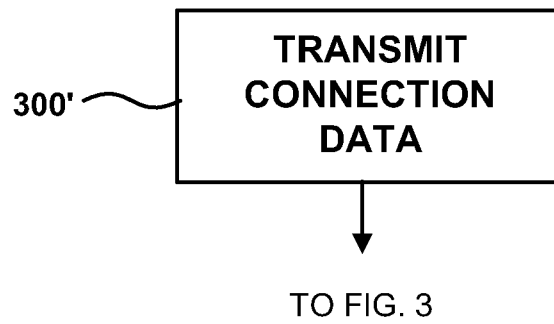


FIG. 3B

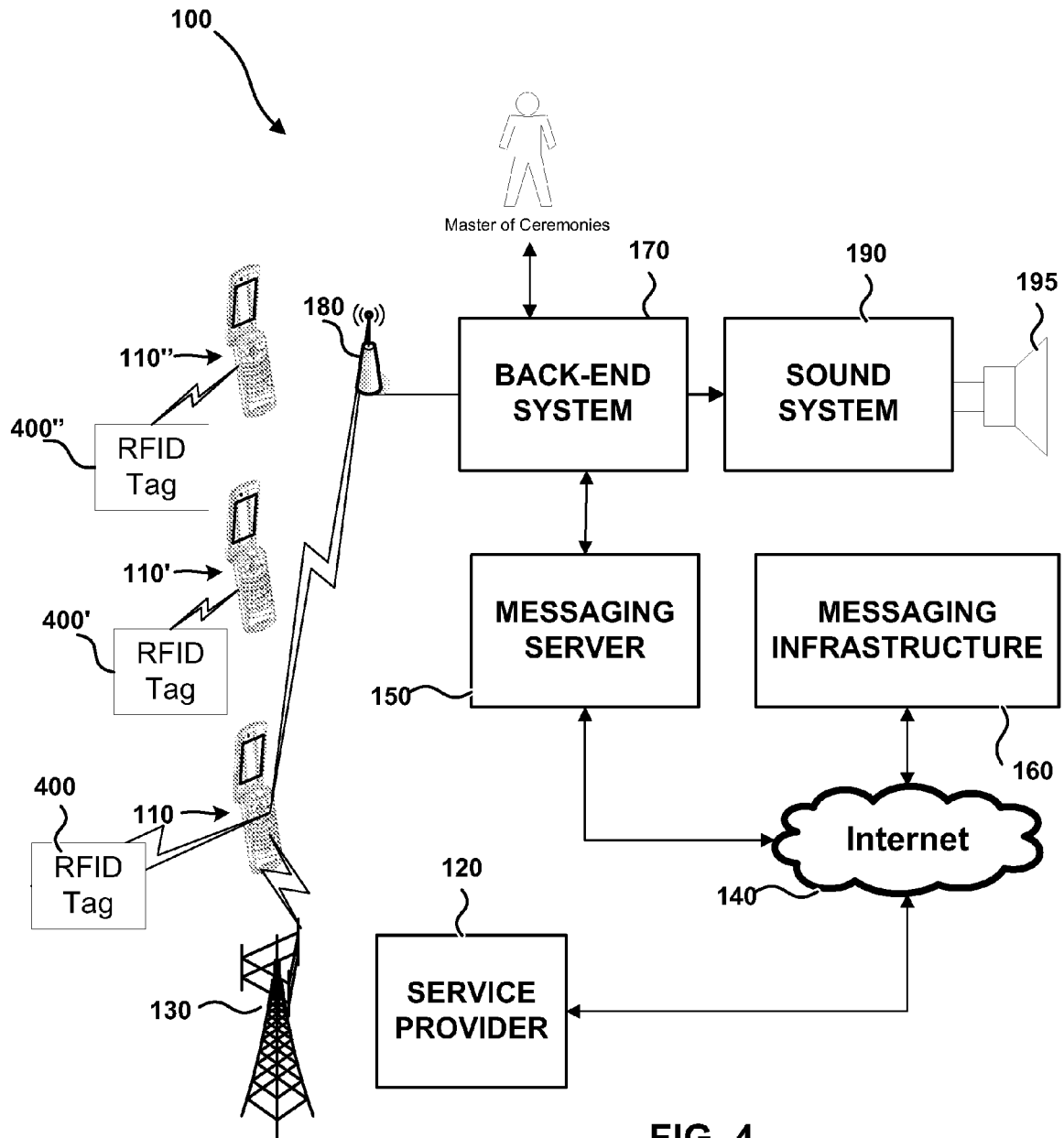


FIG. 4



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 3832

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 101 24 337 A1 (DEUTSCHE TELEKOM AG [DE]) 21 November 2002 (2002-11-21) * Public address system wherein a audiences mobile phone is used as a microphone for the public address system. Wireless communication is established via public cellular network (ISDN, PCM30) or direct radio transmission link.; paragraph [0006] - paragraph [0019]; claim 5; figures 1,2 *	1-15	INV. H04R27/00
A	EP 2 026 275 A1 (HEWLETT PACKARD DEVELOPMENT CO [US]) 18 February 2009 (2009-02-18) * paragraph [0007] * * paragraph [0018] * * paragraph [0009] - paragraph [0010] *	6	
A	"Ch. 10 Wireless PAN Standards, Ch. 11 Implementing Wireless PANs" In: Steve Rackley: "Wireless Networking Technology" 1 January 2007 (2007-01-01), Newnes , XP002562804 ISBN: 0750667885 , pages 253-306 * Near field communication (NFC) as part of an initiation process for a longer range communication, e.g. Bluetooth or WiFi.; page 291 - page 292 * * Security and authentication mechanisms in Bluetooth.; page 300 *	4,6-9	TECHNICAL FIELDS SEARCHED (IPC) H04R
E	DE 10 2008 007097 A1 (ABB AG [DE]) 13 August 2009 (2009-08-13) * the whole document *	1-15	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 January 2010	Examiner Will, Robert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 3832

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2007/003683 A1 (NOKIA CORP [FI]; MAEKINEN JORMA [FI]) 11 January 2007 (2007-01-11) * System for a conference call using mobile phones and Bluetooth communication.; pages 1-14; figure 4 * -----	1,6,10, 12	
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 January 2010	Examiner Will, Robert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82