

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.
Petitioner,

v.

INGENIOSPEC, LLC.
Patent Owner.

Patent No. 8,112,104

Inter Partes Review No. IPR2026-00142

DECLARATION OF DR. JOSHUA R. SMITH

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Exhibit List

Exhibit Description	Exhibit #
U.S. Patent No. 8,112,104 to Thomas et al.	EX1001
Prosecution History of U.S. Patent No. 8,112,104	EX1002
Declaration of Dr. Joshua R. Smith	EX1003
Curriculum Vitae for Dr. Joshua R. Smith	EX1004
U.S. Patent No. 7,027,842 to Zhang et al.	EX1005
U.S. Patent Pub. No. 2010/0115149 to Ewer	EX1006
U.S. Patent Pub. No. 2002/0146097 to Vuori	EX1007
U.S. Patent No. 6,633,741 to Posa et al.	EX1008
U.S. Patent No. 8,924,217 to Moore et al.	EX1009
U.S. Patent No. 7,150,526 to Jannard et al.	EX1010
U.S. Patent No. 6,181,956 to Koskan	EX1011
European Telecommunications Standards Institute. “TS 100 901 V6.1.0: Technical Specification Digital Cellular Telecommunications System (Phase 2+); Technical Realization of the Short Message Service (SMS); Point-to-Point (PP) (GSM 03.40 version 6.1.0 Release 1997).” 1998.	EX1012
Excerpts from LOUIS BLOOMFIELD, HOW EVERYTHING WORKS (John Wiley & Sons, Inc., 2008)	EX1013

I, Dr. Joshua R. Smith, make this declaration in connection with the proceeding identified above.

I. INTRODUCTION

1. I have been retained by counsel for Apple Inc. (“Petitioner” or “Apple”) in connection with the proceeding identified above. I submit this declaration in support of Apple’s Petition for *Inter Partes* Review of United States Patent No. 8,112,104 (EX1001, “the ’104 patent”).

2. I have reviewed and am familiar with the ’104 patent, which issued on February 7, 2012. I understand that the Petition for *inter partes* review that accompanies this Declaration (the “Petition”) seeks to cancel claims 1-47 (the “challenged claims”) of the ’104 patent.

3. In preparation for this Declaration, I reviewed the exhibits provided by the Petitioner, including the ’104 patent. In addition to the above exhibits and other documents, my opinions herein are based upon my personal knowledge, professional judgment, education, and experience gained through my years as a computer scientist, professor, and consultant.

4. The ’104 patent is generally directed to electronic communication devices that have audio and/or textual output capabilities. (EX1001, Abstract.) I am familiar with the technology described in the ’104 patent both as of its earliest

possible priority date of December 8, 2003, and its actual U.S. filing date of January 7, 2011.

5. I have been asked to consider how a person of ordinary skill in the art (“POSITA”) would have understood the challenged claims in light of the disclosure of the ’104 patent. I also have been asked to consider how a POSITA would have understood the following prior art references:

Prior Art Reference	Abbreviation
U.S. Patent No. 7,027,842 to Zhang et al.	Zhang (EX1005)
U.S. Patent Pub. No. 2010/0115149 to Ewer	Ewer (EX1006)
U.S. Patent Pub. No. 2002/0146097 to Vuori	Vuori (EX1007)
U.S. Patent No. 6,633,741 to Posa et al.	Posa (EX1008)
U.S. Patent Pub. No. 8,289,951 to Moore et al.	Moore (EX1009)
U.S. Patent No. 7,150,526 to Jannard et al.	Jannard (EX1010)
U.S. Patent No. 6,181,956 to Koskan	Koskan (EX1011)

6. Further, I have been asked to consider and provide my technical review, analysis, insights, and opinions regarding whether a POSITA would have understood the disclosures of the above references to render obvious the challenged claims.

7. I am being paid \$650 per hour for my work on this matter. My compensation is not dependent on the outcome of this *inter partes* review and in no way affects the substance of my statements in this declaration.

8. I reside in Seattle, Washington, USA.

II. SUMMARY OF GROUNDS

9. I understand that the Petition for *inter partes* review of the '104 patent asserts the following grounds of unpatentability:

Ground	35 U.S.C. §	Claims(s)	Prior Art Reference(s)
1	103	1, 5, 8, 9, 16, 17, 22, 23, 24, 26, 33, 39, 42, 47	Zhang
2	103	2, 6, 10	Zhang, Ewer
3	103	4, 25	Zhang, Vuori
4	103	11-15, 28-32, 43	Zhang, Posa
5	103	18, 21, 34, 37, 38, 45, 46	Zhang, Moore
6	103	19, 20, 35, 36	Zhang, Posa, Moore
7	103	1, 3, 4, 5, 9, 16, 17, 22-27, 33, 39, 42, 44, 47	Jannard, Vuori
8	103	2, 6, 7, 10	Jannard, Vuori, Ewer
9	103	8	Jannard, Vuori, Koskan

Ground	35 U.S.C. §	Claims(s)	Prior Art Reference(s)
10	103	11-15, 28-32, 40, 43	Jannard, Vuori, Posa
11	103	18, 21, 34, 37, 38, 45, 46	Jannard, Vuori, Moore
12	103	19, 20, 35, 36, 41	Jannard, Vuori, Posa, Moore

III. QUALIFICATIONS AND EXPERTISE

10. In formulating my opinions, I have relied upon my knowledge, training, and experience. My qualifications are stated more fully in my *curriculum vitae*, which has been provided as EX1004. Here, I provide a brief summary of my qualifications.

11. I am the Milton and Delia Zeuschel Professor at the University of Washington, jointly appointed in the Department of Electrical and Computer Engineering and in the Allen School. I am providing this Declaration as an independent professional working through my consulting company, Sensor Expert LLC, not as a representative of the University of Washington or any other organization.

12. I have at least twenty years of experience with wireless communication, wireless sensing, and audio technology. I have worked on wireless systems as an engineer, in academic research, and as a supervisor of

academic research. I am a Fellow of the National Academy of Inventors (NAI). According to the NAI, “Election to NAI Fellow status is the highest professional distinction accorded solely to academic inventors.” I am also a Fellow of the Institute of Electrical and Electronic Engineers (“IEEE”). According to the IEEE, the “Grade of Fellow is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments.” The specific citation in my elevation to Fellow was for “contributions to far- and near-field wireless power, backscatter communication and electric field sensing.” At most one tenth of one percent of the worldwide membership can join the ranks of IEEE Fellow each year.

13. I received my Ph.D. and S.M. degrees in Media Arts and Sciences from the Massachusetts Institute of Technology. This was an interdisciplinary program at the MIT Media Lab. As part of this program, my group, led by Neil Gershenfeld, engaged with the fields of Applied Physics, Electrical Engineering, and Computer Science. I also received a M.A. in Physics from Cambridge University, and dual B.A. degrees in Computer Science and Philosophy from Williams College. As a graduate student at the MIT Media Lab, I worked on numerous projects relating to wearable technology and audio. For the Brain Opera, which premiered in 1996 at Lincoln Center in New York City, I developed firmware for numerous custom digital musical instruments. For the 1997

Wearable Computing event at the Media Lab, I collaborated on two wearable audio projects: a musical dress which used capacitive sensing to convert body motion into sound, and a musical jacket with a conductive thread embroidered keypad. I designed a custom Midi synthesizer circuit board used in both of these projects. In addition to science/engineering publications like SIGGRAPH, both projects appeared in Vogue, the fashion magazine.

14. From 2004 to 2011, I worked at Intel Corporation, where I rose to the rank of Principal Engineer before leaving Intel to become a professor. At Intel, I started the Wireless Identification and Sensing Platform (“WISP”) project, in which we designed and built wirelessly powered and wirelessly charged sensor tags from the ground up. We demonstrated a number of firsts, such as the first wirelessly powered accelerometer sensor. In the area of audio, we developed a wirelessly powered speaker that produced sound with no wires or batteries, by directly converting strong electromagnetic signals into audio signals.

15. At Intel, I also served on a committee that made patent filing decisions about wireless technology for the entire company. I also served on Intel’s Strategic Patent Team for wireless technology, which allocated patent filing budgets for each year for the company among various technical subjects within the

wireless area. Prior to Intel, I was Chief Scientist at Escher Group and Director of Escher Labs, where I worked on a variety of sensor systems.

16. In 2011, I joined the University of Washington as an Associate Professor. I received tenure in 2014, and was promoted to Professor and awarded the Milton and Delia Zeuschel Professorship in 2017. At the University of Washington, I currently lead research in a number of areas including wireless sensing, wireless communication, and other topics. At UW, I have worked on projects at the intersection of wireless and audio, such as a battery-free wireless microphone, and a battery free phone, which uses ultra-low power methods to convert between radio waves and audio in both directions: phone to basestation and basestation to phone. My research in these areas has been funded by Federal agencies including the National Science Foundation (NSF), National Institutes for Health (NIH), the Department of Defense (DoD), Defense Advanced Research Projects Agency (DARPA), the Advanced Research Projects Agency for Energy (ARPA-E), and the National Aeronautics and Space Administration (NASA). It has also been funded by corporations such as Intel, Google, Bosch, Microsoft, and Amazon. I teach or have taught wireless communication, wireless power, analog electronics, digital circuits and systems, and other topics. In my wireless communication class, I also cover selected topics in wireless transmission of audio

signals, as well as synthesis of audio signals. I am also the Electrical and Computer Engineering Department's Associate Chair for Professional Programs. In this role, I make decisions about which courses are offered in the Department's Professional Masters Degree Program and often who will teach them. I recently added a course on synthesis and processing of digital audio. I have also co-founded three startup companies, each based on technology developed in my lab.

17. I am a named inventor on 57 U.S. patents and at least 16 foreign patents. At least 27 of my U.S. patents and 13 of my foreign patents have been licensed. I have published over 188 articles and edited one book, entitled "Wirelessly Powered Sensor Networks and Computational RFID." My work has been cited over 27,000 times, and my "H-index," which measures publication impact, is 80. My nine most cited works all relate to wireless technology.

IV. LEGAL UNDERSTANDING

A. My Understanding of Claim Construction

18. I have been advised and understand that claim construction is a matter of law and that the final claim construction will ultimately be determined by the Patent Trial and Appeal Board (the "Board"). I have been advised and understand that patent claims are construed from the perspective of one of ordinary skill in the art at the time the claimed invention was made. I have further been advised and

understand that, in an *inter partes* review, patent claims are to be construed according to the methodology set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). In performing my analysis and rendering my opinions, I have interpreted claim terms by giving them the ordinary and customary meaning they would have to the POSITA reading the '104 patent as of December 8, 2003, and in light of its specification and file history (including the file history of the *ex parte* reexamination).

B. A Person Having Ordinary Skill in the Art

19. I have been advised and understand that a POSITA is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity, not an automaton. With this understanding, based on the disclosures of the '104 patent and the assumed priority date of December 8, 2003, a POSITA would have had a Bachelor's degree and a Master's degree in Electrical Engineering, Computer Engineering, Physics, or a related field, as well as one to two years of academic or industry experience in mobile devices, wireless communications, or audio electronics, or comparable industry experience.

C. My Understanding of Obviousness

20. I have been advised and understand that a claimed invention is unpatentable if the differences between the invention and the prior art are such

that, at the time the invention was made, the subject matter as a whole would have been obvious at the time the invention was made to a POSITA to which the subject matter pertains. This means that even if all of the requirements of the claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid.

21. It is my understanding that obviousness is a question of law based on underlying factual findings: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of skill in the art; and (4) objective considerations of non-obviousness. I understand that for a single reference or a combination of references to render the claimed invention obvious, a POSITA must have been able to arrive at the claims by altering or combining the applied references.

22. I also understand that prior art references can be combined under several different circumstances. For example, it is my understanding that one such circumstance is when a proposed combination of prior art references results in a system that represents a predictable variation, which is achieved using prior art elements according to their established functions.

23. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to

combine the references exists so as to avoid impermissibly applying hindsight when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoiding such hindsight.

V. THE '104 PATENT

A. Background of the '104 Patent

24. The '104 patent relates to “communication techniques for electronic devices,” and describes electronic devices with audio and/or textual output capabilities. (EX1001, Abstract, 1:31-32.) For example, the '104 patent describes communication between users of electronic devices is “achieved by short audio or textual messages.” (EX1001, 2:9-10.) In some embodiments, such electronic devices include wireless headsets configured to communicate wirelessly with devices such as mobile phones. (EX1001, 2:56-3:17.)

B. Prosecution History of the '104 Patent

25. I understand that the application that became the '104 patent was allowed following only a single art-based rejection, which was overcome by the applicant without substantive amendment. (EX1002.) I understand that the Examiner declined to provide independent reasons for allowance—deferring instead to “the reasons set forth in applicant’s response,” which suggested the claims were patentable over the prior art for “facilitat[ing] text messaging for a

user to communicate with another user.” (EX1002, Nov. 2, 2011, Notice of Allowance, July 5, 2011, Office Action Response.) However, in my view, as shown herein, this feature, and all limitations of the challenged claims, were known in the prior art and thus cannot confer patentability.

C. Claim Construction

26. As discussed above, I understand that, during an *inter partes* review, words in a claim are given their ordinary and customary meaning, which is the meaning understood by a POSITA at the time of the alleged invention after reading the entire patent. In performing my analysis and rendering my opinions, I have interpreted claim terms by giving them the ordinary and customary meaning they would have to the POSITA reading the ’104 patent as of December 8, 2003, and in light of its specification and file history.

27. As explained herein, I believe the challenged claims are unpatentable under any reasonable interpretation of the claim language.

D. Priority Date of the Challenged Claims

28. I understand that the ’104 patent claims priority to a provisional patent application filed on December 8, 2003, and that this date is the earliest possible priority date to which the ’104 patent could be entitled. (EX1001.) Accordingly, for the purposes of this declaration, I have assumed a priority date of December 8,

2003, for the challenged claims. I express no opinion as to whether the '104 patent is actually entitled to that priority date. If it is determined that the '104 patent is entitled to a priority date later than December 8, 2003, it would not change any of my opinions expressed herein.

VI. TECHNICAL ANALYSIS OF THE PRIOR ART

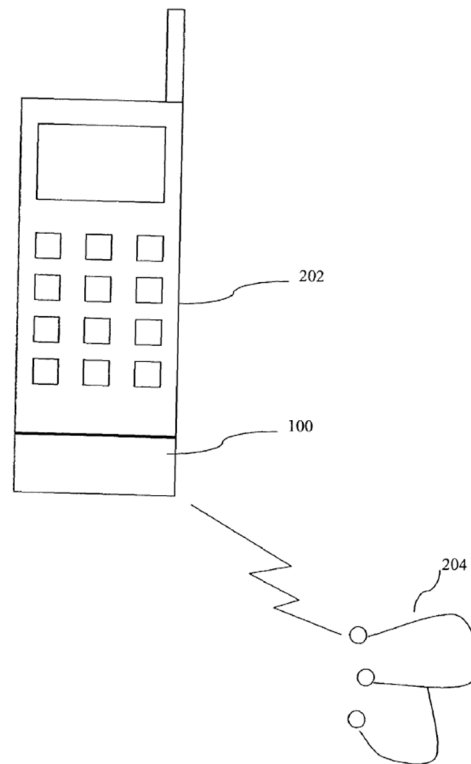
A. Ground 1: Claims 1, 5, 8, 9, 16, 17, 22, 23, 24, 26, 33, 39, 42, and 47 are Rendered Obvious by Zhang

29. It is my view that Zhang teaches every limitation of claims 1, 5, 8, 9, 16, 17, 22, 23, 24, 26, 33, 39, 42, and 47, for the reasons set forth below.

1. Summary of Zhang

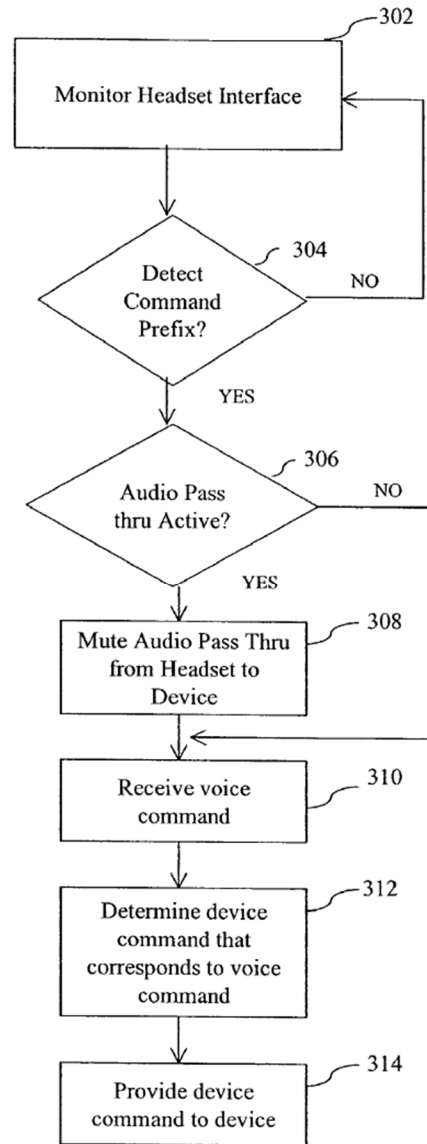
30. Zhang (U.S. Patent No. 7,027,842) was filed on September 24, 2002; I understand Zhang is thus prior art to the '104 patent under at least 35 U.S.C. §§ 102(a) and (e). (EX1005.)

31. Zhang discloses an apparatus and method for providing hands-free operation of a device by using a hands-free adapter and a wireless headset. (EX1005, Abstract, 2:14-28, 5:60-6:6, FIG. 2.) FIG. 2 illustrates:

**Figure 2**

(EX1005, FIG. 2.)

32. The headset includes a microphone for recording audio signals, including voice commands, which are transmitted to the hands-free adapter and used to control the device. (EX1005, 2:14-28, 3:61-4:4, 7:13-38.) FIG. 3 illustrates:

**Figure 3**

(EX1005, 7:13-38, FIG. 3.)

33. The device can be an SMS-enabled mobile phone, a pager, or a PDA.

(EX1005, 4:58-5:3.) The hands-free adapter can retrieve text messages from the device and convert them to audio signals, which can be provided to the headset and read to the user of the device. (EX1005, 4:58-5:3, 9:35-54.) The hands-free

adapter and headset can allow a user to respond to received text messages.

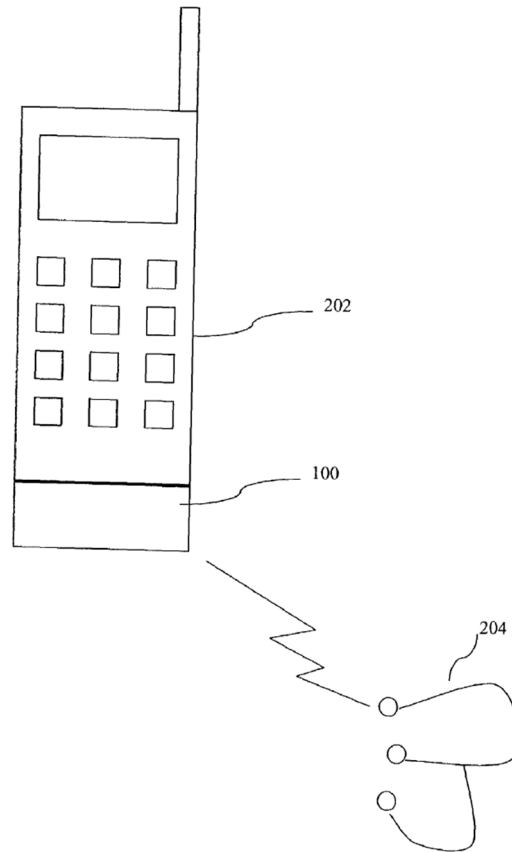
(EX1005, 9:35-54.) Using a “Reply” command, the user can orally provide a reply message, causing the device to send a reply text message. (EX1005, 9:35-54.)

34. Zhang is analogous art to the ’104 patent because it is directed to the same field of endeavor: communication systems, including wireless, mobile communication systems. (EX1001, 2:1-10; EX1005, 1:14-60.) For example, Zhang relates to mobile phones with a hands-free adapter and headset to support hands-free operation—the same type of “hands-free” devices that the ’104 patent purports to improve upon. (*See* EX1001, 1:36-67.) Further, Zhang is reasonably pertinent to the problem faced by the ’104 patent inventor—improving usability and accessibility for users of mobile electronic devices, particularly for hands-free operation. (EX1001, 2:1-5; EX1005, 1:46-48.)

2. Claim 1

a. [Preamble] *A wireless communication system, comprising:*

35. Zhang discloses a mobile telephone 202 with an integrated hands-free adapter 100, which can communicate wirelessly with a headset 204. (EX1005, 2:14-28, 2:45-52, 5:4-12, 5:60-6:6.) FIG. 2 illustrates:



(EX1005, FIG. 2.)

b. [A] *a wireless headset; and*

36. As described above, Zhang's hands-free adapter 100 wirelessly communicates with headset 204. (EX1005, 2:14-28, 5:4-12, 5:60-6:6.) FIG. 1 illustrates a block diagram of hands-free adapter 100, including headset interface 110 that can be wireless:

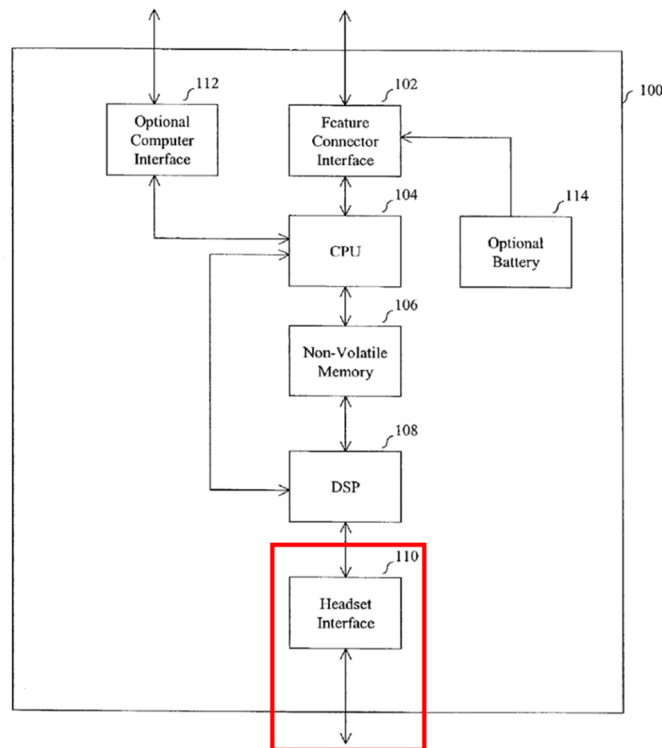


Figure 1

(EX1005, 2:14-28, 5:4-12, FIG. 1 (annotated).)

- c. ***[B] a wireless communication device that supports wireless communication, including messaging, for a first user, said wireless communication device capable of wirelessly communicating with the wireless headset,***

37. As described above, Zhang teaches a wireless communication device (*i.e.*, mobile telephone 202 with hands-free adapter 100) that wirelessly communicates with headset 204. (EX1005, 2:14-28, 5:4-12, 5:60-6:6.) The device supports wireless communication, including messaging, for the user. For example, the device can be a mobile telephone, a pager, or a PDA, which can send and

receive text messages (*e.g.*, SMS text messages). (EX1005, 4:58-5:3, 5:60-6:6, 9:35-60.) As examples, a “Read” command 702 instructs the hands-free adapter to retrieve a text message from the device and to play or read the message to the user; and a “Reply” command 704 instructs the hands-free adapter to generate a command to the device to send a reply text message. (EX1005, 9:35-54.)

d. [C] *wherein said wireless communication device is configured to perform the method of: receiving an incoming text message from a second user;*

38. Zhang’s wireless communication device receives text messages, which the POSITA would have understood to be received from another user. (EX1005, 4:58-5:3, 9:35-60.)

e. [D] *converting the incoming text message to an incoming audio message;*

39. Zhang discloses a voice synthesis process, by which “the text messages received by the device are converted to audio signals and forwarded to the headset.” (EX1005, 4:58-5:3.) The hands-free adapter 100 can include a “DSP [which] performs the voice synthesis,” as illustrated in FIG. 1:

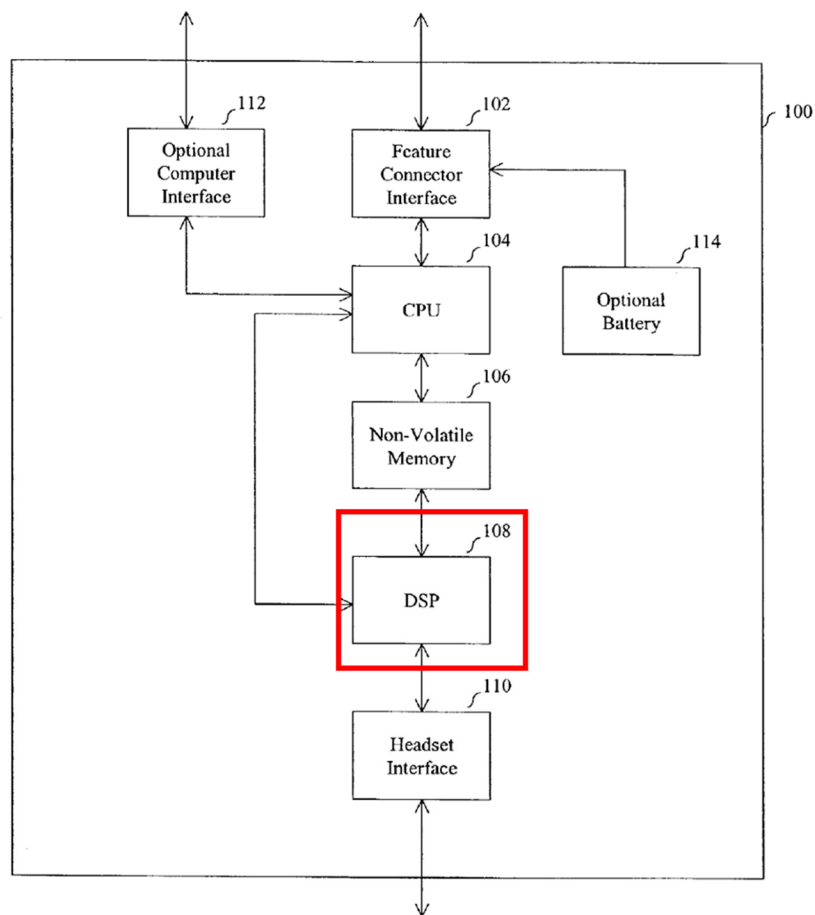


Figure 1

(EX1005, 2:14-28, 2:45-52, 4:58-5:3, FIG. 1 (annotated).)

f. [E] *presenting the incoming audio message for the first user via the wireless headset;*

40. Zhang discloses that in response to an oral “Read” command, the hands-free adapter 100 can retrieve a message and read the message to the user, as shown in FIG. 7:

	Voice Command	Device Command/Action
702	Read	Open message and read it
704	Reply	Reply to message
706	Delete	Delete message
708	Joe	Joe@ipager.com

Figure 7

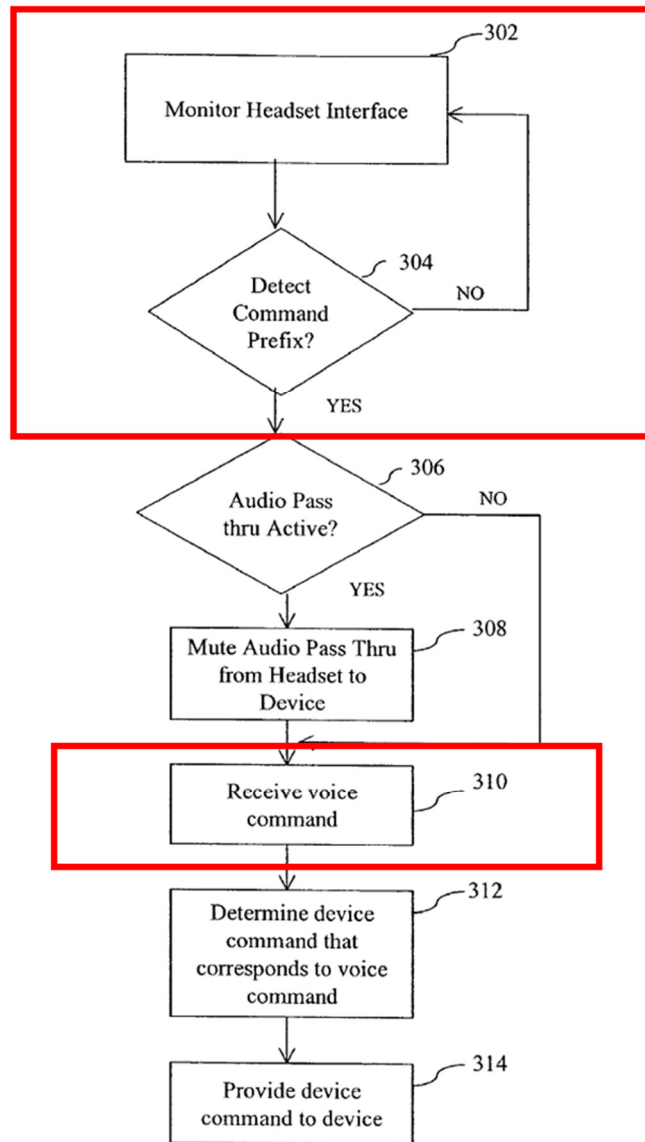
(EX1005, 9:35-54, FIG. 7(annotated).)

41. The text messages can thus be received by the device, converted to audio signals, and forwarded to the headset. (EX1005, 4:58-5:3.) Further, the wireless headset 204 includes a speaker, which the POSITA would understand to read (*i.e.*, present) the converted audio signals to the user. (EX1005, 5:60-6:6.)

g. [F] *recording a reply audio message by the first user via the wireless headset;*

42. Zhang discloses that in response to an oral “Reply” command, the hands-free adapter 100 generates a command to send a reply message (310).

(EX1005, 9:35-54.) FIG. 3 illustrates:

**Figure 3**

(EX1005, 2:14-28, 3:61-4:4, 5:4-12, 5:60-6:6, 9:35-54, FIG. 3 (annotated).)

43. The user orally provides the text of the reply message: for example, “the user says, ‘Goober, Reply yes’ to send a reply message stating ‘Yes.’”

(EX1005, 9:35-54.) The wireless headset 204 includes a microphone for the user to provide the audio message. (EX1005, 5:60-6:6.) The POSITA would further

understand the detected message to be stored in a memory (*e.g.*, a buffer, such as a buffer of DSP 108), so that it can be converted to a text message as described below. Thus, the wireless headset is used to record reply audio messages (*e.g.*, “Yes” in the above example), which are transmitted to the hands-free adapter 100.

h. [G] *converting the reply audio message into a reply text message; and*

44. As described above, Zhang teaches the user orally “provides the text of the reply message,” and the hands-free adapter 100 causes the device to send the reply message in text form. (EX1005, 9:34-54.) FIG. 7 shows the “Reply” command and the corresponding action for the device:

	Voice Command	Device Command/Action
702	Read	Open message and read it
704	Reply	Reply to message
706	Delete	Delete message
708	Joe	Joe@ipager.com

Figure 7

(EX1005, 9:35-54, FIG. 7 (annotated).)

45. The POSITA would have understood that in order to receive a spoken reply input and send it as a text message, the audio of the spoken reply would have to be converted to the reply text message.

i. [H] *transmitting the reply text message to the second user.*

46. Zhang discloses the mobile device sends the reply message.

(EX1005, 9:35-54, FIG. 7.) For example, Zhang teaches the user can say “Goober, Reply yes” to “send a reply message” stating “Yes.” (EX1005, 9:35-54.) Thus, the reply message is transmitted to the second user, *i.e.*, the user that sent the initial incoming message.

3. Claim 5

a. [Preamble] *A wireless communication system as recited in claim 1,*

47. The Preamble is met as described for claim 1.

b. [A] *wherein said wireless communication device is configured to perform the operation of: determining whether the incoming text message should be presented to the first user in an audio manner, and*

48. Zhang discloses that in response to receiving user input including an oral “Read” command, the hands-free adapter 100 can retrieve and read a message

to the user. (EX1005, 9:35-54.) Thus, the hands-free adapter determines whether the text message should be read to the user based on receiving the “Read” command.

- c. ***[B] wherein said converting of the incoming text message is invoked to convert the incoming text message to the incoming audio message, provide that said determining determines that the incoming text message should be presented to the first user in an audio manner.***

49. As shown in FIG. 3, Zhang teaches the hands-free adapter receives a voice command (310), determines an accompanying device command (312), then commands the device to act accordingly (314):

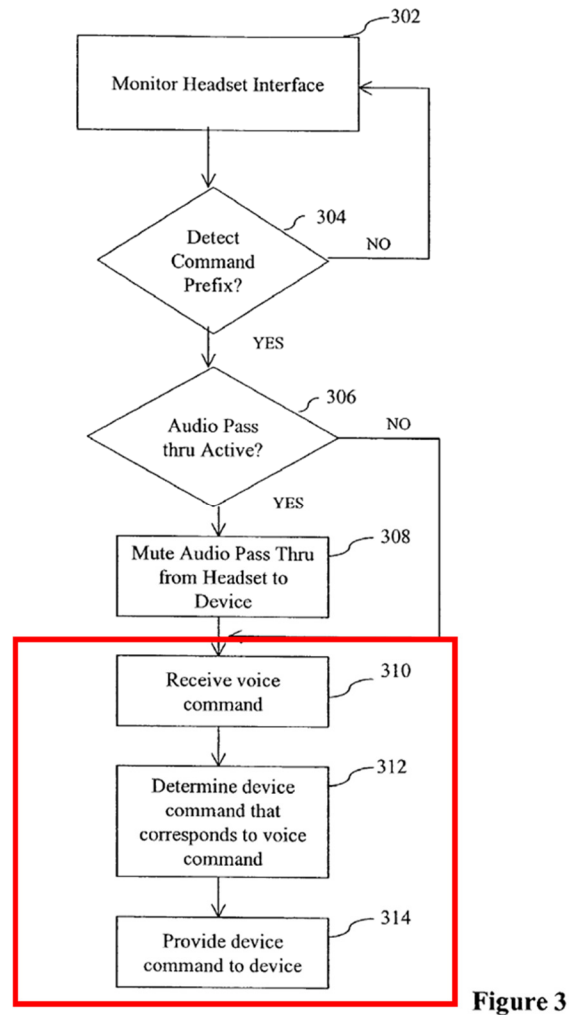


Figure 3

(EX1005, 7:13-48, 9:35-54, FIG. 3 (annotated).)

50. As described above, Zhang teaches that in response to an oral “Read” command, the hands-free adapter 100 can retrieve and read a message to the user. (EX1005, 9:35-54, FIG. 7.) In accordance with Zhang’s teaching that “[i]f the user selects an event indicator message that requires the generation of speech, then the DSP performs the Voice Synthesis,” the POSITA would understand the text is

not converted into audio until the user initiates the conversion with the “Read” command. (EX1005, 4:58-5:3, 9:35-54.)

4. Claim 8

- a. [Preamble] *A wireless communication system as recited in claim 5,***

51. The Preamble is met as described for claim 5.

- b. [A] *wherein said determining is based on a preference setting that is able to be set by the first user.***

52. Zhang discloses the hands-free adapter can be configured with “user preferences [stored] into the non-volatile memory” including “the selection of other voice commands and event indicators.” (EX1005, 2:39-43.) The “voice commands typically are selected by the user during configuration.” (EX1005, 7:55-58; 9:20-23.) As shown in FIG. 7, the “Read” command is such a voice command that can be set as a user preference:

	Voice Command	Device Command/Action
702	Read	Open message and read it
704	Reply	Reply to message
706	Delete	Delete message
708	Joe	Joe@ipager.com

Figure 7

(EX1005, 2:39-43, 7:55-58; 9:20-23, 9:35-54, FIG. 7 (annotated).)

53. Thus, when received, the “Read” command (set by user preference) causes the hands-free adapter to determine the text message should be read to the user. (EX1005, 9:35-54, FIG. 7.)

5. Claim 9

- a. **[Preamble]** *A wireless communication system as recited in claim 5,*

54. The Preamble is met as described for claim 5.

- b. [A] *wherein said determining is based on a user indication.***

55. As previously discussed, Zhang teaches that in response to an oral “Read” command, the hands-free adapter 100 can read the message to the user. (EX1005, 9:35-54, FIG. 7.) Based on receiving the “Read” voice command, which is a user indication, the hands-free adapter determines the text message should be read to the user. (EX1005, 9:35-54, FIG. 7.)

6. Claim 16

- a. [Preamble] *A wireless communication system as recited in claim 1,***

56. The Preamble is met as described for claim 1.

- b. [A] *wherein the incoming text message is a SMS message.***

57. Zhang discloses the wireless communication device can be an “SMS enabled mobile telephone.” (EX1005, 9:36-37.) Thus, an incoming text message received by the SMS-enabled mobile telephone can be an SMS message. (EX1005, 9:35-44.)

7. Claim 17

- a. [Preamble] *A wireless communication system as recited in claim 1,***

58. The Preamble is met as described for claim 1.

- b. [A] *wherein the incoming text message is a SMS message, and wherein the reply text message is a SMS message.***

59. Zhang discloses the wireless communication device can be an “SMS enabled mobile telephone.” (EX1005, 9:36-37.) That is, the incoming text message received by the SMS-enabled mobile telephone and the reply message sent by the SMS-enabled mobile telephone can both be SMS messages. (EX1005, 9:35-44.)

8. Claim 22

- a. [Preamble] *A wireless communication system as recited in claim 1,***

60. The Preamble is met as described for claim 1.

- b. [A] *wherein said wireless communication device is a mobile telephone.***

61. Zhang discloses the wireless communication device can be a “mobile telephone.” (EX1005, 9:35-44.)

9. Claim 23

- a. ***[Preamble] A wireless headset that at least supports messaging for a first user, said wireless headset operatively connects to a mobile electronic device having wireless communication capability, and***

62. As described above, Zhang discloses that headset 204 wirelessly communicates with the hands-free adapter 100 via a wireless network. (EX1005, 2:14-28, 5:4-12, 5:60-6:6.) FIG. 2 illustrates:

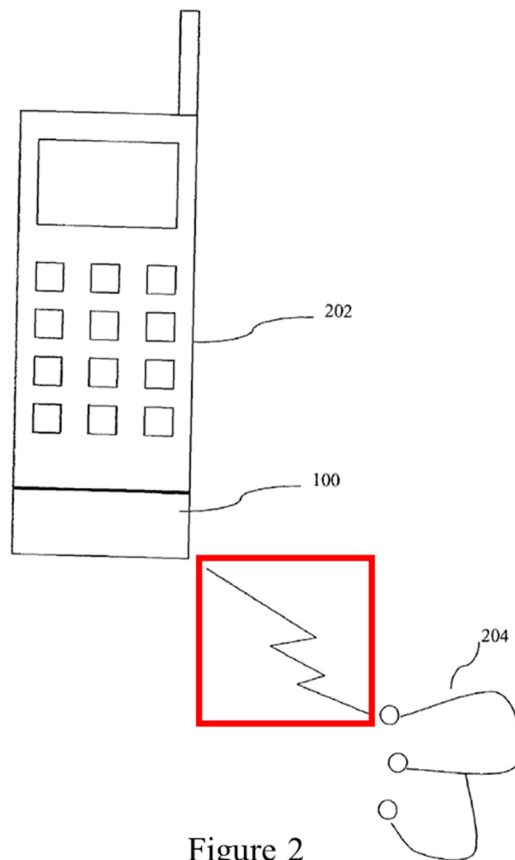


Figure 2

(EX1005, FIG. 2 (annotated).)

63. Zhang's wireless communication device supports wireless communication, including messaging, and can send and receive text messages (e.g., SMS messages). (EX1005, 4:58-5:3, 5:60-6:6, 9:35-60.) As examples, a "Read" command 702 instructs the hands-free adapter to retrieve a text message from the device and to read the message to the user; and a "Reply" command 704 instructs the device to send a reply text message. (EX1005, 9:35-54.) That is, the wireless headset supports the messaging function of the wireless communication device by reading received text messages to the user and recording reply messages. (EX1005, 4:58-5:3, 5:60-6:6.)

- b. ***[A] wherein said wireless headset is configured to at least: wirelessly receive an incoming audio message from the mobile electronic device, the incoming audio message being produced by converting an incoming text message from another wireless electronic device, the incoming text message being received at the mobile electronic device via a wireless network;***

64. Zhang discloses a voice synthesis process, by which "the text messages received by the device are converted to audio signals and forwarded to the headset." (EX1005, 4:58-5:3.) The hands-free adapter 100 can include a DSP 108 to perform voice synthesis and a wireless headset interface 110, as illustrated in FIG. 1:

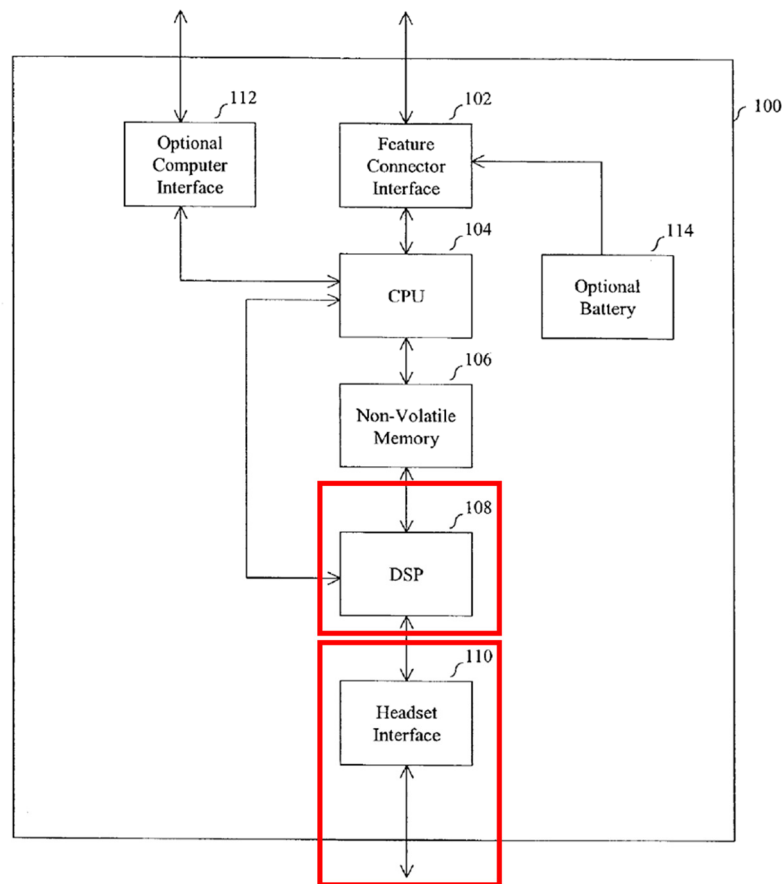


Figure 1

(EX1005, 2:14-28, 2:45-52, 4:58-5:3, FIG. 1 (annotated).)

65. Thus, the headset wirelessly receives an incoming audio message from the wireless communication device, after the DSP 108 converts an incoming text message to the audio message. The POSITA would have understood that the incoming text message is received from another wireless electronic device via the wireless network. This is at least because Zhang discloses the wireless communication device may be SMS-enabled, and the POSITA would understand

the SMS protocol to describe sending and receiving text messages between two or more wireless electronic devices via a wireless network. (*See, e.g.*, EX1012, 6.)

- c. **[B]** *output the incoming audio message for the first user;*

66. This element is met as described for claim 1[E].

- d. **[C]** *receive a reply audio message from the first user in response to the incoming audio message; and*

67. This element is met as described for claim 1[F].

- e. **[D]** *wirelessly transmit the reply audio message to the mobile electronic device.*

68. As described above, Zhang discloses the hands-free adapter 100 wirelessly communicates with headset 204. (EX1005, 2:14-28, 5:4-12, 5:60-6:6.)

FIG. 1 illustrates:

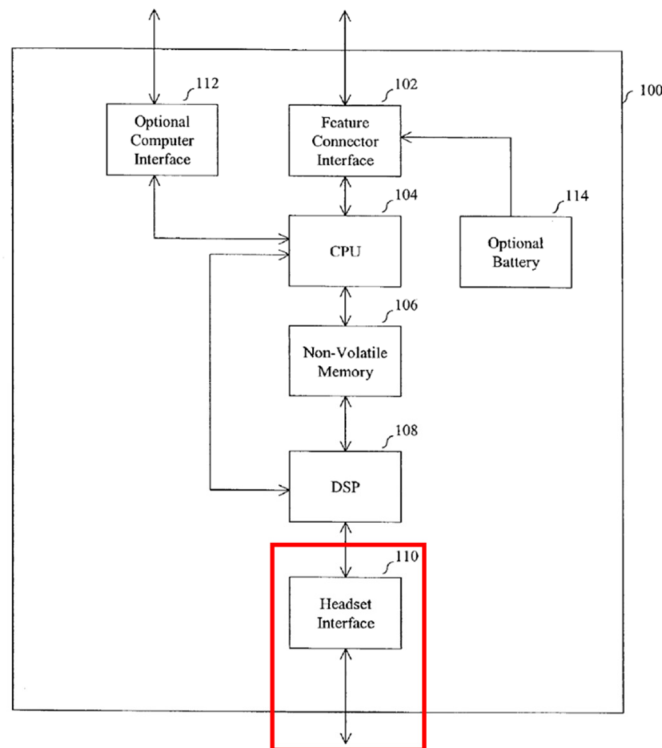


Figure 1

(EX1005, 2:14-28, 5:4-12, FIG. 1 (annotated).)

69. Zhang discloses audio signals are received from the headset and processed by the DSP of the hands-free adapter. (EX1005, 5:2-5.) For example, in response to an oral “Reply” command provided via the microphone of the wireless headset, the hands-free adapter generates a command for the wireless communication device to send a reply message. (EX1005, 9:35-54.) Based on these teachings, the POSITA would have understood that for the wireless communication device to send a reply message, the wireless headset must first

transmit the audio signal containing the reply message's content to the wireless communication device.

10. Claim 24

- a. [Preamble] *A wireless headset according to claim 23,***

70. The Preamble is met as described for claim 23.

- b. [A] *wherein the reply audio message thereafter being converted to a reply text message and transmitted to the another wireless electronic device via the wireless network.***

71. As described above, Zhang discloses the user orally “provides the text of the reply message,” and the hands-free adapter 100 causes the device to send the reply message in text form. (EX1005, 9:34-54.) FIG. 7 illustrates:

	Voice Command	Device Command/Action
702	Read	Open message and read it
704	Reply	Reply to message
706	Delete	Delete message
708	Joe	Joe@ipager.com

Figure 7

(EX1005, 9:35-54, FIG. 7 (annotated).)

72. To the extent not expressly disclosed, the POSITA would have understood that in order to receive a spoken reply input and send it as a text message, the audio of the spoken reply would have to be converted to the reply text message by the wireless communication device. The POSITA would have understood a reply text message is transmitted to another wireless communication device, *i.e.*, the wireless electronic device that sent the initial incoming message, via the wireless network. This is at least because Zhang discloses the wireless electronic device may be SMS-enabled, and the POSITA would understand the

SMS protocol to describe sending and receiving text messages between two or more wireless electronic devices over a wireless network. (*See, e.g.,* EX1012, 6.)

11. Claim 26

- a. **[Preamble]** *A wireless headset as recited in claim 24,*

73. The Preamble is met as described for claim 24.

- b. **[A]** *wherein the incoming text message is a SMS message, and wherein the reply text message is a SMS message.*

74. This element is met as described for claim 17[A].

12. Claim 33

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

75. The Preamble is met as described for claim 23.

- b. **[A]** *wherein the incoming text message is a SMS message.*

76. This element is met as described for claim 16[A].

13. Claim 39

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

77. The Preamble is met as described for claim 23.

- b. *[A] wherein the mobile electronic device is a mobile telephone.*

78. This element is met as described for claim 22[A].

14. Claim 42

- a. *[Preamble] A wireless headset that at least supports messaging for a first user, said wireless headset operatively connects to a mobile electronic device having wireless communication capability, and*

79. The Preamble is met as described for claim 23, preamble.

- b. *[A] wherein said wireless headset is configured to at least: play an incoming audio message for the first user via the wireless headset, the incoming audio message being produced by converting an incoming text message from a second user, the incoming text message being received at the mobile electronic device via a wireless network; and*

80. This element is met as described for claim 23[A] and 23[B].

- c. *[B] receive a reply audio message from the first user via the wireless headset in response to the incoming audio message, the reply audio message thereafter being converted to a reply text message and transmitted to the second user via the wireless network.*

81. This element is met as described for claim 23[C] and claim 24[A].

15. Claim 47

- a. **[Preamble]** *A wireless headset as recited in claim 43,*

82. The Preamble is met as described for claim 43.

- b. **[A]** *wherein the reply audio message is converted to the reply text message and transmitted to the another wireless electronic device by the mobile electronic device.*

83. This element is met as described for claim 24[A].

B. Ground 2: Claims 2, 6, and 10 are Rendered Obvious by Zhang in view of Ewer

84. It is my view that Zhang in view of Ewer teaches every limitation of claims 2, 6, and 10, for the reasons set forth below.

1. Summary of Ewer

85. Ewer is the publication of a U.S. patent application that was filed on December 12, 2002. (EX1006.) I understand Ewer is thus prior art to the '104 patent under at least 35 U.S.C. §102(e). I understand Ewer was not considered during the prosecution of the '104 patent.

86. Ewer teaches “automatic detection and signaling of the connection status of a headset,” which is useful for identifying when a headset is no longer connected to a phone or computer. (EX1006, Abstract, [0004], [0005].) The disclosed methods apply to both wired and wireless headsets, including those using

RF technology. (EX1006, [0027].) If the headset is disconnected or inactive, the system can pause or terminate applications, or prevent them from running.

(EX1006, [0012].) If the headset is active, the system can resume or allow execution of applications. (EX1006, [0012].) FIG. 5 illustrates:

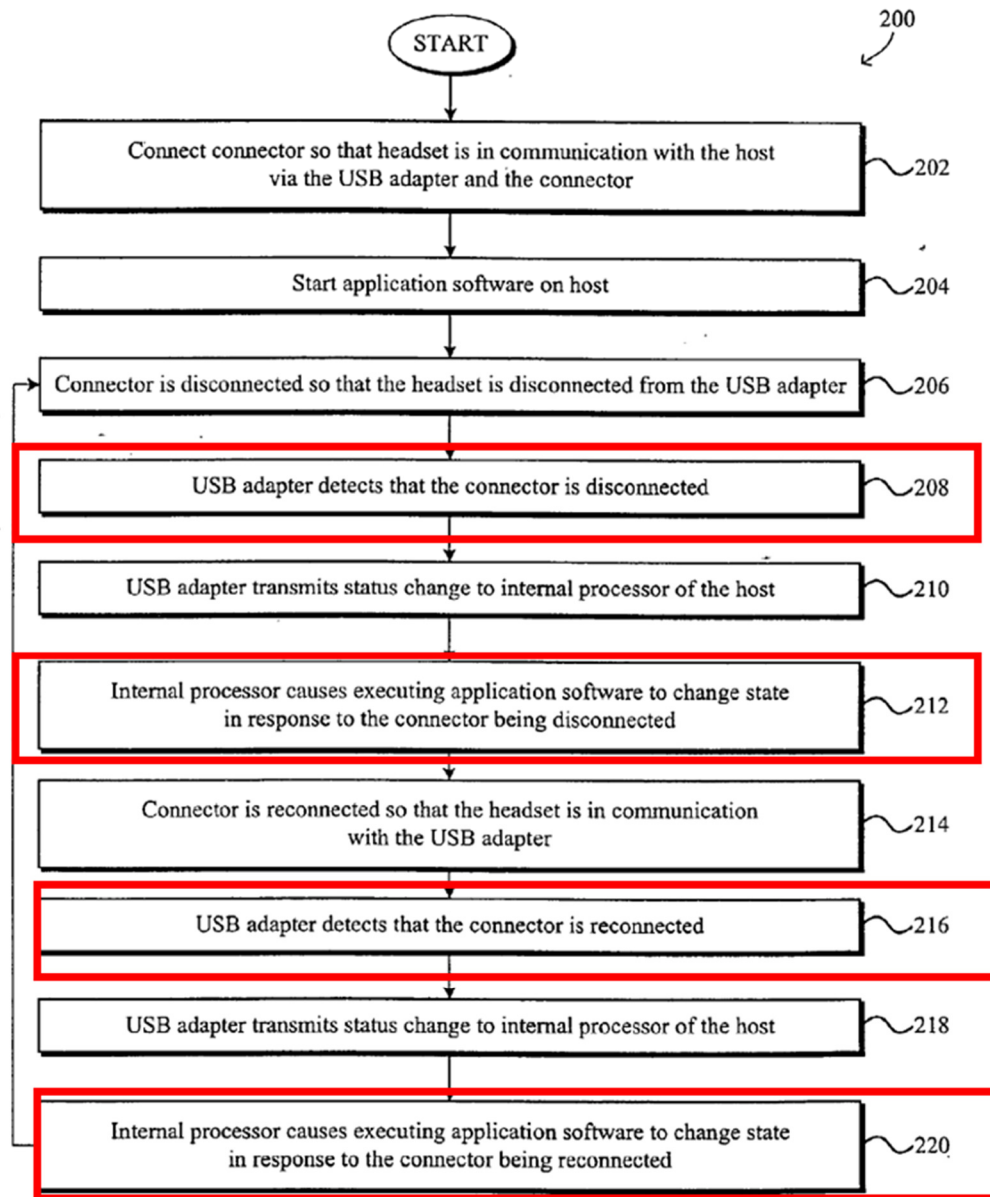


FIG. 5

(EX1006, FIG. 5 (annotated).)

87. Ewer is analogous art to the '104 patent at least because it is directed to the same field of endeavor—communication systems that can be wireless and

include a wireless headset. (EX1006, [0027].) It is also reasonably pertinent to the '104 patent at least because it discloses solutions for connecting a headset to a host device for hands-free operation, a problem discussed in the '104 patent. (See EX1001, 1:36-67; EX1006, [0009]-[0010].)

2. Claim 2

a. *[Preamble] A wireless communication system as recited in claim 1,*

88. The Preamble is met as described for claim 1.

b. *[A] wherein said wireless communication device is configured to perform the operation of determining whether the wireless headset is active, and*

89. This element is met by Ewer. Ewer discloses that a headset adapter 106 determines whether a wireless headset 110 is connected (and thus active); and transmits a signal to a host device 104 accordingly to indicate the headset's connection status. (EX1006, [0027], [0028].) For example, headset adapter 106 can include circuitry (*i.e.*, connector detect circuit 132, processor 136) to monitor the connection status. (EX1006, [0026], [0035].) FIG. 2 illustrates an example relationship among the headset 110, headset adapter 106, and host device 104:

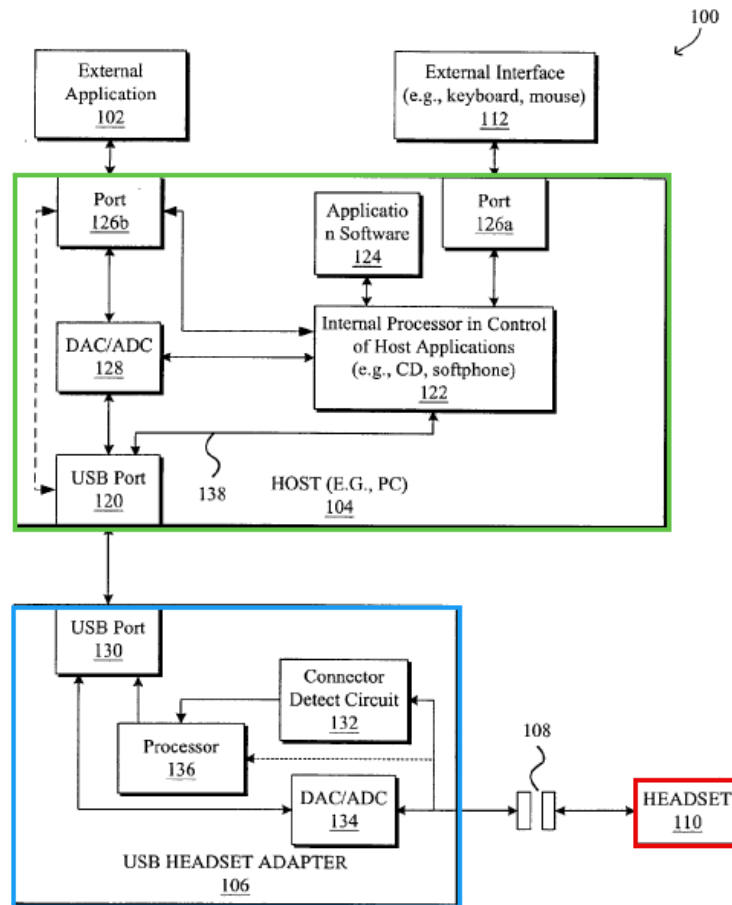


FIG. 2

(EX1006, FIG. 2 (annotated).)¹

¹ While headset 110 communicates with adapter 106 via a connector 108 in the FIG. 2 example, Ewer's automatic detection of the headset's connection status is "similar regardless of whether the connector 108 is provided." (EX1006, [0026].)

90. When the headset 110 is connected or disconnected, the headset adapter 106 transmits a signal “indicating a change in the headset connection status to the host 104”, which runs application software that may respond to the connection status. (EX1006, [0028].)

91. The POSITA would have understood Ewer to disclose determining whether a wireless headset (such as in Zhang) is active, for several reasons. First, although wired embodiments are disclosed, Ewer explains that “wireless connections may alternatively be employed,” and that its use of the term “connection” refers to “both wired and wireless connections.” (EX1006, [0027].)

92. Second, Ewer discloses “RF technology” as one example for headset 110 communicating wirelessly with adapter 106. (EX1006, [0027].) The POSITA would have understood that, in order for adapter 106 to perform its task of “indicat[ing] a change in the headset connection status” to the host 104 for a wireless headset utilizing RF technology, the adapter would determine whether the headset is communicating RF signals (*e.g.*, audio signals) with the adapter. (*See* EX1013, 428-35 (describing wireless communication of audio signals via radio frequency).) Similarly, the POSITA would have understood Ewer’s headset to be active if the headset is communicating with the adapter. This is consistent with the ’104 patent’s description of “determin[ing] whether a head-set is active” in order to

“obtain and send 214 an audio message to the caller,” *i.e.*, via communicating the audio message with the headset. (EX1001, 8:48-54, FIG. 5.)

(i) Motivation to Combine

93. The POSITA would have been motivated to combine the teachings of Zhang and Ewer to meet the claim limitations. Zhang’s system is configured for utilizing a wireless headset in combination with a communication device. The POSITA would have understood that if the wireless headset were disconnected from the communication device, applications on the communication device utilizing the headset cannot function as desired. Zhang’s system would thus face a problem identified in Ewer: the requirement of inconvenient and deliberate “manual intervention by the user in order for the application to be informed of the disconnection and for the application to change its state.” (EX1006, [0009].) The POSITA would seek to minimize such inconvenience and would thus be motivated to combine Ewer with Zhang.

94. The POSITA would have had a reasonable expectation of success in combining the teachings of Zhang and Ewer. Ewer’s techniques are broadly applicable to headsets connected to computers or other processor-based hosts— analogous to Zhang’s headset connected to the integrated communication device and hands-free adapter. (EX1006, [0025].) Ewer’s monitoring of headset

connectivity status is implemented via processors 136 and/or connector detect circuit 132 of USB headset adapter 106 by monitoring connection 108, analogous to DSP 108 of hands-free adapter 100 which monitors headset interface 100 of Zhang. (EX1006, [0035]; EX1005, 4:58-59, 6:15-18, FIG. 3.) Further, Zhang and Ewer also share other analogous and familiar computer components, such as headsets, headset adapters, and communication devices. (EX1005, 1:61-2:52; EX1006, [0025]-[0027].) Zhang and Ewer are thus easily combined based on familiar components. Additionally, Zhang's hands-free adapter already monitors the headset interface. (EX1005, 2:61-62.) Thus, it would have been straightforward to modify the hands-free adapter to monitor the connection status in addition to monitoring audio input via the headset interface.

- c. ***[B] wherein said converting of the incoming text message is automatically invoked to convert the incoming text message to the incoming audio message, provided that said determining determines that the wireless headset is active.***

95. Ewer discloses “[a] signal indicating that the headset is connected may resume a paused application or allow the application to be executed.” (EX1006, [0012].) The POSITA would understand this to disclose that upon detecting that the headset is connected (*e.g.*, active), the system can allow an application running on the connected host device to automatically execute in response to the signal. One application running on Zhang's hands-free adapter is

the conversion of text messages to audio messages. (EX1005, 4:58-5:3.)

Accordingly, the POSITA would understand the combination of Zhang and Ewer to teach automatically executing the conversion of text messages to audio messages upon determining the wireless headset is active.

(i) Motivation to Combine

96. The POSITA would have been motivated to combine the teachings of Zhang and Ewer as discussed with respect to claim 2[A].

3. Claim 6

a. [Preamble] *A wireless communication system as recited in claim 5,*

97. The Preamble is met as described for claim 5.

b. [A] *wherein said wireless communication device is configured to perform the operation of determining whether the wireless headset is active, and*

98. This element is met as described for claim 2[A].

c. [B] *wherein said converting of the incoming text message is automatically invoked to convert the incoming text message to the incoming audio message, provide that said determining determines that the wireless headset is active.*

99. This element is met as described for claim 2[B].

4. Claim 10

- a. [Preamble] *A wireless communication system as recited in claim 5,***

100. The Preamble is met as described for claim 5.

- b. [A] *wherein said determining comprises determining whether the wireless headset is active.***

101. This element is met as described for claim 2[A].

C. Ground 3: Claims 4 and 25 are Rendered Obvious by Zhang in view of Vuori

102. It is my view that Zhang in view of Vuori teaches every limitation of claims 4 and 25, for the reasons set forth below.

1. Summary of Vuori

103. Vuori is the publication of a U.S. patent application that was filed on July 23, 2001, and published on October 10, 2002. (EX1007.) I understand Vuori is thus prior art to the '104 patent under at least 35 U.S.C. §§103(a), (b), and (e). I understand Vuori was not considered during the prosecution of the '104 patent.

104. Vuori discloses systems and methods for “facilitat[ing] the sending of short messages.” (EX1007, [0006].) Vuori describes user equipment that can receive a short voice message (SVM) spoken by a first user and can “recogniz[e] the [SVM] spoken by the first user and ... provid[e] the SVM as a text message.”

(EX1007, [0017].) The user equipment can “end the message recordation by signaling the user that the maximum message length has been reached.” (EX1007, [0032].) The user equipment can be configured to receive an incoming text SVM and can “convert[] the incoming text SVM from the second user to voice for enunciation for instance as an artificial voice.” (EX1007, [0017].)

105. Vuori is analogous art to the ’104 patent at least because it is directed to the same field of endeavor—improving communication between users of electronic devices, where the communication is achieved by short audio or textual messages. (EX1007, [0003], [0006], [0017]; EX1001, 2:1-11.) Vuori is reasonably pertinent to the ’104 patent at least because it describes voice and text messaging solutions applicable to wireless communication devices (*e.g.*, mobile phones), thus addressing a problem faced by the ’104 patent’s inventors. (*See* EX1001, 2:3-37; EX1007, [0007]-[0017].)

2. Claim 4

a. [Preamble] *A wireless communication system as recited in claim 1,*

106. The Preamble is met as described for claim 1.

- b. *[A] wherein said wireless communication device is configured to perform the operation of: limiting the reply audio message during said recording and/or said converting of the reply audio message so that the reply text message does not exceed a predetermined text message size.*

107. Vuori discloses “the user equipment could end the message recordation by signaling the user that the maximum message length has been reached.” (EX1007, [0032].) The POSITA would understand the maximum message length corresponds to a predetermined text message size. Thus, ending message recording when the maximum message length has been reached limits the reply audio message during the recording process.

(i) Motivation to Combine

108. The POSITA would have been motivated to combine the teachings of Zhang and Vuori to meet the claim limitations. Zhang’s system is configured for allowing a user to respond to received SMS text messages. (EX1005, 9:35-54.) The POSITA would have understood that the SMS protocol limited the length of SMS messages to a specified number of characters. (*See, e.g.*, EX1012, p. 6.) Zhang’s system would thus face a problem if the recorded audio message were too long to convert to an SMS text message. The POSITA would seek to prevent such an occurrence and would thus be motivated to combine the teachings of Vuori with Zhang.

109. The POSITA would have had a reasonable expectation of success in combining the teachings of Zhang and Vuori. Vuori's methods are broadly applicable for use in "telecommunications network[s] for providing messages between users"—analogous to Zhang's system which can send and receive SMS text messages. (EX1007, [0007]; EX1005, 4:58-5:3, 5:60-6:6, 9:35-60.) Thus, it would have been straightforward to modify Zhang's system to limit the length of the message recorded via the headset interface.

3. Claim 25

- a. **[Preamble]** *A wireless headset as recited in claim 24,*

110. The Preamble is met as described for claim 24.

- b. **[A]** *wherein at least one of said wireless headset and the mobile electronic device are configured to: limit the reply audio message and/or the reply text message so that the reply text message does not exceed a maximum text message size.*

111. This element is met as described for claim 4[A].

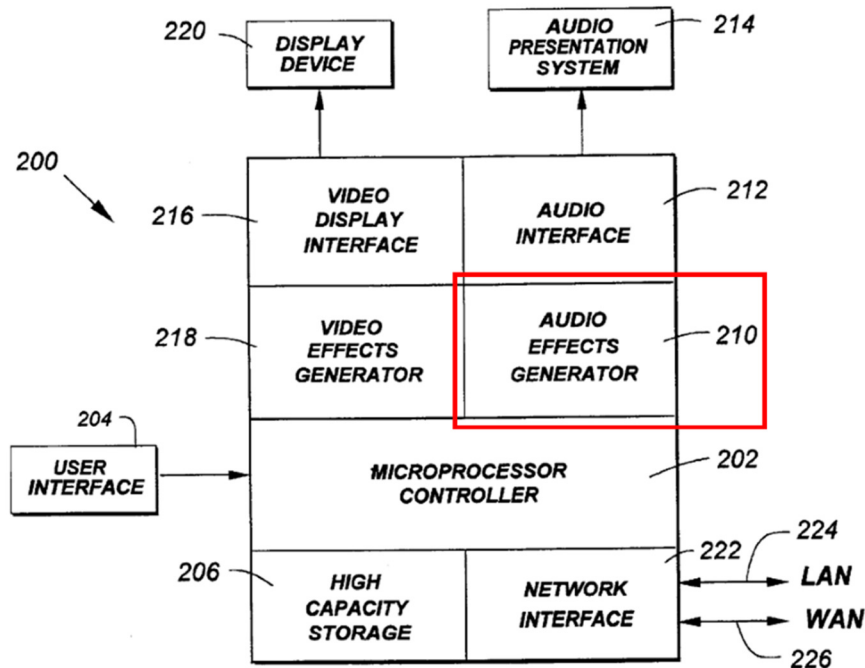
D. Ground 4: Claims 11-15, 28-32, and 43 are Rendered Obvious by Zhang in view of Posa

112. It is my view that Zhang in view of Posa teaches every limitation of claims 11-15, 28-32, and 43, for the reasons set forth below.

1. Summary of Posa

113. Posa is a U.S. patent that was filed on July 6, 2001, and issued on October 14, 2003. (EX1008.) I understand Posa is thus prior art to the '104 patent under at least 35 U.S.C. §§102(a) and (e). I understand Posa was not considered during prosecution of the '104 patent.

114. Posa relates to enhancing an e-book reading experience, including by allowing selection of a narrator. (EX1008, 1:13-16, 3:35-43.) For example, Posa discloses specifying a male or female reader, along with a male or female voice, so that a user can have a book read to them by the narrator of their choice. (EX1008, 3:35-43.) The e-book device can synthesize the narrator's voice using audio effects generator 210. (EX1008, 3:55-57, 5:19-26.) FIG. 2 illustrates:

**Fig - 2**

(EX1008, FIG. 2 (annotated).)

115. The audio can be presented via headphones, which may be connected to the e-book device through a wireless link. (EX1008, 3:55-61; 5:27-30.)

116. Posa is analogous art to the '104 patent at least because it is directed to the same field of endeavor— enhancing user interaction with electronic devices through personalized audio experiences, including by using text to speech synthesis. Posa is also reasonably pertinent to the '104 patent, at least by

disclosing solutions to text to audio conversion in electronic devices—a problem faced by the '104 patent inventors.

2. Claim 11

- a. **[Preamble] *A wireless communication system as recited in claim 1,***

117. The Preamble is met as described for claim 1.

- b. **[A] *wherein said converting of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.***

118. Posa discloses that a user can “specify a male, or female reader, along with male or female voice” to provide narration. (EX1008, 3:35-37.) The male or female voice specified by the user is a user-selected speech characteristic.

Further, Posa discloses “the voice of the narrator may be... substantially synthesized by the device itself.” (EX1008, 3:55-57.)

119. Zhang discloses that by using the device interface, a user can configure the hands-free adapter. (EX1005, 5:25-38.) For example, a user can program user preferences, including the selection of event indicators. (EX1005, 2:38-44, 5:25-38.) An event indicator “can be a message, such as a message previously recorded by the user or a standard message, or a tone or series of tones.” (EX1005, 6:21-23.) For example, event indicators can be sounds produced by the

device, including synthesized speech as generated by the DSP of the hands-free adapter. (EX1005, 2:6-13, 4:52-5:3, 8:13-16.)

120. When combined with the voice selection of Posa, Zhang, in teaching that a user can program event indicators including synthesized speech, also discloses that the user can select a voice for the synthesized speech. (EX1005, 4:66-5:3, 8:13-16; EX1008, 3:35-37; 3:55-57.) Further, when Zhang discloses that text messages are converted to audio signals by the DSP via voice synthesis, Zhang also teaches that the conversion of the text message to audio is at least in part based on the user-selected voice. (EX1005, 4:66-5:3, 8:13-16; EX1008, 3:35-37; 3:55-57.)

(i) Motivation to Combine

121. The POSITA would have been motivated to combine the teachings of Zhang and Posa to meet the claim limitation. Zhang's hands-free adapter is configured to be programmable to allow a user to select event indicators, including synthesized speech. (EX1005, 2:6-44, 4:52-5:3, 8:13-16.) The POSITA would understand this system provides a level of customization. Posa provides an example of additional customization by teaching that a user can choose voice characteristics of synthesized speech. (EX1006, Abstract, 3:35-37.) The POSITA

would have sought to provide such customization to Zhang's system to increase a user's enjoyment and would thus be motivated to combine Zhang with Posa.

122. The POSITA would have had a reasonable expectation of success in combining Zhang and Posa. Posa's speech synthesis is implemented by DSP components such as the audio effects generator 210, which is analogous to DSP 108 of Zhang's hands-free adapter. (EX1005, 4:58-5:3; EX1006, 5:19-17.) Zhang and Posa also share other analogous and familiar computer components, such as wireless headphones to play the audio, memories, and processing units. (EX1005, 4:40-5:66, FIG. 1; EX1006, 4:59-61, 5:1-4, 5:10-19, 5:27-30, FIG. 2.) Zhang and Posa are thus easily combined based on familiar components.

123. Further, Zhang already discloses that a user can select user preferences using the device interface, such as the selection of event indicators which include synthesized speech. (EX1005, 2:6-44, 4:58-5:3, 5:27-38, 8:13-16.) Thus, it would have been straightforward to combine the teachings of Posa and Zhang.

3. Claim 12

a. **[Preamble] *A wireless communication system as recited in claim 11,***

124. The Preamble is met as described for claim 11.

- b. *[A] wherein the at least one user-selected speech characteristic is set based on at least one user preference that is able to be set by the first user.*

125. This element is met as described for claim 11[A].

4. Claim 13

- a. *[Preamble] A wireless communication system as recited in claim 11,*

126. The Preamble is met as described for claim 11.

- b. *[A] wherein the at least one user-selected speech characteristic is set based on at least one user setting provided at said wireless communication device.*

127. Zhang discloses that a user can use the device interface to program user preferences into the non-volatile memory of the hands-free adapter. (EX1005, 2:38-44.)

5. Claim 14

- a. *[Preamble] A wireless communication system as recited in claim 11,*

128. The Preamble is met as described for claim 11.

- b. *[A] wherein the at least one user-selected speech characteristic pertains to at least a voice for use in producing the incoming audio message.*

129. This element is met as described for claim 11[A].

6. Claim 15

- a. **[Preamble]** *A wireless communication system as recited in claim 11,*

130. The Preamble is met as described for claim 11.

- b. **[A]** *wherein said presenting of the incoming audio message comprises playing the incoming audio message, with the playing of the incoming audio message being dependent on at least one user-selected speech characteristic.*

131. This element is met as described for claim 1[F] and claim 11[A].

Since the audio message is synthesized based on the user-selected voice, playback of the audio message is also dependent on the user-selected voice.

7. Claim 28

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

132. The Preamble is met as described for claim 23.

- b. **[A]** *wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.*

133. This element is met as described for claim 11[A].

8. Claim 29

- a. **[Preamble]** *A wireless headset as recited in claim 28,*

134. The Preamble is met as described for claim 28.

- b. *[A] wherein the at least one user-selected speech characteristic is set based on at least one user preference able to be set by or for the first user.*

135. This element is met as described for claim 11[A].

9. Claim 30

- a. *[Preamble] A wireless headset as recited in claim 28,*

136. The Preamble is met as described for claim 28.

- b. *[A] wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device.*

137. This element is met as described for claim 13[A].

10. Claim 31

- a. *[Preamble] A wireless headset as recited in claim 28,*

138. The Preamble is met as described for claim 28.

- b. *[A] wherein the at least one user-selected speech characteristic pertains to at least a voice for use in producing the incoming audio message.*

139. This element is met as described for claim 11[A].

11. Claim 32

- a. *[Preamble] A wireless headset as recited in claim 23,*

140. The Preamble is met as described for claim 23.

- b. [A] *wherein said wireless headset includes at least one speaker,***

141. Zhang discloses “[t]he headset used with the hands-free adapter includes a speaker.” (EX1005, 2:48-49.)

- c. [B] *wherein the output of the incoming audio message comprises directing the incoming audio message to the at least one speaker in said wireless headset, and***

142. Zhang discloses that the incoming text messages can be received by the device, converted to audio signals, and forwarded to the headset where they are read to the user. (EX1005, 4:58-5:3.) The headset includes a speaker, which the POSITA would understand to present the converted audio signals to the user; this process inherently requires directing the audio message to the speaker. (EX1005, 5:60-6:6.)

- d. [C] *wherein the output of the incoming audio message is dependent on at least one user-selected speech characteristic.***

143. This element is met as described for claim 11[A].

12. Claim 43

- a. [Preamble] *A wireless headset as recited in claim 42,***

144. The Preamble is met as described for claim 42.

- b. *[A] wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic, and*

145. This element is met as described for claim 11[A].

- c. *[B] wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device.*

146. This element is met as described for claim 13[A].

(i) Motivation to Combine

147. This element is met as described for claim 11[A].

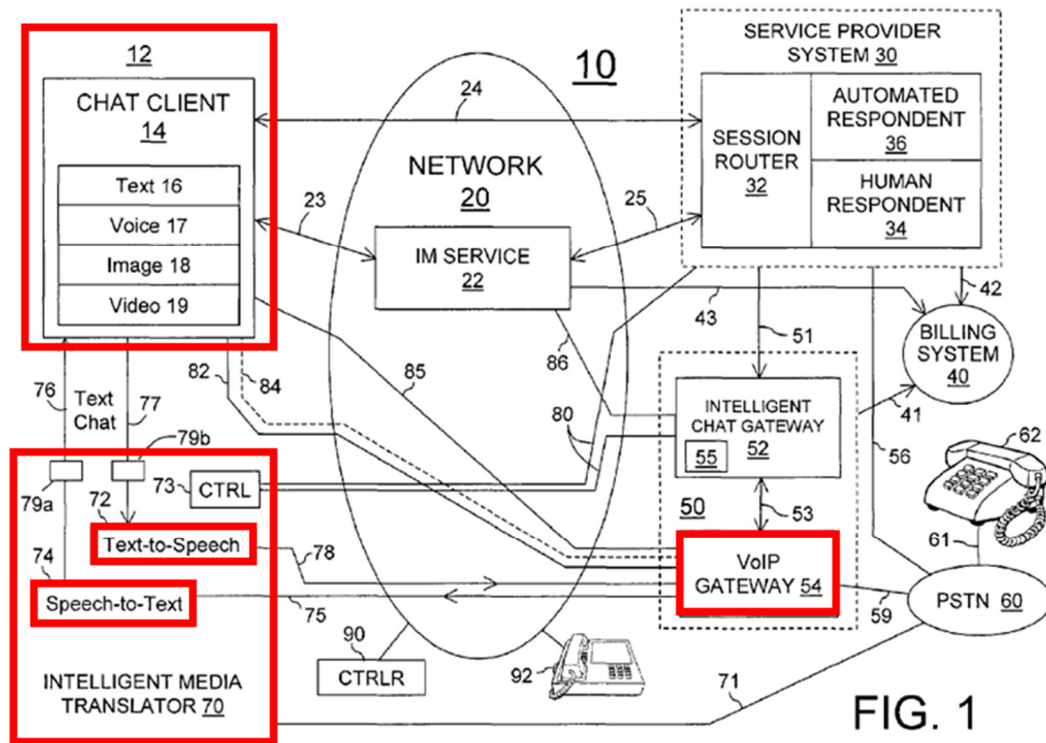
E. Ground 5: Claims 18, 21, 34, 37, 38, 45, and 46 are Rendered Obvious by Zhang in view of Moore

148. It is my view that Zhang in view of Moore teaches every limitation of claims 18, 21, 34, 37, 38, 45, and 46, for the reasons set forth below.

1. Summary of Moore

149. Moore is a U.S. patent that was filed on April 2, 2003, claiming priority to a provisional filed April 2, 2002, and published on October 2, 2003. (EX1009.) I understand Moore is thus prior art to the '104 patent under at least 35 U.S.C. §§103(a) and (e). I understand Moore was not considered during the prosecution of the '104 patent.

150. Moore describes methods and systems for “facilitating communications among one party using an instant communications client and another party using a telephonic connection.” (EX1009, 17:35-41.) For example, the user of a telephone can “hear synthesized speech representing chat messages as they are received from [a] chat client.” (EX1009, 19:28-31.) Moore describes that translation between a textual interface at chat client 14 and an audio interface at VoIP gateway 54 can be implemented by “[intelligent media translator] 70, which may comprise one or both of a text-to-speech module 72 and a speech-to-text module 74”. (EX1009, 16:23-31.) FIG. 1 illustrates:



(EX1009, FIG. 1 (annotated).)

151. Moore allows a user to provide text “using human-readable text in a natural style akin to conversational language.” (EX1009, 12:43-46.) For example, “the speech-to-text module 74 and text-to-speech module 72 may employ special-purpose dictionaries ... that list the proper equivalents for performing conversion among speech and text or symbols.” (EX1009, 17:42-52.) In one example, “LOL” may be translated to “laughing out loud.” (EX1009, 17:42-52.)

2. Claim 18

- a. **[Preamble] *A wireless communication system as recited in claim 1,***

152. The Preamble is met as described for claim 1.

- b. **[A] *wherein said converting of the incoming text message to the incoming audio message comprises: translating at least a portion of the incoming text message from a condensed format to an uncondensed text format; and***

153. Moore discloses the use of special-purpose dictionaries for properly converting conventional abbreviations commonly used in instant messaging sessions. (EX1009, 17:42-52.) For example, Moore teaches that “‘LOL’ may be translated to the spoken equivalent of ‘laughing out loud.’” (EX1009, 17:42-52.) The POSITA would understand that abbreviations such as “LOL” correspond to the claimed “condensed format” and the resulting expansions such as “laughing out loud” correspond to the claimed “uncondensed format.” This is at least because the ’104 patent specifically provides “LOL” as an example of condensed text, and the expansion “lots of love” as an example of uncondensed text. (EX1001, 10:63-11:3.)

154. To the extent not expressly disclosed by Moore, the POSITA would understand that the condensed, chat abbreviation would first be translated to an uncondensed, textual format before the message is converted into an audio format.

This is at least because Moore teaches that the audio is computer-synthesized speech. (EX1009, 2:12-15, 16:26-39, 19:28-31.) Synthesized speech outputs are generated from a textual format, and generally require the text to be in a comprehensible format before it can be synthesized into speech. That is, the condensed textual abbreviation must first be translated into an uncondensed textual format before being translated into an uncondensed audio format.

(i) Motivation to Combine

155. The POSITA would have been motivated to combine the teachings of Zhang and Moore to meet the claim limitation. Zhang describes a hands-free adapter that synthesizes speech from incoming text messages. (EX1005, 4:63-5:3.) Moore discloses techniques for converting text messages to audio formats that convey emotions, thoughts, or impressions, including those indicated by text abbreviations. (EX1009, Abstract, 17:35-52.) The POSITA would have sought to enhance the conveyance of emotions and context in the synthesized speech of Zhang, and would thus be motivated to combine Zhang with Moore in order to do so. Integrating Moore's approach with Zhang's system would improve the synthesized speech's expressiveness and contextual accuracy, enabling users to better perceive both informational content and emotional nuances.

156. The POSITA would have had a reasonable expectation of success in combining Zhang and Moore. Moore's techniques are broadly applicable to the conversion of text-based communications to audio output —analogous to Zhang's synthesis of speech from incoming text messages. Moore's speech synthesis is implemented by components such as the text-to-speech module, which is analogous to DSP 108 of Zhang's hands-free adapter. (EX1005, 4:58-5:3; EX1009, 16:26-39.) Zhang and Moore also share other analogous and familiar computer components, such as memories, processors, and mobile phones and are thus easily combined based on familiar components.

c. [B] *converting at least the portion of the incoming text message in the uncondensed text format to at least a portion of the incoming audio message.*

157. This element is met by Moore. For example, as described above, Moore discloses the use of special-purpose dictionaries for properly converting conventional abbreviations and emoticons commonly used in instant messaging sessions. (EX1009, 17:42-52.) For example, Moore teaches that portions of an incoming text message, such as "LOL," may be "translated to the spoken equivalent of 'laughing out loud.'" (EX1009, 17:42-52.)

158. The POSITA would understand that the untranslated portions of the incoming text message would be converted from the uncondensed text format to a

portion of the incoming audio message, as described above for claim 1, element [D].

159. Additionally, to the extent not expressly disclosed by Moore, the POSITA would understand that the condensed, chat abbreviation would also be translated to an uncondensed, textual format before the message is converted into an audio format. This is at least because Moore teaches that the audio created is computer-synthesized speech. (EX1009, 2:12-15, 16:26-39, 19:28-31.) The POSITA would understand that synthesized speech outputs are generated from a textual format, and generally require the text to be in a comprehensible format before it can be synthesized into speech. That is, the condensed textual abbreviation must first be translated into an uncondensed textual format before being translated into an uncondensed audio format.

(i) Motivation to Combine

160. This element is met as described for claim 18[A].

3. Claim 21

a. [Preamble] *A wireless communication system as recited in claim 1,*

161. The Preamble is met as described for claim 1.

- b. *[A] wherein at least a portion of the incoming text message is in a chat language, and wherein said converting of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.*

162. This element is met as described for claim 18[A] and 18[B]. The text abbreviation (*e.g.*, “LOL”) corresponds to the claimed “chat language” and the expanded form (*e.g.*, “laughing out loud”) corresponds to the claimed “plurality of words.”

4. Claim 34

- a. *[Preamble] A wireless headset as recited in claim 23,*

163. The Preamble is met as described for claim 23.

- b. *[A] wherein the conversion of the incoming text message to the incoming audio message comprises: translation of at least a portion of the incoming text message from a condensed format to an uncondensed text format; and*

164. This element is met as described for claim 18[A].

- c. *[B] conversion of at least the portion of the incoming text message in the uncondensed text format to at least a portion of the incoming audio message.*

165. This element is met as described for claim 18[B].

5. Claim 37

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

166. The Preamble is met as described for claim 23.

- b. **[A]** *wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.*

167. This element is met as described for claim 21[A].

(i) Motivation to Combine

168. This element is met as described for claim 18[A].

6. Claim 38

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

169. The Preamble is met as described for claim 23.

- b. **[A]** *wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises at least increasing the number of alphabets in the portion of the incoming text message that is in the chat language.*

170. This element is met as described for claim 18[A] and 18[B]. The text abbreviation (e.g., “LOL”) corresponds to the claimed “chat language” and the

expanded form (*e.g.*, “laughing out loud”) comprises an increased “number of alphabets.”

7. Claim 45

- a. **[Preamble]** *A wireless headset as recited in claim 43,*

171. The Preamble is met as described for claim 43.

- b. **[A]** *wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.*

172. This element is met as described for claim 21[A].

(i) Motivation to Combine

173. This element is met as described for claim 18[A].

8. Claim 46

- a. **[Preamble]** *A wireless headset as recited in claim 43,*

174. The Preamble is met as described for claim 43.

- b. **[A]** *wherein the conversion of the incoming text message to the incoming audio message comprises: translation at least a portion of the incoming text message from a condensed format to an uncondensed text format; and*

175. This element is met as described for claim 18[A].

- c. ***[B] conversion of at least the portion of the incoming text message in the uncondensed text format to at least a portion of the incoming audio message.***

176. This element is met as described for claim 18[B].

F. Ground 6: Claims 19, 20, 35, and 36 are Rendered Obvious by Zhang in view of Posa and Moore

177. It is my view that Zhang in view of Posa and Moore teaches every limitation of claims 19, 20, 35, and 36, for the reasons set forth below.

1. Claim 19

- a. ***[Preamble] A wireless communication system as recited in claim 18,***

178. The Preamble is met as described for claim 18.

- b. ***[A] wherein said converting of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.***

179. This element is met as described for claim 11[A].

(i) Motivation to Combine

180. The POSITA would have been motivated to combine the teachings of Zhang and Moore as discussed with respect to claim 18[A]. The POSITA would have been motivated to combine the teachings of Zhang and Posa as discussed with respect to claim 11[A]. Zhang and Posa are compatible because they both pertain to methods of converting text to speech (*e.g.*, speech synthesis).

2. Claim 20

- a. **[Preamble]** *A wireless communication system as recited in claim 19,*

181. The Preamble is met as described for claim 19.

- b. **[A]** *wherein the at least one user-selected speech characteristic is set based on at least one user setting provided at said wireless communication device.*

182. This element is met as described for claim 13[A].

(i) Motivation to Combine

183. This element is met as described for claim 18[A].

3. Claim 35

- a. **[Preamble]** *A wireless headset as recited in claim 34,*

184. The Preamble is met as described for claim 34.

- b. **[A]** *wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.*

185. This element is met as described for claim 11[A].

(i) Motivation to Combine

186. This element is met as described for claim 19[A].

4. Claim 36

- a. **[Preamble]** *A wireless headset as recited in claim 35,*

187. The Preamble is met as described for claim 35.

- b. **[A]** *wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device.*

188. This element is met as described for claim 13[A].

(i) Motivation to Combine

189. This element is met as described for claim 18[A].

VII. JANNARD IN VIEW OF VUORI RENDERS OBVIOUS CLAIMS 1-47

A. Ground 7: Claims 1, 3, 4, 5, 9, 16, 17, 22-27, 33, 39, 42, 44, and 47 are Rendered Obvious by Jannard in View of Vuori

190. It is my view that Jannard in view of Vuori teaches every limitation of claims 1, 3, 4, 5, 9, 16, 17, 22-27, 33, 39, 42, 44, and 47, for the reasons set forth below.

1. Summary of Jannard

191. Jannard is a U.S. patent that was filed on July 28, 2003, and claims priority to provisional applications filed April 3, 2003, and July 26, 2002.

(EX1010.) I understand Jannard is thus prior art to the '104 patent under at least 35 U.S.C. §§102(a) and (e).

192. Jannard discloses a wearable audio interface that includes “audio electronics such as, for example, speakers, microphones, and/or interface electronics for interacting with a wireless network.” (EX1010, 1:22-24.) The wearable audio device 10C can be configured to provide wireless communication with a source device B, such as a cellular phone. (EX1010, 19:41-56.) The user of the wearable device 10C can use audio device 10C to receive and listen to audio signals from source device B and also to transmit audio signals to the source device B. (EX1010, 19:41-56.) FIG. 8 illustrates:

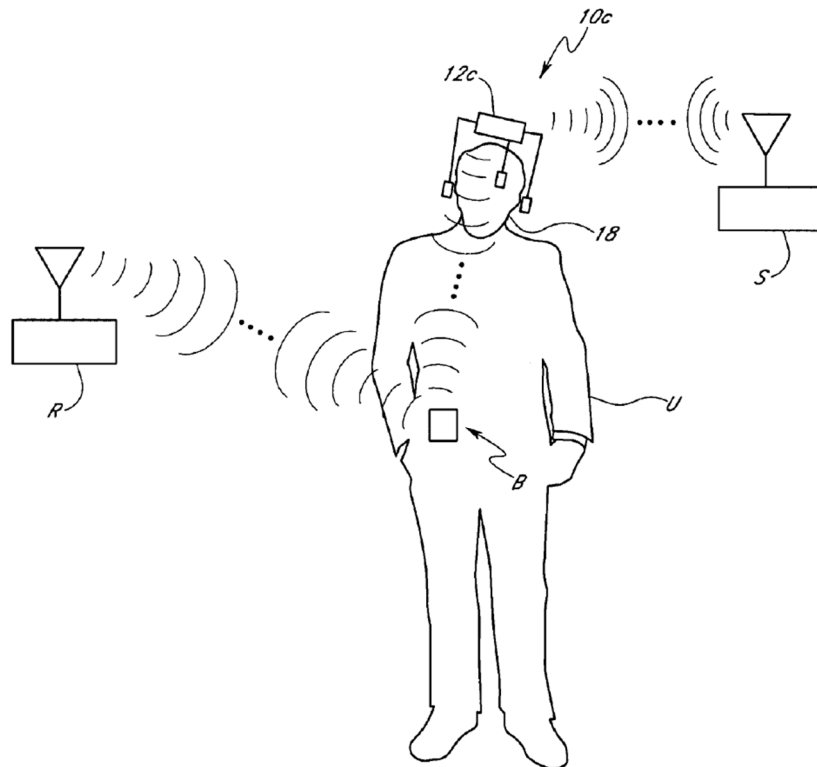


FIG. 8

(EX1010, 19:41-20:9, FIG. 8.)

193. The cell phone can “be configured with a text-to-voice speech engine which generates a humanoid voice.” (EX1010, 31:29-31.) For example, “if the cell phone or other source device is configured to receive email, the ... text-to-speech engine can be configured to read the email to the user.” (EX1010, 31:35-40.)

194. Jannard is analogous art to the ’104 patent because it is directed to the same field of endeavor—wearable devices with audio functionality that interact with wireless communication devices. (EX1001, 2:1-10; EX1010, 1:20-24.) By disclosing devices that “allow a user to ‘hear’ emails, or other text documents without the need to hold or look at the device,” Jannard is reasonably pertinent to the problem faced by the ’104 patent inventor—providing adaptable communication techniques for users of electronic devices. (EX1001, 2:1-5; EX1010, 32:27-31.)

2. Claim 1

a. [Preamble] *A wireless communication system, comprising:*

195. Jannard discloses an audio device 10C “configured to provide one or two-way wireless communication with a source device,” such as a cellular phone. (EX1010, 19:41-56.) The user “can use the audio device 10C to receive and listen

to audio signals from the source device B, and/or transmit audio signals to the source device B.” (EX1010, 19:47-56.) The cellular source device can “be configured to communicate, via long or short range wireless networking protocols, with a remote source R,” such as a cellular phone service provider. (EX1010, 19:56-20:9.) FIG. 8 illustrates:

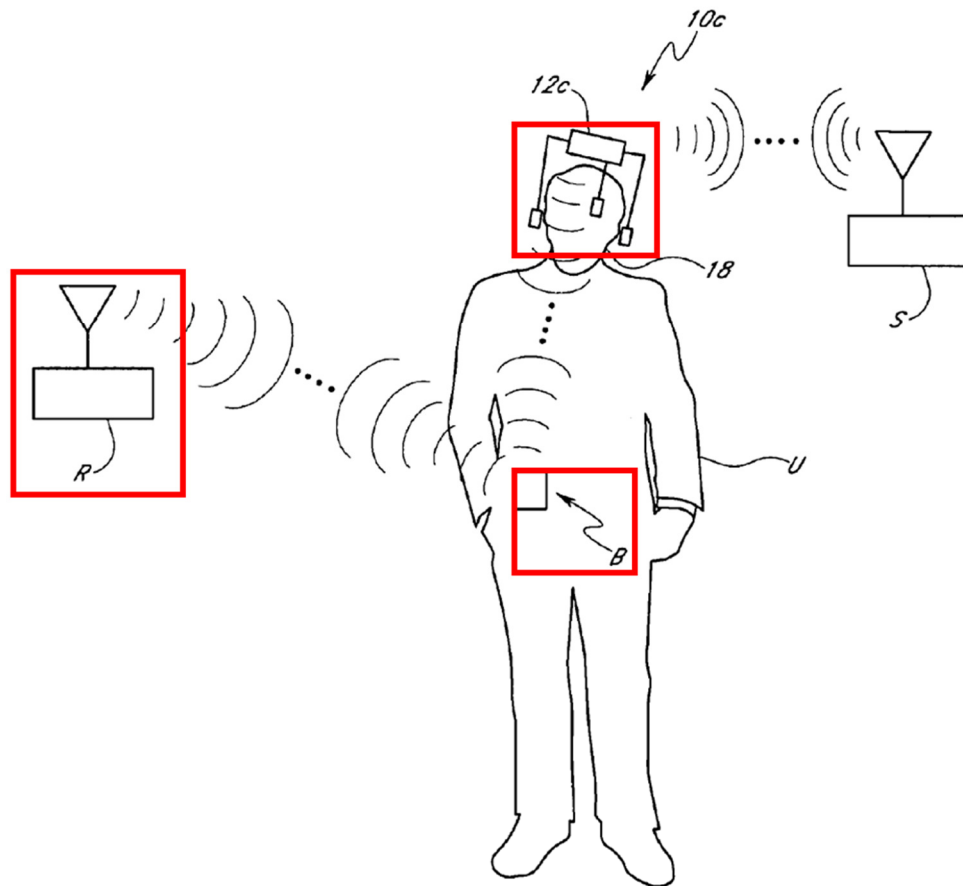
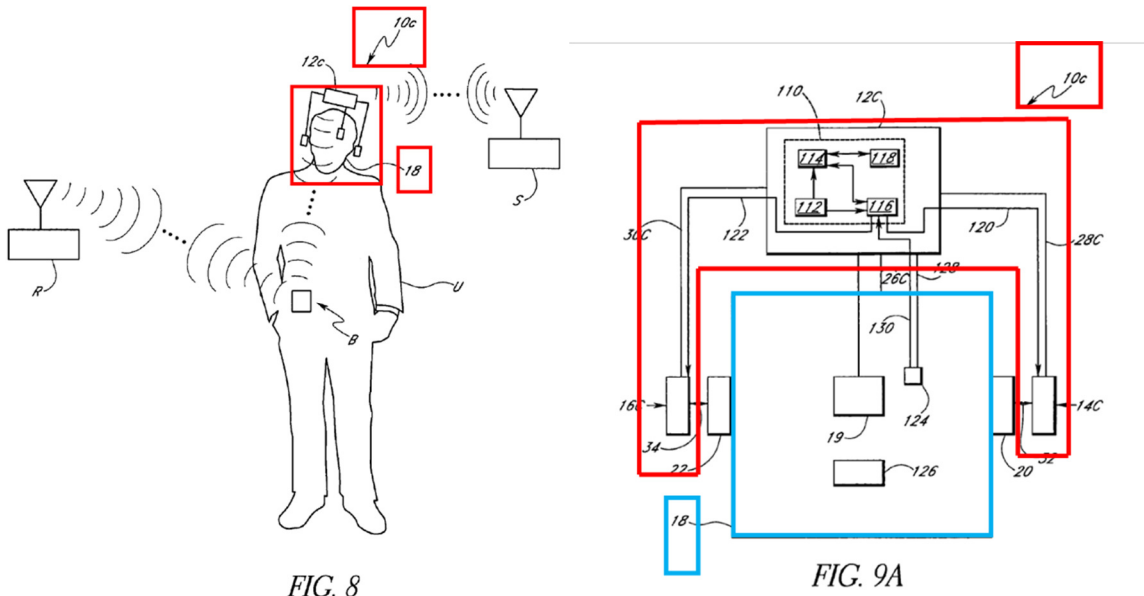


FIG. 8

(EX1010, 19:41-20:9, FIG. 8 (annotated).)

b. [A] *a wireless headset; and*

196. Jannard discloses that the audio device 10C is a headset and “the audio device 10C can be worn on the head 18 of a user U.” (EX1010, 19:41-56, 30:40-46.) FIGS. 8 and 9A illustrate:



(EX1010, 19:41-20:9, FIGS. 8 and 9A (annotated).)

197. The audio device 10C wirelessly communicates with device B.

(EX1010, 19:41-56.) Thus, audio device 10C is a wireless headset.

c. **[B]** *a wireless communication device that supports wireless communication, including messaging, for a first user, said wireless communication device capable of wirelessly communicating with the wireless headset,*

198. Jannard discloses source device B can be a cellular phone that can “communicate, via long or short range wireless networking protocols, with a

remote source R” which can be a “a cellular phone service provider, a satellite radio provider, or a wireless internet service provider.” (EX1010, 19:56-20:9.) By communicating with remote source R, the source device B can support email messaging for a user. (EX1010, 31:29-32:3.) As described above, the source device can wirelessly communicate with the audio device 10C (*e.g.*, the wireless headset). (EX1010, 19:41-47.) FIG. 8 illustrates:

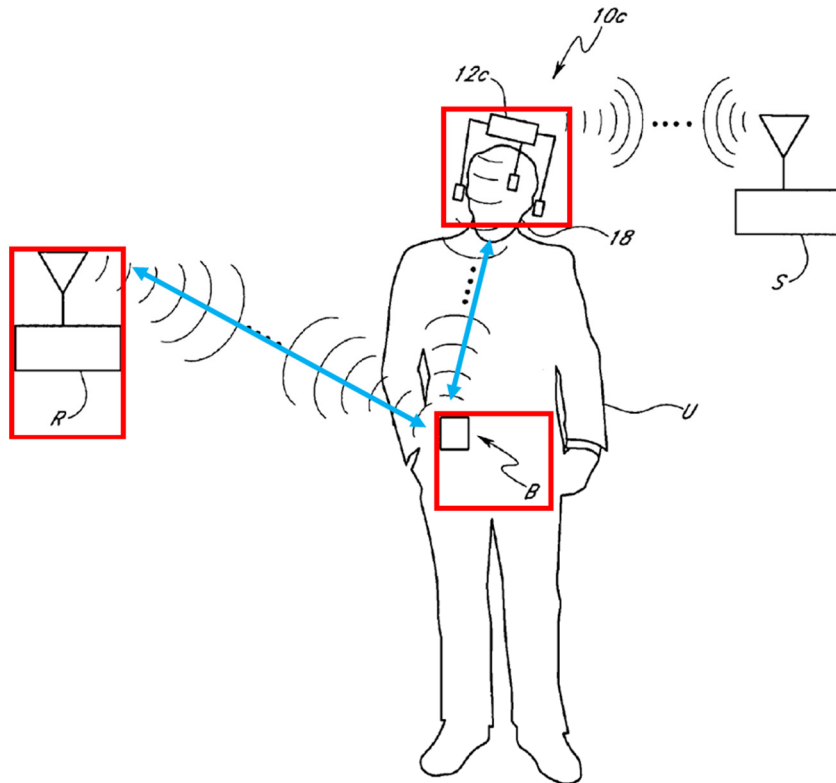


FIG. 8

(EX1010, 19:41-20:9, FIG. 8 (annotated).)

- d. ***[C] wherein said wireless communication device is configured to perform the method of: receiving an incoming text message from a second user;***

199. Jannard discloses that “the cell phone or other source device is configured to receive email.” (EX1010, 31:34-44.) That is, Jannard teaches that a wireless communication device (*e.g.*, the cell phone) can receive an incoming text message (*e.g.*, an email) from another user. (EX1010, 31:34-44; *see* EX1001, 4:2-17 (describing device textual inter-communication via network 108 as including email messages).)

- e. ***[D] converting the incoming text message to an incoming audio message;***

200. Jannard discloses that the source device includes a text-to-voice speech engine and “[t]he text-to-speech engine can be configured to read the email to the user.” (EX1010, 31:29-44.) The POSITA would understand that Jannard’s text-to-voice speech engine converts the incoming textual email message to an audio message, so that it can be heard by the user. (EX1010, 31:29-44.)

- f. ***[E] presenting the incoming audio message for the first user via the wireless headset;***

201. As discussed above, Jannard discloses that “a user can ‘listen’ to email through the audio device 10, 10A, 10A’, 10B, 10C, 10D, 10E, without manually operating the source device.” (EX1010, 31:29-44.) By “‘reading’ the

email to the user,” via the audio device, the system of Jannard presents the audio message to the user using a wireless headset. (EX1010, 31:50-53.) Further, the audio device (*e.g.*, audio device 10C) includes speakers (*e.g.*, speakers 14c and 16c), which the POSITA would understand to present the converted audio signals to the user. (EX1010, 32:1-3.) FIG. 9A illustrates:

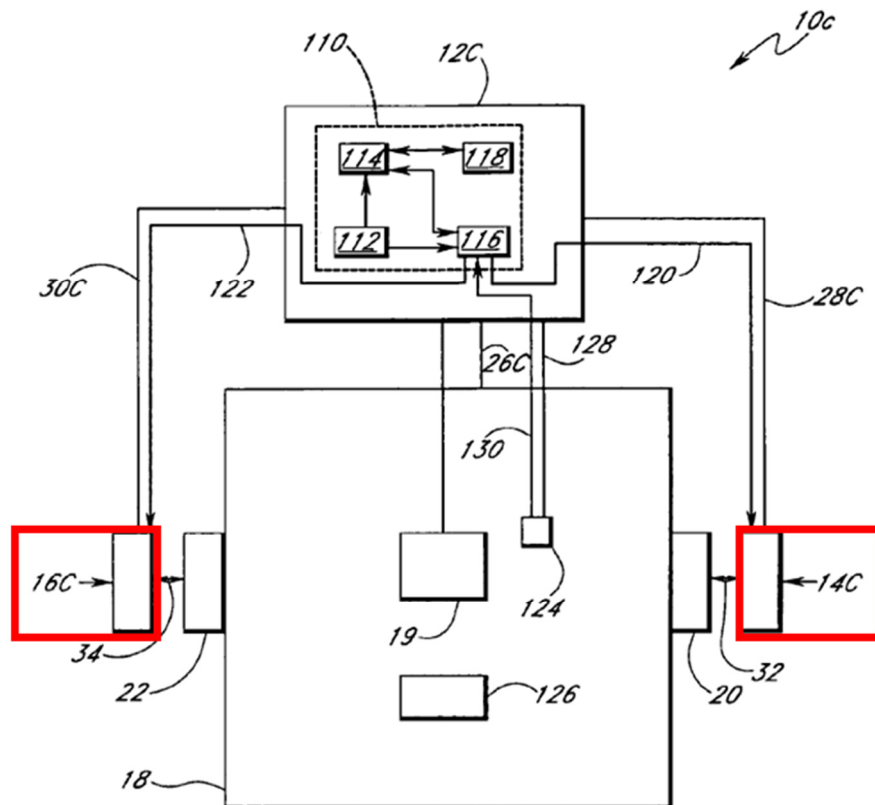


FIG. 9A

(EX1010, 32:1-3, FIG. 9A (annotated).)

g. [F] recording a reply audio message by the first user via the wireless headset;

202. Jannard discloses that the user can reply to the received email by “record[ing] an audio file, ... as an attachment to a reply email.” (EX1010, 31:45-32:3.) For example, the audio device 10C can include a microphone 124, and the user can provide voice commands “by speaking into a microphone on the audio device 10C.” (EX1010, 20:5-7, 21:35-55.)

FIG. 9A illustrates:

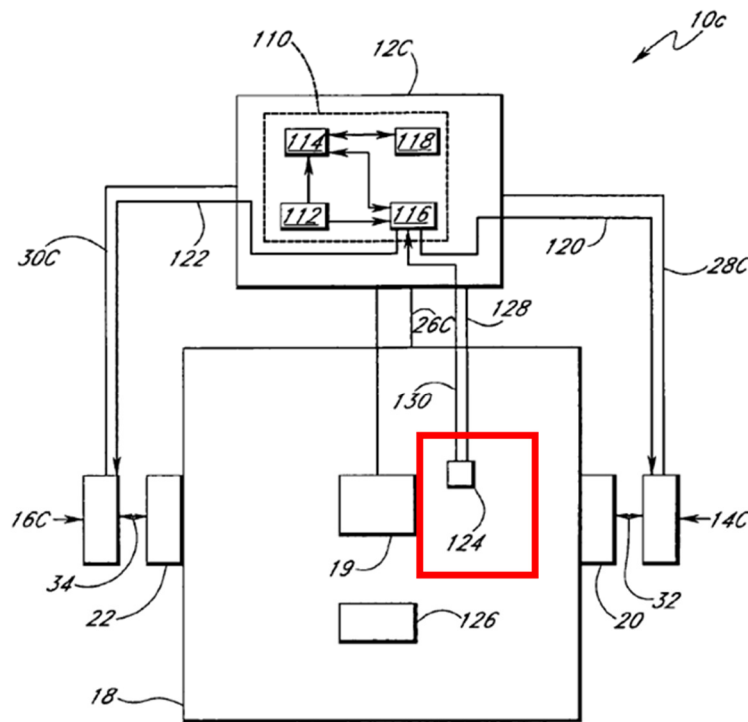


FIG. 9A

(EX1010, 21:35-55, FIG. 9 (annotated).)

203. That is, Jannard teaches that the microphone 124 of the audio device 10C can record a reply email from the first user. (EX1010, 20:5-7, 21:35-55, 31:45-32:3.)

h. [G] *converting the reply audio message into a reply text message; and*

204. Vuori discloses that “the problem of entering numerous letters of the alphabet for assembling short messages can be overcome by converting the spoken SVM to text in the user terminal by means of voice recognition software and sending the converted text to the recipient.” (EX1007, [0058].) Such reply text message “takes up much less storage capacity” than an audio message. (EX1007, [0058].)

(i) Motivation to Combine

205. The POSITA would have been motivated to combine the teachings of Jannard and Vuori to meet the claim limitations. Jannard’s system is configured for allowing a user to respond to received textual email messages in email format. (EX1010, 31:44-48.) The POSITA would have understood that attaching an audio file to an email would require larger storage and communication bandwidth compared to sending a reply message in textual format. Jannard’s system would thus face a problem if the recorded audio message were too large for storage or transmission. The POSITA would seek to prevent such an occurrence and would

thus be motivated to combine the teachings of Vuori with Jannard. Further, since the second user sent an email in textual format, the POSITA would understand that it would be desirable for the first user to respond in the same (*e.g.*, textual) manner as the incoming message.

206. The POSITA would have had a reasonable expectation of success in combining the teachings of Jannard and Vuori. Vuori's methods are broadly applicable for use in "telecommunications network[s] for providing messages between users"—analogous to Jannard's system which can send and receive text messages. (EX1007, [0007]; EX1010, 31:34-32:3.) Vuori's conversion of an audio reply message is implemented via voice recognition software, analogous to Jannard's speech recognition engine that is trained to recognize the voice of the user. (EX1007, [0058]; EX1010, 32:4-13.) Thus, it would have been straightforward to modify Jannard's system to convert the audio reply message recorded via the headset to a reply text message as taught in Vuori.

i. [H] *transmitting the reply text message to the second user.*

207. As discussed above, Jannard teaches the user can respond to an email by sending "a reply email." (EX1010, 31:45-56.) Vuori teaches "converting the spoken SVM to text in the user terminal by means of voice recognition software and sending the converted text to the recipient." (EX1007, [0058].) When viewed

in combination with the teachings of Vuori, Jannard teaches transmitting a reply email containing a reply text message that was converted from the recorded reply audio message. (EX1010, 31:45-56; EX1007, [0058].) To the extent not expressly disclosed, the POSITA would have understood that the reply email is to be transmitted to the second user, *i.e.*, the user that sent the initial incoming email message.

(i) Motivation to Combine

208. This element is met as described for claim 1[G].

3. Claim 3

a. [Preamble] *A wireless communication system as recited in claim 1,*

209. The Preamble is met as described for claim 1.

b. *[A] wherein said wireless communication device is configured to perform the operation of: prompting the first user to provide the reply audio message prior to said recording of the reply audio message.*

210. Jannard discloses that “after the text-to-speech engine finishes ‘reading’ the email to the user, the interface device 116 can enter another audio menu” which includes “a reply option.” (EX1010, 31:45-60.) Upon hearing “the word ‘reply’ the user can depress the button 150 to enter a reply mode.” (EX1010, 31:45-60.) That is, Jannard’s reply option prompts the first user to provide the

reply audio message prior to said recording of the reply audio message (*e.g.*, prior to entering a reply mode). (EX1010, 31:45-60.)

4. Claim 4

- a. **[Preamble]** *A wireless communication system as recited in claim 1,*

211. The Preamble is met as described for claim 1.

- b. **[A]** *wherein said wireless communication device is configured to perform the operation of: limiting the reply audio message during said recording and/or said converting of the reply audio message so that the reply text message does not exceed a predetermined text message size.*

212. Vuori discloses “the user equipment could end the message recordation by signaling the user that the maximum message length has been reached.” (EX1007, [0032].) The POSITA would understand that Vuori’s maximum message length corresponds to a predetermined text message size. Ending message recording when the maximum message length has been reached limits the reply audio message during the recording process.

(i) Motivation to Combine

213. The POSITA would have been motivated to combine the teachings of Jannard and Vuori to meet the claim limitations. Jannard’s system is configured for allowing a user to respond to received textual email messages in email format.

(EX1010, 31:44-48.) The POSITA would have understood that the email messages are limited to a pre-determined size. Jannard's system would thus face a problem if the recorded audio message or converted text message was too large to send as an email. The POSITA would seek to prevent such an occurrence and would thus be motivated to combine the teachings of Vuori with Jannard in order to do so.

214. The POSITA would have had a reasonable expectation of success in combining the teachings of Jannard and Vuori. Vuori's methods are broadly applicable for use in "telecommunications network[s] for providing messages between users"—analogous to Jannard's system which can send and receive text messages. (EX1007, [0007]; EX1010, 31:34-32:3.) Thus, it would have been straightforward to modify Jannard's system to convert the audio reply message recorded via the headset to a reply text message as taught in Vuori.

5. Claim 5

a. [Preamble] *A wireless communication system as recited in claim 1,*

215. The Preamble is met as described for claim 1.

- b. *[A] wherein said wireless communication device is configured to perform the operation of: determining whether the incoming text message should be presented to the first user in an audio manner, and*

216. Jannard discloses the source device can read the email to the user in response to the “user ... send[ing] a signal to the source device so as to open the email.” (EX1010, 31:35-44.) Thus, upon receiving the user input, the source device determines that the text message should be read to the user.

- c. *[B] wherein said converting of the incoming text message is invoked to convert the incoming text message to the incoming audio message, provide that said determining determines that the incoming text message should be presented to the first user in an audio manner.*

217. Jannard discloses a “user can send a signal to the source device so as to open the email,” causing the text-to-speech engine to read the email to the user. (EX1010, 31:35-44.) That is, the text is not converted into audio until the user initiates the conversion by sending a signal to the source device to open the email. (EX1010, 31:35-44.)

6. Claim 9

- a. *[Preamble] A wireless communication system as recited in claim 5,*

218. The Preamble is met as described for claim 5.

b. [A] *wherein said determining is based on a user indication.*

219. As previously discussed, Jannard discloses that in response to a signal from the user, the text to speech engine of the source device can open an email and read the message to the user. (EX1010, 31:35-44.) Based on receiving the signal from the user, which is a user indication, the source device determines that the message should be read to the user.

7. Claim 16

a. [Preamble] *A wireless communication system as recited in claim 1,*

220. The Preamble is met as described for claim 1.

b. [A] *wherein the incoming text message is a SMS message.*

221. Vuori discloses that “the means for receiving an incoming SVM from the second user may include means for receiving an incoming text SVM,” where SVMs “are sent as SMS messages.” (EX1007, [0017], [0031], [0058].) That is, Vuori teaches that the incoming text messages are SMS messages.

(i) Motivation to Combine

222. The POSITA would have been motivated to combine the teachings of Jannard and Vuori to meet the claim limitations. Jannard discloses a wireless audio device with two-way communication capabilities, including integration with

cell phones and text-based communications. (EX1010, 19:41-20:9, 31:29-32:3.)

For example, Jannard discloses that its device can be a Blackberry mobile device, which supports text communication over “a variety of wireless networks.”

(EX1010, 32:20-25.) Vuori specifically teaches using SMS infrastructure for text messaging with voice-to-text and text-to-voice conversion. (EX1007, [0058].)

Vuori emphasizes the universality and usefulness of SMS systems. (EX1007, [0005].) The POSITA would be motivated to modify the system of Jannard to allow users to communicate quickly and reliably, such as via SMS, even in situations where email is unavailable or impractical. The POSITA would understand that the integration of SMS messaging would leverage existing cellular infrastructure and maximize user convenience, especially for short, immediate communications from a wearable device.

223. The POSITA would have had a reasonable expectation of success in combining the teachings of Jannard and Vuori. Vuori’s methods are broadly applicable for use in “telecommunications network[s] for providing messages between users”—analogous to Jannard’s system which can send and receive text messages. (EX1007, [0007]; EX1010, 31:34-32:3.) Jannard’s source device can be a cellular phone configured to communicate with cellular phone service providers, satellite radio providers, and wireless internet service providers.

(EX1010, 19:41-66.) Thus, it would have been straightforward to modify Jannard's system to send and receive SMS messages as taught in Vuori.

8. Claim 17

- a. **[Preamble]** *A wireless communication system as recited in claim 1,*

224. The Preamble is met as described for claim 1.

- b. **[A]** *wherein the incoming text message is a SMS message, and wherein the reply text message is a SMS message.*

225. Vuori discloses that “the means for receiving an incoming SVM from the second user may include means for receiving an incoming text SVM,” where SVMs “are sent as SMS messages.” (EX1007, [0017], [0031], [0058].) Further, the user's device can “convert[] the spoken SVM to text in the user terminal by means of voice recognition software and sending the converted text to the recipient by means of the traditional SMS infrastructure.” (EX1007, [0058].) That is, Vuori teaches that both the incoming and reply text messages are SMS messages.

(i) Motivation to Combine

226. This element is met as described for claim 16[A].

9. Claim 22

- a. [Preamble] *A wireless communication system as recited in claim 1,***

227. The Preamble is met as described for claim 1.

- b. [A] *wherein said wireless communication device is a mobile telephone.***

228. As discussed above, Jannard's source device can be a cellular phone.

(EX1010, 19:41-66.)

10. Claim 23

- a. [Preamble] *A wireless headset that at least supports messaging for a first user, said wireless headset operatively connects to a mobile electronic device having wireless communication capability, and***

229. As discussed above, Jannard is directed to a "wireless interactive headset" and discloses an audio device (*e.g.*, audio devices 10, 10A, 10A, 10B, 10C, 10D, 10E) "configured to provide one or two-way wireless communication with a source device," such as a mobile electronic device that can send and receive emails. (EX1010, 19:41-47, 31:35-60.) The wireless headset supports the messaging function of the mobile electronic device by reading received emails to the user and recording reply messages. (EX1010, 31:35-60.)

- b. [A] wherein said wireless headset is configured to at least: wirelessly receive an incoming audio message from the mobile electronic device, the incoming audio message being produced by converting an incoming text message from another wireless electronic device, the incoming text message being received at the mobile electronic device via a wireless network;**

230. As described above, the audio device wirelessly communicates with the source device via a wireless network connection. (EX1010, 19:41-47.) For example, a user “can use the audio device 10C to receive and listen to audio signals from the source device B.” (EX1010, 19:48-55.) Such received audio signals can include an email converted to an audio message by a text-to-speech engine configured to audibly read the email to the user. (EX1010, 31:35-60.) Thus, the POSITA would have understood that Jannard teaches the audio device (*e.g.*, a headset) wirelessly receives an incoming audio message from the source device, *i.e.*, after the text-to-speech engine of the source device converts an incoming text message to the audio message. The POSITA further would have understood that an incoming text message is received from another wireless electronic device via a wireless network. This is at least because Zhang discloses that incoming text message is an email, which the POSITA would understand to be received from another wireless electronic device via the wireless network

connection. (See EX1001, 4:2-17 (describing device inter-communication via network 108, which supports email messaging protocols).)

- c. **[B]** *output the incoming audio message for the first user;*

231. This element is met as described for claim 1[E].

- d. **[C]** *receive a reply audio message from the first user in response to the incoming audio message; and*

232. This element is met as described for claim 1[F].

- e. **[D]** *wirelessly transmit the reply audio message to the mobile electronic device.*

233. In Jannard, the user can “send voice signals or commands to the cellular phone by speaking into a microphone on the audio device 10C.” (EX1010, 19:41-47, 20:5-7, 21:35-55.) Such voice signals, transmitted wirelessly to the phone as described above, can include the reply audio file for responding to the incoming email. (EX1010, 31:45-32:3.)

11. Claim 24

- a. **[Preamble]** *A wireless headset according to claim 23,*

234. The Preamble is met as described for claim 23.

- b. [A] *wherein the reply audio message thereafter being converted to a reply text message and transmitted to the another wireless electronic device via the wireless network.***

235. Vuori discloses “converting the spoken SVM to text in the user terminal by means of voice recognition software and sending the converted text to the recipient.” (EX1007, [0058].) As discussed above, Jannard teaches the user can respond to an email by sending “a reply email.” (EX1010, 31:45-56.) When viewed in combination with Vuori, Jannard teaches transmitting a reply email containing a reply text message that was converted from the recorded reply audio message. (EX1010, 31:45-56; EX1007, [0058].) The POSITA would have understood that the reply email is transmitted to another wireless electronic device via the wireless network, *i.e.*, the device that sent the initial incoming email message.

(i) Motivation to Combine

236. This element is met as described for claim 1[G].

12. Claim 25

- a. [Preamble] *A wireless headset as recited in claim 24,***

237. The Preamble is met as described for claim 24.

- b. *[A] wherein at least one of said wireless headset and the mobile electronic device are configured to: limit the reply audio message and/or the reply text message so that the reply text message does not exceed a maximum text message size.*

238. This element is met as described for claim 4[A].

(i) Motivation to Combine

239. This element is met as described for claim 4[A].

13. Claim 26

- a. *[Preamble] A wireless headset as recited in claim 24,*

240. The Preamble is met as described for claim 24.

- b. *[A] wherein the incoming text message is a SMS message, and wherein the reply text message is a SMS message.*

241. This element is met as described for claim 17[A].

(i) Motivation to Combine

242. This element is met as described for claim 17[A].

14. Claim 27

- a. *[Preamble] A wireless headset as recited in claim 23,*

243. The Preamble is met as described for claim 23.

- b. *[A] wherein said wireless headset is configured to: prompt the first user to provide the reply audio message prior to said receiving of the reply audio message.*

244. This element is met as described for claim 3[B].

15. Claim 33

- a. *[Preamble] A wireless headset as recited in claim 23,*

245. The Preamble is met as described for claim 23.

- b. *[A] wherein the incoming text message is a SMS message.*

246. This element is met as described for claim 16[A].

(i) Motivation to Combine

247. This element is met as described for claim 16[A].

16. Claim 39

- a. *[Preamble] A wireless headset as recited in claim 23,*

248. The Preamble is met as described for claim 23.

- b. *[A] wherein the mobile electronic device is a mobile telephone.*

249. This element is met as described for claim 22[A].

17. Claim 42

- a. ***[Preamble] A wireless headset that at least supports messaging for a first user, said wireless headset operatively connects to a mobile electronic device having wireless communication capability, and***

250. The Preamble is met as described for claim 23, preamble.

- b. ***[A] wherein said wireless headset is configured to at least: play an incoming audio message for the first user via the wireless headset, the incoming audio message being produced by converting an incoming text message from a second user, the incoming text message being received at the mobile electronic device via a wireless network; and***

251. This element is met as described for claim 23[A] and 23[B].

- c. ***[B] receive a reply audio message from the first user via the wireless headset in response to the incoming audio message, the reply audio message thereafter being converted to a reply text message and transmitted to the second user via the wireless network.***

252. This element is met as described for claim 23[C] and claim 24[A].

(i) Motivation to Combine

253. This element is met as described for claim 24[A].

18. Claim 44

- a. **[Preamble]** *A wireless headset as recited in claim 43,*

254. The Preamble is met as described for claim 43.

- b. **[A]** *wherein said wireless headset is configured to: prompt the first user to provide the reply audio message prior to the reply audio message being received at said wireless headset,*

255. This element is met as described for claim 3[A].

19. Claim 47

- a. **[Preamble]** *A wireless headset as recited in claim 43,*

256. The Preamble is met as described for claim 43.

- b. **[A]** *wherein the reply audio message is converted to the reply text message and transmitted to the another wireless electronic device by the mobile electronic device.*

257. This element is met as described for claim 24[A].

(i) Motivation to Combine

258. This element is met as described for claim 1[G].

B. Ground 8: Claims 2, 6, 7, and 10 are Rendered Obvious by Jannard in view of Vuori and Ewer

259. It is my view that Jannard in view of Vuori and Ewer teaches every limitation of claims 2, 6, 7, and 10, for the reasons set forth below.

1. Claim 2

- a. [Preamble] *A wireless communication system as recited in claim 1,***

260. The Preamble is met as described for claim 1.

- b. [A] *wherein said wireless communication device is configured to perform the operation of determining whether the wireless headset is active, and***

261. Ewer discloses that, to determine whether the headset is connected, “the connector detect circuit 132 or processor 136 either alone or in combination may passively or actively monitor the status of the headset connector 108.”

(EX1006, [0035].) FIG. 2 illustrates:

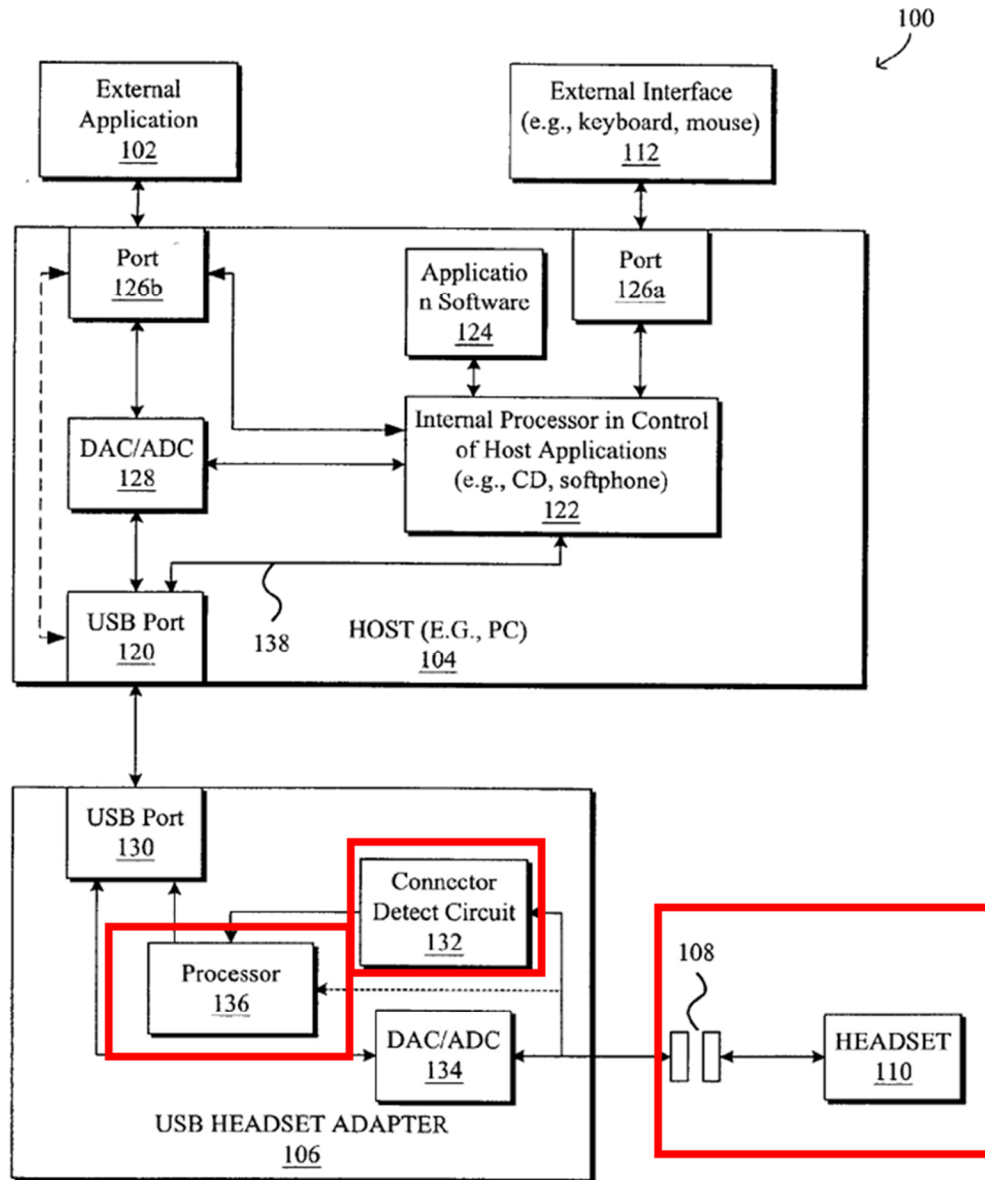


FIG. 2

(EX1006, FIG. 2 (annotated).)

262. In FIG. 2 above, headset 110 may be wireless as in Zhang, *e.g.*, “a cordless headset in wireless communication with the adapter 106” via RF technology. (EX1006, [0027].)

263. To the extent not explicitly disclosed by Ewer, the POSITA would have understood that a headset is active when it is connected to an associated device and inactive when it is not connected. Accordingly, Ewer teaches monitoring whether the headset is connected to determine whether the headset is active.

(i) Motivation to Combine

264. The POSITA would have been motivated to combine the teachings of Jannard and Ewer to meet the claim limitations. Jannard’s system is configured for utilizing a wireless headset in combination with a communication device. The POSITA would have understood that if the wireless headset were disconnected from the communication device, applications run on the communication device that utilize the headset cannot function as desired. Jannard’s system would thus face a problem identified in Ewer: requirement of inconvenient and deliberate “manual intervention by the user in order for the application to be informed of the disconnection and for the application to change its state.” (EX1006, [0009].) The

POSITA would seek to minimize the inconvenience of manual intervention and would thus be motivated to combine Ewer with Jannard.

265. The POSITA would have had a reasonable expectation of success in combining the teachings of Jannard and Ewer. Ewer's techniques are broadly applicable to headsets connected to computers or other processor-based hosts— analogous to Jannard's audio device (*e.g.*, the wireless headset) connected to the source device (*e.g.*, a cell phone). (EX1006, [0025].) Thus, it would have been straightforward to modify the hands-free adapter to monitor the connection status in addition to monitoring audio input via the headset interface.

266. The POSITA further would have been motivated to combine the teachings of Jannard and Vuori with a reasonable expectation of success as discussed with respect to claim 1[G]. Vuori and Ewer are compatible because they both pertain to methods of wireless communication.

- c. ***[B] wherein said converting of the incoming text message is automatically invoked to convert the incoming text message to the incoming audio message, provided that said determining determines that the wireless headset is active.***

267. Ewer discloses that “[a] signal indicating that the headset is connected may resume a paused application or allow the application to be executed.” (EX1006, [0012].) The POSITA would have understood that Ewer teaches that

upon detecting that the headset is connected (*e.g.*, active), the system can allow an application running on the connected host device to automatically execute. One of the applications running on Jannard's source device is the conversion of text messages to audio messages by the text-to-speech engine, as described above. (EX1005, 4:58-5:3.) Accordingly, the combination of Jannard and Ewer teach automatically executing the conversion of text messages to audio messages upon determining that the wireless headset is active.

(i) Motivation to Combine

268. This element is met as described for claim 2[A].

2. Claim 6

a. [Preamble] *A wireless communication system as recited in claim 5,*

269. The Preamble is met as described for claim 5.

b. [A] *wherein said wireless communication device is configured to perform the operation of determining whether the wireless headset is active, and*

270. This element is met as described for claim 2[A].

- c. ***[B] wherein said converting of the incoming text message is automatically invoked to convert the incoming text message to the incoming audio message, provide that said determining determines that the wireless headset is active.***

271. This element is met as described for claim 2[B].

(i) Motivation to Combine

272. This element is met as described for claim 2[A].

3. Claim 7

- a. ***[Preamble] A wireless communication system as recited in claim 6,***

273. The Preamble is met as described for claim 6.

- b. ***[A] wherein said wireless communication device is configured to perform the operation of: prompting the first user to provide the reply audio message prior to said recording of the reply audio message.***

274. This element is met as described for claim 3[A].

(i) Motivation to Combine

275. This element is met as described for claim 2[A].

4. Claim 10

- a. ***[Preamble] A wireless communication system as recited in claim 5,***

276. The Preamble is met as described for claim 5.

- b. *[A] wherein said determining comprises determining whether the wireless headset is active.*

277. This element is met as described for claim 2[A].

C. Ground 9: Claim 8 is Rendered Obvious by Jannard in view of Vuori and Koskan

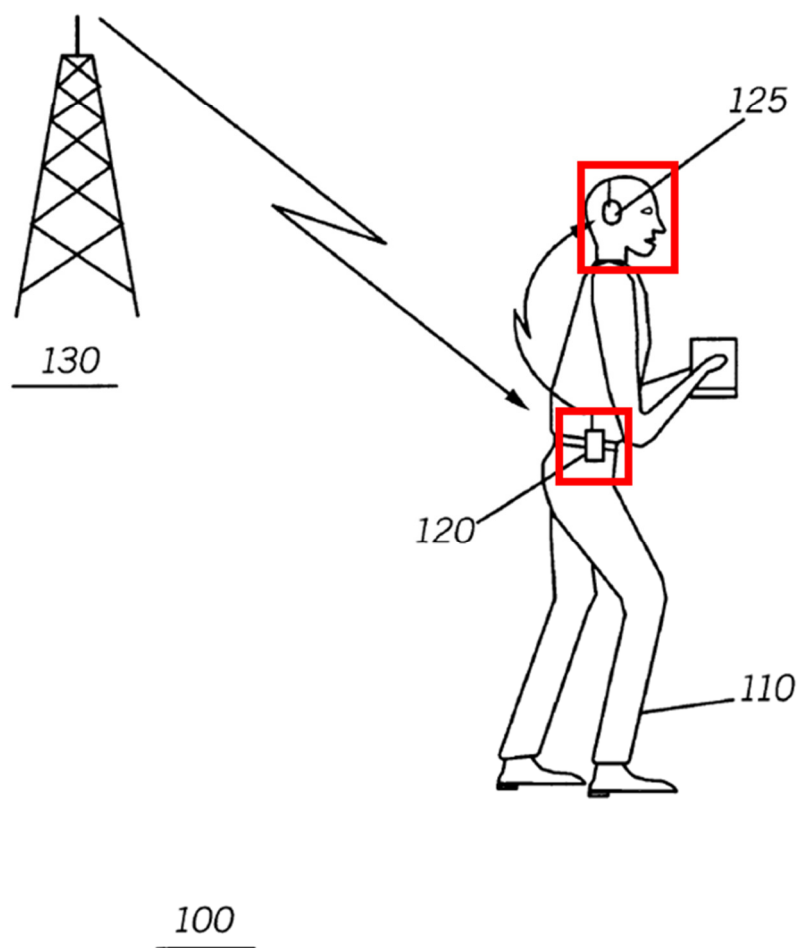
278. It is my view that Jannard in view of Vuori and Koskan teaches every limitation of claim 8, for the reasons set forth below.

1. Summary of Koskan

279. Koskan is a U.S. patent that was filed August 3, 1998, and issued January 30, 2001. (EX1011.) Koskan is prior art to the '104 patent under at least 35 U.S.C. §§ 102(a), (b) and (e).

280. Koskan discloses a “communication system ... that selectively presents messages through an at-the-ear device.” (EX1011, 1:62-2:6.) A base device is switchable between a “first operating mode, [where] the messages are presented in human readable form,” and a “second operating mode, [where] the messages are converted to audible form and presented at the earpiece.” (EX1011, 1:62-2:6.) As illustrated in FIG. 1, the base device 120 and the earpiece 125 are wirelessly coupled:

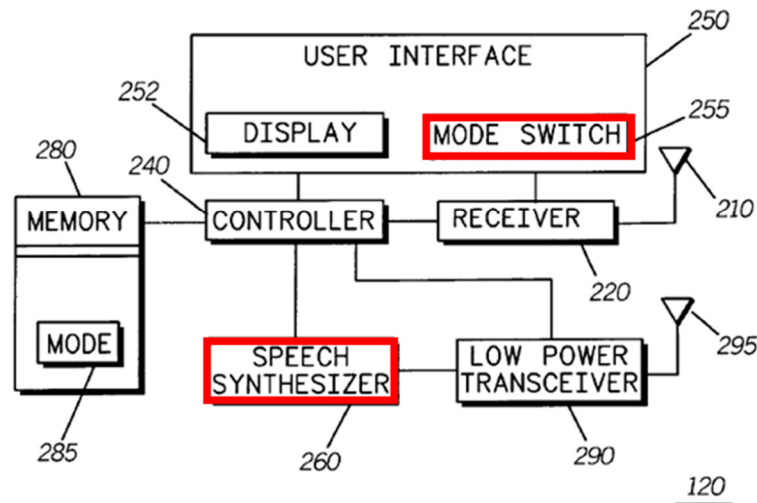
FIG. 1



(EX1011, 2:7-17, FIG. 1 (annotated).)

281. As illustrated in FIG. 2, the base device includes “a selectable mode switch 255” that can be used to select the operating mode and a speech synthesizer “to convert alphanumeric text messages to speech data”:

FIG. 2



(EX1011, 2:18-52, FIG. 2 (annotated).)

282. Koskan is analogous art to the '104 patent because it is directed to the same field of endeavor—wearable devices with audio functionality that interact with wireless communication devices. (EX1001, 2:1-10; EX1011, Abstract.) Koskan is reasonably pertinent to the '104 patent at least because it describes solutions for presenting audio messages to a user of a wireless communication device, thus addressing a problem faced by the '104 patent's inventors.

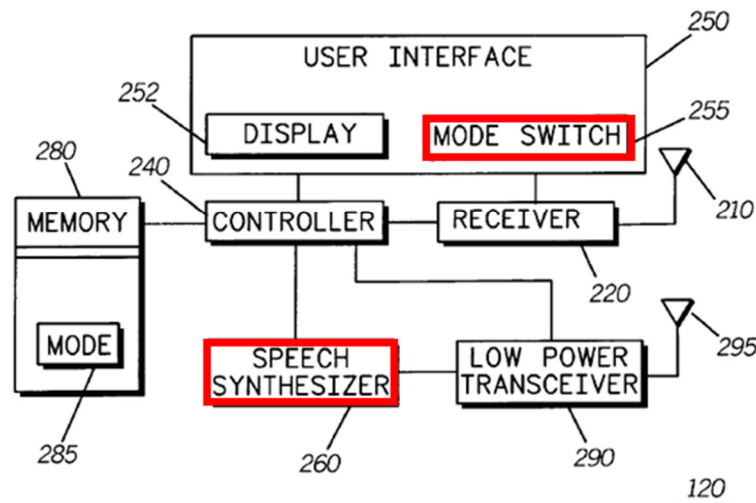
2. Claim 8

- a. **[Preamble]** *A wireless communication system as recited in claim 5,*

283. The Preamble is met as described for claim 5.

- b. **[A]** *wherein said determining is based on a preference setting that is able to be set by the first user.*

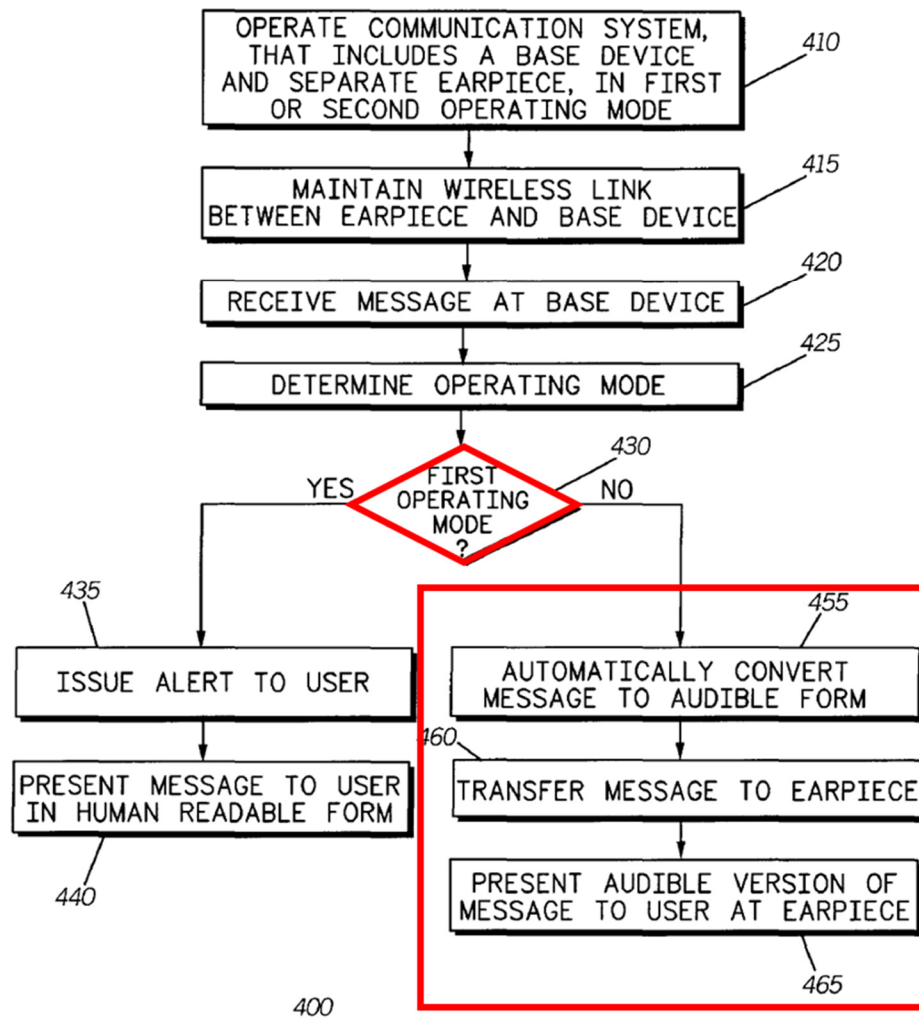
284. Koskan discloses a base device where, in a second operating mode, “messages are converted to audible form and presented at the earpiece.” (EX1011, 1:62-2:6.) The user of the mobile telephone can select which operating mode they prefer (*e.g.*, a preference setting) using a selectable mode switch 255 on the mobile telephone. (EX1011, 2:18-52.) FIG. 2 illustrates:



(EX1011, 2:18-52, FIG. 2 (annotated).)

285. As shown in FIG. 4 below, the base device determines which operating mode (*i.e.*, which user preference setting) the user has selected, and based on that determination, automatically converts a received message to audible form:

FIG. 4



(EX1011, 3:15-42, FIG. 4 (annotated).)

286. That is, the determination of whether the message should be converted to audio form is based on a user preference setting (*e.g.*, the setting of the second operating mode) set by the user using the mode switch. (EX1011, 2:18-52, 3:15-42.)

(i) Motivation to Combine

287. The POSITA would have been motivated to combine the teachings of Jannard and Koskan to meet the claim limitations. Jannard's system allows a user to use a wireless headset to hear emails or other text messages without the need to hold or look at a source device. (EX1010, 32:33-36.) The POSITA would have understood that if a user were in a situation where they could not hold or operate the source device, they may also not be able to operate the user interface on the wireless headset of Jannard to trigger the base device to read the message. Jannard's system would thus face a problem identified in Koskan: that "environmental or physical impediments may prevent a user from immediately retrieving a message, and thus valuable time may transpire while the message remains undelivered." (EX1011, 1:24-28.) The POSITA would seek to modify Jannard to allow users to set the source device to automatically read received text messages.

288. The POSITA would have had a reasonable expectation of success in combining the teachings of Jannard and Koskan. Koskan's methods are broadly applicable for use in "wearable personal communication devices"—analogous to Jannard's system, which includes a wireless headset coupled to a source device that can send and receive text messages. (EX1011, 1:5-9; EX1010, 31:34-32:3.) Koskan's conversion of an audio reply message is implemented via a speech synthesizer on a base device, analogous to Jannard's text-to-speech engine on a source device. (EX1011, 2:38-52; EX1010, 32:4-13.) Further, Jannard and Koskan also share other analogous and familiar computer components, such as wireless headsets and speakers. The systems of Jannard and Koskan are thus easily combined based on familiar components.

289. The POSITA would have been motivated to combine the teachings of Jannard and Vuori as discussed with respect to claim 1[G]. Vuori and Koskan are compatible because they both pertain to converting text to speech.

D. Ground 10: Claims 11-15, 28-32, 40, and 43 are Rendered Obvious by Jannard in view of Vuori and Posa

290. It is my view that Jannard in view of Vuori and Posa teaches every limitation of claims 11-15, 28-32, 40, and 43, for the reasons set forth below.

1. Claim 11

- a. [Preamble] *A wireless communication system as recited in claim 1,***

291. The Preamble is met as described for claim 1.

- b. [A] *wherein said converting of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.***

292. Posa discloses that a user can “specify a male, or female reader, along with male or female voice” to provide narration. (EX1008, 3:35-37.) The POSITA would understand that the male or female voice specified by the user is a user-selected speech characteristic. Further, Posa discloses that the “voice of the narrator may be... substantially synthesized by the device itself.” (EX1008, 3:55-57.)

293. Jannard discloses that the cell phone can “be configured with a text-to-voice speech engine which generates a humanoid voice” to provide further convenient uses for a user, such as reading emails to the user. (EX1010, 31:29-44.) When combined with voice selection of Posa, Jannard teaches that the email messages are converted to audio signals by the text-to-speech engine based on the voice selected by the user. (EX1010, 31:29-44; EX1008, 3:35-37; 3:55-57.)

(i) Motivation to Combine

294. The POSITA would have been motivated to combine the teachings of Jannard and Posa to meet the claim limitation. Jannard's source device includes a text-to-speech engine that synthesizes speech. (EX1010, 31:29-44.) The POSITA would understand that such a user of a system would desire customization of the system to enhance enjoyment and would want to select the voice that reads to them. Posa provides an example of customization by teaching that a user can choose voice characteristics of synthesized speech to increase enjoyment. (EX1008, Abstract, 3:35-37.) The POSITA would have sought to use provide such customization to a user of Jannard's system to increase the user's enjoyment and would thus be motivated to combine Jannard with Posa.

295. The POSITA would have had a reasonable expectation of success in combining Jannard and Posa. Posa's speech synthesis is implemented by DSP components such as the audio effects generator 210, which is analogous Jannard's text-to-speech engine. (EX1010, 31:29-44; EX1008, 5:19-17.) Jannard and Posa also share other analogous and familiar computer components, such as wireless headphones to play the audio, memories, and processing units. Jannard and Posa are thus easily combined based on familiar components.

296. The POSITA would have been motivated to combine the teachings of Jannard and Vuori as discussed with respect to claim 1[G]. Vuori and Posa are compatible because they both pertain to converting text to speech.

2. Claim 12

a. [Preamble] *A wireless communication system as recited in claim 11,*

297. The Preamble is met as described for claim 11.

b. [A] *wherein the at least one user-selected speech characteristic is set based on at least one user preference that is able to be set by the first user.*

298. Posa discloses that a user can “specify a male, or female reader, along with male or female voice” to provide narration. (EX1008, 3:35-37.) To the extent not expressly disclosed in Posa, the POSITA would understand such specification of a reader is set based on a user preference. This is at least because Posa describes the ability for the user to select the narrator from a stored library, including options for well-known narrators or individuals known to the user, and provides a user interface for making such selection, indicating that the system is designed to accommodate user preferences in determining the reader for the electronic book experience. (EX1008, 3:35-43.)

(i) Motivation to Combine

299. This element is met as described for claim 11[A].

3. Claim 13

- a. **[Preamble] *A wireless communication system as recited in claim 11,***

300. The Preamble is met as described for claim 11.

- b. **[A] *wherein the at least one user-selected speech characteristic is set based on at least one user setting provided at said wireless communication device.***

301. As discussed above, Posa discloses a device that enables users to select the voice of a narrator. (EX1008, 3:35-37.) The POSITA would understand that such selection is done through a user interface integrated into the device. This is at least because Posa discloses the device “has a user interface 104, which may be physically located internal or external to the electronic book player unit 102.” (EX1008, 4:49-55.) The POSITA would understand that the user would use the user interface 104 of the device to interact with the device, including by selecting the voice. (EX1008, 4:49-55.)

(i) ***Motivation to Combine***

302. This element is met as described for claim 11[A]. Further, the POSITA would have been motivated to modify Jannard to provide the voice selection at the source device. The POSITA would have had a limited number of choices as to where the user could select which voice to use: the audio device and

the source device. The POSITA would have selected the source device because the source device is where the text-to-speech engine is located.

4. Claim 14

- a. ***[Preamble] A wireless communication system as recited in claim 11,***

303. The Preamble is met as described for claim 11.

- b. ***[A] wherein the at least one user-selected speech characteristic pertains to at least a voice for use in producing the incoming audio message.***

304. This element is met as described for claim 11[A].

5. Claim 15

- a. ***[Preamble] A wireless communication system as recited in claim 11,***

305. The Preamble is met as described for claim 11.

- b. ***[A] wherein said presenting of the incoming audio message comprises playing the incoming audio message, with the playing of the incoming audio message being dependent on at least one user-selected speech characteristic.***

306. This element is met as described for claim 1[F] and claim 11[A]. To the extent not explicitly disclosed by Jannard in view of Vuori and Posa, the POSITA would have understood that since the audio message was synthesized based on the user-selected voice, playback of the audio message is also dependent on the user-selected voice.

(i) Motivation to Combine

307. This element is met as described for claim 11[A].

6. Claim 28

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

308. The Preamble is met as described for claim 23.

- b. **[A]** *wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.*

309. This element is met as described for claim 11[A].

7. Claim 29

- a. **[Preamble]** *A wireless headset as recited in claim 28,*

310. The Preamble is met as described for claim 28.

- b. **[A]** *wherein the at least one user-selected speech characteristic is set based on at least one user preference able to be set by or for the first user.*

311. This element is met as described for claim 12[A].

(i) Motivation to Combine

312. This element is met as described for claim 11[A].

8. Claim 30

- a. **[Preamble]** *A wireless headset as recited in claim 28,*

313. The Preamble is met as described for claim 28.

- b. **[A]** *wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device.*

314. This element is met as described for claim 13[A].

9. Claim 31

- a. **[Preamble]** *A wireless headset as recited in claim 28,*

315. The Preamble is met as described for claim 28.

- b. **[A]** *wherein the at least one user-selected speech characteristic pertains to at least a voice for use in producing the incoming audio message.*

316. This element is met as described for claim 11[A].

10. Claim 32

- a. **[Preamble]** *A wireless headset as recited in claim 23,*

317. The Preamble is met as described for claim 23.

- b. [A] wherein said wireless headset includes at least one speaker,

318. Jannard discloses audio device 10C includes speakers 14C and 16C.

(EX1010, 21:55-60, 32:1-3, FIG. 9A.) FIG. 9A illustrates:

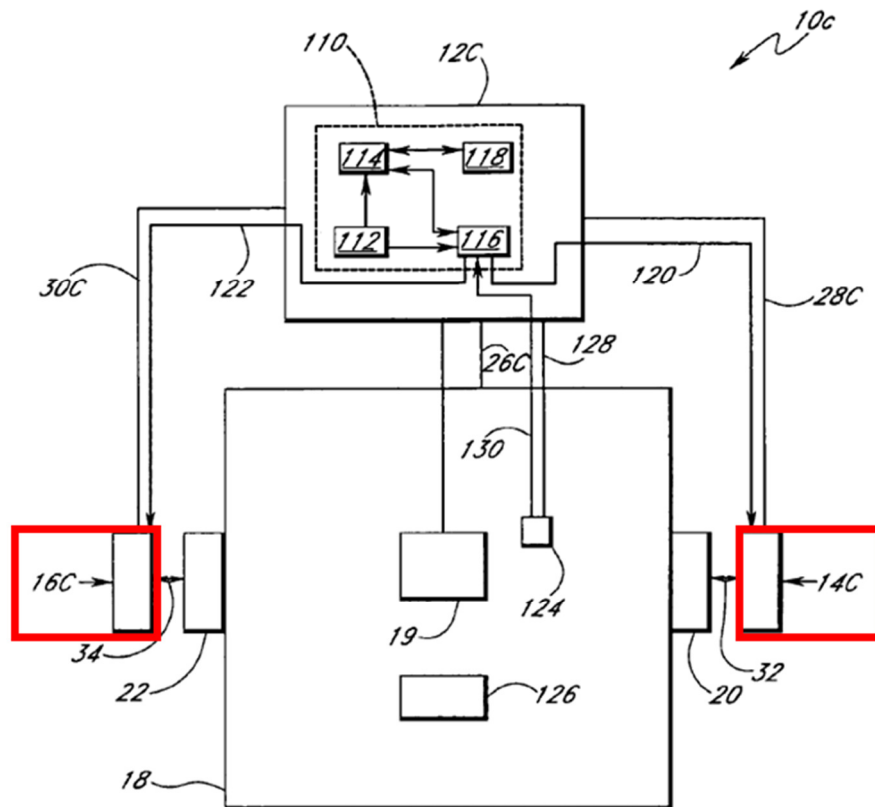


FIG. 9A

(EX1010, 21:55-60, 32:1-3, FIG. 9A (annotated).)

- c. [B] wherein the output of the incoming audio message comprises directing the incoming audio message to the at least one speaker in said wireless headset, and

319. Jannard discloses “[t]he interface 116 can then direct the left and right audio signals to the speakers ... through the speaker lines 120, 122.” (EX1010, 29:64-67.) FIG. 9A illustrates:

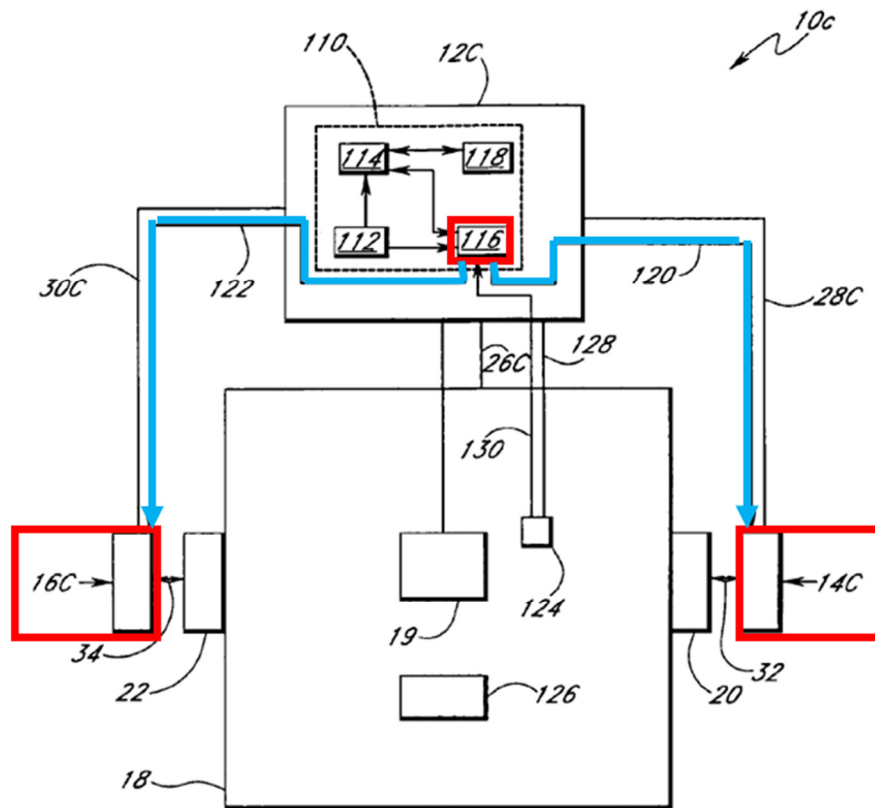


FIG. 9A

(EX1010, 29:64-67, FIG. 9A (annotated).)

320. To the extent not expressly disclosed in Jannard, the POSITA would understand the audio signals directed to the speakers include the incoming audio message, at least because Jannard discloses that the “user can ‘listen’ to email through the audio device.” (EX1010, 31:40-44.)

- d. ***[C] wherein the output of the incoming audio message is dependent on at least one user-selected speech characteristic.***

321. This element is met as described for claim 11[A].

11. Claim 40

- a. ***[Preamble] A wireless headset as recited in claim 23,***

322. The Preamble is met as described for claim 23.

- b. ***[A] wherein said wireless headset is configured to: prompt the first user to provide the reply audio message prior to said receiving of the reply audio message,***

323. This element is met as described for claim 3[A].

- c. ***[B] wherein the reply audio message thereafter being converted to a reply text message and transmitted to the another wireless electronic device via the wireless network,***

324. This element is met as described for claim 24[A].

(i) Motivation to Combine

325. This element is met as described for claim 1[G].

- d. ***[C] wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic,***

326. This element is met as described for claim 11[A].

- e. ***[D] wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device, and***

327. This element is met as described for claim 13[A].

- f. ***[E] wherein the incoming text message is a SMS message, and wherein the reply text message is a SMS message.***

328. This element is met as described for claim 17[A].

12. Claim 43

- a. ***[Preamble] A wireless headset as recited in claim 42,***

329. The Preamble is met as described for claim 42.

- b. ***[A] wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic, and***

330. This element is met as described for claim 11[A].

- c. ***[B] wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device.***

331. This element is met as described for claim 13[A].

(i) Motivation to Combine

332. This element is met as described for claim 11[A].

E. Ground 11: Claims 18, 21, 34, 37, 38, 45, and 46 are Rendered Obvious by Jannard in view of Vuori and Moore

333. It is my view that Jannard in view of Vuori and Moore teaches every limitation of claims 18, 21, 34, 37, 38, 45, and 46, for the reasons set forth below.

1. Claim 18

- a. ***[Preamble] A wireless communication system as recited in claim 1,***

334. The Preamble is met as described for claim 1.

- b. ***[A] wherein said converting of the incoming text message to the incoming audio message comprises: translating at least a portion of the incoming text message from a condensed format to an uncondensed text format; and***

335. This element is met by Moore as described for Ground 5, claim 18[A].

Moore discloses the use of special-purpose dictionaries for properly converting conventional abbreviations used in instant messaging sessions. (EX1009, 17:42-52.) For example, Moore teaches that “‘LOL’ may be translated to the spoken

equivalent of ‘laughing out loud.’” (EX1009, 17:42-52.) The POSITA would understand that chat-language abbreviations such as “LOL” correspond to the claimed “condensed format” and the resulting expansions such as “laughing out loud” correspond to the claimed “uncondensed format.” This is at least because the ’104 patent specifically provides “LOL” as an example of condensed text, and the expansion “lots of love” as an example of uncondensed text. (EX1001, 10:63-11:3.)

336. To the extent that Moore does not explicitly teach translating the incoming text message to an uncondensed text format, the POSITA would understand that the condensed, chat abbreviation would first be translated to an uncondensed, textual format before the message is converted into an audio format. This is at least because Moore teaches that the audio created is computer-synthesized speech. (EX1009, 2:12-15, 16:26-39, 19:28-31.) The POSITA would have understood that synthesized speech outputs are generated from a textual format, and generally require the text to be in a comprehensible format before it can be synthesized into speech. That is, the condensed textual abbreviation must first be translated into an uncondensed textual format before being translated into an uncondensed audio format.

(i) Motivation to Combine

337. The POSITA would have been motivated to combine the teachings of Jannard and Moore to meet the claim limitation. Jannard describes a source device that synthesizes speech from incoming text messages, enabling users to conveniently access message content without the need to look at the source device. (EX1010, 32:20-42.) Moore discloses techniques for converting text messages to audio formats that convey emotions, thoughts, or impressions, including those indicated by text abbreviations. (EX1009, Abstract, 17:35-52.) The POSITA would have sought to enhance the conveyance of emotions and context in the synthesized speech of Jannard, and would thus be motivated to combine Jannard with Moore. Integrating Moore's approach with Jannard's system would improve the synthesized speech's expressiveness and contextual accuracy, enabling users to better perceive both informational content and emotional nuances.

338. The POSITA would have had a reasonable expectation of success in combining Jannard and Moore. Moore's techniques are broadly applicable to the conversion of text-based communications to audio output —analogous to Jannard's synthesis of speech from incoming email messages. Moore's speech synthesis is implemented by components such as the text-to-speech module, which is analogous to the text-to-speech engine of Jannard's source device. Jannard and

Moore also share other analogous and familiar computer components, such as memories, processors, and mobile phones. Jannard and Moore are thus easily combined based on familiar components.

339. The POSITA would have been motivated to combine the teachings of Jannard and Vuori as discussed with respect to claim 1[G]. Vuori and Moore are compatible because they both pertain to methods of converting text to speech.

c. [B] *converting at least the portion of the incoming text message in the uncondensed text format to at least a portion of the incoming audio message.*

340. This element is met by Moore as described for Ground 5, claim 18[B]. As described above, Moore discloses converting conventional abbreviations commonly used in instant messaging sessions. (EX1009, 17:42-52.) For example, Moore teaches that “‘LOL’ may be translated to the spoken equivalent of ‘laughing out loud.’” (EX1009, 17:42-52.)

341. The POSITA would understand that the untranslated portions of the incoming text message would be converted from the uncondensed text format to a portion of the incoming audio message, as described above for Jannard’s text-to-voice speech engine in claim 1, element [D].

342. To the extent that Moore does not explicitly teach translating an uncondensed text format to an audio message, the POSITA would understand that

the condensed, chat abbreviation would first be translated to an uncondensed, textual format before the message is converted into an audio format. This is at least because Moore teaches that the audio created is computer-synthesized speech. (EX1009, 2:12-15, 16:26-39, 19:28-31.) The POSITA would understand that synthesized speech outputs are generated from a textual format, and generally require the text to be in a comprehensible format before it can be synthesized into speech. That is, the condensed textual abbreviation must first be translated into an uncondensed textual format before being translated into an uncondensed audio format.

(i) Motivation to Combine

343. This element is met as described for claim 18[A].

2. Claim 21

a. [Preamble] *A wireless communication system as recited in claim 1,*

344. The Preamble is met as described for claim 1.

- b. ***[A] wherein at least a portion of the incoming text message is in a chat language, and wherein said converting of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.***

345. This element is met as described for claim 18[A] and 18[B]. The POSITA would have understood that text abbreviation (*e.g.*, “LOL”) corresponds to the claimed “chat language” and the expanded form (*e.g.*, “laughing out loud”) corresponds to the claimed “plurality of words,” at least because the ’104 patent describes “LOL” as an example of such chat language, and further describes expanding “LOL” to a plurality of words. (EX1001, 10:63-11:3.)

3. Claim 34

- a. ***[Preamble] A wireless headset as recited in claim 23,***

346. The Preamble is met as described for claim 23.

- b. ***[A] wherein the conversion of the incoming text message to the incoming audio message comprises: translation of at least a portion of the incoming text message from a condensed format to an uncondensed text format; and***

347. This element is met as described for claim 18[A].

- c. ***[B] conversion of at least the portion of the incoming text message in the uncondensed text format to at least a portion of the incoming audio message.***

348. This element is met as described for claim 18[B].

(i) Motivation to Combine

349. This element is met as described for claim 18[A].

4. Claim 37

- a. ***[Preamble] A wireless headset as recited in claim 23,***

350. The Preamble is met as described for claim 23.

- b. ***[A] wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.***

351. This element is met as described for claim 21[A].

(i) Motivation to Combine

352. This element is met as described for claim 18[A].

5. Claim 38

- a. ***[Preamble] A wireless headset as recited in claim 23,***

353. The Preamble is met as described for claim 23.

- b. *[A] wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises at least increasing the number of alphabets in the portion of the incoming text message that is in the chat language.*

354. This element is met as described for claim 18, elements[A] and [B].

The text abbreviation (*e.g.*, “LOL”) corresponds to the claimed “chat language” and the expanded form (*e.g.*, “laughing out loud”) comprises an increased “number of alphabets.” (*See* EX1009, 17:42-52.)

(i) Motivation to Combine

355. This element is met as described for claim 18, elements [A] and [B].

6. Claim 45

- a. *[Preamble] A wireless headset as recited in claim 43,*

356. The Preamble is met as described for claim 43.

- b. *[A] wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.*

357. This element is met as described for claim 21[A].

(i) Motivation to Combine

358. This element is met as described for claim 18[A].

7. Claim 46

- a. **[Preamble]** *A wireless headset as recited in claim 43,*

359. The Preamble is met as described for claim 43.

- b. **[A]** *wherein the conversion of the incoming text message to the incoming audio message comprises: translation at least a portion of the incoming text message from a condensed format to an uncondensed text format; and*

360. This element is met as described for claim 18[A].

- c. **[B]** *conversion of at least the portion of the incoming text message in the uncondensed text format to at least a portion of the incoming audio message.*

361. This element is met as described for claim 18[B].

(i) Motivation to Combine

362. This element is met as described for claim 18[A].

F. Ground 12: Claims 19, 20, 35, 36, and 41 are Rendered Obvious by Jannard in view of Vuori, Posa, and Moore

363. It is my view that Jannard in view of Vuori, Posa, and Moore teaches every limitation of claims 19, 20, 35, 36, and 41, for the reasons set forth below.

1. Claim 19

- a. **[Preamble]** *A wireless communication system as recited in claim 18,*

364. The Preamble is met as described for claim 18.

- b. *[A] wherein said converting of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.*

365. This element is met as described for claim 11[A].

(i) Motivation to Combine

366. The POSITA would have been motivated to combine the teachings of Jannard, Vuori, and Posa as discussed with respect to claim 11[A]. The POSITA would have been motivated to combine the teachings of Jannard, Vuori, and Moore as discussed with respect to claim 18[A]. Additionally, the teachings of Posa and Moore are compatible at least because they both pertain to converting text to speech.

2. Claim 20

- a. *[Preamble] A wireless communication system as recited in claim 19,*

367. The Preamble is met as described for claim 19.

- b. *[A] wherein the at least one user-selected speech characteristic is set based on at least one user setting provided at said wireless communication device.*

368. This element is met as described for claim 13[A].

(i) Motivation to Combine

369. The POSITA would have been motivated to combine the teachings of Jannard, Vuori, and Posa as discussed with respect to claim 13[A]. The POSITA would have been motivated to combine the teachings of Jannard, Vuori, and Moore as discussed with respect to claim 18[A]. Additionally, the teachings of Posa and Moore are compatible at least because they both pertain to converting text to speech.

3. Claim 35

- a. **[Preamble]** *A wireless headset as recited in claim 34,*

370. The Preamble is met as described for claim 34.

- b. **[A]** *wherein the conversion of the incoming text message to the incoming audio message depends on at least one user-selected speech characteristic.*

371. This element is met as described for claim 11 [A].

(i) Motivation to Combine

372. This element is met as described for claim 19[A].

4. Claim 36

- a. **[Preamble]** *A wireless headset as recited in claim 35,*

373. The Preamble is met as described for claim 35.

- b. *[A] wherein the at least one user-selected speech characteristic is set based on at least one user setting able to be provided at the mobile electronic device.*

374. This element is met as described for claim 13[A].

(i) Motivation to Combine

375. This element is met as described for claim 20[A].

5. Claim 41

- a. *[Preamble] A wireless headset as recited in claim 40,*

376. The Preamble is met as described for claim 40.

- b. *[A] wherein at least a portion of the incoming text message is in a chat language, and wherein the conversion of the incoming text message to the incoming audio message comprises expanding the portion of the incoming text message that is in the chat language to a plurality of words.*

377. This element is met as described for claim 21[A].

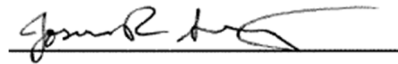
(i) Motivation to Combine

378. This element is met as described for claim 19[A].

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code.

Executed the 10th of November, 2025 in Seattle, Washington.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joshua R. Smith", is written over a solid horizontal line.

Joshua R. Smith